

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## PLANS FOR PROPOSED STATE HIGHWAY CLAY COUNTY

### DESIGN DESIGNATION

BRIDGE A3387  
 A.A.D.T. = 3,002 (2010) - 5,403 (2031)  
 T = 18%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGES A3378, A3374  
 A.A.D.T. = 20,478 (2010) - 36,860 (2031)  
 T = 14%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A3377  
 A.A.D.T. = 19,737 (2010) - 35,526 (2031)  
 T = 14%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A3375  
 A.A.D.T. = 31,683 (2010) - 57,029 (2031)  
 T = 11%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A3386  
 A.A.D.T. = 1,594 (2010) - 2,869 (2031)  
 T = 19%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A1583  
 A.A.D.T. = 13,188 (2010) - 23,738 (2031)  
 T = 18%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A1581  
 A.A.D.T. = 1,303 (2010) - 2,345 (2031)  
 T = 18%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A1580  
 A.A.D.T. = 3,271 (2010) - 5,887 (2031)  
 T = 19%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A3390  
 A.A.D.T. = 3,027 (2010) - 5,448 (2031)  
 T = 19%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A1582  
 A.A.D.T. = 16,090 (2010) - 28,962 (2031)  
 T = 18%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

BRIDGE A3389  
 A.A.D.T. = 1,626 (2010) - 2,926 (2031)  
 T = 19%  
 V = 65 M.P.H.  
 FUNCTIONAL CLASSIFICATION - INTERSTATE

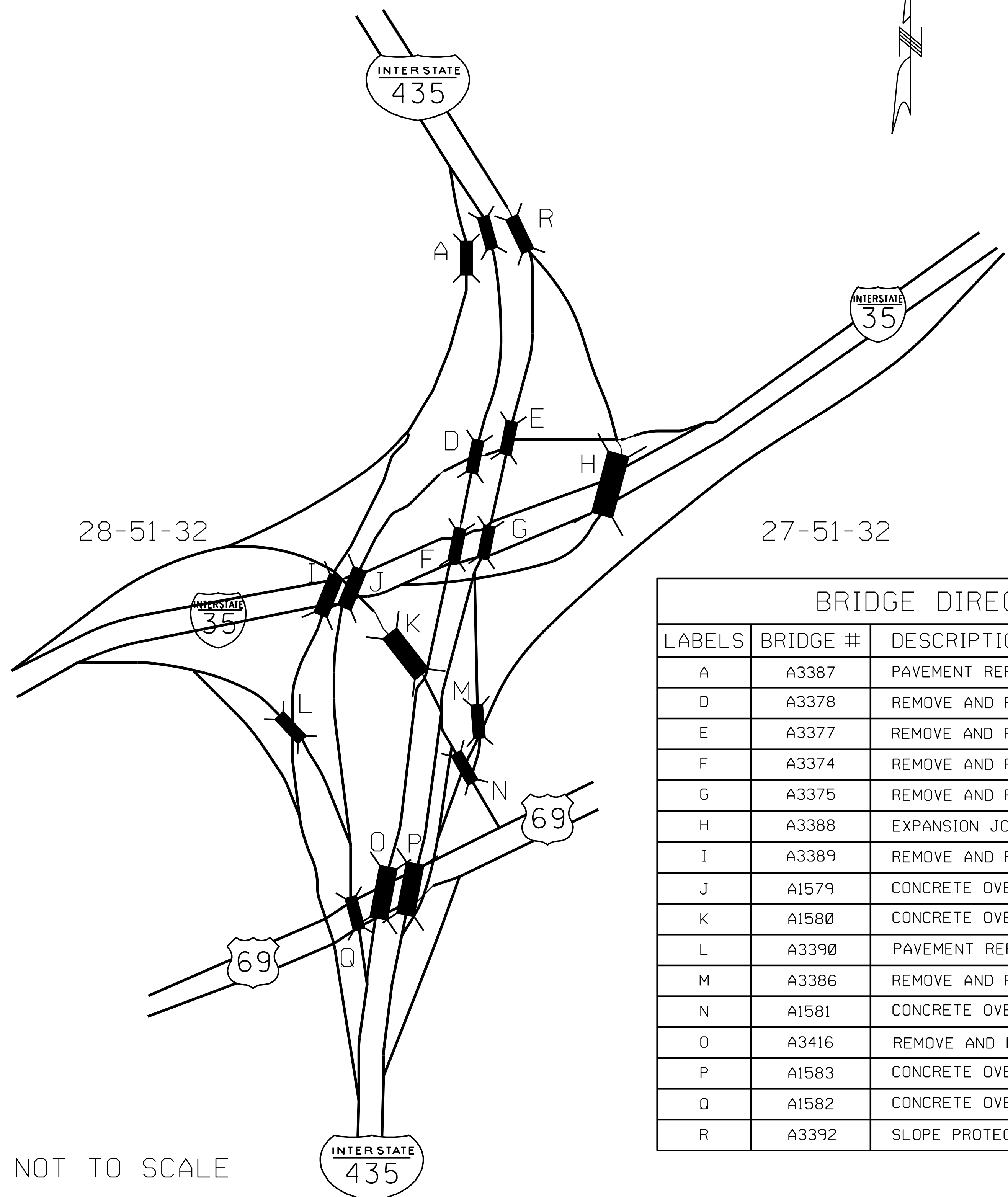
**NO R/W WAS ACQUIRED FOR THIS PROJECT.**

### CONVENTIONAL SYMBOLS

(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES	[Symbol]	[Symbol]
GUARD RAIL	[Symbol]	[Symbol]
CONCRETE RIGHT-OF-WAY MARKER	[Symbol]	[Symbol]
STEEL RIGHT-OF-WAY MARKER	[Symbol]	[Symbol]
LOCATION SURVEY MARKER	[Symbol]	[Symbol]
UTILITIES		
FIBER OPTICS	-FO-	-FO-
OVERHEAD TELEPHONE	-O-	-O-
UNDERGROUND TELEPHONE	-T-	-T-
OVERHEAD POWER	-P-	-P-
UNDERGROUND POWER	-P-	-P-
GAS	-G-	-G-
WATER	-W-	-W-
MANHOLE	[Symbol]	[Symbol]
FIRE HYDRANT	[Symbol]	[Symbol]
WATER VALVE	[Symbol]	[Symbol]
WATER METER	[Symbol]	[Symbol]
DROP INLET	[Symbol]	[Symbol]
DITCH BLOCK	[Symbol]	[Symbol]
GROUND MOUNTED SIGN	[Symbol]	[Symbol]
LIGHT POLE	[Symbol]	[Symbol]
H-FRAME POWER POLE	[Symbol]	[Symbol]
TELEPHONE PEDESTAL	[Symbol]	[Symbol]
FENCE		
CHAIN LINK	[Symbol]	[Symbol]
WOVEN WIRE	[Symbol]	[Symbol]
GATE POST	[Symbol]	[Symbol]
BENCHMARK	[Symbol]	[Symbol]

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES



NOT TO SCALE

### BRIDGE DIRECTORY

LABELS	BRIDGE #	DESCRIPTION OF WORK
A	A3387	PAVEMENT REPAIR
D	A3378	REMOVE AND REPLACE EXPANSION JOINTS
E	A3377	REMOVE AND REPLACE EXPANSION JOINTS
F	A3374	REMOVE AND REPLACE EXPANSION JOINTS
G	A3375	REMOVE AND REPLACE EXPANSION JOINTS
H	A3388	EXPANSION JOINTS, APPROACH SLABS
I	A3389	REMOVE AND REPLACE GUARDRAIL
J	A1579	CONCRETE OVERLAY AND PAVEMENT REPAIR
K	A1580	CONCRETE OVERLAY, APPROACHES SLABS
L	A3390	PAVEMENT REPAIR
M	A3386	REMOVE AND REPLACE EXPANSION JOINTS
N	A1581	CONCRETE OVERLAY AND PAVEMENT REPAIR
O	A3416	REMOVE AND REPLACE GUARDRAIL
P	A1583	CONCRETE OVERLAY AND PAVEMENT REPAIR
Q	A1582	CONCRETE OVERLAY AND PAVEMENT REPAIR
R	A3392	SLOPE PROTECTION REPAIR

### INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET -----	1
TYPICAL SECTIONS (TS) (1 SHEET)---	2
QUANTITIES (QU) (03 SHEETS)-----	3
PLAN (PL) (1 SHEET)-----	4
PROFILE (PR)-----	N/A
RIGHT OF WAY (RW)-----	N/A
REFERENCE POINTS (RP)-----	N/A
COORDINATE POINTS (CP)-----	N/A
SPECIAL SHEETS (SS)-----	N/A
TRAFFIC CONTROL SHEETS (TC)-----	5-59
EROSION CONTROL SHEETS (EC)-----	N/A
LIGHTING (LT)-----	N/A
SIGNALS (SG)-----	60-60A
SIGNING (SN)-----	61-63
PAVEMENT MARKING (PM)-----	N/A
BRIDGE DRAWINGS (B)	
A3387-----	1-23
A3378-----	1-23
A3377-----	1-23
A3374-----	1-28
A3375-----	1-38
A3388-----	1-42
A1579-----	1-22
A1580-----	1-67
A3390-----	1-15
A3386-----	1-24
A1581-----	1-24
A1583-----	1-28
A1582-----	1-27

### LENGTH OF PROJECT

BEGINNING OF PROJECT      VARIOUS BRIDGES

#### APPARENT BRIDGE LENGTHS

A3387 = 274'	A1579 = 251'
A3378 = 175'	A1580 = 726'
A3377 = 192'	A3390 = 195'
A3374 = 337'	A3386 = 256'
A3375 = 359'	A1581 = 218'
A3388 = 523'	A3416 = 202'
A3389 = 247'	A1583 = 226'
	A1582 = 201'

TOTAL BRIDGE LENGTHS:      4382 FEET

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DATE PREPARED  
1/16/2013

ROUTE  
VAR.      MO  
DISTRICT  
KC      SHEET NO.  
            1  
COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

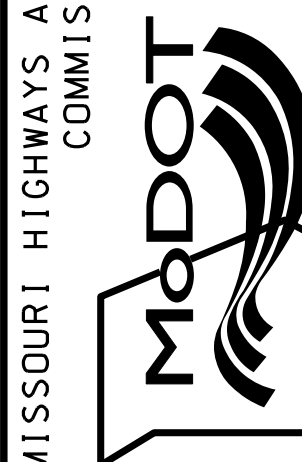
PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 2

COUNTY  
CLAY

JOB NO.  
J412381


CONTRACT ID.

PROJECT NO.

BRIDGE NO.

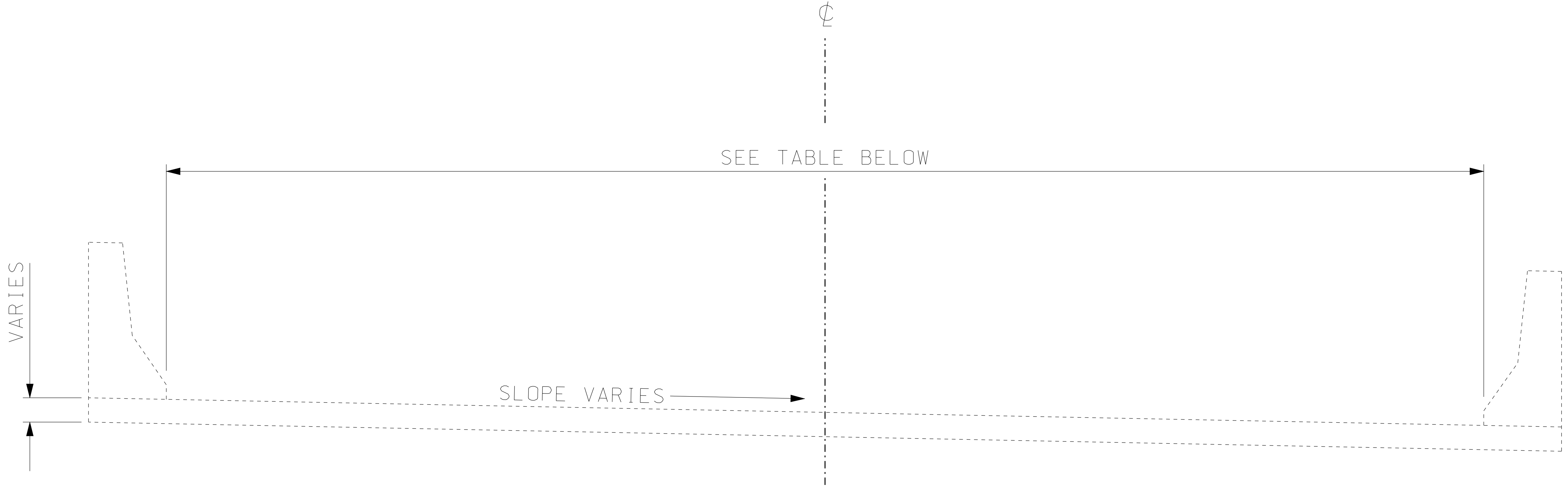
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



BRIDGE DIRECTORY					
ROUTE	BRIDGE #	WIDTH	ROUTE	BRIDGE #	WIDTH
RAMP 8	A3387	40'-0"	RAMP 4	A1580	VARIES
I-435 SB	A3378	40'-0"	RAMP 2	A3390	28'-10"
I-435 SB	A3374	40'-0"	RAMP 2	A1582	38'-0"
I-435 NB	A3377	48'-0"	RAMP 7	A3388	26'-0"
I-435 NB	A3375	VARIES	RAMP 9	A3389	26'-0"
RAMP 11	A3386	26'-0"	I-435 SB	A3416	40'-6"
RAMP 4	A1583	VARIES	RAMP 3	A1579	24'-0"
RAMP 5	A1581	24'-0"			

TYPICAL SECTION  
VARIOUS BRIDGES  
SHEET 1 OF 1



# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

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DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 3

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

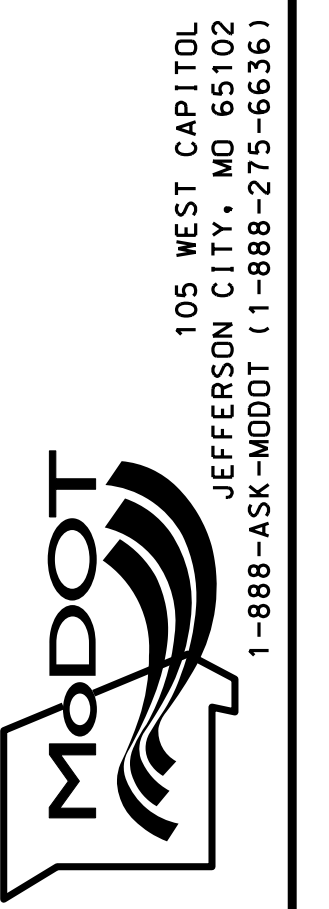
BRIDGE NO.

PLAN SHEET	ROUTE	SIDE	PREFORMED REMOVABLE MARKING TAPE					SHORT TERM MARKING		PAVEMENT MARKING REMOVAL (SYMBOLS) (EA.)	PAVEMENT MARKING REMOVAL (L.F.)	REMARKS
			MARKING TAPE 4 IN. WHITE (L.F.)	MARKING TAPE 4 IN. YELLOW (L.F.)	MARKING TAPE 24 IN. WHITE (L.F.)	LEFT/RIGHT ARROW (EA.)	STRAIGHT ARROW (EA.)					
11-12	RAMP 4 - RAMP 6	CL	1015							1015	TCP - CLOSE EAST HALF OF BR. A-1583	
12	NB I-435	LT	100							100	TCP - CLOSE EAST HALF OF BR. A-1583	
12-13	NB I-435	LT	3360							3360	TCP - CLOSE EAST HALF OF BR. A-1583	
17	NB I-435 OFF RAMP TO US-69	CL	47		12	1			1	56	TCP - CLOSE EAST HALF OF BR. A-1583, I-35 NORTH DETOUR	
18	NB US-69	INTERSECTION	100				2				TCP - CLOSE EAST HALF OF BR. A-1583, I-35 NORTH DETOUR	
19-21	RAMP 4 - RAMP 5	CL		2130						2130	TCP -CLOSE BR. A-1580, A-1581 AND WEST HALF A-1583.	
20-21	RAMP 4 - RAMP 5	RT		1016						1016	TCP - CLOSE RAMP 4 AND RAMP 5	
21-21D	I-435	LT	3360							3360	TCP - CLOSE RAMP 4 AND RAMP 5	
26	RAMP 1 - RAMP 2	CL		330						330	TCP - CLOSE EAST HALF BR. A-1582 STAGE 1	
27	RAMP 2 - RAMP 3	CL	530							530	TCP - CLOSE EAST HALF BR. A-1582 STAGE 1	
30	RAMP 2 - RAMP 3	LT		875						875	TCP - CLOSE WEST HALF BR. A-1582 STAGE 2	
34-35	NB I-435	LT TO RT		2423						2423	TCP - CLOSE WEST HALF OF BR. A-3375 & A-3377 STAGE 1	
37-38	NB I-435	5' RT TO 12' LT.	2606							2606	TCP - CLOSE BR. A3383 AND EAST HALF OF BR. A-3375 & A-3377 STAGE 2	
38-40	NB I-435	12' RT. TO CL		3280						3280	TCP - CLOSE BR. A3383 AND EAST HALF OF BR. A-3375 & A-3377 STAGE 2	
38	RAMP 11	RT		367						367	TCP - CLOSE BR. A3383 AND EAST HALF OF BR. A-3375 & A-3377 STAGE 2	
44-46	SB I-435	12' LT TO 5' RT.		2598						2598	TCP - CLOSE EAST HALF OF BR. A-3374 & A-3378 STAGE 1	
47-49	SB I-435	24' LT. TO 12' RT. TO 24' RT.	3340							3340	TCP - CLOSE WEST HALF OF BR. A-3374 & A-3378 STAGE 2	
48-49	SB I-435	0' TO 12' RT.		680						680	TCP - CLOSE WEST HALF OF BR. A-3374 & A-3378 STAGE 2	
48-50	SB I-435	0' TO 5' LT.	2728							2728	TCP - CLOSE WEST HALF OF BR. A-3374 & A-3378 STAGE 2	
55-56	RAMP 9	12' LT TO 5' RT.	2630							2630	TCP -CLOSE WEST HALF OF BR. A-3387 STAGE 1Z	
56	RAMP 9	16' LT.		268						268	TCP -CLOSE WEST HALF OF BR. A-3387 STAGE 1Z	
57-59	RAMP 9	24' LT. TO 12' RT. TO 24' RT.	2680							2680	TCP -CLOSE EAST HALF OF BR. A-3387 STAGE 2Z	
58-59	RAMP 9	0' TO 5' RT.		1605						1605	TCP -CLOSE EAST HALF OF BR. A-3387 STAGE 2Z	
59	SB I-435	CL		1247						1247	TCP -CLOSE EAST HALF OF BR. A-3387 STAGE 2Z	
<b>TOTAL</b>			<b>22496</b>	<b>16819</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>39224</b>			

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

PERMANENT PAVEMENT MARKING				
PLAN SHEET	LOCATION	ACRYLIC WATERBORNE PAVEMENT MARKING 6 IN. WHITE (L.F.)	TYPE 2 PREFORMED MARKING TAPE (GROOVED) LEFT ARROW (EACH)	REMARKS
17	NB I-435 OFF RAMP TO US-69	46.00		AROUND PAINTED MEDIAN ISLAND
17	NB I-435 OFF RAMP TO US-69		1	PLACE AT CURRENT LOCATION NEXT TO RIGHT ARROW
<b>TOTAL</b>		<b>46</b>	<b>1</b>	

ROCK FILL										
BRIDGE	ROUTE	LOCATION	RUBBLIZING OF SLOPE PROTECTION SY	FURNISHING TYPE 2 ROCK BLANKET CY	PLACING TYPE 2 ROCK BLANKET CY	FURNISH TYPE 3 ROCK DITCH LINER CY	PLACE TYPE 3 ROCK DITCH LINER CY	BEDDING CY	PERMANENT EROSION CONTROL GEOTEXTILE SY	REMARKS
A1581	RAMP FROM US-69 TO SB I-35	NW QUADRANT	262	46	46					
A1581	RAMP FROM US-69 TO SB I-35	SOUTH EMBANKMENT	217	39	39					
A1583	RAMP FROM NB I-435 TO I-35	SOUTH EMBANKMENT	363	65	65					
A3387	RAMP FROM SB I-435 TO SB I-35	NW QUADRANT		63	63					
A3387	RAMP FROM SB I-435 TO SB I-35	SW QUADRANT		63	63					
A3388	RAMP FROM NB I-35 TO NB I-435	NW QUADRANT	100	18	18					
A3390	RAMP FROM NB I-35 TO SB I-435	NW QUADRANT	56	14	14					
A3390	RAMP FROM NB I-35 TO SB I-435	SW QUADRANT	45	15	15	30	30	11	49	
A3392	I-435 SB	NW QUADRANT		56	56					
A3392	I-435 SB	SW QUADRANT		56	56					
<b>TOTAL</b>			<b>1043</b>	<b>435</b>	<b>435</b>	<b>30</b>	<b>30</b>	<b>11</b>	<b>49</b>	

SUMMARY SHEET  
SHEET 2 OF 4

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

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DATE PREPARED  
1/15/2013

ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 3

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

TRAFFIC SIGNAL HEAD									
SIGNAL HEAD POST NUMBER	FACE NUMBER	INDICATION *			VISORS * 12" LENS EACH	BACKPLATE * 3 - LENSES EACH	BRACKET * TYPE I EACH	ONE-FACE SECTION 3-S EACH	REMARKS
		OPTICALLY LIMITING							
		R	Y	G					
4	44	1	1	1	3	1	1	1	SIGNAL AT THE INTERSECTION OF US 69 AND RAMP 1
					OPTICALLY LIMITED TOTAL			1	

\* ITEMS FOR WHICH SEPARATE PAYMENT WILL NOT BE MADE  
SEE SIGNAL SHEET FOR ADDITIONAL INFORMATON

TRAFFIC SIGNAL CABLE				
FROM	TO	CENTER TO CENTER DISTANCE FEET	CONTROL 7c #16 AWG FEET	REMARKS
⊗	④	304	334	SIGNAL AT THE INTERSECTION OF US 69 AND RAMP 1
		TOTAL	334	

SEE SIGNAL SHEET FOR ADDITIONAL INFORMATON

VIDEO DETECTION SYSTEM		
LOCATION	EACH	REMARKS
INTERSECTION RAMP 1, RAMP 8 AND US 69	1	
INTERSECTION RAMP 7, AND US 69	1	SHARE SAME CONTROLLER AS S.PALMER AVE,RAMP 5, AND US 69
INTERSECTION S. PALMER AVE., RAMP 5, AND US 69	1	SHARE SAME CONTROLLER AS RAMP 7 AND US 69
TOTAL	3	

SEE SIGNAL SHEET FOR ADDITIONAL INFORMATON

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

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Table with columns: SIZE, AREA, QTY, TOTAL AREA, TOTAL QTY, RELOCATION, DESCRIPTION. Includes sections for WARNING SIGNS, GUIDE SIGNS, REGULATORY SIGNS, and MISCELLANEOUS SIGNS.

Table with columns: SIGN, SIZE, AREA, QTY, TOTAL AREA, RELOC, RELOC AREA, DESCRIPTION. Includes sections for GUIDE SIGNS, REGULATORY SIGNS, and MISCELLANEOUS SIGNS.

Table with columns: ITEM NUMBER, TOTAL QTY, DESCRIPTION. Lists various items like IMPACT ATTENUATOR, CHANNELIZER, and BARRICADE.

DATE PREPARED 1/15/2013. ROUTE VAR. MO. DISTRICT KC. SHEET NO. 3.

COUNTY CLAY. JOB NO. J412381. CONTRACT ID.

PROJECT NO. BRIDGE NO.

Table with columns: DESCRIPTION, DATE. Lists various items and their dates.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION logo and address: 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-273-6636).

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12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 4

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

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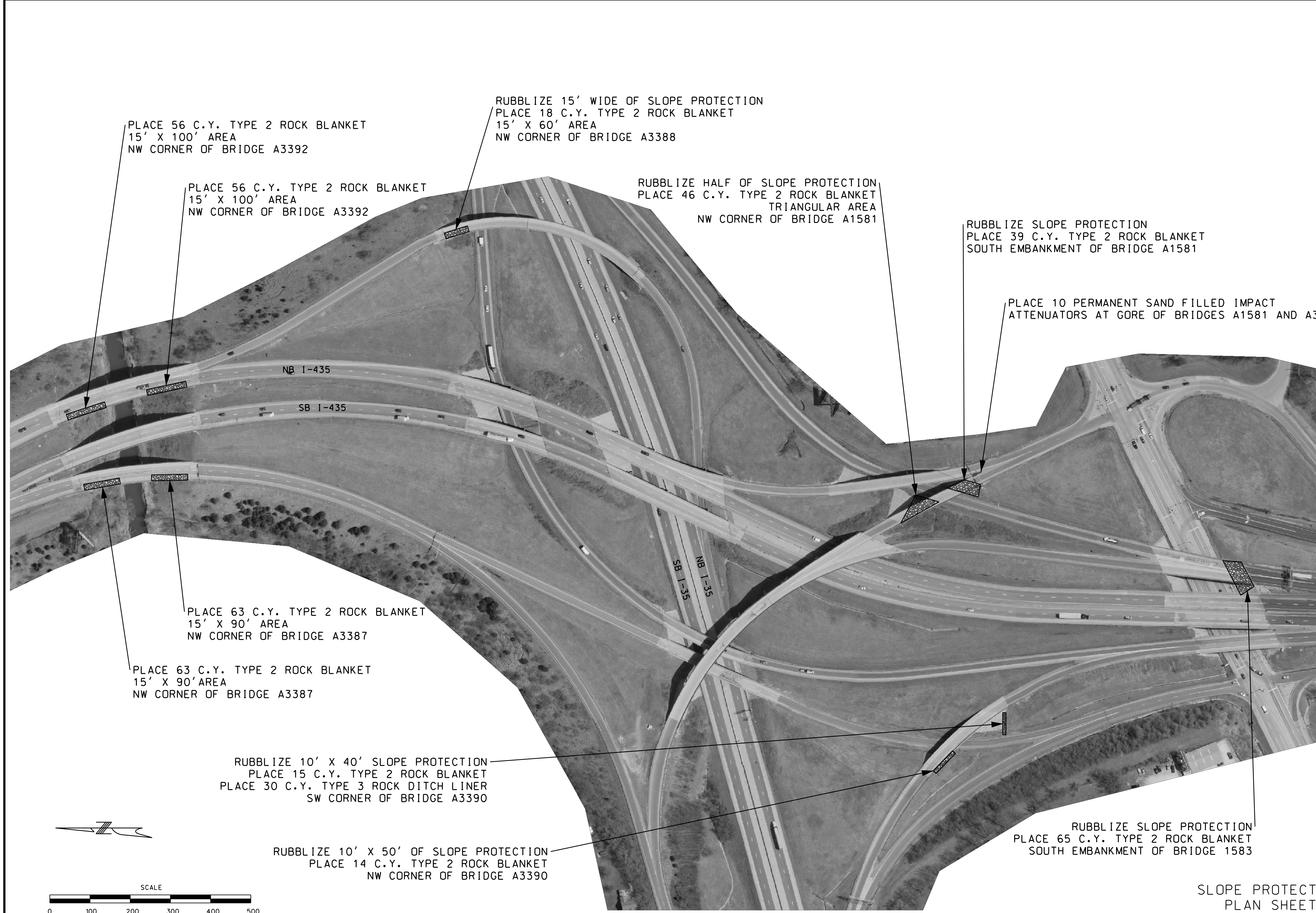
DATE

DESCRIPTION

DATE

DESCRIPTION

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



PLACE 56 C.Y. TYPE 2 ROCK BLANKET  
15' X 100' AREA  
NW CORNER OF BRIDGE A3392

RUBBLIZE 15' WIDE OF SLOPE PROTECTION  
PLACE 18 C.Y. TYPE 2 ROCK BLANKET  
15' X 60' AREA  
NW CORNER OF BRIDGE A3388

PLACE 56 C.Y. TYPE 2 ROCK BLANKET  
15' X 100' AREA  
NW CORNER OF BRIDGE A3392

RUBBLIZE HALF OF SLOPE PROTECTION  
PLACE 46 C.Y. TYPE 2 ROCK BLANKET  
TRIANGULAR AREA  
NW CORNER OF BRIDGE A1581

RUBBLIZE SLOPE PROTECTION  
PLACE 39 C.Y. TYPE 2 ROCK BLANKET  
SOUTH EMBANKMENT OF BRIDGE A1581

PLACE 10 PERMANENT SAND FILLED IMPACT  
ATTENUATORS AT GORE OF BRIDGES A1581 AND A3386

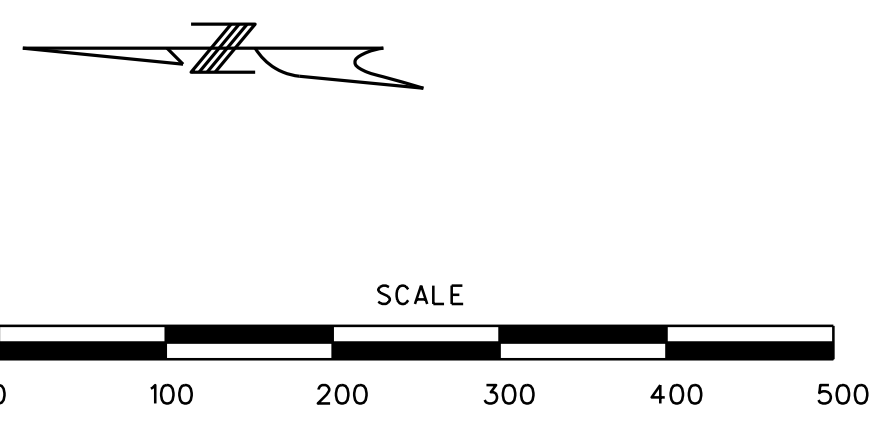
PLACE 63 C.Y. TYPE 2 ROCK BLANKET  
15' X 90' AREA  
NW CORNER OF BRIDGE A3387

PLACE 63 C.Y. TYPE 2 ROCK BLANKET  
15' X 90' AREA  
NW CORNER OF BRIDGE A3387

RUBBLIZE 10' X 40' SLOPE PROTECTION  
PLACE 15 C.Y. TYPE 2 ROCK BLANKET  
PLACE 30 C.Y. TYPE 3 ROCK DITCH LINER  
SW CORNER OF BRIDGE A3390

RUBBLIZE 10' X 50' OF SLOPE PROTECTION  
PLACE 14 C.Y. TYPE 2 ROCK BLANKET  
NW CORNER OF BRIDGE A3390

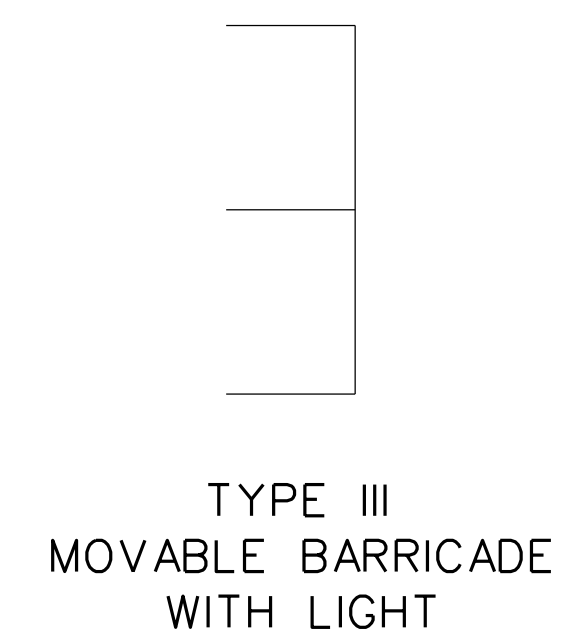
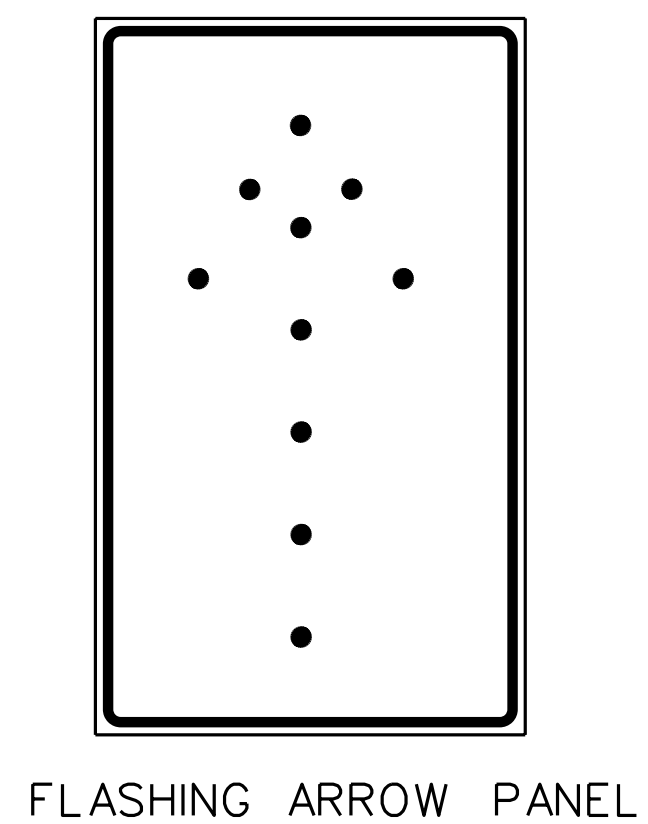
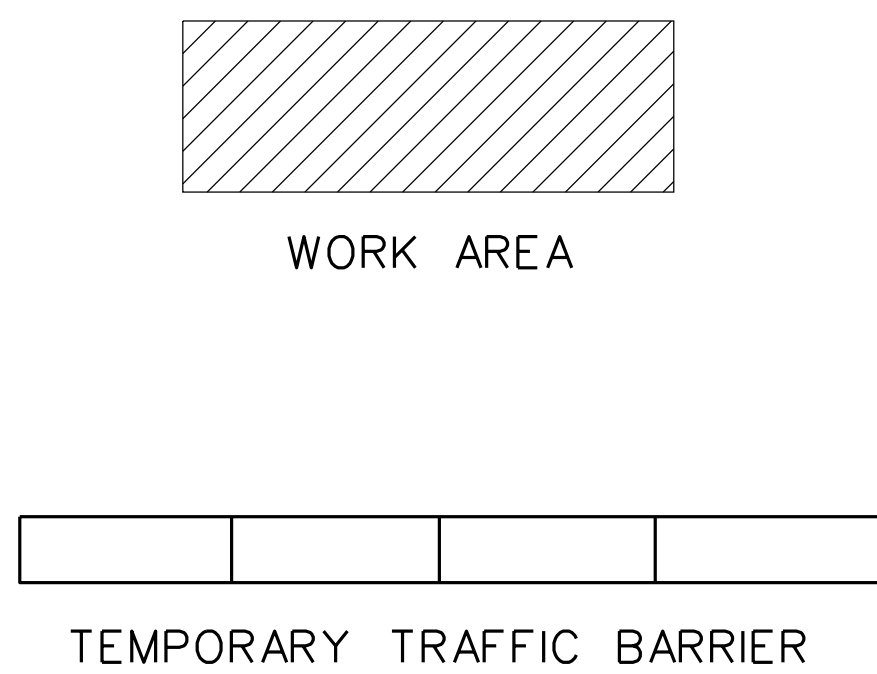
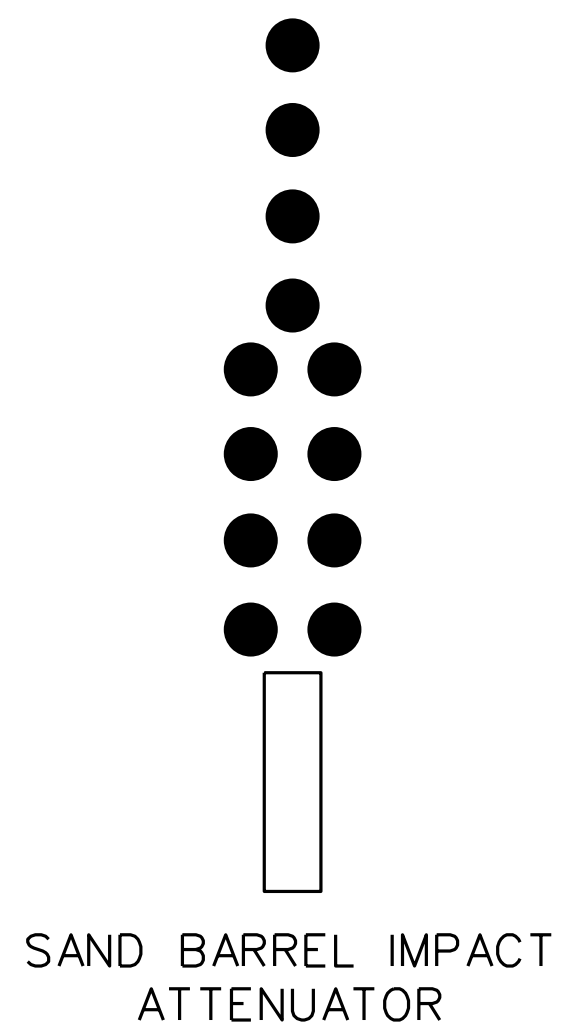
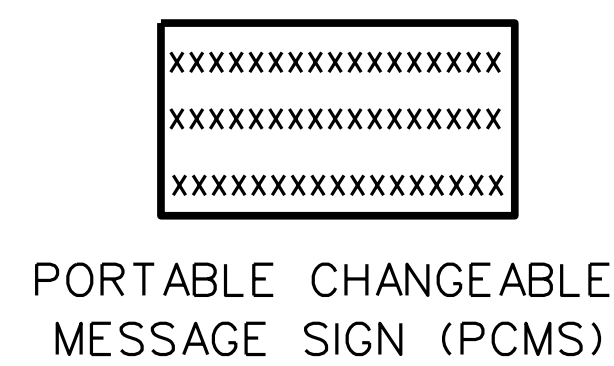
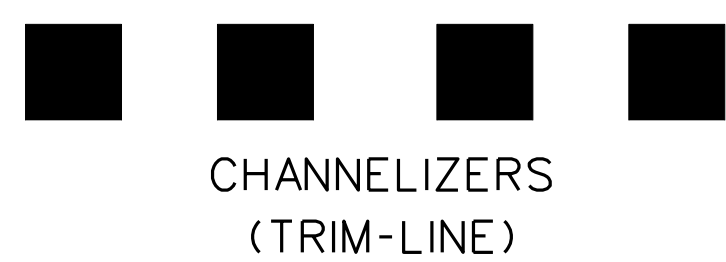
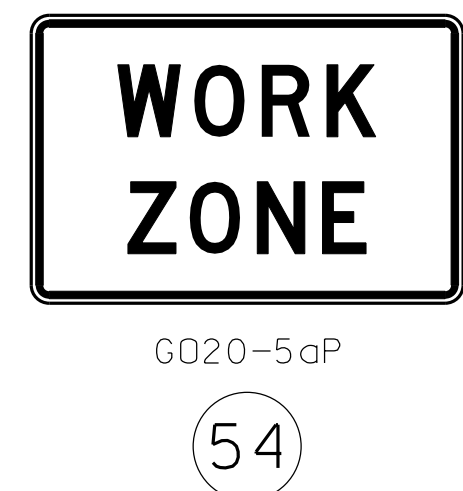
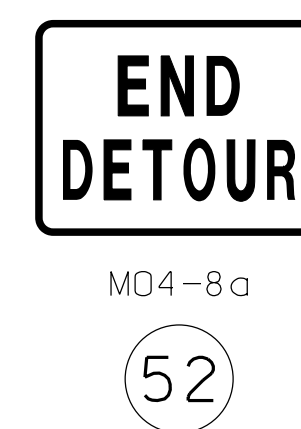
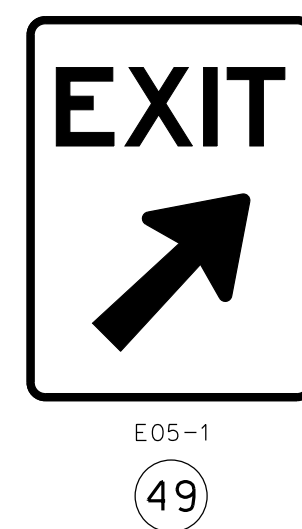
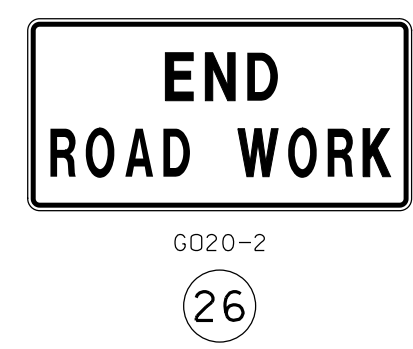
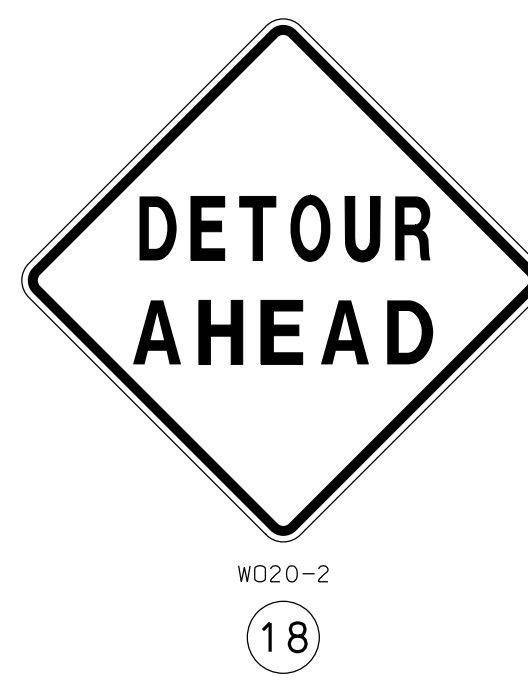
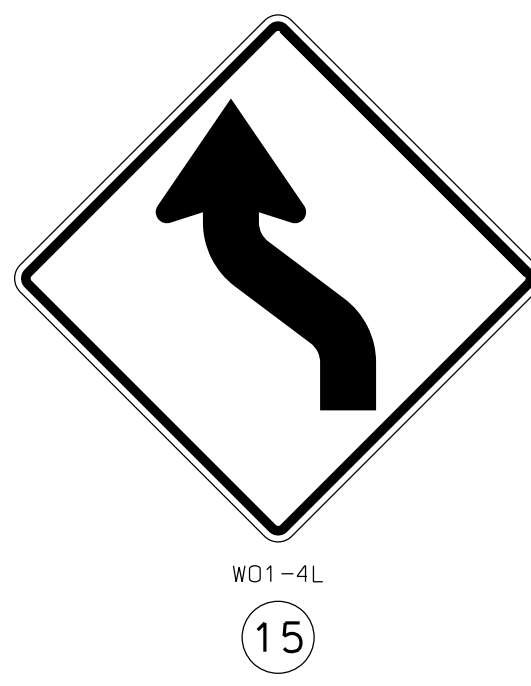
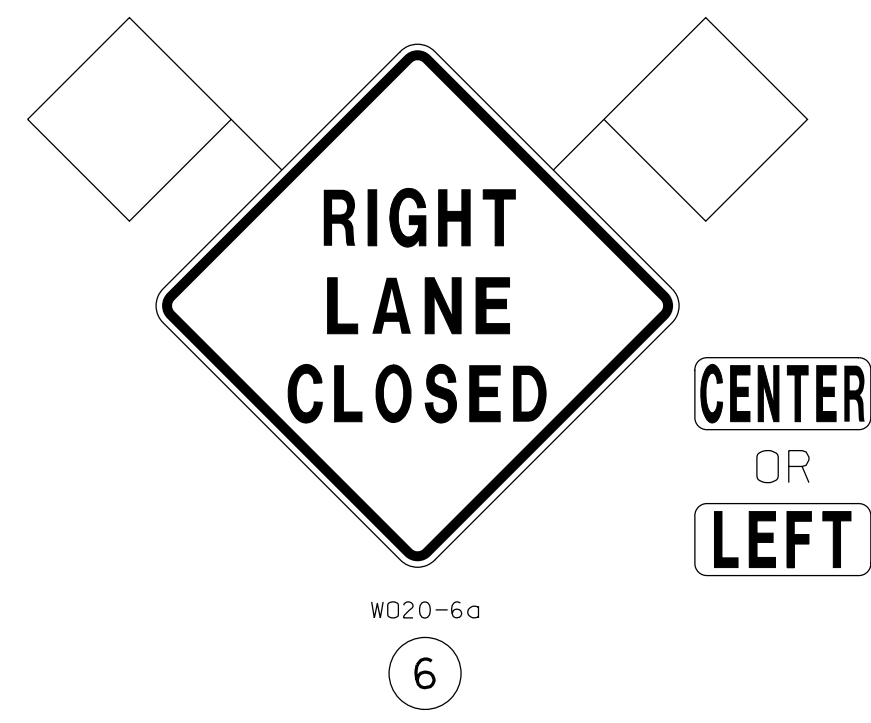
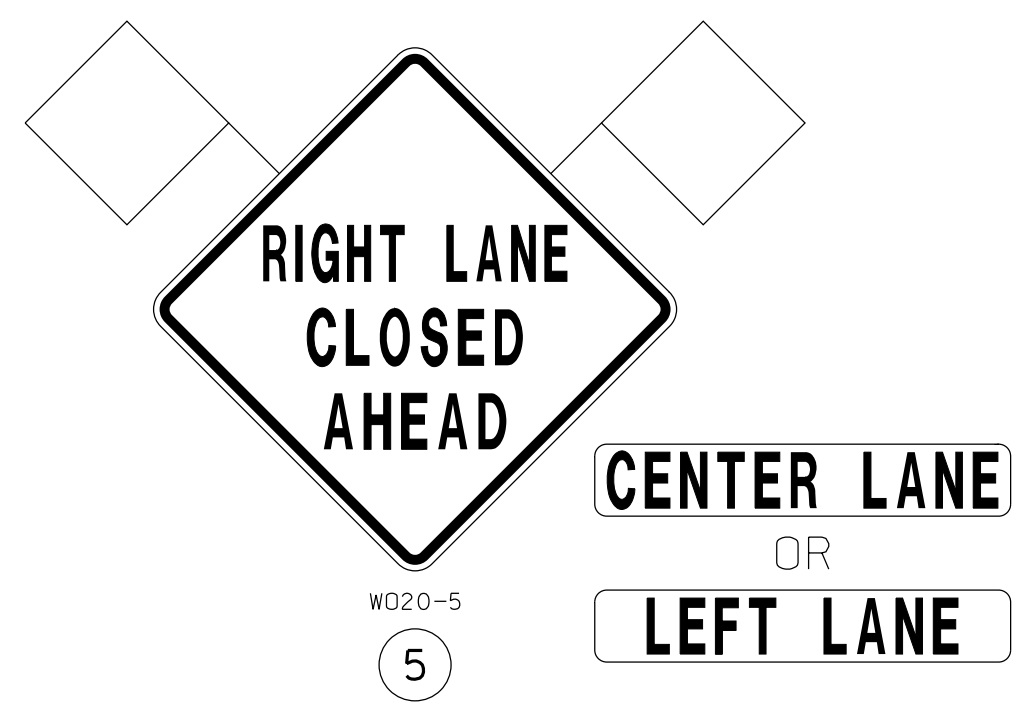
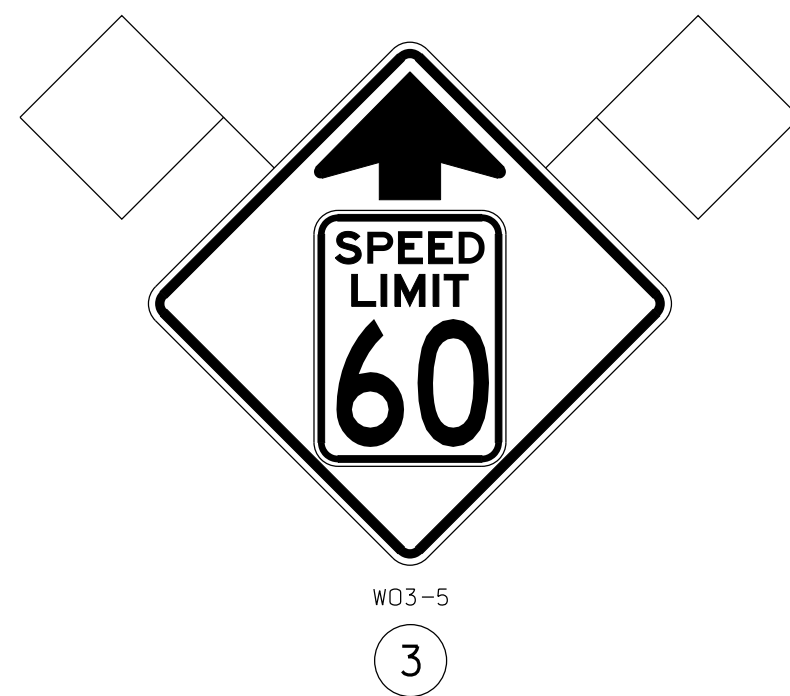
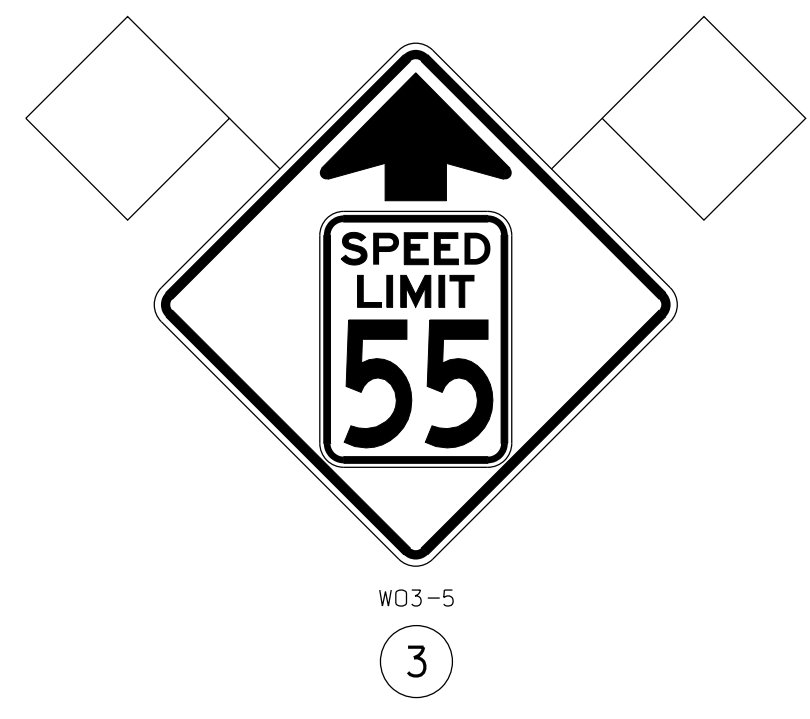
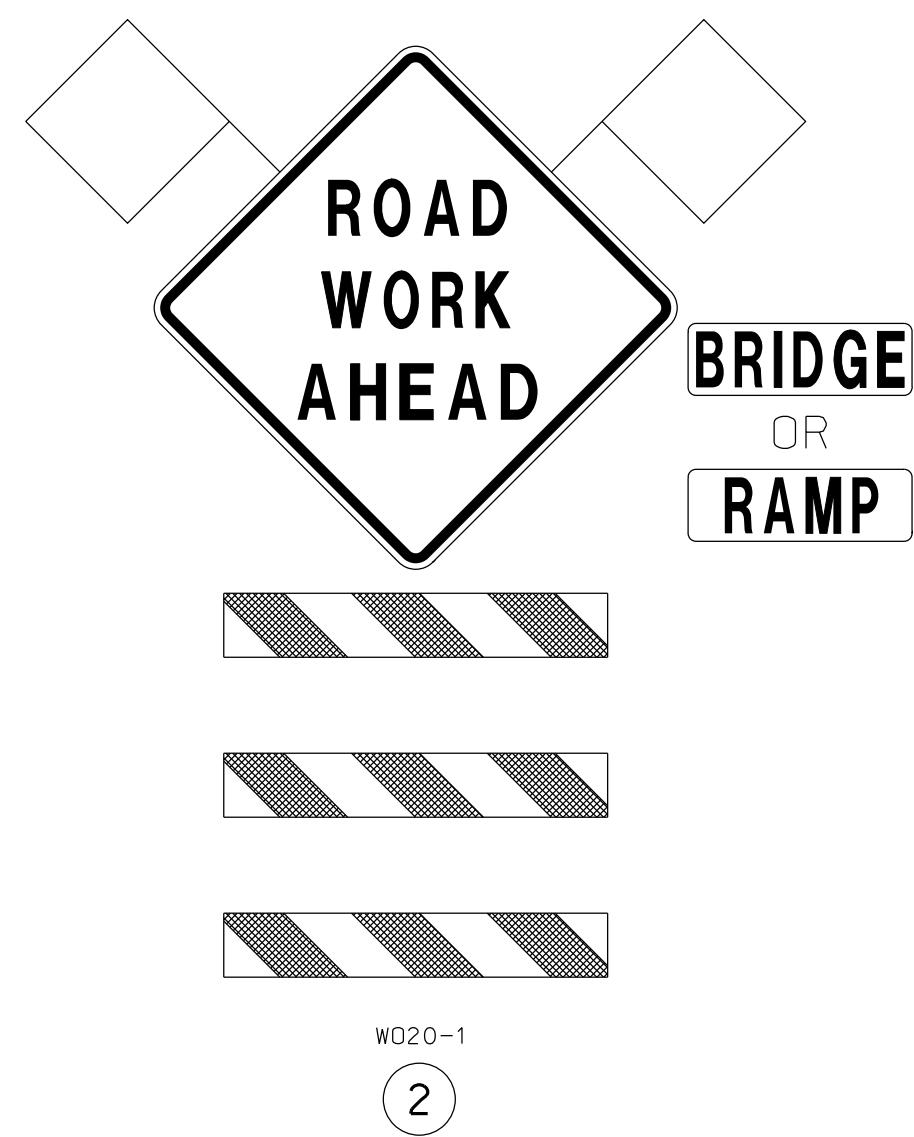
RUBBLIZE SLOPE PROTECTION  
PLACE 65 C.Y. TYPE 2 ROCK BLANKET  
SOUTH EMBANKMENT OF BRIDGE 1583



SLOPE PROTECTION  
PLAN SHEET  
SHEET 1 OF 1

MISSOURI HIGHWAYS AND TRANSPORTATION  
COMMISSION

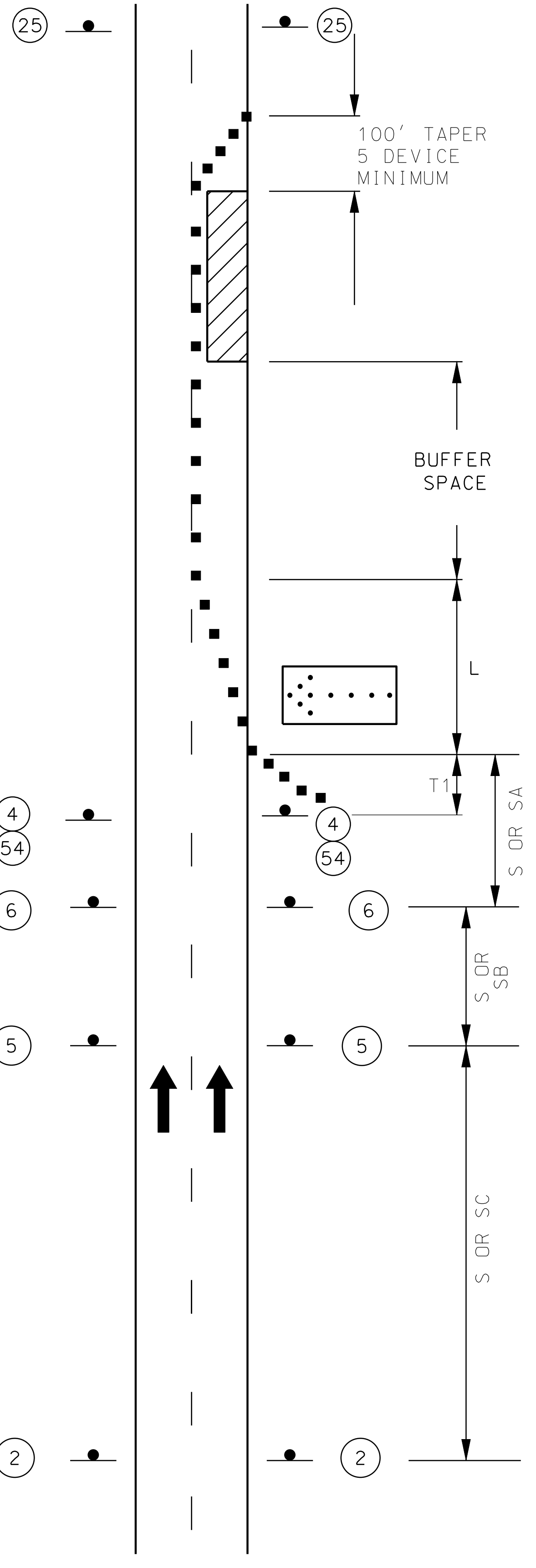
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)



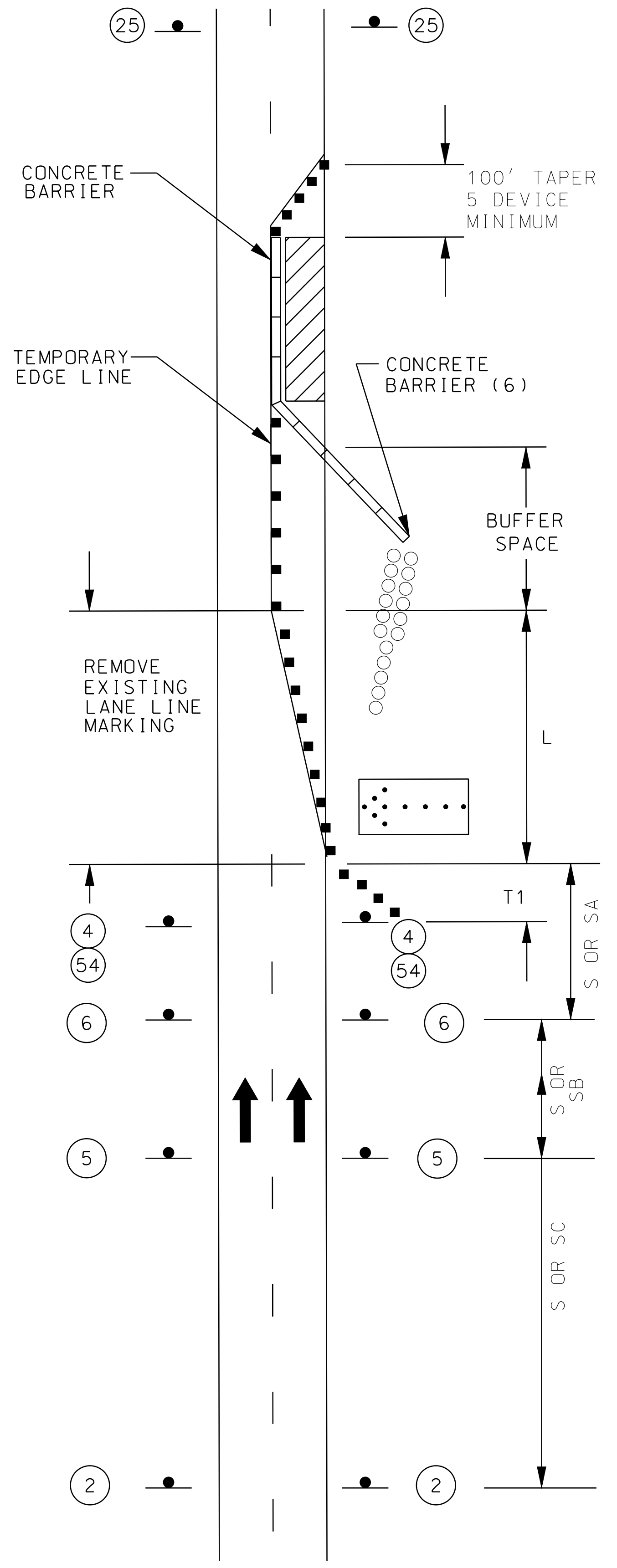
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."	
DATE PREPARED 1/15/2013	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 5
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
DESCRIPTION	DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-273-6636)	

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

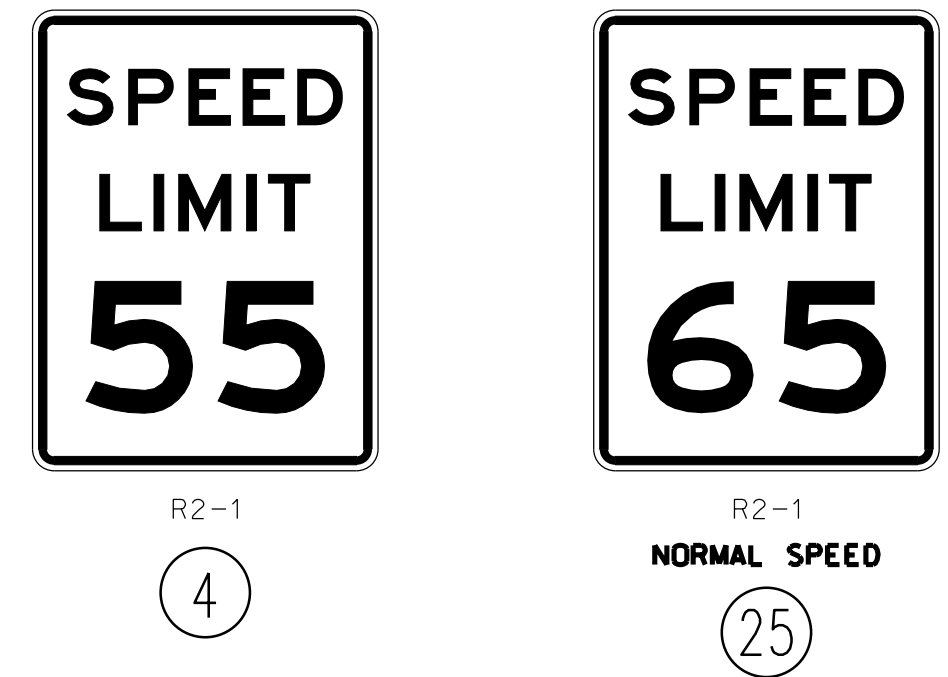
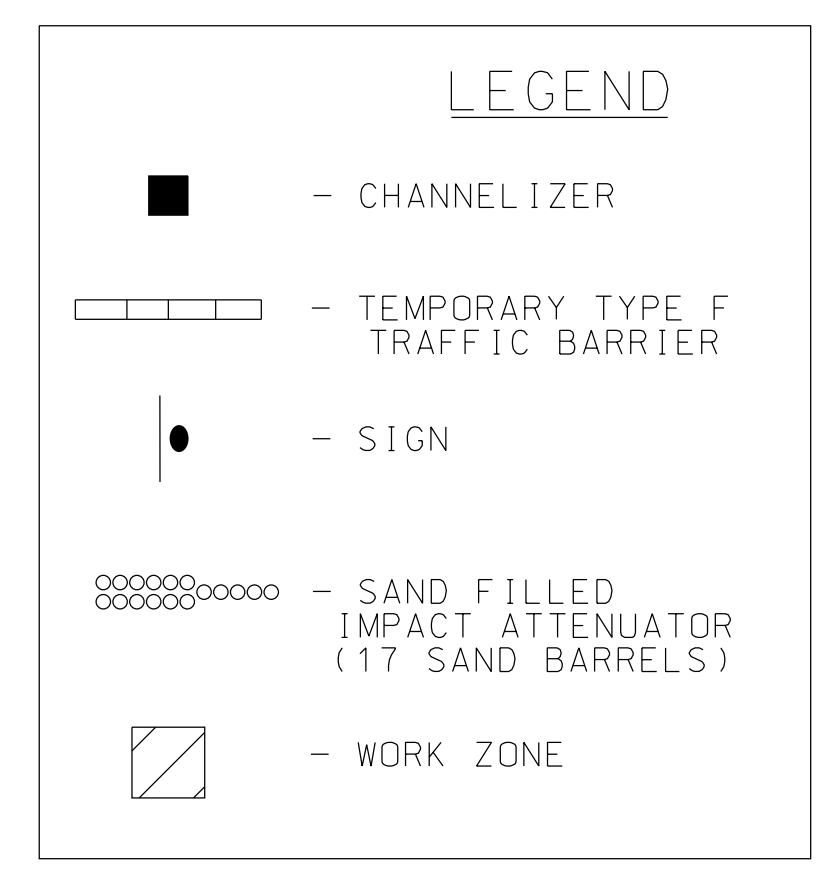
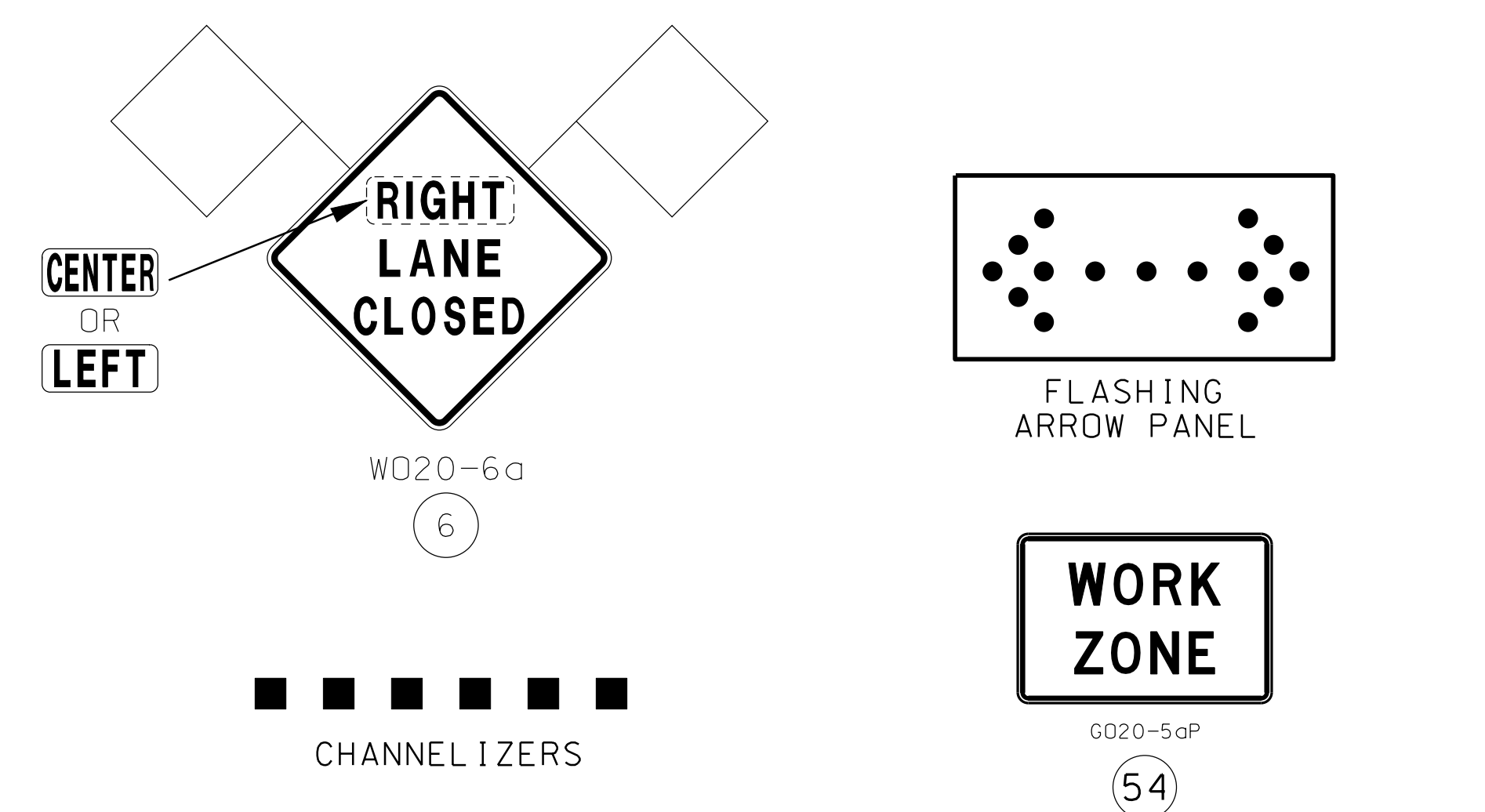
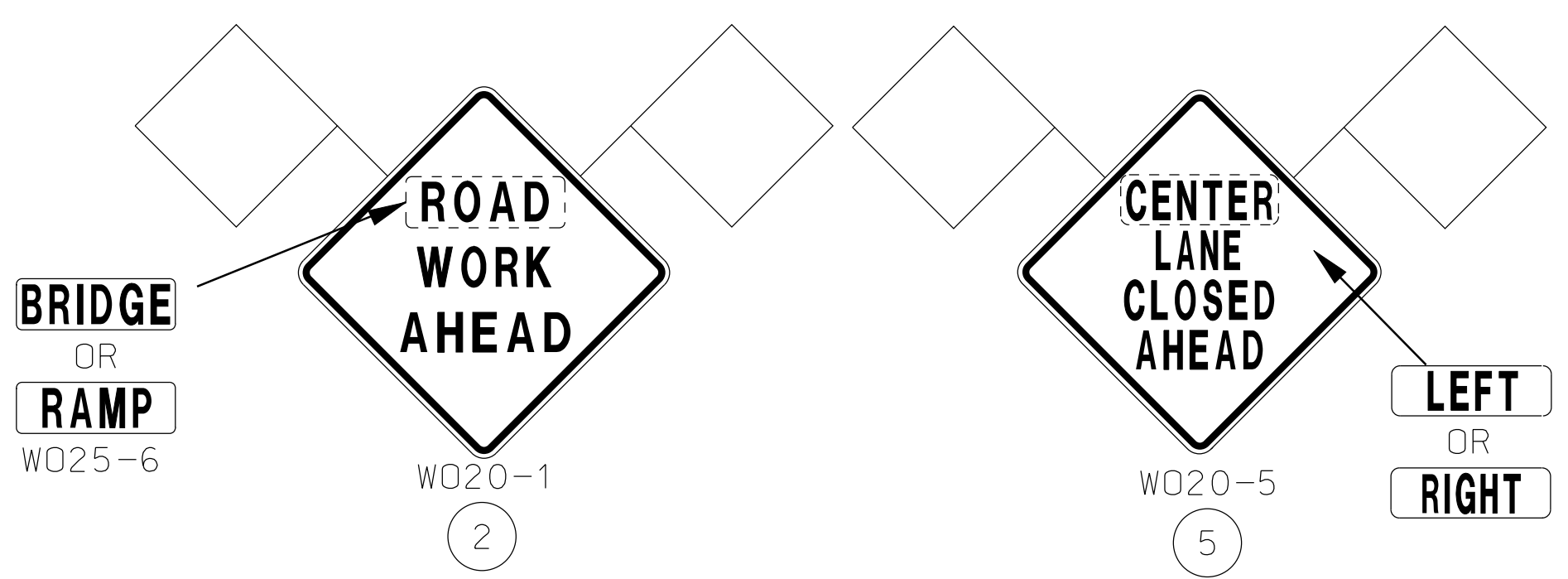




TWO-LANE DIVIDED HIGHWAY



TWO-LANE DIVIDED HIGHWAY  
WITH BARRIER



- NOTES:
- (1). SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.
  - (2). SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZER TAPER LENGTHS
  - (3). SEE SHEET FIGURE 616.0.5, SHEET 2 OF 2. FOR A LANE CLOSURE WITH WIDTH RESTRICTION.
  - (4). REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED.
  - (5). TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.
  - (6). FLARE BARRIER TO EXTEND BEYOND CLEAR ZONE OR FLARE BARRIER TO EDGE LINE AND USE APPROVED END TREATMENT.

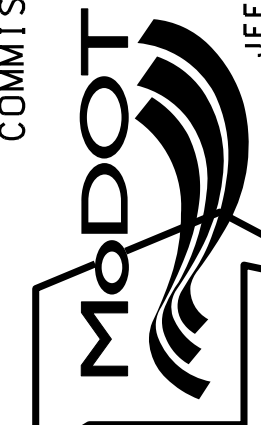
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 6
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO.

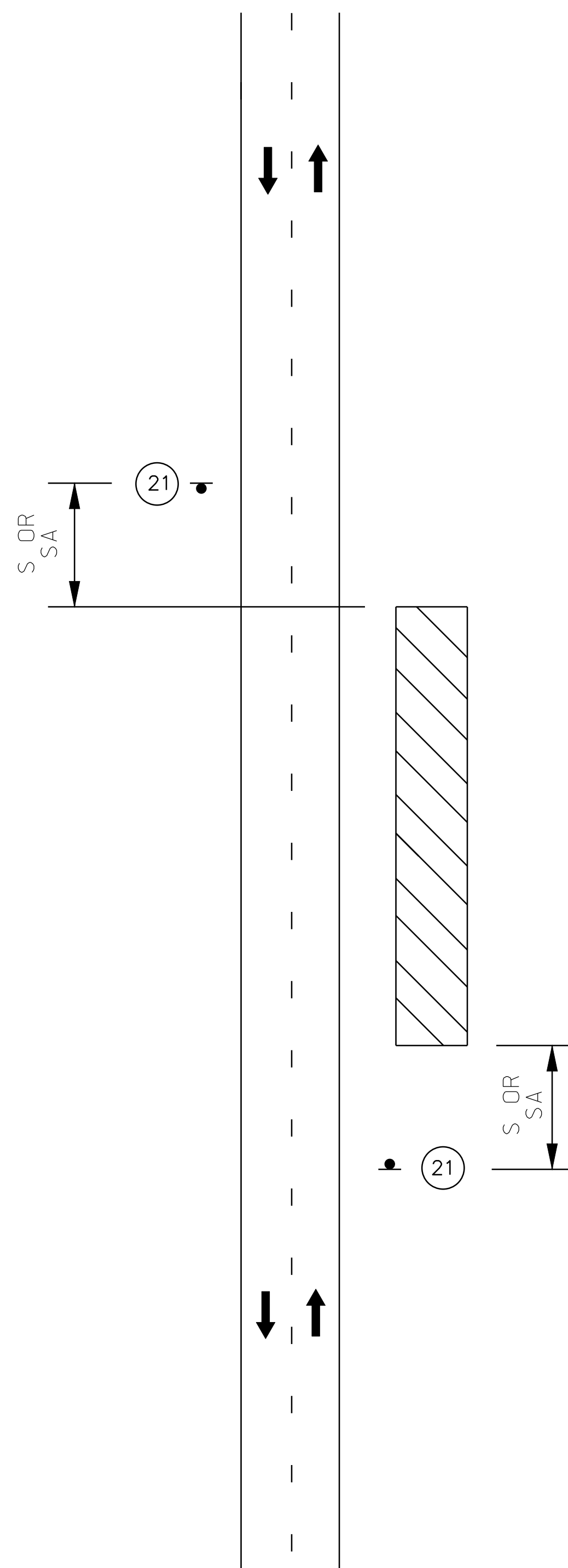
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

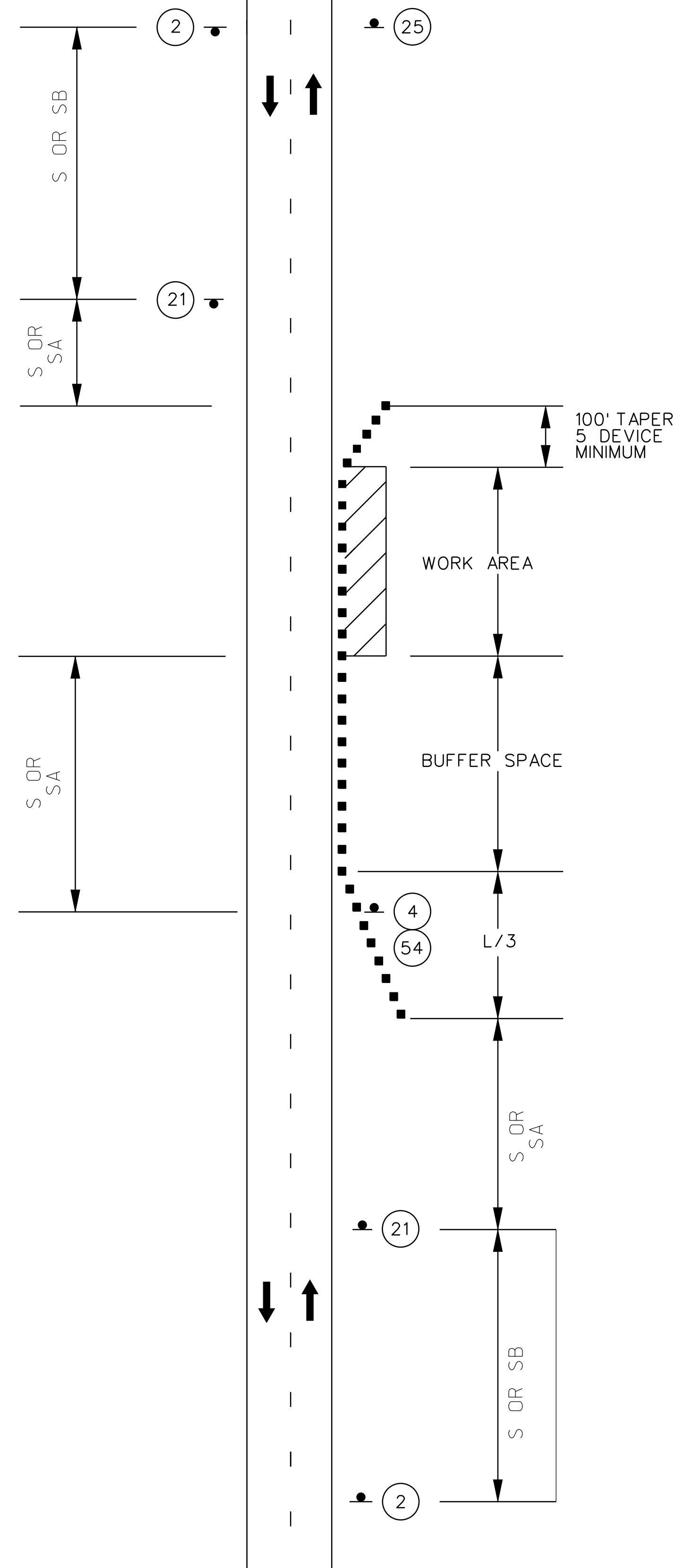
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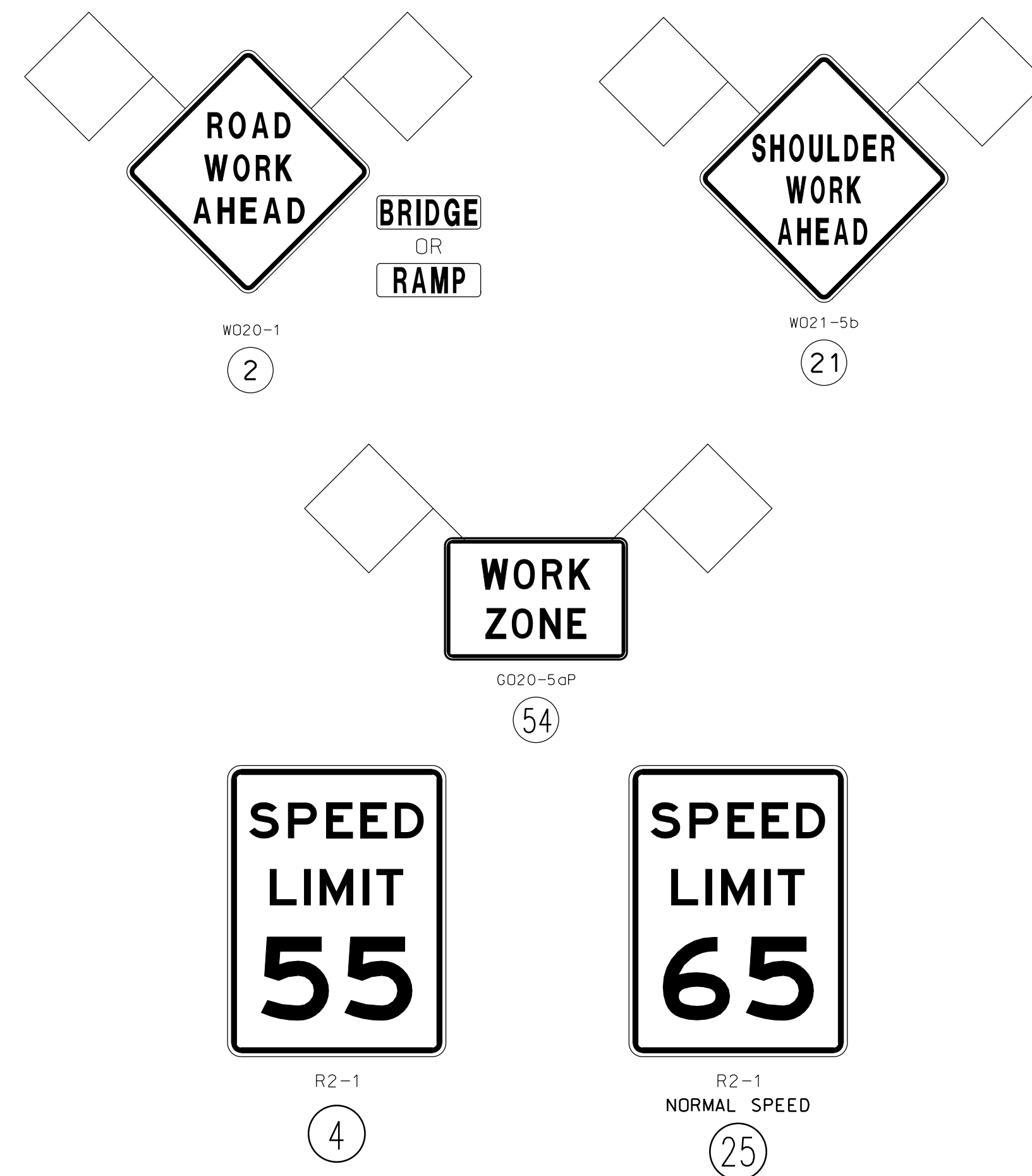
WORK BEYOND SHOULDER

NOTES:

- (1). ONLY APPLICABLE WHEN WORK IS WITHIN THE CLEAR ZONE.
- (2). PROVIDE SIGNS ON LEFT AND RIGHT SIDE OF DIVIDED HIGHWAYS.
- (3). SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.



SHOULDER WORK WITH NO TRAVELWAY ENCROACHMENT



NOTES:

- (1). SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.
- (2). SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.
- (3). SIGN 2 NOT REQUIRED IF SHOULDER WORK IS LOCATED WITHIN THE LIMITS OF AN ACTIVITY AREA WHERE ANOTHER SIGN 2 IS ALREADY USED.
- (4). SIGN 44A NOT REQUIRED FOR NARROW LANE SECTIONS LESS THAN ONE MILE.
- (5). PROVIDE SIGNS ON LEFT AND RIGHT SIDE OF DIVIDED HIGHWAY.

SHOULDER WORK  
TEMPORARY  
TRAFFIC CONTROL  
SHEET 3 OF 55

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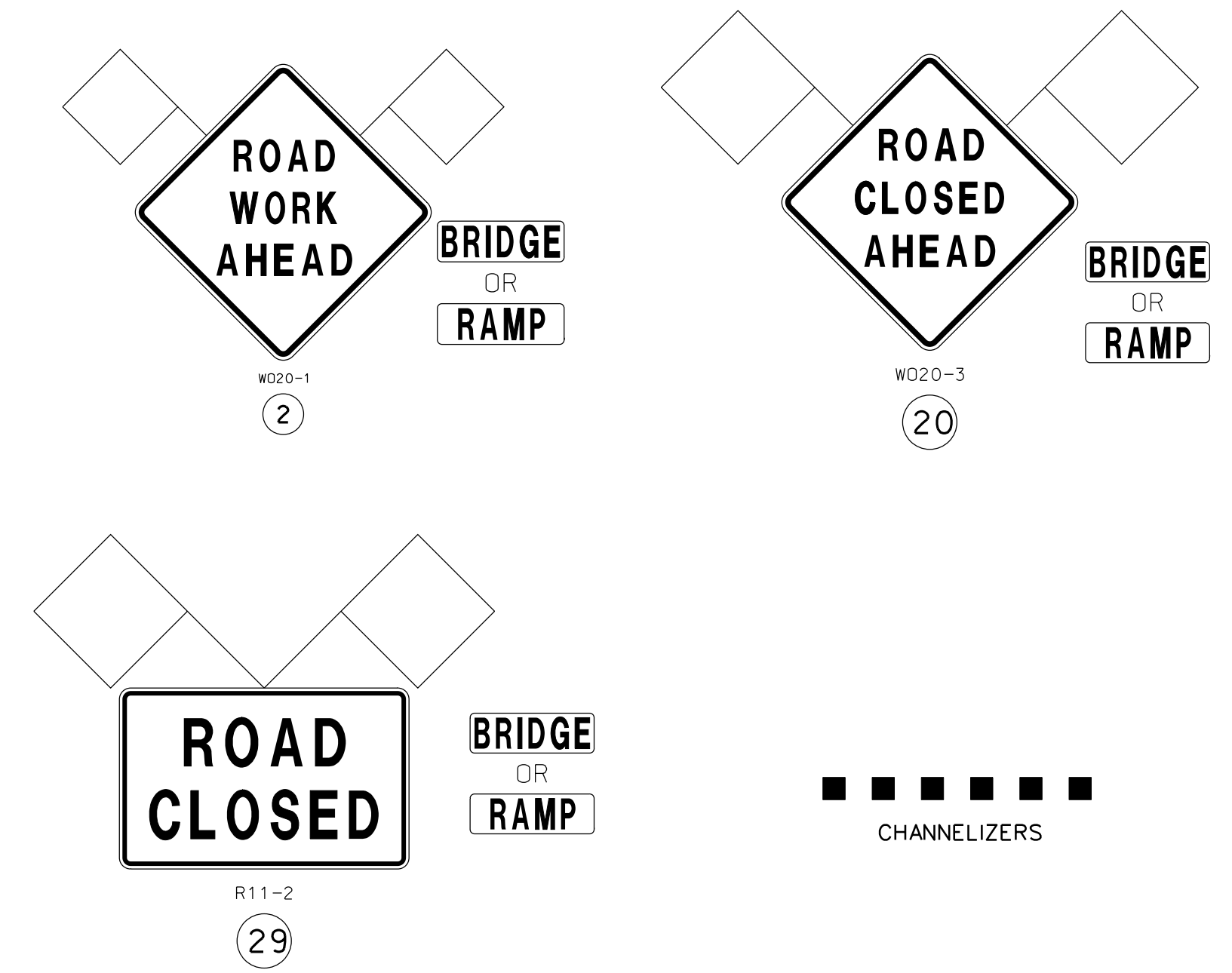
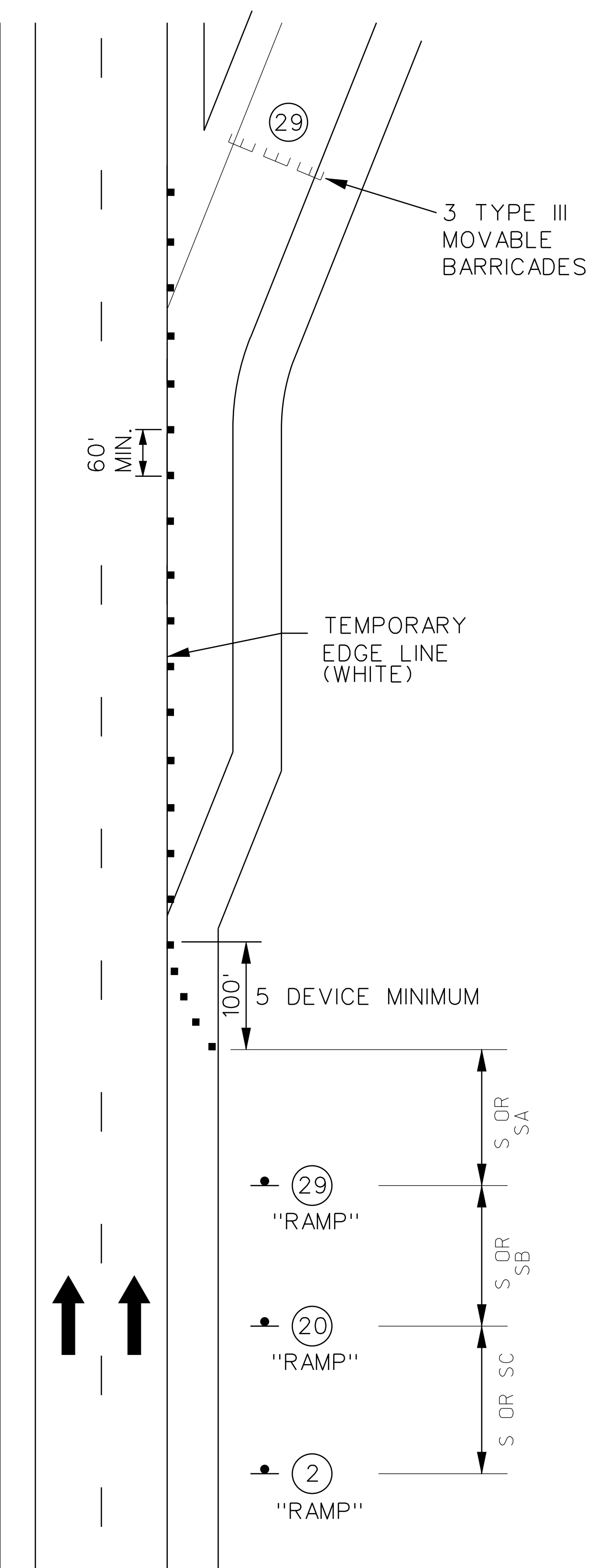
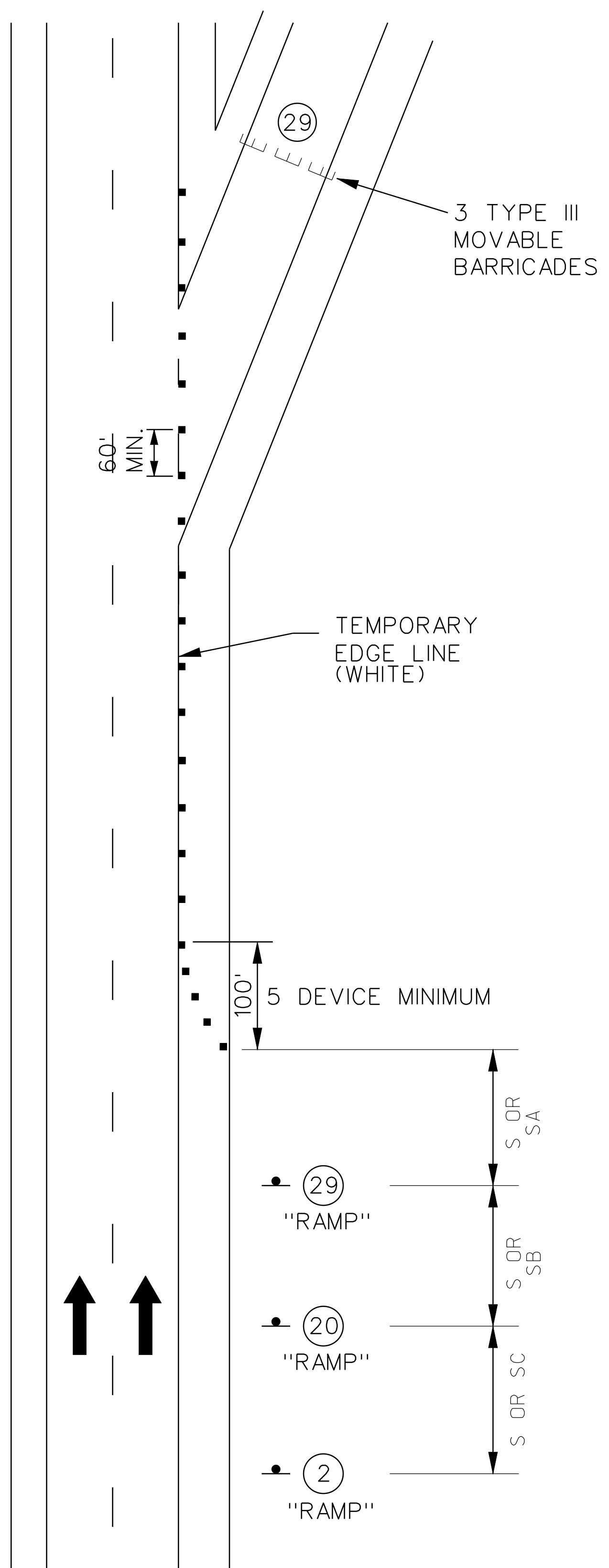
DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 7
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



- NOTES:
- (1). SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.
  - (2). SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.
  - (3). TEMPORARY PAVEMENT MARKING OPTIONAL FOR SHORT TERM OPERATIONS.

LANE CLOSURE  
PARTIAL AND TOTAL RAMP CLOSURE

PARTIAL OR TOTAL  
RAMP CLOSURE  
TEMPORARY  
TRAFFIC CONTROL  
SHEET 4 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 1/15/2013

ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 8

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

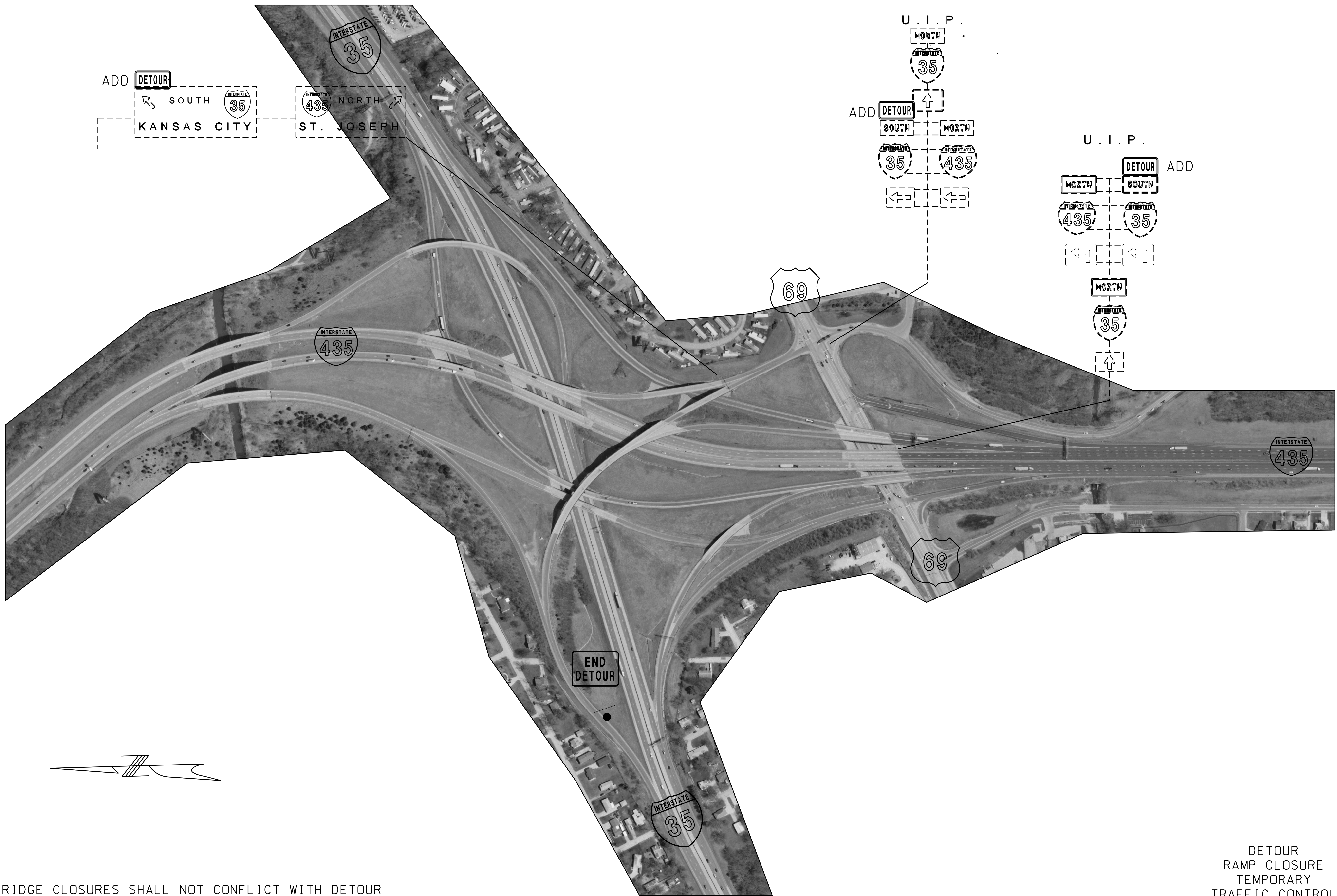
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

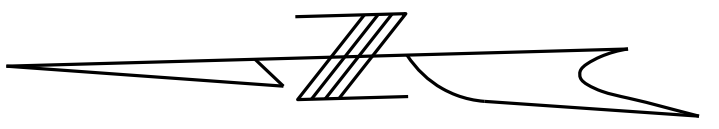


ADD **DETOUR**  
 SOUTH INTERSTATE 35  
 KANSAS CITY  
 NORTH INTERSTATE 435  
 ST. JOSEPH

U. I. P.  
 NORTH INTERSTATE 35  
 ADD **DETOUR**  
 SOUTH INTERSTATE 35  
 NORTH INTERSTATE 435

U. I. P.  
 NORTH INTERSTATE 435  
 SOUTH INTERSTATE 35  
 ADD **DETOUR**  
 NORTH INTERSTATE 35  
 SOUTH INTERSTATE 35

END  
 DETOUR




BRIDGE CLOSURES SHALL NOT CONFLICT WITH DETOUR  
 ROUTES FOR PROJECTS J412381 AND J412384

DETOUR  
 RAMP CLOSURE  
 TEMPORARY  
 TRAFFIC CONTROL  
 SHEET 5 OF 7

"THIS MEDIA SHOULD  
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 A CERTIFIED  
 DOCUMENT."

DATE PREPARED  
 12/13/2012  
 ROUTE 69 STATE MO  
 DISTRICT KC SHEET NO. 8  
 COUNTY CLAY  
 JOB NO. J412384  
 CONTRACT ID.  
 PROJECT NO.  
 BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION  
 COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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# Sign Spacing, Device Spacing, Channelizing Taper Lengths And Recommended Maximum Speed Reductions

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

TAPER LENGTHS AND SPACING OF CHANNELIZING DEVICES						
SPEED (P) MPH	MINIMUM TAPER LENGTHS (L) FOR LANE WIDTHS (W)			MINIMUM TAPER SHOULDER (T1)	MAXIMUM CHANNELIZER SPACING	
	10 FT	11 FT	12 FT		THROUGH TAPER	THROUGH WORK AREA
0-35	205 FT	225 FT	245 FT	70	35 FT	50 FT
40-45	450 FT	495 FT	540 FT	150	40 FT	100 FT
50-55	550 FT	605 FT	660 FT	185	50 FT	100 FT
60-70	700 FT	770 FT	840 FT	235	60 FT	100 FT

LONGITUDINAL BUFFER SPACE	
SPEED (P) MPH	BUFFER SPACE (FEET)
0-35	250
40-45	360
50-55	495
60-70	730

TAPER LENGTH (L)

L = W X P FOR 40 MPH OR MORE  
 L =  $\frac{WP^2}{60}$  FOR 35 MPH OR LESS

L = TAPER LENGTH IN FEET  
 W = LATERAL SHIFT IN FEET  
 P = POSTED SPEED PRIOR TO ROAD WORK IN MPH

SIGN SPACING FOR ADVANCE SIGN SERIES (1) (2)		
SPEED (P) MPH	SIGN SPACING (S)	
	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	SA-1000 FT, SB-1500 FT, SC-2640 FT **	

EPG TABLE 616.29 RECOMMENDED MAXIMUM SPEED REDUCTIONS	
ACTIVITY (I.E. WORKERS, EQUIPMENT OR MATERIAL) LOCATION	RECOMMENDED WORK ZONE SPEED REDUCTION (WHEN APPLICABLE)
10 FT. BEYOND EDGE OF TRAVELWAY TO EDGE OF RIGHT OF WAY	NO SPEED REDUCTION
IN TRAFFIC LANE OR WITHIN 10 FT. OF THE TRAFFIC LANE	10 MPH
HEAD-TO-HEAD ON MULTILANE	10 MPH
SPECIAL CIRCUMSTANCES WITHIN A TEMPORARY TRAFFIC CONTROL WORK ZONE MAY WARRANT A LOWER SPEED LIMIT THAN RECOMMENDED ABOVE. ALL SPEED LIMIT REDUCTIONS GREATER THAN 10 MPH SHALL BE DOCUMENTED, SUBMITTED TO AND APPROVED BY THE DISTRICT WORK ZONE COORDINATOR.	

\*\*THE SA DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN.

THE SB DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS.

THE SC DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS.

(THE "FIRST SIGN" IS THE SIGN IN A THREE-SIGN SERIES THAT IS CLOSEST TO THE TEMPORARY TRAFFIC CONTROL ZONE. THE "THIRD SIGN" IS THE SIGN THAT IS FURTHEST UPSTREAM FROM THE TEMPORARY TRAFFIC CONTROL ZONE).

**NOTES:**

DIMENSIONS IN FEET UNLESS OTHERWISE NOTED.

- (1) SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER OR SIGNED CONDITION.
- (2) SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.
- (3) TAPER LENGTHS SHOWN INCLUDE LENGTH REQUIRED FOR LANE AND 10' SHOULDER.
- (4) CONCRETE BARRIER MAY BE INSTALLED AT AN 8:1 FLARE RATE FROM THE SHOULDER POINT TO THE LIMITS OF THE CLEAR ZONE WHERE THE SIDE SLOPE IS 6:1 OR FLATTER.

**GENERAL NOTES:**

1. SEE STANDARD PLAN 616.10 FOR DETAILS AND ITEMS NOT SHOWN.
2. EXISTING SIGNS SHALL BE COVERED DURING WORKING HOURS ONLY IF IN CONFLICT WITH TRAFFIC CONTROL PLANS.
3. NO DIRECT PAYMENT WILL BE MADE FOR RELOCATING, COVERING, AND UNCOVERING OR REMOVING SIGNS.
4. CONES ALLOWABLE FOR DAYTIME OPERATIONS ONLY.
5. LOCATE FLASHING ARROW PANEL AT BEGINNING OF TAPER WHEN FEASIBLE. ARROW PANELS ARE ALWAYS LOCATED BEHIND CHANNELIZERS OR CONES.

TAPER LENGTHS AND END TREATMENTS FOR CONCRETE BARRIER				
SPEED (P) MPH	MINIMUM TAPER LENGTHS FOR LANE WIDTHS (3)			END TREATMENT (4)
	10 FT	11 FT	12 FT	
<40	160 FT	168 FT	176 FT	BARRIER HEIGHT TRANSITION
≥40	160 FT	168 FT	176 FT	APPROVED CRASH CUSHION

DEVICE SPACING  
TEMPORARY  
TRAFFIC CONTROL  
SHEET 5 OF 55

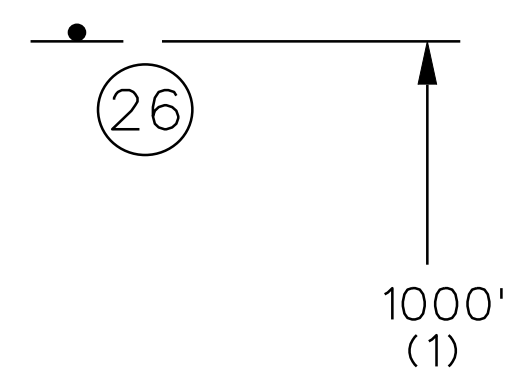
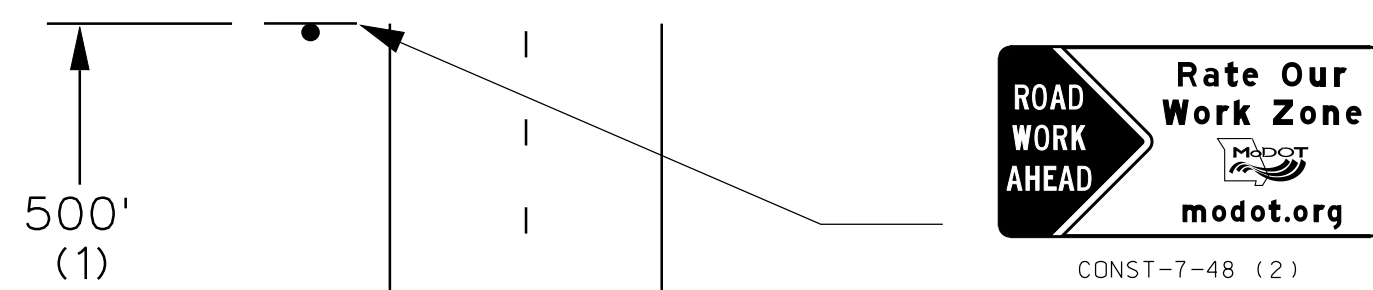
DATE PREPARED  
12/14/2012

ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 9
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

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

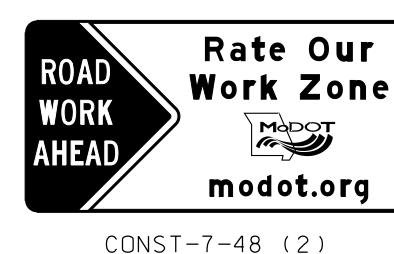
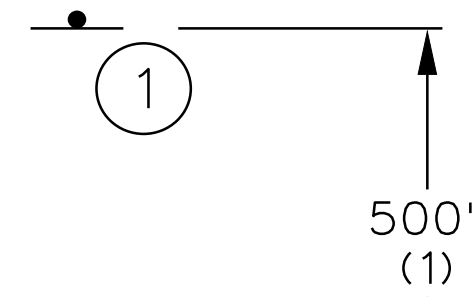
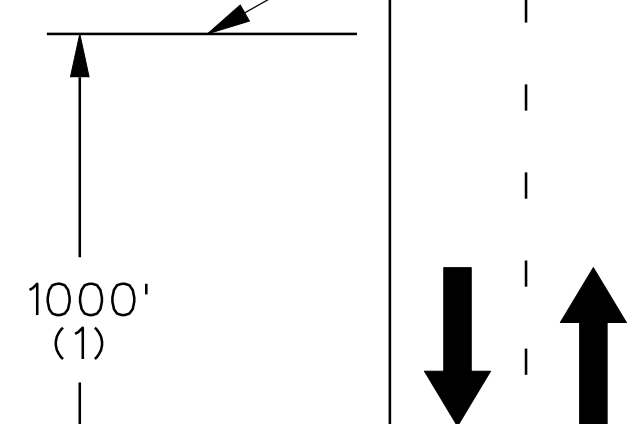
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



END OF PROJECT LIMITS; END OF WORK ZONE TERMINATION AREA, IF LOCATED BEYOND END OF PROJECT; OR LAST WORK ZONE SIGN, IF LOCATED OUTSIDE PROJECT LIMITS.

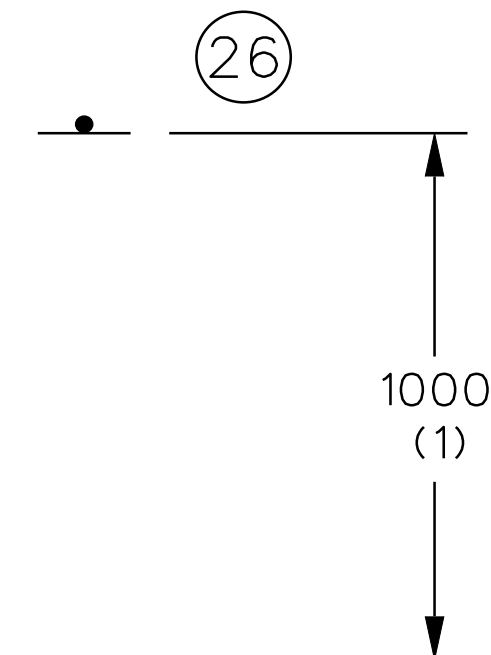
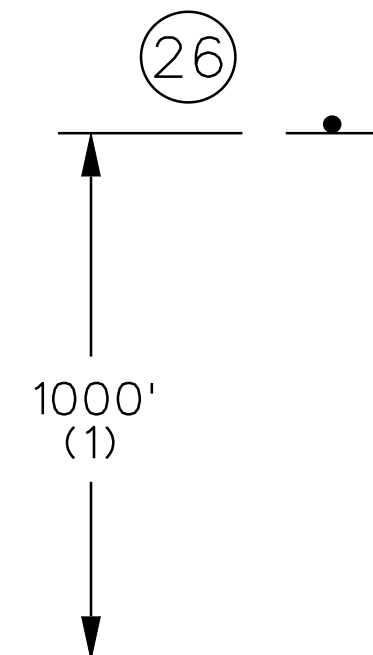


BEGINNING OF PROJECT LIMITS; OR INITIAL WORK ZONE SIGN, IF LOCATED OUTSIDE PROJECT LIMITS.



TWO-LANE UNDIVIDED

BEGIN/END OF PROJECT SIGNING  
(FOR USE ON ALL PROJECTS)



NOTES:

SIGN (1) IS REQUIRED PER EPG 616.2.3.

SIGN (26) IS USED ON ALL PROJECTS WHERE SIGN (1) IS USED.

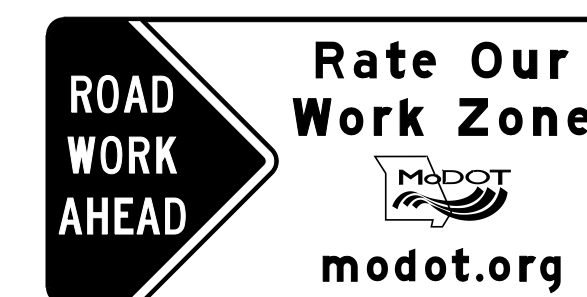
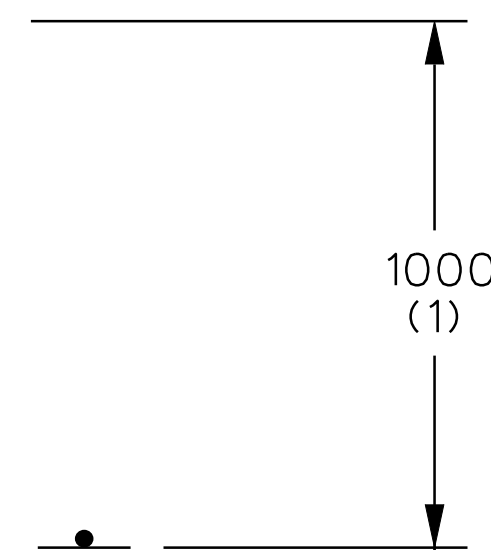
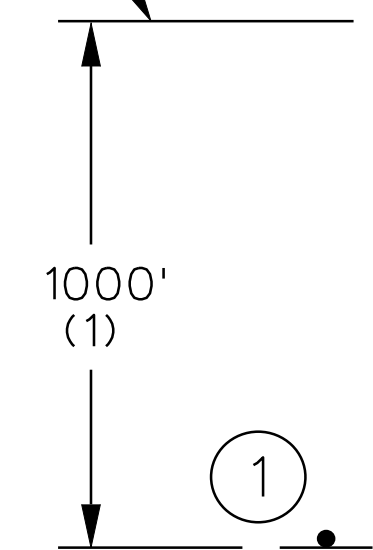
OTHER SIGNS SUCH AS DETOUR OR ALTERNATE ROUTE SIGNING MAY BE USED OUTSIDE THE PROJECT LIMITS.

ANY EXISTING SIGNING THAT CONFLICTS WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED.

(1) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS. WHERE TRAFFIC BACKUPS ARE EXPECTED BEYOND THE ADVANCE WARNING AREA, ADDITIONAL SIGNING MAY BE NEEDED.

(2) SIGN CONST-6-48 IS PLACED 500 FEET BEFORE THE BEGINNING OF PROJECT LIMITS OR THE ROAD WORK AHEAD SIGN OR ROAD WORK NEXT XX MILES SIGN, IF USED, WHEN THESE SIGNS ARE LOCATED OUTSIDE THE PROJECT LIMITS.

(3) SIGN CONST-5-96 IS PLACED IN A VISIBLE AREA WITHIN THE PROJECT LIMITS PROVIDED ITS PLACEMENT DOES NOT DISRUPT A SEQUENCE OF SIGNS. IF A VISIBLE LOCATION WITHIN THE PROJECT IS NOT AVAILABLE, THE SIGN MAY BE PLACED 500 FEET BEFORE SIGN CONST-6-48.



MULTI-LANE DIVIDED

BEGIN/END  
TEMPORARY  
TRAFFIC CONTROL  
SHEET 6 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 10
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MOTD (1-888-273-6636)

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DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 11

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

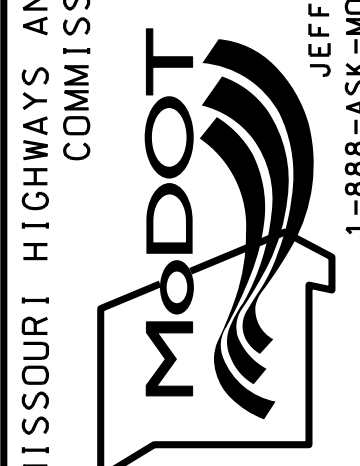
PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

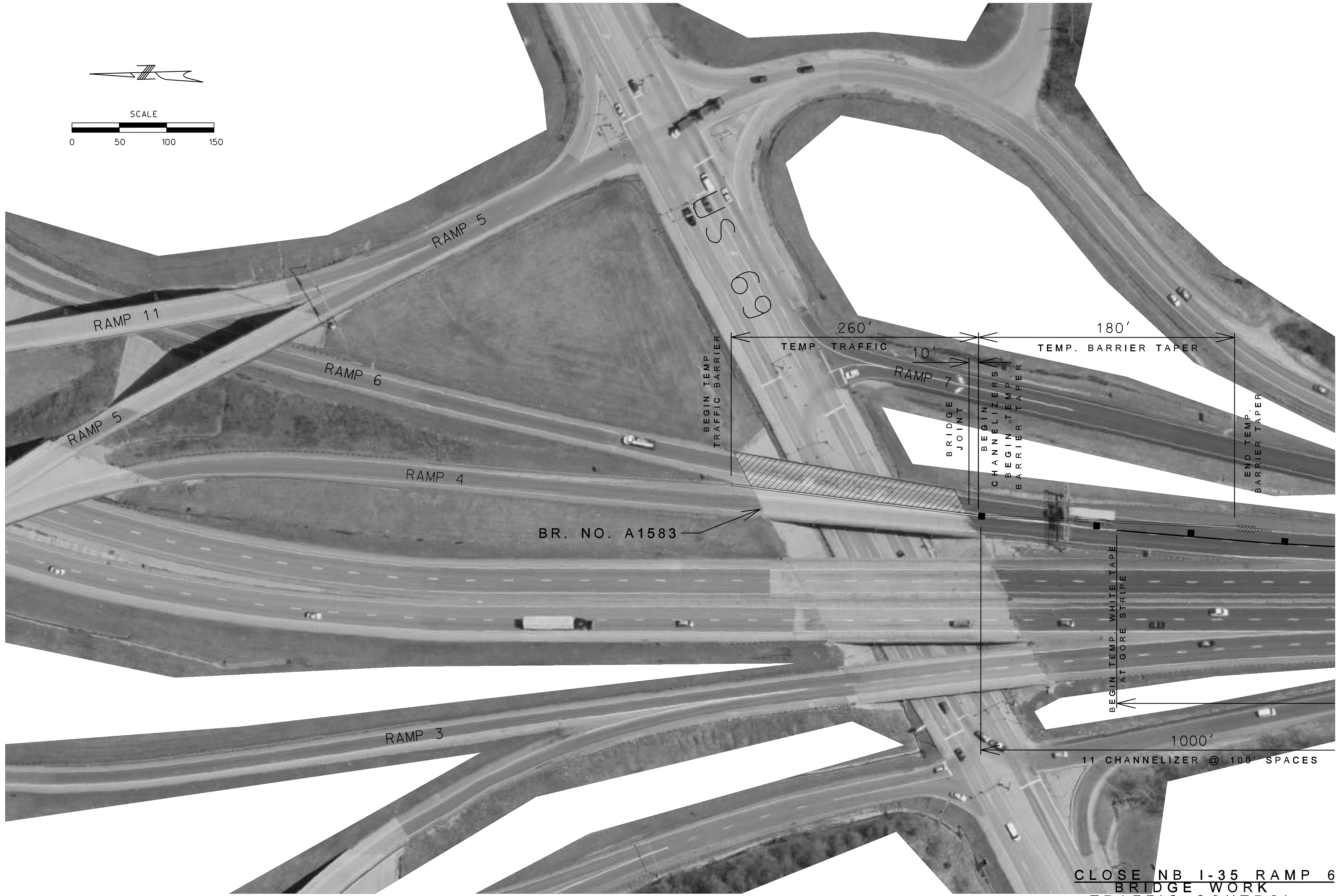
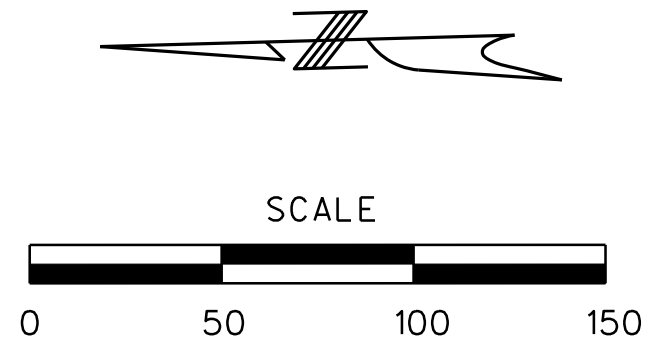
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102



1-888-ASK-MODOT (1-888-273-6636)

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



CLOSE NB I-35 RAMP 6  
BRIDGE WORK  
TRAFFIC CONTROL  
SHEET 7 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 12

COUNTY  
CLAY


JOB NO.  
J412381

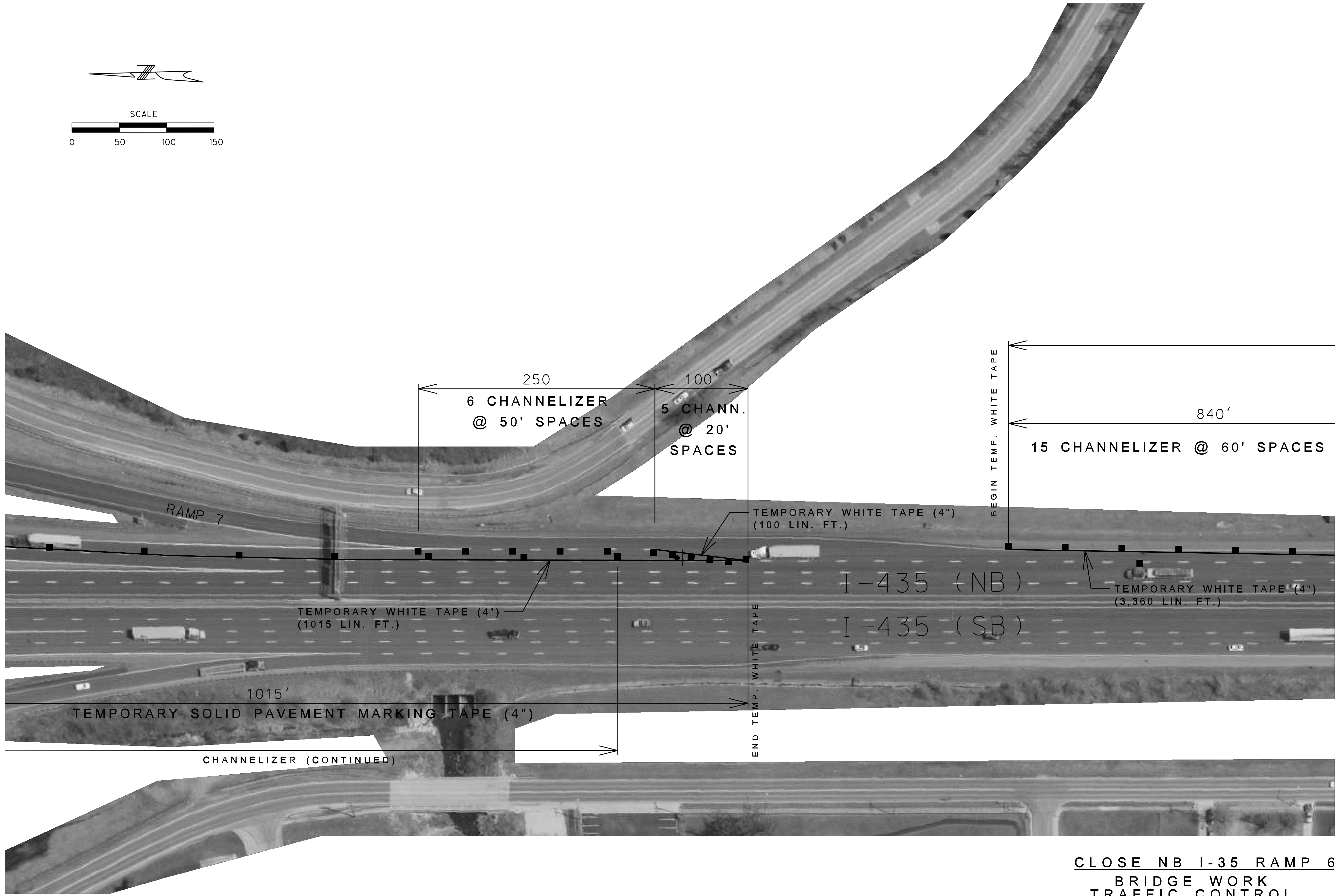
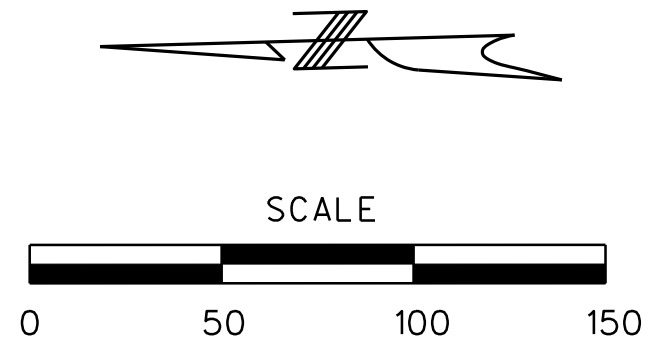
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)



CLOSE NB I-35 RAMP 6  
 BRIDGE WORK  
 TRAFFIC CONTROL  
 SHEET 8 OF 55

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DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 13

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

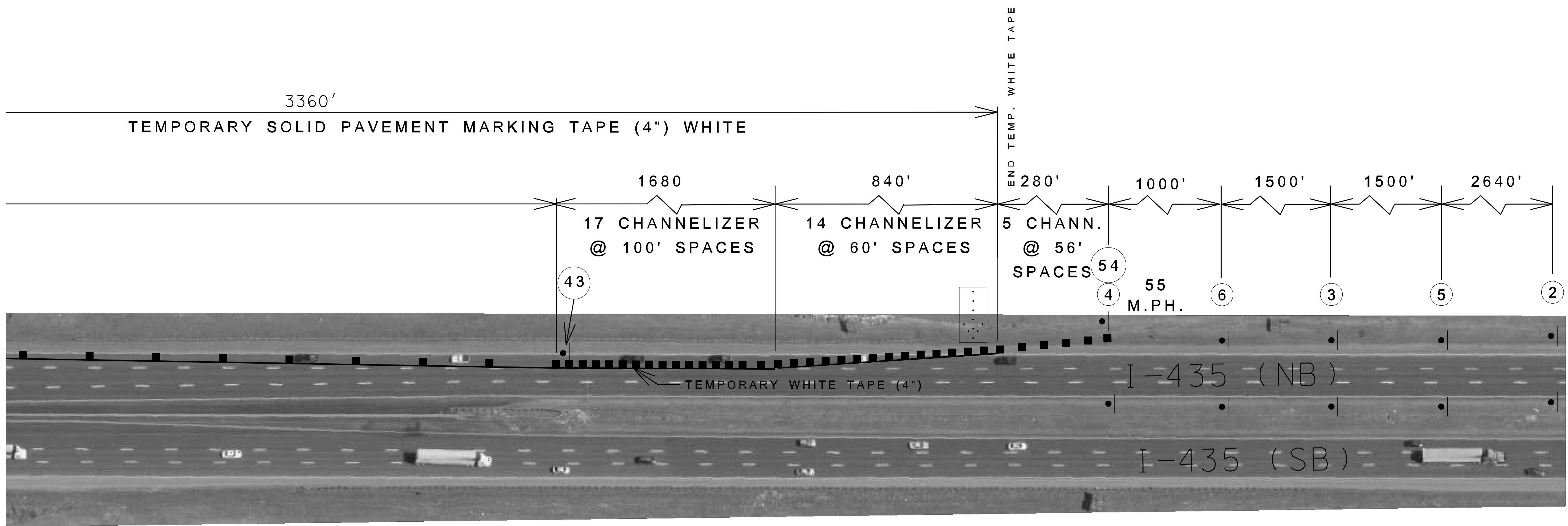
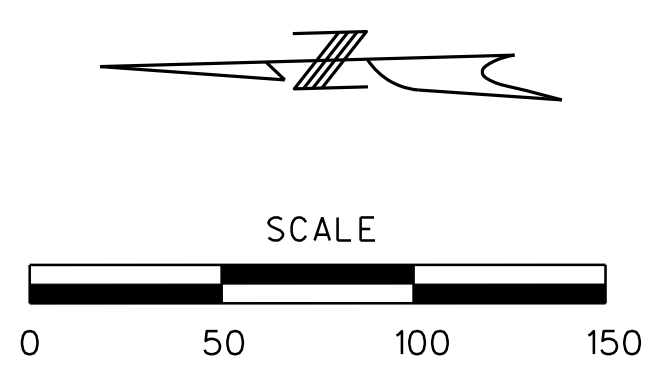
BRIDGE NO.

DATE	DESCRIPTION

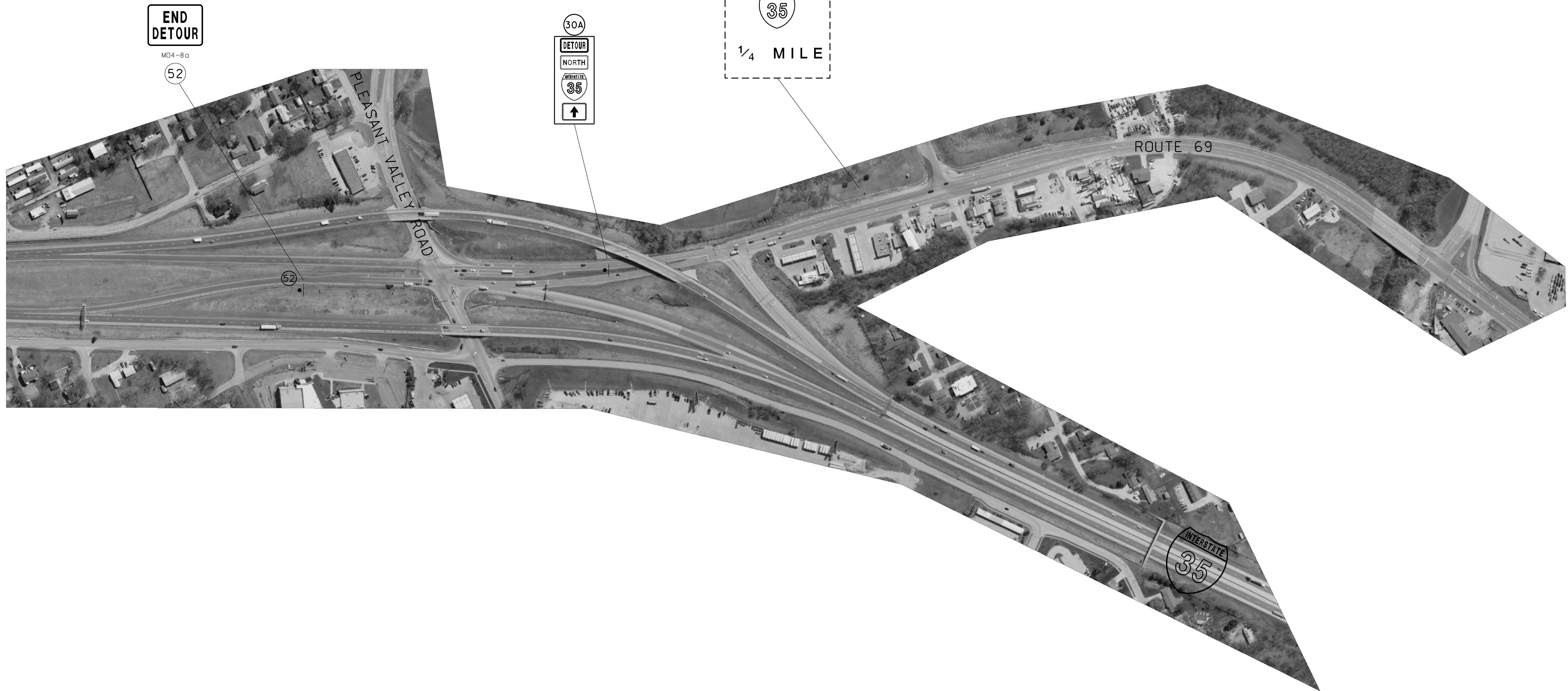
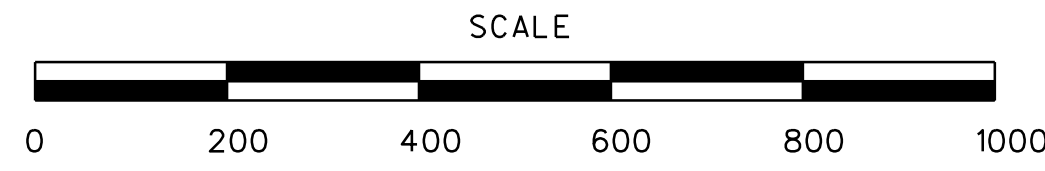
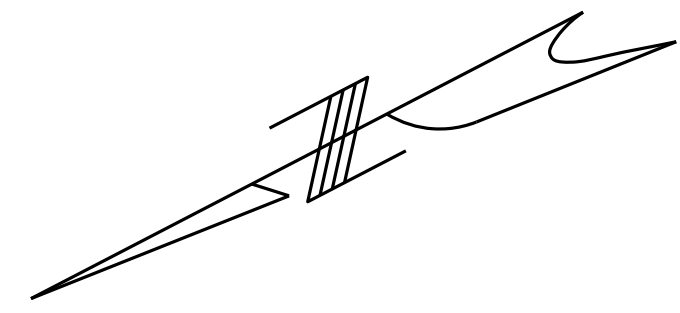
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

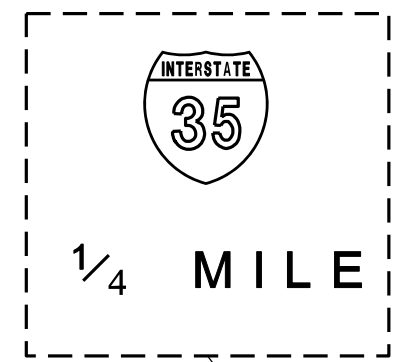
CLOSE NB I-35 RAMP 6  
BRIDGE WORK  
TRAFFIC CONTROL  
SHEET 9 OF 55



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



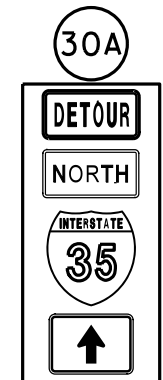
U.I.P.



END  
DETOUR

MO4-8a

52



ROUTE 69



DETOUR I-35 NORTH

CLOSE EAST HALF BRIDGE A-1583

SHEET 1 OF 3

TRAFFIC CONTROL SHEET 10 OF 55

BRIDGE CLOSURES SHALL NOT CONFLICT WITH DETOUR  
ROUTES FOR PROJECTS J412381 AND J412384

"THIS MEDIA SHOULD  
NOT BE CONSIDERED  
A CERTIFIED  
DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 14

COUNTY  
CLAY

JOB NO.  
J412381


CONTRACT ID.

PROJECT NO.

BRIDGE NO.

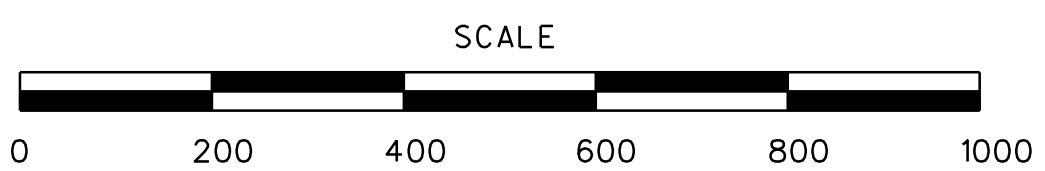
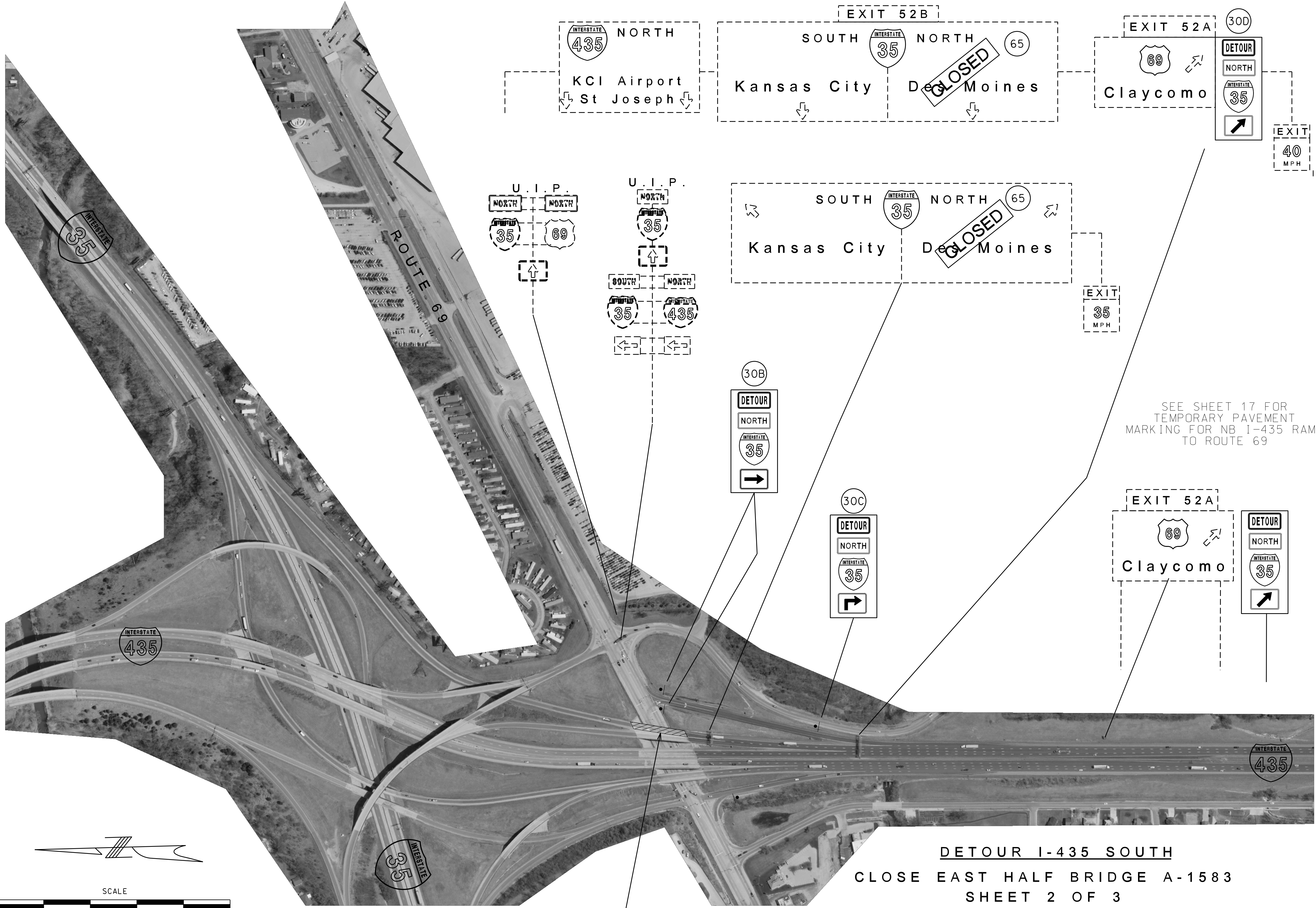
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION  
COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



CLOSE EAST HALF BR. NO. A-1583

**DETOUR I-435 SOUTH**  
**CLOSE EAST HALF BRIDGE A-1583**  
**SHEET 2 OF 3**  
**TRAFFIC CONTROL SHEET 11 OF 55**

SEE SHEET 17 FOR  
 TEMPORARY PAVEMENT  
 MARKING FOR NB I-435 RAMP  
 TO ROUTE 69

"THIS MEDIA SHOULD  
 NOT BE CONSIDERED  
 A CERTIFIED  
 DOCUMENT."

DATE PREPARED		1/15/2013	
ROUTE	STATE	MO	
DISTRICT	SHEET NO.	KC	15
COUNTY			
CLAY			
JOB NO.			
J412381			
CONTRACT ID.			

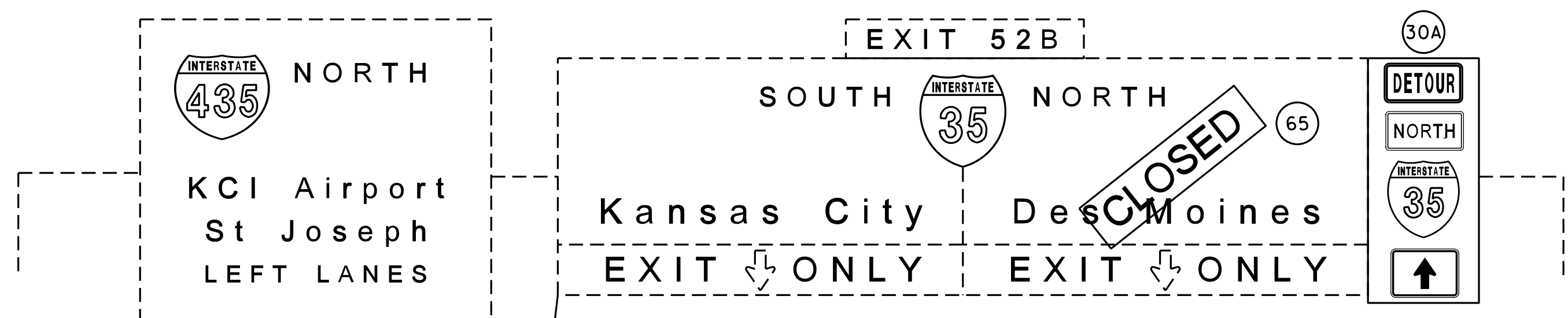
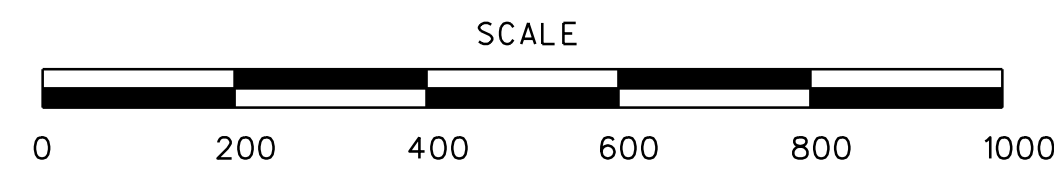
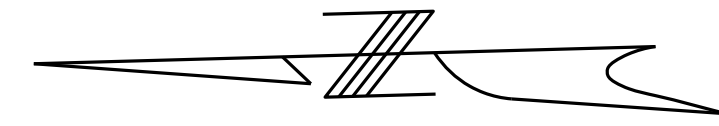
PROJECT NO.  
 BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION  
 COMMISSION

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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



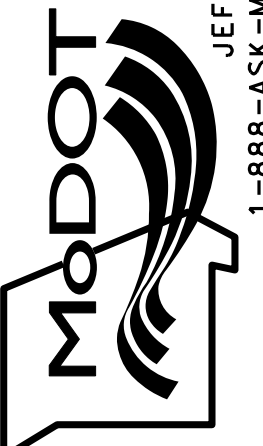
**DETOUR I-35 NORTH**  
**CLOSE EAST HALF BRIDGE A-1583**  
**SHEET 3 OF 3**  
**TRAFFIC CONTROL SHEET 12 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 16
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

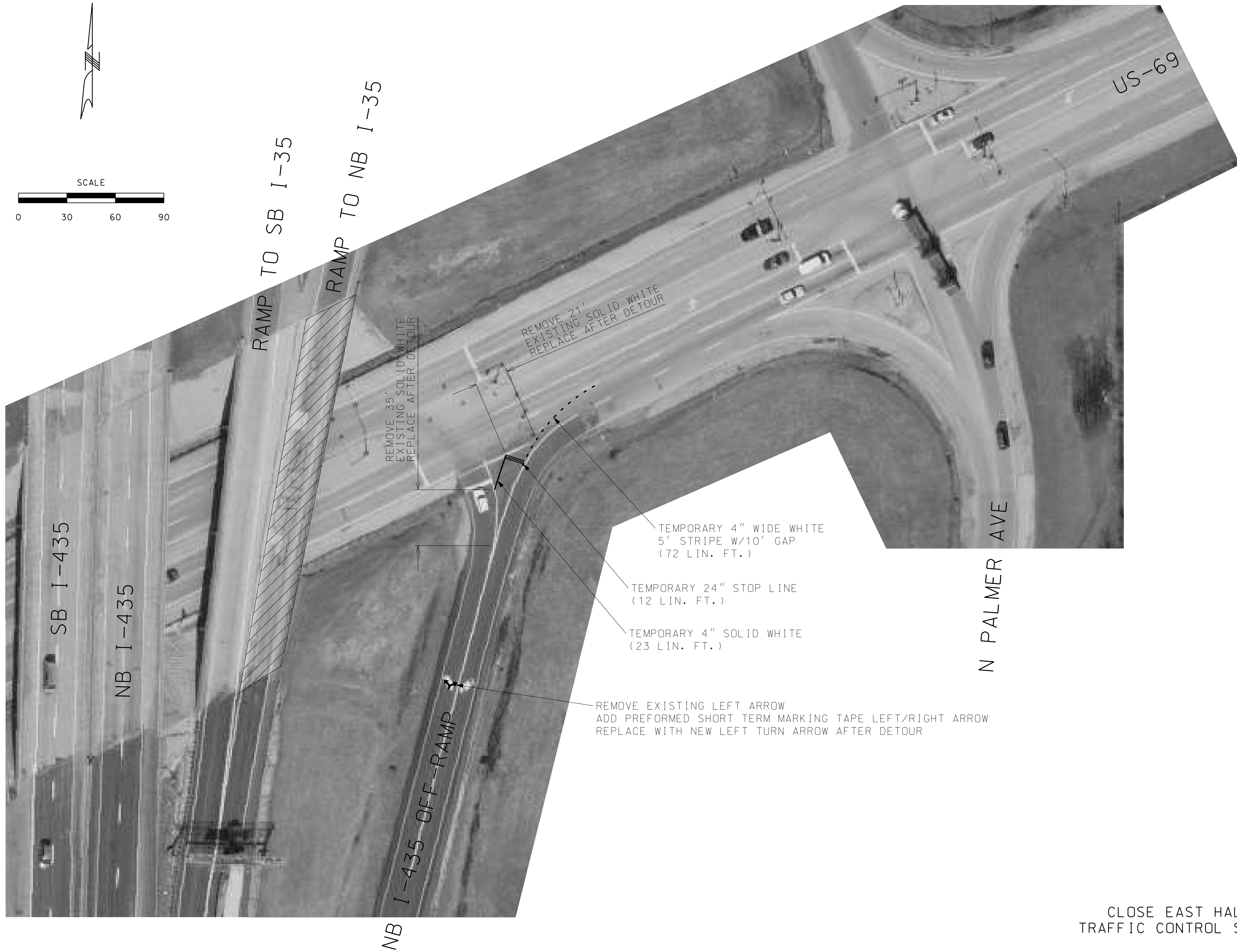
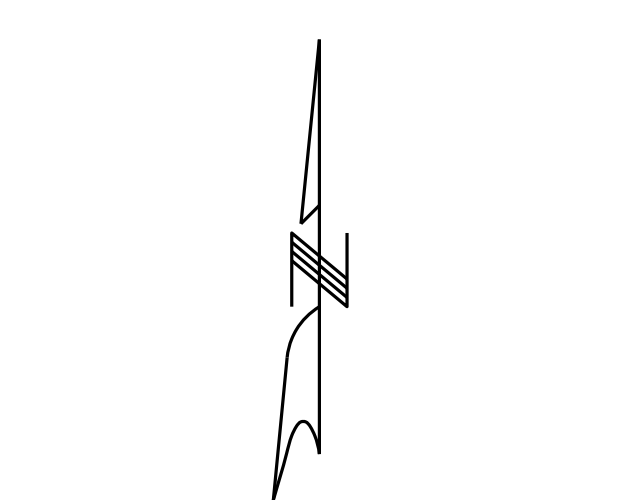
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



CLOSE EAST HALF BR A1583  
 TRAFFIC CONTROL SHEET 13 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
 12/14/2012

ROUTE STATE  
 VAR. MO

DISTRICT SHEET NO.  
 KC 17

COUNTY  
 CLAY

JOB NO.  
 J412381

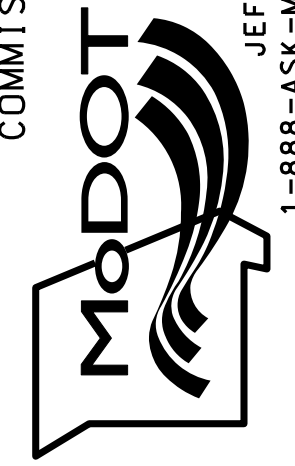
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PROJECT NO.

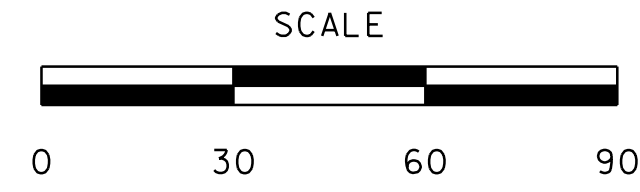
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION  
 COMMISSION



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



NE PLEASANT VALLEY RD



TEMPORARY 4" WIDE WHITE  
5' STRIPE W/10' GAP  
(152 LIN. FT.)

TEMPORARY 4" WIDE WHITE  
5' STRIPE W/10' GAP  
(146 LIN. FT.)

ADD PREFORMED SHORT TERM MARKING TAPE STRAIGHT ARROW

RAMP TO SB I-35  
SB US-69

NB US-69

RAMP FROM SB I-35

RAMP TO NB I-35

NB I-35

S LIBERTY PKWY

R = 50'

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	
12/14/2012	
ROUTE	STATE
VAR.	MO
DISTRICT	SHEET NO.
KC	18
COUNTY	
CLAY	
JOB NO.	
J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO  
DISTRICT SHEET NO.  
KC 19

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.

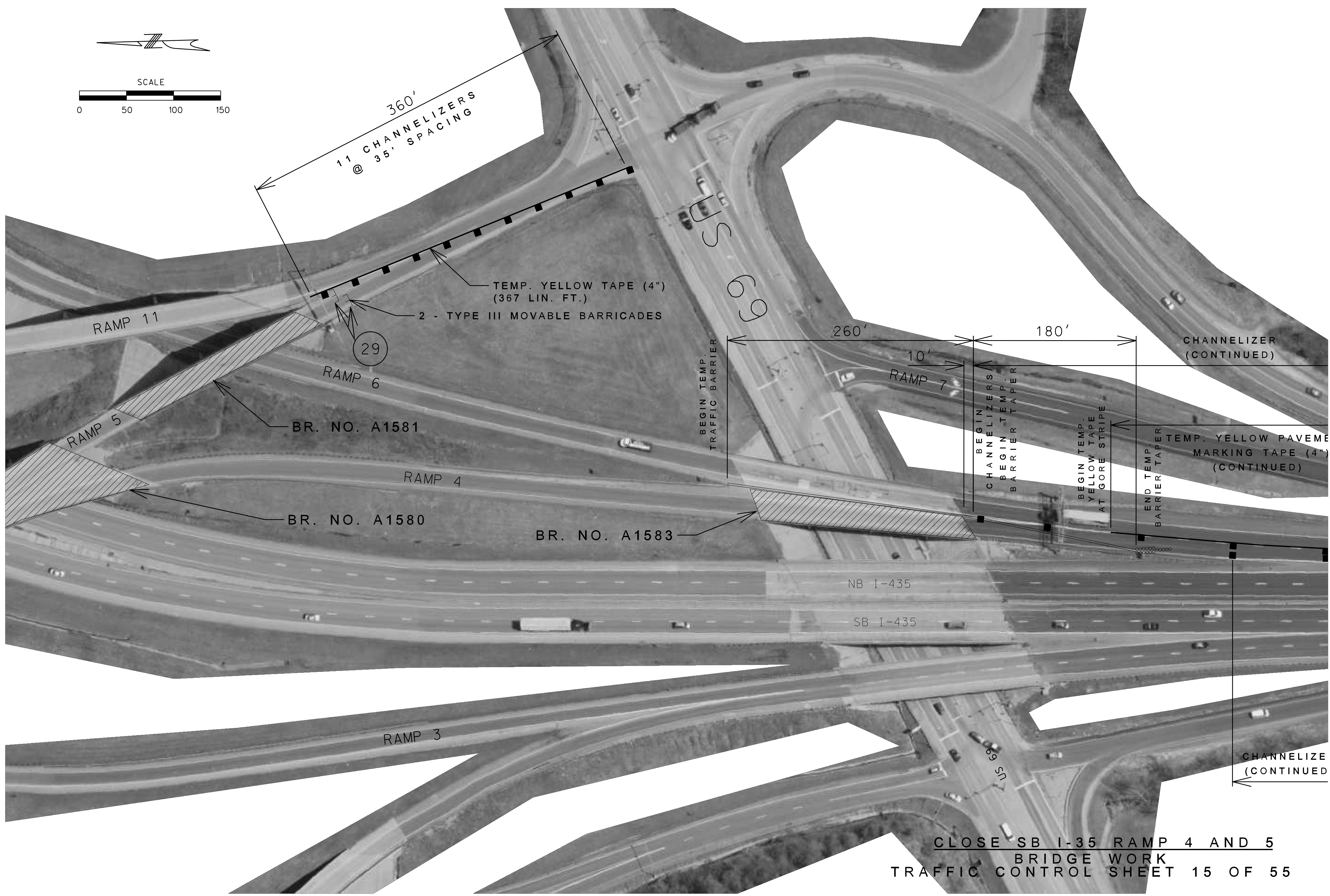
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

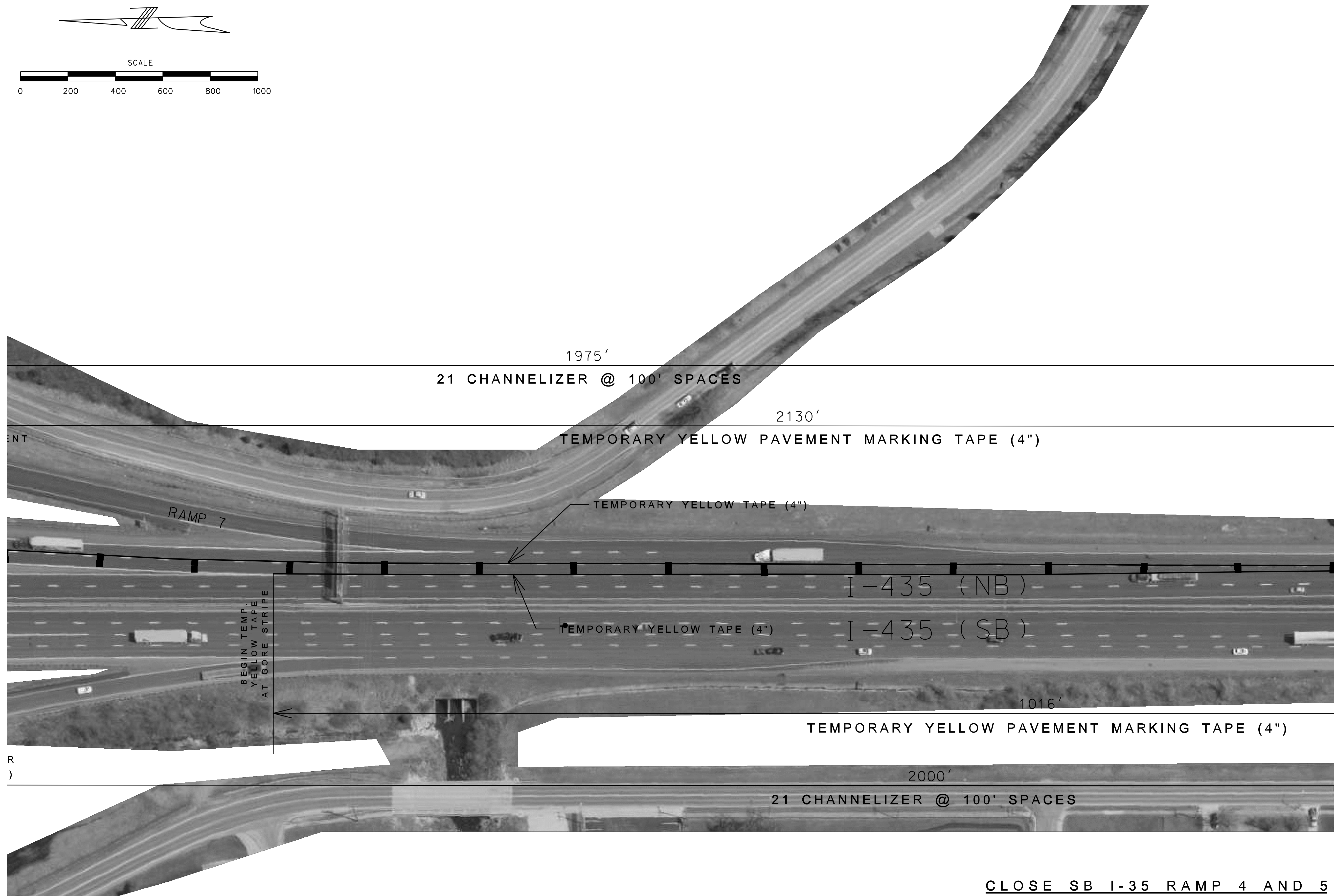
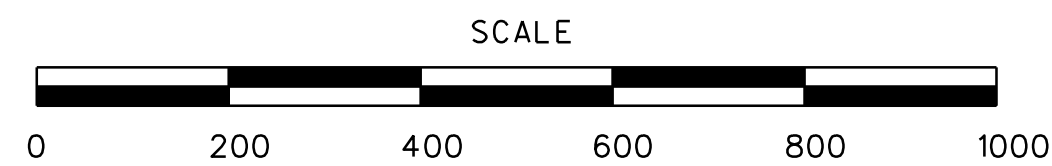
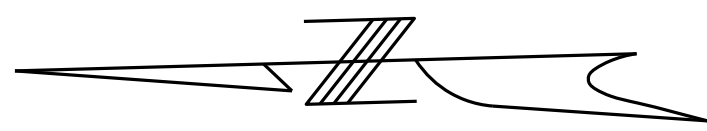
**MoDOT**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



CLOSE SB I-35 RAMP 4 AND 5  
BRIDGE WORK  
TRAFFIC CONTROL SHEET 15 OF 55



CLOSE SB I-35 RAMP 4 AND 5  
 BRIDGE WORK  
 TRAFFIC CONTROL SHEET 16 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 20
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

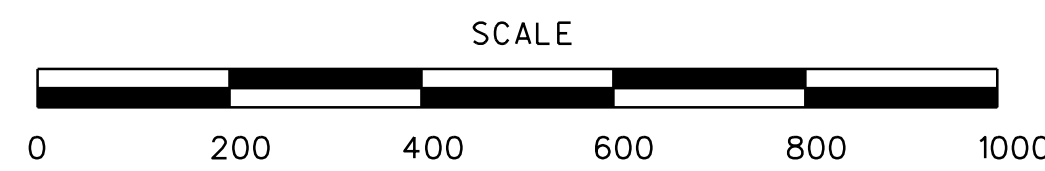
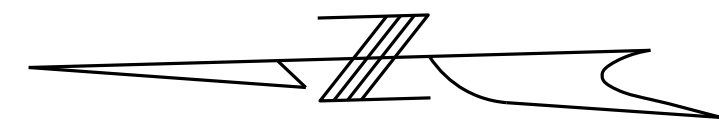
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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





"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE VAR.	STATE MO
---------------	-------------

DISTRICT KC	SHEET NO. 21
----------------	-----------------

COUNTY  
CLAY

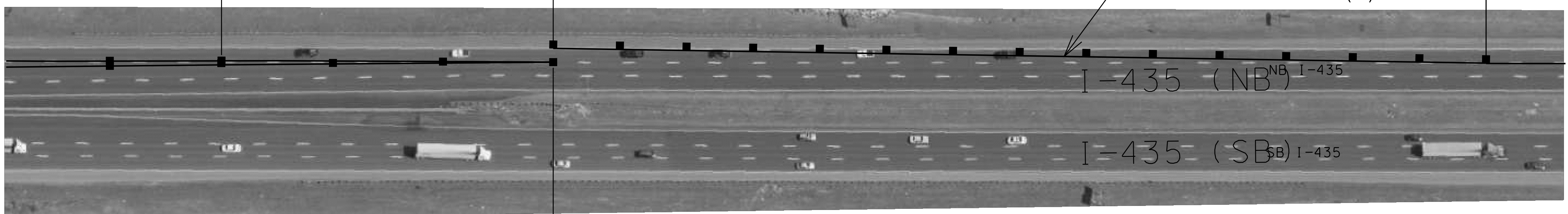
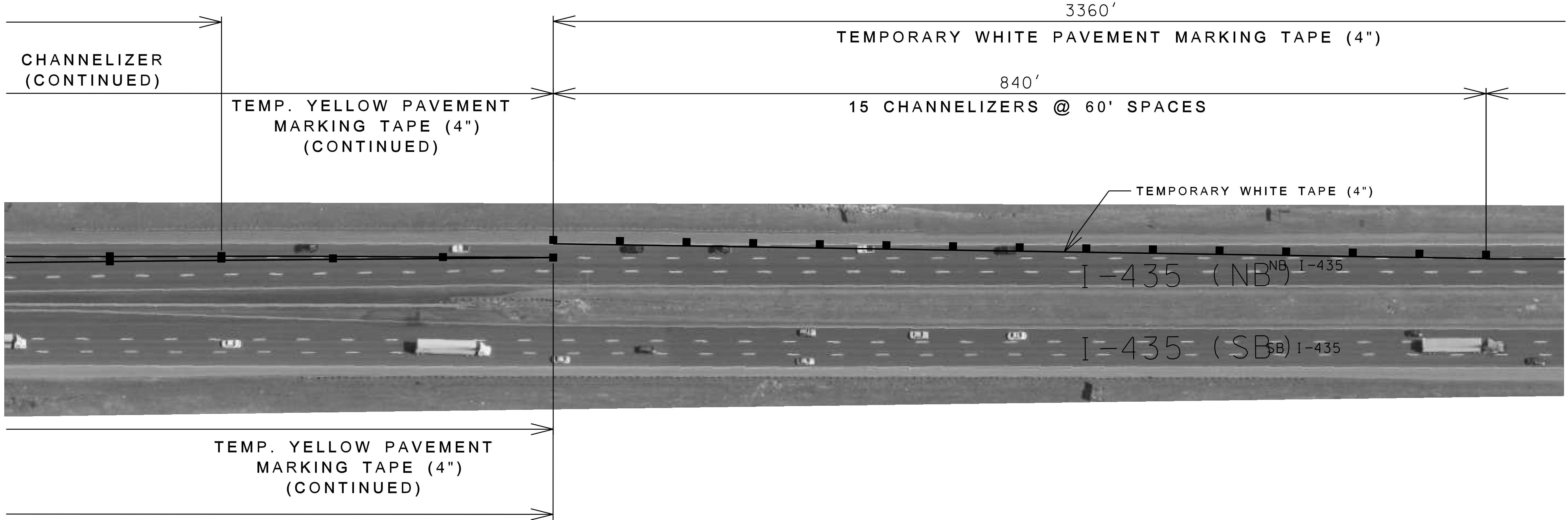
JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

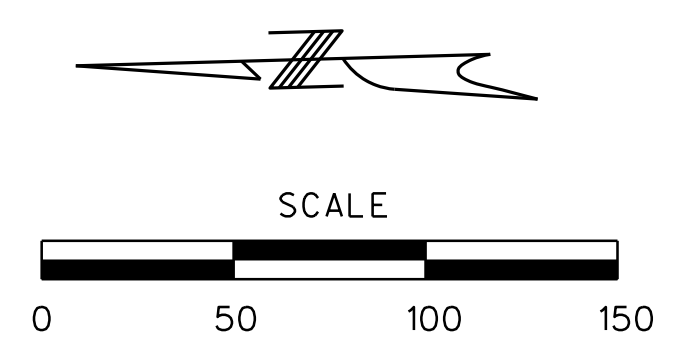


MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

**MoDOT**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

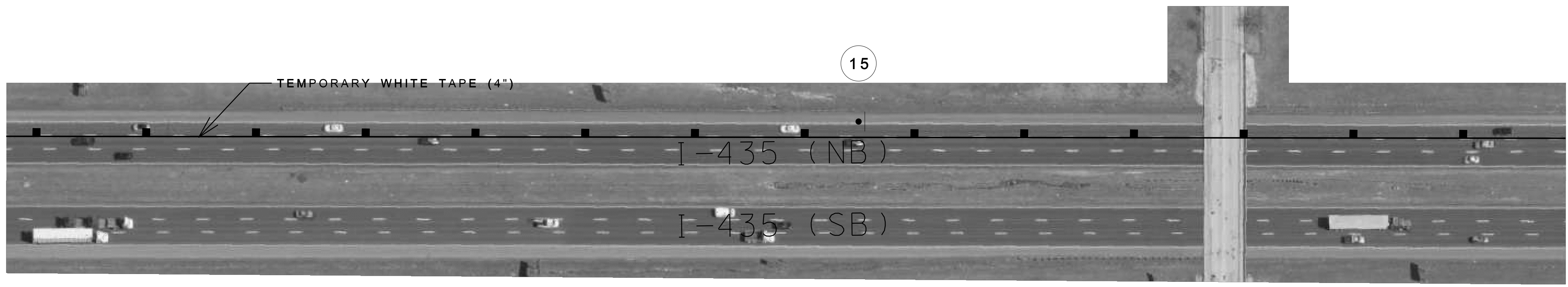


"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 1/15/2013	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 21A
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

TEMPORARY WHITE PAVEMENT MARKING TAPE (4") CONTINUED

1680'  
17 CHANNELIZERS @ 99' SPACES



DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

CLOSE SB I-35 RAMP 4 AND 5  
BRIDGE WORK  
TRAFFIC CONTROL SHEET 17A OF 55

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 21B

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

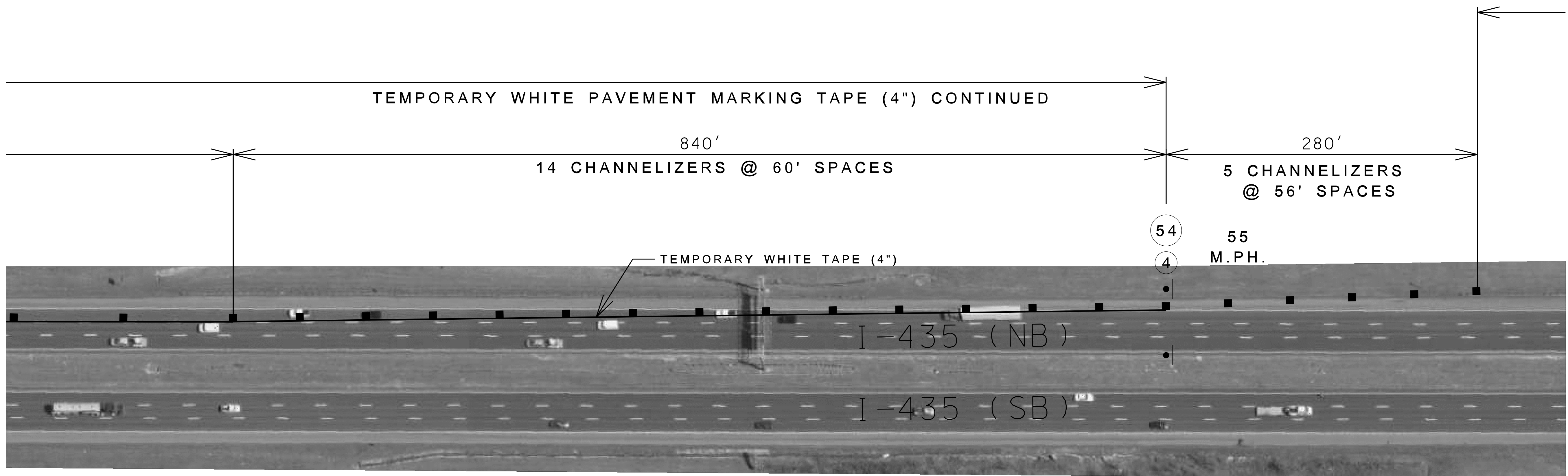
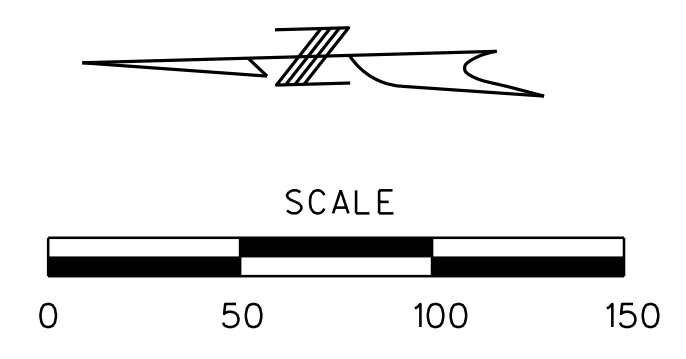
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

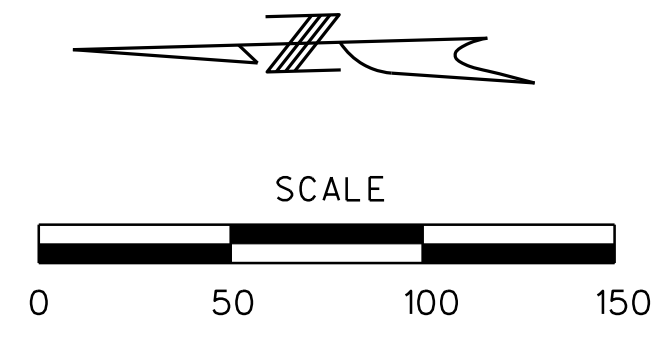
MoDOT

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

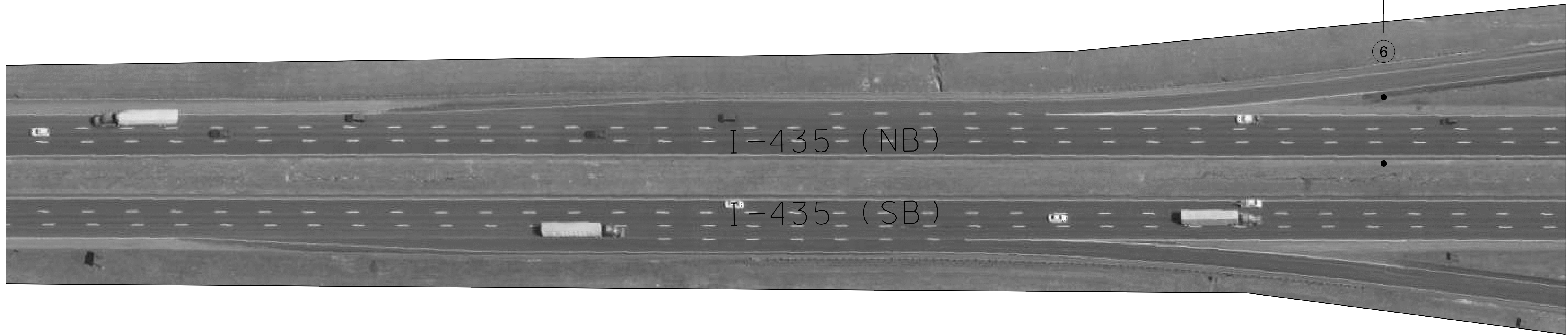
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



CLOSE SB I-35 RAMP 4 AND 5  
BRIDGE WORK  
TRAFFIC CONTROL SHEET 17B OF 55



1320'



CLOSE SB I-35 RAMP 4 AND 5  
 BRIDGE WORK  
 TRAFFIC CONTROL SHEET 17C OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

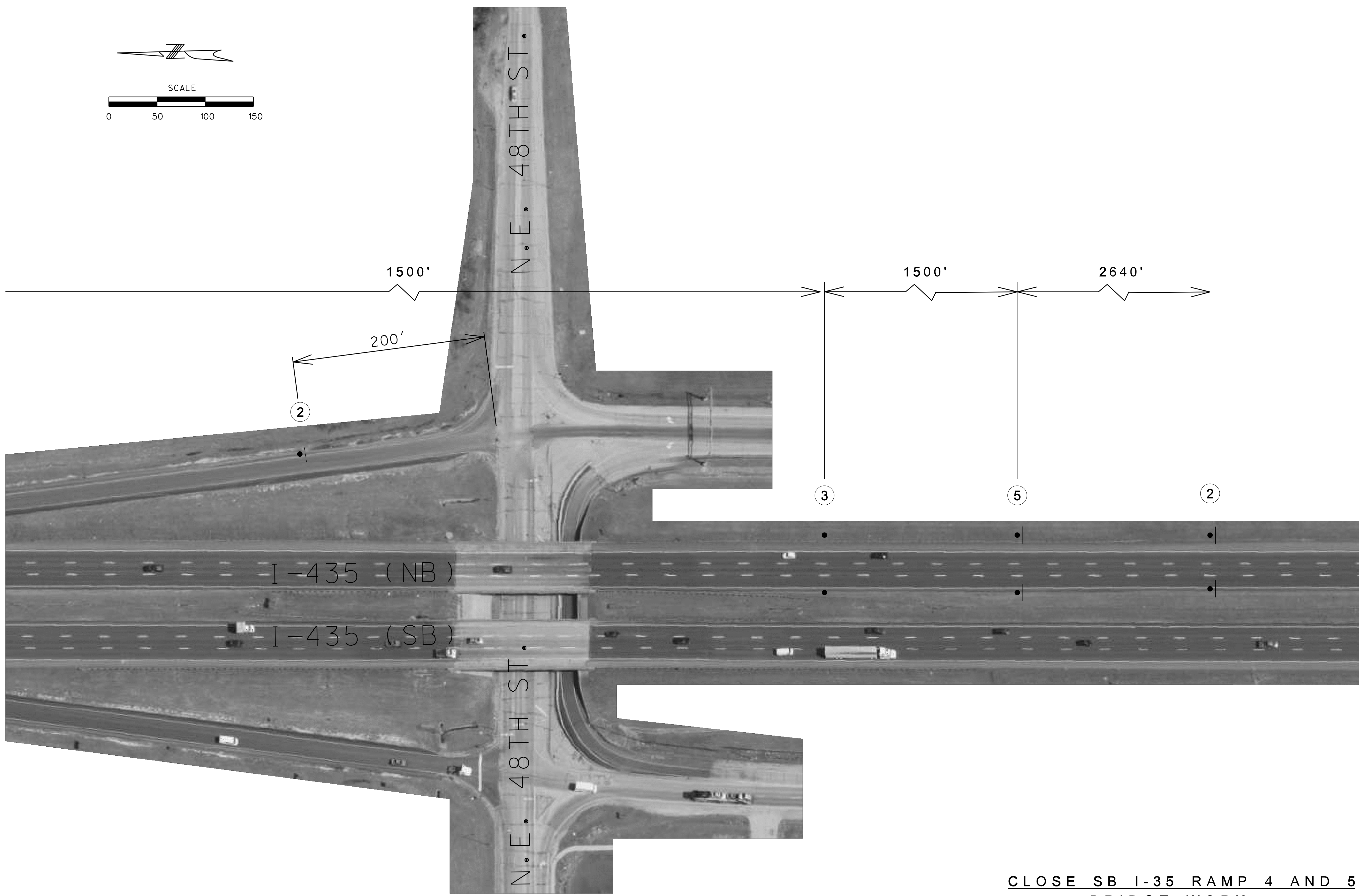
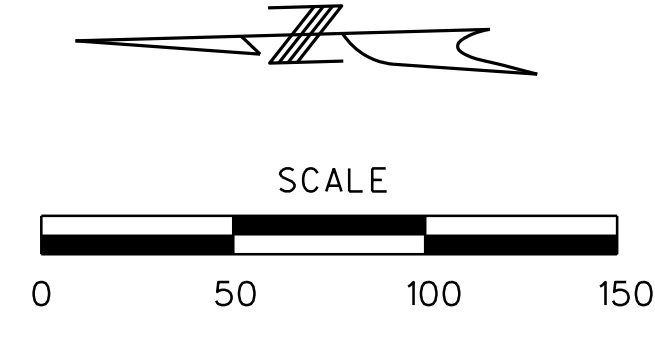
DATE PREPARED 1/15/2013	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 21C
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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



CLOSE SB I-35 RAMP 4 AND 5  
BRIDGE WORK  
TRAFFIC CONTROL SHEET 17D OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

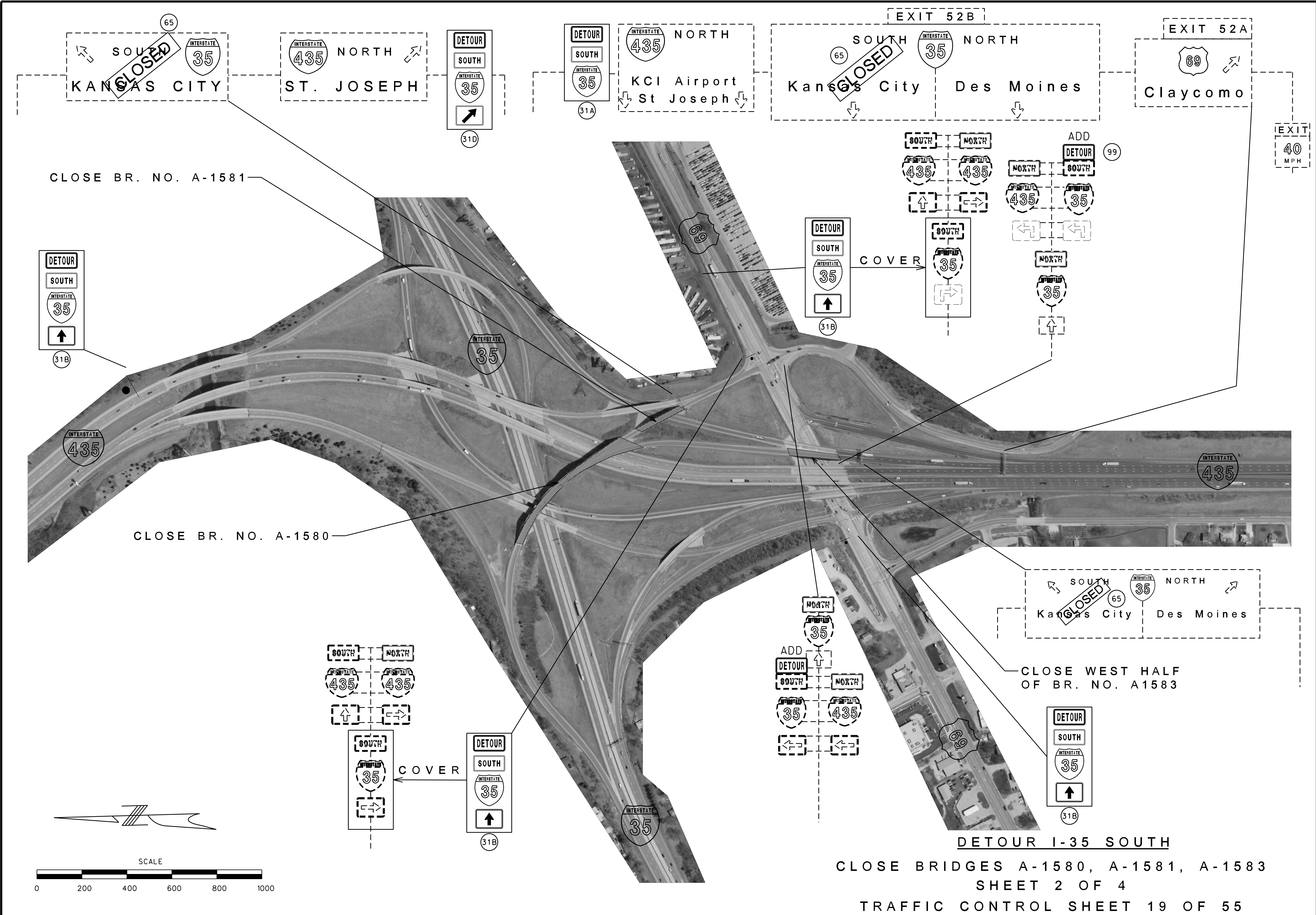
DATE PREPARED 1/15/2013	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 21D
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

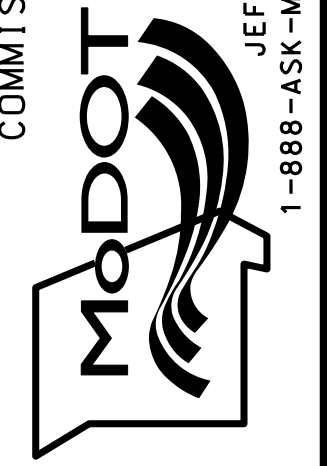
ROUTE STATE  
VAR. MO  
DISTRICT SHEET NO.  
KC 23

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)



DETOUR I-35 SOUTH  
 CLOSE BRIDGES A-1580, A-1581, A-1583  
 SHEET 2 OF 4  
 TRAFFIC CONTROL SHEET 19 OF 55

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 24

COUNTY  
CLAY

JOB NO.  
J412381

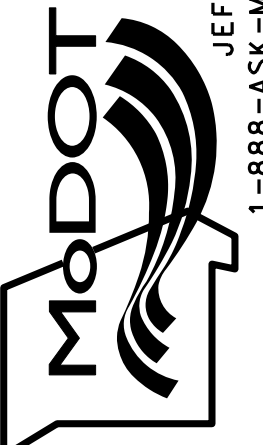
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

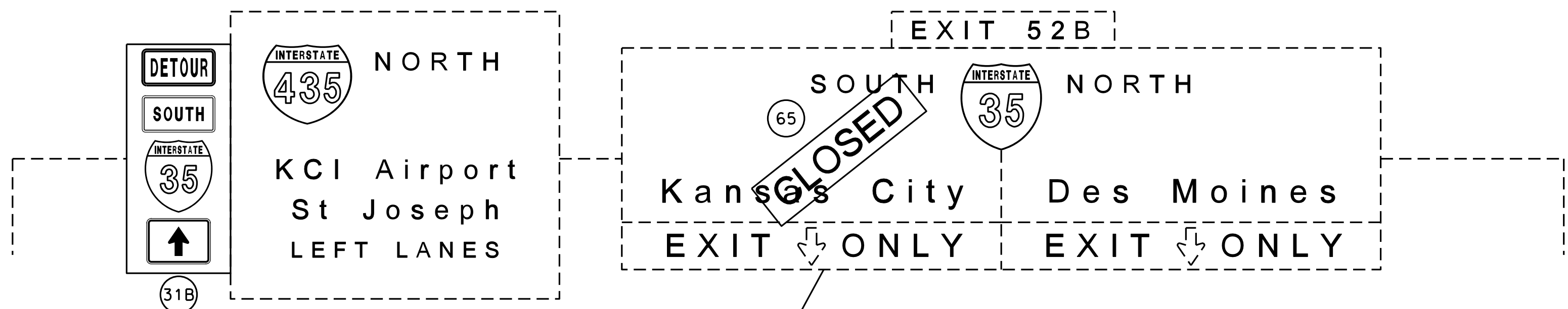
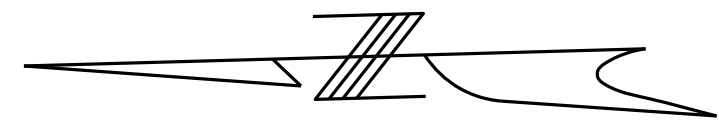
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



DETOUR I-35 SOUTH  
 CLOSE BRIDGES A-1580, A-1581, A-1583  
 SHEET 3 OF 4  
 TRAFFIC CONTROL SHEET 20 OF 55

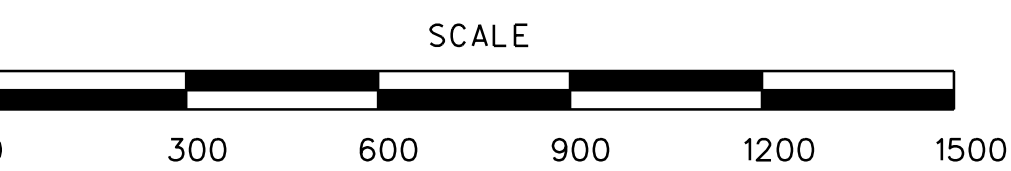
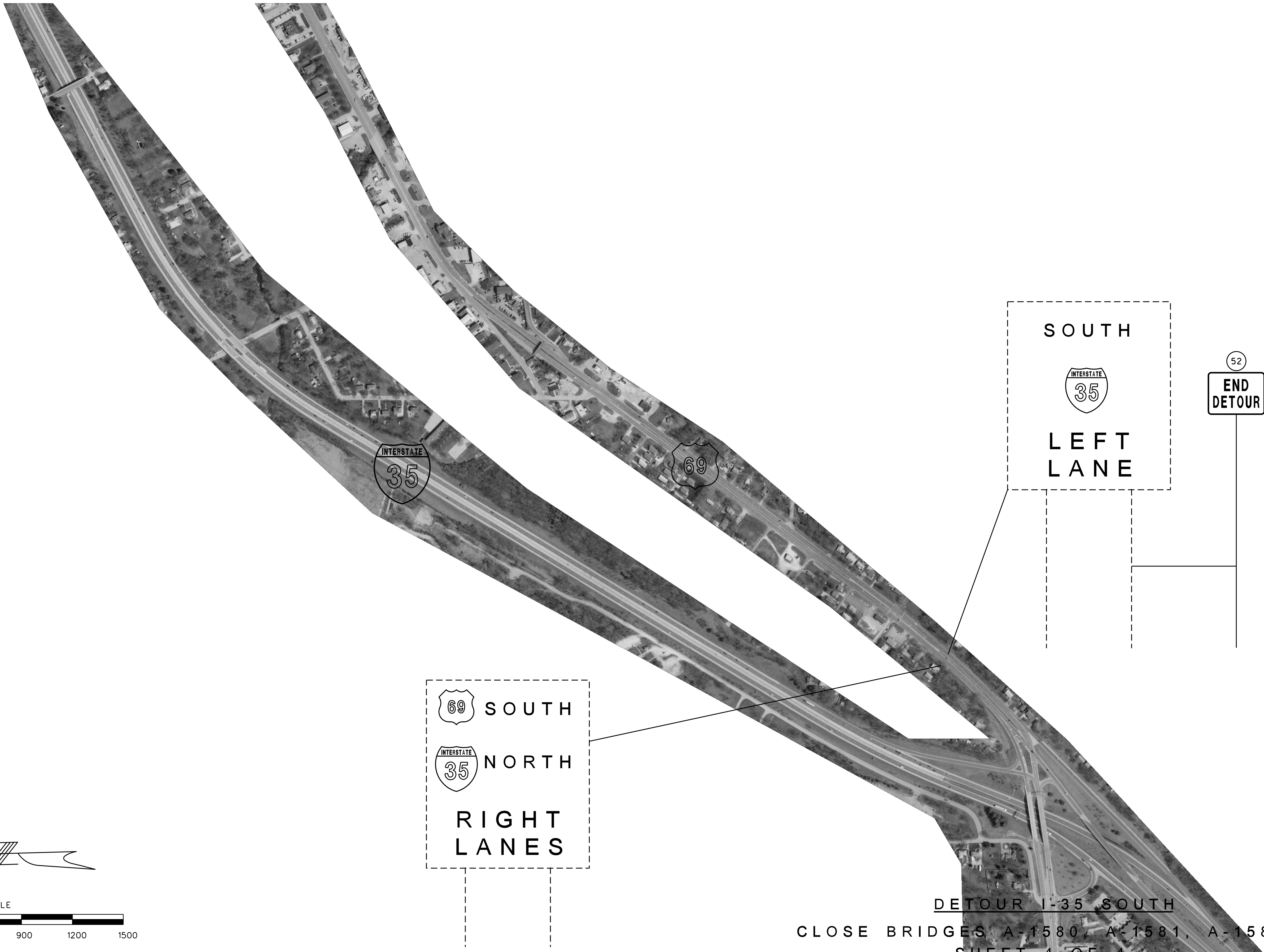
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012  
ROUTE STATE  
VAR. MO  
DISTRICT SHEET NO.  
KC 25  
COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.  
MO  
PROJECT NO.  
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
**MoDOT**  
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



DETOUR I-35 SOUTH

CLOSE BRIDGES A-1580, A-1581, A-1583

SHEET 4 OF 4

TRAFFIC CONTROL SHEET 21 OF 55



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 26

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

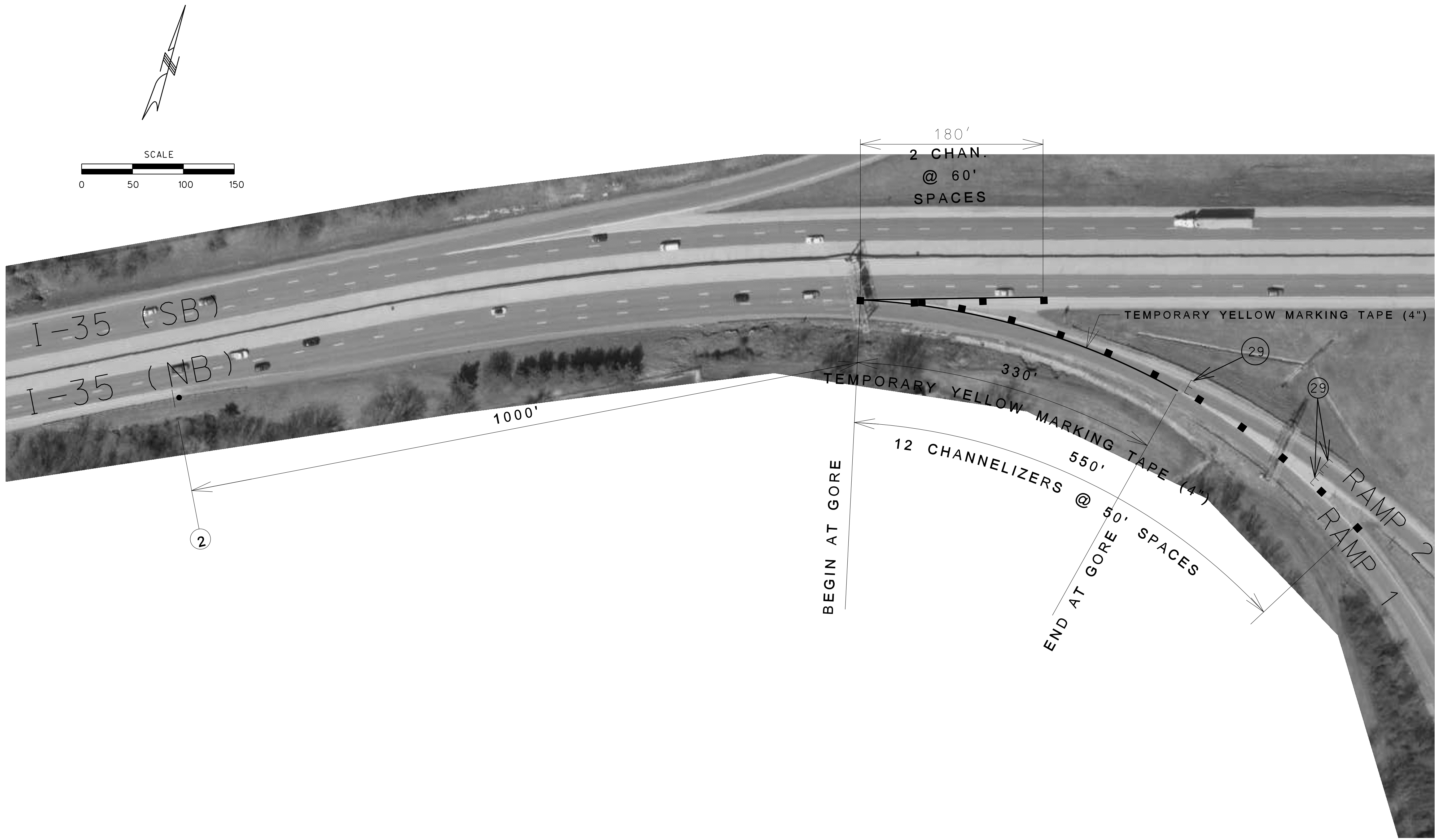
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

**MoDOT**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



SB I-435 ON RAMP STAGE 1 CONSTRUCTION

BRIDGE WORK  
SHEET 1 OF 2

TRAFFIC CONTROL SHEET 22 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 27

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

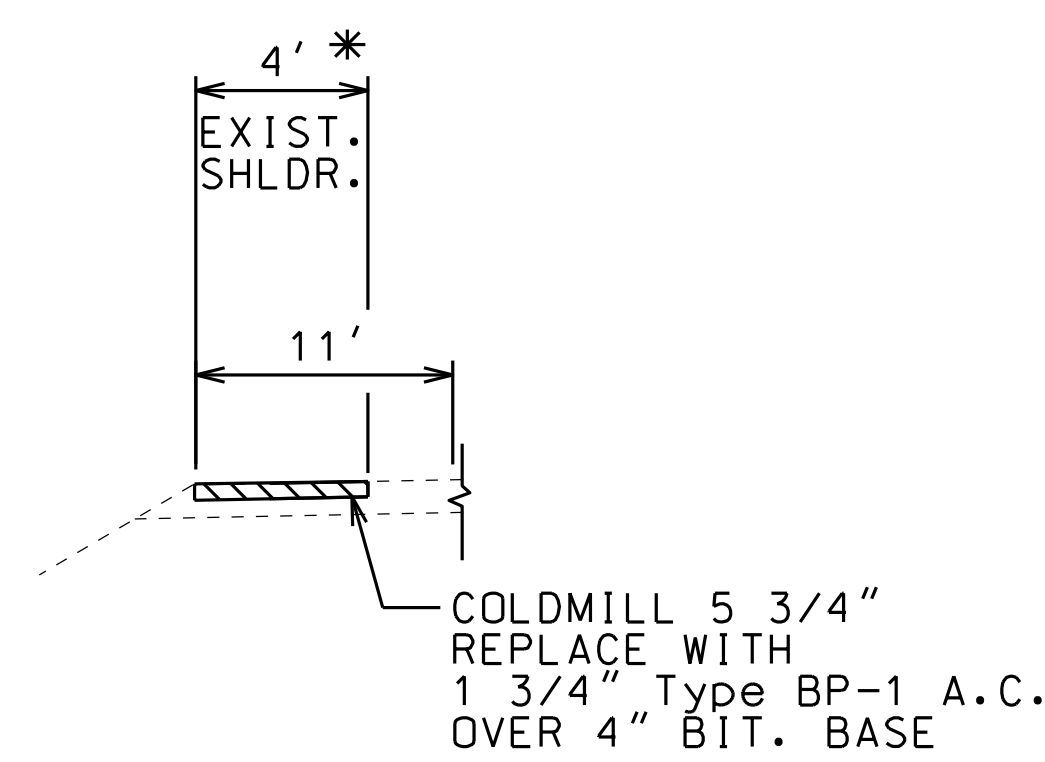
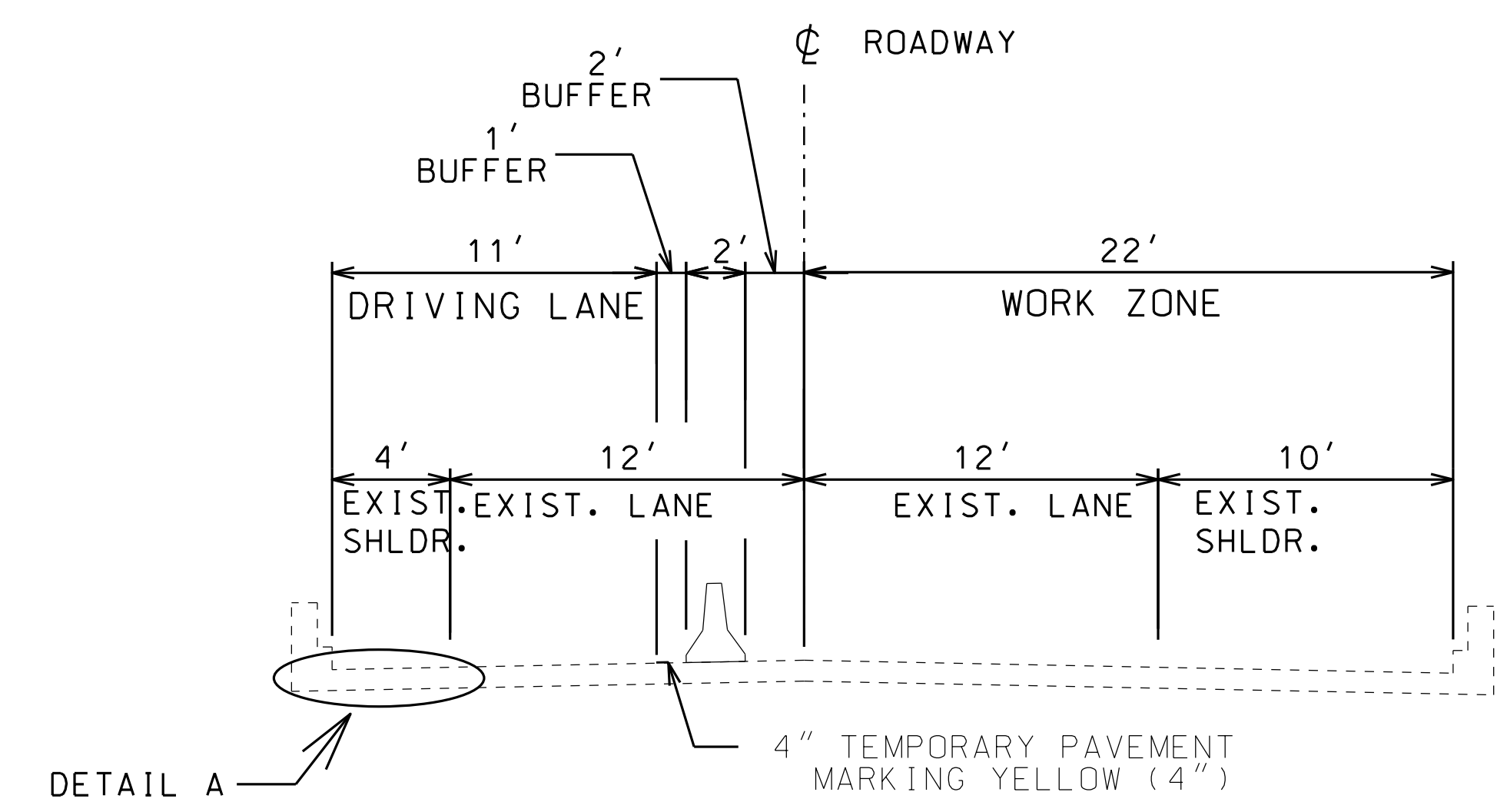
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

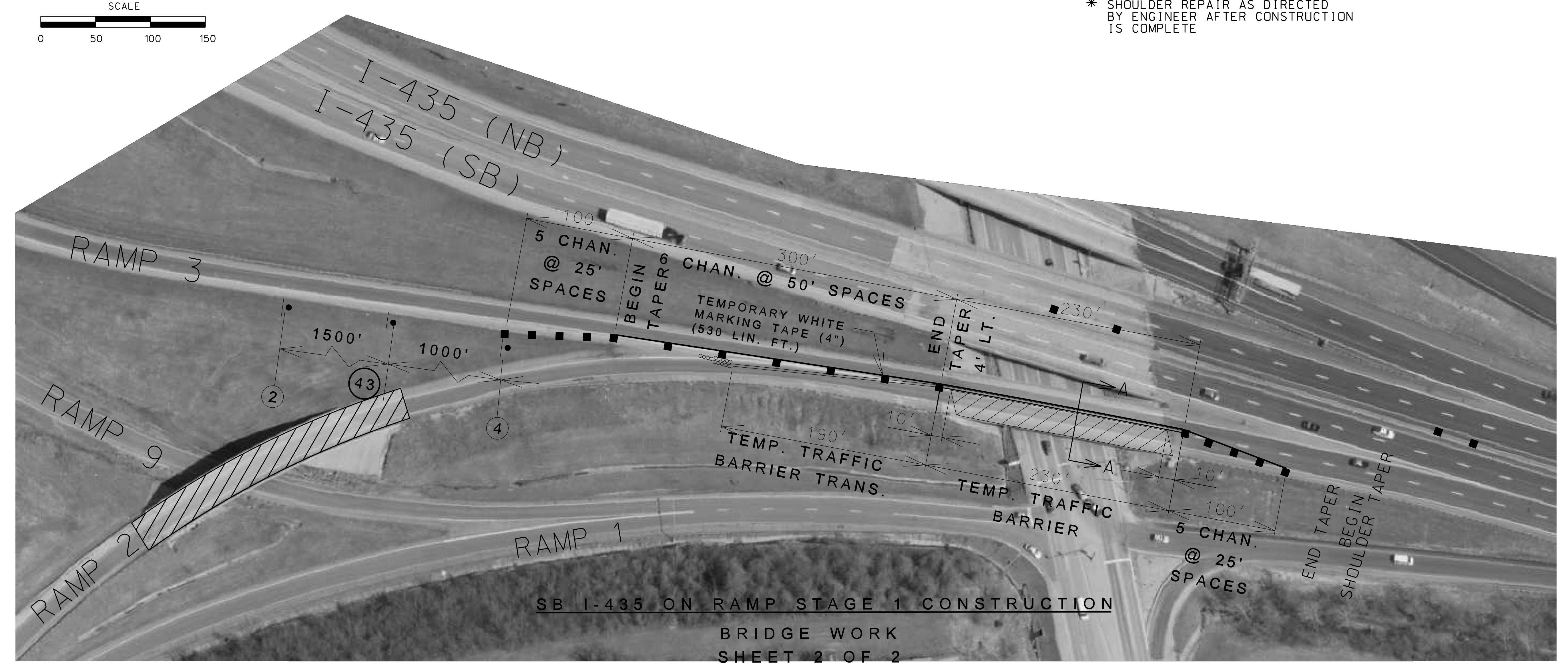
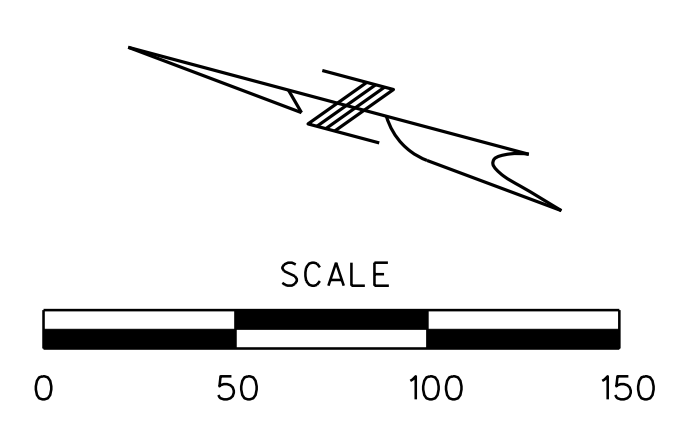
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



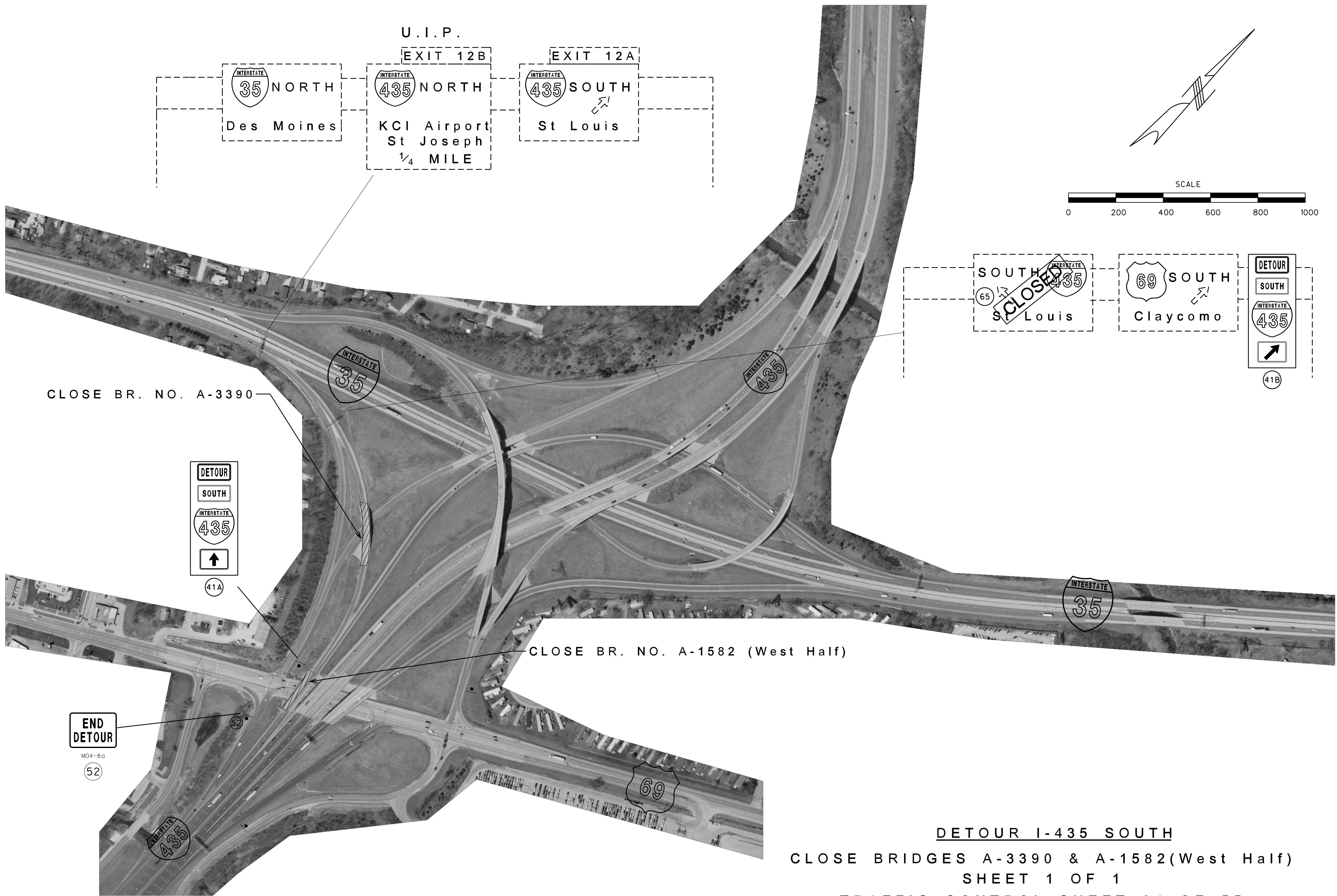
SECTION A-A

DETAIL A  
ASPHALTIC SHOULDER

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE



SB I-435 ON RAMP STAGE 1 CONSTRUCTION  
BRIDGE WORK  
SHEET 2 OF 2



DATE PREPARED  
1/15/2013

ROUTE  
VAR. MO

DISTRICT  
KC

STATE  
MO

SHEET NO.  
28

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

DATE

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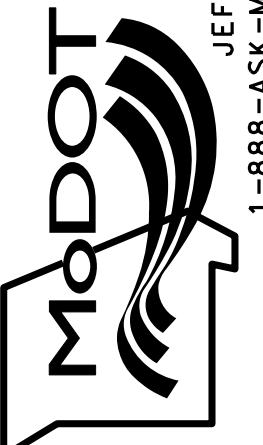
DESCRIPTION

DATE

DESCRIPTION

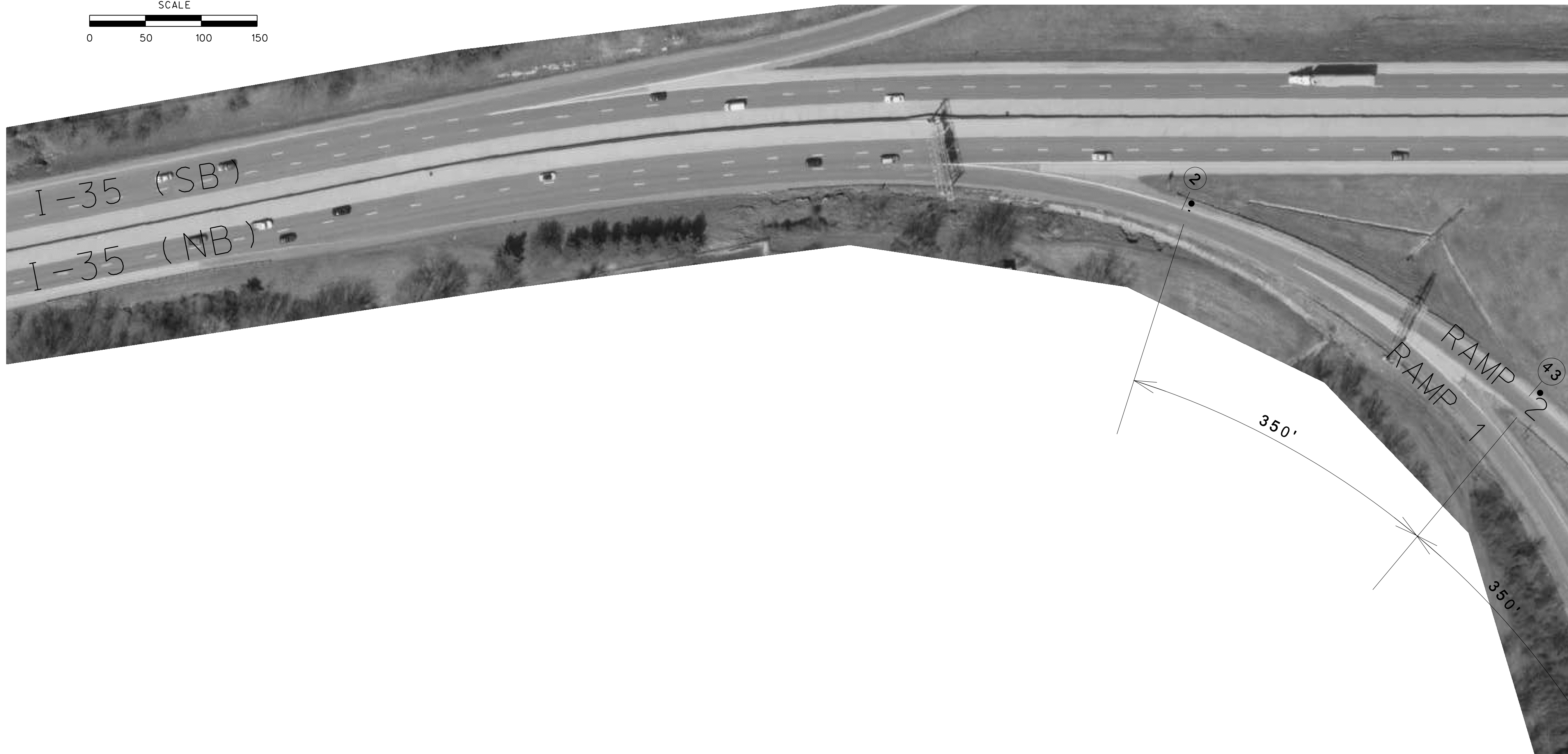
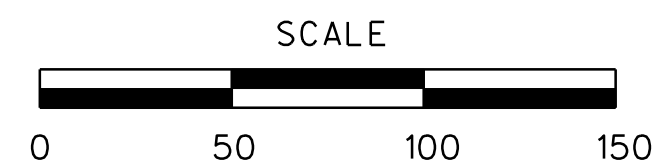
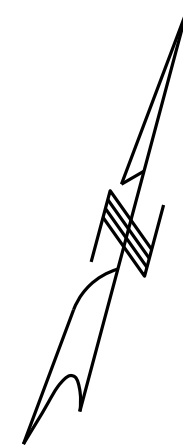
DETOUR I-435 SOUTH  
CLOSE BRIDGES A-3390 & A-1582(West Half)  
SHEET 1 OF 1  
TRAFFIC CONTROL SHEET 24 OF 55

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



**SB I-435 ON RAMP STAGE 2 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 1 OF 2**  
**TRAFFIC CONTROL SHEET 25 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 29

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

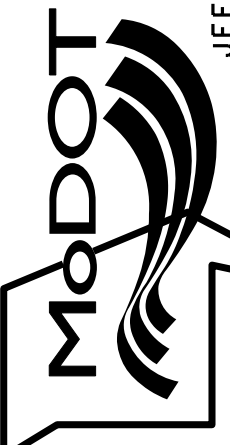
DATE PREPARED  
1/15/2013

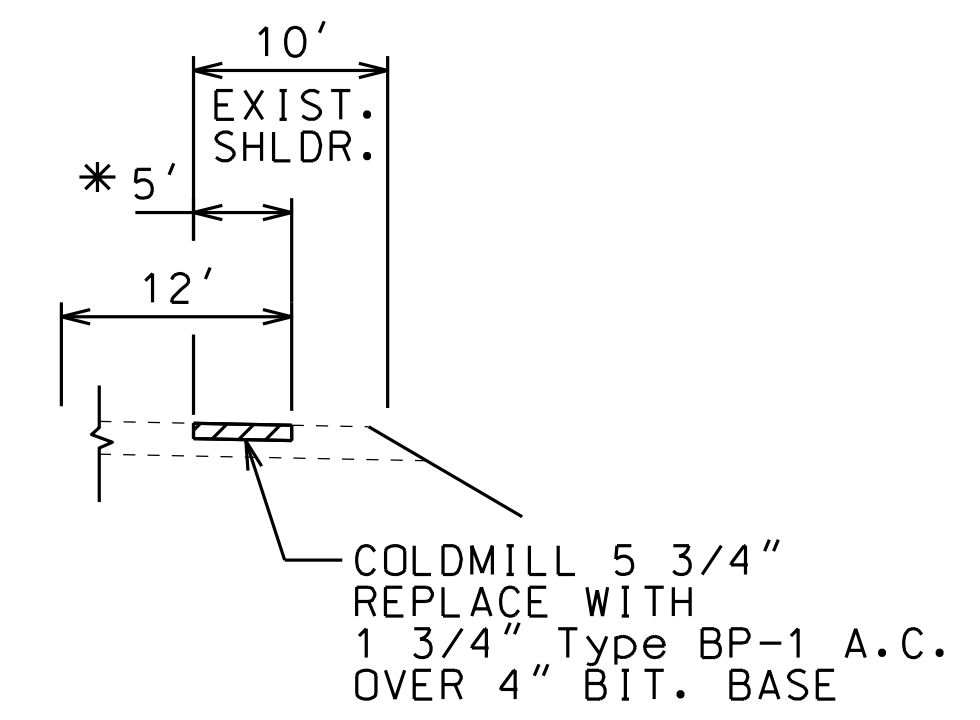
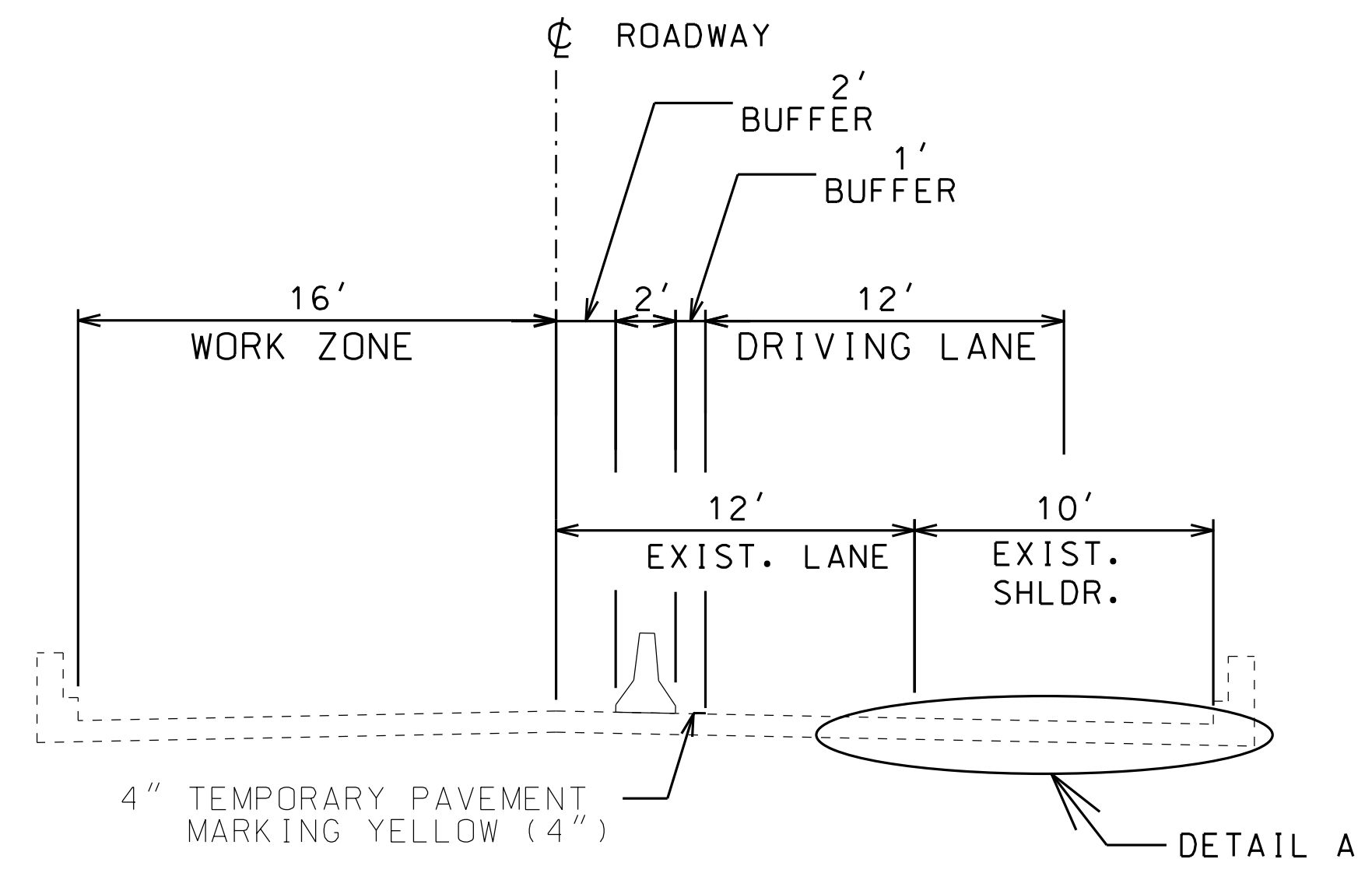
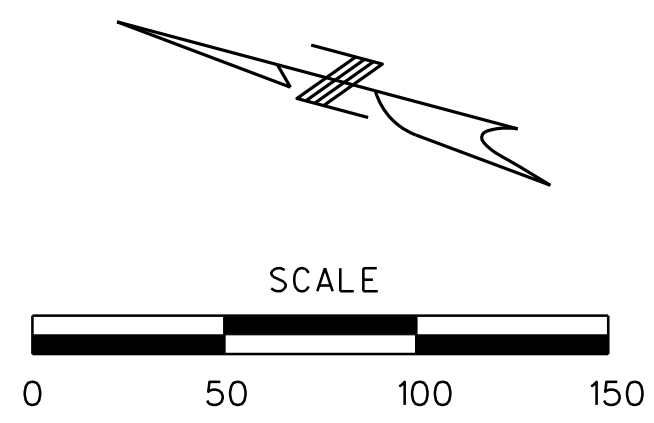
ROUTE VAR. MO  
DISTRICT KC SHEET NO. 30

COUNTY CLAY  
JOB NO. J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

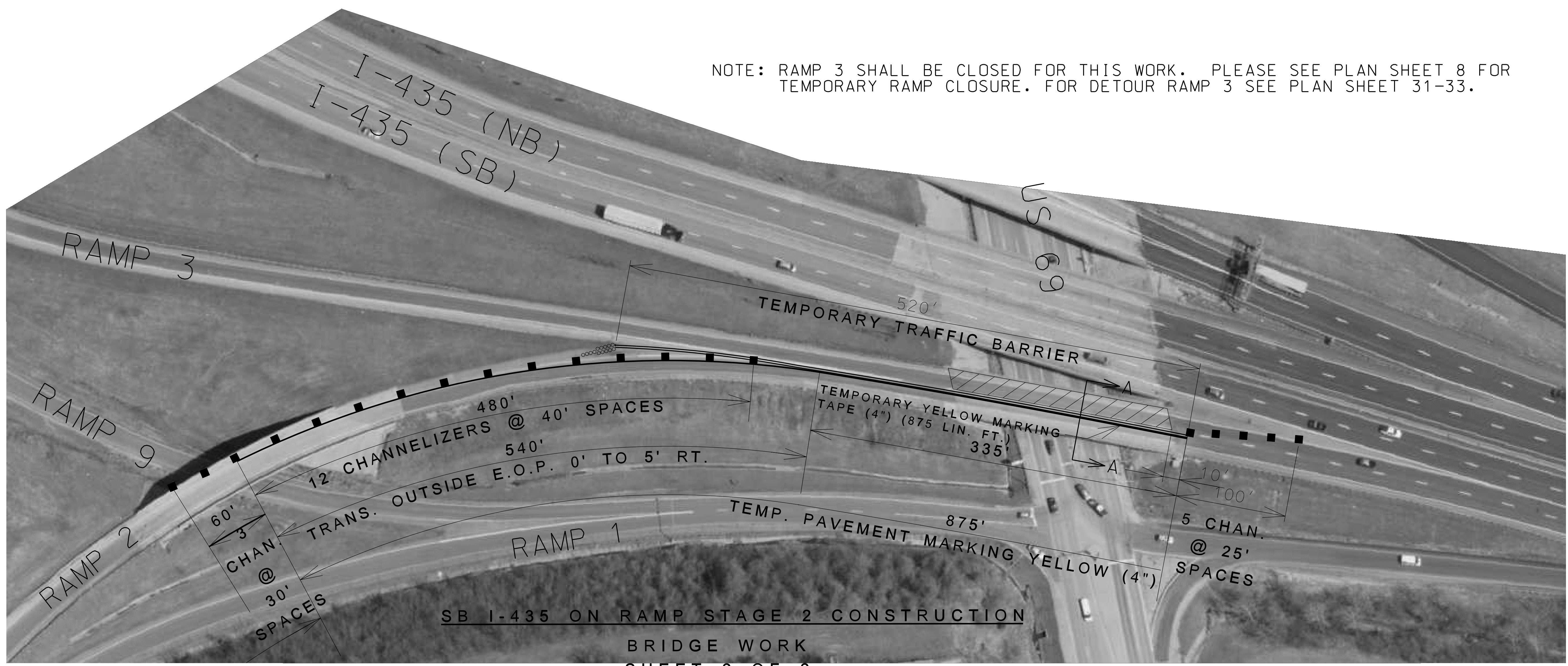


**DETAIL A**  
**ASPHALTIC SHOULDER**

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE

**SECTION A-A**

NOTE: RAMP 3 SHALL BE CLOSED FOR THIS WORK. PLEASE SEE PLAN SHEET 8 FOR TEMPORARY RAMP CLOSURE. FOR DETOUR RAMP 3 SEE PLAN SHEET 31-33.

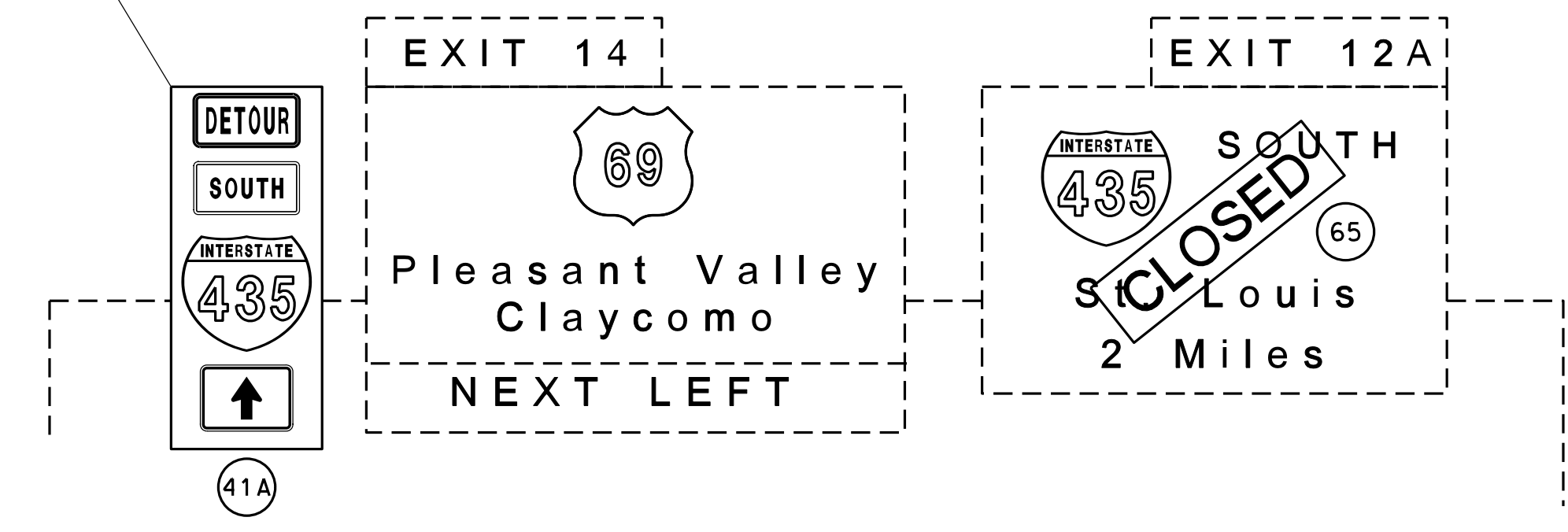
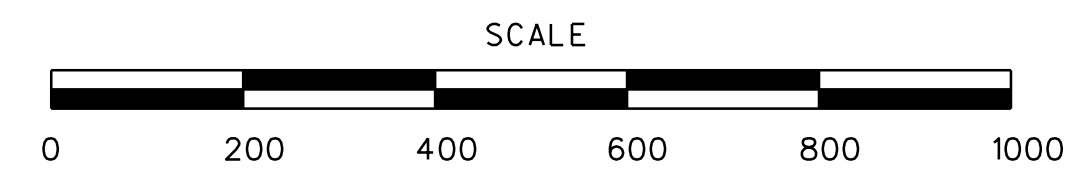
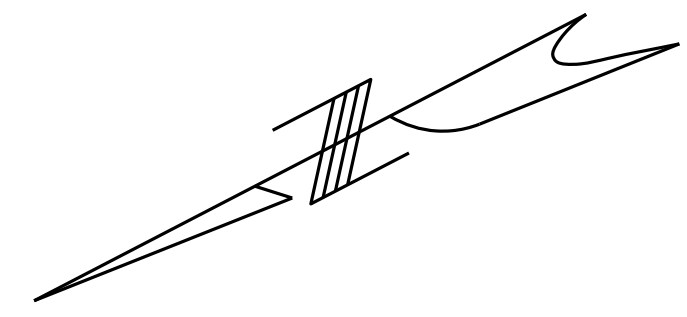


SB I-435 ON RAMP STAGE 2 CONSTRUCTION

BRIDGE WORK  
SHEET 2 OF 2

TRAFFIC CONTROL SHEET 26 OF 55

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



**DETOUR I-435 SOUTH**  
**CLOSE BRIDGE A-1579**  
**SHEET 1 OF 3**  
**TRAFFIC CONTROL SHEET 27 OF 50**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 31

COUNTY  
CLAY

JOB NO.  
J412381

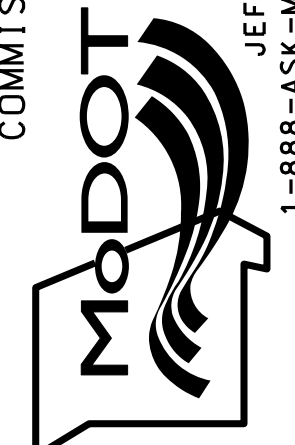
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

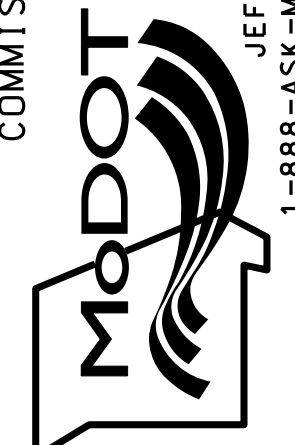
ROUTE	STATE
VAR.	MO
DISTRICT	SHEET NO.
KC	32

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

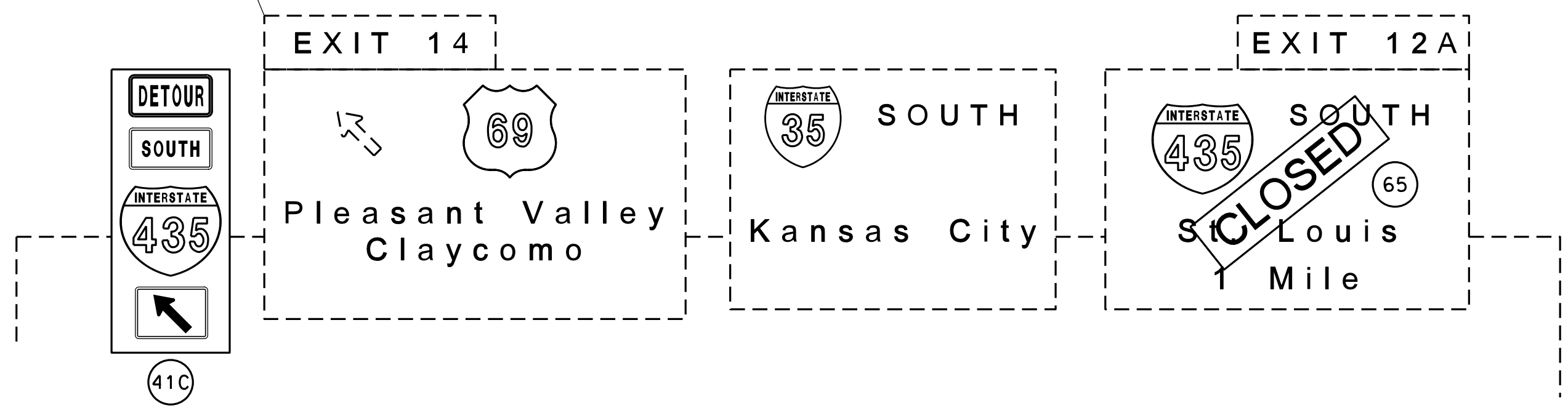
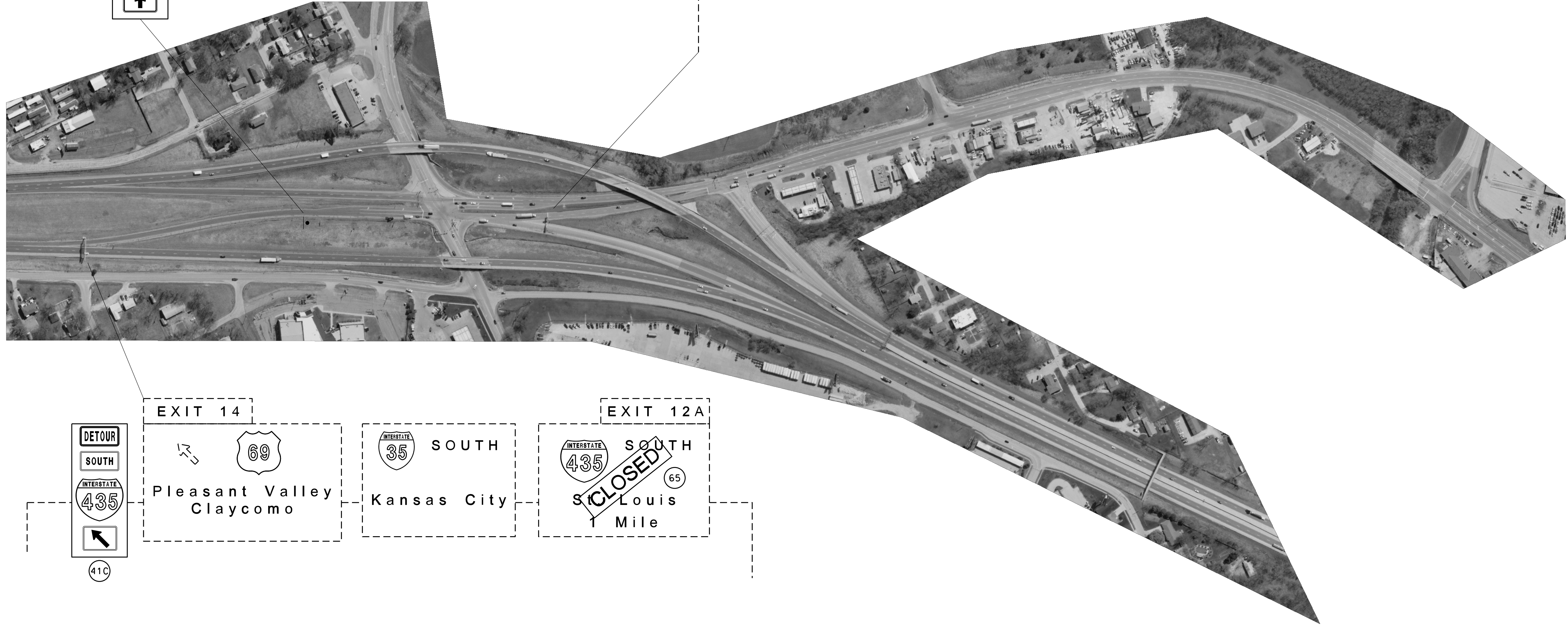
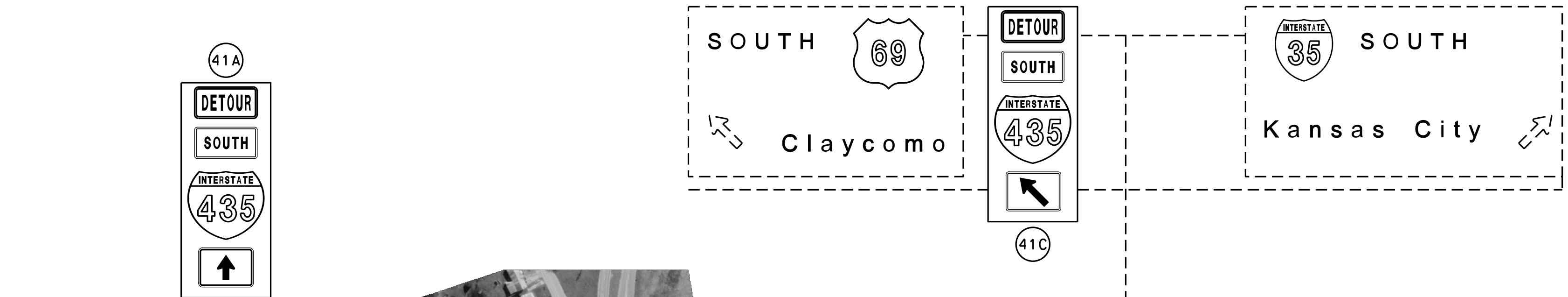
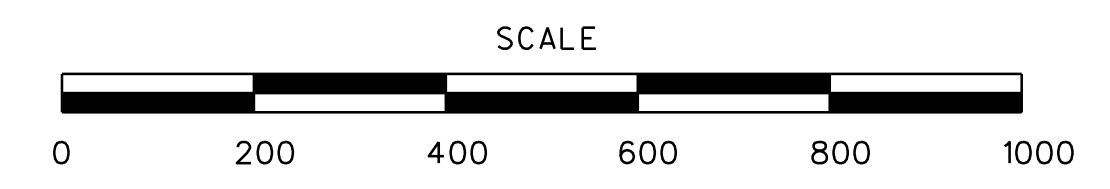
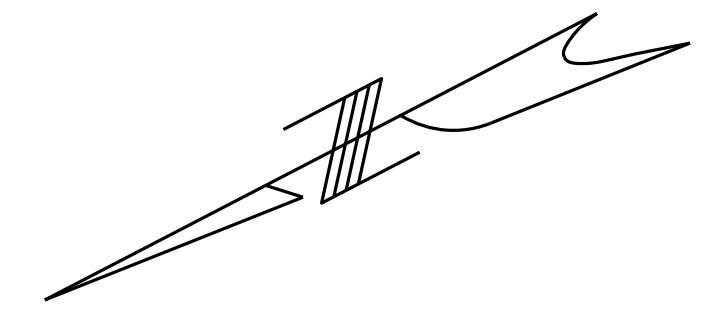
PROJECT NO.

BRIDGE NO.

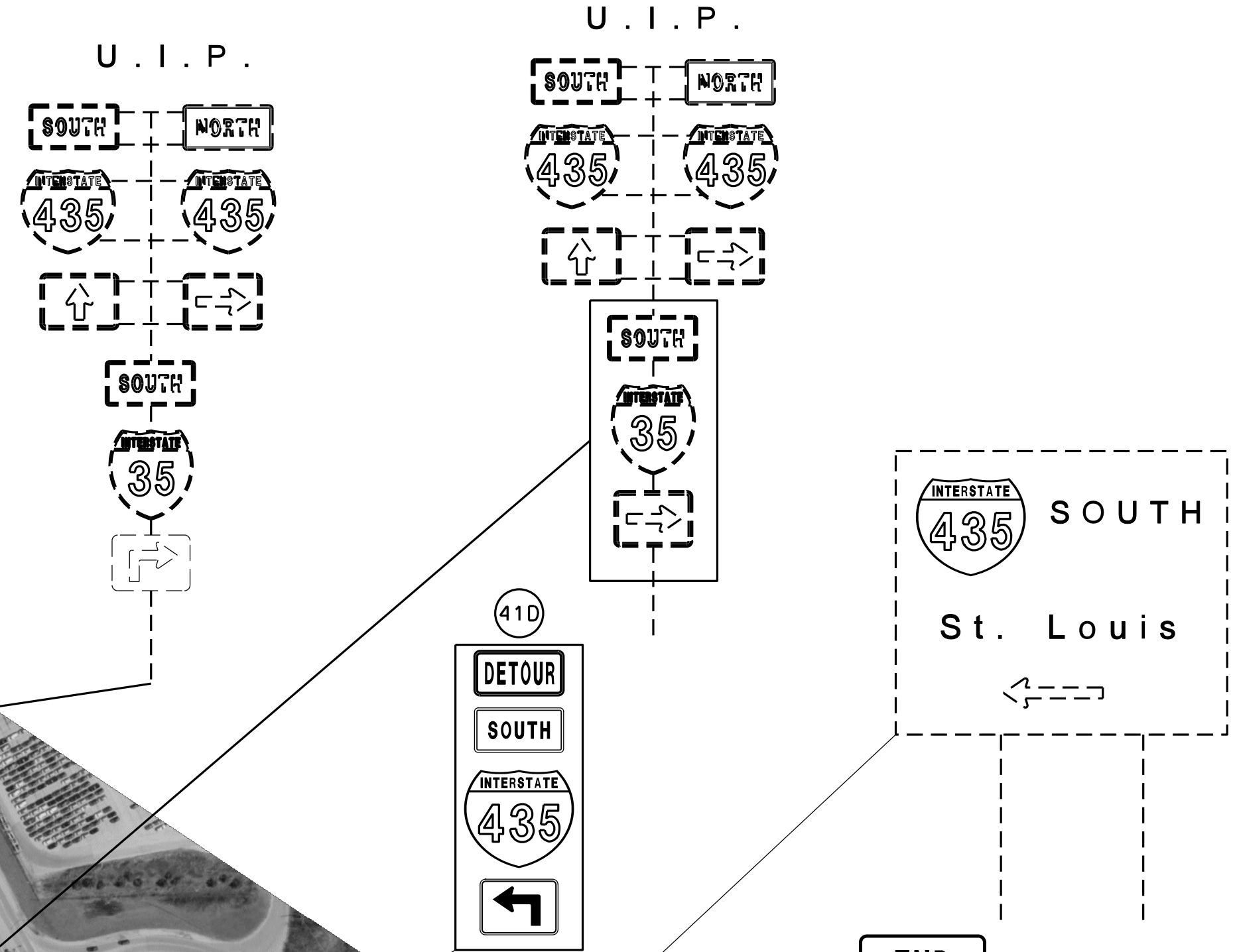
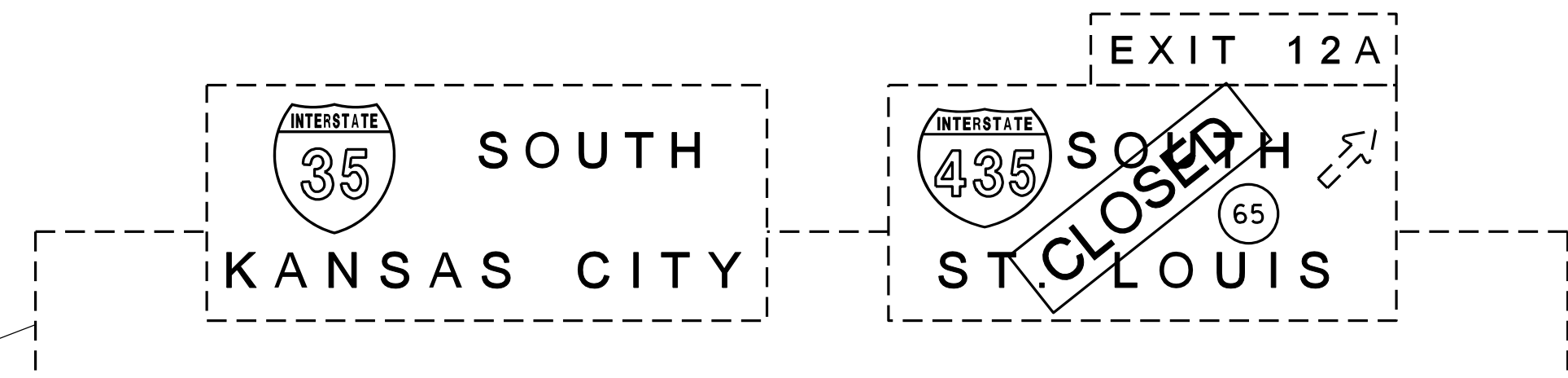
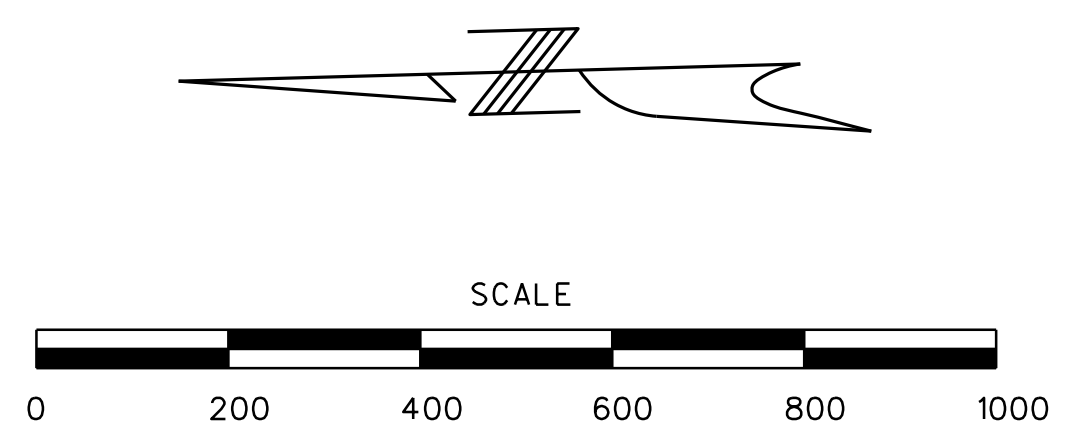
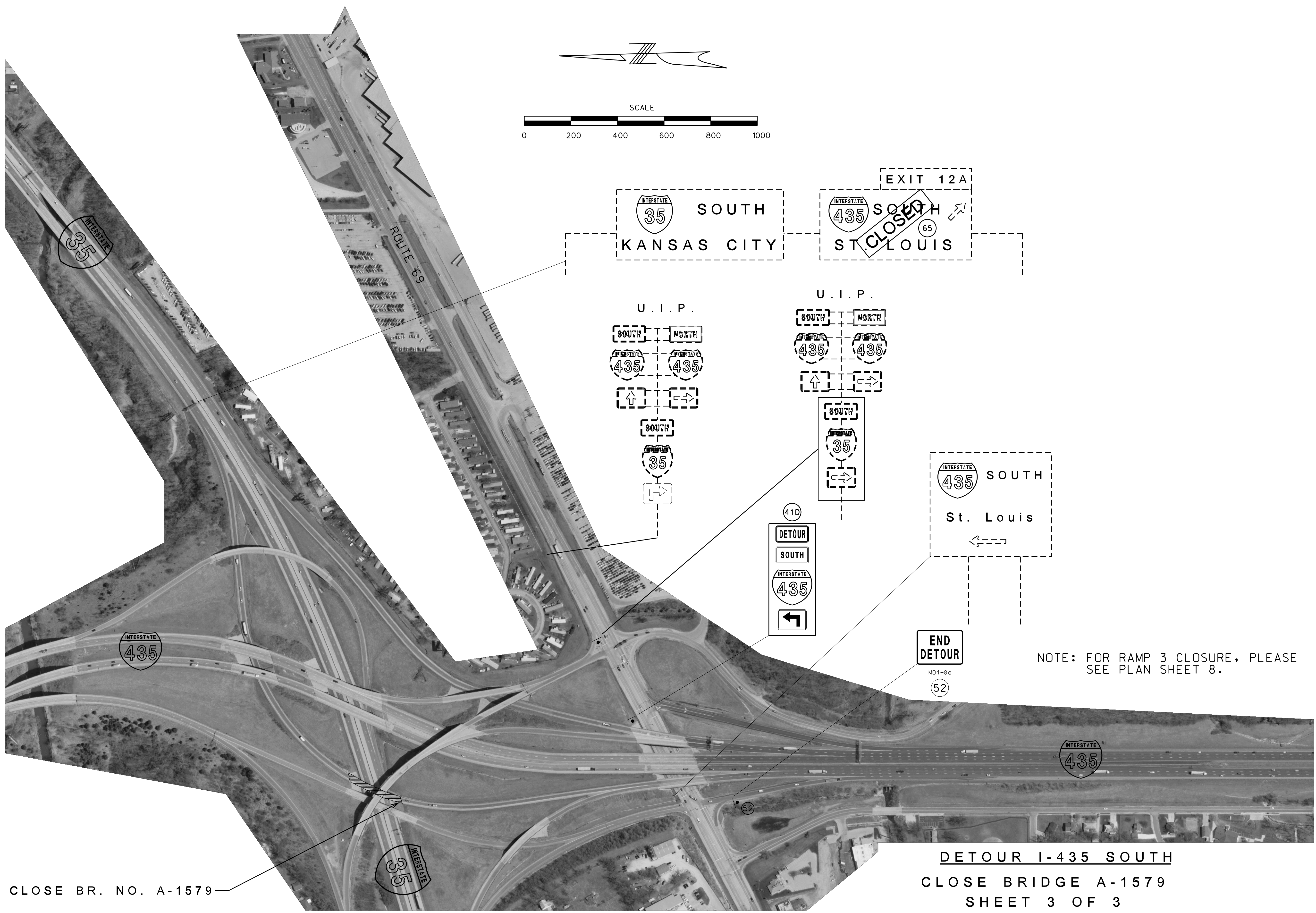
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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



**DETOUR I-435 SOUTH**  
**CLOSE BRIDGE A-1579**  
**SHEET 2 OF 3**  
**TRAFFIC CONTROL SHEET 28 OF 55**



**END  
DETOUR**  
MD4-8a  
52

NOTE: FOR RAMP 3 CLOSURE, PLEASE SEE PLAN SHEET 8.

CLOSE BR. NO. A-1579

**DETOUR I-435 SOUTH**  
CLOSE BRIDGE A-1579  
SHEET 3 OF 3

**TRAFFIC CONTROL SHEET 29 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE	STATE
VAR.	MO
DISTRICT	SHEET NO.
KC	33
COUNTY	
CLAY	
JOB NO.	
J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

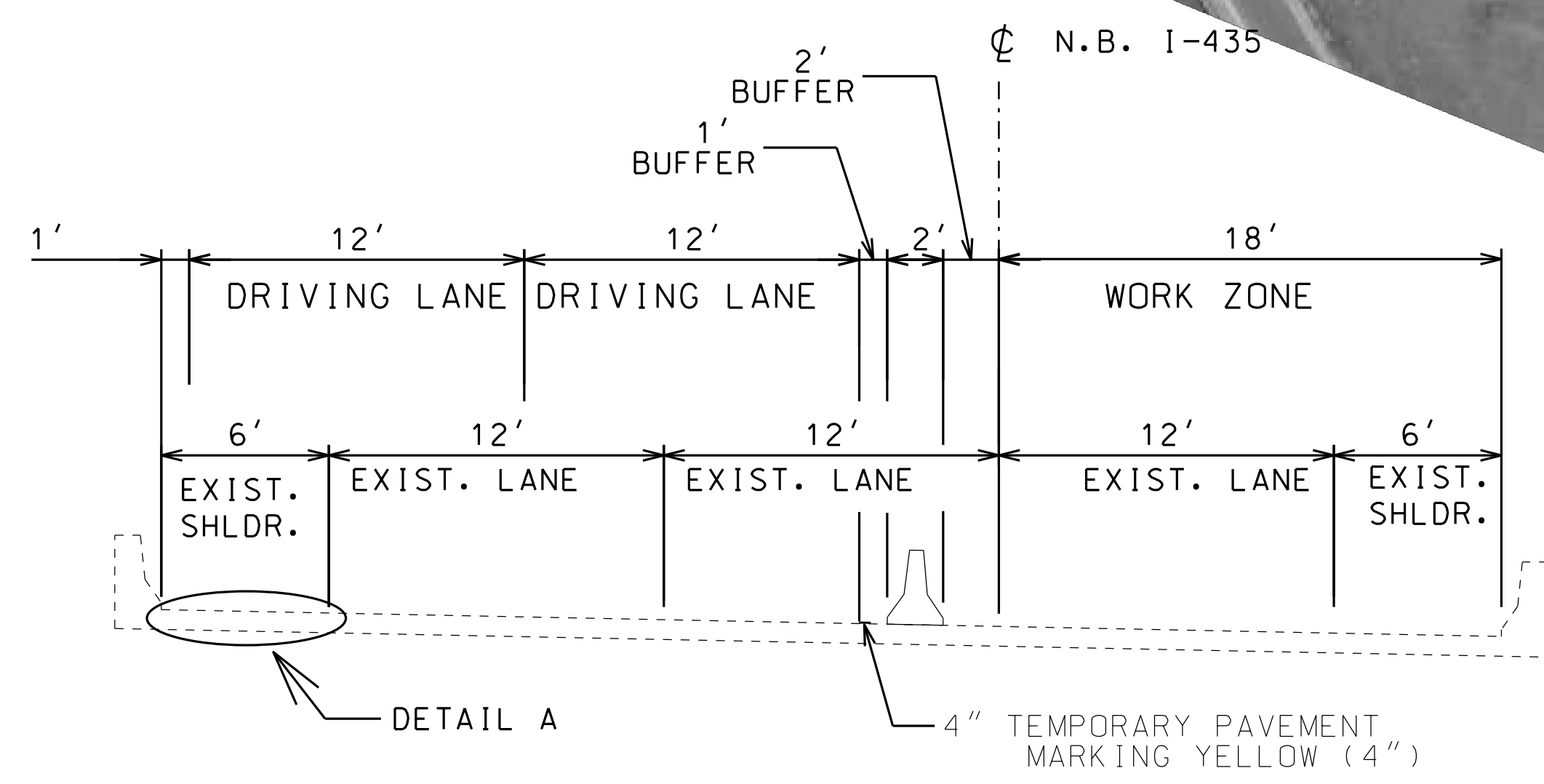
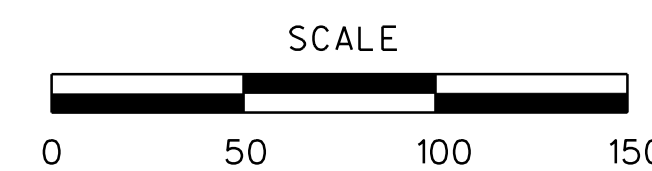
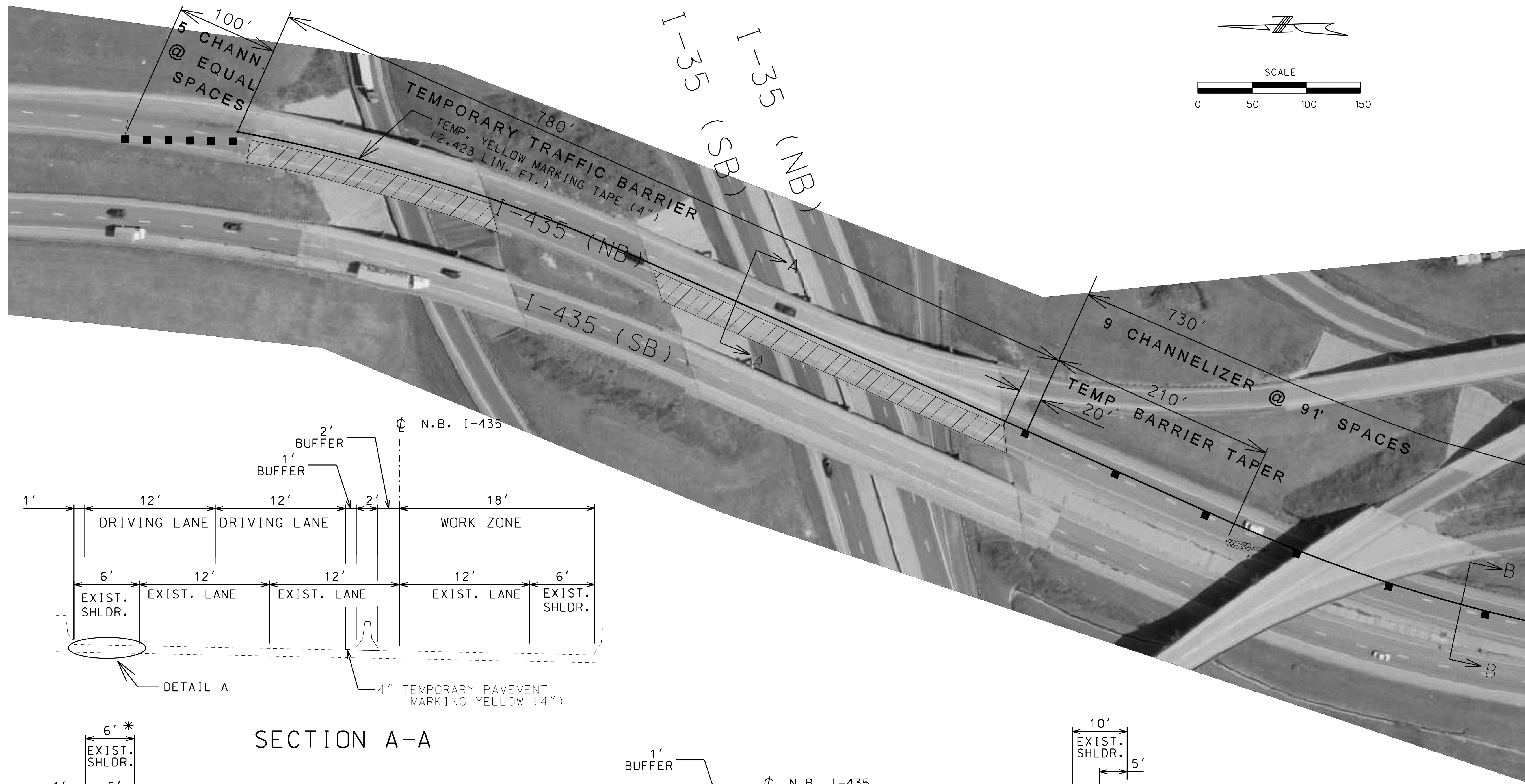
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

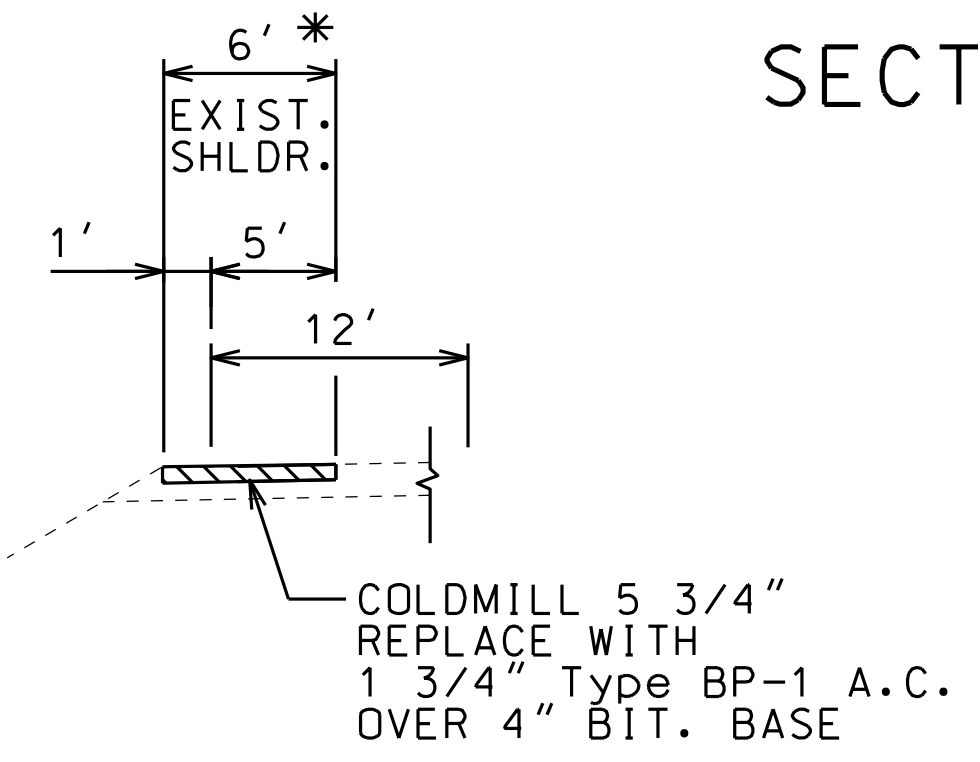
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

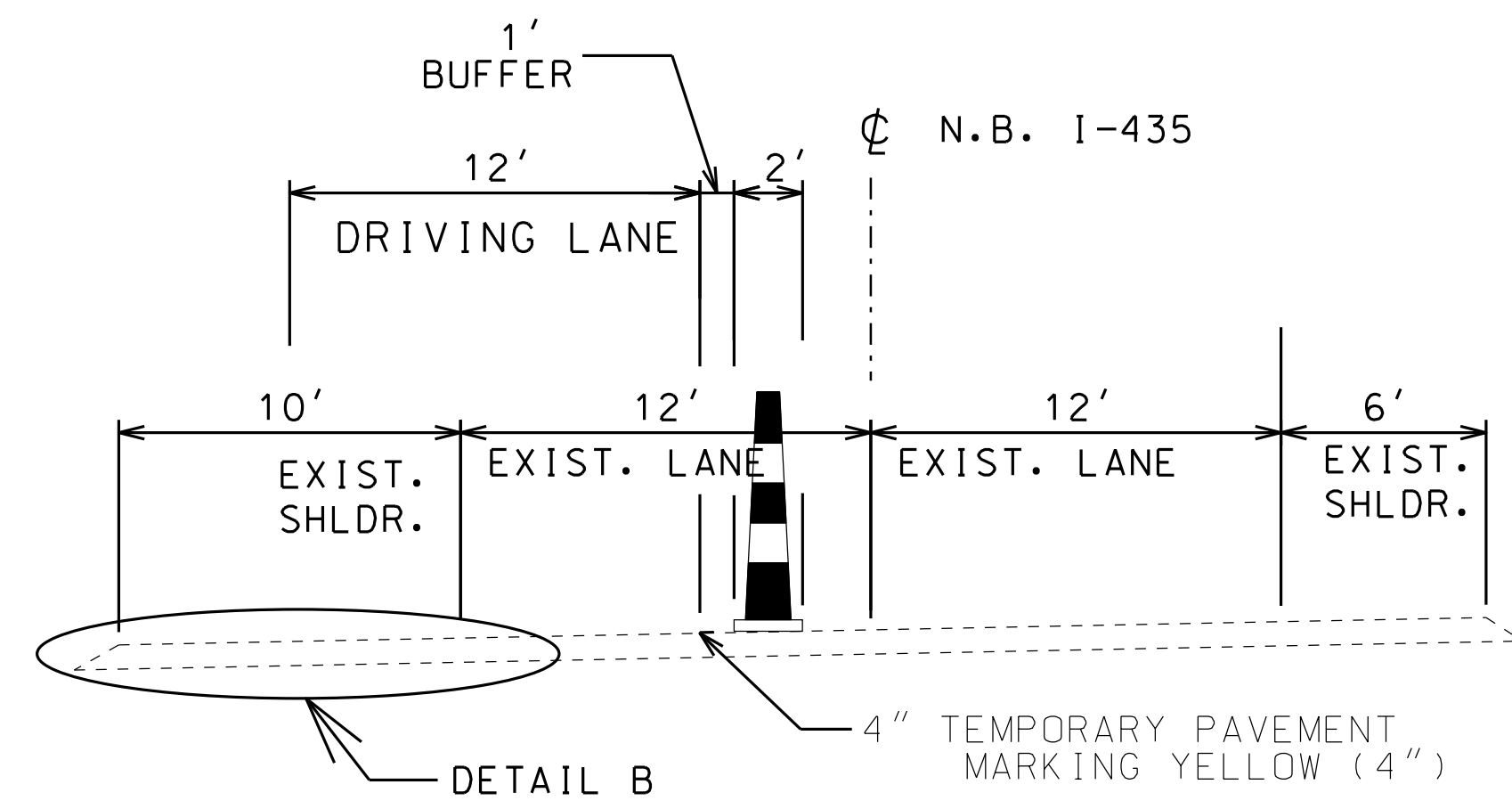




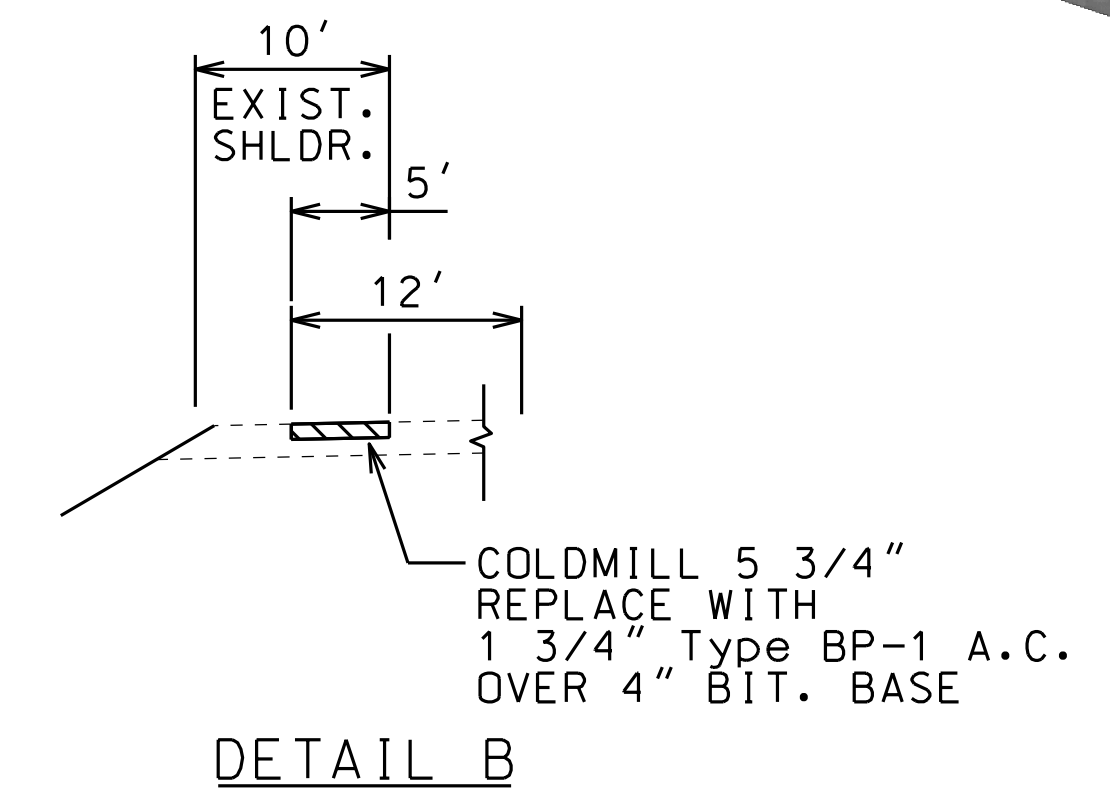
SECTION A-A



DETAIL A  
ASPHALTIC SHOULDER



SECTION B-B



DETAIL B  
ASPHALTIC SHOULDER

NB I-435 STAGE 1 CONSTRUCTION

BRIDGE WORK

SHEET 1 OF 3

TRAFFIC CONTROL SHEET 30 OF 55

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 34
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013


ROUTE	STATE
VAR.	MO
DISTRICT	SHEET NO.
KC	35

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.

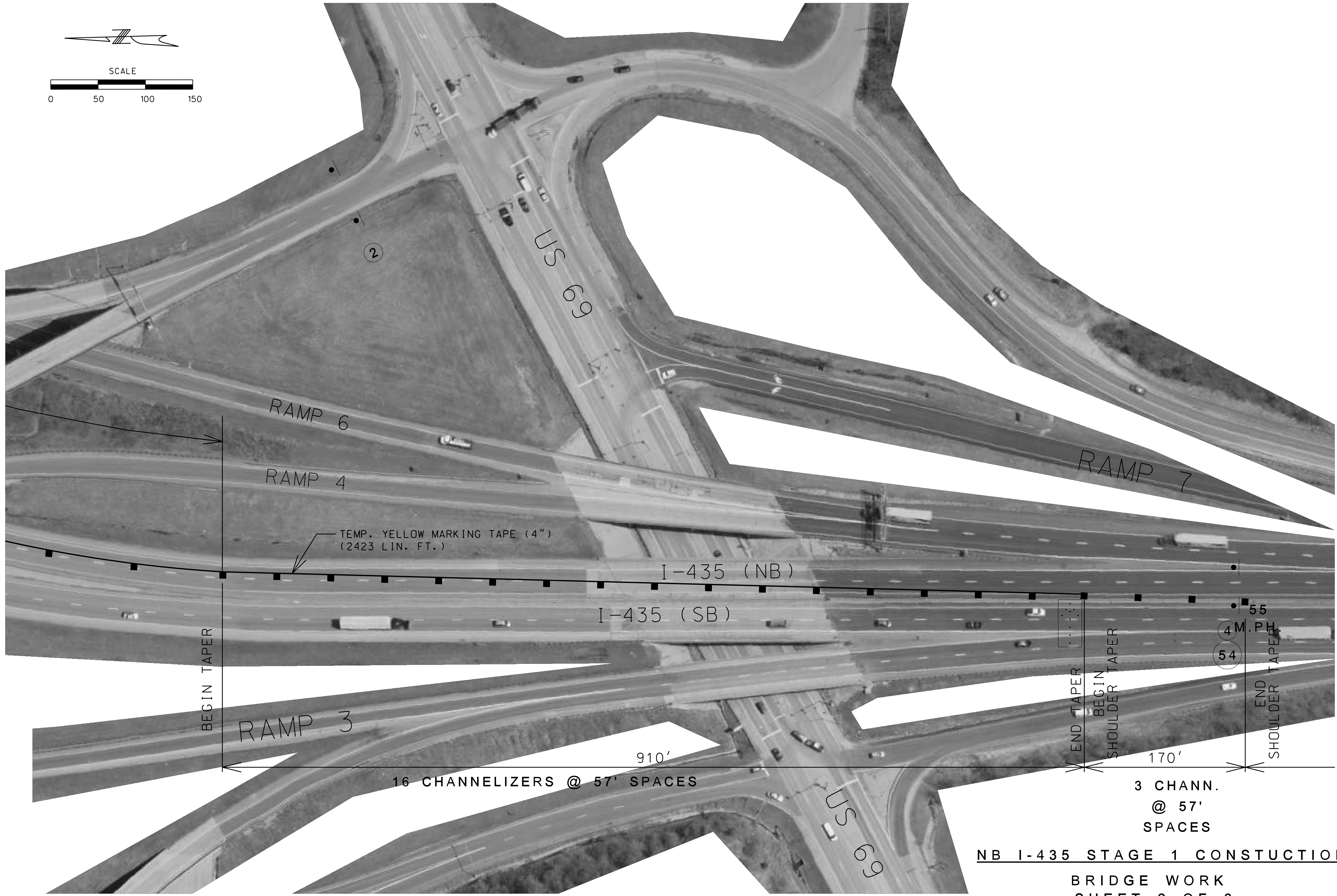
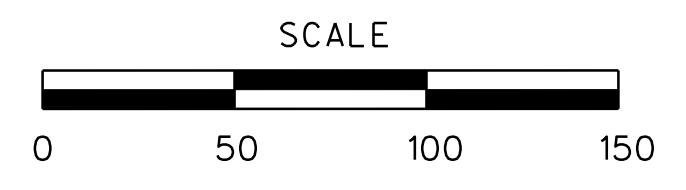
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

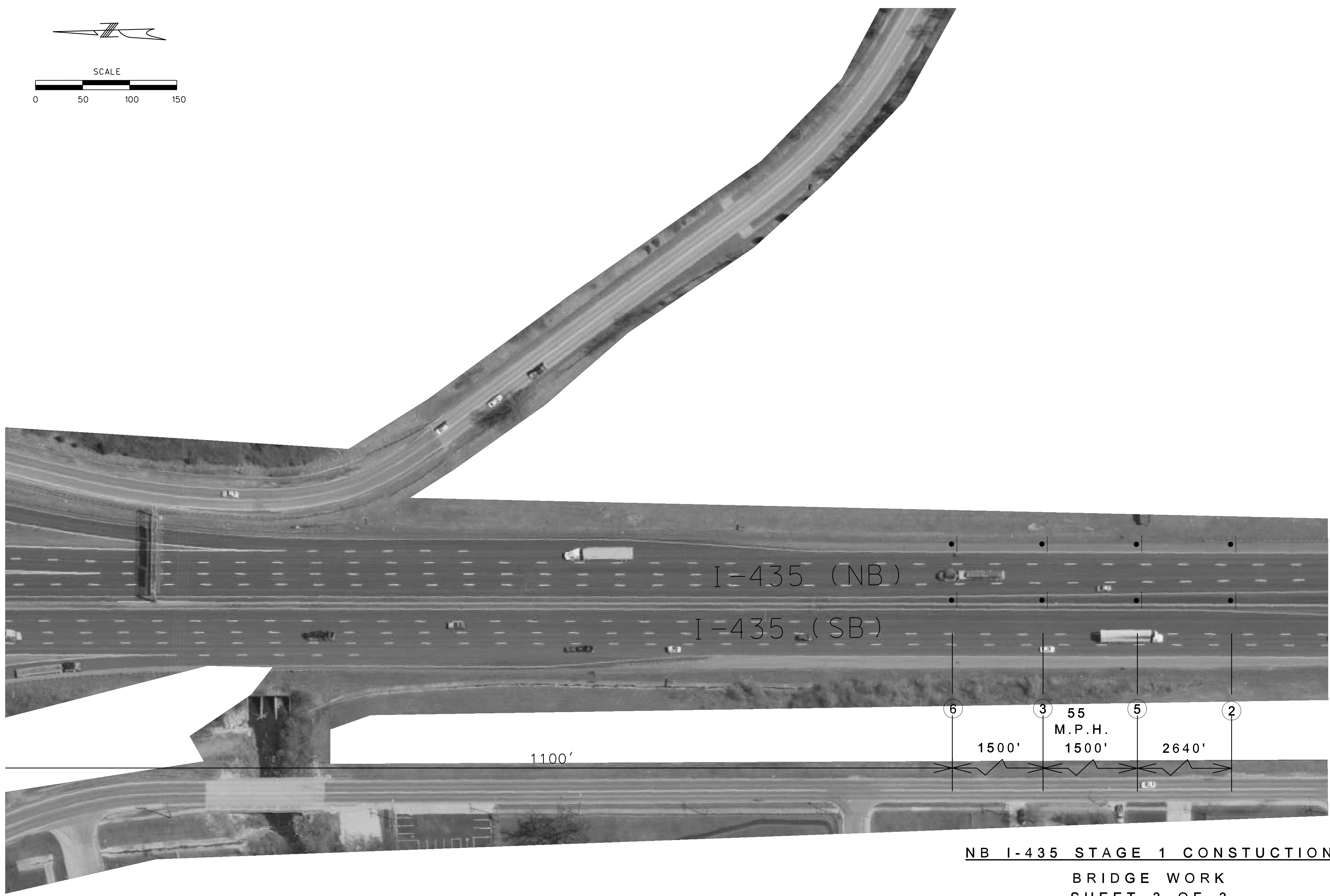
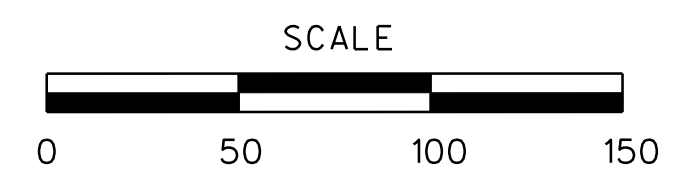
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



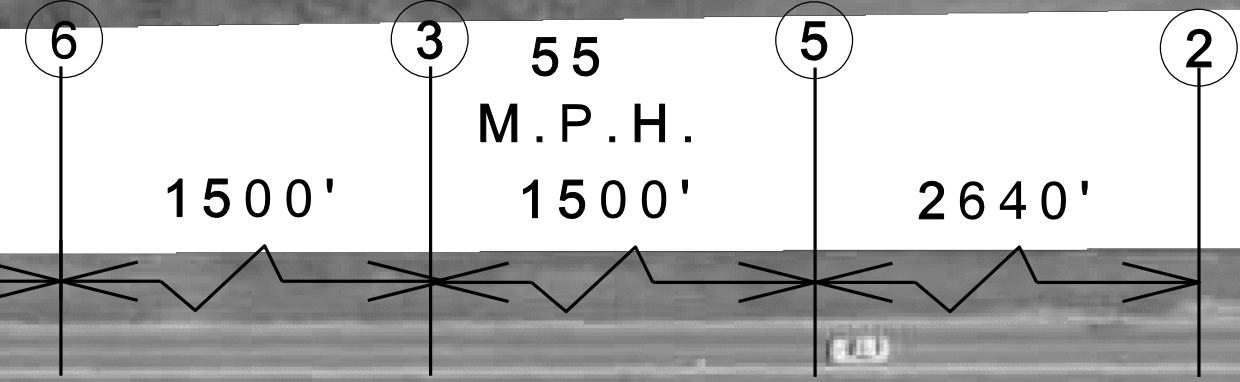
**NB I-435 STAGE 1 CONSTRUCTION**

**BRIDGE WORK  
SHEET 2 OF 3**

**TRAFFIC CONTROL SHEET 31 OF 55**



1100'



**NB I-435 STAGE 1 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 3 OF 3**  
**TRAFFIC CONTROL SHEET 32 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO  
DISTRICT SHEET NO.  
KC 36

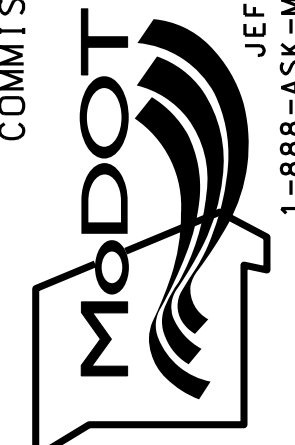
COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

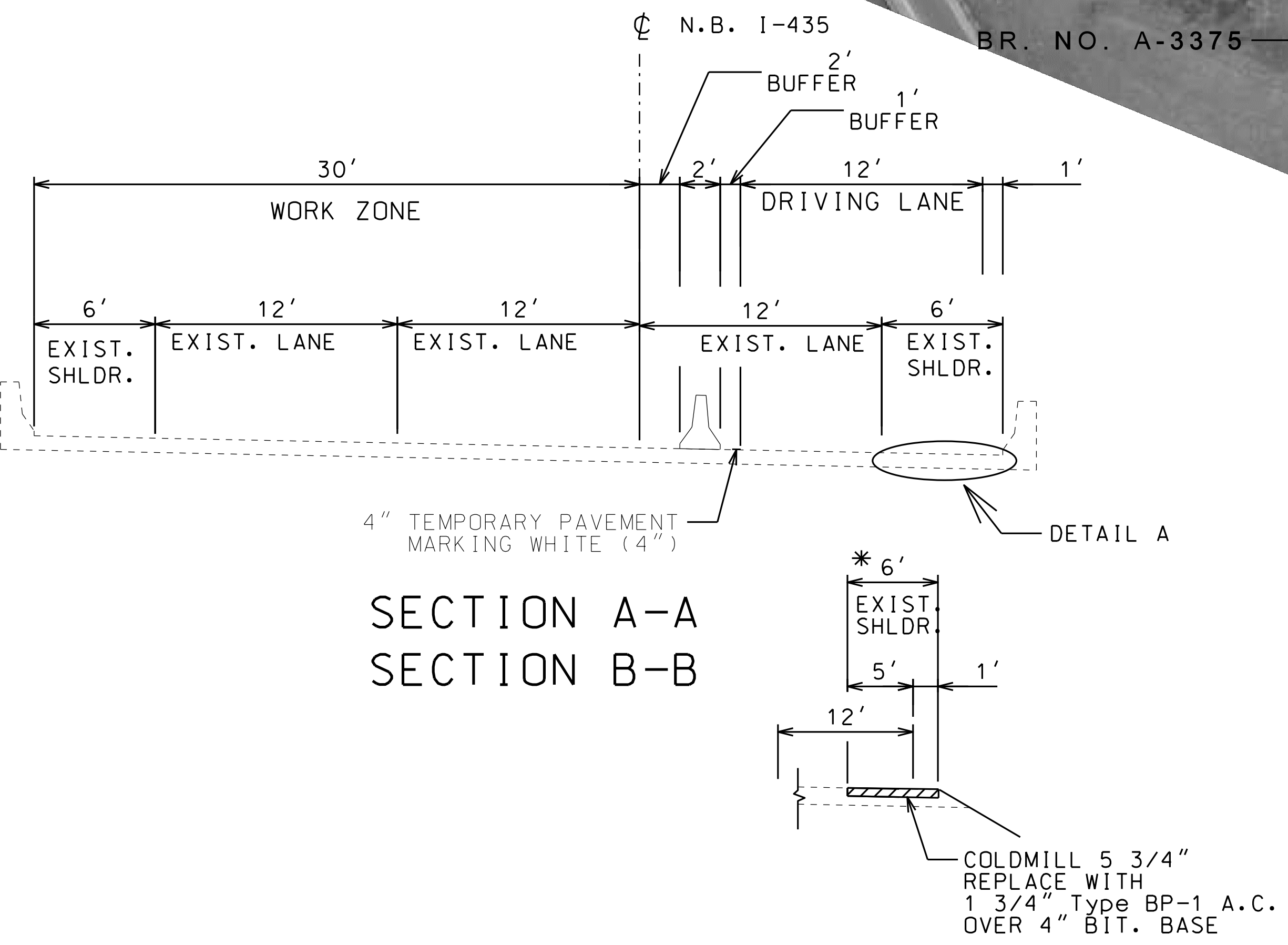
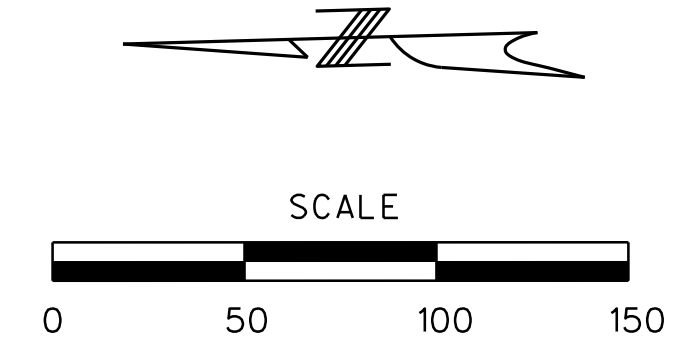
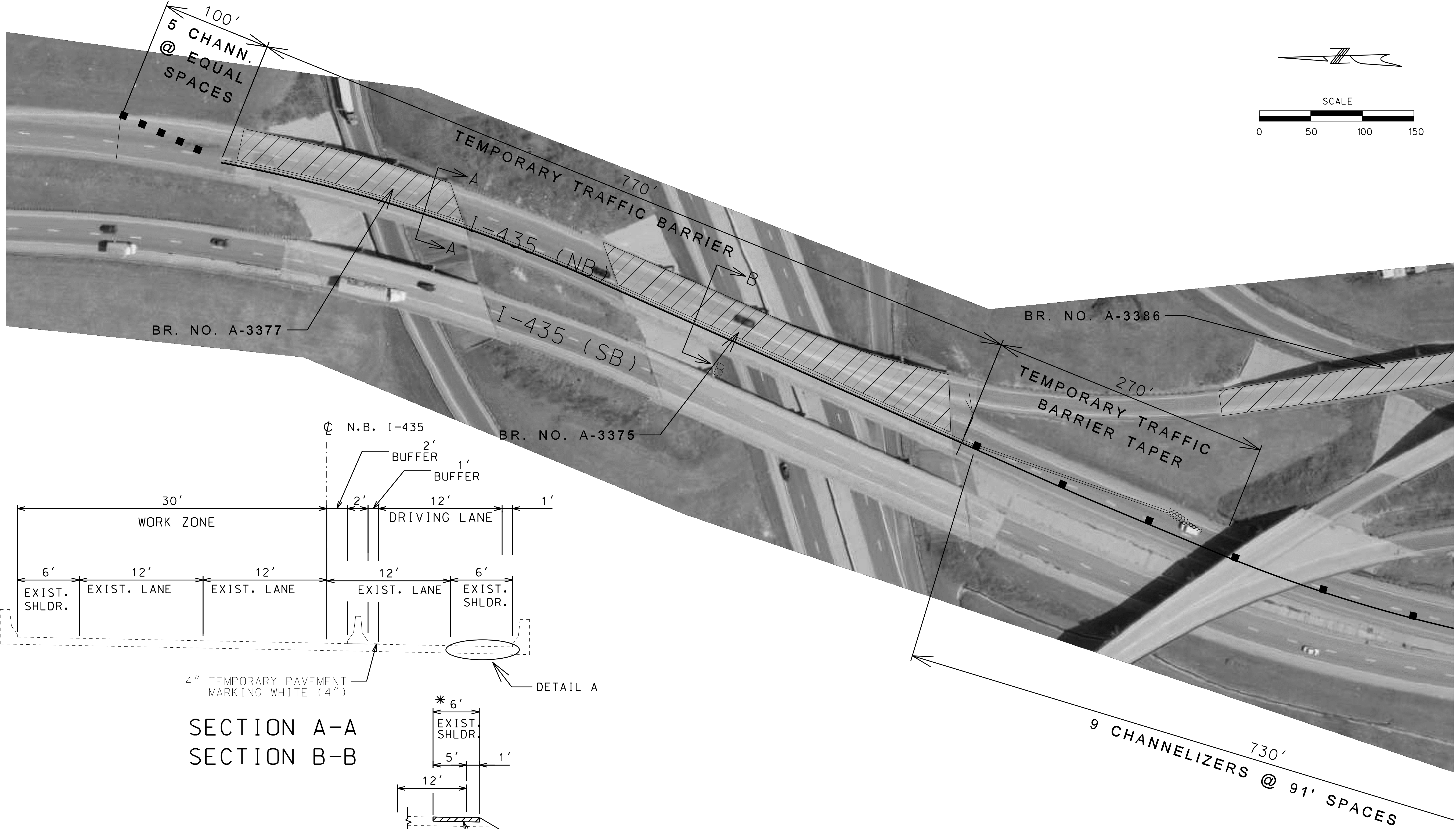
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



4" TEMPORARY PAVEMENT MARKING WHITE (4")

SECTION A-A  
SECTION B-B

DETAIL A  
ASPHALTIC SHOULDER

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE

**NB I-435 STAGE 2 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 1 OF 4**  
**TRAFFIC CONTROL SHEET 33 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

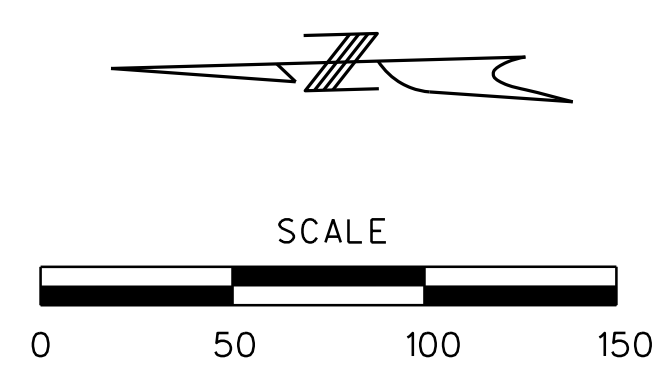
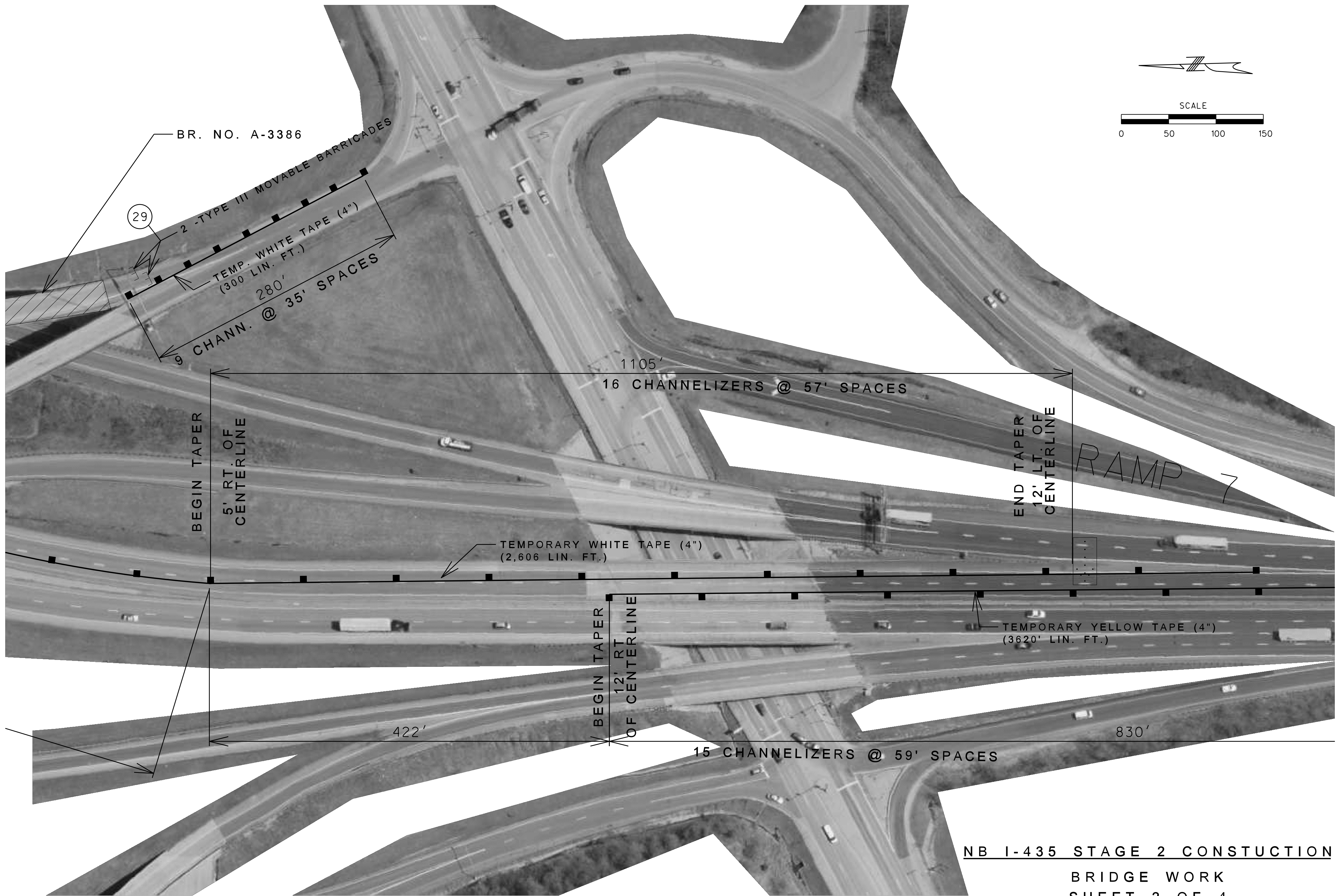
DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 37
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO  
DISTRICT SHEET NO.  
KC 38

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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


NB I-435 STAGE 2 CONSTRUCTION  
 BRIDGE WORK  
 SHEET 2 OF 4  
 TRAFFIC CONTROL SHEET 34 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 39
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

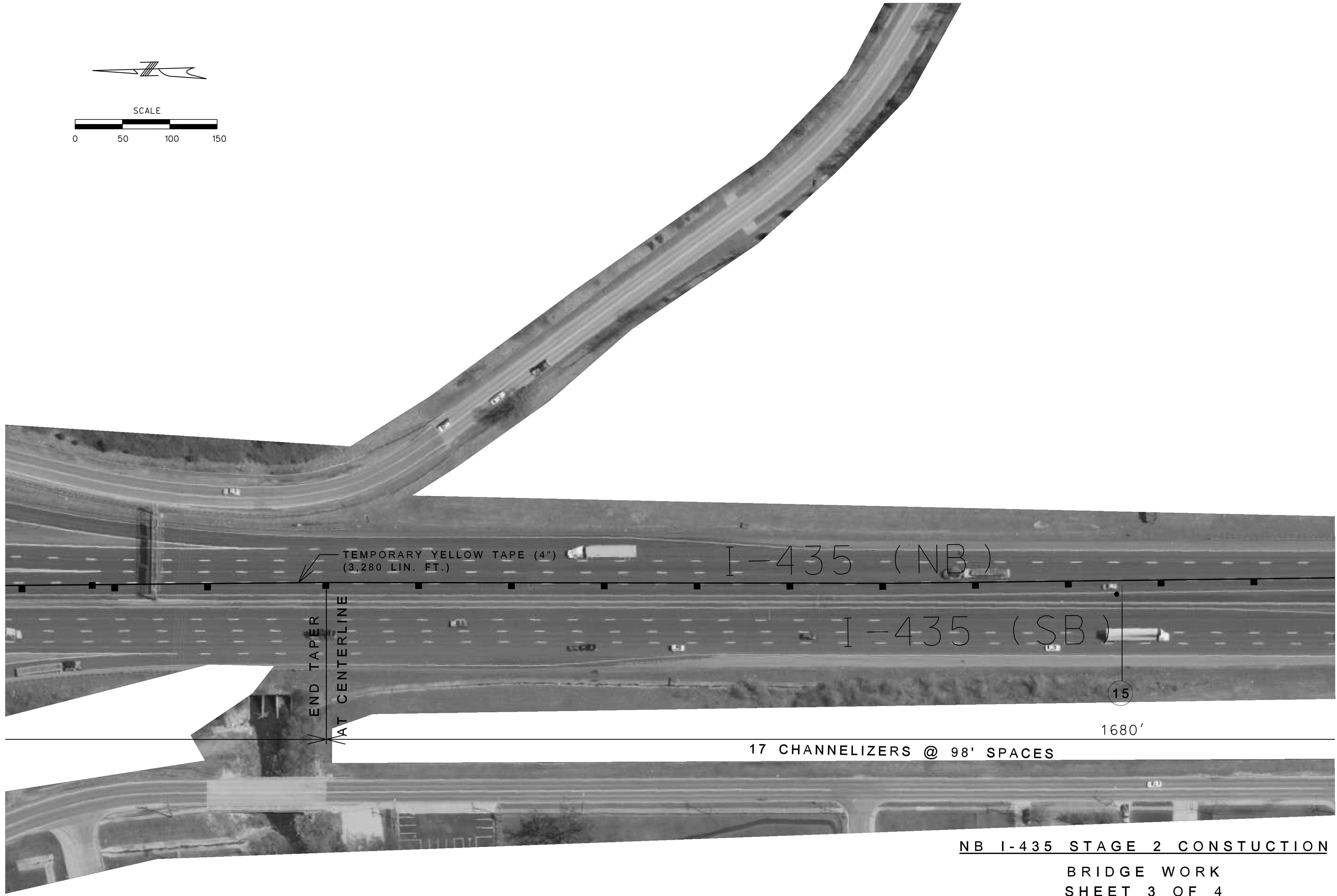
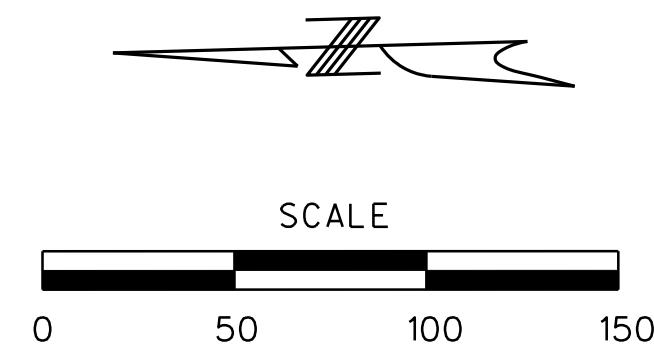
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



TEMPORARY YELLOW TAPE (4")  
(3,280 LIN. FT.)

I-435 (NB)

I-435 (SB)

END TAPER  
AT CENTERLINE

15

1680'

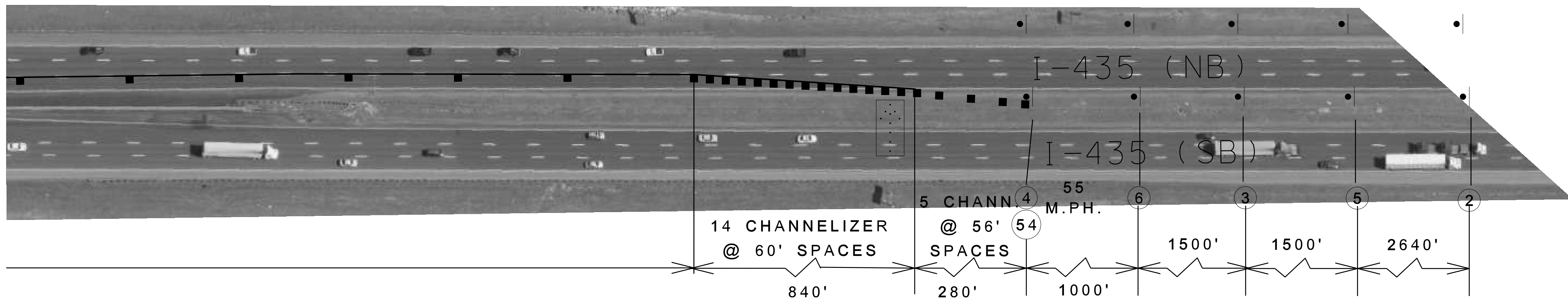
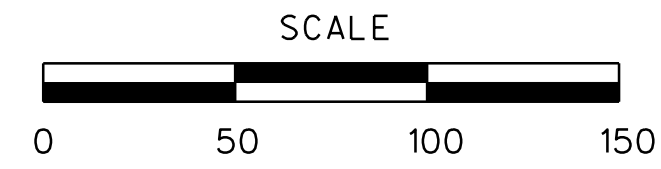
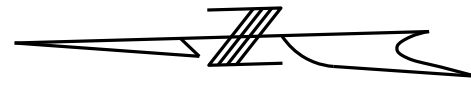
17 CHANNELIZERS @ 98' SPACES

NB I-435 STAGE 2 CONSTRUCTION

BRIDGE WORK

SHEET 3 OF 4

TRAFFIC CONTROL SHEET 35 OF 55



**NB I-435 STAGE 2 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 4 OF 4**  
**TRAFFIC CONTROL SHEET 36 OF 55**

THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 40

COUNTY  
CLAY

JOB NO.  
J412381


CONTRACT ID.

PROJECT NO.

BRIDGE NO.

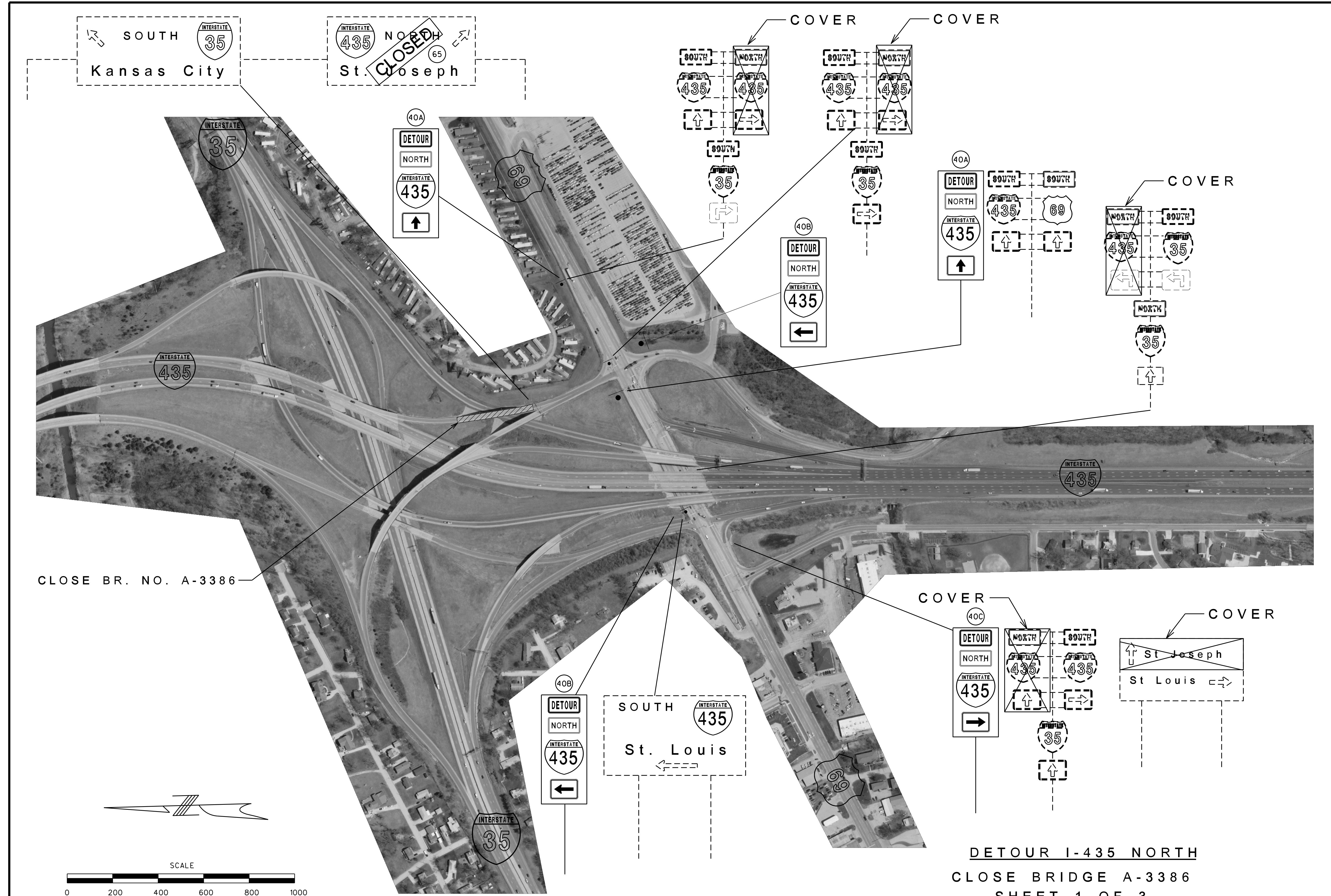
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

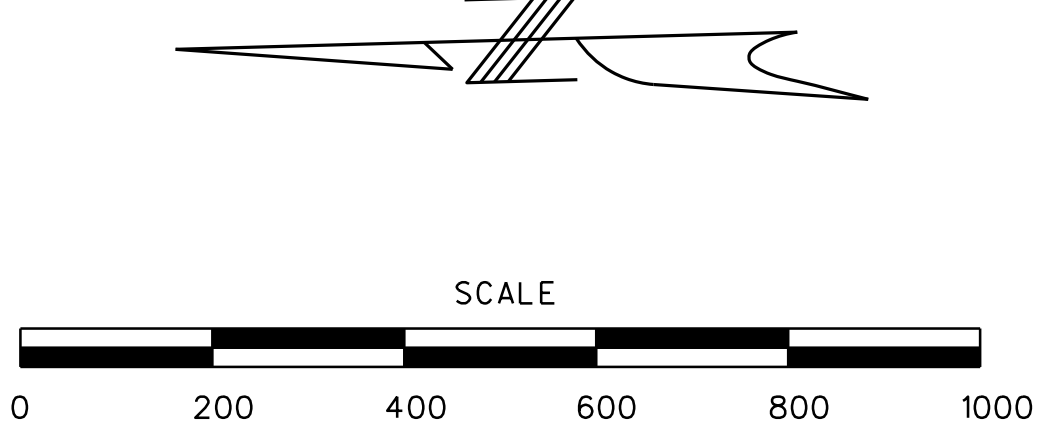


105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



CLOSE BR. NO. A-3386



DETOUR I-435 NORTH  
 CLOSE BRIDGE A-3386  
 SHEET 1 OF 3

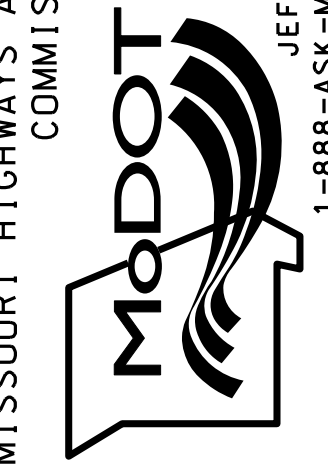
TRAFFIC CONTROL SHEET 37 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
 12/14/2012  
 ROUTE STATE  
 VAR. MO  
 DISTRICT SHEET NO.  
 KC 41  
 COUNTY  
 CLAY  
 JOB NO.  
 J412381  
 CONTRACT ID.  
 PROJECT NO.  
 BRIDGE NO.

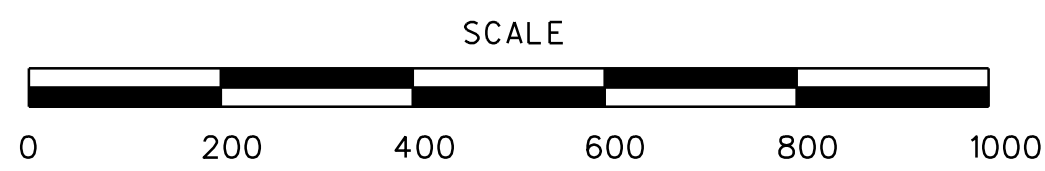
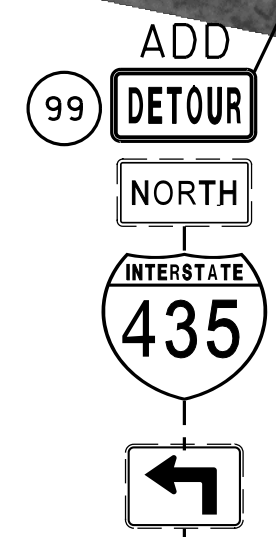
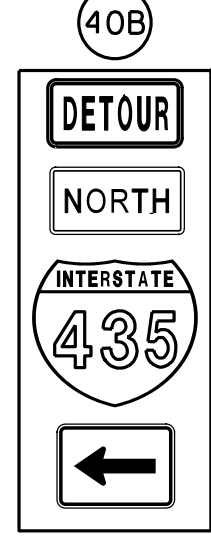
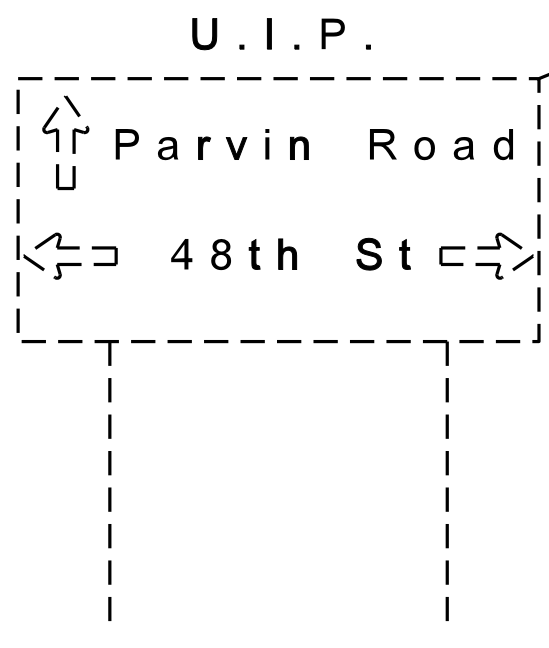
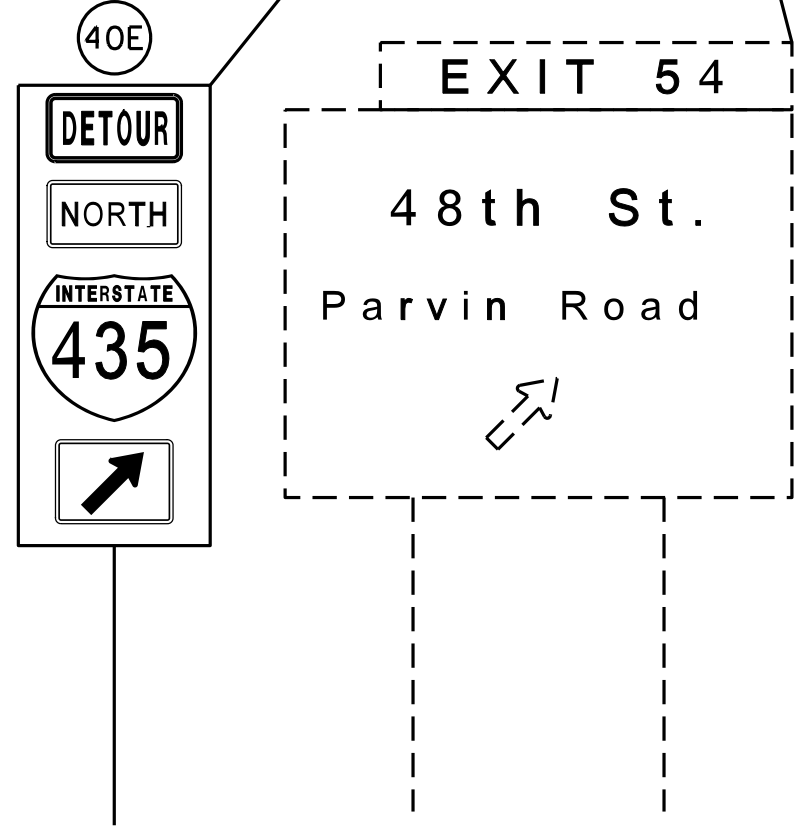
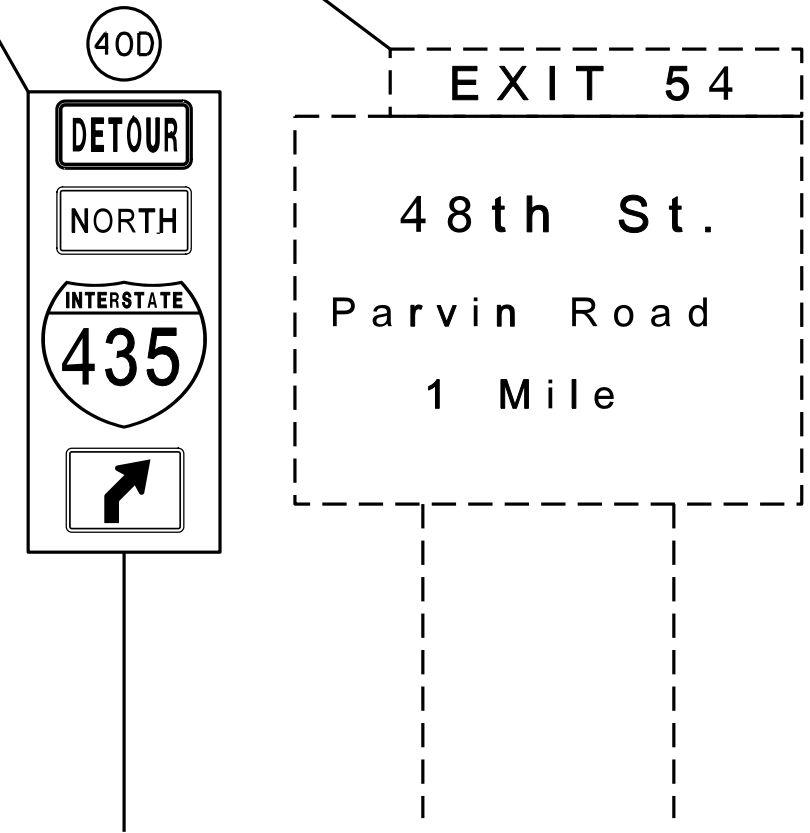
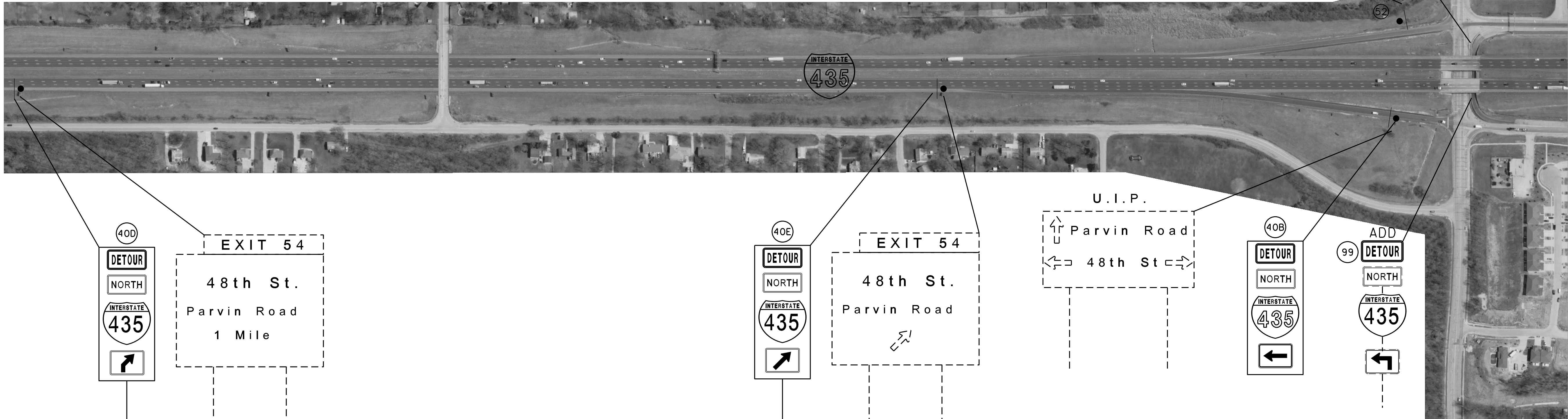
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL JEFFERSON CITY, MO 65102  
 1-888-ASK-MO DOT (1-888-273-6636)



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






**DETOUR I-435 NORTH**  
**CLOSE BRIDGE A-3386**  
**SHEET 2 OF 3**  
**TRAFFIC CONTROL SHEET 38 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 42
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

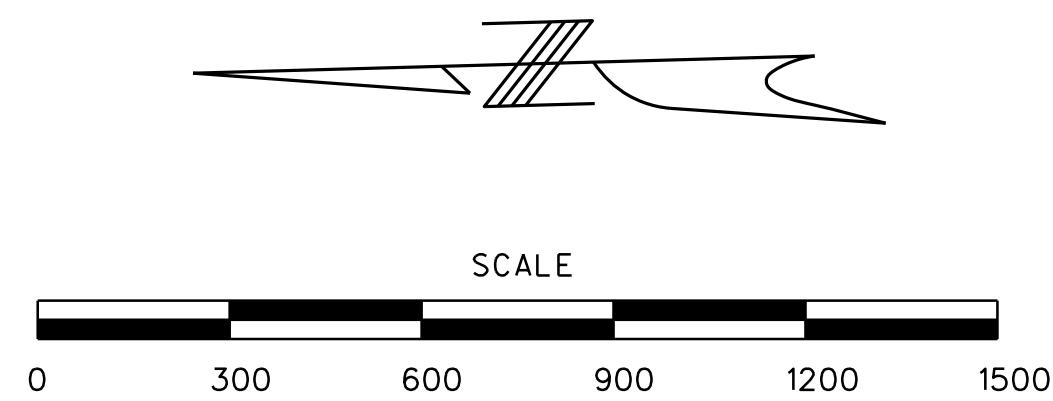
DATE	DESCRIPTION



MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION




105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



 SOUTH  
 NORTH  
 RIGHT LANES

SOUTH  
  
 LEFT LANE

  
**END  
 DETOUR**


**DETOUR I-435 NORTH**  
**CLOSE BRIDGE A-3386**  
**SHEET 3 OF 3**

**TRAFFIC CONTROL SHEET 39 OF 55**

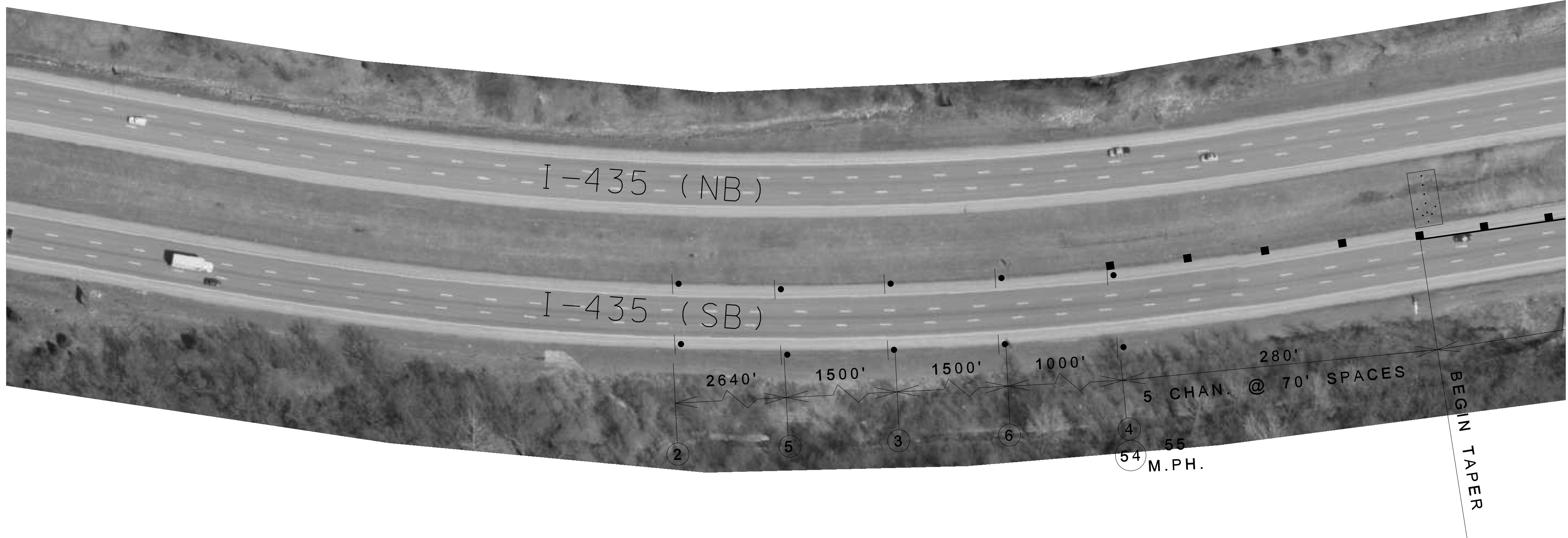
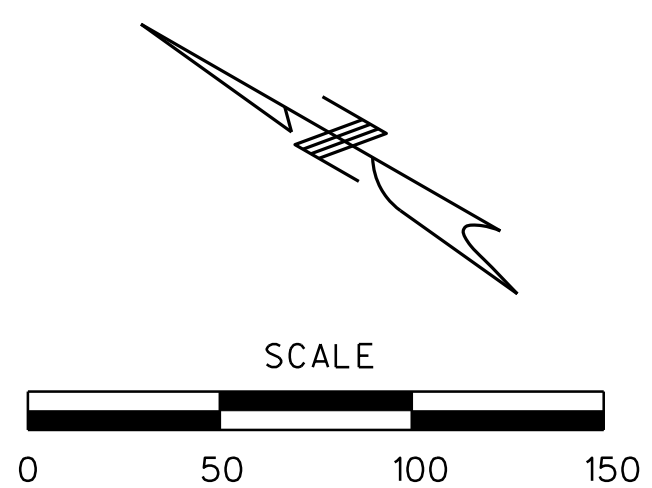
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
 12/14/2012  
 ROUTE STATE  
 VAR. MO  
 DISTRICT SHEET NO.  
 KC 43  
 COUNTY  
 CLAY  
 JOB NO.  
 J412381  
 CONTRACT ID.  
 MO  
 PROJECT NO.  
 BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION  
 COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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



**SB I-435 STAGE 1 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 1 OF 3**  
**TRAFFIC CONTROL SHEET 40 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 44

COUNTY  
CLAY

JOB NO.  
J412381

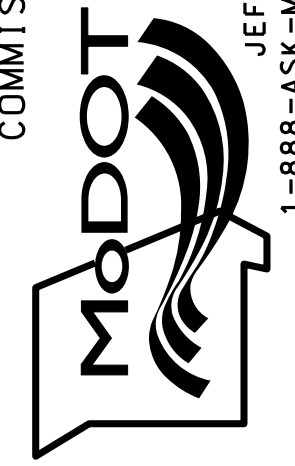
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

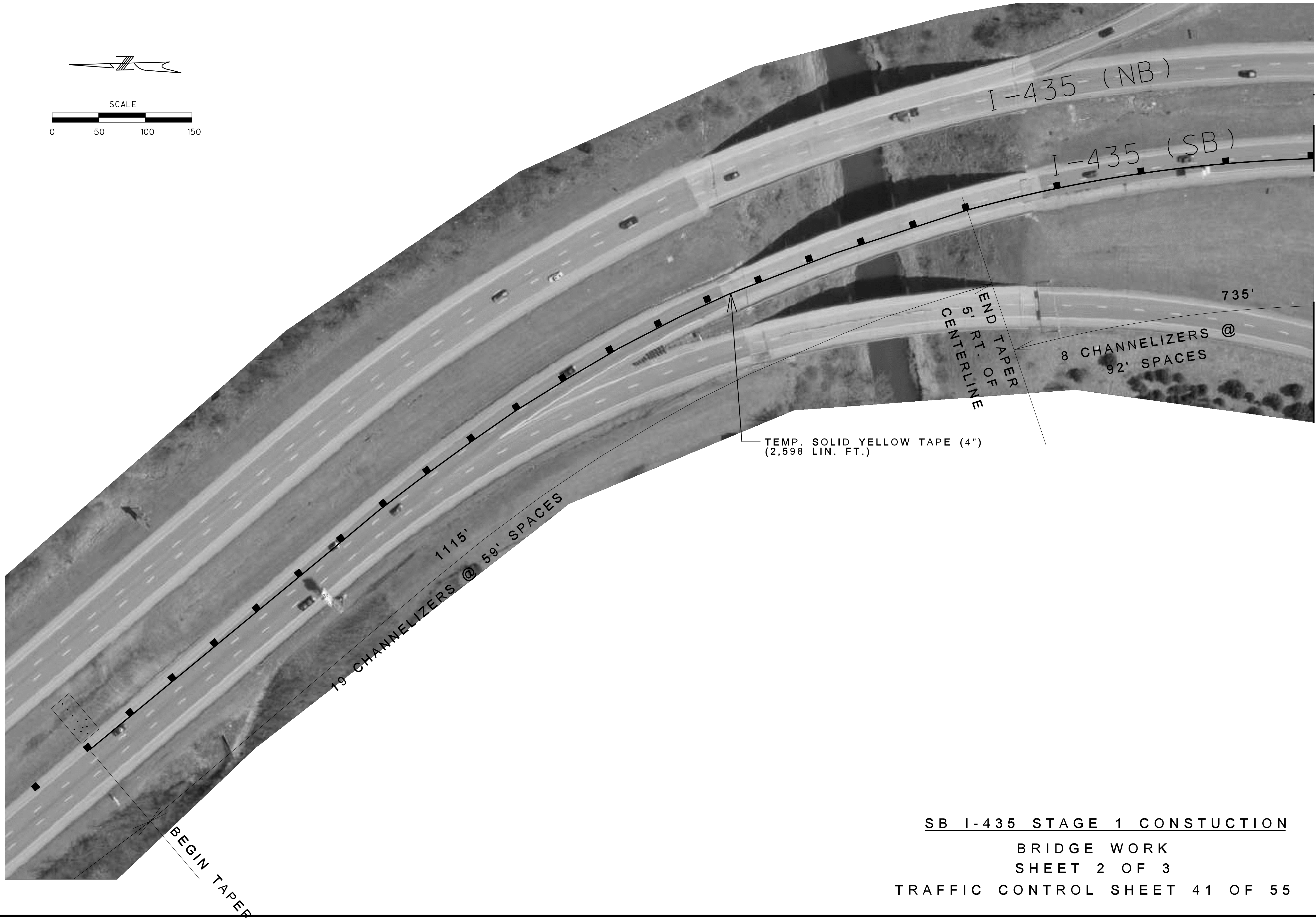
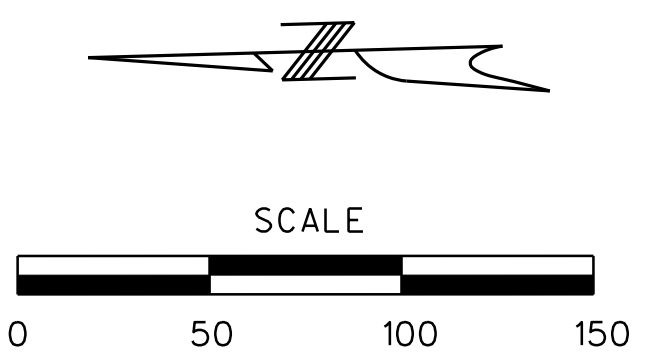
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED		1/15/2013	
ROUTE	STATE	MO	
VAR.	MO		
DISTRICT	SHEET NO.	45	
KC	45		
COUNTY			
CLAY			
JOB NO.			
J412381			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			

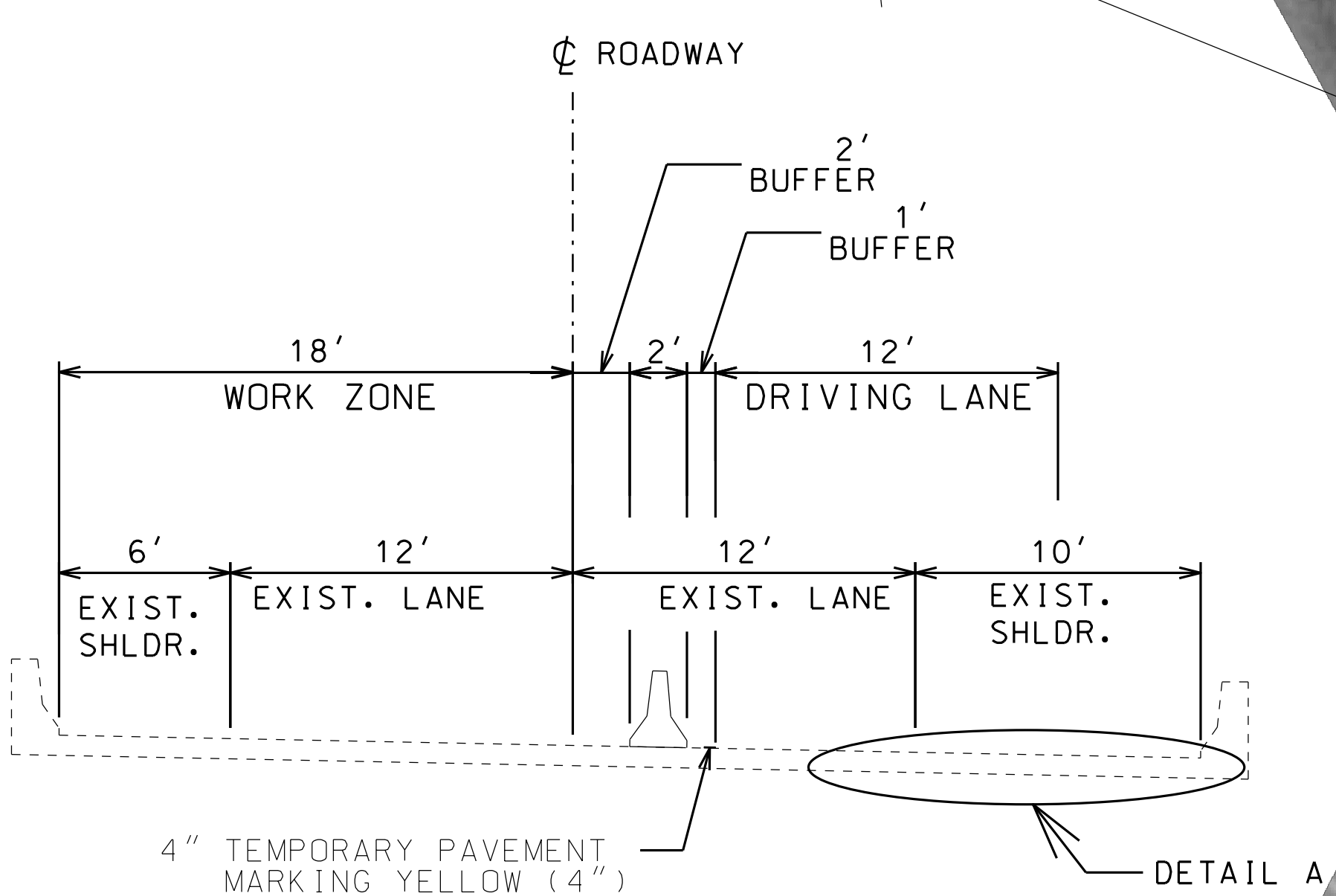
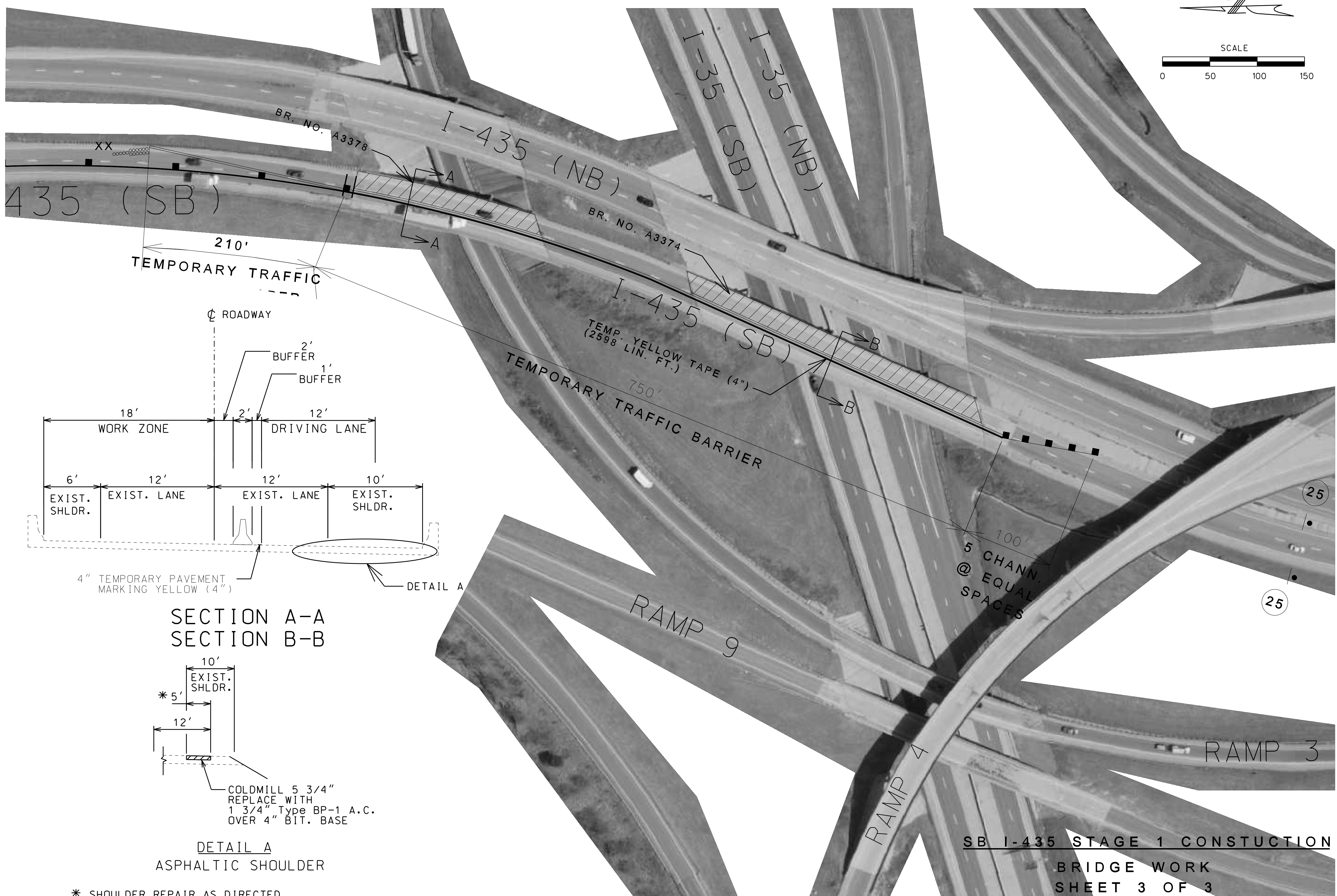
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

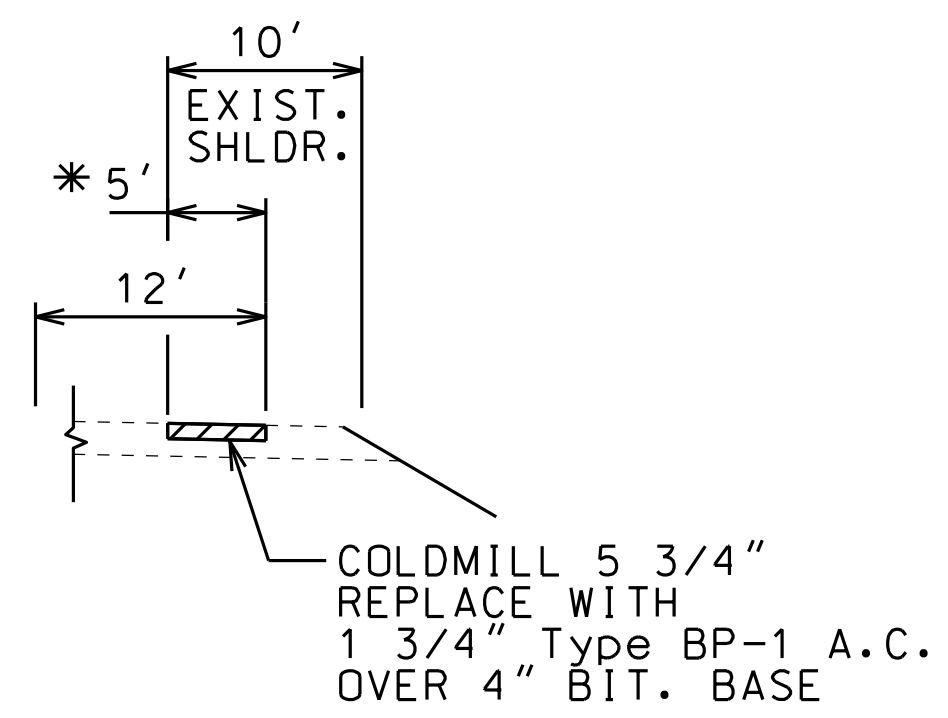
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

**SB I-435 STAGE 1 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 2 OF 3**  
**TRAFFIC CONTROL SHEET 41 OF 55**

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



SECTION A-A  
SECTION B-B



DETAIL A  
ASPHALTIC SHOULDER

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE

SB I-435 STAGE 1 CONSTRUCTION  
BRIDGE WORK  
SHEET 3 OF 3  
TRAFFIC CONTROL SHEET 42 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	
1/15/2013	
ROUTE	STATE
VAR.	MO
DISTRICT	SHEET NO.
KC	46
COUNTY	
CLAY	
JOB NO.	
J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 47

COUNTY  
CLAY

JOB NO.  
J412381

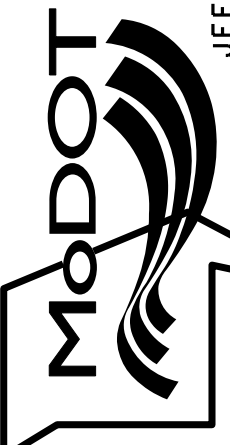
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

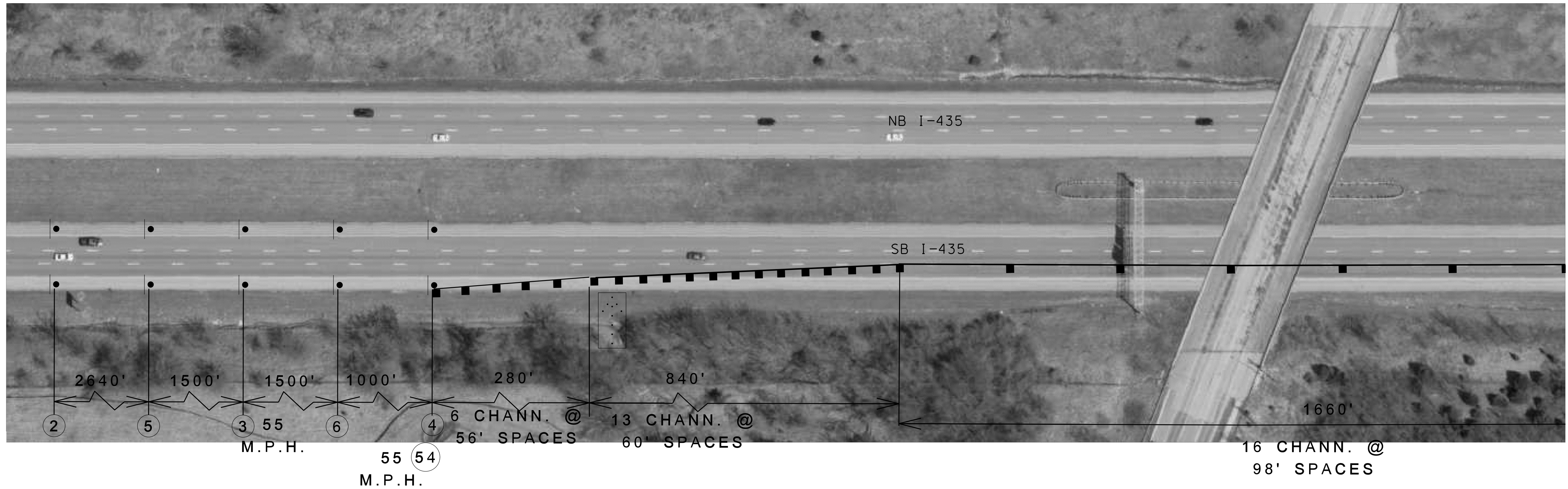
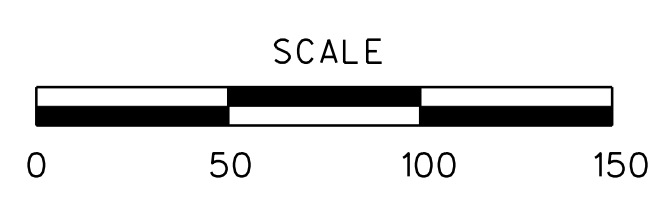
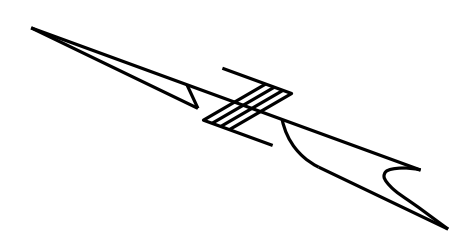
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

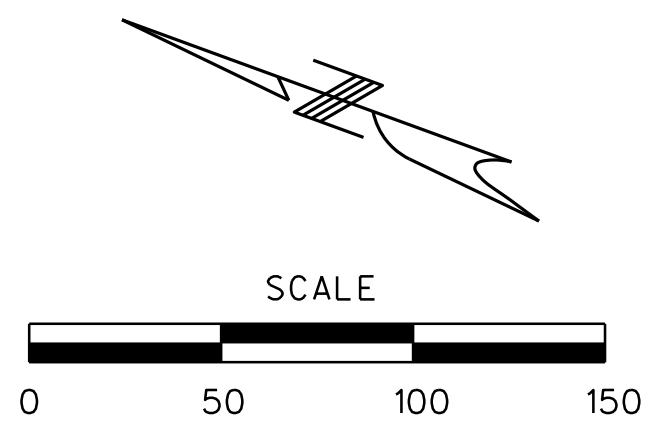


105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



**SB I-435 STAGE 2 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 1 OF 4**  
**TRAFFIC CONTROL SHEET 43 OF 55**



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE	STATE
VAR.	MO
DISTRICT	SHEET NO.
KC	48

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.

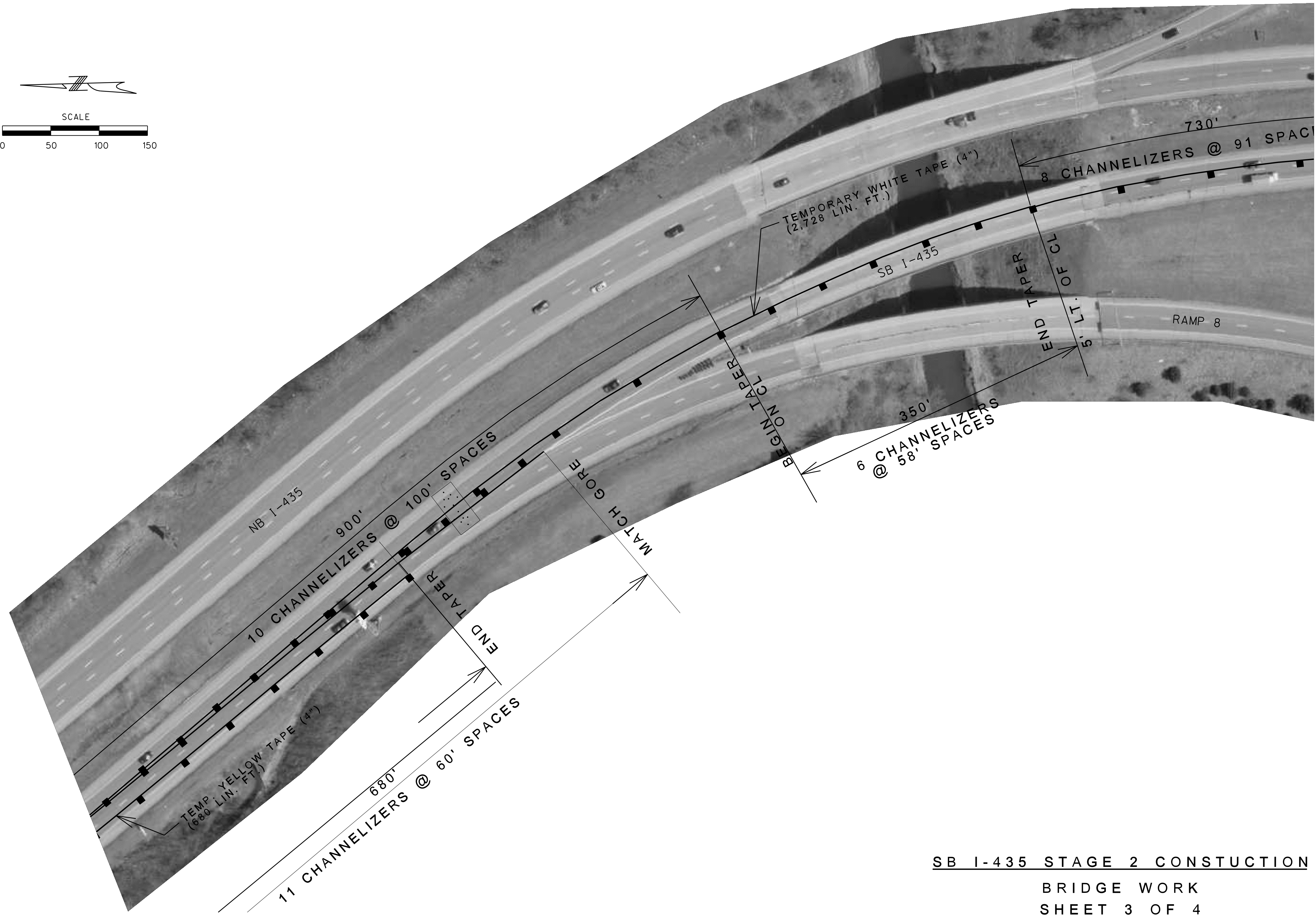
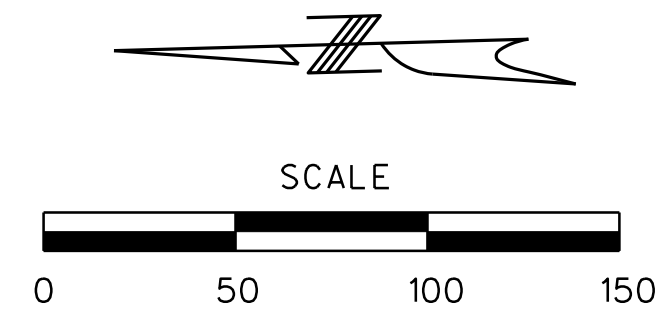
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

SB I-435 STAGE 2 CONSTRUCTION  
 BRIDGE WORK  
 SHEET 2 OF 4  
 TRAFFIC CONTROL SHEET 44 OF 55




**SB I-435 STAGE 2 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 3 OF 4**  
**TRAFFIC CONTROL SHEET 45 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

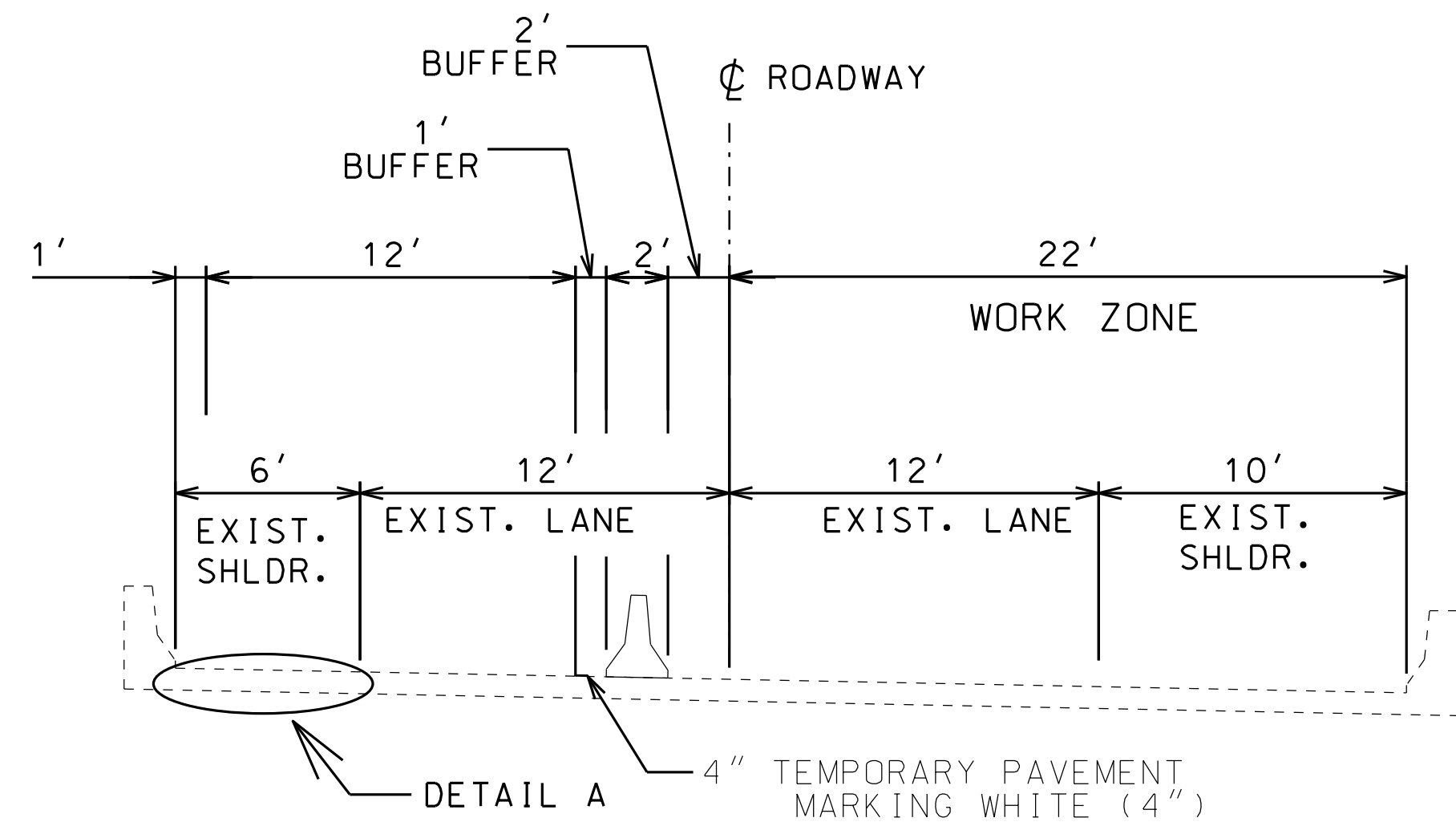
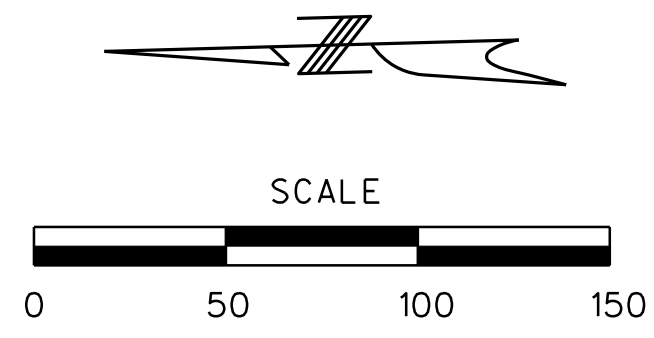
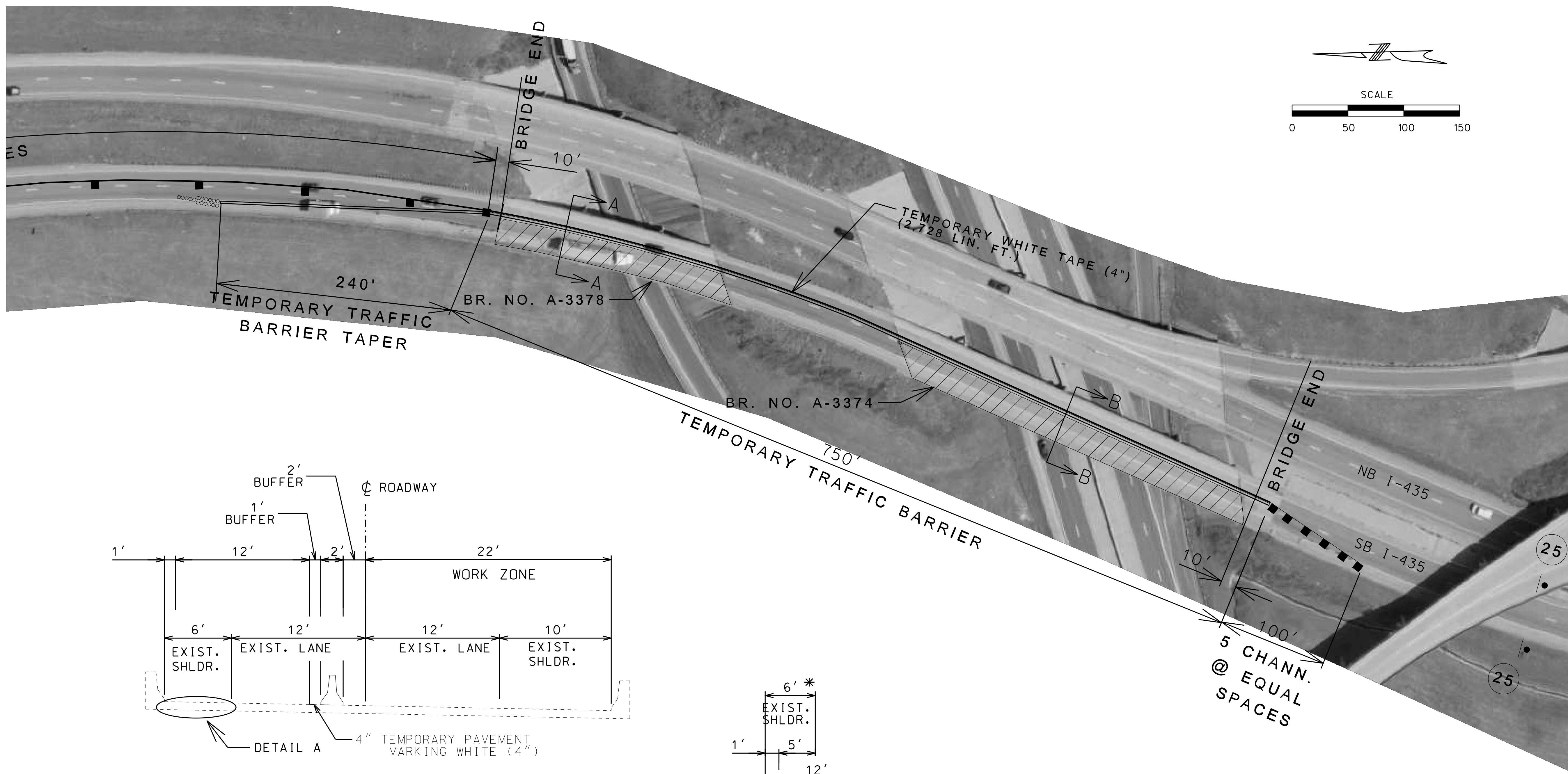
DATE PREPARED  
**12/14/2012**  
 ROUTE STATE  
**VAR. MO**  
 DISTRICT SHEET NO.  
**KC 49**  
 COUNTY  
**CLAY**  
 JOB NO.  
**J412381**  
 CONTRACT ID.

DATE	DESCRIPTION

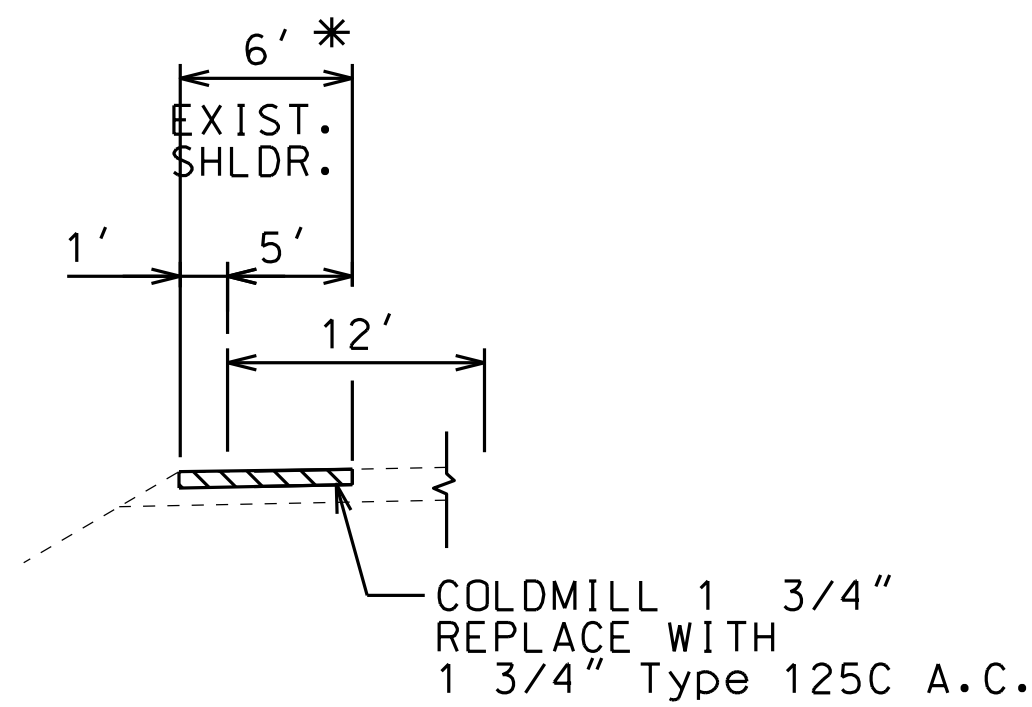
MISSOURI HIGHWAYS AND TRANSPORTATION  
 COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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





SECTION A-A  
SECTION B-B



DETAIL A  
ASPHALTIC SHOULDER

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE

**SB I-435 STAGE 2 CONSTRUCTION**

BRIDGE WORK  
SHEET 4 OF 4

TRAFFIC CONTROL SHEET 46 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

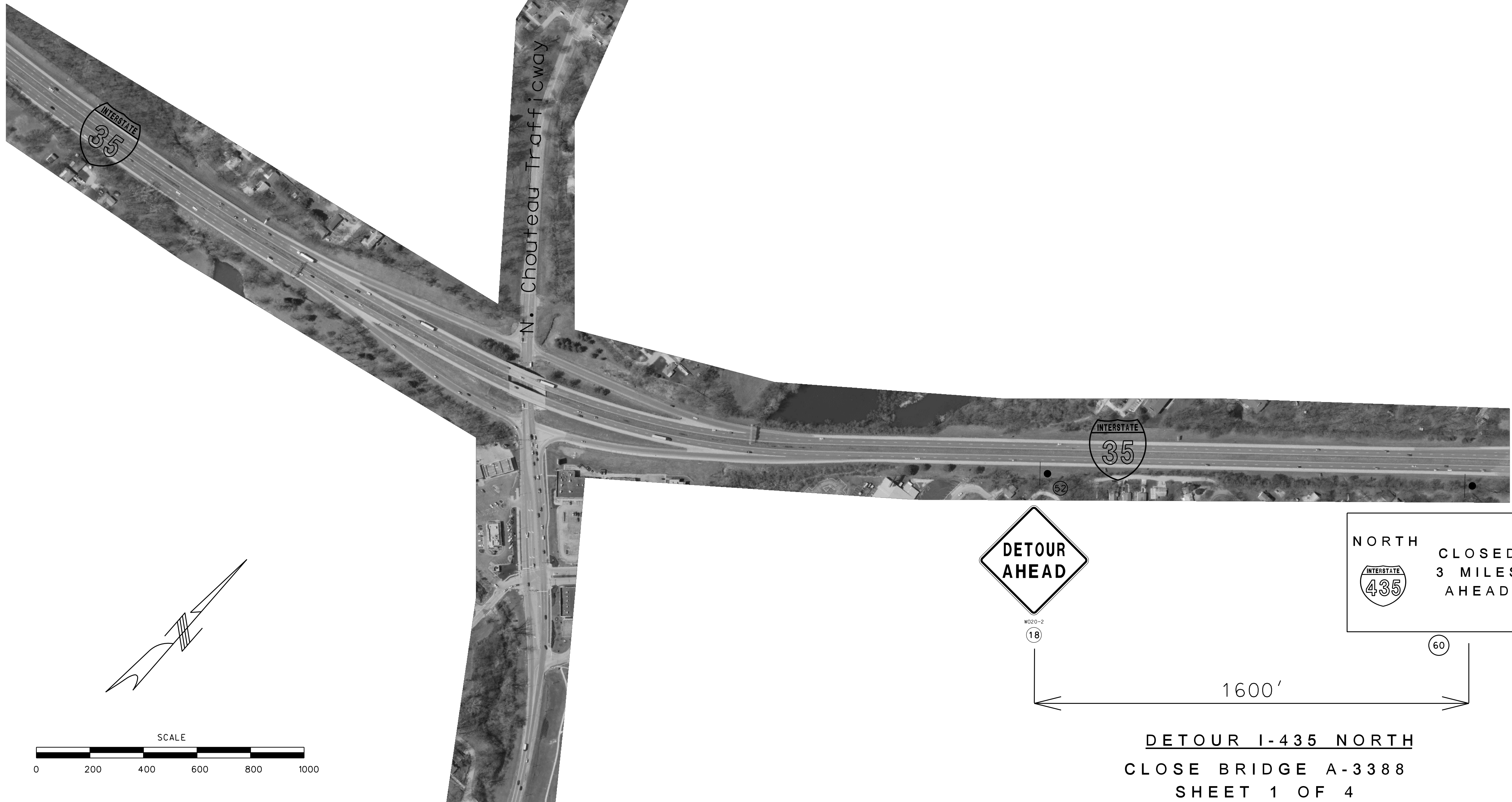
DATE PREPARED 1/15/2013	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 50
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 51

COUNTY  
CLAY

JOB NO.  
J412381


CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

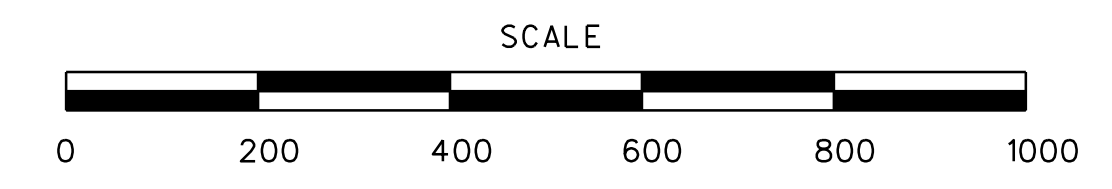
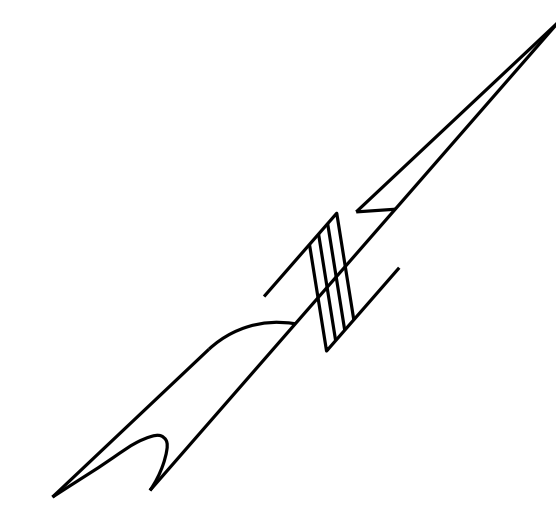
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

**DETOUR I-435 NORTH**  
**CLOSE BRIDGE A-3388**  
**SHEET 1 OF 4**  
**TRAFFIC CONTROL SHEET 47 OF 55**



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 52

COUNTY  
CLAY

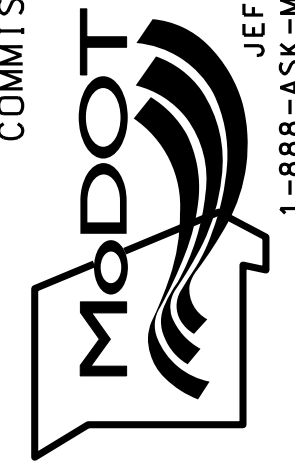
JOB NO.  
J412381

CONTRACT ID.

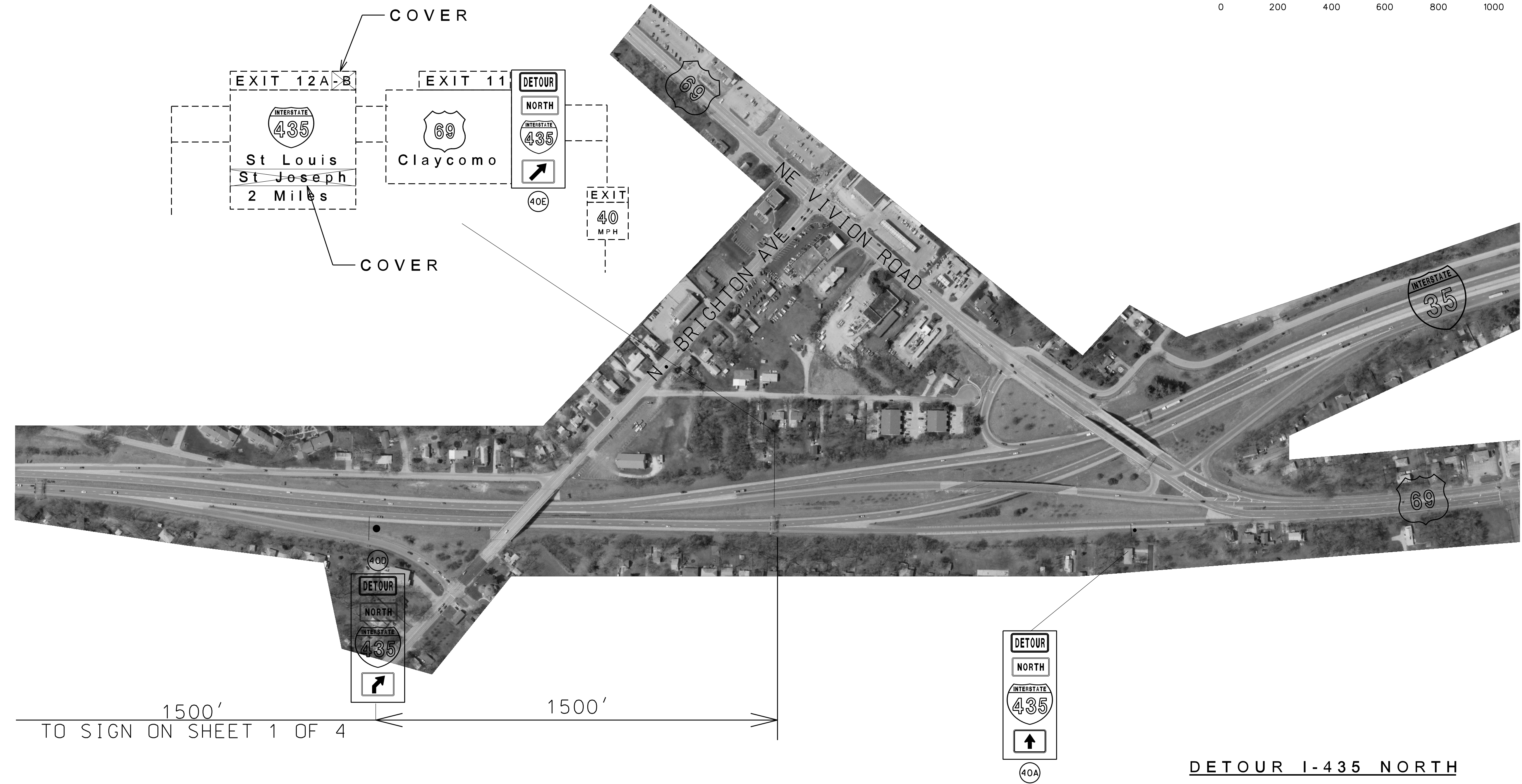
PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

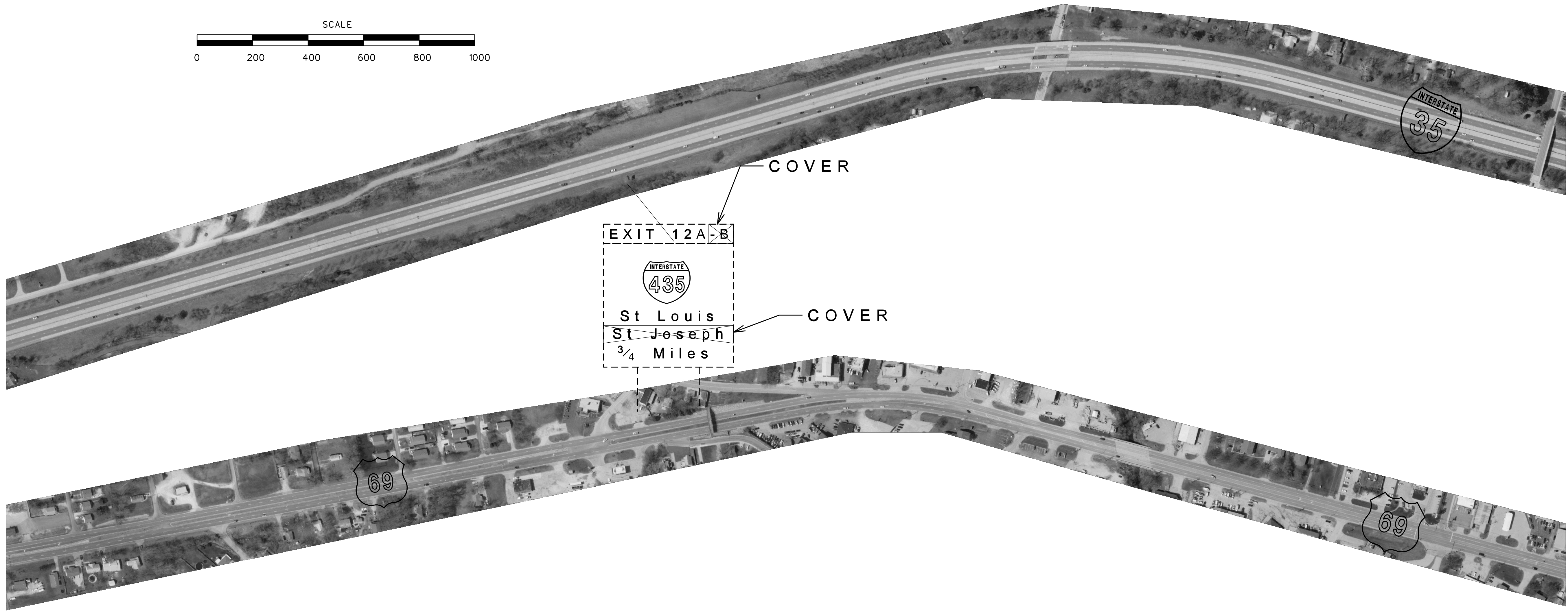
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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



1500' TO SIGN ON SHEET 1 OF 4      1500'

**DETOUR I-435 NORTH**  
**CLOSE BRIDGE A-3388**  
**SHEET 2 OF 4**  
**TRAFFIC CONTROL SHEET 48 OF 55**



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 53

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

**DETOUR I-435 NORTH**

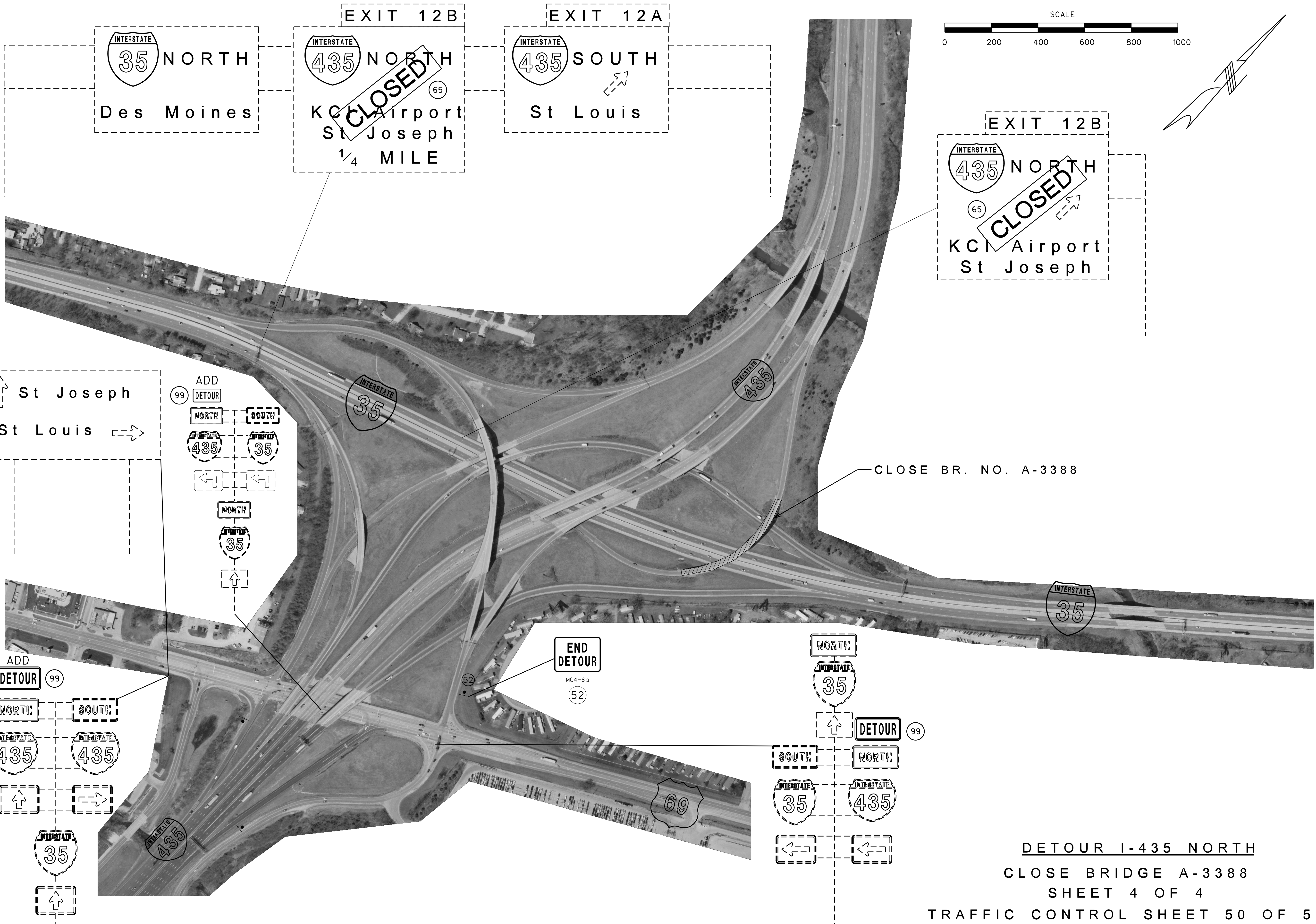
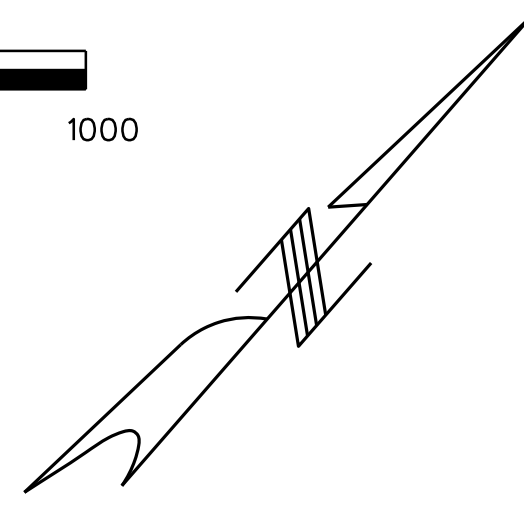
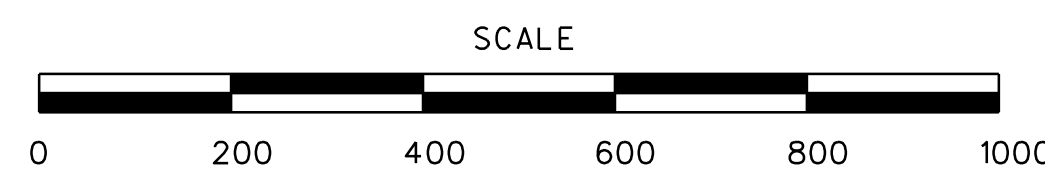
**CLOSE BRIDGE A-3388**

**SHEET 3 OF 4**

**TRAFFIC CONTROL SHEET 49 OF 55**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 54
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

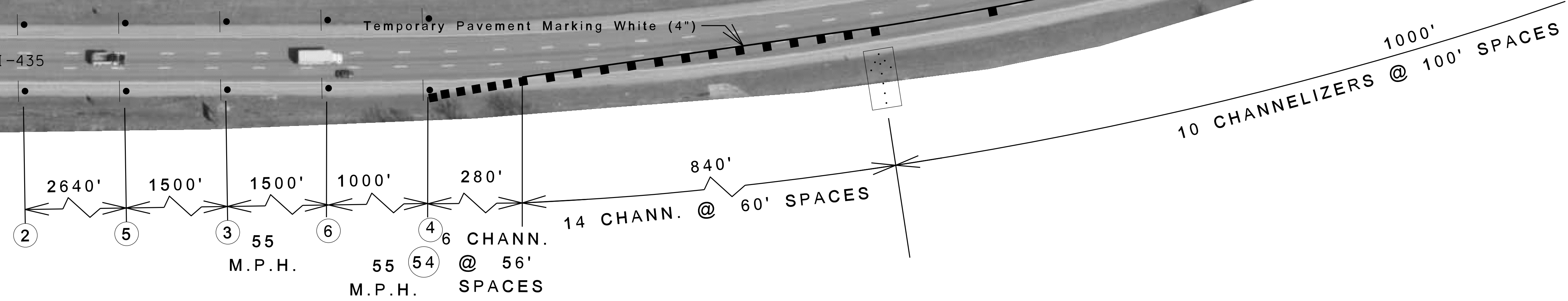
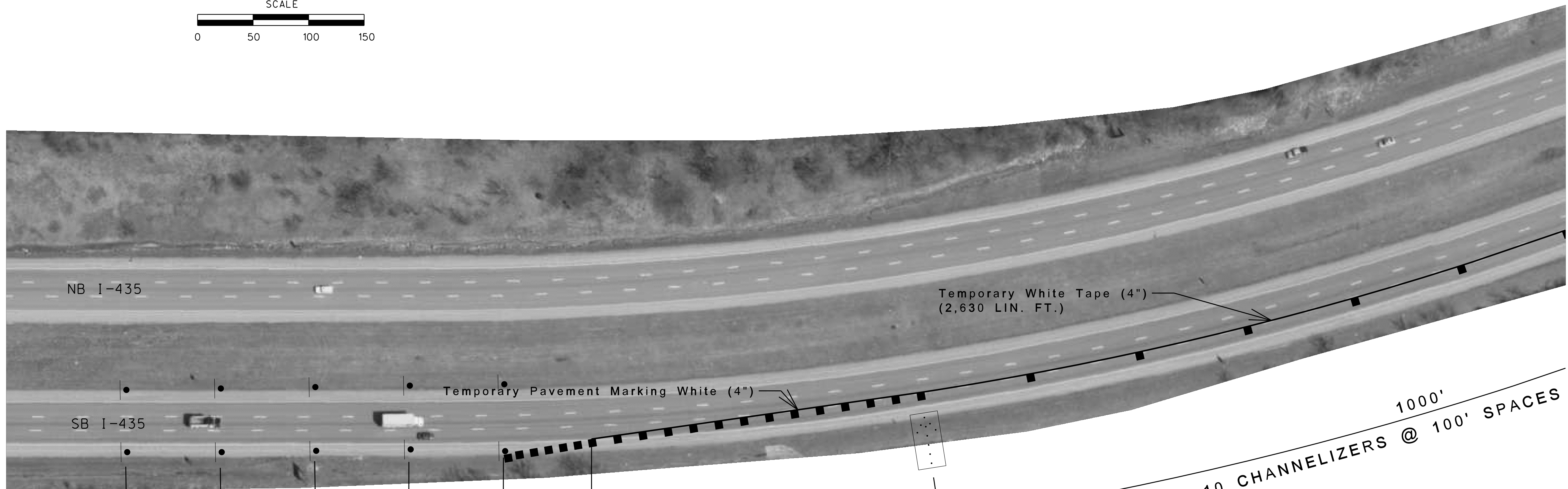
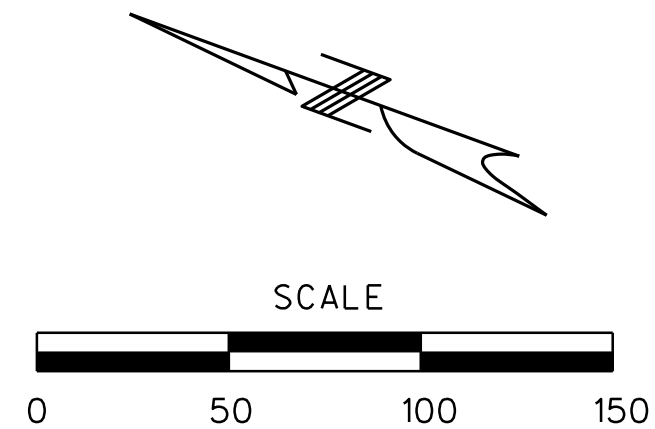


DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/15/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 55

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

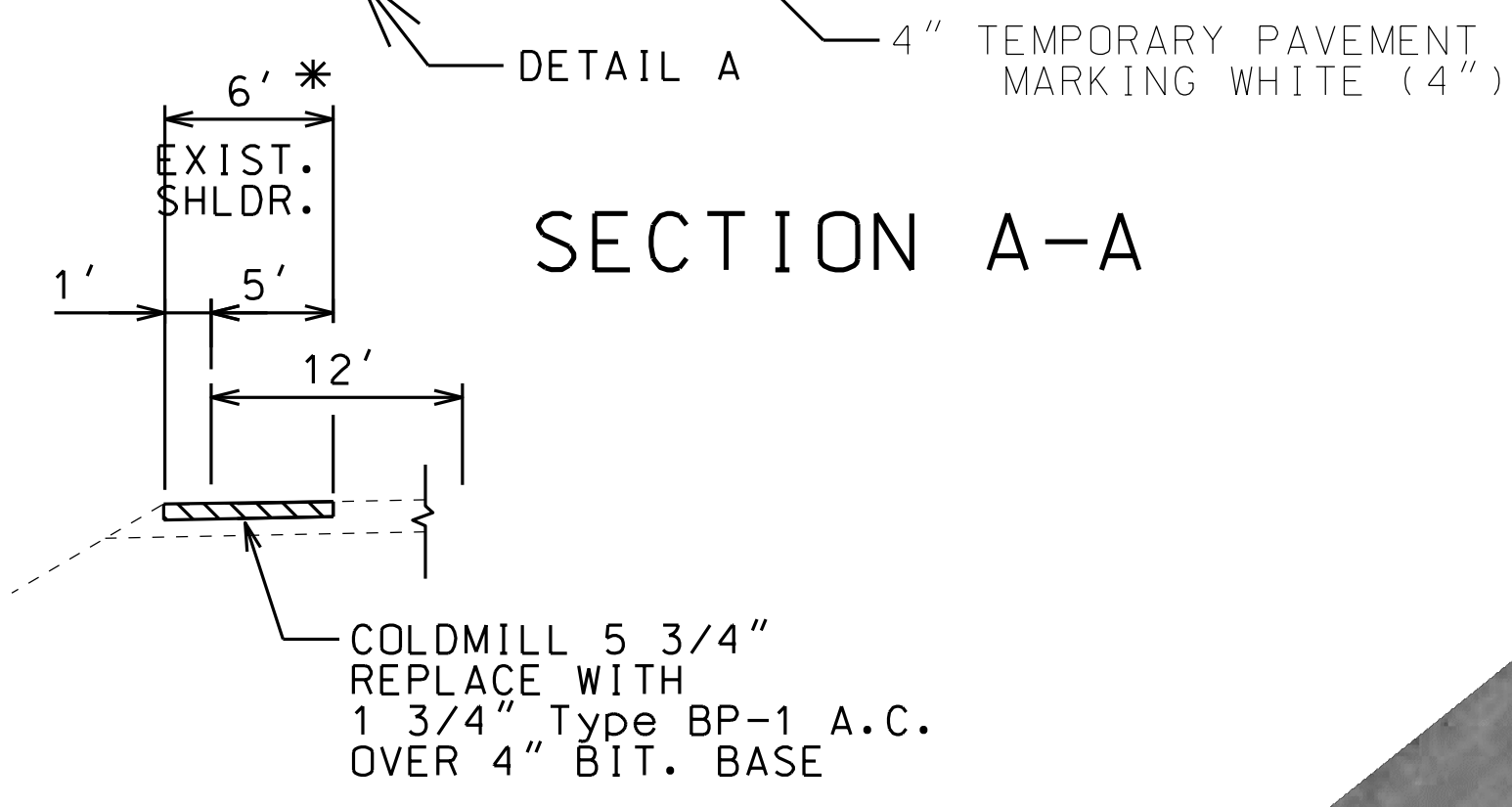
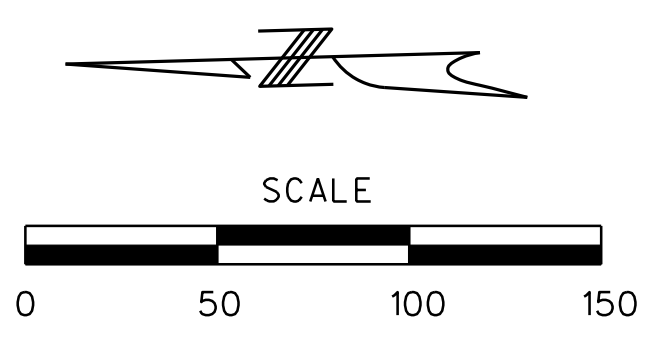
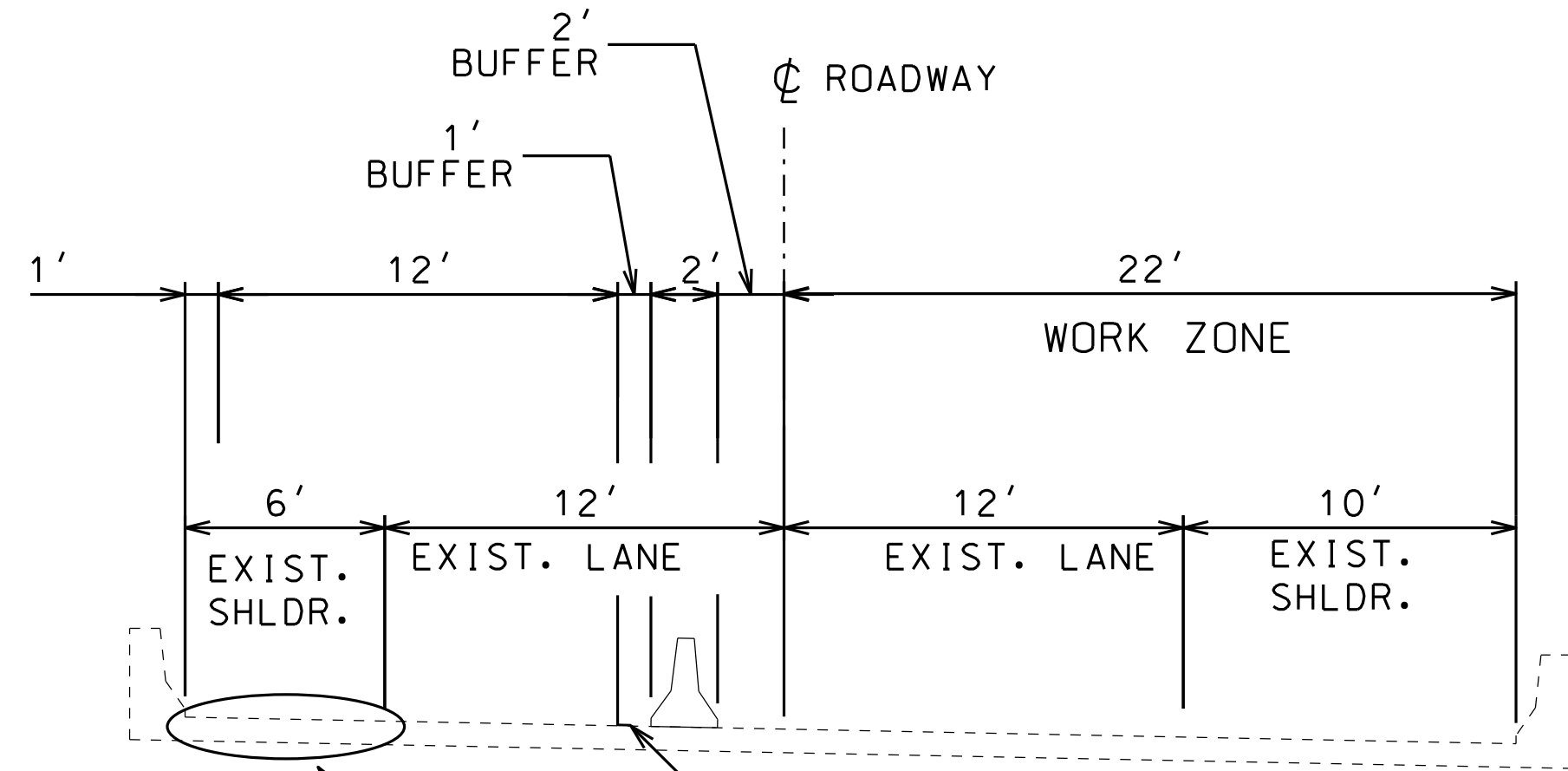
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

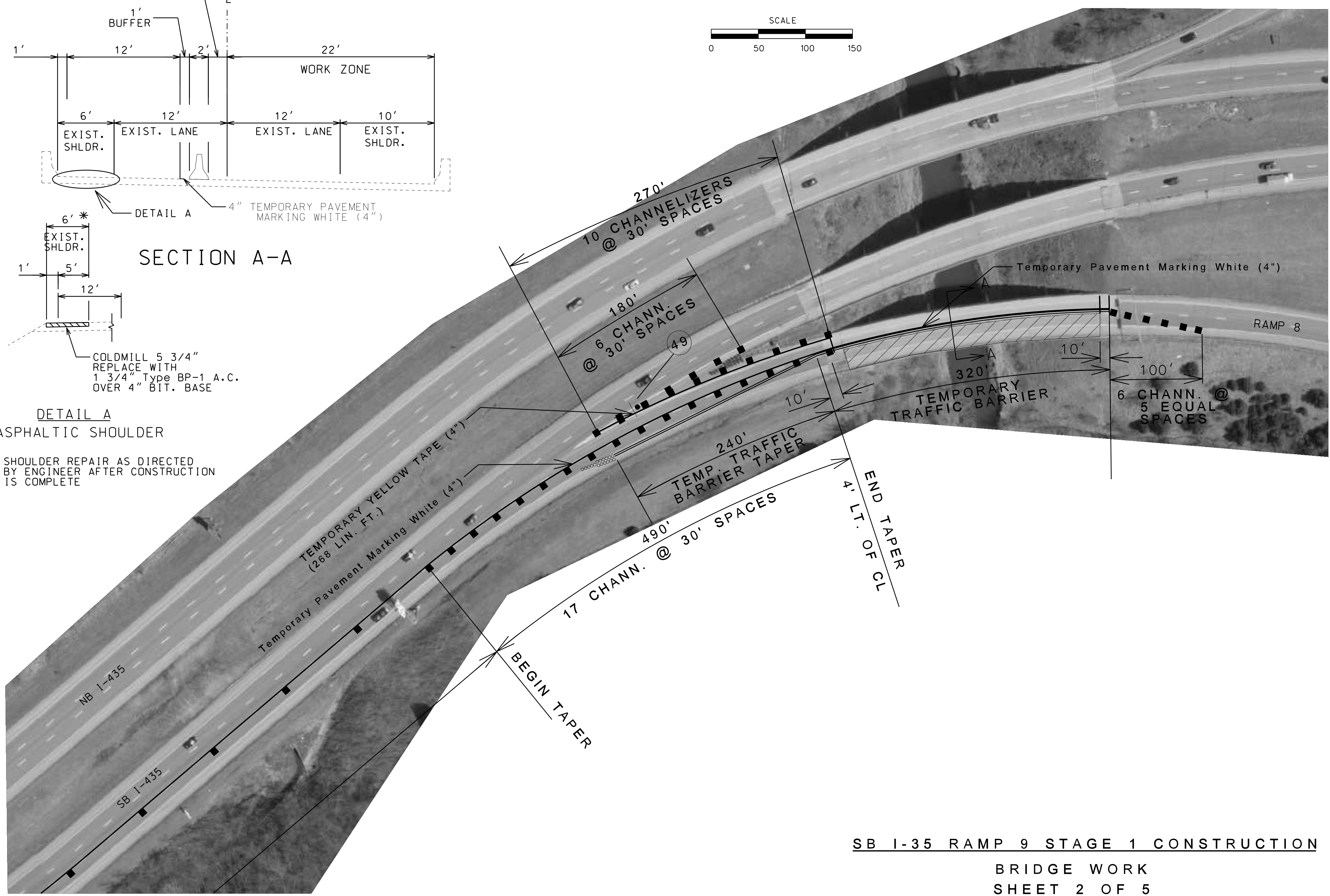
**SB I-35 RAMP 9 STAGE 1 CONSTRUCTION**  
**BRIDGE WORK**  
**SHEET 1 OF 5**  
**TRAFFIC CONTROL SHEET 51 OF 55**

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



DETAIL A ASPHALTIC SHOULDER

\* SHOULDER REPAIR AS DIRECTED BY ENGINEER AFTER CONSTRUCTION IS COMPLETE



SB I-35 RAMP 9 STAGE 1 CONSTRUCTION

BRIDGE WORK

SHEET 2 OF 5

TRAFFIC CONTROL SHEET 52 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/14/2012

ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 56

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-273-6636)

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 57

COUNTY  
CLAY

JOB NO.  
J412381

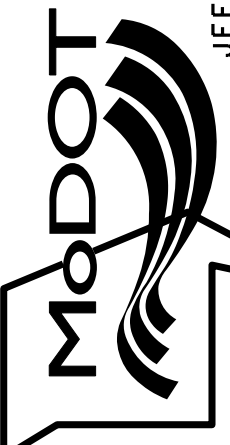
CONTRACT ID.

PROJECT NO.

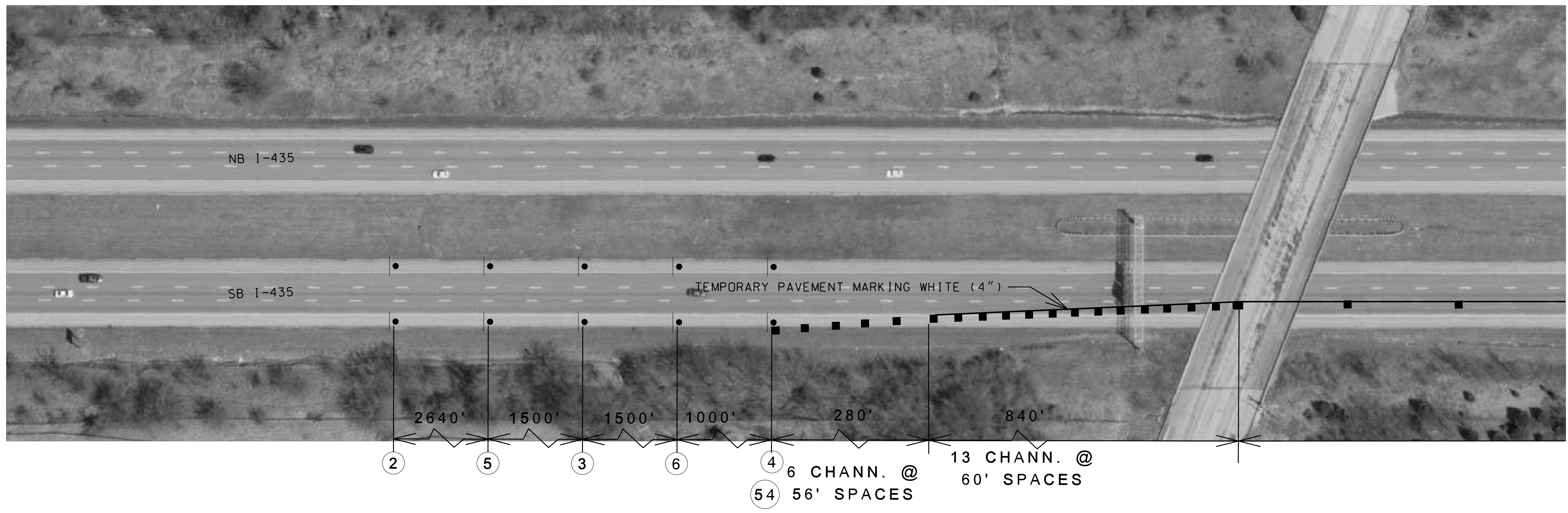
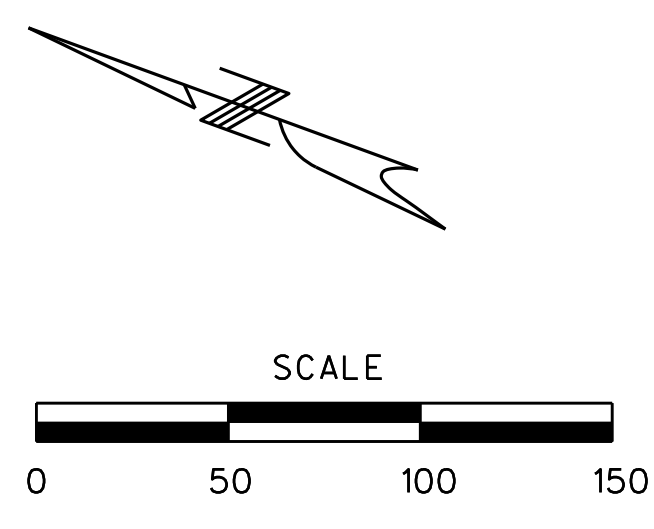
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)



SB I-35 RAMP 9 STAGE 2 CONSTRUCTION  
BRIDGE WORK  
SHEET 3 OF 5  
TRAFFIC CONTROL SHEET 53 OF 55

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



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 58

COUNTY  
CLAY

JOB NO.  
J412381

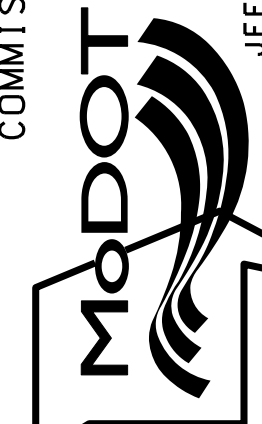
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

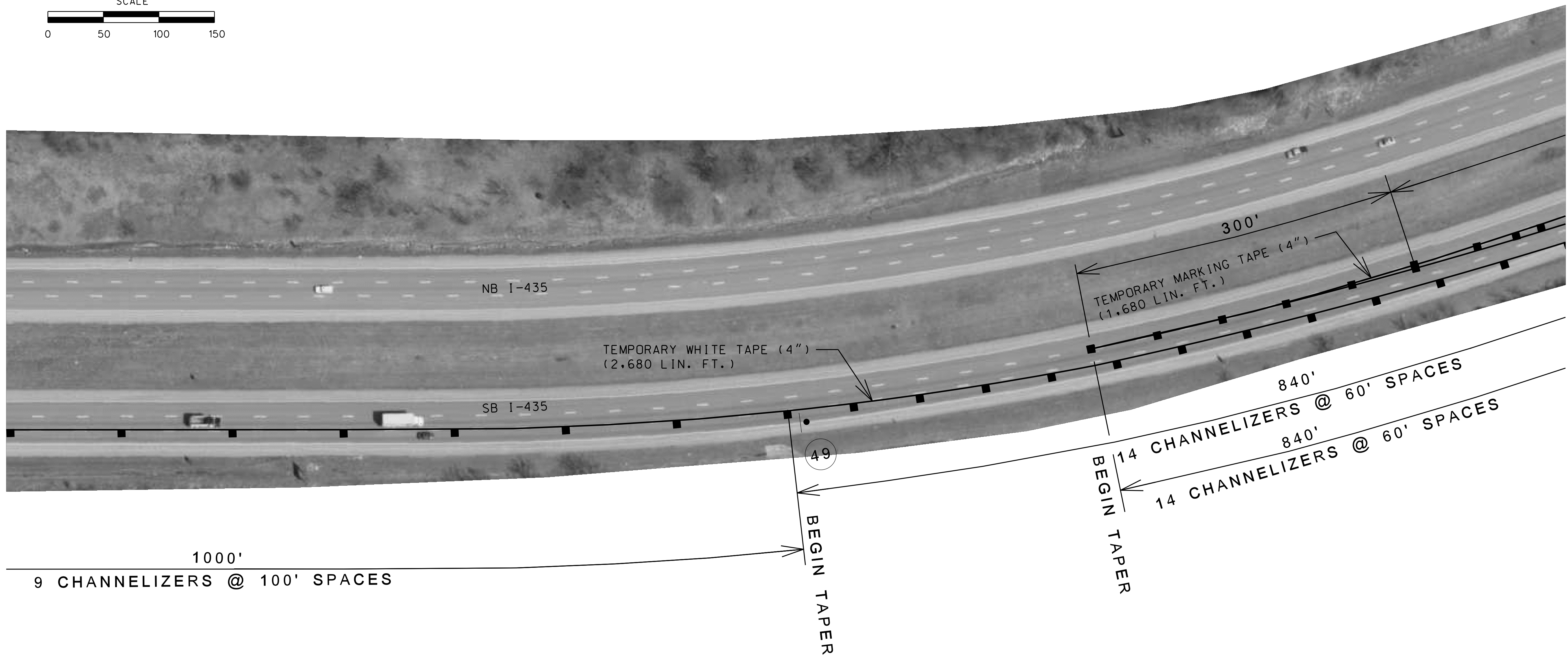
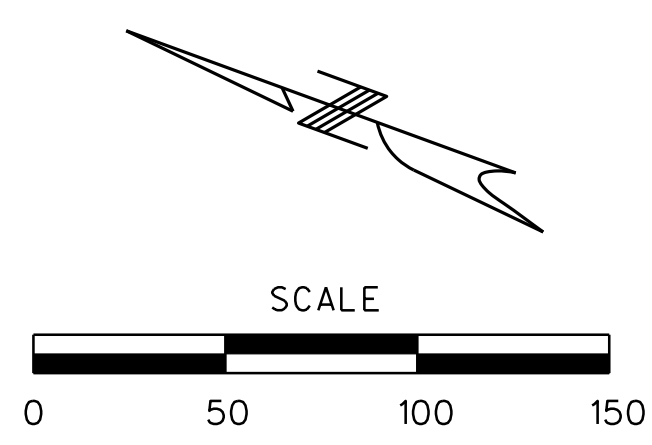
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

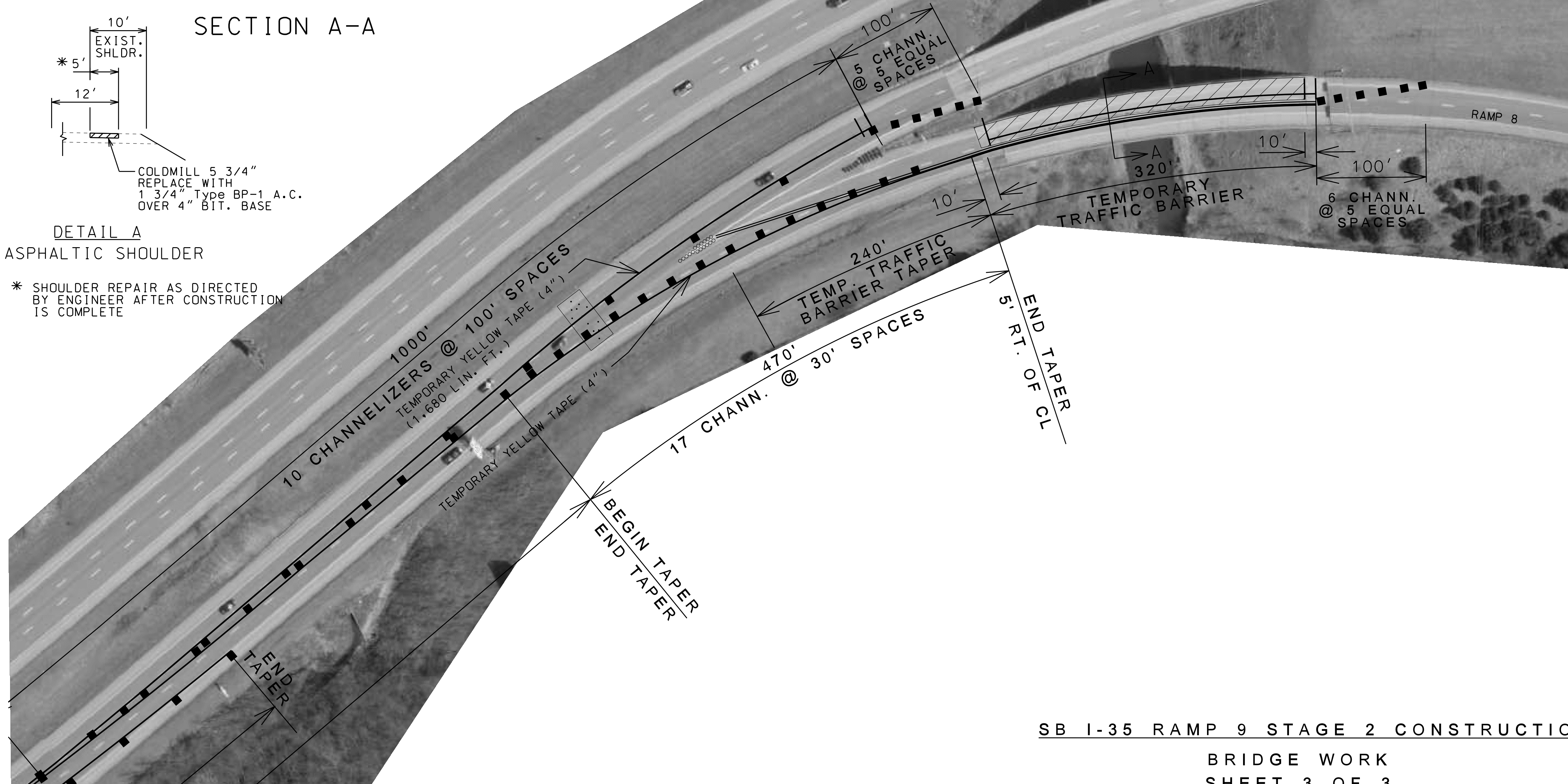
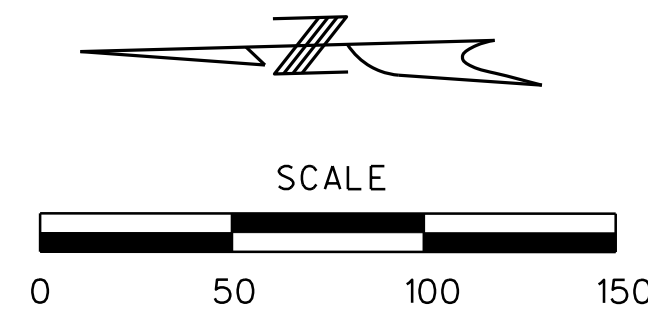
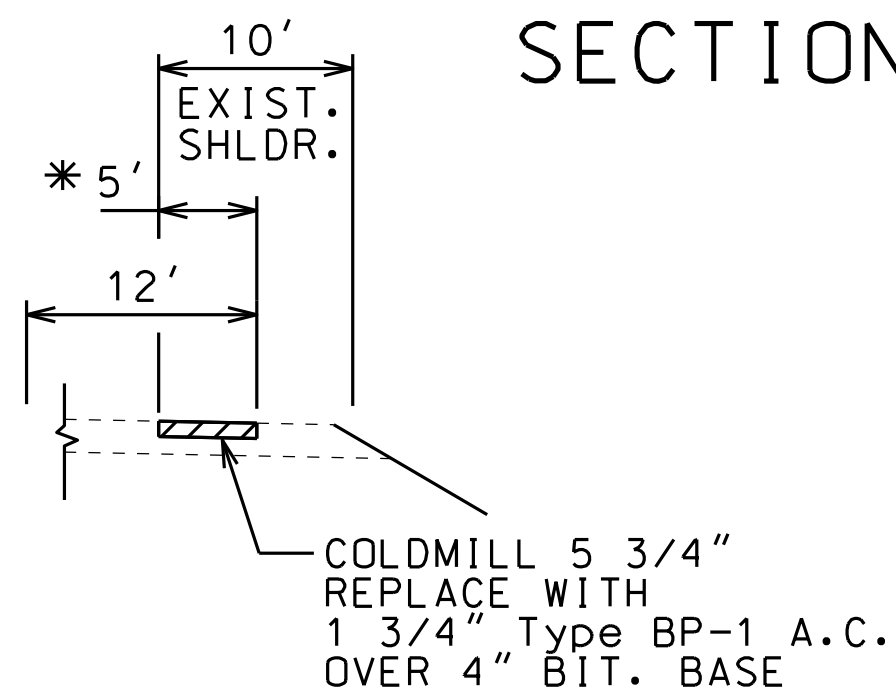
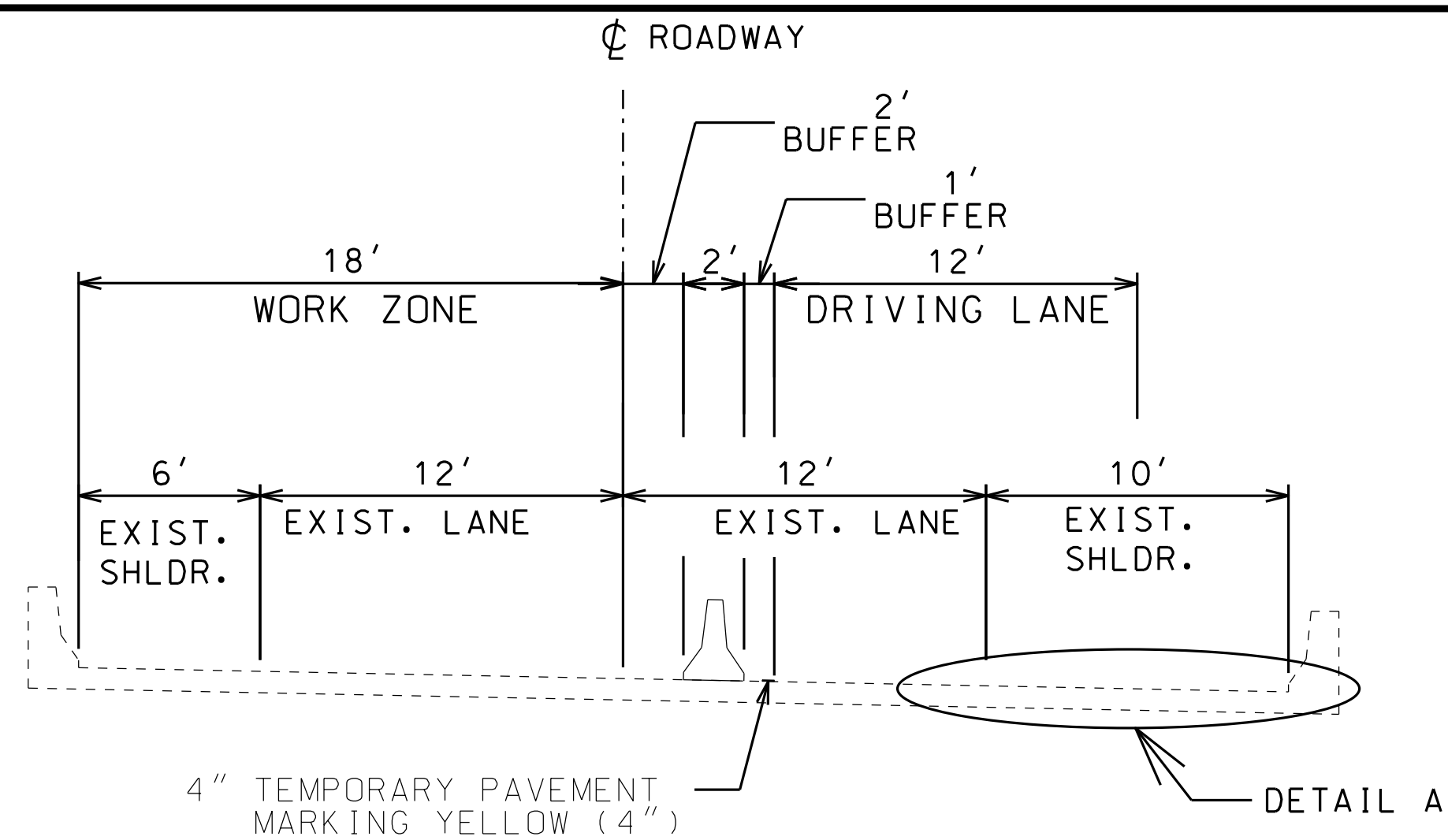


105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



SB I-35 RAMP 9 STAGE 2 CONSTRUCTION  
BRIDGE WORK  
SHEET 5 OF 5  
TRAFFIC CONTROL SHEET 54 OF 55

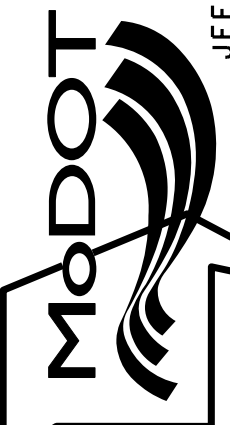


SB I-35 RAMP 9 STAGE 2 CONSTRUCTION

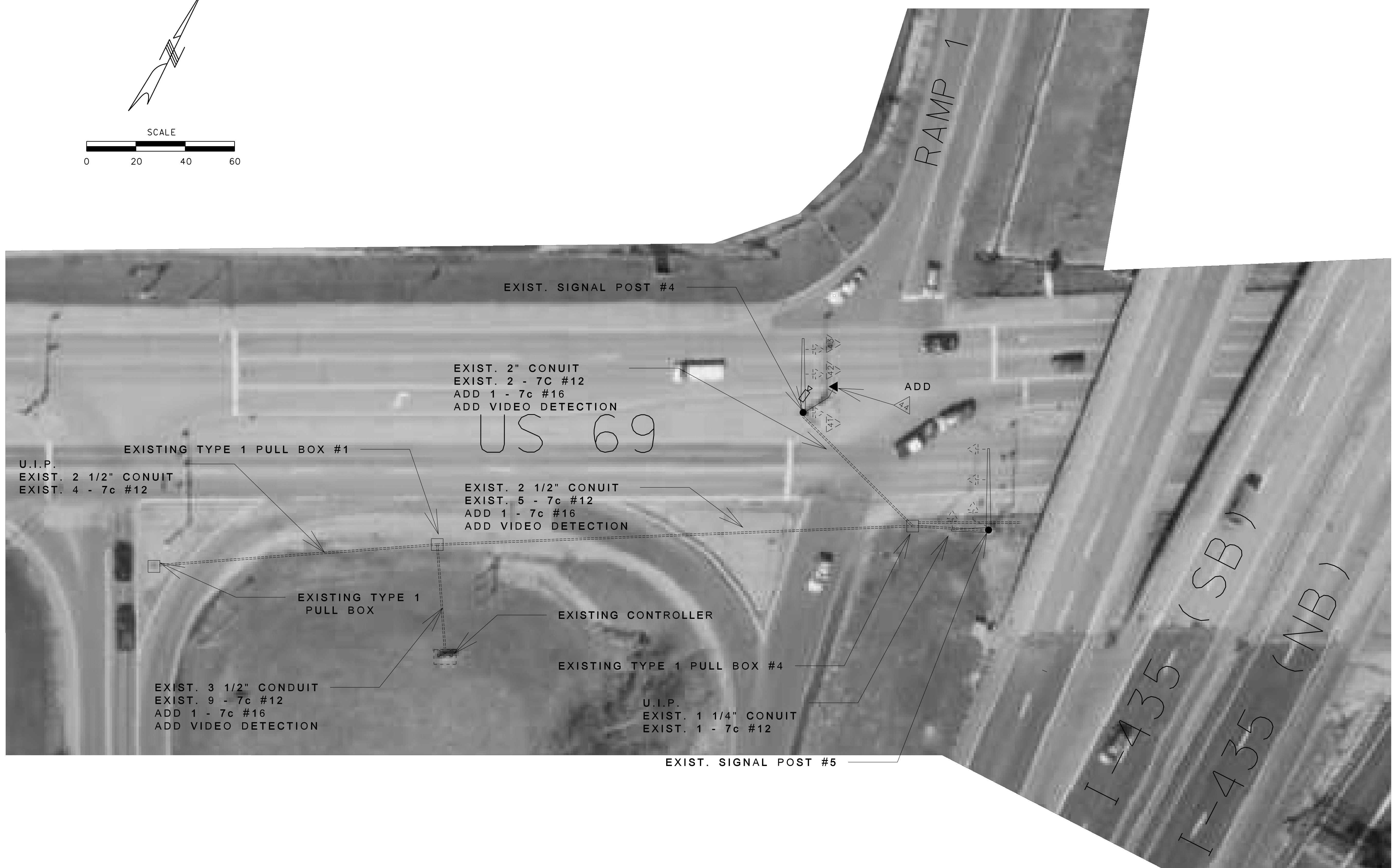
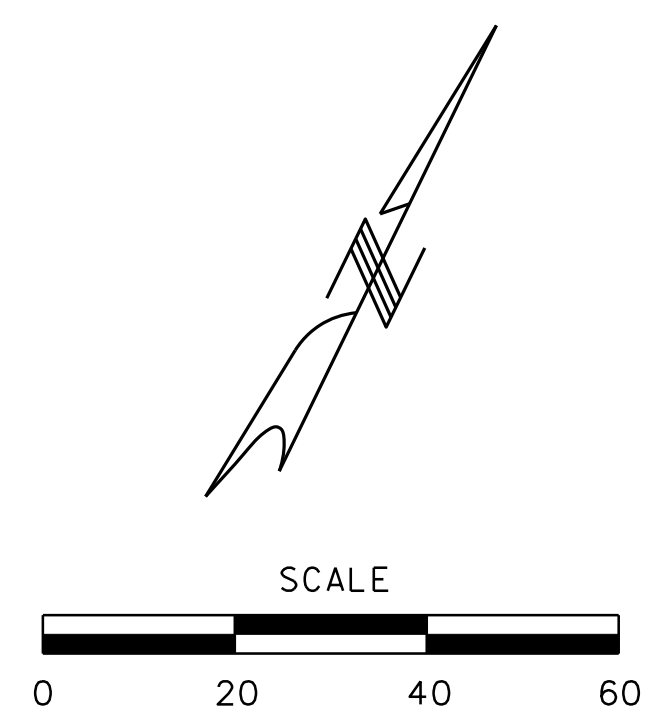
BRIDGE WORK

SHEET 3 OF 3

TRAFFIC CONTROL SHEET 55 OF 55

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."	
DATE PREPARED 12/14/2012	
ROUTE VAR.	STATE MO
DISTRICT KC	SHEET NO. 59
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
DESCRIPTION	DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MDOT (1-888-275-6636)	

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



NOTE: SEE QUANTITY SHEETS FOR SIGNAL QUANTITIES

ADD VIDEO DETECTION AND SIGNAL HEAD @ INTERSECIION RAMP 1 AND US 69

SHEET 1 OF 2

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
1/16/2013

ROUTE STATE  
VAR. MO

DISTRICT SHEET NO.  
KC 60

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

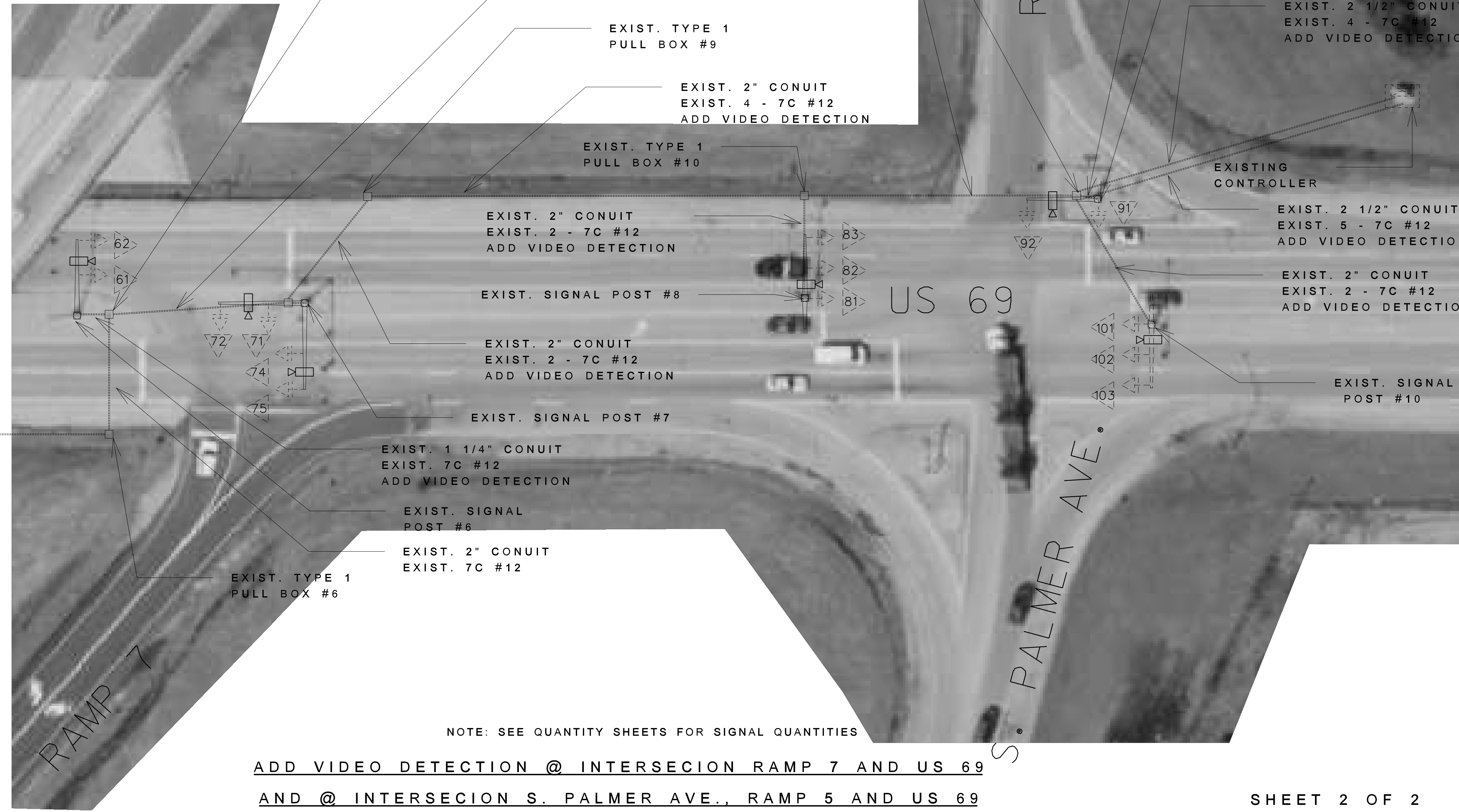
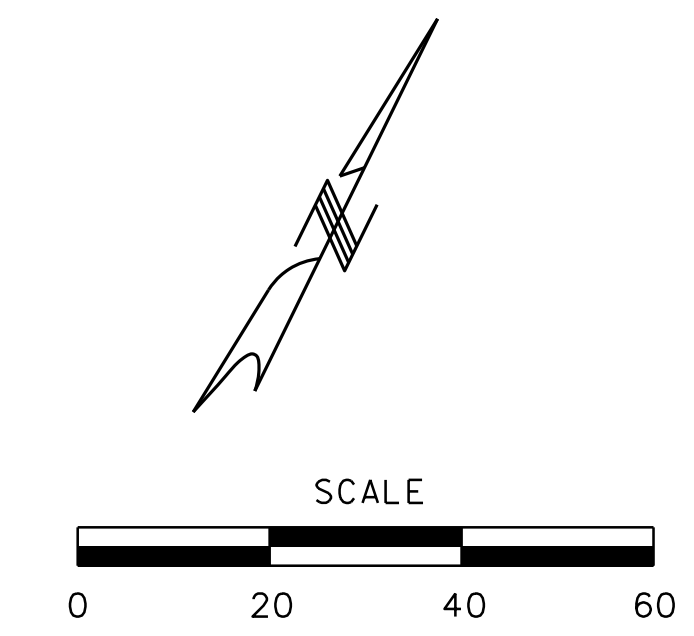
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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



NOTE: SEE QUANTITY SHEETS FOR SIGNAL QUANTITIES

ADD VIDEO DETECTION @ INTERSECCION RAMP 7 AND US 69  
AND @ INTERSECCION S. PALMER AVE., RAMP 5 AND US 69

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 1/16/2013

ROUTE STATE  
VAR. MO  
DISTRICT SHEET NO.  
KC 60A

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

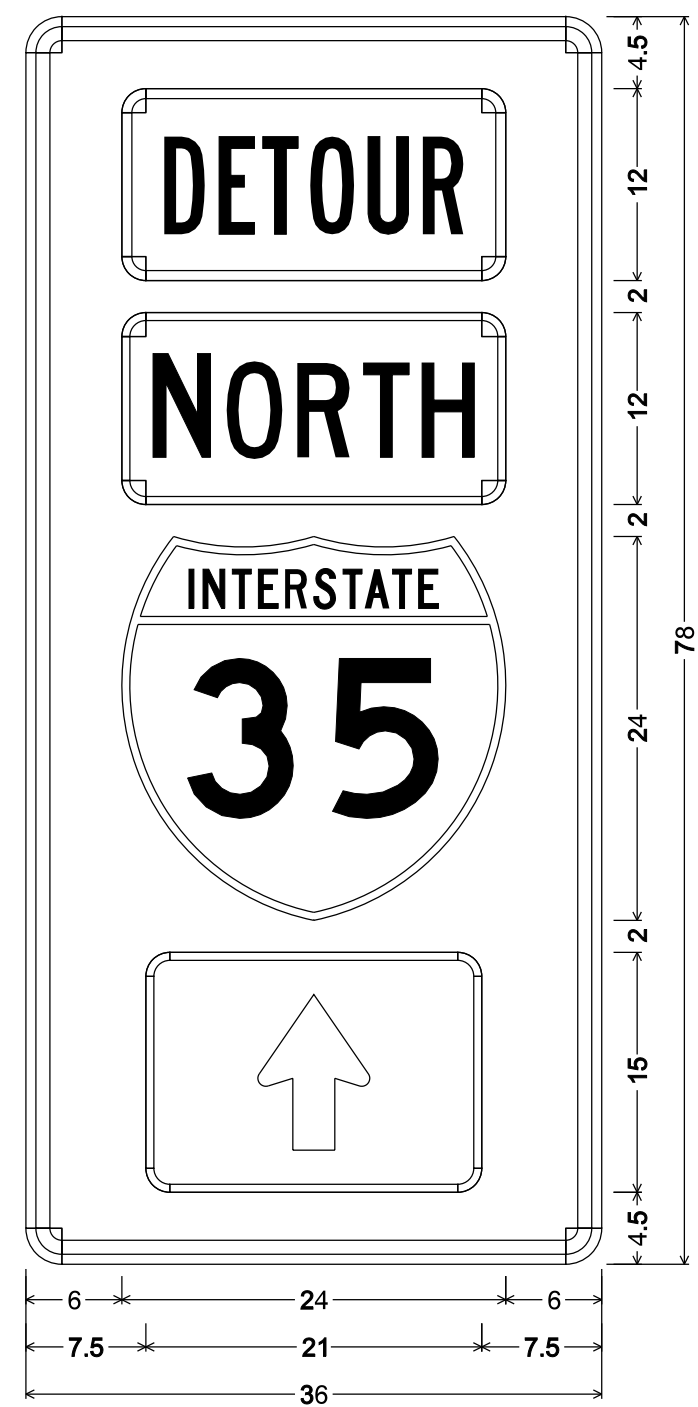
PROJECT NO.  
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

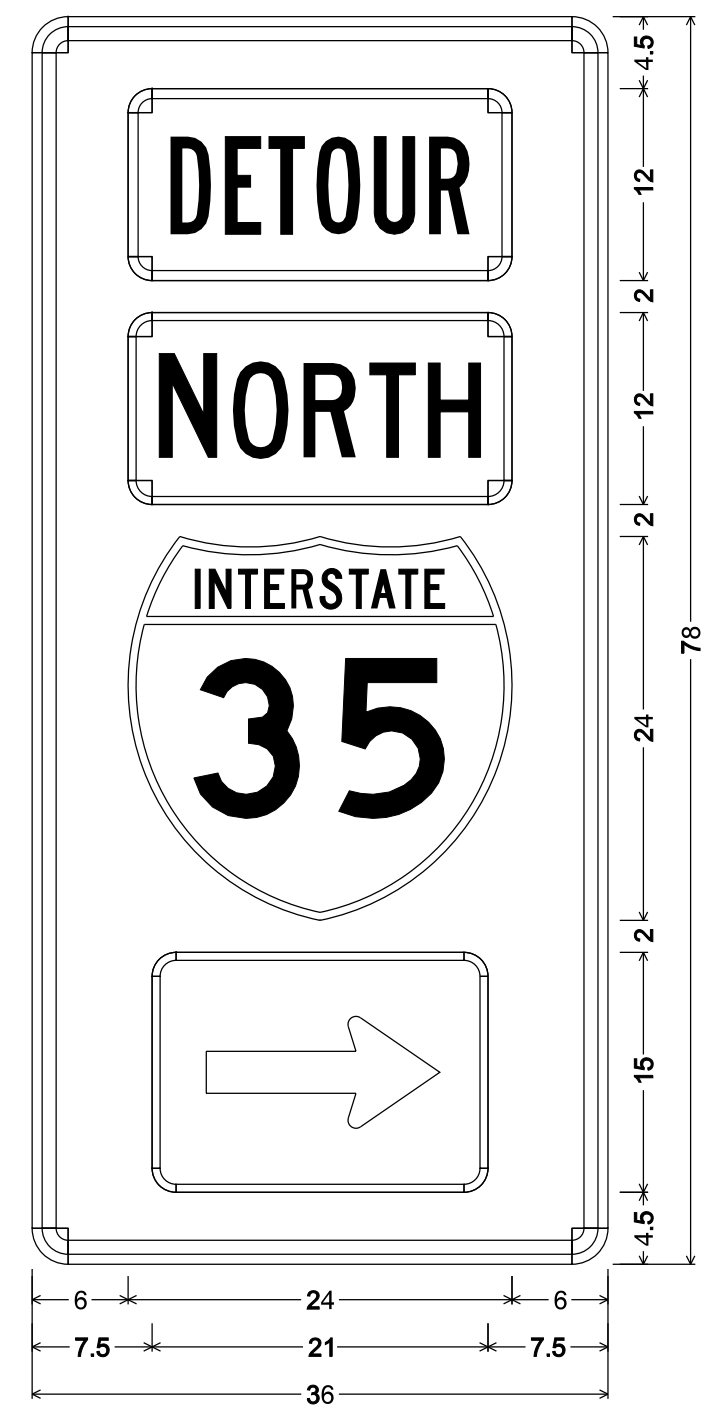
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



SIGN NO.	30A
STATION	
ROADWAY	

MO4-11-36 SHR4L1:  
2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
Table of letter and object lefts.

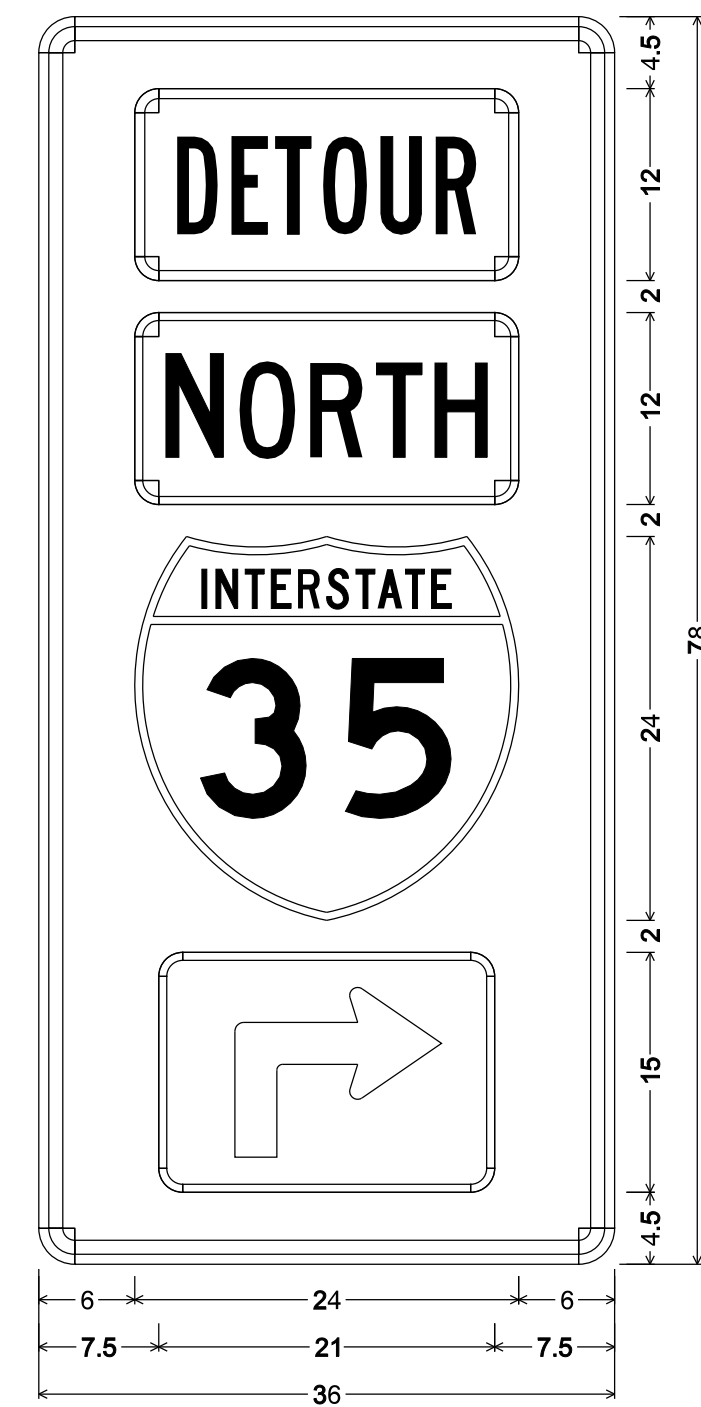
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6.000
6.000
7.500



SIGN NO.	30B
STATION	
ROADWAY	

MO4-11-36 SHR4L1:  
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Table of letter and object lefts.

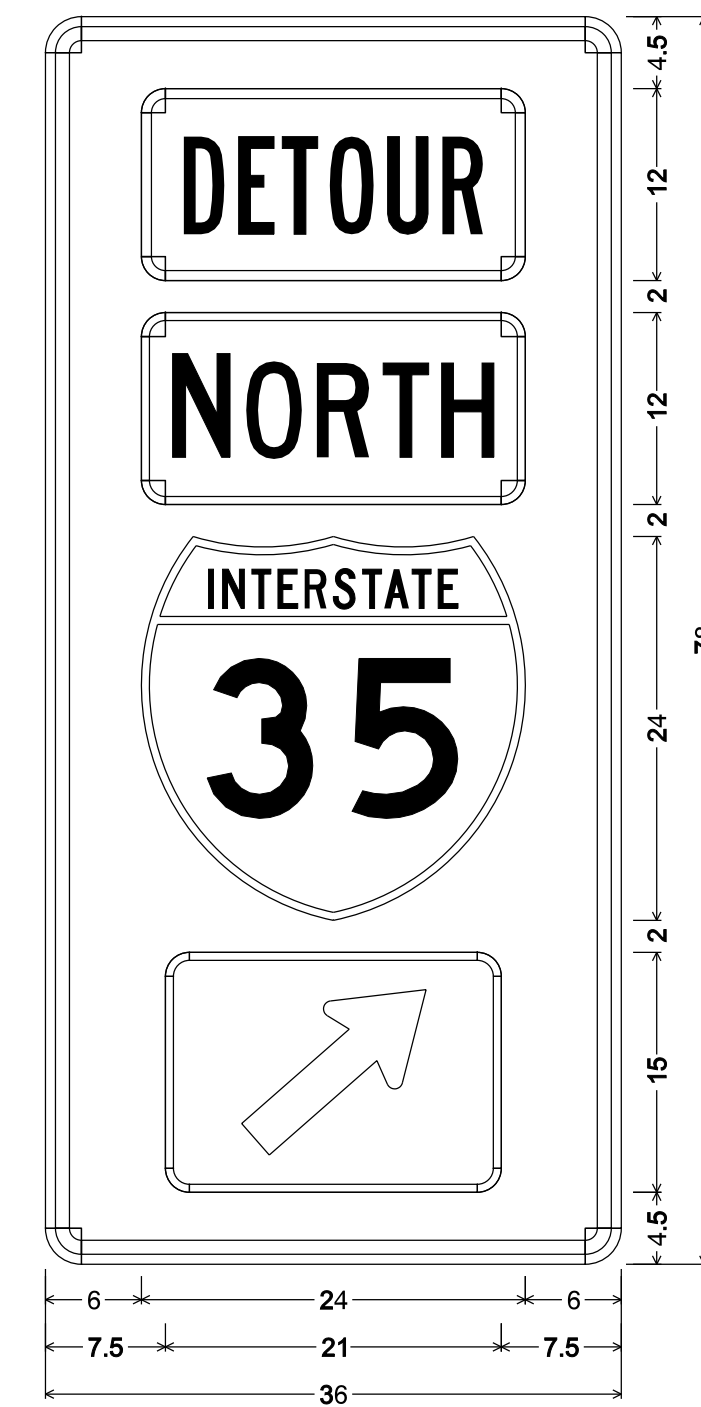
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SIGN NO.	30C
STATION	
ROADWAY	

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2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
Table of letter and object lefts.

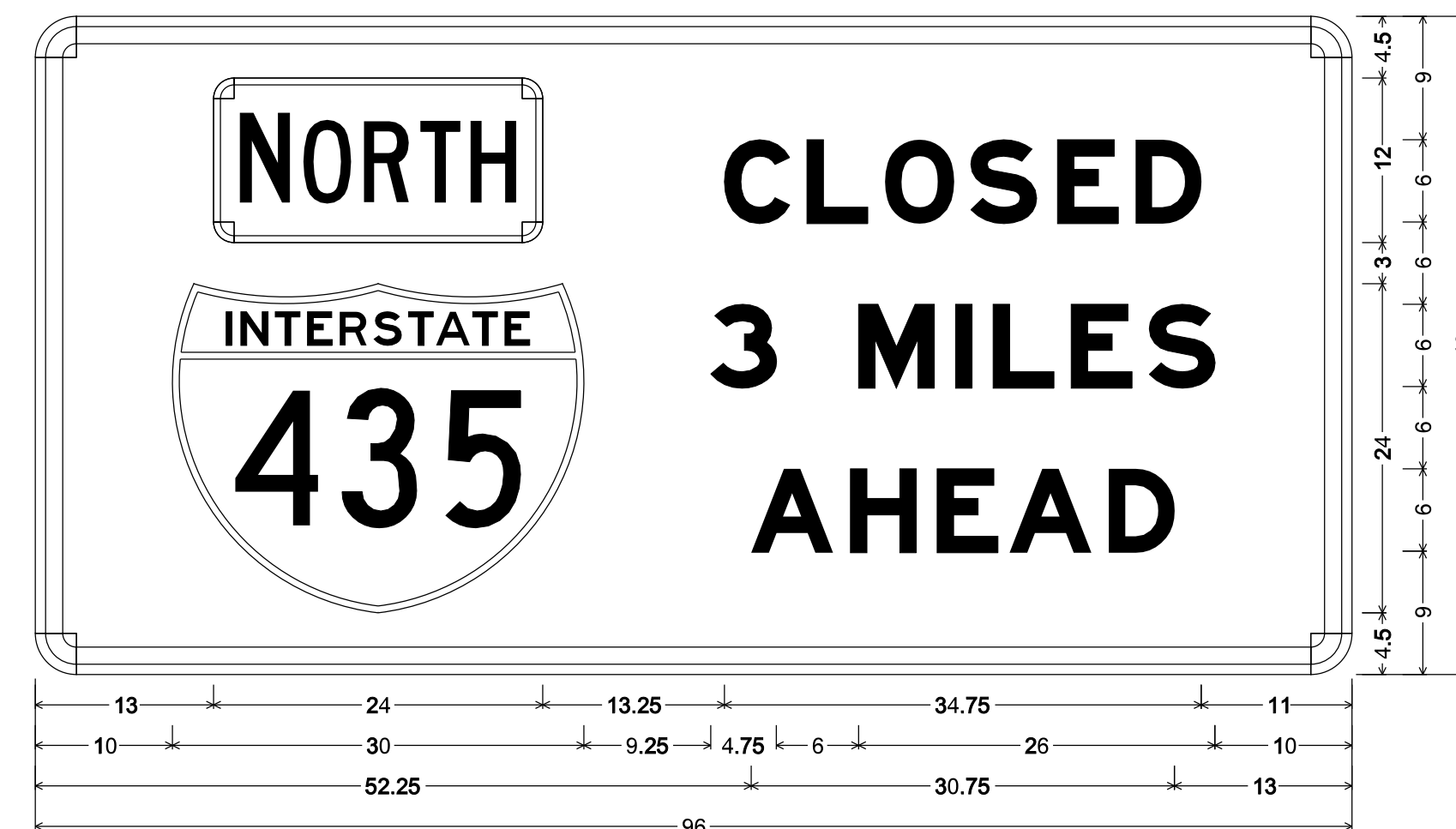
6.000
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SIGN NO.	30D
STATION	
ROADWAY	

MO4-11-36 SHR4L1:  
2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
Table of letter and object lefts.

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7.500

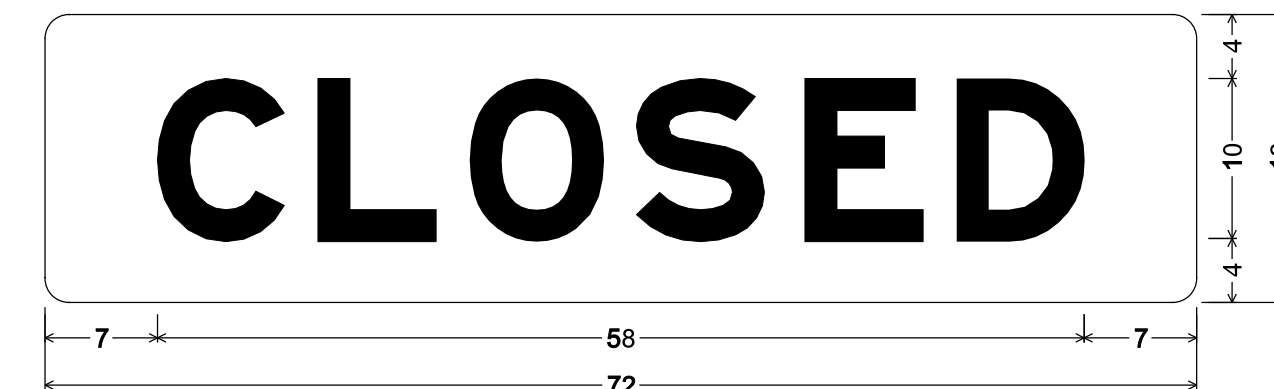


SIGN NO.	60
STATION	
ROADWAY	

MO4-13-96 SHR4L1: 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;  
[CLOSED] E Mod; [3 MILES] E Mod; [AHEAD] E Mod;  
Table of letter and object lefts.

13.000	C	L	O	S	E	D
50.250	56.250	62.000	68.250	74.500	80.250	
10.000	3	M	I	L	E	S
49.250	60.000	67.125	69.875	75.500	81.250	
52.250	A	H	E	A	D	
59.375	65.750	71.000	78.250			

SIGN NO.	65
STATION	
ROADWAY	



SPECIAL SHR4L1: 1.500" Radius, No border, Orange;  
[CLOSED] Black E Mod;  
Table of letter and object lefts.

C	L	O	S	E	D
7.000	17.125	26.500	37.000	47.500	57.000

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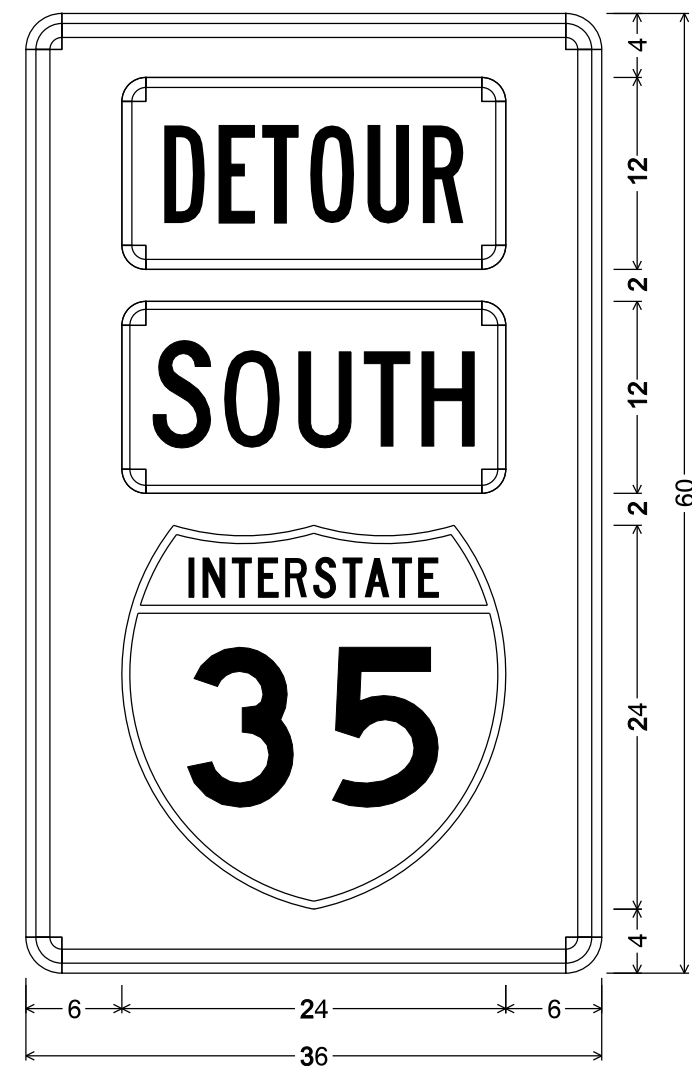
DATE PREPARED	12/14/2012		
ROUTE	VAR	STATE	MO
DISTRICT	KC	SHEET NO.	61
COUNTY	CLAY		
JOB NO.	J412381		
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

SIGNING SHEET  
 TEMPORARY TRAFFIC CONTROL  
 SHEET 1 OF 3

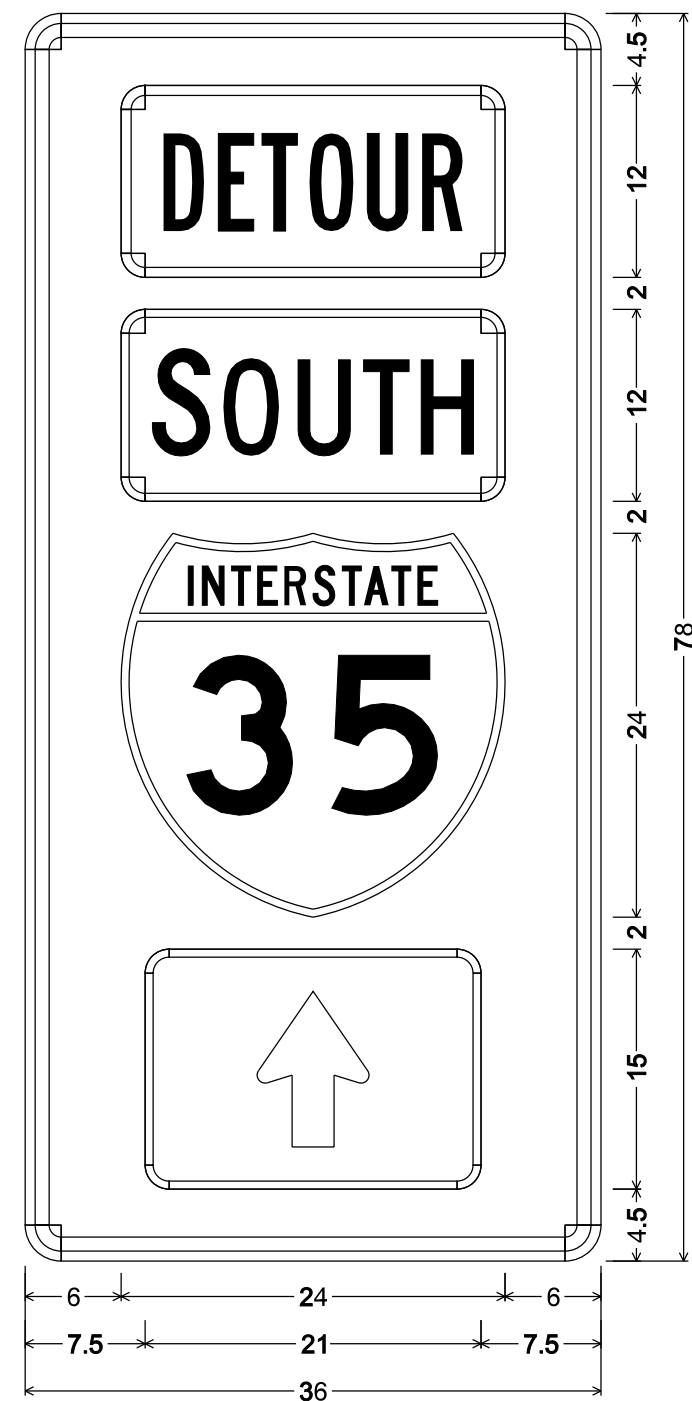
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED. REV.



SIGN NO.	31A
STATION	
ROADWAY	

MO4-11-36 SHR4L1;  
2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
Table of letter and object lefts.

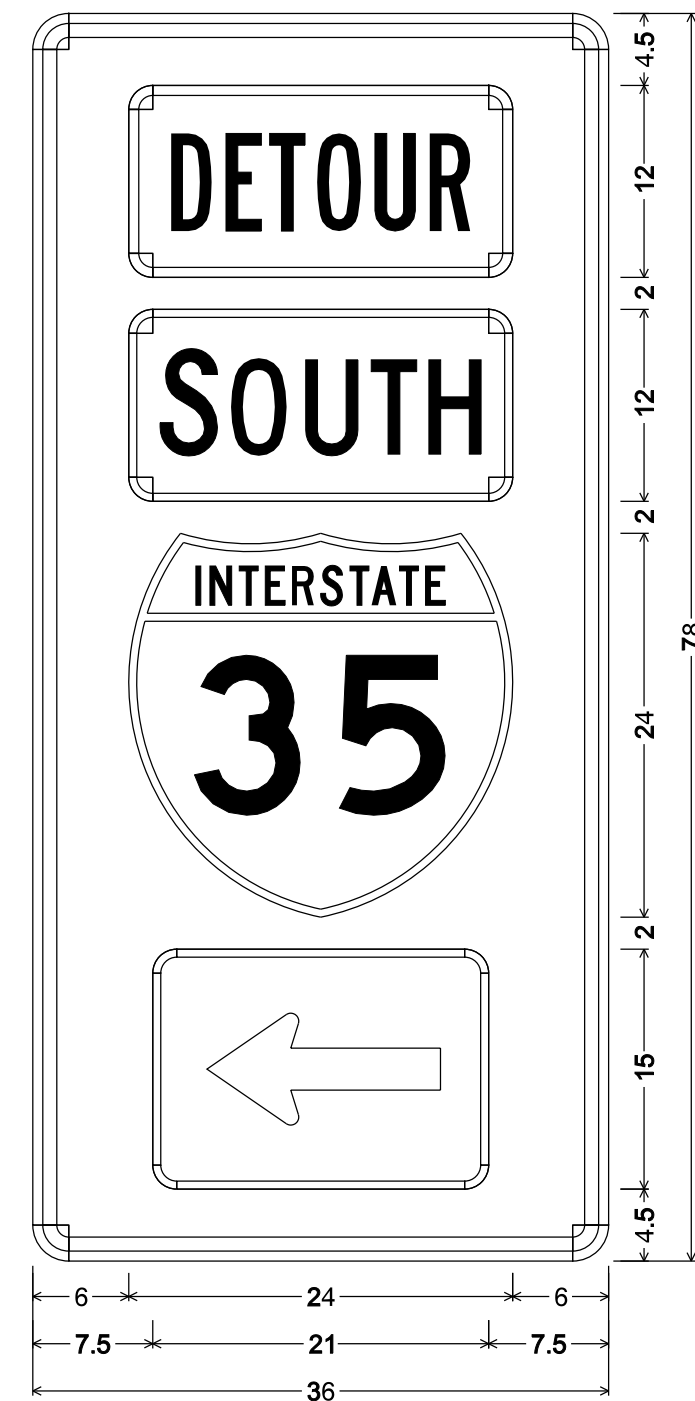
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SIGN NO.	31B
STATION	
ROADWAY	

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Table of letter and object lefts.

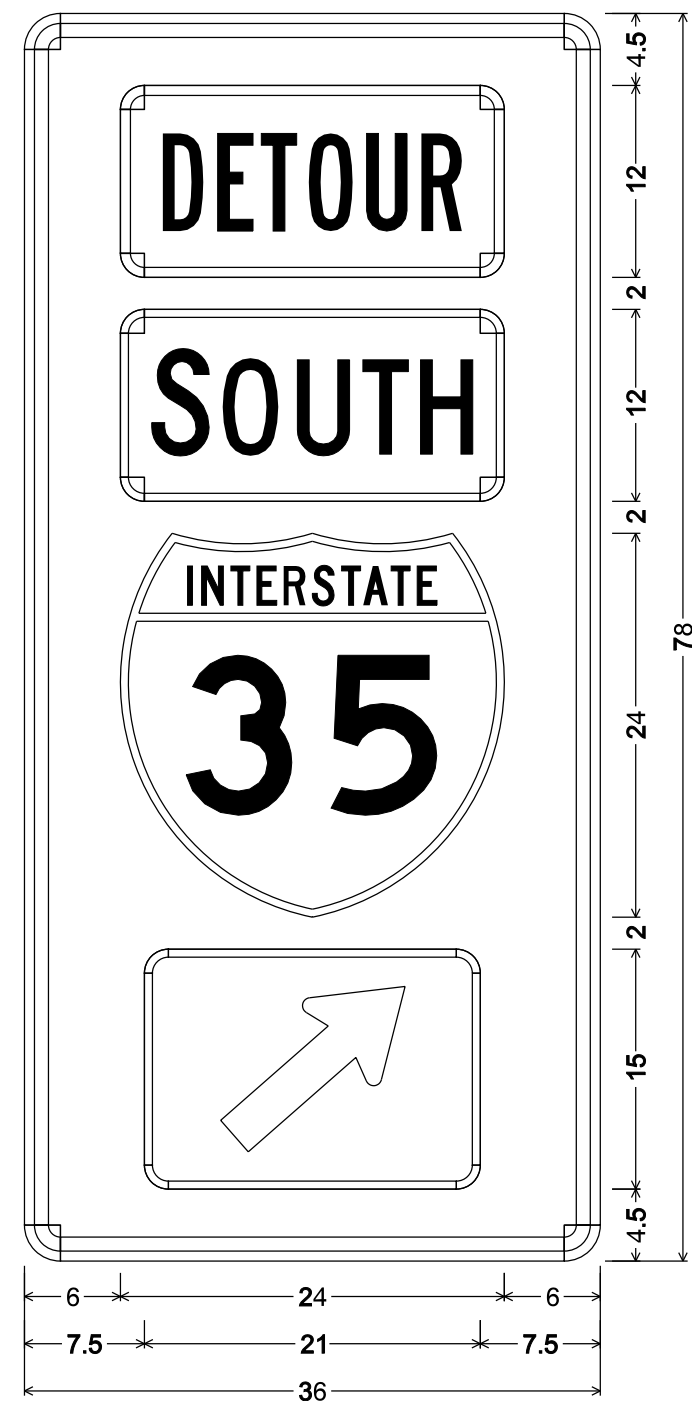
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SIGN NO.	31C
STATION	
ROADWAY	

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Table of letter and object lefts.

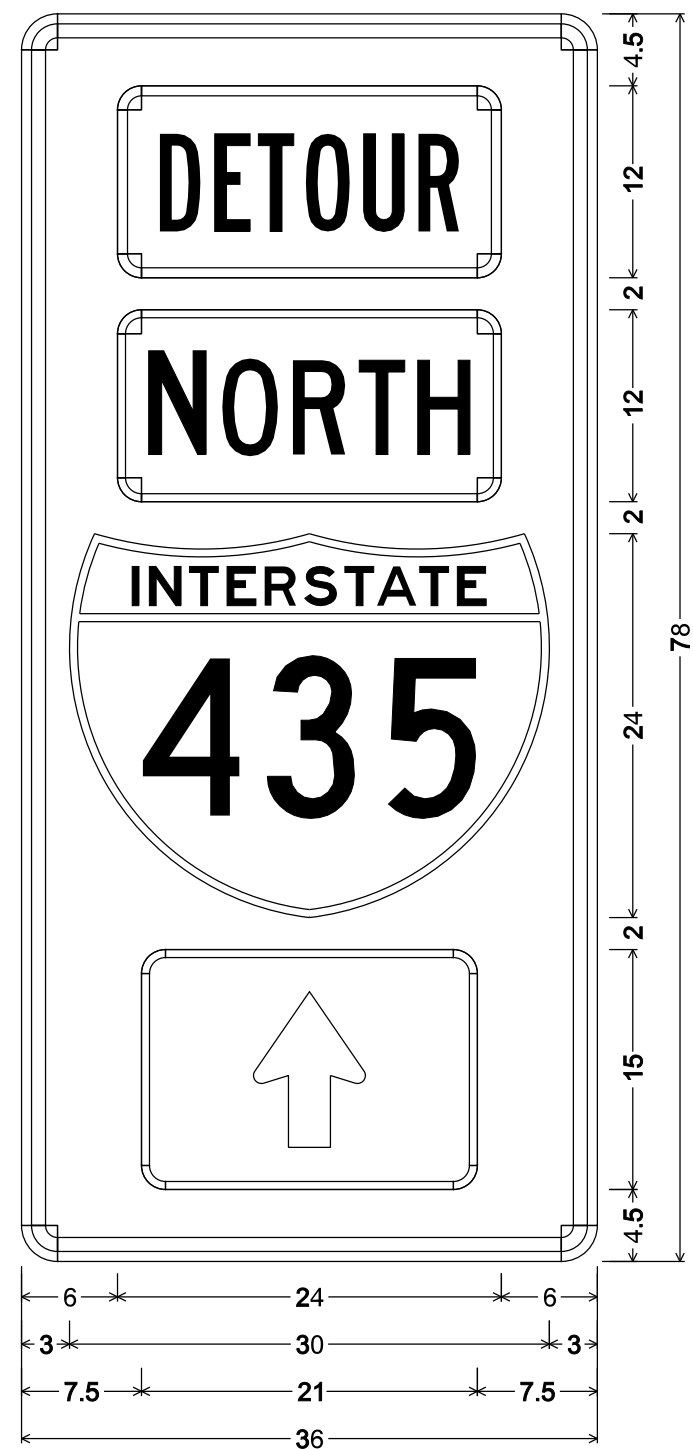
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SIGN NO.	31D
STATION	
ROADWAY	

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Table of letter and object lefts.

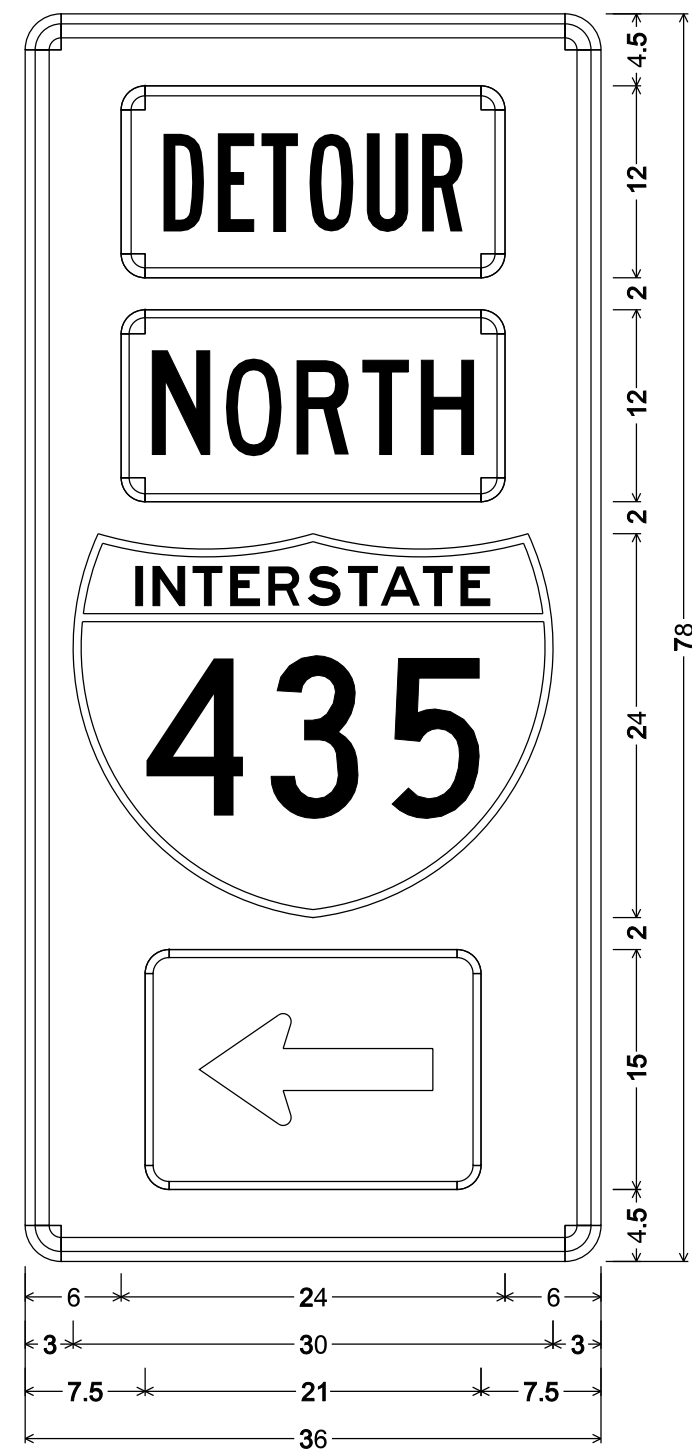
6.000
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SIGN NO.	40A
STATION	
ROADWAY	

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Table of letter and object lefts.

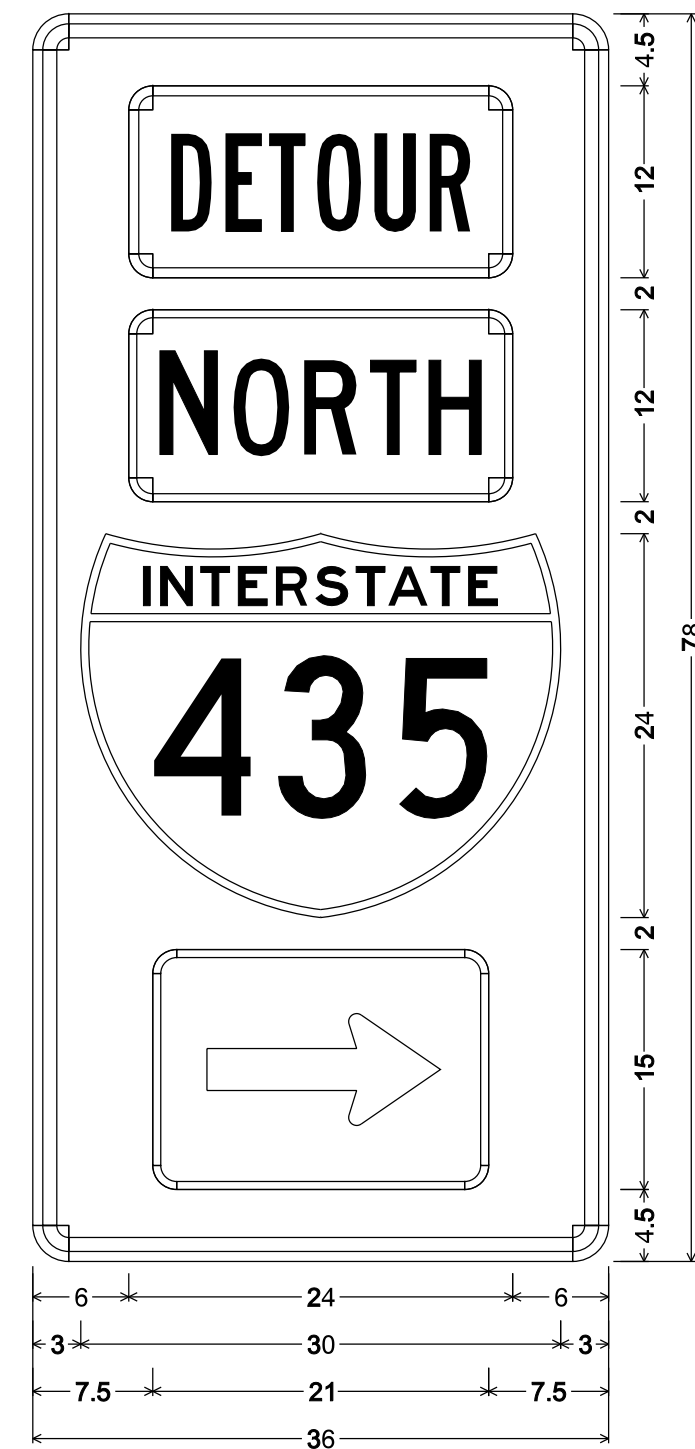
6.000
6.000
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7.500



SIGN NO.	40B
STATION	
ROADWAY	

MO4-11-36 SHR4L1;  
2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
Table of letter and object lefts.

6.000
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3.000
7.500



SIGN NO.	40C
STATION	
ROADWAY	

MO4-11-36 SHR4L1;  
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Table of letter and object lefts.

6.000
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DATE PREPARED	12/14/2012		
ROUTE	VAR	STATE	MO
DISTRICT	KC	SHEET NO.	62
COUNTY	CLAY		
JOB NO.	J412381		
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			

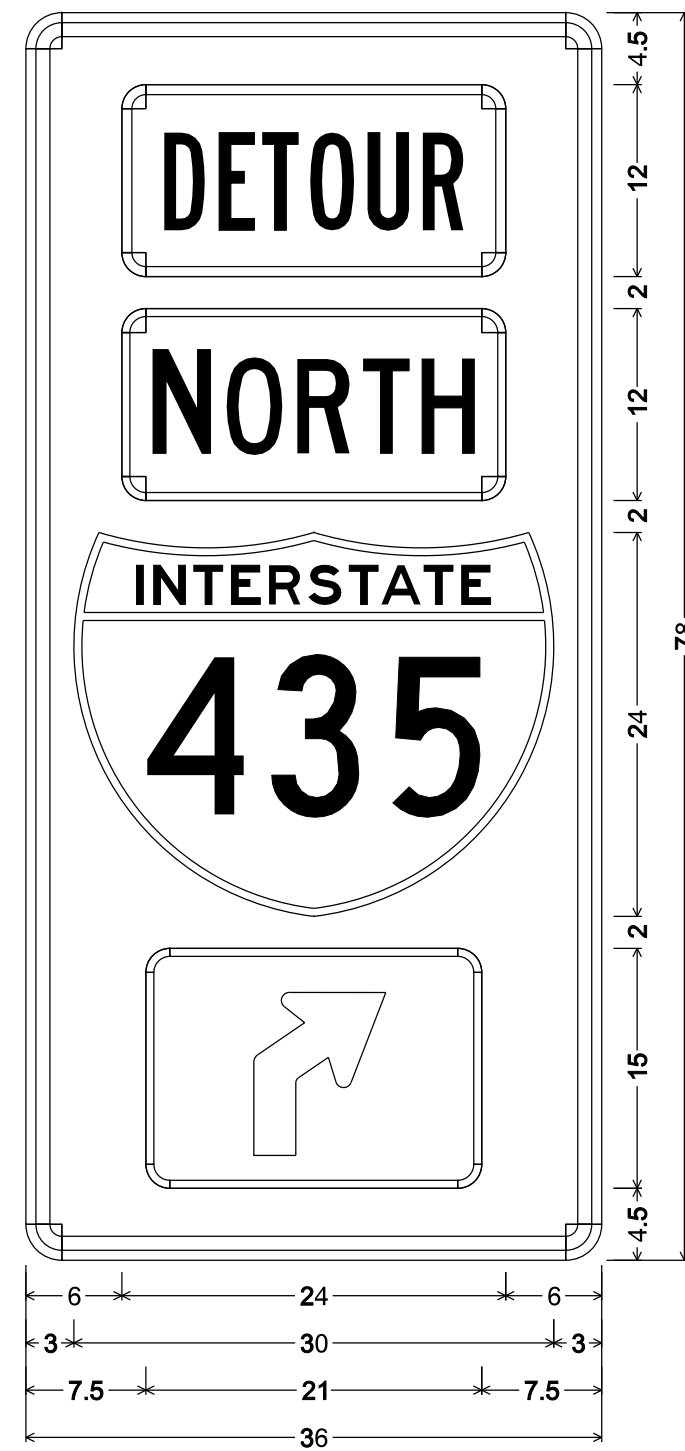
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

SIGNING SHEET  
TEMPORARY TRAFFIC CONTROL  
SHEET 2 OF 3

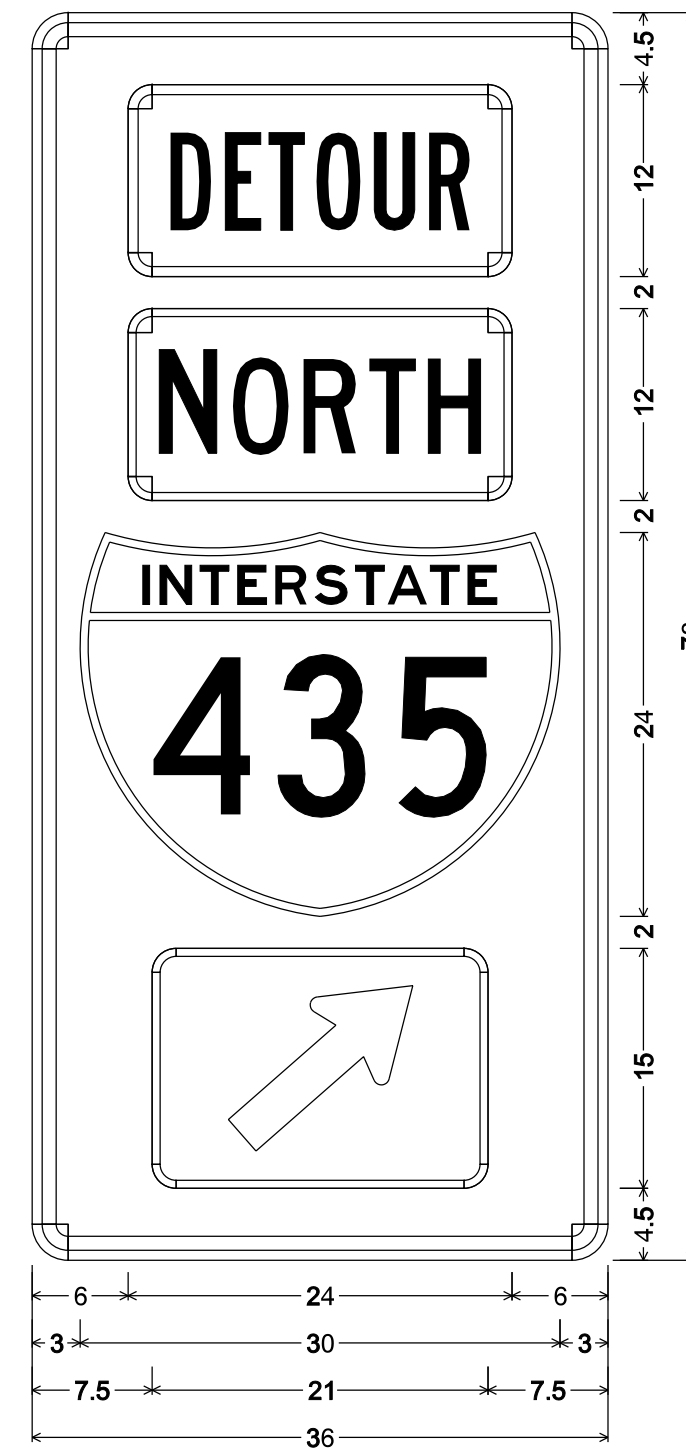
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



SIGN NO.	40D
STATION	
ROADWAY	

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Table of letter and object lefts.

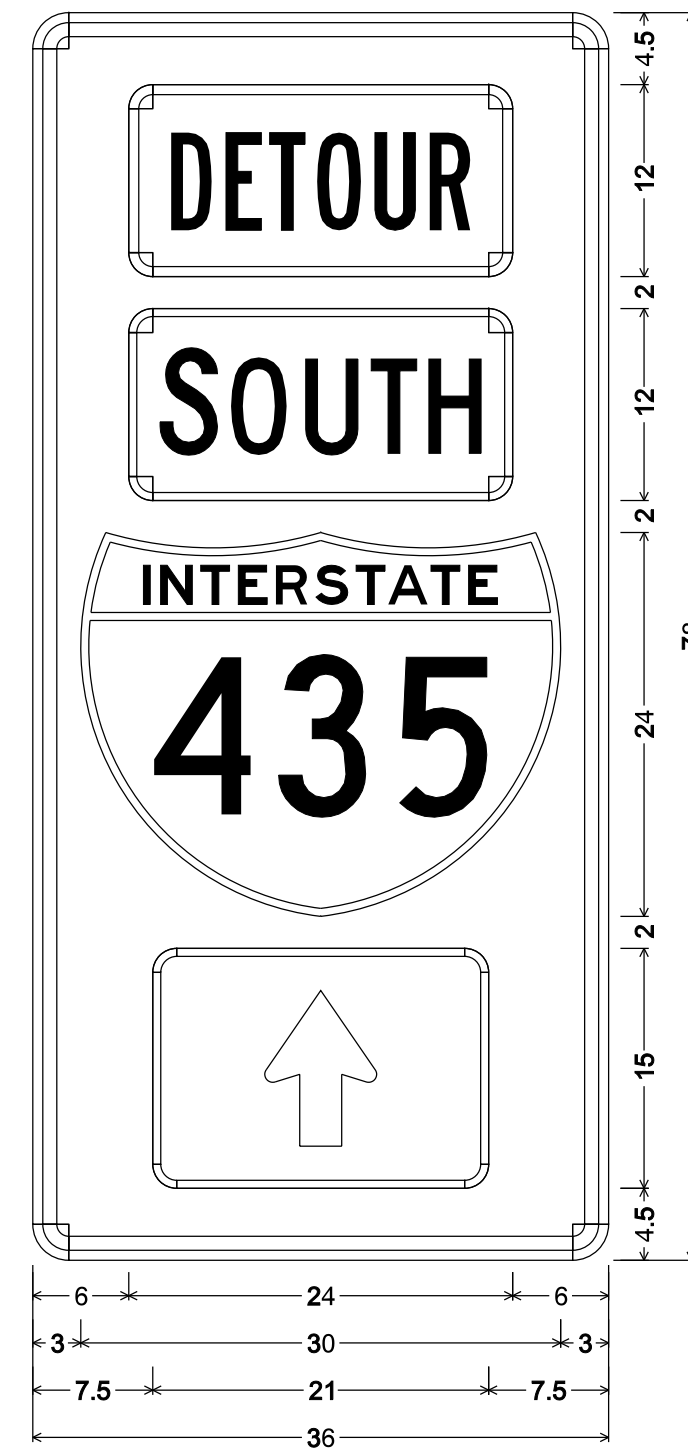
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3.000
7.500



SIGN NO.	40E
STATION	
ROADWAY	

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Table of letter and object lefts.

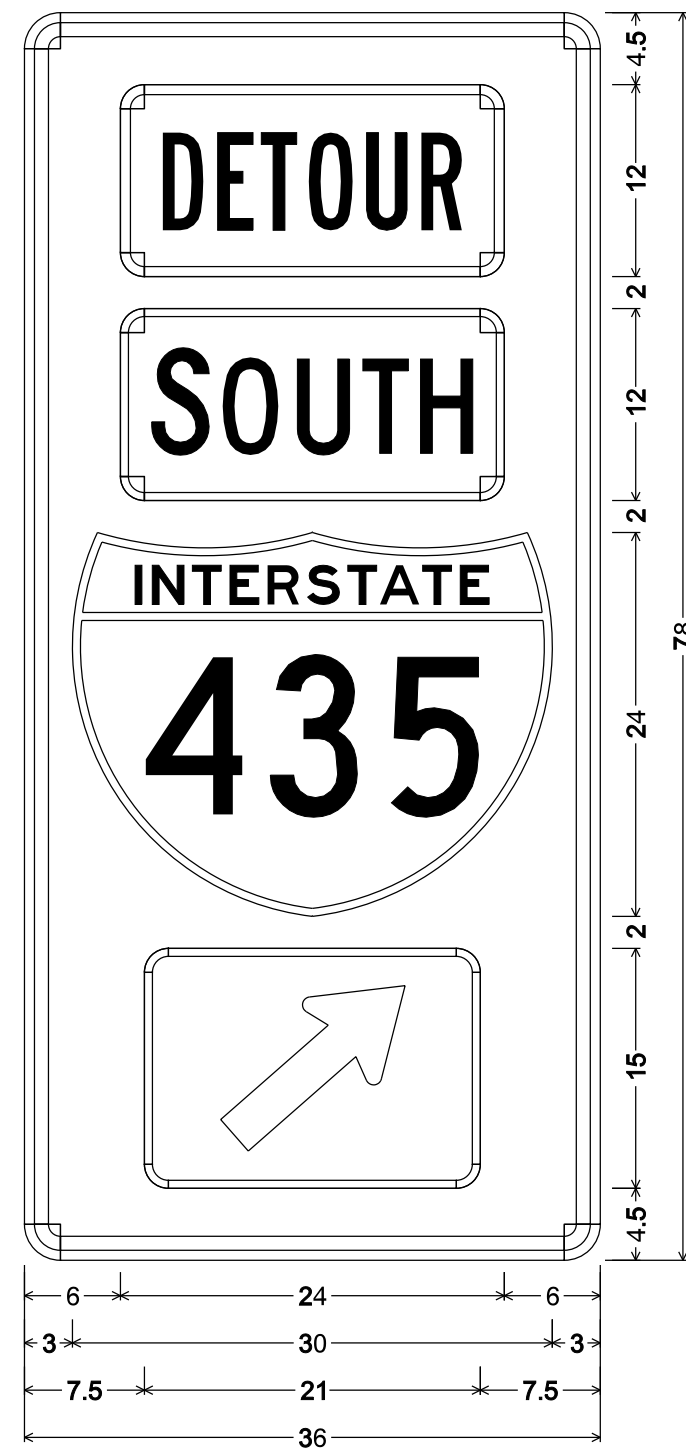
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SIGN NO.	41A
STATION	
ROADWAY	

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Table of letter and object lefts.

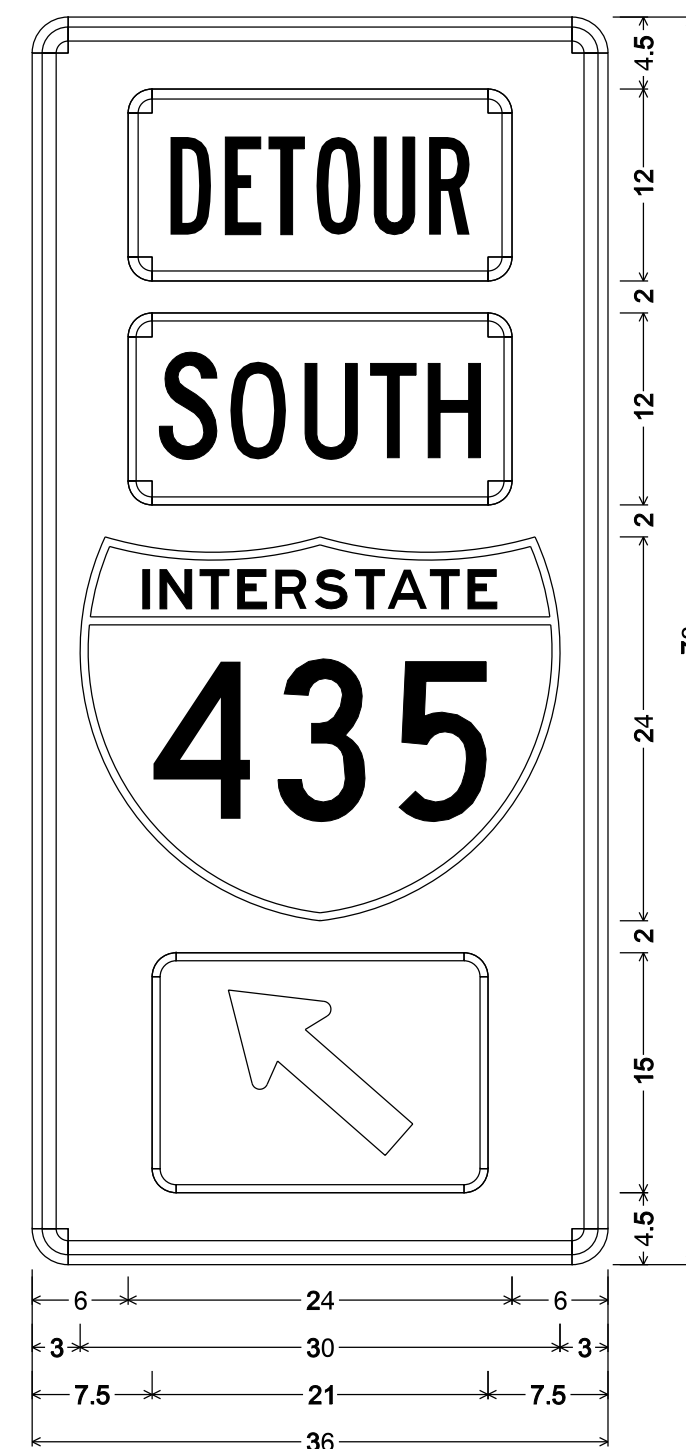
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SIGN NO.	41B
STATION	
ROADWAY	

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Table of letter and object lefts.

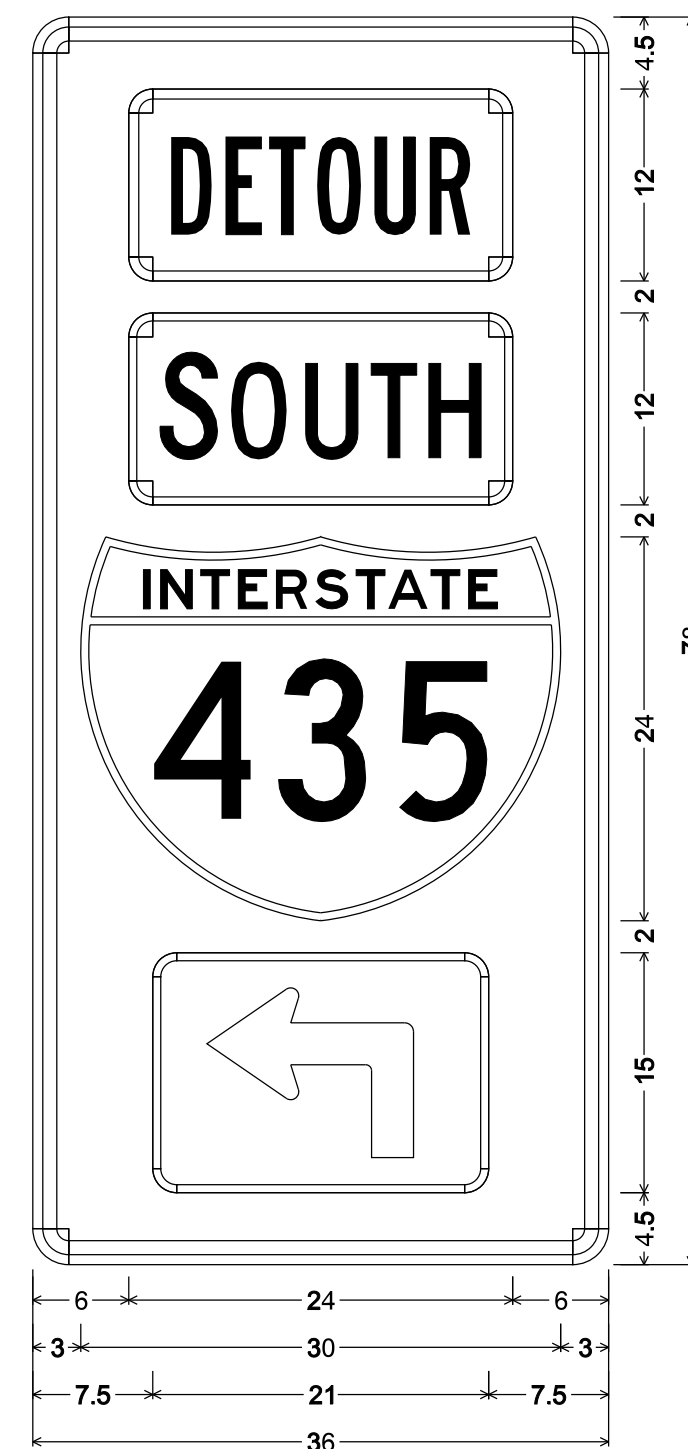
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6.000
3.000
7.500



SIGN NO.	41C
STATION	
ROADWAY	

MO4-11-36 SHR4L1:  
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Table of letter and object lefts.

6.000
6.000
3.000
7.500



SIGN NO.	41D
STATION	
ROADWAY	

MO4-11-36 SHR4L1:  
2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
Table of letter and object lefts.

6.000
6.000
3.000
7.500

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DATE PREPARED  
12/14/2012

ROUTE STATE  
VAR MO  
DISTRICT SHEET NO.  
KC 63

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



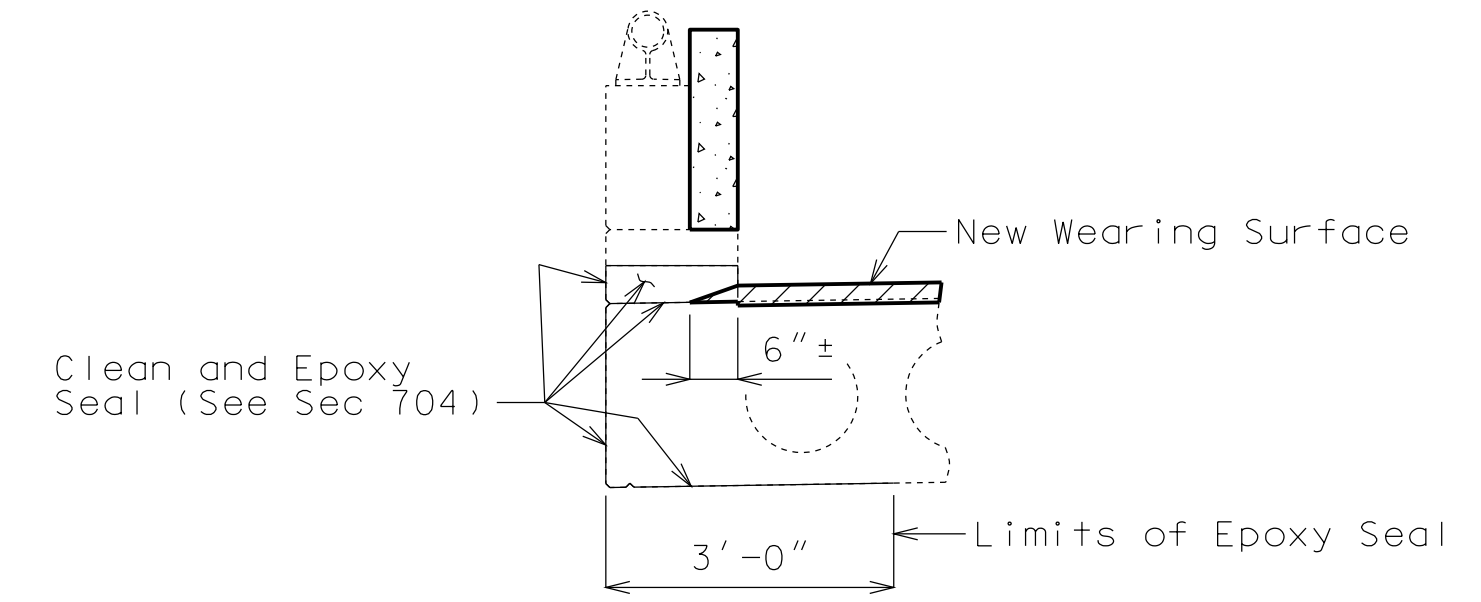
SIGNING SHEET  
TEMPORARY TRAFFIC CONTROL  
SHEET 3 OF 3

D-31

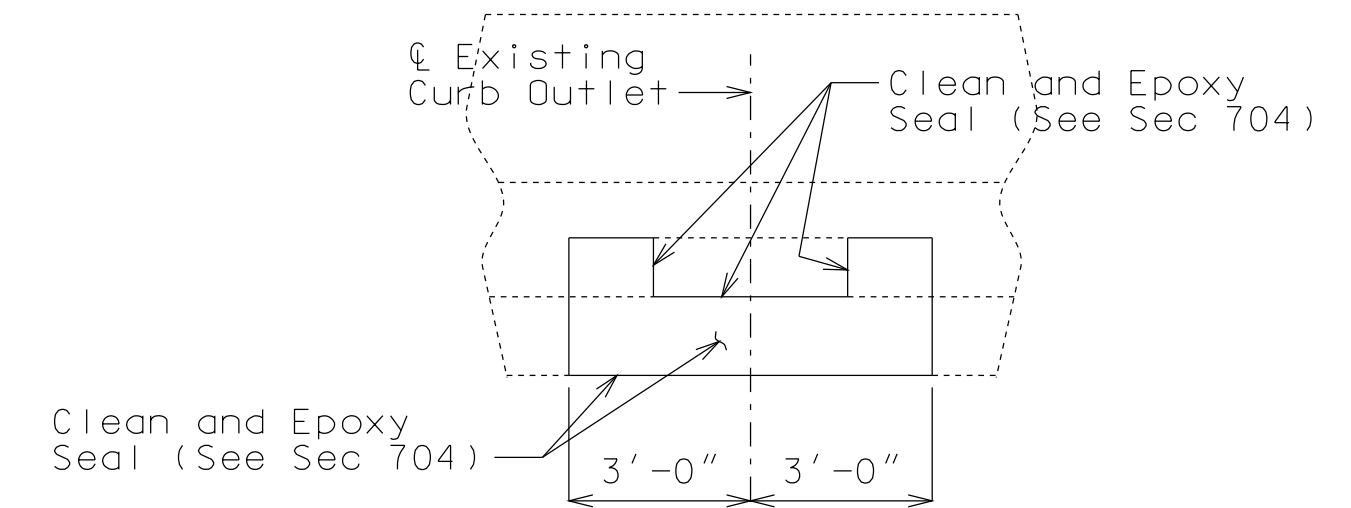
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 U.I.P. & Rehabilitate Existing (52'-72'-72'-52')  
 Continuous Concrete Voided Slab Spans

SEC/SUR 27 TWP 51N RGE 32W



TYPICAL SECTION OF EXISTING CURB  
 OUTLET SHOWING LIMITS OF EPOXY SEAL



TYPICAL ELEVATION OF EXISTING CURB  
 OUTLET SHOWING LIMITS OF EPOXY SEAL  
 (Wearing surface not shown for clarity)

Note:  
 All reinforcing steel in voided slab that is loose and exposed shall be removed as directed by the engineer. Removal of reinforcing steel and loose concrete will be considered completely covered by the contract unit price for Clean and Epoxy Seal.

General Notes:

Design Specifications:

2002 - AASHTO 17th Edition  
 Load Factor Design  
 Bridge Deck Rating = 6

Design Unit Stresses:

Class B-1 Concrete (Substructure and Curb Blockout)  $f'c = 4,000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi

Reinforcing Steel:

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

Joint Filler:

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

Miscellaneous:

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

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

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

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.

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

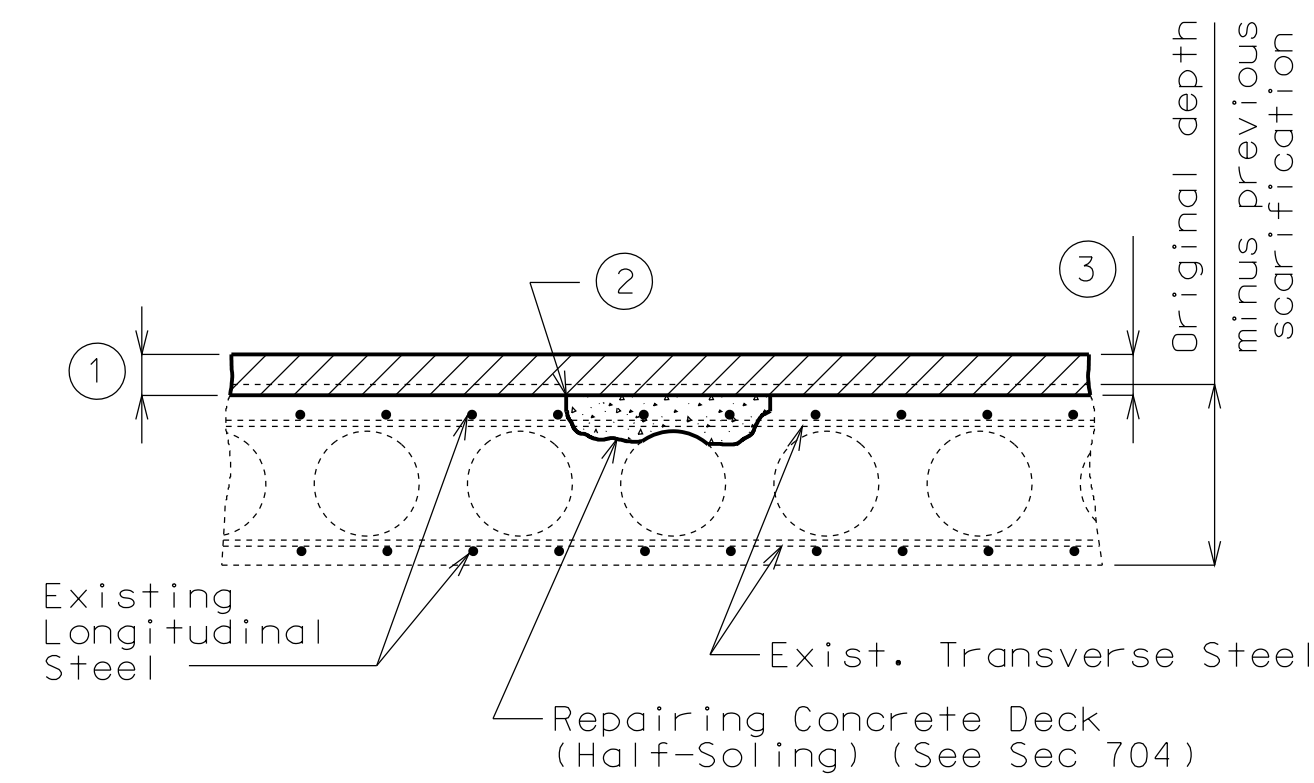
Traffic Handling:

Structure will be closed to traffic during construction. See Roadway Plans for Traffic Control Plan.

REPAIRS TO BRIDGE: RAMP 3 (I-35 SB  
 TO I-435 SB) OVER I-35  
 STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

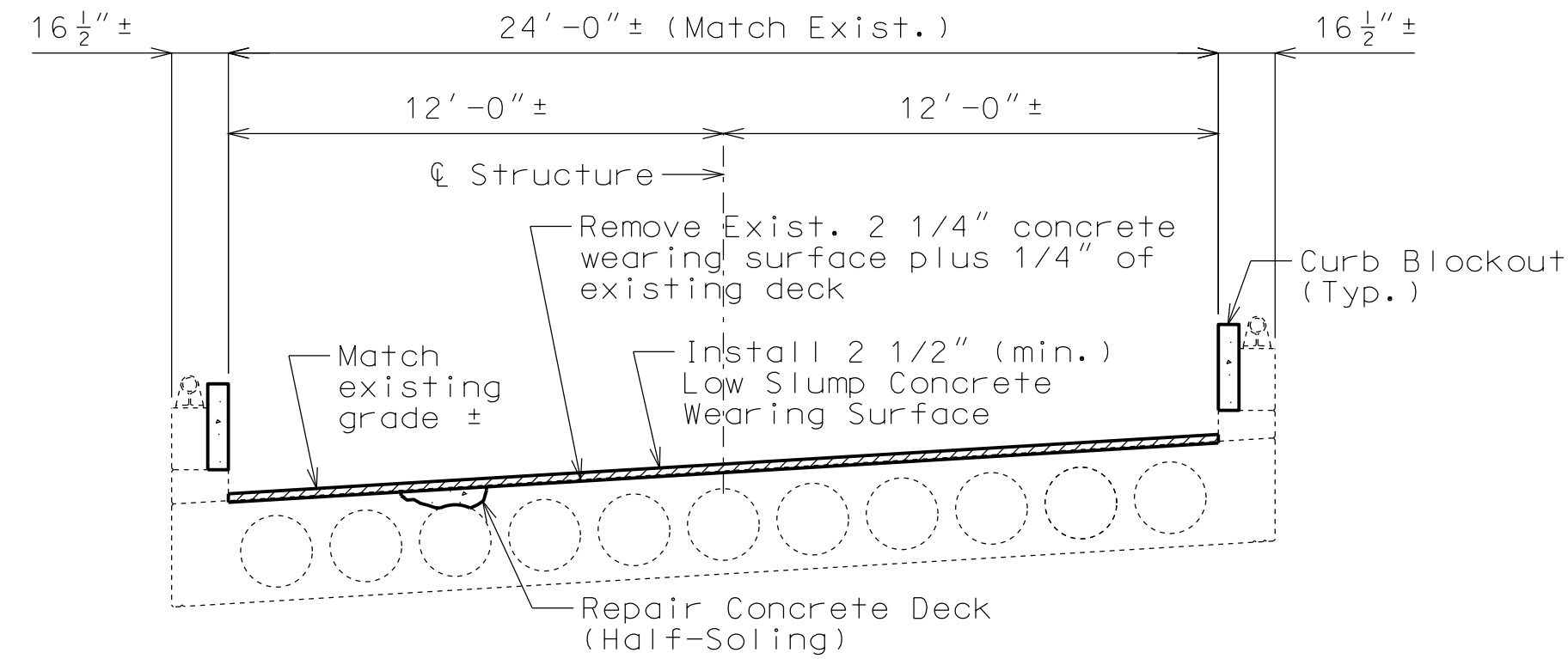
STA. 17+54.14± (Ramp 3)(Match Existing)

STD. 617.10  
 STD. 706.35



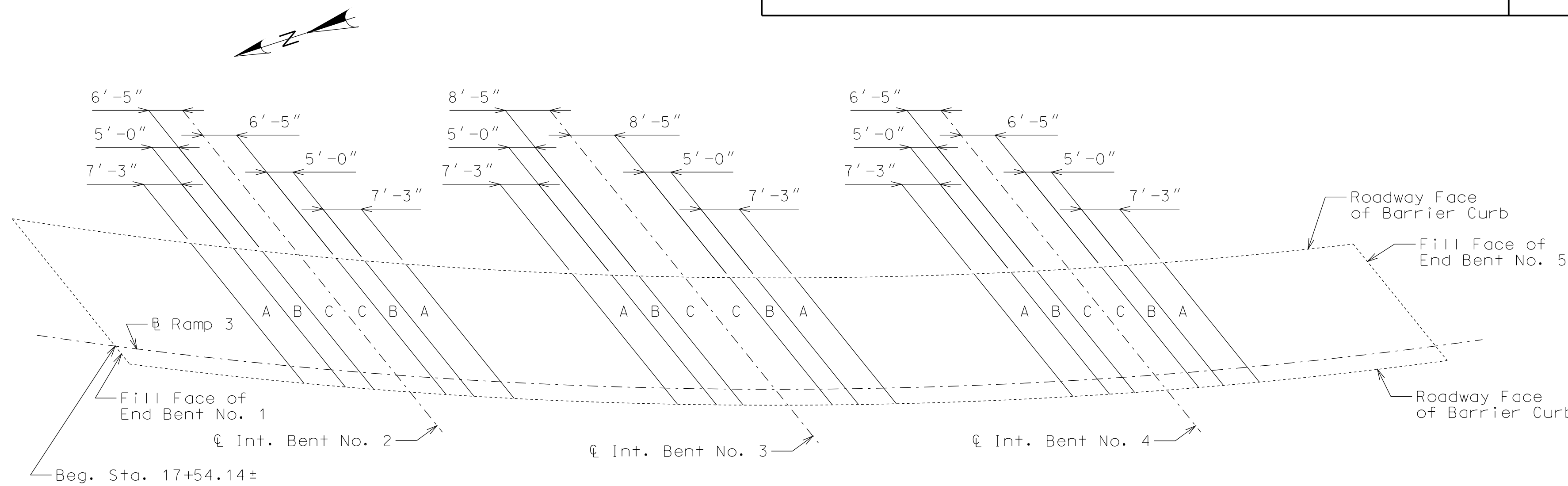
HALF-SOLED REPAIR

- 1 Remove existing wearing surface plus 1/4" of existing deck.
- 2 One inch vertical side shall be established outside the deteriorated area. See Sec 704.
- 3 2 1/2" (min.) for Low Slump Concrete Wearing Surface



SECTION THRU EXISTING SLAB

Estimated Quantities		
Item		Total
Removal of Concrete Wearing Surface	sq. foot	6033
Low Slump Concrete Wearing Surface	sq. yard	670
Curb Blockout	linear foot	527
Rehabilitation of Existing Wings	lump sum	1
Repairing Concrete Deck (Half-Soling)	sq. foot	300
Clean and Epoxy Seal	sq. foot	529



PLAN OF EXISTING 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 prior to work in Zone A.

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).

"THIS MEDIA SHOULD  
 NOT BE CONSIDERED  
 A CERTIFIED  
 DOCUMENT."

DATE PREPARED  
 12/3/2012

ROUTE  
 I-435 STATE  
 MO

DISTRICT  
 BR SHEET NO.  
 1

COUNTY  
 CLAY

JOB NO.  
 J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
 A15792

DESCRIPTION

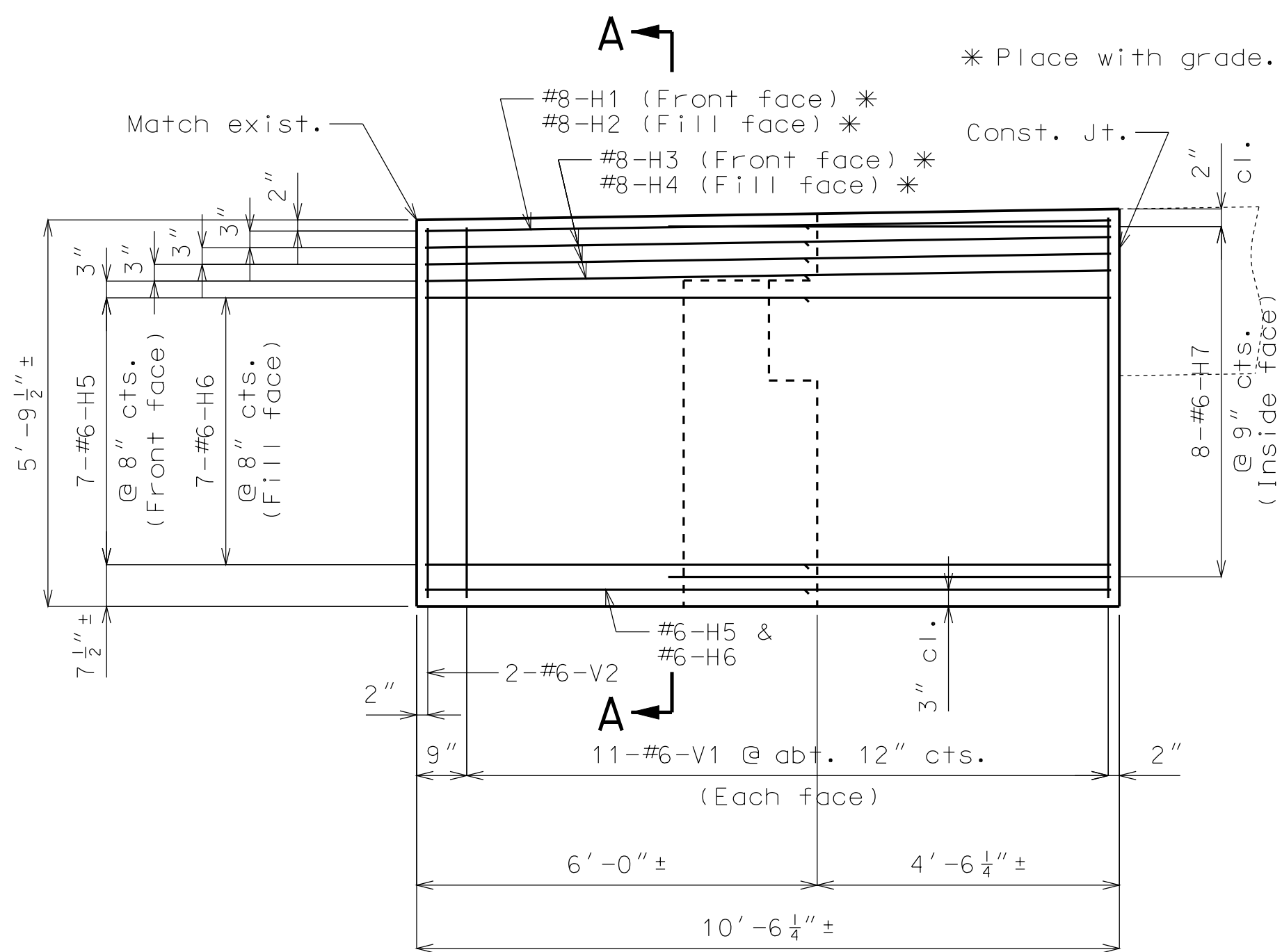
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION  
 COMMISSION

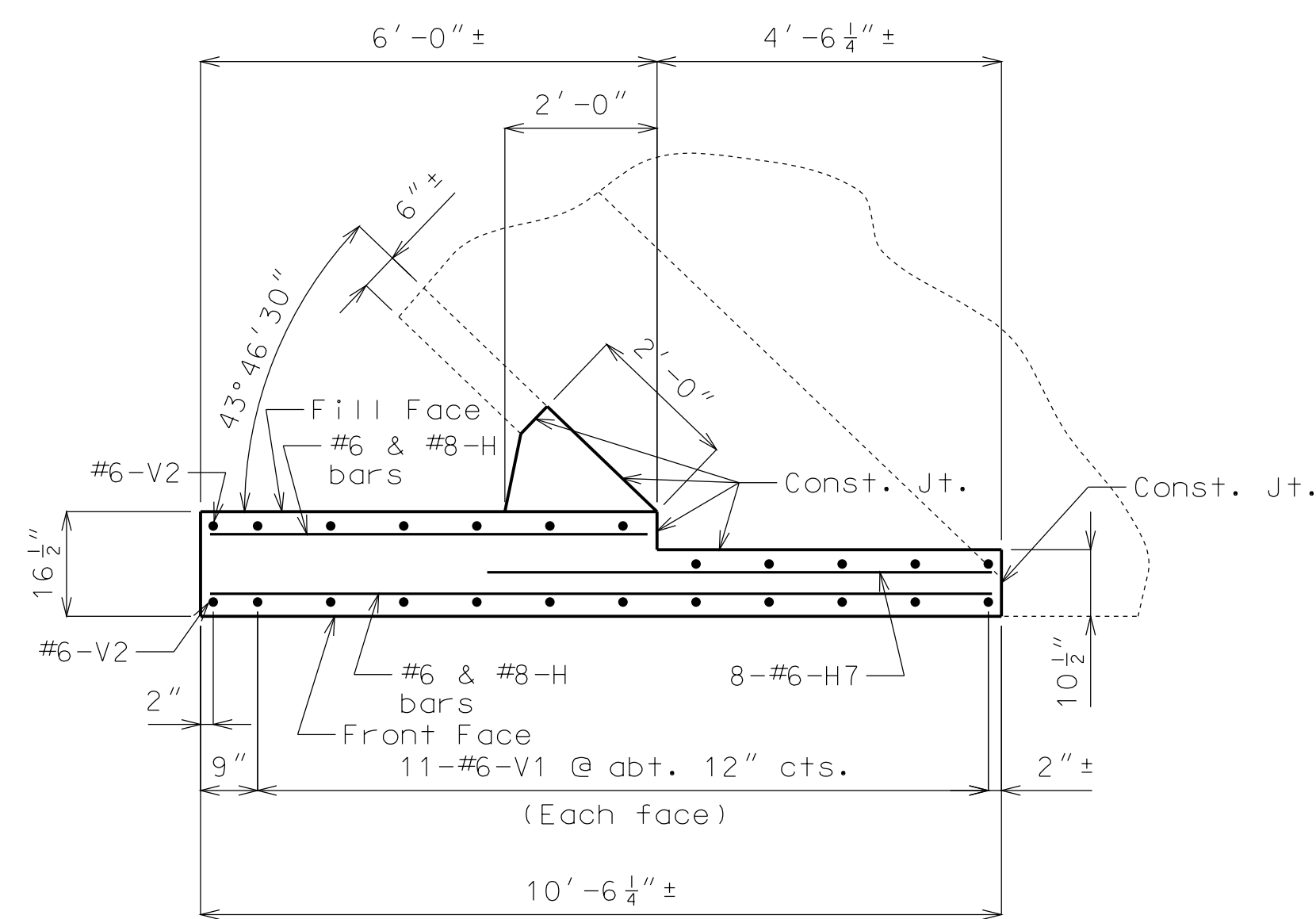
105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

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

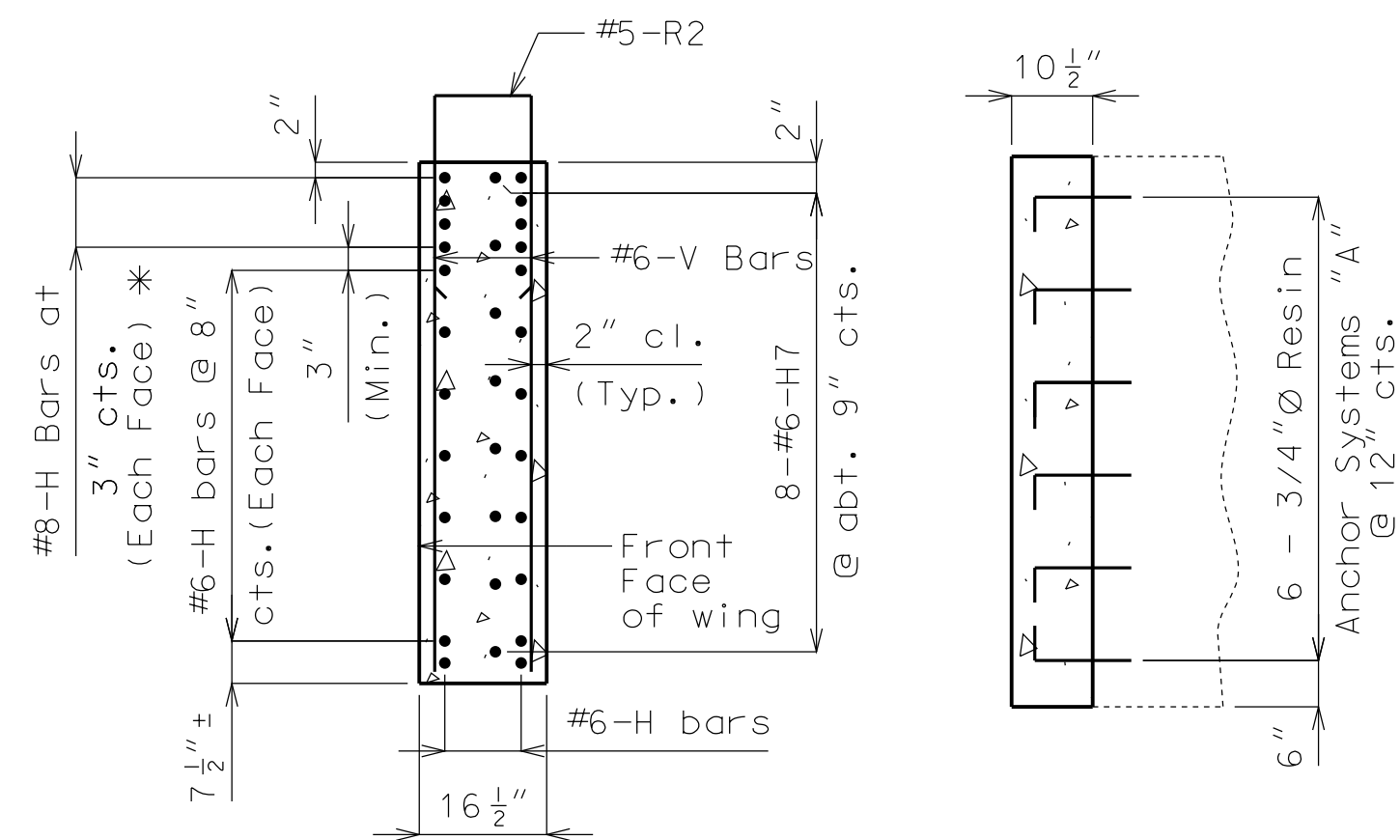




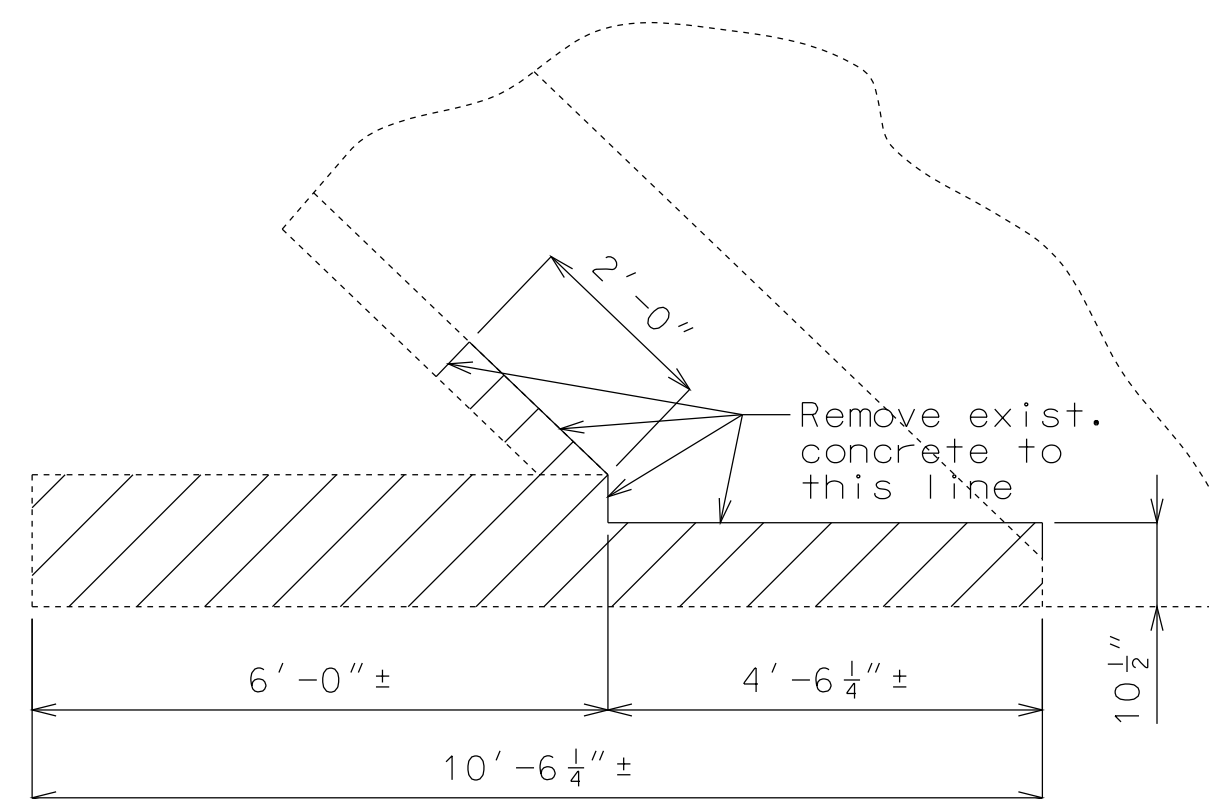
ELEVATION SHOWING WING REINFORCEMENT & DIMENSIONS



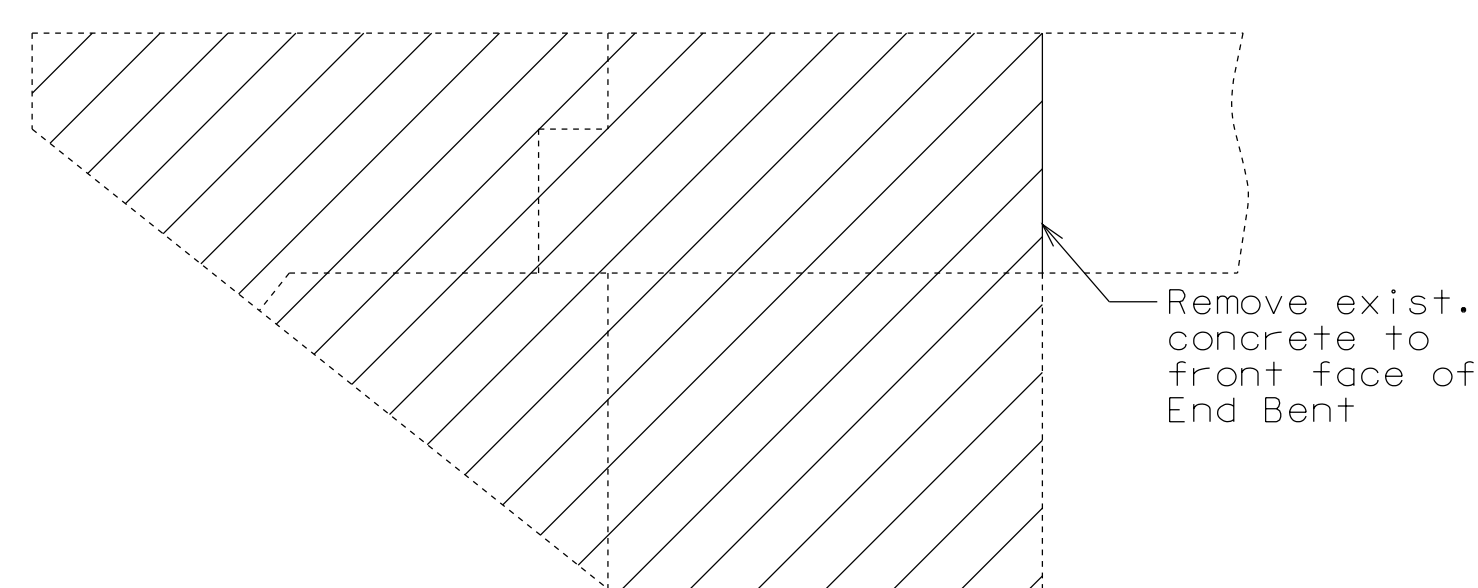
PLAN SHOWING WING REINFORCEMENT & DIMENSIONS



SECTION A-A SECTION B-B

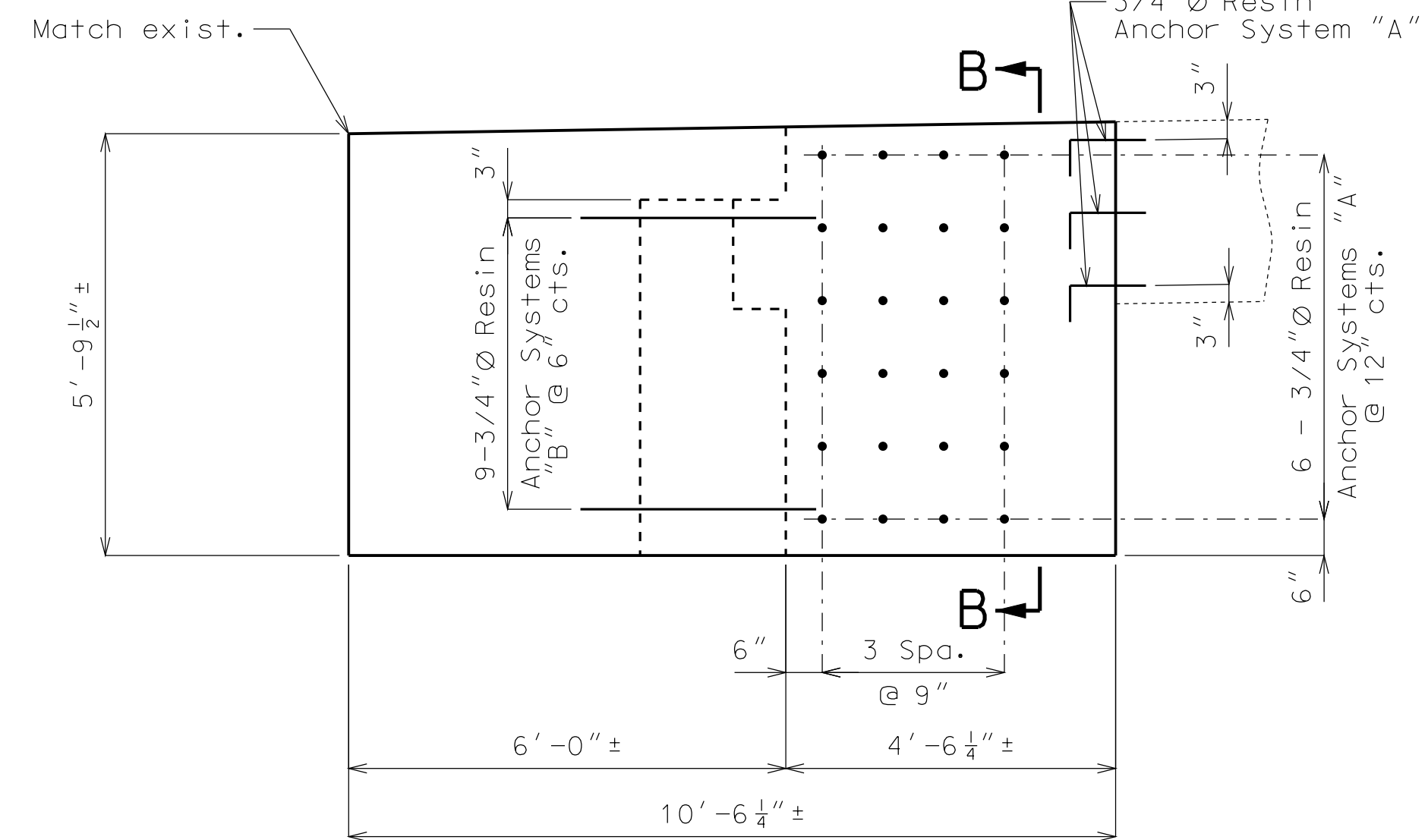


PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL

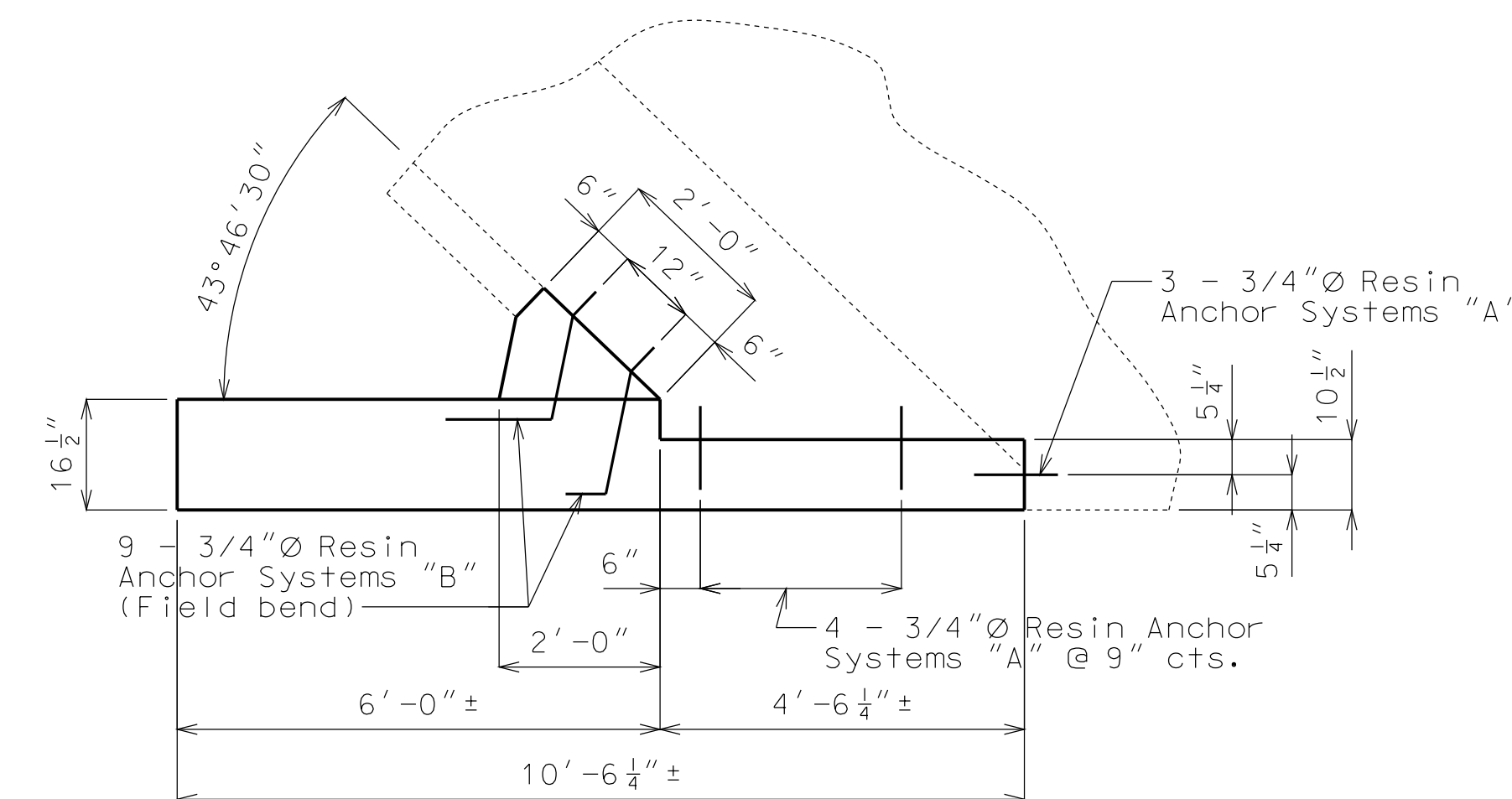


ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL

(See Sheet No. 6 for curb, parapet & end post removal.)



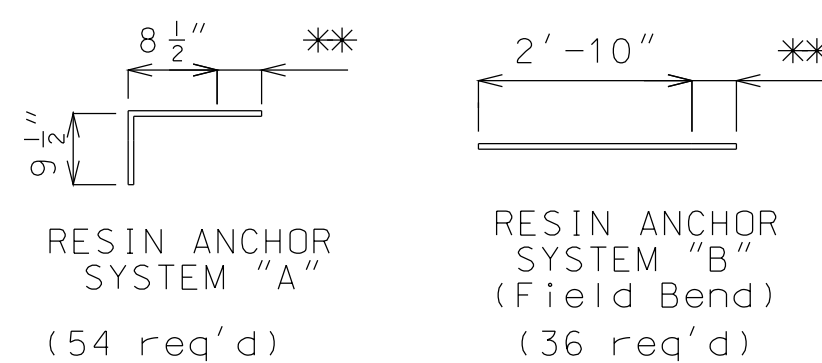
ELEVATION SHOWING WING RESIN ANCHORS & DIMENSIONS



PLAN SHOWING WING RESIN ANCHORS & DIMENSIONS

Notes:  
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.  
The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".  
A #6 Grade 60 reinforcing bar shall be substituted for the 3/4"Ø threaded rod.

Cost of removal of wing, resin anchors, excavation, Class B-1 Concrete and reinforcing steel for rehabilitation of right (NW) wing will be considered completely covered by the contract lump sum price for Rehabilitation of Existing Wings.



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

DETAILS OF RESIN ANCHORS

DETAILS SHOWING REHABILITATION OF RIGHT (NW) WING AT END BENT NO. 1

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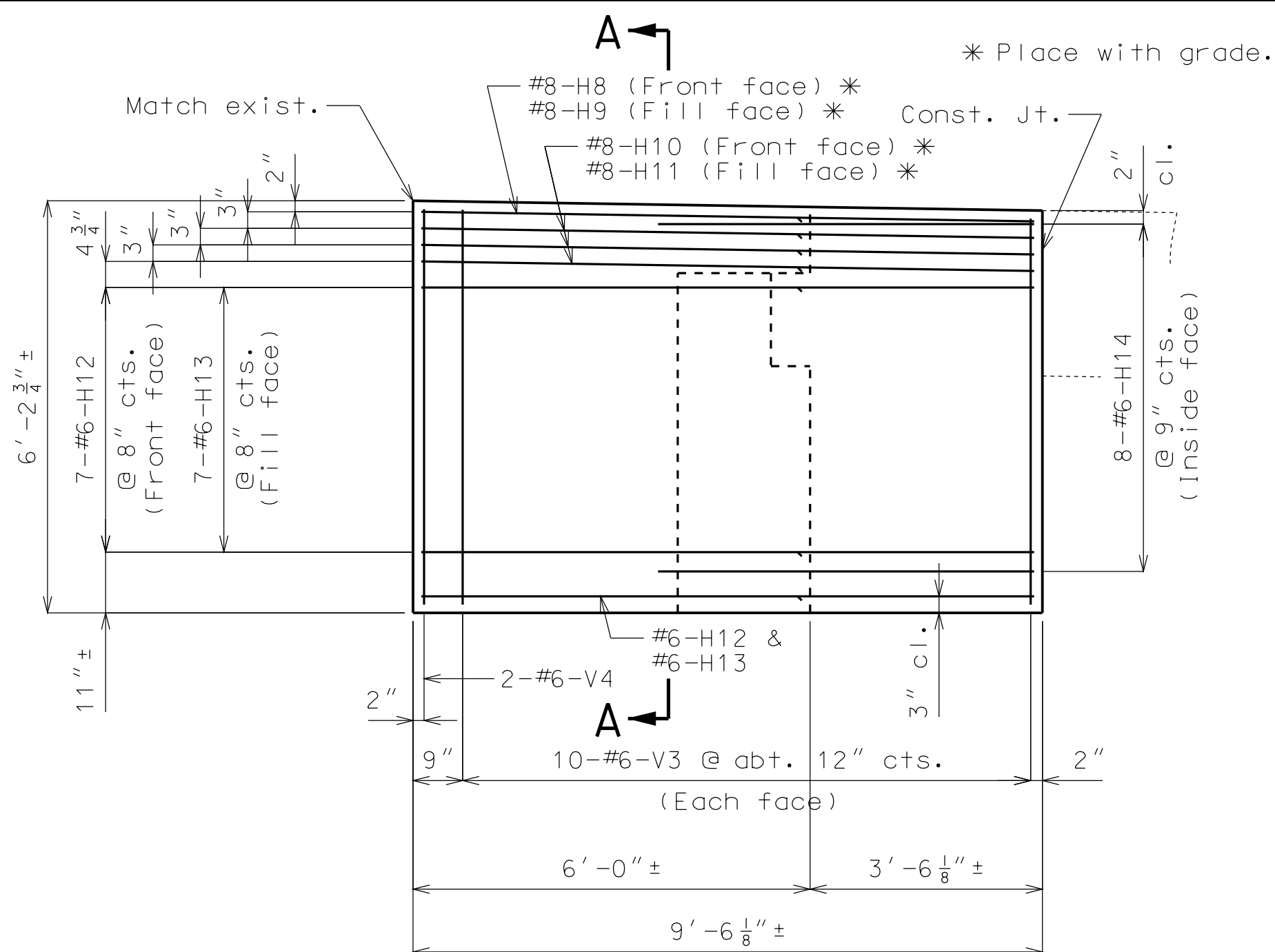
DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15792	

DESCRIPTION	DATE

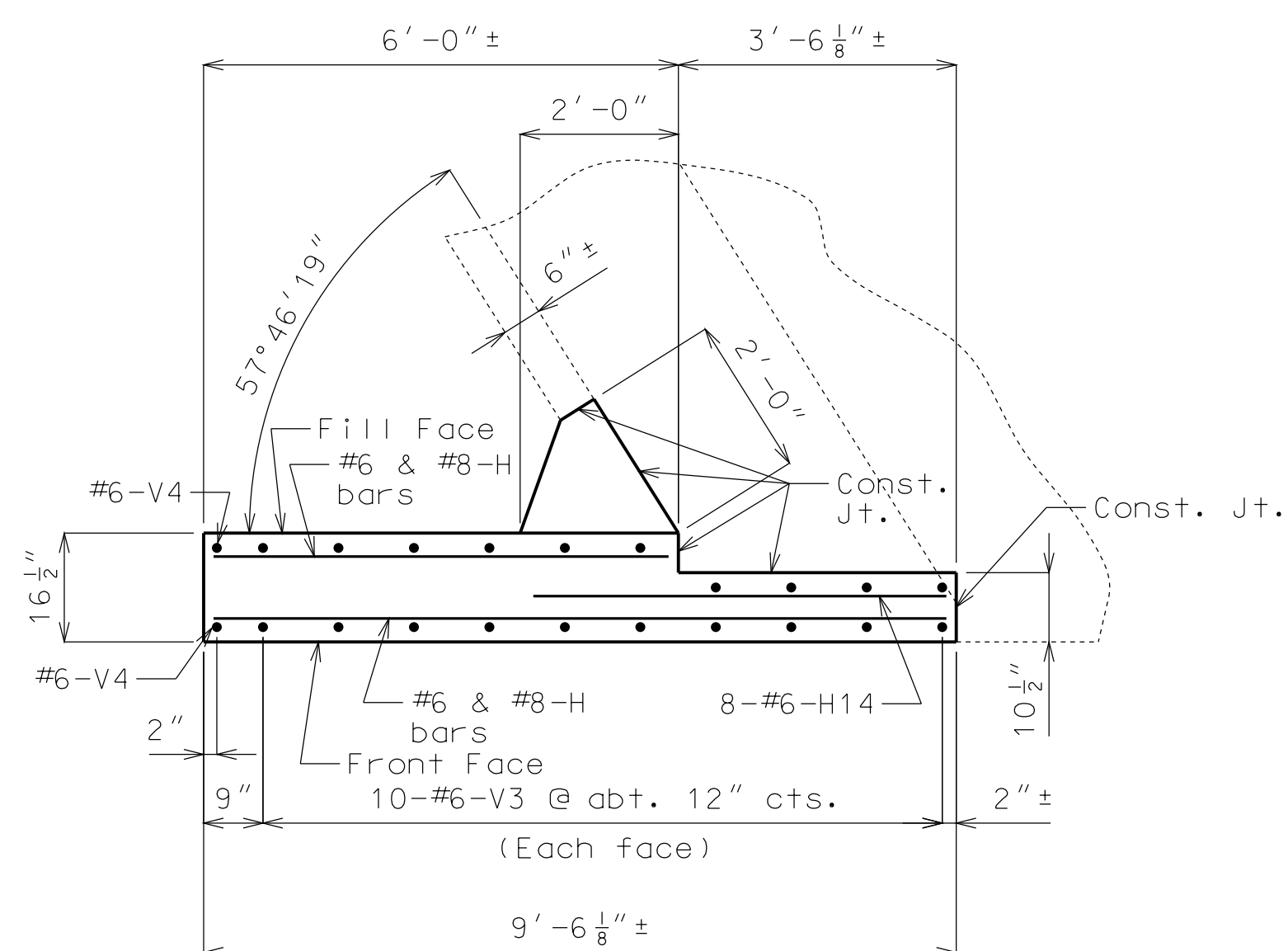
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

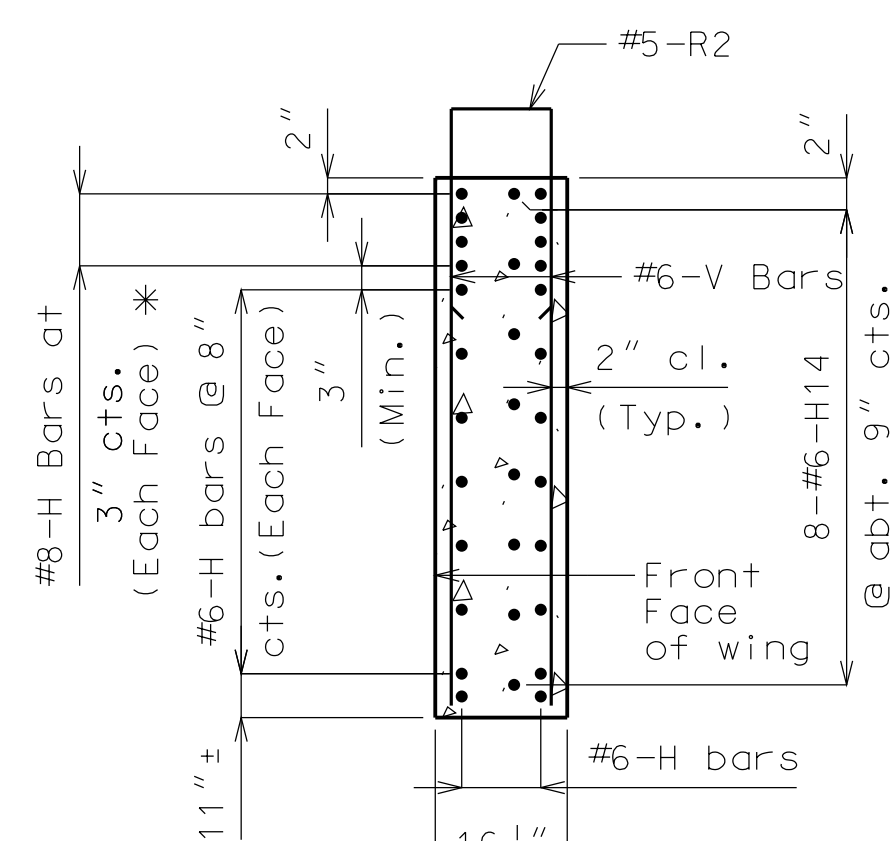
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



ELEVATION SHOWING WING REINFORCEMENT & DIMENSIONS

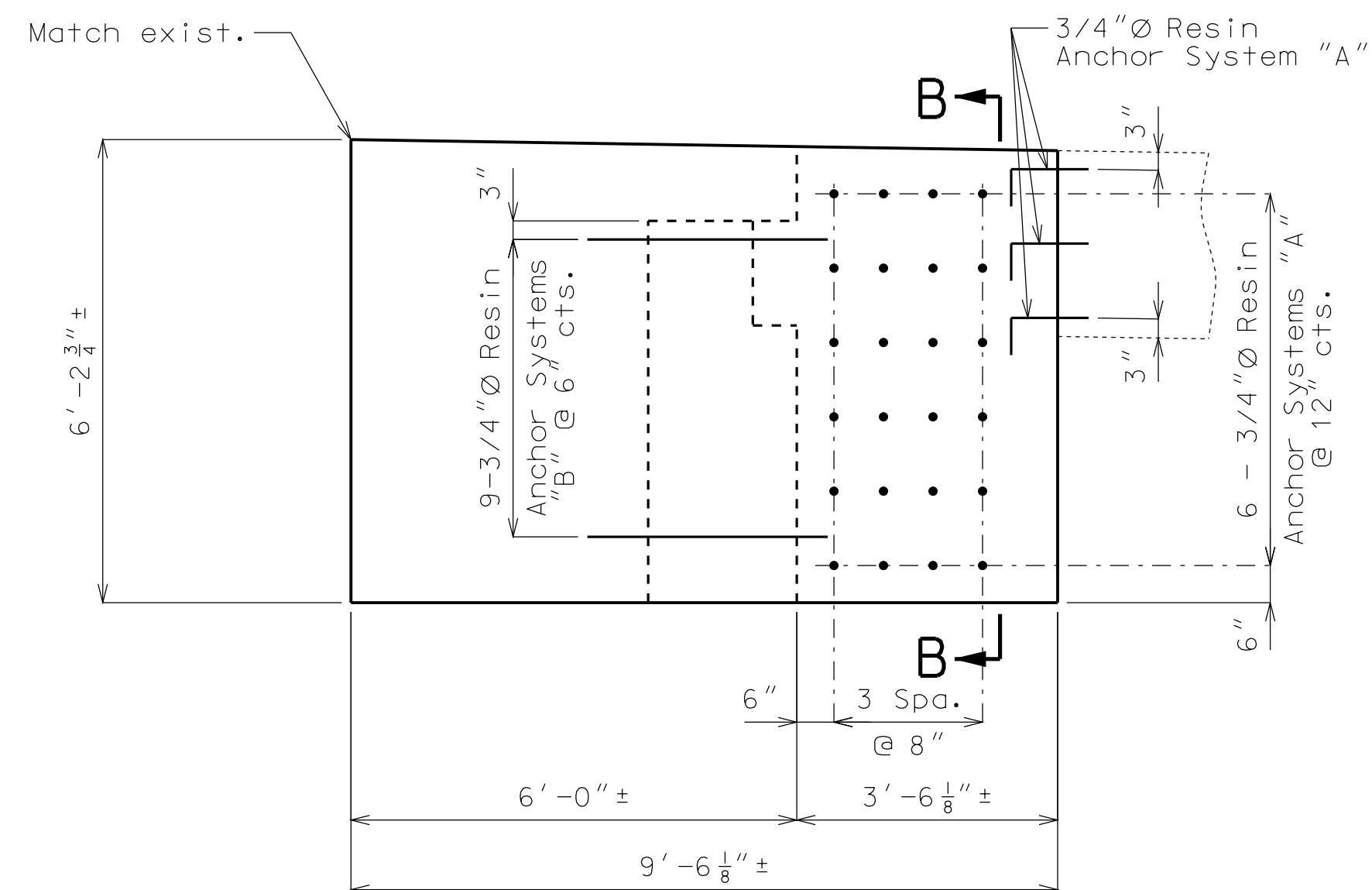


PLAN SHOWING WING REINFORCEMENT & DIMENSIONS

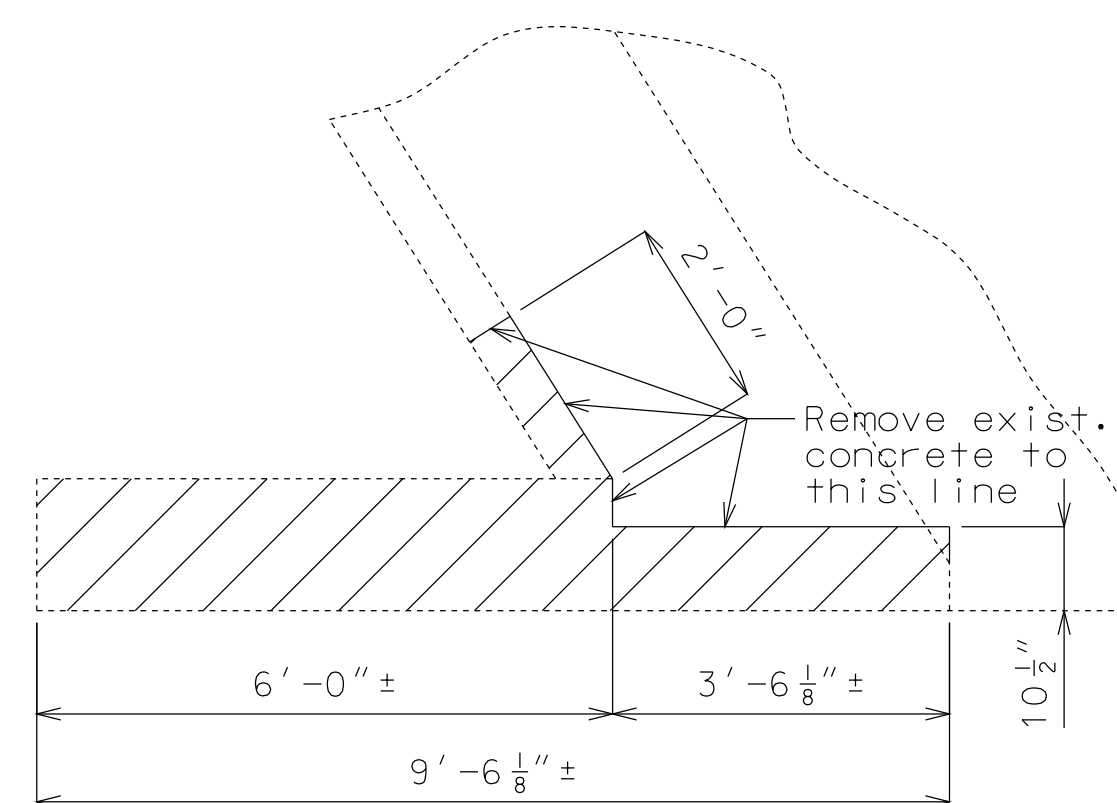


SECTION A-A

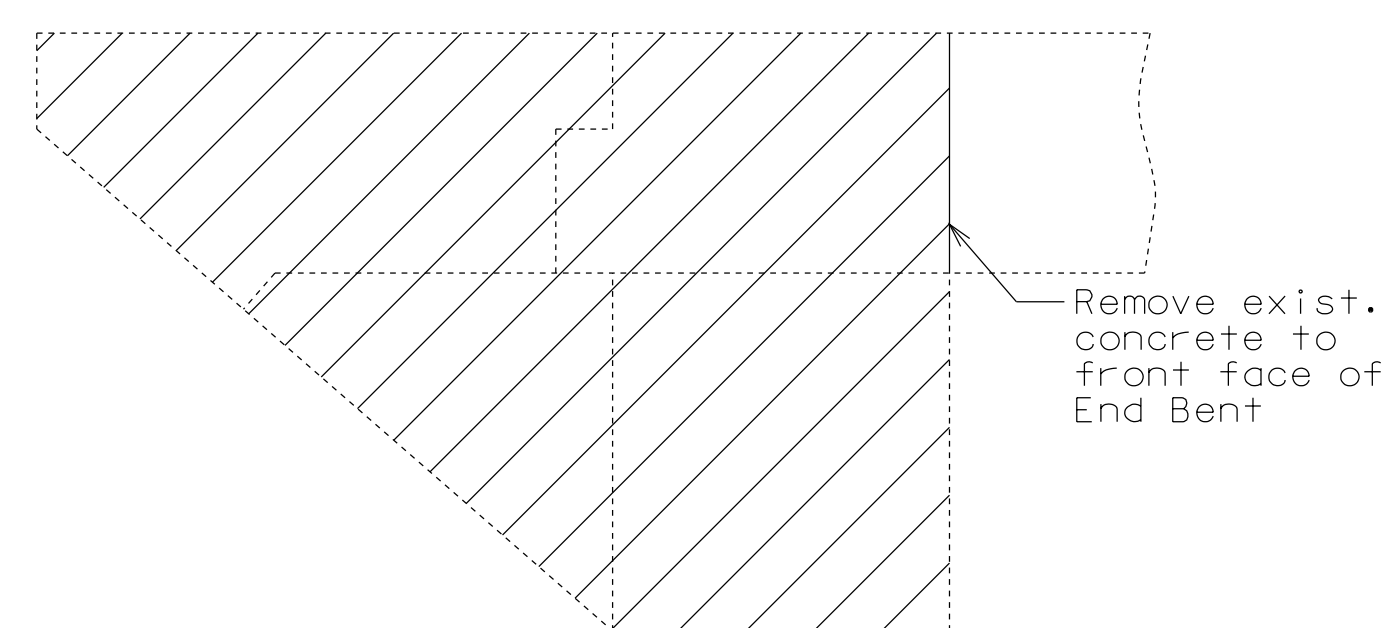
SECTION B-B



ELEVATION SHOWING WING RESIN ANCHORS & DIMENSIONS

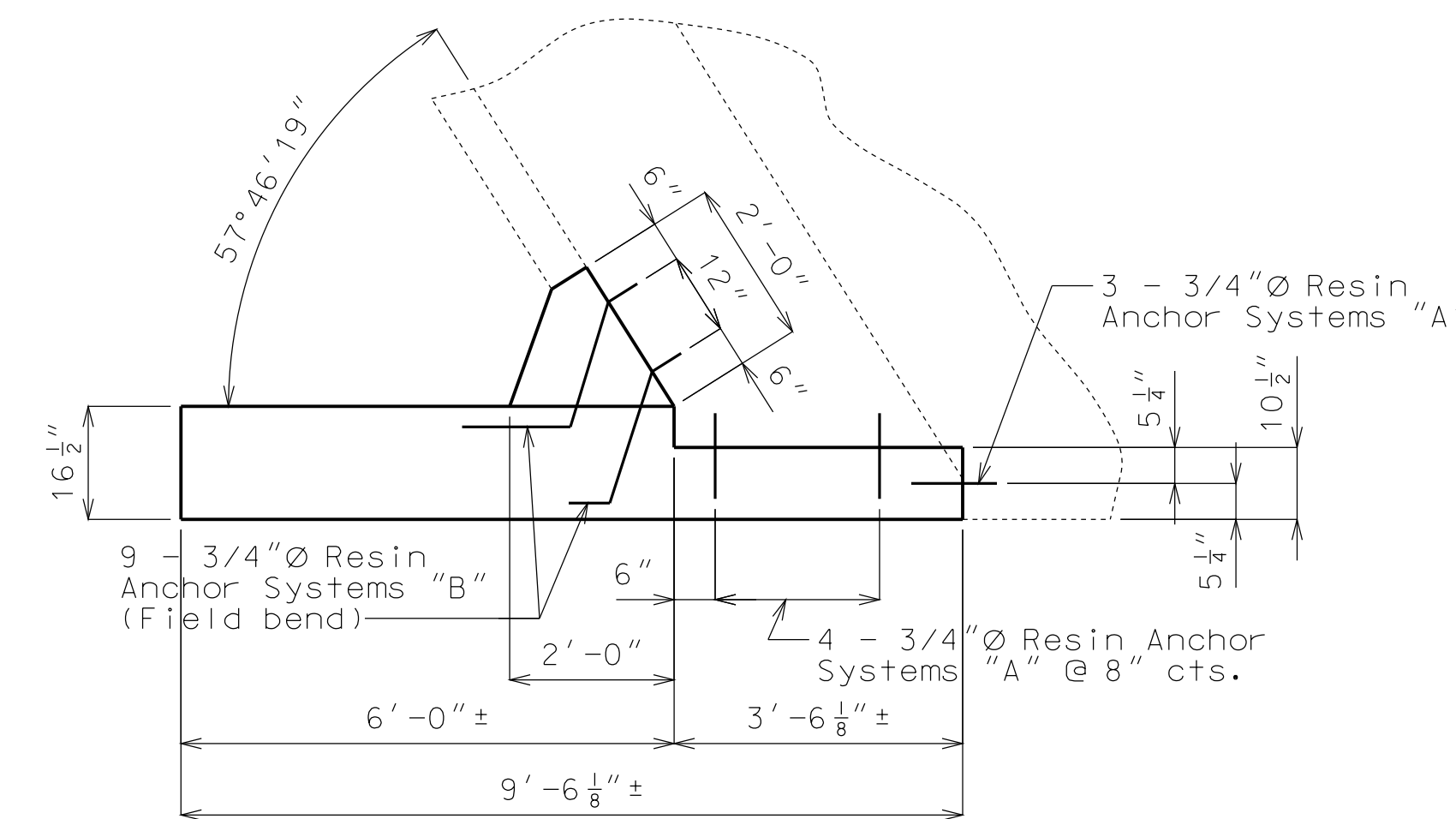


PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL



ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL

(See Sheet No. 6 for curb, parapet & end post removal.)



PLAN SHOWING WING RESIN ANCHORS & DIMENSIONS

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

A #6 Grade 60 reinforcing bar shall be substituted for the 3/4" Ø threaded rod.

Cost of removal of wing, resin anchors, excavation, Class B-1 Concrete and reinforcing steel for rehabilitation of left (SE) wing will be considered completely covered by the contract lump sum price for Rehabilitation of Existing Wings.

For Details of Resin Anchors, see Sheet No. 2.

DETAILS SHOWING REHABILITATION OF LEFT (SE) WING AT END BENT NO. 5

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DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15792	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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DATE PREPARED  
12/3/2012

ROUTE I-435 STATE MO  
DISTRICT BR SHEET NO. 4

COUNTY CLAY  
JOB NO. J412381  
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A15792

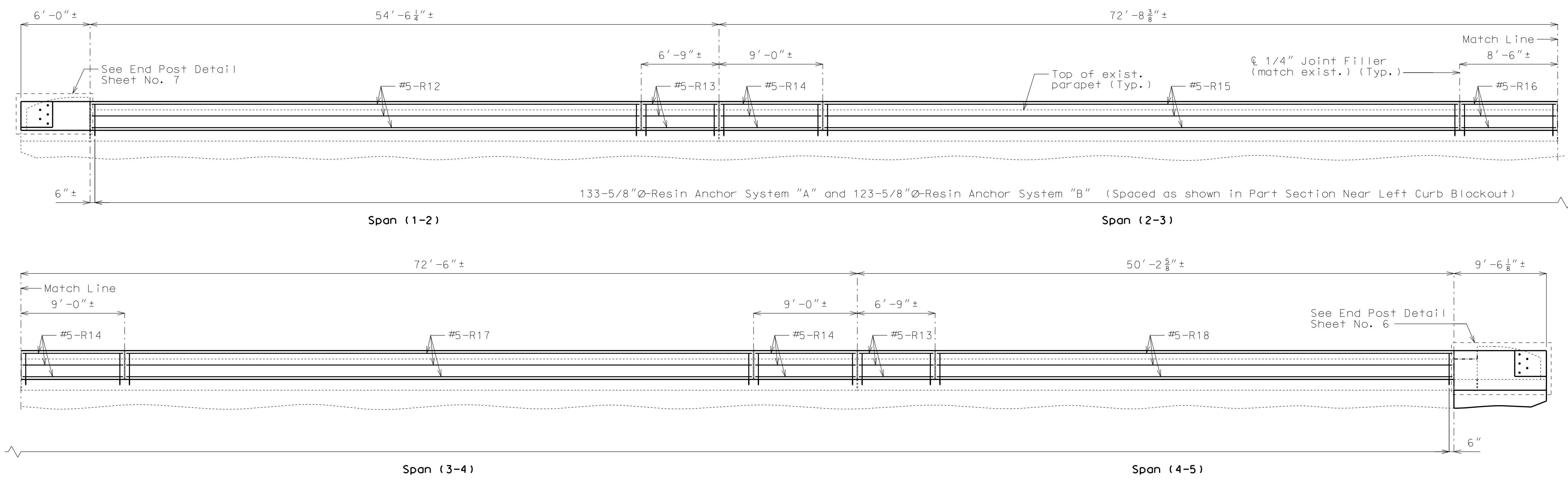
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MO DOT

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

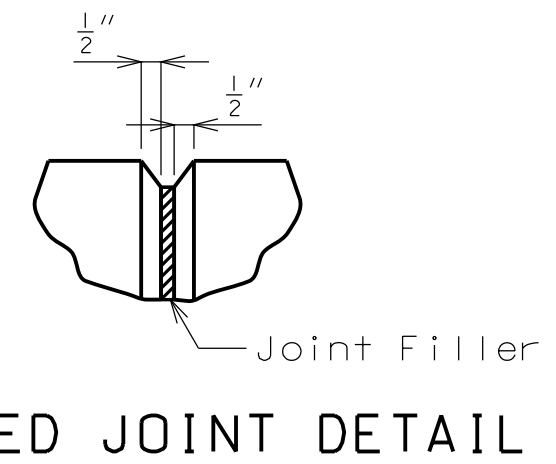
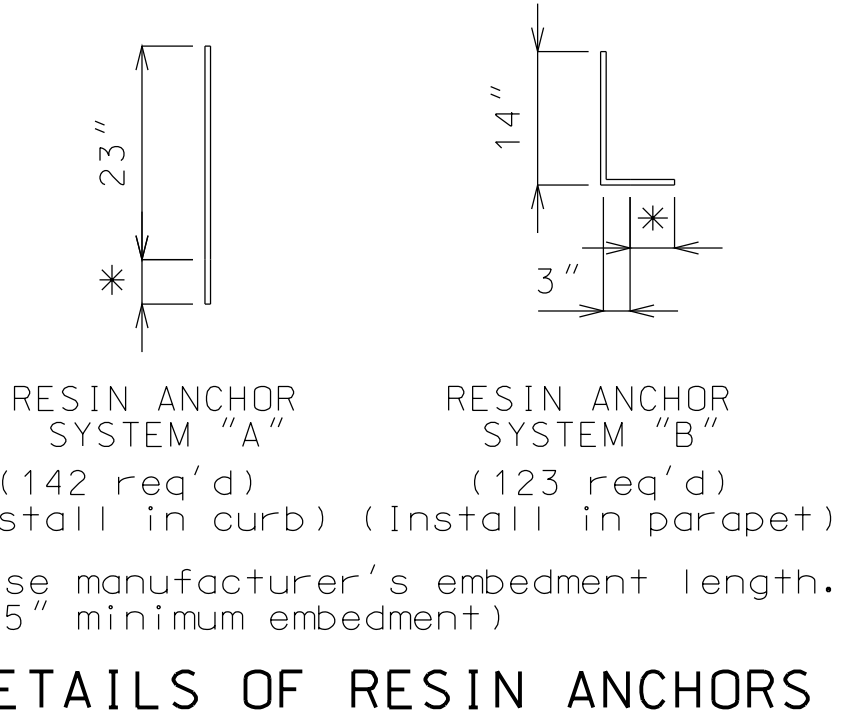
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



**SECTION NEAR LEFT CURB BLOCKOUT**

Note: Longitudinal dimensions shown are arc dimensions along grade and are taken at top and  $\phi$  of Parapet.

Bridge rail and concrete wearing surface not shown for clarity.



Notes:

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

Measurement of curb blockout is to the nearest linear foot, measured at the top and  $\phi$  of parapet from end of wing to end of wing. (Match existing curb and parapet)

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

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

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

All reinforcement shall be epoxy coated.

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

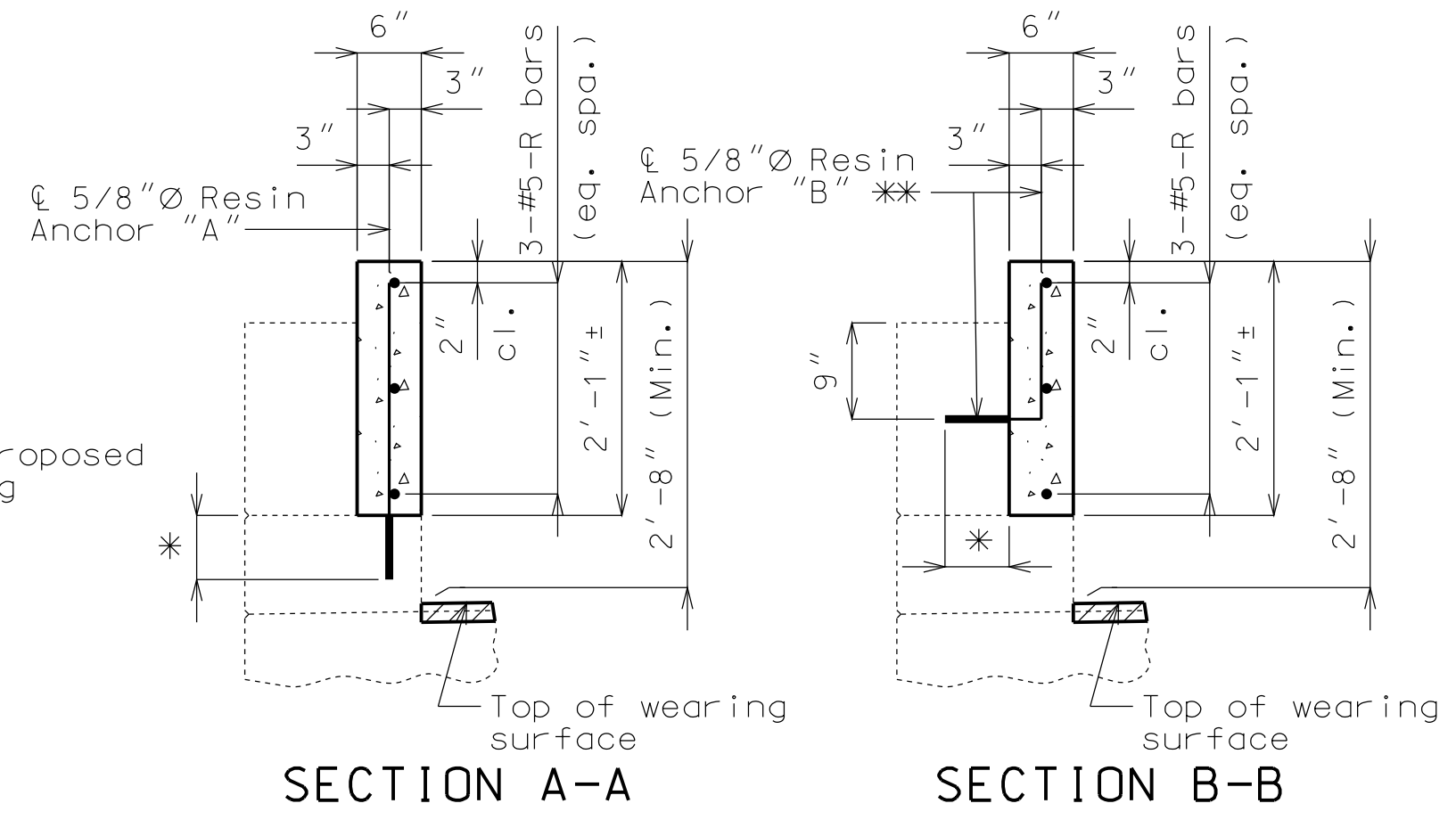
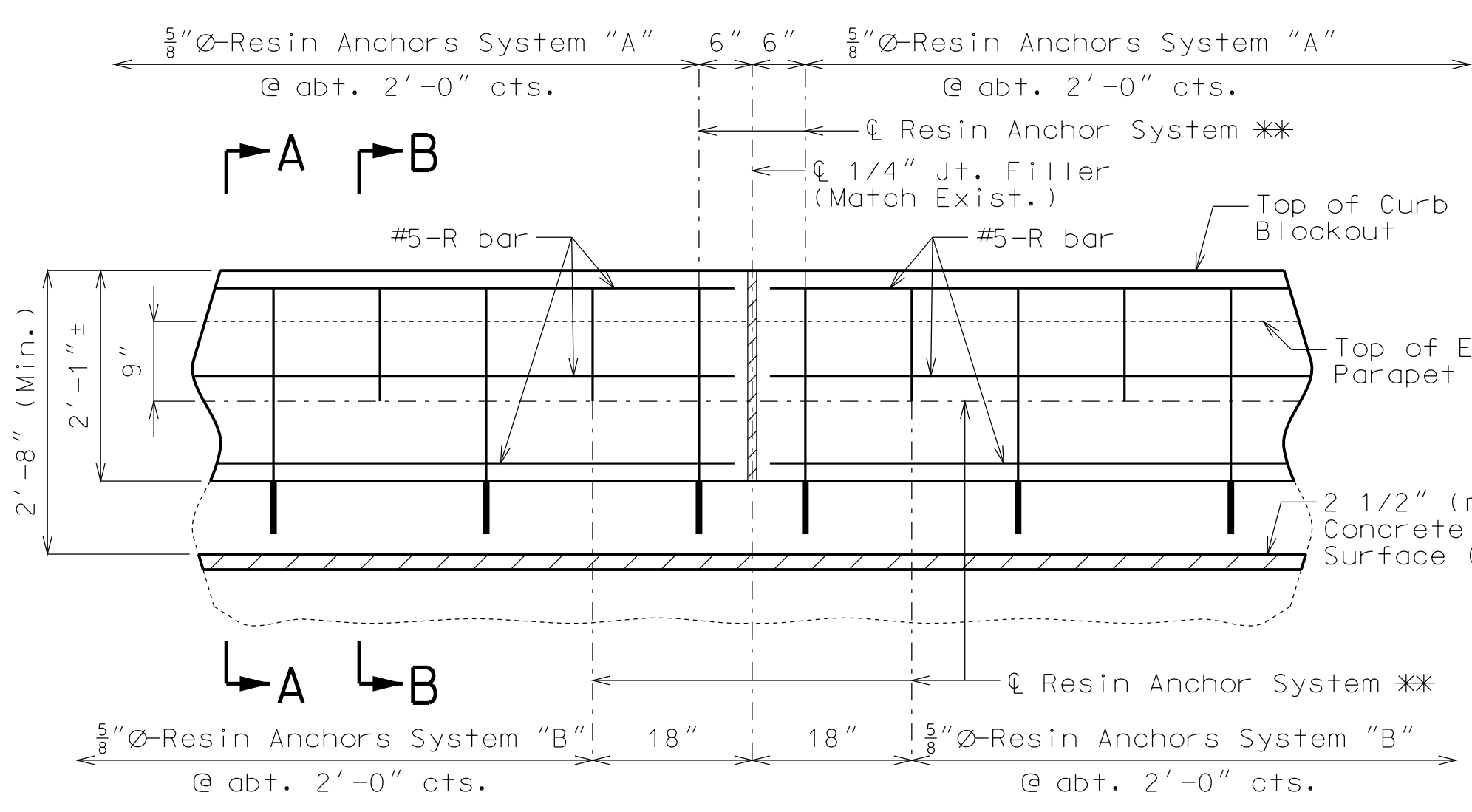
Use a minimum lap of 2'-11" for #5 horizontal curb blockout bars.

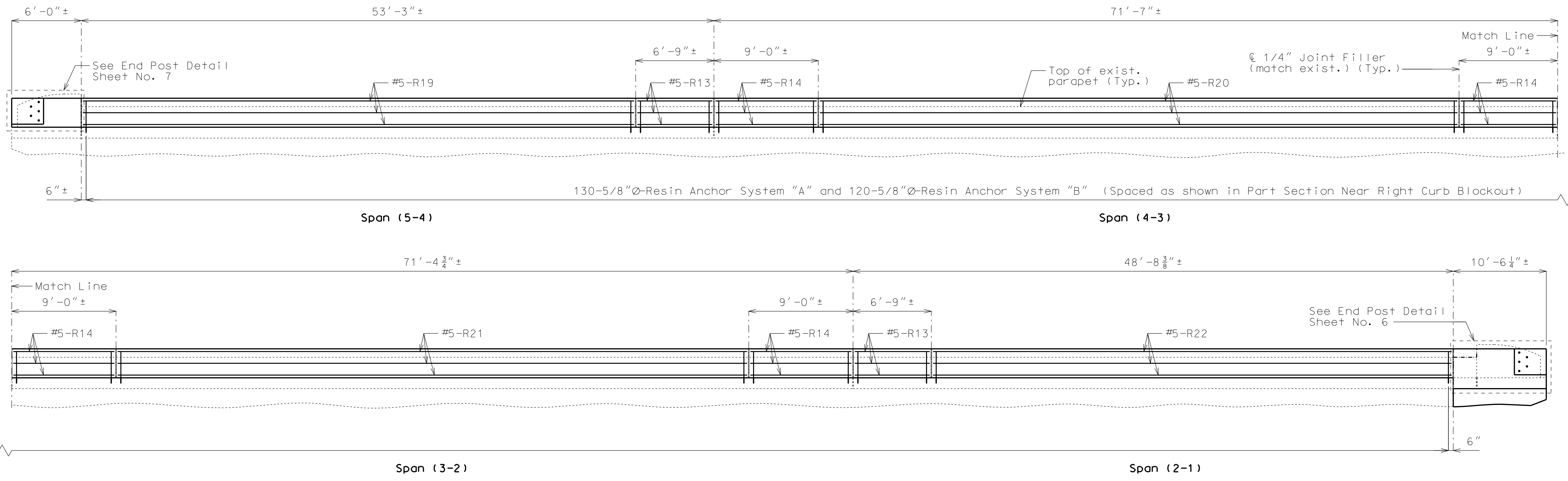
Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators shall have retroreflective sheeting on side facing oncoming traffic only. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Curb Blockout".

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

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

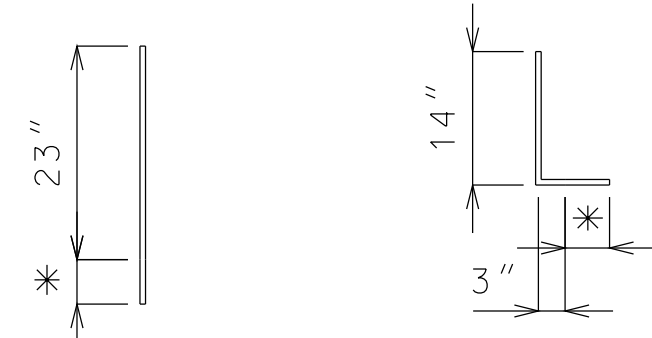
An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8"Ø threaded rod.





**SECTION NEAR RIGHT CURB BLOCKOUT**

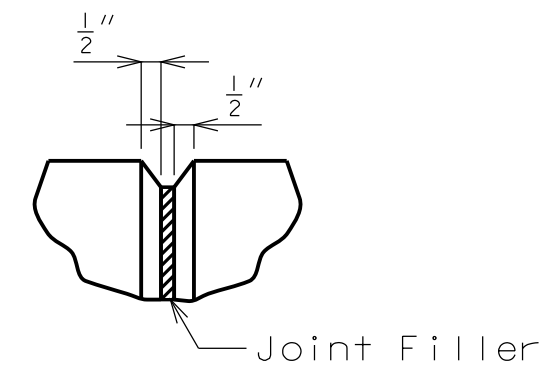
Note: Longitudinal dimensions shown are arc dimensions along grade and are taken at top and  $\ell$  of Parapet.  
 Bridge rail and concrete wearing surface not shown for clarity.



**RESIN ANCHOR SYSTEM "A"**  
 (139 req'd)  
 (Install in curb)  
 \* Use manufacturer's embedment length. (5" minimum embedment)

**RESIN ANCHOR SYSTEM "B"**  
 (120 req'd)  
 (Install in parapet)

**DETAILS OF RESIN ANCHORS**



**FILLED JOINT DETAIL**

Notes:  
 Concrete in curb blockout shall be Class B-1 with  $f'c = 4000$  psi.  
 Measurement of curb blockout is to the nearest linear foot, measured at the top and  $\ell$  of parapet from end of wing to end of wing. (Match existing curb and parapet)  
 All exposed edges of curb blockout shall have 1/2" radius or 3/8" bevel unless otherwise shown.

Payment for concrete, reinforcing steel, resin anchors, and any other work incidental to the curb blockout, complete in place, will be included in the contract unit price for Curb Blockout per linear foot.  
 Cost of any concrete curb or parapet repair will be included in the contract unit price for Curb Blockout.  
 All reinforcement shall be epoxy coated.

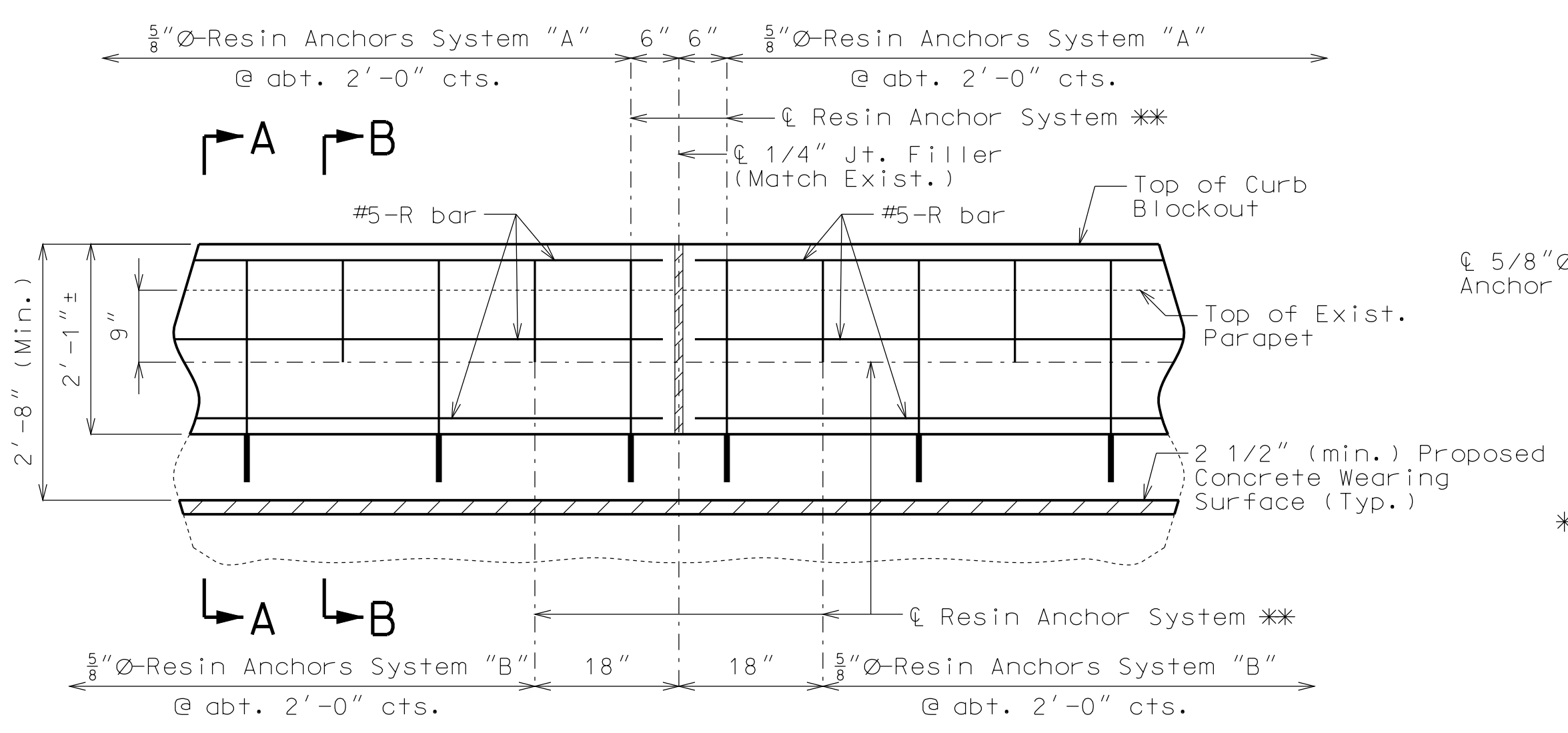
\*\* Shift resin anchors where necessary to clear existing anchor bolts for bridge rail, miss curb outlets (if present) and clear existing reinforcement.

Use a minimum lap of 2'-11" for #5 horizontal curb blockout bars.  
 Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators shall have retroreflective sheeting on side facing oncoming traffic only. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Curb Blockout".

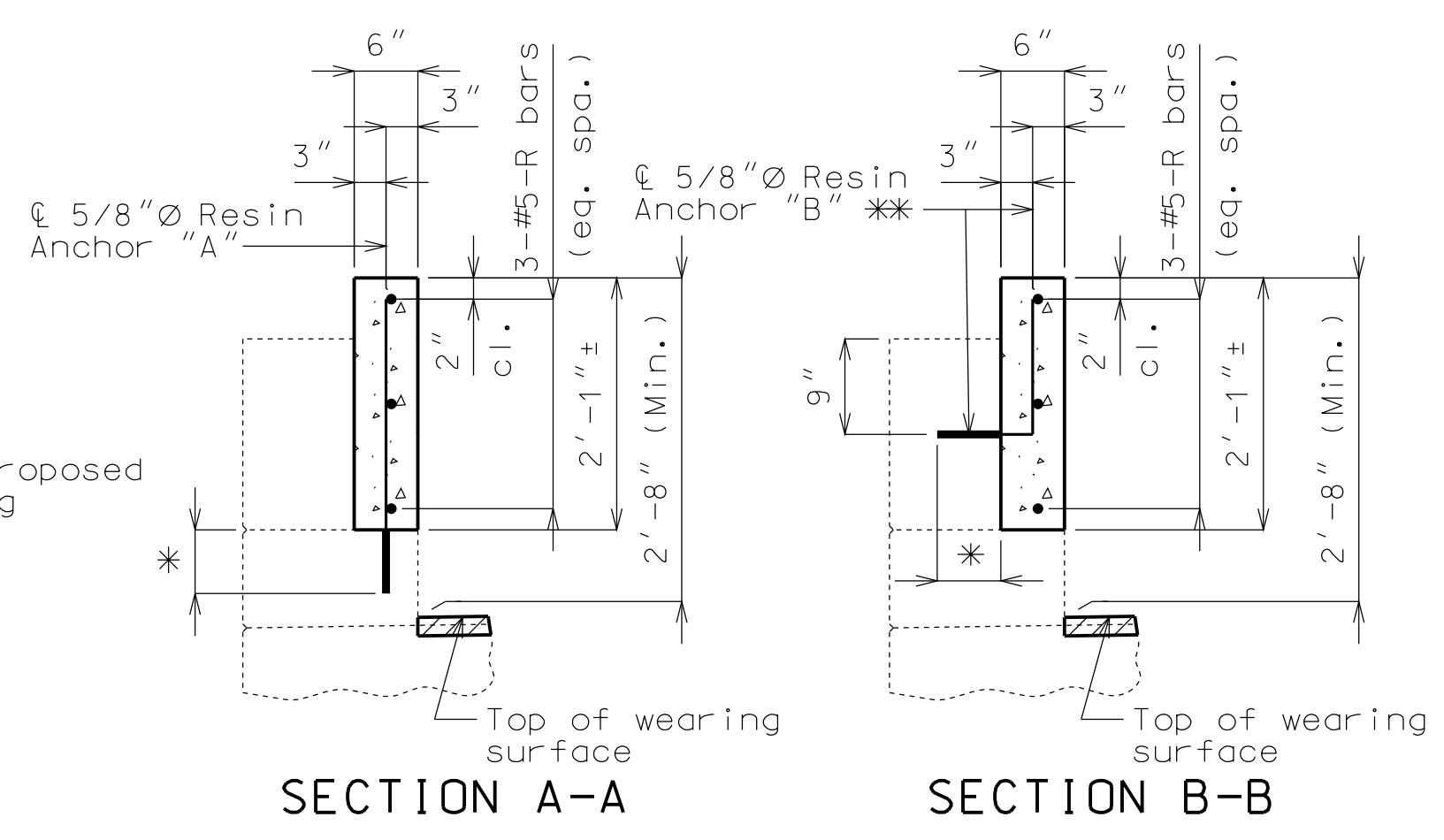
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

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

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



**PART SECTION NEAR RIGHT CURB BLOCKOUT**



**DETAILS OF RIGHT CURB BLOCKOUT**

Detailed Aug. 2012  
 Checked Aug. 2012

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

Sheet No. 5 of 8

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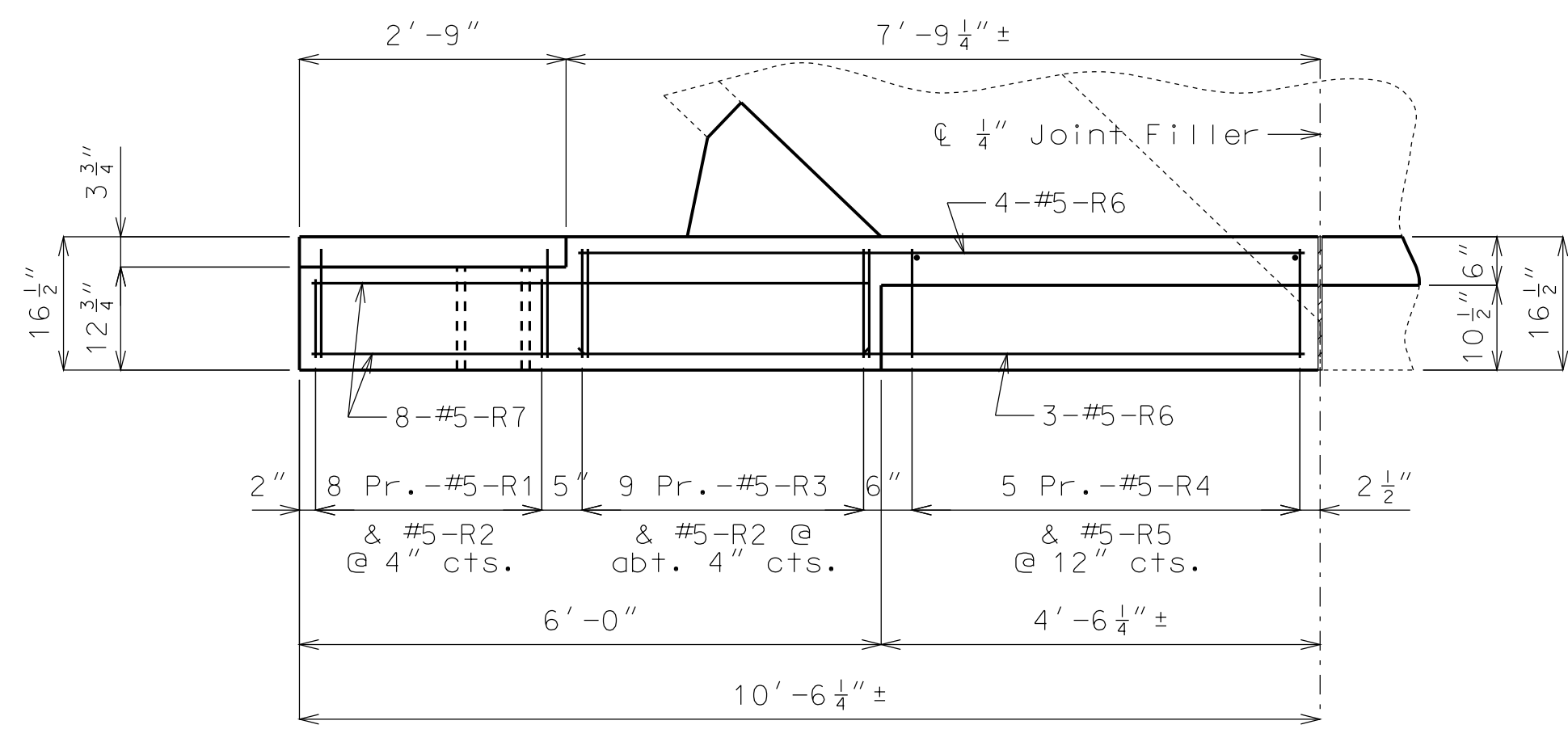
DATE PREPARED <b>12/3/2012</b>	
ROUTE <b>I-435</b>	STATE <b>MO</b>
DISTRICT <b>BR</b>	SHEET NO. <b>5</b>
COUNTY <b>CLAY</b>	
JOB NO. <b>J412381</b>	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. <b>A15792</b>	

DESCRIPTION	DATE

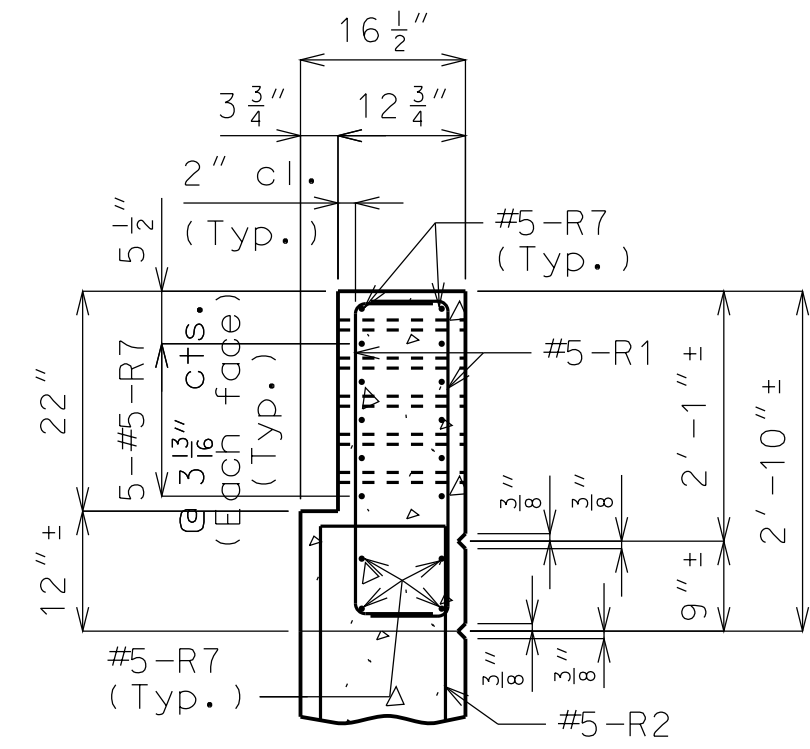
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

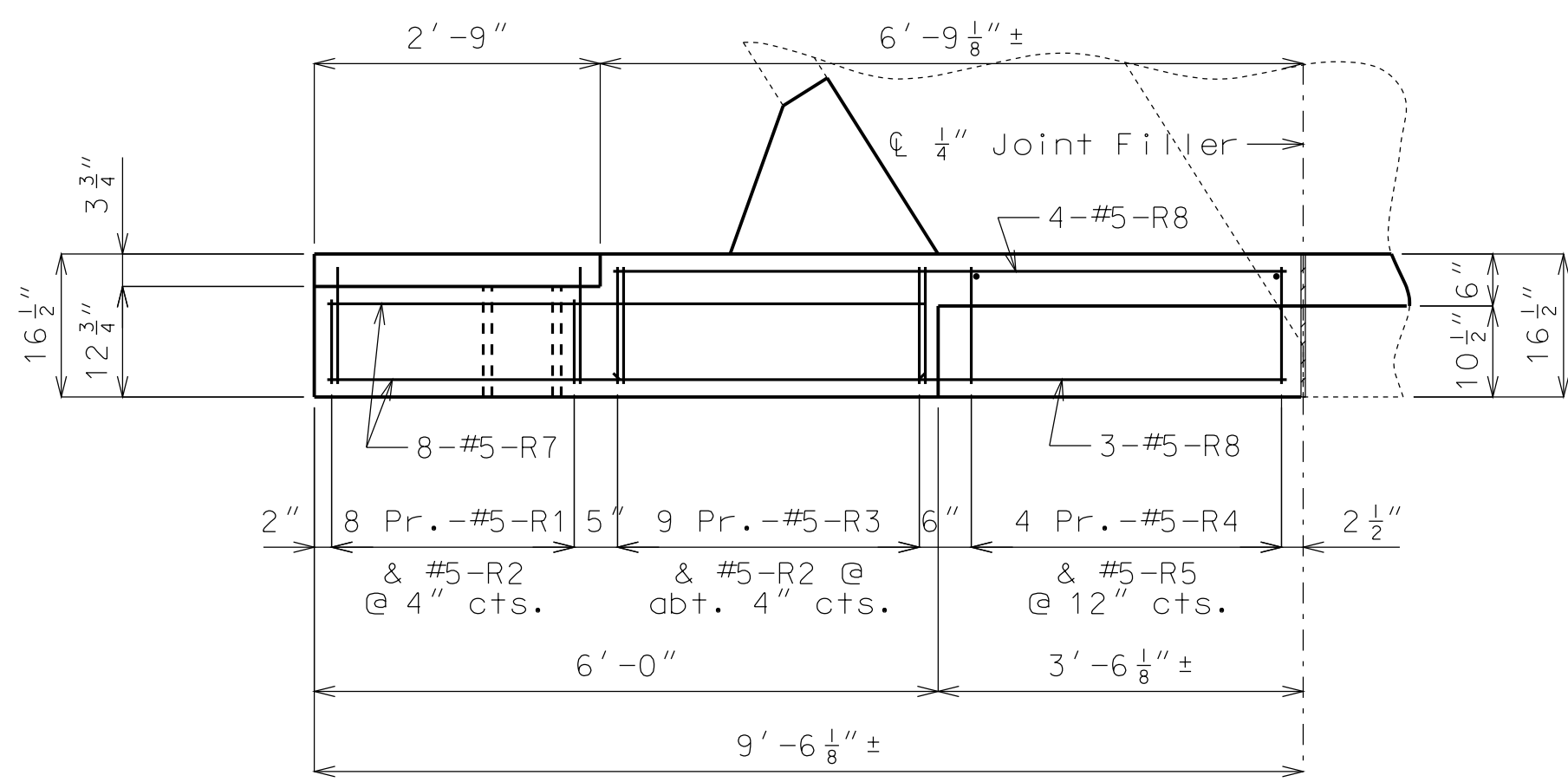
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



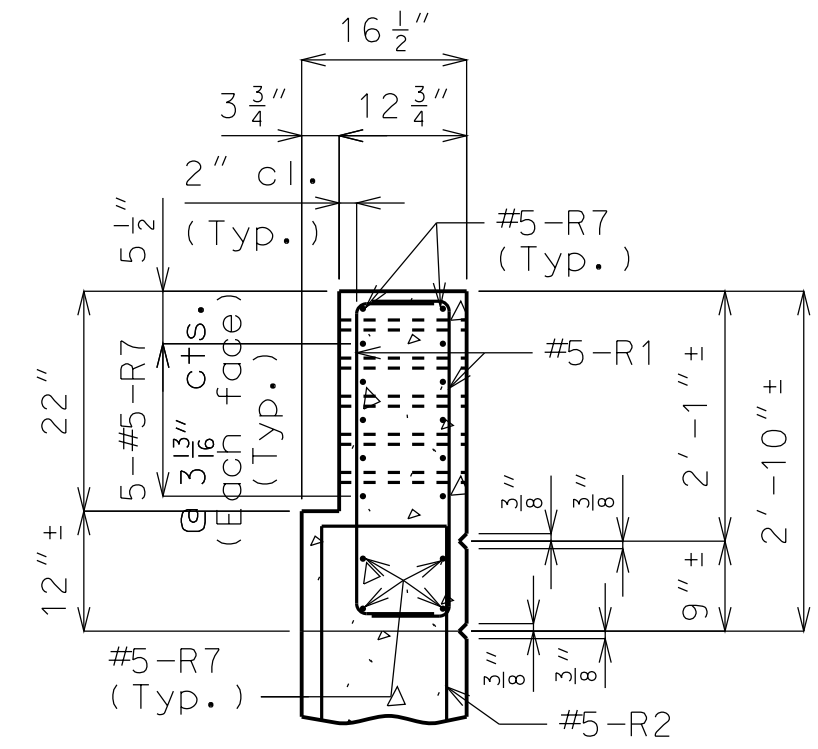
PLAN SHOWING RIGHT (NW) END POST AT EXISTING END BENT NO. 1



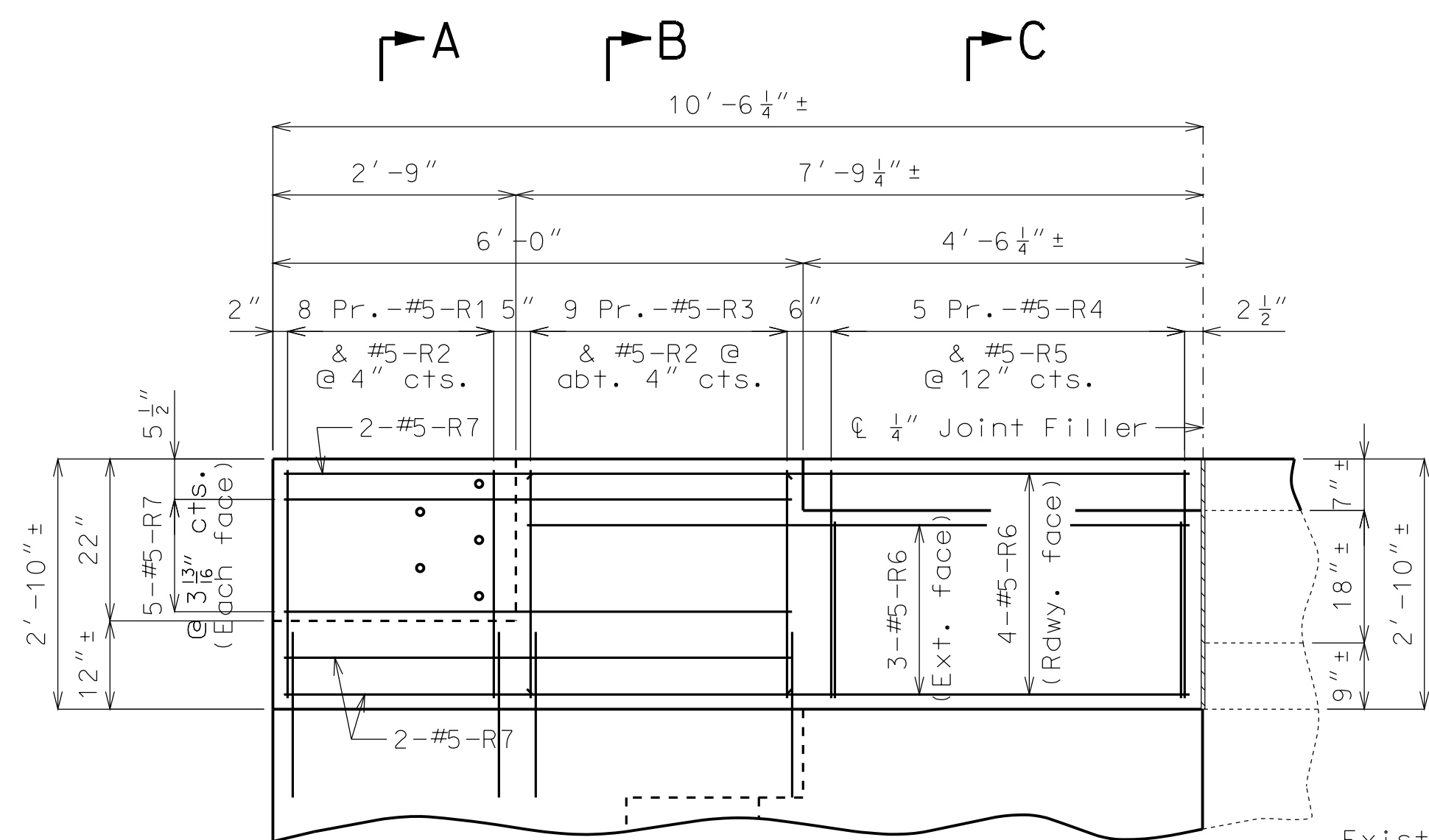
SECTION A-A



PLAN SHOWING LEFT (SE) END POST AT EXISTING END BENT NO. 5

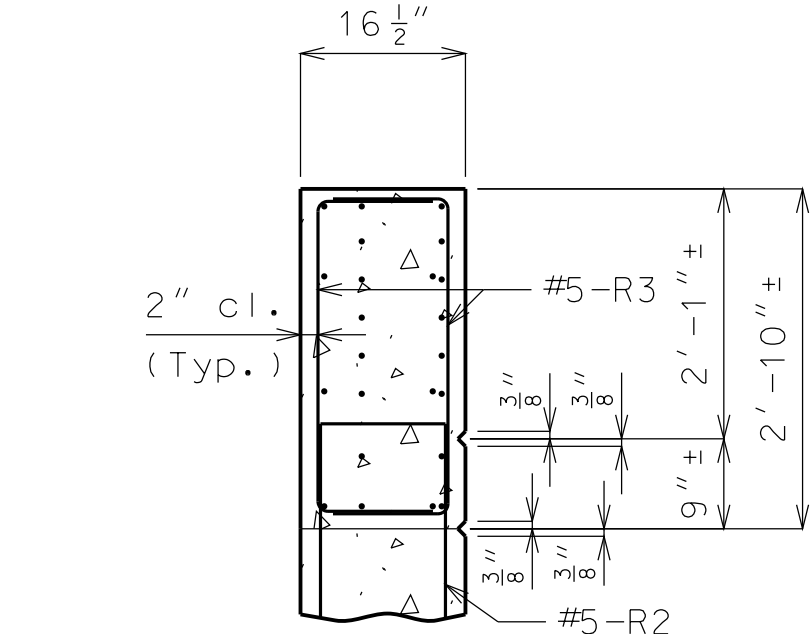


SECTION D-D

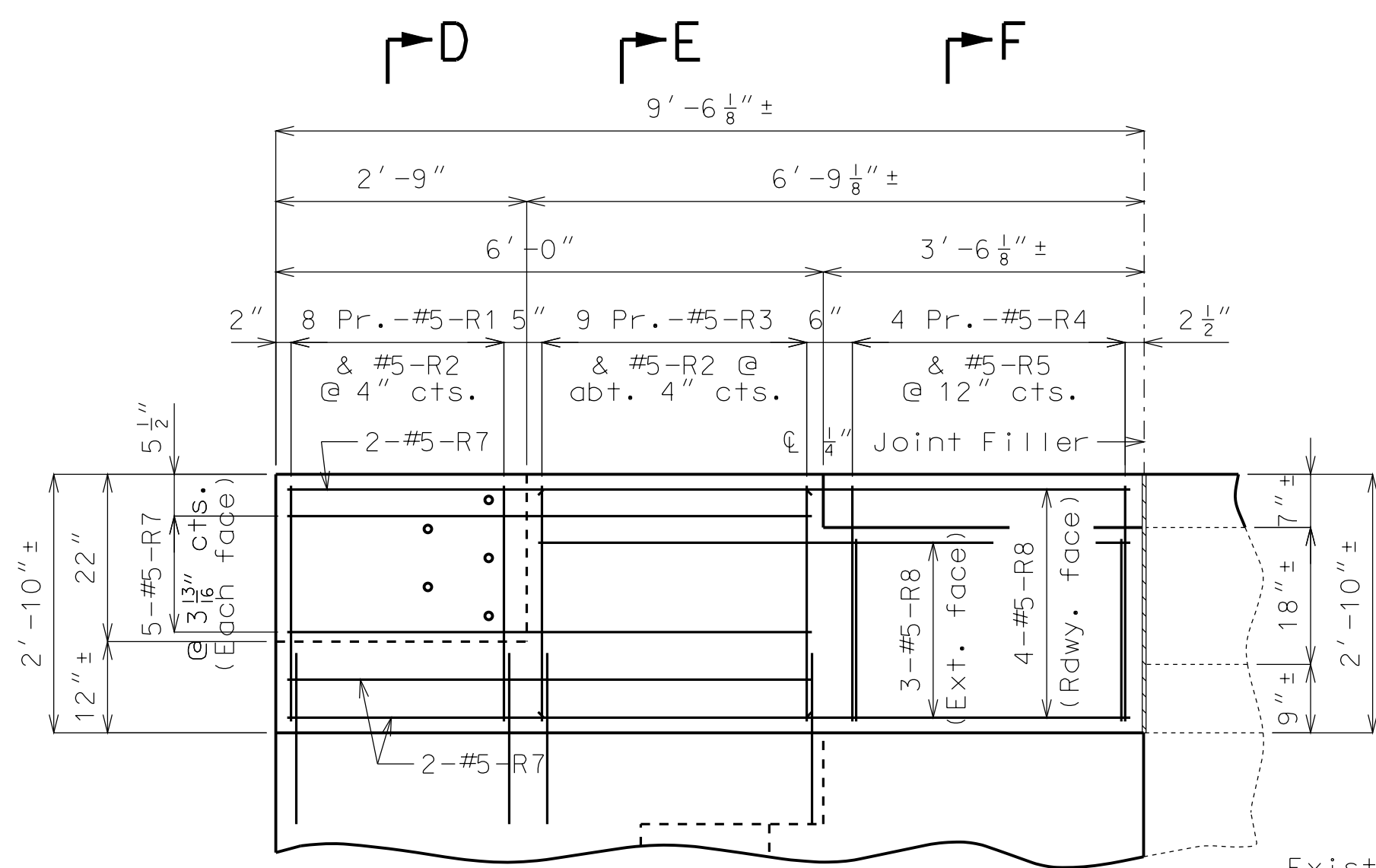


ELEVATION SHOWING RIGHT (NW) END POST AT EXISTING END BENT NO. 1

Note: Bevel not shown for clarity.

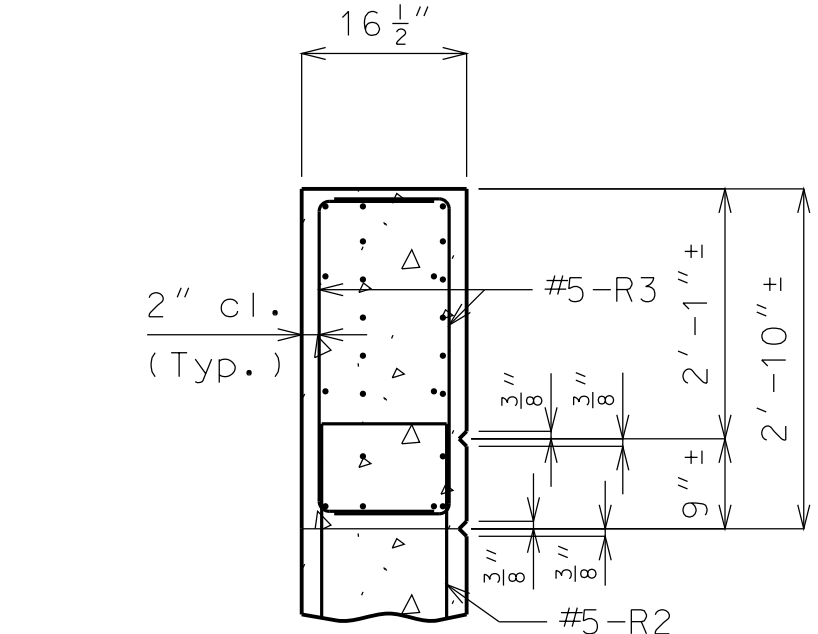


SECTION B-B

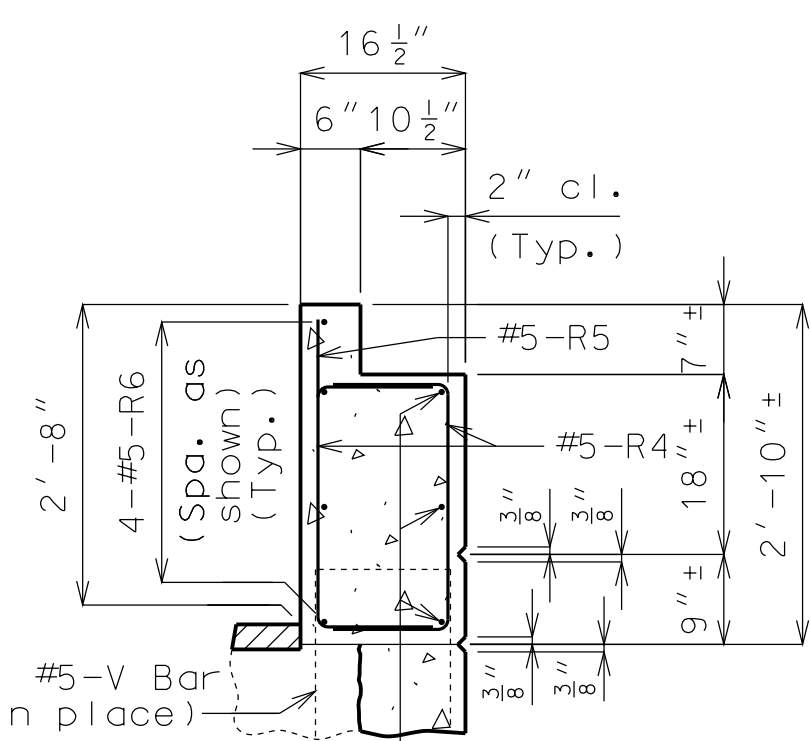


ELEVATION SHOWING LEFT (SE) END POST AT EXISTING END BENT NO. 5

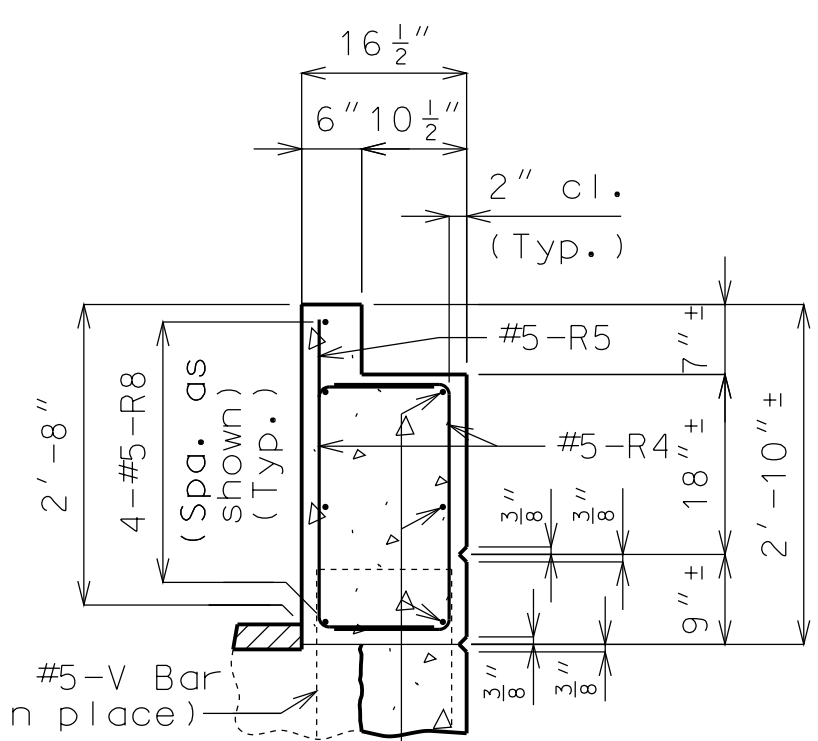
Note: Bevel not shown for clarity.



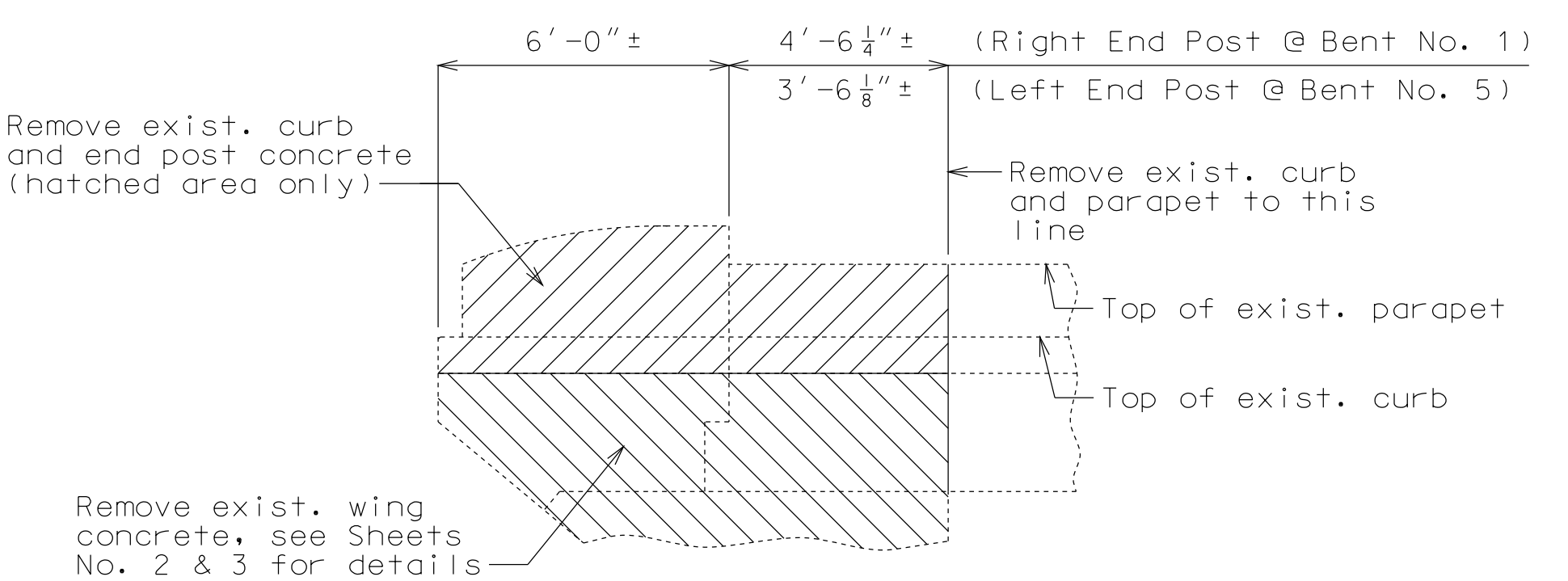
SECTION E-E



SECTION C-C

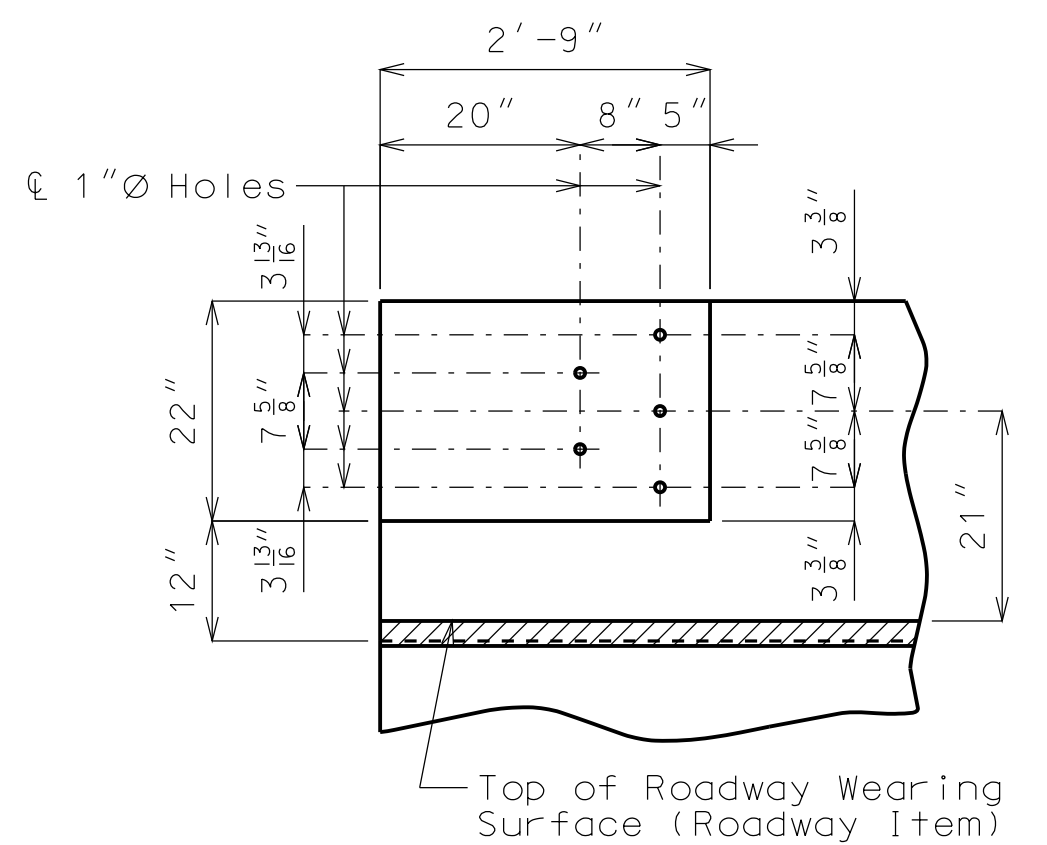


SECTION F-F



PART ELEVATION SHOWING END POST, CURB AND PARAPET CONCRETE REMOVAL

Notes:  
 Cost of removing existing end posts, curb and parapet will be considered completely covered by the contract unit price for Curb Blockout (linear foot).  
 Bridge rail not shown for clarity.  
 Existing tube rails that fall within the area of parapet removal shall be protected from damage.  
 Any damage to tube rails during removal shall be repaired or replaced, at the contractor's expense, as directed by the engineer.  
 Tube rails shall be reattached in removal areas. Cost of reattaching tube rails will be considered completely covered by the contract unit price for Curb Blockout.



DETAILS OF GUARD RAIL ATTACHMENT

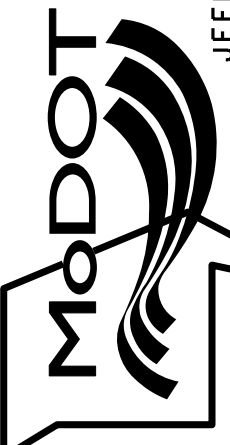
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 6
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO. A15792

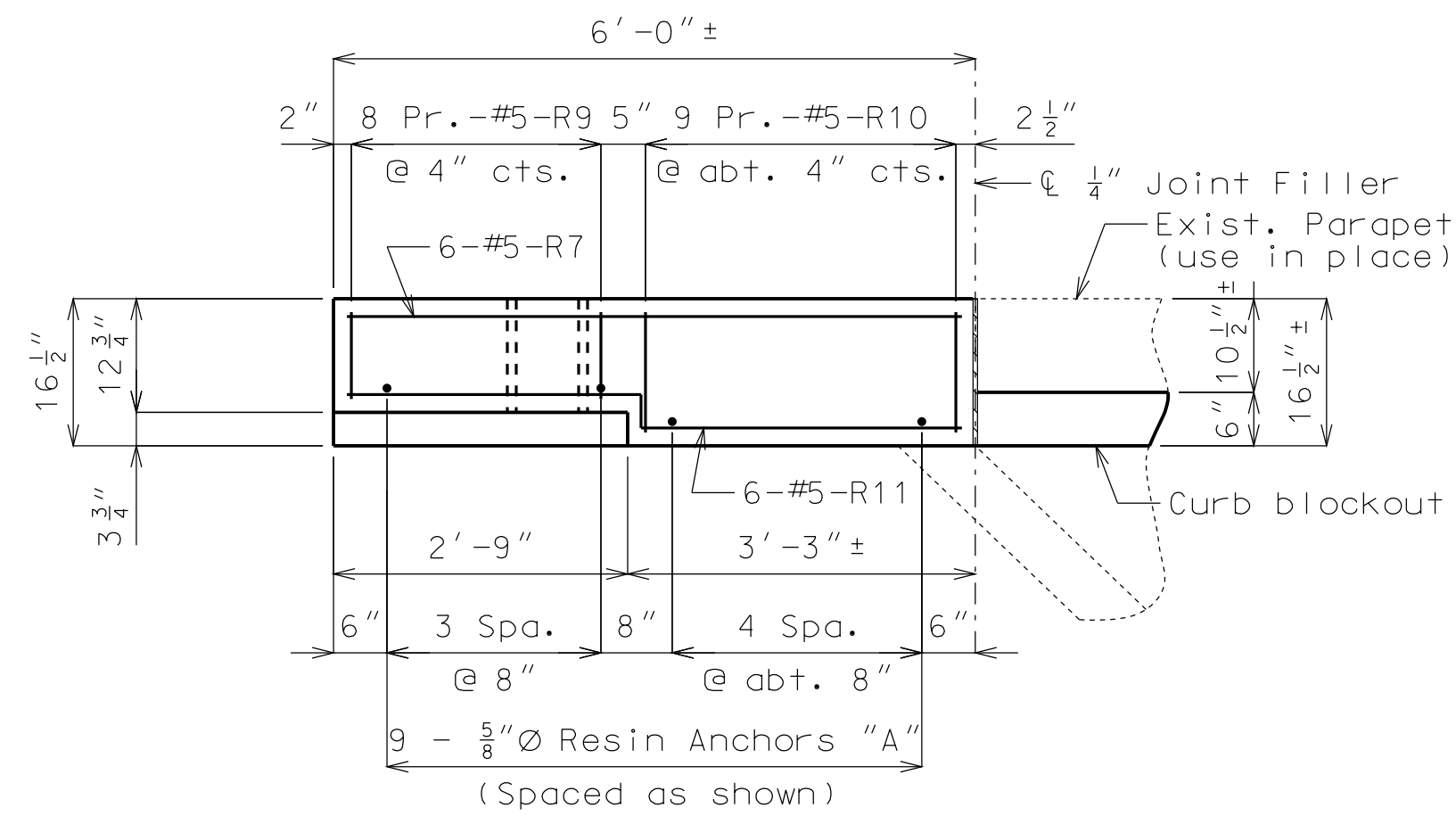
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



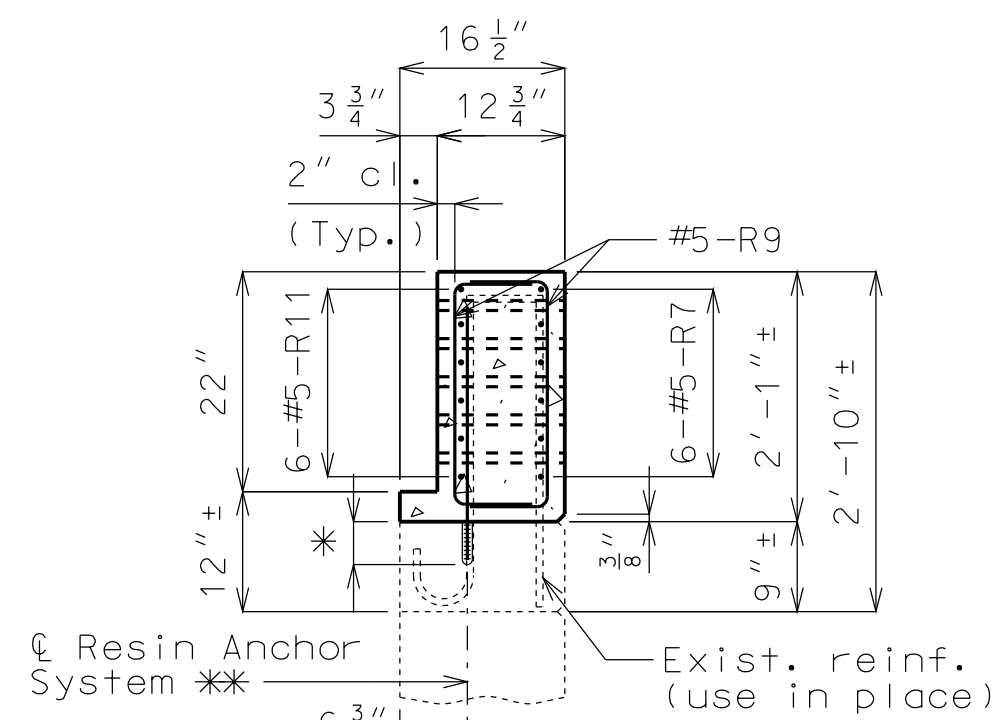
105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

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

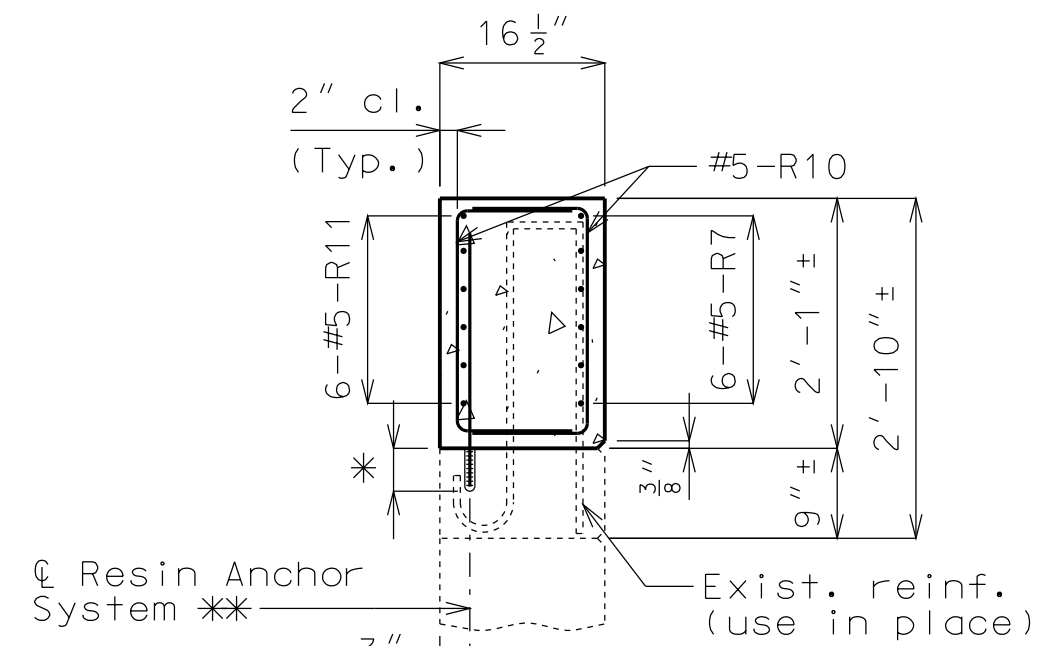


PLAN SHOWING LEFT (NE) END POST AT EXISTING END BENT NO. 1 AND RIGHT (SW) END POST AT EXISTING END BENT NO. 5

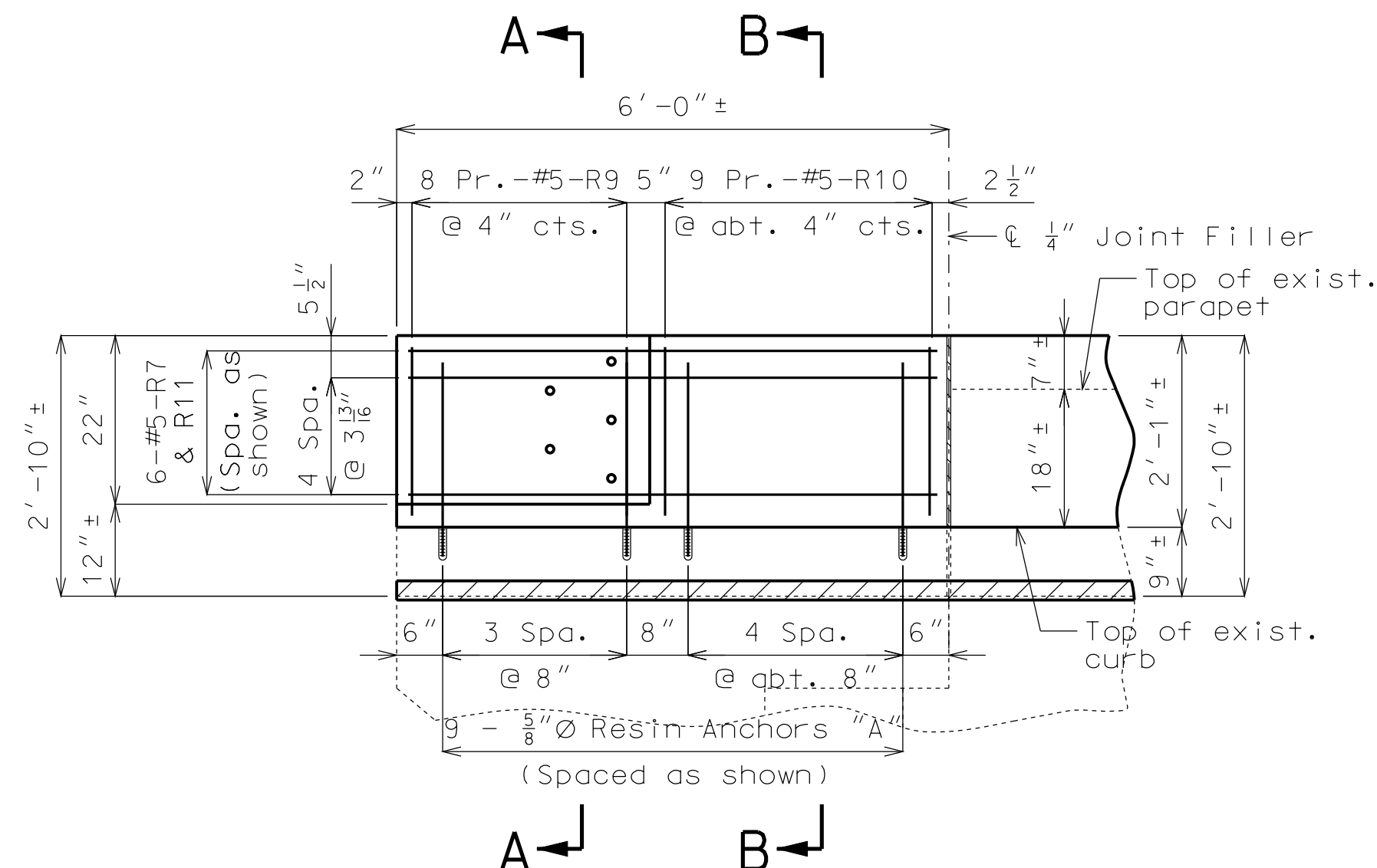
Note: Existing vertical reinforcement, use-in-place, not shown for clarity.



SECTION A-A

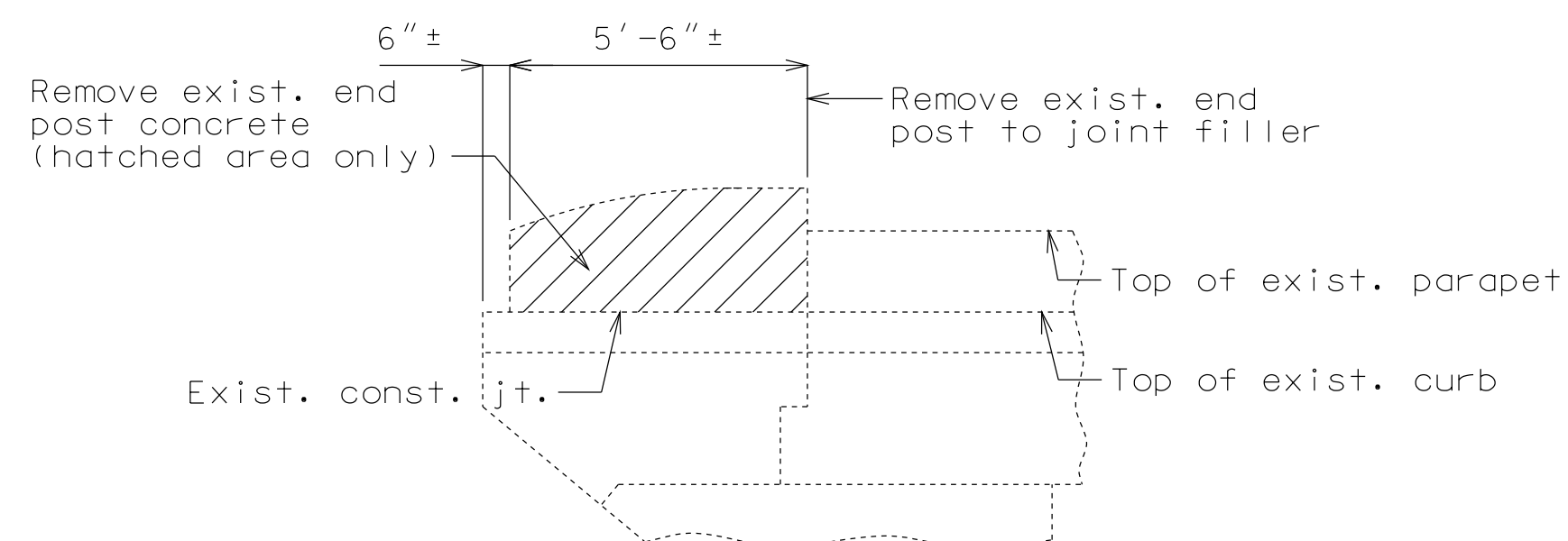


SECTION B-B



ELEVATION SHOWING LEFT (NE) END POST AT EXISTING END BENT NO. 1 AND RIGHT (SW) END POST AT EXISTING END BENT NO. 5

Note: Existing vertical reinforcement, use-in-place, not shown for clarity.



PART ELEVATION SHOWING END POST CONCRETE REMOVAL

(Left end post @ Bent No. 1 & Right end post @ Bent No. 5)

Notes:

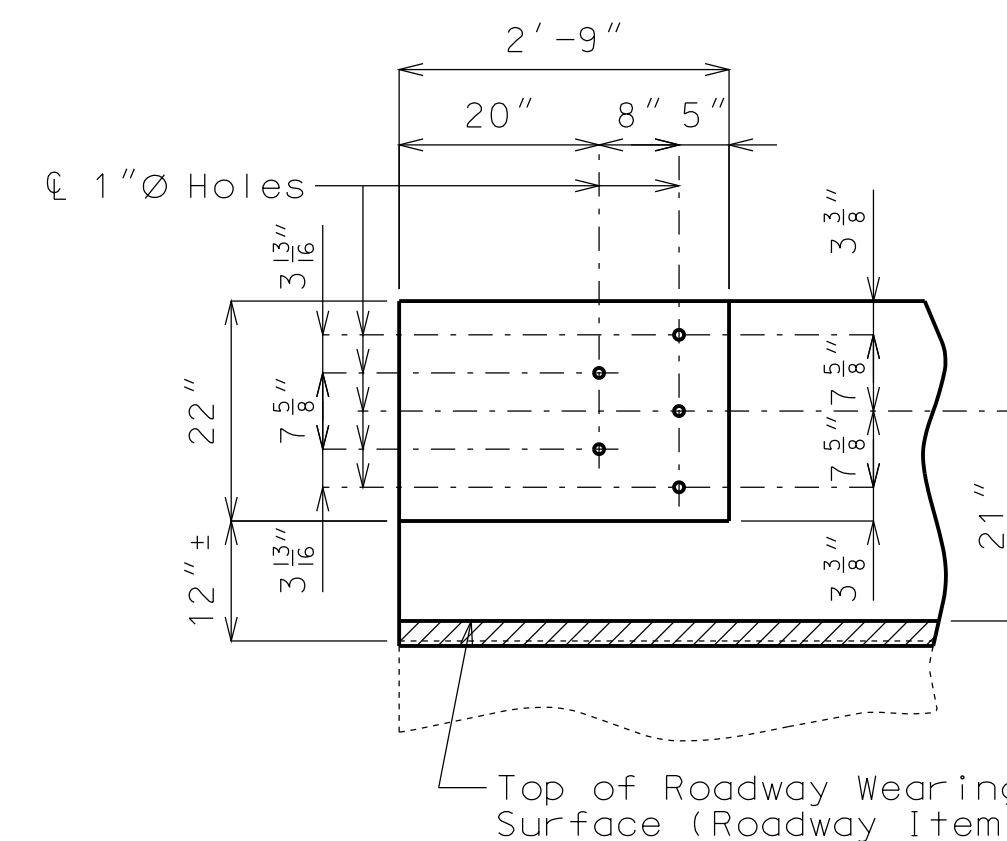
For Details of Resin Anchors, see Sheet No. 4.

\* Manufacturer's recommended embedment length. (5" minimum embedment)

\*\* Shift resin anchors where necessary to clear exist. reinforcement.

Cost of removing existing end posts will be considered completely covered by the contract unit price for Curb Blockout (linear foot).

Bridge rail not shown for clarity.



DETAILS OF GUARD RAIL ATTACHMENT

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/3/2012

ROUTE STATE  
I-435 MO

DISTRICT SHEET NO.  
BR 7

COUNTY  
CLAY

JOB NO.  
J412381

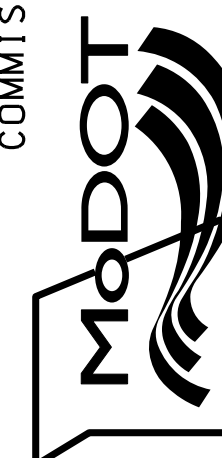
CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A15792

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.

DETAILS OF END POST AT END BENTS

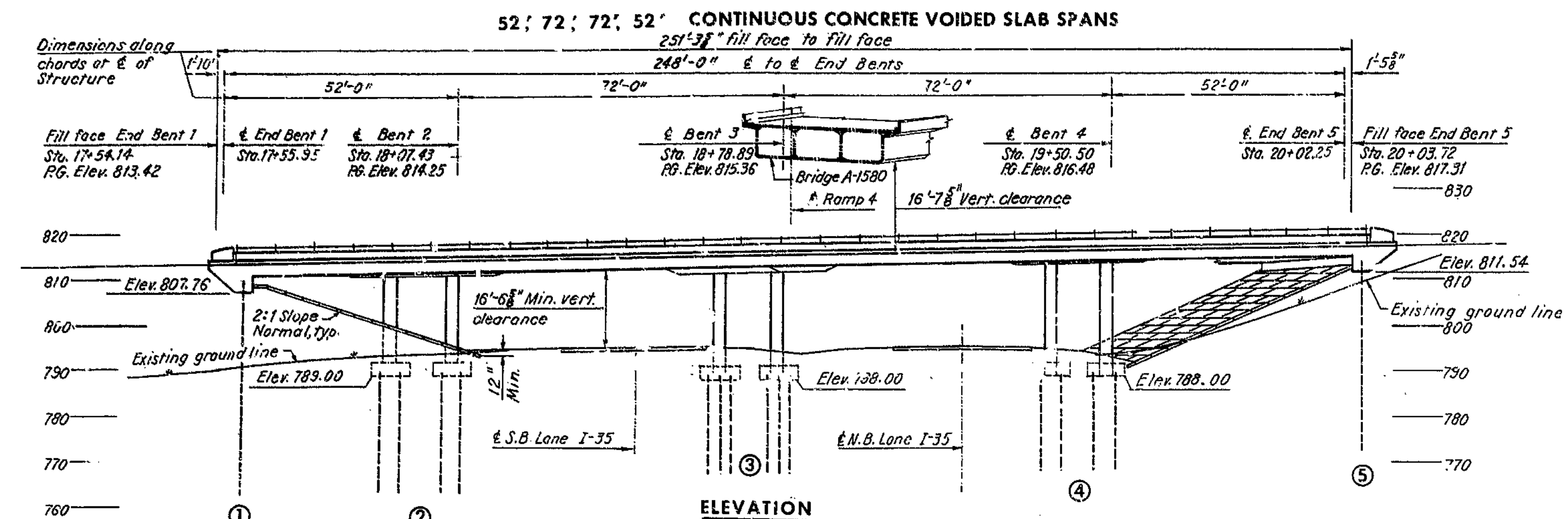


MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. & SEC.	DIST. NO.	TOTAL SHEETS
MO		74	
COUNTY		ROUTE	SEC.
CLAY			

PVI Sta. 15+83.52  
Elev. 812.41

PROFILE GRADE RAMP 3



Note: All dimensions are horizontal. Bents cannot be located from the reference point on the tangent by conventional survey methods based on 100' chords. For Substructure Layout, see Sheet 2. For location of borings, see Sheet 2. All bents are parallel.

Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bents 1 and 5 before steel piles are driven.

**GENERAL NOTES**

Design Specifications: AASHTO 1965.

Design Loading: HS20-44 and Modified 24000# Tandem Axle with 15# sq. ft. Future wearing surface. Earth 120# cu. ft. Equivalent fluid pressure 30#/ft.

Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.

Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 1,200$  psi.  
 Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
 Reinforcing Steel  $f_s = 20,000$  psi.  
 Steel pile (A.S.T.M A35-66)  $f_b = 5,000$  psi.

Reinforcing Steel: All splices in reinforcing bars shall be 24 bar diameters. Bar sizes are designated on 'I' plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.

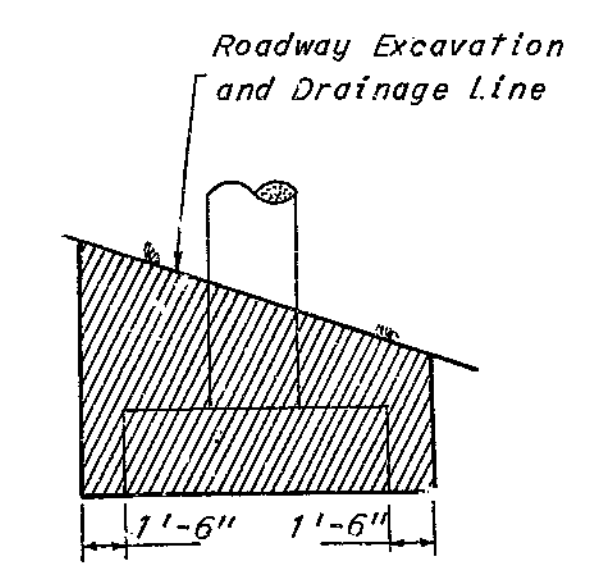
Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.

All reinforcing bar bending dimensions are "out to out".

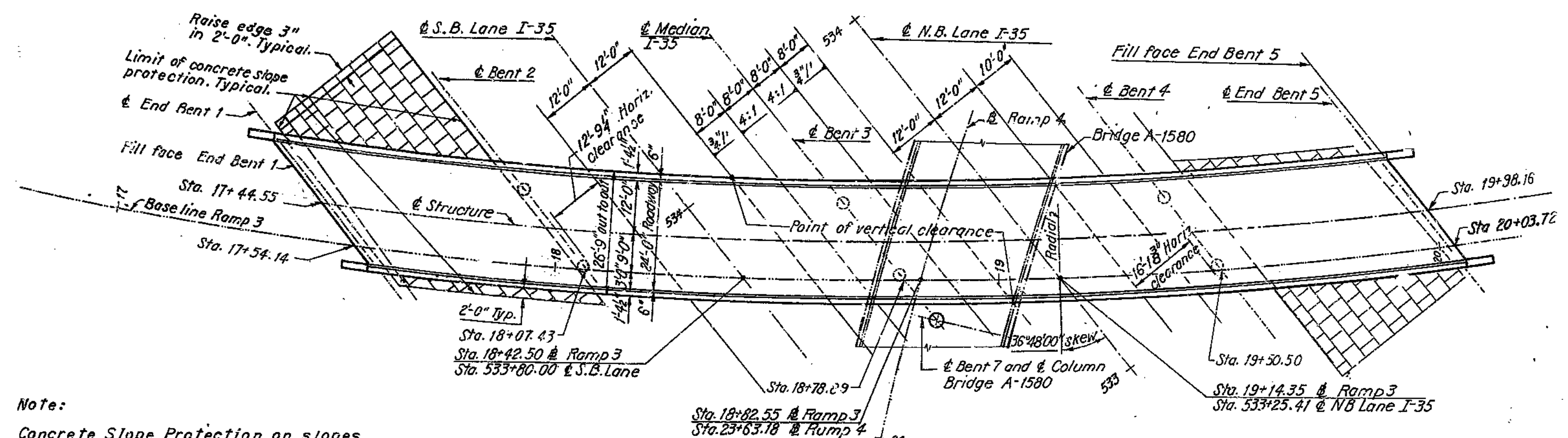
Sealing of Deck: Superstructure deck to be surface sealed.

Utilities: All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor will notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposal of utilities.

Welding: See Standard Specification 55.3.13 for qualification of welding operators.



LIMITS OF EXCAVATION



Note: Concrete Slope Protection on slopes at end bents is to be included under roadway items. Provide 1" filler (Standard Specification 157.1.1) between slope protection concrete and end bents or intermediate bents. See Standard Specification 83.50. For Details, see Sheet 10 and Roadway Plans.

CURVE DATA  
(Chord Definition)

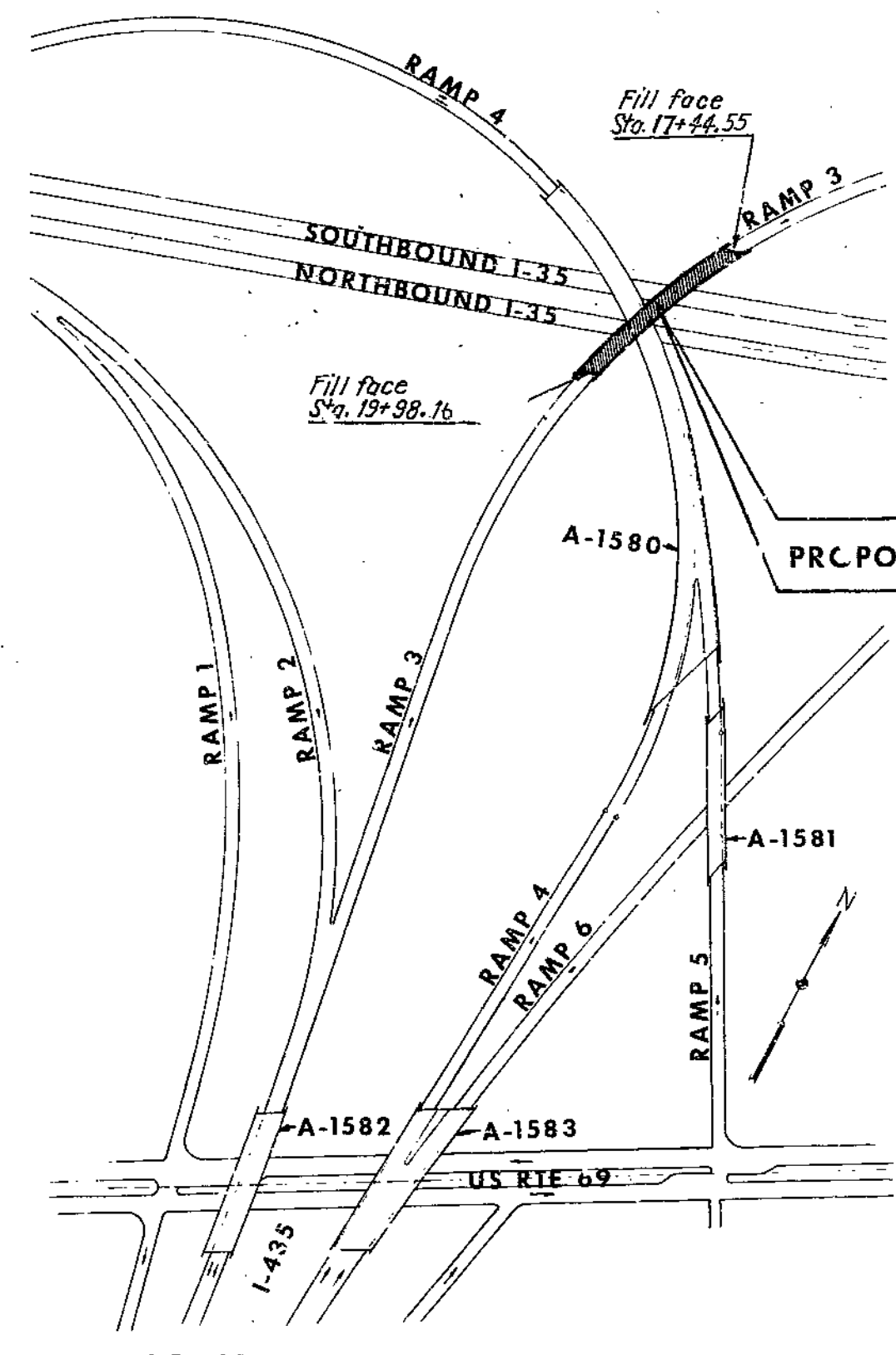
Base Line Ramp 3	Base Line Ramp 4
P.I. = 18+37.39	P.I. = 35+15.89
$\Delta = 92^{\circ}09'42''$	$\Delta = 138^{\circ}10'34''$
D = 6'00'00"	D = 8'00'00"
T = 992.11'	T = 1875.89'
L = 1536.06'	L = 1727.20'
R = 955.37'	R = 716.78'
S.E. = 0.06'/1'	

BENCH MARKS

- 41 - Spike in T.P. 165' Rt. Sta. 519+65 Rte. I-435 Elev. 809.15
- 42 -  $\square$  on NW corner NW Abut. Br. 220' Rt. Sta. 526+50 Rte. I-435 Elev. 787.33

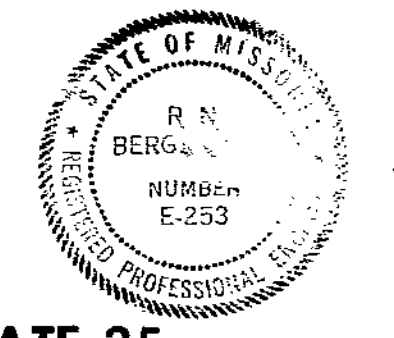
**TOTAL ESTIMATED QUANTITIES**

ITEM	UNIT	SUBSTR.	SUPRSTR.	TOTAL
Class 1 Excavation for Structures	Cu. Yd.	80		80
Steel Piles in Place (105P42)	Lin. Ft.	1,007		1,007
Class B Concrete	Cu. Yd.	27.7		27.7
Class B1 Concrete	Cu. Yd.		587.4	587.4
Reinforcing Steel	Lbs.	1,800	153,310	155,110
Bridge Rail (Single Tube Type)	Lin. Ft.		501	501



LOCATION SKETCH

SUBMITTED BY: *R. Bergendoff*  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-253



**BRIDGE: RAMP 3 OVER INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
 CLAY COUNTY

SUBMITTED BY: *W. D. Camm* DATE 12-23-68  
 BRIDGE ENGINEER  
 APPROVED BY: *M. J. ...* DATE 12-23-68  
 CHIEF ENGINEER

STD. 54.00  
A-1579

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE: J.S.H. DATE: 5-21-68 CHECKED: S.S.W. DATE: 5-22-68

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

GENERAL PLAN AND ELEVATION

SHEET 1 OF 10

SEE SERIAL PLANS DRAWING LINES

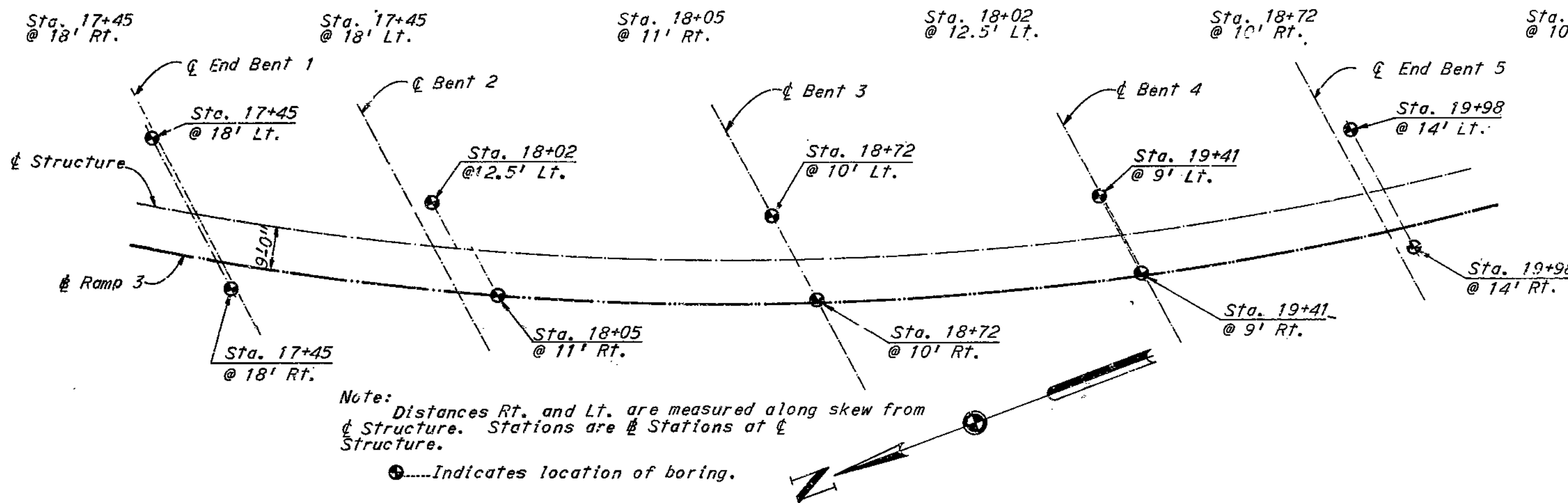
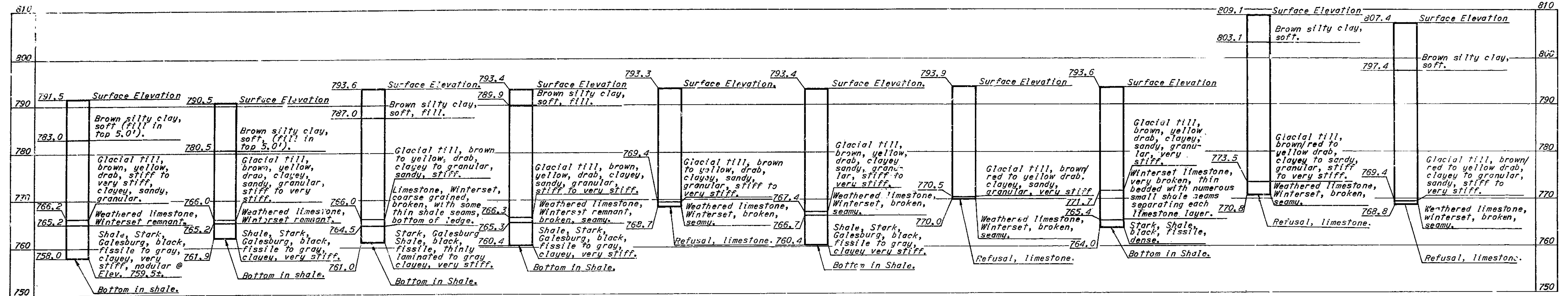
158

2106-21-62  
579-852



MISSOURI STATE HIGHWAY DEPARTMENT

NO. ROAD	STATE	FEDERAL PROJECT NO. & SEC.	SHEET TOTAL
5	MO		15
DIST. NO.	COUNTY	ROUTE	SEC.
4	CLAY		



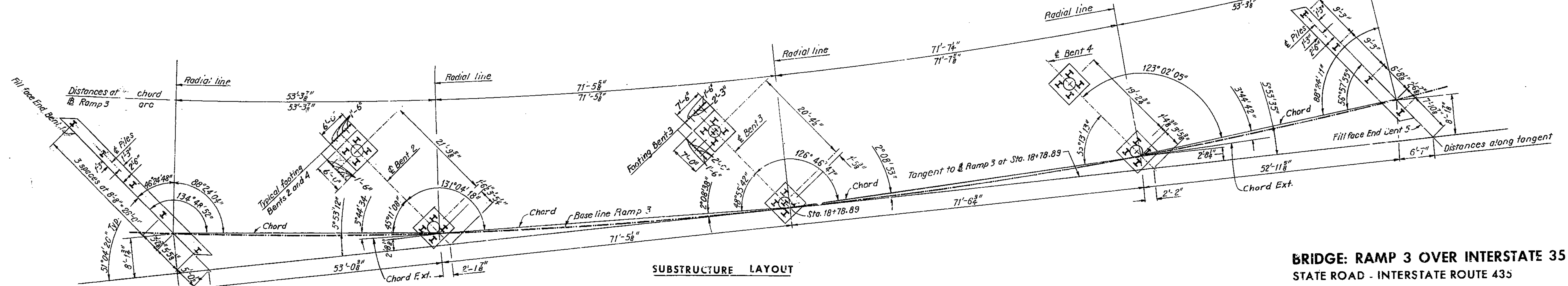
Note: Distances Rt. and Lt. are measured along skew from Structure. Stations are Stations at Structure.  
 ● Indicates location of boring.

BORING LOG

Bent No.	PILE DATA				
	1	2	3	4	5
Pile Type and Size	10BP 42	10BP 42	10BP 42	10BP 42	10BP 42
Number	5	8	10	8	4
Approximate Length	Ft. 47	27	22	22	42
Design Bearing	Tons. 48	55	50	55	51
*Hammer Energy Required	Ft.Lbs. 10,800	12,300	11,200	12,300	11,500

\*---Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor  $(W+w)/2W$  when the weight of the ram (W) is less than the weight of the pile (w). All piles shall be driven to practical refusal.

BORING LAYOUT



SUBSTRUCTURE LAYOUT

**BRIDGE: RAMP 3 OVER INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
 CLAY COUNTY

HOWARD, NEEDL'S, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE J.S.H. DATE 4-24-68 CHECKED A.J.C. DATE 5-3-68

NOTE: This drawing is not to scale Follow dimensions.

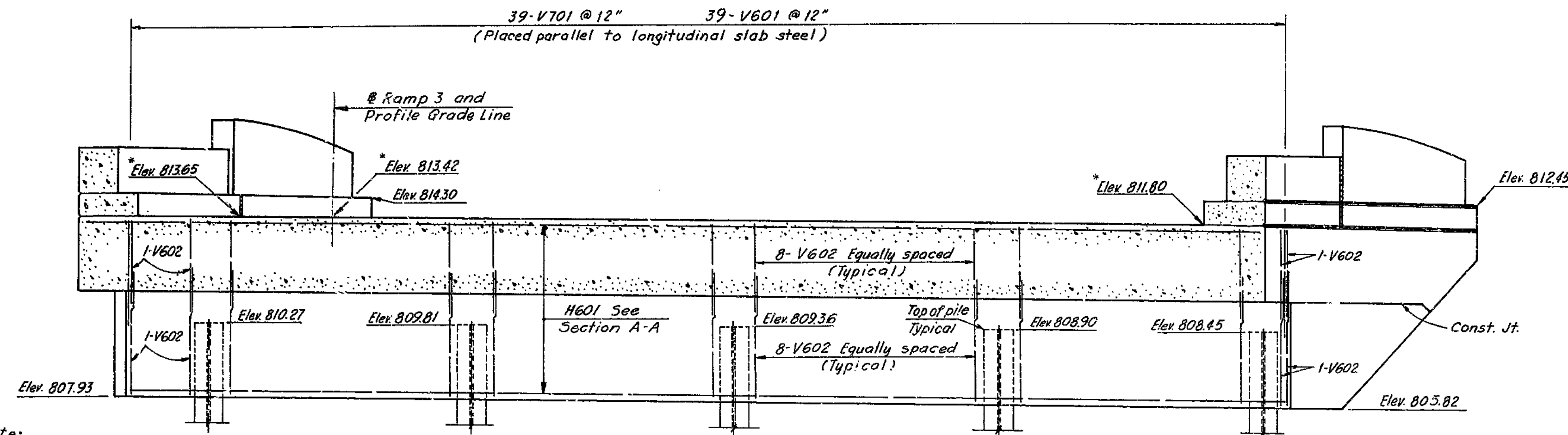
BORINGS AND SUBSTRUCTURE LAYOUT

159  
A-1579 Ramp 3 Rte. I-435 over I-35 Clay County 2106-21-0-1-579-855 216



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STAT.	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			77	
DIST. NO.	COUNTY			HOURS	SEC.
4	CLAY				

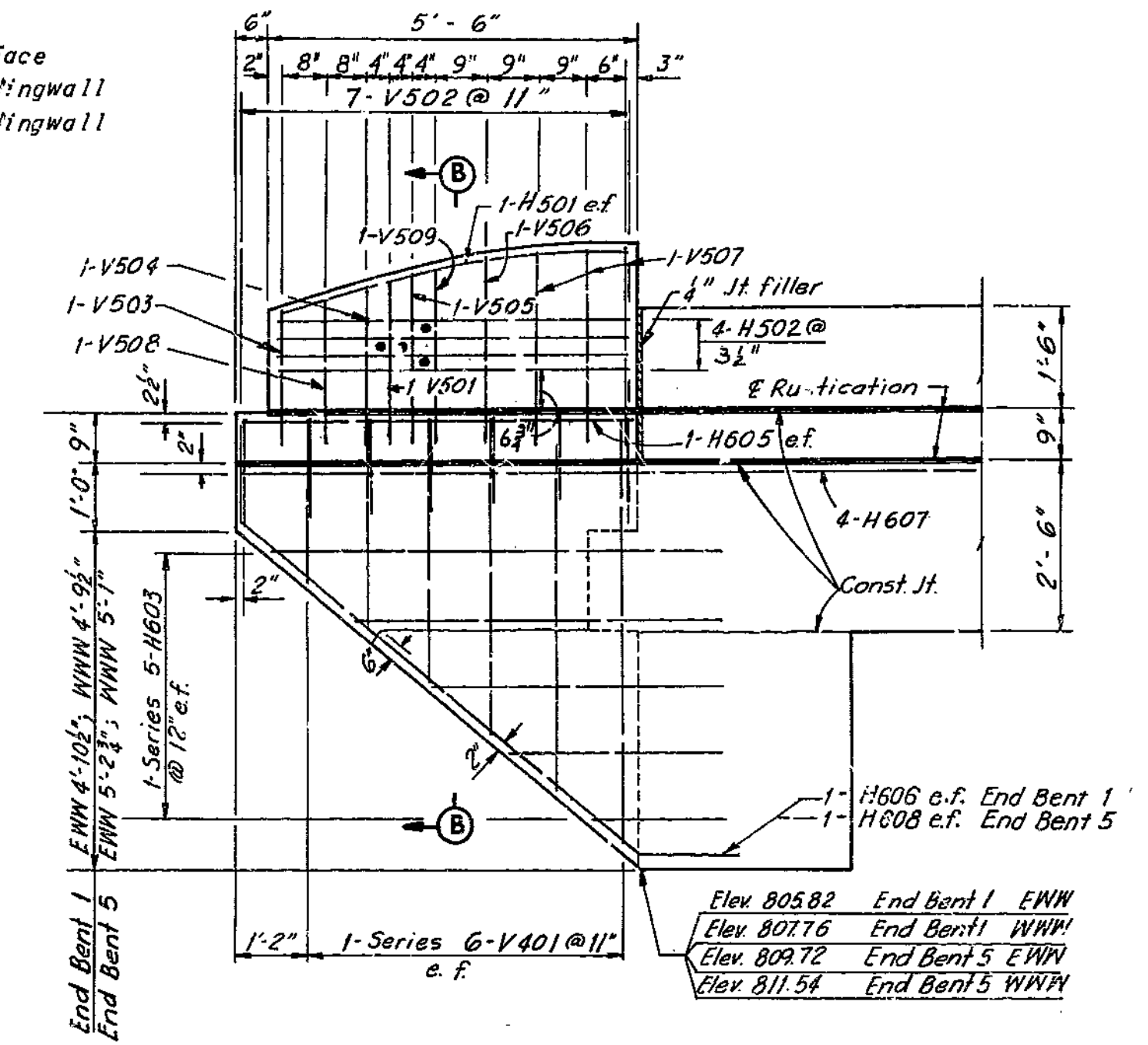


ELEVATION

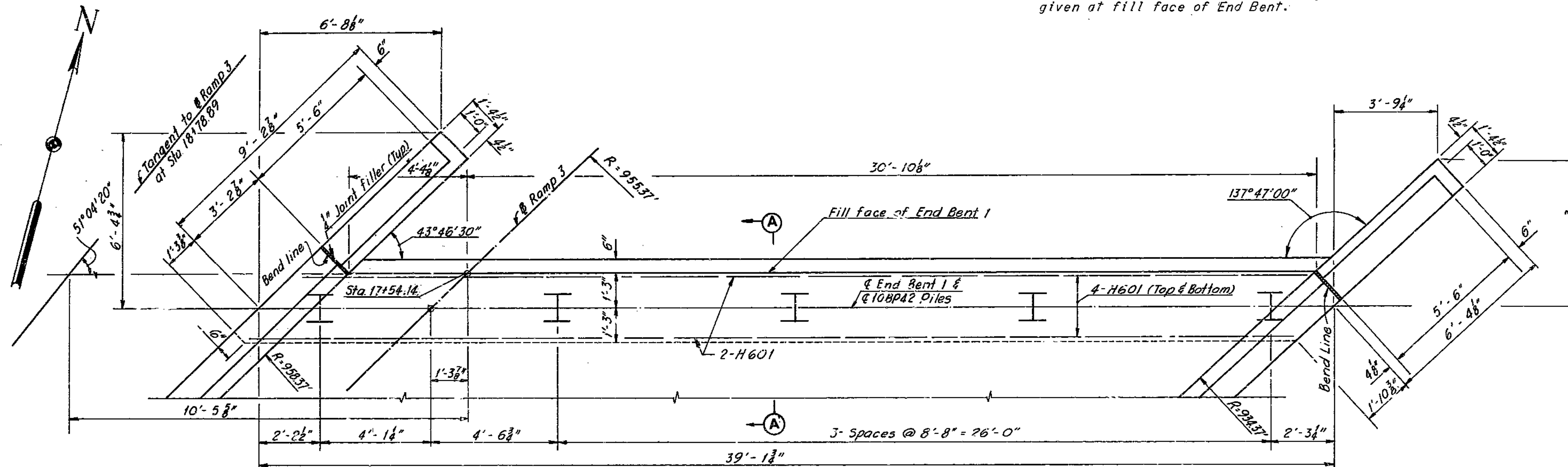
Note: V602 stirrups and V601 and V702 bars to be placed parallel to longitudinal slab steel.

Note: Elevations denoted with an (\*) are given at fill face of End Bent.

Legend:  
e.f. : Each Face  
EWW : East Wingwall  
WWW : West Wingwall

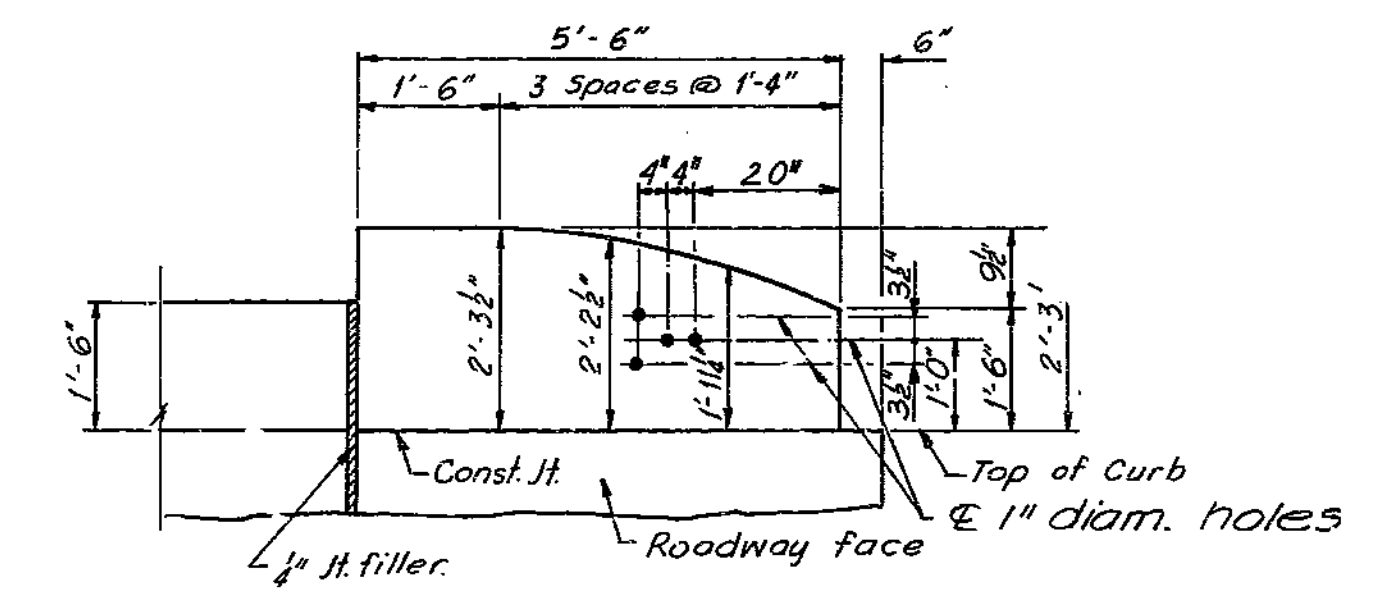


WINGWALL ELEVATION



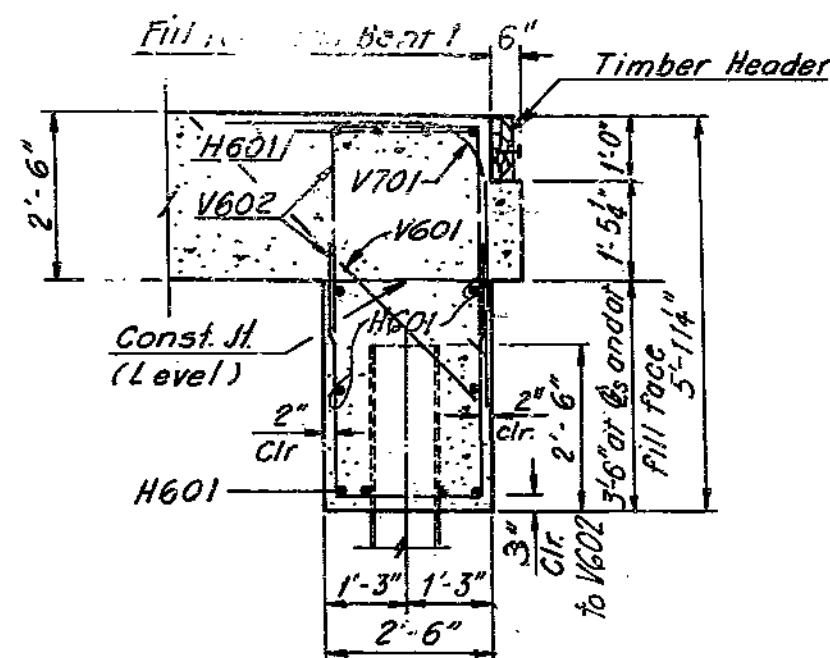
PLAN

Note:  
For Substructure layout, see Sheet 2.  
For Rustication Details, see Sheet 7.  
For Timber Header, see Sheet 6.  
For Pile Splice Details, see Sheet 10.  
All piles are 10BP42 pile, no batter.  
Concrete End Posts are vertical.  
Dimensions to surface receiving joint filler are to face of concrete.

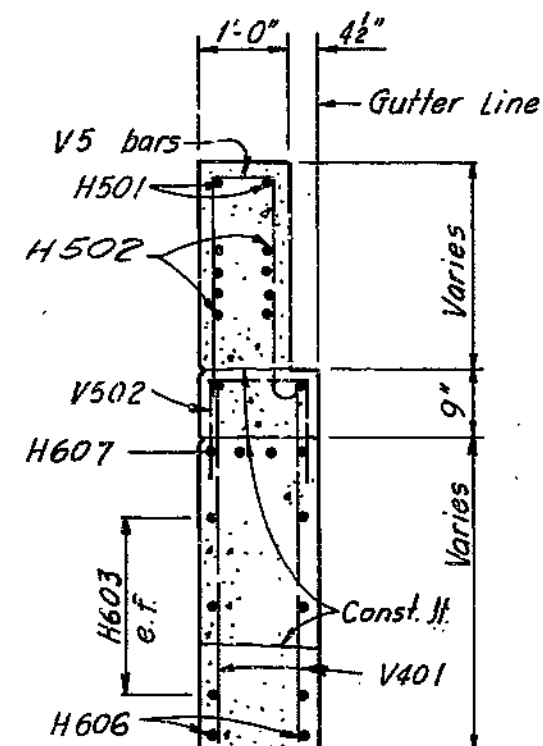


CONCRETE END POST ORDINATES

Note: Guard Rail Attachment: 1" round holes through post for 3/4" H.S. Bolts (Galvanized).



SECTION A-A



SECTION B-B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE S.S.W. DATE 5-8-68 CHECKED JSH DATE 5-17-68

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

END BENT 1

BRIDGE: RAMP 3 OVER INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
CLAY COUNTY

A-1579

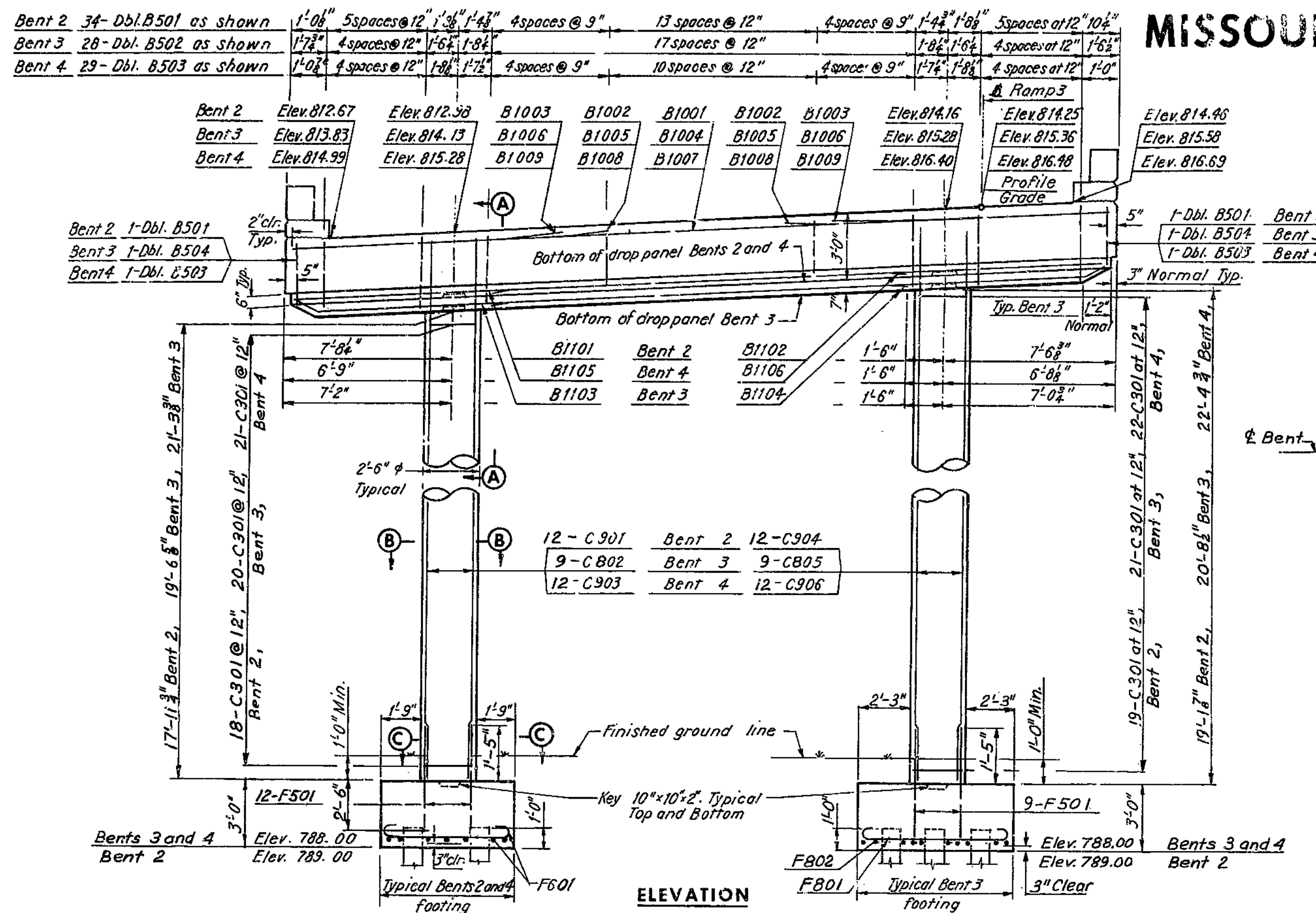
6 SHEET 4 OF 10

191

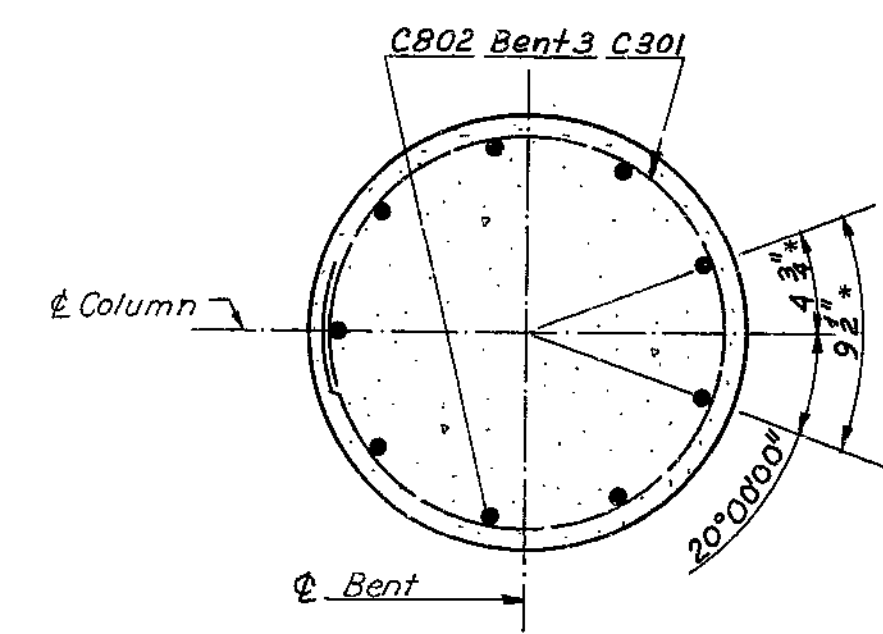
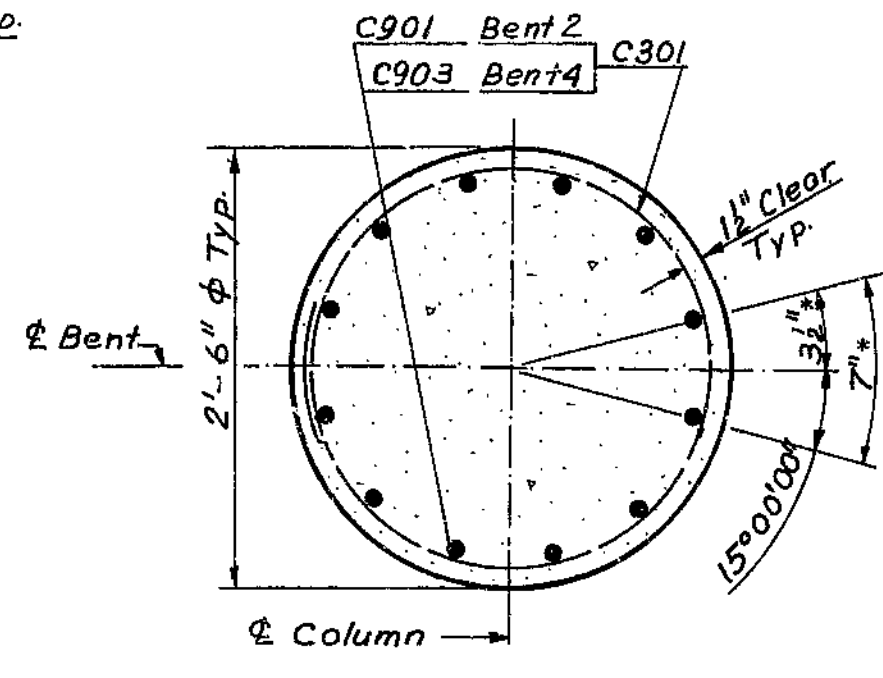
2106-21-02-579-853  
End Bent 1

MISSOURI STATE HIGHWAY DEPARTMENT

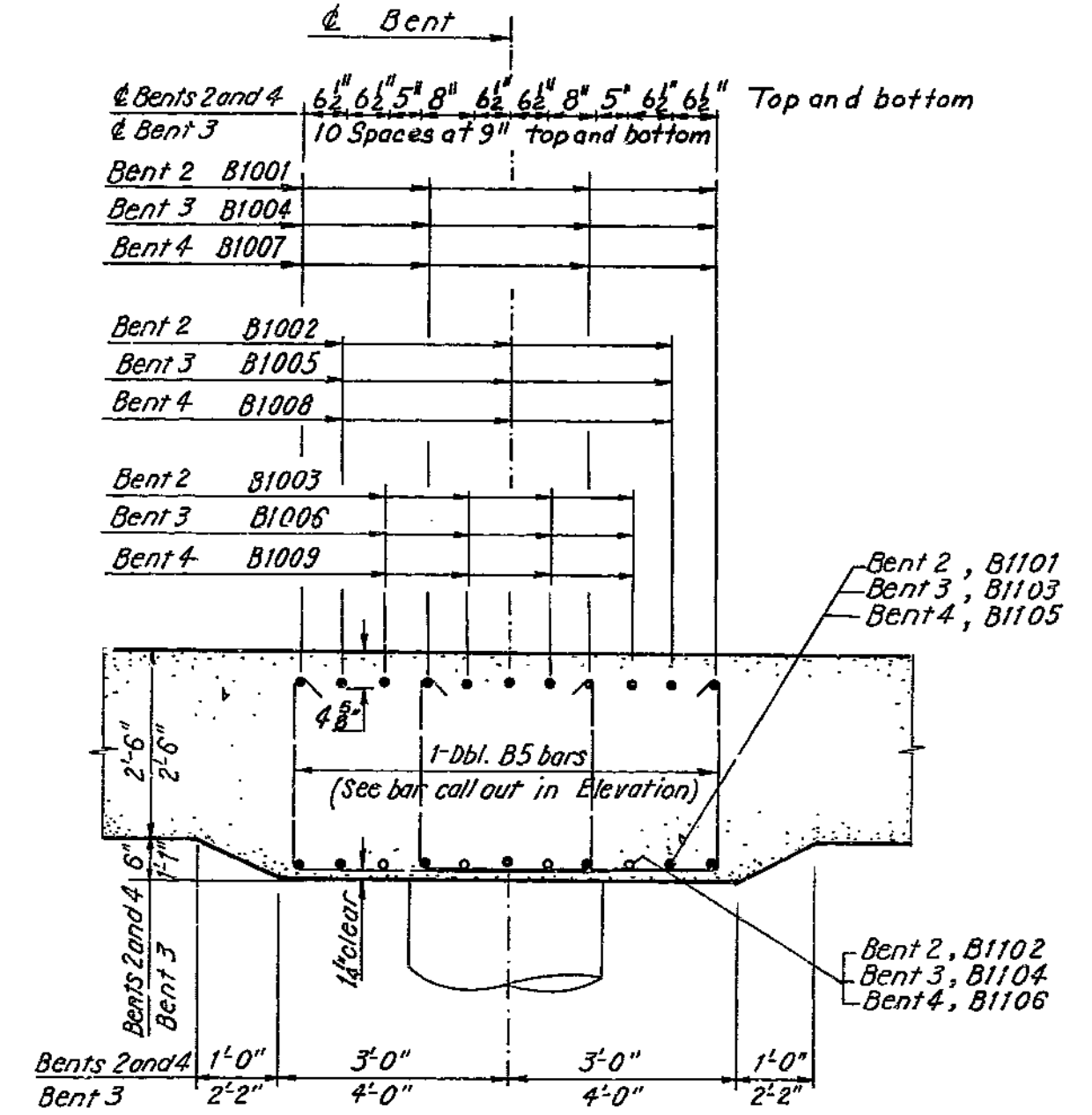
5	NO. I-435-1(69)	78
4	CLAY	F-435



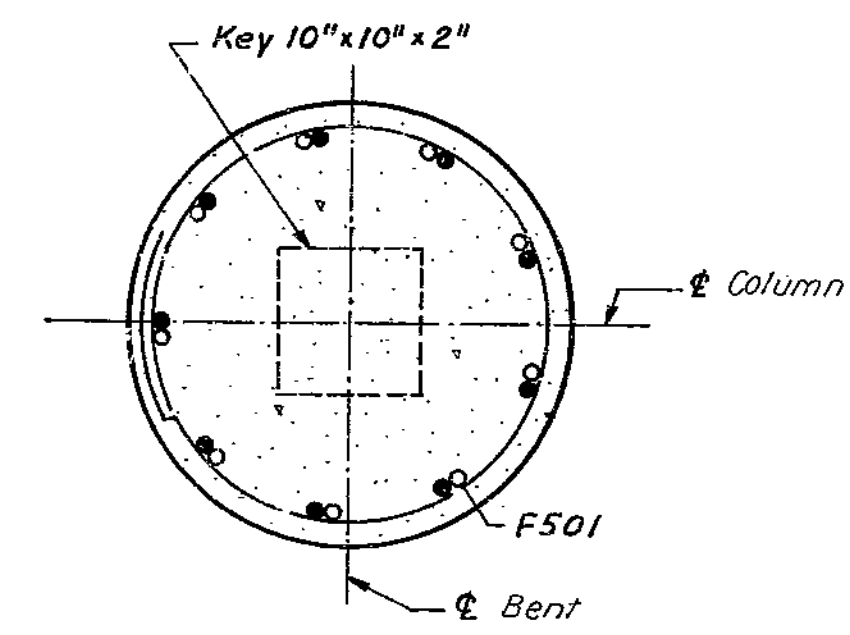
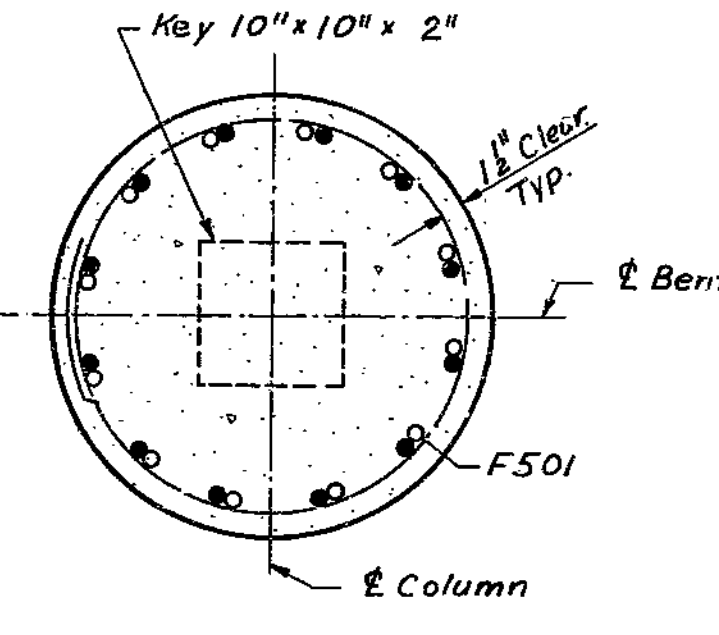
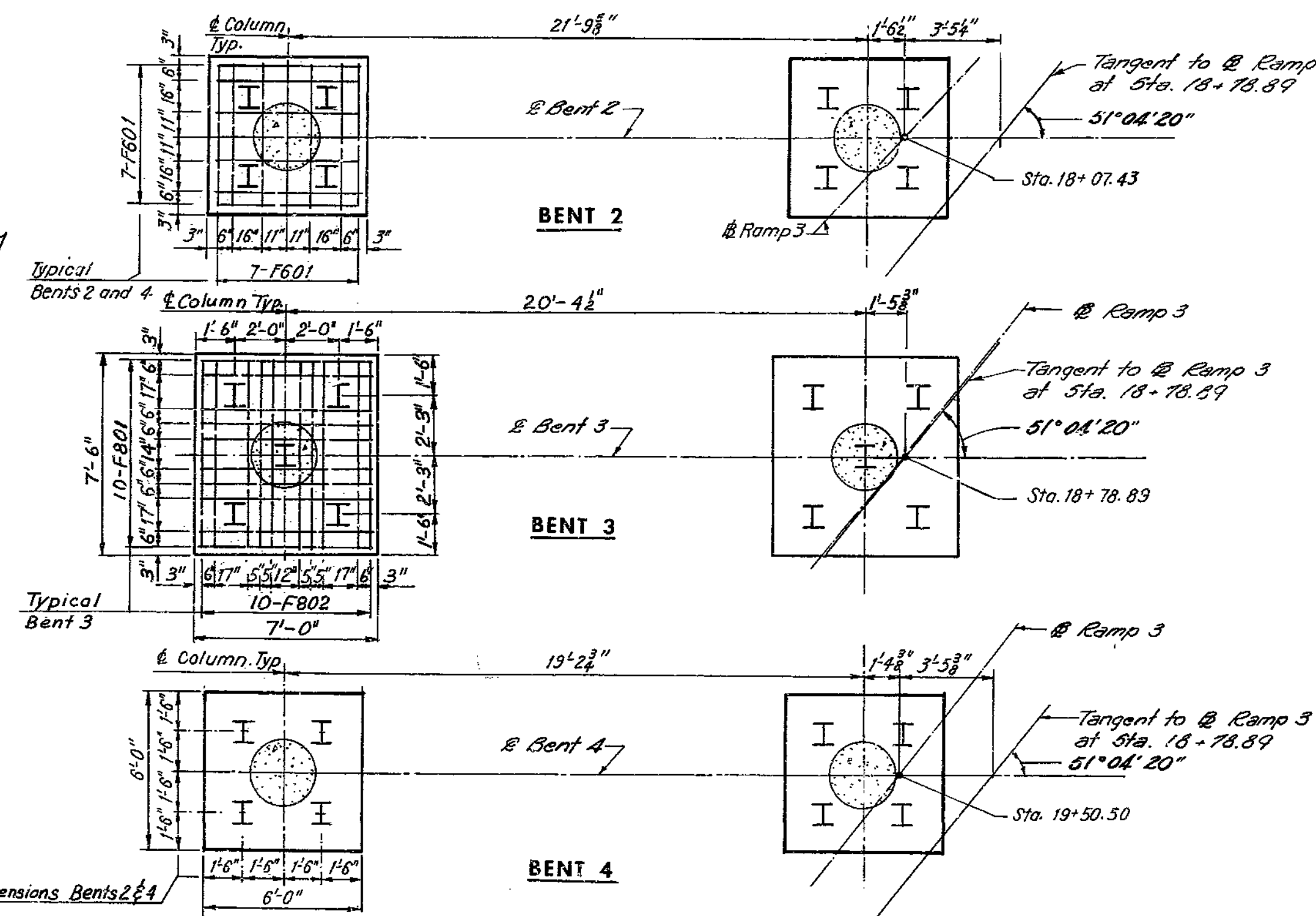
Note: Dbl. # 5 stirrups in capbeam to be placed parallel to longitudinal slab bars.



\* denotes dimensions along C301 bar



Note:  
 For Substructure Layout Plan, see Sheet 2.  
 For Pile Data Table, see Sheet 2.  
 For Reinforcement Schedule, see Sheet 3.  
 For Cap Beam Reinforcement, see Sheet 9.  
 All piles are 10BP42, no batter.  
 Provide 1" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.



162

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

MADE JSH DATE 5-13-68 CHECKED SSW DATE 5-16-68

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

BENTS 2, 3 AND 4

**BRIDGE: RAMP 3 OVER INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
 CLAY COUNTY

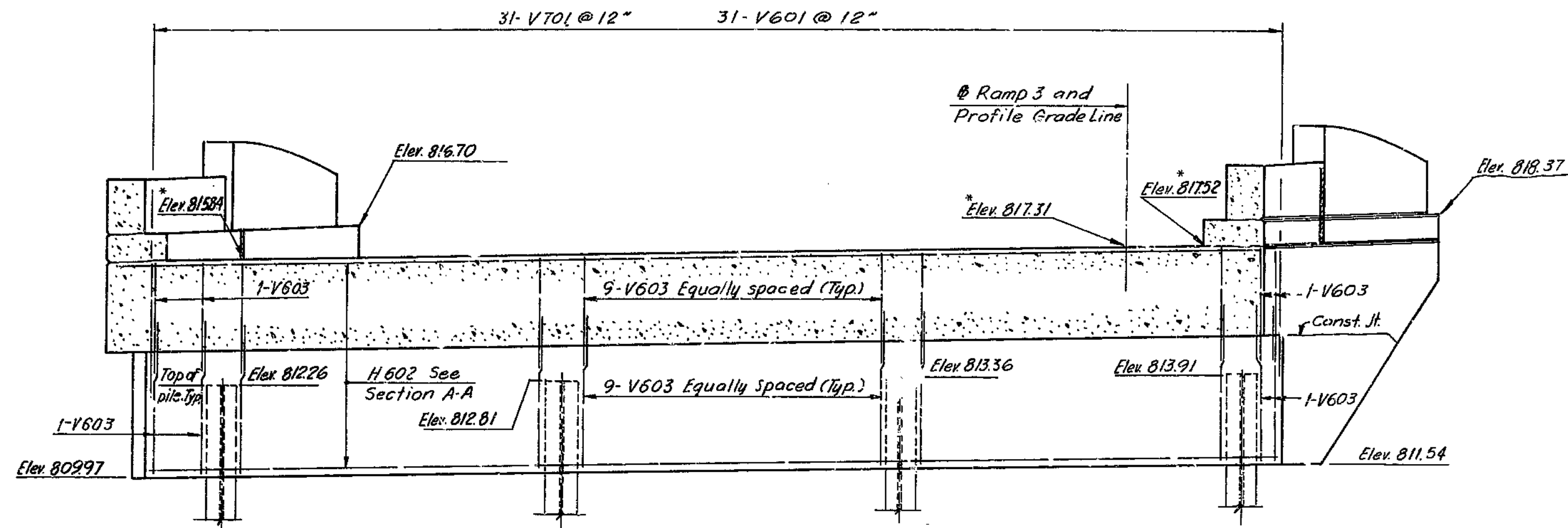
SHEET 5 OF 10

A-1579

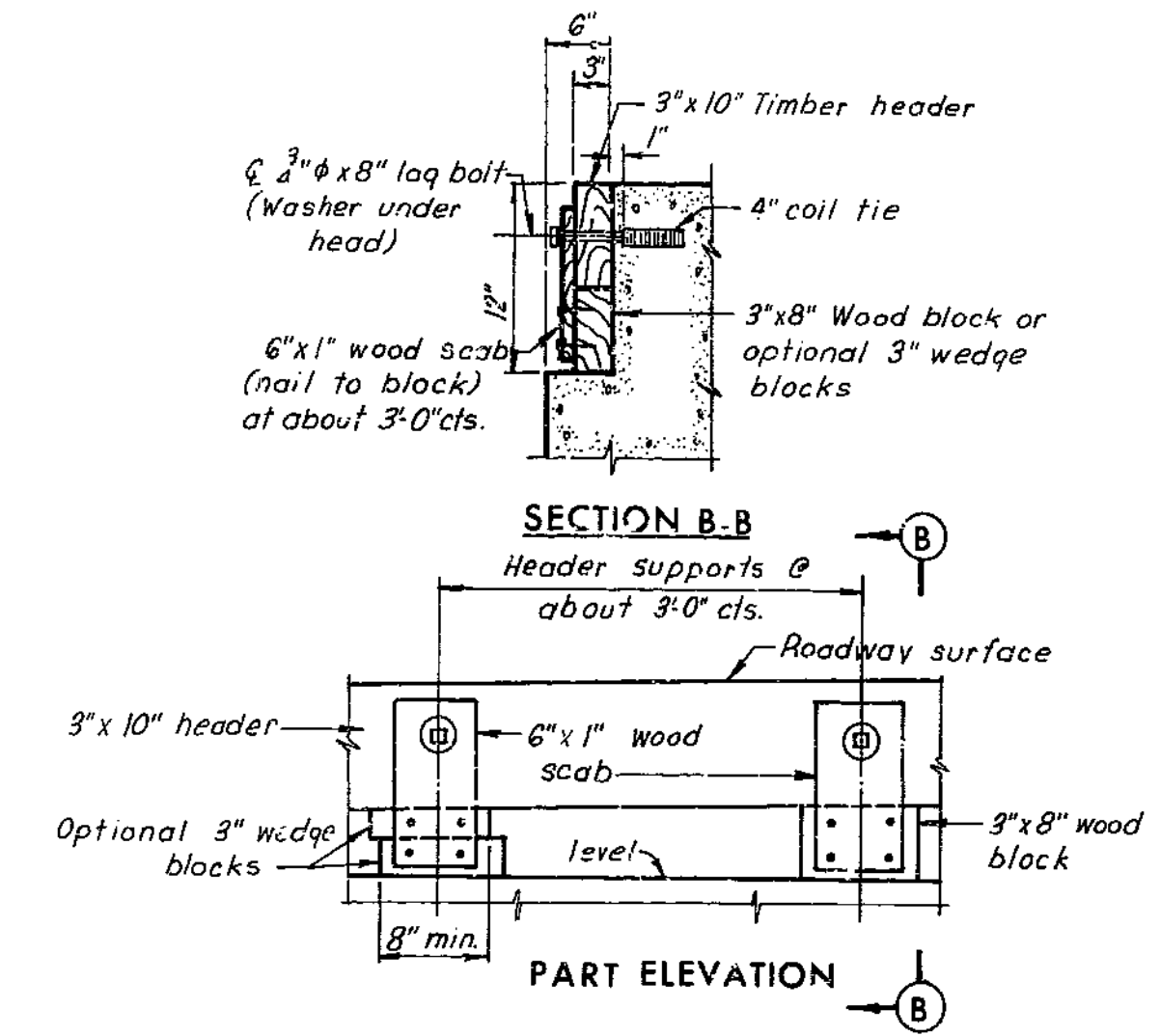
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			79	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

Note: V603 stirrups, and V601 and V701 bars to be placed parallel to longitudinal slab steel.

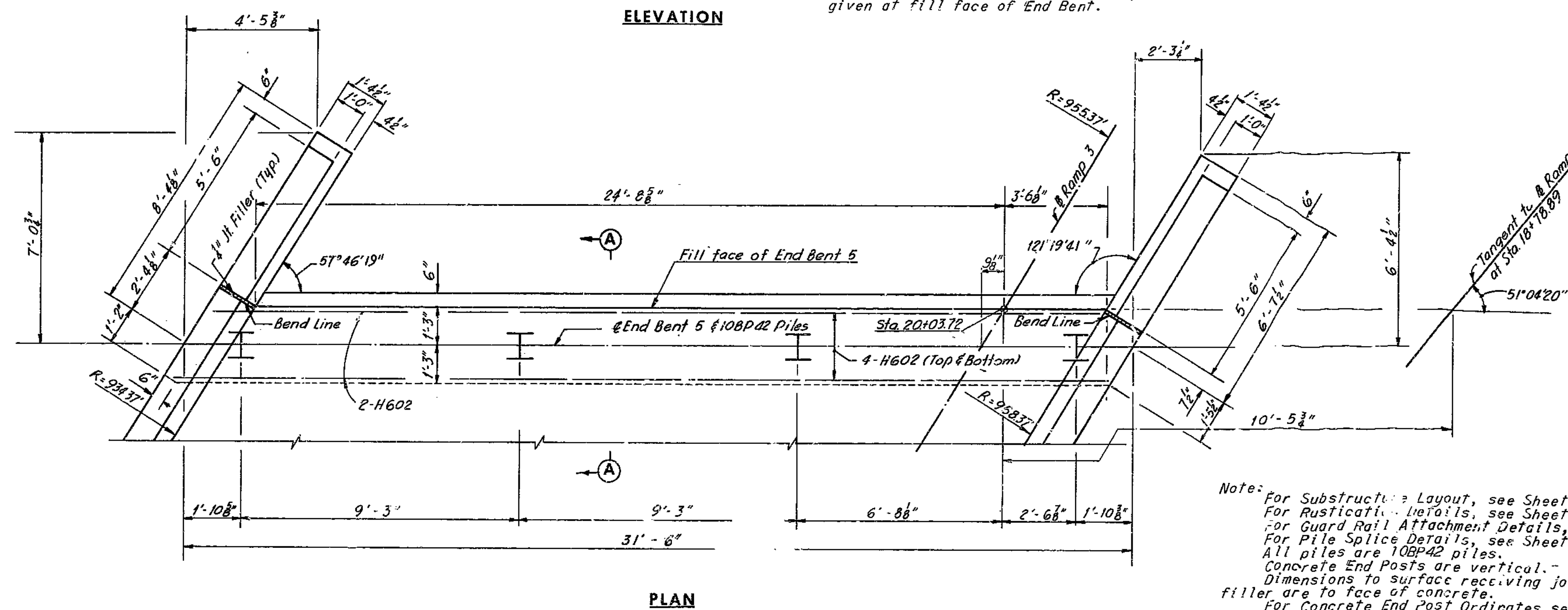


Note: Elevations denoted with an (\*) are given at Fill Face of End Bent.

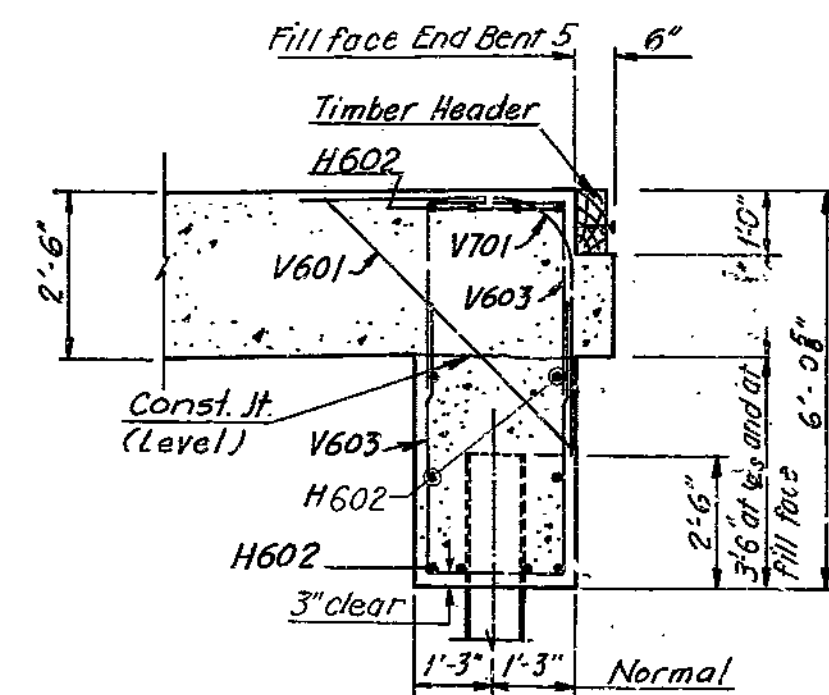


TIMBER HEADER DETAILS

Note: Cost of Timber Header, complete in place, to be included in price bid for concrete.



Note: For Substructure Layout, see Sheet 2.  
For Rustication Details, see Sheet 7.  
For Guard Rail Attachment Details, see Sheet 4.  
For Pile Splice Details, see Sheet 10.  
All piles are 10B42 piles.  
Concrete End Posts are vertical.  
Dimensions to surface receiving joint filler are to face of concrete.  
For Concrete End Post Ordinates, see Sheet 4.  
For Wingwall Details, see Sheet 4.



SECTION A-A

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE SSW DATE 5-13-68 CHECKED JSH DATE 5-17-68

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

END BENT 5

SHEET 6 OF 10

A-1579

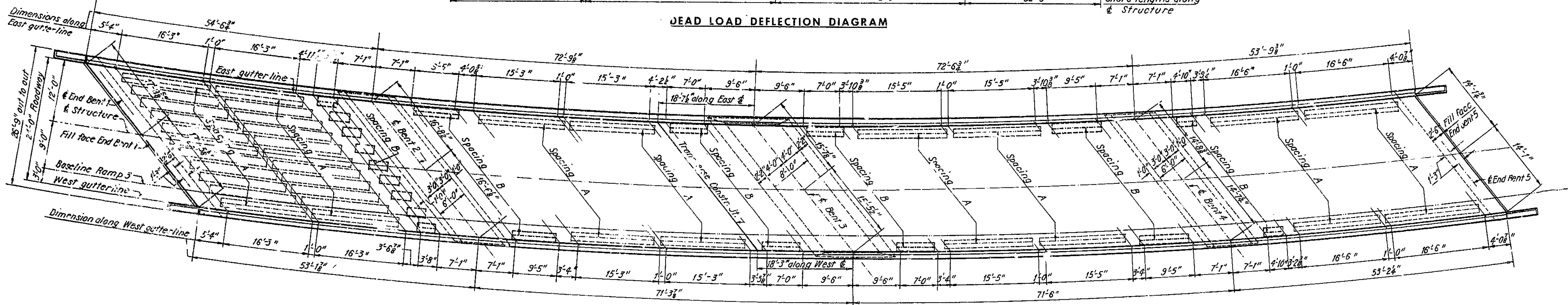
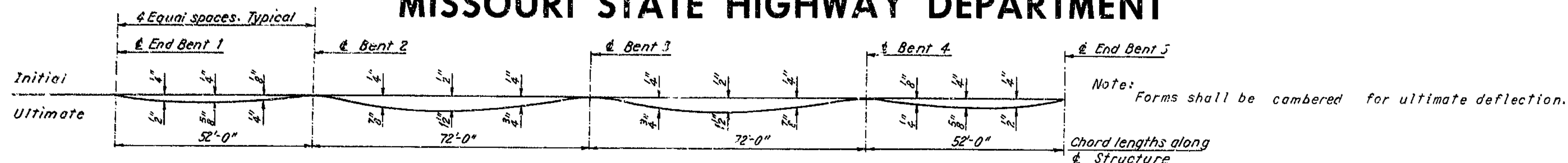
163

2106-21-02-579-833  
End Bent 5

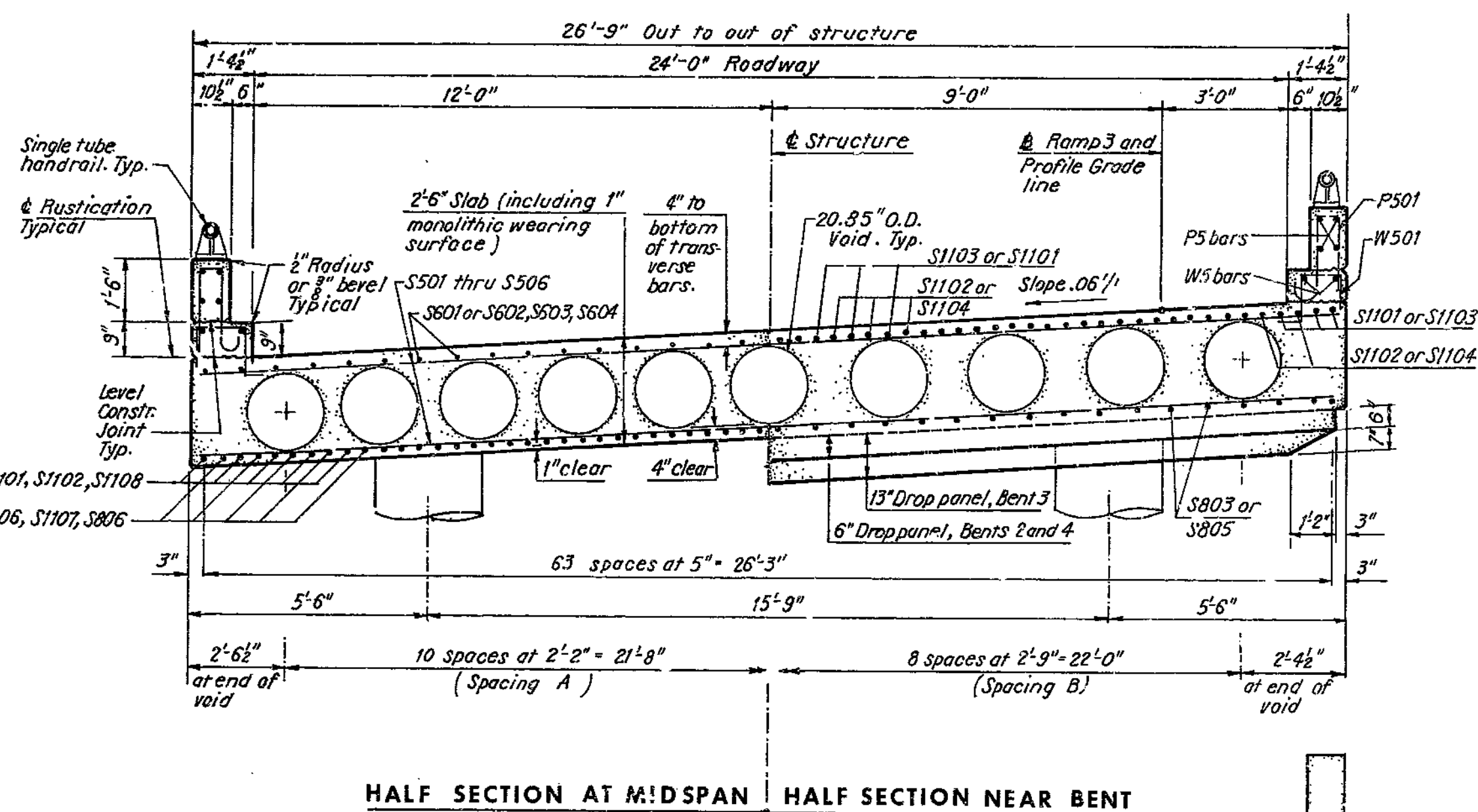
BRIDGE: RAMP 3 OVER INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RT. I-435) STA. 17+44.55  
CLAY COUNTY

MISSOURI STATE HIGHWAY DEPARTMENT

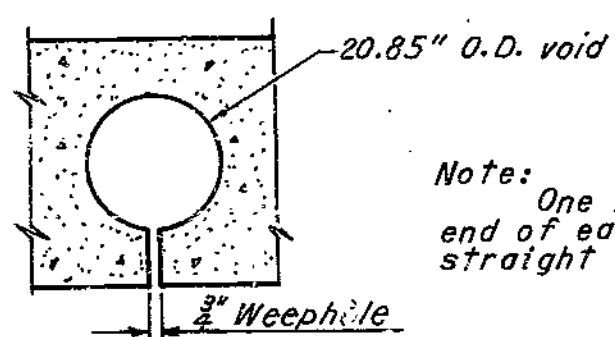
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SCALE	DATE	TOTAL SHEETS
5	MO			80	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



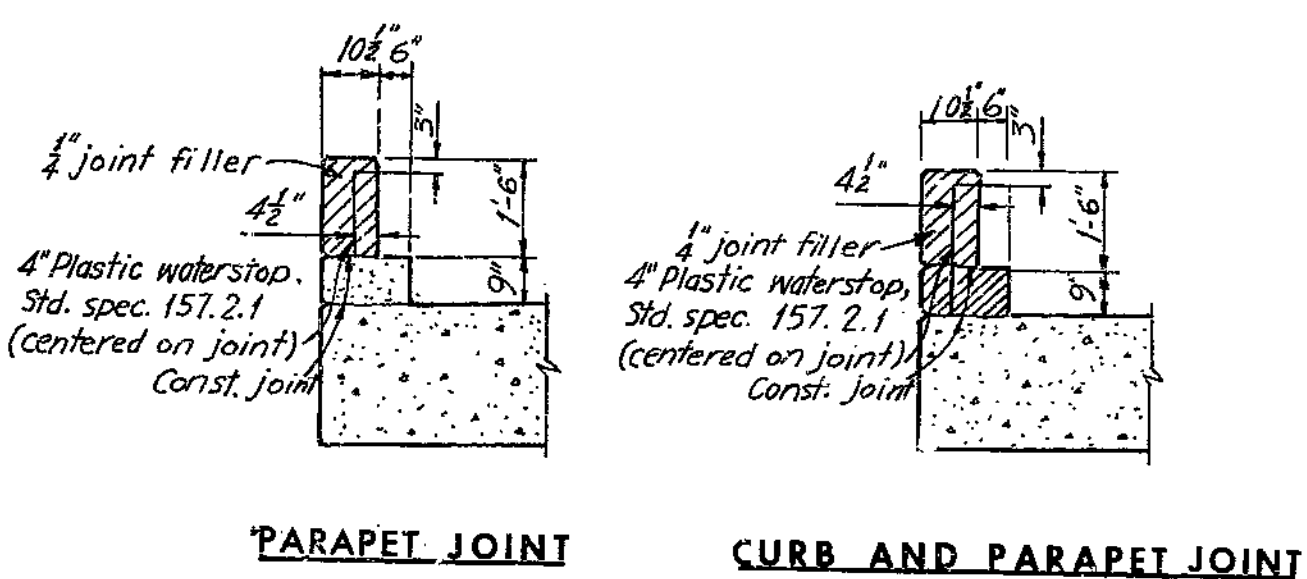
DECK PLAN



HALF SECTION AT MIDSPAN | HALF SECTION NEAR BENT

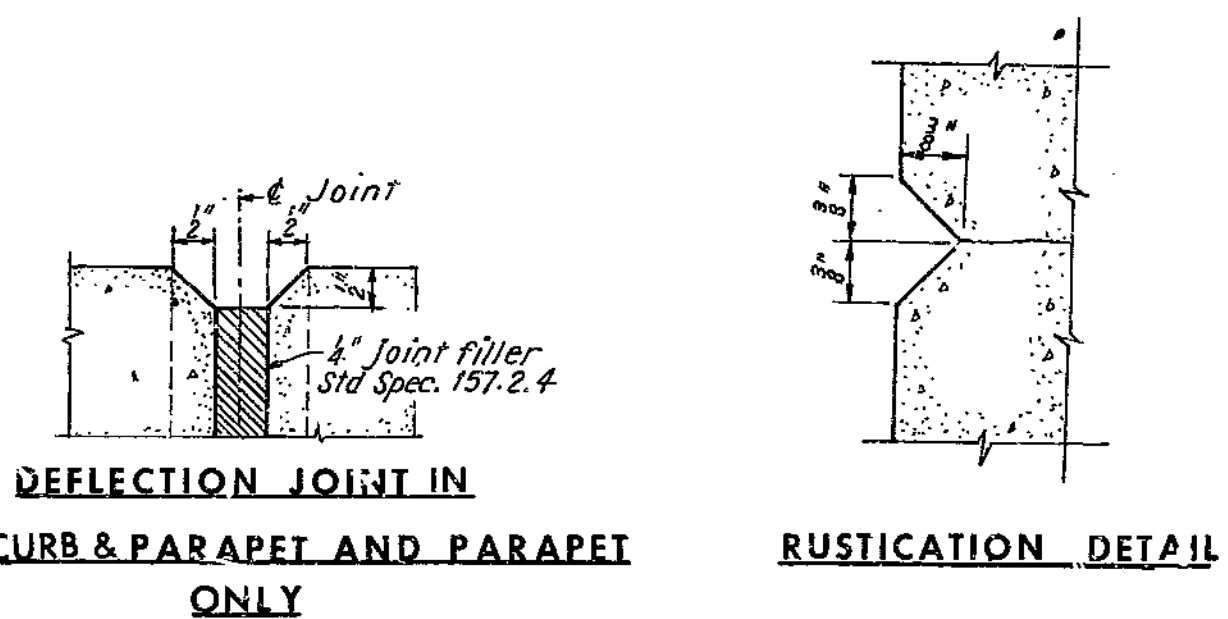


DETAIL OF WEEPHOLE IN VOIDS



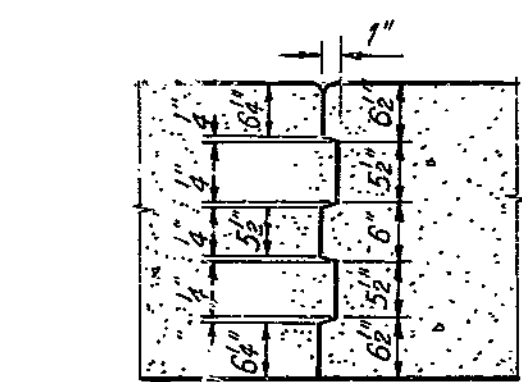
DETAILS OF PLASTIC WATERSTOP

Note: Plastic waterstop shall be placed in the parapet and curb filled joints on low side of structure only. Cast of plastic waterstop complete in place to be included in unit price bid for concrete.



All reinforcing to stop 2" clear of deflection joints.

**POURING ROADWAY SLAB**  
The contractor shall use a finishing machine and shall pour and satisfactorily finish the roadway slab at the rate of not less than 39 cubic yards per hour. He shall observe the transverse construction joint shown on plans unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slab at a rate which will permit continuous pouring through this joint. No longitudinal construction joints will be permitted.



Note: Finish each side of joint with 1/4" radius edging tool. Key to extend full width of roadway slab.

Note: All dimensions are horizontal. For Timber Header Detail, see Sheet 6. For Handrail Details, see Sheet 10. Provide 1 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

BRIDGE: RAMP 3 OVER INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435) S.T.A. 17+4.55  
CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY | NEW YORK

MADE JSW DATE 5-22-68 CHECKED SSW DATE 5-21-68

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

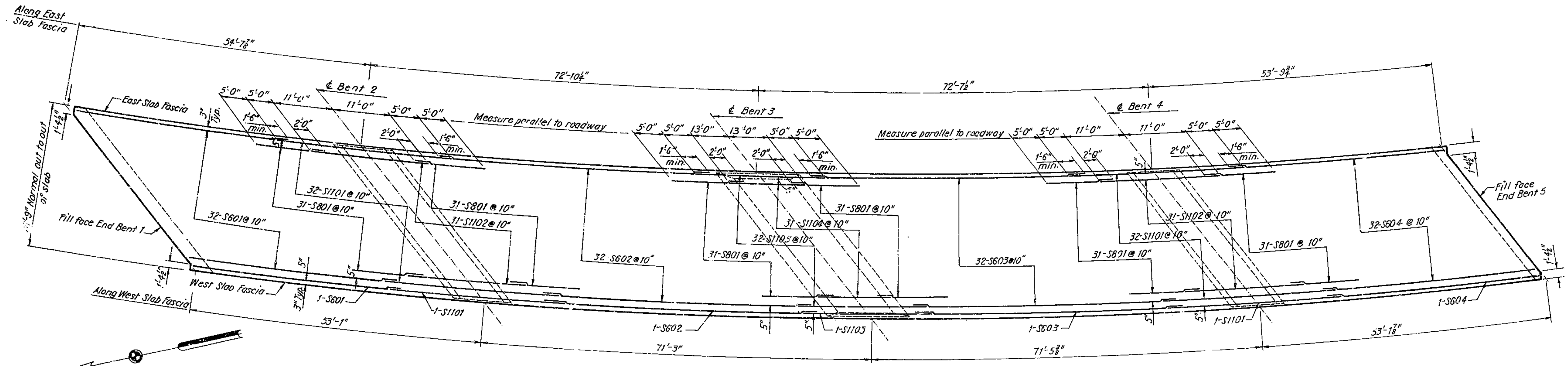
PLAN AND CROSS SECTION

164

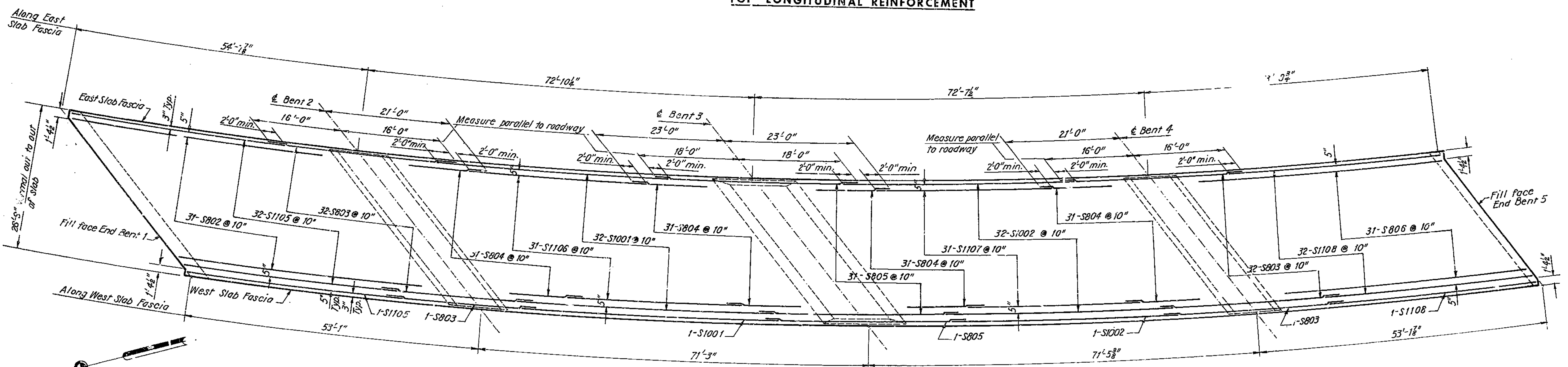
210621 01  
579 B51

MISSOURI STATE HIGHWAY DEPARTMENT

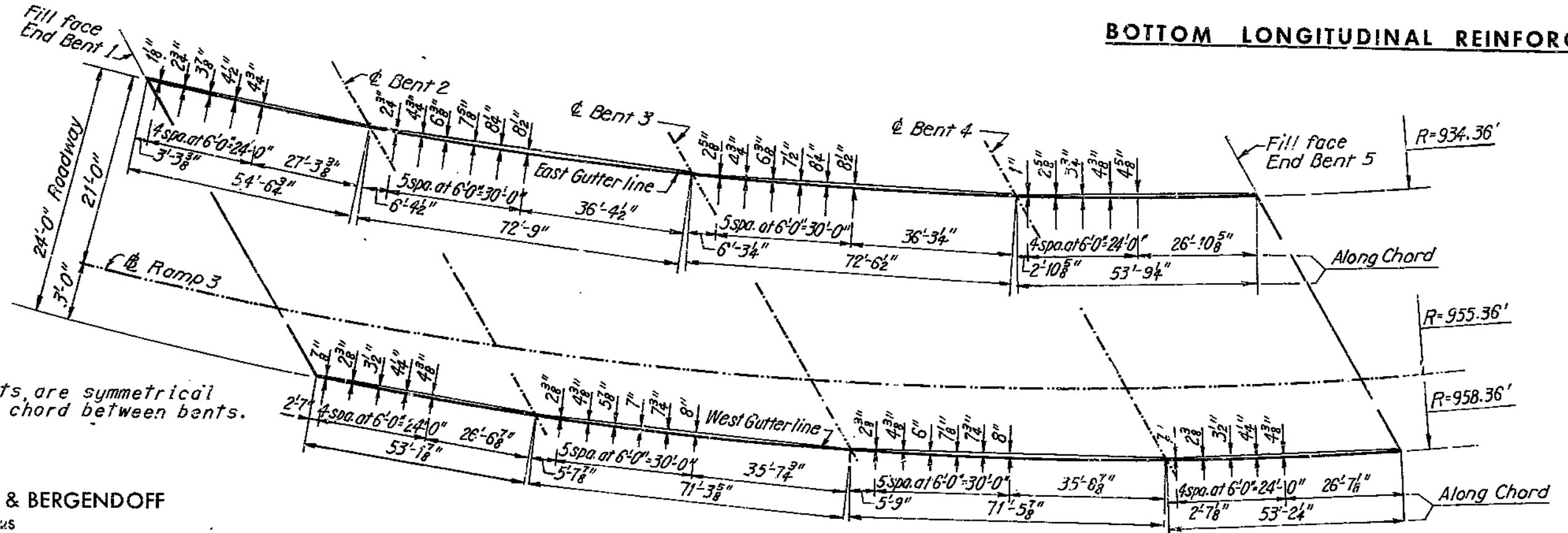
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			81	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



TOP LONGITUDINAL REINFORCEMENT



BOTTOM LONGITUDINAL REINFORCEMENT



GUTTERLINE OFFSETS

Notes:  
 For Reinforcement Schedule, see Sheet 3.  
 For Transverse Slab Reinforcement, see Sheet 9.  
 For Transverse Section, see Sheet 7.  
 All dimensions are horizontal unless otherwise shown.  
 For End Bent Reinforcement see Sheets 4 and 5  
 Top and bottom reinforcing steel is placed parallel to @ structure.

Note: Gutterline offsets are symmetrical about center line of chord between bents.

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE J.S.H. DATE 4-30-68 CHECKED A.L.C. DATE 5-9-68

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

LONGITUDINAL REINFORCEMENT

BRIDGE: RAMP 3 OVER INTERSTATE 35  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
 CLAY COUNTY

SHEET 9 OF 10

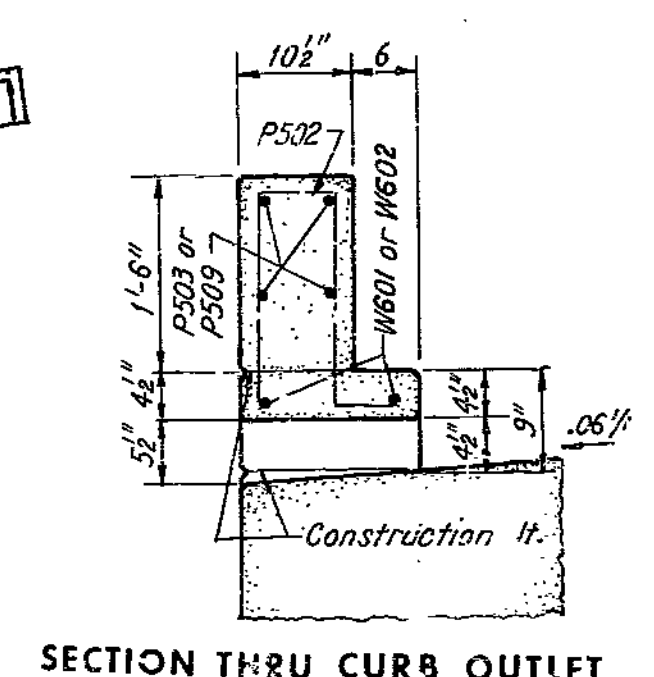
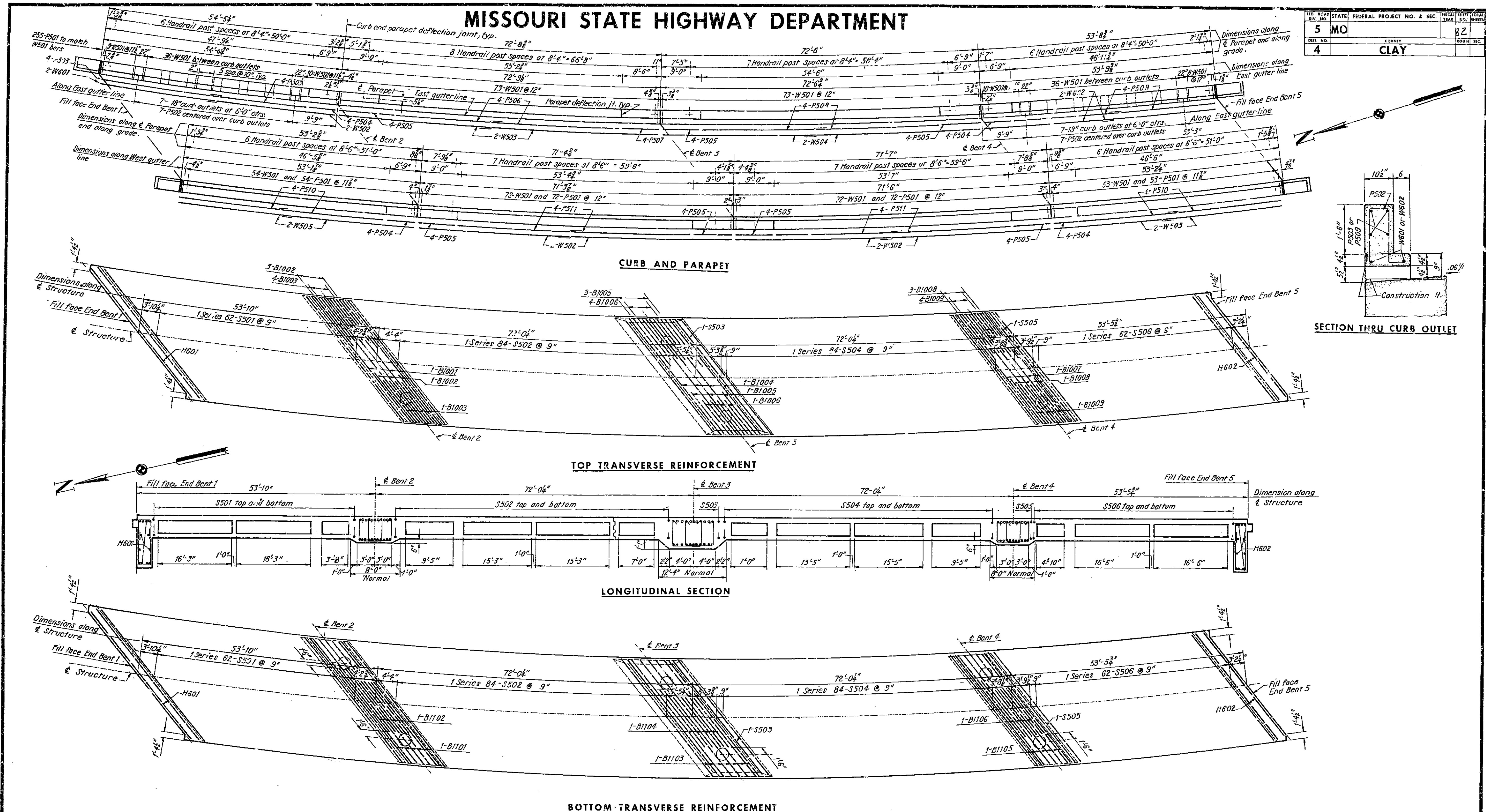
A-1579

165

2106 21 02 579-B54

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			82	
DIST. NO.	COUNTY	ROUTE & SEC.			
4	CLAY				



Note:  
 For Longitudinal Slab Reinforcement see Sheet 8.  
 For Reinforcement Schedule, see Sheet 3.  
 For Transverse Section, see Sheet 7.  
 For Cap Beam Reinforcement, see Sheet 5.  
 All dimensions horizontal, unless otherwise noted.  
 For end bent reinforcement, see Sheets 4 and 6.

**BRIDGE: RAMP 3 OVER INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
 CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE JSH 5-7-68 CHECKED SSW DATE 5-16-68

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

TRANSVERSE REINFORCEMENT

SHEET 4 OF 10

A-1579

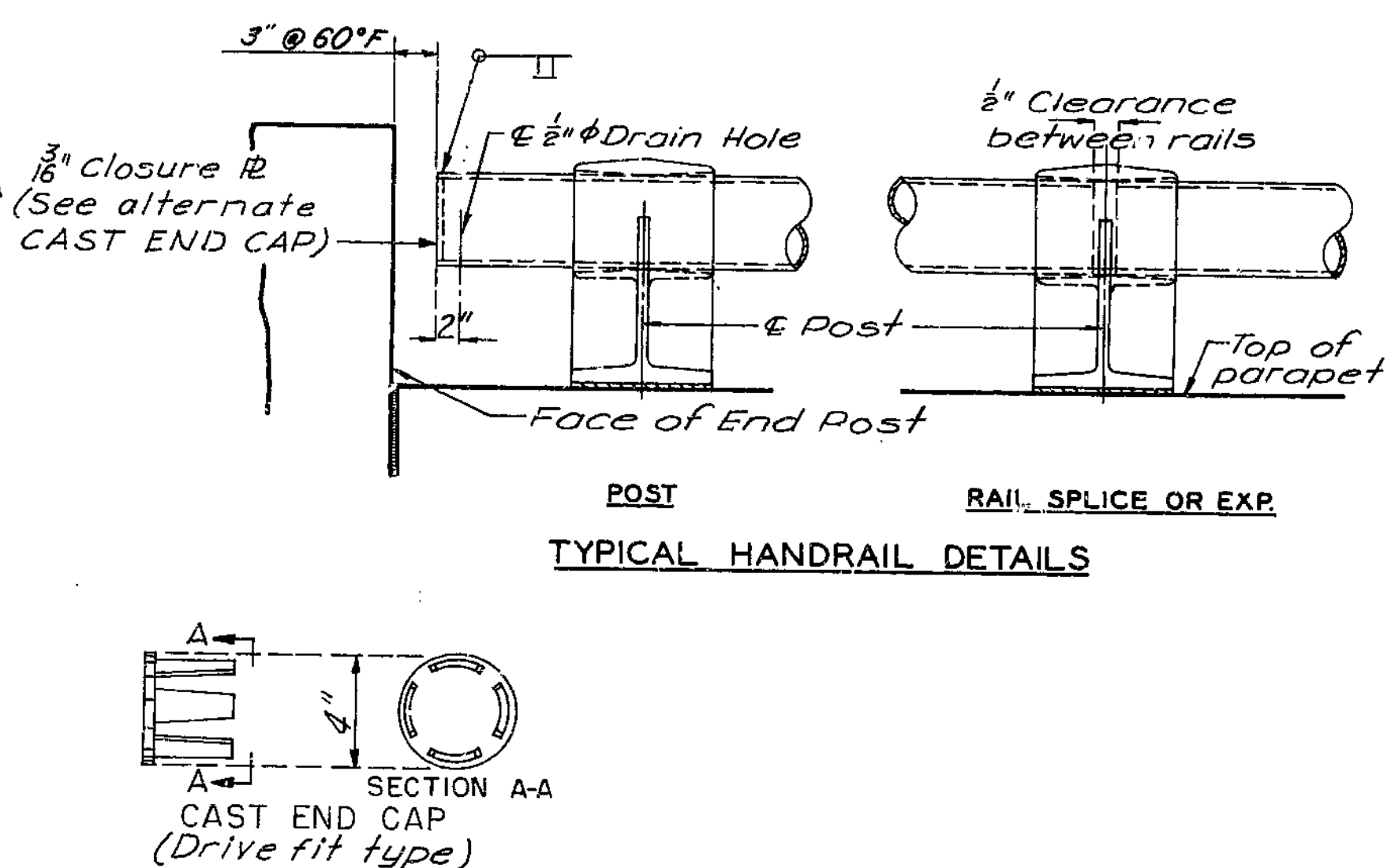
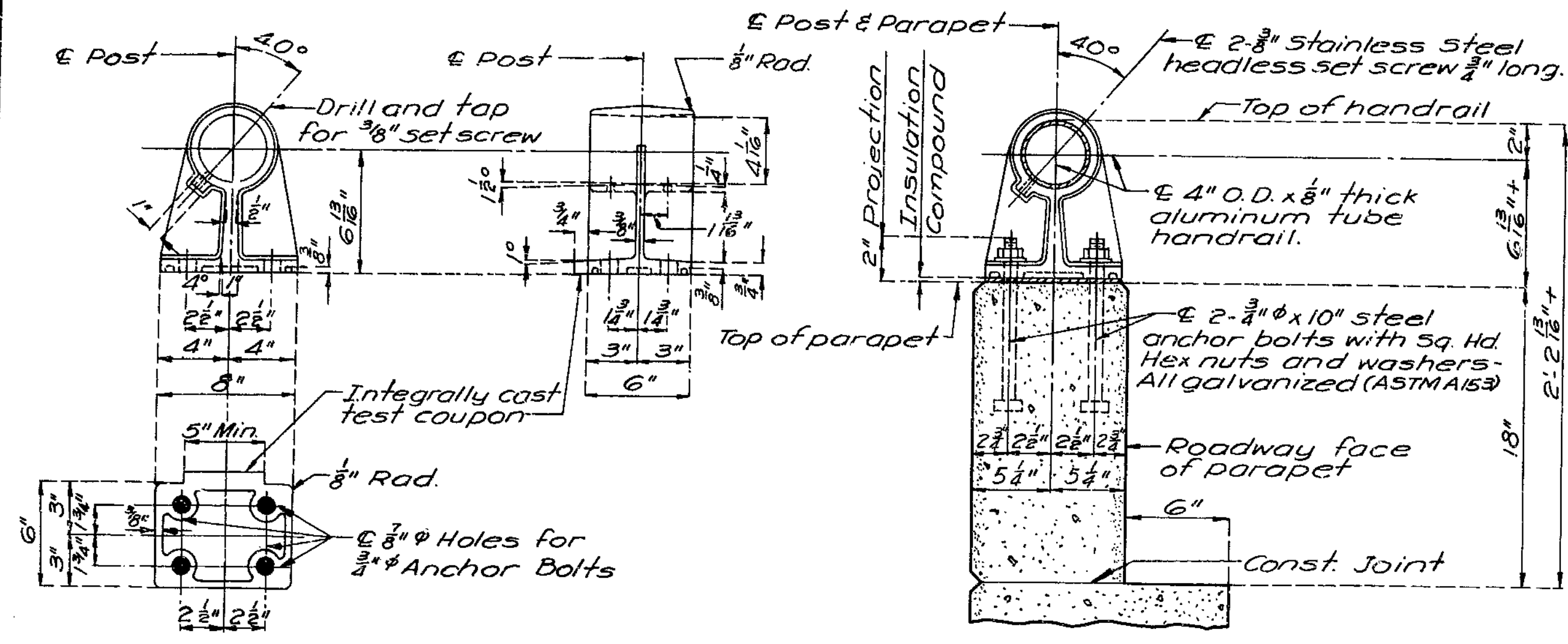
166

5/16/68



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		83	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



**GENERAL NOTES:**

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

Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/4". Where more filling of post is required for proper alignment, concrete bearing areas shall be ground down.

All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material. The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulation compound. All fillets 1/4" except as noted.

All drafts 3° except as noted.

Pipe Rail to be fabricated in a minimum of two panel lengths.

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

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

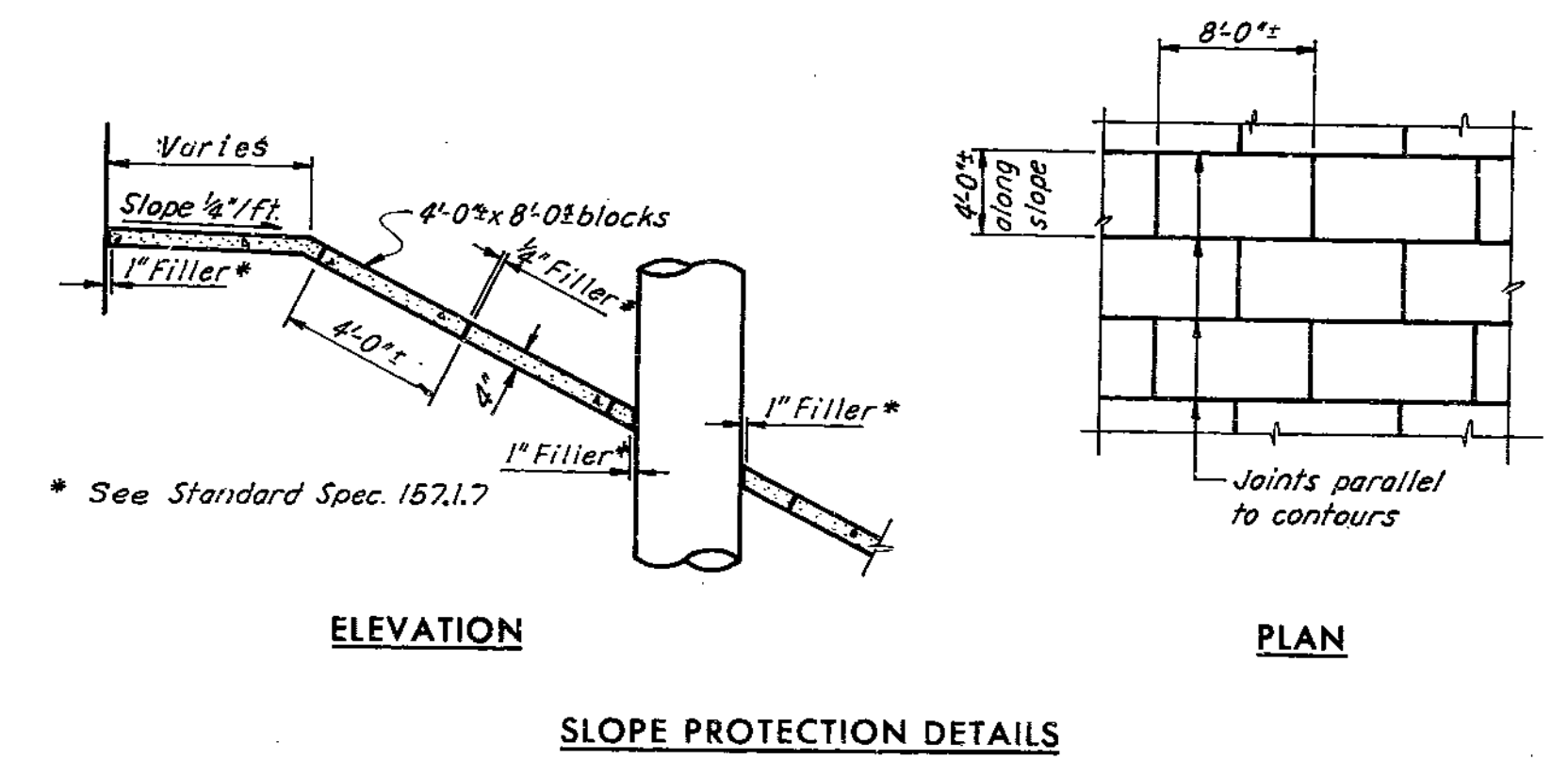
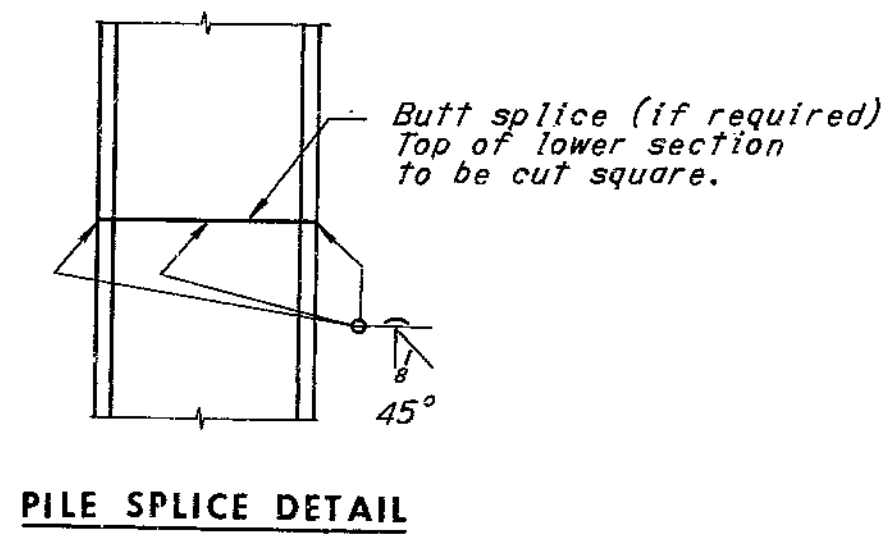
All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.

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

Concrete end posts to be vertical.

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

SINGLE TUBE ALUMINUM RAILING



**BRIDGE: RAMP 3 OVER INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
 CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE JSN DATE \_\_\_\_\_ CHECKED ALC DATE 5-13-68

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

167

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(69)9	74	
DIST. NO.	COUNTY		DATE	SEC.
4	CLAY		5-4-68	

FINAL PLANS  
GENERAL NOTES

Design Specifications: AASHTO 1965.

Design Loading: HS20-44 and Modified 24000# Tandem Axle with 15#sq. ft. future wearing surface. Earth 120# cu. ft. Equivalent fluid pressure 30#/#.

Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.

Design Unit Stresses:  
Class B Concrete (substructure)  $f_c = 1,200$  psi.  
Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
Reinforcing Steel  $f_s = 20,000$  psi.  
Steel pile (A.S.T.M A36-66)  $f_b = 9,000$  psi.

Reinforcing Steel: All splices in reinforcing bars were 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.

Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.

All reinforcing bar bending dimensions are "out to out".

Sealing of Deck: Superstructure deck was surface sealed.

Utilities: All utilities, unless shown otherwise, were removed or relocated by others. The Contractor did notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.

Welding: See Standard Specification 55.3.13 for qualification of welding operators.

QUANTITY NOTES

No payment was made for excavation at End Bents 1 and 5. All excavation was paid as Class 1 Excavation for Structures.

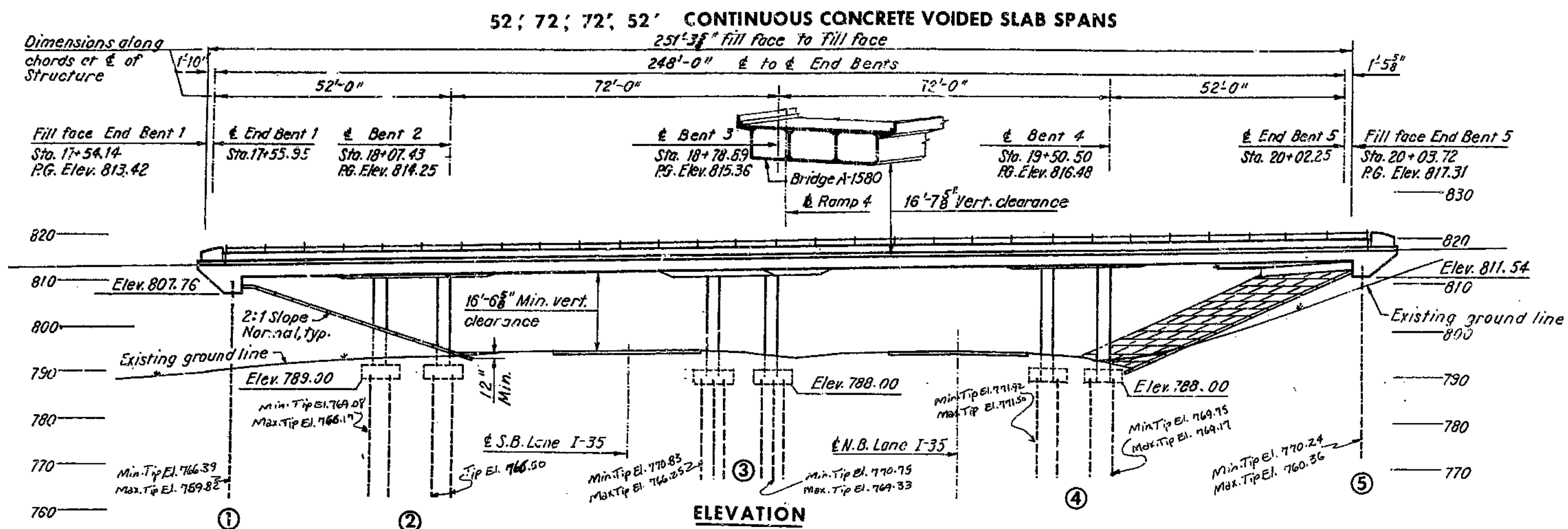
Estimated quantity of Class B Concrete in intermediate bent footings only. All other concrete is included in quantity of Class B1 Concrete.

All reinforcing except that in interior bent footings is included in superstructure reinforcing.

QUANTITIES

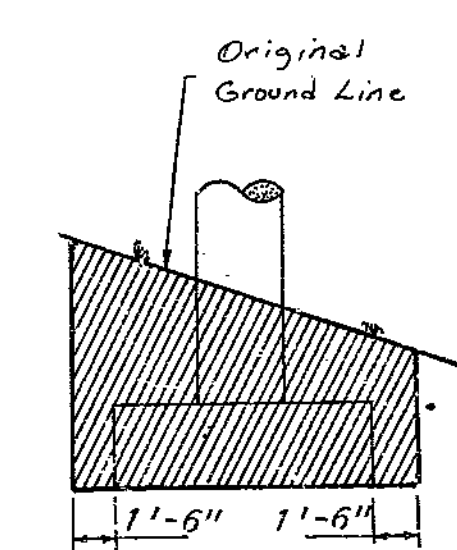
ITEM	UNIT	SUBSTR.	SUPRSTR.	TOTAL
Class 1 Excavation for Structures	Cu. Yd.	100.0	-	100.0
Steel Piles in Place (10BPA2)	Lin. Ft.	952	-	952
Class B Concrete	Cu. Yd.	27.7	-	27.7
Class 1 concrete	Cu. Yd.	-	587.4	587.4
Reinforcing Steel	Lbs.	1,800	153,310	155,110
Bridge Rail (Single Tube Type)	Lin. Ft.	-	501	501

PROFILE GRADE RAMP 3



Note: All dimensions are horizontal. Bents cannot be located from the reference point on the tangent by conventional survey methods based on 100' chords. For Substructure Layout, see Sheet 2. For location of borings, see Sheet 2. For table of pile loads, see Sheet 2. All bents are parallel.

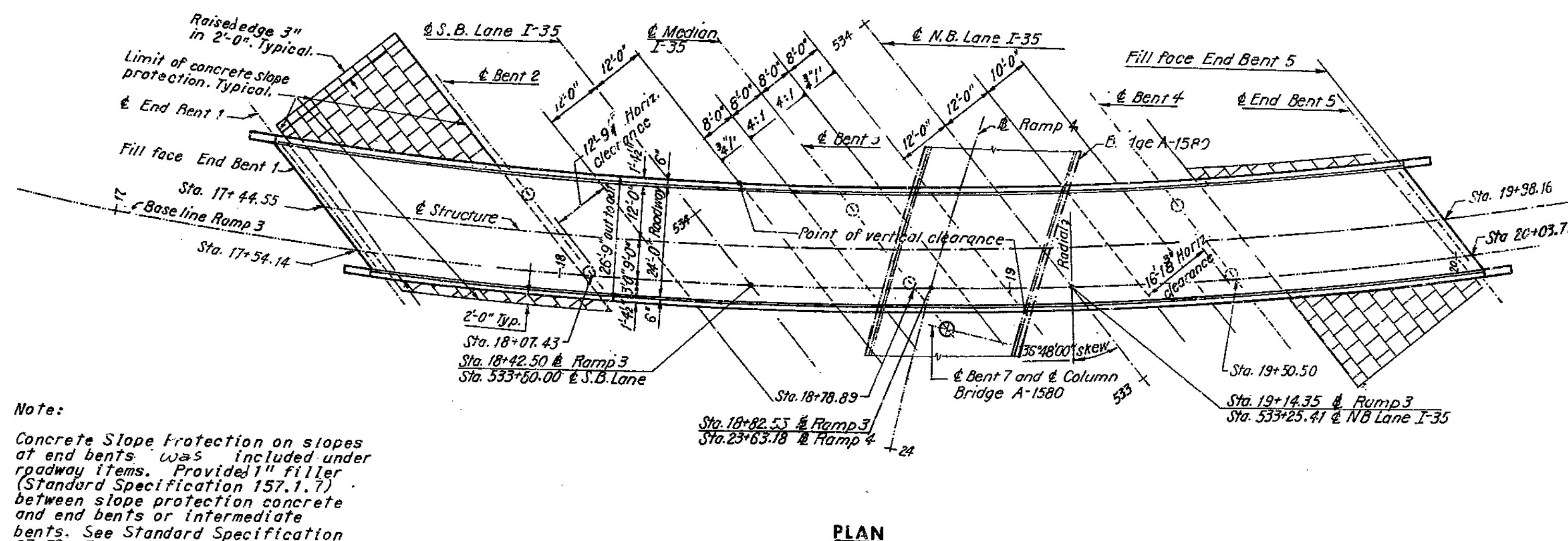
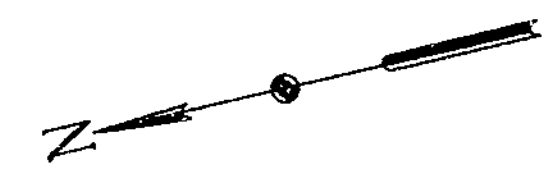
Note: Compacted roadway fill (full roadway width) was placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bents 1 and 5 before steel piles were driven.



LIMITS OF EXCAVATION

Excav. Computed from original ground line.

Note: Falsework over existing lanes was constructed with a minimum vertical clearance of 13'-6" from crown of existing lanes and a minimum lateral clearance of 14'-0" from centerlines of existing lanes.



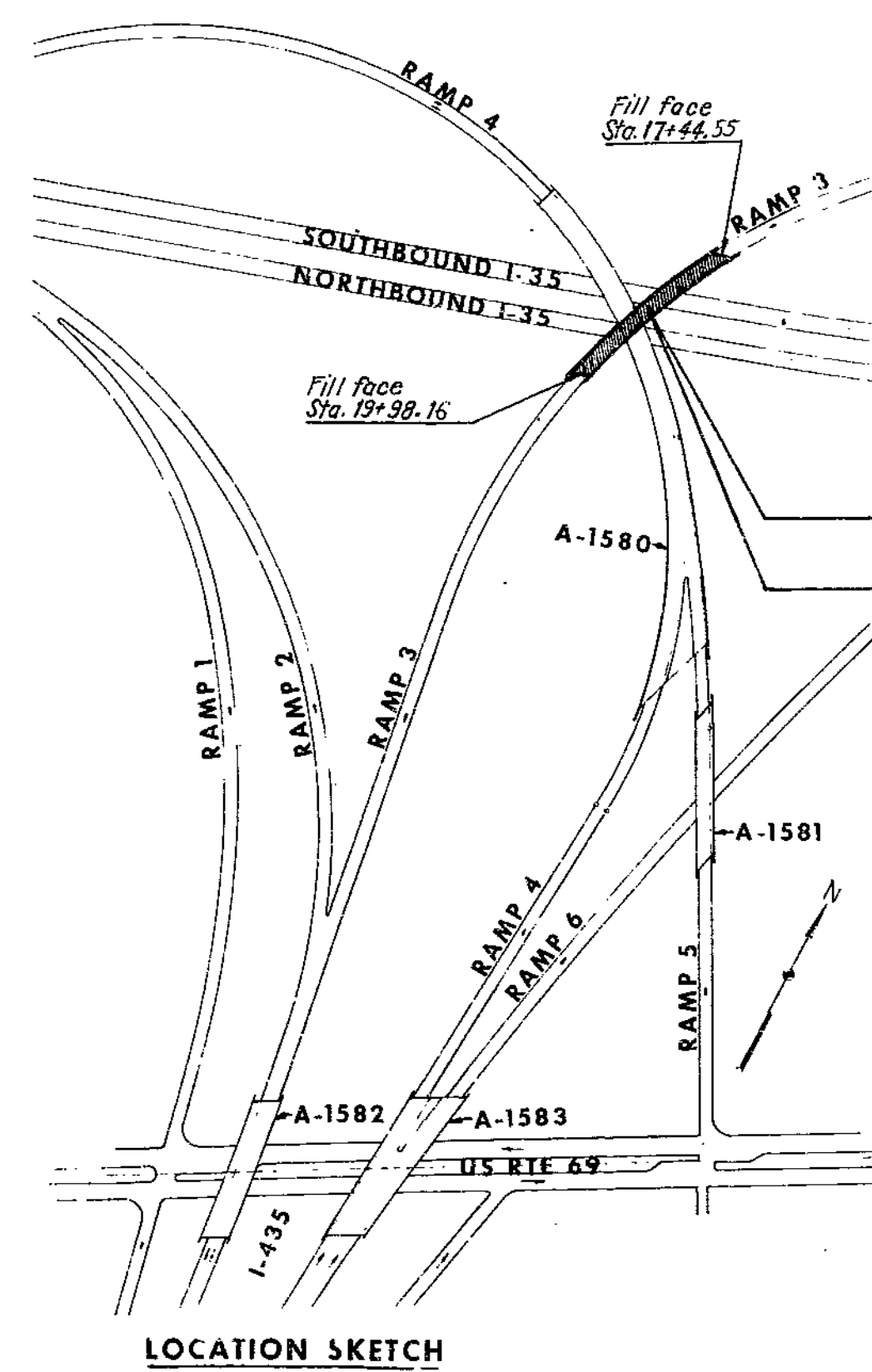
Note: Concrete Slope Protection on slopes at end bents was included under roadway items. Provided 1" filler (Standard Specification 157.1.7) between slope protection concrete and end bents or intermediate bents. See Standard Specification 83.50. For Details, see Sheet 10 and Roadway Plans.

CURVE DATA  
(Chord Definition)

Base Line Ramp 3	Base Line Ramp 4
P. I. = 18+37.39	P. I. = 35+15.89
Δ = 92°09'42"	Δ = 138°10'34"
D = 6°00'00"	D = 8°00'00"
T = 992.11'	T = 1875.89'
L = 1536.06'	L = 1727.20'
R = 955.37'	R = 716.78'
S.E. = 0.06 1/2	

BENCH MARKS

B.M. Elev. 818.97, "I" on E. End Post B1. No. 5



SUBMITTED BY: *R.A. Bergendoff*  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI NO. E-253

BRIDGE: RAMP 3 OVER INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
CLAY COUNTY

SUBMITTED BY: *R.A. Bergendoff* DATE: 5-21-68  
BRIDGE ENGINEER  
APPROVED BY: *R.A. Bergendoff* DATE: 5-22-68  
CHIEF ENGINEER

STD. 54.00

A-1579

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE JSH DATE 5-21-68 CHECKED SSW DATE 5-22-68

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

GENERAL PLAN AND ELEVATION

SHEET 1A of 2

FINAL PLANS

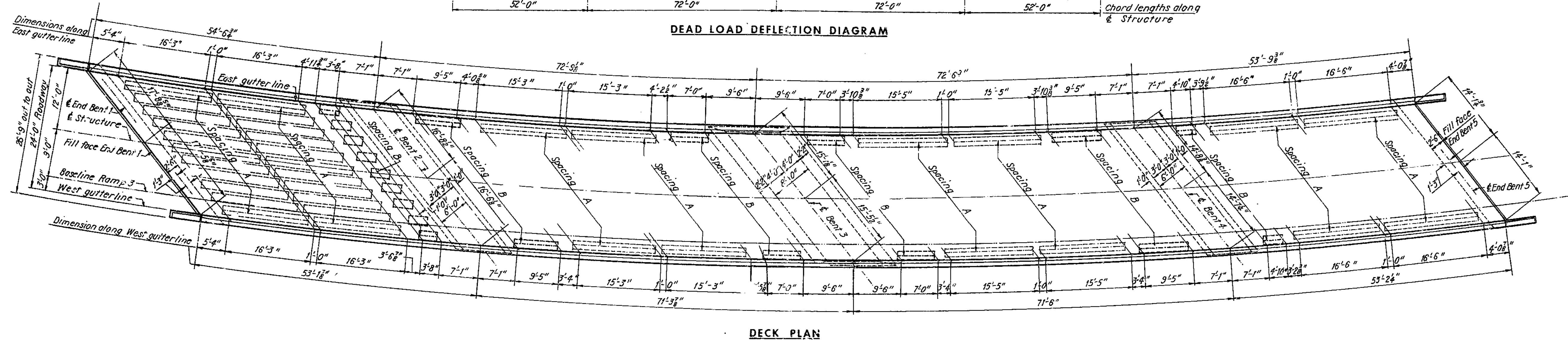
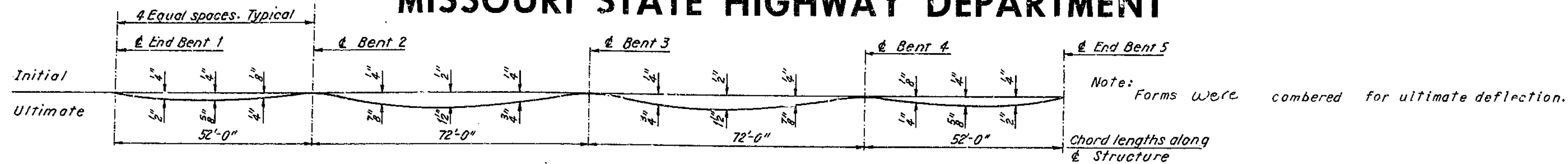
891

206-21-62  
24-12-69

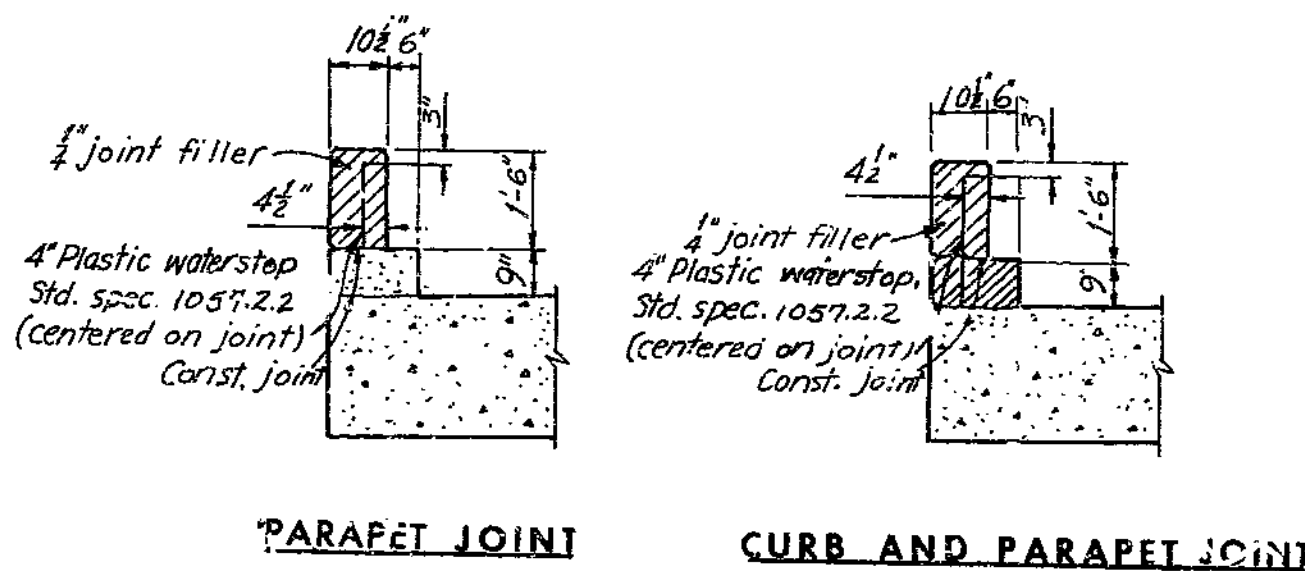
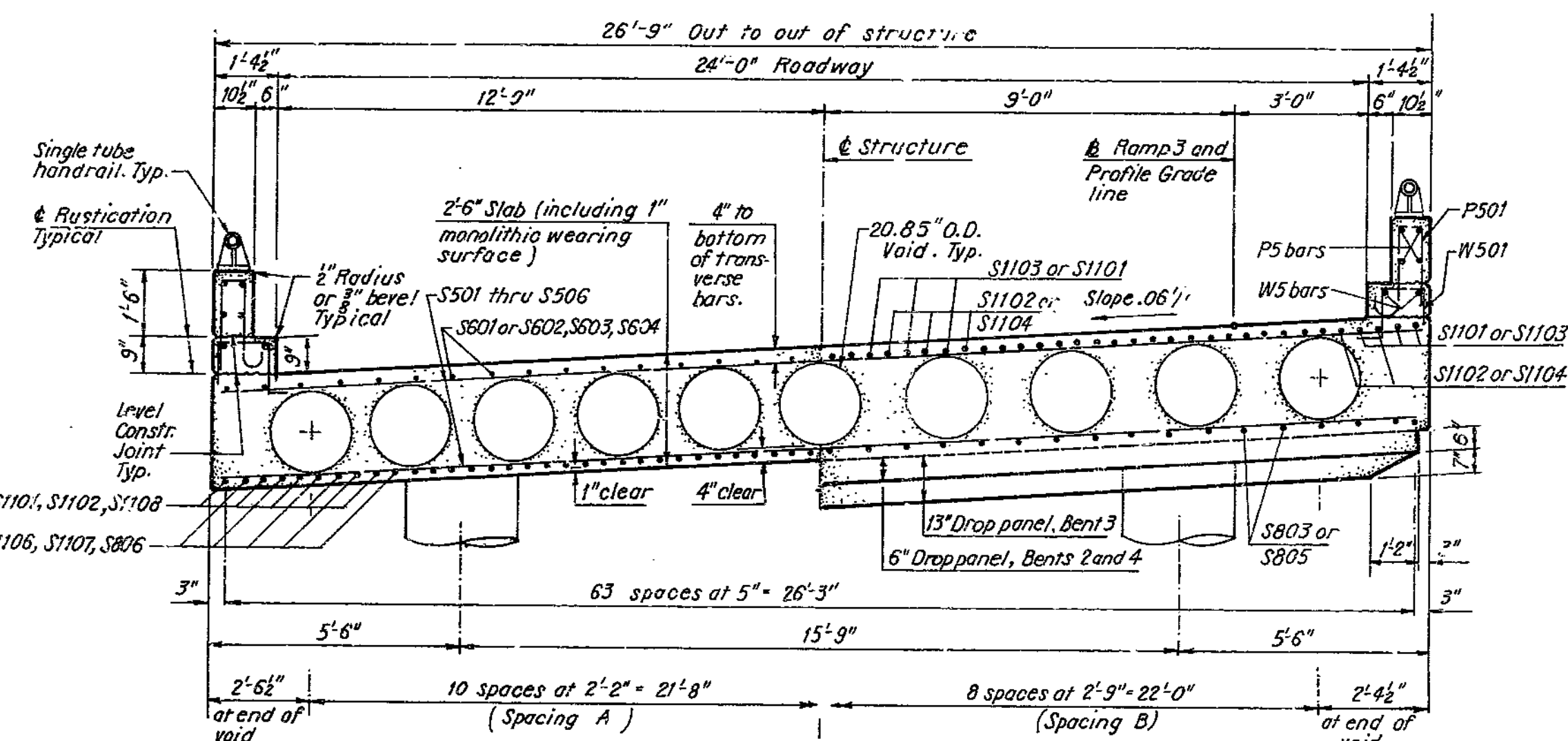
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	PLAN	SHEET TOTAL
5	MO	I-435-1(69)9		80
DIST. NO.	COUNTY	EQUIL. SEC.		
4	CLAY			

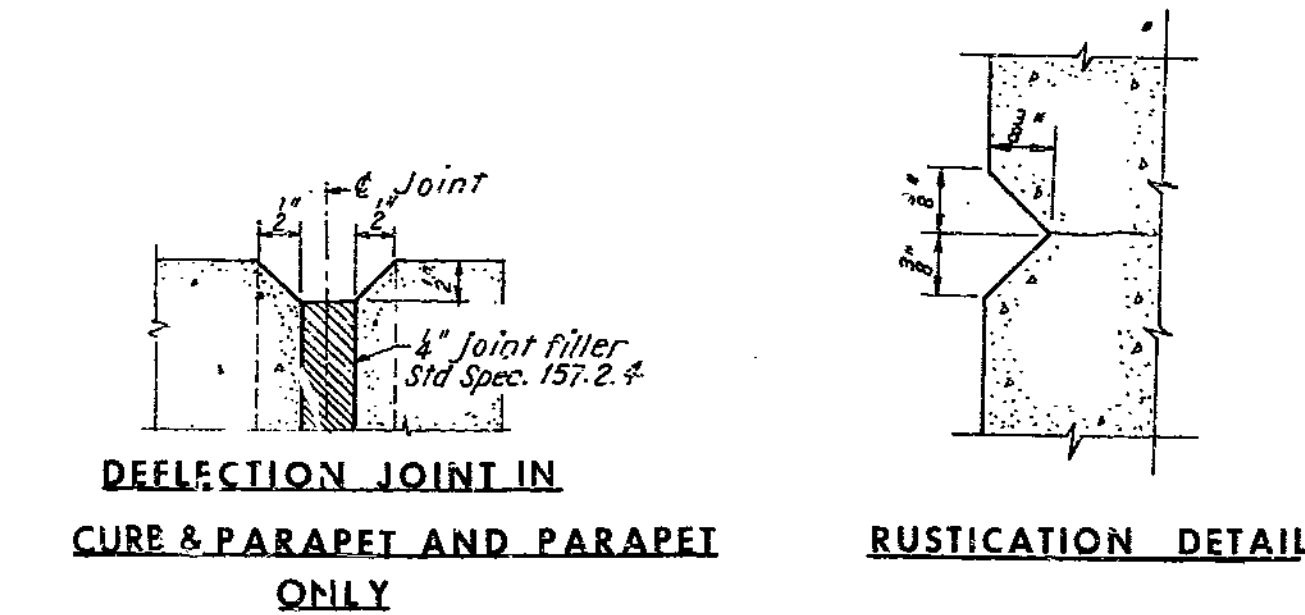
FINAL PLANS



**POURING ROADWAY SLAB**  
The contractor used an approved self propelled oscillating mechanical finishing machine, and poured and satisfactorily finished the entire roadway slab at a rate of 80 cubic yards per hour. No longitudinal construction joints were permitted.

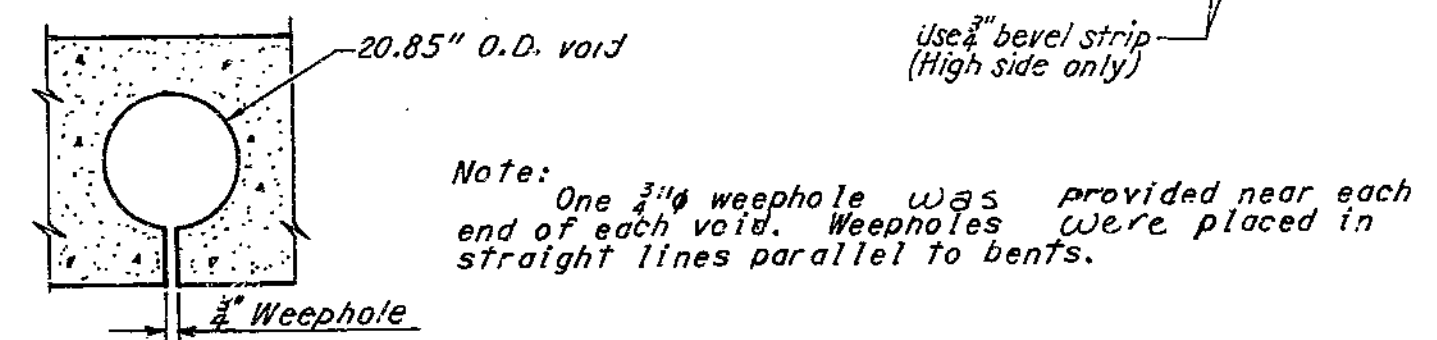


Note: Plastic waterstop was placed in the parapet and curb filled joints on low side of structure only. Cost of plastic waterstop complete in place included in unit price bid for concrete.



All reinforcing stopped 2" clear of deflection joints.

Note: Fiber tubes for producing voids have an outside diameter of 20.85" and a wall thickness of 0.350" and were anchored to joists carrying the floor form at not more than 2'-0" centers.



Note: One 3/4" weephole was provided near each end of each void. Weepholes were placed in straight lines parallel to bents.

Note: All dimensions are horizontal. For Timber Header Detail, see Sheet 6. For Handrail Details, see Sheet 10. Provide 1/4" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

BRIDGE: RAMP 3 OVER INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435) STA. 17+44.55  
CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE JSN DATE 5-22-68 CHECKED SSW DATE 5-21-68

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

PLAN AND CROSS SECTION

SHEET 40F OF 2  
FINAL PLANS

A-1579

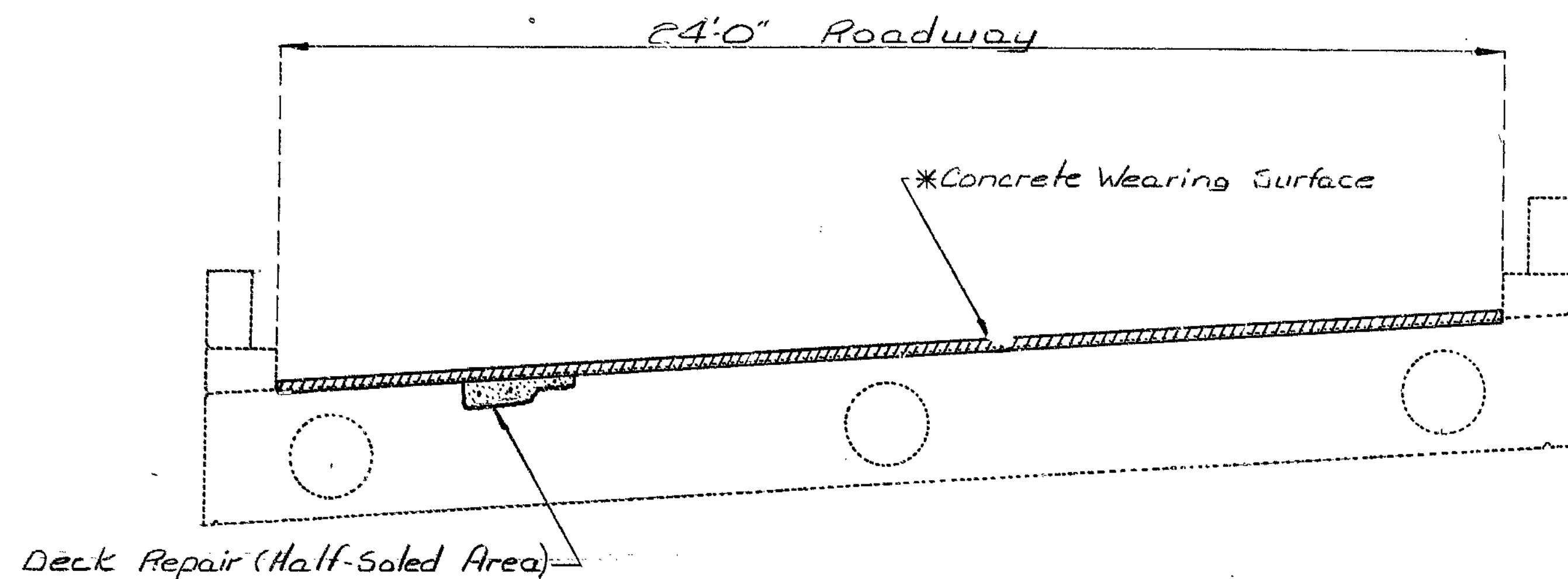
1691

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

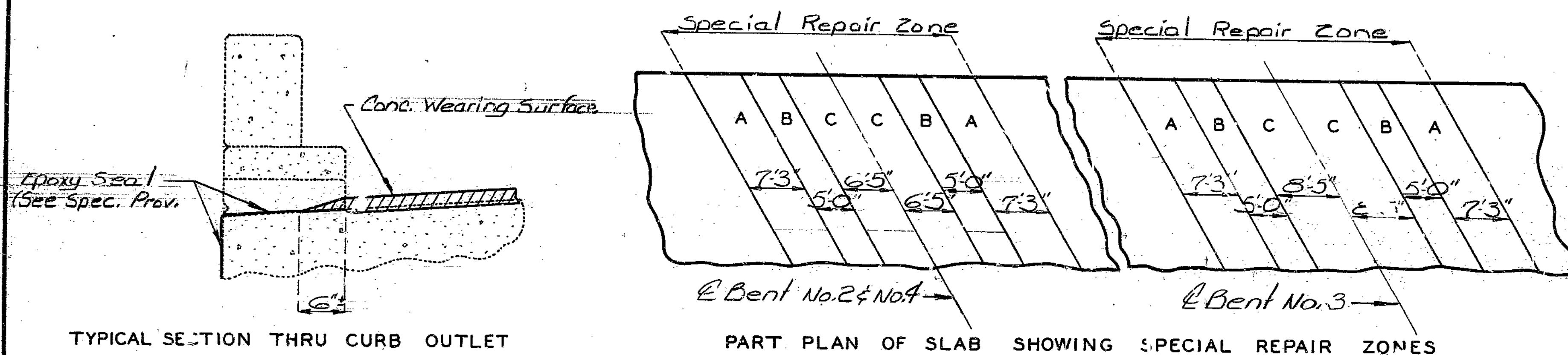
STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	5
SEC./SUR. 27	TWP. 51 N	RGE. 32 W

GENERAL NOTES:

Outline of old work is indicated by light dashed lines.  
 Heavy lines indicate new work.  
 One lane of traffic to be maintained during construction (See Road Plans).



SECTION THRU SLAB



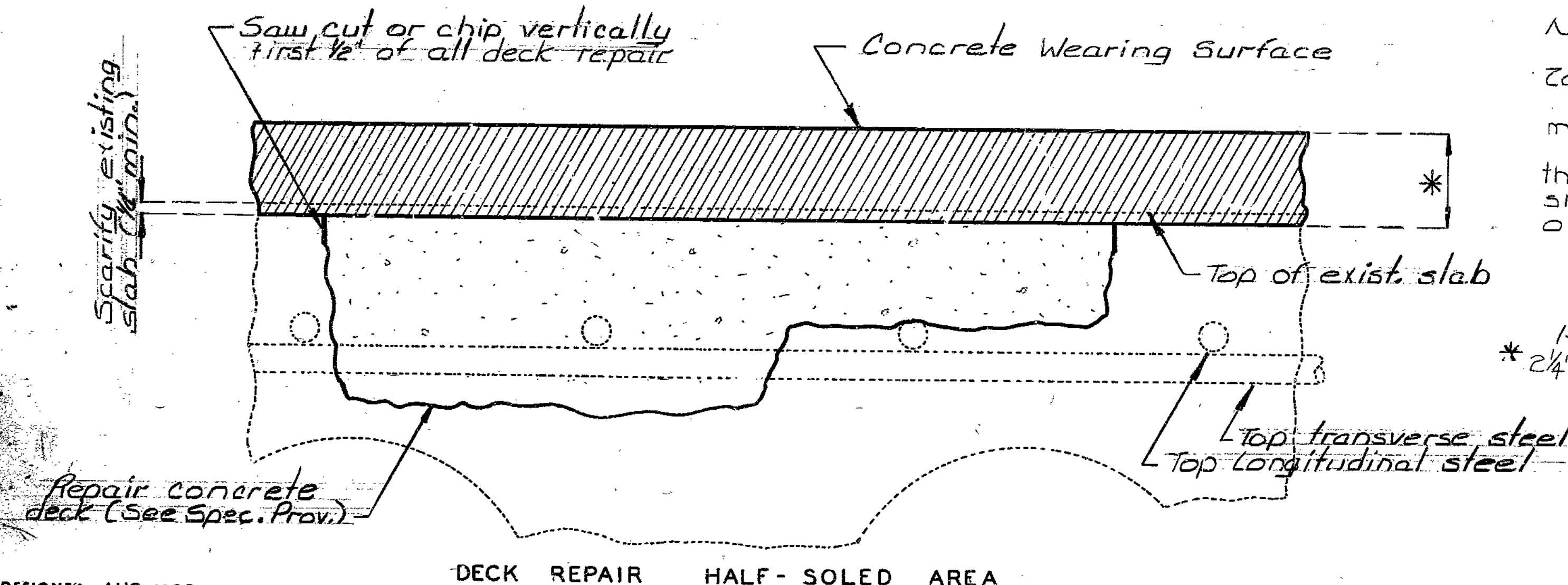
TYPICAL SECTION THRU CURB OUTLET

PART PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

ESTIMATED ITEM	QUANTITIES	TOTAL
Repairing Concrete Deck (Half-Soled) (Sq. Ft.)		182
Concrete Wearing Surface ( )	Sq. Yd.	670
See Special Provisions		

Notes:  
 Sequence of repair: Zone A, Zone C, then Zone B.  
 Zones with the same letter designation may be repaired at the same time.  
 Any repair in the remainder of the bridge that is within 2'-0" of Zone A shall be completed before removing old concrete in Zone A.

\* 1 3/4" (Min.) for Latex Modified conc.  
 \* 2 1/4" (Min.) for Low Skimp concrete



DECK REPAIR HALF-SOLED AREA

BRIDGE: RAMP 3 OVER RTE. I-35

STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35

ROUTE I-35 INTERCHANGE

PROJECT NO. IR-435-1(215)

STA. 17+44.55

JOB NO. 4-I 435-702

RTE. I-435

CLAY

COUNTY

STD.
STD.
A-1579R

DESIGNED AUG. 1985  
 DETAILED AUG. 1985  
 CHECKED SEPT. 1985

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

SEE FINAL PLANS

Sheet No. 1 of 1

DATE 10/25/85

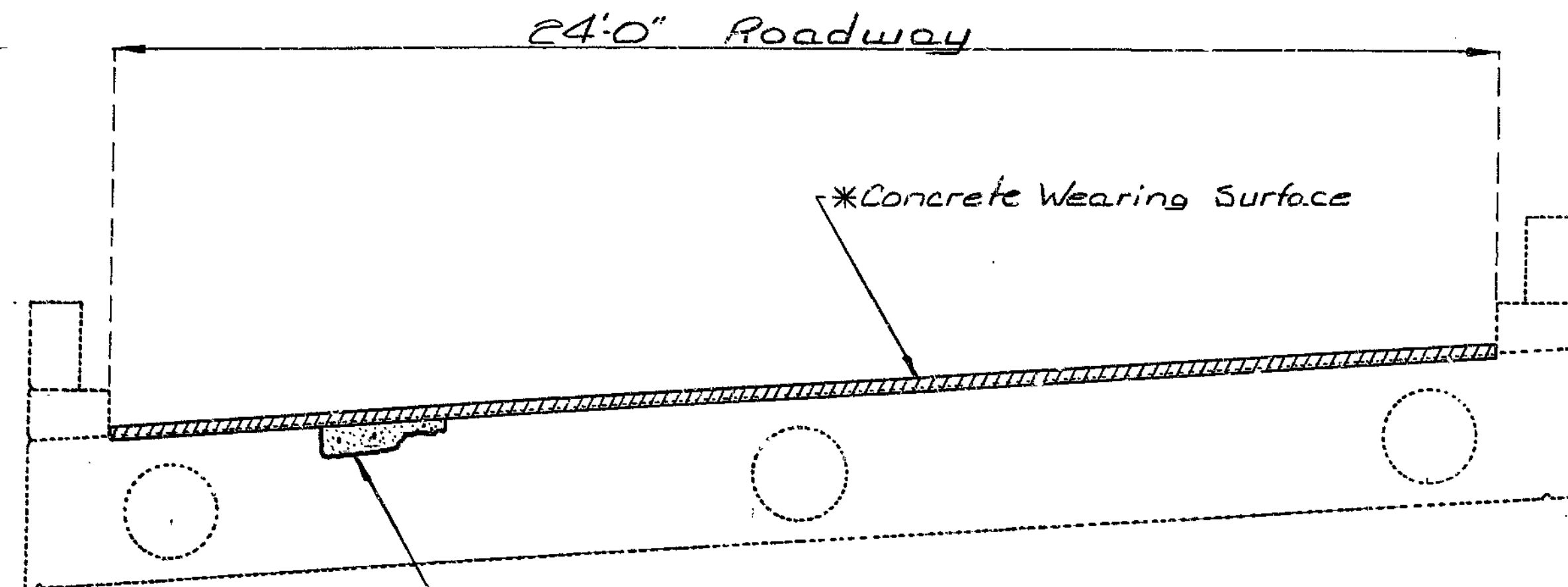
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	5
SEC./SUR. 27	TWP. 51 N RGE. 32 W	

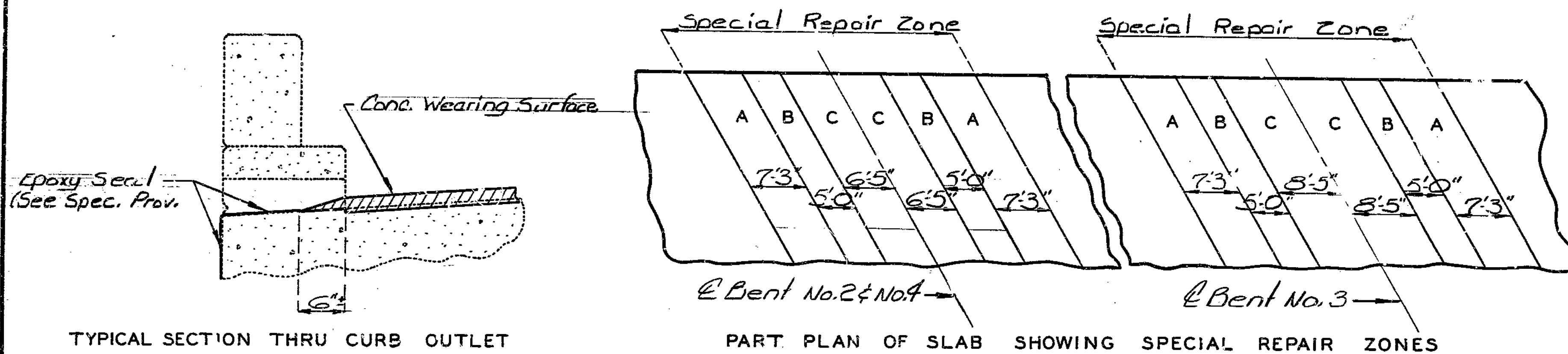
FINAL PLANS

GENERAL NOTES:

Outline of old work is indicated by light dashed lines.  
Heavy lines indicate new work.  
One lane of traffic to be maintained during construction (See Road Plans).

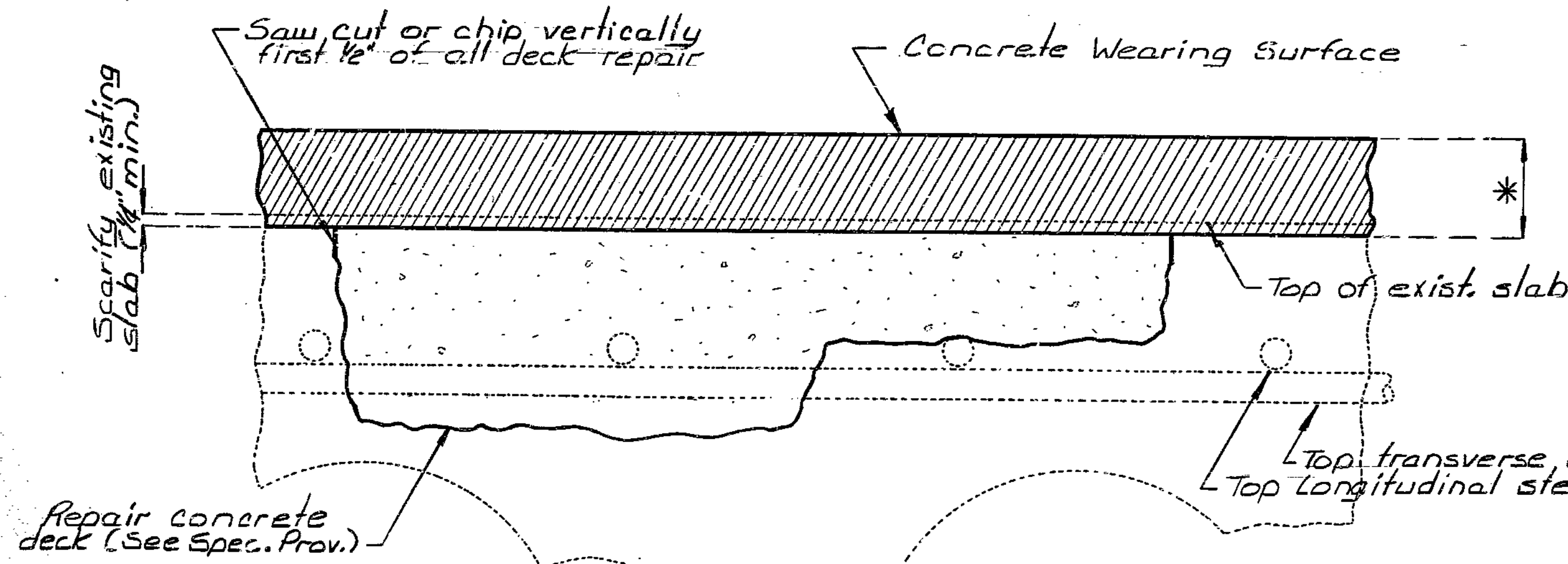


SECTION THRU SLAB



ESTIMATED QUANTITIES	
ITEM	TOTAL
Repairing Concrete Deck (Half-Soled) (Sq. Ft.)	811
Concrete Wearing Surface (*) (Sq. Yd.)	670
See Special Provisions	

TYPICAL SECTION THRU CURB OUTLET



Notes:  
Sequence of repair: Zone A, Zone B, then Zone C.  
Zones with the same letter designation may be repaired at the same time.  
Any repair in the remainder of the bridge that is within 2'6" of Zone A shall be completed before removing old concrete in Zone A.

\* 2 1/4" (Min.) for Low Slump concrete

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

Sheet No. 1A of 1

BRIDGE: RAMP 3 OVER RTE. I-35

STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35

ROUTE I-35 INTERCHANGE

PROJECT NO. IR-435-1 (215)

STA. 17+44.55

JOB NO. 4-I 435-702

RTE. I-435

CLAY

COUNTY

DATE 10/25/85

STD.

STD.

A-15792

DESIGNED AUG. 1985  
DETAILED AUG. 1985  
CHECKED SEPT. 1985

478

**General Notes:**

Design Specifications  
 (New Construction except for Drilled Shaft):  
 2002 - AASHTO 17th Edition  
 Load Factor Design  
 Seismic Performance Category A  
 Bridge Deck Rating = 5

Design Specifications (Drilled Shaft):  
 2010 AASHTO LRFD Bridge Design Specifications and  
 2010 Interim Revisions  
 Load and Resistance Factor Design

Design Loading:  
 HS20-44 & Military 24,000# Tandem Axle (New Construction  
 except for Drilled Shaft)  
 HL-93 (Drilled Shaft)  
 35#/Sq. Ft. Future Wearing Surface  
 Earth 120#/Cu. Ft. Equivalent fluid pressure 45#/Cu. Ft.

Design Unit Stresses:  
 Class B Concrete (Substructure)  $f'c = 3,000$  psi  
 Class B-1 Concrete (Curb Blockout)  $f'c = 4,000$  psi  
 Class B-2 Concrete (Superstructure, Drilled  
 Shafts & Rock Sockets)  $f'c = 4,000$  psi  
 Reinforcing Steel (Grade 60)  $fy = 60,000$  psi  
 Structural Low Alloy Steel (ASTM A709 Grade 50)  $fy = 50,000$  psi

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

Concrete Protective Coatings:  
 Protective coating for concrete bents and piers (Epoxy) shall  
 be applied as shown on the bridge plans and in accordance with  
 Sec 711.

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

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

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.

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

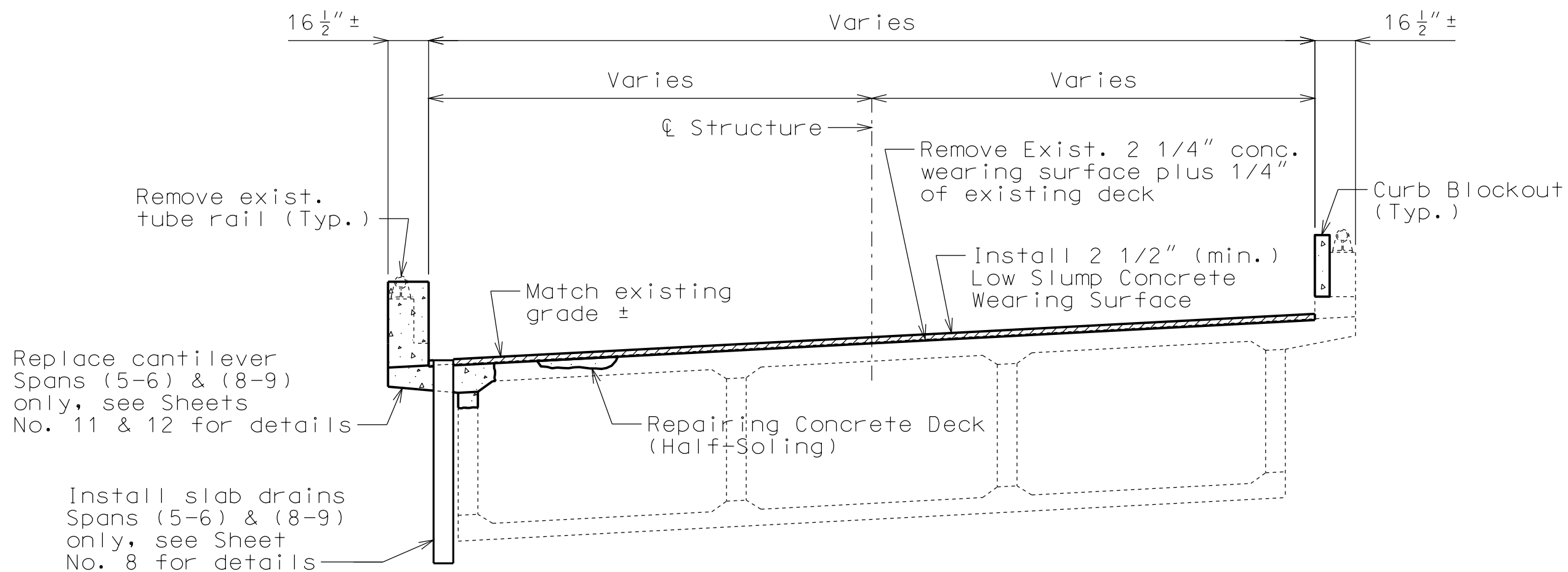
The area exposed by the removal of concrete and not covered with  
 new concrete shall be coated with an approved qualified special  
 mortar in accordance with Sec 704.

Existing tube rails shall be removed and shall become property of  
 the contractor. The contractor shall include salvage value in  
 the contract unit price for Curb Blockout.

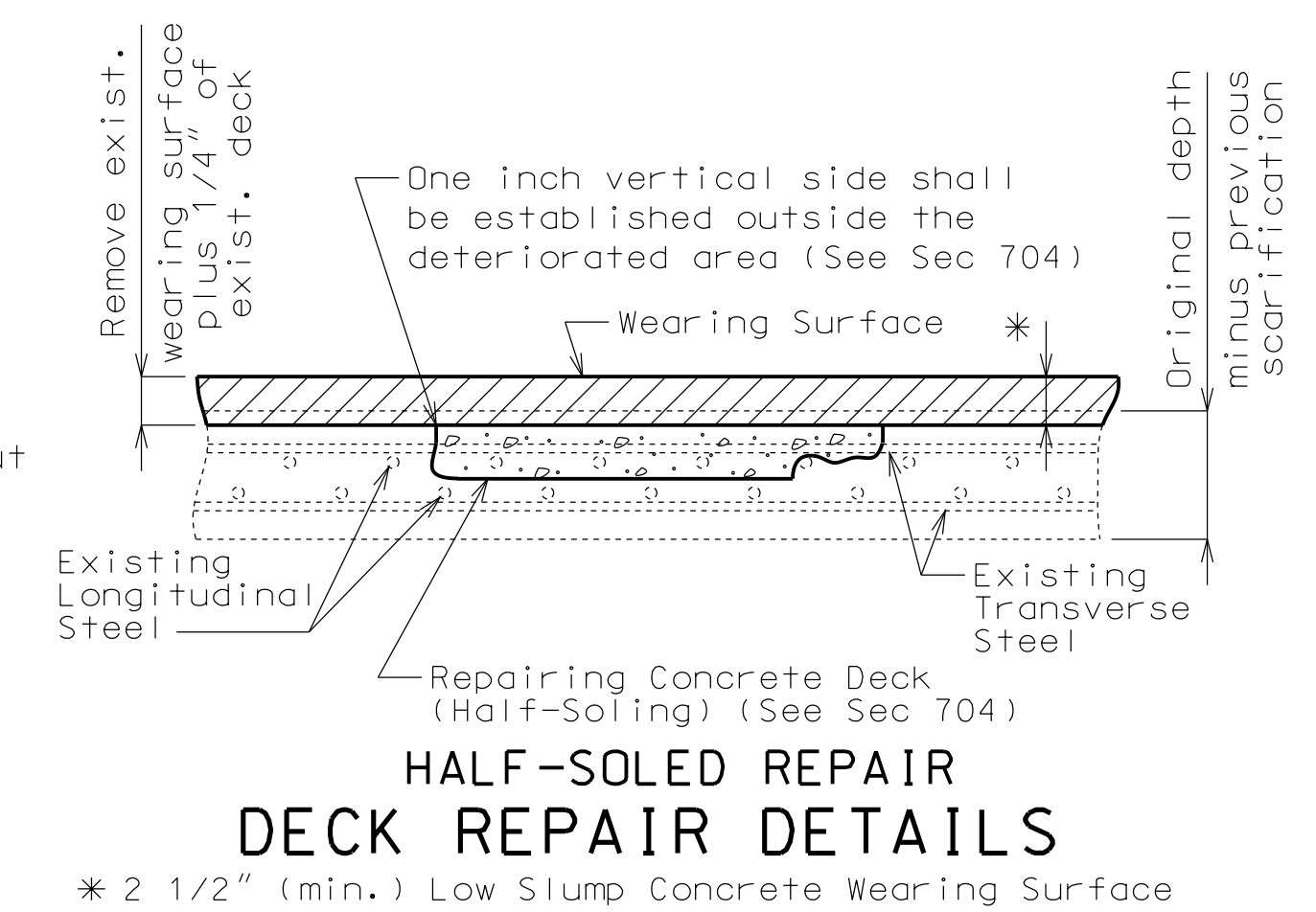
Joint Filler:  
 All joint filler shall be in accordance with Sec 1057 for preformed  
 sponge rubber expansion and partition joint filler, except as  
 noted.

Traffic Handling:  
 Structure will be closed during construction except construction of  
 Bent 5A. See Roadway plans for Traffic Control Plan.

**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**  
**U.I.P. & Rehabilitate Existing (62'-100'-100'-82')(4.3'-83'-106'-106'-83')**  
**Continuous Concrete Box Girder Spans**



SECTION THRU EXISTING SLAB



**HALF-SOLED REPAIR  
 DECK REPAIR DETAILS**

\* 2 1/2" (min.) Low Slump Concrete Wearing Surface

Estimated Quantities			
Item	Substr.	Superstr.	Total
Removal of Concrete Wearing Surface		24,371	24,371
Partial Removal of Existing Bridge Decks		598	598
Removal of Existing Expansion Joints & Adjacent Concrete		30	30
Removal of Existing Bearings		5	5
Low Slump Concrete Wearing Surface		2753	2753
Drilled Shafts (5 ft. 6 in. Dia.)	24.0		24.0
Rock Sockets (5 ft. 0 in. Dia.)	17.0		17.0
Supplementary Television Camera Inspection		1	1
Foundation Inspection Holes	27.0		27.0
Sonic Logging Testing		1	1
Class B Concrete (Substructure)	73.5		73.5
Class B-2 Concrete		21.5	21.5
Curb Blockout		1488	1488
Substructure Repair (Unformed)	105		105
Repairing Concrete Deck (Half-Soling)		7350	7350
Epoxy Pressure Injecting		34	34
Clean and Epoxy Seal		651	651
Reinforcing Steel (Bridges)	20,510	4700	25,210
Protective Coating - Concrete Bents and Piers (Epoxy)		1	1
Fabricated Structural Low Alloy Steel (Misc.)		2500	2500
Slab Drain		14	14
Laminated Neoprene Bearing Pad Assembly		5	5
Strip Seal Expansion Joint System		30	30

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

FOUNDATION DATA		
TYPE	DESIGN DATA	BENT NO. 5A
Rock Socket (Drilled Shaft)	Number	1
	Foundation Material	Shale
	Elevation Range	ft 765.5-757.0
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf 7.5
	Foundation Material	Rock
	Elevation Range	ft 757.0-754.0
	Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf 24.6
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf 209.7

Minimum Nominal Axial Compressive Resistance =  $\frac{\text{Maximum Factored Loads}}{\text{Resistance Factors}}$   
 (Side Resistance + Tip Resistance)

Designed Aug. 2012  
 Detailed July 2012  
 Checked Aug. 2012

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

Sheet No. 1 of 22

**REPAIRS TO BRIDGE: RAMPS 4 & 5 (RTE. 69 & I-435 NB TO I-35 SB) OVER I-435. RAMP 3 (I-35 SB TO I-435 SB), RAMP 9 (I-435 SB TO RTE. 69) & I-35 STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE**

STA. 18+27.09± (Ramp 4) (Match Existing)

STD. 617.10
STD. 706.35

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-5636)

MoDOT

THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

DATE PREPARED: 12/7/2012

ROUTE: I-435 STATE: MO

DISTRICT: BR SHEET NO.: 1

COUNTY: CLAY

JOB NO.: J412381

CONTRACT ID.:

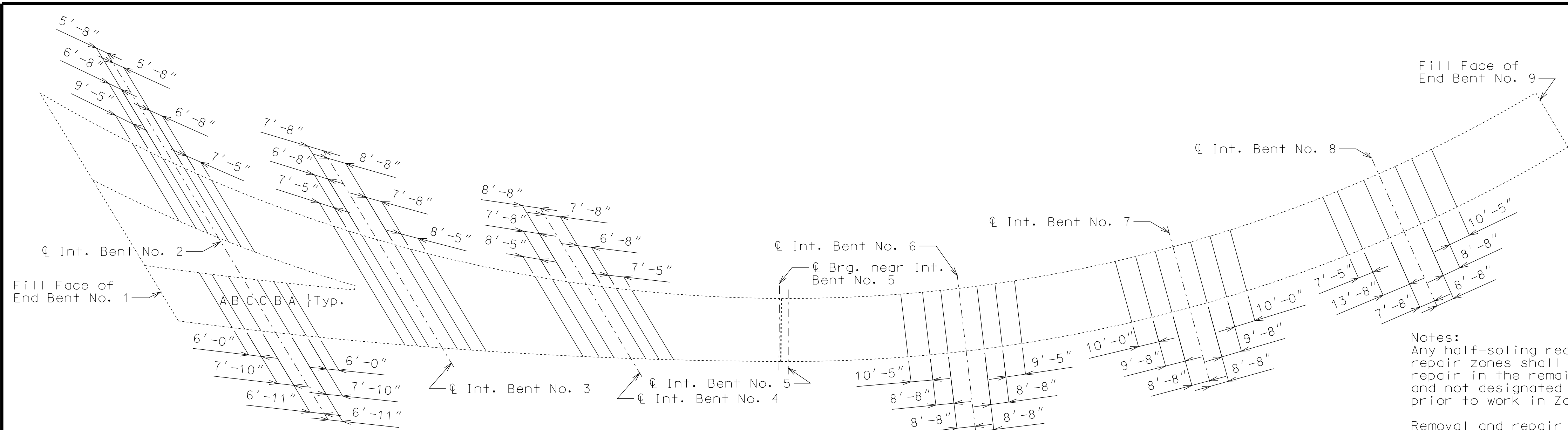
PROJECT NO.:

BRIDGE NO.: A15802

DESCRIPTION

DATE

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



PLAN OF EXISTING 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 prior to work in Zone A.

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 except for Bent No. 7.

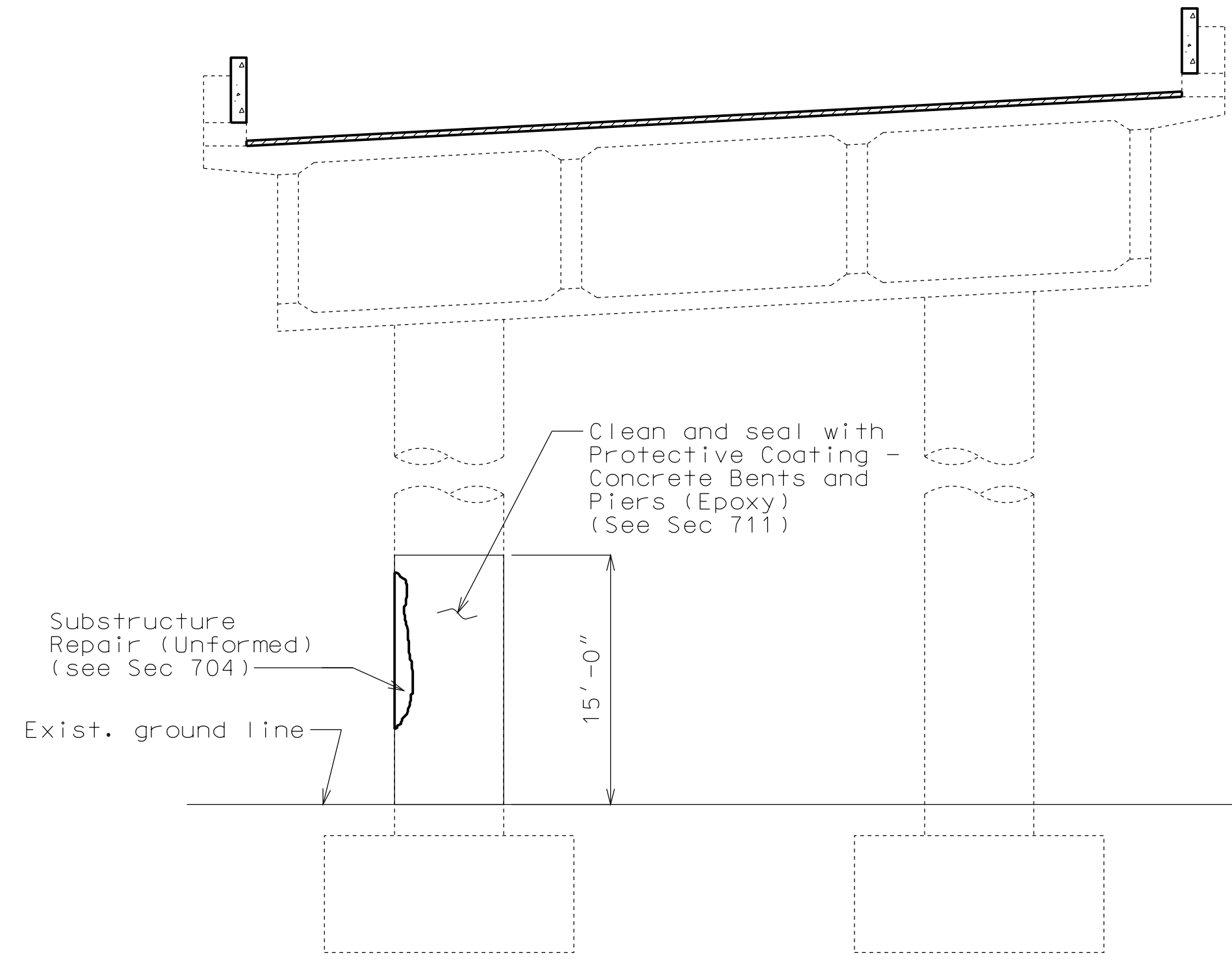
Zones with the same letter designation may be repaired at the same time except for the zones directly adjacent to the centerline of Bent No. 7. If either of the zones adjacent to centerline of bent has a single repair area of over 10 square feet or a total repair area of over 20 square feet, that zone shall be repaired before removing concrete in the other zone of the same designation at that bent.

Total width of full depth repair shall not exceed 1/3 of the deck width at one time. For any area of deck repair that extends over a concrete girder and is more than 18 inches in length along the girder, the concrete removal shall stop at the centerline of girder and repair completed in this area. Prior to continuing work in this area, the concrete shall have attained a compressive strength of 3200 psi. No traffic shall be permitted over the girder that is undergoing repair.

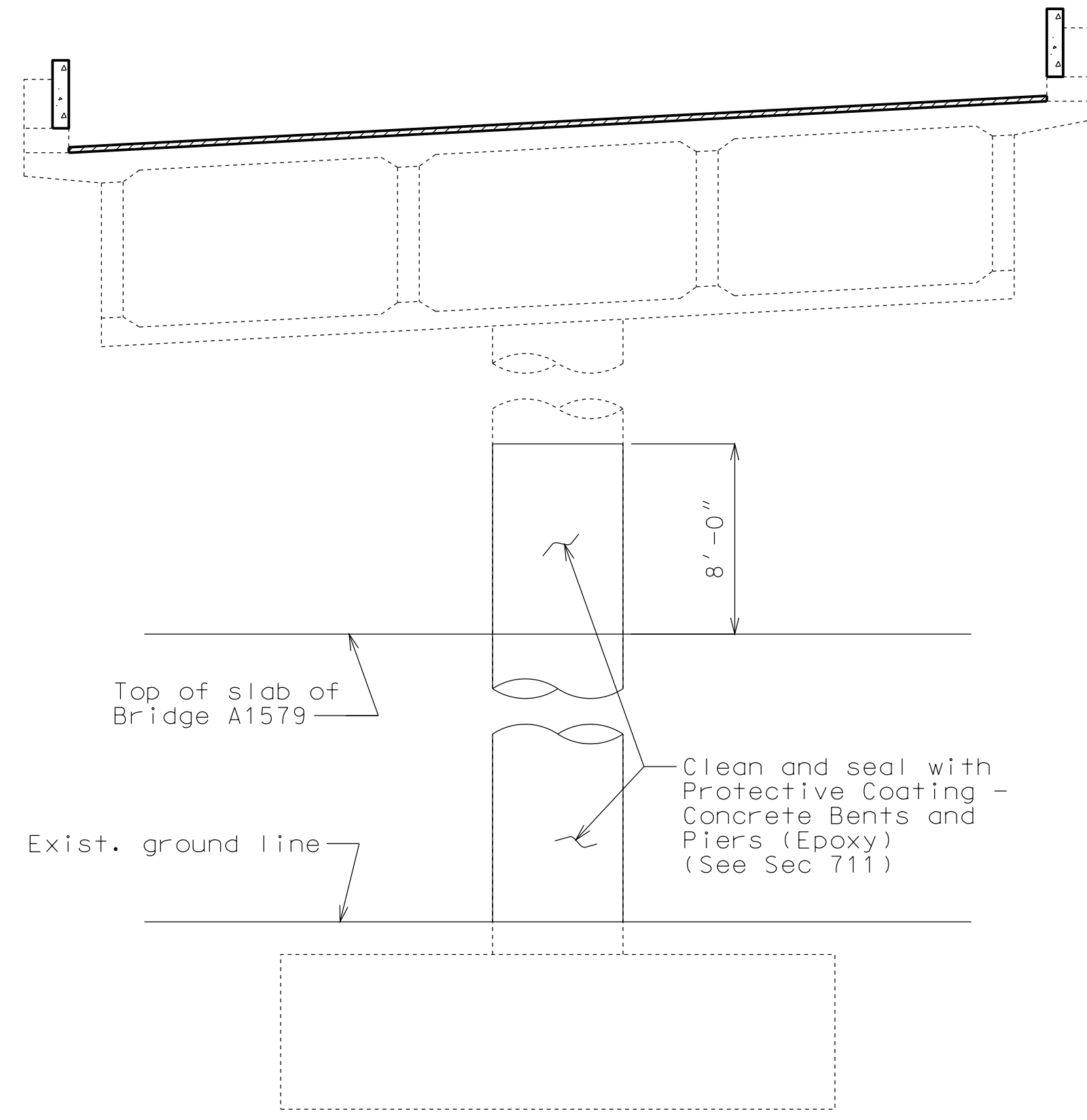
When the full depth repair extends over a diaphragm or girder and the deteriorated concrete extends into the diaphragm or girder, all deteriorated concrete shall be removed and replaced as full depth repair. Concrete in girders shall not be removed below the deck haunch of the girder without prior review and approval from the engineer.

Interior falsework installed by the contractor resting on the bottom slab shall be removed where entry access is available.

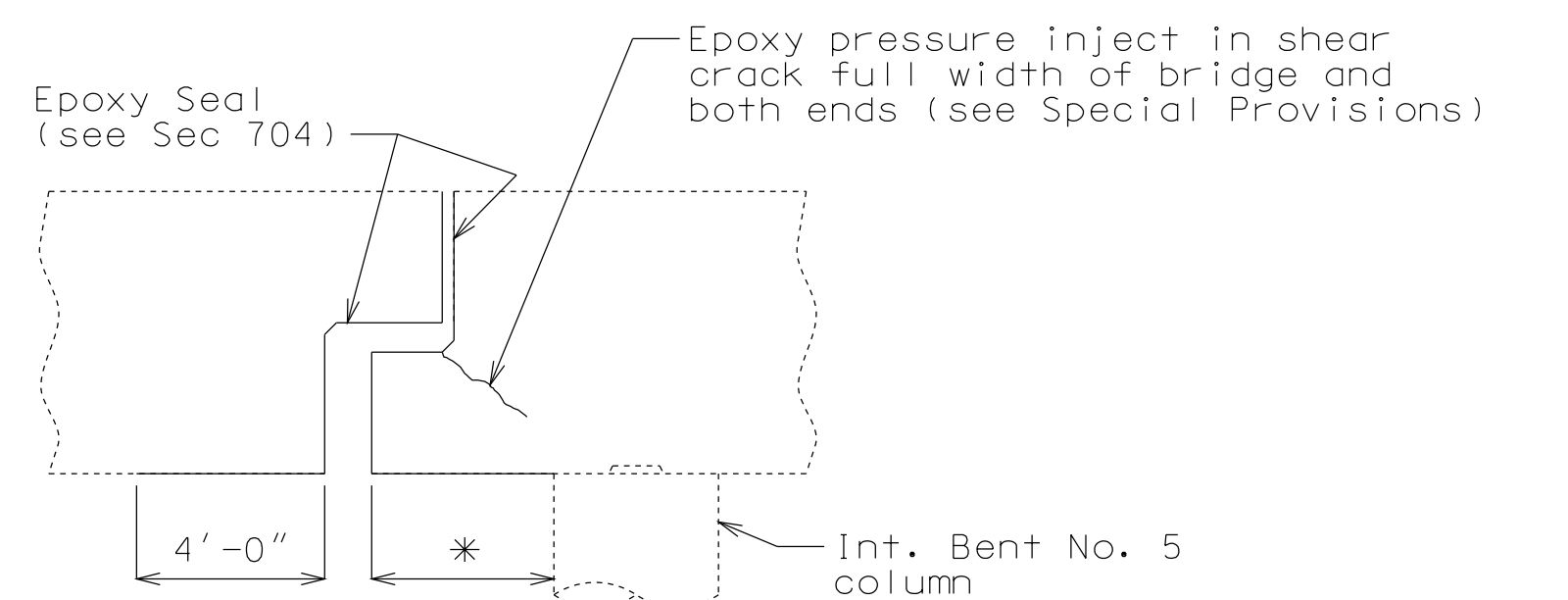
If any single repair area does not exceed 9 square feet in size and the total repair within a special repair zone does not exceed 27 square feet, the special repair zone requirement does not apply for that zone. Half-soling repair in the special repair zone, on either side of the intermediate bents, shall be to a depth that will not expose half the diameter of the longitudinal reinforcing bar. Full depth repair shall be made when removal of deteriorated concrete exposes half or more of the diameter of the longitudinal reinforcing bar.



PART ELEVATION OF INT. BENTS NO. 5 & 6 SHOWING PROTECTIVE COATING AND SUBSTRUCTURE REPAIR (UNFORMED)



PART ELEVATION OF INT. BENT NO. 7 SHOWING PROTECTIVE COATING



SECTION THRU EXPANSION JOINT NEAR INT. BENT NO. 5 SHOWING EPOXY SEAL AND EPOXY PRESSURE INJECTING

\* 4'-0" or to face of column.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

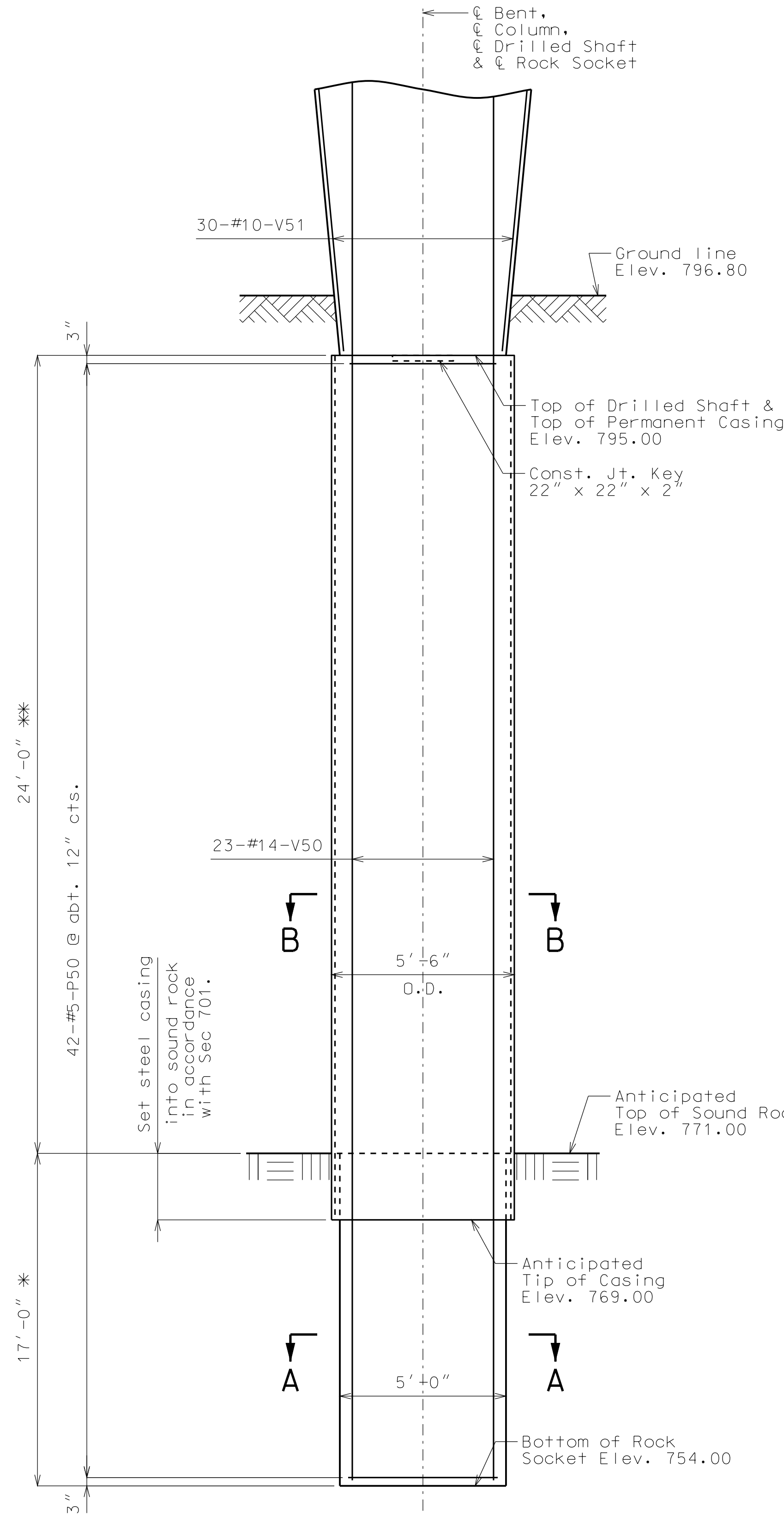
DATE PREPARED 12/7/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15802	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

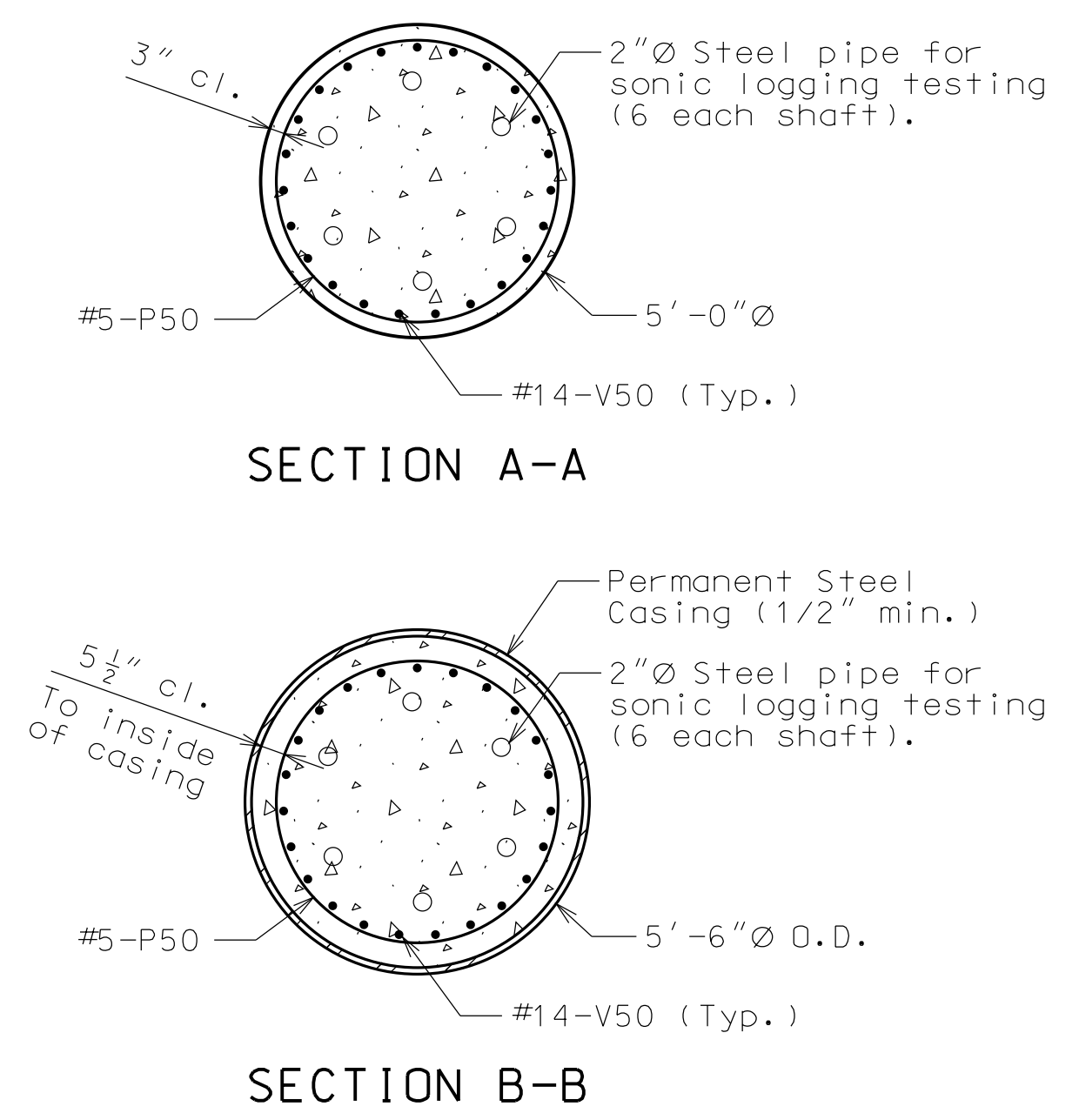
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

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

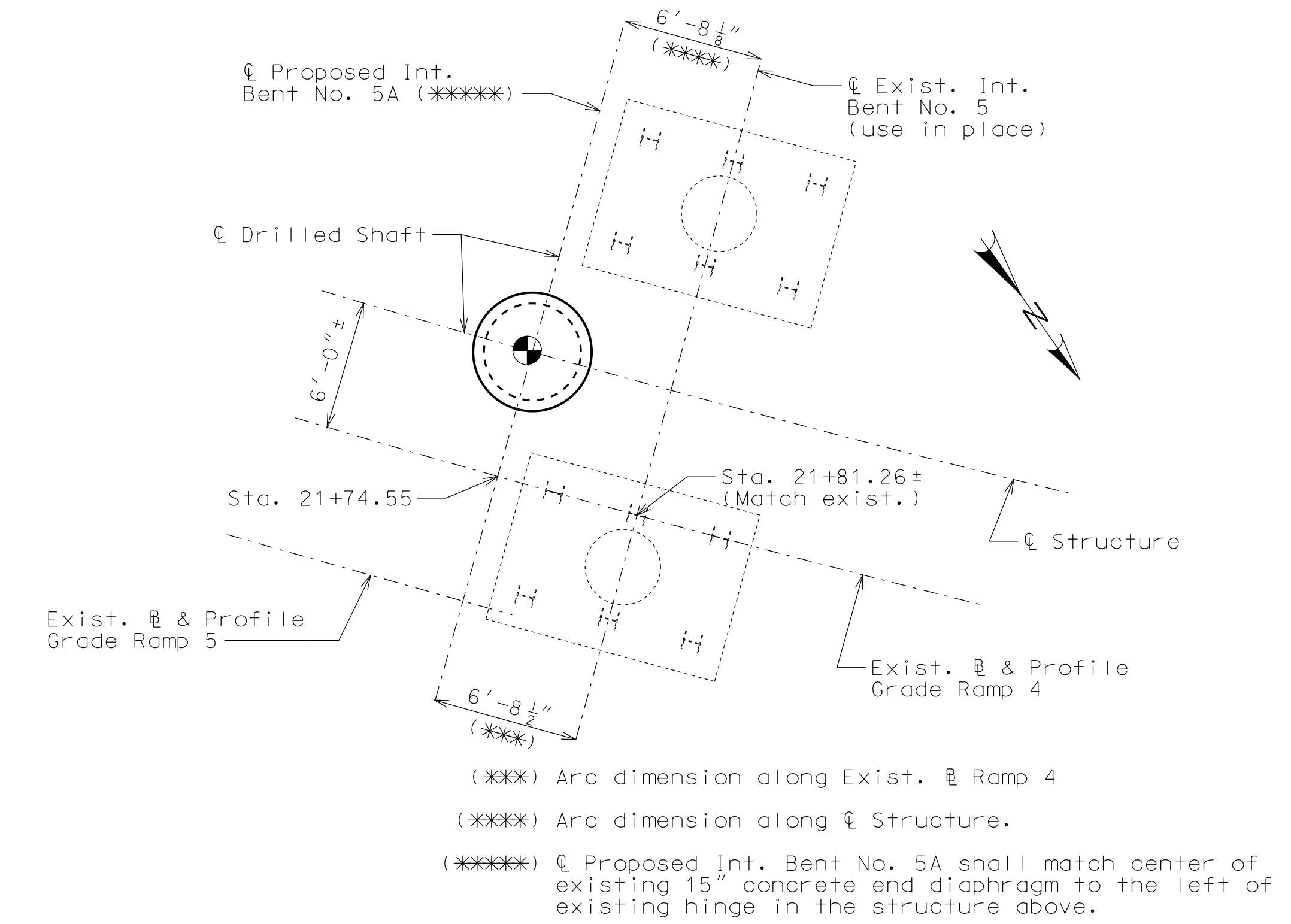


PART ELEVATION SHOWING DRILLED SHAFT AND ROCK SOCKET

\* Pay Limits of Rock Socket (5'-0" diameter)  
 \*\* Pay Limits of Drilled Shaft (5'-6" diameter)



SECTION A-A  
SECTION B-B



PART PLAN SHOWING LOCATION OF PROPOSED INT. BENT NO. 5A

⊙ Indicates location of borings.  
 Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheets for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheets No. 21 thru 22, or will be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

Substructure Quantity Table for Bent No. 5A		
Item		Quantity
Drilled Shafts (5 ft. 6 in. Dia.)	linear foot	24.0
Rock Sockets (5 ft. 0 in. Dia.)	linear foot	17.0
Supplementary Television Camera Inspection	each	1
Foundation Inspection Holes	linear foot	27.0
Sonic Logging Testing	each	1
Class B Concrete (Substructure)	cu. yard	73.5
Reinforcing Steel (Bridges)	pound	20,510

Notes:  
 These quantities are included in the Estimated Quantities Table on Sheet No. 1.  
 An additional 4 feet has been added to V-bar lengths and an additional 4-#5-P-bars have been added in the quantities, if required, for possible change in drilled shaft or rock socket lengths. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The additional P-bars shall be spaced similarly to that shown in elevation, if required, or to a lesser spacing if not required, but not less than 6" cts.  
 Sonic logging testing shall be performed on drilled shaft and rock socket.  
 Thickness of permanent steel casing shall be as shown on the plans and in accordance with Sec 701.  
 All reinforcement in drilled shaft and rock socket is included in the Substructure Quantities.  
 For details of Intermediate Bent No. 5A not shown, see Sheets No. 4 & 5.

DETAILS OF INTERMEDIATE BENT NO. 5A

Detailed Oct. 2012  
 Checked Oct. 2012

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 12/7/2012

ROUTE: I-435 STATE: MO

DISTRICT: BR SHEET NO.: 3

COUNTY: CLAY

JOB NO.: J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.: A15802

DESCRIPTION

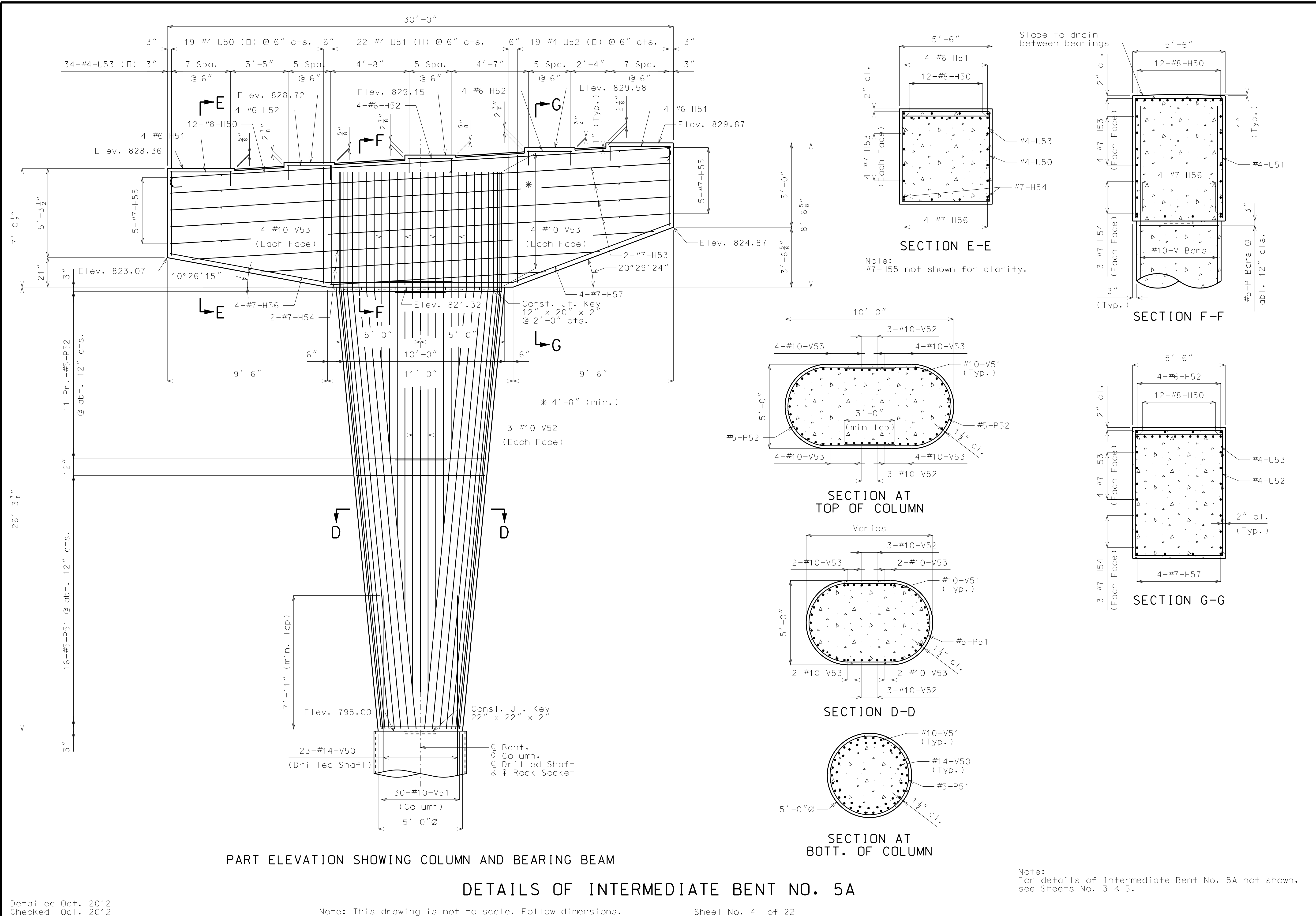
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102  
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DATE PREPARED: 12/7/2012

ROUTE: I-435, STATE: MO, DISTRICT: BR, SHEET NO.: 4

COUNTY: CLAY, JOB NO.: J412381, CONTRACT ID.: [Blank]

PROJECT NO.: [Blank]

BRIDGE NO.: A15802

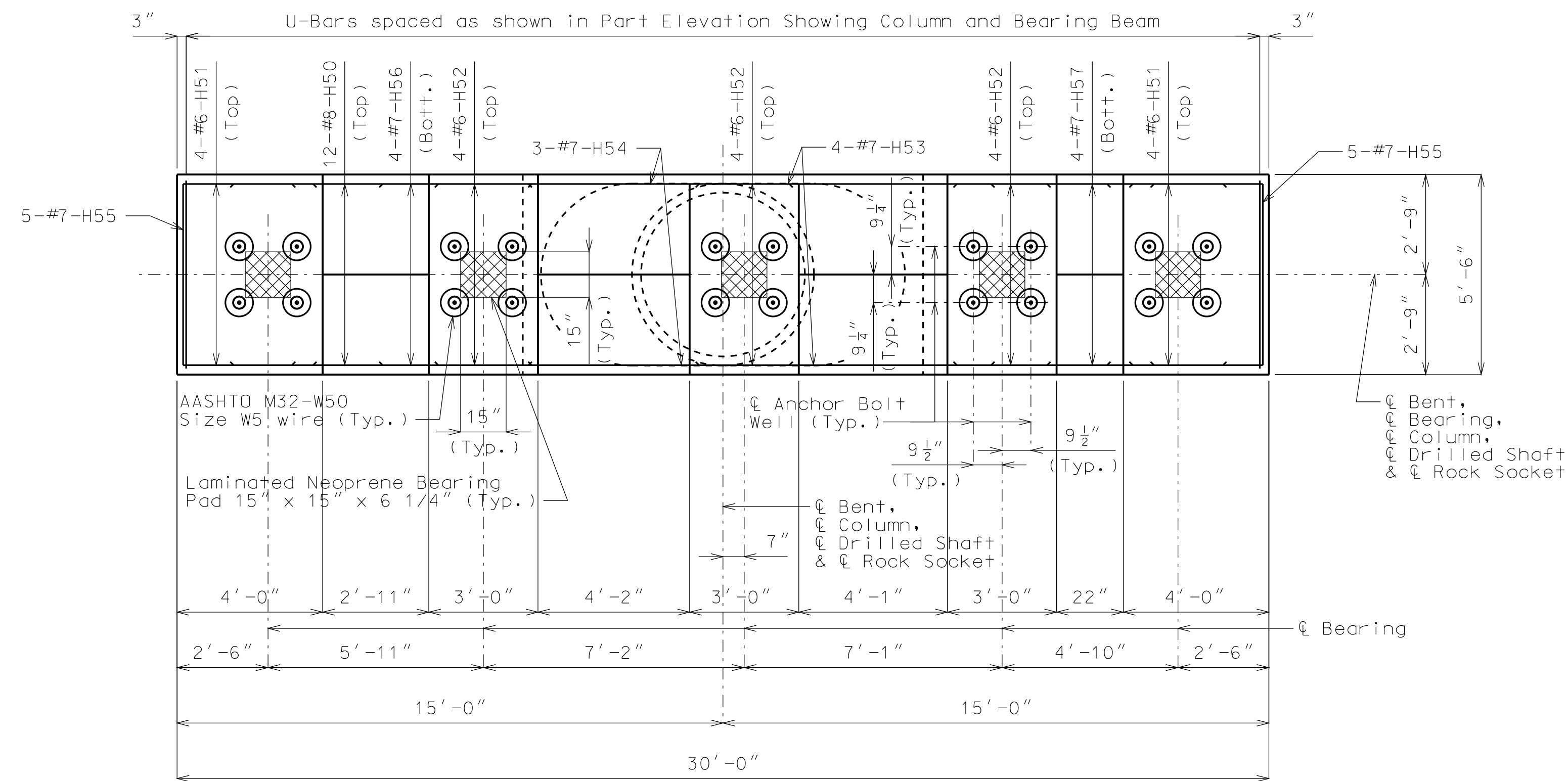
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

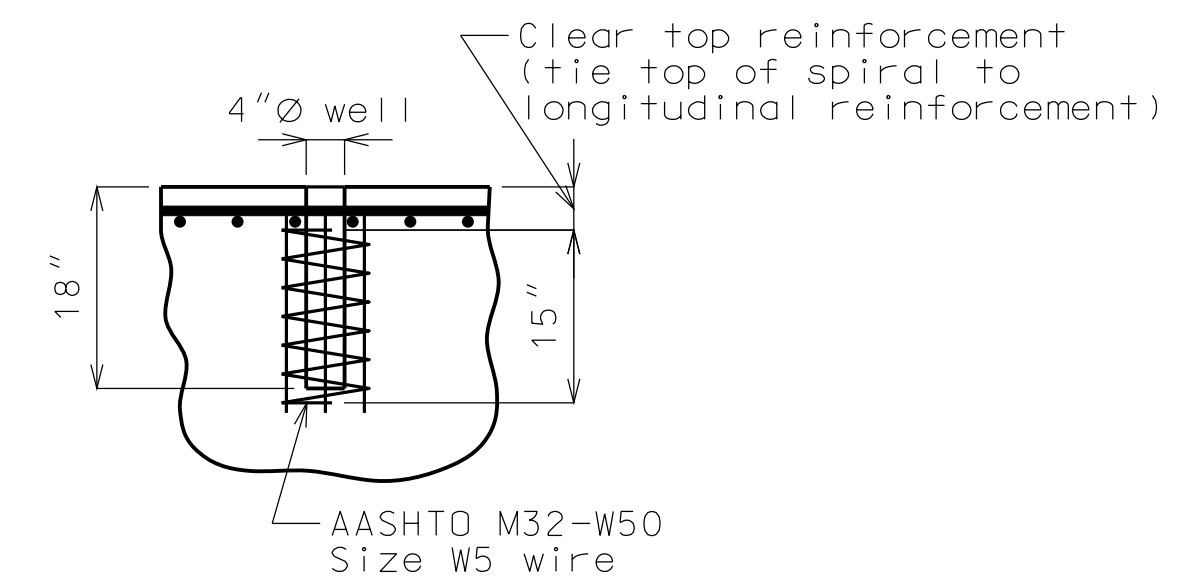
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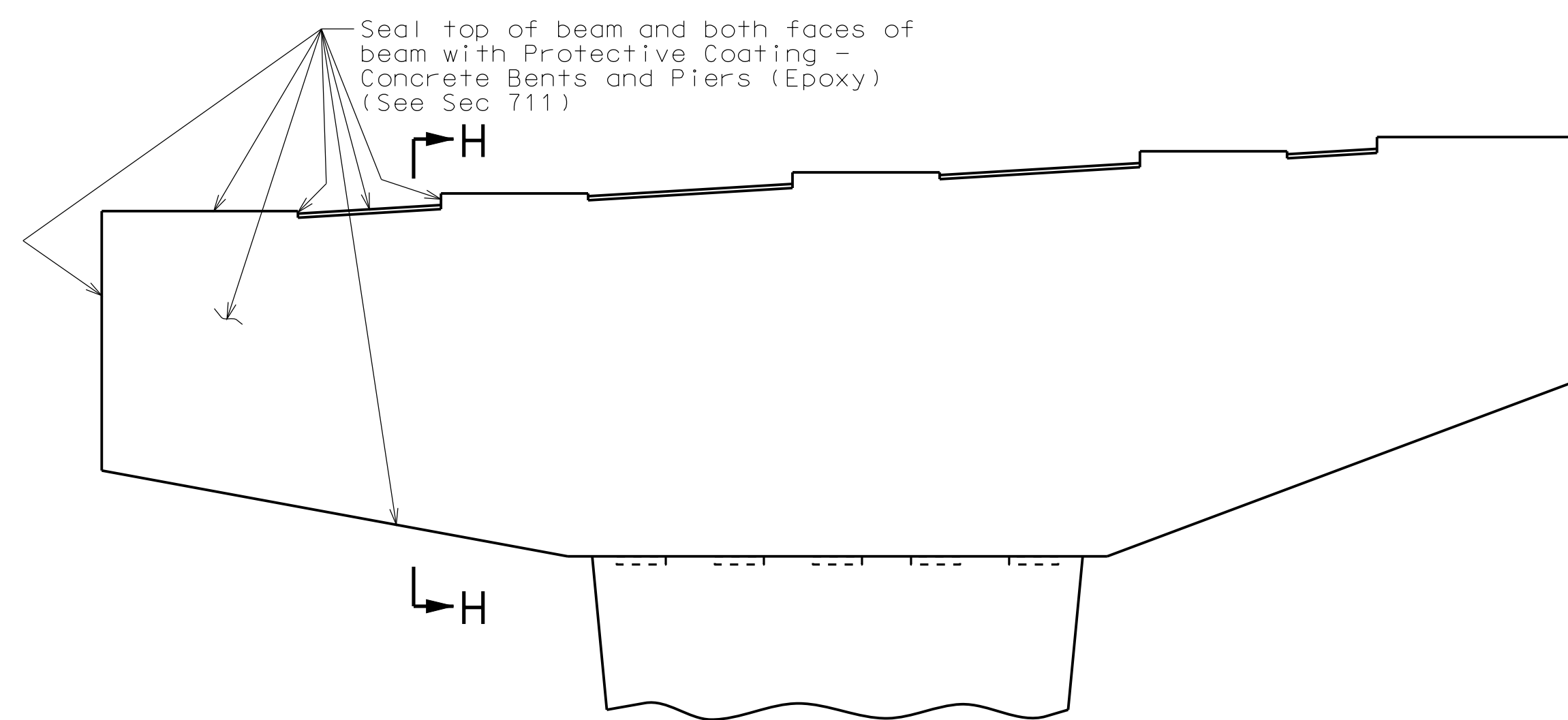
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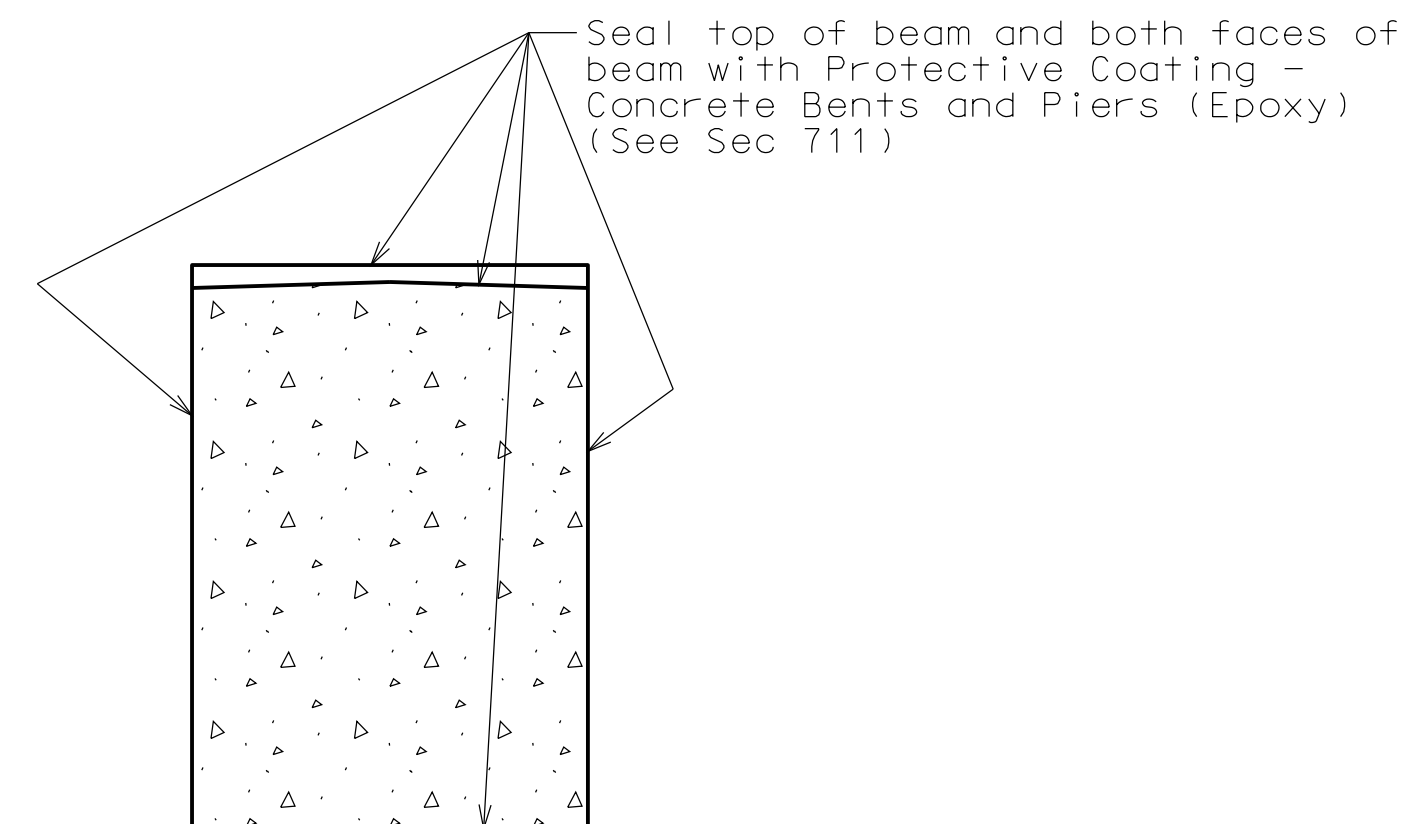
PLAN



DETAIL OF ANCHOR BOLT WELLS



PART ELEVATION SHOWING PROTECTIVE COATING - CONCRETE BENTS AND PIERS (EPOXY)



SECTION H-H

Notes:  
 Reinforcing steel shall be shifted to clear anchor bolt wells by at least 1/2".  
 Holes for anchor bolts may be drilled into the substructure.  
 Anchor bolt wells shall not be formed with galvanized corrugated steel pipe.  
 For details of Intermediate Bent No. 5A not shown, see Sheets No. 3 & 4.

DETAILS OF INTERMEDIATE BENT NO. 5A

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ROUTE I-435	STATE MO
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COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15802	

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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DISTRICT BR SHEET NO. 6

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

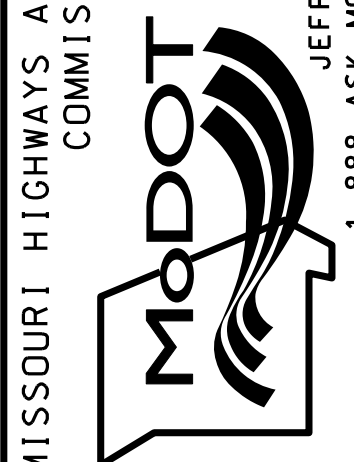
PROJECT NO.

BRIDGE NO. A15802

DESCRIPTION

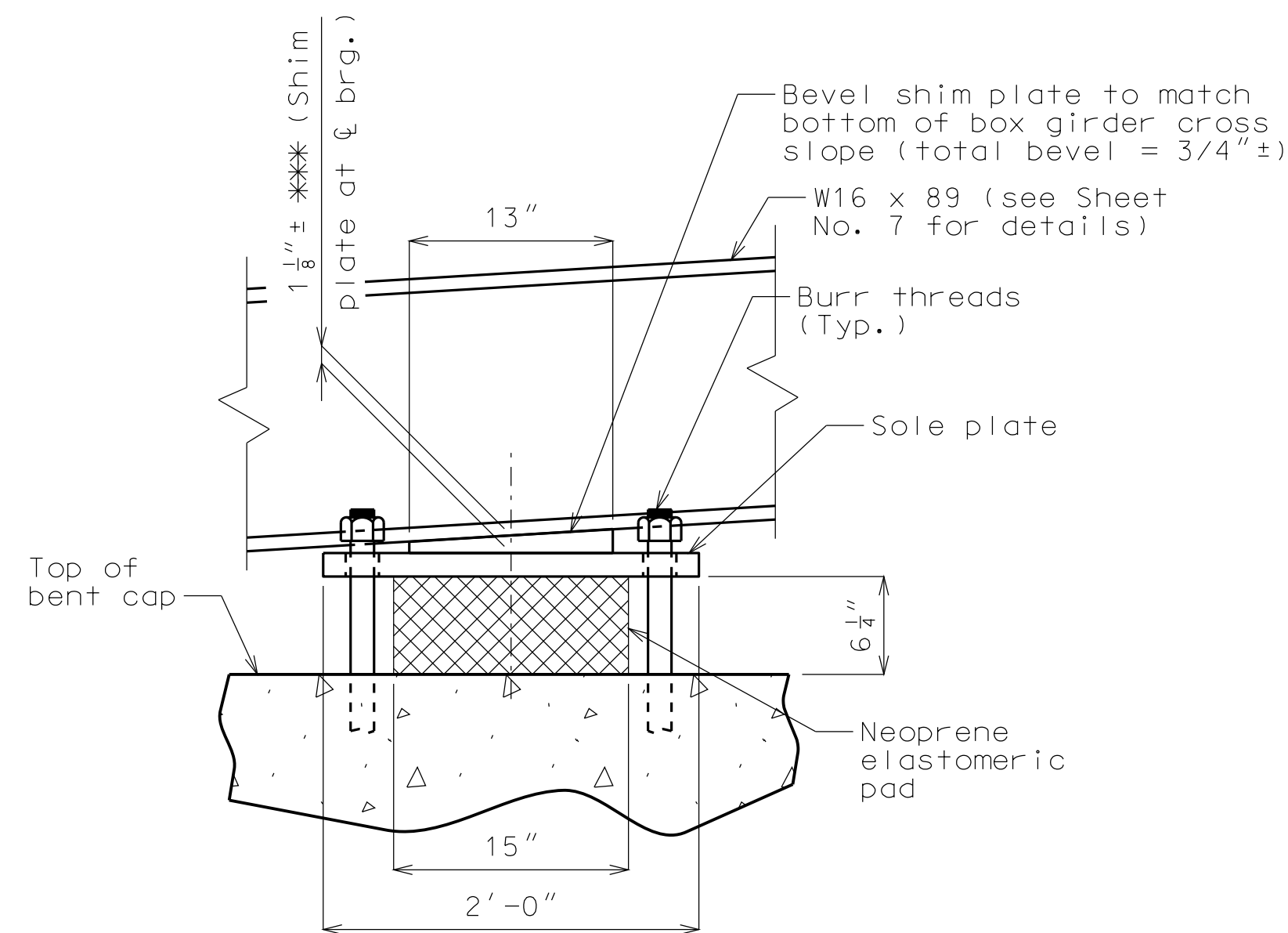
DATE

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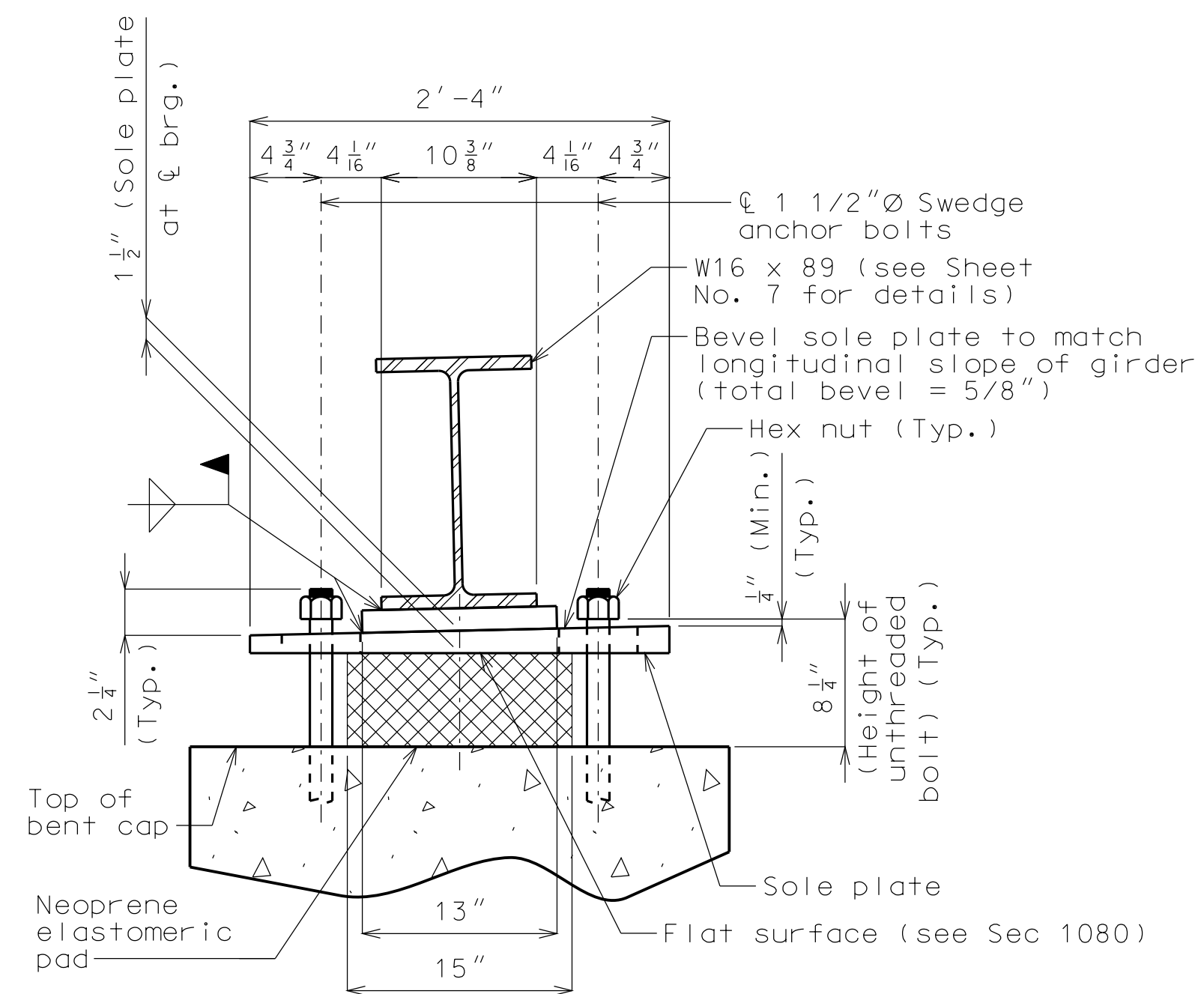
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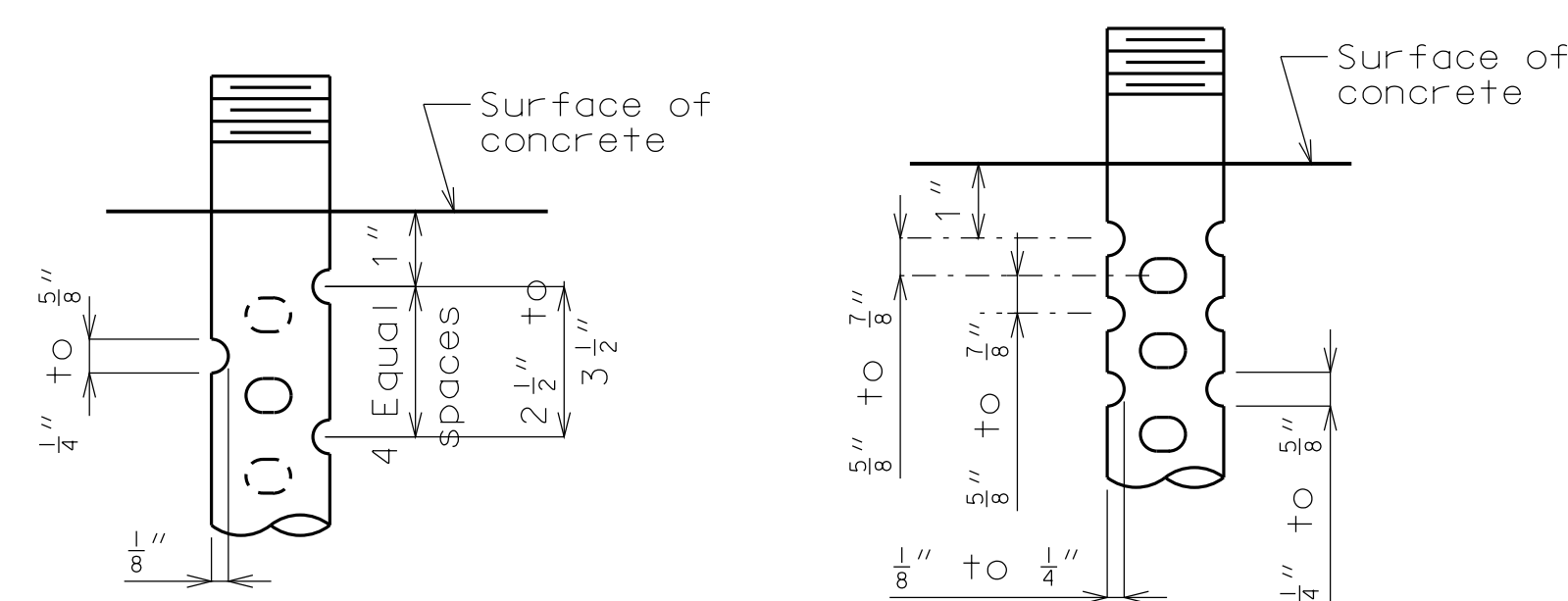


END VIEW

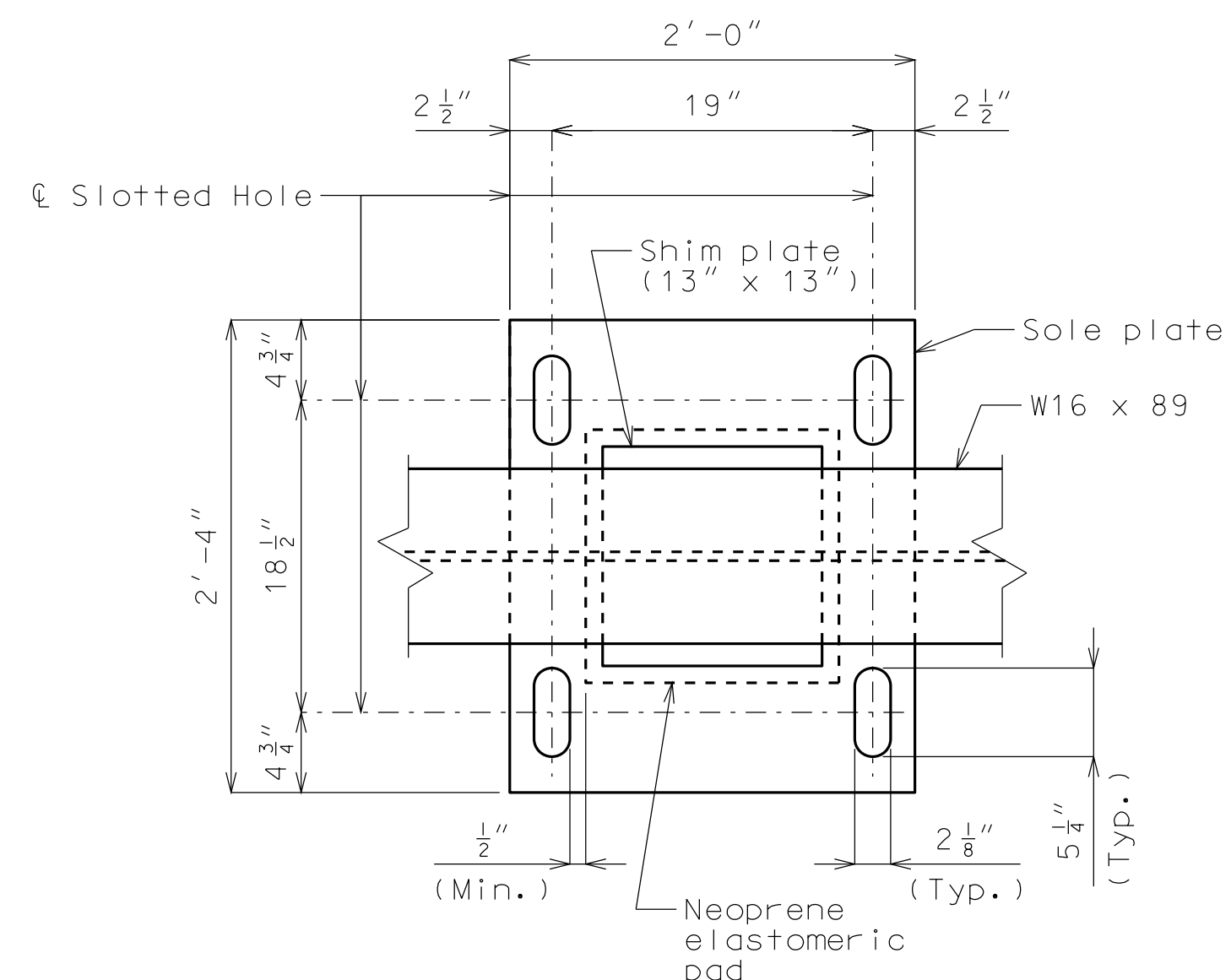
(\*\*\*) Shim plate thickness and slope requirement shall be field verified before fabrication. Shim plate shall be one plate.



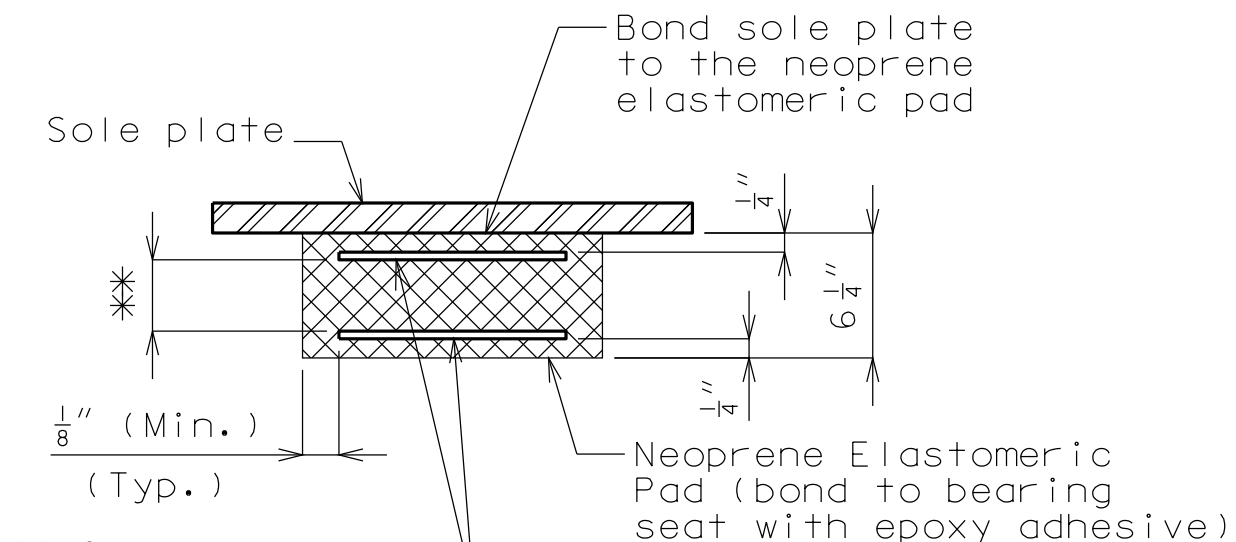
SIDE VIEW



DETAIL OF 3/4"Ø THRU 2 1/2"Ø ANCHOR BOLTS SWEDGE ANCHOR BOLT DETAILS  
OPTIONAL DETAIL OF 1 3/8"Ø THRU 2 1/2"Ø ANCHOR BOLTS



PART PLAN



NEOPRENE ELASTOMERIC PAD

11 Gage or 1/8" shim plate \*

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

(\*\*) Nine layers of 1/2" elastomer alternating with ten 11 gage or 1/8" shim plates

GENERAL NOTES:

Anchor bolts shall be 1 1/2"Ø ASTM F1554 Grade 55 swedged bolts and shall extend 15" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor bolt shall be at the ¢ of slotted hole at 60°F. Bearing position shall be adjusted 3/16" for each 10° fall or rise in temperature at installation.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate and wide flange shim plate shall be ASTM A709 Grade 36 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

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

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY AT INT. BENT NO. 5A

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12/17/2012

ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 7

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A15802

DESCRIPTION

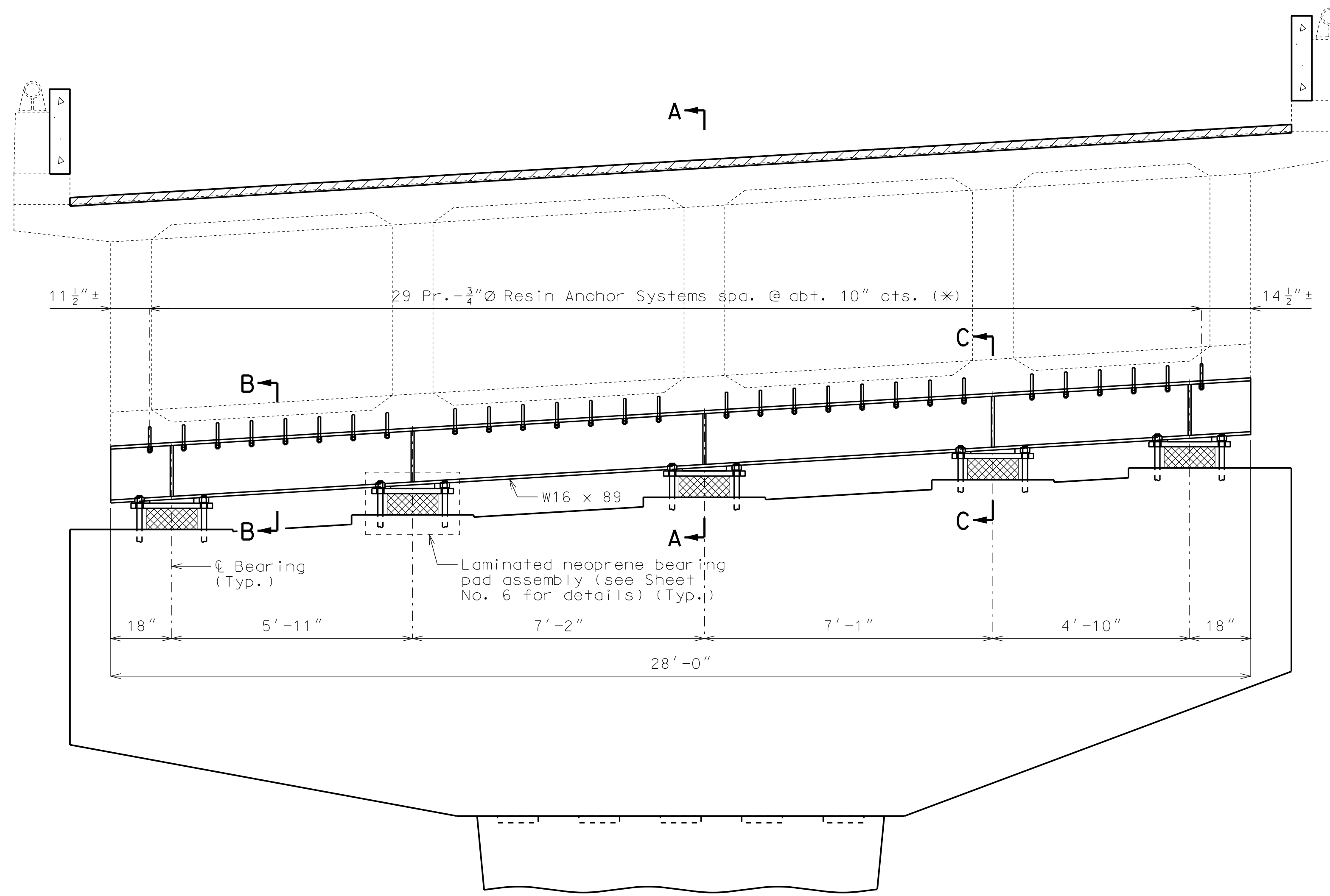
DATE	DESCRIPTION

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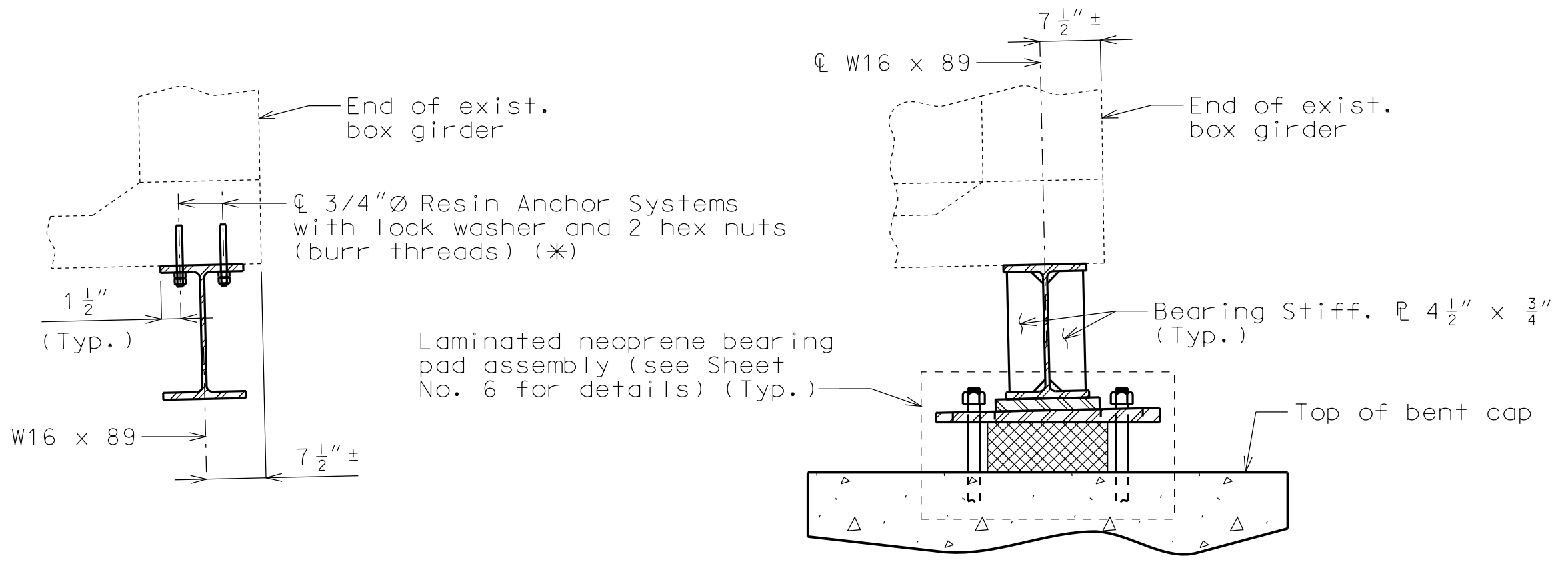
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MO DOT

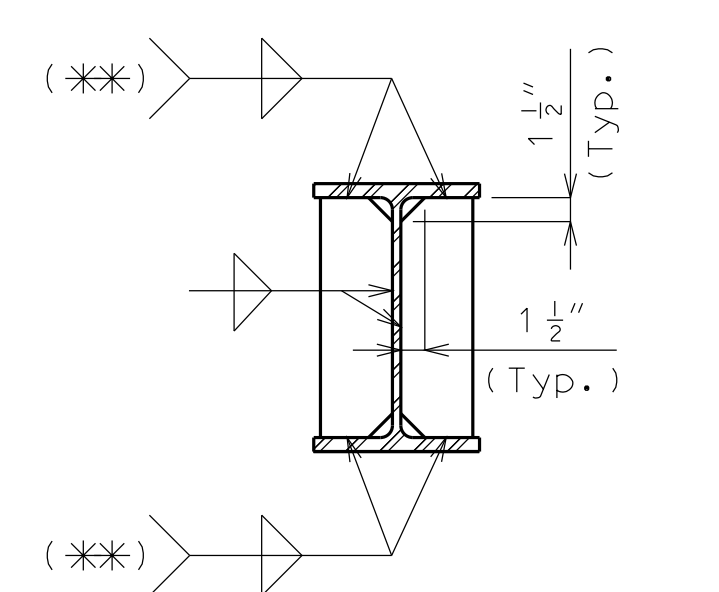


ELEVATION SHOWING BEARING EXTENSION AT INT. BENT NO. 5A



SECTION B-B

SECTION C-C

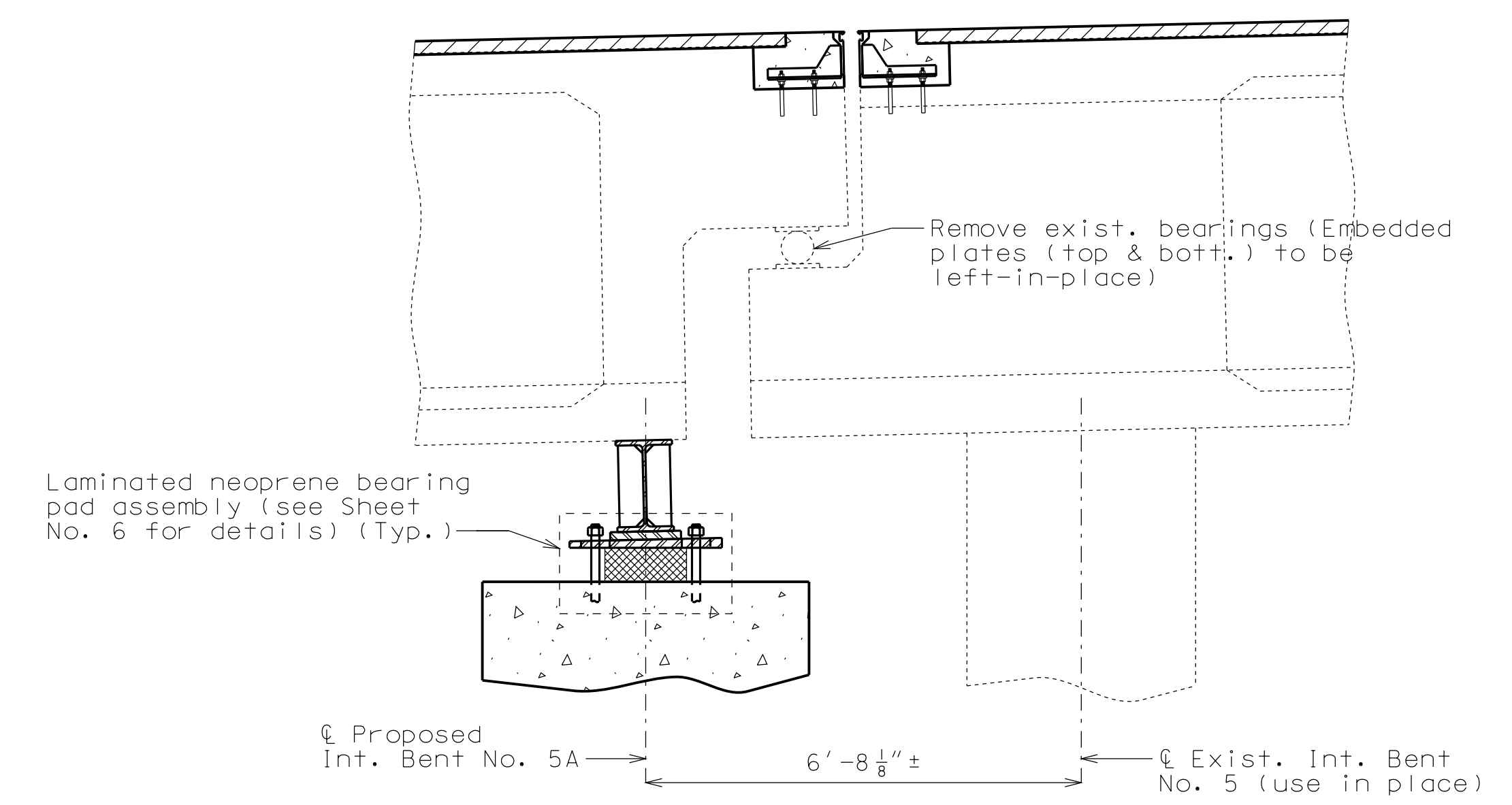


WELDING DETAILS

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

Sheet No. 7 of 22

DETAILS OF BEARING EXTENSION AT INT. BENT NO. 5A



SECTION A-A

Notes:  
The temporary supports shall be capable of safely supporting a service load DL and construction load of 130 kips per bearing (factor of safety not included), see Special Provisions.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the fabricated structural steel. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat(s): The color of the field coat(s) shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (Misc.). The cost of the finish field coat will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (Misc.).

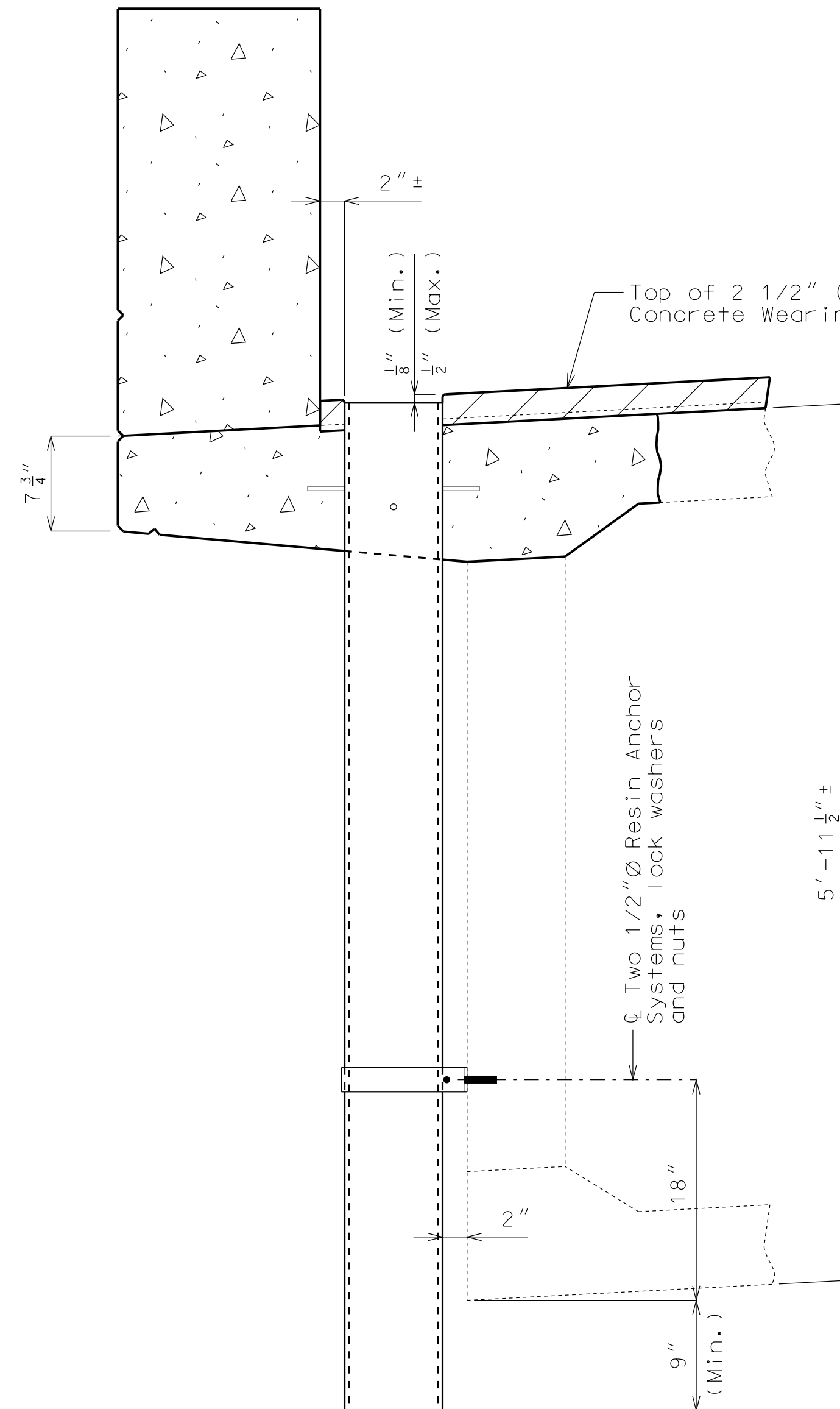
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

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

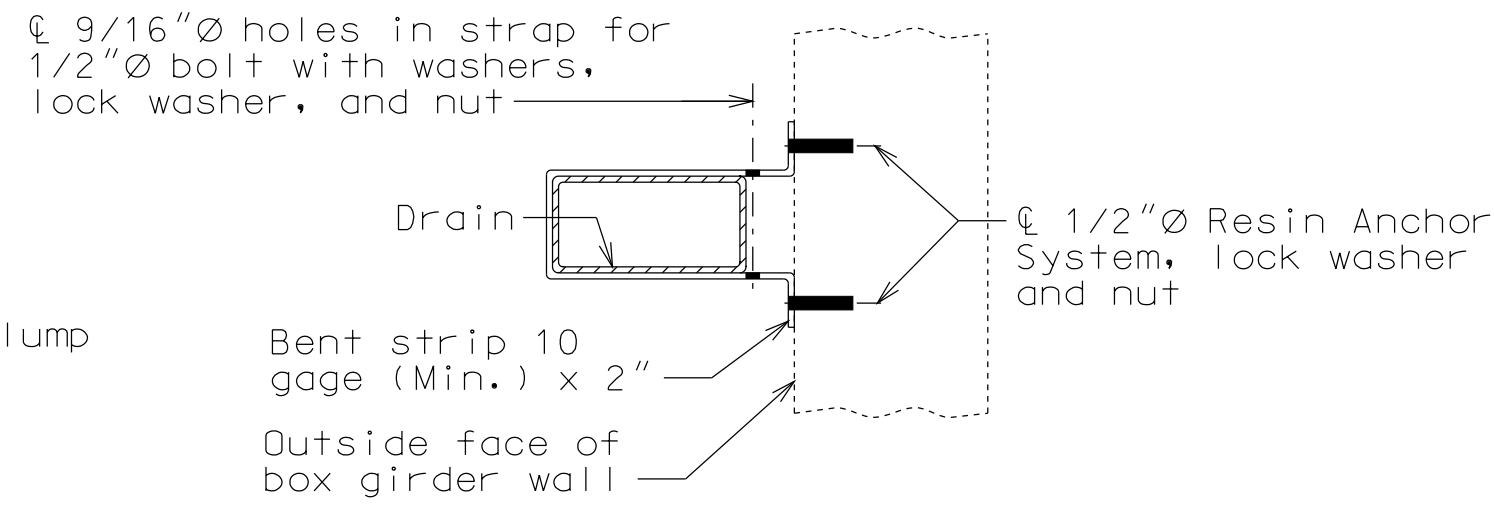
(\*) 3/4" Ø resin anchor systems shall be placed to clear exist. reinforcing steel and not directly below existing webs.

Cost bearing extension and resin anchors, complete in place, will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (Misc.).

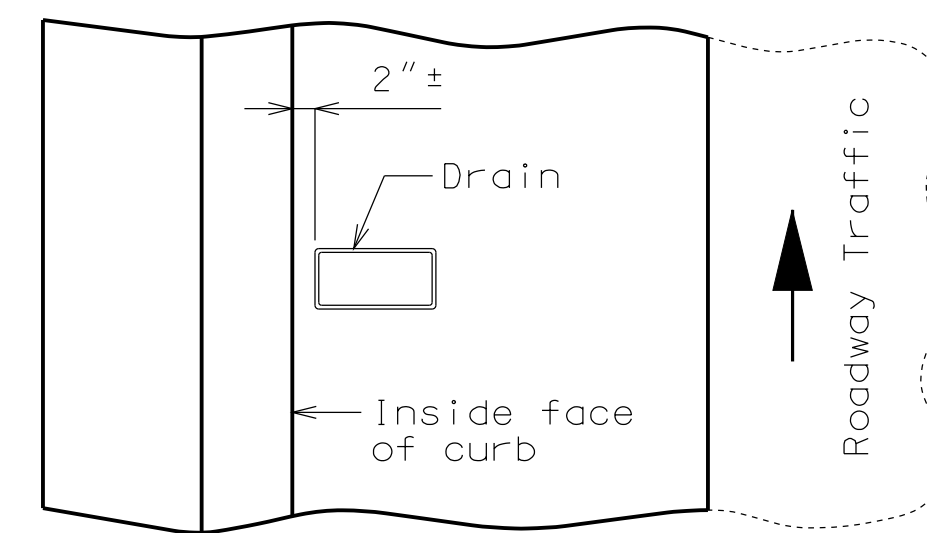
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PART SECTION NEAR DRAIN



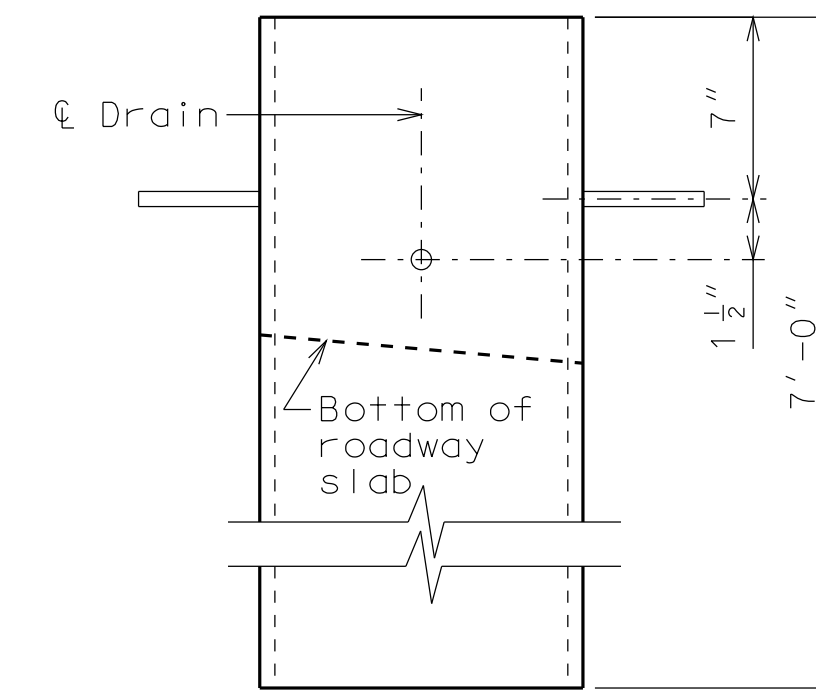
PART SECTION SHOWING SLAB DRAIN STRAP



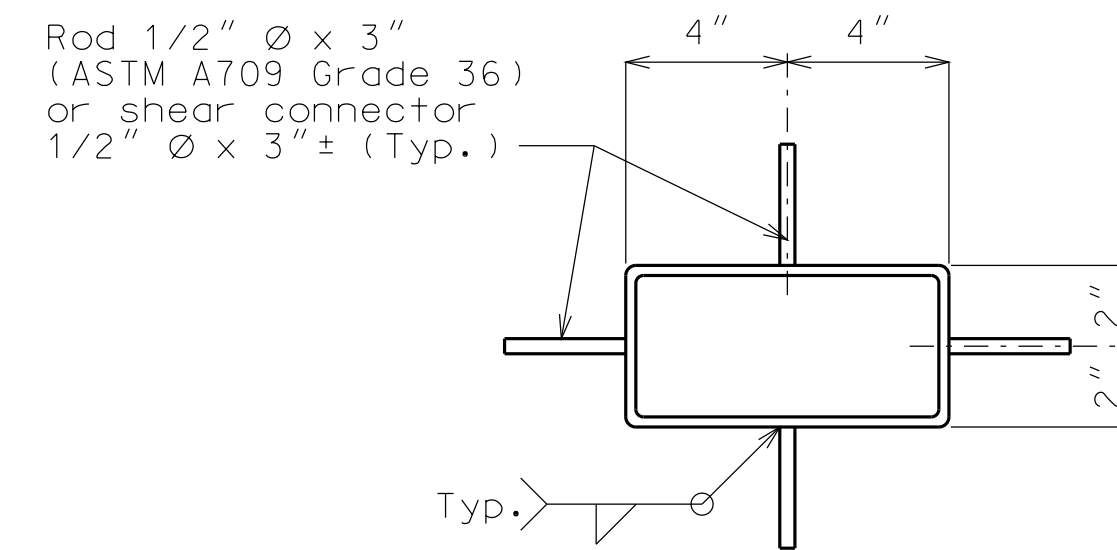
PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY

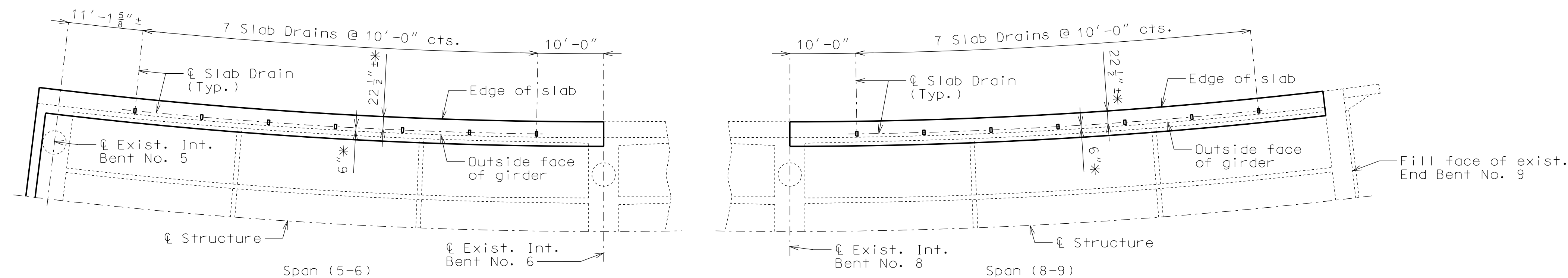
SLAB DRAIN DETAILS



ELEVATION OF DRAIN



PLAN OF DRAIN



PART PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

Note: Slab drains are spaced along edge of slab.

\* Radial dimensions.

Notes:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Slab drain strap shall be ASTM A709 Grade 36 steel.

Outside dimensions of drains are 8" x 4".

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

Reinforcing steel shall be shifted to clear drains.

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

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

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

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

Cost of furnishing and installing the resin anchor system, complete-in-place, will be considered completely covered by the contract unit price for Slab Drain.

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".


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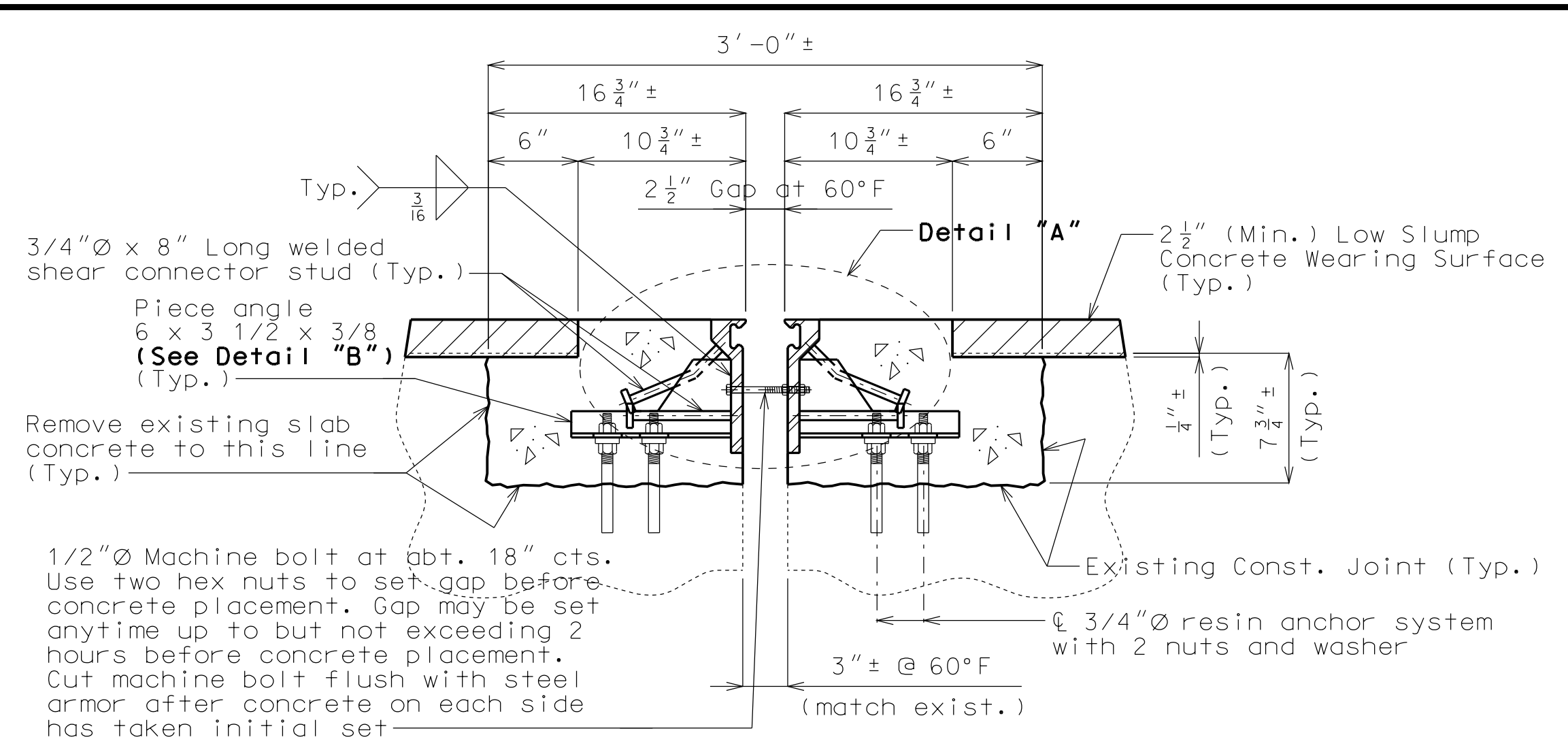
PROJECT NO.
BRIDGE NO. A15802

DATE	DESCRIPTION

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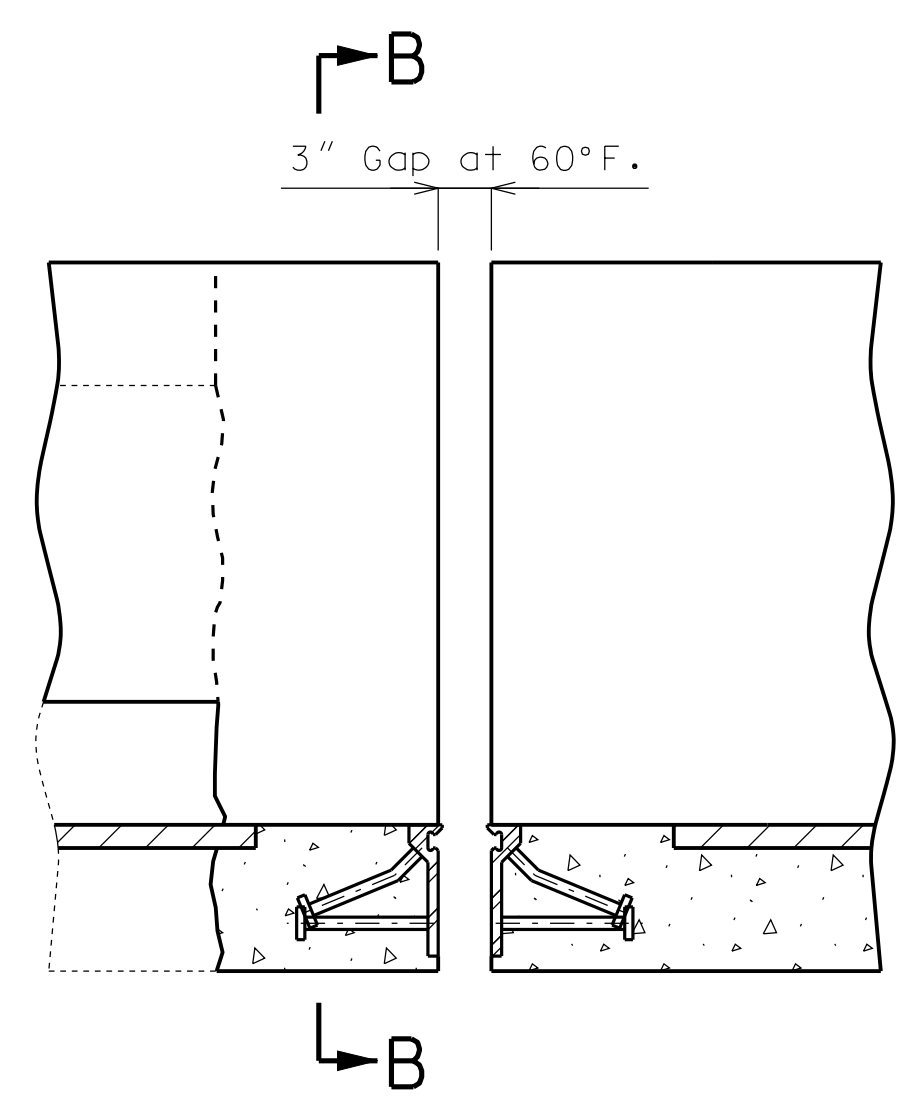


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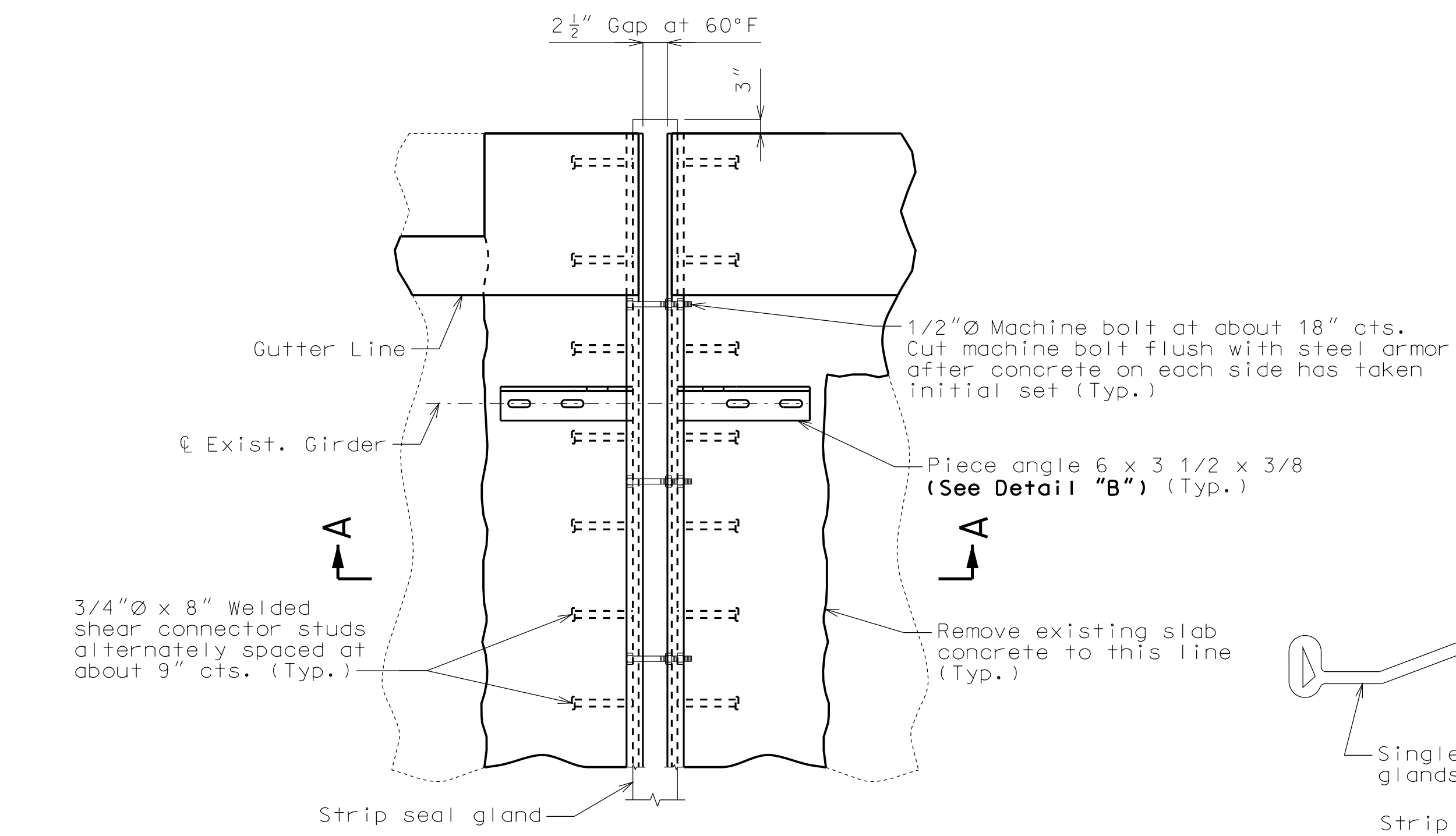
**SECTION A-A**

Note: Strip seal gland and reinforcement not shown for clarity.

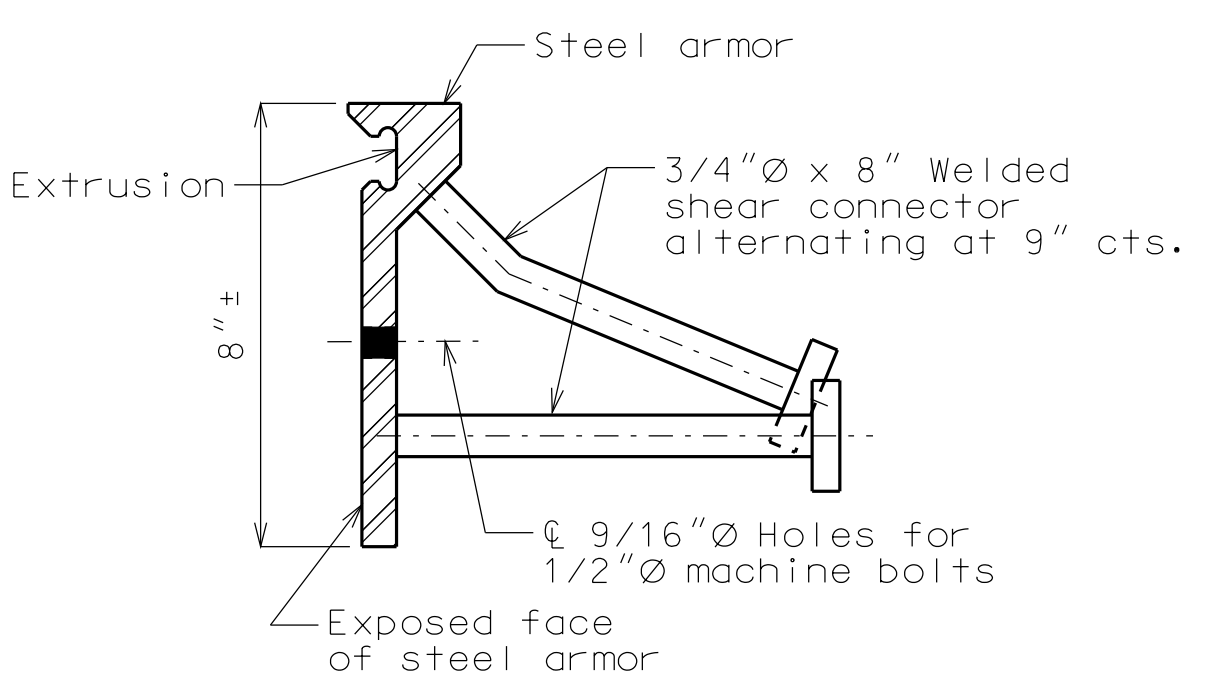


**PART ELEVATION OF BARRIER CURB**

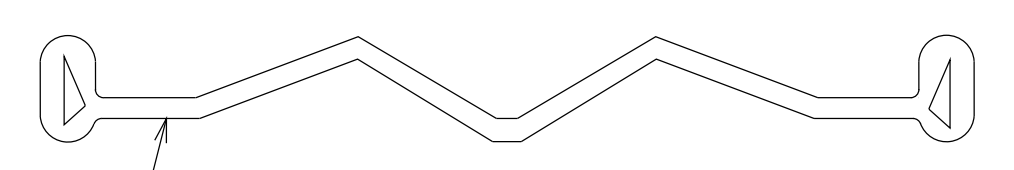
Note: Strip seal gland not shown for clarity.



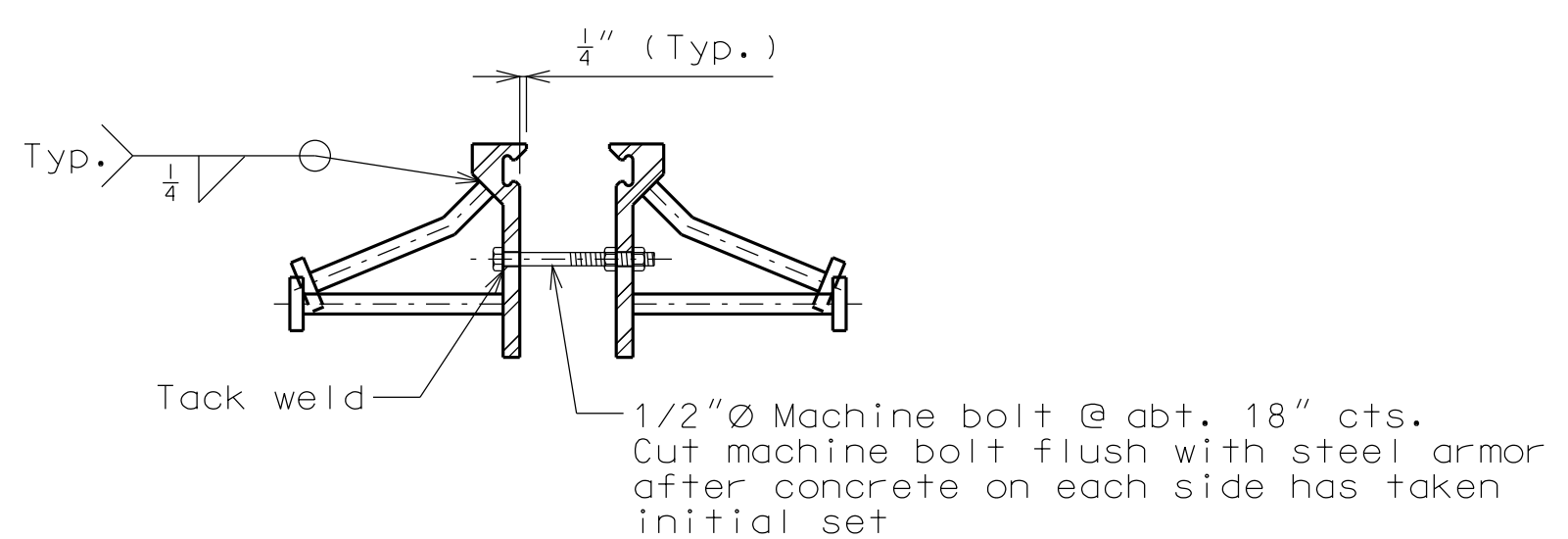
**PART PLAN**



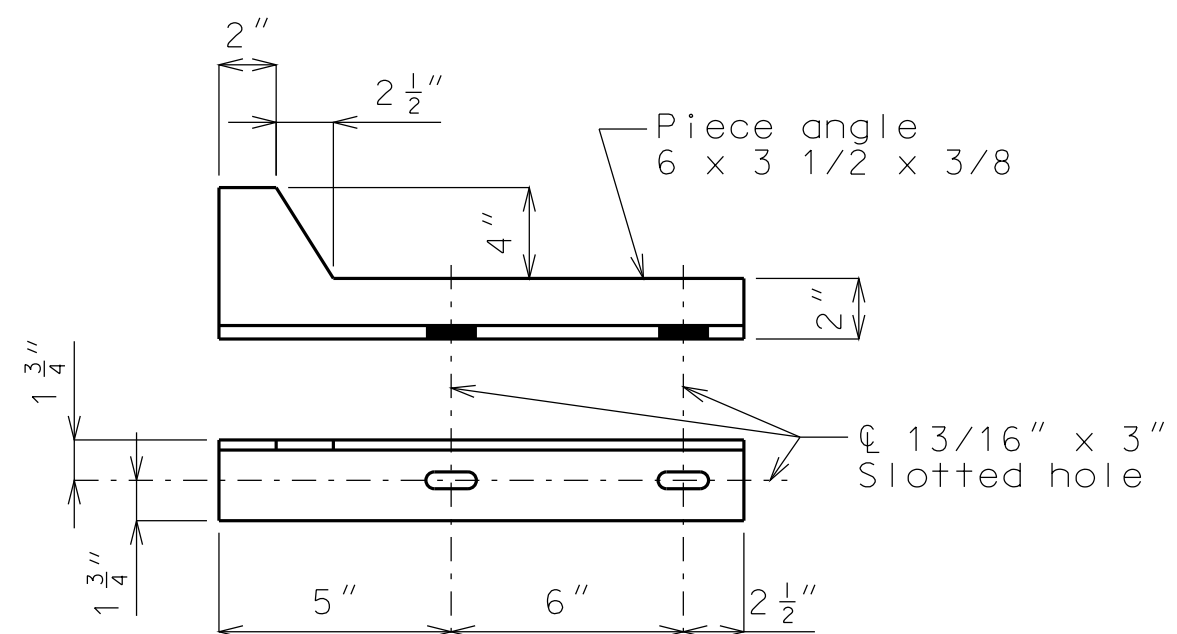
**DETAIL OF JOINT ARMOR**



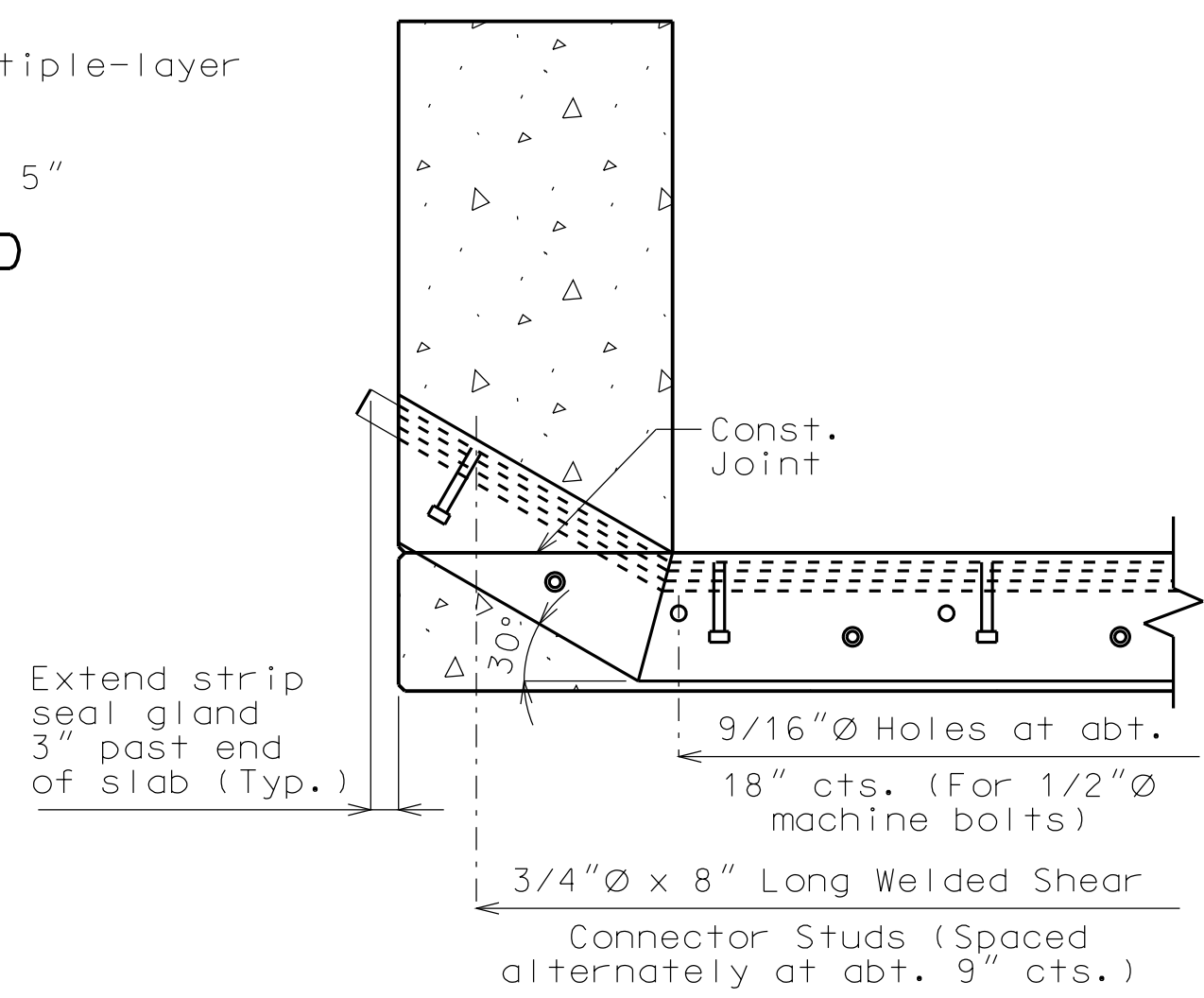
**DETAIL OF GLAND**



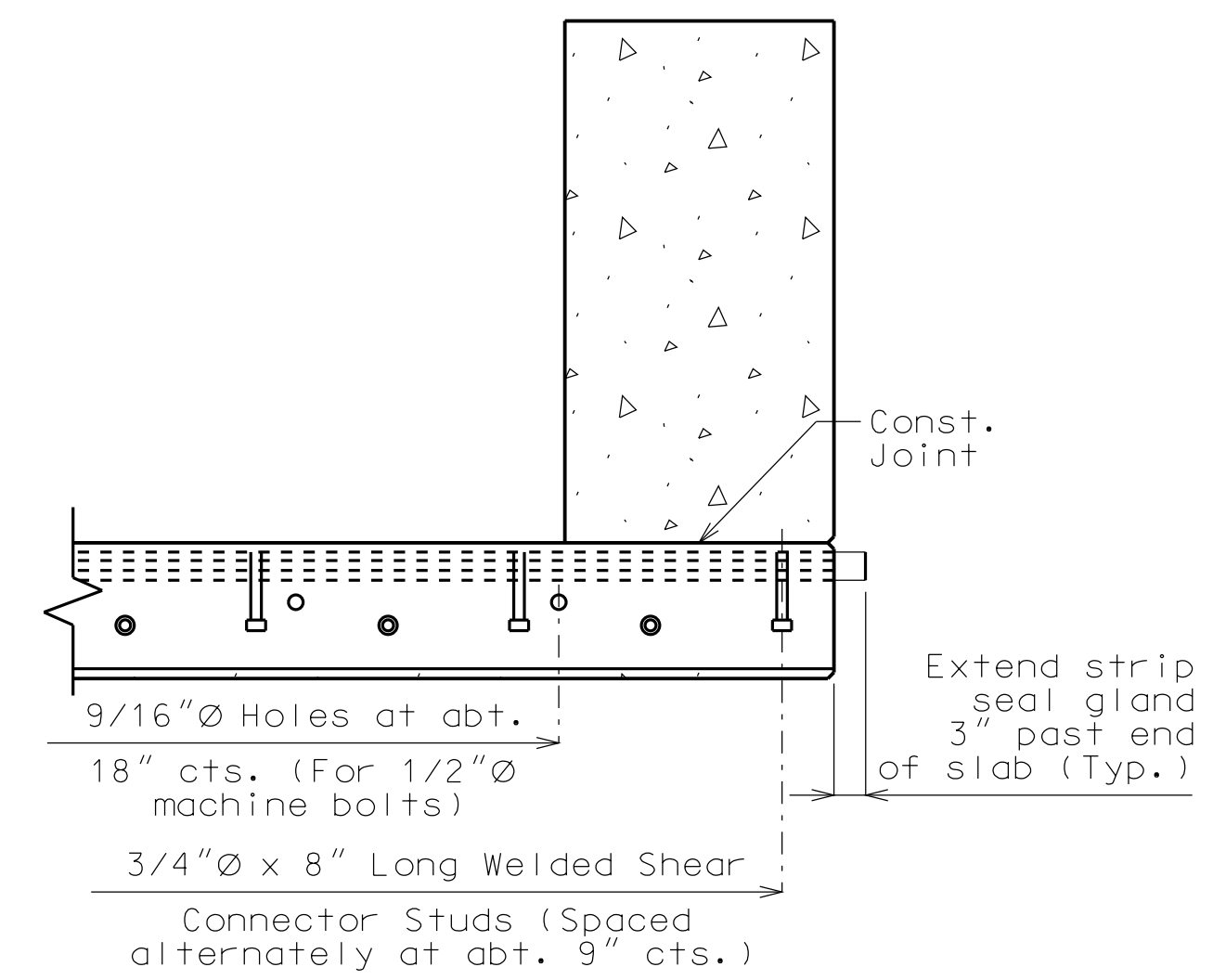
**DETAIL "A"**



**DETAIL "B"**



**PART SECTION B-B (LEFT SIDE)**



**PART SECTION B-B (RIGHT SIDE)**

**DETAILS OF STRIP SEAL NEAR INT. BENT NO. 5**

**GENERAL NOTES:**

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

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

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

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

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/4 inch for each 10 degree fall or rise in temperature at installation.

Exist. longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1 inch from vertical leg of the steel armor at the expansion joint system.

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

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

Cost of furnishing and installing the resin anchor system, complete-in-place, will be considered completely covered by the contract unit price for Class B-2 Concrete.

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 inches.

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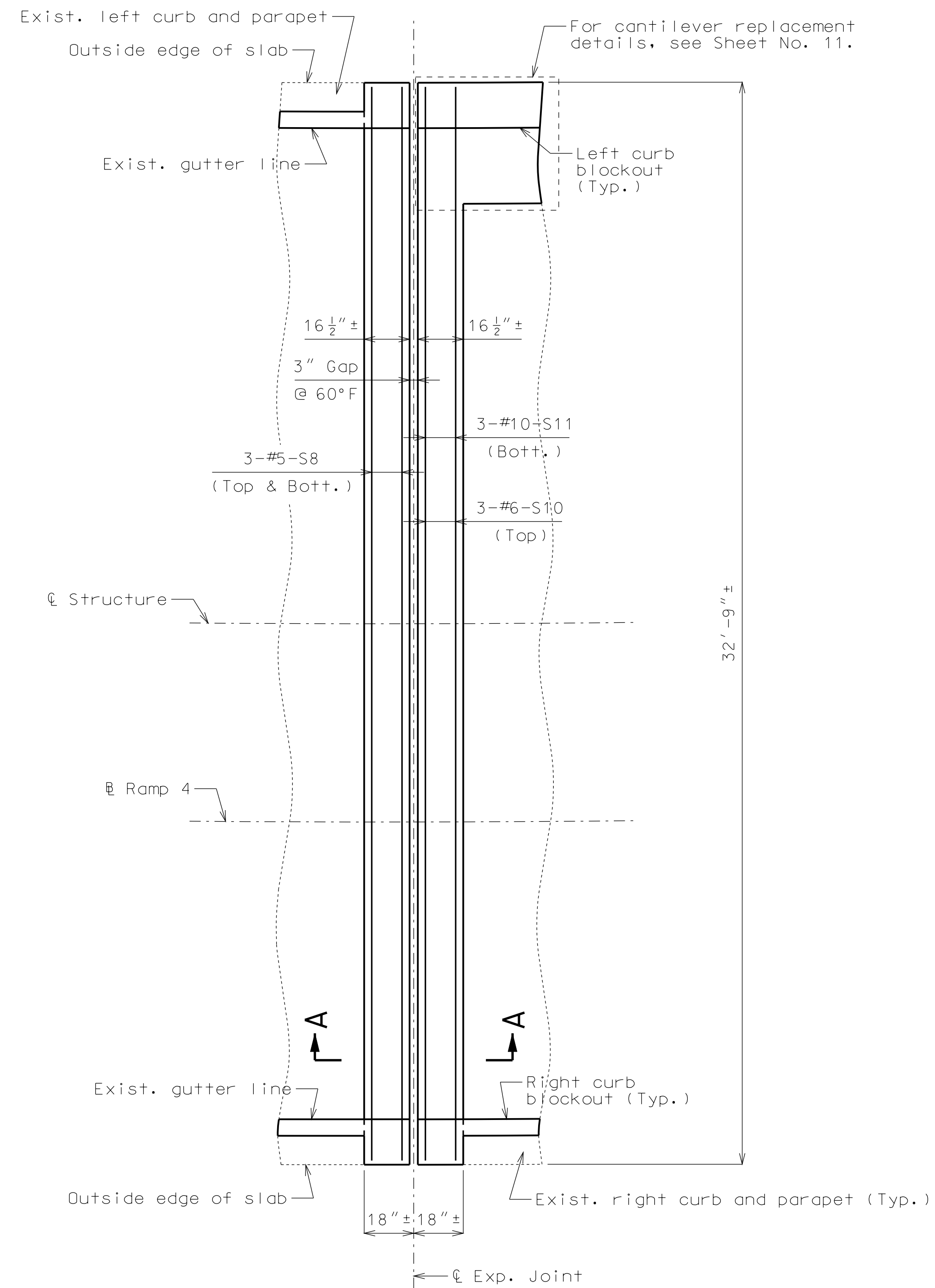
DATE PREPARED 12/7/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 9
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15802	

DESCRIPTION	DATE

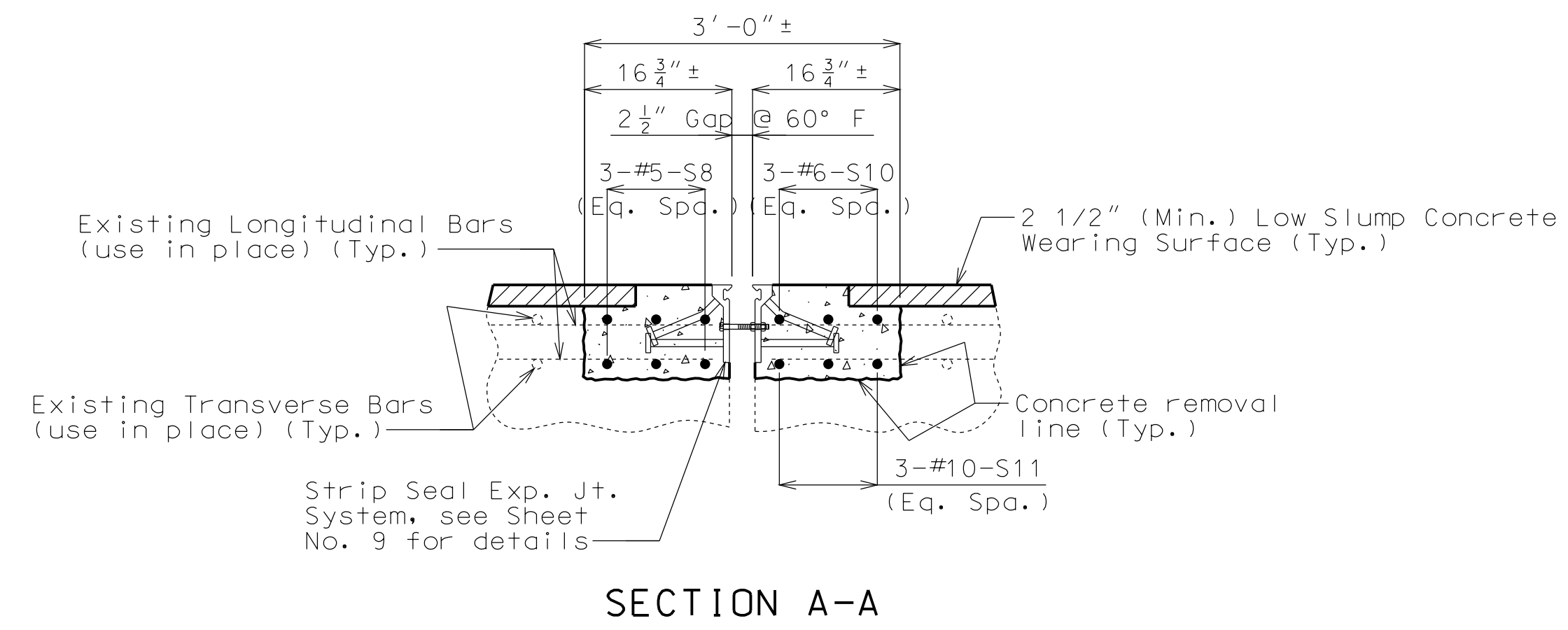
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**PART PLAN OF SLAB NEAR INT. BENT NO. 5**  
 Note: Joint armor and overlay not shown for clarity.




**SECTION A-A**

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ROUTE <b>I-435</b>	STATE <b>MO</b>
DISTRICT <b>BR</b>	SHEET NO. <b>10</b>
COUNTY <b>CLAY</b>	
JOB NO. <b>J412381</b>	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. <b>A15802</b>	

DESCRIPTION	DATE

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I-435 MO

DISTRICT SHEET NO.  
BR 11

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A15802

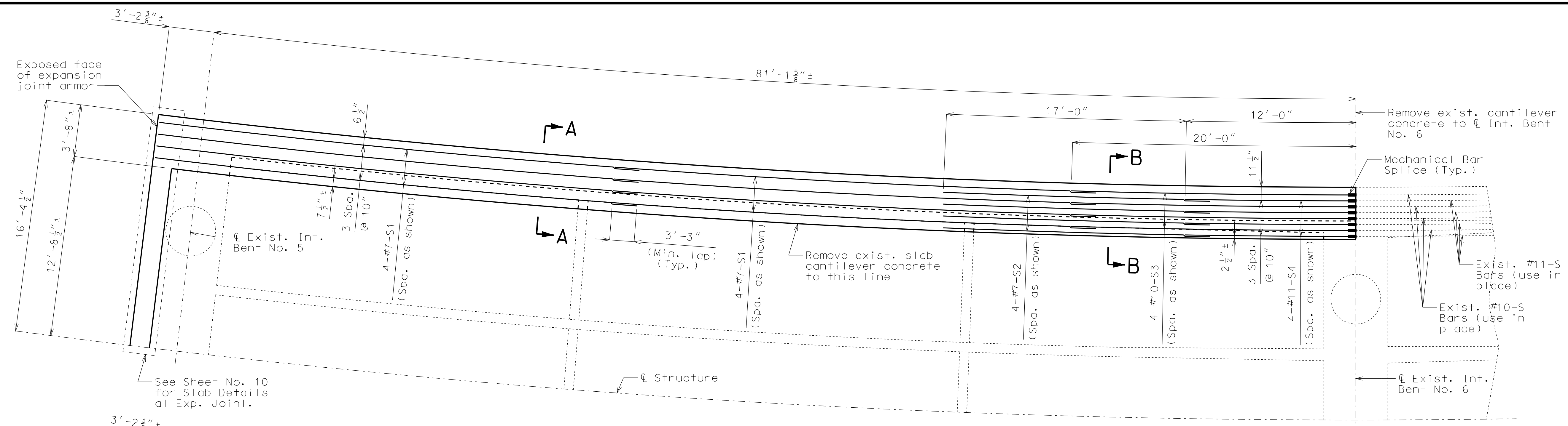
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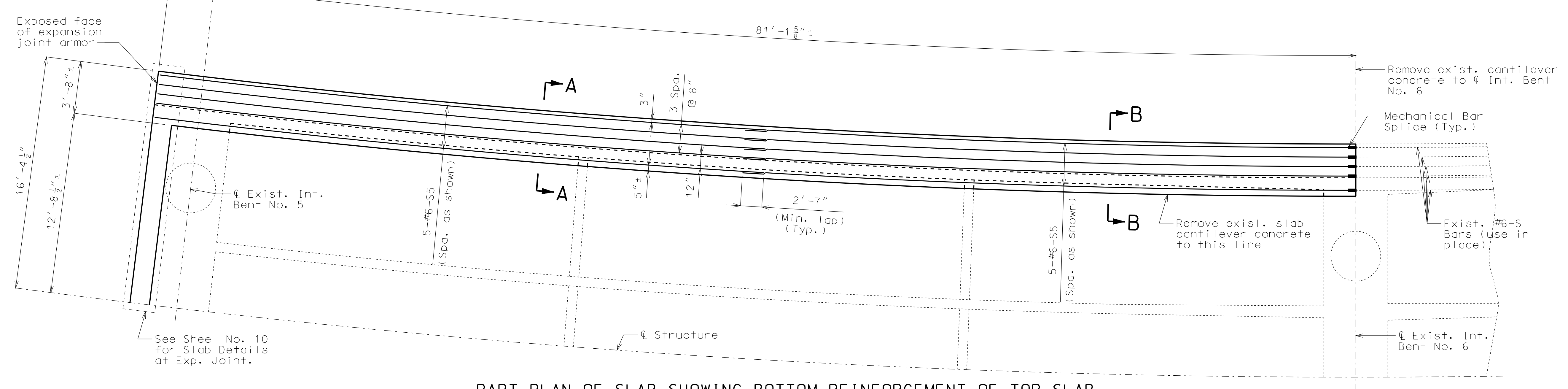
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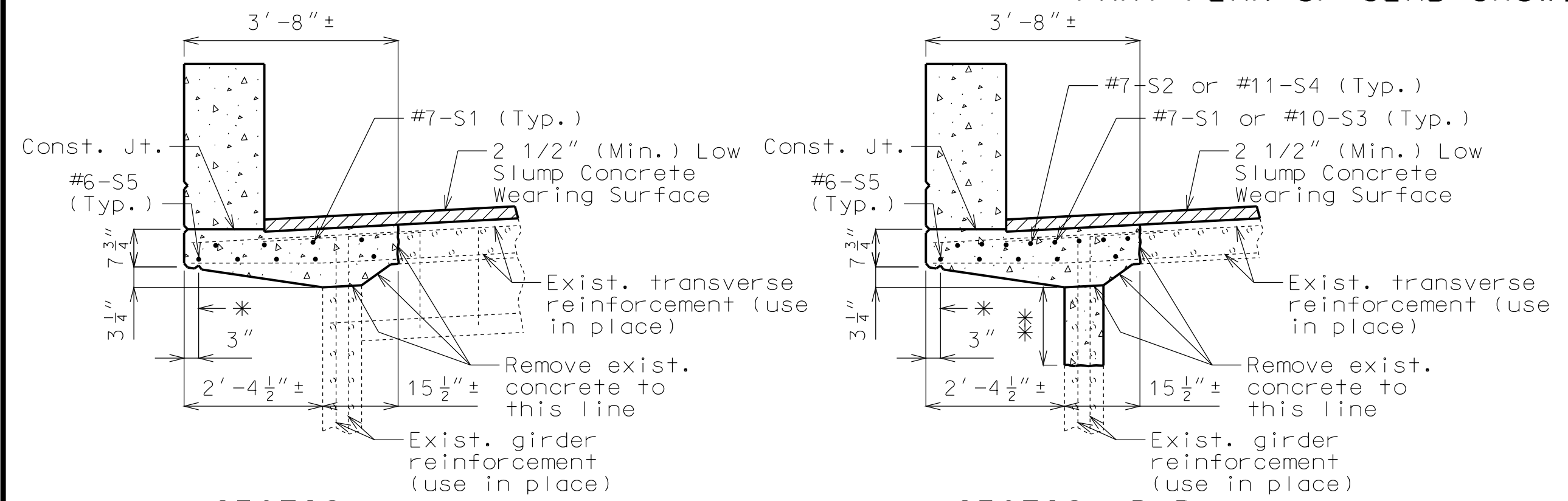
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PART PLAN OF SLAB SHOWING TOP REINFORCEMENT OF TOP SLAB



PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT OF TOP SLAB



SECTION A-A  
(Near mid-span)

SECTION B-B  
(Near Int. Bent No. 6)

DETAILS SHOWING SPAN (5-6) LEFT CANTILEVER REPLACEMENT

Notes:  
 Longitudinal dimensions are measured horizontally.  
 For details and reinforcement of Curb Blockout, see Sheets No. 13 & 14.  
 The contractor shall use a mechanical bar splice for #10-S3, #11-S4 & #6-S5 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of concrete removal line. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.  
 Longitudinal reinforcement shall be placed parallel to girders.

\* Use 3/4\"/>

Detailed July 2012  
Checked Aug. 2012

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

Sheet No. 11 of 22



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ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 12

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A15802

DESCRIPTION

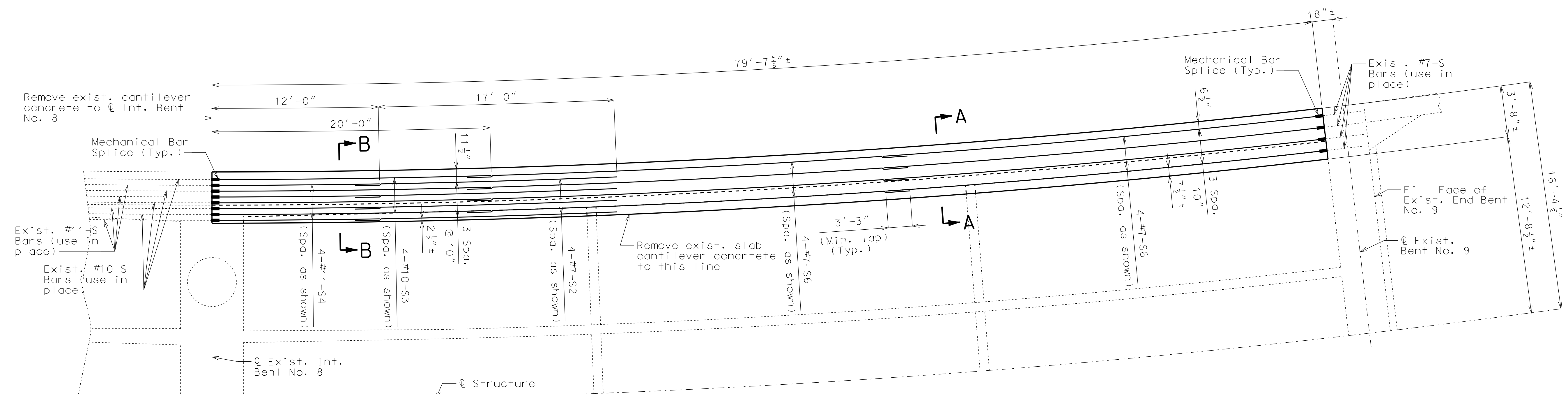
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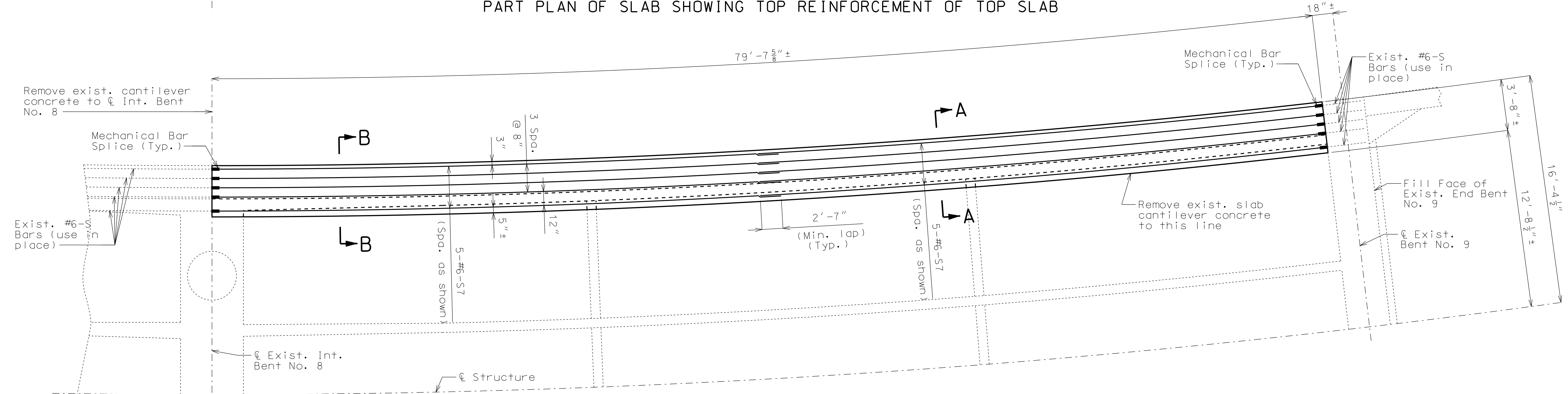
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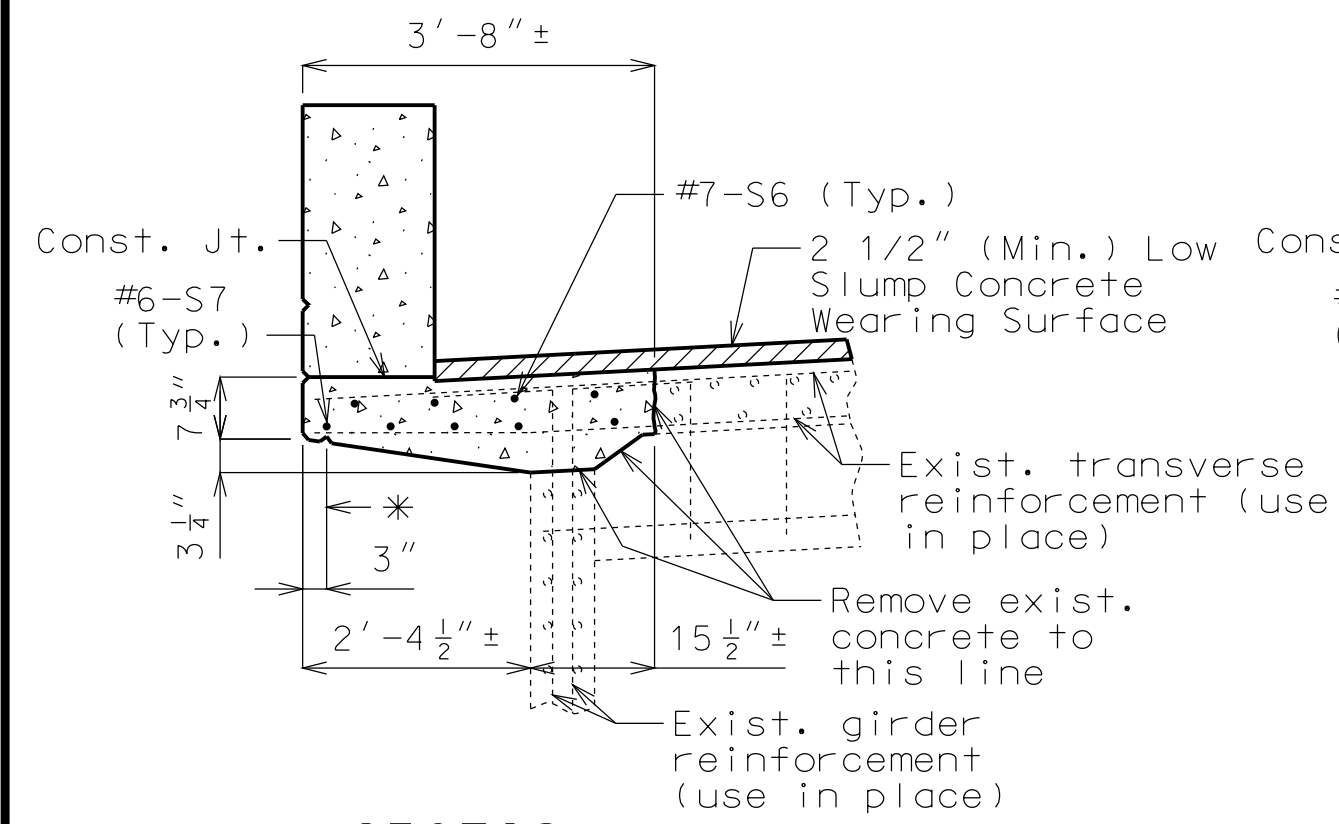
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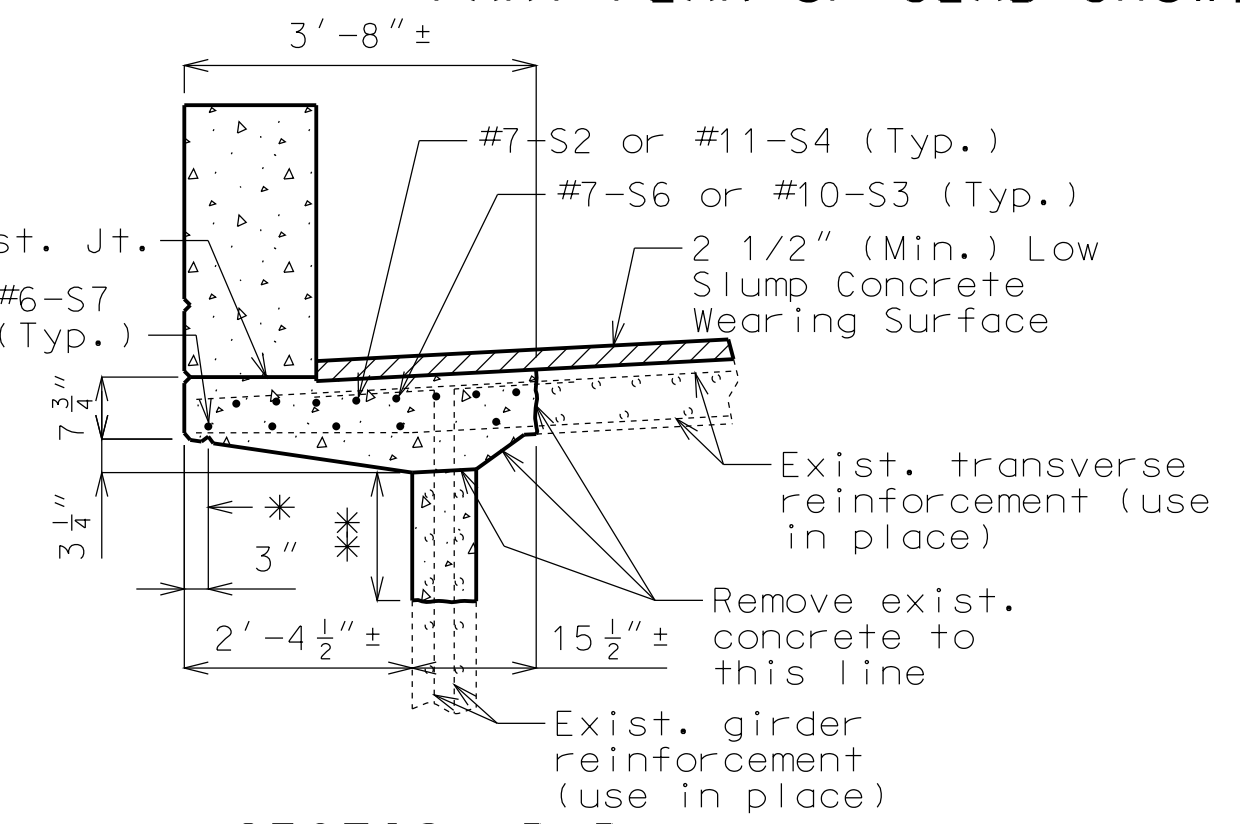
PART PLAN OF SLAB SHOWING TOP REINFORCEMENT OF TOP SLAB



PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT OF TOP SLAB



SECTION A-A  
(Near mid-span)



SECTION B-B  
(Near Int. Bent No. 8)

DETAILS SHOWING SPAN (8-9) LEFT CANTILEVER REPLACEMENT

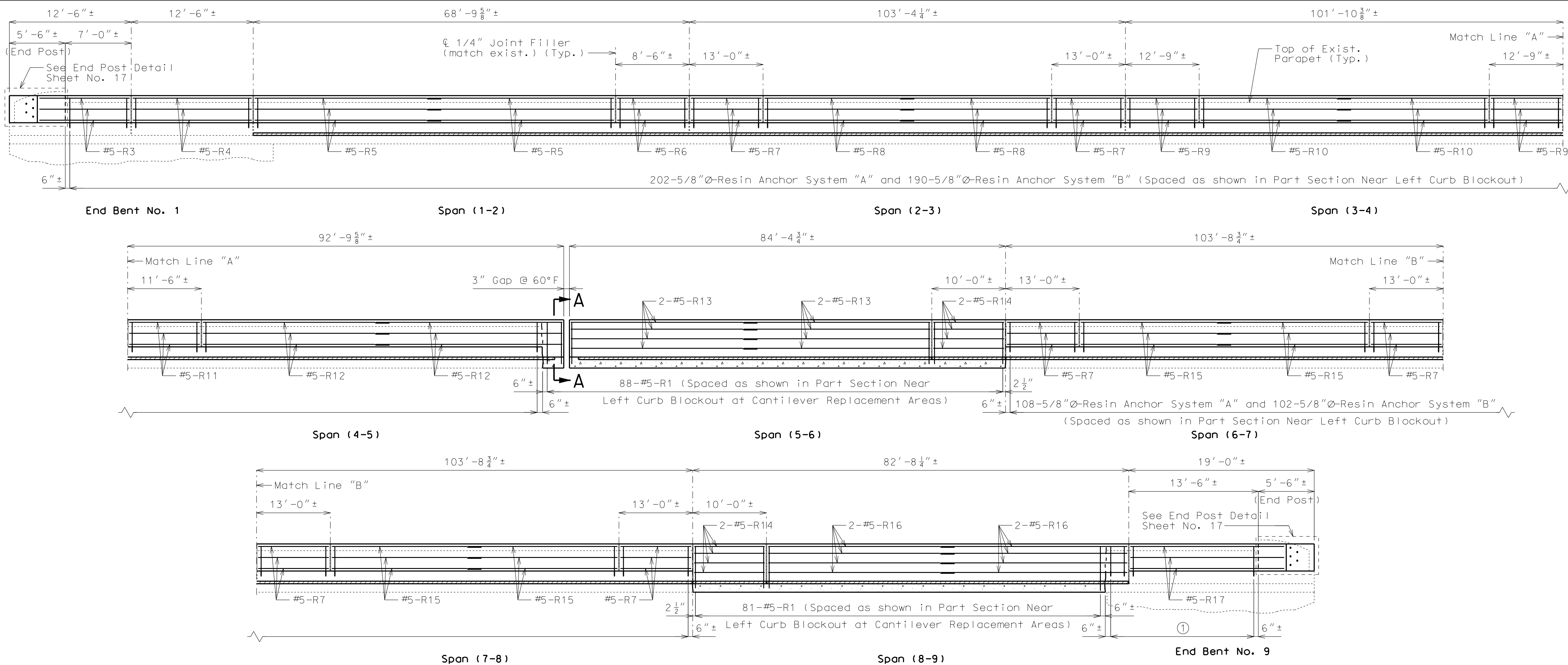
Notes:  
 Longitudinal dimensions are measured horizontally.  
 For details and reinforcement of Curb Blockout, see Sheets No. 13 & 14.  
 The contractor shall use a mechanical bar splice for #7-S6, #10-S3, #11-S4 & #6-S7 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of concrete removal line. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.  
 Longitudinal reinforcement shall be placed parallel to girders.

- \* Use 3/4" bevel strip.
- \* \* Girder removal to be determined in field by engineer. Clean and reuse existing reinforcement.

Detailed July 2012  
 Checked Aug. 2012

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

Sheet No. 12 of 22

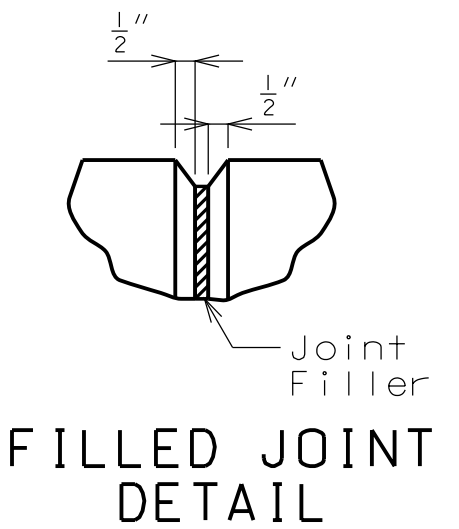


**SECTION NEAR LEFT CURB BLOCKOUT**

Note: Longitudinal dimensions shown are arc dimensions along grade at  $\ell$  parapet.  
 Bridge rail not shown for clarity.

① 10-5/8"Ø-Resin Anchor System "A" and 8-5/8"Ø-Resin Anchor System "B" (Spaced as shown in Part Section Near Left Curb Blockout)

- Notes:
- Concrete in curb blockout shall be Class B-1 with  $f'c = 4000$  psi.
  - Measurement of curb blockout is to the nearest linear foot, measured at the top and  $\ell$  of parapet from end of wing to end of wing. (Match existing curb and parapet)
  - All exposed edges of curb blockout shall have 1/2" radius or 3/8" bevel unless otherwise shown.
  - Payment for concrete, reinforcing steel, resin anchors, and any other work incidental to the curb blockout, complete in place, will be included in the contract unit price for Curb Blockout per linear foot.
  - Cost of any concrete curb or parapet repair will be included in the contract unit price for Curb Blockout.
  - All reinforcement shall be epoxy coated.
  - Use a minimum lap of 2'-11" for #5 horizontal curb blockout bars.
  - Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators shall have retroreflective sheeting on side facing oncoming traffic only. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Curb Blockout".
  - For Section A-A, Part Section Near Left Curb Blockout and Part Section Near Left Curb Blockout at Cantilever Replacement Areas, see Sheet No. 14.



**DETAILS OF LEFT CURB BLOCKOUT**

THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

DATE PREPARED: 12/7/2012

ROUTE: I-435 STATE: MO

DISTRICT: BR SHEET NO.: 13

COUNTY: CLAY

JOB NO.: J412381

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A15802

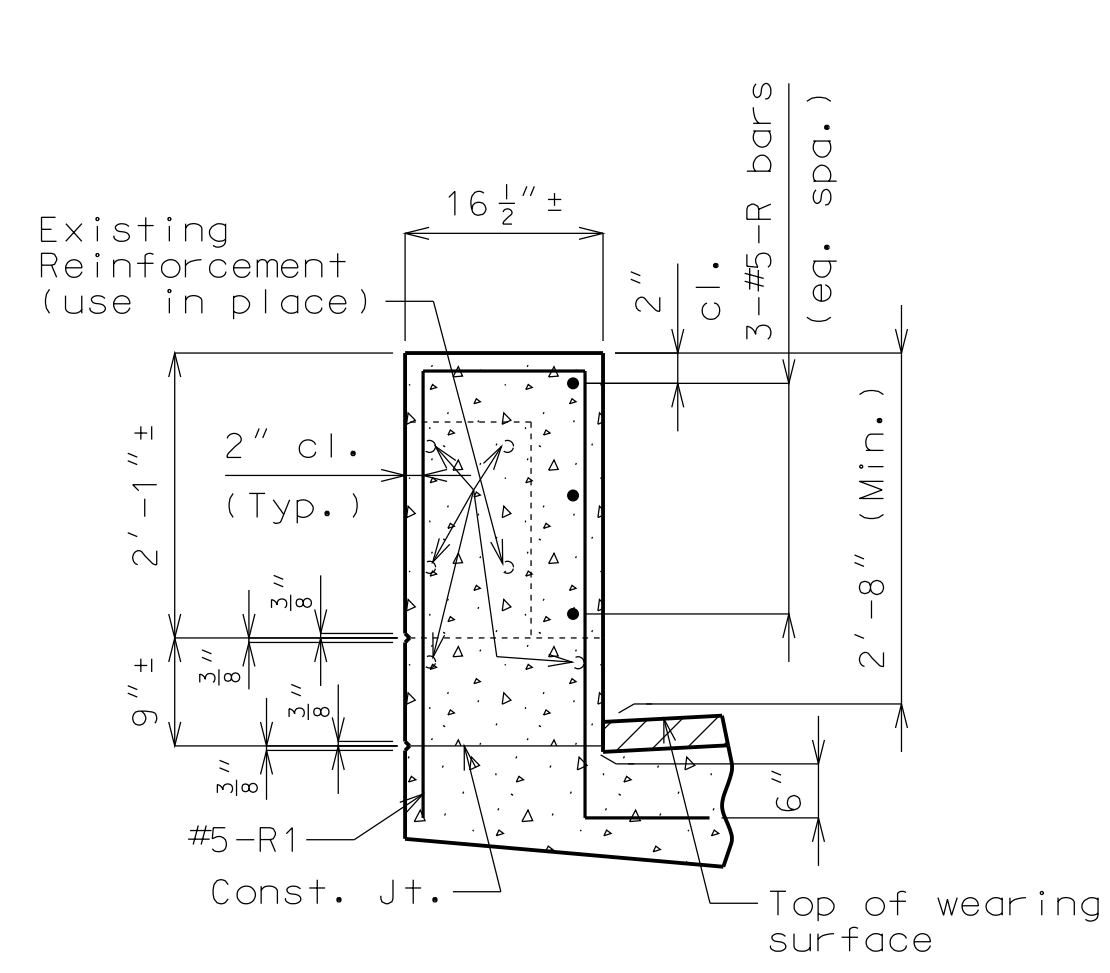
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

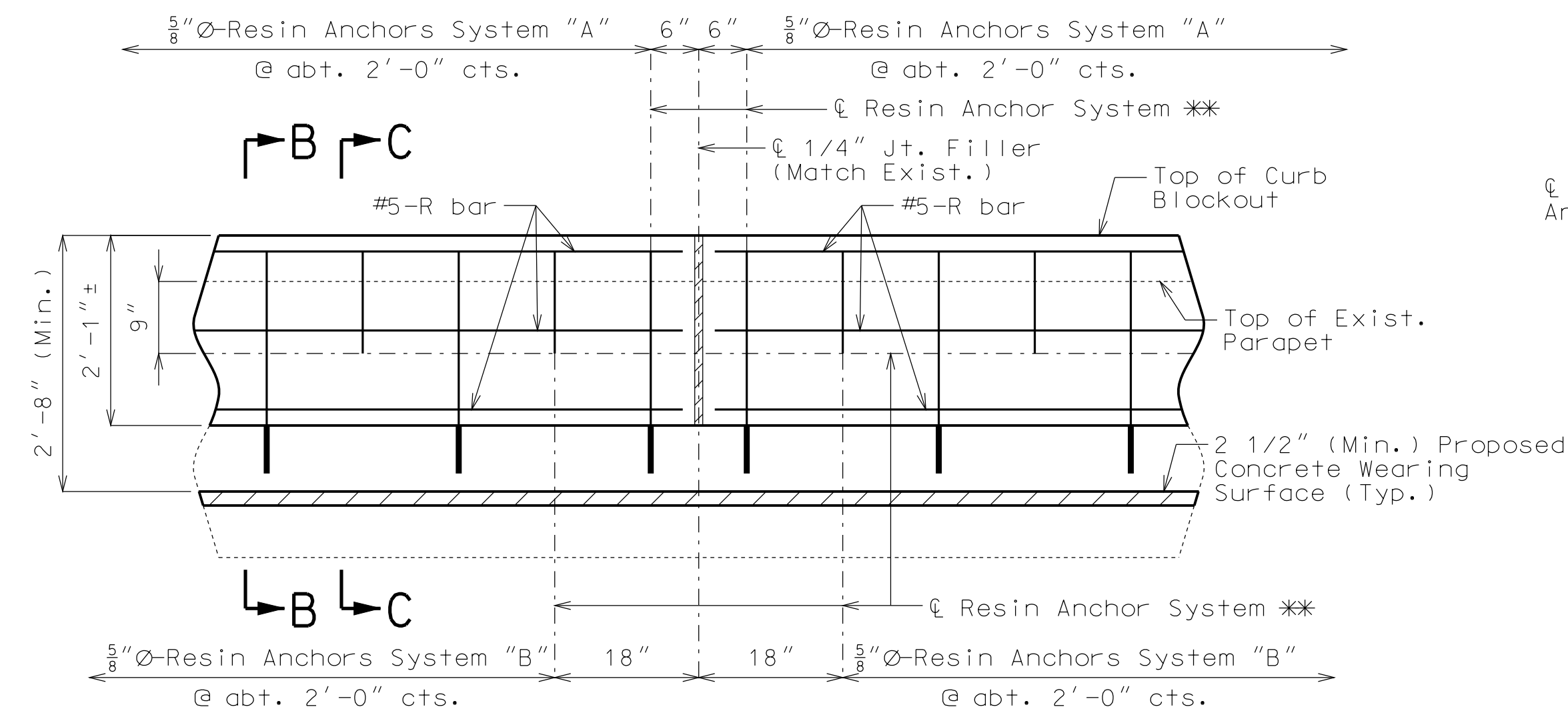
MoDOT

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

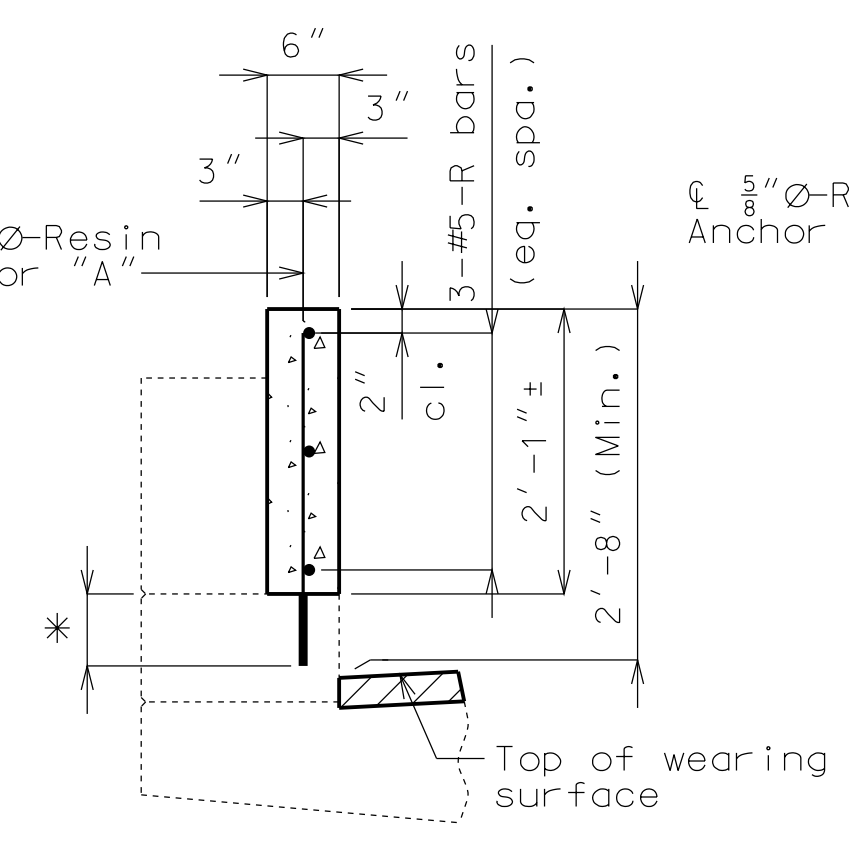
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



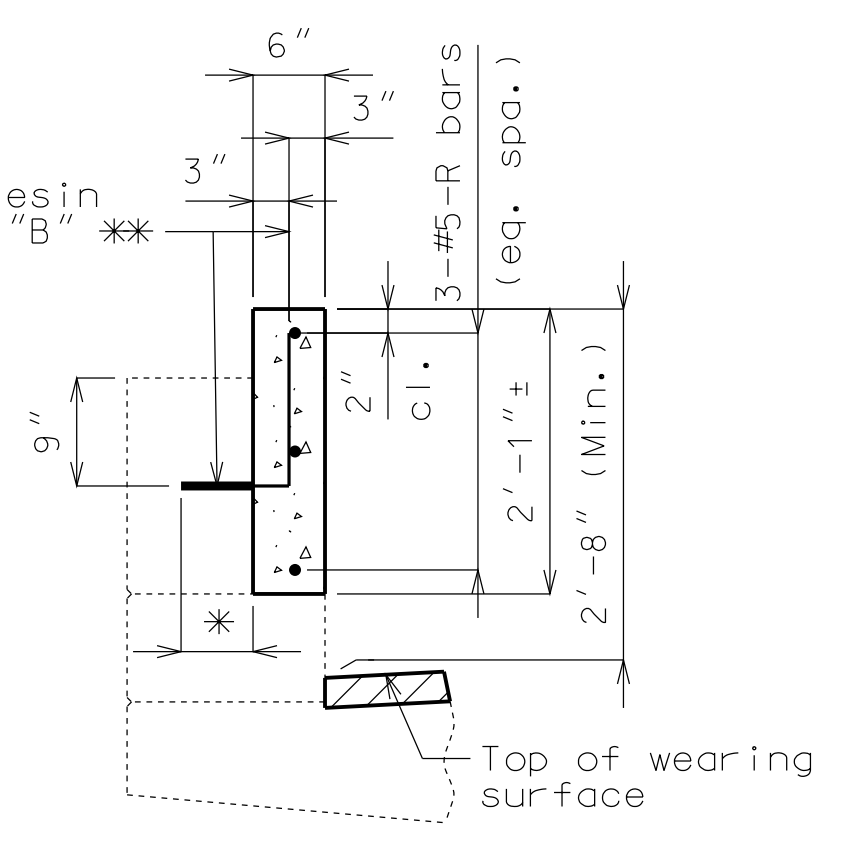
SECTION A-A



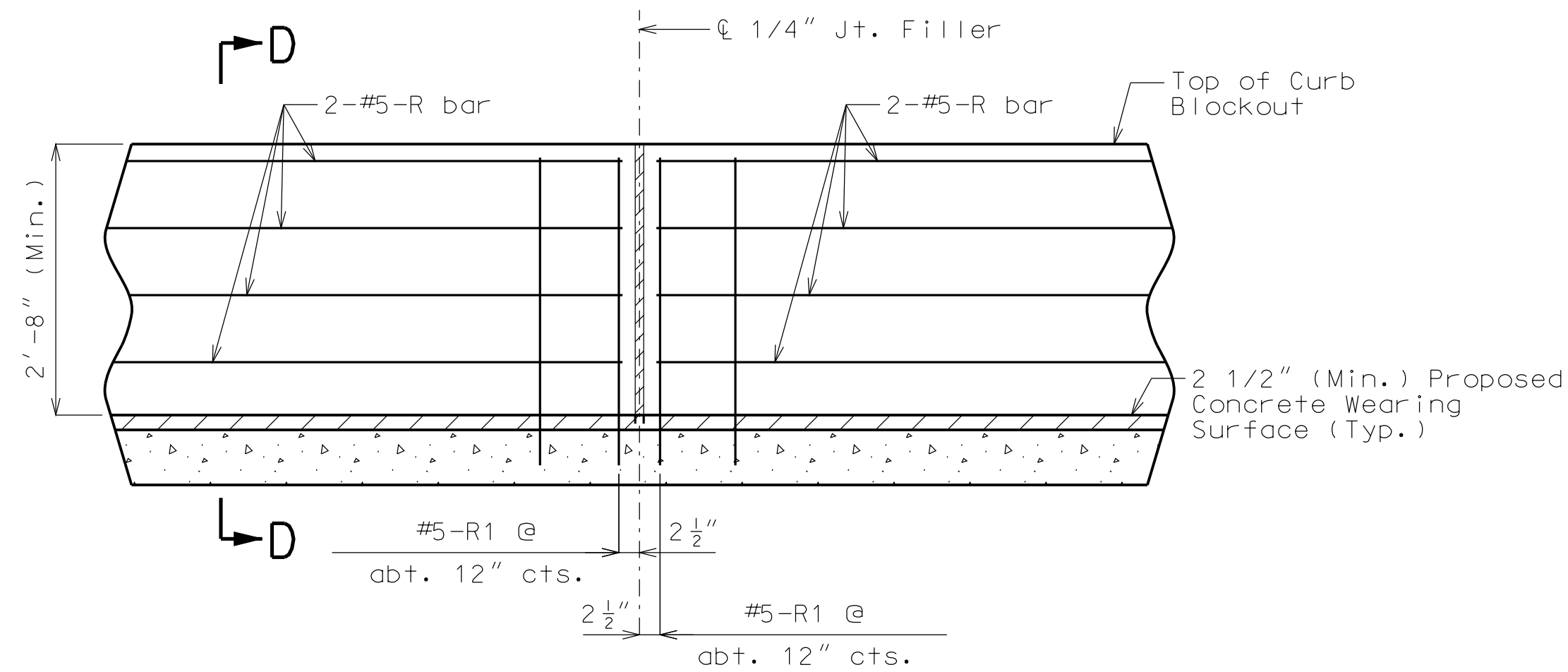
PART SECTION NEAR LEFT CURB BLOCKOUT



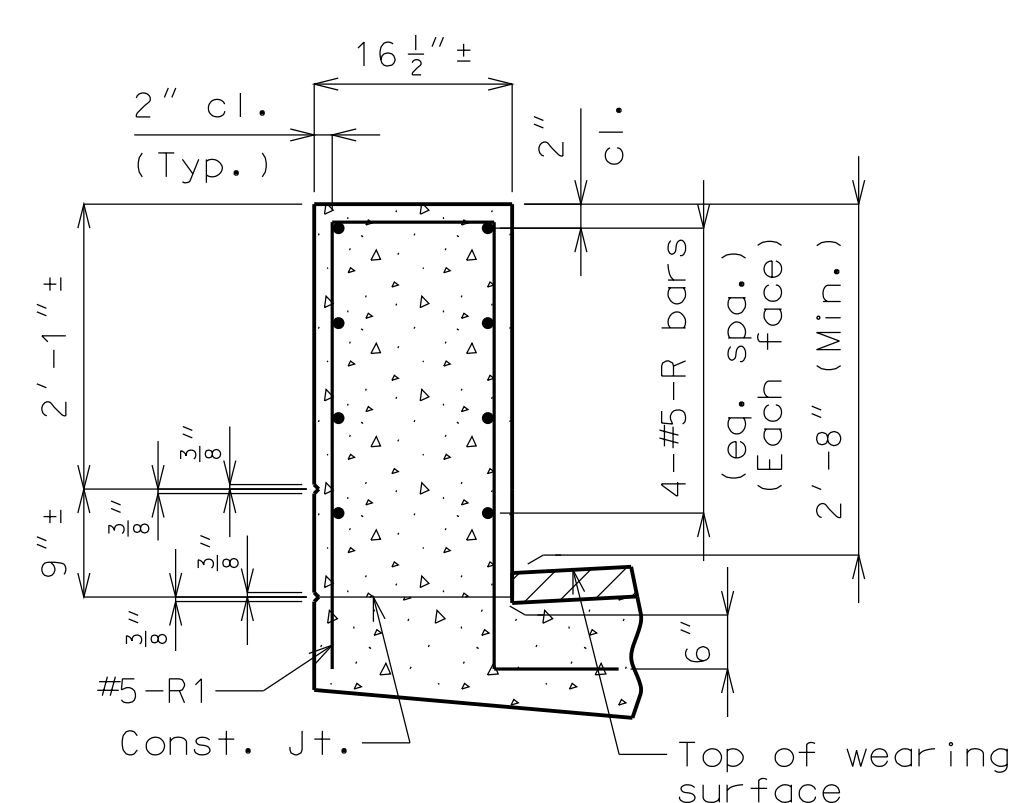
SECTION B-B



SECTION C-C

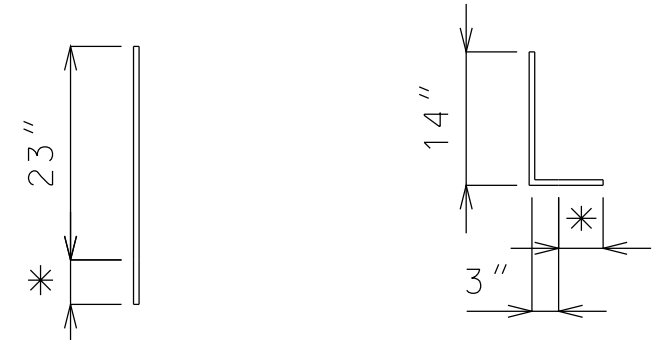


PART SECTION NEAR LEFT CURB BLOCKOUT AT CANTILEVER REPLACEMENT AREAS



SECTION D-D

Notes:  
 The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.  
 The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".  
 An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8" threaded rod.  
 For Section Near Left Curb Blockout and location of Section A-A, see Sheet No. 13.  
 \*\* Shift resin anchors where necessary to clear existing anchor bolts for bridge rail and clear existing reinforcement.



RESIN ANCHOR SYSTEM "A" (334 req'd) (Install in curb)  
 RESIN ANCHOR SYSTEM "B" (300 req'd) (Install in parapet)  
 \* Use manufacturer's embedment length. (5" minimum embedment)

DETAILS OF RESIN ANCHORS

DETAILS OF LEFT CURB BLOCKOUT

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/7/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 14
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15802	

DATE	DESCRIPTION

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.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/7/2012

ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 15

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A15802

DESCRIPTION

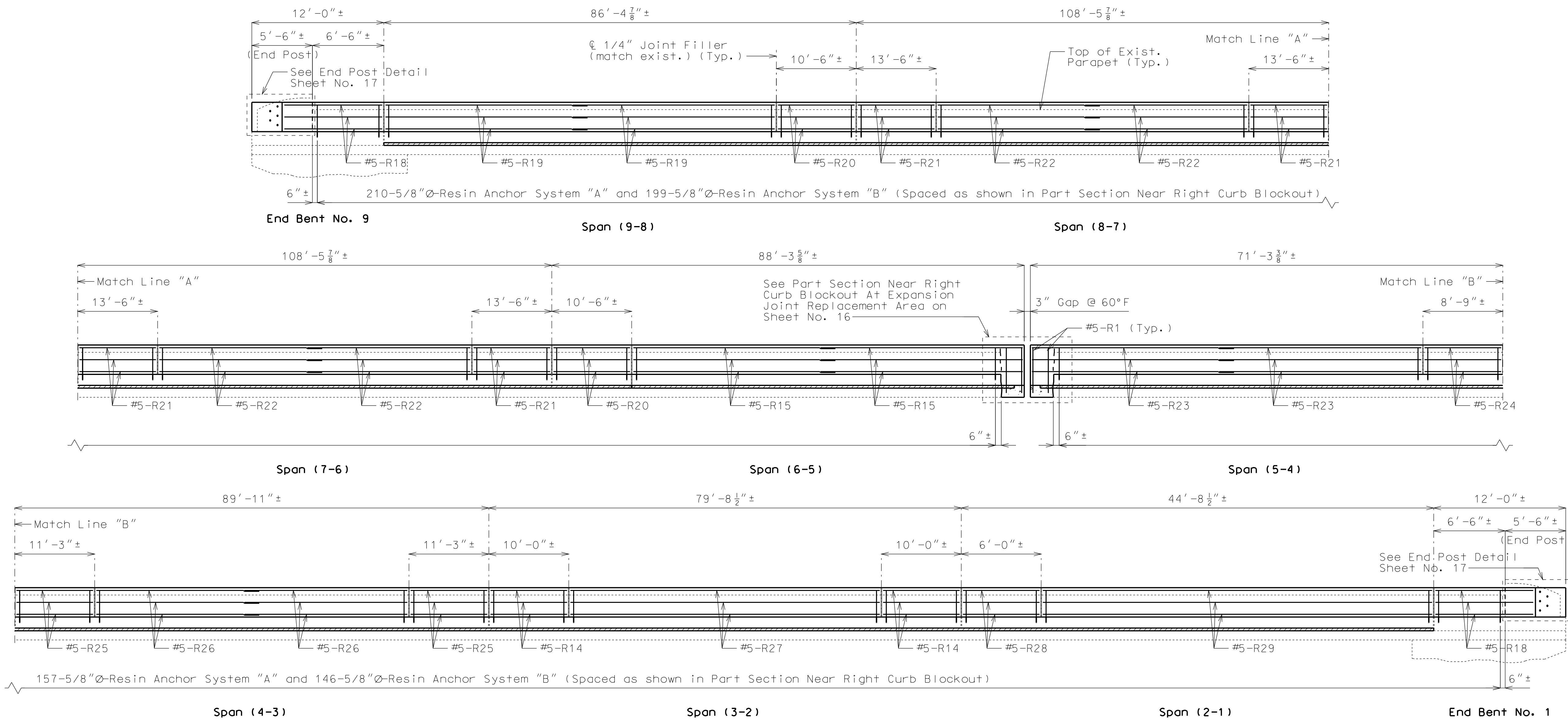
DATE

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.



**SECTION NEAR RIGHT CURB BLOCKOUT**

Note: Longitudinal dimensions shown are arc dimensions along grade at  $\ell$  parapet.

Bridge rail not shown for clarity.

**Notes:**

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

Measurement of curb blockout is to the nearest linear foot, measured at the top and  $\ell$  of parapet from end of wing to end of wing. (Match existing curb and parapet)

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

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

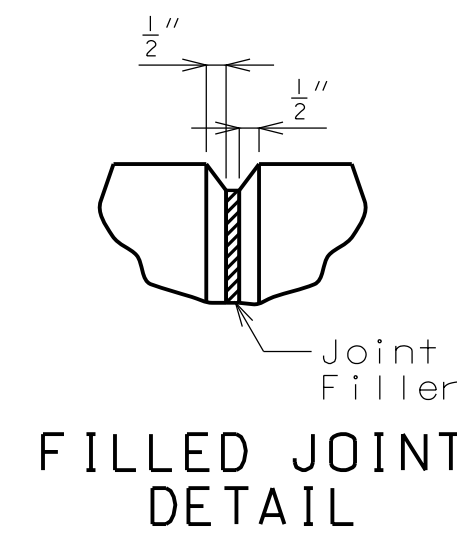
Cost of any concrete curb or parapet repair will be included in the contract unit price for Curb Blockout.

All reinforcement shall be epoxy coated.

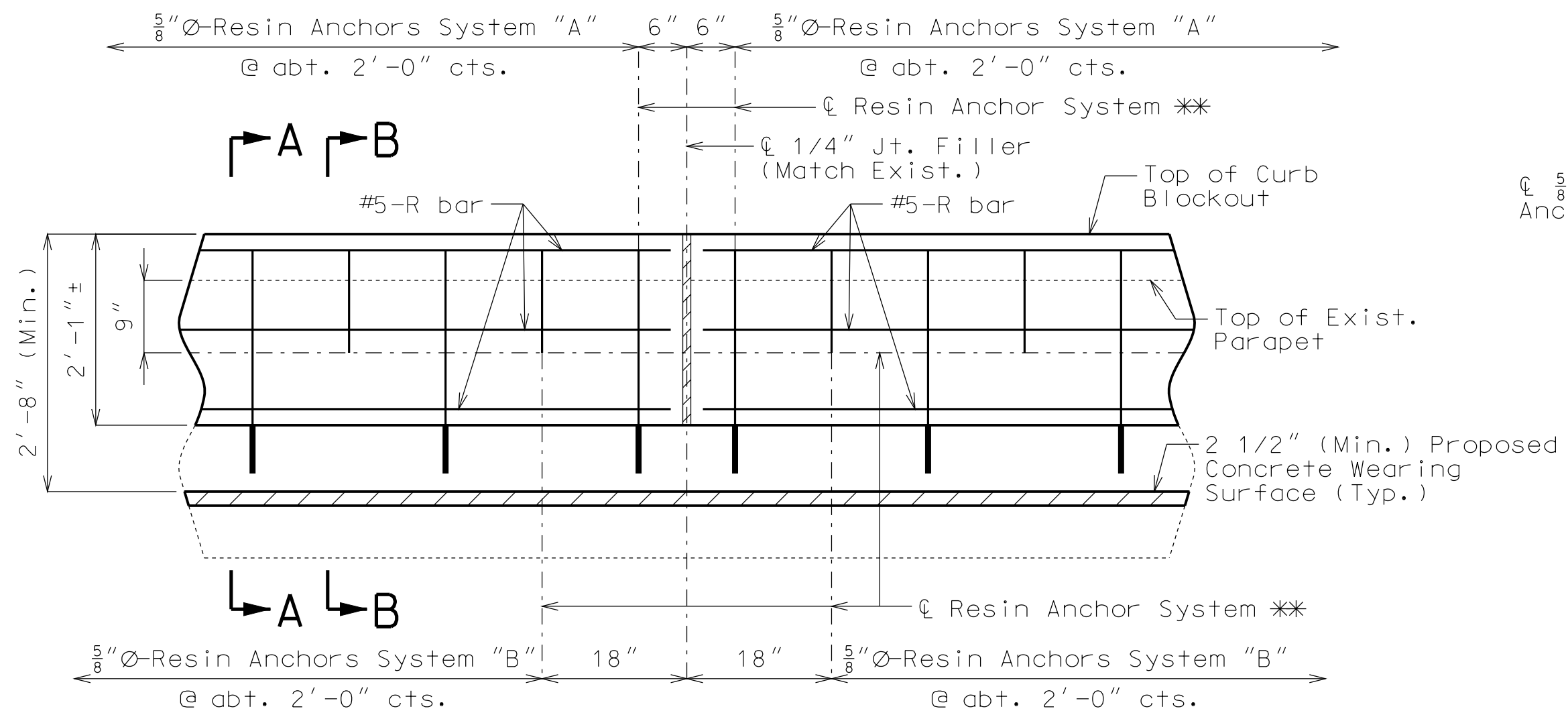
Use a minimum lap of 2'-11" for #5 horizontal curb blockout bars.

Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators shall have retroreflective sheeting on side facing oncoming traffic only. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Curb Blockout".

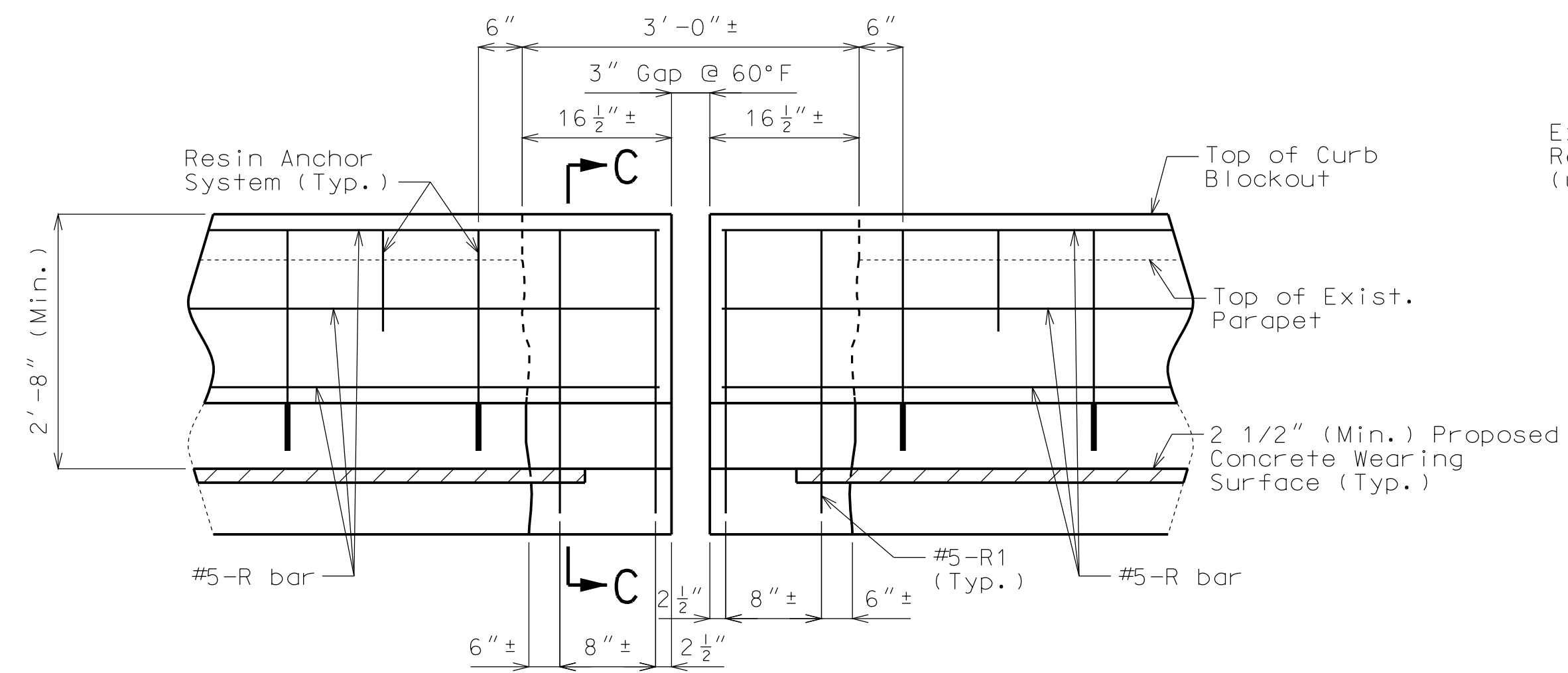
For Part Section Near Right Curb Blockout and Part Section Near Right Curb Blockout at Expansion Joint Replacement Area, see Sheet No. 16.



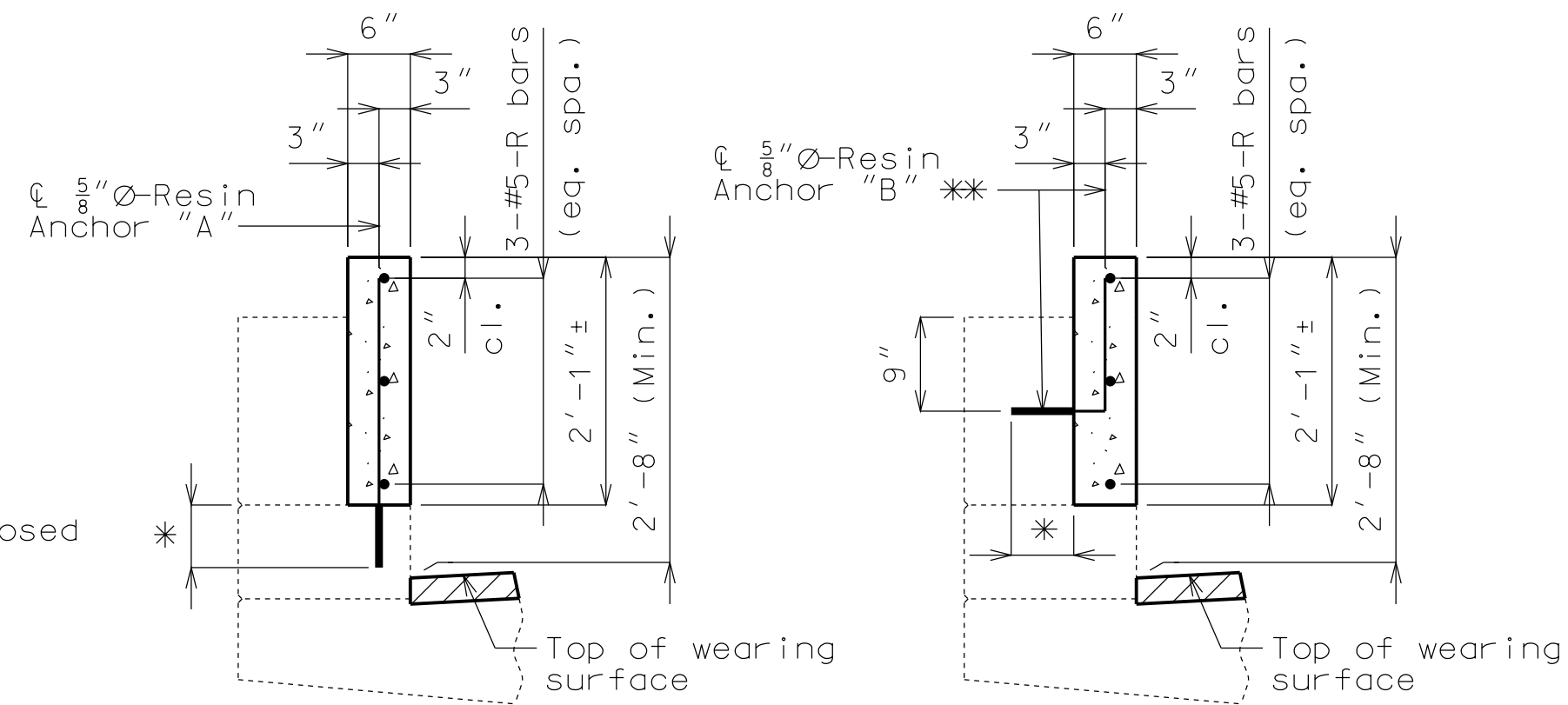
**DETAILS OF RIGHT CURB BLOCKOUT**



PART SECTION NEAR RIGHT CURB BLOCKOUT

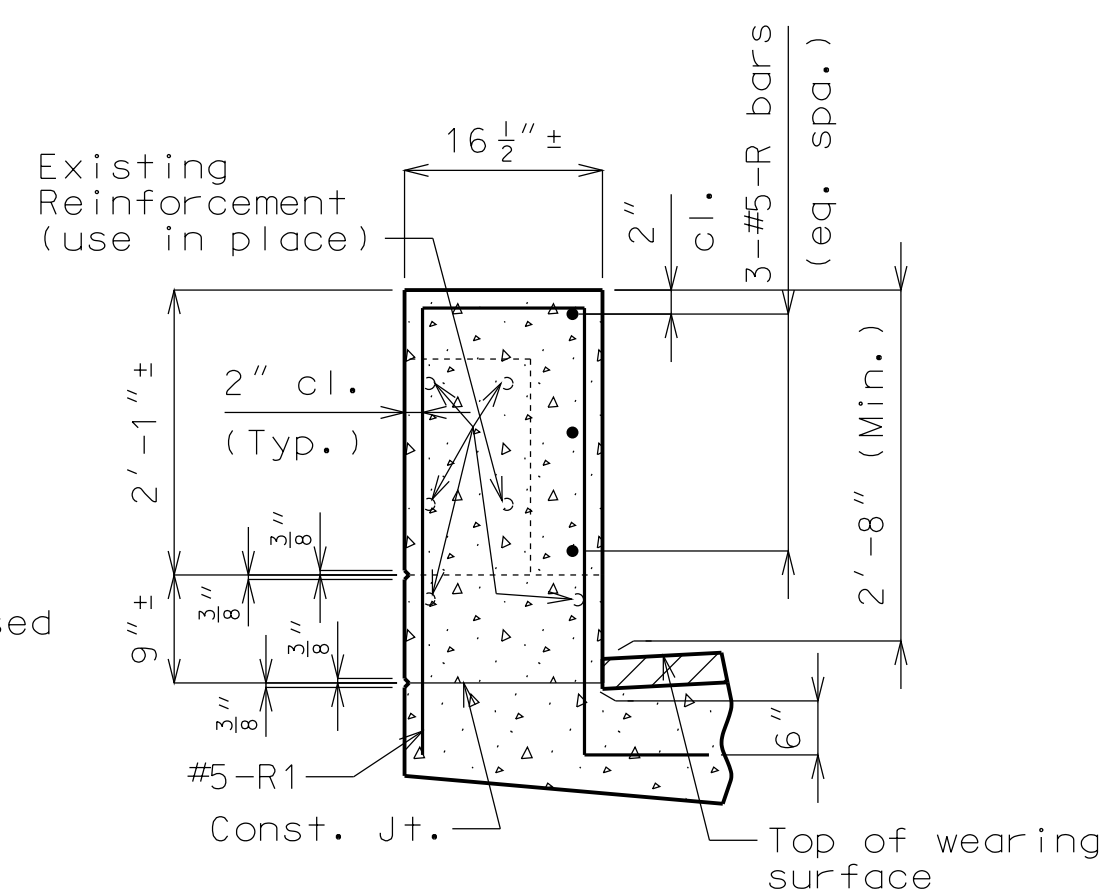


PART SECTION NEAR RIGHT CURB BLOCKOUT AT EXPANSION JOINT REPLACEMENT AREA

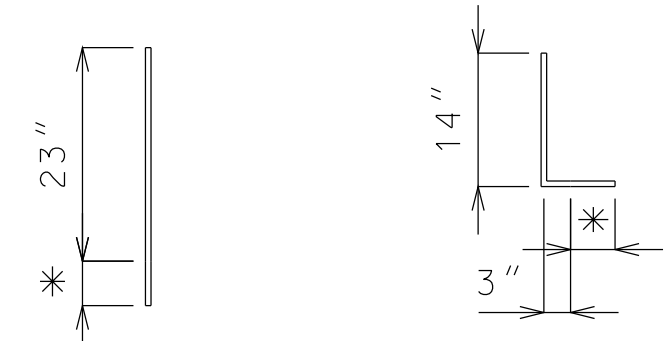


SECTION A-A

SECTION B-B



SECTION C-C



RESIN ANCHOR SYSTEM "A"  
(381 req'd)  
(Install in curb)

RESIN ANCHOR SYSTEM "B"  
(345 req'd)  
(Install in parapet)

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

DETAILS OF RESIN ANCHORS

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

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

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

\*\* Shift resin anchors where necessary to clear existing anchor bolts for bridge rail and clear existing reinforcement.

For Section Near Right Curb Blockout, see Sheet No. 15.


DETAILS OF RIGHT CURB BLOCKOUT

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/7/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 16
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15802	

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.

Notes:  
 For Details of Resin Anchors, see Sheets No. 14 & 16.  
 \*\* Shift resin anchors where necessary to clear exist. reinforcement.  
 Bridge rail not shown for clarity.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

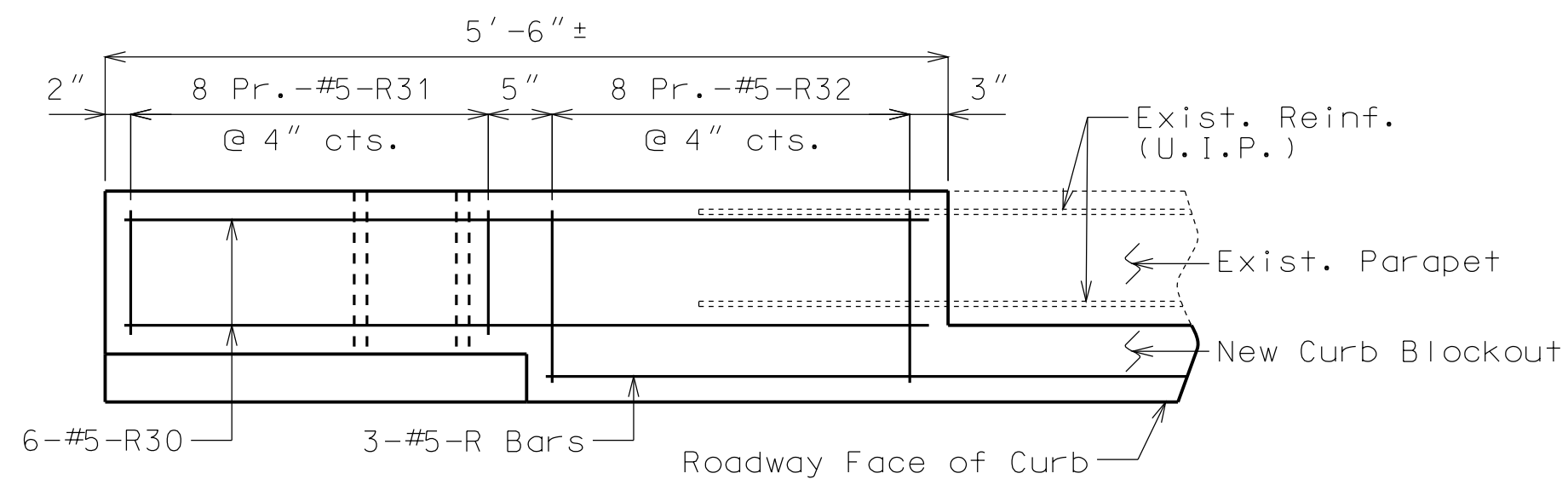
DATE PREPARED  
 12/7/2012  
 ROUTE I-435 STATE MO  
 DISTRICT BR SHEET NO. 17  
 COUNTY CLAY  
 JOB NO. J412381  
 CONTRACT ID.

PROJECT NO.  
 BRIDGE NO. A15802

REVISION NO.	DESCRIPTION	DATE

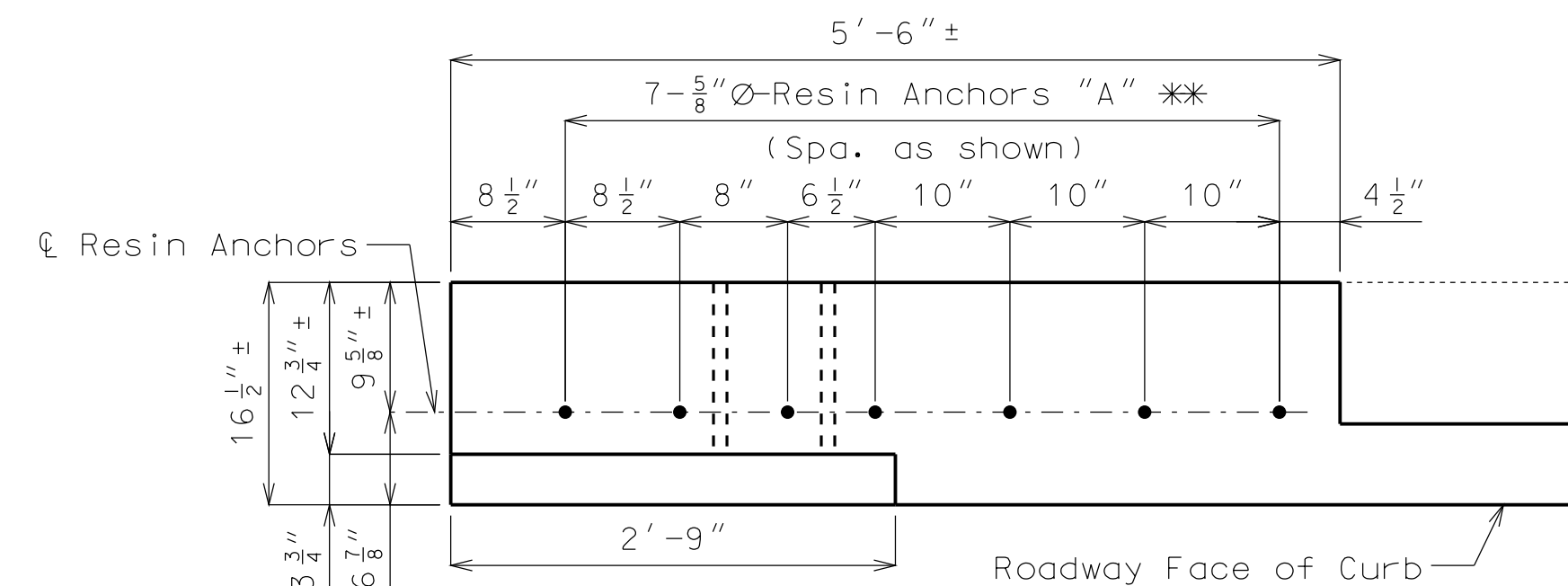
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 MO DOT  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

REV.

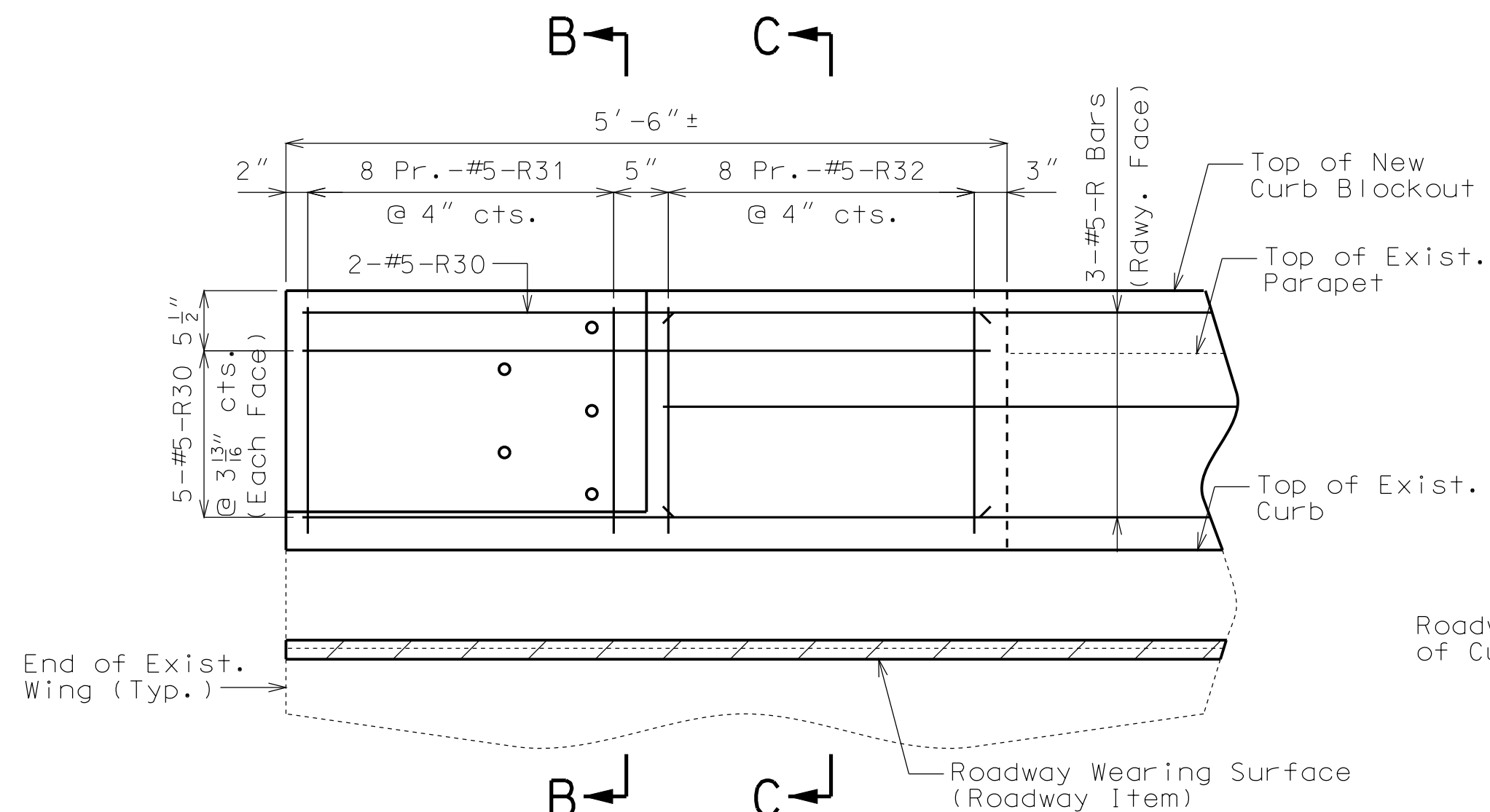


PLAN SHOWING END POST REINFORCEMENT

Note: Existing vertical reinforcement, use-in-place, not shown for clarity.

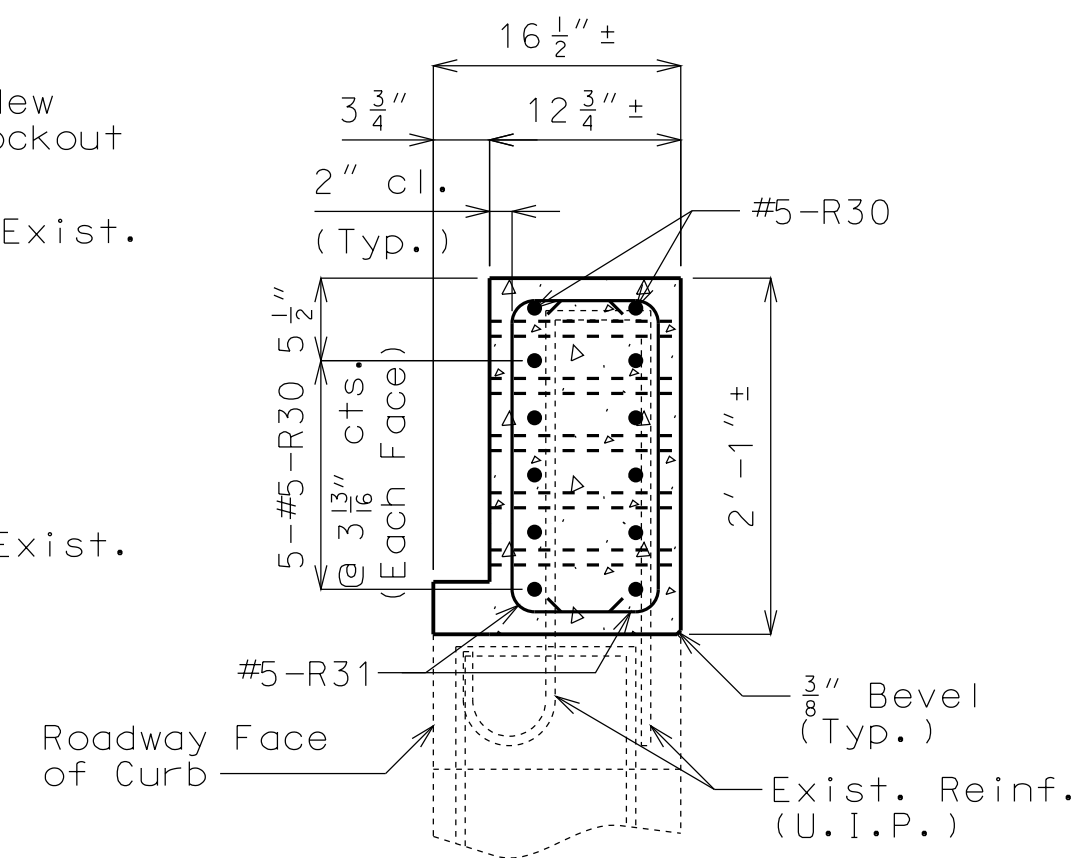


PLAN SHOWING END POST RESIN ANCHOR SYSTEMS AND DIMENSIONS

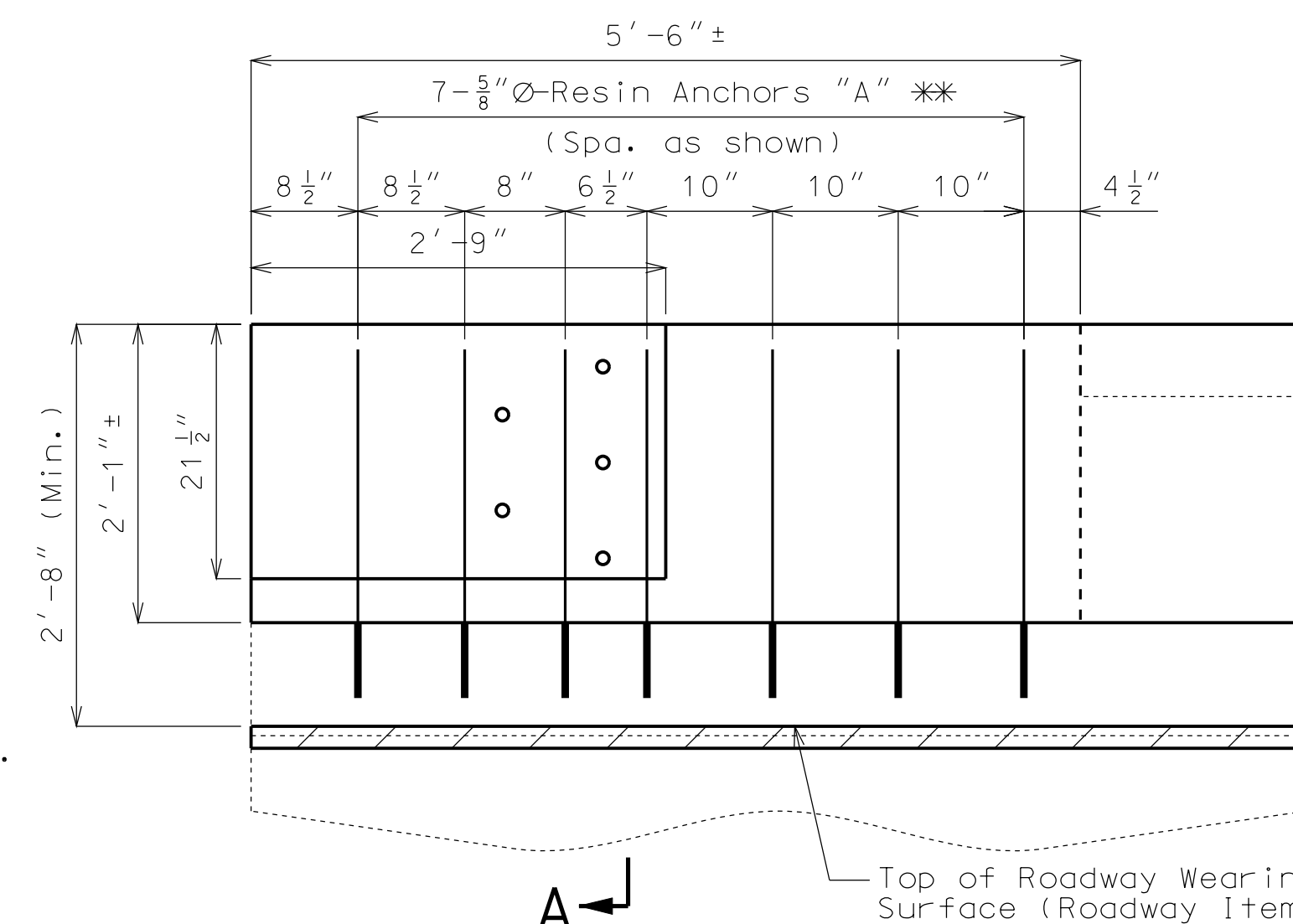


ELEVATION SHOWING END POST REINFORCEMENT

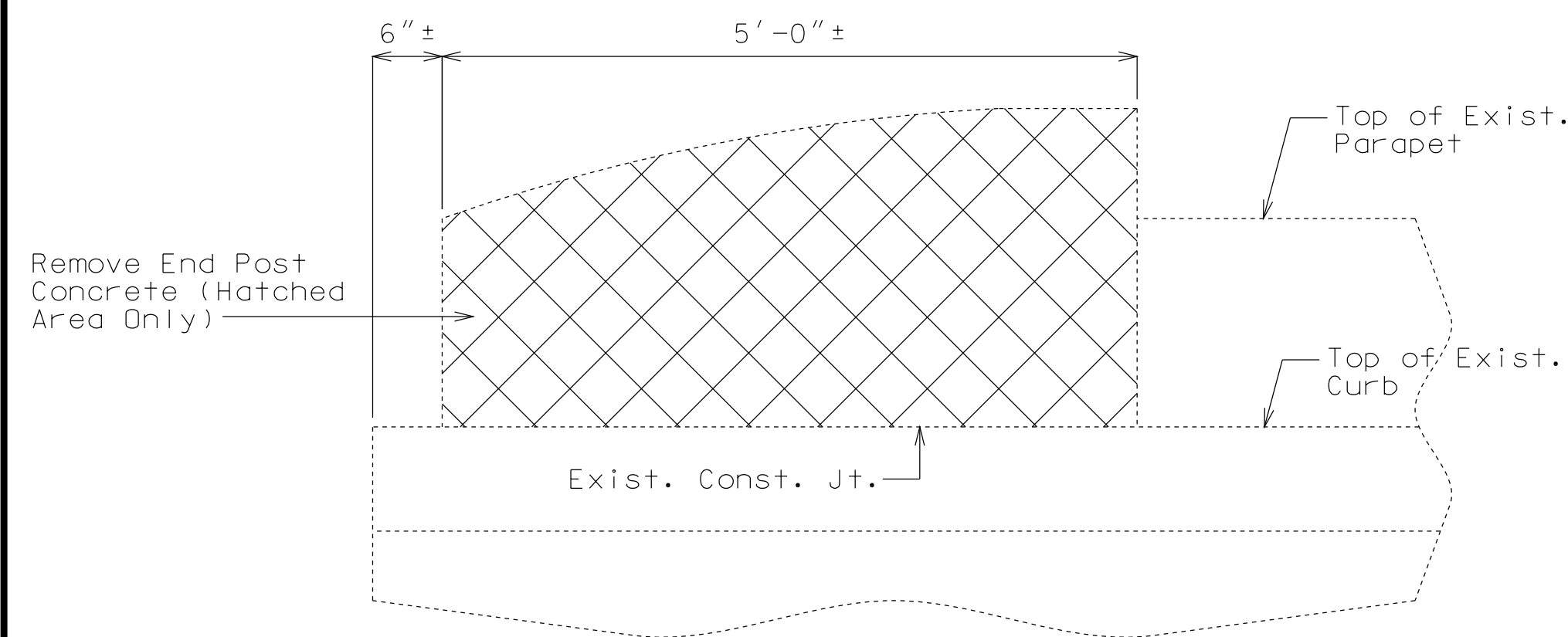
Note: Existing vertical reinforcement, use-in-place, not shown for clarity.



SECTION B-B

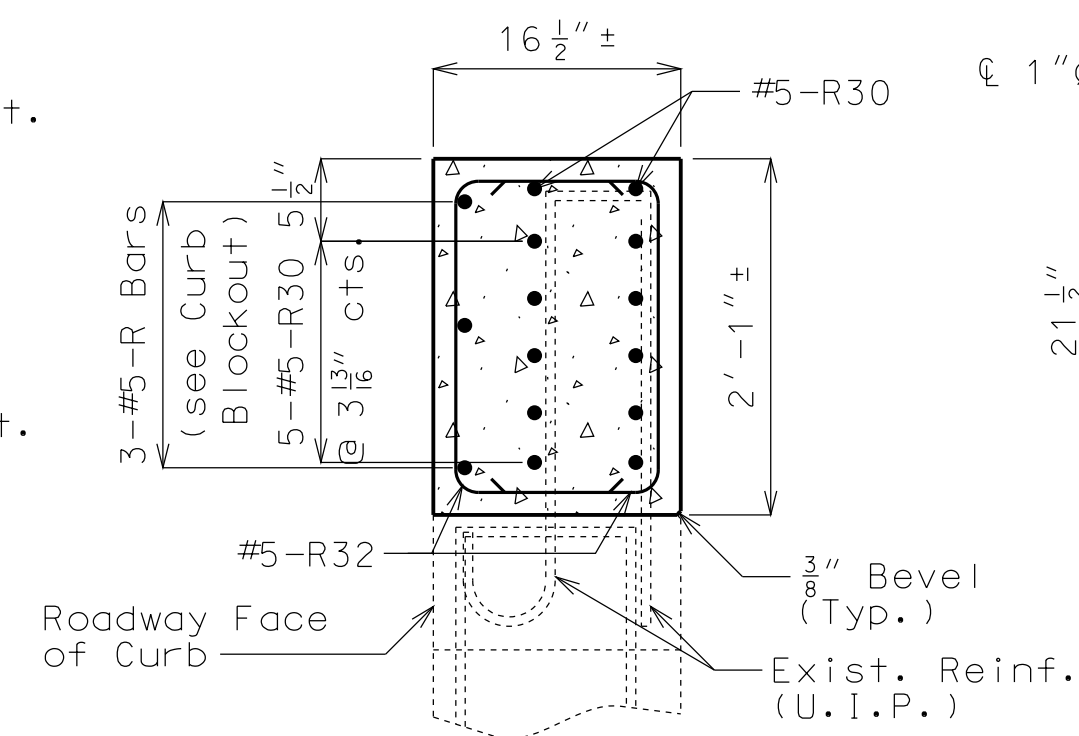


ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS AND DIMENSIONS

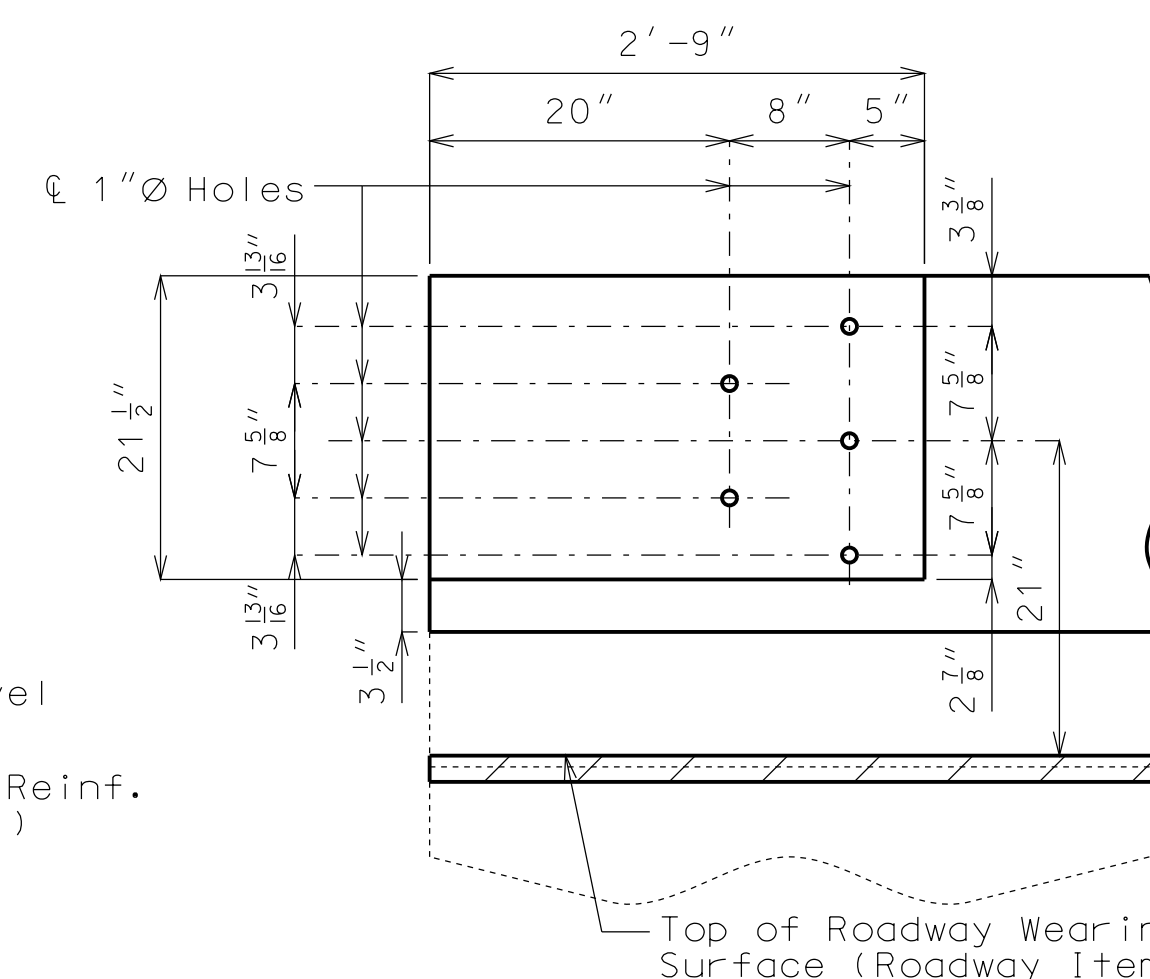


ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL

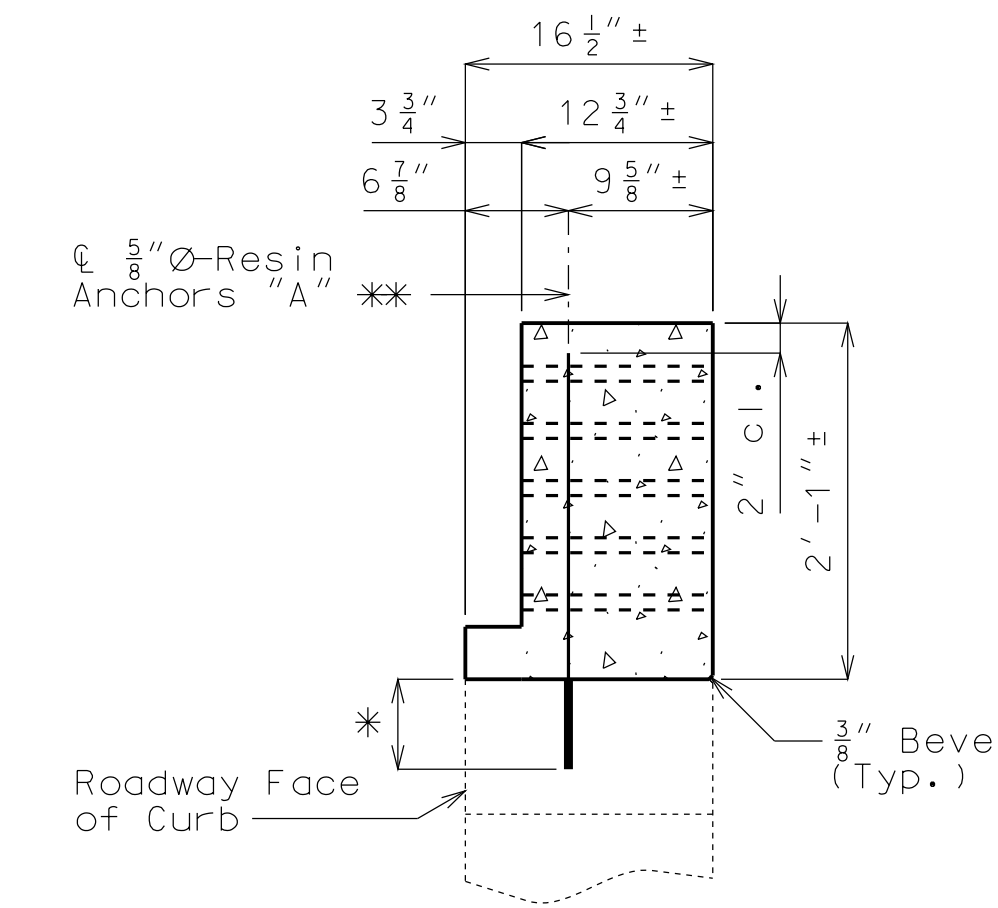
Note:  
 Cost of removing existing end posts will be considered completely covered by the contract unit price for Curb Blockout (linear foot).



SECTION C-C



DETAILS OF GUARD RAIL ATTACHMENT



SECTION A-A

\* Manufacturer's recommended embedment length. (5" minimum embedment)

DETAILS OF END POST AT END BENTS NO. 1 & 9

(Left side shown. Right side similar.)

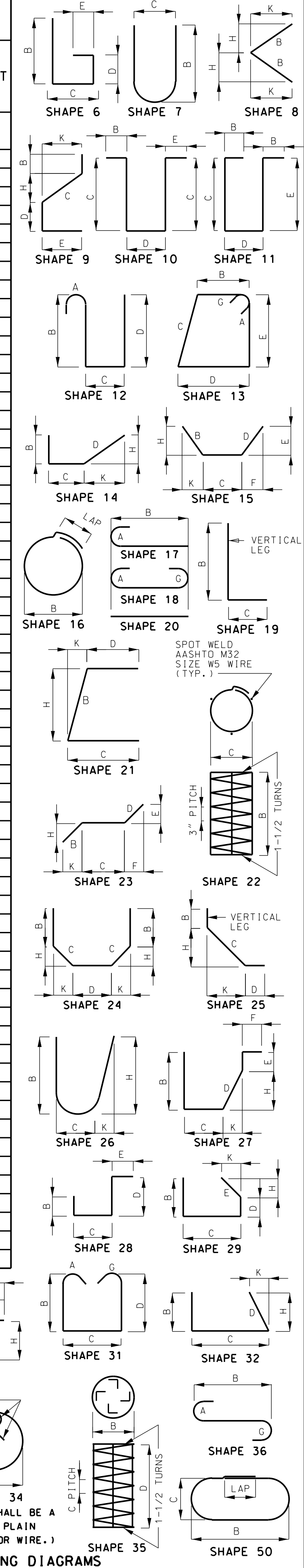


**BILL OF REINFORCING STEEL**

NO. REQ'D.	MARK NO.	LOCATION	DIMENSIONS														NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
			B		C		D		E		F		H		K				
			FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.			
7																			1457
10																			1108
11																			510
		TOTAL																	12515
		Reinforcing Steel (Bridges)																	
4																			1020
5																			1377
6																			92
7																			1235
8																			1009
10																			6377
14																			9325
W5																			77
		TOTAL																	20512

**BILL OF REINFORCING STEEL**

NO. REQ'D.	MARK NO.	LOCATION	DIMENSIONS														NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
			B		C		D		E		F		H		K				
			FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.			



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

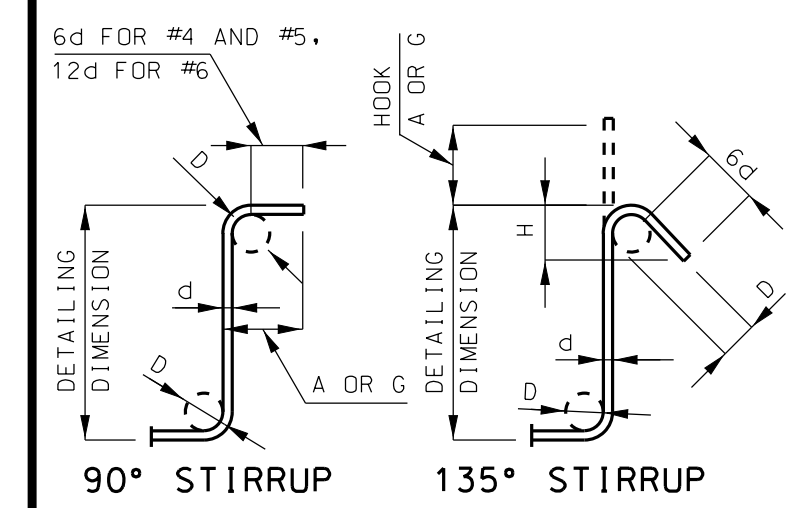
DATE PREPARED  
12/7/2012  
ROUTE  
I-435  
STATE  
MO  
DISTRICT  
BR  
SHEET NO.  
19

COUNTY  
CLAY  
JOB NO.  
J412381  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO.  
A15802

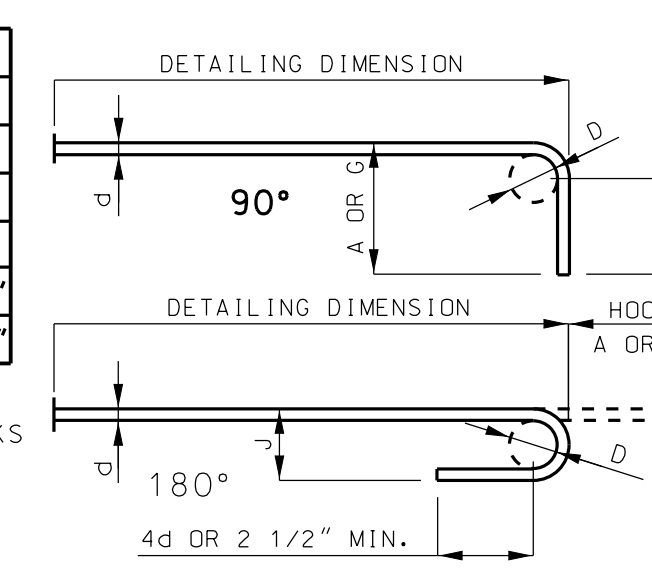
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)



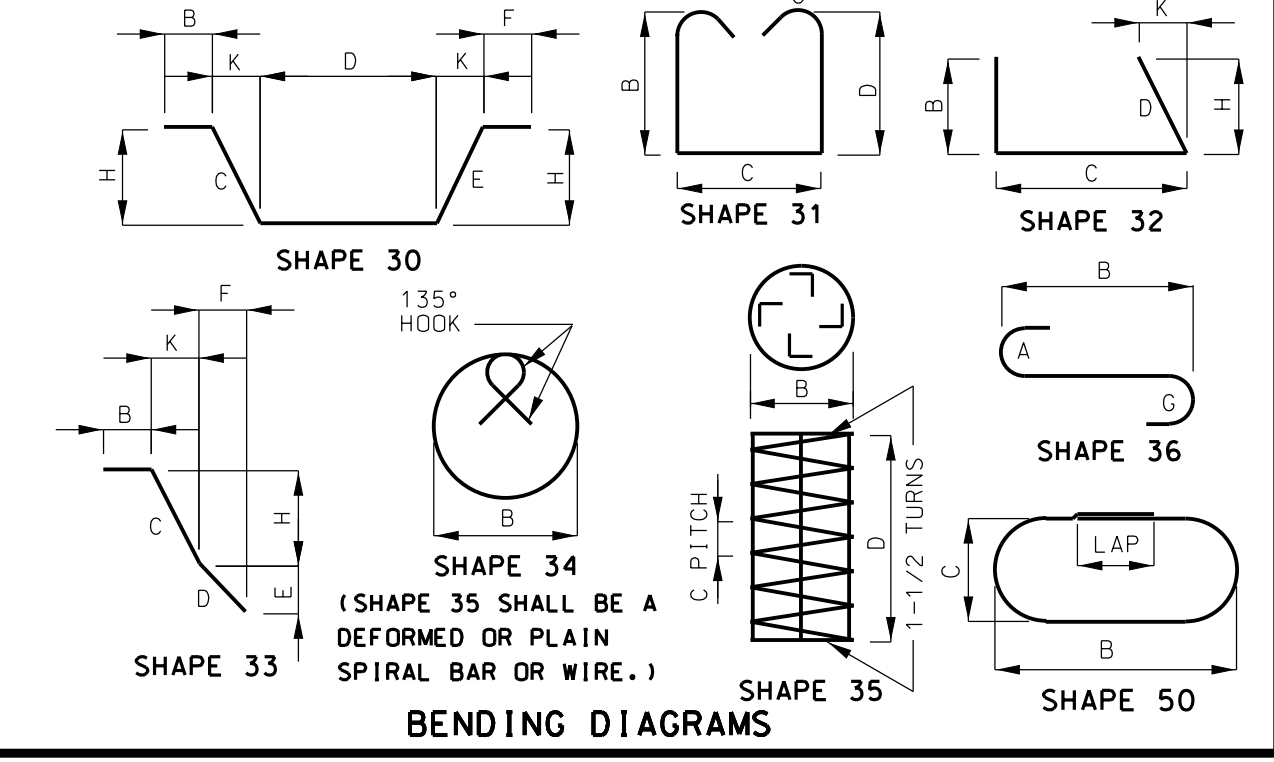
BAR SIZE	D (IN.)	90° HOOK		135° HOOK		APPROX. H
		HOK A OR G	HOK A OR G	HOK A OR G	HOK A OR G	
#4	2"	4 1/2"	4 1/2"	3"		
#5	2 1/2"	6"	5 1/2"	3 3/4"		
#6	4 1/2"	12"	8"	4 1/2"		

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



BAR SIZE	D (IN.)	END HOOK DIMENSIONS			
		ALL GRADES			
		180° HOOKS		90° HOOKS	
		A	J	A	G
#3	2 1/4"	5"	3"	6"	
#4	3"	6"	4"	8"	
#5	3 3/4"	7"	5"	10"	
#7	5 1/4"	10"	7"	14"	
#8	6"	11"	8"	16"	
#9	9 1/2"	15"	11 3/4"	19"	
#10	10 3/4"	17"	13 1/4"	22"	
#11	12"	19"	14 3/4"	2'-0"	
#14	18 1/4"	2'-3"	21 3/4"	2'-7"	

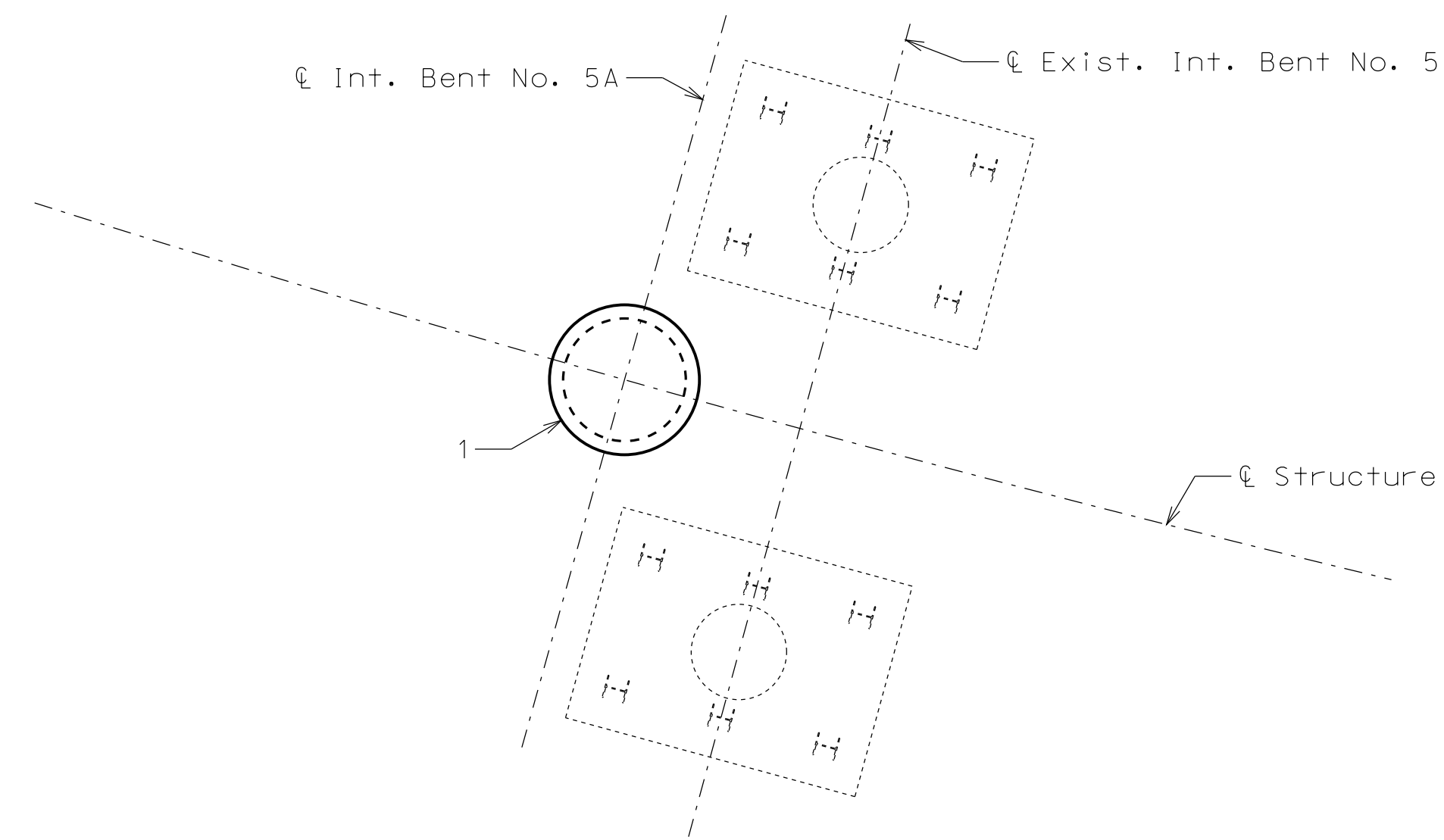
**NOTE:**  
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.  
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.  
E = EPOXY COATED REINFORCEMENT.  
S = STIRRUP.  
X = BAR IS INCLUDED IN SUBSTRUCTURE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



Detailed Oct. 2012  
Checked Oct. 2012

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





PART PLAN SHOWING DRILLED SHAFT NUMBERING FOR RECORDING AS-BUILT DRILLED SHAFT DATA

As-Built Drilled Shaft Data				
Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Int. Bent No. 5A
1				

NOTE: THIS SHEET TO BE COMPLETED BY MoDOT CONSTRUCTION PERSONNEL.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/7/2012

ROUTE STATE  
I-435 MO

DISTRICT SHEET NO.  
BR 20

COUNTY  
CLAY

JOB NO.  
J412381

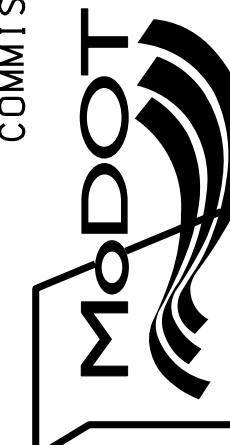
CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A15802

DATE	DESCRIPTION

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.

DATE	DESCRIPTION

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.

**Missouri Department of Transportation  
Construction and Materials**

**BORING NO. T-12-33**  
Page 1 of 2

Job No.: J412381 County: Clay Route: I-435  
Design: A-15802 Skew: Radial Location: Ramp 4 & 5 over Rte I-35  
Bent: 5a Logged By: Easaw Thomas Operator: Michael Donahoe  
Station: 21+74.3 Northing: 1106554.964 Date of Work: 04/09/12-04/10/12  
Offset: C/L Easting: 2790817.639 Depth to Water: \_\_\_\_\_  
Elevation: 796.8 Requested Northing: \_\_\_\_\_ Depth Hole Open: \_\_\_\_\_  
Requested Station: \_\_\_\_\_ Requested Easting: \_\_\_\_\_ Time Change: \_\_\_\_\_  
Requested Offset: \_\_\_\_\_ Equipment: CME 45 ,NX  
Requested Elevation: \_\_\_\_\_ Location Note: \_\_\_\_\_  
Drill No.: G-9577 Hammer Efficiency: 87% Drilling Method: Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N <sub>60</sub> )	Shear Strength Data	Field Tests	Index Tests
0		0-7.6' Brown, LEAN CLAY scattered silt, mottled gray, soft to medium stiff, moist	795						
5			790						
7.6-8.1'		Concrete							
8.1-20'		Light brown, LEAN CLAY trace silt, mottled gray, stiff, moist	785						
20-25.5'		Light yellowish red, LEAN CLAY trace silt, & sand, stiff, moist	775						
25.5-31.1'		Limestone, gray, thin bedded, medium hard, moderately weathered, medium grained, Encountered void between 26.5 - 27.5 ft at the drilling time.	770		74 (0)				

N<sub>60</sub> = (Em/60)Nm N<sub>60</sub> - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value  
(1) = Assumed, (2) = Actual  
Coordinate System: U.S. State Plane 1983 Coordinate Zone: Missouri West Coordinate Proj. Factor: \_\_\_\_\_  
Coordinate Datum: NAD 83 (CONUS) Coordinate Units: U.S. Survey Feet

\* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

**Missouri Department of Transportation  
Construction and Materials**

**BORING NO. T-12-33**  
Page 2 of 2

Job No.: J412381 County: Clay Route: I-435  
Design: A-15802 Skew: Radial Location: Ramp 4 & 5 over Rte I-35  
Bent: 5a Logged By: Easaw Thomas Operator: Michael Donahoe  
Station: 21+74.3 Northing: 1106554.964 Date of Work: 04/09/12-04/10/12  
Offset: C/L Easting: 2790817.639 Depth to Water: \_\_\_\_\_  
Elevation: 796.8 Requested Northing: \_\_\_\_\_ Depth Hole Open: \_\_\_\_\_  
Requested Station: \_\_\_\_\_ Requested Easting: \_\_\_\_\_ Time Change: \_\_\_\_\_  
Requested Offset: \_\_\_\_\_ Equipment: CME 45 ,NX  
Requested Elevation: \_\_\_\_\_ Location Note: \_\_\_\_\_  
Drill No.: G-9577 Hammer Efficiency: 87% Drilling Method: Hollow Stem Auger

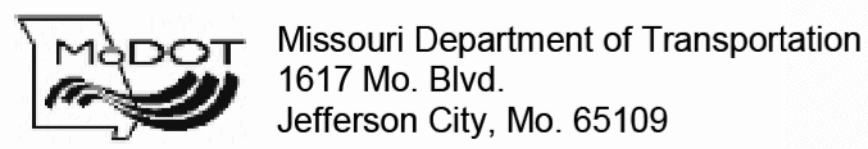
Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N <sub>60</sub> )	Shear Strength Data	Field Tests	Index Tests
30		31.1-32' Siltstone, gray, medium bedded, medium hard, fine grained	765		86		Qu Test Results UCS = 730.52 ksf MC = 0% γ <sub>moist</sub> = 155.6 pcf	PP = 9.00 tsf	
32-35'		Dark tan, thinly laminated, soft, fine grained, Shaley limestone					Qu Test Results UCS = 152.64 ksf MC = 9.5% γ <sub>moist</sub> = 144.8 pcf		
35-39.5'		Gray, medium bedded, soft, medium grained, calcareous shale	760		100		Qu Test Results UCS = 1.58 ksf MC = 18.3% γ <sub>moist</sub> = 132.4 pcf	PP = 8.00 tsf	
39.5-55'		Limestone, gray, thin to medium bedded, medium hard, slightly weathered, medium grained	755		100 (88)		Qu Test Results UCS = 771.98 ksf MC = 0% γ <sub>moist</sub> = 165.2 pcf		
45			750		100 (98)		Qu Test Results UCS = 943.48 ksf MC = 0% γ <sub>moist</sub> = 160.2 pcf		
50			745		100 (96)		Qu Test Results UCS = 695.24 ksf MC = 0% γ <sub>moist</sub> = 164.3 pcf		
55							Qu Test Results UCS = 278.78 ksf MC = 0% γ <sub>moist</sub> = 164.9 pcf		
		Bottom of borehole at 55.0 feet.							

N<sub>60</sub> = (Em/60)Nm N<sub>60</sub> - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value  
(1) = Assumed, (2) = Actual  
Coordinate System: U.S. State Plane 1983 Coordinate Zone: Missouri West Coordinate Proj. Factor: \_\_\_\_\_  
Coordinate Datum: NAD 83 (CONUS) Coordinate Units: U.S. Survey Feet

\* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

**BORING DATA**

Note: For location of boring, see Sheet No. 4.



Missouri Department of Transportation  
1617 Mo. Blvd.  
Jefferson City, Mo. 65109

### KEY TO SYMBOLS

CLIENT \_\_\_\_\_ PROJECT NAME Intersection of I-35 & I-435  
PROJECT NUMBER J412381 PROJECT LOCATION Ramp 4 & 5 over Rte I-35

#### LITHOLOGIC SYMBOLS (Unified Soil Classification System)

- CL: USCS Low Plasticity Clay
- CL-CH: USCS Low to High Plasticity Clay
- CL-ML: USCS Low Plasticity Silty Clay
- CONCRETE: Concrete
- LIMESTONE: Limestone
- SHALE: Shale
- SILTSTONE: Siltstone

#### SAMPLER SYMBOLS

- Rock Core Barrel

#### WELL CONSTRUCTION SYMBOLS

#### ABBREVIATIONS

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>LL - LIQUID LIMIT (%)</li> <li>PI - PLASTIC INDEX (%)</li> <li>W - MOISTURE CONTENT (%)</li> <li>DD - DRY DENSITY (PCF)</li> <li>NP - NON PLASTIC</li> <li>-200 - PERCENT PASSING NO. 200 SIEVE</li> <li>PP - POCKET PENETROMETER (TSF)</li> </ul> | <ul style="list-style-type: none"> <li>TV - TORVANE</li> <li>PID - PHOTOIONIZATION DETECTOR</li> <li>UC - UNCONFINED COMPRESSION</li> <li>ppm - PARTS PER MILLION</li> <li> Water Level at Time<br/>Drilling, or as Shown</li> <li> Water Level After 24<br/>Hours, or as Shown</li> </ul> |
|---|--|

KEY TO SYMBOLS - MISSOURI DOT.GDT - 4/23/12 10:23 - J:\SG\GINT\PROJECT FILES\M412381.GPJ

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
**12/7/2012**

ROUTE <b>I-435</b>	STATE <b>MO</b>
DISTRICT <b>BR</b>	SHEET NO. <b>22</b>

COUNTY <b>CLAY</b>	JOB NO. <b>J412381</b>
CONTRACT ID.	

PROJECT NO.	BRIDGE NO. <b>A15802</b>
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DESCRIPTION	DATE
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

## BORING DATA

Note: For location of boring, see Sheet No. 4.

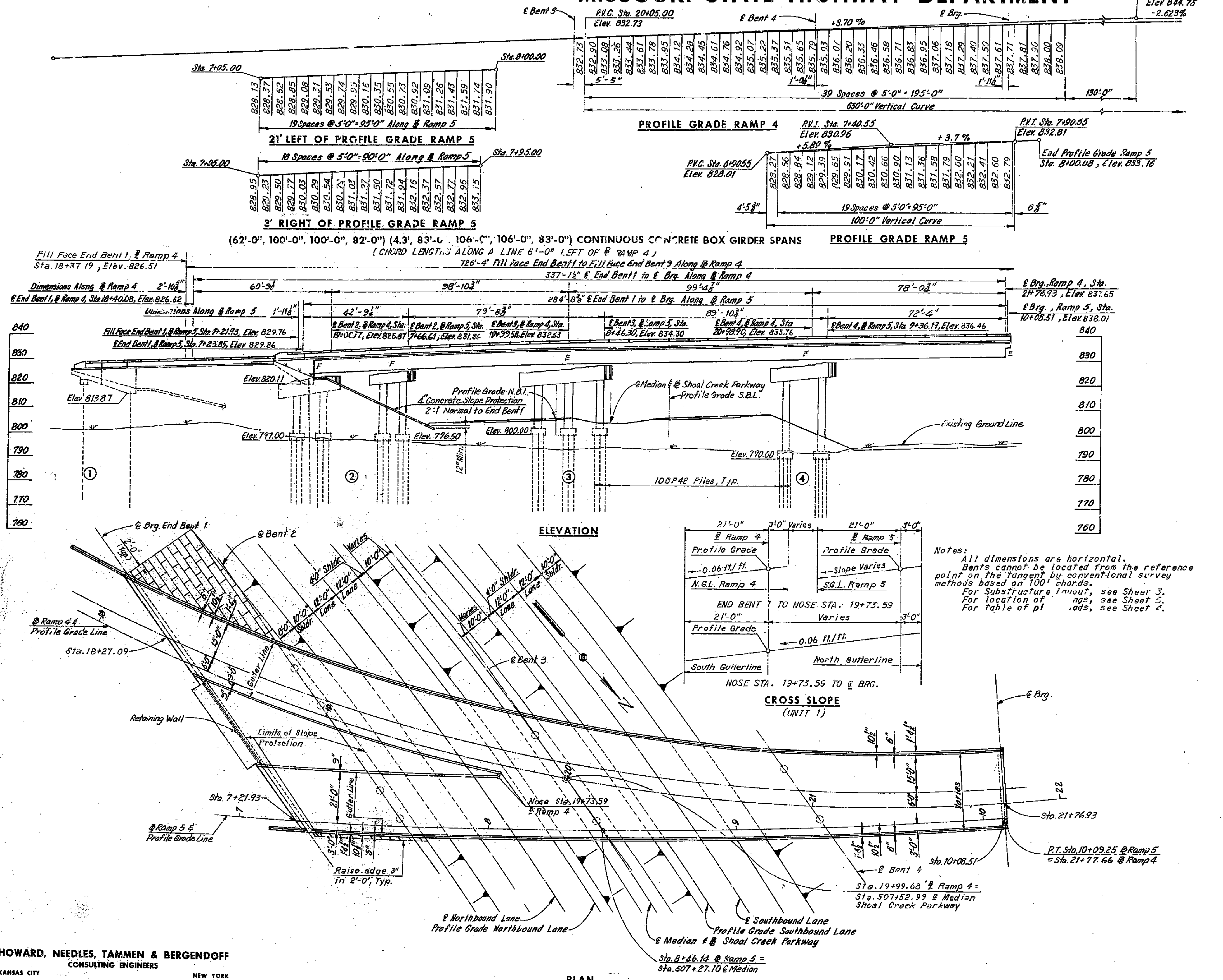
Detailed Oct. 2012  
Checked Oct. 2012

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

Sheet No. 22 of 22

MISSOURI STATE HIGHWAY DEPARTMENT

FED. AC. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	DATE
5	MO			8/4
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



**GENERAL NOTES**

Design Specifications: AASHTO 1965

Design Loading: HS20-44 and 24,000 Tandem axle with 15"sq. ft. future wearing surface. Earth 120"cu. ft. Equivalent fluid pressure 30" ft.

Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.

Design Unit Stresses:

- Class B Concrete (Substructure)  $f_c = 1,200$  psi.
- Class B1 Concrete (Superstructure)  $f_c = 1,600$  psi.
- Reinforcing Steel  $f_s = 20,000$  psi.
- Steel pile (A.S.T.M. A36-66)  $f_b = 9,000$  psi.

Reinforcing Steel: All splices in reinforcing bars shall be 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.

Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.

All reinforcing bar bending dimensions are "out to".

Sealing of Deck: Superstructure deck is to be surface sealed.

Utilities: All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor will notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.

Welding: See Std. Specification 55.3.13 for qualification of welding operators.

Maintenance of Traffic: Provide one opening with minimum dimensions of 28'-0" horizontal and 13'-6" vertical, for eac. direction of I-35 traffic during construction.

Painting: Access doors & bearings shall be cleaned & painted in the field or may be cleaned & painted one coat of red lead in the shop with the two remaining coats applied in the field; all to be in accordance with Standard Specification 55.4.10 except that the final coat on access doors and frames shall be gray. In lieu of painting, the Contractor may, if he prefers, galvanize the access doors in accordance with Standard Specifications 55.2.8 and 55.4.11. All galvanizing shall be done after fabrication. Cost of painting or galvanizing to be included in price bid for other items. No paint shall be applied to top surface of top plate and bottom surface of bottom plate of bearings. See Special Provisions for painting of Expansion Device.

Note: Concrete slope protection on slopes at end bents is to be included under roadway items. Provide 4" filler (Standard Specification 157.1.7) between slope protection concrete and end bents or intermediate bents. See Standard Specification 83.50. For Details, see Sheet 36 and Roadway Plans.

Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bent 1 before steel piles are driven. Compacted fill of bents 2, 3 and 4 shall be placed to finished ground line before excavating for footings or driving pile.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE DES. DATE 2-20-68 CHECKED L.J.R. DATE 10-9-68

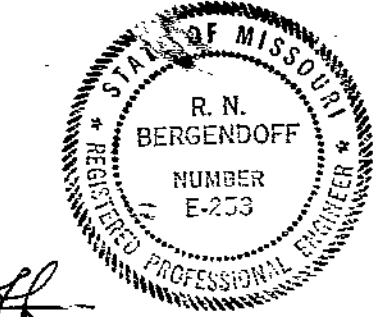
NOTE: This drawing is not to scale. Follow dimensions.

PLAN

GENERAL PLAN AND ELEVATION - UNIT 1

SHEET 1 OF 36 APPROVED BY DATE 12-23-68

STD. 54.00  
A-1580



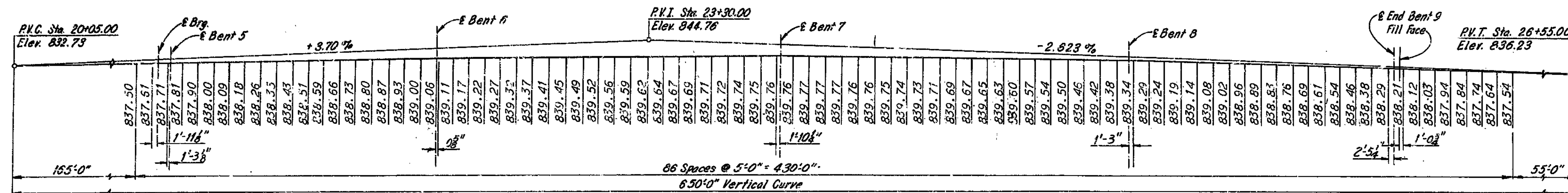
SUBMITTED BY: R.N. Bergendoff  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI NO. E-253  
BRIDGE: RAMP 4 & 5 OVER RAMP 3  
& INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO STA. 18+27.09 Ramp 4  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 7+21.93 Ramp 5  
CLAY COUNTY  
SUBMITTED BY: W.A. Camley DATE 12-23-68  
BRIDGE ENGINEER  
DATE 12-23-68  
CHIEF ENGINEER

170

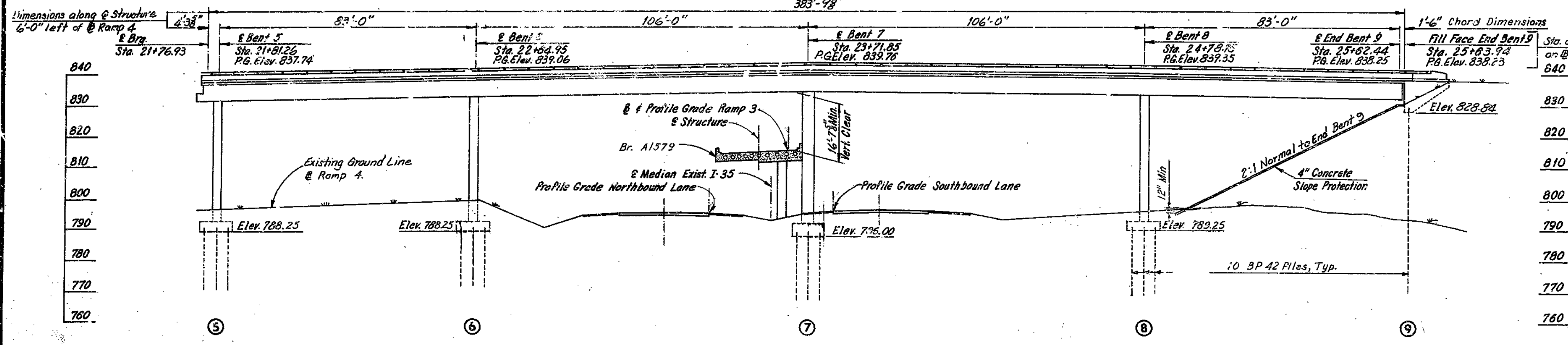
2408-2102-580-B82

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
5	MO			85
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Base Line Ramp 3	Base Line Ramp 4	Base Line Ramp 5
P. I. = 18+37.40	P. I. = 35+15.89	P. I. = 8+04.90
Δ = 92°09'42"	Δ = 138°10'34"	Δ = 10°14'44"
D = 6°00'00"	D = 8°00'00"	D = 2°30'00"
T = 992.11'	T = 1875.89'	T = 205.48'
L = 1536.04'	L = 1727.20'	L = 409.82'
R = 955.37'	R = 716.78'	R = 2292.01'
SE = 0.06' ft'	SE = 0.08' ft'	SE = Varies



Median Shoal Creek Parkway

P. I. = 509+70.98  
 Δ = 24°02'13"  
 D = 4°00'00"  
 T = 305.01'  
 L = 603.92'  
 R = 1432.69'  
 SE = 0.08' ft'

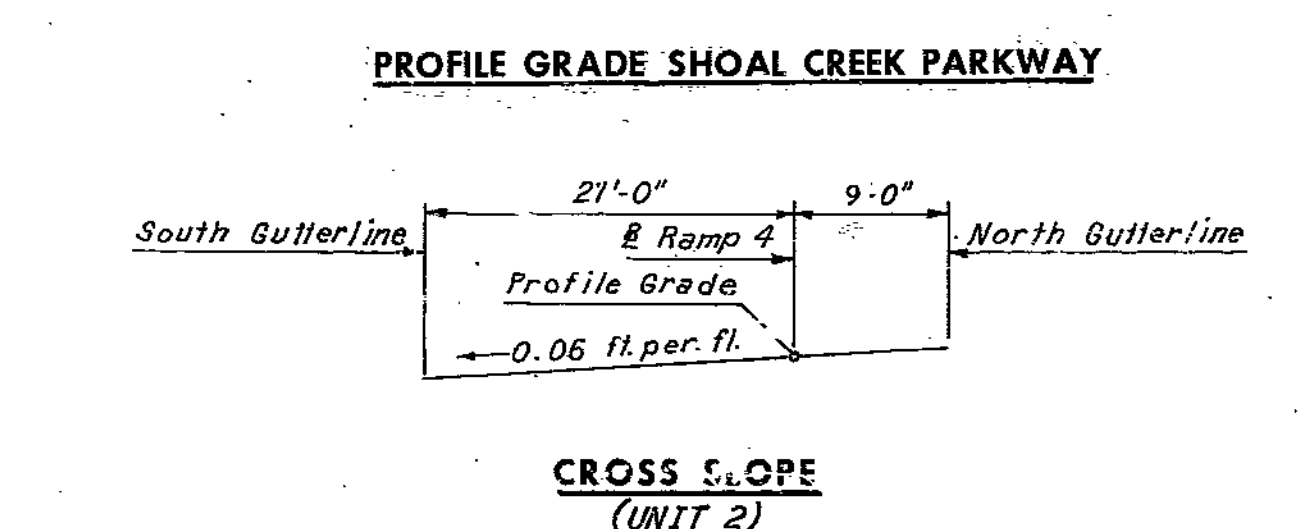
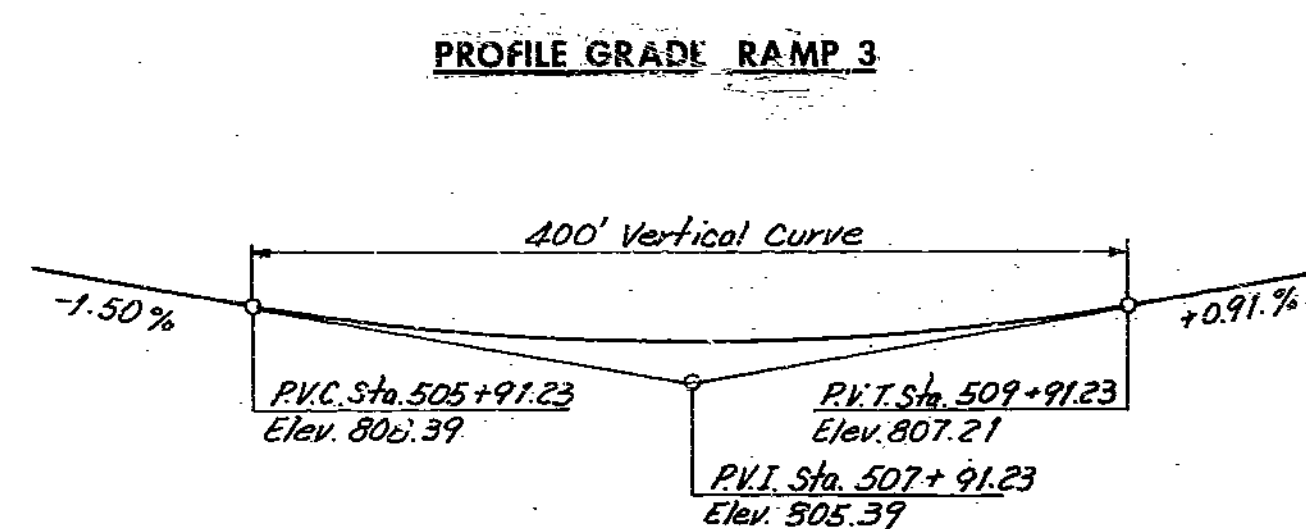
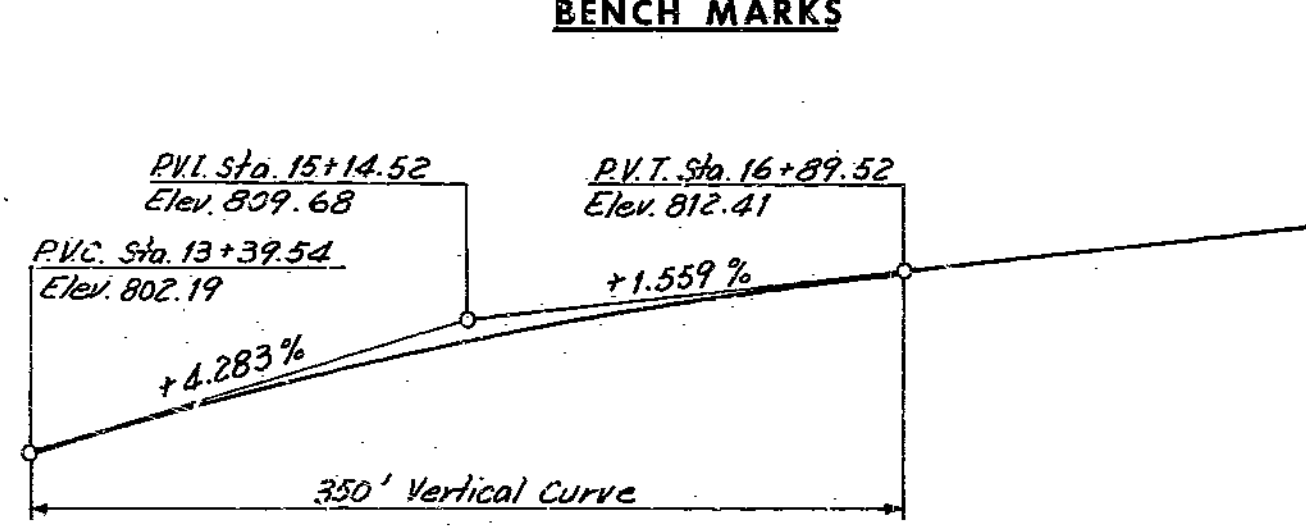
Note: Use same curve data for NBL and SBL as listed for Median Shoal Creek Parkway. The Beginning P.C. Stations are equal to the right angle stationing on Median Shoal Creek Parkway.

**CURVE DATA**

B. M. # 40 - Spike in P.P. 200' Rt. Sta. 509+00 Elev. 815.92  
 Rte. I-435

B. M. # 41 - Spike in T.P. 165' Rt. Sta. 519+65 Elev. 809.15  
 Rte. I-435

B. M. # 42 - on N.W. Corner of N.W. Br. Abut. 220' Rt. Sta. 526+30 Rte. I-435 Elev. 787.33



Note: Falsework over existing lanes shall be constructed with a minimum vertical clearance of 13'-6" from crown of existing lanes and a minimum lateral clearance of 14'-0" from center line of existing lanes.

Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bent 9 before steel piles are driven.

Notes: All dimensions are horizontal. Bents cannot be located from the reference point on the tangent by conventional survey methods based on 100' chords. For Substructure Layout, see Sheet 4. For location of borings, see Sheet 6. For Table of pile loads, see Sheet 3. Bents are radial.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**

STATE ROAD - INTERSTATE ROUTE 435

IN CLAYCOMO PROJECT NO. I-435-(69)(RTE. I-435) STA. 18+27.09 Ramp 4 STA. 7+21.93 Ramp 5

**CLAY COUNTY**

SHEET 2 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE D.E.S. DATE 10-2-68 CHECKED L.J.R. DATE 10-8-68

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

GENERAL PLAN AND ELEVATION - UNIT 2

A-1580

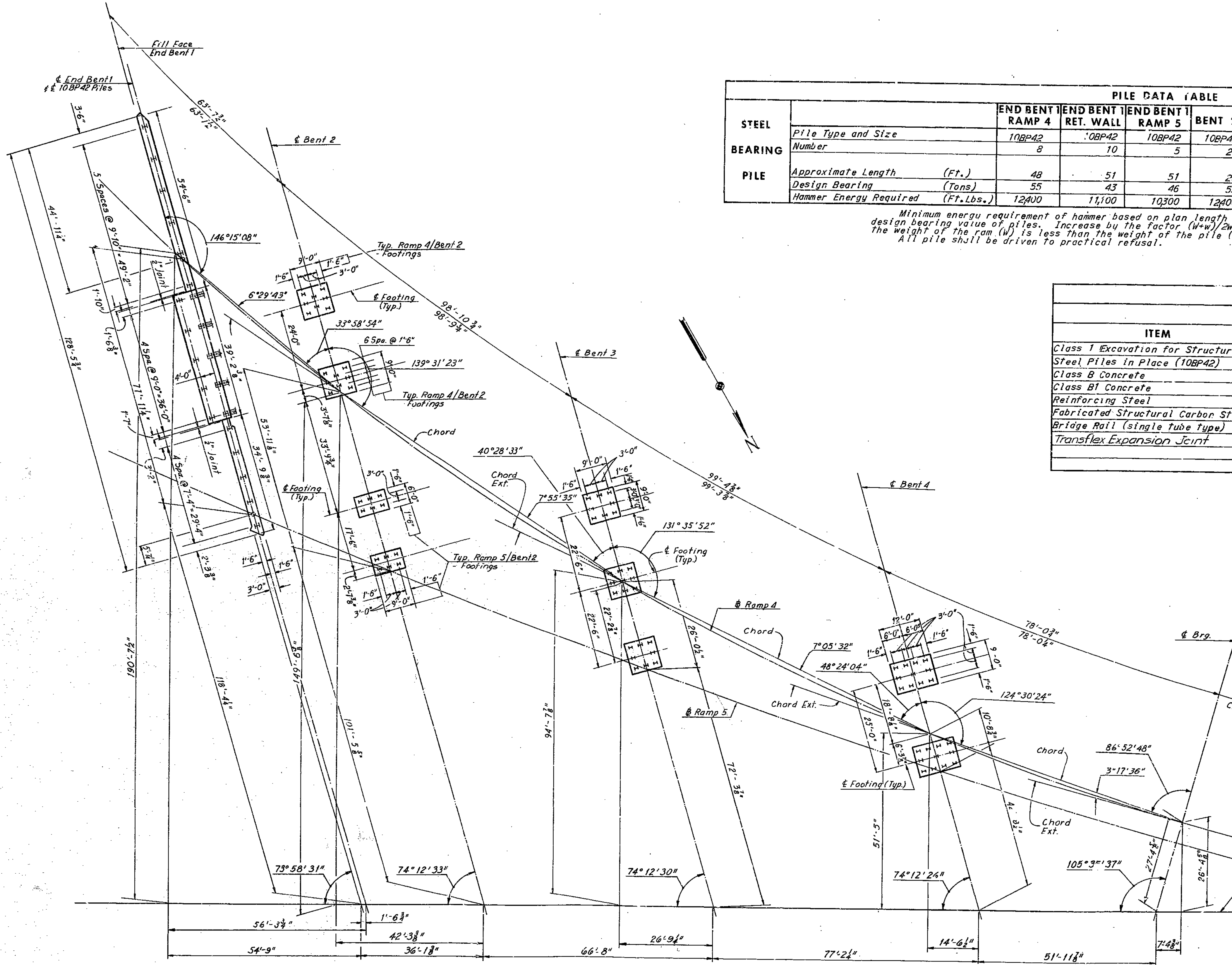
SEE FINAL PLANS BROWN LINES

171

2140 21-02-590-852

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		36	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



STEEL BEARING PILE	END BENT 1 RAMP 4	END BENT RET. WALL	END BENT 1 RAMP 5	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8	END BENT 9
Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42
Number	8	10	5	28	25	22	12	14	17	14	6
Approximate Length (Ft.)	48	51	51	28	31	Lt. Ftg. 2		20	19	22	61
Design Bearing (Tons)	55	43	46	55	55	55	49	55	51	55	55
Hammer Energy Required (Ft. Lbs.)	12400	11,100	10300	12400	12400	12400	11,000	12,400	12,000	12,400	12,400

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

ITEM	UNIT	UNIT 1			UNIT 2			TOTAL
		SUBSTR	SUPRSTR	TOTAL	SUBSTR	SUPRSTR	TOTAL	
Class 1 Excavation for Structures	Cu. Yd.			211	244		455	
Steel Piles in Place (10BP42)	Lin. Ft.	3,258		3,258	1,554		4,812	
Class B Concrete	Cu. Yds.	287.6		287.6	121.0		408.6	
Class B Concrete	Cu. Yd.		1,223.5	1,223.5		1,055.9	2,279.4	
Reinforcing Steel	Lbs.	77,080	329,980	407,060	24,770	346,460	753,520	
Fabricated Structural Carbon Steel	Lbs.		18,130	18,130		100	18,230	
Bridge Rail (single tube type)	Lin. Ft.		678	678		795	1,473	
Transflex Expansion Joint	Lin. Ft.					32	32	

346,830 Δ 3,610

Note: Footing dimensions and pile spacing given at Bents 3 and 4 are typical throughout the bent. All piles shown are 10BP42.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 3 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

SUBSTRUCTURE LAYOUT PLAN

SUBSTRUCTURE LAYOUT - UNIT 1

MADE C.E.B. DATE 10-3-68 CHECKED L.J.R. DATE 10-9-68

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

Revised 7-29-70

A-1580

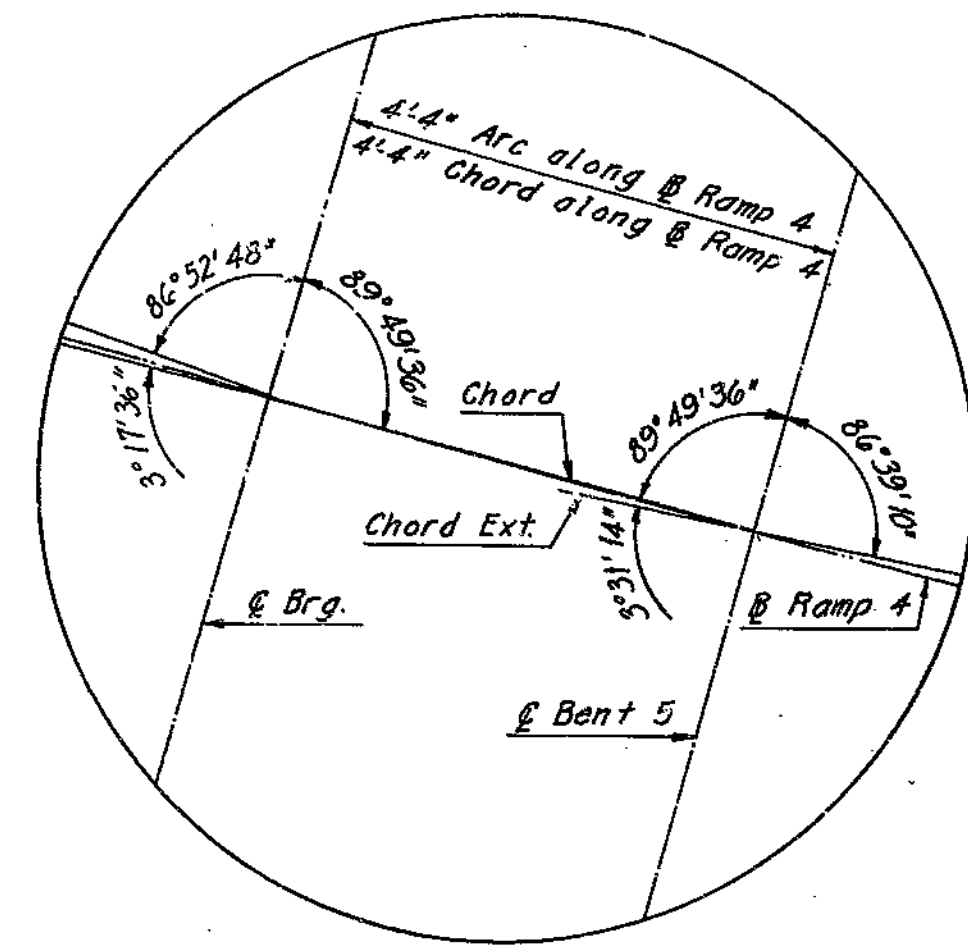
SEE FINAL PLANS BROWN LINES

172

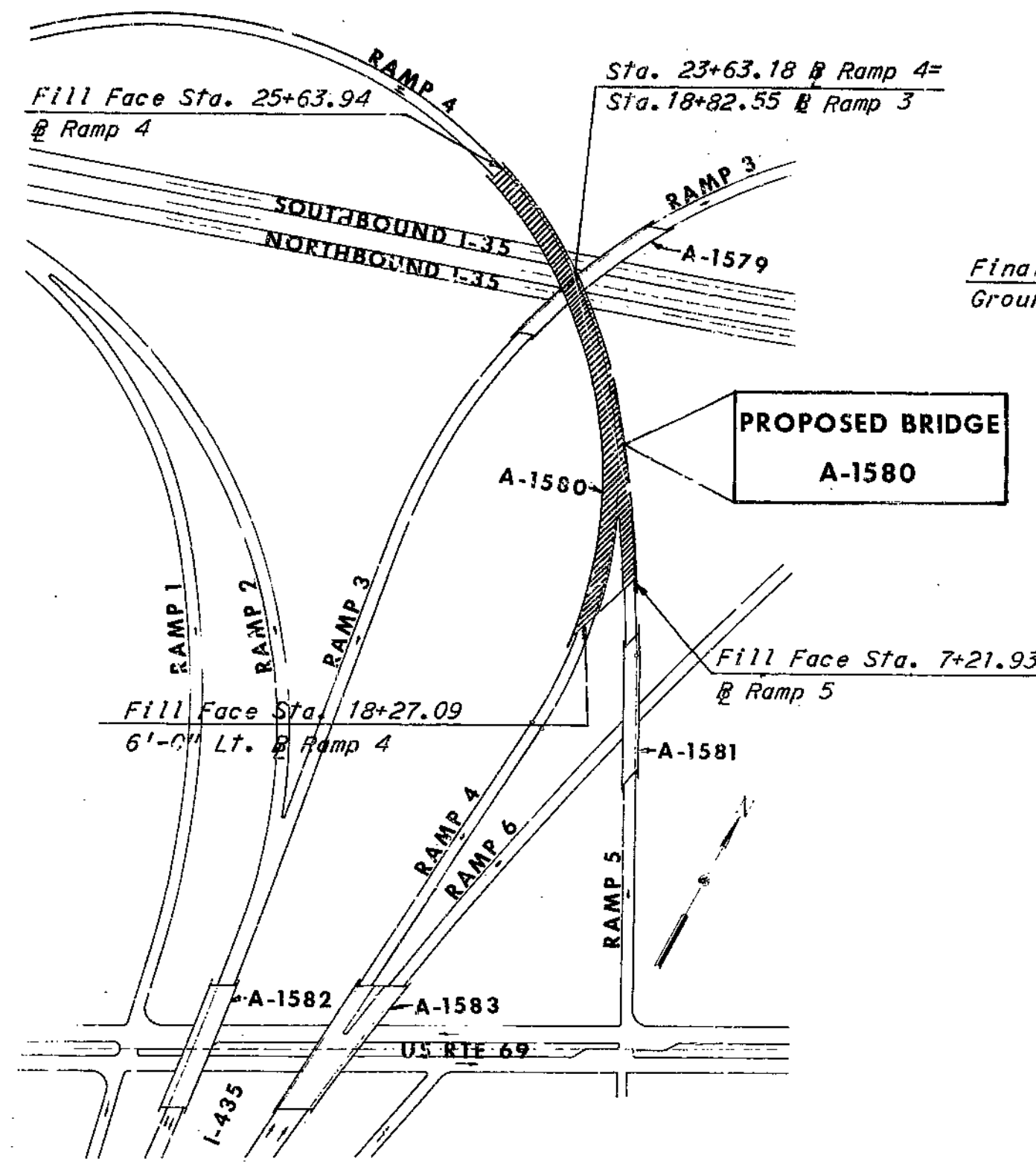
2446-21-02  
 Br. 1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MO			27	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

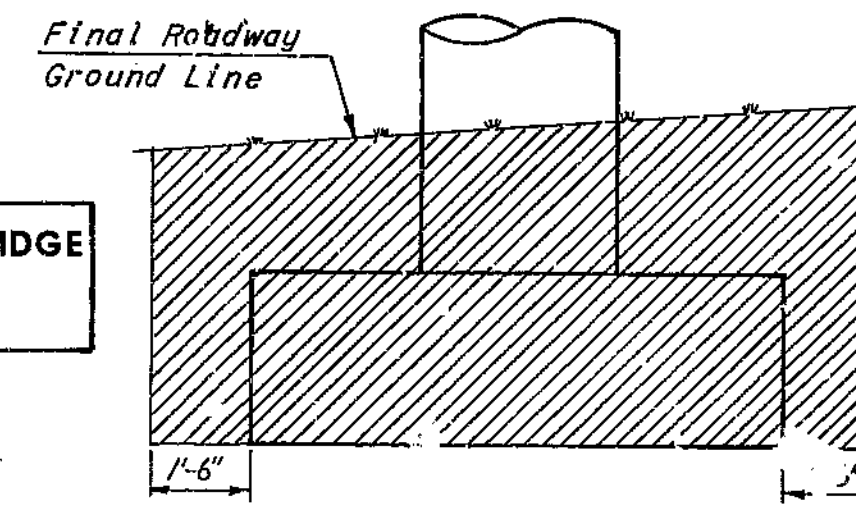


DETAIL A

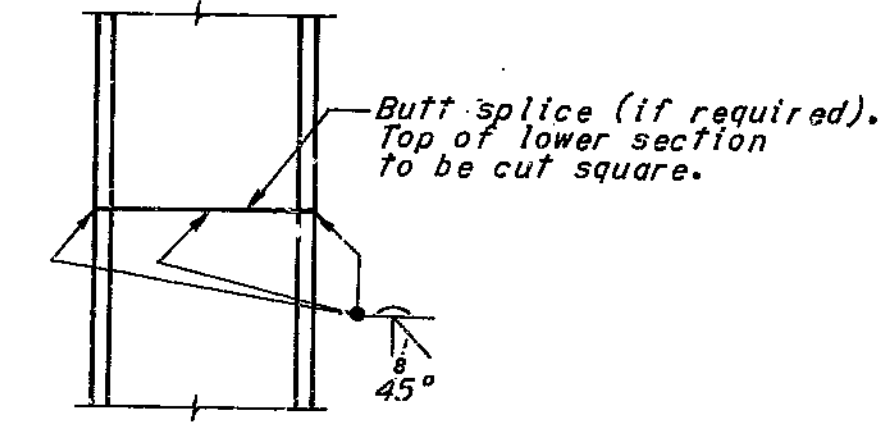


LOCATION SKETCH

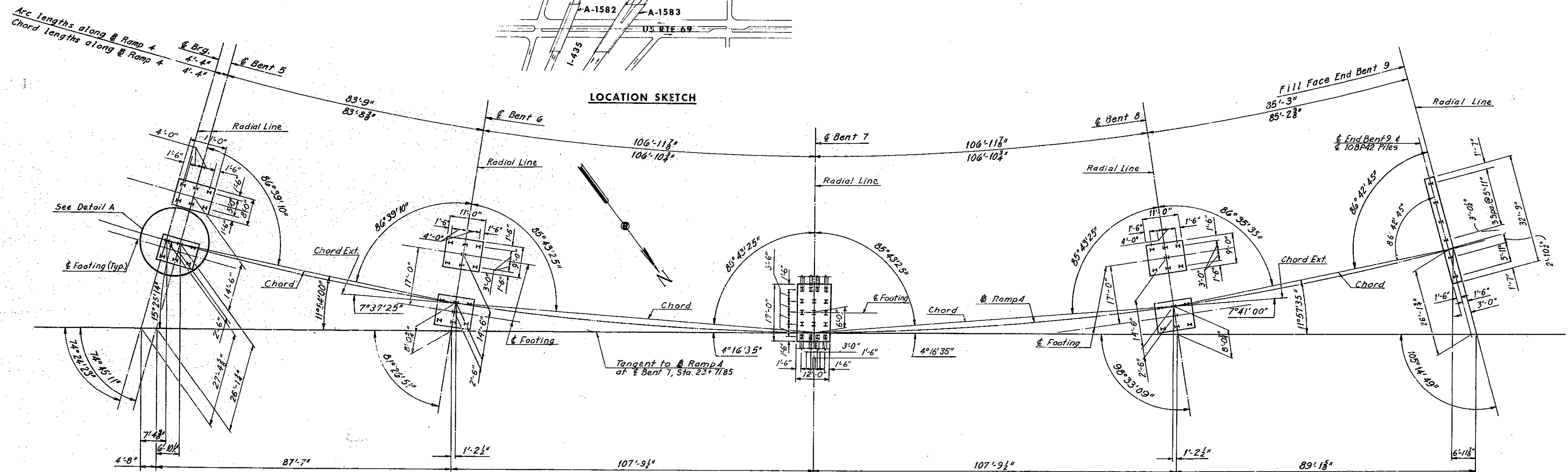
Note: No payment for excavation will be made at End Bents 1 or 9.



LIMITS OF EXCAVATION



PILE SPlice DETAIL



SUBSTRUCTURE LAYOUT PLAN

Note: Footing dimensions are typical for two column bents.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY  
 SHEET 4 OF 36

SUBSTRUCTURE LAYOUT - UNIT 2

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE L.E.H. DATE 9-5-68 CHECKED L.J.R. DATE 10-4-68

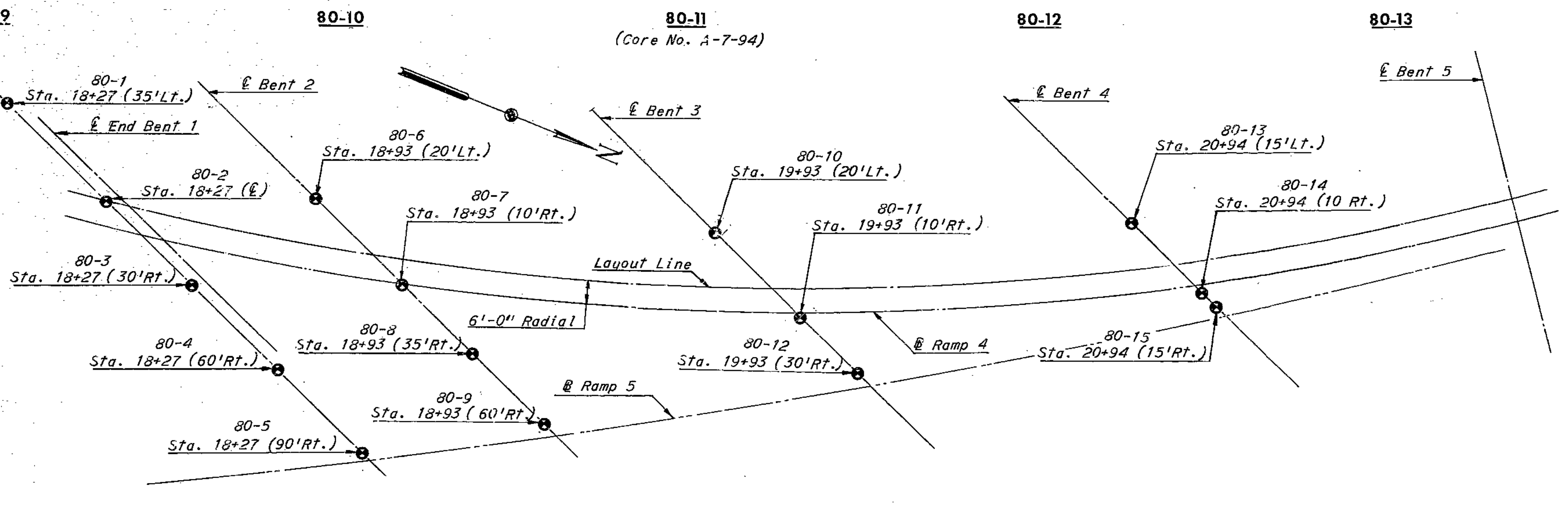
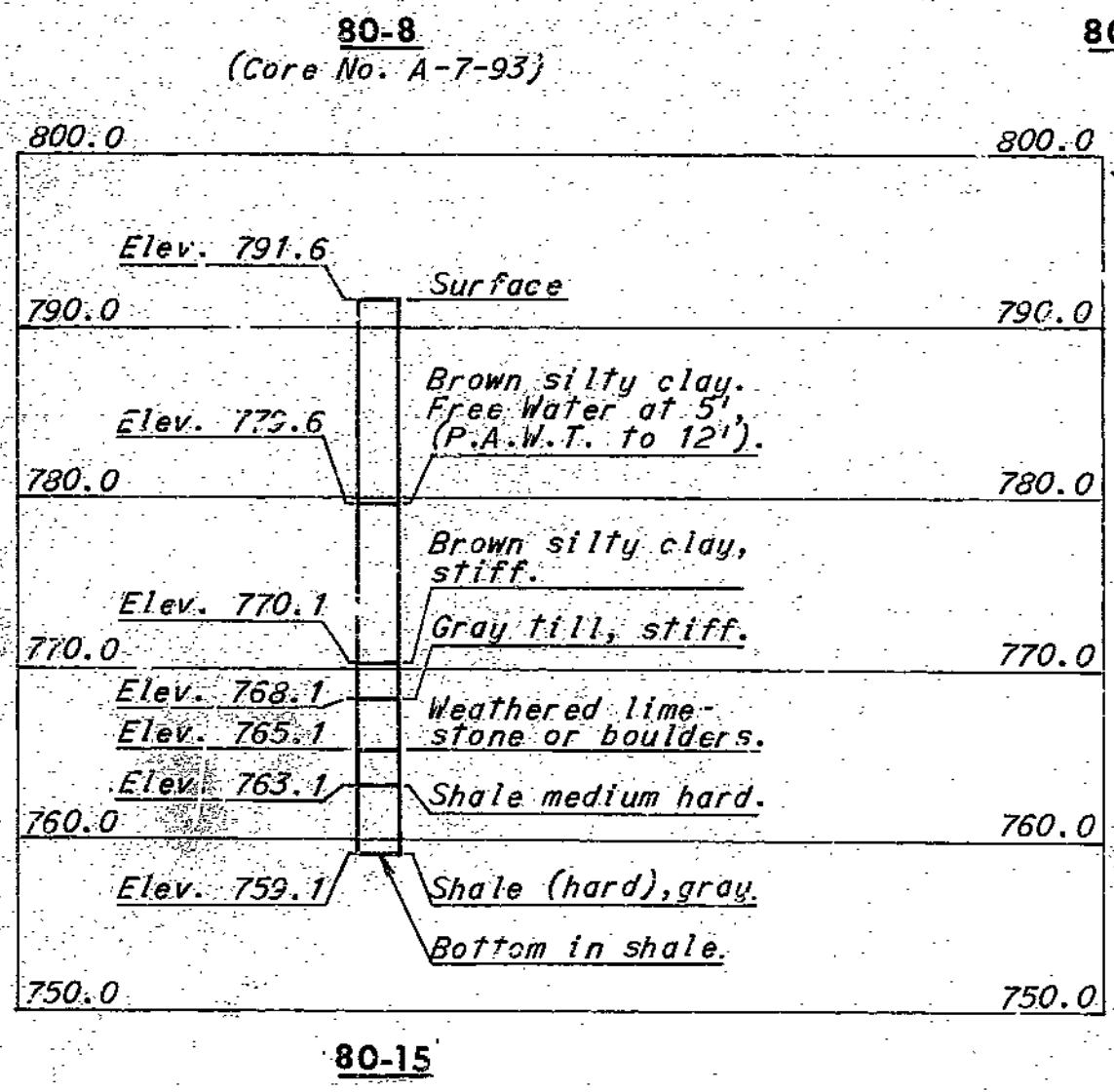
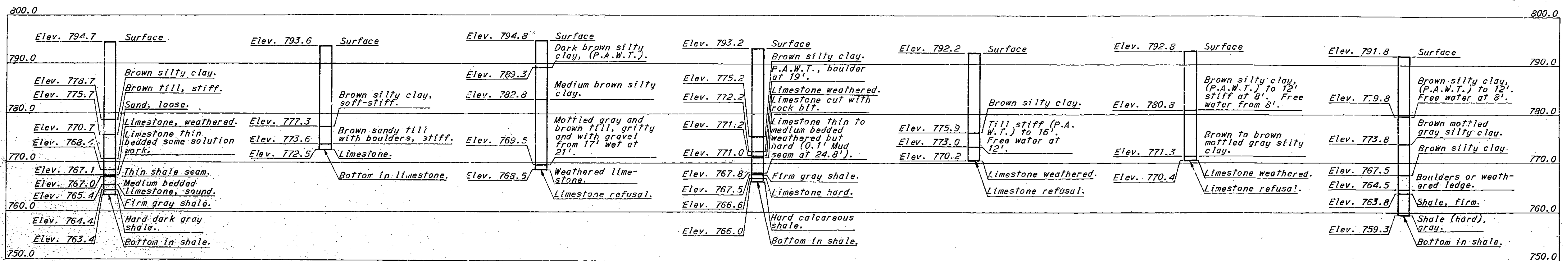
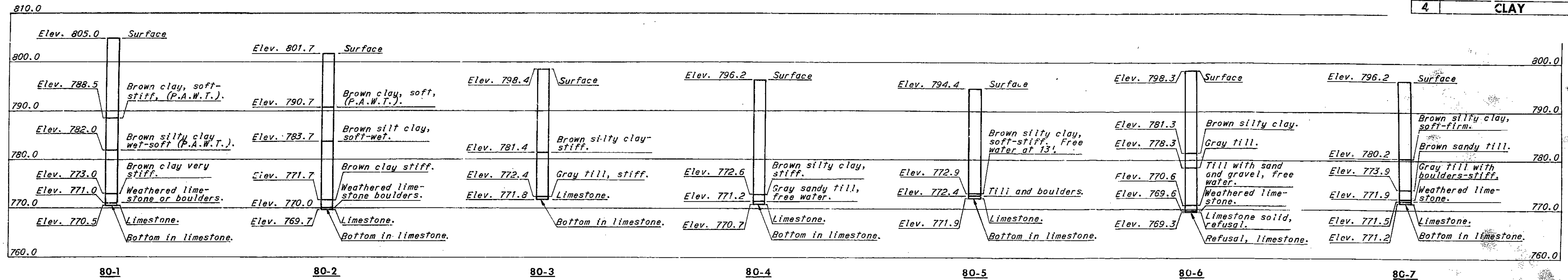
NOTE: This drawing is not to scale. Follow dimensions.

173

2148-21-02  
 B19 #1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	ROUTE	NO.	INVERT
5	MO			4		
DIST. NO.	COUNTY	ROUTE	SEC.			
4	CLAY					



Notes:  
 Distances left and right are measured from Layout Line, along skew.  
 Borings made in November, 1967 consisted of core samples: A-7-93 and A-7-94. All the rest were auger.

Note:  
 P.A.W.T. = Pushed Auger Without Turning.  
 ● Indicates location of boring.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
**CLAY COUNTY**  
 SHEET 5 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE P.L.C. DATE 5-1-68 CHECKED D.E.S. DATE 5-6-68

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

BORINGS - UNIT 1

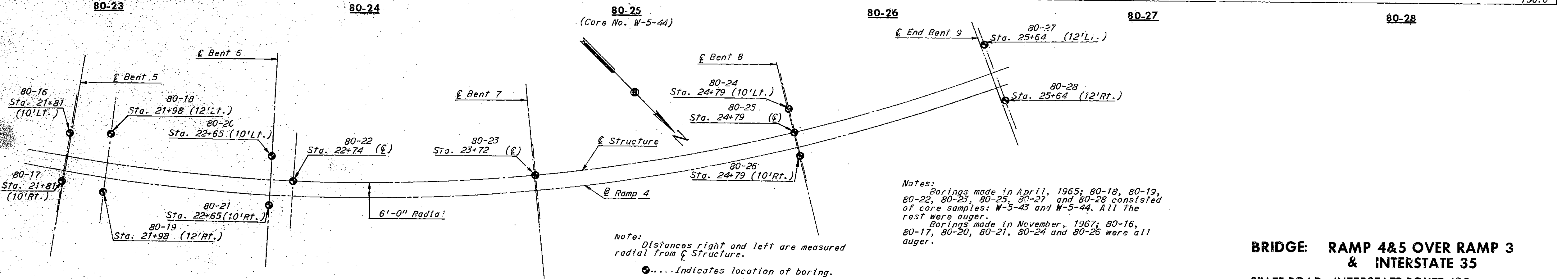
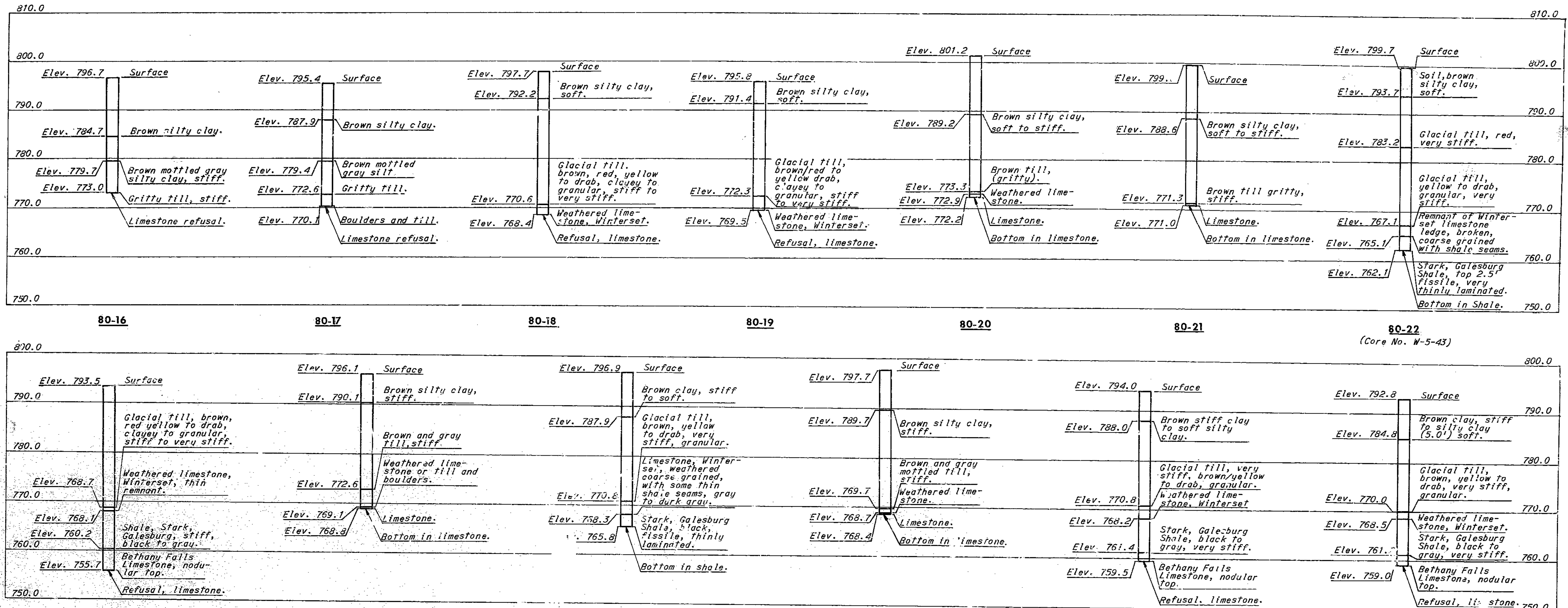
A-1580

174  
 2MB-2102-390-555



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		89	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Notes:  
 Borings made in April, 1965; 80-18, 80-19, 80-22, 80-23, 80-25, 80-27 and 80-28 consisted of core samples: W-5-43 and W-5-44. All the rest were auger.  
 Borings made in November, 1967; 80-16, 80-17, 80-20, 80-21, 80-24 and 80-26 were all auger.

Note:  
 Distances right and left are measured radial from  $\epsilon$  Structure.  
 $\odot$ .....Indicates location of boring.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY

BORINGS - UNIT 2

SHEET 6 OF 36

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE A.S.C. DATE 5-1-68 CHECKED D.E.S. DATE 5-6-68

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

21-48-21-01-390-B53

175

MISSOURI STATE HIGHWAY DEPARTMENT

Table with project details: ROAD NO. 5 MO, COUNTY CLAY, SHEET NO. 29, TOTAL SHEETS 90.

Table 1: BILL OF REINFORCEMENT. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes substructure for Retaining Wall End Bent 1 and Bent 2, Ramp 4.

Table 2: BILL OF REINFORCEMENT. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes substructure for Bent 3 and Bent 4.

Table 3: BILL OF REINFORCEMENT. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes substructure and superstructure for End Bent 1.

Table 4: BILL OF REINFORCEMENT. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes superstructure for Slab.

Table 5: BILL OF REINFORCEMENT. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes superstructure for various bridge components.

Note: For Bending Diagrams see Sheets 8 and 9. For Table of Cutting Diagrams see Sheet 9.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435 IN CLAYCOMO PROJECT NO. 1-435-1( ) (RTE. 1-435) STA. 19+27.09 Ramp 4 CLAY COUNTY STA. 7+21.93 Ramp 5

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE Y.C.P. DATE 10-15-68 CHECKED L.J.R. DATE 10-18-68

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

NOTE: BARS IN ABOVE UNIT TO BE BILLED AND TAGGED SEPARATELY.

REINFORCEMENT SCHEDULE - UNIT 1

MISSOURI STATE HIGHWAY DEPARTMENT

Table with project details: FEDERAL PROJECT NO. & SEC., COUNTY (CLAY), SHEET NO. (91), TOTAL SHEETS (91).

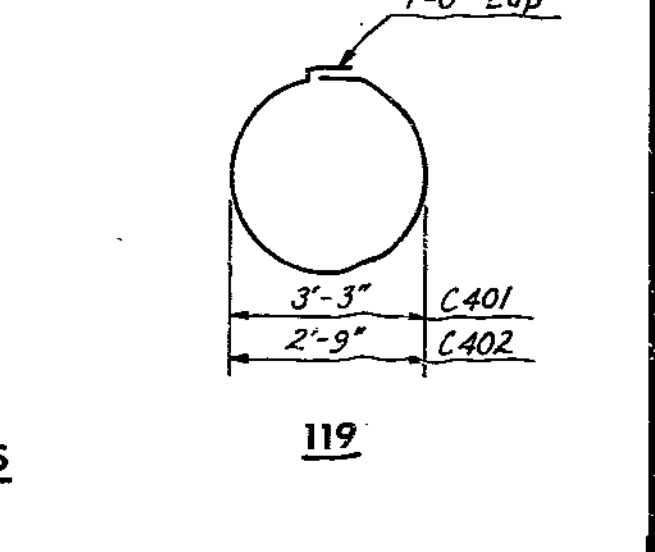
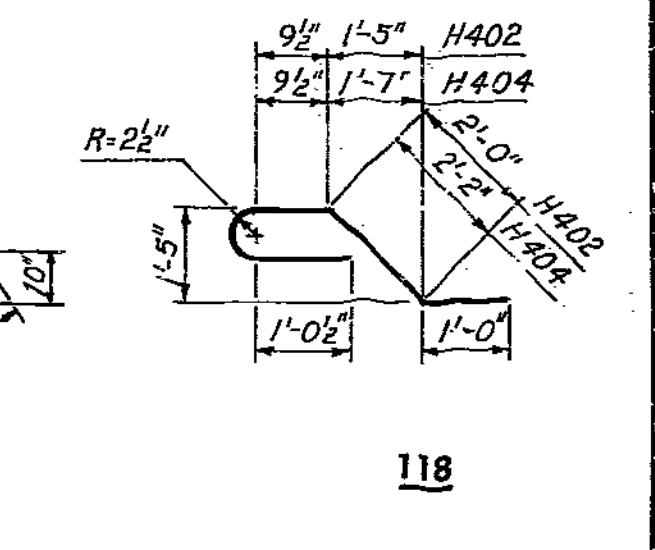
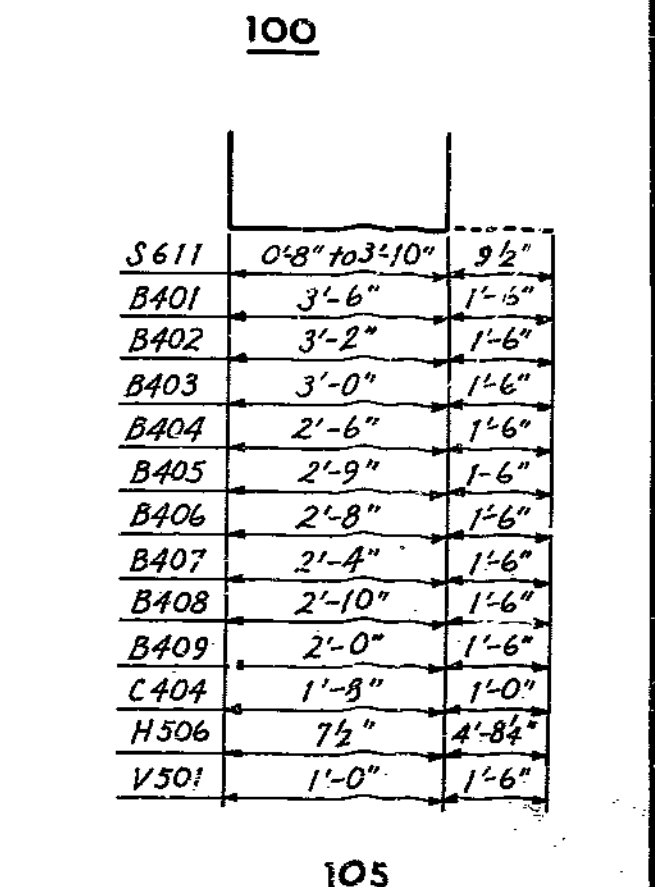
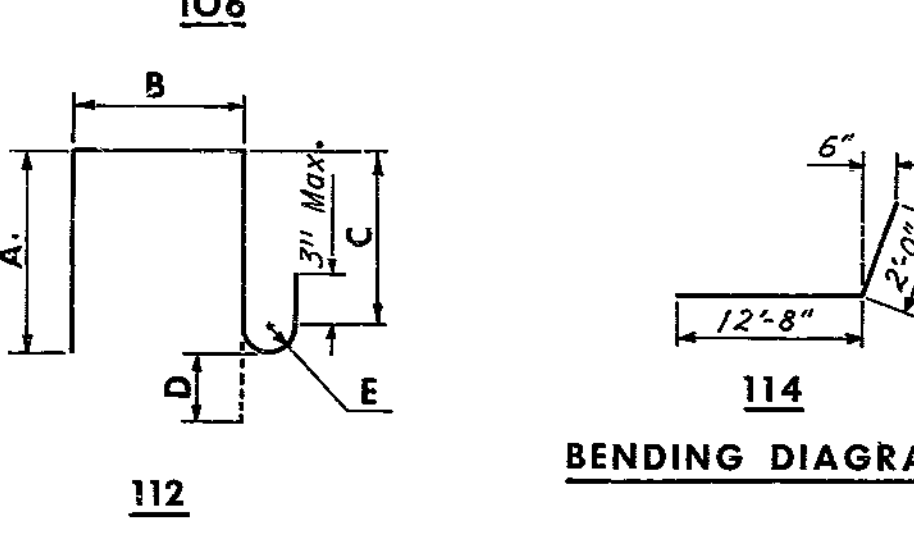
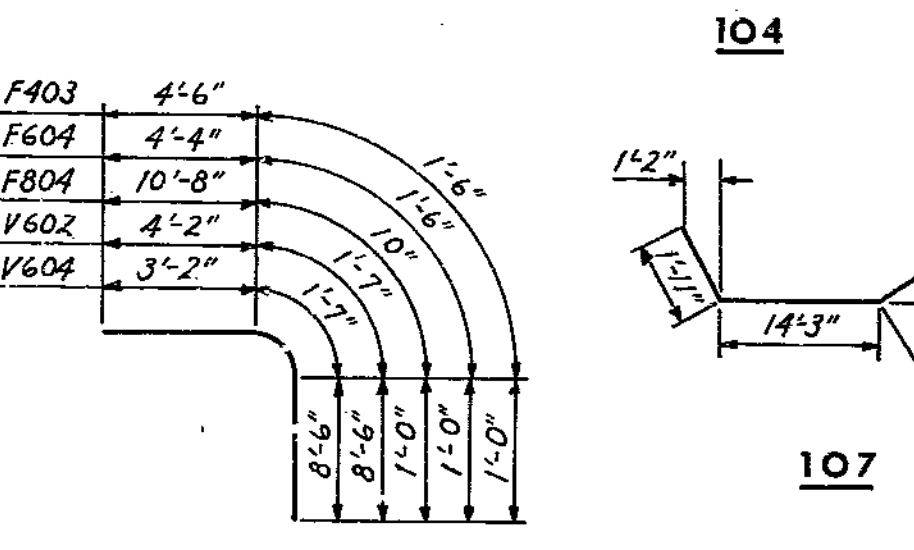
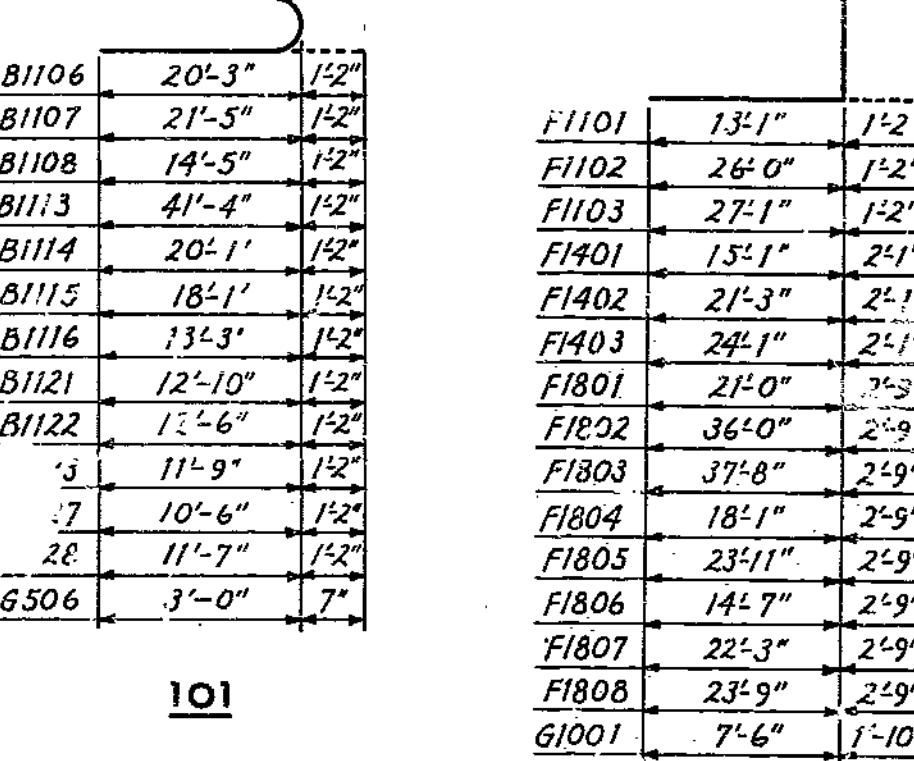
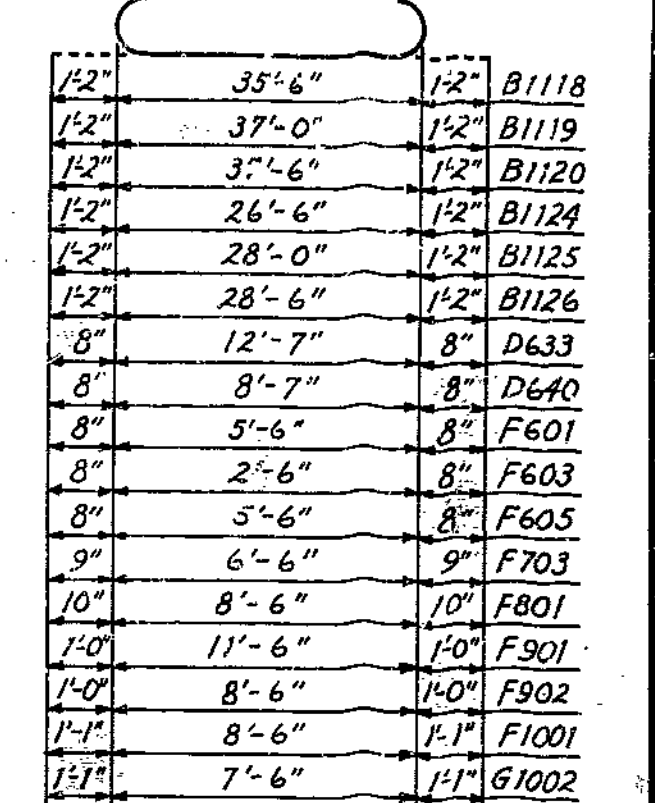
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BILL OF REINFORCEMENT table with columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes SUPERSTRUCTURE and GIRDER WEB sections.

BILL OF REINFORCEMENT table with columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes SUPERSTRUCTURE and GIRDER WEB sections.

BILL OF REINFORCEMENT table with columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes SUPERSTRUCTURE and GIRDER WEB sections.

BILL OF REINFORCEMENT table with columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes SUPERSTRUCTURE and GIRDER WEB sections.



BENDING DIAGRAMS

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435 IN CLAYCOMO PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4 CLAY COUNTY STA. 7+21.93 Ramp 5

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

KANSAS CITY NEW YORK MADE Y.C.P. DATE 10-17-68 CHECKED L.J.R. DATE 10-21-68

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

NOTE: BARS IN ABOVE UNIT TO BE BILLED AND TAGGED SEPARATELY.

Note: For additional Bending Diagrams and table of dimensions for bending diagram 112 see Sheet 9. For Table of Cutting Diagrams see Sheet 9. For additional notes see Sheet 9.

REINFORCEMENT SCHEDULE - UNIT 1

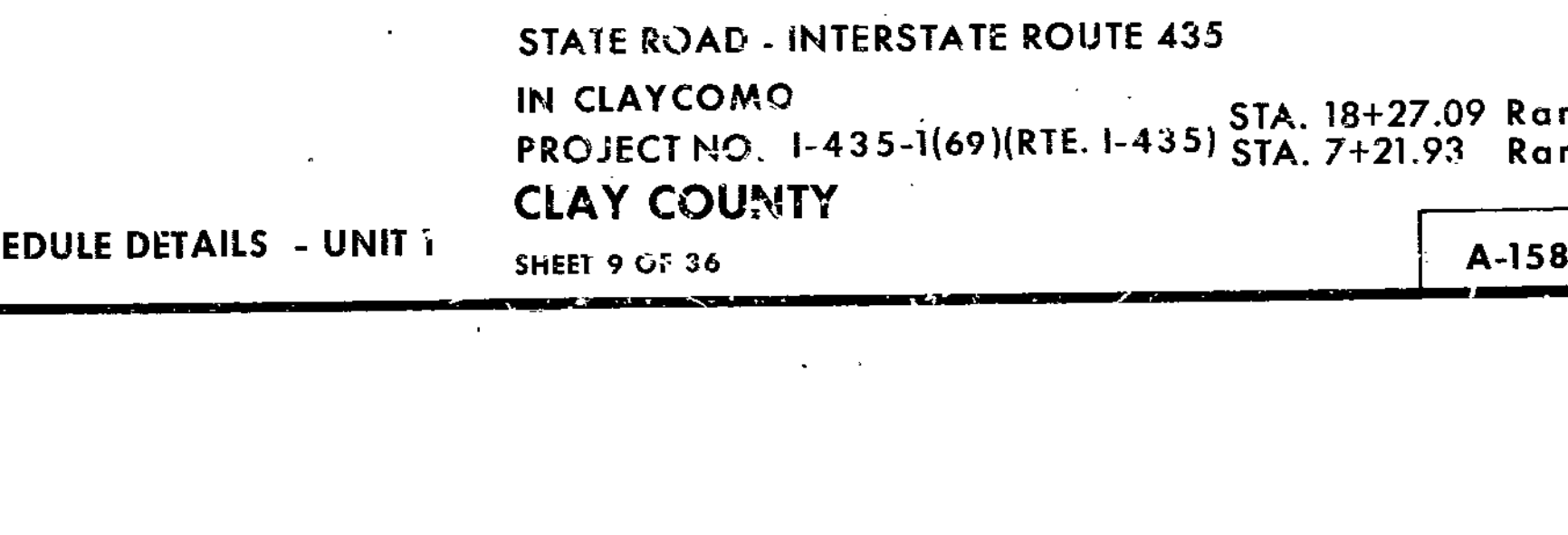
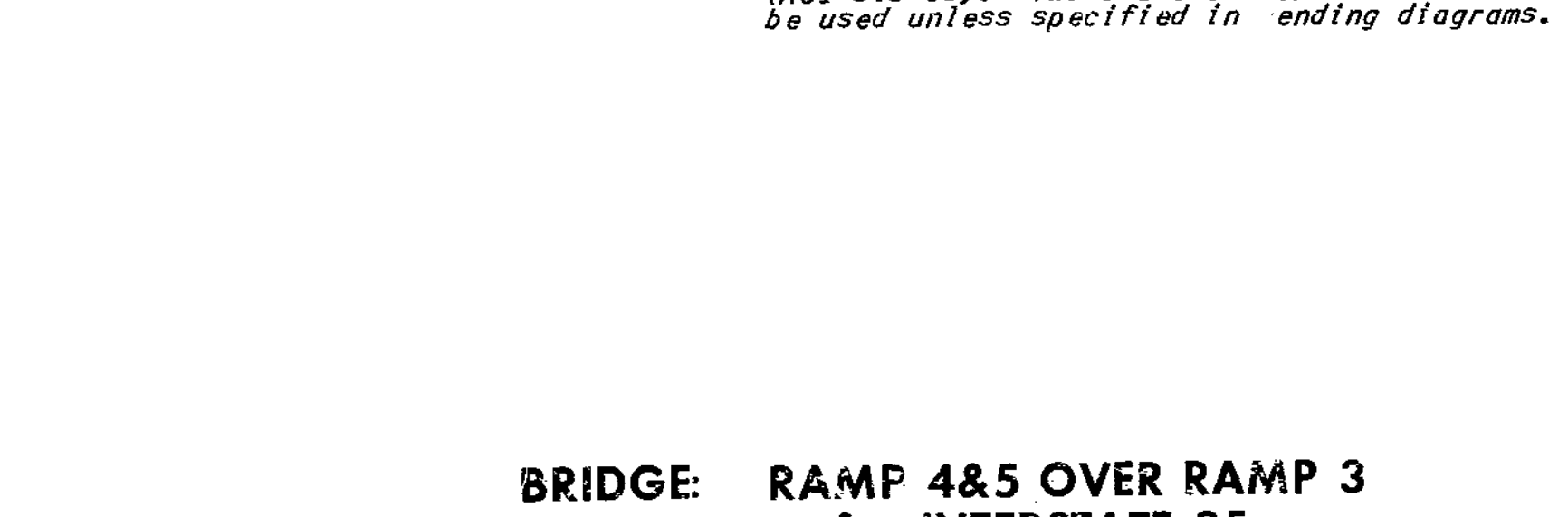
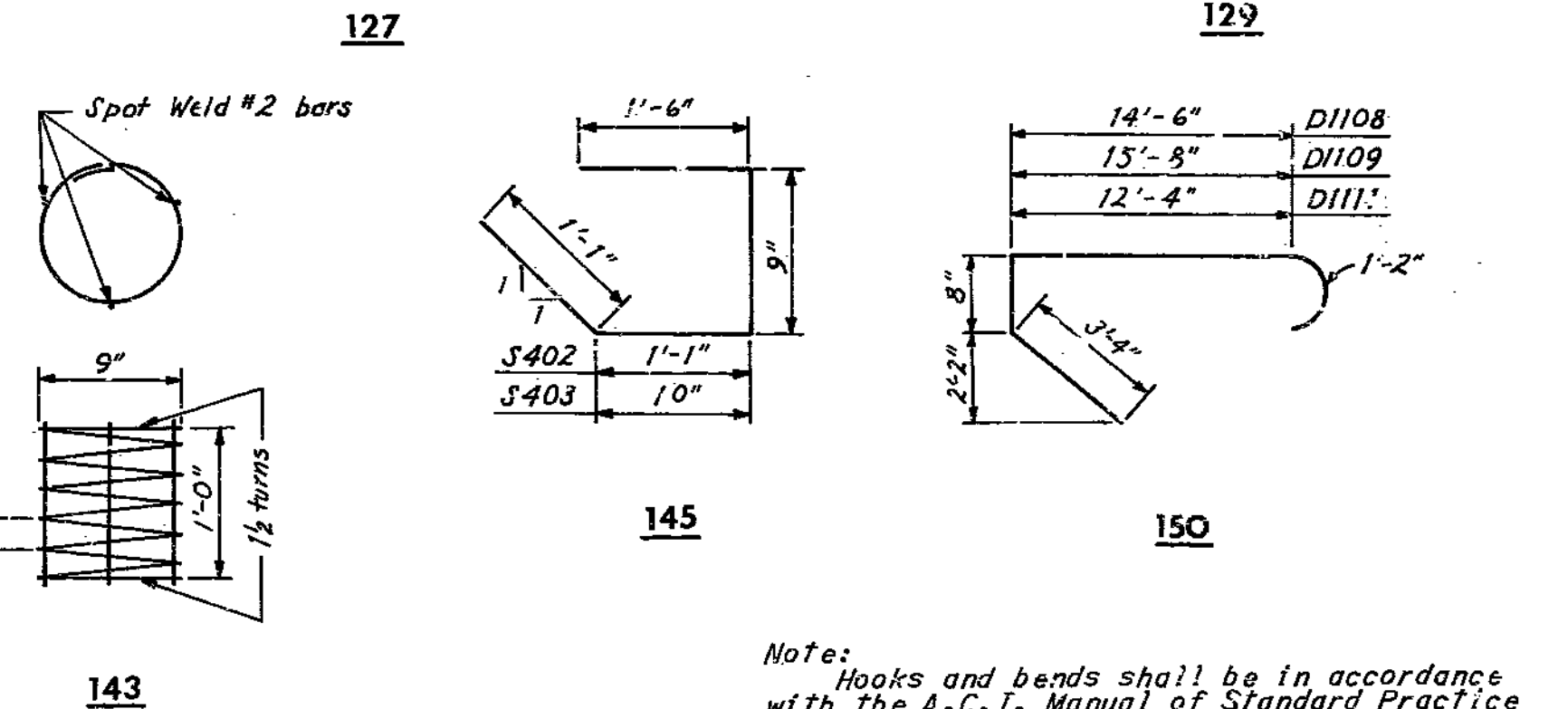
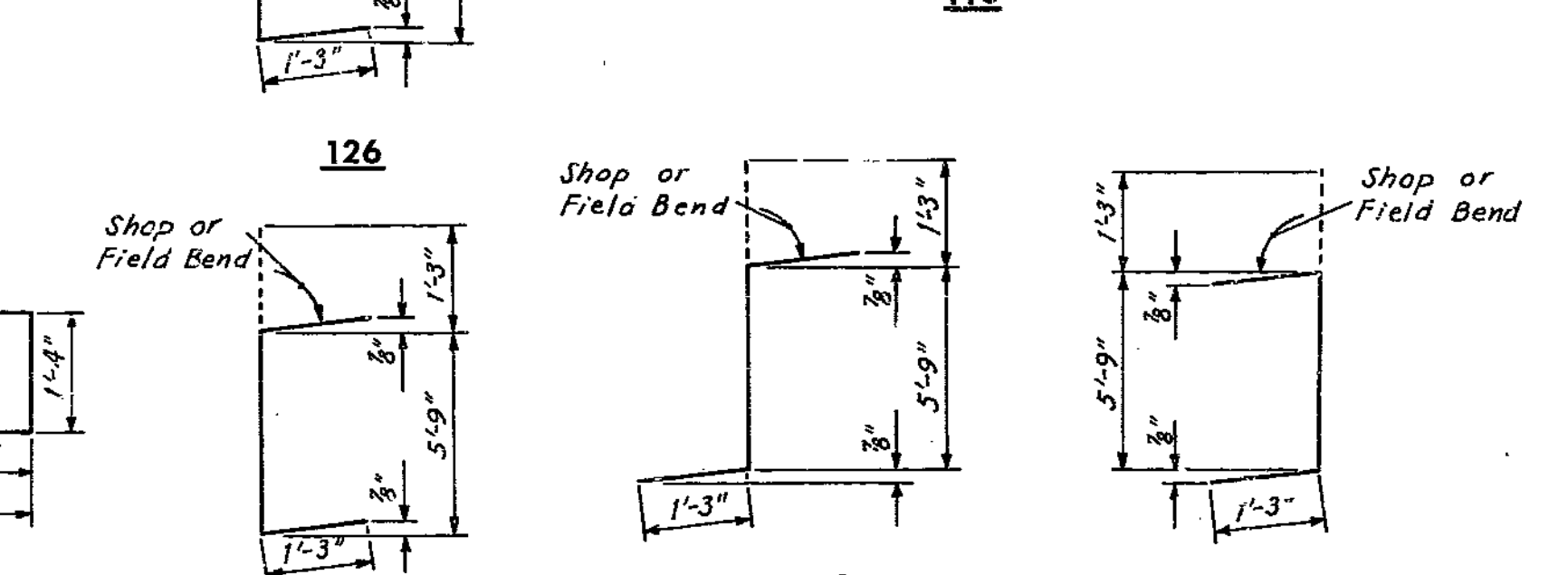
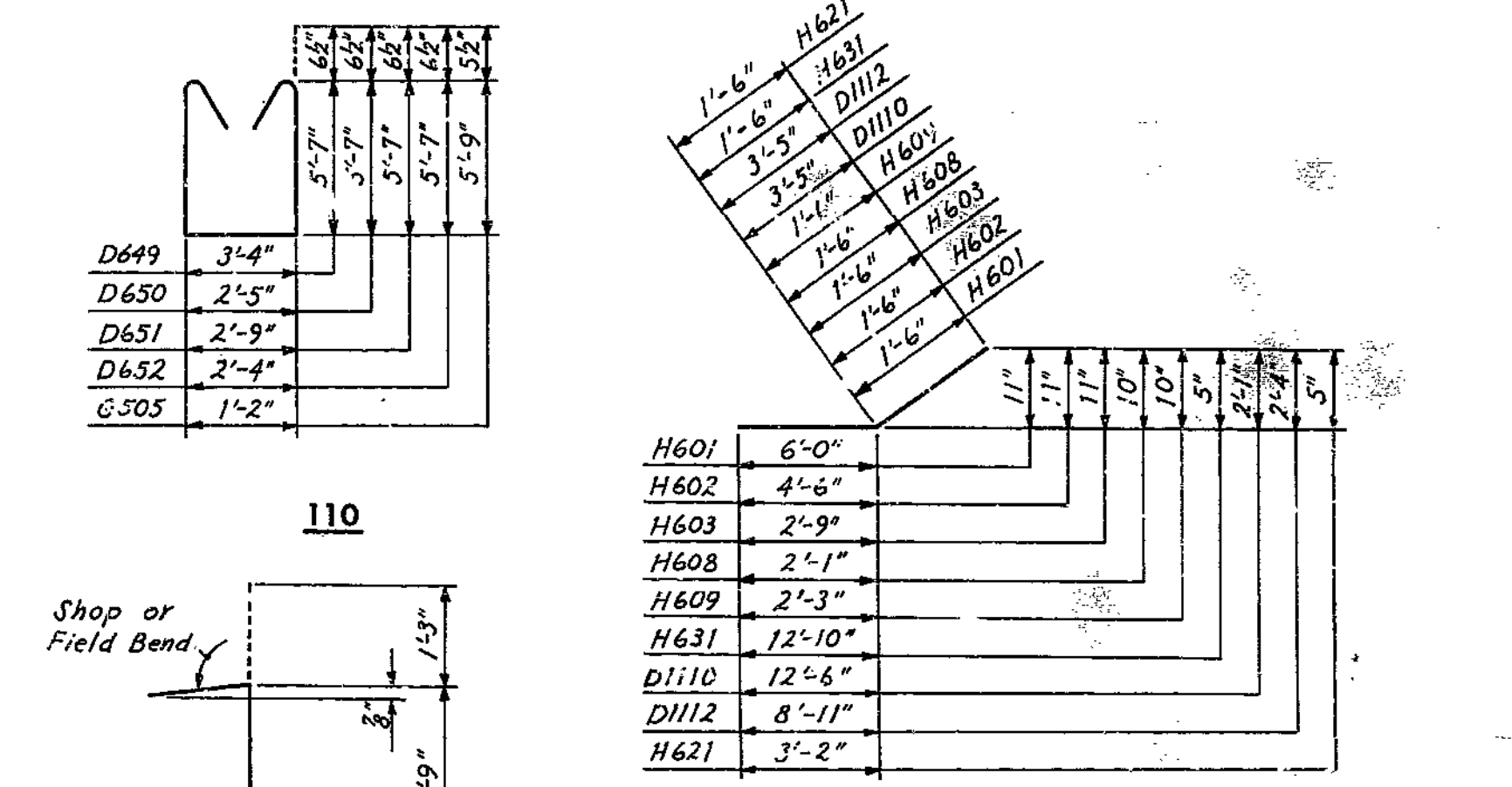
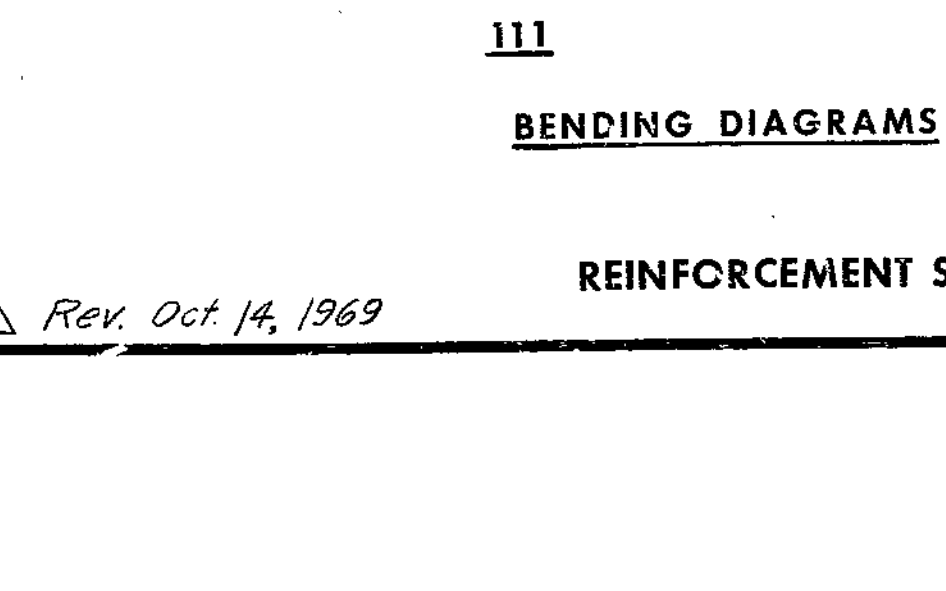
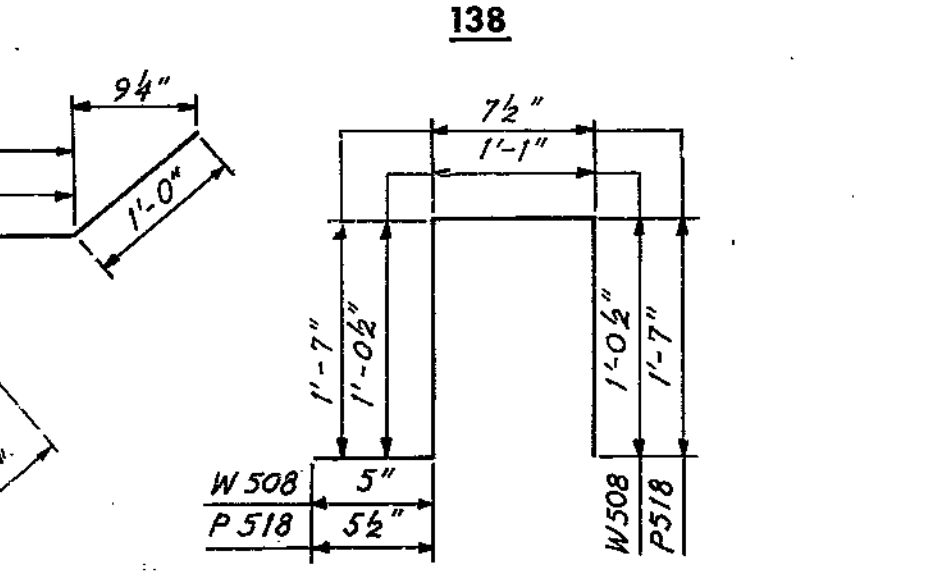
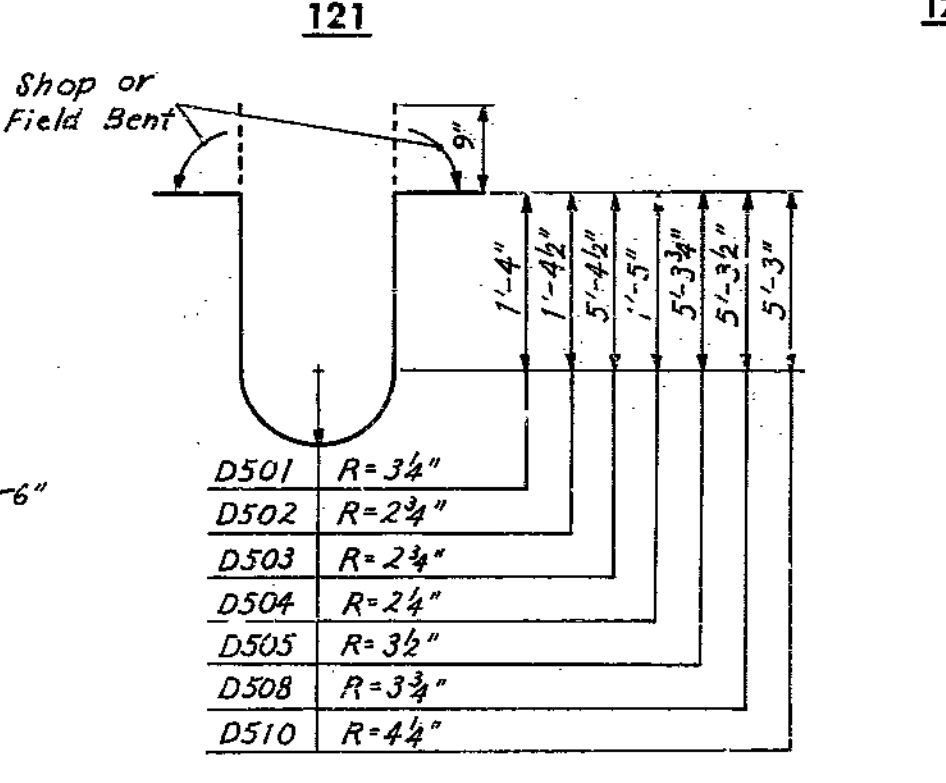
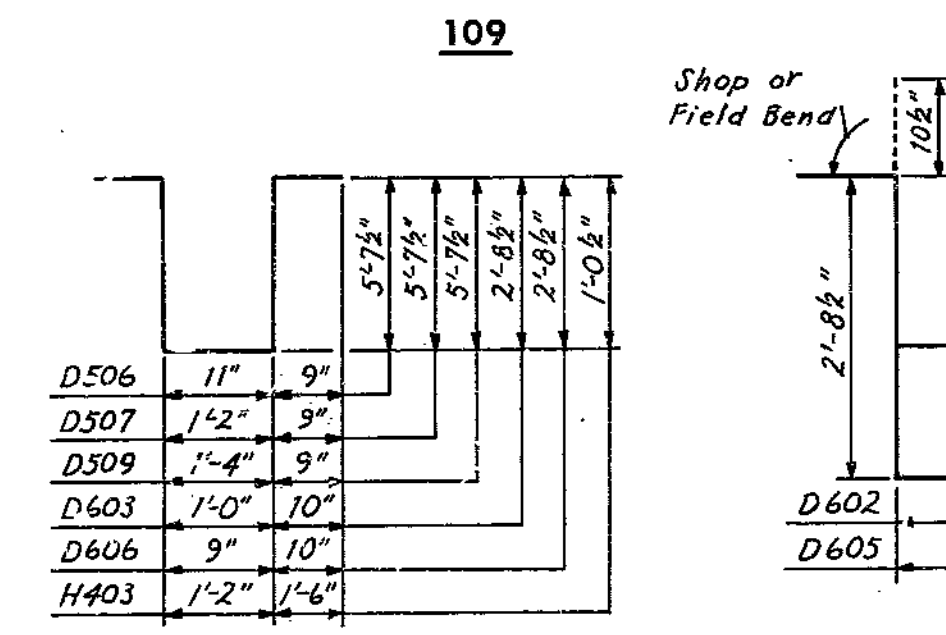
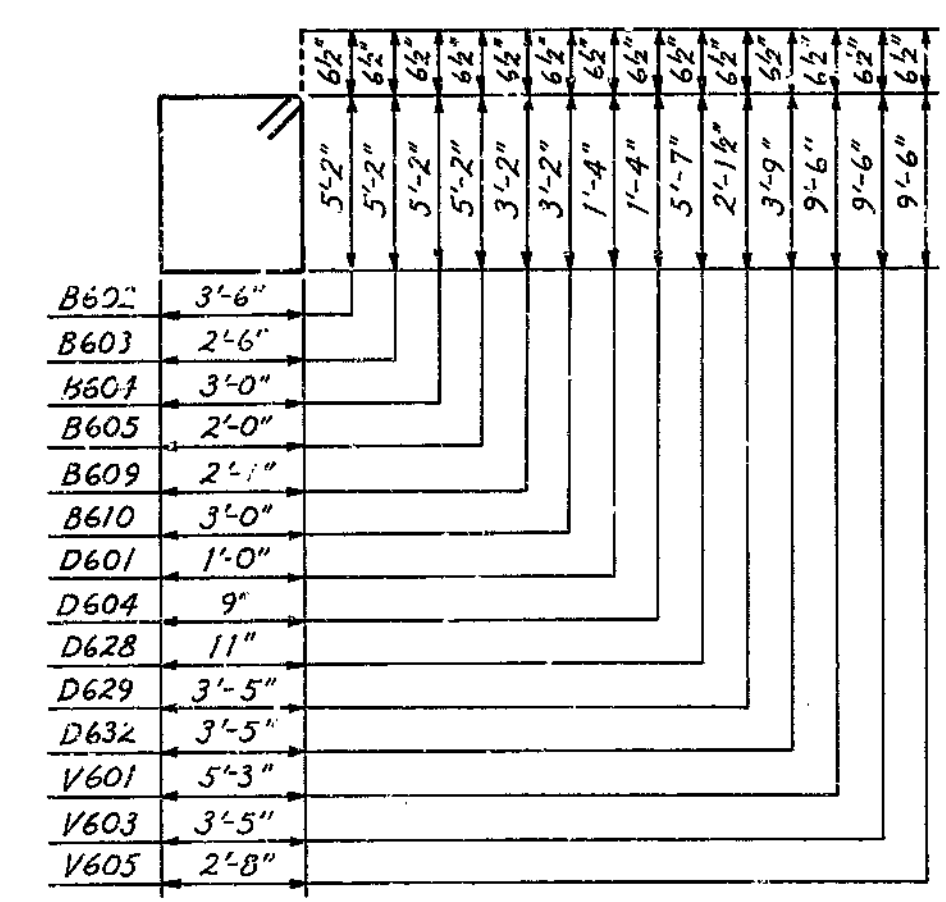
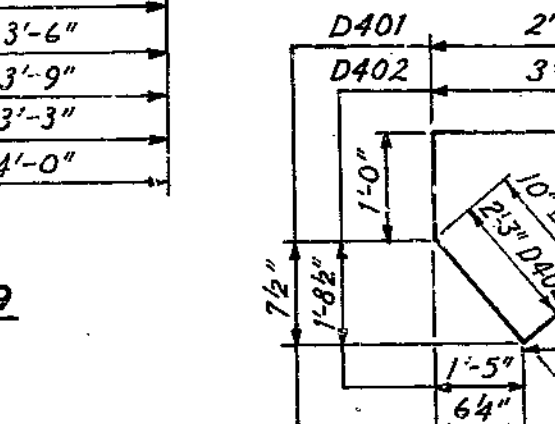
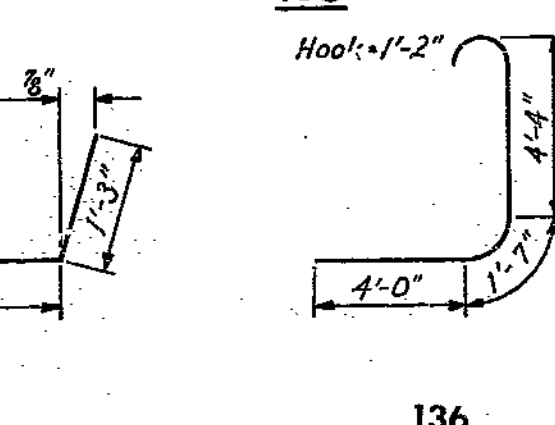
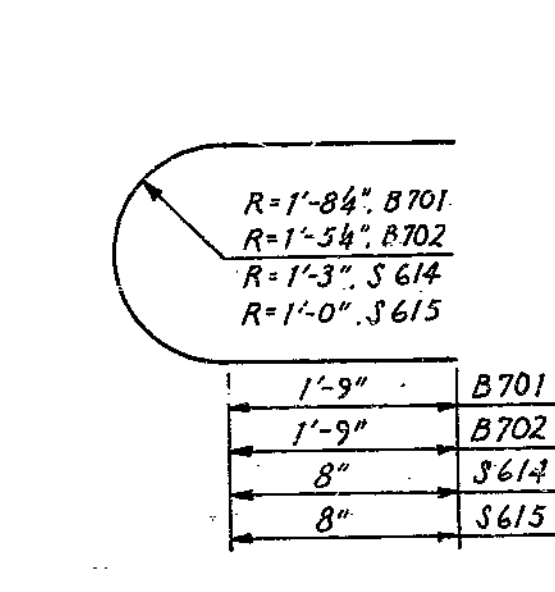
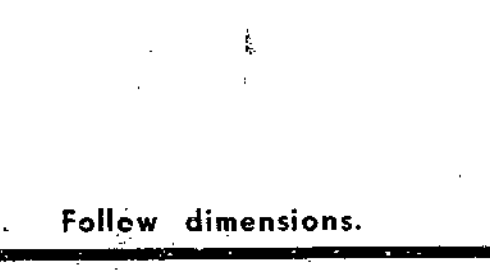
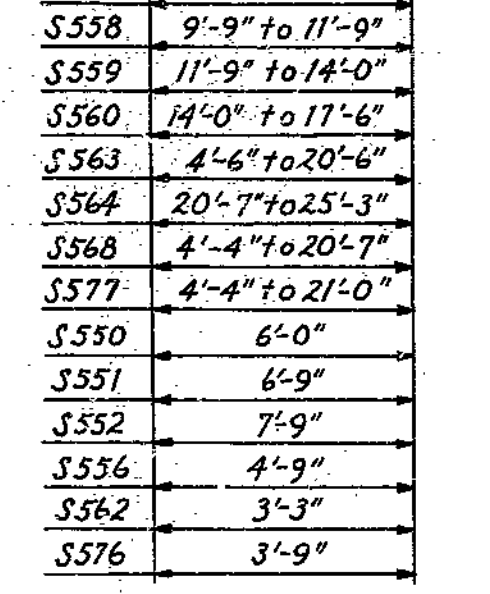
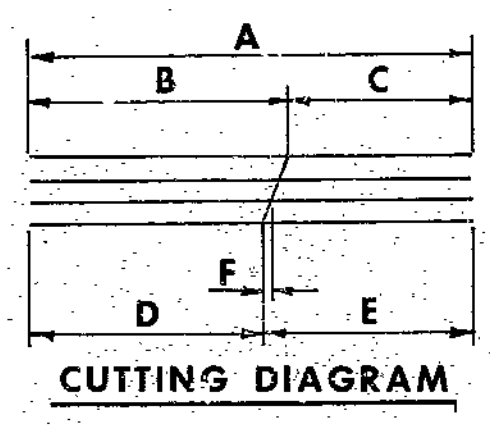
MISSOURI STATE HIGHWAY DEPARTMENT

Table with project details: MO, CLAY, STA. 18+27.09 Ramp 4, STA. 7+21.93 Ramp 5.

TABLE OF CUTTING DIAGRAM DIMENSIONS. Columns: MARK, A, B, C, D, E, F, G, H. Rows: H604, H605, S503, S504, S507, S508, S509, S510, S511, S512, S513, S514, S522, S523, S524, S531, S532, S533, S535, S536, S539, S540, S541, S544, S546, S548, S554, S557, S558, S559, S561, S562, S564, S566, S568, S569, S571, S572, S573, S574, S577, S578, S580, S601, S603, S604, S605, S606, S607, S608, S609, S610, S611, S703, S706, S708, S710, S713, S715, S726, S728, S730, S733, S737, S806.

TABLE OF CUTTING DIAGRAM DIMENSIONS. Columns: MARK, A, B, C, D, E, F, G, H. Rows: S912, S1012, S1013, S1016, S1017, S1018, S1021, V406, V407, V412, V414, V408, S1108.

BENDING DIMENSIONS SHAPE 112. Columns: MARK, A, B, C, D, E. Rows: P517, V502, V503, V504, V505, V506, V507, V508, V509, V510.



Note: Hooks and bends shall be in accordance with the A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI-315-63). Two diameter bends shall not be used unless specified in ending diagrams.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435 IN CLAYCOMO PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4 CLAY COUNTY

178

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

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

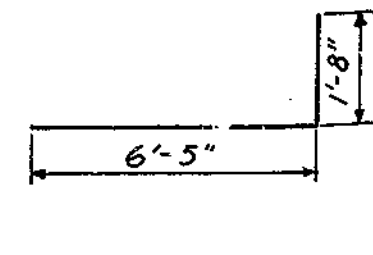
Rev. Oct 14, 1969



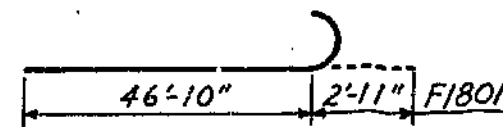
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			94	
DIST. NO.	COUNTY				
4	CLAY				

8"	7'-6"	8"	F601
9"	10'-6"	9"	F701
9"	8'-6"	9"	F702
9"	11'-6"	9"	F703
1'-2"	16'-6"	1'-2"	F102



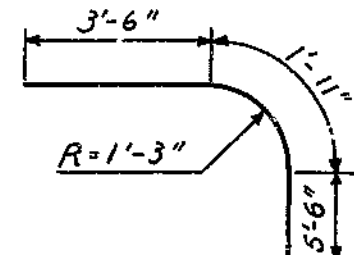
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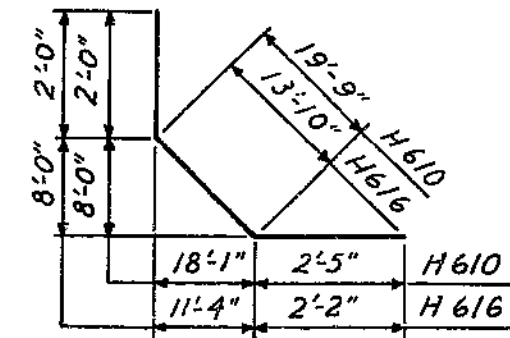
101

B401	9"	1'-11"	
B402	9"	1'-10"	
H504	4'-8 1/4"	1'-2"	
V508	1'-6"	7'-0"	

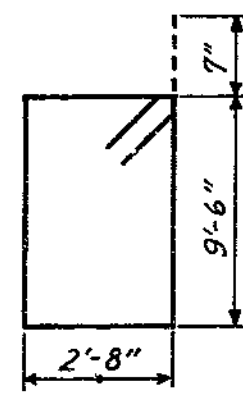
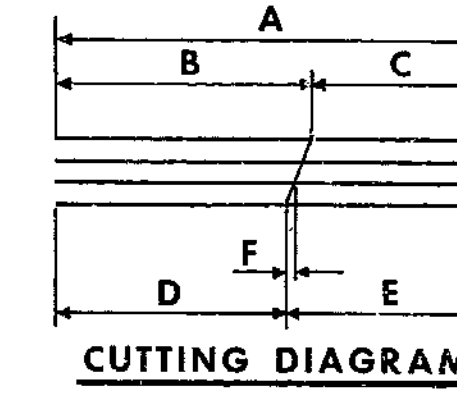
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106



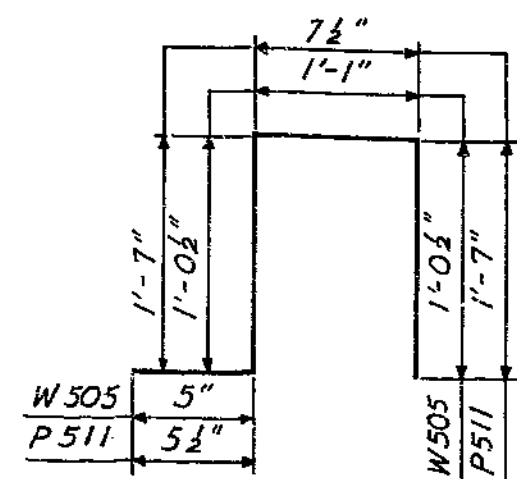
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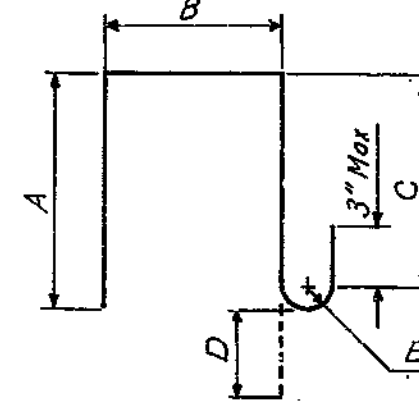
109

B602	3'-6"	5'-5 3/8"	6 3/8"
B604	2'-9"	5'-6 3/8"	6 3/8"
B605	3'-11"	5'-6 3/8"	6 3/8"
B606	3'-8"	5'-6 3/8"	6 3/8"

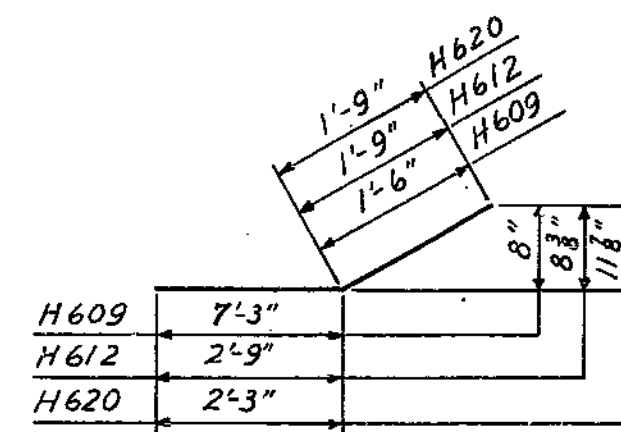
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111



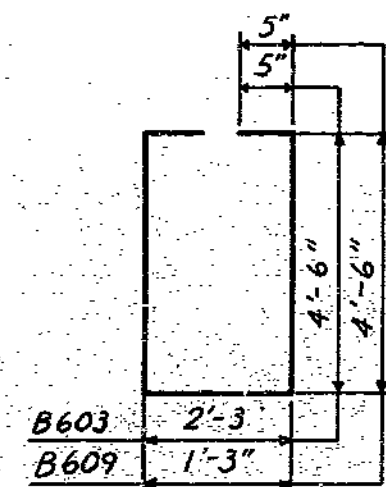
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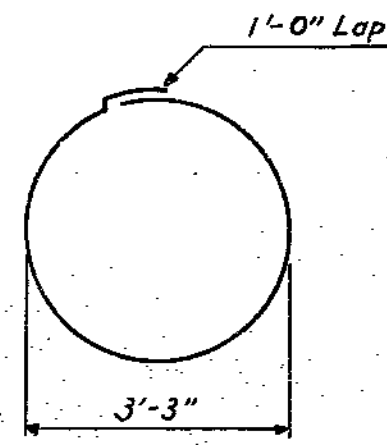
113

TABLE OF CUTTING DIAGRAM DIMENSIONS								
MARK	A	B	C	D	E	F	G	H
H603	26'-4"	19'-0"	7'-4"	14'-4"	12'-11"	2'-4"	3	3
H604	19'-6"	16'-2"	3'-4"	10'-4"	9'-2"	1'-2"	3	3
H613	20'-2"	13'-6"	6'-8"	10'-9 1/2"	9'-4 1/2"	1'-4 3/4"	3	3
H614	12'-6"	9'-6"	3'-0"	6'-10 3/4"	5'-7 1/4"	1'-3 3/4"	3	3
V401	12'-9"	10'-4"	2'-5"	6'-7"	6'-2"	5"	10	10
V402	11'-1"	8'-8"	2'-5"	5'-9"	5'-4"	5"	8	8
V403	12'-10"	10'-3"	2'-7"	6'-9 1/2"	6'-0 1/2"	8 1/2"	6	6
V404	10'-1"	7'-6"	2'-7"	5'-4 1/2"	4'-8 3/4"	8 1/2"	4	4
S605	103'-0"	53'-5"	49'-7"	51'-8 1/2"	51'-3 5/8"	4 3/8"	6	6
S606	93'-11"	48'-11"	45'-0"	47'-1 1/2"	46'-9 1/2"	4 1/8"	6	6
S607	84'-0"	43'-11"	40'-1"	42'-2 1/2"	41'-9 5/8"	4 3/8"	6	6
S703	83'-1"	44'-1"	39'-0"	41'-7"	41'-6"	1 7/8"	17	17
S706	95'-4"	49'-11"	45'-5"	47'-9"	47'-7"	1 5/8"	17	17
S708	101'-9"	53'-6"	48'-3"	50'-11"	50'-10"	1 5/8"	17	17
S712	48'-9"	26'-3"	22'-6"	24'-5 3/4"	24'-3 3/4"	1 3/8"	19	19
S714	66'-2"	35'-6"	30'-8"	33'-1 1/2"	33'-0 1/2"	1 3/8"	19	19
S717	62'-10"	33'-10"	29'-0"	31'-5 1/2"	31'-4 1/2"	1 3/8"	19	19
S721	45'-3"	24'-6"	20'-9"	22'-8 3/4"	22'-6 3/4"	1 3/8"	19	19

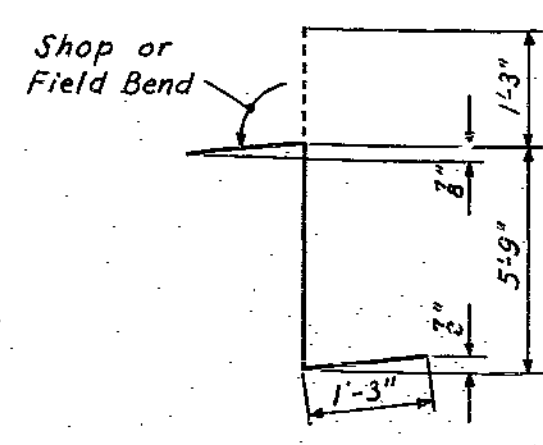
Note:  
G= Number of bars.  
H= Total number of bars.



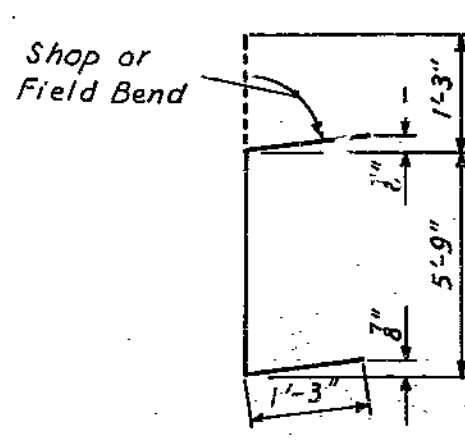
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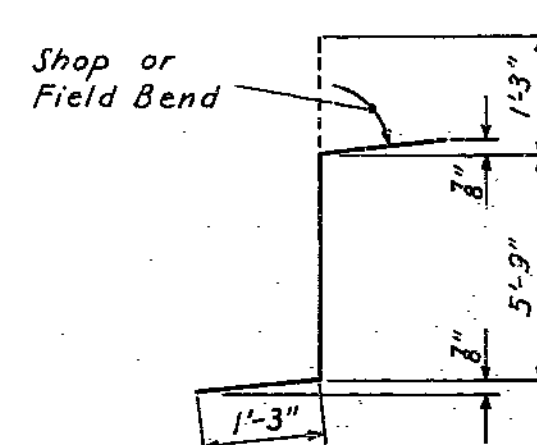
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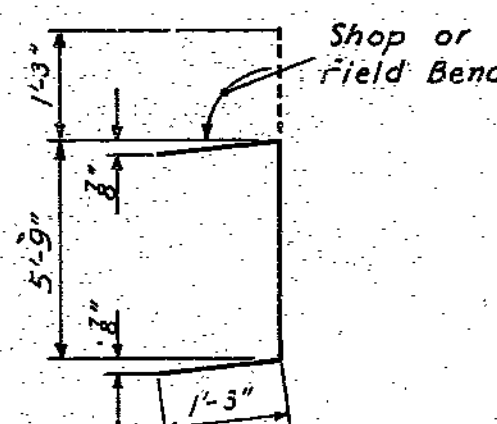
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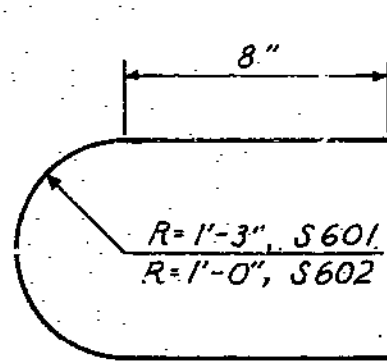
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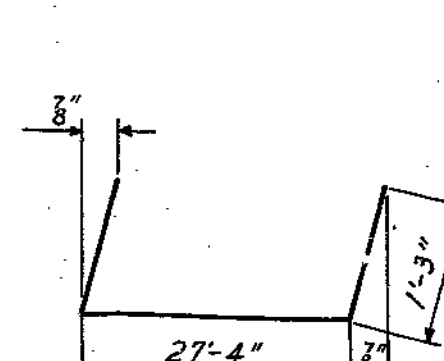
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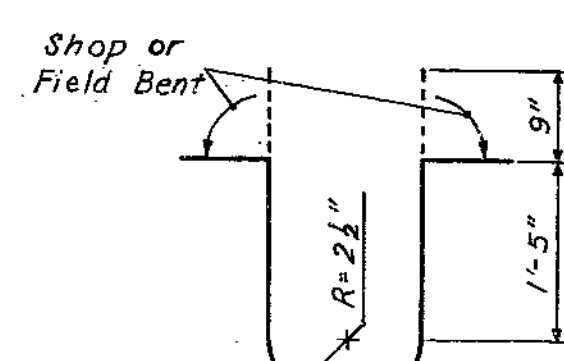
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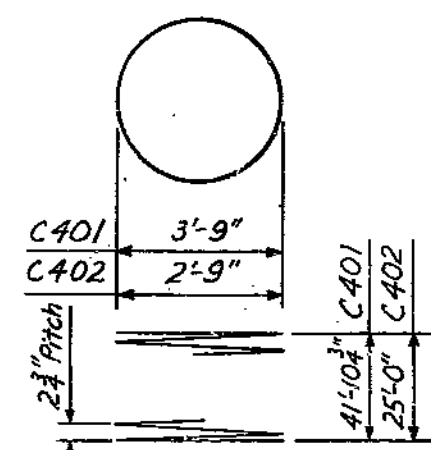
130



135



138



SPIRAL

Note:  
Make 1/2 turns top and bottom and 1/2 turns at splices. Clip 4 vertical spacers to spiral before placing concrete.

BENDING DIMENSIONS SHAPE 112					
MARK	A	B	C	D	E
P 510	2'-0"	7 1/2"	1'-9"	8 1/2"	3"
V 501	2'-1 1/2"	9"	1'-10 1/2"	6 3/4"	2 1/2"
V 502	2'-3 1/2"	9"	2'-1 5/8"	7 1/4"	2 1/4"
V 503	2'-5 3/4"	9"	2'-3 1/2"	6 1/4"	2 1/4"
V 504	2'-7"	9"	2'-4 3/4"	7"	2 1/4"
V 505	2'-7 1/2"	9"	2'-5"	6 1/2"	2 1/4"
V 506	2'-8 3/4"	9"	2'-6 1/4"	7 1/4"	2 1/4"
V 507	2'-8 3/4"	9"	2'-6 1/4"	6 1/4"	2 1/4"
V 509	2'-0"	7 1/2"	1'-9"	8 1/2"	3"
V 510	2'-9 3/4"	9"	2'-7 3/4"	7 1/4"	2 1/4"

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

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435

IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
CLAY COUNTY STA. 7+21.93 Ramp 5

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE Y.C.P. DATE 10-14-68 CHECKED L.J.R. DATE 10-15-68

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

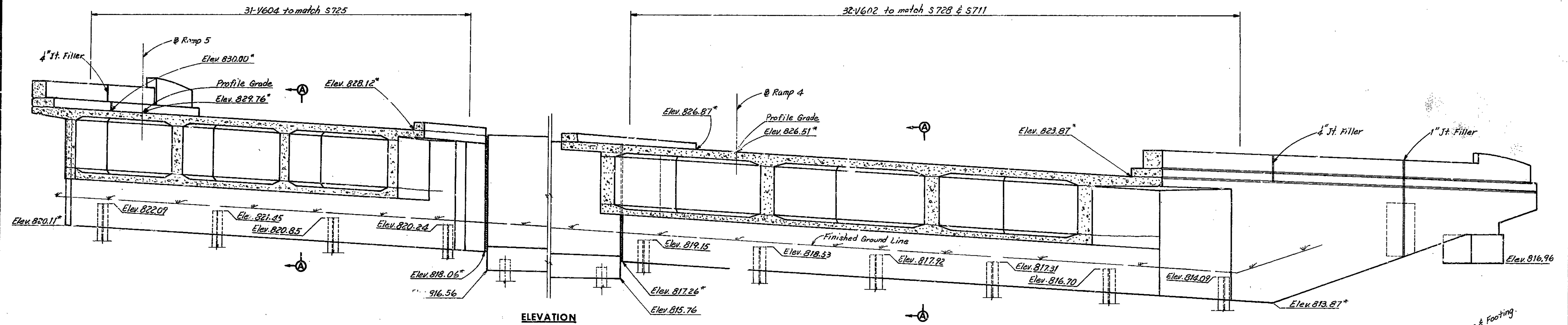
REINFORCEMENT SCHEDULE DETAILS - UNIT 2

SHEET 11 OF 36

A-1580

MISSOURI STATE HIGHWAY DEPARTMENT

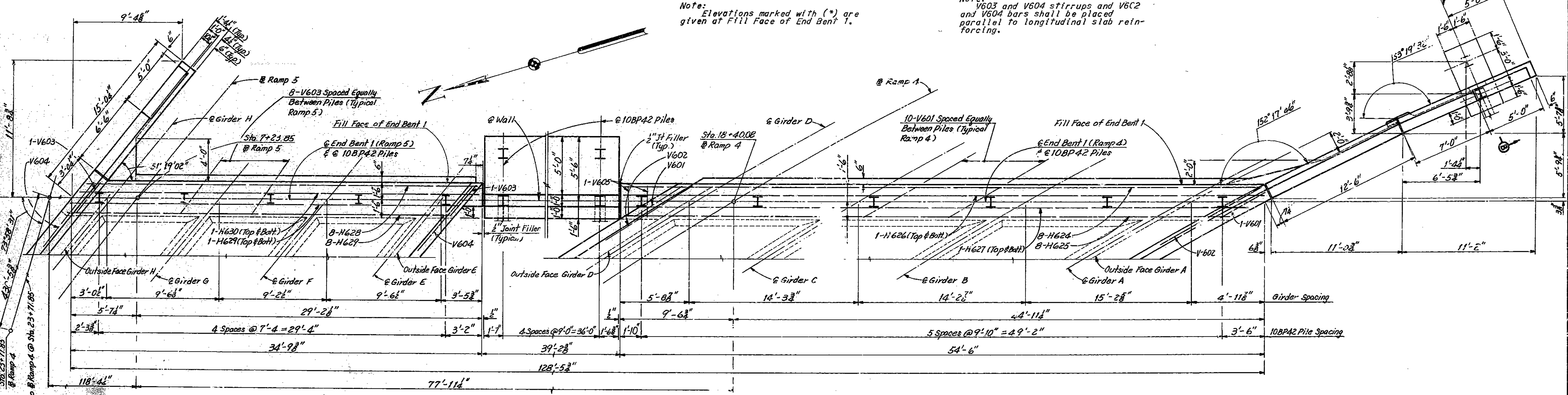
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5	MO		95	
DIST. NO.	COUNTY		ROUTE	SEC.
4	CLAY			



ELEVATION

Note: Elevations marked with (\*) are given at Fill Face of End Bent 1.

Note: V603 and V604 stirrups and V602 and V604 bars shall be placed parallel to longitudinal slab reinforcing.



PLAN

Notes:  
 For Substructure Layout, see Sheet 3.  
 For Rustication Details, see Sheet 33.  
 For Timber Header Details, see Sheet 32.  
 For Reinforcement Schedule, see Sheet 7.  
 For Pile Splice Details, see Sheet 4.  
 All piles are 10BP42.  
 Concrete End Posts are vertical.  
 For Wingwall Details, see Sheet 13.  
 For Retaining Wall Details, see Sheet 13.  
 For Section A-A, see Sheet 13.  
 Provide 1" clear from face of concrete to reinforcing steel in superstructure, unless otherwise shown.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAY CO MO  
 PROJECT NO. 1-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY

END BENT 1

SHEET 12 OF 35

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE G.C.C. DATE 9-24-68 CHECKED C.E.B. DATE 10-15-68

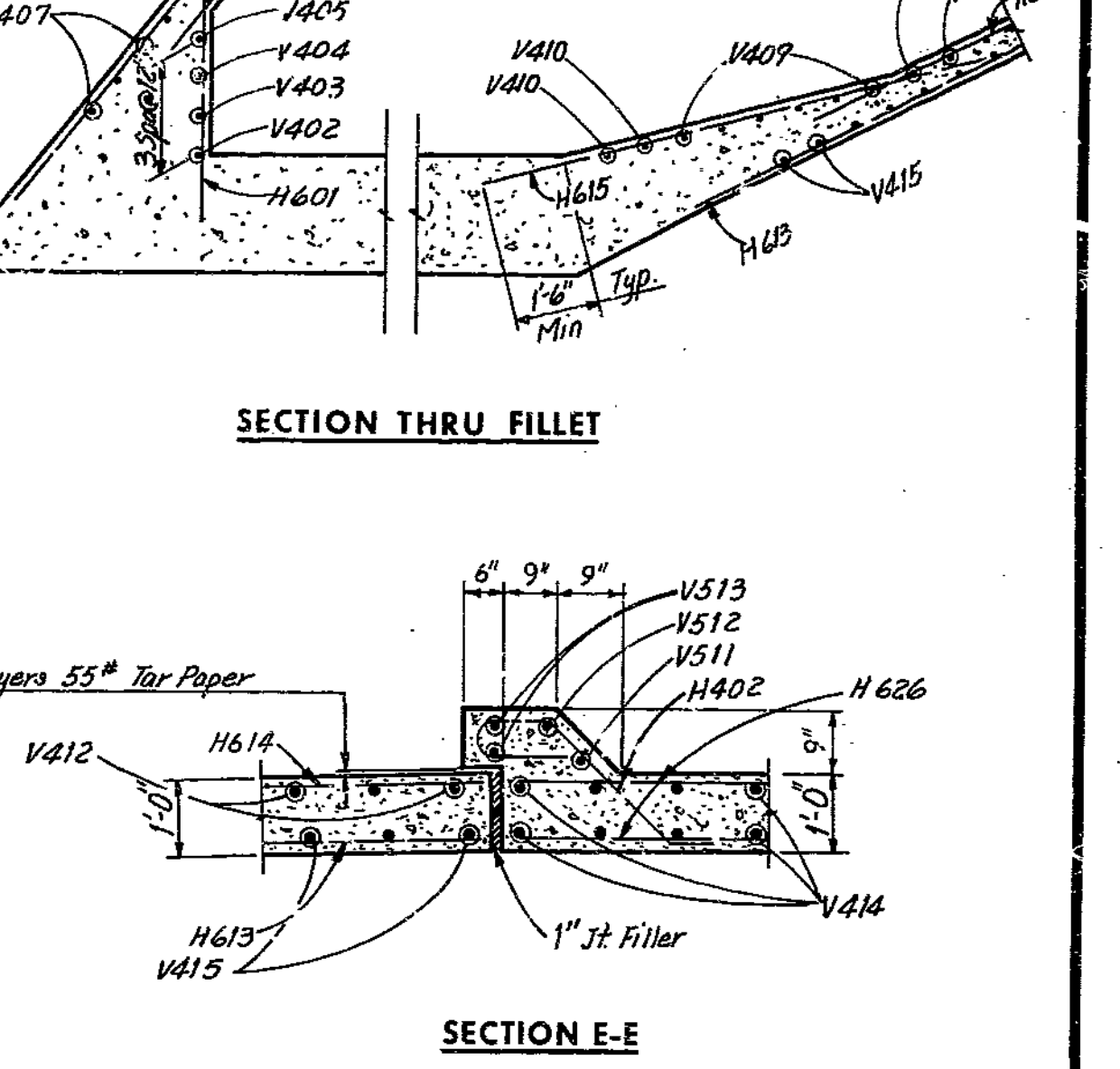
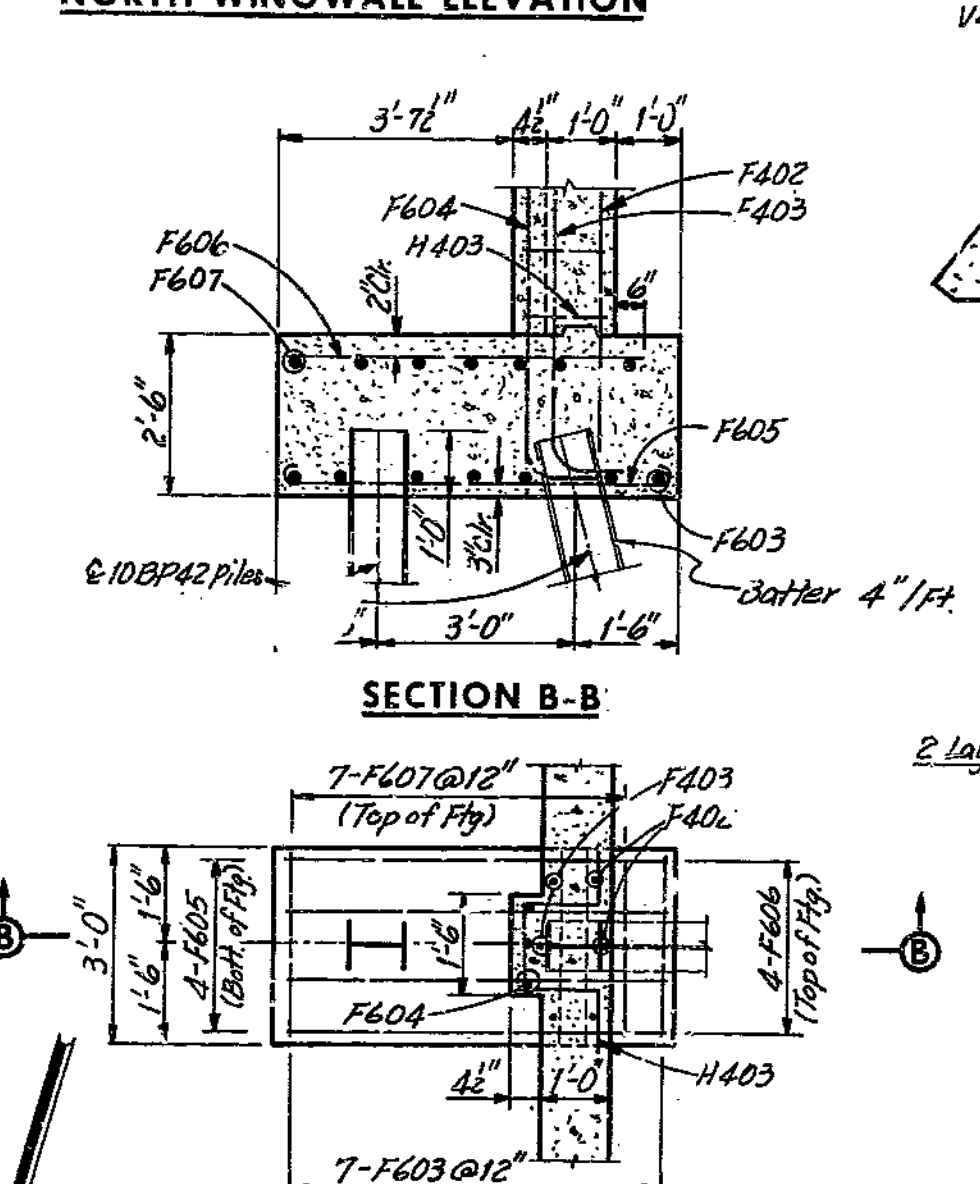
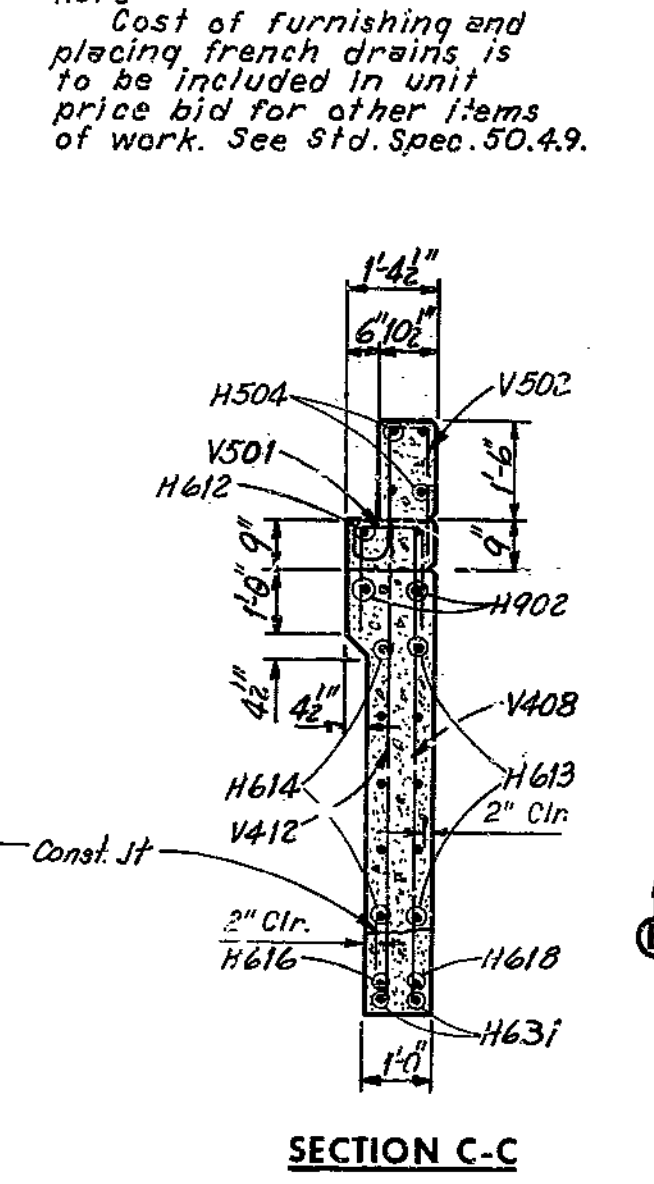
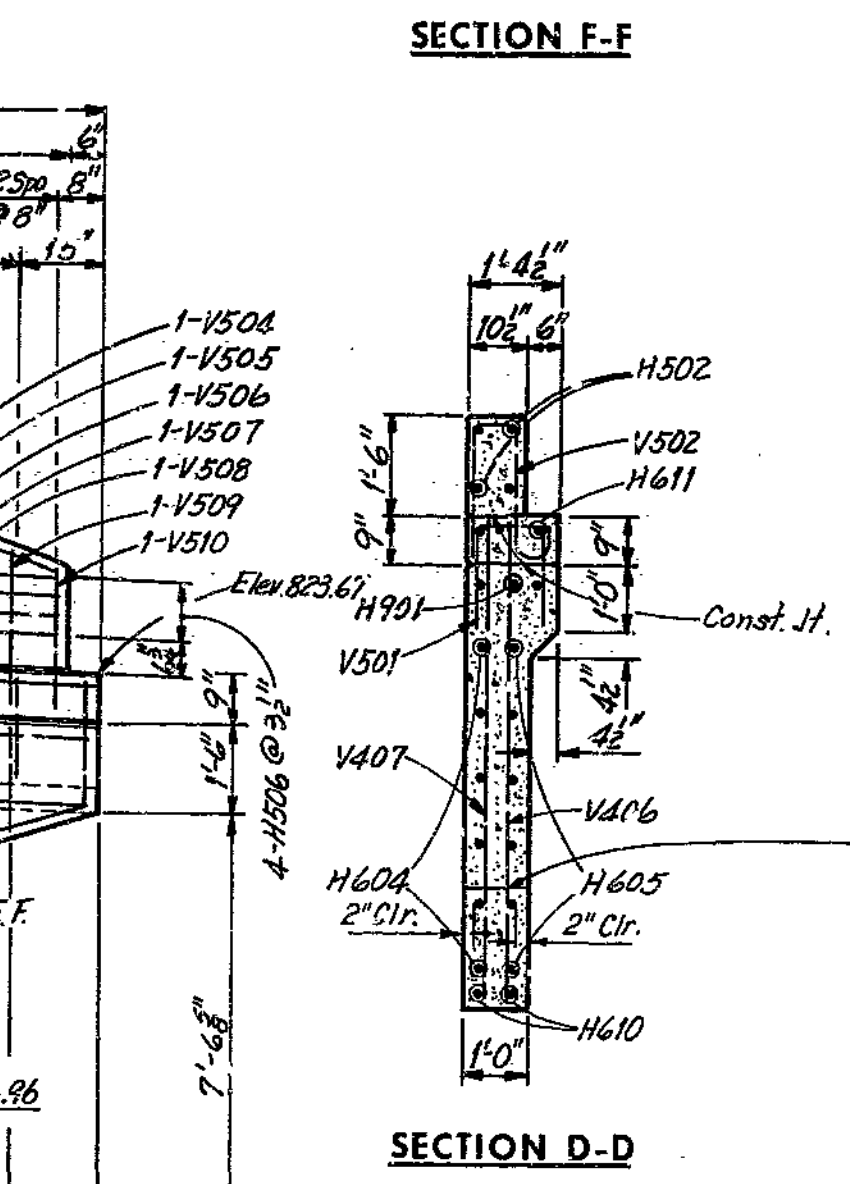
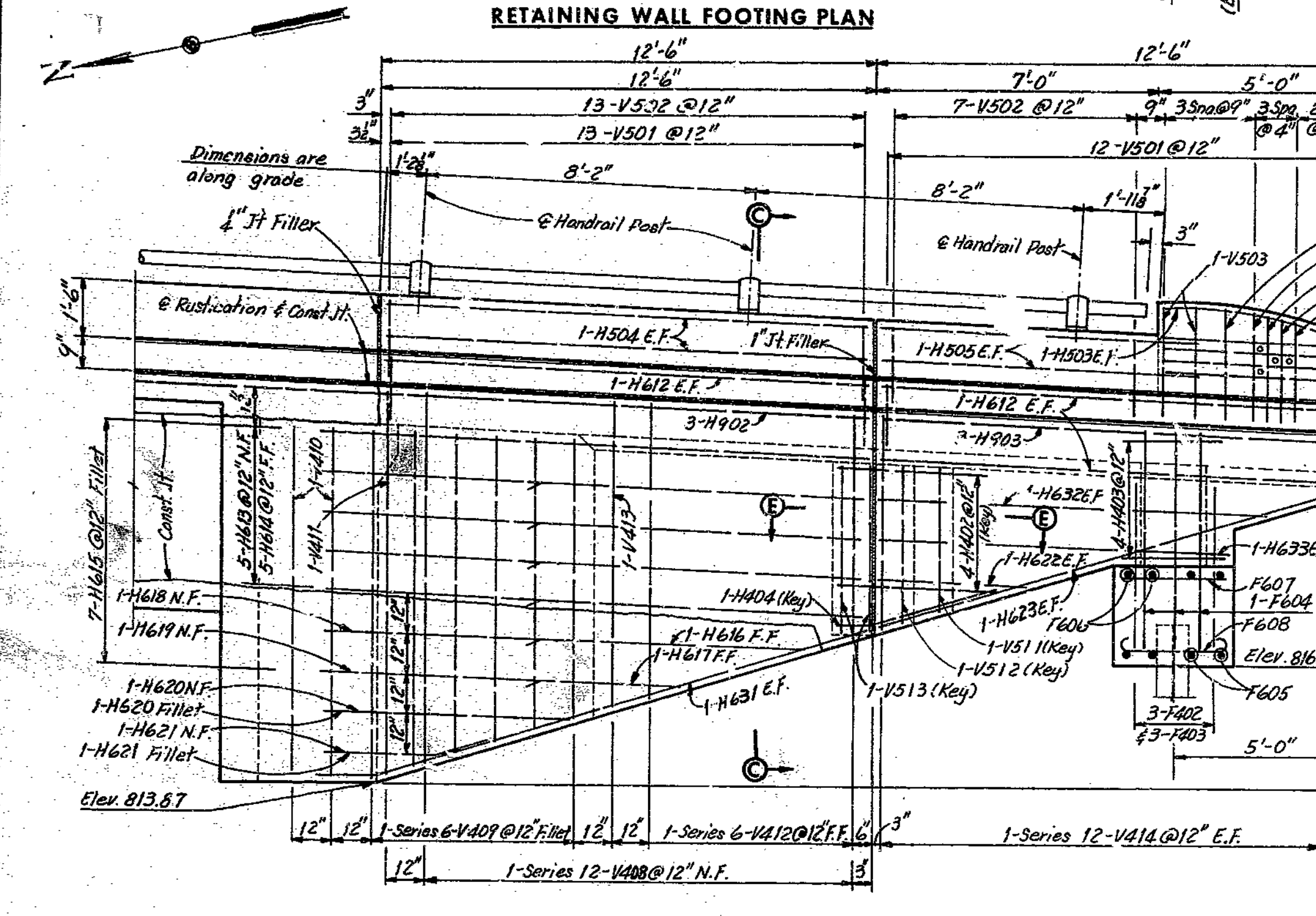
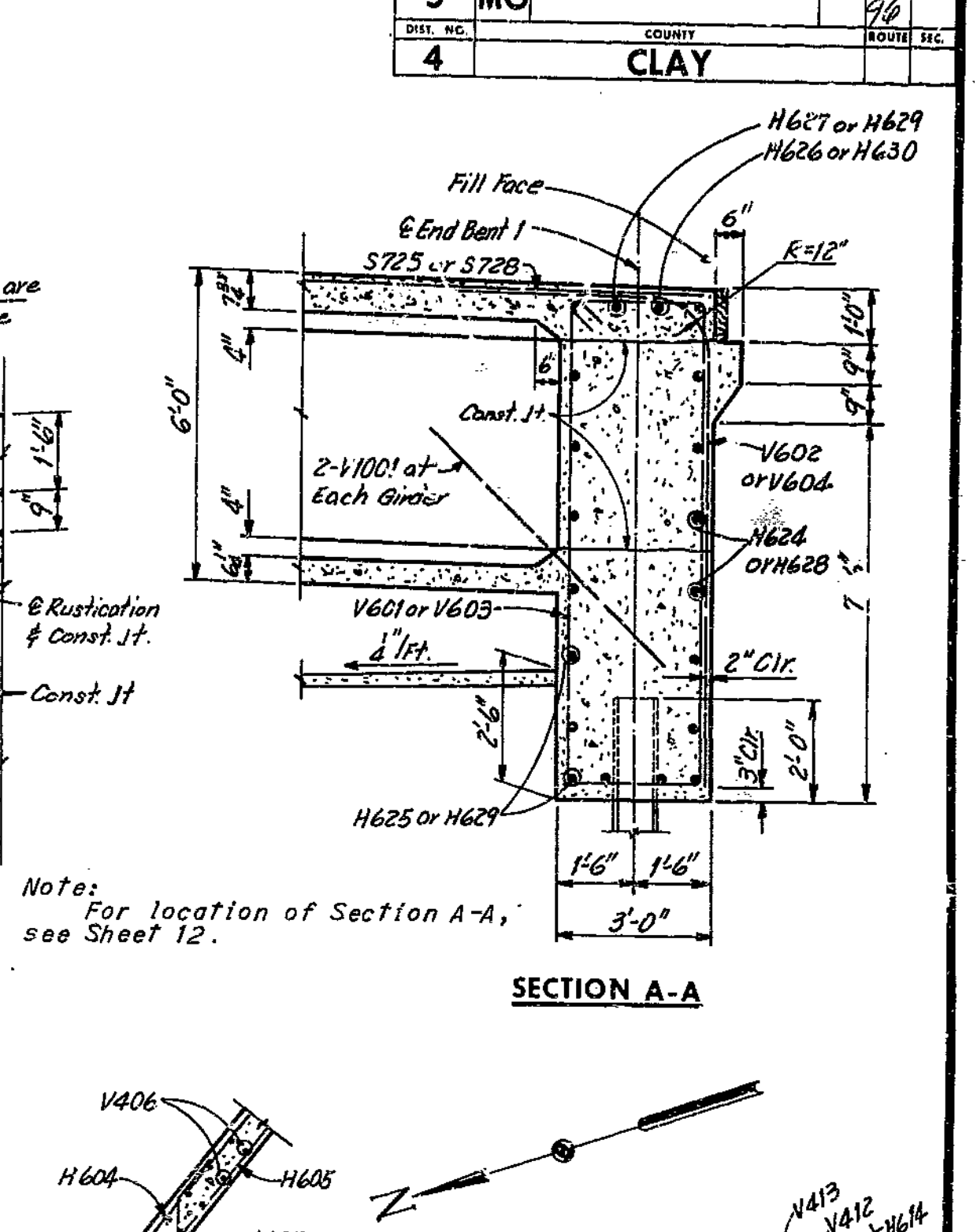
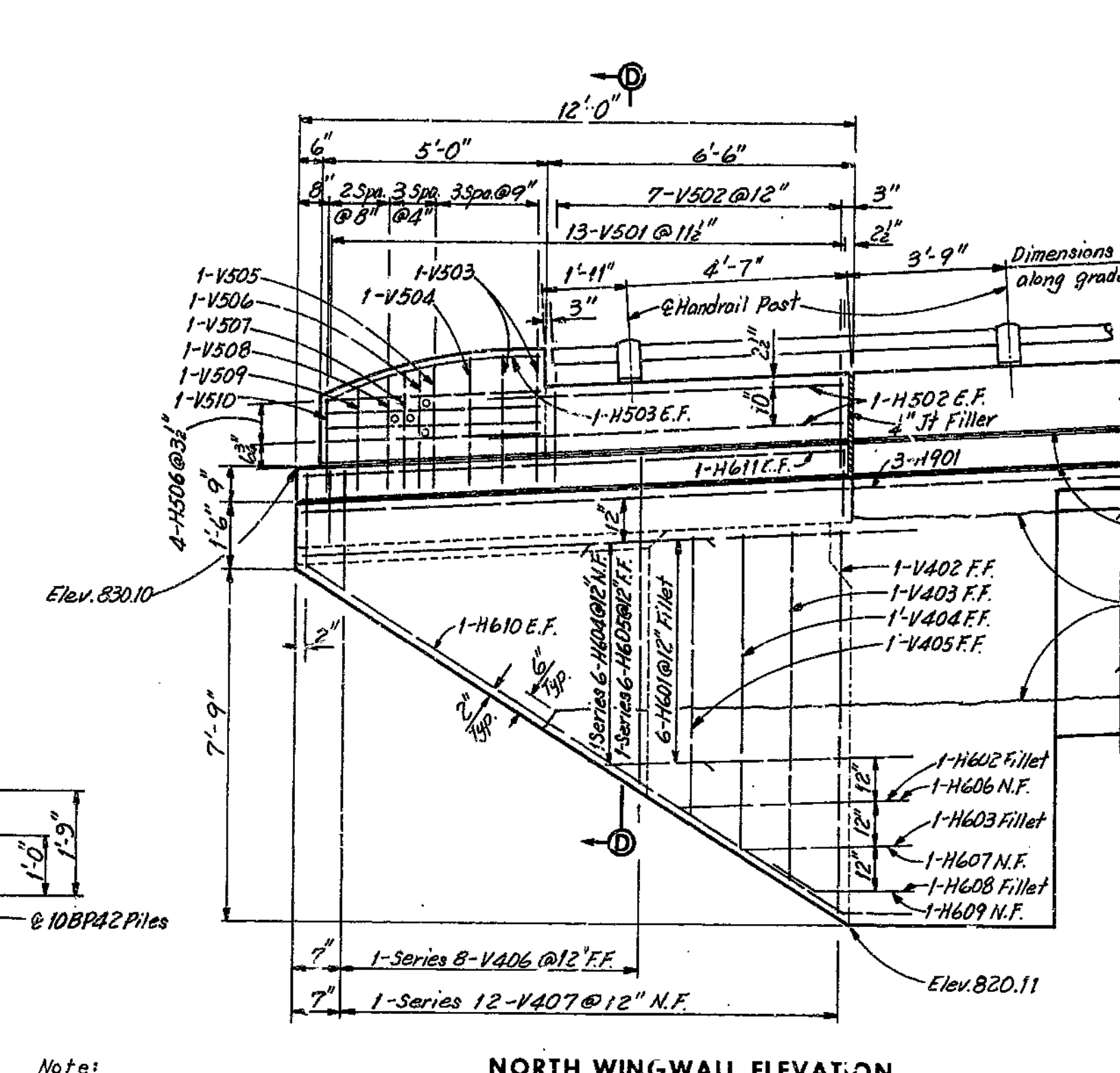
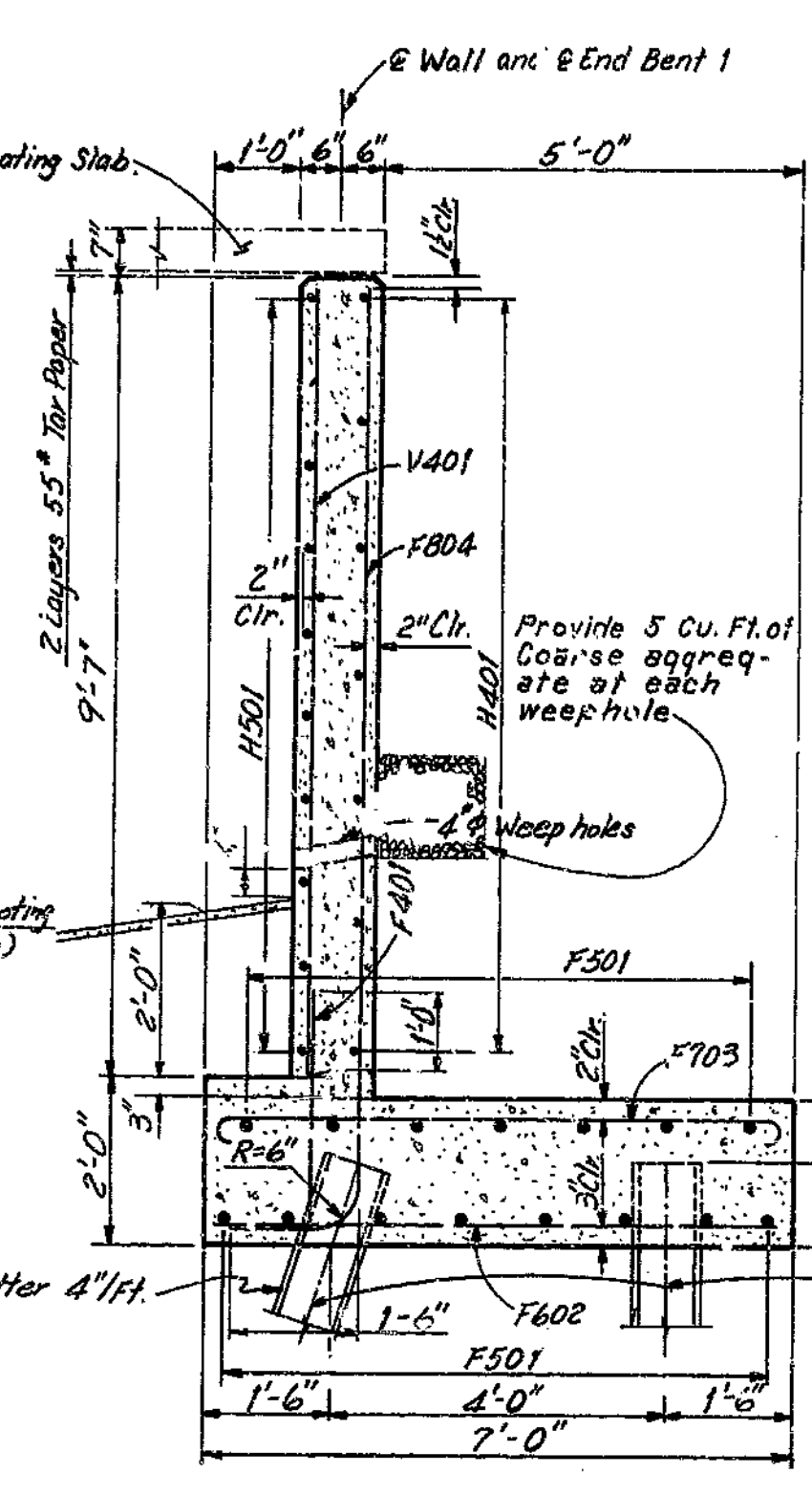
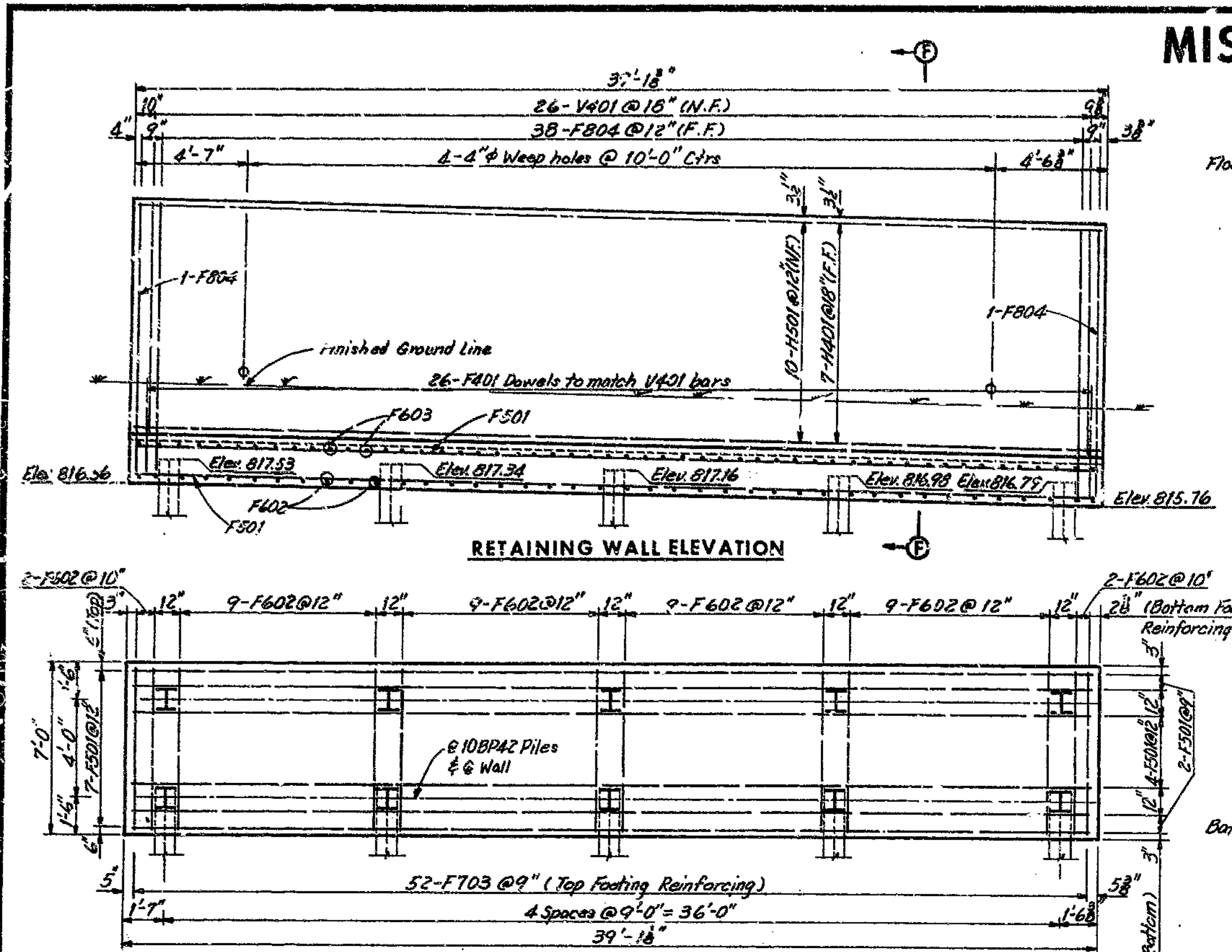
NOTE: This drawing is not to scale. Follow dimensions.

181

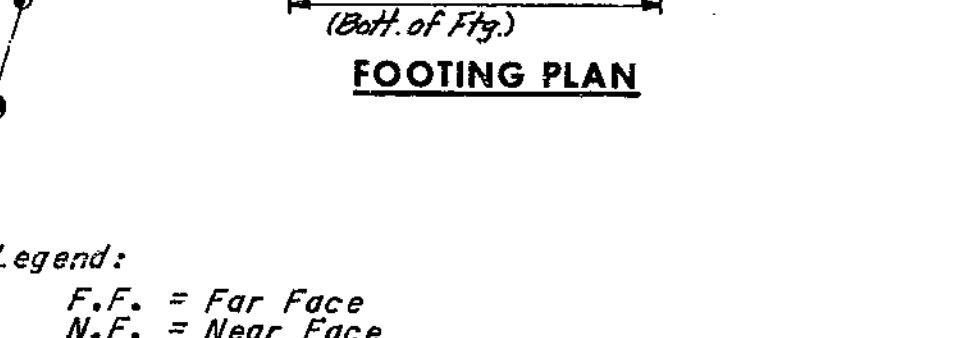
2148-21-02-580-855

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SCALE	DATE
5	MO		96	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Note: Cost of furnishing and placing french drains is to be included in unit price bid for other items of work. See Std. Spec. 50.4.9.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

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

CONCRETE END POST ORDINATES

END BENT 1 DETAILS

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
CLAY COUNTY STA. 7+21.93 Ramp 5  
SHEET 13 OF 36

A-1580

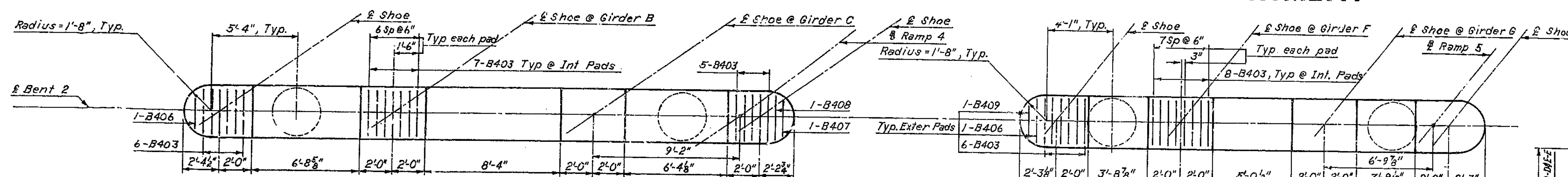
182

2148-21-02-380-B55



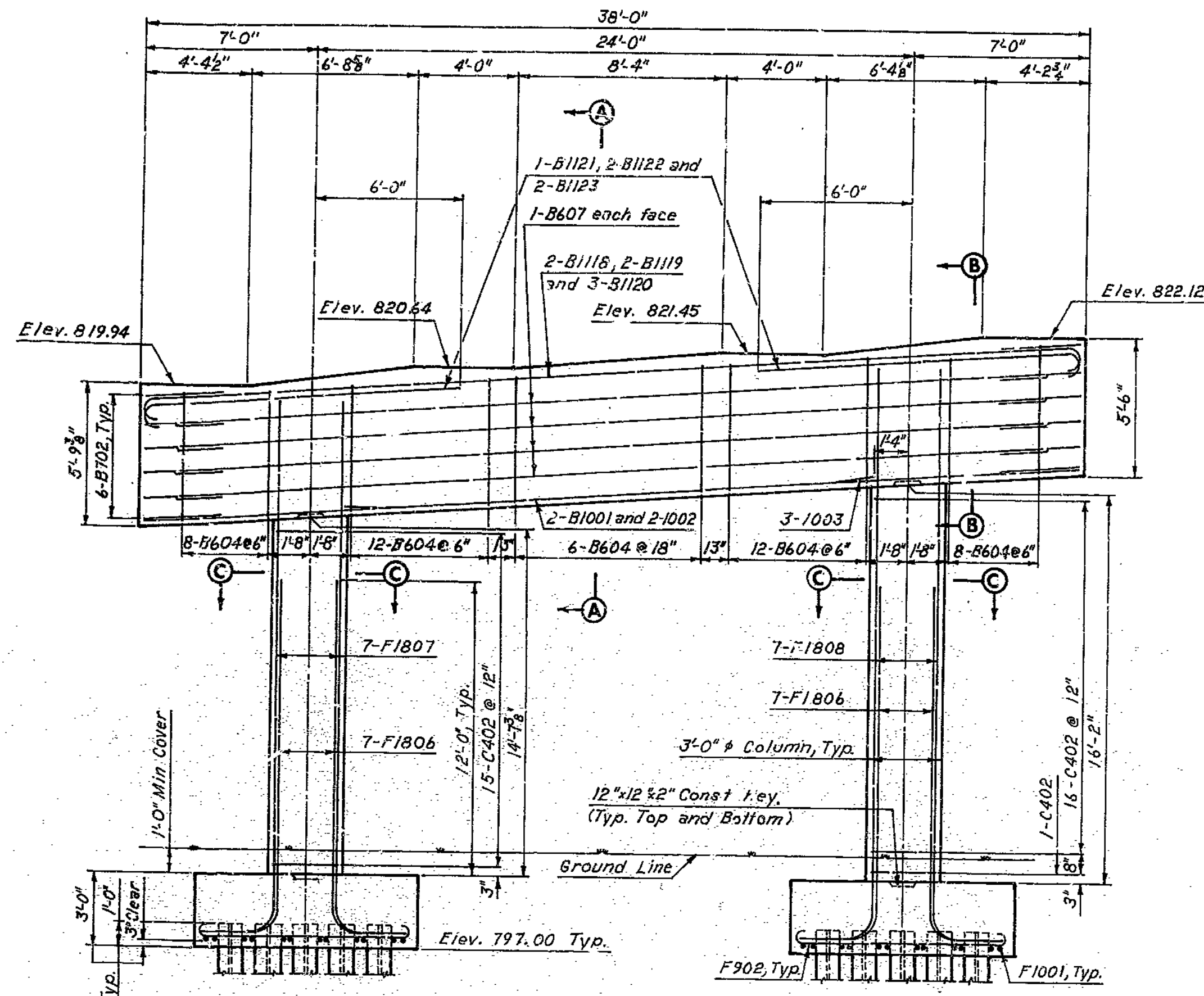
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	DRIVER (TOTAL) NO. SHEETS
5	MO		97
SHT. NO.	COUNTY	ROUTE	SEC.
4	CLAY		

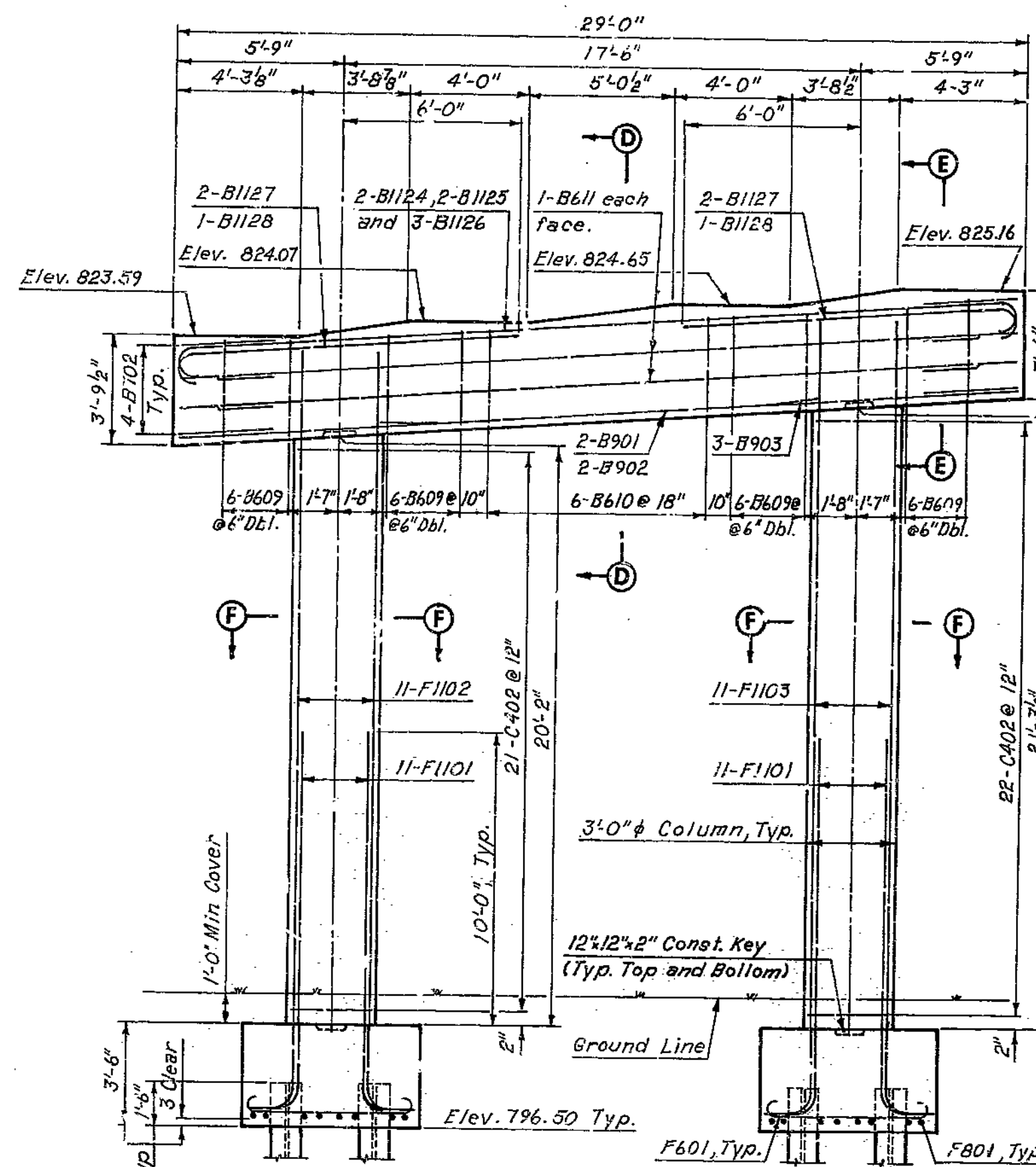


BENT PLAN

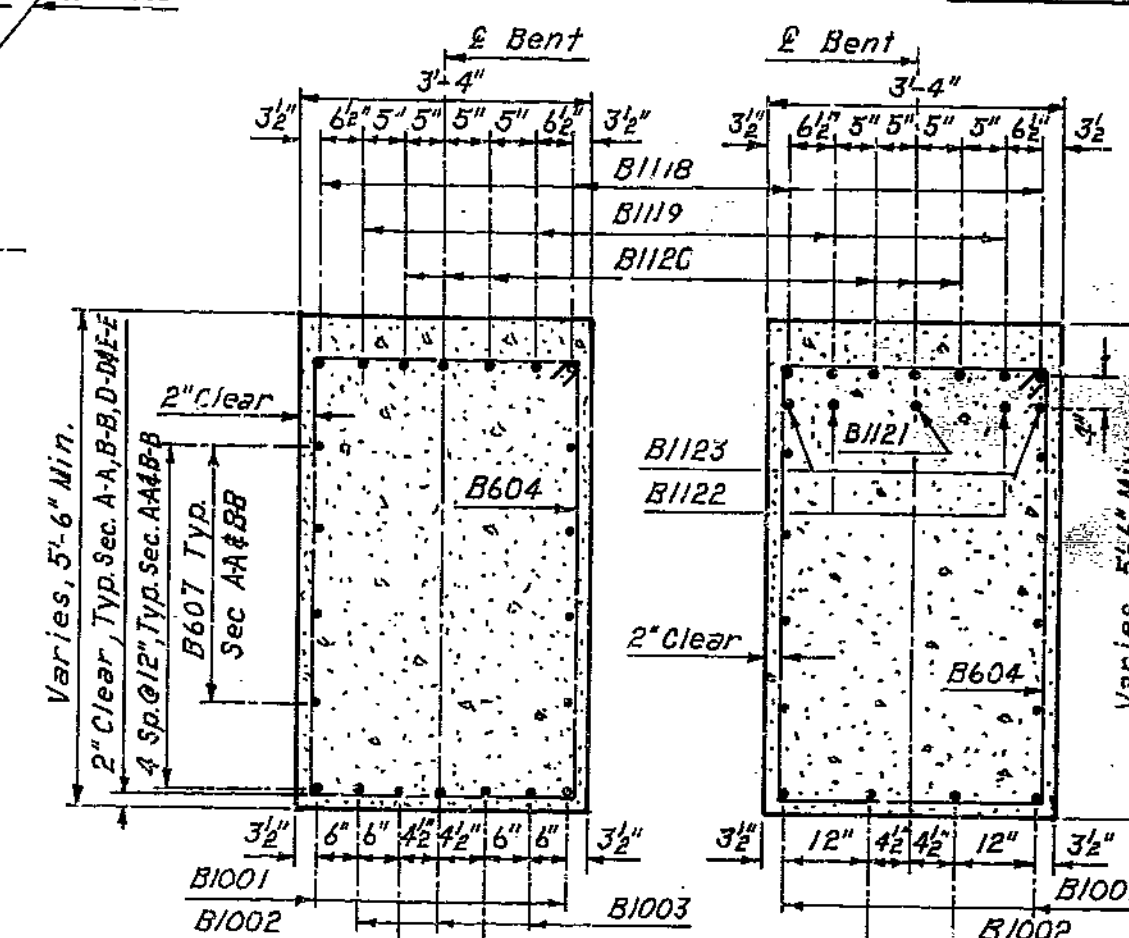
BENT PLAN



ELEVATION

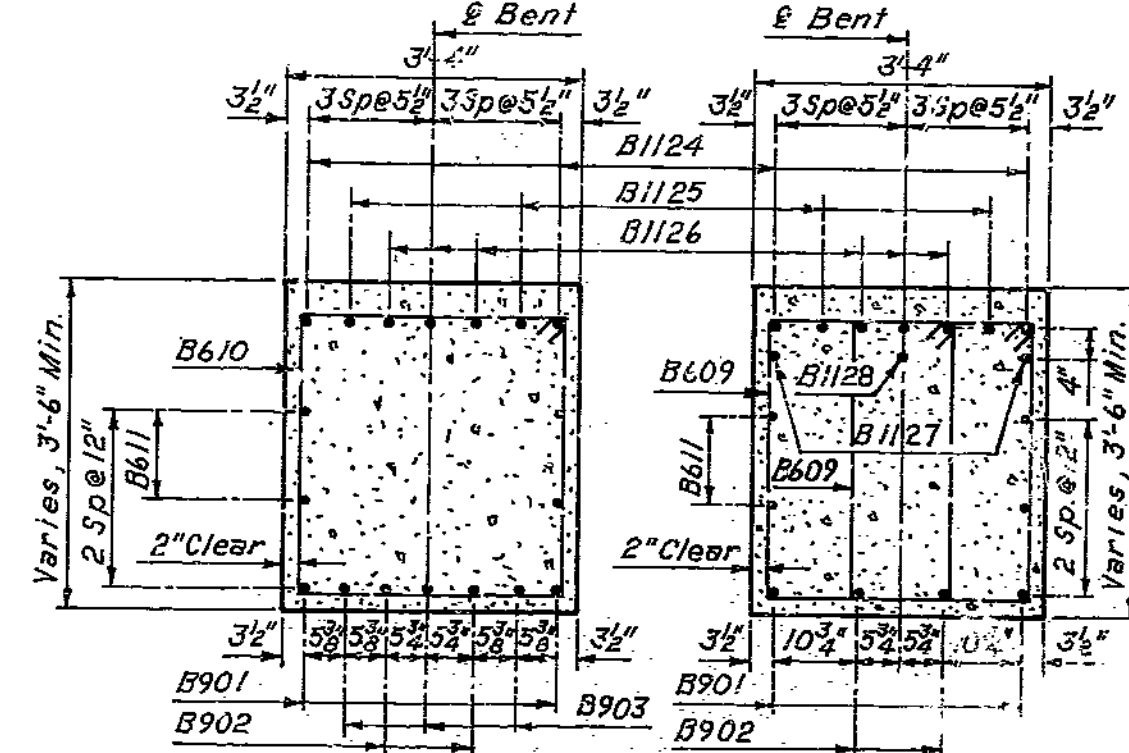


ELEVATION



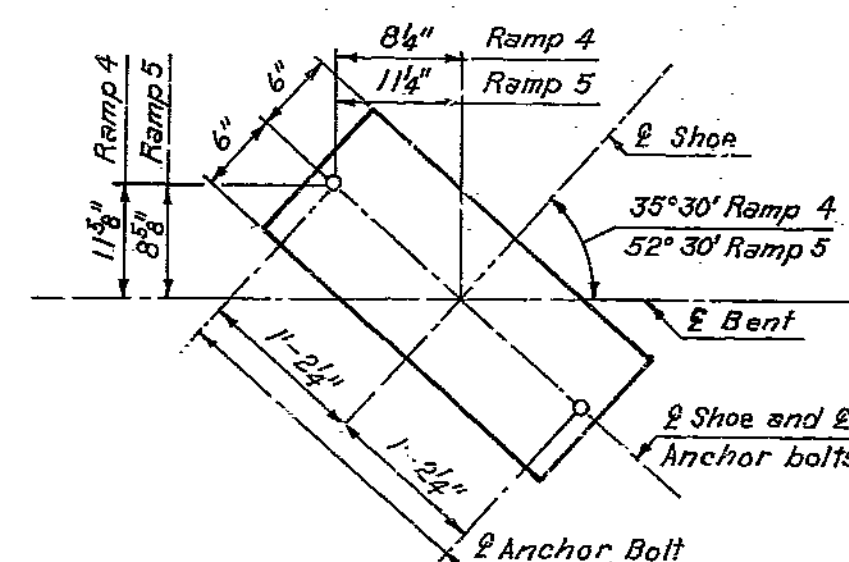
SECTION A-A

SECTION B-B



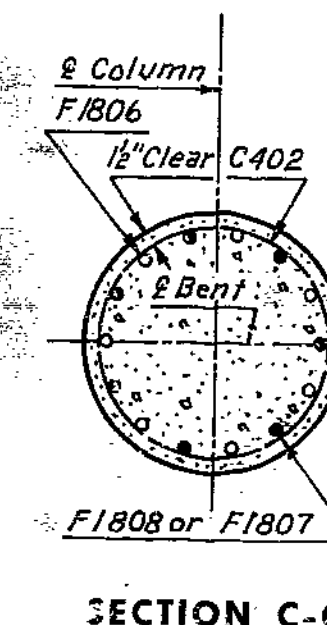
SECTION D-D

SECTION E-E

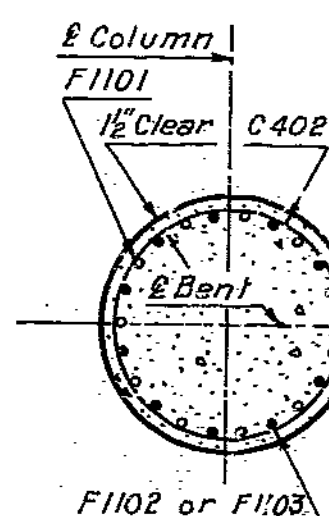


ANCHOR BOLT SETTING PLAN

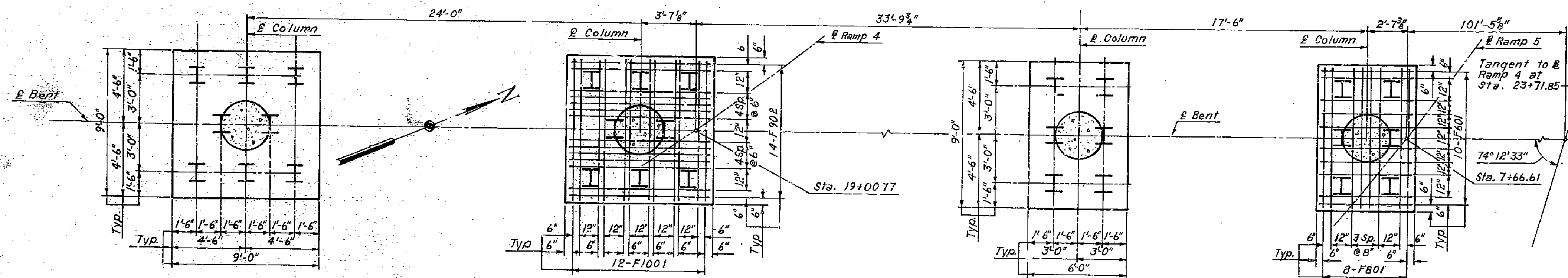
Note:  
 All dimensions are horizontal.  
 For Substructure Layout, see Sheet 3.  
 For Pile Data Table, see Sheet 3.  
 For Pile Splice Detail, see Sheet 4.  
 All piles are 10PB42, No batter.  
 For Reinforcement Schedule, see Sheet 7.  
 For Shoe Detail, see Sheet 36.  
 For Detail of spiral around Anchor Bolt, see Sheet 16.



SECTION C-C



SECTION F-F



FOOTING PLAN

FOOTING PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE L.J.R. DATE 9-20-68 CHECKED C.E.B. DATE 10-11-68

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

BRIDGE: RAMP 4&5 OVER RAMP 3  
 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435

IN CLAYCOMO STA. 18+27.09 Ramp 4

PROJECT NO. I-435-1(69)(RTE. I-435) STA. 7+21.92 Ramp 5

CLAY COUNTY

BENT 2

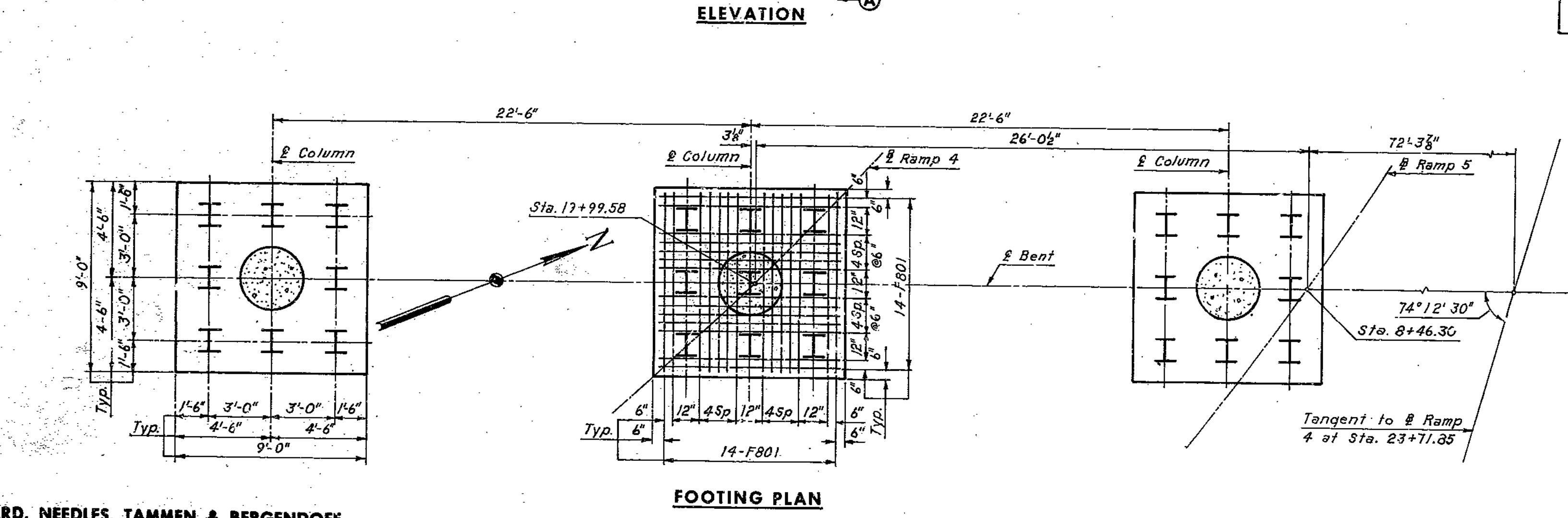
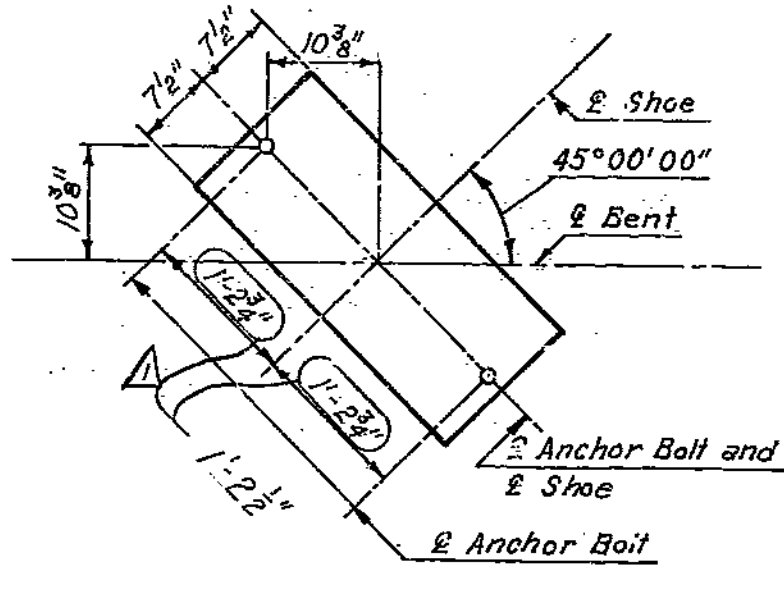
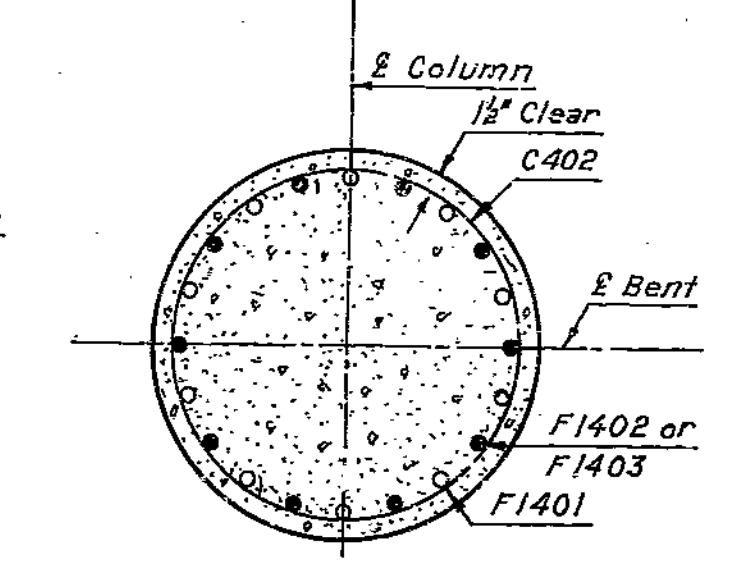
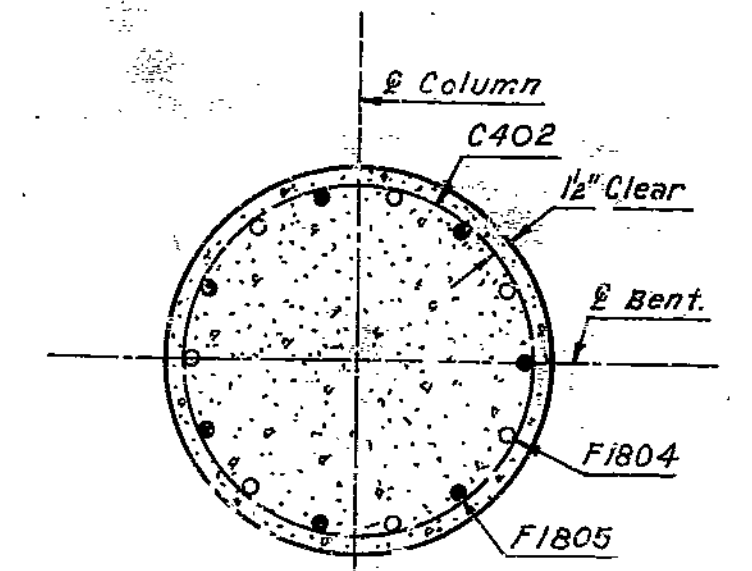
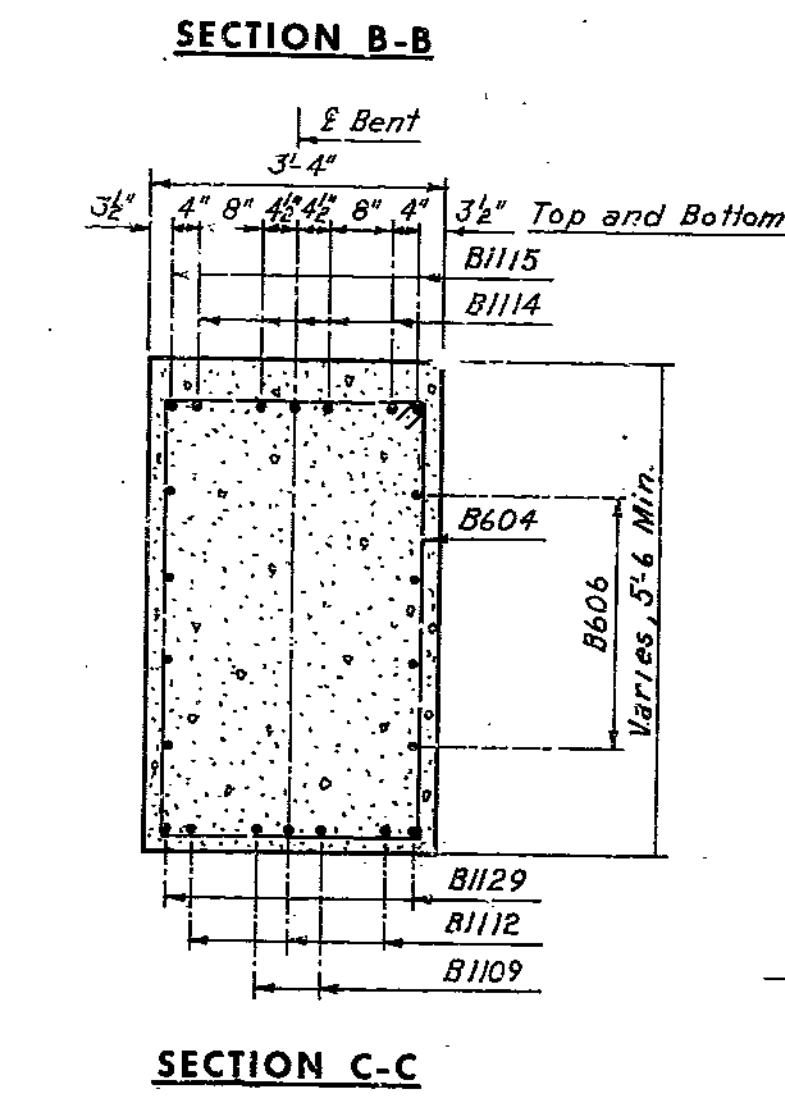
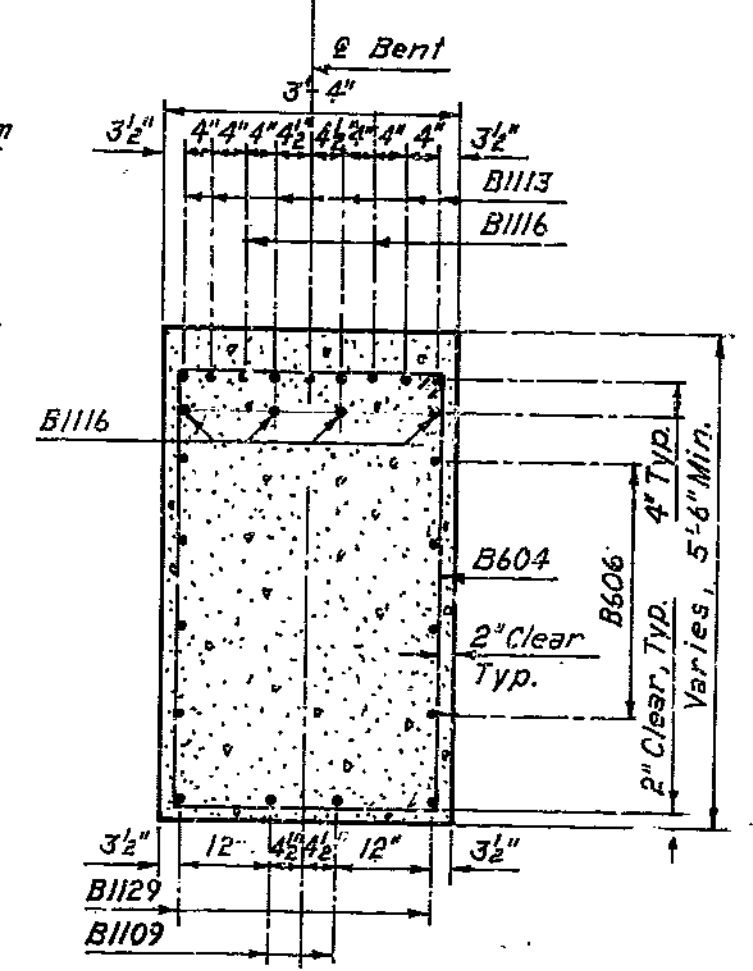
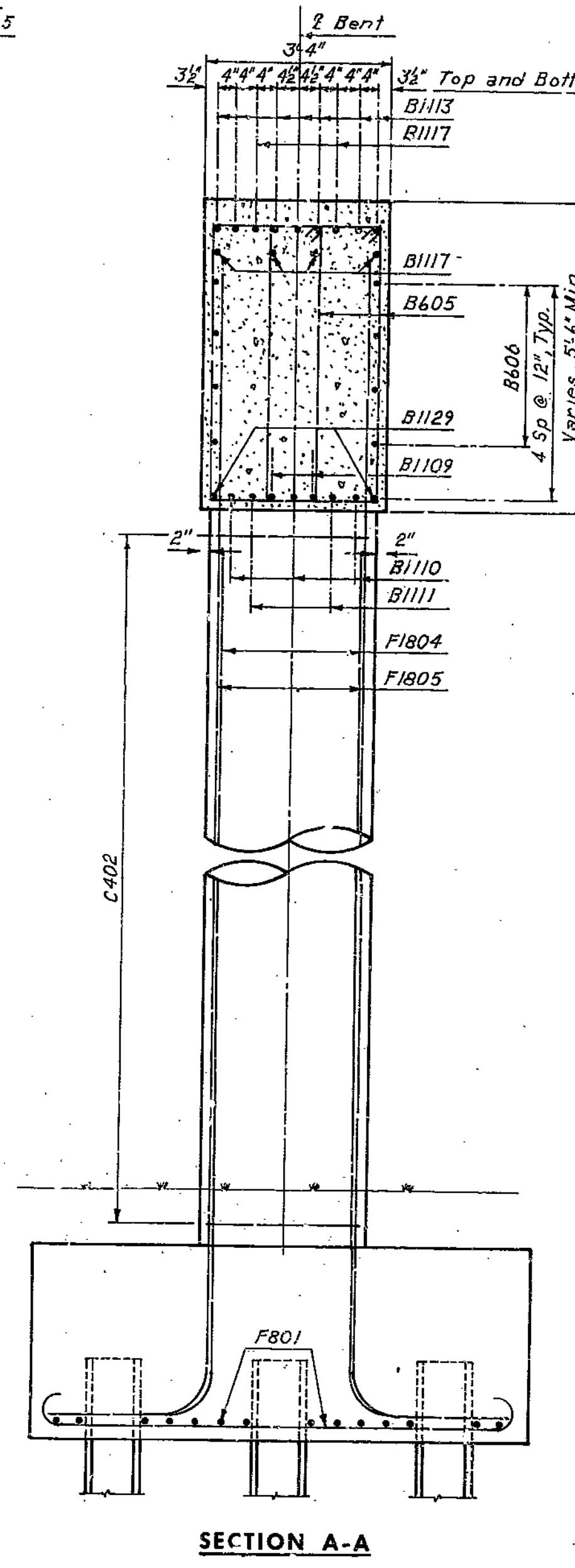
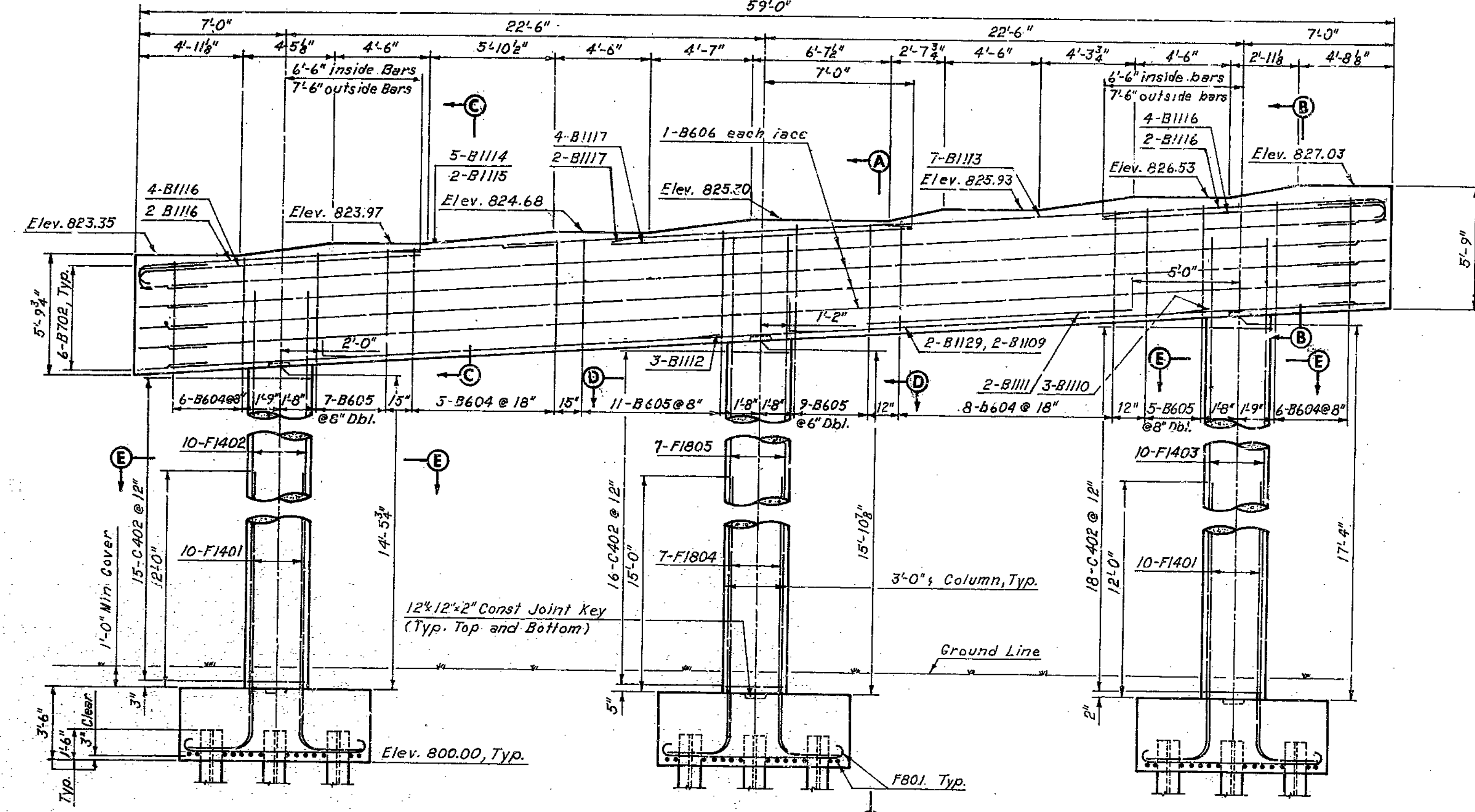
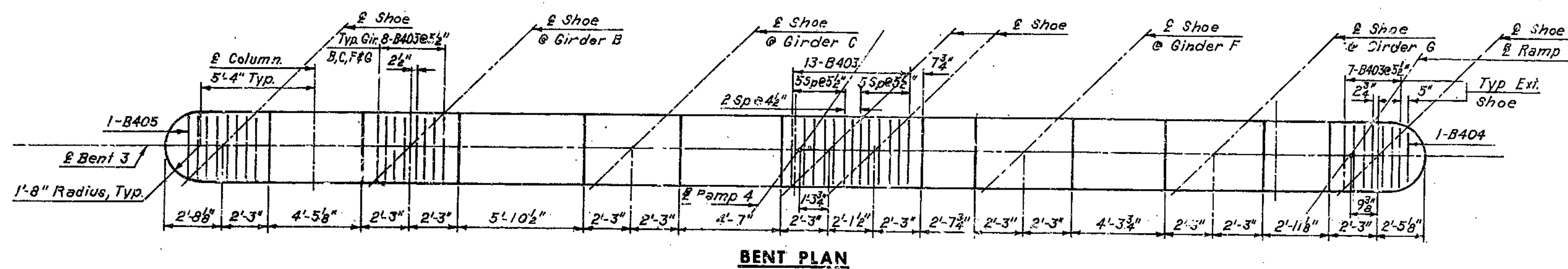
SHEET 14 OF 36

A-1580

183

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	MO	PROJECT NO. & SEC.	
DIST. NO.	4	COUNTY	CLAY
SHEET NO.		TOTAL SHEETS	



Notes:  
 For substructure layout, see Sheet 3.  
 For Pile Data Table, see Sheet 3.  
 For Pile Cap Detail, see Sheet 4.  
 All piles are 108x42, no batter.  
 For Reinforcement Schedule, see Sheet 7.  
 For Shoe Detail, see Sheet 36.  
 For Detail of Spiral around Anchor Bolt, see Sheet 16.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
**CLAY COUNTY**  
 BENT 3  
 SHEET 15 OF 36  
 A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE L.J.R. DATE 9-17-68 CHECKED C.E.B. DATE 10-5-68

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

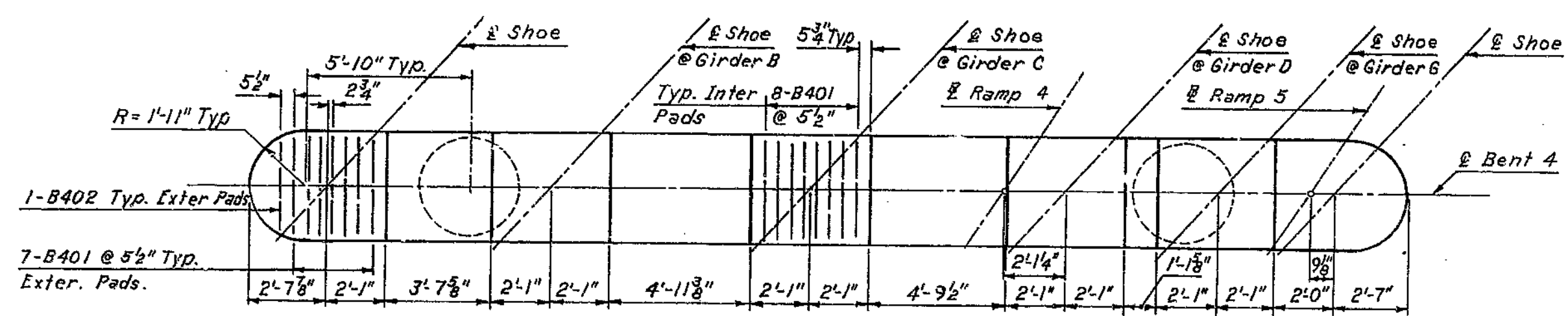
Rev. 2-27-69

184

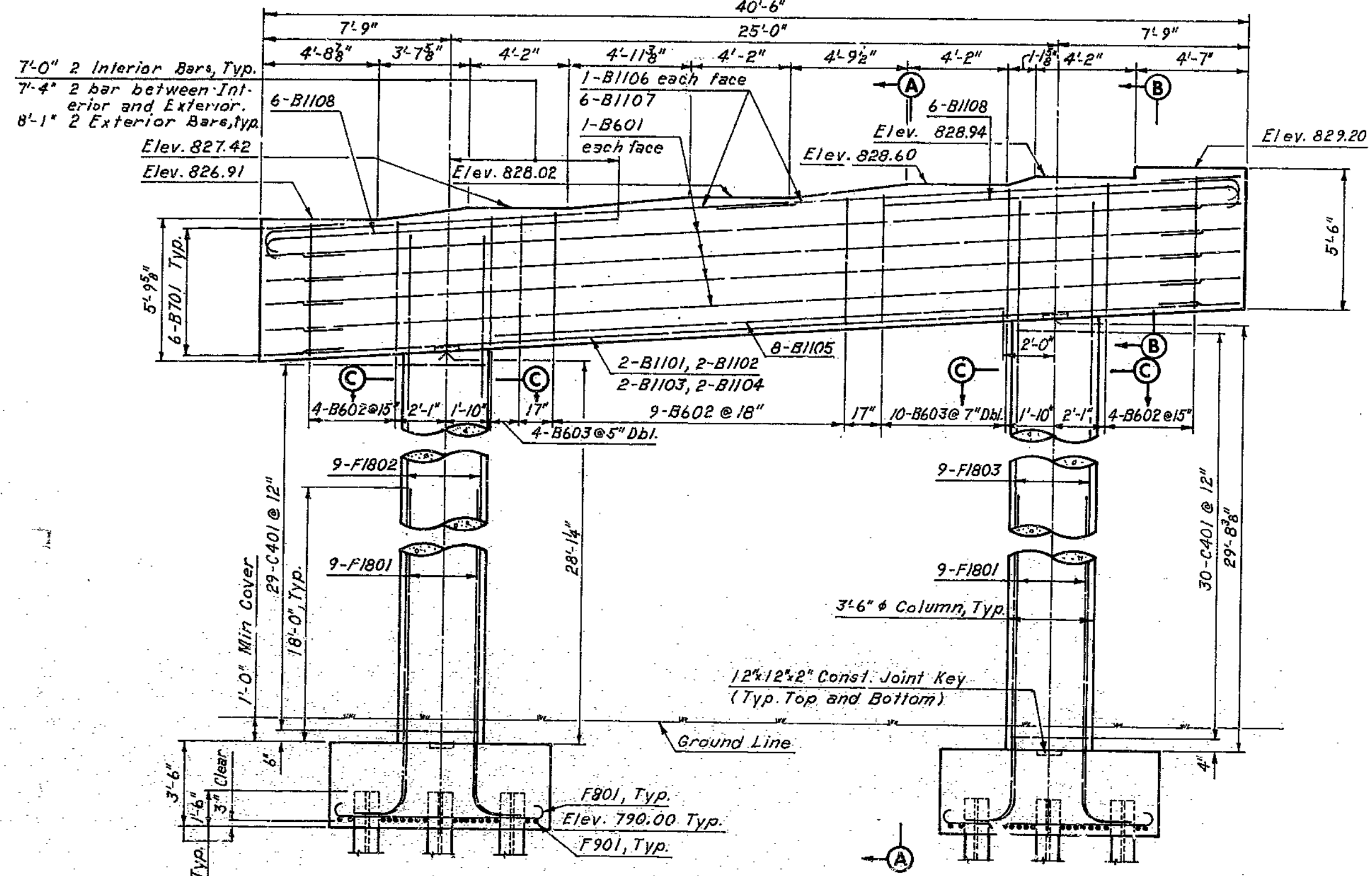
2148-21-02-580-B-55

MISSOURI STATE HIGHWAY DEPARTMENT

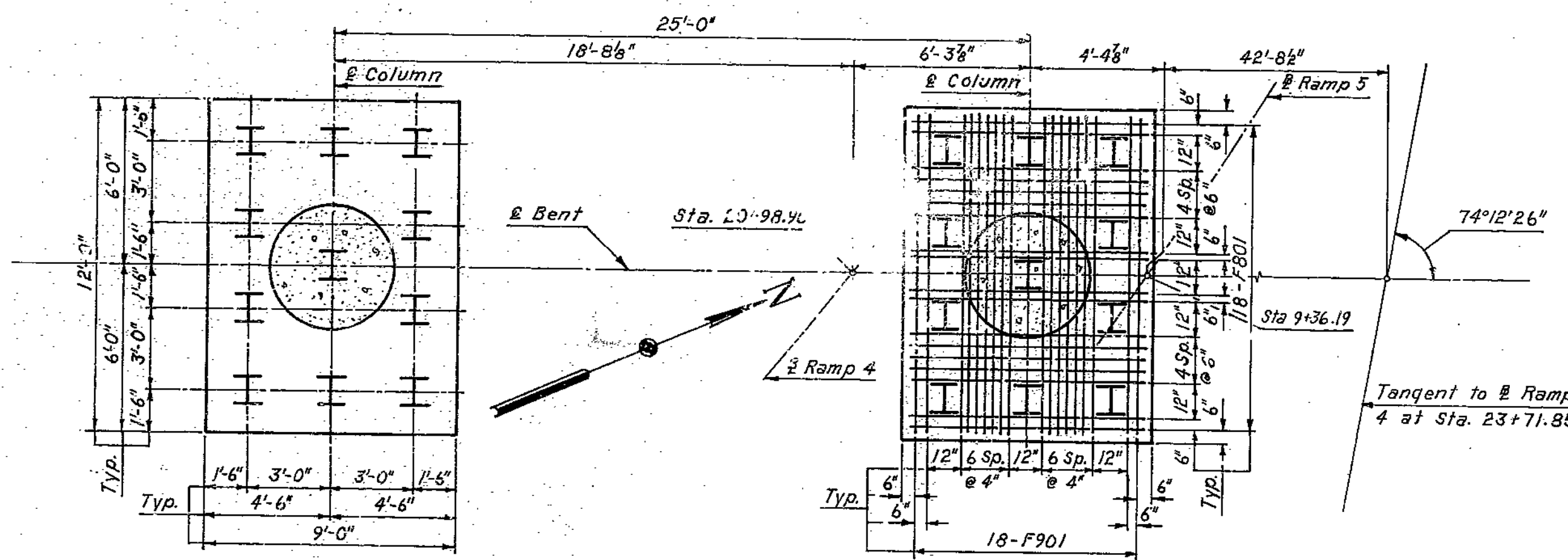
FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
5	MO		99	
DIST. NO.	COUNTY	ROUTE	NO.	SEC.
4	CLAY			



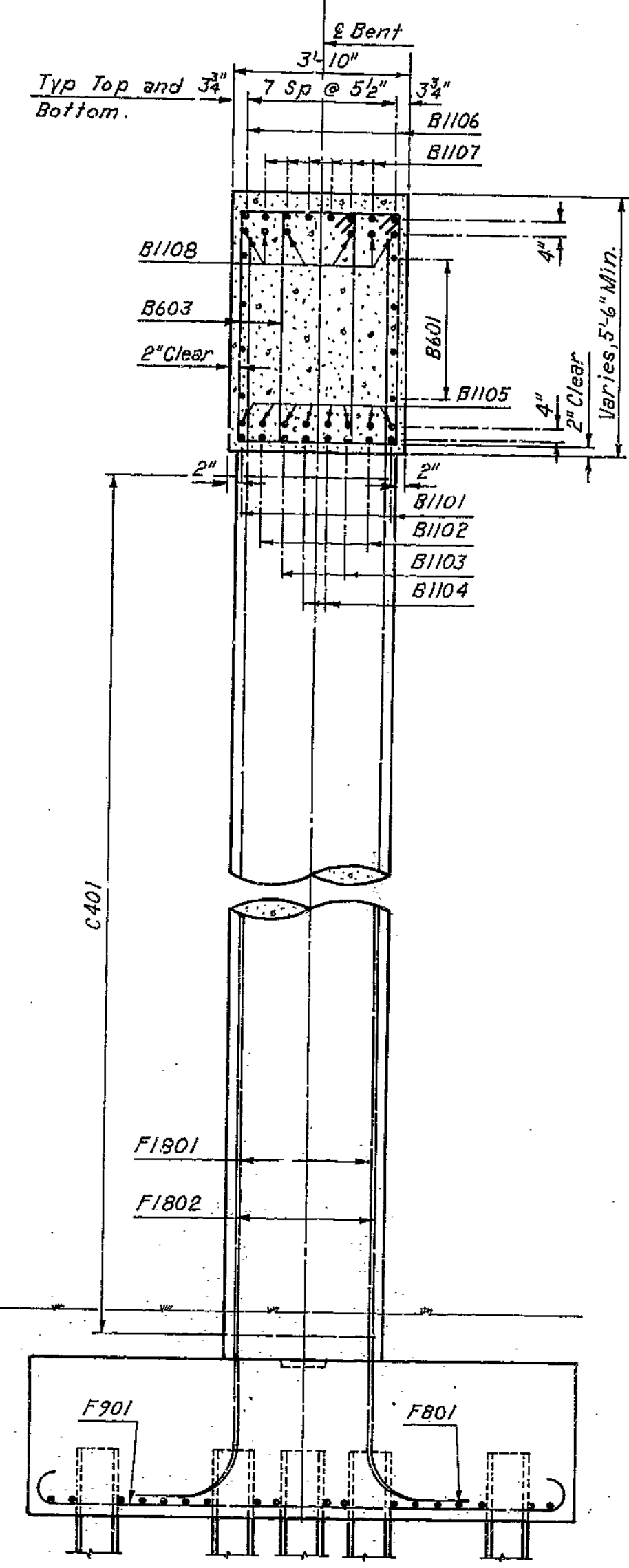
BENT PLAN



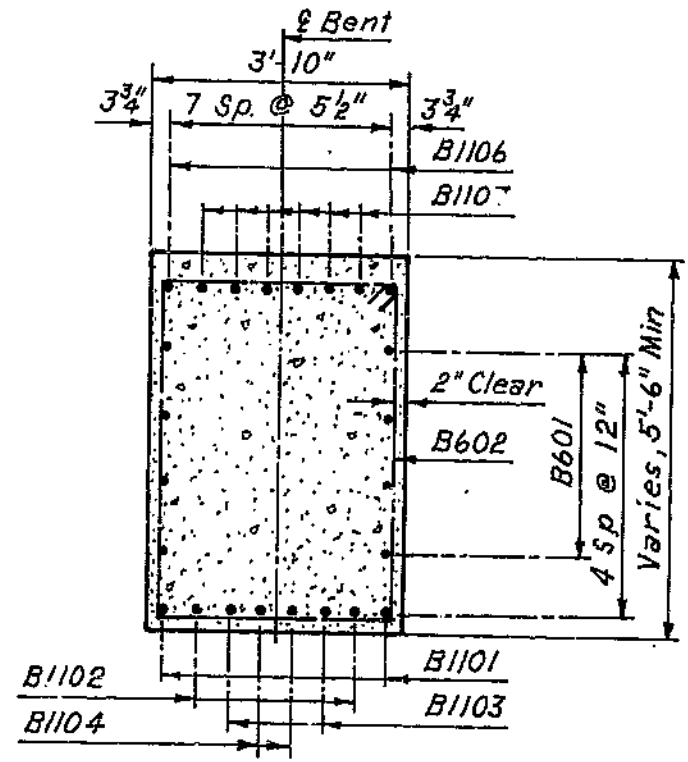
ELEVATION



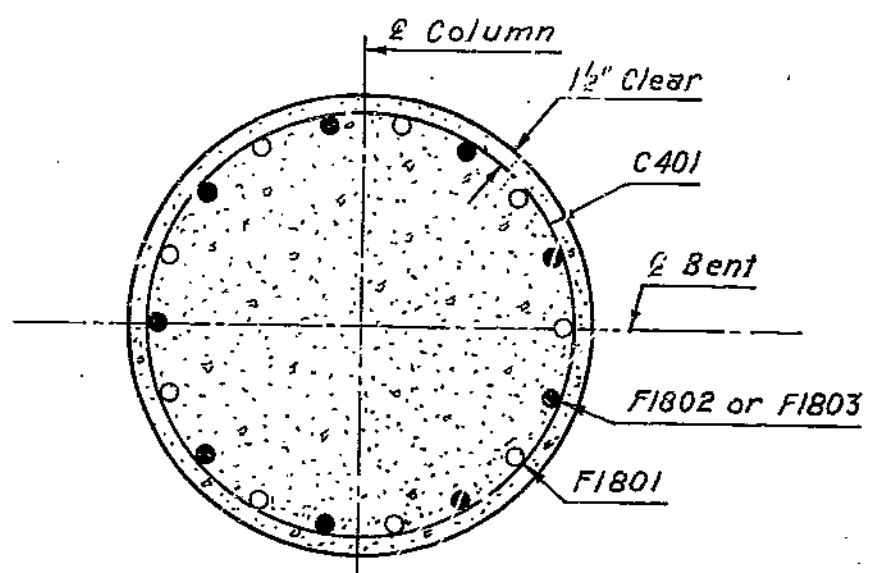
FOOTING PLAN



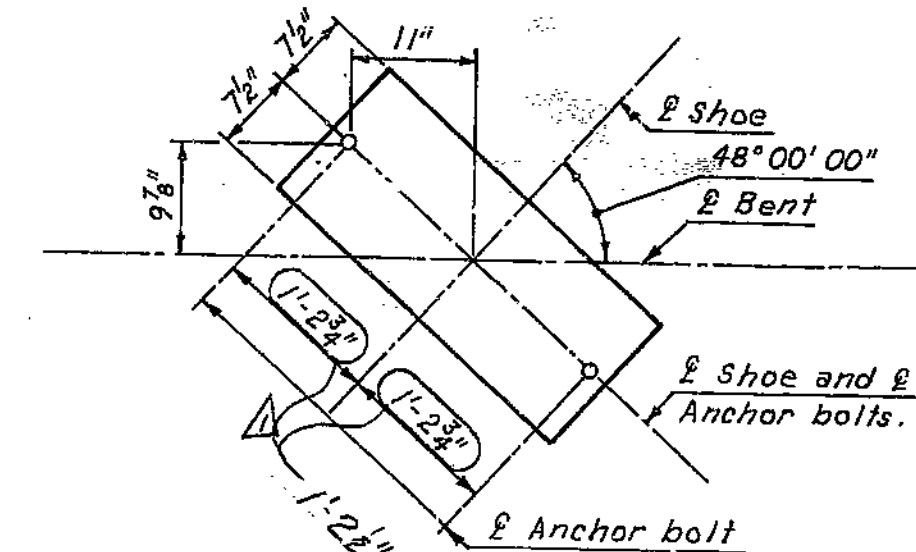
SECTION A-A



SECTION B-B

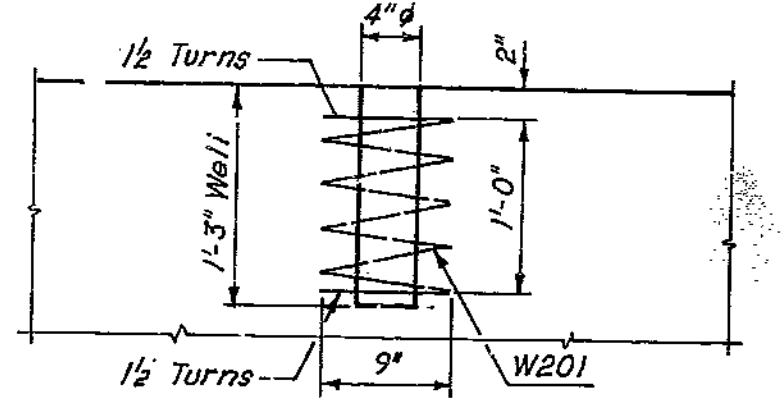


SECTION C-C



ANCHOR BOLT SETTING PLAN

Note: Anchor bolts may be set in wells as shown or in holes drilled in the concrete substructure. See Special Provisions for setting Anchor bolts.



DETAIL OF SPIRAL AROUND ANCHOR BOLT

Notes:  
 For substructure layout, see Sheet 3.  
 For Pile Data Table, see Sheet 3.  
 For Pile Splice Detail, see Sheet 4.  
 All piles are 10PB42, no batter.  
 For Reinforcement schedule, see Sheet 7.  
 For Shoe Detail, see Sheet 36.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY

BENT 4

SHEET 16 OF 36

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE L.J.R. DATE 9-12-68 CHECKED C.E.B. DATE 10/1/68

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

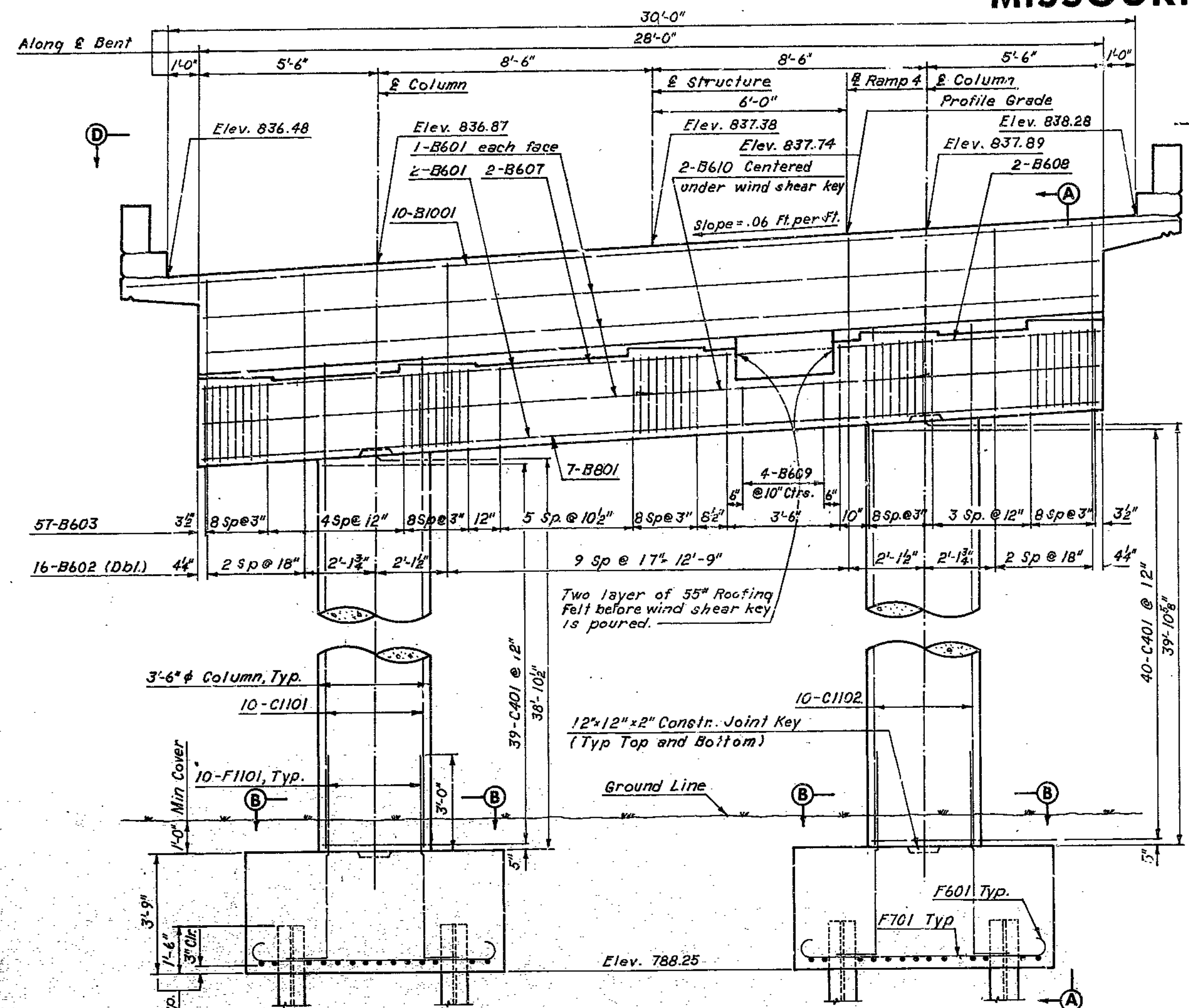
Rev. 2-27-69

185

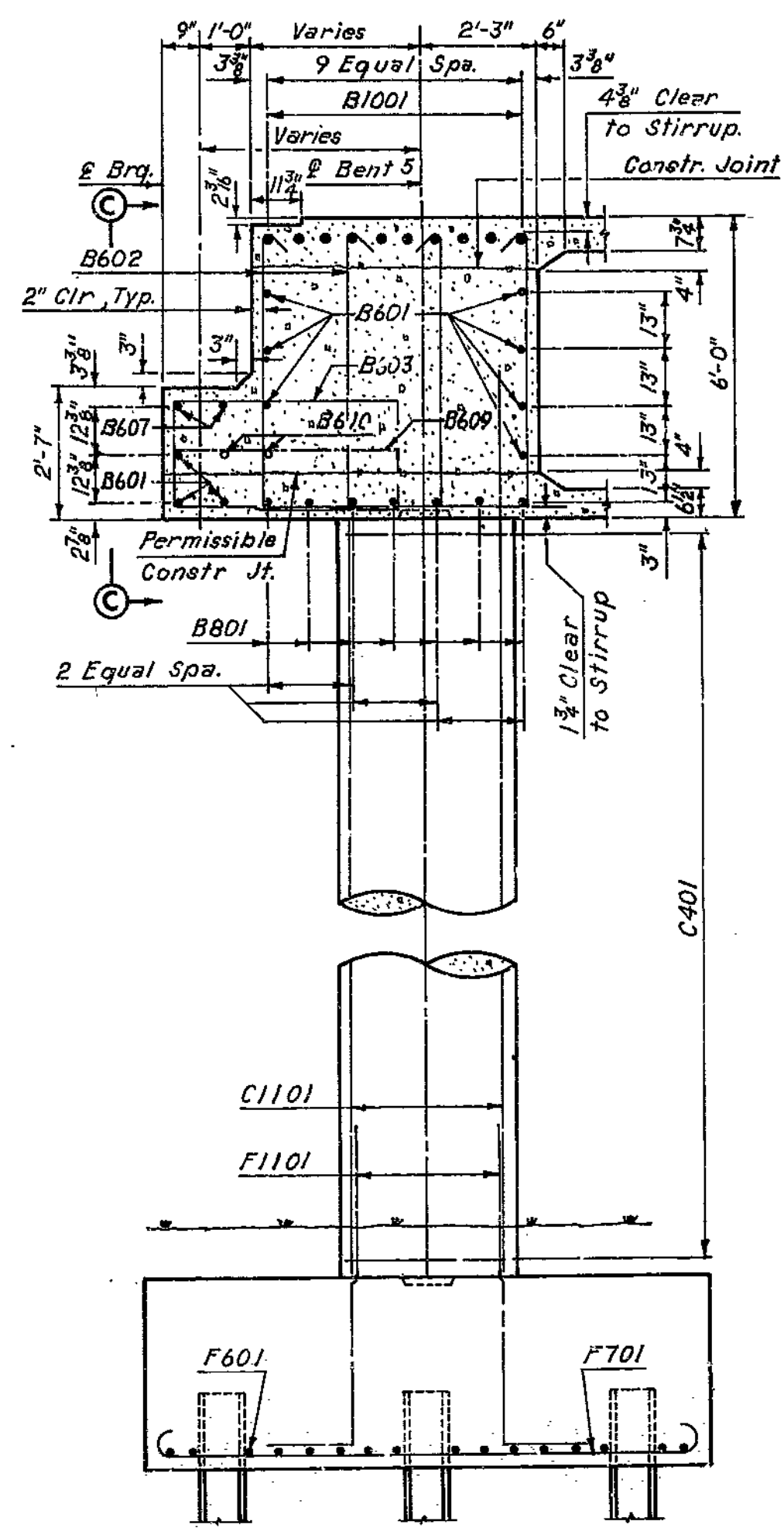
2148-21-02-580-B55

MISSOURI STATE HIGHWAY DEPARTMENT

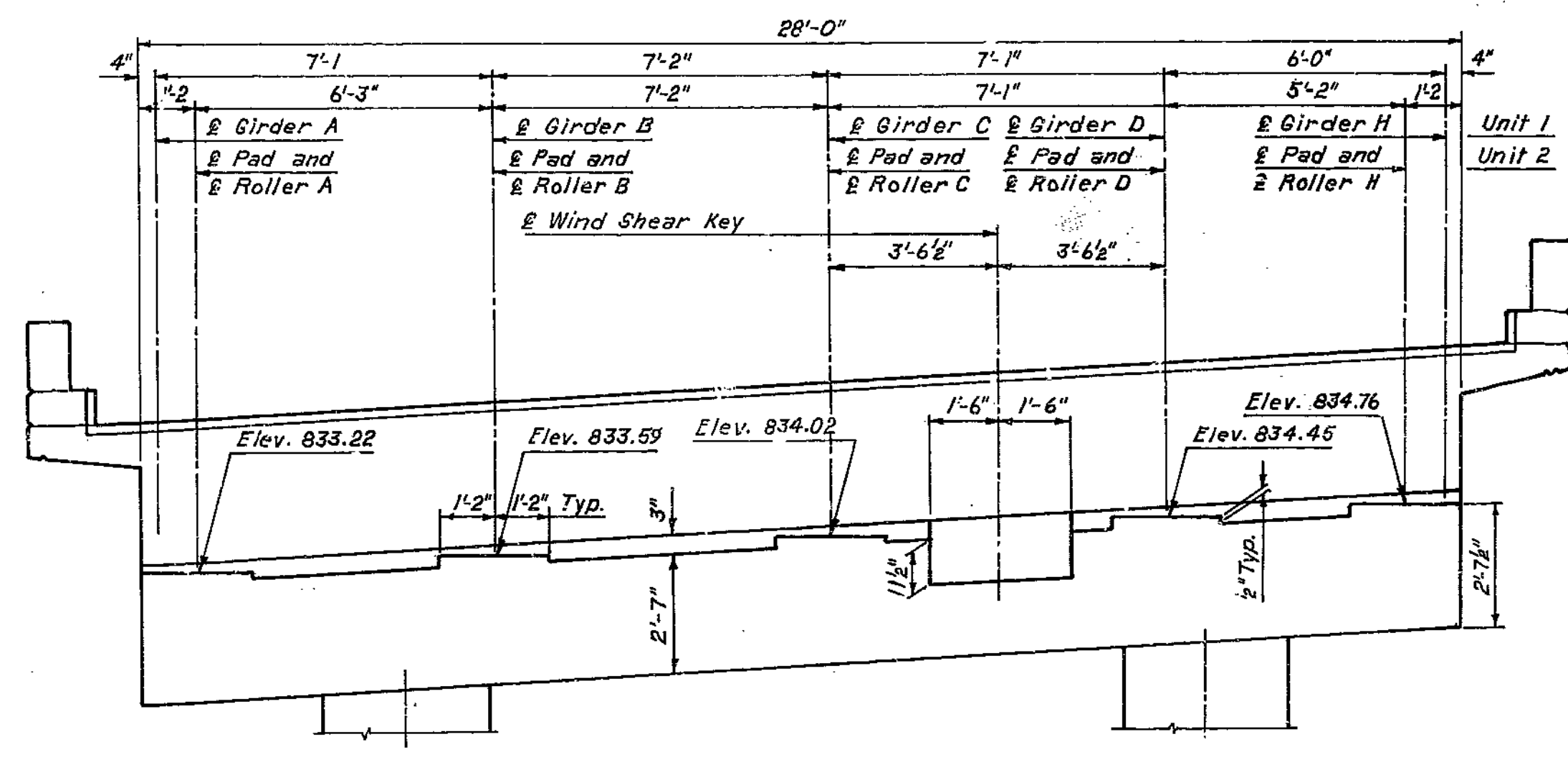
NO. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			100	
DIST. NO.	COUNTY				
4	CLAY				



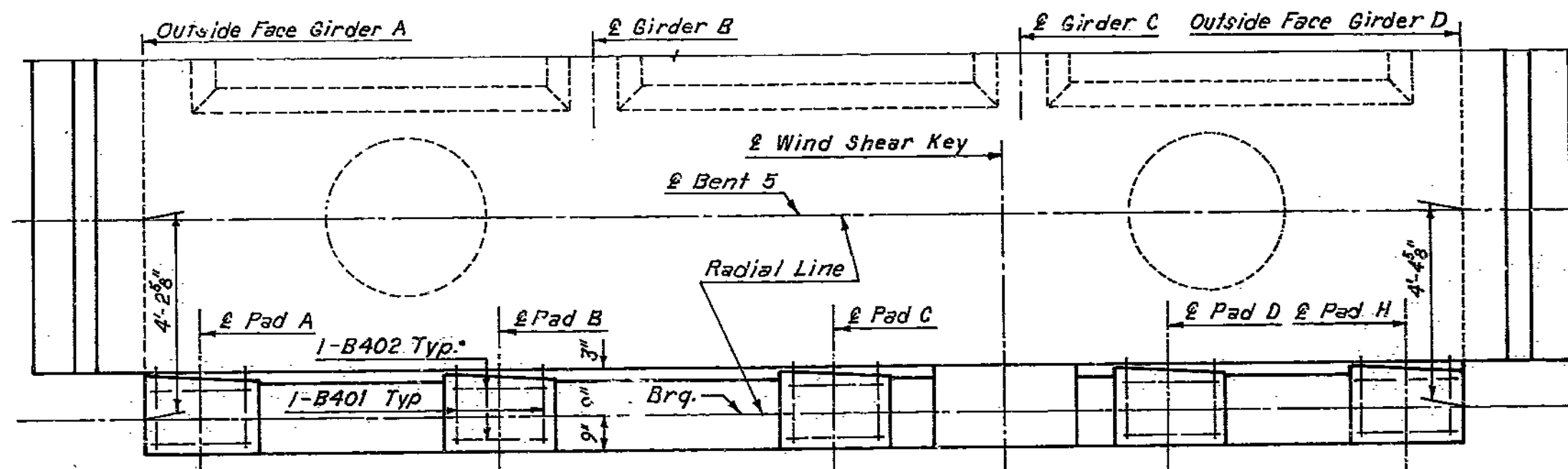
ELEVATION



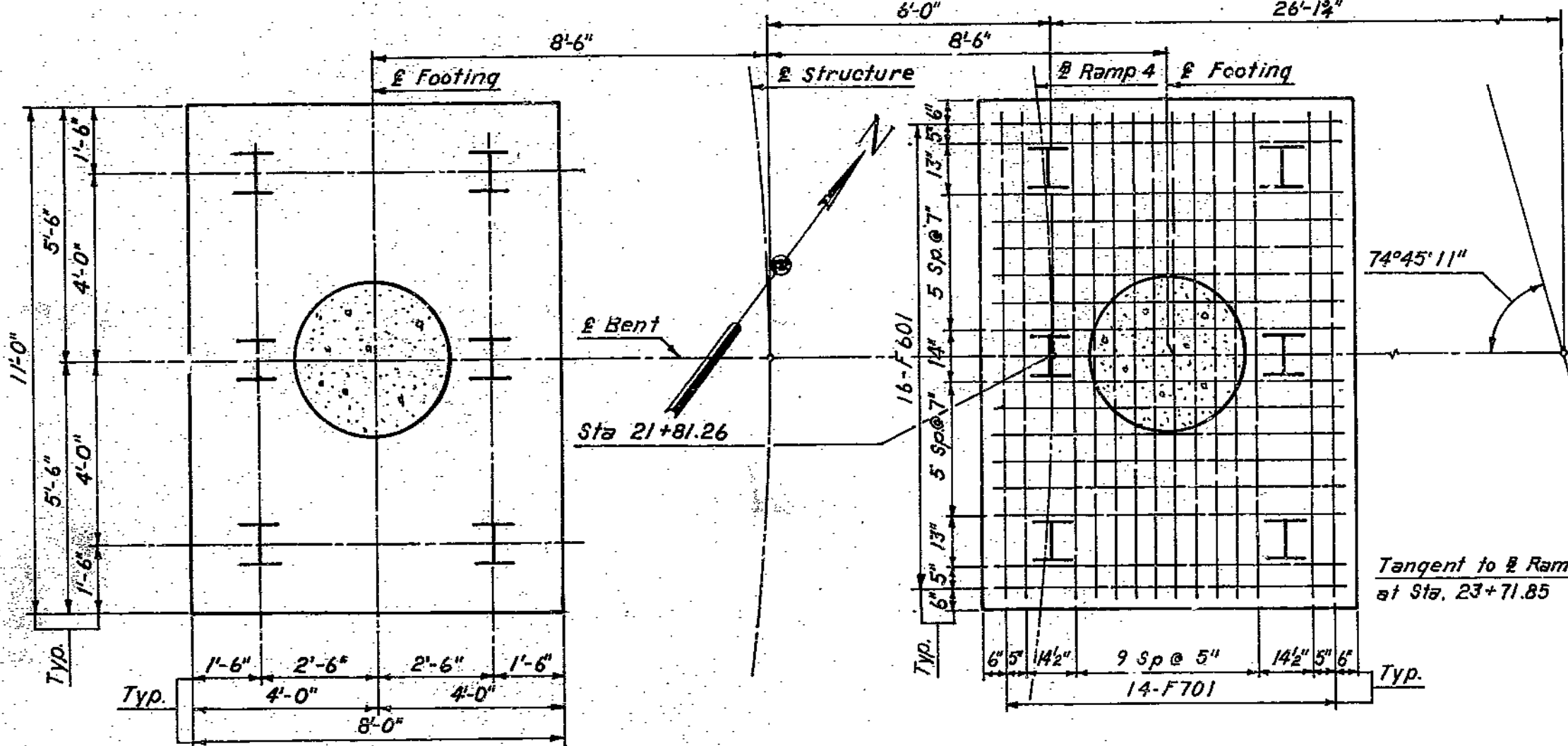
SECTION A-A



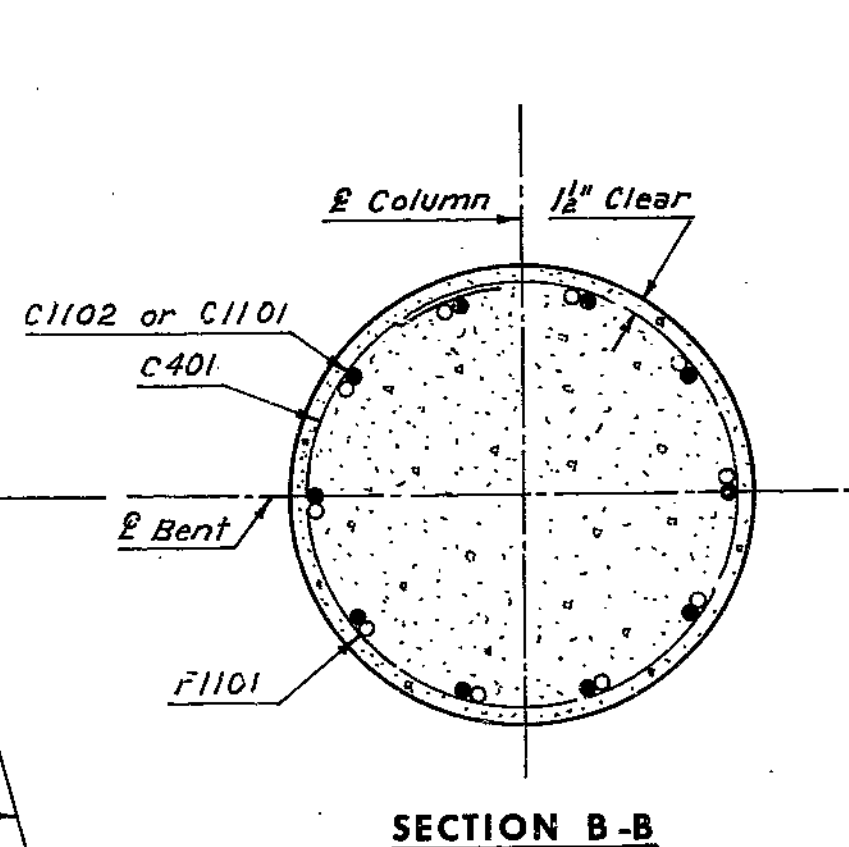
VIEW C-C



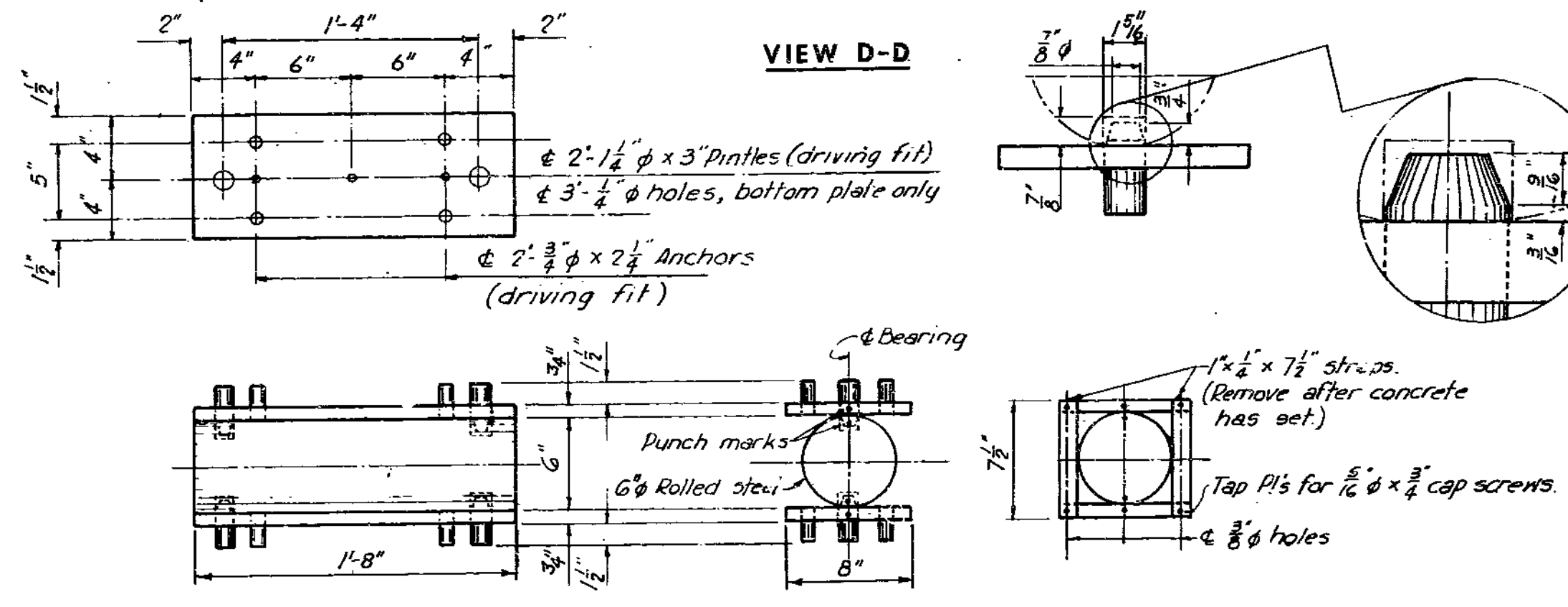
VIEW D-D



FOOTING PLAN



SECTION B-B



EXPANSION ROLLER

Notes:  
 For Substructure Layout, see Sheet 4.  
 For Pile Data Table, see Sheet 3.  
 For Pile Splice Detail, see Sheet 4.  
 All piles are 10BP42, no batter.  
 For Reinforcement Schedule, see Sheet 10.

Note:  
 Top and bottom plates to be USS T-1 Alloy or equivalent. Materials for pintels and rollers shall be cold finished carbon steel AISI C1042 or C1045 (turned and polished).  
 All bearing plates shall be straightened to plane surfaces.

Weight of expansion rollers is included in Fabricated Structural Carbon Steel item.  
 No of rollers required- 5

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY

BENT 5

SHEET 17 OF 36

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE L.J.R. DATE 7-11-68 CHECKED C.E.S. DATE 9-23-68

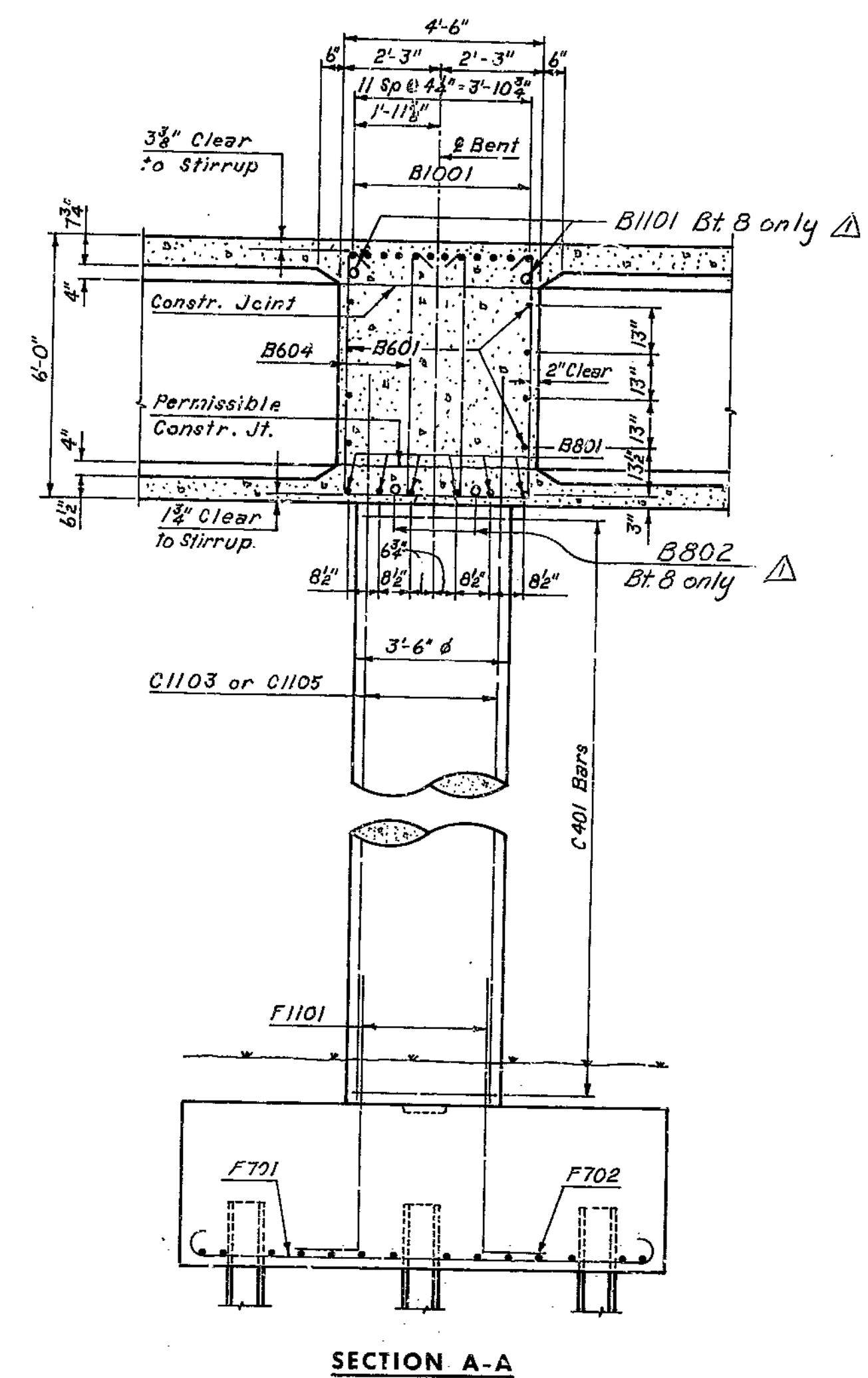
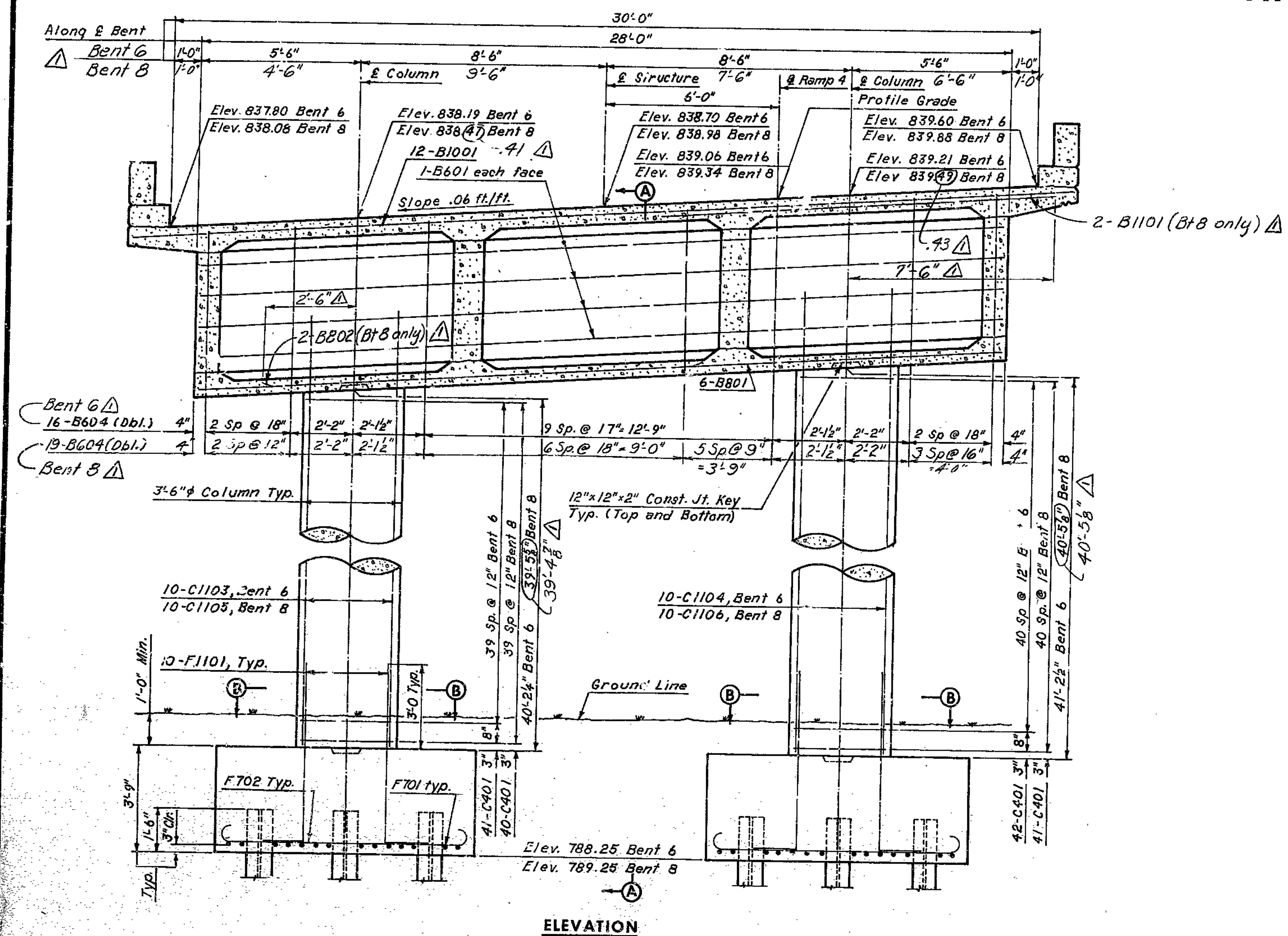
NOTE: This drawing is not to scale. Follow dimensions.

186

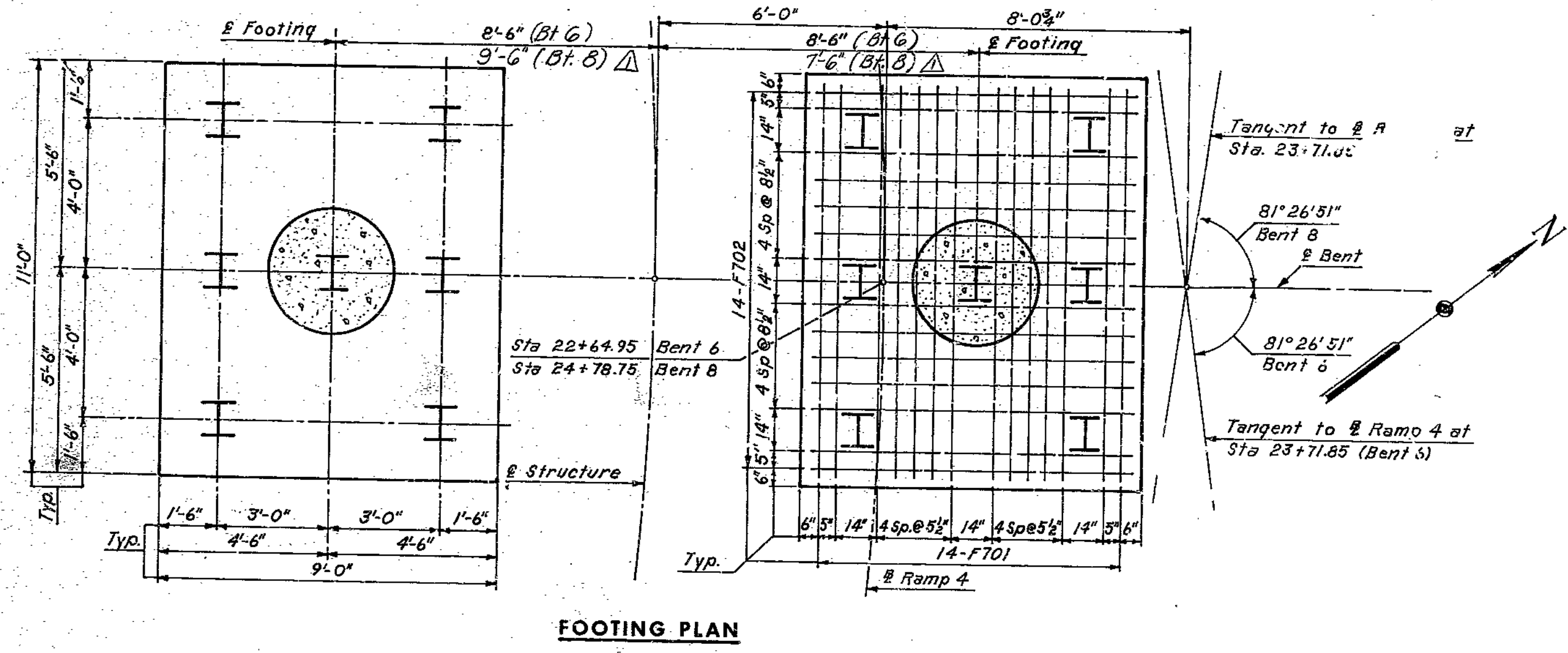
2148-2102  
 BF 1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			101	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



Note:  
For Substructure Layout, see Sheet 1.  
For Pile Data Table, see Sheet 3.  
For Pile Splice Detail, see Sheet 4.  
All piles are 108P42, no batter.  
Dimensions and Reinforcement are typical for each Bent unless noted otherwise.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE L.J.R. DATE 6-29-68 CHECKED C.F.B. DATE 9-23-68

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

Revised 7-29-70

BENT 6 AND 8

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
STA. 7+21.93 Ramp 5  
CLAY COUNTY  
SHEET 18 OF 36

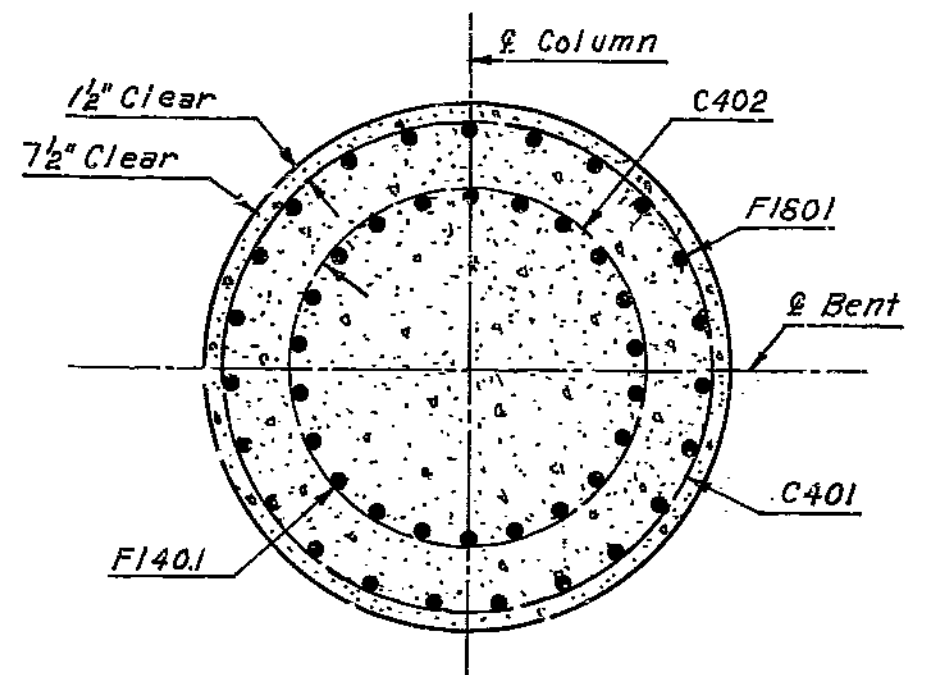
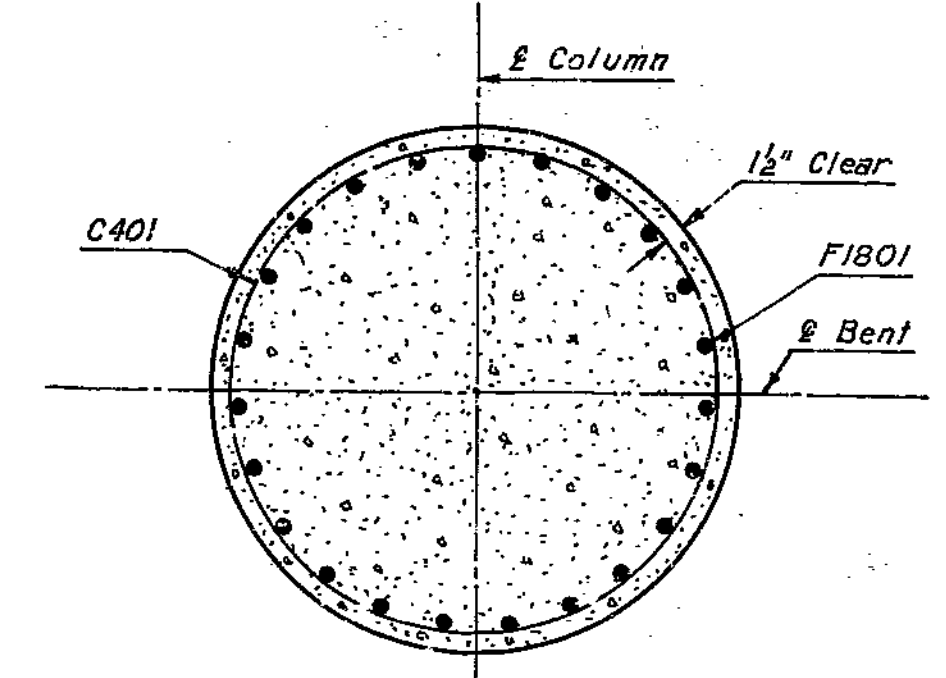
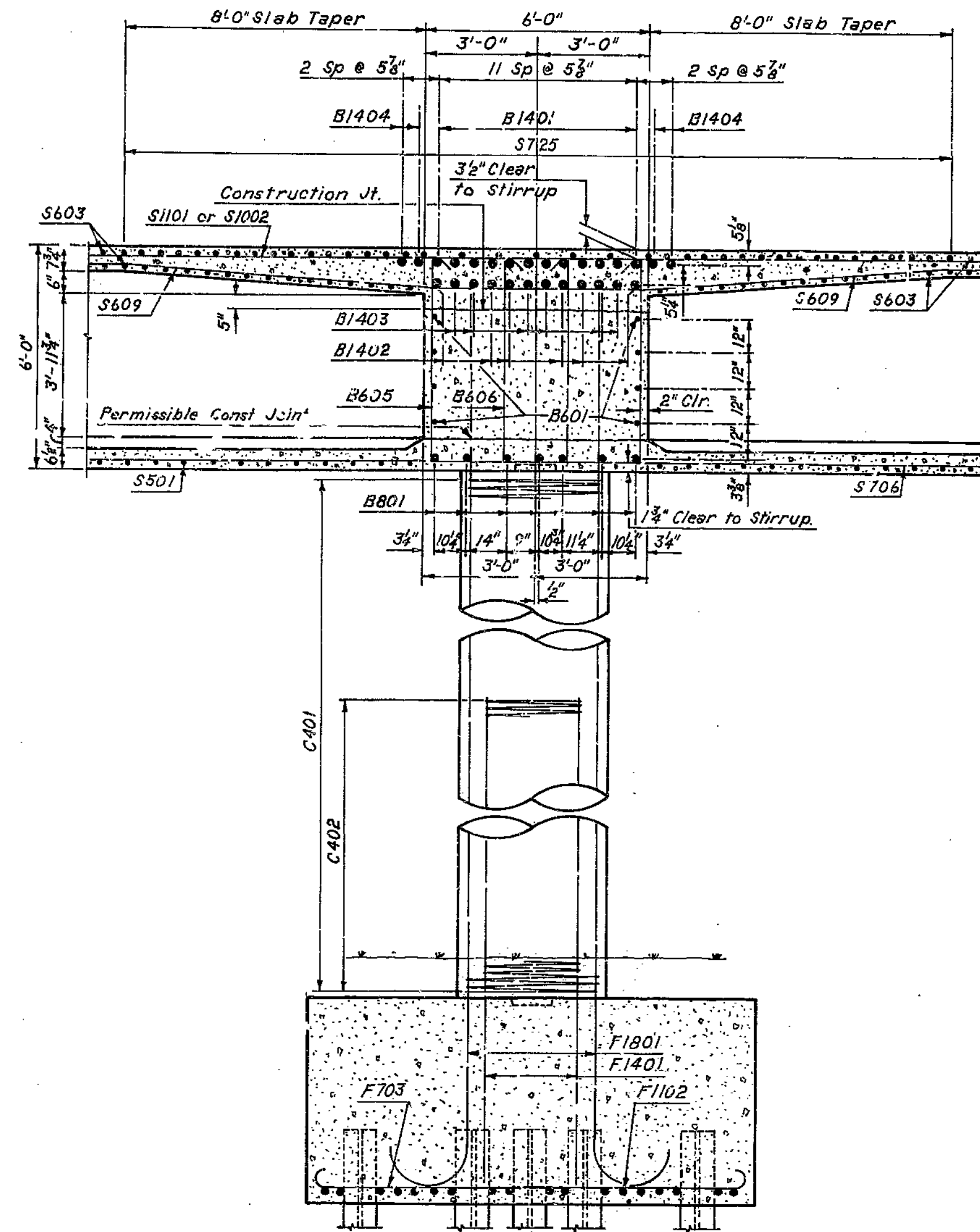
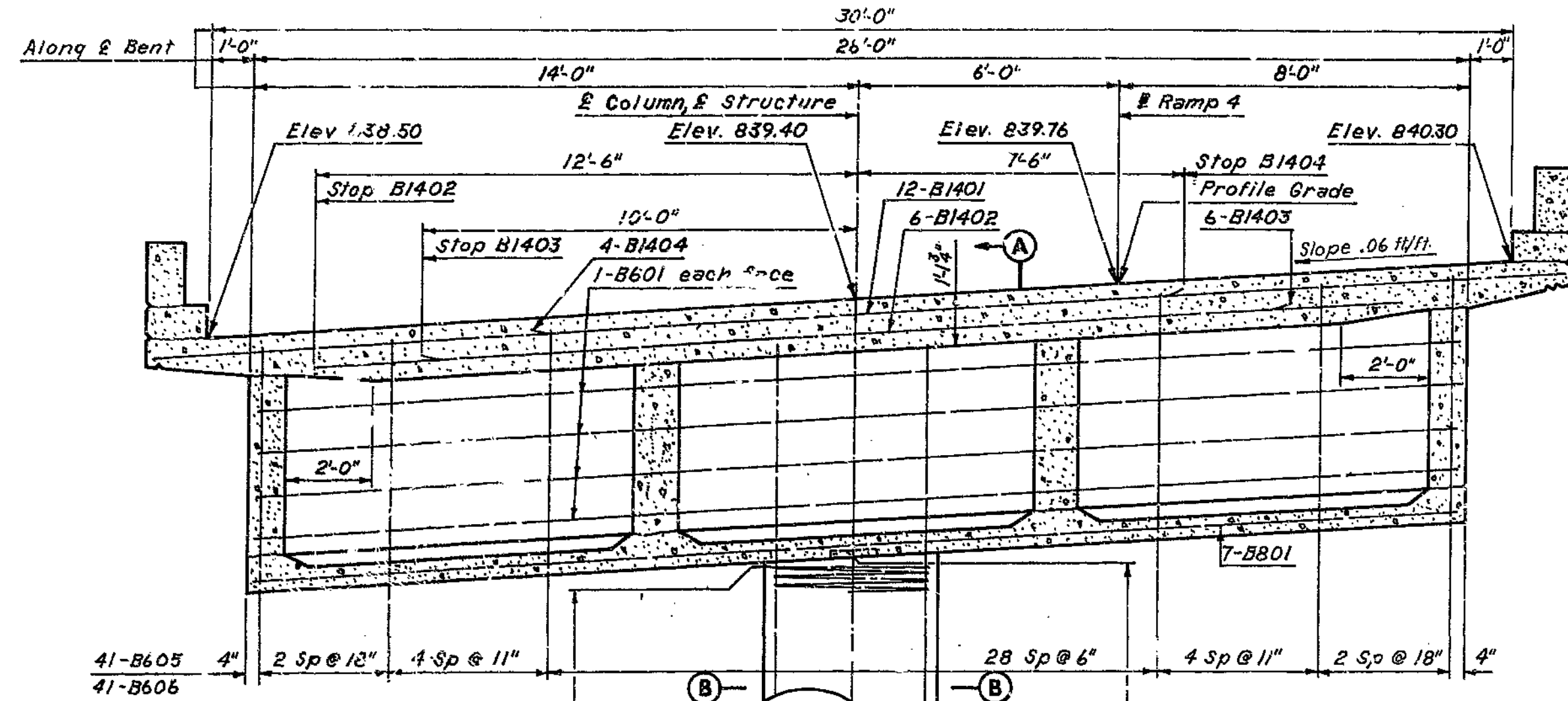
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187

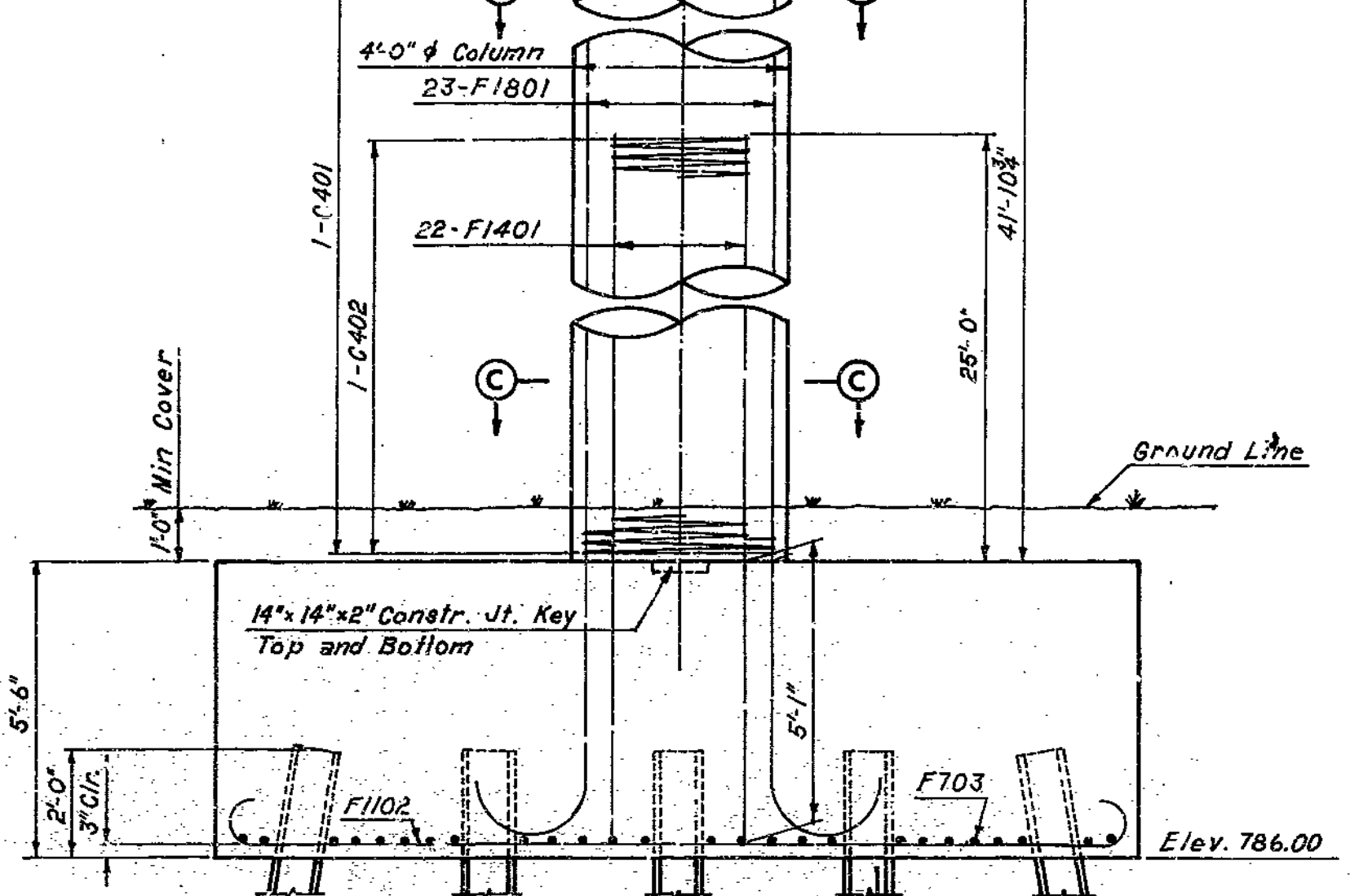
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MISSOURI STATE HIGHWAY DEPARTMENT

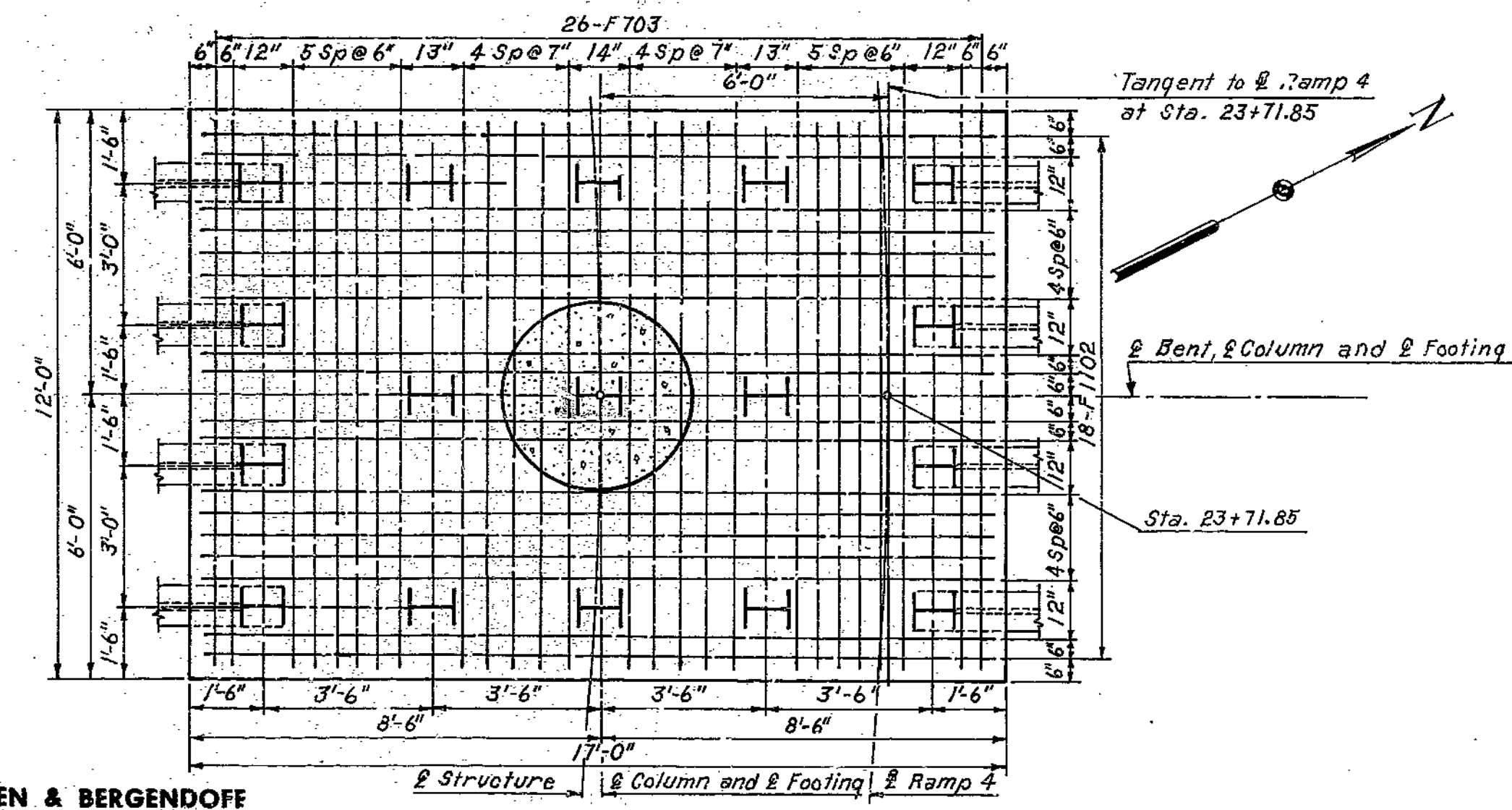
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5	MO		102	
REV. NO.		COUNTY	ROUTE	SEC.
4		CLAY		



Note:  
 For Substructure Layout, see Sheet 4.  
 For Pile Data Table, see Sheet 3.  
 For Pile Splice Detail, see Sheet 4.  
 All Piles are 108P42, Batter 2" per ft. where shown.  
 For Reinforcement Schedule, see Sheet 10.



ELEVATION



FOOTING PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE L.J.R. DATE 7-10-68 CHECKED C.F.B. DATE 9-23-68

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

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY

BENT 7

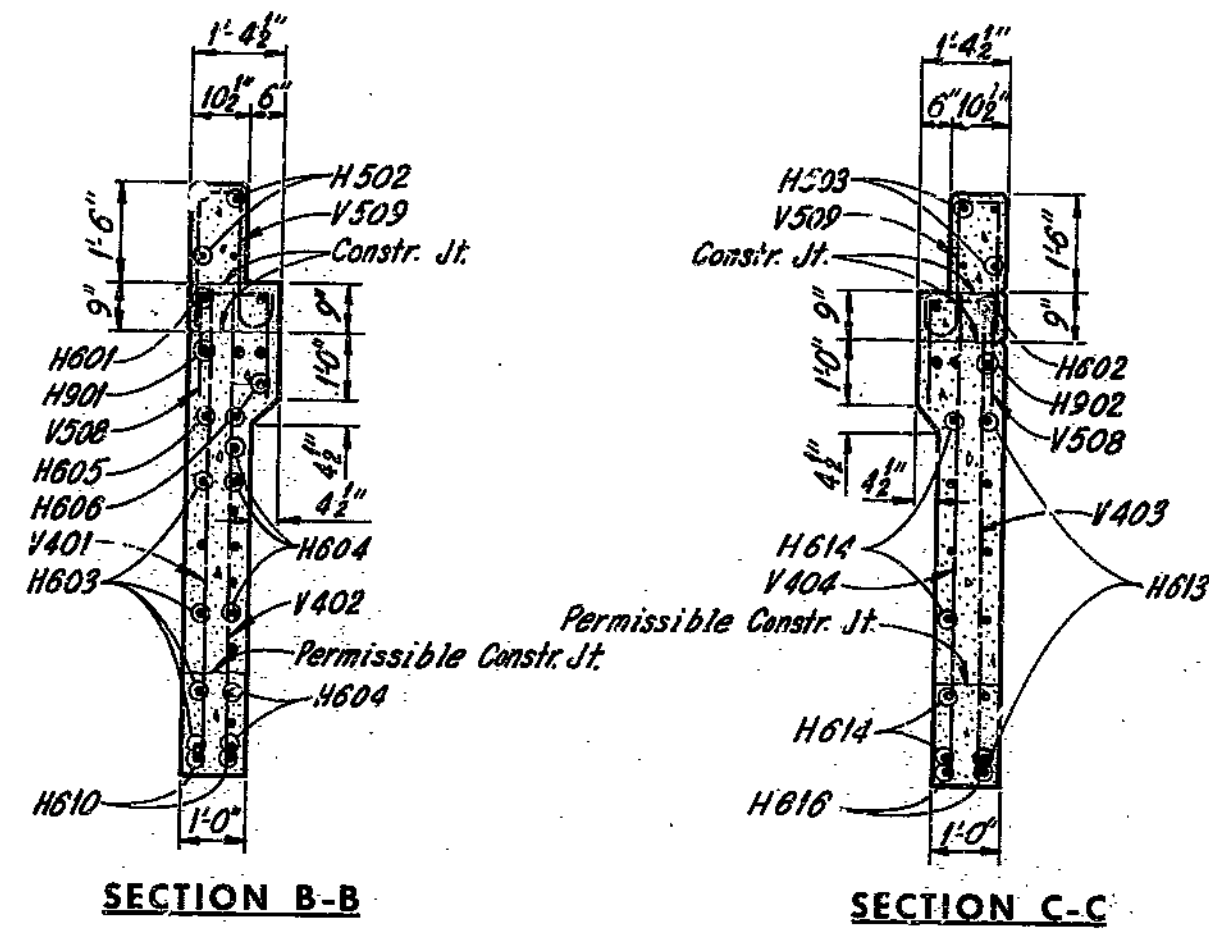
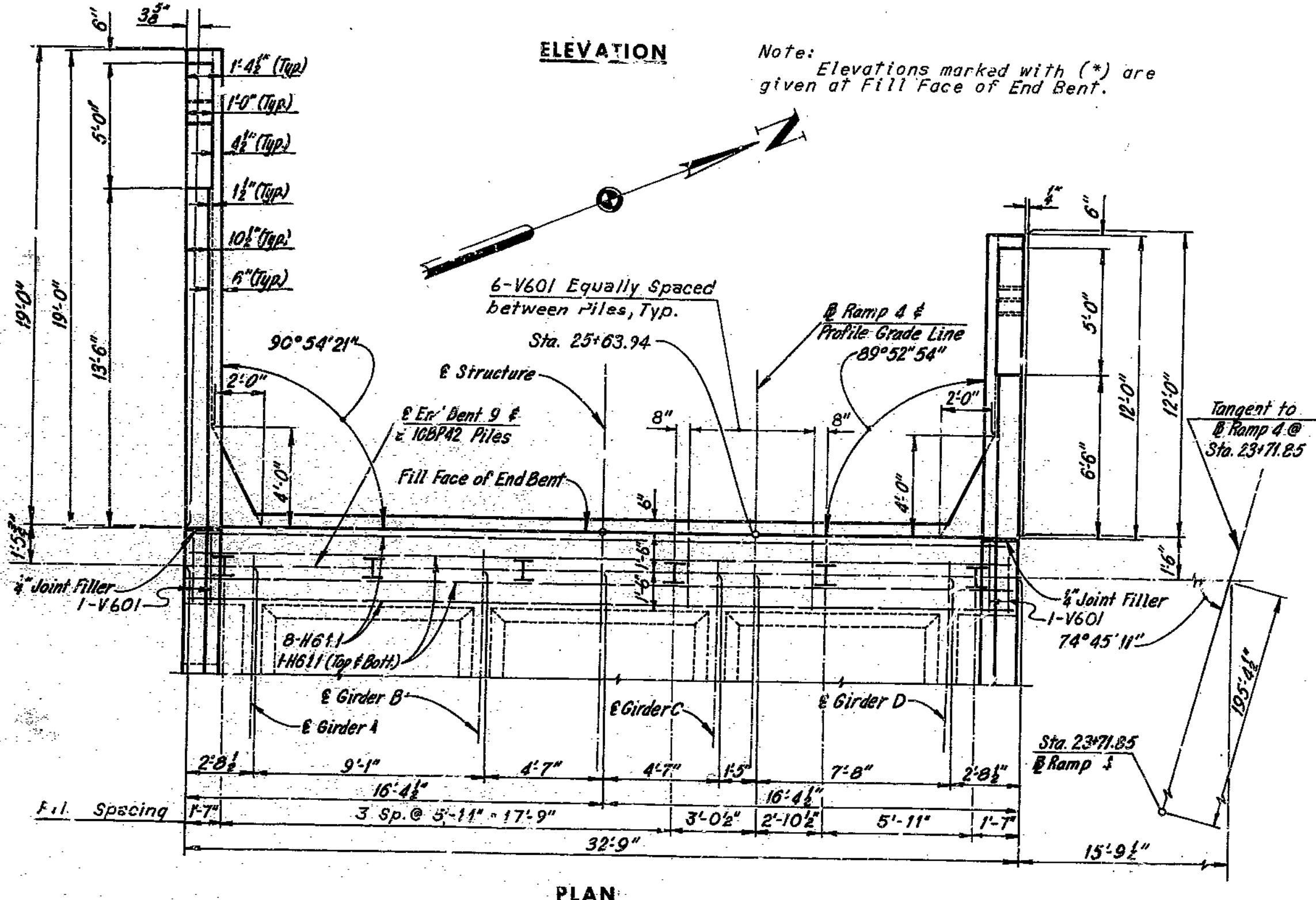
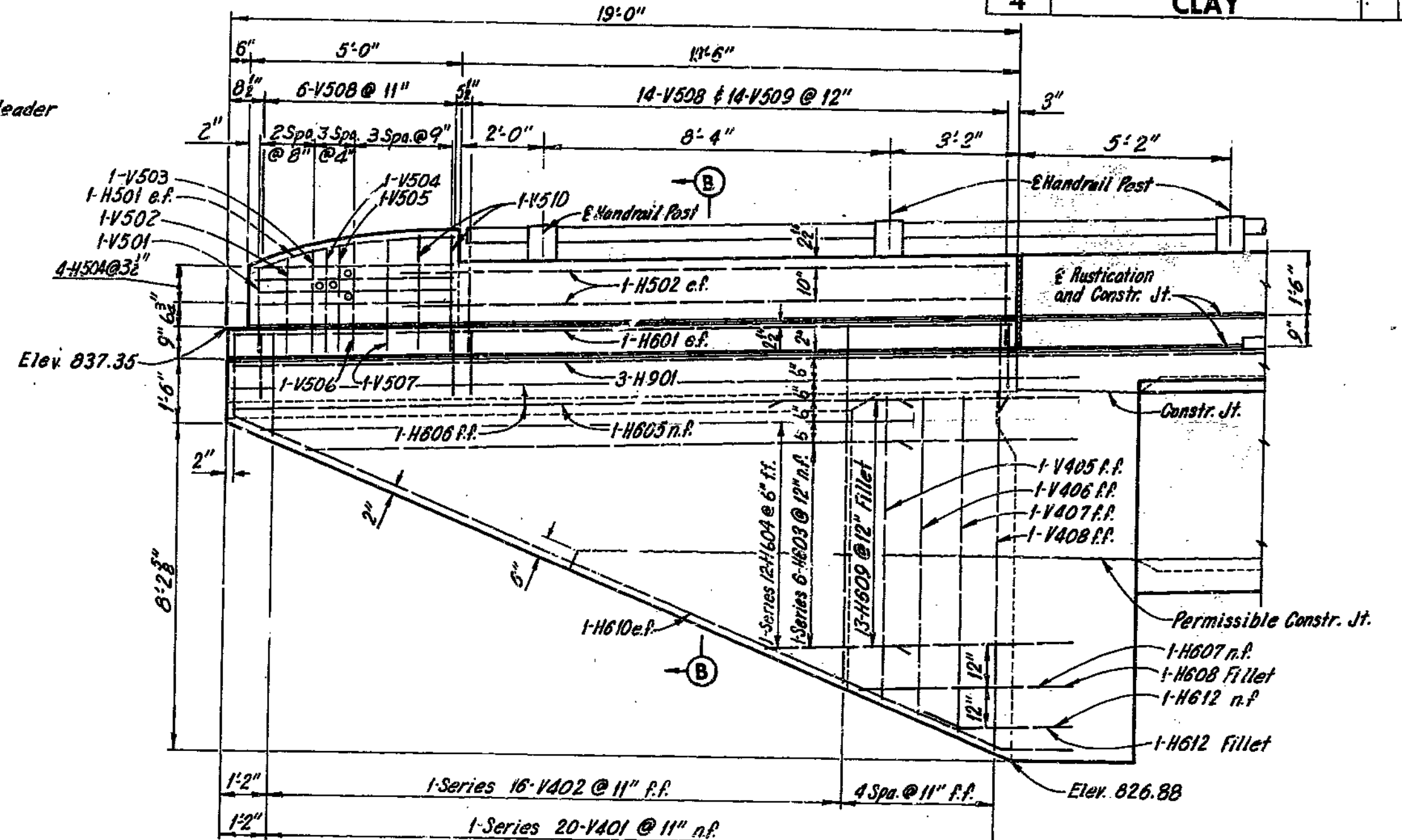
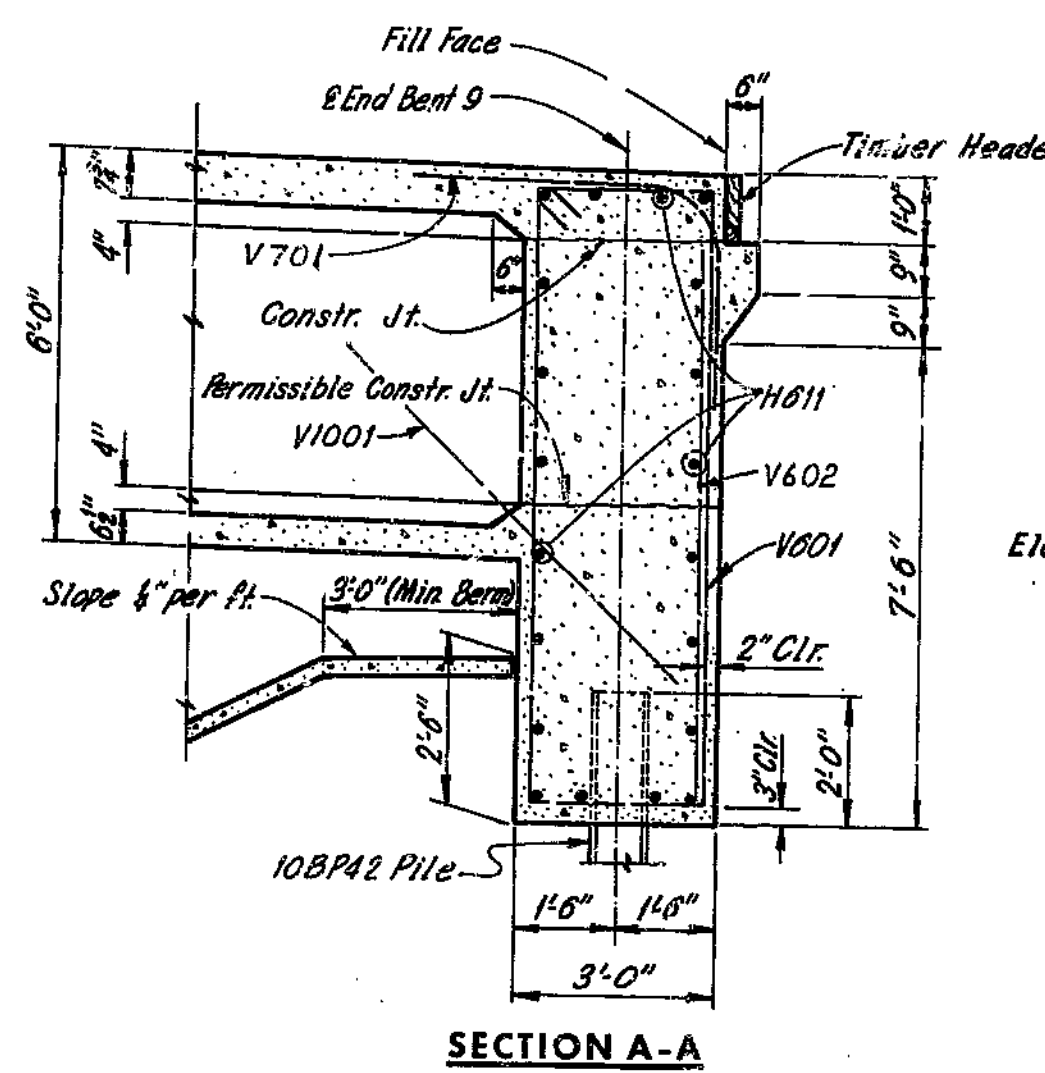
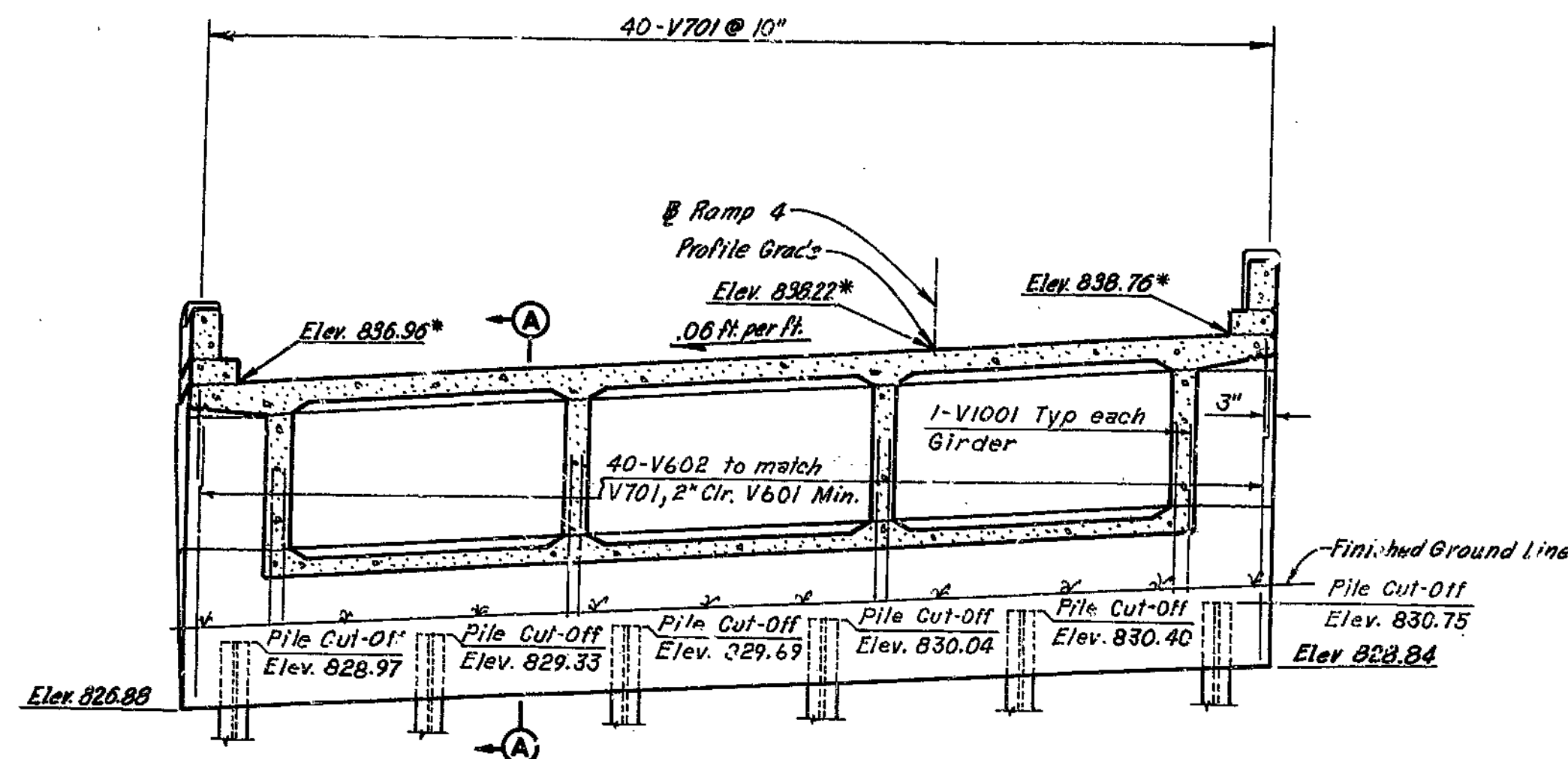
SHEET 19 OF 36

A-1580

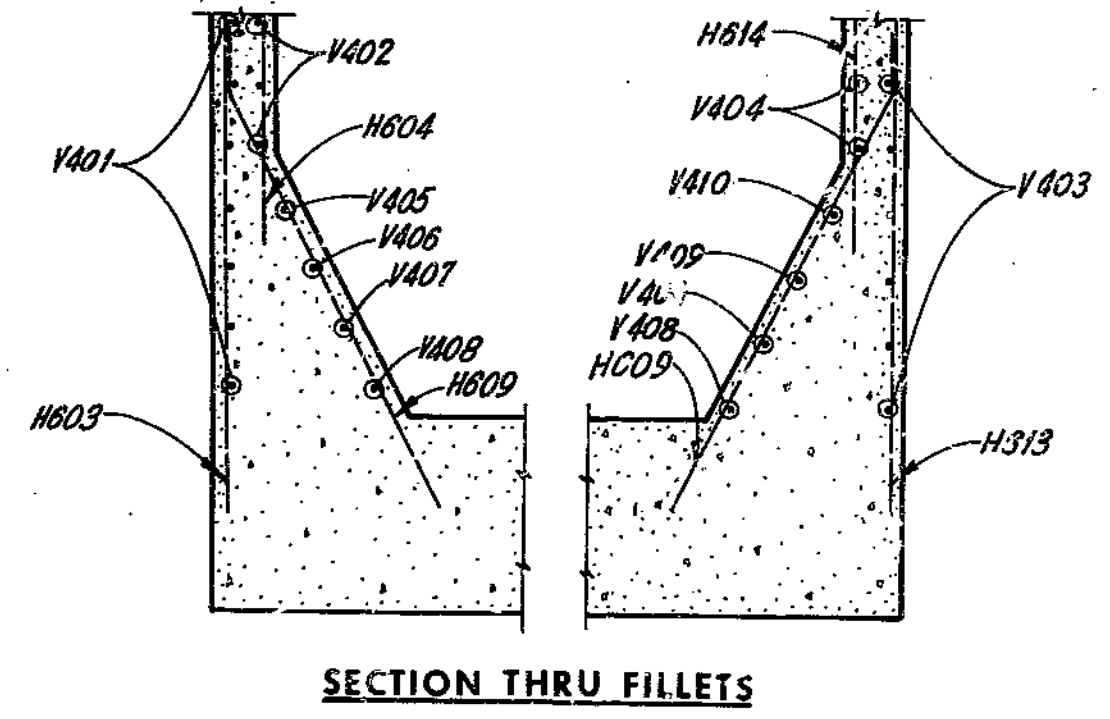
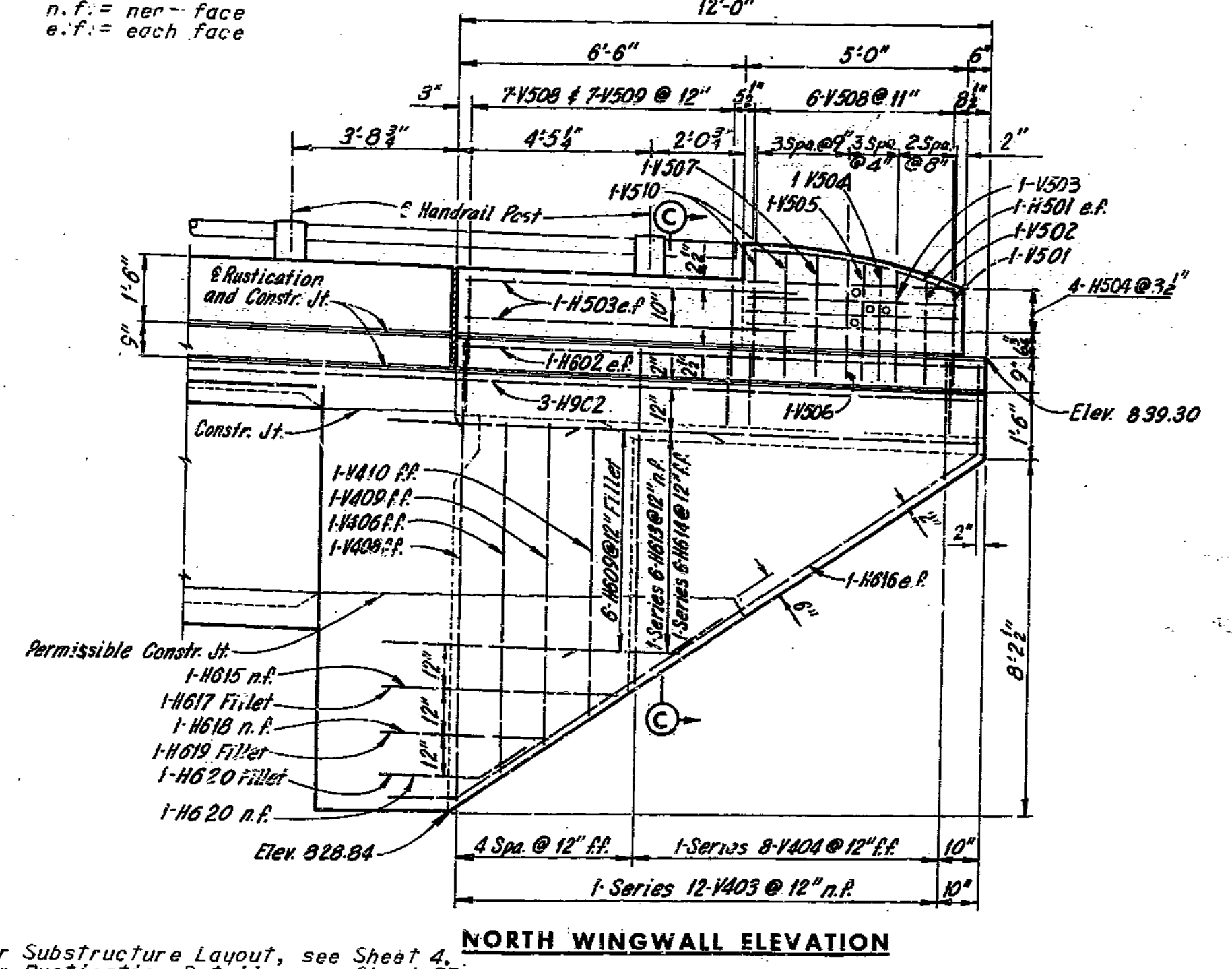
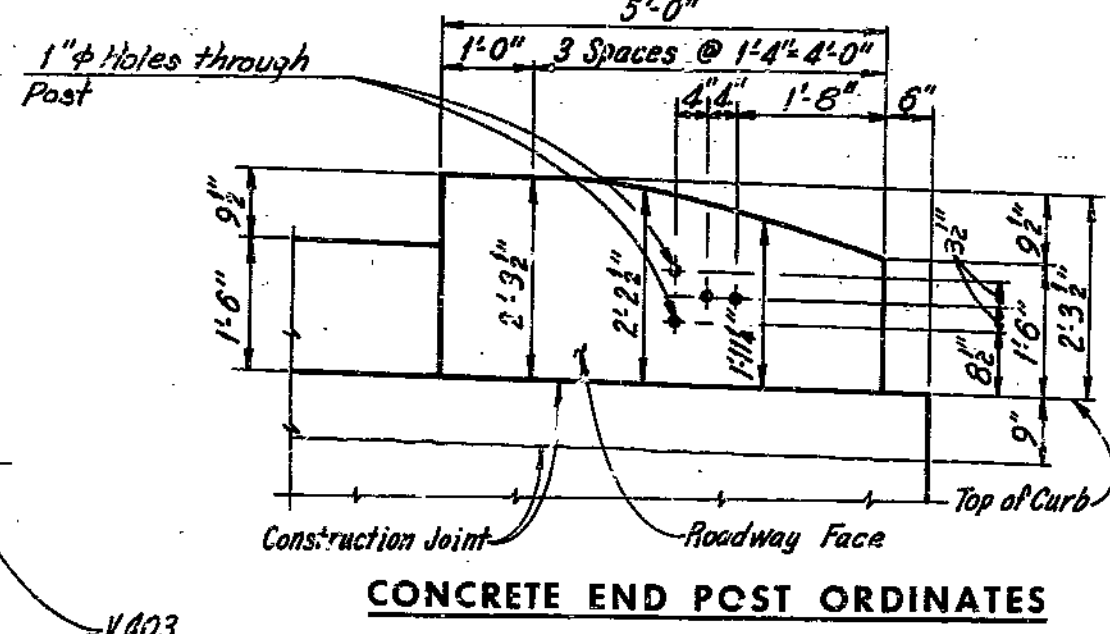
188

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SECT.	FISCAL YEAR	TOTAL SHEETS
5	MO			123
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Legend:  
 f.f. = far face  
 n.f. = near face  
 e.f. = each face



Notes:  
 For Substructure Layout, see Sheet 4.  
 For Rustication Details, see Sheet 32.  
 For Timber Header Detail, see Sheet 32.  
 For Reinforcement Schedule, see Sheet 10.  
 Provide 1/2" clear from face of concrete to reinforcing steel in superstructure, unless otherwise shown.  
 Concrete End Posts are vertical.  
 All piles are 10BPA2.  
 For Pile Splice Detail, see Sheet 4.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(65)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY  
 SHEET 20 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

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

681

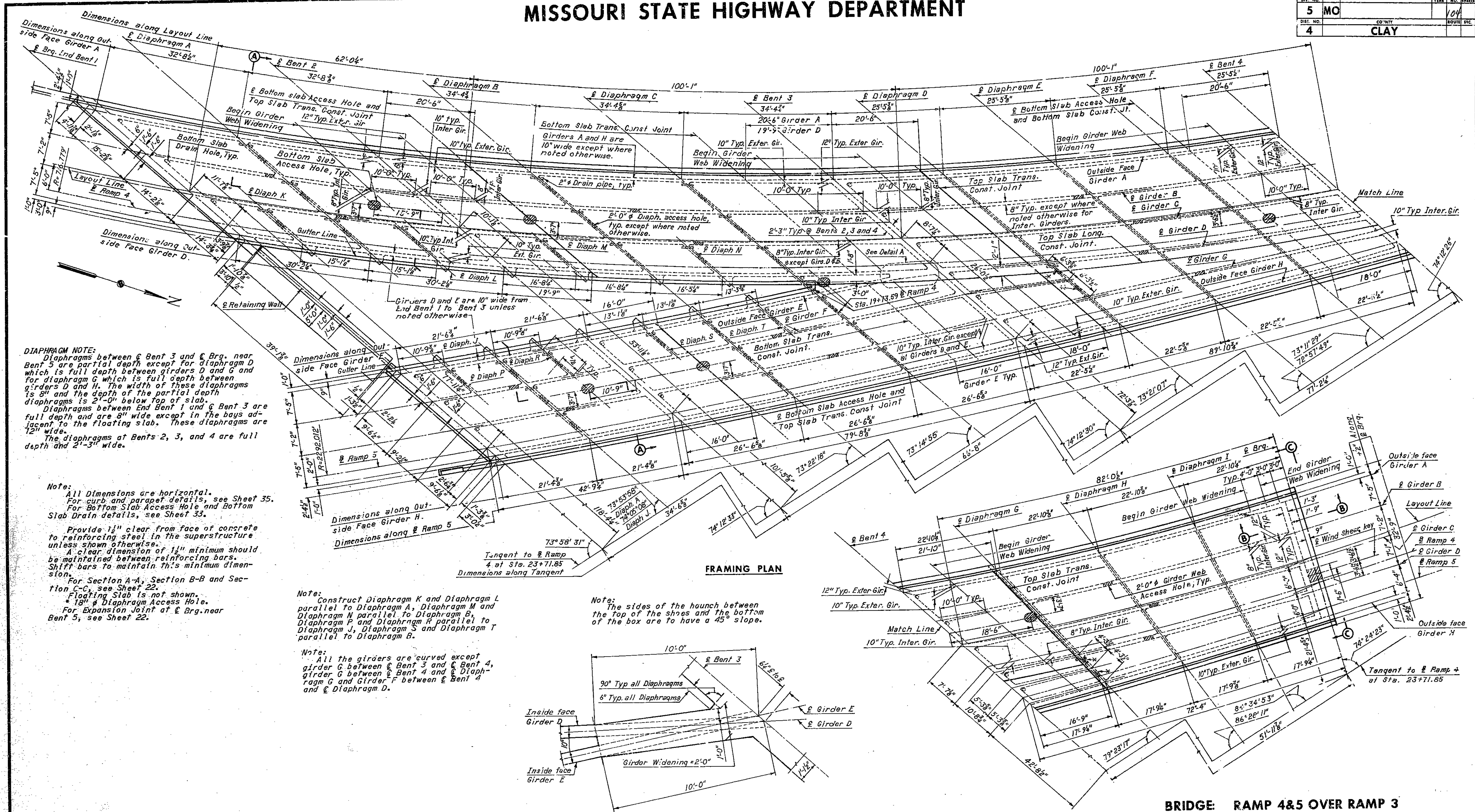
2148-21-02-380-853

END BENT 9

A-1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	DIST. NO.	CO. NO.	ROUTE NO.	ROUTE SEC.
5	MO		1964	4	CLAY		



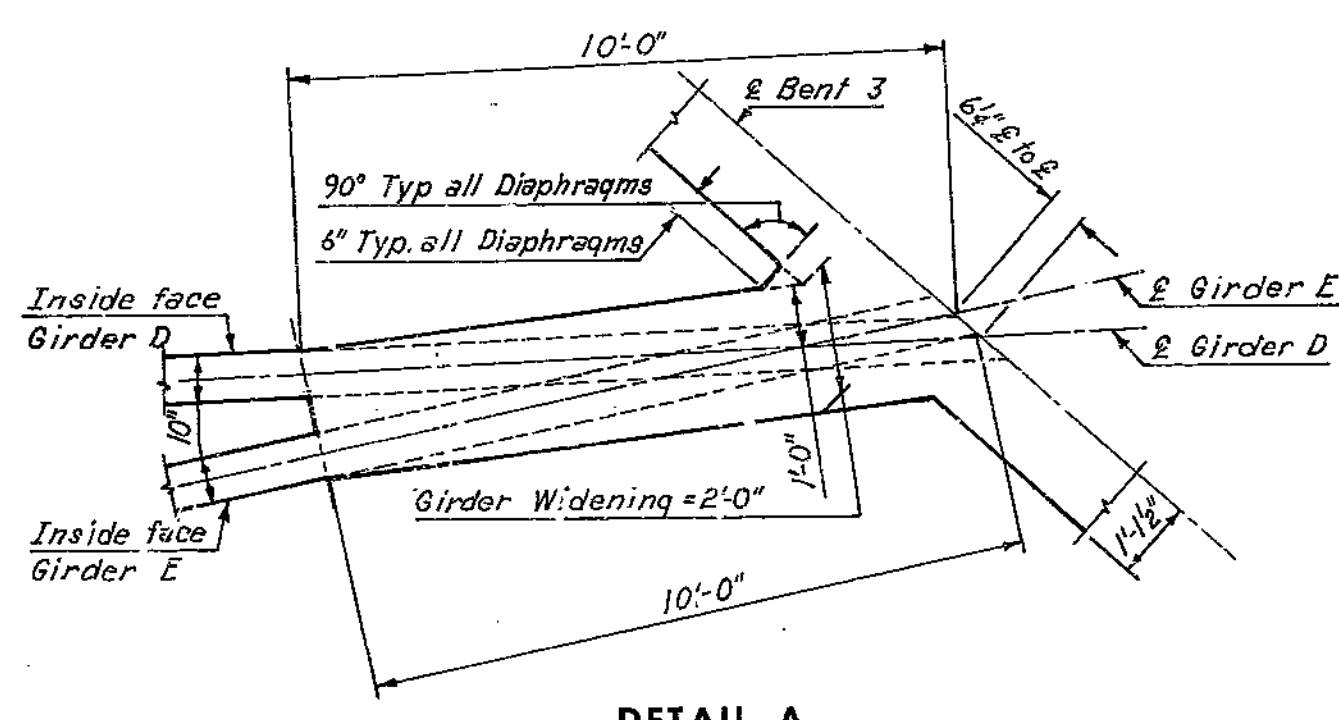
**DIAPHRAGM NOTE:**  
 Diaphragms between Bent 3 and Brg. near Bent 5 are partial depth except for Diaphragm D which is full depth between girders D and G and for diaphragm G which is full depth between girders D and H. The width of these diaphragms is 8" and the depth of the partial depth diaphragms is 2'-0" below top of slab. Diaphragms between End Bent 1 and Bent 3 are full depth and are 8" wide except in the bays adjacent to the floating slab. These diaphragms are 12" wide. The diaphragms at Bents 2, 3, and 4 are full depth and 2'-3" wide.

**Note:**  
 All Dimensions are horizontal.  
 For curb and parapet details, see Sheet 35.  
 For Bottom Slab Access Hole and Bottom Slab Drain details, see Sheet 35.  
 Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure unless shown otherwise.  
 A clear dimension of 1/2" minimum should be maintained between reinforcing bars. Shift bars to maintain this minimum dimension.  
 For Section A-A, Section B-B and Section C-C, see Sheet 22.  
 Floating Slab is not shown.  
 18" Diaphragm Access Hole.  
 For Expansion Joint at Brg. near Bent 5, see Sheet 22.

**Note:**  
 Construct Diaphragm K and Diaphragm L parallel to Diaphragm A, Diaphragm M and Diaphragm N parallel to Diaphragm B, Diaphragm P and Diaphragm R parallel to Diaphragm J, Diaphragm S and Diaphragm T parallel to Diaphragm B.

**Note:**  
 All the girders are curved except girder G between Bent 3 and Bent 4, girder H between Bent 4 and Diaphragm G and Girder F between Bent 4 and Diaphragm D.

**Note:**  
 The sides of the haunch between the top of the shoes and the bottom of the box are to have a 45° slope.



**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
**CLAY COUNTY**  
 SHEET 21 OF 32

FRAMING PLAN - UNIT I

A-1580

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

SEE FINAL PLANS BROWN LINES

190

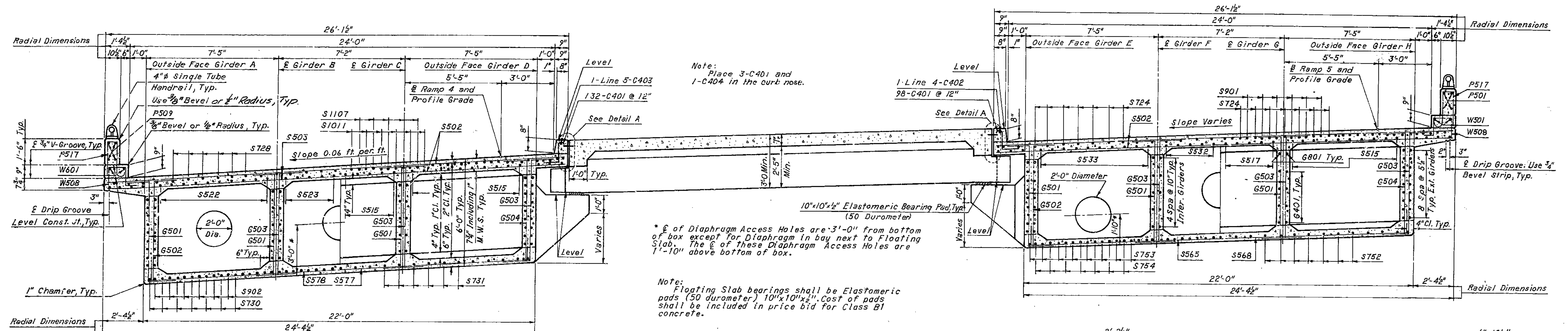
2148-21-02-580-B55

HOWARD, NEEDLES, TAMM & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE L.J.R. DATE 9-27-60 CHECKED G.C.C. DATE 10-9-68



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			105	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

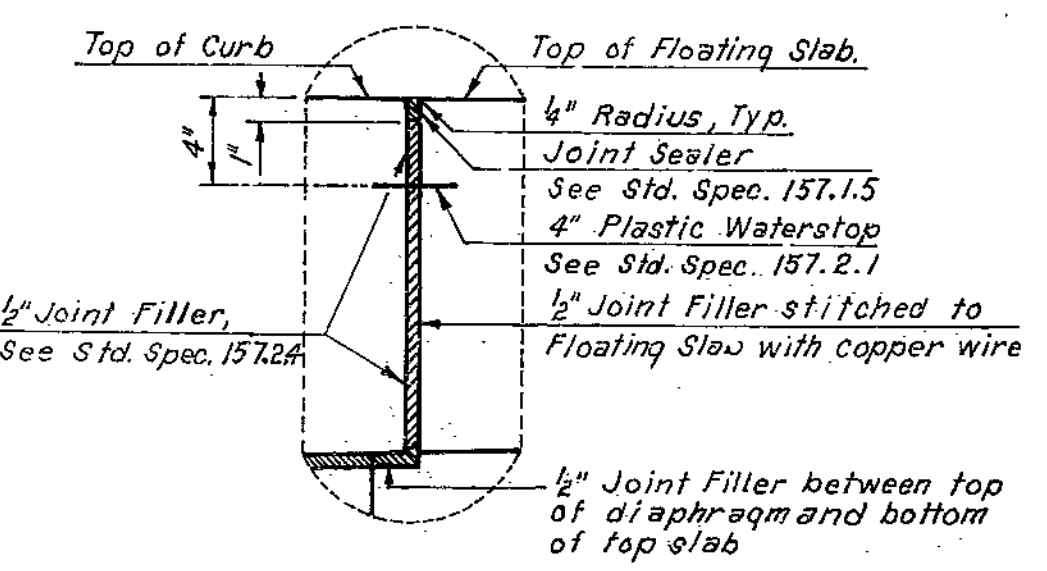


Note: Place 3-C401 and 1-C404 in the curb nose.

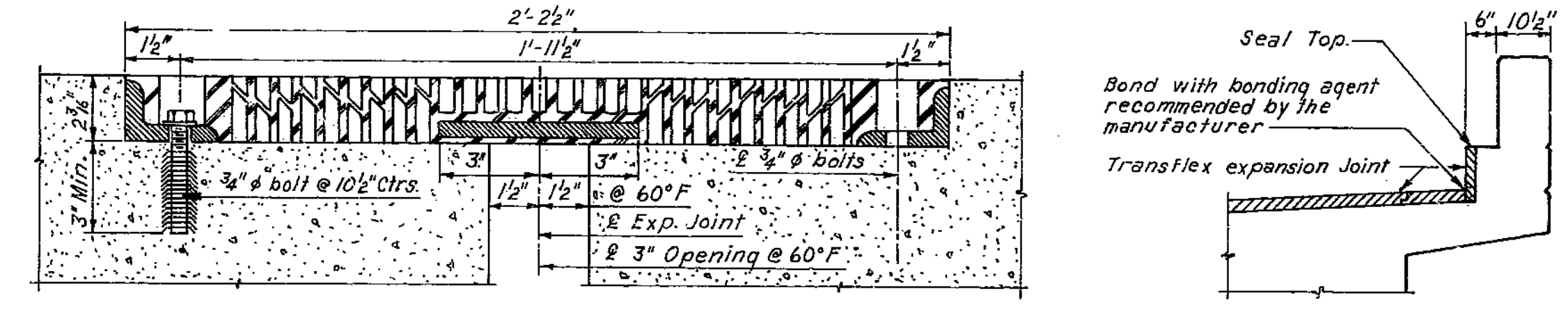
\* E of Diaphragm Access Holes are 3'-0" from bottom of box except for Diaphragm in bay next to Floating Slab. The E of these Diaphragm Access Holes are 1'-10" above bottom of box.

Note: Floating Slab bearings shall be Elastomeric pads (50 durometer) 10"x10"x1/2". Cost of pads shall be included in price bid for Class B1 concrete.

SECTION A-A



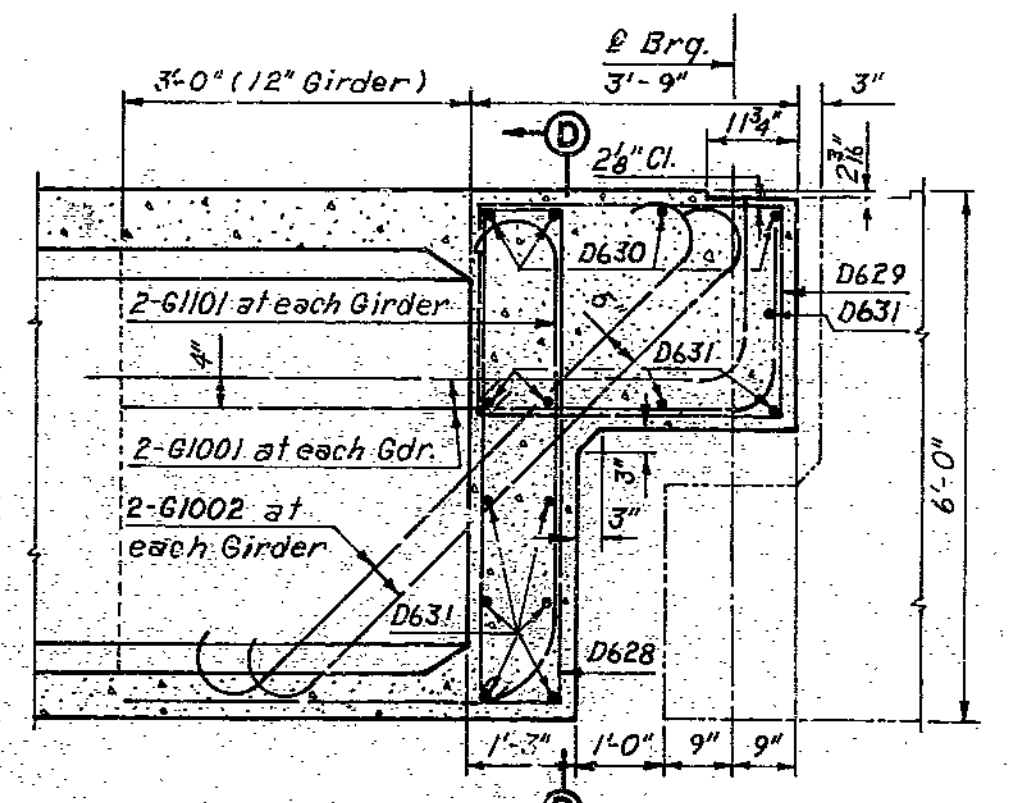
Note: Cost of plastic waterstop complete in place to be included in unit price bid for concrete.



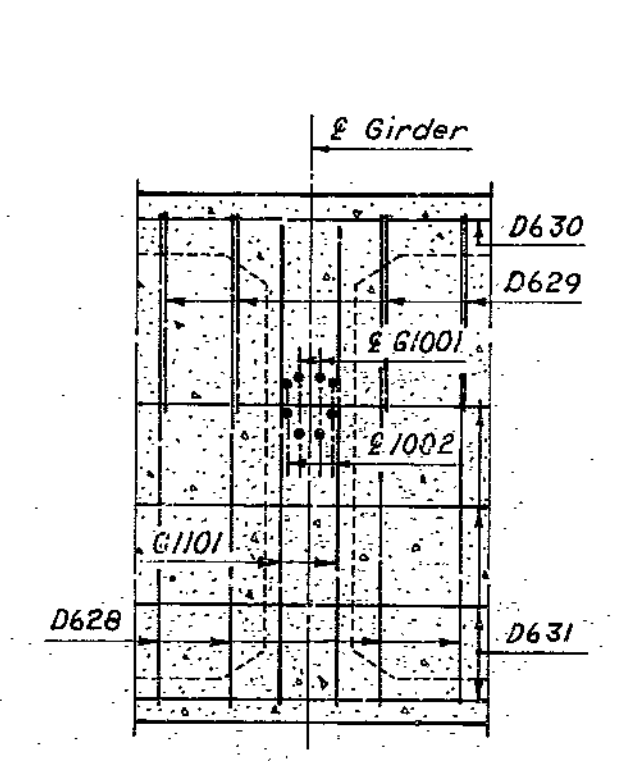
Note: Anchors shall be of the self drilling expansion type, made of casehardened and drawn carburized steel, with self-cutting annular broaching grooves equal to Red Head (Phillips Drill Co.) or Bulldog (J.D. Polis Mfg. Co.) Cost of furnishing and installing anchor bolt assemblies shall be included in price bid for Transflex expansion joint.

SECTION G-G

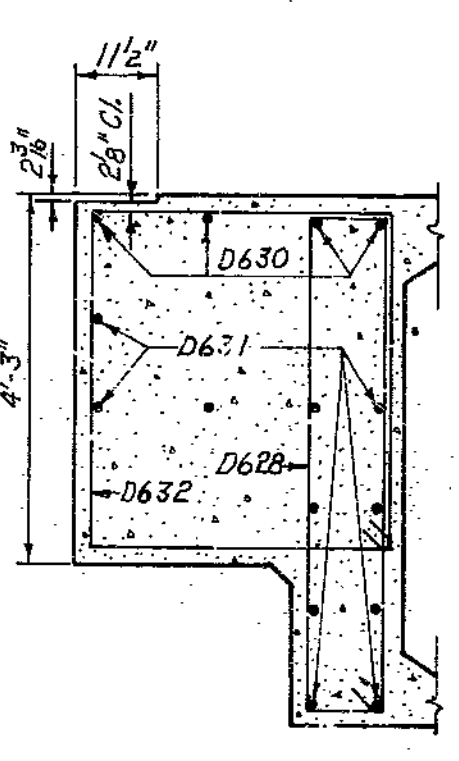
SECTION F-F



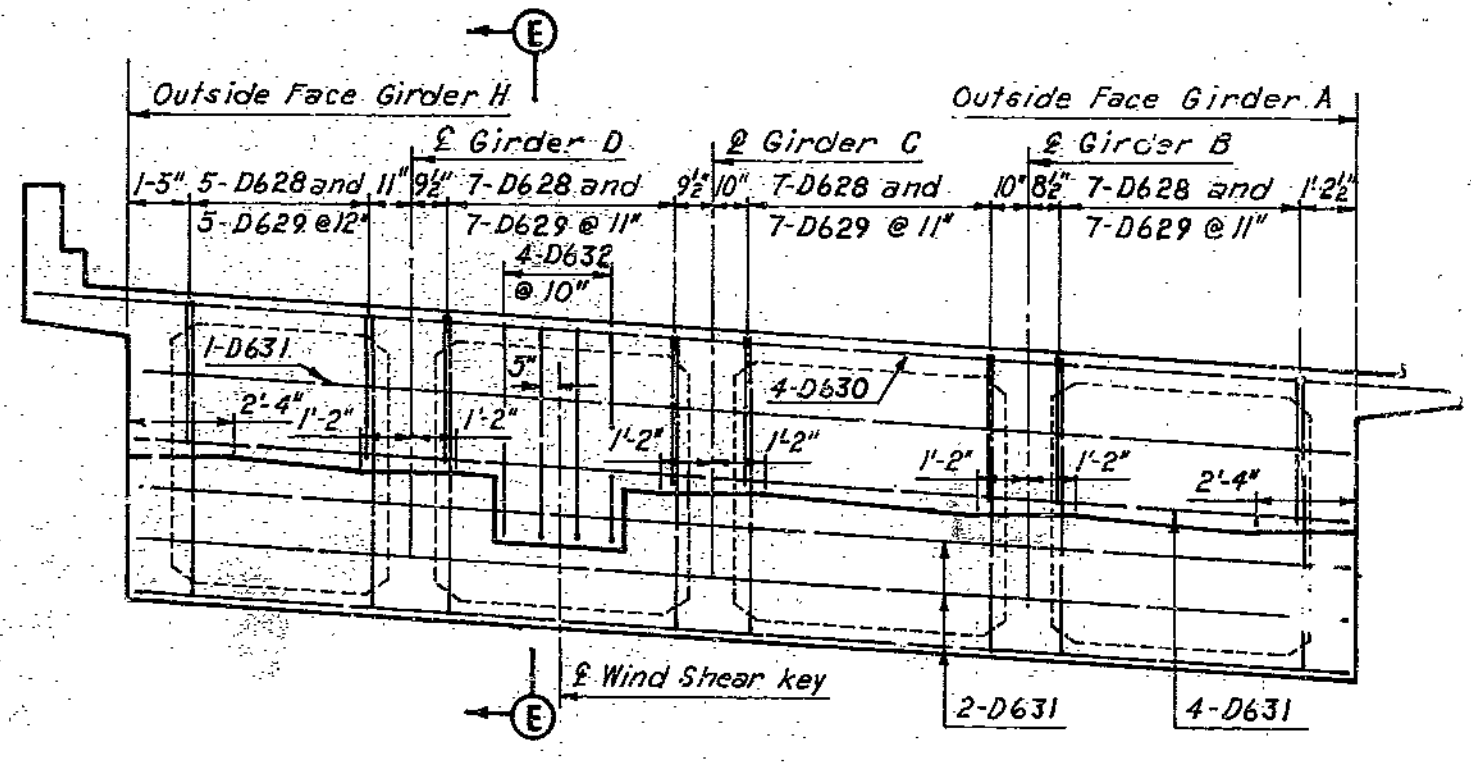
SECTION B-B



SECTION D-D

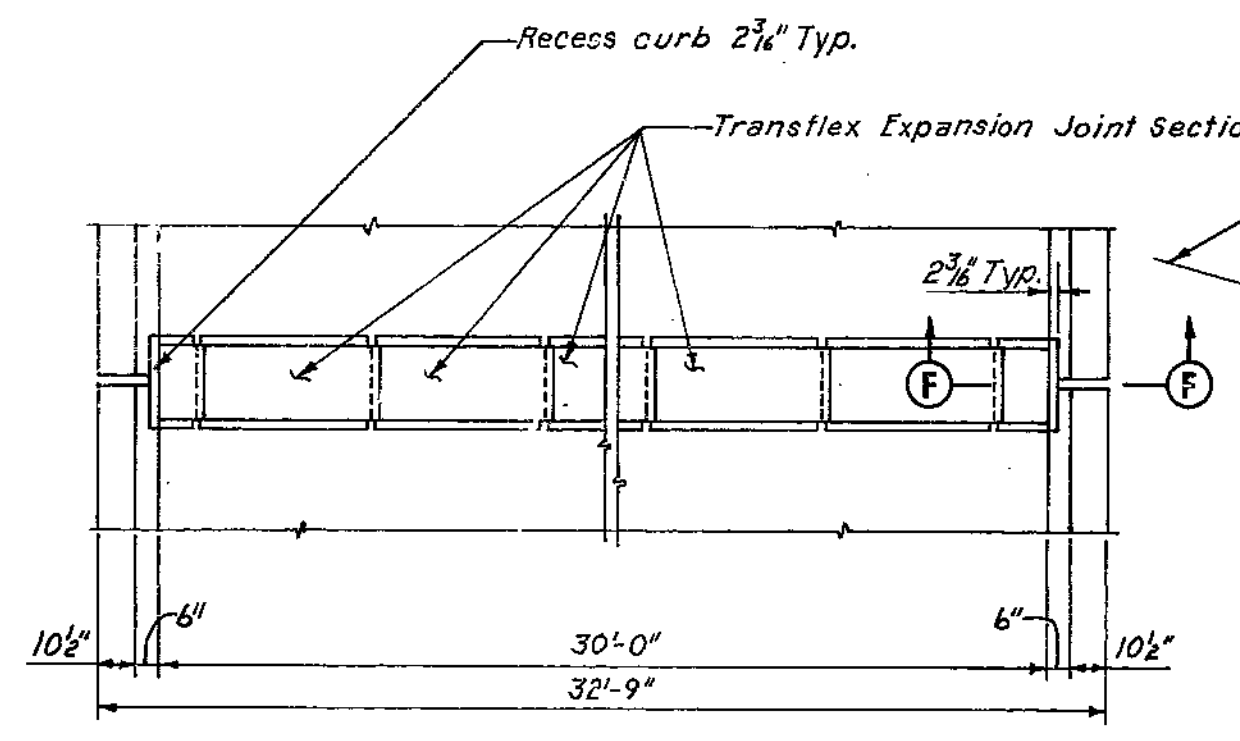


SECTION E-E

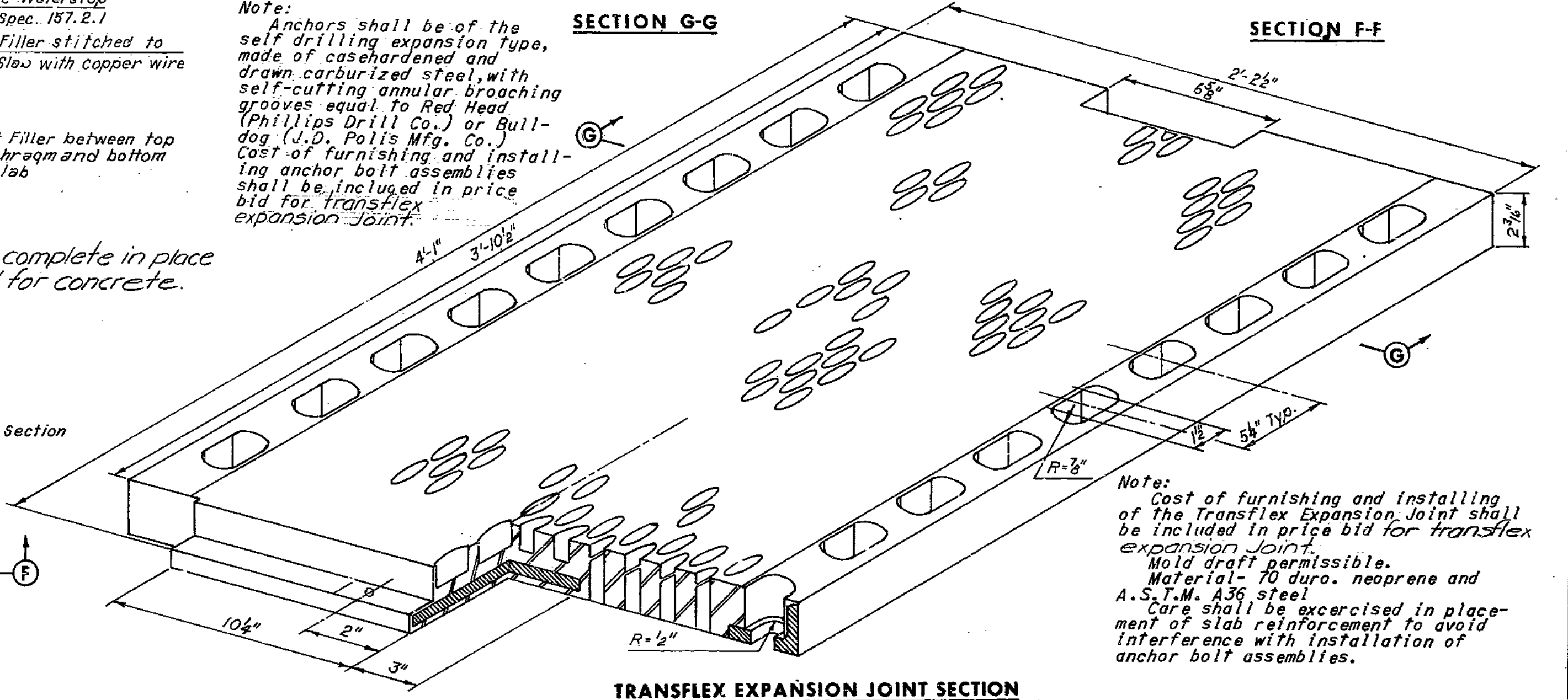


SECTION C-C

Note: For location of Sections A-A, B-B and C-C, see Sheet 21. For Diaphragm Reinforcing, see Sheet 27. For Shoe Details, see Sheet 36. For Floating Slab Details, see Sheet 28. For Parapet Reinforcing, see Sheet 29. For Rustication Detail, see Sheet 33.



PLAN



EXPANSION JOINT DETAILS

TRANSFLEX EXPANSION JOINT SECTION (TYPE 400 AS MANUFACTURED BY GENERAL TIRE AND RUBBER CO.)

Note: Cost of furnishing and installing of the Transflex Expansion Joint shall be included in price bid for transflex expansion joint. Mold draft permissible. Material - 70 duro. neoprene and A.S.T.M. A36 steel. Care shall be exercised in placement of slab reinforcement to avoid interference with installation of anchor bolt assemblies.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
CLAY COUNTY STA. 7+21.93 Ramp 5

SHEET 22 OF 36

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE LJR DATE 10-3-68 CHECKED G.C.C. DATE 10-9-68

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

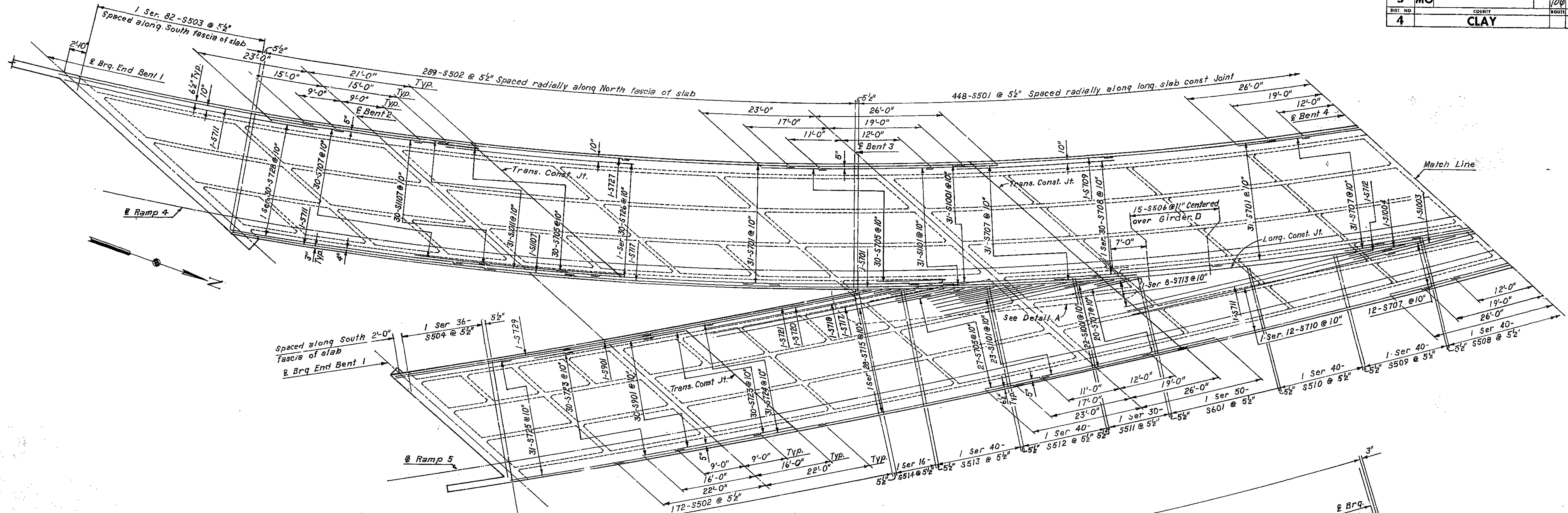
FRAMING PLAN DETAILS - UNIT 1

191

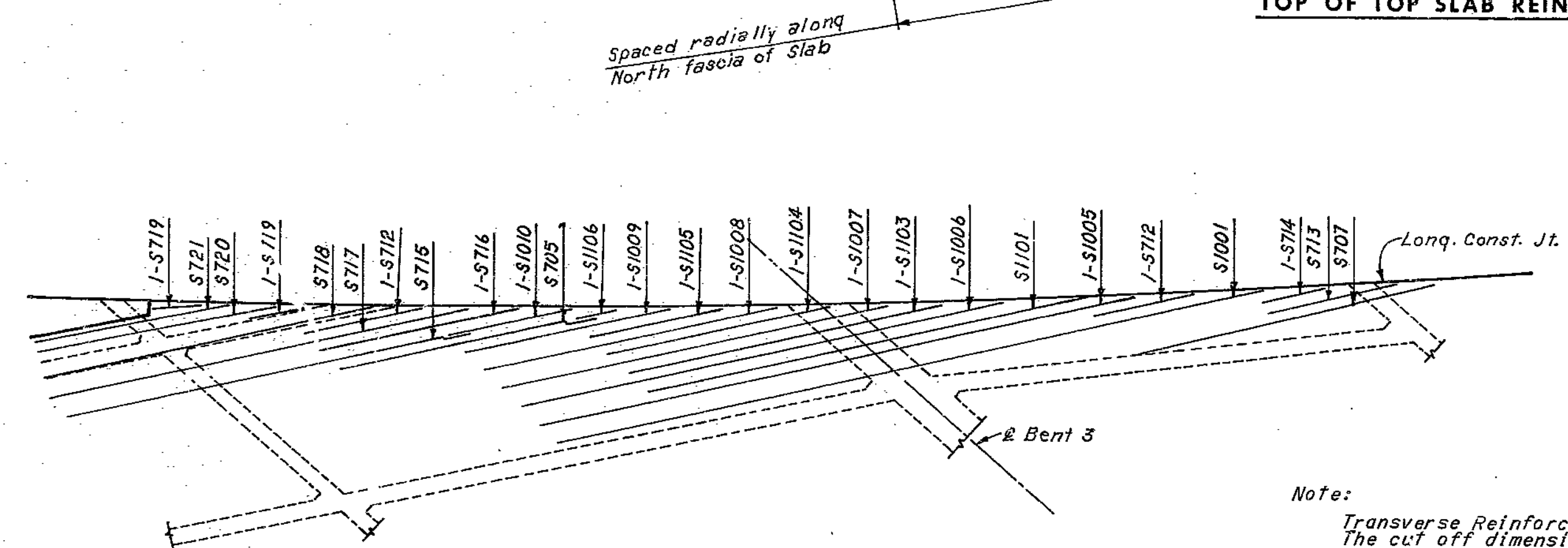
2148-21-02-380-B55

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		106	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			

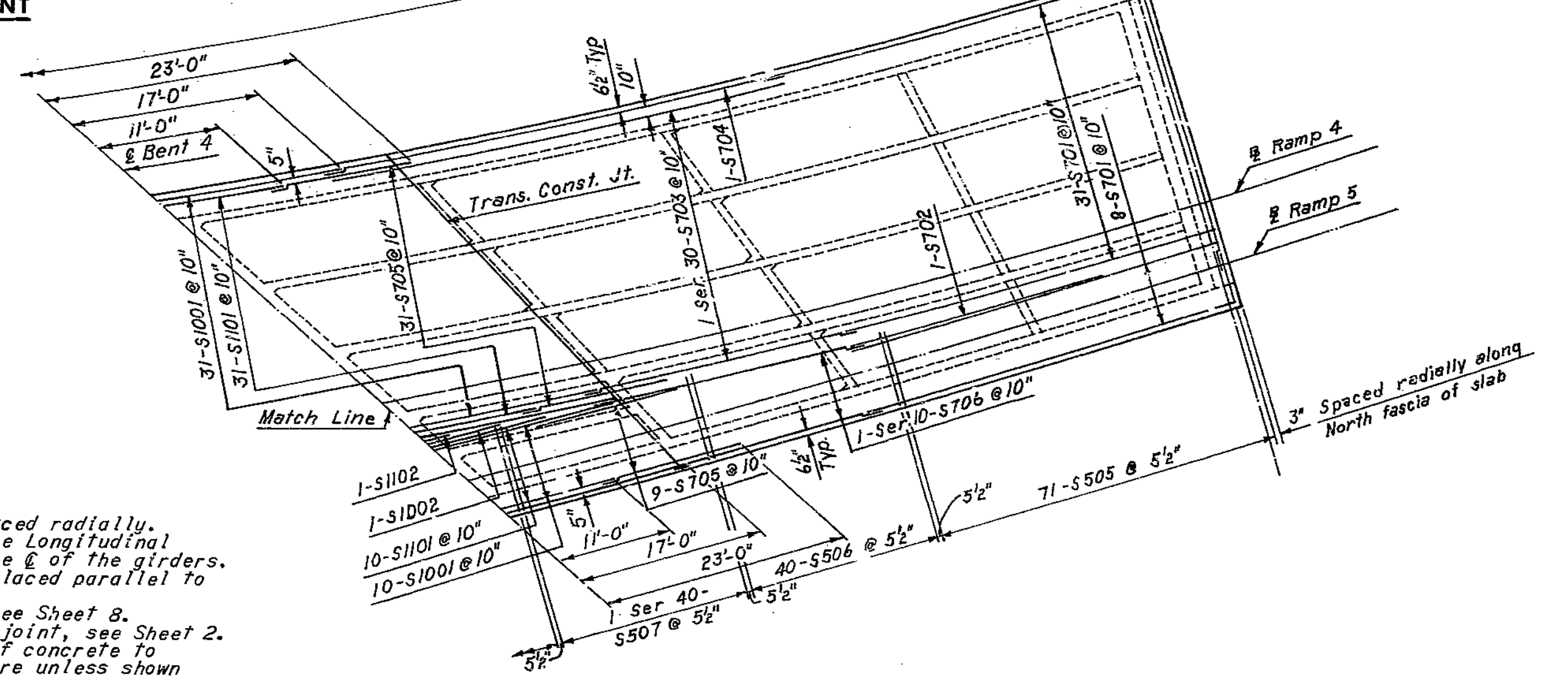


TOP OF TOP SLAB REINFORCEMENT



DETAIL A

Note:  
 Transverse Reinforcing is spaced radially. The cut off dimensions for the Longitudinal Reinforcing are measured along the  $\bar{c}$  of the girders. Longitudinal reinforcing is placed parallel to  $\bar{c}$  of girders.  
 For Reinforcement Schedule, see Sheet 8.  
 For location of construction joint, see Sheet 2.  
 Provide 1/2" clear from face of concrete to reinforcing steel in superstructure unless shown otherwise.  
 A clear dimension of 1/2" minimum should be maintained between parallel reinforcing bars in top and bottom layers of top slab. Shift bars as required to maintain this minimum dimension.  
 Girder Web widening is not shown.  
 Field bend the portion of the S501 bars which extends past the Long. Const. Jt. radial to the north fascia of the slab.



TOP OF TOP SLAB REINFORCEMENT - UNIT 1

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. -435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY. STA. 7+21.93 Ramp 5

SHEET 23 OF 36

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE L.N.R. DATE 8-21-68 CHECKED G.C.C. DATE 10-2-68

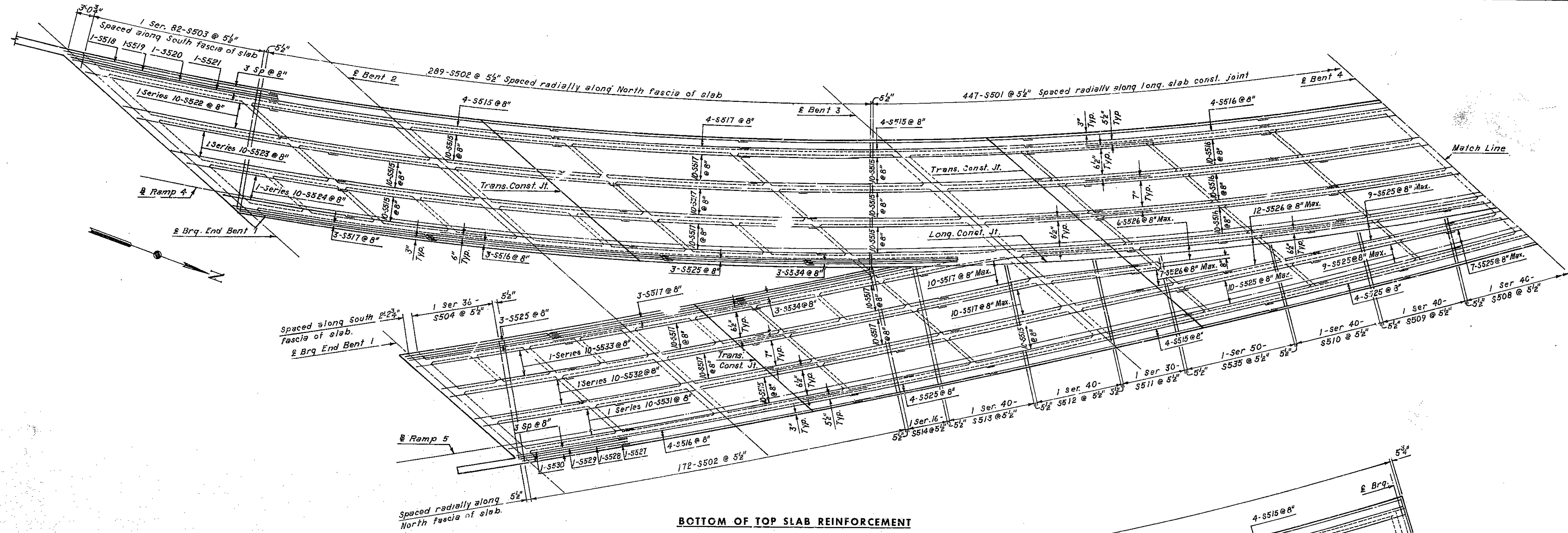
NOTE: This drawing is not to scale. Follow dimensions.

192

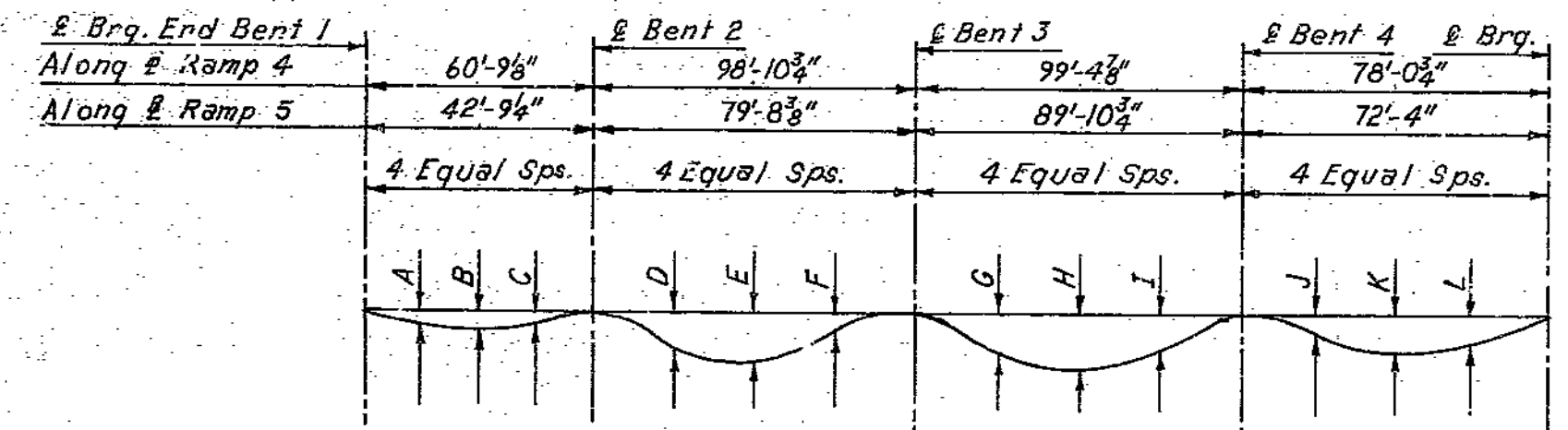
248-21-02 Br. 1580

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
MO		107	
DIST. NO.	COUNTY	ROUTE	SEC.
4	CLAY		



BOTTOM OF TOP SLAB REINFORCEMENT



DEAD LOAD DEFLECTION DIAGRAM

Note: Forms shall be cambered for ultimate deflection.

		DEAD LOAD DEFLECTION ORDINATES											
		A	B	C	D	E	F	G	H	I	J	K	L
GIRDER A	Ulti	1/8"	3/8"	0"	1/2"	1"	3/8"	1/2"	3/8"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	3/8"	1/2"	0"	1/8"	0"	1/8"	1/8"	1/8"
GIRDER B	Ulti	1/8"	3/8"	0"	3/8"	3/8"	1/2"	3/8"	1/2"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	1/4"	1/4"	0"	1/8"	0"	1/8"	1/8"	1/8"
GIRDER C	Ulti	1/8"	1/8"	0"	3/8"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	1/4"	1/4"	0"	1/8"	0"	1/8"	1/8"	1/8"
GIRDER D	Ulti	1/8"	1/8"	0"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	1/4"	1/4"	0"	1/8"	0"	1/8"	1/8"	1/8"
GIRDER E	Ulti	0"	0"	0"	1/2"	3/8"	3/8"	—	—	—	—	—	—
	Init	0"	0"	0"	1/4"	1/4"	1/4"	—	—	—	—	—	—
GIRDER F	Ulti	0"	0"	0"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	1/4"	1/4"	0"	1/8"	0"	1/8"	1/8"	1/8"
GIRDER G	Ulti	0"	0"	0"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	1/4"	1/4"	0"	1/8"	0"	1/8"	1/8"	1/8"
GIRDER H	Ulti	0"	0"	0"	1/2"	3/8"	3/8"	1/2"	3/8"	1/2"	1/2"	1/2"	1/2"
	Init	0"	0"	0"	1/4"	1/4"	1/4"	0"	1/8"	0"	1/8"	1/8"	1/8"

Note: Transverse Reinforcing is spaced radially. Longitudinal reinforcing is placed parallel to & of girders. For Reinforcement Schedule, see Sheet 8. Provide 1 1/2" clear from face of concrete to reinforcing steel in superstructure unless shown otherwise. A clear dimension of 1 1/2" minimum should be maintained between parallel reinforcing bars in top and bottom layers of top slab. Shift bars as required to maintain this minimum dimension.

BOTTOM OF TOP SLAB REINFORCEMENT - UNIT 1

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

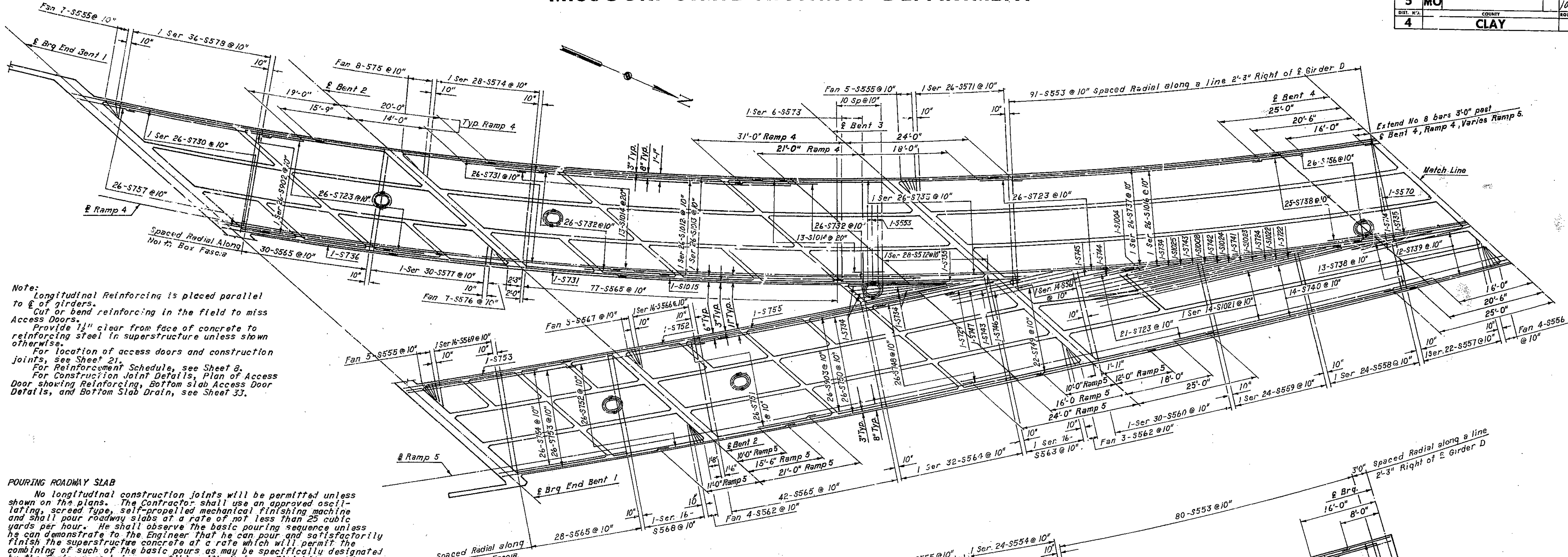
MADE L.A.P. DATE 8-23-68 CHECKED G.C.C. DATE 10-7-68

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

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 24 OF 36

MISSOURI STATE HIGHWAY DEPARTMENT

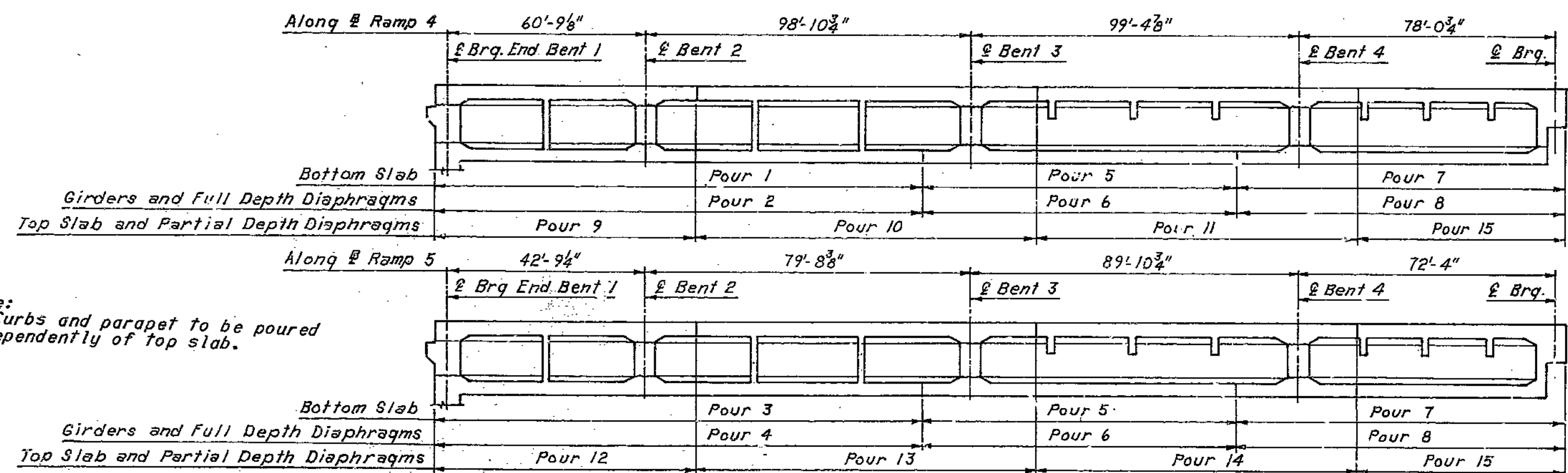
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
4	MO		108	
COUNTY		ROUTE	SEC.	
CLAY				



Note: Longitudinal Reinforcing is placed parallel to  $\epsilon$  of girders.  
 Cut or bend reinforcing in the field to miss Access Doors.  
 Provide  $\frac{1}{2}$ " clear from face of concrete to reinforcing steel in superstructure unless shown otherwise.  
 For location of access doors and construction joints, see Sheet 21.  
 For Reinforcement Schedule, see Sheet 8.  
 For Construction Joint Details, Plan of Access Door showing Reinforcing, Bottom slab Access Door Details, and Bottom Slab Drain, see Sheet 33.

**POURING ROADWAY SLAB**  
 No longitudinal construction joints will be permitted unless shown on the plans. The Contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour roadway slabs at a rate of not less than 25 cubic yards per hour. He shall observe the basic pouring sequence unless he can demonstrate to the Engineer that he can pour and satisfactorily finish the superstructure concrete at a rate which will permit the combining of such of the basic pours as may be specifically designated by the Engineer as being compatible with design. Finishing machine loads will not be permitted on concrete less than 48 hours old. With use of forms and basic falsework meeting the approval of the Engineer, the girder webs and diaphragms may be poured with the bottom slab sections on which they bear.  
 All forms shall be removed from the interior of box girders except top slab forms which may be left in place. See Standard Specification 53.4.2.4.

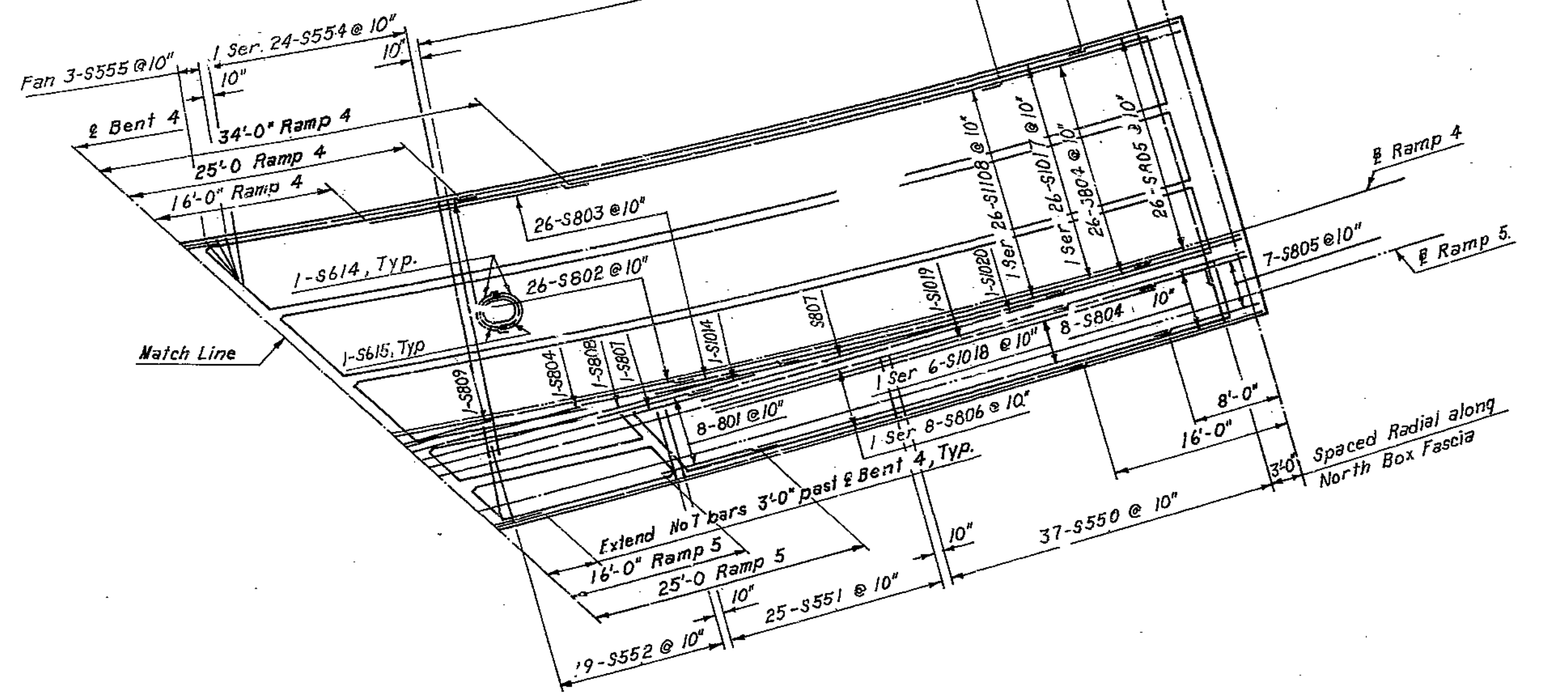
**BOTTOM SLAB REINFORCING**



Note: Curbs and parapet to be poured independently of top slab.

Note: Pours 9 and 12 are not to be made until Floating Slab and End Wall has been poured.

**POURING SEQUENCE**



**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 7+21.93 Ramp 5  
 CLAY COUNTY

**BOTTOM SLAB REINFORCEMENT - UNIT 1**

SHEET 25 OF 36

A-1580

SEE FINAL PLANS BROWN LINES

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE L.J.R. DATE 9-25-68 CHECKED G.C.C. DATE 10-3-68

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

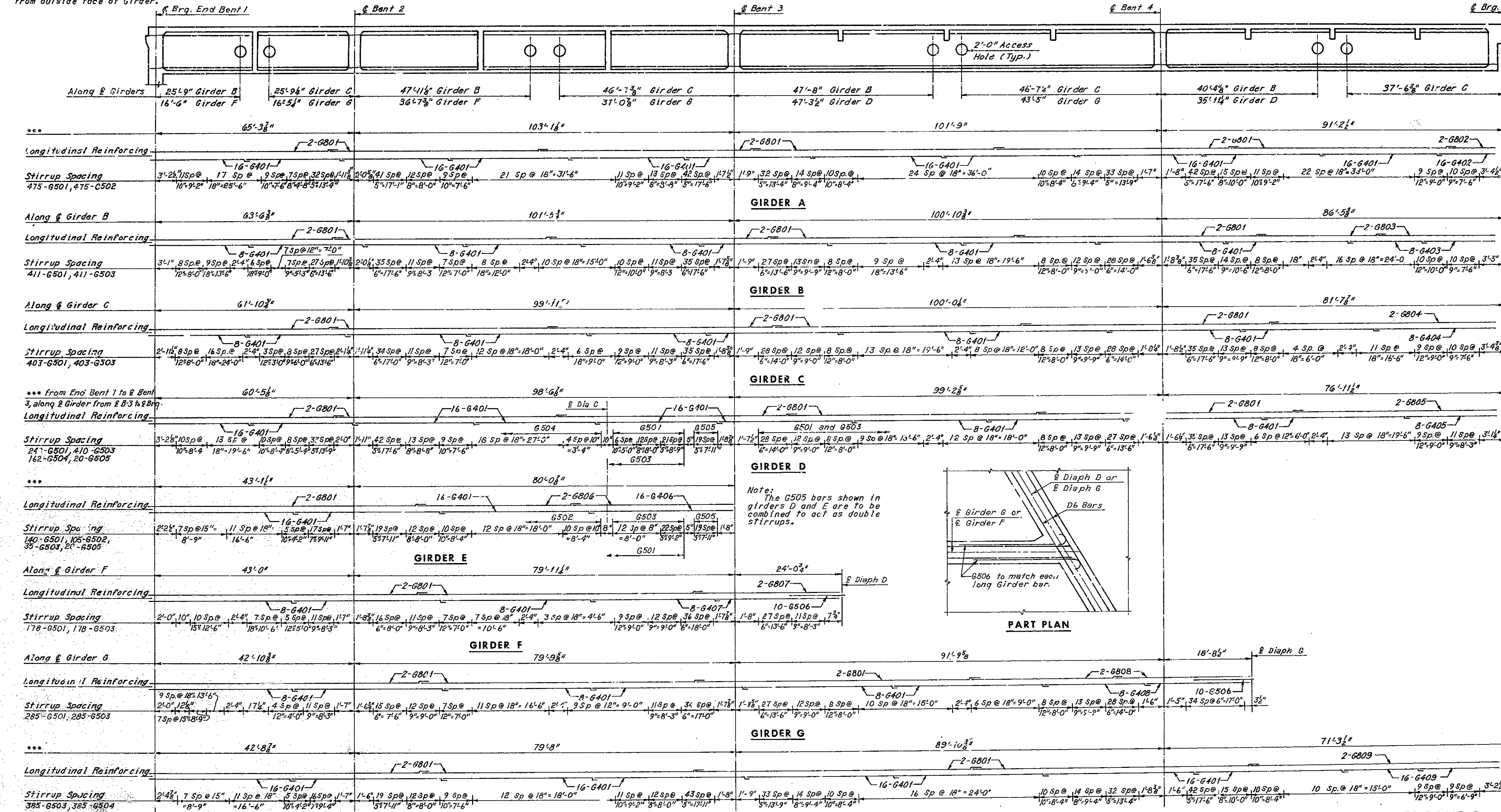
194

2148-21-02  
Bl. 1580

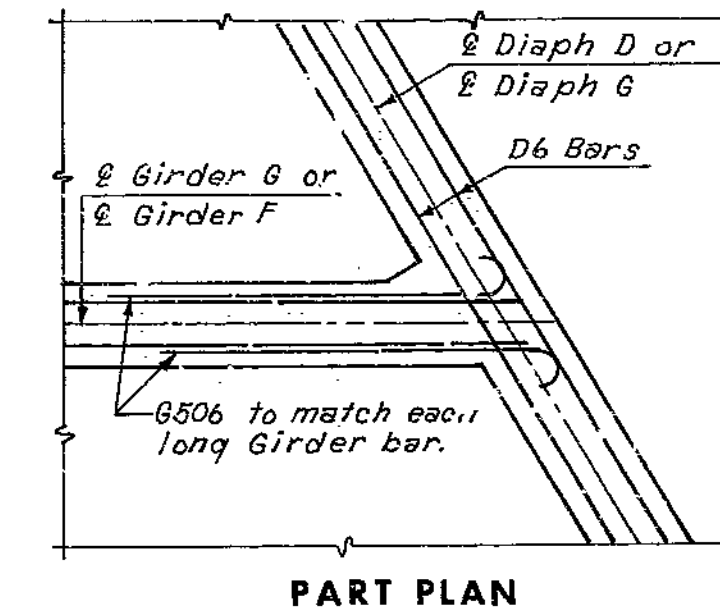
MISSOURI STATE HIGHWAY DEPARTMENT

MO. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		109	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			

Note: \*\*\* along a line 4" radial from outside face of Girder.



Note: The G505 bars shown in girders D and E are to be combined to act as double stirrups.



**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
**CLAY COUNTY**  
 SHEET 26 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY, MISSOURI NEW YORK, NEW YORK

MADE L.J.R. DATE 9-1-68 CHECKED E.C.C. DATE 10-11-68

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

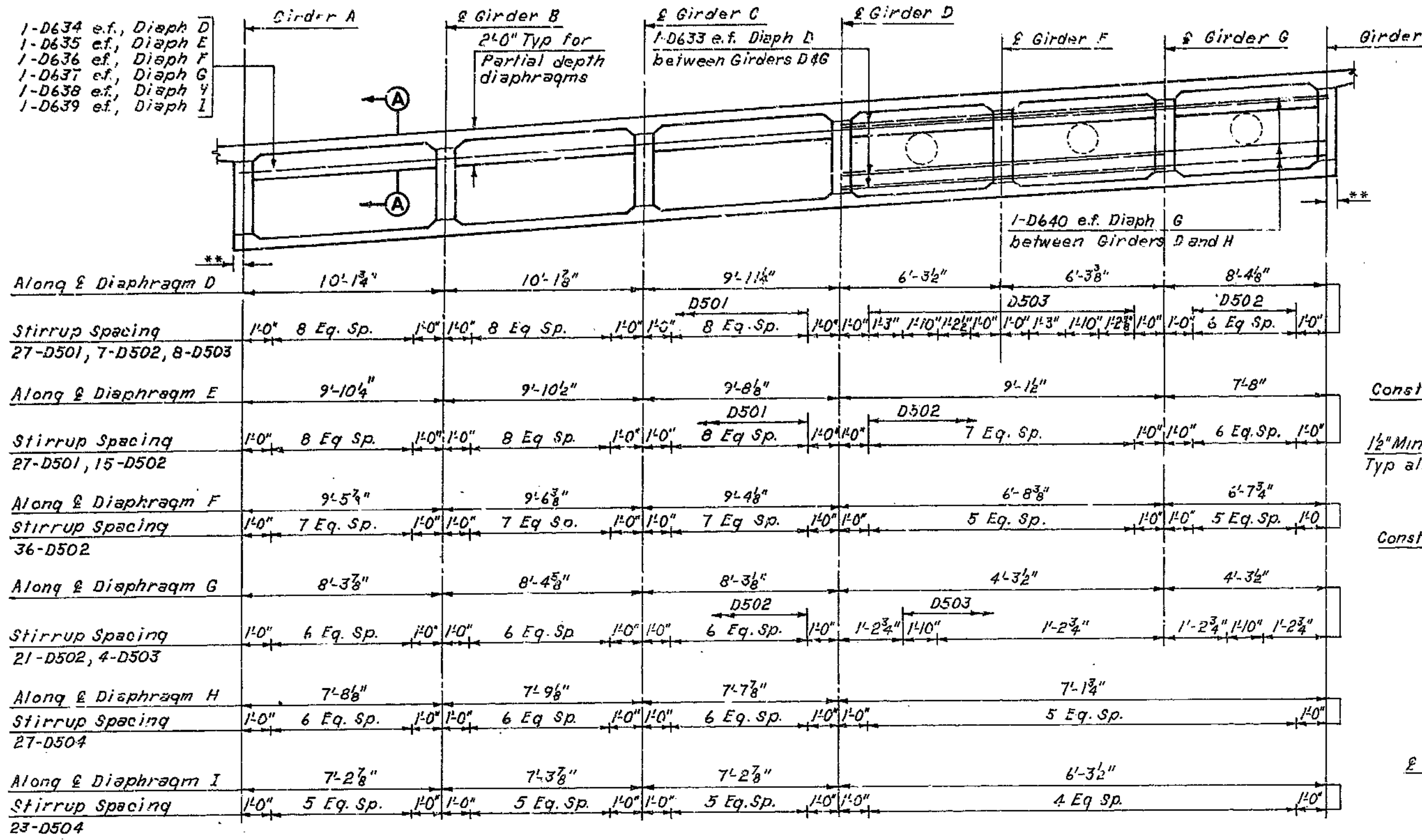
GIRDER WEB REINFORCING - UNIT 1

A-1580

195

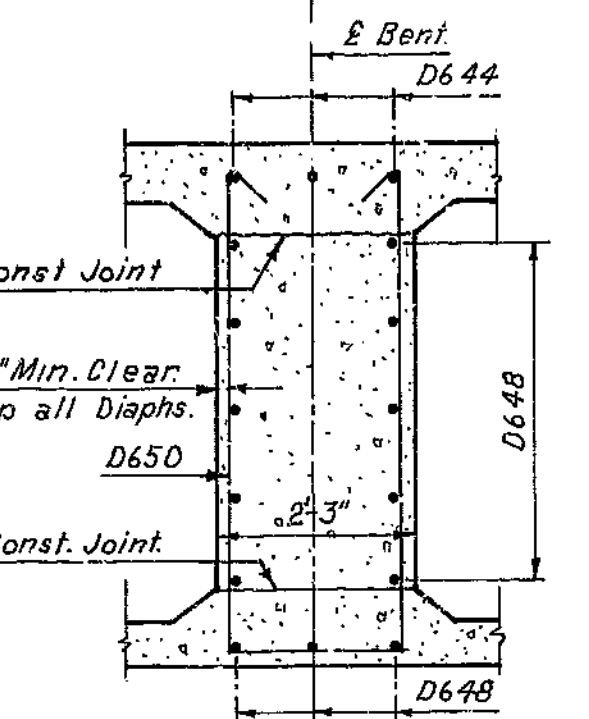
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		110	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			

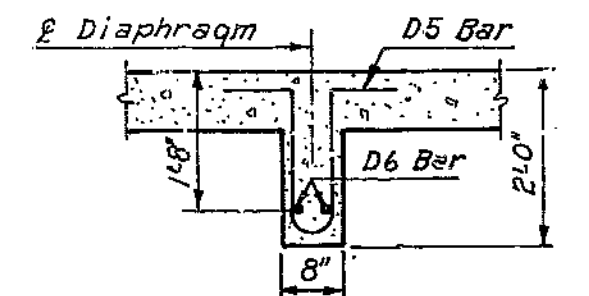


DIAPHRAGM D, E, F, G, H AND I

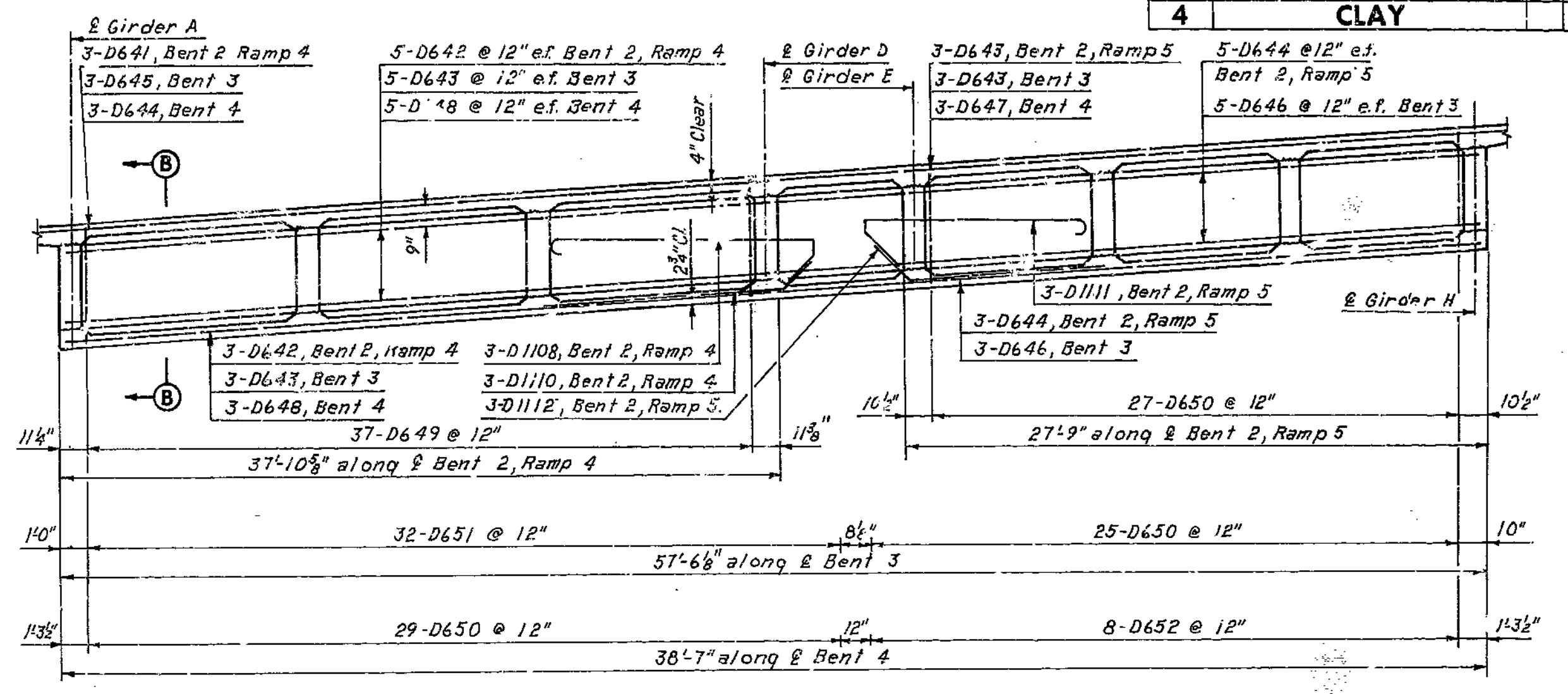
Note: 4" radial from outside face of Girder.



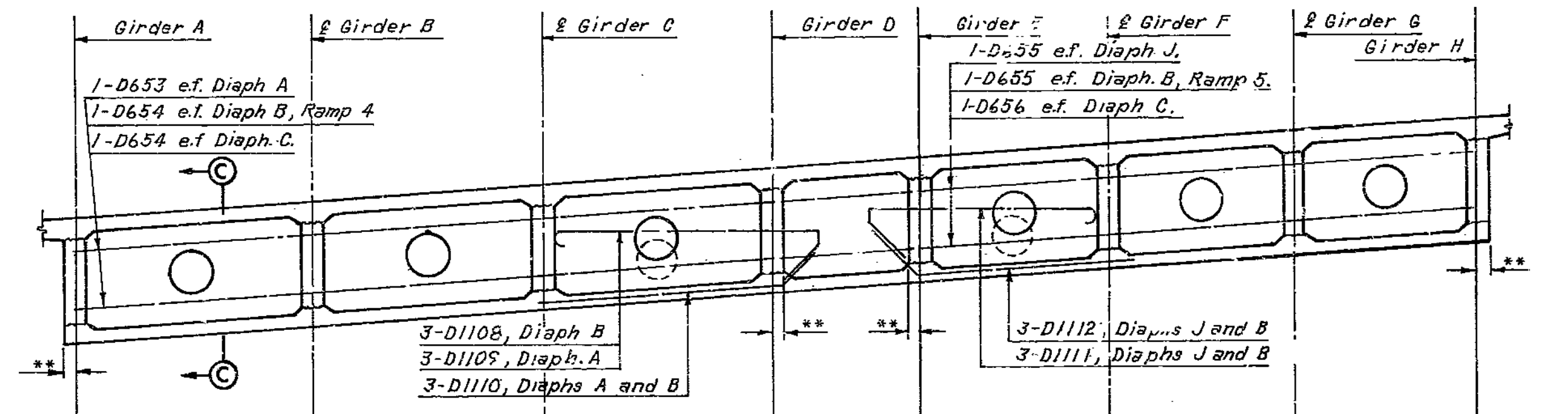
SECTION B-B (BENT 4 DIAPHRAGM SHOWN)



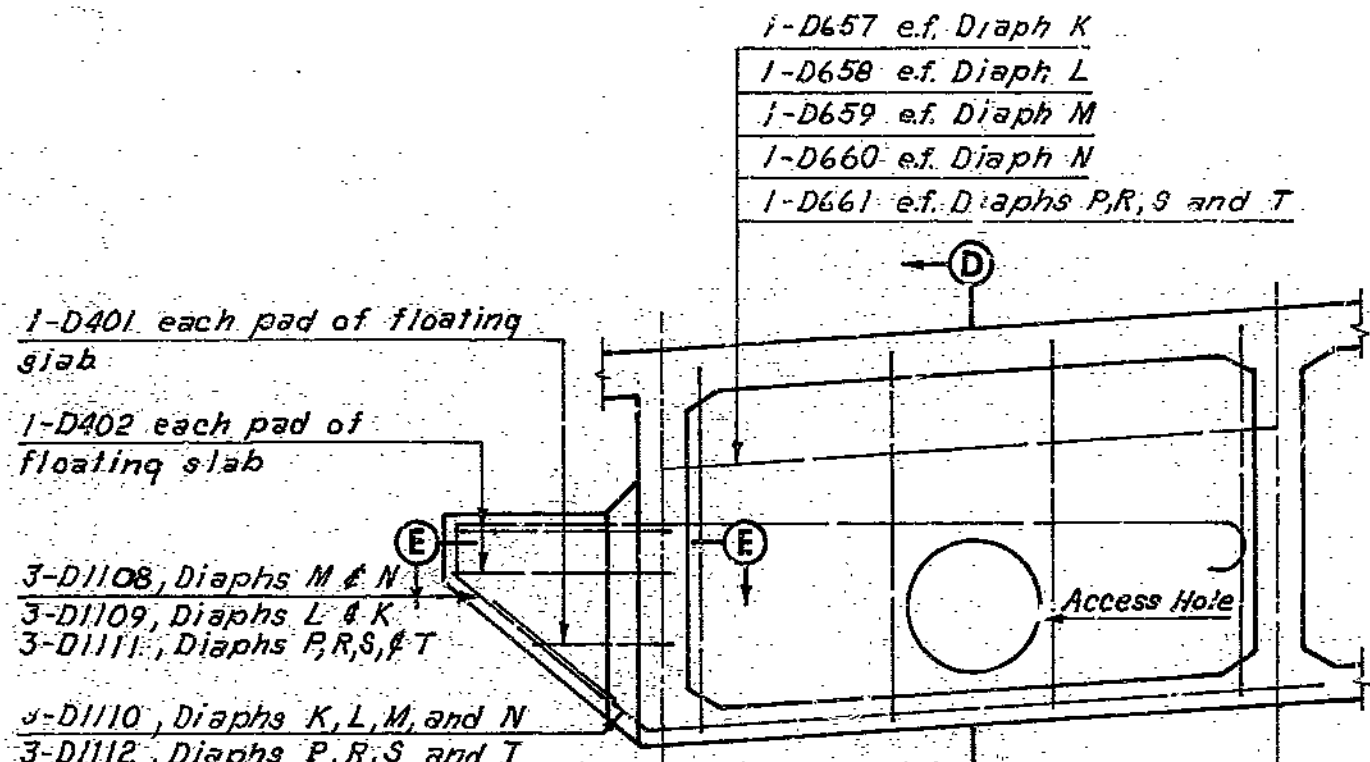
SECTION A-A



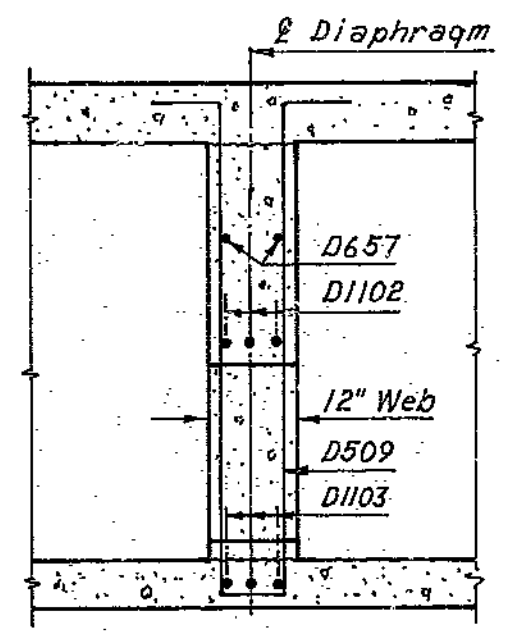
BENT 2, BENT 3 AND BENT 4 DIAPHRAGM



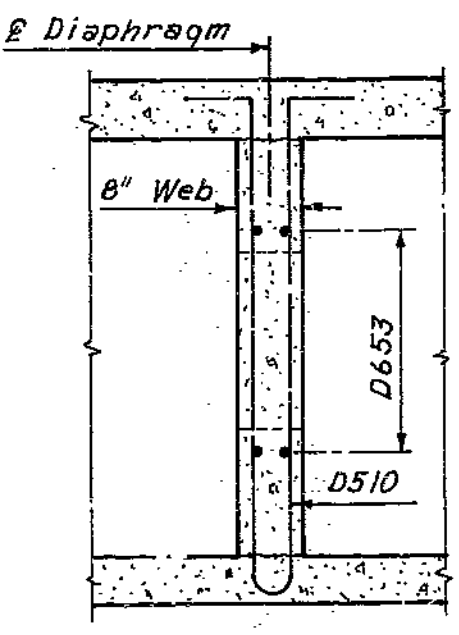
DIAPHRAGM A, B, C AND J



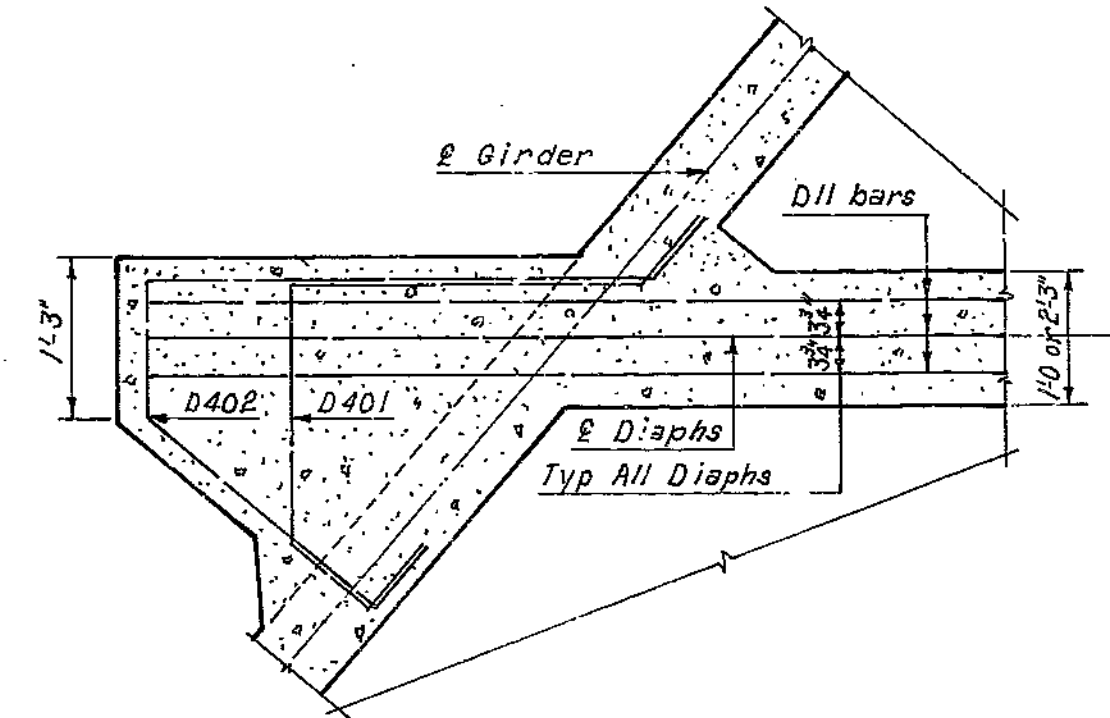
DIAPHRAGM K, L, M, N, P, R, S AND T



SECTION D-D (DIAPHRAGM K SHOWN)



SECTION C-C (DIAPHRAGM A SHOWN)



SECTION E-E

Note: For Framing Plan, see Sheet 21. For Reinforcement Schedule, see Sheet 7. All dimensions are horizontal.

Notes: Stirrups are placed parallel to longitudinal slab steel. e.f. = each face

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS

KANSAS CITY NEW YORK  
 MADE L.J.R. DATE 10-1-68 CHECKED G.C.C. DATE 10-11-68

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

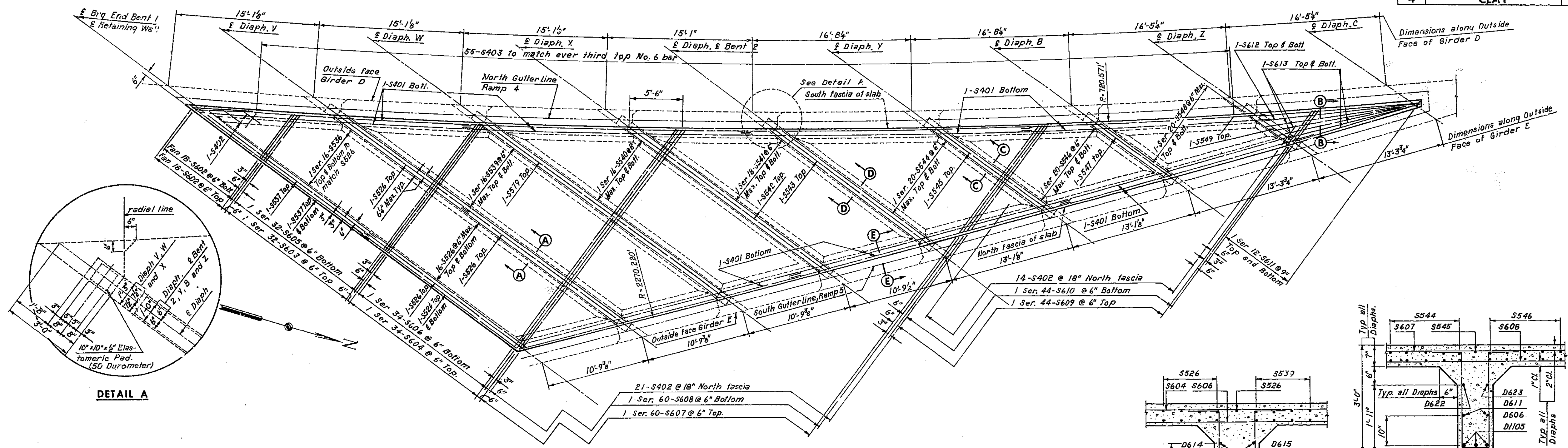
DIAPHRAGM REINFORCEMENT - UNIT 1

SHEET 27 OF 36

A-1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			111	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



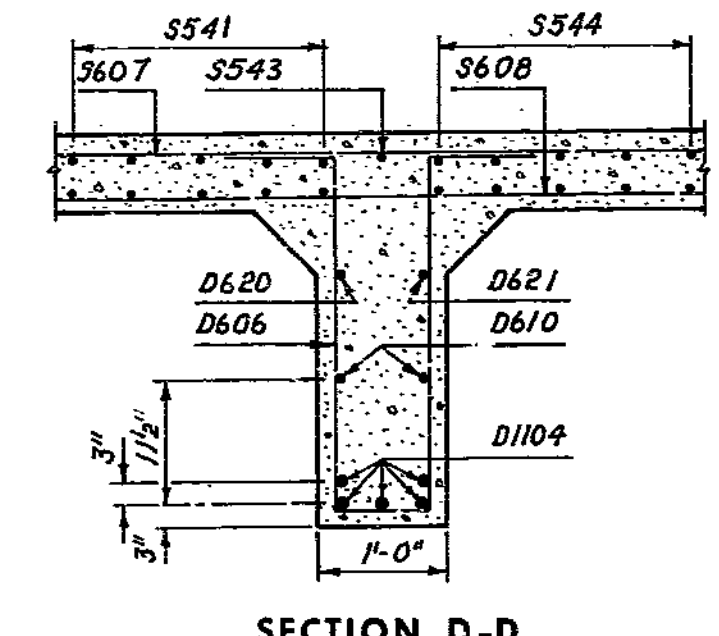
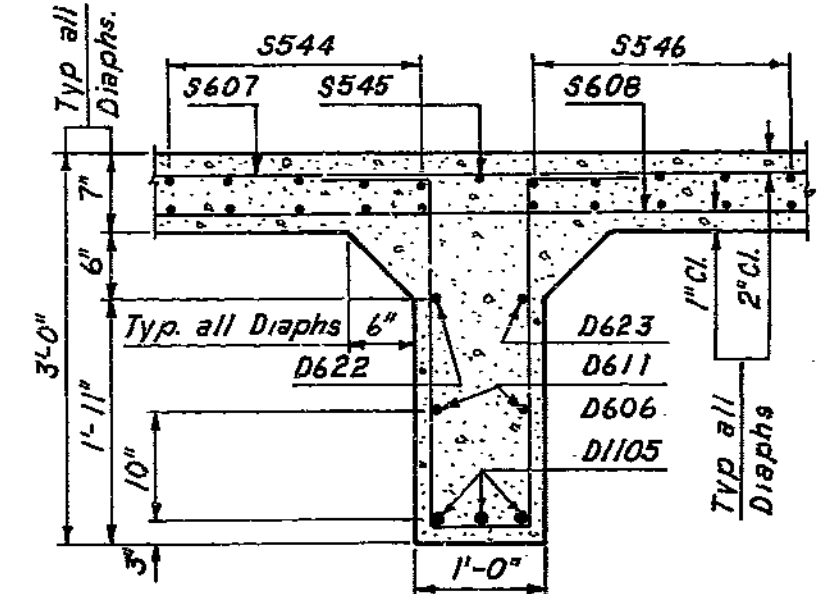
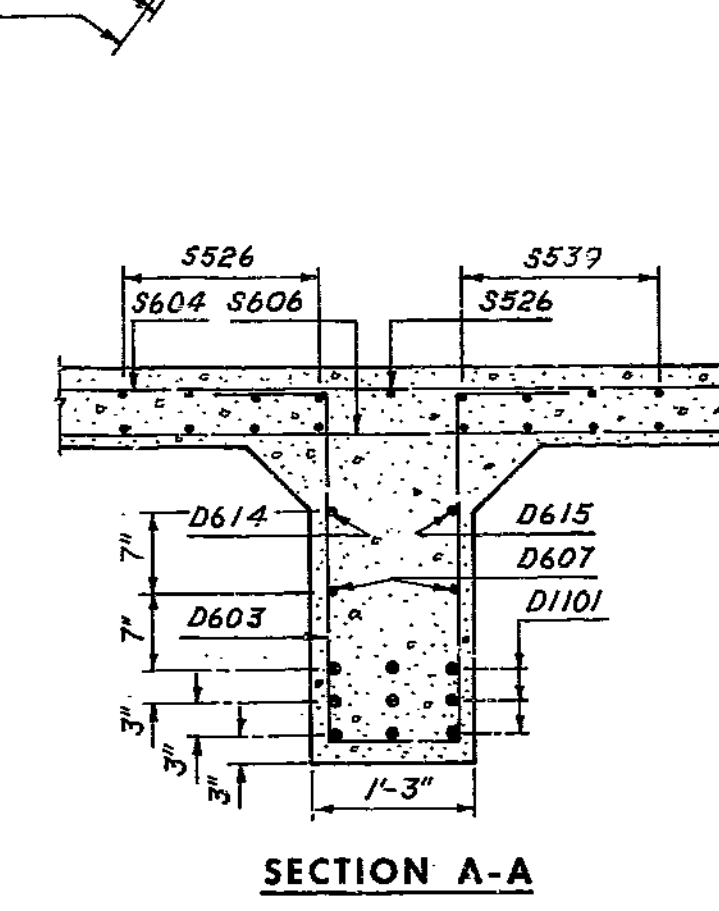
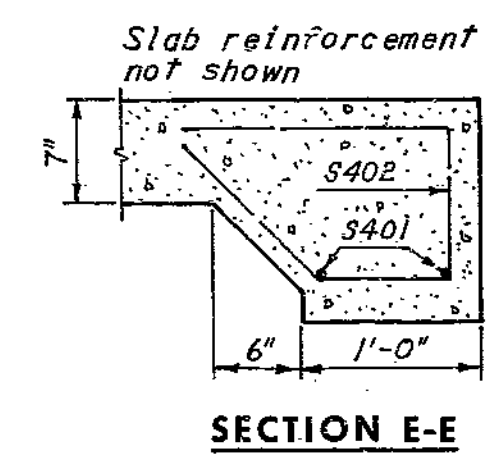
**FLOATING SLAB PLAN AND REINFORCING**

Diaph. V	3" 5 1/2" 5 1/2" 5 1/2" 5" 5-D603 @ 9" 12"	26-D603 @ 12"	12" 7-D603 @ 9" 5 1/2" 5 1/2" 5 1/2" 3"
Diaph. W	3" 6" 6" 6" 6" 7 1/2"	29-D603 @ 12"	7 1/2" 6" 6" 3"
Diaph. X	3" 6" 6" 6" 6" 9"	23-D603 @ 12"	9" 6" 6" 3"
Diaph. & Bent 2	3" 6" 6" 6" 6" 12"	17-D606 @ 12"	12" 6" 6" 3"
Diaph. Y	3" 6" 6" 6" 6" 10 1/2"	12-D606 @ 12"	10 1/2" 6" 6" 3"
Diaph. B	3" 6" 6" 6" 6" 9 1/2"	7-D606 @ 12"	9 1/2" 6" 6" 3"
Diaph. Z	3" 6" 6" 6" 6" 6 1/2"	3-D606 @ 12"	6 1/2" 6" 6" 3"

**DIAPHRAGM REINFORCING**  
LOOKING UP STATION

1-D602 Diaph. V, W and X.	1-D603 Diaph. V, W and X	1-D603 Diaph. V, W, and X	1-D602 Diaph. V, W and X
1-D605 Diaph. & Bent 2, Y, B, and Z.	1-D606 Diaph. & Bent 2, Y, B and Z.	1-D606 Diaph. & Bent 2, Y, B and Z.	1-D605 Diaph. & Bent 2, Y, B and Z.
1-D601 Diaph. V, W and X.			1-D601 Diaph. V, W and X.
1-D604 Diaph. & Bent 2, Y, B and Z.			1-D604 Diaph. & Bent 2, Y, B, and Z.
3-D1101, Diaph. V	3-D1101, Diaph. V	1-D607 e.f., Diaph. V	1-D614 n.f., 1-D615 f.f., Diaph. V
3-D1102, Diaph. W	3-D1102, Diaph. W	1-D608 e.f., Diaph. W	1-D616 n.f. f.f., Diaph. W
3-D1103, Diaph. X	1-D1103 e.f., Diaph. X	1-D609 e.f., Diaph. X	1-D618 f.f., Diaph. X
3-D1104, Diaph. & Bent 2	1-D1104 e.f., Diaph. & Bent 2	1-D610 e.f., Diaph. & Bent 2	1-D620 f.f., Diaph. & Bent 2
3-D1105, Diaph. Y		1-D611 e.f., Diaph. Y	1-D622 n.f., 1-D623 f.f., Diaph. Y
3-D1106, Diaph. B	3-D1101, Diaph. V	1-D612 e.f., Diaph. B	1-D624 n.f., 1-D625 f.f., Diaph. B
3-D1107, Diaph. Z	1-D1102 e.f., Diaph. W	1-D613 e.f., Diaph. Z	1-D626 n.f., 1-D627 f.f., Diaph. Z

LEGEND:  
e. f. = Each Face.  
n. f. = Near Face.



Note:  
For Framing Plan, see Sheet 21.  
For Retaining Wall details, see Sheet 13.  
For End Bent 1, see Sheet 12.  
For Reinforcement Schedule, see Sheets 7 and 8.  
All dimensions are horizontal.  
Elastomeric pads shall have a hardness of 50 durometer.

197

2148-21-02  
Gr. 050

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

DATE: 9-2-68  
CHECKED: G. C. C. DATE: 10-9-68

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

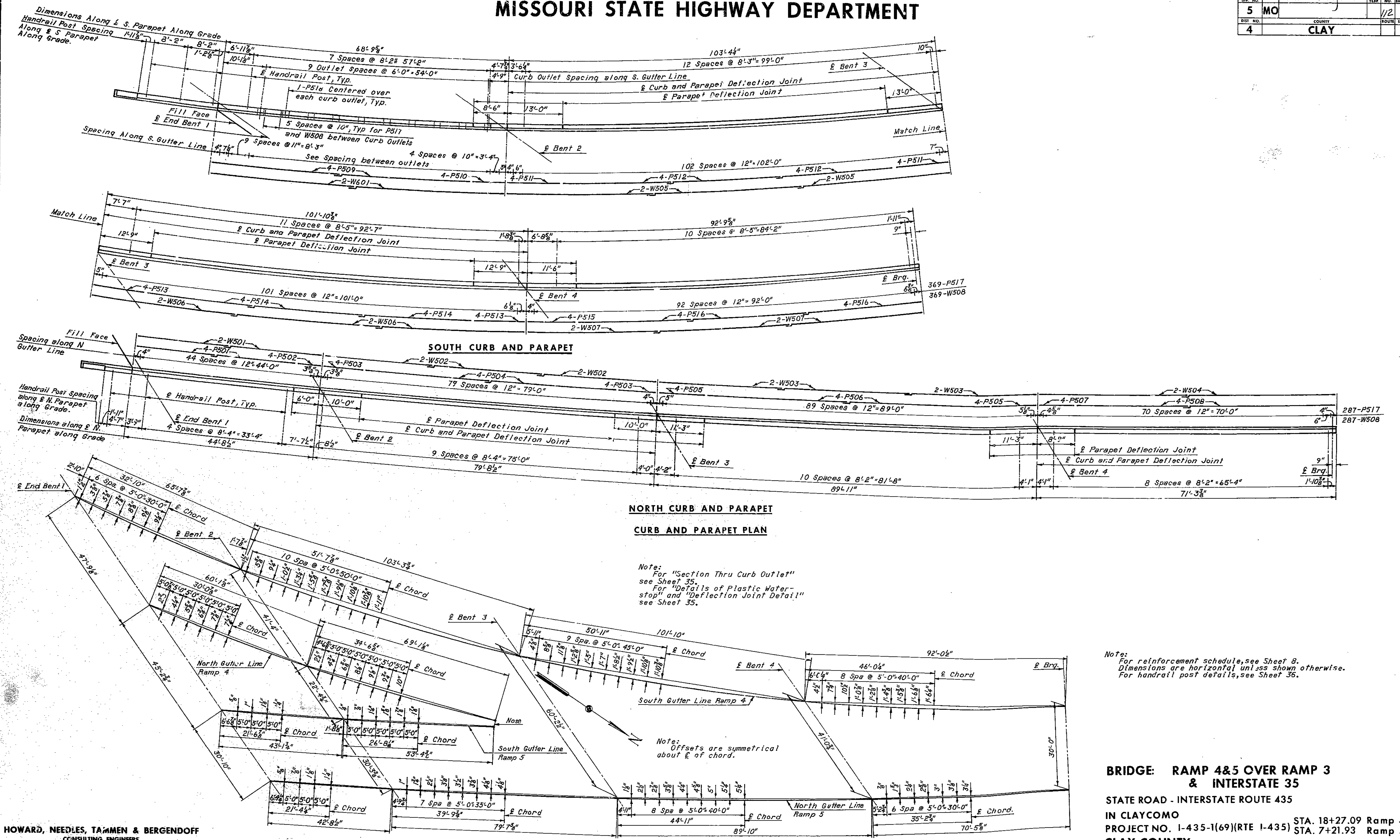
BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
STA. 7+21.93 Ramp 5  
CLAY COUNTY  
SHEET 28 OF 36

FLOATING SLAB

A-1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			112	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



Note:  
 For "Section Thru Curb Outlet"  
 see Sheet 35.  
 For "Details of Plastic Water-  
 stop" and "Deflection Joint Detail"  
 see Sheet 35.

Note:  
 For reinforcement schedule, see Sheet 8.  
 Dimensions are horizontal unless shown otherwise.  
 For handrail post details, see Sheet 36.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 29 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE L.J.R. DATE 5-16-68 CHECKED J.E.H. DATE 8-10-68

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

GUTTER LINE OFFSETS

CURB AND PARAPET PLAN - UNIT 1

A-1580

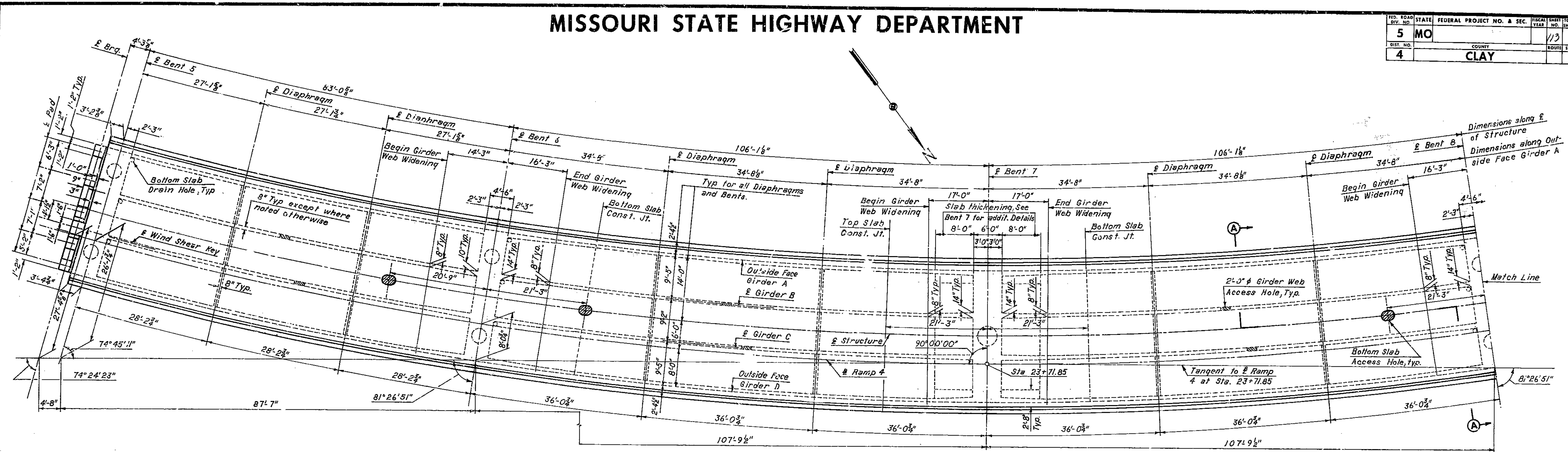
198

2148-21-02  
 Br. 1580

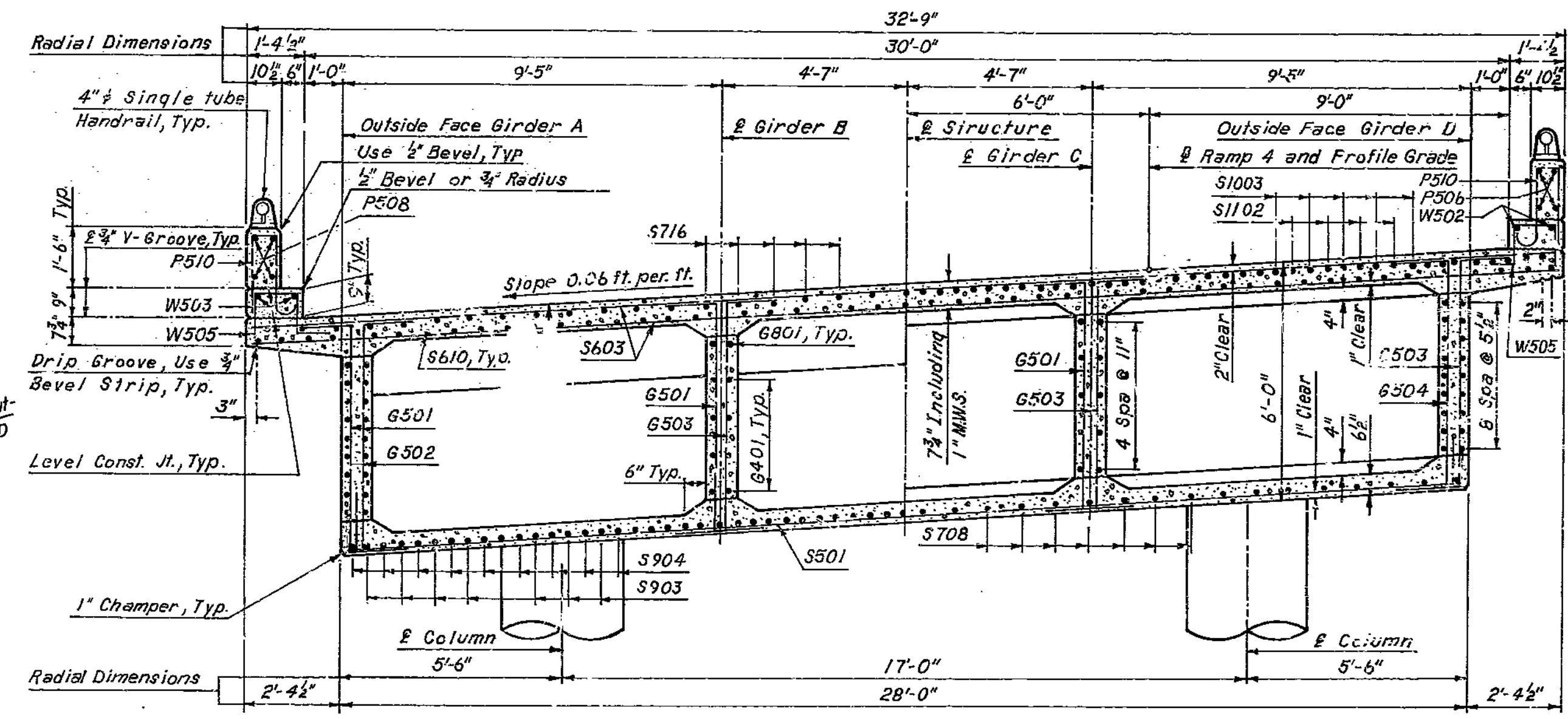
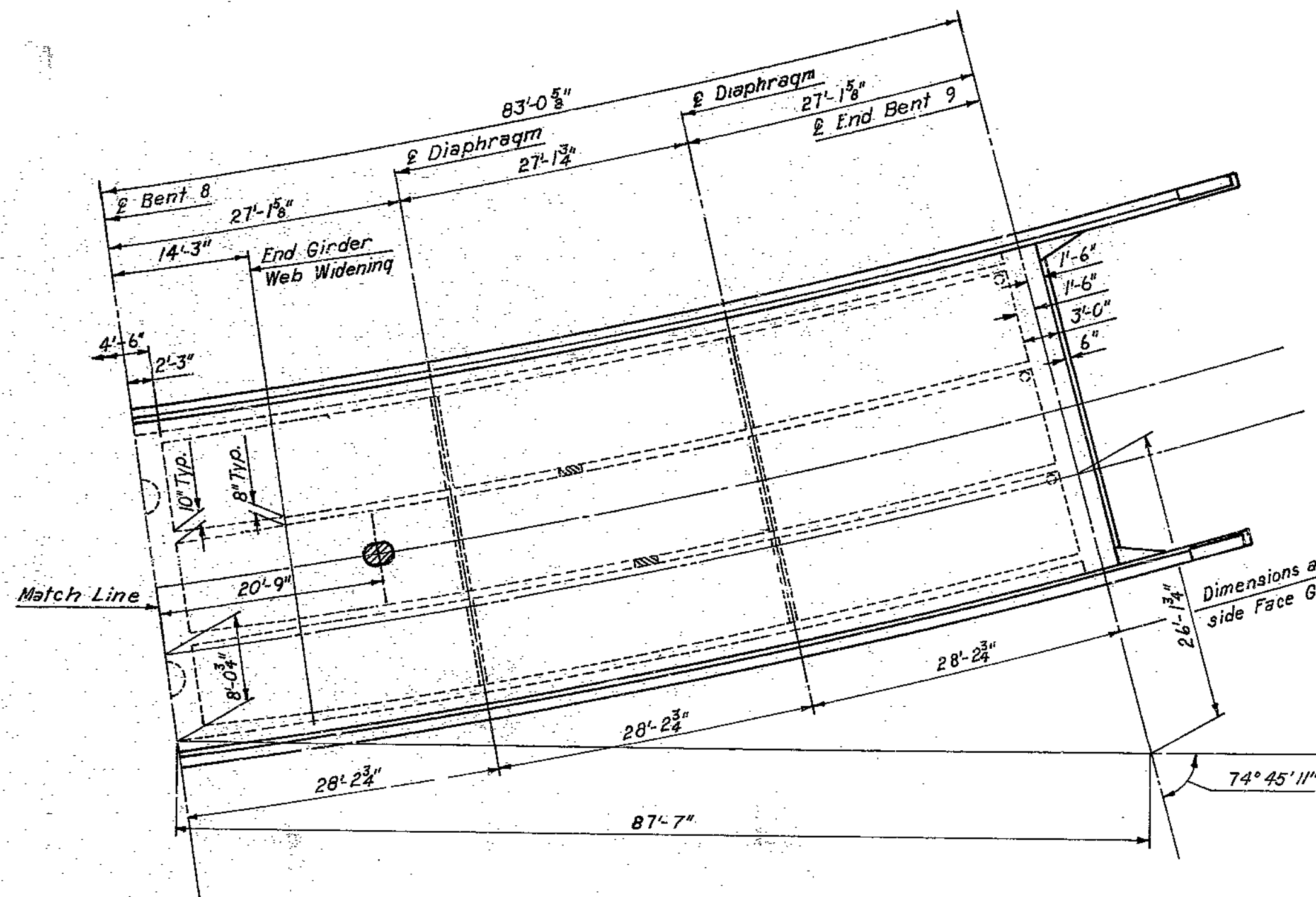


MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
5	MO			173
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



FRAMING PLAN



SECTION A-A

Notes:  
 1. Centerlines of Bents, Diaphragms and transverse slab construction joints are radial.  
 2. All dimensions are horizontal.  
 3. For curb and parapet details, see Sheet 35.  
 4. For Bottom Slab Access Hole and Bottom Slab Drain details see Sheet 35.  
 5. For reinforcement schedule, see Sheet 10.  
 6. Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure unless shown otherwise.  
 7. A clear dimension of 1/2" minimum should be maintained between reinforcing bars.  
 8. Shift bars to maintain this minimum dimension.  
 9. For additional details of slab thickening at Bent 7 see Sheet 19.

199

2148-21-02  
 Br. 1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE L.V.R. DATE 5-9-68 CHECKED J.E.H. DATE 5-20-68

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

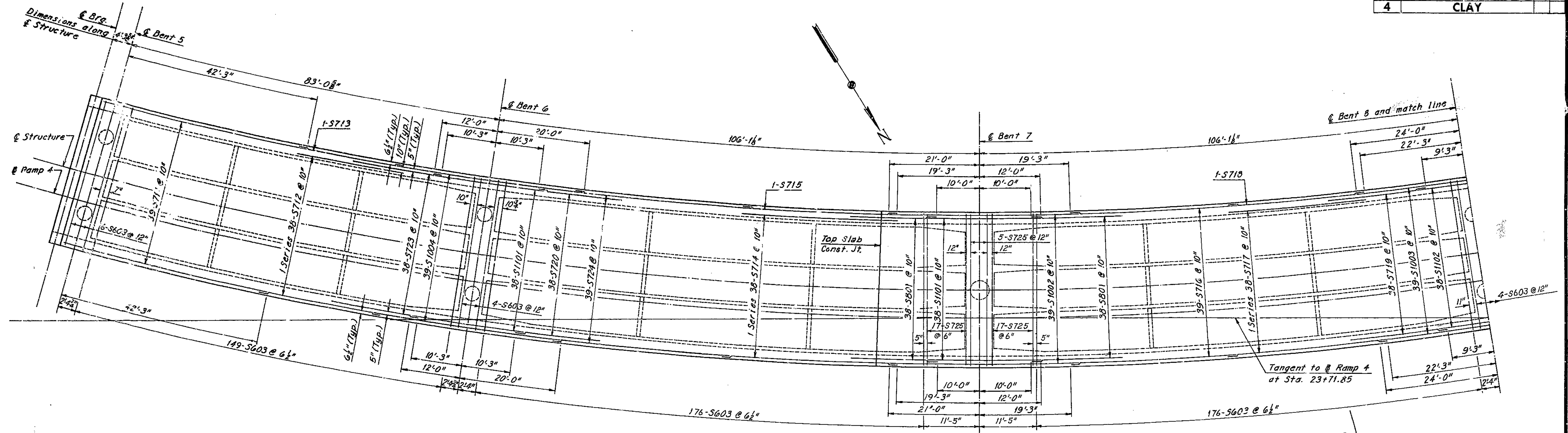
BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCO MO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY  
 SHEET 30 OF 36

FRAMING PLAN - UNIT 2

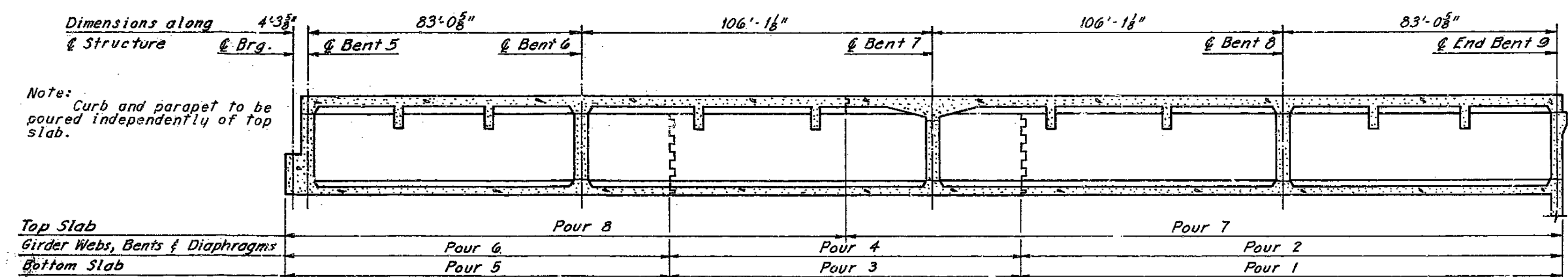
A-1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
4	MO		114	
		COUNTY	ROUTE	SEC.
		CLAY		



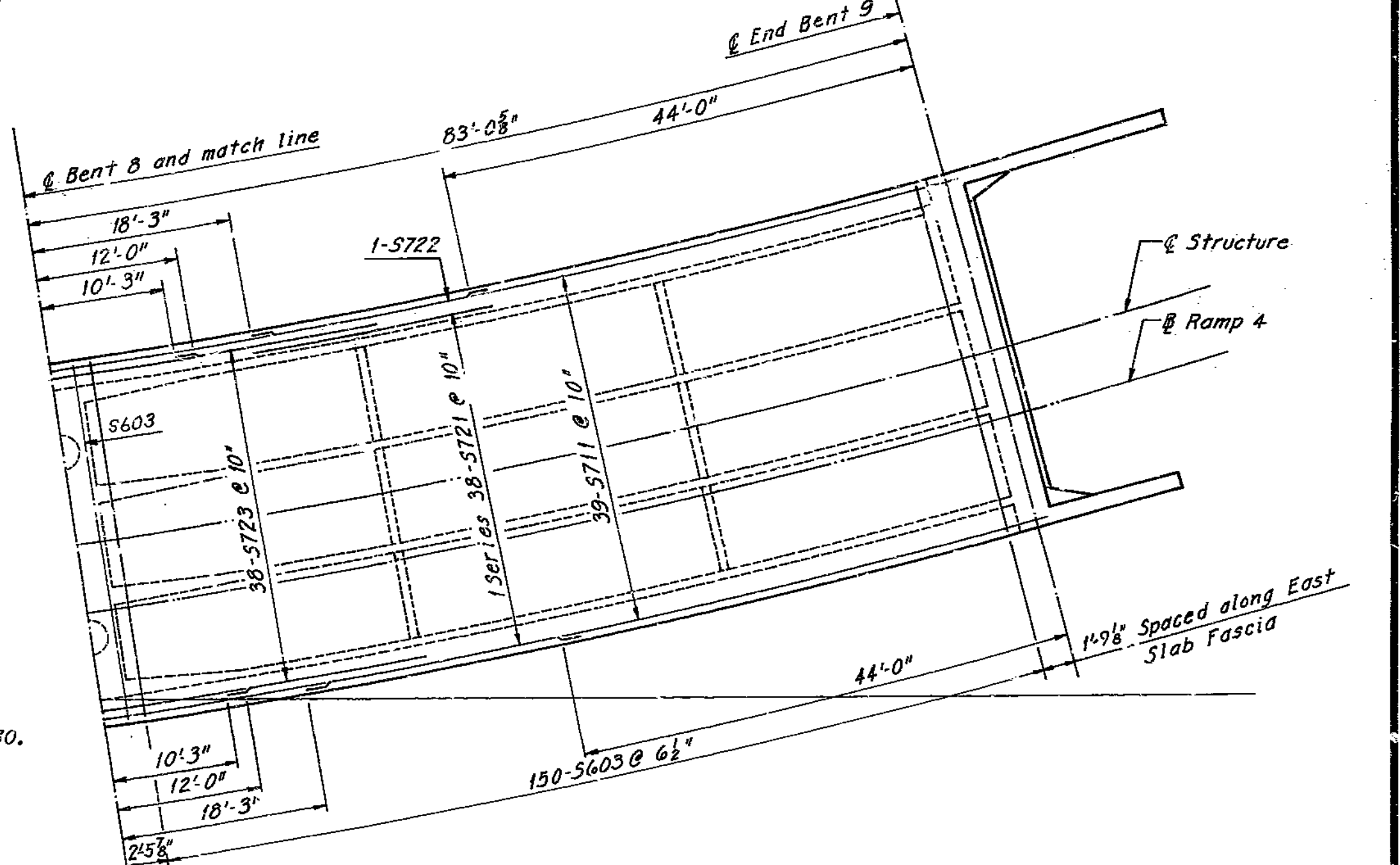
TOP OF TOP SLAB REINFORCEMENT



POURING SEQUENCE

**POURING ROADWAY SLAB**  
 No longitudinal construction joints will be permitted unless shown on the plans. The Contractor shall use an approved oscillating, screed type, self-propelled mechanical finishing machine and shall pour roadway slabs at a rate of not less than 25 cubic yards per hour. He shall observe the basic pouring sequence unless he can demonstrate to the Engineer that he can pour and satisfactorily finish the superstructure concrete at a rate which will permit the combining of such of the basic pours as may be specifically designated by the Engineer as being compatible with design. Finishing machine loads will not be permitted on concrete less than 48 hours old.  
 With use of forms and basic falsework meeting the approval of the Engineer, the girder webs and diaphragms may be poured with the bottom slab sections on which they bear. All forms shall be removed from the interior of box girders except top slab forms which may be left in place. See Standard Specification 53.4.2.4.

Note: Transverse Reinforcing is spaced radially and the dimensions shown are at the top slab fascia. Longitudinal reinforcing is placed parallel to @ of girders.  
 For Reinforcement Schedule, see Sheet 10.  
 For location of construction joint, see Sheet 30.  
 Provide 1/2" clear from face of concrete to reinforcing steel in superstructure unless shown otherwise.  
 A clear dimension of 1 1/2" minimum should be maintained between parallel reinforcing bars in top and bottom layers of top slab. Shift bars as required to maintain this minimum dimension.



**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCO MO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
**CLAY COUNTY**  
 SHEET 31 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE J.E.H. DATE 5-2-68 CHECKED L.J.R. DATE 5-10-68

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

TOP OF TOP SLAB REINFORCEMENT - UNIT 2

SEE FINAL PLANS BROWN LINES

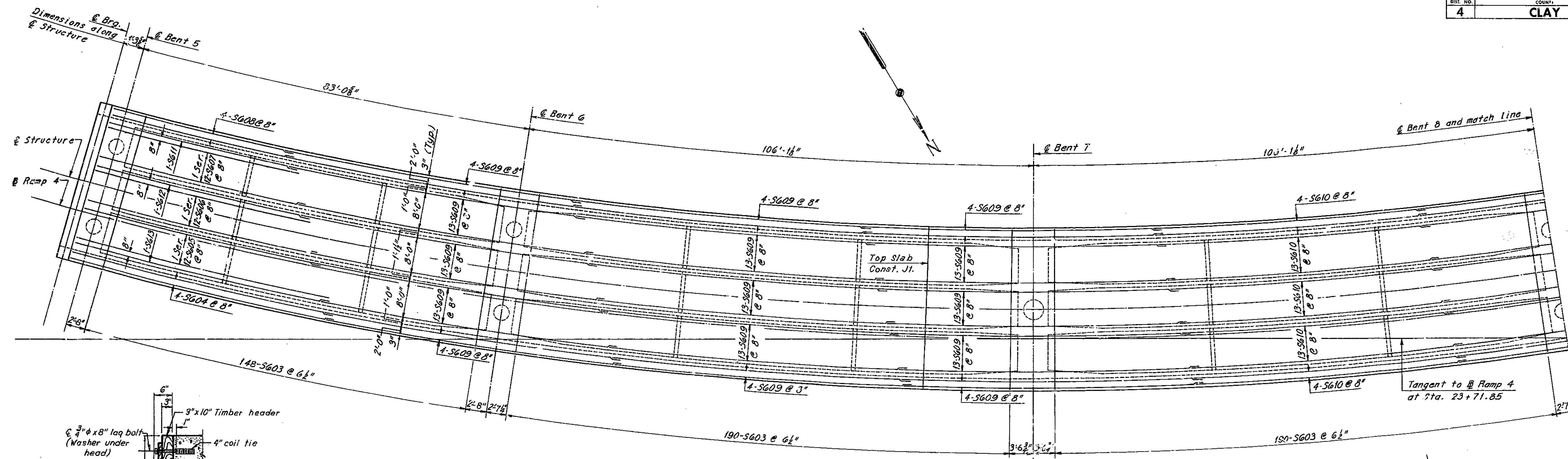
A-1580

200

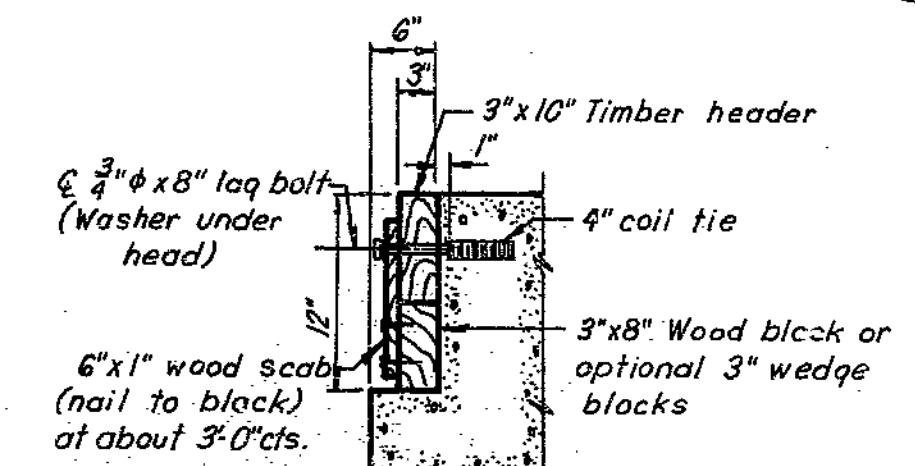
2148-21-02  
Br. 1580

MISSOURI STATE HIGHWAY DEPARTMENT

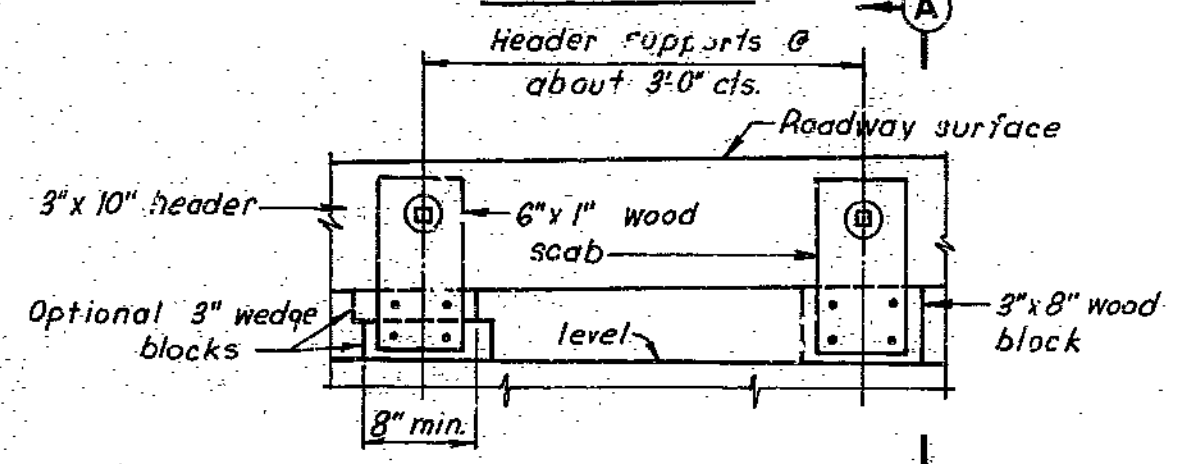
FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			115	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



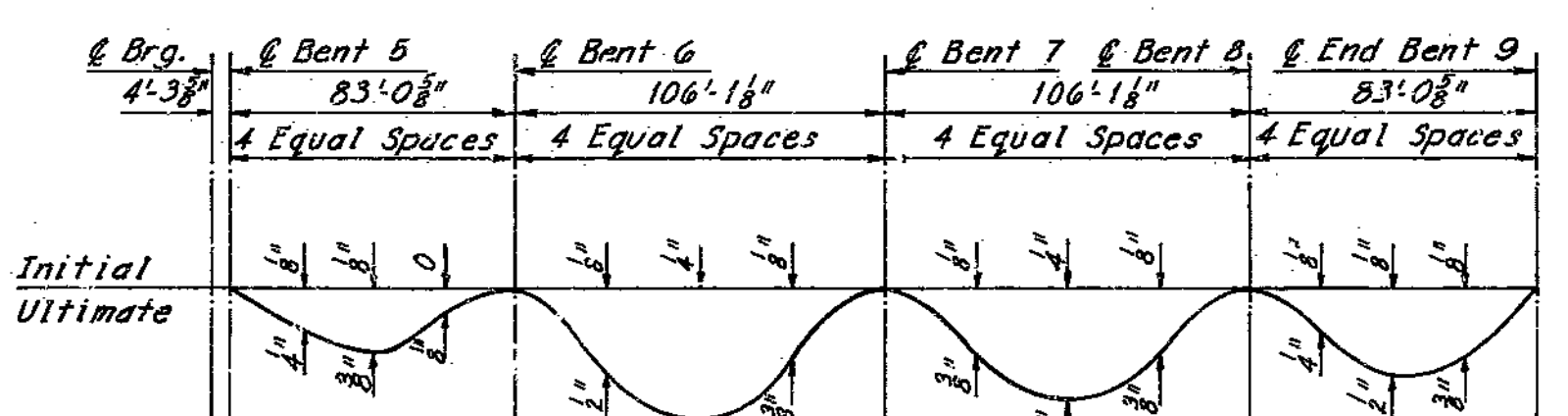
BOTTOM OF TOP SLAB REINFORCEMENT



SECTION A-A

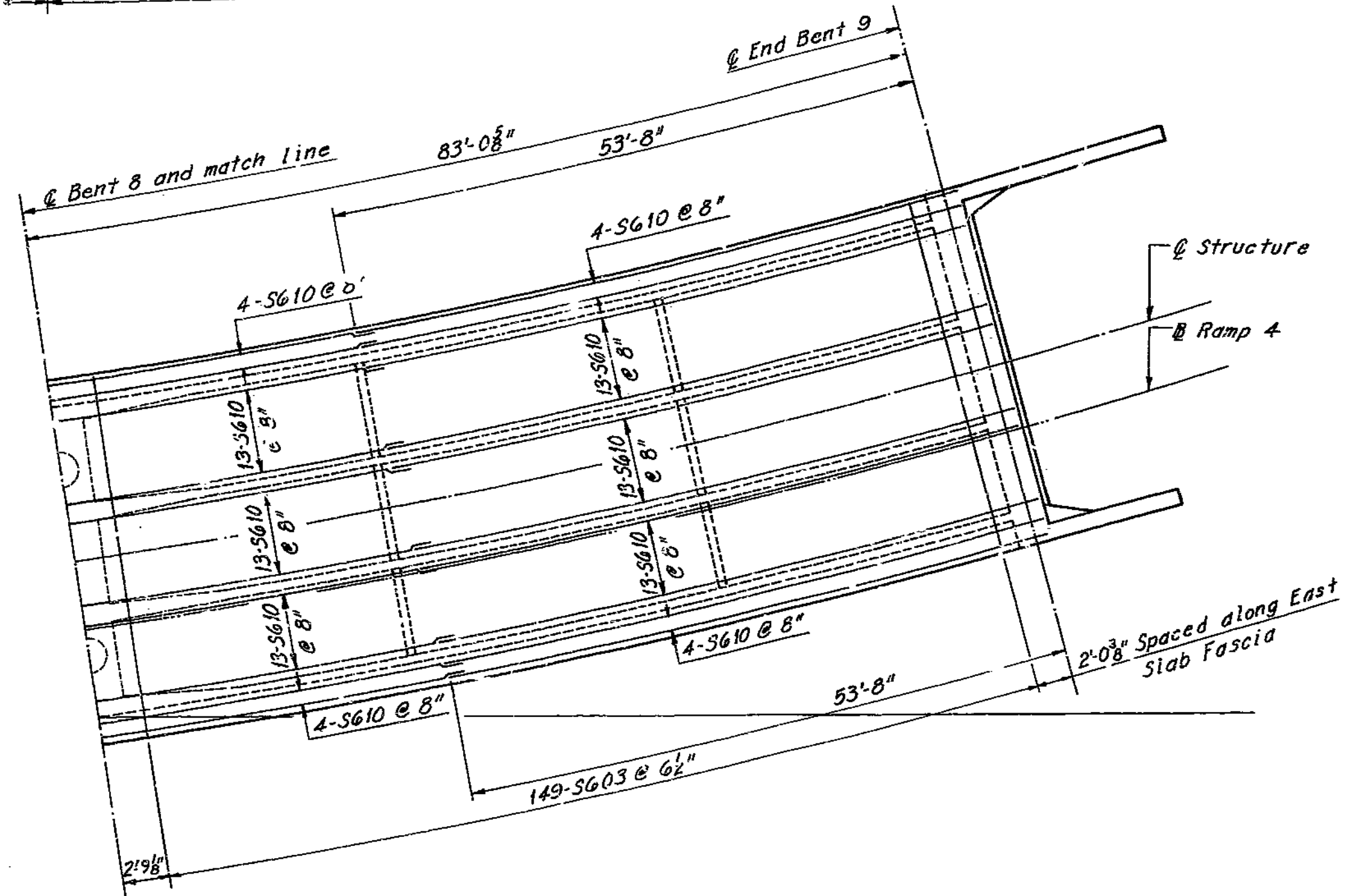


TIMBER HEADER DETAIL



DEAD LOAD DEFLECTION DIAGRAM

Note: Forms shall be cambered for ultimate deflections.



Note: Cost of Timber Header, complete in place, to be included in price bid for concrete.

Note: Transverse Reinforcing is spaced radially and the dimensions shown are at the top slab fascia. The cut off dimensions for the Longitudinal Reinforcing are measured along the centerline of the girders. Longitudinal reinforcing is placed parallel to centerline of girders. For Reinforcement Schedule, see Sheet 10. For location of construction joint, see Sheet 30. Provide 1/2 inch clear from face of concrete to reinforcing steel in superstructure unless shown otherwise. A clear dimension of 1/2 inch minimum should be maintained between parallel reinforcing bars in top and bottom layers of top slab. Shift bars as required to maintain this minimum dimension.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 32 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE BY J.E.H. DATE 5-3-68 CHECKED L.J.R. DATE 5-10-68

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

BOTTOM OF TOP SLAB REINFORCEMENT - UNIT 2

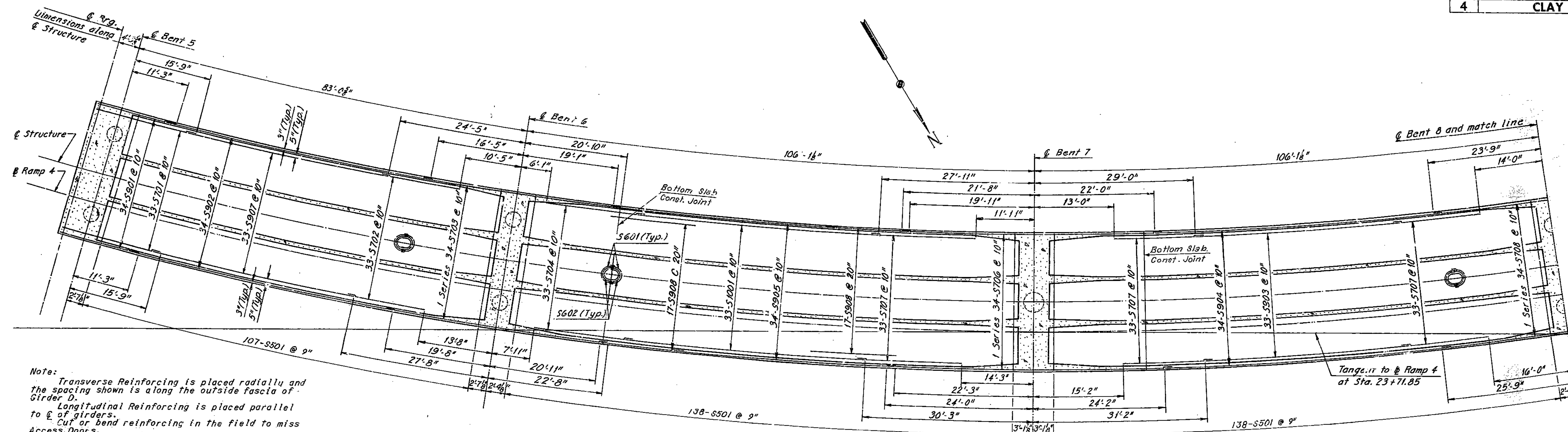
A-1580

201

2140-21-02 Br. 1580

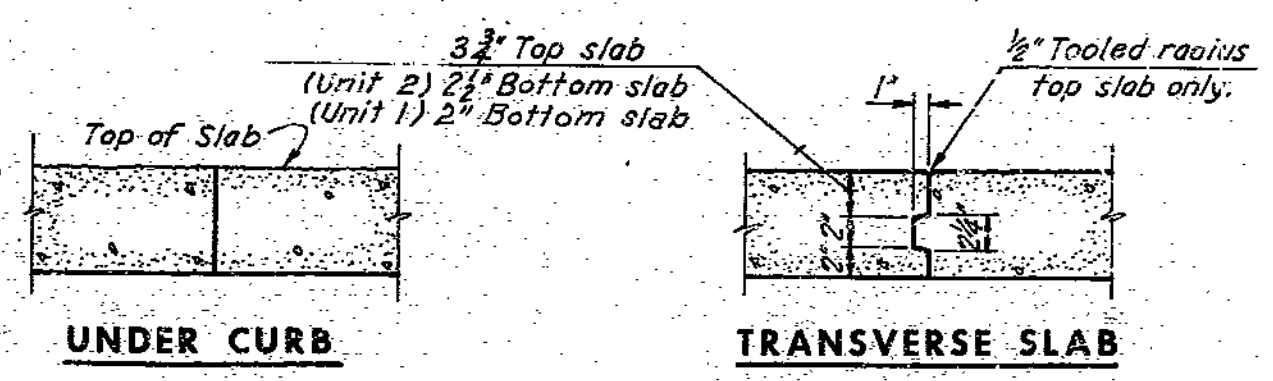
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			116	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

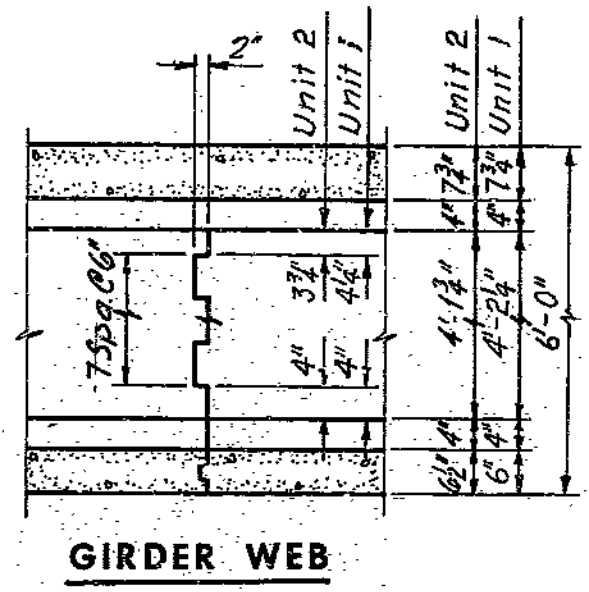


Note:  
 Transverse Reinforcing is placed radially and the spacing shown is along the outside fascia of Girder D.  
 Longitudinal Reinforcing is placed parallel to @ of girders.  
 Cut or bend reinforcing in the field to miss Access Doors.  
 Provide 1/2" clear from face of concrete to reinforcing steel in superstructure unless shown otherwise.  
 For location of access doors and construction joints, see Sheet 30.  
 For Reinforcement Schedule, see Sheet 10.

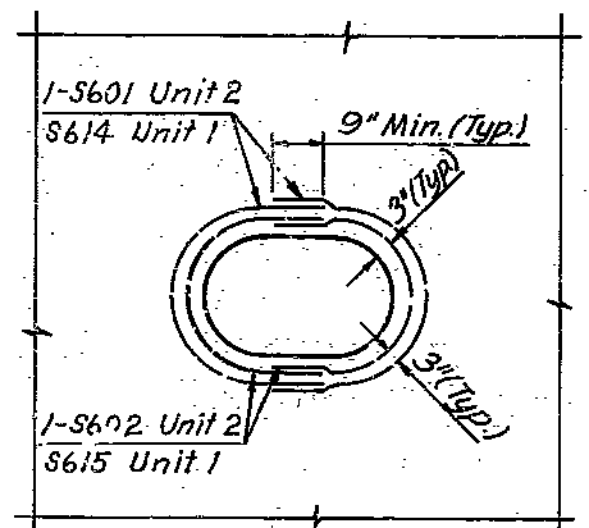
BOTTOM SLAB REINFORCEMENT



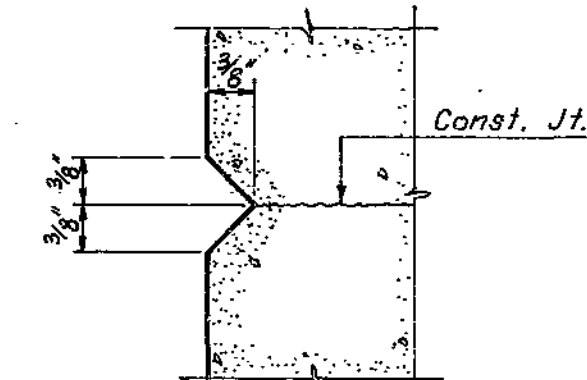
CONSTRUCTION JOINT DETAILS



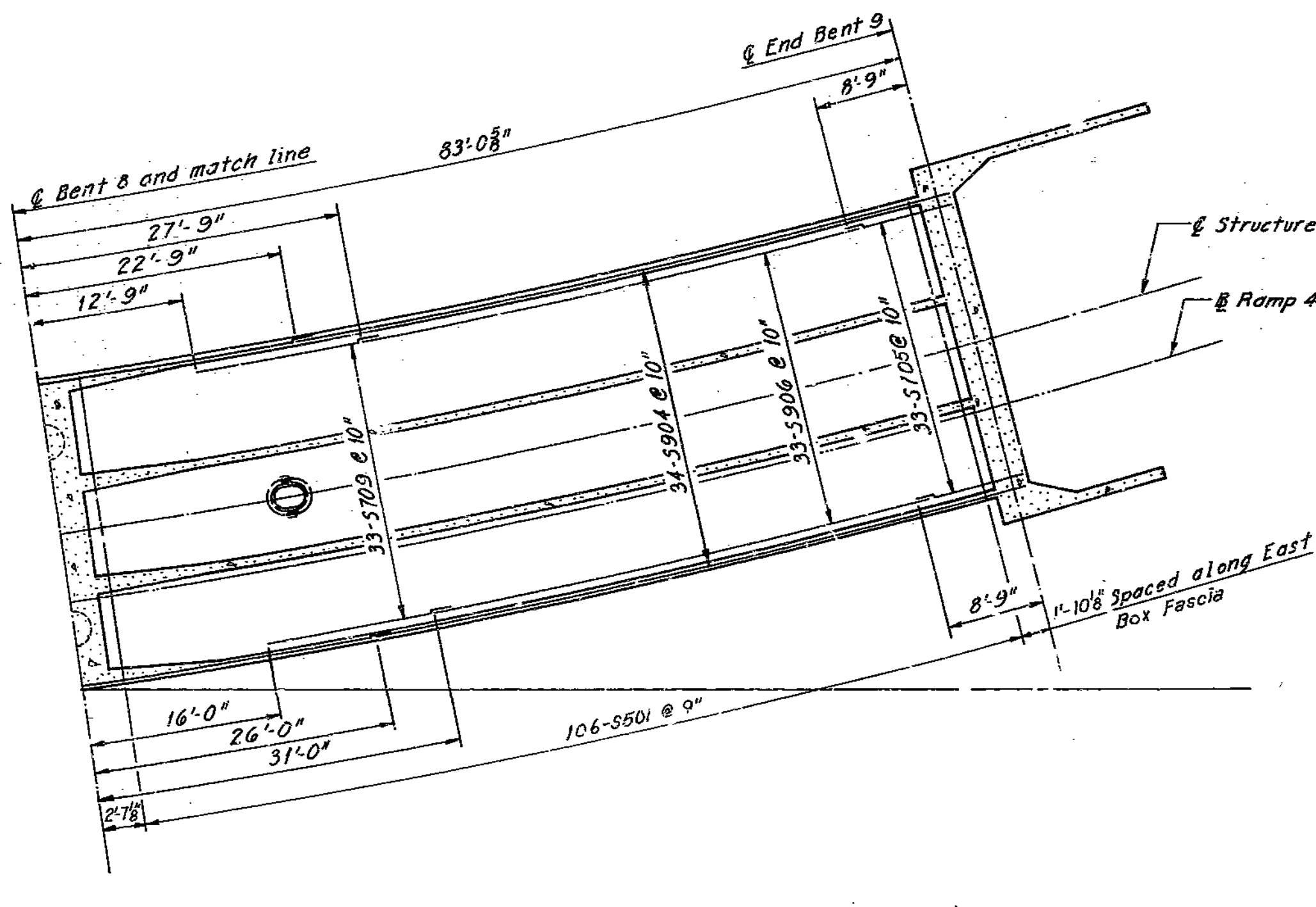
GIRDER WEB



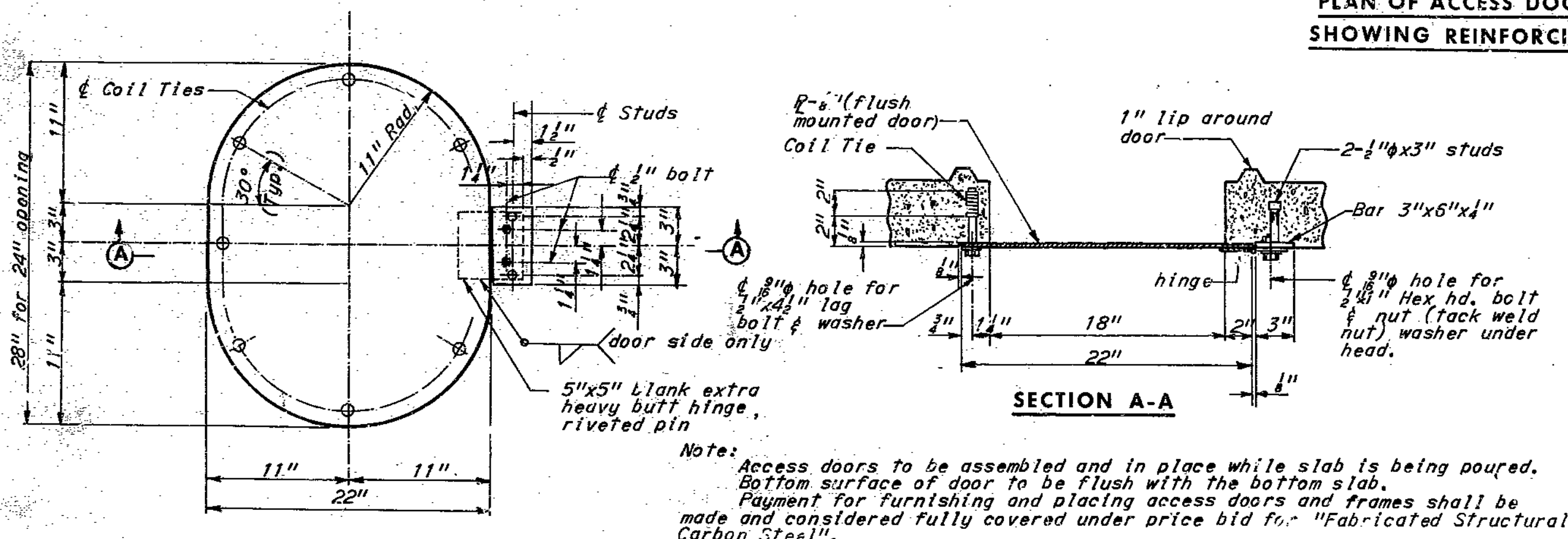
PLAN OF ACCESS DOOR SHOWING REINFORCING



RUSTICATION DETAIL



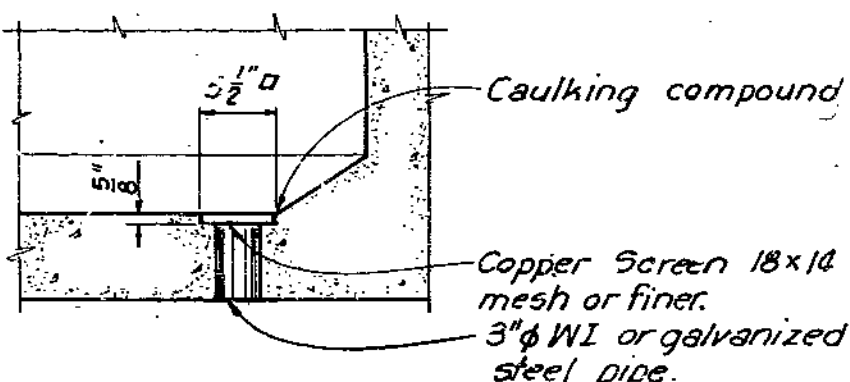
BOTTOM SLAB REINFORCEMENT - UNIT 2



SECTION A-A

Note:  
 Access doors to be assembled and in place while slab is being poured. Bottom surface of door to be flush with the bottom slab.  
 Payment for furnishing and placing access doors and frames shall be made and considered fully covered under price bid for "Fabricated Structural Carbon Steel".  
 Number of doors required: 7 Unit 1; 4 Unit 2  
 Weight: 25 lbs. per door.

BOTTOM SLAB ACCESS DOOR DETAILS



Note:  
 If galvanized steel pipe is used, the screen shall be aluminum.  
 Cost of furnishing and placing pipe, screen, and caulking compound shall be included in price bid for other items of work.

BOTTOM SLAB DRAIN

2148-21-02 Br. 1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

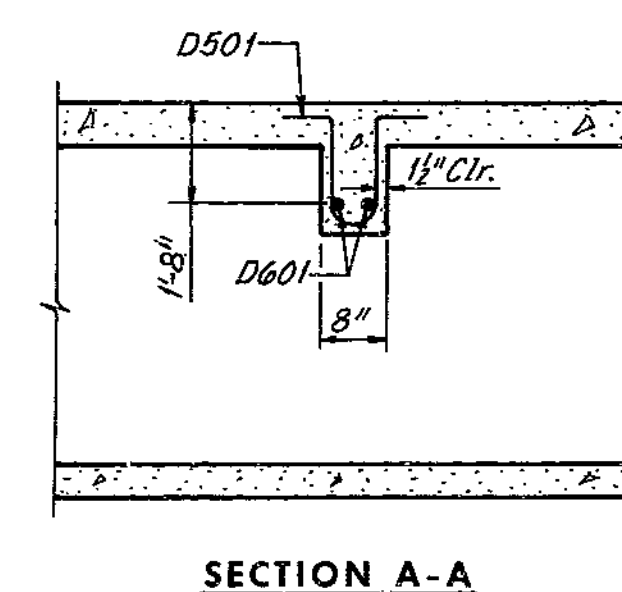
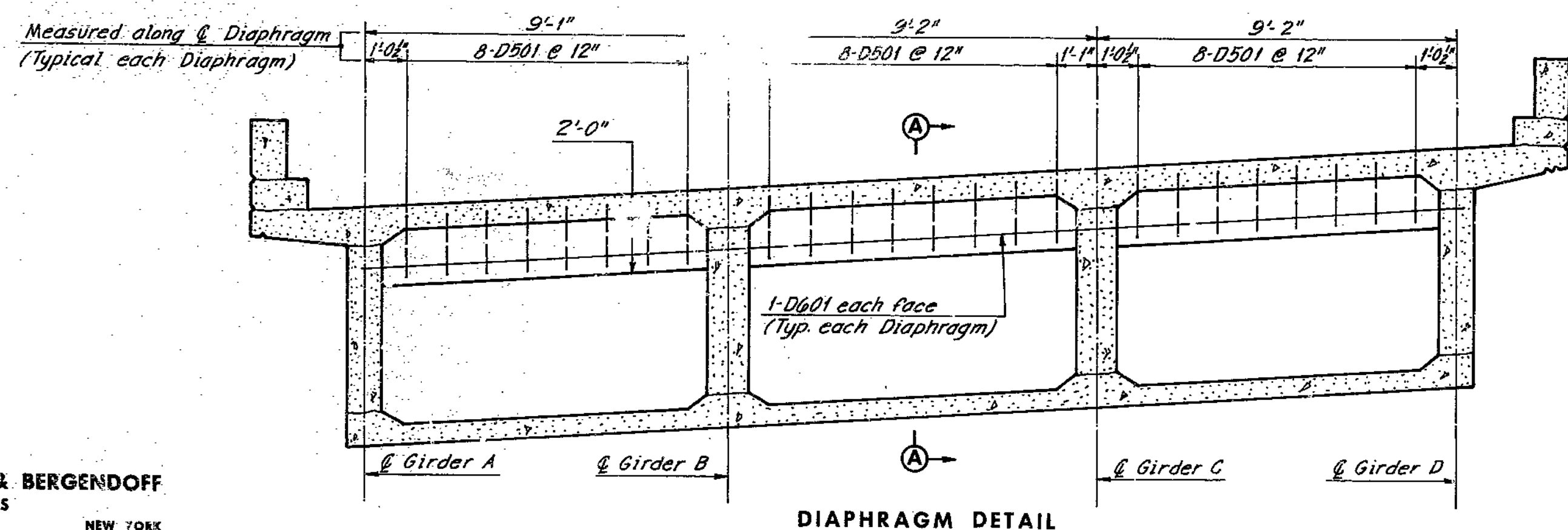
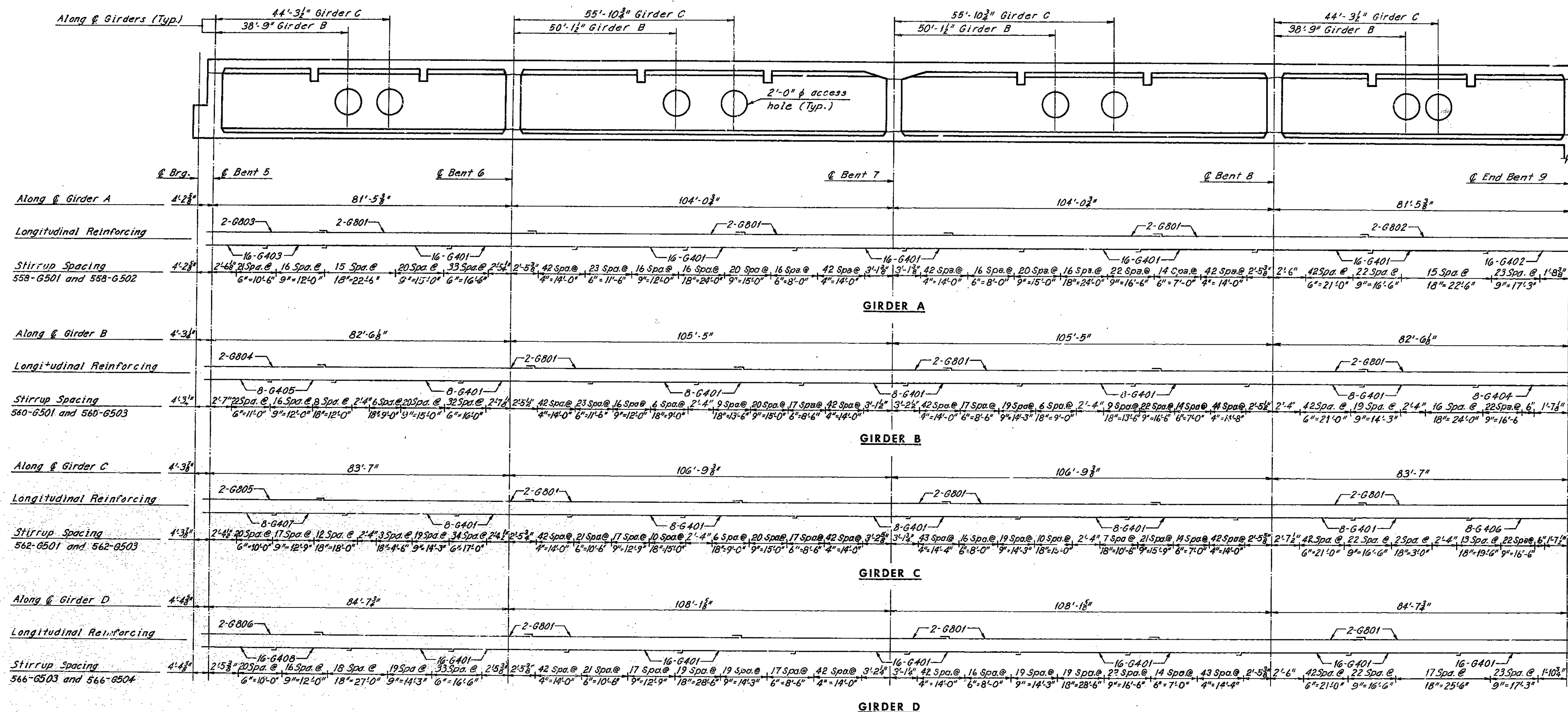
MADE U.E.H. DATE 5-6-68 CHECKED L.V.R. DATE 5-10-68

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

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO PROJECT NO. 1-435-1(69)(RTE. 435) STA. 18+27.09 Ramp 4 STA. 7+21.93 Ramp 5  
 CLAY COUNTY SHEET 33 OF 36 A-1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		117	
DIST. NO.	COUNTY	ROUTE	SECTION	
4	CLAY			



Note:  
 For Reinforcement Schedule, see Sheet 10.  
 All dimensions are horizontal unless shown otherwise.  
 CUT or bend reinforcement in the field to miss access holes.  
 Stirrups in diaphragms are placed parallel to  $\epsilon$  of girders and spaced along  $\epsilon$  of diaphragm.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 34 OF 36

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY, MISSOURI  
 MADE J.E.H. DATE 5-7-68 CHECKED L.J.R. DATE 9-28-68

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

GIRDER WEB REINFORCING - UNIT 2

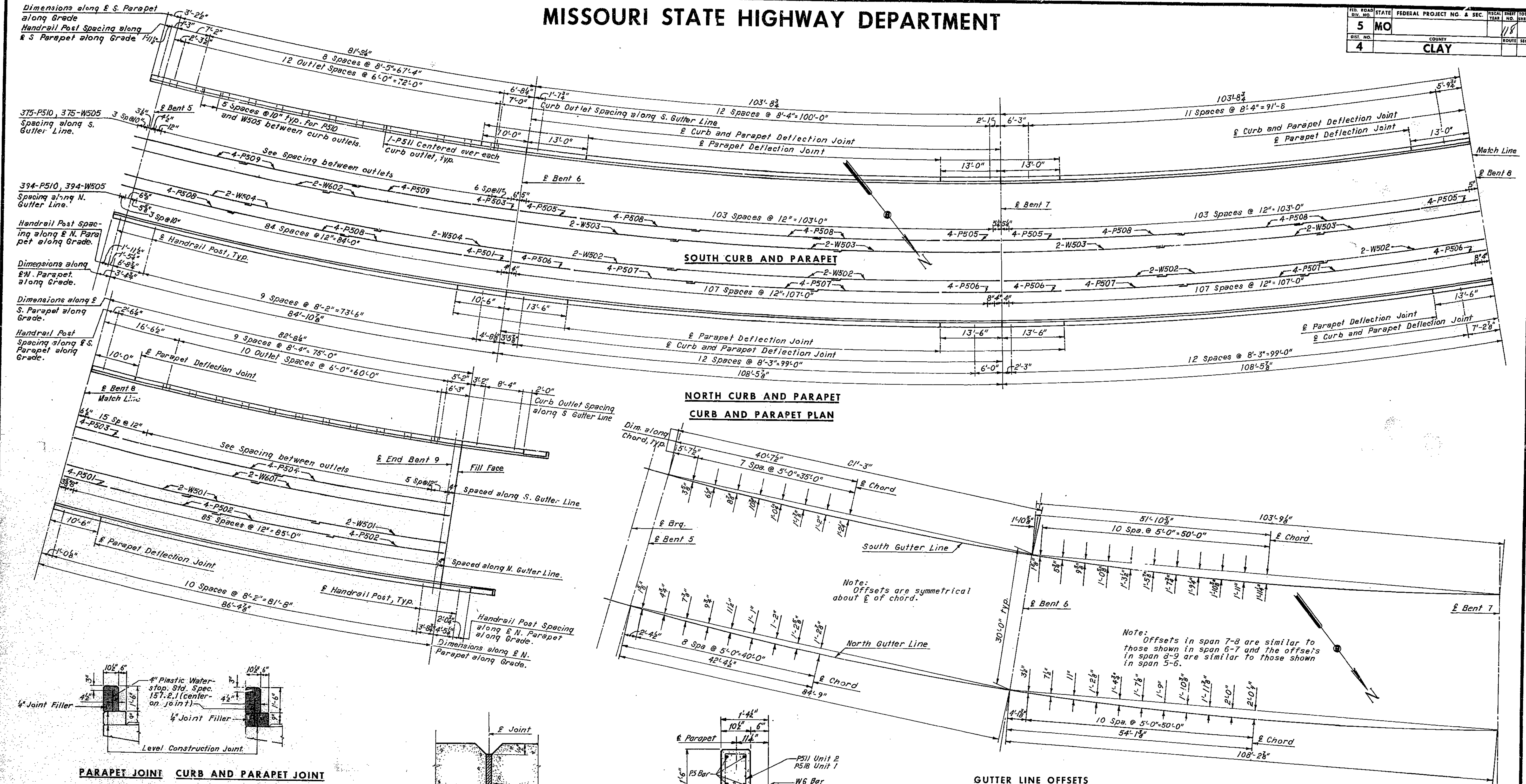
A-1580

203

2148-21-02  
 B-1580

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		118	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



204

2148-21-02 Br. 1980

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE L.J.R. DATE 5-8-68 CHECKED J.E.N. DATE 5-10-68

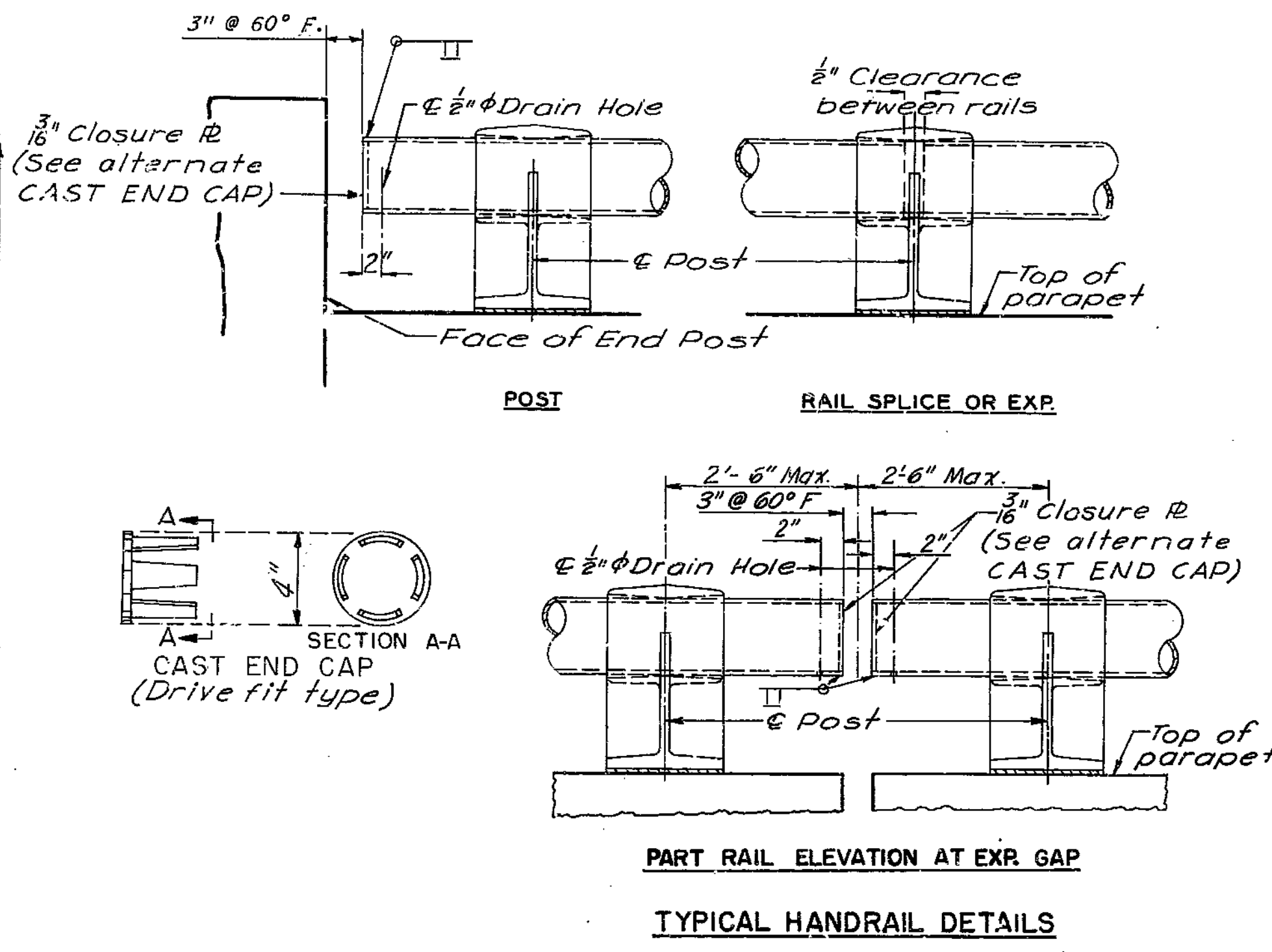
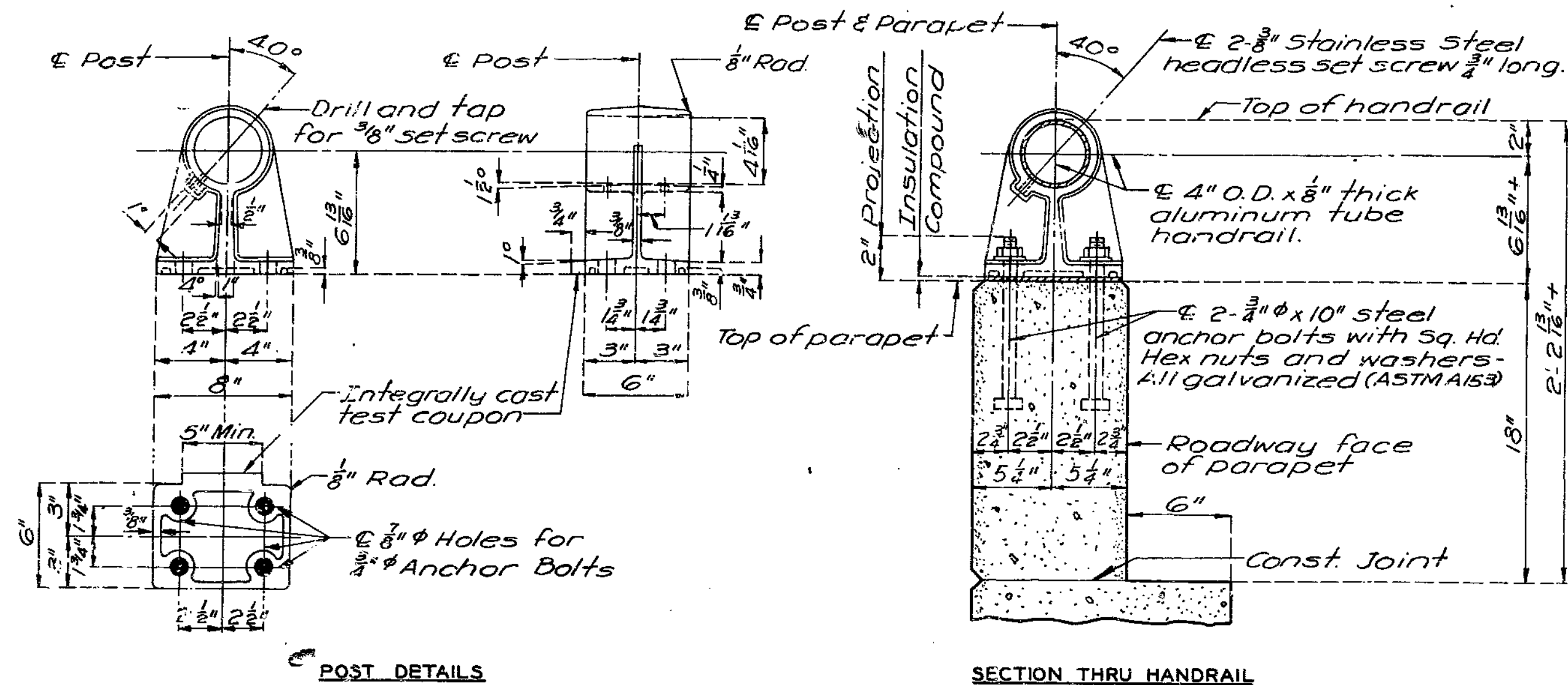
NOTE: This drawing is not to scale. Follow dimensions.

Note: For reinforcement schedule, see Sheet 10. Dimensions are horizontal unless shown otherwise. For handrail post details, see Sheet 36.

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
CLAY COUNTY STA. 7+21.93 Ramp 5  
SHEET 35 OF 36  
A-1580

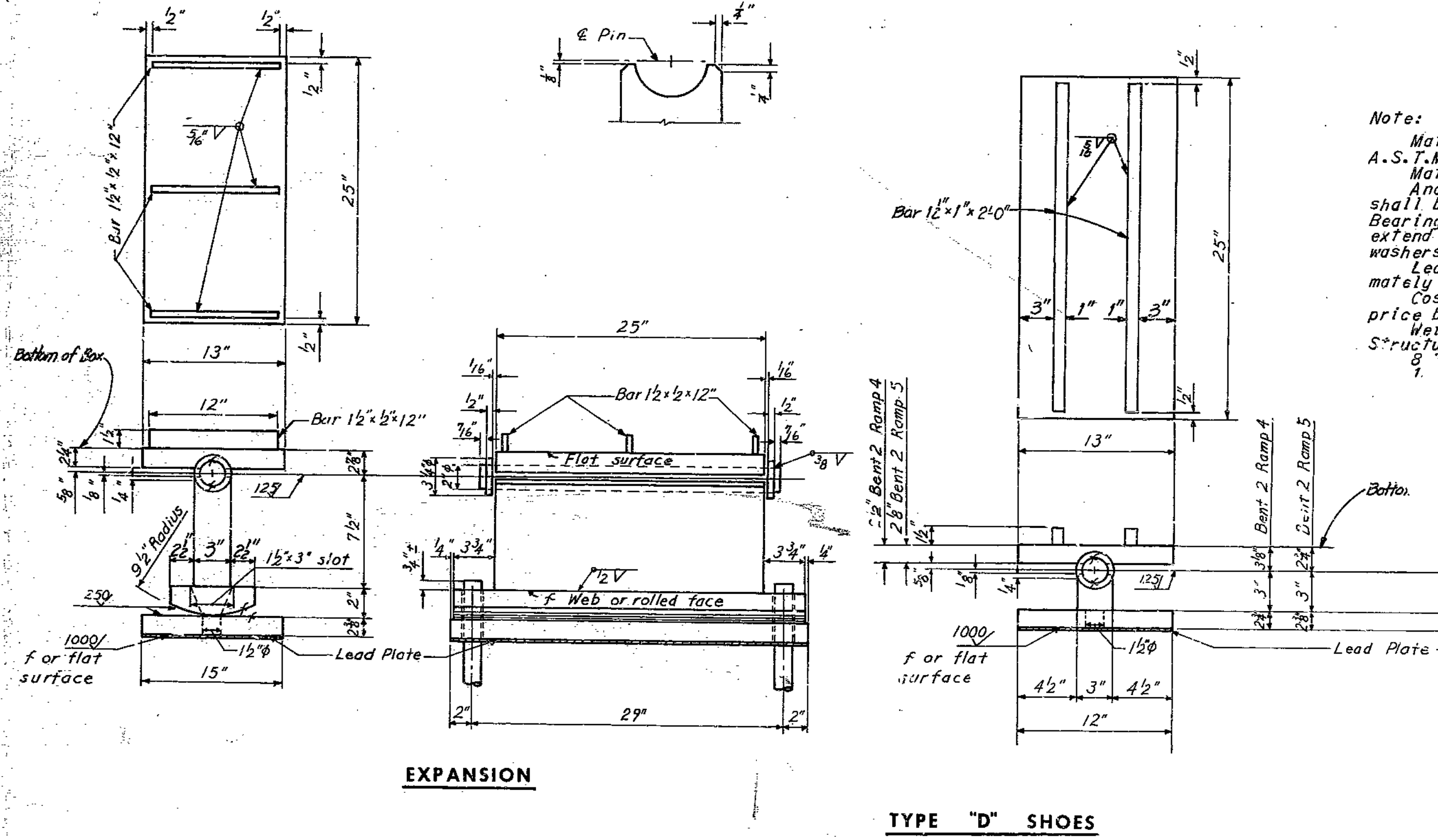
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			119	
DIST. NO.	COUNTY			RDWN	SEC.
4	CLAY				

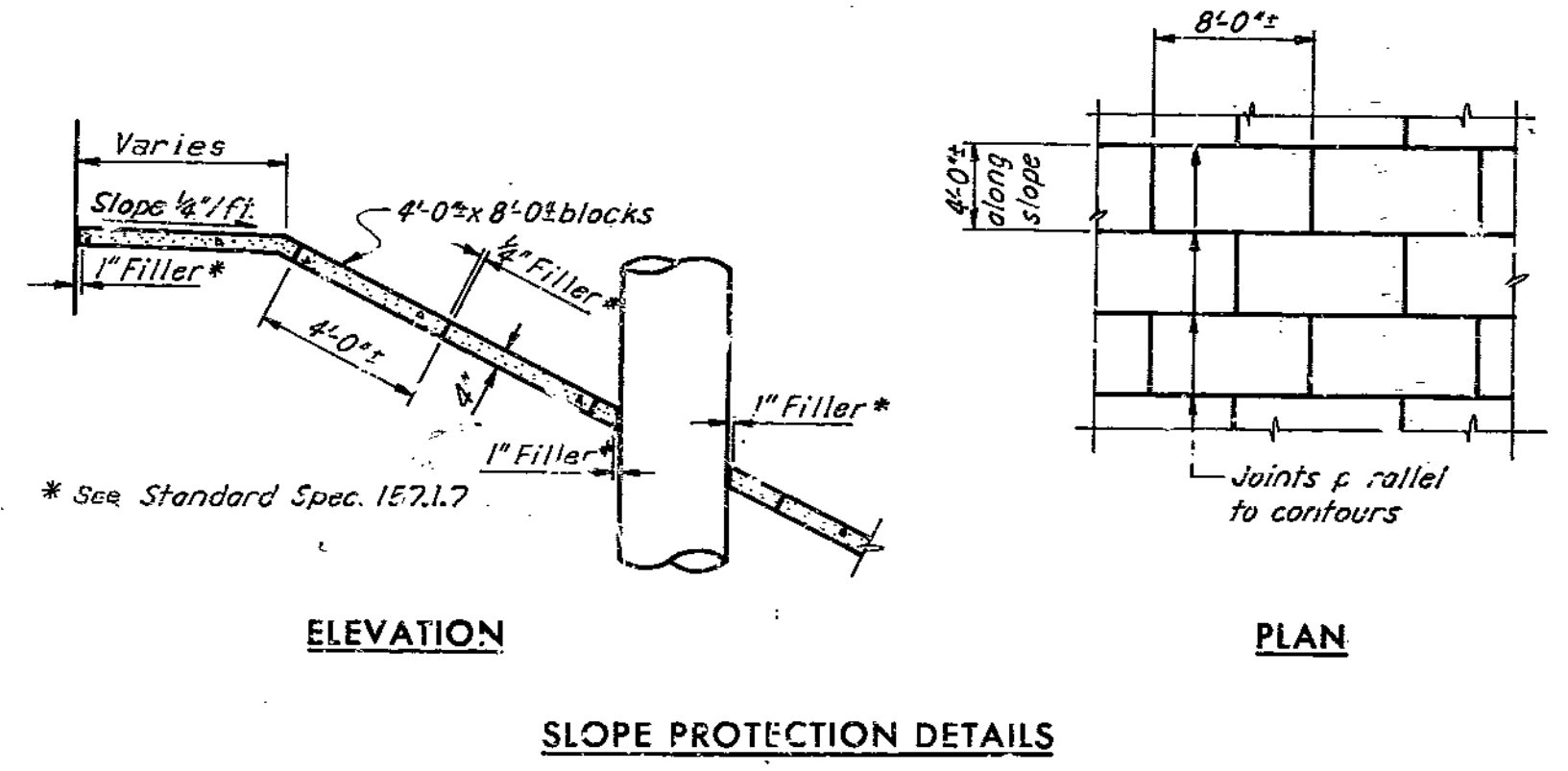


**GENERAL NOTES:**  
 All handrail posts shall be set normal to grade. Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet. Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/8 inch. Where more tilting of posts is required for proper alignment, concrete bearing areas shall be ground down.  
 All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.  
 The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.  
 All fillets 1/4 inch except as noted.  
 All drafts 3 degrees except as noted.  
 Pipe Rail to be fabricated in a minimum of two panel lengths.  
 Omit set screw on side adjacent to filled joint in parapet and curb at all expansion posts.  
 Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade.  
 All exposed edges of end posts shall have 1/2 inch bevel. All exposed edges of curbs and parapets shall have 2 inch radius or 1/4 inch bevel unless otherwise noted.  
 If the contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.  
 Concrete end posts to be vertical.  
 Integrally cast test coupons and a coat of clear lacquer specified in Std. Specs. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.

SINGLE TUBE ALUMINUM RAILING



**Note:**  
 Material for Type "D" Bearings shall be A.S.T.M. A36.  
 Material for pins shall be A.I.S.I. C-1018.  
 Anchor Bolts for Type "D" Expansion Bearings shall be 1/2 inch diameter bolts and for Type "D" Fixed Bearings shall be 1/2 inch diameter bolts, and shall extend 12 inches into concrete with hex nuts and plain washers for fixed bearings.  
 Lead plates under bearings shall be approximately 1/4 inch in thickness and weigh 8 sq. ft.  
 Cost of lead plates shall be included in price bid for other items.  
 Weight of bearings is included in Fabricated Structural Carbon Steel.  
 Expansion Shoes required.



SLOPE PROTECTION DETAILS

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Rmp 5

205  
2148-21-02-590-B55

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE BY J.E.H. DATE 7-10-68 CHECKED L.J.R. DATE 10-10-68

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

HANDRAIL DETAILS

SHEET 36 OF 36

A-1580

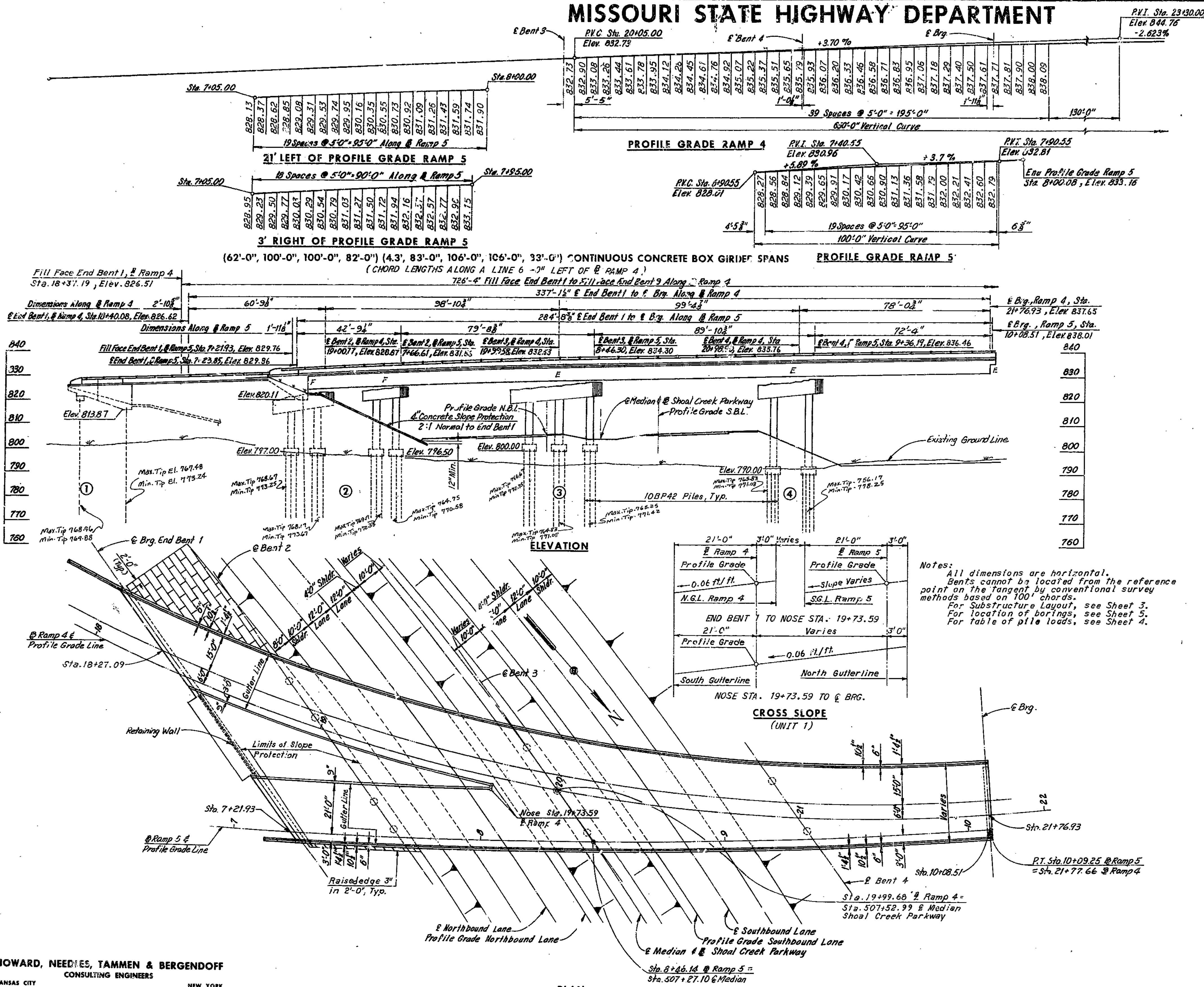
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET TOTAL
5	MO	I-435-1(69)9	84
DIST. NO.	COUNTY		NO. SHEETS
4	CLAY		1-48

FINAL PLANS

GENERAL NOTES

- Design Specifications: AASHTO 1965
- Design Loading: HS20-44 and 24,000 Tandem axle with 15<sup>1/2</sup>sq. ft. future wearing surface. Earth 120<sup>1/2</sup>cu. ft. Equivalent fluid pressure 30<sup>1/2</sup>l/ft.
- Construction Specifications: Missouri Standard Specifications for State Roads, Material, Bridges, Culverts and Incidental Structures - 1961.
- Design Unit Stresses:
  - Class B Concrete (Substructure)  $f_c = 1,200$  psi.
  - Class B1 Concrete (Superstructure)  $f_c = 1,600$  psi.
  - Reinforcing Steel  $f_s = 20,000$  psi.
  - Steel pile (A.S.T.M. A36-66)  $f_b = 9,000$  psi.
- Reinforcing Steel: All splices in reinforcing bars were 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.
- Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.
- All reinforcing bar bending dimensions are "out to out".
- Sealing of Deck: Superstructure deck was surface sealed.
- Utilities: All utilities, unless shown otherwise, were removed or relocated by others. The Contractor did not notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.
- Welding: See Std. Specification 55.3.13 for qualification of welding operators.
- Maintenance of Traffic: Provided one opening with minimum dimensions of 28'-0" horizontal and 13'-6" vertical, for each direction of I-35 traffic during construction.
- Painting: Access doors & bearings were cleaned & painted; one coat of red lead in the shop with the top remaining coats applied in the field; all in accordance with Standard Specification 55.4.10, Edition of 1961, except that the final coat on access doors & frames was gray. Cost of painting was included in price bid for other items. No paint was applied to top surface of top plate or bottom surface of bottom plate of bearings.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE DES. DATE 2-20-68 CHECKED L.J.R. DATE 10-9-68

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

PLAN

GENERAL PLAN AND ELEVATION - UNIT 1

SHEET 1A-206

SUBMITTED BY:  
*R. J. Seegenhoff*  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI NO. E-253  
BRIDGE: RAMP 4 & 5 OVER RAMP 3  
& INTERSTATE 35

STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO STA. 18+27.09 Ramp 4  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 7+21.93 Ramp 5

CLAY COUNTY  
SUBMITTED BY: *W. J. Jones* DATE: *10-9-68*  
BRIDGE ENGINEER  
APPROVED BY: *W. J. Jones* DATE: *10-9-68*  
CHIEF ENGINEER

STD. 54.07  
A-1580

2006

2148-21-02-500-012

FINAL PLANS

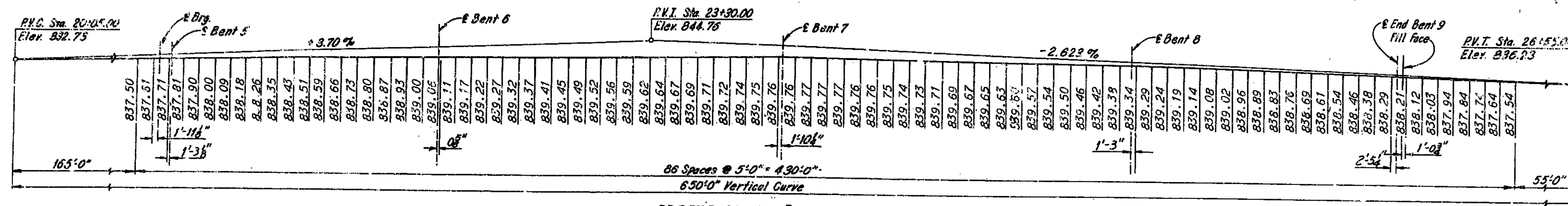


MISSOURI STATE HIGHWAY DEPARTMENT

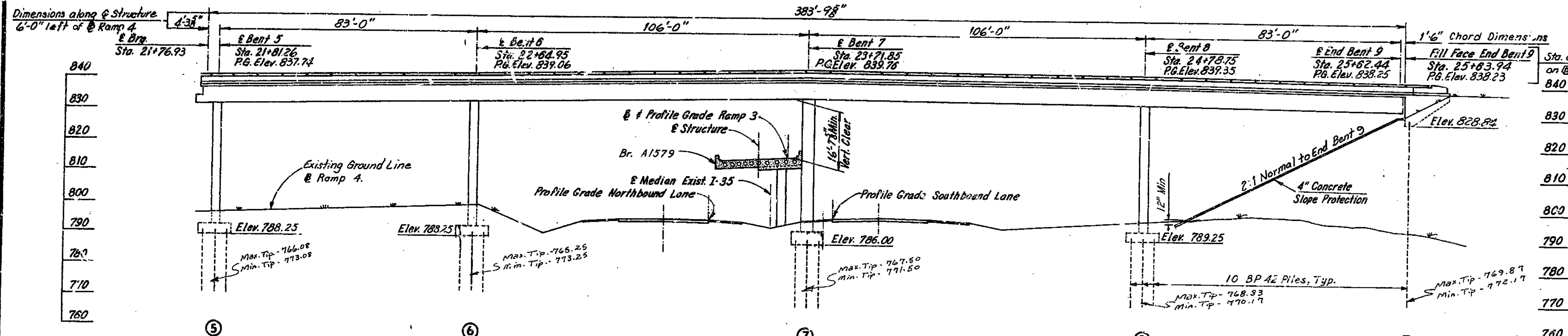
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SCALE	DATE
5	MO	I-435-1(69)9	85	
DIST. NO.	COUNTY	ROUTE NO.	YEAR	NO. SHEETS
4	CLAY			1-43

FINAL PLANS

<p>Base Line Ramp 3</p> <p>P. I. = 18+37.40</p> <p>A = 92°09'42"</p> <p>D = 6°00'00"</p> <p>T = 992.11'</p> <p>L = 1536.04'</p> <p>R = 955.37'</p> <p>SE = 0.06' ft.</p>	<p>Base Line Ramp 4</p> <p>P. I. = 35+15.89</p> <p>A = 139°10'34"</p> <p>D = 8°00'00"</p> <p>T = 1875.89'</p> <p>L = 1727.20'</p> <p>R = 716.78'</p> <p>SE = 0.08' ft.</p>	<p>Base Line Ramp 5</p> <p>P. I. = 8+04.90</p> <p>A = 10°14'44"</p> <p>D = 2°30'00"</p> <p>T = 205.48'</p> <p>L = 409.82'</p> <p>R = 2292.01'</p> <p>SE = Varies</p>
--	--	--



PROFILE GRADE & RAMP 4



ELEVATION

Note: Use same curve data for NBL and SBL as listed for E Median Shoal Creek Parkway. The Beginning P.C. Stations are equal to the right angle stationing on E Median Shoal Creek Parkway.

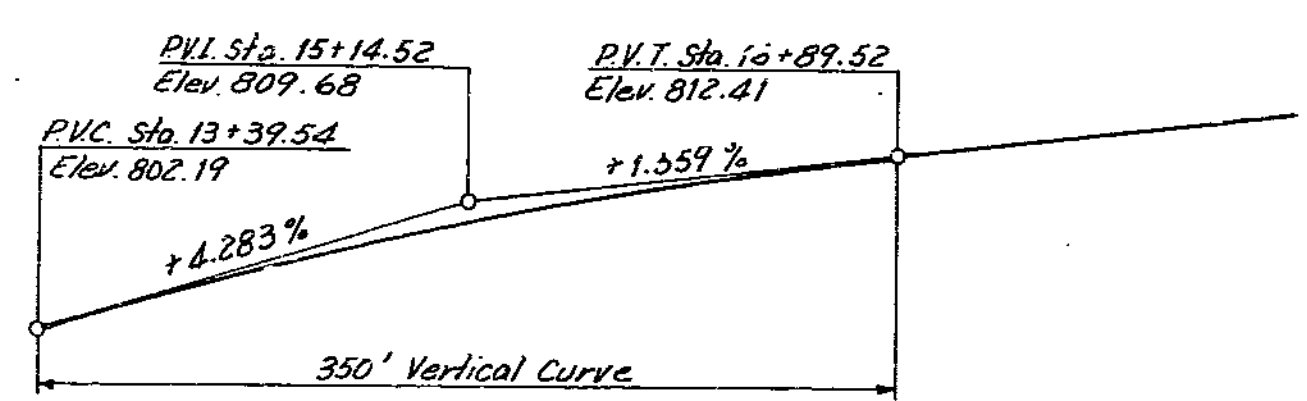
E Median Shoal Creek Parkway  
 P. I. = 509+70.98  
 A = 24°02'13"  
 D = 4°00'00"  
 T = 305.01'  
 L = 600.92'  
 R = 1432.69'  
 SE = 0.08' ft.

CURVE DATA

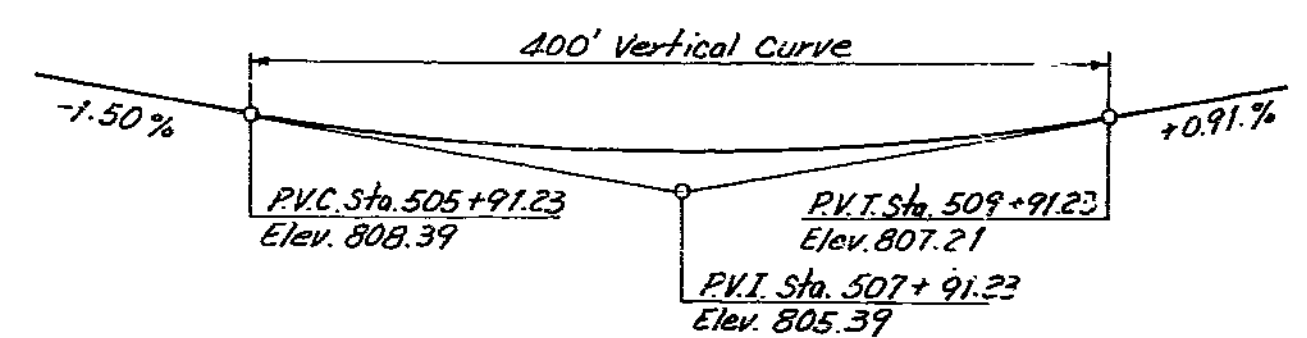
B.M. Elev. 823.69, "I" on Wing W. Side Bt. 1

B.M. # 42 - "□" on N.W. Corner of N.W. Cr. Abut. 220' Rt. Sta. 526+50 Rte. I-435 Elev. 787.33

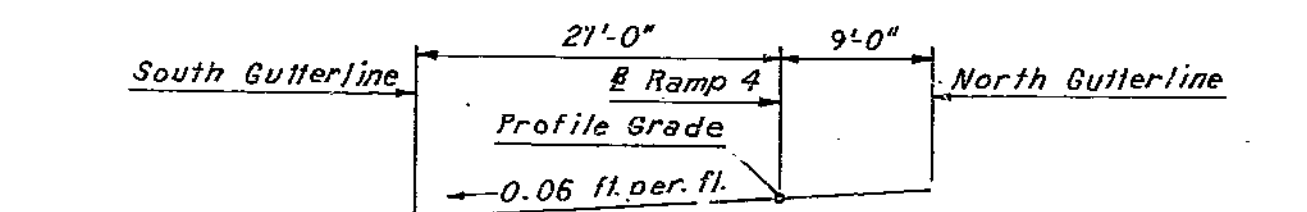
BENCH MARKS



PROFILE GRADE RAMP 3



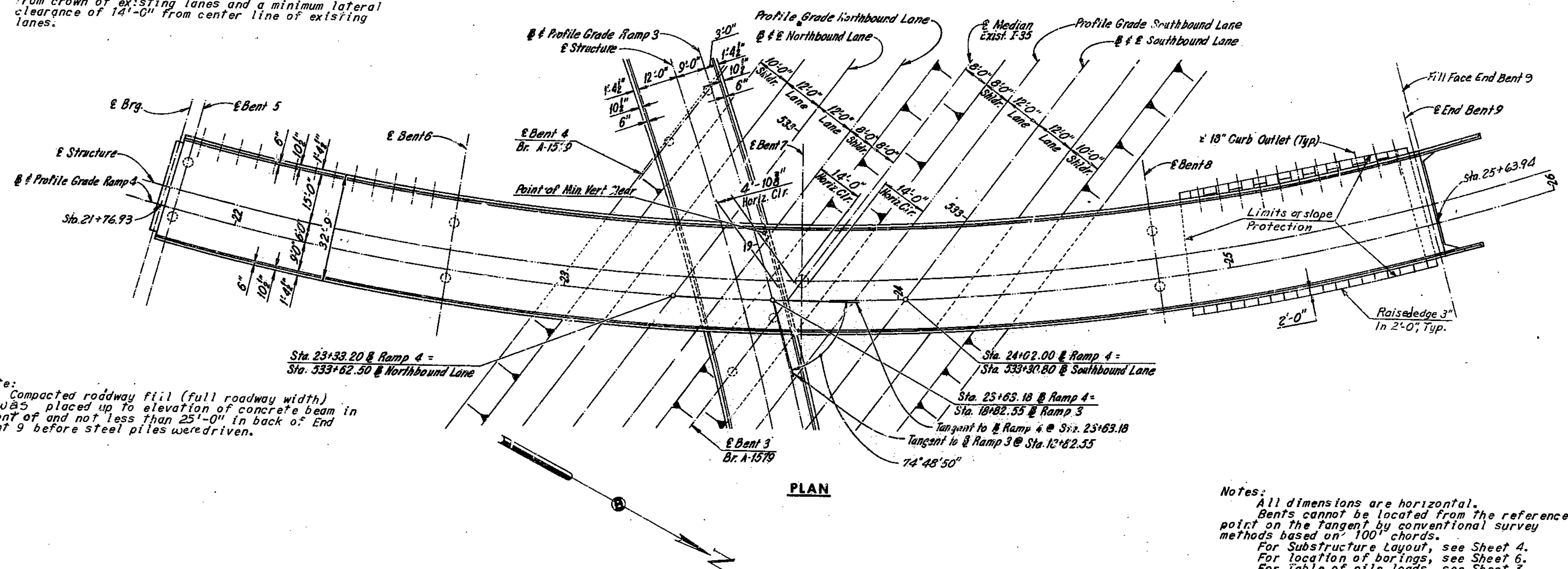
PROFILE GRADE SHOAL CREEK PARKWAY



CROSS SLOPE (UNIT 2)

Note: Faisework over existing lanes was constructed with a minimum vertical clearance of 13'-6" from crown of existing lanes and a minimum lateral clearance of 14'-0" from center line of existing lanes.

Note: Compacted roadway fill (full roadway width) was placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bent 9 before steel piles were driven.



PLAN

Notes: All dimensions are horizontal. Bents cannot be located from the reference point on the tangent by conventional survey methods based on 100' chords. For Substructure Layout, see Sheet 4. For location of borings, see Sheet 6. For table of pile loads, see Sheet 3. E Bents are radial.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

MADE D.E.S. DATE 10-2-68 CHECKED L.V.R. DATE 10-8-68

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

GENERAL PLAN AND ELEVATION - UNIT 2

BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 24 OF 60

207

2146-21-02-580-852

MISSOURI STATE HIGHWAY DEPARTMENT

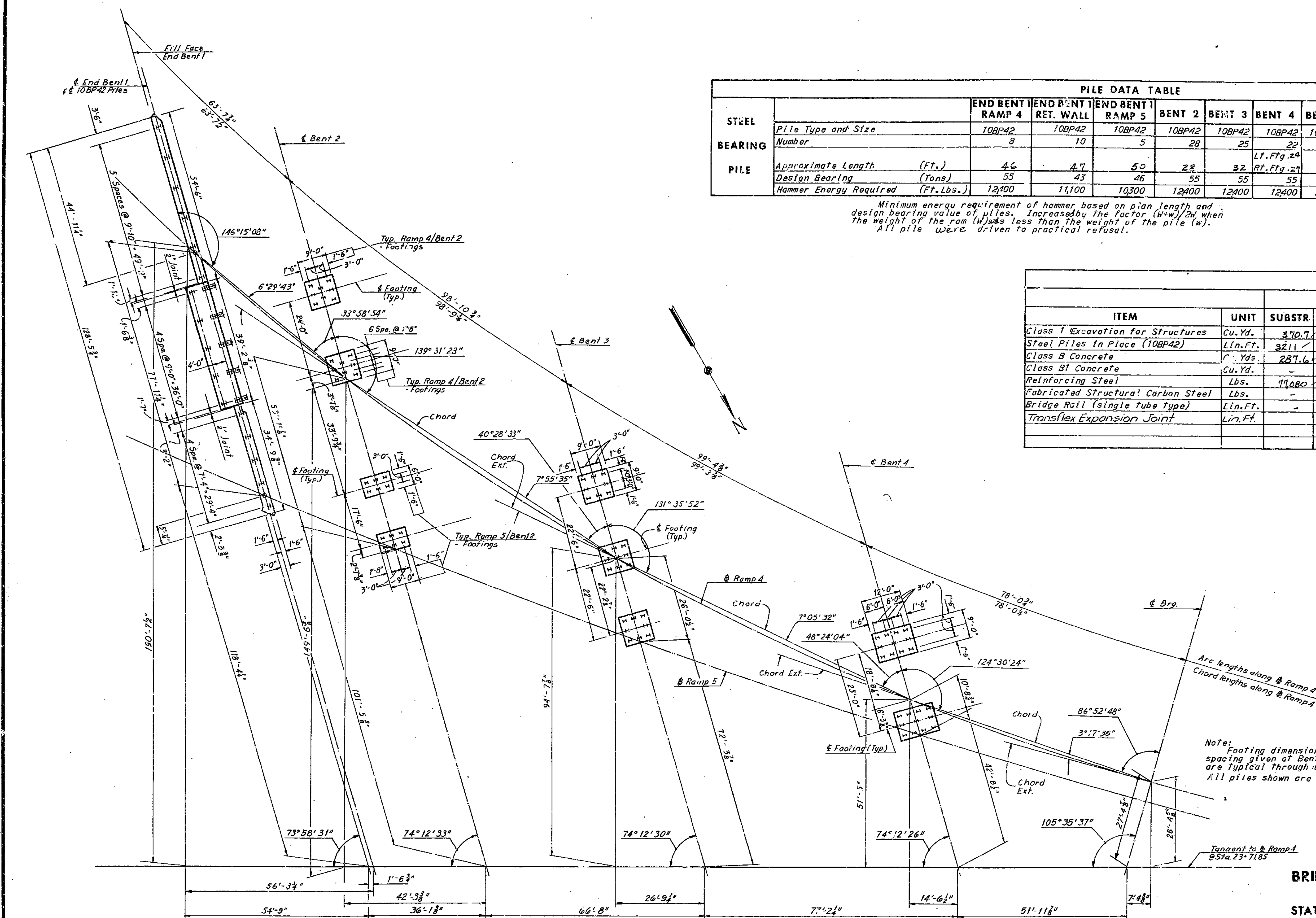
STATE ROAD DIST. NO.	STATION	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO I-435-1(69)9		86	
COUNTY				
4	CLAY			

FINAL PLANS

STEEL BEARING PILE		END BENT RAMP 4	END BENT RET. WALL	END BENT RAMP 5	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8	END BENT 9
Pile Type and Size		10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42	10BP42
Number		8	10	5	28	25	22	12	14	17	14	6
Approximate Length (Ft.)		46	47	50	22	32	LT. Ftg. 24	19	20	19	22	59
Design Bearing (Tons)		55	43	46	55	55	55	49	55	51	55	55
Hammer Energy Required (Ft.-Lbs.)		12,400	11,100	10,300	12,400	12,400	12,400	11,000	12,400	12,000	12,400	12,400

Minimum energy requirement of hammer based on pile length and design bearing value of piles. Increased by the factor (W/w)/24 when the weight of the ram (W) was less than the weight of the pile (w). All pile were driven to practical refusal.

ITEM	UNIT	UNIT 1			UNIT 2			TOTAL
		SUBSTR	SUPRSTR	TOTAL	SUBSTR	SUPRSTR	TOTAL	
Class I Excavation for Structures	Cu. Yd.	370.7	-	370.7	417.3	-	417.3	788.0
Steel Piles in Place (10BP42)	Lin. Ft.	3211	-	3211	1561	-	1561	4772
Class B Concrete	Cu. Yds	287.6	-	287.6	121.0	-	121.0	408.6
Reinforcing Steel	Lbs.	11,080	3,930	15,010	2,750	105,720	108,470	228,000
Fabricated Structural Carbon Steel	Lbs.	-	17550	17550	-	100	100	17650
Bridge Rail (single tube type)	Lin. Ft.	-	678	678	-	785	785	1463
Transflex Expansion Joint	Lin. Ft.	-	-	-	-	32	32	32



Note: Footing dimensions and pile spacing given at Bents 3 and 4 are typical through out the bent. All piles shown are 10BP42.

**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAY CO MO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 18+27.09 Ramp 4  
 STA. 7+21.93 Ramp 5  
 CLAY COUNTY  
 SHEET 3A OF 6  
 A-1580

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE C.E.B. DATE 10-3-68 CHECKED L.J.R. DATE 10-9-68

SUBSTRUCTURE LAYOUT PLAN

SUBSTRUCTURE LAYOUT - UNIT 1

208

2/48-31-02  
Dr. 1580

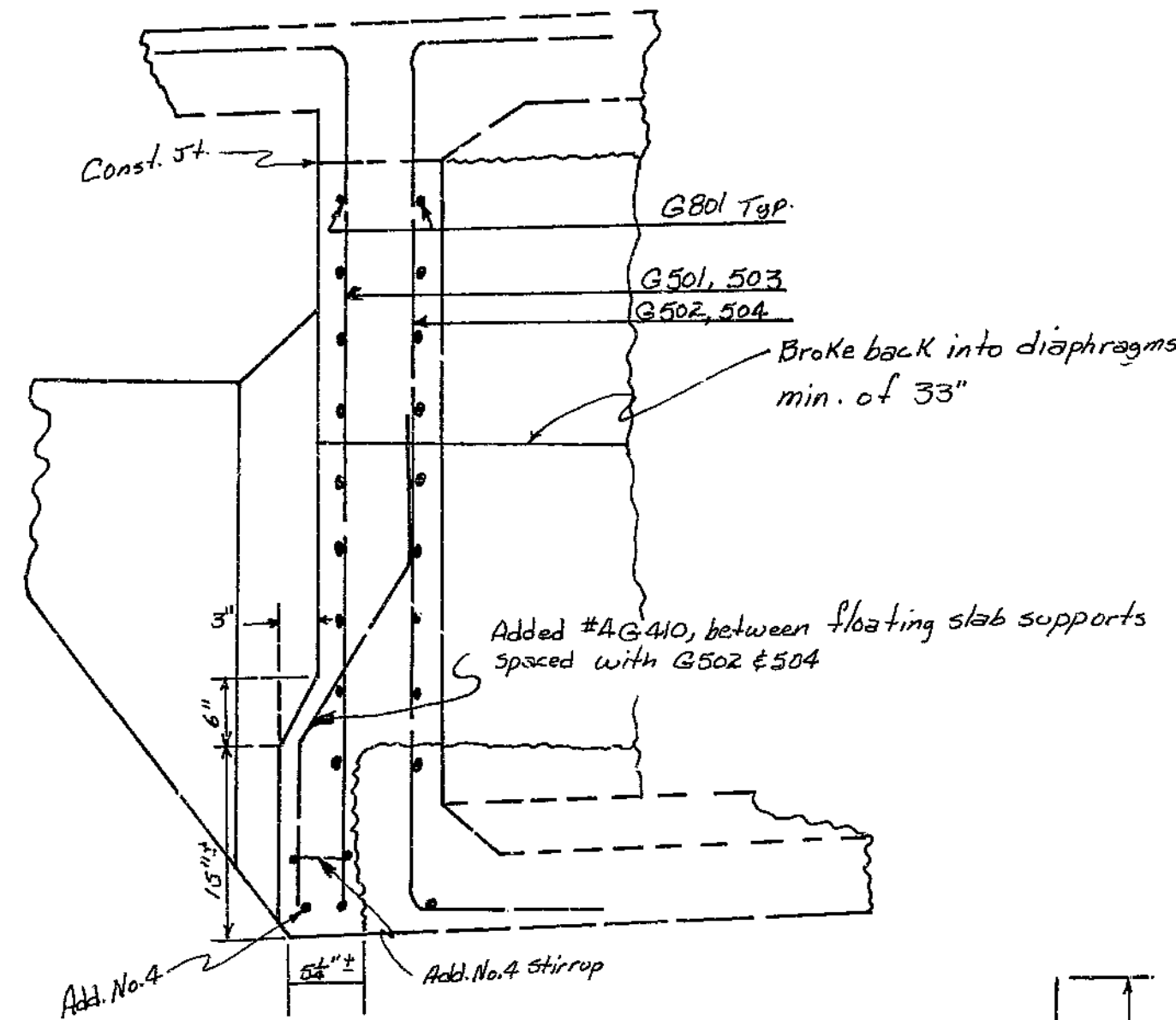
Dist. No.	STATE	FEDERAL PROJ. No. & Sec.	Area	Sheet	Total
5	Mo.	I-435-1 (69)			
Dist. No.	COUNTY		Route	Sec.	
4	CLAY		435		

MISSOURI STATE HIGHWAY DEPT

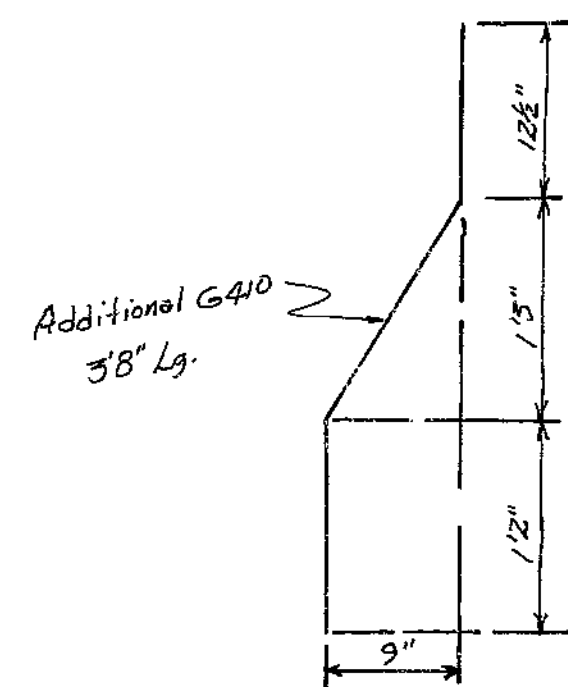
FINAL PLANS

DATE	BY
DATE	BY
DATE	BY
DATE	BY

DATE	BY
DATE	BY
DATE	BY
DATE	BY



Note: Change in design of girders D&E, necessary to repair damage caused by fire. Additional concrete & reinforcing steel placed at no cost to the State or Federal Government.



UNIT ONE

Girder E (Ahead)  
Girder D (Back)

BRIDGE: RAMP 4&5 OVER RAMP 3  
& INTERSTATE 35

STATE ROAD- INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1 (69) (RTE. I-435) STA. 18+27.09 Rp. 4  
CLAY COUNTY STA. 7+21.93 Rp. 5

209

STD. 54.00

A-1580

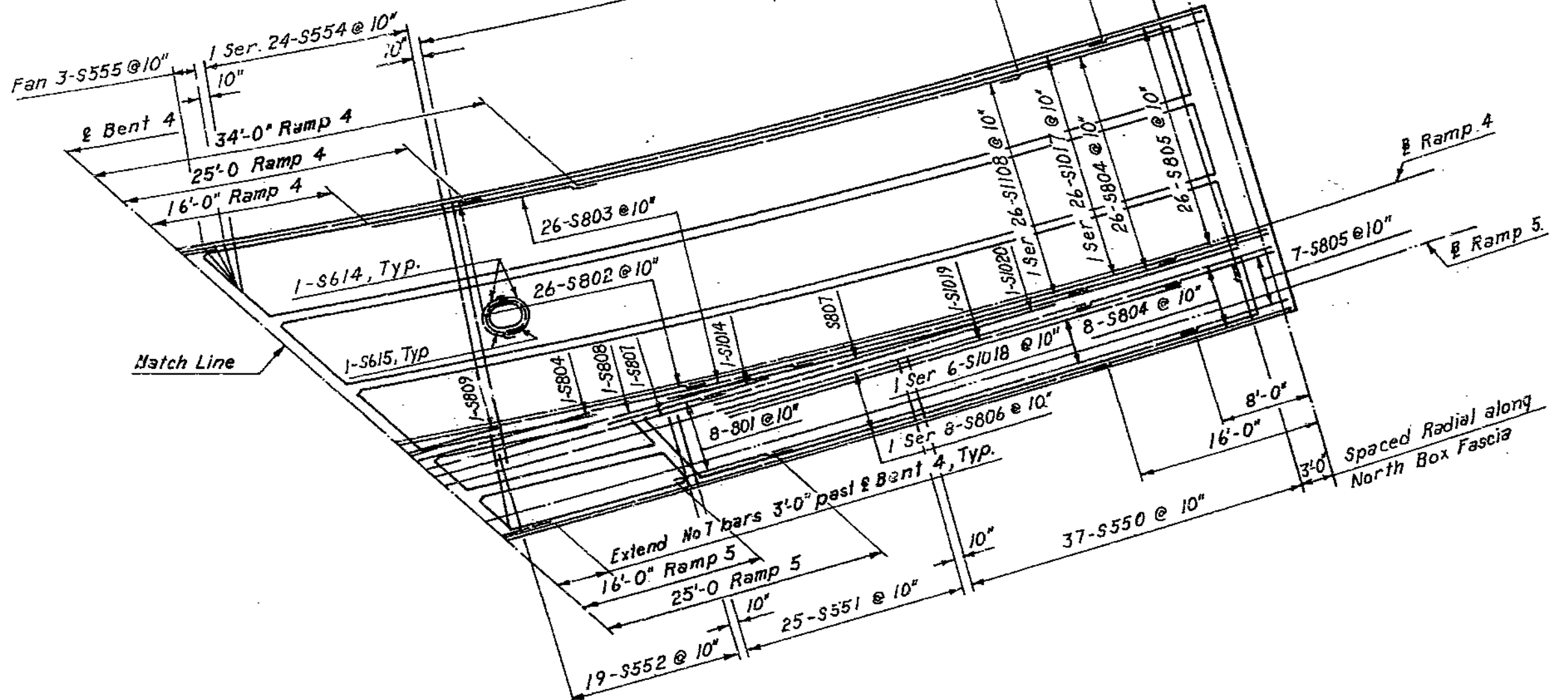
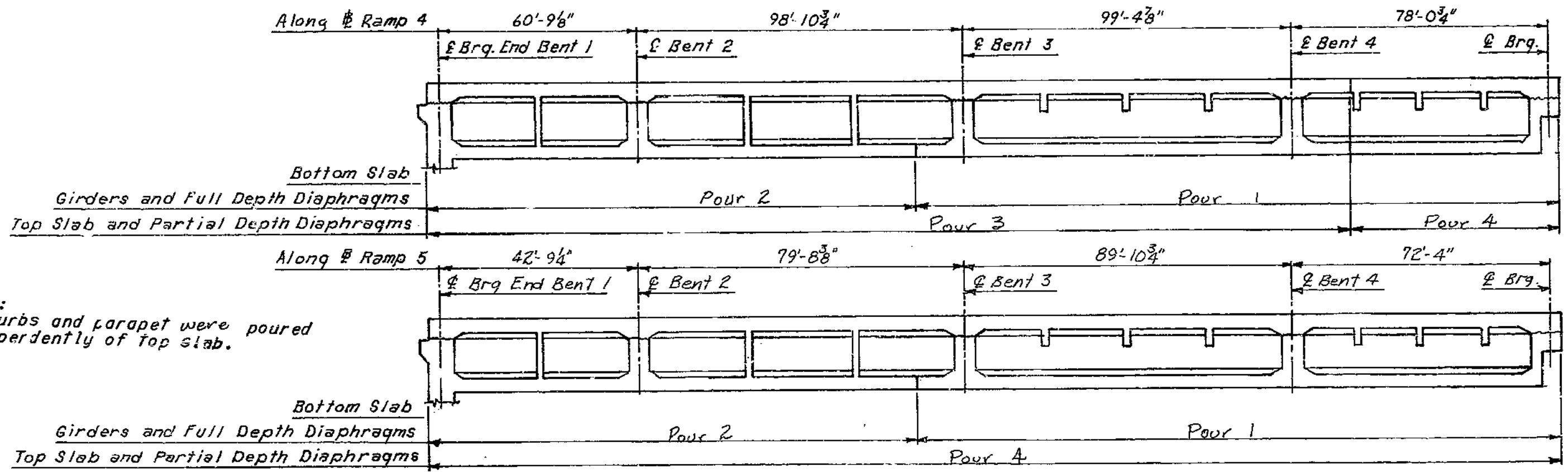
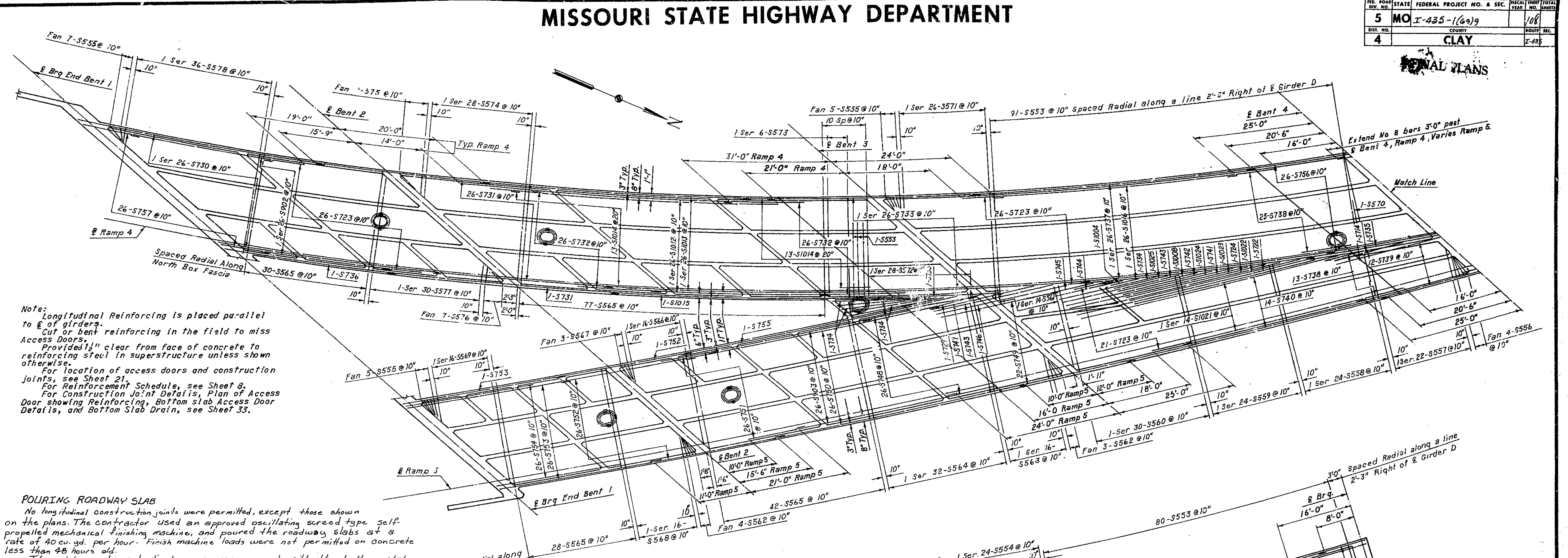
SHEET 21 of 6.

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(69)9	108	108
DIST. NO.	COUNTY	ROUTE	SECTION	
4	CLAY	2-43		

FINAL PLANS



BOTTOM SLAB REINFORCEMENT - UNIT 1

FINAL PLANS

A-1580

210

2148-21-02 Br. 1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS NEW YORK

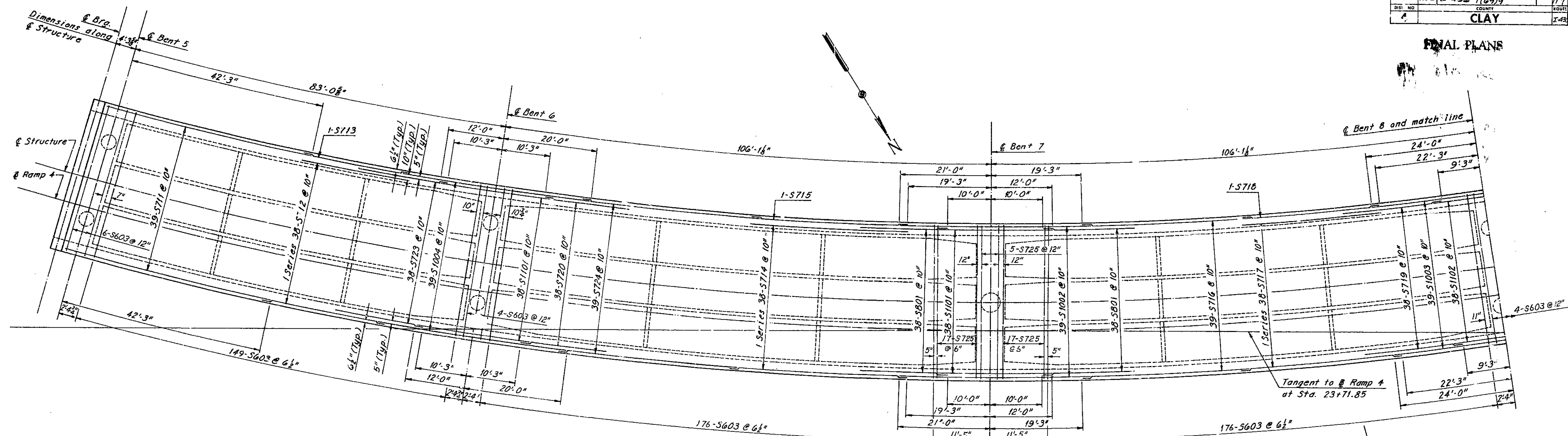
MADE L.J.R. DATE 9-25-68 CHECKED E.C.C. DATE 10-3-68

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

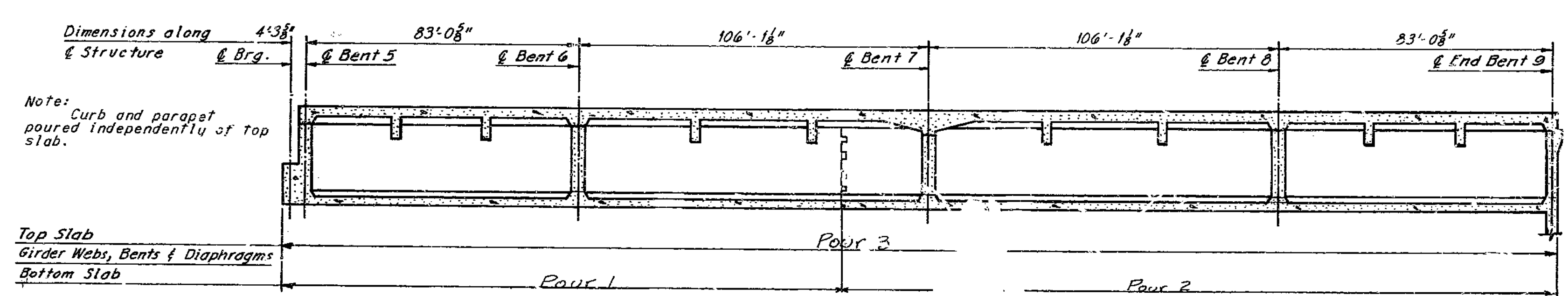
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(69)9		114	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY	I-435			

FINAL PLANS



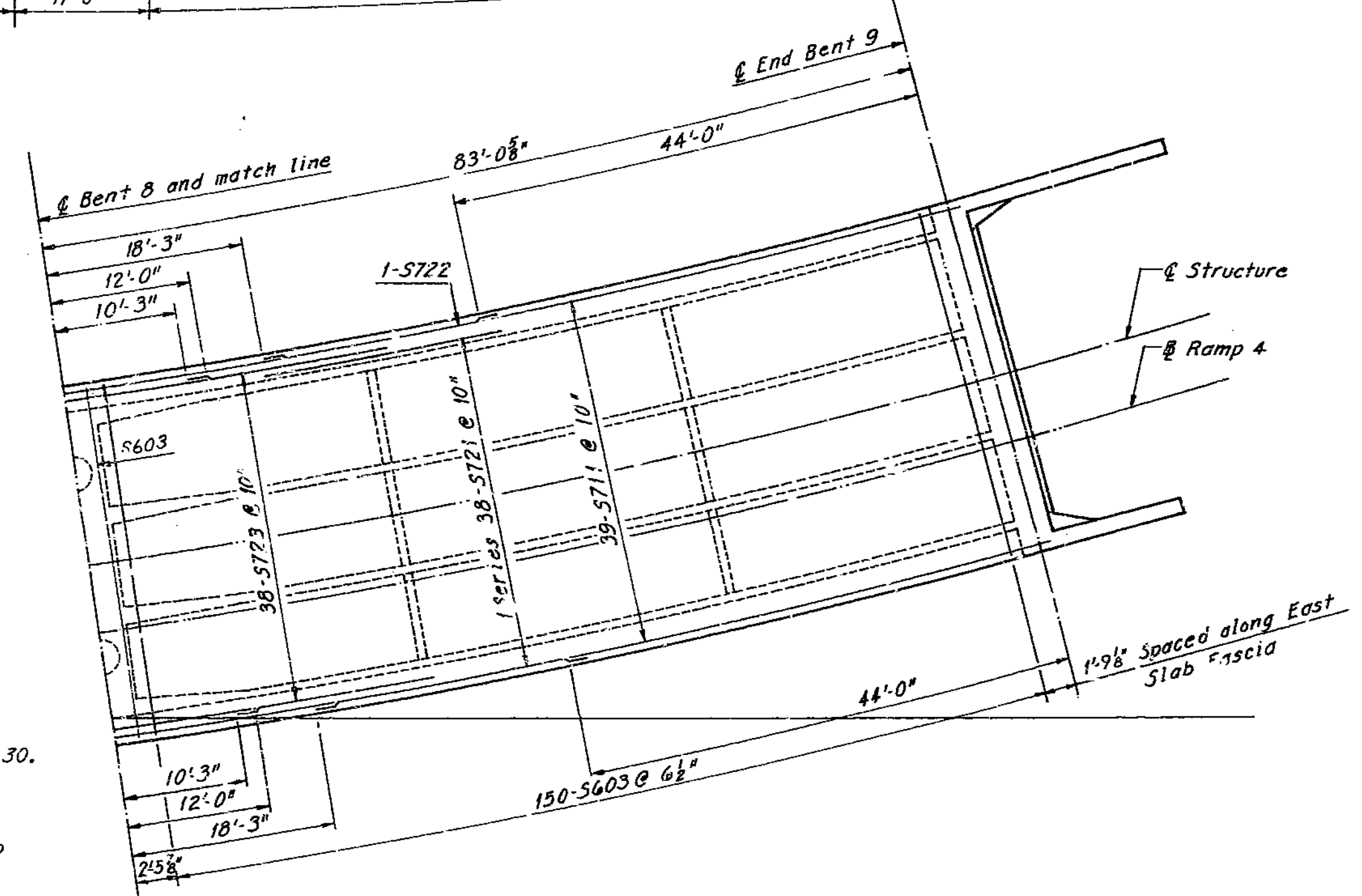
TOP OF TOP SLAB REINFORCEMENT



POURING SEQUENCE

**Pouring Roadway Slab:**  
 No longitudinal construction joints were permitted unless shown on the plans. The contractor used an approved oscillating, screed type, self propelled mechanical finishing machine, and poured the roadway slab at a rate of 60 c.y. per hour. Finishing machine loads were not permitted on concrete less than 48 hours old.  
 The girder webs & diaphragms were poured with the bottom slab sections on which they bear.  
 All forms were removed from the interior of box girders except top slab forms, which were left in place. See Standard Specification 33.4.2.4

**Note:**  
 Transverse Reinforcing is spaced radially and the dimensions shown are at the top slab fascia. Longitudinal reinforcing is placed parallel to @ of girders.  
 For Reinforcement Schedule, see Sheet 10.  
 For location of construction joint, see Sheet 30.  
 Provide 1/2" clear from face of concrete to reinforcing steel in superstructure unless shown otherwise.  
 A clear dimension of 1/2" minimum was maintained between parallel reinforcing bars in top and bottom layers of top slab. Shift bars as required to maintain this minimum dimension.



**BRIDGE: RAMP 4&5 OVER RAMP 3 & INTERSTATE 35**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 18+27.09 Ramp 4  
 CLAY COUNTY STA. 7+21.93 Ramp 5  
 SHEET 31A OF 6

TOP OF TOP SLAB REINFORCEMENT - UNIT 2

FINAL PLANS

A-1580

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE J.E.H. DATE 5-2-68 CHECKED L.J.R. DATE 5-10-68

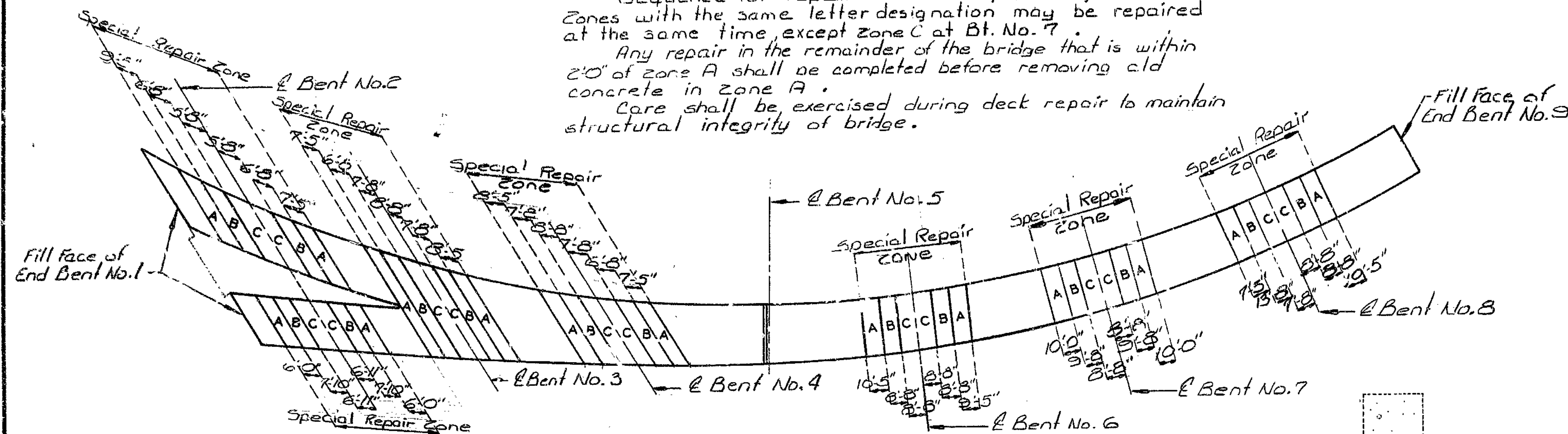
NOTE: This drawing is not to scale. Follow dimensions.

211  
2148-21.02  
5-15-60

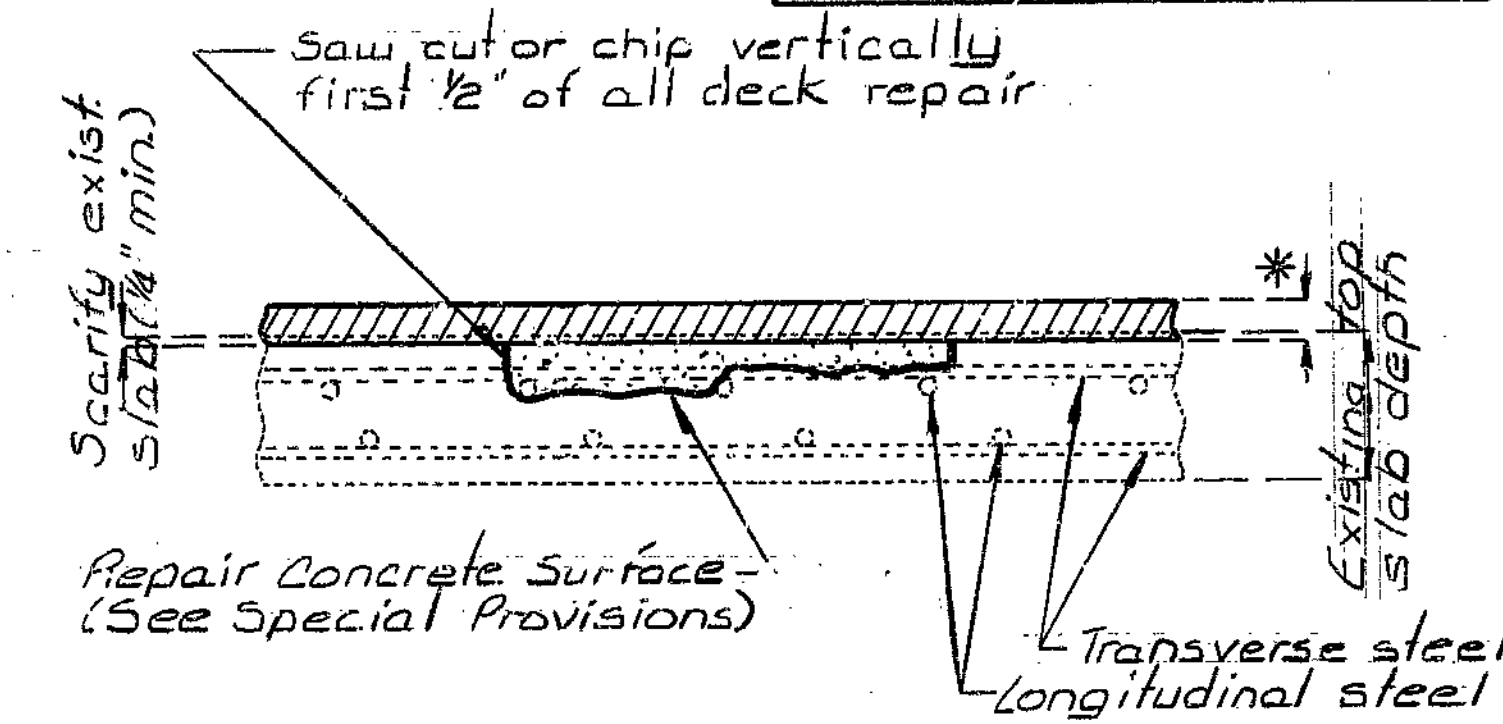
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	9
SEC./SUR. 27 & 28 TWP. 51 N RGE. 32 W		

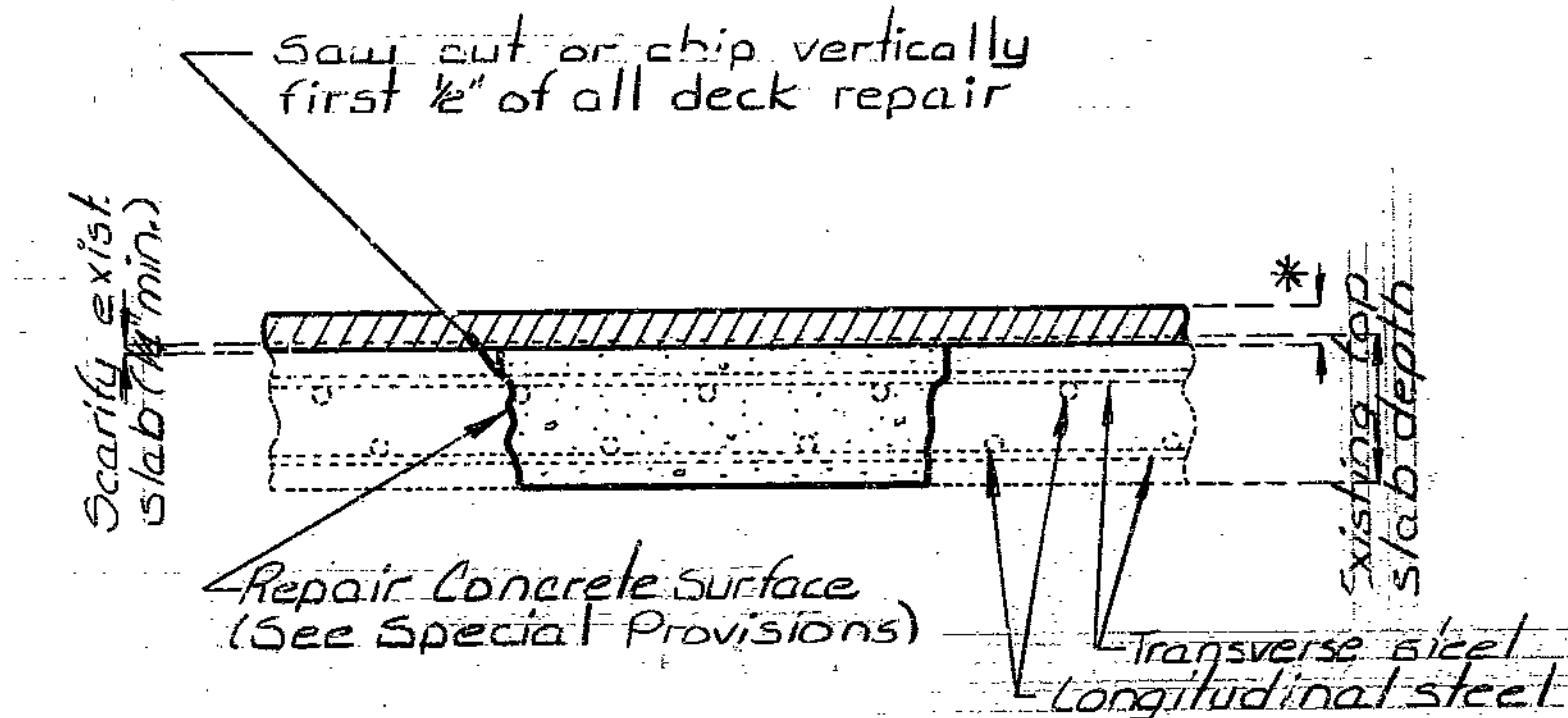
Note: Sequence for repair: Zone A, Zone B, then Zone C. Zones with the same letter designation may be repaired at the same time, except zone C at Bt. No. 7. Any repair in the remainder of the bridge that is within 2'0" of zone A shall be completed before removing old concrete in zone A. Care shall be exercised during deck repair to maintain structural integrity of bridge.



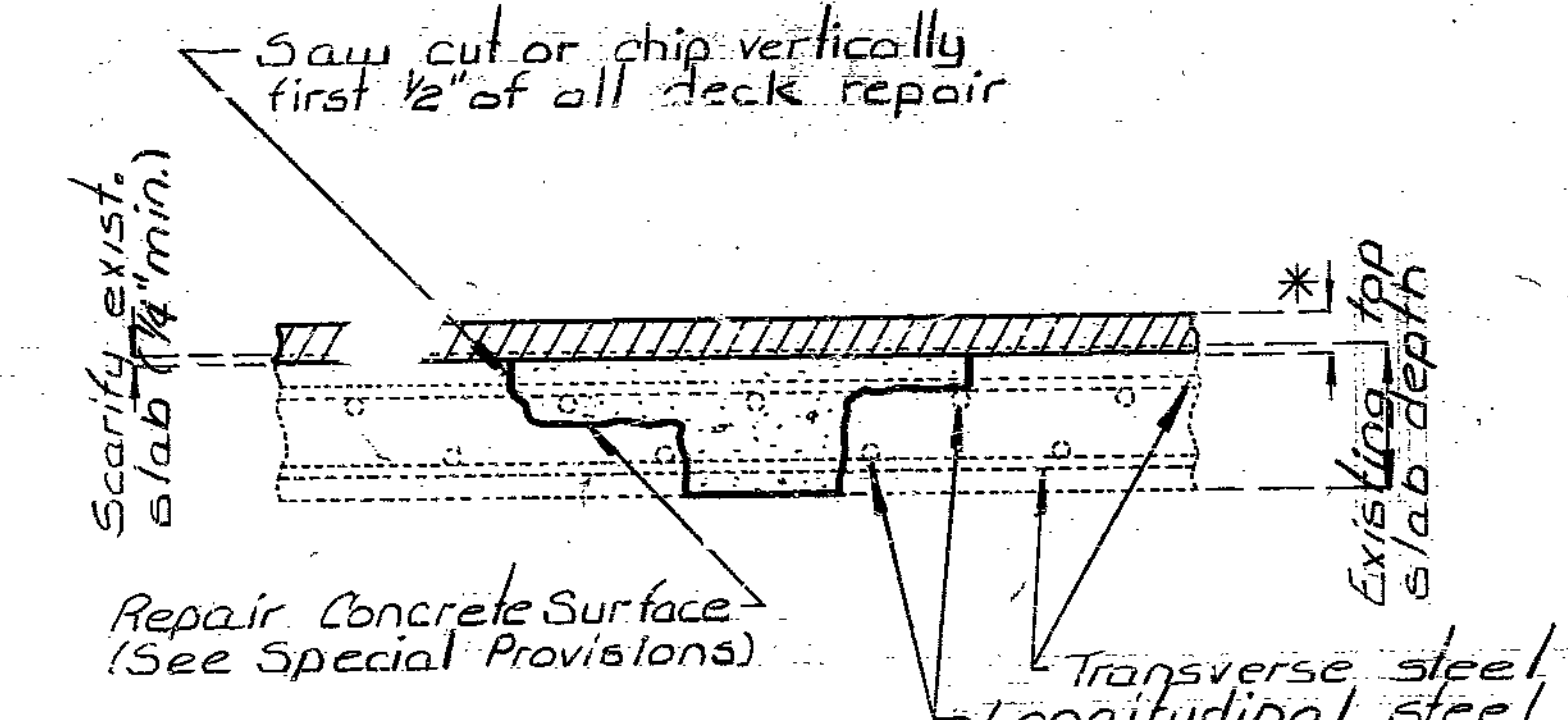
PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES



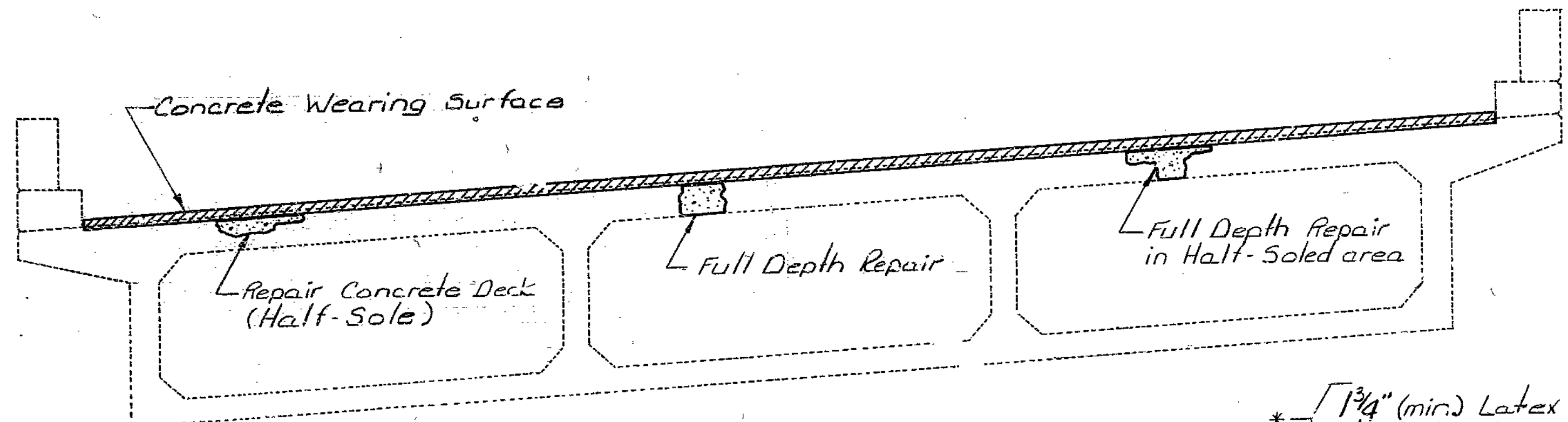
HALF-SOLED AREA



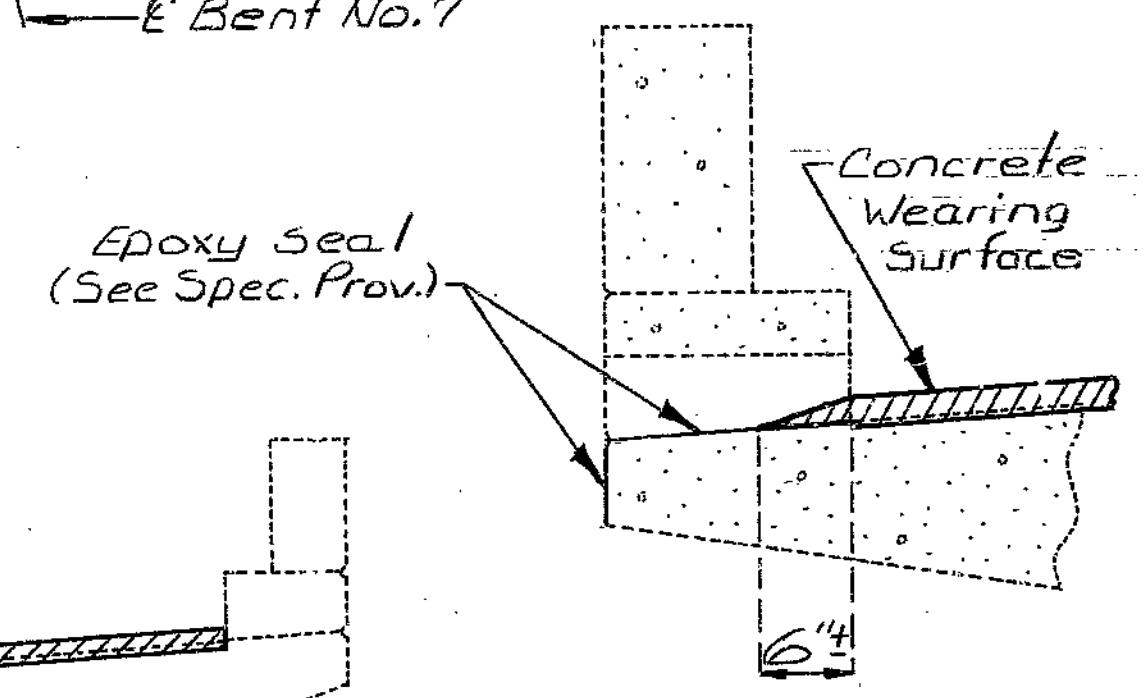
FULL DEPTH REPAIR



FULL DEPTH REPAIR HALF-SOLED AREA



SECTION THRU SLAB



TYPICAL SECTION THRU CURB OUTLET

\* 1/4" (min.) Latex Modified concrete or 2/4" (min.) Low Slump concrete overlay

Notes: Outline of old work is indicated by light dashed lines. Heavy lines indicate new work. Traffic to be maintained during construction (See Road Plans).

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

ESTIMATED QUANTITIES		
ITEM		TOTAL
Repairing Conc. Deck (Half Soled)	Sq. Ft.	732
Full Depth Repair	Sq. Ft.	244
Concrete Wearing Surface ( )	Sq. Yd.	2912
See Special Provisions		
Elastomeric Expansion Joint Seal (4.0 in)	Lin. Ft.	30
Removal of Exp. Jt. & Adjacent Concrete	Lump Sum	1

BRIDGE: RAMPS 4&5 OVER ROUTES I-435 & I-35

STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35

ROUTE I-35 INTERCHANGE STA. 18+27.09 (RAMP 4)  
PROJECT NO. IR-435-1(215) STA. 7+21.93 (RAMP 5)

JOB NO. 4-I-435-702 RTE. I-435  
CLAY COUNTY

STD.
STD.
A-1580R

DESIGNED SEPT. 1985  
DETAILED SEPT. 1985  
CHECKED SEPT. 1985

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

SEE FINAL PLANS  
Sheet No. 1 of 2

DATE 10/25/85

429

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	10

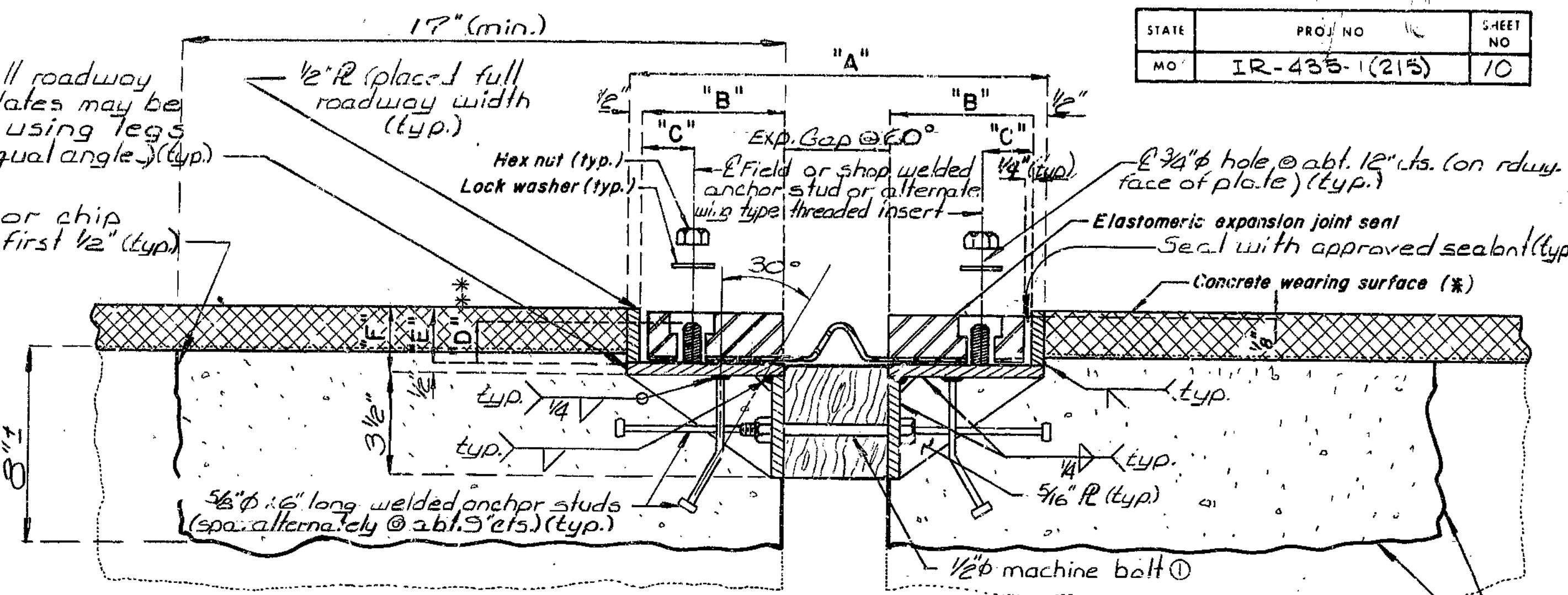
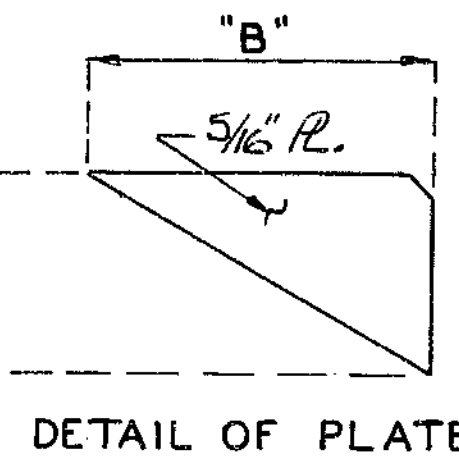
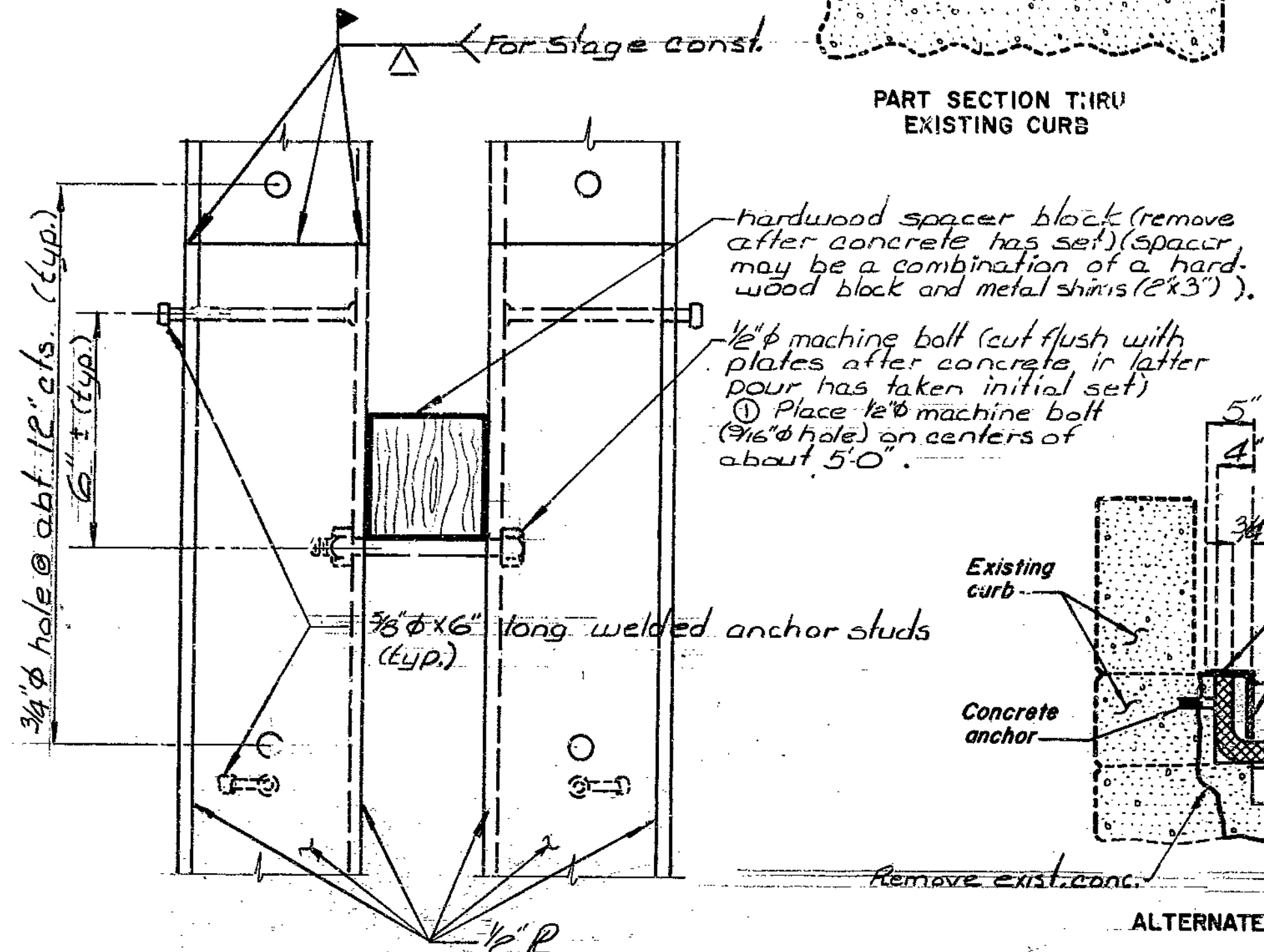
\*  $\begin{cases} 1\frac{3}{4}" \text{ (min) for Latex Modified Conc.} \\ 2\frac{1}{4}" \text{ (min) for Low Slump Concrete} \end{cases}$

$\frac{1}{2}" R$  (placed full roadway width, these plates may be one piece by using legs of equal or unequal angle) (typ.)

Saw cut or chip vertically first  $\frac{1}{2}"$  (typ.)

Remove existing bonded Transflex expansion joint

PART SECTION THRU EXISTING CURB



Note: Existing reinforcement in area of concrete replacement shall be cleaned and reused.

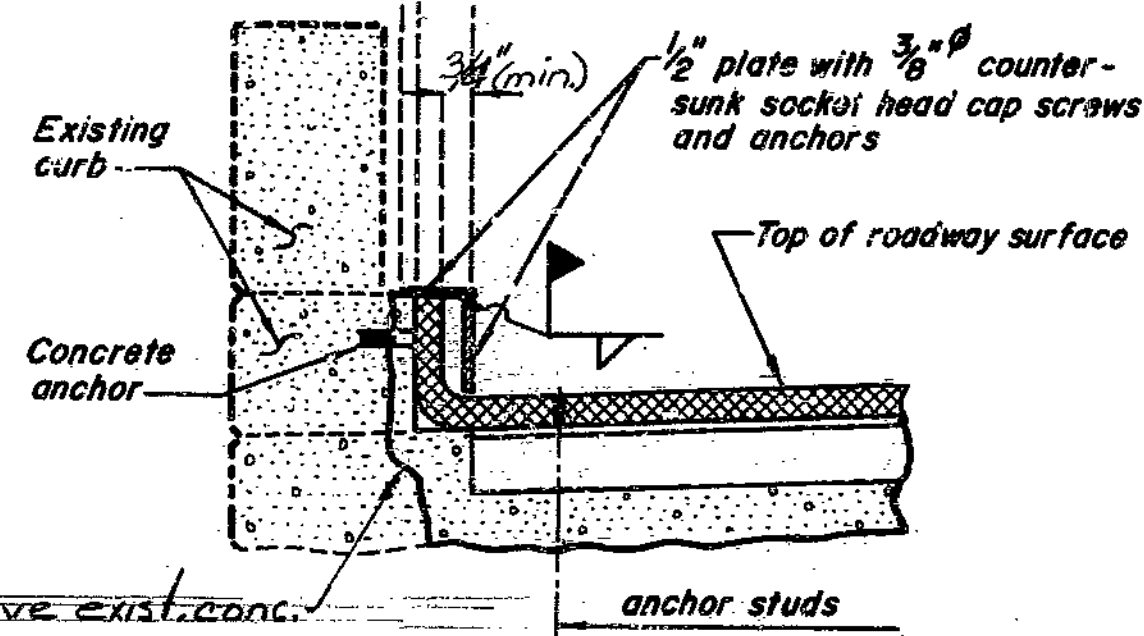
PART SECTION THRU EXPANSION DEVICE NEAR BENT NO. 5

Remove existing concrete to this line (typ.)

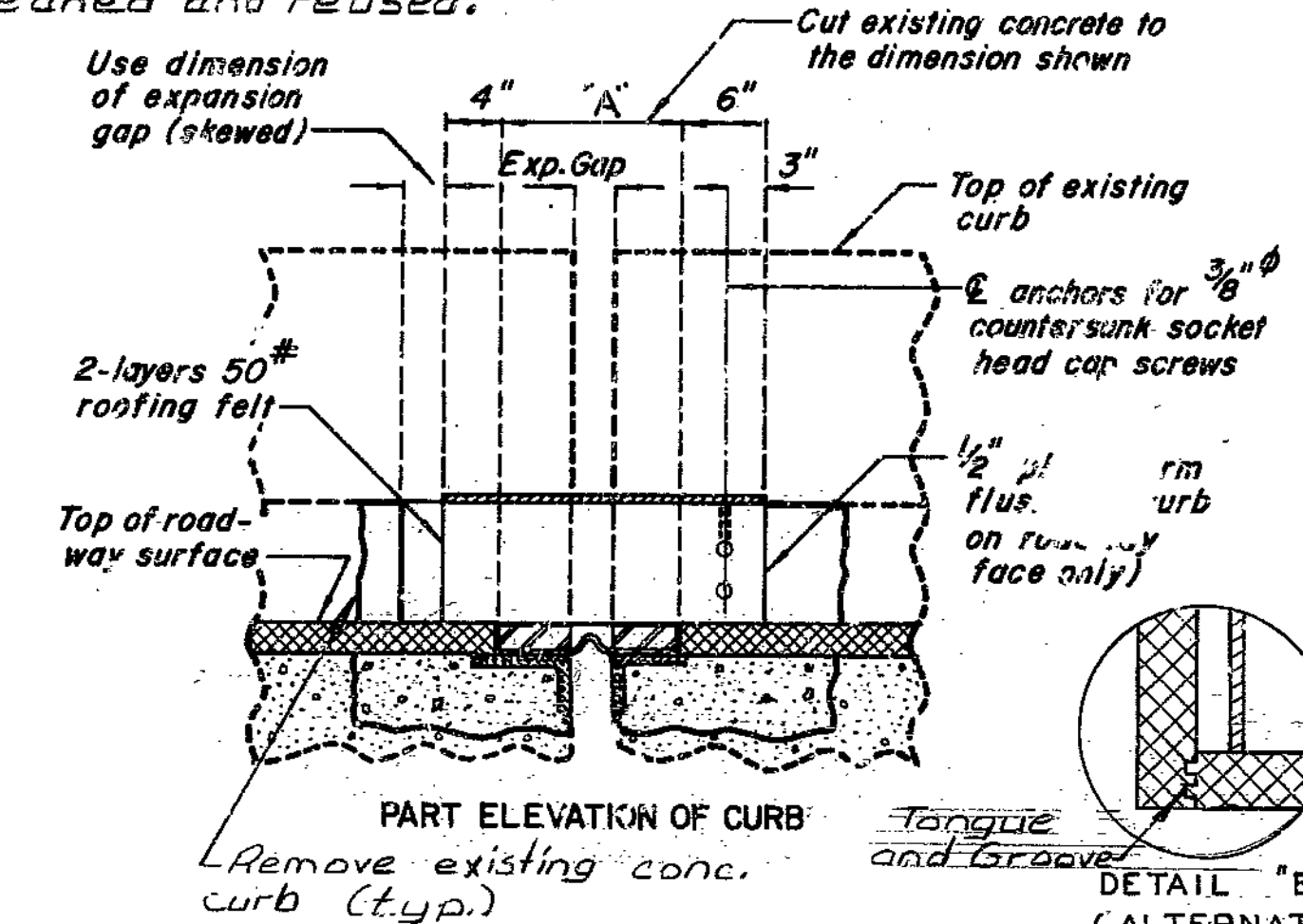
hardwood spacer block (remove after concrete has set) (spacer may be a combination of a hardwood block and metal shims (2"x3")).

$\frac{1}{2}"$  machine bolt (cut flush with plates after concrete in latter pour has taken initial set)

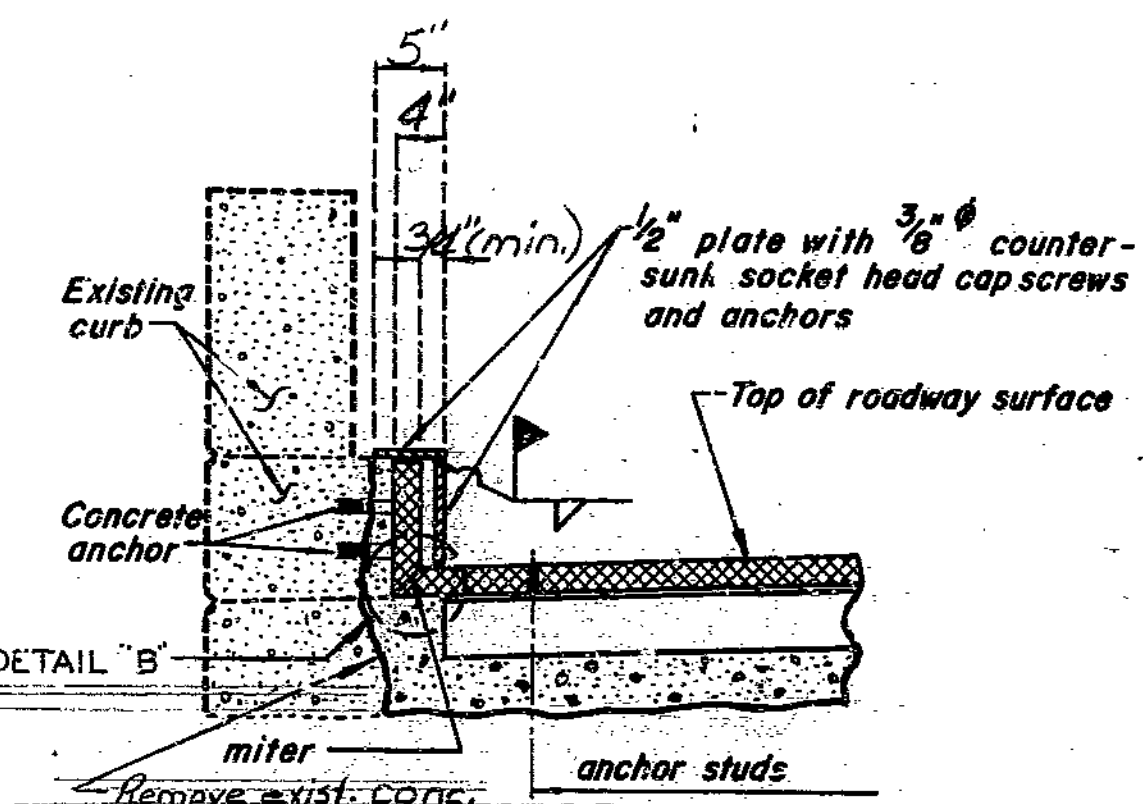
Place  $\frac{1}{2}"$  machine bolt ( $\frac{3}{8}"$  hole) on centers of about 5'-0"



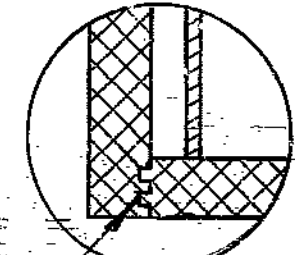
ALTERNATE TYPE "A" CURB



PART ELEVATION OF CURB



ALTERNATE TYPE "B" CURB



DETAIL "B" (ALTERNATE)

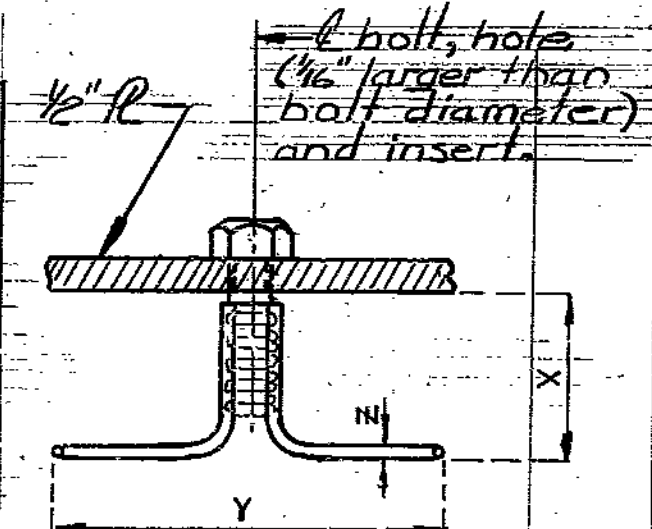
Note: Alternate methods of supporting Expansion Device Armor shall be submitted to the Engineer for approval.

Plates shall be field adjusted by adding or removing metal shims (2"x3"). As required for temperature correction. The expansion gap shall be adjusted for any temperature correction prior to pouring concrete.

\*\* maximum height above plate

LOCATION	ACCEPTABLE ALTERNATE TYPES	EXR GAP AT 60°	TABLE OF DIMENSIONS						ANCHOR STUDS SIZE SPA. "G"
			"A" AT 60°	"B"	"C"	"D" **	"E"	"F"	
BENT NO. 5	On-Flex 45	2 1/4"	11 3/4"	4 1/2"	1 1/8"	1 1/2"	2 3/4"	3 1/4"	5/8" 12" 65
	Wabo Bendoflex 450	2 1/2"	12"	4 1/2"	1 3/8"	1 1/4"	2 3/4"	3 1/4"	1/2" 12" 50
	Fel-span T40A C3	2 1/4"	12 1/4"	4 1/2"	1 1/2"	1 1/2"	2 1/4"	2 3/4"	1/2" 12" 50
	Acme Trojan TR400	2 1/2"	12"	4 1/4"	1 3/4"	1 1/8"	1 3/4"	2 1/4"	1/2" 12" 40
	Delastiflex LM400	2 1/2"	12 1/8"	4 1/2"	2 3/16"	1 1/8"	2 1/8"	2 5/8"	1/2" 9" 45
Gen-strip CCL 4"	2 1/2"	12"	4 1/4"	1 3/4"	1 1/8"	1 3/4"	2 1/4"	5/8" 12" 65	

BOLT DIAMETER	SAFE LOAD TENSION (LBS.) (MIN.)	APPROX. ULT. CAP. TENSION (LBS.) (MIN.)	DIMENSIONS		
			X (MIN.)	Y	Z
1/2"	800	8,000	1 5/8"	5"	2 1/8"
5/8"	1,300	9,200	1 7/8"	5"	2 1/8"
3/4"	1,800	13,200	2 1/4"	6"	2 5/8"
7/8"	2,000	16,200	2 1/2"	6 1/2"	3 0/8"
1"	2,000	16,200	2 1/2"	6 1/2"	3 0/8"



DETAILS OF ALTERNATE WING TYPE THREADED INSERT  
Machine bolts need only be used to secure the wing type threaded inserts to the steel plate until the concrete has attained 3,000 psi.

Notes: Material for the armored joint shall be A36 structural grade steel. Anchors for the armored joint shall be approved stud welded anchors (C1010 thru C1020)

All dimensions are at right angles.

Expansion gap and dimension "A" shall be increased 1/4" for each 10° fall in temperature and decreased 1/4" for each 10° rise in temperature.

The certified nuts for the anchor studs shall be tightened to the foot pounds ("G") specified in the table of dimensions. Retighten to ("G") foot pounds a minimum of 30 minutes after initial tightening. The welded anchor studs shall be the reduced base (R.B.) type.

See Special Provisions for painting.

Contact surface of steel to aluminum shall be insulated with material specified on the shop drawings.

Furnishing, painting, and installing the structural steel armored joint and curb plates shall be included in the contract unit price for expansion joint seal.

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

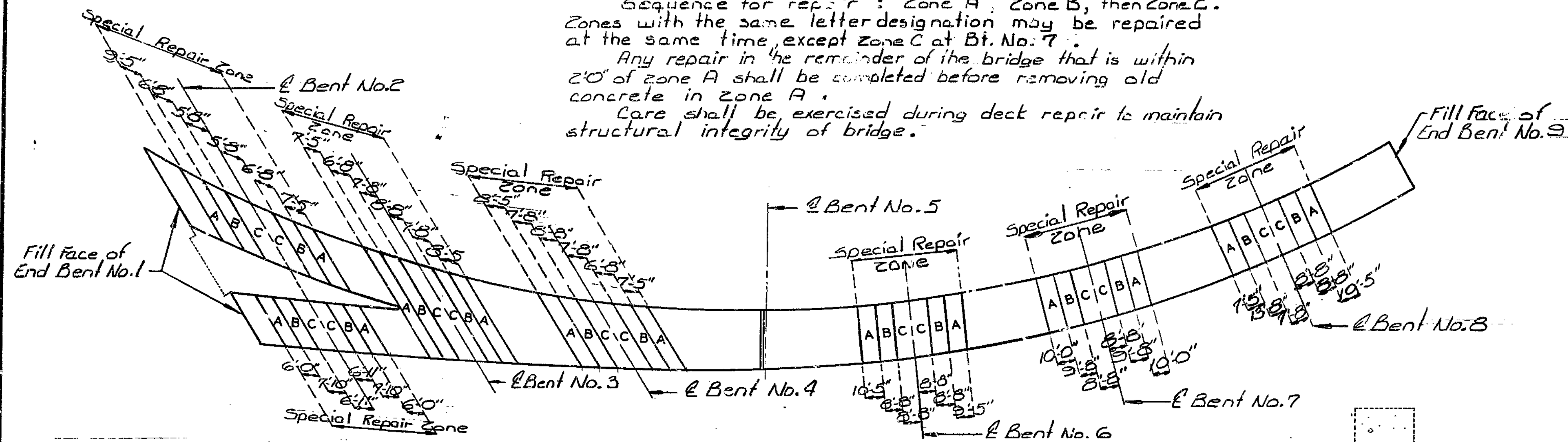
Sheet No. 2 of 2

LS-DL - BRUSH CURB  
 REVISED 03-86  
 ELASTOMERIC  
 08-80  
 DETAILED SEPT. 1985  
 CHECKED SEPT. 1985

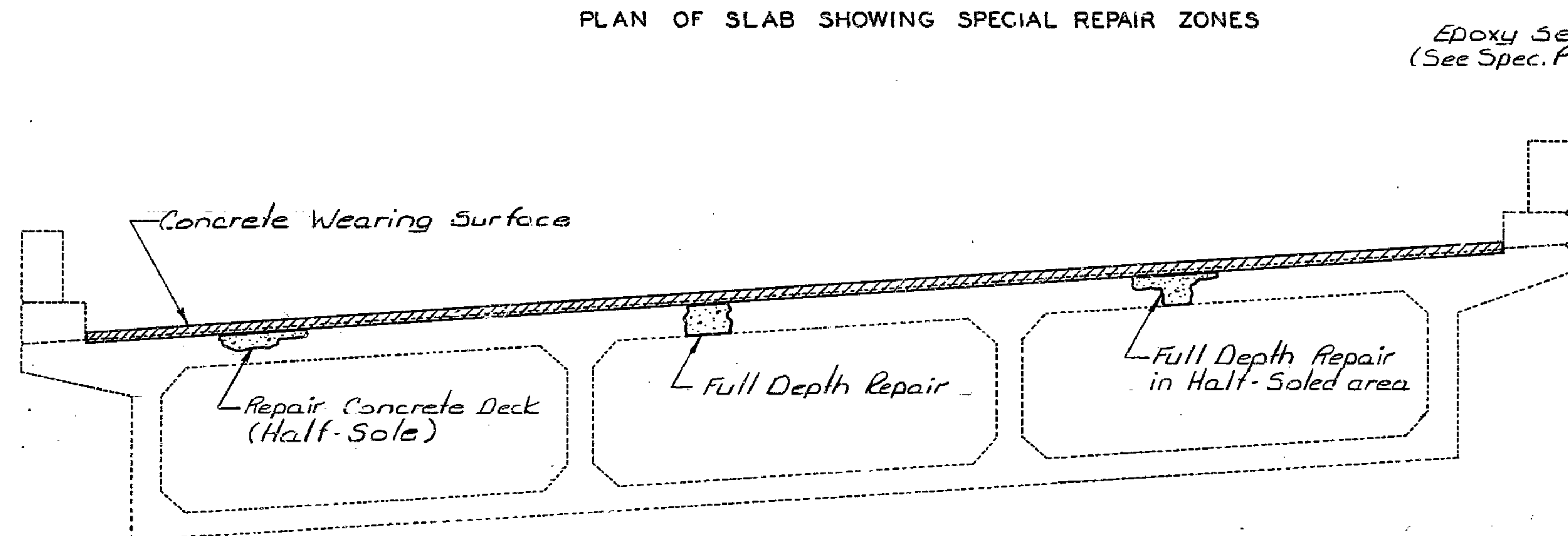
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	9
SEC./SUR. 27 & 28 TWP. 51N RGE. 32W		

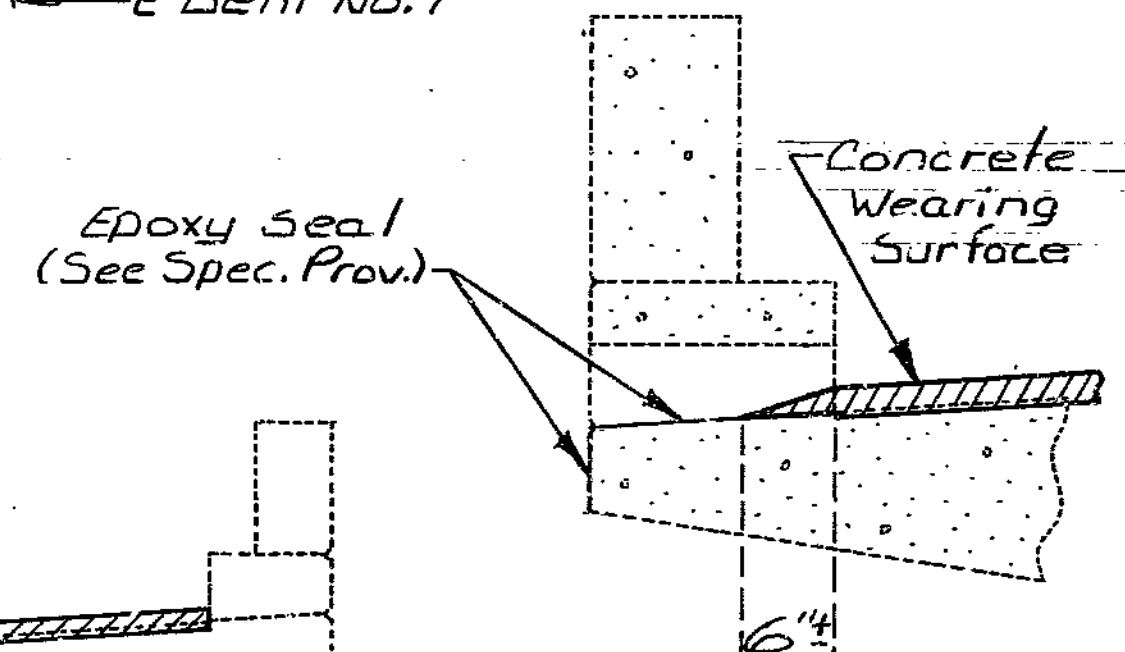
Note: Sequence for repair: Zone A, Zone B, then Zone C. Zones with the same letter designation may be repaired at the same time, except Zone C at Bt. No. 7. Any repair in the remainder of the bridge that is within 2'0" of zone A shall be completed before removing old concrete in Zone A. Care shall be exercised during deck repair to maintain structural integrity of bridge.



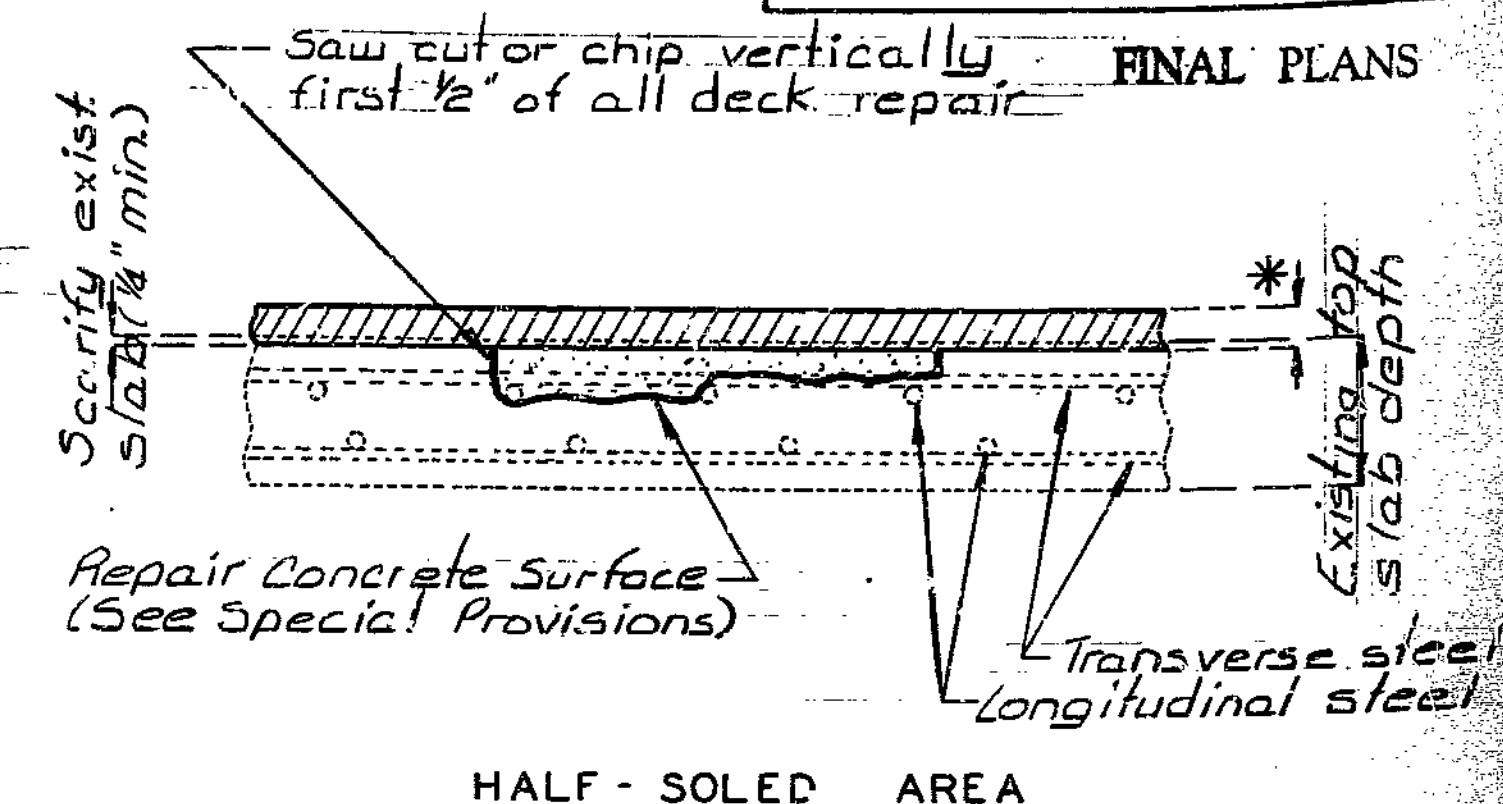
PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES



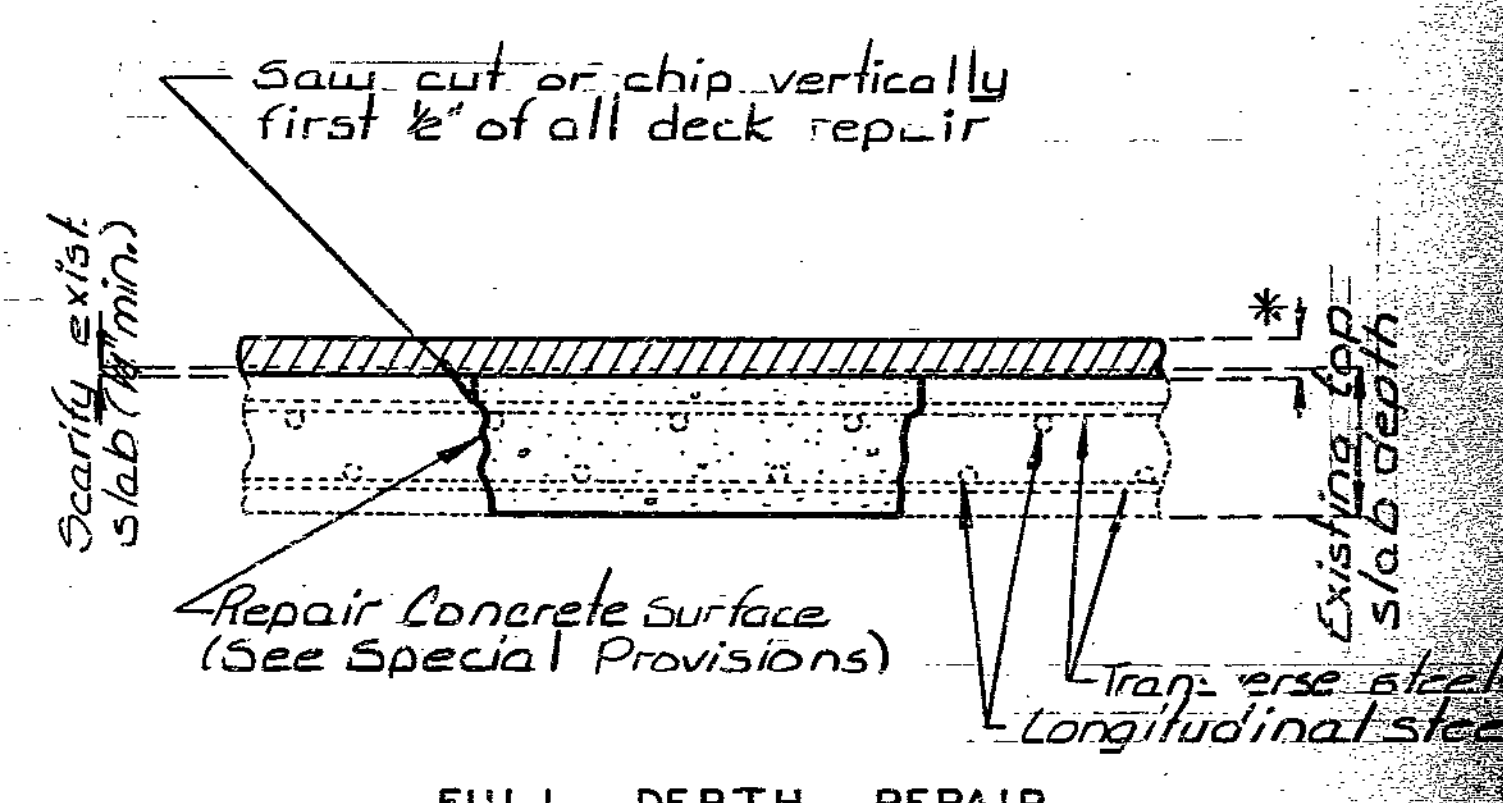
SECTION THRU SLAB



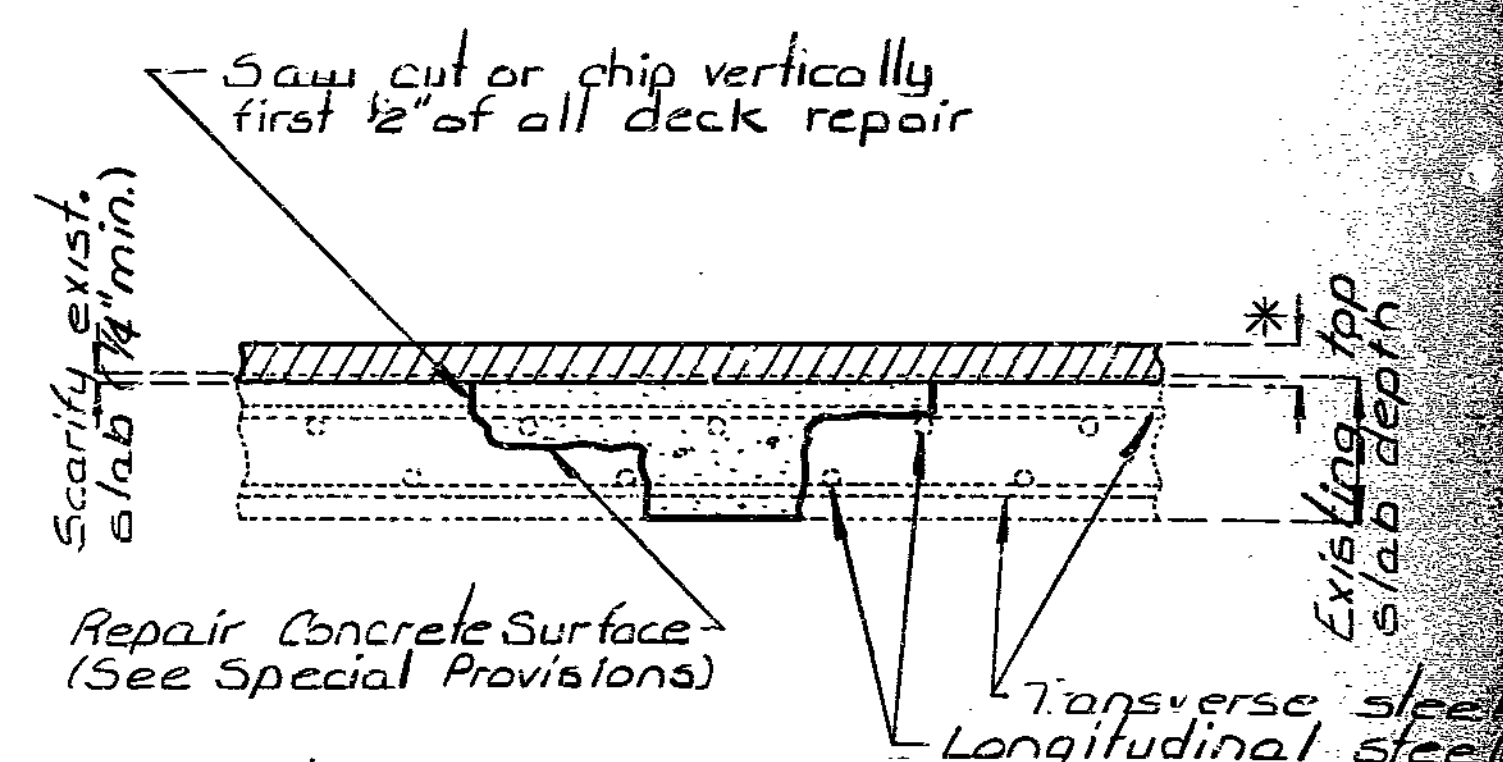
TYPICAL SECTION THRU CURB OUTLET



HALF-SOLED AREA



FULL DEPTH REPAIR



FULL DEPTH REPAIR HALF-SOLED AREA

ESTIMATED QUANTITIES		
ITEM		TOTAL
Repairing Conc. Deck (Half-Soling)	Sq. Ft.	156
Full Depth Repair	Sq. Ft.	0
Concrete Wearing Surface (*) See Special Provisions	Sq. Yd.	2712
Elastomeric Expansion Joint Seal (4.0 in)	Lin. Ft.	30
Removal of Exp. Jt. & Adjacent Concrete	Lin. Ft.	30

\* 2 1/4" (min.) Low Slump concrete overlay

Notes: Outline of old work is indicated by light dashed lines. Heavy lines indicate new work. Traffic to be maintained during construction (See Road Plans).

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

BRIDGE: RAMP 4&5 OVER ROUTES I-435 & I-35

STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35

ROUTE I-35 INTERCHANGE

PROJECT NO. IR-435-1(215)

JOB NO. 4-I-435-702

CLAY

STA. 18+27.09 (RAMP 4)

STA. 7+21.93 (RAMP 5)

RTE. I-435

COUNTY

ISTD.

ISTD.

A-15802

DESIGNED SEPT. 1985  
DETAILED SEPT. 1985  
CHECKED SEPT. 1985

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

Sheet No. 1A of 2

DATE 10/25/85

431

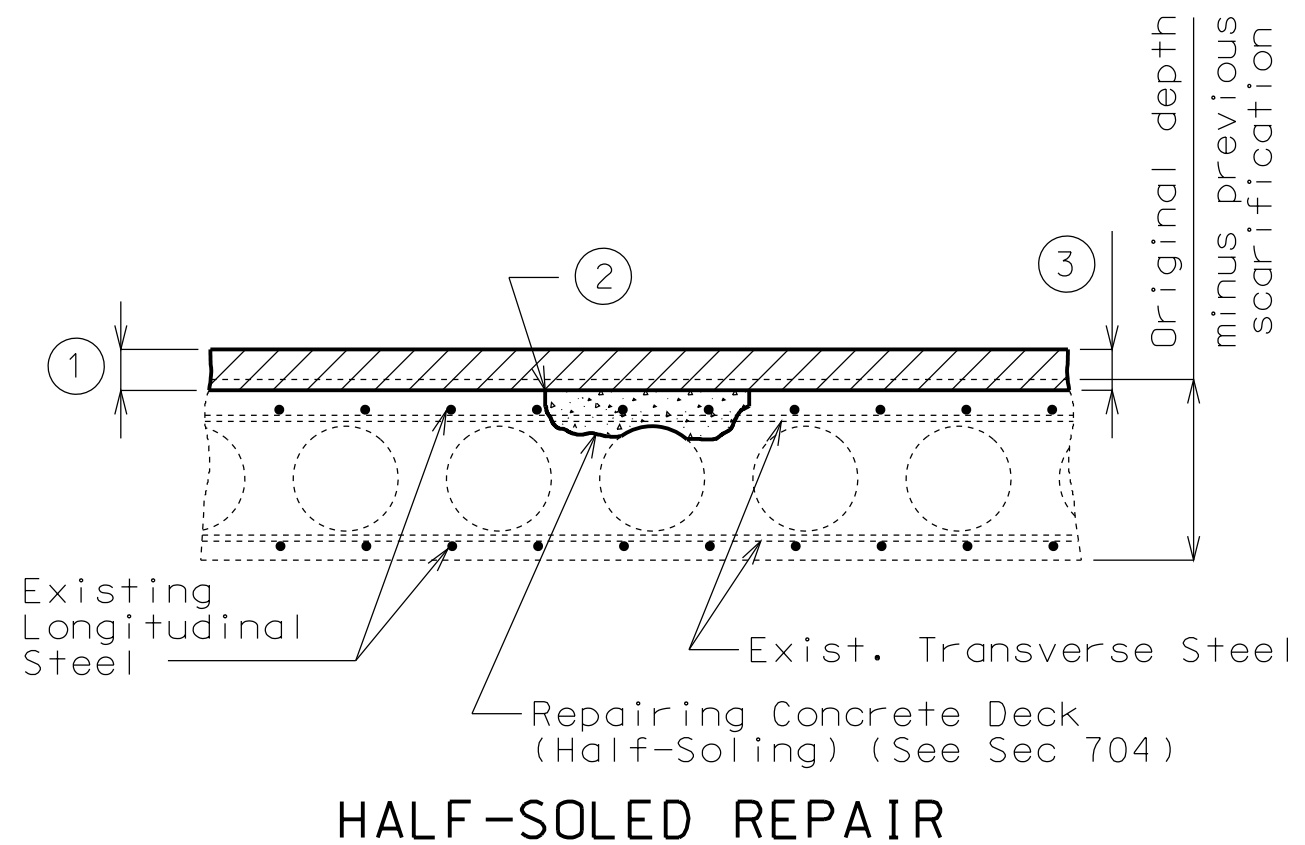


**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**  
**U.I.P. & Rehabilitate Existing (50'-63'-57'-44')**  
**Continuous Concrete Voids Slab Spans**

SEC/SUR 27 TWP 51N RGE 32W

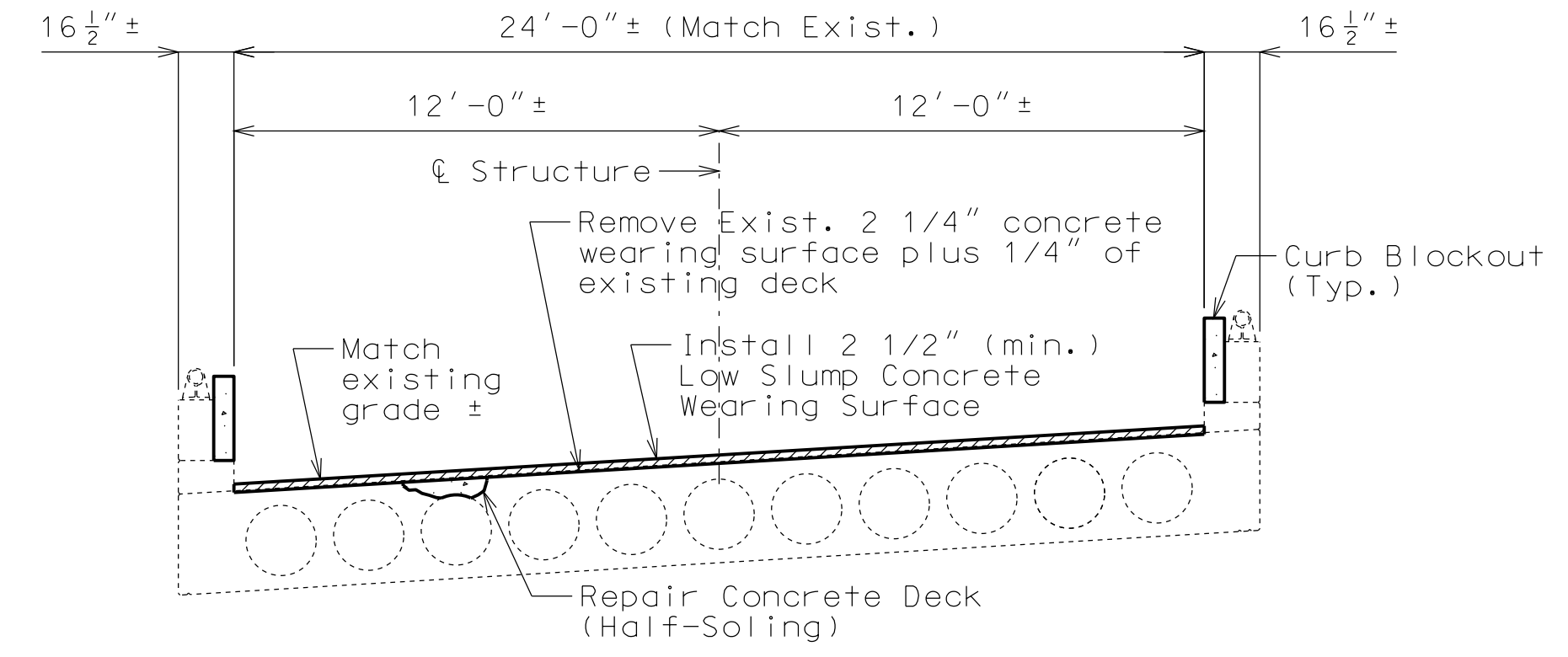
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15812	



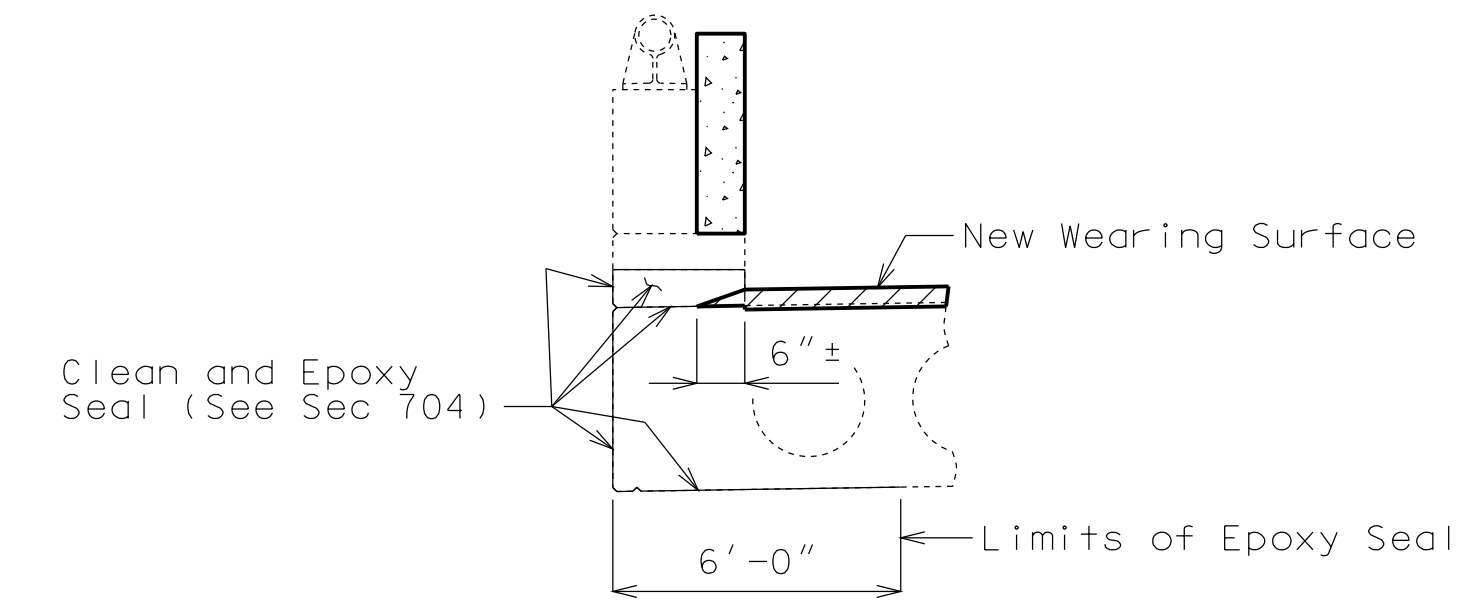
**HALF-SOLED REPAIR**

- ① Remove existing wearing surface plus 1/4" of existing deck.
- ② One inch vertical side shall be established outside the deteriorated area. See Sec 704.
- ③ 2 1/2" (min.) for Low Slump Concrete Wearing Surface

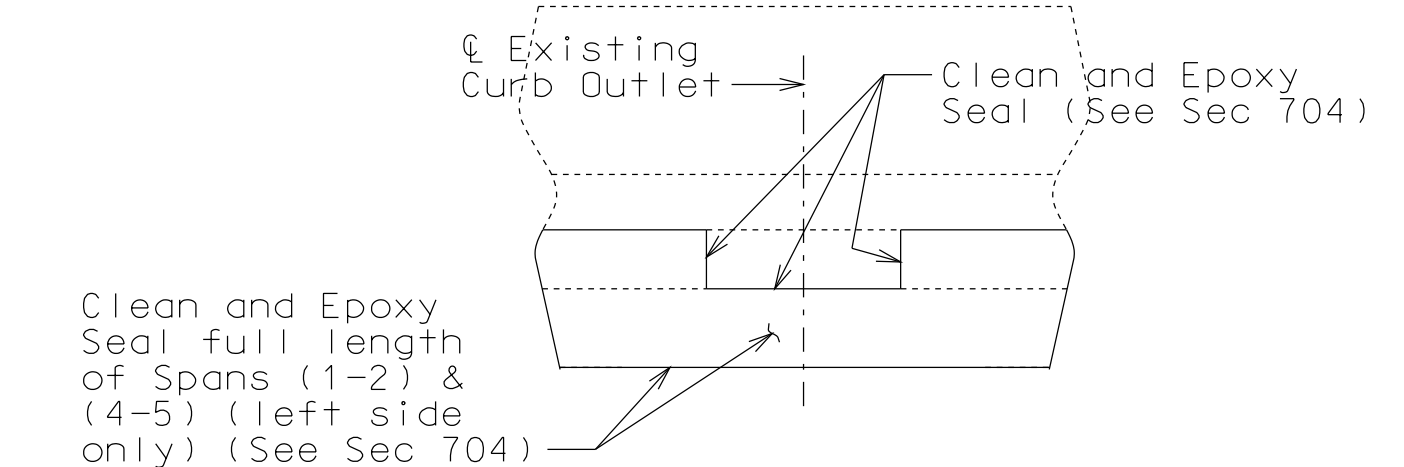


**SECTION THRU EXISTING SLAB**

Estimated Quantities		
Item		Total
Removal of Concrete Wearing Surface	sq. foot	5222
Removal of Cathodic Protection System	lump sum	1
Low Slump Concrete Wearing Surface	sq. yard	580
Curb Blockout	linear foot	460
Rehabilitation of Existing Wings	lump sum	1
Repairing Concrete Deck (Half-Soling)	sq. foot	2500
Clean and Epoxy Seal	sq. foot	769



**TYPICAL SECTION OF EXISTING CURB OUTLET SHOWING LIMITS OF EPOXY SEAL**

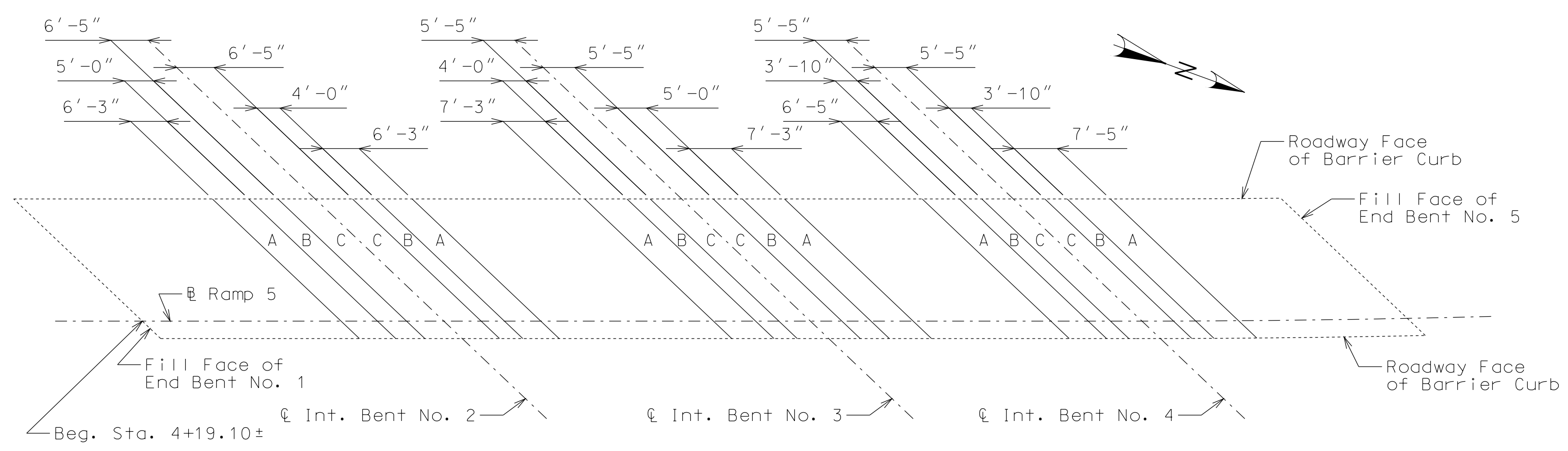


**TYPICAL ELEVATION OF EXISTING CURB OUTLET SHOWING LIMITS OF EPOXY SEAL**  
 (Wearing surface not shown for clarity)

**Note:**  
 All reinforcing steel in voided slab that is loose and exposed shall be removed as directed by the engineer. Removal of reinforcing steel and loose concrete will be considered completely covered by the contract unit price for Clean and Epoxy Seal.

**General Notes:**

- Design Specifications:**
  - 2002 - AASHTO 17th Edition
  - Load Factor Design
  - Bridge Deck Rating = 6
- Design Unit Stresses:**
  - Class B-1 Concrete (Substructure and Curb Blockout)  $f'c = 4,000$  psi
  - Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi
- Reinforcing Steel:**
  - Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.
- Joint Filler:**
  - All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.
- Miscellaneous:**
  - Roadway surfacing adjacent to bridge ends shall match bridge overlay (Roadway Item).
  - Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.
  - Contractor shall verify all dimensions in field before ordering new material.
  - 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.
  - Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

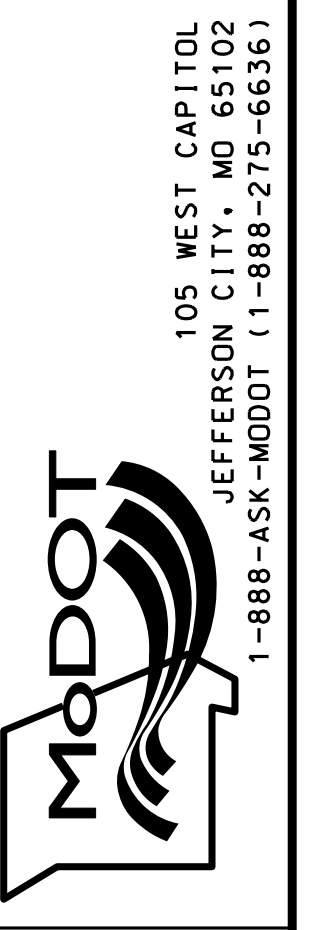


**PLAN OF EXISTING SLAB SHOWING SPECIAL REPAIR ZONES**

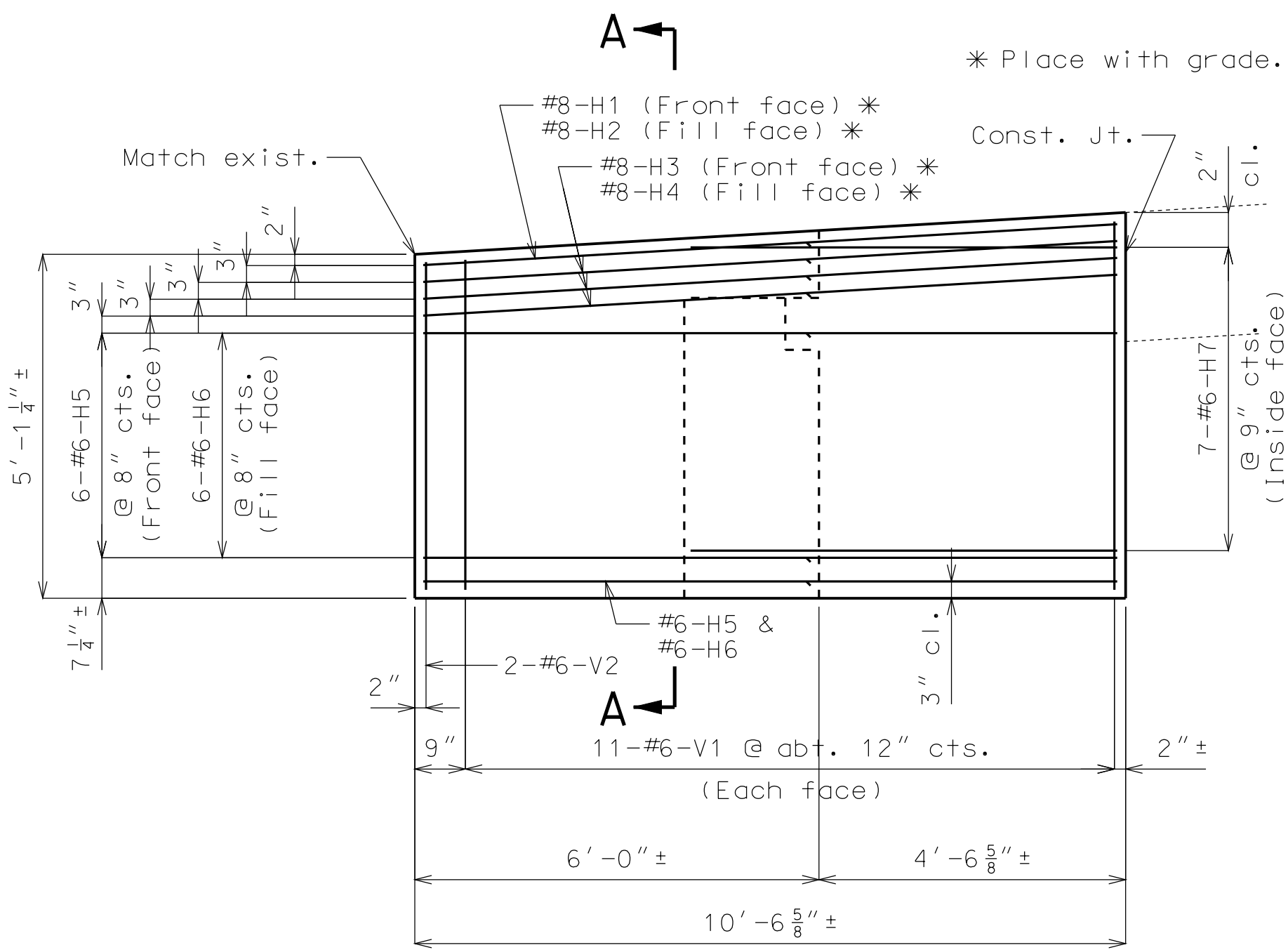
**Notes:**  
 Any half-soling required in the areas designated as special repair zones shall be completed in alphabetical sequence. Any repair in the remainder of the bridge that is adjacent to Zone A and not designated as a special repair zone shall be completed prior to work in Zone A.  
 Removal and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

**REPAIRS TO BRIDGE: RAMP 5  
 (RTE. 69 TO I-35 SB) OVER  
 RAMP 6 (I-435 NB TO I-35 NB)  
 STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE**

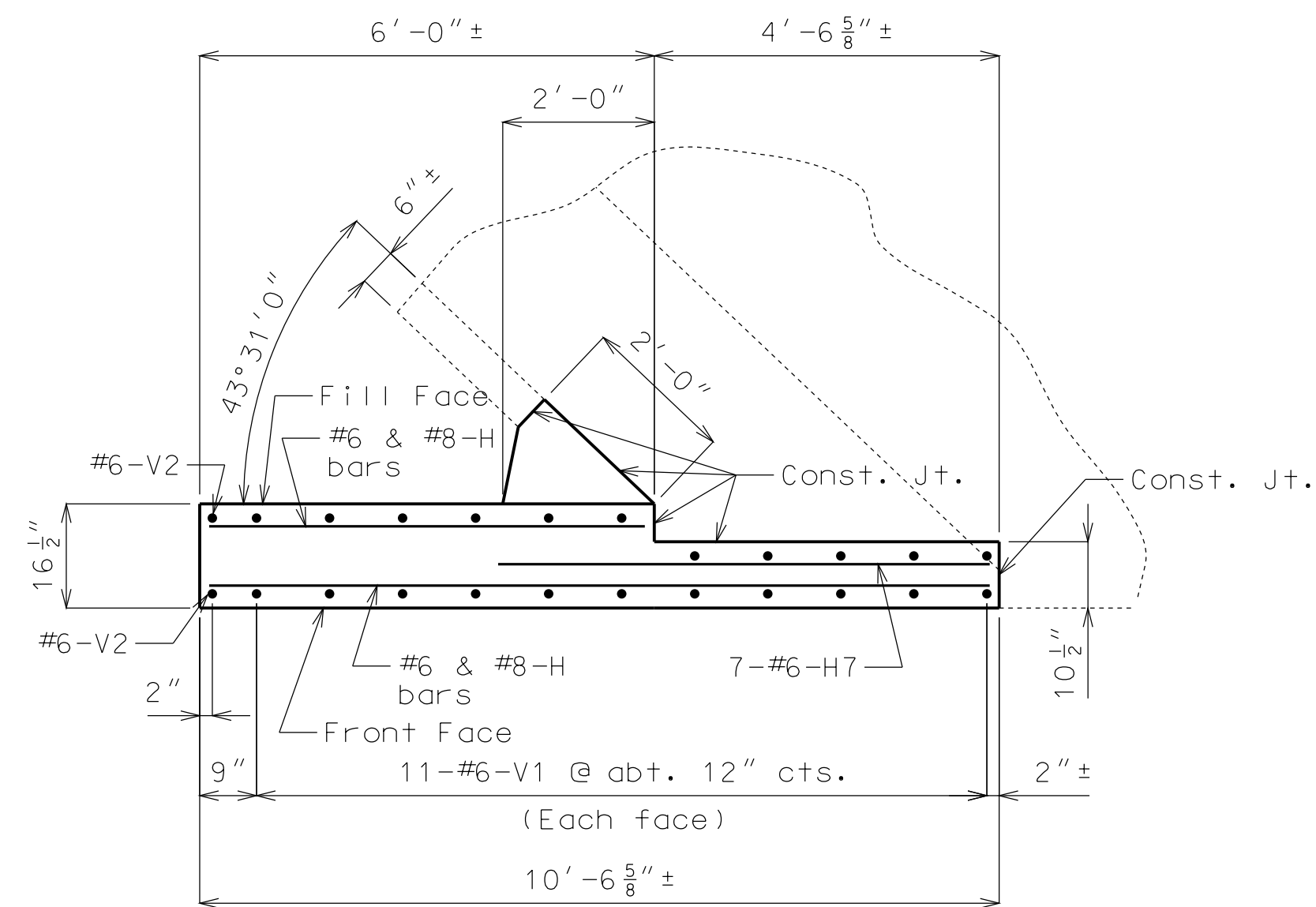
DESCRIPTION DATE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



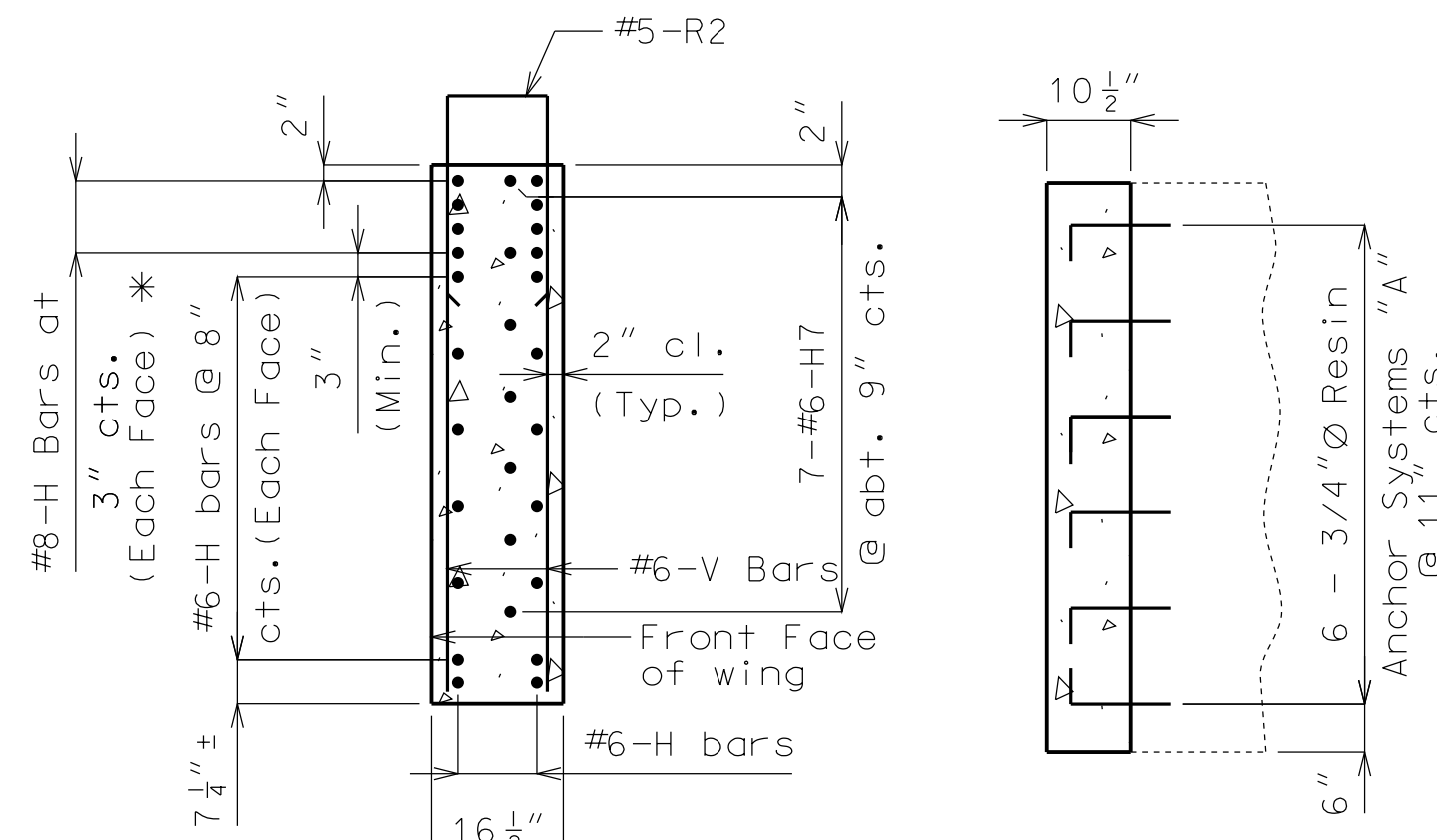
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



ELEVATION SHOWING WING REINFORCEMENT & DIMENSIONS

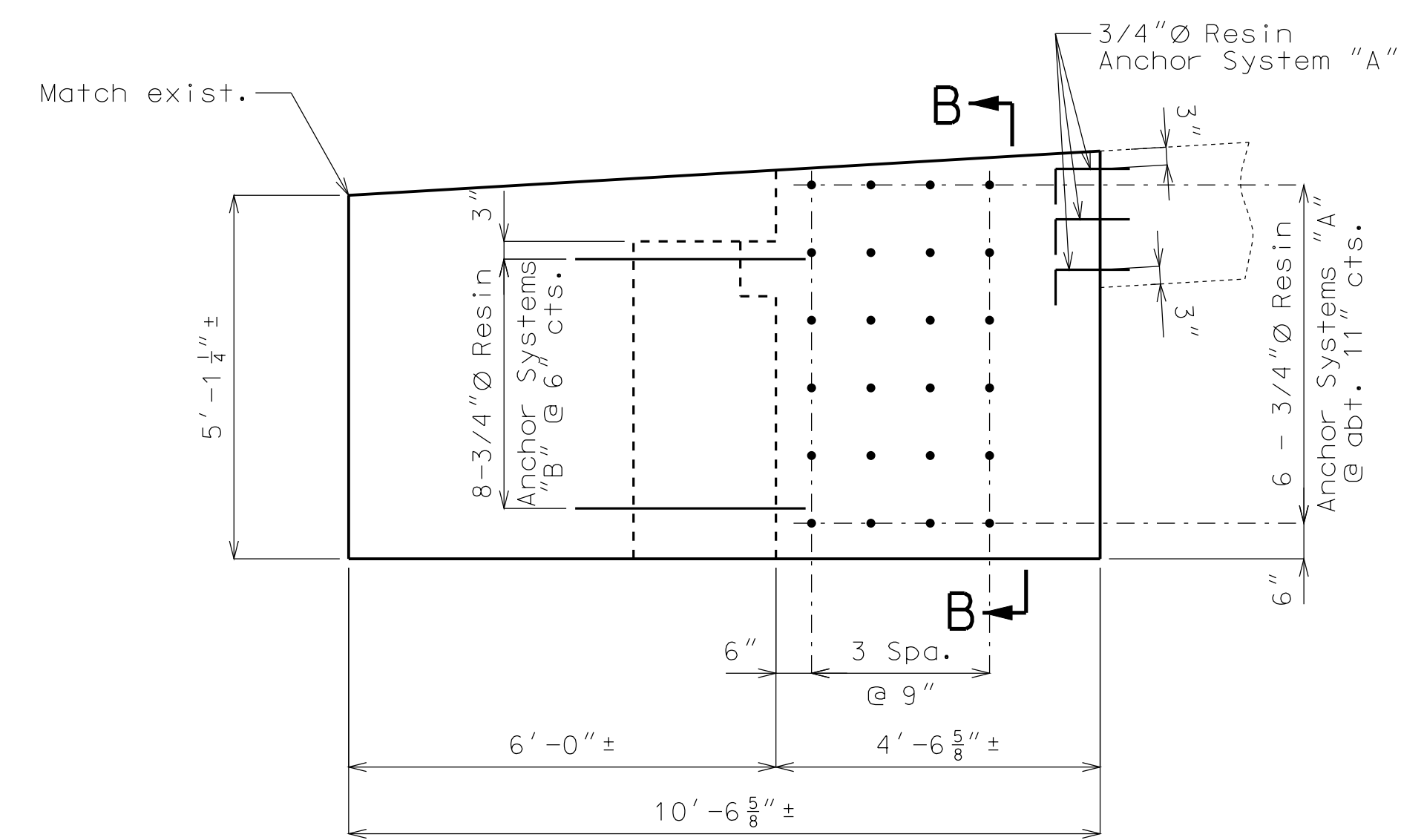


PLAN SHOWING WING REINFORCEMENT & DIMENSIONS

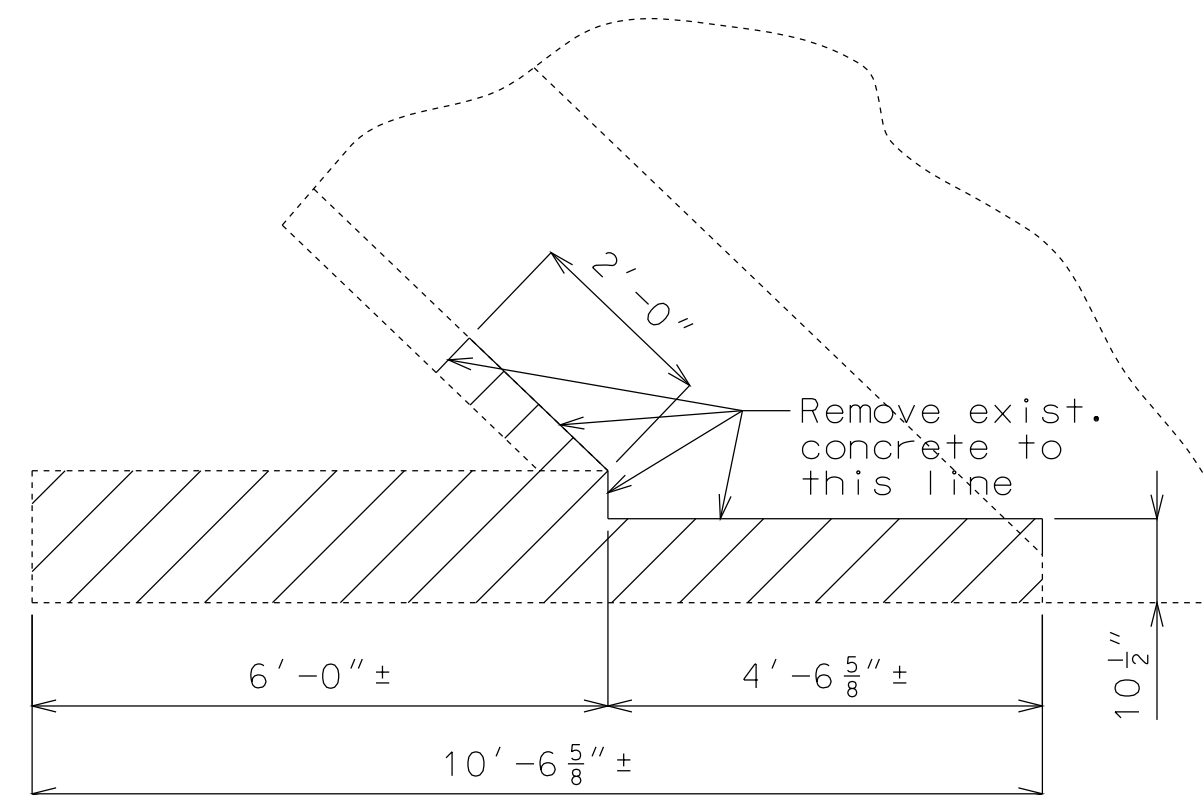


SECTION A-A

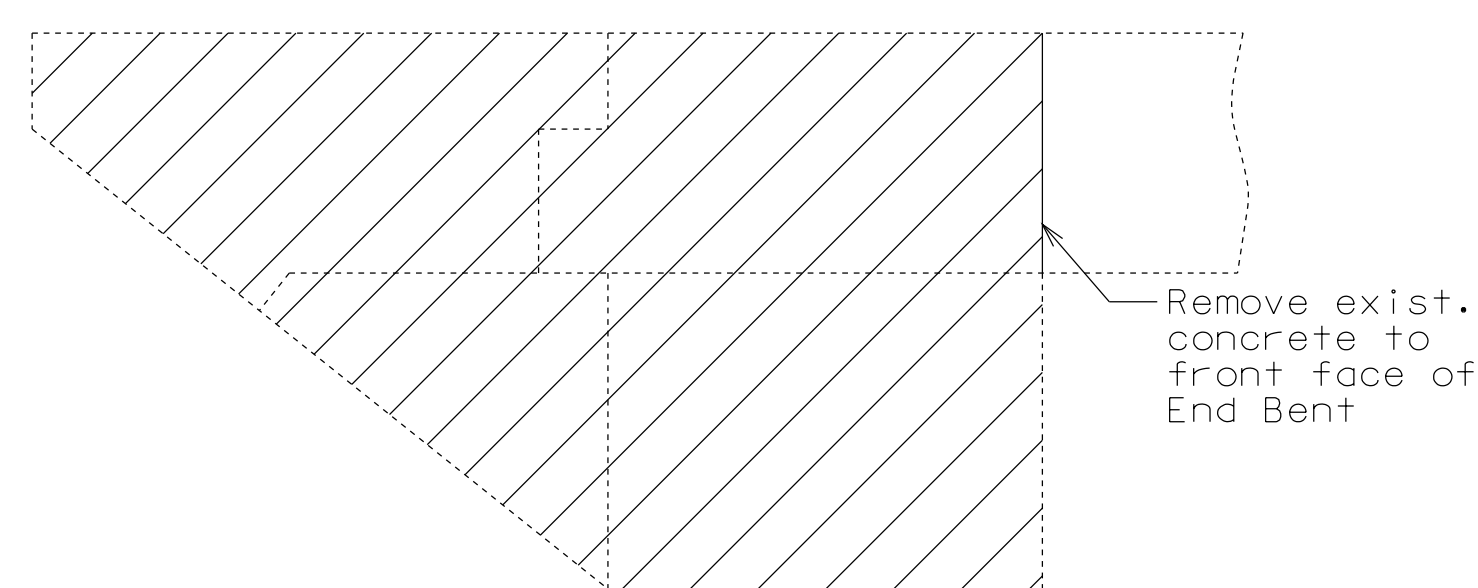
SECTION B-B



ELEVATION SHOWING WING RESIN ANCHORS & DIMENSIONS

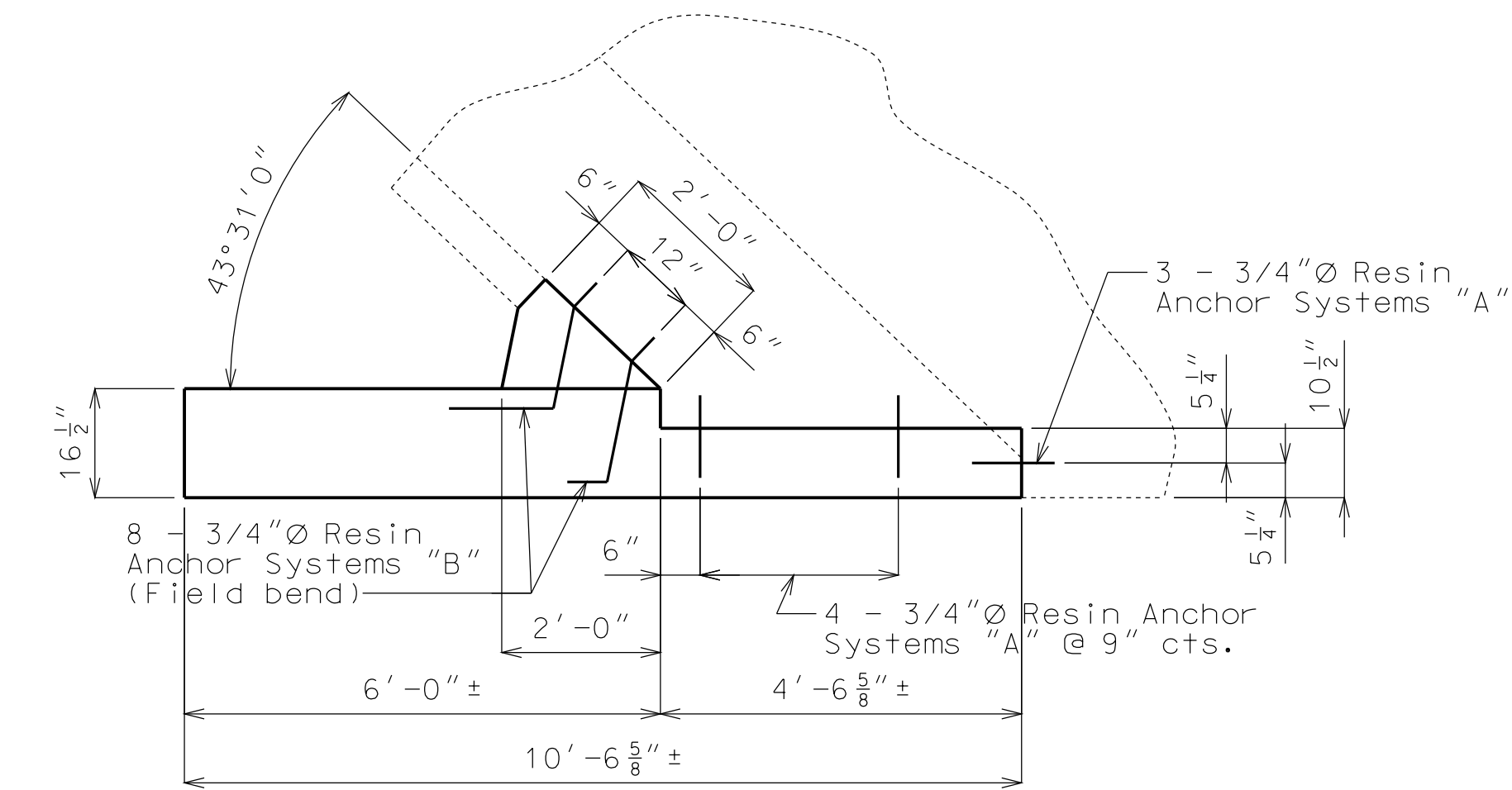


PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL



ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL

(See Sheet No. 6 for curb, parapet & end post removal.)



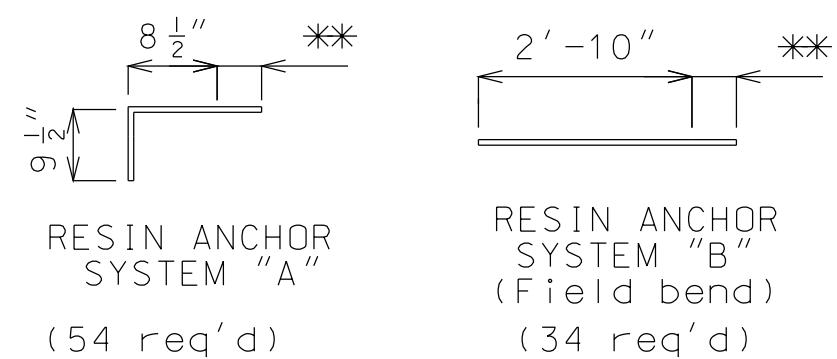
PLAN SHOWING WING RESIN ANCHORS & DIMENSIONS

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

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

A #6 Grade 60 reinforcing bar shall be substituted for the 3/4\"/>

Cost of removal of wing, resin anchors, excavation, Class B-1 Concrete and reinforcing steel for rehabilitation of right (SE) wing will be considered completely covered by the contract lump sum price for Rehabilitation of Existing Wings.



\*\* Use manufacturer's embedment length. (5\"/>

DETAILS OF RESIN ANCHORS

DETAILS SHOWING REHABILITATION OF RIGHT (SE) WING AT END BENT NO. 1

Detailed Aug. 2012  
Checked Aug. 2012

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

Sheet No. 2 of 8

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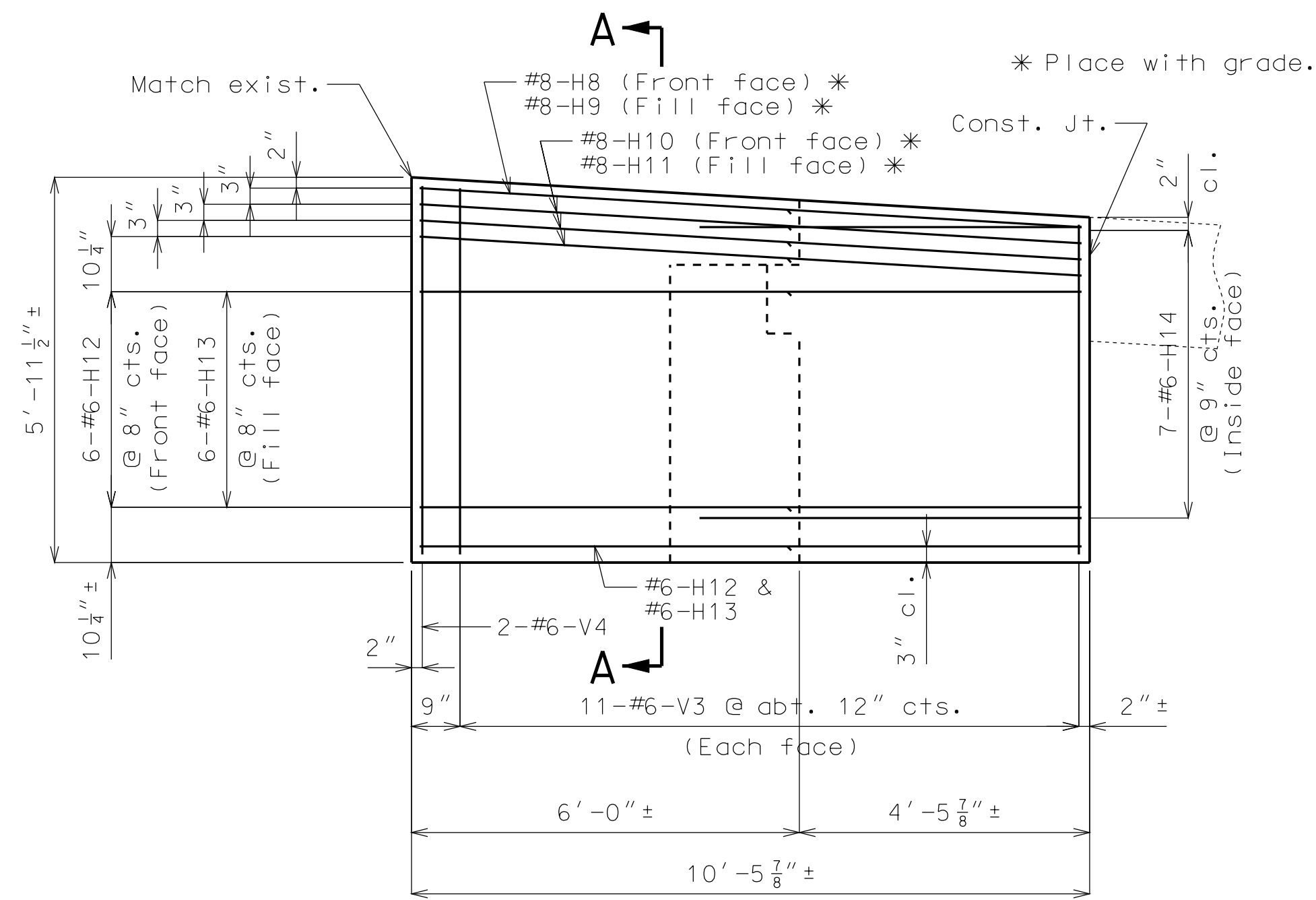
DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15812	

DESCRIPTION	DATE

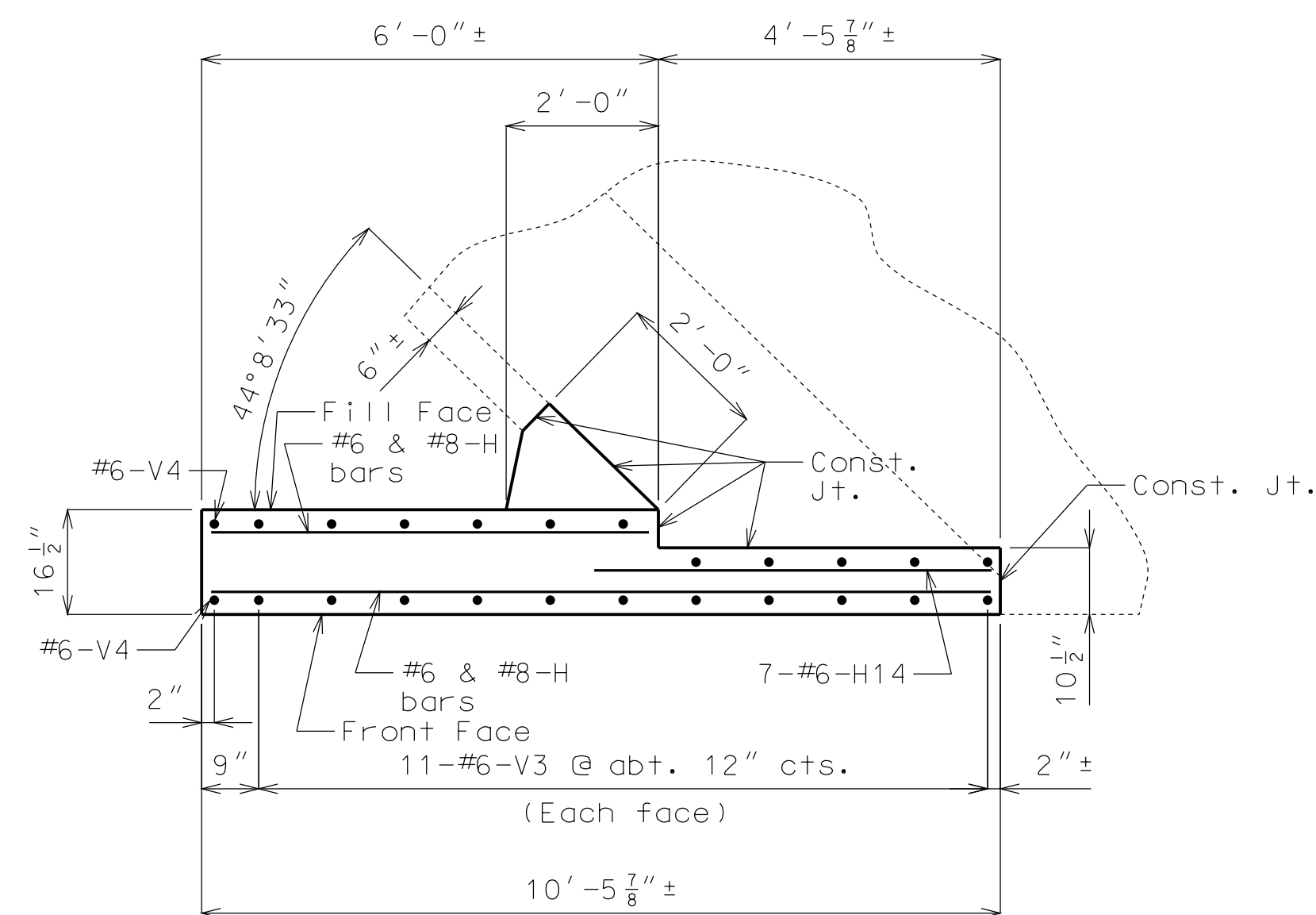
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

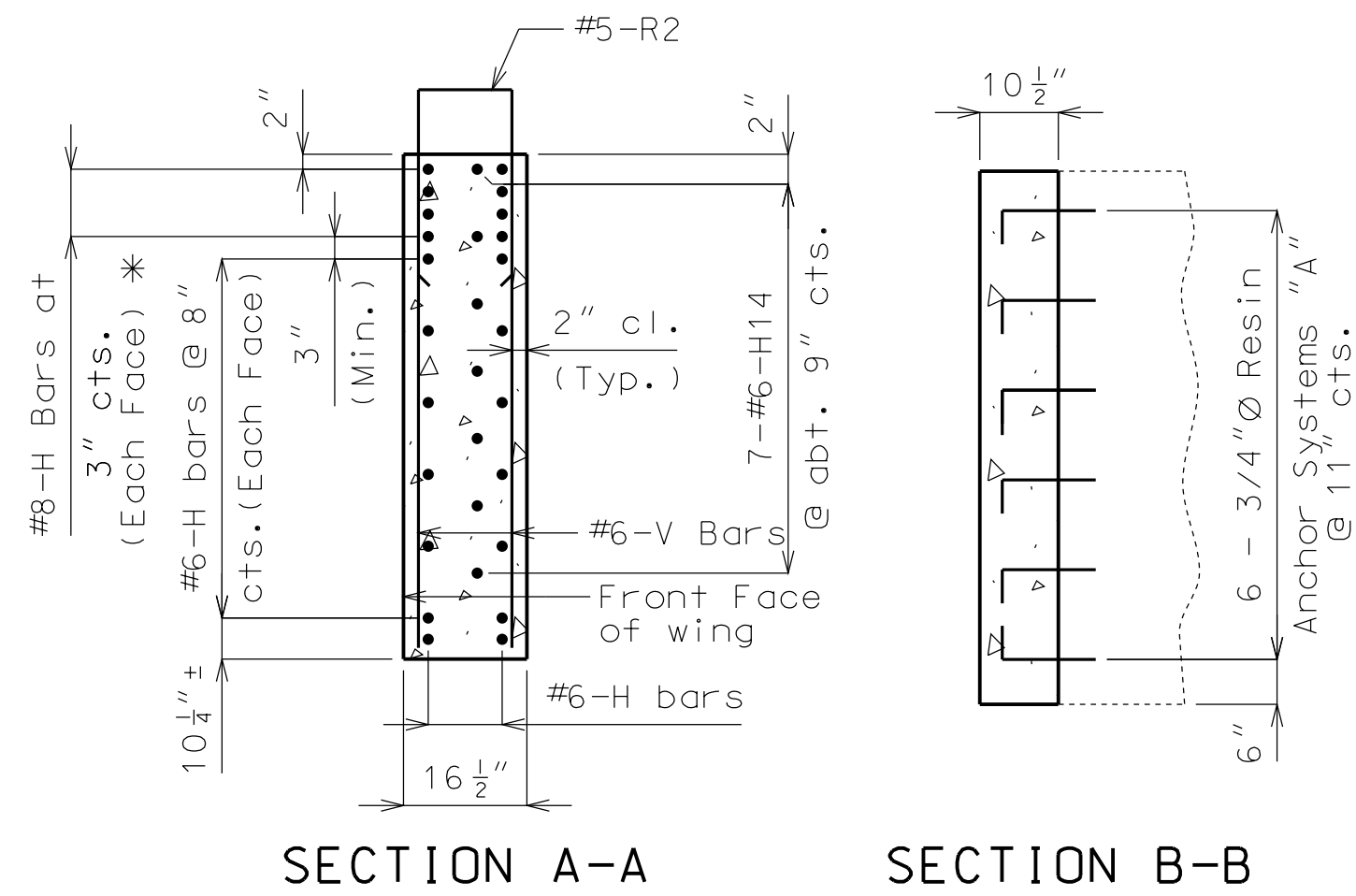
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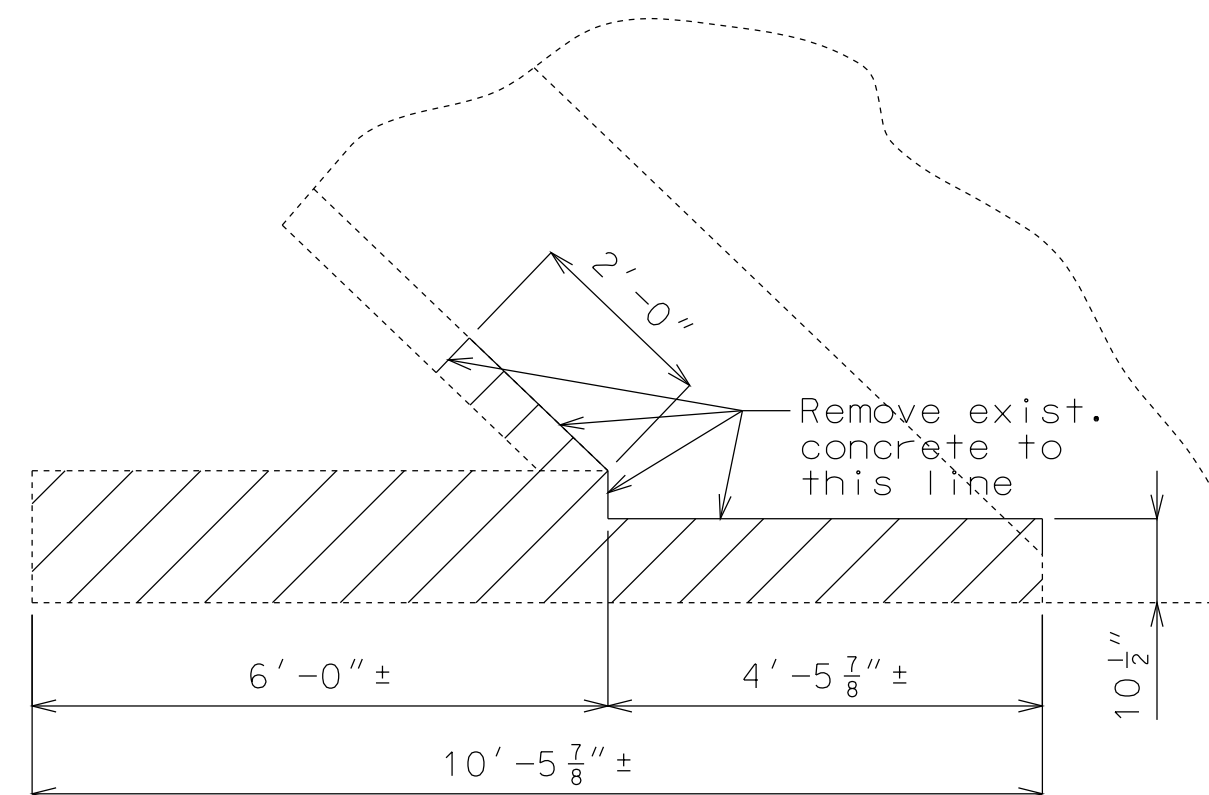
ELEVATION SHOWING WING REINFORCEMENT & DIMENSIONS



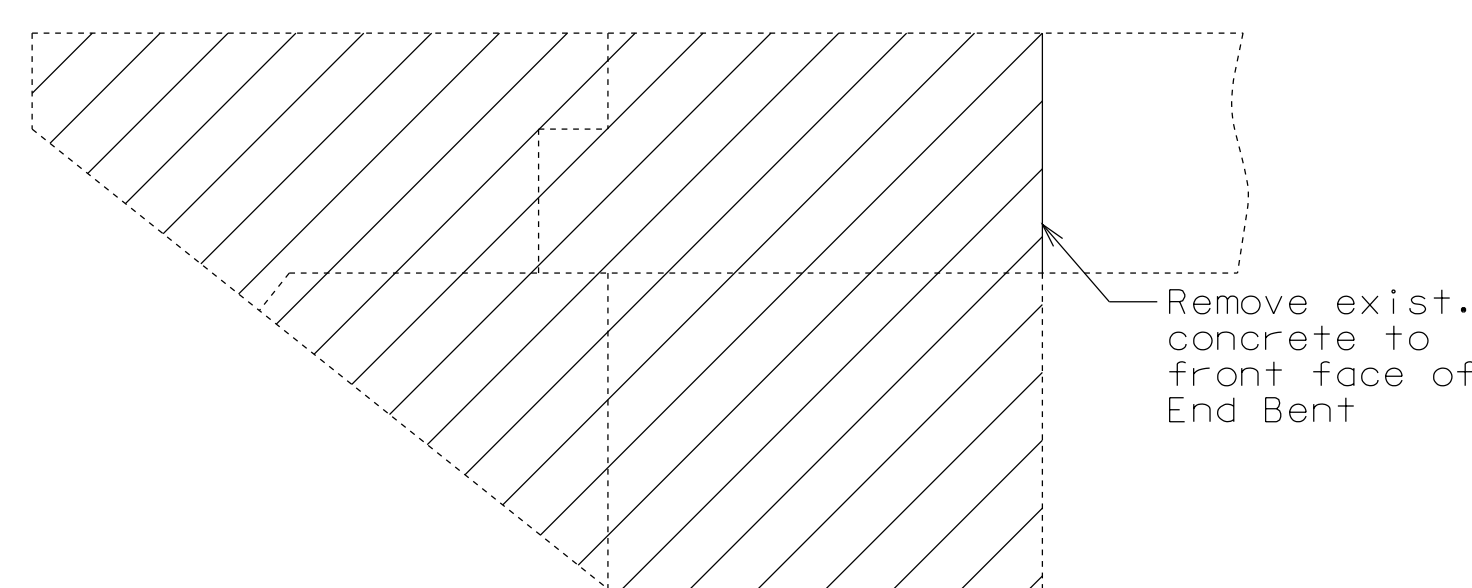
PLAN SHOWING WING REINFORCEMENT & DIMENSIONS



SECTION A-A SECTION B-B

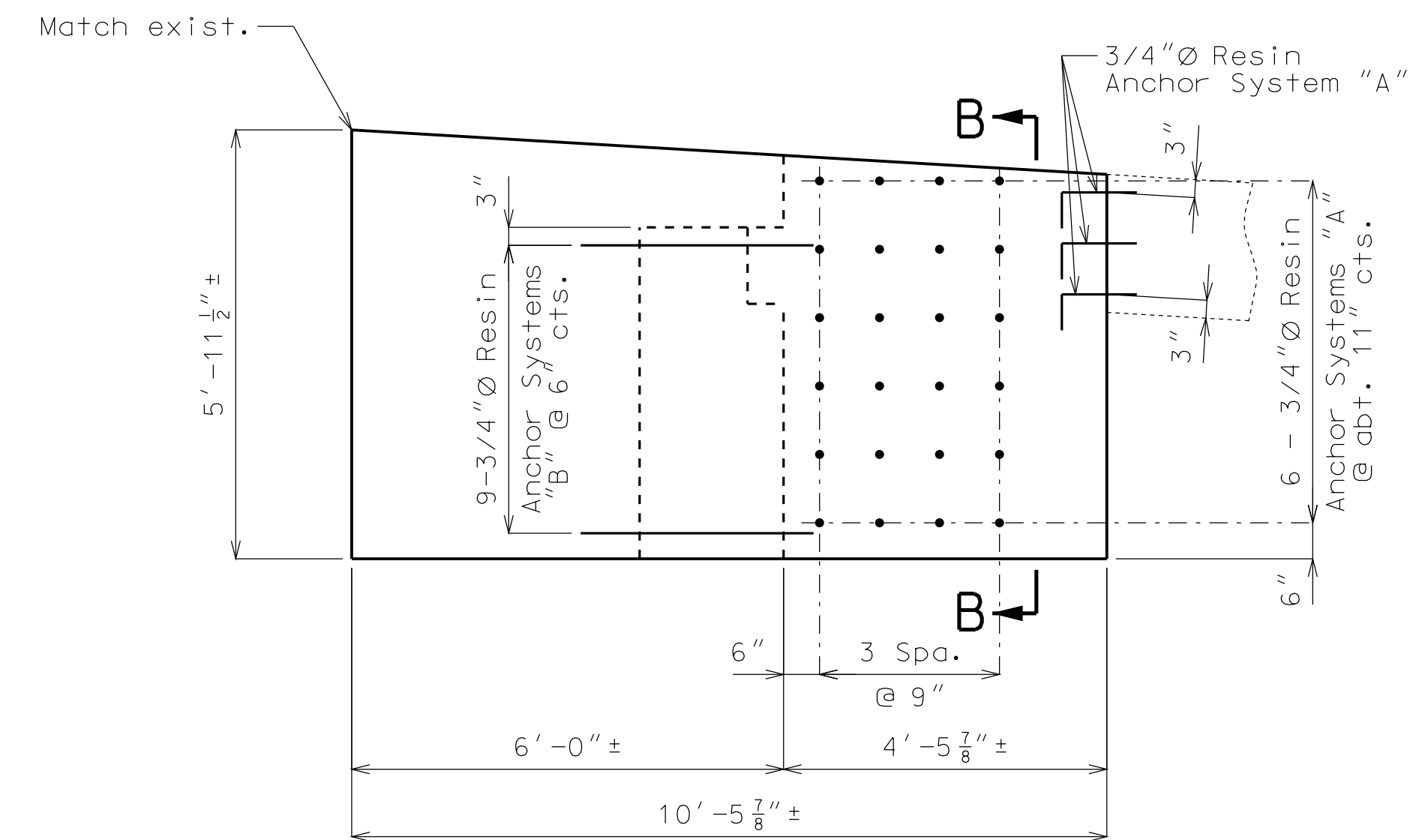


PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL

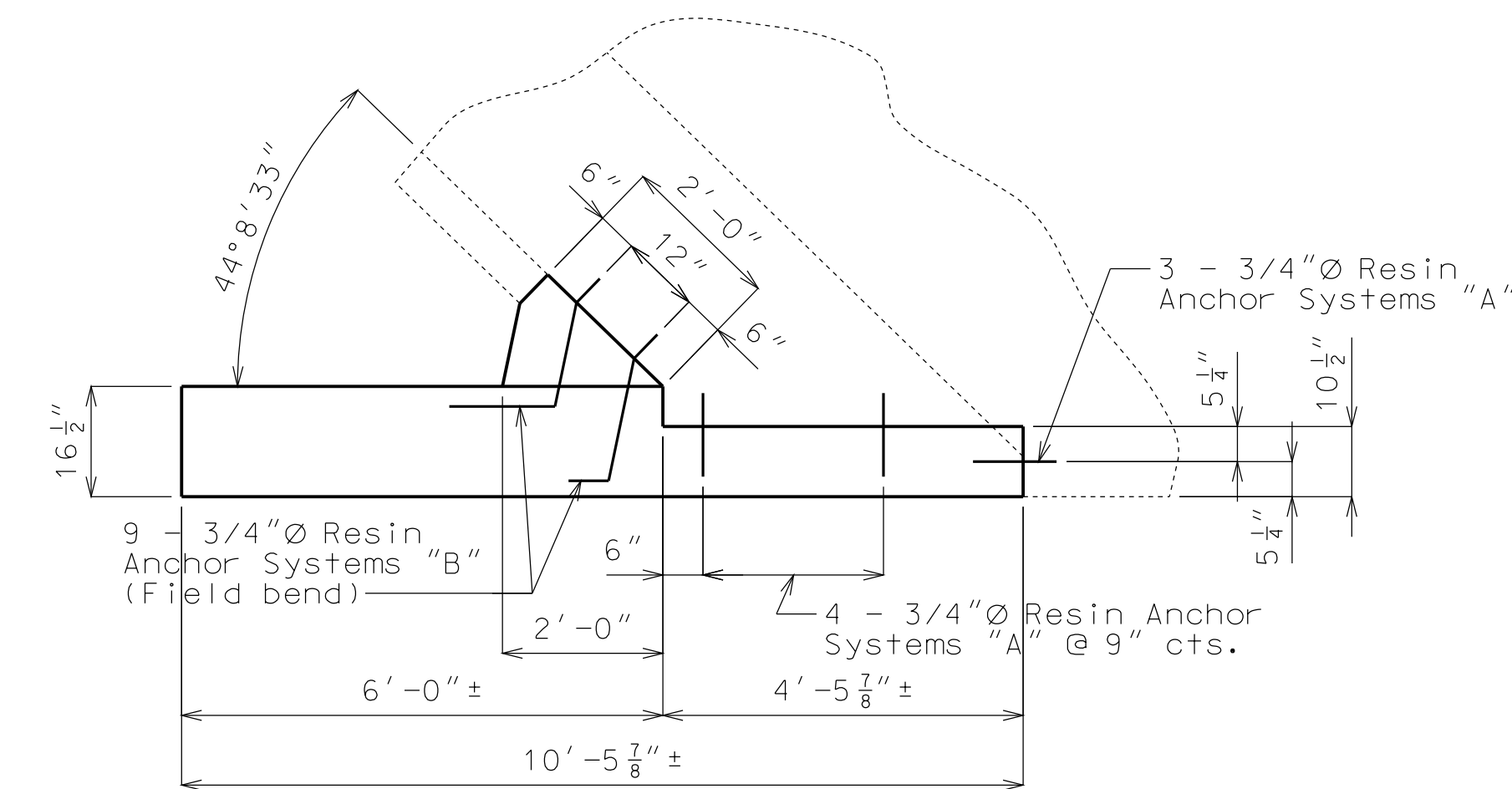


ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL

(See Sheet No. 6 for curb, parapet & end post removal.)



ELEVATION SHOWING WING RESIN ANCHORS & DIMENSIONS



PLAN SHOWING WING RESIN ANCHORS & DIMENSIONS

Notes:

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

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

A #6 Grade 60 reinforcing bar shall be substituted for the 3/4\"/>

Cost of removal of wing, resin anchors, excavation, Class B-1 Concrete and reinforcing steel for rehabilitation of left (NW) wing will be considered completely covered by the contract lump sum price for Rehabilitation of Existing Wings.

For Details of Resin Anchors, see Sheet No. 2.


DETAILS SHOWING REHABILITATION OF LEFT (NW) WING AT END BENT NO. 5

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DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15812	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

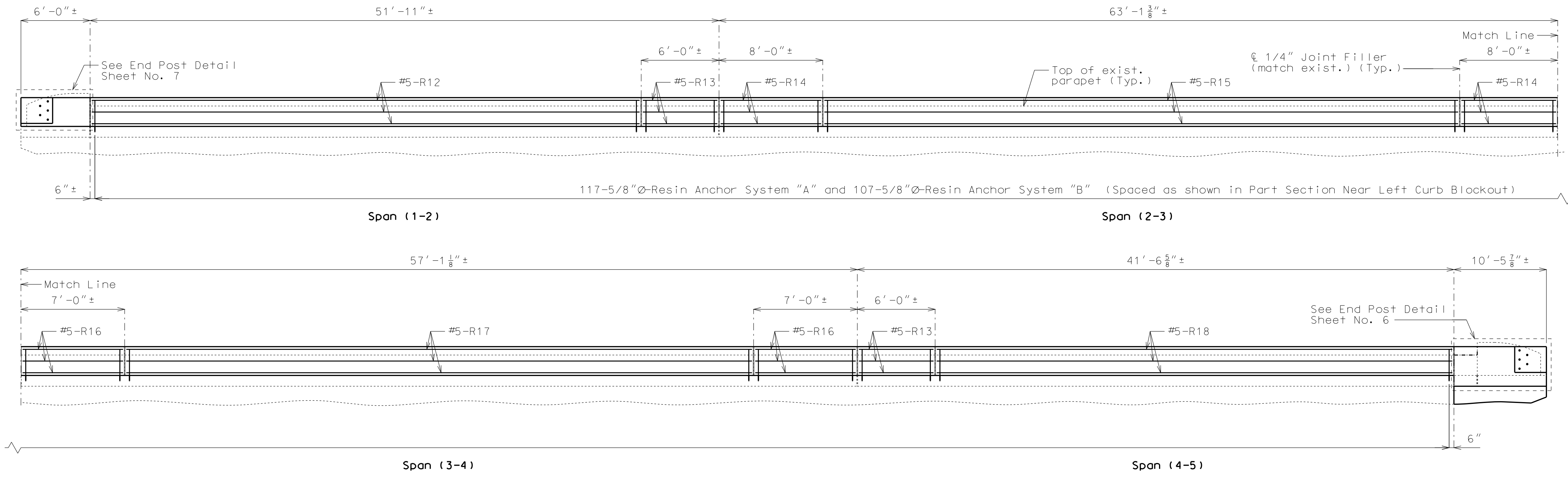


105 WEST CAPITOL  
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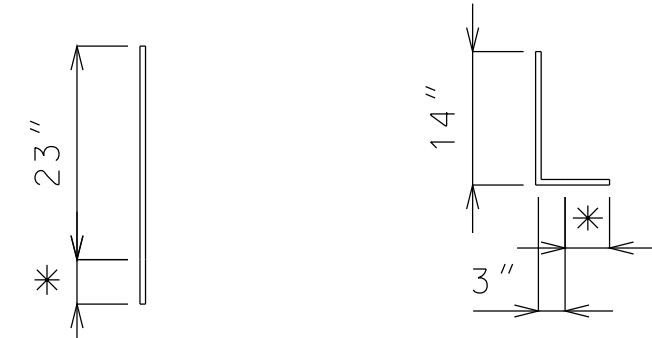
DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 4
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15812	



**SECTION NEAR LEFT CURB BLOCKOUT**

Note: Longitudinal dimensions shown are along grade and are taken at top and center of Parapet.

Bridge rail and concrete wearing surface not shown for clarity.

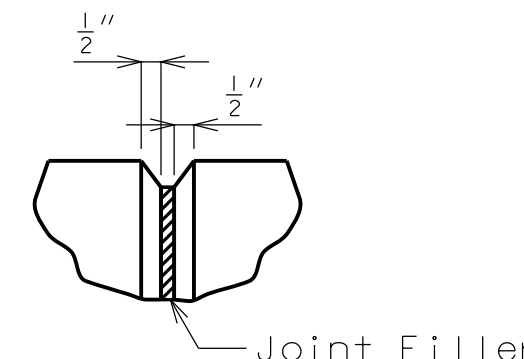


**RESIN ANCHOR SYSTEM "A"**  
(126 req'd)  
(Install in curb)

**RESIN ANCHOR SYSTEM "B"**  
(107 req'd)  
(Install in parapet)

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

**DETAILS OF RESIN ANCHORS**



**FILLED JOINT DETAIL**

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

Measurement of curb blockout is to the nearest linear foot, measured at the top and center of parapet from end of wing to end of wing. (Match existing curb and parapet)

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

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

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

All reinforcement shall be epoxy coated.

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

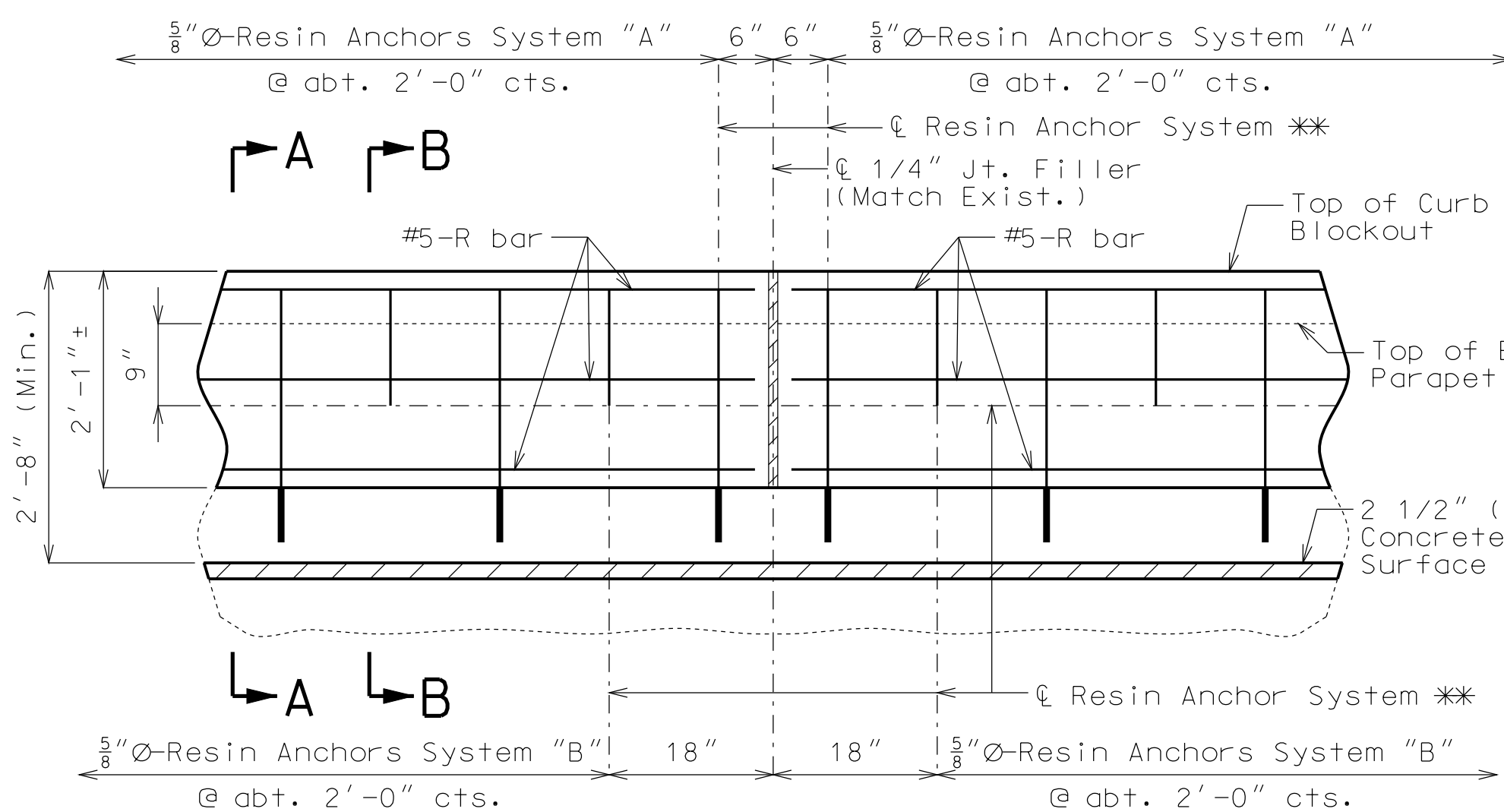
Use a minimum lap of 2'-11" for #5 horizontal curb blockout bars.

Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators shall have retroreflective sheeting on side facing oncoming traffic only. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Curb Blockout".

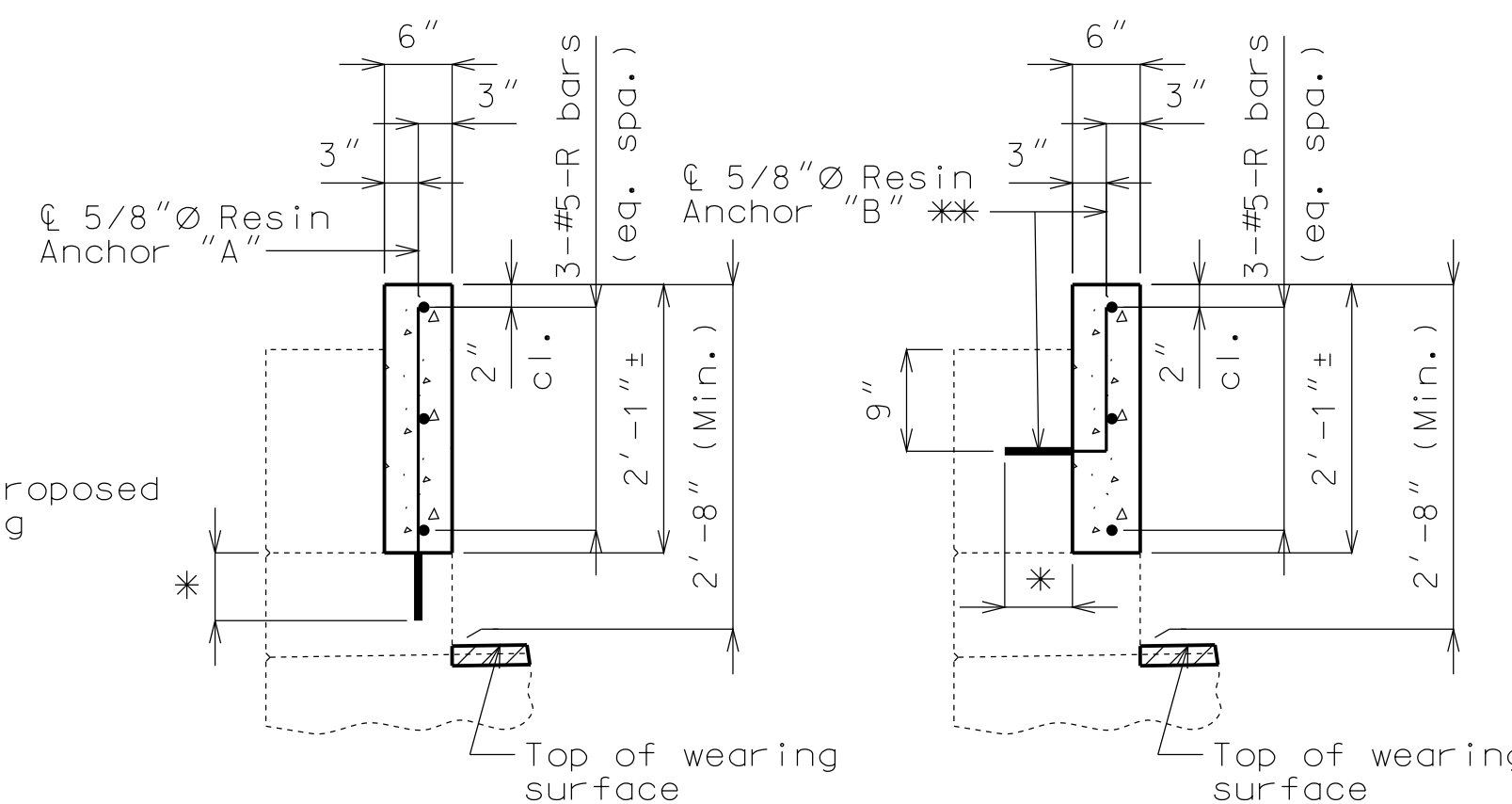
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

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

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



**PART SECTION NEAR LEFT CURB BLOCKOUT**



**SECTION A-A**

**SECTION B-B**

**DETAILS OF LEFT CURB BLOCKOUT**

Detailed Aug. 2012  
Checked Aug. 2012

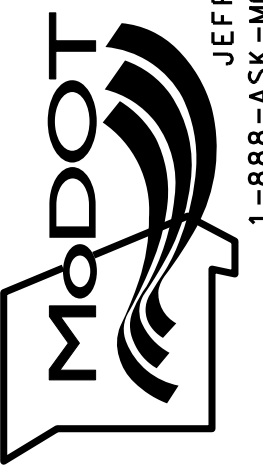
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 8

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

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

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DATE PREPARED  
12/3/2012

ROUTE <b>I-435</b>	STATE <b>MO</b>
DISTRICT <b>BR</b>	SHEET NO. <b>5</b>

COUNTY  
**CLAY**

JOB NO.  
**J412381**

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
**A15812**

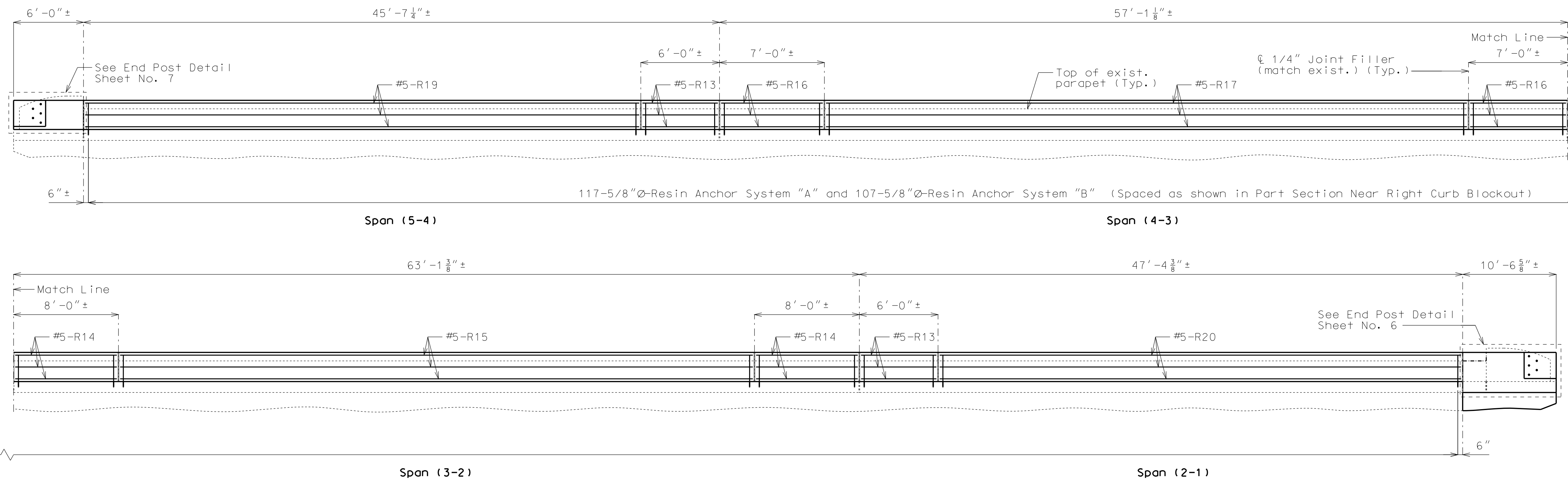
DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

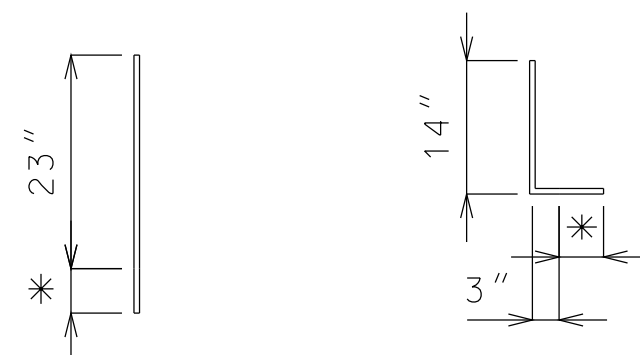
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



**SECTION NEAR RIGHT CURB BLOCKOUT**

Note: Longitudinal dimensions shown are along grade and are taken at top and  $\frac{1}{2}$ " of Parapet.

Bridge rail and concrete wearing surface not shown for clarity.



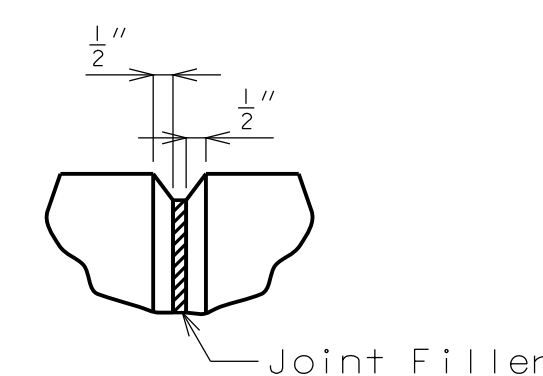
RESIN ANCHOR SYSTEM "A"

RESIN ANCHOR SYSTEM "B"

(126 req'd) (Install in curb) (107 req'd) (Install in parapet)

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

**DETAILS OF RESIN ANCHORS**



**FILLED JOINT DETAIL**

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

Measurement of curb blockout is to the nearest linear foot, measured at the top and  $\frac{1}{2}$ " of parapet from end of wing to end of wing. (Match existing curb and parapet)

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

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

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

All reinforcement shall be epoxy coated.

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

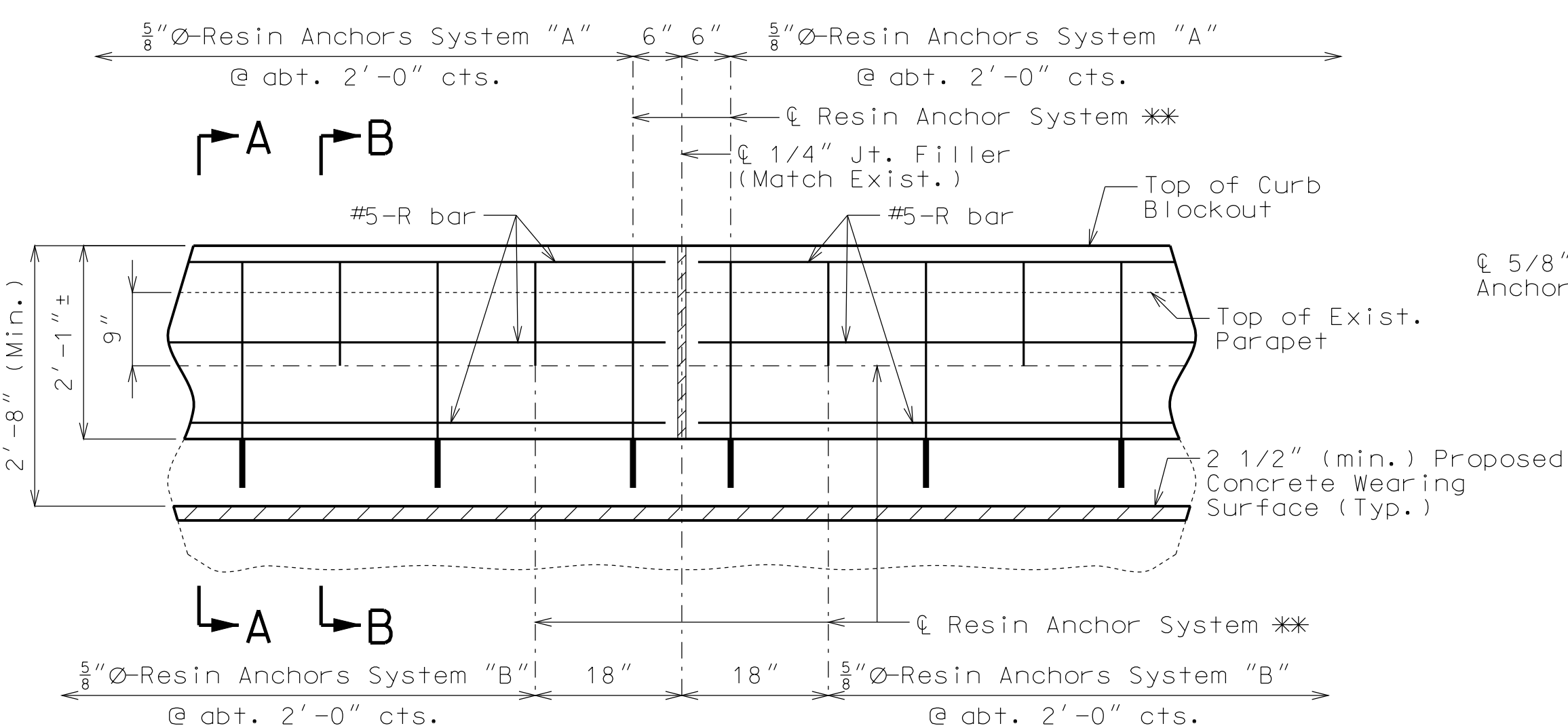
Use a minimum lap of 2'-11" for #5 horizontal curb blockout bars.

Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators shall have retroreflective sheeting on side facing oncoming traffic only. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Curb Blockout".

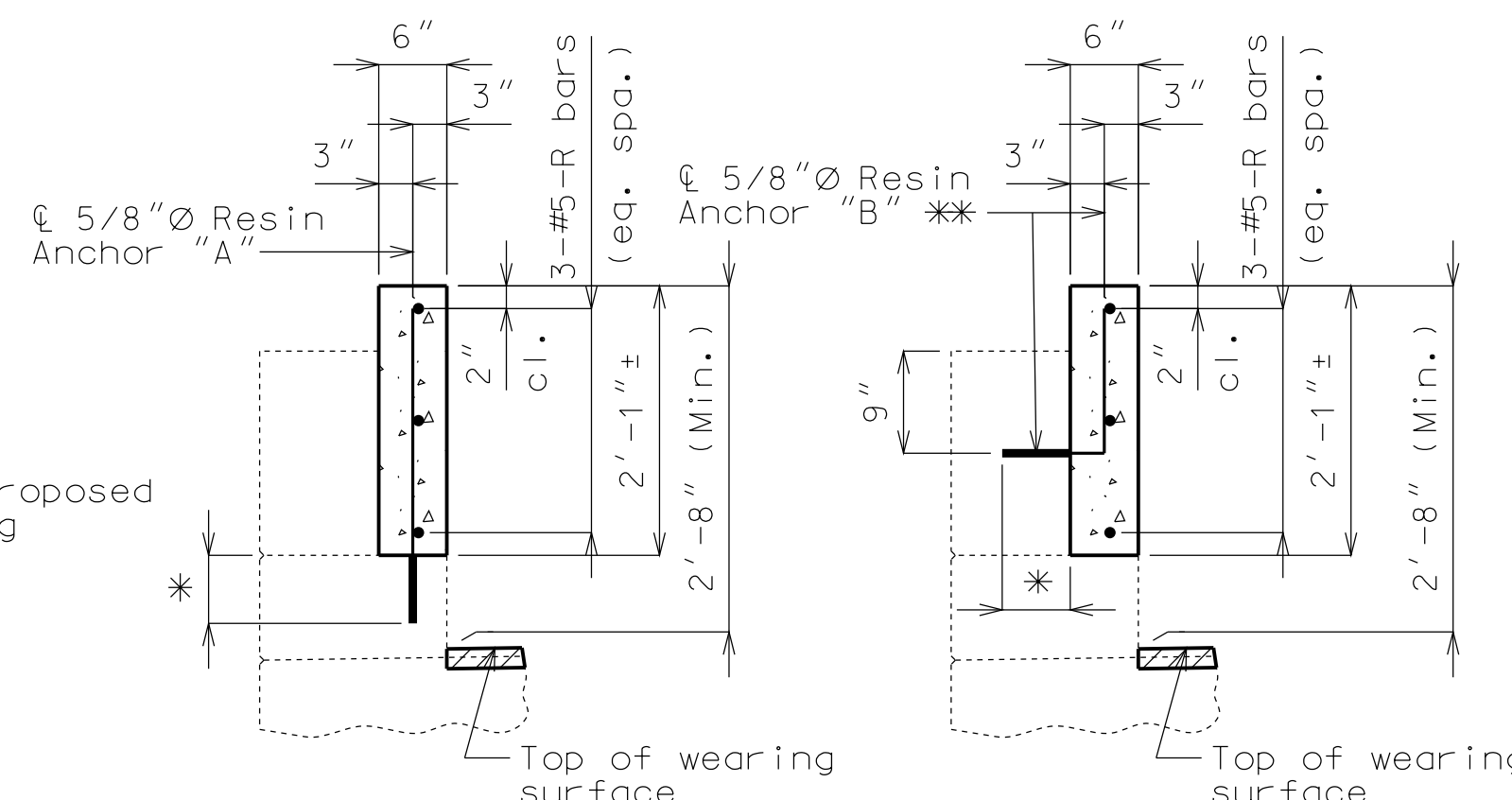
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

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

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



**PART SECTION NEAR RIGHT CURB BLOCKOUT**



**SECTION A-A**

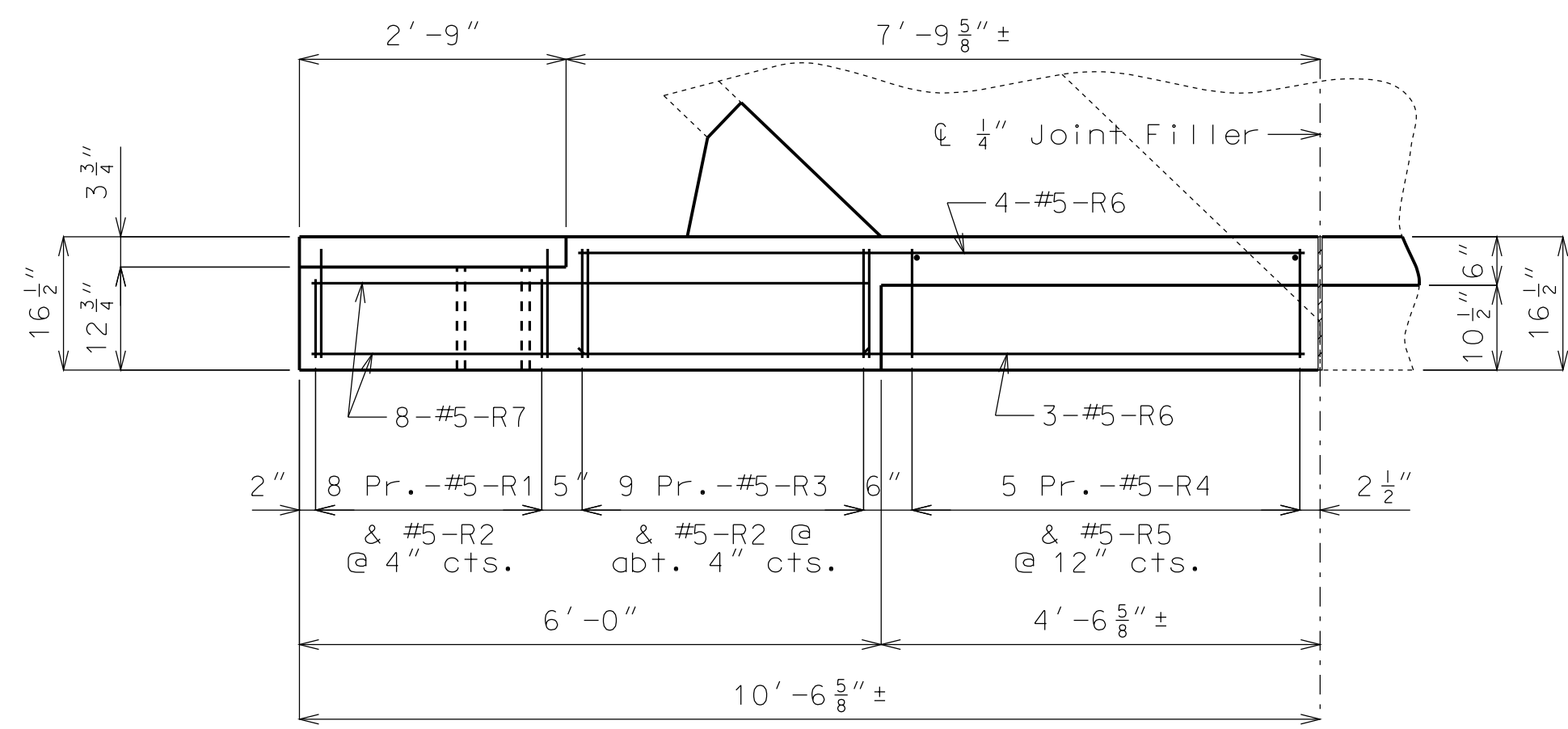
**SECTION B-B**

**DETAILS OF RIGHT CURB BLOCKOUT**

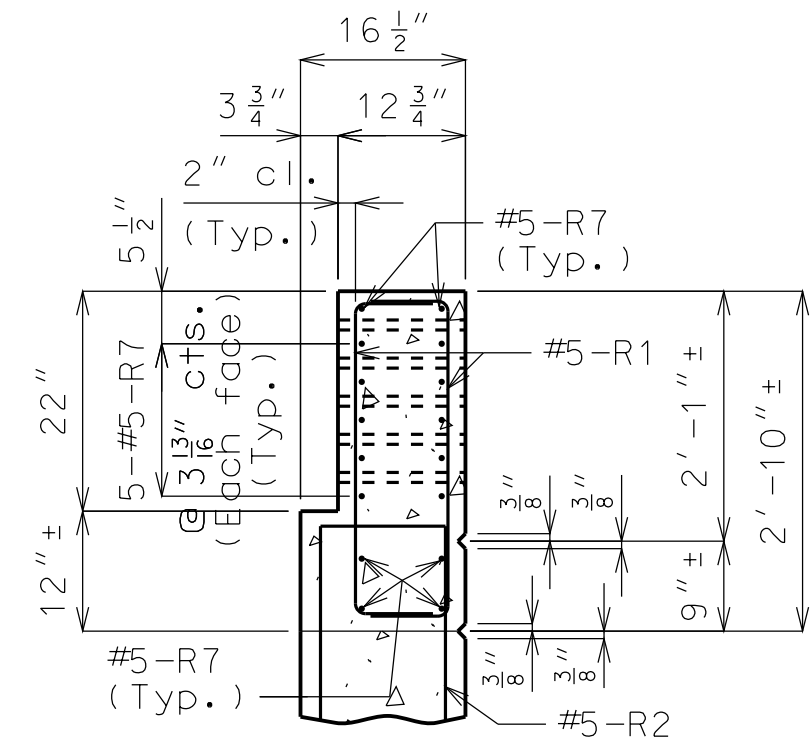
Detailed Aug. 2012  
Checked Aug. 2012

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

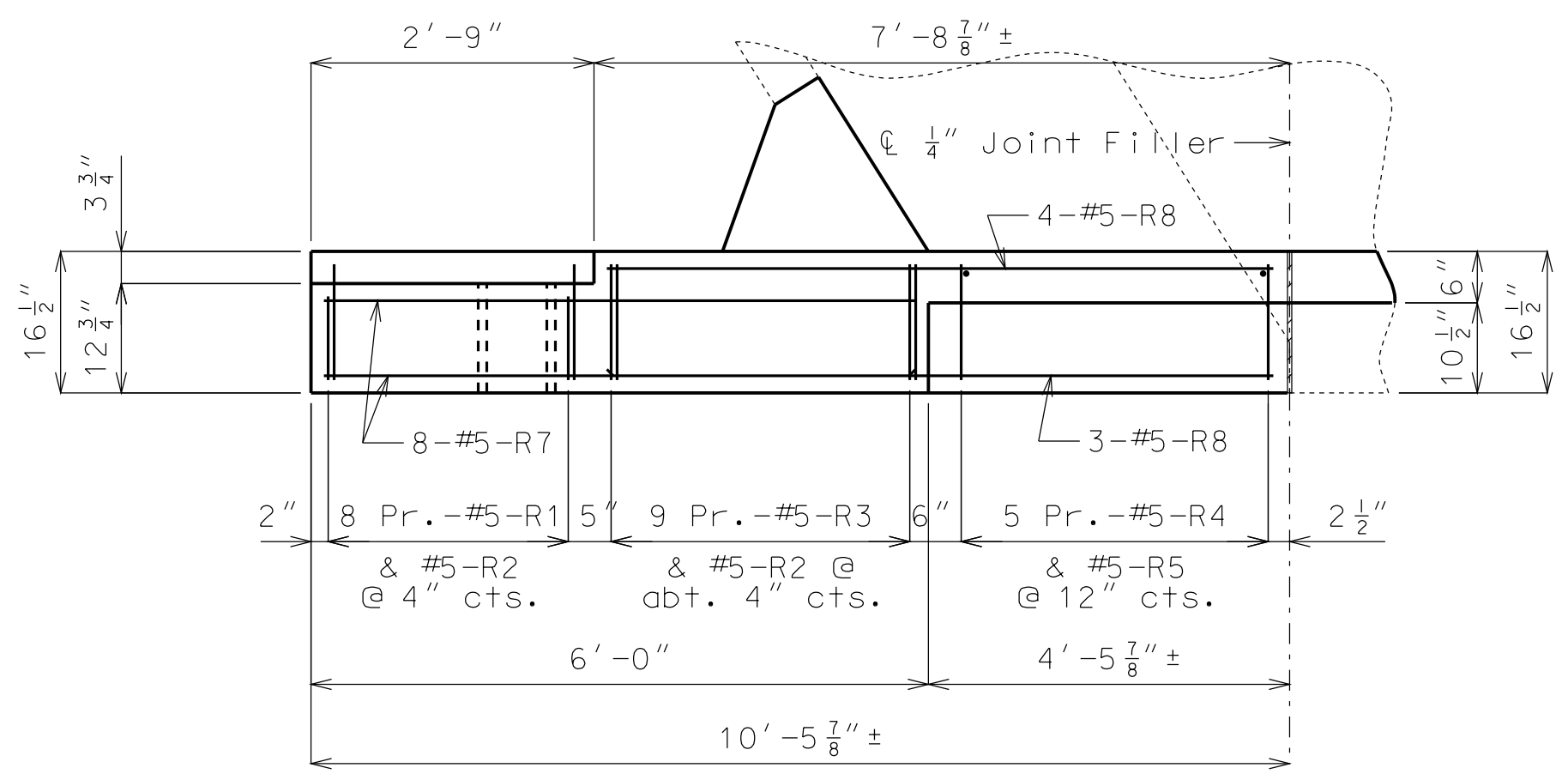
Sheet No. 5 of 8



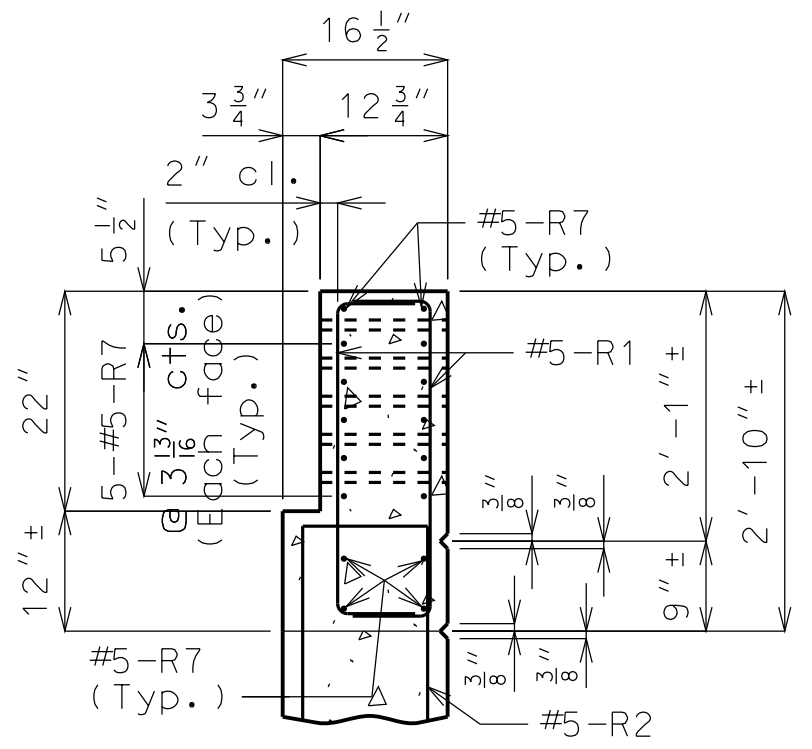
PLAN SHOWING RIGHT (SE) END POST AT EXISTING END BENT NO. 1



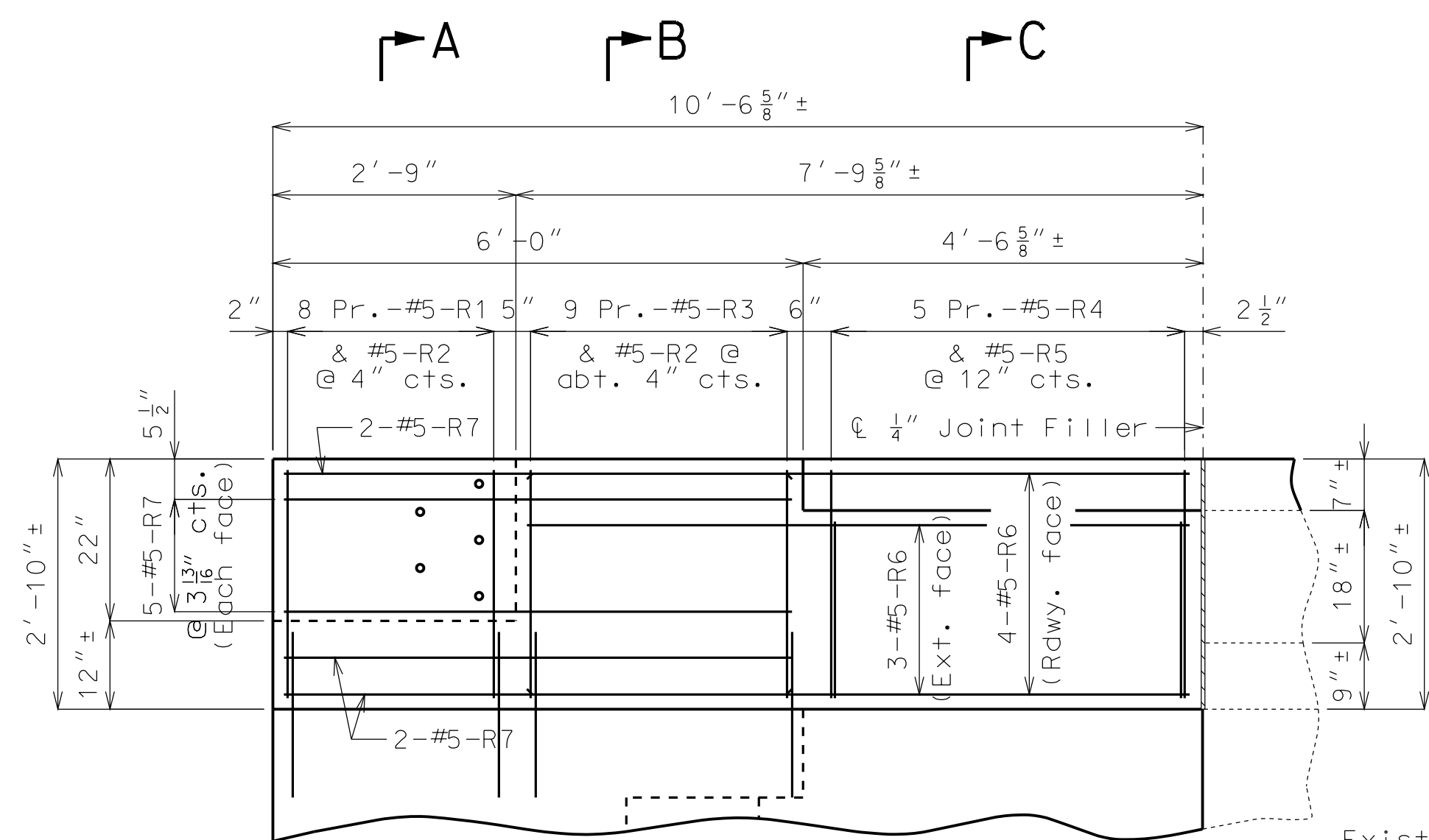
SECTION A-A



PLAN SHOWING LEFT (NW) END POST AT EXISTING END BENT NO. 5

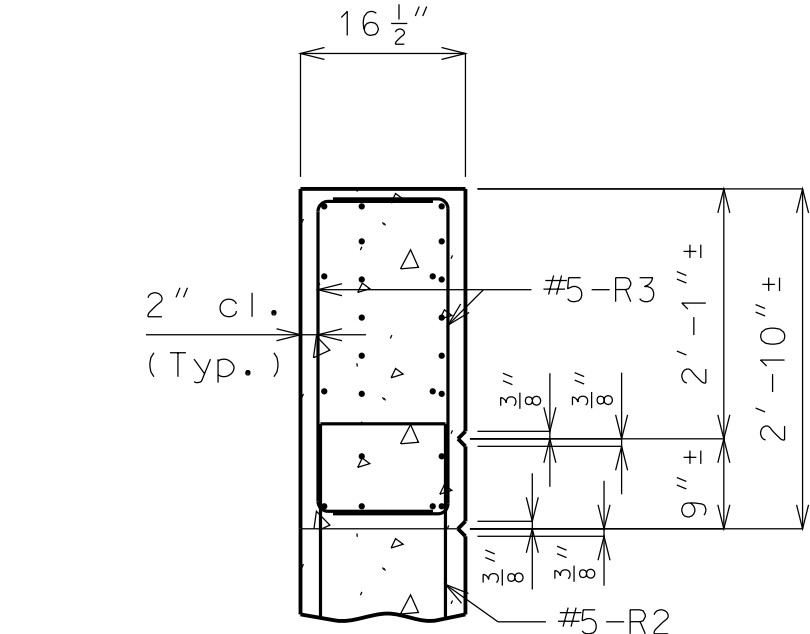


SECTION D-D

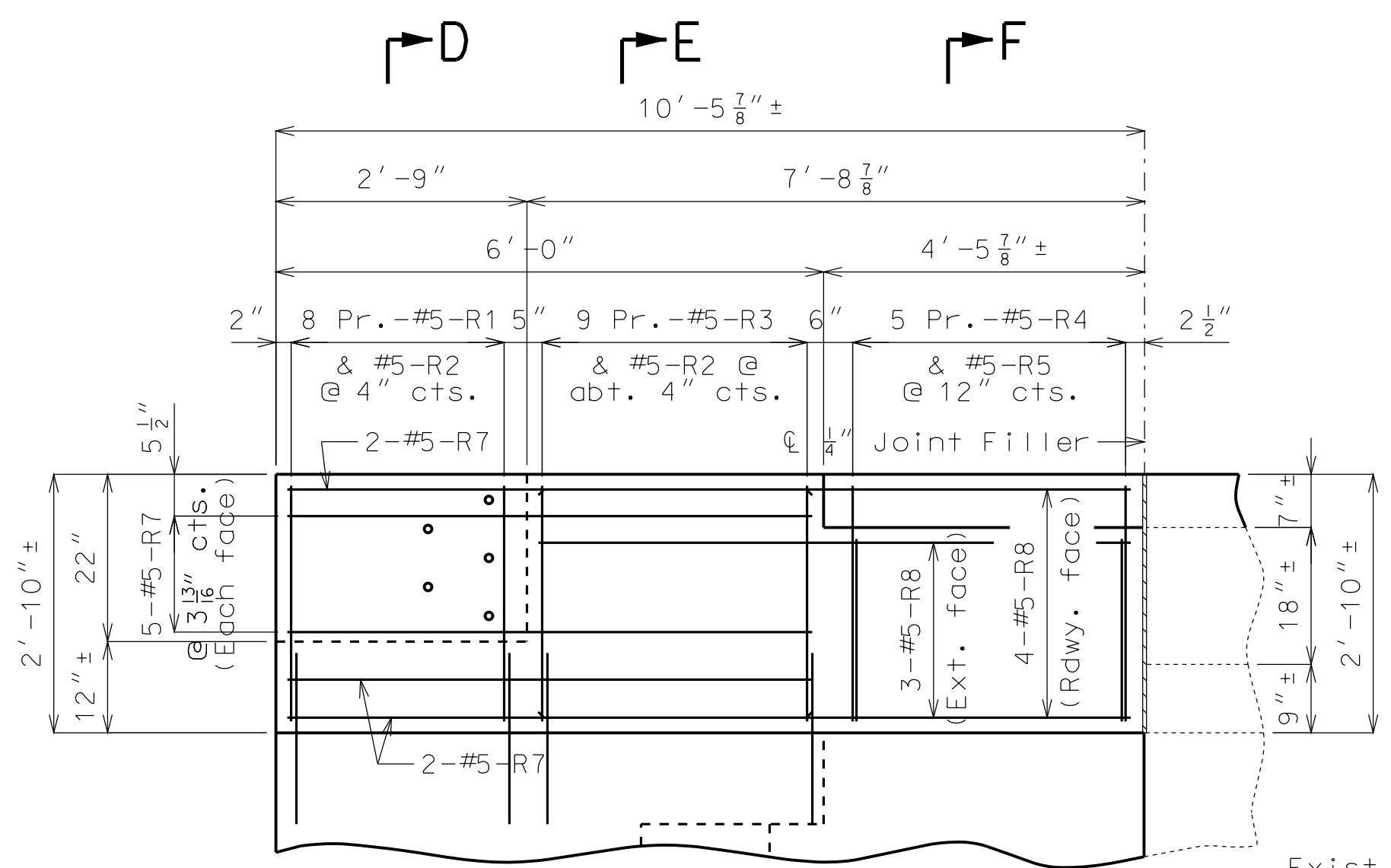


ELEVATION SHOWING RIGHT (SE) END POST AT EXISTING END BENT NO. 1

Note: Bevel not shown for clarity.

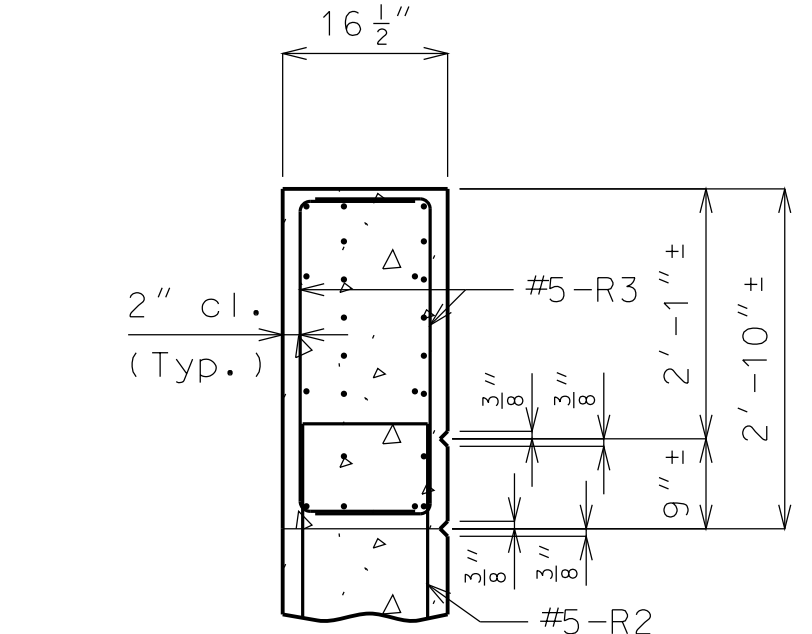


SECTION B-B

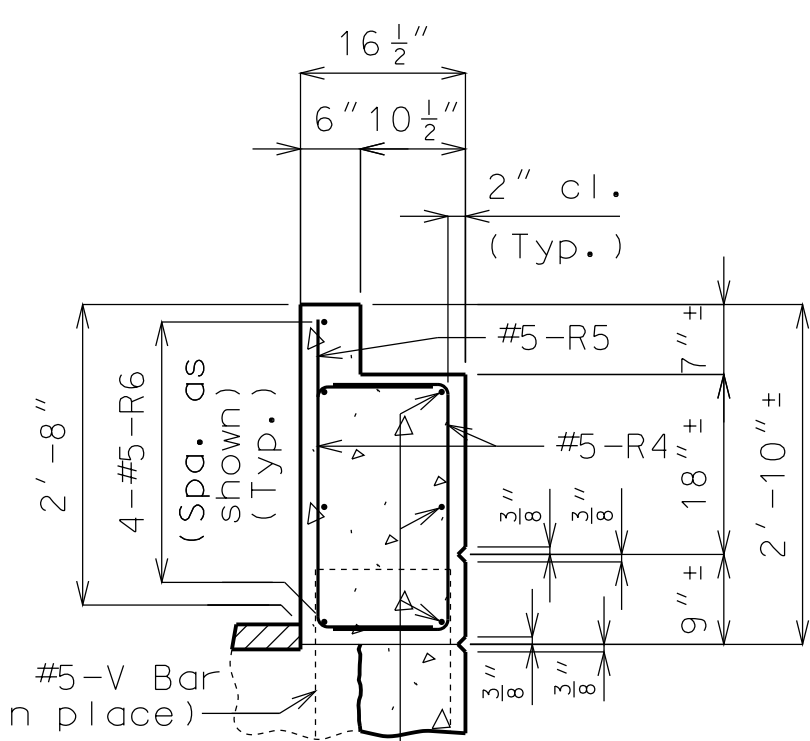


ELEVATION SHOWING LEFT (NW) END POST AT EXISTING END BENT NO. 5

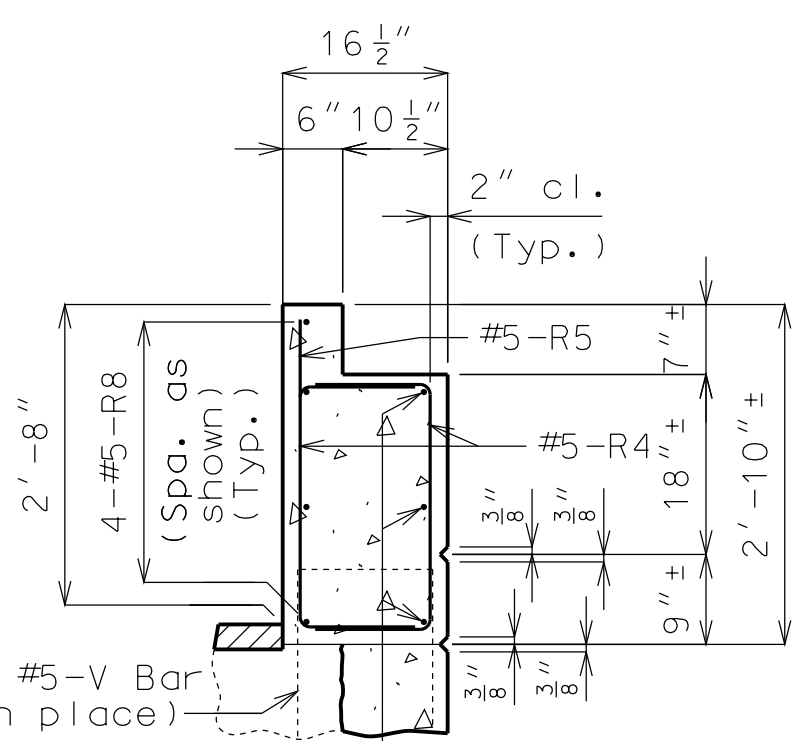
Note: Bevel not shown for clarity.



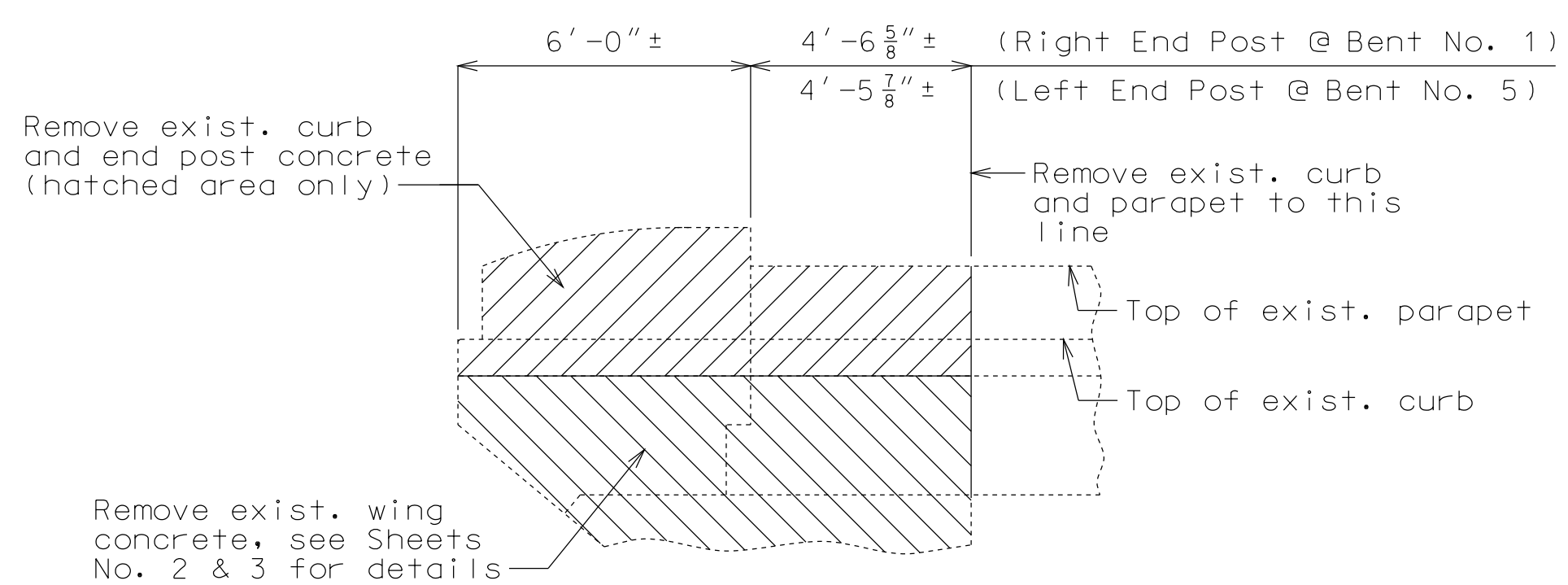
SECTION E-E



SECTION C-C

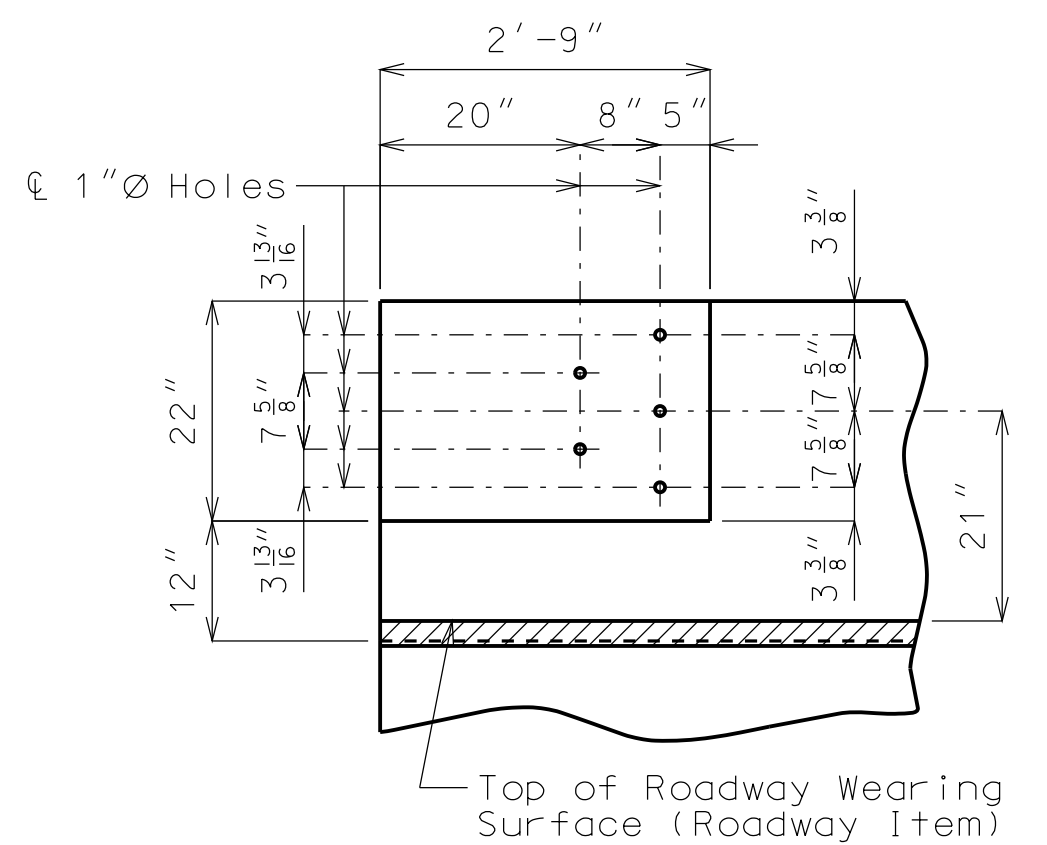


SECTION F-F



PART ELEVATION SHOWING END POST, CURB AND PARAPET CONCRETE REMOVAL

Notes:  
 Cost of removing existing end posts, curb and parapet will be considered completely covered by the contract unit price for Curb Blockout (linear foot).  
 Bridge rail not shown for clarity.  
 Existing tube rails that fall within the area of parapet removal shall be protected from damage.  
 Any damage to tube rails during removal shall be repaired or replaced, at the contractor's expense, as directed by the engineer.  
 Tube rails shall be reattached in removal areas. Cost of reattaching tube rails will be considered completely covered by the contract unit price for Curb Blockout.



DETAILS OF GUARD RAIL ATTACHMENT

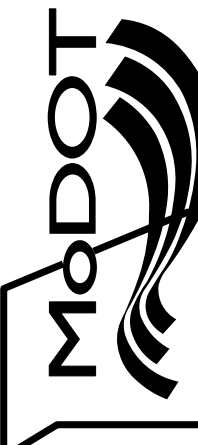
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 6
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A15812	

DESCRIPTION	DATE

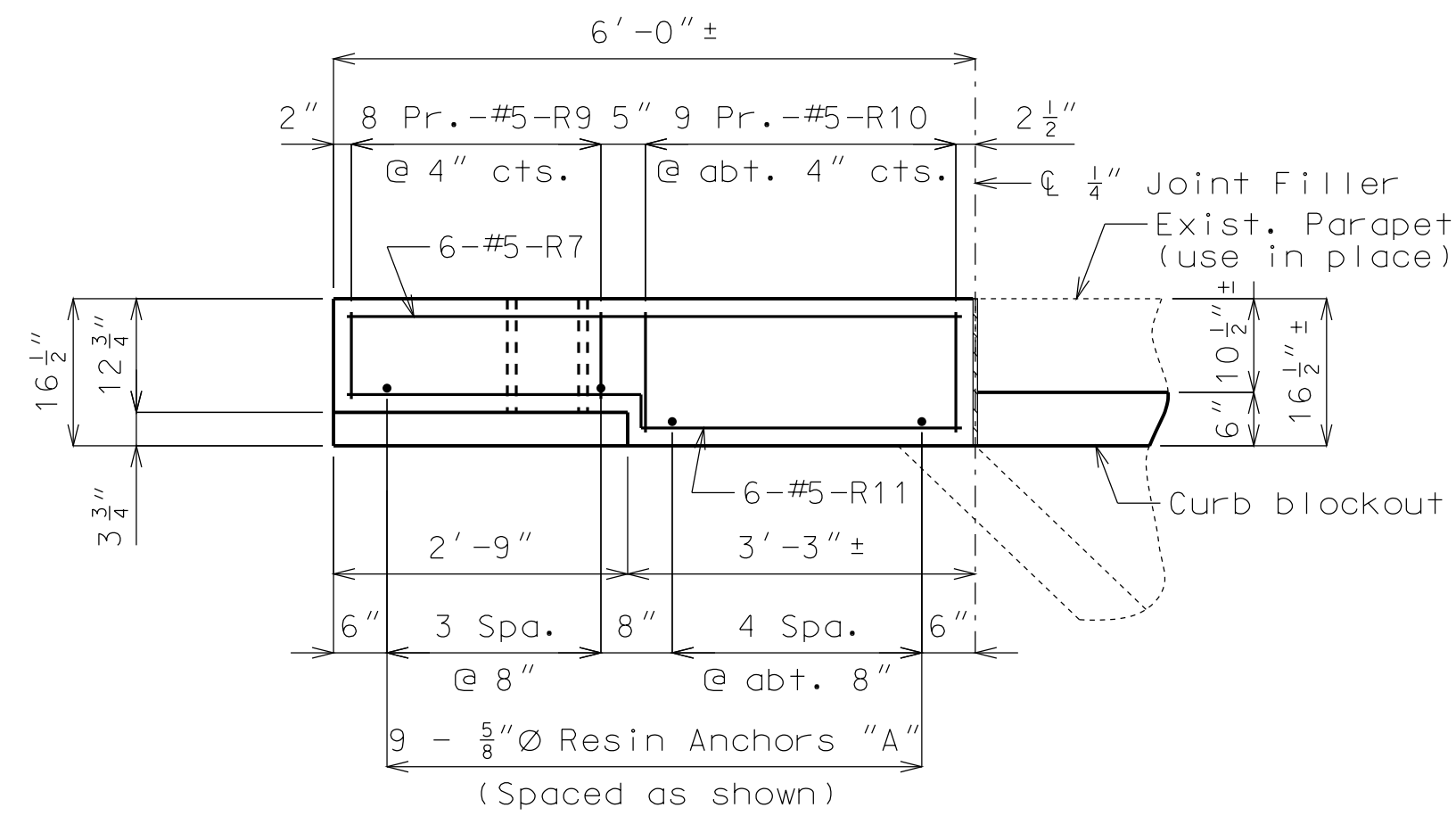
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



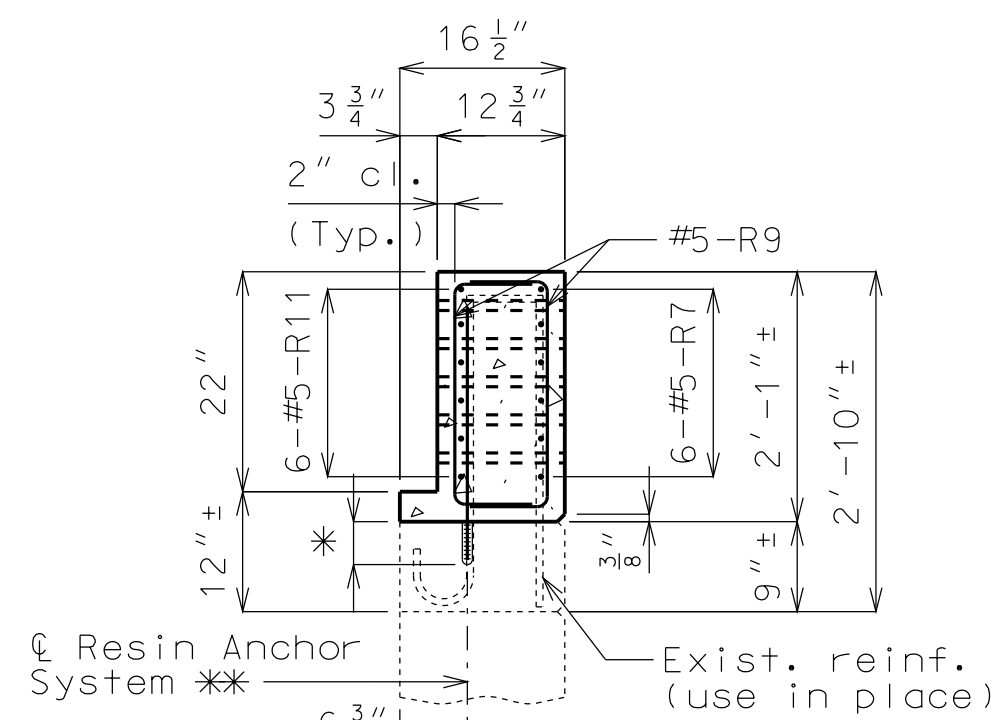
105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

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

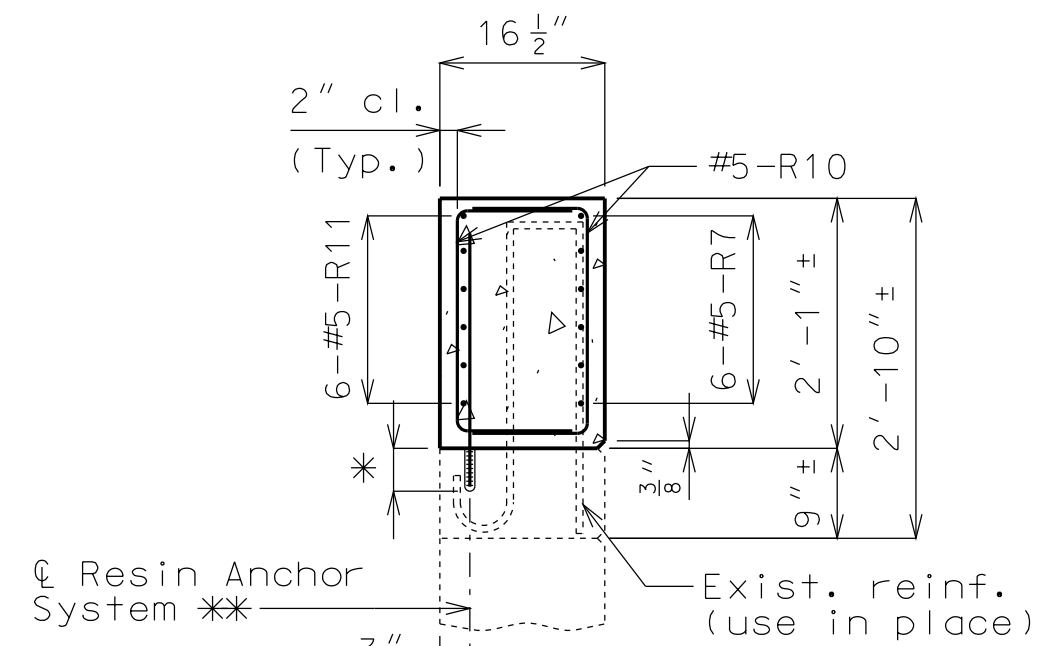


PLAN SHOWING LEFT (SW) END POST AT EXISTING END BENT NO. 1 AND RIGHT (NE) END POST AT EXISTING END BENT NO. 5

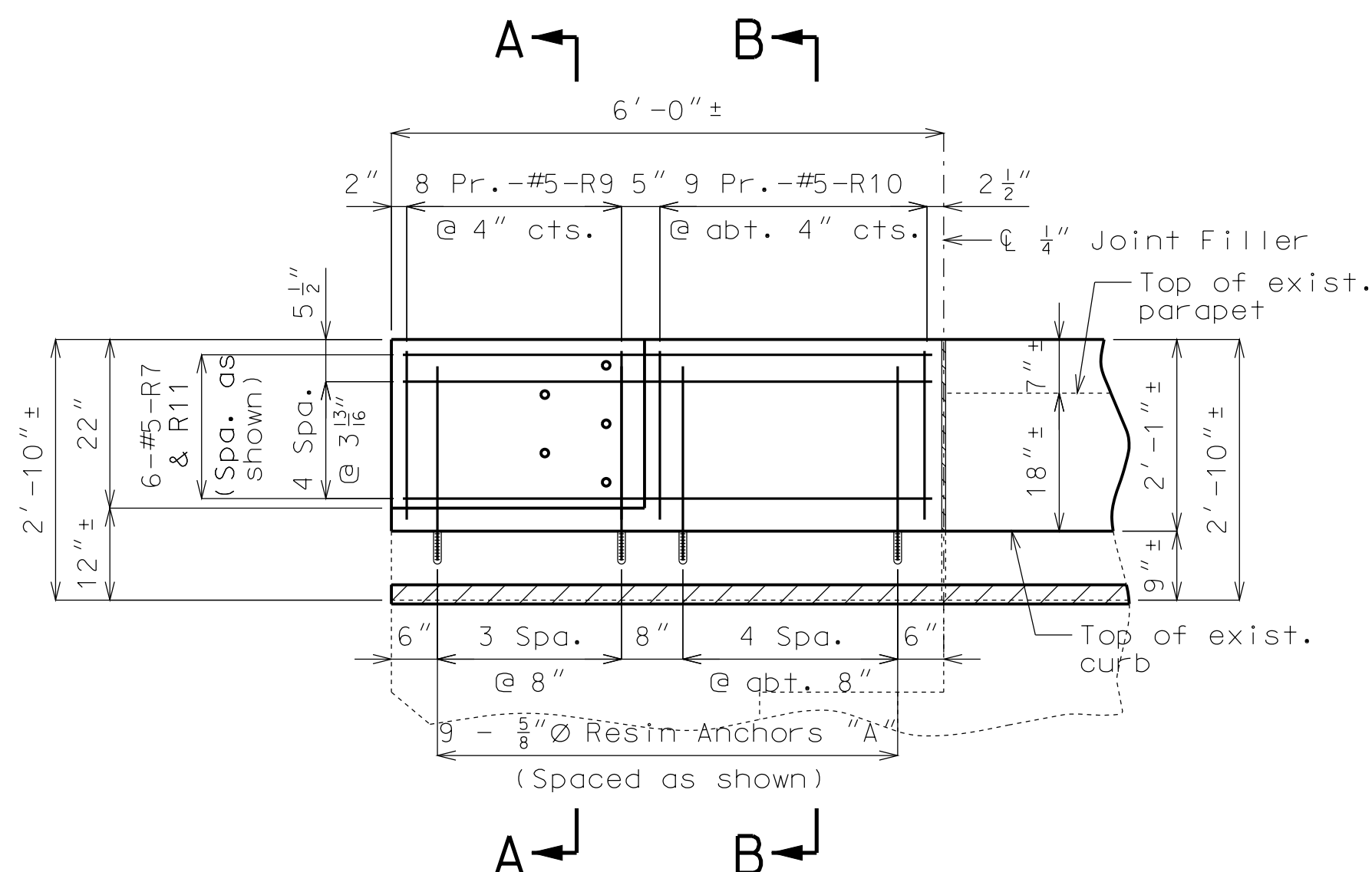
Note: Existing vertical reinforcement, use-in-place, not shown for clarity.



SECTION A-A

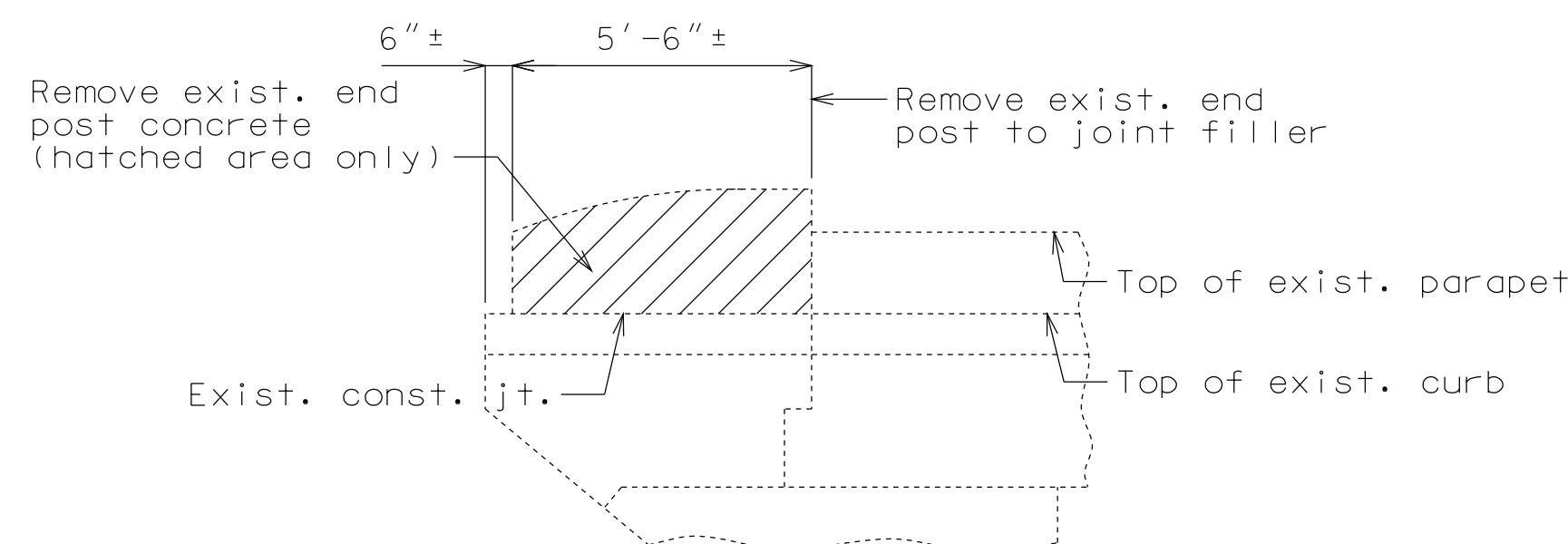


SECTION B-B



ELEVATION SHOWING LEFT (SW) END POST AT EXISTING END BENT NO. 1 AND RIGHT (NE) END POST AT EXISTING END BENT NO. 5

Note: Existing vertical reinforcement, use-in-place, not shown for clarity.



PART ELEVATION SHOWING END POST CONCRETE REMOVAL

(Left end post @ Bent No. 1 & Right end post @ Bent No. 5)

Notes:

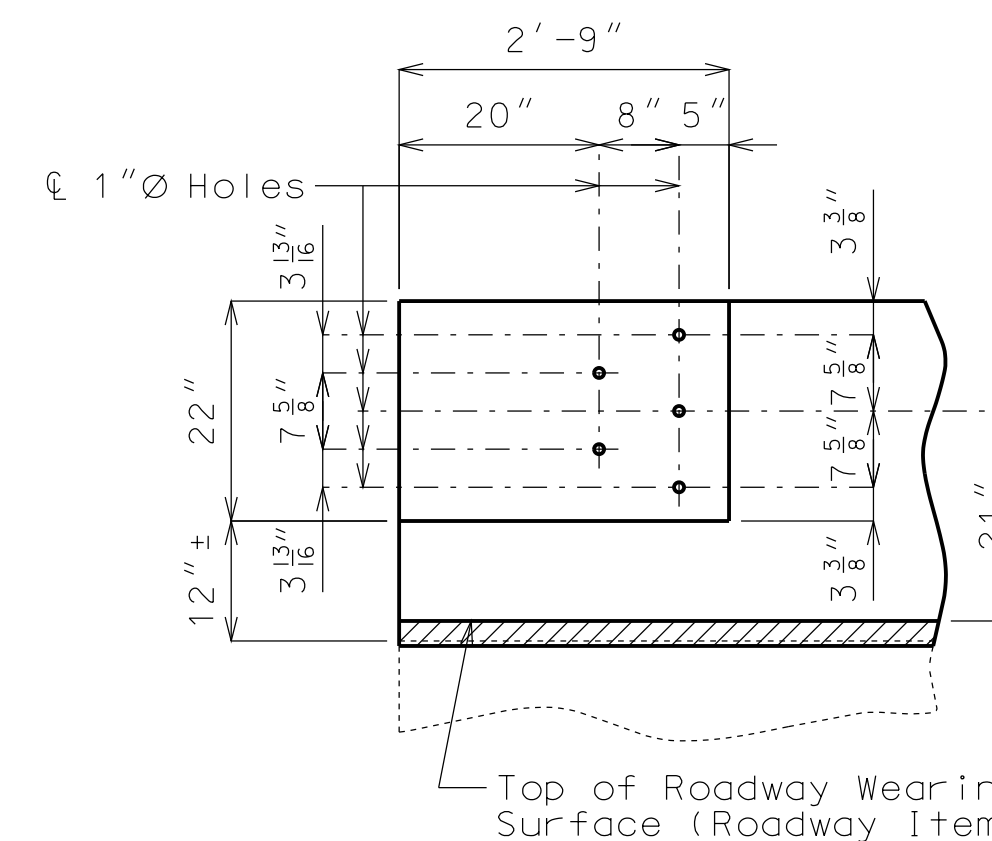
For Details of Resin Anchors, see Sheet No. 4.

\* Manufacturer's recommended embedment length. (5" minimum embedment)

\*\* Shift resin anchors where necessary to clear exist. reinforcement.

Cost of removing existing end posts will be considered completely covered by the contract unit price for Curb Blockout (linear foot).

Bridge rail not shown for clarity.



DETAILS OF GUARD RAIL ATTACHMENT

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/3/2012

ROUTE STATE  
I-435 MO

DISTRICT SHEET NO.  
BR 7

COUNTY  
CLAY

JOB NO.  
J412381

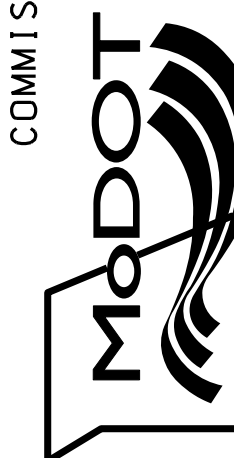
CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A15812

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

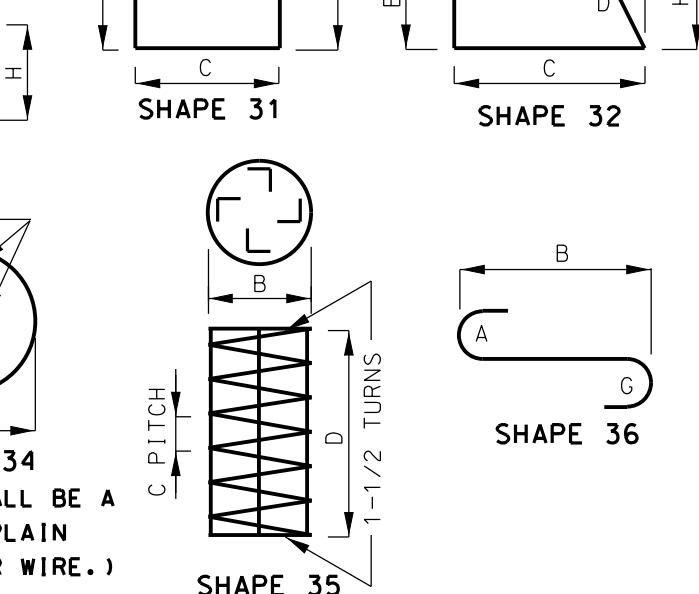
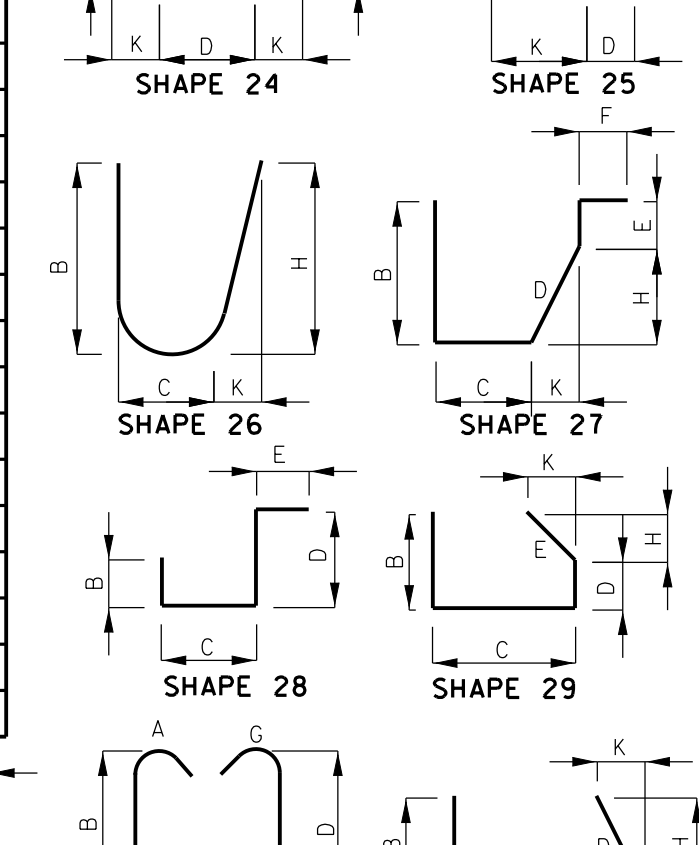
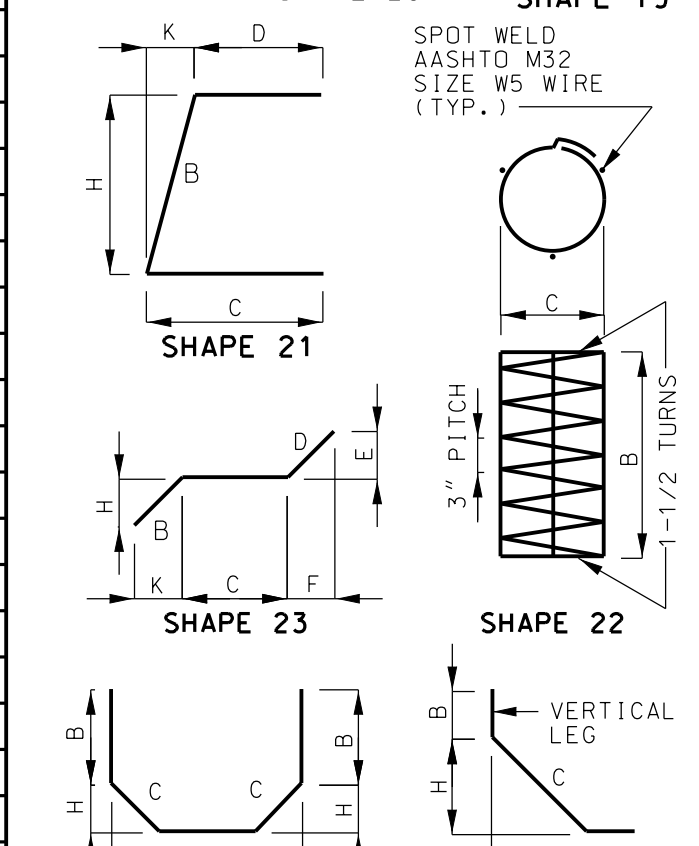
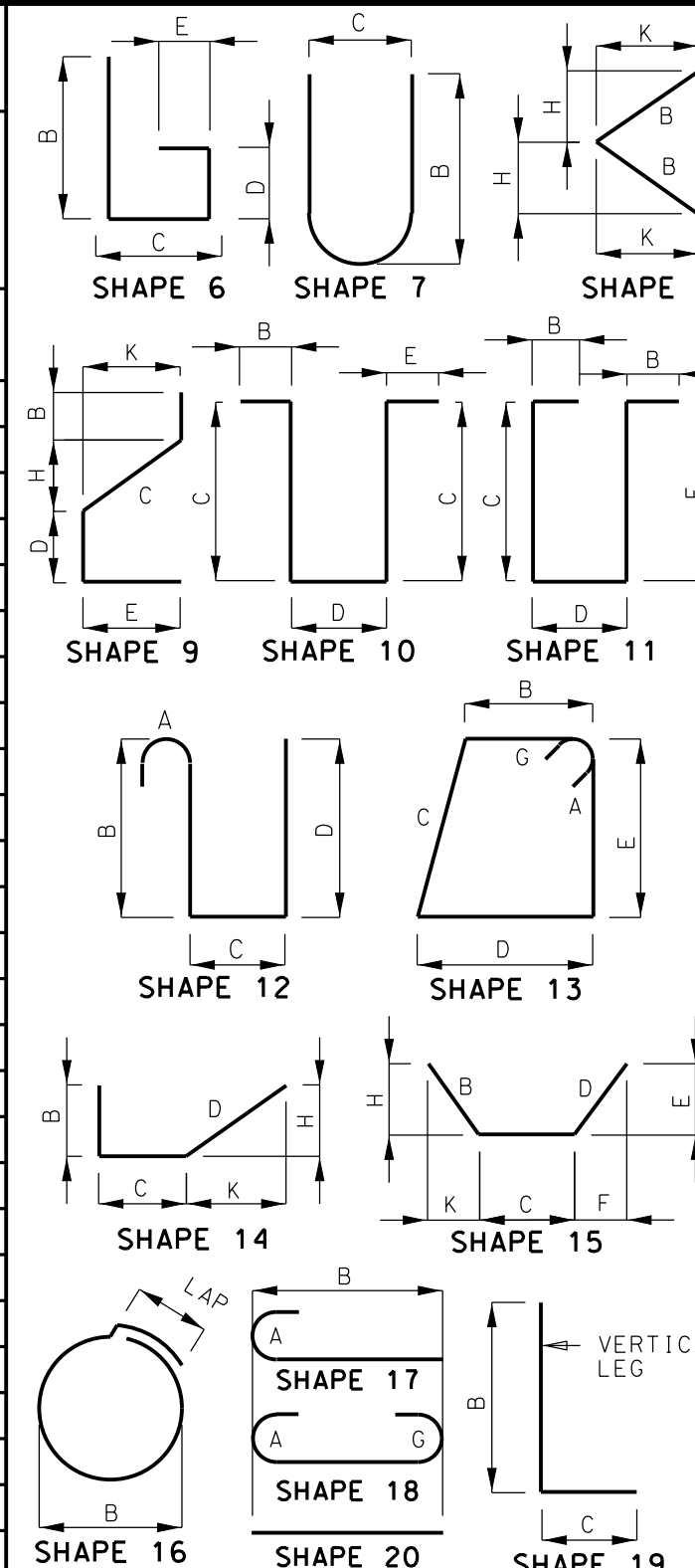
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

BILL OF REINFORCING STEEL

Table with columns: NO. REQ'D., MARK NO., SIZE, MARK, LOCATION, EPOXY (E), SHAPE NO., STIRRUP (S), SUBSTR. (X), VARIES (V), NO. EACH, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Rows include various bar shapes like WING, V1, V2, R1-R20, and BLOCKOUT.

BILL OF REINFORCING STEEL

Table with columns: NO. REQ'D., MARK NO., SIZE, MARK, LOCATION, EPOXY (E), SHAPE NO., STIRRUP (S), SUBSTR. (X), VARIES (V), NO. EACH, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Rows include bars 5 through 8, and a TOTAL summary row.



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/3/2012

ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 8

COUNTY CLAY

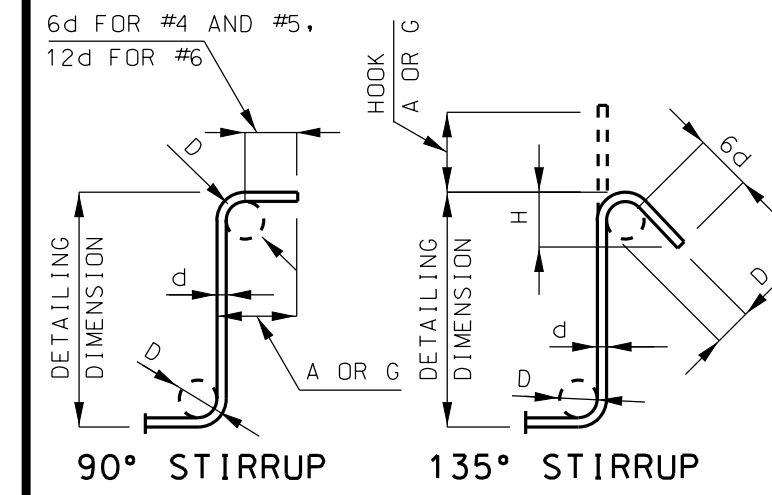
JOB NO. J412381

CONTRACT ID.

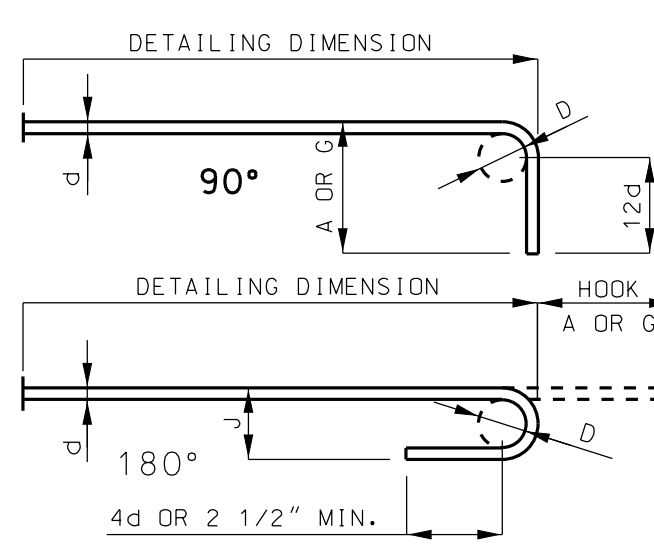
PROJECT NO.

BRIDGE NO. A15812

Table with columns: NO., DESCRIPTION, DATE. Contains project details.

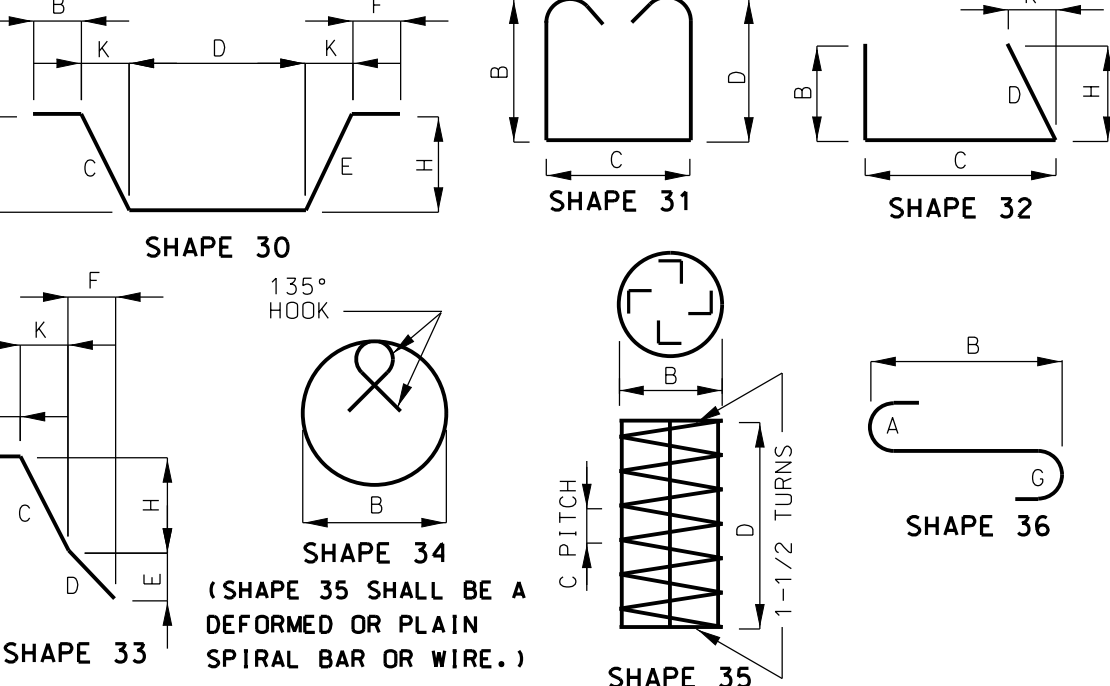


STIRRUP HOOK DIMENSIONS table for Grades 40-50-60 KSI, listing bar size, D (in.), 90° hook, and 135° hook dimensions.



END HOOK DIMENSIONS table for ALL GRADES, listing bar size, D (in.), and hook dimensions for 180 and 90 degree hooks.

NOTE: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.



Detailed Aug. 2012 Checked Aug. 2012

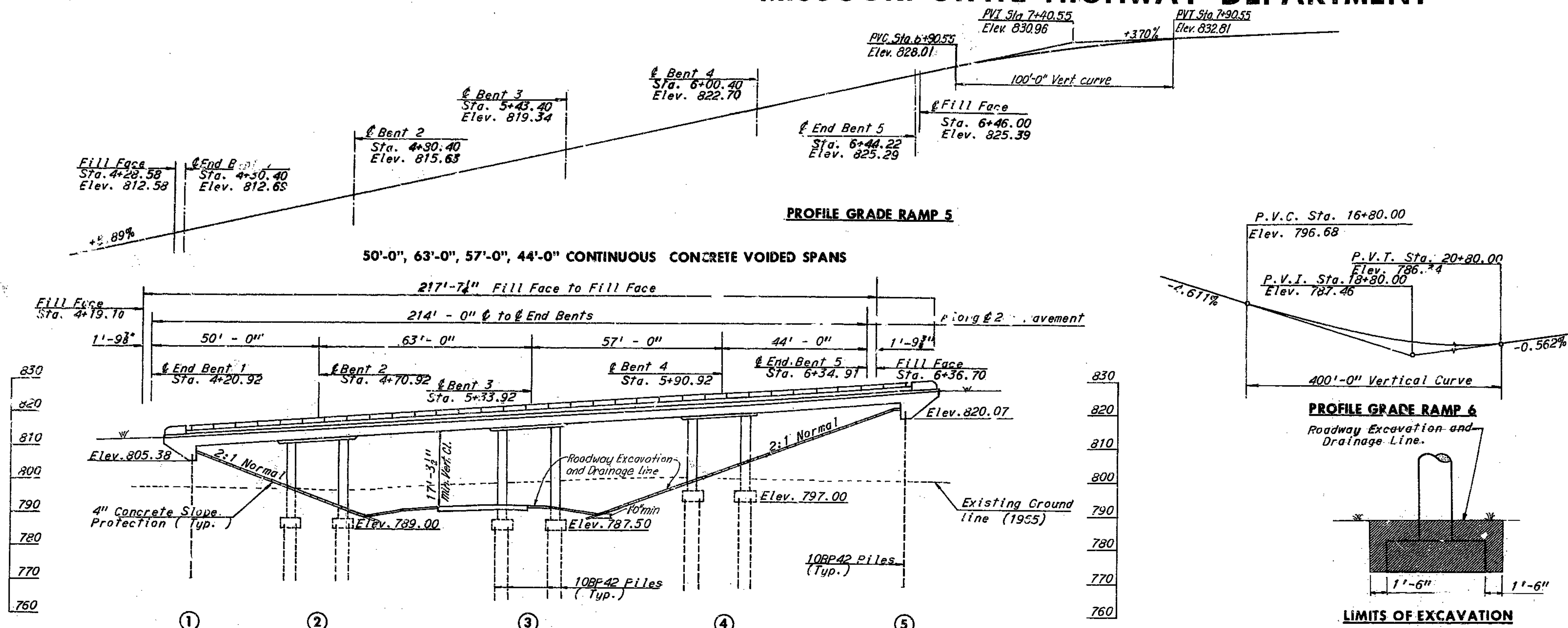
Note: This drawing is not to scale. Follow dimensions.

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



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			41	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



**GENERAL NOTES**

Design Specifications: AASHO 1965.

Design Loading: H20-44 with 15#/sq. ft. future wearing surface. Earth 120#/cu. ft. Equivalent fluid pressure 30#/ft.

Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incident Structures - 1961.

Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 1,200$  psi.  
 Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
 Reinforcing Steel  $f_s = 20,000$  psi.  
 Steel pile (A.S.T.M A36-66).  $f_b = 9,000$  psi.

Reinforcing Steel: All splices in reinforcing bars shall be 24 bar diameters. Bar sizes are designated on the plan by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.

Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.

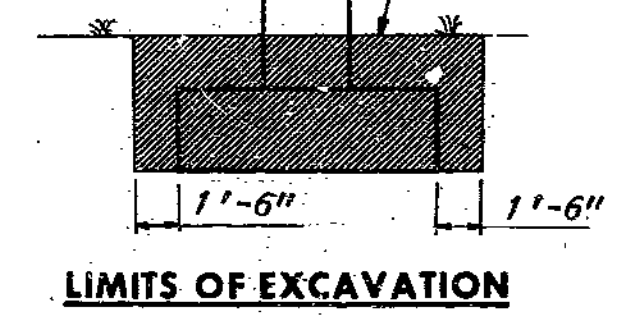
All reinforcing bar bending dimensions are "out to out".

Sealing of Deck: Superstructure deck to be surface sealed.

Utilities: All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor will notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.

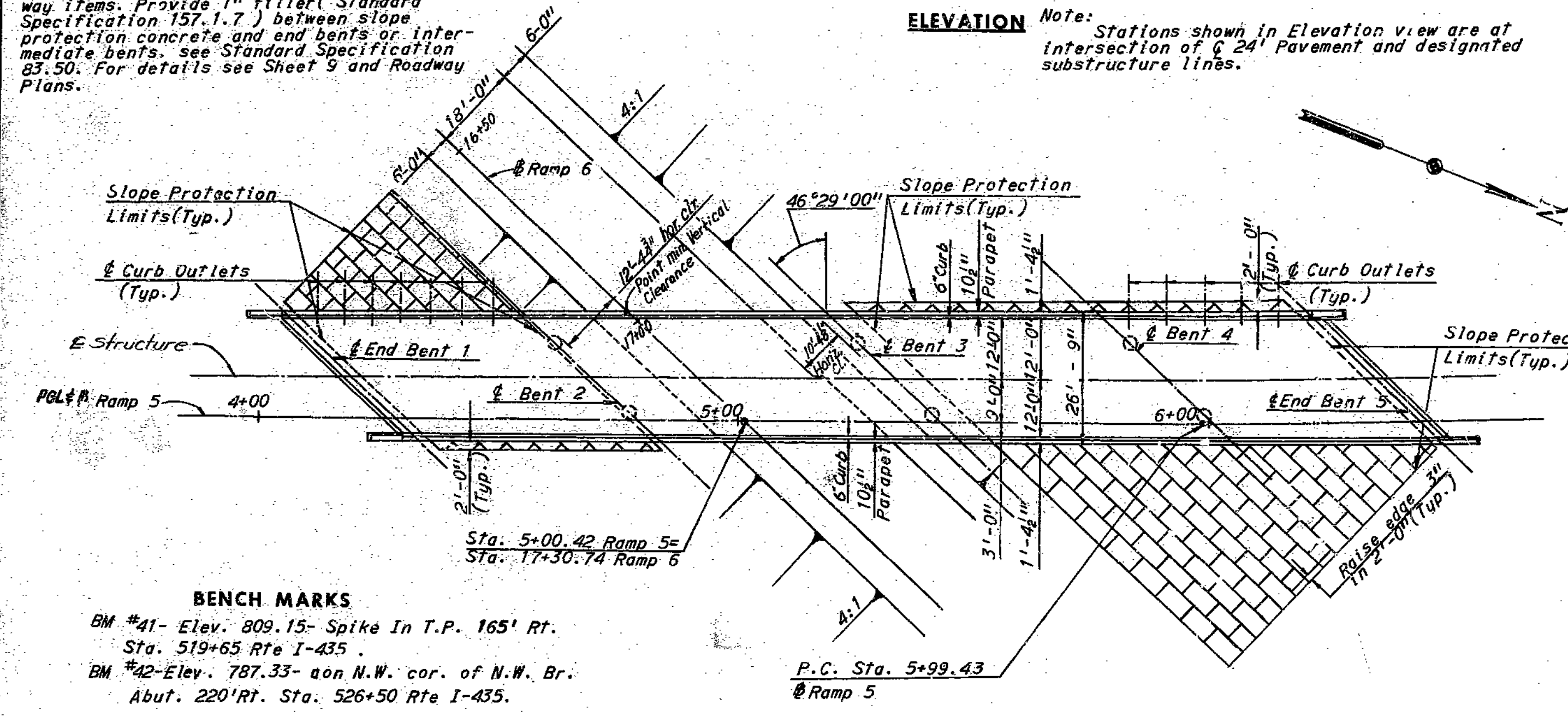
Welding: See Standard Specification 55.3.13 for qualification of welding operators.

Fill: Compacted roadway fill (full roadway width) shall be placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bents 1 and 5 before steel piles are driven.



Note: Concrete slope protection on slopes at end bents is to be included under roadway items. Provide 1" filler (Standard Specification 157.1.7) between slope protection concrete and end bents or intermediate bents. See Standard Specification 83.50. For details see Sheet 9 and Roadway Plans.

**ELEVATION** Note: Stations shown in Elevation view are at intersection of 24" Pavement and designated substructure lines.



**BENCH MARKS**

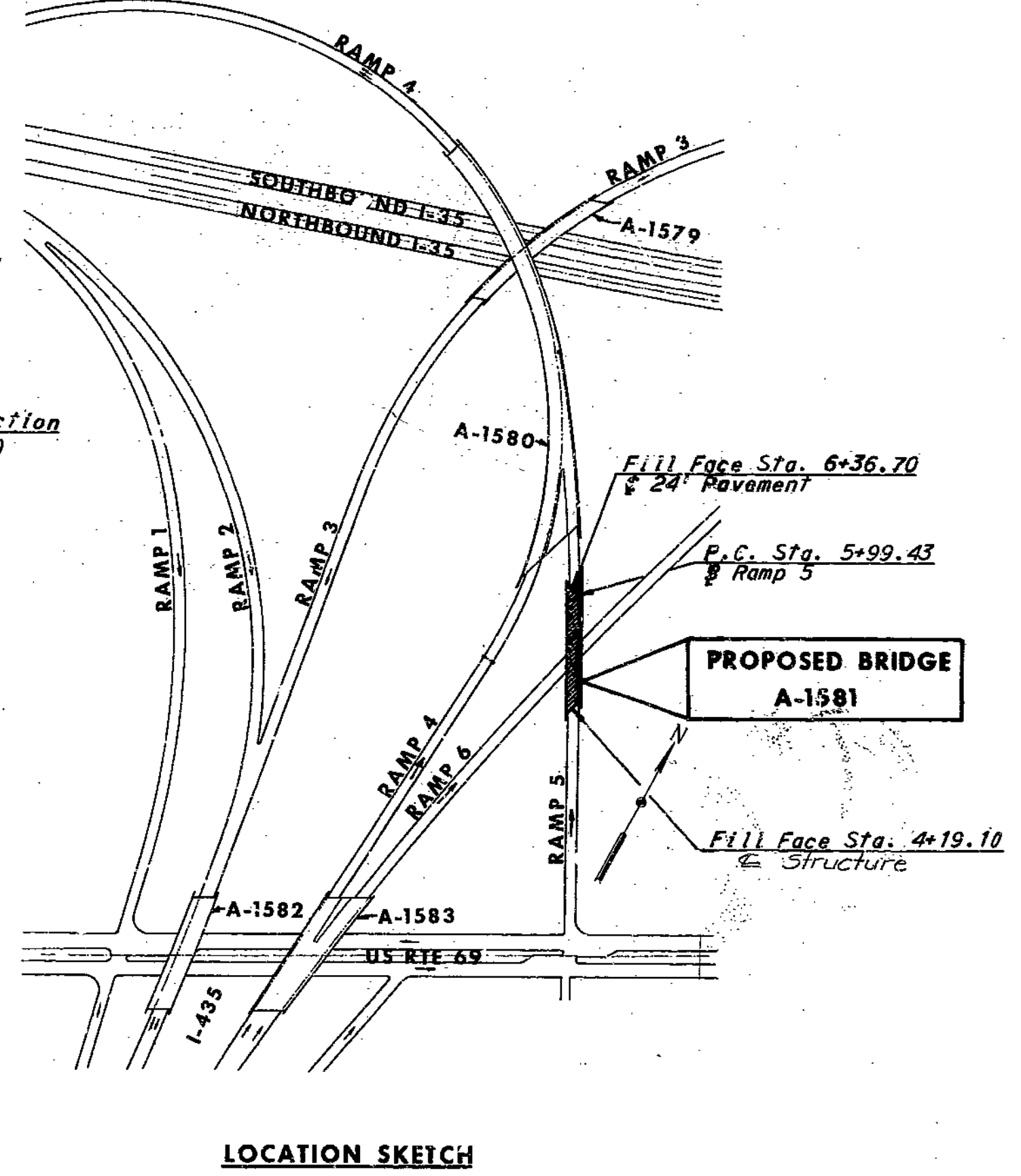
BM #41 - Elev. 809.15 - Spike in T.P. 165' Rt. Sta. 519+65 Rte I-435.

BM #42 - Elev. 787.33 - on N.W. cor. of N.W. Br. Abut. 220' Rt. Sta. 526+50 Rte I-435.

**CURVE DATA**

Ramp 5	Ramp 6
PI Sta. 8+04.90	PI Sta. 11+95.41
$\Delta = 10^{\circ}14'43''$	$\Delta = 17^{\circ}31'16''$
$D = 2^{\circ}30'$	$D = 1^{\circ}30'$
$T = 205.49'$	$T = 882.96'$
$L = 409.32'$	$L = 1752.12'$
$R = 2292.01'$	$R = 5729.65'$

Note: For length and number of Piles, see Pile Data Table sheet 2. For Boring locations see sheet 2. All dimensions are horizontal and vertical unless otherwise specified. All Bents are parallel.



**TOTAL ESTIMATED QUANTITIES**

ITEM	UNIT	SUBSTR.	SUPRSTR.	TOTAL
Class 1 Excavation for Structures	Cu.Yd.	75		75
Steel Piles in Place (10BP42)	Lin.Ft.	973		973
Class B Concrete	Cu.Yd.	24.0		24.0
Class B1 Concrete	Cu.Yd.		425.7	425.7
Reinforcing Steel	Lbs.	1,110	131,770	132,880
Bridge Rail (Single Tube Type)	Lin.Ft.		434	434

Quantity Notes:  
 No payment for excavation will be made for End Bents 1 and 5.  
 All excavation for bridge will be paid for as Class 1 Excavation for Structures. Sketch shows excavation for pay purposes.  
 All concrete except interior Bent footings is included in Class B1 Concrete.  
 All reinforcing except that in the interior Bent footings is included in superstructure reinforcing.

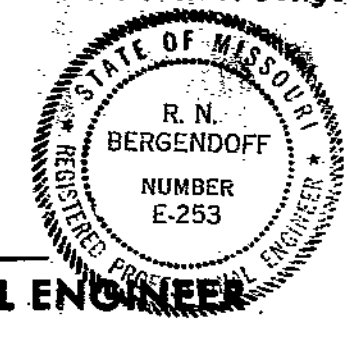
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE GSH DATE 4-30-68 CHECKED JFD DATE 5-15-68

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

GENERAL PLAN AND ELEVATION SHEET 1 OF 9

SUBMITTED BY: R. N. Bergendoff  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-253



BRIDGE: RAMP 5 OVER RAMP 6  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435)  
 CLAY COUNTY

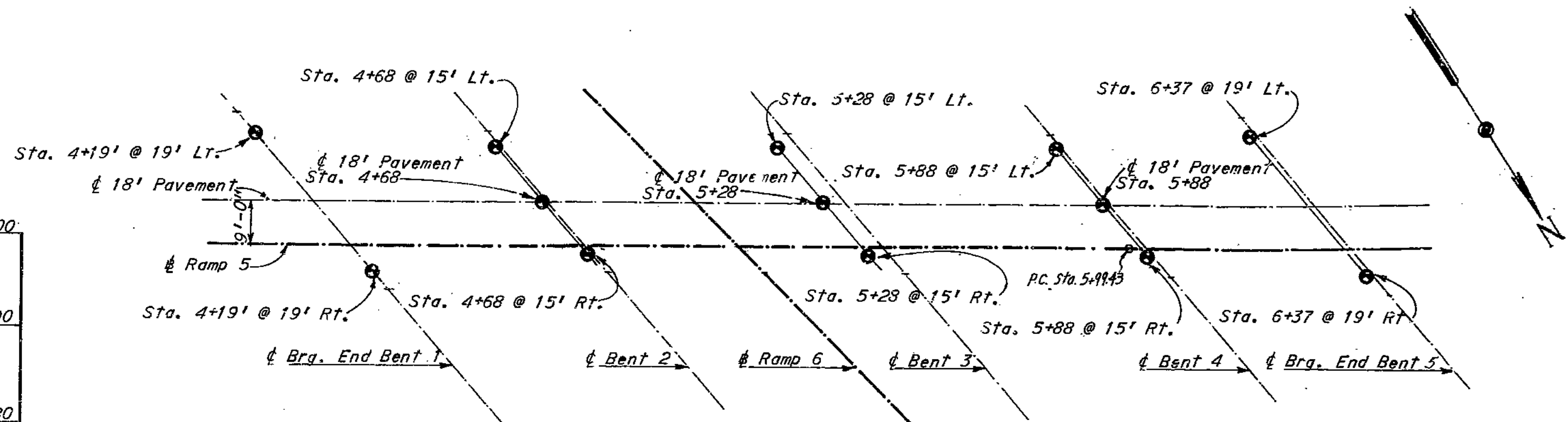
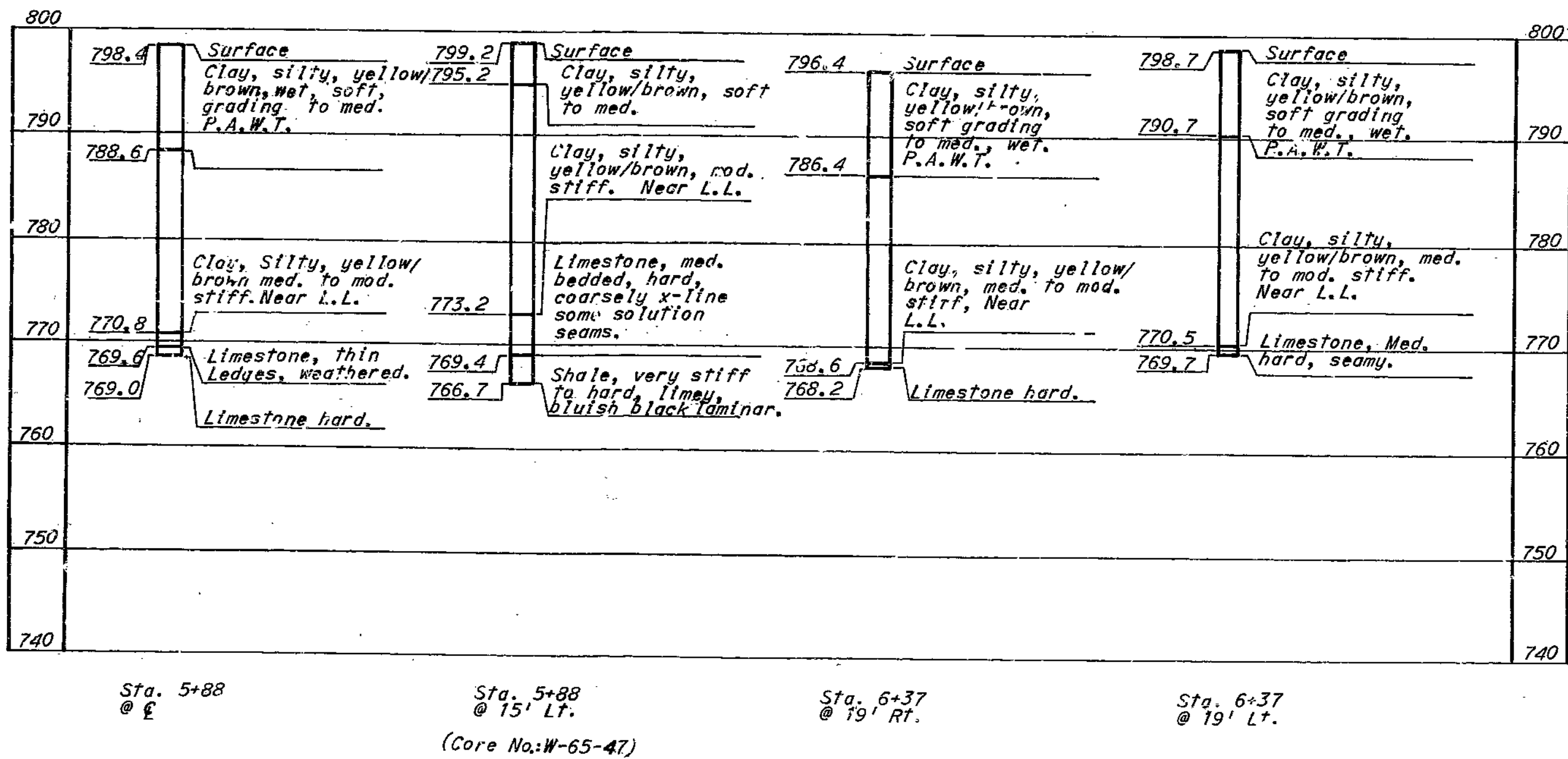
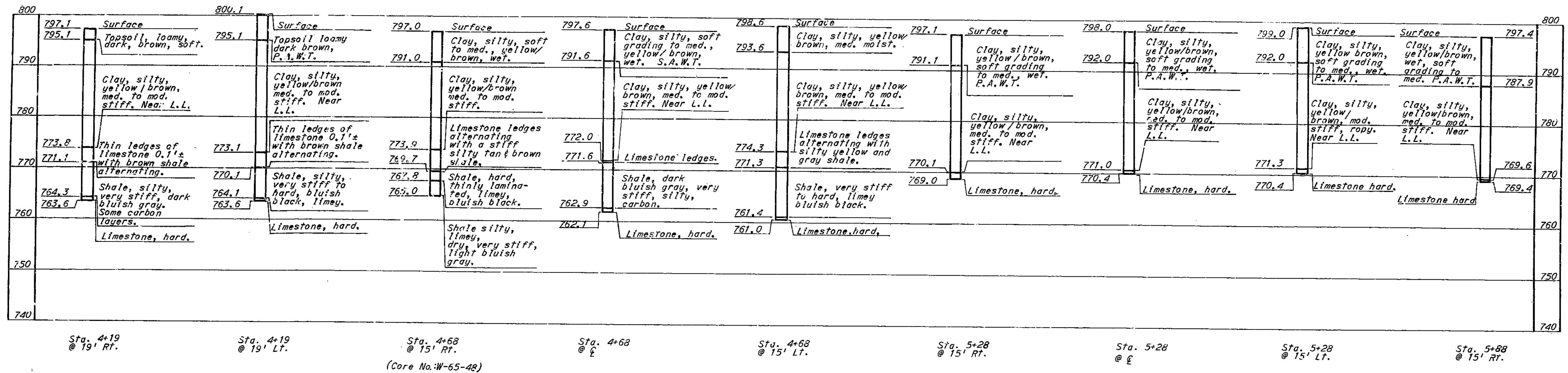
SUBMITTED BY: DATE 12-23-68  
 APPROVED BY: DATE 12-23-68

STA. 4+19.10  
 STD. 54.00  
 A-1581

SEE FINAL PLANS BROWN LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			42	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



Note: Distances left and right are measured from  $\phi$  18" Pavement, along skew. 2 1/2" D.T.C.B. used on all cored borings. All borings augered unless otherwise shown. Borings dated April 1965.

BENT NO.	PILE DATA				
	1	2	3	4	5
Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42
Number	5	8	8	8	5
Approximate Length (Ft.)	37	17	22	27	52
Design Bearing (Tons.)	36	49	50	50	36
Hammer Energy required*(Ft. Lbs.)	8,000	11,000	11,200	11,200	8,000

\* Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor  $(W+w)/2w$  when the weight of the ram (W) is less than the weight of pile (w). All piles shall be driven to practical refusal.

**BRIDGE: RAMP 5 OVER RAMP 6**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
 CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE G.S.H. DATE 5-17-68 CHECKED AUC DATE 5-18-68

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

BORINGS SHEET 2 OF 9

A-1581

213  
2106-21-02-581

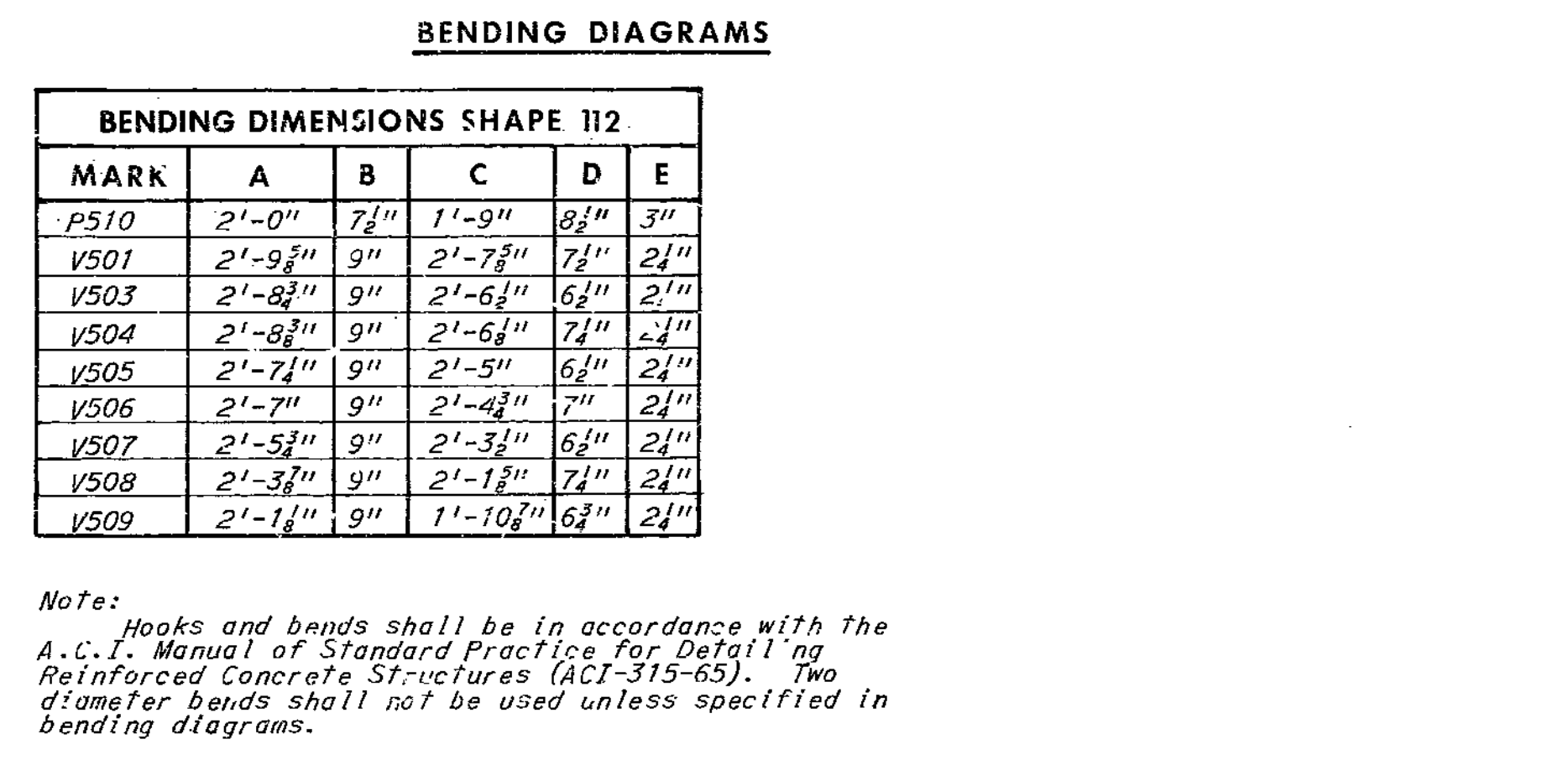
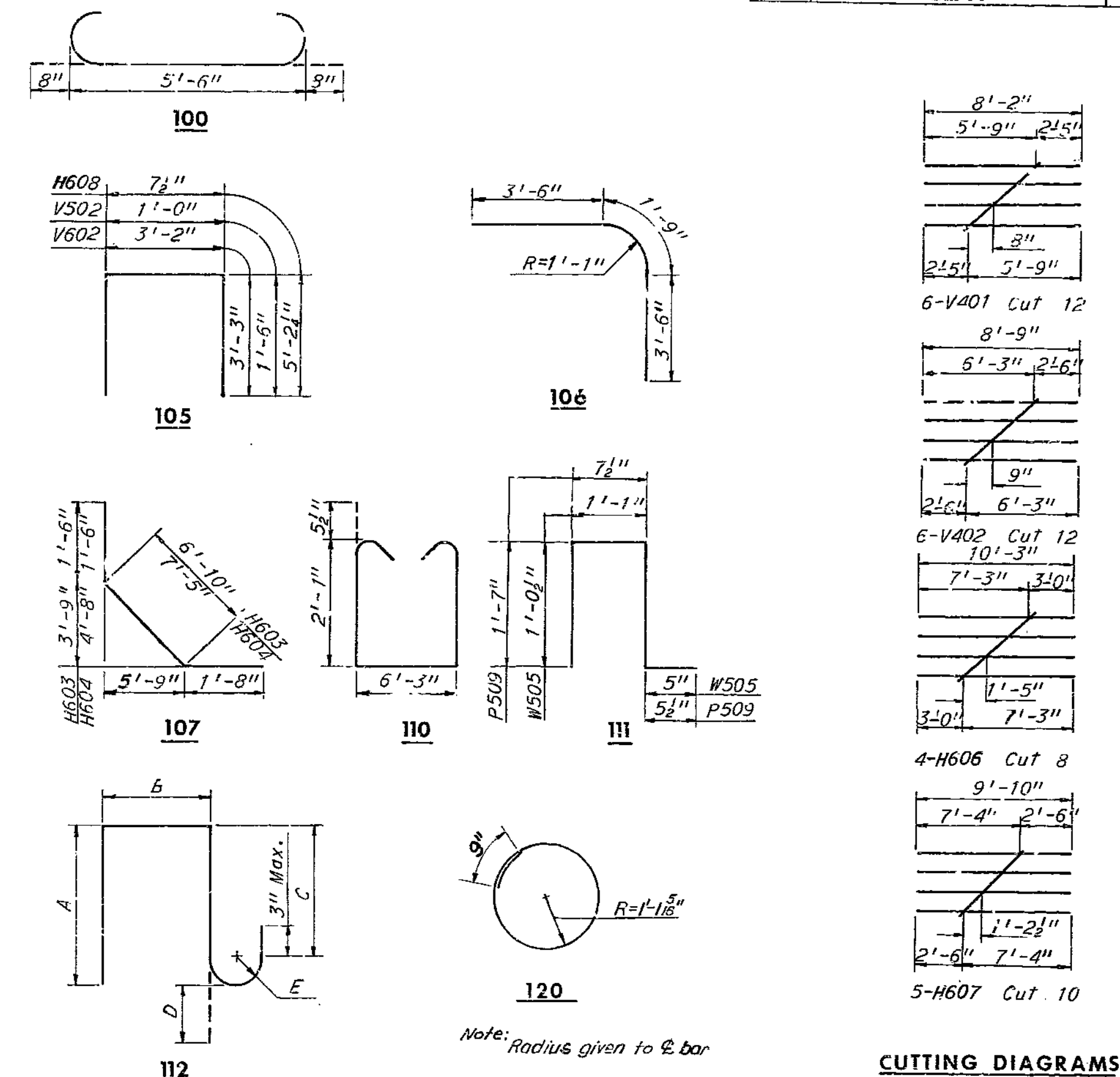
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			43	
DIST. NO.	COUNTY	ROUTE	SIC		
4	CLAY				

BILL OF REINFORCEMENT				
NO.	MARK	LENGTH	SHAPE	LOCATION
<b>SUBSTRUCTURE</b>				
Bent 2				
20	F501	3'-11"	Str.	Footing
28	F601	6'-10"	100	Footing
Bent 3				
20	F501	3'-11"	Str.	Footing
28	F601	6'-10"	100	Footing
Bent 4				
20	F501	3'-11"	Str.	Footing
28	F601	6'-10"	100	Footing
<b>SUPERSTRUCTURE</b>				
SLAB				
422	S501	38'-6"	Str.	Slab Trans.
32	S502	38'-3"	Str.	Slab Trans.
34	S503	37'-9"	Str.	Slab Trans.
32	S601	37'-1"	Str.	Slab Long.
32	S602	37'-0"	Str.	Slab Long.
32	S603	32'-0"	Str.	Slab Long.
32	S604	34'-1"	Str.	Slab Long.
93	S801	11'-0"	Str.	Slab Long.
62	S802	10'-0"	Str.	Slab Long.
109	S803	12'-0"	Str.	Slab Long.
27	S804	29'-0"	Str.	Slab Long.
27	S805	24'-0"	Str.	Slab Long.
52	S806	7'-0"	Str.	Slab Long.
27	S807	42'-0"	Str.	Slab Long.
26	S808	8'-0"	Str.	Slab Long.
27	S809	18'-0"	Str.	Slab Long.
27	S810	38'-7"	Str.	Slab Long.
32	S1001	26'-0"	Str.	Slab Long.
26	S1002	33'-7"	Str.	Slab Long.
26	S1003	28'-0"	Str.	Slab Long.
32	S1101	31'-0"	Str.	Slab Long.
31	S1102	22'-0"	Str.	Slab Long.
62	S1103	20'-0"	Str.	Slab Long.
32	S1104	29'-0"	Str.	Slab Long.
27	S1105	38'-7"	Str.	Slab Long.
27	S1106	39'-0"	Str.	Slab Long.
26	S1107	31'-0"	Str.	Slab Long.
26	S1108	33'-7"	Str.	Slab Long.
<b>CURB AND PARAPET</b>				
16	P501	23'-5"	Str.	Parapet
16	P502	5'-8"	Str.	Parapet
16	P503	7'-8"	Str.	Parapet
16	P504	24'-0"	Str.	Parapet
16	P505	6'-8"	Str.	Parapet
16	P506	22'-0"	Str.	Parapet
8	P507	20'-7"	Str.	Parapet
8	P508	20'-3"	Str.	Parapet
11	P509	4'-3"	111	Parapet
460	P510	5'-4"	112	Parapet

BILL OF REINFORCEMENT				
NO.	MARK	LENGTH	SHAPE	LOCATION
<b>SUPERSTRUCTURE</b>				
BENT 4				
4	W501	26'-6"	Str.	Curb
8	W502	32'-0"	Str.	Curb
8	W503	29'-0"	Str.	Curb
4	W504	23'-5"	Str.	Curb
460	W505	3'-7"	111	Curb
END BENT 1				
4	H501	5'-3"	Str.	End Post
8	H502	11'-0"	105	End Post
12	H601	38'-0"	Str.	End Bent
4	H603	10'-0"	107	Wingwall
8	H605	14'-0"	Str.	Wingwall
8	H606	10'-3"	Series	Wingwall
4	H609	5'-8"	Str.	Wingwall
12	V401	8'-2"	Series	Wingwall
6(2)	V501	7'-0"	112	End Post
14	V502	4'-0"	105	Wingwall
2	V503	6'-9"	112	End Post
2	V504	6'-9"	112	End Post
2	V505	6'-6"	112	End Post
2	V506	6'-6"	112	End Post
6	V507	6'-3"	112	End Post
2	V508	6'-0"	112	End Post
2	V509	5'-6"	112	End Post
39	V601	5'-3"	Str.	End Bent
80	V602	9'-8"	105	End Bent
39	V603	8'-9"	106	End Bent
BENT 2				
72	B501	11'-4"	110	Cap Beam
4	B1101	38'-6"	Str.	Cap Beam
8	B1102	16'-0"	Str.	Cap Beam
8	B1103	14'-0"	Str.	Cap Beam
4	B1104	18'-10"	Str.	Cap Beam
8	B1105	38'-0"	Str.	Cap Beam
41	C301	7'-9"	120	Column
BENT 3				
72	B501	11'-4"	110	Cap Beam
4	B1101	38'-6"	Str.	Cap Beam
8	B1102	16'-0"	Str.	Cap Beam
8	B1103	14'-0"	Str.	Cap Beam
4	B1104	18'-10"	Str.	Cap Beam
8	B1105	38'-0"	Str.	Cap Beam
52	C301	7'-9"	120	Column
10	C903	27'-9"	Str.	Column
10	C904	28'-4"	Str.	Column

BILL OF REINFORCEMENT				
NO.	MARK	LENGTH	SHAPE	LOCATION
<b>SUPERSTRUCTURE</b>				
BENT 4				
70	B501	11'-4"	110	Cap Beam
4	B1101	38'-6"	Str.	Cap Beam
8	B1102	16'-0"	Str.	Cap Beam
8	B1103	14'-0"	Str.	Cap Beam
4	B1104	18'-10"	Str.	Cap Beam
8	B1105	38'-0"	Str.	Cap Beam
39	C301	7'-9"	120	Column
10	C905	21'-2"	Str.	Column
10	C906	22'-5"	Str.	Column
END BENT 5				
4	H501	5'-3"	Str.	End Post
8	H502	11'-0"	105	End Post
12	H602	37'-3"	Str.	End Bent
4	H604	10'-7"	107	Wingwall
8	H605	14'-0"	Str.	Wingwall
10	H607	9'-10"	Series	Wingwall
4	H609	5'-8"	Str.	Wingwall
12	V402	8'-9"	Series	Wingwall
6(2)	V501	7'-0"	112	End Post
14	V502	4'-0"	105	Wingwall
2	V503	6'-9"	112	End Post
2	V504	6'-9"	112	End Post
2	V505	6'-6"	112	End Post
2	V506	6'-6"	112	End Post
6	V507	6'-3"	112	End Post
2	V508	6'-0"	112	End Post
2	V509	5'-6"	112	End Post
38	V601	5'-3"	Str.	End Bent
80	V602	9'-8"	105	End Bent
38	V603	8'-9"	106	End Bent



**BRIDGE: RAMP 5 OVER RAMP 6**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
 CLAY COUNTY

214

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE GSH DATE 5-25-68 CHECKED HLC DATE 5-28-68

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
MO			44
DIST. NO.	COUNTY	ROUTE	SEC.
4	CLAY		

**TABLE OF ELEVATION AND DIMENSIONS**

ELEV.	END BENT 1		END BENT 5	
	EAST WW	WEST WW	EAST WW	WEST WW
ELEV. G	813.19	811.37	826.72	824.91
ELEV. H	807.36	805.38	820.10	818.18
DIM. I	4'-14"	4'-2 5/8"	4'-10 3/4"	4'-11 3/8"

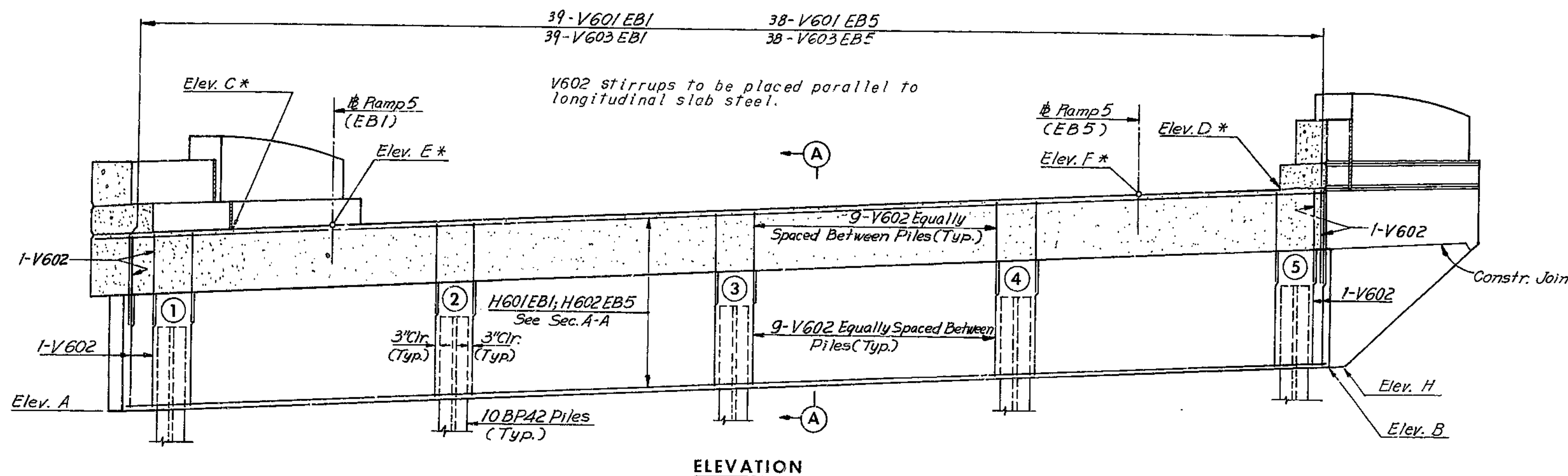
**TABLE OF PILE CUT-OFF ELEVATIONS**

PILE NO.	EB1	EB5
	1	809.83
2	809.33	821.12
3	808.84	821.57
4	808.34	822.02
5	807.84	822.47

**TABLE OF ELEVATIONS**

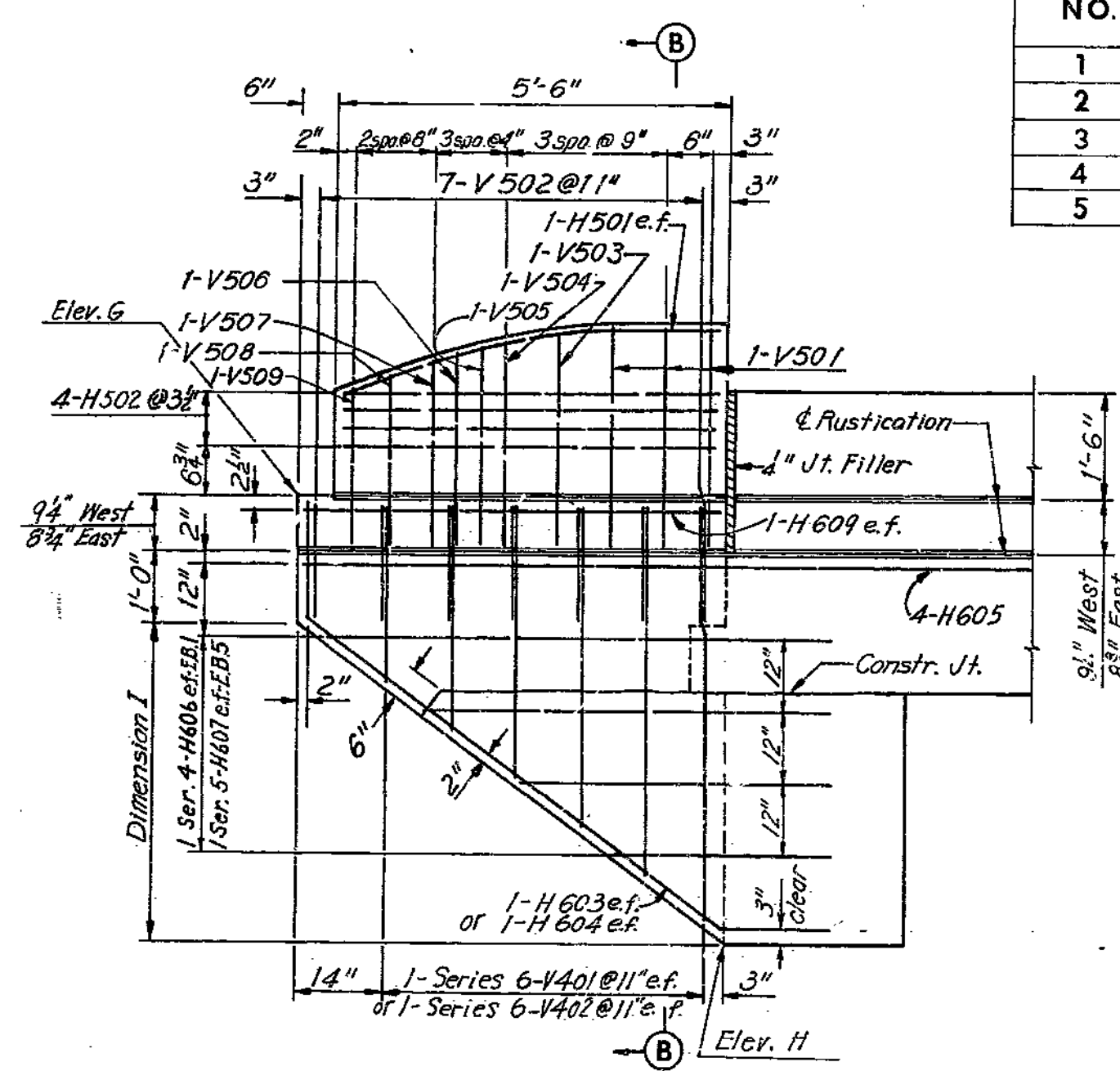
ELEV.	EB1	EB5
A	807.51	818.01
B	805.95	820.06
C*	812.81	823.79
D*	810.95	825.62
E*	812.58	
F*		825.39

\* Elevations denoted with an (\*) are given at fill face of End Bent.



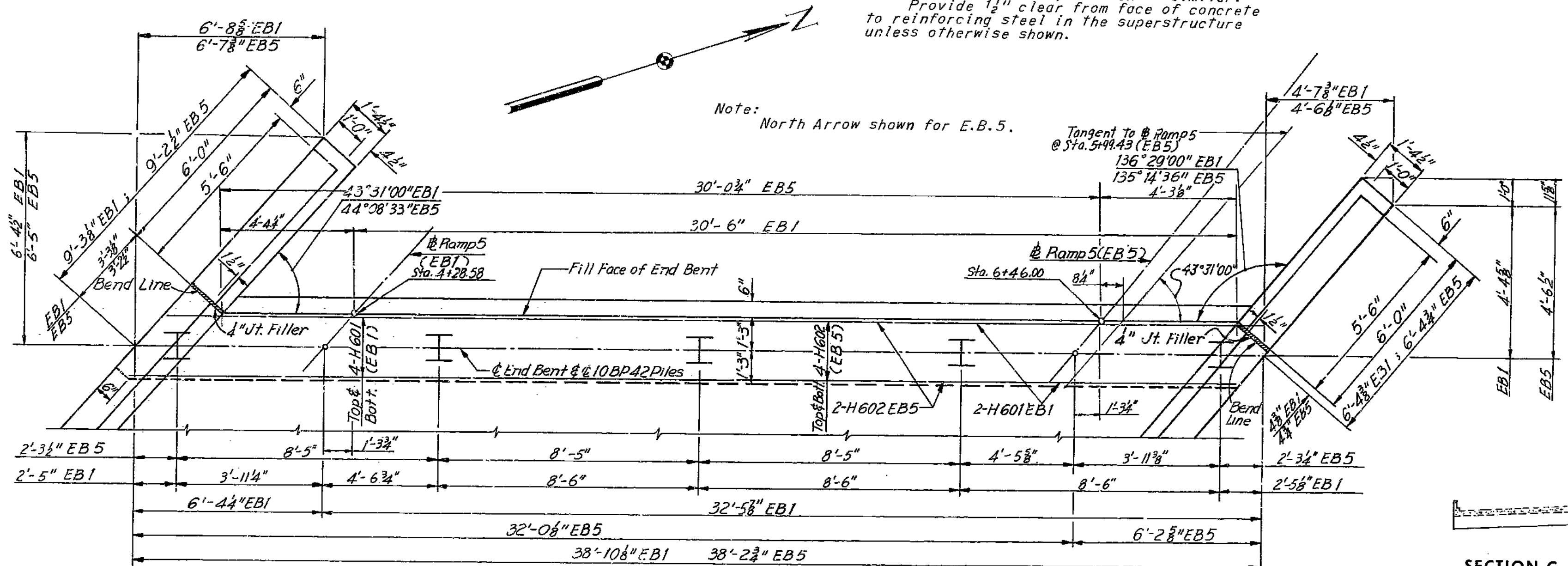
ELEVATION

Note: End Bent 5 shown, End Bent 1 similar. Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure unless otherwise shown.



WINGWALL ELEVATION

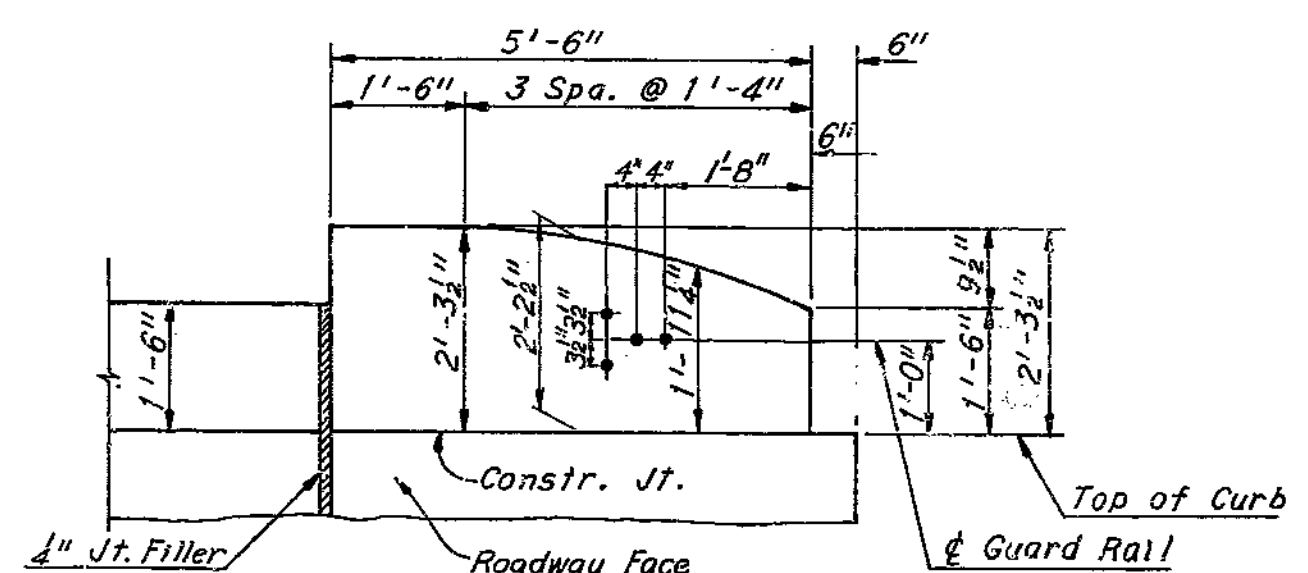
GUARD RAIL ATTACHMENT: 1" round holes through post for 3/8" H.S. Bolts (Galvanized).



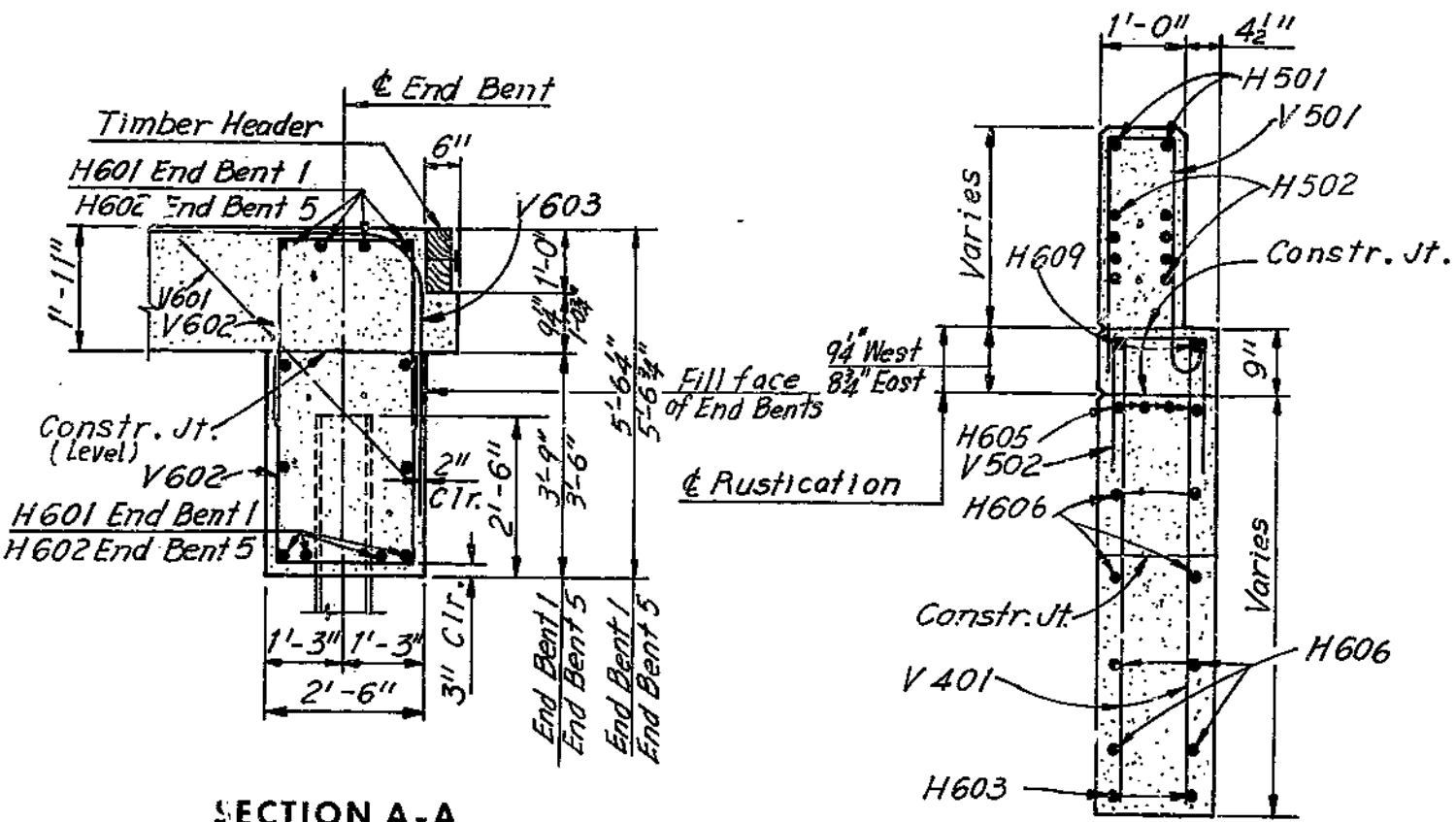
PLAN

Legend: e.f. = Each Face, E.B. = End Bent, W.W. = Wingwall

Note: For Substructure Layout, see Sheet 5. For Rustication Details, see Sheet 6. Concrete End Posts are vertical. Dimensions to surface receiving joint filler are to face of concrete. For Timber Header Details, see Sheet 9. All piles are 10B42 piles, no batter.



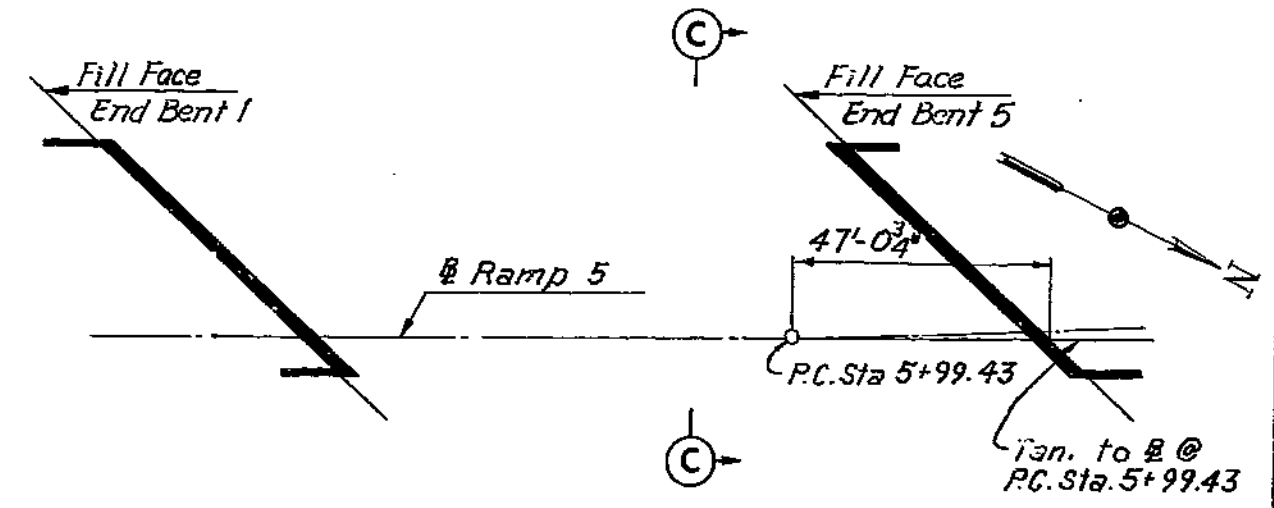
CONCRETE END POST ORDINATES



SECTION A-A

SECTION B-B

(Shown for End Bent 1 Wingwalls End Bent 5 Wingwalls Similar)



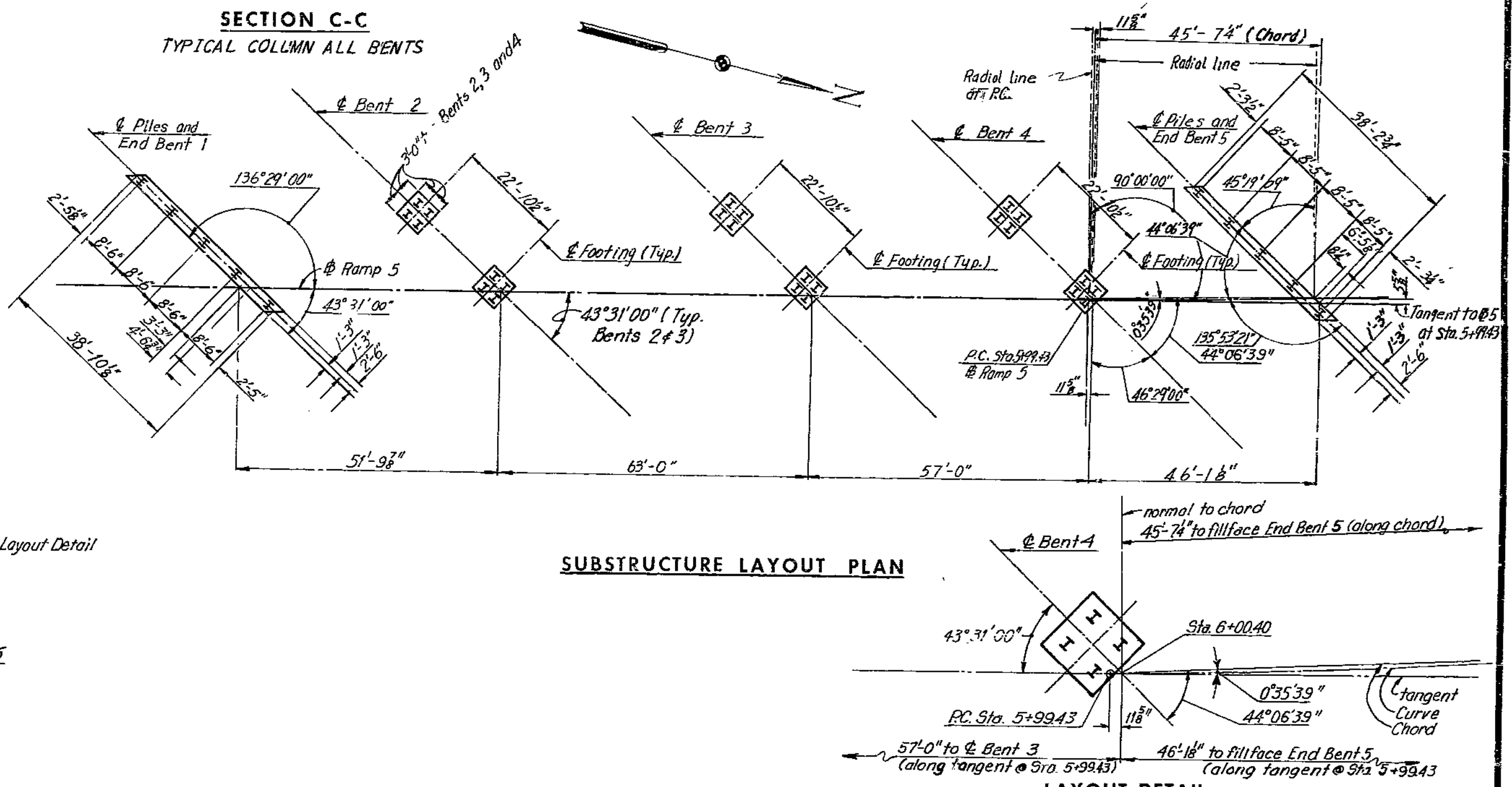
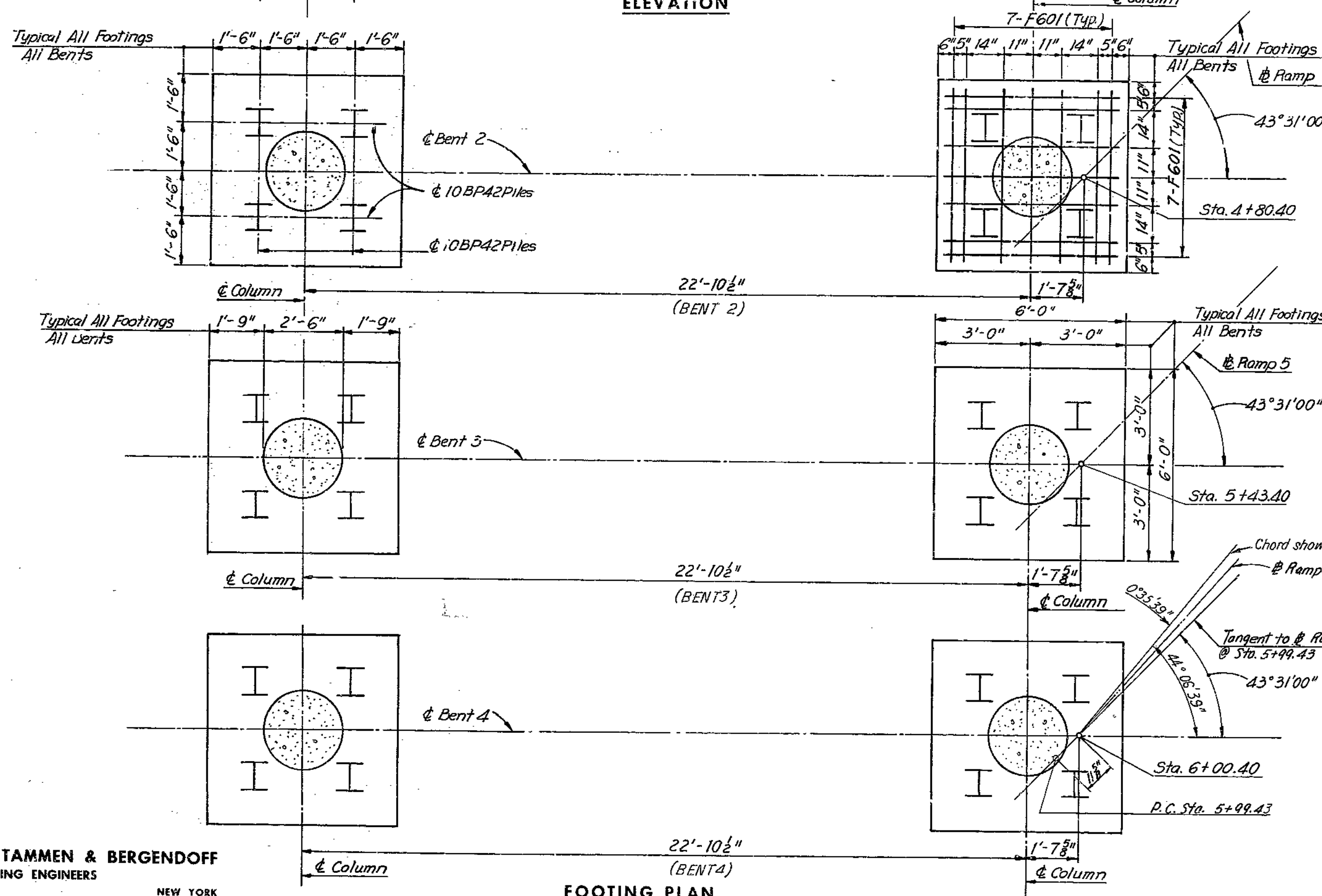
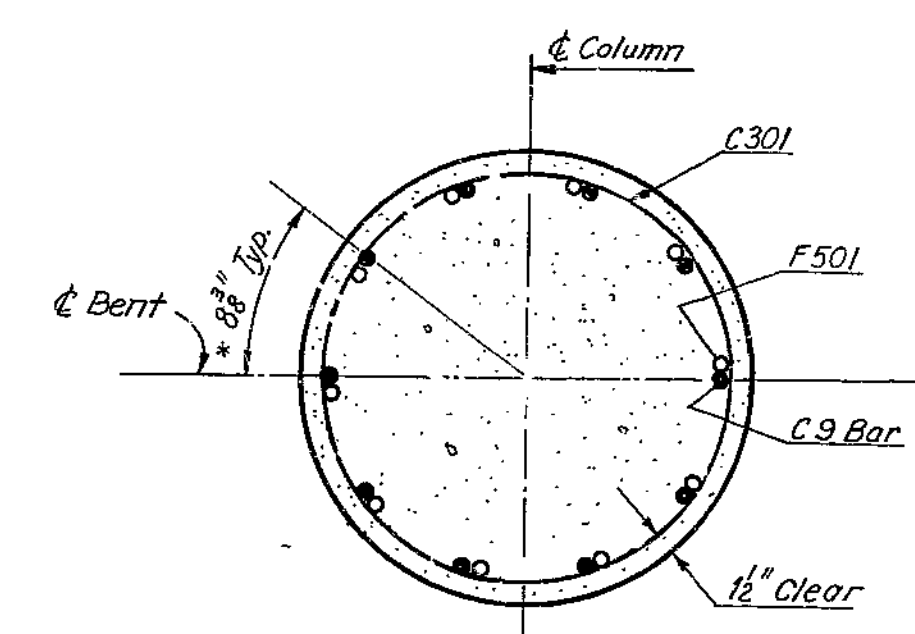
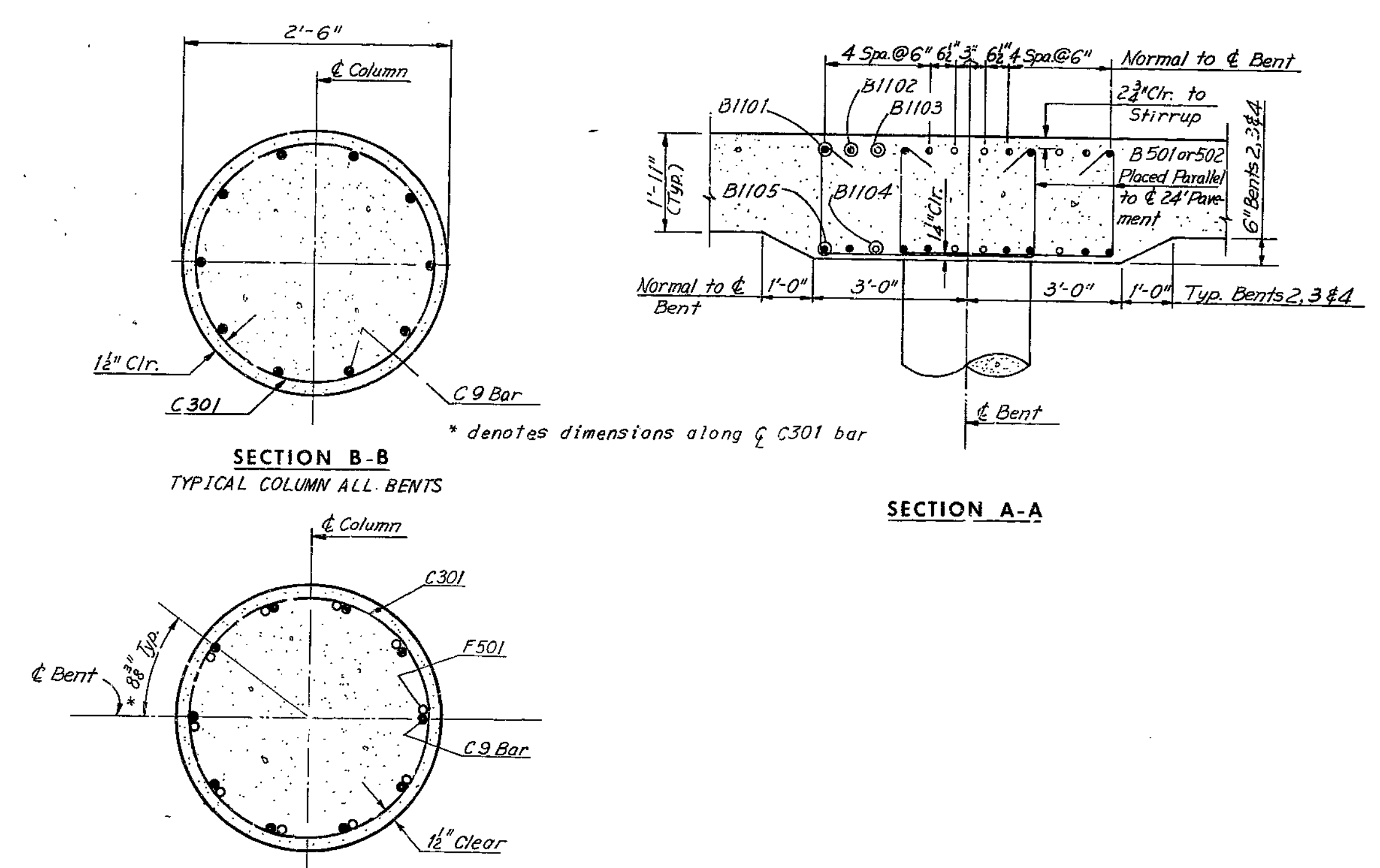
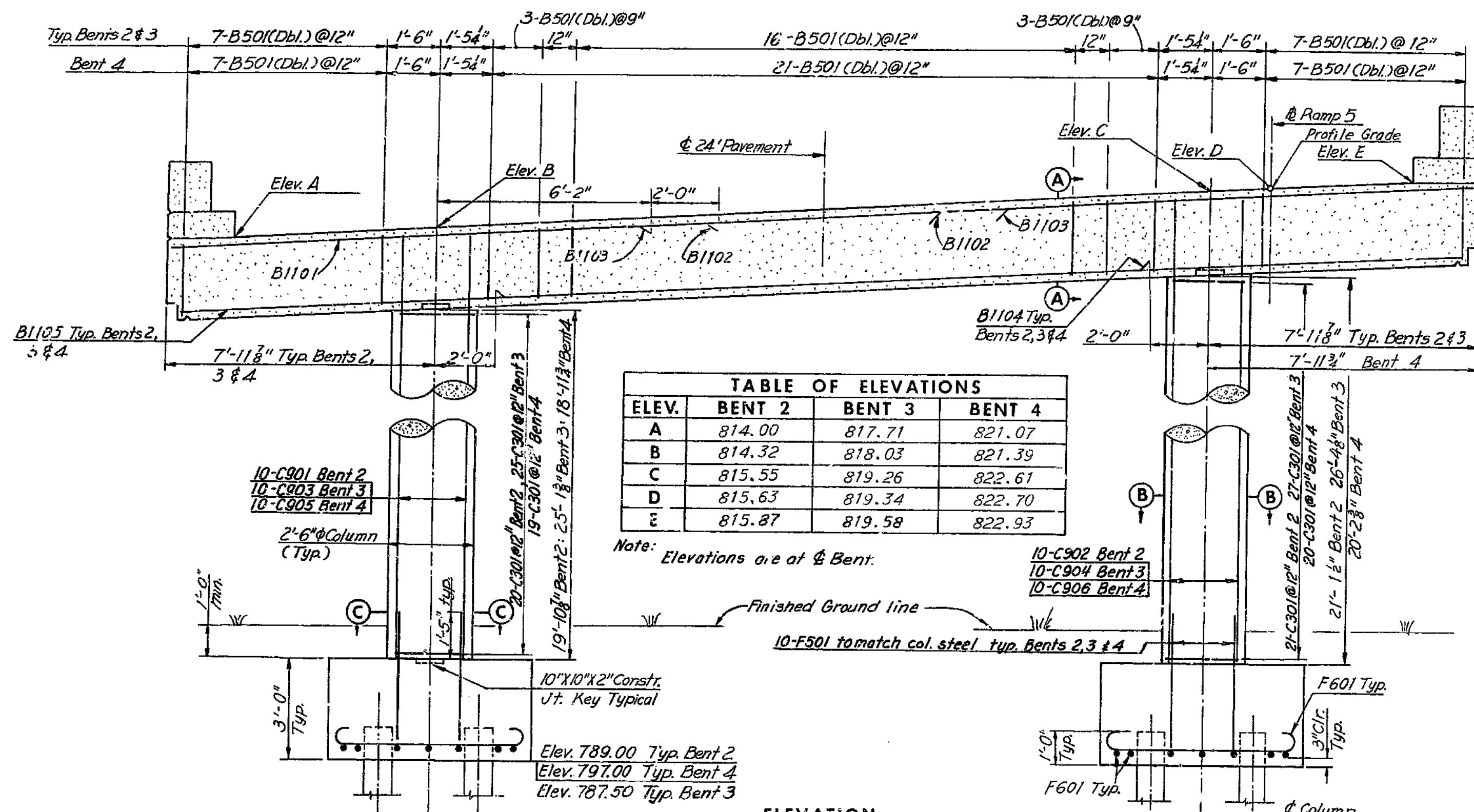
END BENT LAYOUT

**BRIDGE: RAMP 5 OVER RAMP 6**  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
CLAY COUNTY

2106-21-02 A1581 215

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MO			45	
COUNTY		ROUTE			
CLAY					



Note: For Cap Beam reinforcement see Sheet 8. For Reinforcing Schedule see Sheet 3. All piles are 10BPA42 driven vertically. Provide 1 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

**BRIDGE: RAMP 5 OVER RAMP 6**  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
CLAY COUNTY

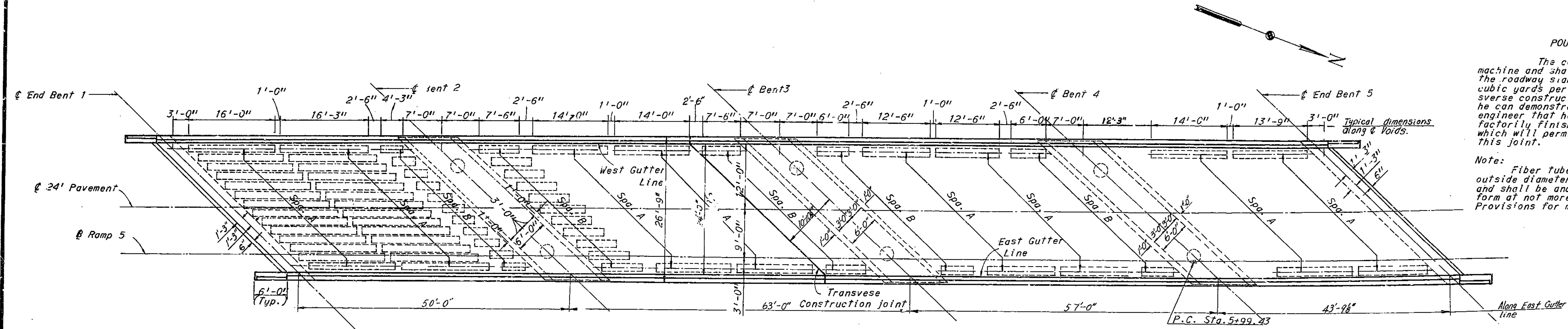
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

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

2/06-21-02  
A-1581  
216

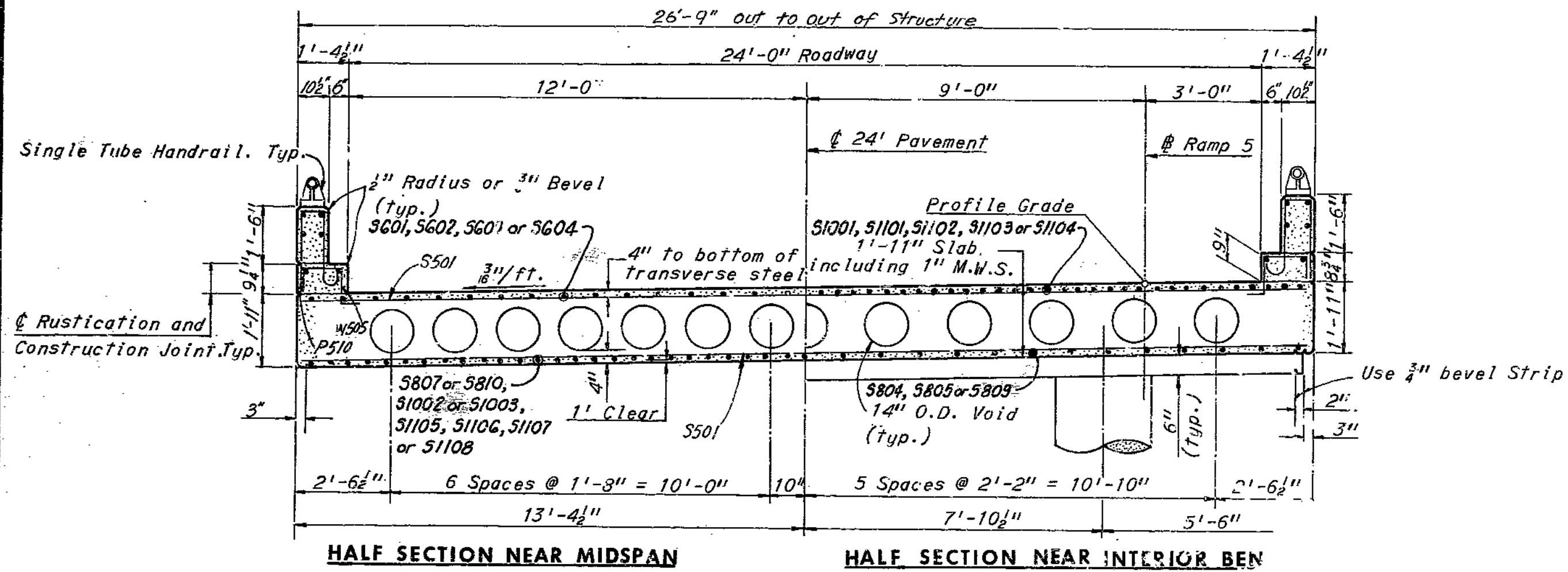
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJ. DIST. NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			46	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

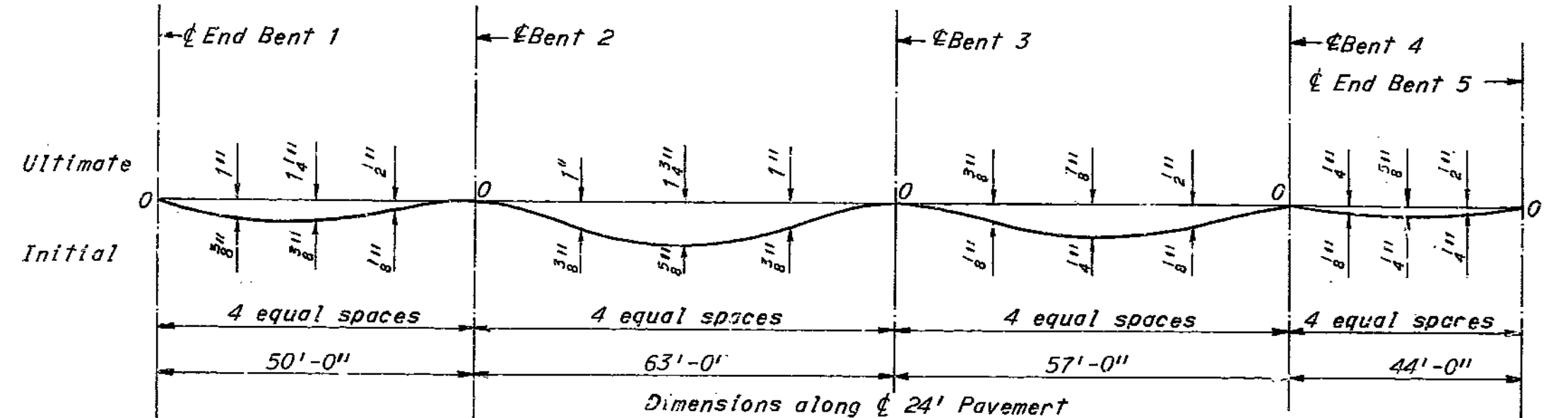


**POURING ROADWAY SLAB**  
 The contractor shall use a finishing machine and shall pour and satisfactorily finish the roadway slab at a rate of not less than 32 cubic yards per hour. He shall observe the transverse construction joint shown on plans unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slab at a rate which will permit a continuous pouring through this joint.  
 Note: Fiber tubes for producing voids shall have an outside diameter of 14" and a wall thickness of .250" and shall be anchored to joists carrying the floor form at not more than 4'-0" centers. See Special Provisions for metal tube alternate for voids.

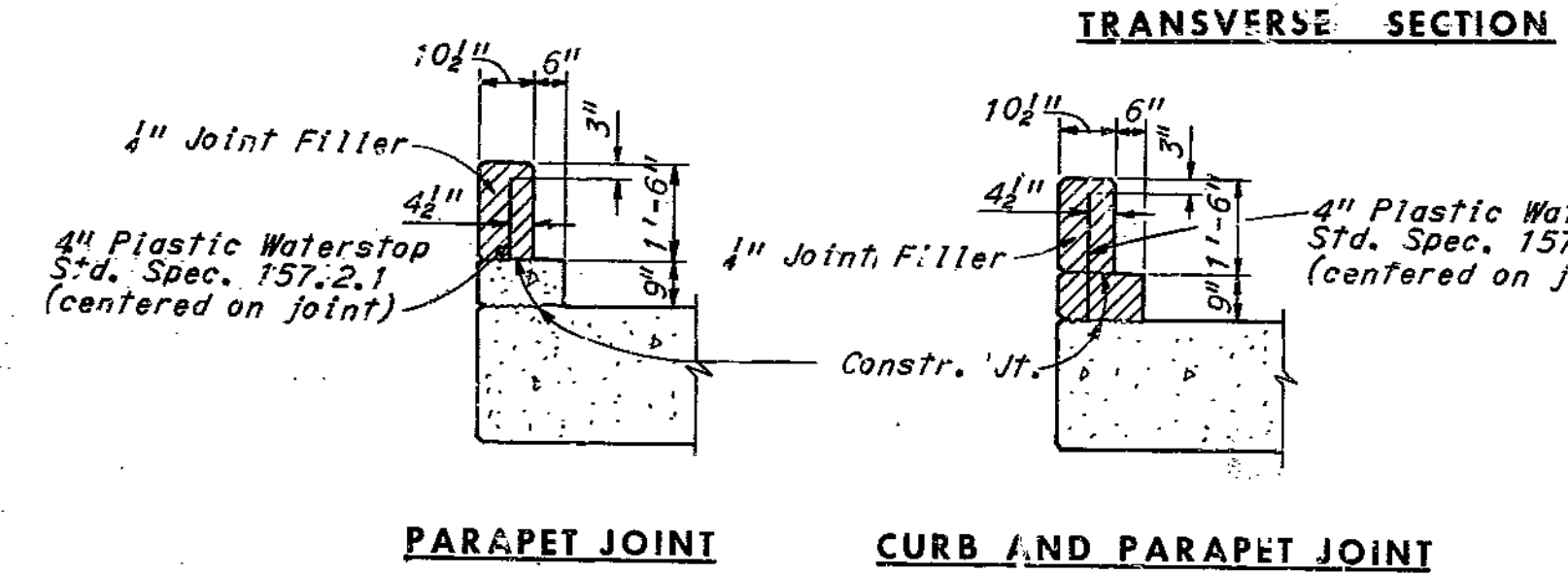
DECK PLAN



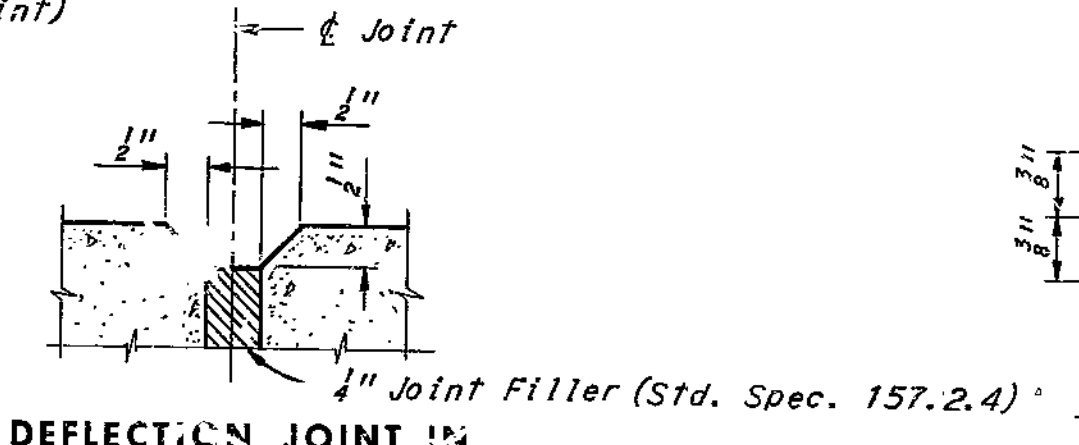
HALF SECTION NEAR MIDSPAN HALF SECTION NEAR INTERIOR BEN



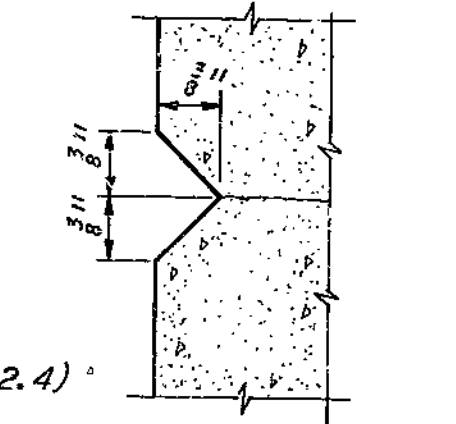
DEAD LOAD DEFLECTION DIAGRAM



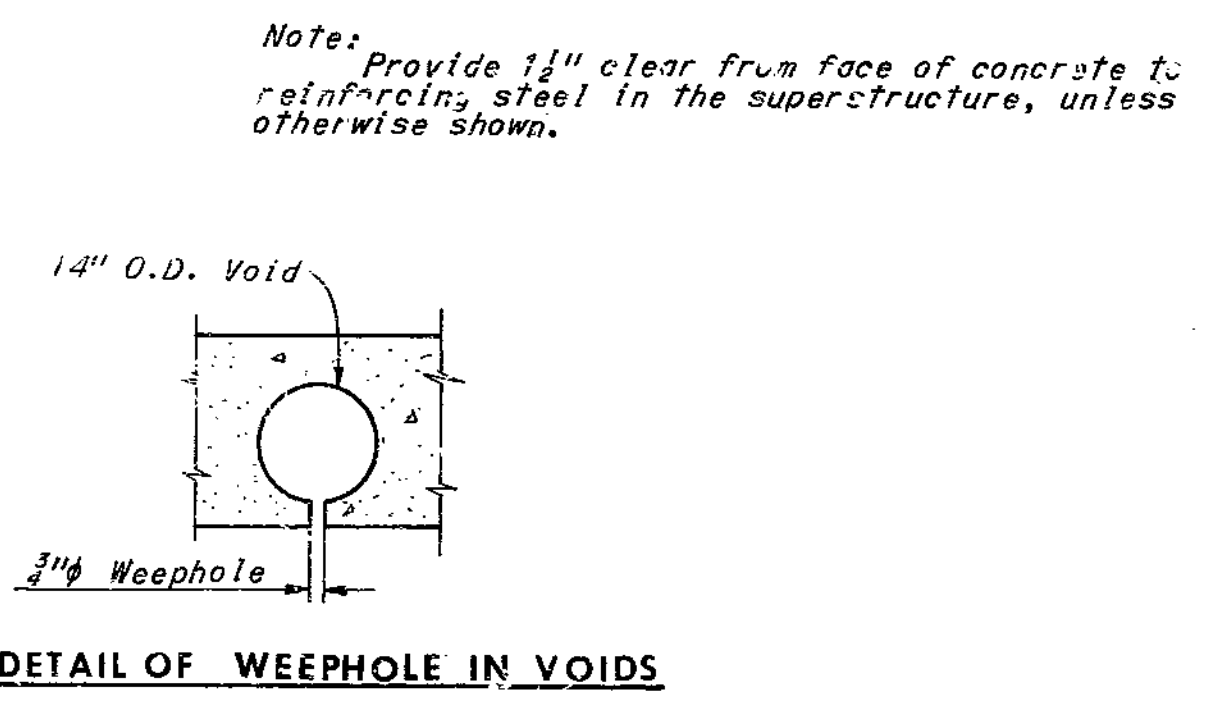
PARAPET JOINT CURB AND PARAPET JOINT



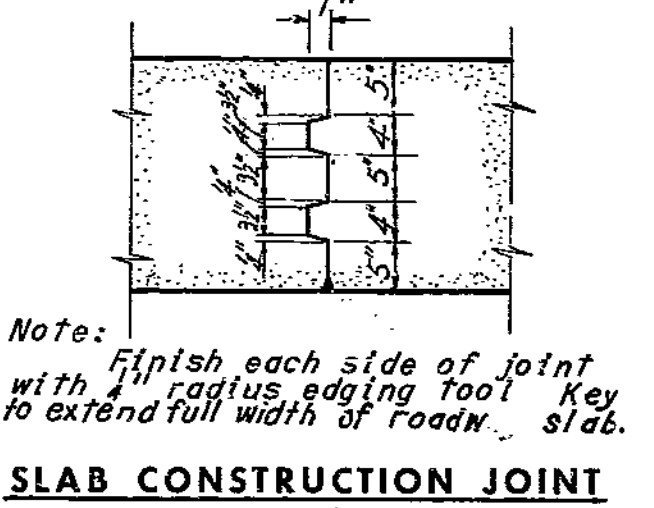
DEFLECTION JOINT IN PARAPET AND IN CURB AND PARAPET



RUSTICATION DETAIL



DETAIL OF WEEPHOLE IN VOIDS



SLAB CONSTRUCTION JOINT

Note: Plastic waterstop shall be placed in the parapet and curb filled joints on West side. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

Note: All reinforcing to stop 2" clear of deflection joints.

Note: One 3/4" φ weephole shall be provided near each end of each void. Weepholes shall be placed in straight lines parallel to bents.

BRIDGE: RAMP 5 OVER RAMP 6  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69) (RTE. 1-435) STA. 4+19.10  
 CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

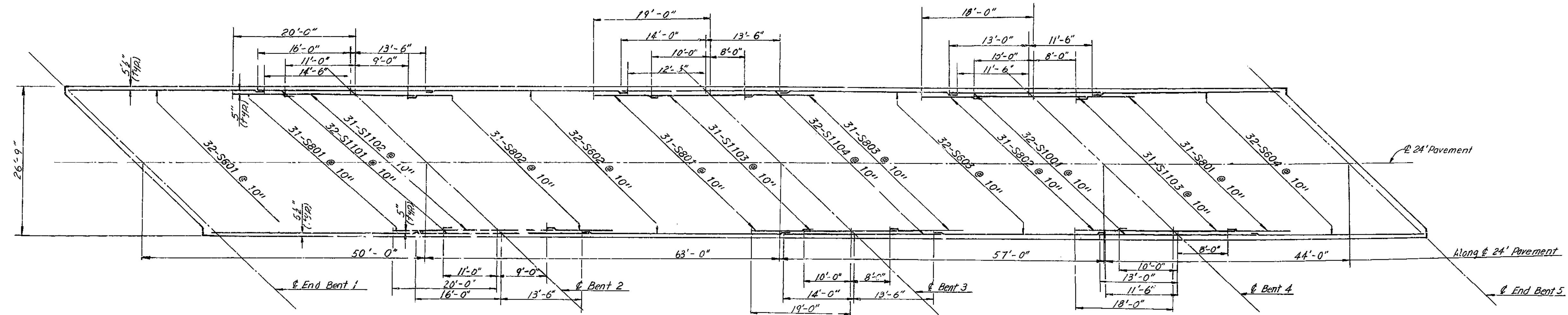
MADE G.S.H. DATE 5-3-68 CHECKED A.L.C. DATE 5-17-68

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

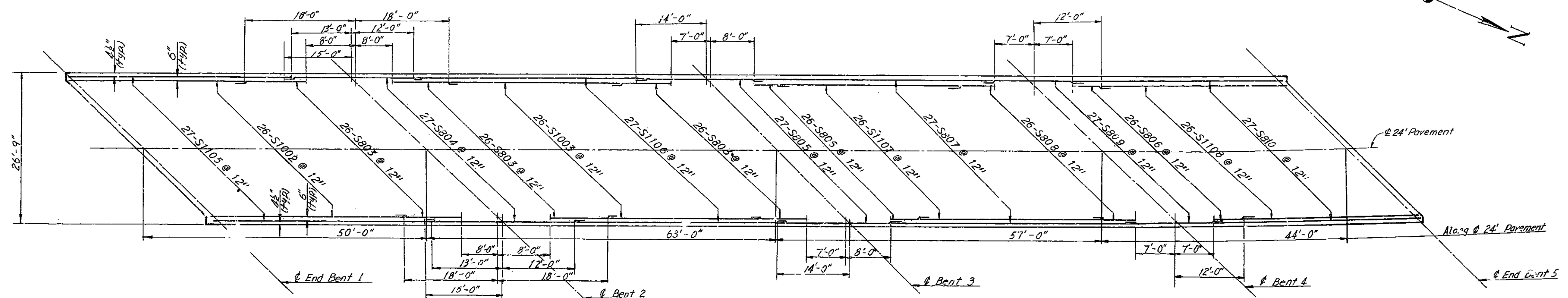
217

MISSOURI STATE HIGHWAY DEPARTMENT

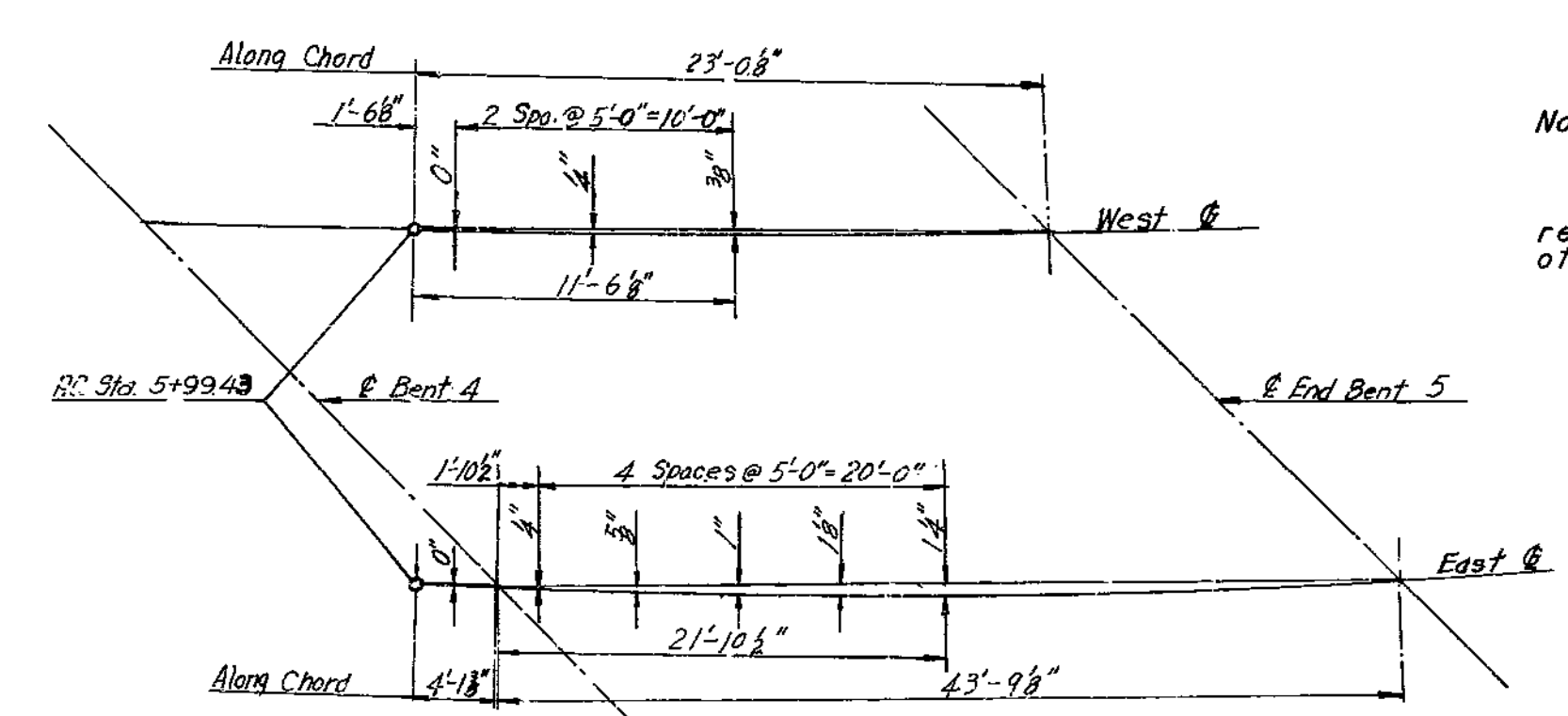
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			47	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



TOP LONGITUDINAL REINFORCEMENT



BOTTOM LONGITUDINAL REINFORCEMENT



GUTTERLINE OFFSETS

Notes:  
 For Reinforcement Schedule, see Sheet 3.  
 For Transverse Slab Reinforcement, see Sheet 8.  
 Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

218

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE G.S.H. DATE 5-7-68 CHECKED A.L.C. DATE 5-15-68

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

BRIDGE: RAMP 5 OVER RAMP 6  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
 CLAY COUNTY

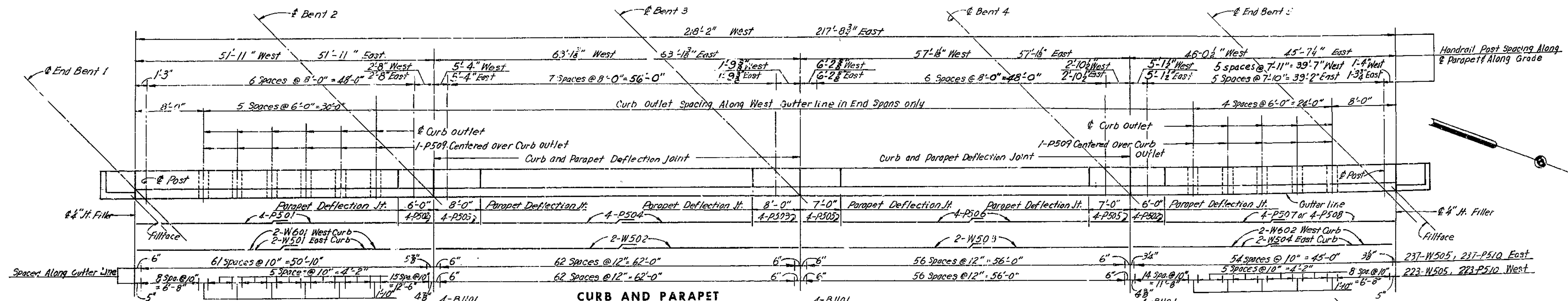
LONGITUDINAL REINFORCEMENT

SHEET 7 OF 9

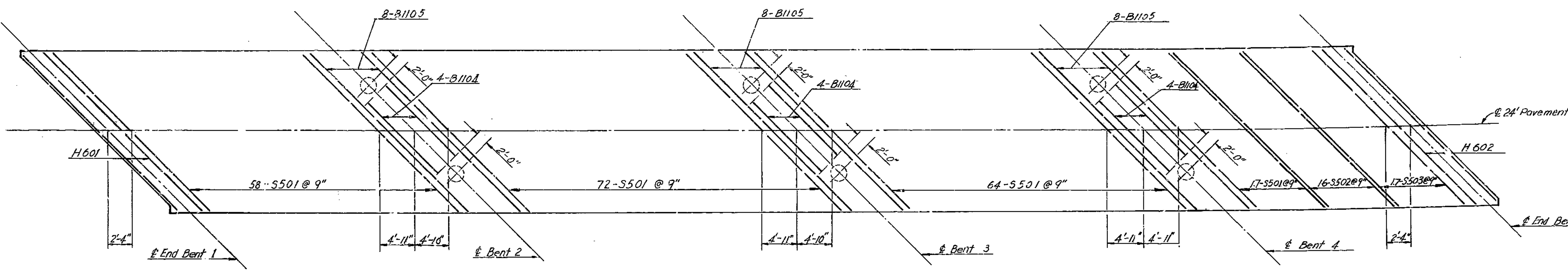
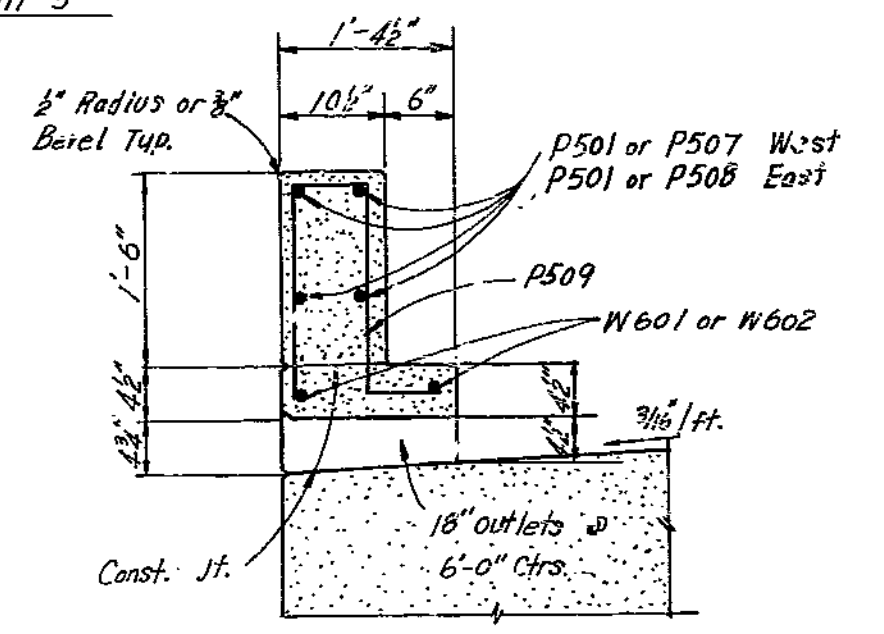
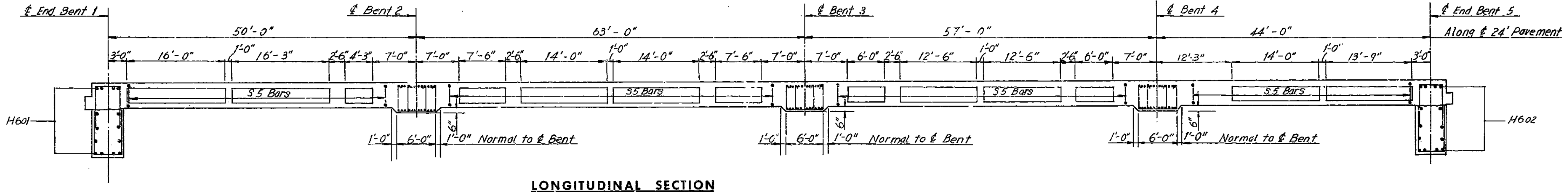
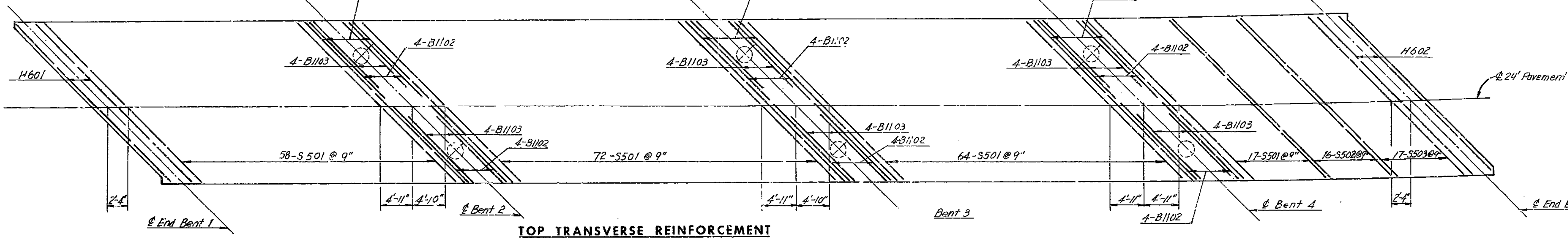
A-1581

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		48	
RIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Note: Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.  
For Reinforcement Schedule, see Sheet 3.



**BRIDGE: RAMP 5 OVER RAMP 6**  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-I(69) (RT. I-435) STA. 4+19.10  
CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE G.S. DATE 5-13-68 CHECKED A.L.C. DATE 5-16-68

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

TRANSVERSE REINFORCEMENT SHEET 8 OF 9

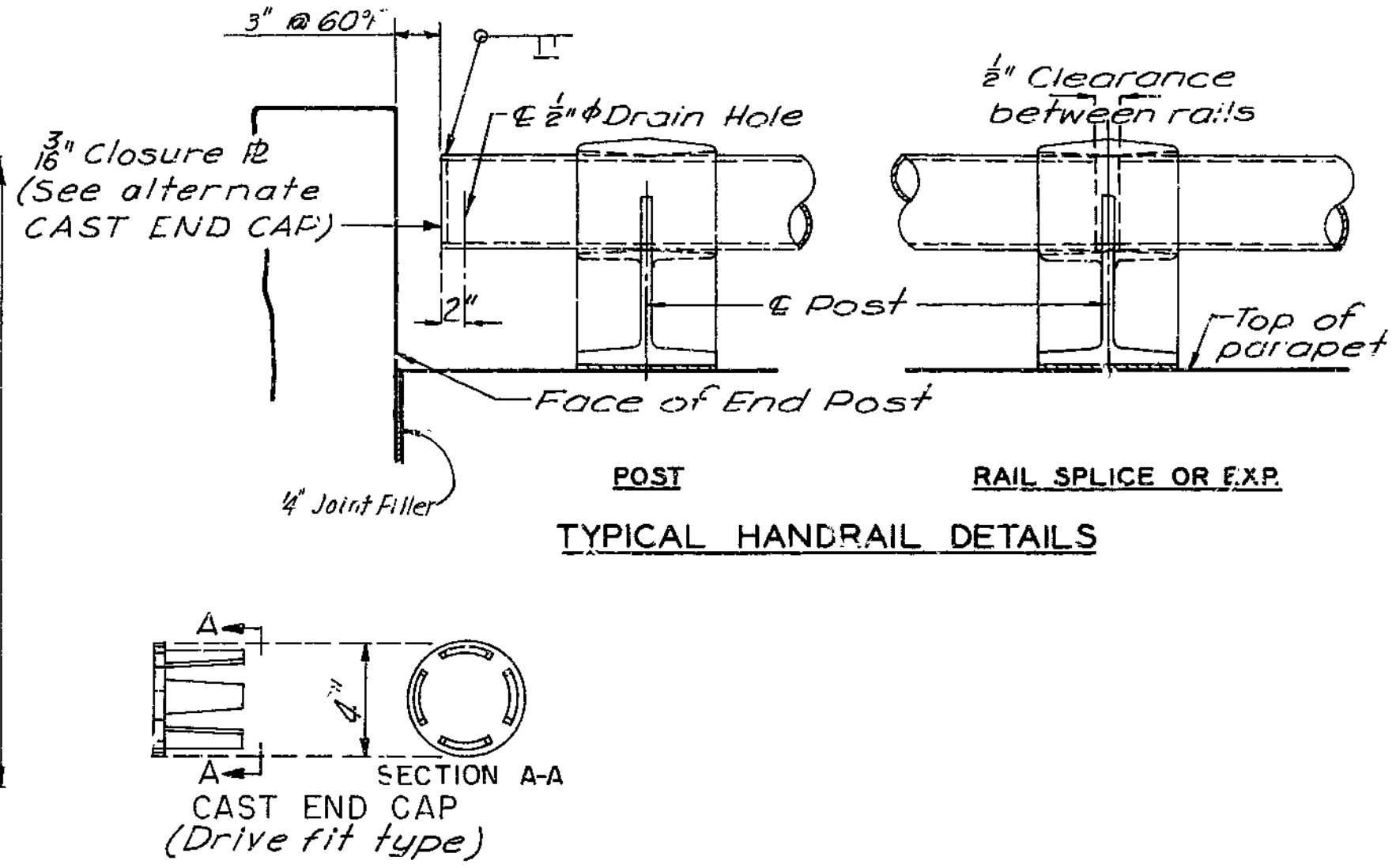
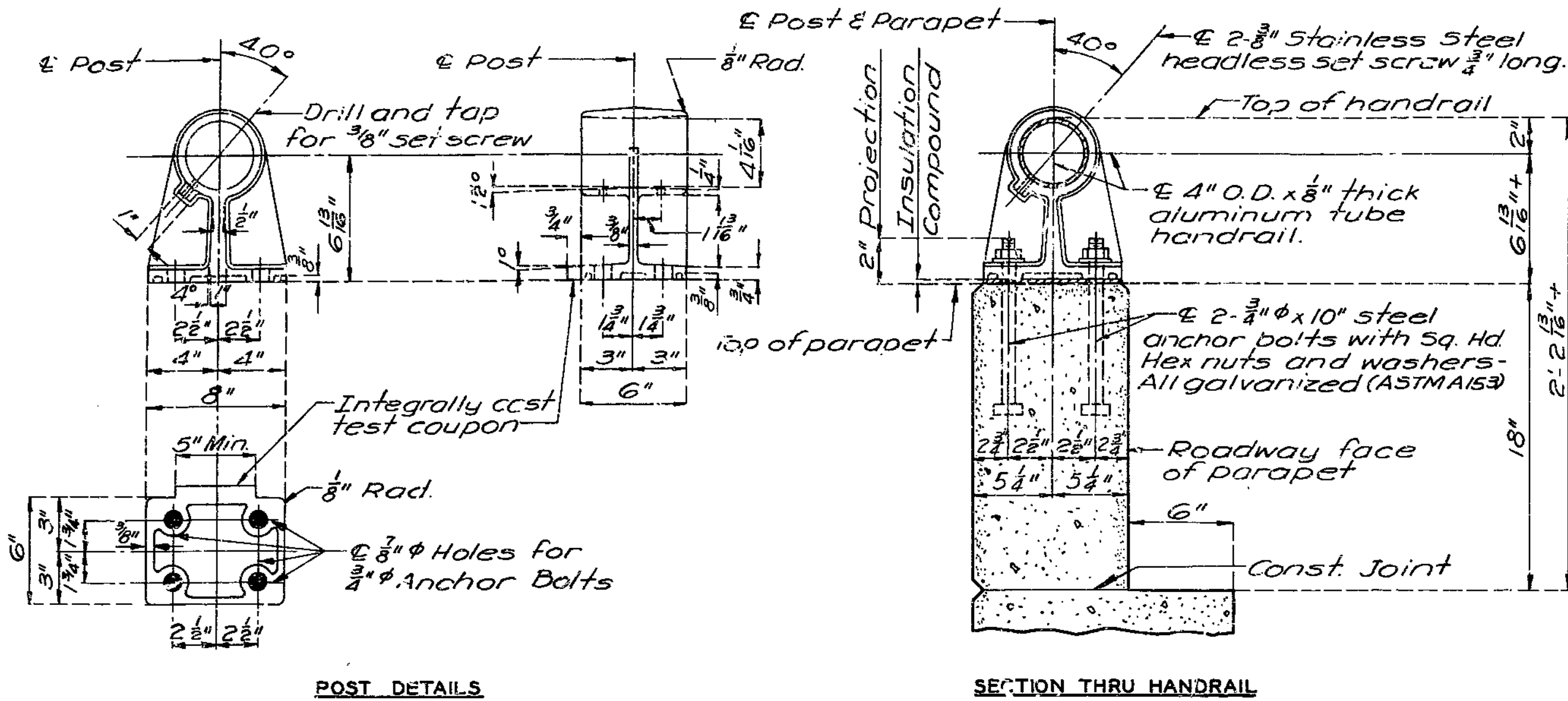
A-1581

219



MISSOURI STATE HIGHWAY DEPARTMENT

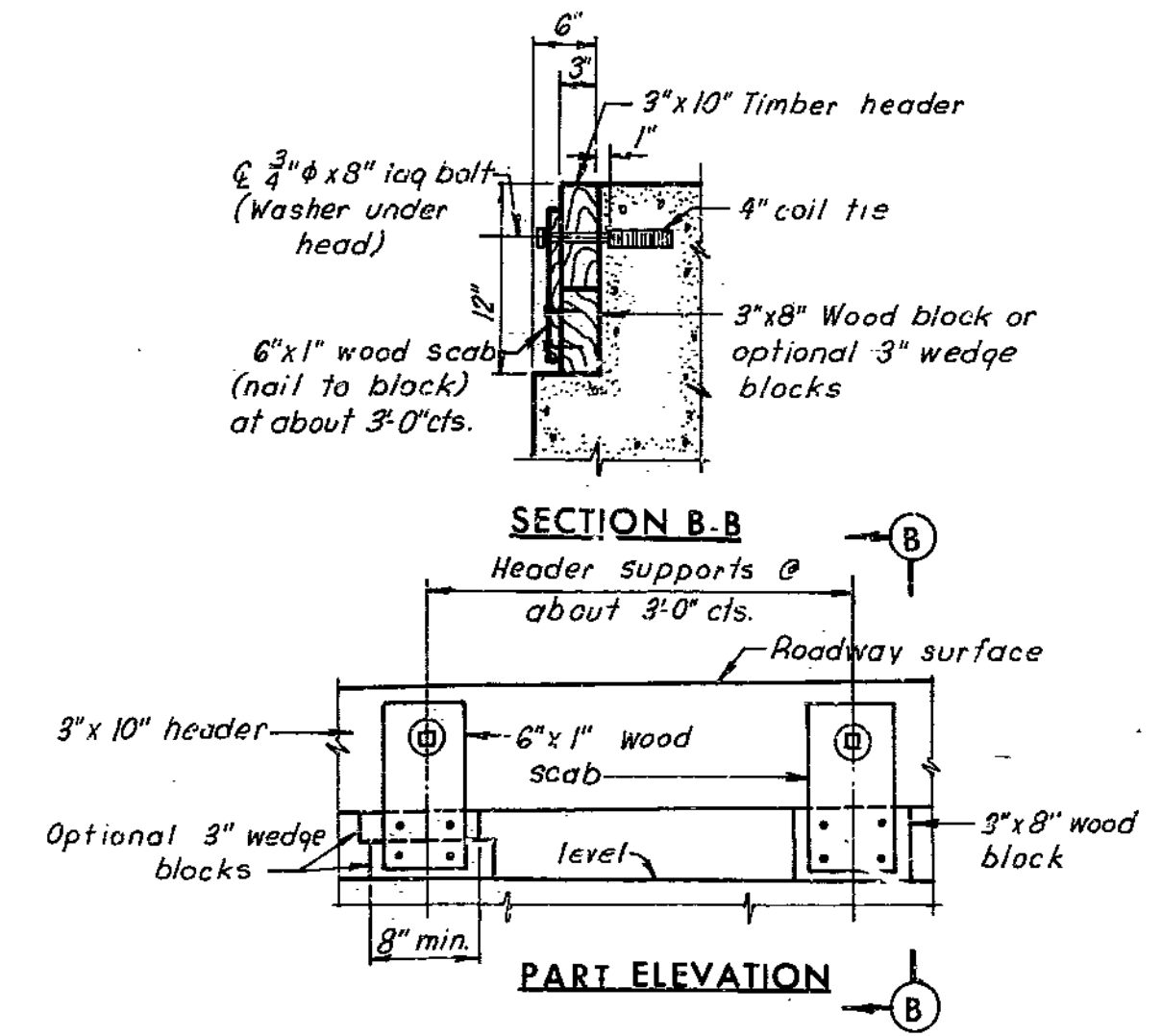
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			49	
DIST. NO.	COUNTY			ROUTE	SEC.
4	CLAY				



**GENERAL NOTES:**

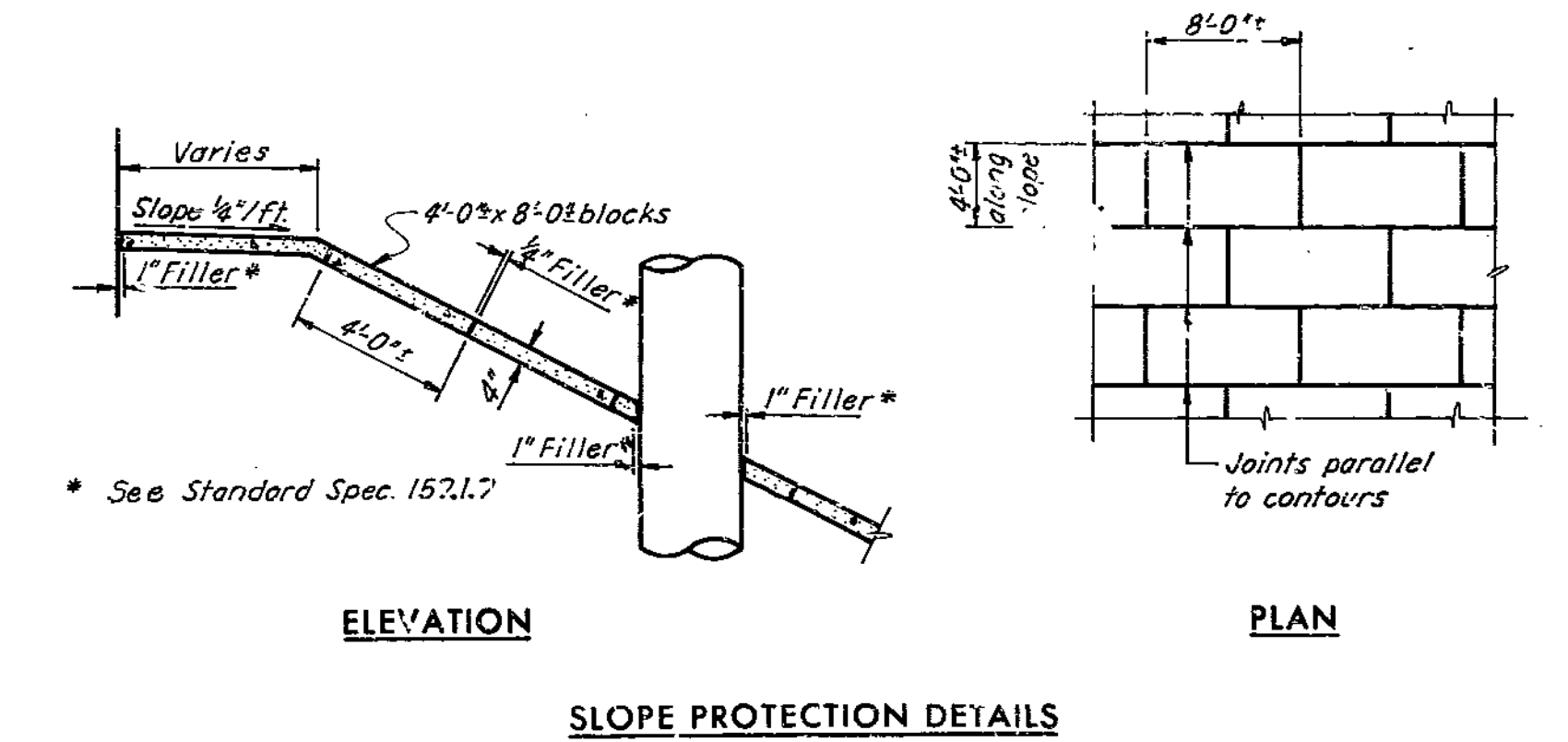
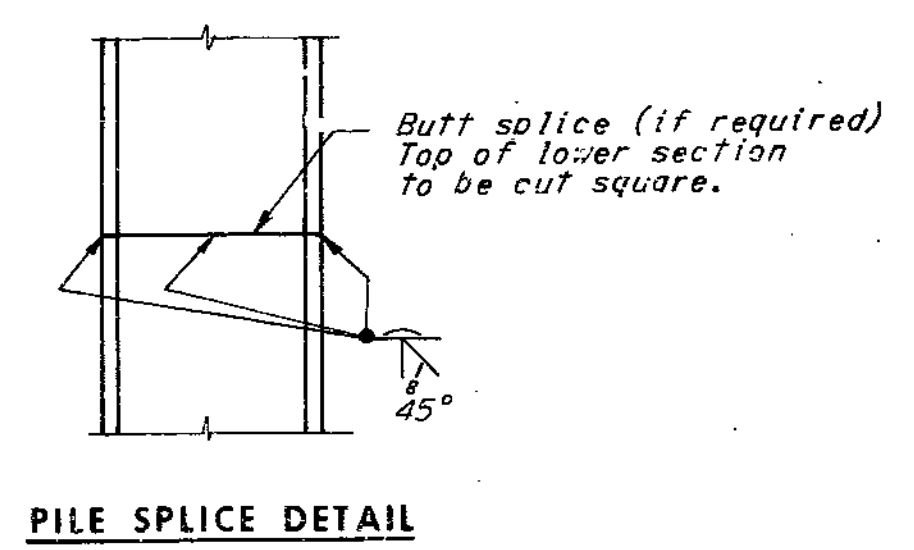
All handrail posts shall be set normal to grade. Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet. Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.

All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material. The contract unit price per linear foot of "bridge rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulation compound. All fillets 1/4" except as noted. All drafts 3° except as noted. Pipe rail to be fabricated in a minimum of two panel lengths. Omit set screw on side adjacent to filled joint in parapet and curb at all expansion posts. Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade. All exposed edges of end posts shall have 1/4" bevel. All exposed edges of curbs and parapets shall have 1/4" radius or 1/4" bevel unless otherwise noted. If the Contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates. Concrete end posts to be vertical. Integrally cast test coupons and a coat of clear lacquer specified in Std. Specs. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.



**TIMBER HEADER DETAILS**

Note: Cost of Timber Header, complete in place, to be included in price bid for concrete.



**BRIDGE: RAMP 5 OVER RAMP 6**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
 CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE GSH DATE 5-10-68 CHECKED HLC DATE 5-14-68

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

HANDRAIL DETAILS

SHEET 9 OF 9

A-1581

220

207d 21-00 667

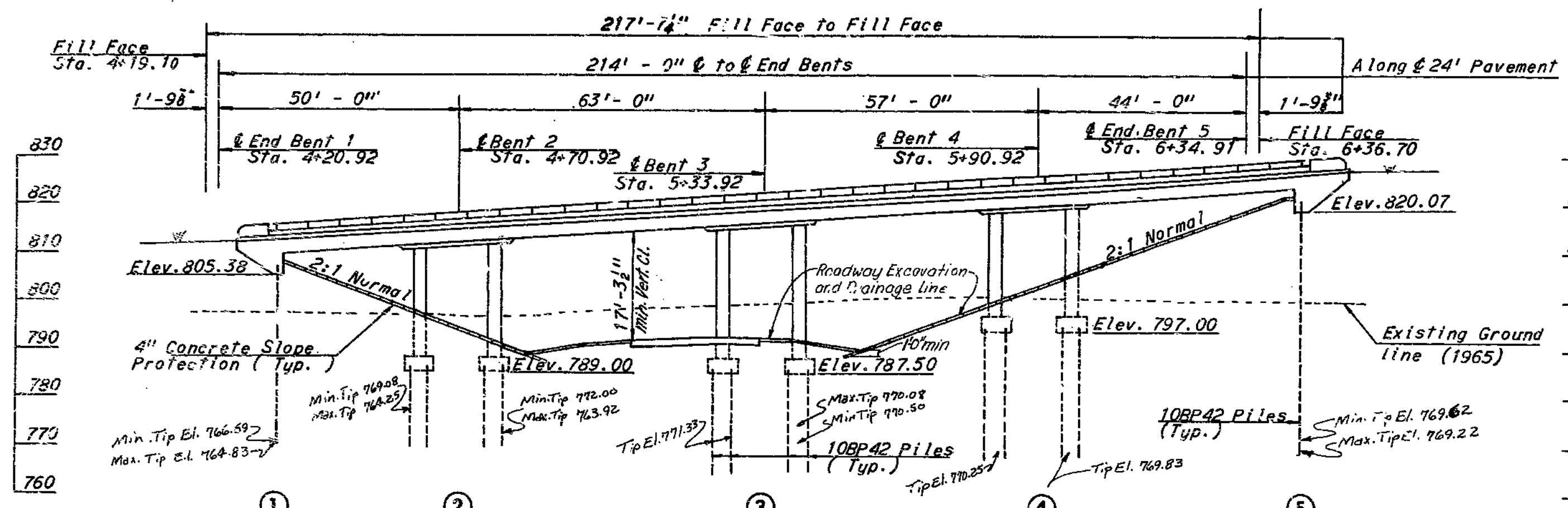
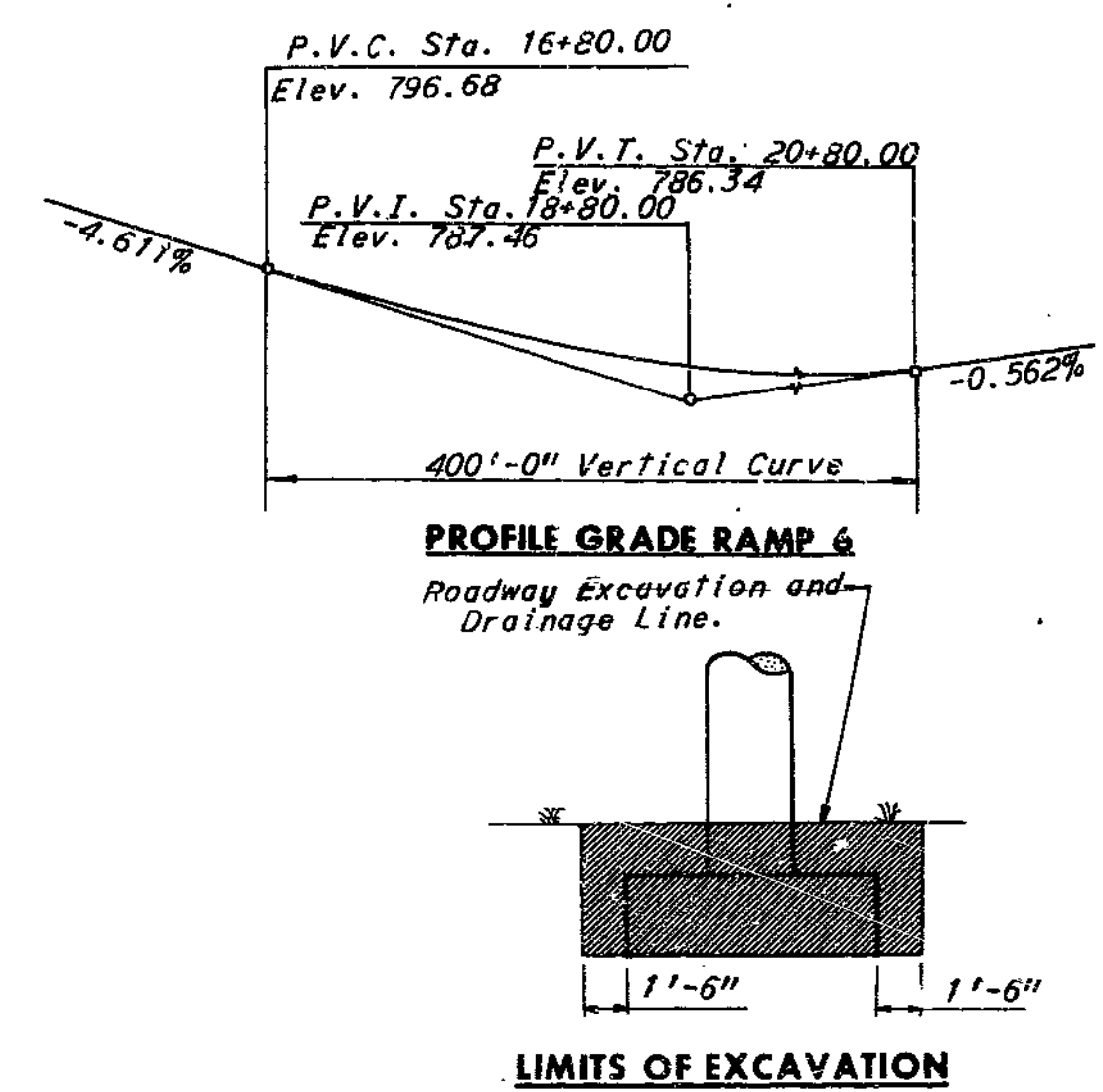
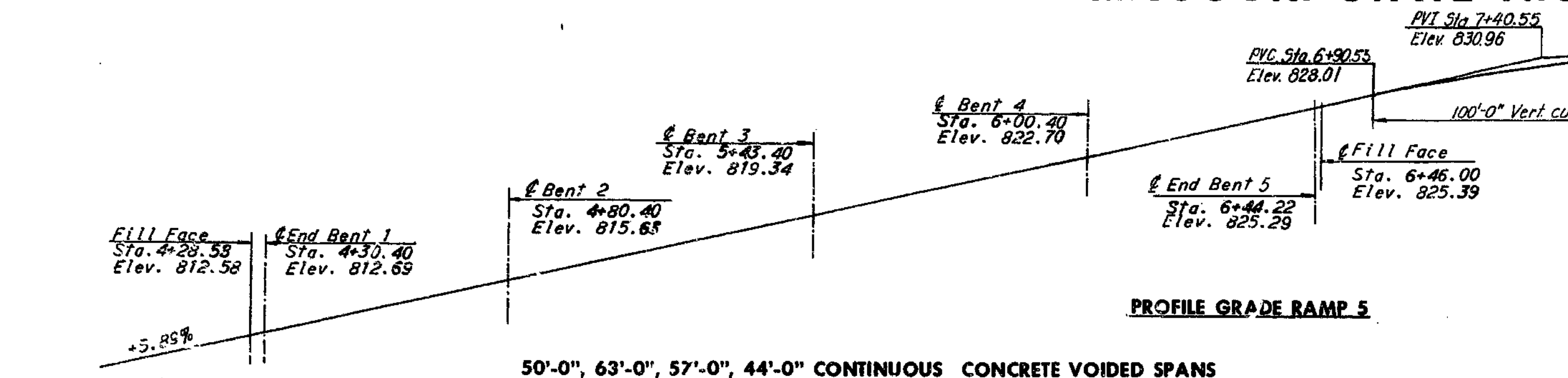
MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
MO	I-435-1(69)9	41	41
COUNTY	ROUTE	SEC.	
CLAY	I-435		

FINAL PLANS

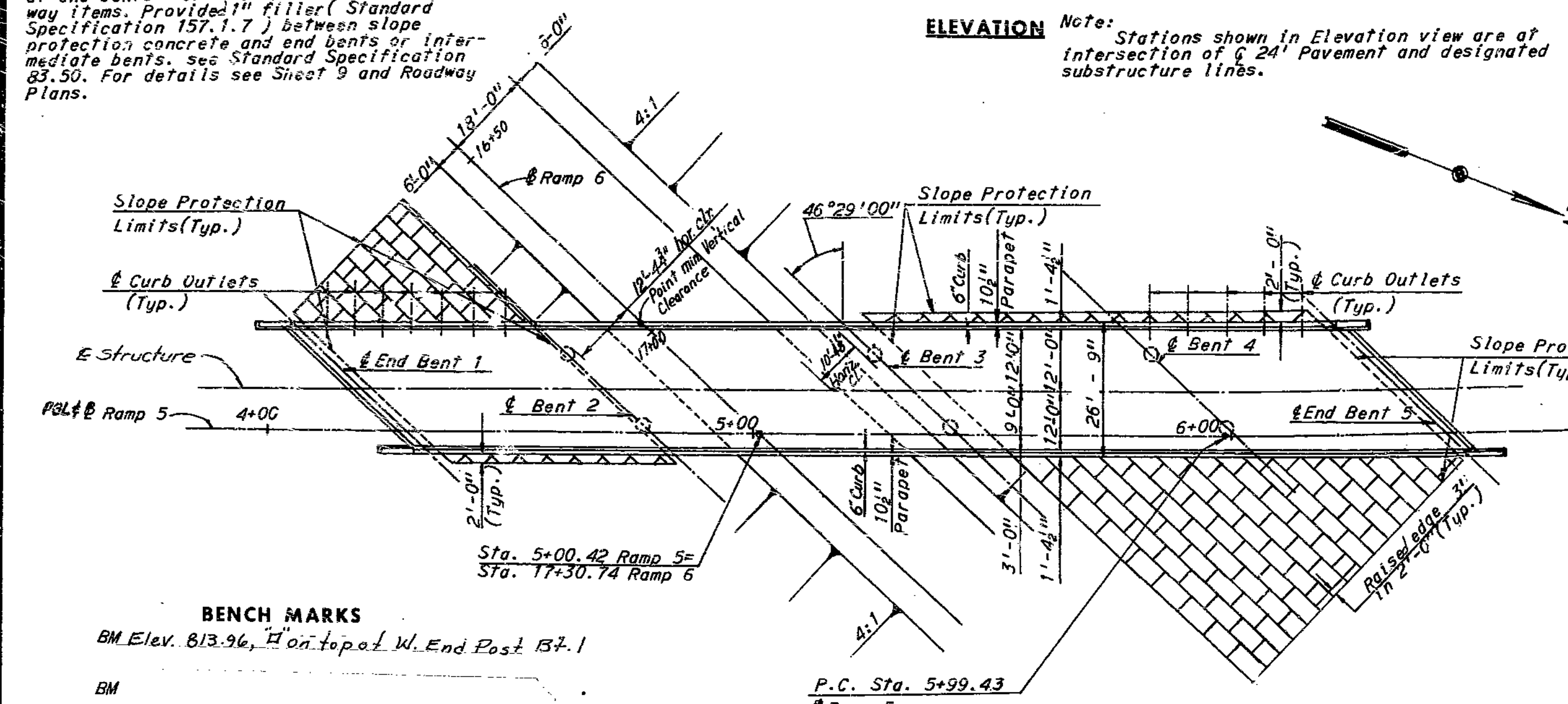
GENERAL NOTES

- Design Specifications: AASHTO 1965.
- Design Loading: H20-44 with 15#/sq. ft. future wearing surface. Earth 120#/cu.ft. Equivalent fluid pressure 30#/ft.
- Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.
- Design Unit Stresses:
  - Class B Concrete (substructure)  $f_c = 1,200$  psi.
  - Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.
  - Reinforcing Steel  $f_s = 20,000$  psi.
  - Steel pile (A.S.T.M A36-66).  $f_b = 9,000$  psi.
- Reinforcing Steel: All splices in reinforcing bars are 24 bar diameters. Bar sizes are designated on the plan by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.
- Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.
- All reinforcing bar bending dimensions are "out to out".
- Sealing of Deck: Superstructure deck was surface sealed.
- Utilities: All utilities, unless shown otherwise, were removed or relocated by others. The Contractor did notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.
- Welding: See Standard Specification 55.3.13 for qualification of welding operators.
- Fill: Compacted roadway fill (full roadway width) was placed up to elevation of concrete beam in front of and not less than 25'-0" in back of End Bents 1 and 5 before steel piles were driven.



Note: Concrete slope protection on slopes at end bents was included under roadway items. Provided in filler Standard Specification 157.1.7 between slope protection concrete and end bents or intermediate bents, see Standard Specification 83.50. For details see Sheet 9 and Roadway Plans.

ELEVATION Note: Stations shown in Elevation view are at intersection of 24' Pavement and designated substructure lines.

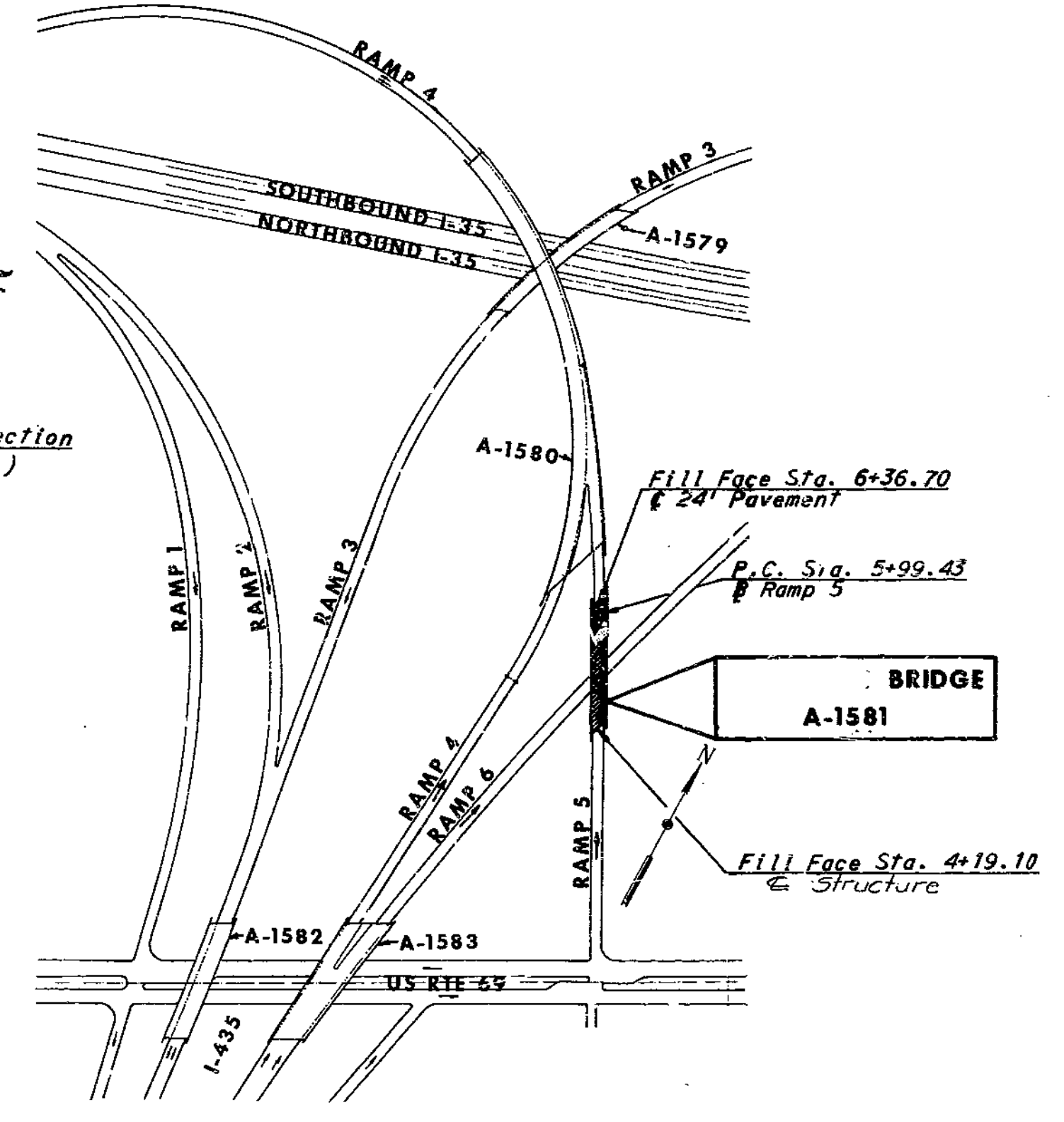


BENCH MARKS  
BM Elev. 813.96, on top of W. End Post B7-1

CURVE DATA

Ramp	PI Sta.	PI Elev.	Δ	D	T	L	R
Ramp 5	8+04.90	11+35.41	10°14'44"	2°30'	205.48'	409.32'	2292.01'
Ramp 6	11+35.41	17°31'16"	1°00'	882.96'	1752.12'	5729.65'	

Note: For length and number of Piles, see Pile Data Table sheet 2.  
For Boring locations see sheet 2.  
All dimensions are horizontal and vertical unless otherwise specified.  
All Bents are parallel.



QUANTITIES

ITEM	UNIT	SUBSTR.	SUPRSTR.	TOTAL
Class 1 Excavation for Structures	Cu.Yd.	78.5	-	78.5
Steel Piles in Place (10BPA2)	Lin.Ft.	1021	-	1021
Class B Concrete	Cu.Yd.	24.0	-	24.0
Class B1 Concrete	Cu.Yd.	-	445.7	445.7
Reinforcing Steel	Lbs.	1110	131830	132940
Bridge Rail (Single Tube Type)	Lin.Ft.	-	434	434

Quantity Notes:  
No payment for excavation was made for End Bents 1 and 5.  
All excavation for bridge was paid for as Class 1 Excavation for Structures. Sketch shows excavation for pay purposes.  
All concrete except interior Bent footings is included in Class B1 Concrete.  
All reinforcing except that in the interior Bent footings is included in superstructure reinforcing.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE GSH DATE 4-30-68 CHECKED JEP DATE 5-15-68

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

GENERAL PLAN AND ELEVATION

SHEET 1A of 2

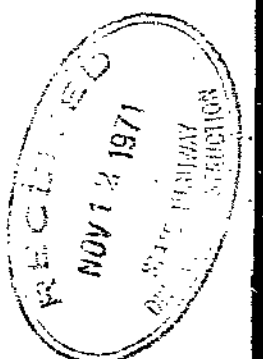
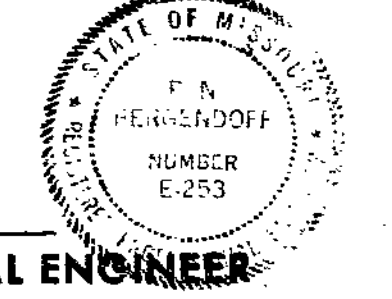
FINAL PLANS

SUBMITTED BY: *R. N. Bergendoff*  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI NO. E-253

BRIDGE: RAMP 5 OVER RAMP 6  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69) (RTE. I-435)  
CLAY COUNTY

SUBMITTED BY: *R. N. Bergendoff* DATE 11-23-68  
APPROVED BY: *R. N. Bergendoff* DATE 11-23-68  
BRIDGE ENGINEER  
CHIEF ENGINEER

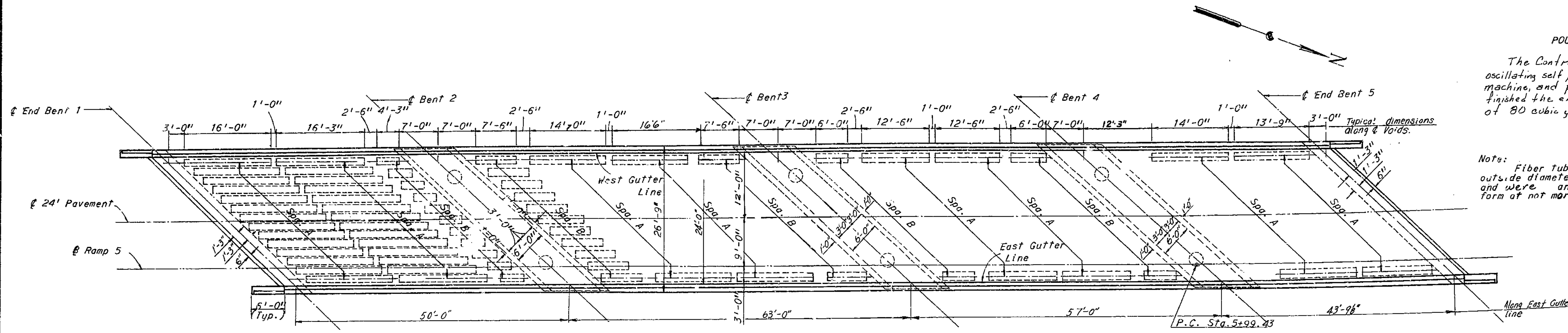
STA. 4+19.10  
STD. 54.00  
A-1581



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(69)9	46	100
DIST. NO.	COUNTY	ROUTE	SECTION	
4	CLAY			

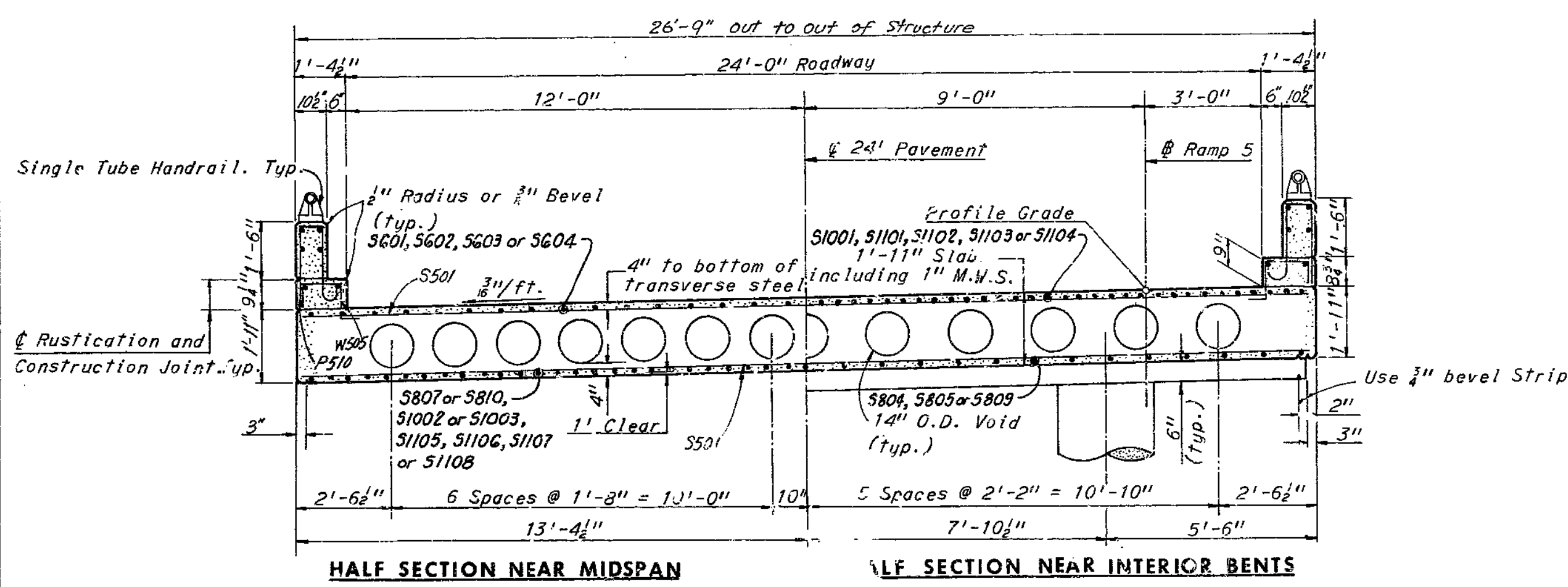
FINAL PLANS



DECK PLAN

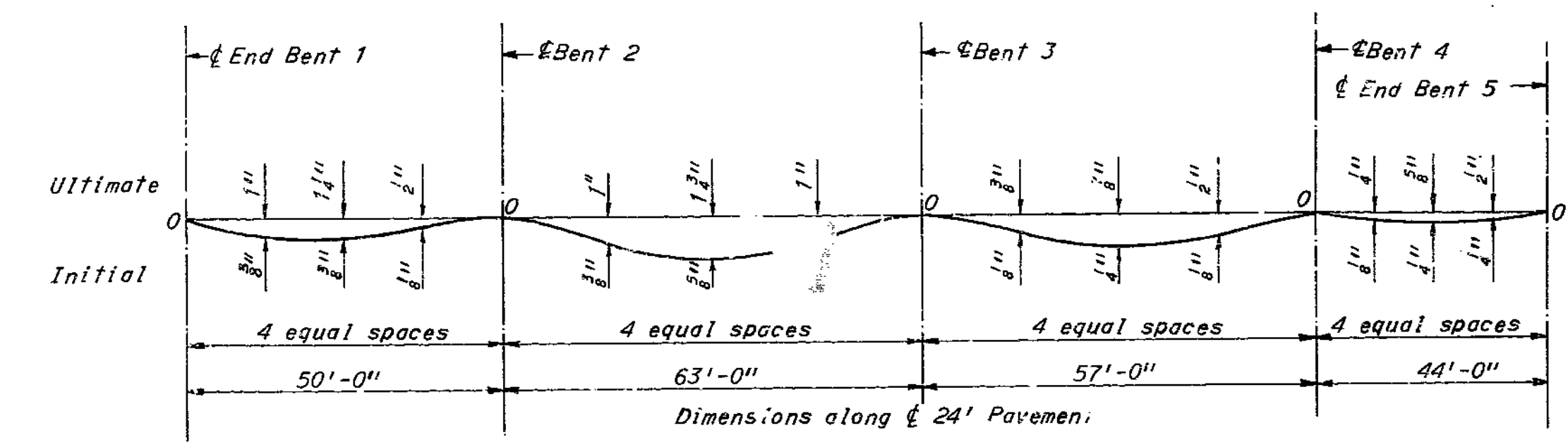
**POURING ROADWAY SLAB**  
 The Contractor used an approved oscillating self propelled mechanical finishing machine, and poured and satisfactorily finished the entire roadway slab at a rate of 80 cubic yards per hour.

**Notes:** Fiber tubes for producing voids have an outside diameter of 14" and a wall thickness of .250" and were anchored to joists carrying the floor form at not more than 4'-0" centers.



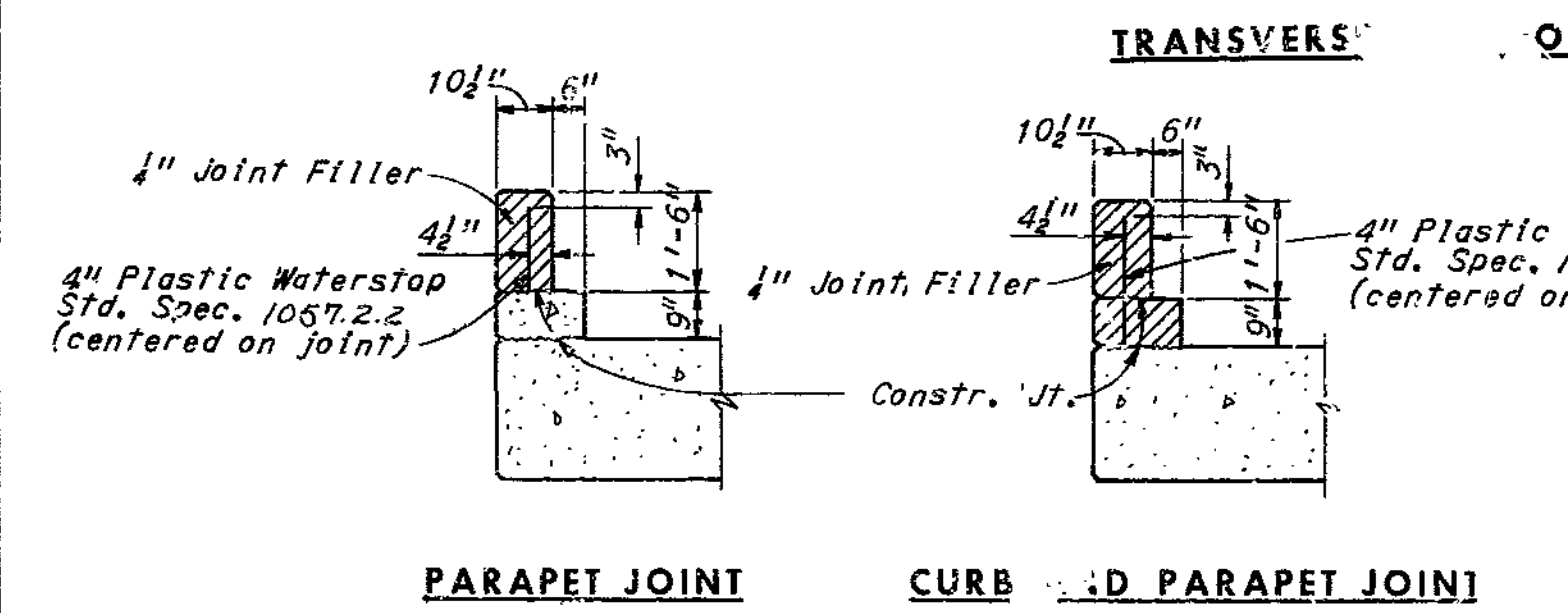
HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INTERIOR BENTS



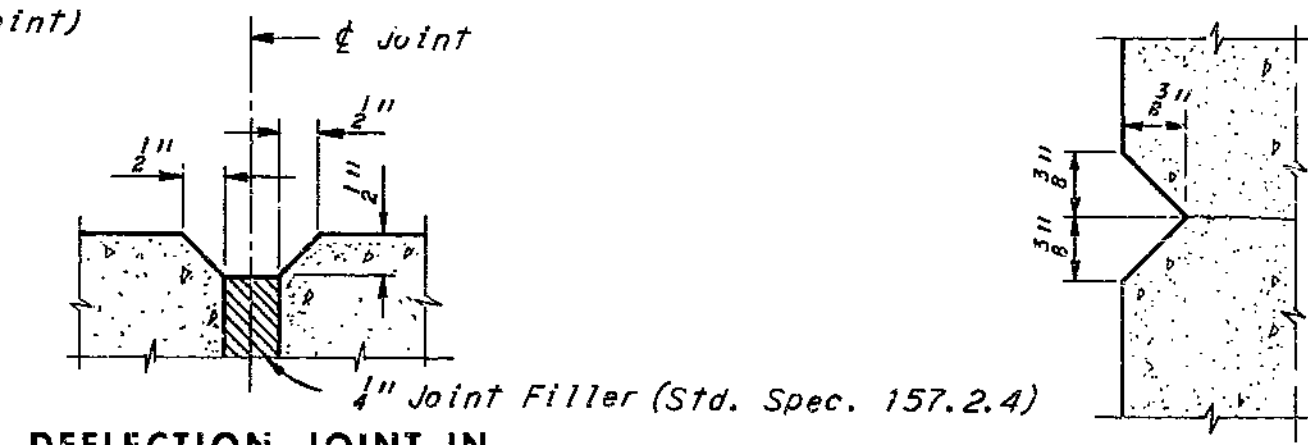
DEAD LOAD DEFLECTION DIAGRAM

**Notes:** Forms were cambered for ultimate deflection.

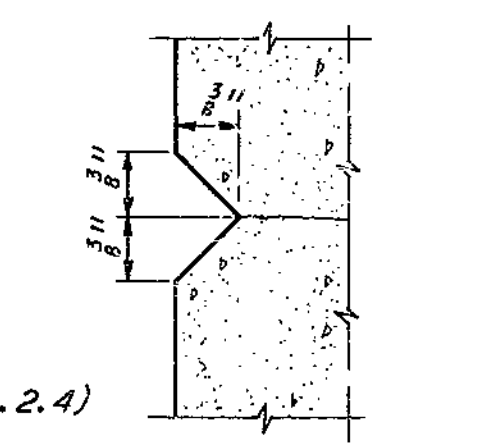


PARAPET JOINT

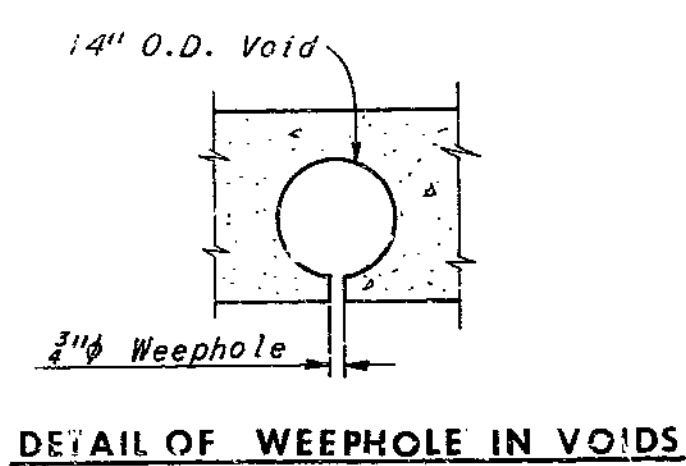
CURB AND PARAPET JOINT



DEFLECTION JOINT IN PARAPET AND IN CURB AND PARAPET



RUSTICATION DETAIL



DETAIL OF WEEPHOLE IN VOIDS

**Notes:** One 3/4" φ weep hole was provided near each end of each void. Weep holes were placed in straight lines parallel to bents.

**Notes:** Plastic waterstop was placed in the parapet and curb filled joints on west side. Cost of plastic waterstop complete in place was included in unit price bid for concrete.

**Notes:** All reinforcing stopped 2" clear of deflection joints.

**BRIDGE: RAMP 5 OVER RAMP 3**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69) (RTE. I-435) STA. 4+19.10  
 CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE GSH DATE 5-3-68 CHECKED AJC DATE 5-17-68

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

PLAN AND CROSS SECTION SHEET 6A OF 2

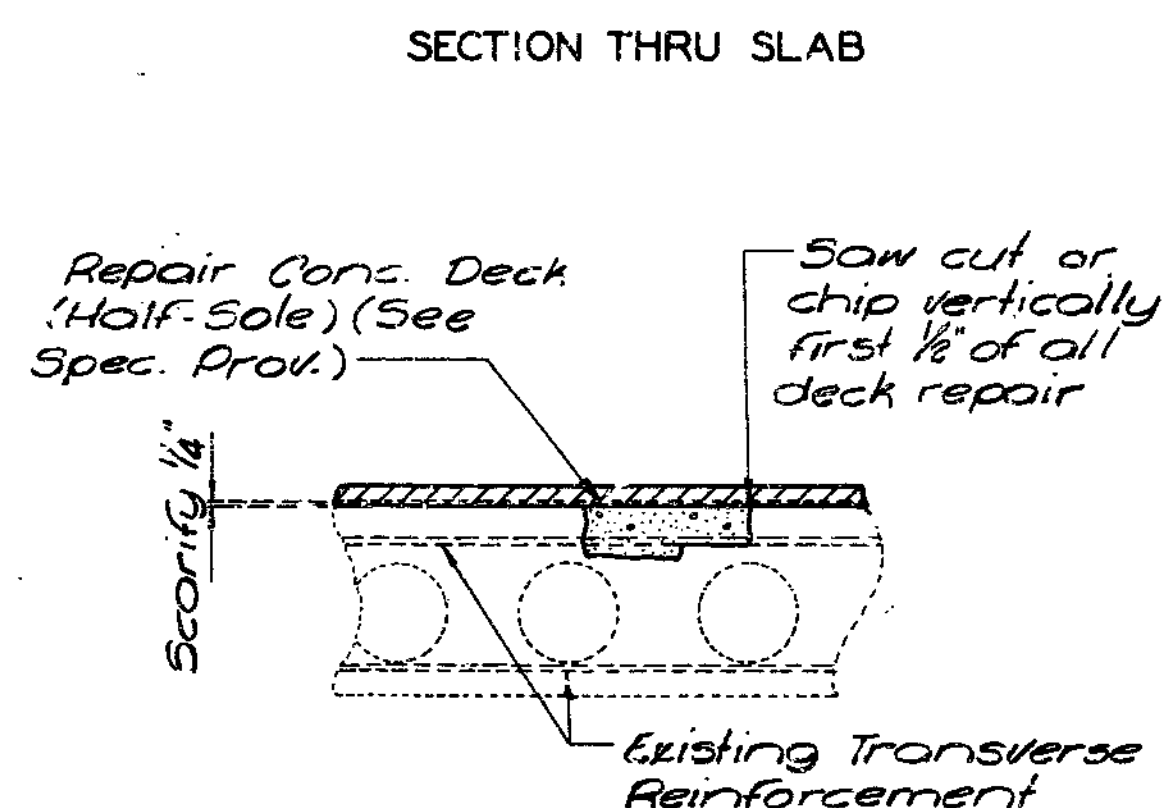
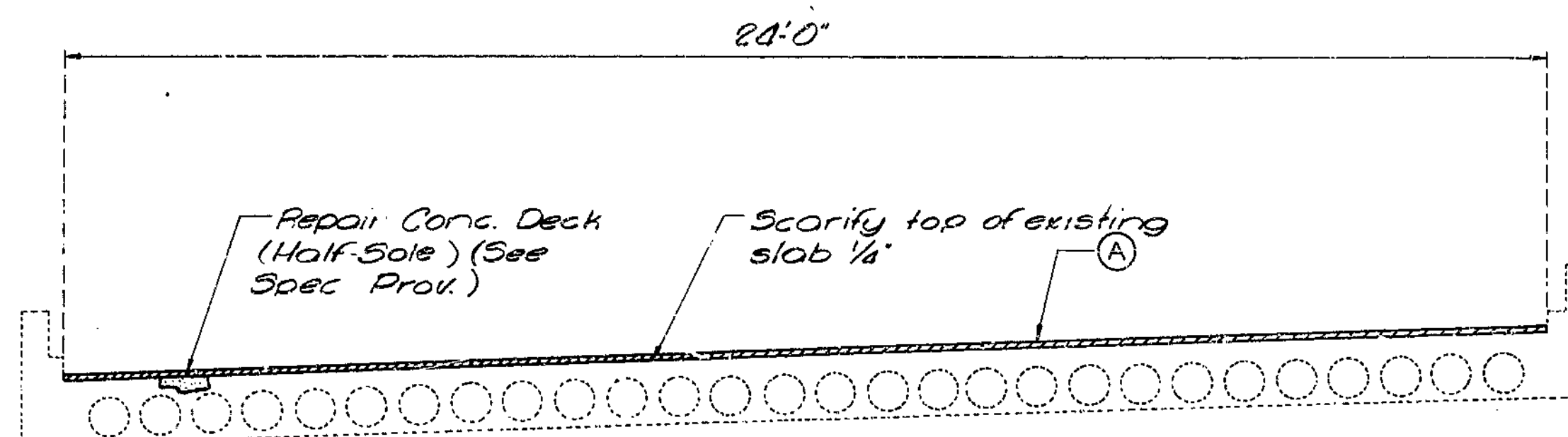
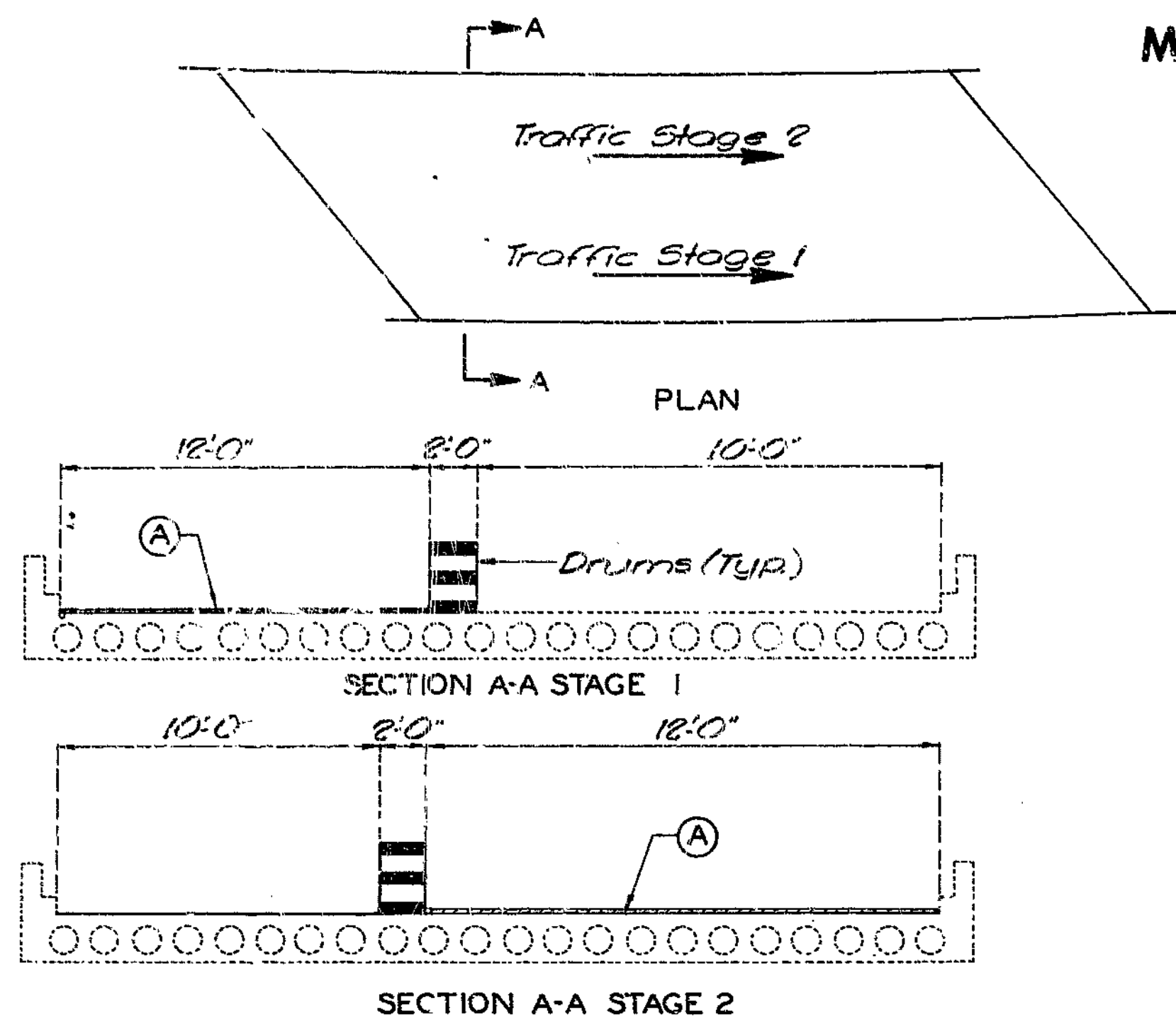
A-1581

FINAL PLANS

222

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	17
SEC./SUR. 27	TWP. 51N	RGE. 32W.



ESTIMATED QUANTITIES		TOTAL
* Concrete Wearing Surface ( )	Sq. Yd	581
Repair Concrete Deck (Half-Soling)	Sq. Ft.	202
Cathodic Protection System	Lump Sum	1

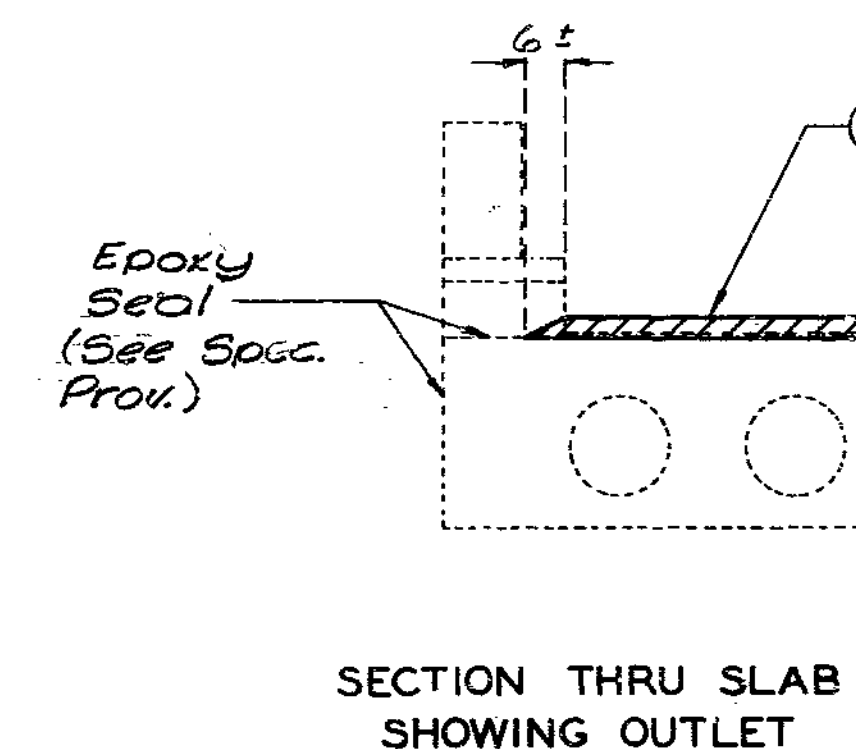
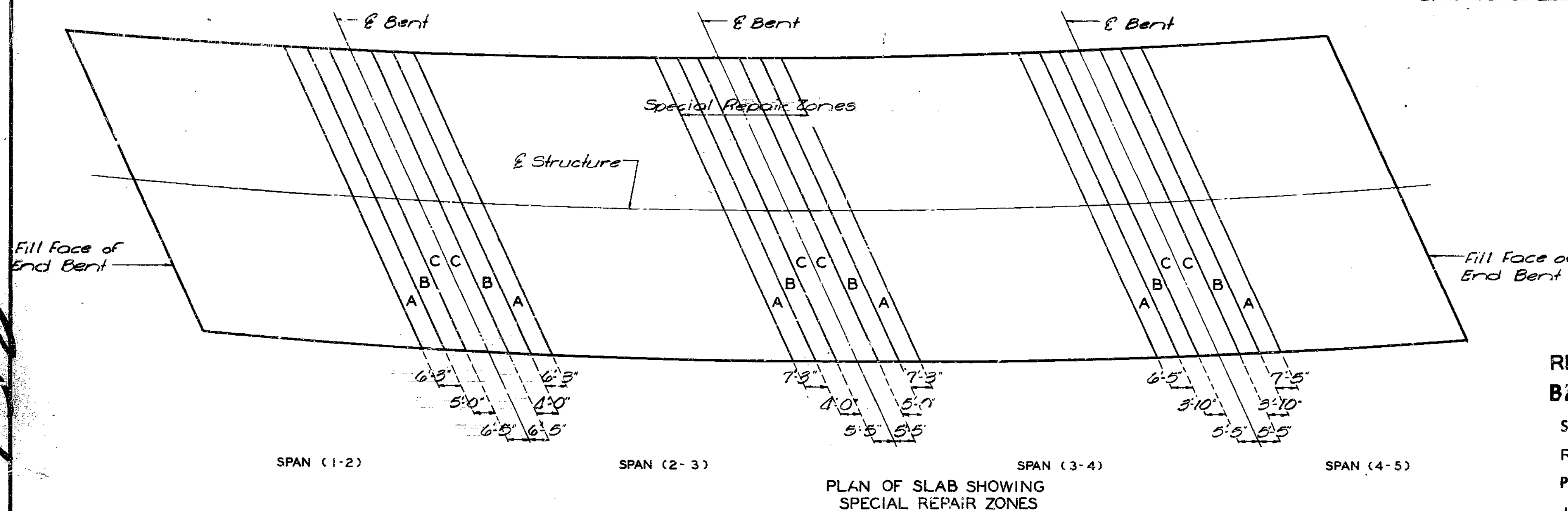
Note: Outline of old work is indicated by light dotted lines. Heavy lines indicate new work.

Sequence for repair; Zone A, 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.  
 See Special Provisions for alternate use of conc. wearing surface.  
 One lane of traffic is to be maintained over structure during construction. (See Road Plans)

(A) { 1 3/4" (min.) Latex Modified Concrete plus Cathodic Protection System  
 or  
 2 1/8" (min.) Low Slump Concrete plus Cathodic Protection System

\* 1 3/4" (min.) Latex Modified Conc. or  
 2 1/8" (min.) Low Slump Conc.

HALF-SOLED AREA



REPAIRS TO  
**BRIDGE: RAMP 5 OVER RAMP 6**  
 STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35  
 ROUTE I-35 INTERCHANGE  
 PROJECT NO. IR-435-1(215) STA. 4+19.10  
 JOB NO. 4-I-435-702 RTE. I-435  
 CLAY COUNTY

STD.
STD.
A-1581R

DESIGNED SEPT. 1985  
 DETAILED SEPT. 1985  
 CHECKED Sept 1985

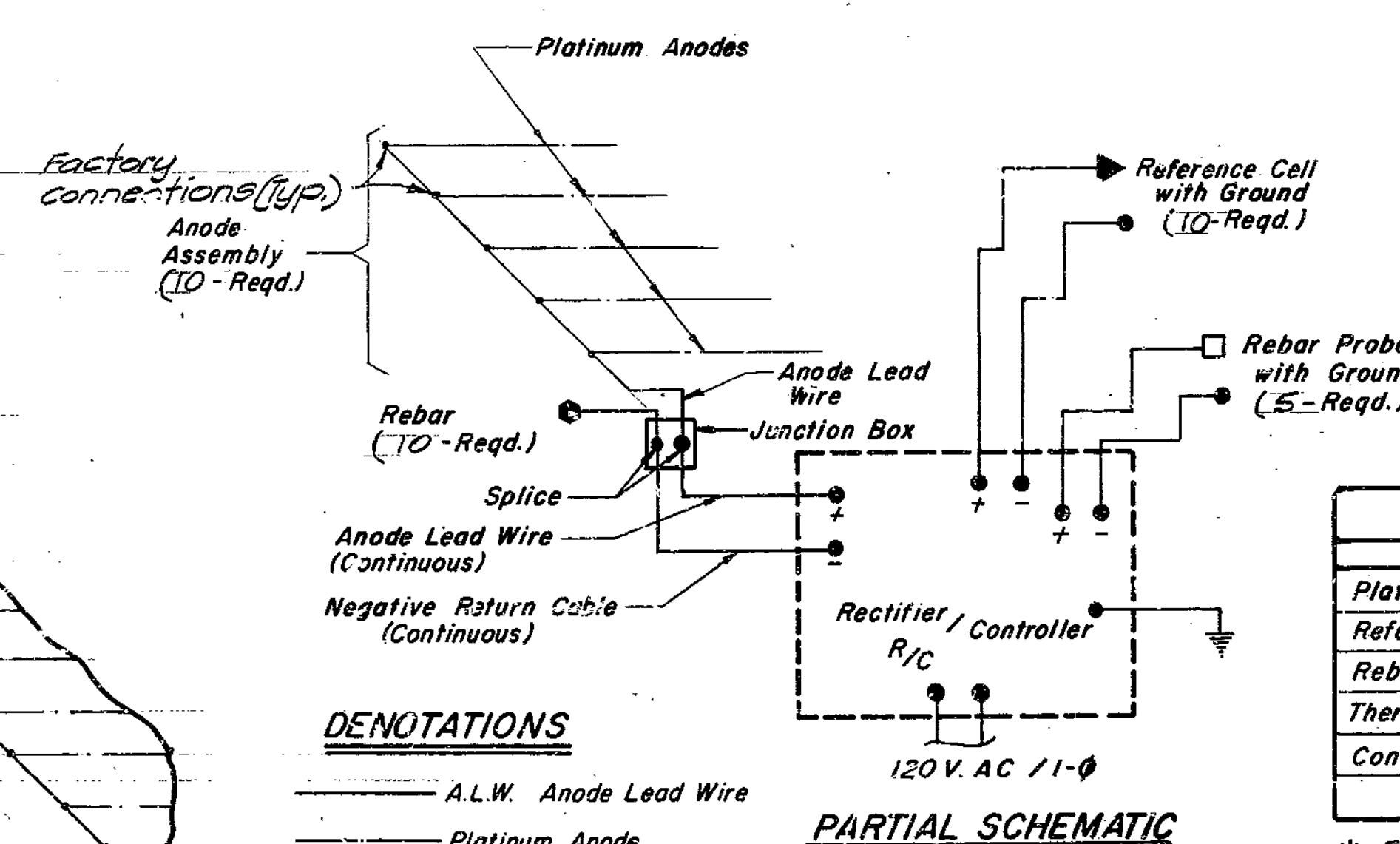
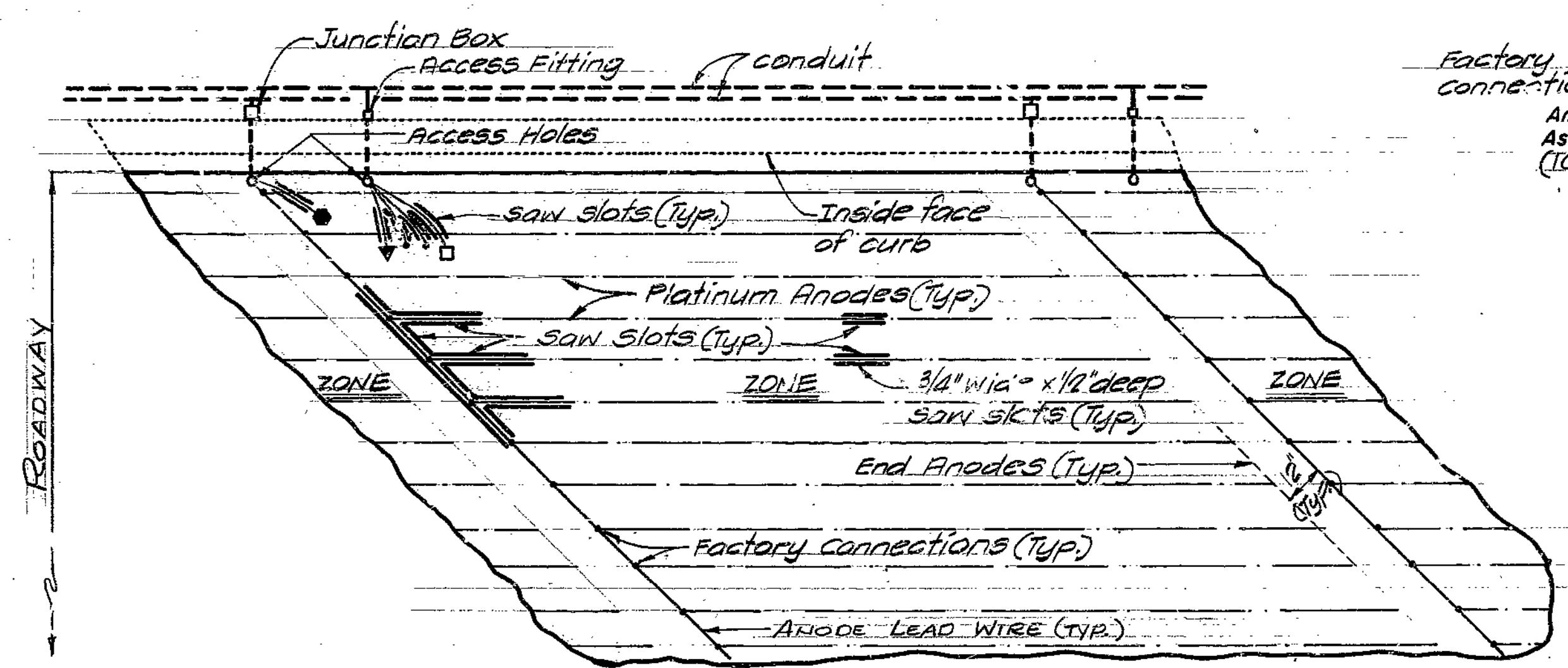
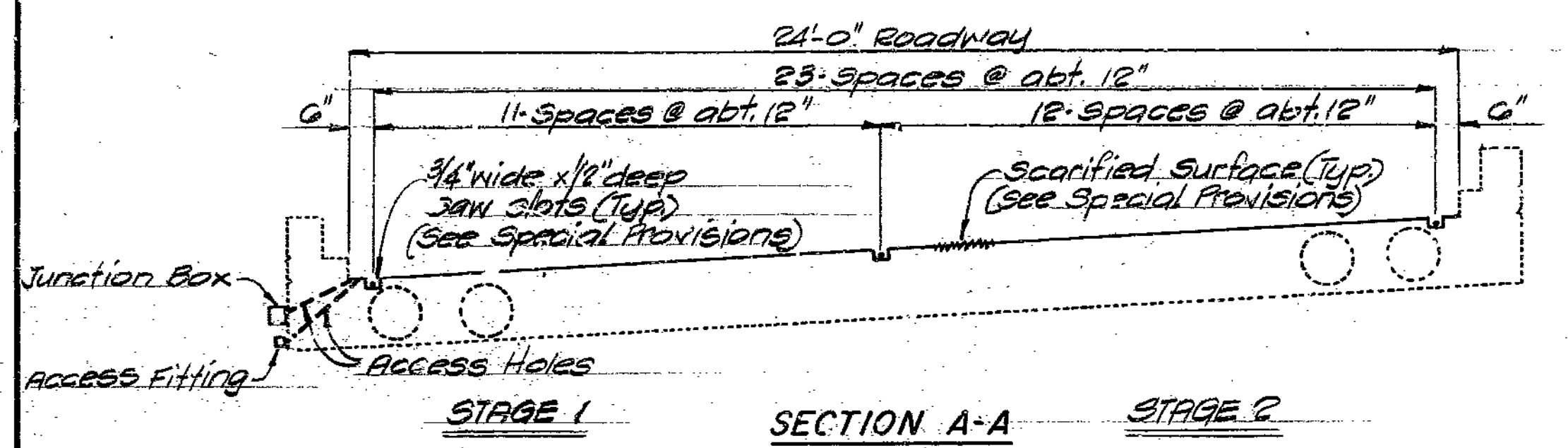
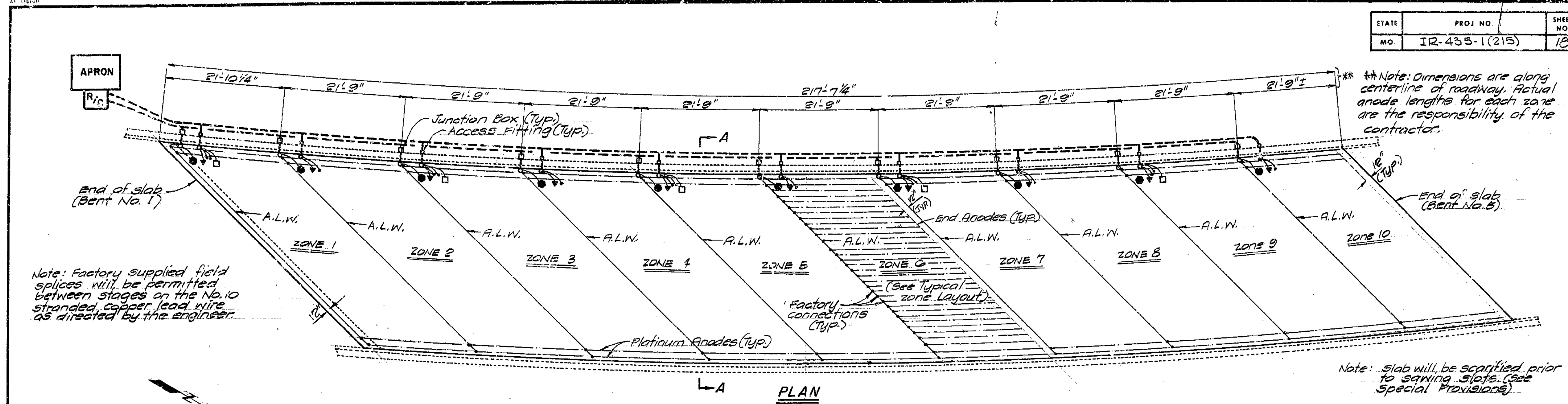
Note: This drawing is not to scale. Follow dimensions.

SEE FINAL PLANS  
 Sheet No. 1 of 4

DATE 10/25/85

432

STATE	PROJ NO	SHEET NO
MO.	IR-435-1(215)	18



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

ESTIMATED QUANTITIES *		
ITEM	UNIT	QUANTITY
Platinum Anodes	Lin. Ft.	4,960
Reference Cells	Each	10
Rebar Probes	Each	5
Thermite Welds	Each	25
Conduit 2 1/2" Ø PVC	Lin. Ft.	480

\* For information only.  
Note: Platinum anodes and conduit lengths are approximate. Actual lengths are the responsibility of the contractor.

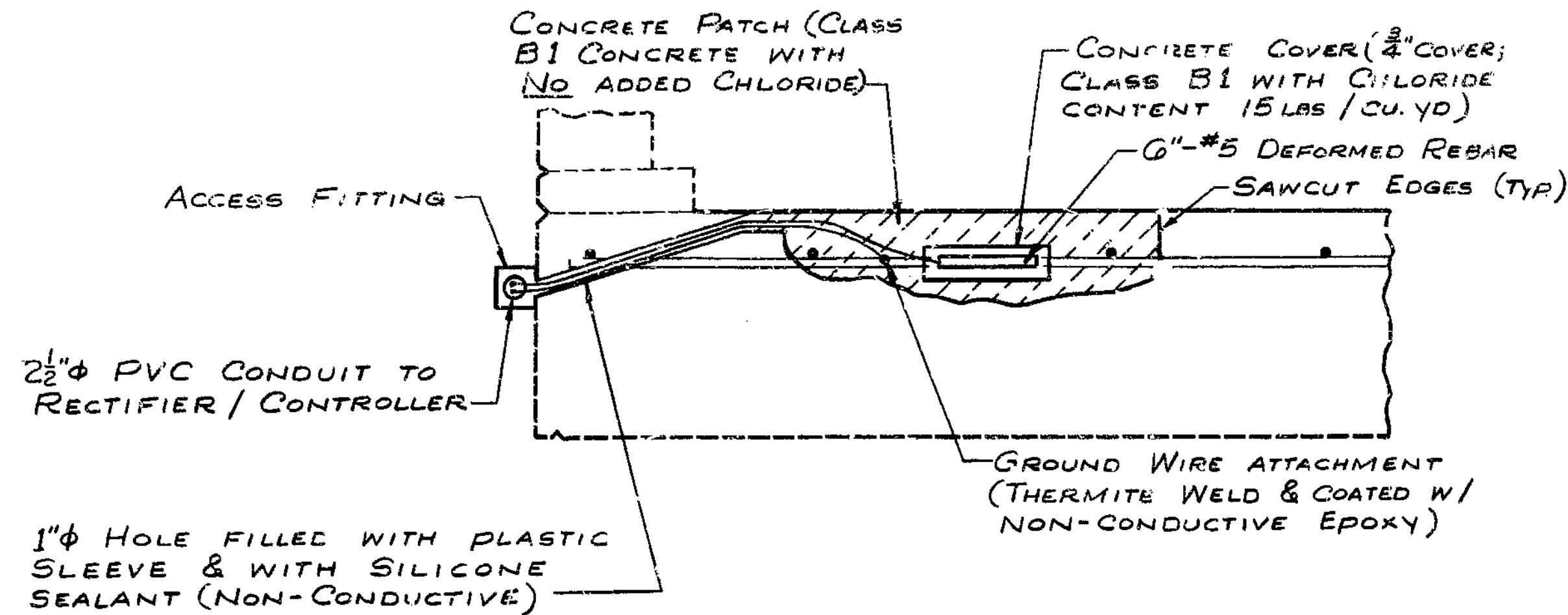
**CATHODIC PROTECTION SYSTEM**

433

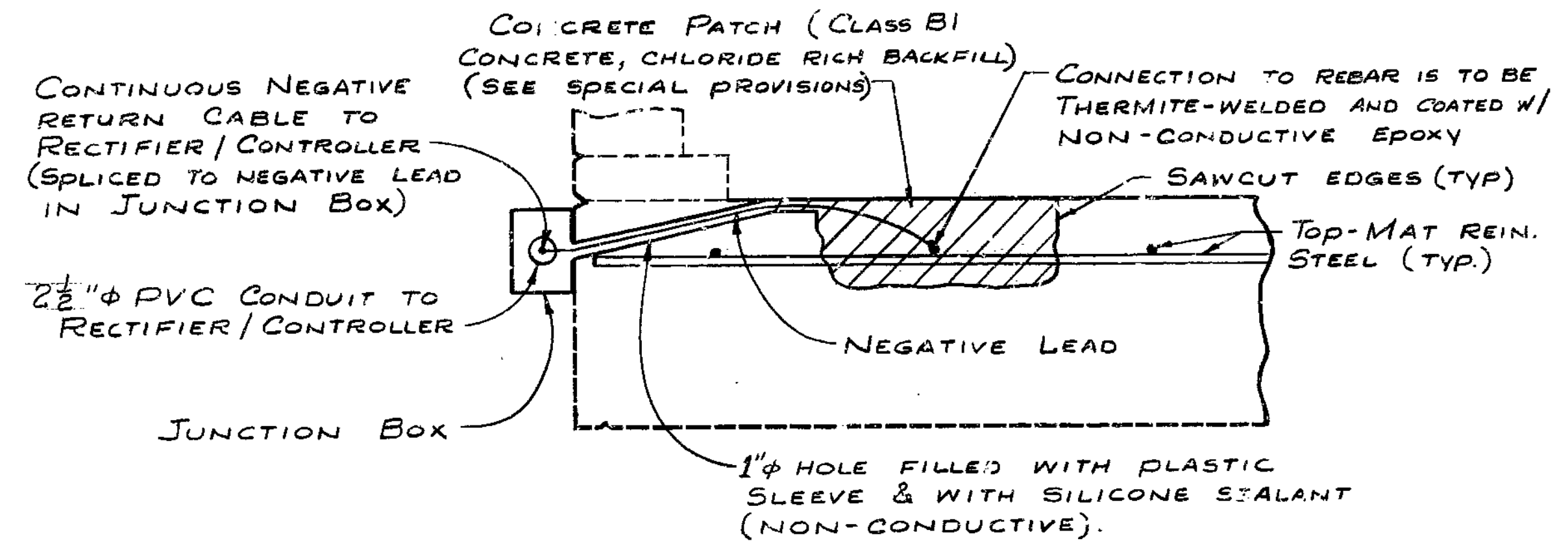
DETAILED Sept. 1985  
CHECKED Sept. 1985

Note: Anodes shall be placed as shown with a minimum tolerance of plus or minus three inches.  
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ NO	SHEET NO.
MO	IR-435-1(215)	19

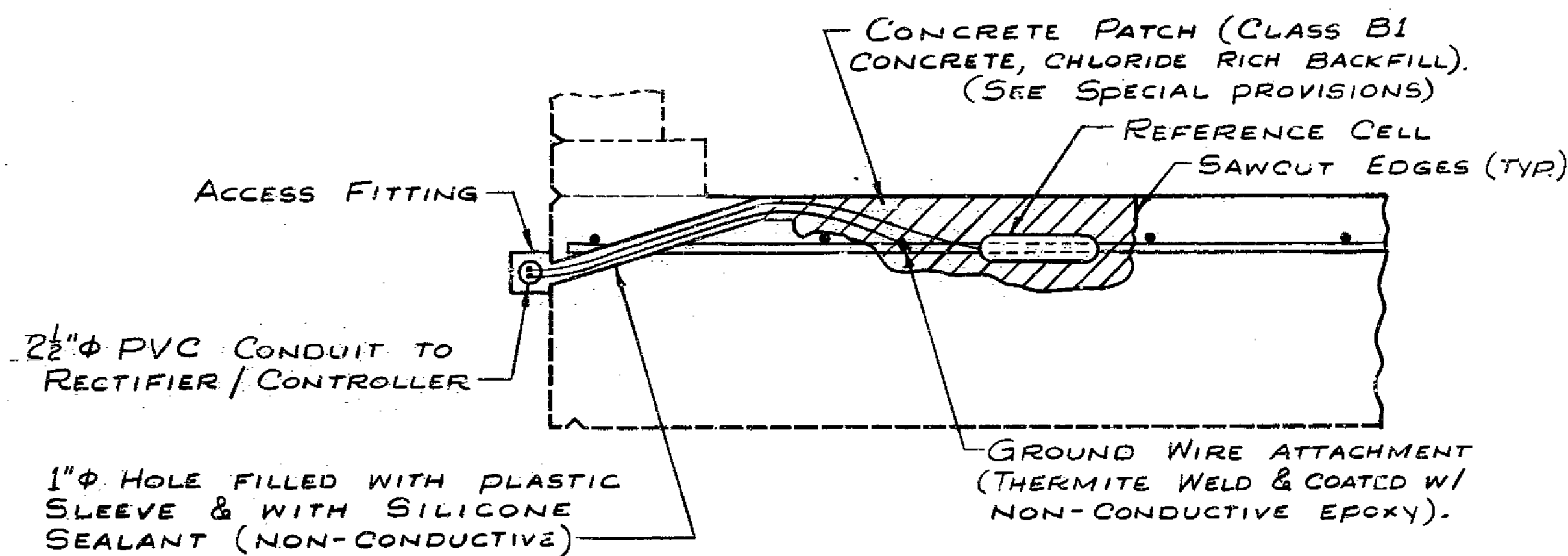


REBAR PROBE DETAILS

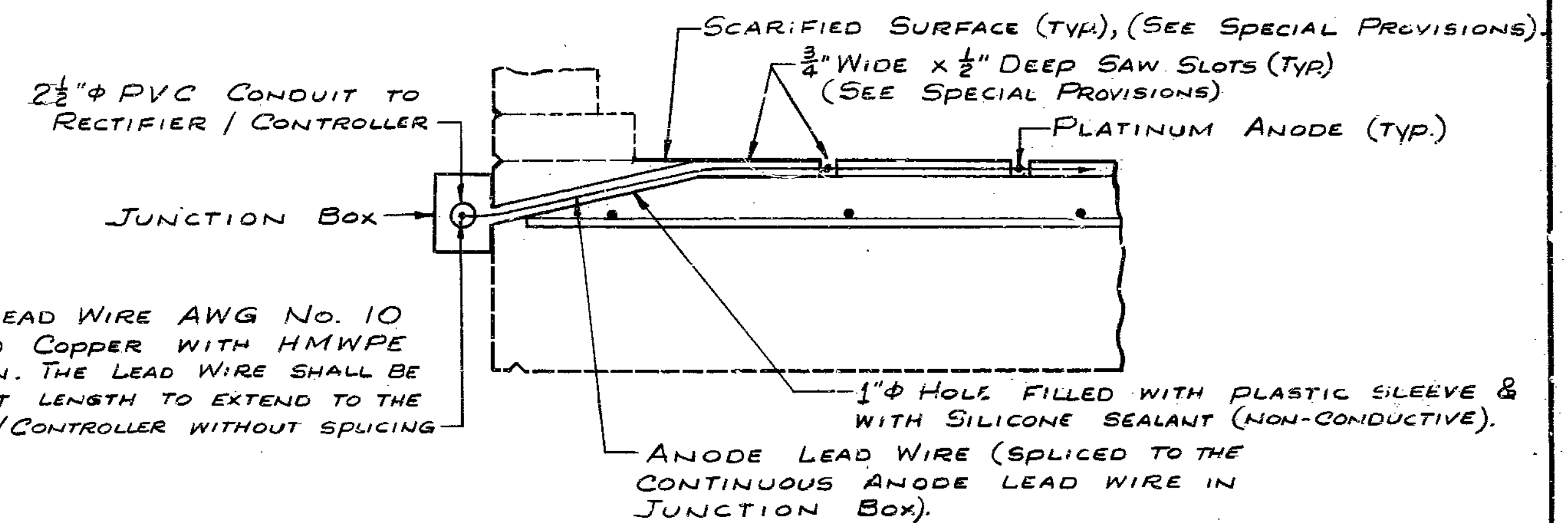


SYSTEM NEGATIVES CONNECTION DETAIL

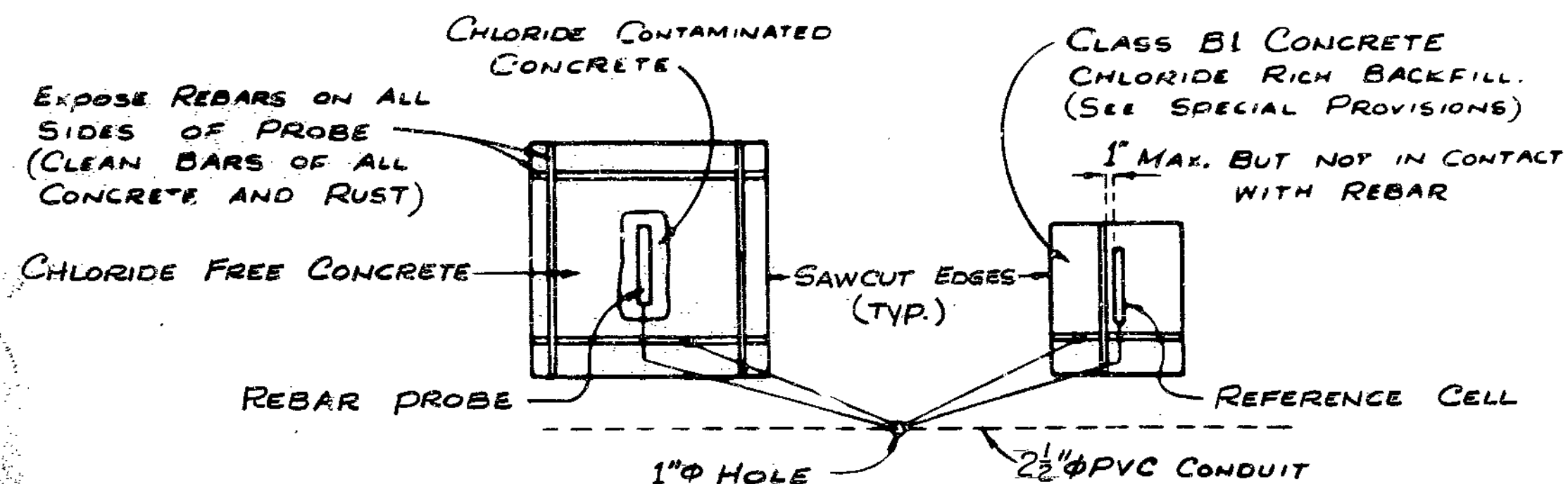
NOTE: THE REFERENCE CELL SHALL BE PLACED IN THE EXCAVATED AREA WITHIN 1" BUT NOT IN DIRECT CONTACT OF TOP-MAT REINFORCING STEEL.



REFERENCE CELL DETAILS



PLATINUM ANODE TO ANODE LEAD WIRE DETAIL



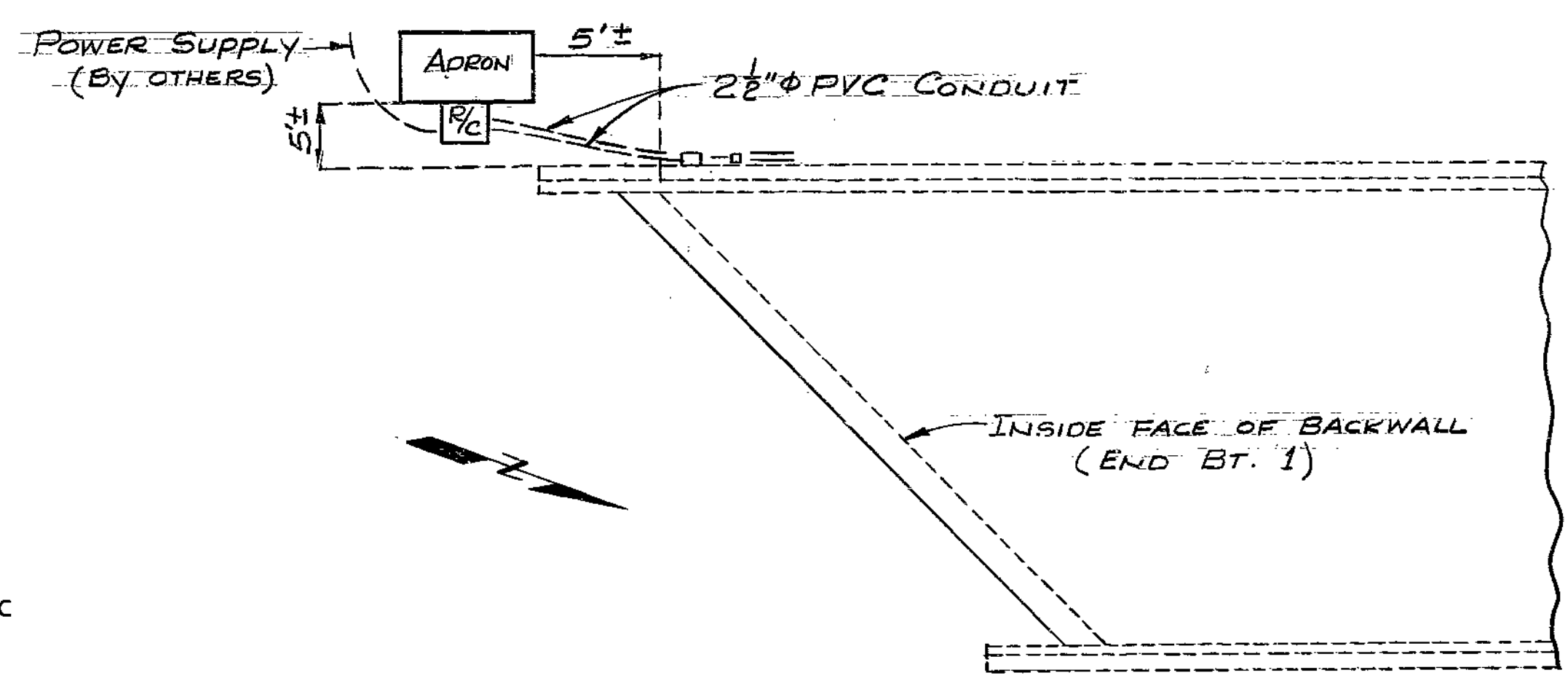
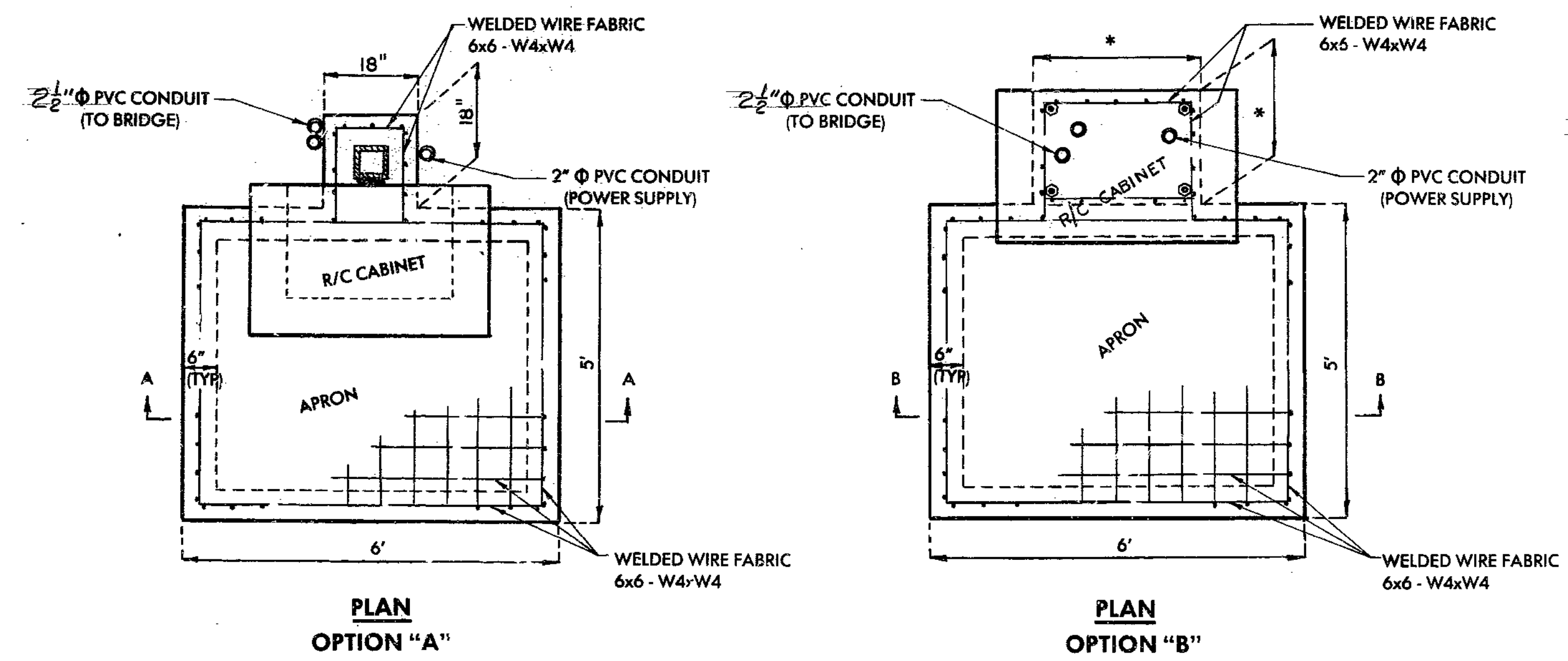
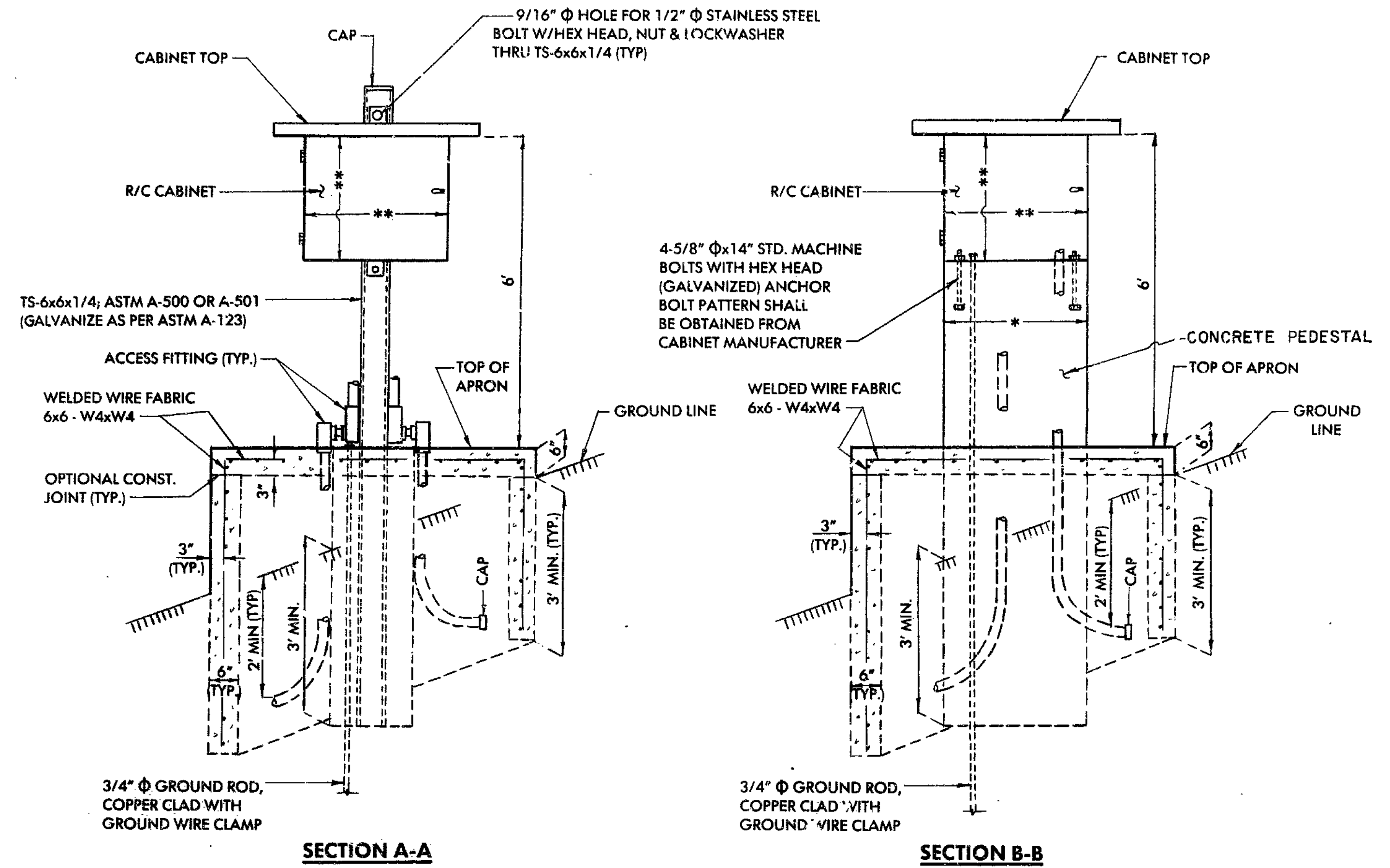
PLAN OF REBAR PROBE AND REFERENCE CELL

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

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

434

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	20



\*\*DIMENSIONS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.  
 \*DIMENSIONS ACCORDING TO MANUFACTURED CABINET.

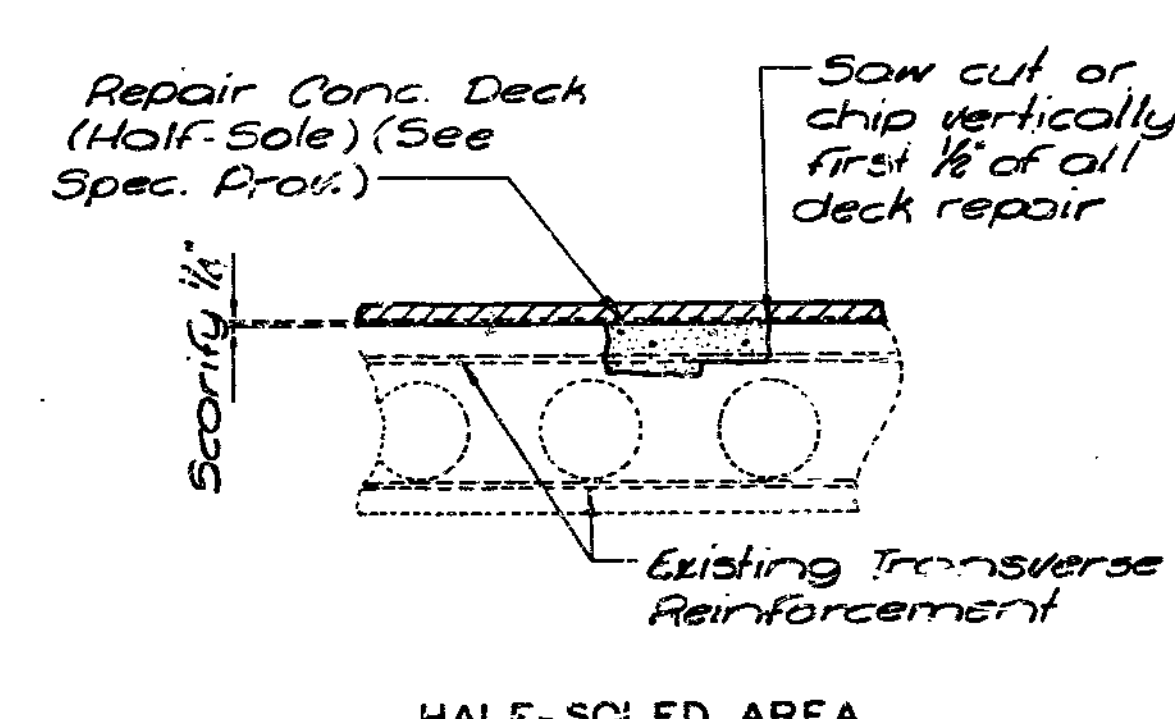
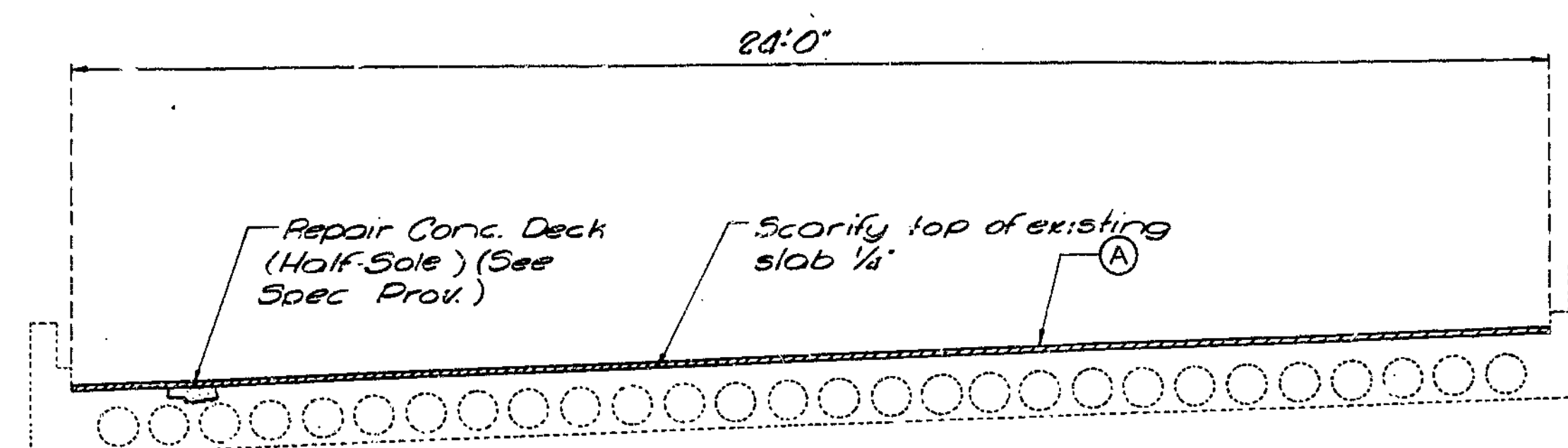
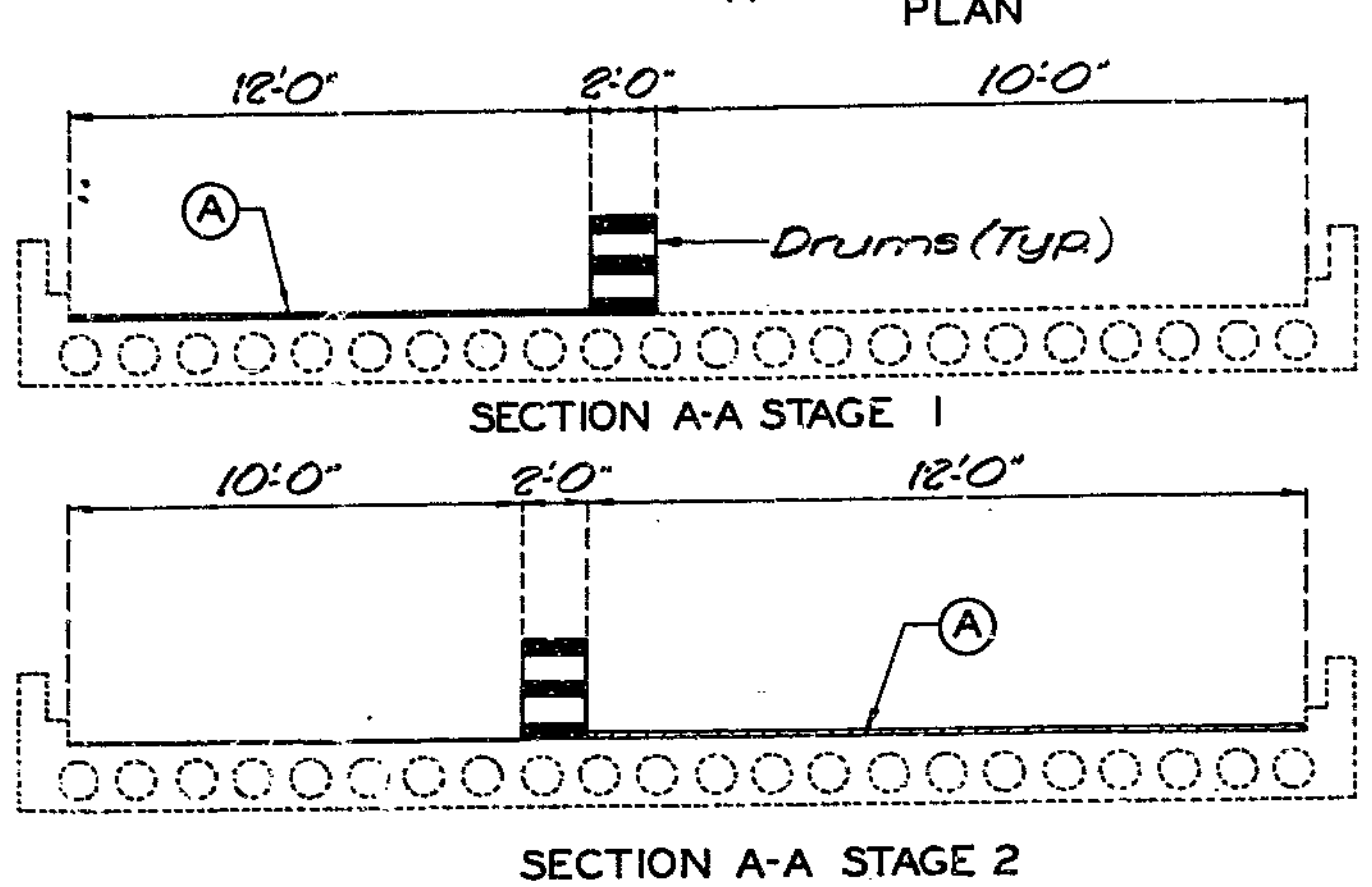
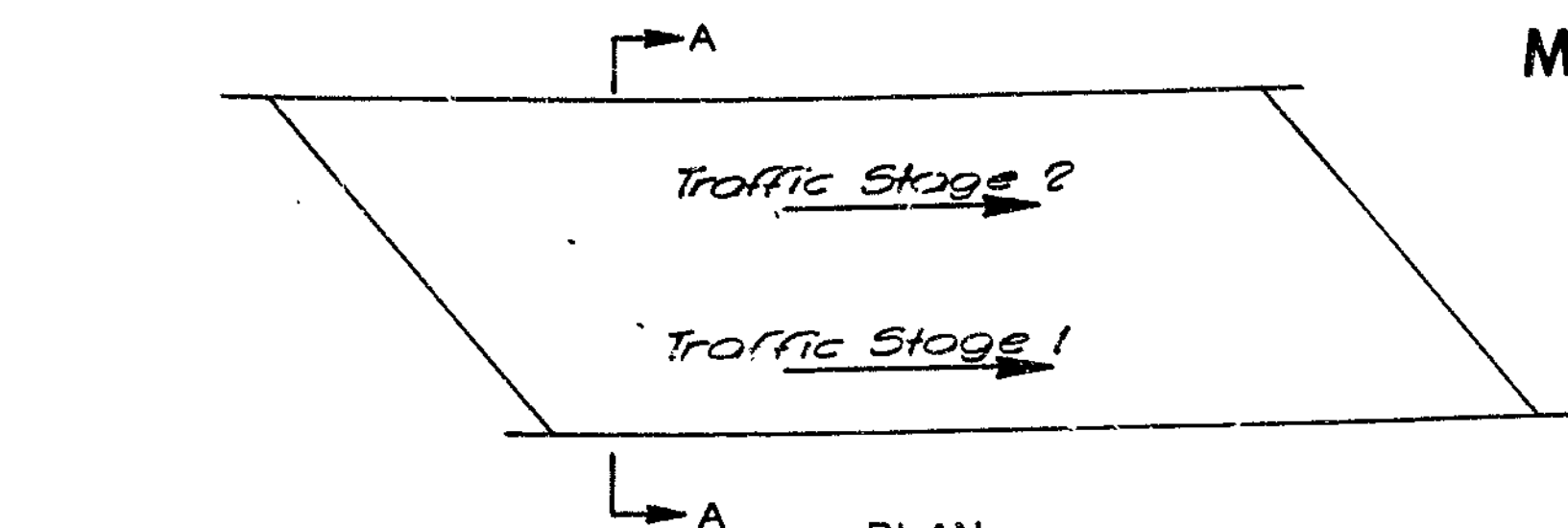
Note: The 3/4"  $\phi$  ground rods shall be sufficient length to extend a minimum of 10'-0" below bottom of concrete pedestal.  
 Ground wire shall be No. 6 AWG minimum.  
 Knockouts or drilled holes shall be provided in cabinets for all conduit. Locations of such are the responsibility of the contractor and cabinet manufacturer.

435

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	17
SEC./SUR. 27	TWP. 51N	RGE. 32W

FINAL PLANS



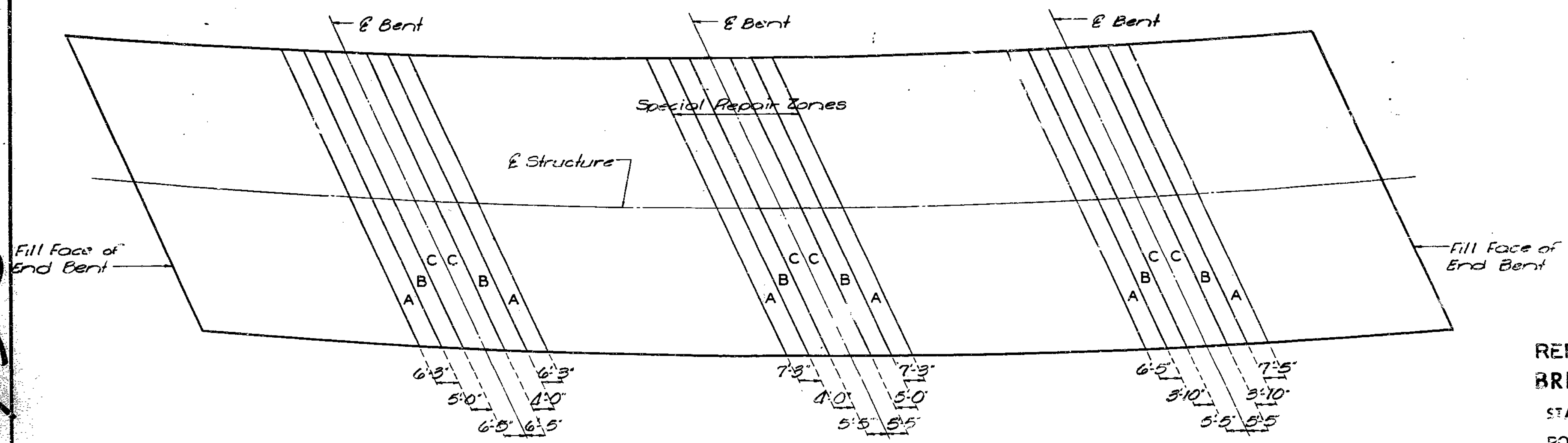
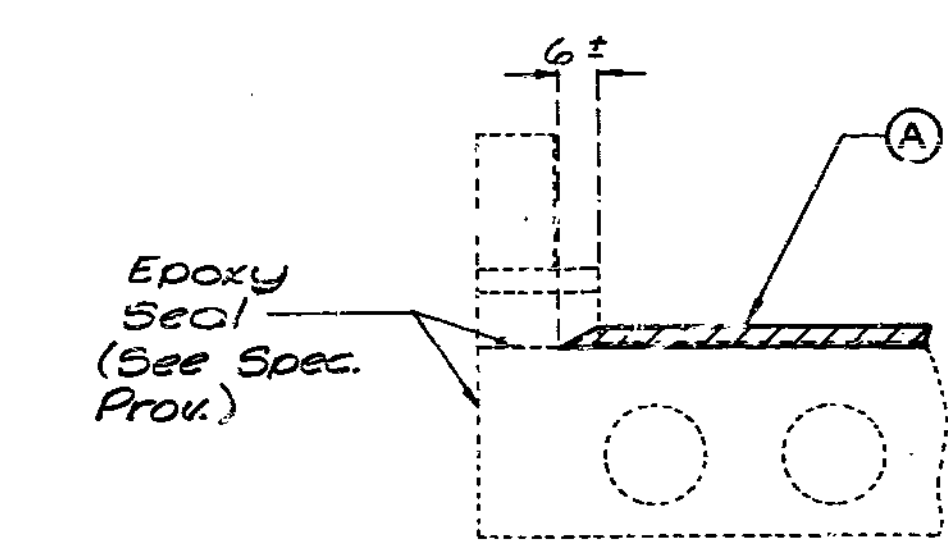
ESTIMATED QUANTITIES		TOTAL
ITEM		
* Concrete Wearing Surface ( * )	Sq. Yd	58.1
Repair Concrete Deck (Half-Soling)	Sq. Ft.	66
Cathodic Protection System	Lump Sum	1.0

Note: Outline of old work is indicated by light dotted lines. Heavy lines indicate new work.

Sequence for repair; Zone A, 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.  
See Special Provisions for alternate use of conc. wearing surface.  
One lane of traffic is to be maintained over structure during construction. (See Road Plans)

(A) 2 1/4" (min.) Low Slump Concrete plus Cathodic Protection System

2 1/4" (min.) Low Slump Conc.



PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

REPAIRS TO  
BRIDGE RAMP 5 OVER RAMP 6  
STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35  
ROUTE I-35 INTERCHANGE  
PROJECT NO. IR-435-1(215) STA. 4+19.10  
JOB NO. 4-I-435-702 RTE. I-435  
CLAY COUNTY

DESIGNED SEPT. 1985  
DETAILED SEPT. 1985  
CHECKED Sept 1985

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

Sheet No. 1A of 4

DATE 10/25/85

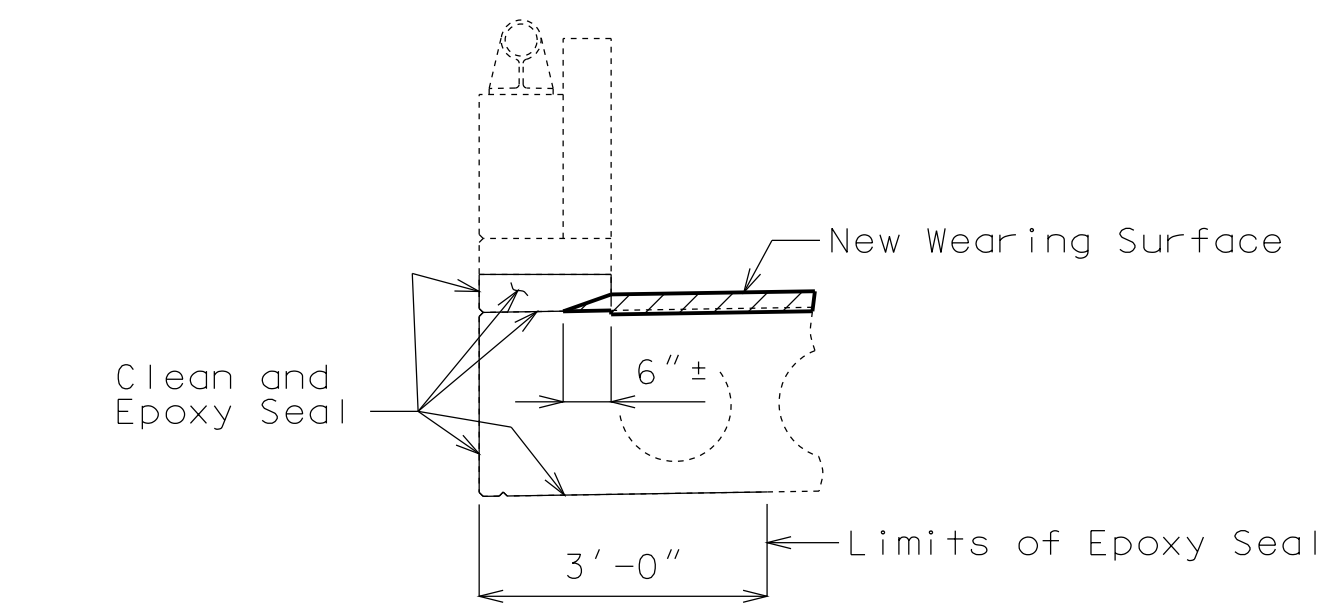
STD  
STD  
A-158

436

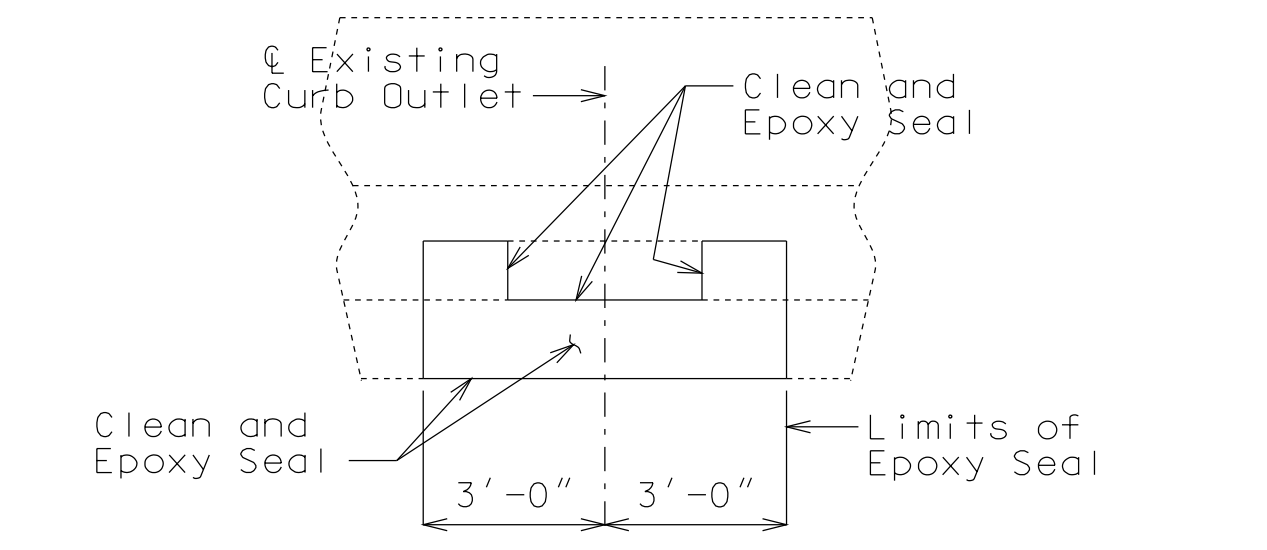


MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 U.I.P. & Rehabilitate Existing (48'-60'-50'-40')  
 Continuous Concrete Voided Slab Spans

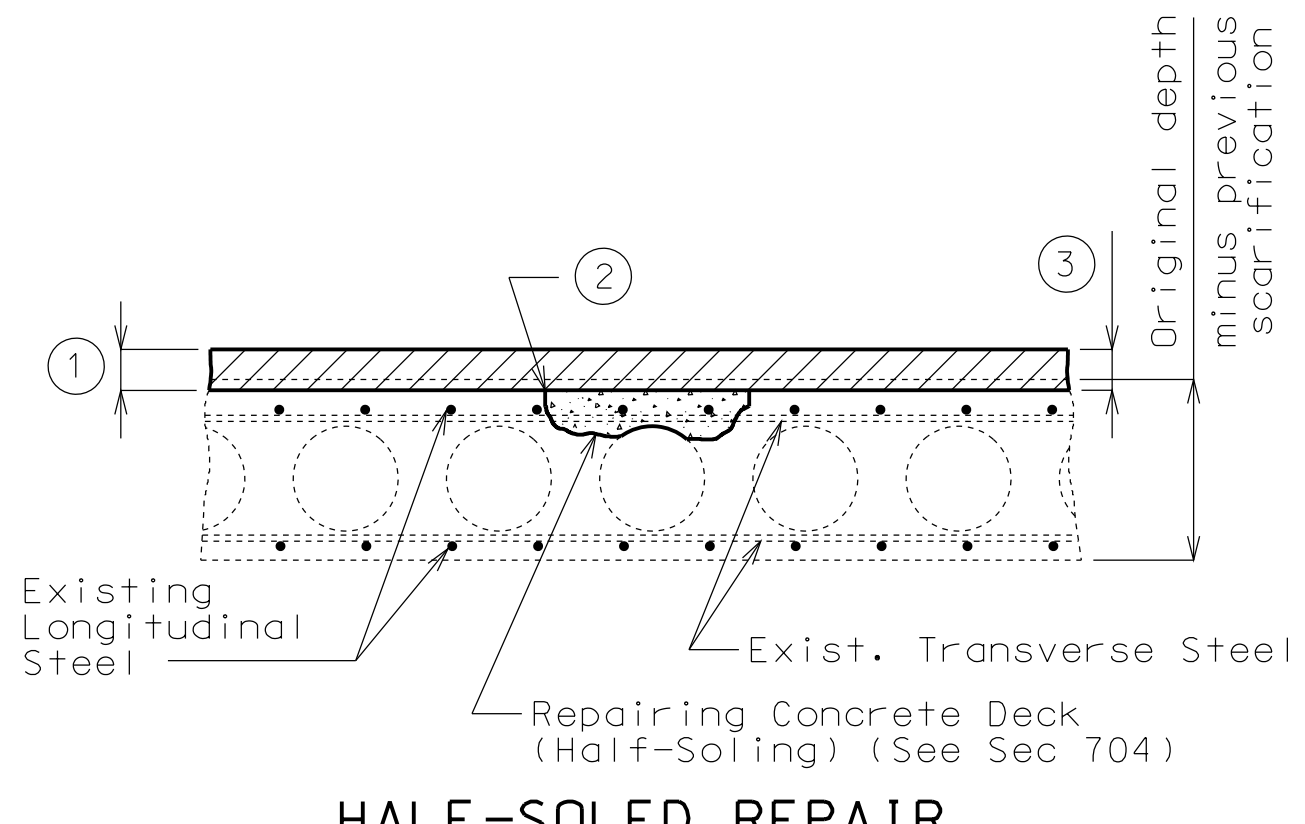
SEC/SUR 27 TWP 51N RGE 32W



TYPICAL SECTION OF EXISTING CURB OUTLET SHOWING LIMITS OF EPOXY SEAL

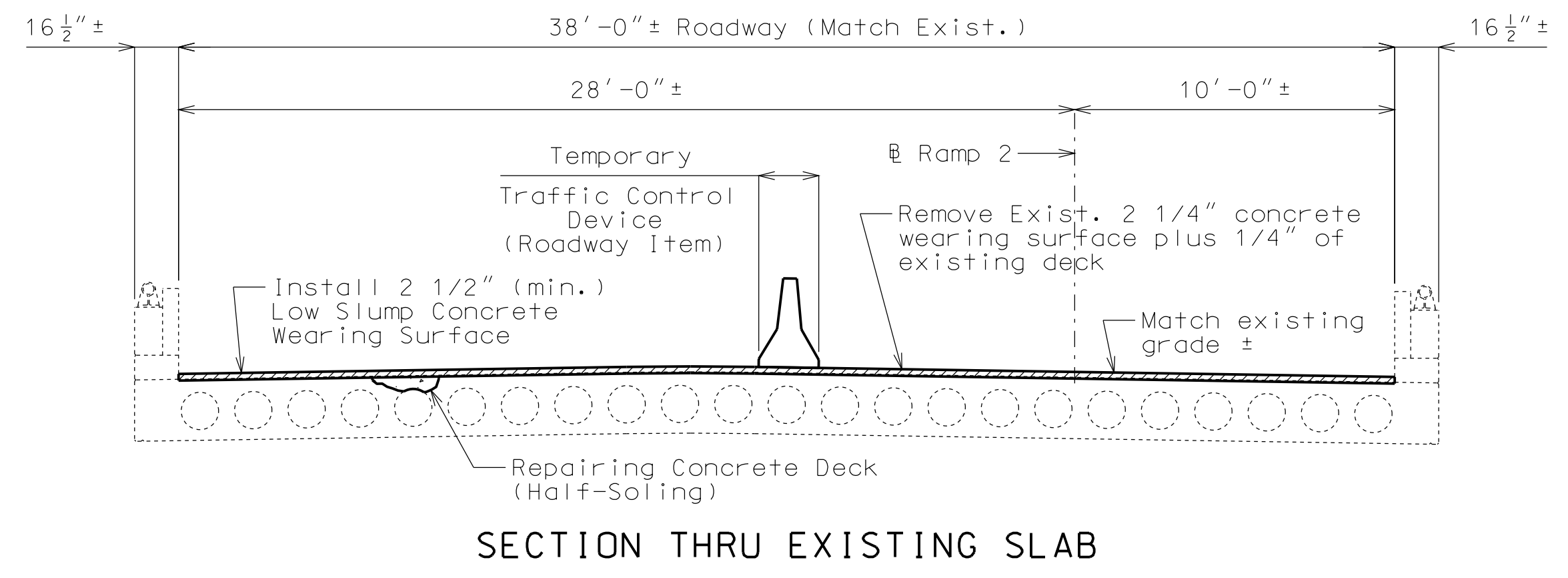


TYPICAL ELEVATION OF EXISTING CURB OUTLET SHOWING LIMITS OF EPOXY SEAL  
 (Wearing surface not shown for clarity)

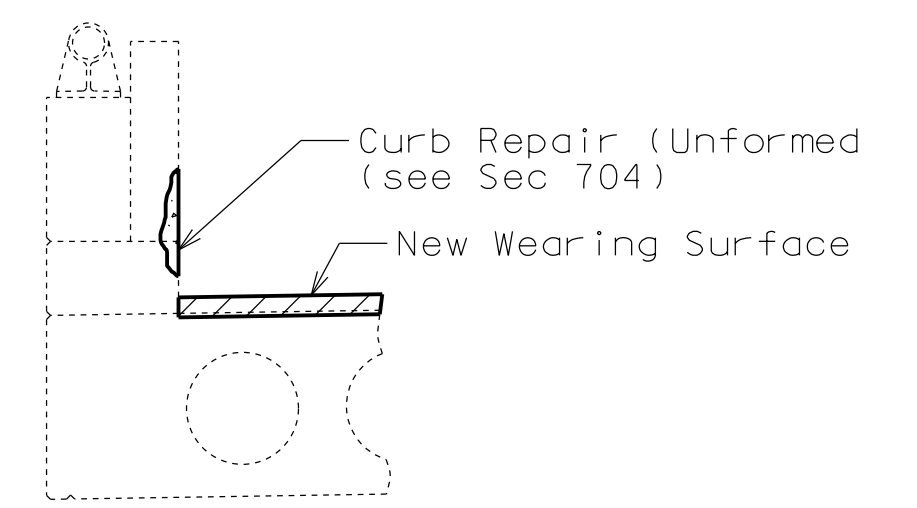


HALF-SOLED REPAIR

- ① Remove existing wearing surface plus 1/4" of existing deck.
- ② One inch vertical side shall be established outside the deteriorated area. See Sec 704.
- ③ 2 1/2" (min.) for Low Slump Concrete Wearing Surface

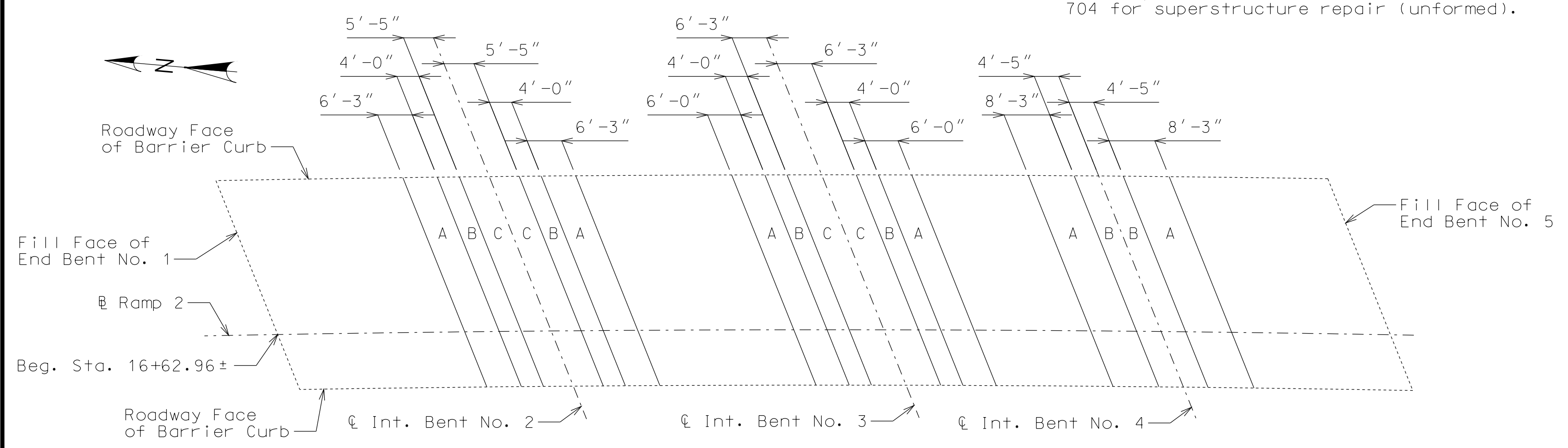


SECTION THRU EXISTING SLAB



TYPICAL SECTION OF EXISTING CURB REPAIR

Note:  
 Curb repair shall be in accordance with Sec 704 for superstructure repair (unformed).



PLAN OF EXISTING 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 prior to work in Zone A.

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).

General Notes:

Design Specifications:  
 2002 - AASHTO 17th Edition  
 Load Factor Design  
 Bridge Deck Rating = 7

Traffic Control:  
 Traffic over structure to be maintained during construction. See Roadway Plans for traffic control.

Miscellaneous:  
 Roadway surfacing adjacent to bridge ends shall match bridge overlay (Rdwy. Item).

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

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

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.

Estimated Quantities

Item		Total
Removal of Concrete Wearing Surface	sq. foot	7630
Low Slump Concrete Wearing Surface	sq. yard	848
Curb Repair (Unformed)	sq. foot	50
Repairing Concrete Deck (Half-Soling)	sq. foot	800
Clean and Epoxy Seal	sq. foot	757

REPAIRS TO BRIDGE: RAMPS 2 & 3  
 (I-35 N & S TO I-435 S) OVER  
 RTE. 69

STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

STD. 617.20
STD. 706.35

Detailed Apr. 2012  
 Checked Apr. 2012

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

Sheet No. 1 of 1

STA. 16+62.96± (Ramp 2) (Match Existing)

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
 12/3/2012

ROUTE  
 I-435 MO

DISTRICT  
 BR SHEET NO. 1

COUNTY  
 CLAY

JOB NO.  
 J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
 A15823

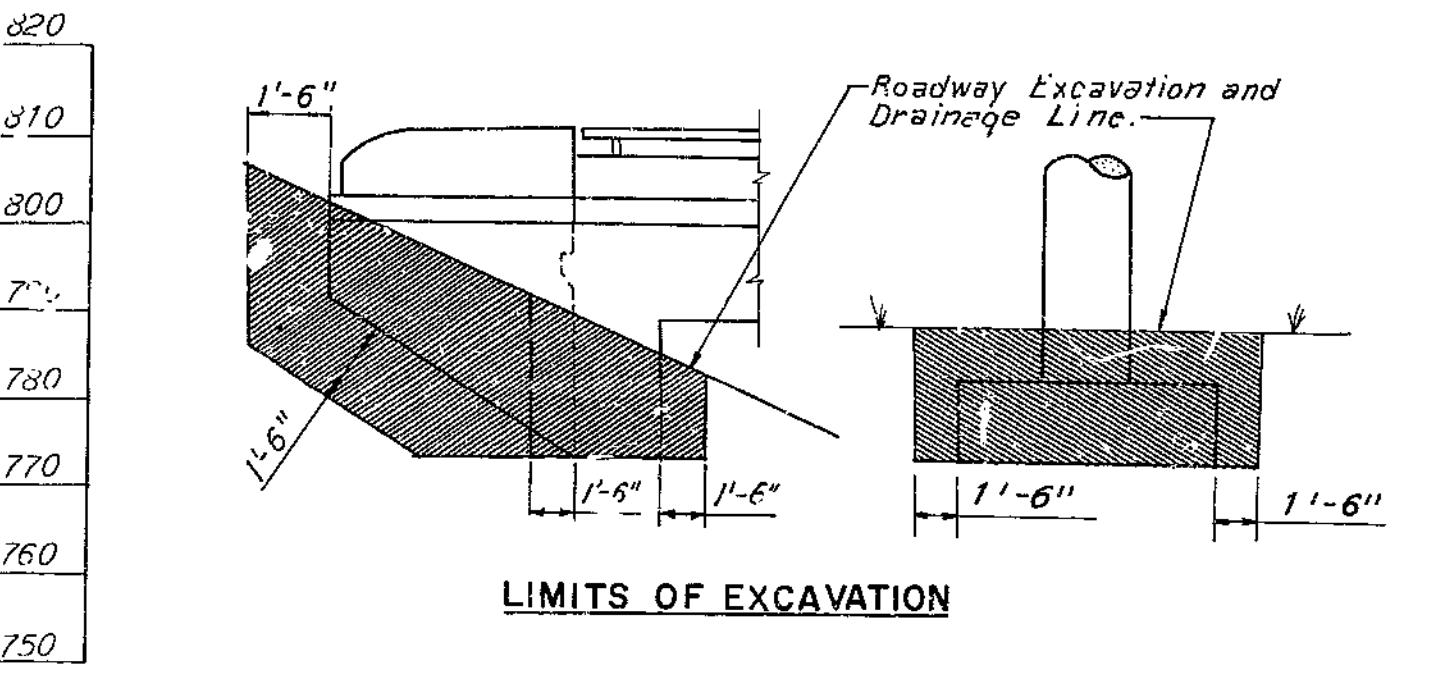
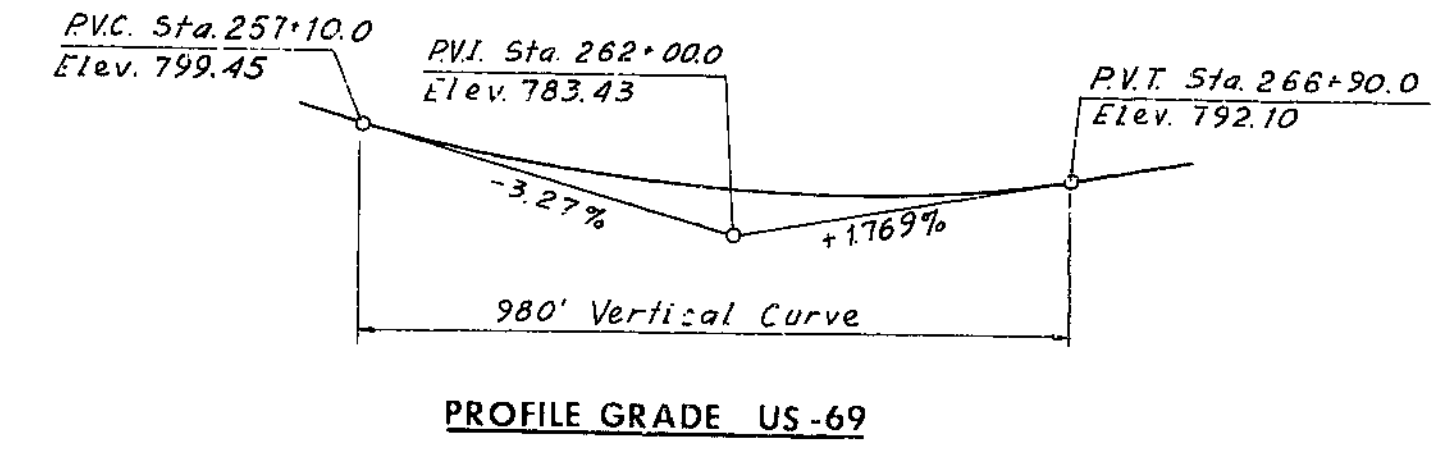
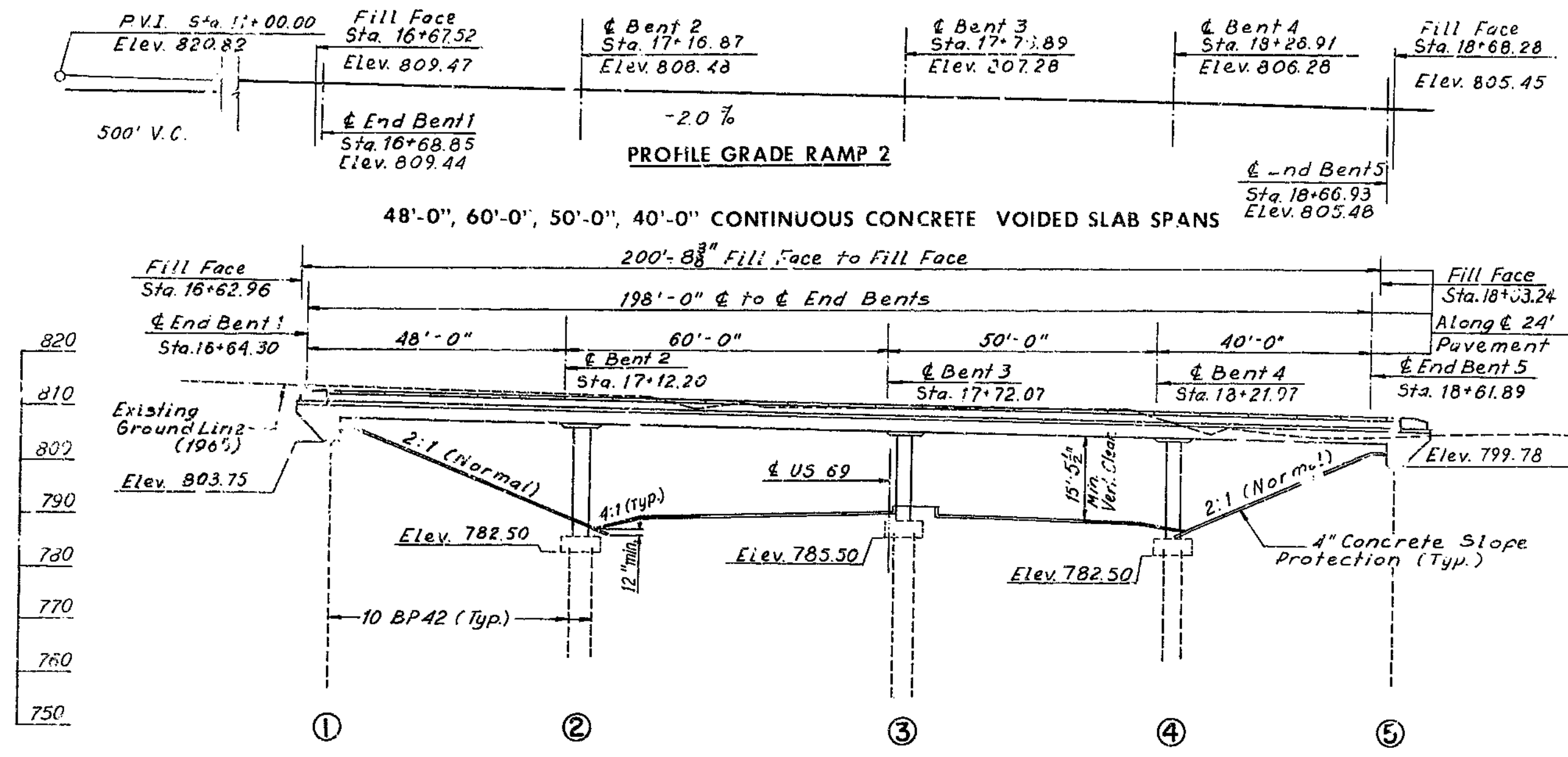
DESCRIPTION	DATE

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

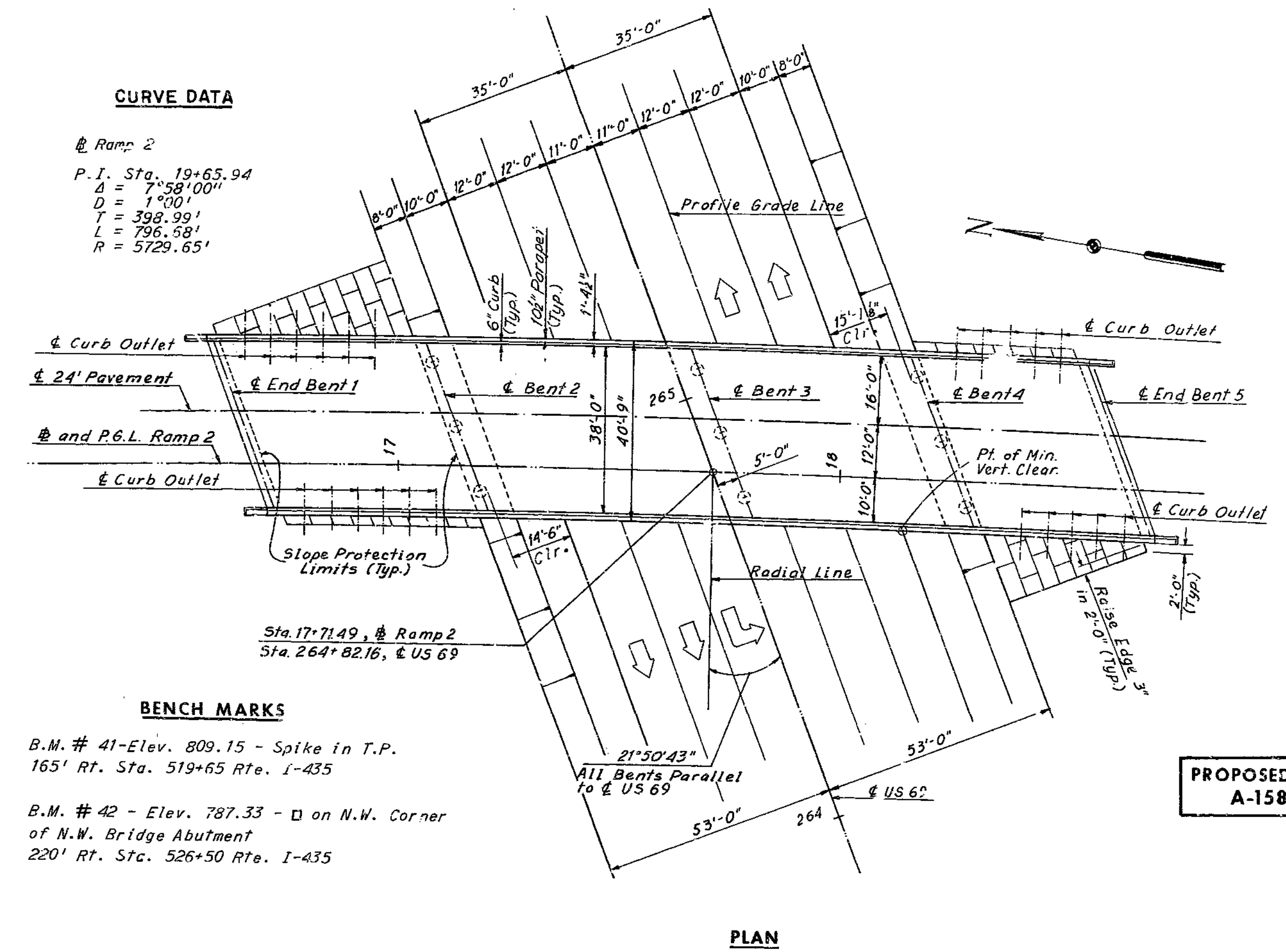
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MO			64	
DIST. NO.	COUNTY	ROUTE	SECTION	
4	CLAY			



Note: All dimensions are horizontal. Bents can not be located from the reference point on the tangent by conventional survey methods based on 100' chords. For Substructure Layout, see Sheet 3. For location of borings, see Sheet 2. For table of pile loads, see Sheet 3.



**BENCH MARKS**

B.M. # 41 - Elev. 809.15 - Spike in T.P. 165' Rt. Sta. 519+65 Rte. I-435

B.M. # 42 - Elev. 787.33 - D on N.W. Corner of N.W. Bridge Abutment 220' Rt. Sta. 526+50 Rte. I-435

**GENERAL NOTES**

Design Specifications: AASHTO 1965.

Design Loading: HS20-44 and Modified 24000# Tandem Axle with 15%sq. Ft. future wearing surface Earth 120# cu. ft. Equivalent fluid pressure 30#/ft.

Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.

Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 1,200$  psi.  
 Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
 Reinforcing Steel  $f_s = 20,000$  psi.  
 Steel pile (A.S.T.M A36-66)  $f_b = 9,000$  psi.

Reinforcing Steel: All splices in reinforcing bars shall be 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicates the size of the bar.

Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.

All reinforcing bar bending dimensions are "out to out".

Sealing of Deck: Superstructure deck to be surface sealed.

Utilities: All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor will notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.

Welding: See Standard Specification 55.3.13 for qualification of welding operators.

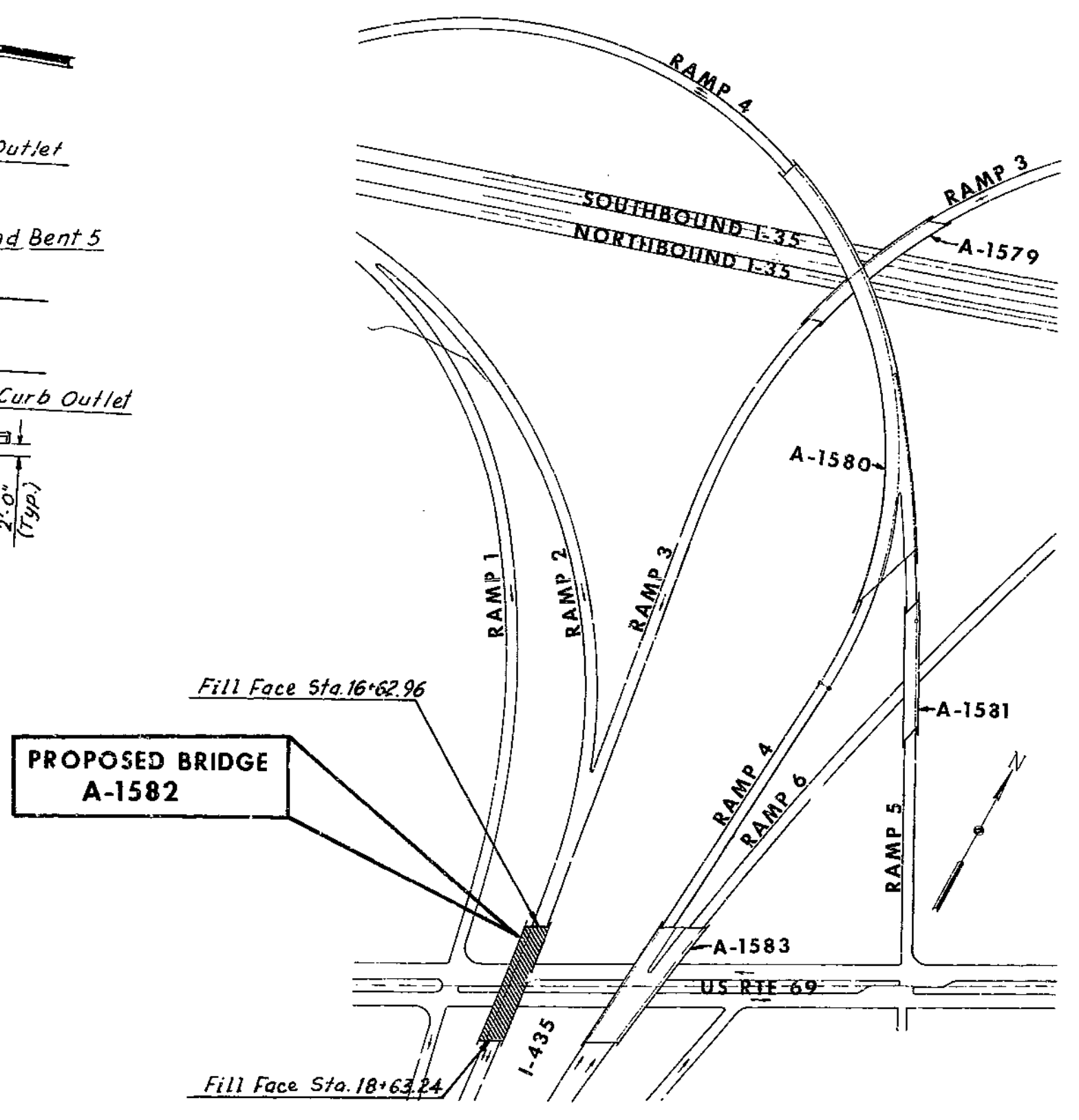
Note: Concrete Slope Protection on slopes at End Bents is to be included under roadway items. Provide 1" Filler (Standard Specification 157.1.7.) between Slope Protection concrete and End Bents or intermediate bents. See Standard Specification 83.50. For details, see Sheet 10 and Roadway Plans.

**TOTAL ESTIMATED QUANTITIES**

ITEM	UNIT	SUPERSTR.	SUBSTR.	TOTAL
Class 1 Excavation for Structures	Cu.Yd.		170	170
Steel Piles in Place (10BP42)	Lin.Ft.		1,446	1,446
Class B Concrete	Cu.Yd.		36.0	36.0
Class B1 Concrete	Cu.Yd.	578.2		578.2
Reinforcing Steel	Lbs.	162,010	1,620	163,630
Bridge Rail (Single Tube Type)	Lin.Ft.	400		400

**Quantity Notes:**

All excavation for bridge will be paid for as Class 1 Excavation for Structures. Sketch shows excavation for pay purposes. All concrete except interior bent footings is included in Class B1 Concrete. All reinforcing except that in interior bent footings is included in superstructure reinf.



**LOCATION SKETCH**  
 GENERAL PLAN AND ELEVATION

SUBMITTED BY: *R. N. Bergendoff*  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-253



**BRIDGE: RAMP 2 OVER ROUTE 69**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.96  
 CLAY COUNTY @ 24' PAV.

SUBMITTED BY: *W. A. Came* DATE 12-23-68  
 BRIDGE ENGINEER  
 APPROVED BY: *M. J. ...* DATE 12-23-68  
 CHIEF ENGINEER

STD. 54.00  
 A-1582

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

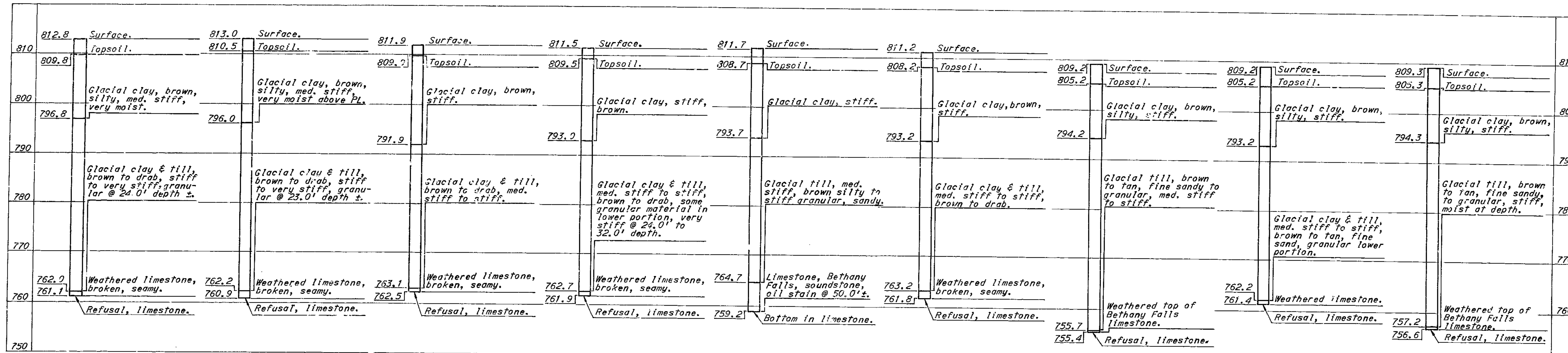
MADE C.E.B. DATE 3-24-68 CHECKED JFP DATE 5-27-68

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

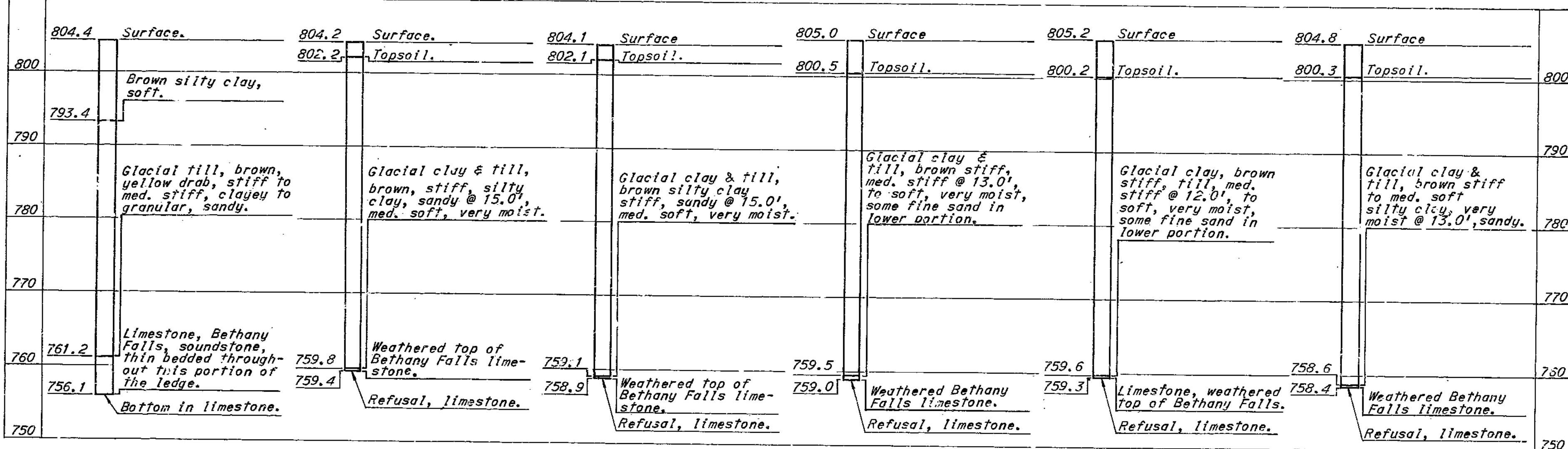
2106-21-02 A-1582 223

MISSOURI STATE HIGHWAY DEPARTMENT

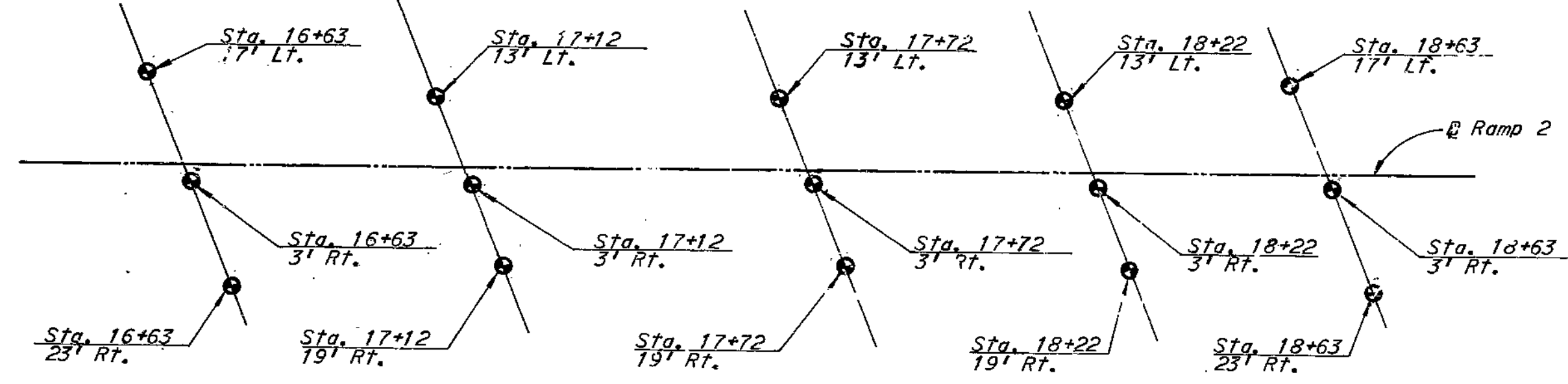
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET TOTAL
5	MO			65
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Sta. 16+63 @ 3' Rt.      Sta. 16+63 @ 23' Rt.      Sta. 16+63 @ 17' Lt.      Sta. 17+12 @ 3' Rt.      Sta. 17+12 @ 19' Rt. (Core No. L-5-33)      Sta. 17+12 @ 13' Lt.      Sta. 17+72 @ 3' Rt.      Sta. 17+72 @ 13' Lt.      Sta. 17+72 @ 19' Rt.



Sta. 18+22 @ 13' Lt. (Core No. T-5-38)      Sta. 18+22 @ 3' Rt.      Sta. 18+22 @ 19' Rt.      Sta. 18+63 @ 3' Rt.      Sta. 18+63 @ 23' Rt.      Sta. 18+63 @ 17' Lt.



Note: All borings augered unless otherwise shown. Borings dated May 1965.

Note: Distances left and right are measured from Ramp 2 along skew. Indicates location of boring.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY      NEW YORK

BORING LOCATION SKETCH (RAMP 2)

MADE M.B.R. DATE 5-10-68      CHECKED A.C. DATE 5-25-68

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

BRIDGE: RAMP 2 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.96  
CLAY COUNTY      @ 24' PAV.

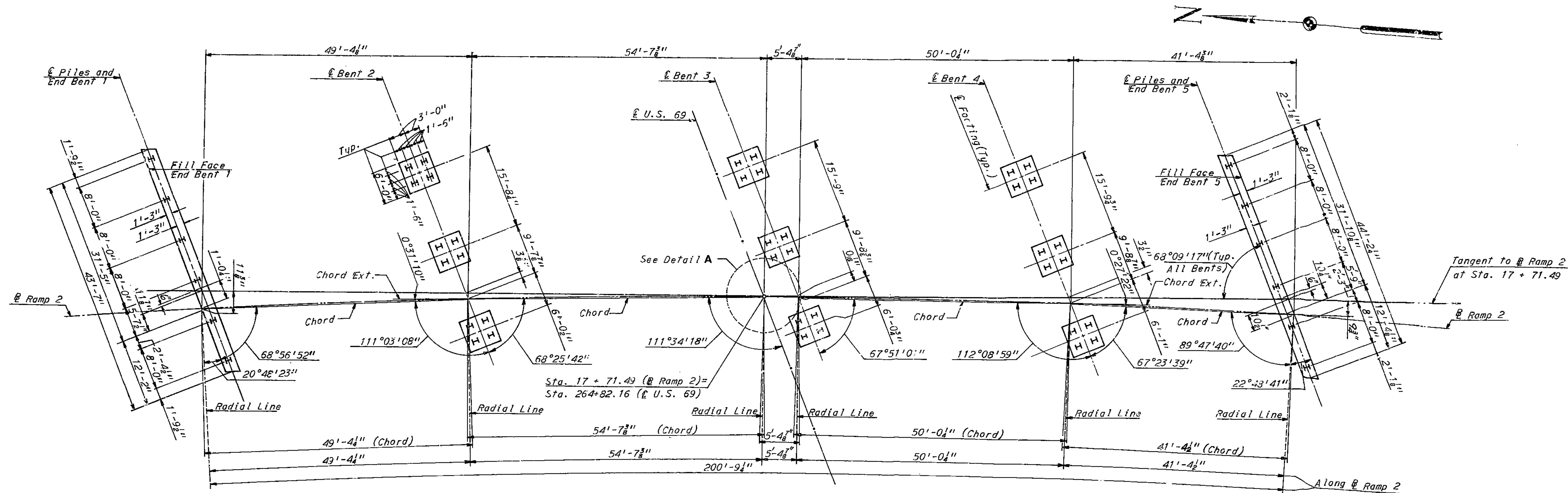
BORINGS

SHEET 2 OF 10

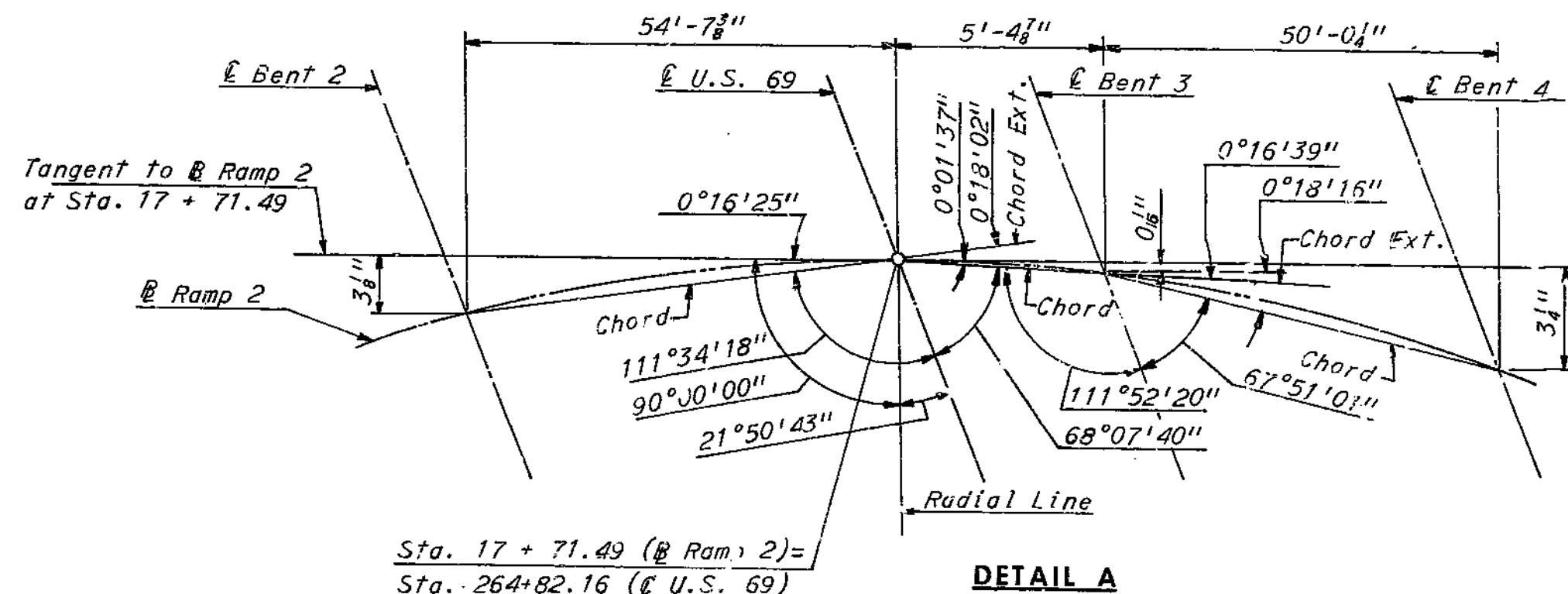
A-1.82

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	DATE
5	MO		5-28-68
DIST. NO.	COUNTY		
4	CLAY		



SUBSTRUCTURE LAYOUT PLAN



DETAIL A

	END BENT 1	BENT 2	BENT 3	BENT 4	END BENT 5
Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42
Number	6	12	12	12	6
Approximate Length (Ft.)	47	32	32	22	42
Design Bearing (Tons.)	45	53	53	53	45
Hammer Energy Required* (Ft.-Lbs.)	10100	11900	11900	11900	10100

\* Minimum Energy Requirement of hammer based on design bearing value of piles. Increase by the factor (W+w) / 2W when the ram (W) is less than the weight of the pile (w). All piles shall be driven to practical refusal.

BRIDGE: RAMP 2 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 16+62 - 50+01  
 CLAY COUNTY  
 SHEET 3 OF 10

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS

MADE IN KANSAS CITY, MISSOURI  
 DATE 5-24-68  
 CHECKED JSB DATE 5-28-68

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

SUBSTRUCTURE LAYOUT

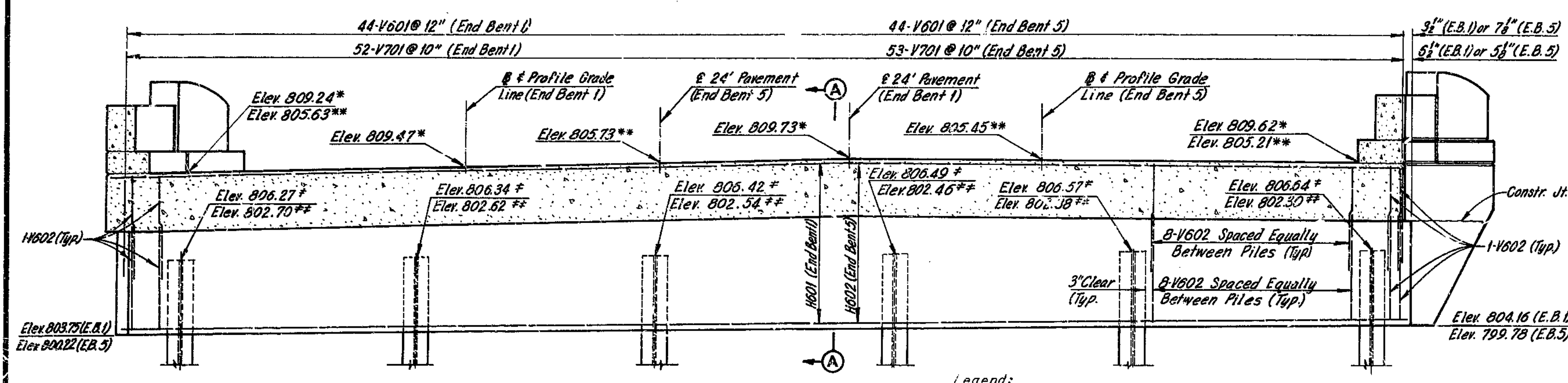
A-15823-1-A

225



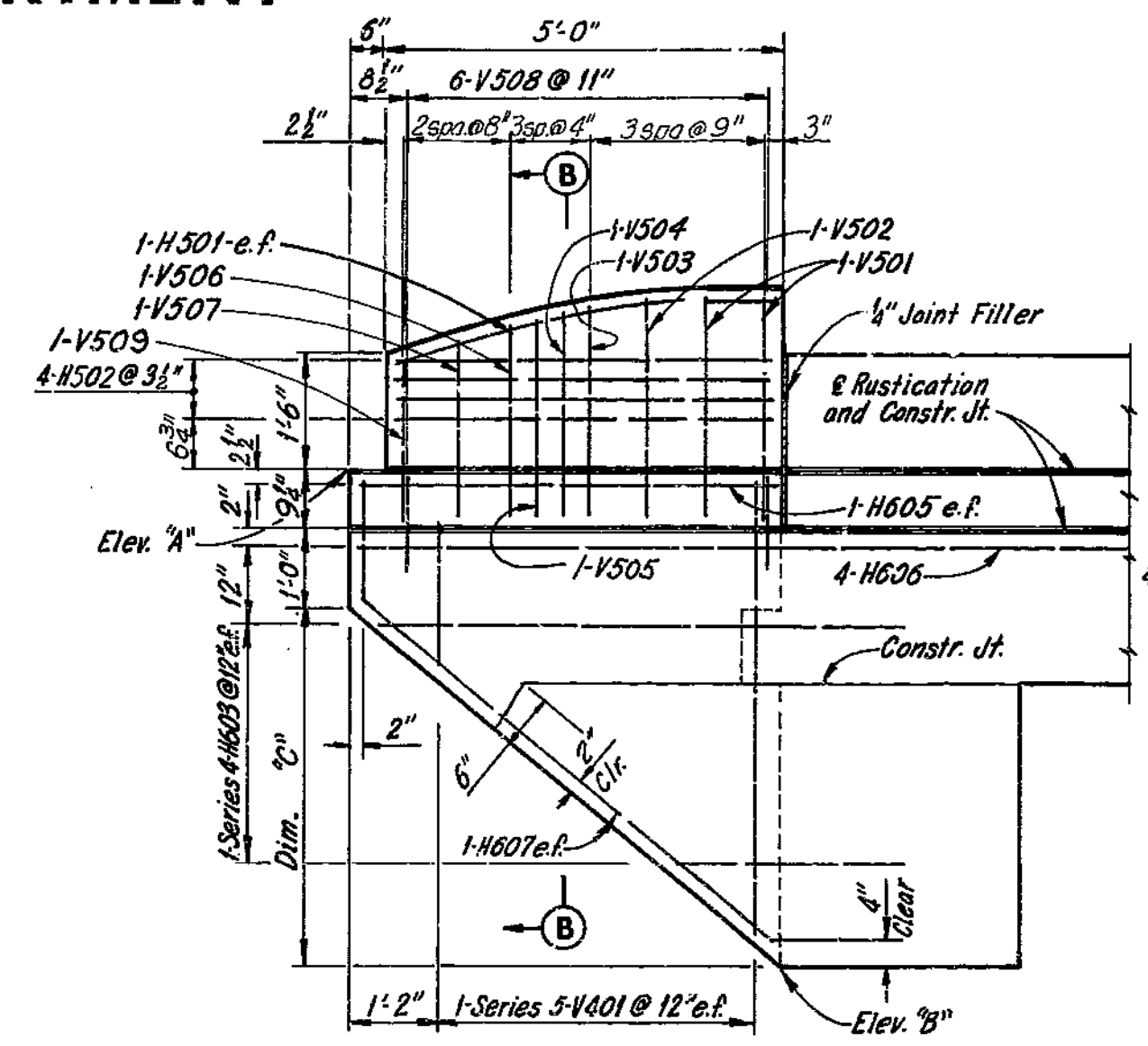
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

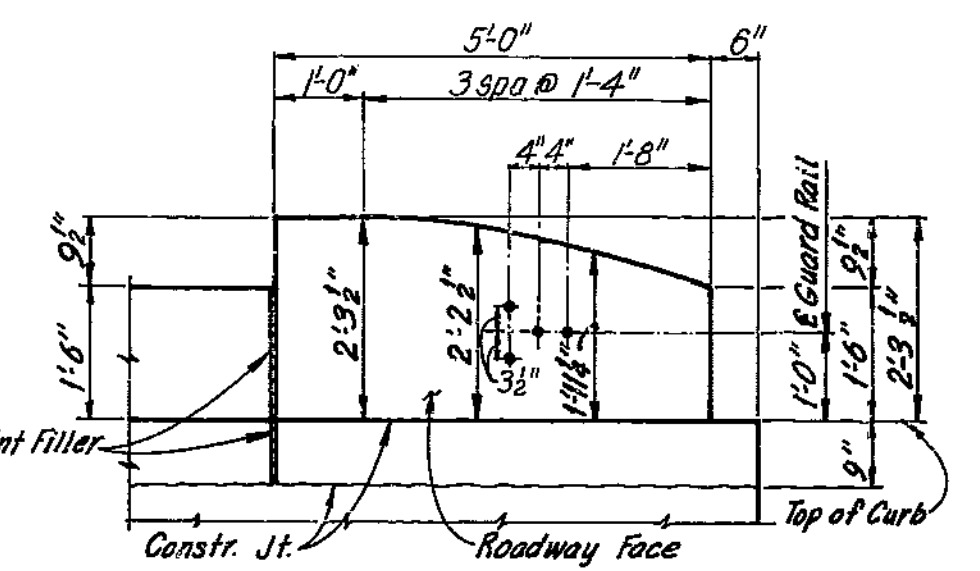


ELEVATION

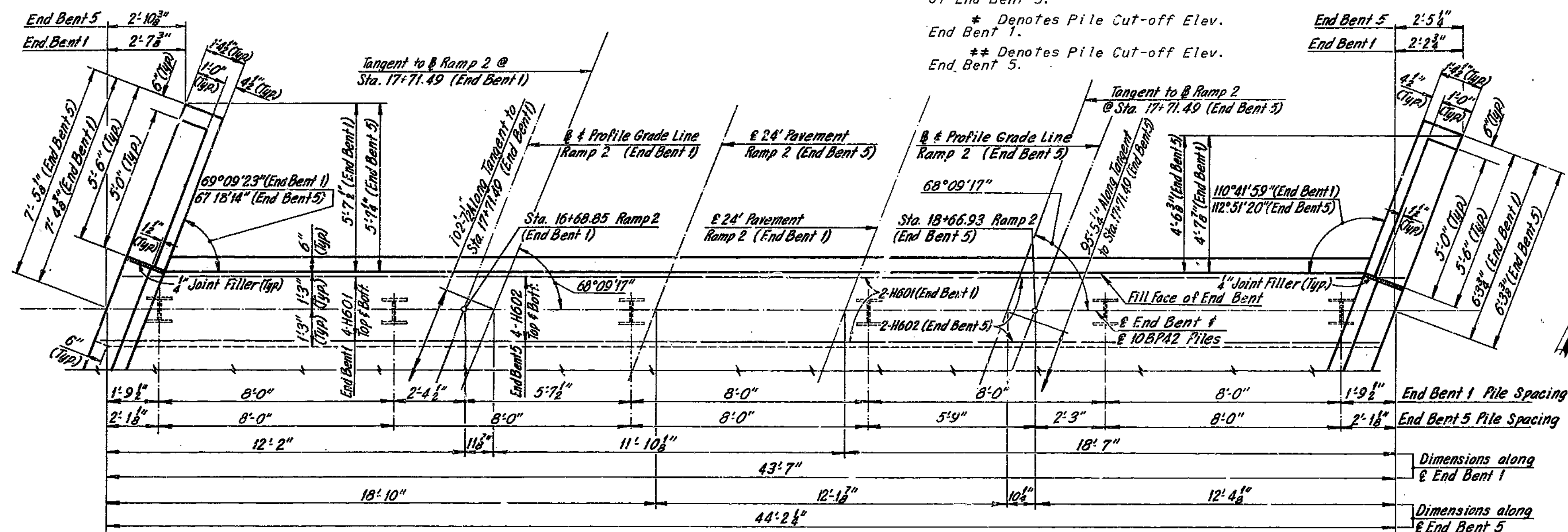
Legend:  
 e.f. = each face  
 E.B. 1 = End Bent 1  
 E.B. 5 = End Bent 5  
 \* Denotes Elev. at Fill Face of End Bent 1.  
 \*\* Denotes Elev. at Fill Face of End Bent 5.  
 \* Denotes Pile Cut-off Elev. End Bent 1.  
 \*\* Denotes Pile Cut-off Elev. End Bent 5.



WINGWALL ELEVATION



CONCRETE END POST ORDINATES

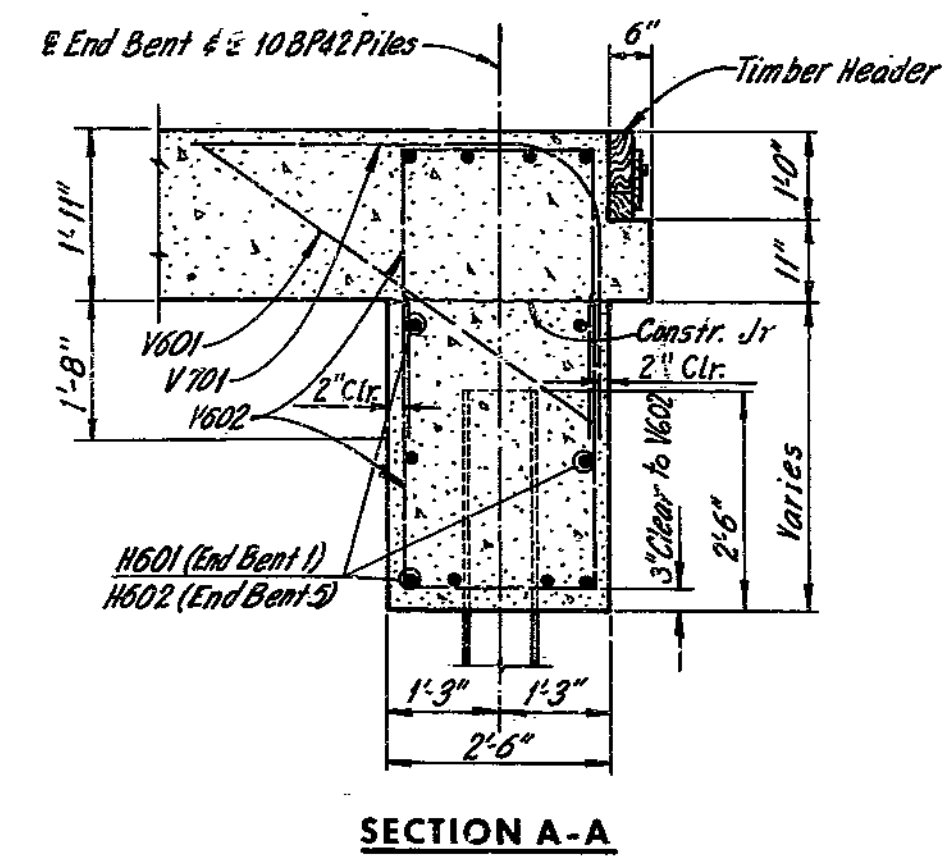


PLAN

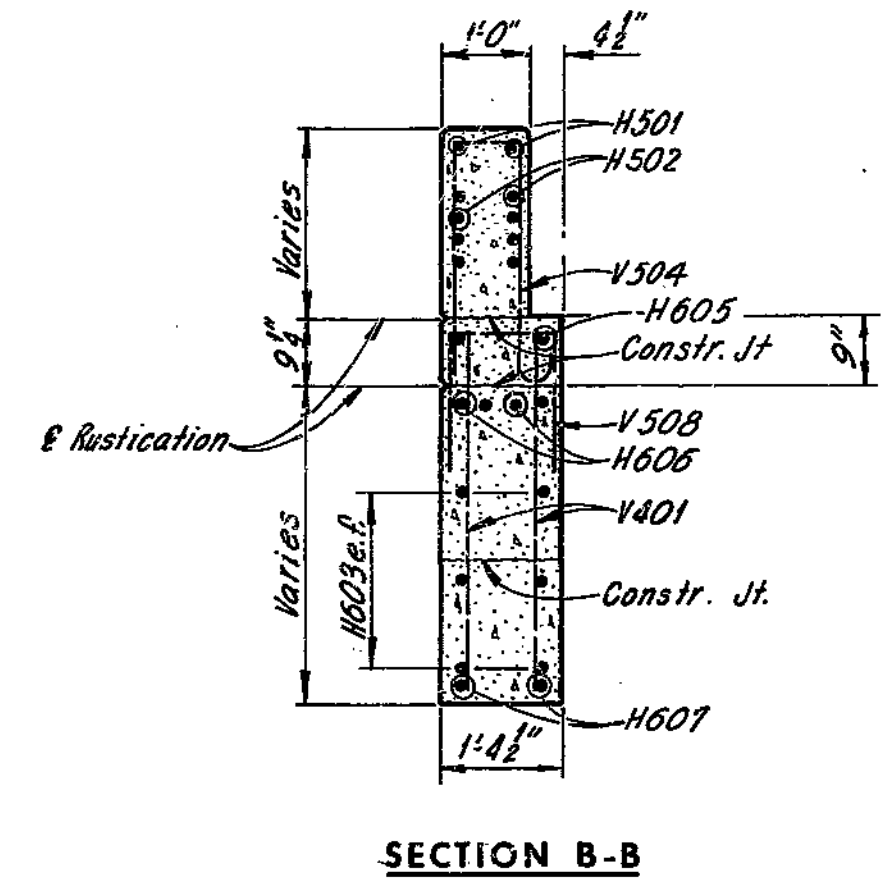
TABLE OF ELEVATIONS AND DIMENSIONS			
END BENT 1			
WINGWALL	ELEV. "A"	ELEV. "B"	DIM. "C"
EAST	810.43	804.16	4'-6 3/8"
WEST	810.10	803.75	4'-7"
END BENT 5			
WINGWALL	ELEV. "A"	ELEV. "B"	DIM. "C"
EAST	806.27	800.22	4'-3 3/8"
WEST	805.85	799.78	4'-3 3/8"

Note: Wingwall Elevation shown is for West Wingwall End Bent 1 and East Wingwall End Bent 5, other wingwalls are similar. See Table of Elevations and Dimensions.

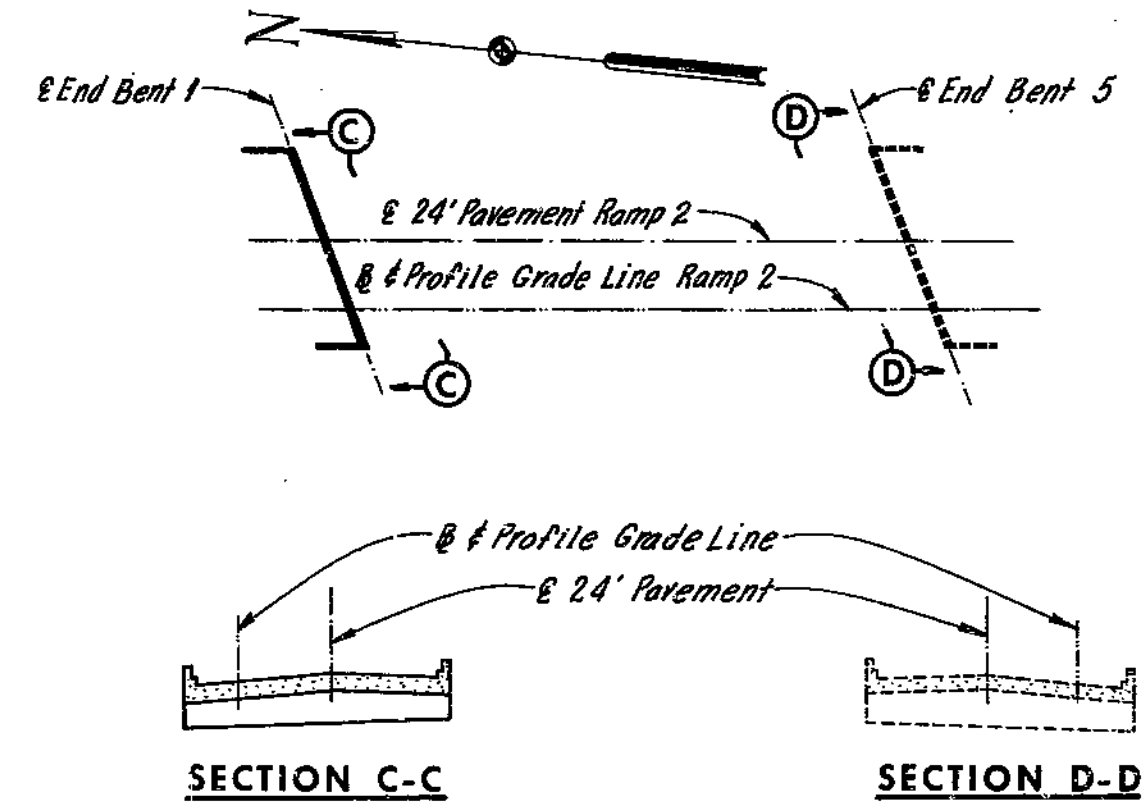
Notes:  
 End Bent 1 shown, End Bent 5 similar.  
 Provide 1/2" clear from face of concrete to reinforcing steel in superstructure unless otherwise shown.  
 V602 stirrups, V601 bars, and V701 bars to be placed parallel to longitudinal slab steel.  
 For Substructure Layout, see Sheet 3.  
 For Rustication Details, see Sheet 7.  
 For Reinforcing Schedule, see Sheet 4.  
 Concrete End Posts are vertical.  
 All piles are 10BP42.  
 For Pile Splice Detail, see Sheet 10.  
 For Timber Header Detail, see Sheet 10.  
 North Arrow shown is for End Bent 1.



SECTION A-A



SECTION B-B



SECTION C-C

SECTION D-D

END BENT LAYOUT

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE D.E.S. DATE 5-20-68 CHECKED A.L.C. DATE 5-25-68

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

END BENTS 1 AND 5 SHEET 5 OF 10

A-1582

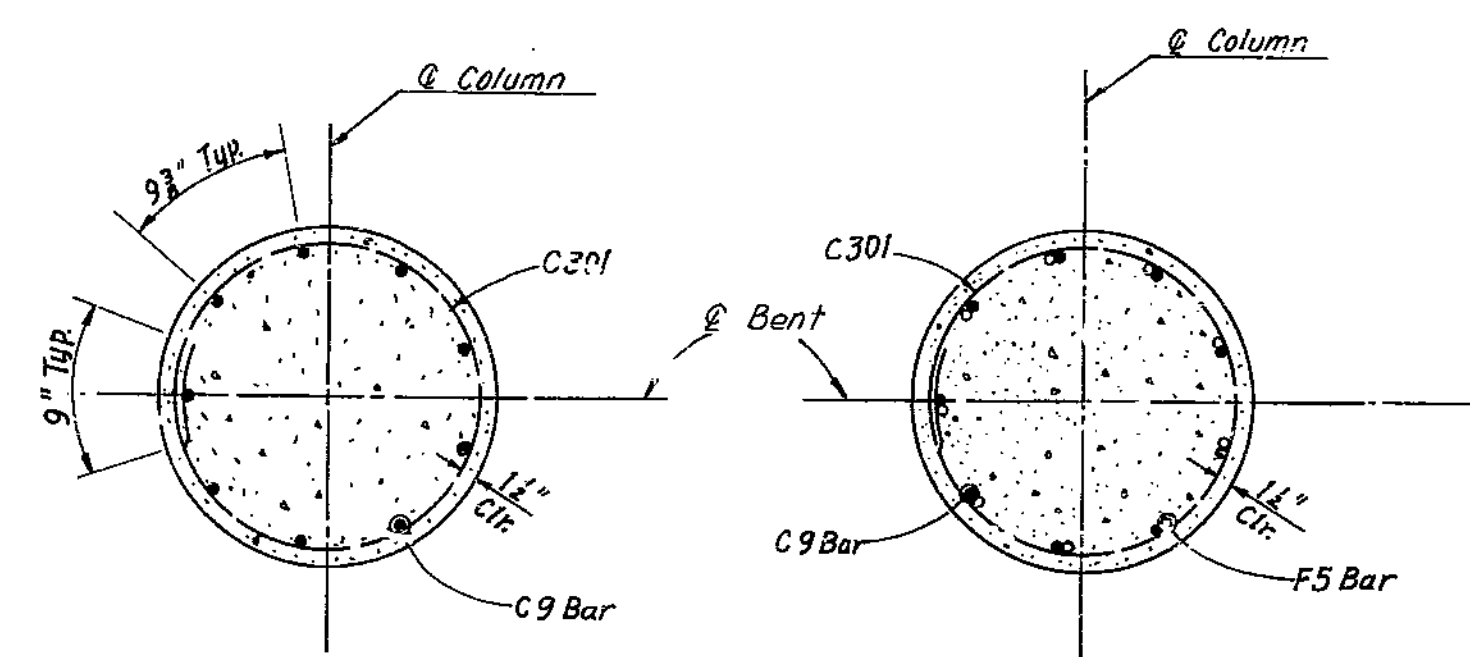
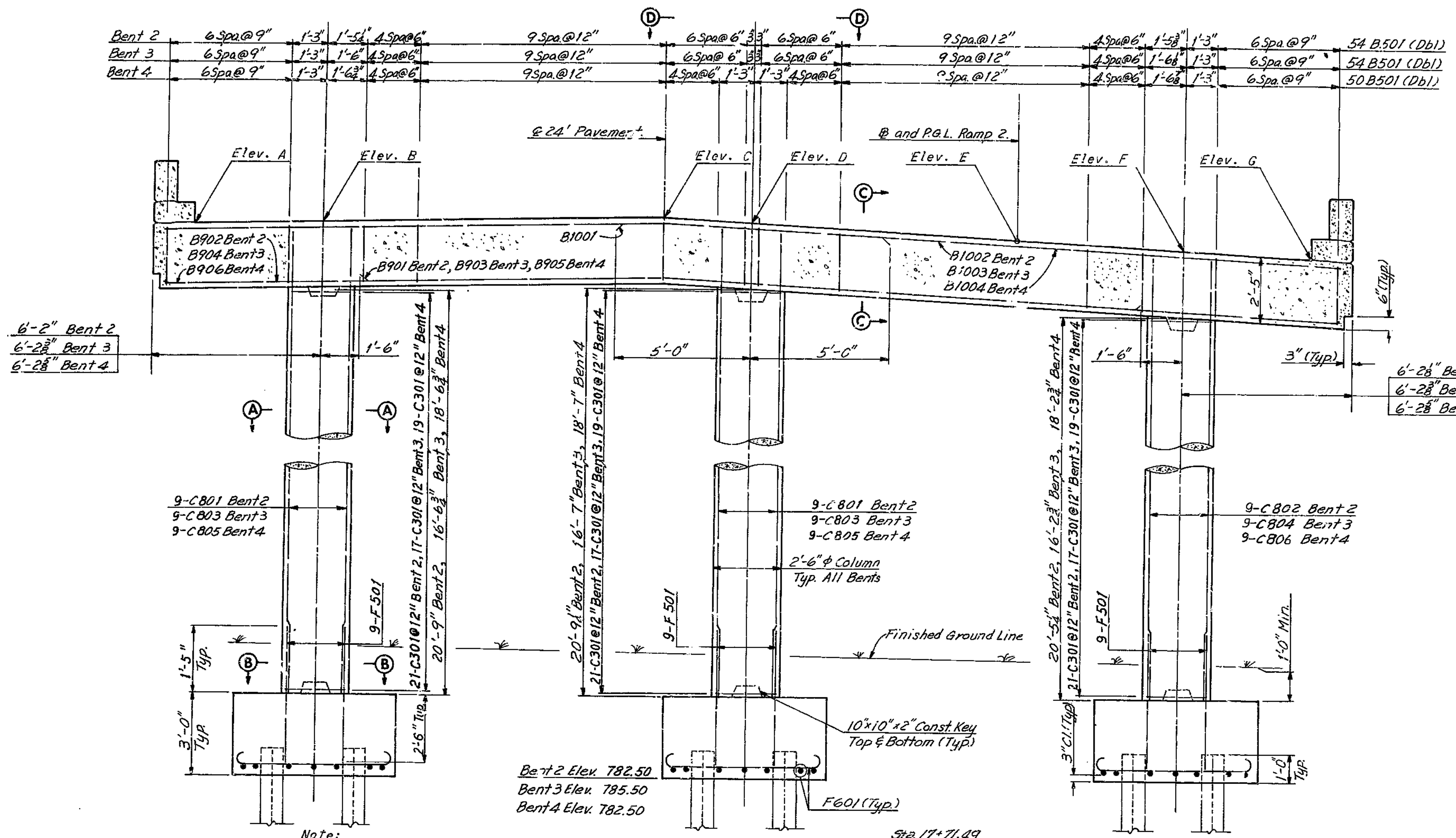
227

18-2106-01-02-502-B-53

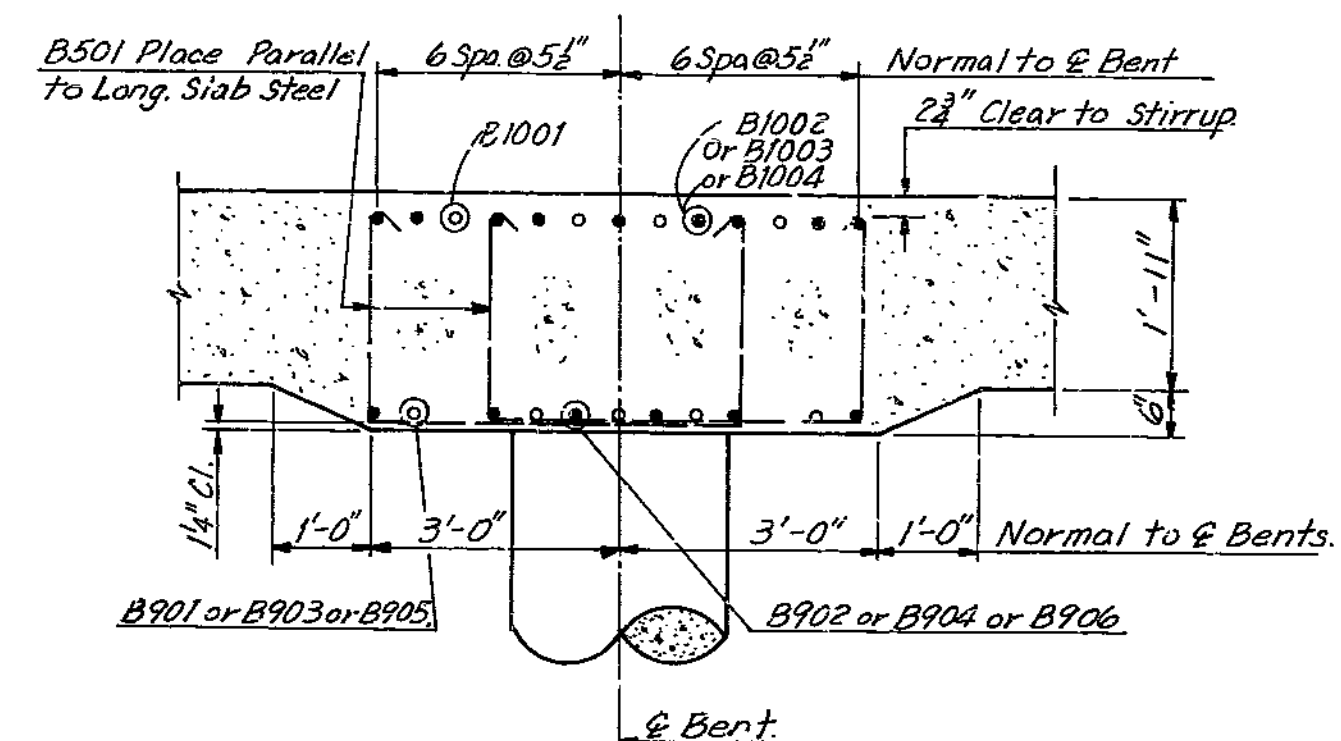
BRIDGE: RAMP 2 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.96  
 CLAY COUNTY  
 24' PAV.

MISSOURI STATE HIGHWAY DEPARTMENT

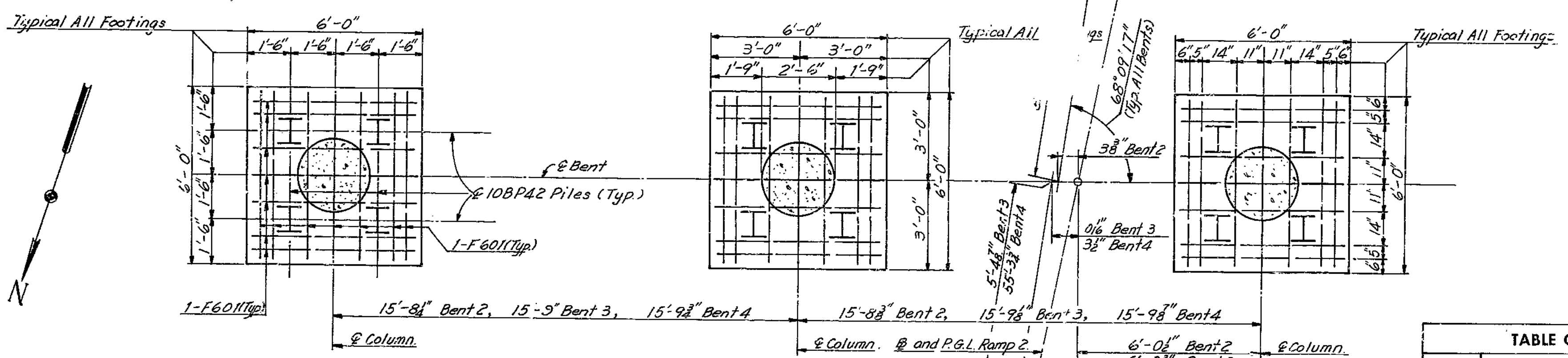
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			69	
DIST. NO.	COUNTY			ROUTE	SEC.
4	CLAY				



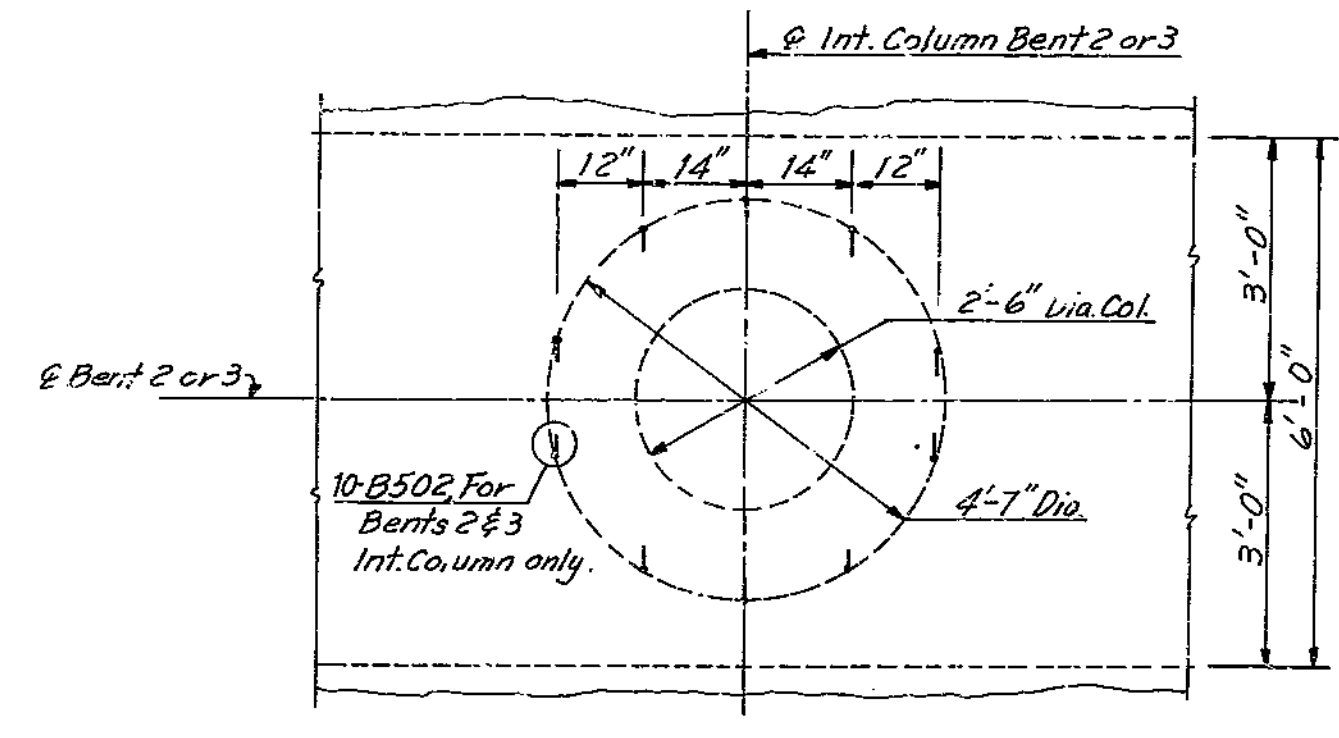
SECTION A-A SECTION B-B  
\* denotes dimensions along C301 bar



SECTION C-C



FOOTING PLAN



VIEW D-D

Elev.	BENT 2	BENT 3	BENT 4
A	807.64	807.44	806.45
B	808.67	807.48	806.49
C	808.75	807.55	806.55
D	808.69	807.50	806.50
E	808.48	807.28	806.28
F	808.35	807.15	806.15
G	808.25	807.05	806.04

(Showing additional 7 bars required for Bents 2 and 3 interior column only.)

Note:  
For Substructure Layout, see Sheet 3.  
For Pile Data Table, see Sheet 3.  
For Reinforcement Schedule, see Sheet 4.  
For Cap Beam Reinforcement, see Sheet 9.  
For Rustication Detail, see Sheet 7.  
All piles are 10BP42, no batter.  
Provide 1" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

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

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE G.C.C. DATE 5-17-68 CHECKED H.L.C. DATE 5-29-68

BRIDGE: RAMP 2 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.76  
CLAY COUNTY

SHEET 6 OF 10

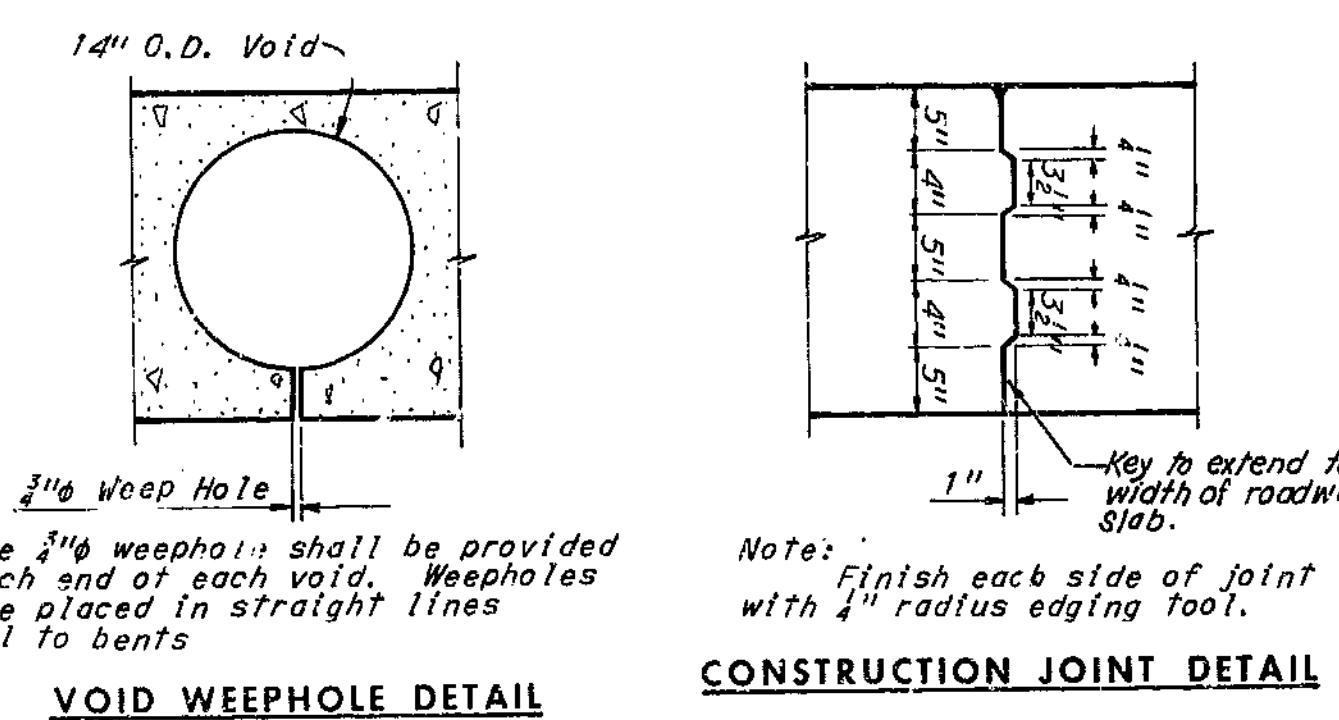
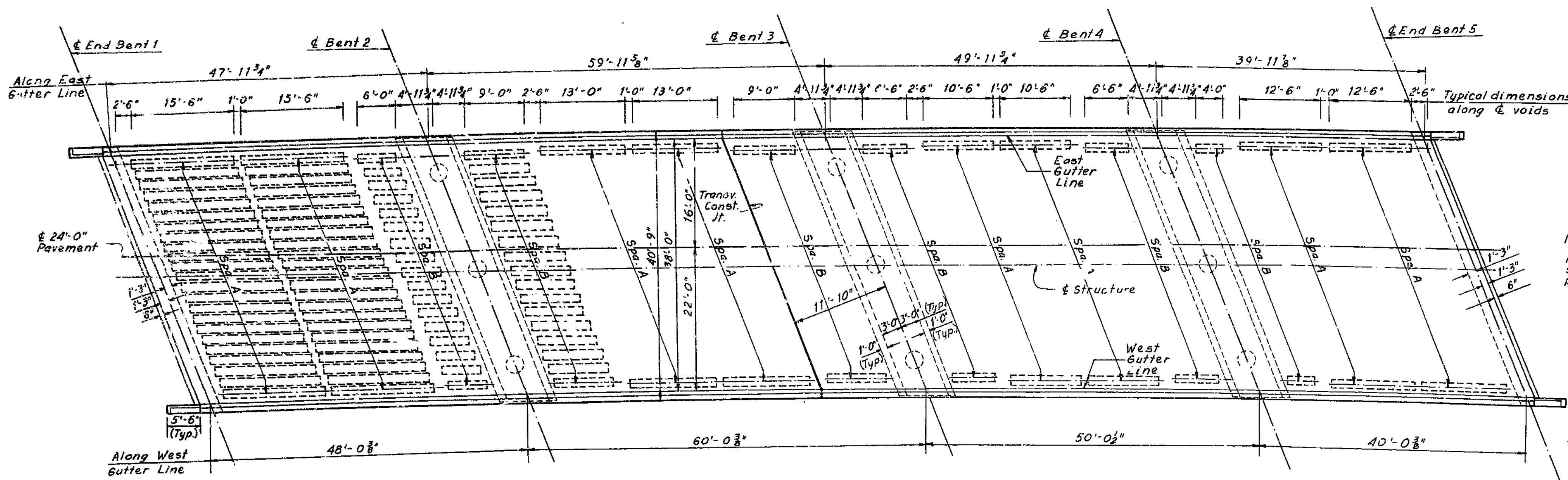
A-1582

228

BENTS 2, 3 AND 4

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			10	
DIST. NO.	COUNTY			ROUTE	SEC.
4	CLAY				



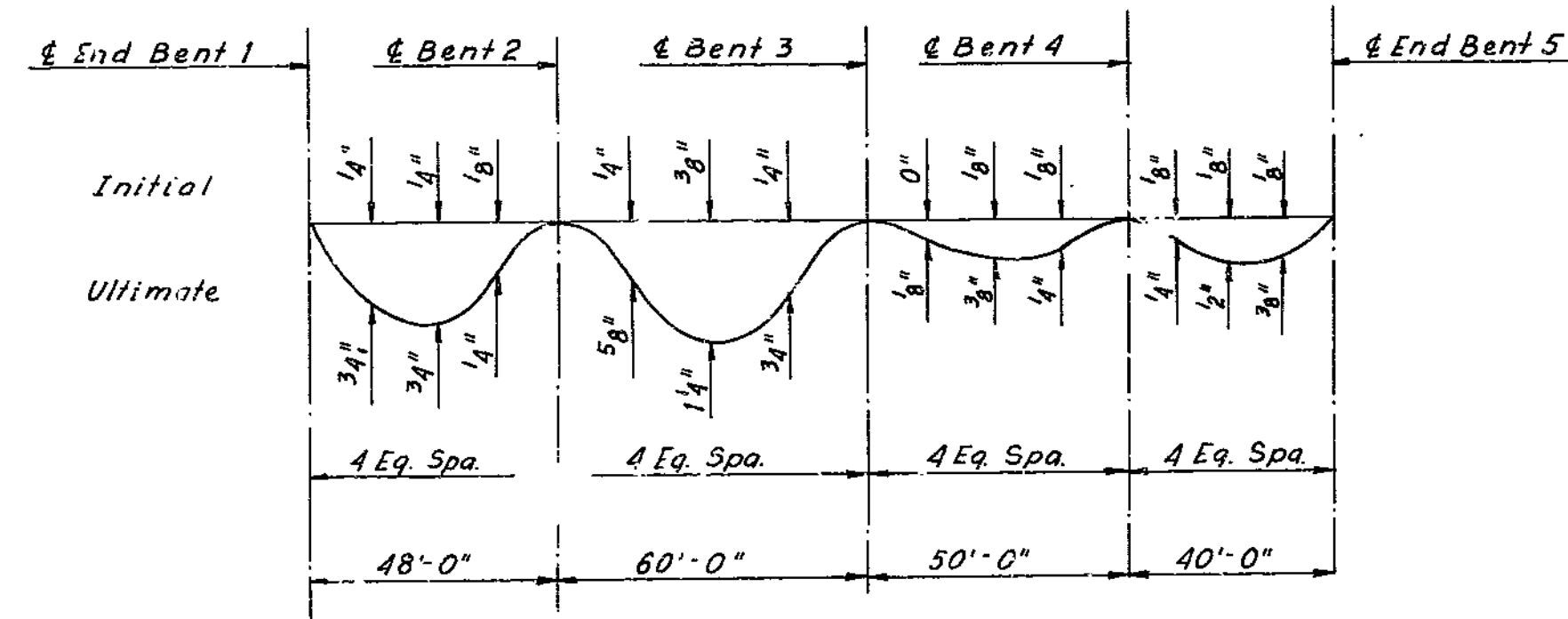
**POURING ROADWAY SLAB**  
 The contractor shall use a finishing machine and shall pour and satisfactorily finish the roadway slab at a rate not less than 26 cubic yards per hour. He shall observe the transverse construction joint shown on plans; unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slab at a rate which will permit a continuous pouring through this joint.



Note: For Reinforcement Schedule, see Sheet 4. For Transverse Slab Reinforcement, see Sheet 9. Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

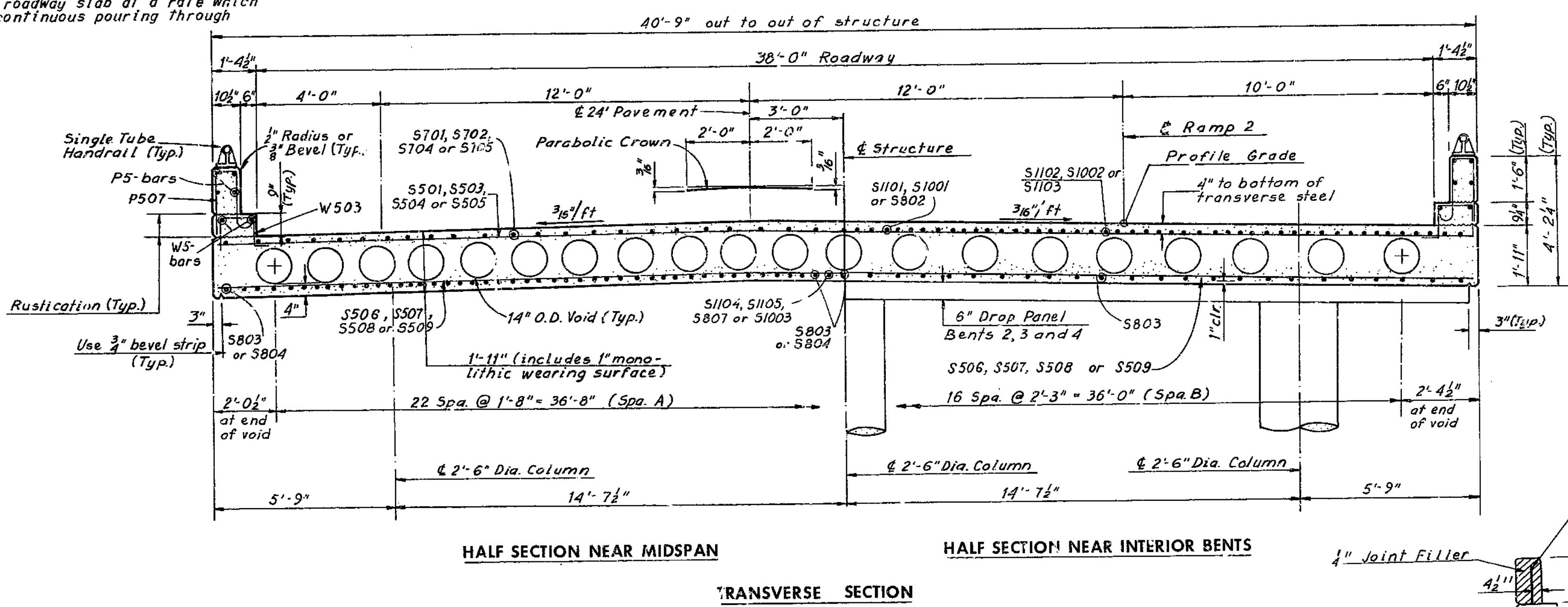
Note: All reinforcing to stop 2" clear of deflection joints.

DEFLECTION JOINT IN CURB & PARAPET AND PARAPET ONLY



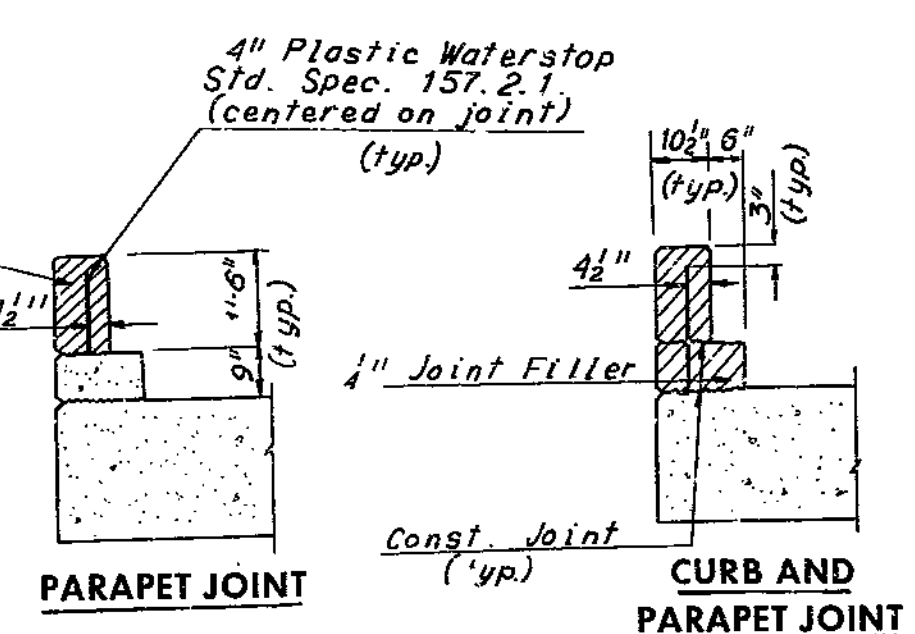
Note: Forms shall be cambered for ultimate deflections.

DEAD LOAD DEFLECTION DIAGRAM

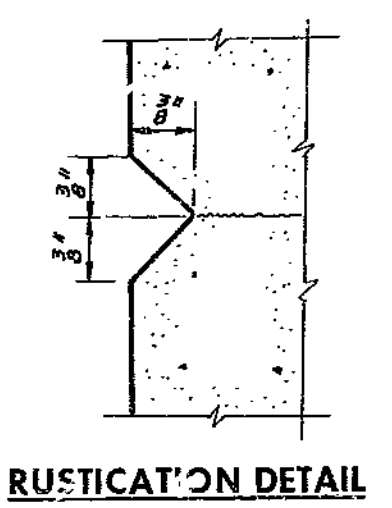


Note: Fiber tubes for producing voids shall have an outside diameter of 14.0" and a wall thickness of 0.250" and shall be anchored to joists carrying the floor form at no more than 41-0" centers. See Special Provisions for metal tube alternate for voids.

Note: Plastic waterstop shall be placed in the parapet and curb filled joints on each side of the structure. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.



DETAILS OF PLASTIC WATERSTOP



RUSTICATION DETAIL

**BRIDGE: RAMP 2 OVER ROUTE 69**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 16+62.96  
 CLAY COUNTY  
 & 24" PAV.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE C.E.B. DATE 5-23-68 CHECKED JFP DATE 5-25-68

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

PLAN AND CROSS SECTION

SHEET 7 OF 10

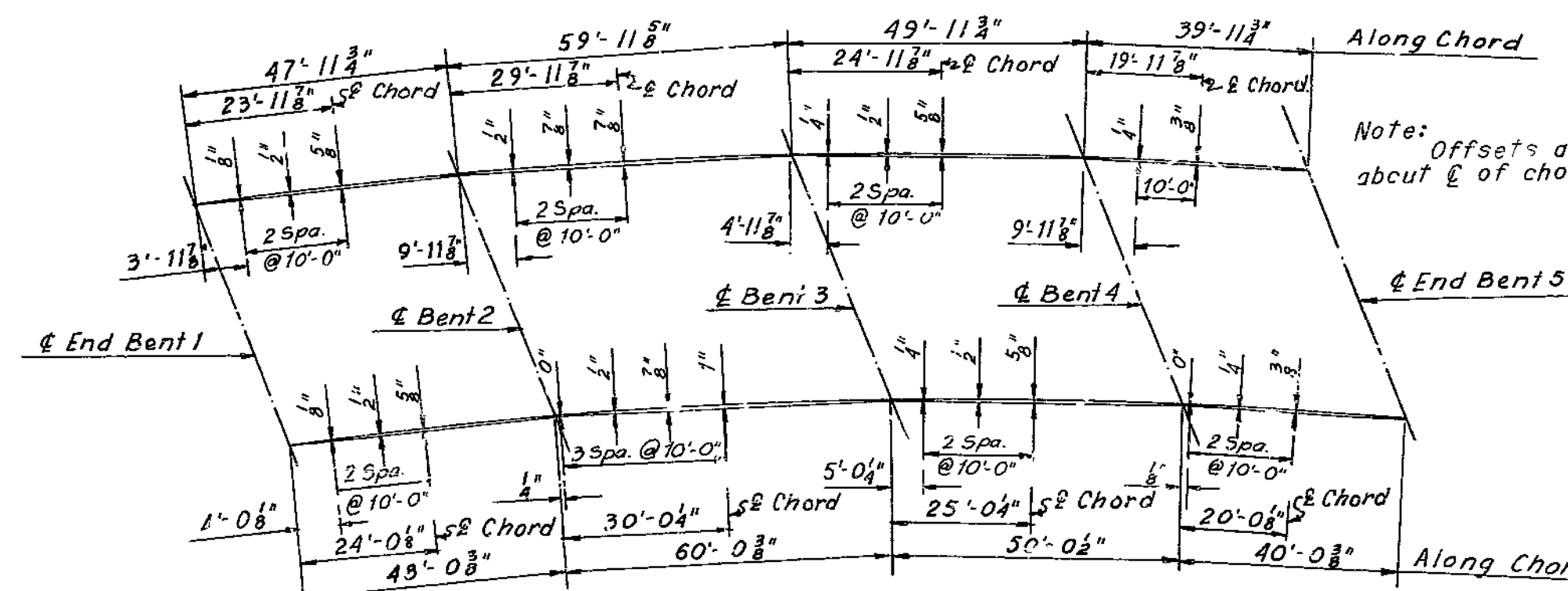
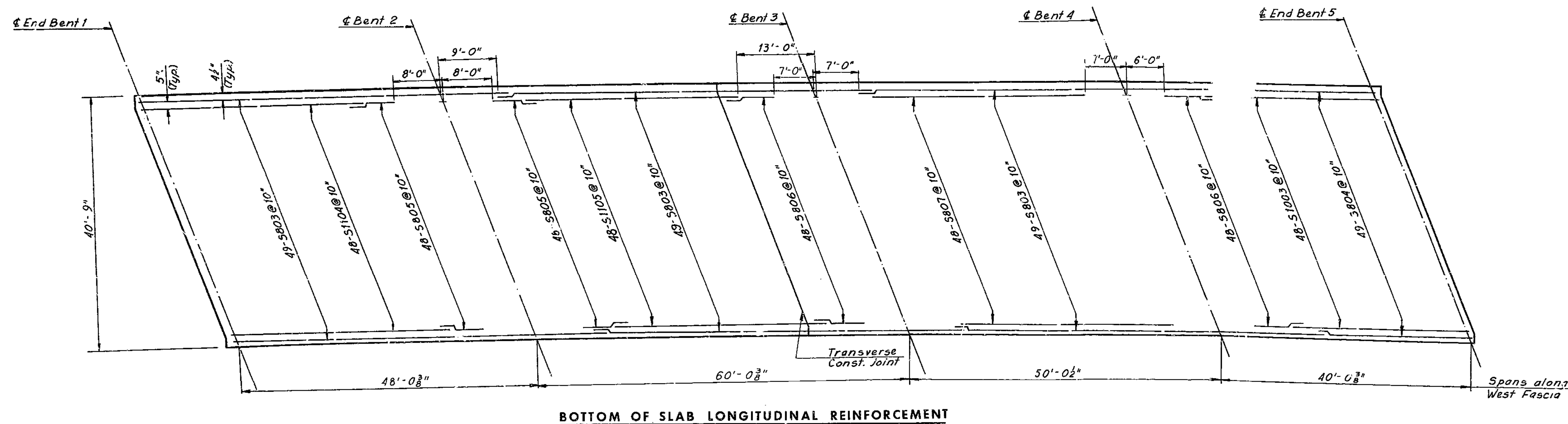
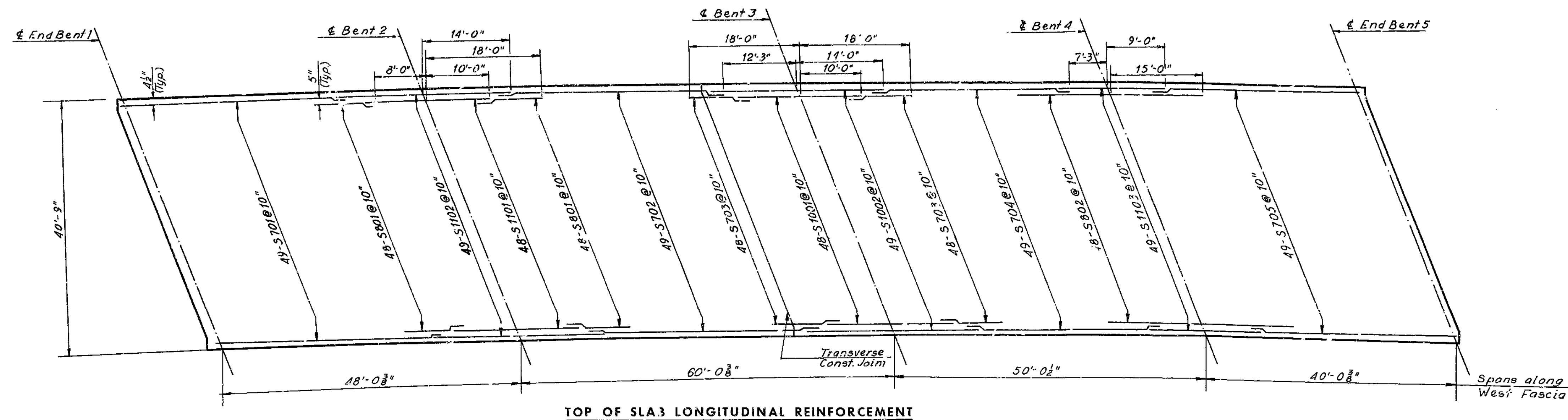
A-1582

229  
2106-21-02  
A-1582



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO		11	
DIST. NO.	COUNTY		DATE	SEC.
4	CLAY			



Note: Offsets are symmetrical about centerline of chord.

Note: For Reinforcement Schedule see Sheet 4. For Transverse Slab Reinforcement see Sheet 9. Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

BRIDGE: RAMP 2 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.56  
 CLAY COUNTY  
 ± 24' PAV.

SHEET 8 OF 10  
 A-1582

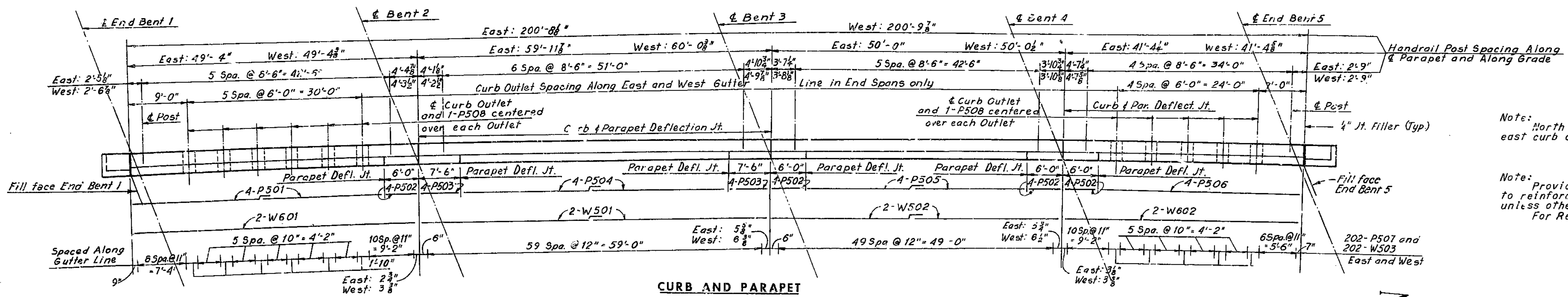
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE C.F.D. DATE 5-20-68 CHECKED MLC DATE 5-28-68

230  
 2106-21-02  
 \* A-1582

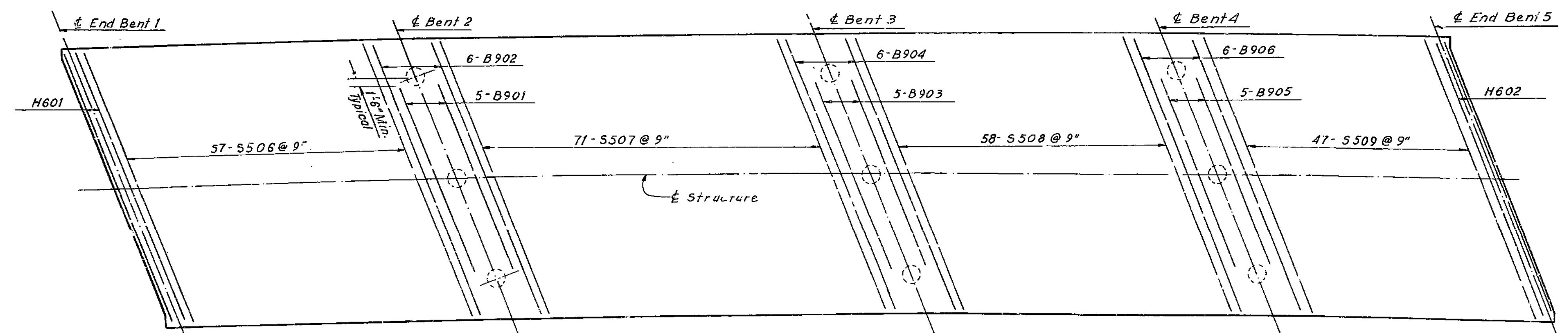
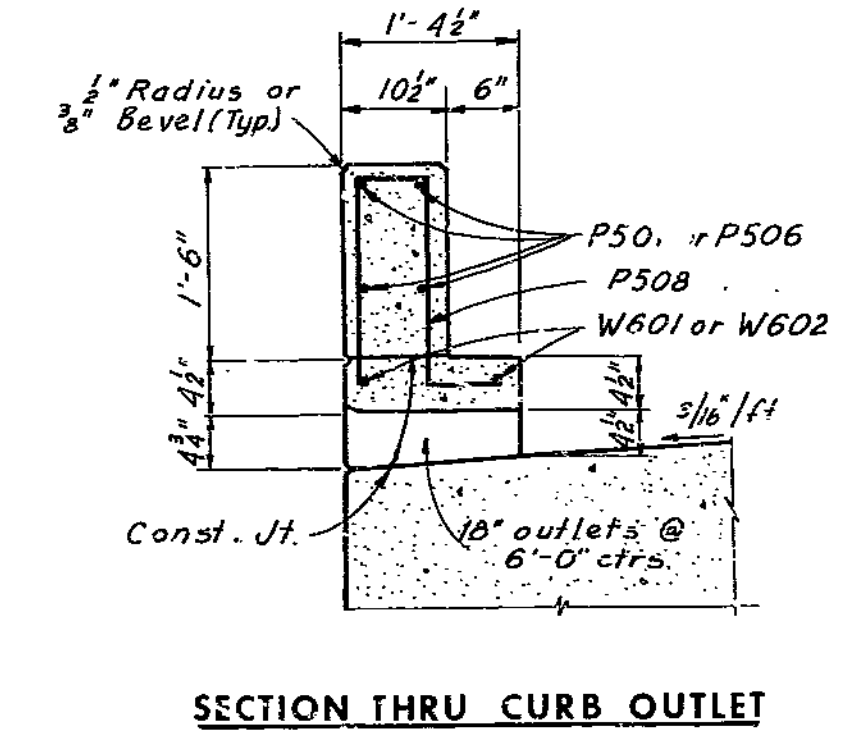
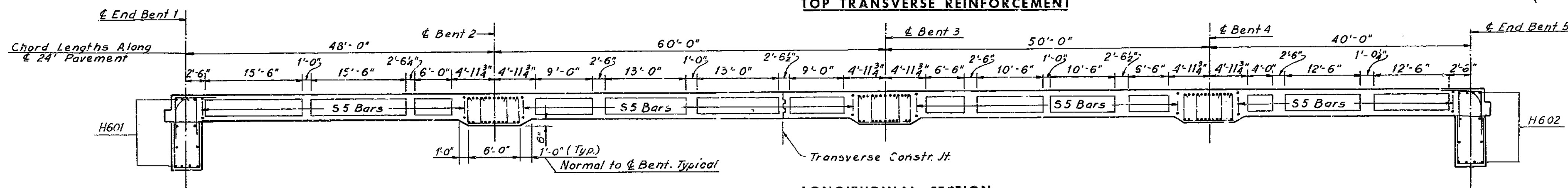
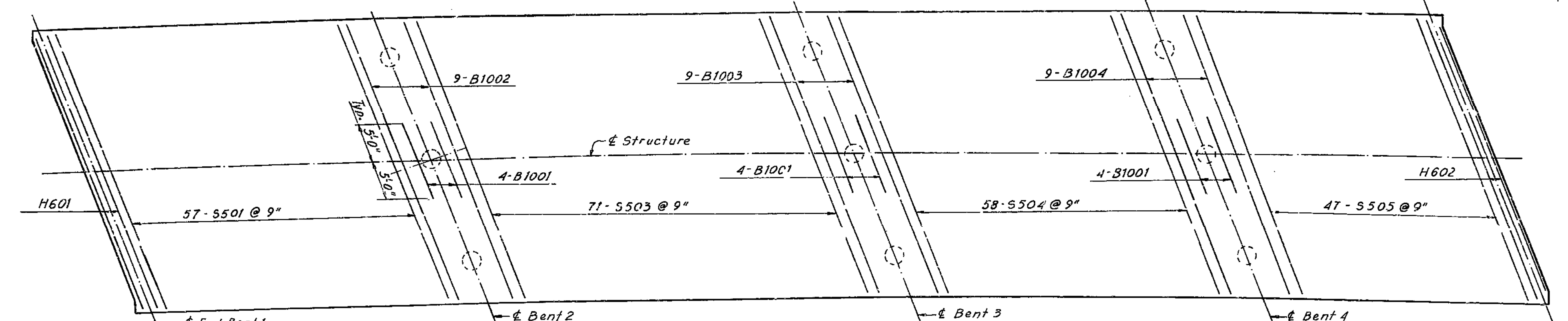
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			72	
DIST. NO.	COUNTY	ROUTE	SECT.		
4	CLAY				



Note: North arrow shown for east curb and parapet plan.

Note: Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown. For Reinforcement Schedule, see Sheet 4.



TRANSVERSE REINFORCEMENT

HOWARD, NEED, ES, TAMMEN & SERGENOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

BRIDGE: RAMP 2 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.96  
CLAY COUNTY 24' PAV.  
SHEET 9 OF 10

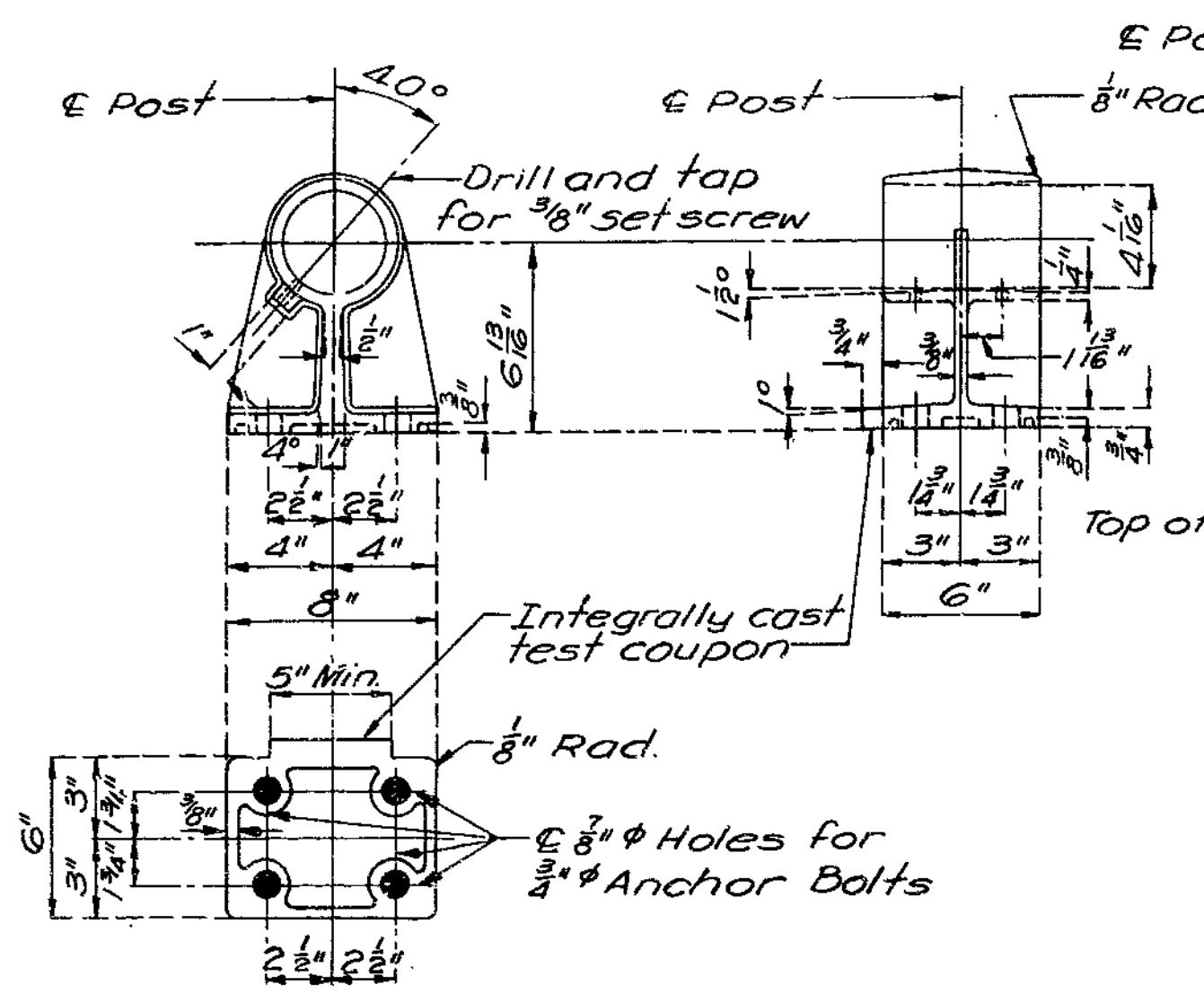
2106-21-02  
# A-1582  
231

MADE C.A.B. DATE 5-22-68 CHECKED A.V.G. DATE 5-25-68

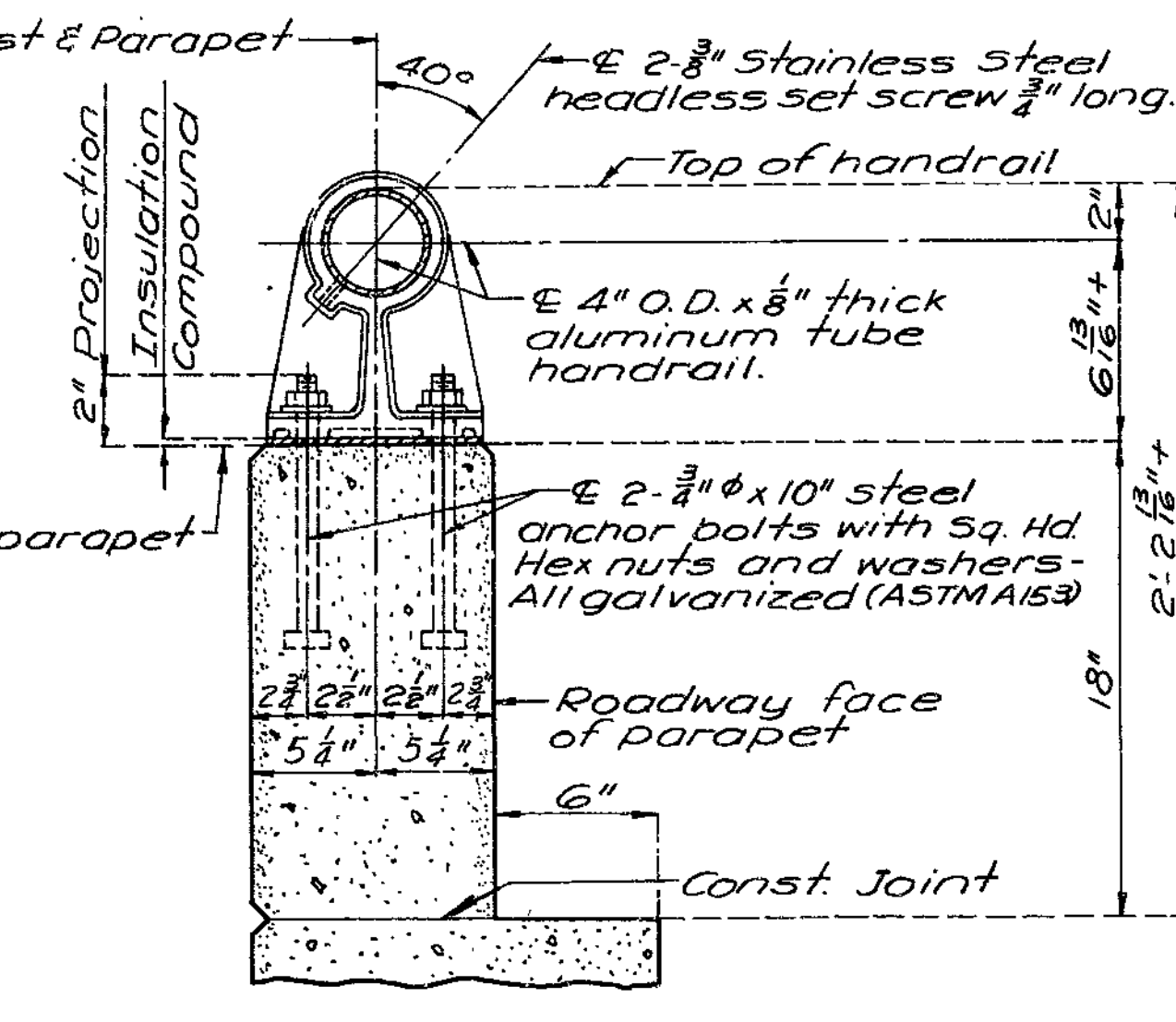
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MISSOURI STATE HIGHWAY DEPARTMENT

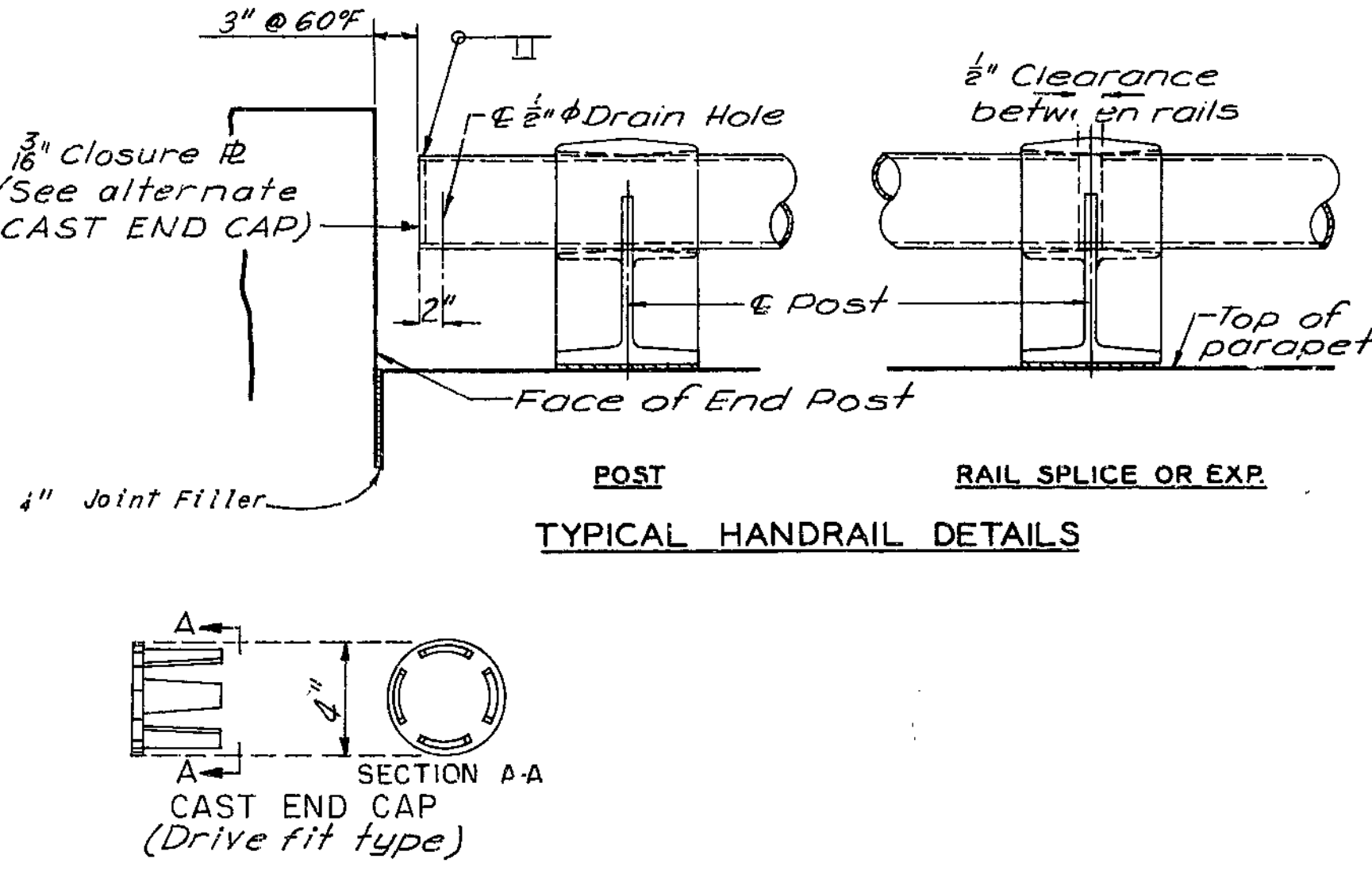
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5	MO			13	
DIST. NO.	COUNTY			FOURTH	SEC.
4	CLAY				



POST DETAILS



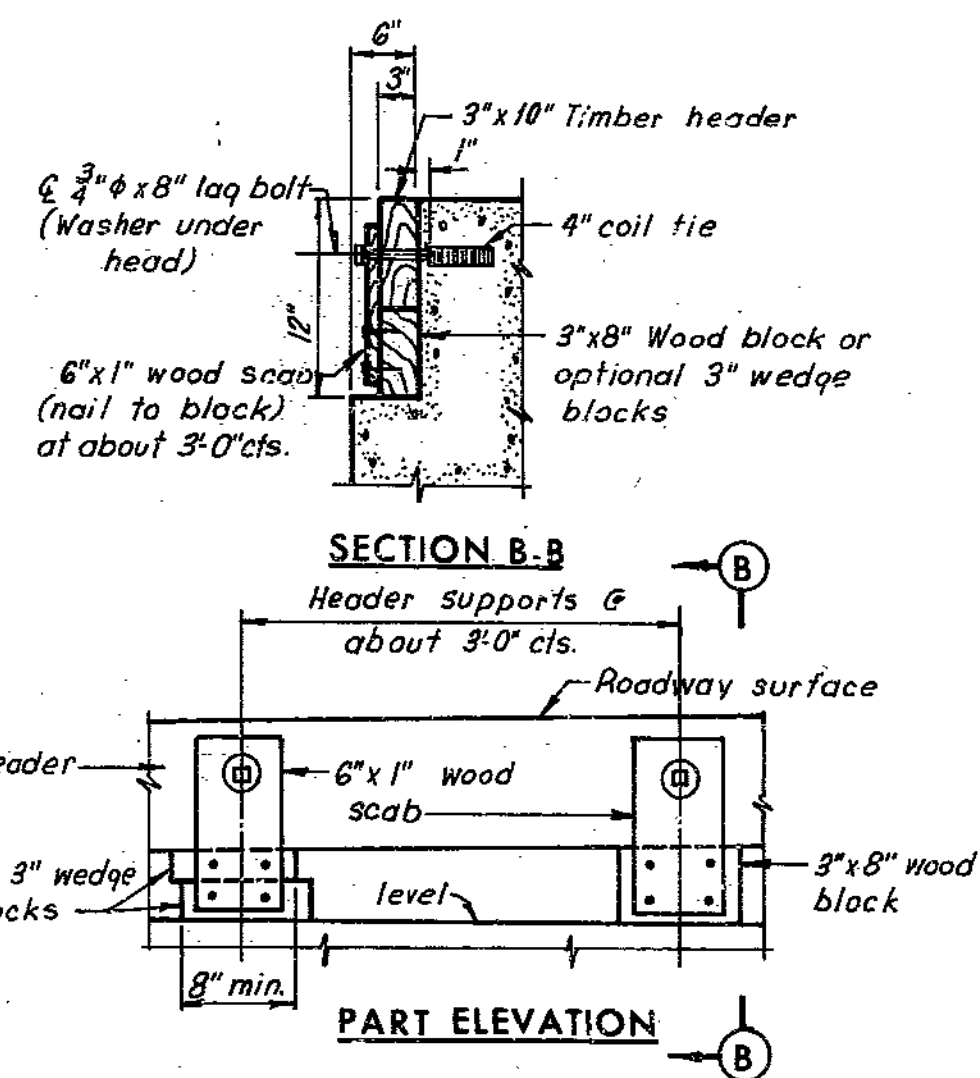
SECTION THRU HANDRAIL



SINGLE TUBE ALUMINUM RAILING

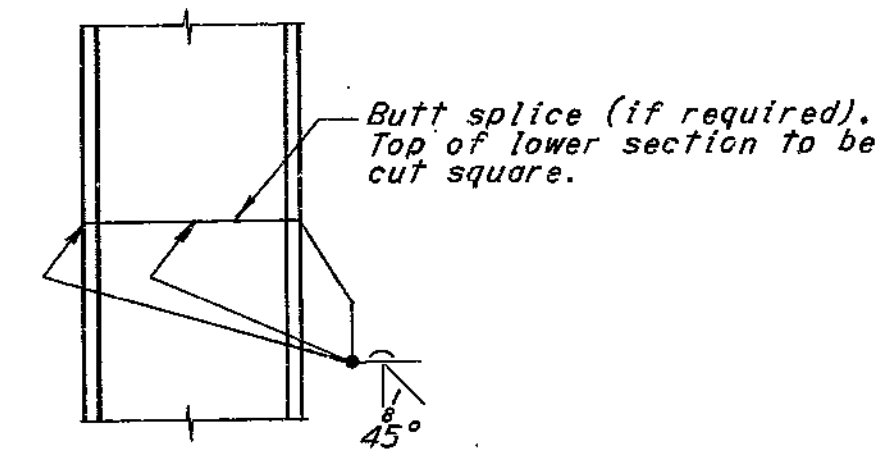
GENERAL NOTES:

All handrail posts shall be set normal to grade. Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet. Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/4". Where more filling of post is required for proper alignment, concrete bearing areas shall be ground down. All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material. The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulation compound. All fillets 1/4" except as noted. All drafts 3/8" except as noted. Pipe Rail to be fabricated in a minimum of two panel lengths. Omit set screw on side adjacent to filled joint in parapet and curb at all expansion posts. Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade. All exposed edges of end posts shall have 1/4" bevel. All exposed edges of curbs and parapets shall have 1/4" radius or 1/4" bevel unless otherwise noted. If the Contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates. Concrete end posts to be vertical. Integrally cast test coupons and a coat of clear lacquer specified in Std. Specs 56.2.4 and 56.3.5 respectively will not be required for these rail posts.

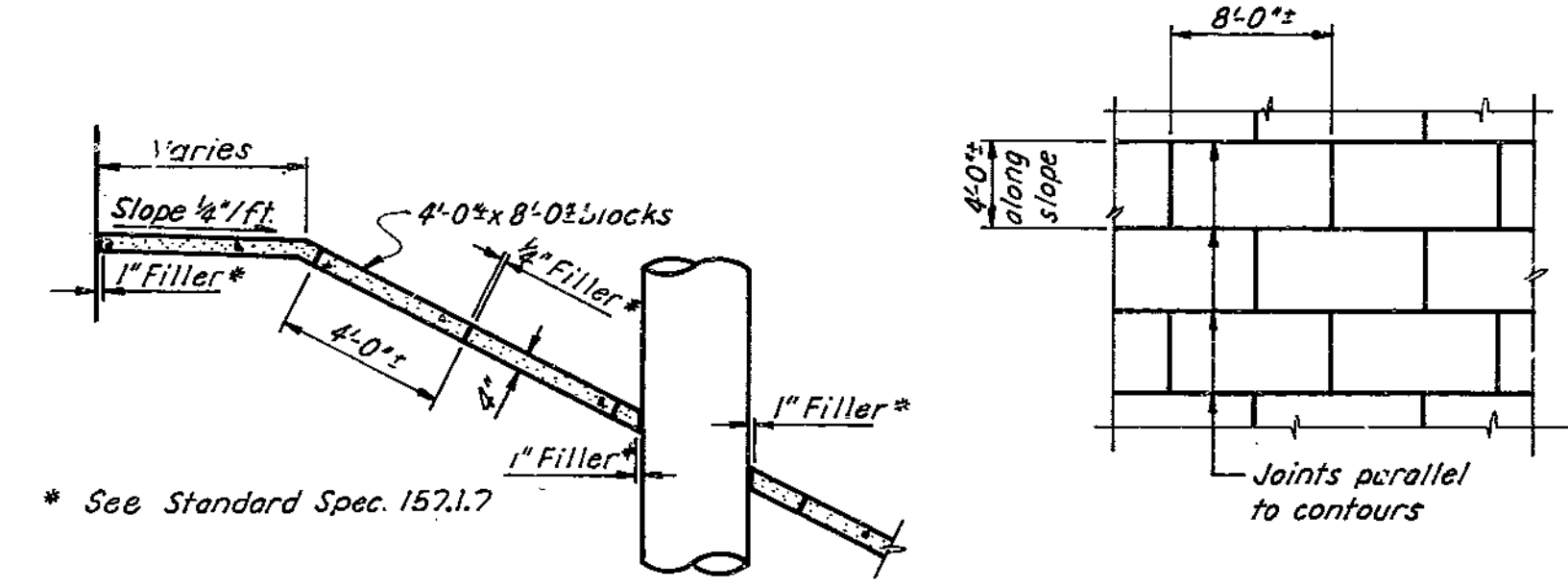


TIMBER HEADER DETAILS

Note: Cost of Timber Header, complete in place, to be included in price bid for concrete.



PILE SPLICE DETAIL



ELEVATION

PLAN

SLOPE PROTECTION DETAILS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE JFP DATE 5-10-68 CHECKED HJC DATE 5-14-68

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

HANDRAIL DETAILS

BRIDGE: RAMP 2 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.96  
CLAY COUNTY & 24'PAV.

SHEET 10 OF 10

A-1582

232

MISSOURI STATE HIGHWAY DEPARTMENT

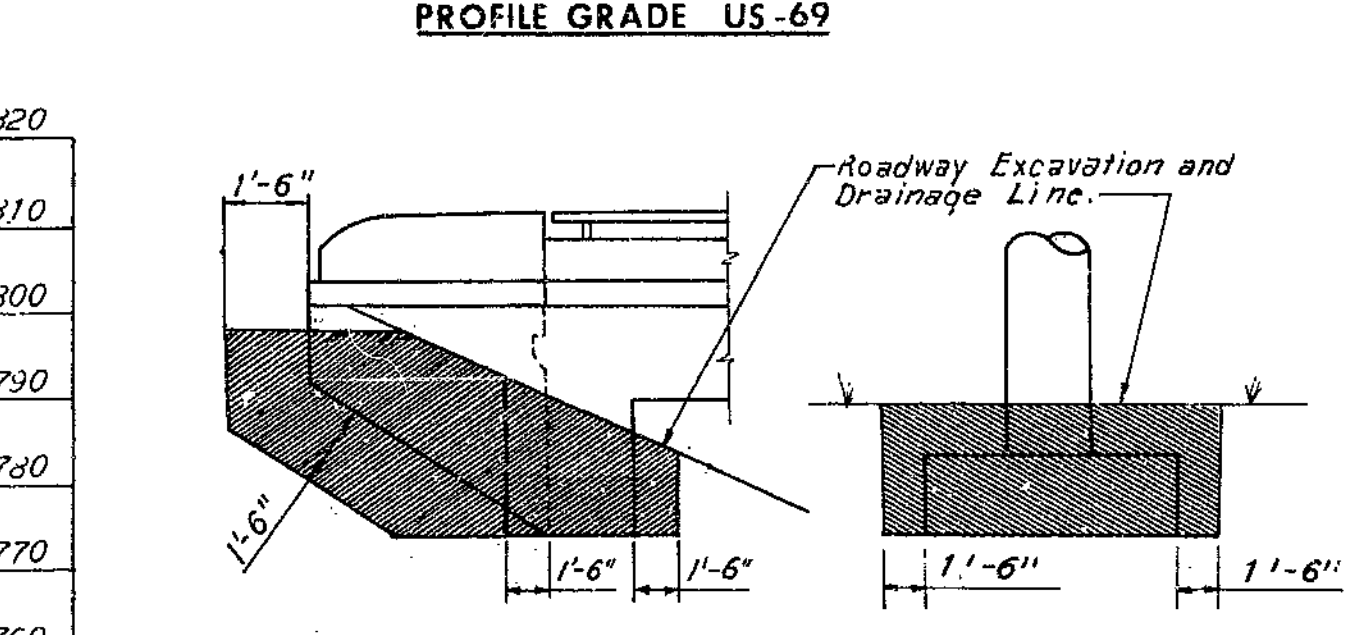
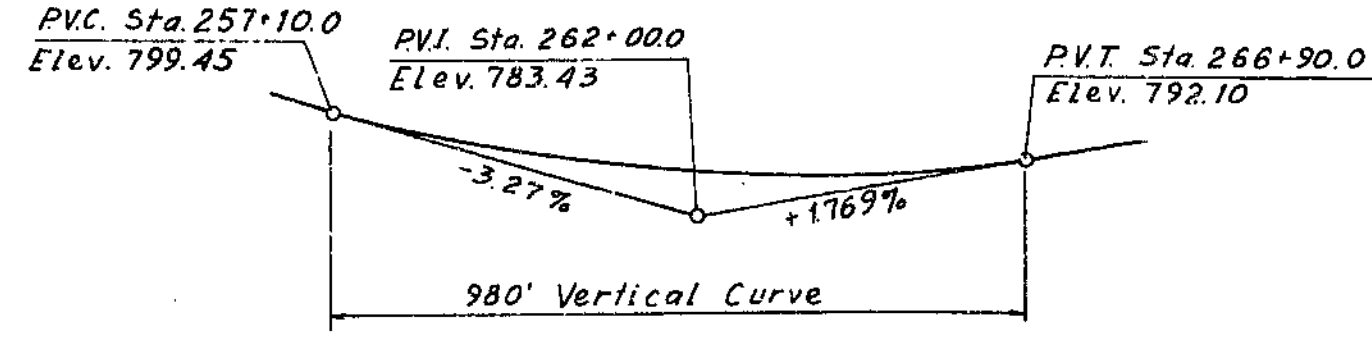
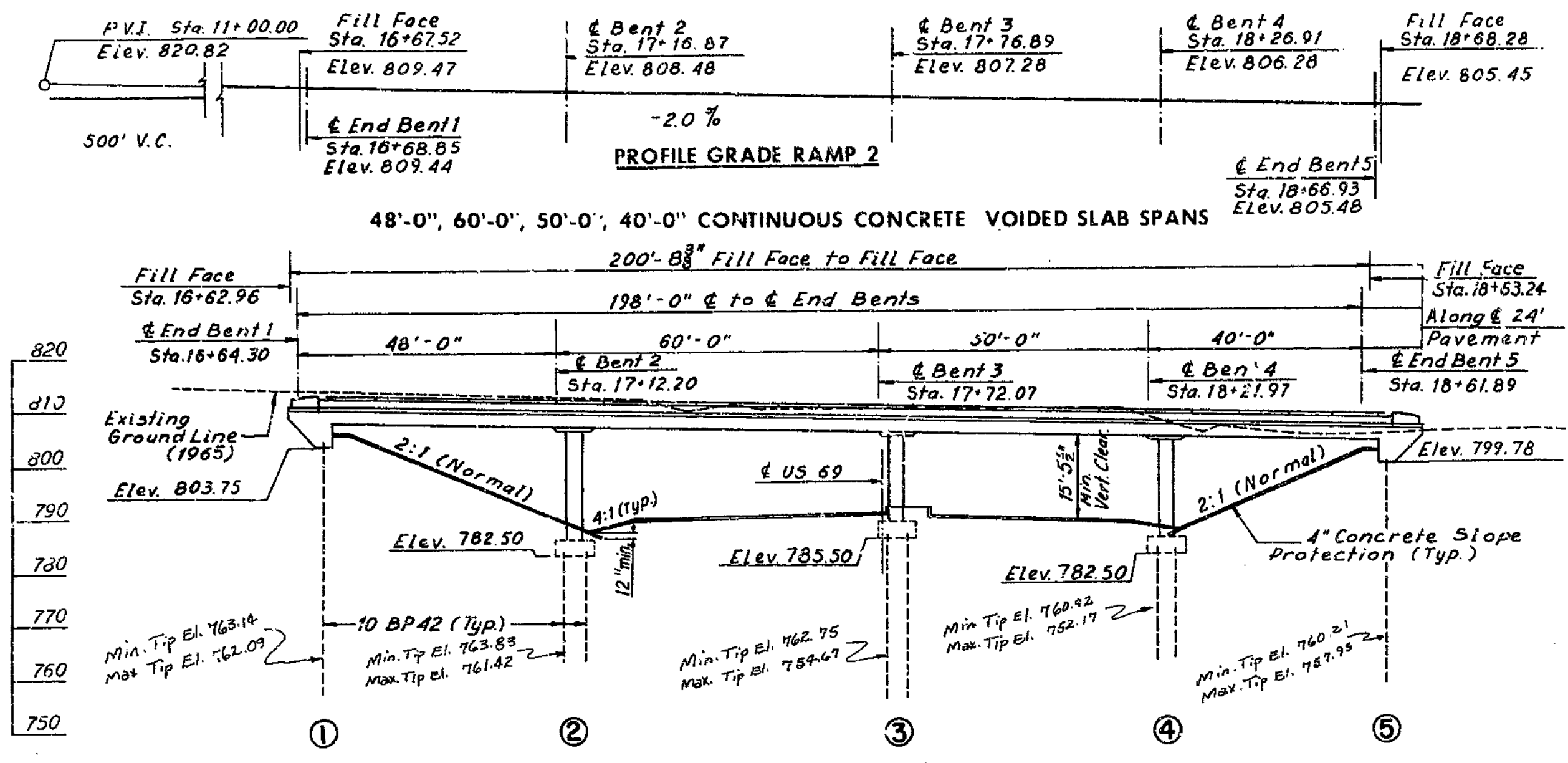
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(69)9	64	
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			

FINAL PLANS

GENERAL NOTES

Design Specifications: AASHTO 1965.  
 Design Loading: HS20-44 and Modified 24000<sup>#</sup> Tandem Axle with 15<sup>sq.</sup> ft. future wearing surface. Earth 120<sup>cu.</sup> ft. Equivalent fluid pressure 30<sup>psi</sup>/ft.  
 Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.  
 Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 1,200$  psi.  
 Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
 Reinforcing Steel  $f_s = 20,000$  psi.  
 Steel pile (A.S.T.M A36-66)  $f_b = 9,000$  psi.  
 Reinforcing Steel: All splices in reinforcing bars were 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicates the size of the bar.  
 Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.  
 All reinforcing bar bending dimensions are "out to out".  
 Sealing of Deck: Superstructure deck  $W85$  surface sealed.  
 Utilities: All utilities, unless shown otherwise, were removed or relocated by others. The Contractor did notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.  
 Welding: See Standard Specification 55.3.13 for qualification of welding operators.

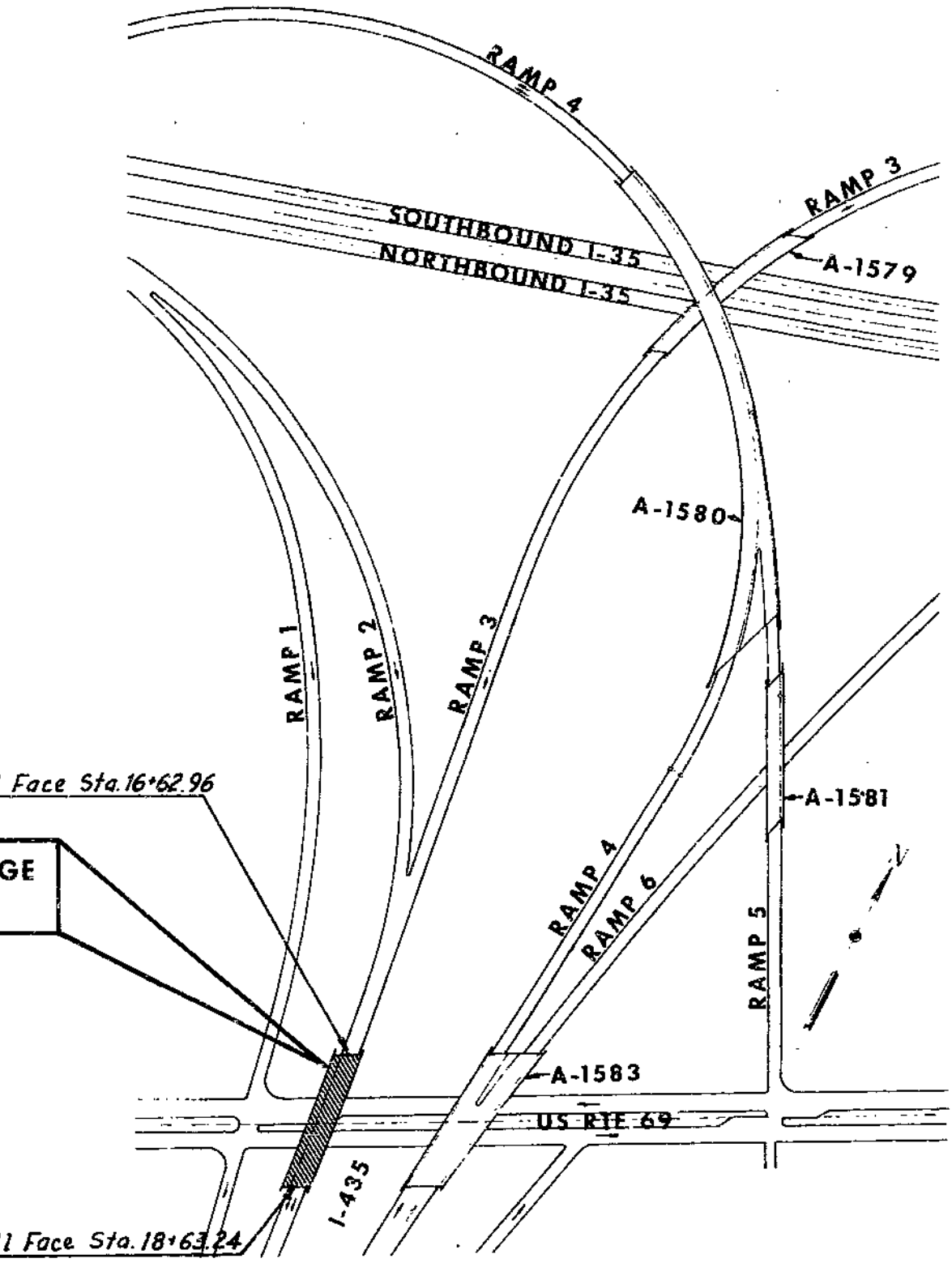
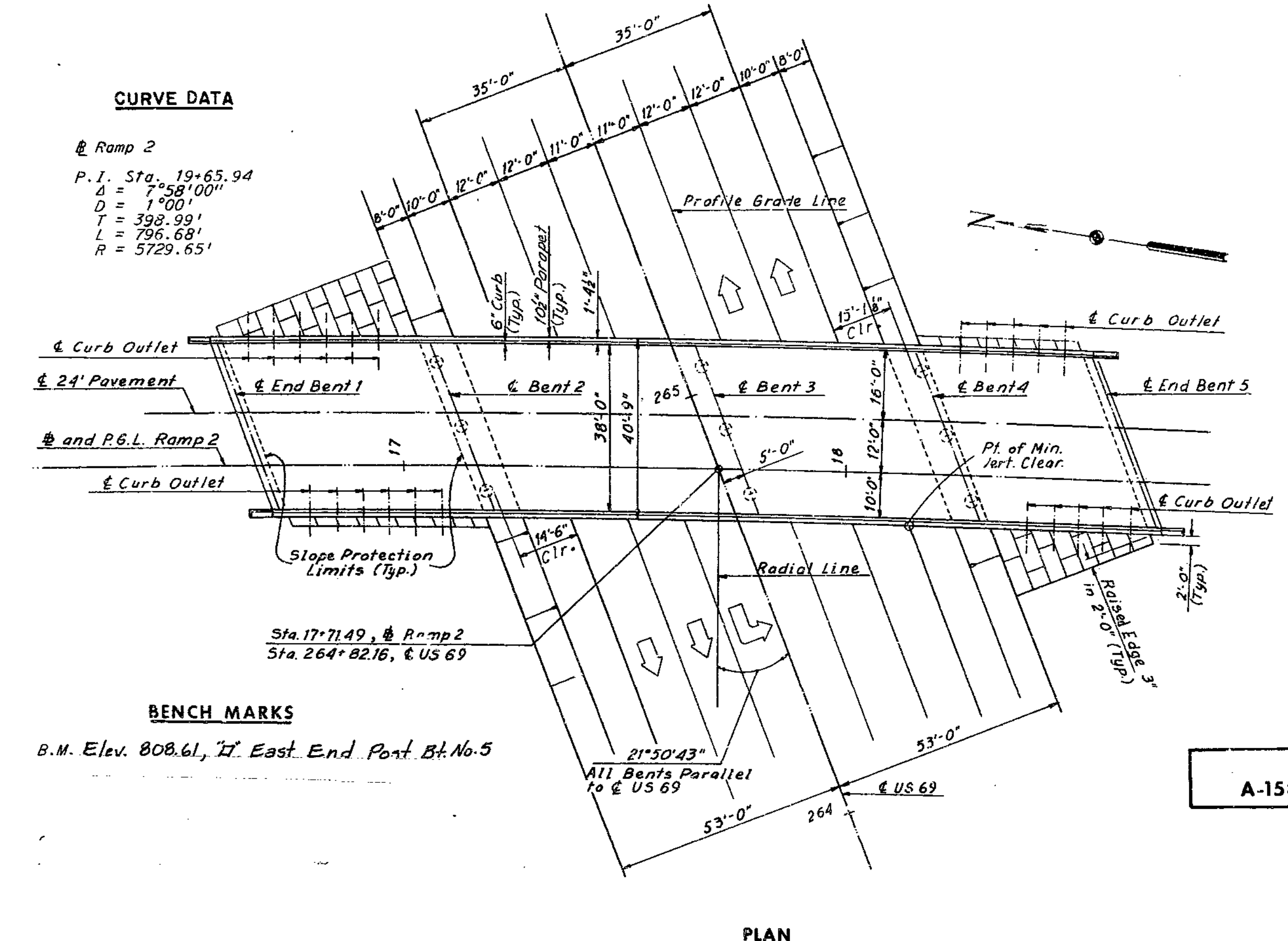
Note: Concrete Slope Protection on slopes at End Bents is included under roadway items. Provide 1" Filler (Standard Specification 157.1.7.) between Slope Protection concrete and End Bents or intermediate bents. See Standard Specification 35.50. For details, see Sheet 10 and Roadway Plans.



Note: All dimensions are horizontal. Bents can not be located from the reference point on the tangent by conventional survey methods based on 100' chords. For Substructure Layout, see Sheet 3. For location of borings, see Sheet 2. For table of pile loads, see Sheet 3.

CURVE DATA

@ Ramp 2  
 P.I. Sta. 19+65.94  
 $\Delta = 1^{\circ}58'00''$   
 $D = 1^{\circ}00'$   
 $T = 398.99'$   
 $L = 796.68'$   
 $R = 5729.65'$



ITEM	UNIT	QUANTITIES		
		SUPERSTR.	SUBSTR.	TOTAL
Class 1 Excavation for Structures	Cu.Yd.	-	187.0	187.0
Steel Piles Place (10BP42)	Lin.Ft.	-	1389	1389
Class B Concrete	Cu.Yd.	-	36.0	36.0
Class B1 Concrete	Cu.Yd.	578.2	-	578.2
Reinforcing Steel	Lbs.	162010	1620	163630
Bridge Rail (Single Tube Type)	Lin.Ft.	400	-	400

Quantity Notes: All excavation for bridge was paid for as Class 1 Excavation for Structures. Sketch shows excavation for pay purposes. All concrete except interior bent footings is included in Class B1 Concrete. All reinforcing except that in interior bent footings is included in superstructure reinf.

SUBMITTED BY: *[Signature]*  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-253

BRIDGE: RAMP 2 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 16+62.96  
 CLAY COUNTY  
 & 24'PAV.

SUBMITTED BY: *[Signature]* DATE 12-23-68  
 BRIDGE ENGINEER  
 APPROVED BY: *[Signature]* DATE 1-2-69  
 CHIEF ENGINEER

STD. 54.00  
 A-1582

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE C.E.D. DATE 5-24-68 CHECKED JPP DATE 5-27-68

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

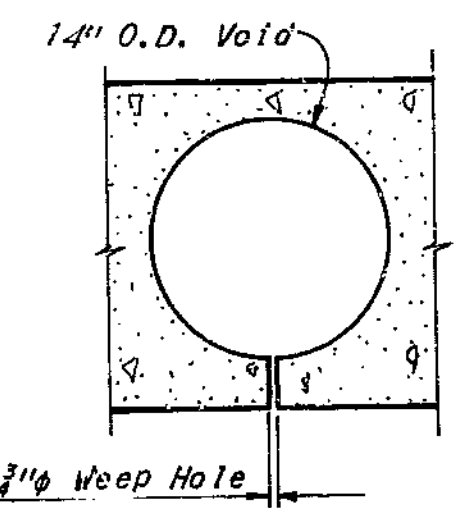
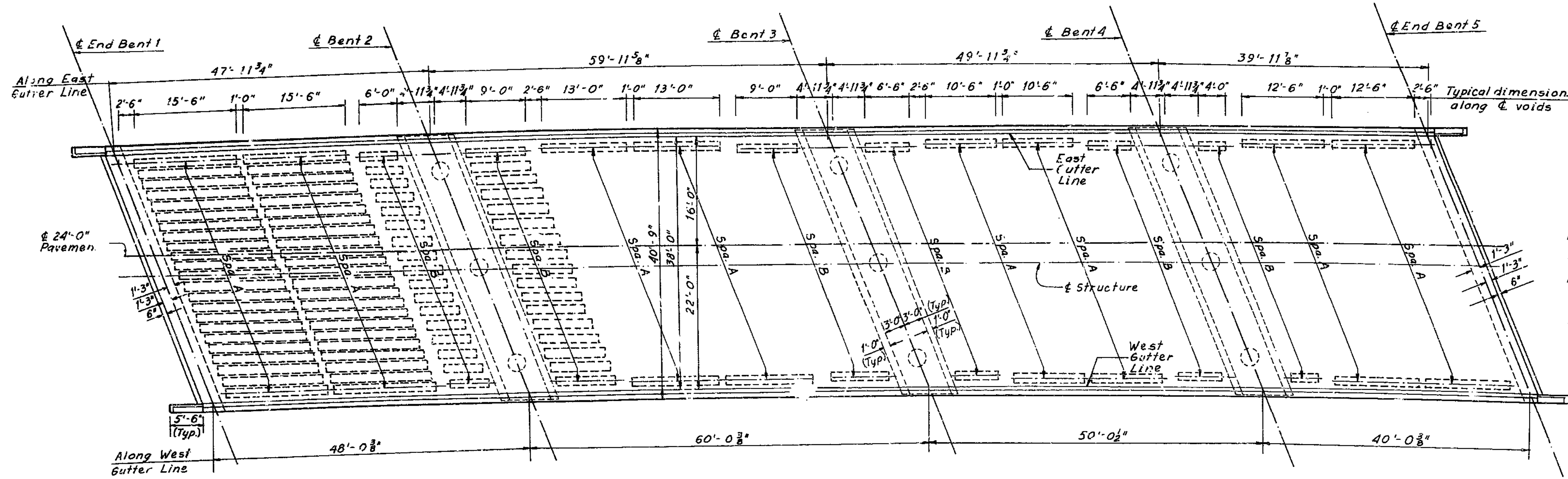
2106-21-02 233 A-1582

SHEET 14 OF 20  
 FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

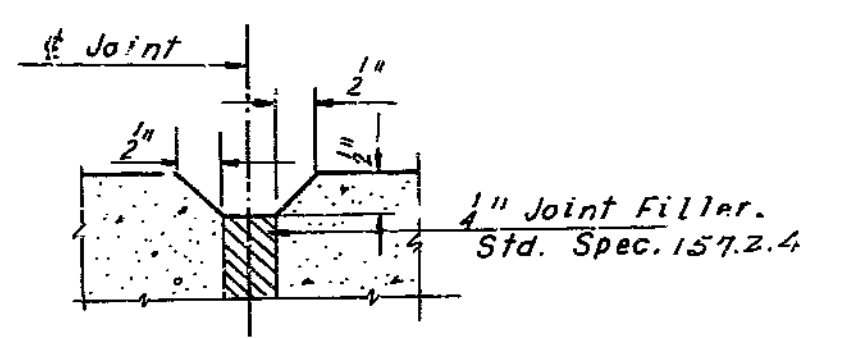
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(69)9		10	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY		243		

FINAL PLANS



Note: One 3/4" weep hole was provided near each end of each void. Weepholes were placed in straight lines parallel to bents.

VOID WEEPHOLE DETAIL

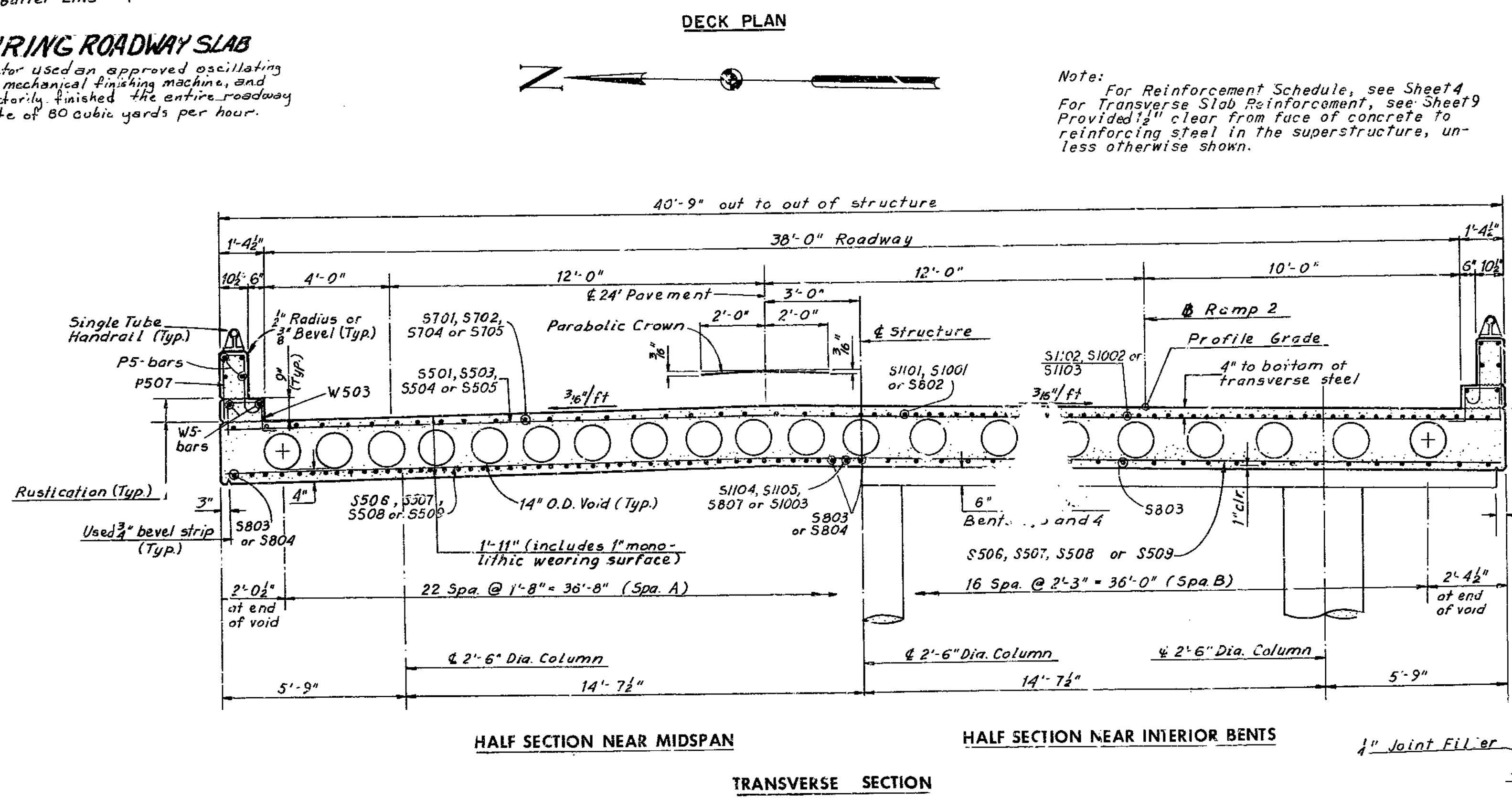


DEFLECTION JOINT IN CURB & PARAPET AND PARAPET ONLY

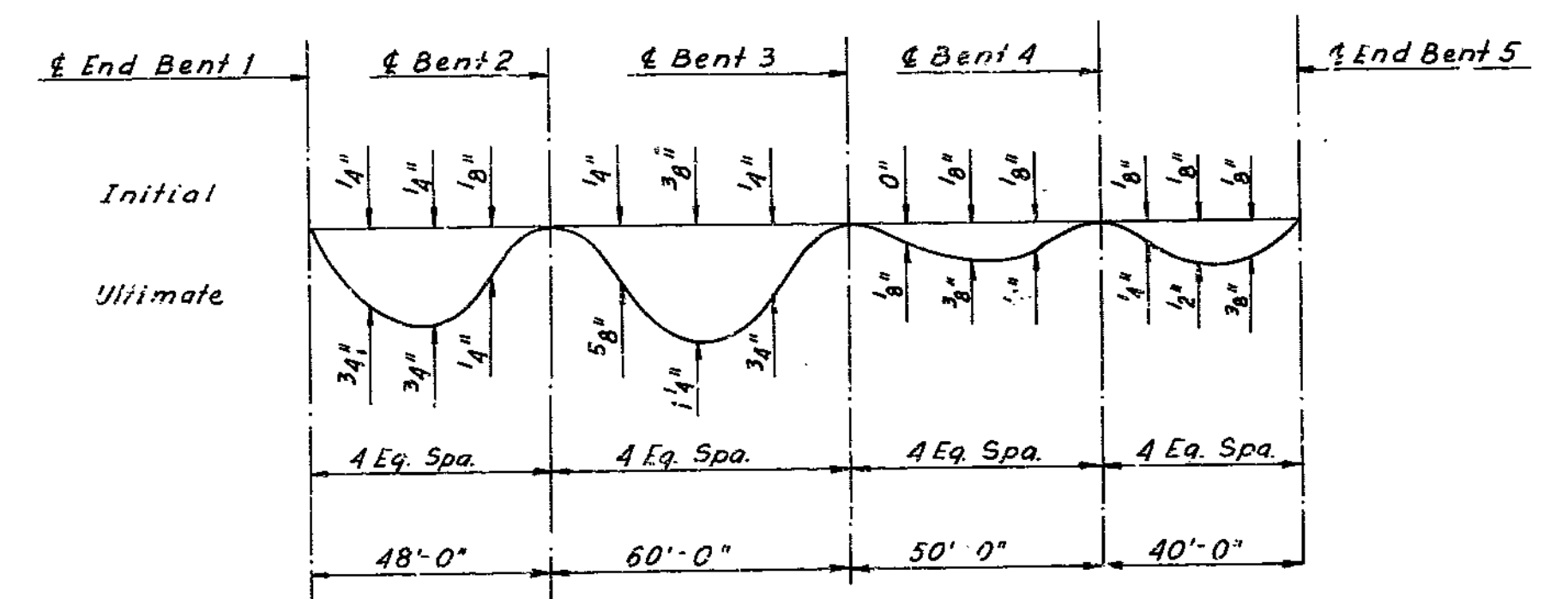
**POURING ROADWAY SLAB**  
The Contractor used an approved oscillating self-propelled mechanical finishing machine, and poured & satisfactorily finished the entire roadway slab at a rate of 80 cubic yards per hour.

Note: For Reinforcement Schedule, see Sheet 4. For Transverse Slab Reinforcement, see Sheet 9. Provided 2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

Note: All reinforcing stopped 2" clear of deflection joints.

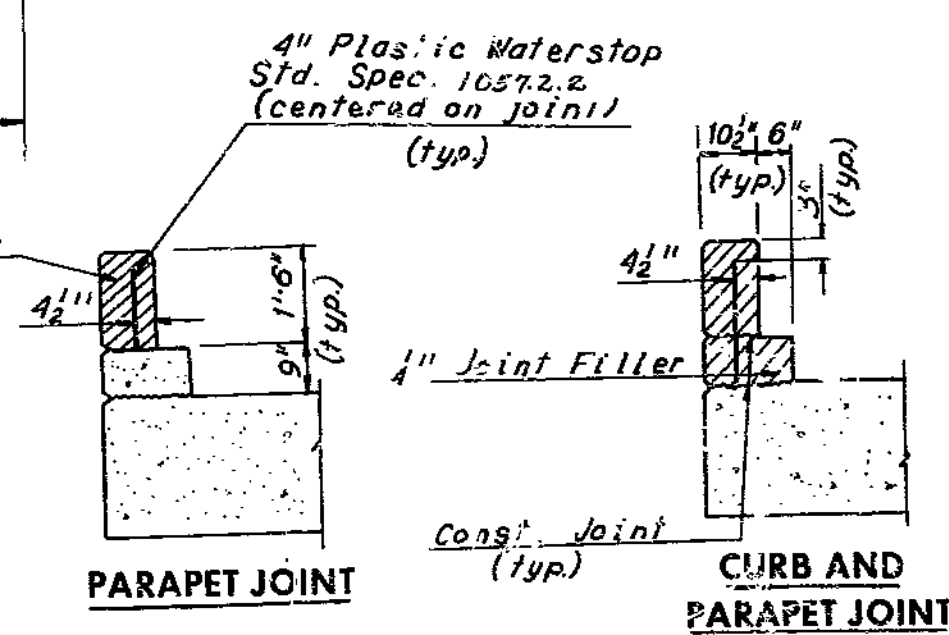


TRANSVERSE SECTION

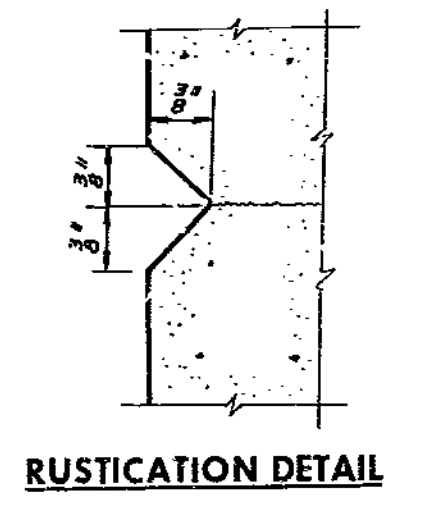


Note: Forms were cambered for ultimate deflections.

DEAD LOAD DEFLECTION DIAGRAM



DETAILS OF PLASTIC WATERSTOP



RUSTICATION DETAIL

**BRIDGE: RAMP 2 OVER ROUTE 69**  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)9(RTE. I-435) STA. 16+62.96  
CLAY COUNTY & 24+AV.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK  
MADE C.E.B. DATE 5-23-68 CHECKED JFP D.R. 5-25-68

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

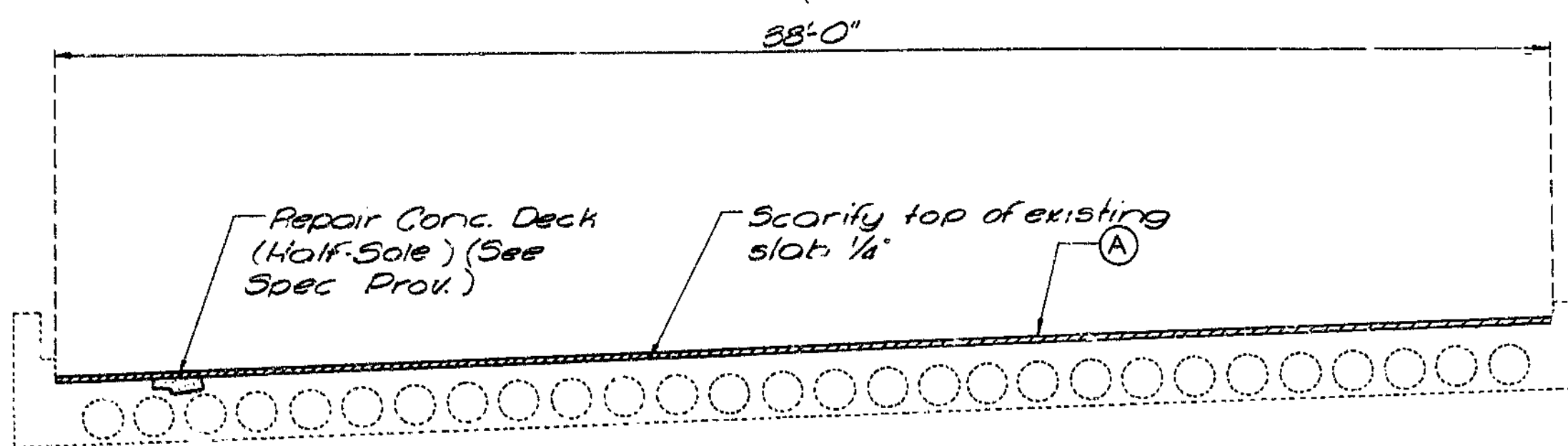
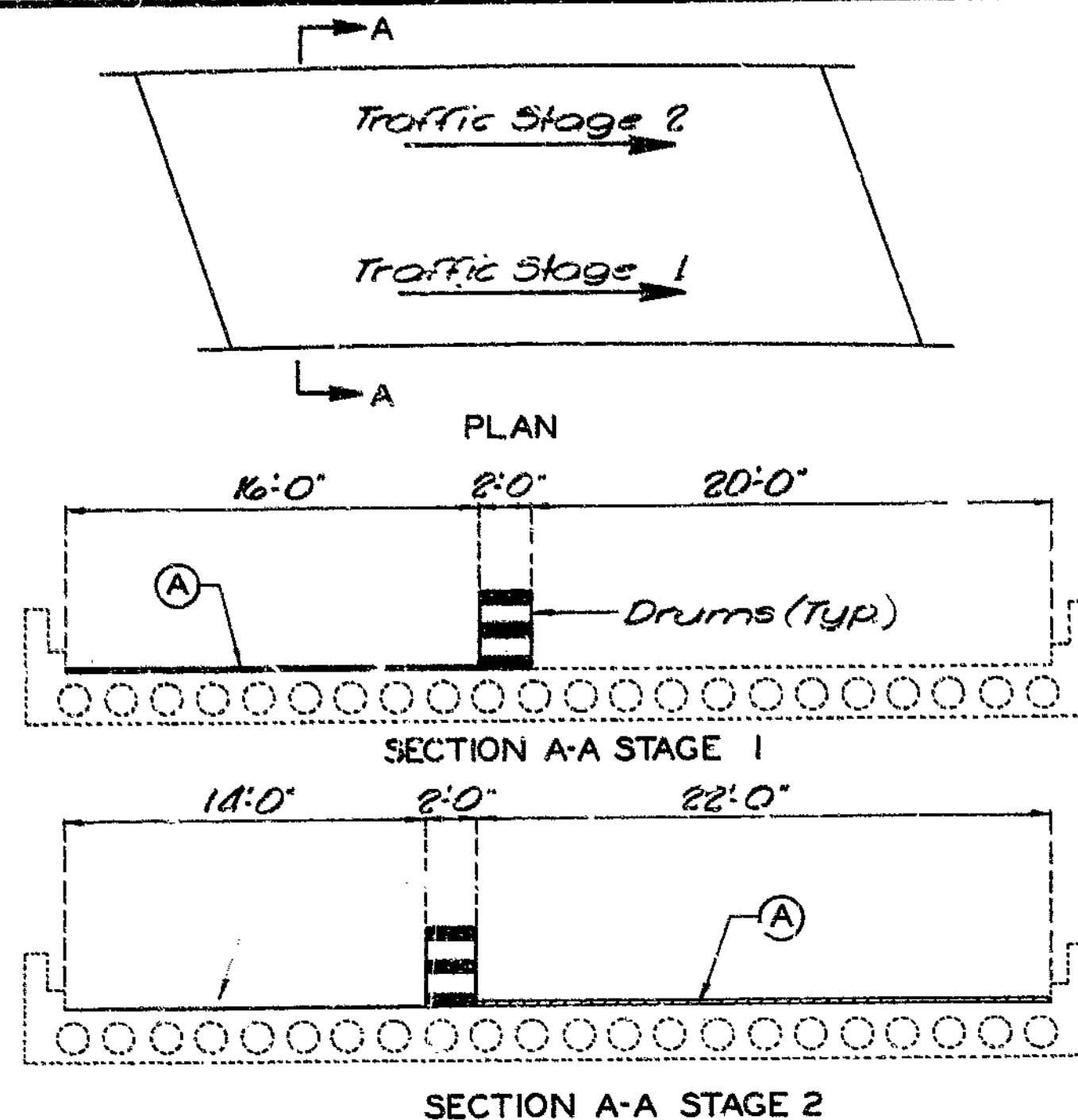
SHEET 740F OF 2  
FINAL PLANS

A-1582

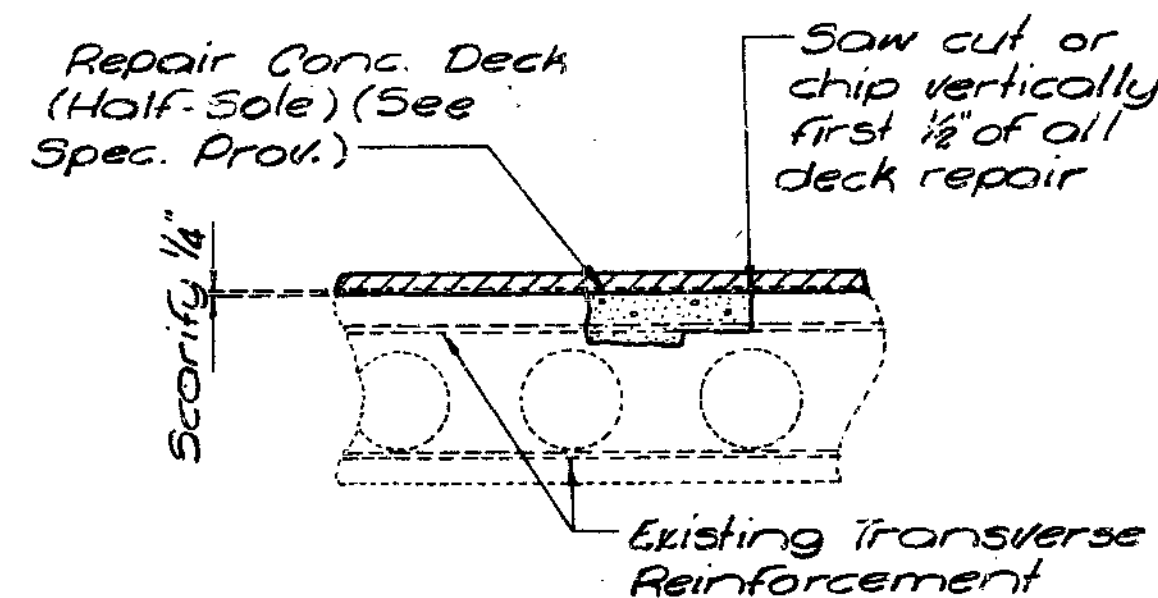
2106-21-02  
A-1582  
234

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	25
SEC./SUR. 27	TWP. 51N RGE. 32W	



SECTION THRU SLAB



HALF-SOLED AREA

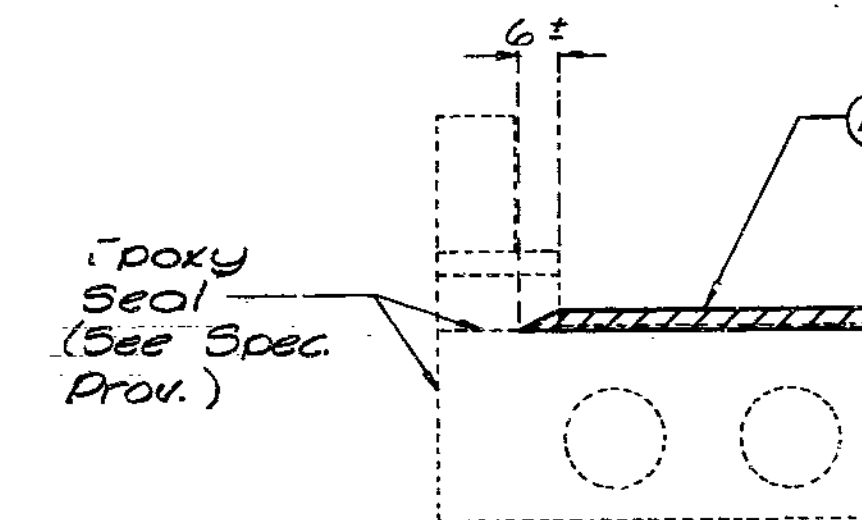
- Ⓐ { 1 3/4" (min.) Latex Modified Concrete plus Cathodic Protection System or 2 1/4" (min.) Low Slump Concrete plus Cathodic Protection System

- \* { 1 3/4" (min.) Latex Modified Conc. or 2 1/4" (min.) Low Slump Conc.

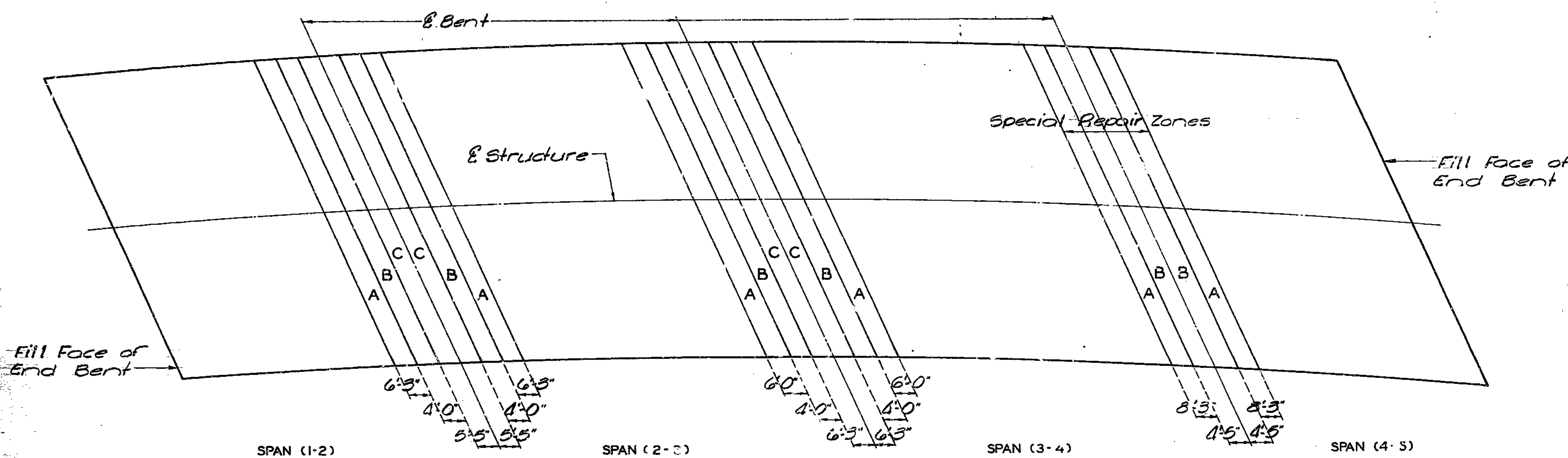
ESTIMATED QUANTITIES		TOTAL
ITEM		
* Concrete Wearing Surface ( ) Sq. Yd		847
Repair Concrete Deck (Half-Soling) Sq. Ft.		305
Cathodic Protection System	Lump Sum	1

Note: Outline of old work is indicated by light dotted lines. Heavy lines indicate new work.

Sequence for repair; Zone A, 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.  
 See Special Provisions for use of alternate concrete wearing surface.  
 One lane of traffic is to be maintained over structure during construction. (See Road Plans.)



SECTION THRU SLAB SHOWING OUTLET



PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

REPAIRS TO  
**BRIDGE: RAMP 2 OVER ROUTE 69**  
 STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35  
 ROUTE I-35 INTERCHANGE  
 PROJECT NO. IR-435-1(215) STA. 16+62.96  
 JOB NO. 4-I-435-702 RTE. I-435  
 CLAY COUNTY

STD.
STD.
A-1582R

DATE 10/25/85

DESIGNED SEPT. 1985  
 DETAILED SEPT. 1985  
 CHECKED Sept 1985

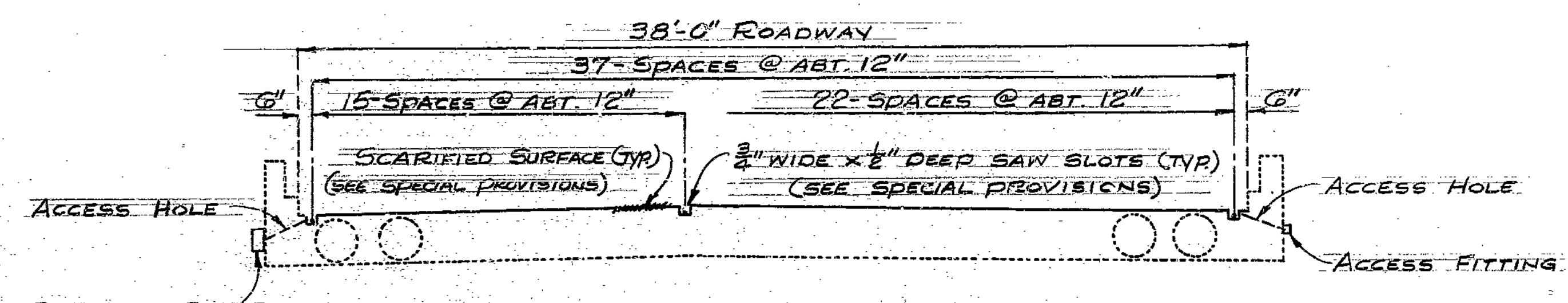
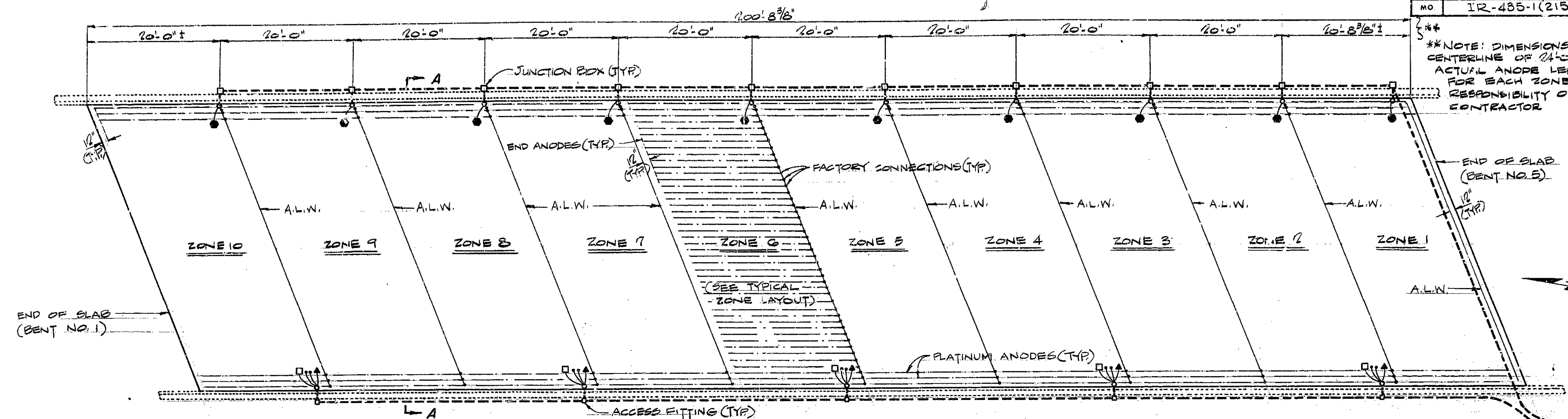
Note: This drawing is not to scale. Follow dimensions.

SPECIAL PLANS  
 Sheet No. 1 of 4

437

STATE	PROJ. NO.	SHEET NO.
MO.	IR-485-1(215)	20

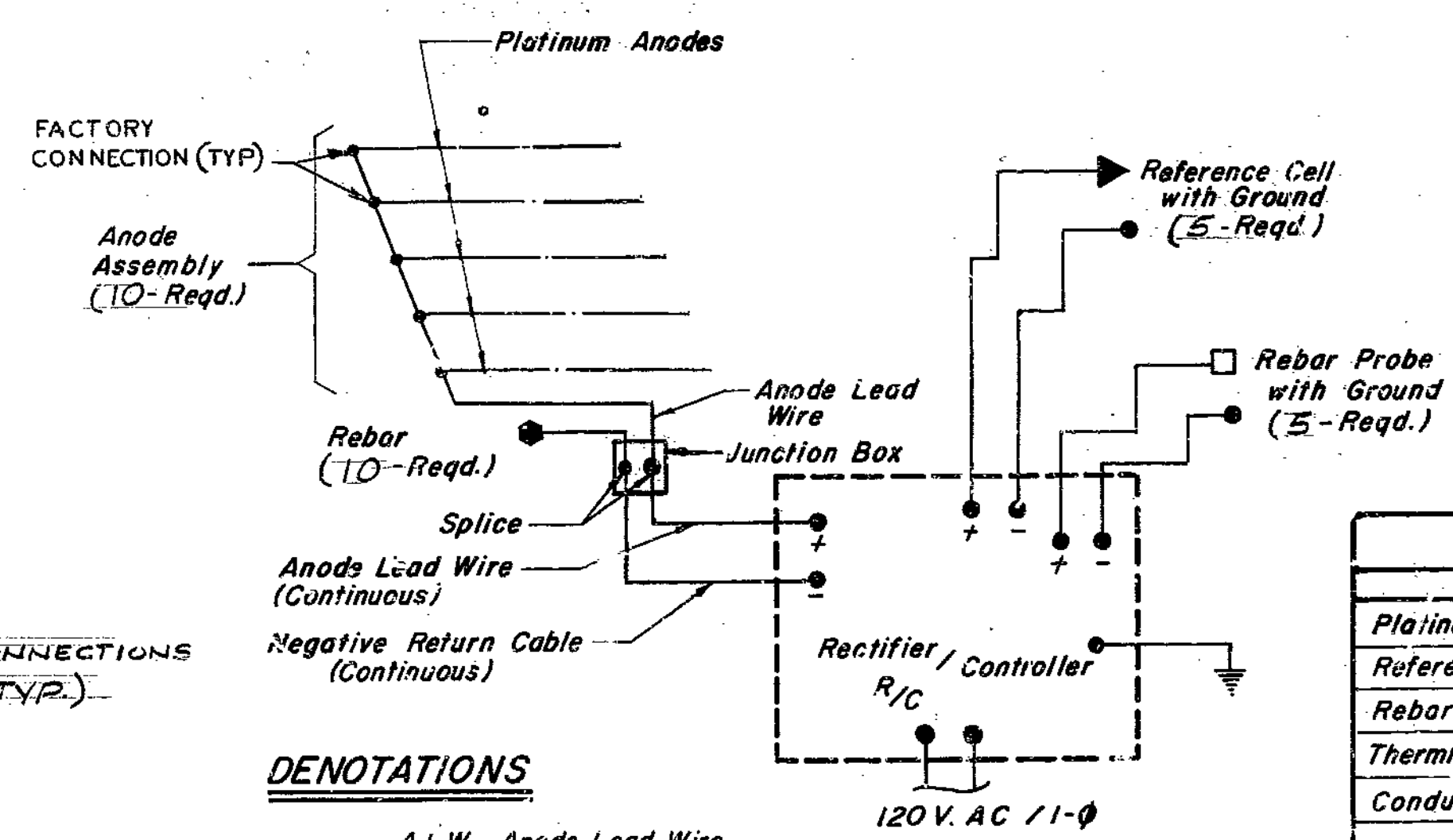
\*\*NOTE: DIMENSIONS ARE ALONG CENTERLINE OF 24'-0" PAVEMENT. ACTUAL ANODE LENGTHS FOR EACH ZONE ARE THE RESPONSIBILITY OF THE CONTRACTOR



NOTE: FACTORY SUPPLIED FIELD SPLICES WILL BE PERMITTED WHEN STAGES ON THE NO. 10 STRANDED COPPER WIRE AS DIRECTED BY THE ENGINEER.

NOTE: SLAB SHALL BE SCARIFIED PRIOR TO SAWING SLOTS. (SEE SPECIAL PROVISIONS)

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



ESTIMATED QUANTITIES *		
ITEM	UNIT	QUANTITY
Platinum Anodes	Lin. Ft.	7,210
Reference Cells	Each	5
Rebar Probes	Each	5
Thermite Welds	Each	20
Conduit 2 1/2" φ PVC	Lin. Ft.	490

\* For information only. Note: Platinum anodes and conduit lengths are approximate. Actual lengths are the responsibility of the contractor.

**CATHODIC PROTECTION SYSTEM**

438

**TYPICAL ZONE LAYOUT EXCEPT AS NOTED**  
 Note: Anodes shall be placed as shown with a minimum tolerance of plus or minus three inches.  
 Note: This drawing is not to scale. Follow dimensions.

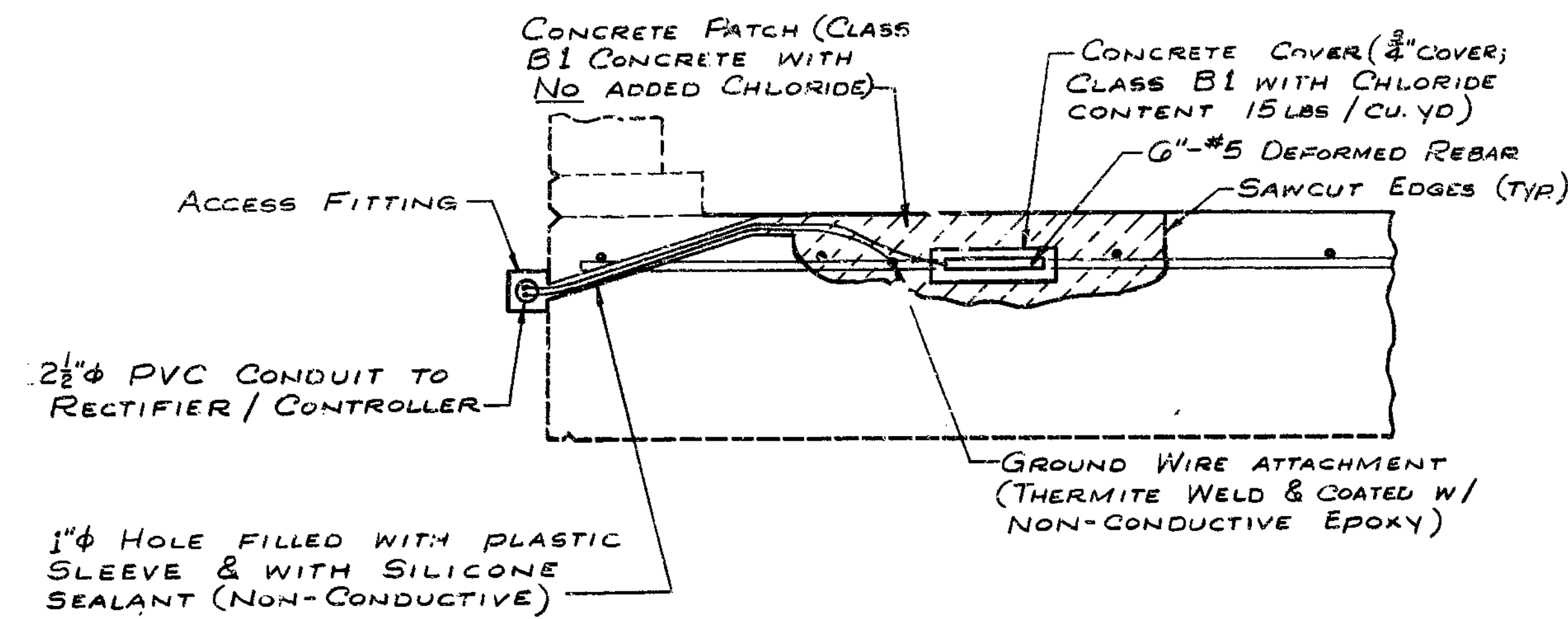
DETAILED OCT. 1985  
 CHECKED OCT. 1985

Sheet No. 2 of 4

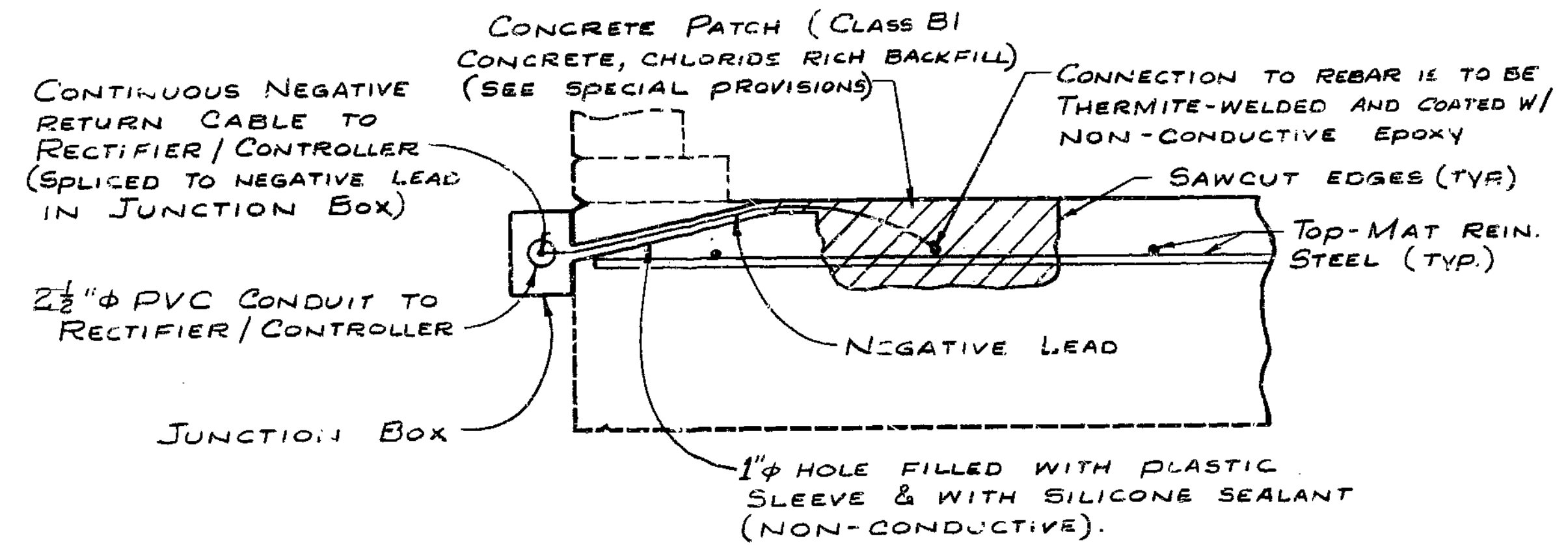
CLAY COUNTY

A-1582R

STATE	PROJ NO	SHEET NO.
MO	IR-485-1(215)	27

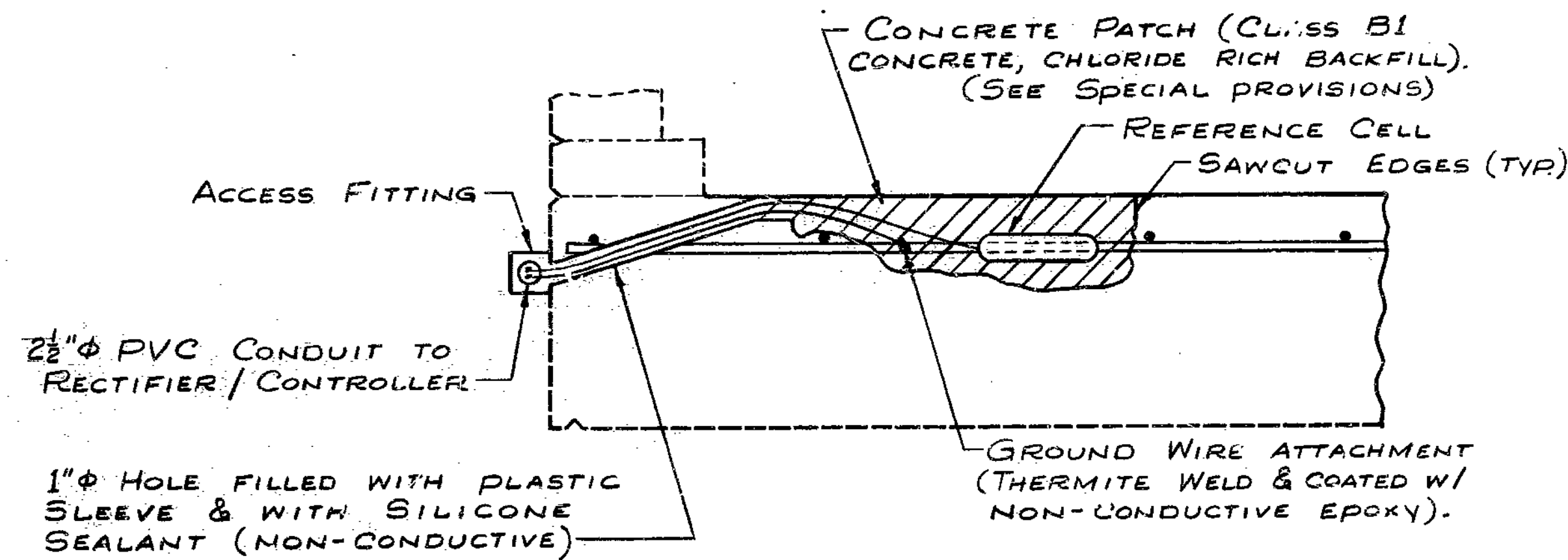


REBAR PROBE DETAILS

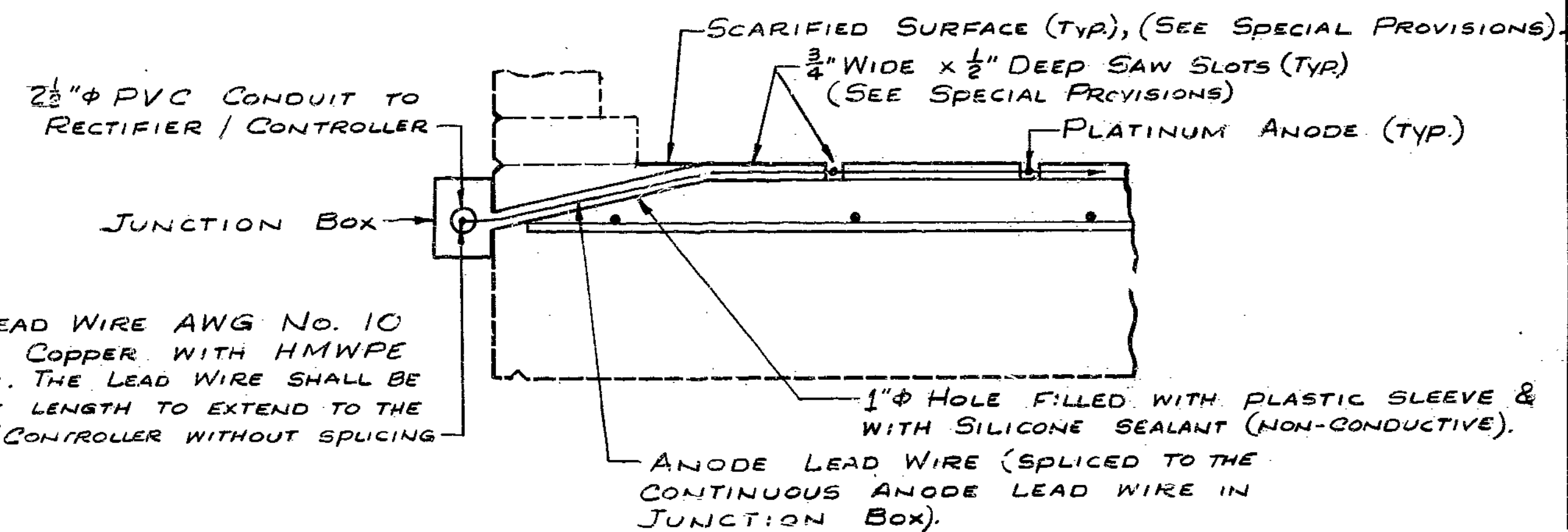


SYSTEM NEGATIVES CONNECTION DETAIL

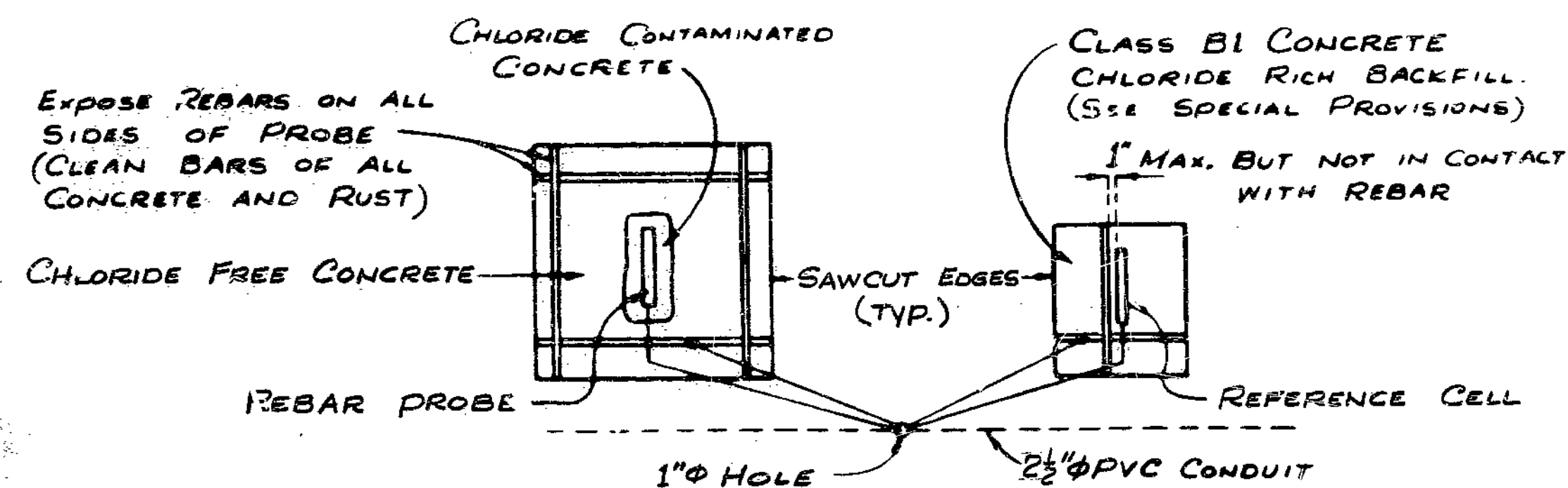
NOTE: THE REFERENCE CELL SHALL BE PLACED IN THE EXCAVATED AREA WITHIN 1" BUT NOT IN DIRECT CONTACT OF TOP-MAT REINFORCING STEEL.



REFERENCE CELL DETAILS



PLATINUM ANODE TO ANODE LEAD WIRE DETAIL



PLAN OF REBAR PROBE AND REFERENCE CELL

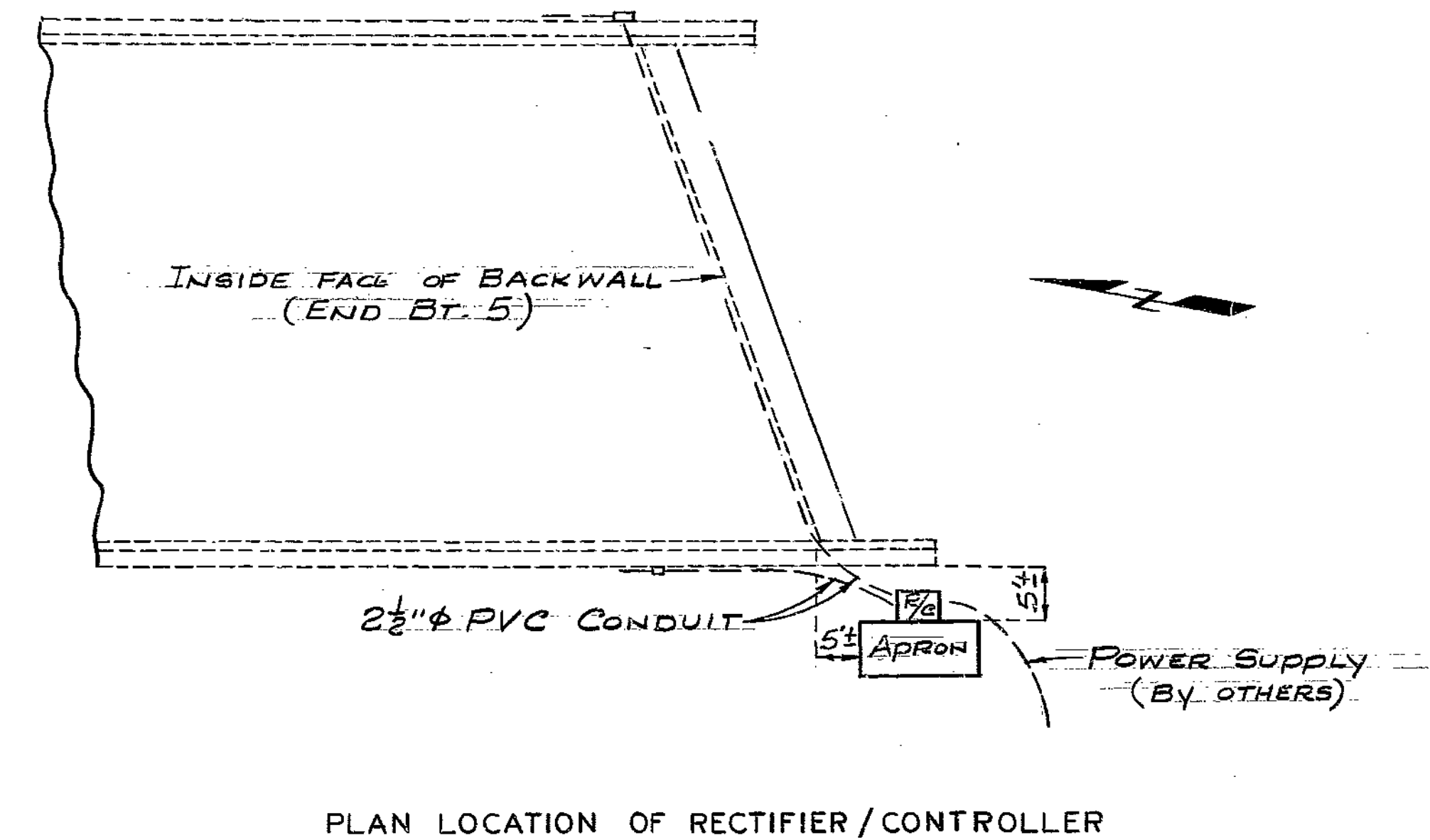
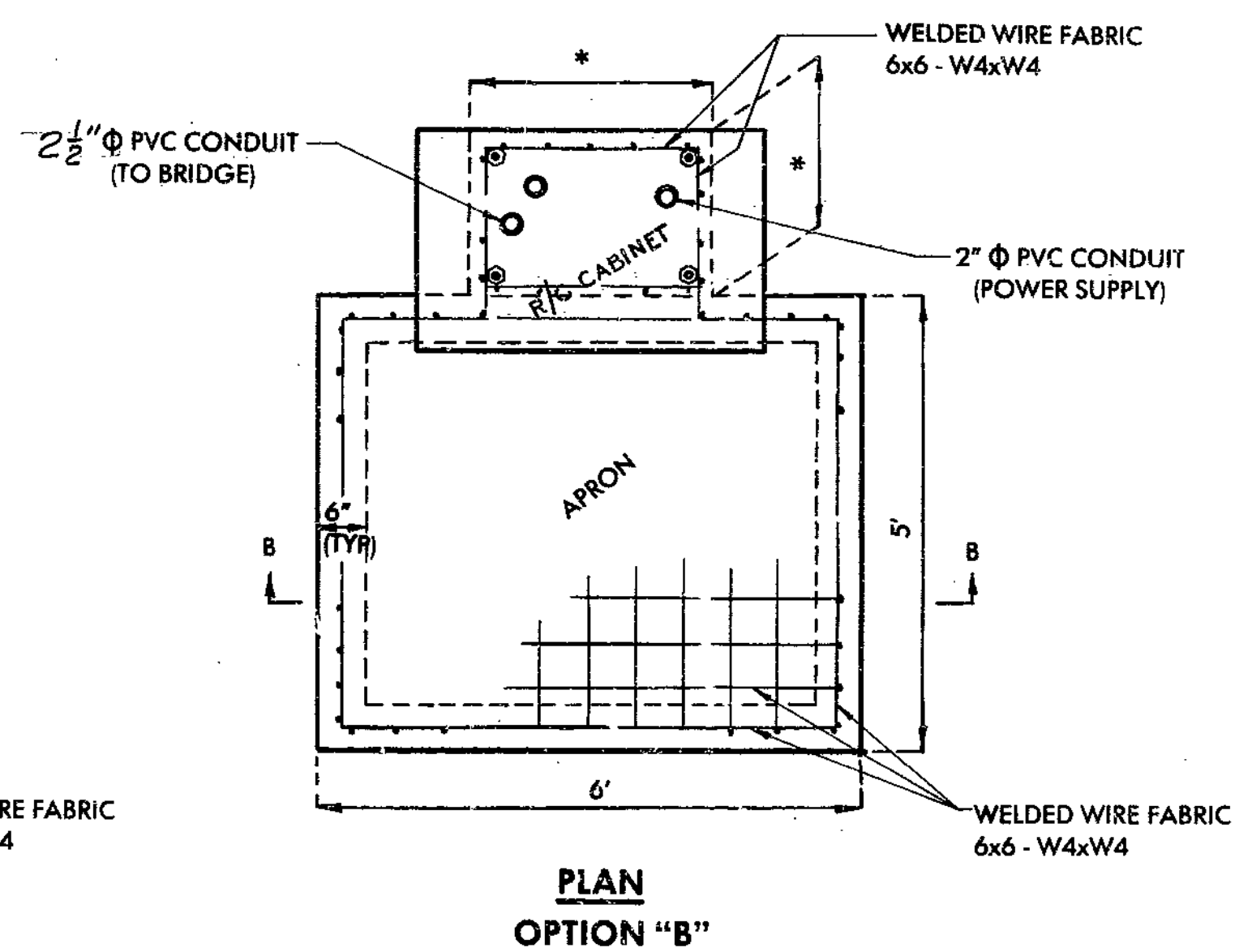
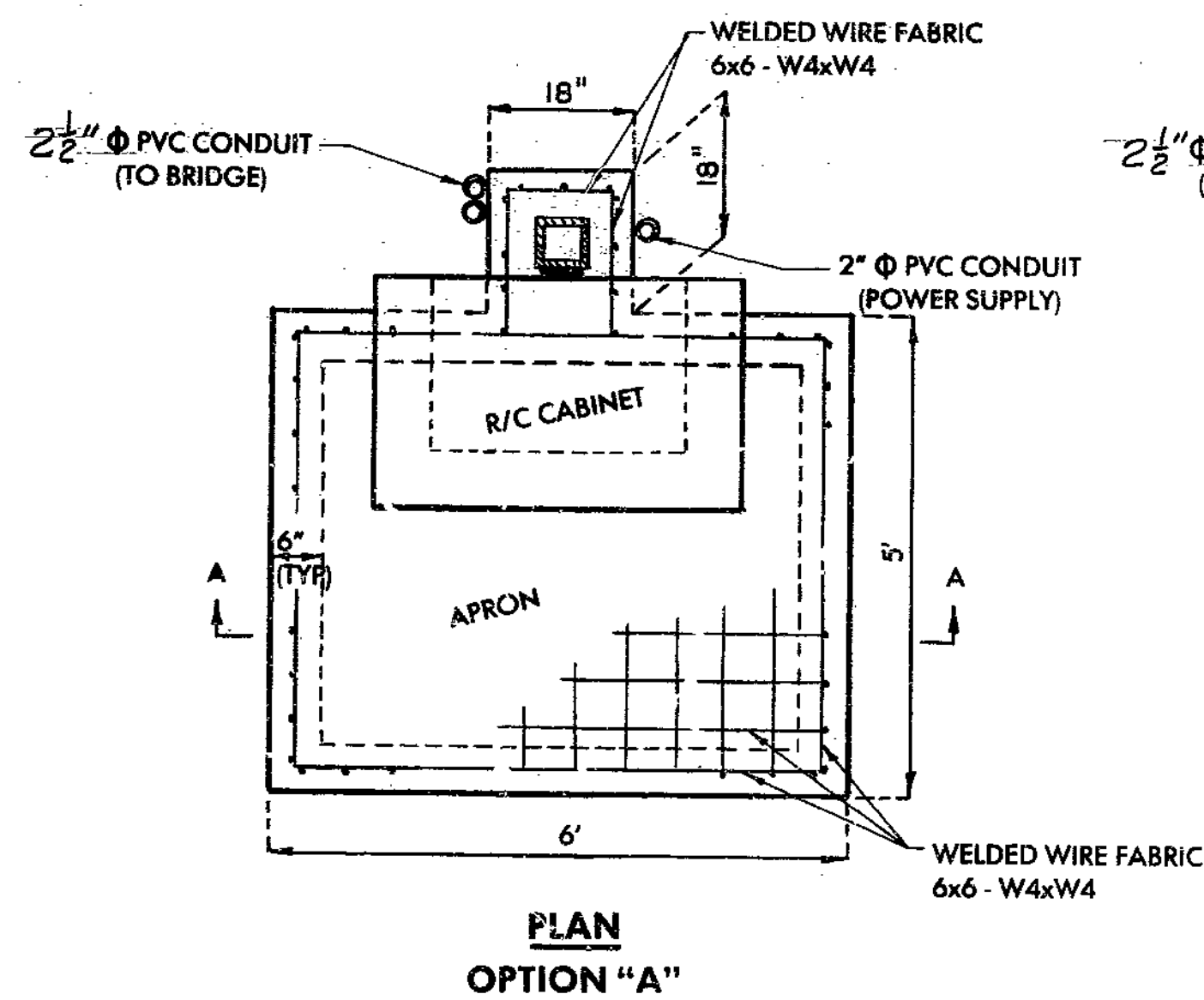
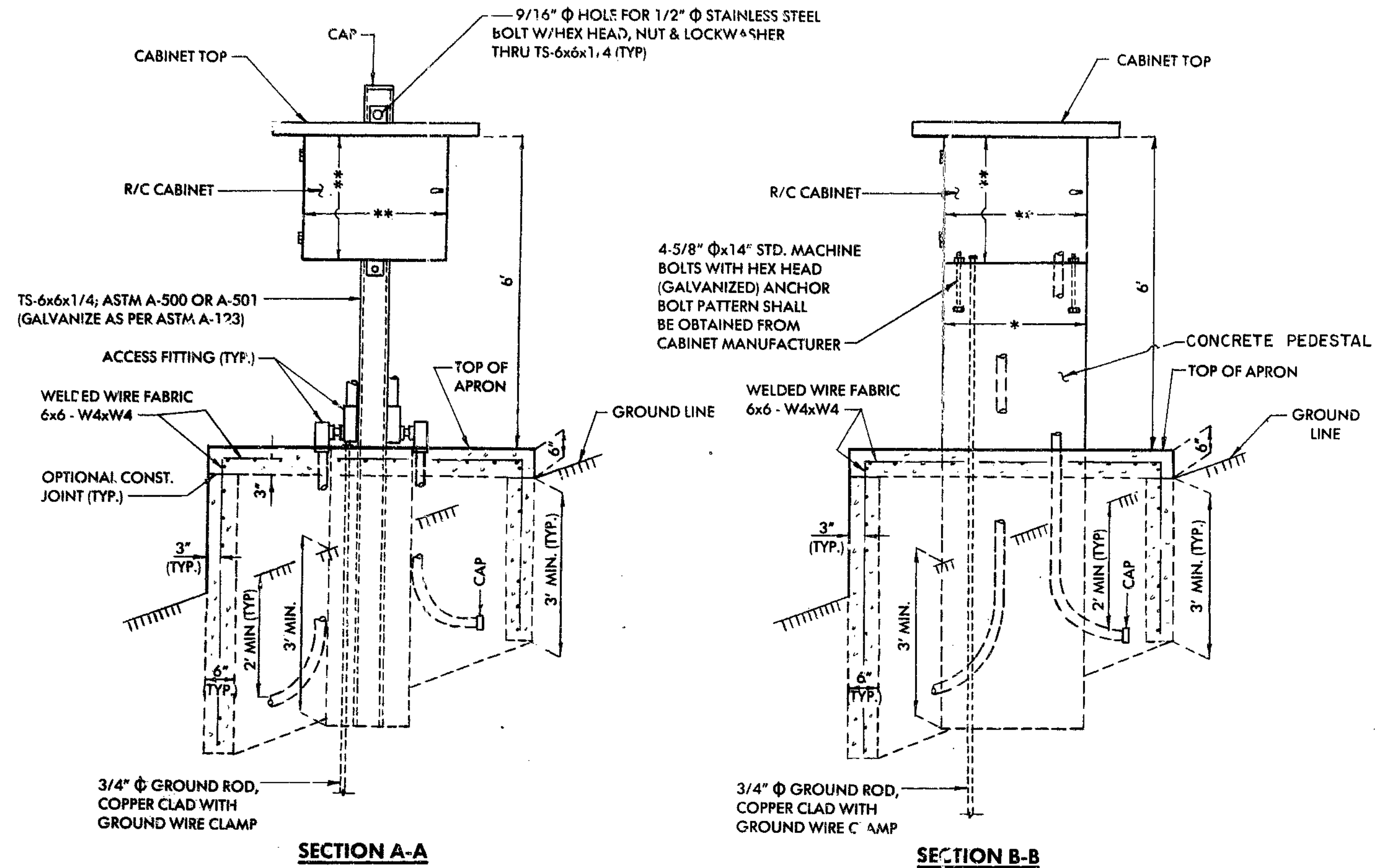
Note: All concrete removal shall be initiated by saw cutting the first 1/2"

Notes: Conduit shall be schedule 40 Heavy Wall PVC (Polyvinyl Chloride Plastic). Each section of conduit shall bear the Underwriters Laboratories, Inc. (UL) label. Conduit shall be secured to concrete with clamps at abt. 5'-0" cts. Weepholes shall be provided at appropriate locations to drain any moisture in the conduit lines. The location and direction of conduit may be shifted to meet field conditions as approved by the engineer. Use expansion couplings and access fittings where appropriate. The junction boxes shall be PVC molded, surface mounted, size 6" x 6" x 4". They shall be equal to "Carlson" Electrical Construction Products or "Triangle" Conduit & Cable Co. Inc. The conduit terminations and cover shall be of water tight construction.

439



STATE	PROJ. NO	SHEET NO.
MO.	IR-435-1(215)	28



\*\*DIMENSIONS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.  
\*DIMENSIONS ACCORDING TO MANUFACTURED CABINET.

Note: The 3/4"  $\Phi$  ground rods shall be sufficient length to extend a minimum of 10'-0" below bottom of concrete pedestal.  
Ground wire shall be No. 6 AWG minimum.  
Knockouts or drilled holes shall be provided in cabinets for all conduit. Locations of such are the responsibility of the contractor and cabinet manufacturer.

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

440  
DETAILED SEPT. 1985  
CHECKED SEPT. 1985

Sheet No. 4 of 4

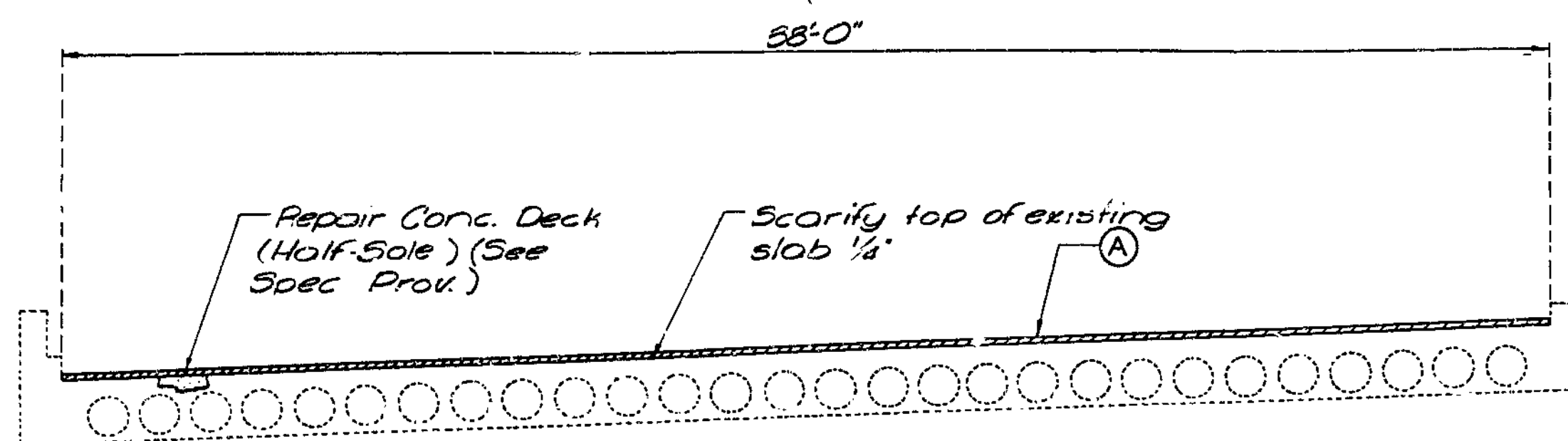
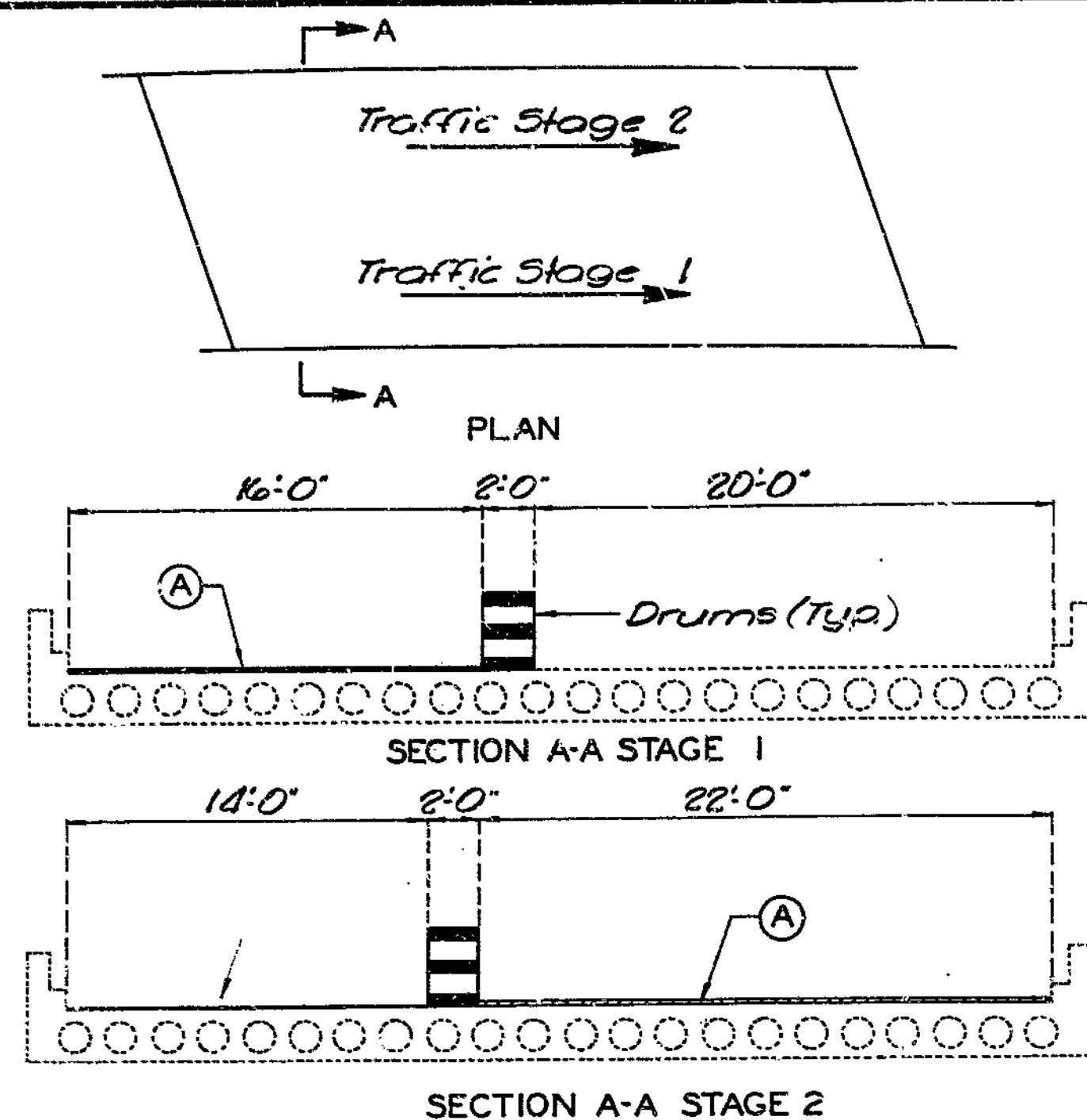
CLAY COUNTY

A-1582R

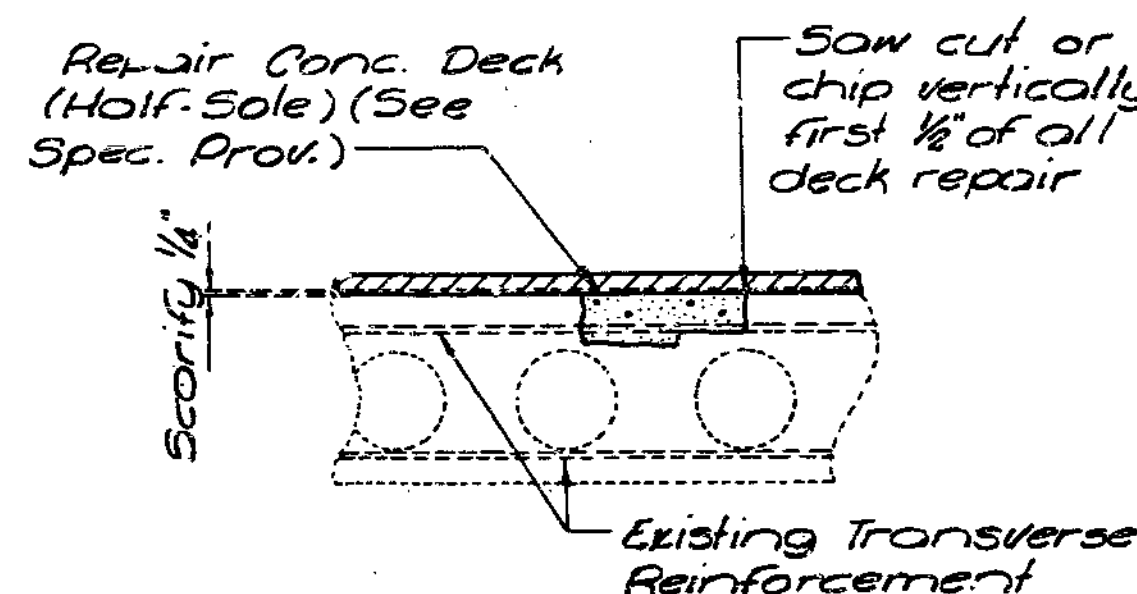
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	25
SEC./SUR. 27	TWP. 51N	RGE. 32W

FINAL PLANS



SECTION THRU SLAB



HALF-SOLED AREA

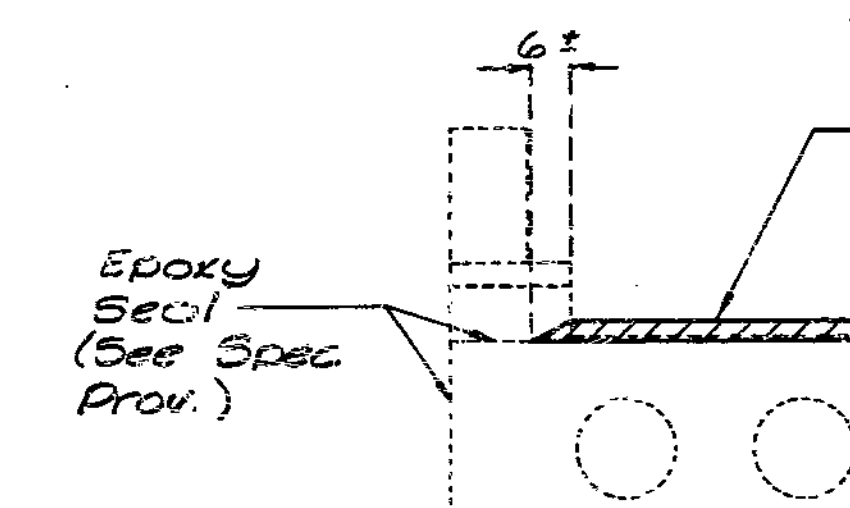
ESTIMATED QUANTITIES		
ITEM		TOTAL
* Concrete Wearing Surface ( )	Sq. Yd	817.0
Repair Concrete Deck (Half-Soling)	Sq. Ft.	907.0
Cathodic Protection System	Lump Sum	1.0

Note: Outline of old work is indicated by light dotted lines. Heavy lines indicate new work.

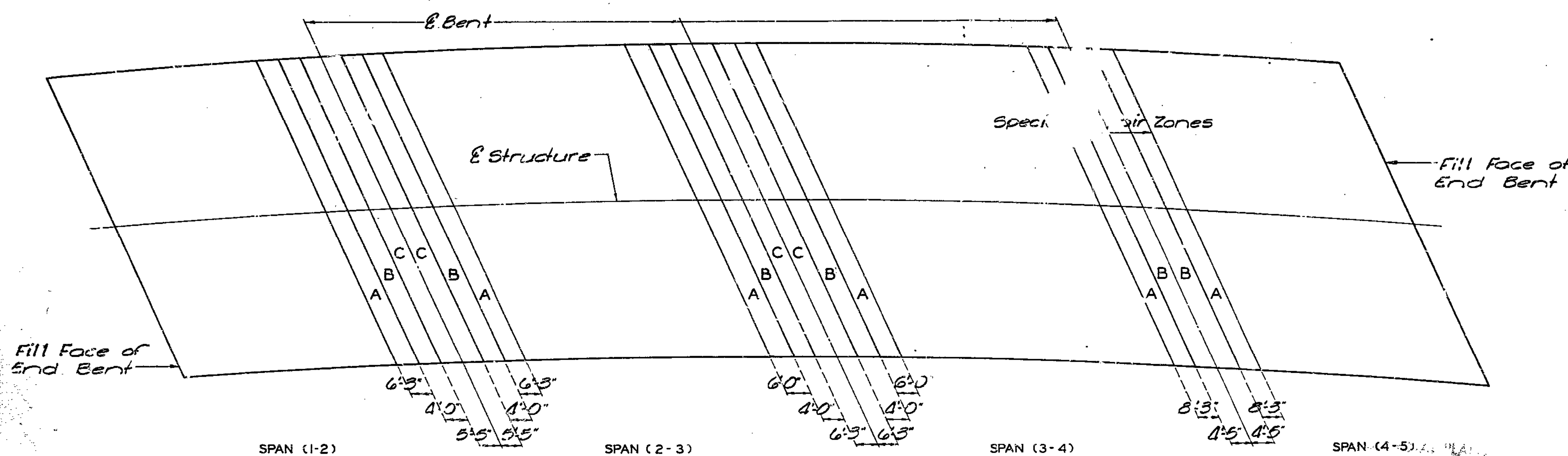
Sequence for repair; Zone A, Zone B, then Zone C.  
 Any repair in the remainder of the bridge that is within 5'-0" of Zone A shall be completed before removing old concrete in Zones A.  
 Zones with the same letter designation may be repaired at the same time.  
 See Special Provisions for use of alternate concrete wearing surface.  
 One lane of traffic is to be maintained over structure during construction. (See Road Plans.)

① (2 1/4" (min.) Low Slump Concrete plus Cathodic Protection System

(2 1/4" (min.) Low Slump Conc.



SECTION THRU SLAB SHOWING OUTLET



PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

REPAIRS TO BRIDGE: RAMP 2 OVER ROUTE 69

STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35  
 ROUTE I-35 INTERCHANGE  
 PROJECT NO. IR-435-1(215) STA. 16+62.96  
 JOB NO. 4-I-435-702 RTE. I-435  
 CLAY COUNTY

DATE 10/25/85

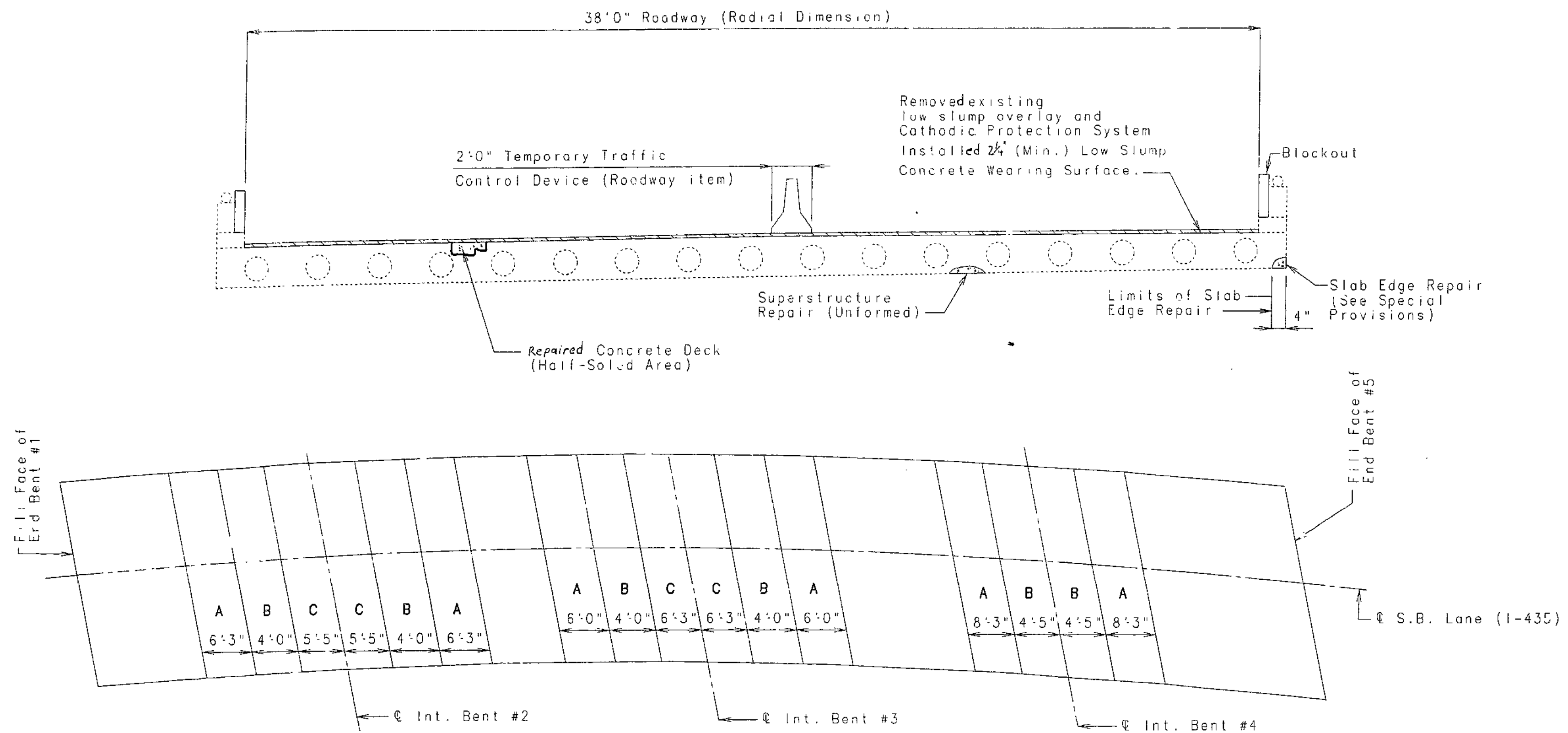
DESIGNED SEPT. 1985  
 DETAILED SEPT. 1985  
 CHECKED Sept 1985

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

Sheet No. 1A of 4

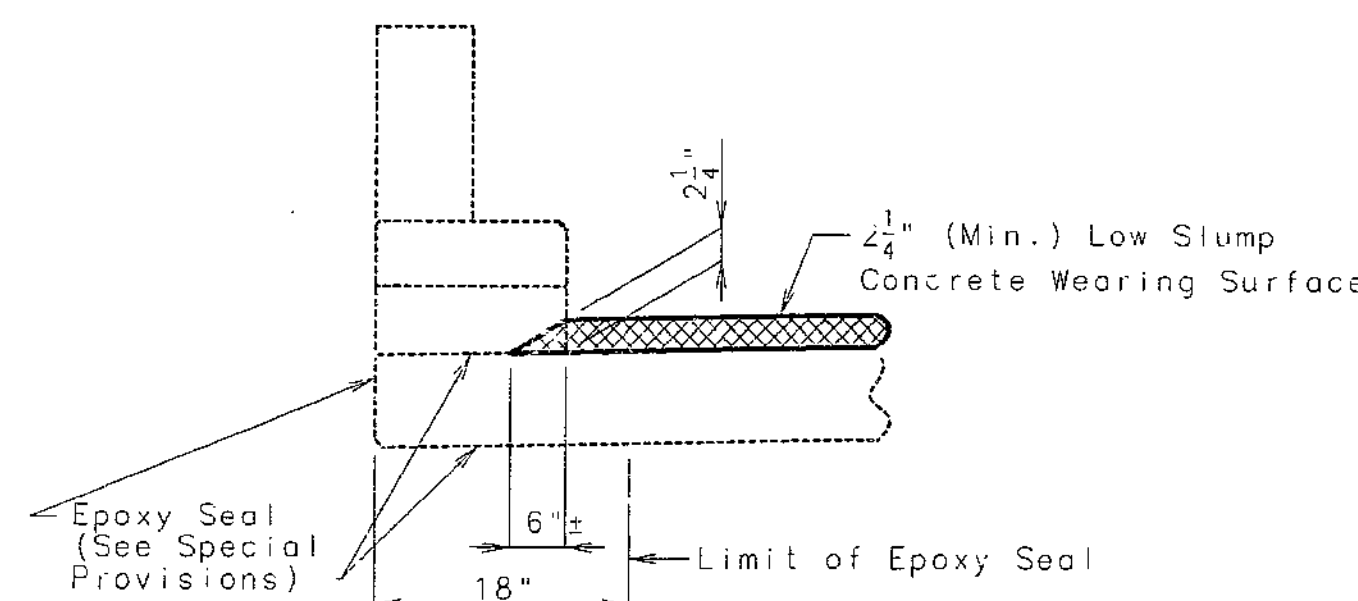
STD  
 STD  
 A-1582

STATE	PROJ. NO.	SHEET NO.
MO.	AC/M-435-1(26)	1
SEC./SUR.27	TWP. 51N	RGE 32W



PLAN OF EXISTING SLABS SHOWING SPECIAL REPAIR ZONES

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

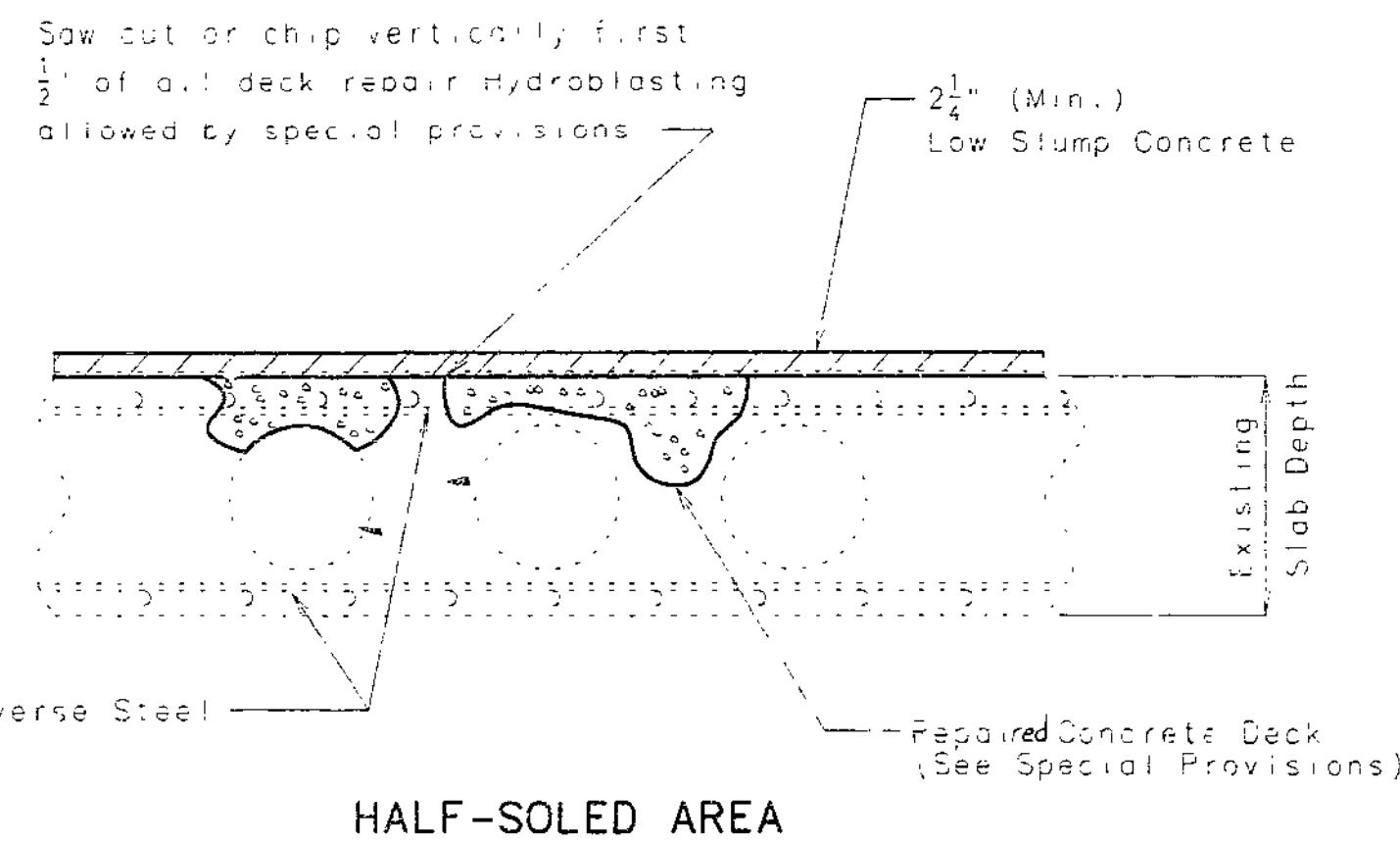


TYPICAL SECTION OF EXISTING CURB SHOWING OUTLET



I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.

DATE 10/24/97



HALF-SOLED AREA

FINAL QUANTITIES	
ITEM	TOTAL
Partial Removal of Cathodic Protection System	Lump Sum 1 ✓
Removal Of Low Slump Concrete Wearing Surface	Sq. Ft. 7630 ✓
Rehabilitation of Existing Wings	Lump Sum 1 ✓
Substructure Repair (Unformed)	Sq. Ft. 45 ✓
Superstructure Repair (Unformed)	Sq. Ft. 326 ✓
Curb Blockout	Lin. Ft. 423 ✓
Repairing Concrete Deck (Half Soling)	Sq. Ft. 3794 ✓
Slab Edge Repair (Bridges)	Lin. Ft. 208 ✓
Low Slump Concrete Wearing Surface	Sq. Yd. 848 ✓
501.00 BRIDGE A-15822 (CONTINGENT)	
501.01 SHOTCRETE REPAIR	LUMP SUM 1 ✓

- Disconnect existing cathodic protection system. Remove existing cathodic protection conduit system and wiring within. Remove existing cathodic protection rectifier and store at MCDOT signal shop located at 9101 E 40th Terrace K C Mo. (See Special Provision)
- See Special Provisions
- Cost of partial removal of wing, resin anchors, excavation, Class B1 Concrete and reinforcing steel for Northwest wing @ Bent #1 and Southeast wing @ Bent #5 to be included in bid price for rehabilitation of existing wings. See Special Provisions.

GENERAL NOTES:

Design Specifications:  
A.A.S.H.T.O. 1:96

Design Unit Stresses:

Class B1 Concrete (Curb Blockout & End Bent Wings) F'C=4,000 PSI  
Reinforcing steel (Grade 60) F<sub>y</sub>=60,000 PSI

Joint Filler:

All joint filler shall meet the requirements of STD. SPEC. 1057.2.4, except as noted.

Reinforcing Steel:

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

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

Old Work:

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

Maintain Traffic:

See Roadway Plans for traffic control during construction.

Verify Dimensions:

Contractor shall verify all dimensions in field before ordering materials.

Roadway Surfacing:

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

Maintain Grade:

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

Existing Parapet Railing:

Where parapet is removed reattach parapet railing to new concrete 3/4" X 10" Anchor bolts. Leave set screws out of rail post for expansion. Cost to be included in unit price for curb blockout.



DETAIL SHOWING SUBSTRUCTURE REPAIR AREAS AT END BENTS

REPAIRS TO BRIDGE RAMP 2 OVER ROUTE 69

STATE ROAD FROM MISSOURI RIVER TO ROUTE 1-35

ABOUT .5 MILES S. OF RTE 1-35 BEG. STA. 16+69.52  
PROJECT NO. (MATCH EXISTING)

JOB NO. J411247B

RTE. 1-435 SBL

CLAY

COUNTY

DETAILED: SEPT. 1997  
CHECKED: SEPT. 1997

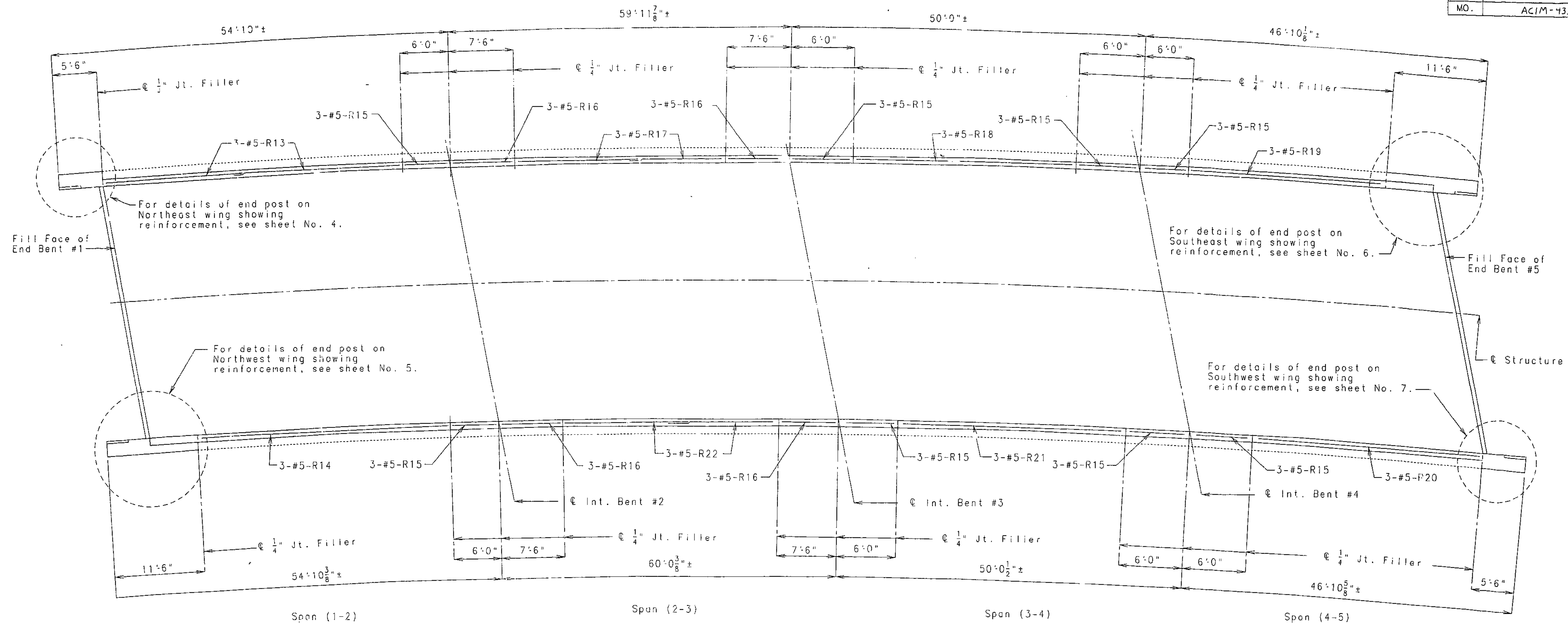
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 1 OF 9

DATE:

A15822

STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-435-1(26)	2



PLAN OF CURB BLOCKOUT SHOWING REINFORCEMENT

Note: Dimensions shown are horizontal arc dimensions along inside of curb.  
 Curb Blockout Joint Filler shall match those of Existing Structure.  
 Use a minimum lap of 2'-11" for #5 horizontal bars.

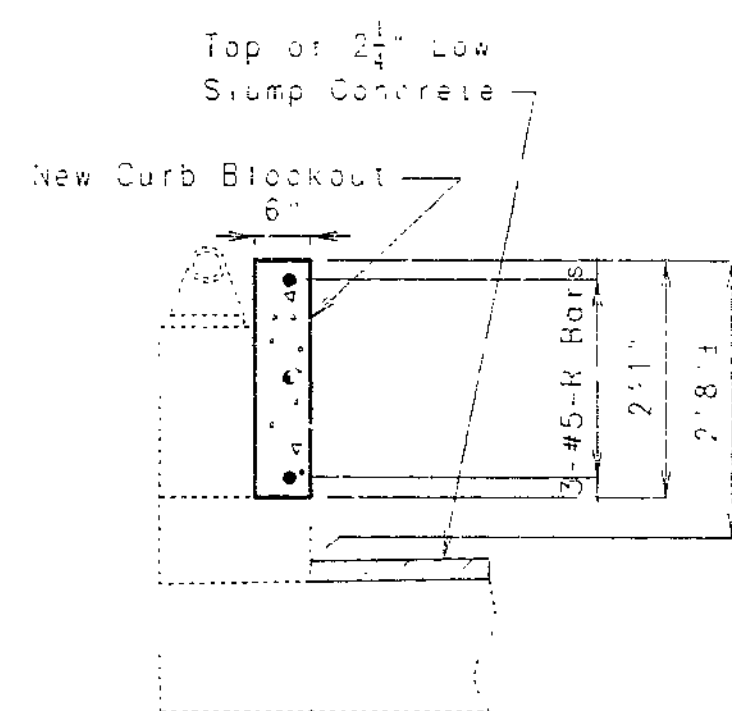
Notes for Curb Blockout

Concrete in curb blockout shall be B1.  
 Measurement of curb blockout is to the nearest linear foot measured at the gutter line from end of wing to end of wing.

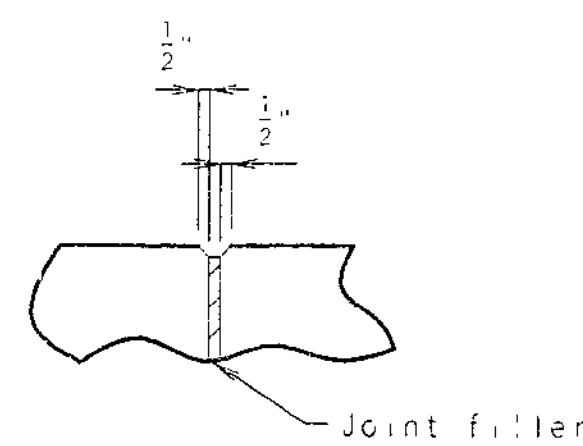
All exposed edges of curb blockout shall have 1/2" radius or 3/8" bevel unless otherwise shown.

Payment for concrete and reinforcing steel in curb blockouts and end posts complete in place shall be included in the contract unit price for the curb blockout per linear foot.

Cost of any concrete curb, parapet & end post removal shall be considered completely covered in unit prices bid for curb blockout.



TYPICAL SECTION THRU CURB BLOCKOUT



FILLED JOINT DETAIL

FINAL PLANS  
 I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.



DATE 10/20/97

349

DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

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

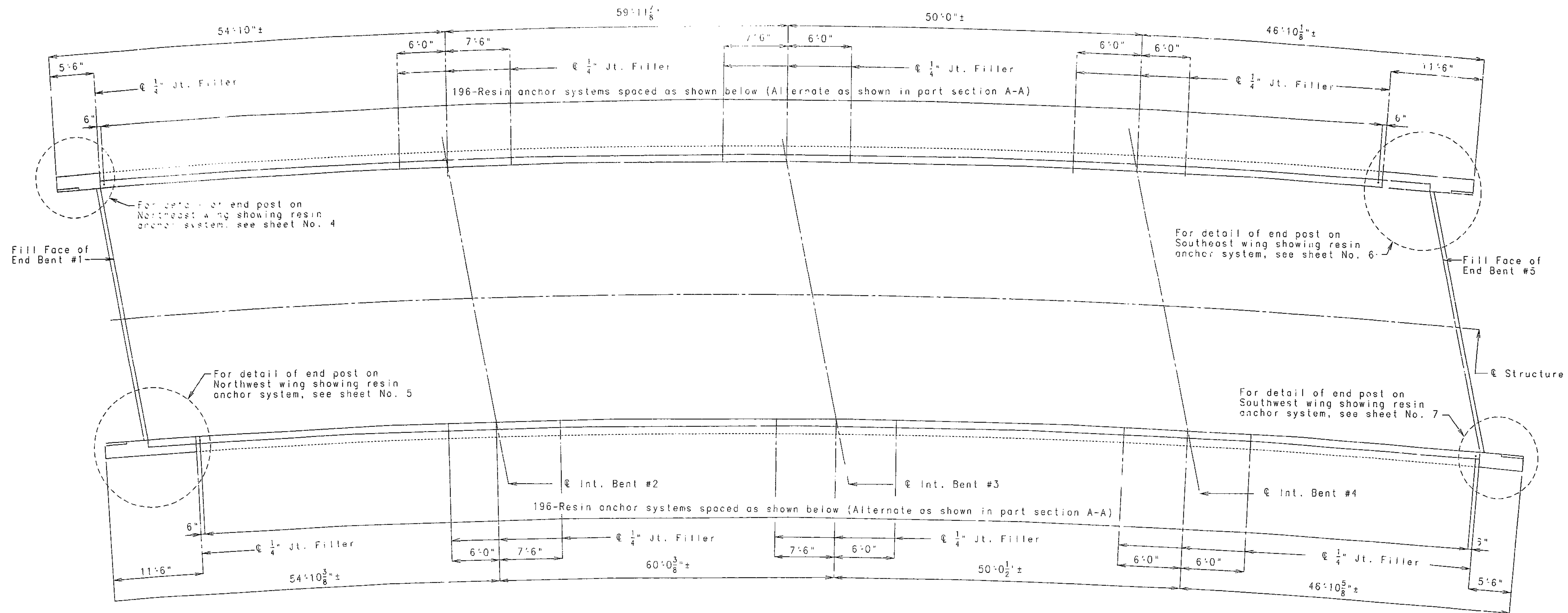
SHEET NO. 2 OF 9

CLAY COUNTY

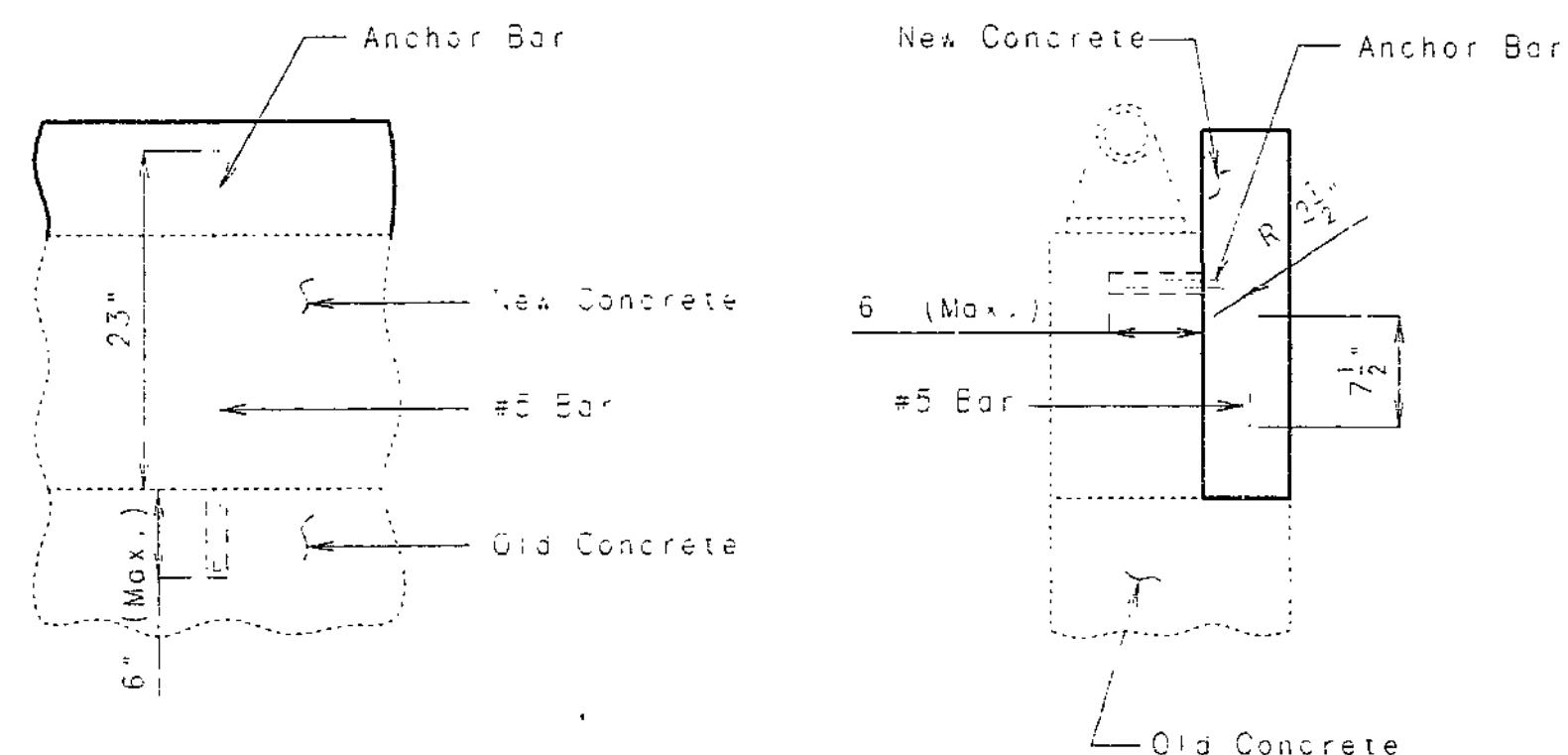
A15822

STATE	PROJ. NO.	SHEET NO.
MD.	AC11M 435-1(261)	3

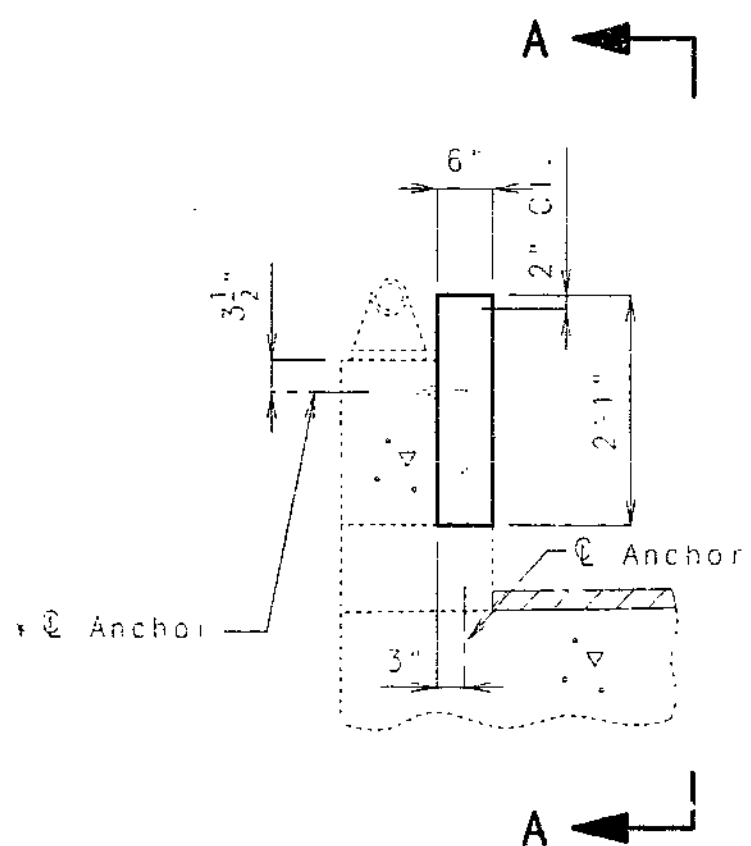
Note: Dimensions shown are horizontal arc dimensions along inside edge of curb.



PLAN OF CURB BLOCKOUT SHOWING RESIN ANCHOR SPACING

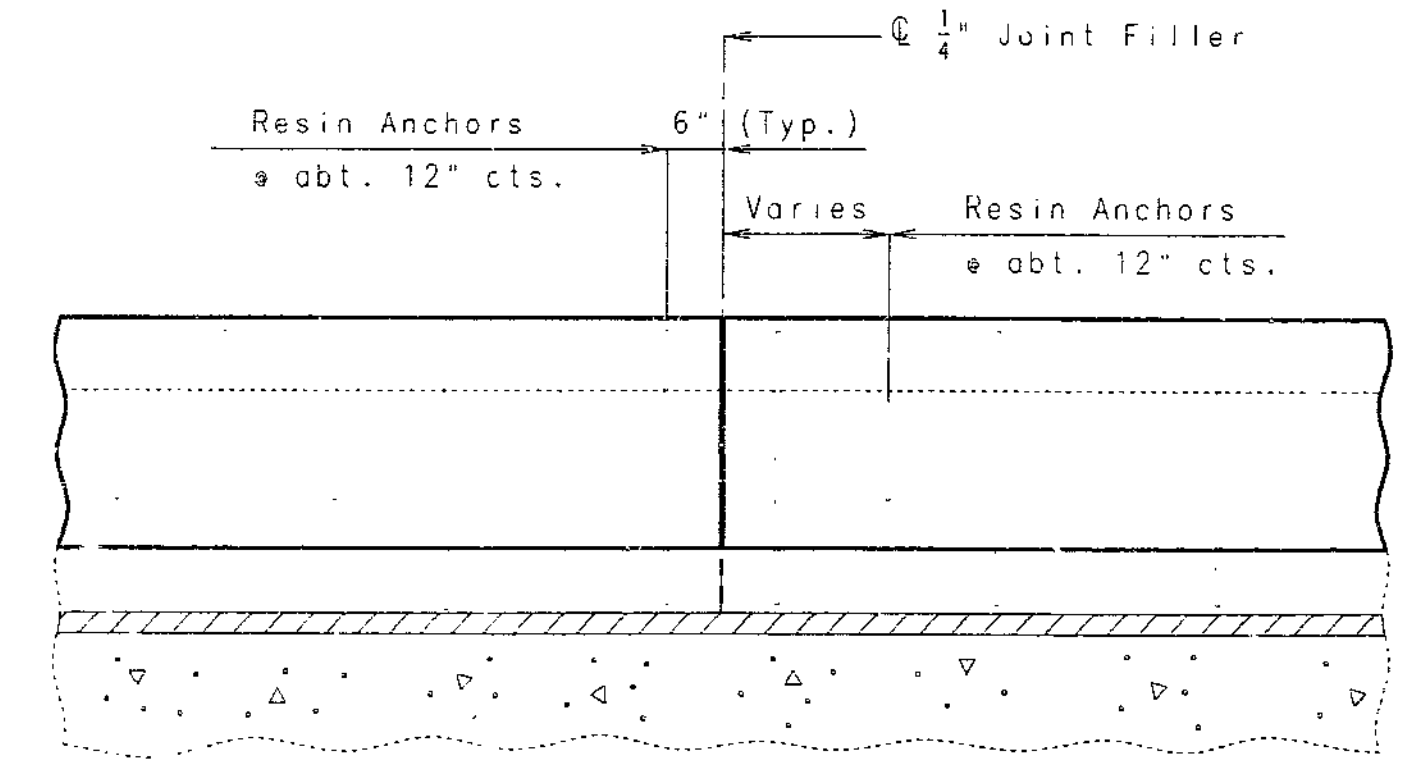


RESIN ANCHOR SYSTEMS DETAILS



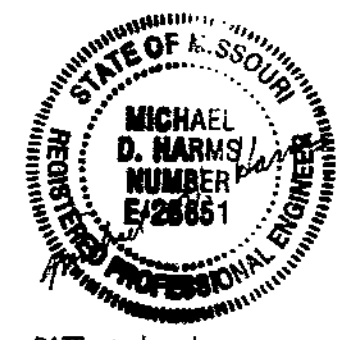
TYPICAL SECTION THRU CURB

\* Shift resin anchors to clear existing steel anchor bolts for tube rail.



PART SECTION A-A

I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.



DATE 10/20/09

Note:  
 The contractor shall use one of the resin anchor systems listed in the job special provisions for the curb blockout. These 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 as shown shall be substituted for the 5/8" threaded rod stud.  
 Cost of furnishing and installing the anchor systems complete in place shall be included in the price bid per linear foot of curb blockout.  
 The 5/8" diameter resin anchor systems shall have a minimum ultimate pullout strength of 18,800 lbs. in concrete with f'c = 4000 psi. See special provisions.

Embedment depth of resin anchor system (vertical and horizontal) shall be a maximum of 6" into existing curb & parapet.  
 Adjust resin anchors in field, if necessary to miss curb outlets.

350  
 DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

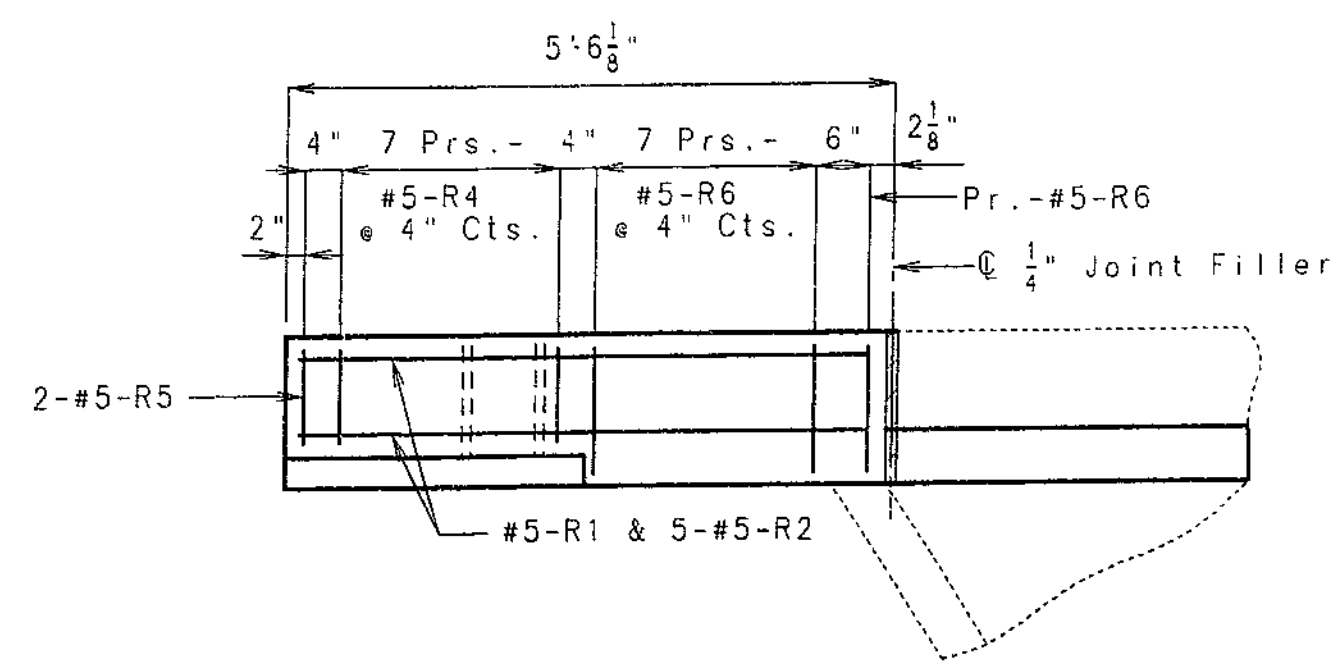
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 3 OF 9

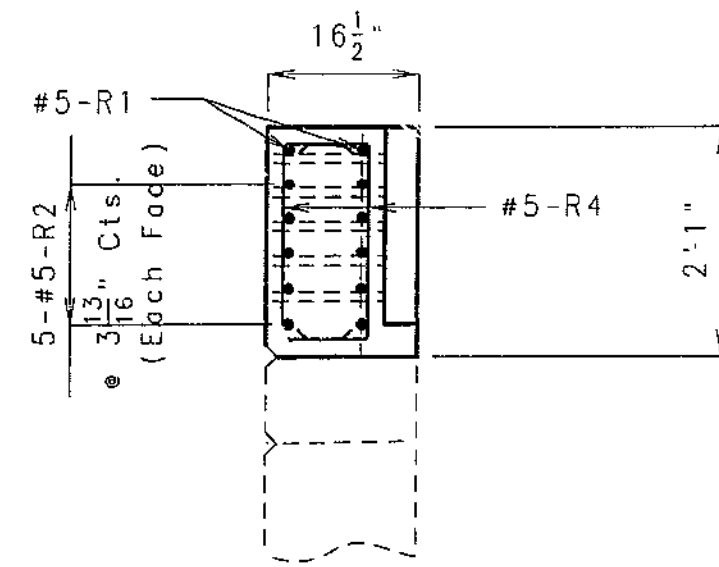
CLAY COUNTY

A15822

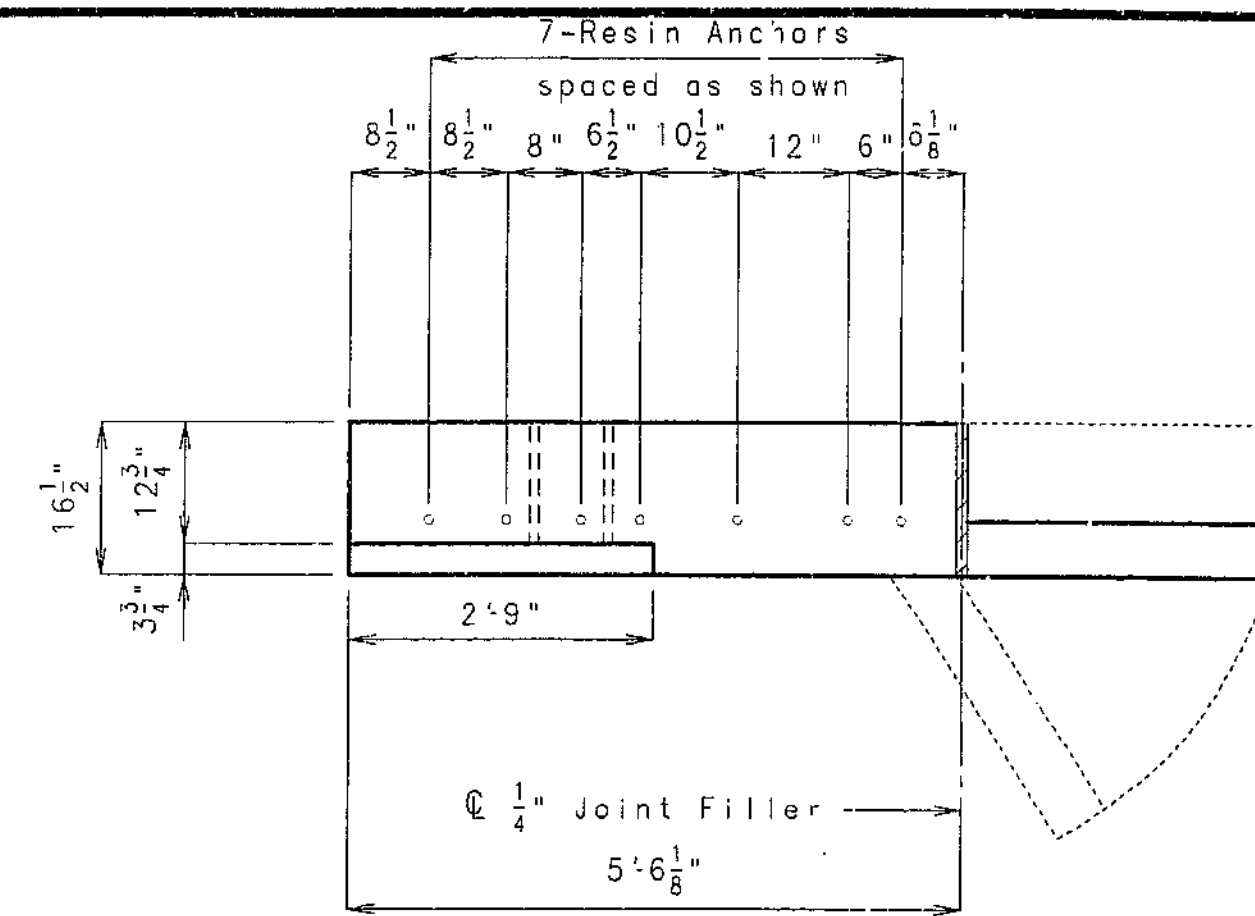
STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-435-1(2&1)	4



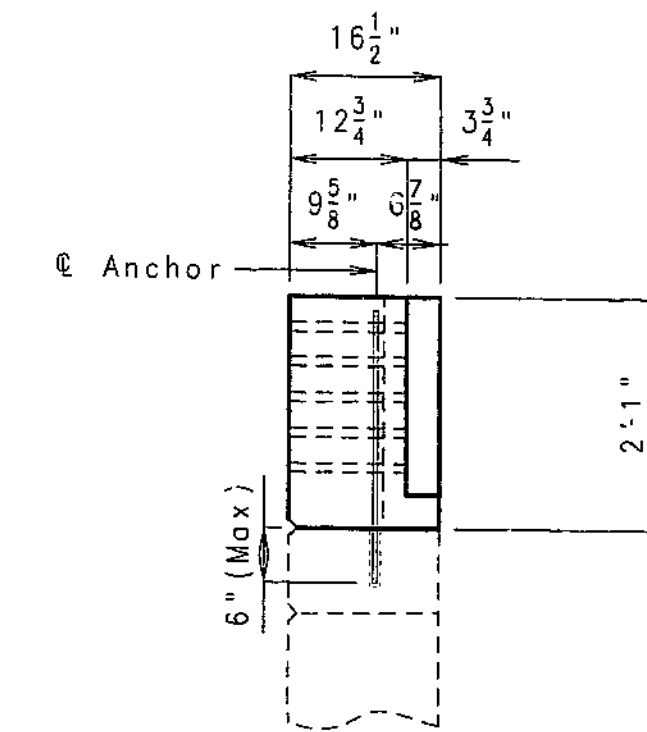
PLAN SHOWING END POST REINFORCEMENT



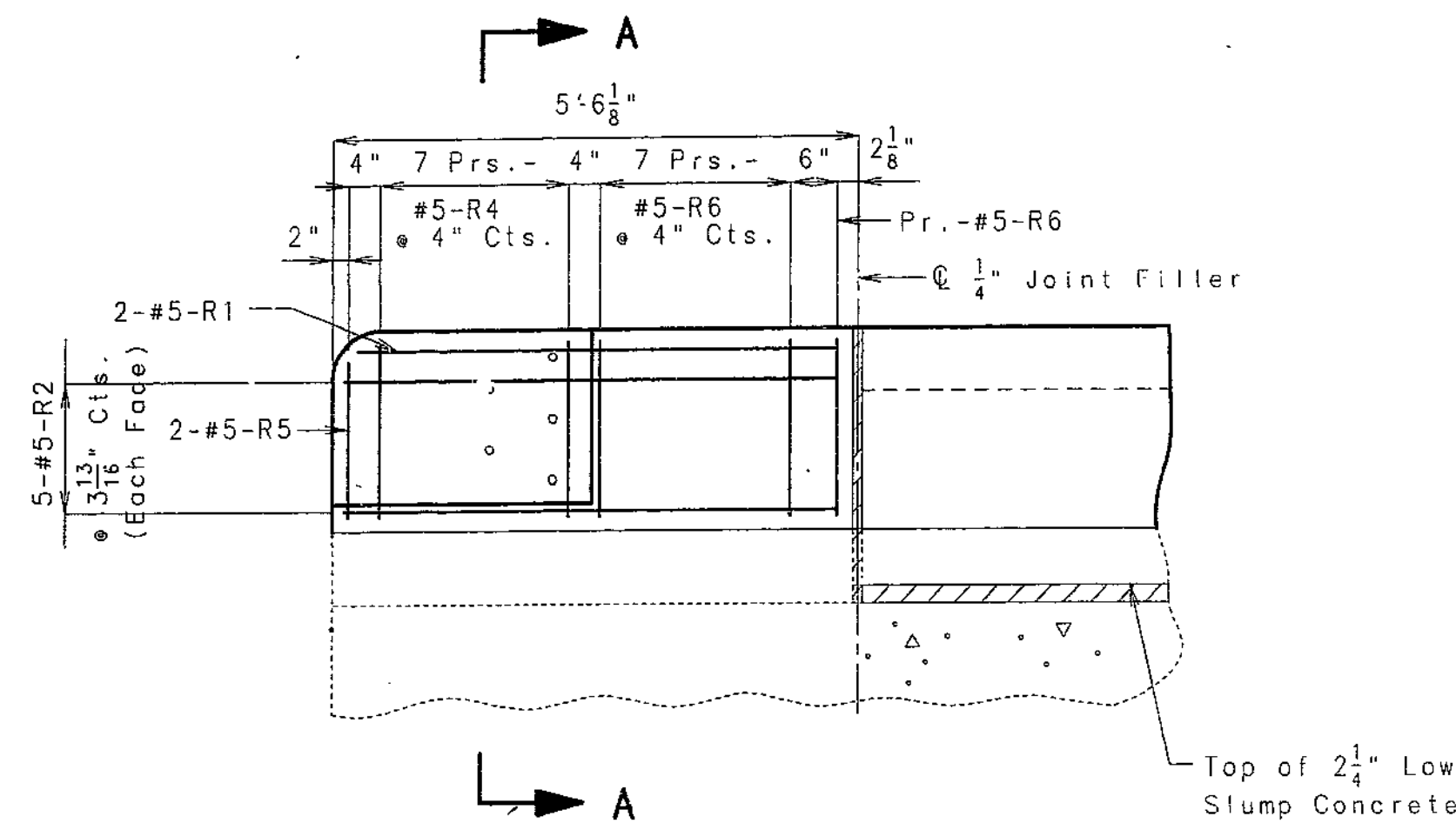
SECTION A-A



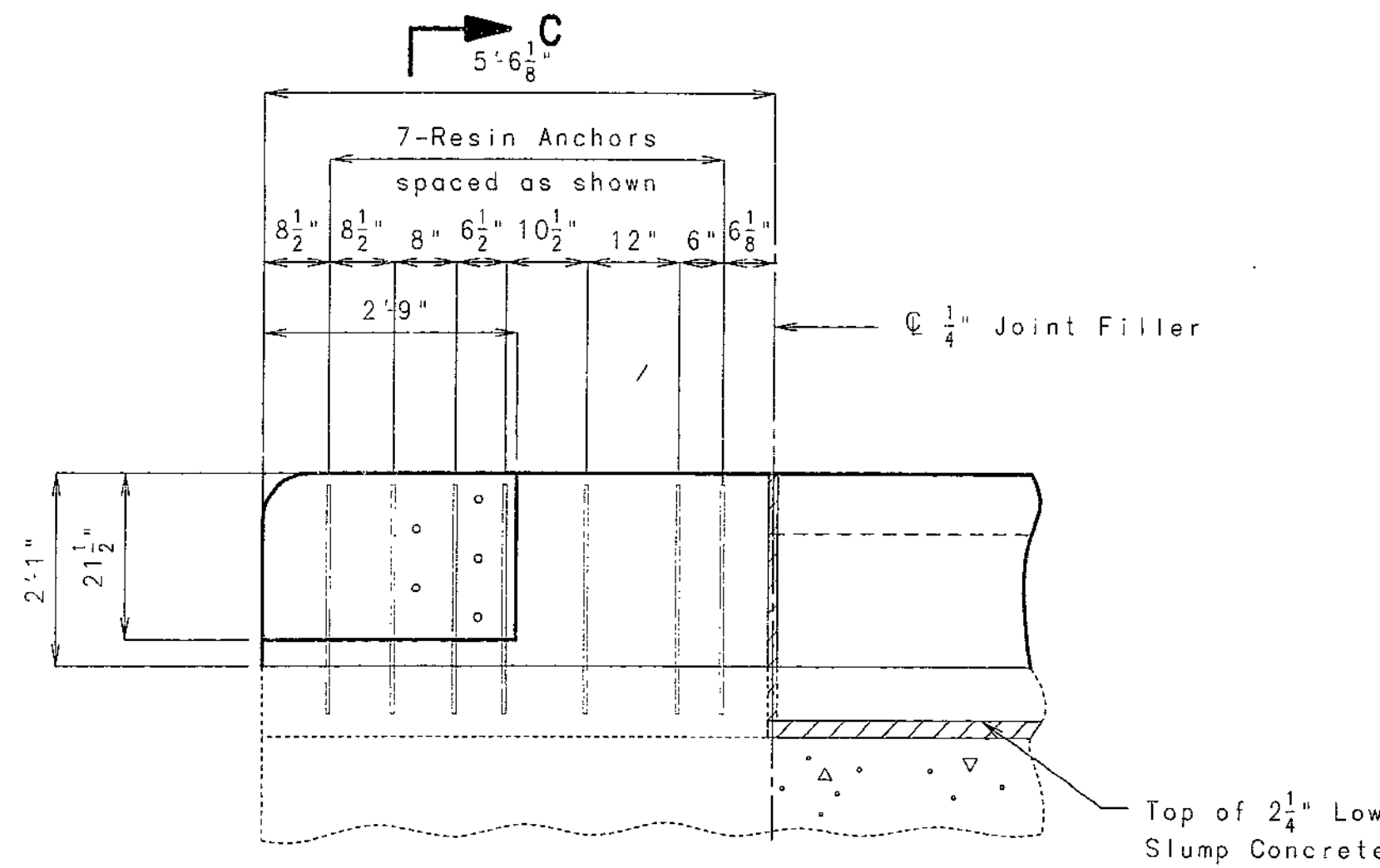
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



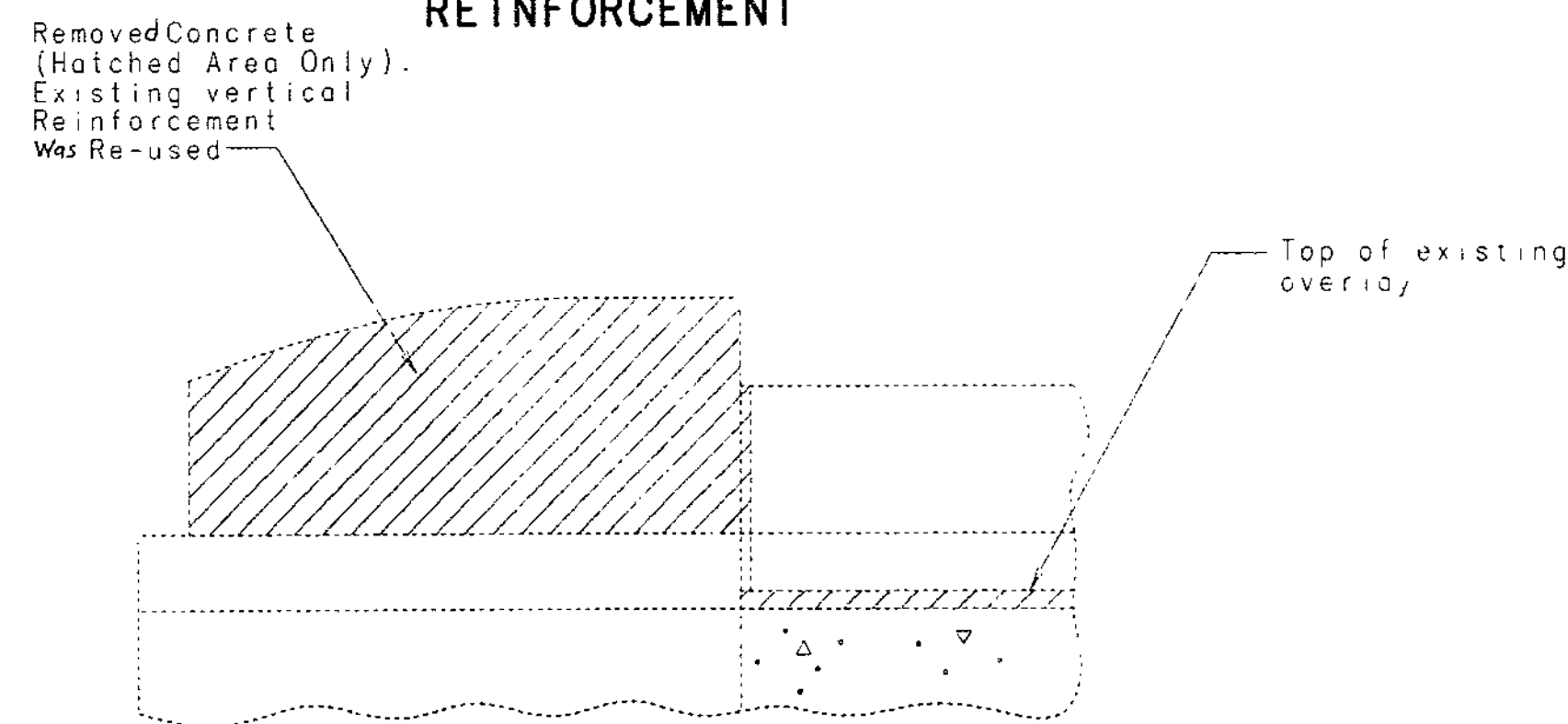
SECTION C-C



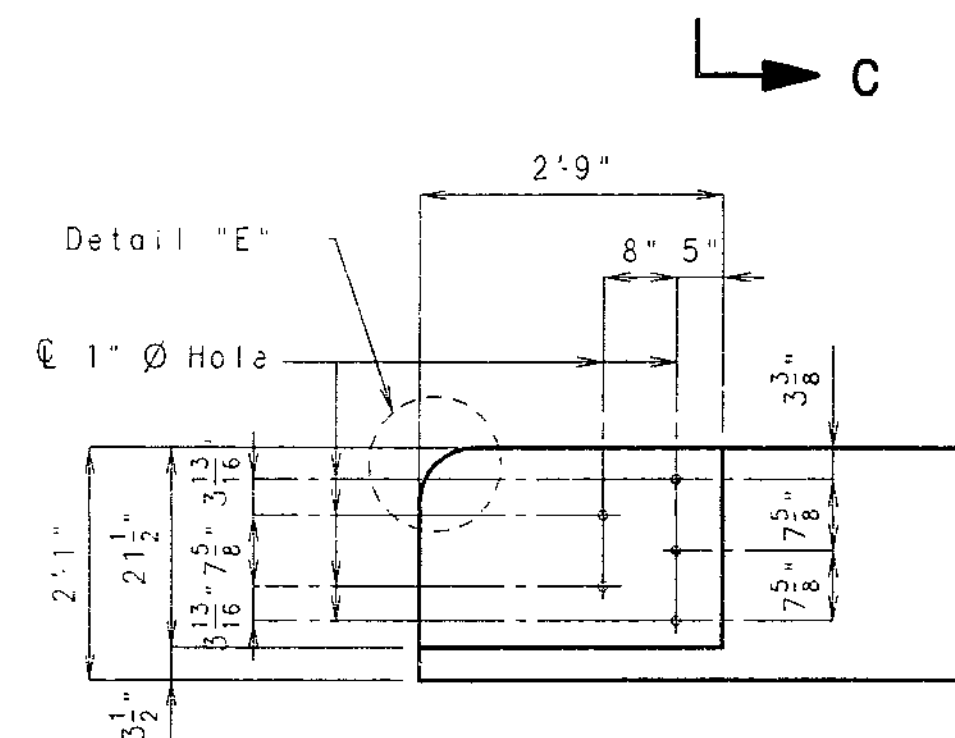
ELEVATION SHOWING END POST REINFORCEMENT



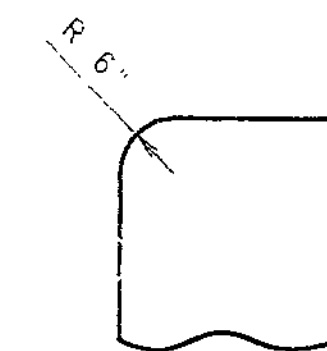
ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL

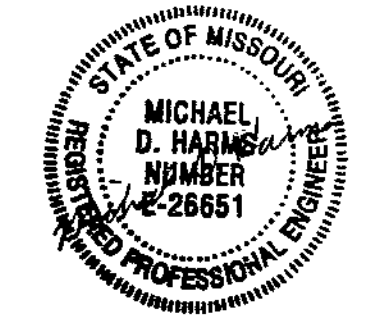


DETAILS OF GUARD RAIL ATTACHMENT



DETAIL "E"

WE HEREBY CERTIFY THAT THIS DRAWING ACCURATELY REPRESENTS THE DESIGN AND LOCATION OF THE STRUCTURE AND APPEARANCES AS CONSTRUCTED ON THIS PROJECT.



DATE 10/20/97

DETAILS OF END POST ON NORTHEAST WING AT BENT #1

351  
 DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

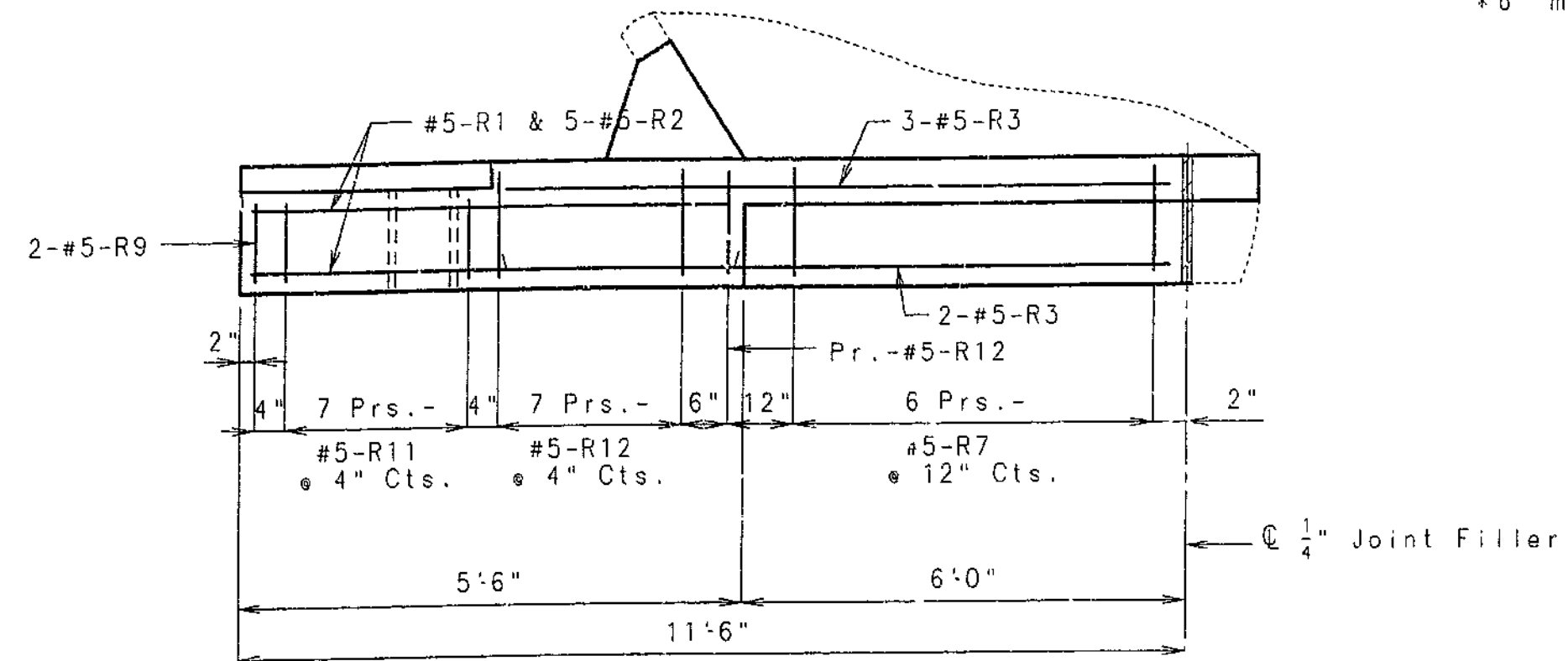
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 4 OF 9.

CLAY COUNTY

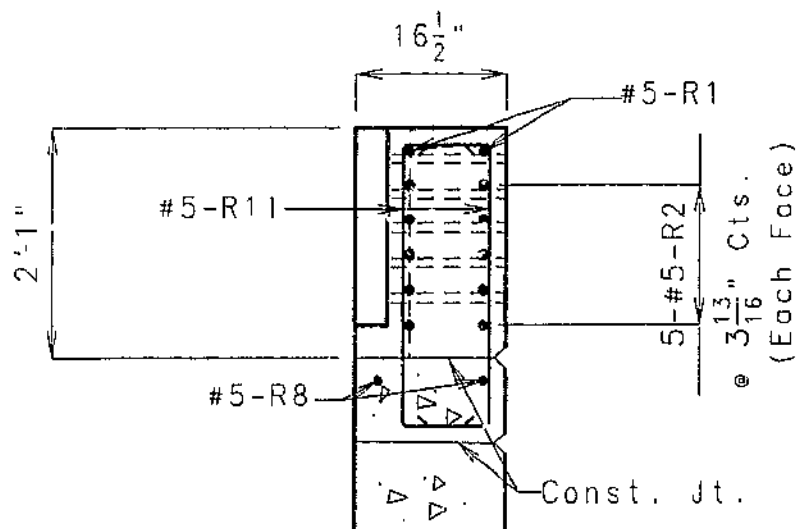
A15822

STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-435-1 (see D)	5

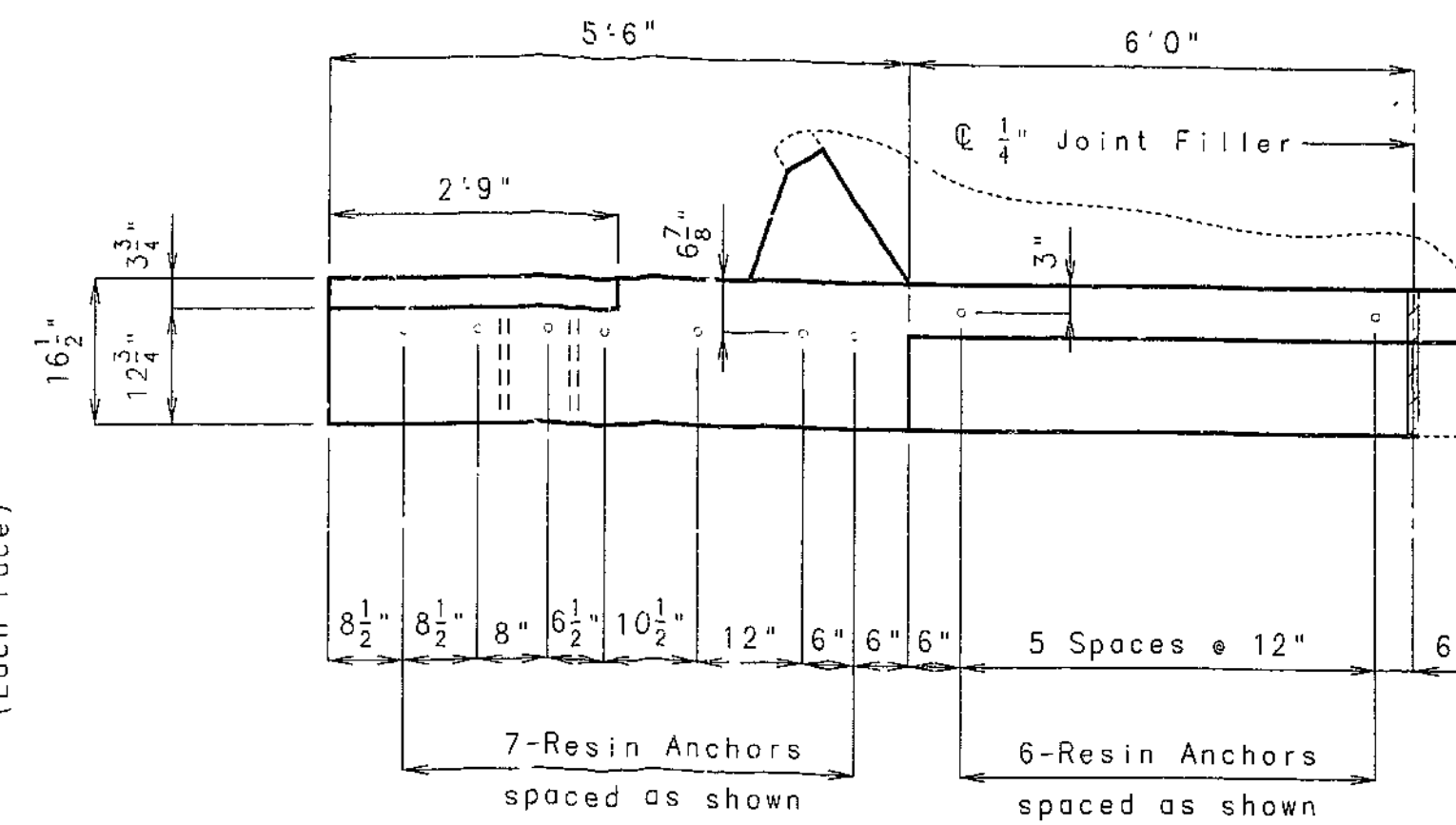


PLAN SHOWING END POST REINFORCEMENT

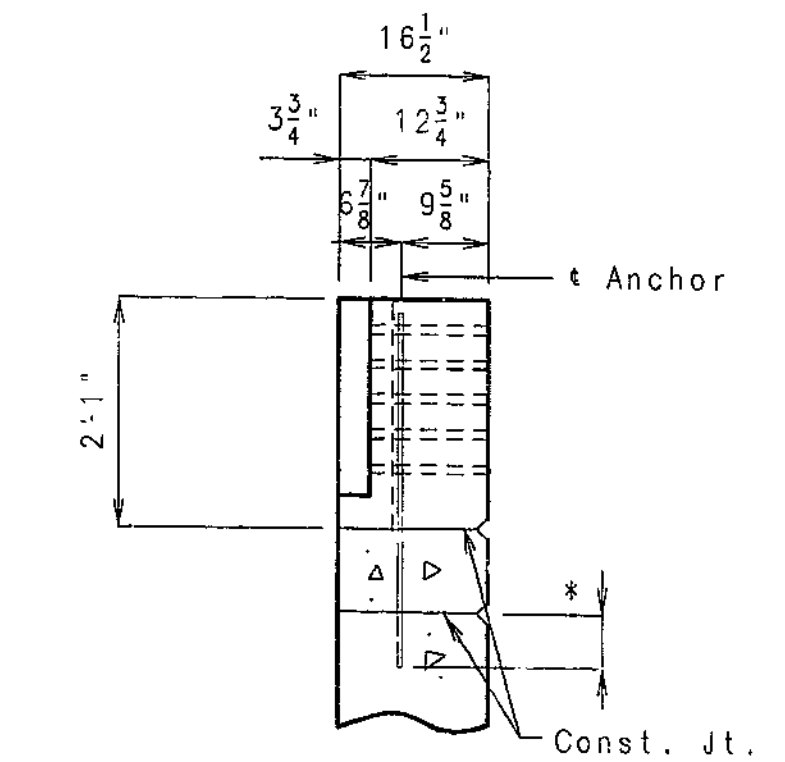
\*6" minimum embedment length.



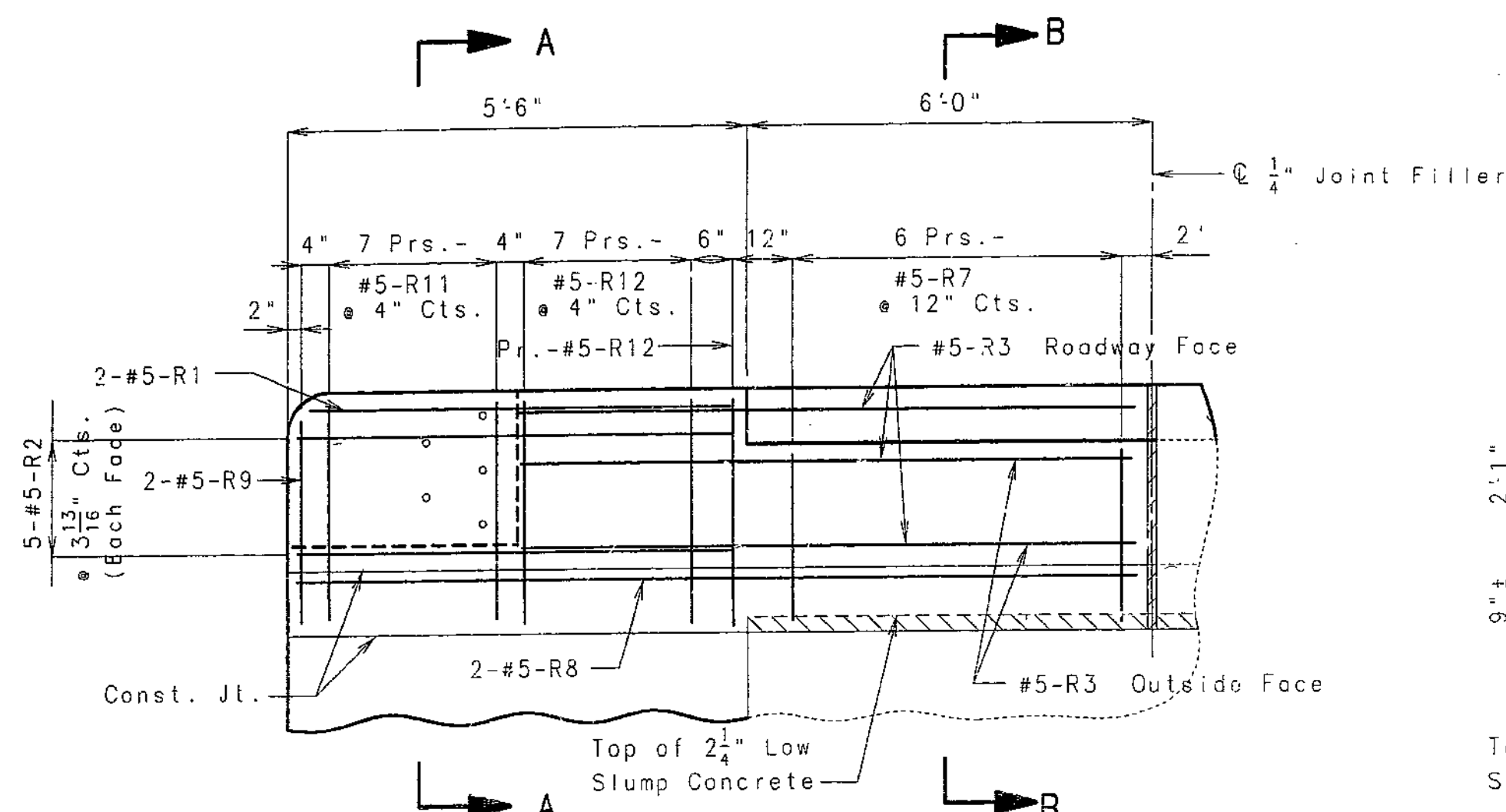
SECTION A-A



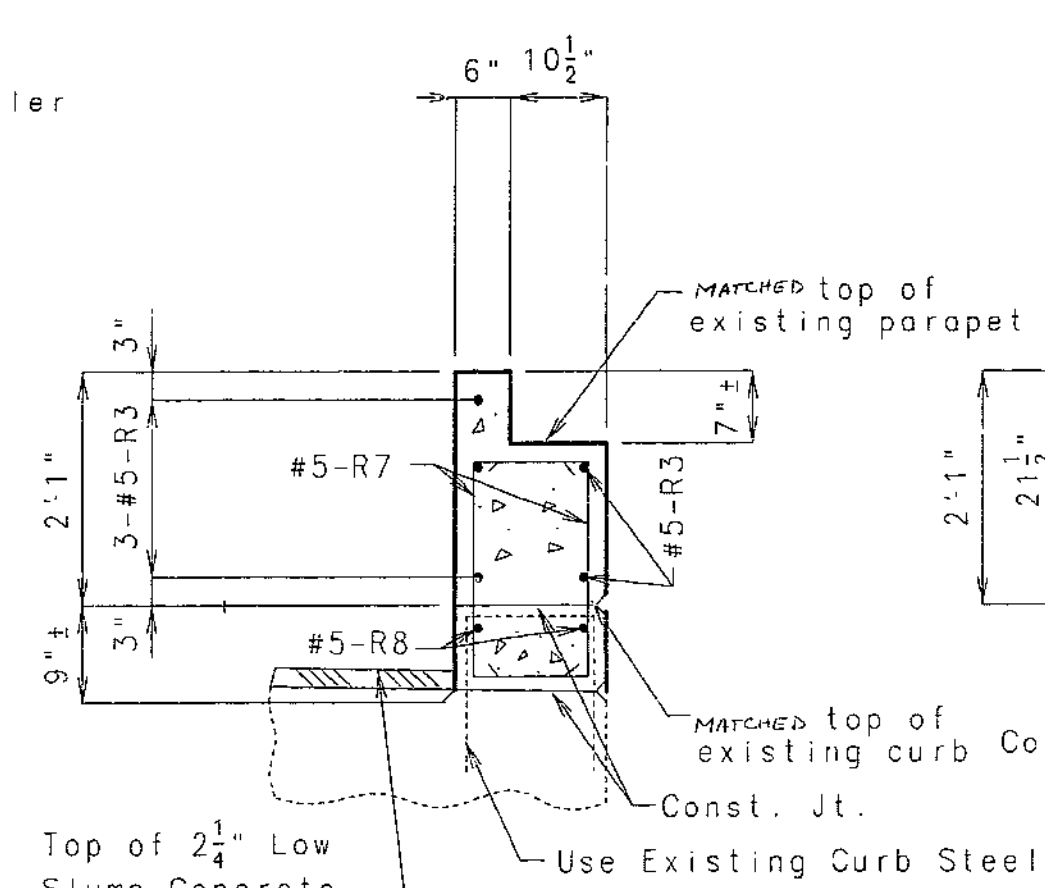
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



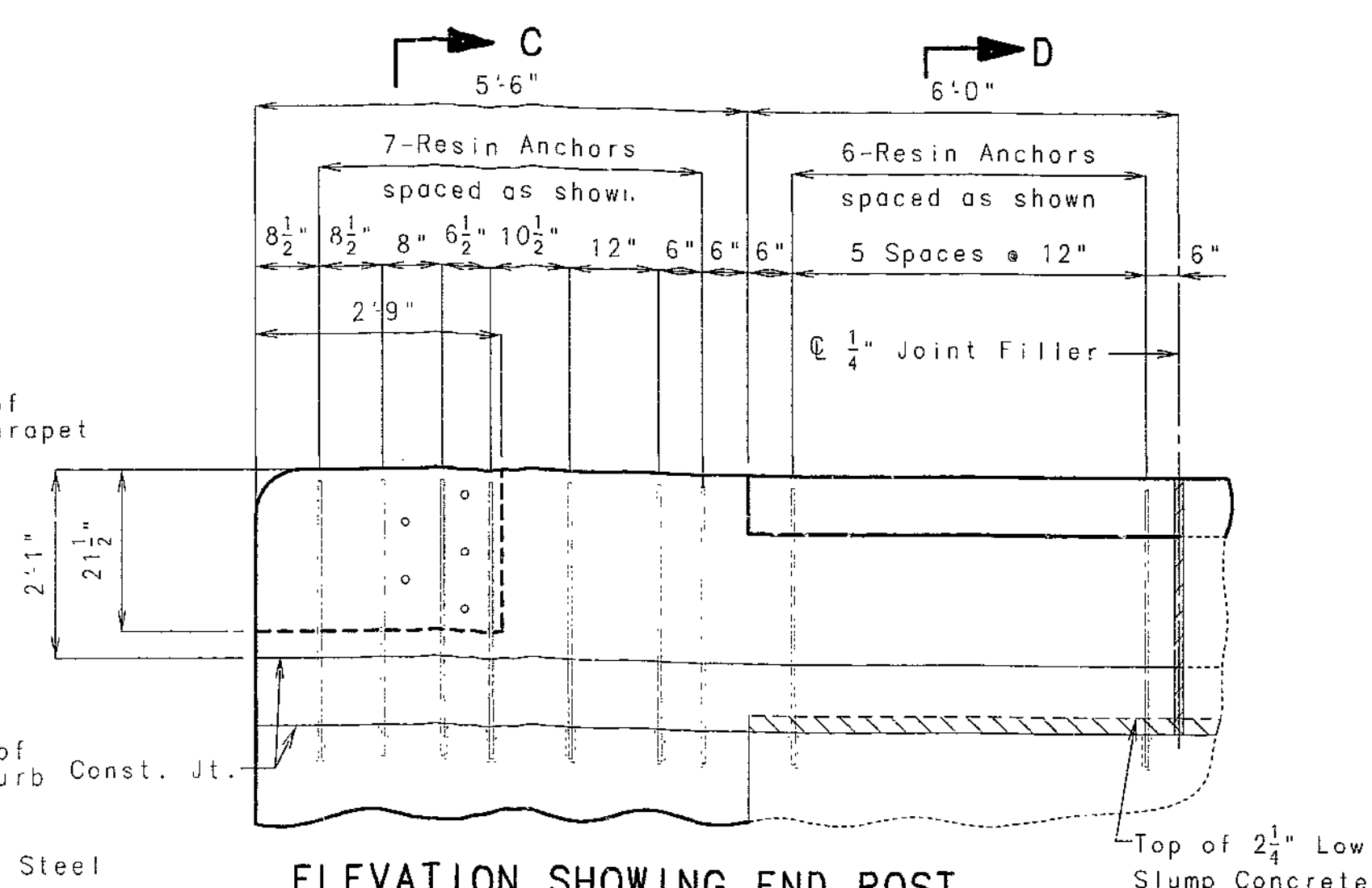
SECTION C-C



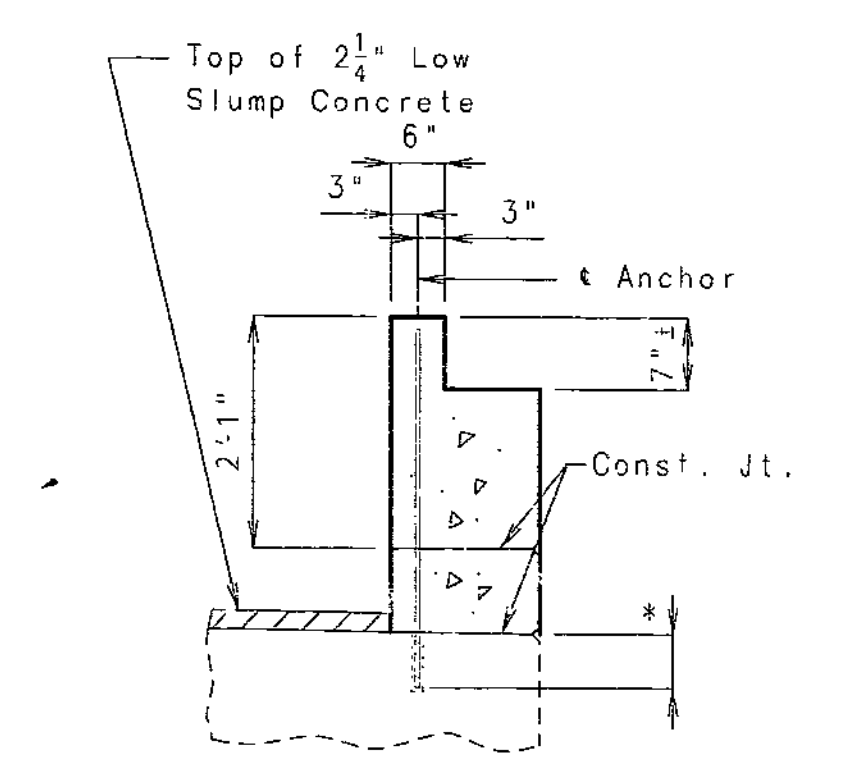
ELEVATION SHOWING END POST REINFORCEMENT



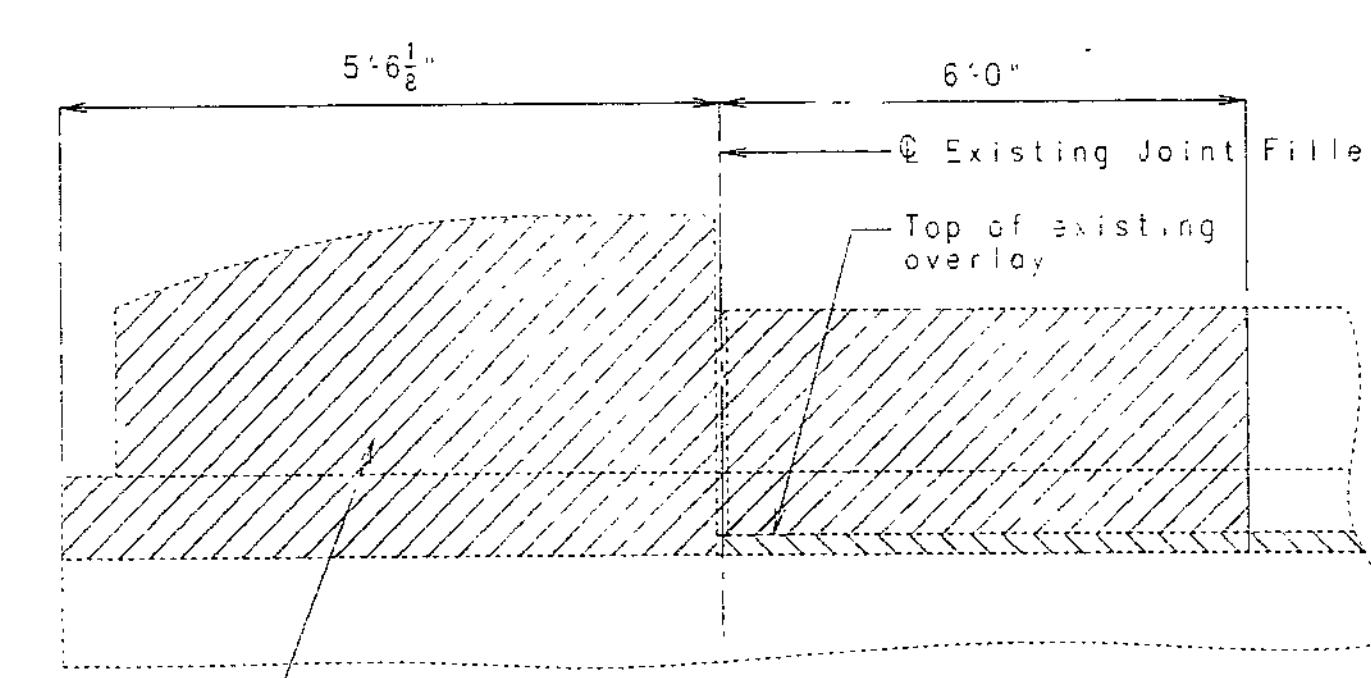
SECTION B-B



ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS

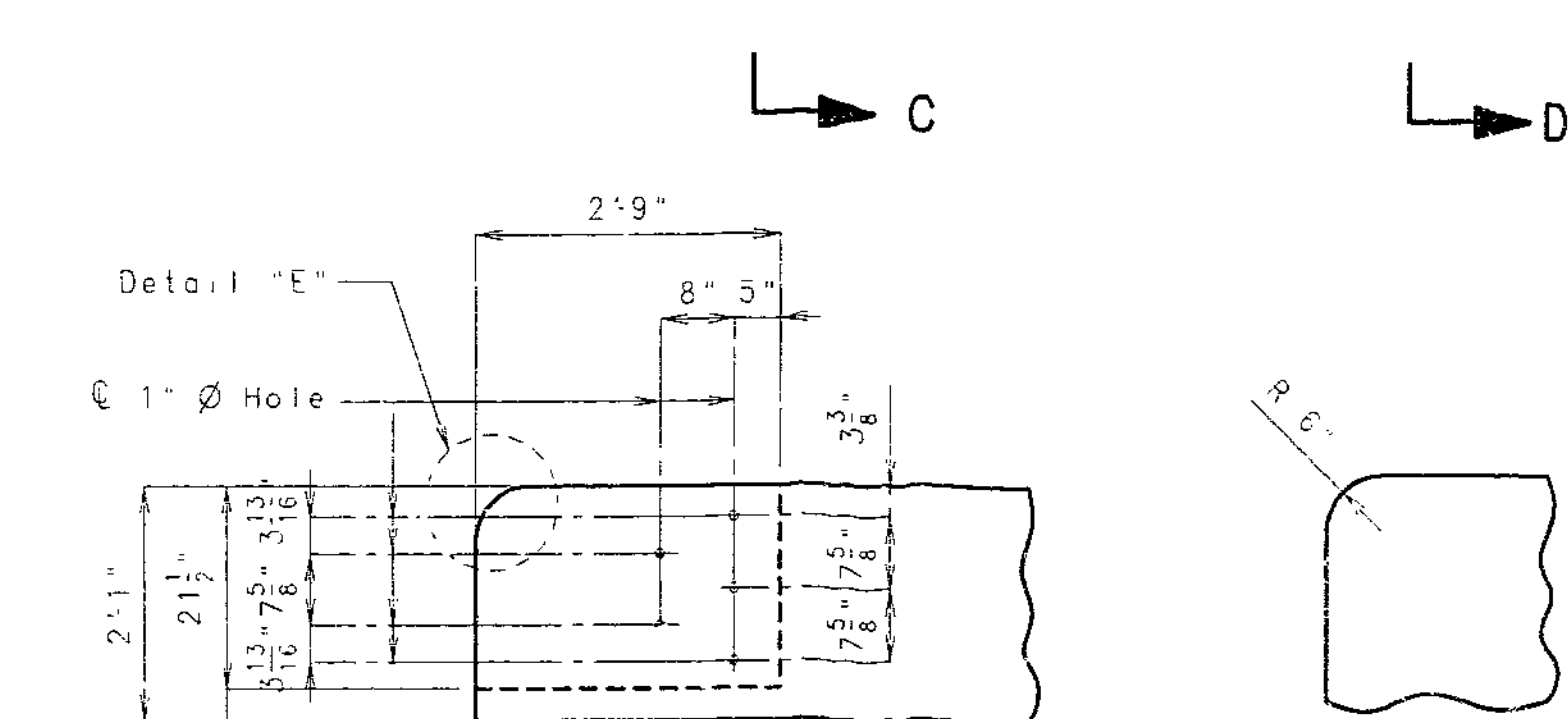


SECTION D-D

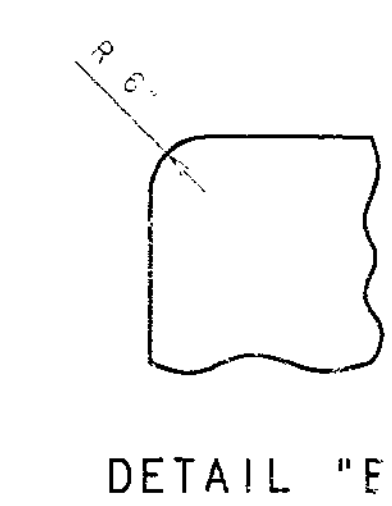


Note: For limits of concrete removed of existing wing see sheet No. 3.

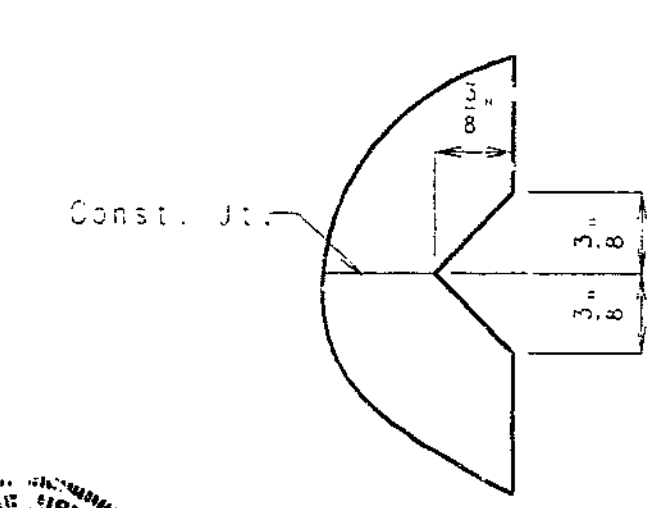
ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL



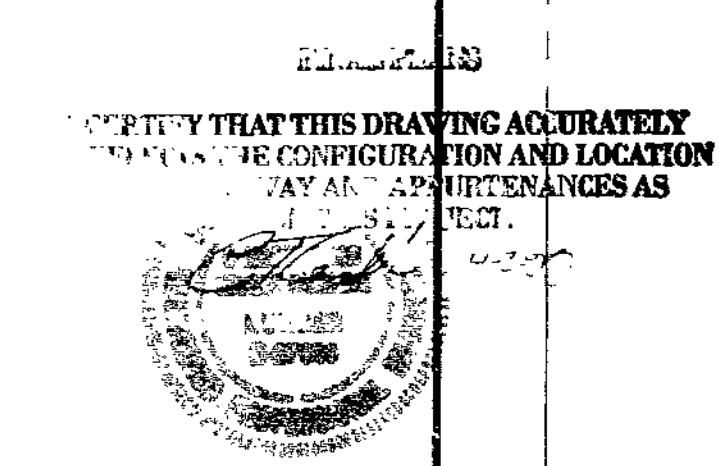
DETAILS OF GUARD RAIL ATTACHMENT



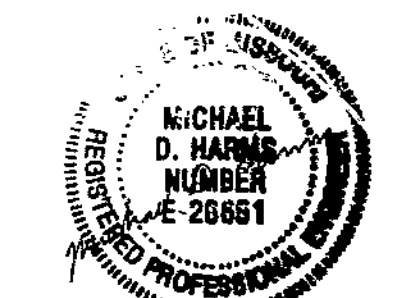
DETAIL "E"



RUSTICATION DETAIL



CERTIFY THAT THIS DRAWING ACCURATELY REPRESENTS THE CONFIGURATION AND LOCATION OF ALL STRUCTURES AND UTILITIES AS SHOWN HEREON.



DATE 10/20/97

352

DETAILED SEPT. 1997  
CHECKED SEPT. 1997

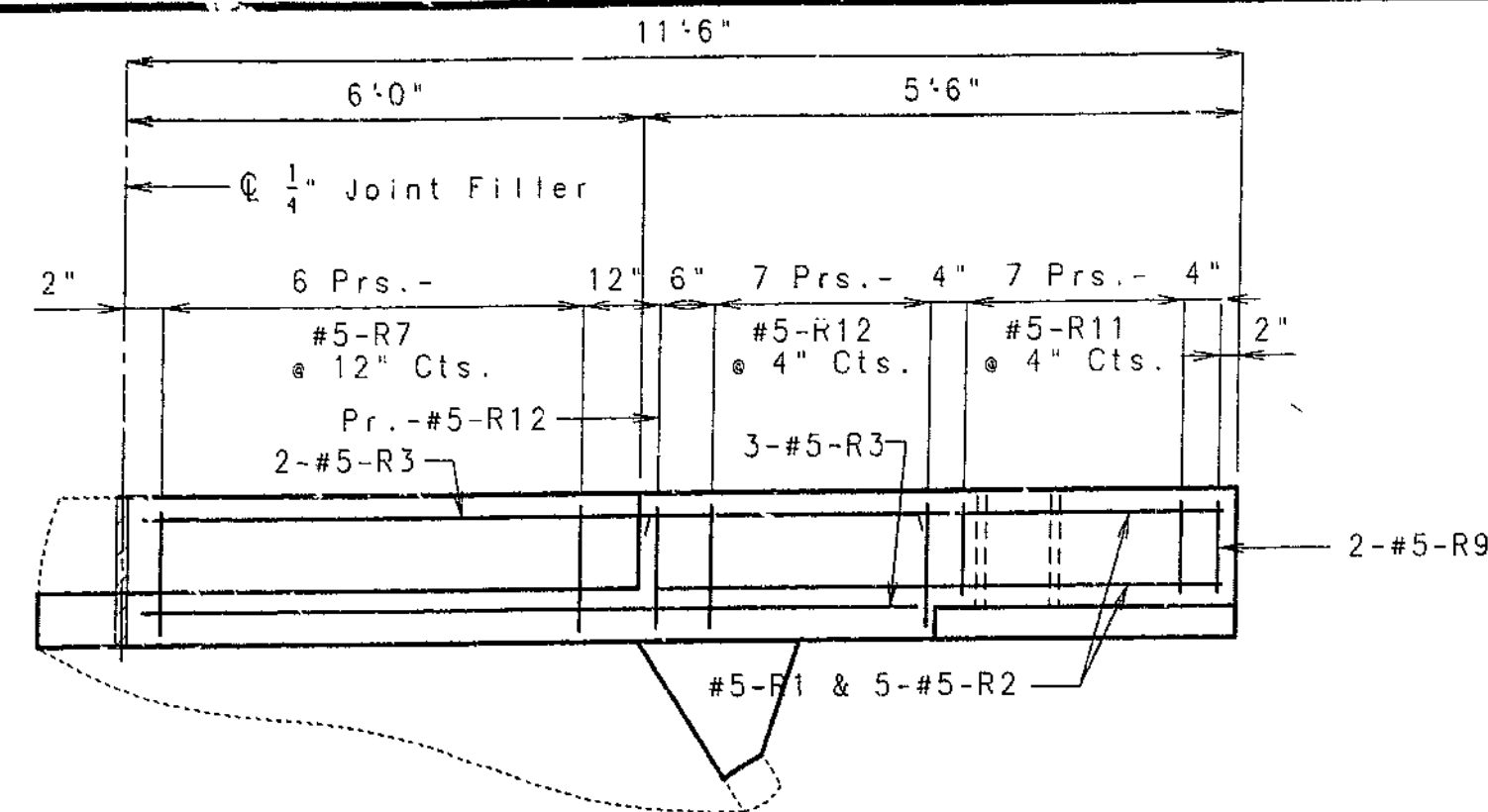
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 5 OF 9.

CLAY COUNTY

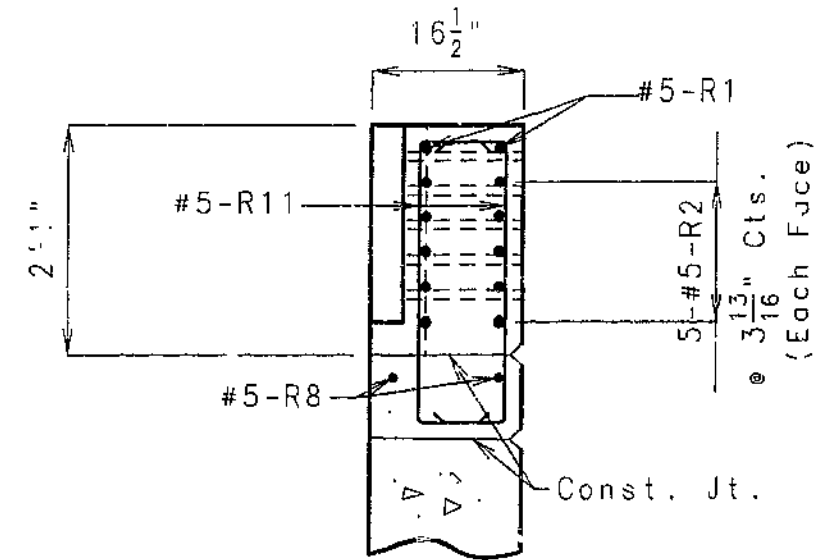
A15822

STATE	PROJ. NO.	SHEET NO.
MO.	AC11M-435-1(24)	6

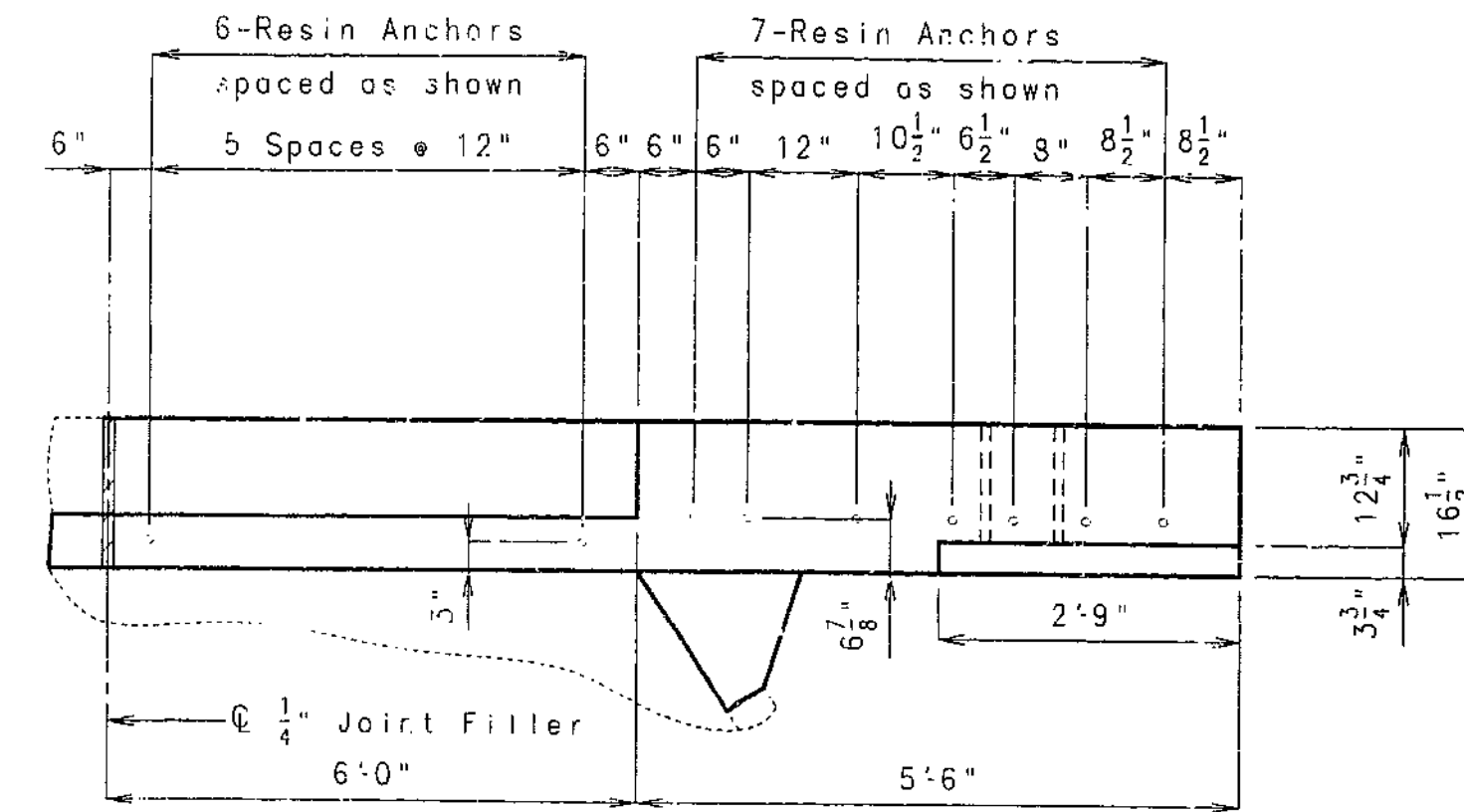


PLAN SHOWING END POST REINFORCEMENT

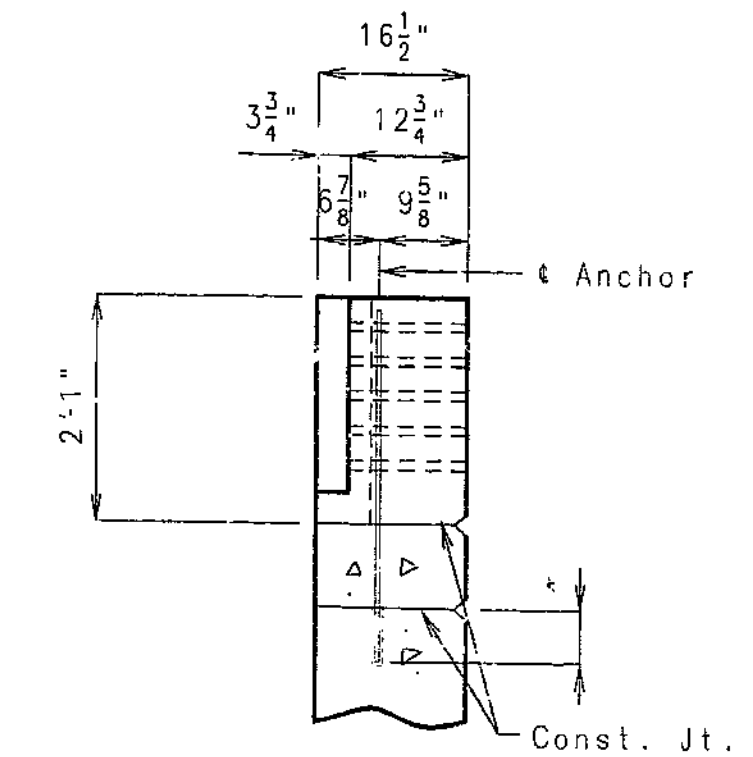
\*6" minimum embedment length.



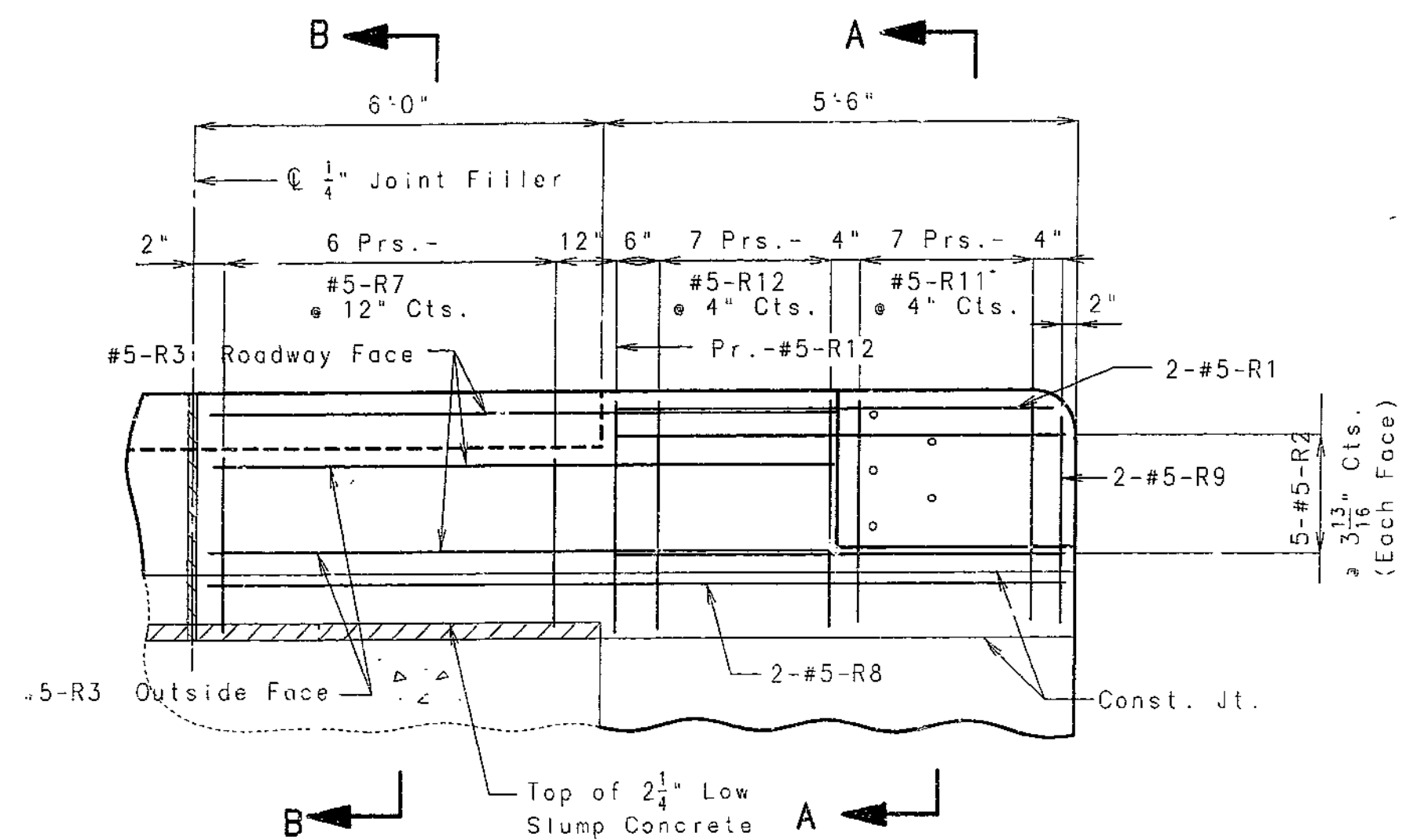
SECTION A-A



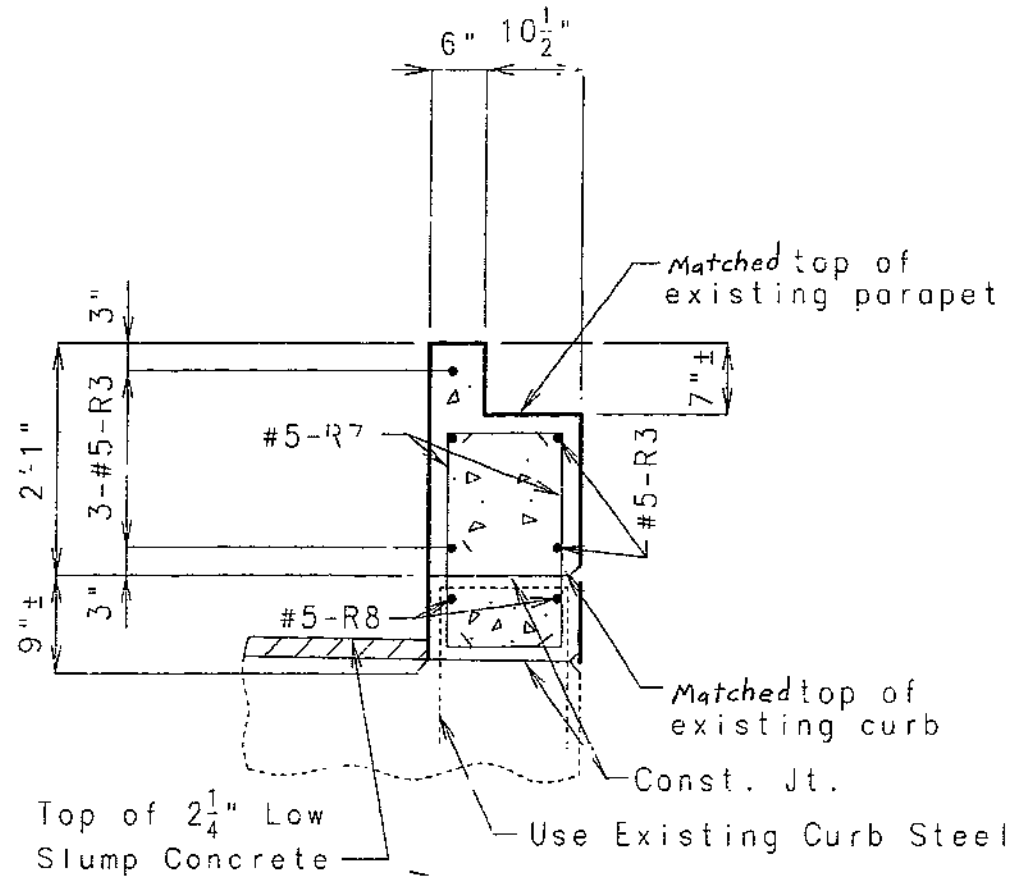
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



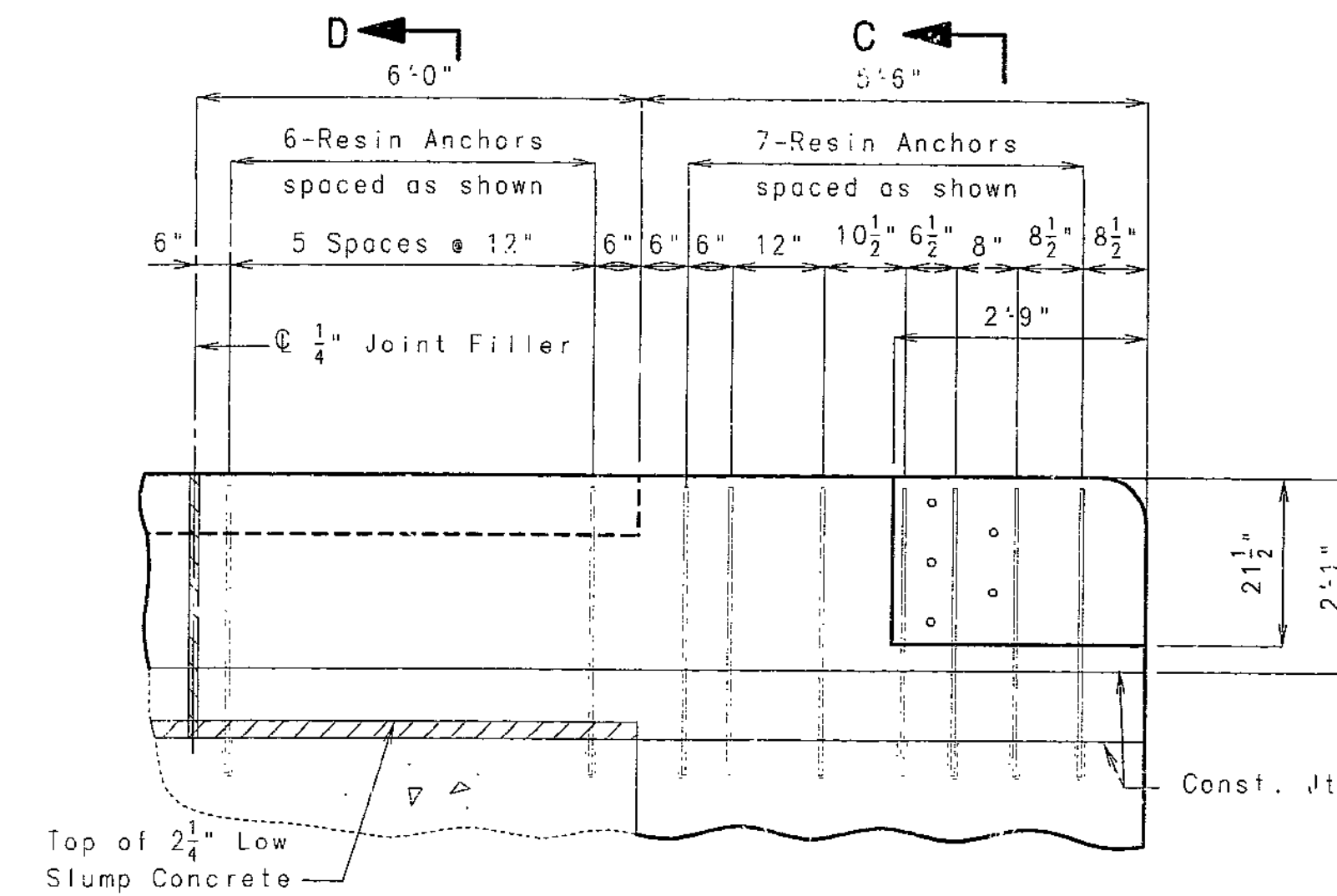
SECTION C-C



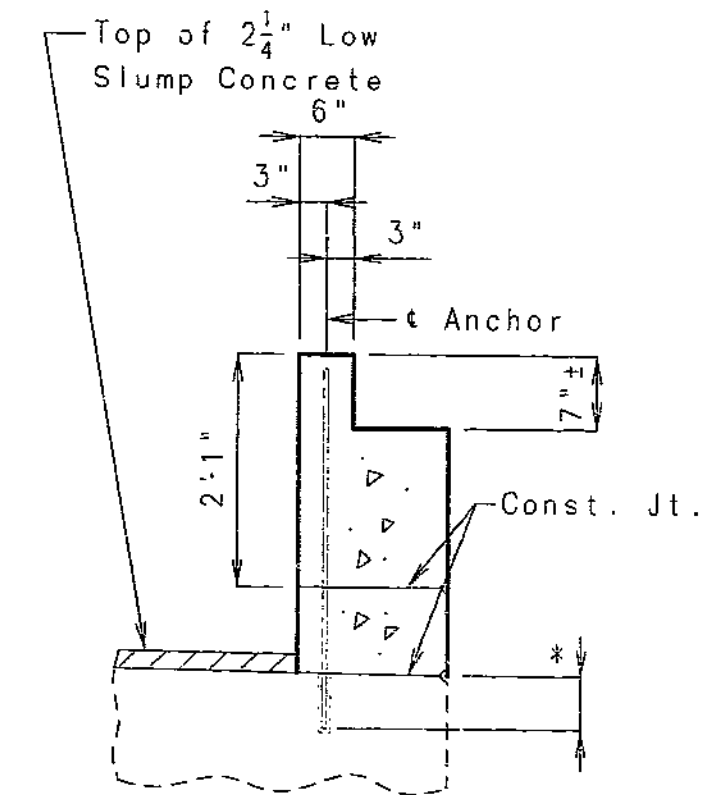
ELEVATION SHOWING END POST REINFORCEMENT



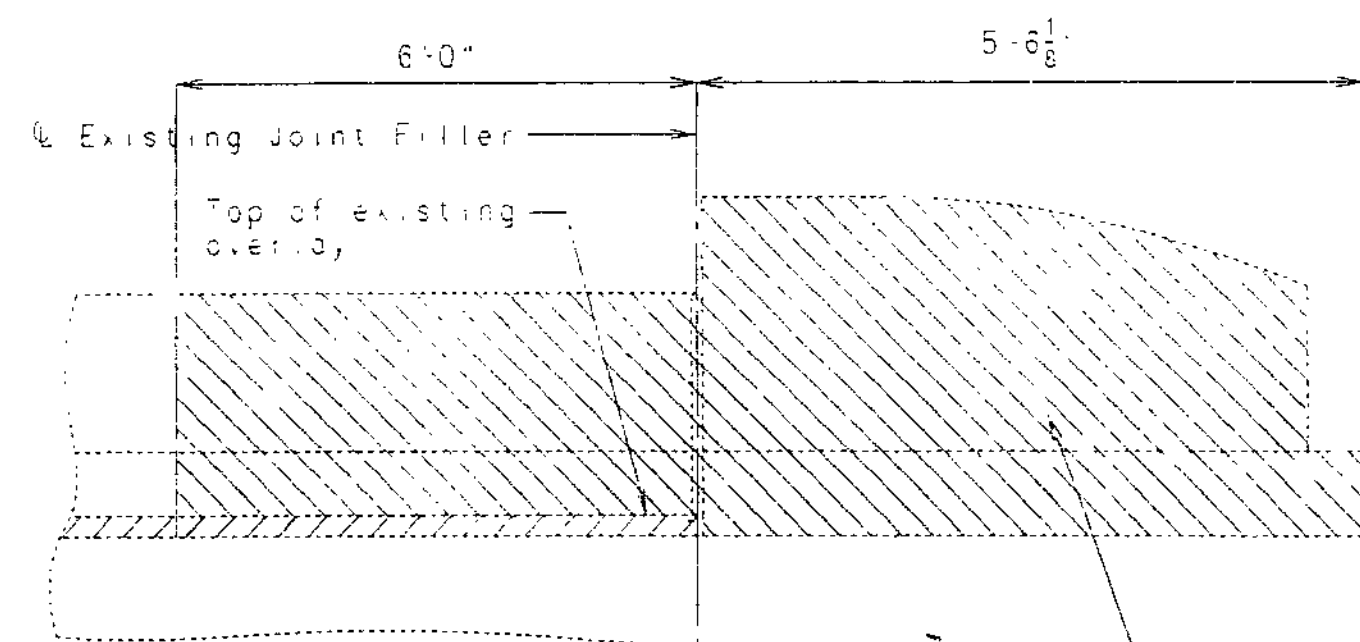
SECTION B-B



ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



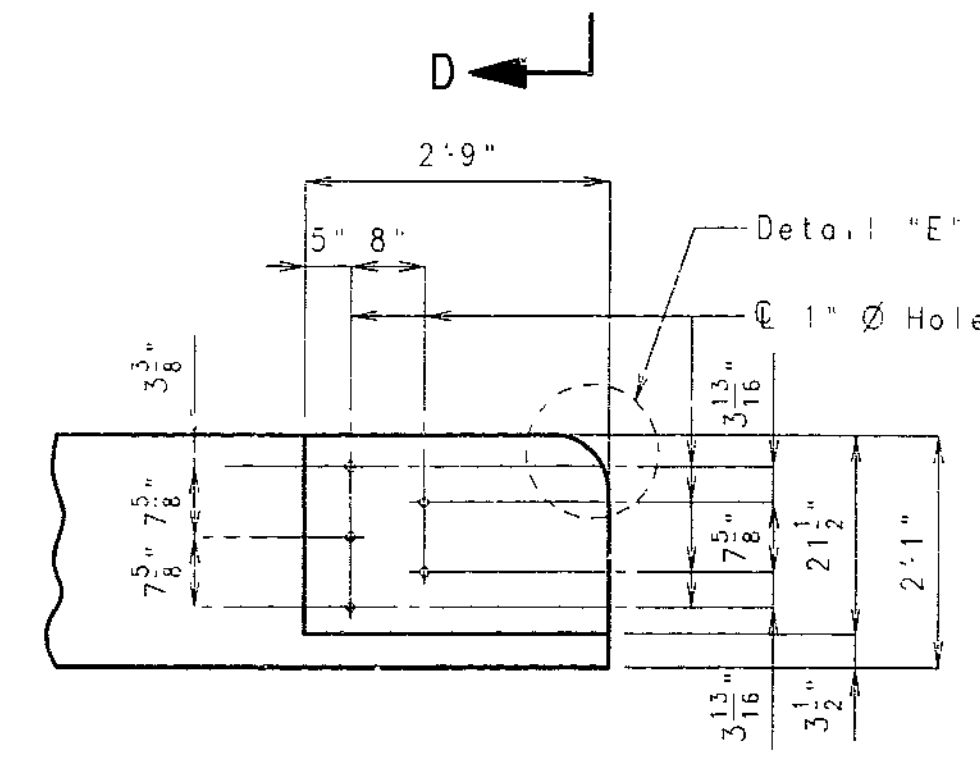
SECTION D-D



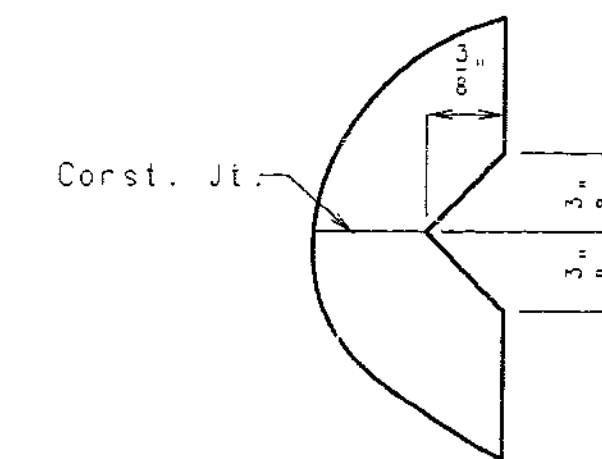
Note: For limits of concrete removal of existing wing see sheet No. 8.

ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL

Removed Concrete (Hatched Area Only). Existing vertical Reinforcement Was Re-used.

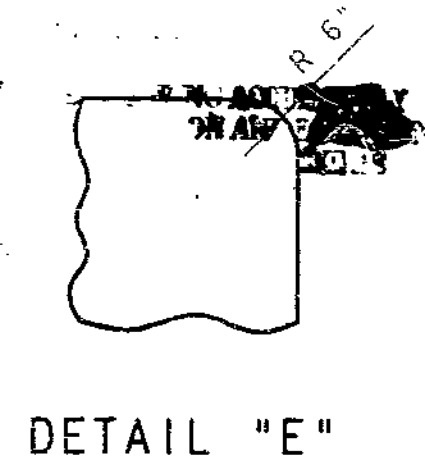


DETAILS OF GUARD RAIL ATTACHMENT

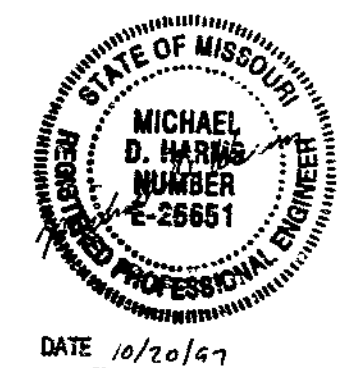


RUSTICATION DETAIL

I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.



DETAIL "E"



DETAILED SEPT. 1997  
CHECKED SEPT. 1997

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

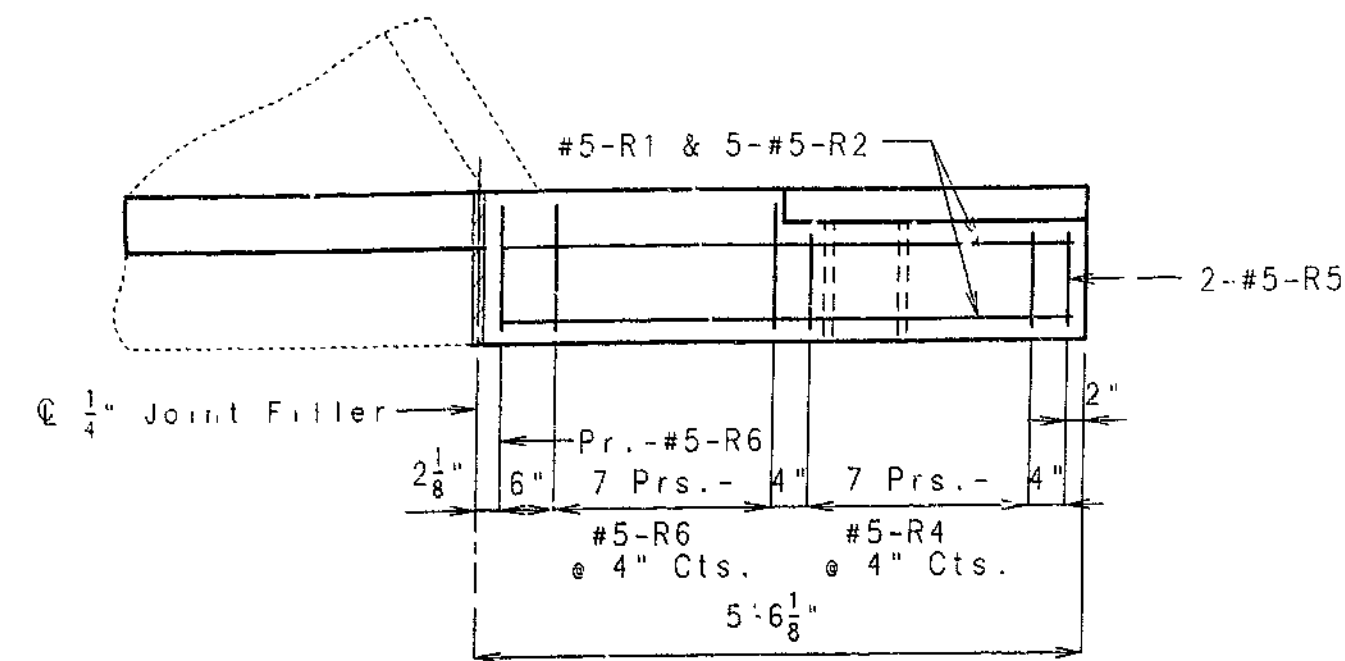
SHEET NO. 6 OF 9.

CLAY COUNTY

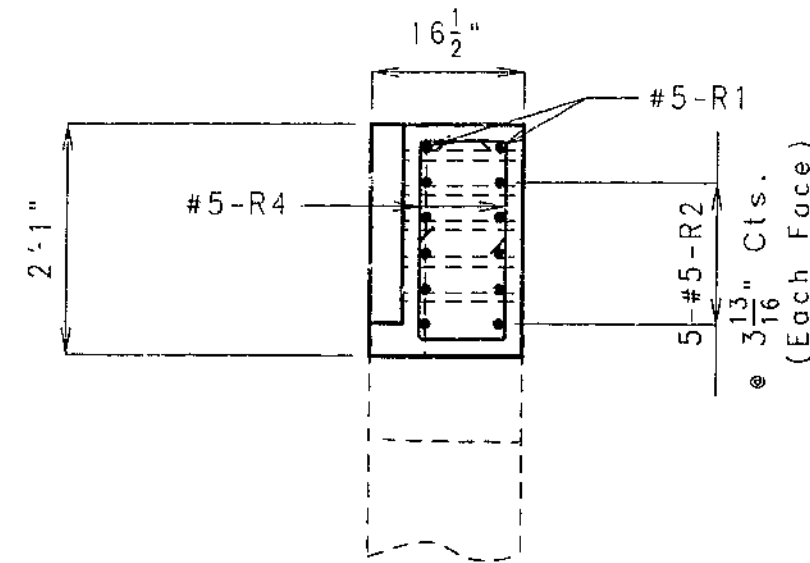
A15822



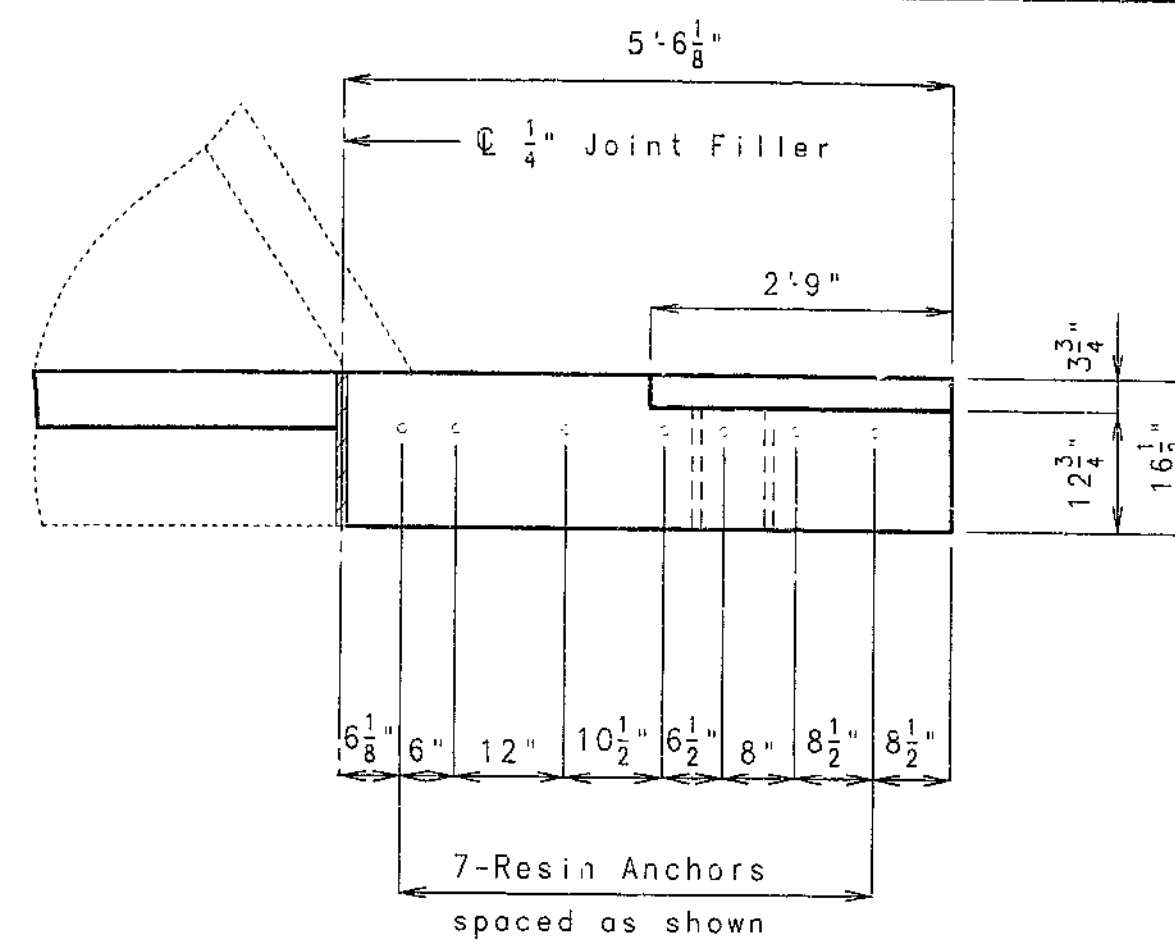
STATE	PROJ. NO	SHEET NO.
MO.	ACTM-435-(201)	7



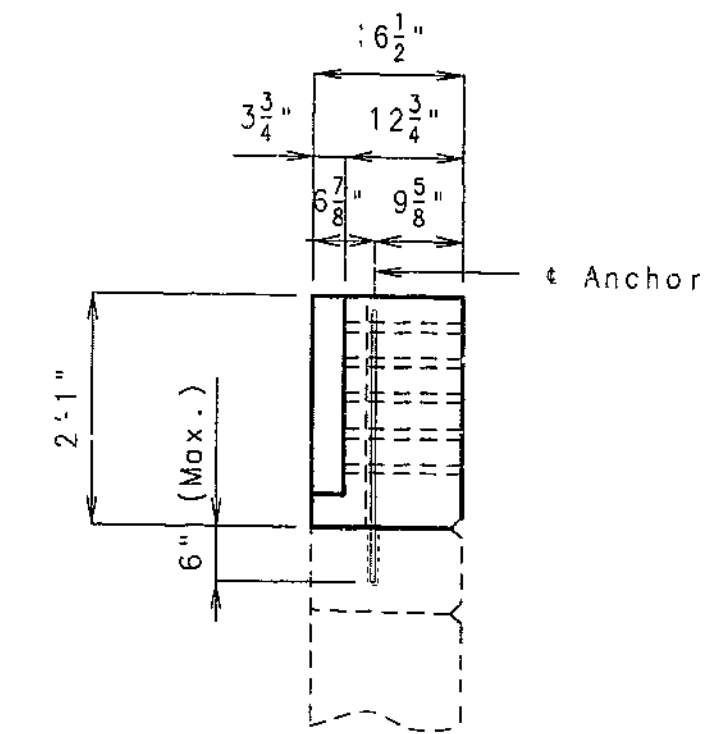
PLAN SHOWING END POST REINFORCEMENT



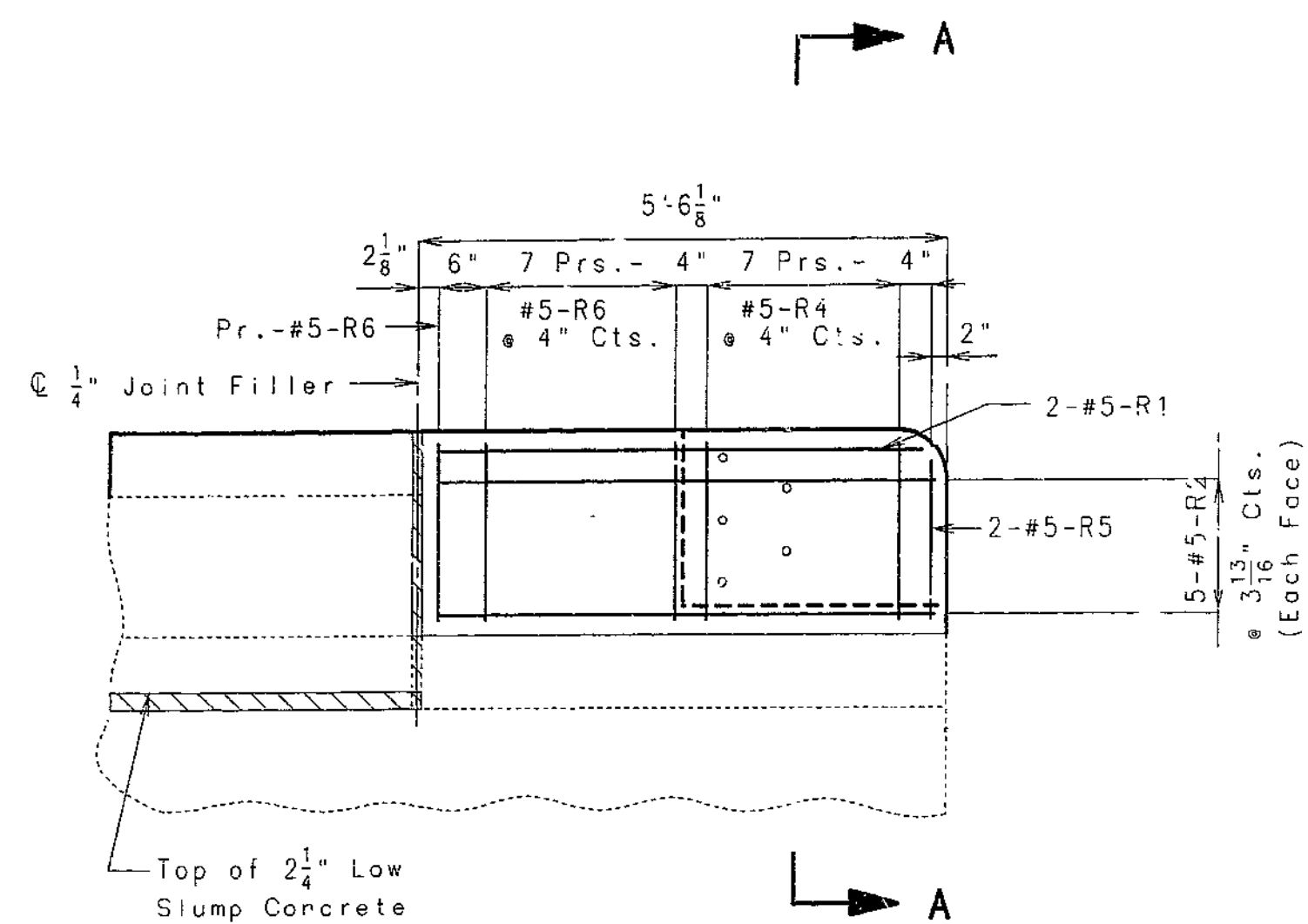
SECTION A-A



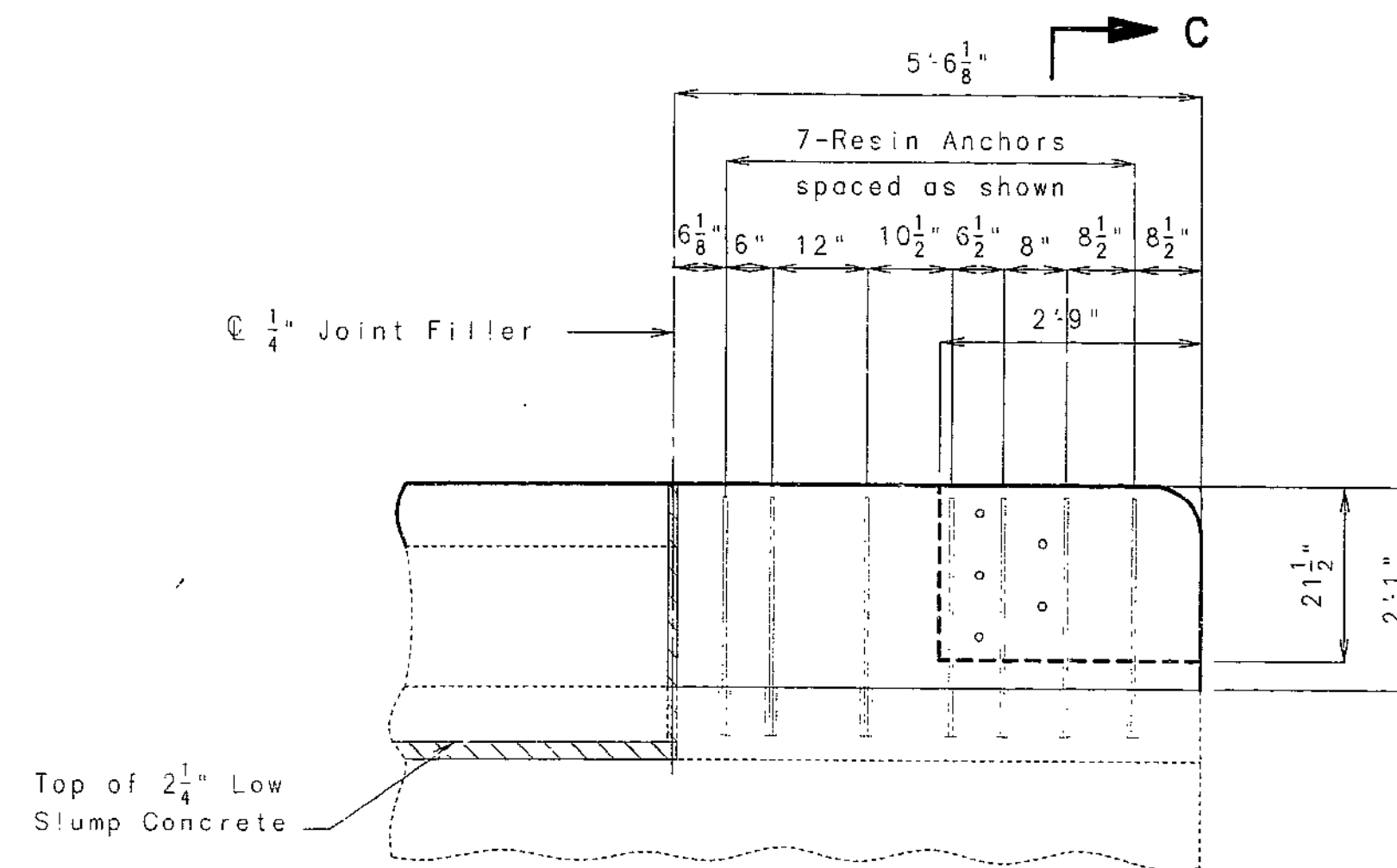
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



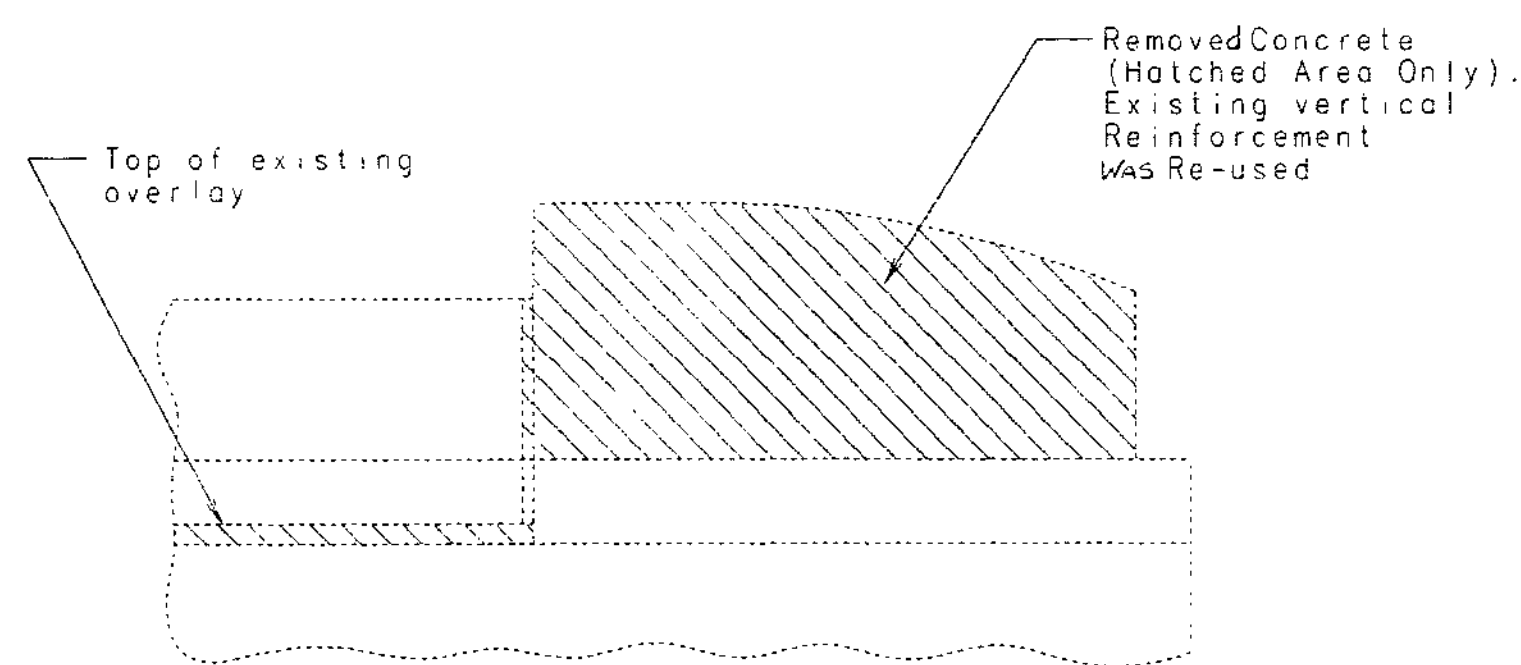
SECTION C-C



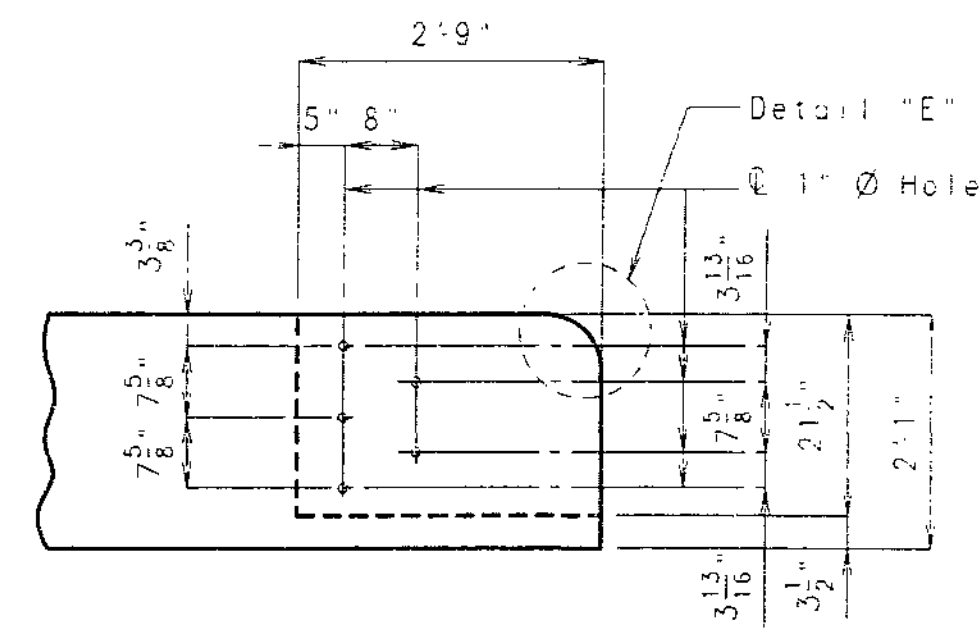
ELEVATION SHOWING END POST REINFORCEMENT



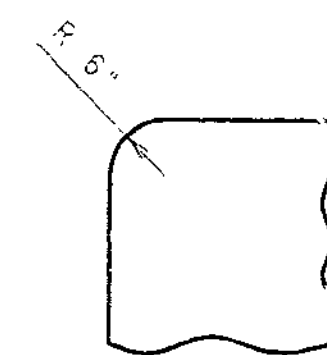
ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



ELEVATION OF EXISTING CURB SHOWING CONCRETE REMOVAL



DETAILS OF GUARD RAIL ATTACHMENT



DETAIL "E"

FINAL PLANS  
 I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.

SIGNATURE  
 DATE 10/20/97

STATE OF MISSOURI  
 MICHAEL D. HARMS  
 NUMBER E-28651  
 LICENSED PROFESSIONAL ENGINEER

DETAILS OF END POST ON SOUTHWEST WING AT BENT #5

354  
 DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

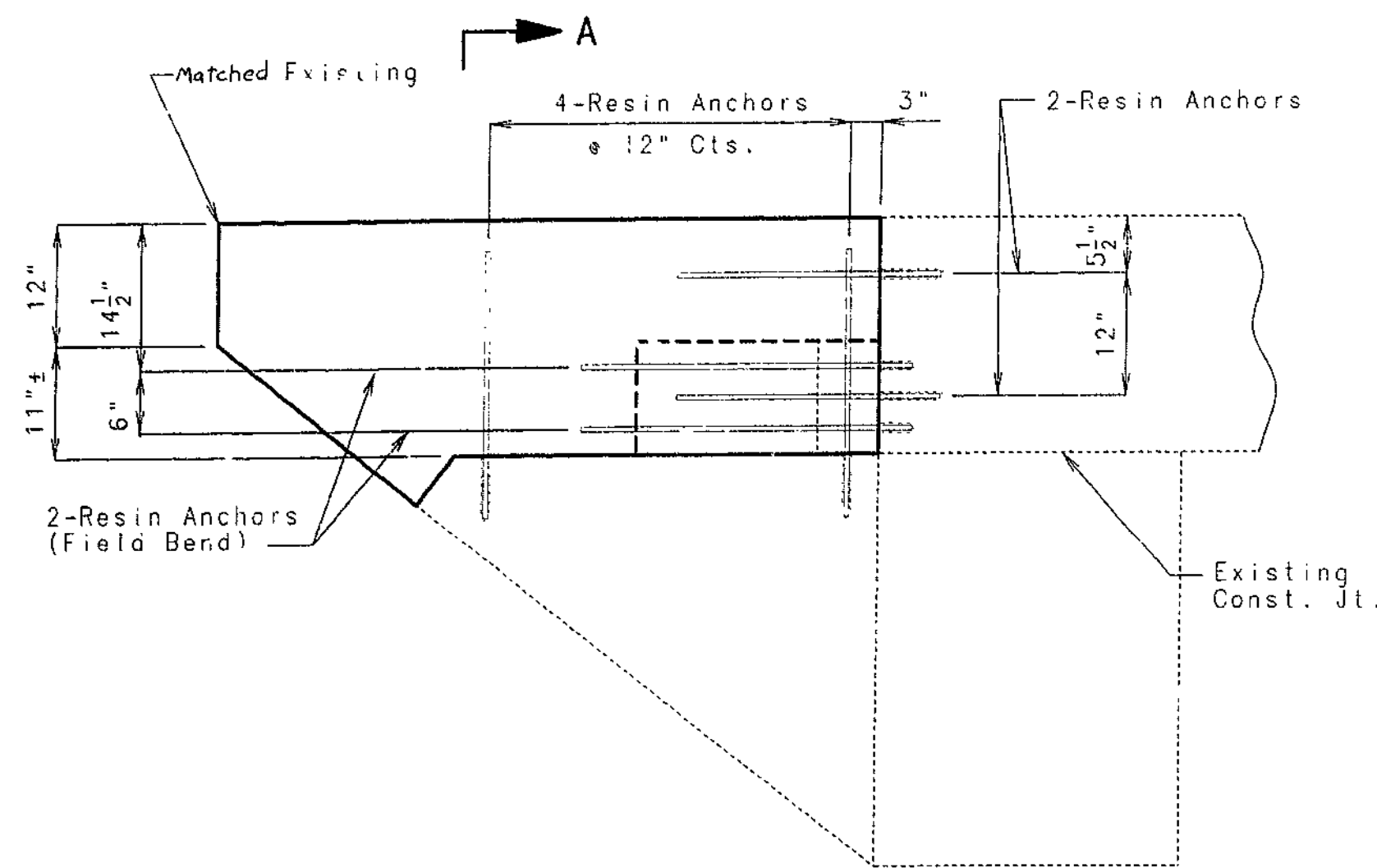
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 7 OF 9.

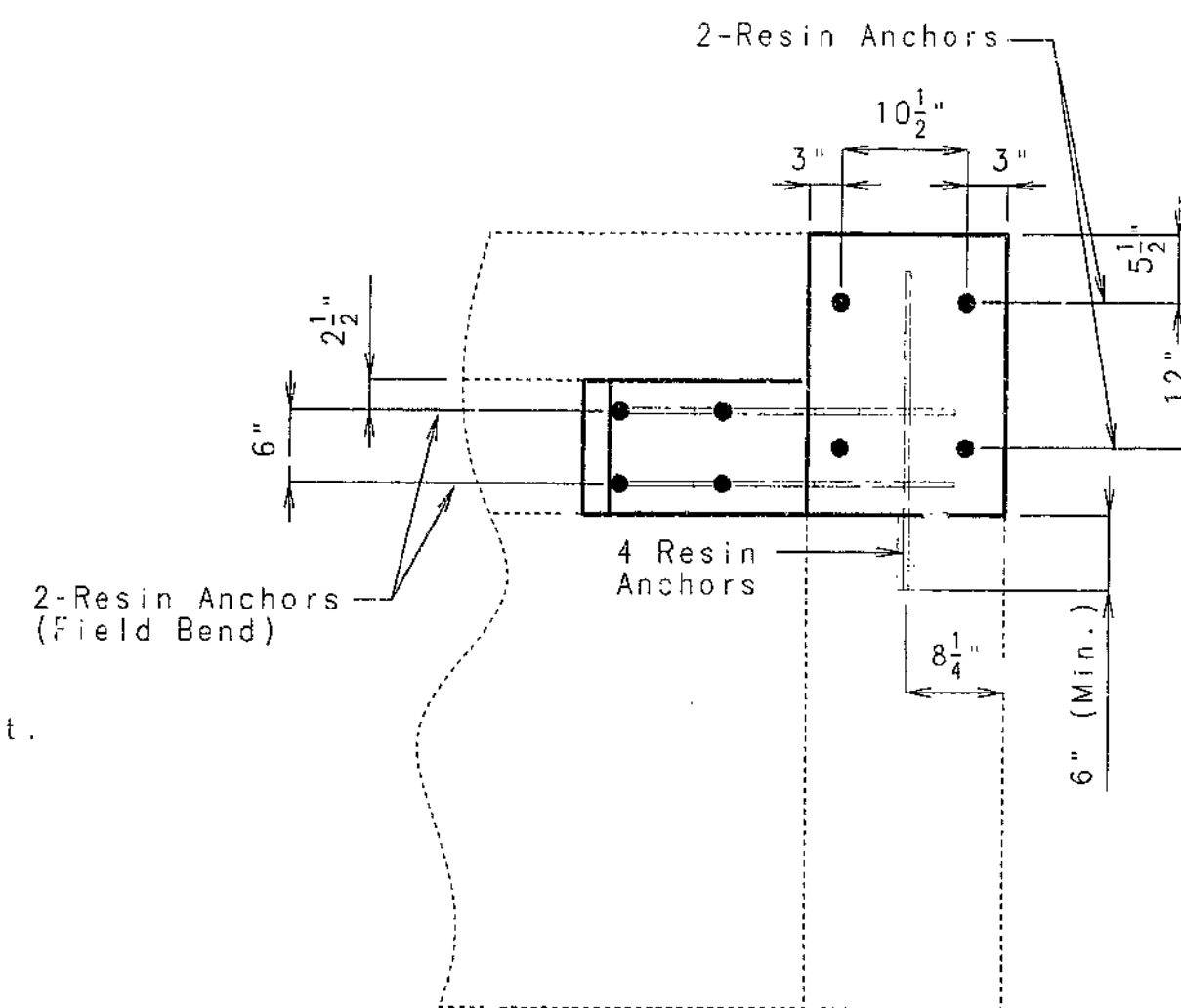
CLAY COUNTY

A15822

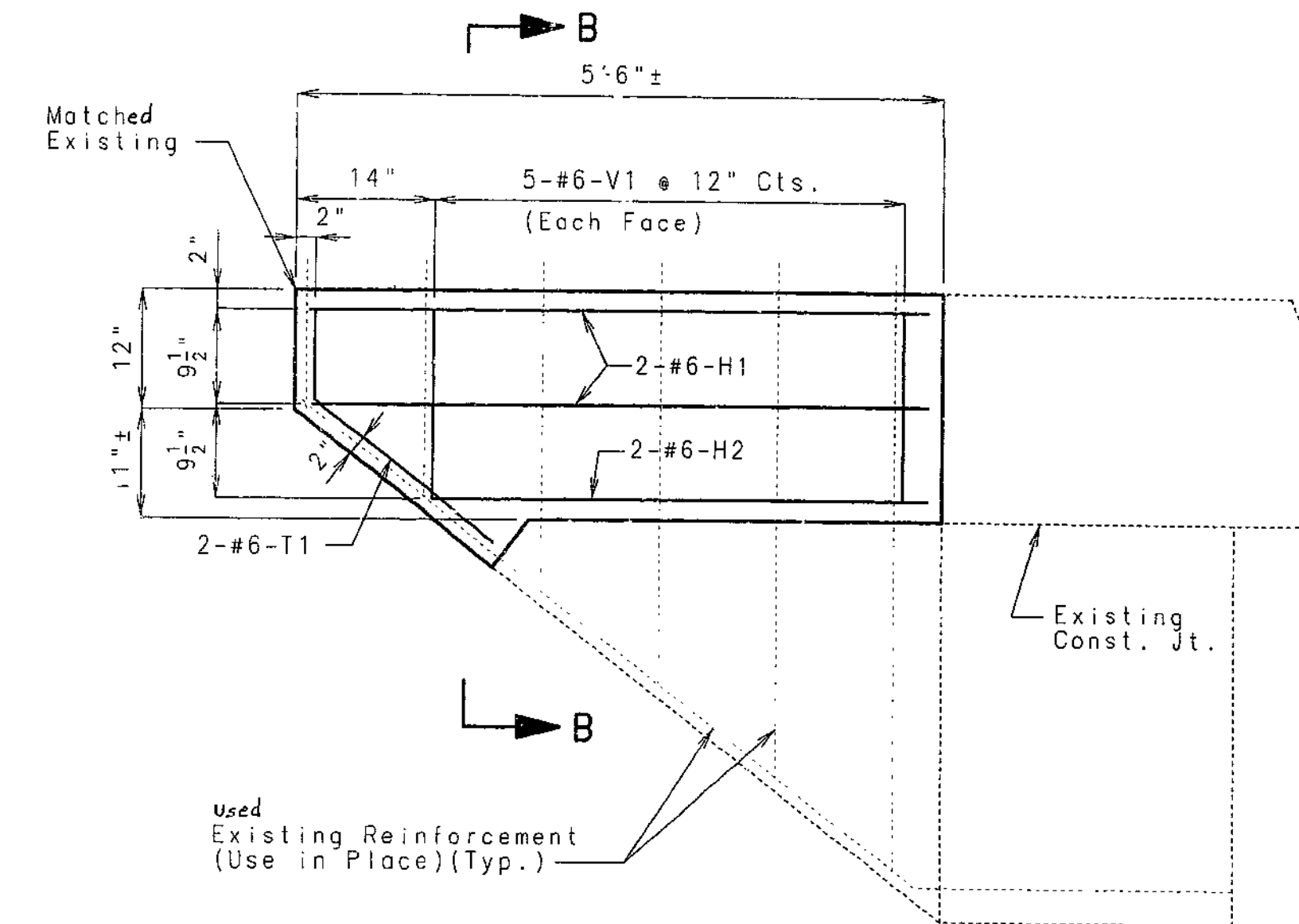
STATE	PROJ. NO.	SHEET NO.
MD.	ACIM-435-1(201)	8



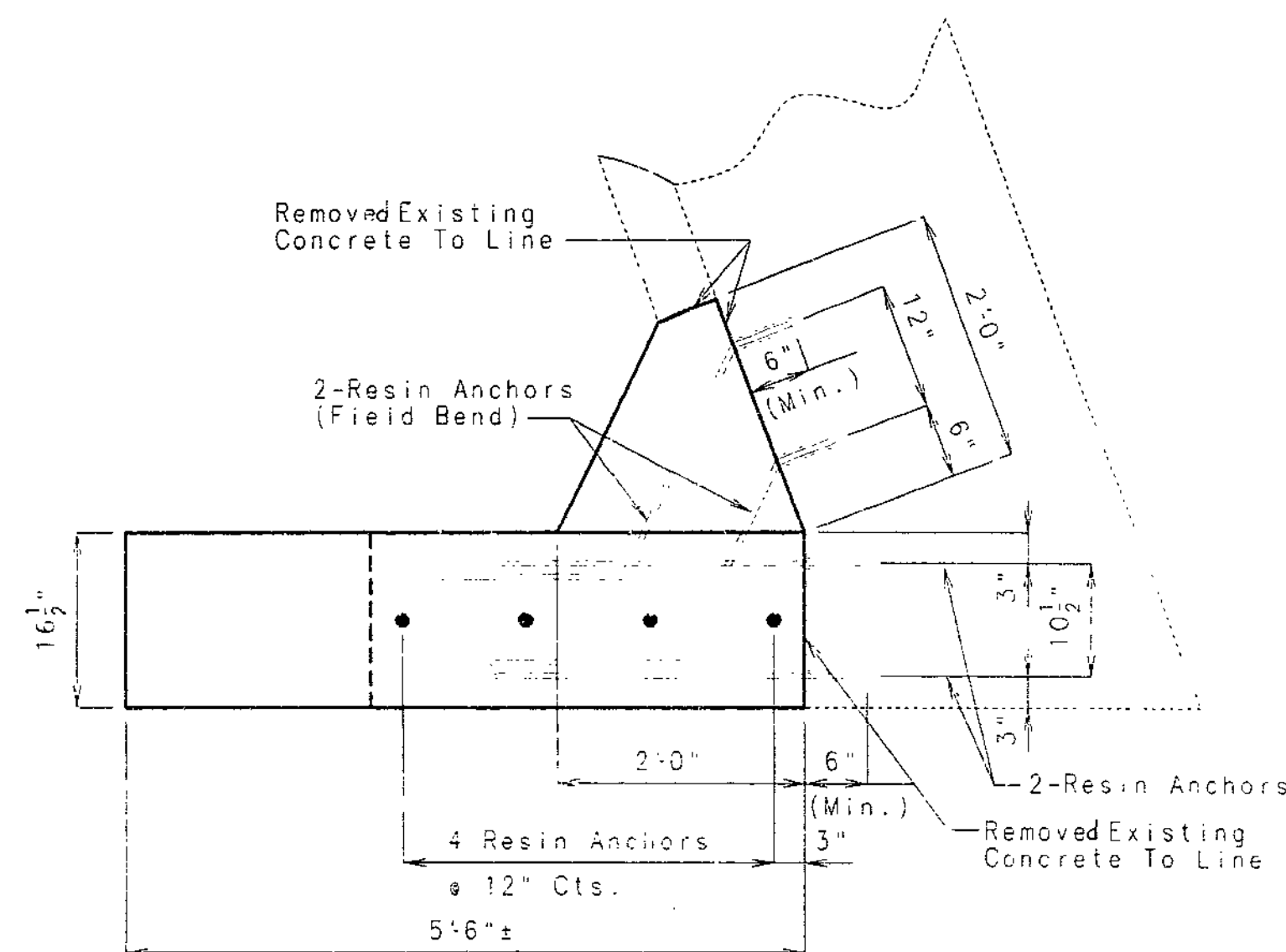
ELEVATION SHOWING WING RESIN ANCHOR SYSTEMS & DIMENSIONS (NORTHWEST & SOUTHEAST)



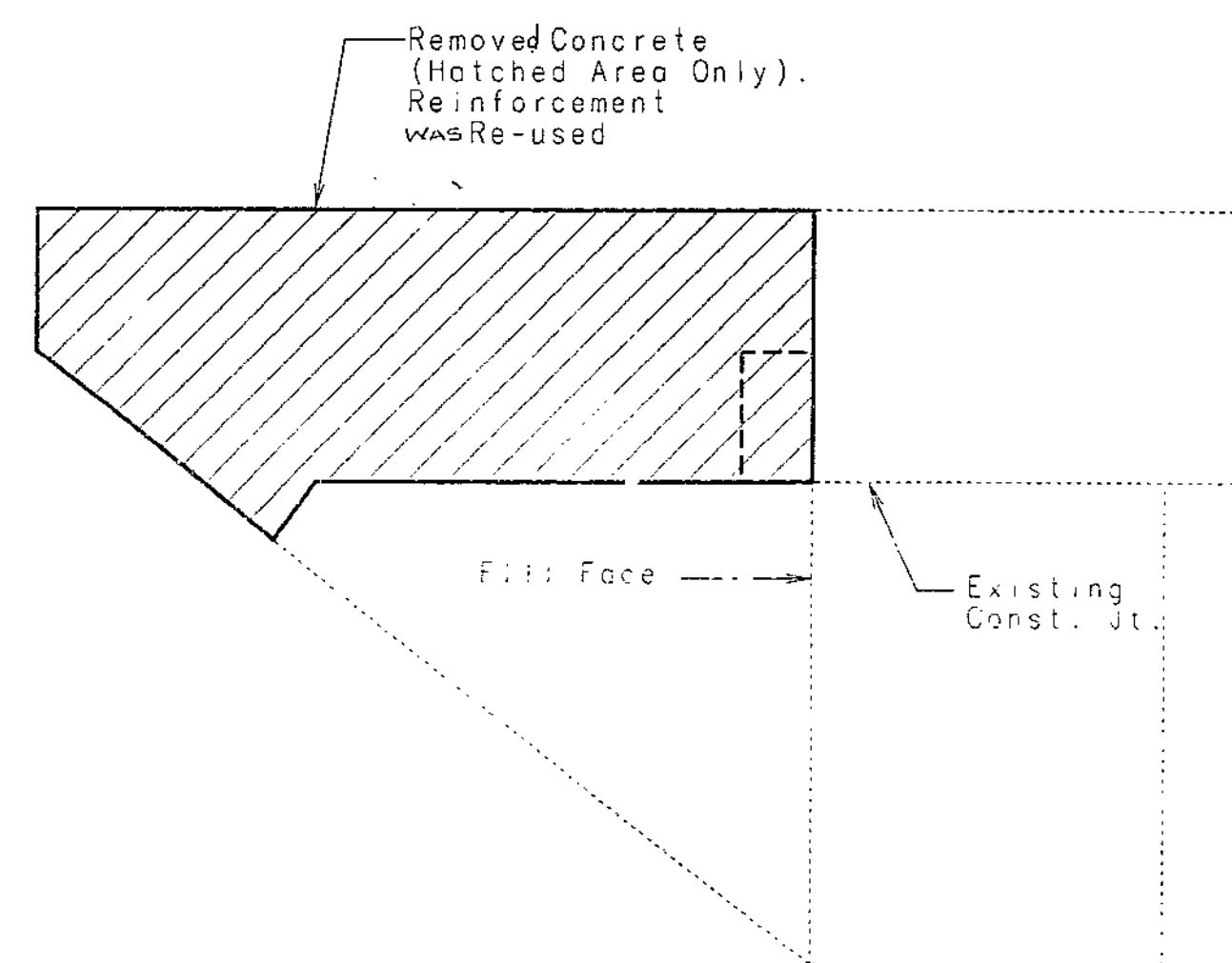
SECTION A-A



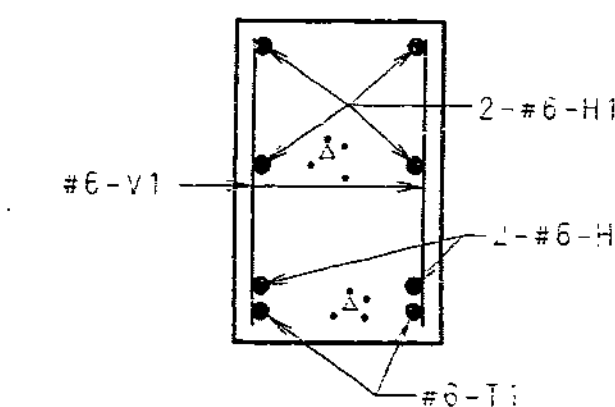
ELEVATION SHOWING WING REINFORCEMENT & DIMENSIONS (NORTHWEST & SOUTHEAST)



PLAN SHOWING WING RESIN ANCHOR SYSTEMS & DIMENSIONS (NORTHWEST & SOUTHEAST)



ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL



SECTION B-B

DETAILS SHOWING REHABILITATION OF NORTHWEST WING AT BENT #1 AND SOUTHEAST WING AT BENT #5

I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.



DATE 10/20/97

DETAILED SEPT. 1997  
CHECKED SEPT. 1997

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

SHEET NO. 8 OF 9.

CLAY COUNTY

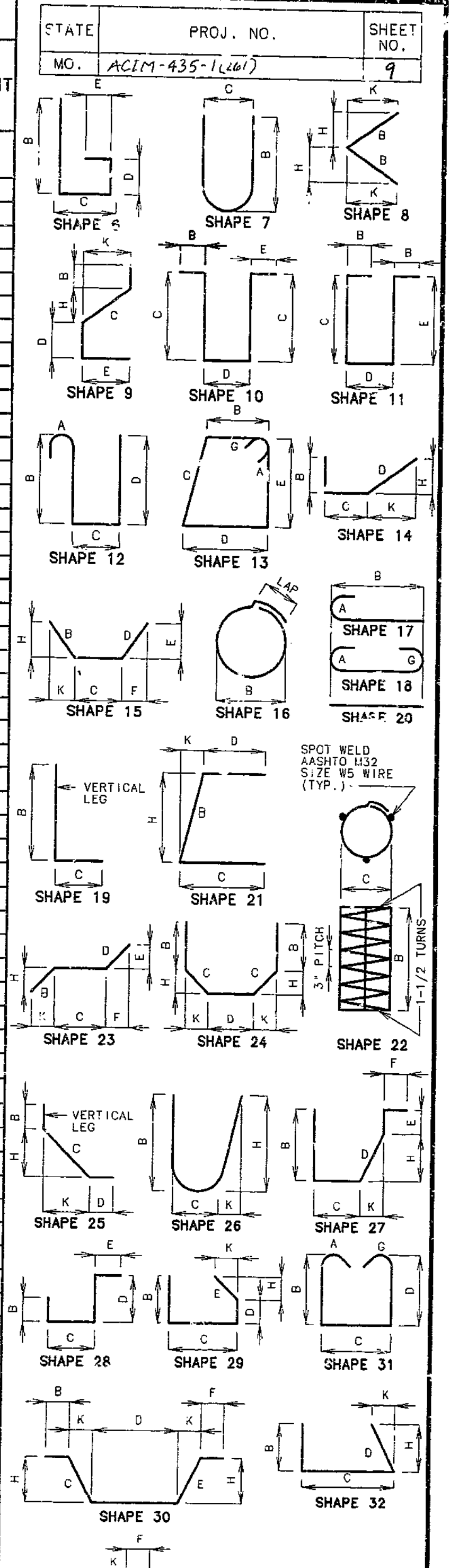
A15822

BILL OF REINFORCING STEEL

Table with columns: NO. REQ'D., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Contains 22 rows of reinforcement data.

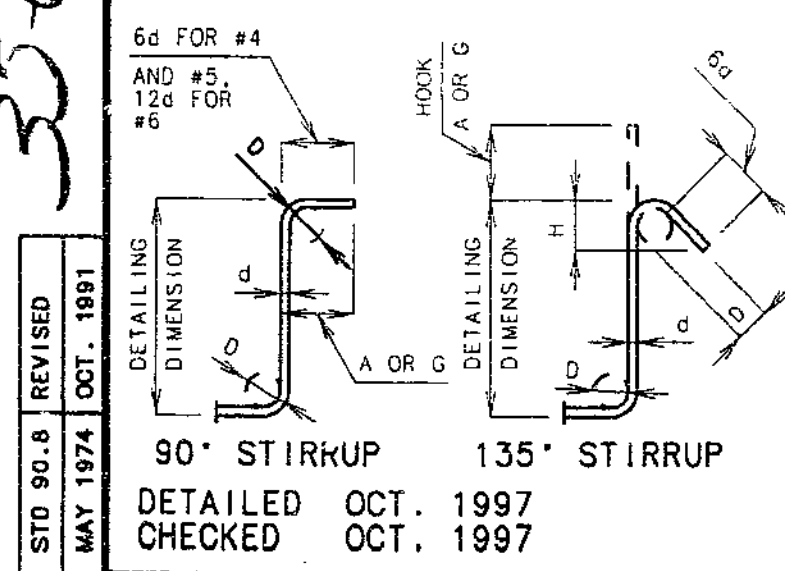
BILL OF REINFORCING STEEL

Table with columns: NO. REQ'D., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. This table is mostly empty.

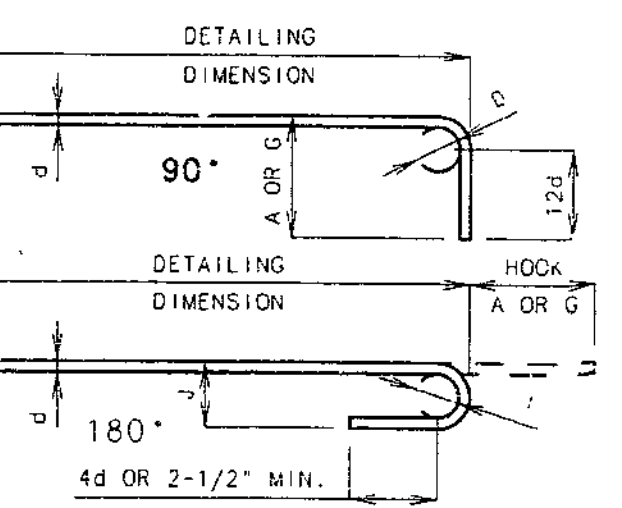


NOTE: THIS DRAWING DOES NOT REFLECT THE CONFIGURATION AND LOCATION OF THE ROADWAY AND UTILITIES AS INSTRUCTED ON THE PROJECT.

356

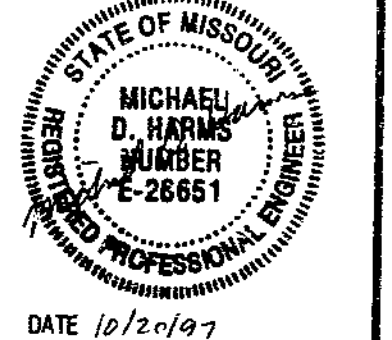
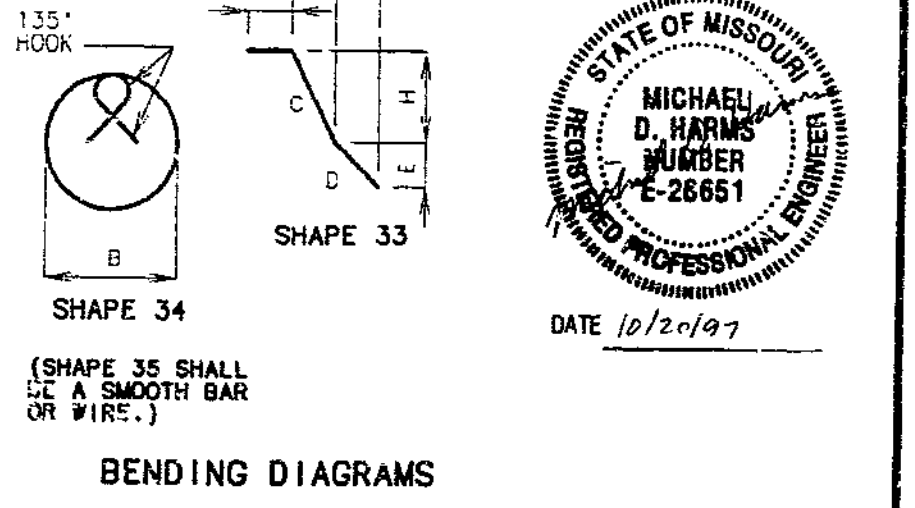
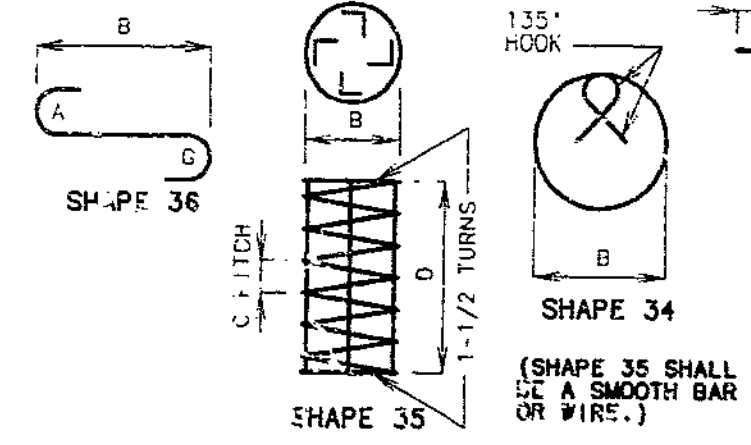


STIRRUP HOOK DIMENSIONS table with columns: BAR SIZE, D (IN.), 90° HOOK, 135° HOOK, APPROX. H.



END HOOK DIMENSIONS table with columns: BAR SIZE, D (IN.), 180° HOOKS, 90° HOOKS.

\* TWO ADDITIONAL #5-R8 & #6-H1 ARE INCLUDED IN THE BAR BILL FOR TESTING. NOTE: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH THE SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.



STD 90.6 REVISED OCT. 1991  
MAY 1974

Detailed OCT. 1997  
Checked OCT. 1997

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P. & Rehabilitate Existing (46'-60'-66'-51')  
Continuous Concrete Voided Slab Spans

SEC/SUR 27 TWP 51N RGE 32W

"THIS MEDIA SHOULD  
NOT BE CONSIDERED  
A CERTIFIED  
DOCUMENT."

DATE PREPARED  
12/3/2012

ROUTE STATE  
I-435 MO

DISTRICT SHEET NO.  
BR 1

COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A15833

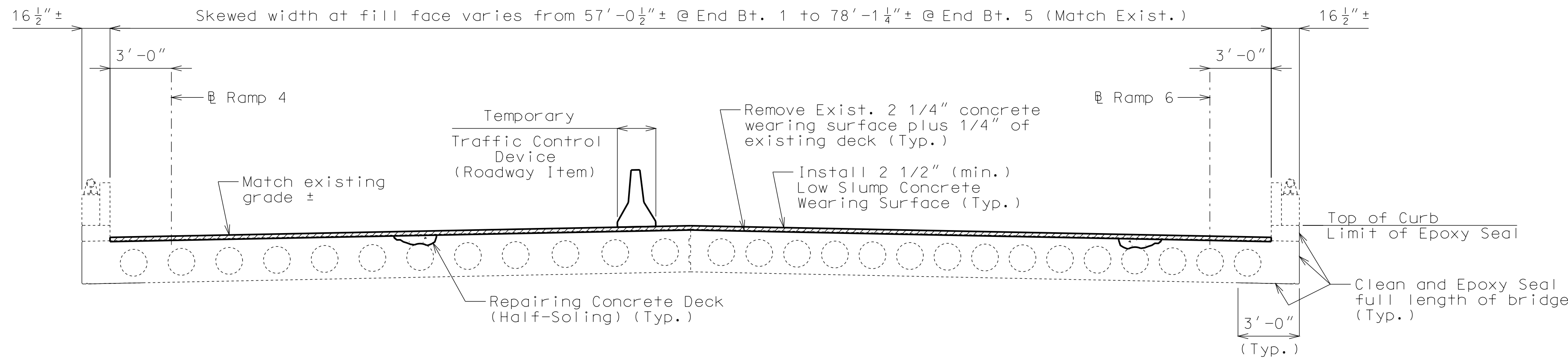
DESCRIPTION

DATE

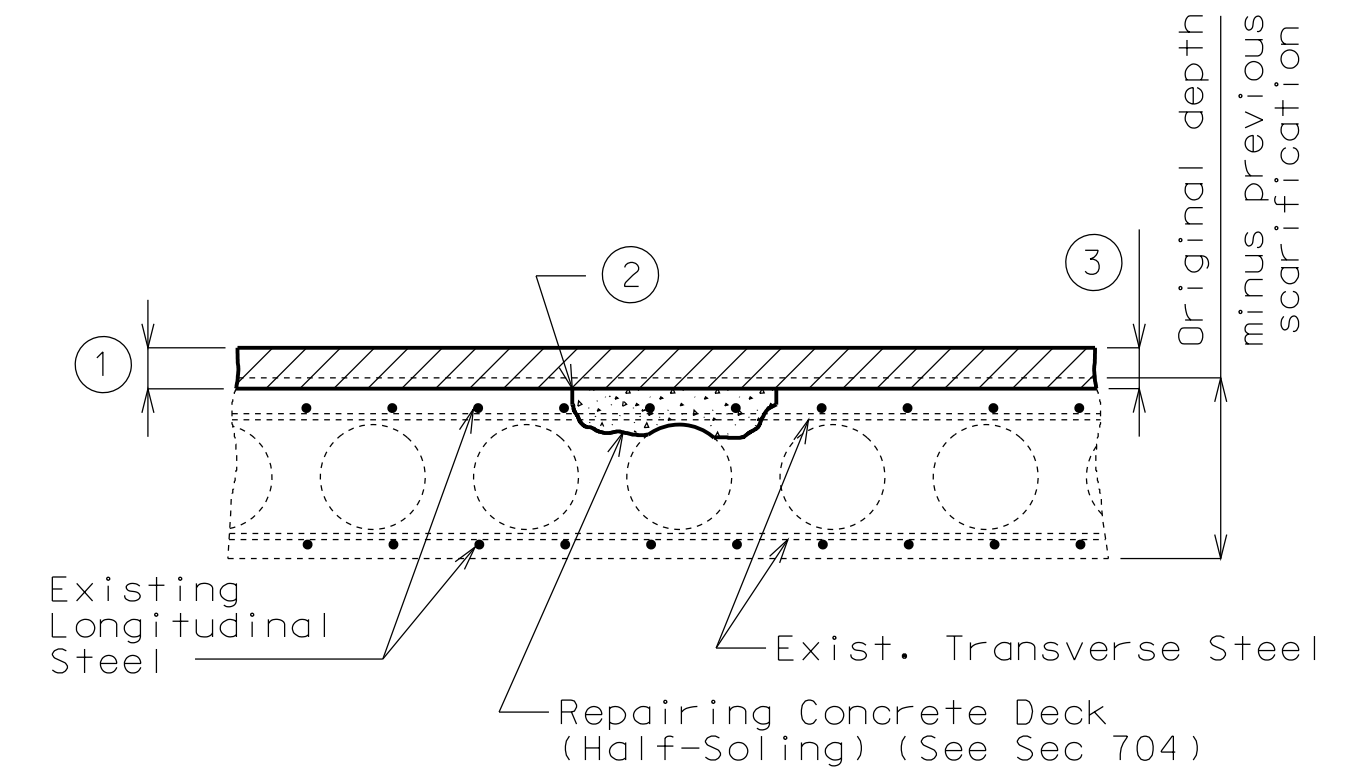
MISSOURI HIGHWAYS AND TRANSPORTATION  
COMMISSION

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.

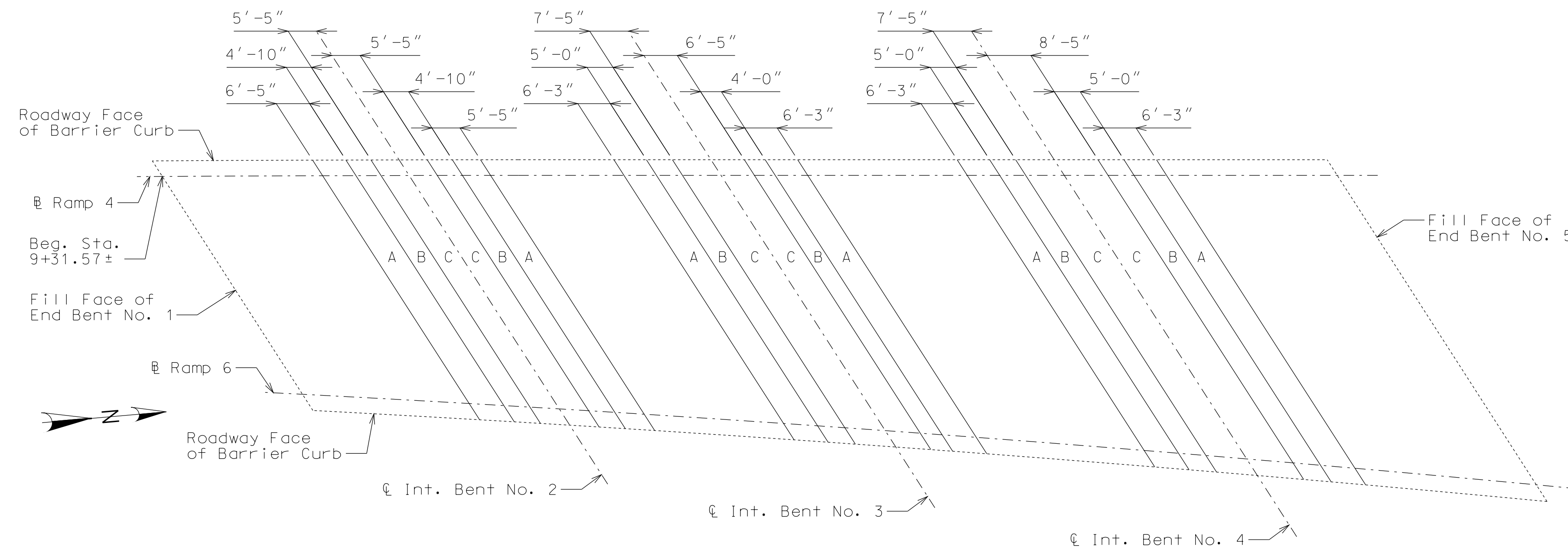


SECTION THRU EXISTING SLAB



HALF-SOLED REPAIR

- ① Remove existing wearing surface plus 1/4" of existing deck.
- ② One inch vertical side shall be established outside the deteriorated area. See Sec 704.
- ③ 2 1/2" (min.) for Low Slump Concrete Wearing Surface



PLAN OF EXISTING SLAB SHOWING SPECIAL REPAIR ZONES

General Notes:

Design Specifications:  
2002 - AASHTO 17th Edition  
Load Factor Design  
Bridge Deck Rating = 6

Traffic Control:  
Traffic over structure to be maintained during construction. See Roadway Plans for traffic control.

Miscellaneous:  
Roadway surfacing adjacent to bridge ends shall match bridge overlay (Rdwy. Item).

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

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

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.

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 prior to work in Zone A.  
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).

Estimated Quantities		
Item		Total
Removal of Concrete Wearing Surface	sq. foot	12,676
Low Slump Concrete Wearing Surface	sq. yard	1409
Repairing Concrete Deck (Half-Soling)	sq. foot	1900
Clean and Epoxy Seal	sq. foot	2666

REPAIRS TO BRIDGE: RAMPS 4 & 6  
(I-435 N TO I-35 N & S) OVER  
RTE. 69

STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

Detailed Apr. 2012  
Checked Apr. 2012

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

Sheet No. 1 of 1

STA. 9+31.57± (Ramp 4) (Match Existing)

STD. 617.20

STD. 706.35

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			50	
DIST. NO.	COUNTY			ROUTE	SIC
4	CLAY				

GENERAL NOTES

Design Specifications: AASHTO 1965.  
 Design Loading: HS20-44 and Modified 24000\*\* Tandem Axle with 15# sq. ft. future wearing surface. Earth 120% cu. ft. Equivalent fluid pressure 30#/ft.  
 Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.  
 Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 1,200$  psi.  
 Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
 Reinforcing Steel  $f_s = 20,000$  psi.  
 Steel pile (A.S.T.M. A36-66)  $f_b = 9,000$  psi.  
 Reinforcing Steel: All splices in reinforcing bars shall be 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicates the size of the bar.  
 Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.  
 All reinforcing bar bending dimensions are "out to out".  
 Sealing of Deck: Superstructure deck to be surface sealed.  
 Utilities: All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor will notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.  
 Welding: See Standard Specification 55.3.13 for qualification of welding operators.

P.O.T. Sta. 9+00.00  
Elev. 810.12

PROFILE GRADE RAMP 4

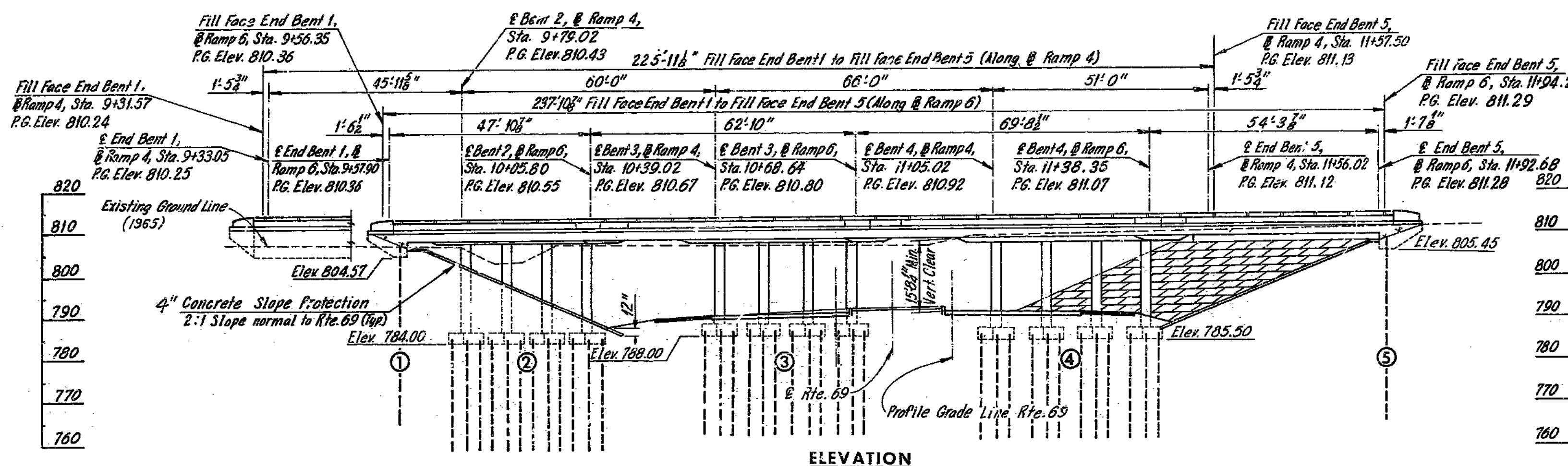
PROFILE GRADE RAMP 6

PROFILE GRADE U.S. RTE. 69

CURVE DATA  
(Chord Definition)

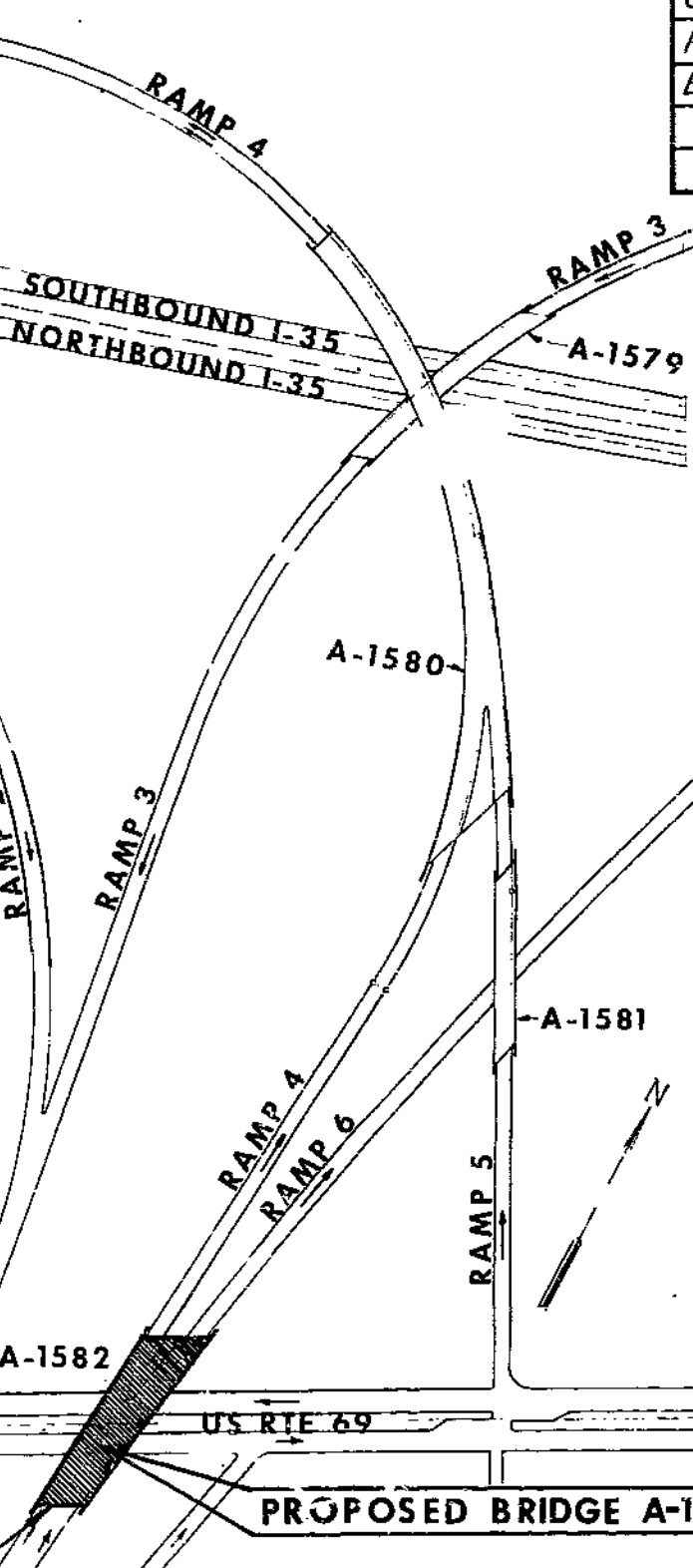
Base Line Ramp 4	Base Line Ramp 6
P.I. = 5+00.32	P.I. = 11+95.41
$\Delta = 5^{\circ}00'18"$	$\Delta = 17^{\circ}31'16"$
$U = 0^{\circ}30'$	$D = 1^{\circ}00'$
$T = 500.32'$	$T = 882.96'$
$L = 1,000.00'$	$L = 1,752.12'$
$R = 11,459.20'$	$R = 5,729.65'$

46.60, 66.51' CONTINUOUS VOIDED SLAB SPANS



ELEVATION

LIMITS OF EXCAVATION



LOCATION SKETCH

TOTAL ESTIMATED QUANTITIES			
ITEM	UN'T	SUBSTR.	SUPRSTR. TOTAL
Class 1 Excavation for Structures	Cu.Yd.	240	240
Steel Piles in Place (10BP42)	Lin.Ft.	2,076	2,076
Class B Concrete	Cu.Yd.	55.3	55.3
Class B1 Concrete	Cu.Yd.		1,006.8
Reinforcing Steel	Lbs.	3,500	309,350
Bridge Rail (Single Tube Type)	Lin.Ft.		463

QUANTITY NOTES

All excavation will be paid as Class 1 Excavation for Structures.  
 Estimated quantity of Class B Concrete in intermediate bent footings only. All other concrete is included in estimated quantity of Class B1 Concrete.  
 All Reinforcing except that in interior bent footings is included in superstructure reinforcing.

BENCH MARKS

- B.M. #41- Spike in T.P. 165' Pt. Sta. 519+65 Rte. I-435 Elev. 809.15
- B.M. #42- Don N.W. corner of N.W. Br. Abut. 220' Rt. Sta. 526+50 Rte I-435 Elev. 787.33

Notes:  
 All dimensions are horizontal.  
 Bents cannot be located from the reference point on the tangent by conventional survey methods based on 100' chords.  
 For Substructure Layout, see Sheet 3.  
 For location of borings, see Sheet 2.  
 For table of pile loads, see Sheet 3.  
 All bents are parallel.

SUBMITTED BY:  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-253

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY  
 18' PAV. RAMP 4

SUBMITTED BY: *[Signature]* DATE 12-23-68  
 APPROVED BY: *[Signature]* DATE 12-23-68  
 BRIDGE ENGINEER  
 CHIEF ENGINEER

STD. 54.00  
 A-1583

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE D.E.S. DATE 3-24-68 CHECKED JSH DATE 6-11-68

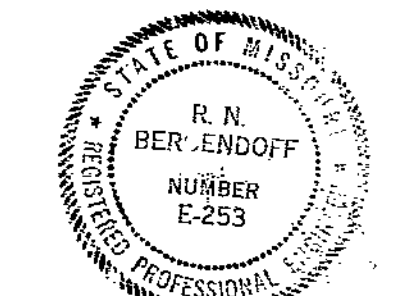
NOTE: This drawing is not to scale. Follow dimensions.

GENERAL PLAN AND ELEVATION SHEET 1 OF 14

SEE FINAL PLANS BROWN LINES

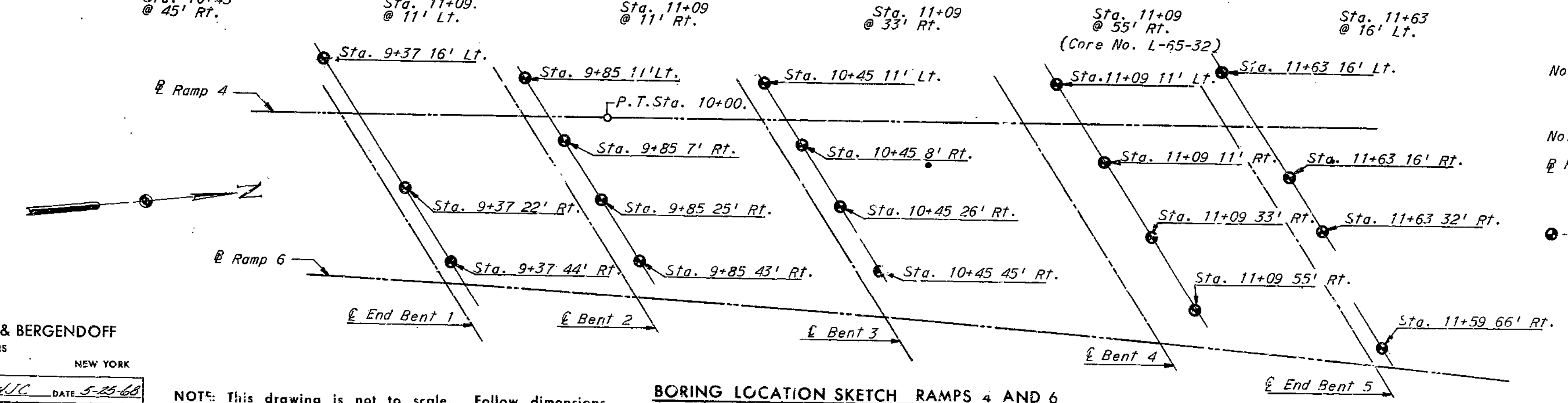
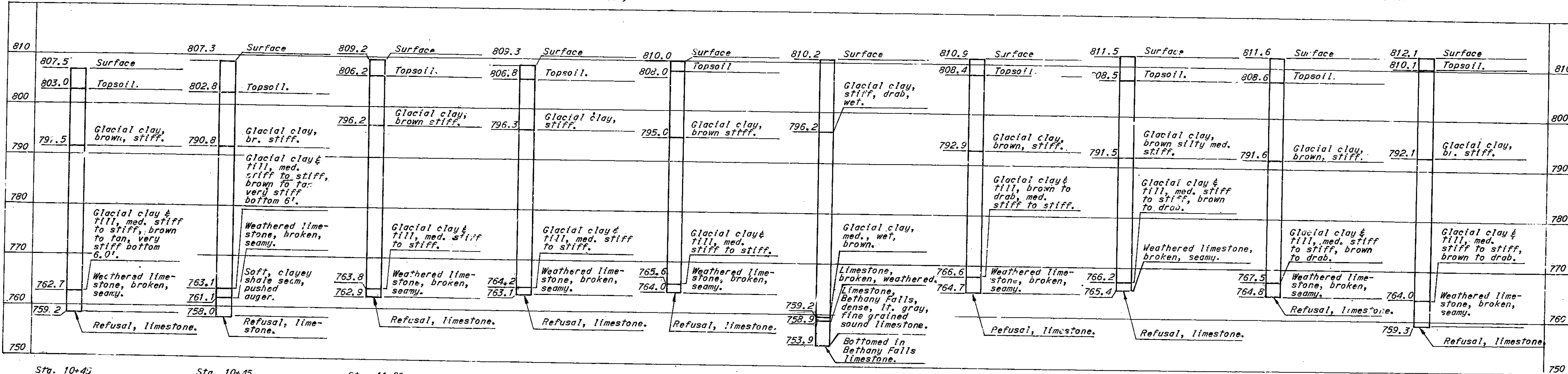
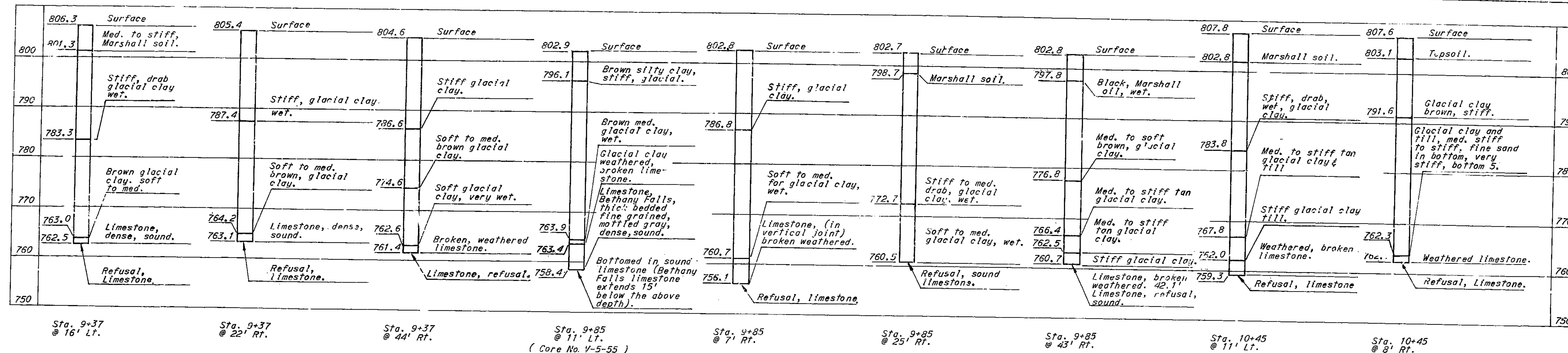
235

2108-21-02-383-B52



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	PRINTED YEAR
5	MO		57	1965
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



Note: All borings Augered unless otherwise shown. Borings dated May, 1965.

Note: Distance left and right are measured from @ Ramp 4 along skew. Stations are along @ Ramp 4.

● --- Indicates location of boring.

**BRIDGE: RAMP 4 & 6 OVER ROUTE 69**  
**STATE ROAD - INTERSTATE ROUTE 435**  
**IN CLAY COUNTY**  
**PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29**  
**CLAY COUNTY**      @ 18' PAV. RAMP 4

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 CONSULTING ENGINEERS  
 KANSAS CITY      NEW YORK

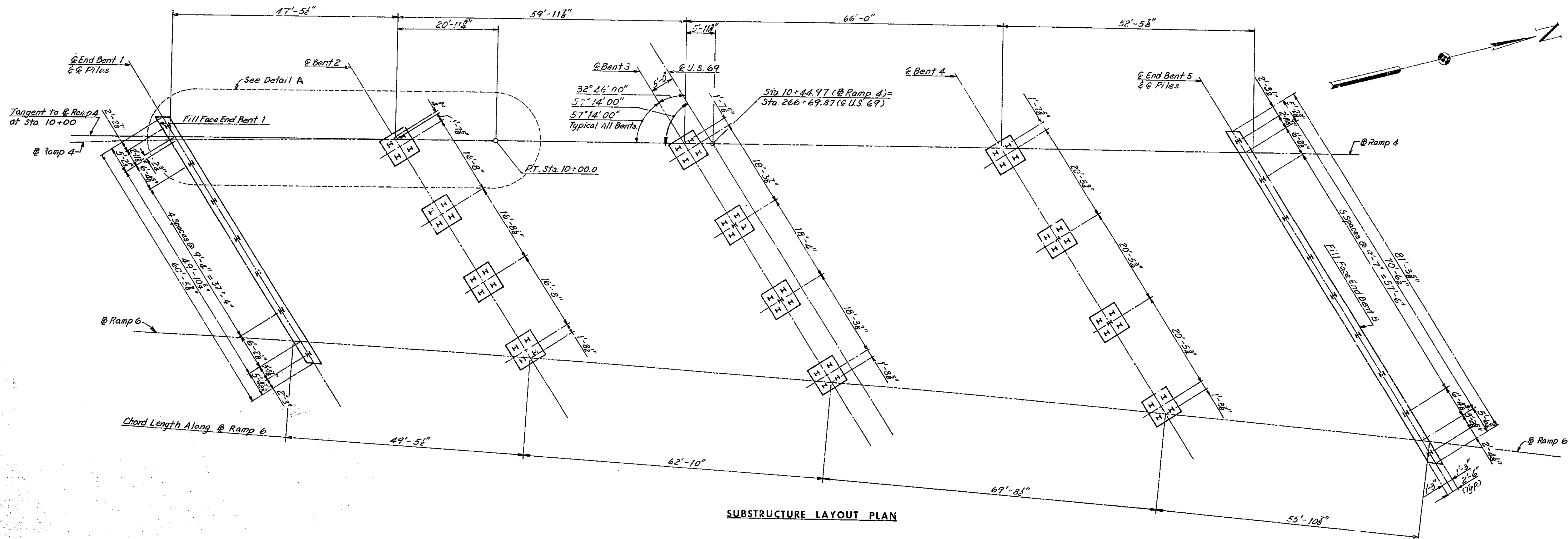
NOT: This drawing is not to scale. Follow dimensions.

BORING LOCATION SKETCH RAMPS 4 AND 6

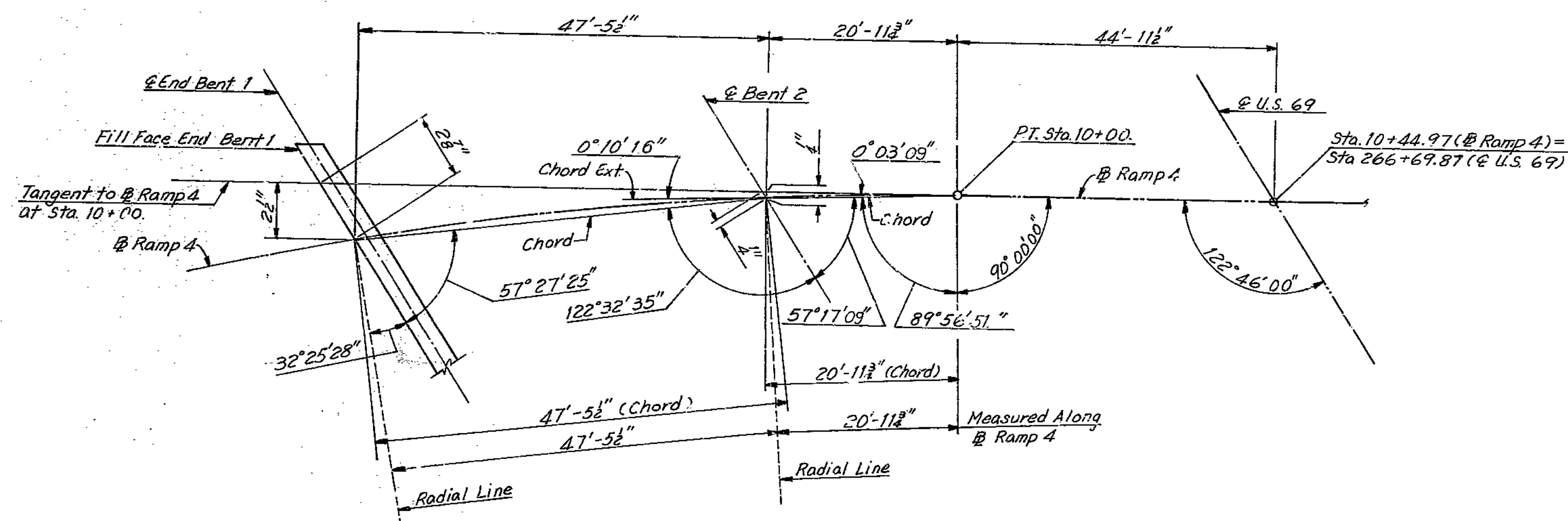
A-1583

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	DIST. NO.	COUNTY	ROUTE	SEC.
5	MO		4	CLAY		



SUBSTRUCTURE LAYOUT PLAN



DETAIL A

	END BENT 1	BENT 2	BENT 3	BENT 4	END BENT 5
Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42
Number	7	16	18	18	9
Approximate Length (Ft.)	42	27	27	27	42
Design Bearing (Ton.)	55	55	55	55	51
Hammer Energy Required* (Ft.-Lbs.)	10800	12400	12400	12400	11500

\* Minimum Energy requirement of hammer based on design bearing value of piles. Increase by the factor  $(W+w)/2W$  when the ram (W) is less than the weight of the pile (w). All piles shall be driven to practical refusal.

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCO MO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY 18' PAV. RAMP 4

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 CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE G.C.C. DATE 5-27-68 CHECKED HJC DATE 5-28-68

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

SUBSTRUCTURE LAYOUT

SHEET 3 OF 14

A-1583

237

MISSOURI STATE HIGHWAY DEPARTMENT

Table with project details: STATE MO, FEDERAL PROJECT NO. & SEC., COUNTY CLAY, SHEET NO. 53, TOTAL SHEETS.

BILL OF REINFORCEMENT table for SUBSTRUCTURE and SUPERSTRUCTURE. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes items like BENT 2, F501, F601, F801, F802, V501, V502, V503, V504, V505, V506, V507, V508, V509, V601, V602, V701, B504, B1005, B1006, B1007, B1008, B1009, C301, C801, C802.

BILL OF REINFORCEMENT table for SUPERSTRUCTURE. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes items like C1001, C1002, B502, B503, B901, B902, B903, B904, B1109, B1110, B1111, B1112, B1113, B1114, B1115, B1116, C301, C803, C804, C1003, B501, B502, B1001, B1002, B1003, B1004, B1101, B1102, B1103, B1104, B1105, B1106, B1107, B1108, C1004, H501, H502, H603, H605.

BILL OF REINFORCEMENT table for SUPERSTRUCTURE. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes items like H606, H607, H608, H609, V401, V501, V502, V503, V504, V505, V506, V507, V508, V509, V601, V602, V701, S601, S602, S603, S604, S605, S606, S607, S608, S609, S610, S801, S802, S803, S804, S805, S806, S807, S808, S809, S810, S1001, S1101, S1102, S1103, S1104, S1105, S1106, S1107, S1108, S1109, S1110, S1111, S1112, S1113, S1114, S1115, S1116, S501, S502, S503, S504.

BILL OF REINFORCEMENT table for SUPERSTRUCTURE. Columns: NO., MARK, LENGTH, SHAPE, LOCATION. Includes items like S505, S506, S507, S508, S509, S510, S511, S512, S513, S514, P501, P502, P503, P504, P505, P506, P507, P508, P509, P510, P511, P512, P513, P514, W501, W502, W503, W504, W505, W506, W507, W508, W509, S1101, S1102, S1103, S1104, S1105, S1106, S1107, S1108, S1109, S1110, S1111, S1112, S1113, S1114, S1115, S1116, S501, S502, S503, S504.

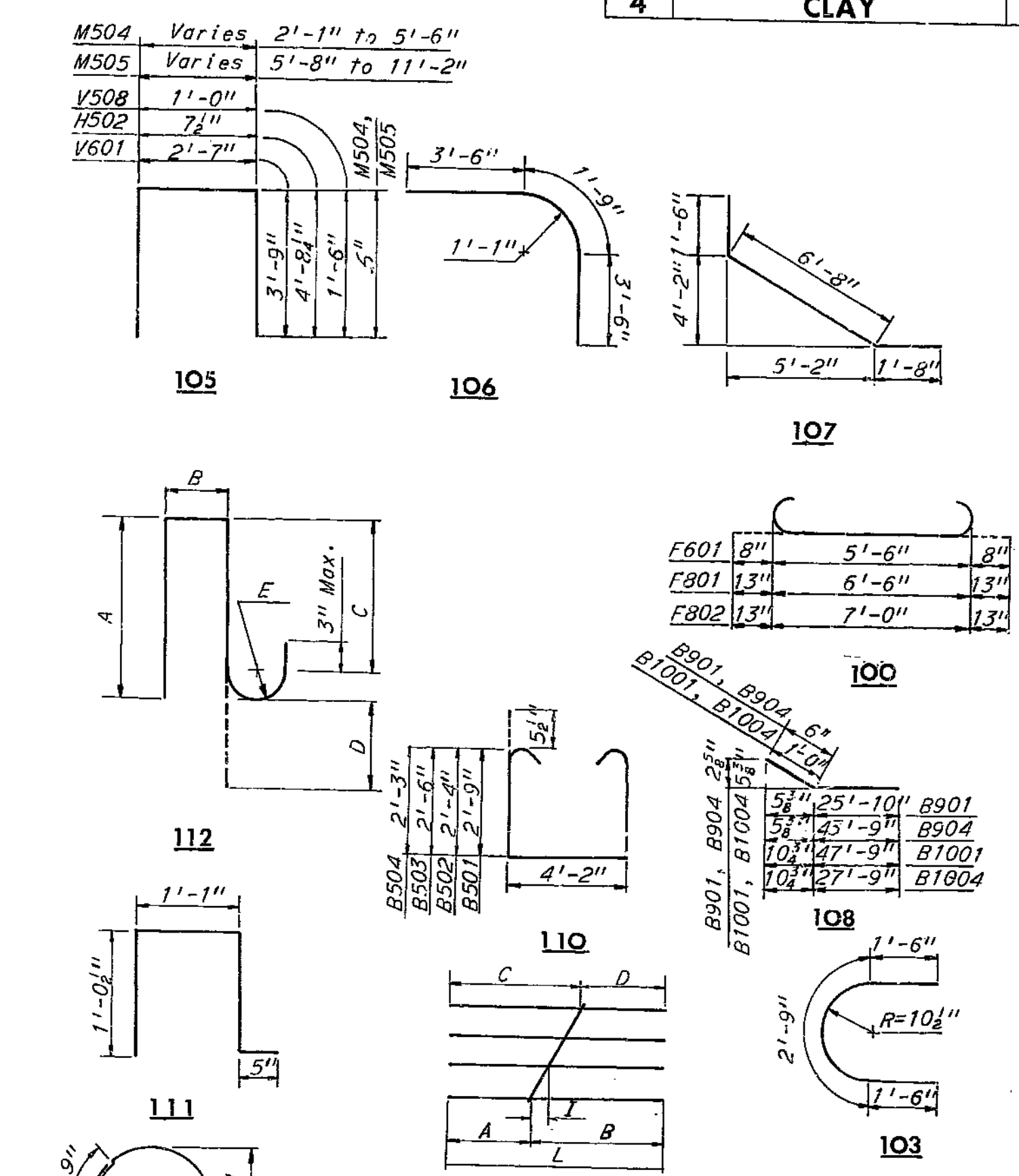


TABLE OF CUTTING DIAGRAM DIMENSIONS. Table with columns: Mark, No., Cut, A, B, C, D, L. Lists dimensions for various reinforcement marks.

DIMENSIONS OF TYPE 112. Table with columns: Mark, A, B, C, D, E. Lists dimensions for Type 112 reinforcement.

238

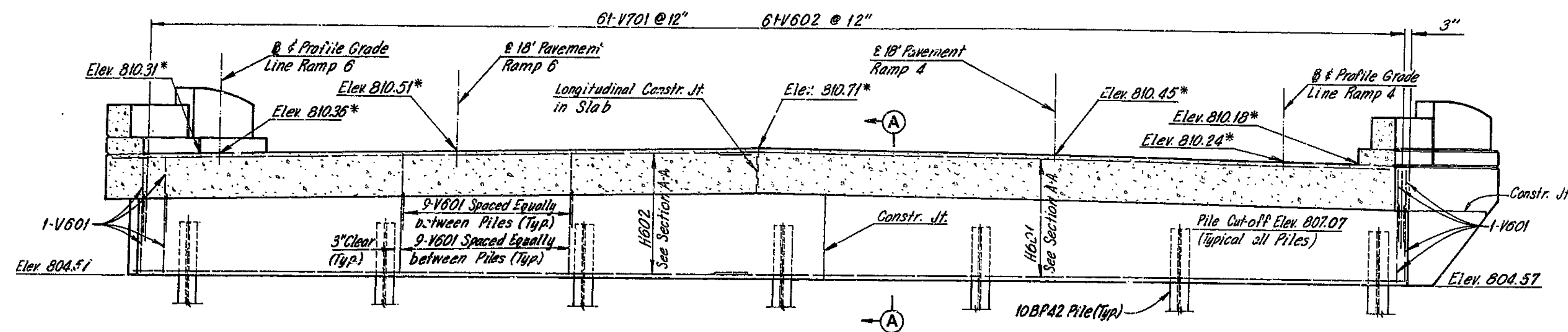
HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS. KANSAS CITY, NEW YORK.

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



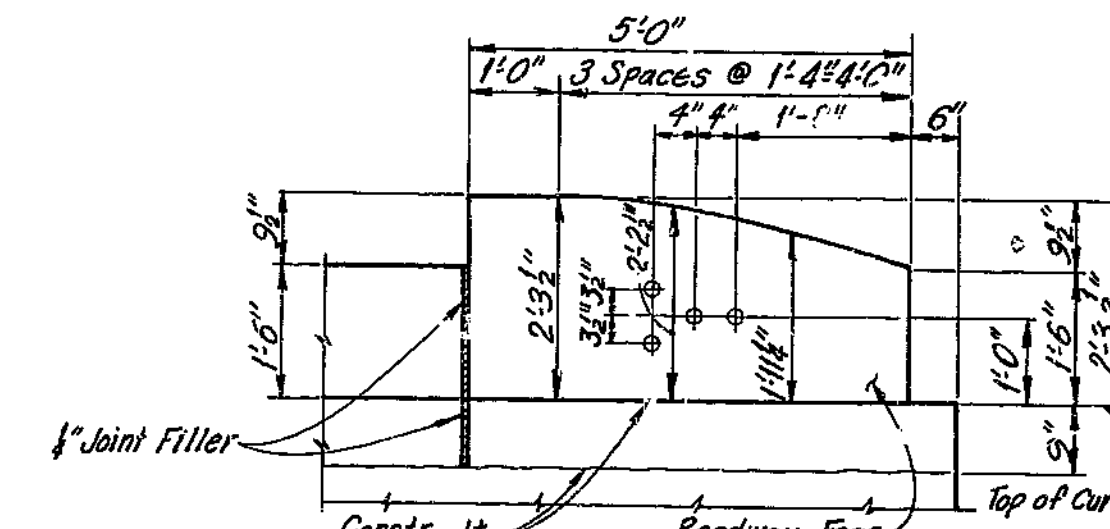
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			54	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



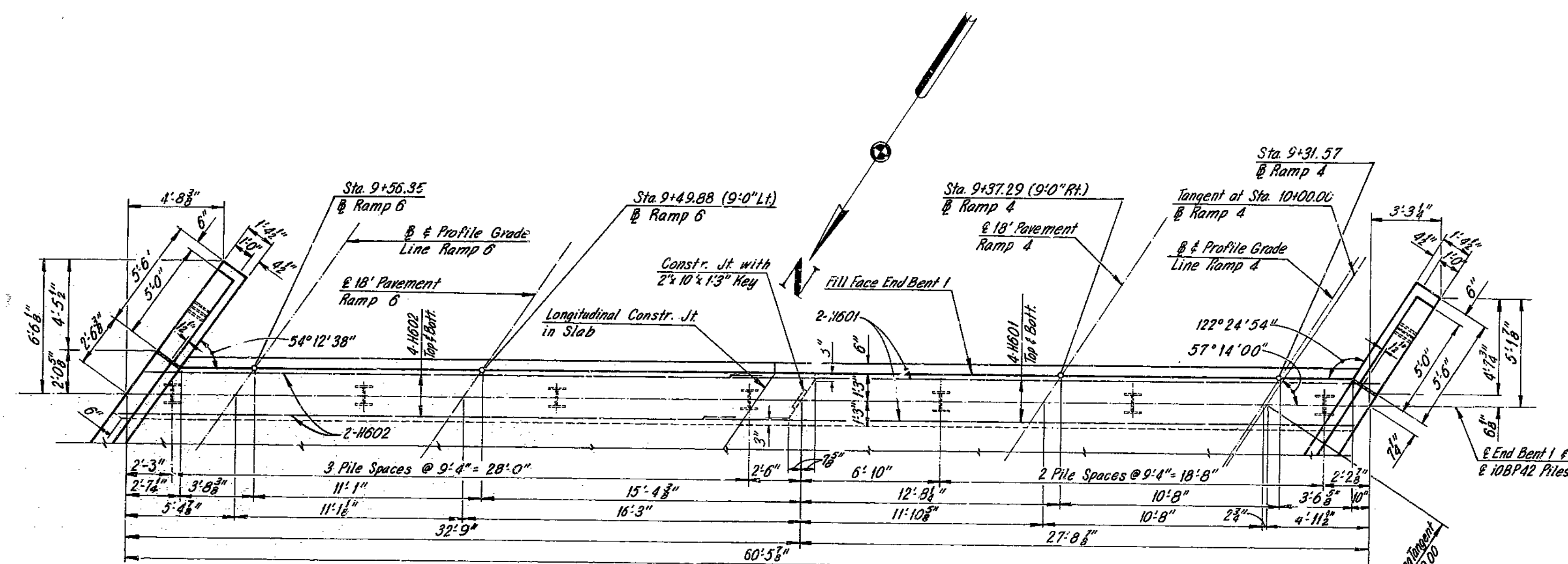
ELEVATION

Note:  
Elevations denoted with an (\*) are given at Fill Face of End Bent 1.

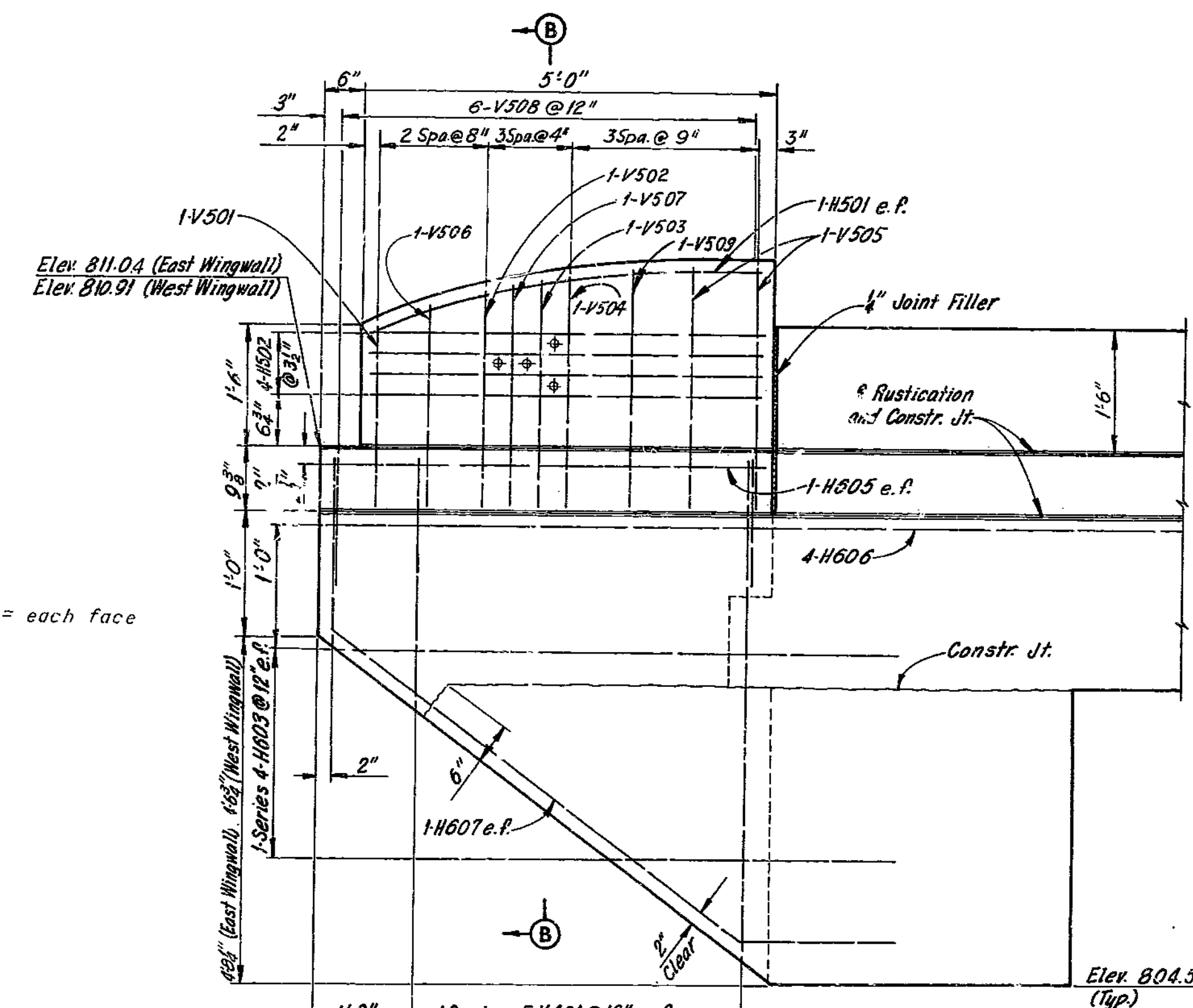


CONCRETE END POST ORDINATES

Note:  
GUARD RAIL ATTACHMENT:  
1" round holes through post for 3/4" H. S. Bolts (Galvanized).



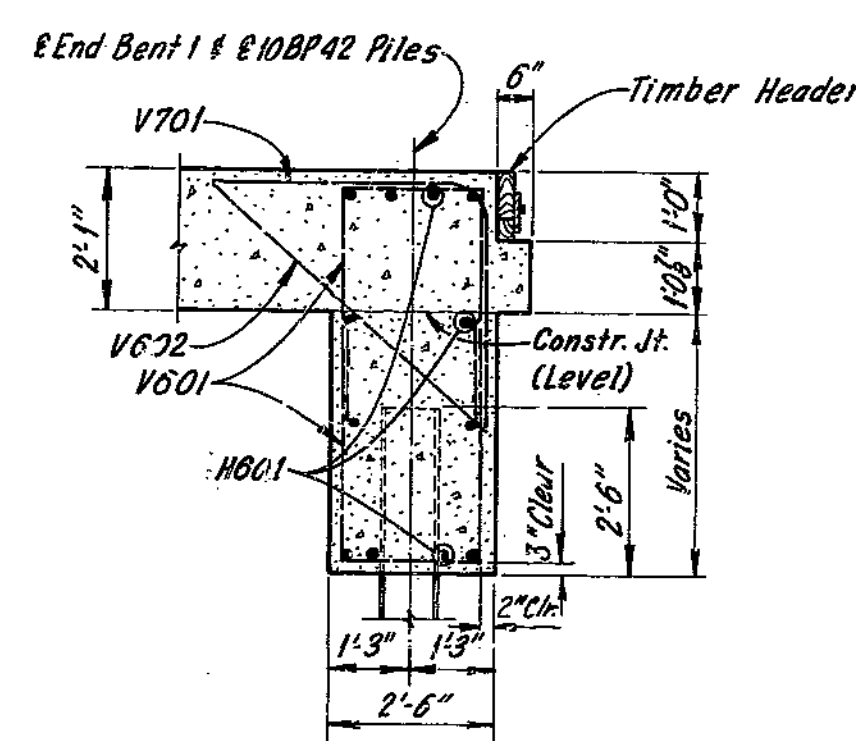
PLAN



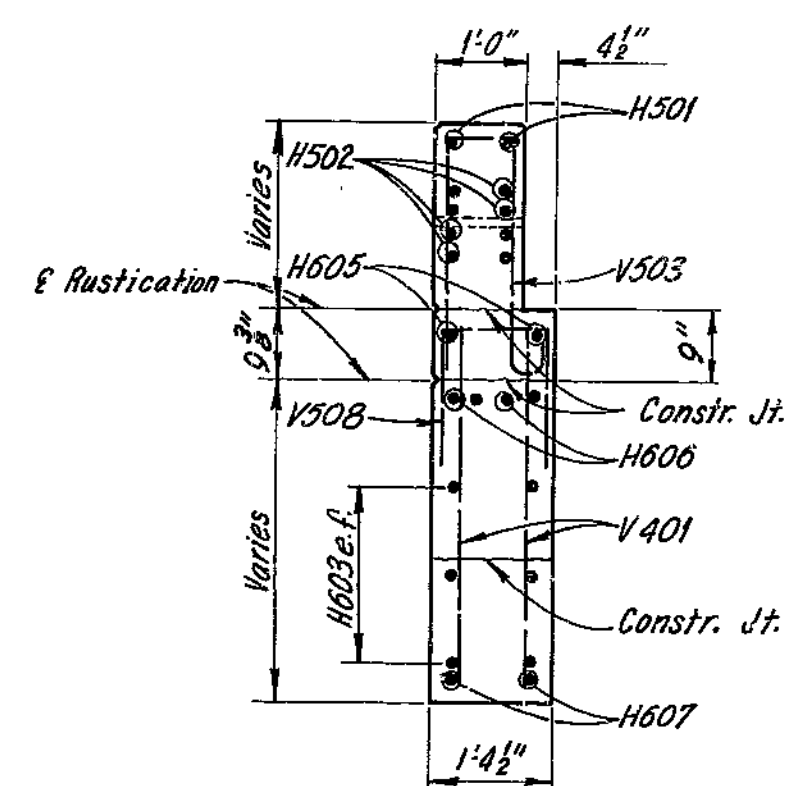
WINGWALL ELEVATION

(East Wingwall shown, West Wingwall similar.)

Note:  
Provide 1" clear from face of concrete to reinforcing steel in superstructure unless otherwise shown.  
V601 Stirrups, and V602 and V701 bars to be placed parallel to longitudinal slab steel.  
For Substructure Layout, see Sheet 3.  
For Rustication Details, see Sheet 10.  
For Reinforcing Schedule, see Sheet 4.  
Concrete End Posts are vertical.  
All Piles are 10BP42.  
For Pile Splice Detail, see Sheet 14.  
For Timber Header Detail, see Sheet 14.



SECTION A-A



SECTION B-B

239

2100-21-02-583-852

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CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE D.E.S. DATE 6-6-68 CHECKED HJC DATE 6-10-68

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

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
CLAY COUNTY 1/4 1/4 PAV. RAMP 4

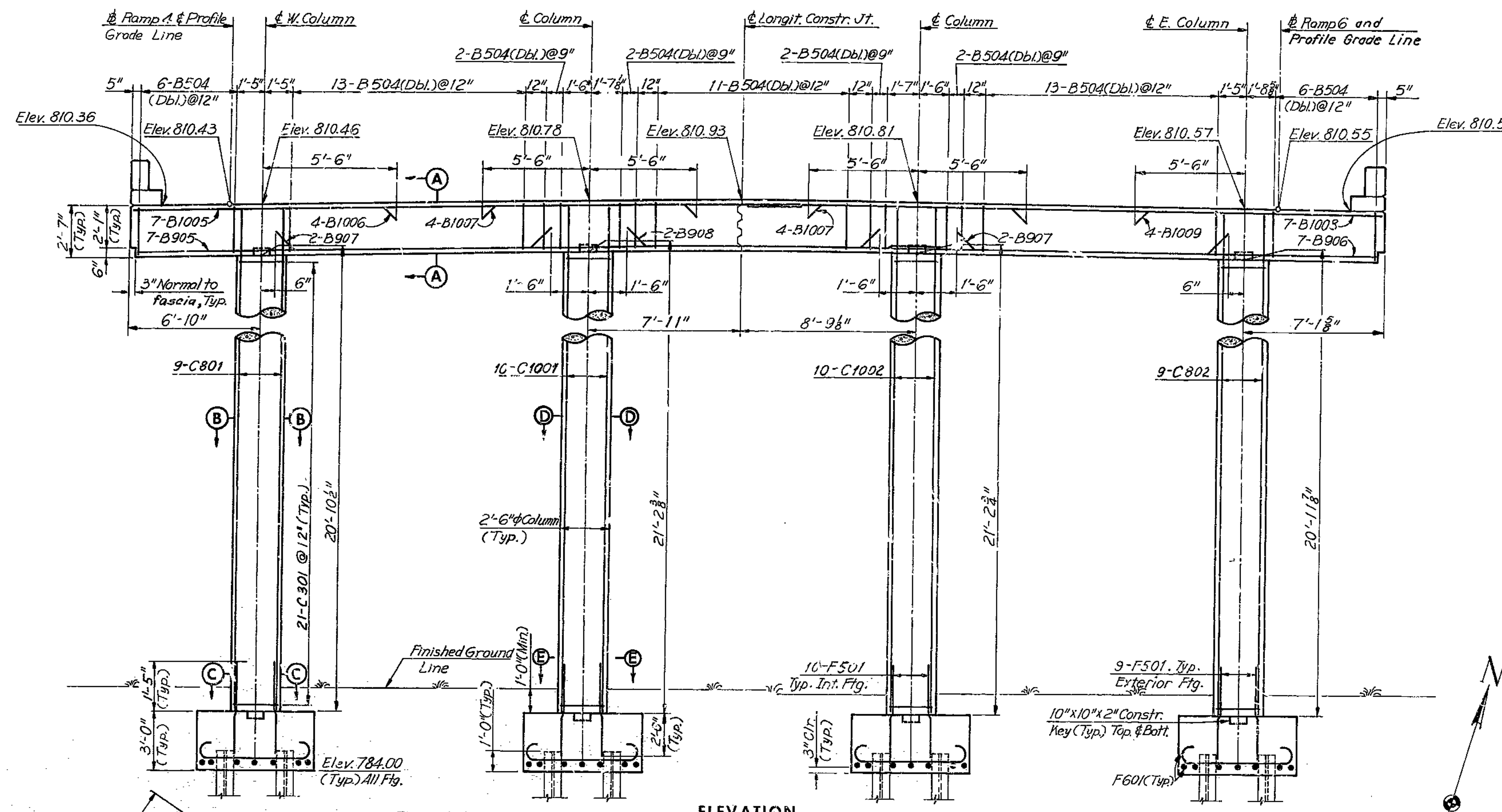
END BENT 1

SHEET 5 OF 14

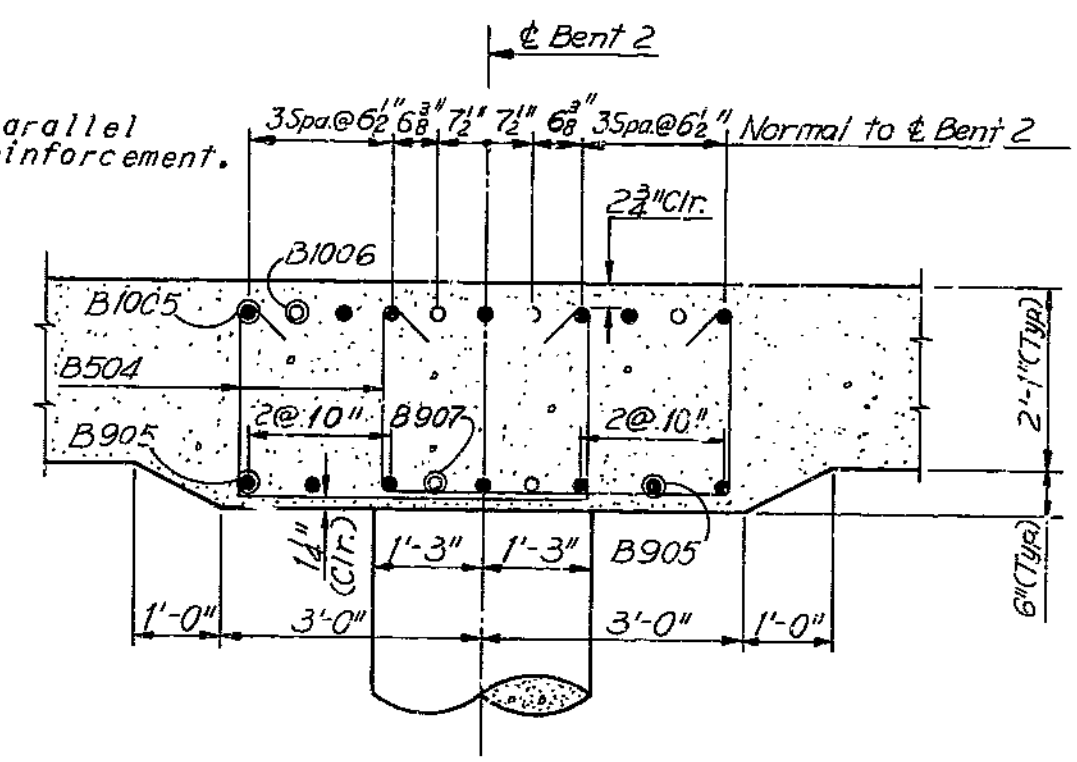
A-1583

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			55	
DIST. NO.	COUNTY			ROUTE	SEC.
4	CLAY				

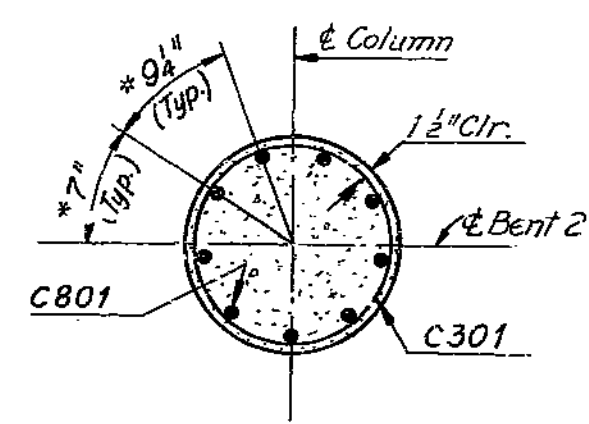


Note:  
B504 to be placed parallel to longitudinal slab reinforcement.

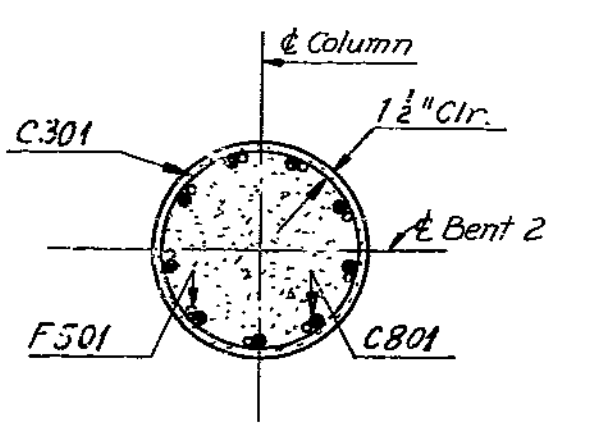


SECTION A-A

\* Dimensions are along C301 Bar.

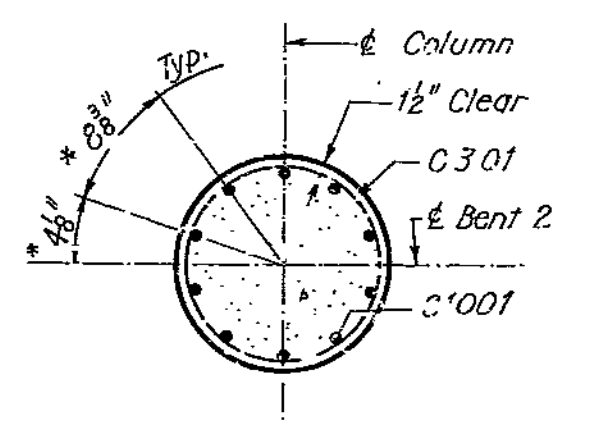


SECTION B-B

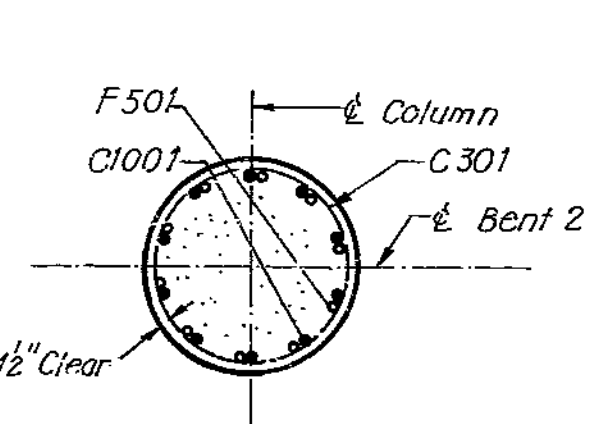


SECTION C-C

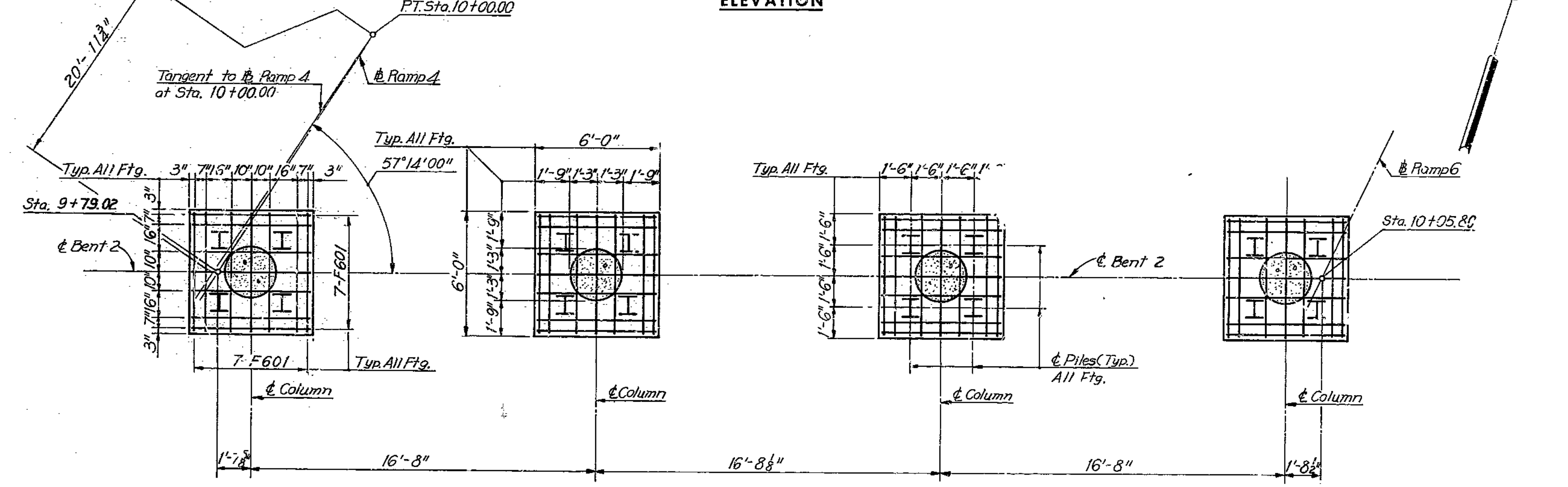
Note:  
For Substructure Layout Plan, see Sheet 3.  
For Pile Data Table, see Sheet 3.  
Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.  
For Reinforcing Schedule, see Sheet 4.  
All Piles are 103P42, no batter.  
For Cap Beam Reinforcement, see Sheet 12.



SECTION D-D



SECTION E-E



FOOTING PLAN

240

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CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE A.H.H. DATE 6-11-68 CHECKED G.S.H. DATE 6-12-68

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

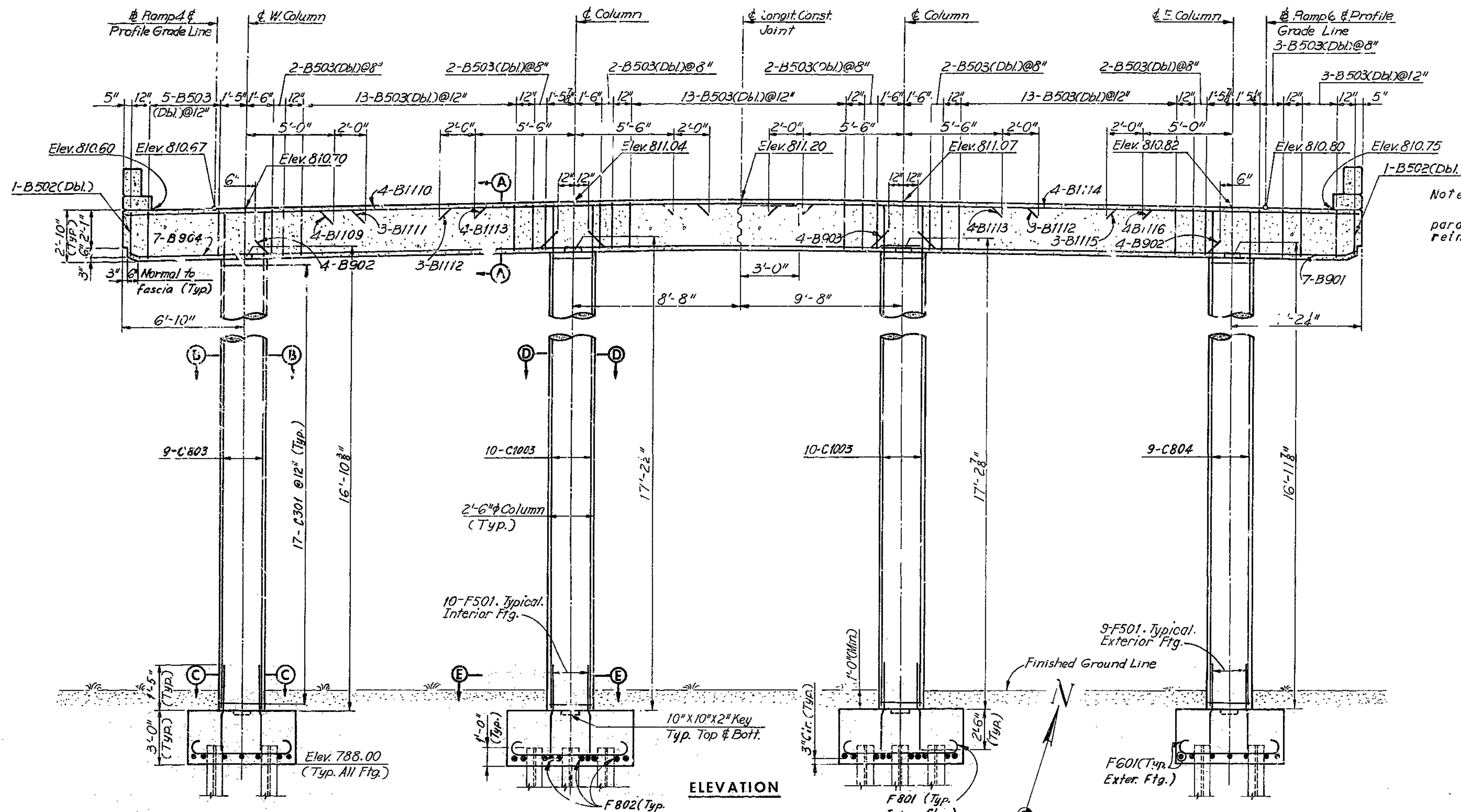
BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
CLAY COUNTY CLAY COUNTY  
CLAY COUNTY CLAY COUNTY

BENT 2 SHEET 6 OF 14

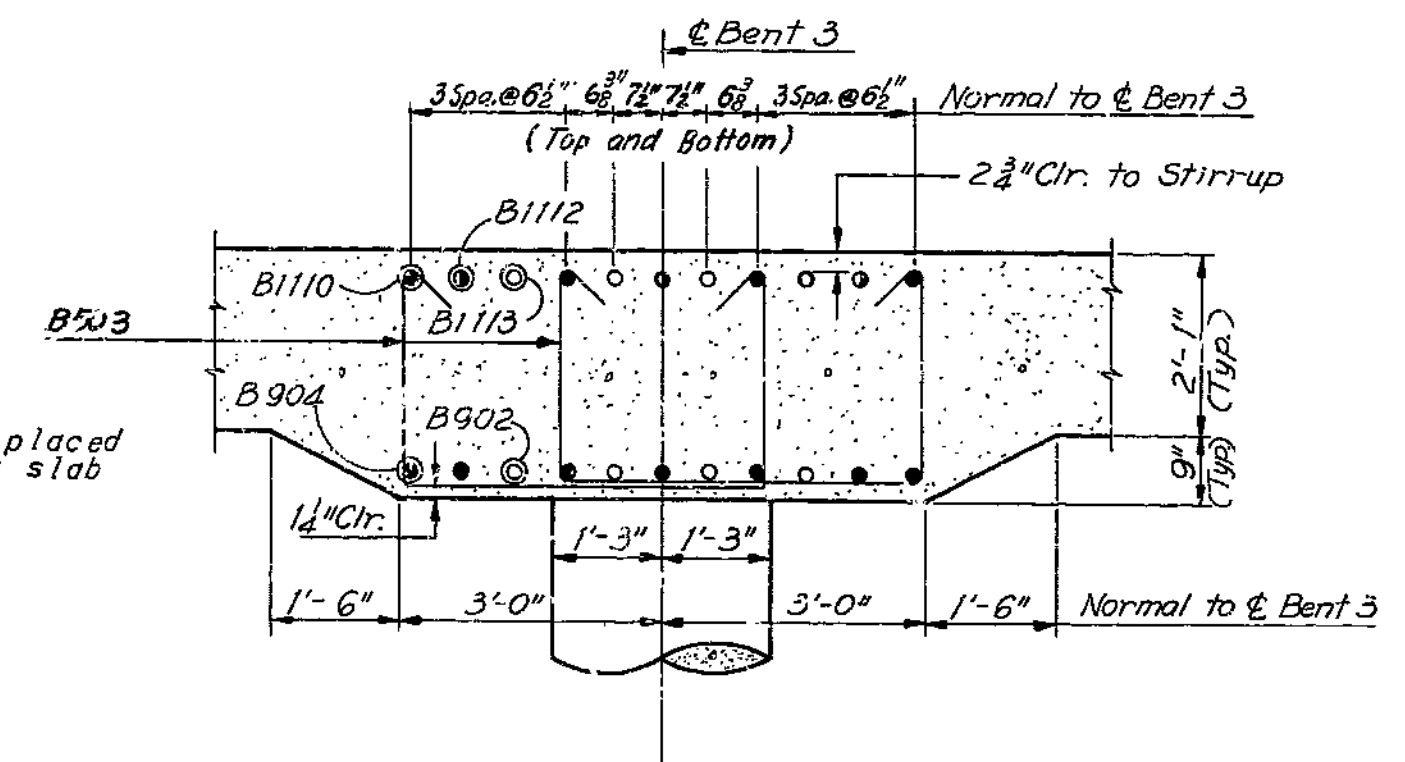
A-1583

MISSOURI STATE HIGHWAY DEPARTMENT

FED. PROJ. NO.	STATE	FEDERAL PROJECT NO. & SEC.	TOTAL SHEETS
5	MO		56
DIST. NO.	COUNTY	ROUTE	SEC.
4	CLAY		

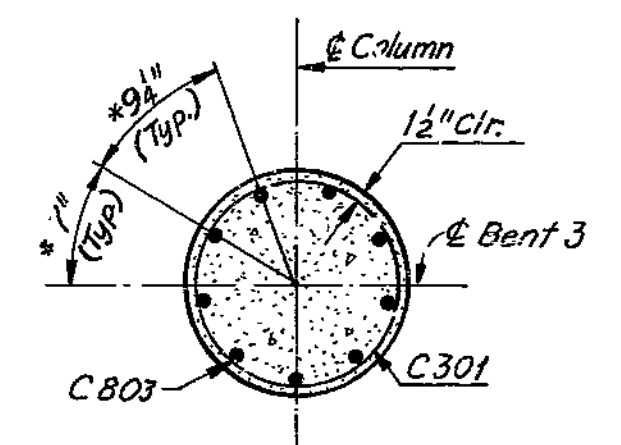


Note:  
B503 and B502 to be placed parallel to longitudinal slab reinforcement.

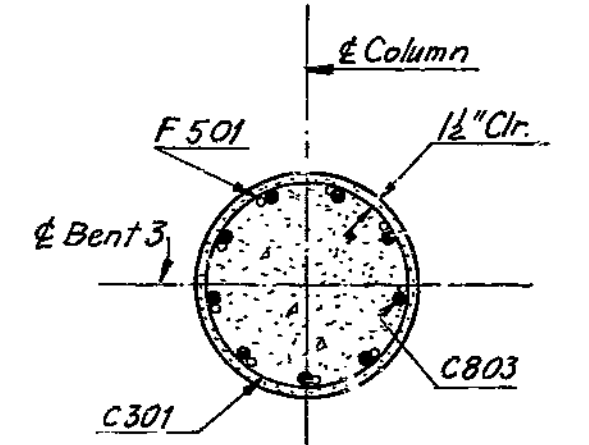


SECTION A-A

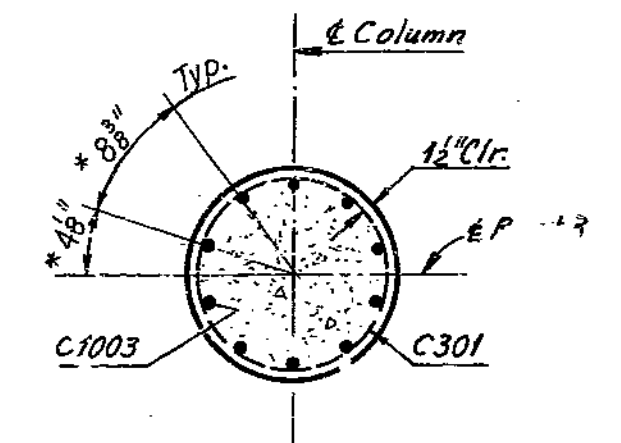
\* Dimensions are along C301 Bar.



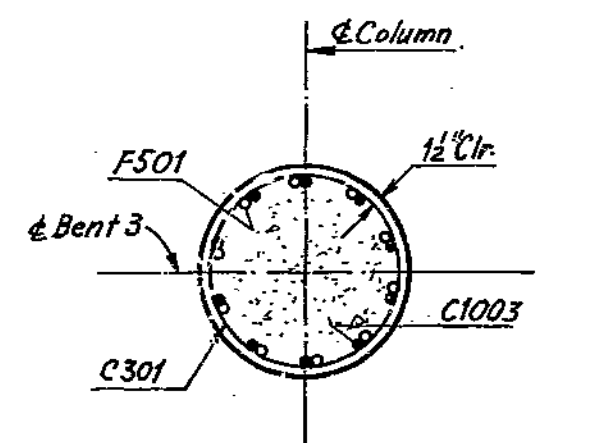
SECTION B-B



SECTION C-C

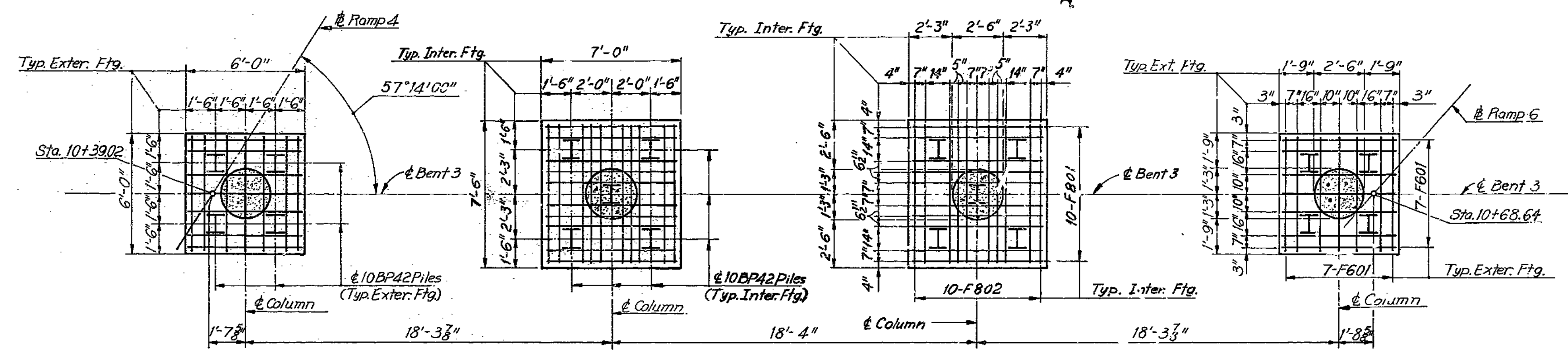


SECTION D-D



SECTION E-E

Note:  
For Substructure Layout Plan, see Sheet 3.  
For Pile Table, see Sheet 3.  
Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.  
For Reinforcing Schedule, see Sheet 4.  
All Piles are 10BP42, no batter.



FOOTING PLAN

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
CLAY COUNTY 18' PAV. RAMP 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE A.H.H. DATE 6-4-68 CHECKED S.S.W. DATE 6-10-68

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

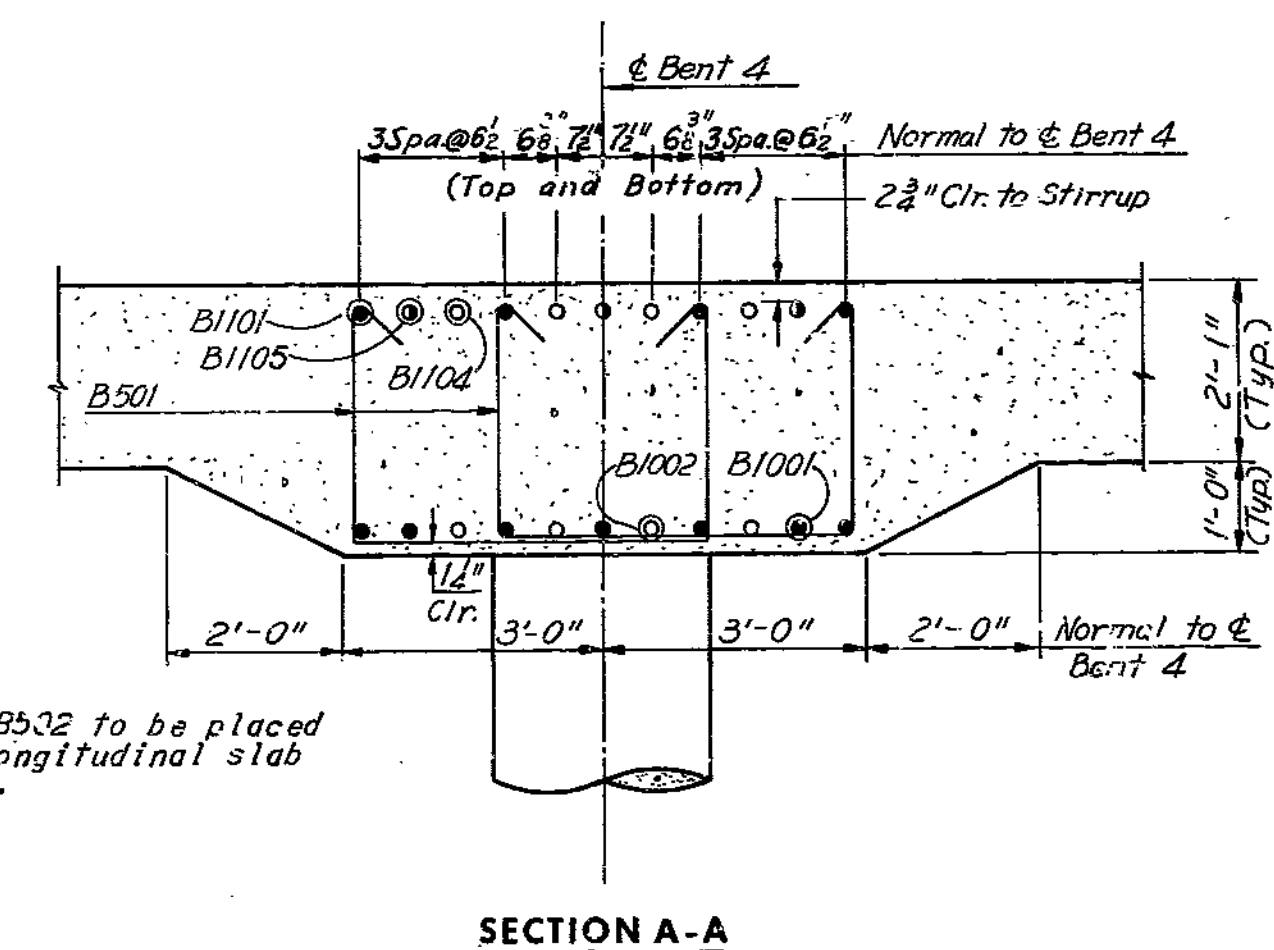
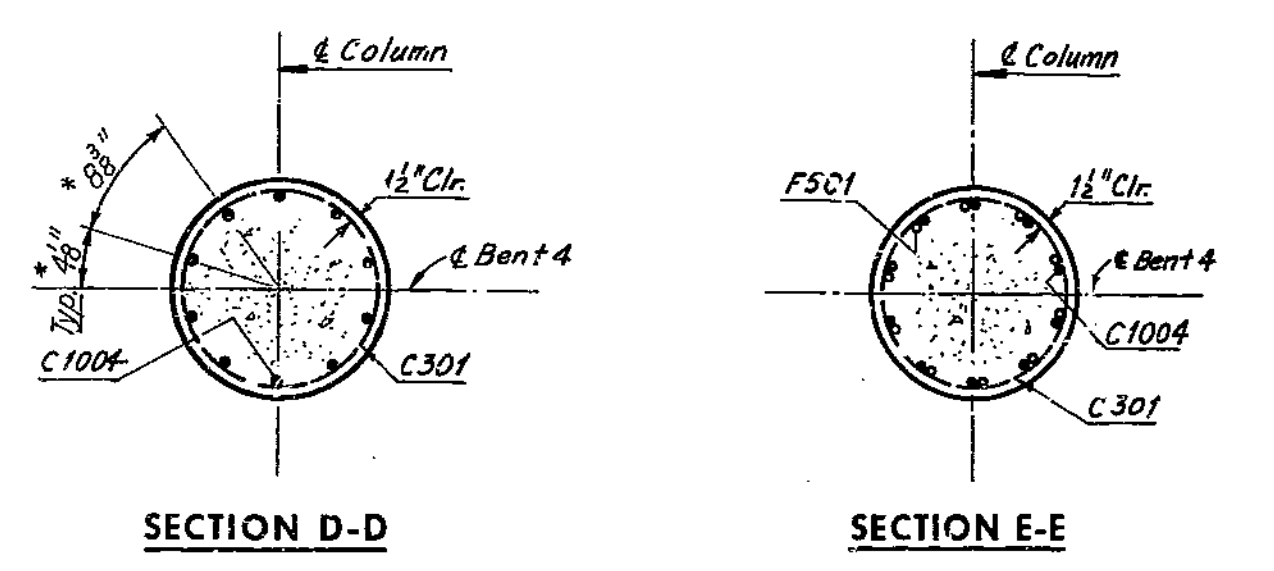
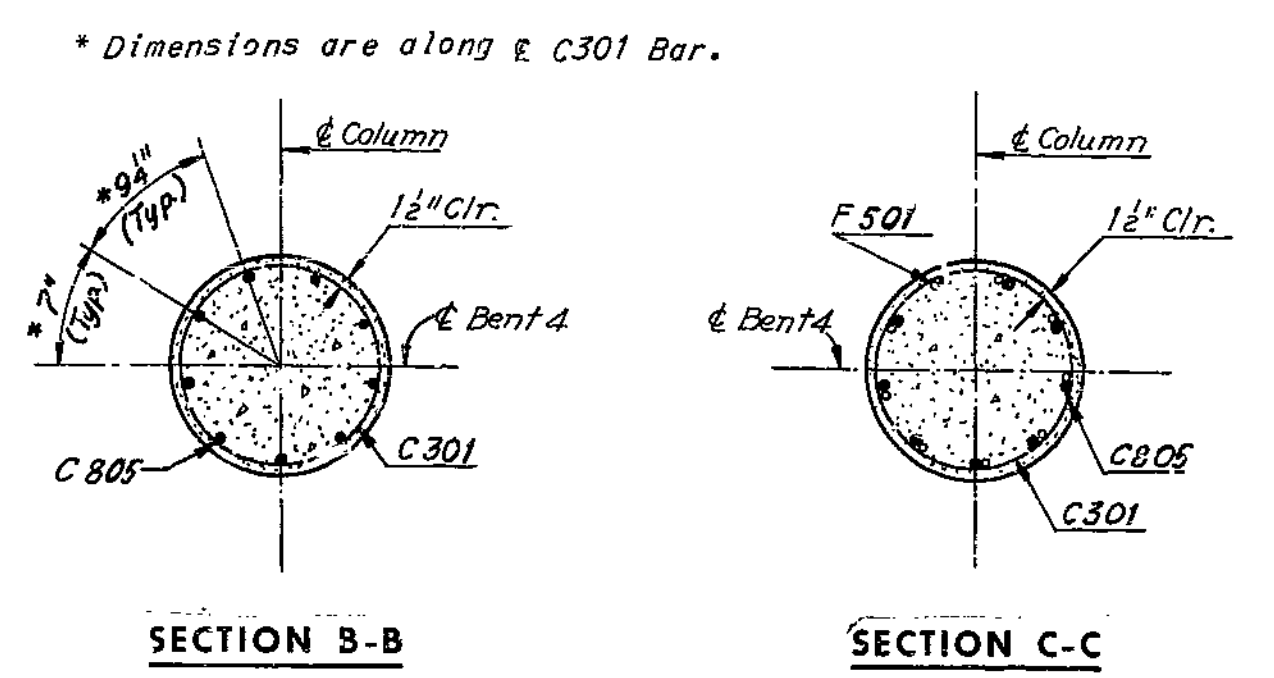
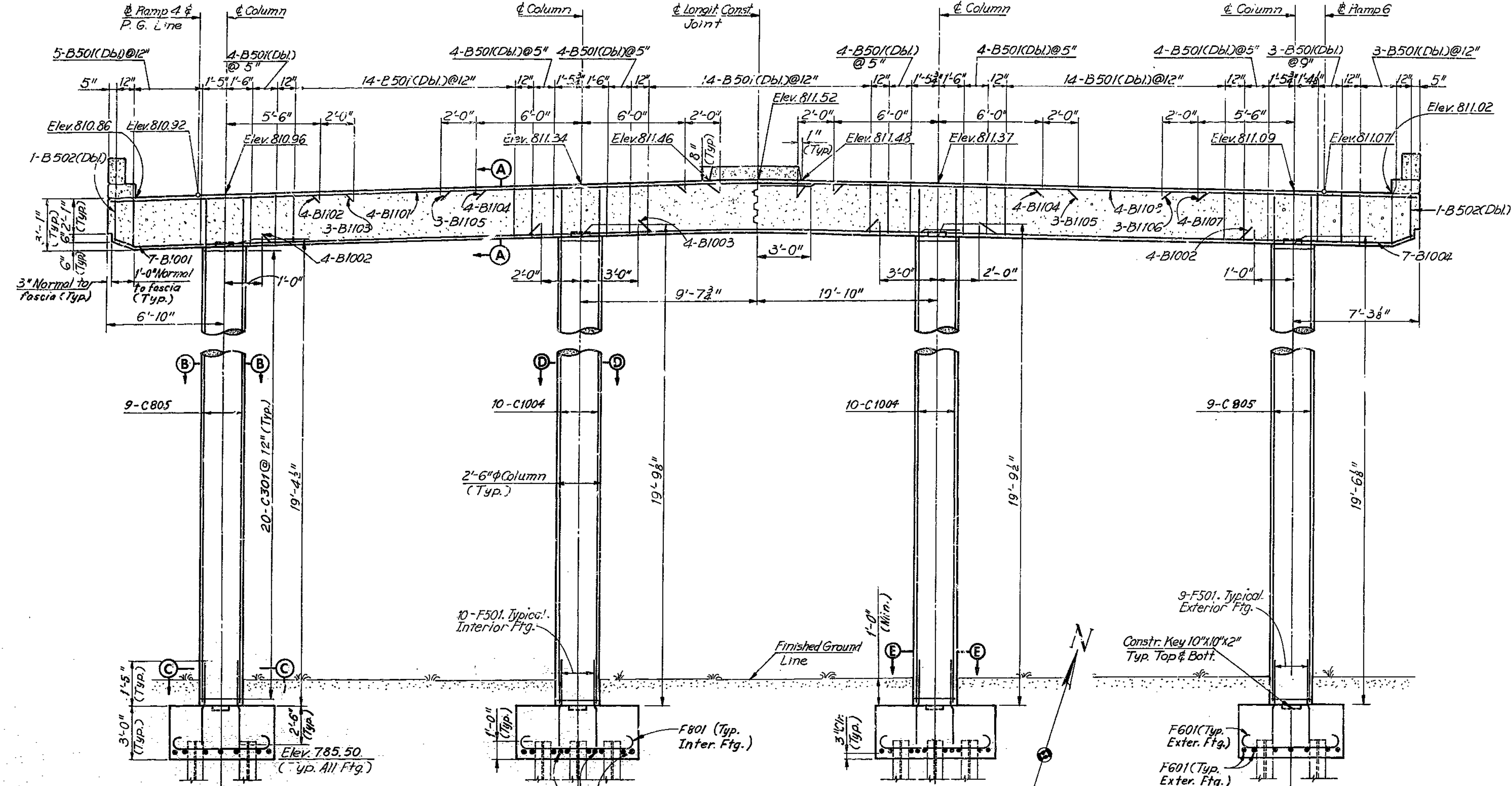
BENT 3 SHEET 7 OF 14

A-1583

241

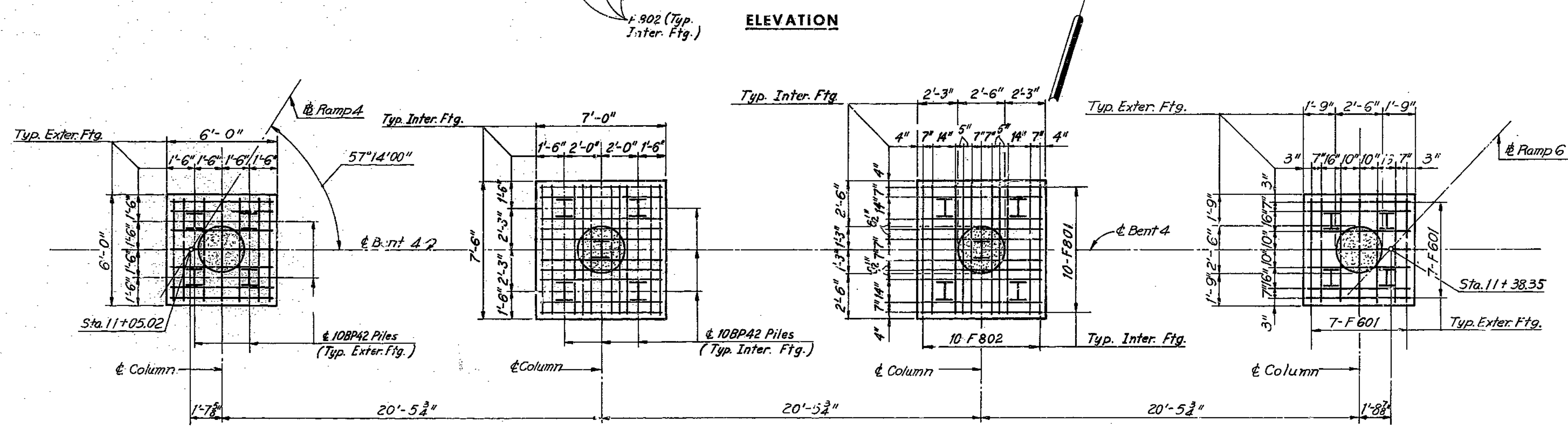
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
4	MO		57	
RHT. NO.	COUNTY		ROUTE	SEC.
	CLAY			



Note: B501 and B502 to be placed parallel to longitudinal slab reinforcement.

Note: For Substructure Layout Plan, see Sheet 3.  
For Pile Data Table, see Sheet 3.  
All Piles are 10BP42, no batter.  
For Reinforcing Schedule, see Sheet 4.



FOOTING PLAN

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 9+37.29  
CLAY COUNTY  
CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE AHH DATE 5-28-68 CHECKED SSM DATE 6-10-68

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

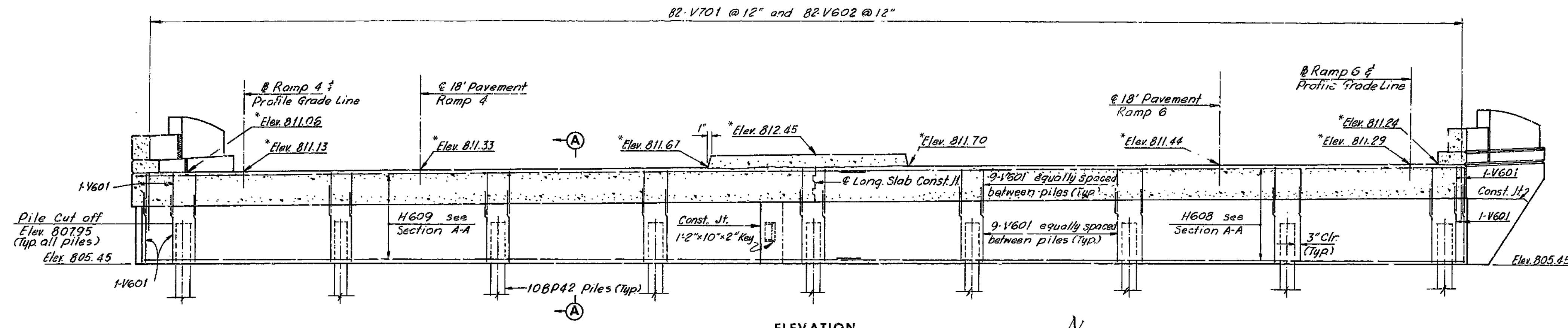
242

MISSOURI STATE HIGHWAY DEPARTMENT

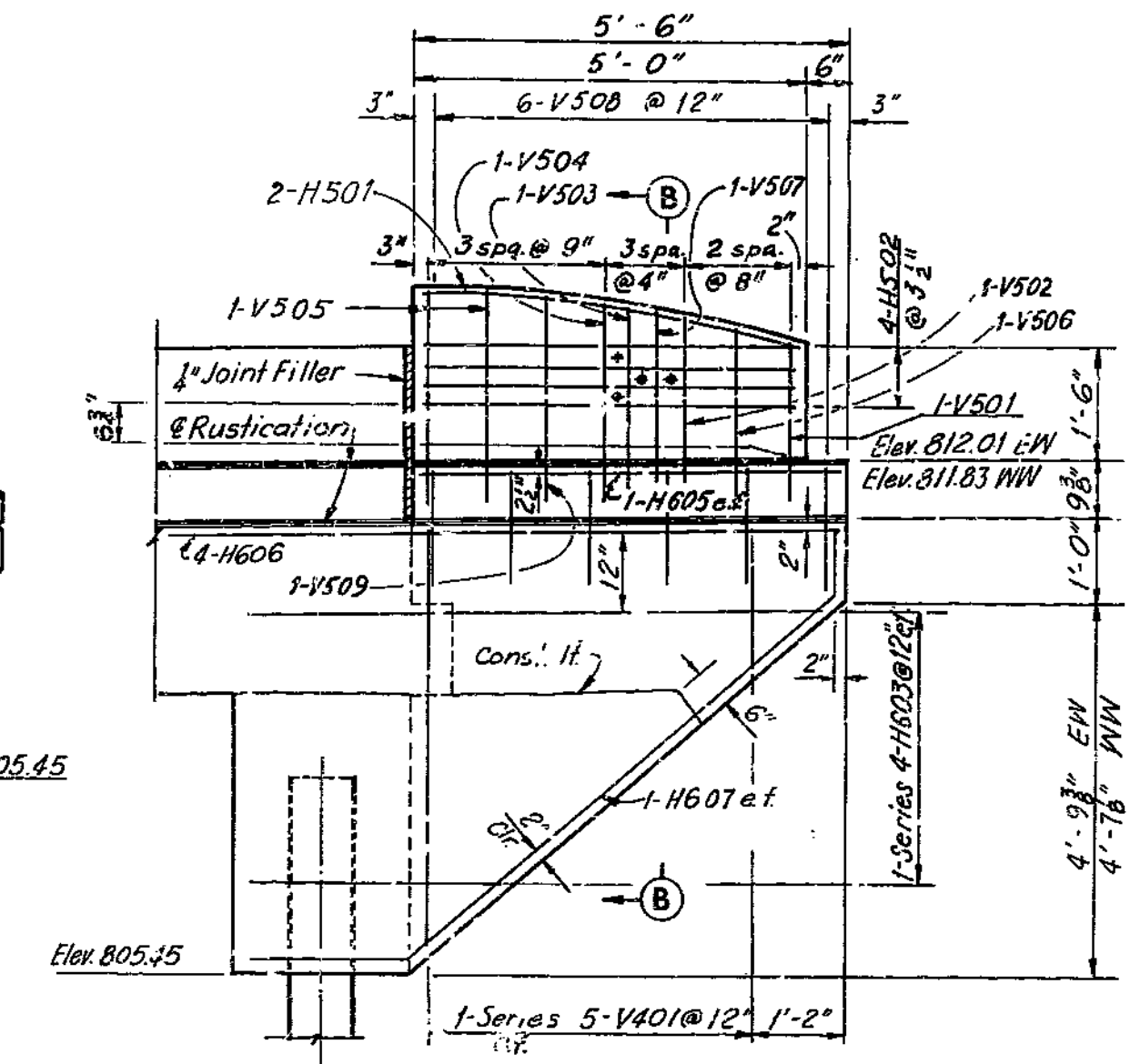
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET TOTAL
5	MO		58
DIST. NO.	COUNTY	ROUTE	SEC.
4	CLAY		

Note: V601 stirrups, and V602 and V701 bars to be placed parallel to slab longitudinal reinforcing steel.

Note: Elevations denoted with an (\*) are given at Fill Face of End Bent.



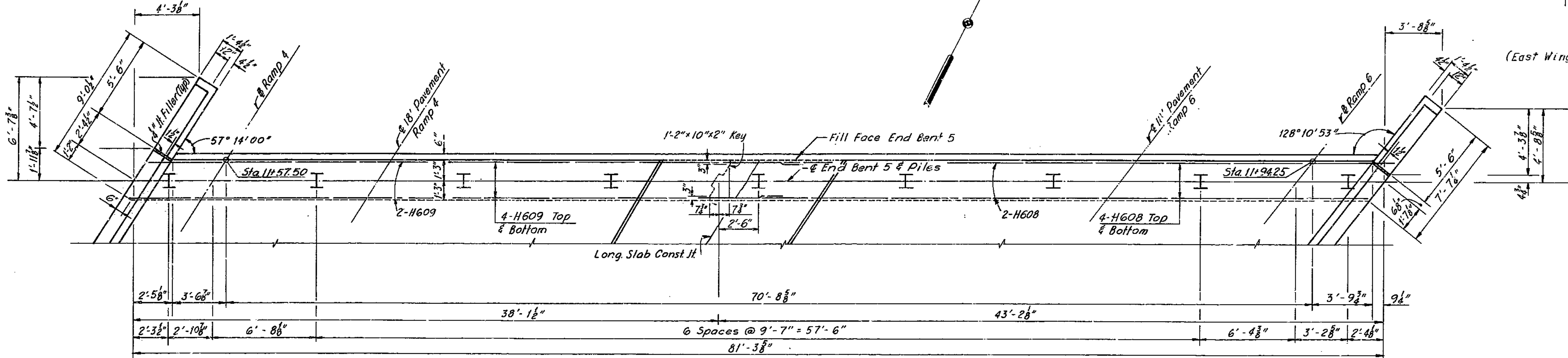
ELEVATION



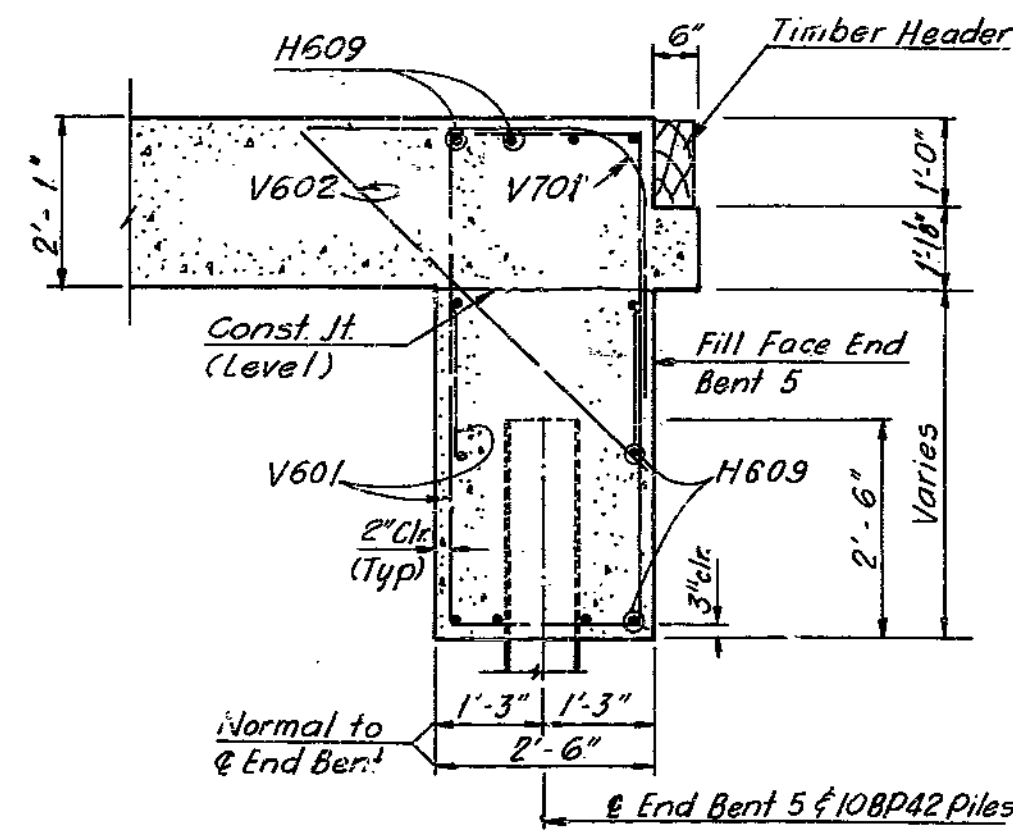
WINGWALL ELEVATION

(East Wingwall Elevation shown, West Wingwall similar.)

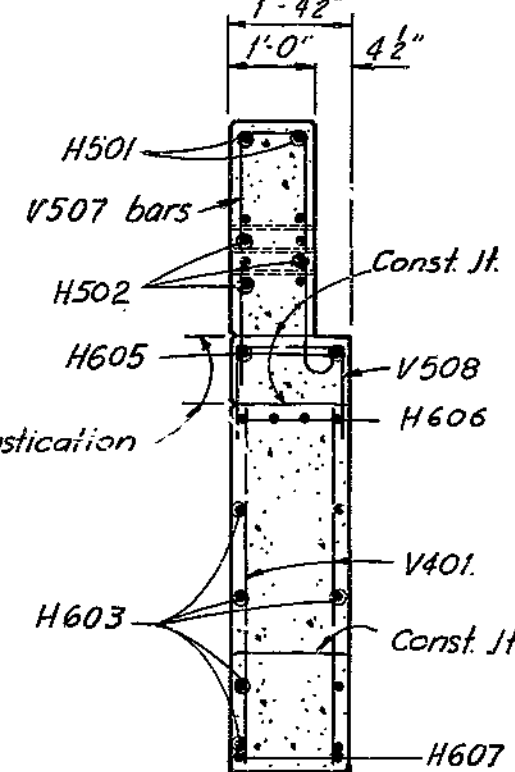
Legend:  
e.f. = each face  
E.W. = East Wingwall  
W.W. = West Wingwall



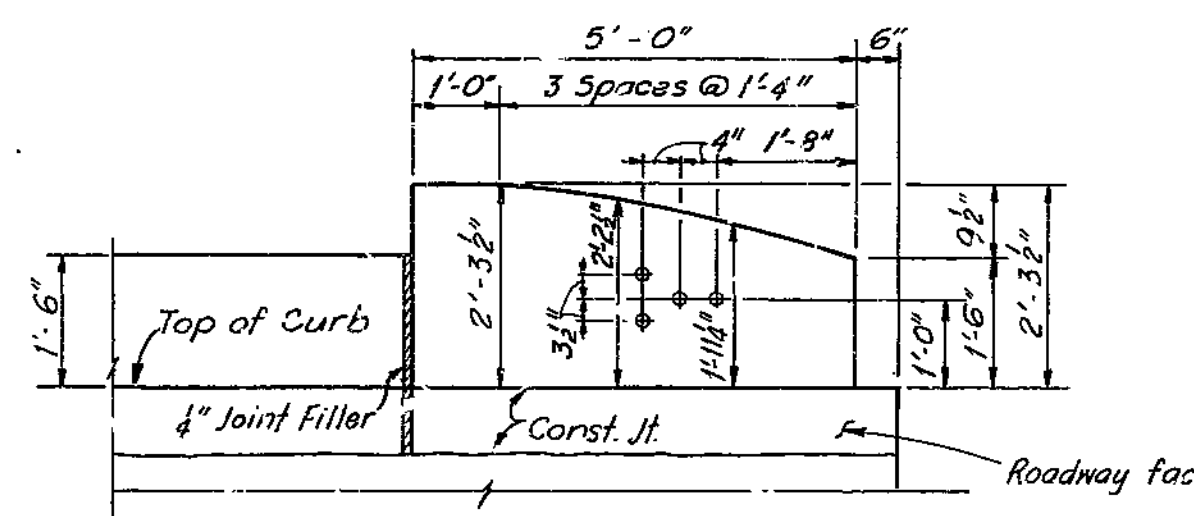
PLAN



SECTION A-A



SECTION B-B



CONCRETE END POST ORDINATES

Note: GUARD RAIL ATTACHMENT: 1" round holes through post for 3/8" H. S. Bolts (Galvanized).

Note: For Substructure Layout, see sheet 3.  
For Reinforcing Schedule, see sheet 4.  
For Timber Header Details, see sheet 14.  
For Pile Splice Detail, see sheet 14.  
For Rustication Detail, see sheet 10.  
All piles are 10BP42 pile.  
Concrete End Posts are vertical.  
Provide 1/2" clear from face of concrete to reinforcing steel in the Superstructure, unless otherwise noted.

HOWARD, NEEDES, TAMMEN & BERGENOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE SSW DATE 6-3-68 CHECKED MC DATE 6-11-68

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

END BENT 5

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. 1-435-1(69)(RTE. 1-435) STA. 9+37.29  
CLAY COUNTY § 18' PAV. RAMP 4

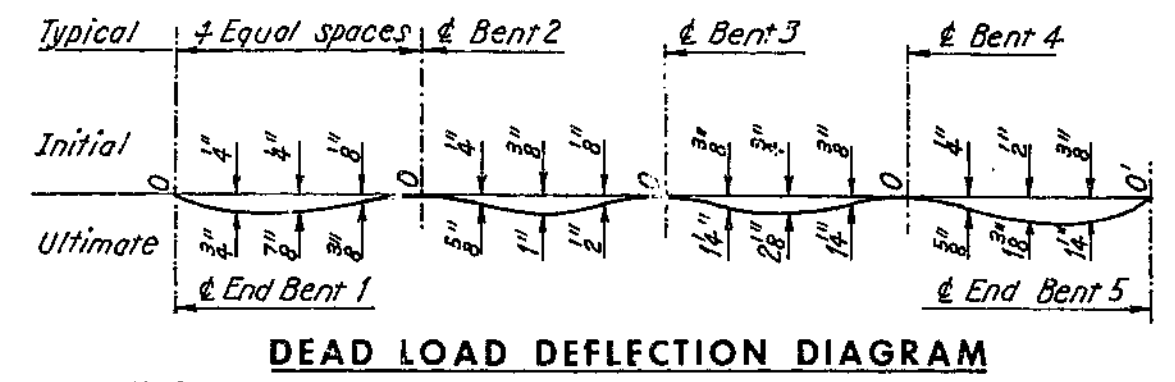
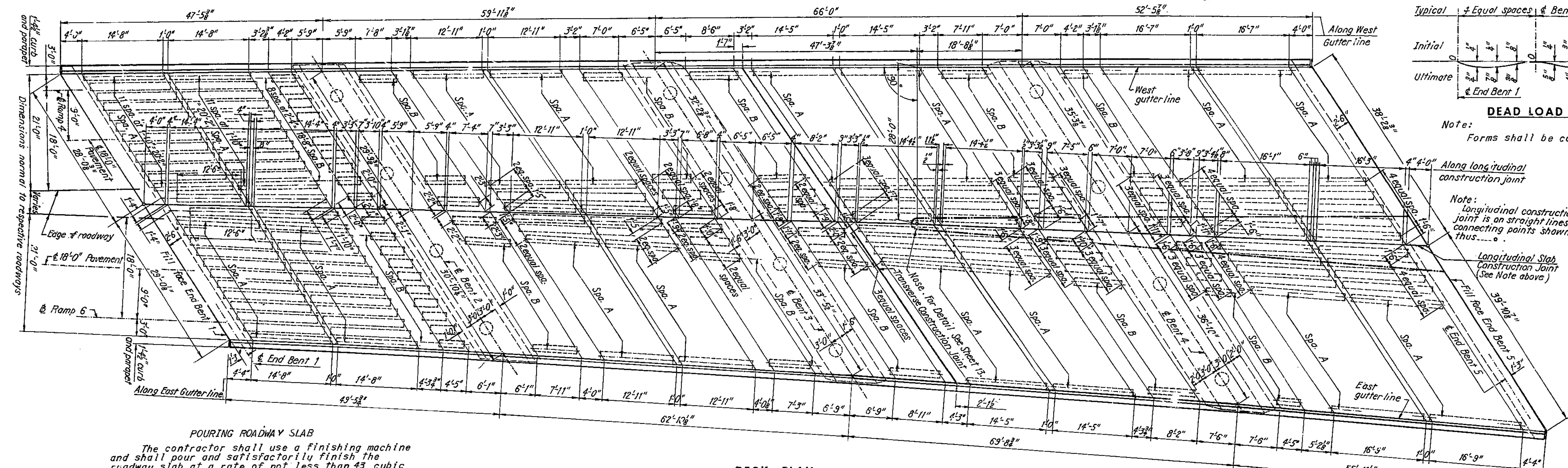
SHEET 9 OF 14

A-1583

243

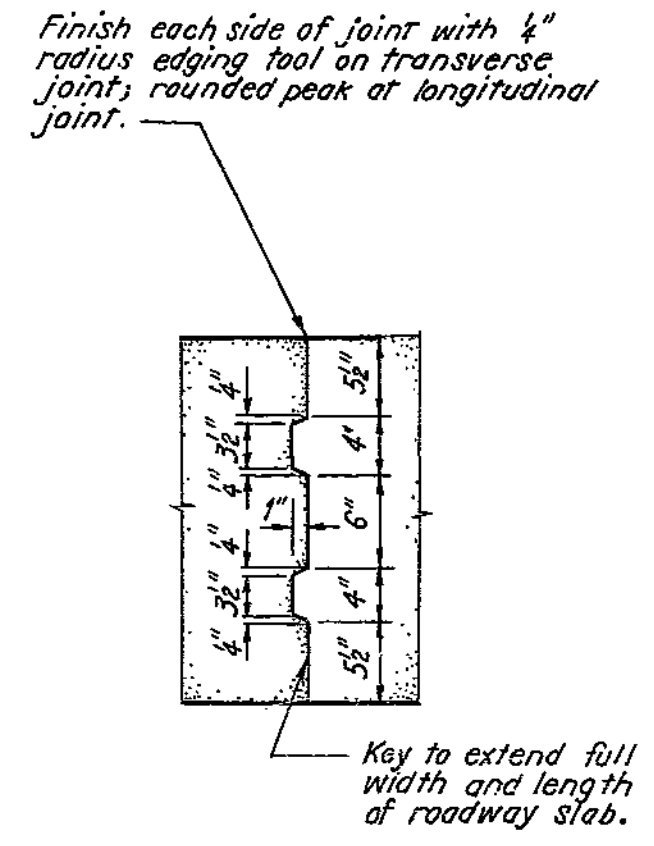
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			59	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				

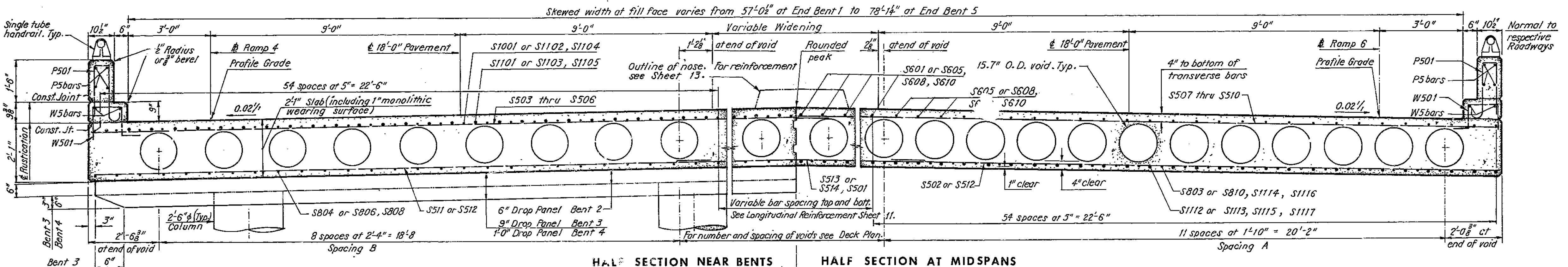


**POURING ROADWAY SLAB**  
 The contractor shall use a finishing machine and shall pour and satisfactorily finish the roadway slab at a rate of not less than 45 cubic yards per hour. He shall observe the transverse construction joint shown on plans unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slab at a rate which will permit a continuous pouring through this joint.

DECK PLAN



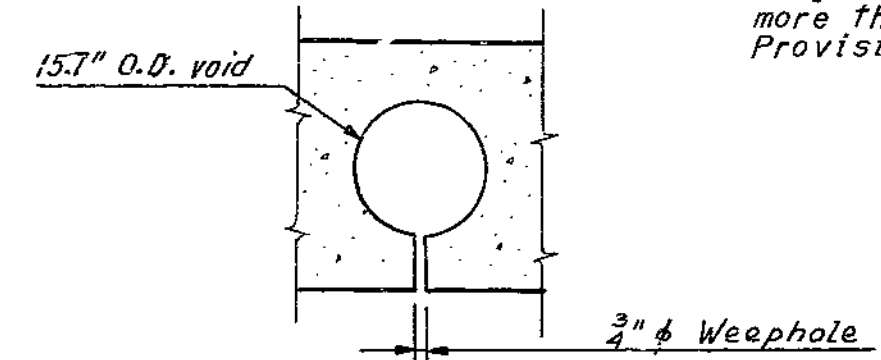
SLAB CONSTRUCTION JOINT



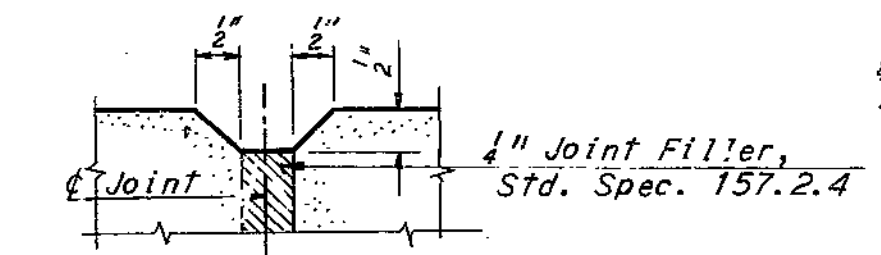
Note: Fiber tubes for producing voids shall have an outside diameter of 15.7\" and a wall thickness of .300\" and shall be anchored to joists carrying the floor form at not more than 3'-0\" centers. See Special Provisions for metal tube alternate for voids.

Note: Plastic waterstop shall be placed in the parapet and curb filled joints on both sides of structure. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

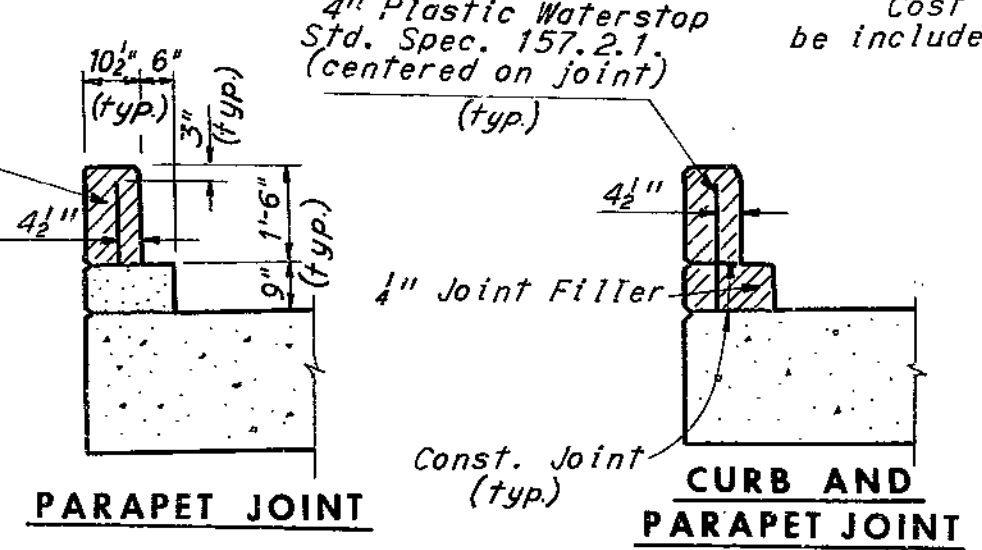
Note: All dimensions are horizontal. For Timber Header Detail, see Sheet 14. For Handrail Details, see Sheet 14. Provide 1/2\" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.



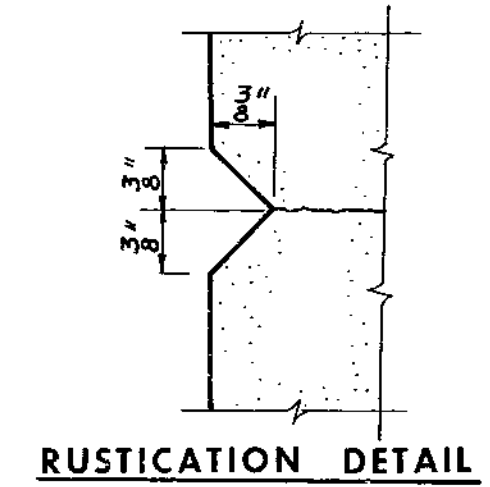
Note: **DETAIL OF WEEPHOLE IN VOIDS**  
 One 3\" weephole shall be provided near each end of each void. Weepholes shall be placed in straight lines parallel to bents.



DEFLECTION JOINT IN CURB AND PARAPET AND PARAPET ONLY



DETAILS OF PLASTIC WATERSTOP



RUSTICATION DETAIL

**BRIDGE: RAMP 4 & 6 OVER ROUTE 69**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY § 18\" PAV. RAMP 4

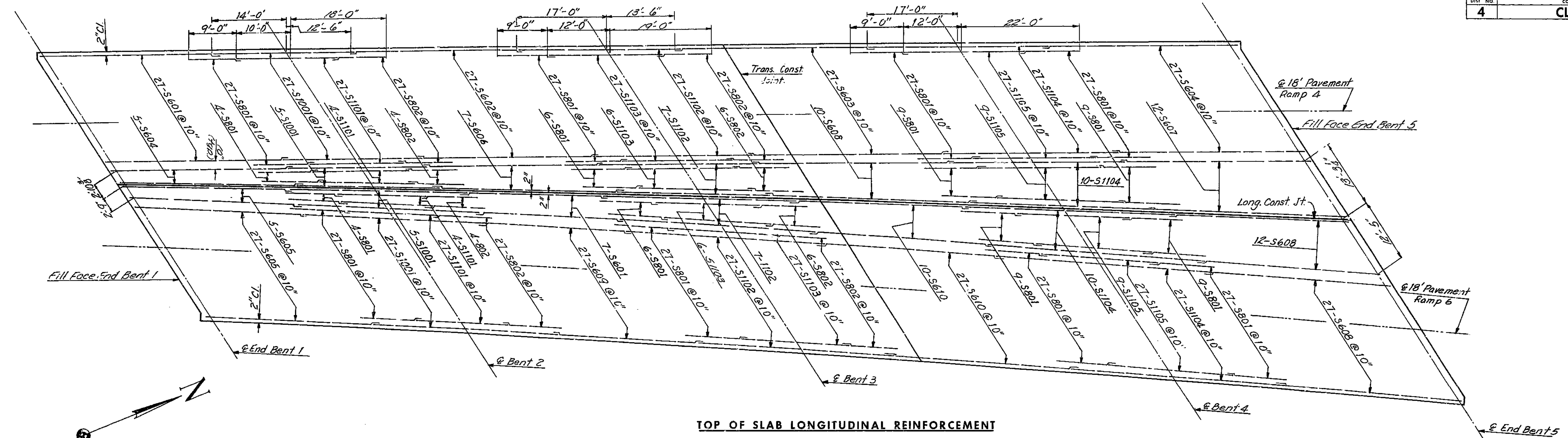
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 KANSAS CITY CONSULTING ENGINEERS NEW YORK  
 MADE J.H. DATE 6-10-88 CHECKED JFP DATE 6-12-88

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

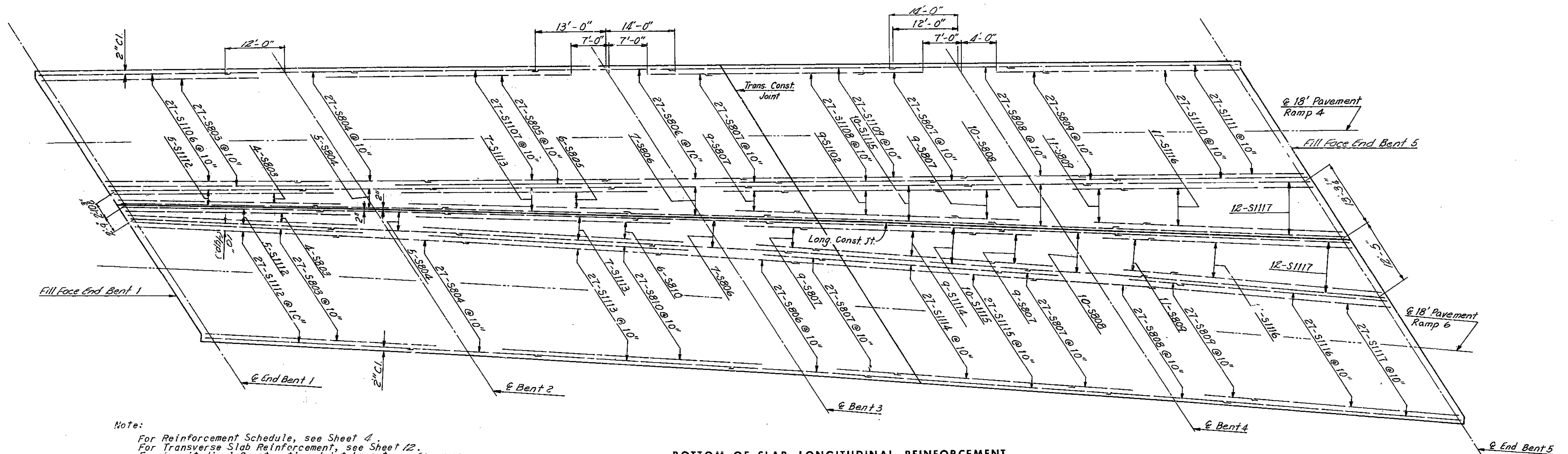
244

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
5	MO			60
DIST. NO.	COUNTY	ROUTE	SEC.	
4	CLAY			



TOP OF SLAB LONGITUDINAL REINFORCEMENT



BOTTOM OF SLAB LONGITUDINAL REINFORCEMENT

Note:  
 For Reinforcement Schedule, see Sheet 4.  
 For Transverse Slab Reinforcement, see Sheet 12.  
 For Longitudinal Construction Joint Layout, see Sheet 10.  
 For Transverse Capbeam Reinforcement, see Sheet 12.  
 Provide 1/4" clear from face of concrete to reinforcing steel in superstructure, unless otherwise shown.  
 All dimensions are horizontal, unless otherwise shown.

Note:  
 Longitudinal Reinforcing Steel is placed parallel to 18' pavement of the respective ramp indicated, unless otherwise shown.  
 Longitudinal Reinforcing Steel for which spacing is not shown shall be flared and spaced equally.

**BRIDGE: RAMP 4 & 6 OVER ROUTE 69**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY 18' PAV. RAMP 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE & C.C. DATE 6-5-68 CHECKED H.J.C. DATE 6-10-68

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

LONGITUDINAL REINFORCEMENT

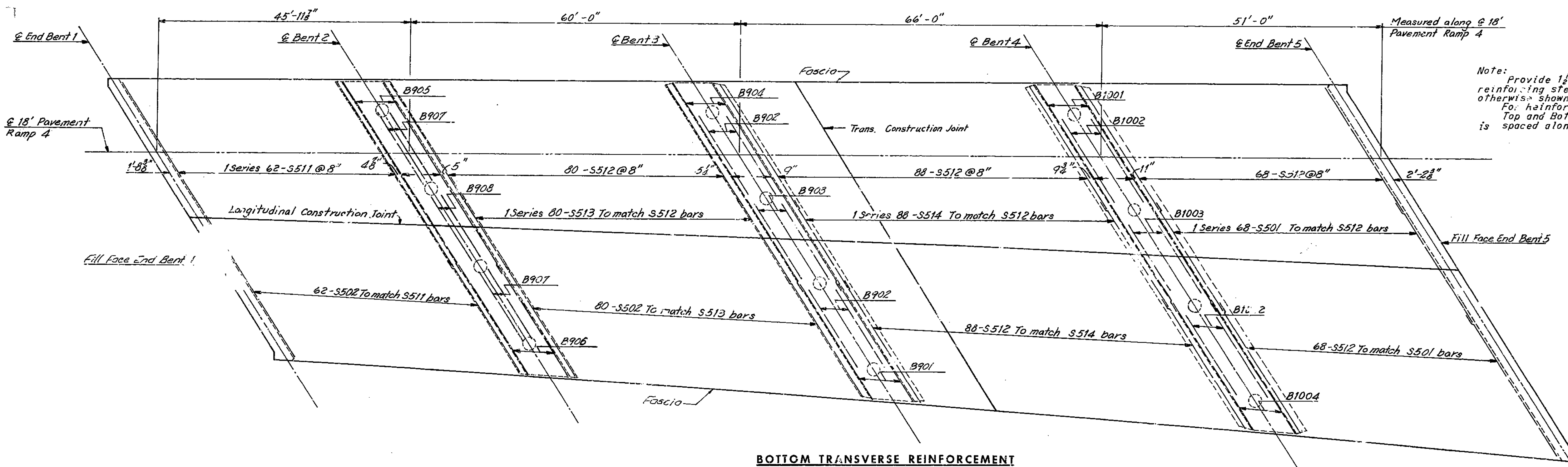
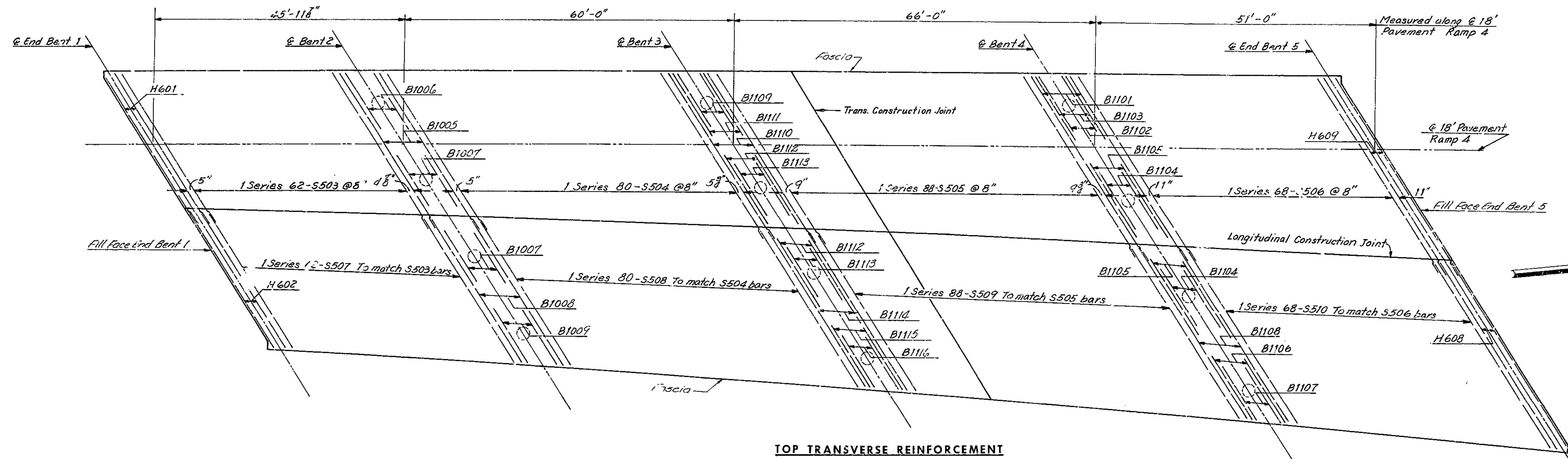
SHEET 11 OF 14

A-1583

245

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			61	
DIST. NO.	COUNTY			FOURTH SEC.	
4	CLAY				



Note: Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.  
 For Reinforcement Schedule, see Sheet 4.  
 Top and Bottom Transverse reinforcing steel is spaced along @ 18' pavement of Ramp 4.

246

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 CONSULTING ENGINEERS

KANSAS CITY NEW YORK

MADE G.C.C. DATE 6-6-68 CHECKED SSN DATE 6-18-68

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

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY @ 18' PAV. RAMP 4

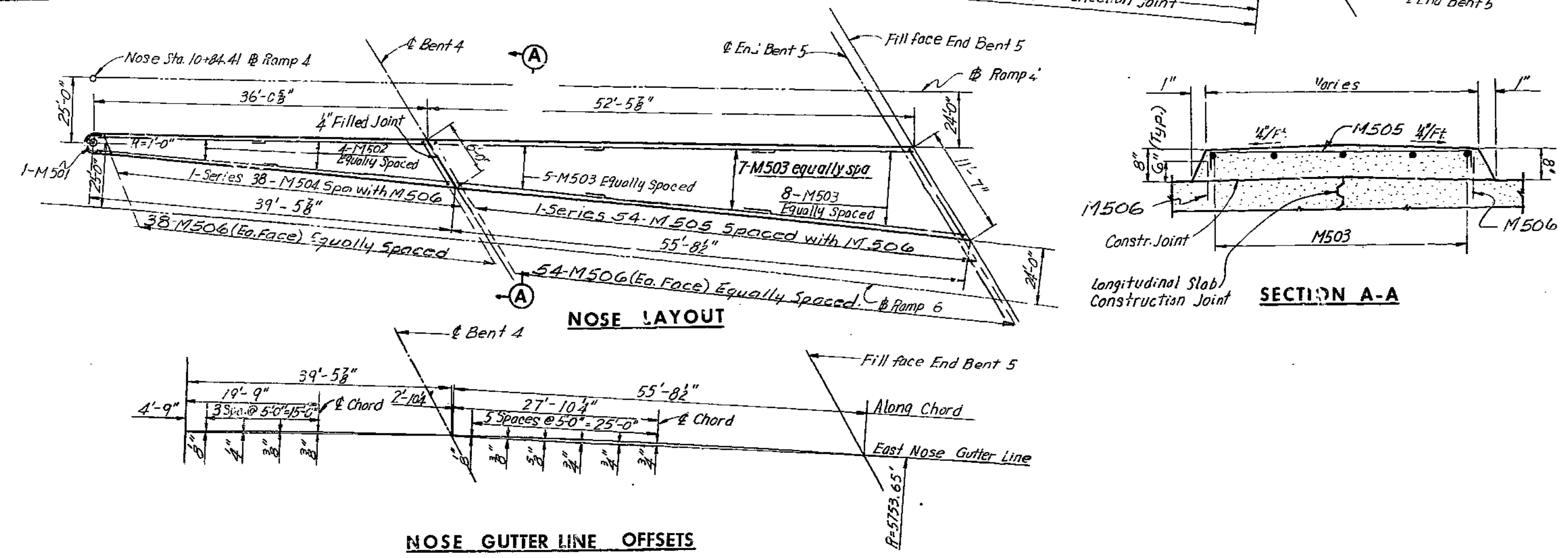
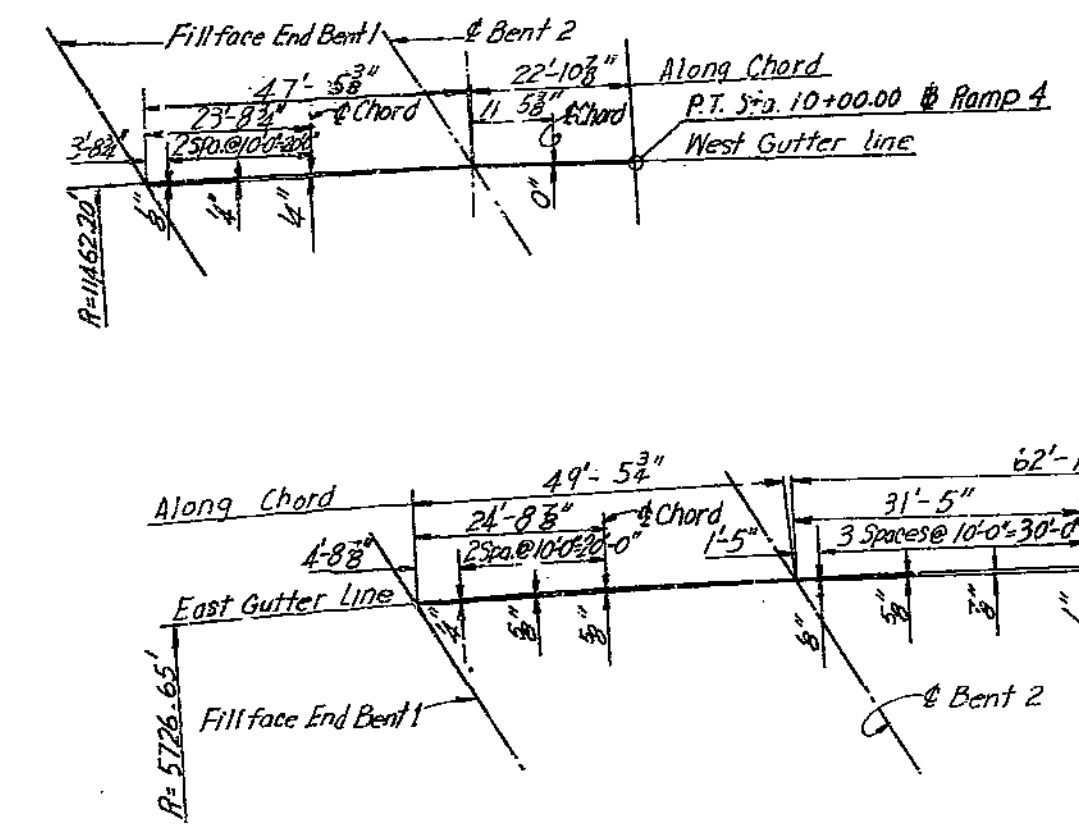
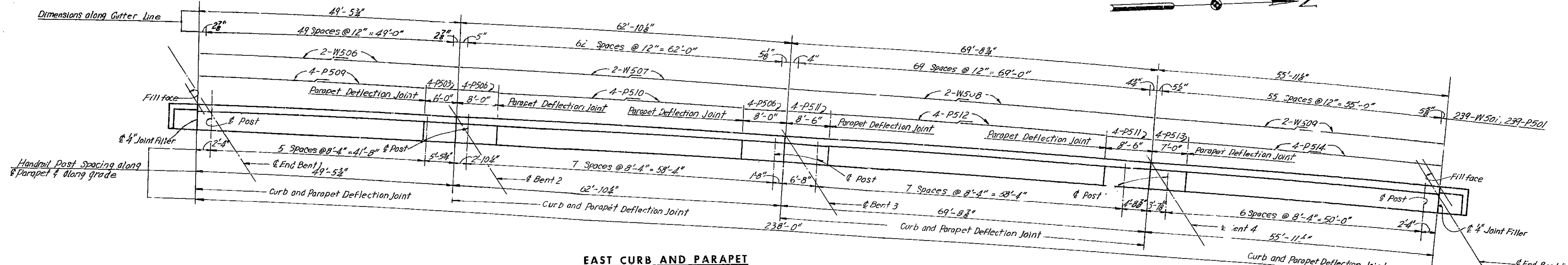
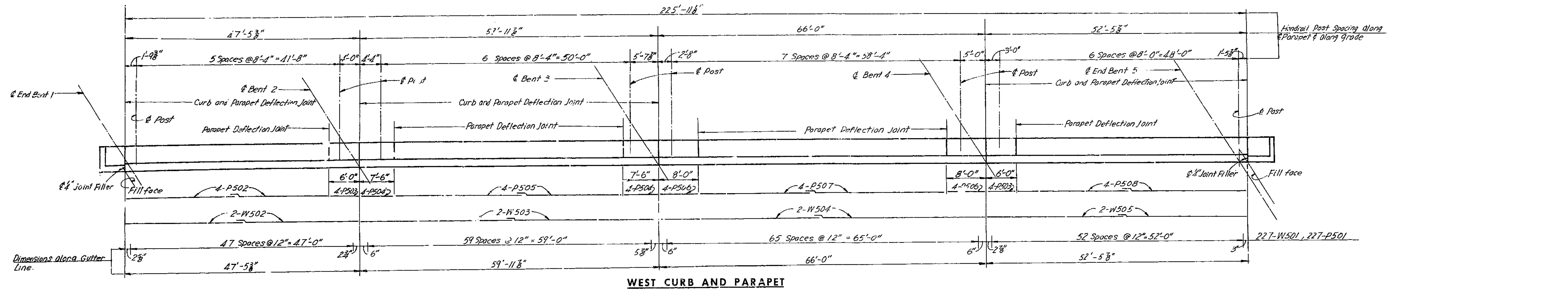
TRANSVERSE REINFORCEMENT SHEET 12 OF 14

A-1583



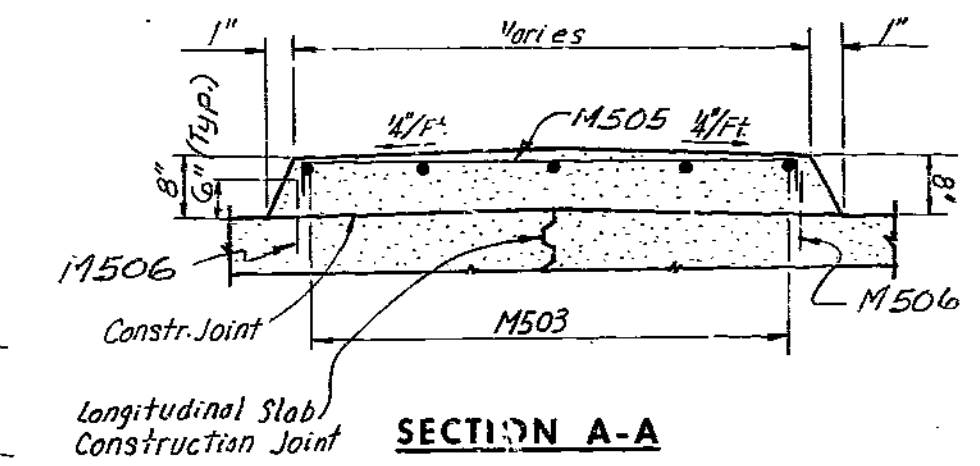
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO			62	
DIST. NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



Note: Gutterline offsets are symmetrical about center line of chord between bents.

Note: Provide 1/2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown. For Reinforcement Schedule, see Sheet 4.

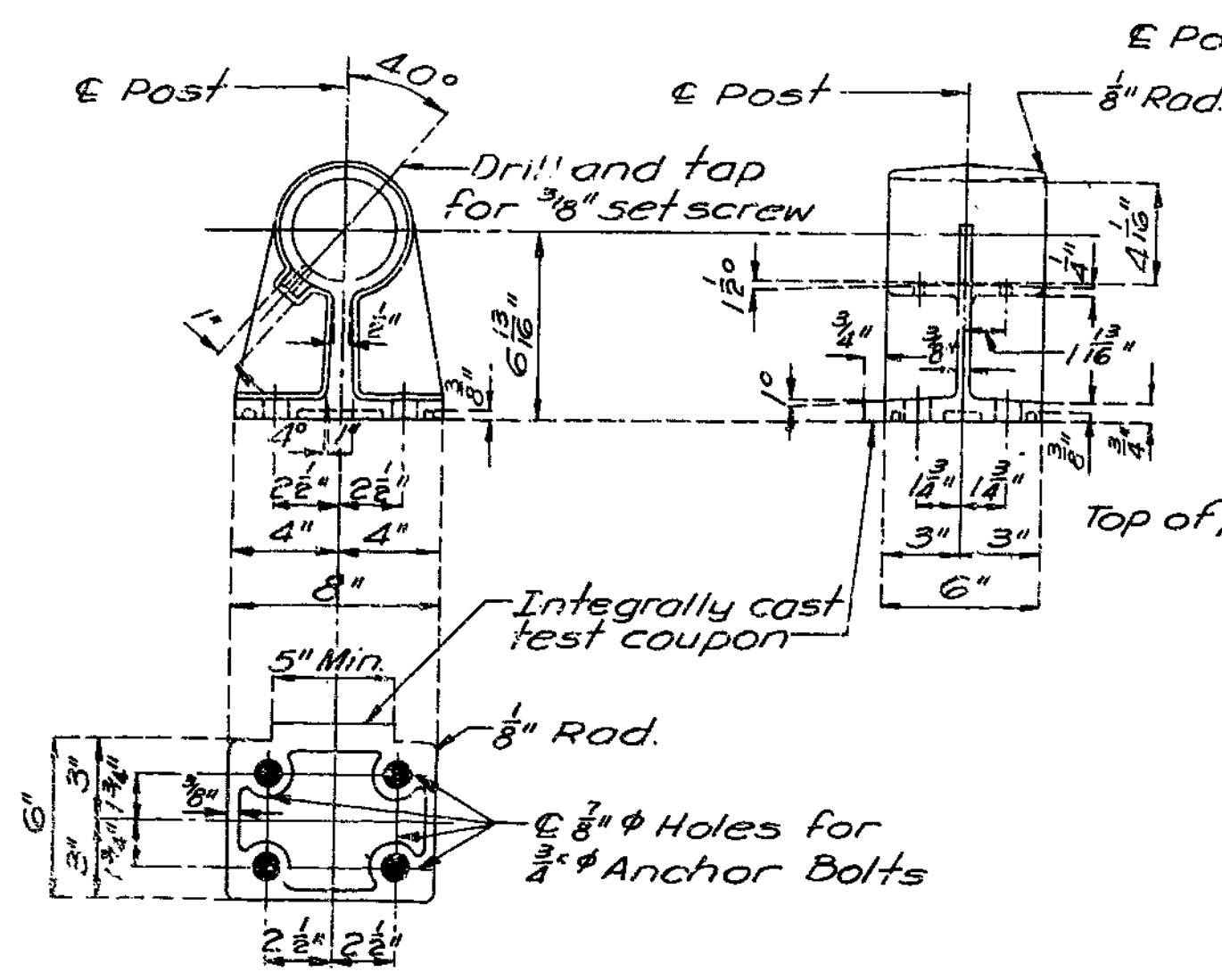


**BRIDGE: RAMP 4 & 6 OVER ROUTE 69**  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY & 18' PAV. RAMP 4

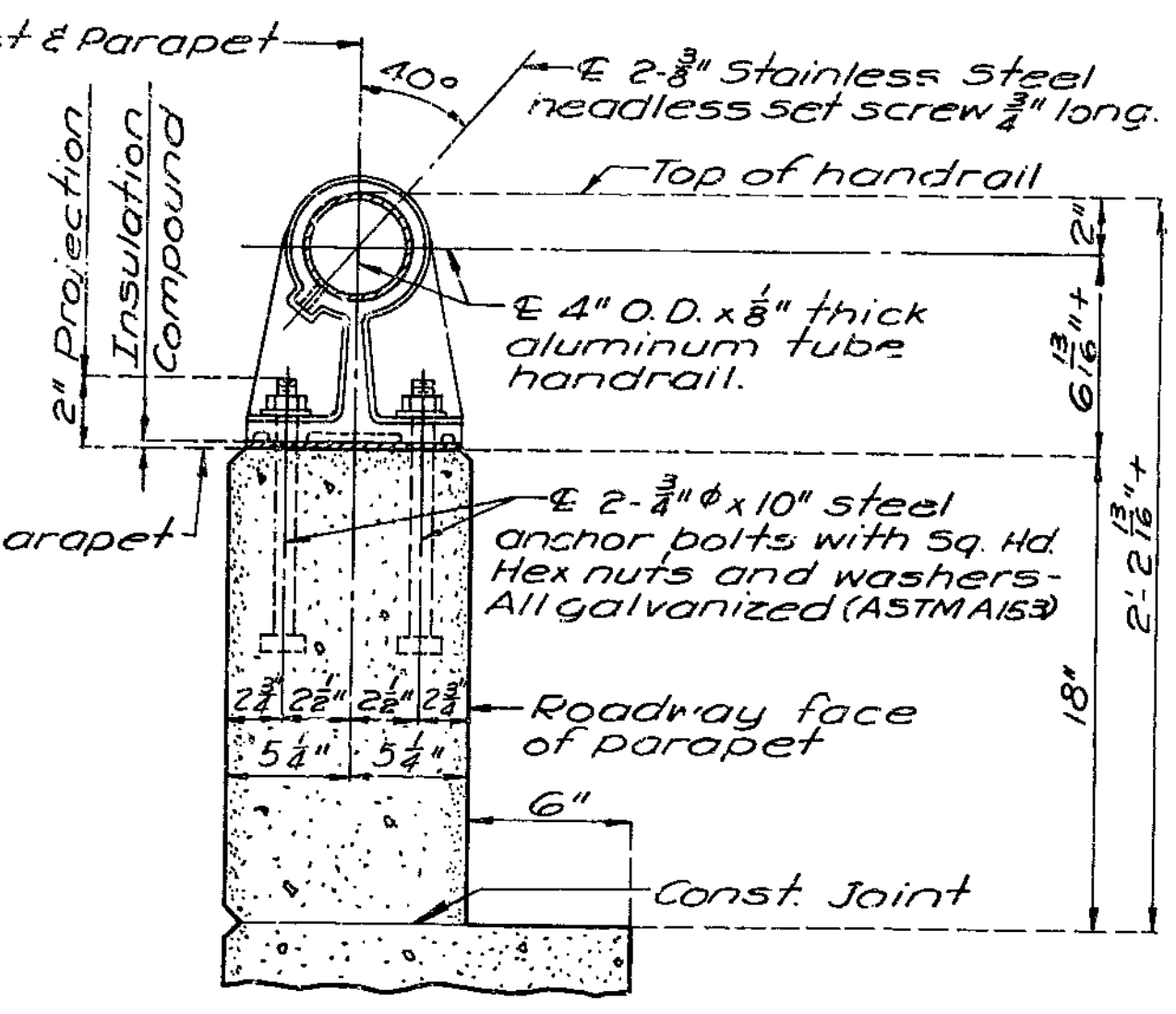
247

MISSOURI STATE HIGHWAY DEPARTMENT

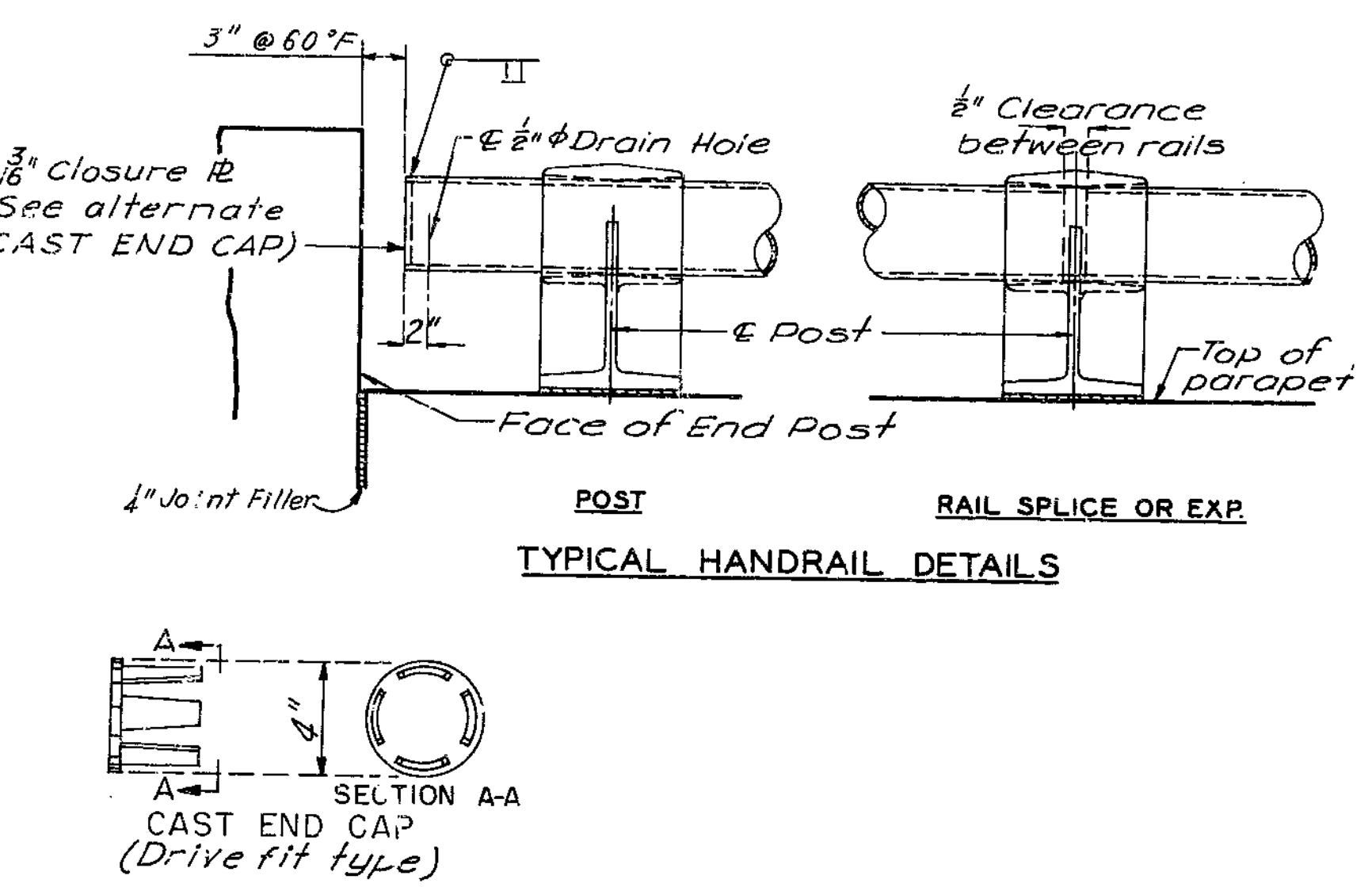
DIST. NO.	STATE	FEDERAL PROJECT NO. & SEL.	SHEET NO.	TOTAL SHEETS
4	MO		63	
	COUNTY		ROUTE	SEC.
	CLAY			



POST DETAILS

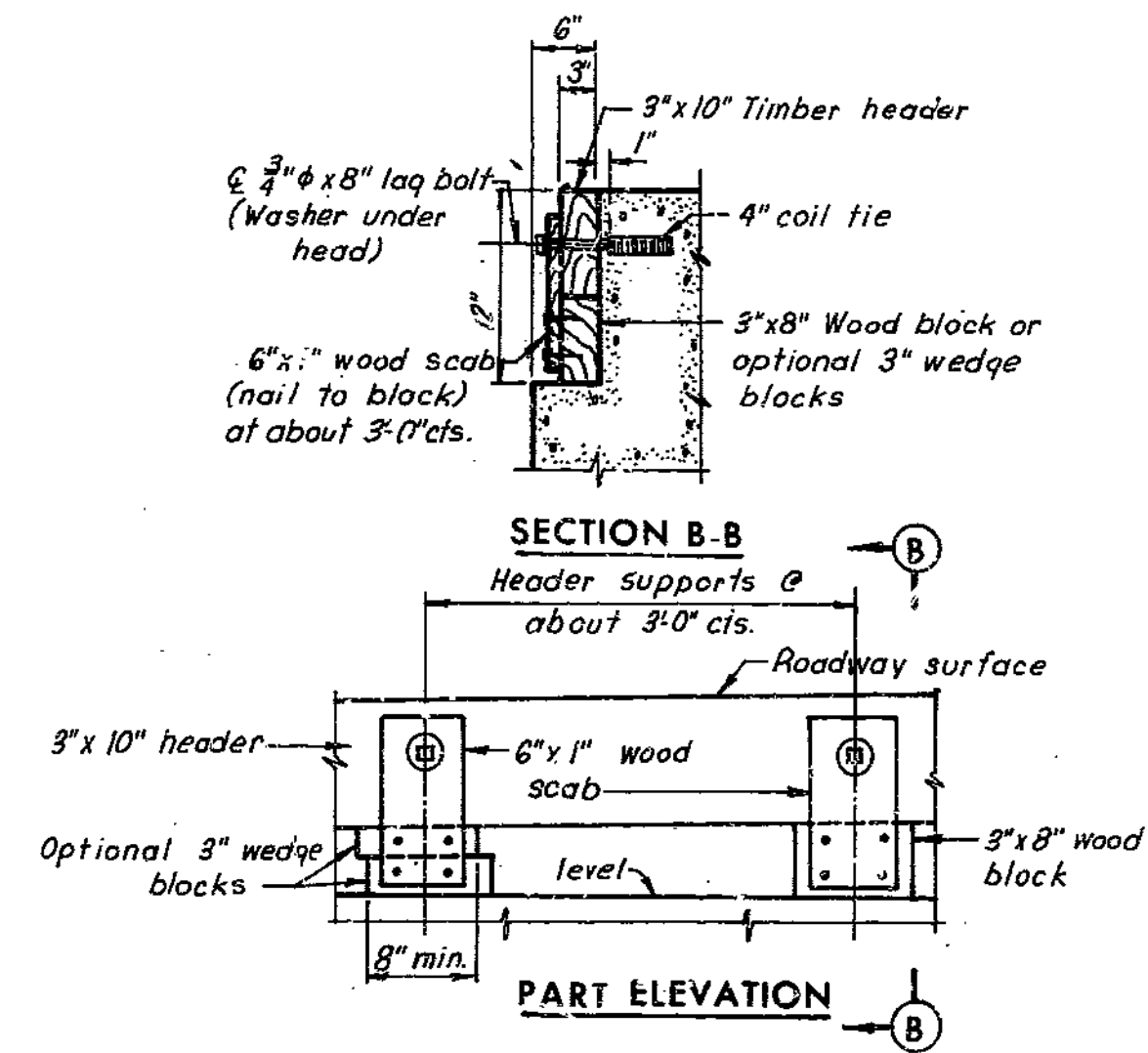


SECTION THRU HANDRAIL

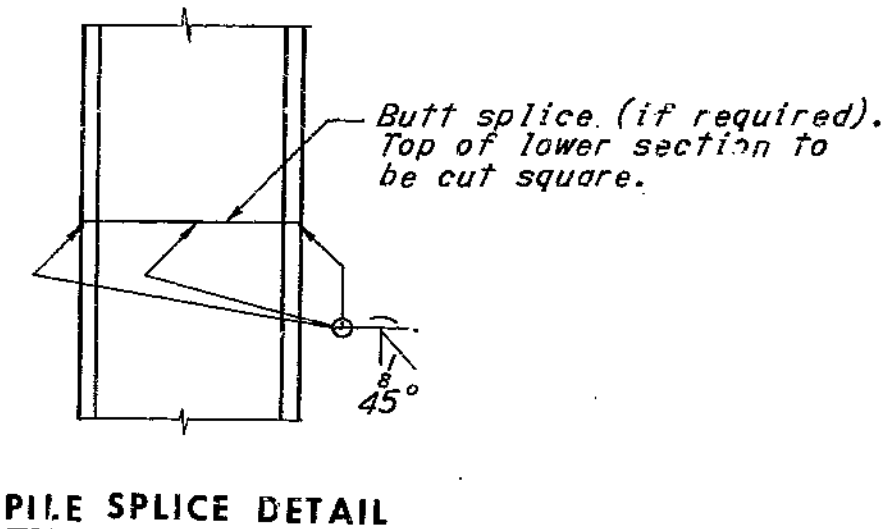


SINGLE TUBE ALUMINUM RAILING

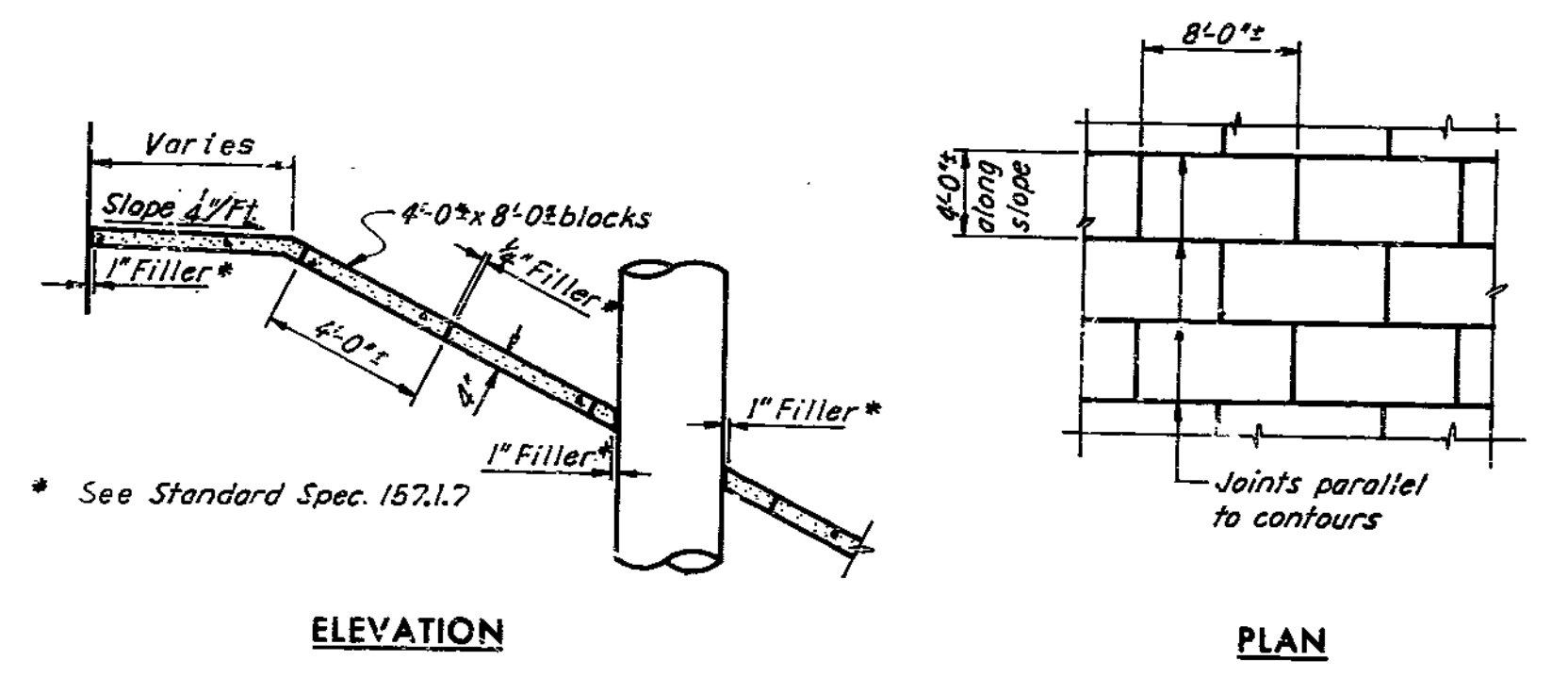
GENERAL NOTES:  
 All handrail posts shall be set normal to grade. Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet. Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/4 inch. Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.  
 All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material. The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulation compound. All fillets 1/4 inch except as noted.  
 All drafts 3/16 inch except as noted.  
 Pipe Rail to be fabricated in a minimum of two panel lengths.  
 Omit set screw on side adjacent to filled joint in parapet and curb at all expansion posts.  
 Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade.  
 All exposed edges of end posts shall have 1/4 inch bevel. All exposed edges of curbs and parapets shall have 1/4 inch radius or 1/8 inch bevel unless otherwise noted.  
 If the Contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.  
 Concrete end posts to be vertical.  
 Integrally cast test coupons and a coat of clear lacquer specified in Std. Specs 56.2.4 and 56.3.5 respectively will not be required for these rail posts.



**TIMBER HEADER DETAILS**  
 Note: Cost of Timber Header, complete in place, to be included in price bid for concrete.



PILE SPLICE DETAIL



SLOPE PROTECTION DETAILS

248

106-7-01

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 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE A.H.H. DATE 5-25-68 CHECKED J.F.P. DATE 5-25-68

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

HANDRAIL DETAILS

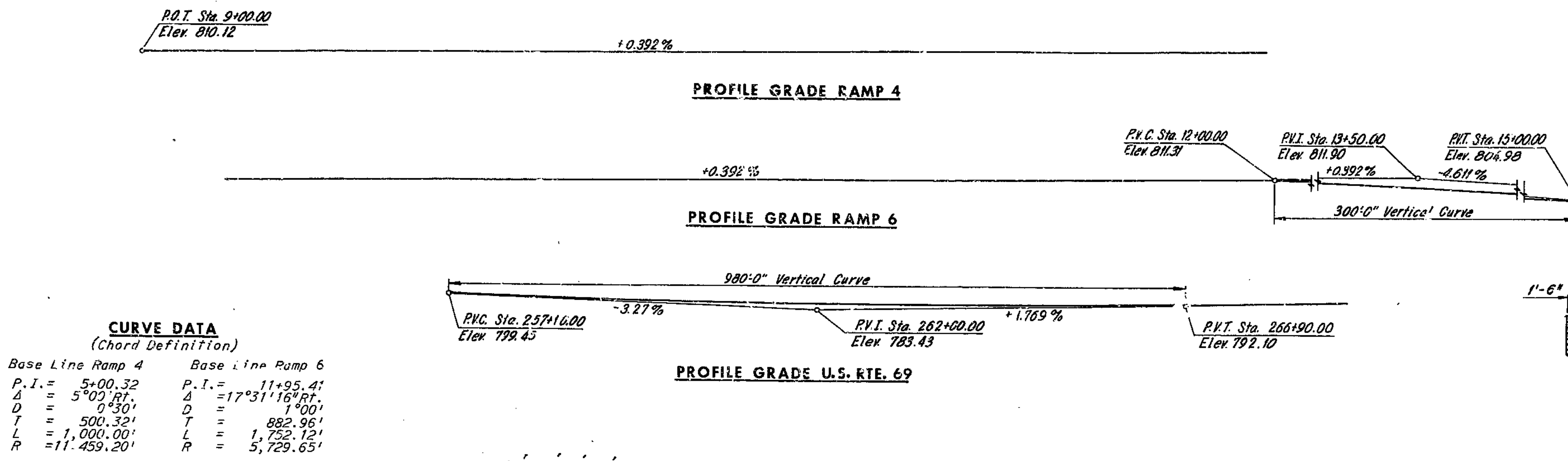
BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.79  
 CLAY COUNTY 18' PAV. RAMP 4  
 SHEET 14 OF 14  
 A-1583

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	TOTAL SHEETS
5	MO	I-435-1(69)9		50
DIST. NO.	COUNTY	ROUTE	POST-MILE	
4	CLAY		24.33	

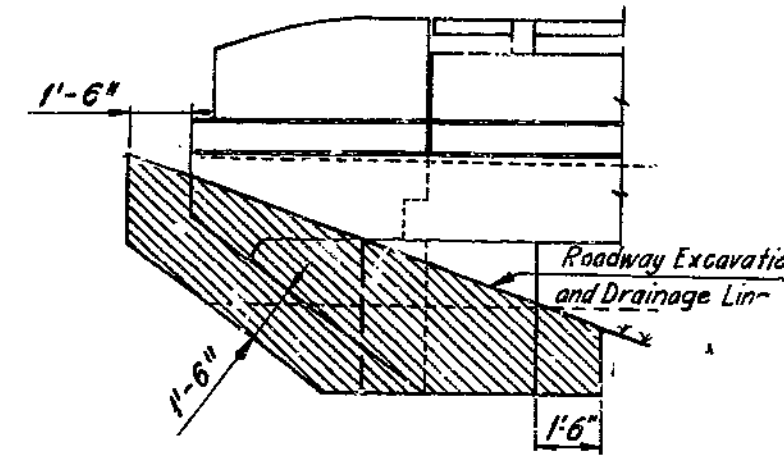
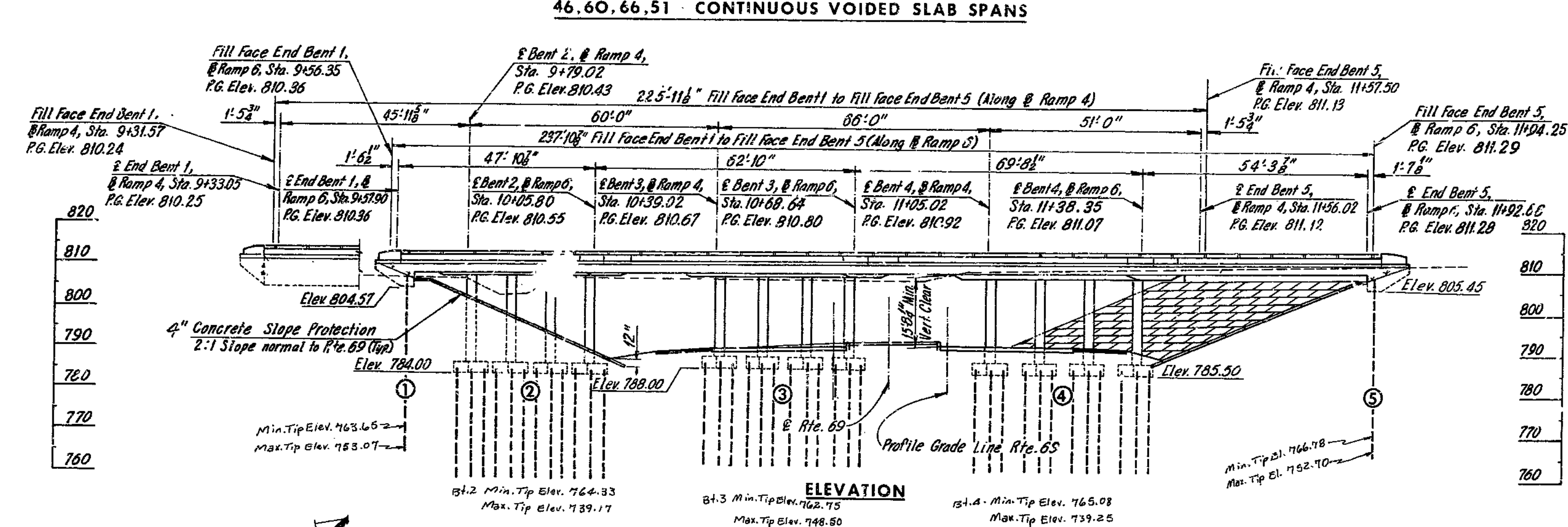
GENERAL NOTES FINAL PLANS

Design Specifications: AASHTO, 1965.  
 Design Loading: HS20-44 and Modified 24000<sup>#</sup> Tandem Axle with 15<sup>3</sup>/<sub>32</sub> in. future wearing surface, Earth 120<sup>3</sup>/<sub>4</sub> cu. ft. Equivalent fluid pressure 30<sup>3</sup>/<sub>4</sub> /ft.  
 Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts and Incidental Structures - 1961.  
 Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 1,200$  psi.  
 Class B1 Concrete (superstructure)  $f_c = 1,600$  psi.  
 Reinforcing Steel  $f_s = 20,000$  psi.  
 Steel pile (A.S.T.M. A36-66)  $f_b = 9,000$  psi.  
 Reinforcing Steel: All splices in reinforcing bars are 24 bar diameters. Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicates the size of the bar.  
 Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions.  
 All reinforcing bar bending dimensions are "out to out".  
 Sealing of Deck: Superstructure deck was surface sealed.  
 Utilities: All utilities, unless shown otherwise, were removed or relocated by others. The Contractor did notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities.  
 Welding: See Standard Specification 55.3.13 for qualification of welding operators.



**CURVE DATA**  
(Chord Definition)

Base Line Ramp 4	Base Line Ramp 6
P.I. = 5+00.32	P.I. = 11+95.41
$\Delta = 5^{\circ}00'RT$	$\Delta = 17^{\circ}31'16''RT$
D = 0'30"	D = 1'00"
T = 500.32'	T = 882.96'
L = 1,000.00'	L = 1,752.12'
R = 11,459.20'	R = 5,729.65'



LIMITS OF EXCAVATION

ITEM	UNIT	QUANTITIES		TOTAL
		SUBSTR.	SUPRSTR.	
Class 1 Excavation for Structures	Cu.Yd.	306.5	-	306.5
Steel Piles in Place (10BP42)	Lin.Ft.	2332	-	2332*
Class B Concrete	Cu.Yd.	55.3	-	55.3
Class B1 Concrete	Cu.Yd.	-	1006.8	1006.8
Reinforcing Steel	Lbs.	3500	30935.0	34285.0
Bridge Rail (Single Tube Type)	Lin.Ft.	-	463	463
Adjust Charge (10¢ @ 9¢/lb Bid Price)	Lin.Ft.	4.8	-	4.8
Re-fabricate Stirrups	Force Ach.	-	187.84	187.84

QUANTITY NOTES

All excavation was paid as Class 1 Excavation for Structures.  
 \*Estimated quantity of Class B Concrete in intermediate bent footings only. All other concrete is included in quantity of Class B1 Concrete.  
 All Reinforcing except that in interior bent footings is included in superstructure reinforcing.

BENCH MARKS

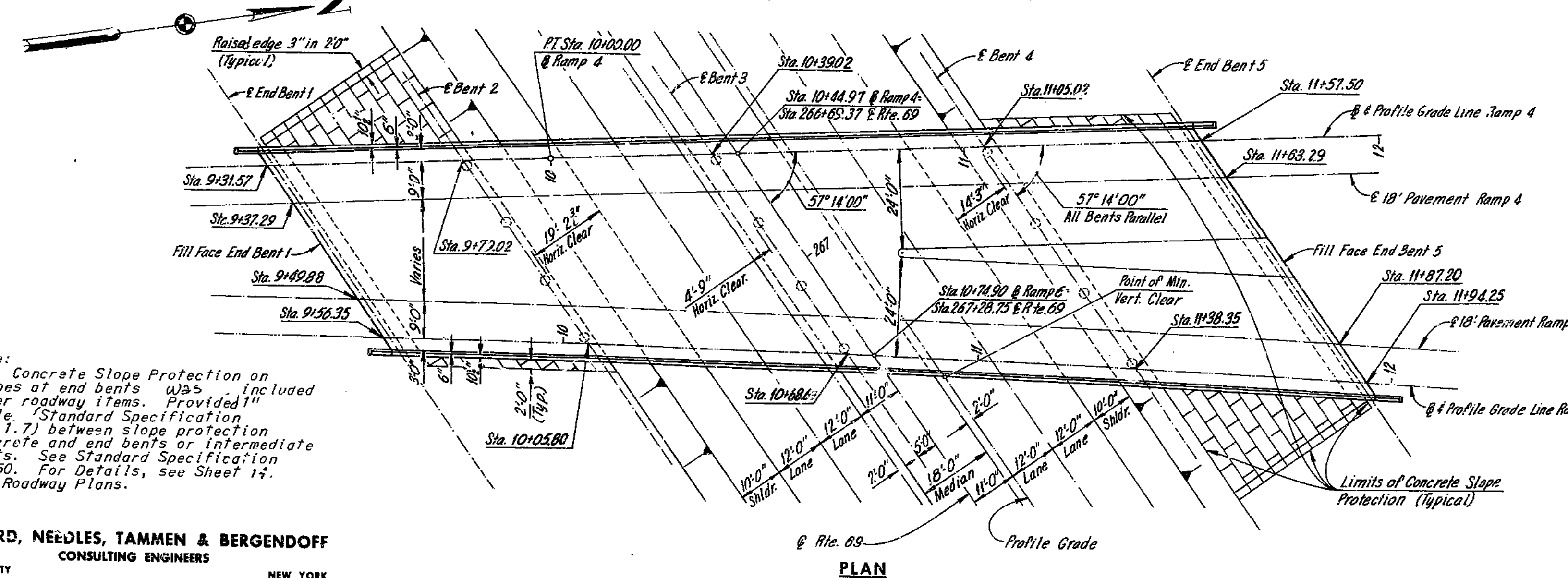
B.M. Elev. 814.20, 'D' on E. End Post B.M. 5  
 B.M.

Notes:  
 All dimensions are horizontal.  
 Bents cannot be located from the reference point on the tangent by conventional survey methods based on 100' chords.  
 For Superstructure Layout, see Sheet 3.  
 For location of borings, see Sheet 2.  
 For Title of pile loads, see Sheet 3.  
 All bents are parallel.

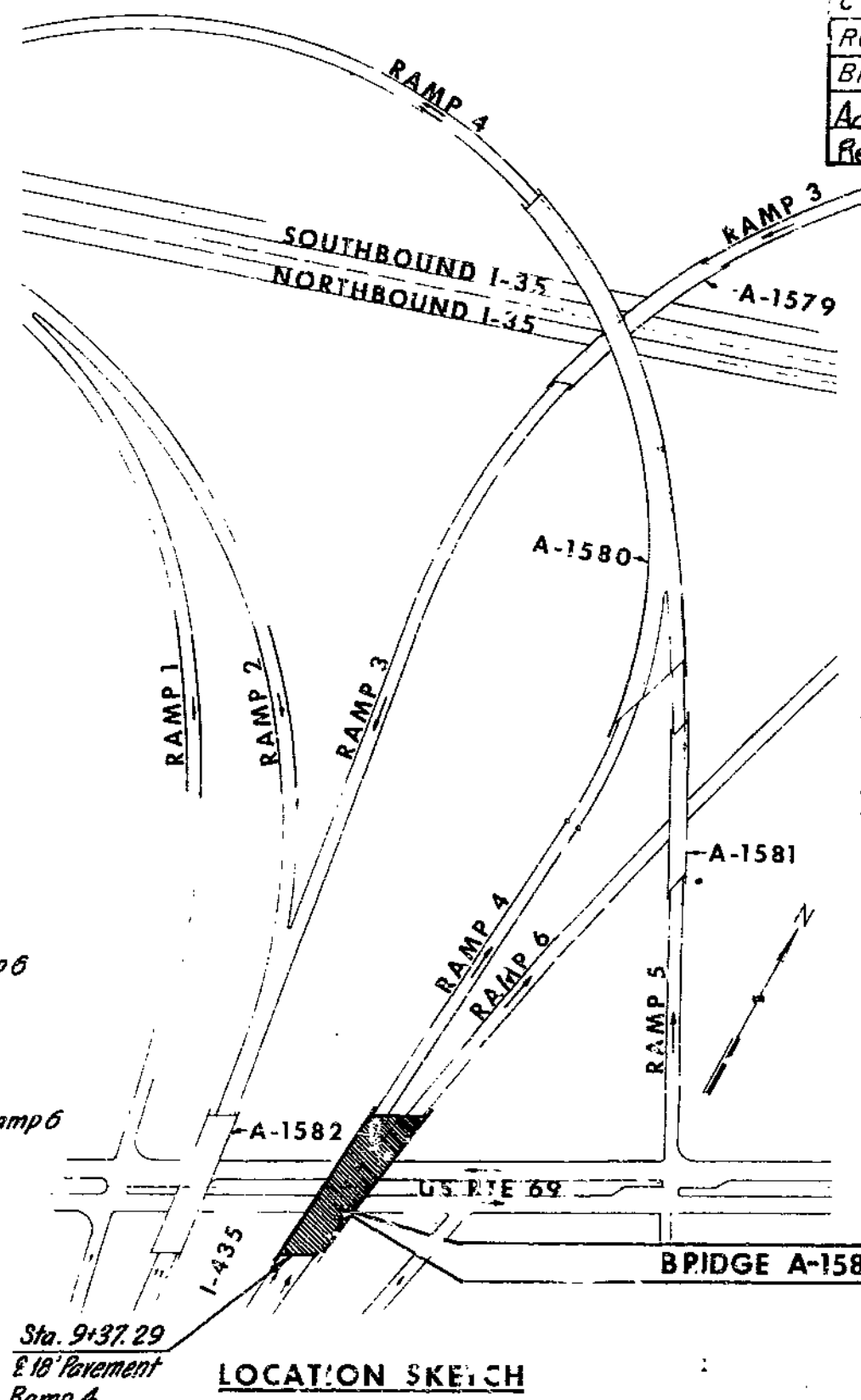
SUBMITTED BY:  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-253

BRIDGE: RAMP 4 & 6 OVER ROUTE 69  
 STATE ROAD - INTERSTATE ROUTE 435  
 IN CLAYCOMO  
 PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
 CLAY COUNTY  
 18' PAV. RAMP 4

SUBMITTED BY: [Signature]  
 BRIDGE ENGINEER  
 DATE: 5-24-68  
 APPROVED BY: [Signature]  
 CHIEF ENGINEER  
 DATE: 5-24-68  
 STD. 54.00  
 A-1583



PLAN



LOCATION SKETCH

Note:  
 Concrete Slope Protection on slopes of end bents was included under roadway plans. Provided 17" fill (Standard Specification 157.1.7) between slope protection concrete and end bents or intermediate bents. See Standard Specification 83.50. For Details, see Sheet 14 and Roadway Plans.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE D.E.S. DATE 5-24-68 CHECKED JSH DATE 6-11-68

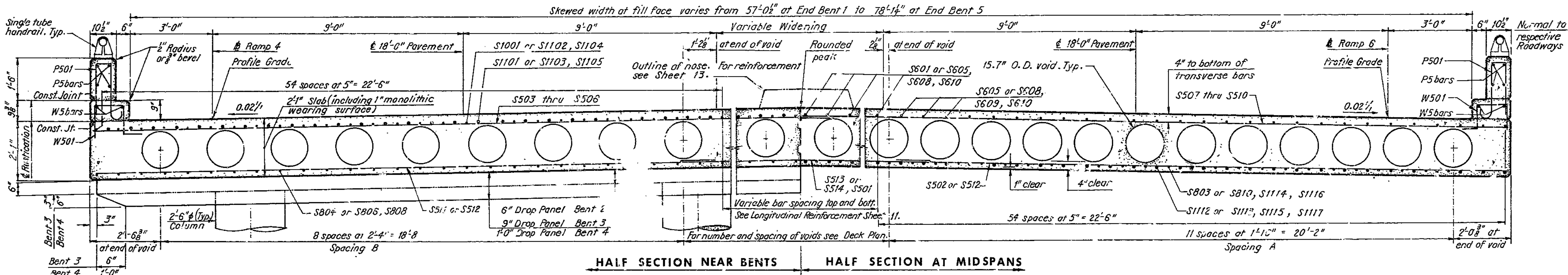
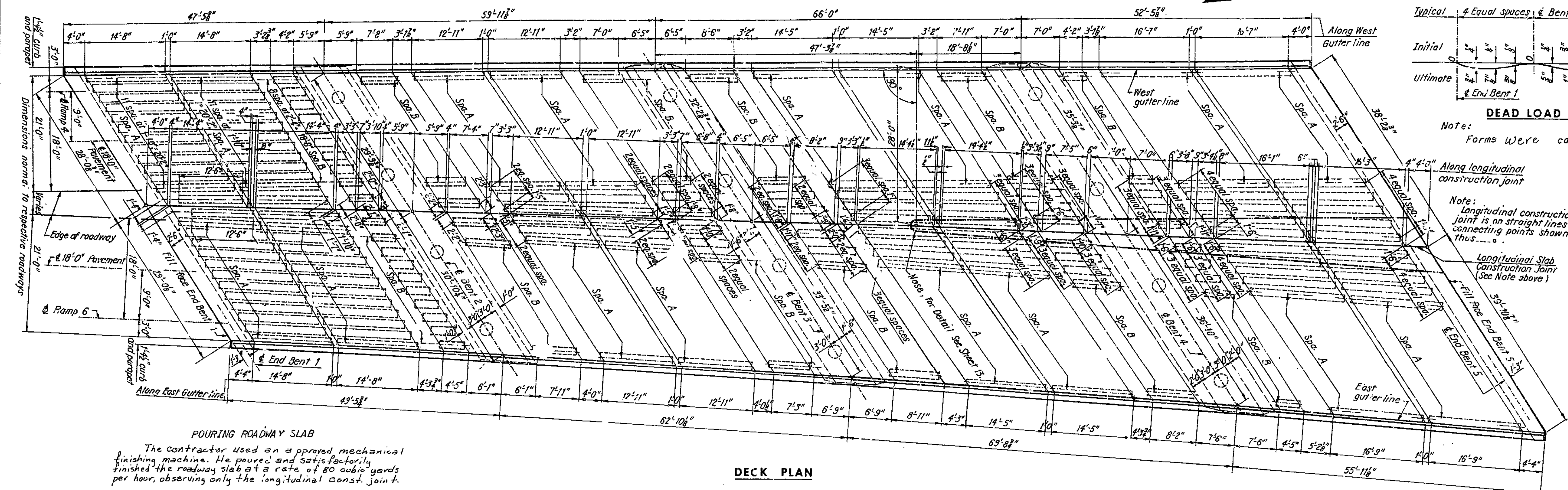
NOTE: This drawing is not to scale. Follow dimensions.

249

2106-21-02-583-652

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	I-435-1(29)9		59	
SHEET NO.	COUNTY	ROUTE	SEC.		
4	CLAY				



Note: Fiber tubes for producing voids have an outside diameter of 15.7" and a wall thickness of .300" and were anchored to joists carrying the floor form at not more than 3'-0" centers.

Note: Plastic waterstop was placed in the parapet and curb filled joints on both sides of structure. Cost of plastic waterstop complete in place included in unit price bid for concrete.

Note: All dimensions are horizontal. For Timber Header Detail, see Sheet 14. For Handrail Details, see Sheet 14. Provided 2" clear from face of concrete to reinforcing steel in the superstructure, unless otherwise shown.

Note: **DETAIL OF WEEPHOLE IN VOIDS**  
One 3" # weephole was provided near end of each void. Weepholes were placed in straight lines parallel to bents.

**DEFLECTION JOINT IN CURB AND PARAPET AND PARAPET ONLY**

All reinforcing stopped 2" clear of deflection joints.

**PARAPET JOINT**

**CURB AND PARAPET JOINT**

**RUSTICATION DETAIL**

**DETAILS OF PLASTIC WATERSTOP**

**BRIDGE: RAMP 4 & 6 OVER ROUTE 69**  
STATE ROAD - INTERSTATE ROUTE 435  
IN CLAYCOMO  
PROJECT NO. I-435-1(69)(RTE. I-435) STA. 9+37.29  
CLAY COUNTY  
CLAY COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK

MADE JSH DATE 6-10-88 CHECKED JFP DATE 6-12-88

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

PLAN AND CROSS SECTION

SHEET 10 OF 2

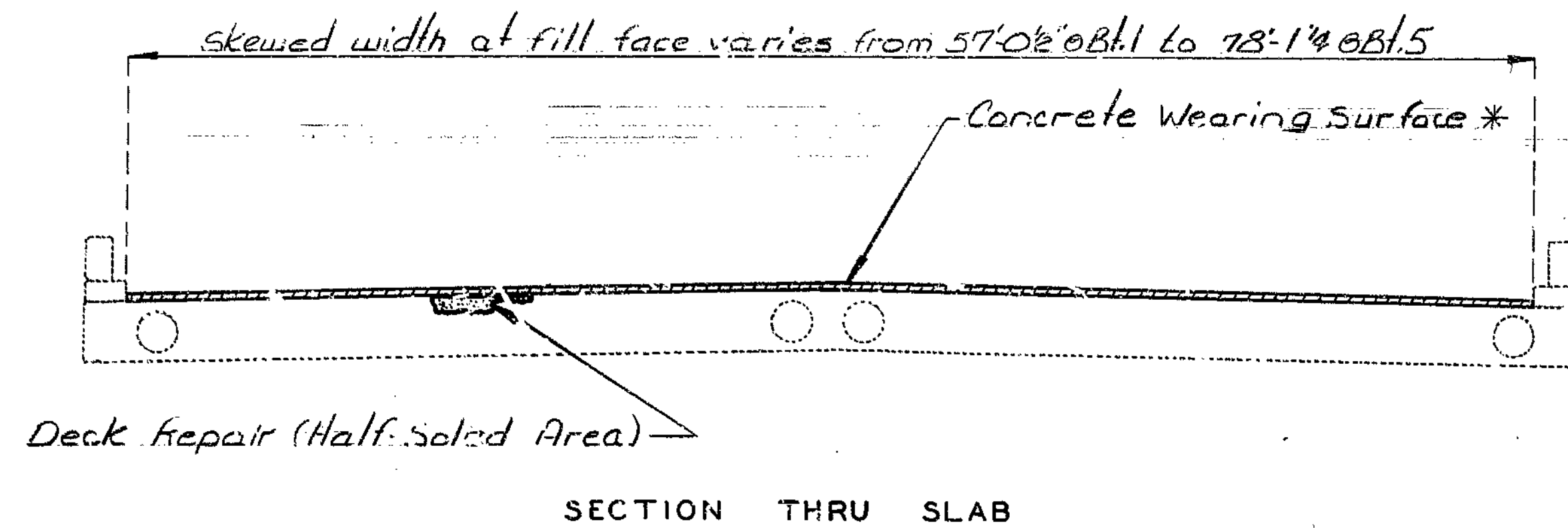
A-1583

FINAL PLANS

250

**MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION**

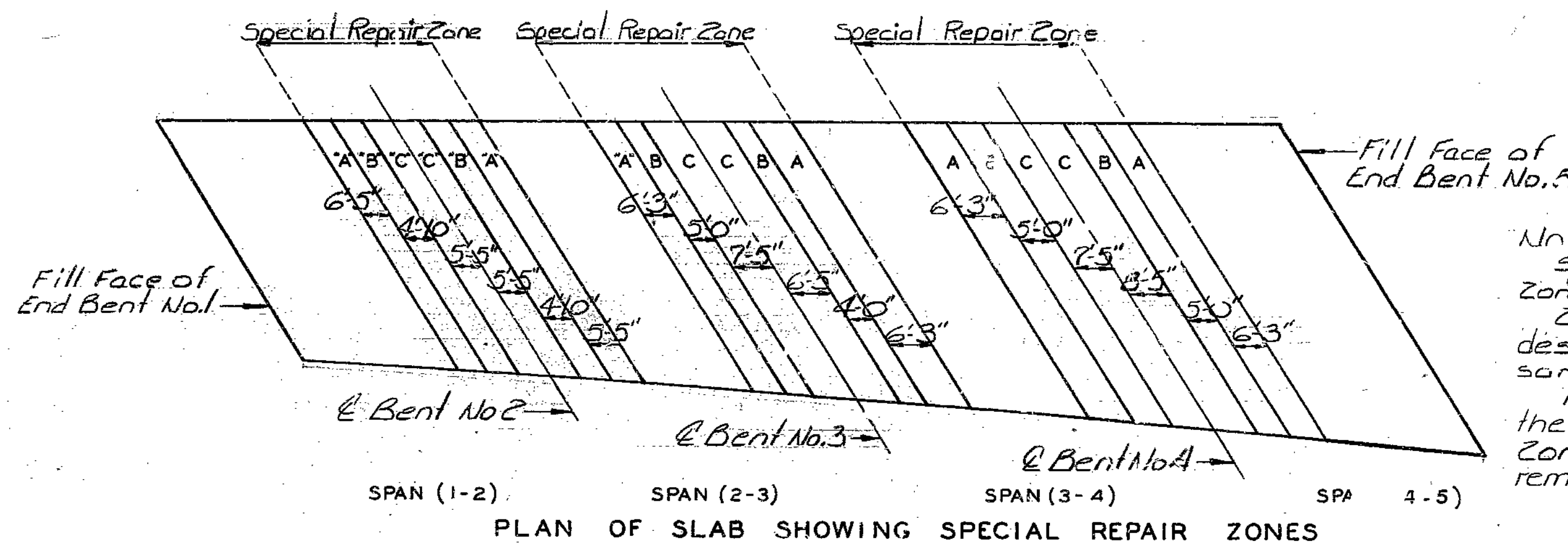
STATE	PROJ. NO.	SHEET NO.
MO.	IR-435-1(215)	33
SEC./SUR. 27	TWP. 51 N RGE. 32 W	



**GENERAL NOTES:**

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

Traffic over structure to be maintained during construction. See Road Plans.



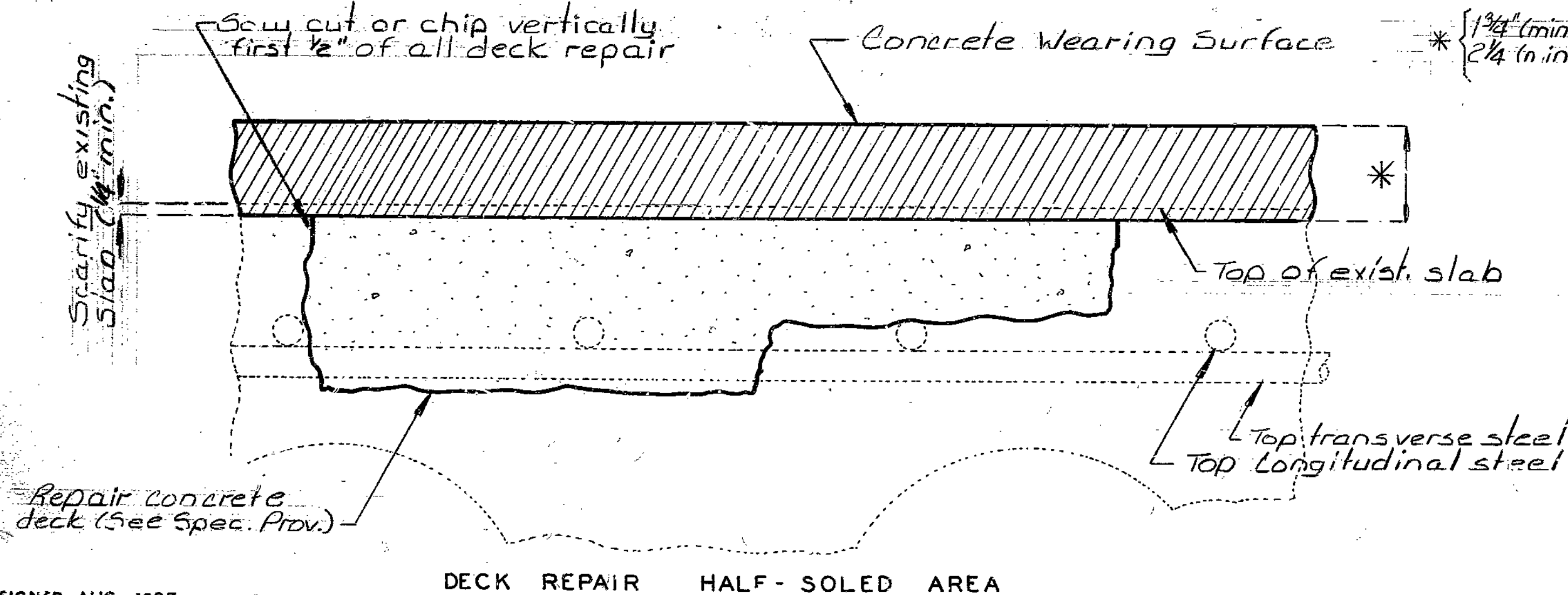
Notes:

Sequence for repair: Zone A, Zone B, then Zone C.

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

Any repair in the remainder of the bridge that is within 2' 6" of Zone A shall be completed before removing old concrete in Zone A.

ESTIMATED QUANTITIES	
ITEM	TOTAL
Repairing Concrete Deck (Half Soled) Sq. Ft.	379
Concrete Wearing Surface ( ) Sq. Yd.	1405
See Special Provisions	



448

DESIGNED AUG. 1985  
 DETAIL AUG. 1985  
 CHECKED SEPT. 1985

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

SEE FINAL PLANS  
 Sheet No. 1 of 1

**BRIDGE : RAMPS 4 & 6 OVER RTE. 69**  
 STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35  
 NEAR THE RTE. I-35 INTERCHANGE  
 PROJECT NO. IR-435-1(215) STA. 9+31.57 (RAMP 4) / 9+56.35 (RAMP 6)  
 JOR NO. 4-I-435-702 RTE. I-435  
**CLAY COUNTY**

STD.
STD.
A-1583R

DATE 10/25/85

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

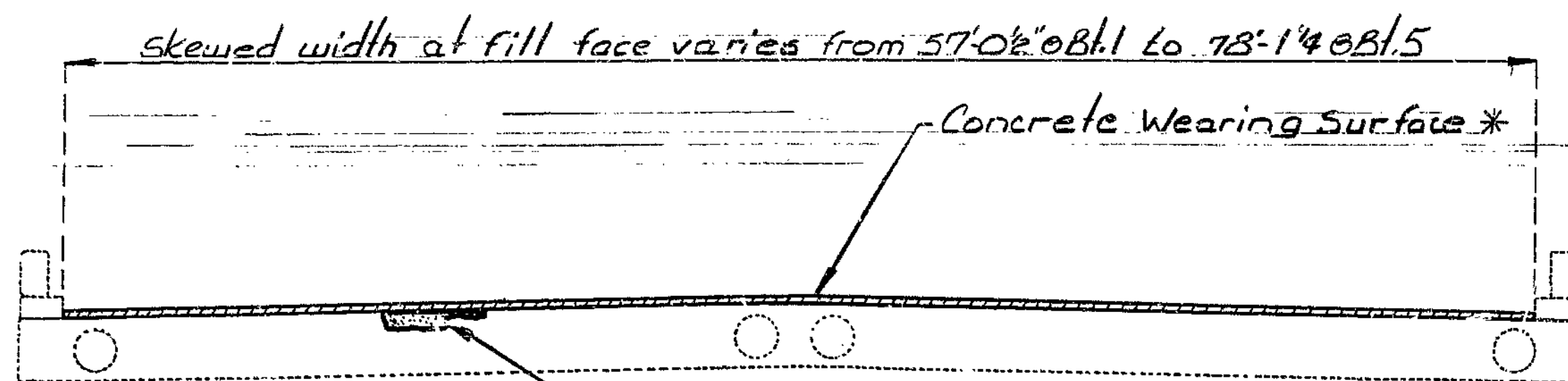
STATE	PROJ NO	SHEET NO.
MO.	IR-435-1(215)	33
SEC./SUR. 27	TWP. 51 N	RGE. 32 W

FINAL PLANS

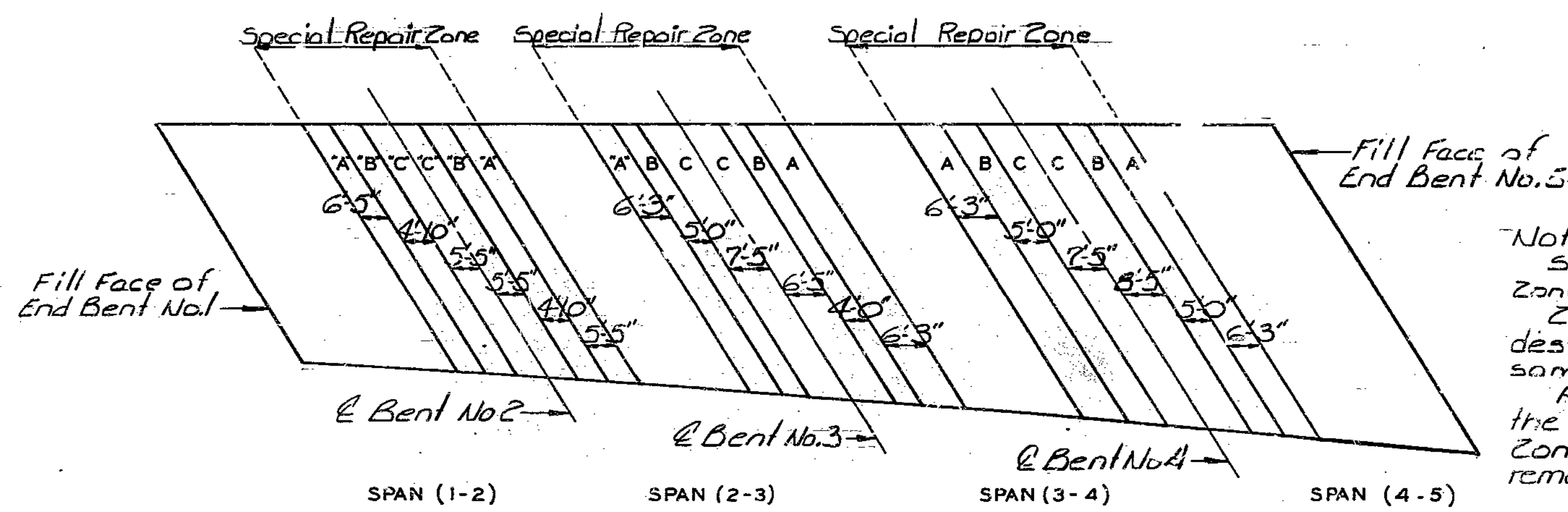
GENERAL NOTES:

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

Traffic over structure to be maintained during construction. See Road Plans.



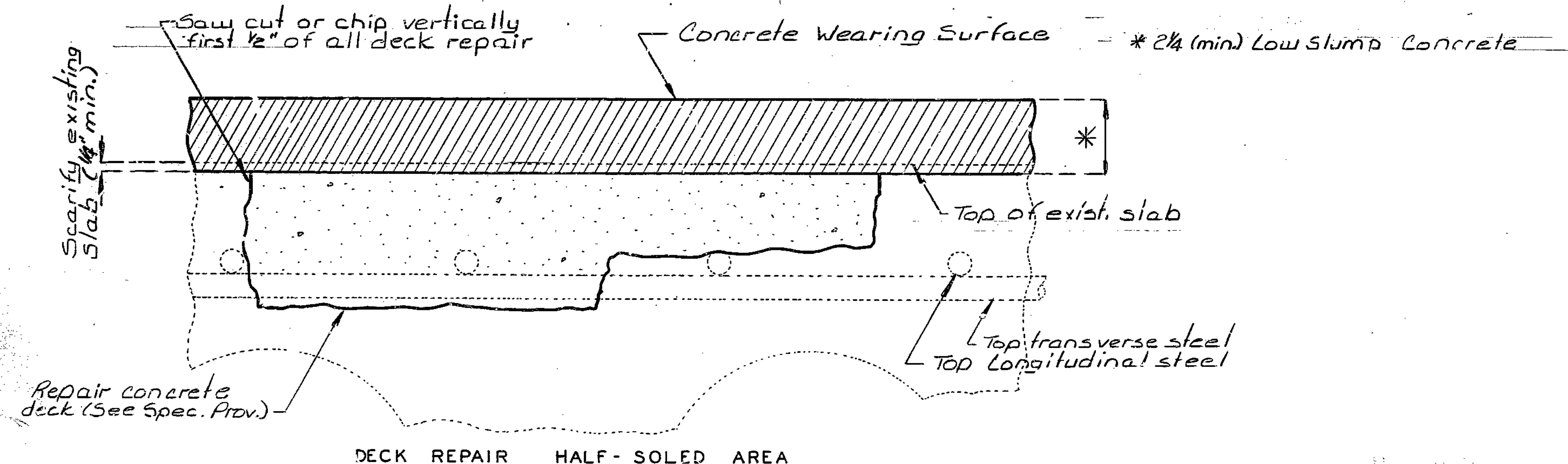
SECTION THRU SLAB



PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

Notes:  
 Sequence for repair: Zone A, Zone B, then Zone C.  
 Zones with the same letter designation may be repaired at the same time.  
 Any repair in the remainder of the bridge that is within 2'-6" of Zone A shall be completed before removing old concrete in Zone A.

ESTIMATED QUANTITIES	TOTAL
Repairing Concrete Deck (Half Soling) Sq. Ft.	35
Concrete Wearing Surface (*) Sq. Yd.	1405
See Special Provisions	



DECK REPAIR HALF-SOLED AREA

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

DESIGNED AUG. 1985  
 DETAILED AUG. 1985  
 CHECKED DEPT. 1985

Sheet No. 1A of 1

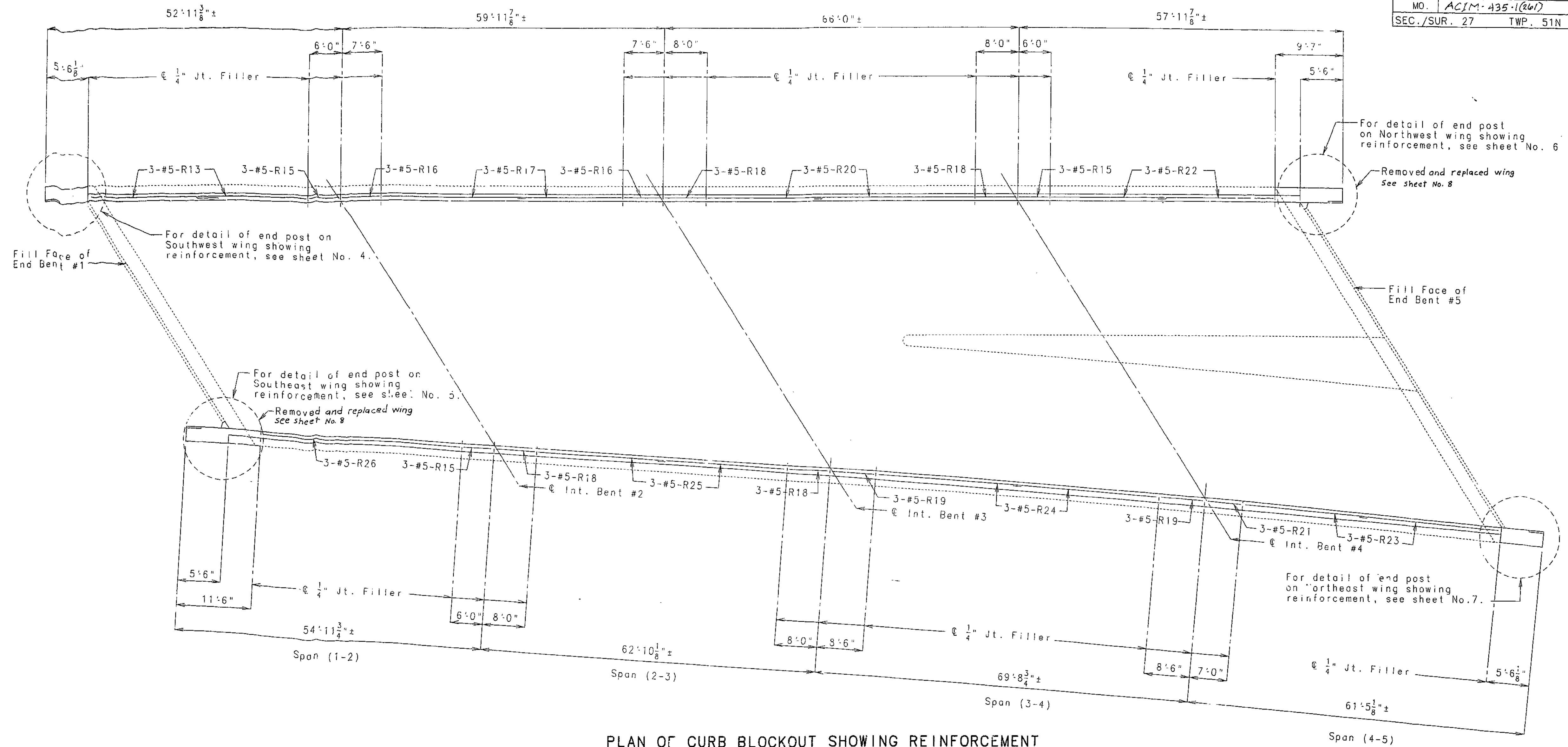
BRIDGE : RAMPS 4 & 6 OVER RTE. 69  
 STATE ROAD FROM MISSOURI RIVER TO ROUTE I-35  
 NEAR THE RTE. I-35 INTERCHANGE  
 PROJECT NO. IR-435-1(215) STA. { 9+31.57 (RAMP 4)  
 { 9+56.35 (RAMP 6)  
 JOB NO. 4-I-435 - 702 - RTE. I-435  
 CLAY COUNTY  
 DATE 10/25/85

ISTD  
 ISTD  
 A-15833

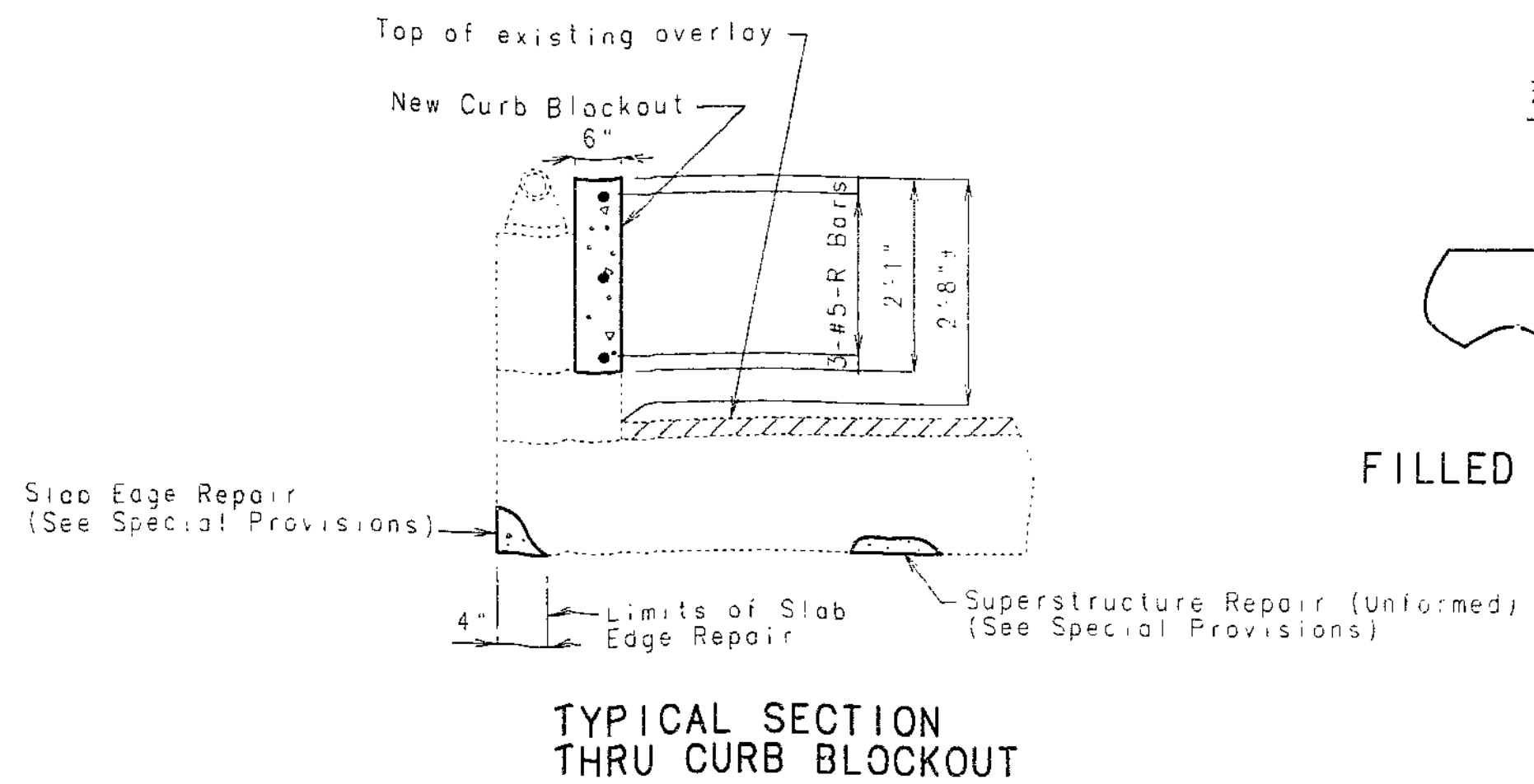
443

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

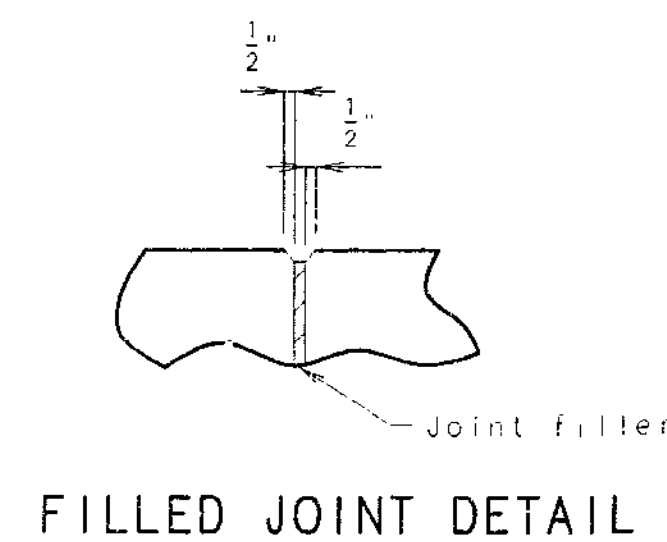
STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-435-1(261)	24
SEC./SUR. 27	TWP. 51N	RGE. 32W



PLAN OF CURB BLOCKOUT SHOWING REINFORCEMENT



TYPICAL SECTION THRU CURB BLOCKOUT

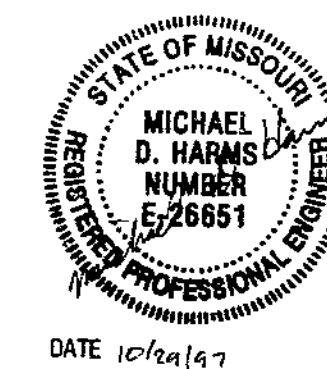


FILLED JOINT DETAIL

Note: Longitudinal dimensions shown are arc dimensions taken along curb gutter line.  
 For General Notes and Quantities see sheet No. 3.  
 Minimum lap for R bar reinforcement to be 2'-11".  
 Match existing curb jt. filler at int bents.

REPAIRS TO BRIDGE: RAMPS 4 & 6 OVER RTE. 69

STATE ROAD FROM MISSOURI RIVER TO RTE. 1-35 ABOUT .5 MILE S. OF RTE. 1-35  
 PROJECT NO. J411247B  
 JOB NO. J411247B



CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.

CLAY

COUNTY

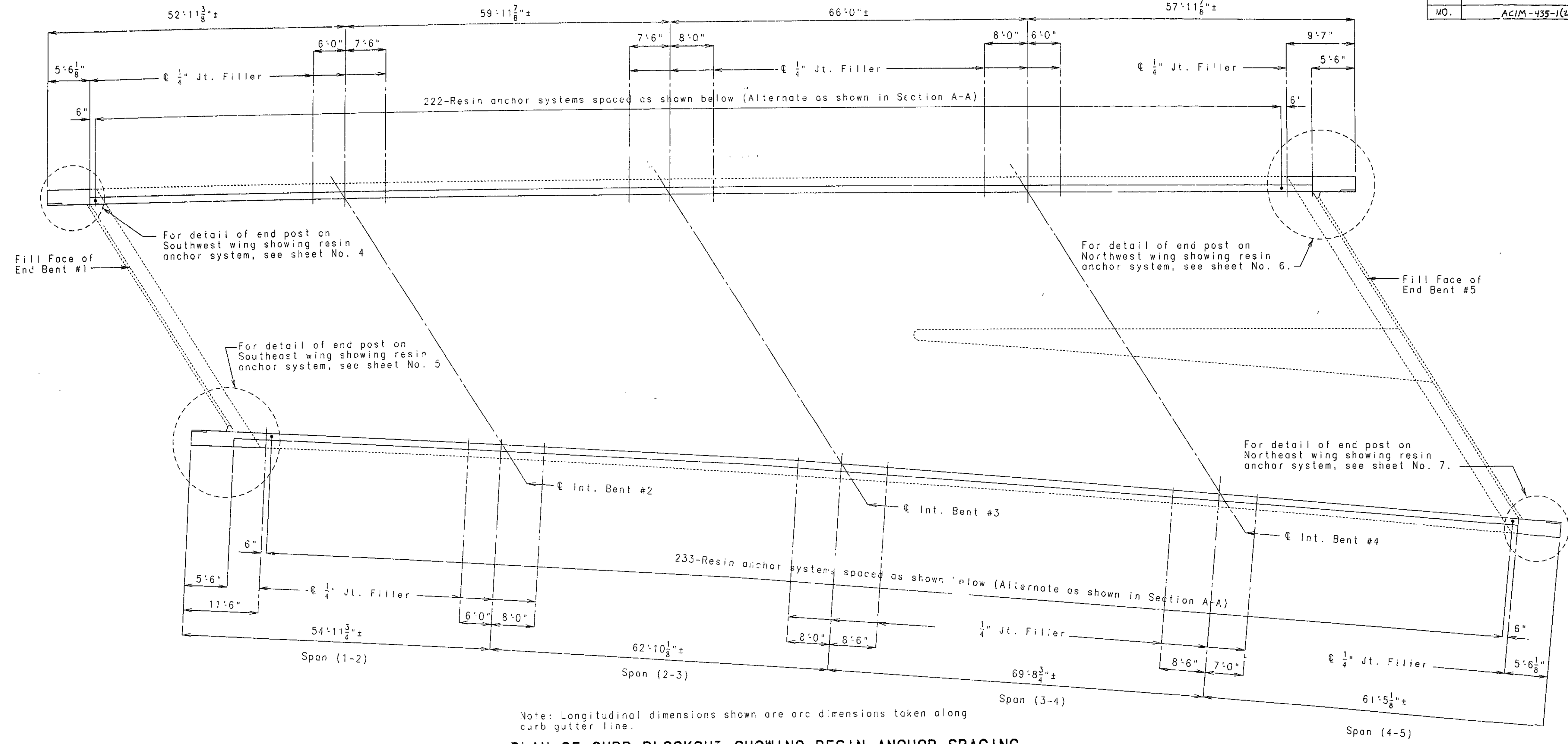
STD.
STD.
A15832

DESIGNED SEPT. 1997  
 DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

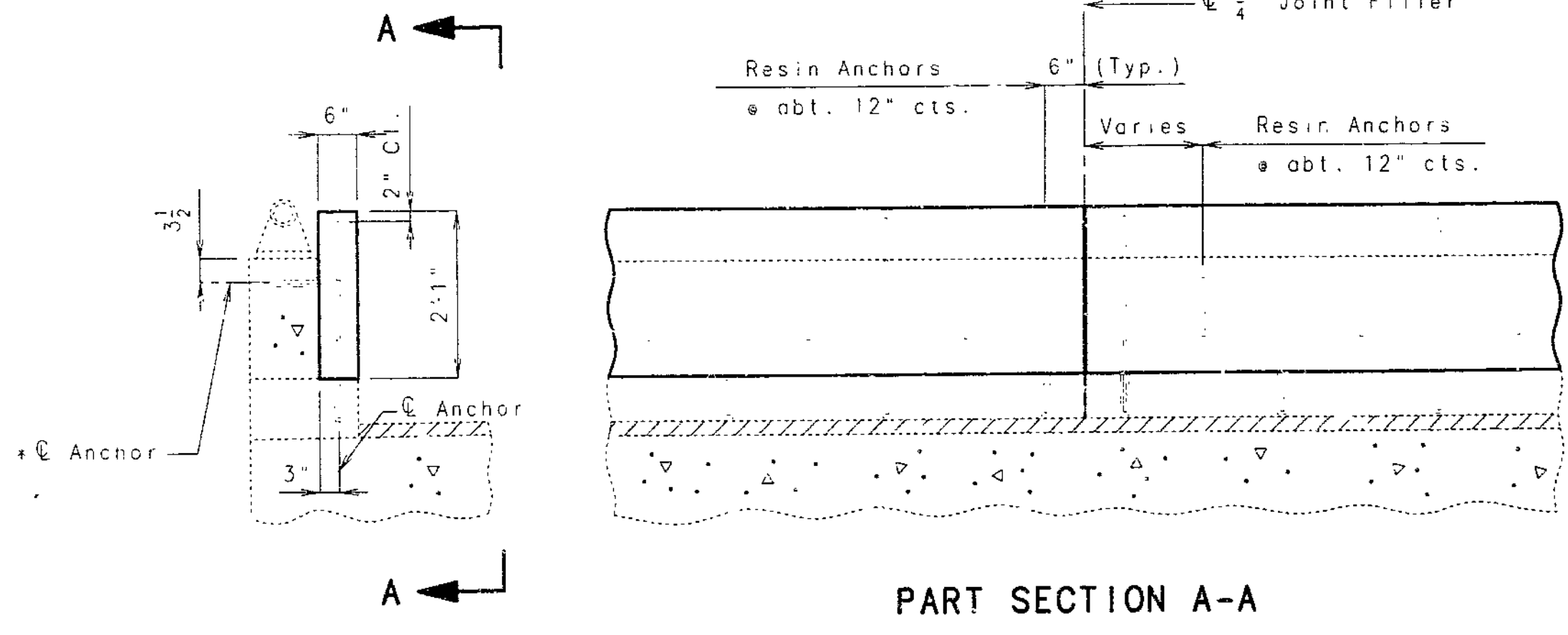
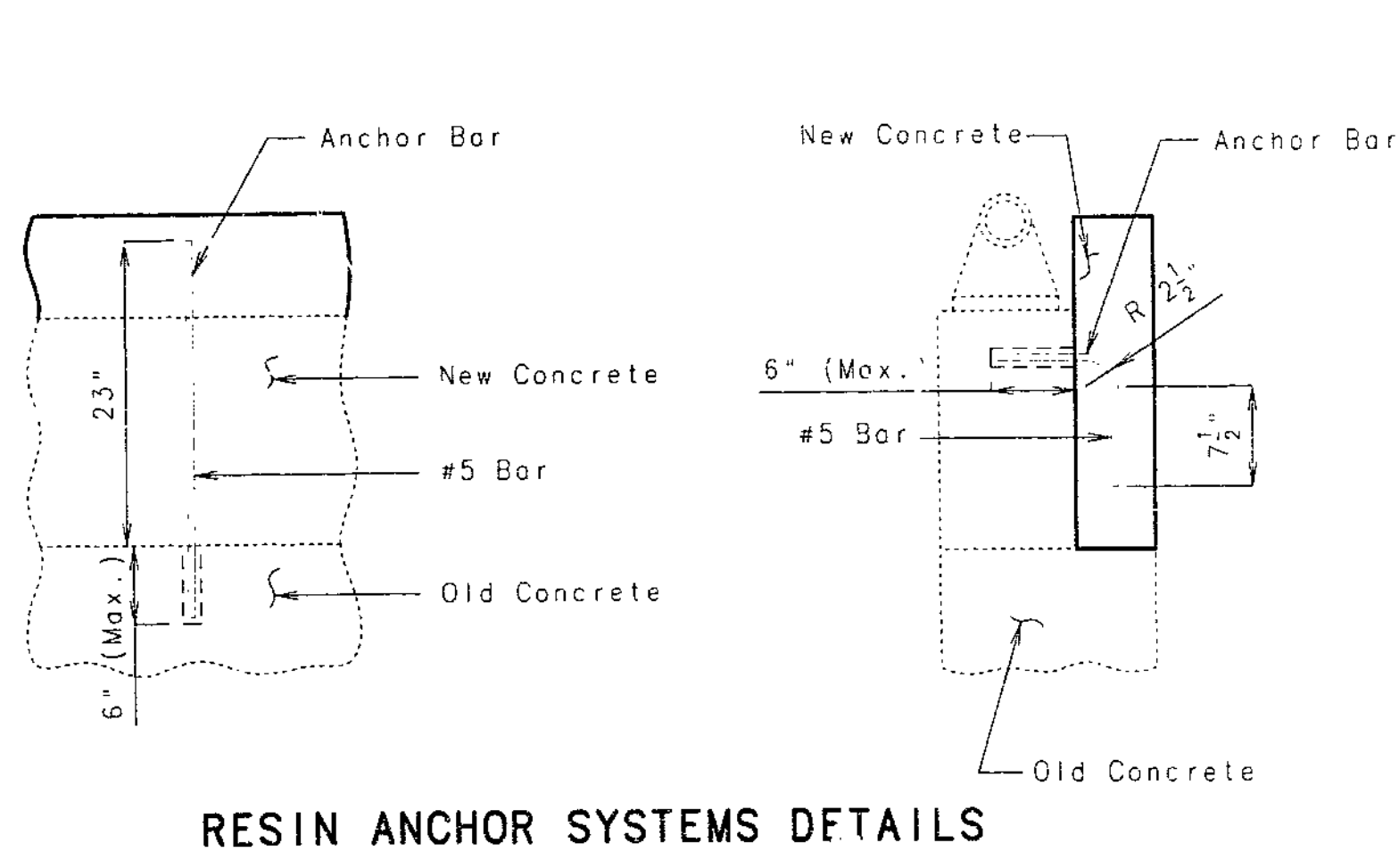
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 1 OF 9

STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-435-1(26)	25



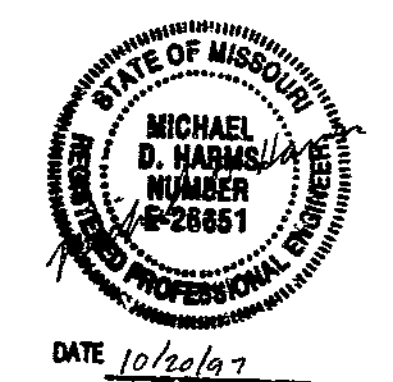
Note: Longitudinal dimensions shown are arc dimensions taken along curb gutter line.  
**PLAN OF CURB BLOCKOUT SHOWING RESIN ANCHOR SPACING**



**PART SECTION A-A**

\* Shift resin anchors to clear existing steel anchor bolts for tube rail.

FINAL PLAN  
 I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.



DATE 10/20/97

CLAY COUNTY

A15832

358  
 DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

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

SHEET NO. 2 OF 9.



STATE	PROJ. NO.	SHEET NO.
MO.	AC1M-455-1(141)	26

**GENERAL NOTES:**

**DESIGN SPECIFICATIONS:**

A.A.S.H.T.O.-1996

**DESIGN UNIT STRESSES:**

Class B1 Concrete (Curb Blockout, End Post & End Bent Wings) f'c=4000 psi  
Reinforcing Steel (Grade 60) fy=60,000 psi

**JOINT FILLER:**

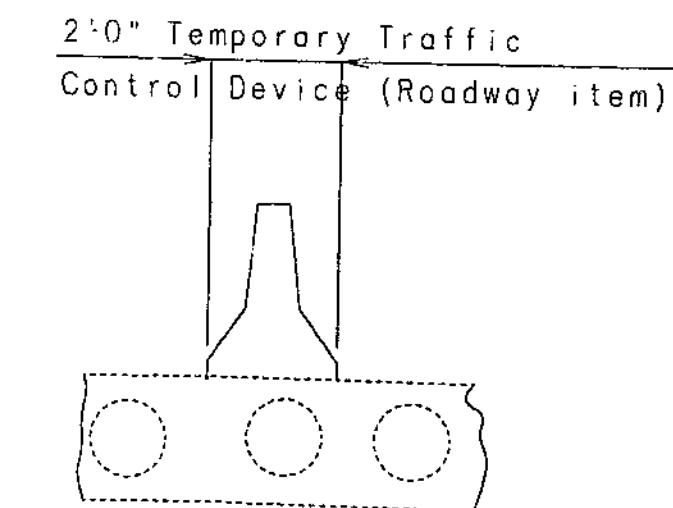
All joint filler shall meet the requirements of Std. Spec. 1057.2.4, except as noted.

**REINFORCING STEEL:**

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

FINAL QUANTITIES		
ITEM		TOTAL
*Rehabilitation of existing wings	Lump Sum	1 ✓
Curb Blockout	Lin. Ft.	488 ✓
Substructure Repair (Unformed)	Sq. Ft.	30 ✓
Superstructure Repair (Unformed)	Sq. Ft.	145 ✓
Slab Edge Repair (Bridges)	Lin. Ft.	119 ✓
302-00 BRIDGE A-15833 (CONTINGENT)		
502-01 SHUTCRETE REPAIR	LUMP SUM	1

\*Cost of partial removal of wing, resin anchors, excavation, Class B1 Concrete and reinforcing steel for Northwest wing and Southeast wing to be included in bid price for rehabilitation of existing wings. See Special Provisions.



DETAIL OF TEMPORARY TRAFFIC BARRIER

**OLD WORK:**

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

**VERIFY DIMENSIONS:**

Contractor shall verify dimensions in field before ordering new material.

**NOTES:**

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

The contractor shall use one of the resin anchor systems listed in the job special provisions for the curb blockout. These 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 as shown shall be substituted for the 5/8" threaded rod stud.

Cost of furnishing and installing the anchor systems complete in place shall be included in the price bid per linear foot of curb blockout.

The 5/8" diameter resin anchor systems shall have a minimum ultimate pullout strength of 18,800 lbs. in concrete with f' = 4000 psi. See special provisions.

**NOTES FOR CURB BLOCKOUT**

Concrete in curb blockout shall be B1. Measurement of curb blockout is to the nearest linear foot measured at the gutter line from end of wing to end of wing.

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

Payment for concrete and reinforcing steel in curb blockouts & End Posts complete in place shall be included in the contract unit price for the curb blockout per linear foot.

Cost of any concrete curb, parapet & end post removal shall be considered completely covered in unit prices bid for curb blockout.

Embedment depth of resin anchor systems (vertical & horizontal) shall be a maximum of 8" into existing curb.

Adjust Resin Anchors in the field if necessary, to miss curb outlets.

**TRAFFIC HANDLING:**

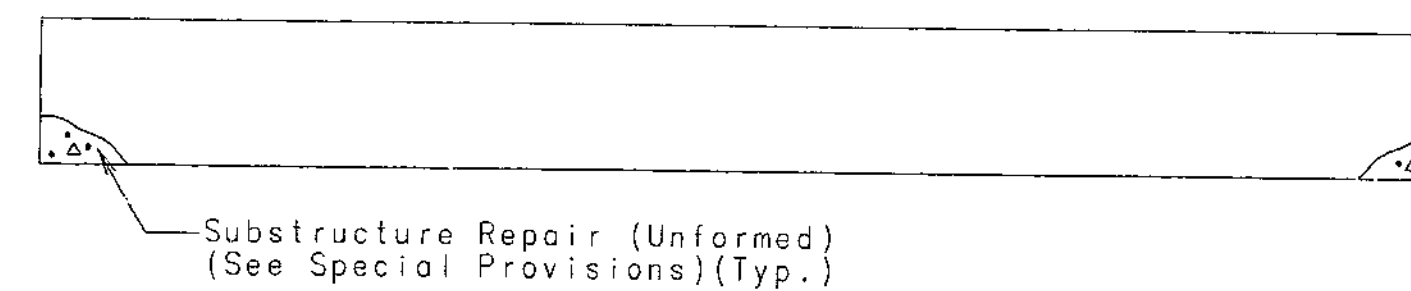
See roadway plans for traffic control during construction.

**EXISTING PARAPET RAILING:**

Where parapet is removed reattach parapet railing to new concrete using 3/4"x10" anchor bolts. Leave set screws out of rail post for expansion. Cost to be included in unit price for curb blockout.

**EXISTING LOW SLUMP CONCRETE OVERLAY:**

Any damage to the existing low slump concrete overlay shall be repaired or replaced as directed by the engineer. No direct payment will be made for any replacement or repairs to the low slump concrete overlay.



DETAIL SHOWING SUBSTRUCTURE REPAIR AREAS AT END BENTS

359

I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.

SIGNATURE: [Signature] DATE: 10/10/97

STATE OF MISSOURI  
MICHAEL D. HARMON  
NUMBER 2-26651  
PROFESSIONAL ENGINEER

DATE 10/10/97

DETAILED SEPT. 1997  
CHECKED SEPT. 1997

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

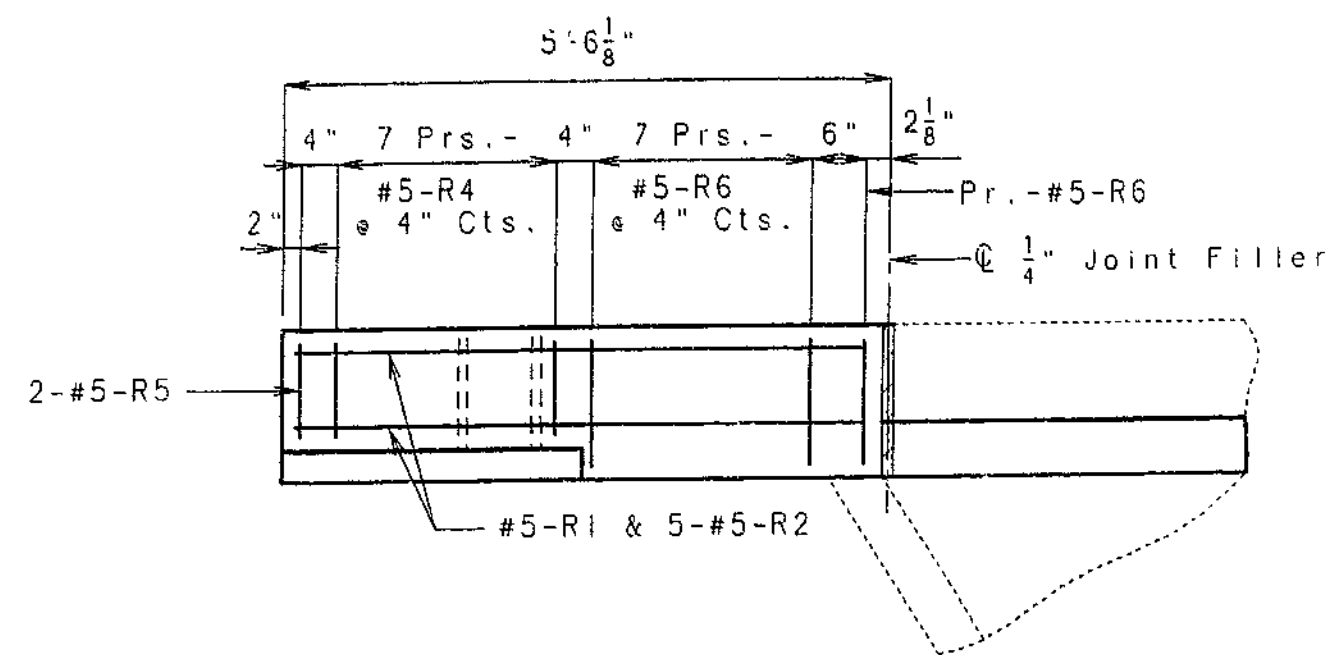
SHEET NO. 3 OF 9

CLAY

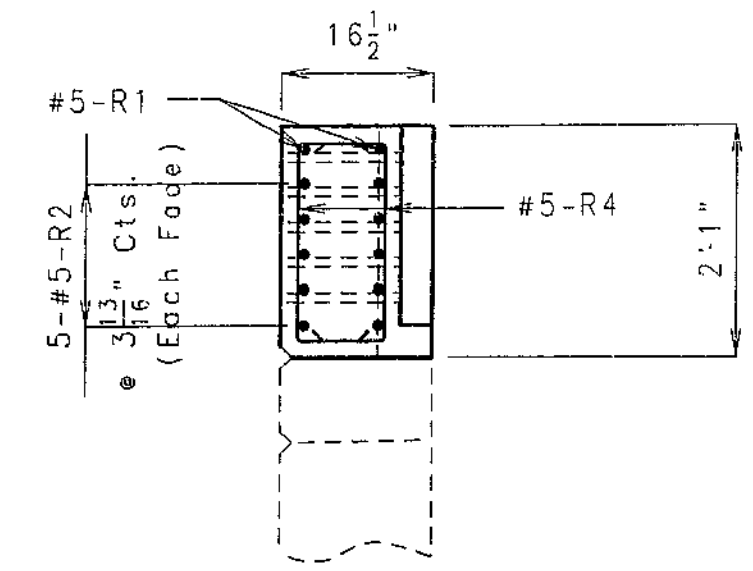
COUNTY

A15832

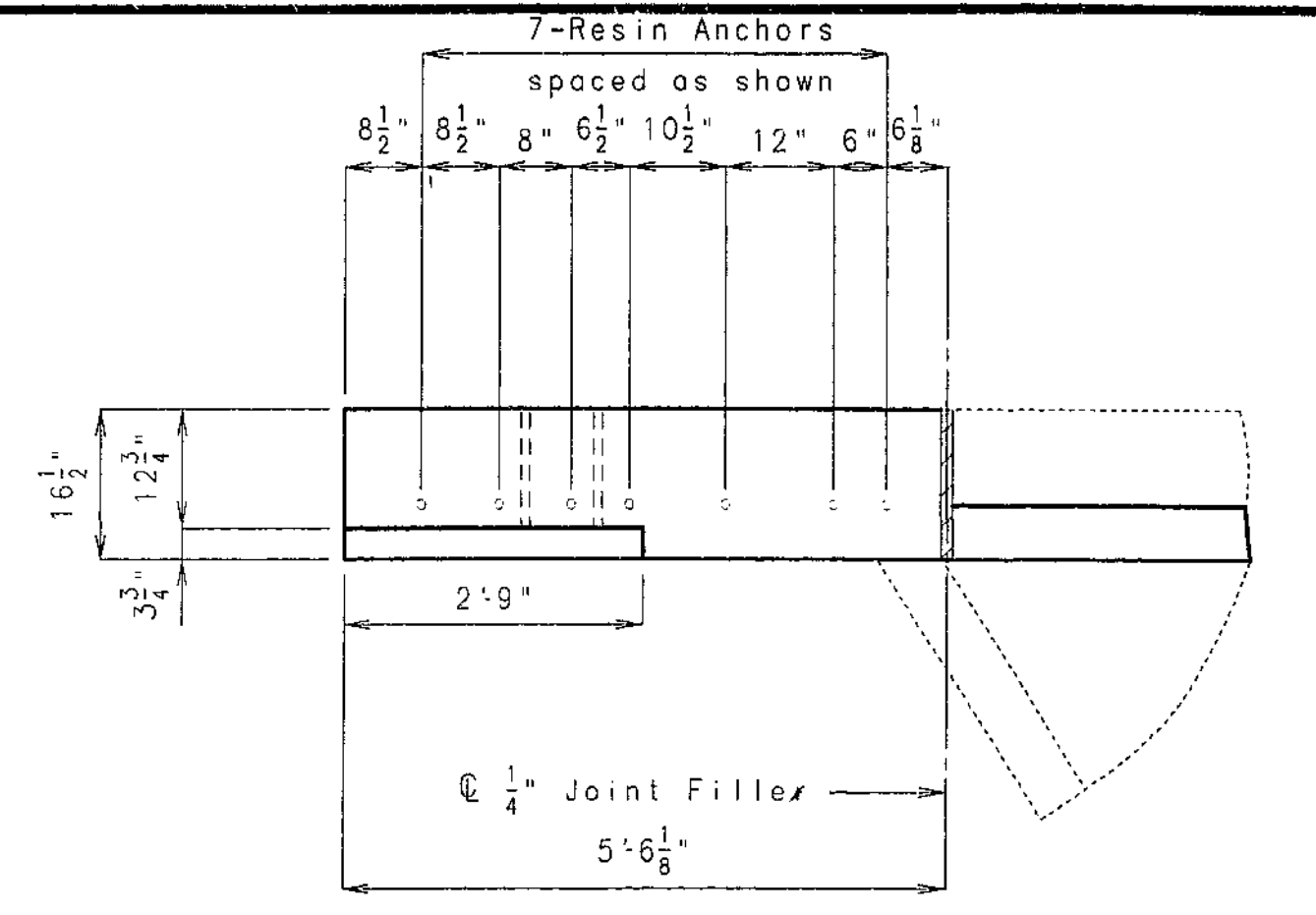
STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-435-1(261)	27



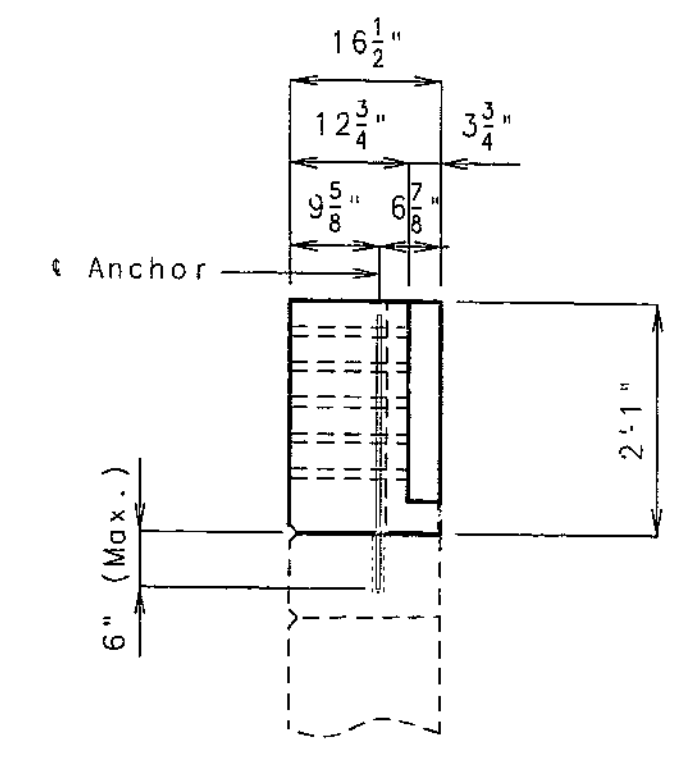
PLAN SHOWING END POST REINFORCEMENT



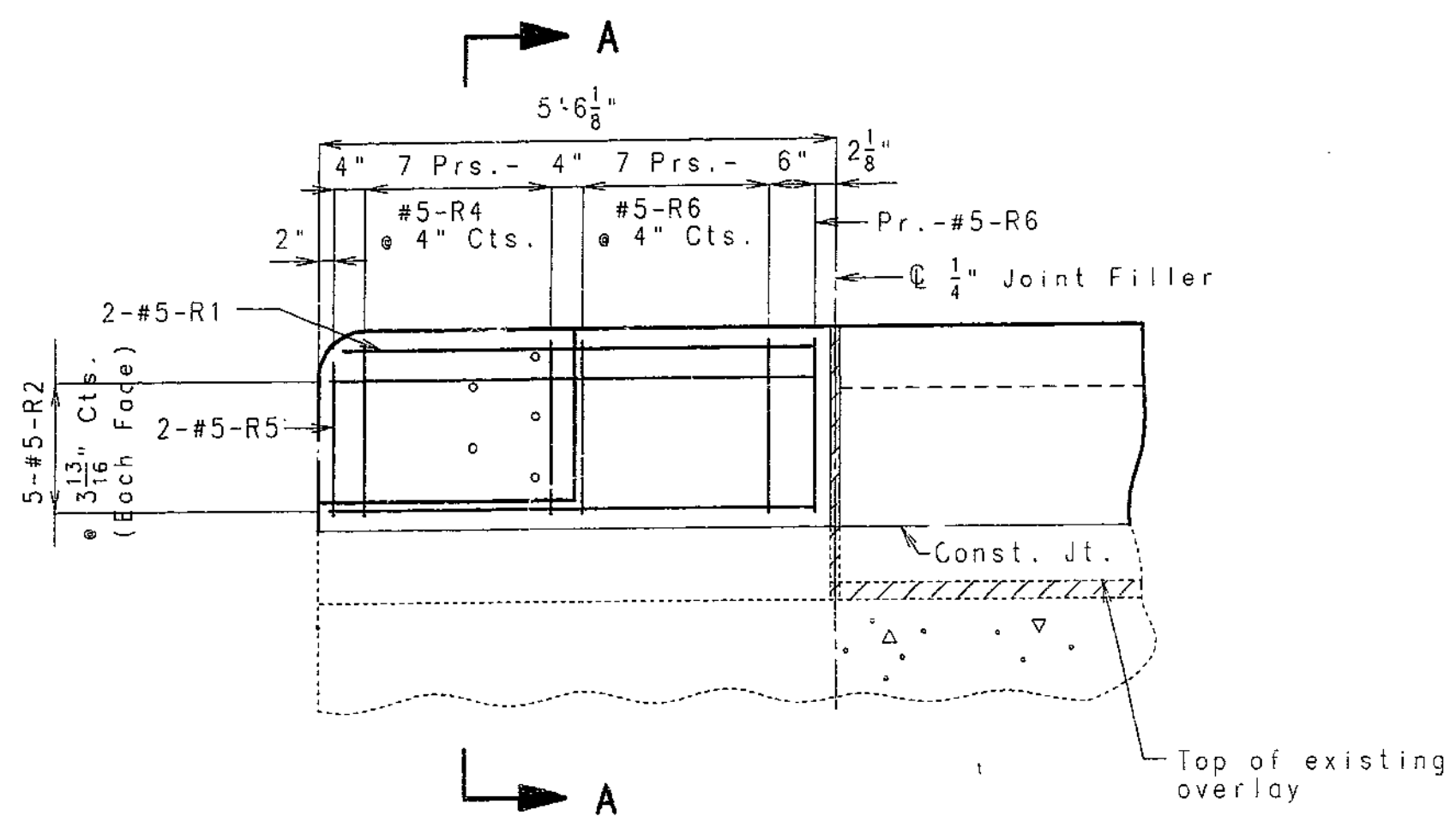
SECTION A-A



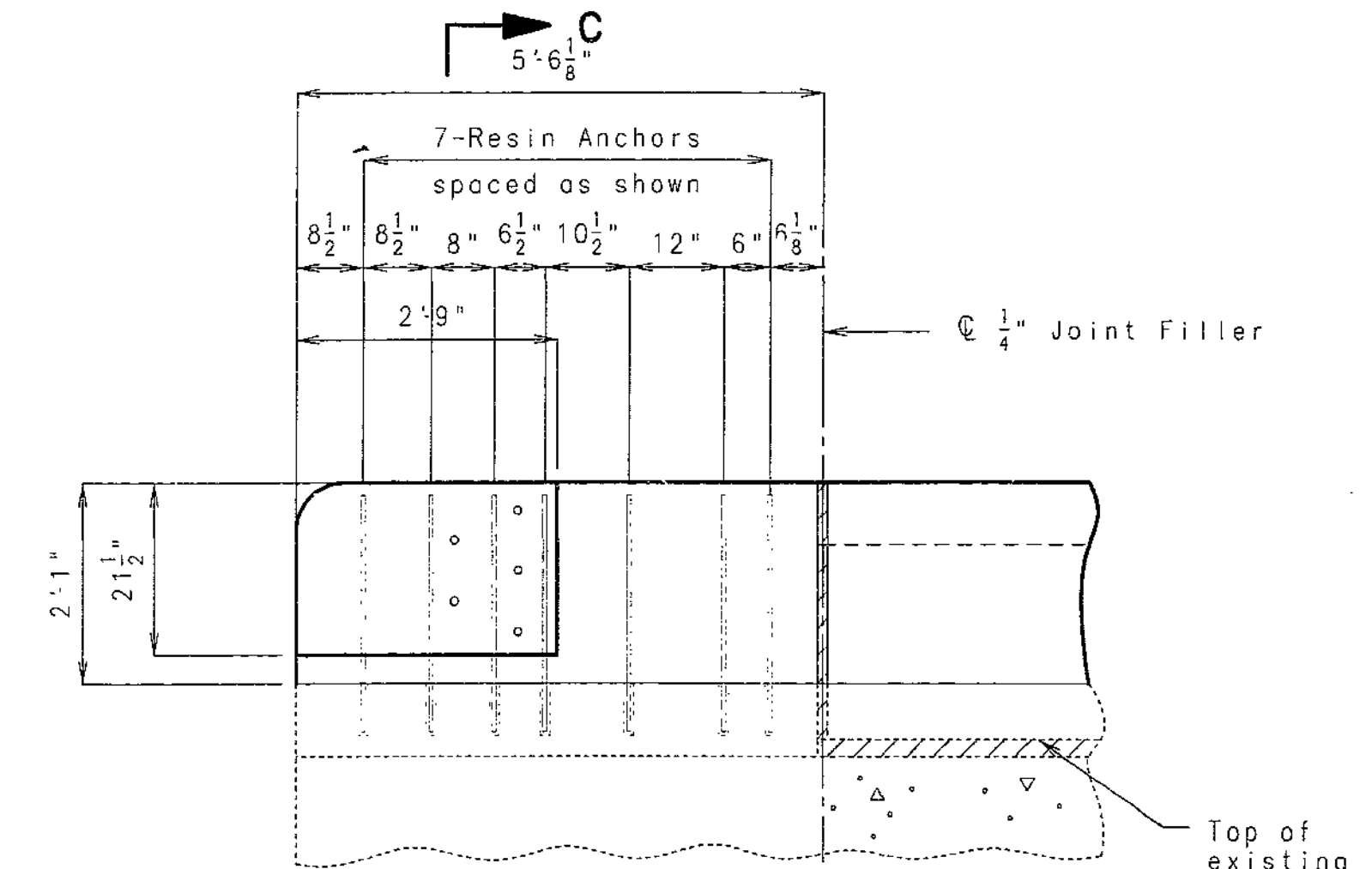
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



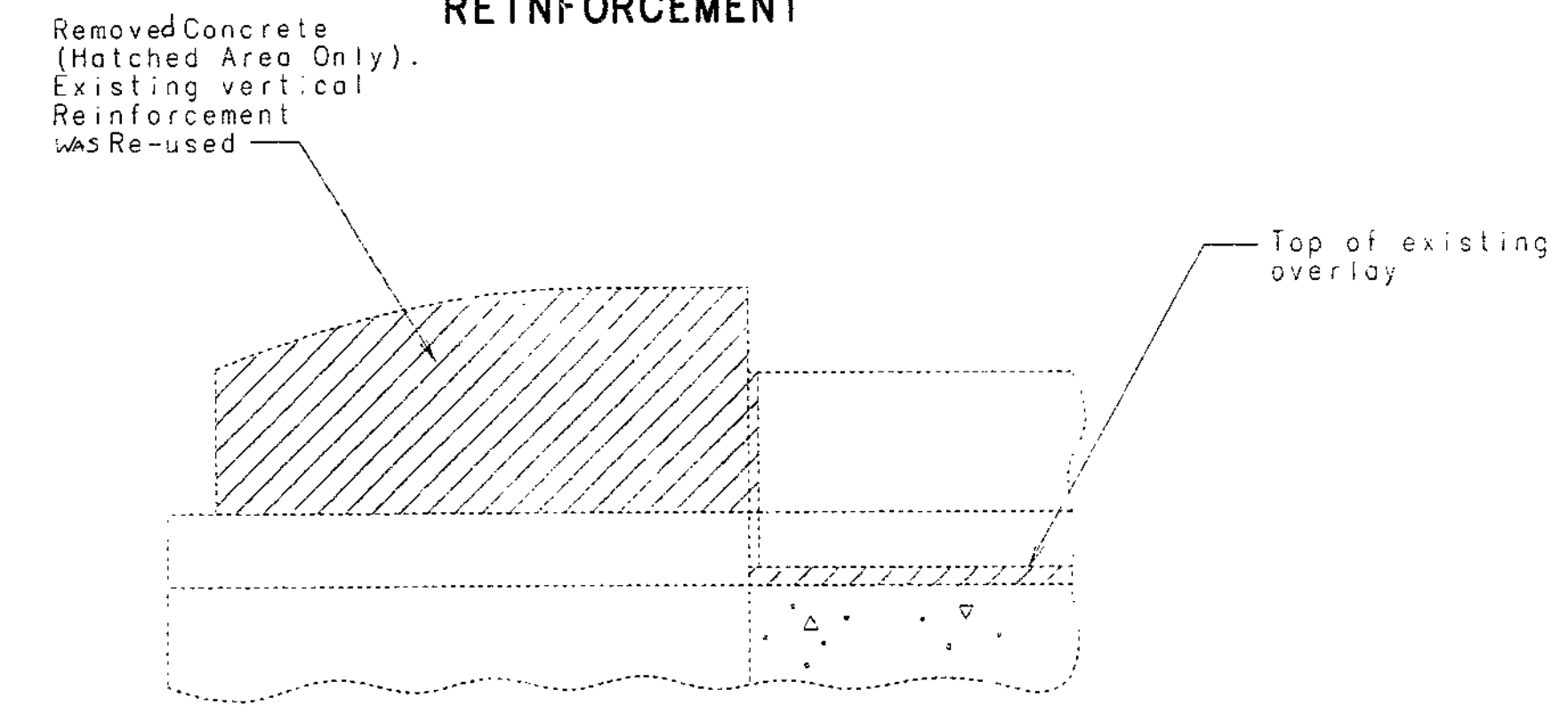
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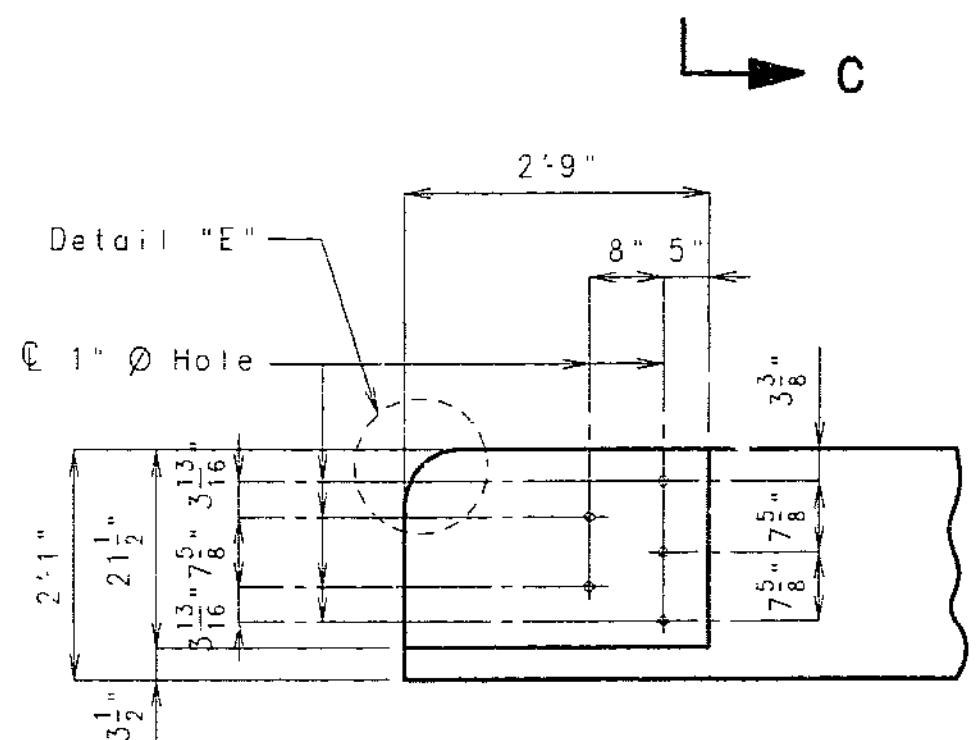
ELEVATION SHOWING END POST REINFORCEMENT



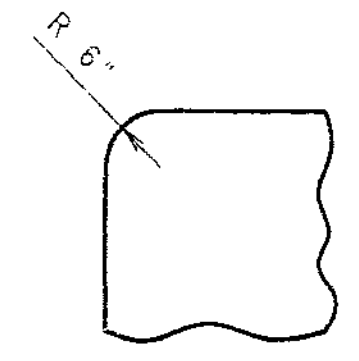
ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



ELEVATION OF EXISTING END POST WING CONCRETE REMOVAL



DETAILS OF GUARD RAIL ATTACHMENT



DETAIL "E"

CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.



DATE 10/20/97

DETAILS OF END POST ON SOUTHWEST WING AT BENT #1

360

DETAILED SEPT. 1997  
CHECKED SEPT. 1997

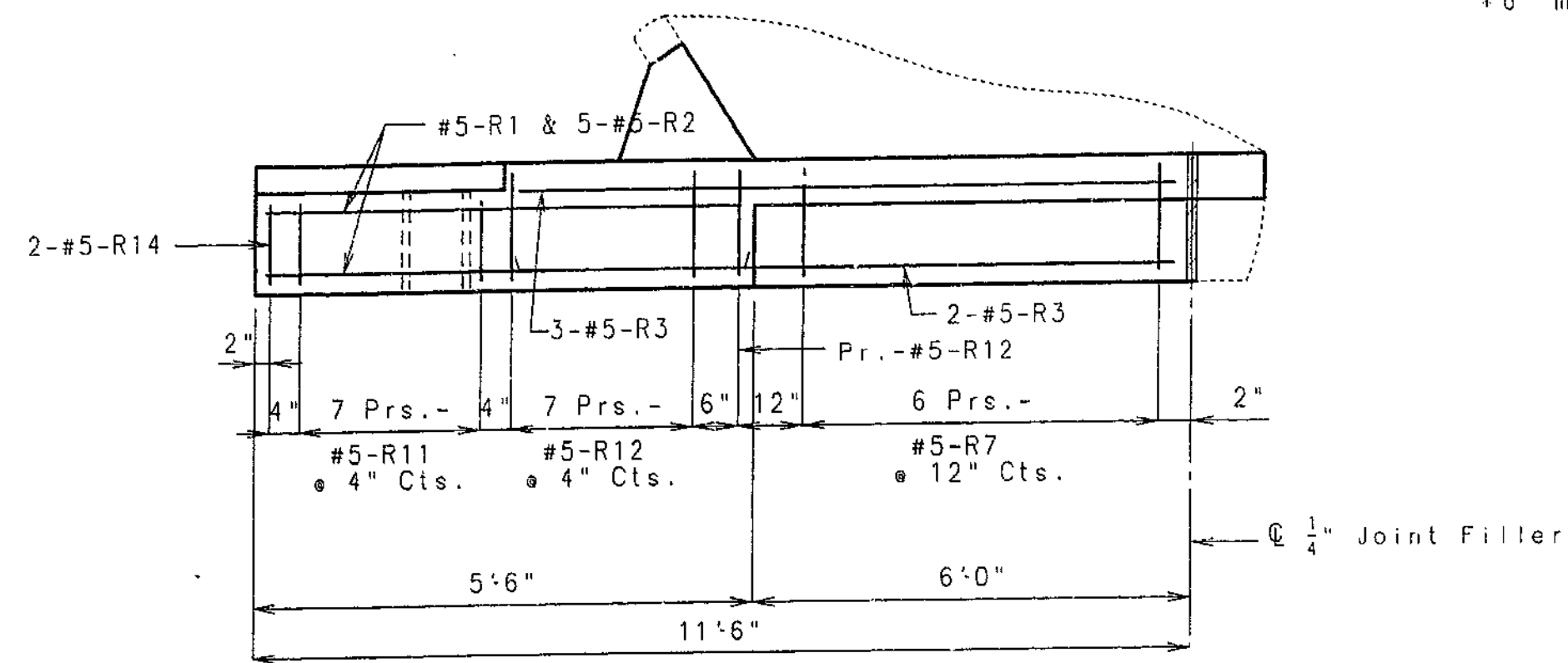
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 4 OF 9.

CLAY COUNTY

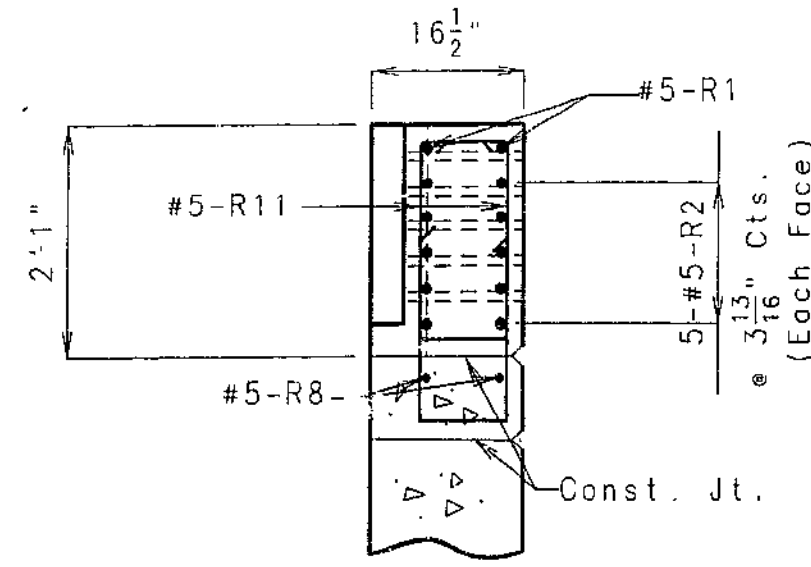
A15832

STATE	PROJ. NO.	SHEET NO.
MO. A.C.I.M.-435-1(200)		28

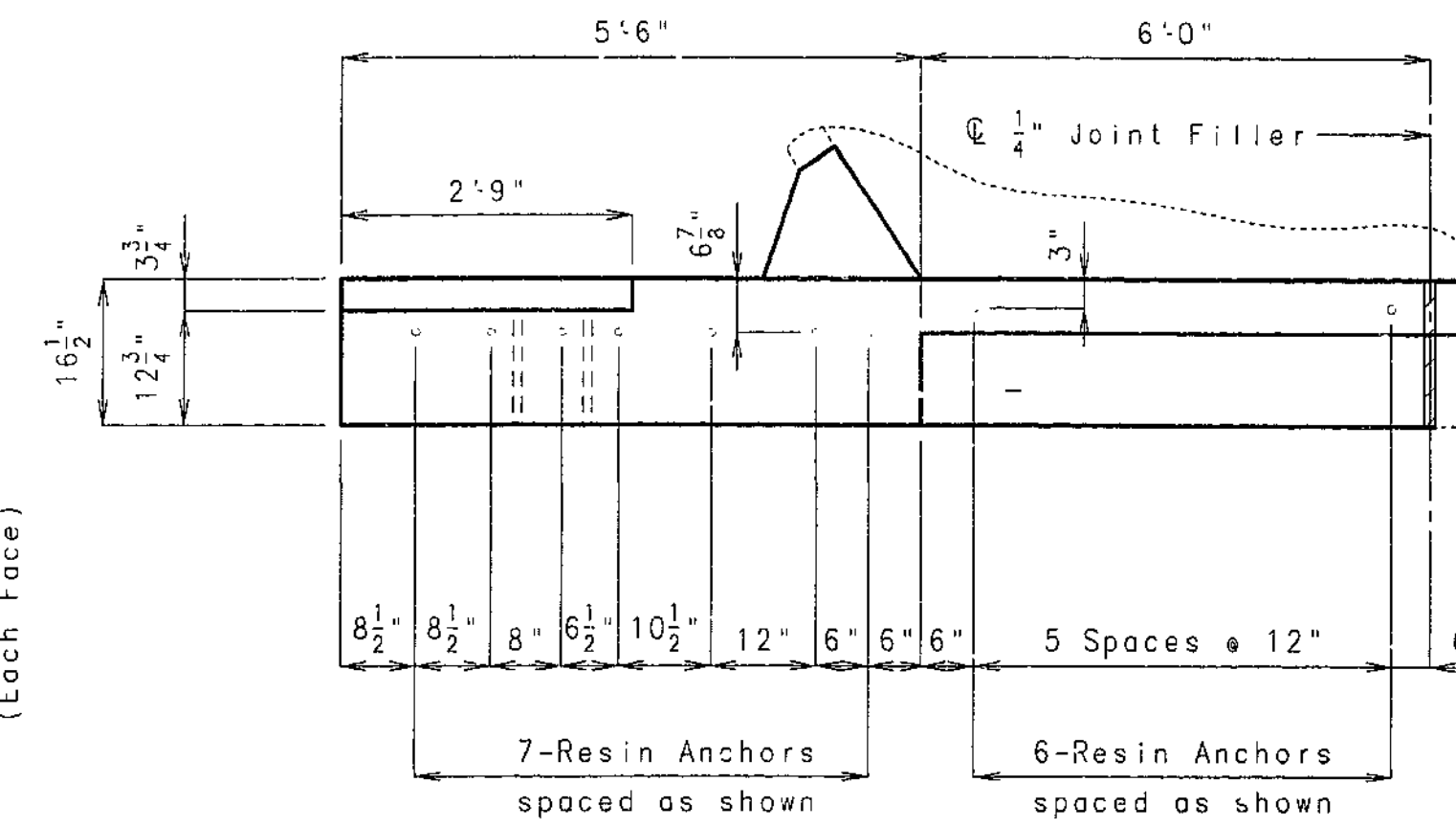


PLAN SHOWING END POST REINFORCEMENT

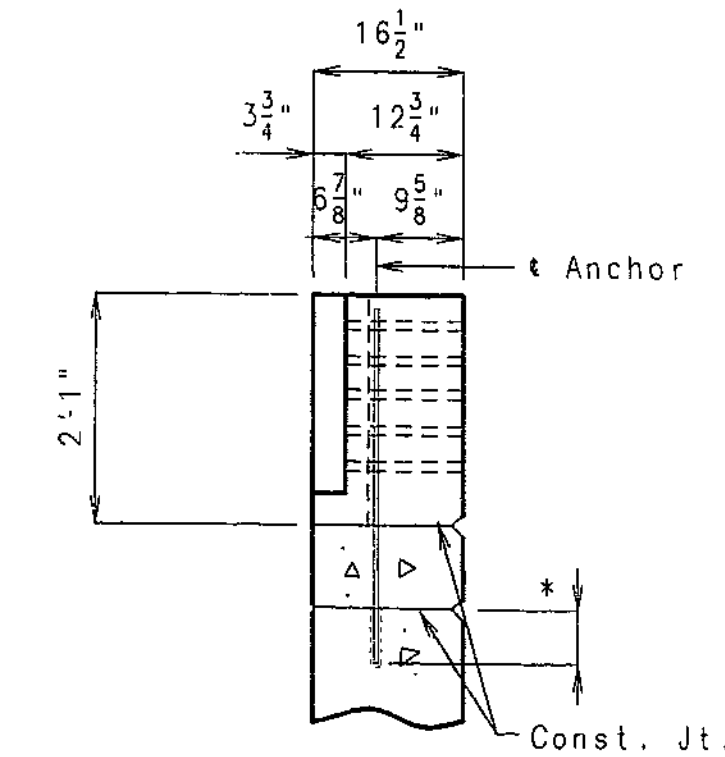
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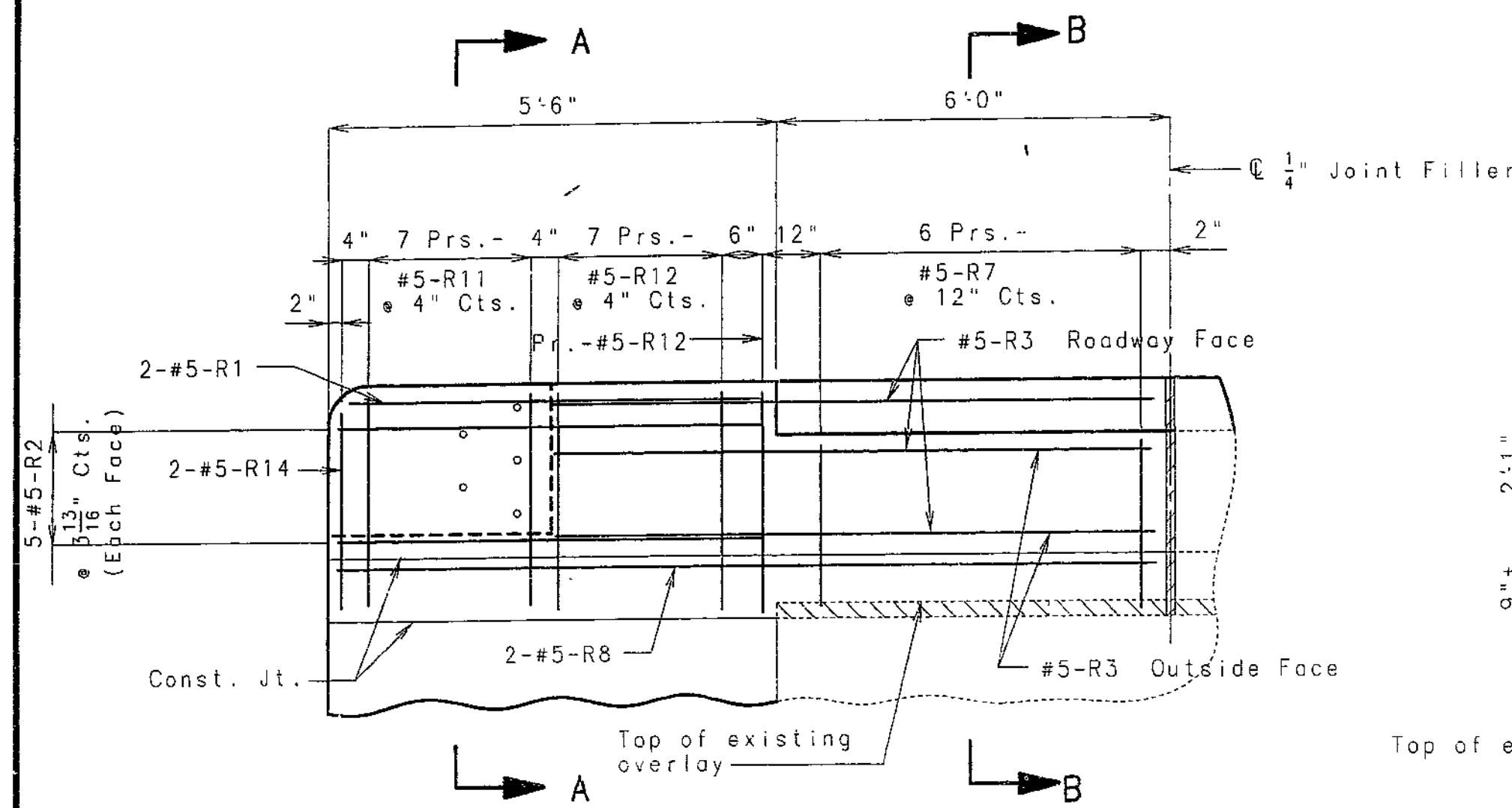
SECTION A-A



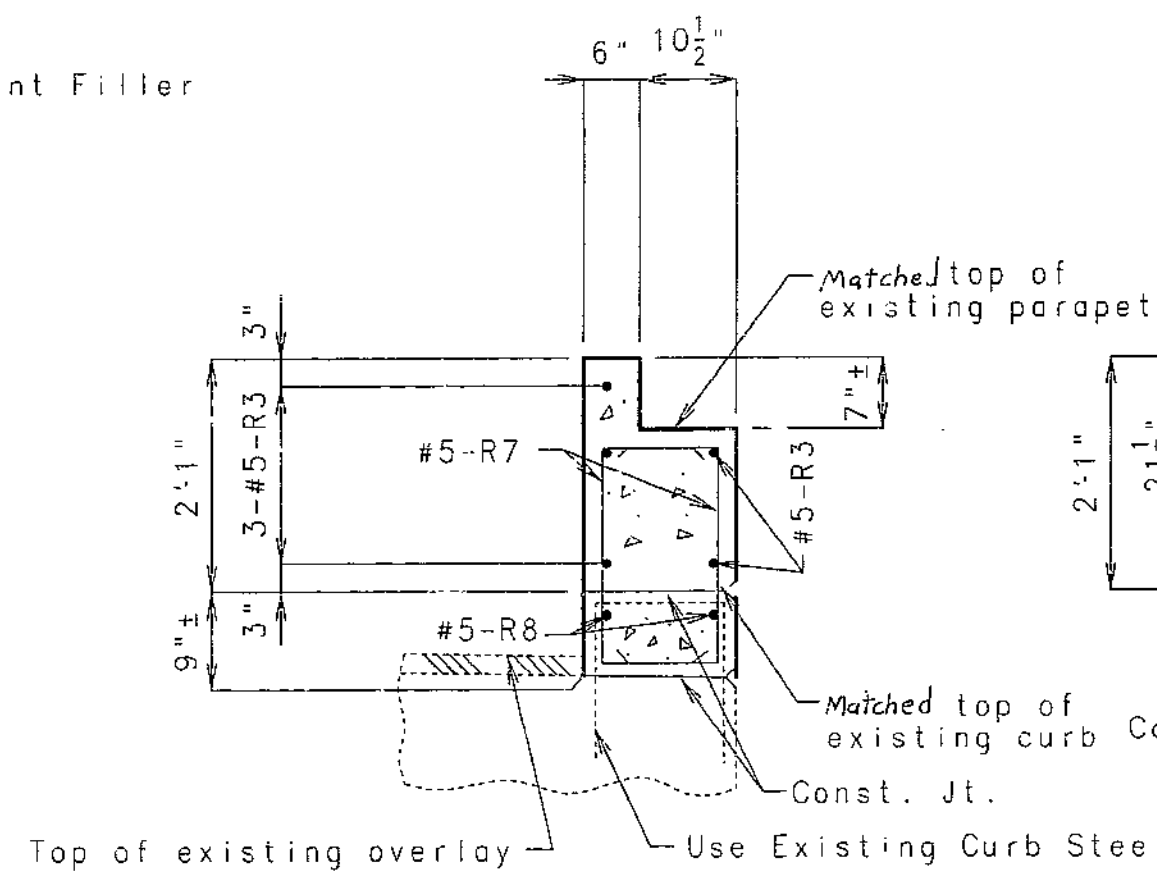
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



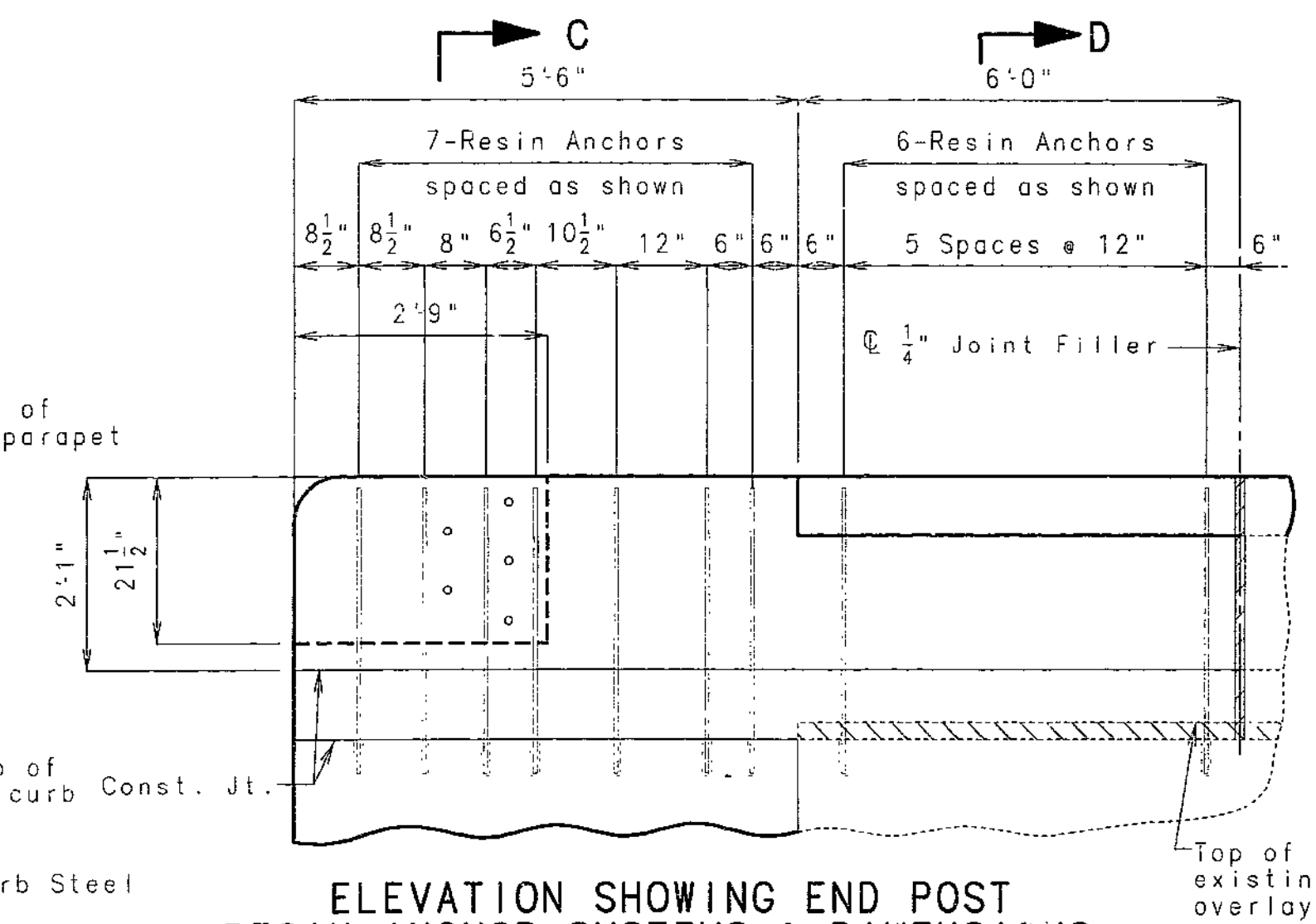
SECTION C-C



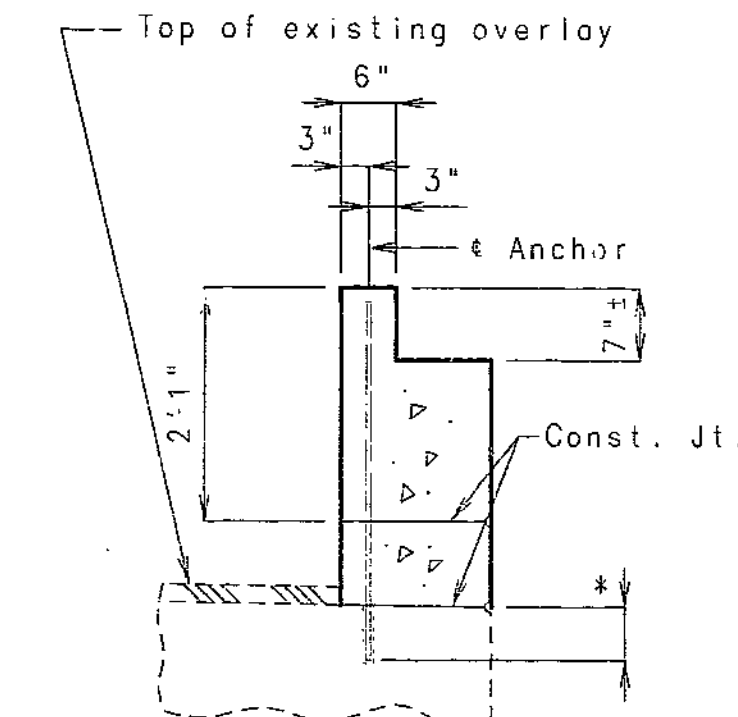
ELEVATION SHOWING END POST REINFORCEMENT



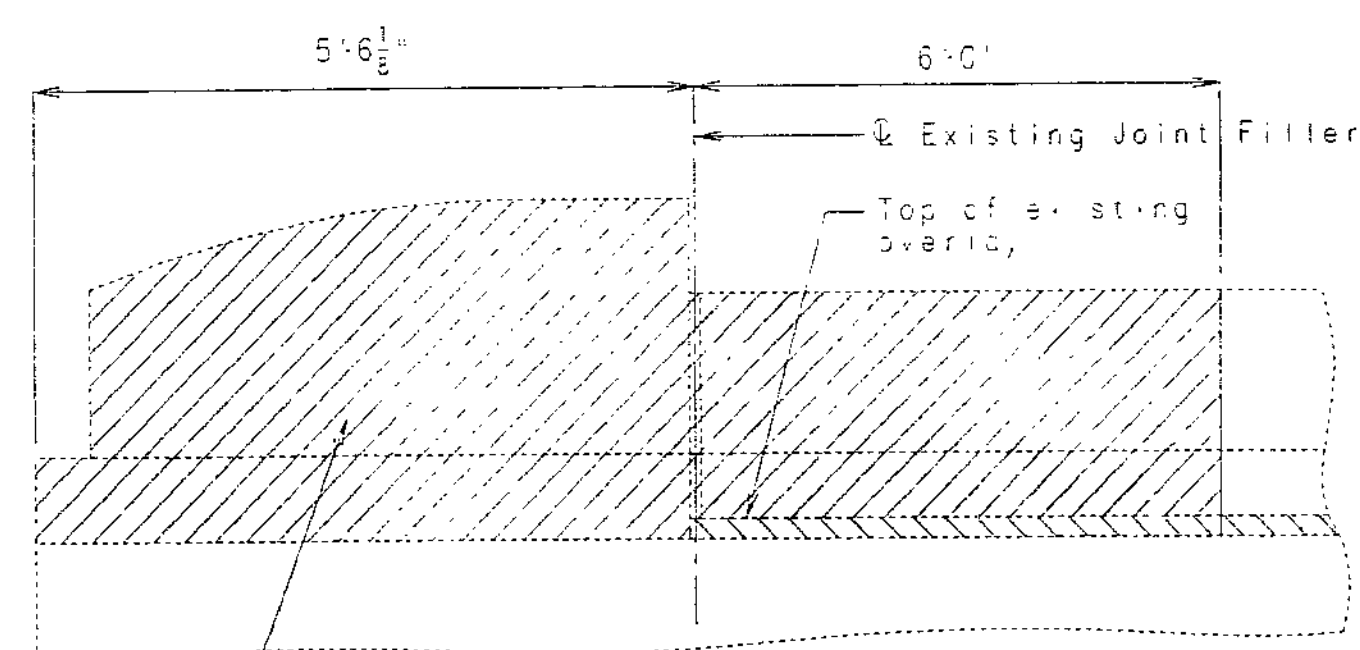
SECTION B-B



ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



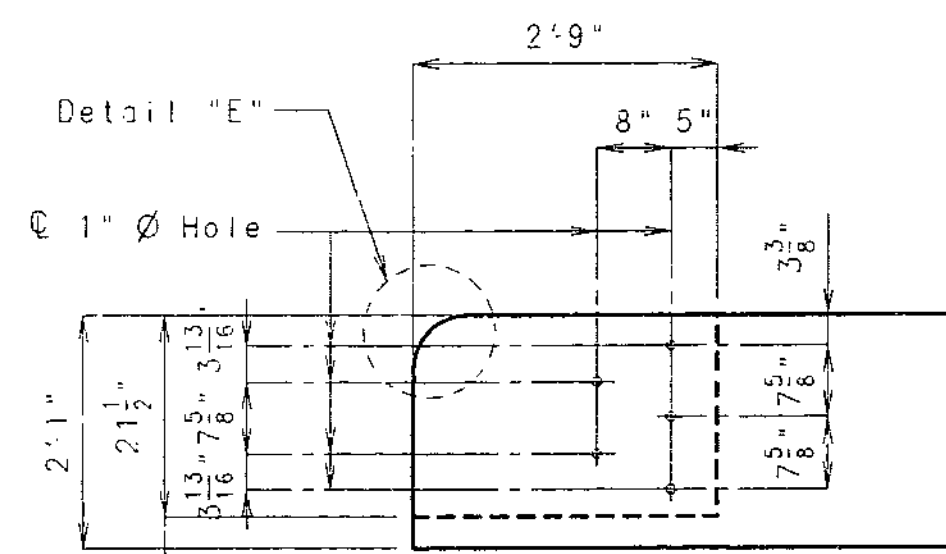
SECTION D-D



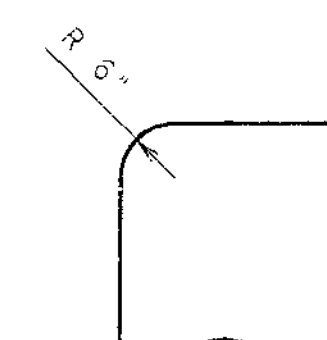
ELEVATION OF EXISTING CURB SHOWING CONCRETE REMOVAL

Removed Concrete (Hatched Area Only). Existing vertical Reinforcement was Re-used

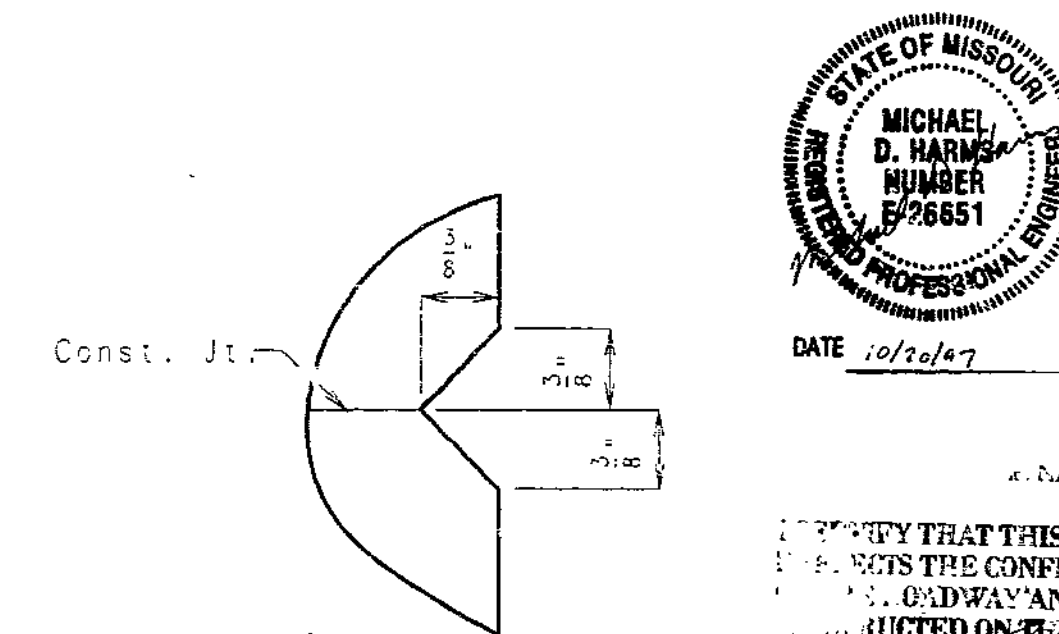
Note: For limits of concrete removal of existing wing see sheet No. 8.



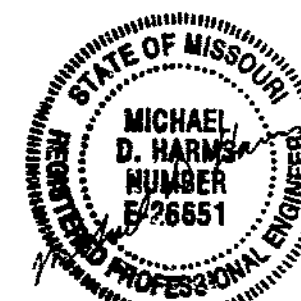
DETAILS OF GUARD RAIL ATTACHMENT



DETAIL "E"



RUSTICATION DETAIL



DATE 10/20/97

I CERTIFY THAT THIS DRAWING MEETS THE CONFIGURATION OF THE ROADWAY AND APPROVED FOR CONSTRUCTION ON THIS PROJECT.

SIGNATURE  
MICHAEL D. HARMS  
E-26651

DETAILS OF END POST ON SOUTHEAST WING BENT #2

361  
DETAILED SEPT. 1997  
CHECKED SEPT. 1997

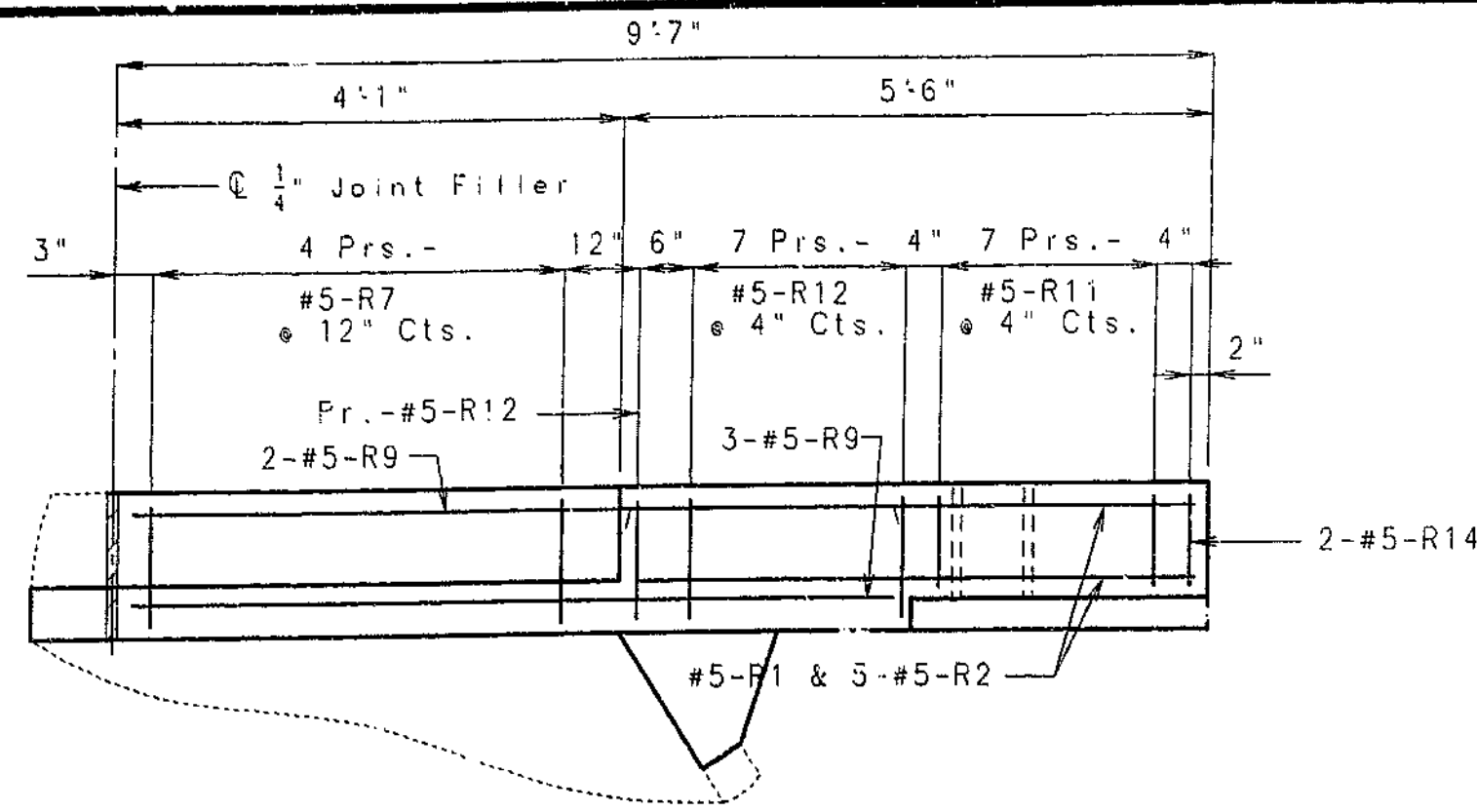
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 5 OF 9.

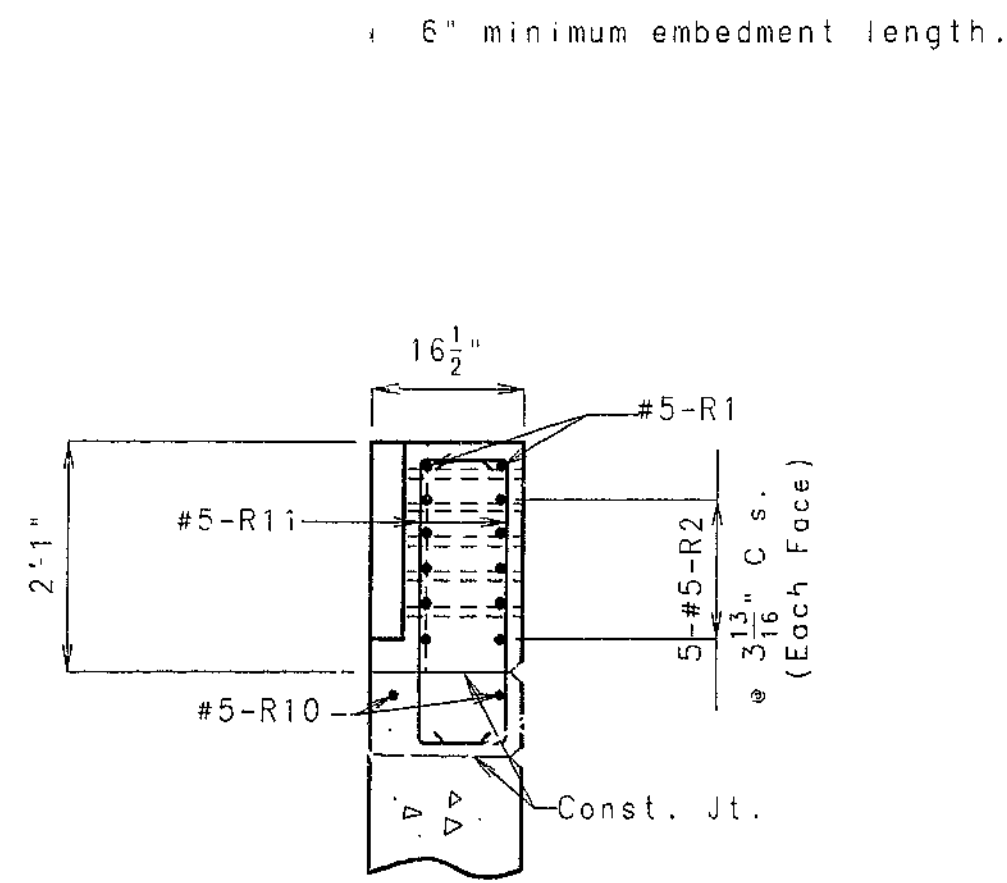
CLAY COUNTY

A15832

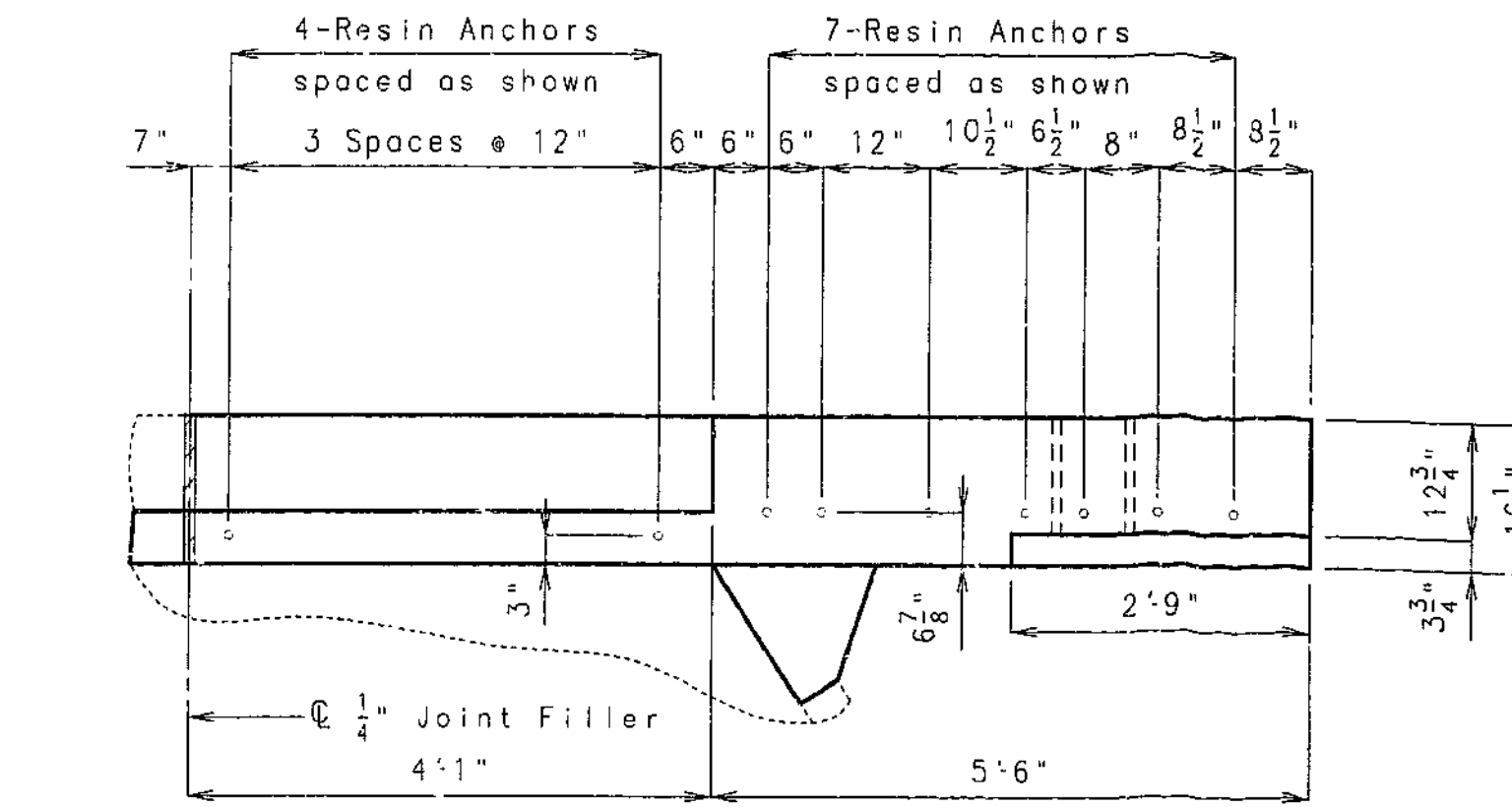
STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-436-1(261)	29



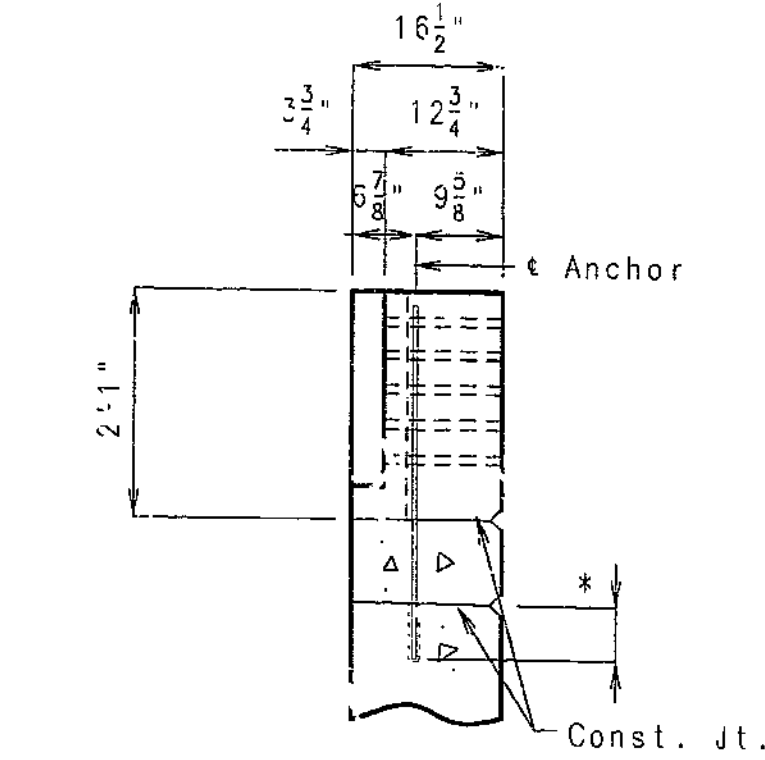
PLAN SHOWING END POST REINFORCEMENT



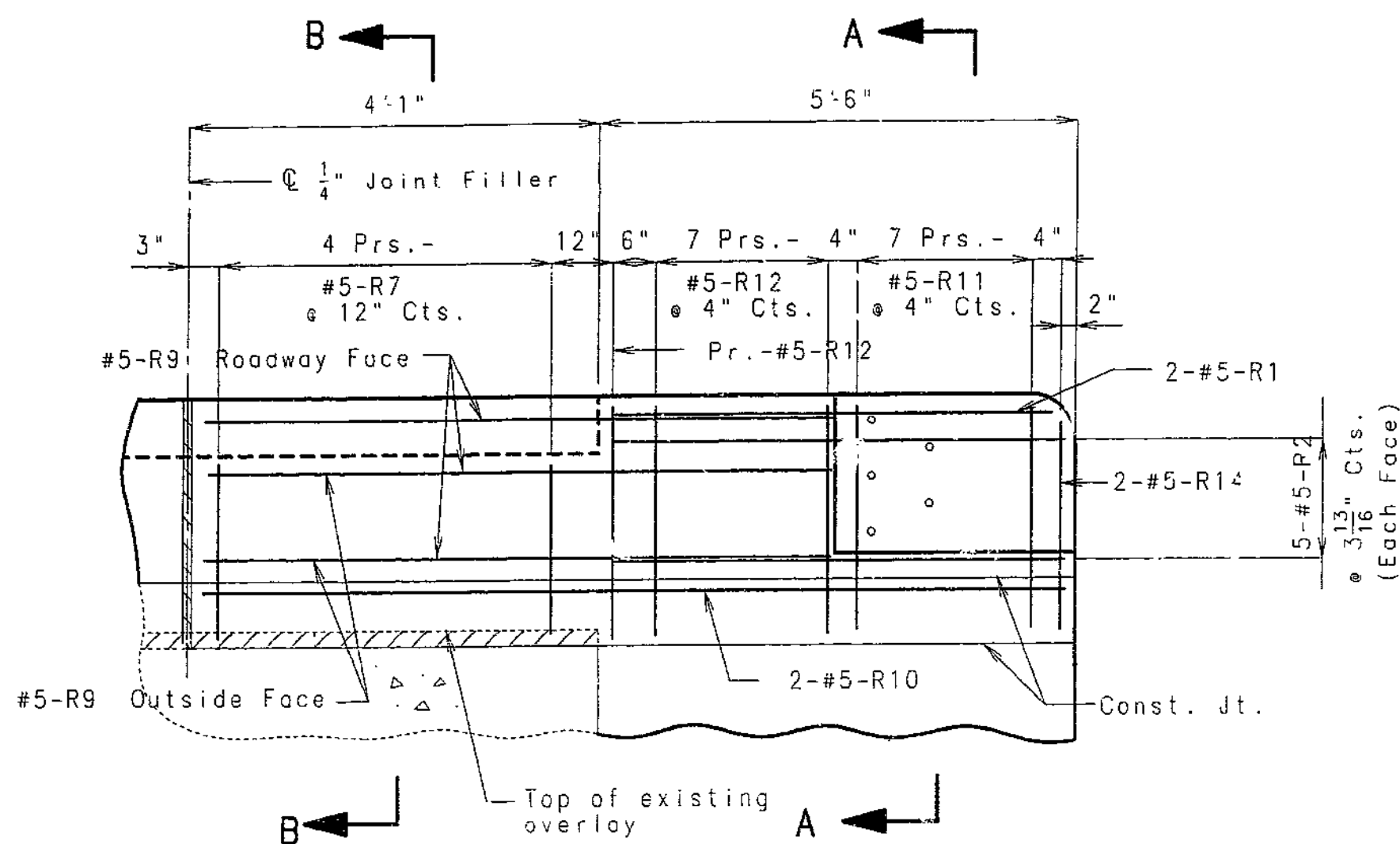
SECTION A-A



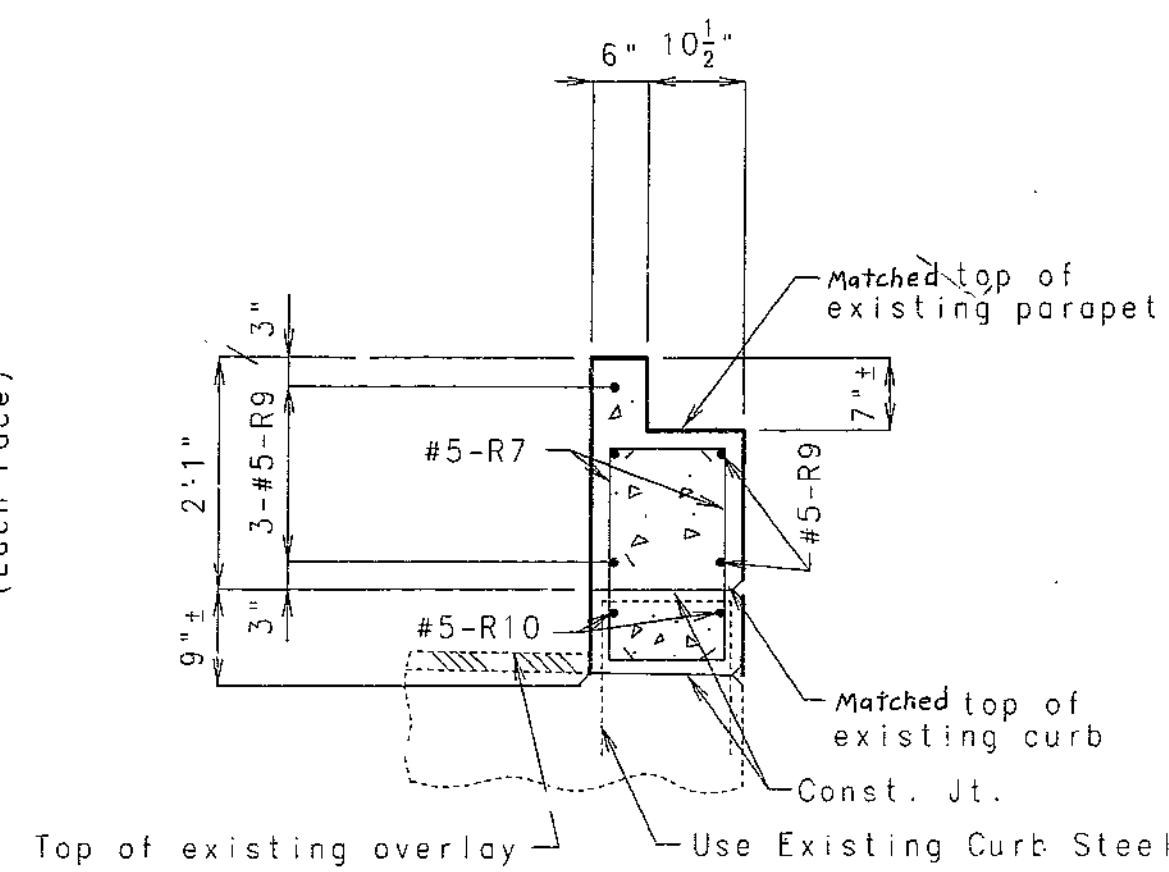
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



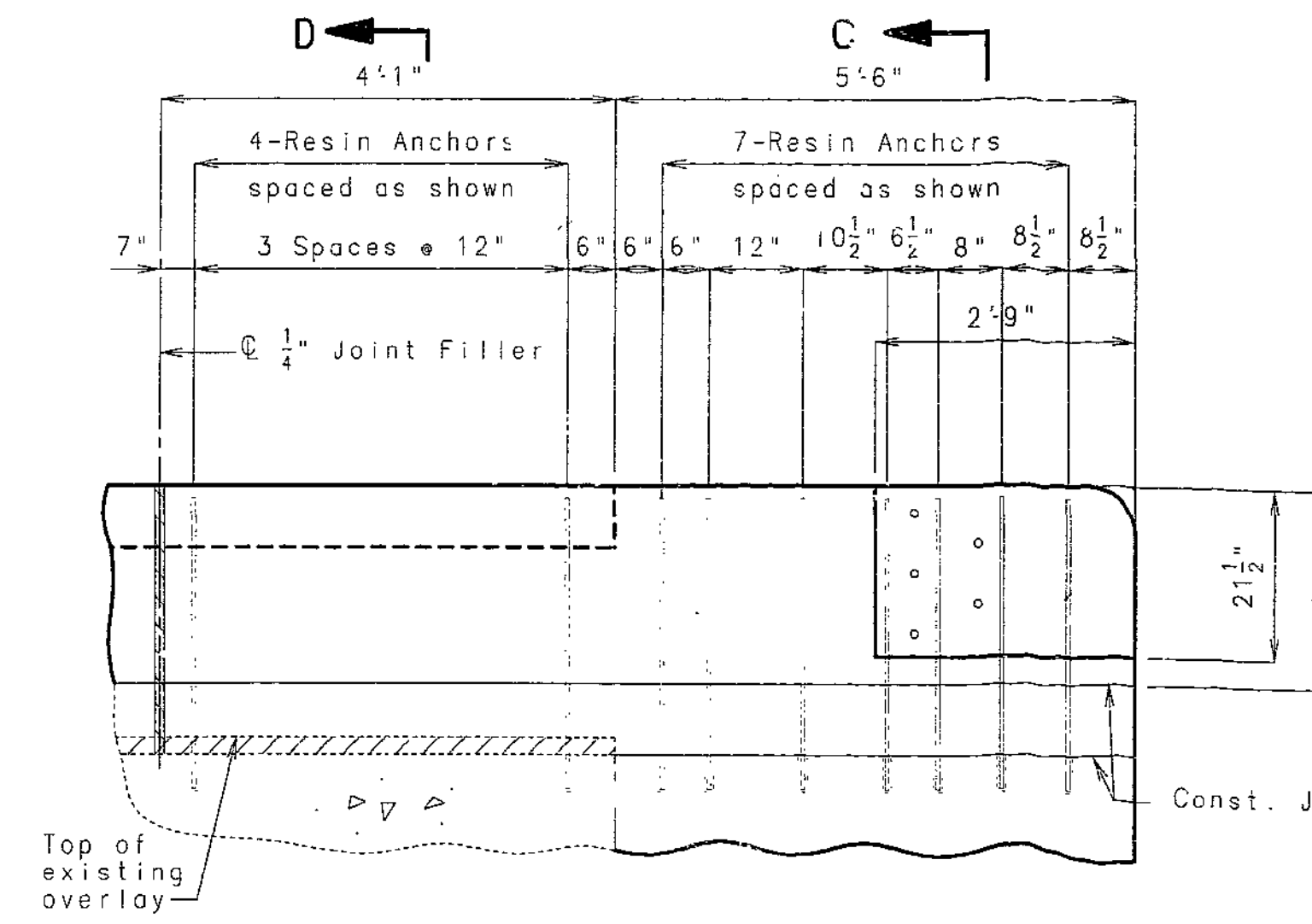
SECTION C-C



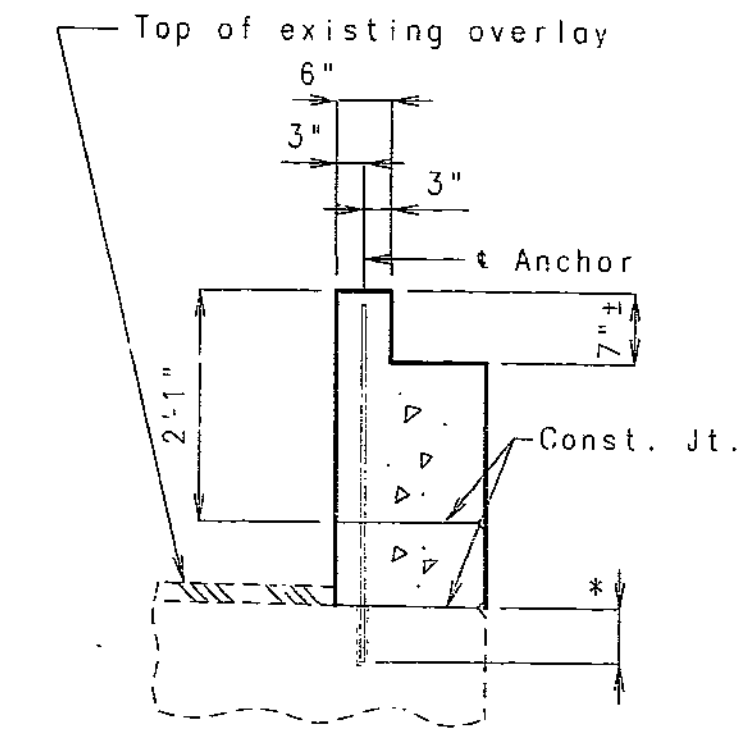
ELEVATION SHOWING END POST REINFORCEMENT



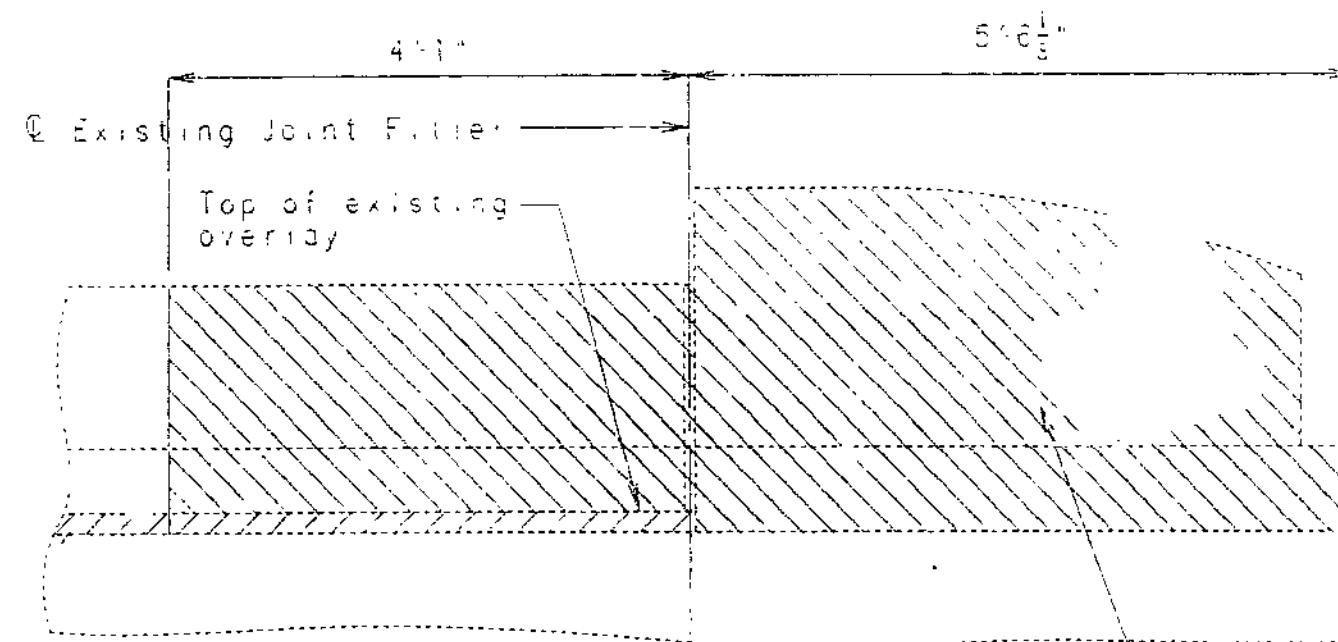
SECTION B-B



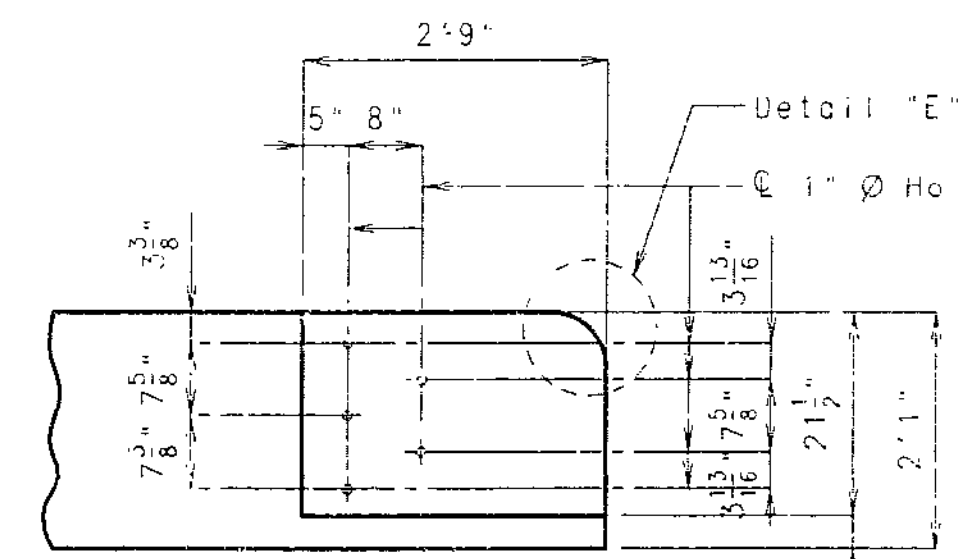
ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



SECTION D-D



ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL

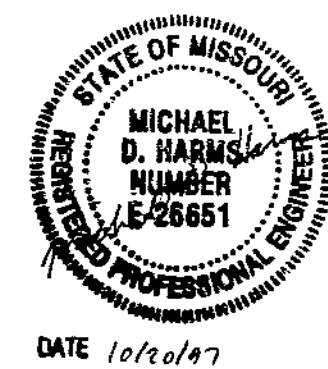


DETAILS OF GUARD RAIL ATTACHMENT

DETAIL "E"

FINAL PLAN  
I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.

SIGNATURE



DATE 10/26/97

DETAILS OF END POST ON NORTHWEST WING AT BENT #5

362  
DETAILED SEPT. 1997  
CHECKED SEPT. 1997

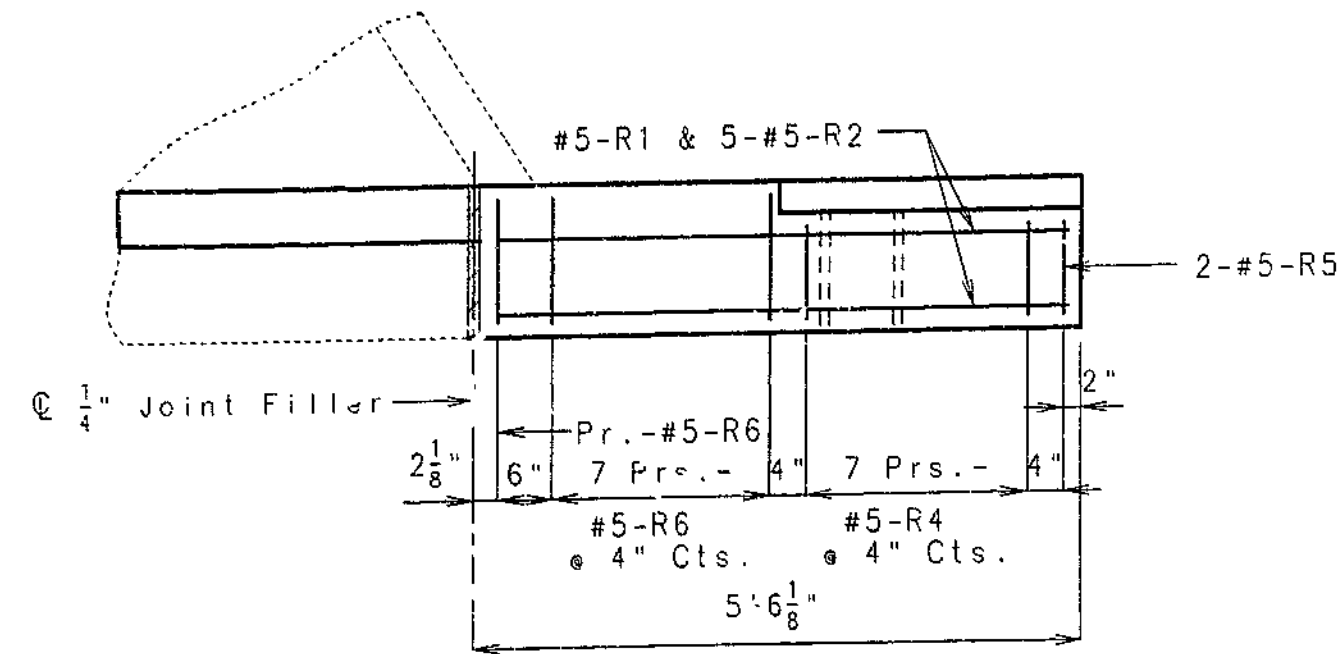
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 6 OF 9.

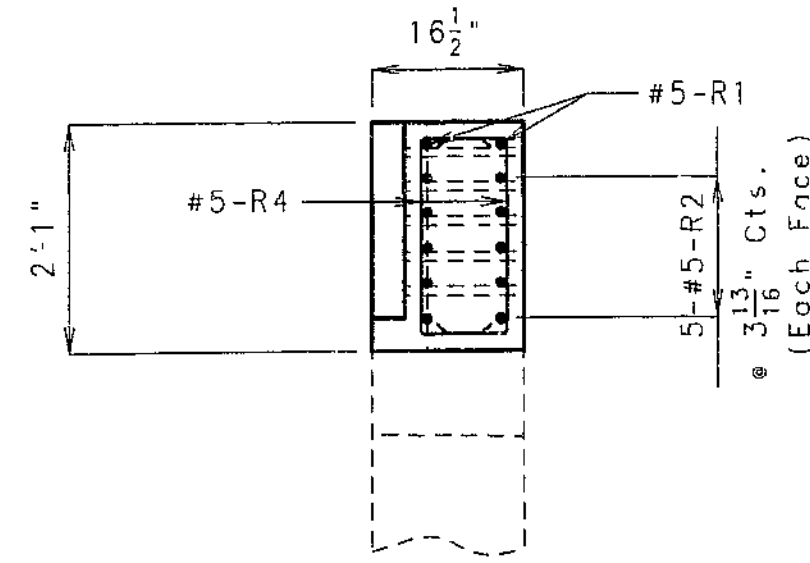
CLAY COUNTY

A15832

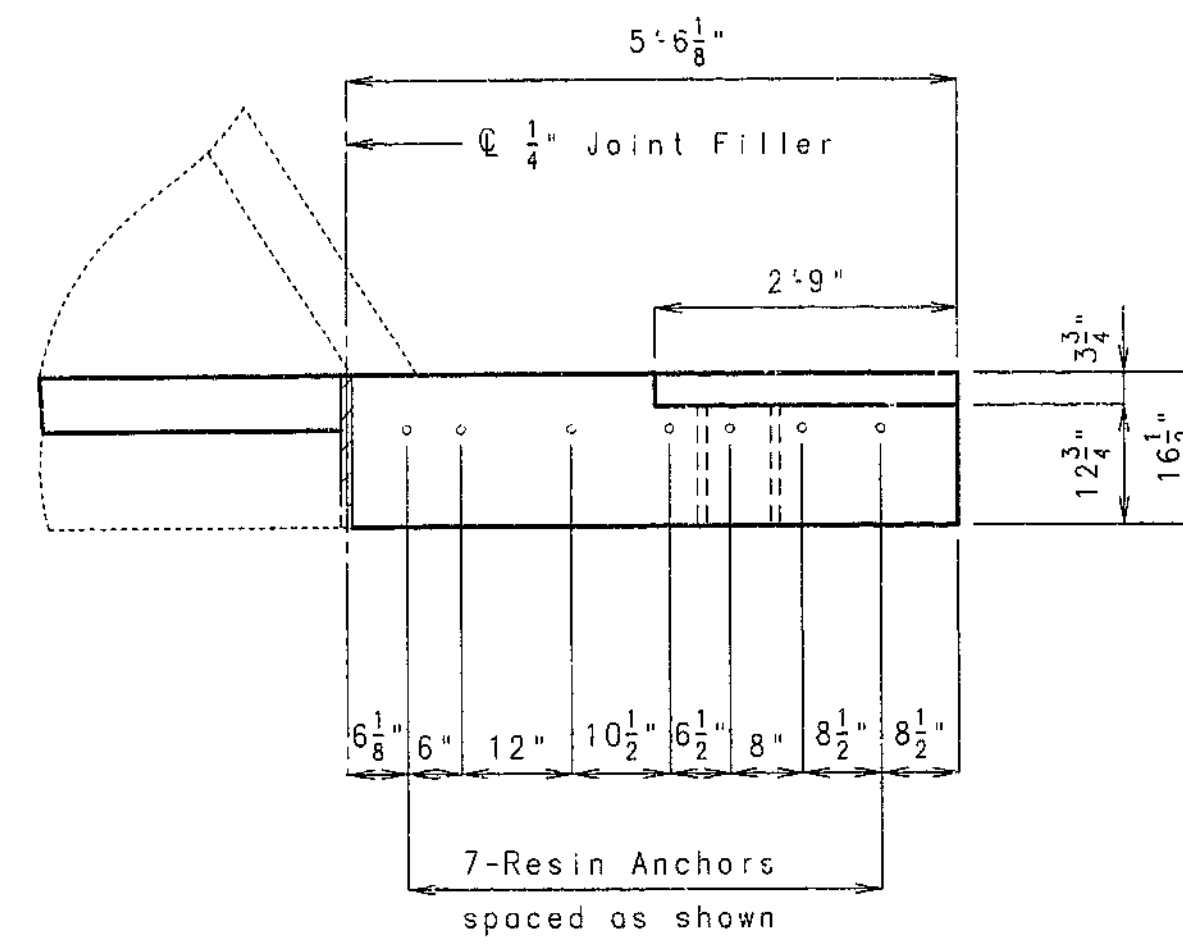
STATE	PROJ. NO.	SHEET NO.
MO.	ACIM-436-1(261)	30



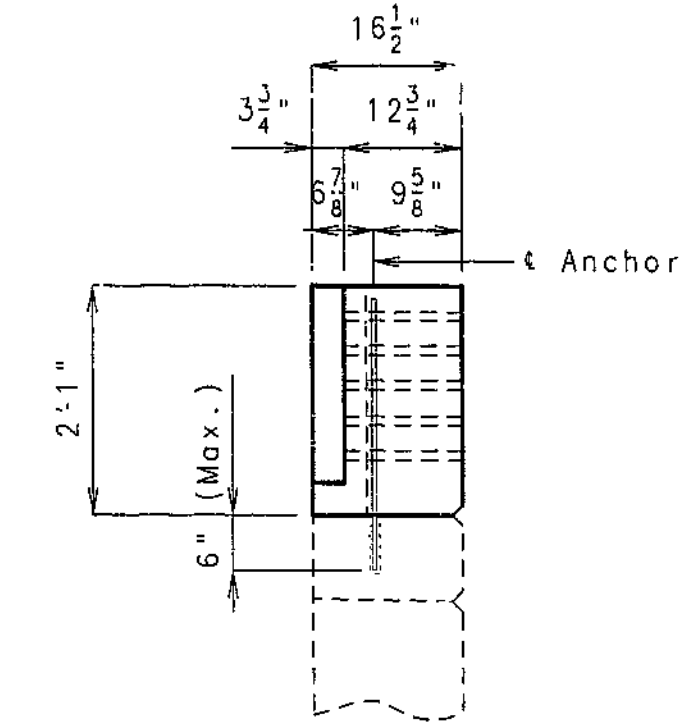
PLAN SHOWING END POST REINFORCEMENT



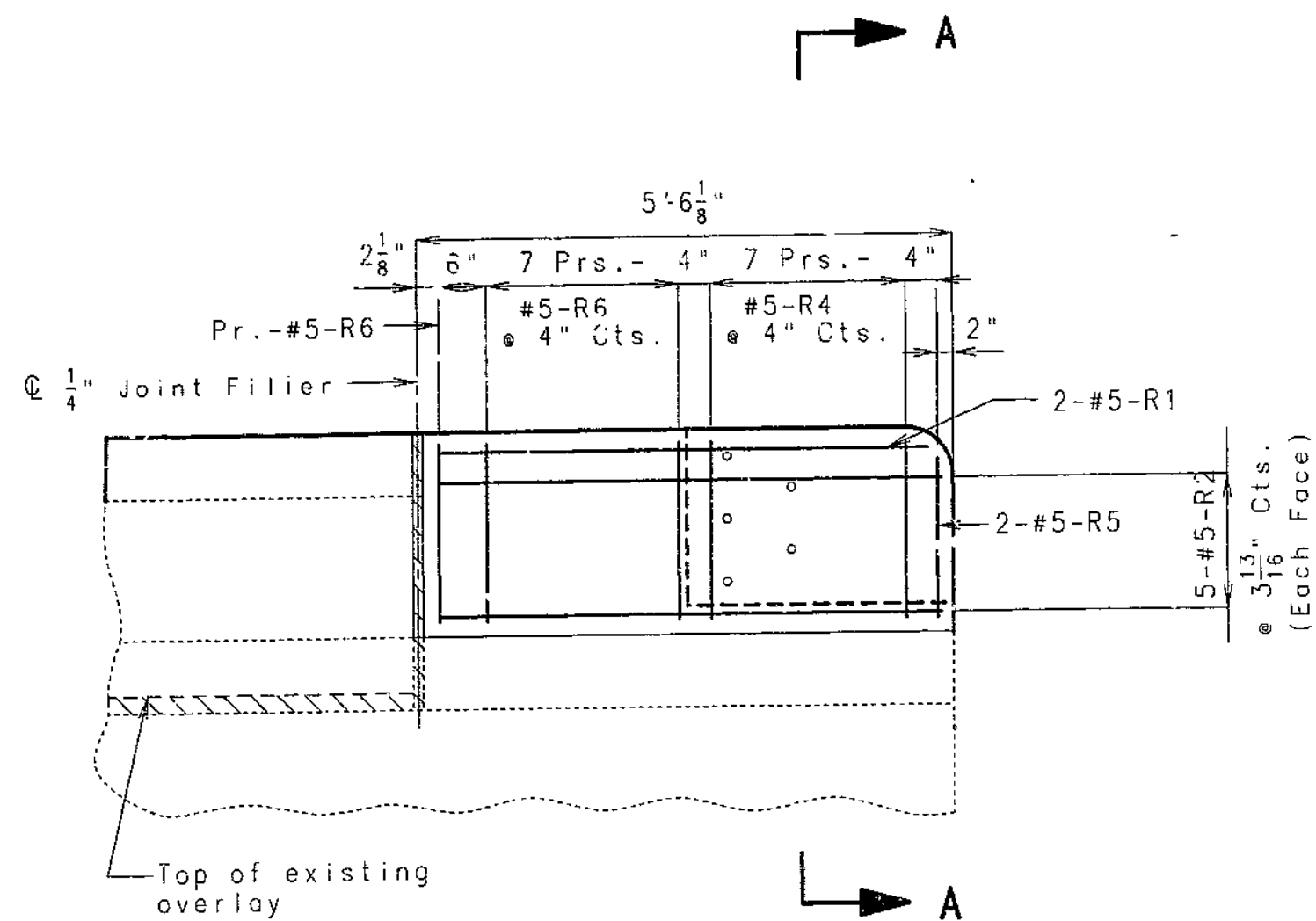
SECTION A-A



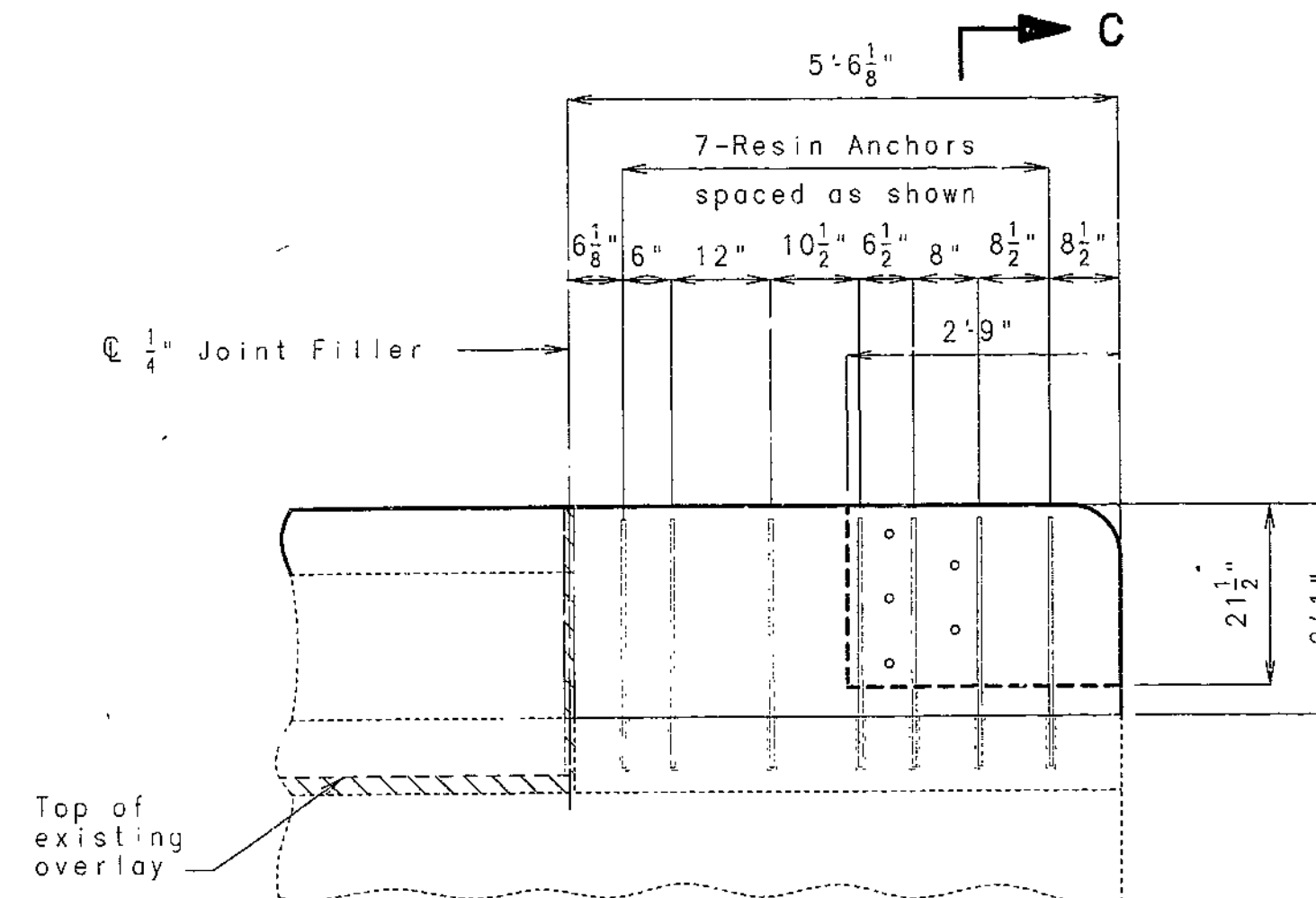
PLAN SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



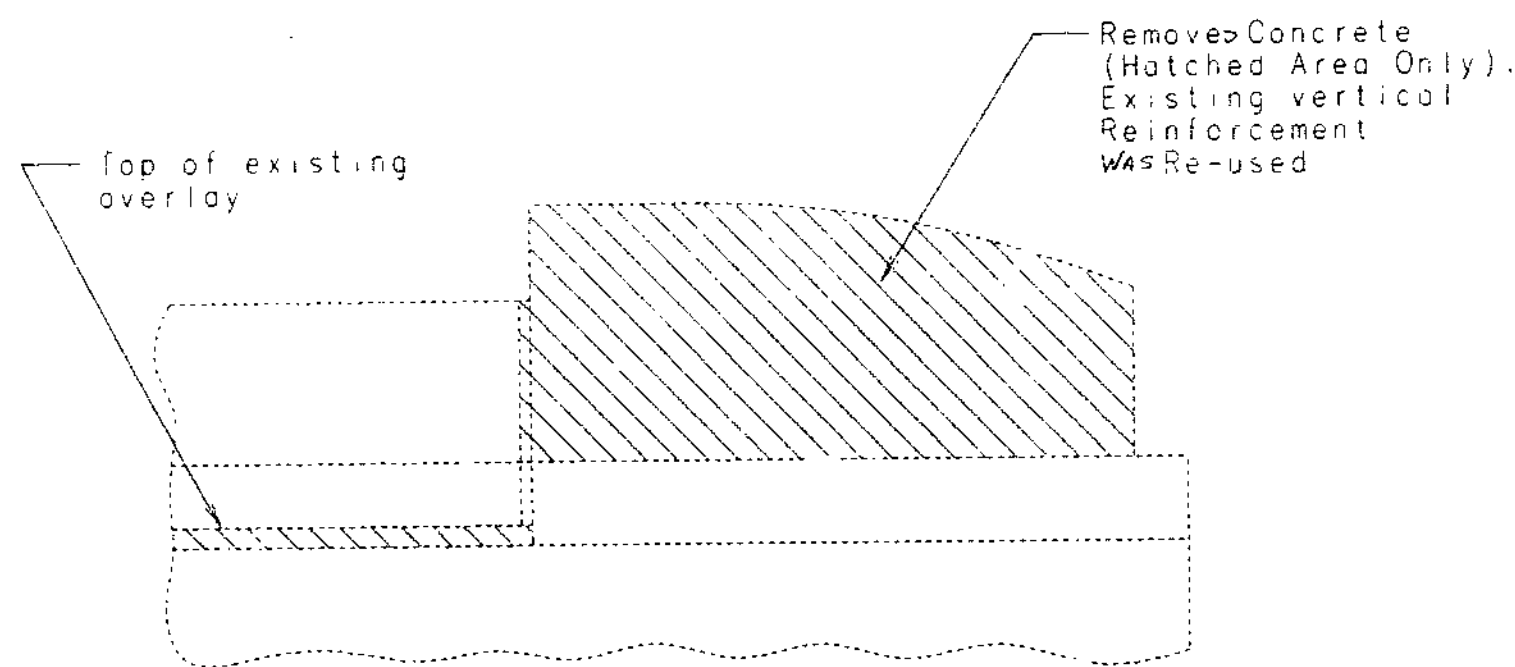
SECTION C-C



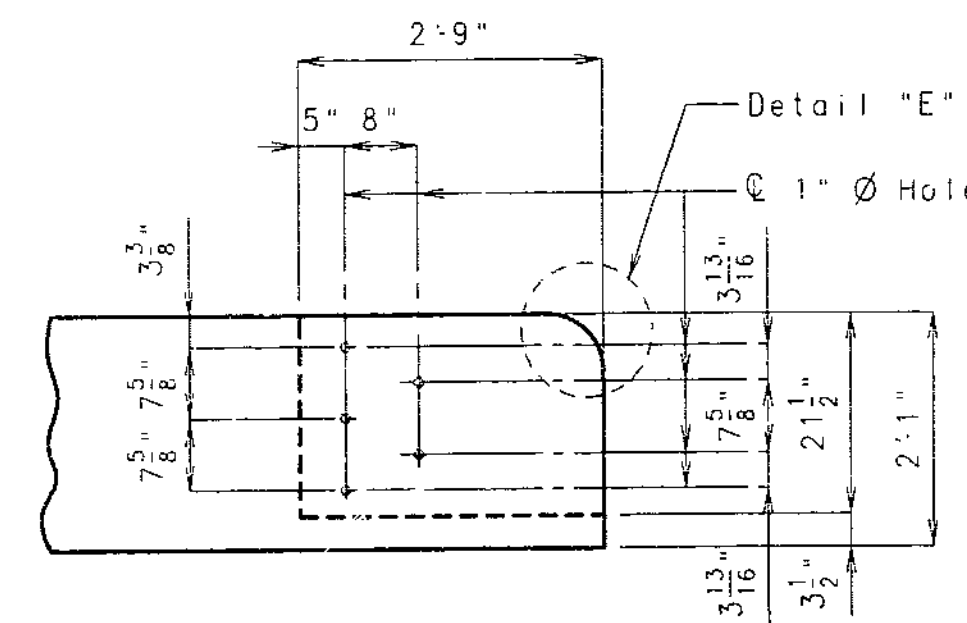
ELEVATION SHOWING END POST REINFORCEMENT



ELEVATION SHOWING END POST RESIN ANCHOR SYSTEMS & DIMENSIONS



ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL



DETAILS OF GUARD RAIL ATTACHMENT

FINAL PLANS  
I CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES AS CONSTRUCTED ON THIS PROJECT.

SIGNATURE  
DATE 10/20/97



DATE 10/20/97

DETAILS OF END POST ON NORTHEAST WING AT BENT #5

363  
DETAILED SEPT. 1997  
CHECKED SEPT. 1997

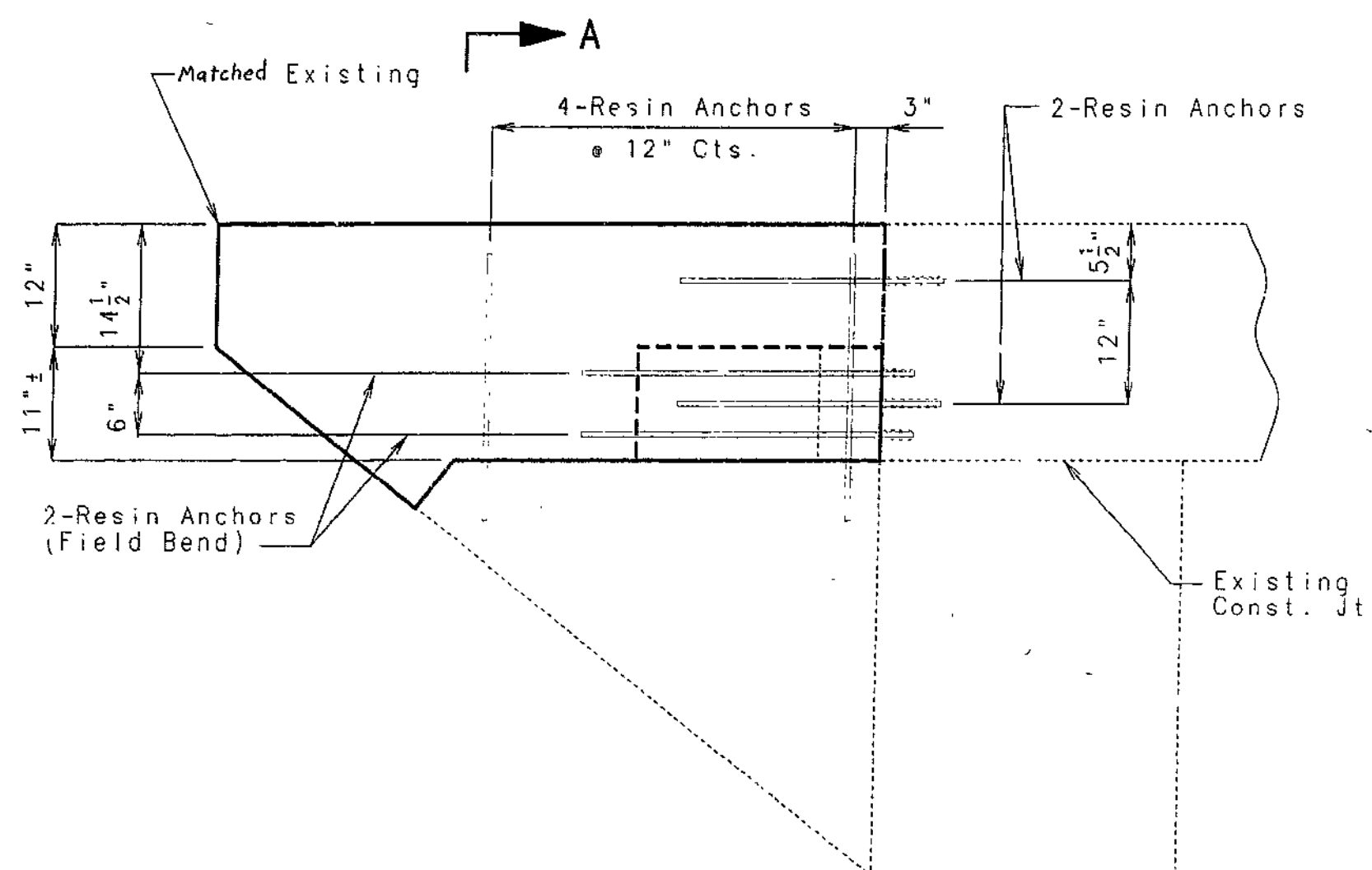
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 7 OF 9.

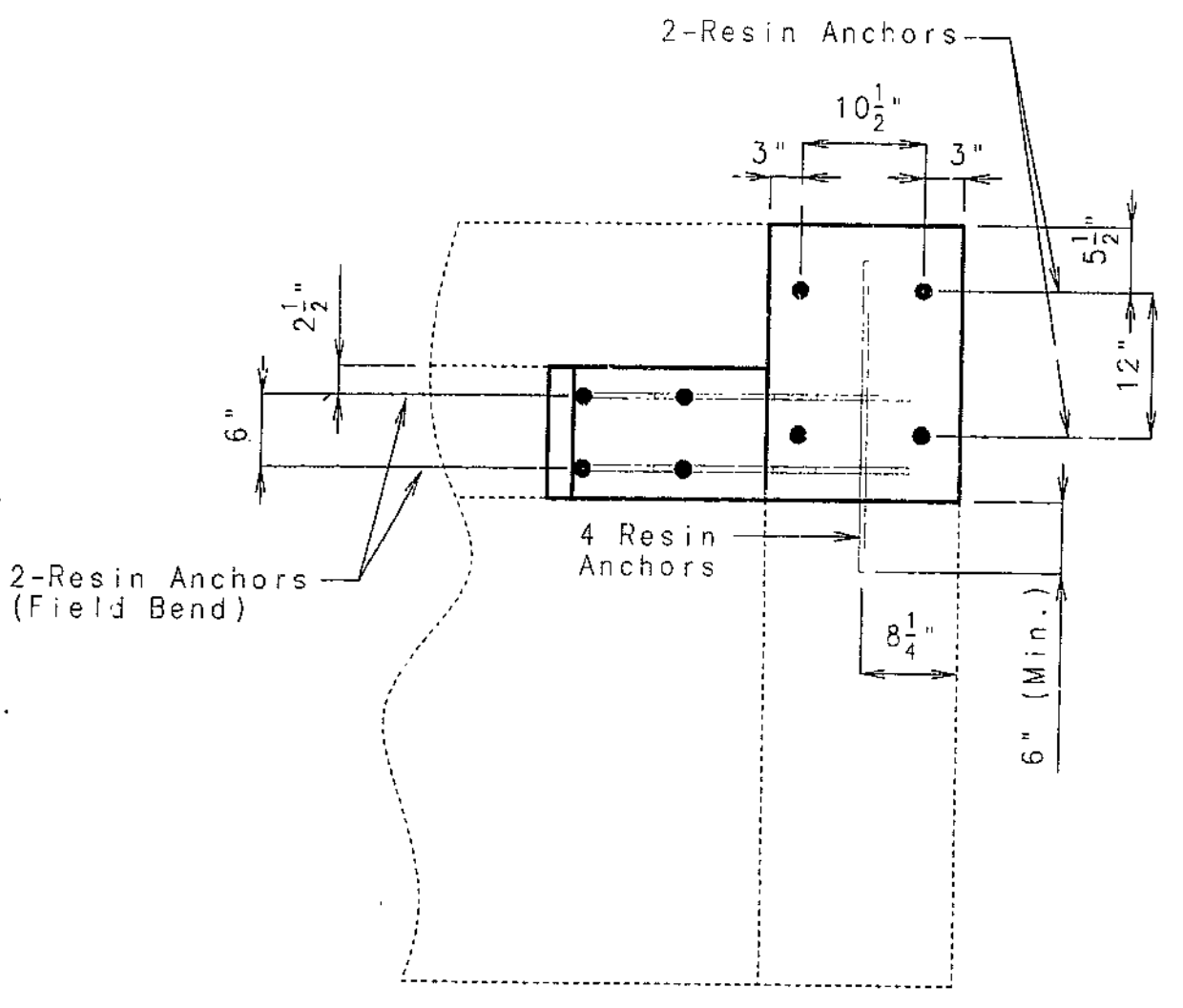
CLAY COUNTY

A15832

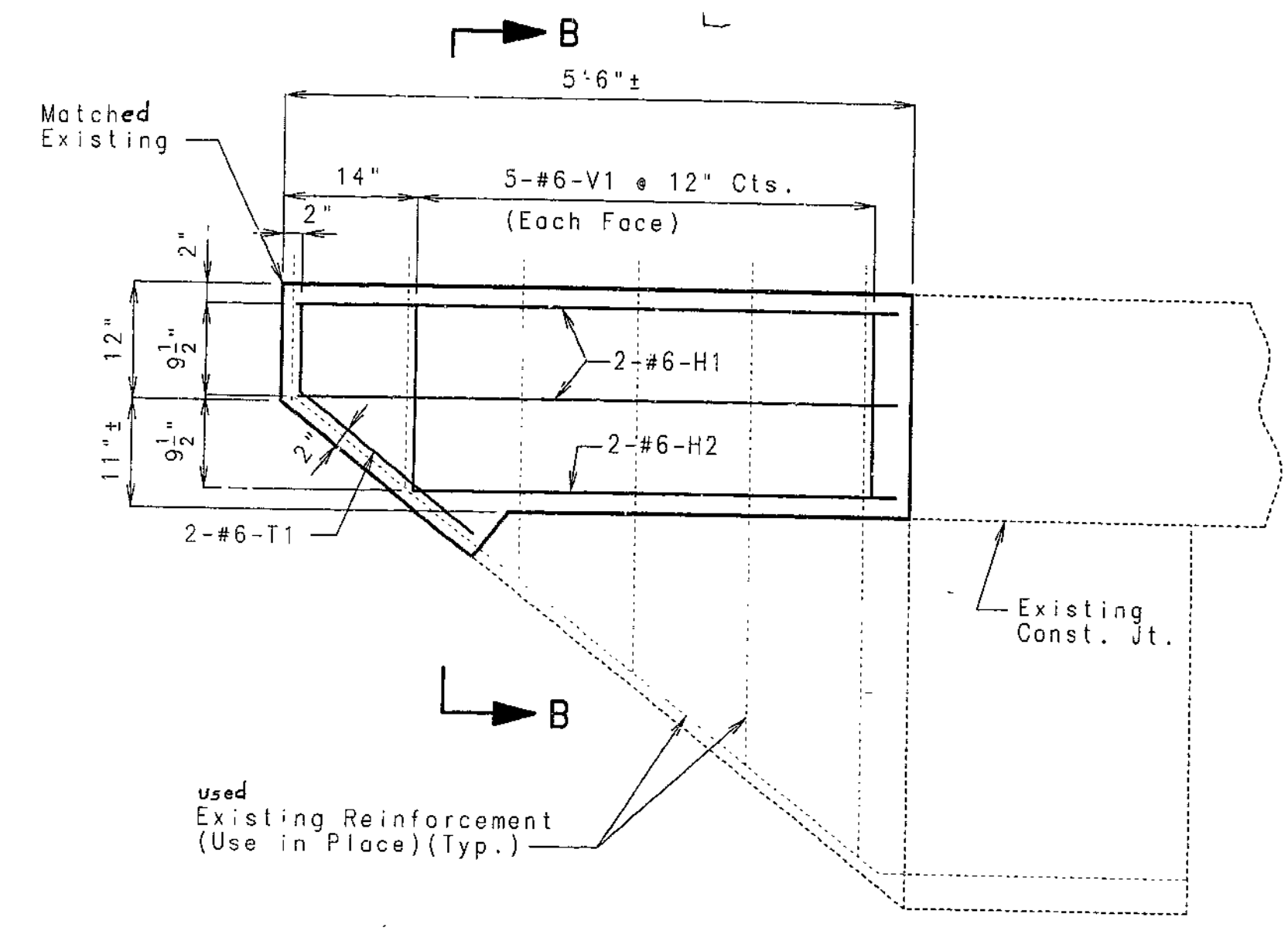
STATE	PROJ. NO.	SHEET NO.
MO.	A.C.M.-435-1(201)	31



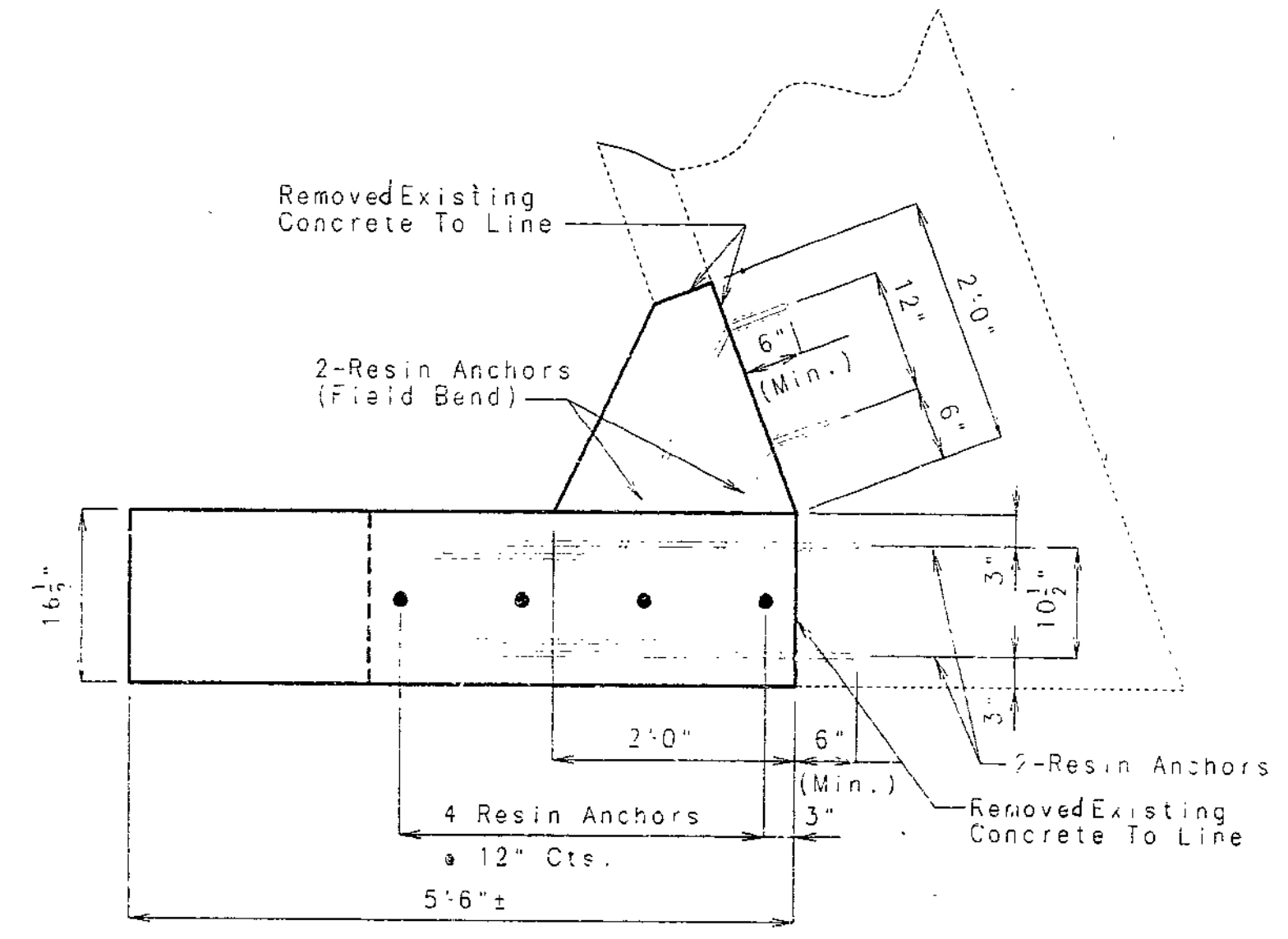
ELEVATION SHOWING WING RESIN ANCHOR SYSTEMS & DIMENSIONS (NORTHWEST & SOUTHEAST)



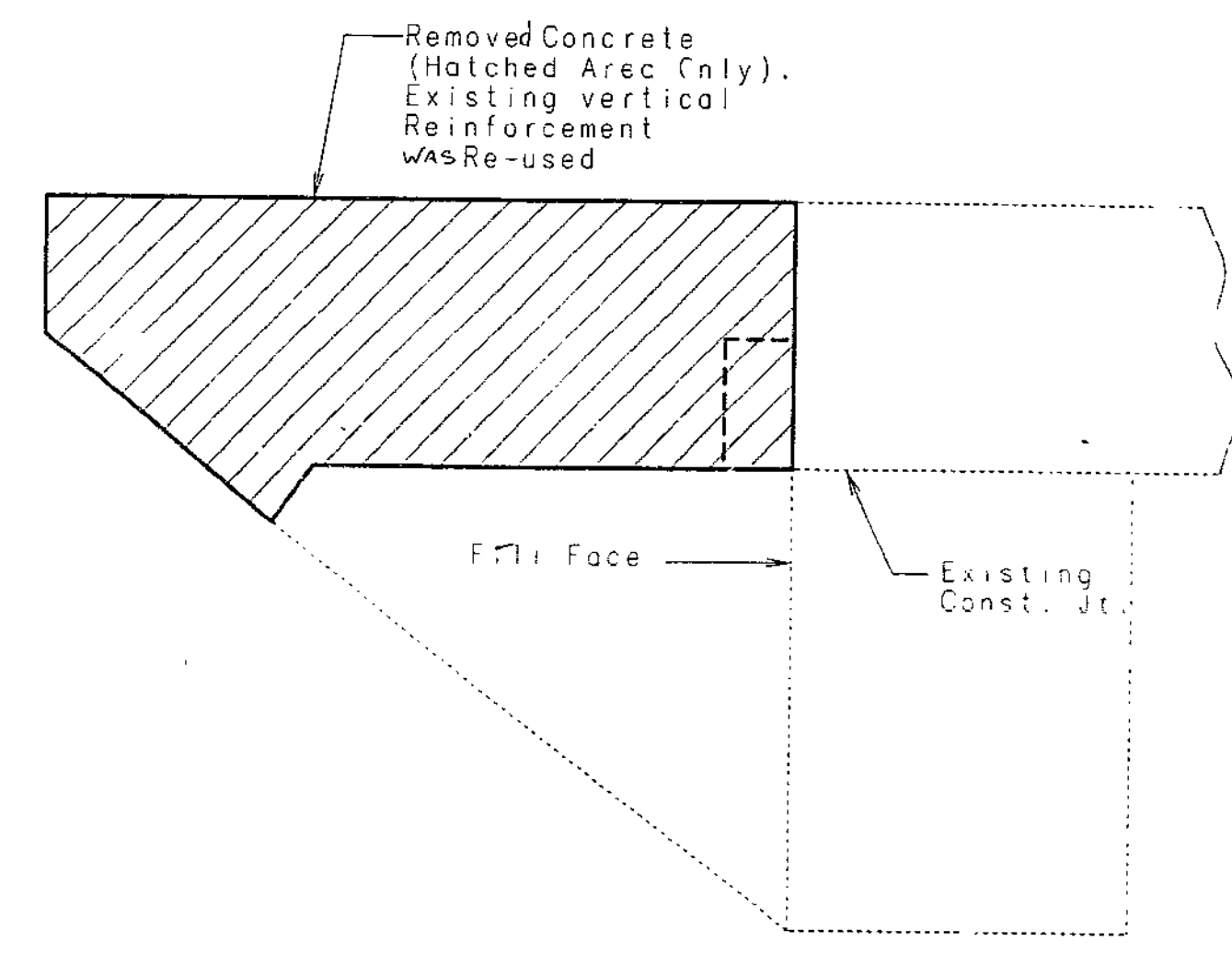
SECTION A-A



ELEVATION SHOWING WING REINFORCEMENT & DIMENSIONS (NORTHWEST & SOUTHEAST)

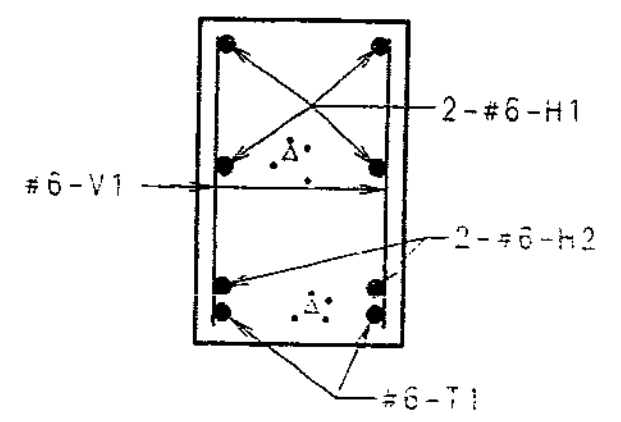


PLAN SHOWING WING RESIN ANCHOR SYSTEMS & DIMENSIONS (NORTHWEST & SOUTHEAST)

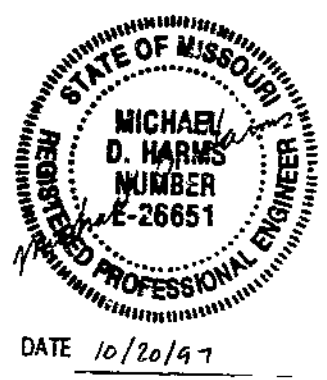


ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL

FINAL PLANS  
 CERTIFY THAT THIS DRAWING ACCURATELY REFLECTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND APPURTENANCES CONSTRUCTED ON THIS PROJECT.  
 [Signature] DATE 10/20/97



SECTION B-B



DETAILS SHOWING REHABILITATION OF SOUTHEAST WING BENT #1 AND NORTHWEST WING BENT #5  
 CLAY COUNTY

DETAILED SEPT. 1997  
 CHECKED SEPT. 1997

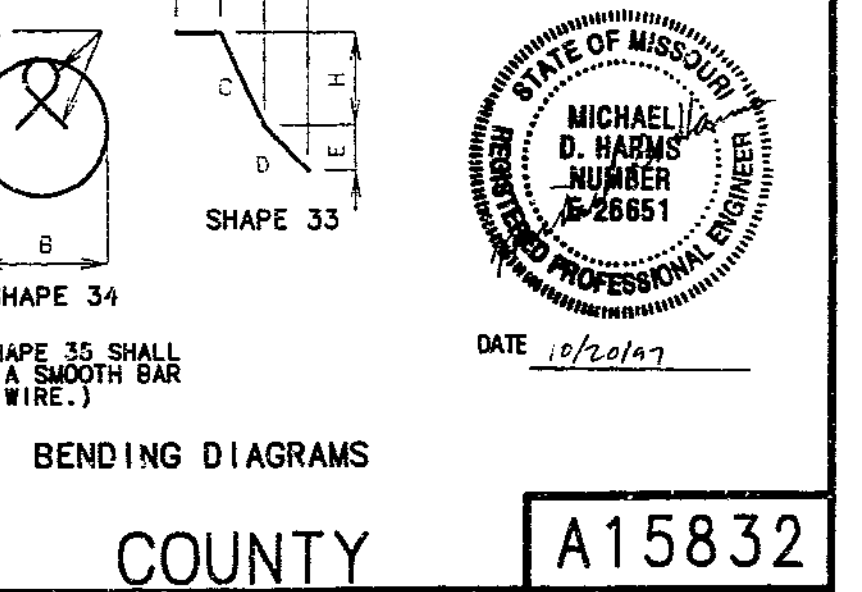
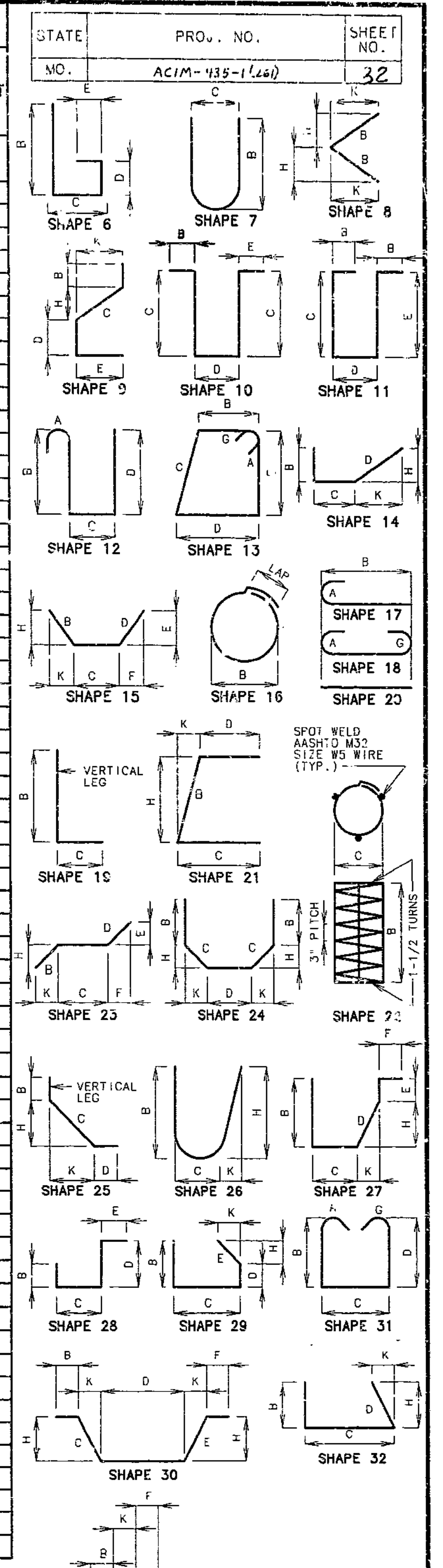
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 8 OF 9.

A15832

364

BILL OF REINFORCING STEEL														BILL OF REINFORCING STEEL																							
NO. REQ'D.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (Y)	NO. EACH	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	NO. REQ'D.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (Y)	NO. EACH	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D	E	F	H	K													B	C	D	E	F	H	K			
		FT.		IN.		FT.		IN.		FT.		IN.		FT.		IN.		FT.		IN.		FT.		IN.		FT.		IN.		FT.		IN.					
10	6 H1	WING	E	20					5	3.000							5	3	5	3											79						
4	6 H2	WING	E	20					4	1.000							4	1	4	1											25						
20	6 V1	WING	E	20					22	0.000							0	22	0	22											55						
4	6 T1	WING	E	15	S				23	125	9	000					14	250	18	250	2	8									16						
8	5 R1	BLOCKOUT	E	20					5	0.000							5	0	5	0											42						
10	5 R2	BLOCKOUT	E	20					5	2.000							5	2	5	2											216						
5	5 R3	BLOCKOUT	E	20					8	6.000							8	6	8	6											44						
28	5 R4	BLOCKOUT	E	10	S				9	750	22	000					3	6	3	5											95						
4	5 R5	BLOCKOUT	E	10	S				9	750	20	000					3	4	3	1											13						
32	5 R6	BLOCKOUT	E	10	S				13	500	22	000					4	1	3	11											131						
20	5 R7	BLOCKOUT	E	10	S				13	500	2	0	000				4	3	4	1											85						
4	5 R8	BLOCKOUT	E	20					11	3.000							11	3	11	3											47						
5	5 R9	BLOCKOUT	E	20					6	8.000							6	8	6	8											35						
2	5 R10	BLOCKOUT	E	20					9	4.000							9	4	9	4											19						
28	5 R11	BLOCKOUT	E	10	S				9	750	2	7	000				4	3	4	0											117						
32	5 R12	BLOCKOUT	E	10	S				13	500	2	7	000				4	10	4	8											156						
6	5 R13	BLOCKOUT	E	20					22	1.000							22	1	22	1											138						
4	5 R14	BLOCKOUT	E	10	S				9	750	2	5	000				4	1	3	10											16						
9	5 R15	BLOCKOUT	E	20					5	8.000							5	8	5	8											53						
6	5 R16	BLOCKOUT	E	20					7	2.000							7	2	7	2											45						
6	5 R17	BLOCKOUT	E	20					23	10.000							23	10	23	10											149						
12	5 R18	BLOCKOUT	E	20					7	8.000							7	8	7	8											96						
6	5 R19	BLOCKOUT	E	20					8	2.000							8	2	8	2											51						
6	5 R20	BLOCKOUT	E	20					26	4.000							26	4	26	4											165						
3	5 R21	BLOCKOUT	E	20					6	8.000							6	8	6	8											21						
6	5 R22	BLOCKOUT	E	20					22	6.000							22	6	22	6											141						
6	5 R23	BLOCKOUT	E	20					25	9.000							25	9	25	9											161						
6	5 R24	BLOCKOUT	E	20					27	8.000							27	8	27	8											173						
6	5 R25	BLOCKOUT	E	20					24	9.000							24	9	24	9											155						
3	5 R26	BLOCKOUT	E	20					37	1.000							37	1	37	1											116						



CERTIFY THIS DRAWING ACCURATELY REFLECTS THE EXISTING CONDITIONS OF THE ROADWAY AND APPURTENANCES AS INDICATED ON THIS PROJECT.

DATE: 10/2/97

STATE OF MISSOURI  
MICHAEL D. HARRIS  
REGISTERED PROFESSIONAL ENGINEER  
NUMBER 26651  
DATE 10/2/97

365

STD 90.8 REVISED MAY 1974 OCT. 1991

DETAILED OCT. 1997  
CHECKED OCT. 1997

STIRRUP HOOK DIMENSIONS			
GRADES 40 - 50 - 60 KSI			
BAR SIZE	D (IN.)	90° HOOK	135° HOOK
#4	2"	4-1/2"	4-1/2"
#5	2-1/2"	6"	5-1/2"
#6	4-1/2"	12"	8"

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

END HOOK DIMENSIONS			
ALL GRADES			
BAR SIZE	D (IN.)	180° HOOKS	90° HOOKS
#3	2-1/4"	5"	3"
#4	3"	6"	4"
#5	3-3/4"	7"	5"
#6	4-1/2"	8"	6"
#7	5-1/4"	10"	7"
#8	6"	11"	8"
#9	9-1/2"	15"	11-3/4"
#10	10-3/4"	17"	13-1/4"
#11	12"	19"	14-3/4"
#14	18-1/4"	21-3/4"	21-7/8"

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 U.I.P. & Rehabilitate Existing (70'-99'-107'-56')  
 Continuous Composite Plate Girder Spans

SEC/SUR 27 TWP 51N RGE 32W

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/3/2012

ROUTE STATE  
I-435 MO

DISTRICT SHEET NO.  
BR 1

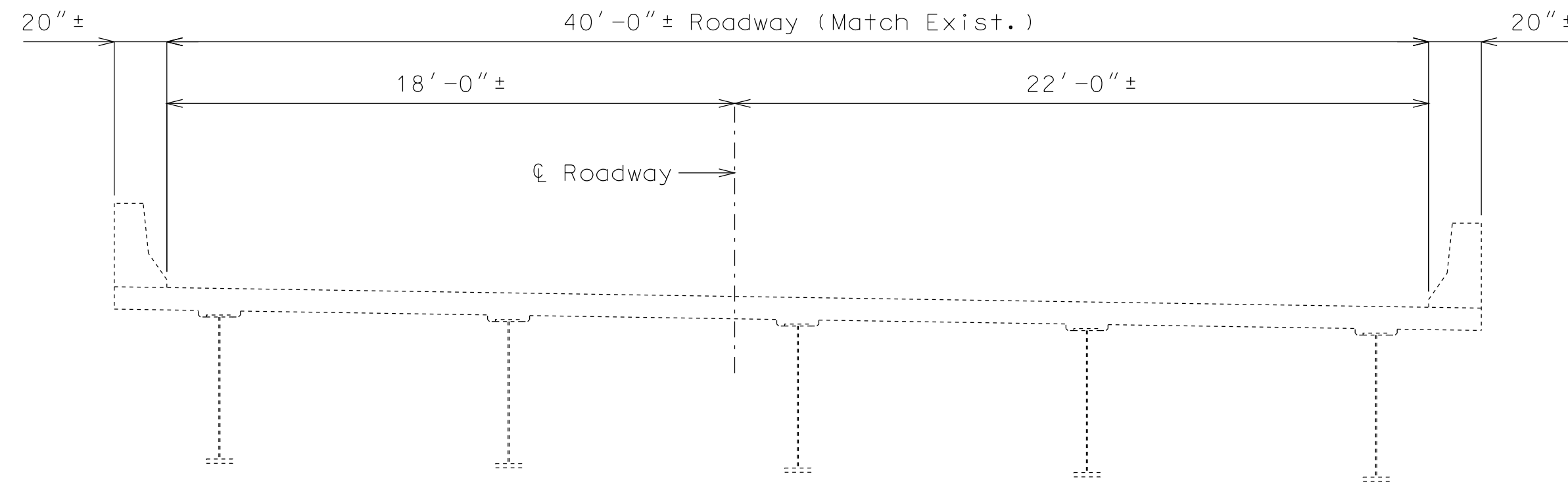
COUNTY  
CLAY

JOB NO.  
J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A33741



SECTION THRU EXISTING SLAB

**General Notes:**

**Design Specifications:**

- 2002 - AASHTO 17th Edition Load Factor Design
- Seismic Performance Category A
- Bridge Deck Rating = 7

**Design Loading:**

- HS20-44 Military 24,000# Tandem Axle (1977 & New Construction)
- 15#/Sq. Ft. Future Wearing Surface
- Fatigue Stress - Case II

**Design Unit Stresses:**

- Class B-1 Concrete (Superstructure and Safety Barrier Curb)  $f'c = 4,000$  psi
- Reinforcing Steel (Grade 60)  $fy = 60,000$  psi

**Reinforcing Steel:**

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

**Structural Steel Protective Coatings**

(Existing structural steel near End Bents):

- Protective Coating: System G in accordance with Sec 1081.

Coating Limits: All existing structural steel within 10 feet from end of girders at End Bents No. 1 & 5.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G, H or I)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Recoating Structural Steel".

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Field Application of Inorganic Zinc Primer". Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for "Intermediate Field Coat (System G)". The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for "Finish Field Coat (System G)".

Sec 1081.4.5 shall be modified such that the word "RECOATED" is replaced by the word "RECOATED - SYSTEM G - EXPANSION AREAS ONLY".

**Concrete Protective Coatings:**

- Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

**General Notes (Cont.):**

**Miscellaneous:**

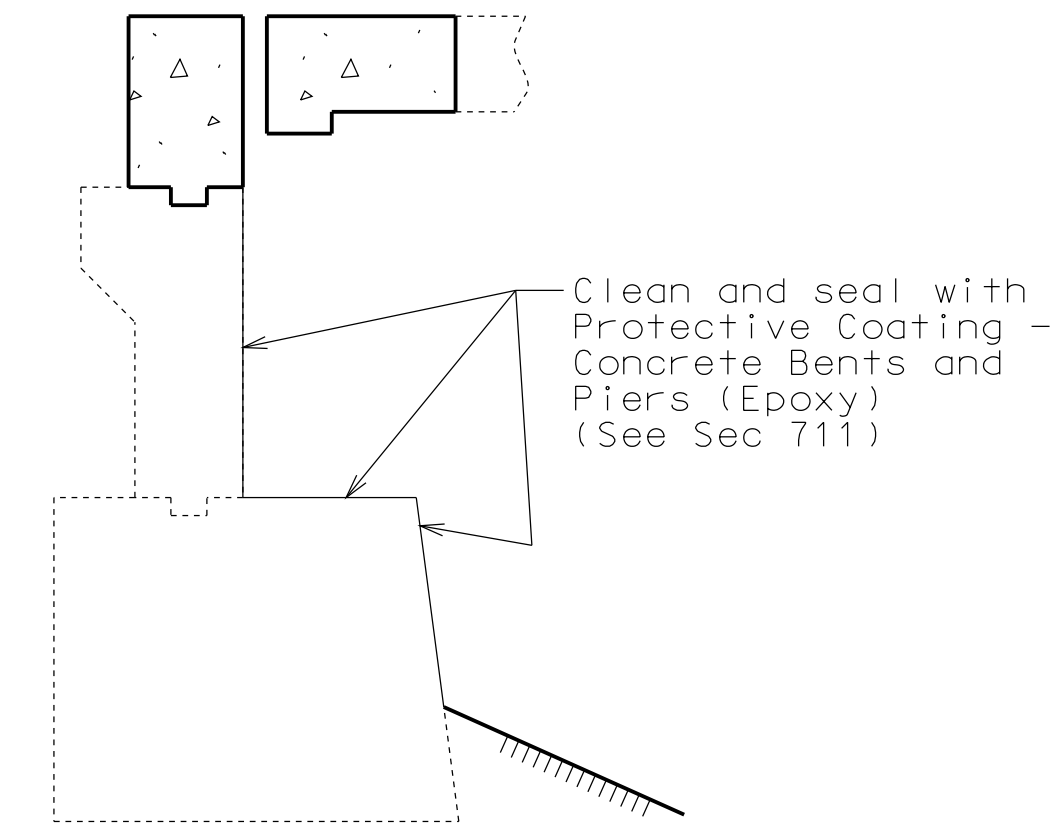
- Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

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

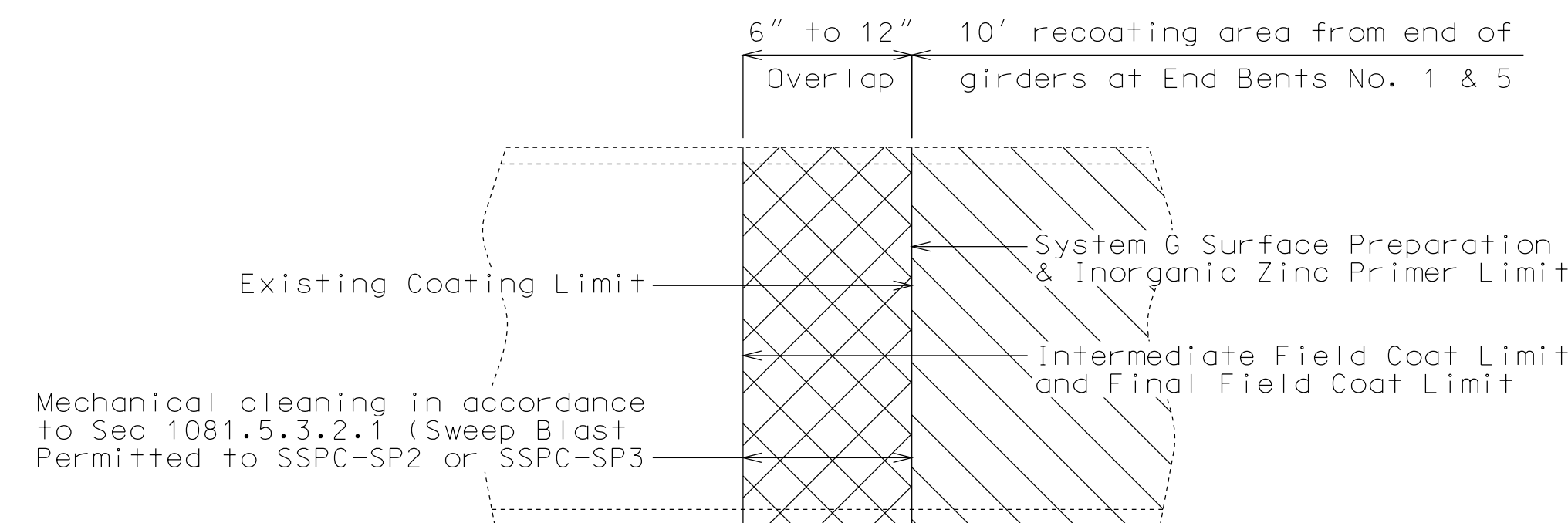
**Traffic Handling:**

- Traffic over structure to be maintained during construction. See Sheet No. 2 for Stage Details.



TYPICAL SECTION THRU END BENTS NO. 1 & 5 SHOWING PROTECTIVE COATING

Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	102
Remove and Replace Barrier Curb	linear foot	15
Class B-1 Concrete	cu. yard	11.0
Reinforcing Steel (Epoxy Coated)	pound	530
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Surface Preparation for Recoating Structural Steel	sq. foot	1200
Field Application of Inorganic Zinc Primer	sq. foot	1200
Intermediate Field Coat (System G)	sq. foot	1200
Finish Field Coat (System G)	sq. foot	1200
Strip Seal Expansion Joint System	linear foot	102



PART ELEVATION SHOWING LIMITS OF PAINT OVERLAP  
 (Vertical or horizontal paint limit. Horizontal limit shown)

REPAIRS TO BRIDGE: I-435 S OVER I-35 & RAMP 7 (I-35 N TO I-435 N)  
 STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

STA. 634+27.25± (I-435S) (Match Existing)

STD. 617.20
STD. 706.35

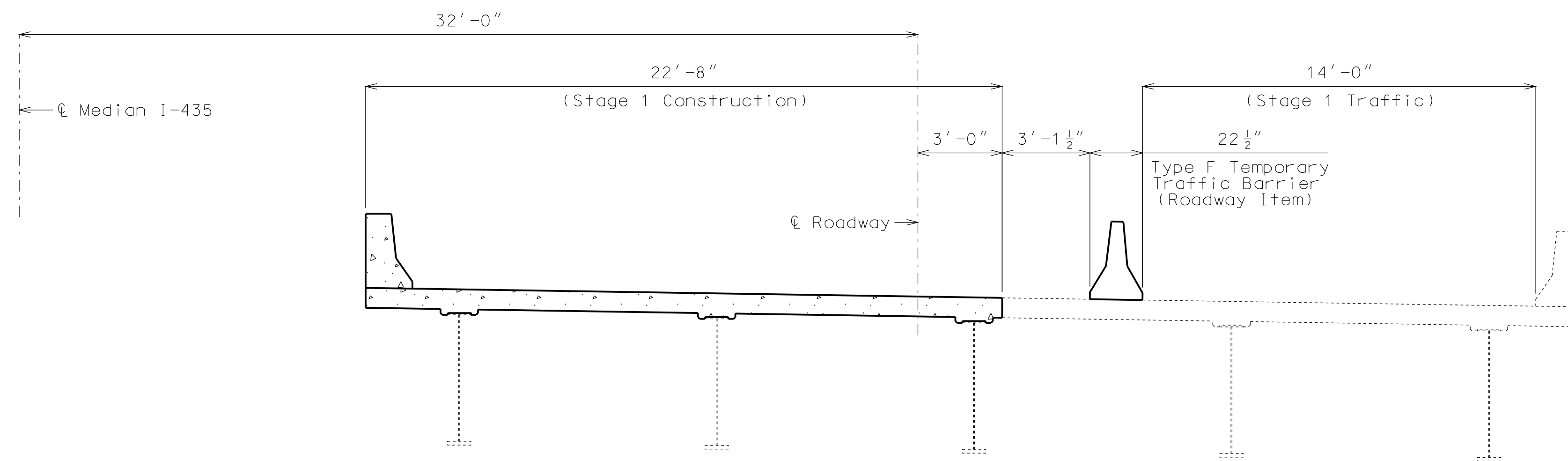
DESCRIPTION DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

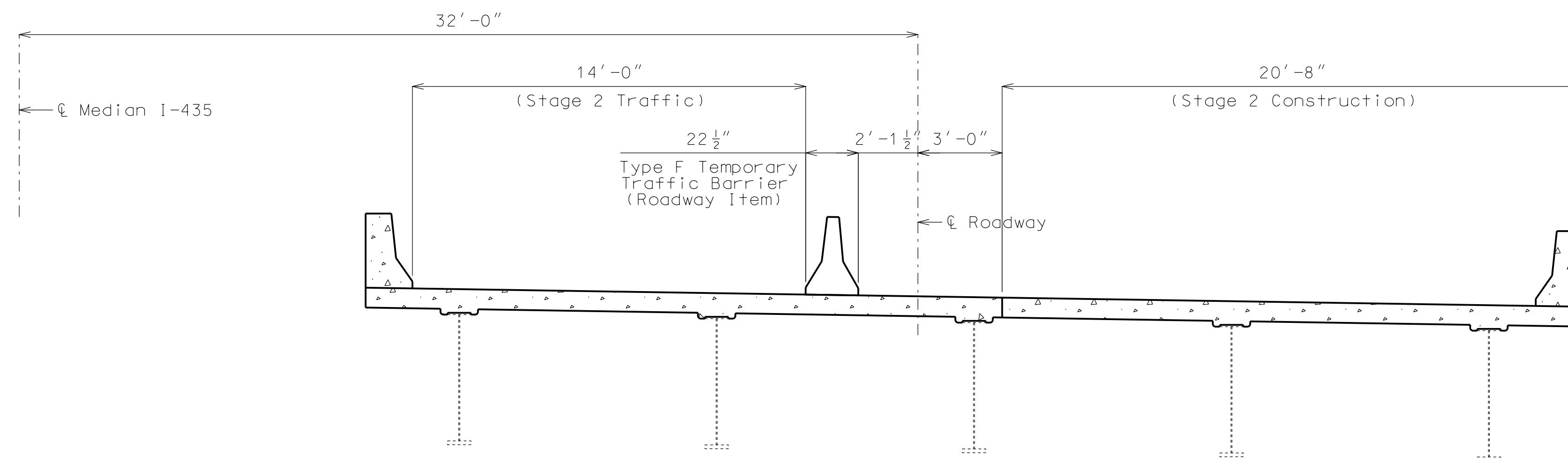
105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

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





STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION

Note:  
Temporary Barrier shall not be attached to the bridge.

DETAILS SHOWING STAGED CONSTRUCTION

Detailed May 2012  
Checked June 2012

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

Sheet No. 2 of 6

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/3/2012

ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 2

COUNTY  
CLAY

JOB NO.  
J412381

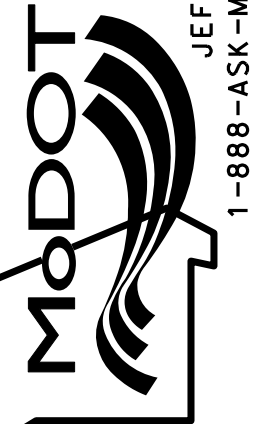
CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A33741

DESCRIPTION	DATE

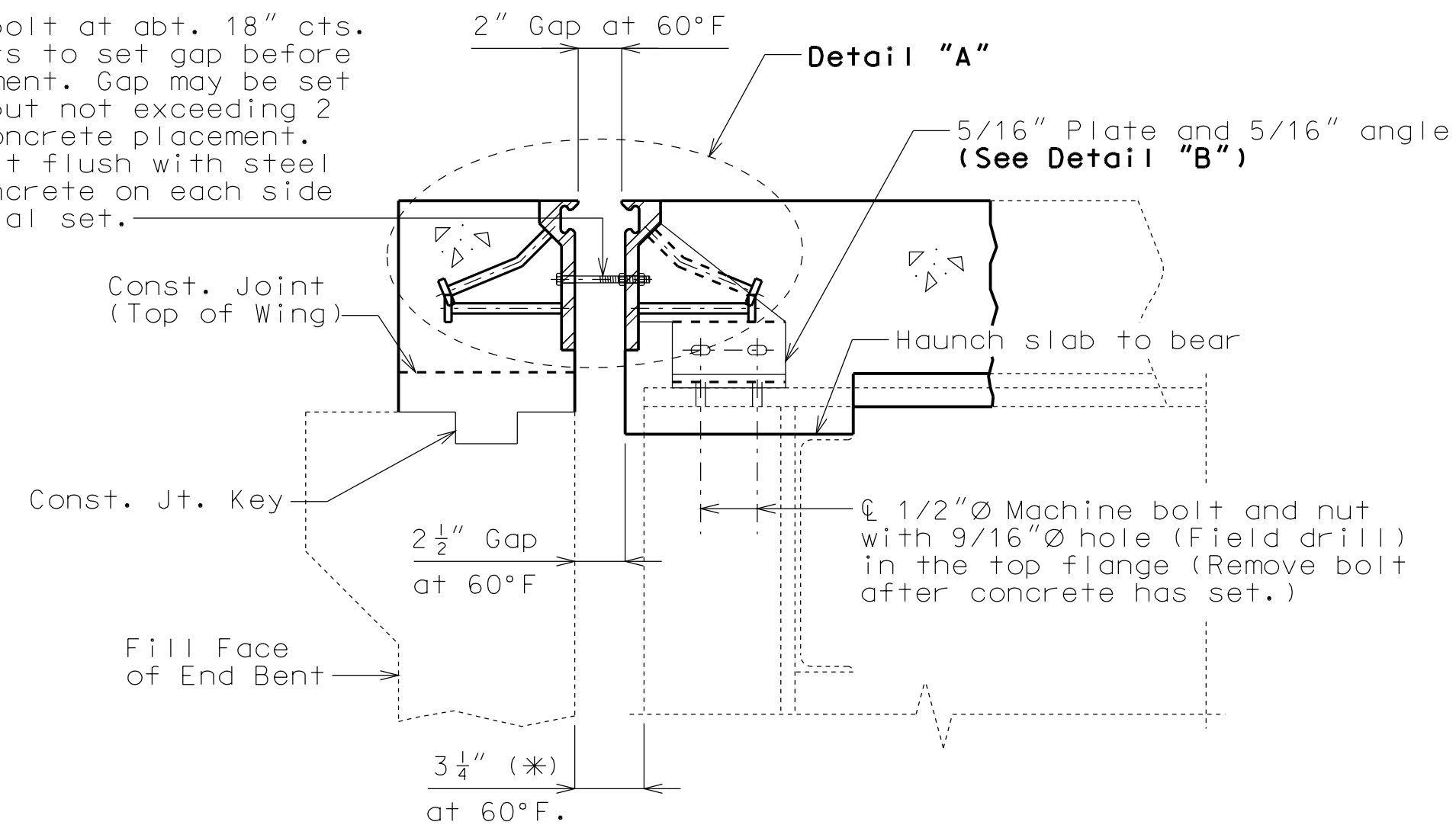
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

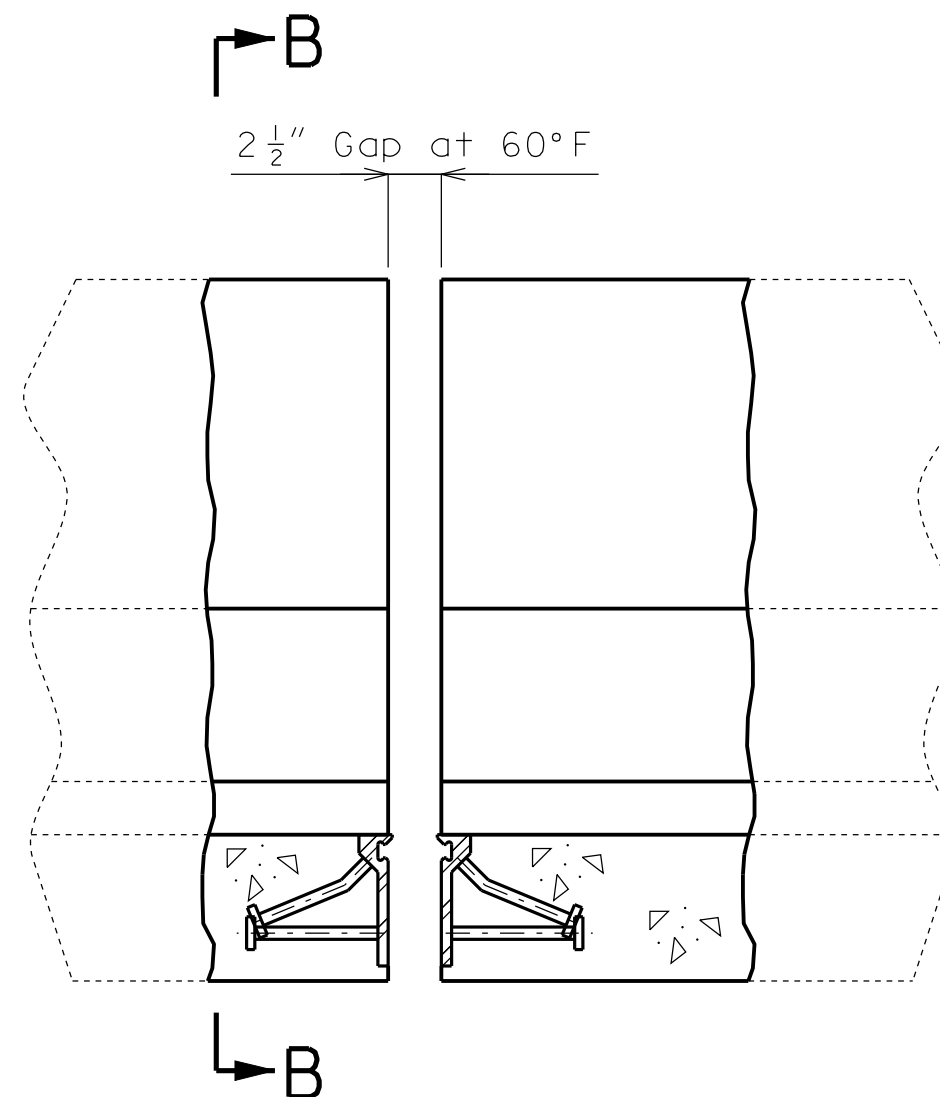
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

1/2"Ø Machine bolt at abt. 18" cts. Use two hex nuts to set gap before concrete placement. Gap may be set anytime up to but not exceeding 2 hours before concrete placement. Cut machine bolt flush with steel armor after concrete on each side has taken initial set.



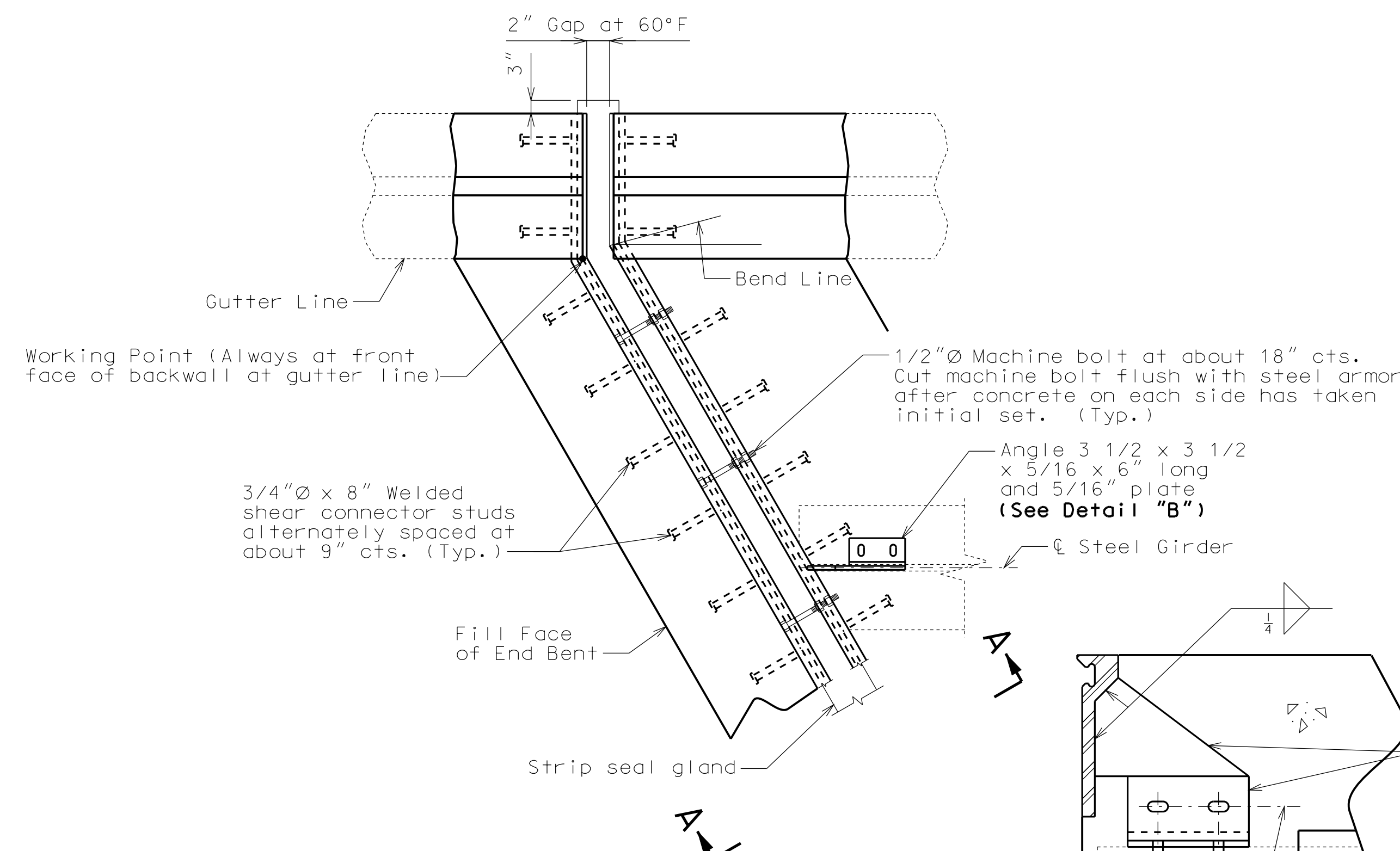
SECTION A-A

Note: Strip seal gland not shown for clarity.

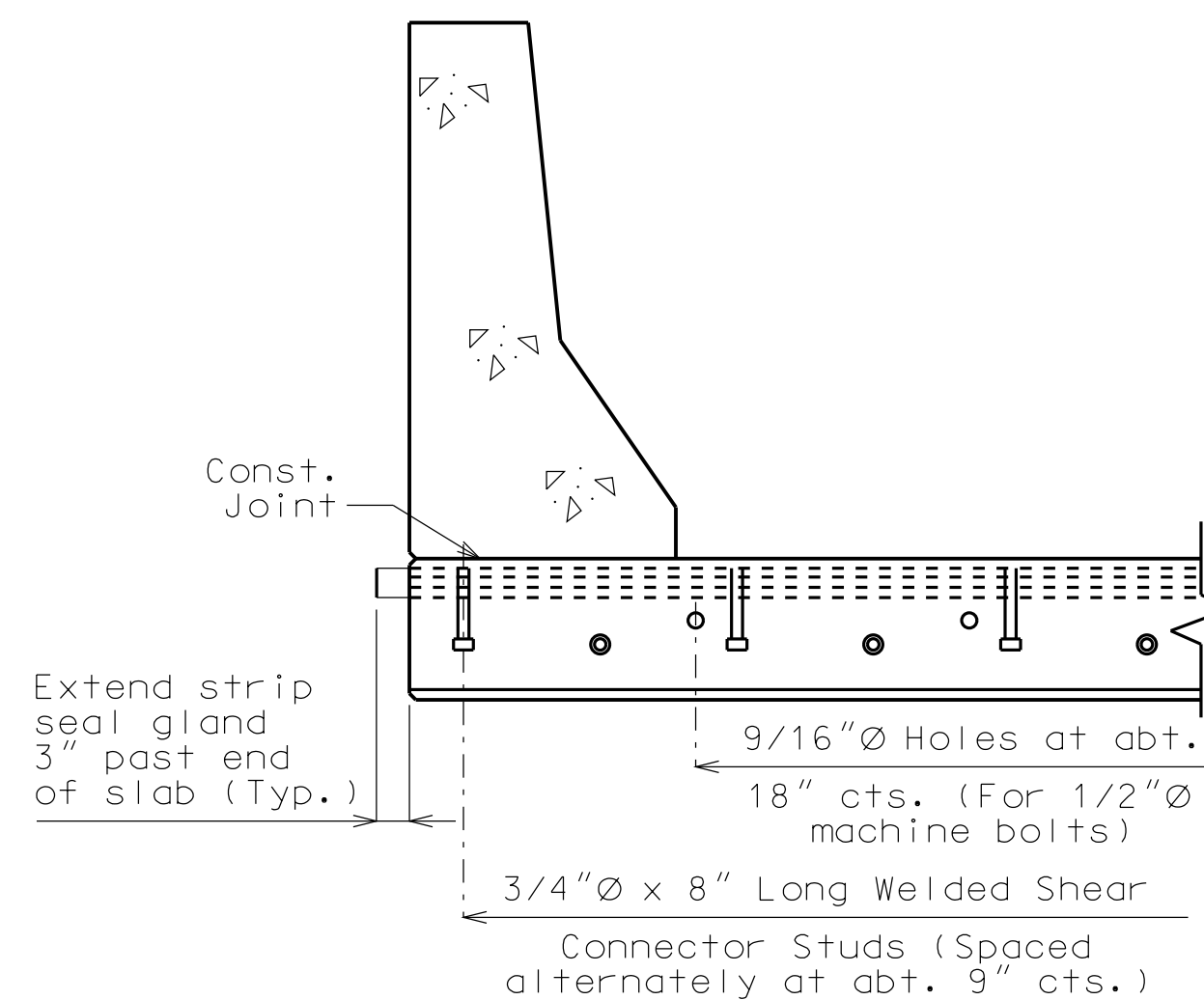


Note: Strip seal gland not shown for clarity.

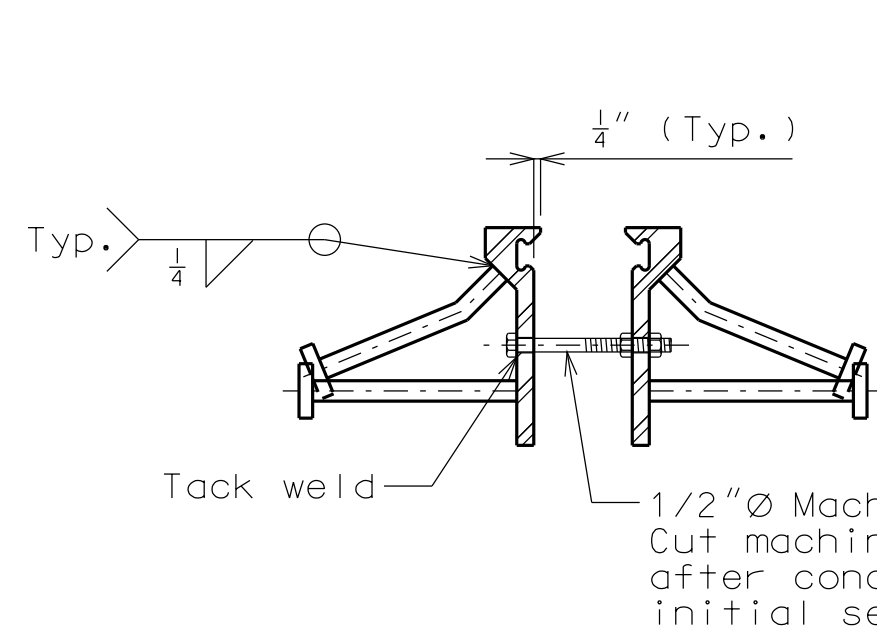
PART ELEVATION OF BARRIER CURB



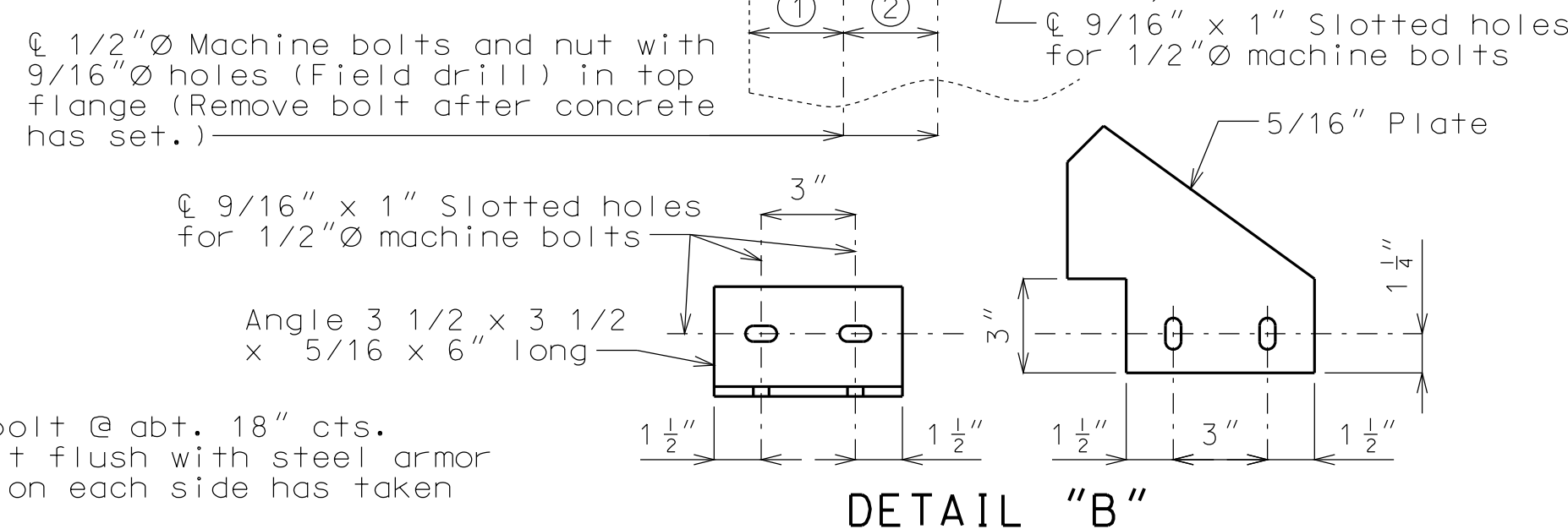
PART PLAN



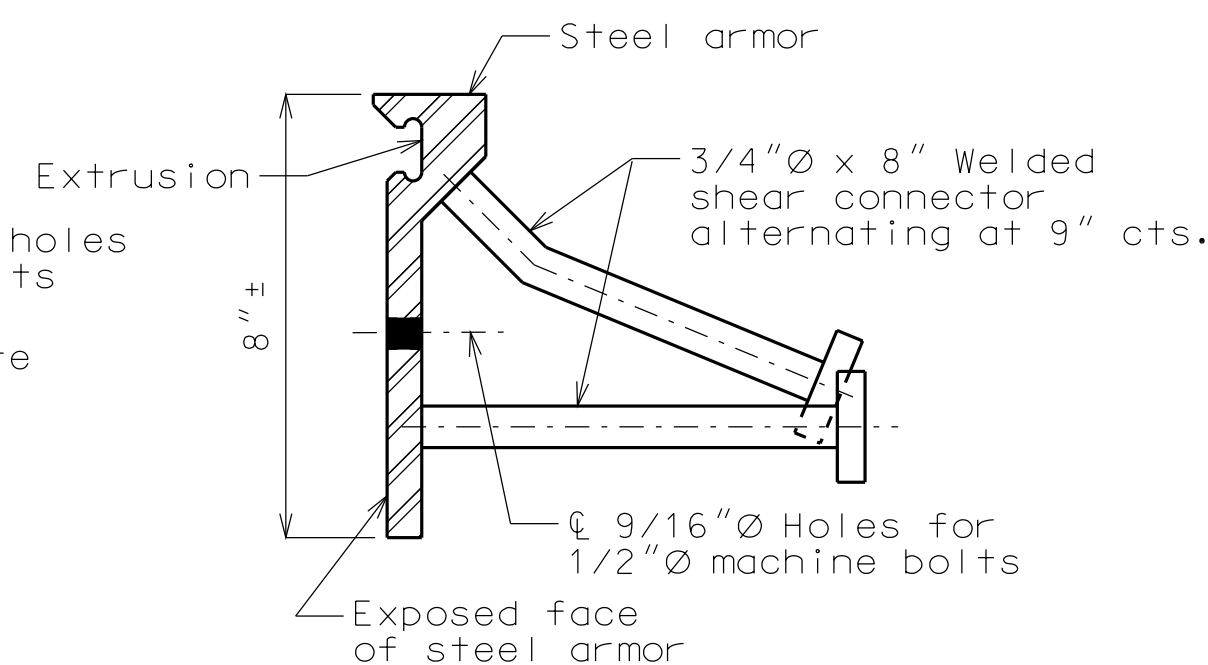
PART SECTION B-B



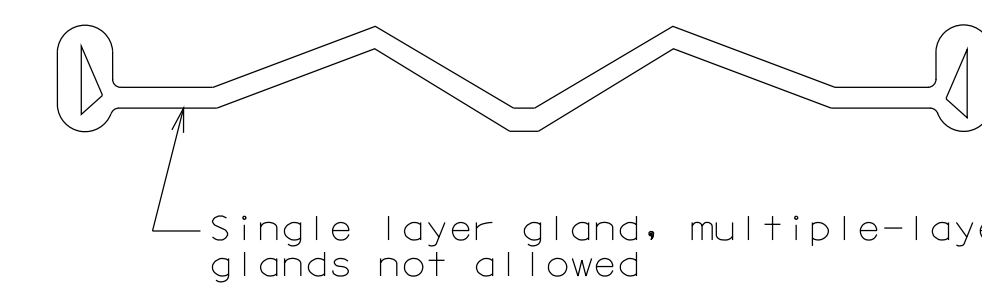
DETAIL "A"



DETAILS OF STRIP SEAL AT END BENTS NO. 1 & 5



DETAIL OF JOINT ARMOR



DETAIL OF GLAND

GENERAL NOTES:

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

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

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

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

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

Longitudinal reinforcing steel shall be placed so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

(\*) Match existing.

- ① 2"(\*) (End Bent No. 1)  
5 3/4"(\*) (End Bent No. 5)
- ② 3"(\*) (End Bents No. 1 & 5)

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED

12/3/2012

ROUTE STATE

I-435 MO

DISTRICT SHEET NO.

BR 3

COUNTY

CLAY

JOB NO.

J412381

CONTRACT ID.

PROJECT NO.

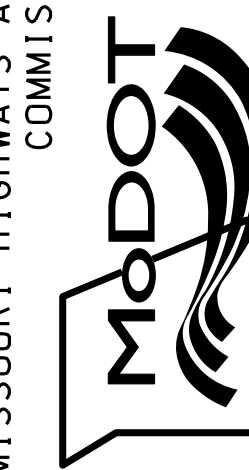
BRIDGE NO.

A33741

DESCRIPTION

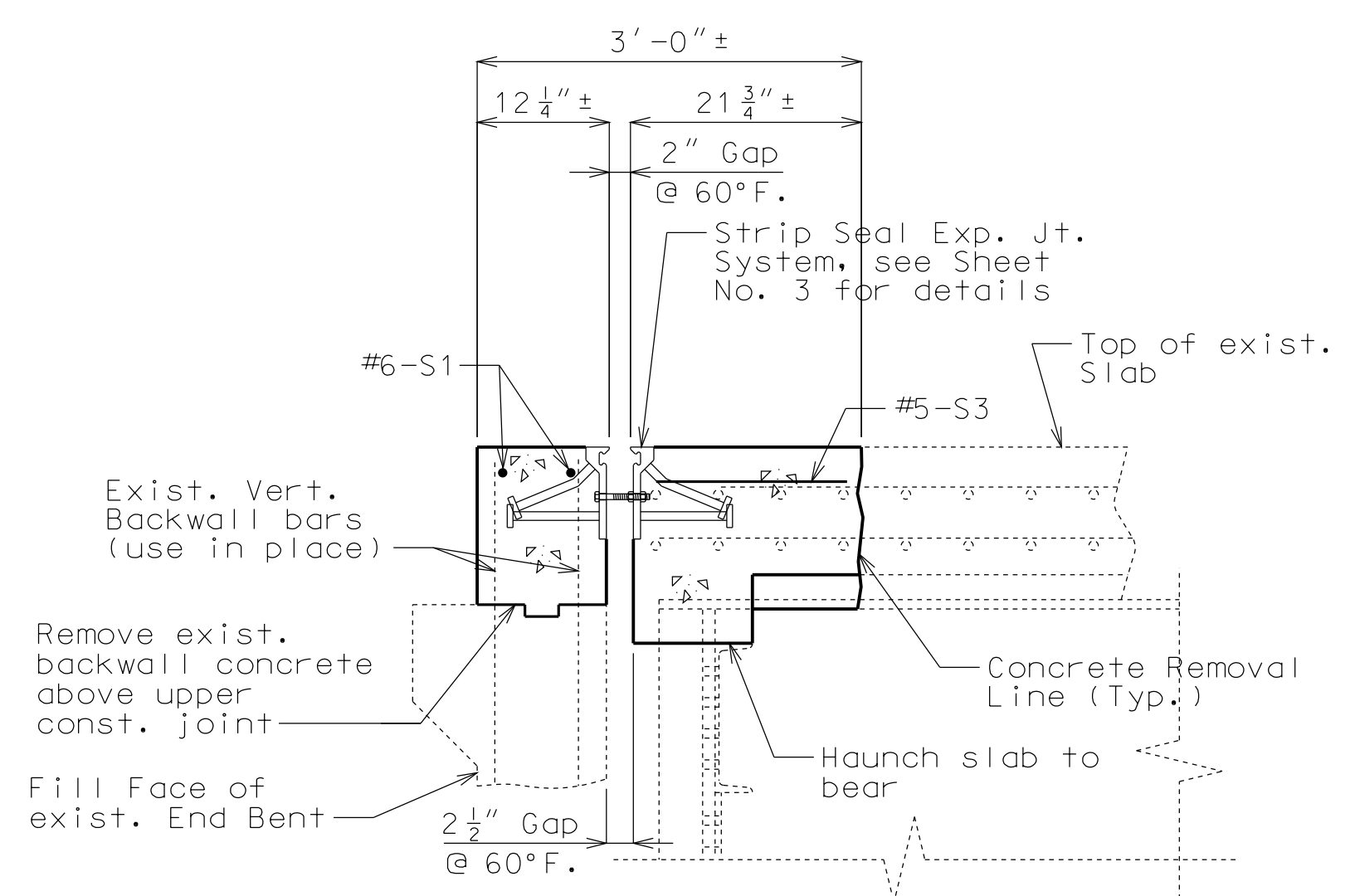
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

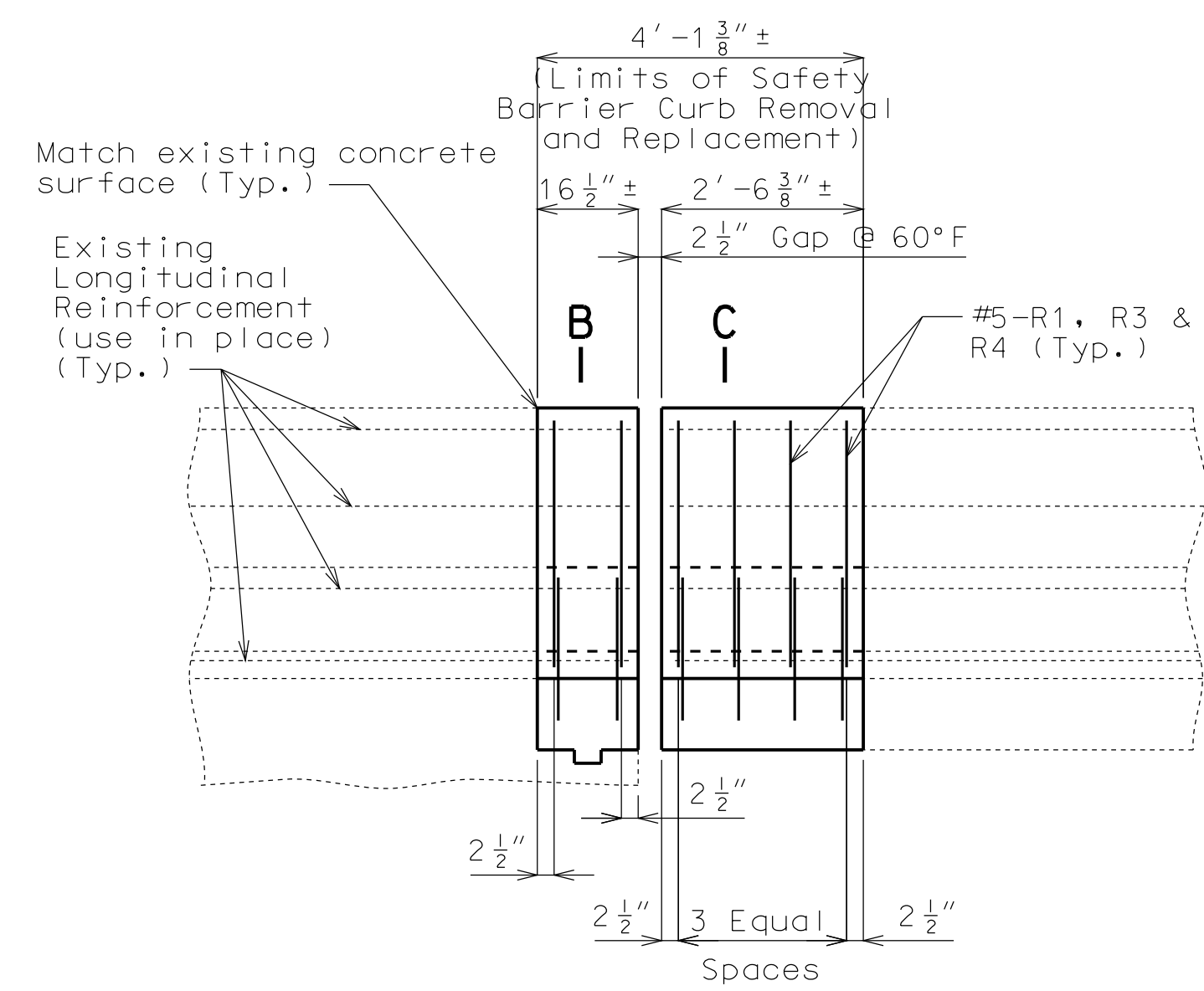
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



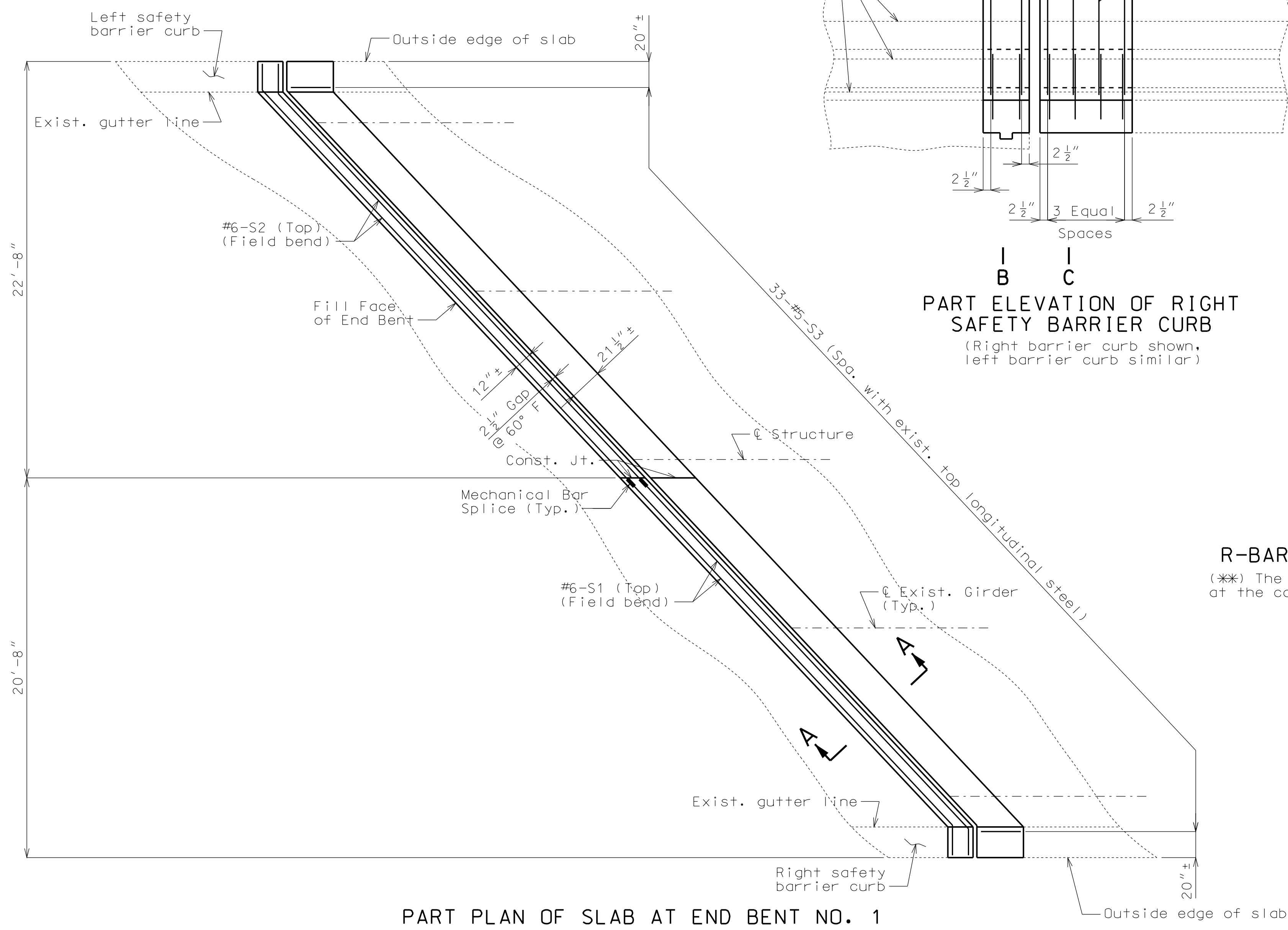
SECTION A-A

Notes:  
 The contractor shall use a mechanical bar splice for #6-S1 & S2 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.

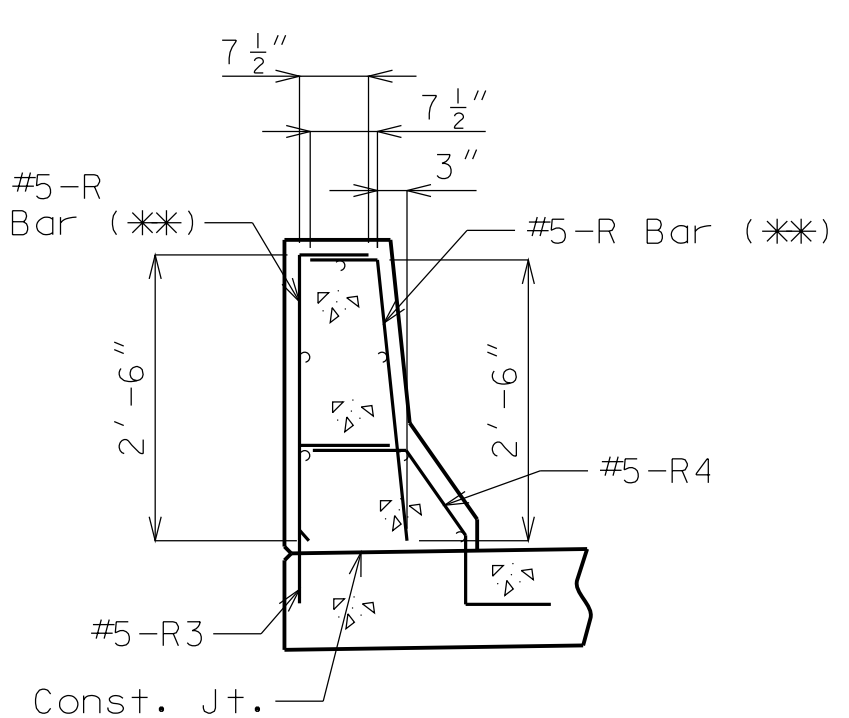
Payment for all concrete and reinforcement for safety barrier curb, complete-in-place, will be considered completely covered by the contract unit price for Remove and Replace Barrier Curb per linear foot.



PART ELEVATION OF RIGHT SAFETY BARRIER CURB  
 (Right barrier curb shown, left barrier curb similar)

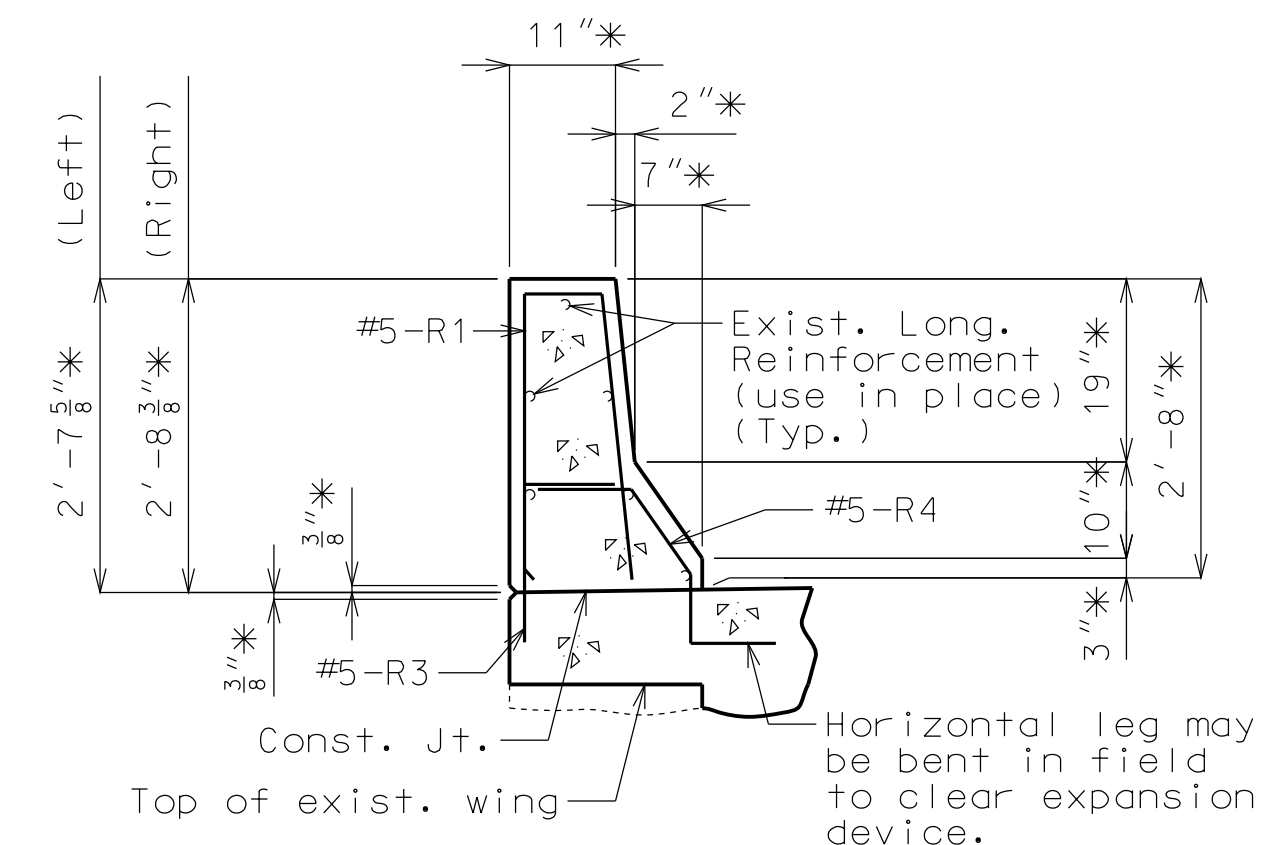


PART PLAN OF SLAB AT END BENT NO. 1



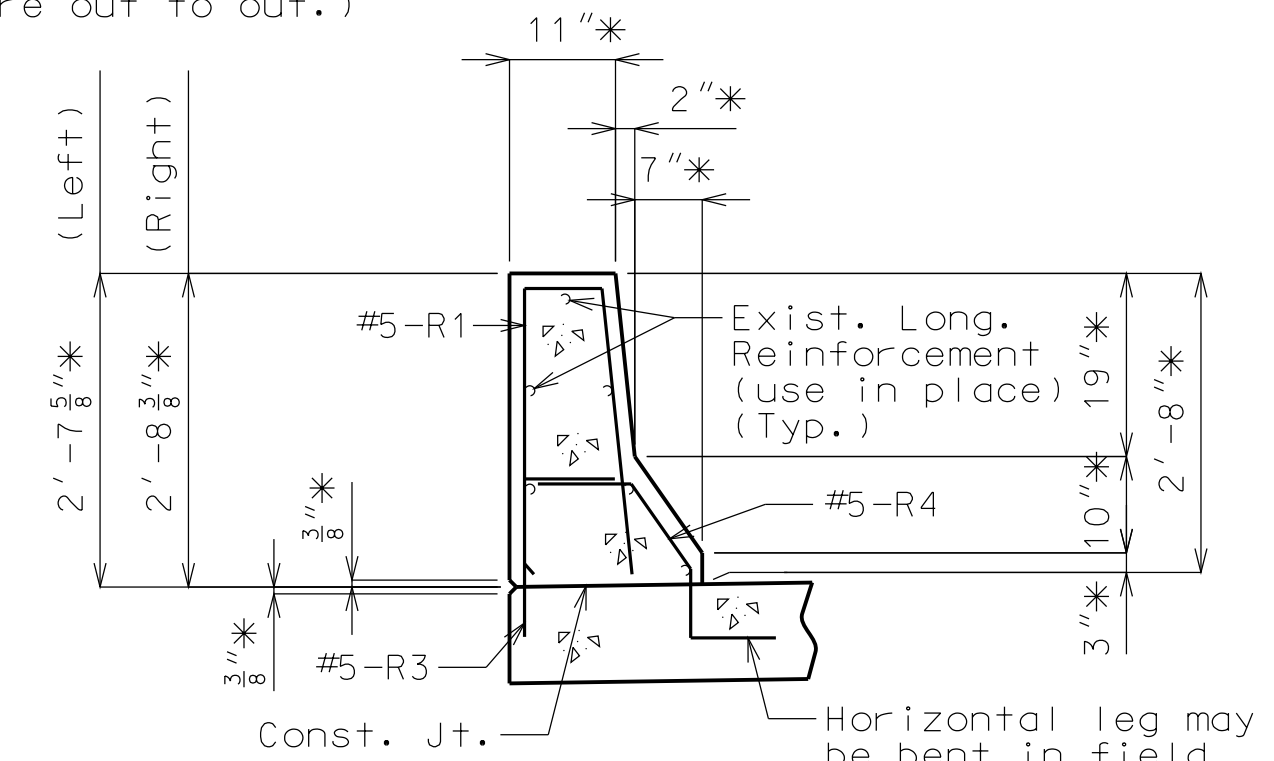
R-BAR PERMISSIBLE ALTERNATE SHAPE

(\*\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION B-B

\* Match existing.



PART SECTION C-C

\* Match existing.

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

Sheet No. 4 of 6

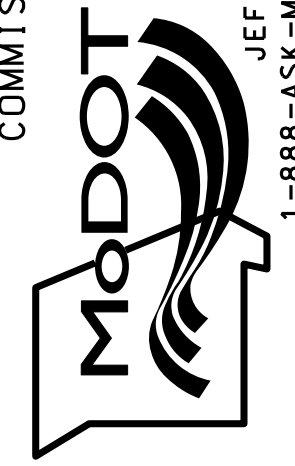
Detailed May 2012  
 Checked June 2012

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

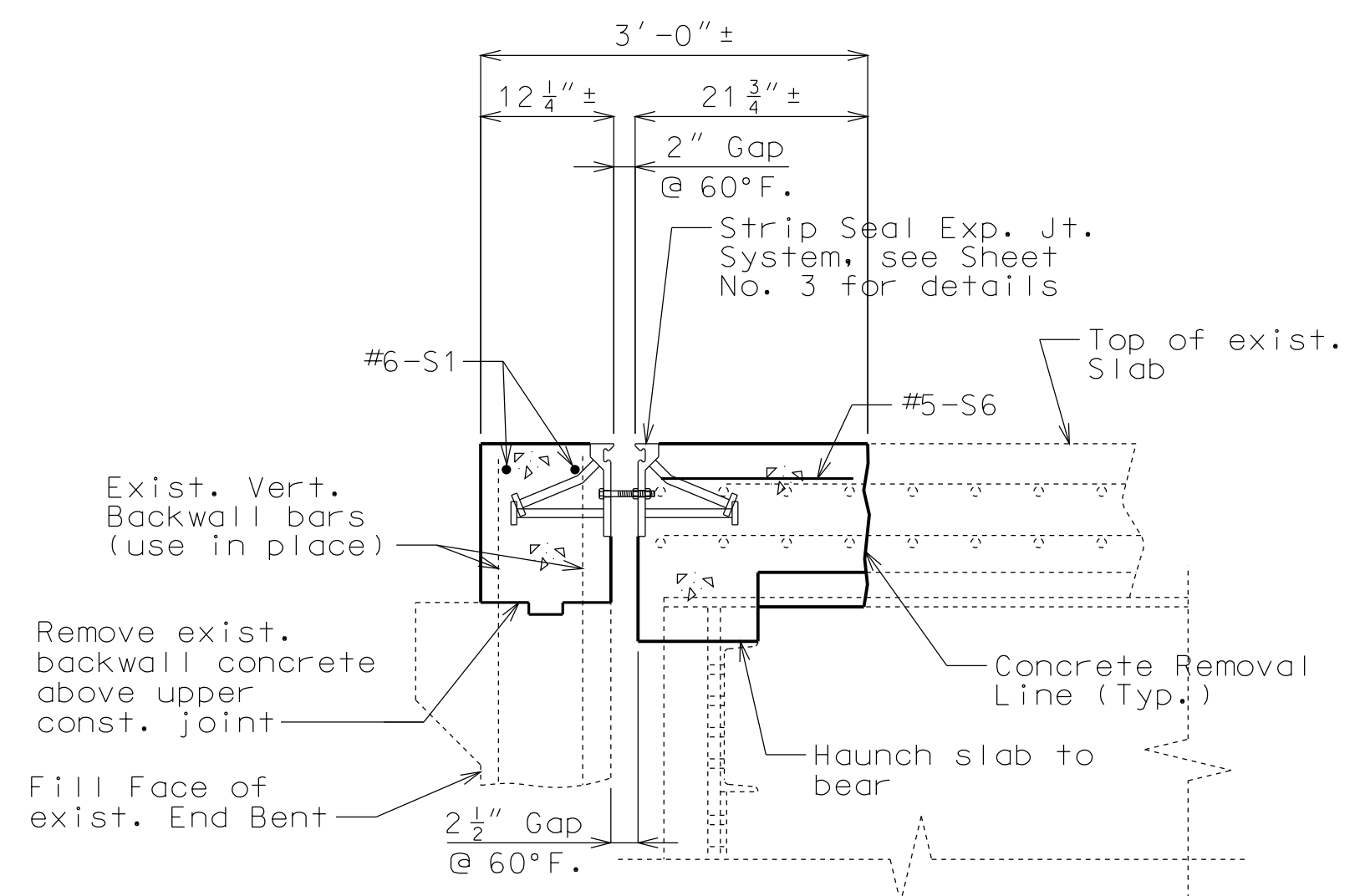
DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 4
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33741	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)



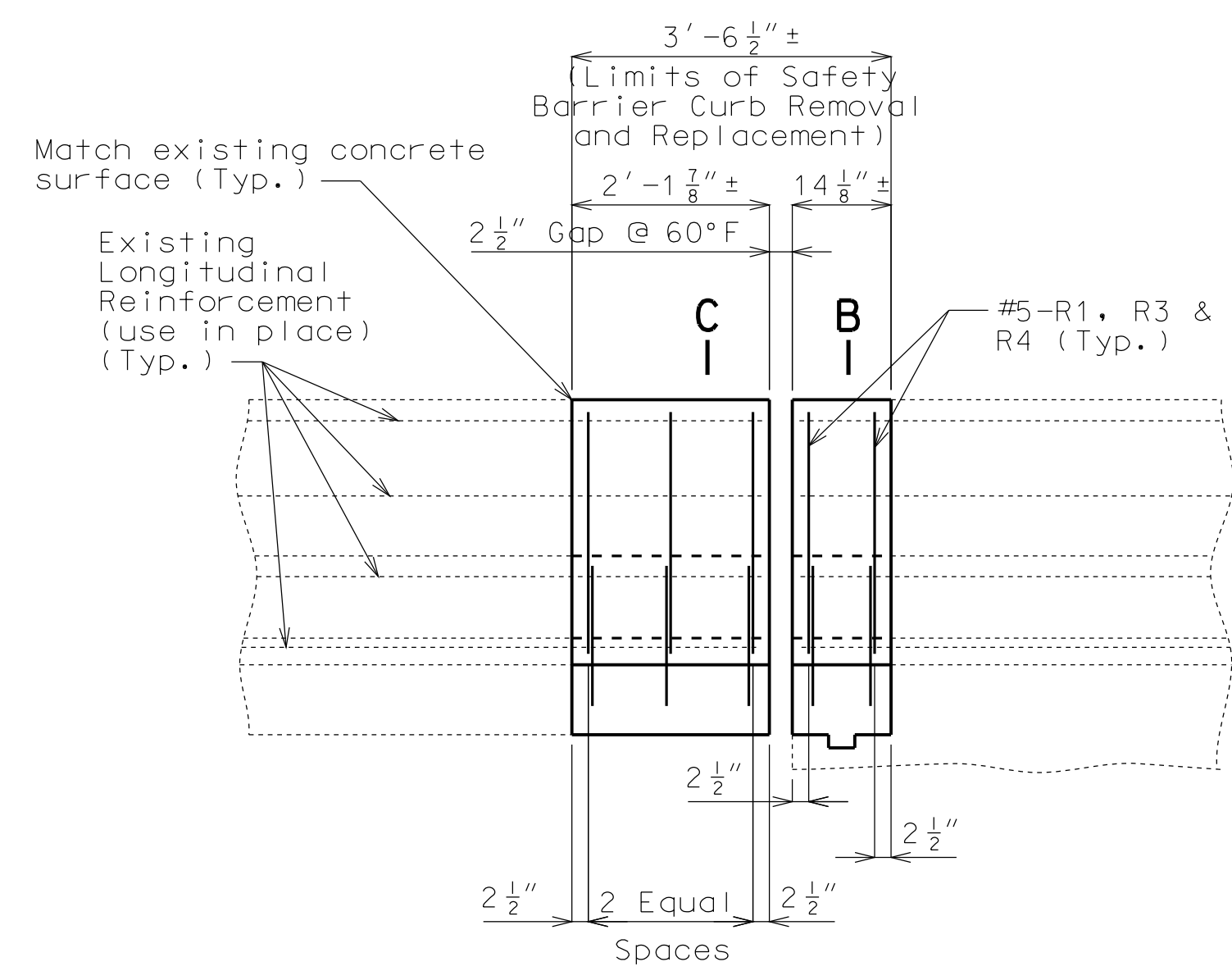
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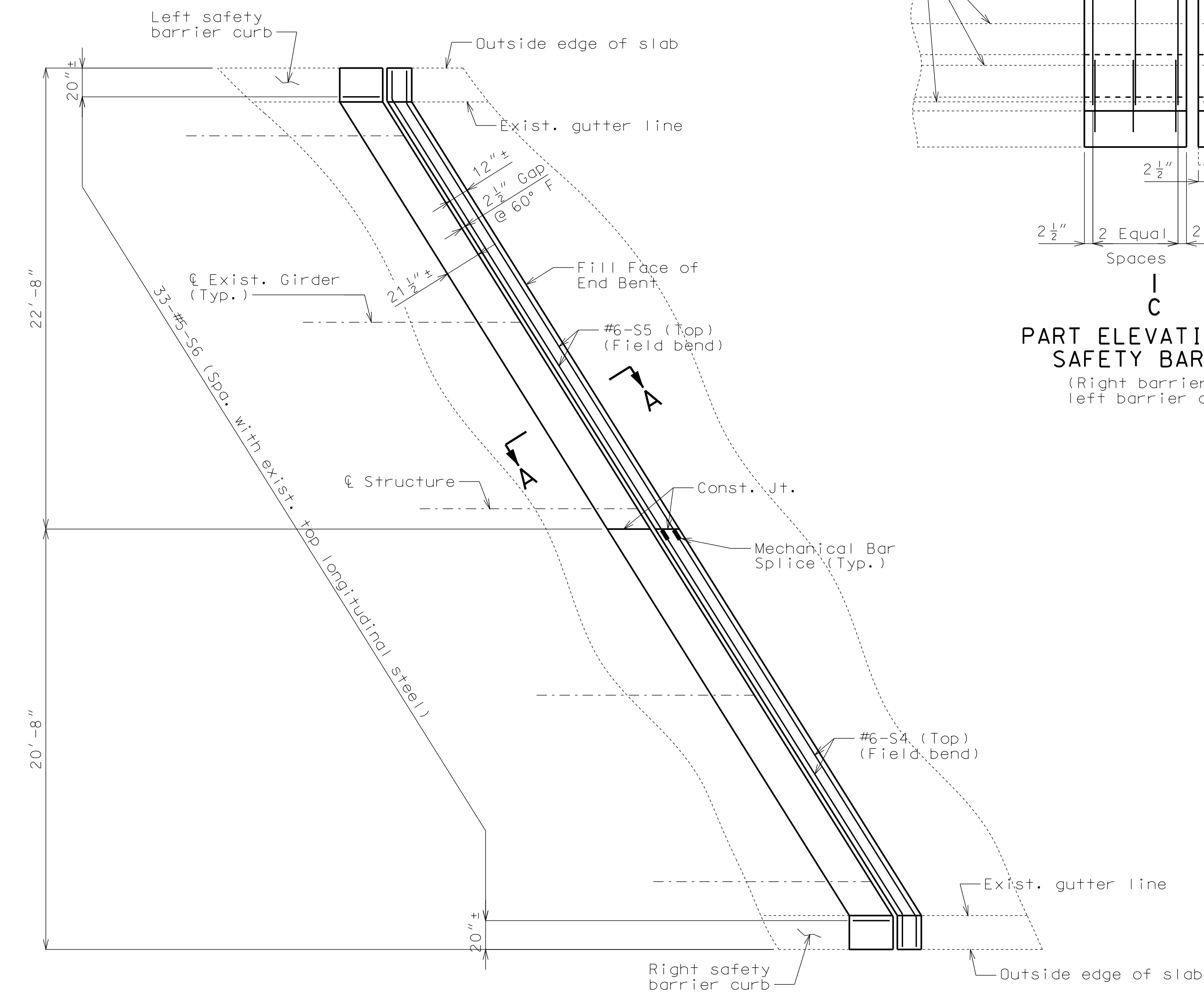
SECTION A-A

Notes:  
 The contractor shall use a mechanical bar splice for #6-S4 & S5 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.

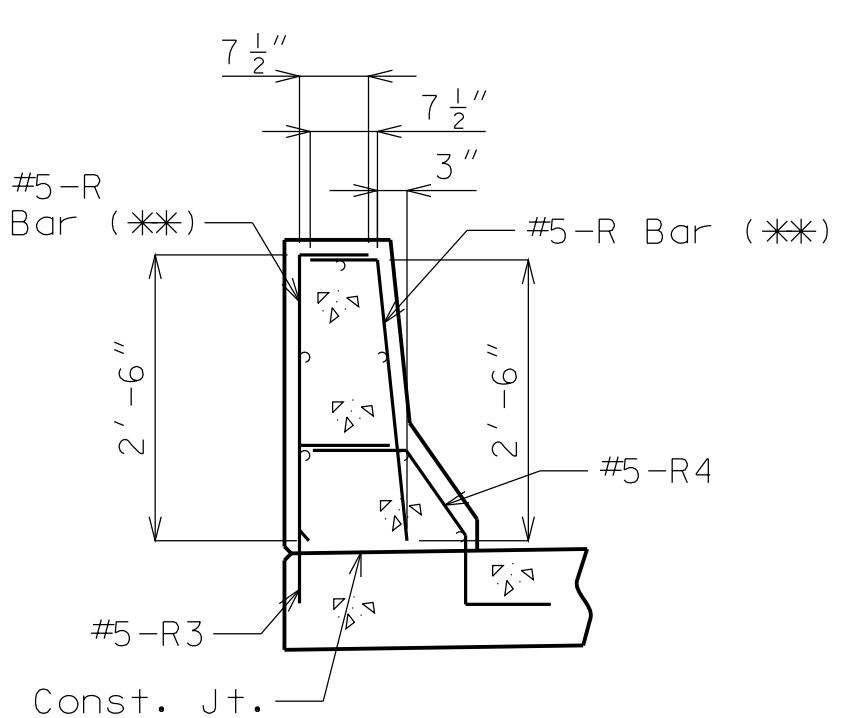
Payment for all concrete and reinforcement for safety barrier curb, complete-in-place, will be considered completely covered by the contract unit price for Remove and Replace Barrier Curb per linear foot.



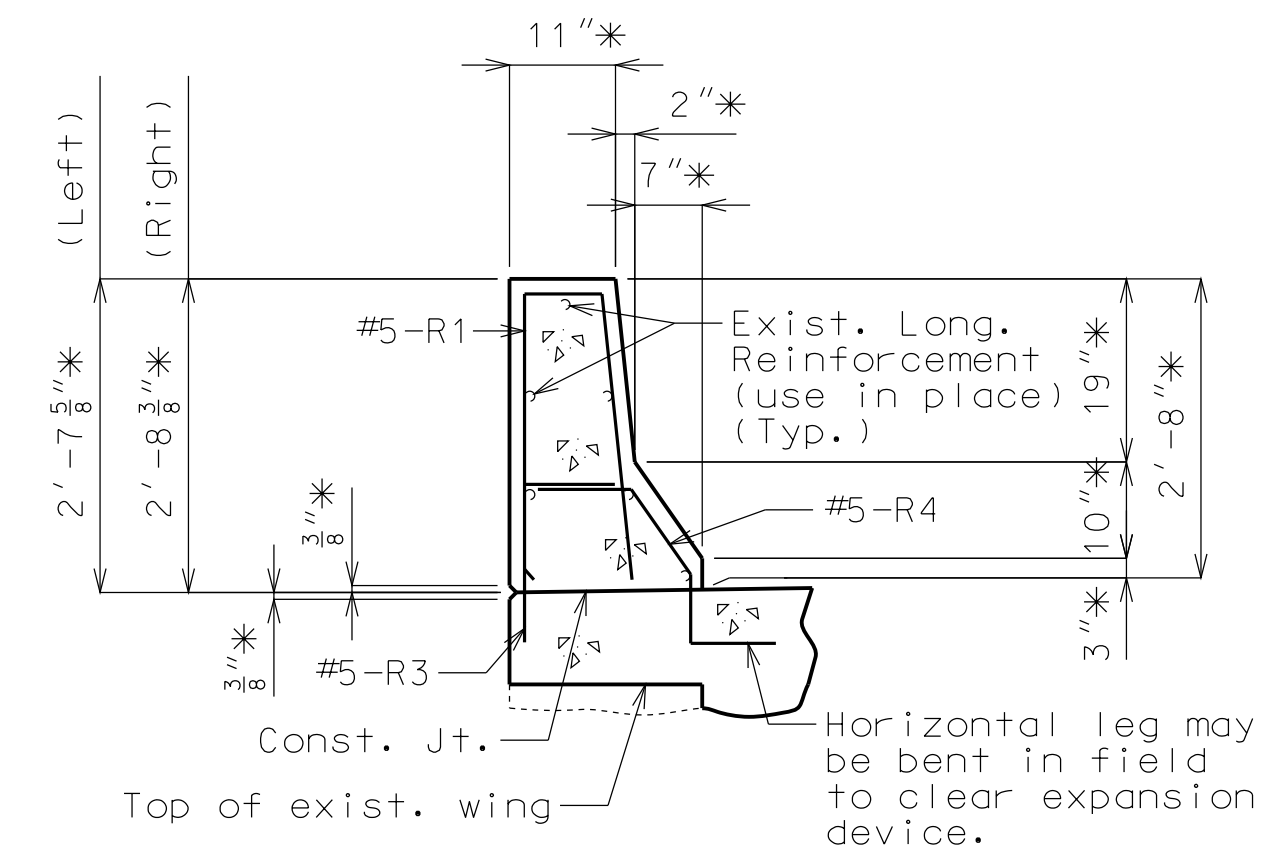
PART ELEVATION OF RIGHT SAFETY BARRIER CURB  
 (Right barrier curb shown, left barrier curb similar)



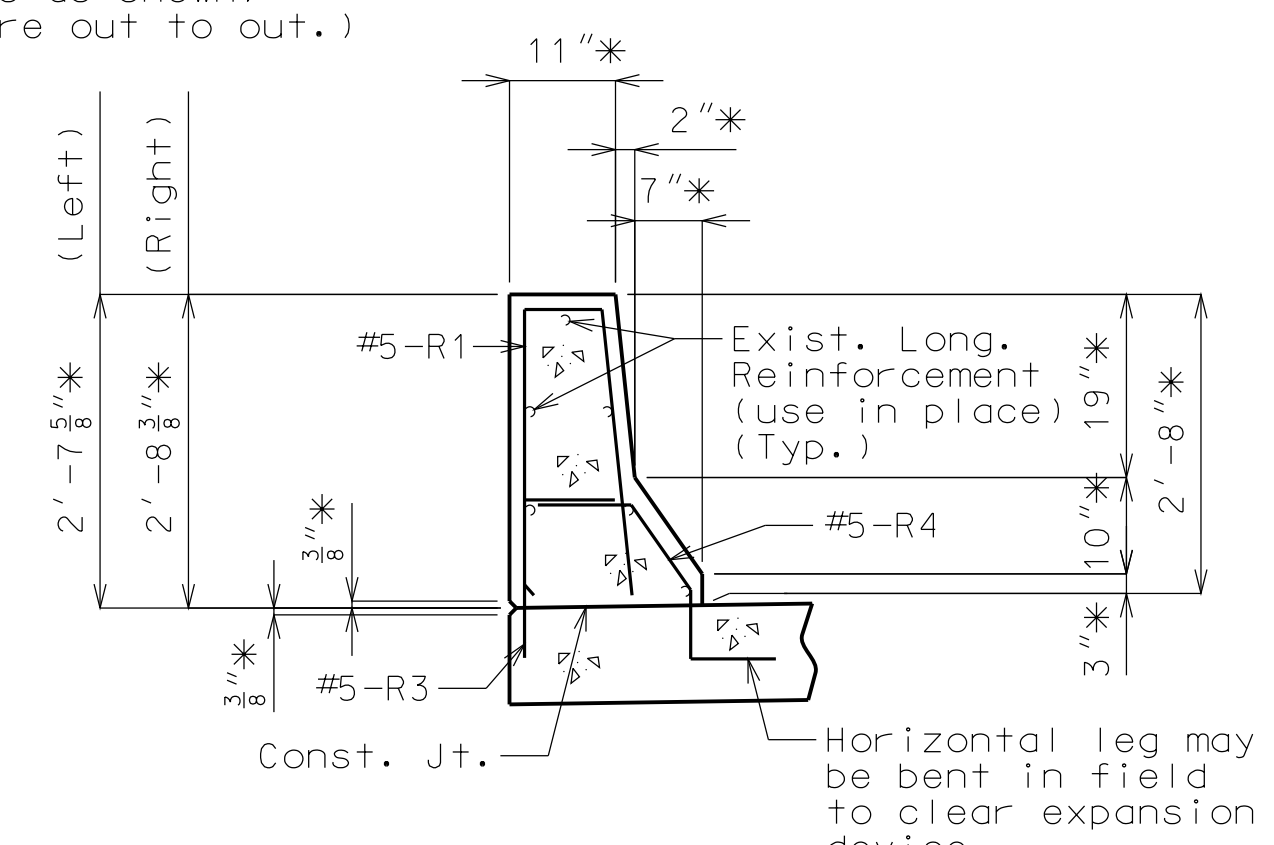
PART PLAN OF SLAB AT END BENT NO. 5



R-BAR PERMISSIBLE ALTERNATE SHAPE  
 (\*\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION B-B  
 \* Match existing.



PART SECTION C-C  
 \* Match existing.

DATE PREPARED 12/3/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 5
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33741	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)


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



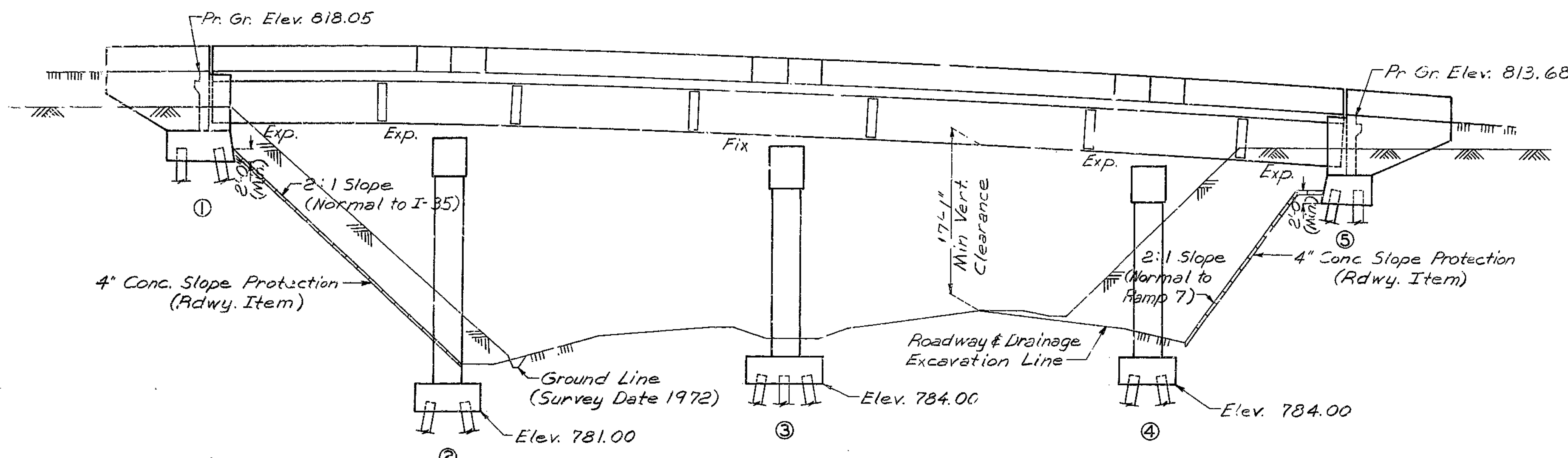
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(70'-99'-107'-56') Cont. Comp. R Girder Spans

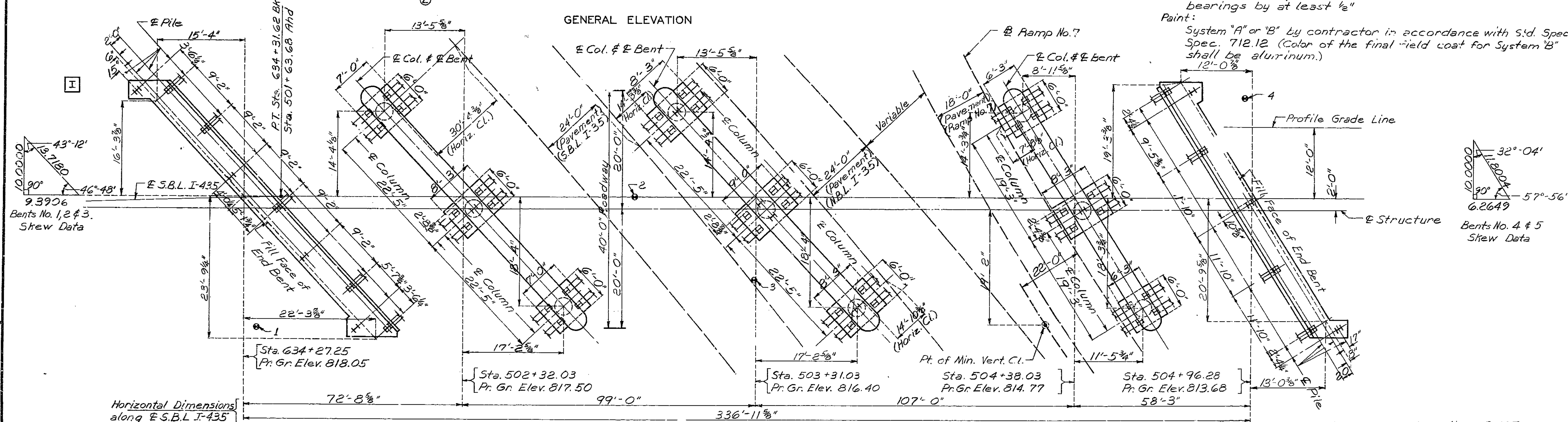
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
SEC./SUR. 27	TWP 51N	RGE. 32W		24	

P.I. Sta. 630+93.31  
 Elev. 827.10  
 +3.5% -2.0%  
 1350' V.C.  
 Equ'ion Sta. 634+31.62 BK  
 Sta. 501+63.68 A7.

**GENERAL NOTES:**  
 Design Specifications:  
 A.A.S.H.T.O.-1977 Load Factor Design Substructure.  
 Design Loading:  
 HS 20-44 15#/sq. ft. Future Wearing Surface  
 Modified 24,000# Tandem Axle.  
 Earth 120# Equivalent Fluid Pressure 30"  
 Fatigue Stress: Case II  
 Design Unit Stresses:  
 Class B2 Concrete (Superstructure)  $f_c = 4,000$  psi.  
 Class B Concrete (Substructure)  $f_c = 3,000$  psi.  
 Reinforcing Steel (Substructure) (Grade 60)  $f_y = 40,000$  psi.  
 Reinforcing Steel (Superstructure) (Grade 60)  $f_y = 60,000$  psi.  
 Structural Carbon Steel  $f_s = 20,000$  psi.  
 Structural Steel (A.S.T.M. A-572) Grade 50  $f_s = 27,000$  psi.  
 Steel Pile  $f_b = 9,000$  psi.  
 Fabricated Steel:  
 Field connections, High Strength Bolts  $\frac{3}{4}" \phi$ , holes  $\frac{1}{16}" \phi$   
 except as noted.  
 Reinforcing Steel:  
 Minimum clearance to reinforcing steel shall be  $\frac{1}{2}"$   
 unless otherwise shown.  
 All reinforcing bars in tops of substructure beams or  
 caps shall be spaced to clear anchor bolts for  
 bearings by at least  $\frac{1}{2}"$   
 Paint:  
 System "A" or "B" by contractor in accordance with S.D. Spec.  
 Spec. 712.12 (Color of the final field coat for System "B"  
 shall be aluminum.)



GENERAL ELEVATION



PLAN

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

Note: All Horizontal Clearance Dimensions are radial.

Note: For Estimated Quantities, Pile Data,  
 and Location Sketch see sheet No. 2

B.M. #62 Elev. 781.21 Top P/w Post & Median I-435  
 22' Rt. Sta. 631+22.

BRIDGE OVER RTE. I-35 & RAMP 7

STATE ROAD FROM RTE. 152 TO RTE 69  
 AT I-35 & I-435 INTERCHANGE  
 PROJECT NO. I-435-1(143) STA. 634+27.25  
 JOB NO. 4-I-435-49H RTE. I-435 (SBL)  
 CLAY COUNTY

STD. 611.60
STD. 706.35
A-3374

DESIGNED Dec. 1977  
 DETAILED OCT. 1978  
 CHECKED Nov. 1979

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

Sheet No. 1 of 20.

DATE March 12, 1981

157

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	25	

Curve Data For S.B.L. I-435  
 P.I. Sta. 626+19.45  
 $\Delta = 64^{\circ}-45'-23''$  Rt.  
 $D = 3^{\circ}-30'$   
 $T = 1038.01$   
 $L = 1850.18$   
 $R = 1637.02$

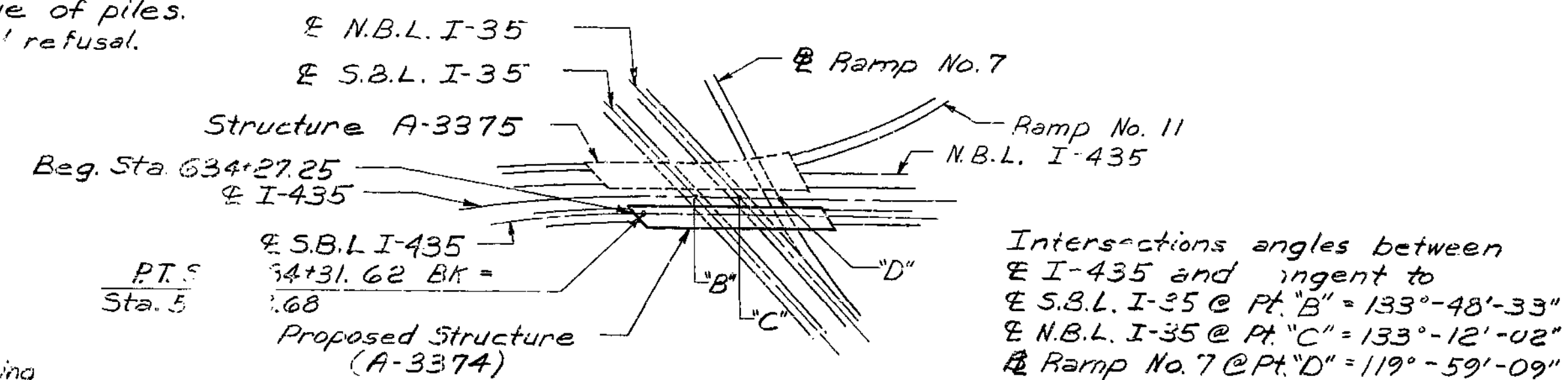
ESTIMATED QUANTITIES			
ITEM		SUBSTR.	SUPERSTR. TOTAL
Class I Excavation	Cu. Yd.	325	325
Structural Steel Pile (10")	Lin. Ft.	2933	2933
Class B Concrete	Cu. Yd.	262.4	262.4
Class B2 Concrete	Cu. Yd.		487.9
Reinforcing Steel	Lbs.	44,620	88,530
Reinforcing Steel (Epoxy Coated)	Lbs.	1290	72,500
Fabricated Structural Carbon Steel	Lbs.		236,920
Fabricated Structural Low Alloy Steel	Lbs.		68,900
Painting (System "A" or "B" Alum)	Ton		151.6
Elastomeric Expansion Jt. Seal (3.0")	Lin. Ft.		102
Slab Drains	Each		7

Note: All Concrete and reinforcement in safety barrier curbs is included with superstructure quantities.

PILE DATA						
BENT NO.	WING PILE BENT NO. 1	2	3	4	5	
Pile Type and Size	HP10 x 42					
Number	1	9	13	16	13	7
Approximate Length	Ft.	73	69	43	48	56
Design Bearing	Tons	7	45	55	50	45
Hammer Energy required	Ft. Lbs.	9,100	11,000	12,800	11,500	11,000

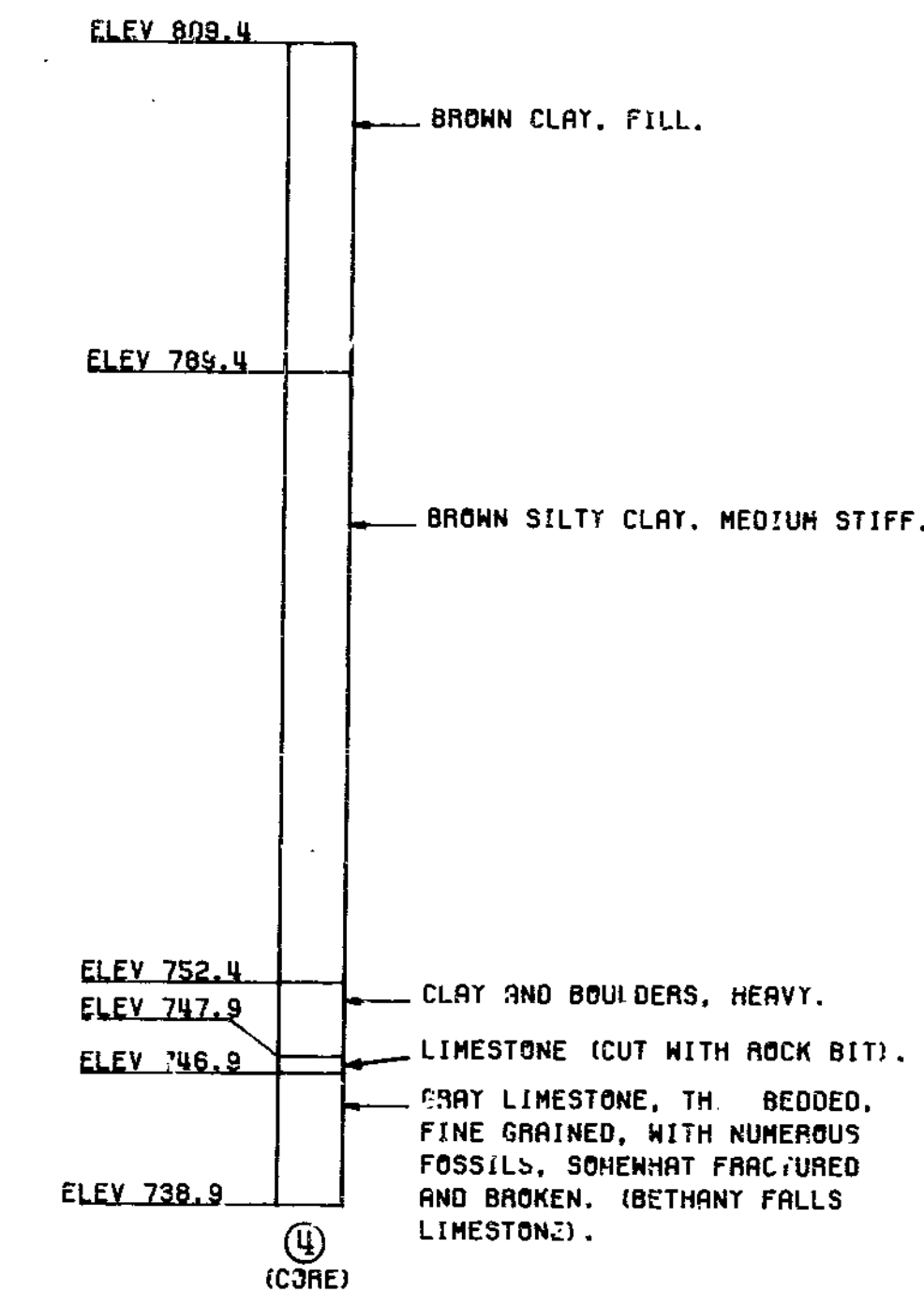
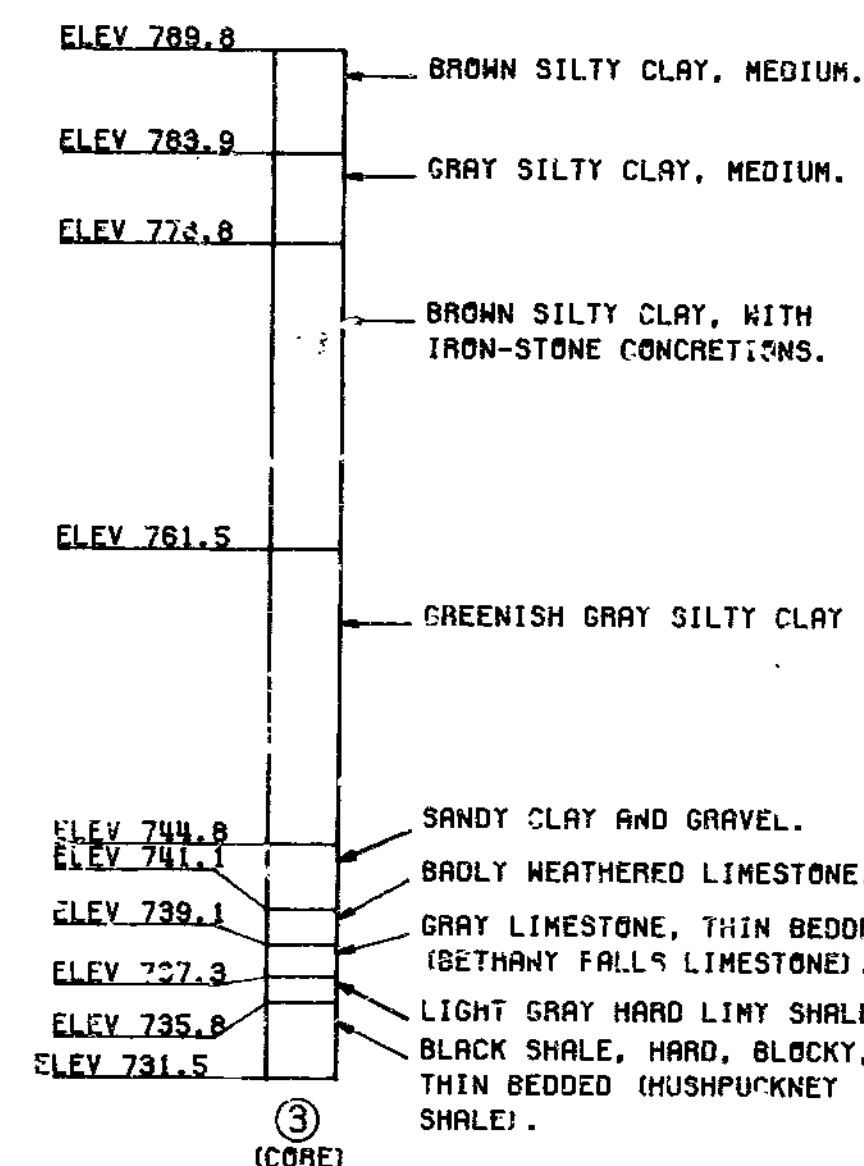
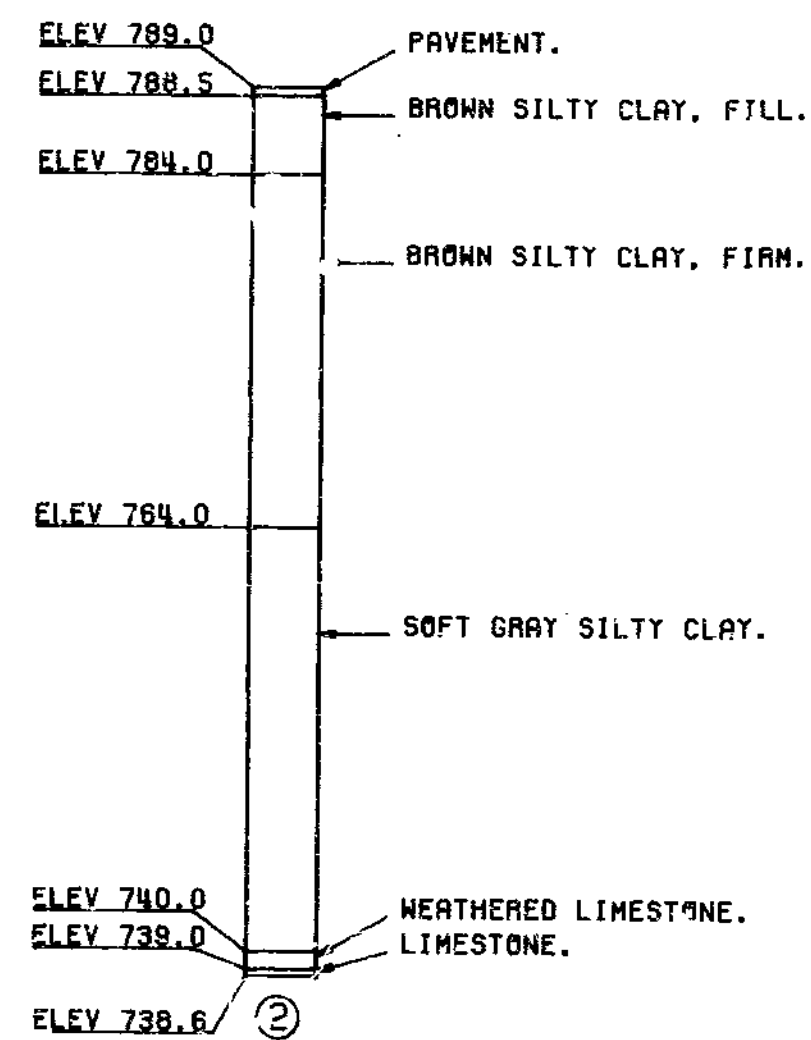
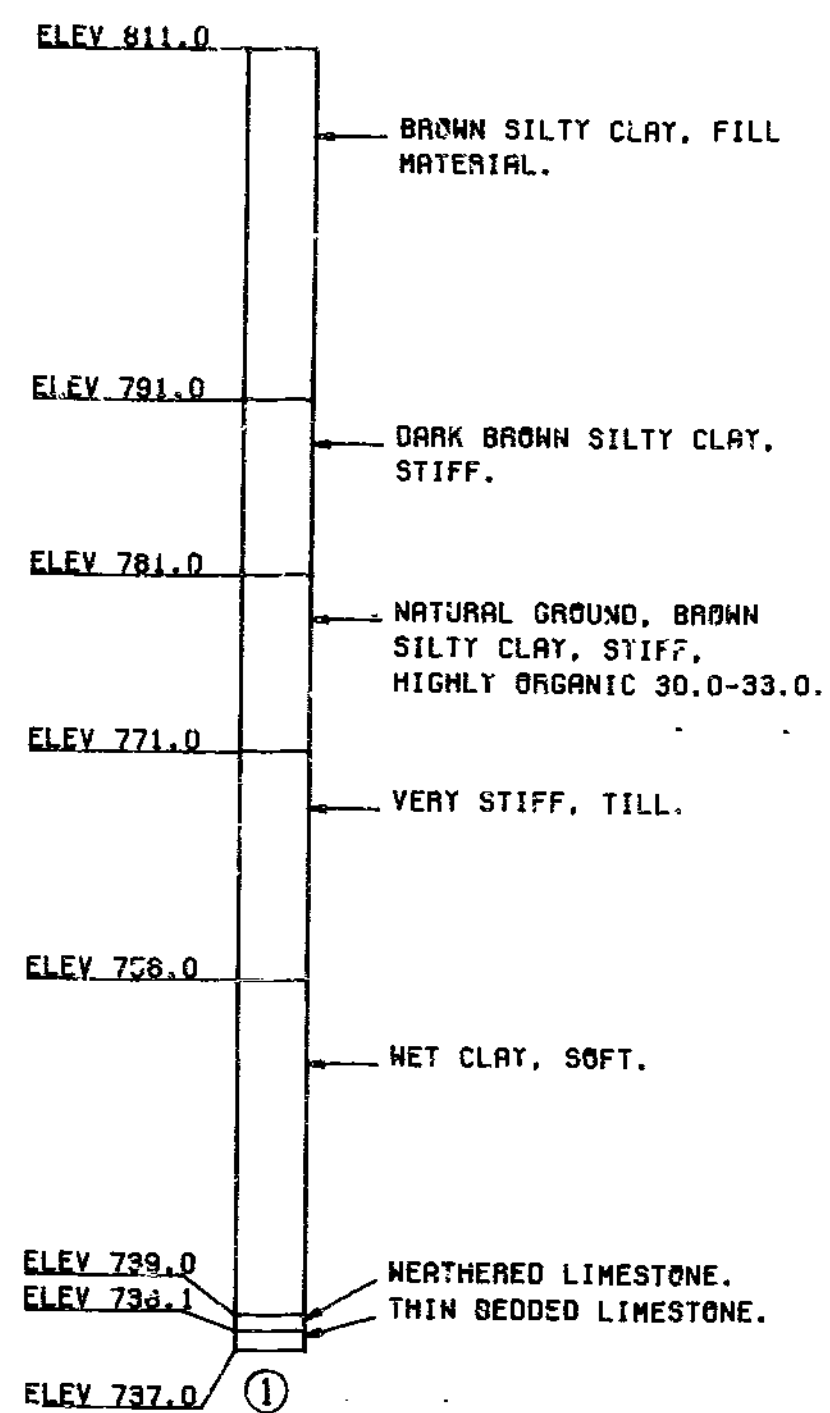
Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
 All pile shall be driven to practical refusal.

Note: Construction Clearance (Rte. I-35, N.B.L. & S.B.L.)  
 A minimum Vertical Clearance of 15'-0" from existing lanes and a minimum Lateral Clearance of 28'-0" centered on existing lanes shall be maintained during Construction.



LOCATION SKETCH

"B" Sta. 502+62.44  $\text{I-435} = \text{Sta. } 538+07.50$   $\text{S.B.L. I-35}$   
 "C" Sta. 503+40.10  $\text{I-435} = \text{Sta. } 537+55.55$   $\text{N.B.L. I-35}$   
 "D" Sta. 504+07.9;  $\text{I-435} = \text{Sta. } 5+49.10$   $\text{Ramp No. 7}$



Note: For location of boring see sheet No. 1 of 20.

BORING DATA

158  
 DETAILED OCT. 1978  
 CHECKED Nov. 1979

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

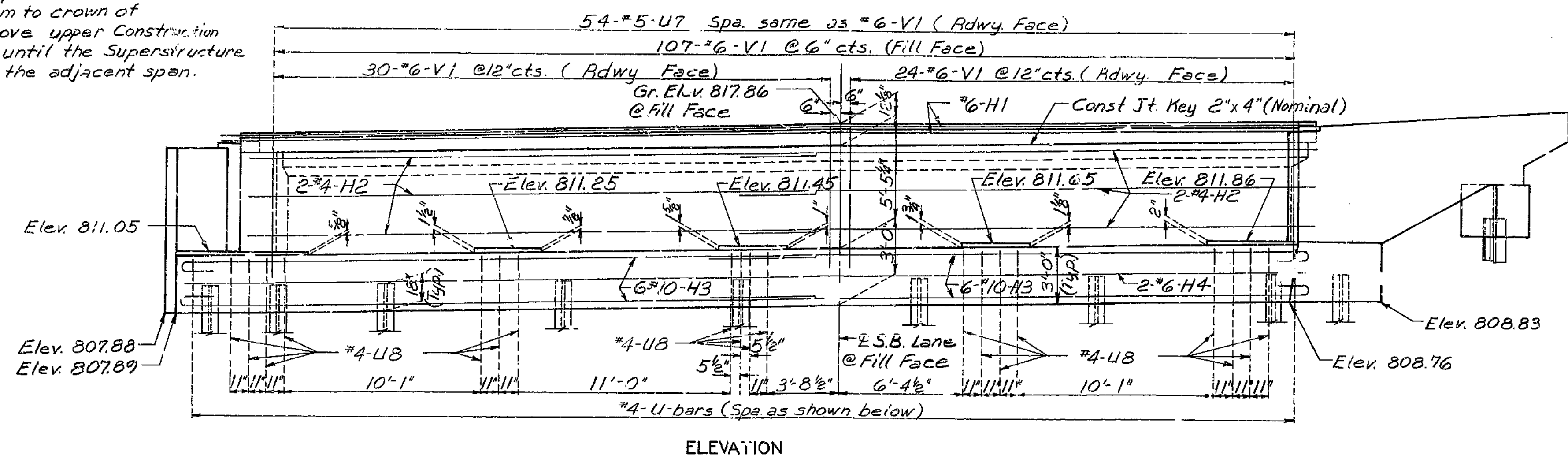
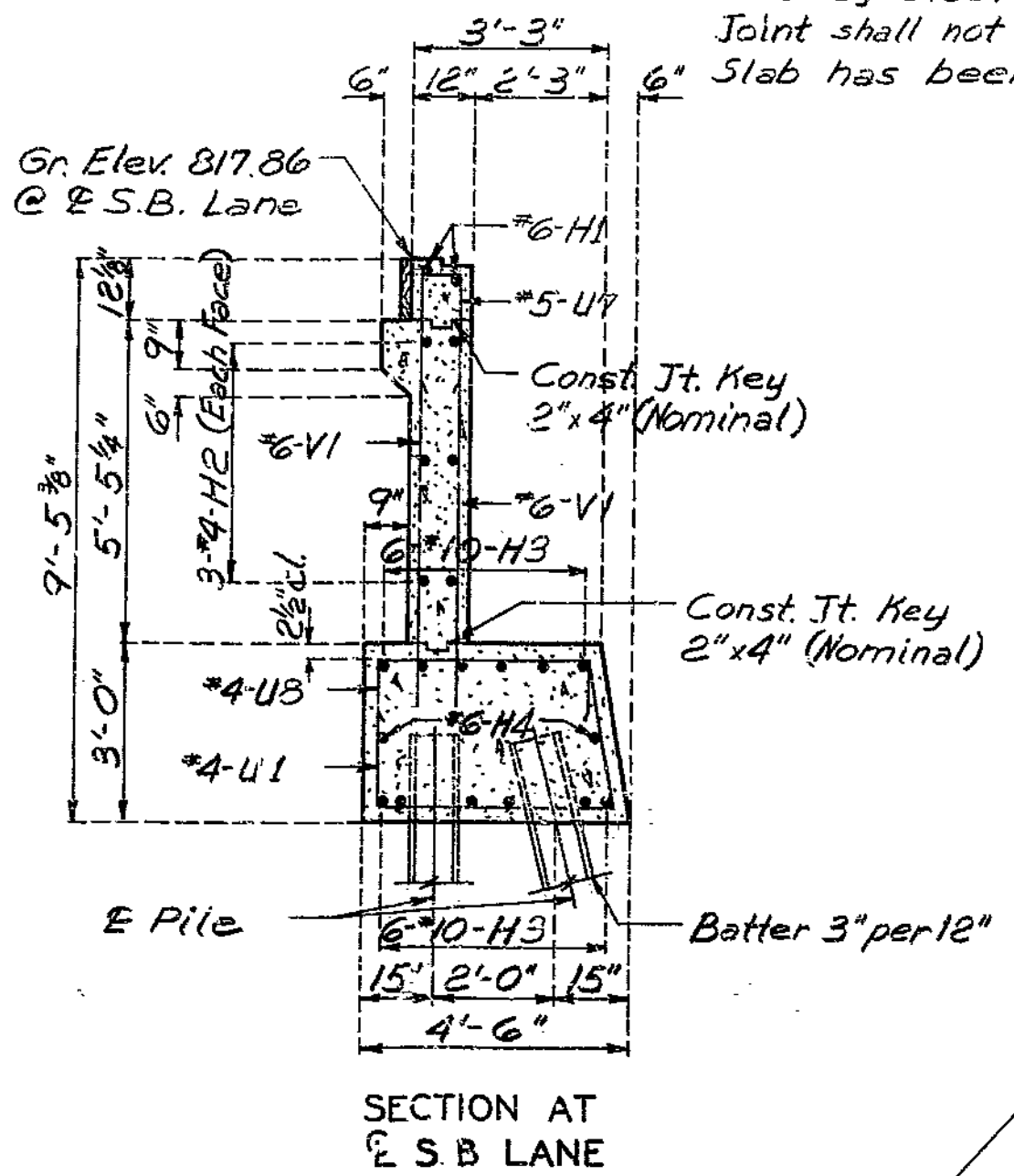
Sheet No. 2 of 20.

CLAY COUNTY

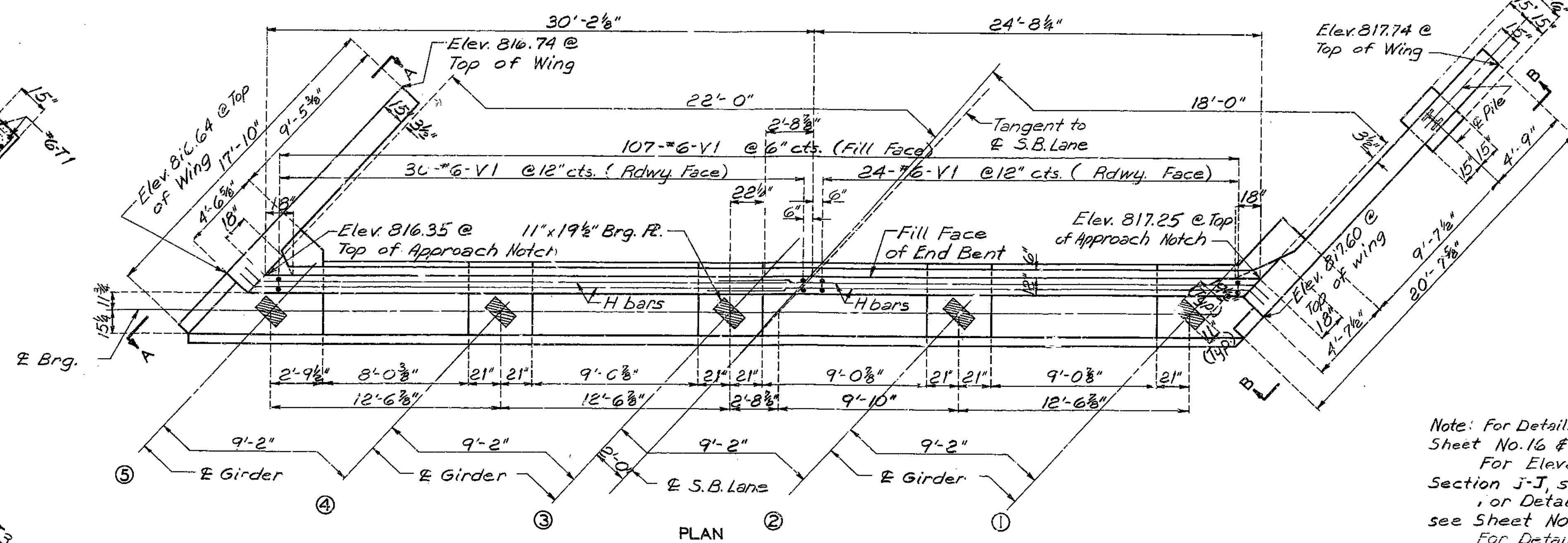
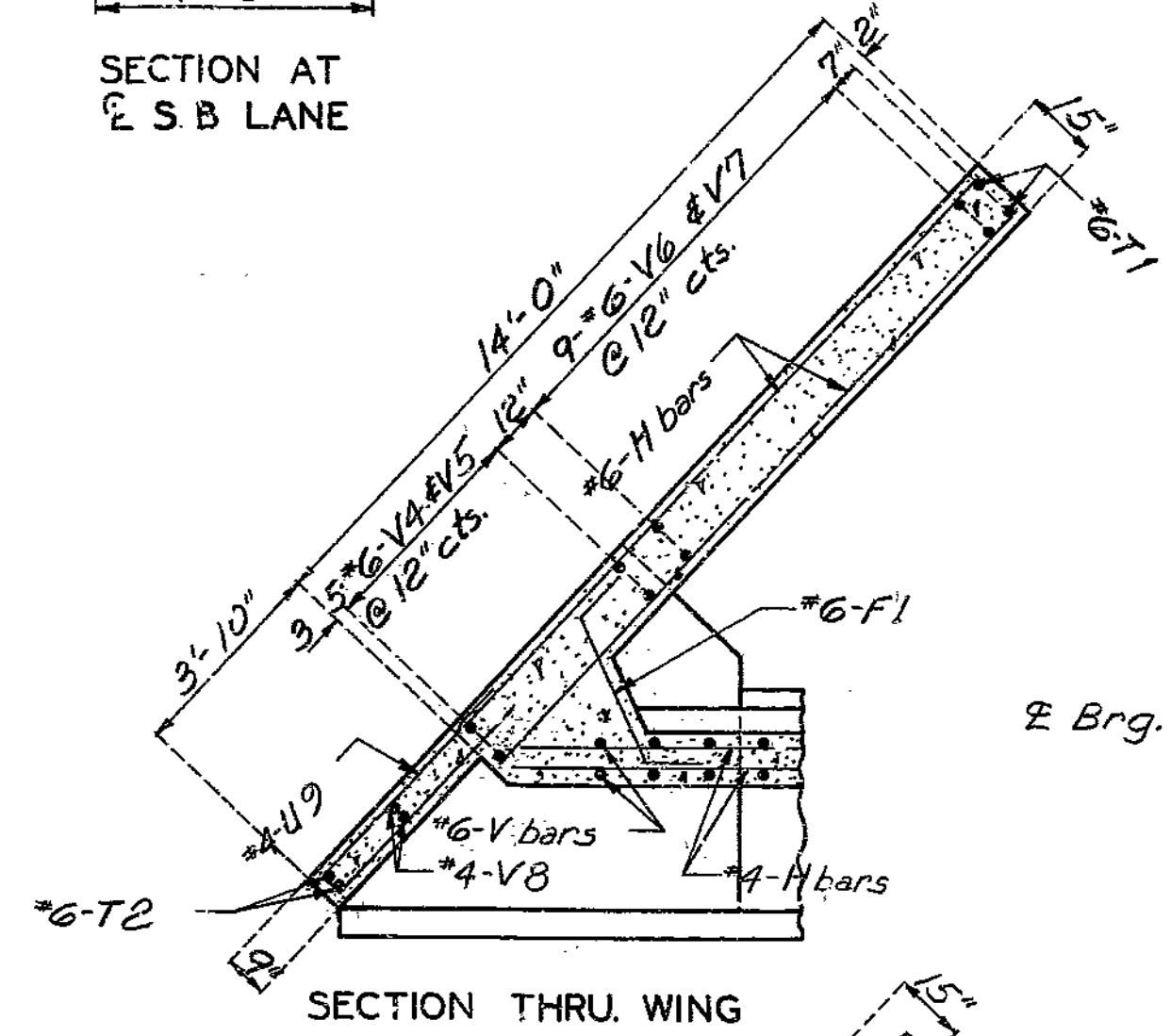
A-3374

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	F.Y. YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	24	

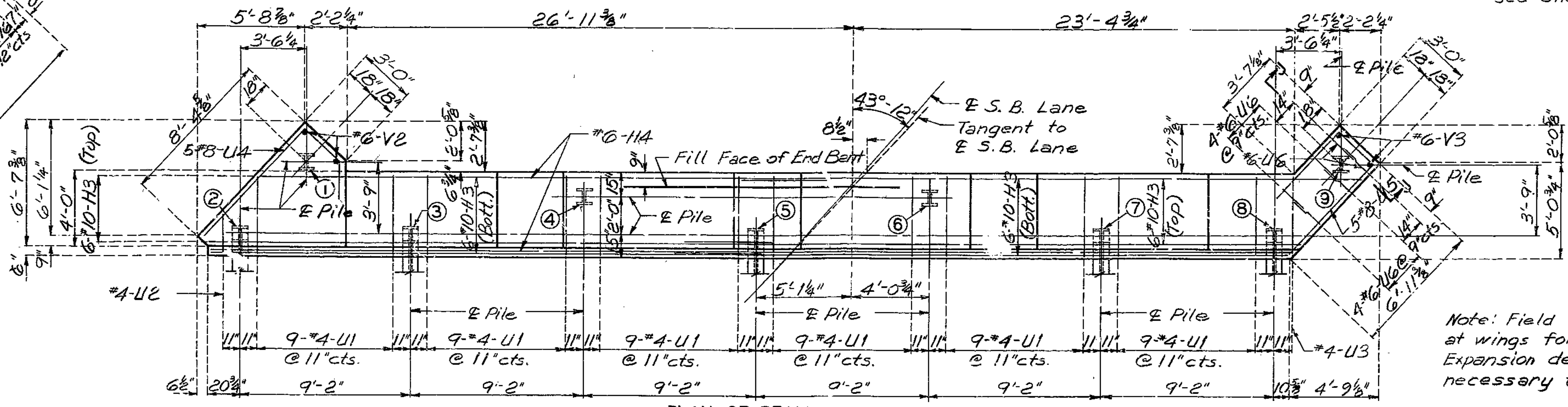
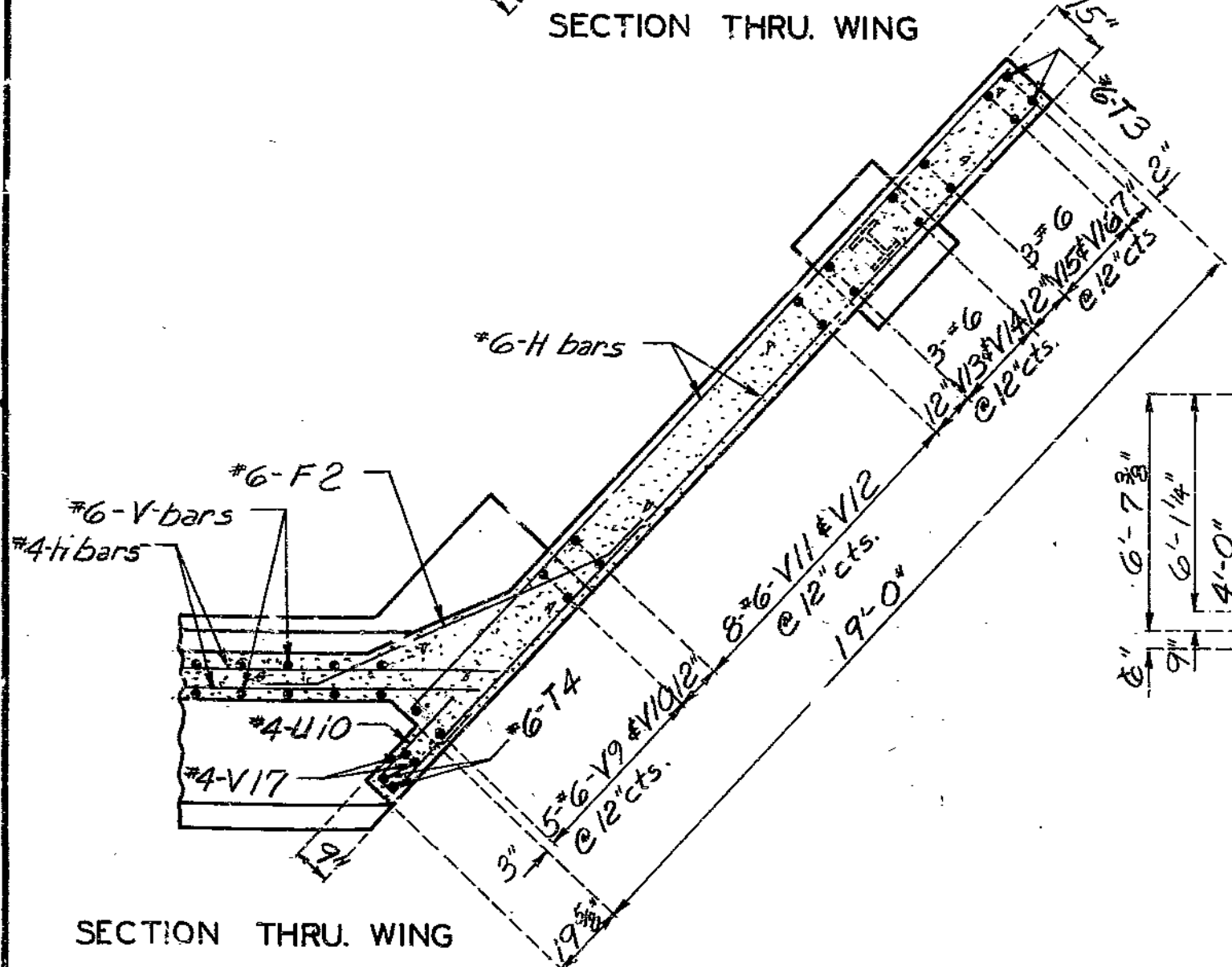
Note: Top of Backwall and Expansion device for End Bent No. 1 to conform to crown of roadway slab. Backwall above upper Construction Joint shall not be poured until the Superstructure Slab has been poured in the adjacent span.



PILE NO.	PILE CUT-OFF ELEVATION
1	809.48
2	809.43
3	809.57
4	809.71
5	809.84
6	809.98
7	810.12
8	810.26
9	810.30



Note: For Details of barrier curbs see Sheet No. 16 & No. 17  
 For Elevation A-A & Elevation B-B & Section J-J, see Sheet No. 3  
 or Details of Anchor Bolt Wells see Sheet No. 11  
 For Detail of Steel Pile Splice see Sheet No. 8



Note: Field bending shall be required at wings for #6-H1 bars in backwall with Expansion device and for #1 #F2 bars when necessary to conform to slope of wings.

159

DETAILED AUG. 1978  
 CHECKED Nov. 1979

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

PLAN OF BEAM  
 (BELOW LOWER CONSTRUCTION JOINT)  
 DETAILS OF END BENT NO. 1

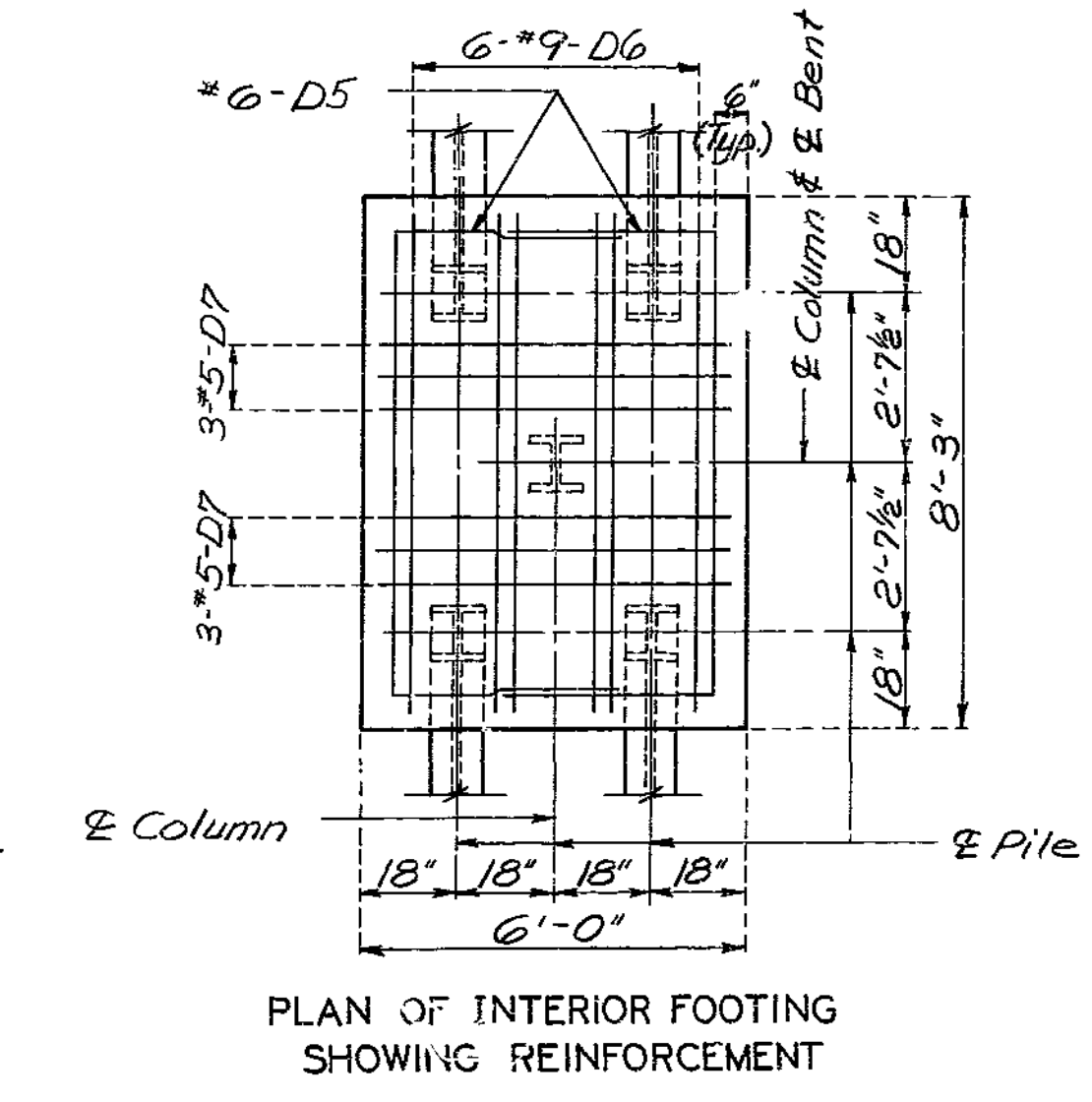
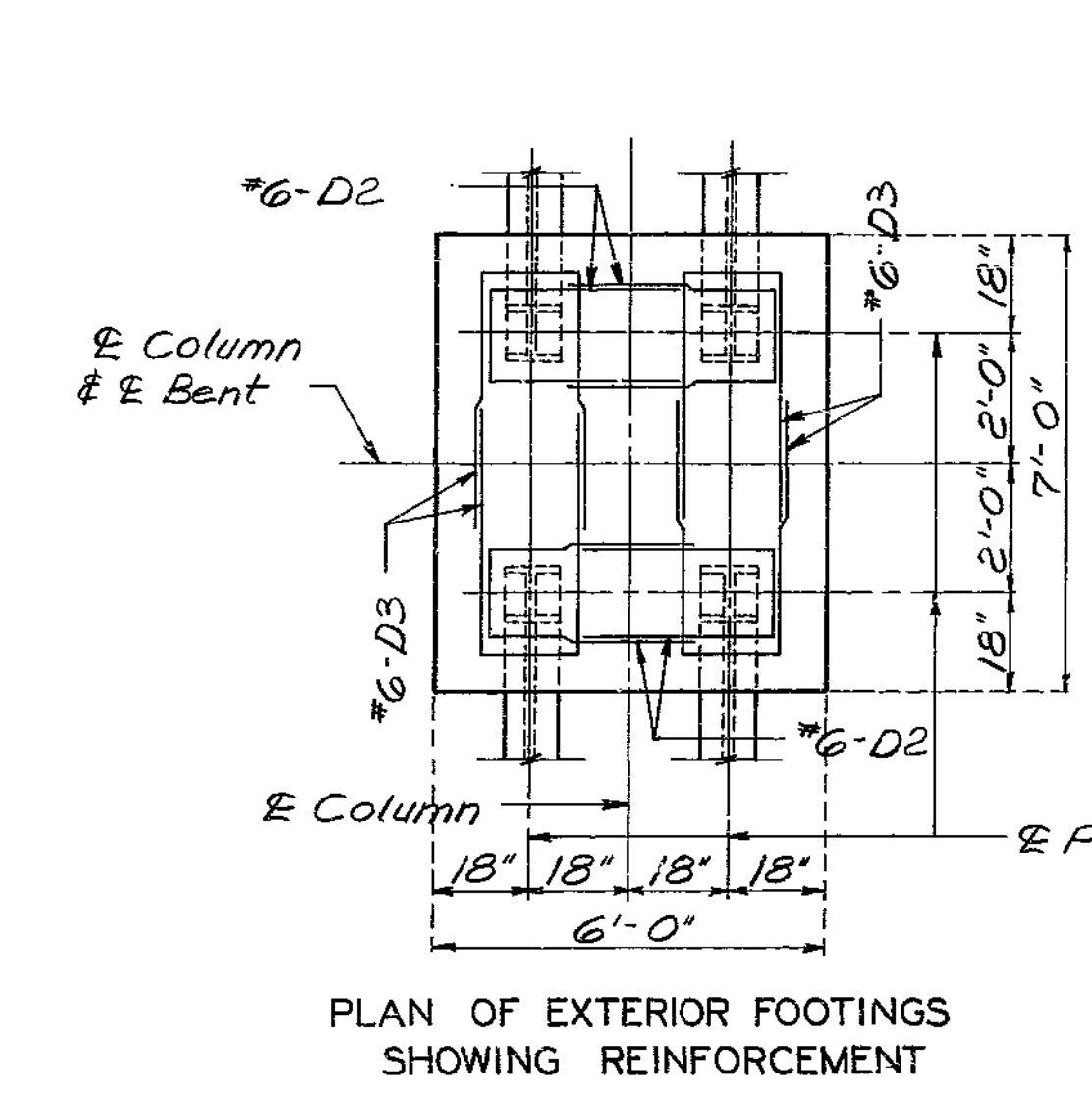
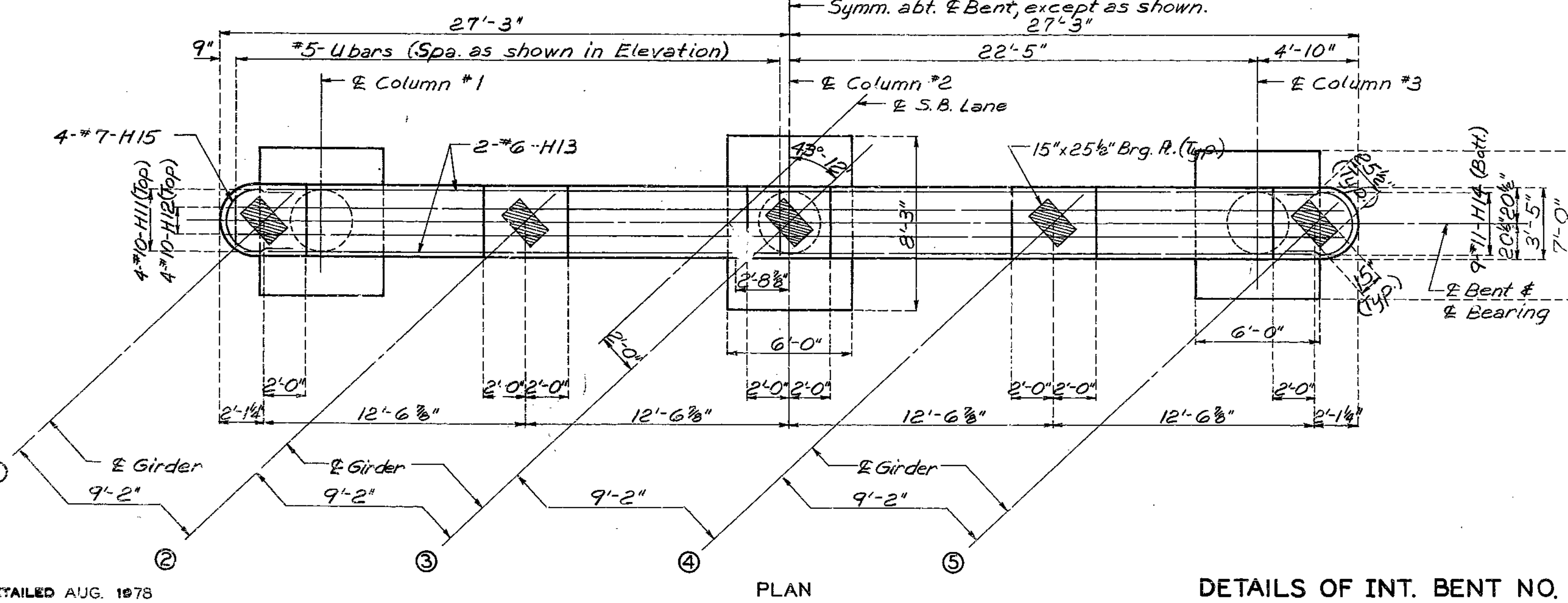
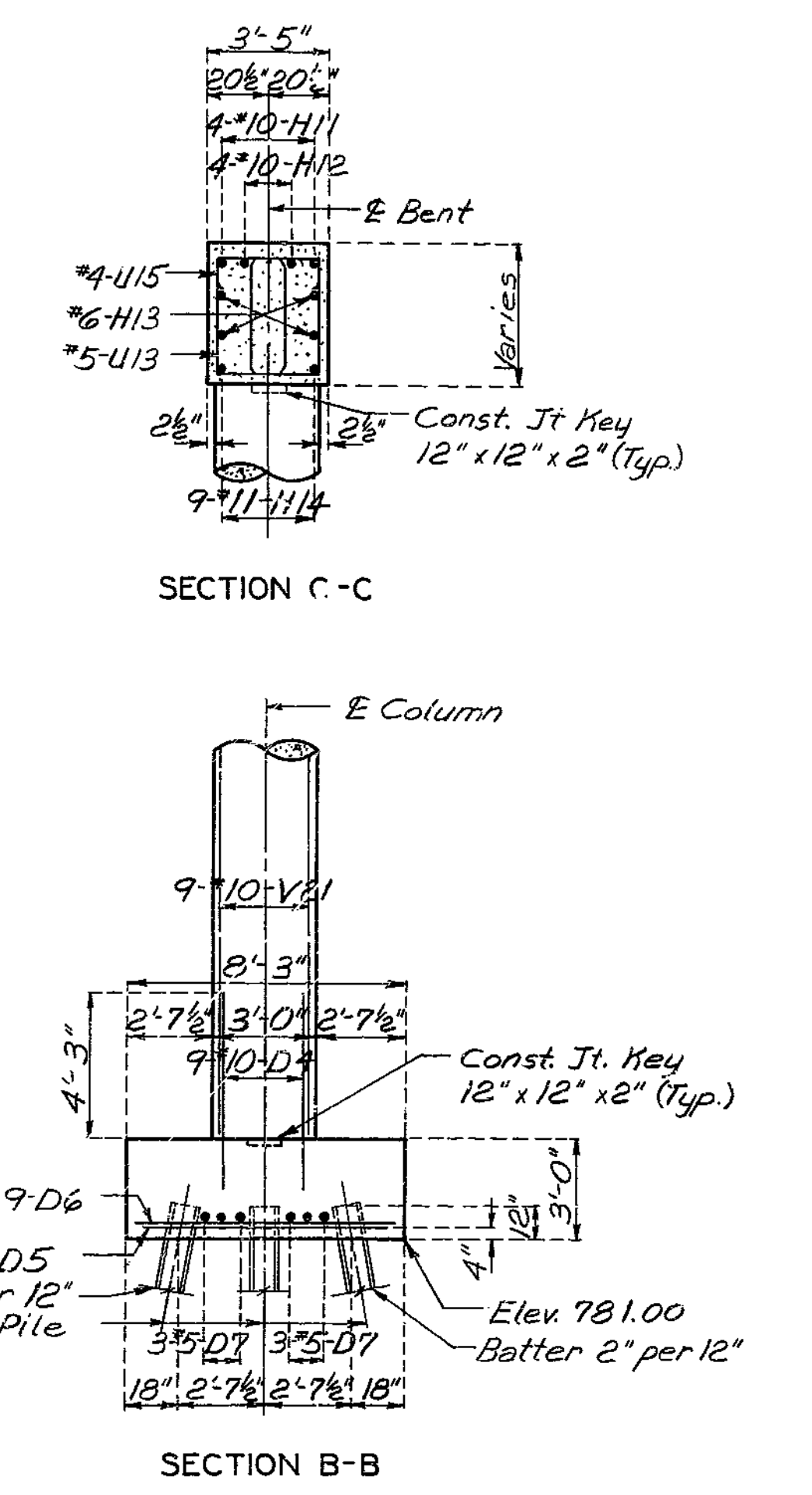
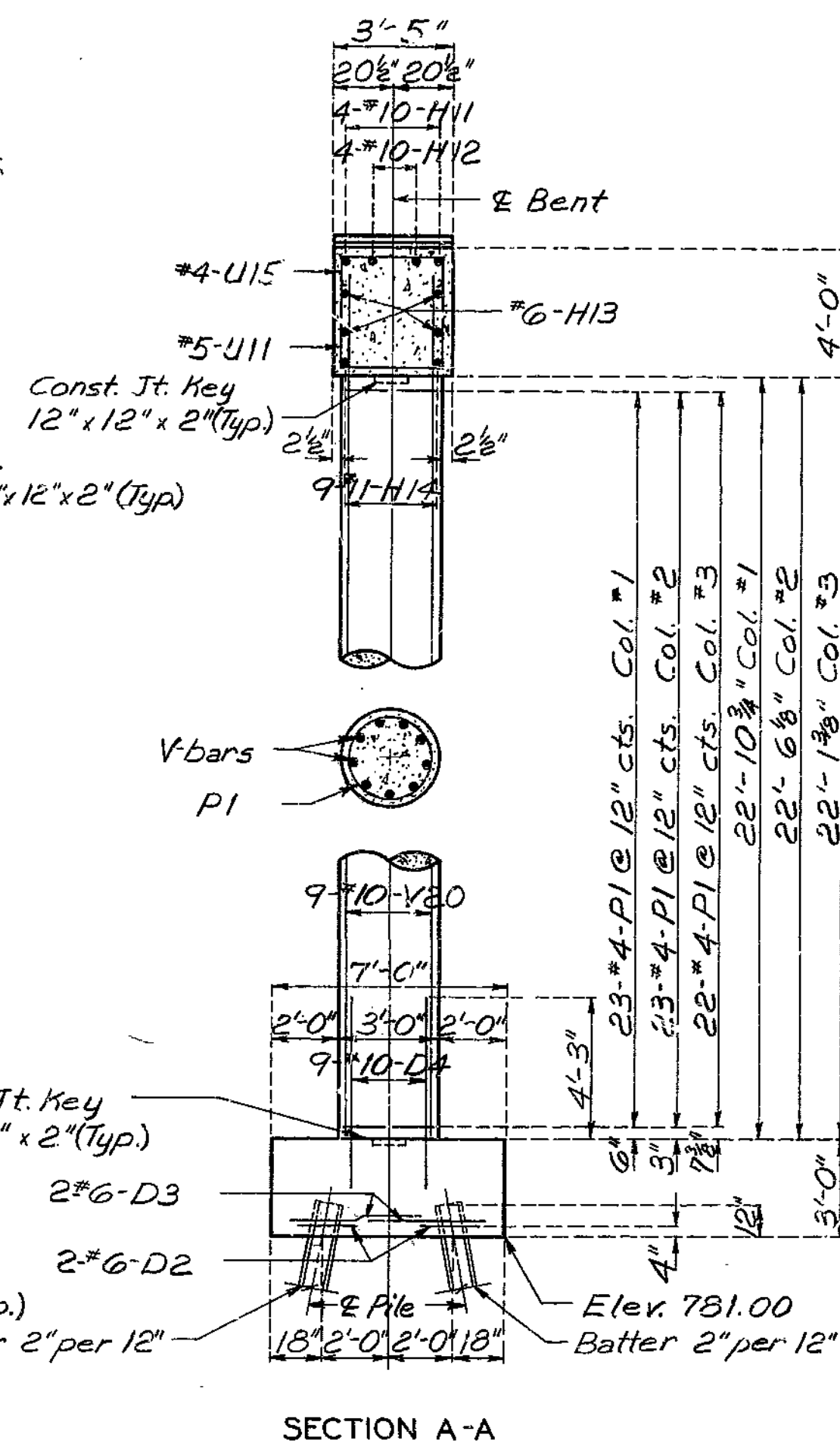
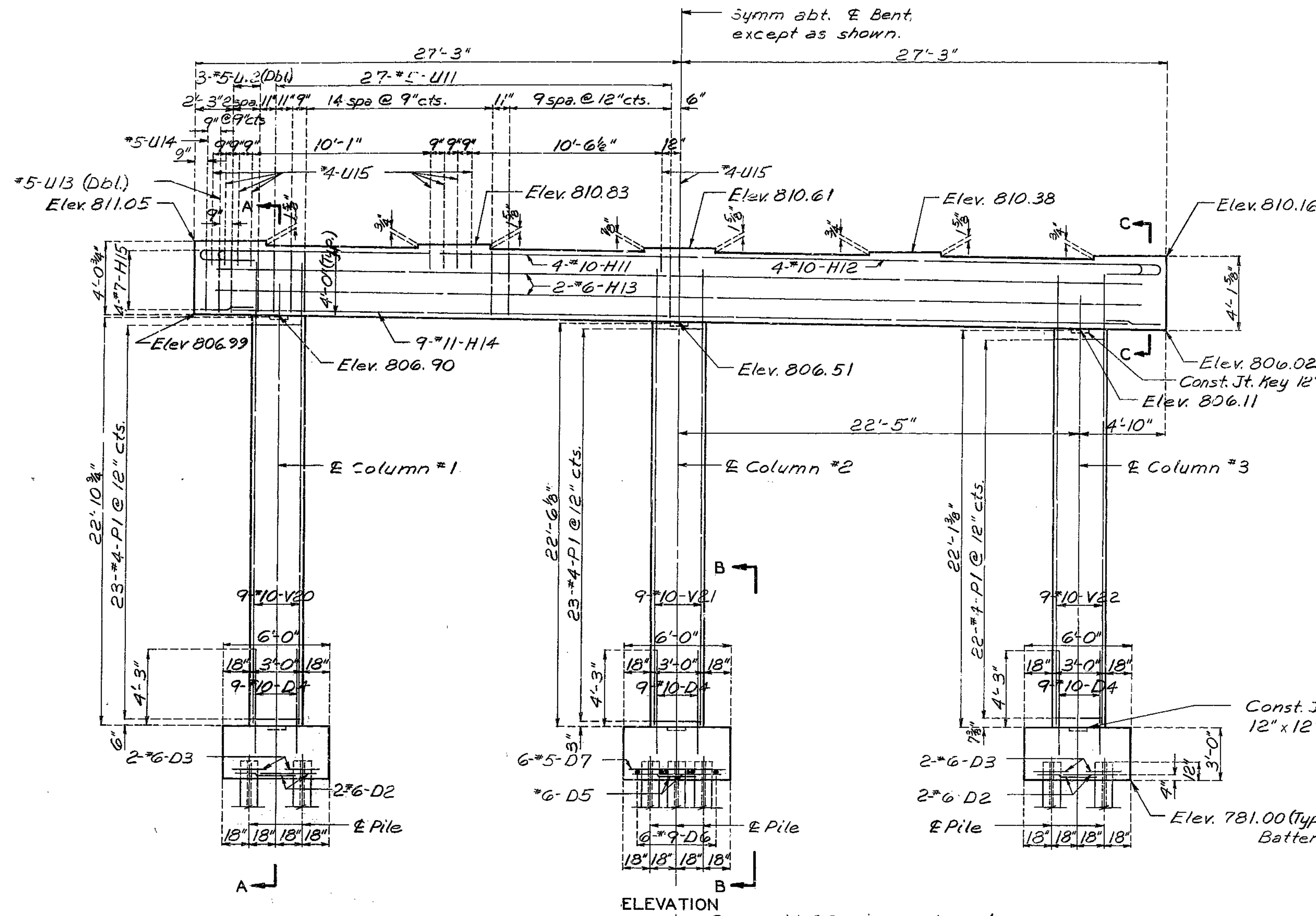
Sheet No. 3 of 20.

CLAY COUNTY

A-3374



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	27	



DETAILS OF INT. BENT NO. 2

Note: For Plan of Anchor Bolts see sheet No. 11  
 For Detail of Steel Pile Splice see sheet No. 8  
 Sheet No. 4 of 20.

160

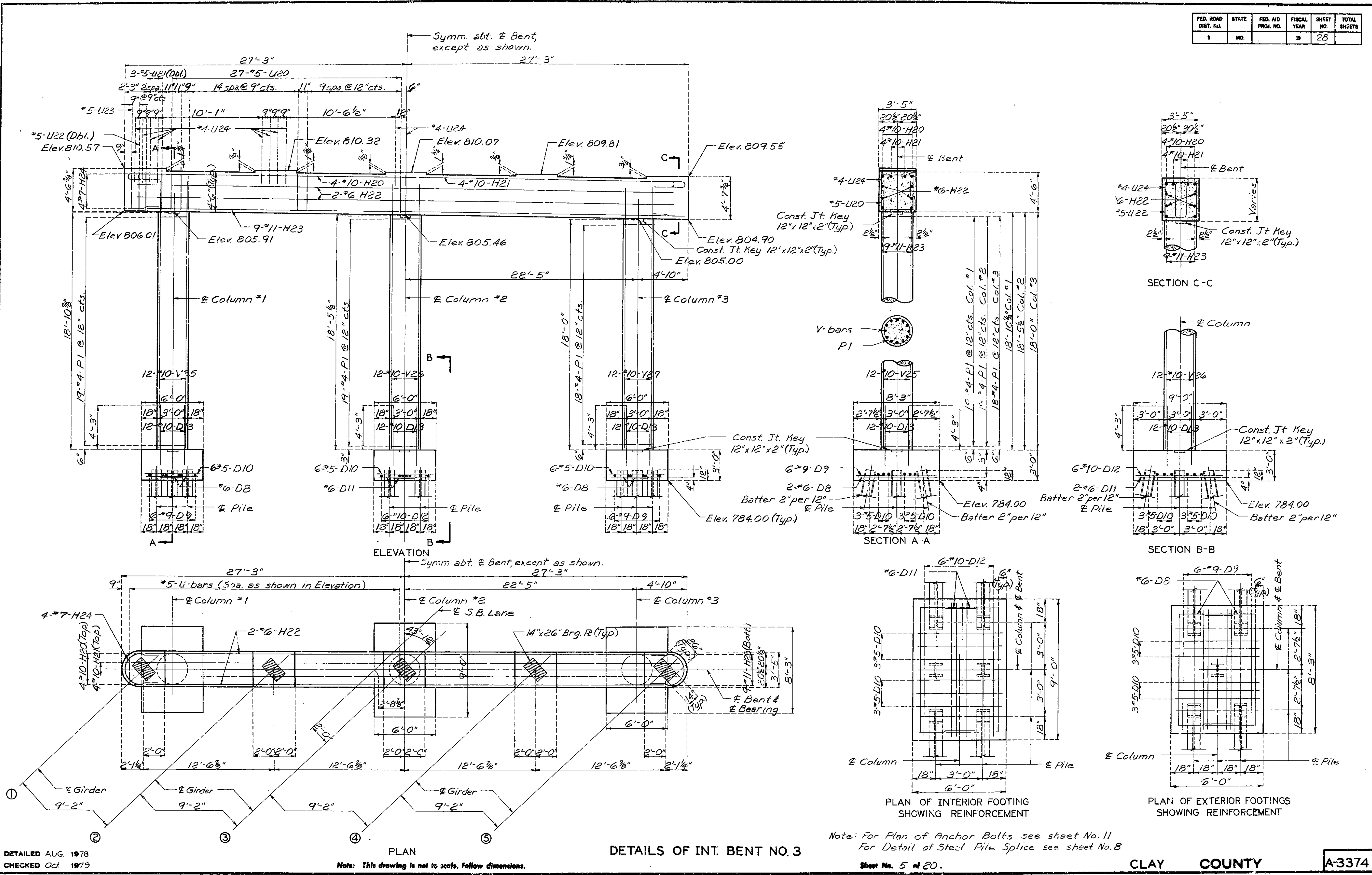
DETAILED AUG. 1978  
 CHECKED Oct. 1979

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

CLAY COUNTY

A-3374

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



161

DETAILED AUG. 1978  
CHECKED Oct. 1979

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

DETAILS OF INT. BENT NO. 3

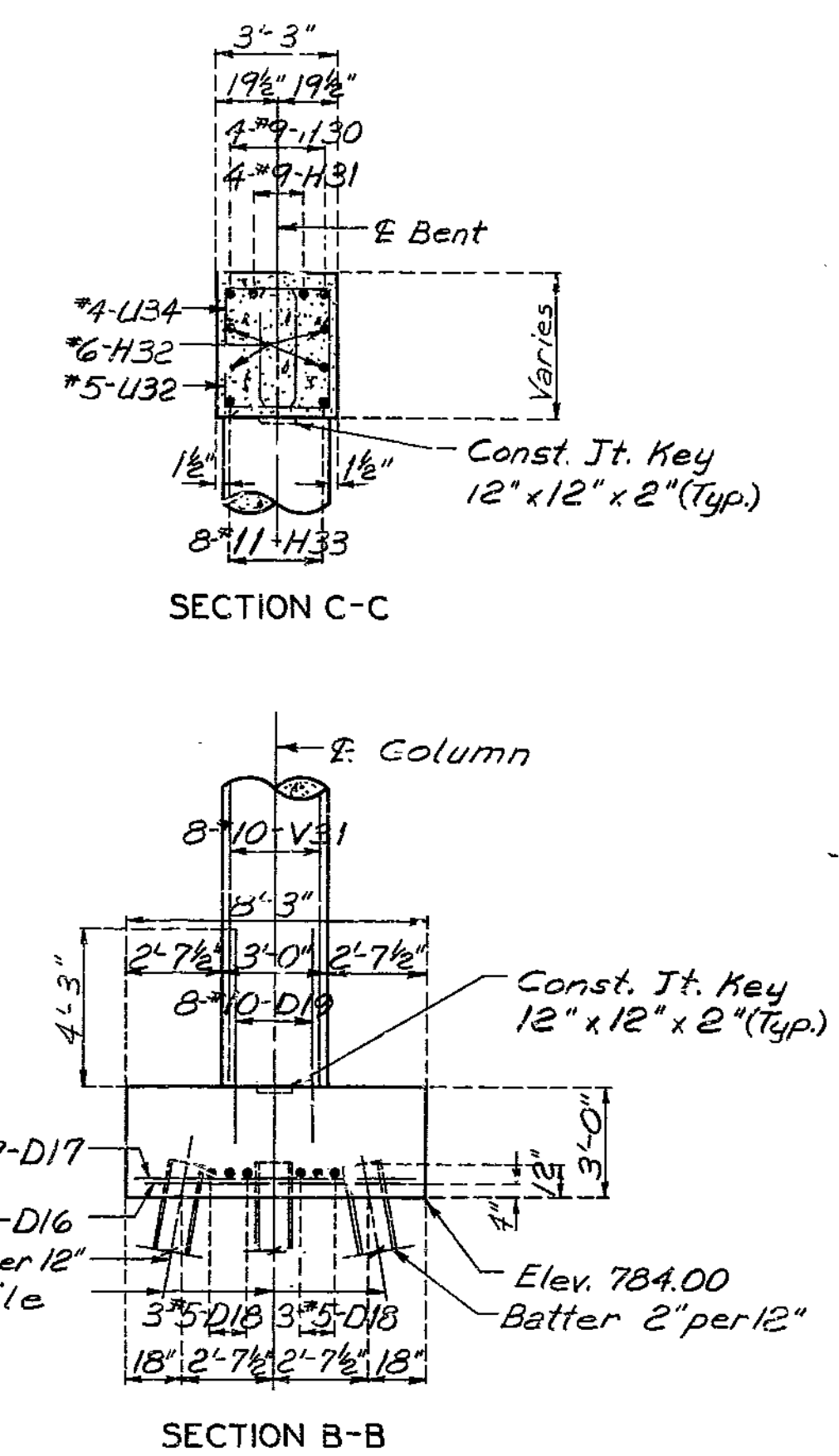
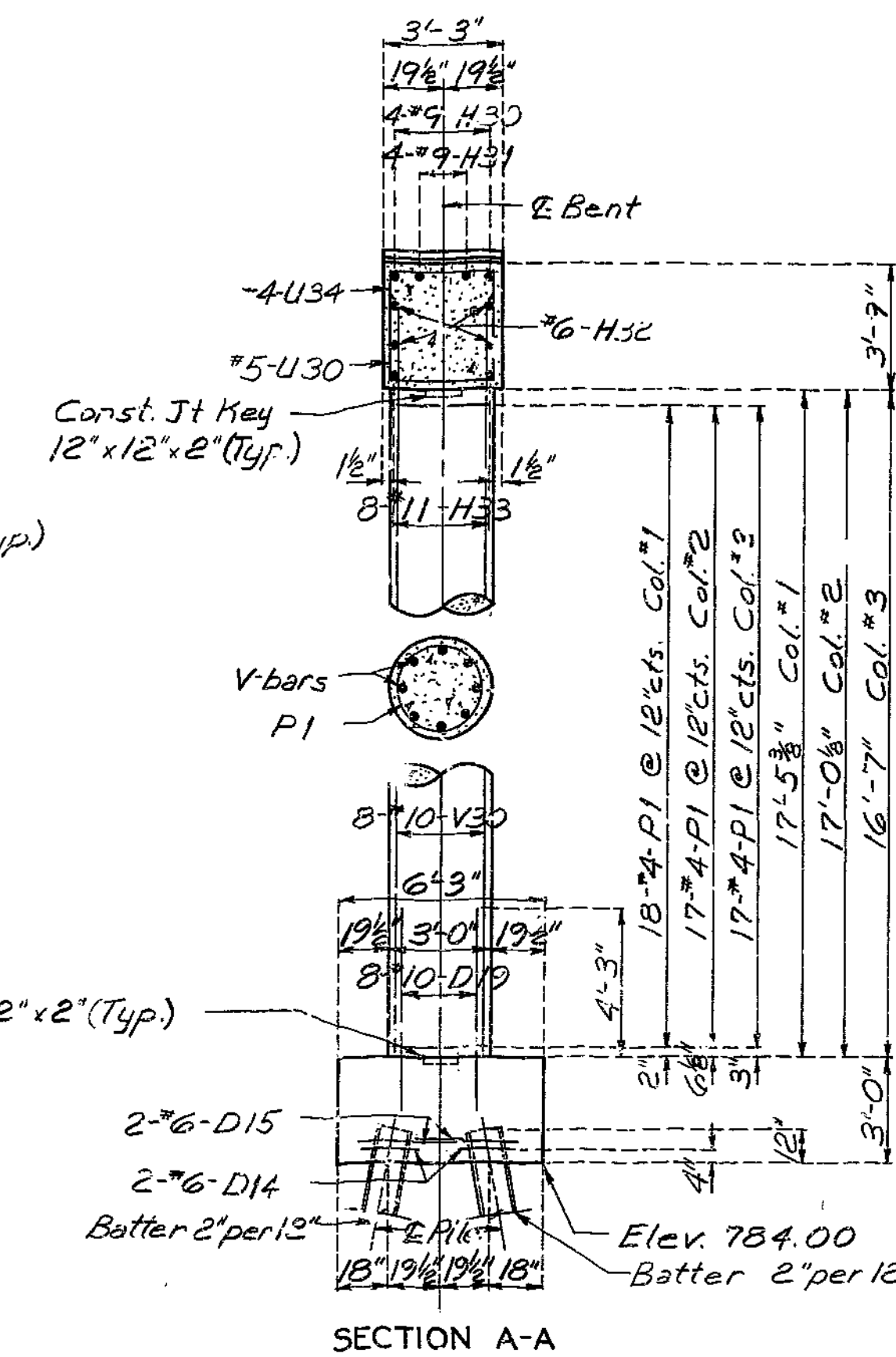
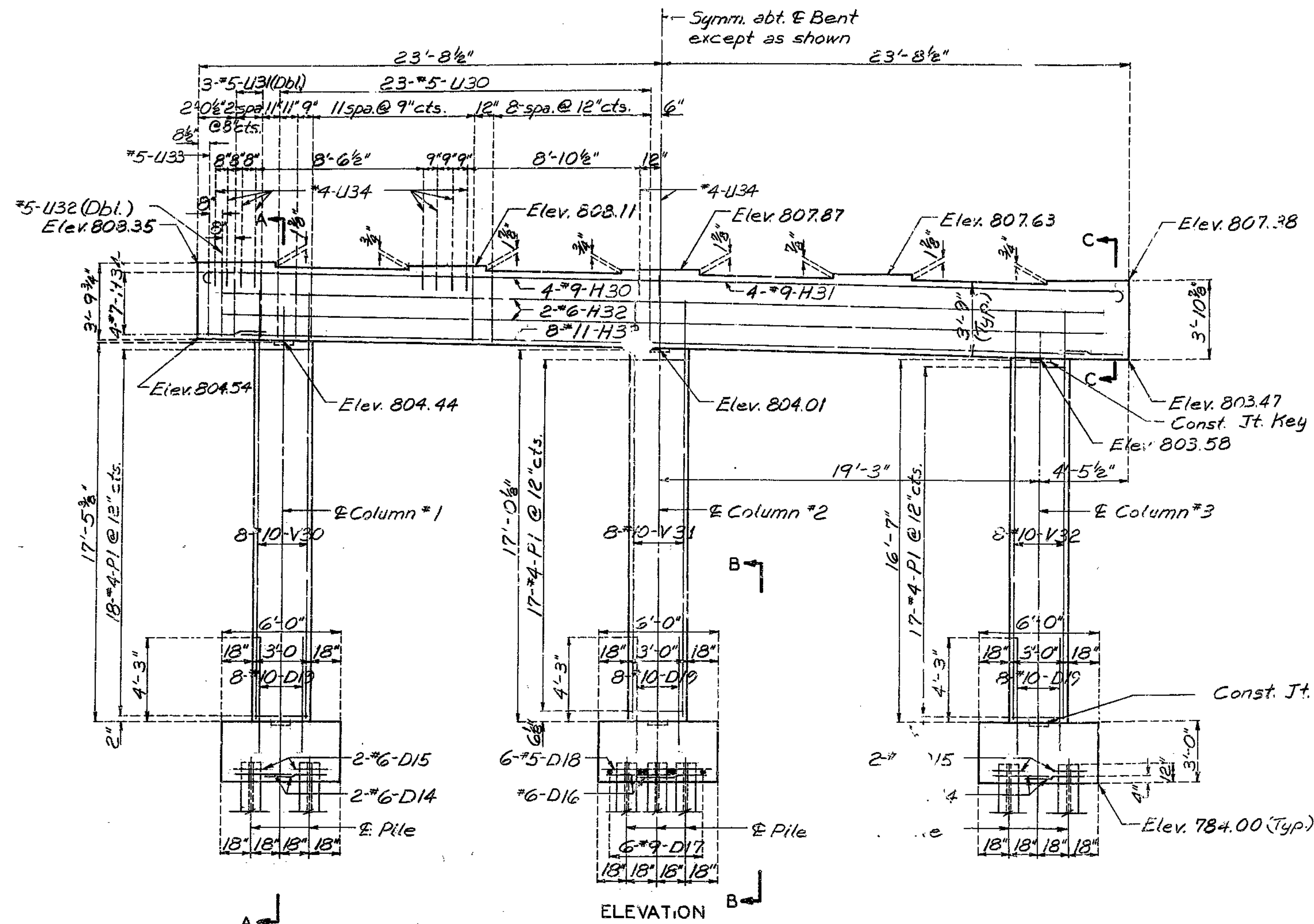
Note: For Plan of Anchor Bolts see sheet No. 11  
For Detail of Steel Pile Splice see sheet No. 8

Sheet No. 5 of 20.

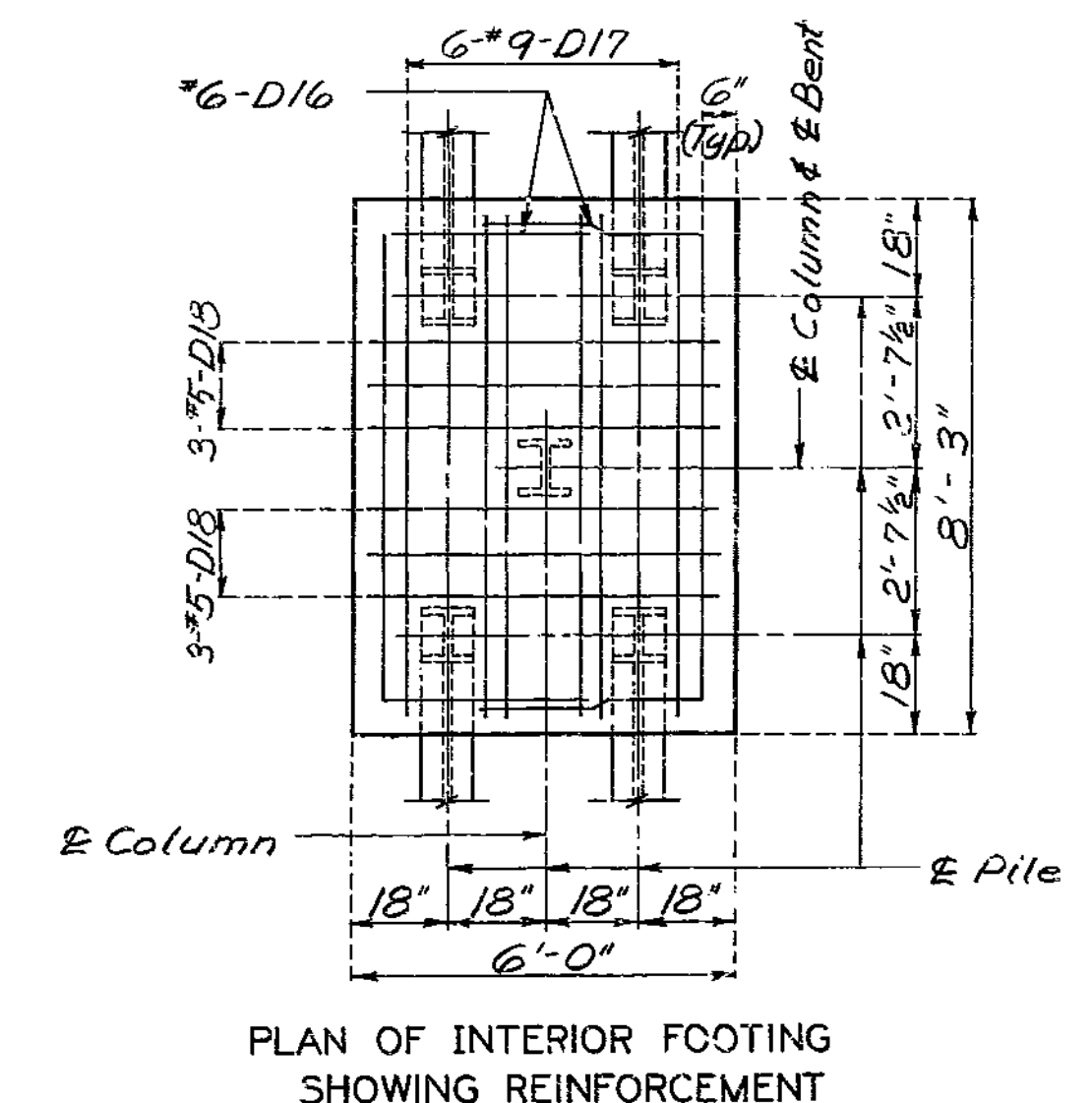
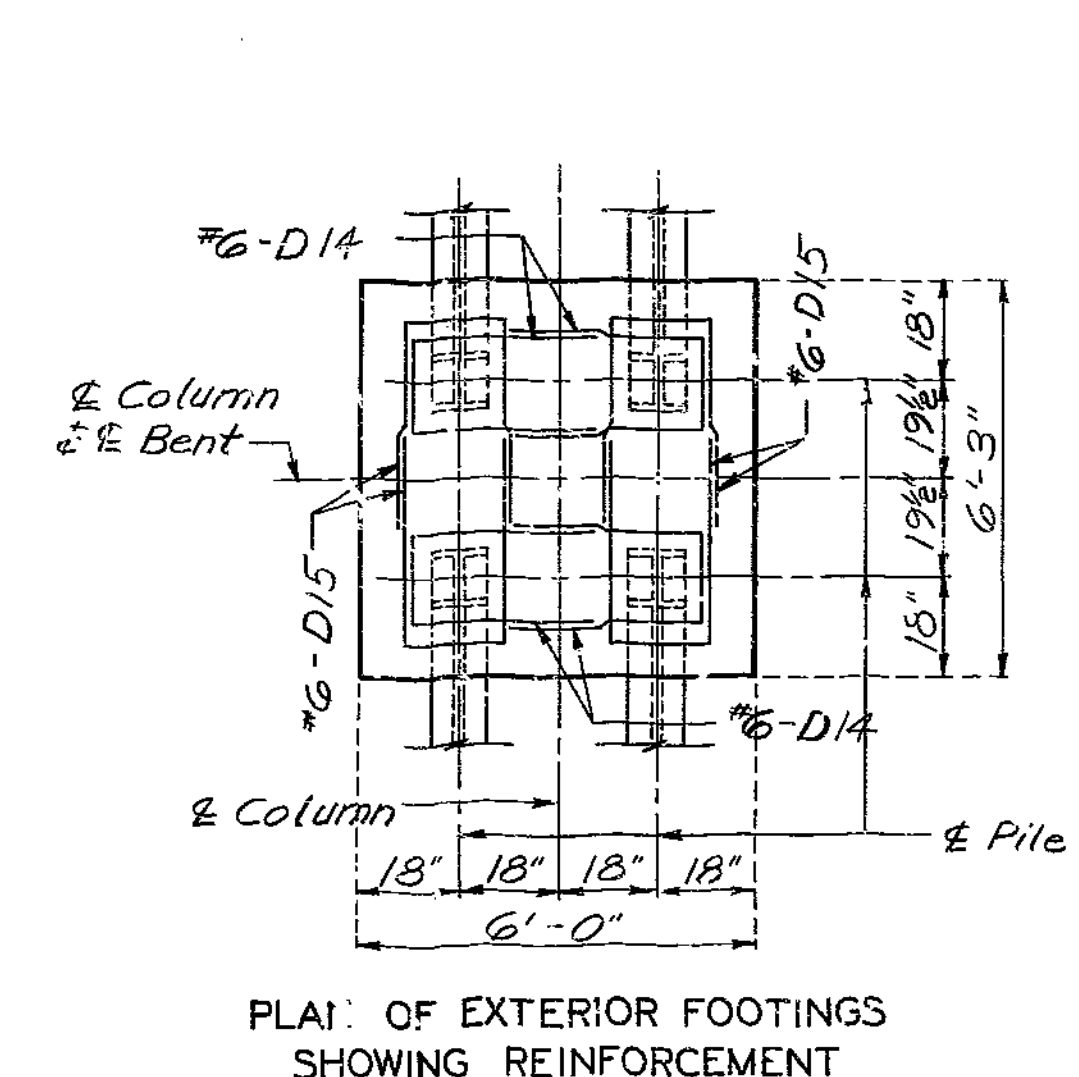
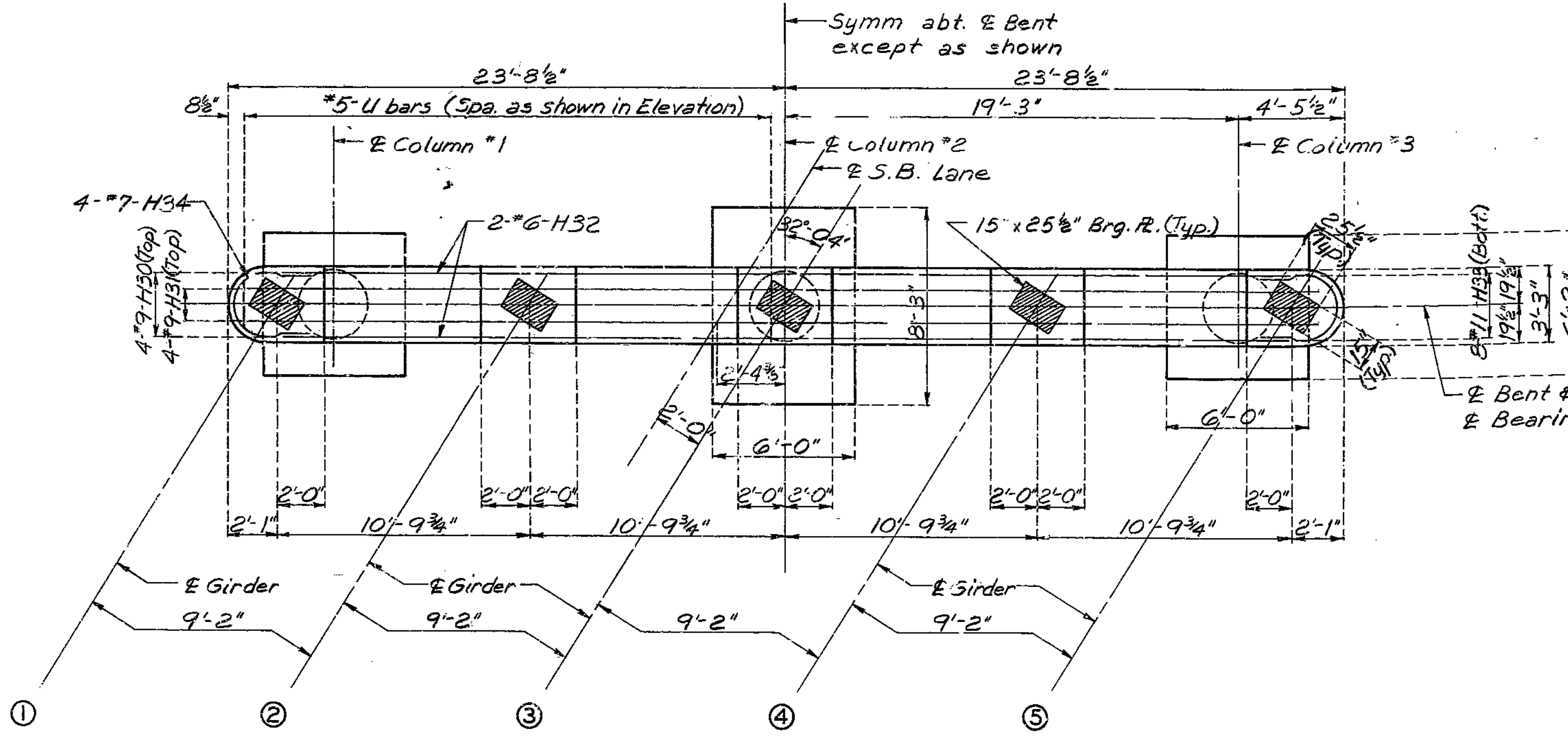
CLAY COUNTY

A-3374

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	29	



162



Note: For Plan of Anchor Bolts see sheet No. 11  
For Detail of Steel Pile Splice see sheet No. 8

DETAILED AUG. 1978  
CHECKED Oct. 1979

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

DETAILS OF INT. BENT NO. 4

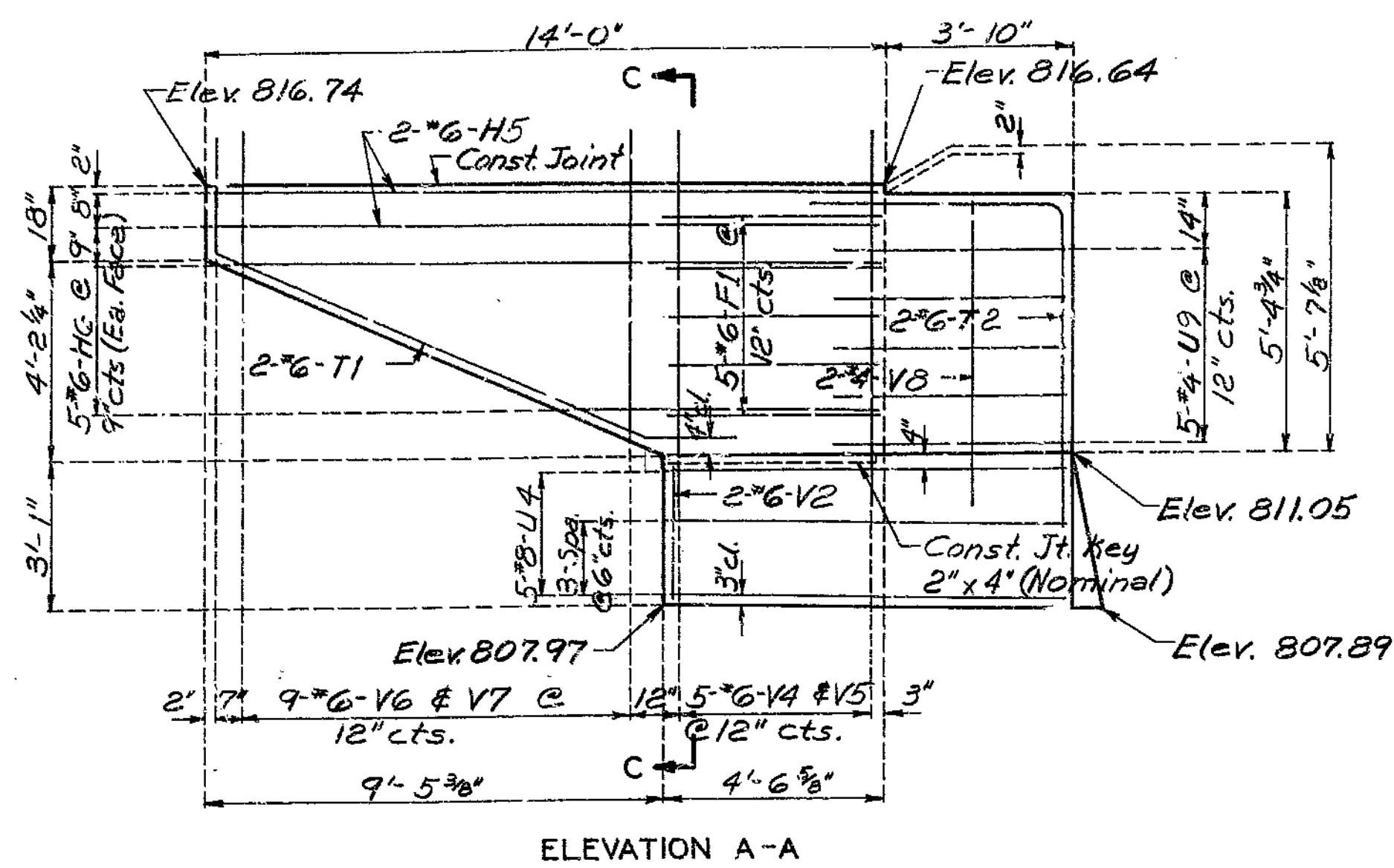
Sheet No. 6 of 20.

CLAY COUNTY

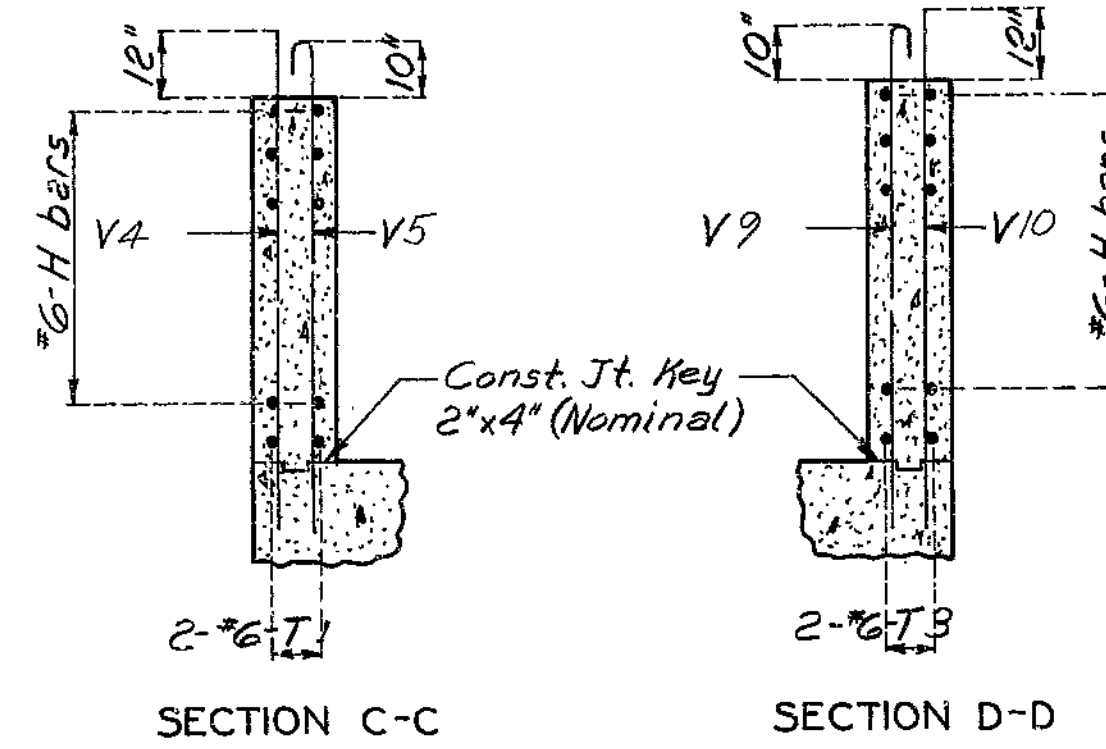
A-3374



FED. ROAD DIST. NO.	STATE NO.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	31	

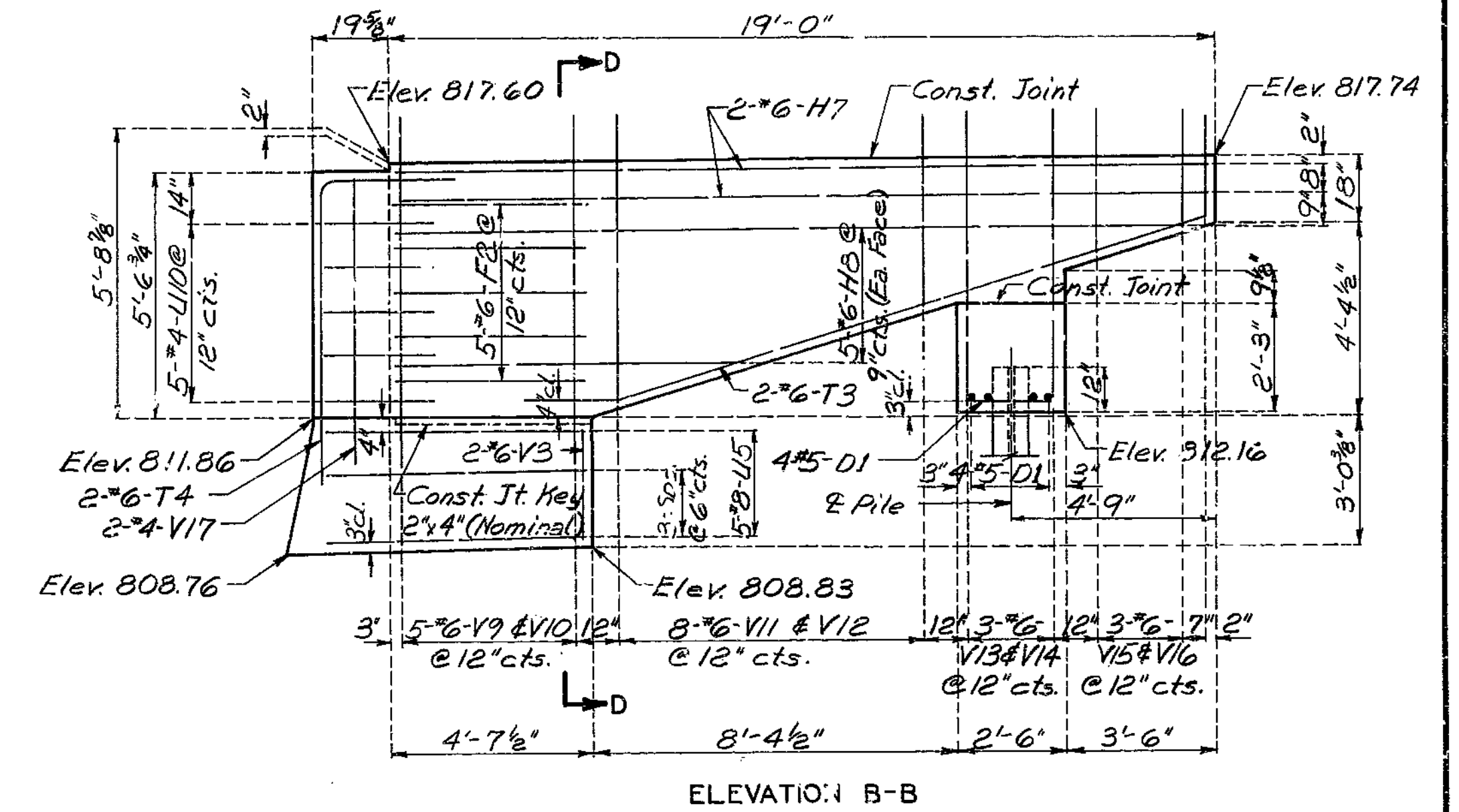


ELEVATION A-A

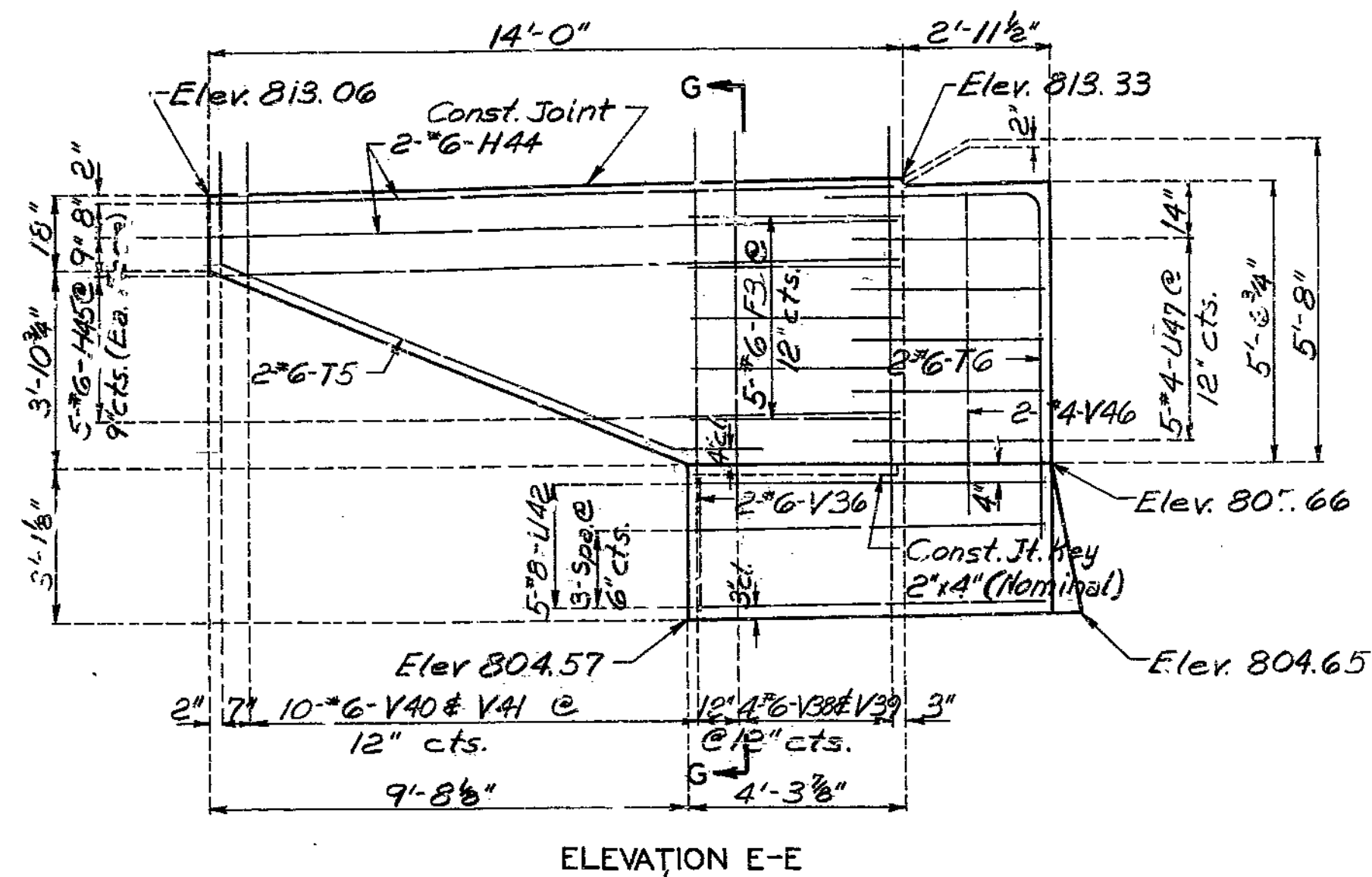


SECTION C-C SECTION D-D

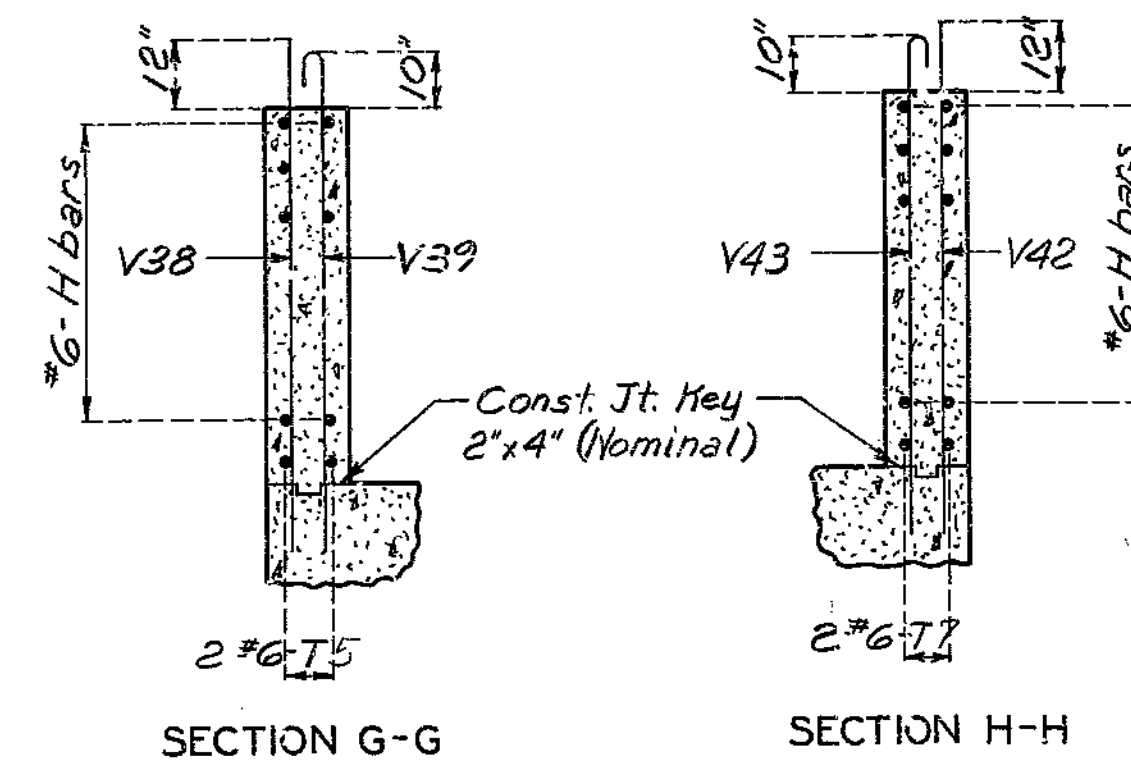
DETAILS OF WINGS END BENT NO. 1



ELEVATION B-B

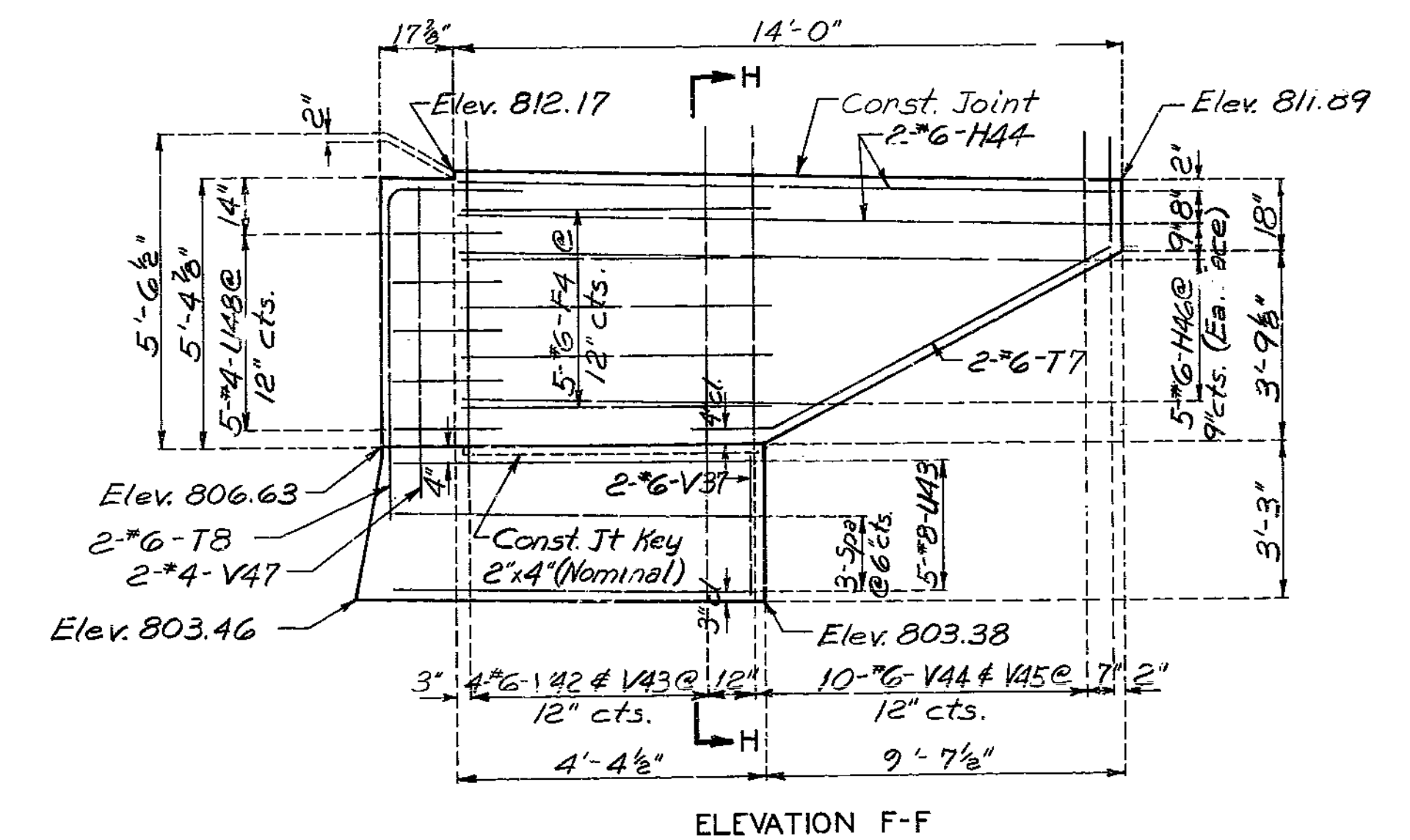


ELEVATION E-E

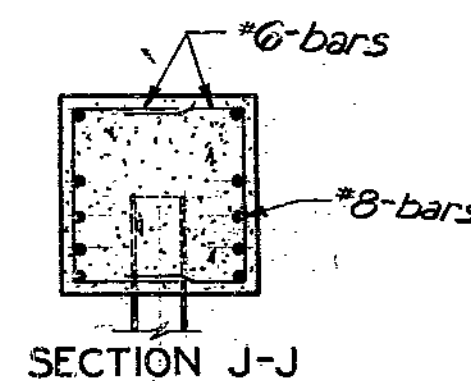


SECTION G-G SECTION H-H

DETAILS OF WINGS END BENT NO. 5

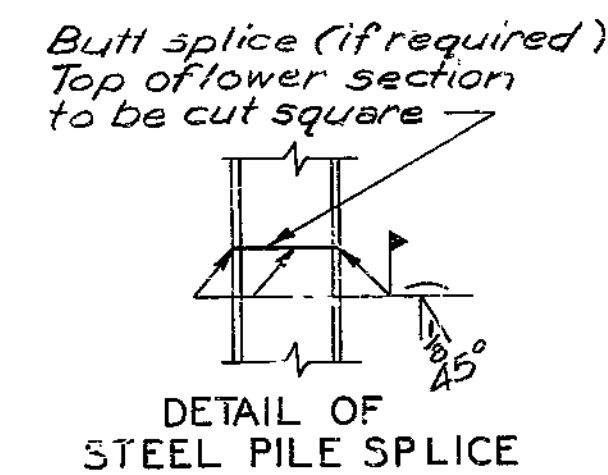


ELEVATION F-F



SECTION J-J

Note: For location of Section J-J See Sheet No. 3 and No. 7

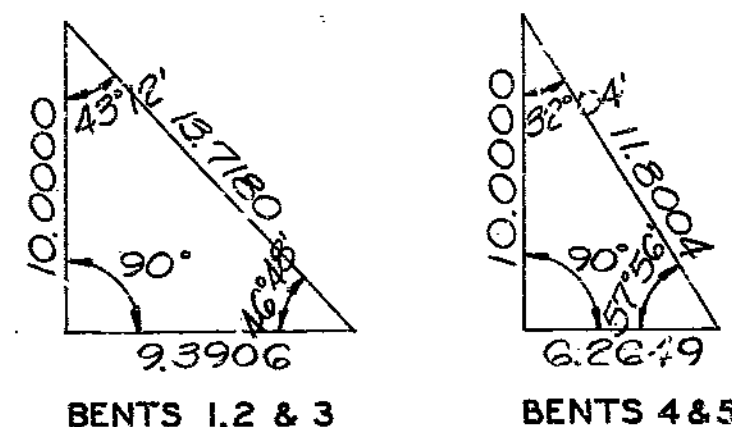
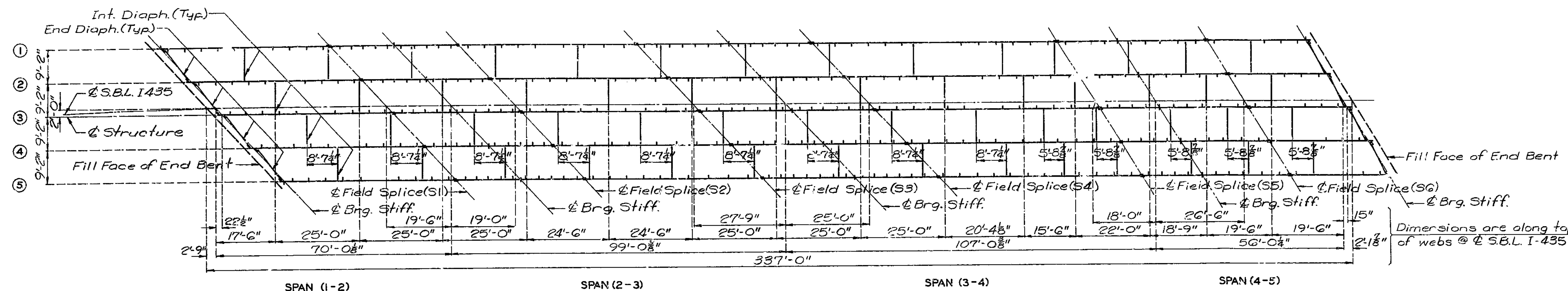


DETAIL OF STEEL PILE SPLICE

Note: For details and reinforcement of barrier curb, see sheets No. 16 & No. 17. For location of elevations see sheet No. 3 & No. 7

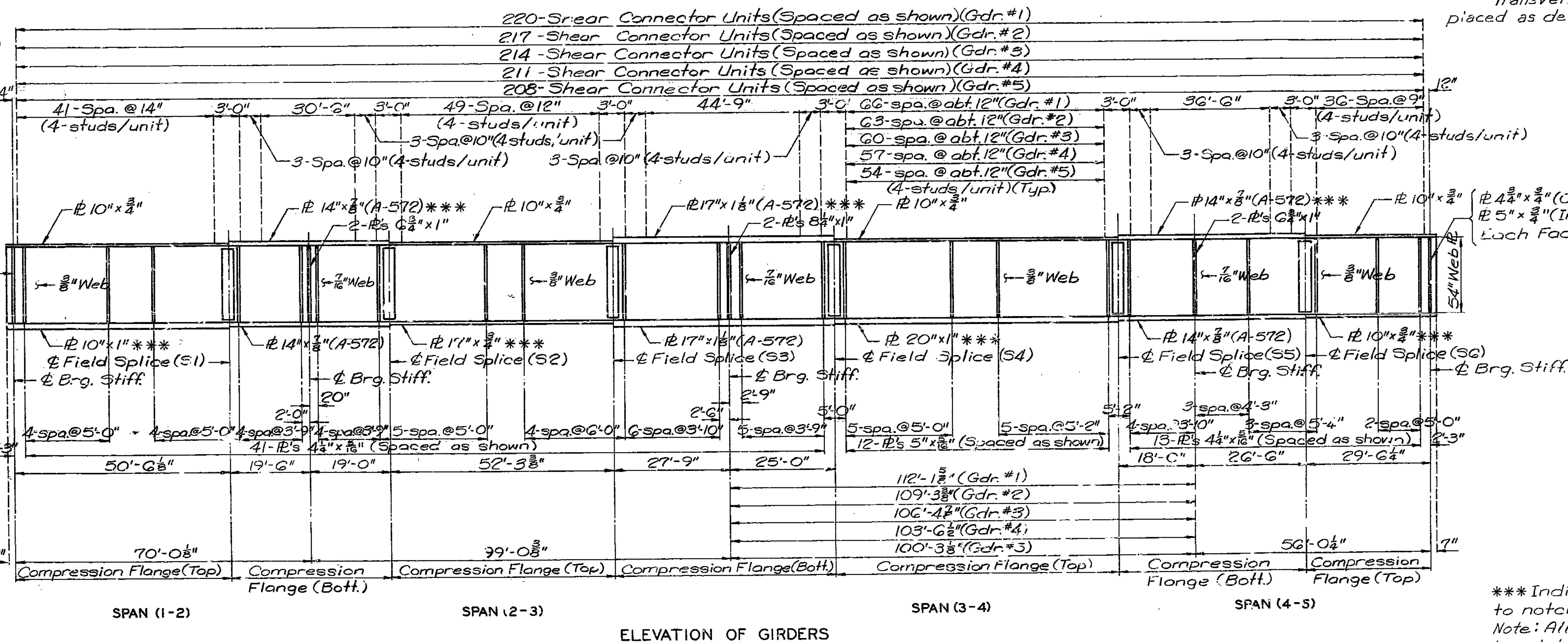
164

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	32	



Note: Fabricated structural steel shall be A-36 except as noted.  
 Plate girder shall be fabricated to conform with Camber Diagram shown on sheet No.13  
 Transverse web stiffeners shall be placed as detailed.

(Skew to forward tangent @ Sta. 50+63.68)

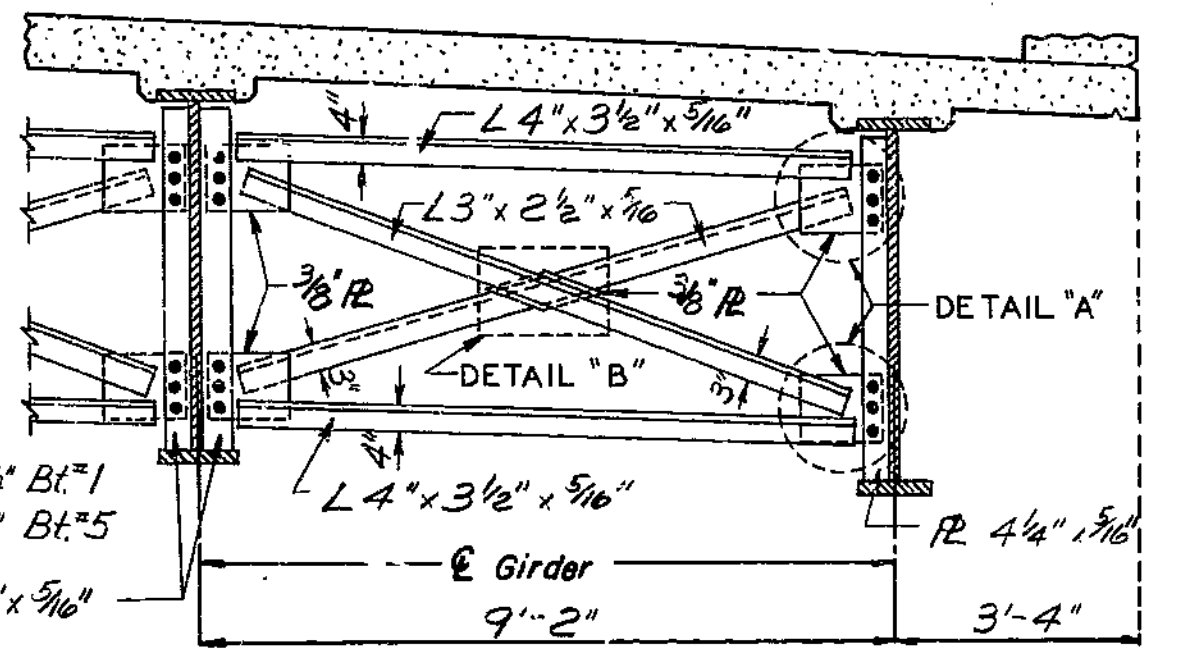
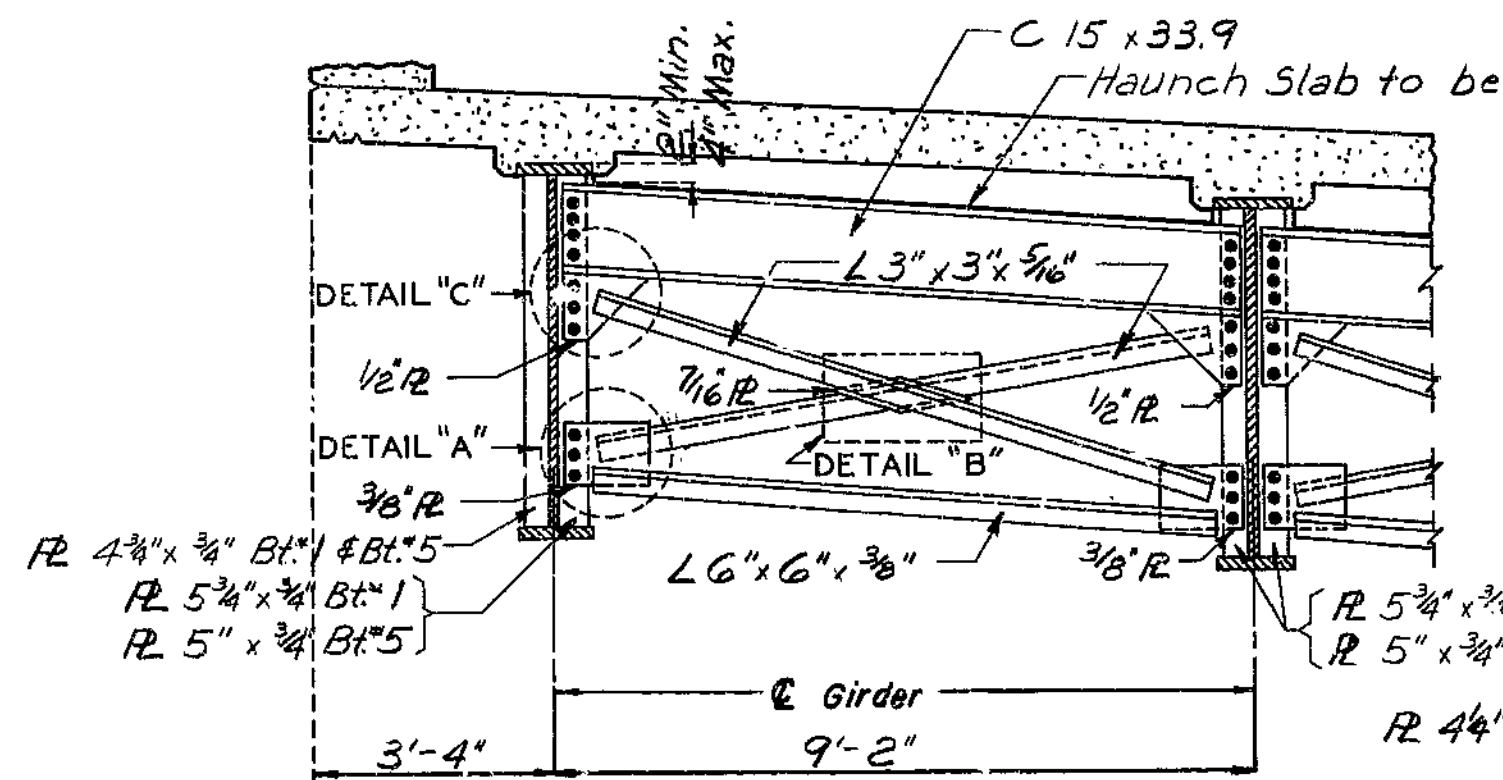
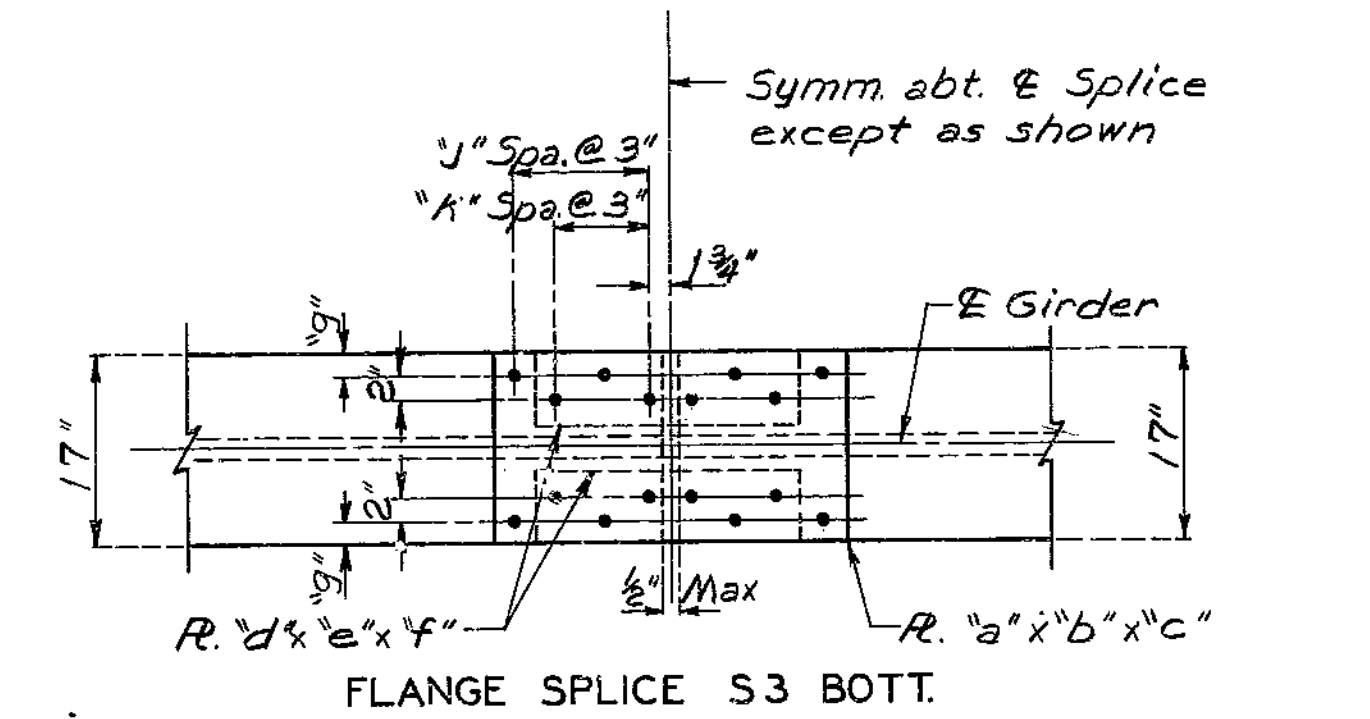
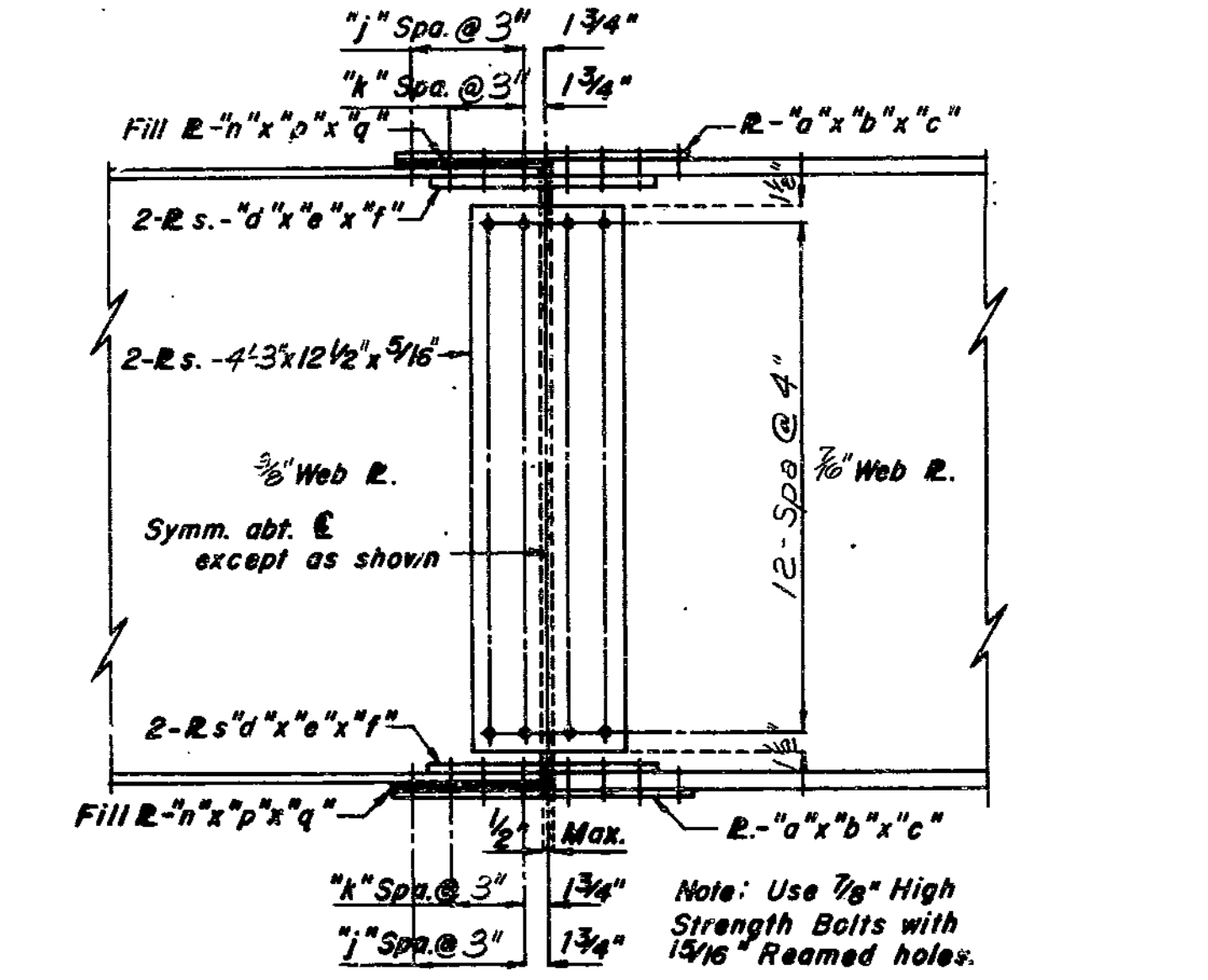
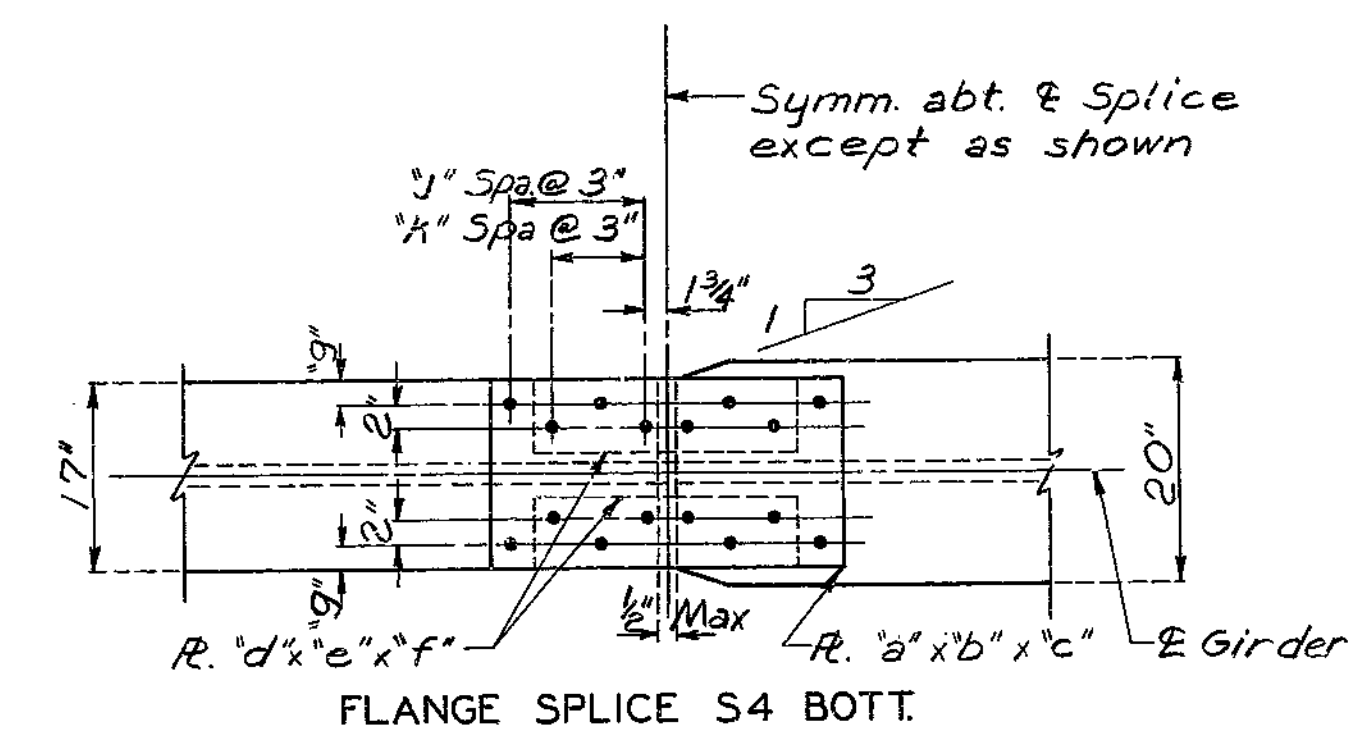
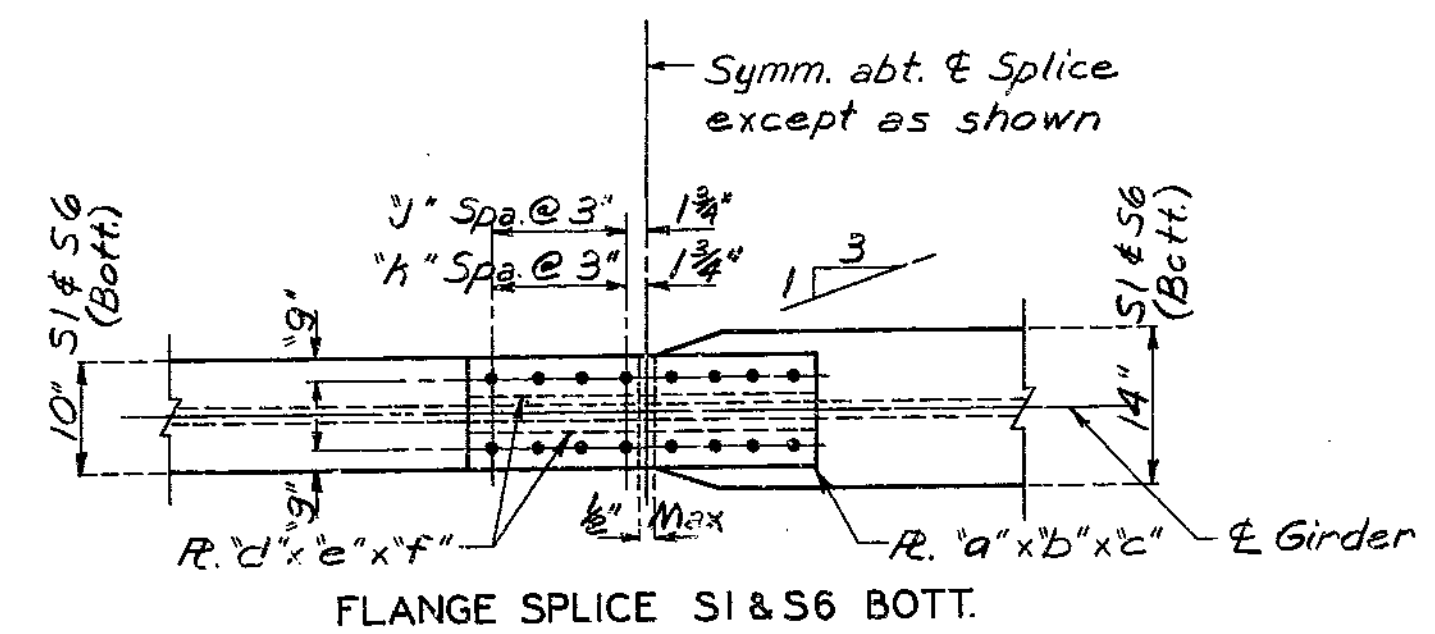
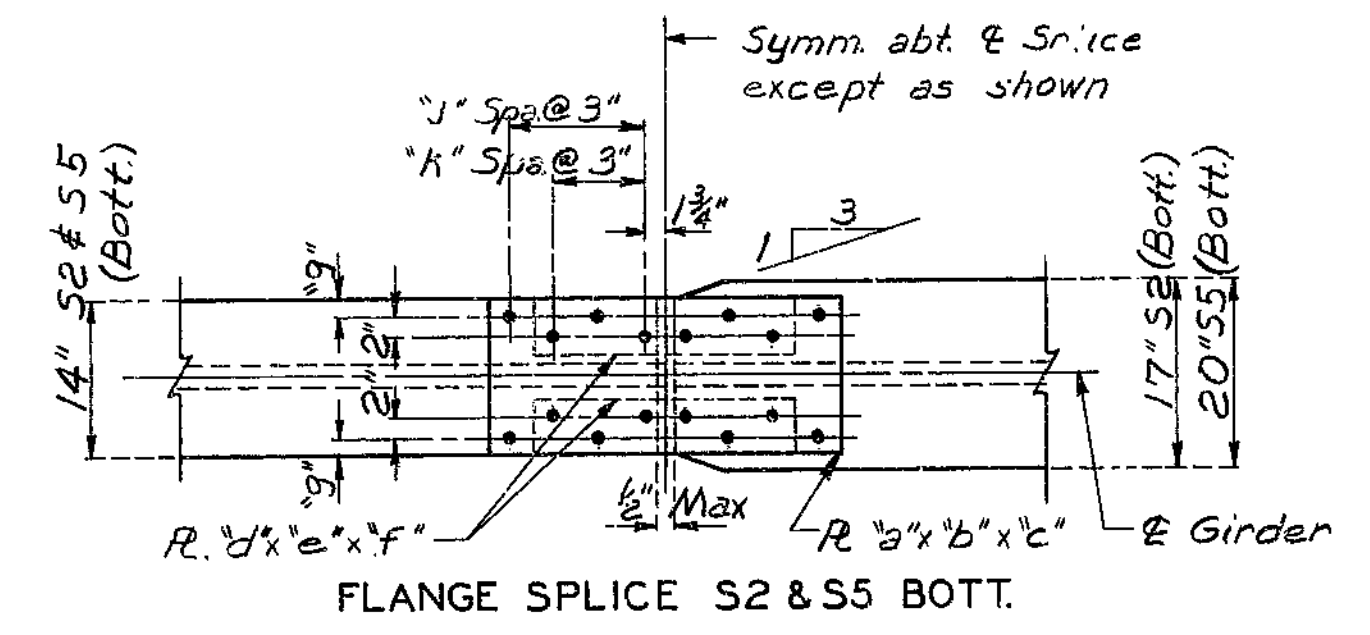
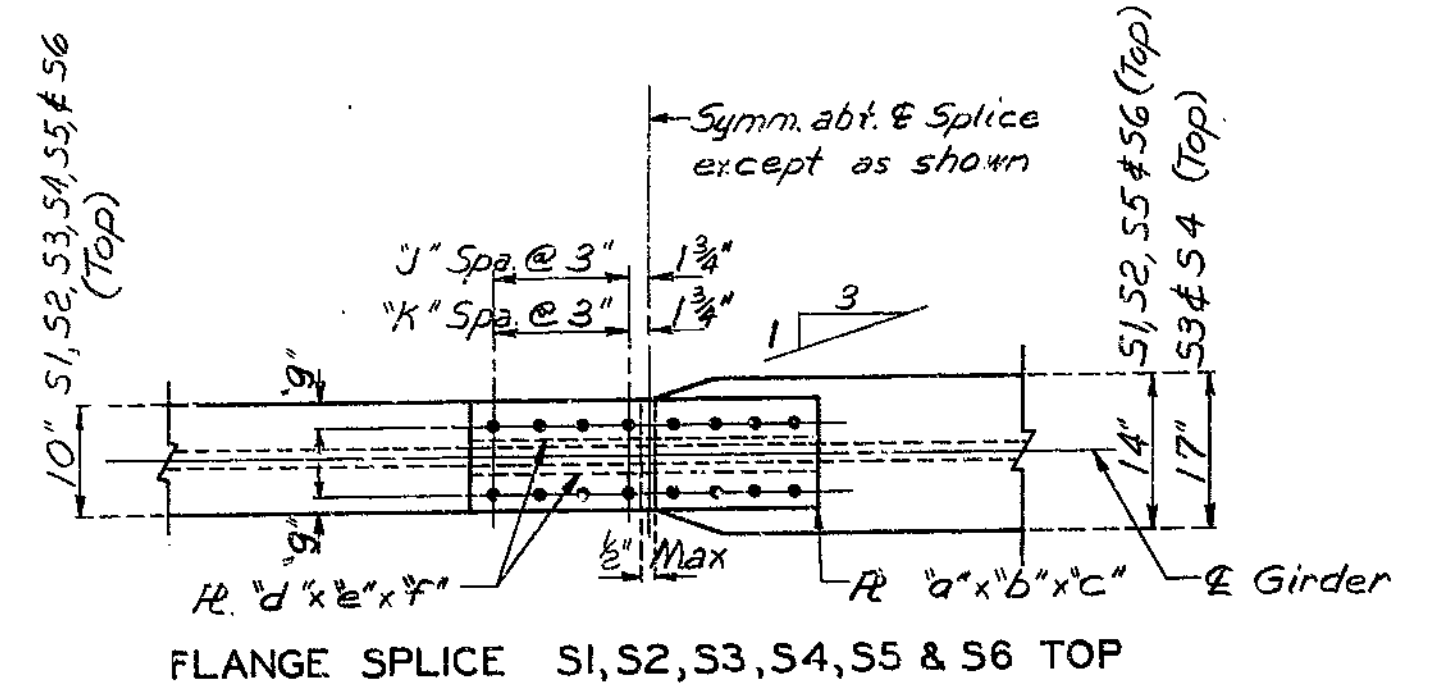


\*\*\* Indicates Flange Plates subject to notch toughness requirements.  
 Note: All Web Plates shall be subject to notch toughness requirements.

Note: Longitudinal dimensions are along top of webs. See Part: Longitudinal Section, sheet No.10.

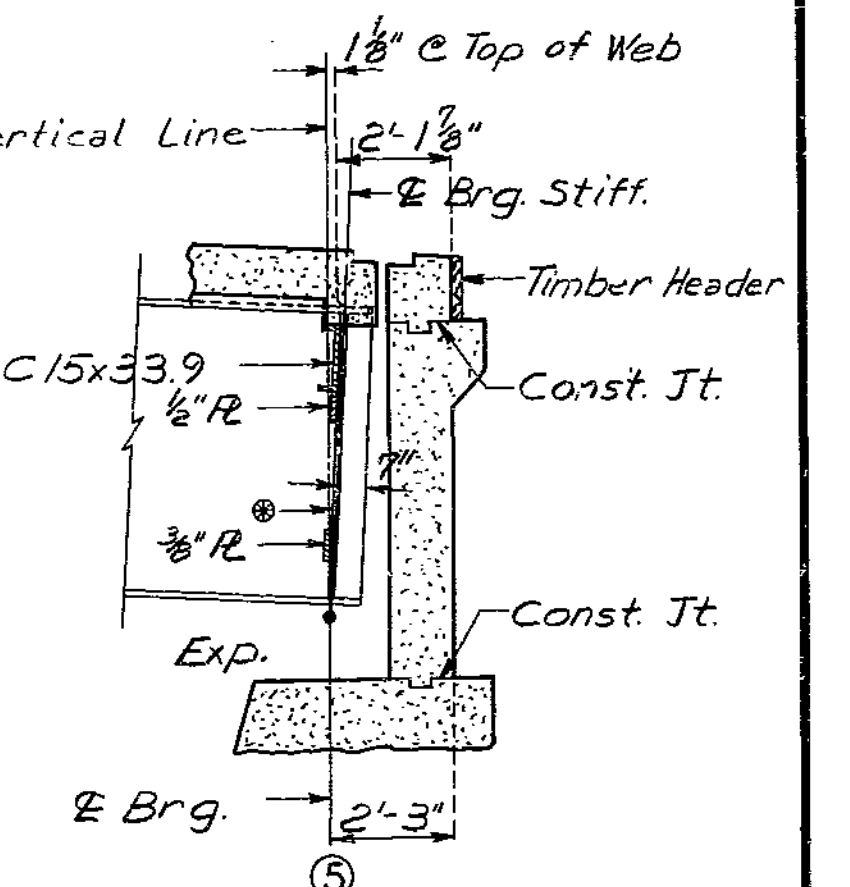
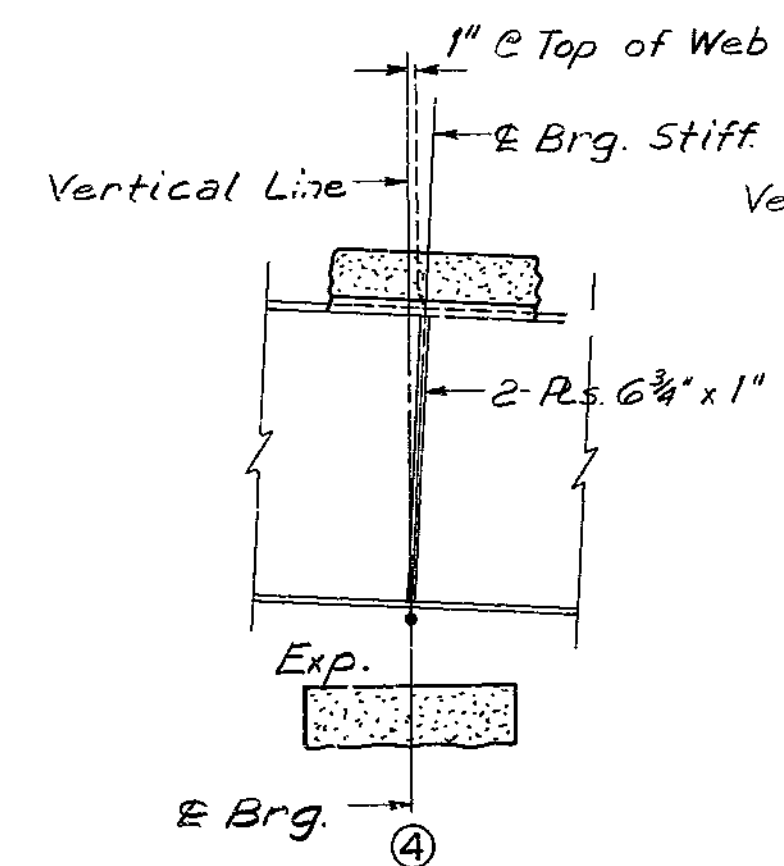
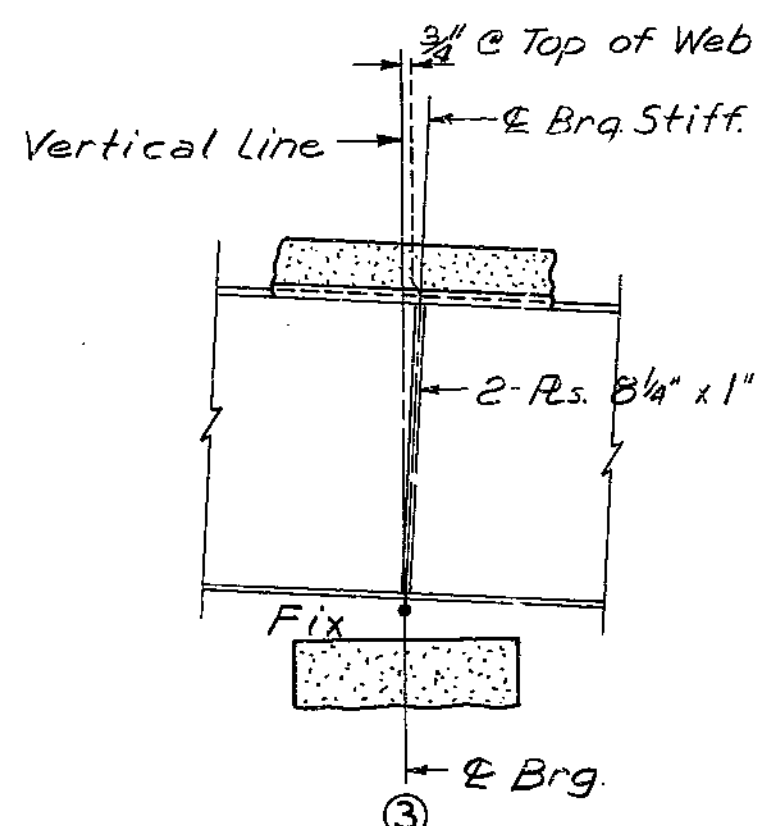
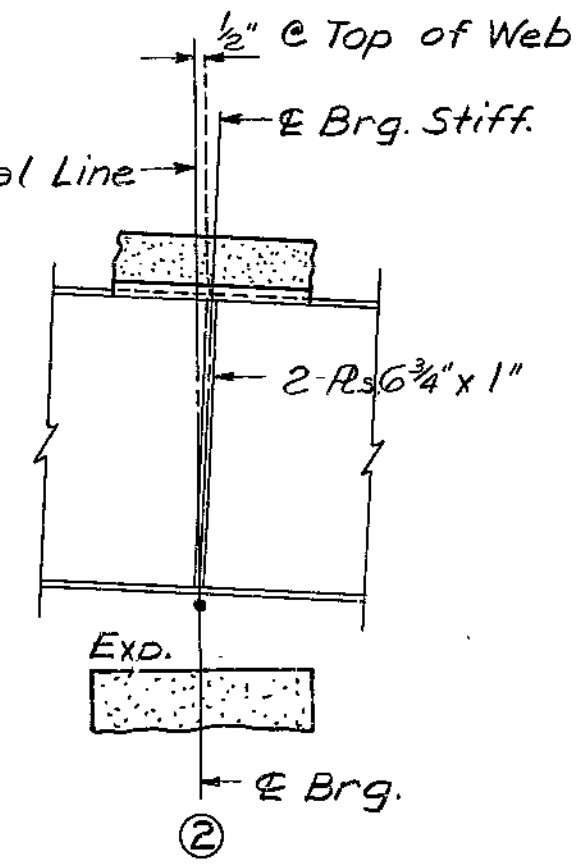
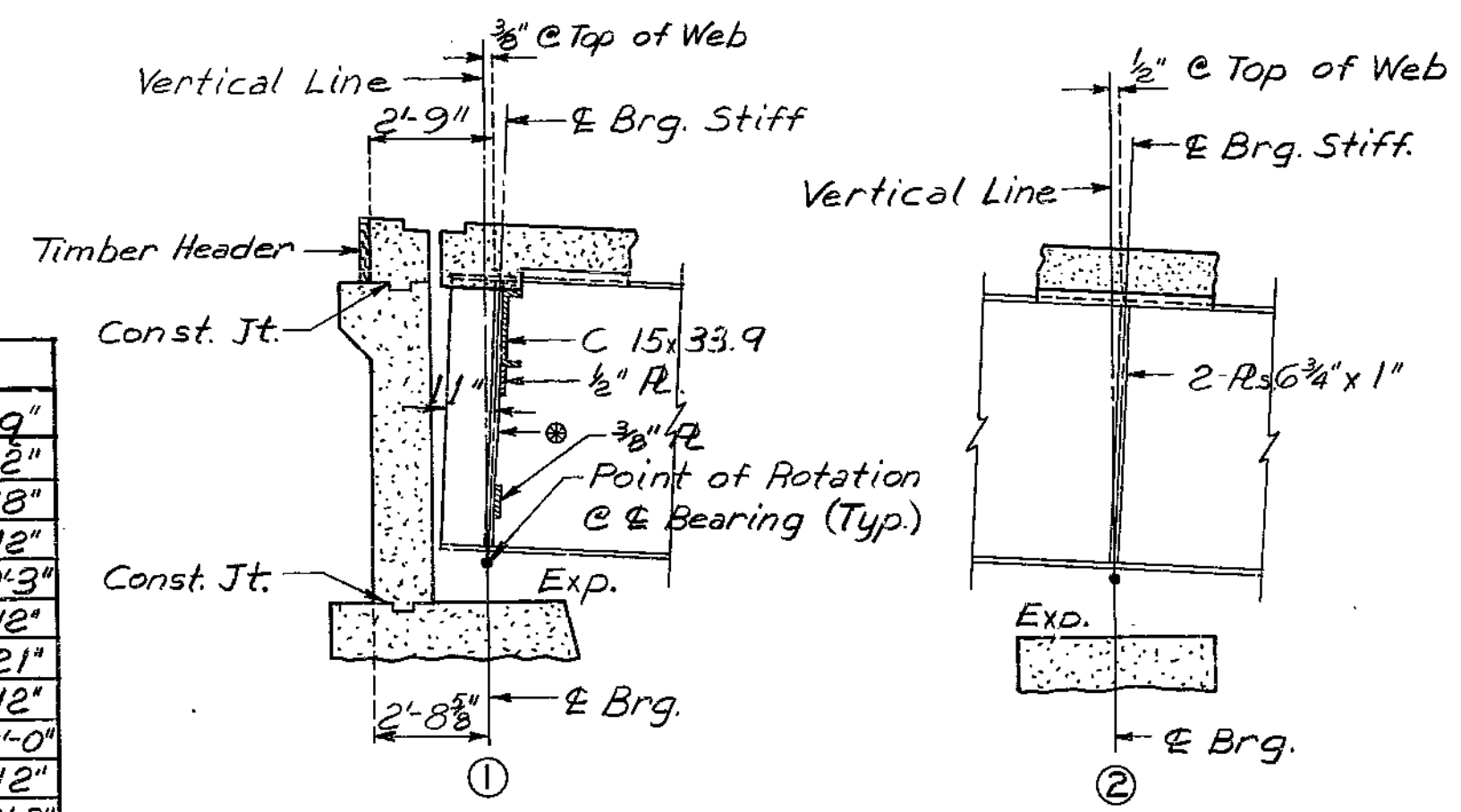
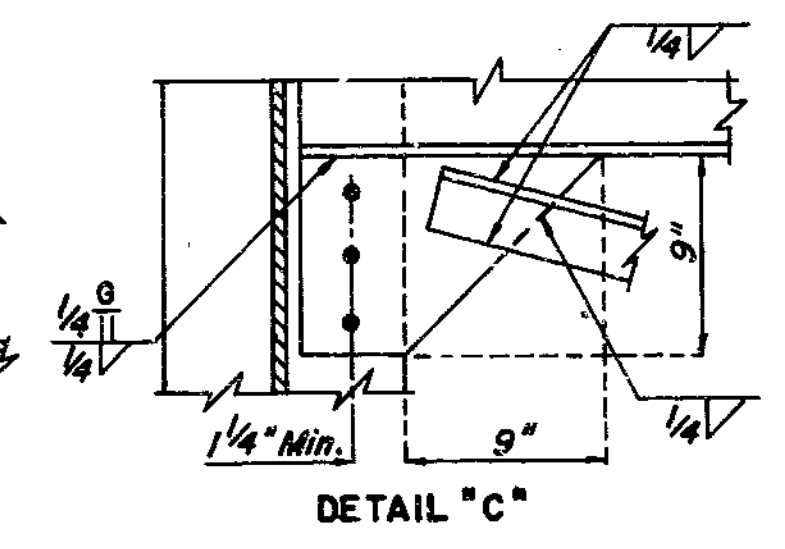
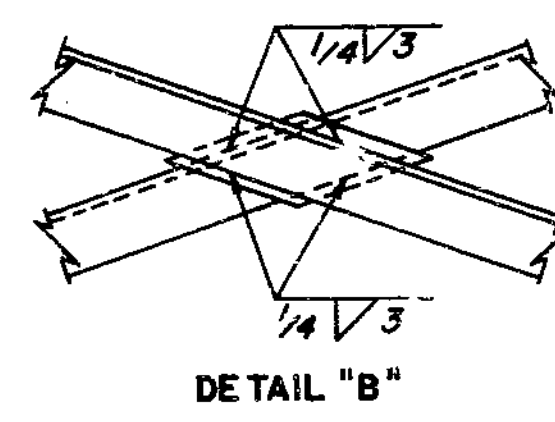
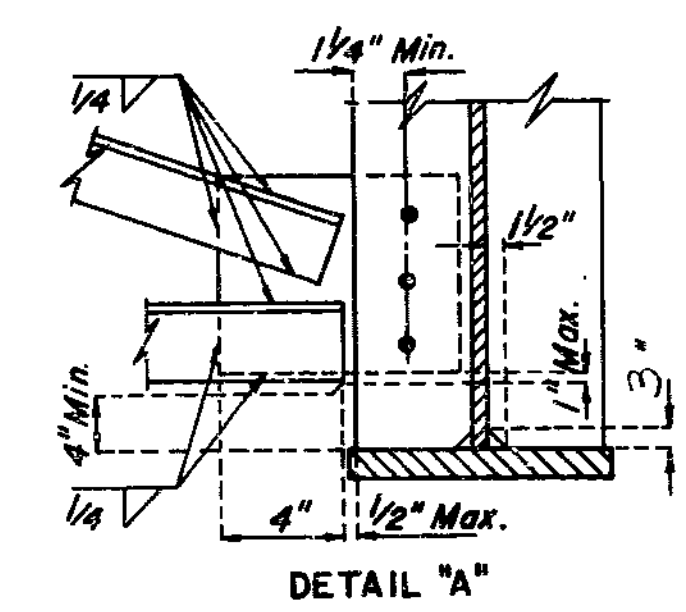
165

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	33	



TYP. PART SECTION SHOWING END DIAPHRAGMS

TYP. PART SECTION SHOWING INT. DIAPHRAGMS



PART LONGITUDINAL SECTION

SPLICE LOCATION	TABLE OF DIMENSIONS - FIELD SPLICE										
	a"	b"	c"	d"	e"	f"	g"	h"	i"	j"	k"
S1 Top	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"
S1 Bott.	10"	3"	3'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	5"	4 10"	1/2"	18"
S2 Top	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"
S2 Bott.	14"	3"	4'-6 1/2"	6"	1/2"	4'-6 1/2"	2"	8"	14"	1/2"	2'-3"
S3 Top	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"
S3 Bott.	17"	3"	3'-6 1/2"	7 1/2"	1/2"	3'-6 1/2"	2 3/4"	6"	17"	1/2"	21"
S4 Top	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"
S4 Bott.	17"	3"	6'-0 1/2"	7 1/2"	1/2"	6'-0 1/2"	2 3/4"	11"	17"	1/2"	3'-0"
S5 Top	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"
S5 Bott.	14"	3"	4'-6 1/2"	6"	1/2"	4'-6 1/2"	2"	8"	14"	1/2"	2'-3"
S6 Top	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"
S6 Bott.	10"	3"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3"	10"	1/2"	12"

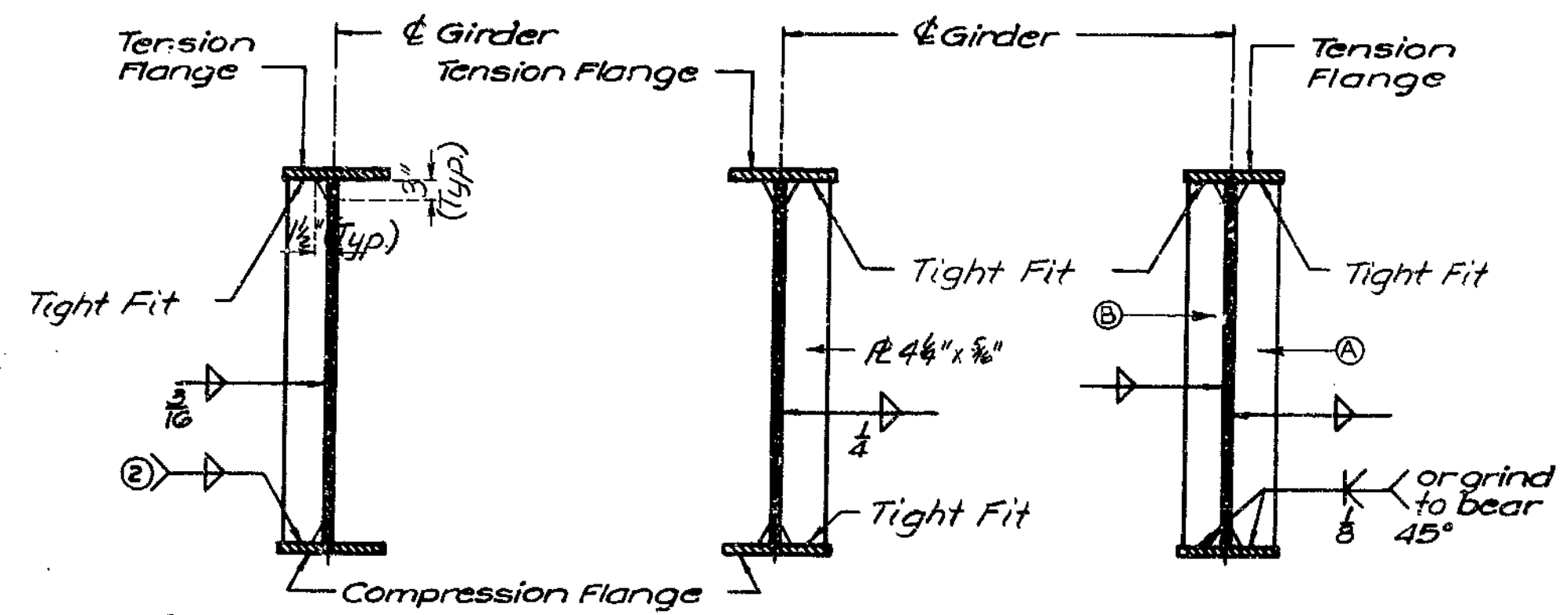
DETAILS OF FIELD SPLICES

- Bt. 1
  - R 4 3/4" x 3/4" (Outside Face of Ext. Gdr.)
  - R 5 3/4" x 3/4" (Inside Face of Ext. Gdr.)
  - R 5 3/4" x 3/4" (Each Face of Int. Gdr.)
- Bt. 5
  - R 4 3/4" x 3/4" (Outside Face of Ext. Gdr.)
  - R 5" x 3/4" (Inside Face of Ext. Gdr.)
  - R 5" x 3/4" (Each Face of Int. Gdr.)

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

166

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	34	

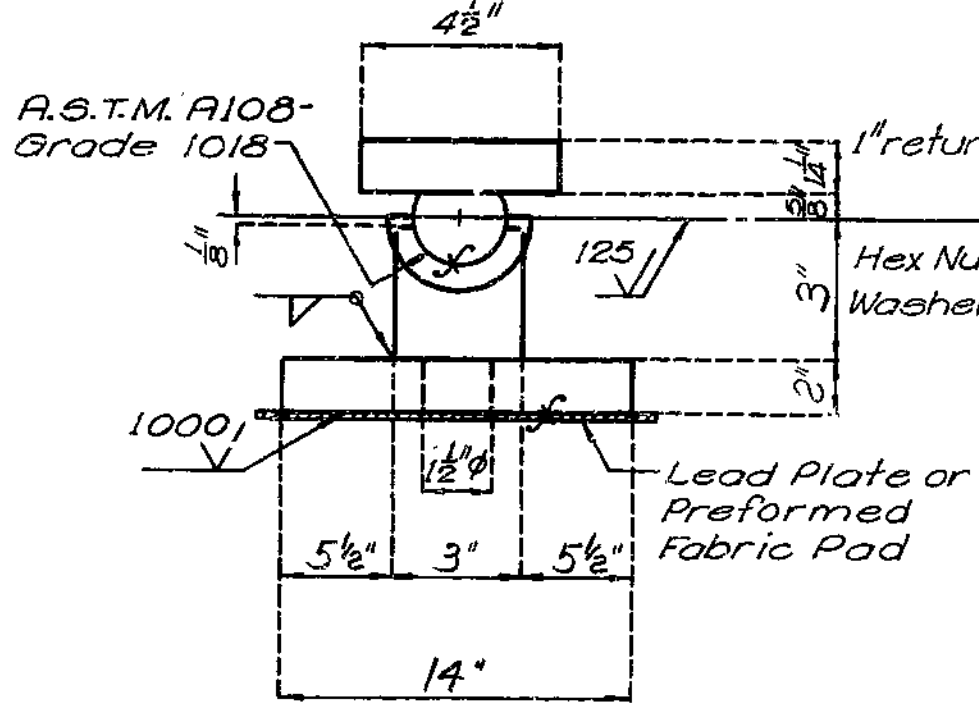
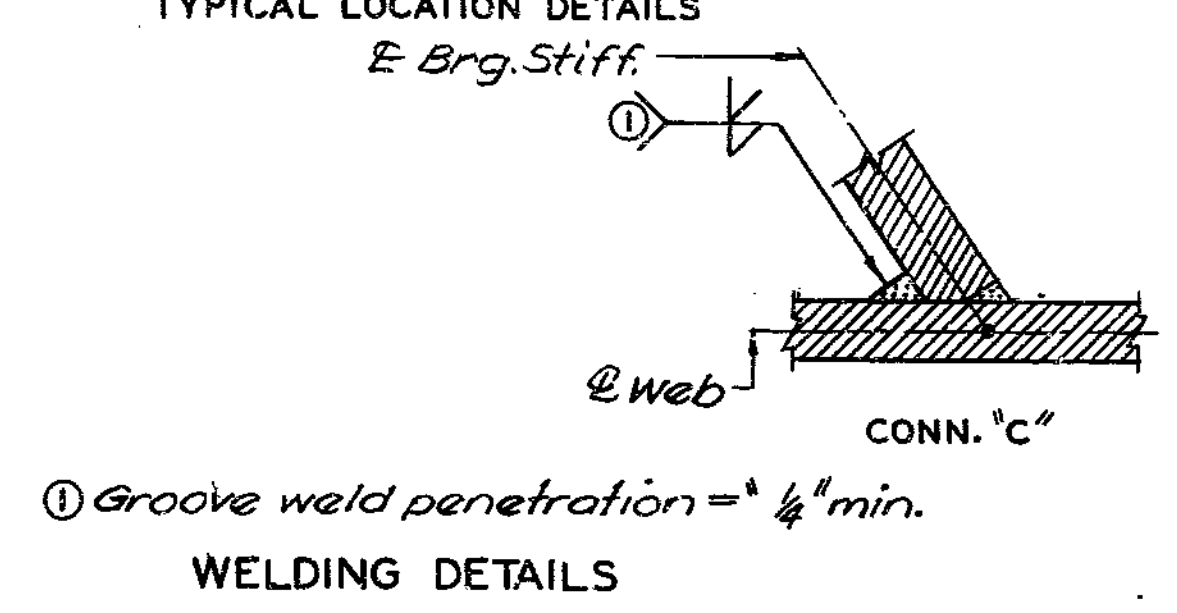
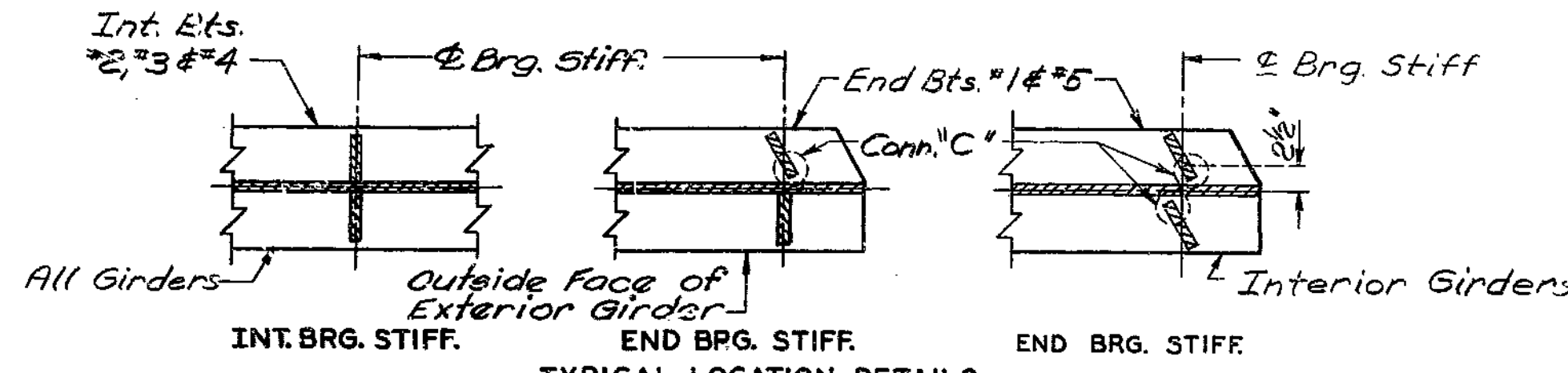
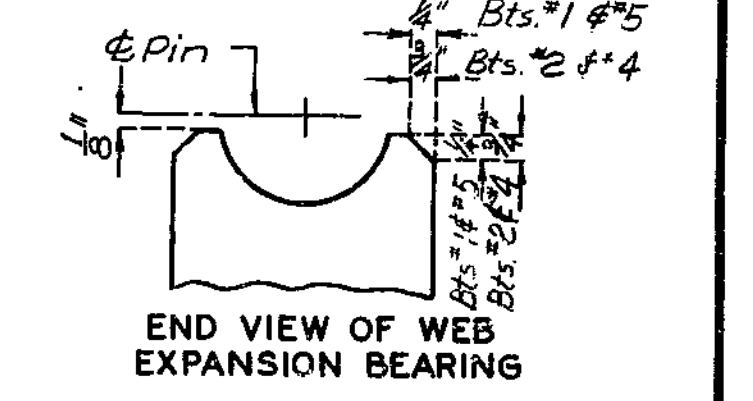
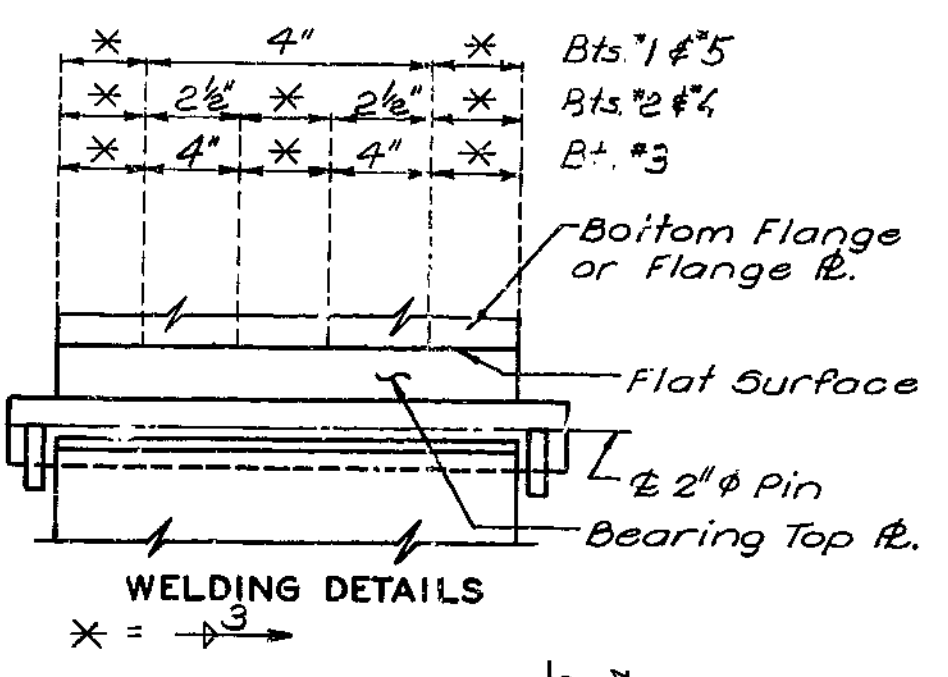


INT. WEB STIFF. (ONE SIDE ONLY)  
Weld to compression flange as located on Elevation of Girder.

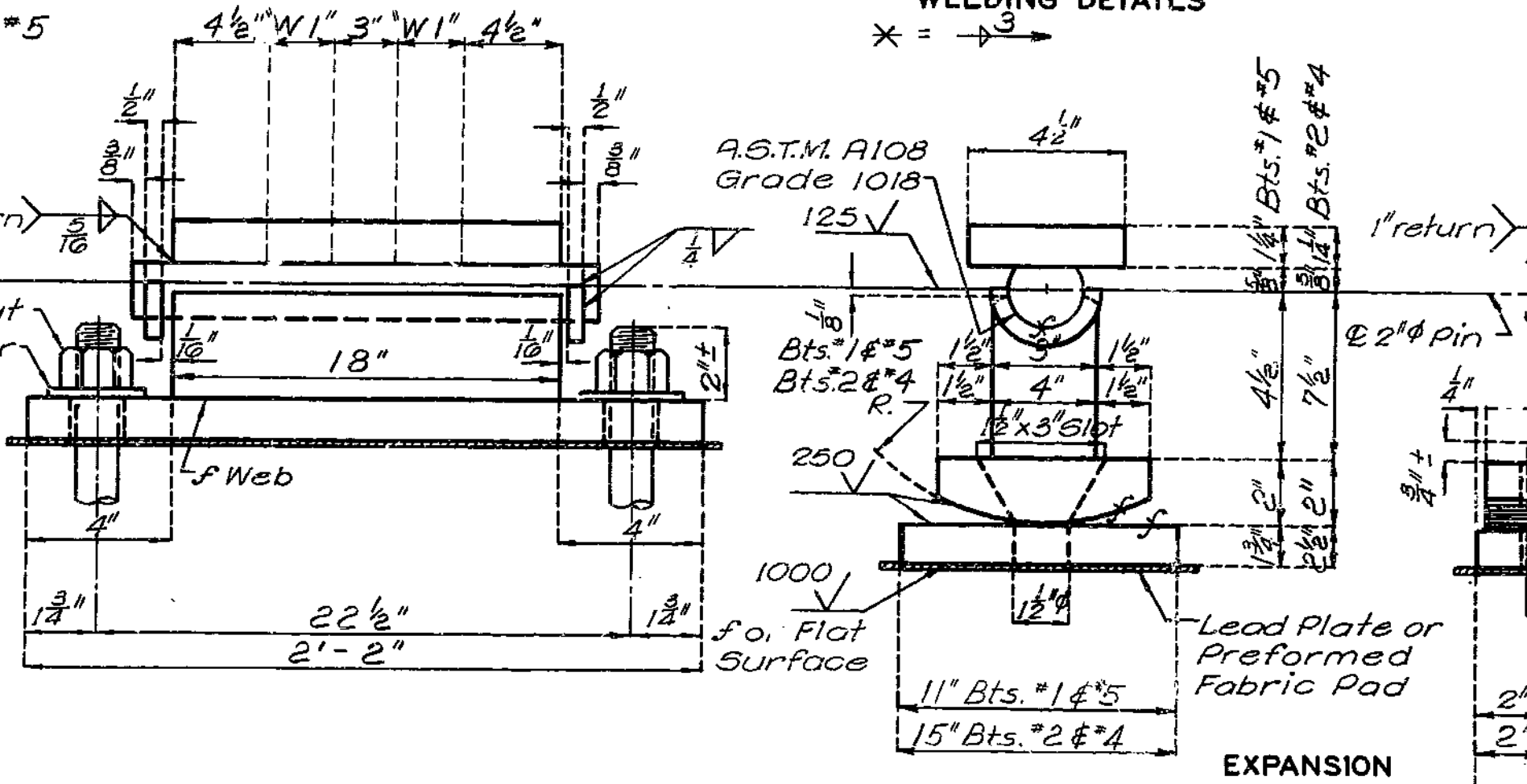
INT. DIAPH. CONN. P. ONLY  
END BRG. STIFF.  
INT. BRG. STIFF.

**NOTES: TYPE "D" BEARINGS**  
ANCHOR BOLTS FOR TYPE "D" BEARINGS SHALL BE 1-1/4" SWAGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE, WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS.  
"ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS.  
"X" INDICATES MACHINE FINISH SURFACE.  
SHOP DRAWINGS ARE NOT REQUIRED FOR LEAD PLATES AND/OR PREFORMED FABRIC PADS.

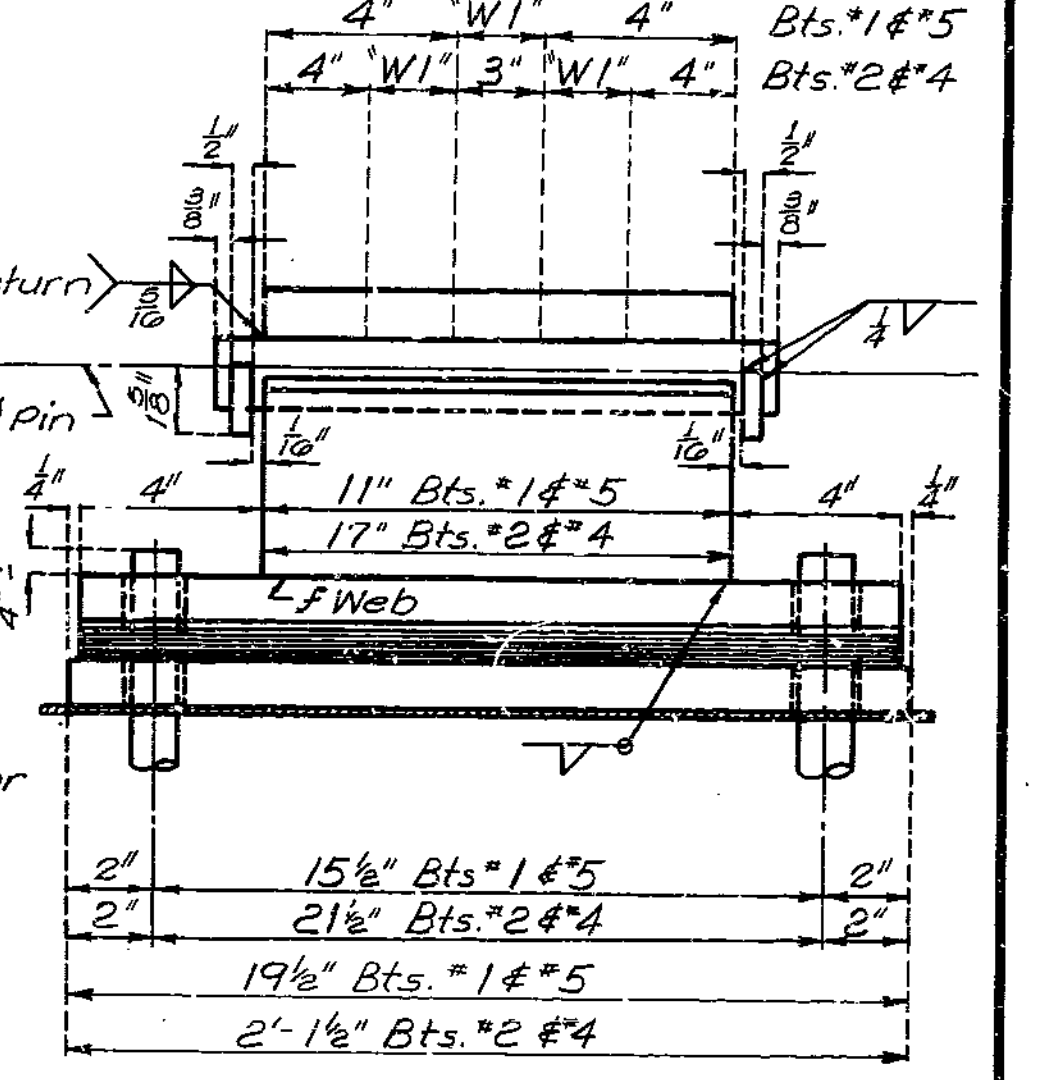
- Ⓐ 2-Rs. 6 3/4" x 1" Bts. #2 #4  
2-Rs. 8 3/4" x 1" Bt. #3
- Ⓑ R 4 3/4" x 3/4" Outside Face of Ext. Gdr.  
R 5 3/4" x 3/4" Inside Face of Ext. Gdr.  
R 5 3/4" x 3/4" Each Face of Int. Gdr.  
R 4 3/4" x 3/4" Outside Face of Ext. Gdr.  
R 5" x 3/4" Inside Face of Ext. Gdr.  
R 5" x 3/4" Each Face of Int. Gdr.



**FIXED**  
REQUIRED: 5 @ Bent No. 3



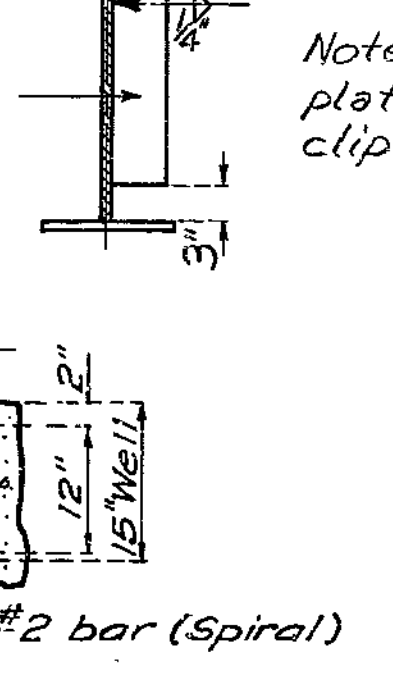
**EXPANSION**  
REQUIRED: 5 @ Bent No. 1  
5 @ Bent No. 2  
5 @ Bent No. 4  
5 @ Bent No. 5



W1 = 3/8" x 3" Weld Both Sides

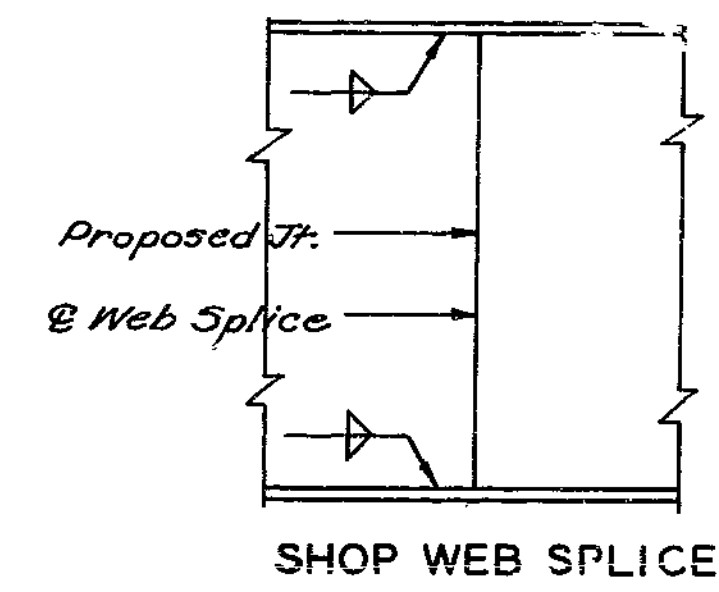
**TYPE "D" BEARINGS**  
(ESTIMATED WEIGHT 9022#)

BENTS	R
Bt. #1 & Bt. #5	6 1/2"
Bt. #2 & Bt. #4	9 1/2"

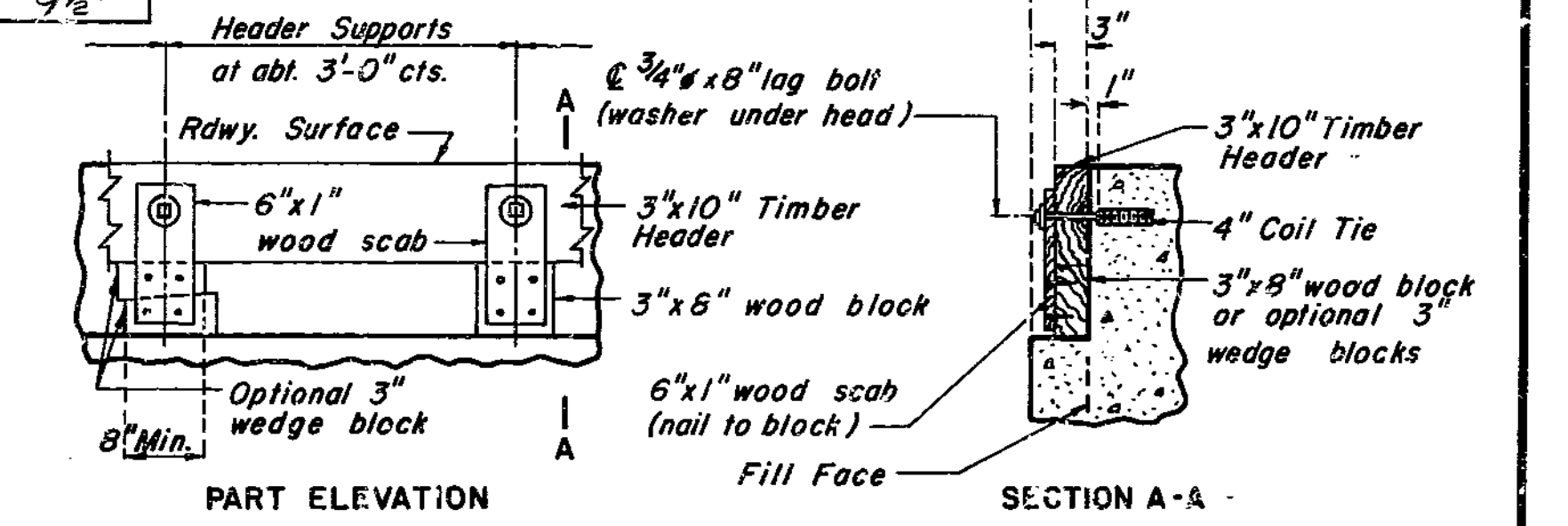


**DETAIL OF ANCHOR BOLT WELLS**

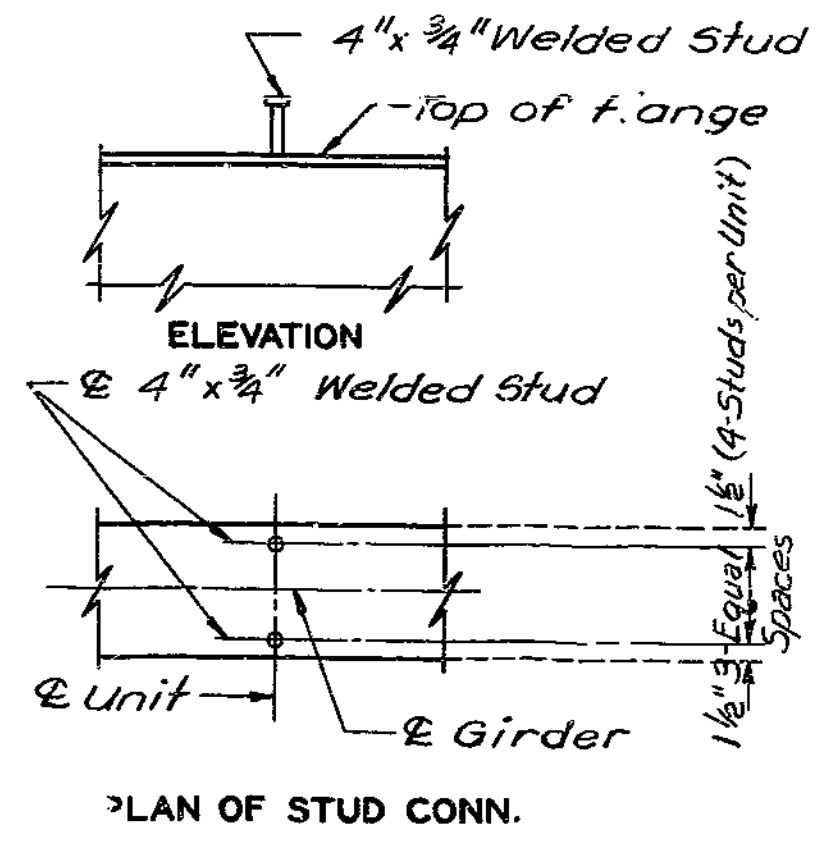
Note: When web stiffeners and diaphragm connection plates interfere with flange splice plates and bolts, clip stiffener plates as shown.



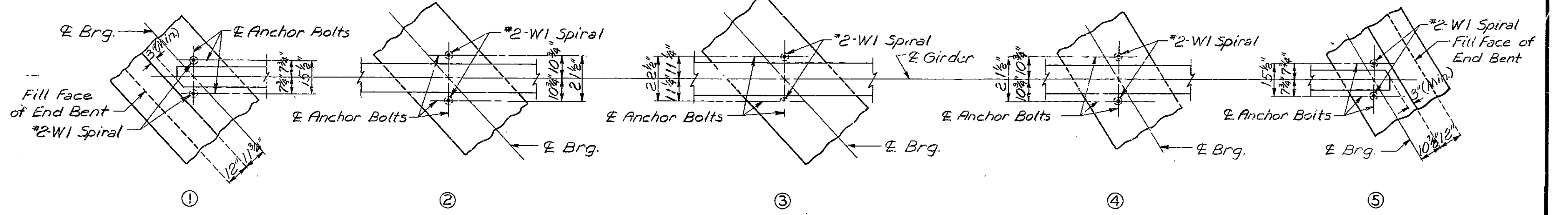
**SHOP WEB SPLICE**



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



**PLAN OF STUD CONN.**



**PART ANCHOR BOLT PLAN**

**DETAILS OF SHEAR CONNECTORS**  
Note: Weight of 2,664 lbs. of shear connectors is included in weight of Fabricated Structural Carbon Steel.  
DETAILED SEPT. 1978  
CHECKED Oct. 1979

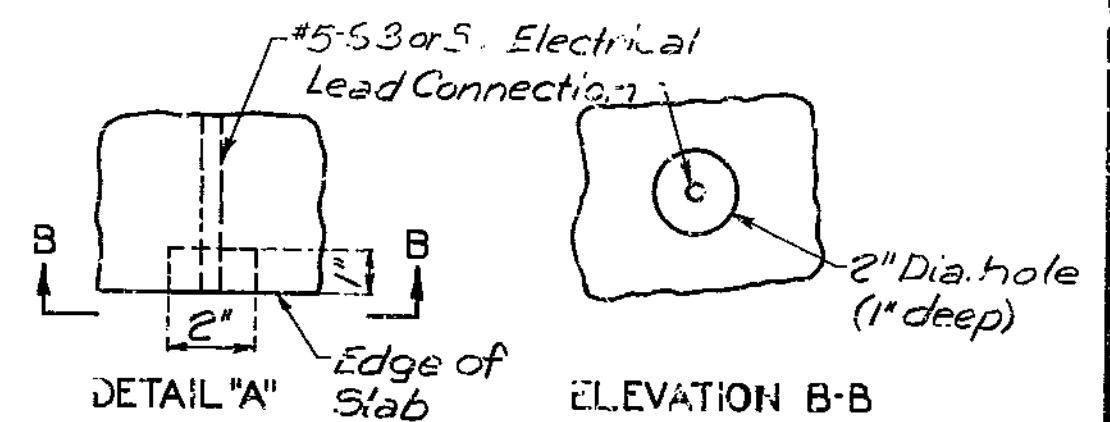
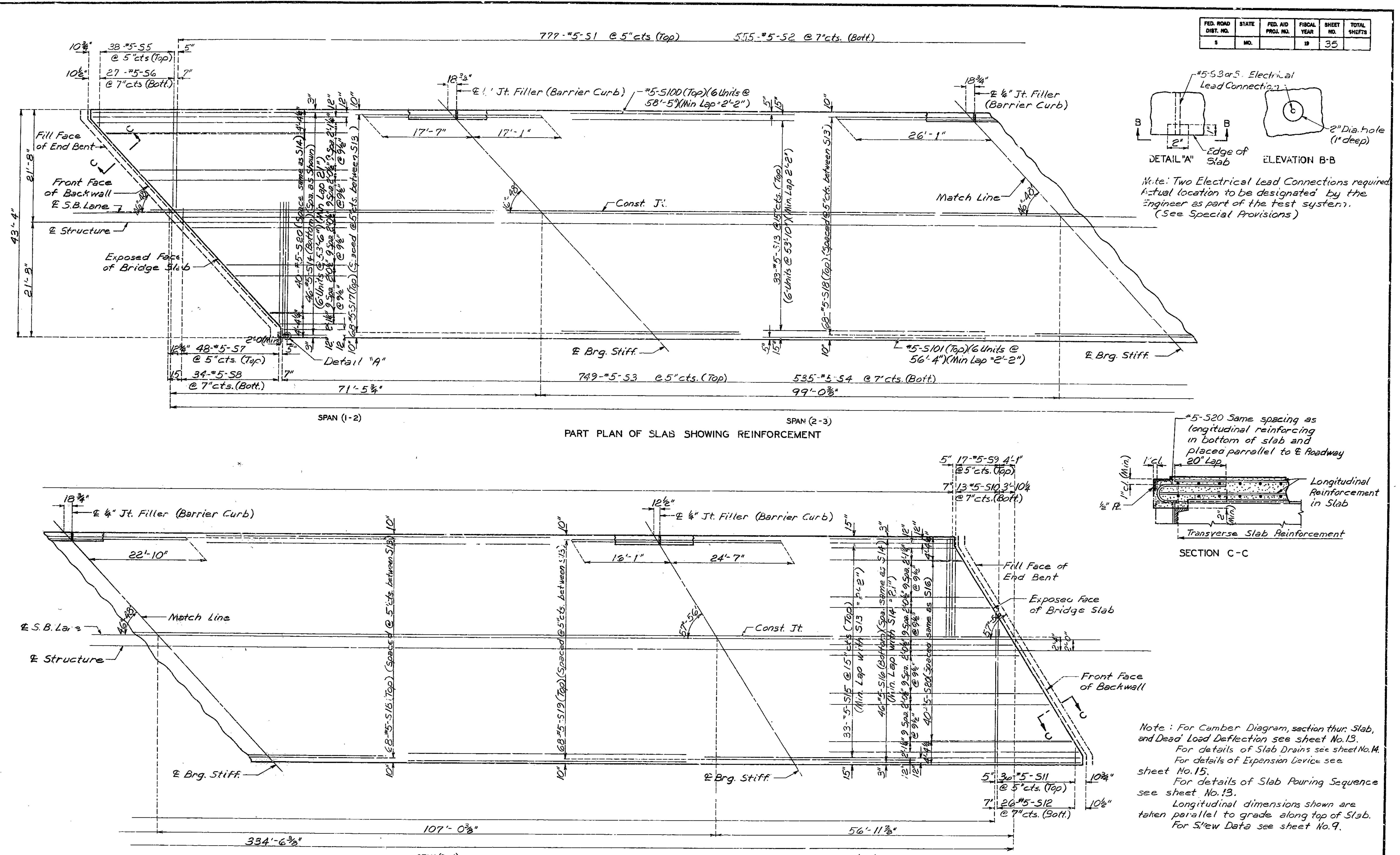
Note: This drawing is not to scale. Follow dimensions.

167

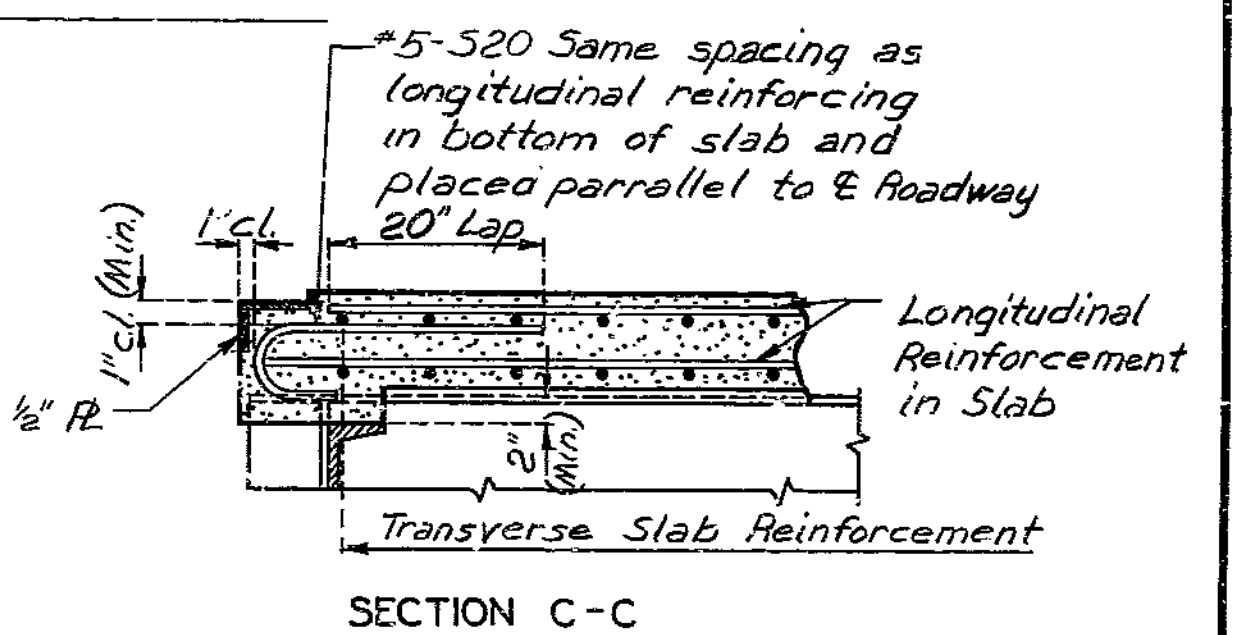
STD. D.B. REVISED  
FEB. 1965 OCT. 1977



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	35	



Note: Two Electrical Lead Connections required. Actual location to be designated by the Engineer as part of the test system. (See Special Provisions)



Note: For Camber Diagram, section thru Slab, and Dead Load Deflection see sheet No. 13. For details of Slab Drains see sheet No. 14. For details of Expansion Device see sheet No. 15. For details of Slab Pouring Sequence see sheet No. 13. Longitudinal dimensions shown are taken parallel to grade along top of Slab. For Slew Data see sheet No. 9.

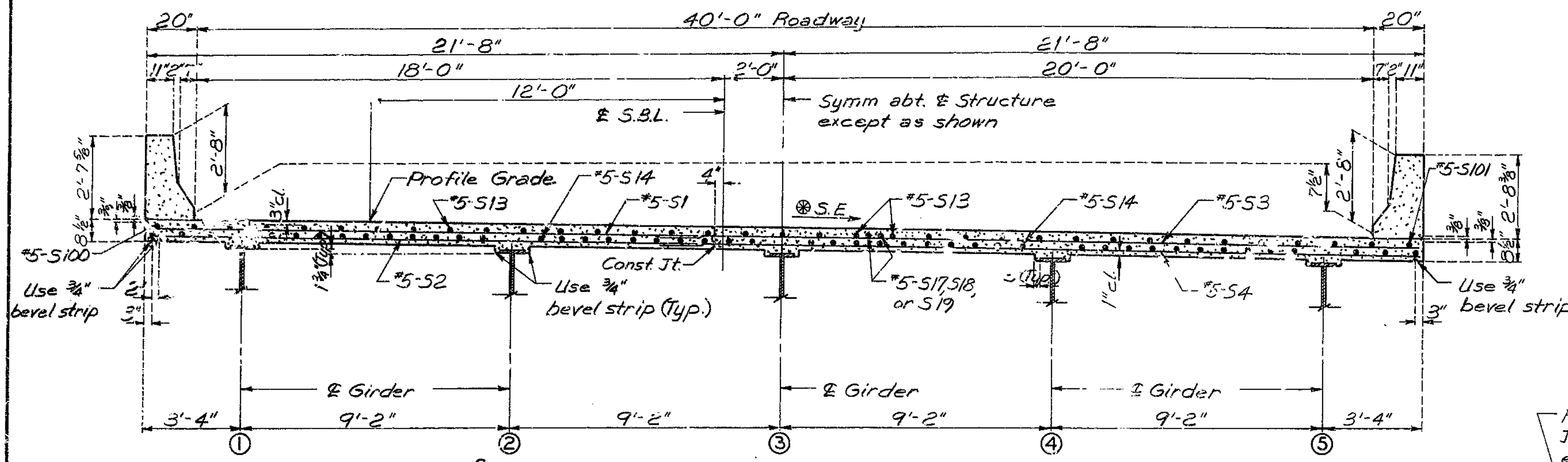
168

DETAILED SEPT. 1978  
CHECKED Oct. 1979

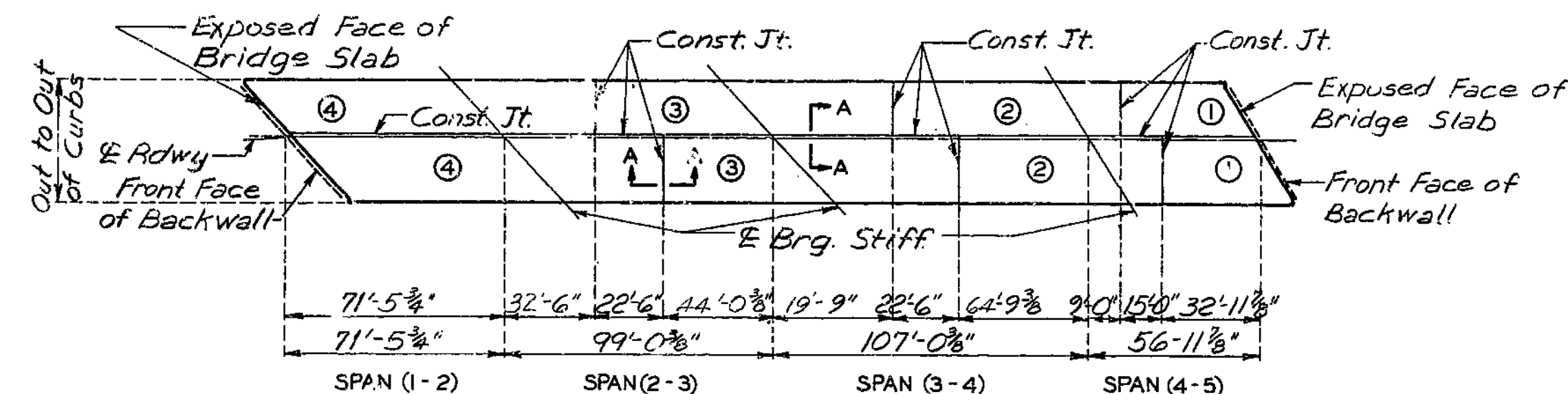
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 12 of 20.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	36	



Note: For details and reinforcement of safety barrier curb not shown see sheet No. 16 #No. 17.



SEQUENCE OF POURS	DIRECTION			
	1	2	3	4
BASIC SEQUENCE	END TO 2	1 TO 3	2 TO 4	3 TO END
ALTERNATE "A" POURS	1 + 2	3	2 TO 4	3 TO END
ALTERNATE "B" POURS	1 + 2	3 + 4	2 TO END	
ALTERNATE "C" POURS	1 + 2 + 3 + 4 END TO END			

Note: The Contractor shall pour and satisfactorily finish the slab pours at a rate of not less than 3 cubic yards per hour unless he elects to use an approved retarder to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 2.5 cubic yards per hour.

Alternate pours to the basic sequence are subject to the approval of the Engineer in accordance with Section 103.3.12.4 of Missouri State Specifications.

SLAB POURING SEQUENCE

	*70'-0 3/8"	*99'-0 3/8"	*106'-4 3/8"	*56'-0 3/8"
Line "A"	4-Equal Spa. 10-Equal Spa. 10-Equal Spa. 4-Equal Spa.			
Line "B"	E Brg. Stiff. E Brg. Stiff. E Brg. Stiff. E Brg. Stiff.			
Ext. Gdr. No. 1	0"	0"	0"	0"
Int. Gdr. No. 2	0"	0"	0"	0"
Int. Gdr. No. 3	0"	0"	0"	0"
Int. Gdr. No. 4	0"	0"	0"	0"
Ext. Gdr. No. 5	0"	0"	0"	0"
	SPAN (1-2)	SPAN (2-3)	SPAN (3-4)	SPAN (4-5)

PLATE GIRDER CAMBER DIAGRAM

Note: Camber includes allowance for vertical curve and for dead load deflection due to concrete slab, curb and structural steel.

Line "A" indicates bottom of top flange along E Girder.

Line "B" is a straight line between E bearing stiff.

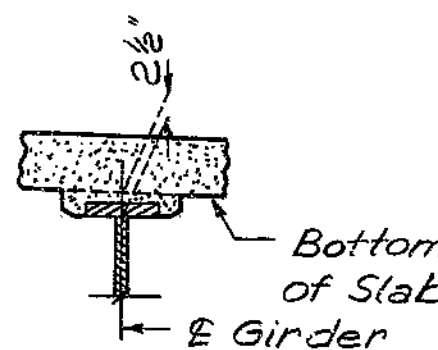
	*70'-0 3/8"	*99'-0 3/8"	*106'-4 3/8"	*56'-0 3/8"
Line "A"	4-Equal Spa. 10-Equal Spa. 10-Equal Spa. 4-Equal Spa.			
Line "B"	E Brg. Stiff. E Brg. Stiff. E Brg. Stiff. E Brg. Stiff.			
Ext. Gdr. No. 1	0"	0"	0"	0"
Int. Gdr. No. 2	0"	0"	0"	0"
Int. Gdr. No. 3	0"	0"	0"	0"
Int. Gdr. No. 4	0"	0"	0"	0"
Ext. Gdr. No. 5	0"	0"	0"	0"
	SPAN (1-2)	SPAN (2-3)	SPAN (3-4)	SPAN (4-5)

DEAD LOAD DEFLECTION

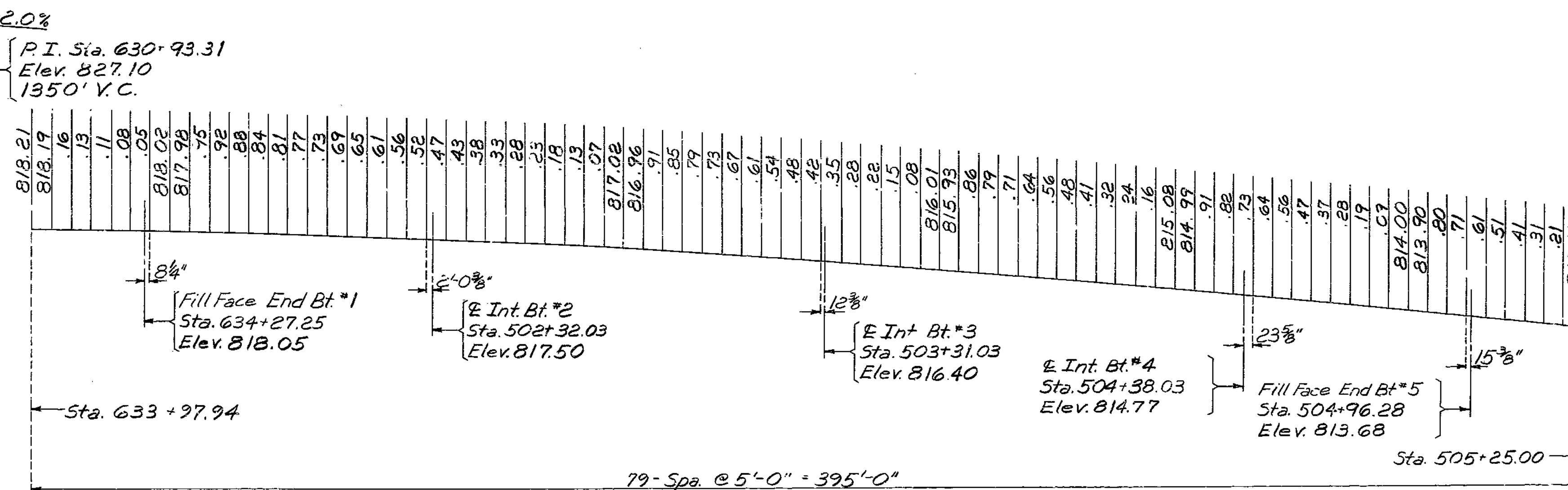
Note: 18% of dead deflection due to weight of structural steel. Negative sign indicates upward deflection.

\*Dimensions at top of web along E Structure.

S.E. 0.0156'ft to the Rt. on Structure Ahd. of P.T. 501+63.68 Trans. to 0.081ft. in 215' Bk. of P.T.



Note: 2 1/2" dimension may vary if girder camber after erection differs from plan camber by more than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variation in haunching.

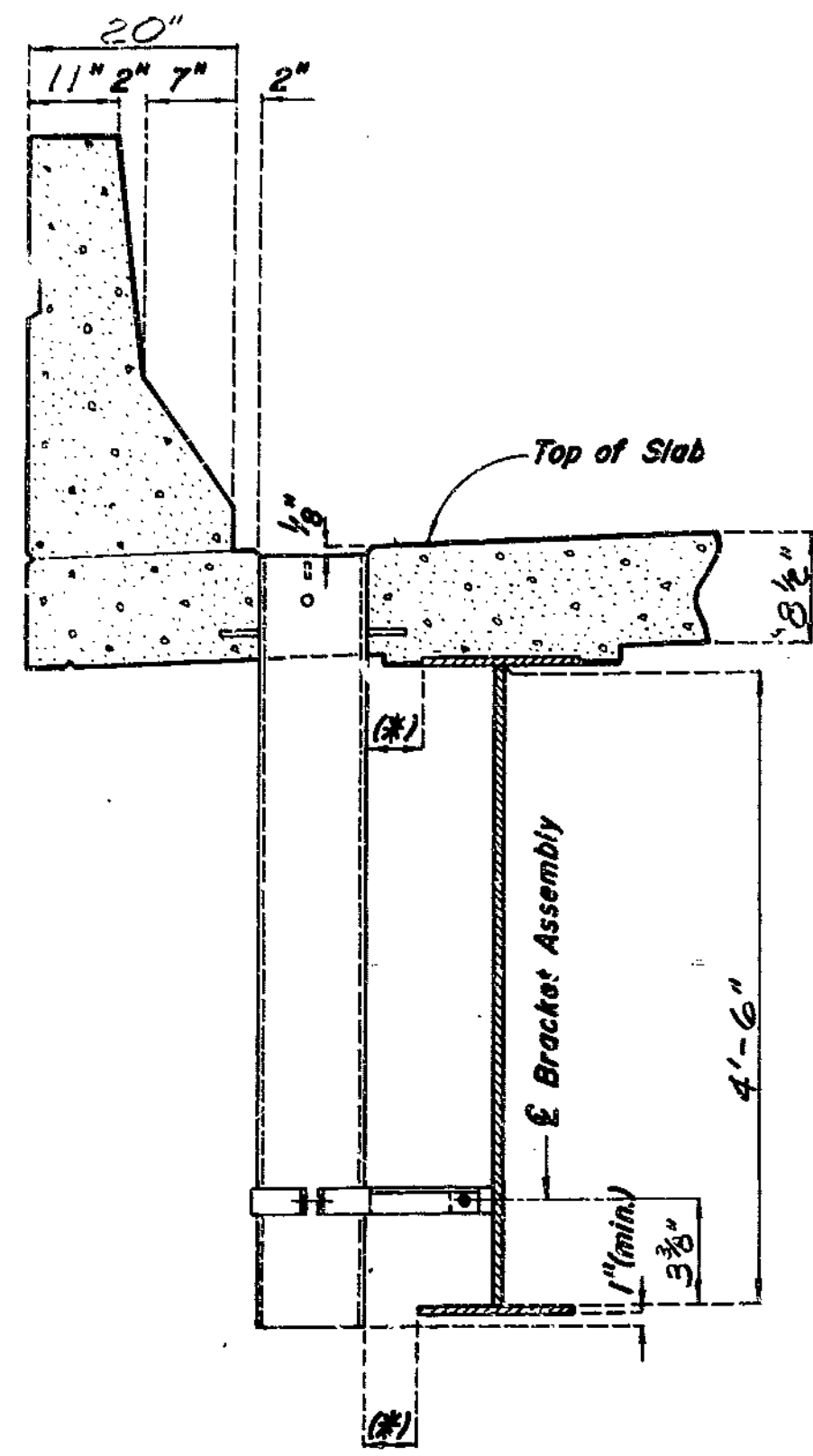


PROFILE GRADE ELEVATION

Sta. 634+31.62 Bk. Sta. 501+63.68 Ah.

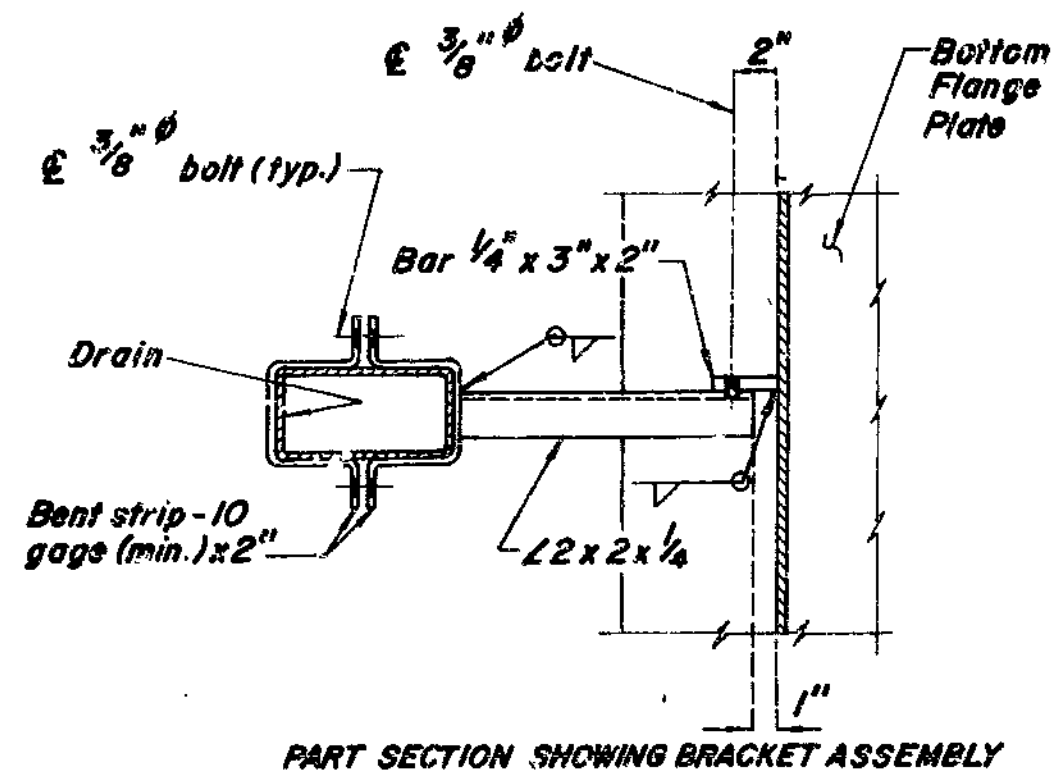
169

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

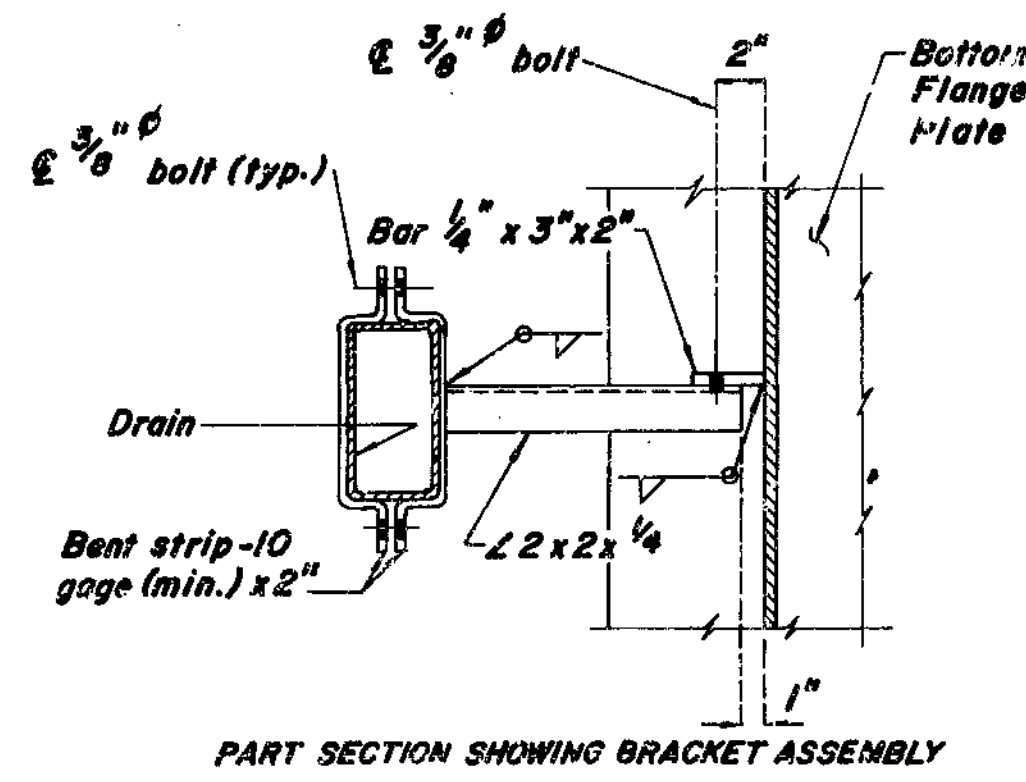


PART ELEVATION OF SLAB

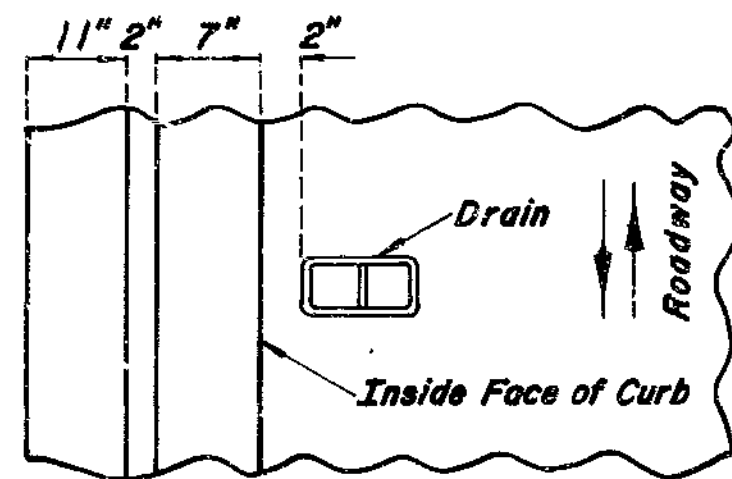
(\*) If dimension is less than 1" drains shall be placed parallel to roadway, otherwise place drains transverse to roadway.



PART SECTION SHOWING BRACKET ASSEMBLY

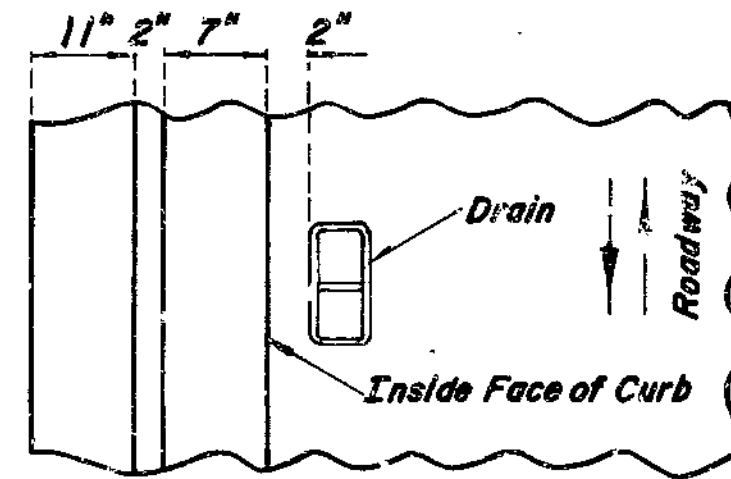


PART SECTION SHOWING BRACKET ASSEMBLY



PART PLAN OF DRAIN

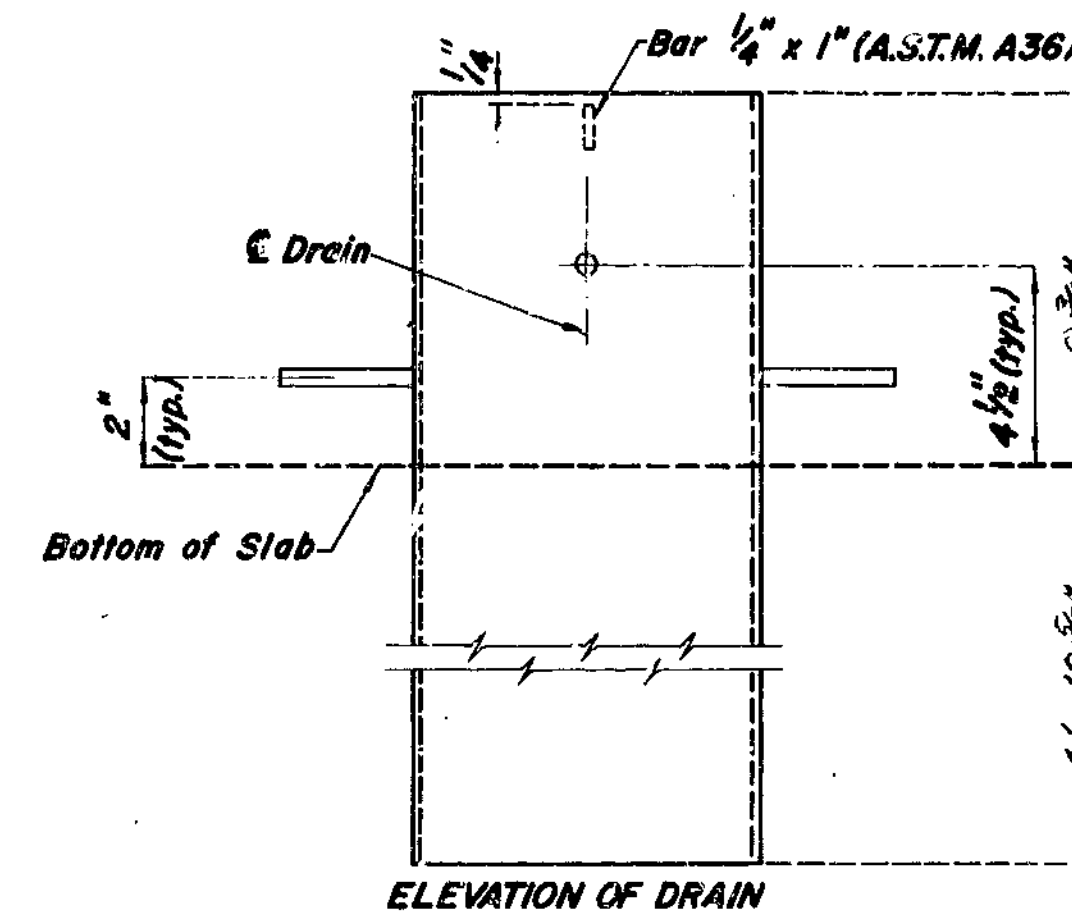
DETAILS OF DRAINS TRANSVERSE TO ROADWAY



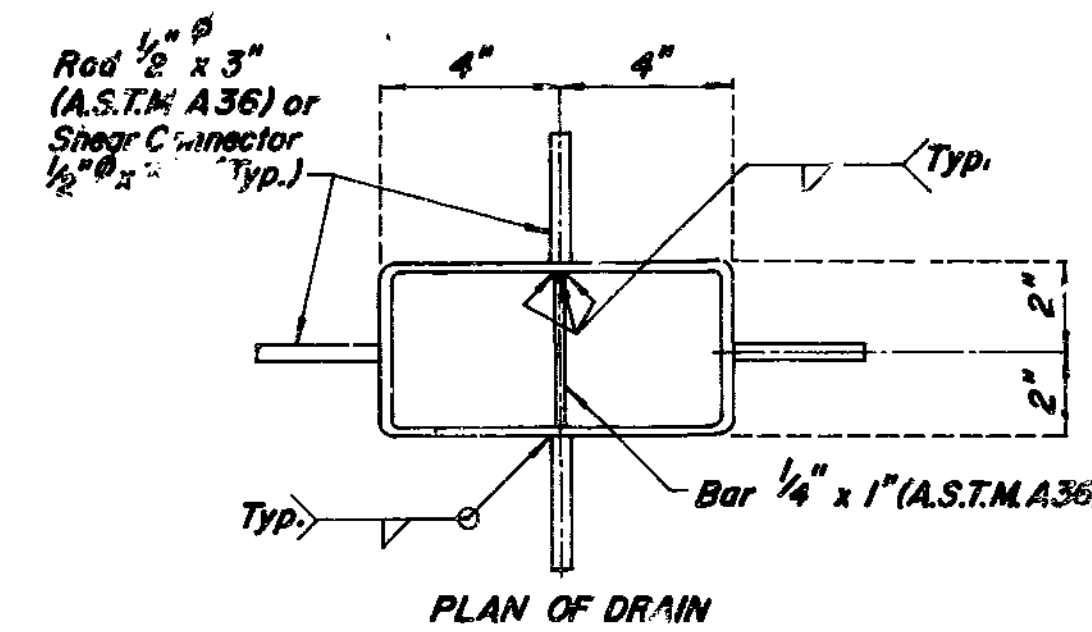
PART PLAN OF DRAIN

DETAILS OF DRAINS PARALLEL TO ROADWAY

SLAB DRAIN DETAILS



ELEVATION OF DRAIN



PLAN OF DRAIN

GENERAL NOTES:

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE 8" x 4".

THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.

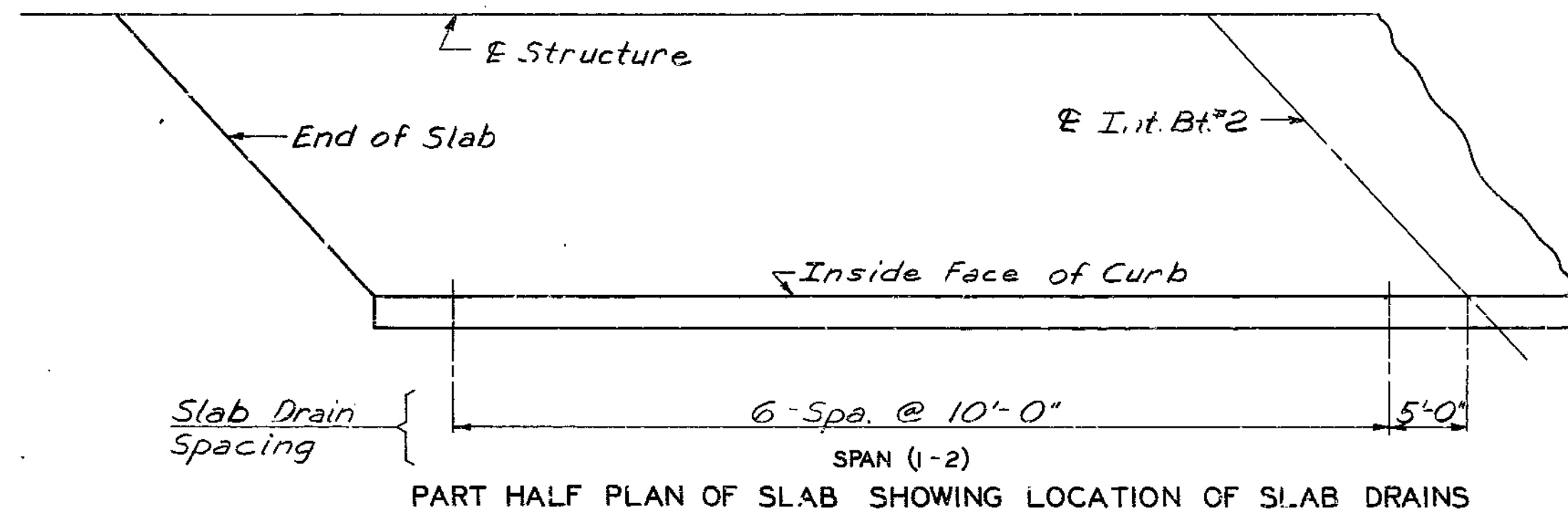
LOCATE DRAINS IN SLAB BY DIMENSIONS SHOWN IN PART ELEVATION.

SHIFT REINFORCING IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

THE DRAINS AND 10 GAGE BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

THE 1/4" x 3" x 2" BAR SHALL BE LOCATED ON THE PLATE GIRDER SHOP DRAWINGS.

SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND THE 10 GAGE BRACKET ASSEMBLY.



PART HALF PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

170

LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP. GAP AT 60°	TABLE OF DIMENSIONS						ANCHOR STUDS	
			"A" AT 60°	"B"	"C"	"D"	"E"	"F"	SIZE	"G"
End Bents No. 1 & No. 5	FEL-SPAN T305A	1 5/8"	9 1/2"	3 1/4"	1 3/8"	1 1/4"	1 1/16"	2 3/16"	1/2"	50
	WABO-ELASTODAM 300(S)	1 3/4"	9 1/4"	3 1/4"	1 3/8"	1 1/4"	1 3/4"	2 1/4"	1/2"	40
	ON-FLEX 45	2"	11 1/2"	4 1/4"	1 3/8"	1 1/2"	2 3/8"	3 3/8"	1/2"	65

NOTE: All dimensions are at right angles. Expansion gap and dimension "A" shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature.

GENERAL NOTES:

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE NUTS ON THE ANCHOR STUDS SHALL BE TIGHTENED TO THE 100T POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 4 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 4 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING.

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

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

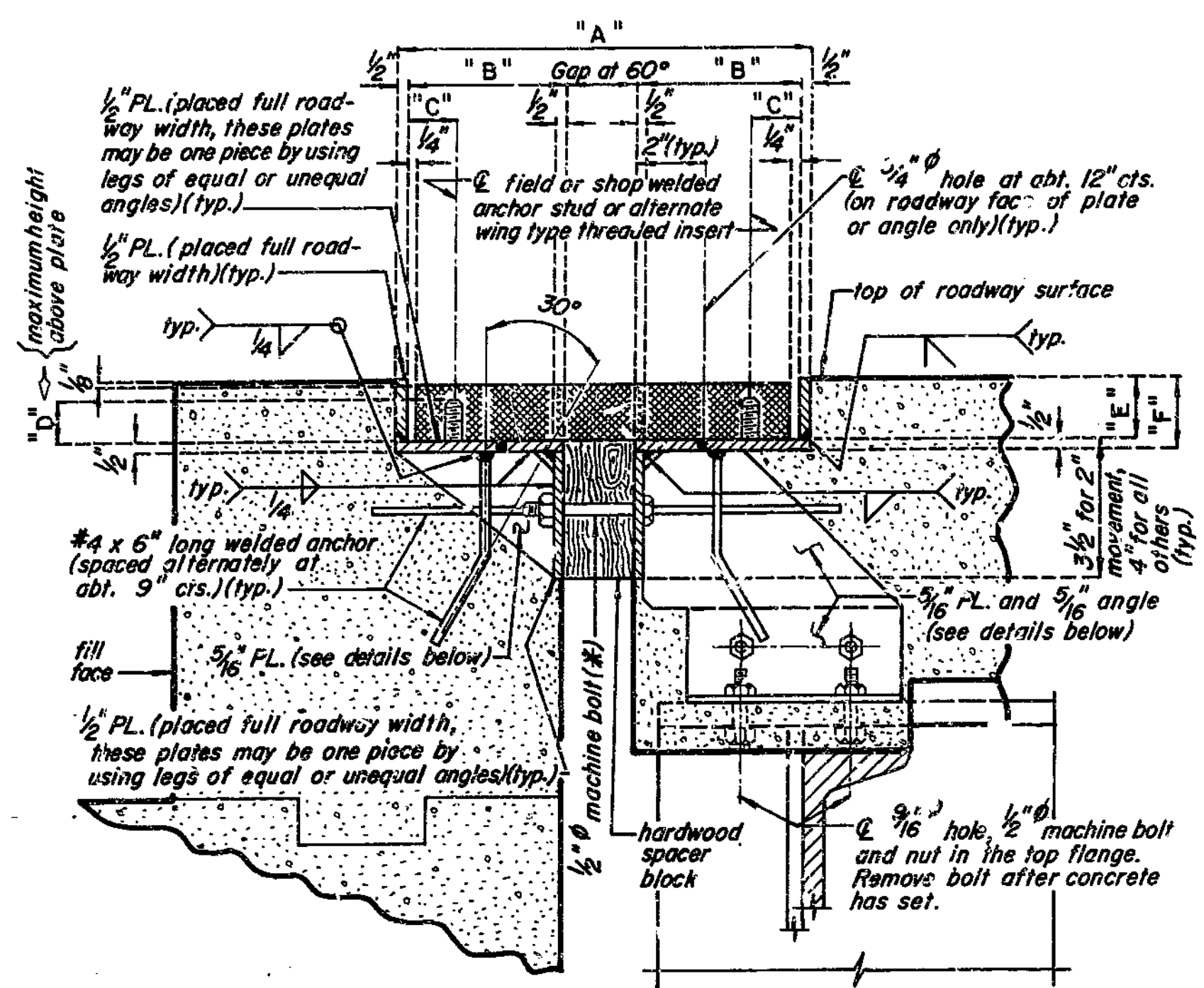
PLATES SHALL BE FIELD ADJUSTED BY ADDING OR REMOVING METAL SHIMS (2" x 3"), AS REQUIRED FOR TEMPERATURE CORRECTION. THE EXPANSION GAP SHALL BE ADJUSTED FOR ANY TEMPERATURE CORRECTION PRIOR TO POURING TOP OF END BENT BACKWALL.

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

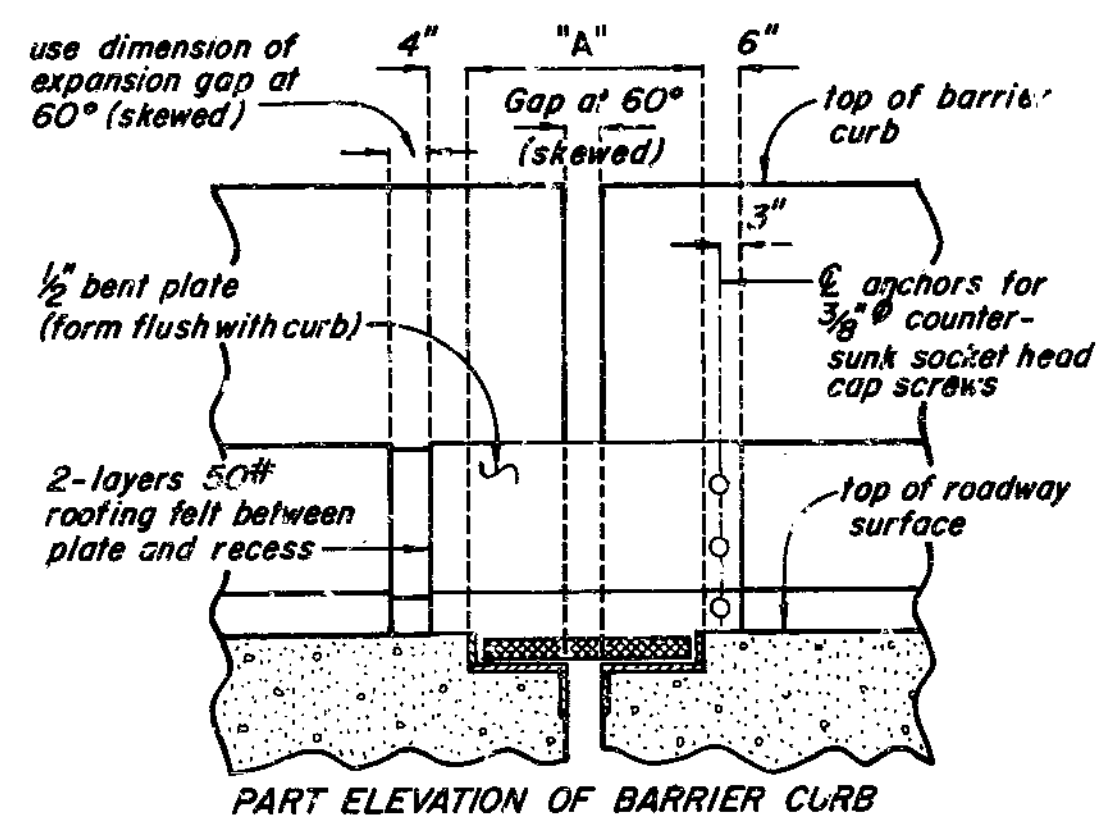
FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

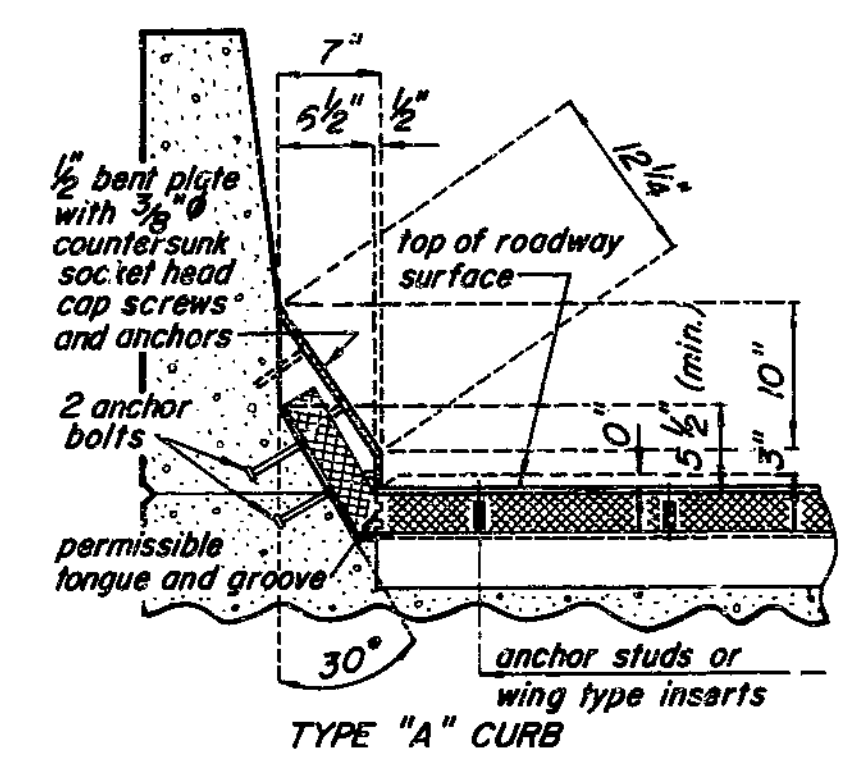
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		19	38	



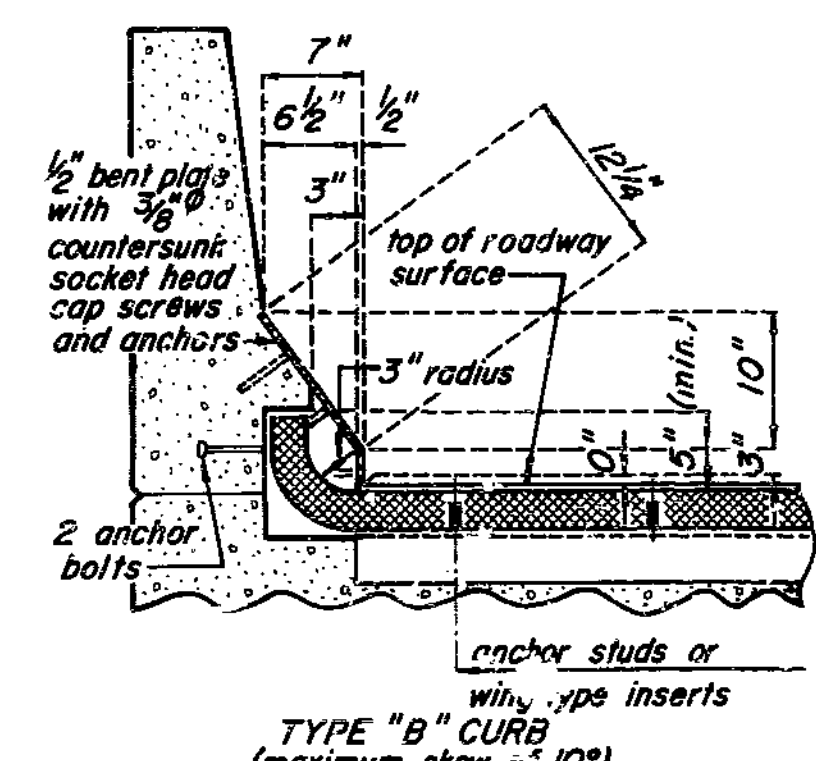
PART SECTION THRU ARMORED JOINT



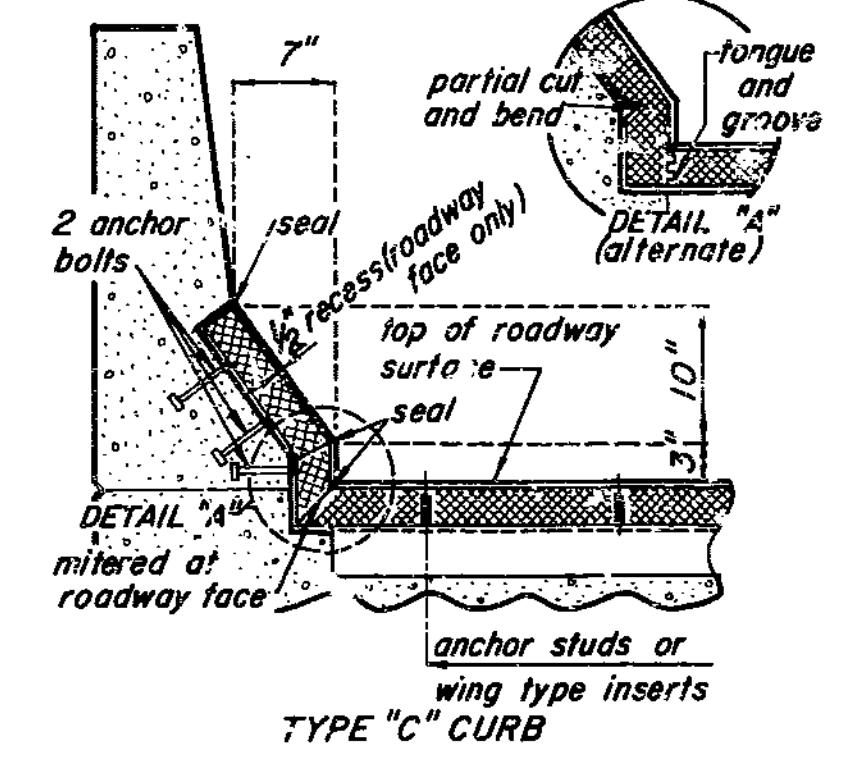
PART ELEVATION OF BARRIER CURB



TYPE "A" CURB

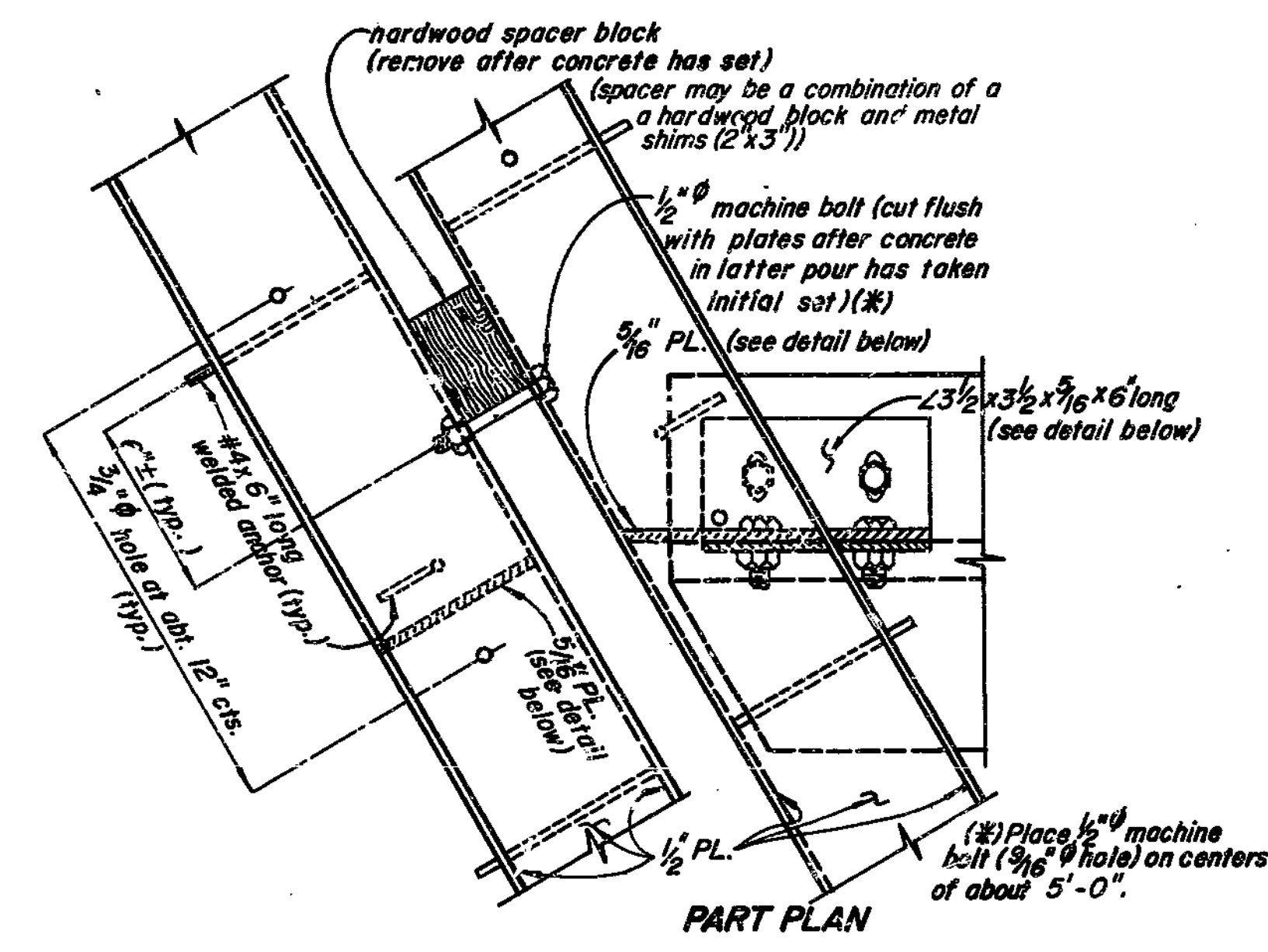


TYPE "B" CURB (maximum skew of 10°)

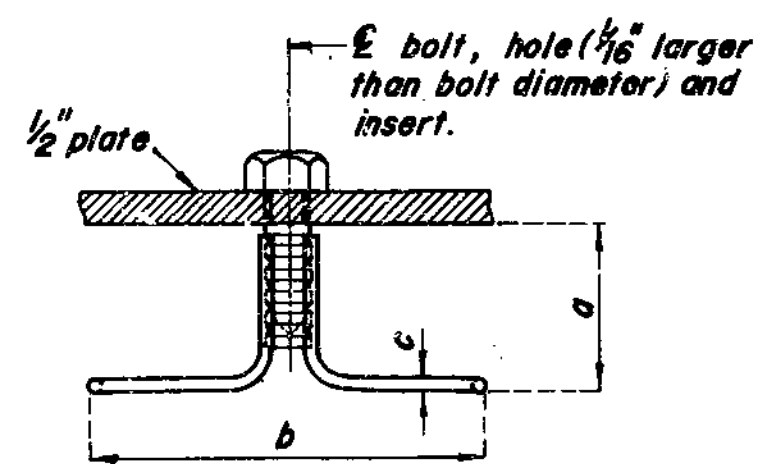


TYPE "C" CURB

ALTERNATE CURB TREATMENTS

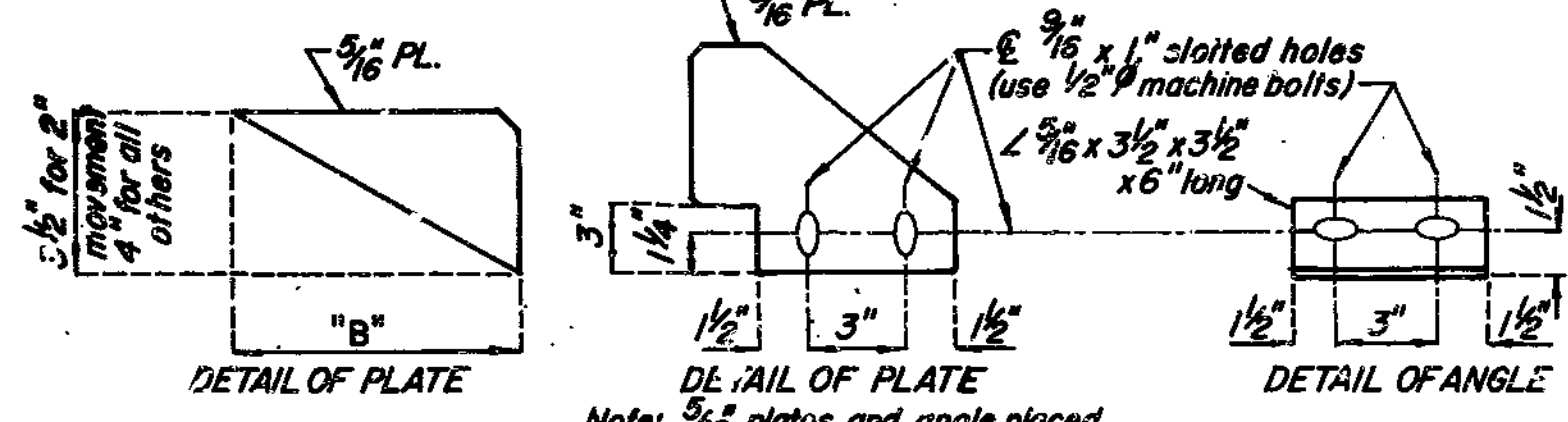


PART PLAN



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

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



DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 1 & NO. 5

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

SPS - END BT. REVISED FEB. 1978 AUG. 1980

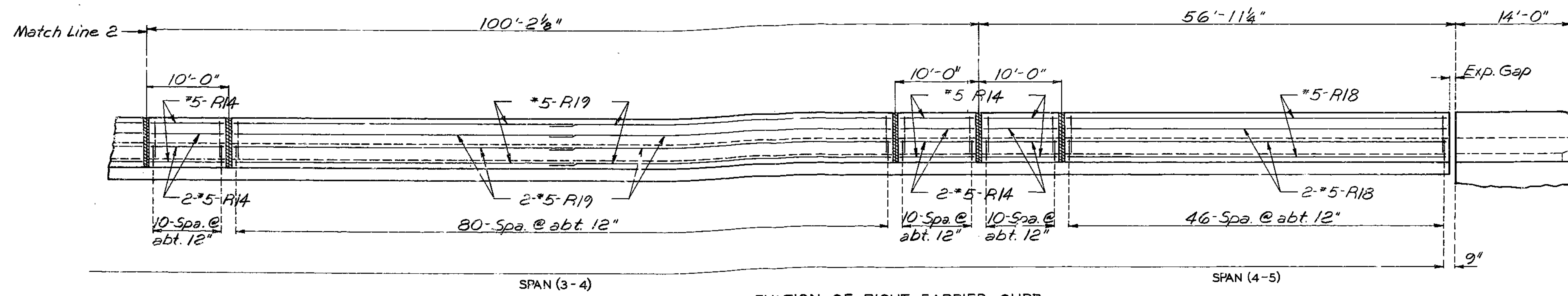
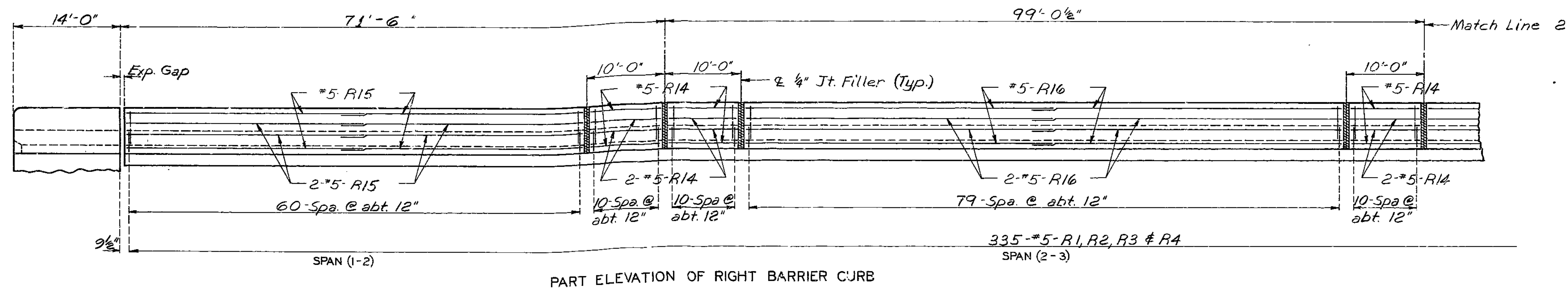
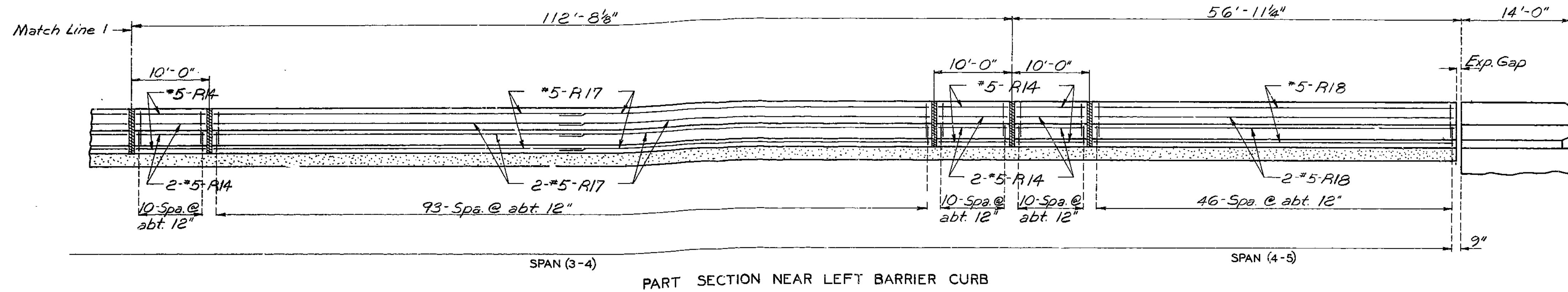
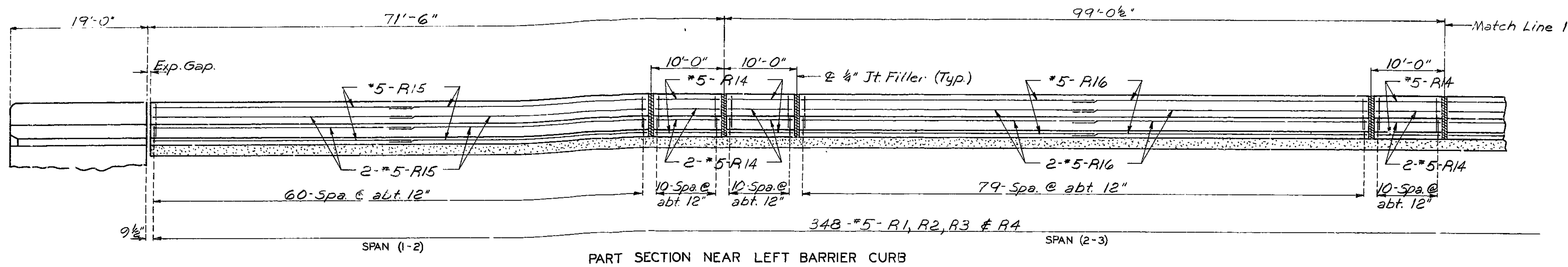
DETAILED JAN. 1981  
CHECKED JAN. 1981

CLAY COUNTY

A-3374

171

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	30	

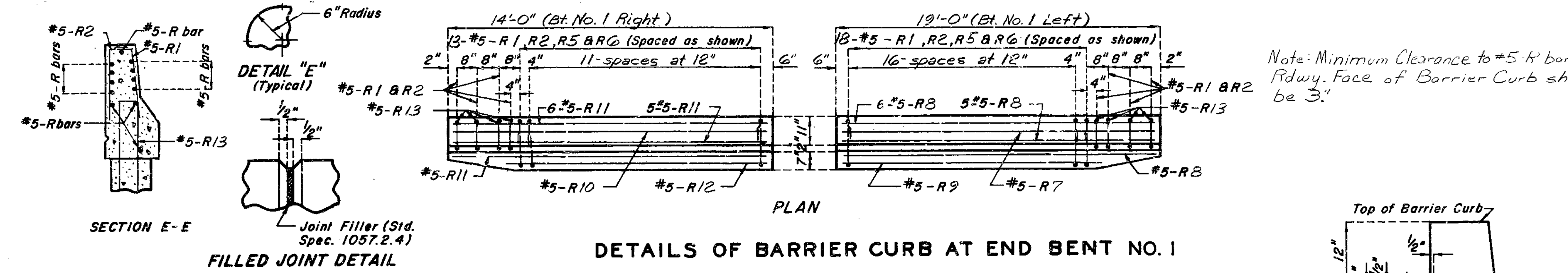
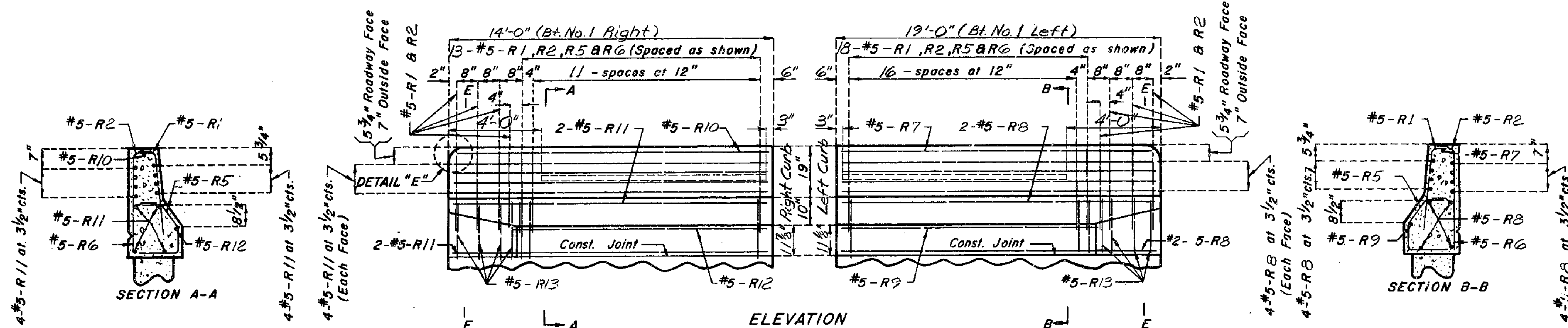


Note: Longitudinal dimensions shown are taken parallel to grade along top of barrier curb.  
 For details of barrier curb not shown see sheet No 17  
 Use minimum lap of 17" for #5 horizontal Barrier Curb bars.

Note: Top of Barrier Curb to be built parallel to grade with Barrier Curb Joints (except at End Bents) normal to grade.  
 All exposed edges of Barrier Curb shall have 1/2" Radius or 3/8" Bevel unless otherwise noted.

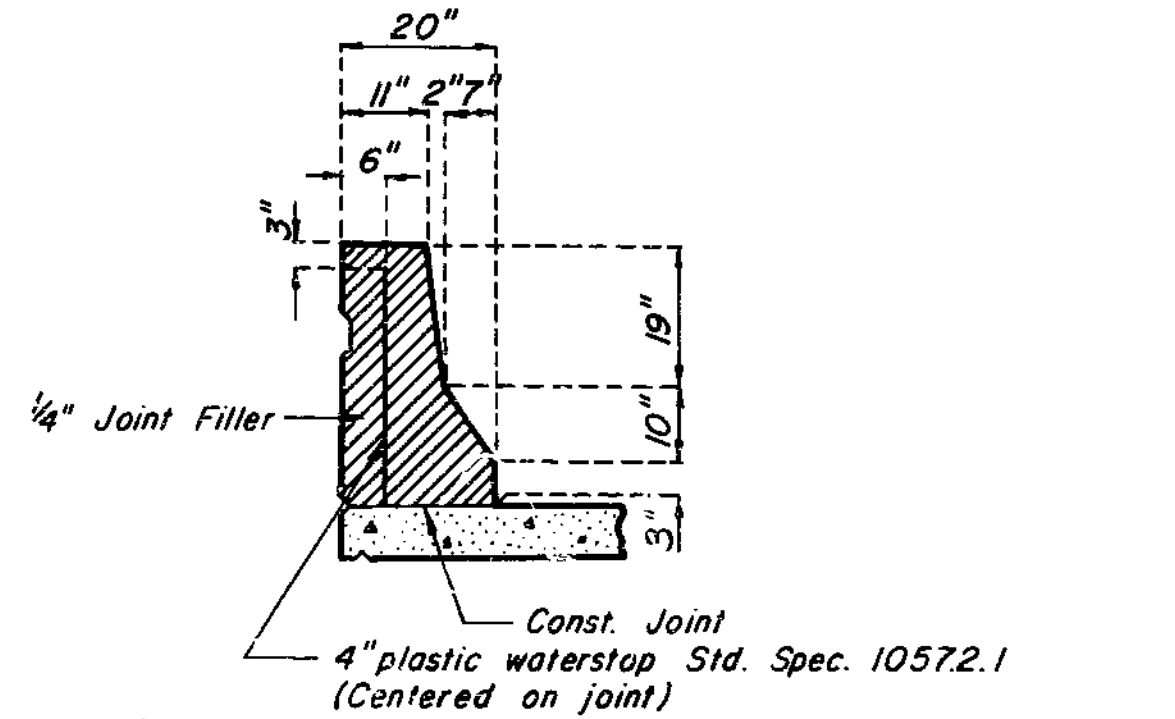
172

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



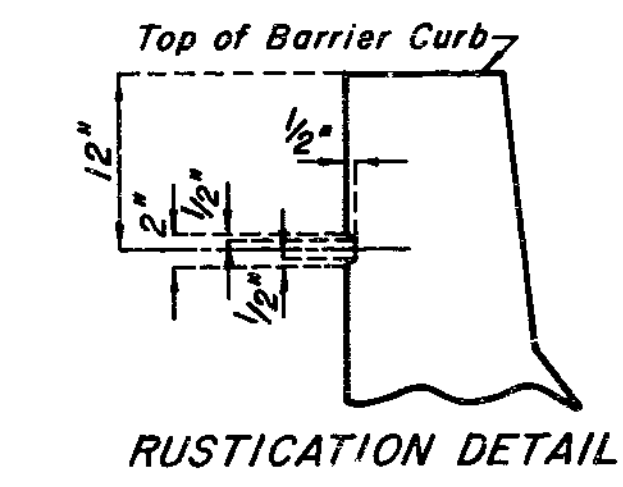
DETAILS OF BARRIER CURB AT END BENT NO. 1

Note: Minimum Clearance to #5-R bar in Rdwy. Face of Barrier Curb shall be 3"



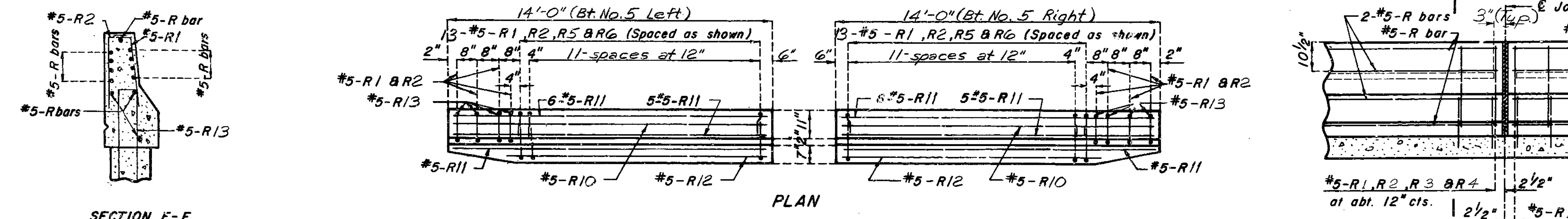
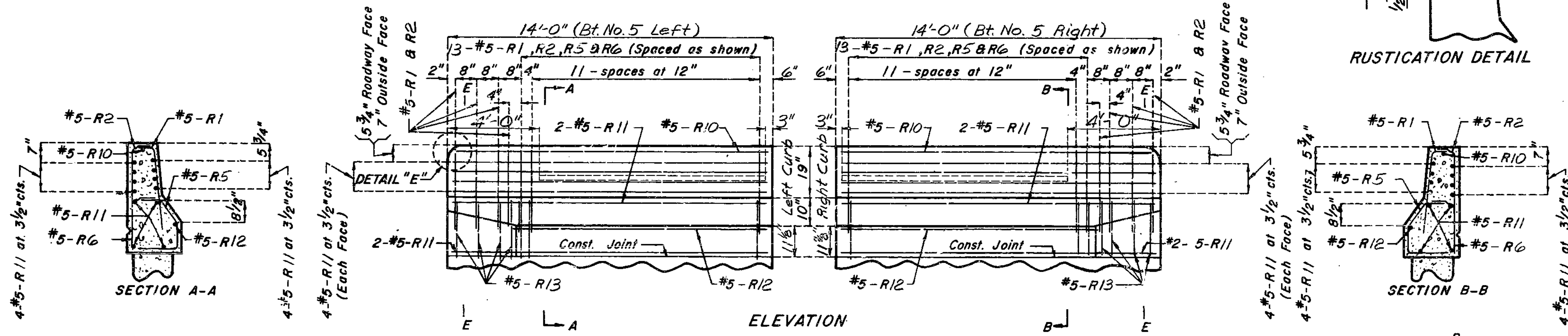
Note: Plastic waterstop shall be placed in all safety barrier curb filled joints. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

DETAILS OF PLASTIC WATERSTOP



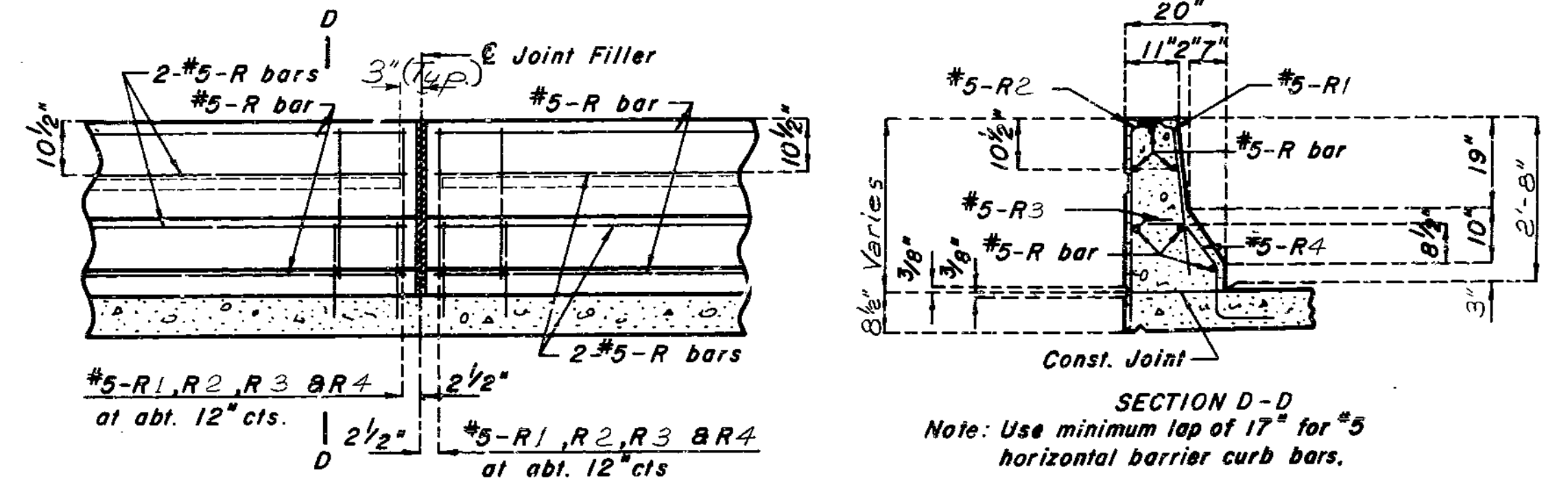
RUSTICATION DETAIL

NOTES:  
TOP OF BARRIER CURB TO BE BUILT PARALLEL TO GRADE WITH BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE.  
ALL EXPOSED EDGES OF BARRIER CURB SHALL HAVE 1/2" RADIUS OR 3/8" BEVEL UNLESS OTHERWISE NOTED.

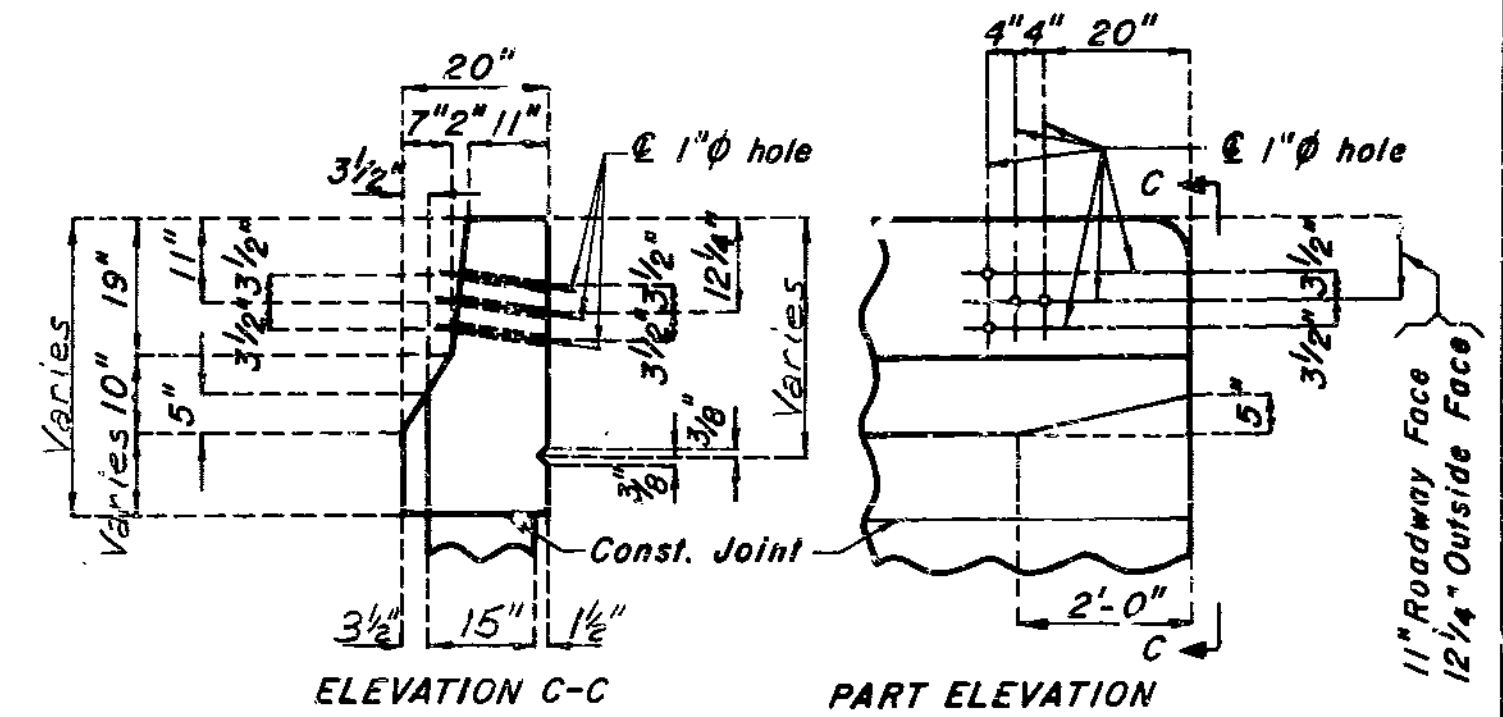


DETAILS OF BARRIER CURB AT END BENT NO. 5

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



PART SECTION NEAR LEFT BARRIER CURB



DETAILS OF GUARD RAIL ATTACHMENT

Note: Use minimum lap of 17" for #5 horizontal barrier curb bars.

173

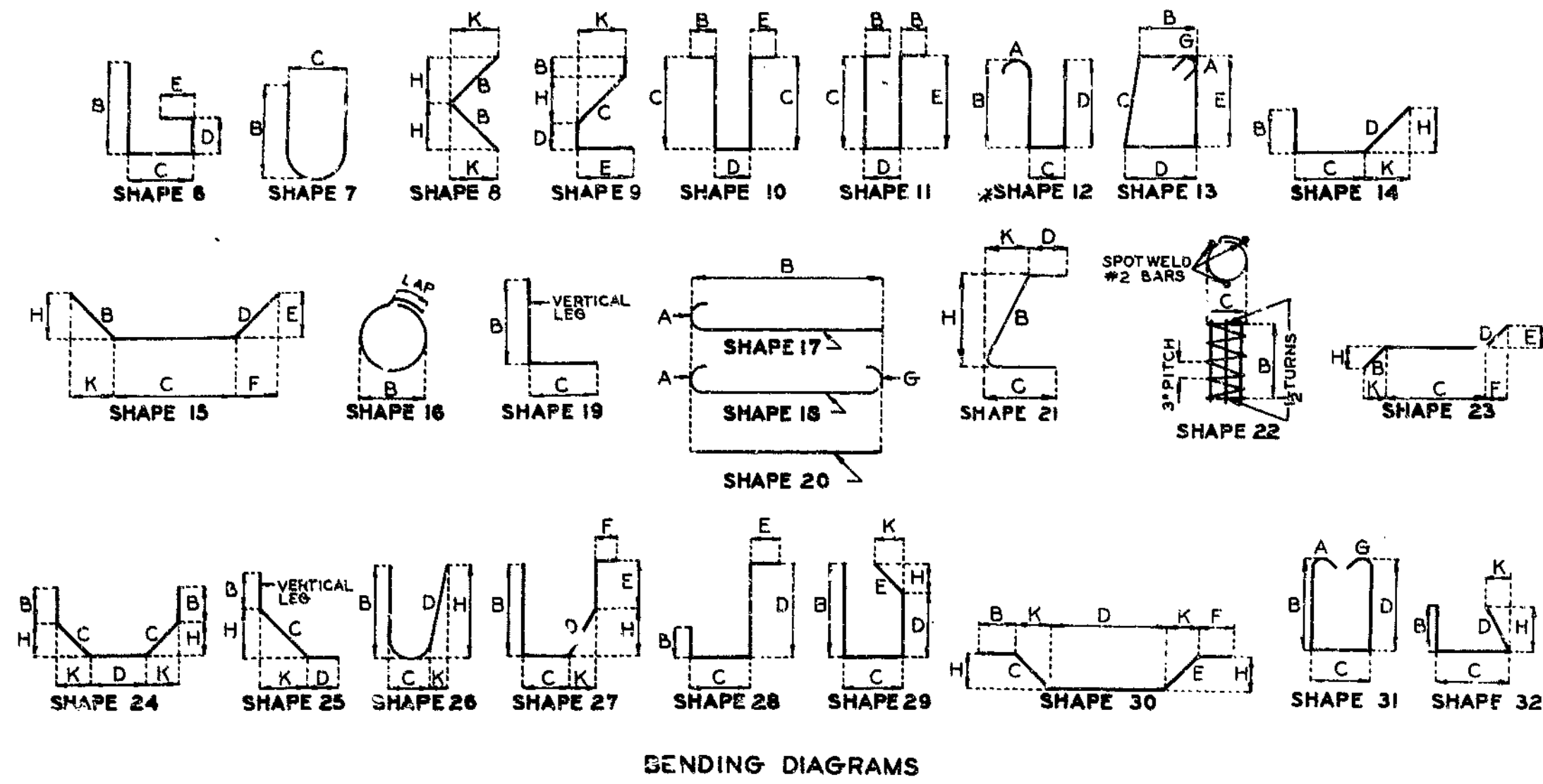
STD. 1.7.3(N) REVISED NOV. 1974 NOV. 1979

DETAILED SEPT. 1973 CHECKED Oct. 1979



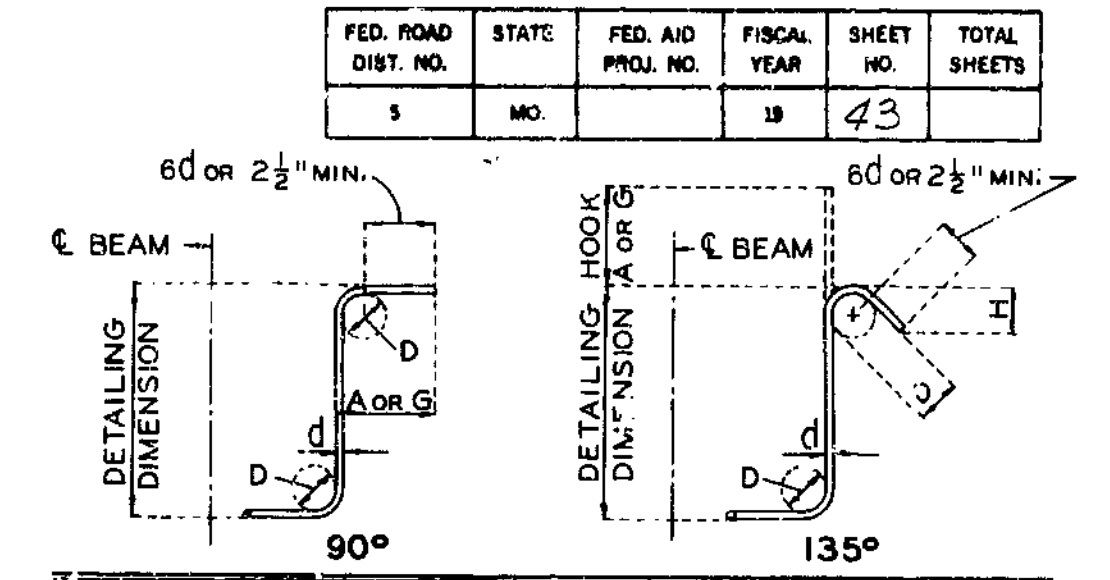






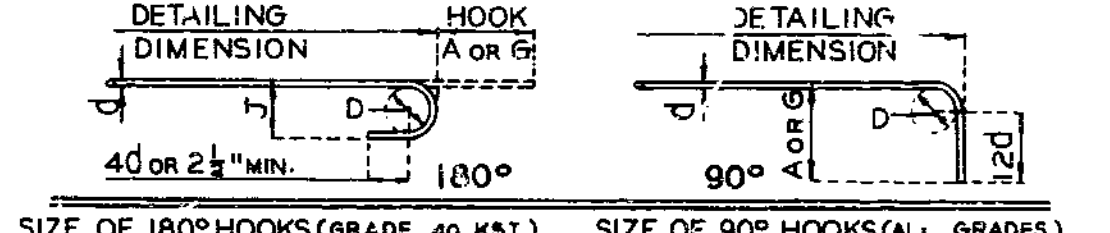
BENDING DIAGRAMS

COMPLETE BILL OF REINFORCING STEEL																					
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT			
									S	C	D	E	F	H	K				FT. IN.	FT. IN.	LBS.
26	5512	SLAB		20				1	25	9.000							25	9	25	9	
		INCR = 11.250 IN							2	5.000							2	5	2	5	342
198	5513	SLAB		20					53	10.000							53	10	53	10	11117
276	5514	SLAB		20					53	6.000							53	6	53	6	15401
33	5515	SLAB		20				1	29	8.000							29	8	29	8	
		INCR = 4.625 IN							17	2.000							17	2	17	2	806
46	5516	SLAB		20				1	29	2.000							29	2	29	2	
		INCR = 3.375 IN							16	8.000							16	8	16	8	1095
68	5517	SLAB		20					34	8.000							34	8	34	8	2459
68	5518	SLAB		20					48	11.000							48	11	48	11	3469
68	5519	SLAB		20					40	8.000							40	8	40	8	2884
80	5520	SLAB		17					2	2.000							2	2	2	2	229
6	55100	SLAB		20					58	5.000							58	5	58	5	366
6	55101	SLAB		20					56	4.000							56	4	56	4	353
		END OF BAR LIST																			



STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D	90° HOOK		135° HOOK
		A OR G	A OR G	APPROX. H
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

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



SIZE OF 180° HOOKS (GRADE 40 KSI) AND 180° HOOKS (ALL GRADES) AND 90° HOOKS (ALL GRADES) AND 90° HOOKS (GRADE 60 KSI)  
 D = 5d FOR #3 THRU #11  
 D = 6d FOR #3 THRU #6  
 D = 8d FOR #9, #10 AND #11  
 D = 10d FOR #14 AND #18

BAR SIZE	END HOOK DIMENSIONS					
	180° HOOKS		90° HOOKS		ALL GRADES	
	GRADE 40	GRADE 60	GRADE 40	GRADE 60	A	G
#3	5"	2-3/4"	5"	3"	6"	6"
#4	6"	3-1/2"	6"	4"	8"	8"
#5	7"	4-1/2"	7"	5"	10"	10"
#6	8"	5-1/4"	8"	6"	12"	12"
#7	9"	6-1/4"	10"	7"	14"	14"
#8	10"	7"	11"	8"	16"	16"
#9	12"	8"	15"	11-1/4"	19"	19"
#10	13"	9"	17"	12-3/4"	22"	22"
#11	14"	10"	19"	14-1/4"	21-0"	21-0"
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"	21-7"
#18	21-11"	21-3"	21-11"	21-3"	31-5"	31-5"

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)  
 ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.  
 \* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.

176

STD. 90.8.5  
 MAY 1974  
 REVISIONS  
 NOV. 1979

DETAILED JAN. 1980  
 CHECKED Jan. 1980

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

Sheet No. 20 of 20.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(70'-99'-107'-56') Cont. Comp. R Girder Spans

FED. ROAD DIST. NO.	STATE	FED. AID P. J. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	24	

SEC./SUR.	TWP.	RGE.
27	51N	32W

GENERAL NOTES:

Design Specifications:  
A.A.S.H.T.O - 1977 Load Factor Design Substructure. NS

Design Loading:  
HS 20-44 15' / sq. ft. Future Wearing Surface  
Modified 24,000' Tandem Axle  
Earth 120' Equivalent Fluid Pressure 30'  
Fatigue Stress: Case II

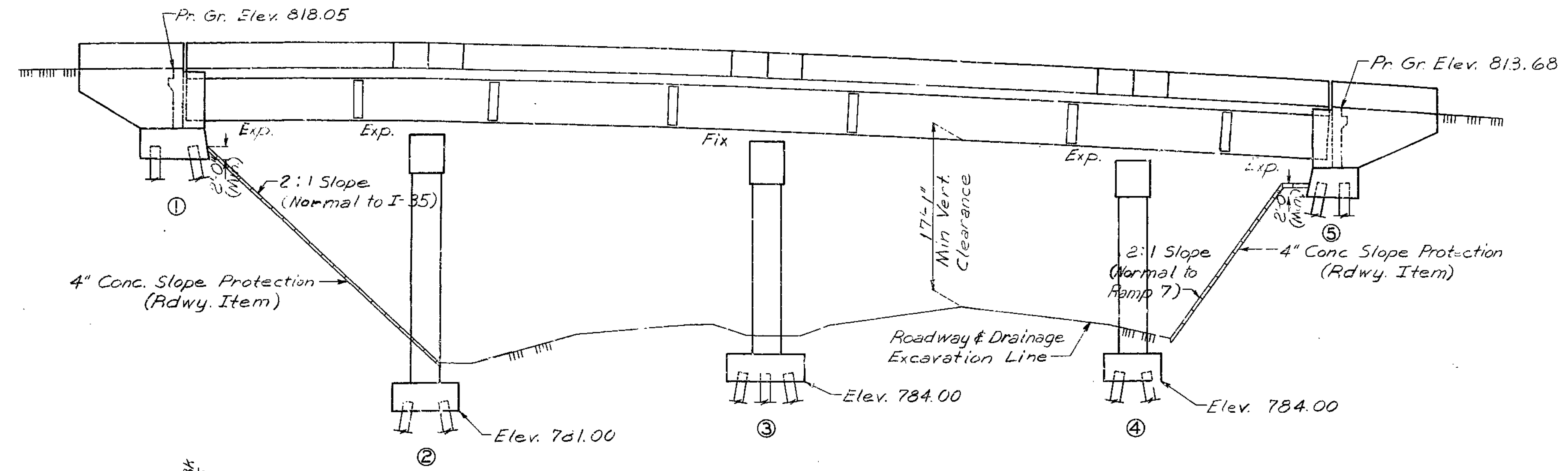
Design Unit Stresses:  
Class B2 Concrete (Superstructure)  $f_c = 4,000$  psi.  
Class B Concrete (Substructure)  $f_c = 3,000$  psi.  
Reinforcing Steel (Substructure) (Grade 60)  $f_y = 40,000$  psi.  
Reinforcing Steel (Superstructure) (Grade 60)  $f_y = 60,000$  psi.  
Structural Carbon Steel  $f_s = 20,000$  psi.  
Structural Steel (A.S.T.M. A-572) Grade 50  $f_s = 27,000$  psi.  
Steel Pile  $f_b = 9,000$  psi.

Fabricated Steel:  
Field connections High Strength Bolts  $\frac{3}{4}$ "  $\phi$ , holes  $\frac{3}{16}$ "  $\phi$  except as noted.

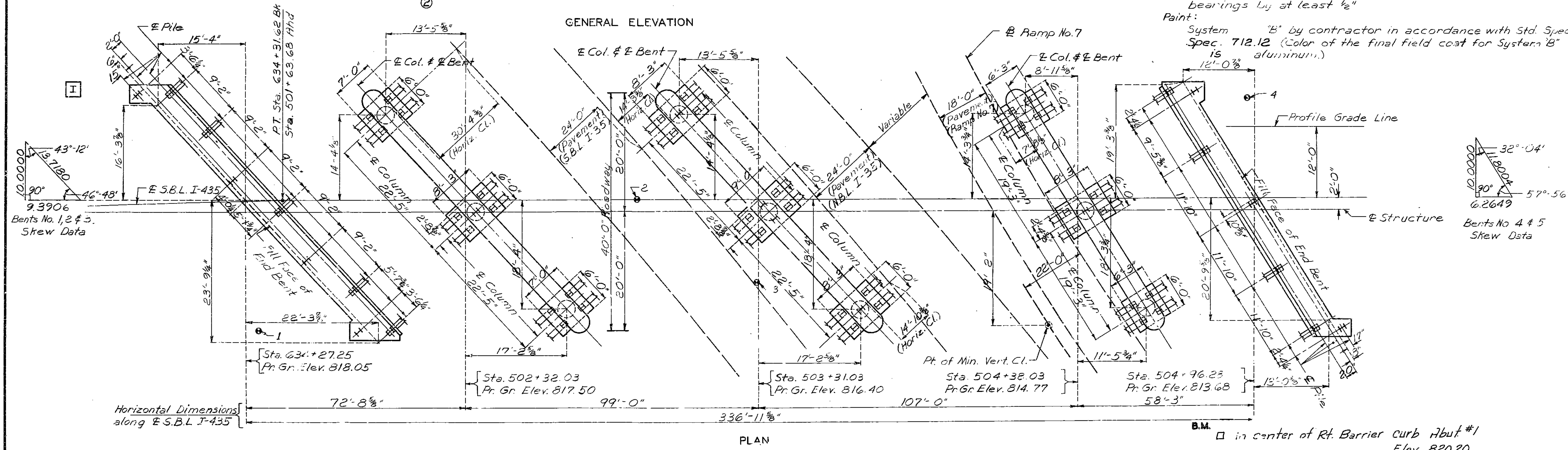
Reinforcing Steel:  
Minimum clearance to reinforcing steel is  $\frac{1}{2}$ " unless otherwise shown.  
All reinforcing bars in tops of substructure beams or caps was spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}$ "

Paint:  
System "B" by contractor in accordance with Std. Spec. 712.12 (Color of the final field coat for System "B" aluminum.)

F.I. Sta. 630+93.31  
Elev. 827.10  
+2.5%  
1350' V.C.  
-2.0%  
Equation Sta. 634+31.62 BK  
Sta. 501+63.68 Ah.



GENERAL ELEVATION



PLAN

B.M.  $\square$  in center of Rt. Barrier curb Abut #1  
Elev. 820.20

BRIDGE OVER RTE. I-35 & RAMP 7

STATE ROAD FROM RTE. 152 TO RTE 69

AT I-35 & I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 634+27.25

JOB NO. 4-I-435-49H RTE. I-435 (SBL)

CLAY COUNTY

STD. 611.60
STD. 706.35
A-3374

Note: For Boring Data see sheet No. 2  
⑥ Indicates location of boring.

Note: All Horizontal Clearance Dimensions are radial.

Note: For Quantities, Pile Data, and Location Sketch see sheet No. 2

DESIGNED Dec. 1977  
DETAILED OCT. 1978  
CHECKED Nov. 1979

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

Sheet No. 1A of 20.

DATE Mar. 1, 1979

177

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	25	

Curve Data For S.B.L. I-435  
 P.I. Sta. 626 + 19.45  
 $\Delta = 64^\circ - 45' - 23''$  Rt.  
 $D = 3^\circ - 30'$   
 $T = 1038.01$   
 $L = 1850.18$   
 $R = 1637.02$

FINAL PLANS

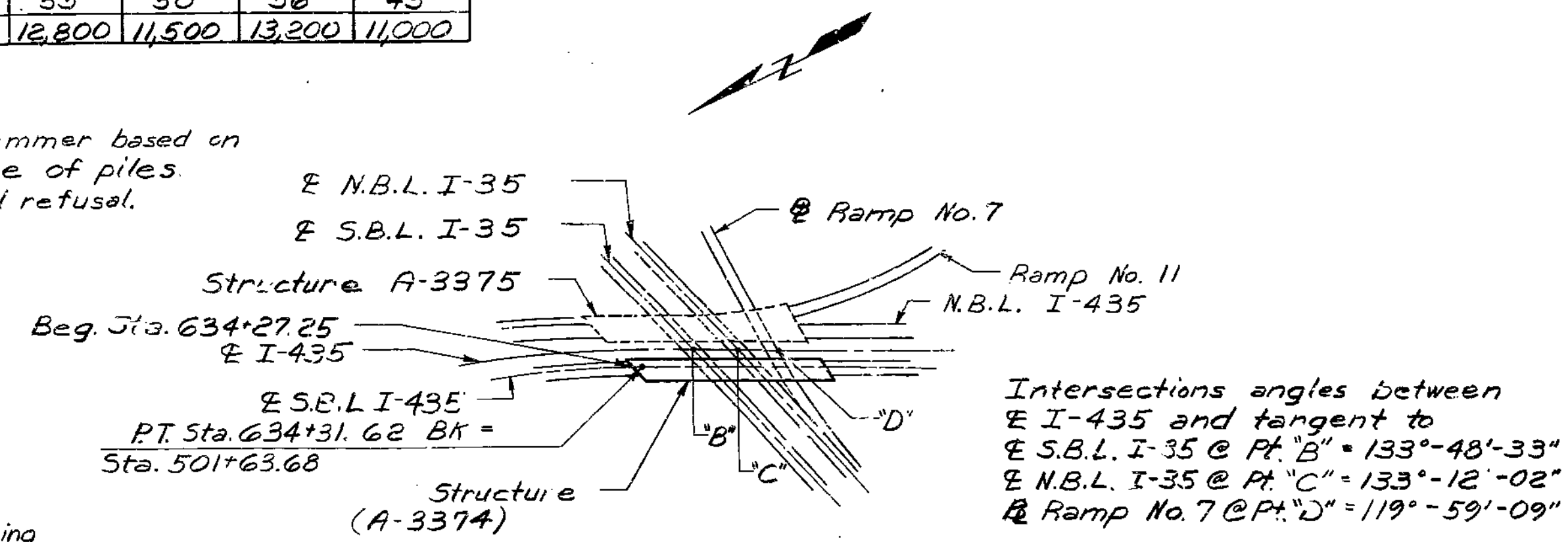
ESTIMATED QUANTITIES			
ITEM		SUBSTR.	SUPERSTR. TOTAL
Class 1 Excavation	Cu. Yd.	353.5	353.5
Structural Steel Pile (10")	Lin. Ft.	2968	2968
Class B Concrete	Cu. Yd.	262.4	262.4
Class B Concrete	Cu. Yd.		487.9
Reinforcing Steel	Lbs.	44,620	88,530
Reinforcing Steel (Epoxy Coated)	Lbs.	1,290	72,500
Fabricated Structural Carbon Steel	Lbs.		254,400
Fabricated Structural Low Alloy Steel	Lbs.		68,700
Painting (System "B" Alum)	Ton		160.2
Elastomeric Expansion Jt. Seal (3.0")	Lin. Ft.		102
Slab Drains	Each		7

Note: All Concrete and reinforcement in safety barrier curbs is included with superstructure quantities.

PILE DATA						
BENT NO.	WING PILE BENT NO.	1	2	3	4	5
Pile Type and Size: HP10 x 42						
Number		1	9	13	13	7
Approximate Length		Ft. 73	69	43	48	56
Design Bearing		Tons 7	45	55	50	45
Hammer Energy required		Ft. Lbs. 9,100	11,000	12,800	11,500	13,200

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

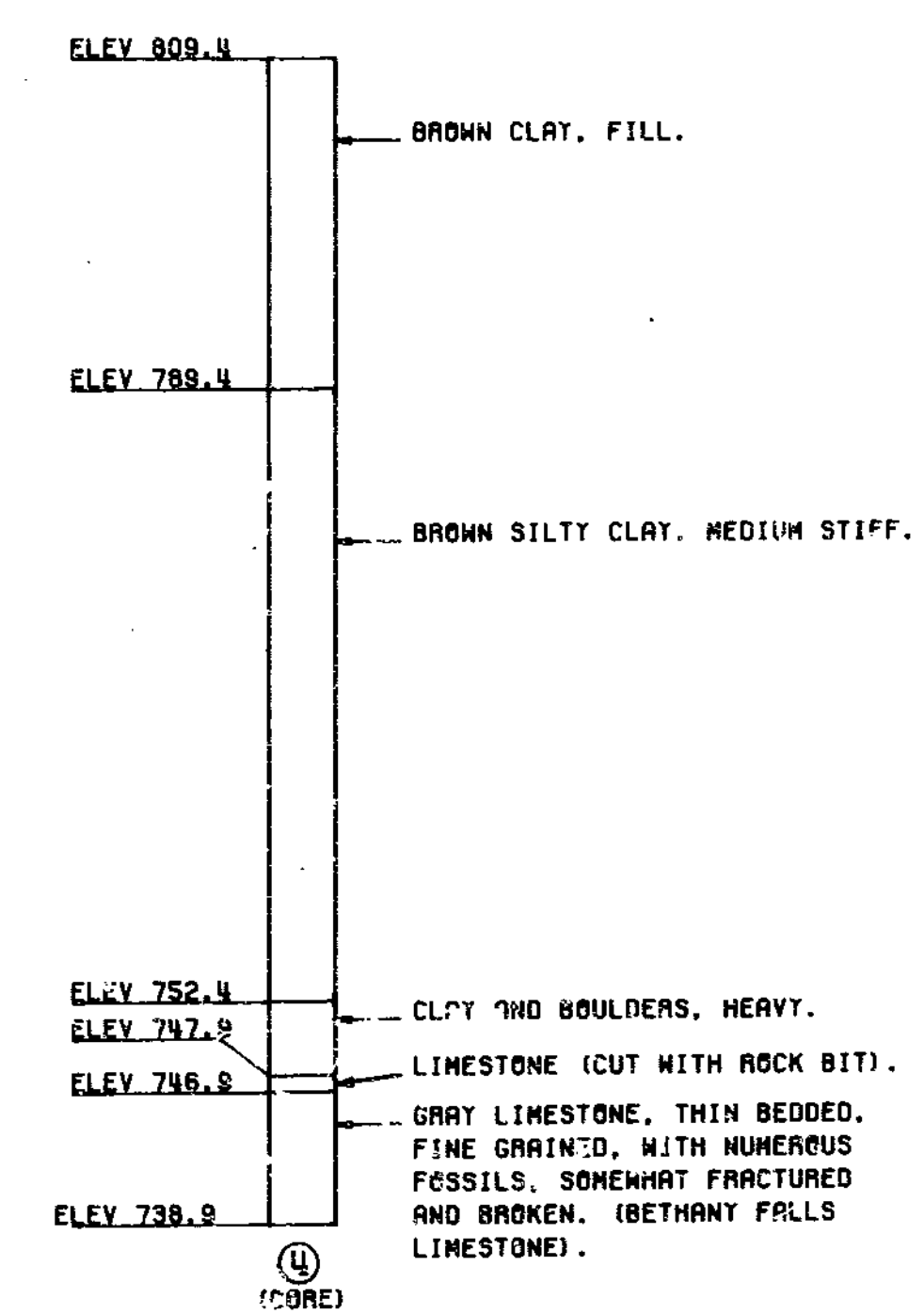
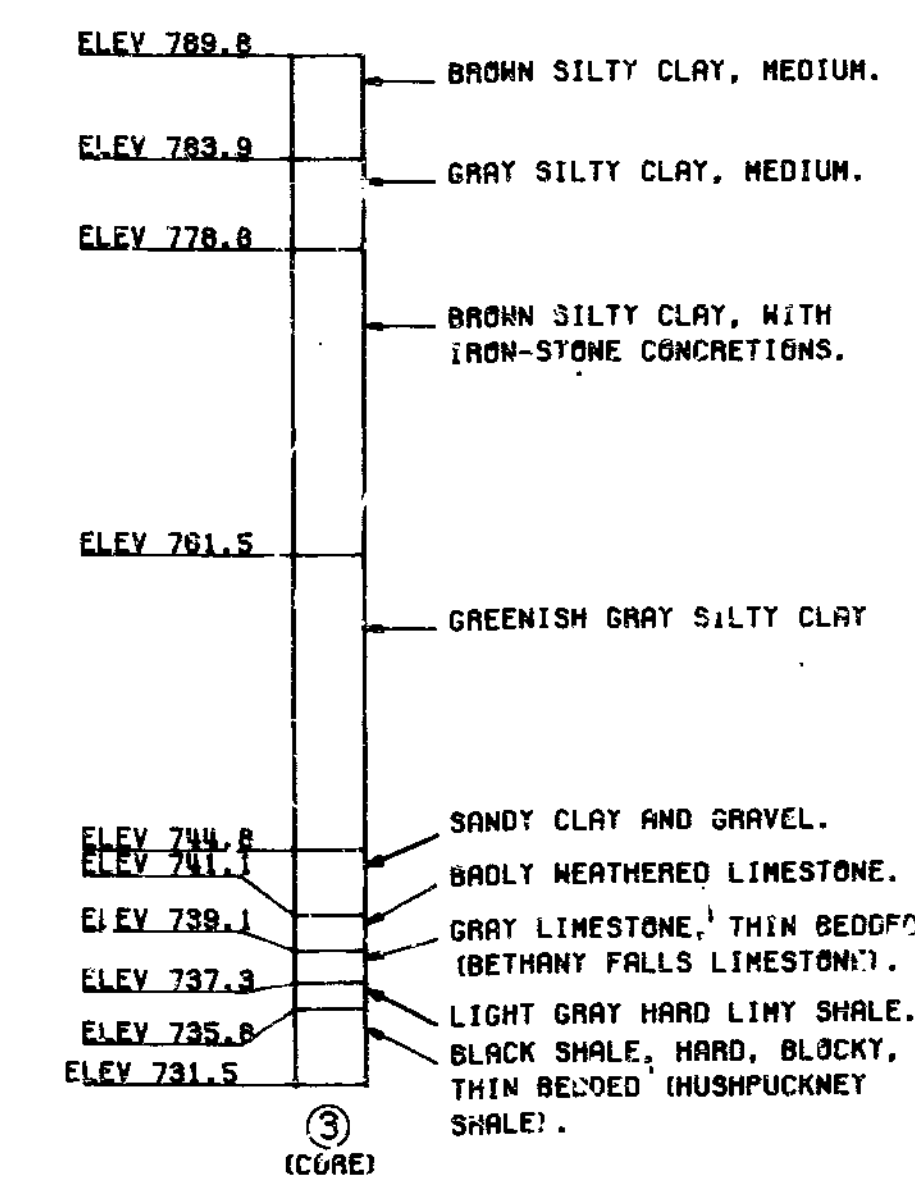
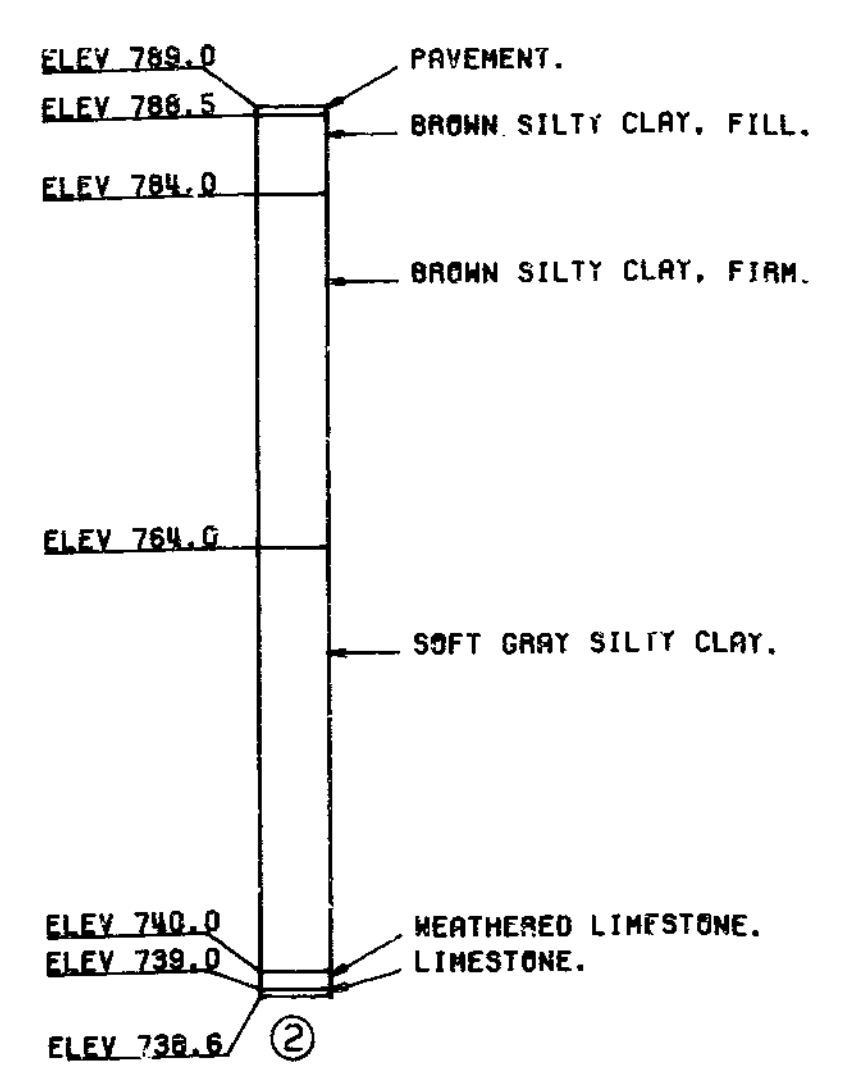
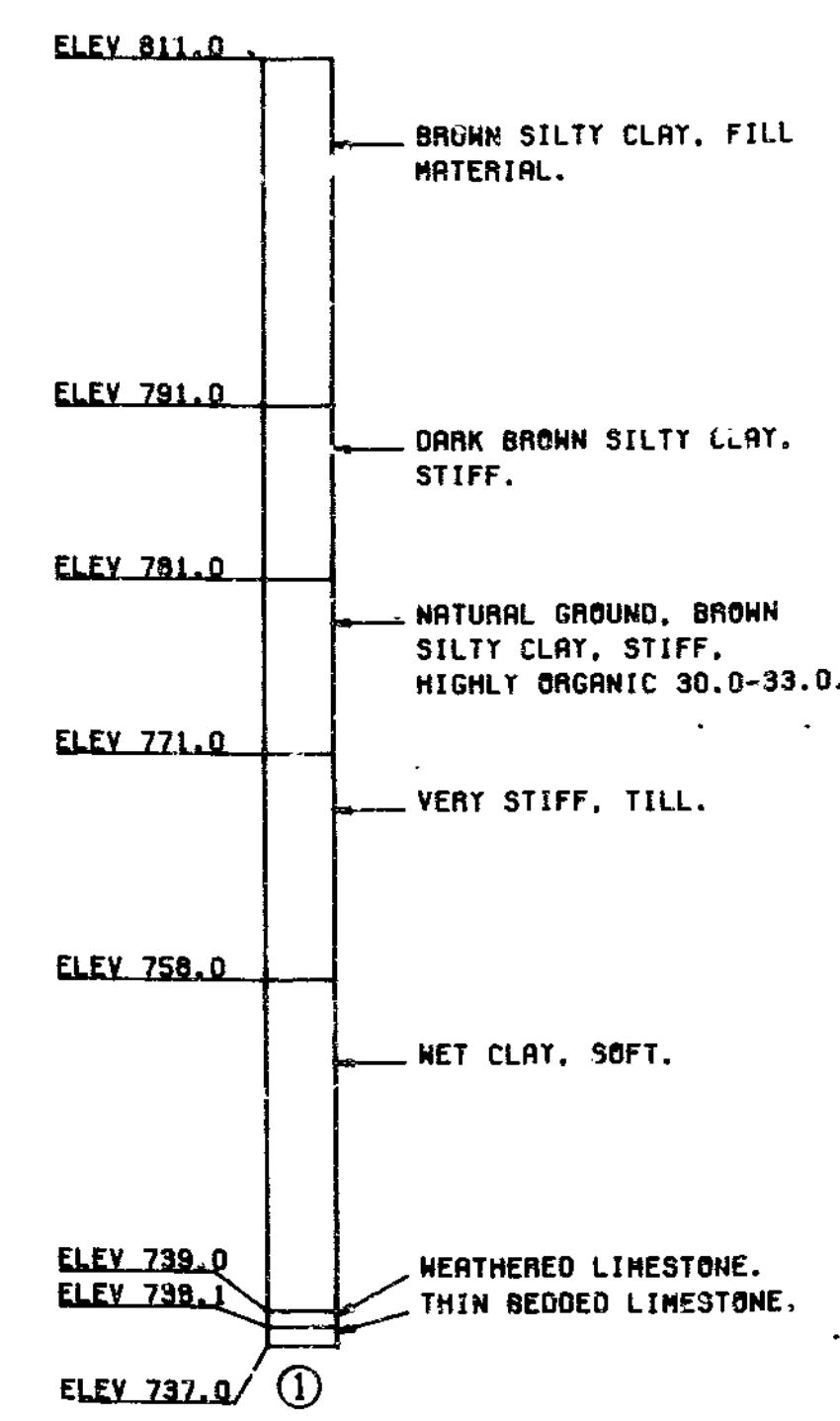
Note: Construction Clearance (Rte. I-35, N.B.L. & S.B.L.) A minimum Vertical Clearance of 15'-0" from existing lanes and a minimum Lateral Clearance of 28'-0" centered on existing lanes was maintained during construction.



Intersections angles between  
 $\angle$  I-435 and tangent to  
 $\angle$  S.B.L. I-35 @ Pt. "B" =  $133^\circ - 48' - 33''$   
 $\angle$  N.B.L. I-35 @ Pt. "C" =  $133^\circ - 12' - 02''$   
 $\angle$  Ramp No. 7 @ Pt. "D" =  $119^\circ - 59' - 09''$

"B" Sta. 502+62.44  $\angle$  I-435 = Sta. 538+07.50  $\angle$  S.B.L. I-35  
 "C" Sta. 503+40.10  $\angle$  I-435 = Sta. 537+55.55  $\angle$  N.B.L. I-35  
 "D" Sta. 504+07.96  $\angle$  I-435 = Sta. 5+42.10  $\angle$  Ramp No. 7

178



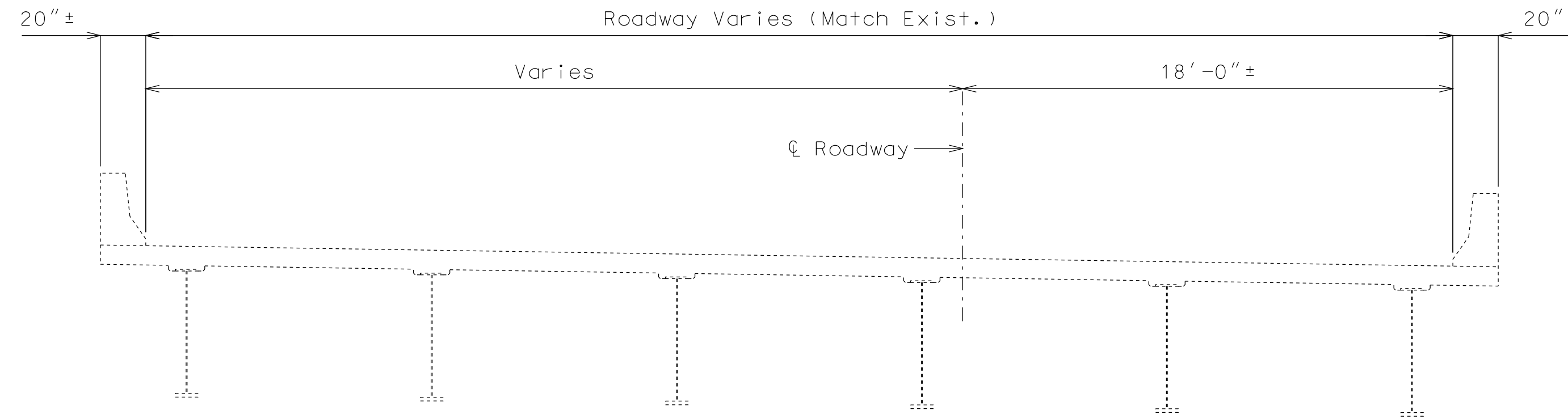
BORING DATA

Note: For location of boring see sheet No. 1 of 20.

**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**  
**U.I.P. & Rehabilitate Existing (74'-101'-131'-4') Continuous**  
**Composite Plate Girder Spans, (43.5') Simple Non-Composite**  
**Plate Girder Span**

SEC/SUR 27      TWP 51N      RGE 32W

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."



**SECTION THRU EXISTING SLAB**

**General Notes:**

**Design Specifications:**

2002 - AASHTO 17th Edition  
 Load Factor Design  
 Seismic Performance Category A  
 Bridge Deck Rating = 7

**Design Loading:**

HS20-44 Military 24,000# Tandem Axle (1977 & New Construction)  
 15#/Sq. Ft. Future Wearing Surface  
 Fatigue Stress - Case I

**Design Unit Stresses:**

Class B-1 Concrete (Superstructure and Safety Barrier Curb)       $f'c = 4,000$  psi  
 Reinforcing Steel (Grade 60)       $fy = 60,000$  psi

**Reinforcing Steel:**

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

**Structural Steel Protective Coatings**

(Existing structural steel near End Bents and near Int. Bent No. 4):  
 Protective Coating: System G in accordance with Sec 1081.

**Coating Limits:** All existing structural steel within 10 feet from end of girders at End Bents No. 1 & 5 and within 10 feet each side of  $\phi$  expansion joint near Int. Bent No. 4.

**Surface Preparation:** Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G, H or I)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Recoating Structural Steel".

**Prime Coat:** The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Field Application of Inorganic Zinc Primer". Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

**Field Coat:** The color of the field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for "Intermediate Field Coat (System G)". The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for "Finish Field Coat (System G)".

Sec 1081.4.5 shall be modified such that the word "RECOATED" is replaced by the word "RECOATED - SYSTEM G - EXPANSION AREAS ONLY".

**Concrete Protective Coatings:**

Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

**General Notes (Cont.):**

**Miscellaneous:**

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

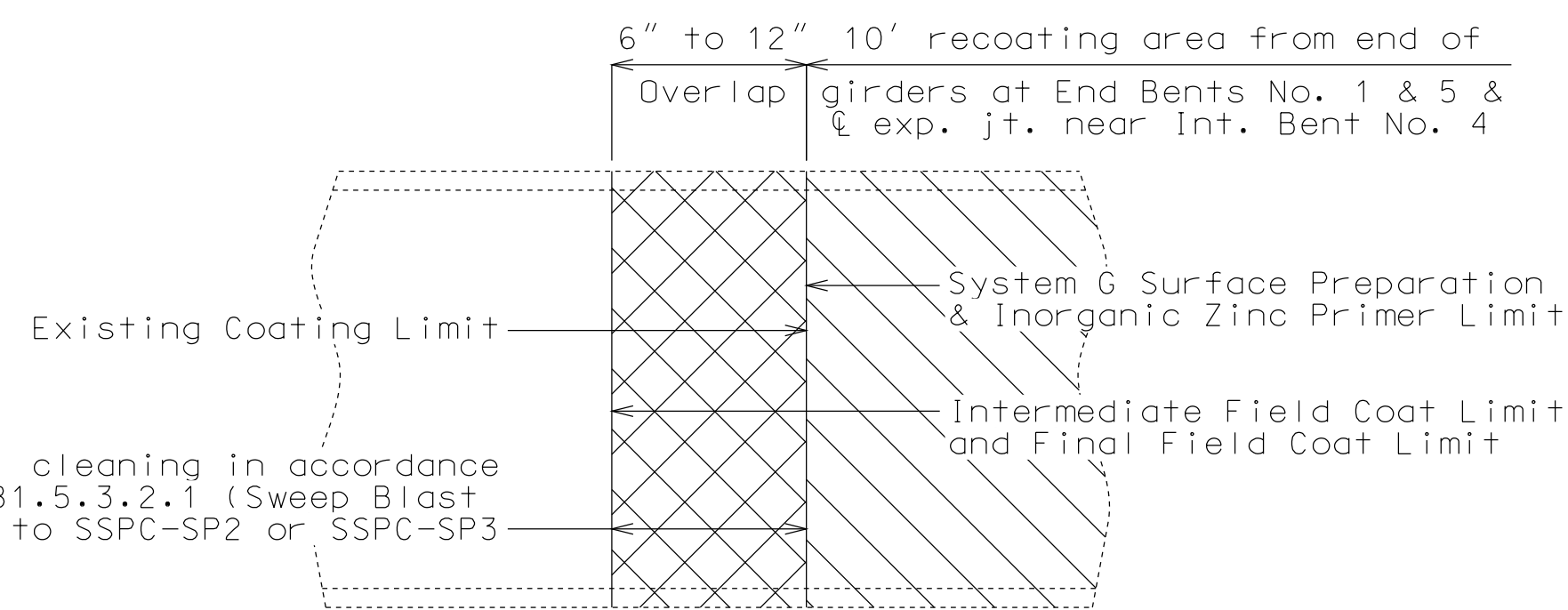
Contractor shall verify all dimensions in field before ordering new material.

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

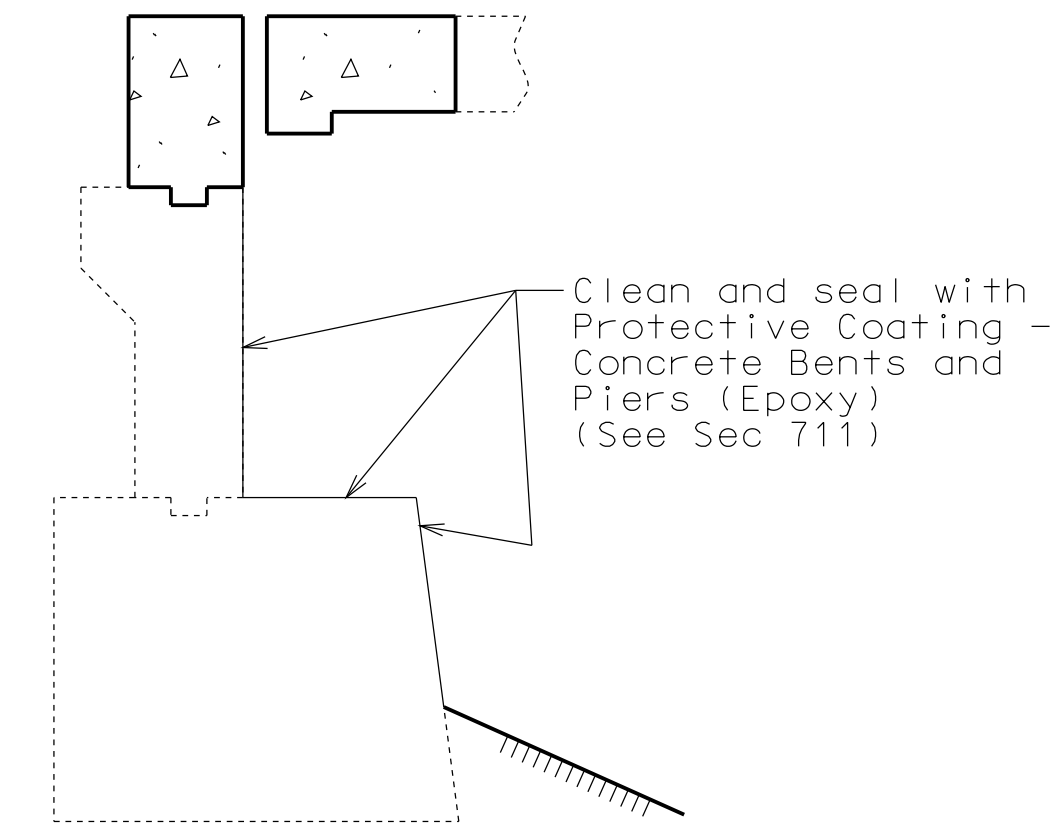
**Traffic Handling:**

Traffic over structure to be maintained during construction. See Sheet No. 2 for Staging Details.

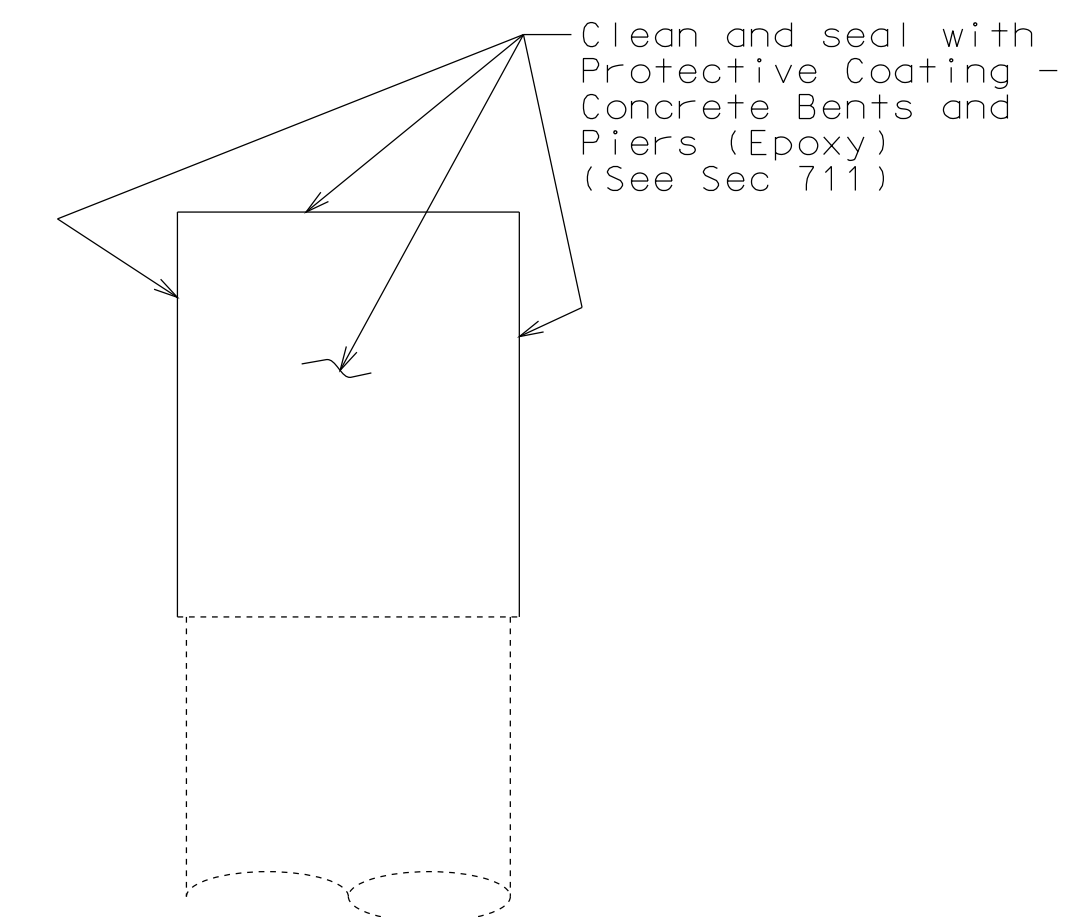
Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	211
Remove and Replace Barrier Curb	linear foot	26
Class B-1 Concrete	cu. yard	26.7
Reinforcing Steel (Epoxy Coated)	pound	710
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Surface Preparation for Recoating Structural Steel	sq. foot	4200
Field Application of Inorganic Zinc Primer	sq. foot	4200
Intermediate Field Coat (System G)	sq. foot	4200
Finish Field Coat (System G)	sq. foot	4200
Strip Seal Expansion Joint System	linear foot	211



**PART ELEVATION SHOWING LIMITS OF PAINT OVERLAP**  
 (Vertical or horizontal paint limit. Horizontal limit shown)



**TYPICAL SECTION THRU  
 END BENTS NO. 1 & 5  
 SHOWING PROTECTIVE COATING**



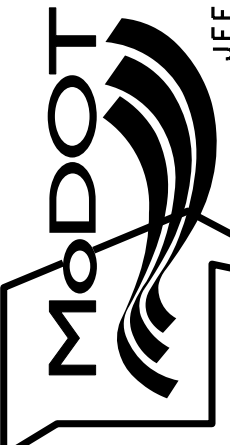
**TYPICAL SECTION THRU  
 INT BENT NO. 4  
 SHOWING PROTECTIVE COATING**

**REPAIRS TO BRIDGE: I-435 N & RAMP  
 11 (RTE. 69 TO I-435 N) OVER I-35  
 & RAMP 7 (I-35 N TO I-435 N)**  
 STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

DATE PREPARED 12/12/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33751	

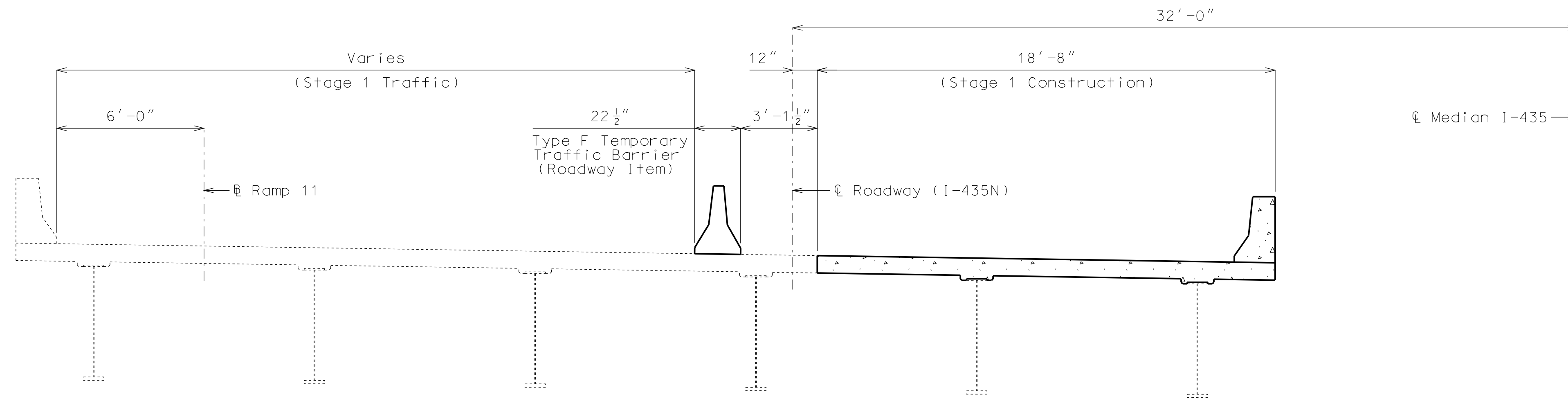
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

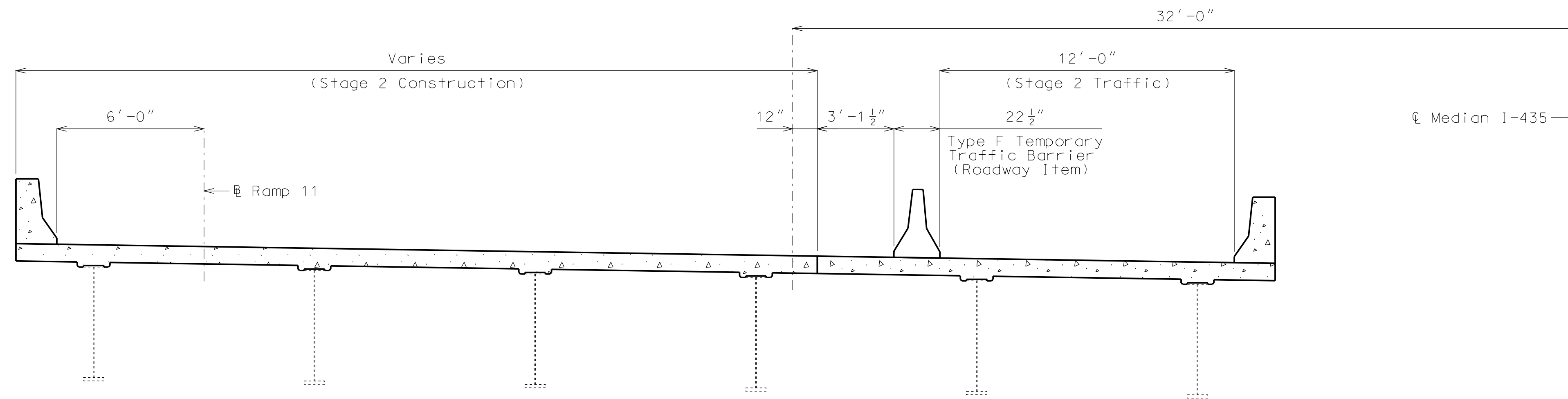


105 WEST CAPITOL  
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION

Note:  
Temporary Barrier shall not be attached to the bridge.

DETAILS SHOWING STAGED CONSTRUCTION

Detailed May 2012  
Checked July 2012


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

Sheet No. 2 of 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

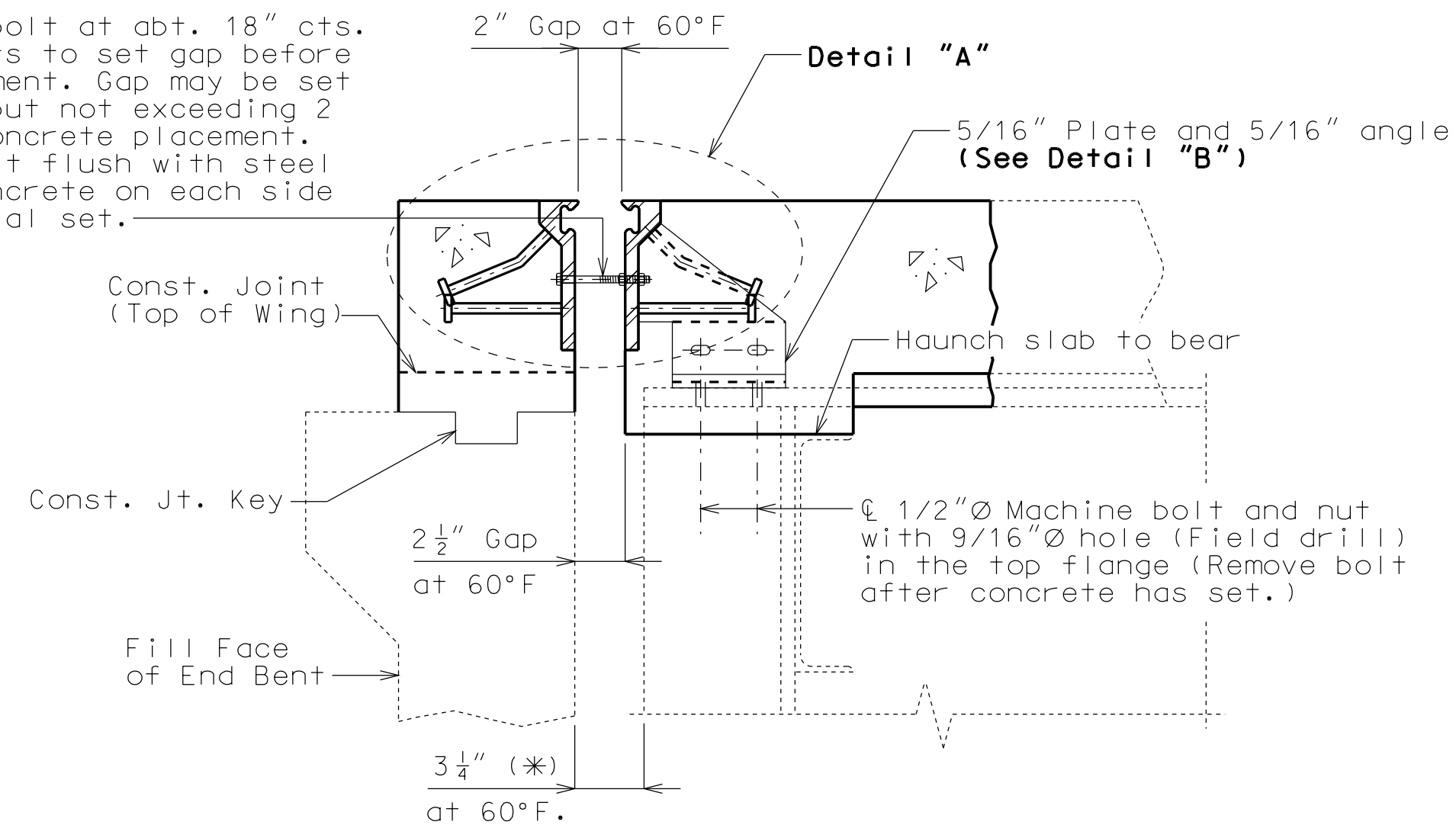
DATE PREPARED  
12/12/2012  
ROUTE I-435 STATE MO  
DISTRICT BR SHEET NO. 2  
COUNTY CLAY  
JOB NO. J412381  
CONTRACT ID.  
PROJECT NO.  
BRIDGE NO. A33751

DESCRIPTION	DATE

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

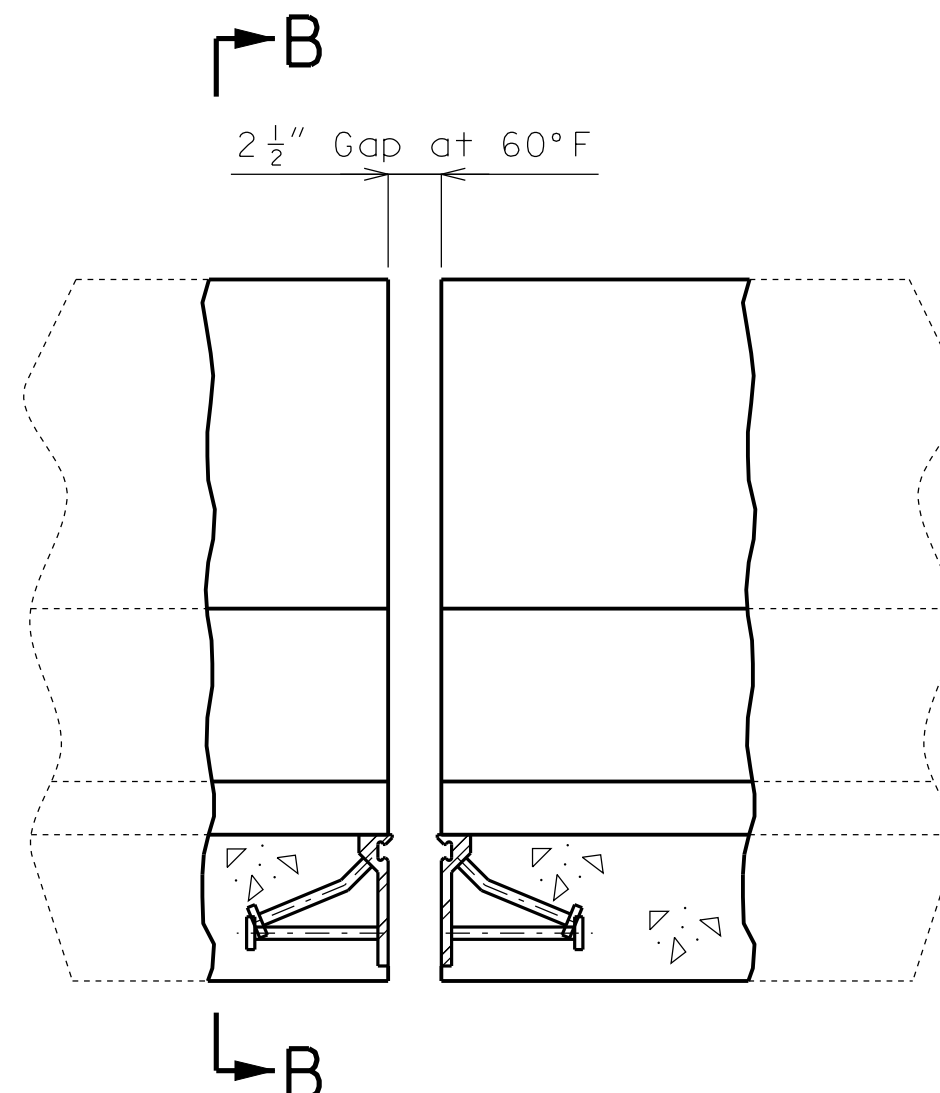
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

1/2"Ø Machine bolt at abt. 18" cts. Use two hex nuts to set gap before concrete placement. Gap may be set anytime up to but not exceeding 2 hours before concrete placement. Cut machine bolt flush with steel armor after concrete on each side has taken initial set.



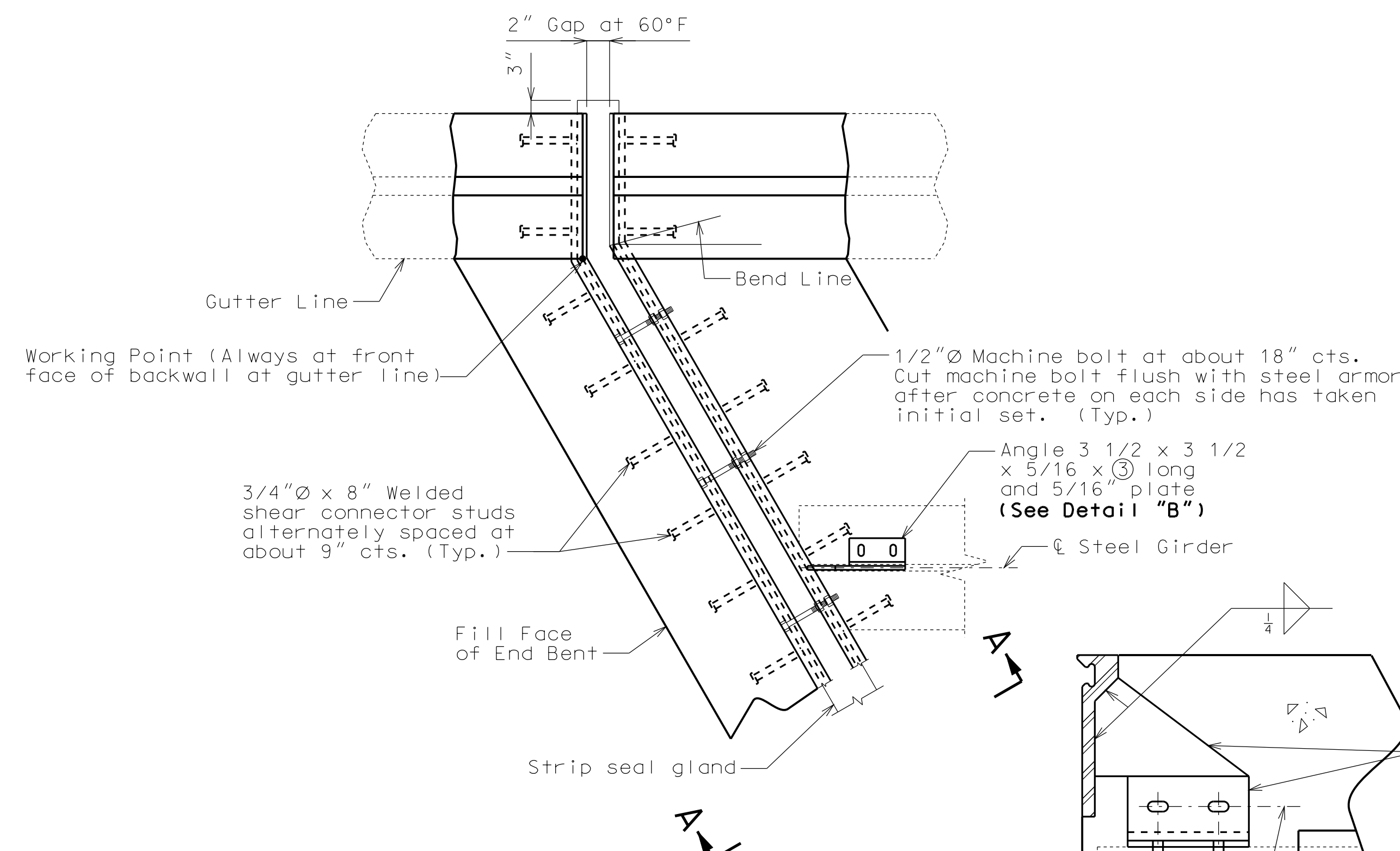
SECTION A-A

Note: Strip seal gland not shown for clarity.

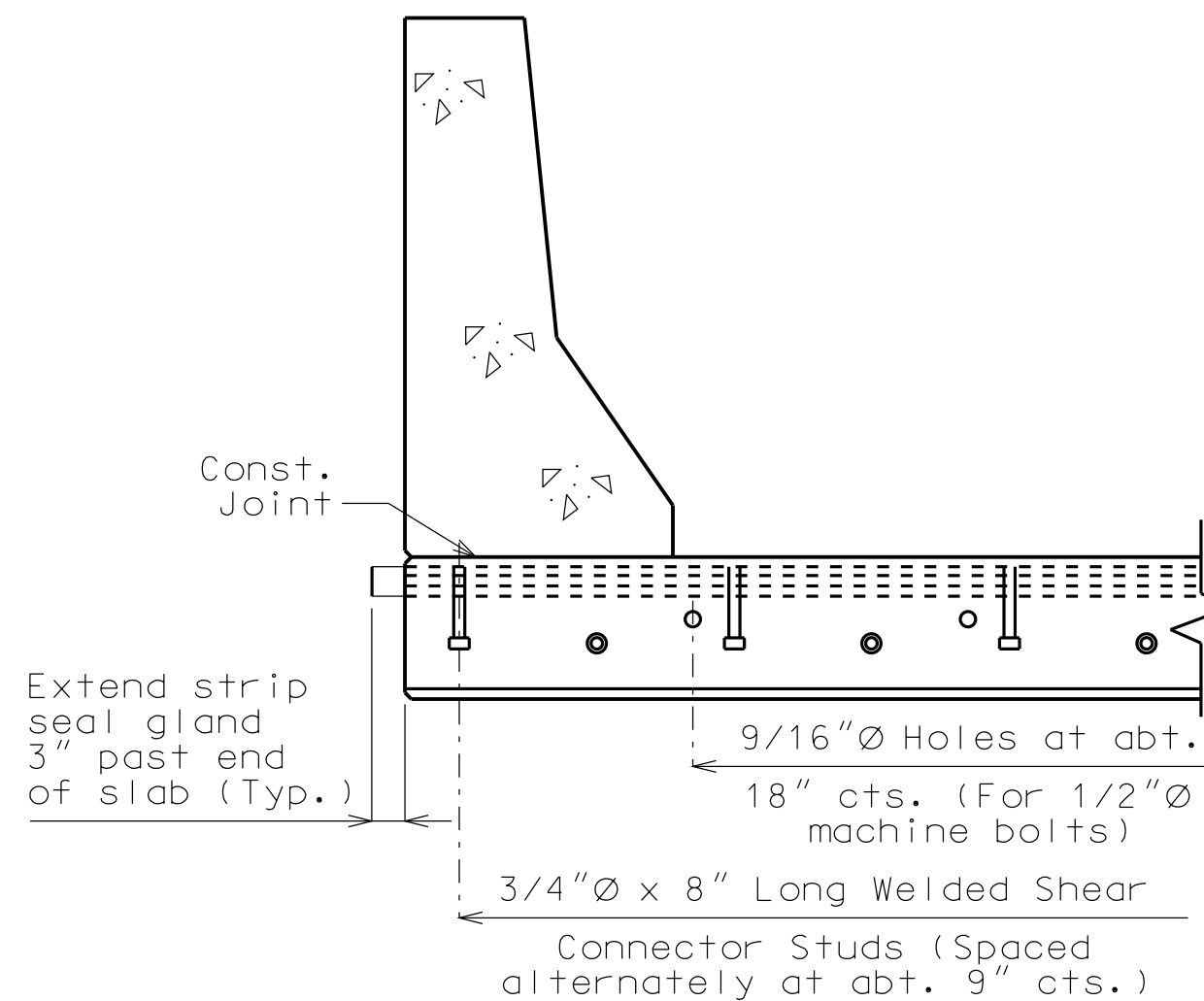


Note: Strip seal gland not shown for clarity.

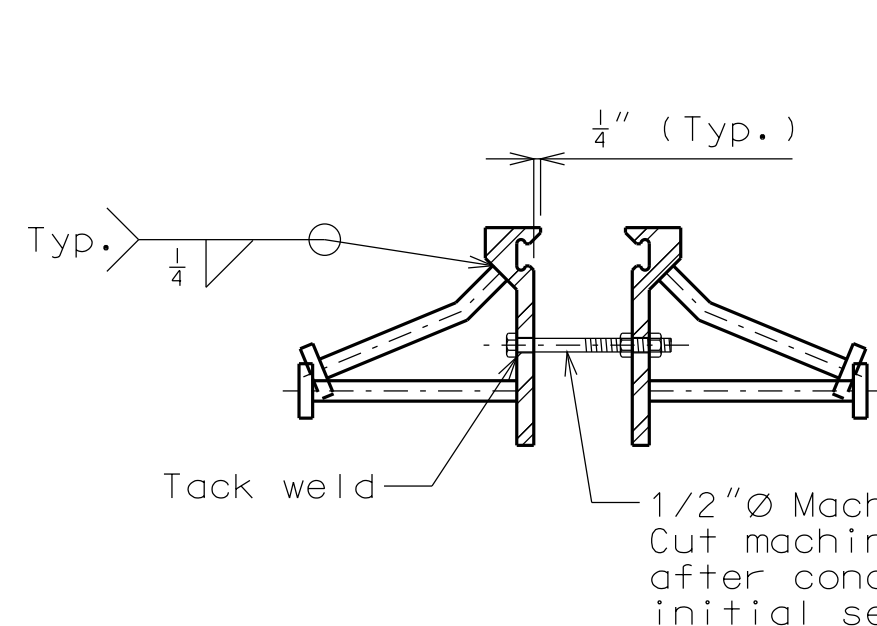
PART ELEVATION OF BARRIER CURB



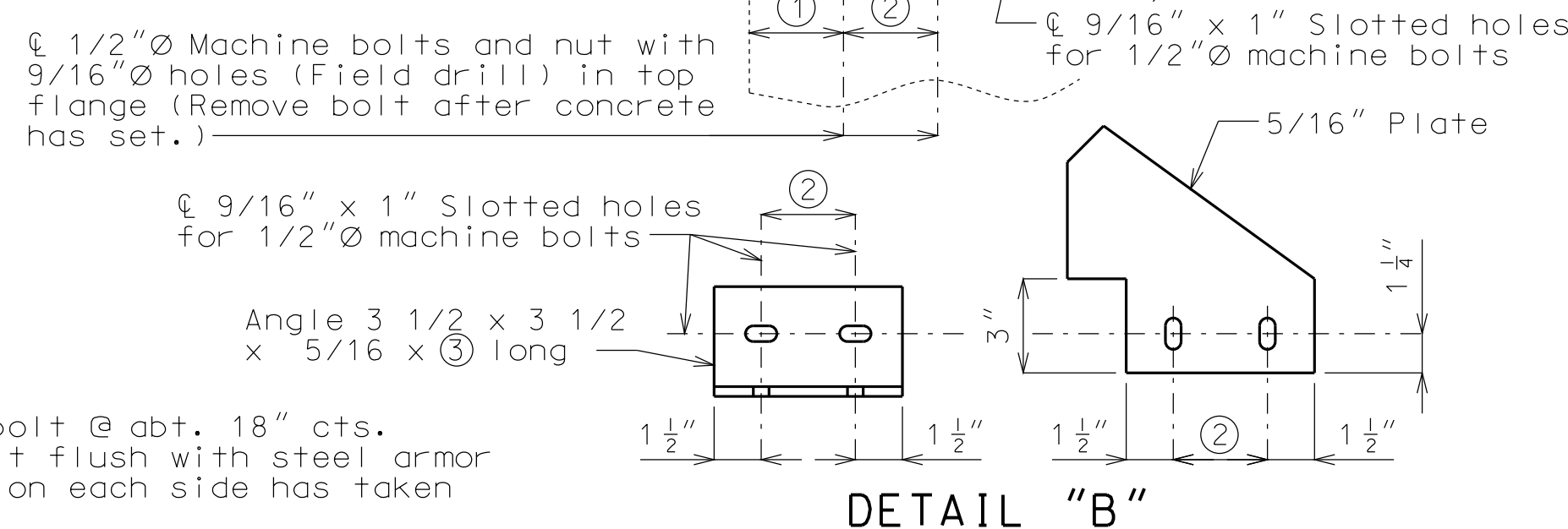
PART PLAN



PART SECTION B-B

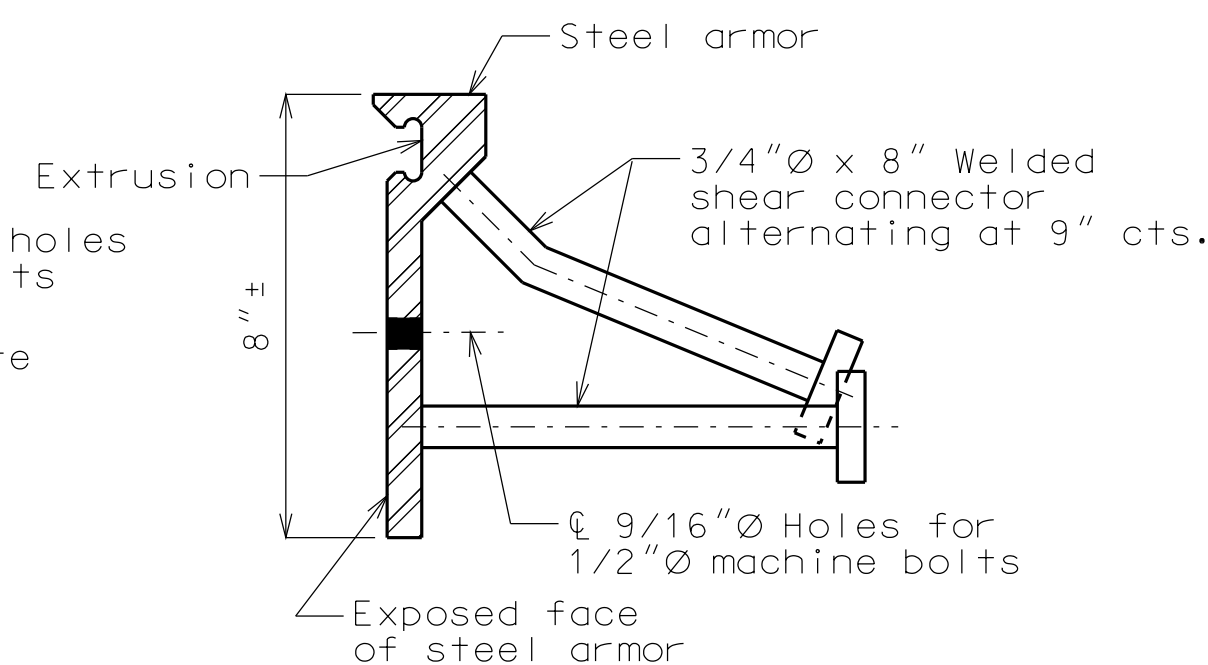


DETAIL "A"

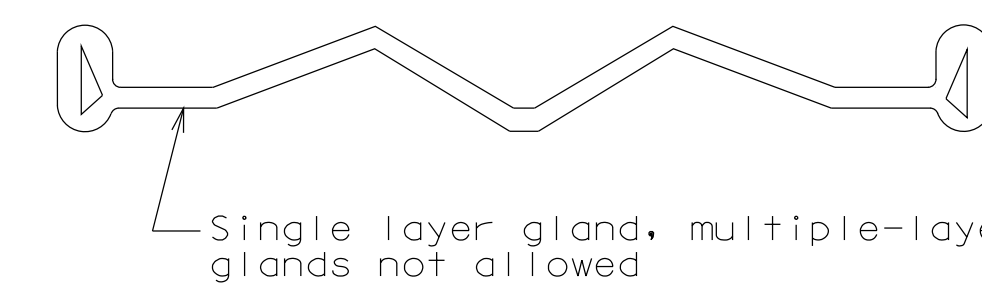


DETAIL "B"

DETAILS OF STRIP SEAL AT END BENTS NO. 1 & 5



DETAIL OF JOINT ARMOR



DETAIL OF GLAND

GENERAL NOTES:

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

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

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

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

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

Longitudinal reinforcing steel shall be placed so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

(\*) Match existing.

- ① 3"(\*) (End Bent No. 1)  
3 3/8"(\*) (End Bent No. 5, Girders 1 & 8)  
3 5/8"(\*) (End Bent No. 5, Girders 2 thru 7)
- ② 3"(\*) (End Bent No. 1)  
4"(\*) (End Bent No. 5)
- ③ 6"(\*) (End Bent No. 1)  
7"(\*) (End Bent No. 5)

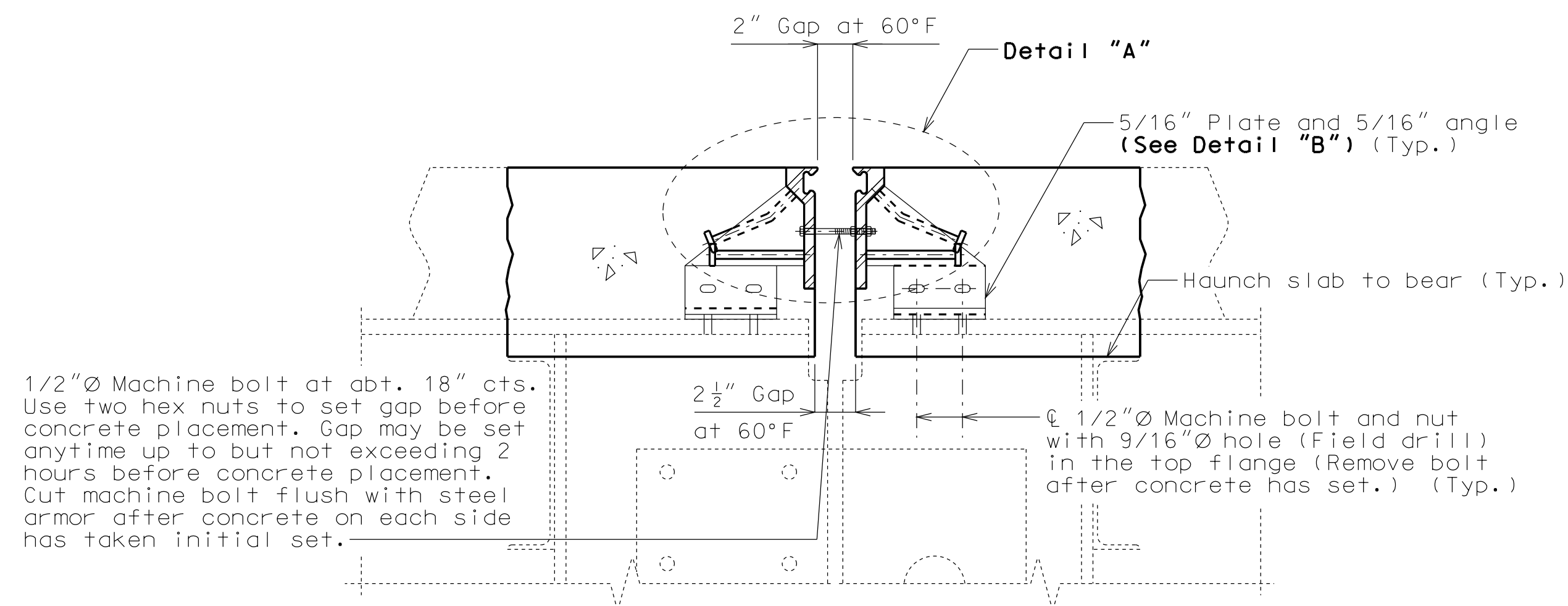
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/12/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33751	

DESCRIPTION	DATE

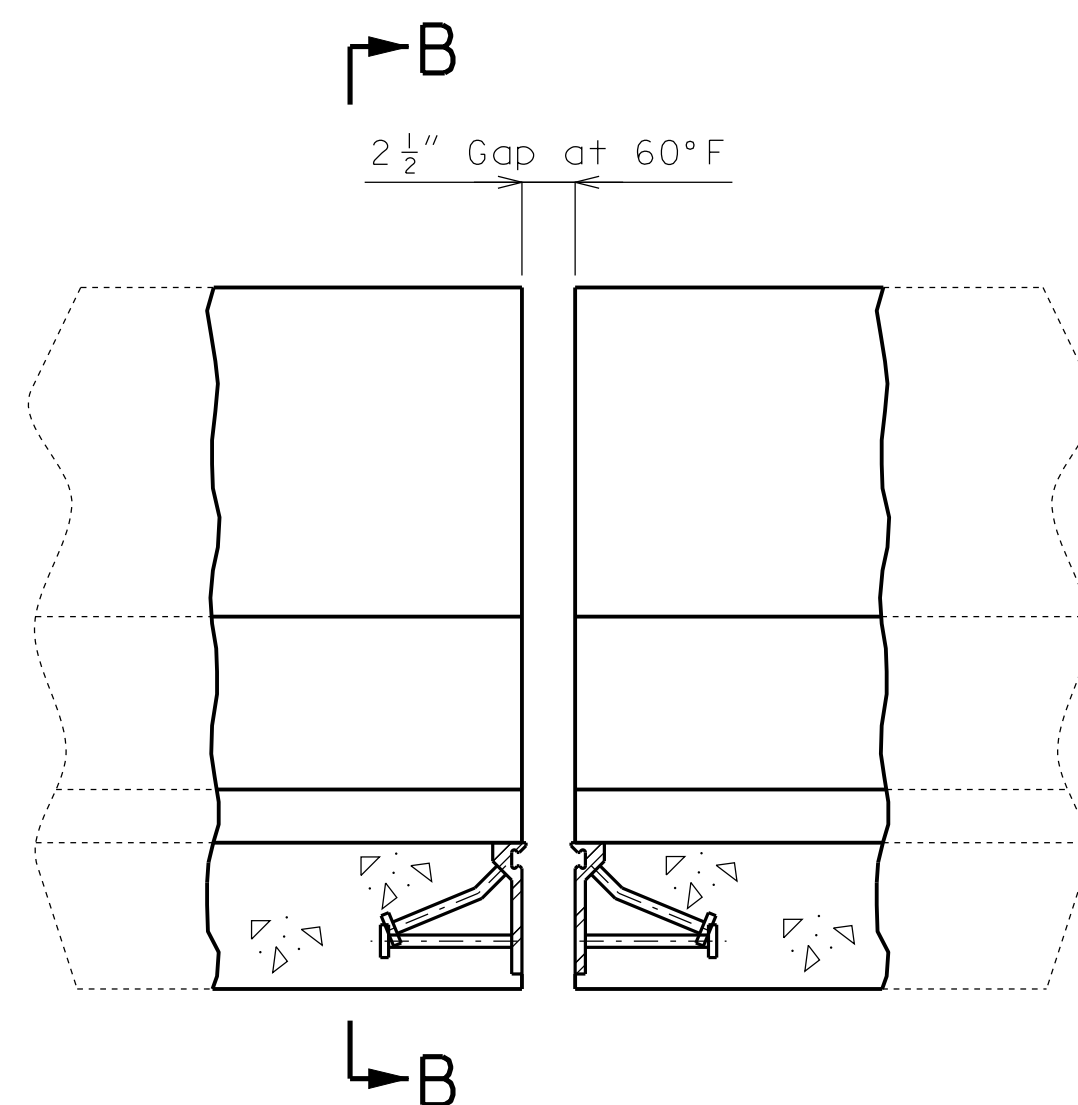
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

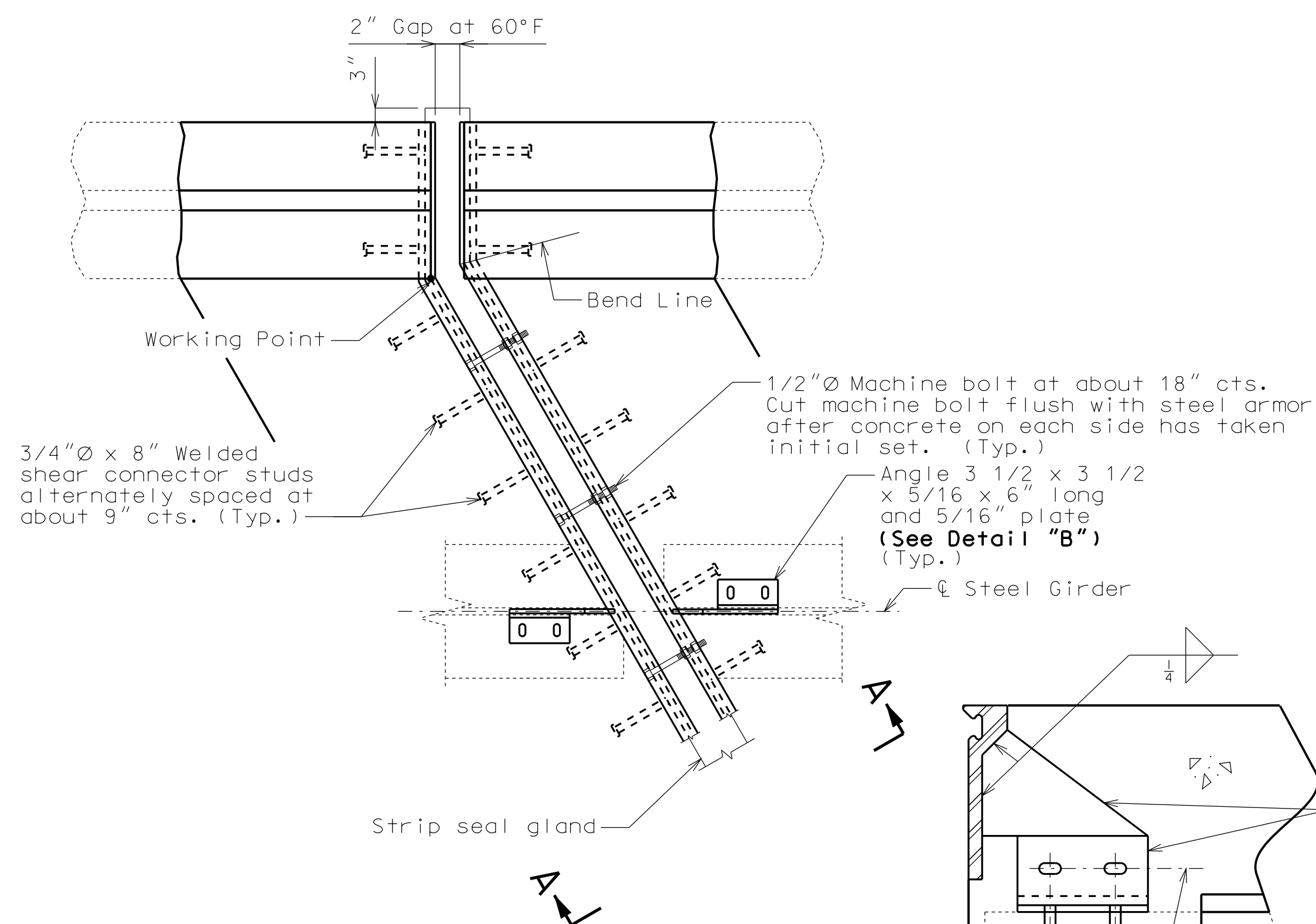


**SECTION A-A**

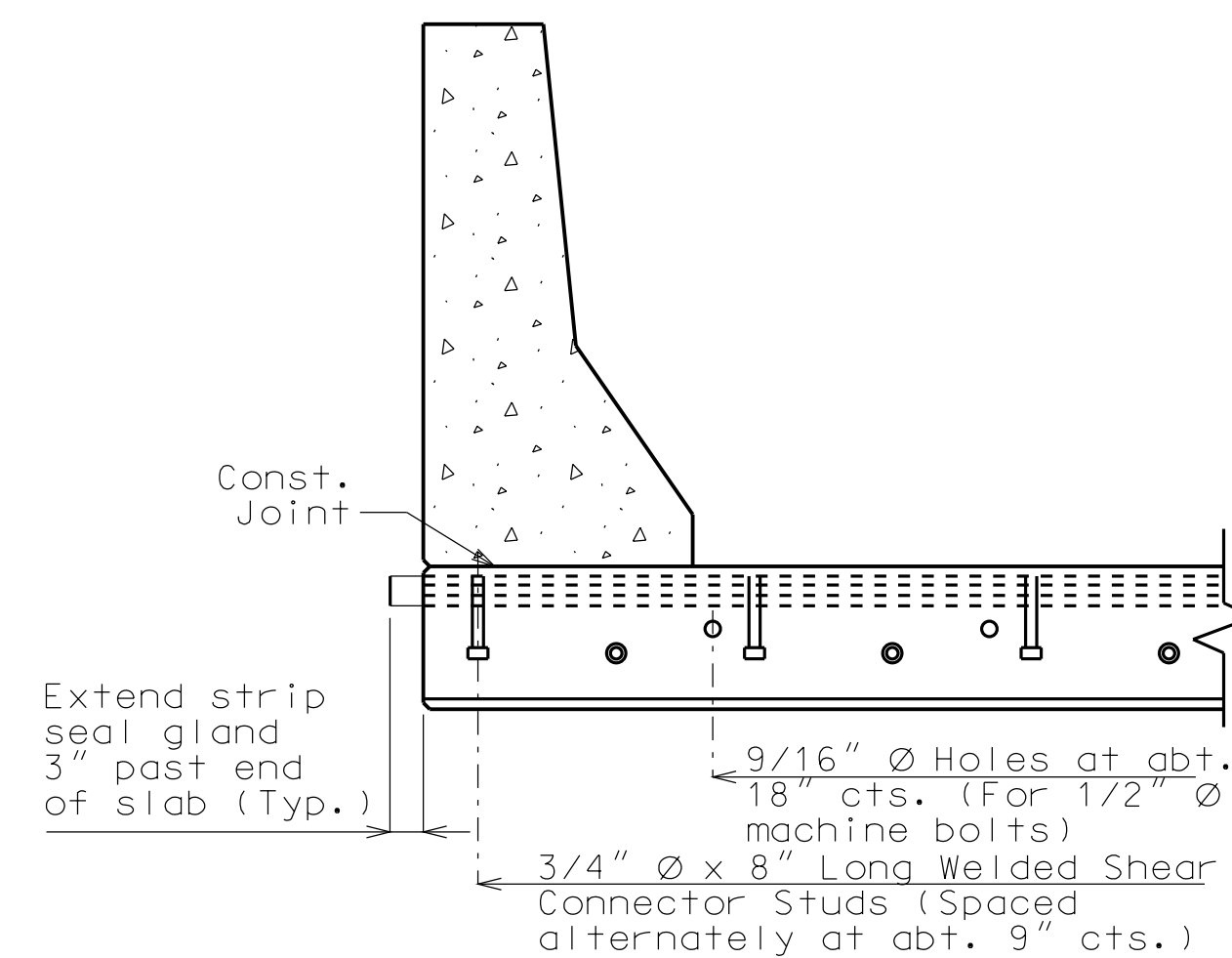
Note: Strip seal gland not shown for clarity.



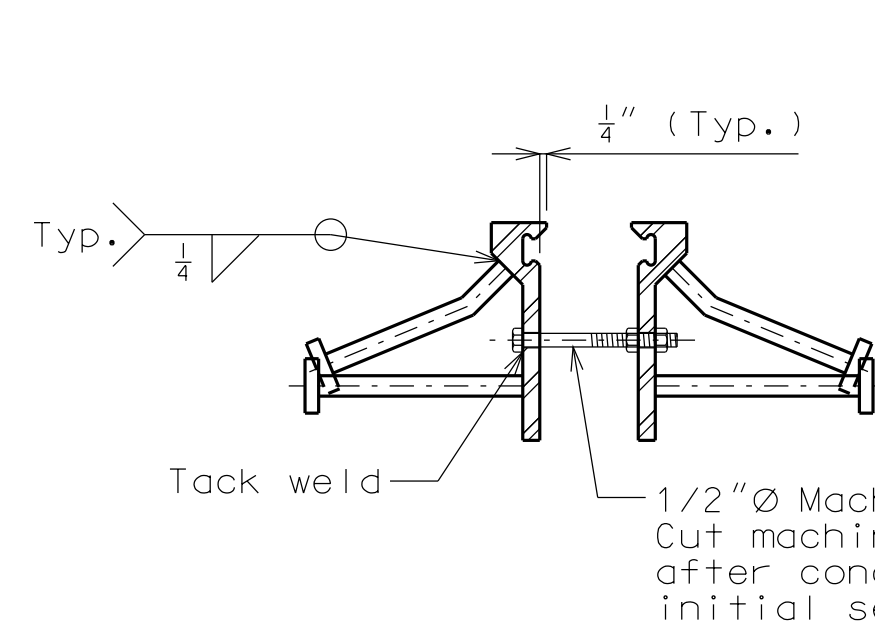
Note: Strip seal gland not shown for clarity.  
**PART ELEVATION OF BARRIER CURB**



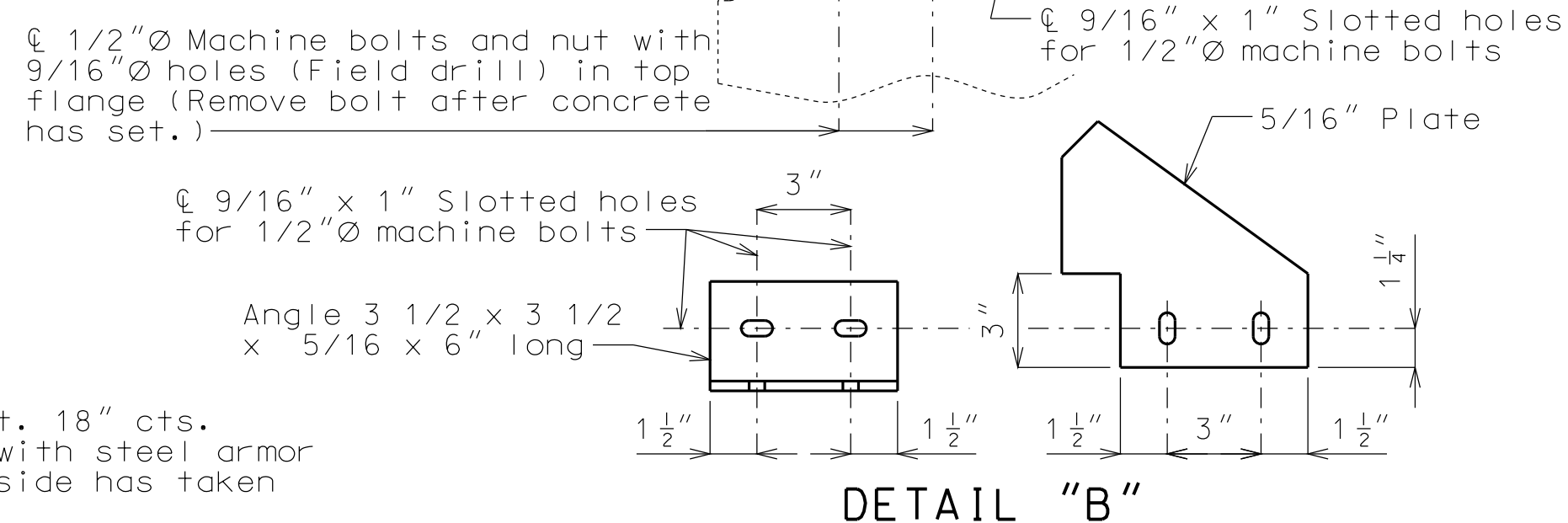
**PART PLAN**



**PART SECTION B-B**

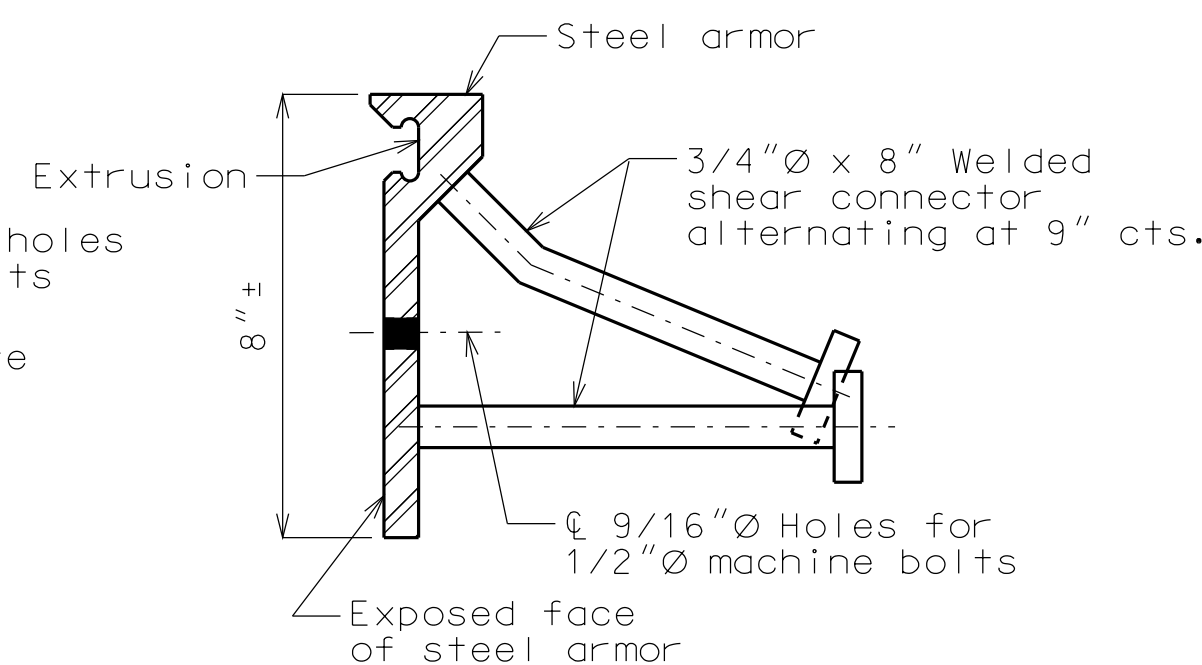


**DETAIL "A"**

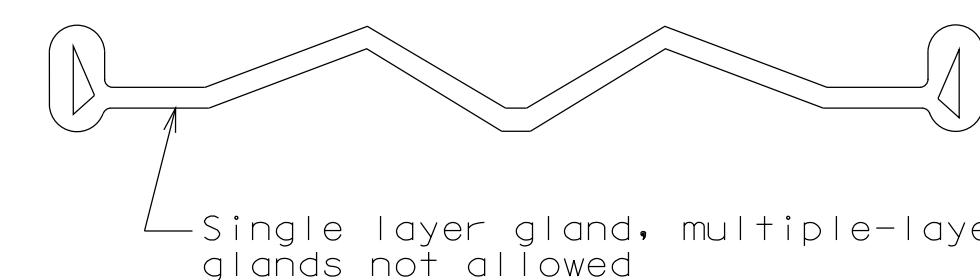


**DETAIL "B"**

**DETAILS OF STRIP SEAL AT NEAR INTERMEDIATE BENT NO. 4**



**DETAIL OF JOINT ARMOR**



**DETAIL OF GLAND**

**GENERAL NOTES:**

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

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

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

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

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 0" for each 10° fall or rise in temperature at installation.

Longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

(\* Match existing.)

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DATE PREPARED		12/12/2012	
ROUTE	STATE		
I-435	MO		
DISTRICT	SHEET NO.		
BR	4		
COUNTY			
CLAY			
JOB NO.			
J412381			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			
A33751			

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
12/12/2012

ROUTE I-435 STATE MO  
DISTRICT BR SHEET NO. 5

COUNTY CLAY  
JOB NO. J412381  
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33751

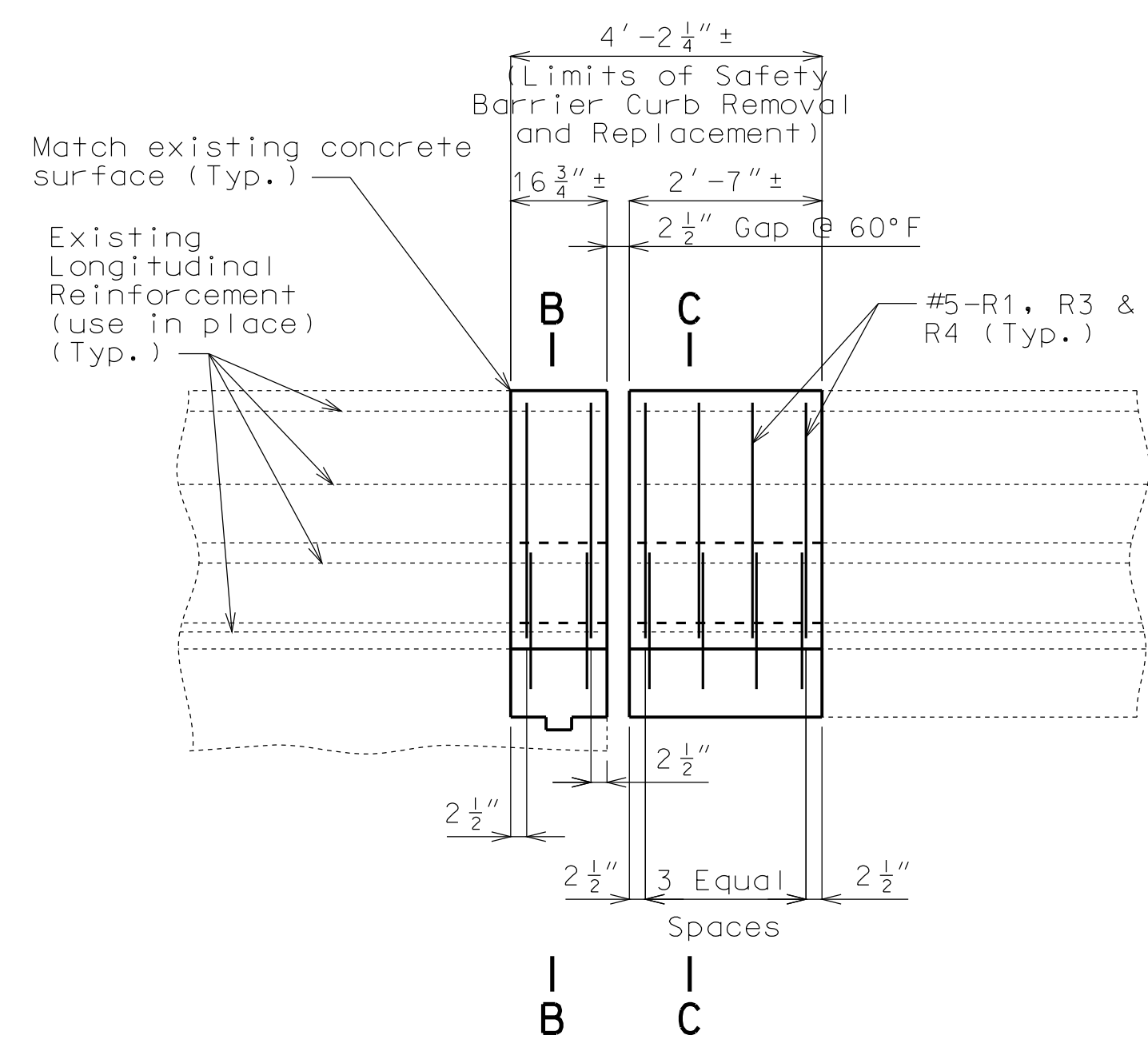
DESCRIPTION	DATE

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

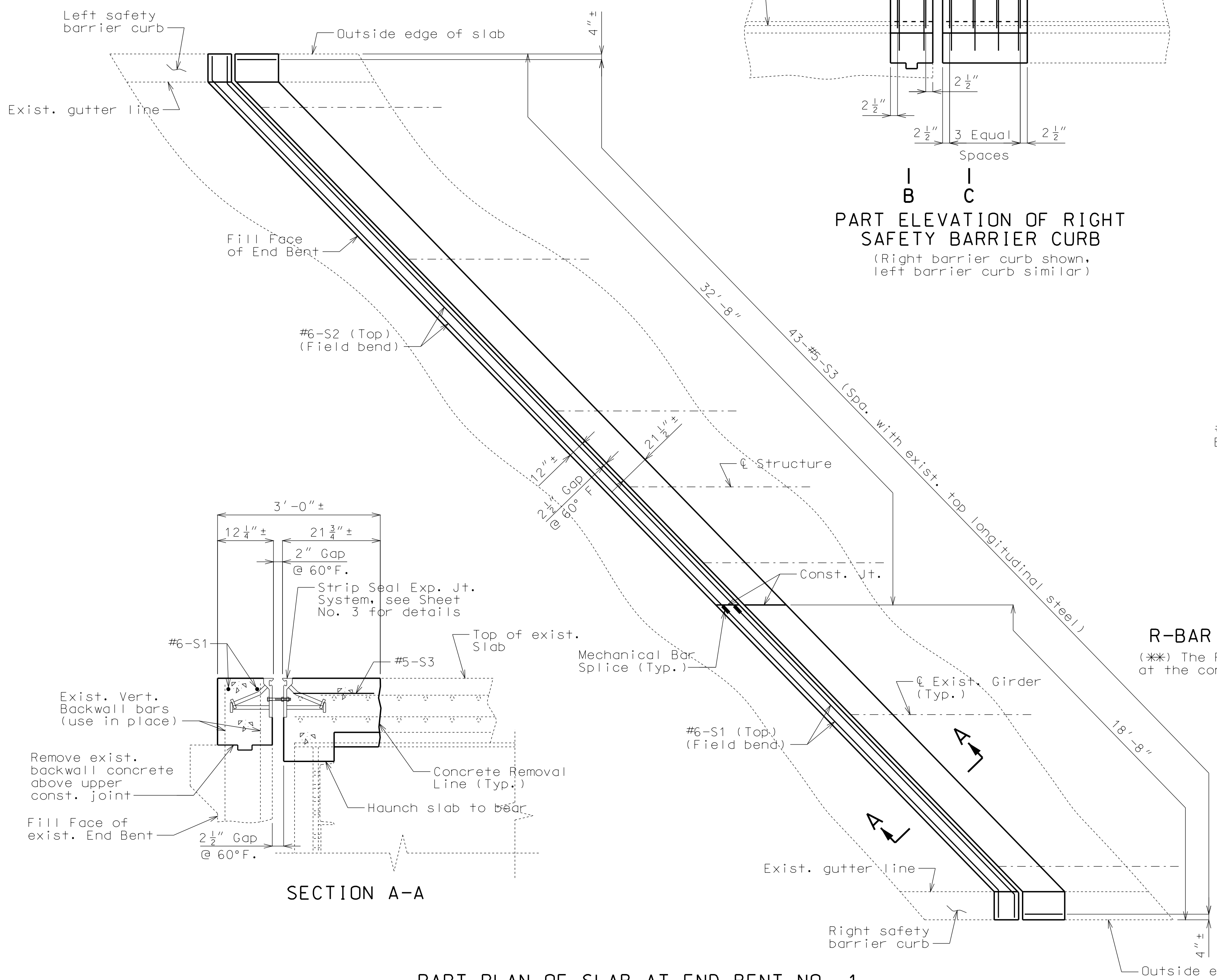
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Notes:  
 The contractor shall use a mechanical bar splice for #6-S1 & S2 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.

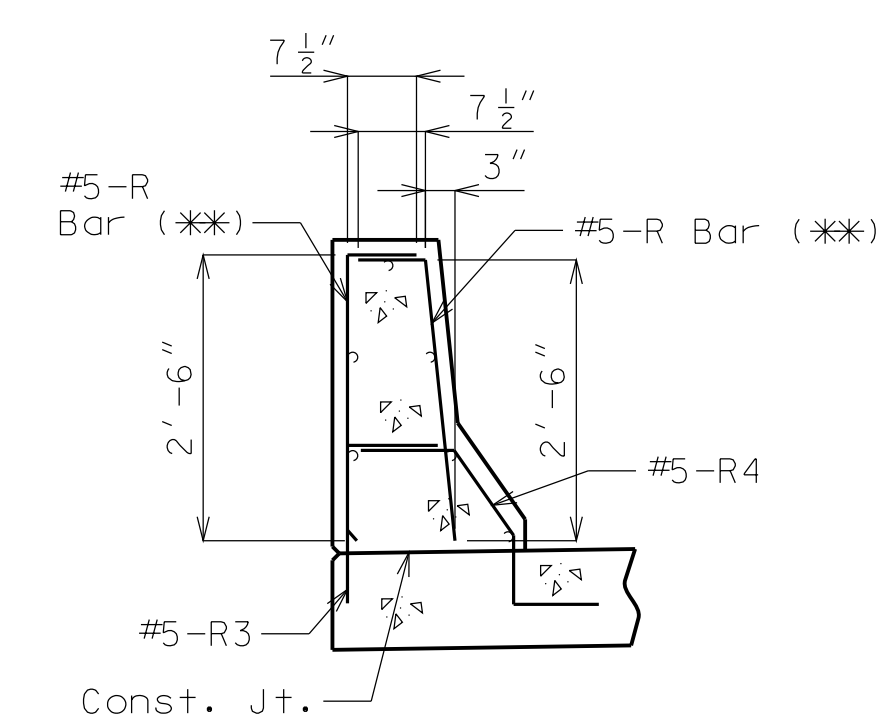
Payment for all concrete and reinforcement for safety barrier curb, complete-in-place, will be considered completely covered by the contract unit price for Remove and Replace Barrier Curb per linear foot.



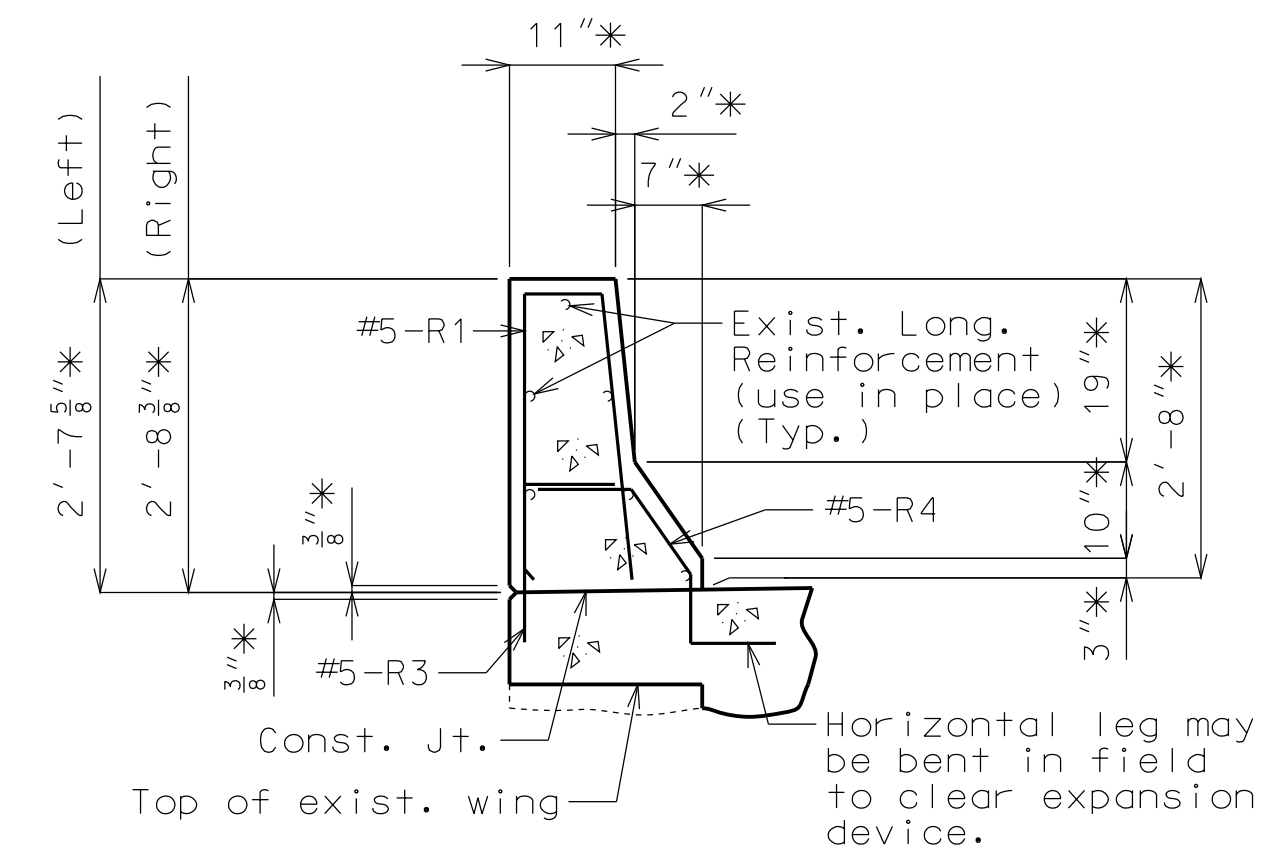
**PART ELEVATION OF RIGHT SAFETY BARRIER CURB**  
 (Right barrier curb shown, left barrier curb similar)



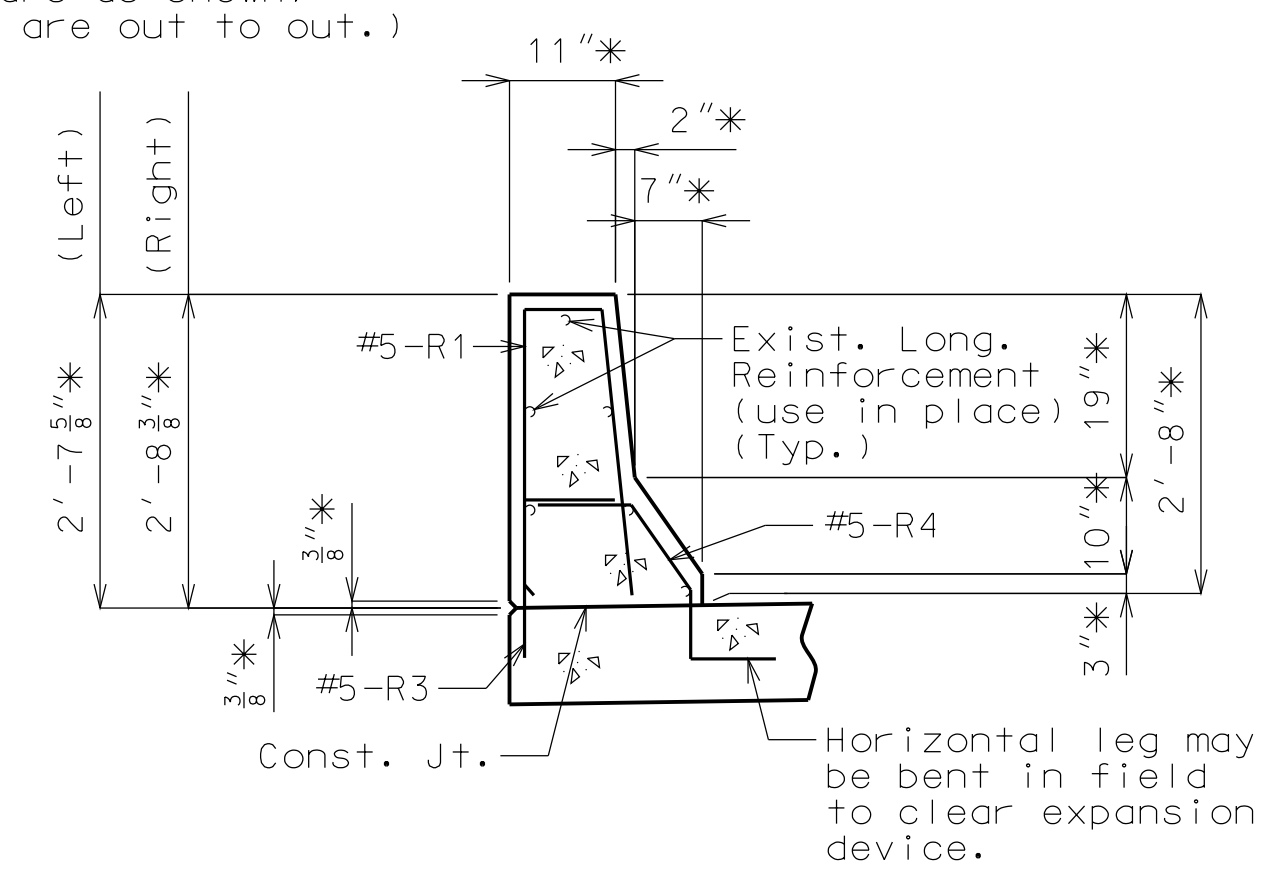
**PART PLAN OF SLAB AT END BENT NO. 1**



**R-BAR PERMISSIBLE ALTERNATE SHAPE**  
 (\*\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



**PART SECTION B-B**  
 \* Match existing.  
 Horizontal leg may be bent in field to clear expansion device.



**PART SECTION C-C**  
 \* Match existing.  
 Horizontal leg may be bent in field to clear expansion device.

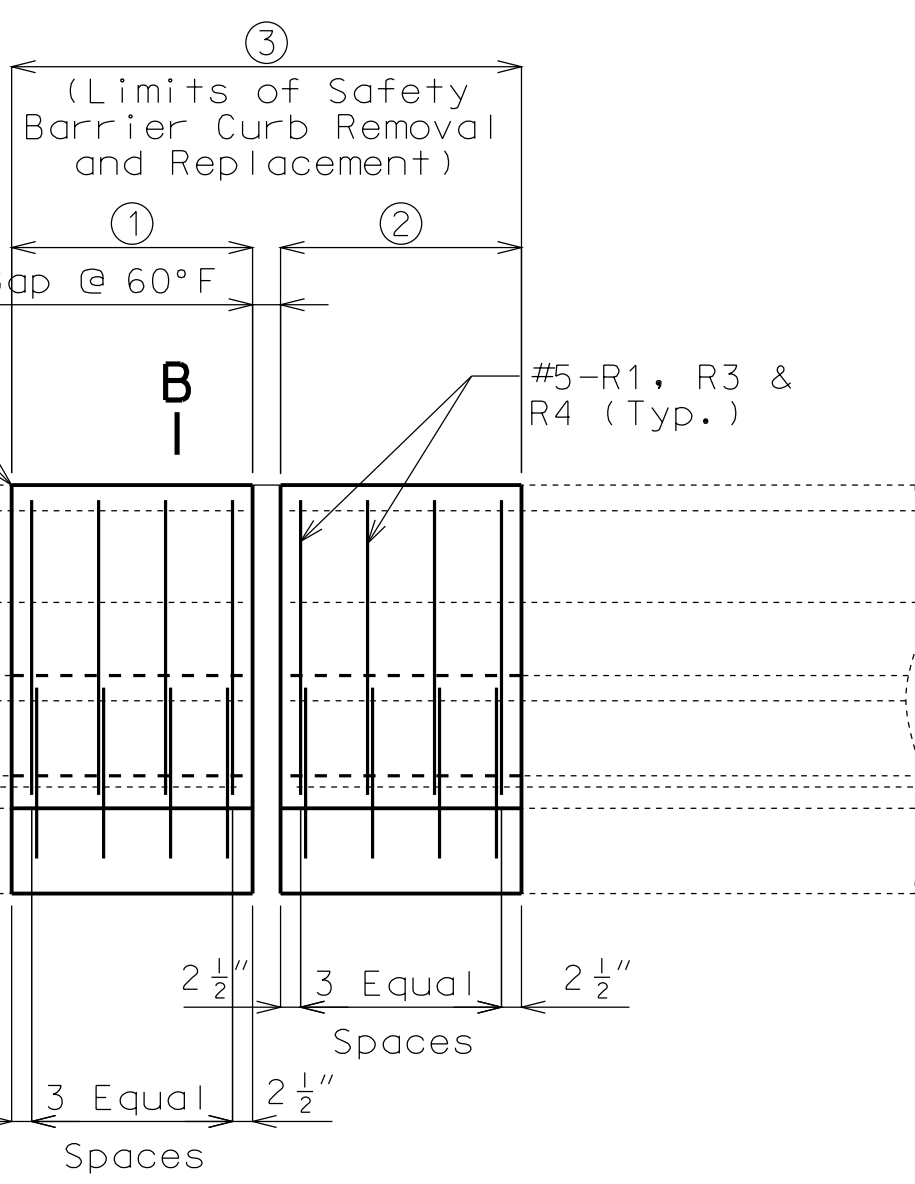
Detailed May 2012  
 Checked July 2012

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

Sheet No. 5 of 8

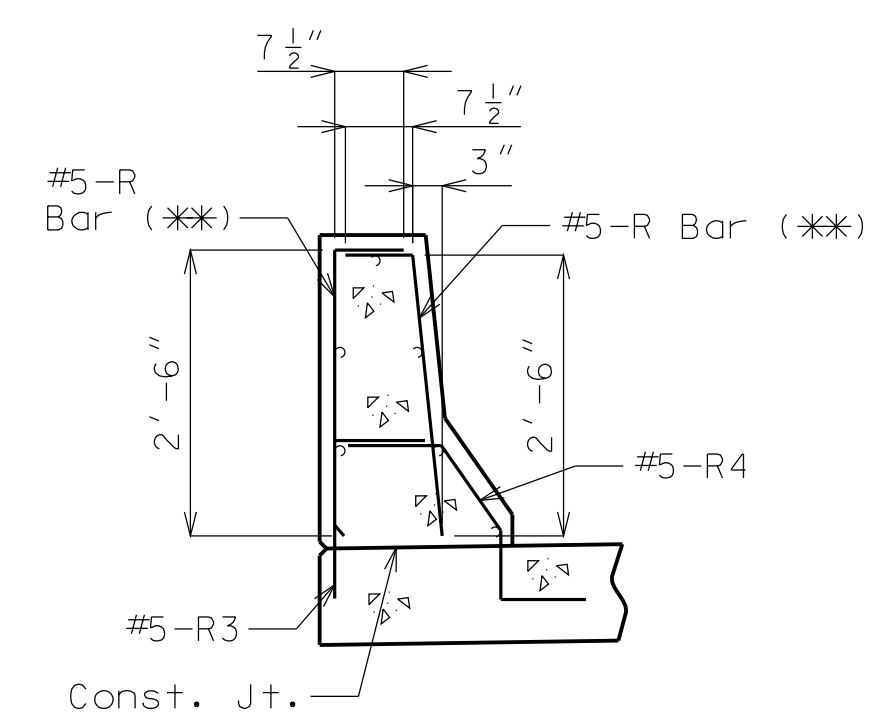


- ① 2'-6 3/8"± (Left barrier curb)  
2'-9"± (Right barrier curb)
- ② 2'-6 1/2"± (Left barrier curb)  
2'-8 5/8"± (Right barrier curb)
- ③ 5'-3 3/8"± (Left barrier curb)  
5'-8 1/8"± (Right barrier curb)

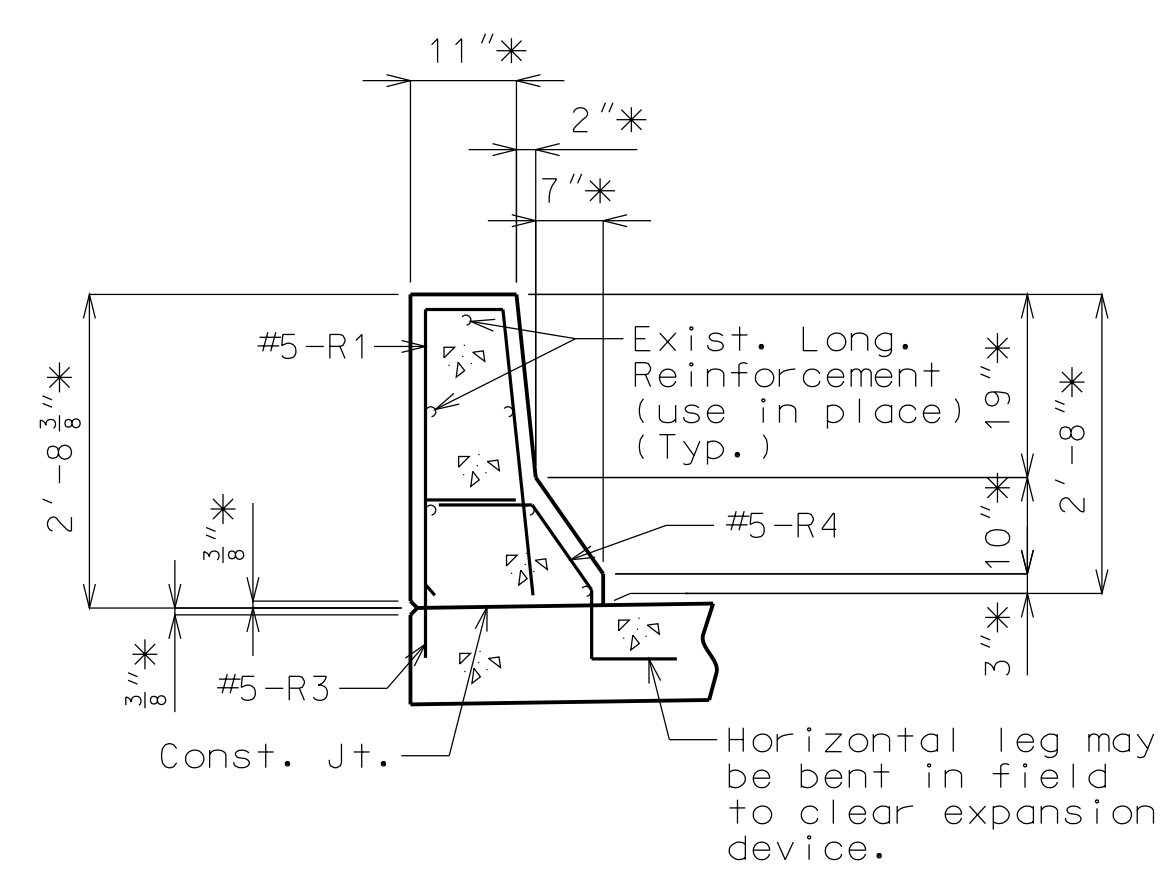


**PART ELEVATION OF RIGHT SAFETY BARRIER CURB**  
(Right barrier curb shown, left barrier curb similar)

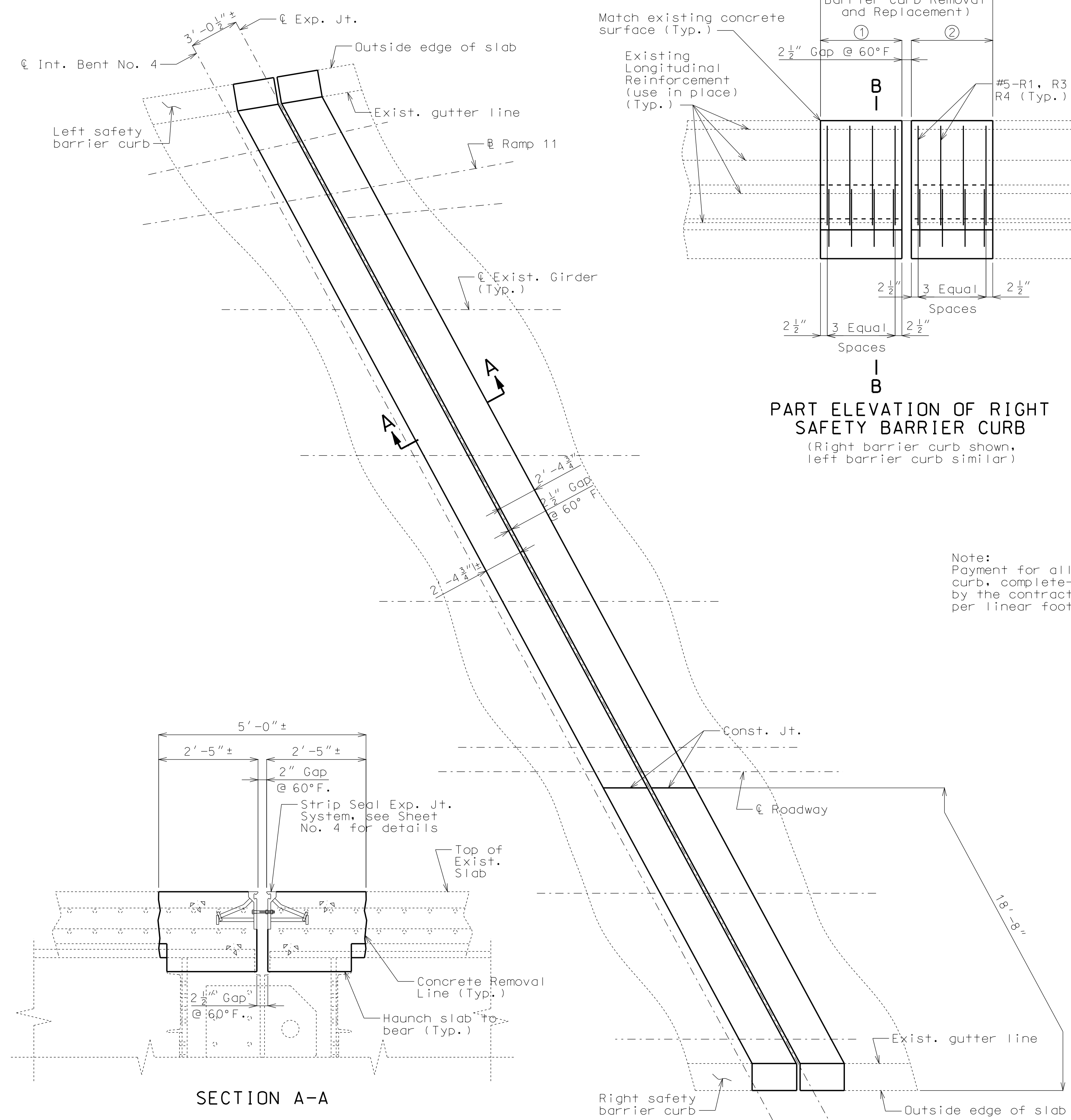
Note:  
Payment for all concrete and reinforcement for safety barrier curb, complete-in-place, will be considered completely covered by the contract unit price for Remove and Replace Barrier Curb per linear foot.



**R-BAR PERMISSIBLE ALTERNATE SHAPE**  
(\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



**PART SECTION B-B**  
\* Match existing.



**SECTION A-A**

**PART PLAN OF SLAB NEAR INT. NO. 4**

Detailed May 2012  
Checked July 2012

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

Sheet No. 6 of 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

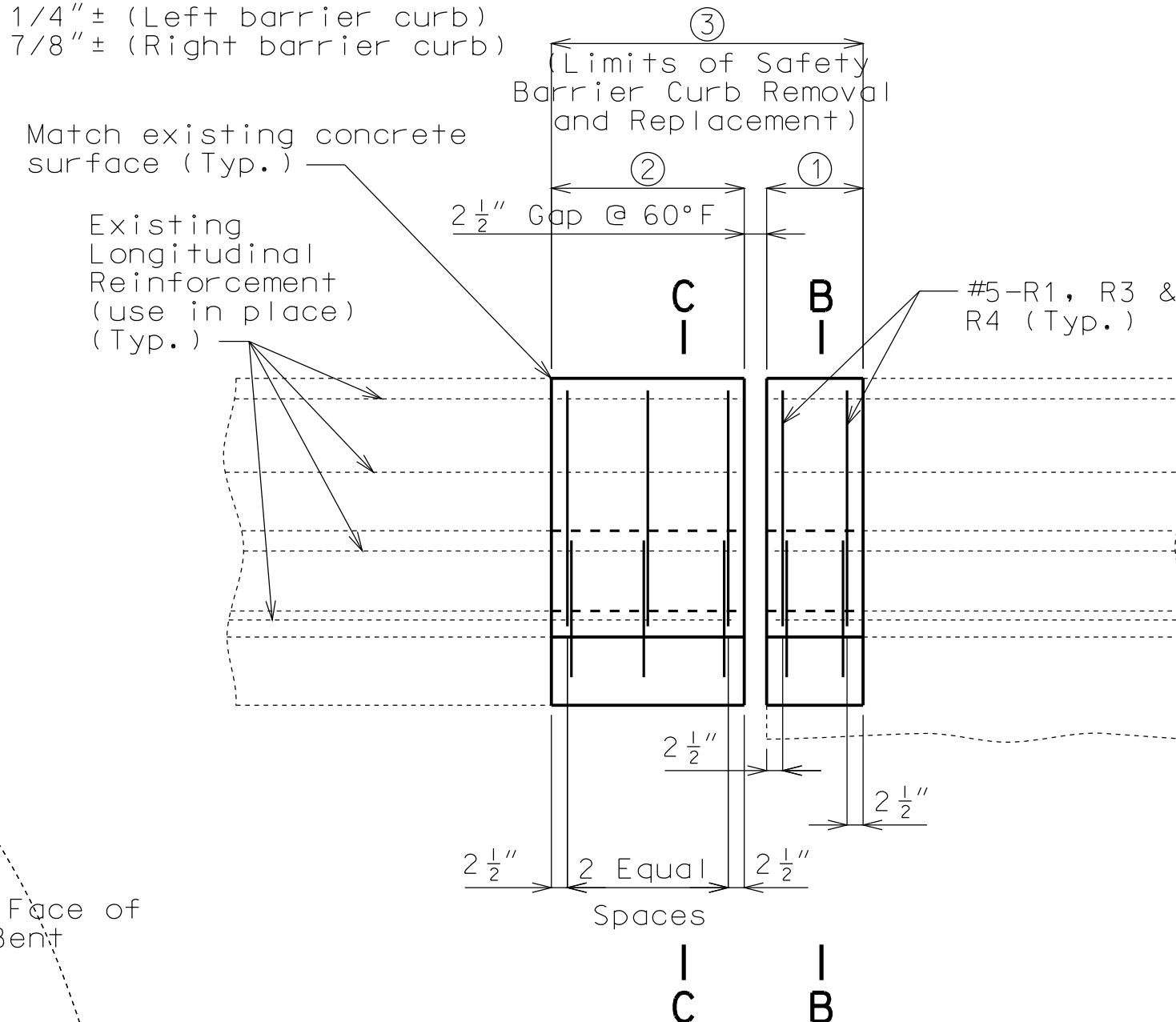
DATE PREPARED <b>12/12/2012</b>	
ROUTE <b>I-435</b>	STATE <b>MO</b>
DISTRICT <b>BR</b>	SHEET NO. <b>6</b>
COUNTY <b>CLAY</b>	
JOB NO. <b>J412381</b>	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. <b>A33751</b>	
DESCRIPTION	DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-273-6636)

MO DOT

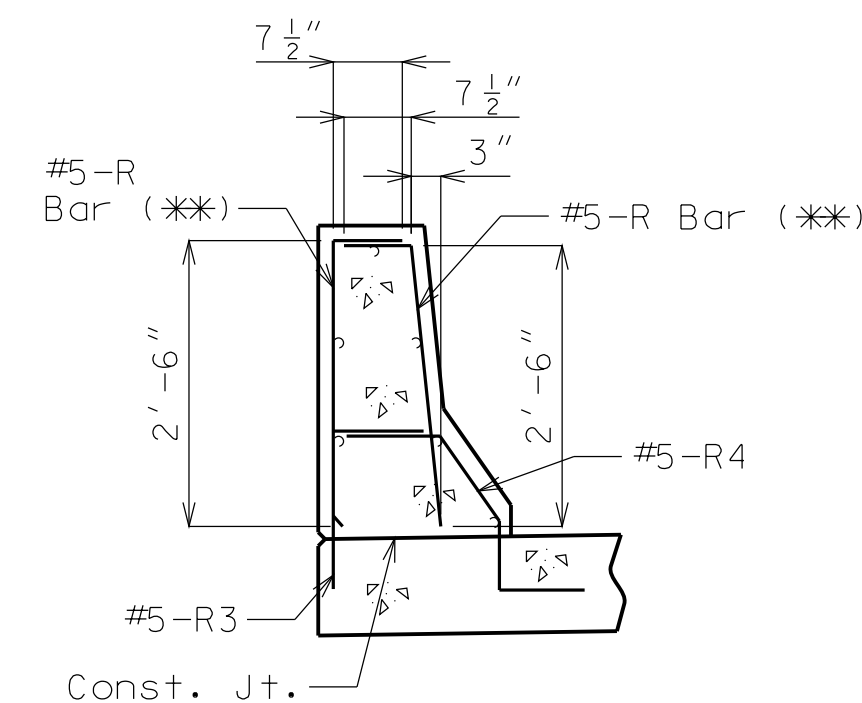
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

#5-S7 (Spa. with exist. to longitudinal steel)

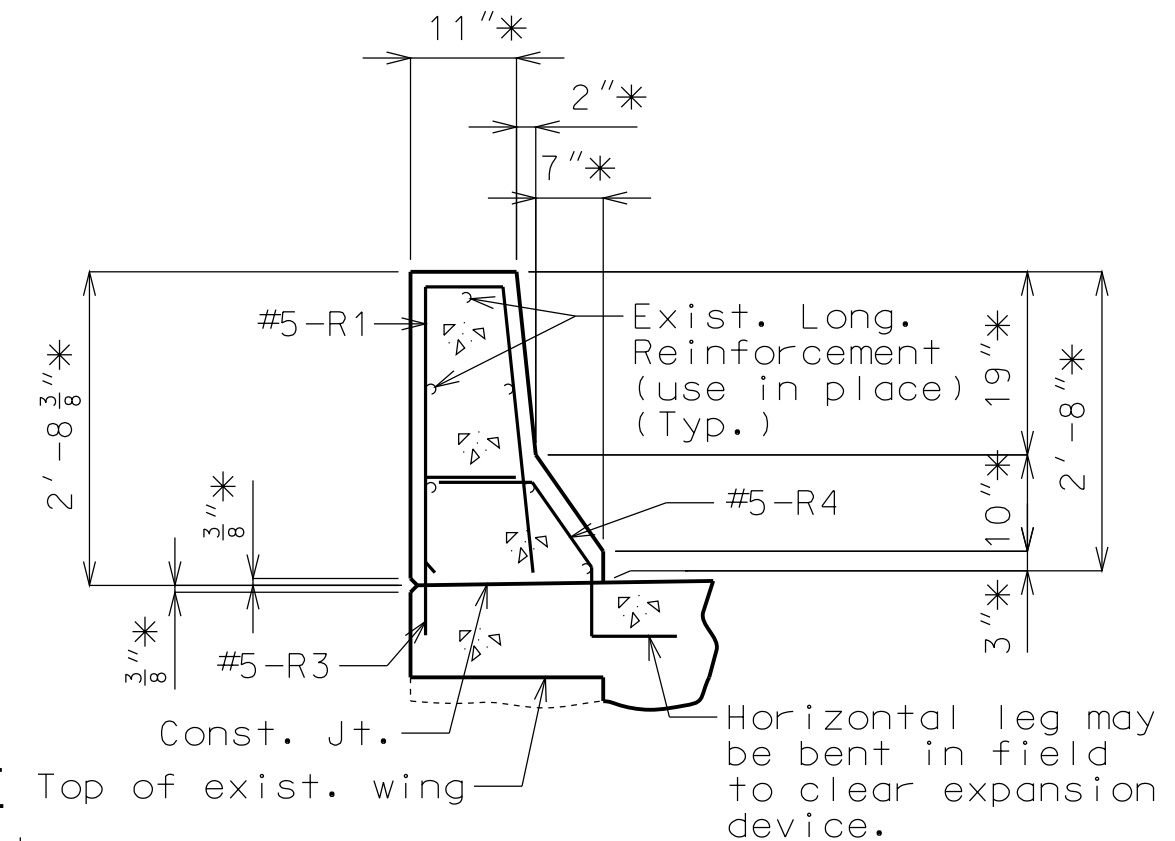
- ① 12 1/2"± (Left barrier curb)  
13 5/8"± (Right barrier curb)
- ② 22 1/4"± (Left barrier curb)  
2'-0 3/4"± (Right barrier curb)
- ③ 3'-1 1/4"± (Left barrier curb)  
3'-4 7/8"± (Right barrier curb)



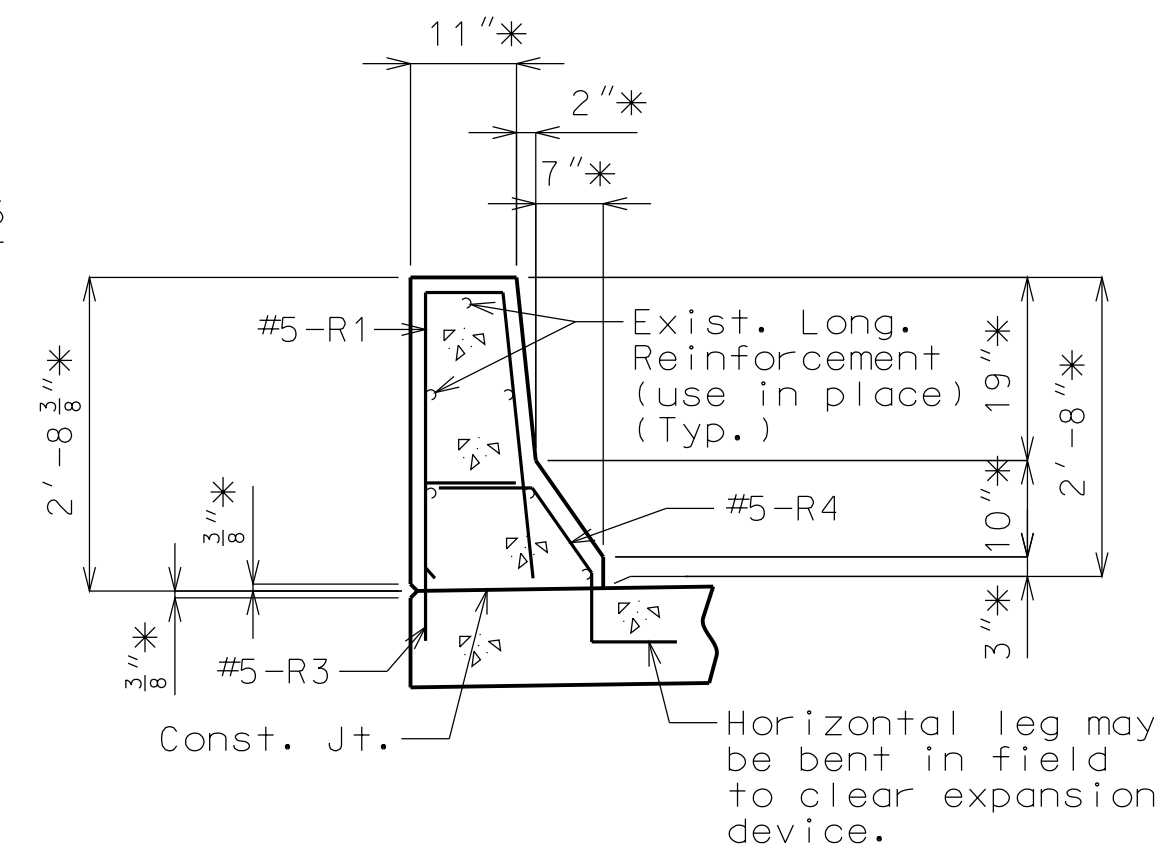
**PART ELEVATION OF RIGHT SAFETY BARRIER CURB**  
(Right barrier curb shown, left barrier curb similar)



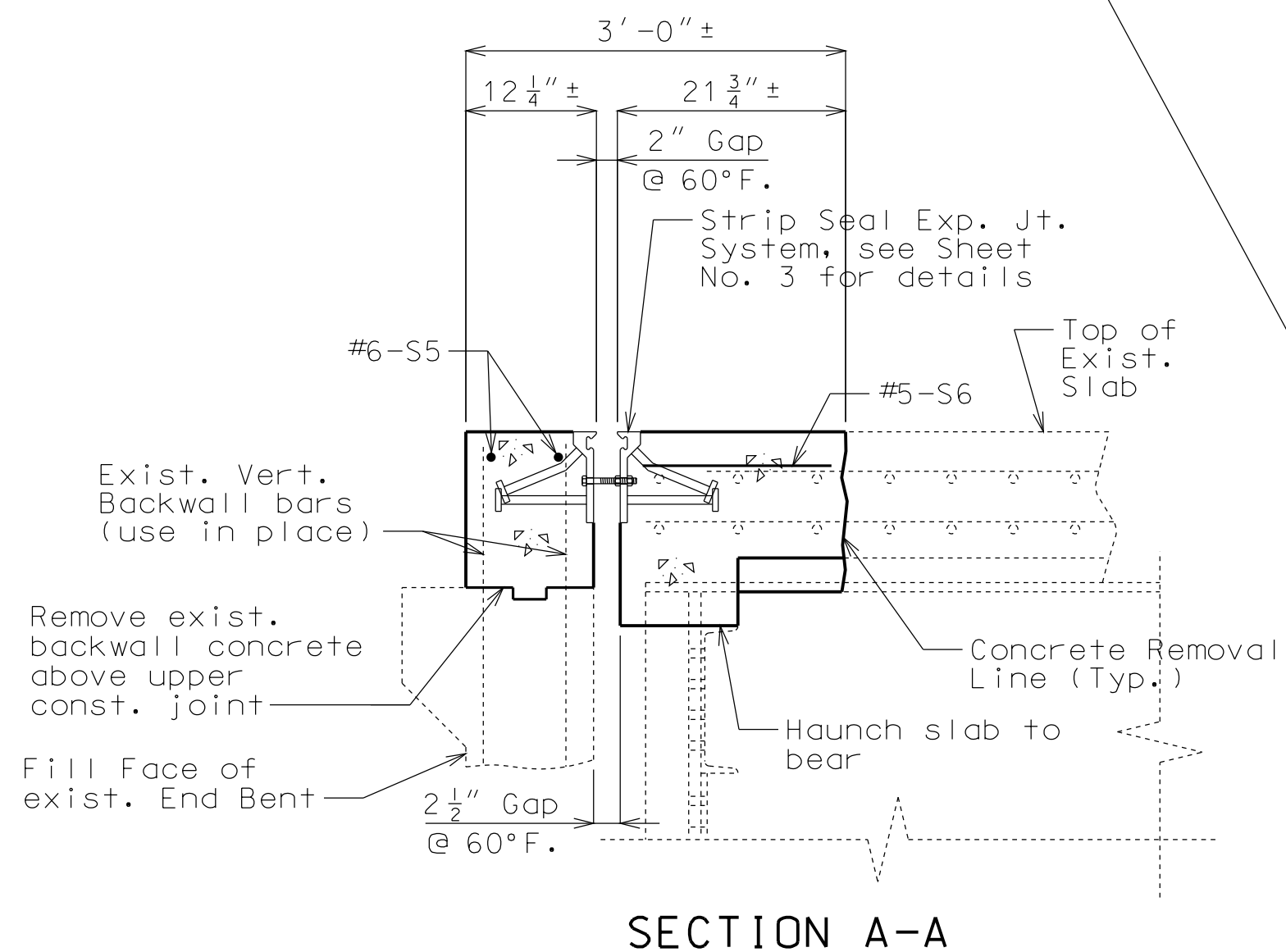
**R-BAR PERMISSIBLE ALTERNATE SHAPE**  
(\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



**PART SECTION B-B**  
\* Match existing.



**PART SECTION C-C**  
\* Match existing.



**PART PLAN OF SLAB AT END BENT NO. 5**

Note:

Notes:  
The contractor shall use a mechanical bar splice for #6-S4 & S5 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.

Payment for all concrete and reinforcement for safety barrier curb, complete-in-place, will be considered completely covered by the contract unit price for Remove and Replace Barrier Curb per linear foot.

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 12/12/2012

ROUTE I-435, STATE MO, DISTRICT BR, SHEET NO. 7

COUNTY CLAY, JOB NO. J412381, CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33751

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-273-6636)

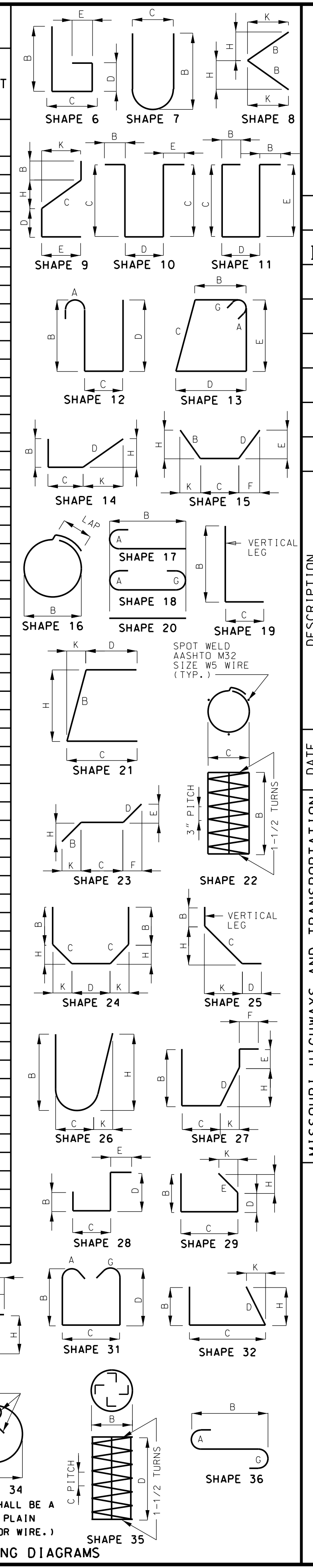
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

### BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
						B		C		D		E		F		H					K	
						FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.
SLAB																						
2	6	S1	SLAB	E	20												25	2	25	2	76	
2	6	S2	SLAB	E	20												44	9	44	9	134	
43	5	S3	SLAB	E	20												2	1	2	1	93	
4	6	S4	SLAB	E	20												20	10	20	10	125	
2	6	S5	SLAB	E	20												58	6	58	6	176	
56	5	S6	SLAB	E	20												21	0	21	0	102	
2	5	S7	SLAB	E	20												19	0	19	0	3	
BARRIER CURB																						
40	5	R1	BARRIER CURB	E	14												2	6	8	2	229	
38	5	R3	BARRIER CURB	E	19												17	0	10	0	86	
38	5	R4	BARRIER CURB	E	27												10	0	11	7	126	
TOTALS																						
5				E																	639	
6				E																	511	
			TOTAL																		0	
			TOTAL	E																	1150	
Slab on Girder																						
5				E																	198	
6				E																	511	
			TOTAL																		709	
Safety Barrier Curb																						
5				E																	441	
			TOTAL																		441	

### BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
						B		C		D		E		F		H					K	
						FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.



TWO ADDITIONAL #6-S4 & #5-R1 ARE INCLUDED IN THE BAR BILL FOR TESTING.

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED  
**12/12/2012**

ROUTE **I-435** STATE **MO**  
DISTRICT **BR** SHEET NO. **8**

COUNTY  
**CLAY**  
JOB NO.  
**J412381**  
CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
**A33751**

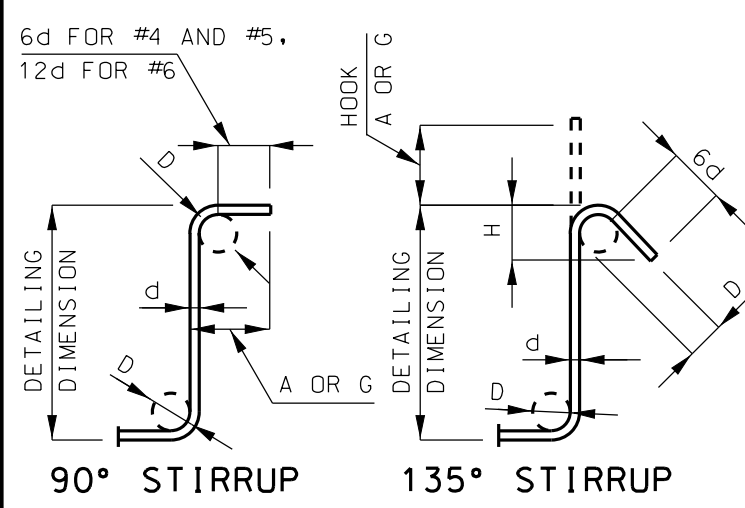
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

DATE

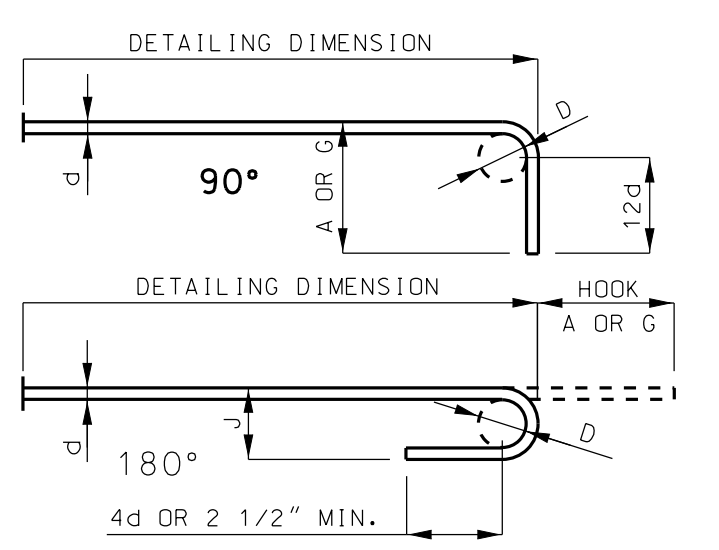
DESCRIPTION

**MoDOT**

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



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



BAR SIZE	D (IN.)	ALL GRADES			
		180° HOOKS		90° HOOKS	
		A OR C	J	A OR C	J
#3	2 1/4"	5"	3"	6"	6"
#4	3"	6"	4"	8"	8"
#5	3 3/4"	7"	5"	10"	10"
#6	4 1/2"	8"	6"	12"	14"
#7	5 1/4"	10"	7"	14"	16"
#8	6"	11"	8"	16"	18"
#9	9 1/2"	15"	11 3/4"	19"	22"
#10	10 3/4"	17"	13 1/4"	22"	26"
#11	12"	19"	14 3/4"	2'-0"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"	2'-7"

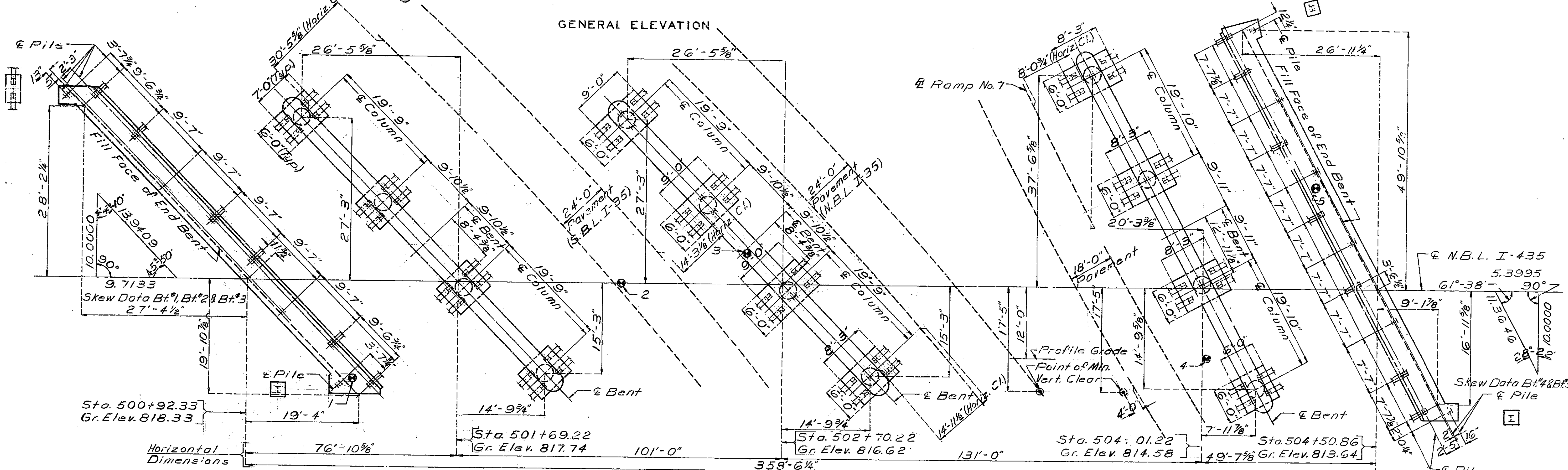
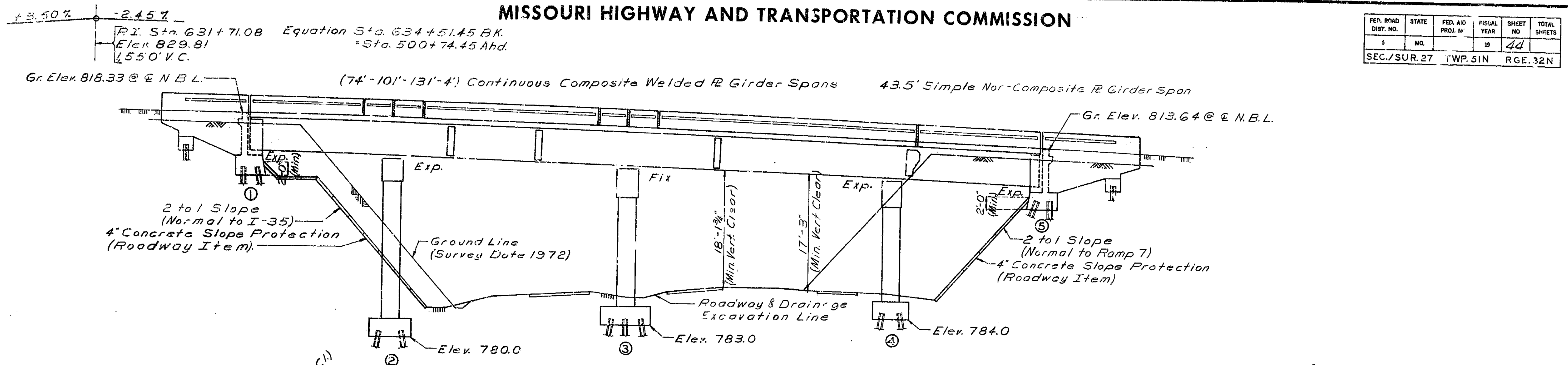
Detailed May 2012  
Checked July 2012

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

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

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	44	
SEC./SUR. 27		IWP. 51N		RGE. 32N	



PLAN

Note: For Estimated Quantities, File Data, General Notes and Location Sketch see sheet No. 2.  
 For Boring Data see Sheet No. 3  
 ⊙ Indicates location of boring.  
 Grade Elevations shown are taken along & N.B.L. I-435.  
 All Horizontal Clearance dimensions shown are radial dimensions.

B.M. #62 Elev. 781.21 Top of Post & Median I-435 22' Rt. Sta. 631+22.

**BRIDGE OVER RTE. I-35 + RAMP 7**

STATE ROAD FROM RTE. 152 TO RTE. 69  
 AT I-35 + I-435 INTERCHANGE  
 PROJECT NO. I-435-1(163) STA. 500+92.33  
 JOB NO. 4-I-435-49H RTE I-435 (NBL)  
 CLAY COUNTY

STD. 611.60
STD. 706.35
A-3375

179

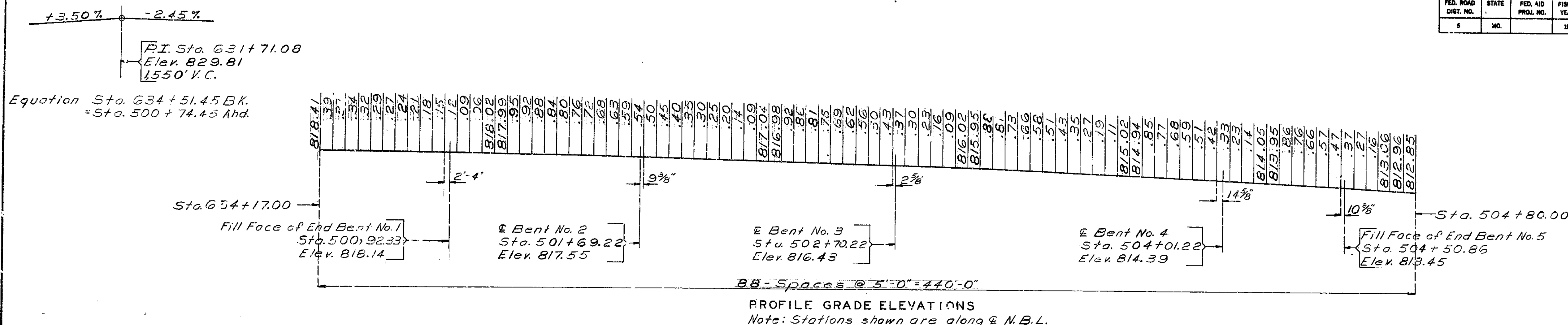
DESIGNED Oct. 1977  
 DETAILED Aug. 1979  
 CHECKED Aug. 1979

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

Sheet No. 1 of 28.

DATE March 16, 1981

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	45	



Note: Construction Clearance (Rte I-35, N.B.L. & S.B.L.):  
A minimum vertical clearance of 15'-0" from existing lanes and a minimum lateral clearance of 28'-0" centered on existing lanes shall be maintained during construction.

ESTIMATED QUANTITIES			
ITEM		SUBSTR.	SUPERST. TOTAL
Class 1 Excavation	Cu.Yd.	510	510
Structural Steel Pile (10")	Lin.Ft.	4518	4518
Class B Concrete	Cu.Yd.	3772	3772
Class B2 Concrete	Cu.Yd.		640.3
Reinforcing Steel (Grade 60)	Lbs.	63920	66,830
Reinforcing Steel (Epoxy Coated)	Lbs.	1,600	100,110
Fabricated Structural Carbon Steel	Lbs.		508,870
Fabricated Structural Low Alloy Steel	Lbs.		118,570
Painting (System A or B Aluminum)	Ton		311.7
Elastomeric Expansion Joint Seal (30")	Lin.Ft.		14.3
Slab Drains	Each		7

All concrete and reinforcement in safety barrier curbs is included with superstructure quantities

GENERAL NOTES:

Design Specifications:  
A.A.S.H.T.O.-1977 Load Factor Design Substructure.

Design Loading:  
HS20-44; 15%/sq.ft. Future Wearing Surface.  
Modified 24,000\* Tandem Axle.  
Earth 120\* Equivalent Fluid Pressure 30"  
Fatigue Stress: Case I

Design Unit Stresses:

Class B Concrete (Substructure)  $f'c=3,000$  psi.  
Class B2 Concrete (Superstructure)  $f'c=4,000$  psi.  
Reinforcing Steel (Substructure) (Grade 60)  $f_y=40,000$  psi.  
Reinforcing Steel (Superstructure) (Grade 60)  $f_y=60,000$  psi.  
Structural Carbon Steel  $f_s=20,000$  psi.  
Structural Steel (A.S.T.M. A572) Grade 50  $f_s=27,000$  psi.  
Steel Pile  $f_b=9,000$  psi.

Fabricated Steel

Field connections High Strength Bolts  $\frac{3}{4}" \phi$ , holes  $\frac{1}{16}" \phi$  except as noted.

Painting:

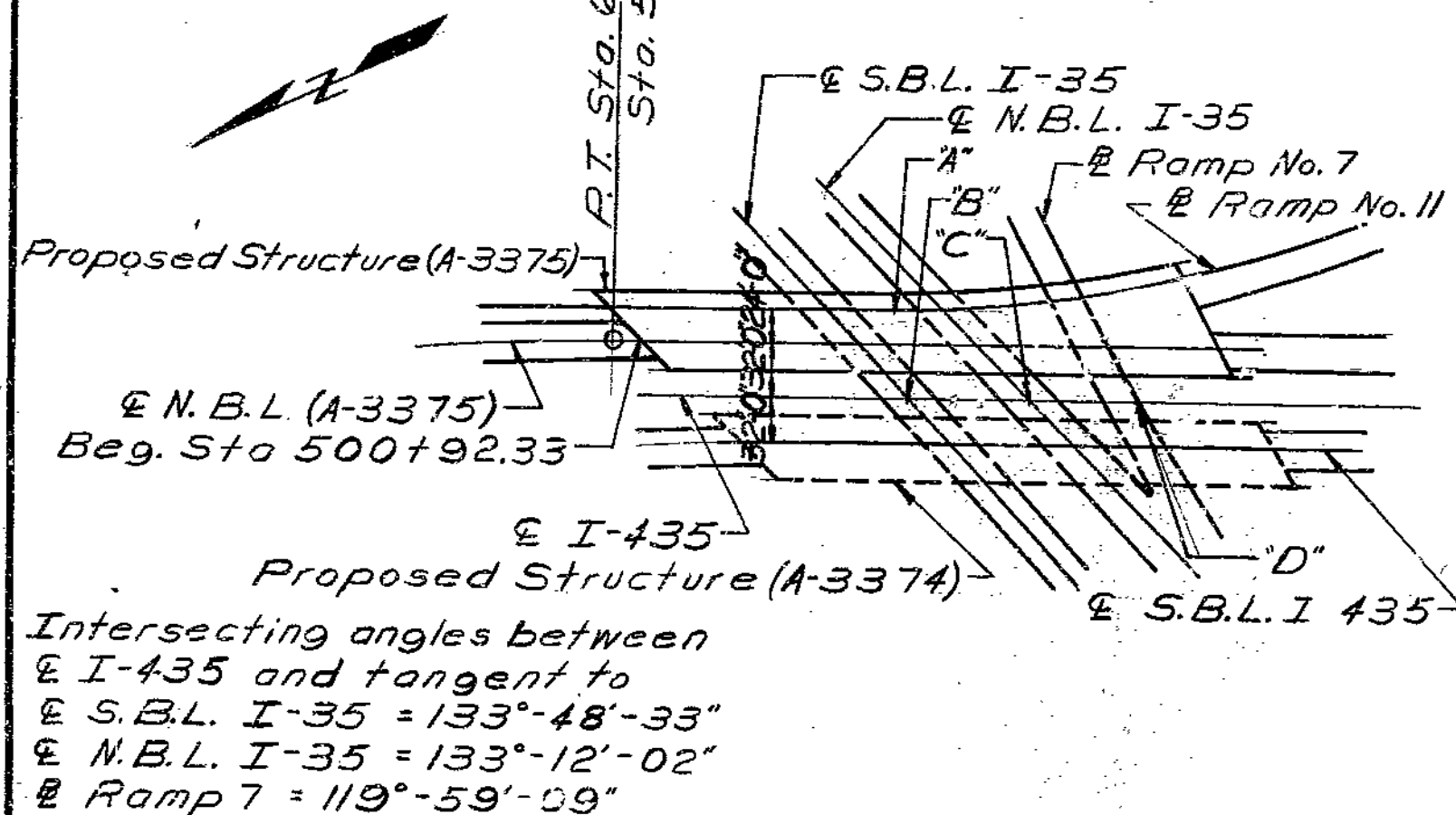
System A or B by contractor in accordance with Std. Spec. 712.12.  
Color of the final field coat for System B shall be aluminum.

Reinforcing Steel:

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

All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}"$ .

Curve Data For Ramp No. 11:  
P.I. Sta. 7+79.18  
 $\Delta = 35^\circ-16'-45"$  Rt.  
 $D = 7^\circ-00'$   
 $T = 244.62$   
 $L = 475.41$   
 $R = 818.52$   
 $S.E. = .064/t$



A\* = P.T. Sta. 10+09.97 Ramp 11 = Sta. 502+48.23 € I-435  
B\* = Sta. 502+62.44 € I-435 = Sta. 538+07.50 € S.B.L. I-35  
C\* = Sta. 503+40.10 € I-435 = Sta. 537+55.55 € N.B.L. I-35  
D\* = Sta. 504+07.96 € I-435 = Sta. 5+49.10 € Ramp 7

LOCATION SKETCH

PILE DATA							
BENT NO.	WING PILE BENT NO. 1	1	2	3	4	5	WING PILE BENT NO. 5
Pile Type and Size Number							
	3	10	16	23	19	13	2
Approximate Length	Ft.	73	69	41	46	48	65
Design Bearing	Tons	7	54	55	55	50	49
Hammer Energy required	Ft.Lbs.	9,100	14,200	13,000	13,000	11,800	13,100

Minimum energy requirement of hammer based on plan length and design bearing value of piles.

All pile shall be driven to practical refusal.

180  
DETAILED Aug. 1979  
CHECKED Aug. 1979

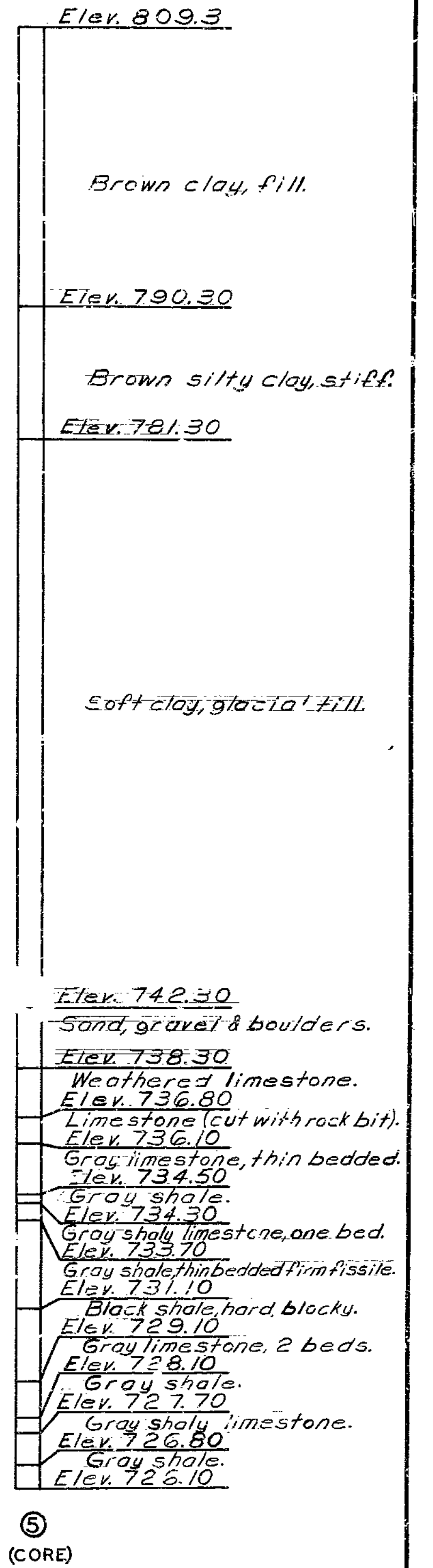
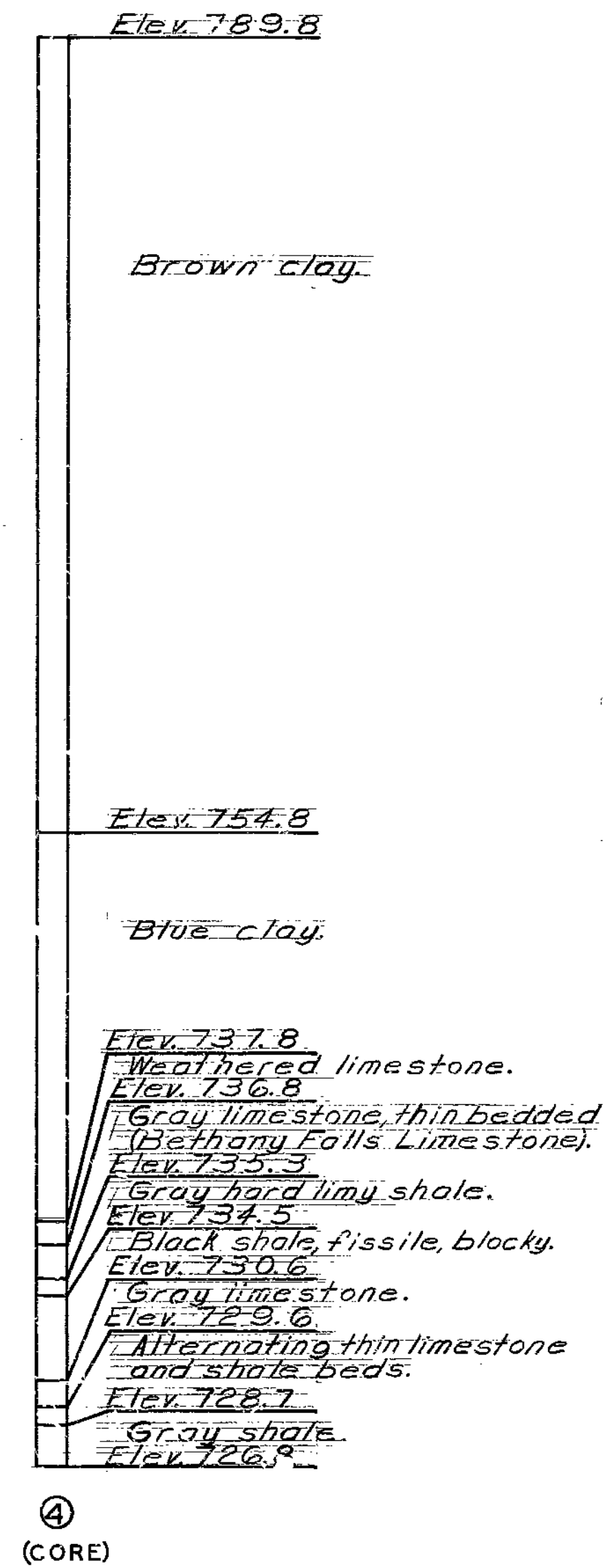
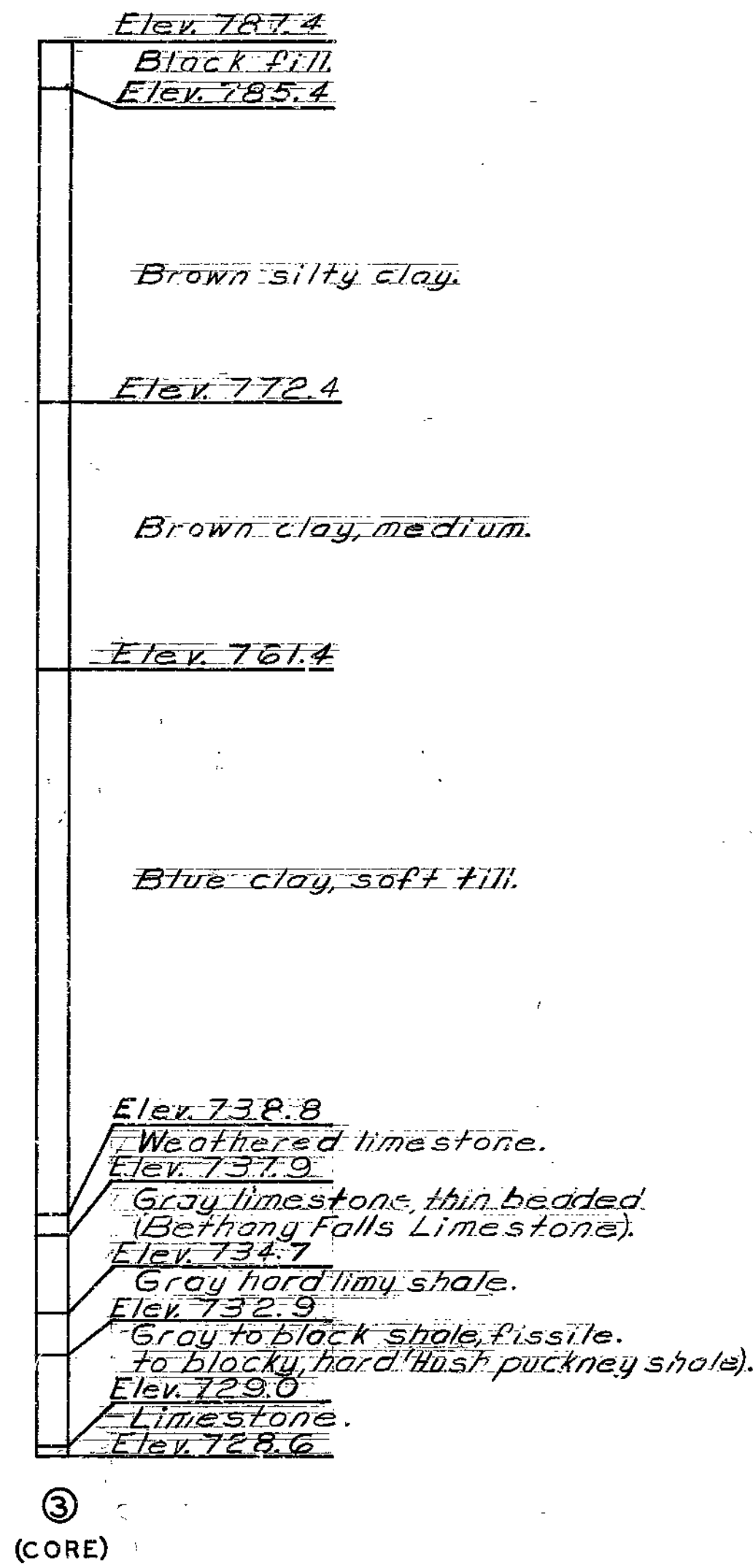
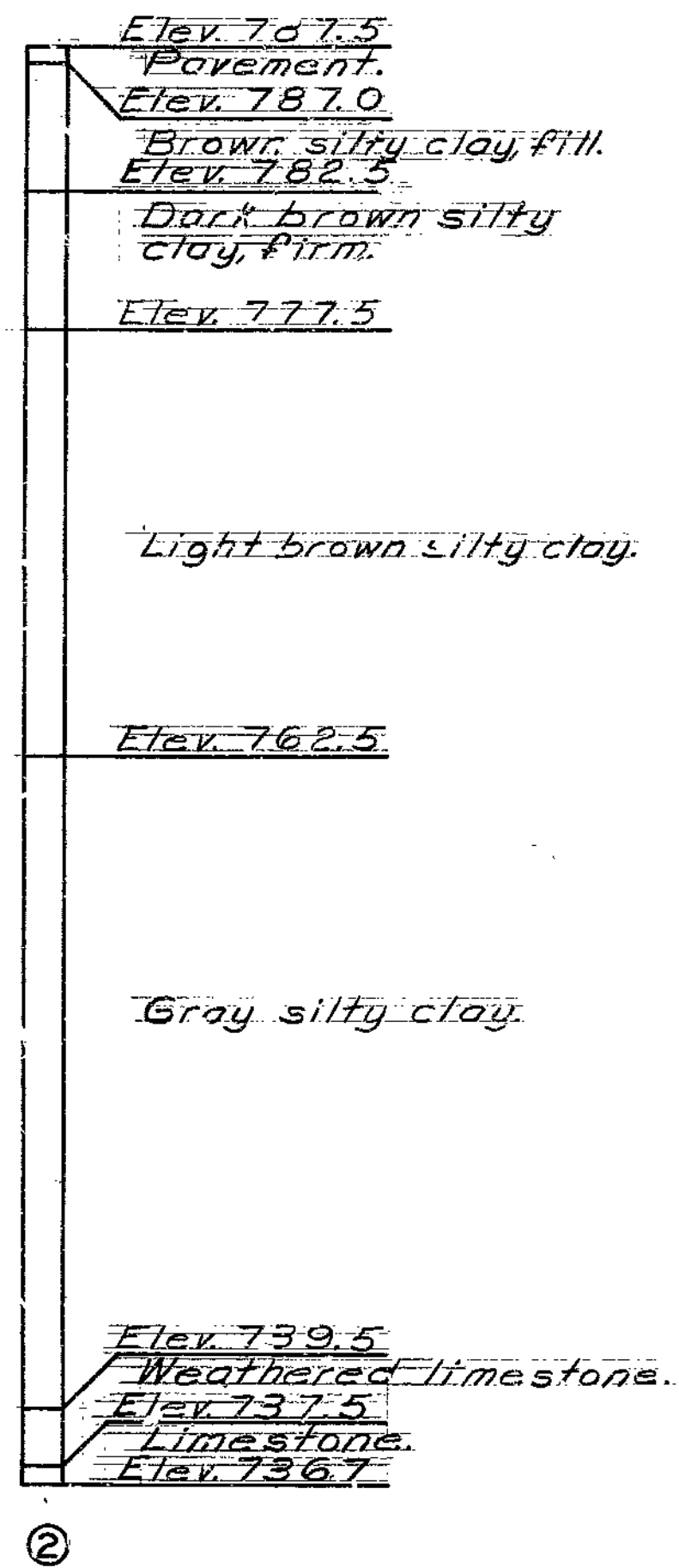
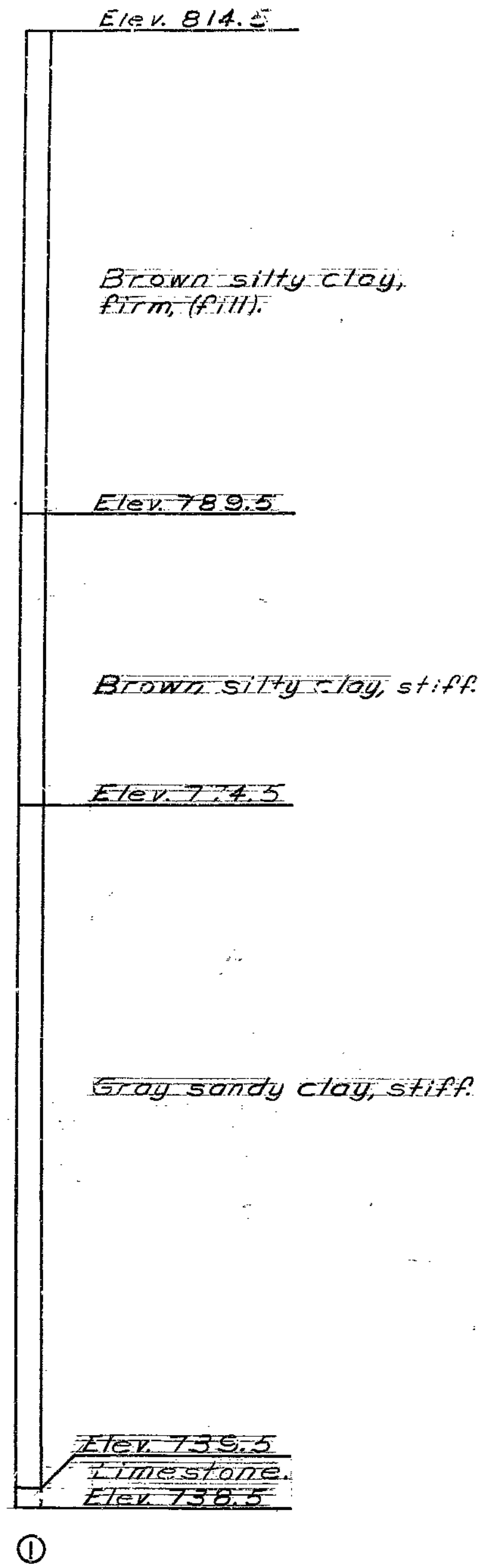
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2 of 28.

CLAY COUNTY

A-3375

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



BORING DATA

181

DETAILED July 1979  
CHECKED July 1979

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

Sheet No. 3 of 28.

CLAY COUNTY

A-3375

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

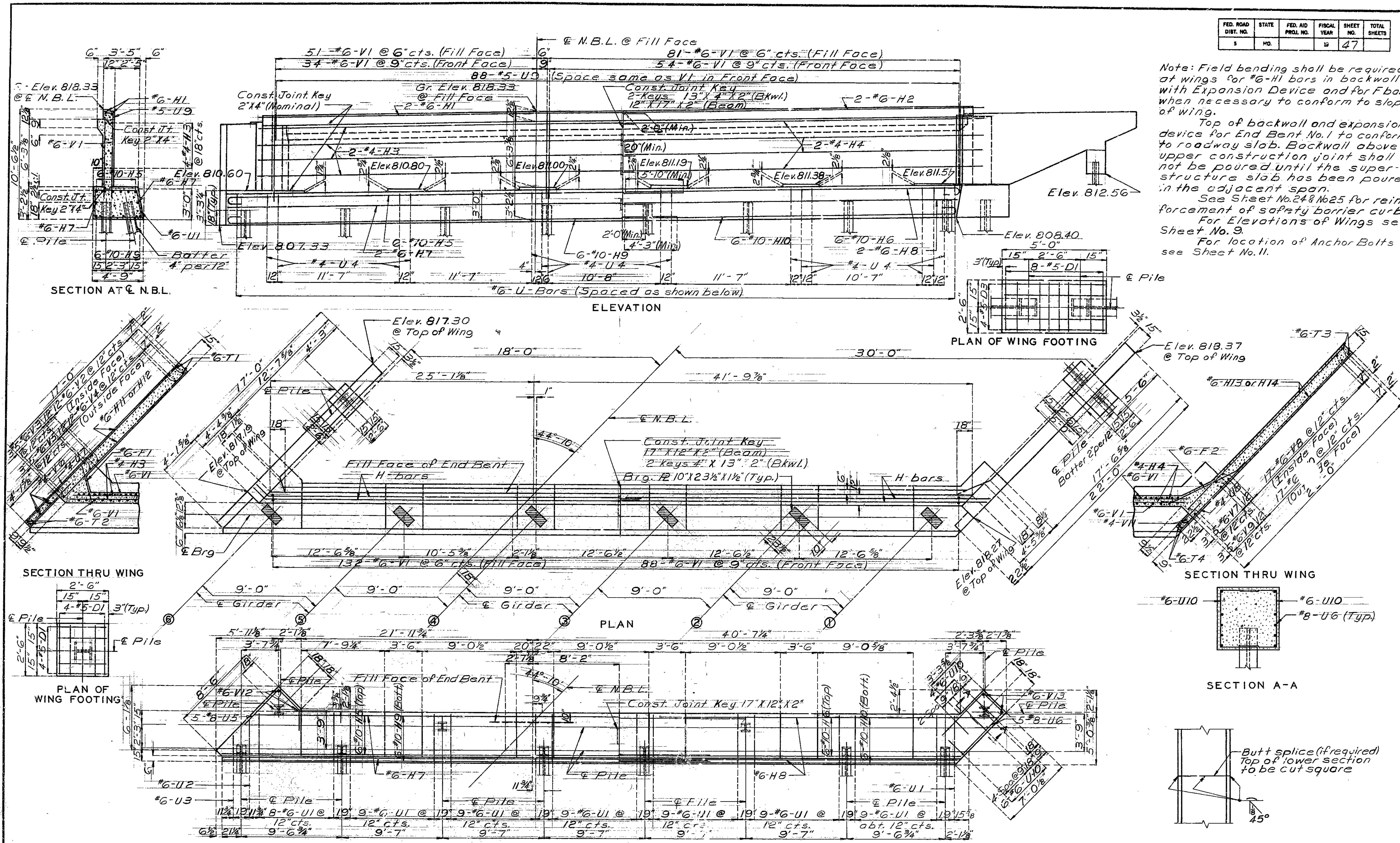
Note: Field bending shall be required at wings for #6-H1 bars in backwall with Expansion Device and for F bars when necessary to conform to slope of wing.

Top of backwall and expansion device for End Bent No. 1 to conform to roadway slab. Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.

See Sheet No. 24 & No. 25 for reinforcement of safety barrier curb.

For Elevations of Wings see Sheet No. 9.

For location of Anchor Bolts see Sheet No. 11.



PLAN OF BEAM  
DETAILS OF END BENT NO. 1

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

Sheet No. 4 of 28.

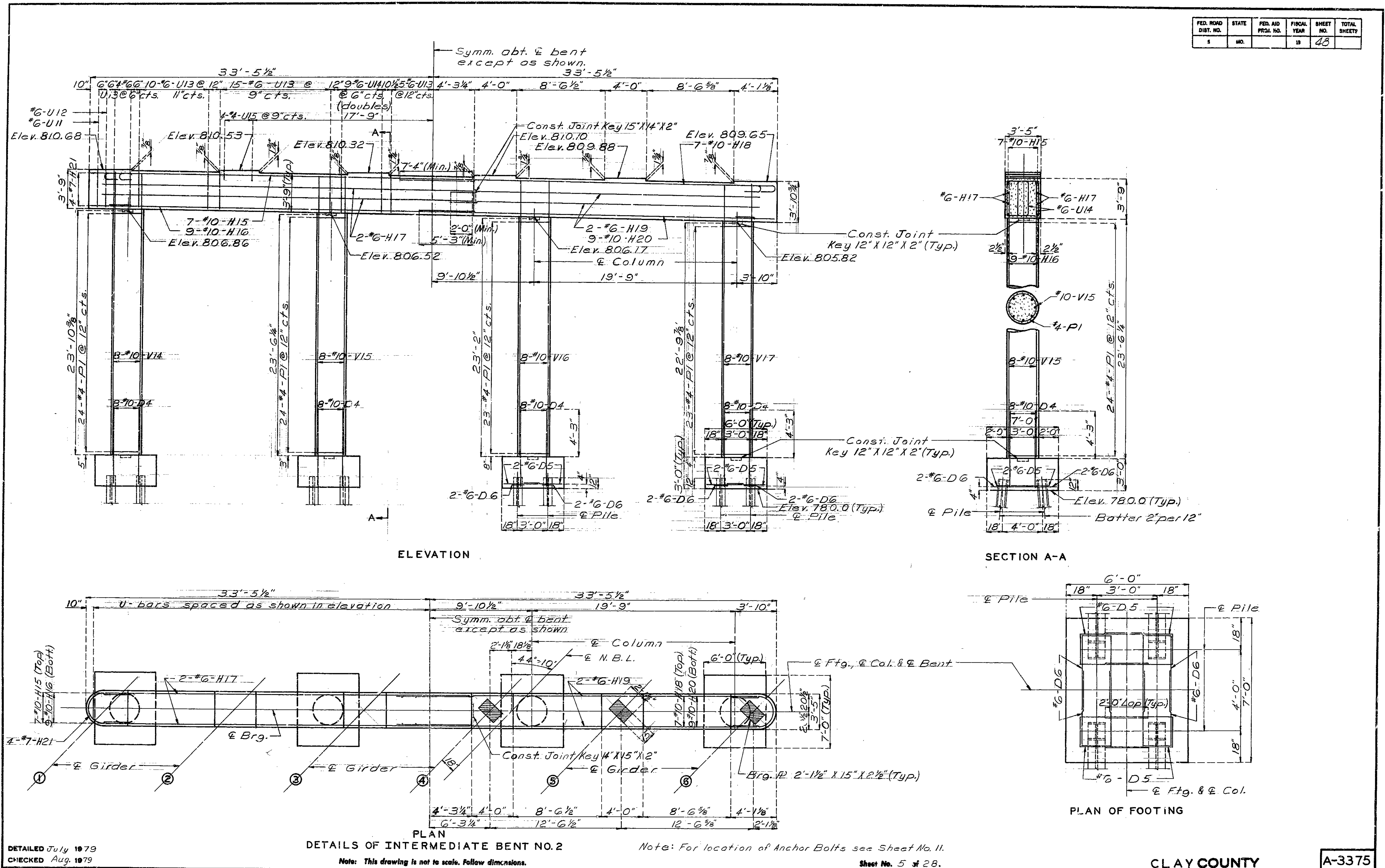
CLAY COUNTY

A-3375

182

DATE: July 1979  
CHECKED: Aug. 1979

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



183

DETAILED July 1979  
CHECKED Aug. 1979

DETAILS OF INTERMEDIATE BENT NO. 2

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

Note: For location of Anchor Bolts see Sheet No. 11.

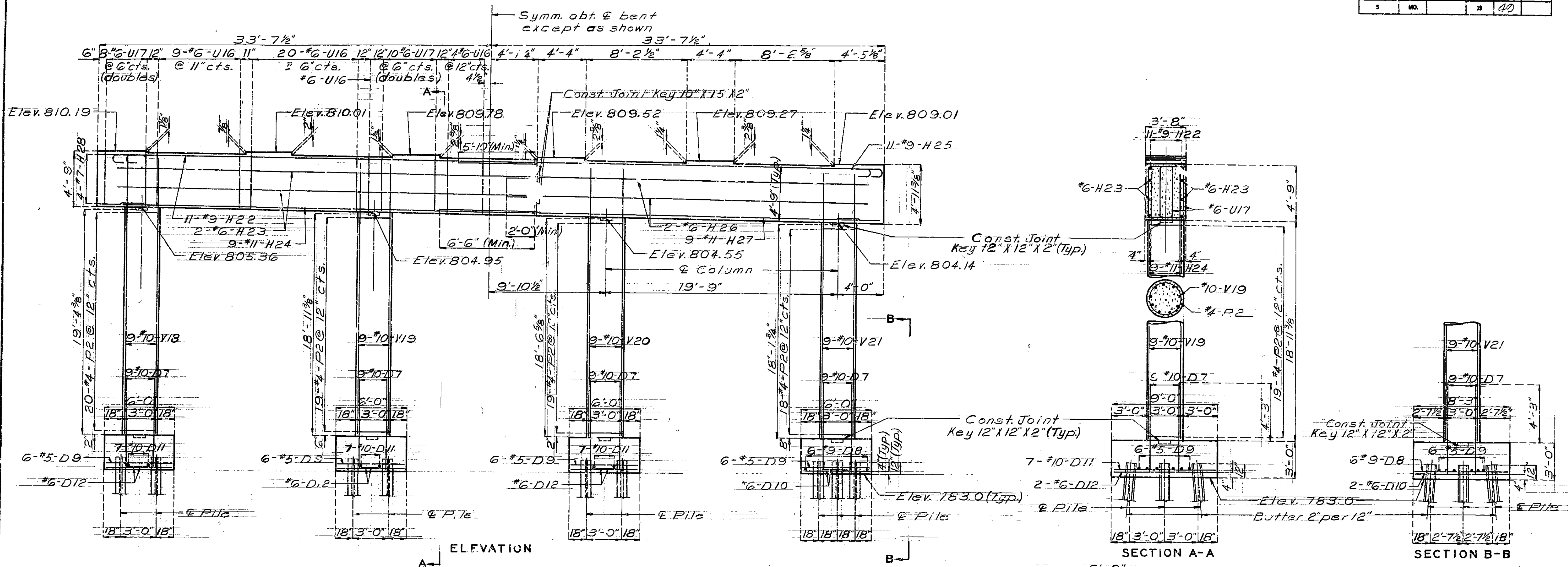
Sheet No. 5 of 28.

CLAY COUNTY

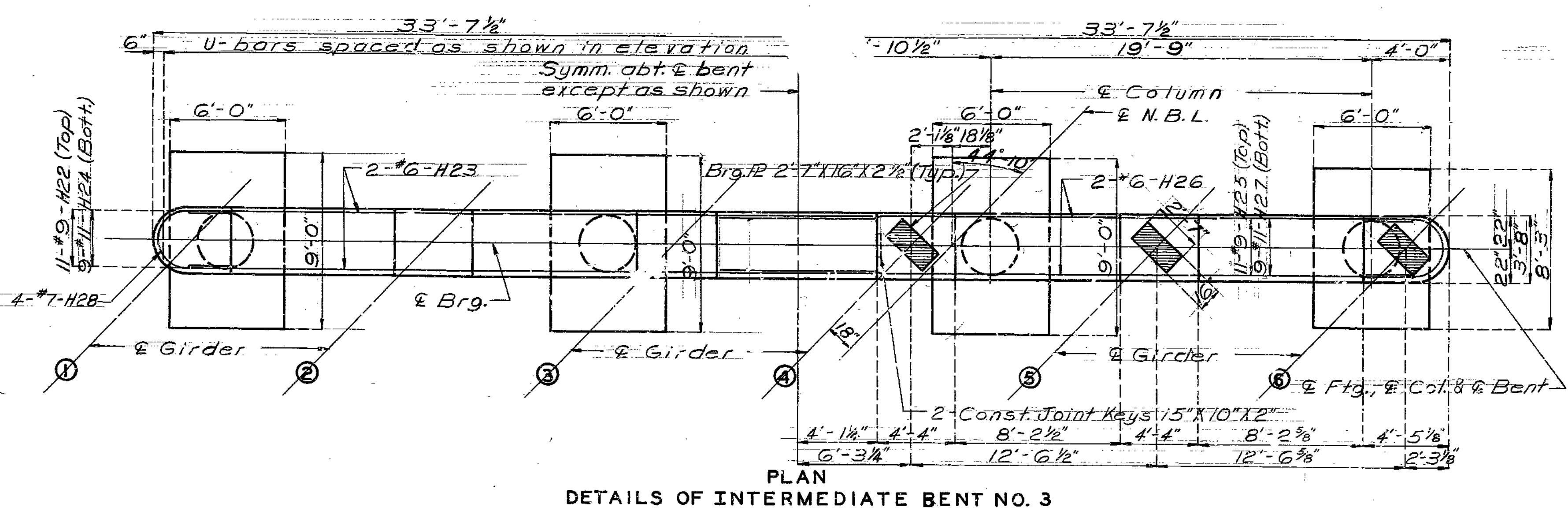
A-3375



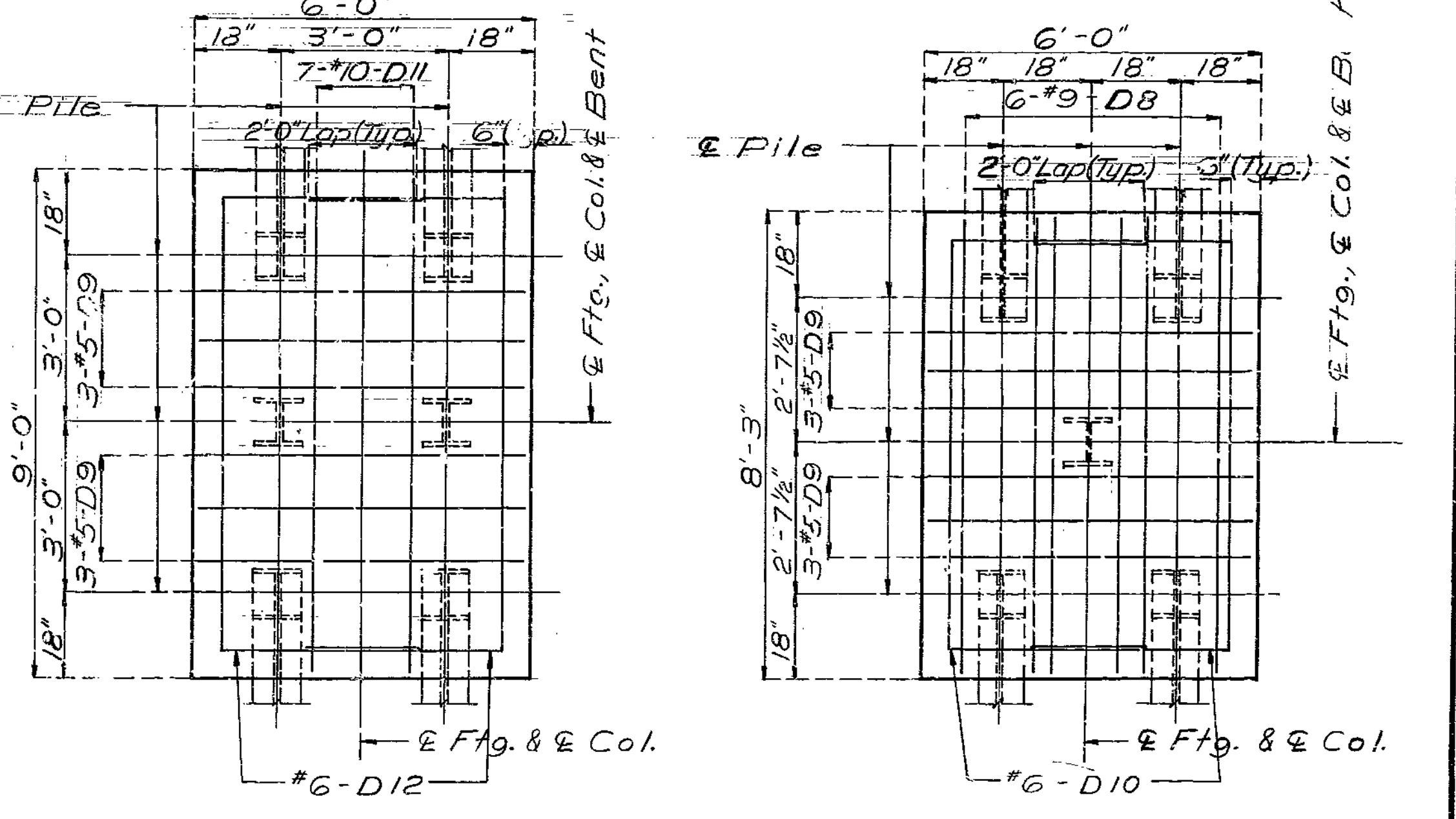
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	40	



184



PLAN DETAILS OF INTERMEDIATE BENT NO. 3



PLAN OF FOOTINGS

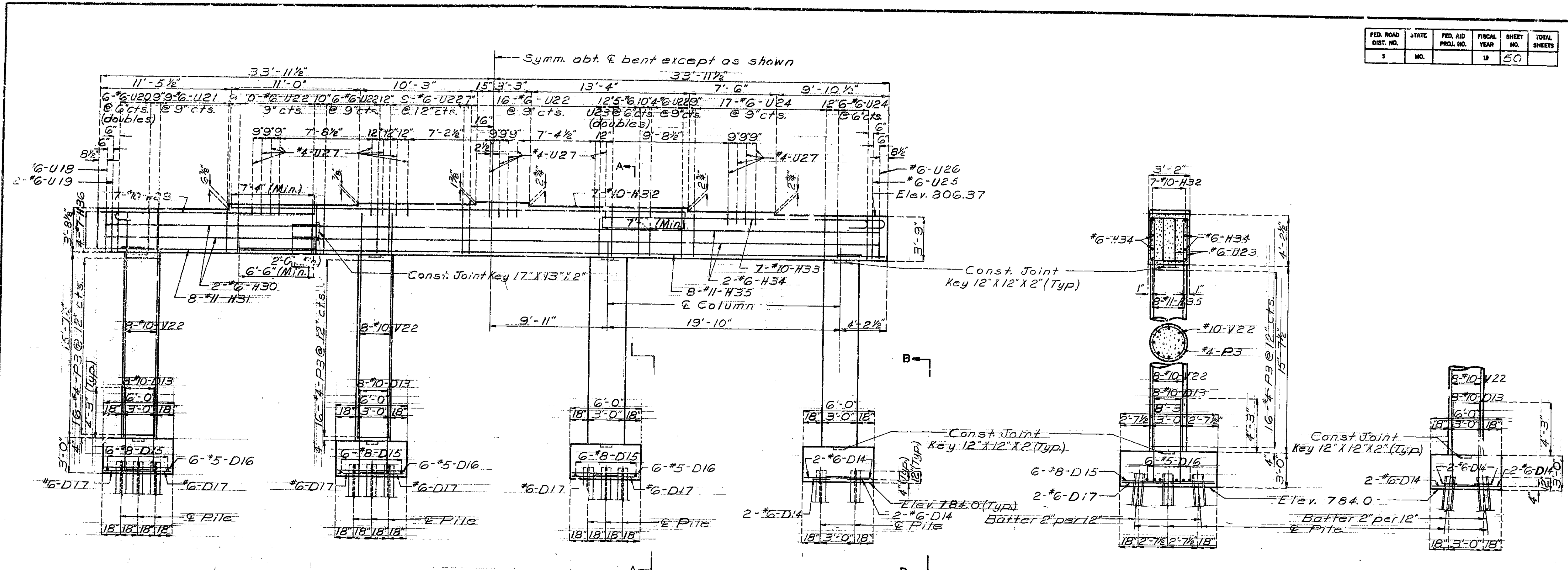
Note: For location of Anchor Bolts see Sheet No. 11.

DETAILED July 1979  
CHECKED Aug. 1979

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

Sheet No. 6 of 28.

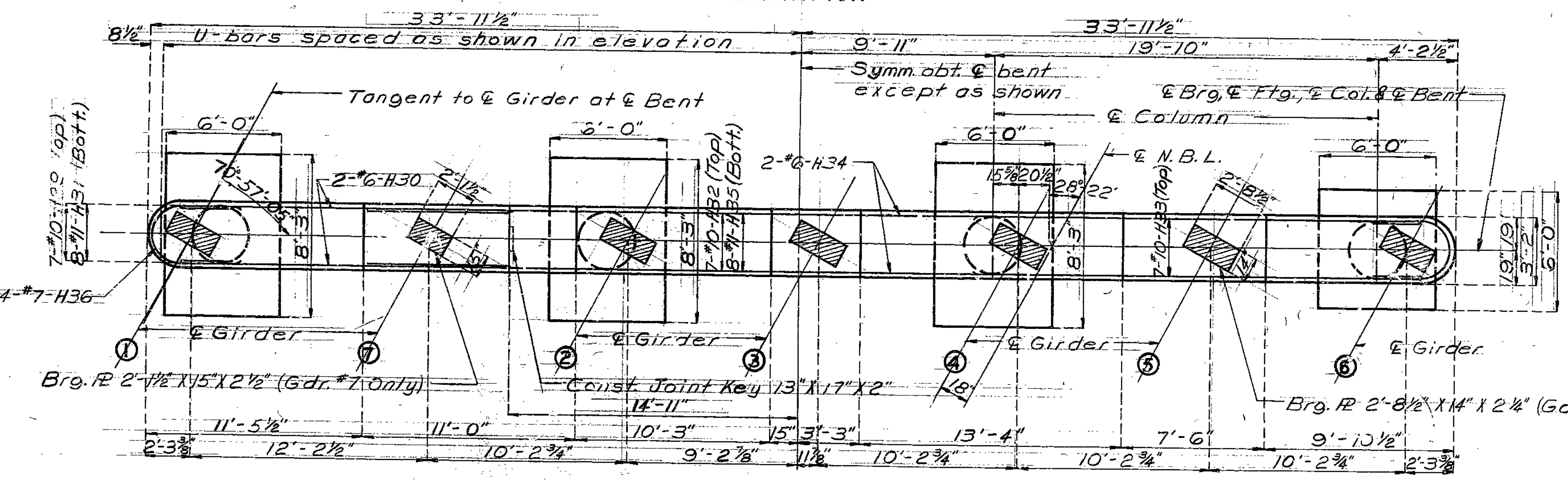
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	50	



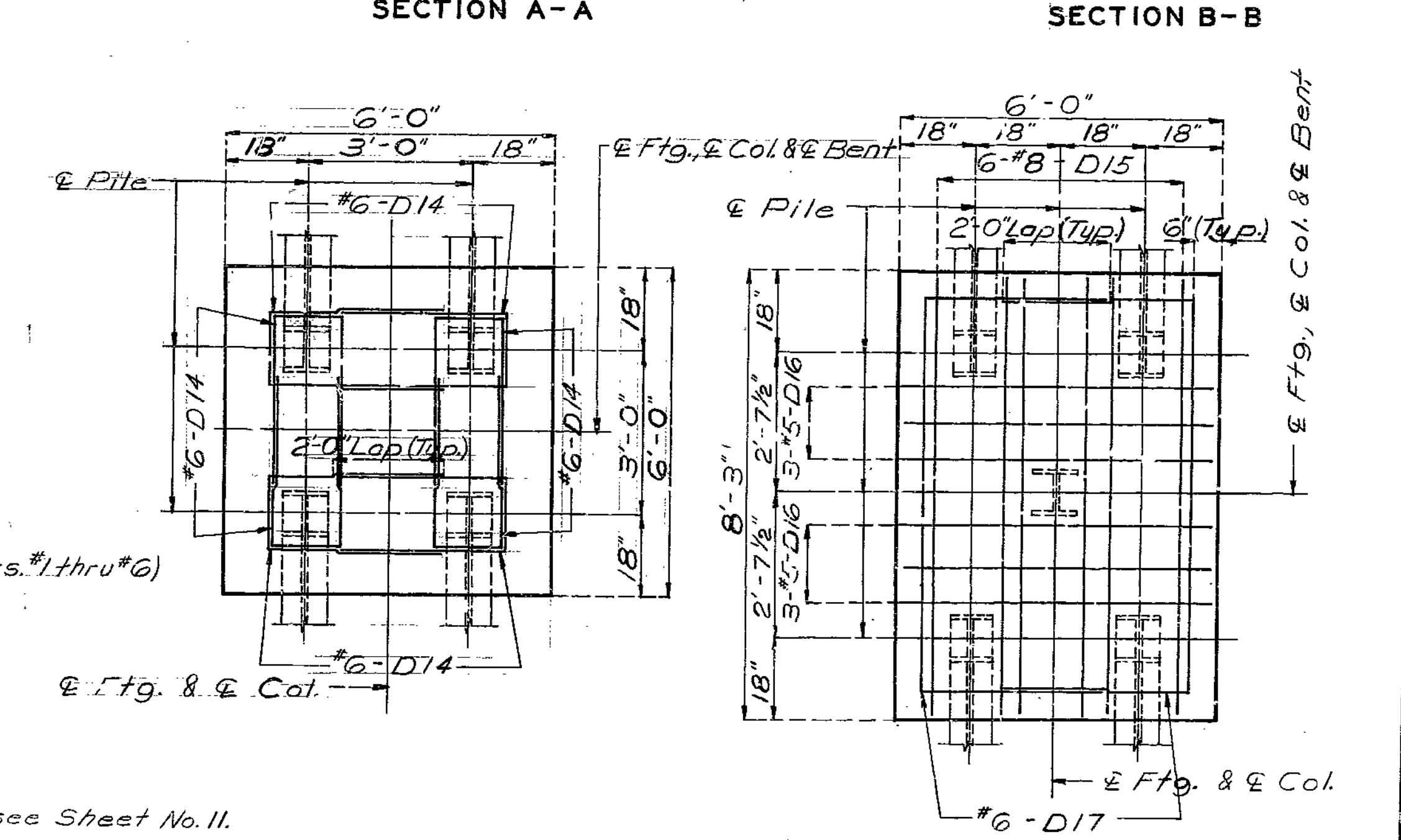
ELEVATION

SECTION A-A

SECTION B-B



PLAN DETAILS OF INTERMEDIATE BENT NO. 4



PLAN OF FOOTINGS

Note: For location of Anchor Bolts see Sheet No. 11.

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

Sheet No. 7 of 28.

DETAILED July 1979  
CHECKED Aug. 1979

185

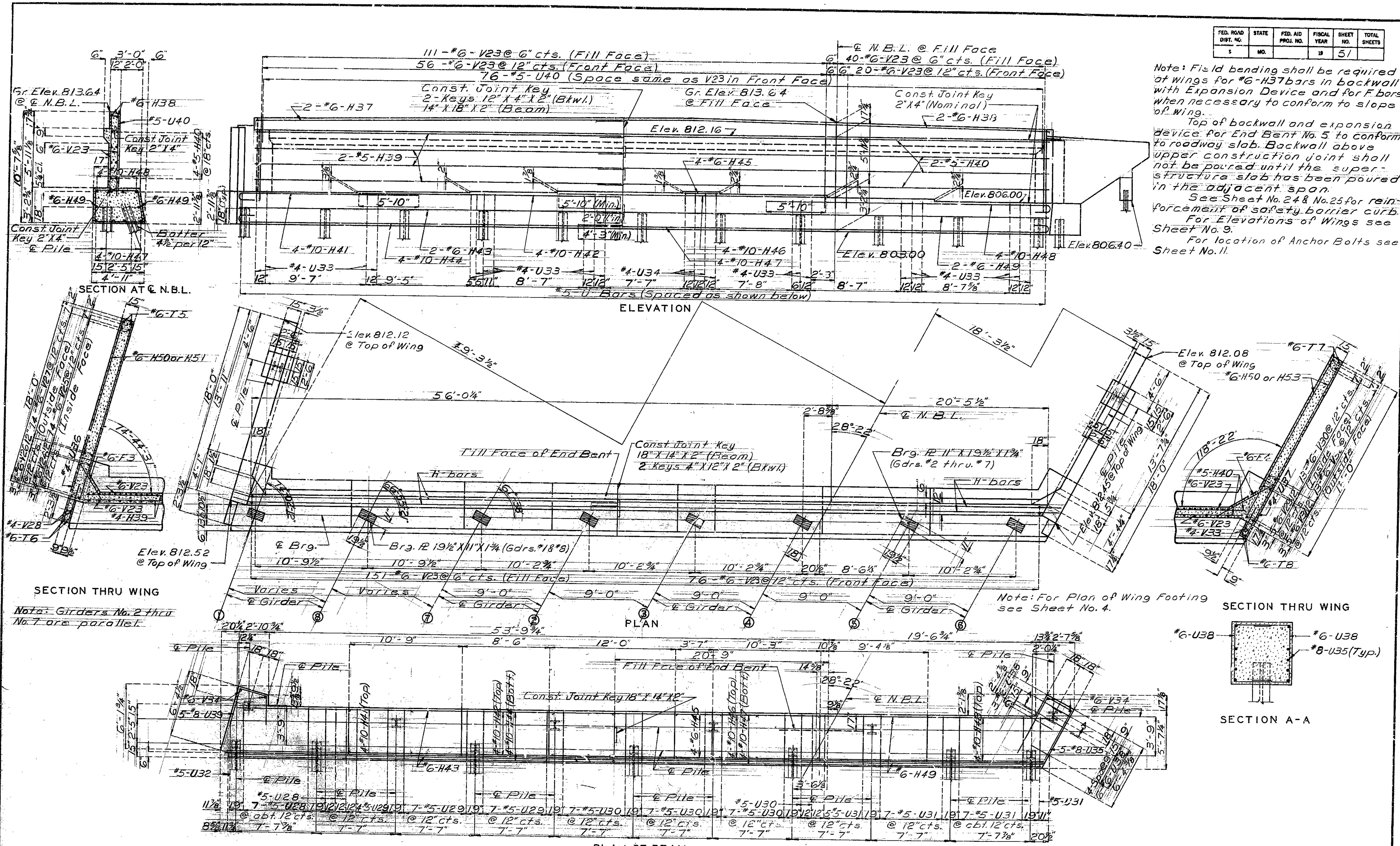
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	51	

Note: Field bending shall be required of wings for #6-H37 bars in backwall with Expansion Device and for F bars when necessary to conform to slope of wing.

Top of backwall and expansion device for End Bent No. 5 to conform to roadway slab. Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.

See Sheet No. 24 & No. 25 for reinforcement of safety barrier curb. For Elevations of Wings see Sheet No. 9.

For location of Anchor Bolts see Sheet No. 11.



PLAN OF BEAM  
DETAILS OF END BENT NO. 5

DETAILED July 1979  
CHECKED Aug. 1979

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

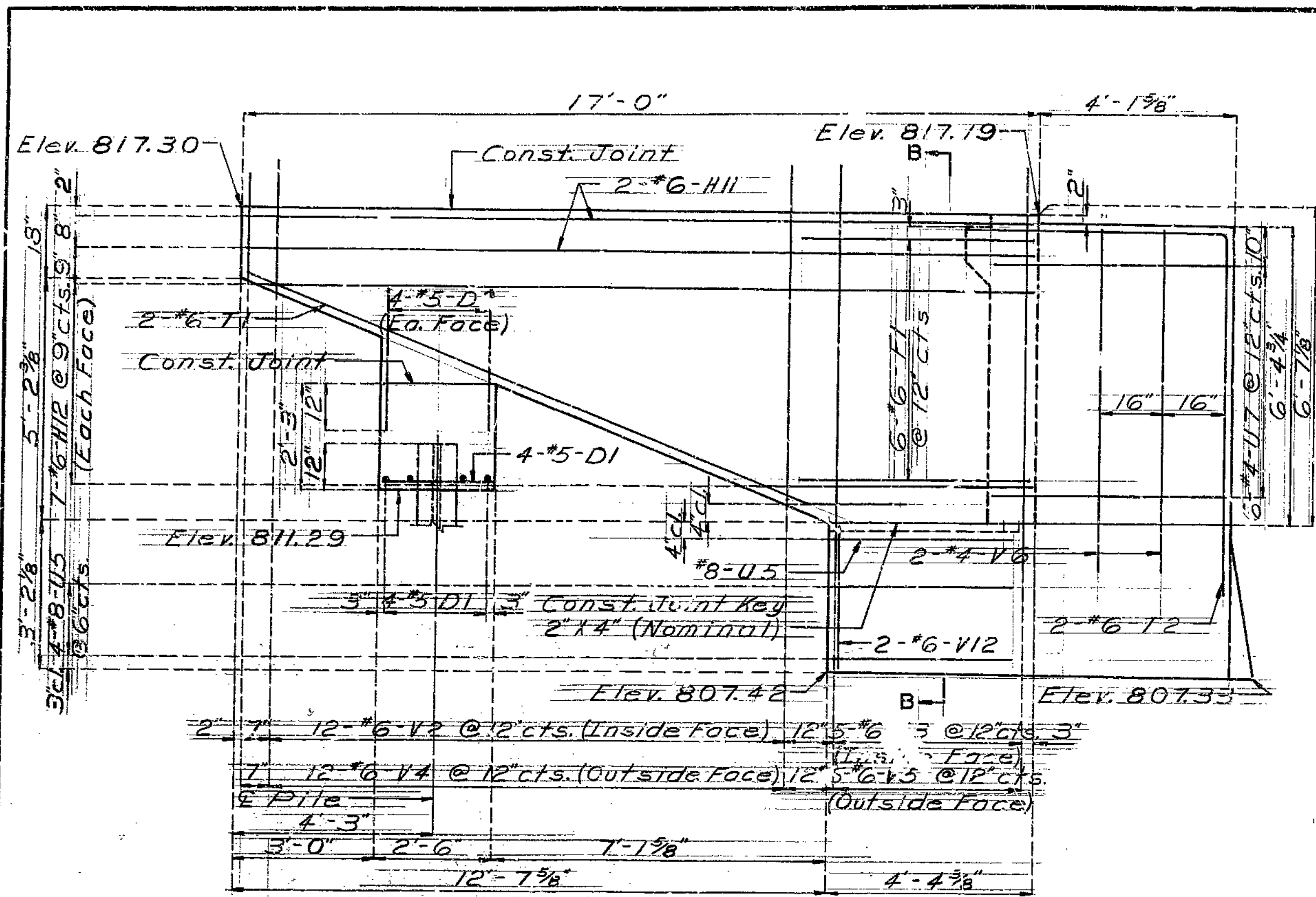
Sheet No. 8 of 28.

CLAY COUNTY

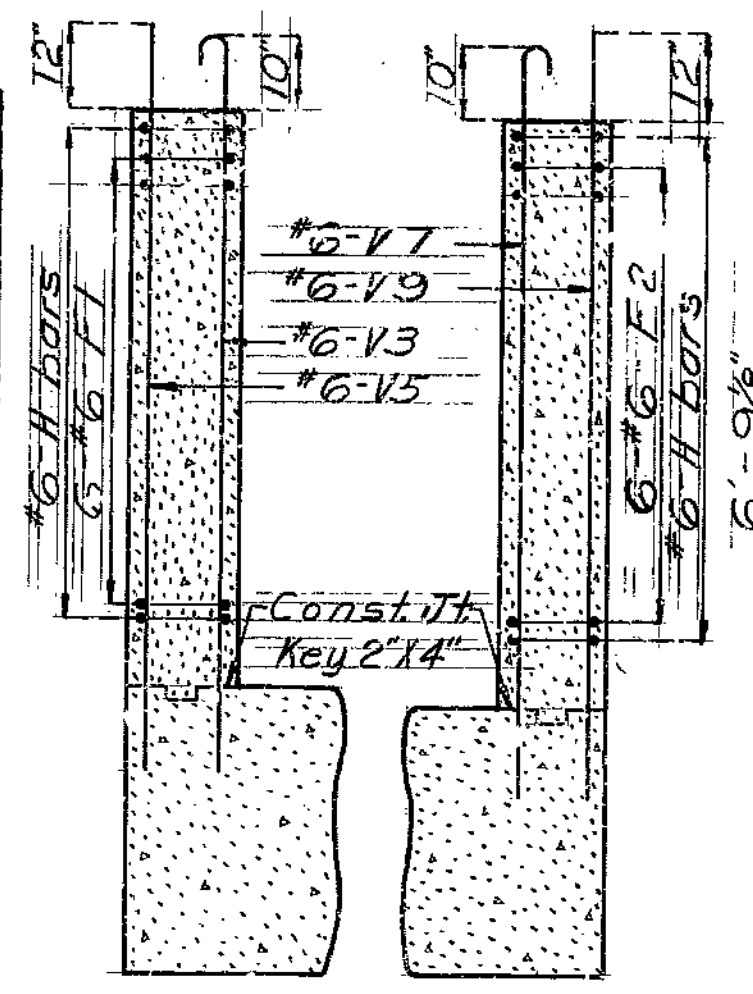
A-3375

186

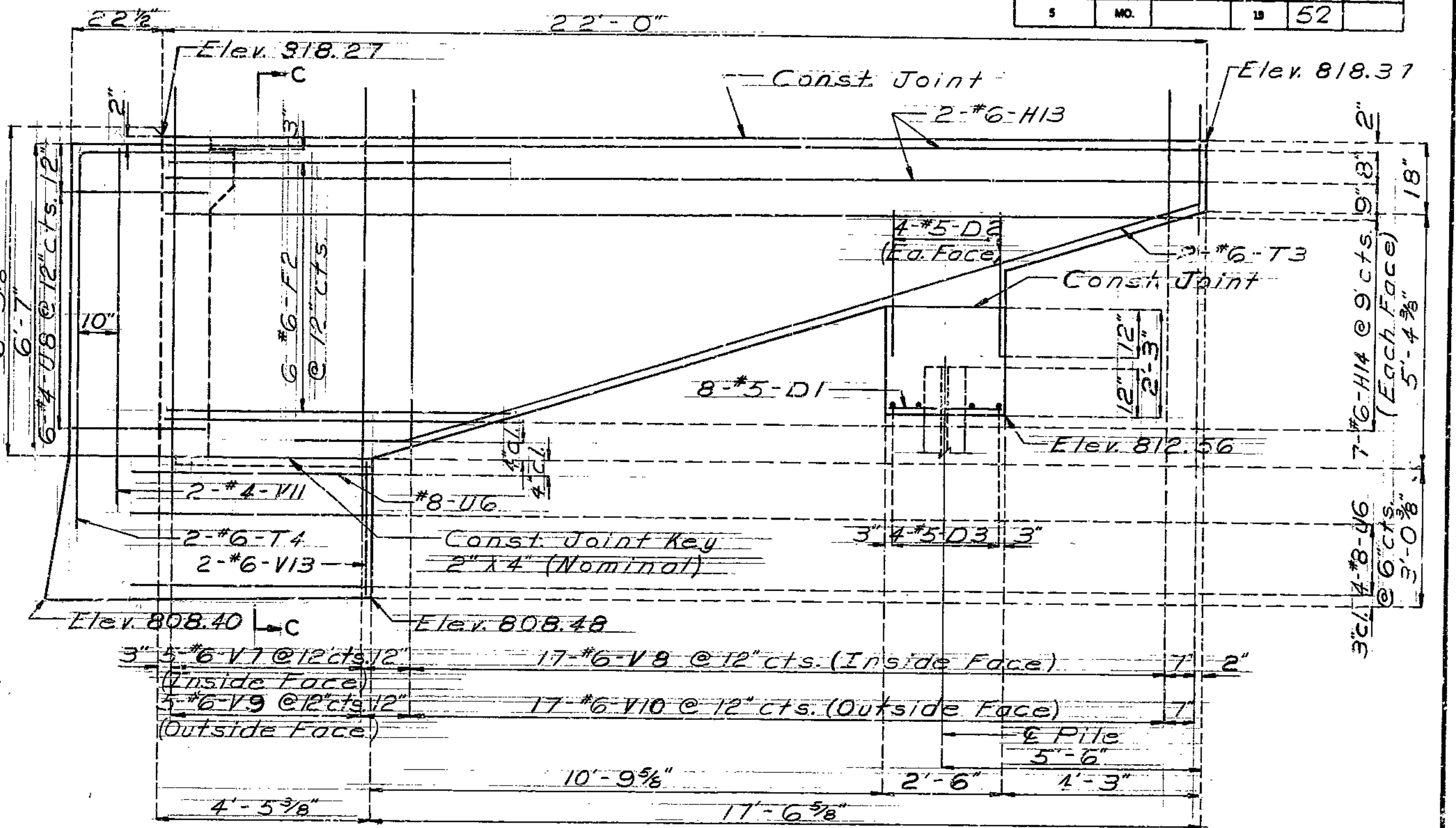
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	52	



ELEVATION OF 17'-0" WING

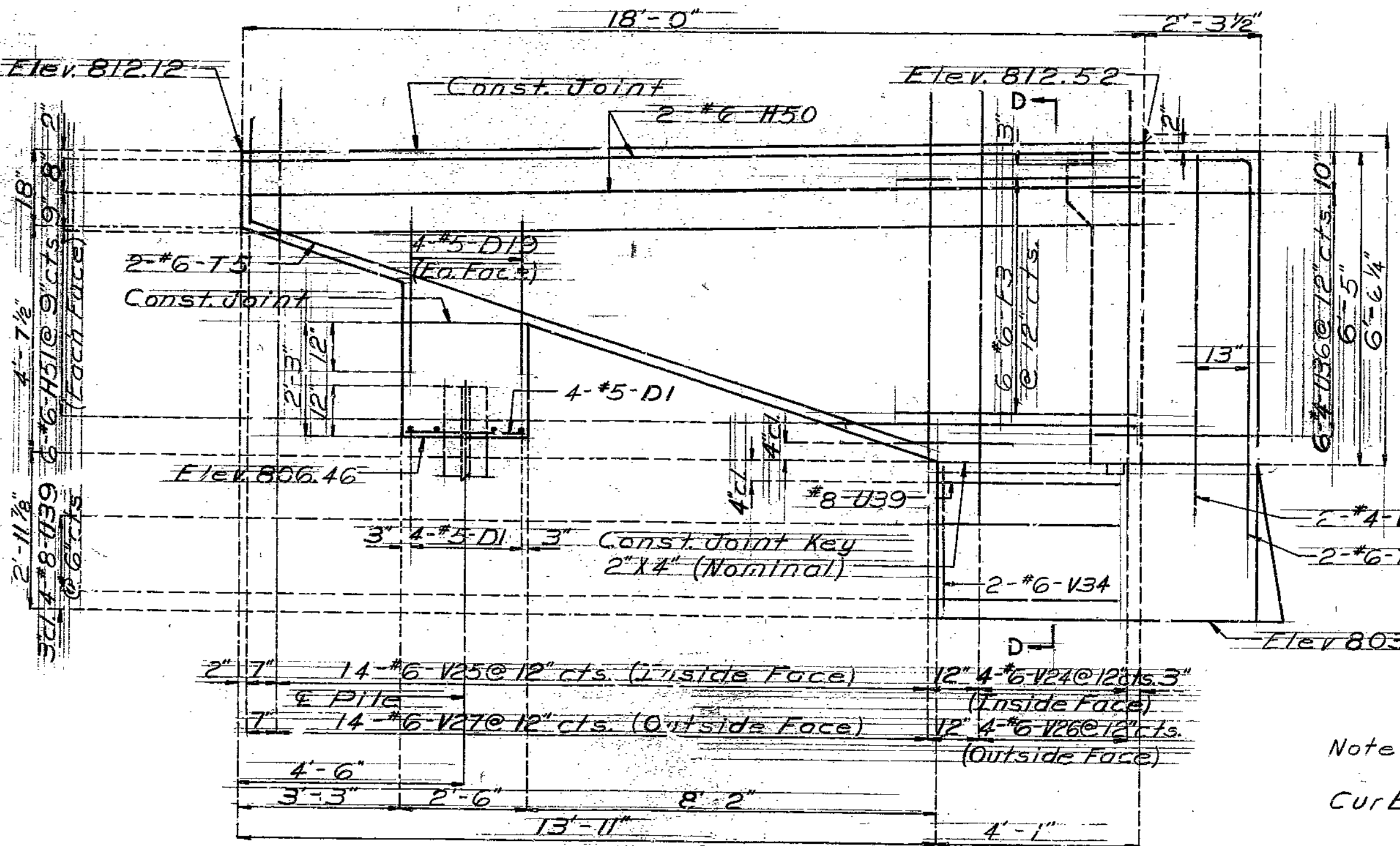


SECTION B-B SECTION C-C

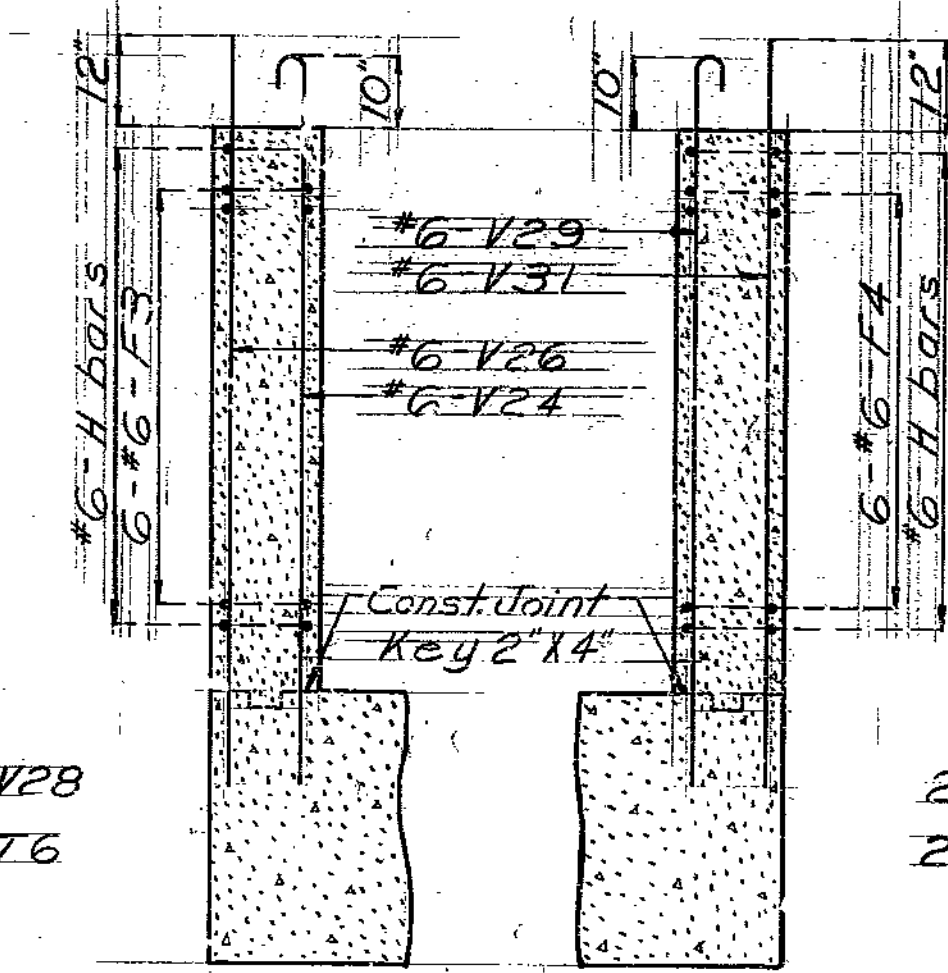


ELEVATION OF 22'-0" WING

DETAILS OF END BENT NO. 1



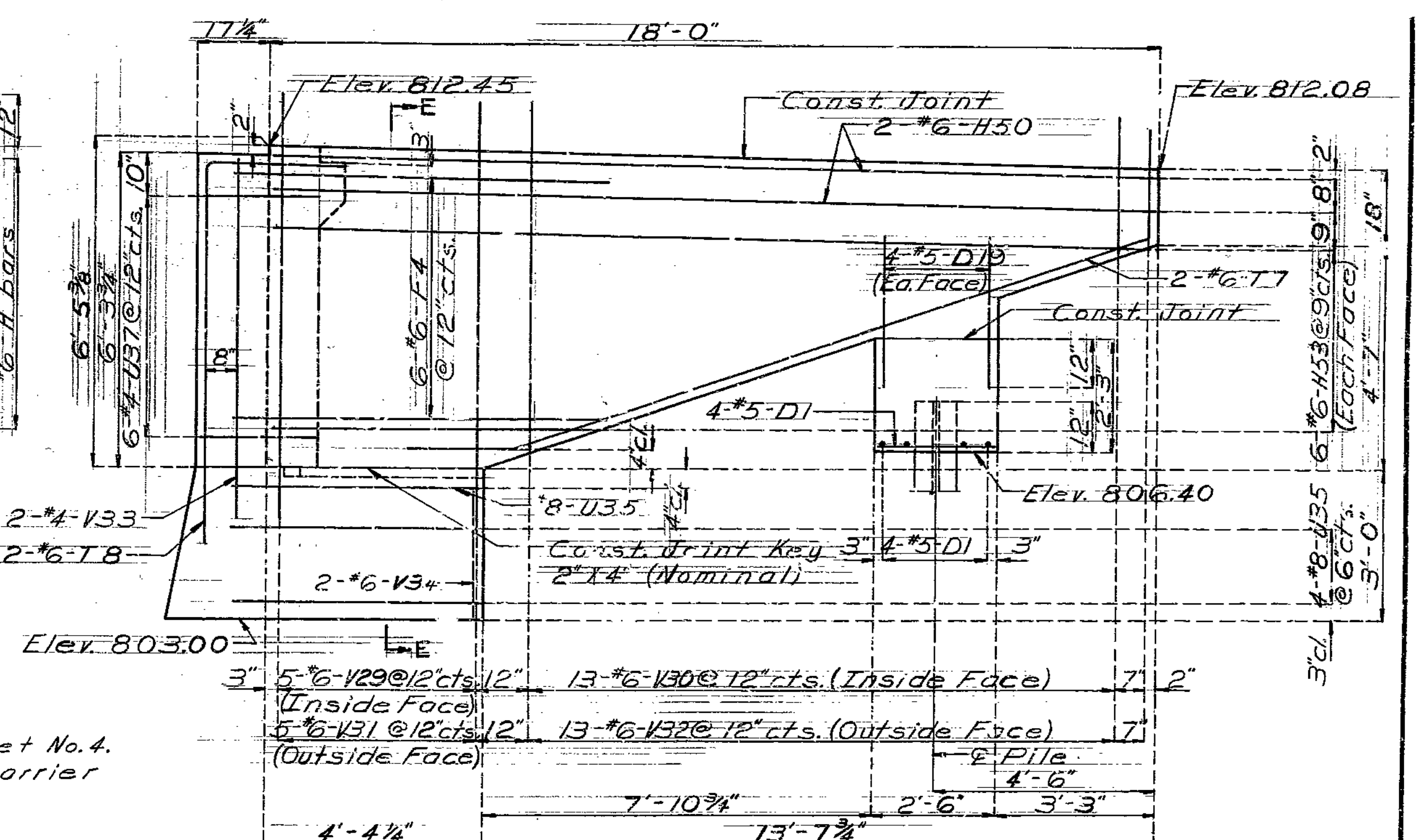
ELEVATION OF 18'-0" WING (LEFT)



SECTION D-D SECTION E-E

Note: For Plan of Wing Footing see sheet No. 4.  
 For reinforcement of Safety Barrier Curb see sheets No. 24 & No. 25.

DETAILS OF END BENT NO. 5



ELEVATION OF 18'-0" WING (RIGHT)

187

DETAILED July 1973  
 CHECKED Aug. 1979

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

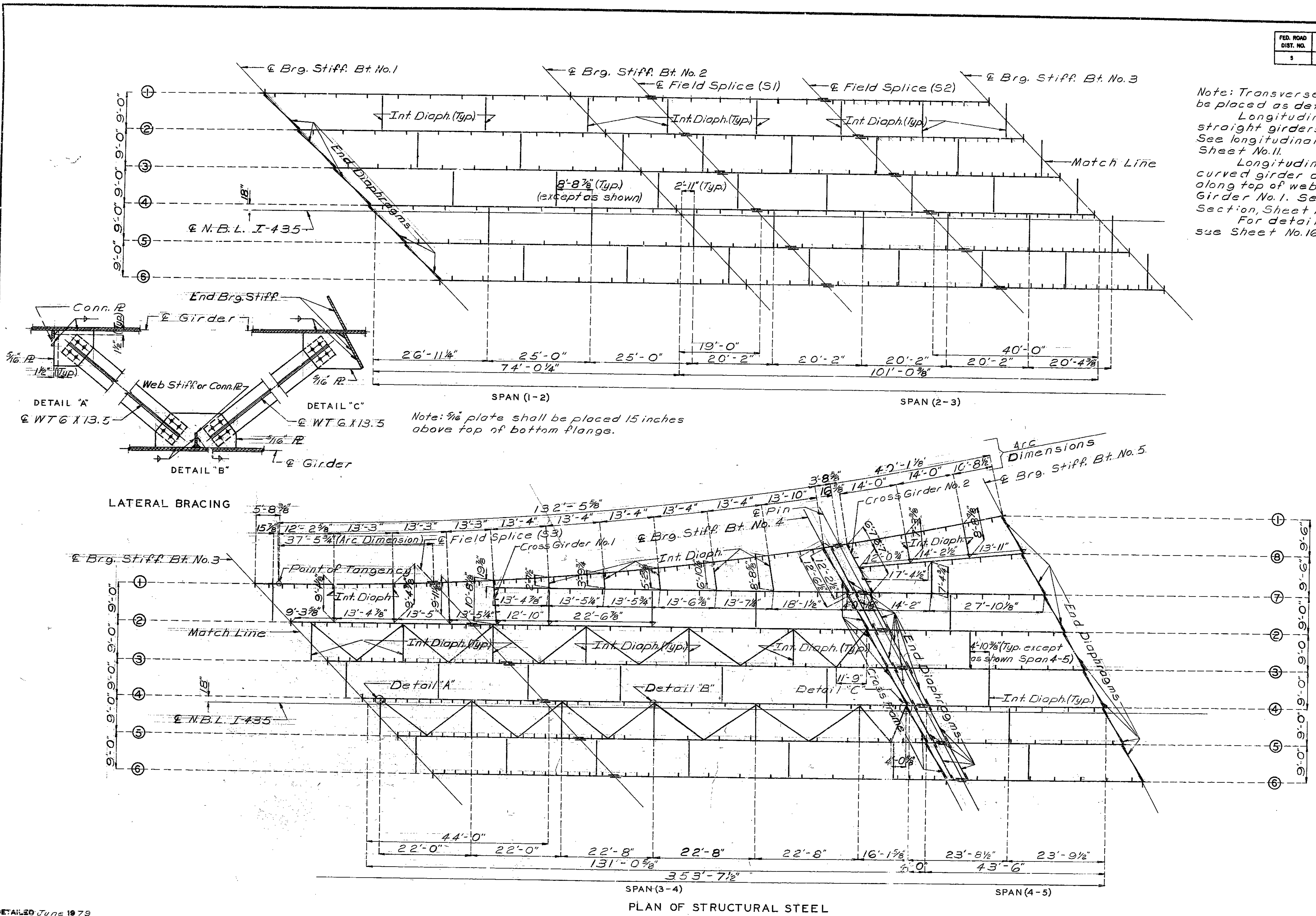
Sheet No. 9 of 28.

CLAY COUNTY

A-3375

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	53	

Note: Transverse web stiffeners shall be placed as detailed.  
 Longitudinal dimensions for straight girders are along top of webs. See longitudinal steel diagram, Sheet No. 11.  
 Longitudinal dimensions for curved girder are arc dimensions along top of web at centerline of Girder No. 1. See Part Longitudinal Section, Sheet No. 11.  
 For details of shear connectors see Sheet No. 16.



Note: 5/16" plate shall be placed 15 inches above top of bottom flange.

188

DETAILED June 1979  
 CHECKED June 1979

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

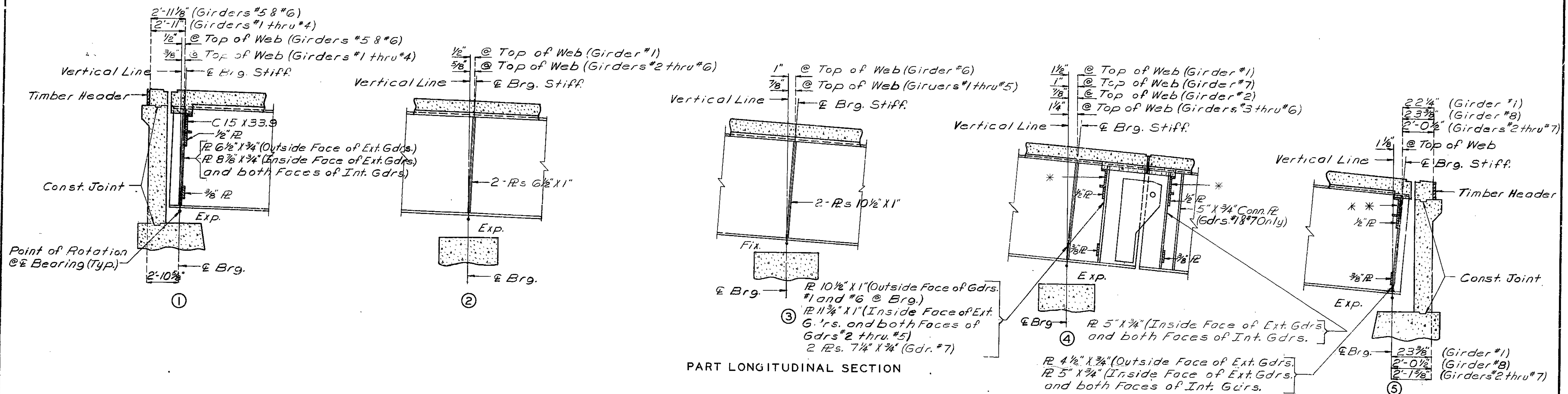
PLAN OF STRUCTURAL STEEL

Sheet No. 10 of 28.

CLAY COUNTY

A-3375

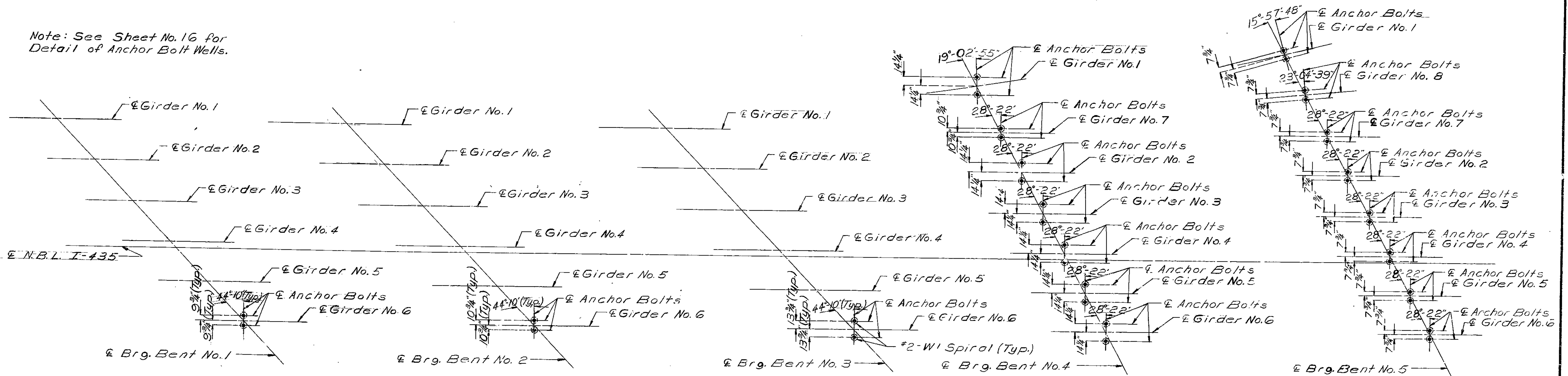
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	54	



PART LONGITUDINAL SECTION

\* = C12 X 25 for 9'-0" Spacing  
 \* = C15 X 33.9 for 11'-0 3/8" Space  
 \*\* = C12 X 25 for 9'-0" Spacing  
 \*\* = C12 X 30 for 9'-6" Spacing

Note: See Sheet No. 16 for Detail of Anchor Bolt Wells.



ANCHOR BOLT PLAN

DETAILED July 1979  
 CHECKED July 1979

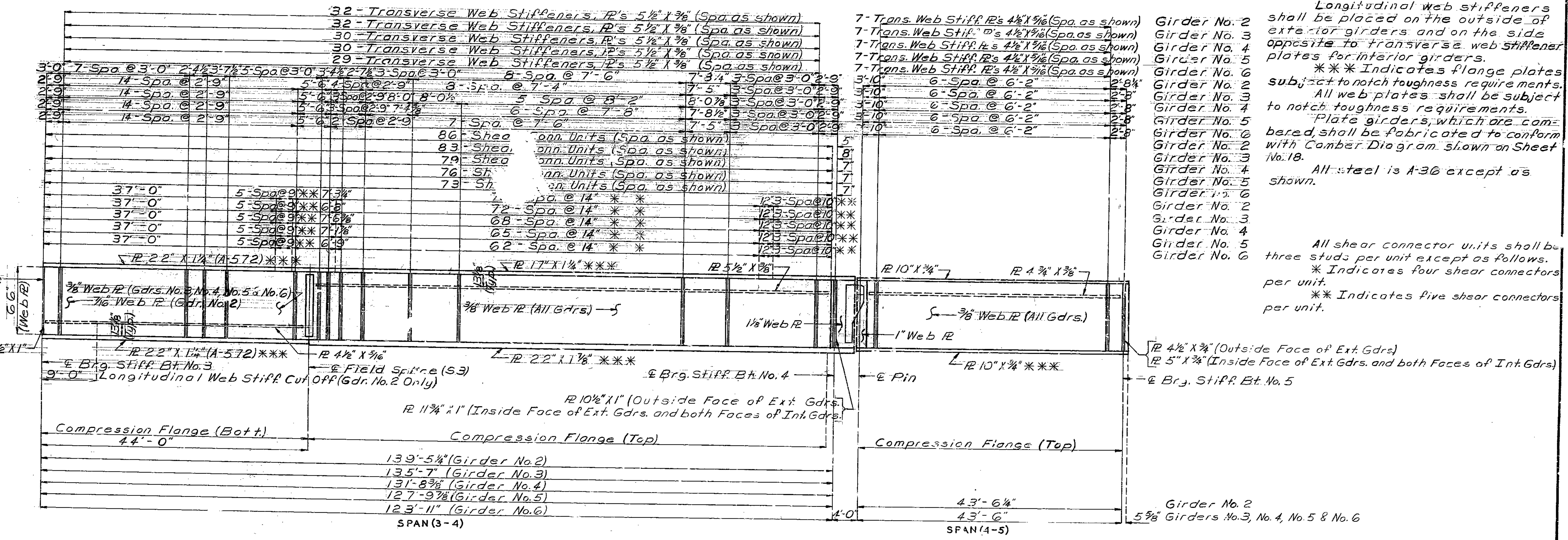
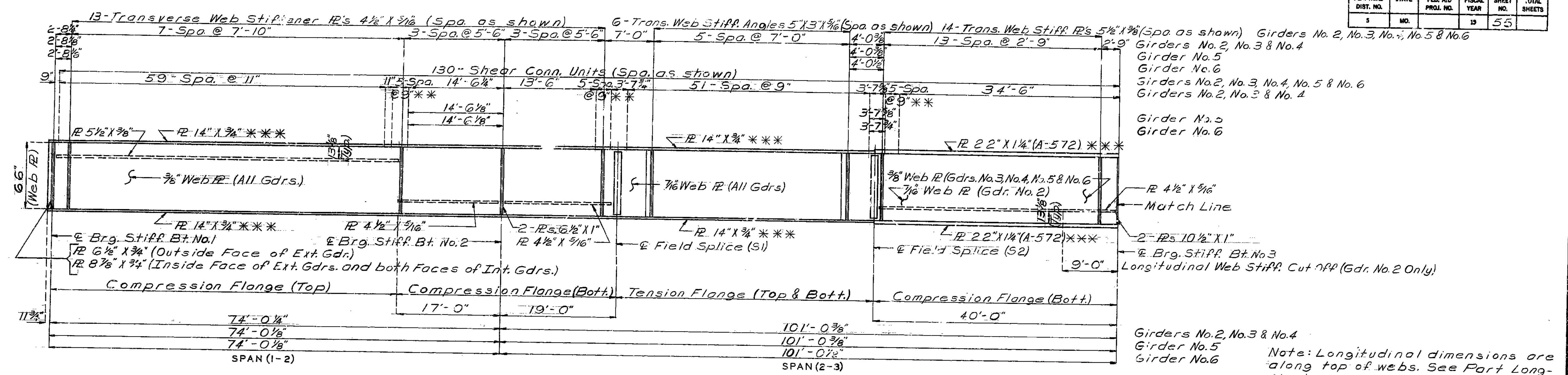
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 11 of 28.

CLAY COUNTY

A-3375

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	55	



ELEVATION OF GIRDERS NO. 2, NO. 3, NO. 4, NO. 5 & NO. 6

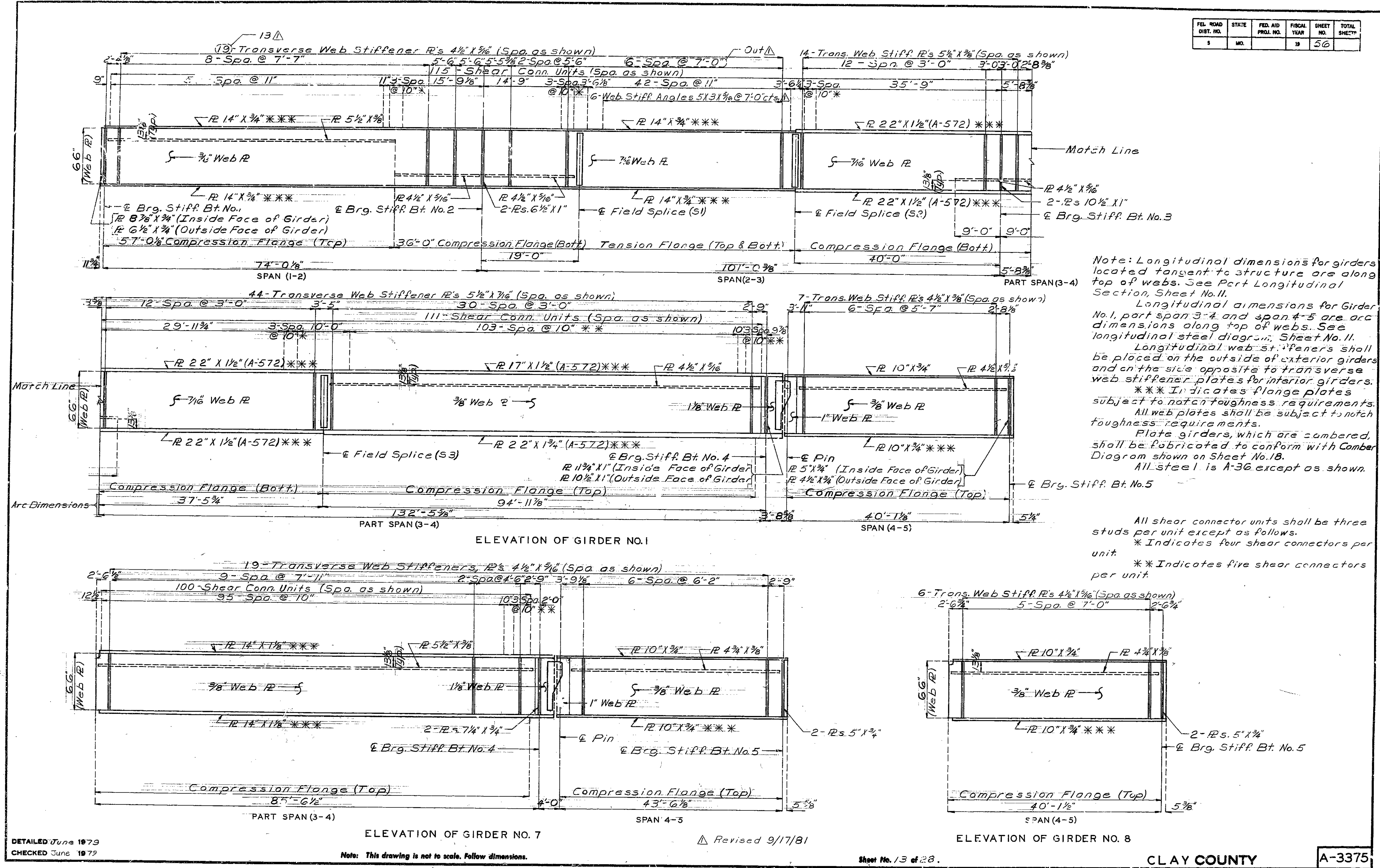
DETAILED June 1979  
CHECKED June 1979

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

Sheet No. 12 of 28.

190

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	56	



Note: Longitudinal dimensions for girders located tangent to structure are along top of webs. See Part Longitudinal Section, Sheet No. 11.

Longitudinal dimensions for Girder No. 1, part span 3-4 and span 4-5 are arc dimensions along top of webs. See longitudinal steel diagram, Sheet No. 11.

Longitudinal web stiffeners shall be placed on the outside of exterior girders and on the side opposite to transverse web stiffener plates for interior girders.

\*\*\* Indicates flange plates subject to notch toughness requirements. All web plates shall be subject to notch toughness requirements.

Plate girders, which are cambered, shall be fabricated to conform with Camber Diagram shown on Sheet No. 18.

All steel is A-36 except as shown.

All shear connector units shall be three studs per unit except as follows.

\* Indicates four shear connectors per unit.

\*\* Indicates five shear connectors per unit.

191

DETAILED June 1979  
CHECKED June 1979

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

Revised 9/17/81

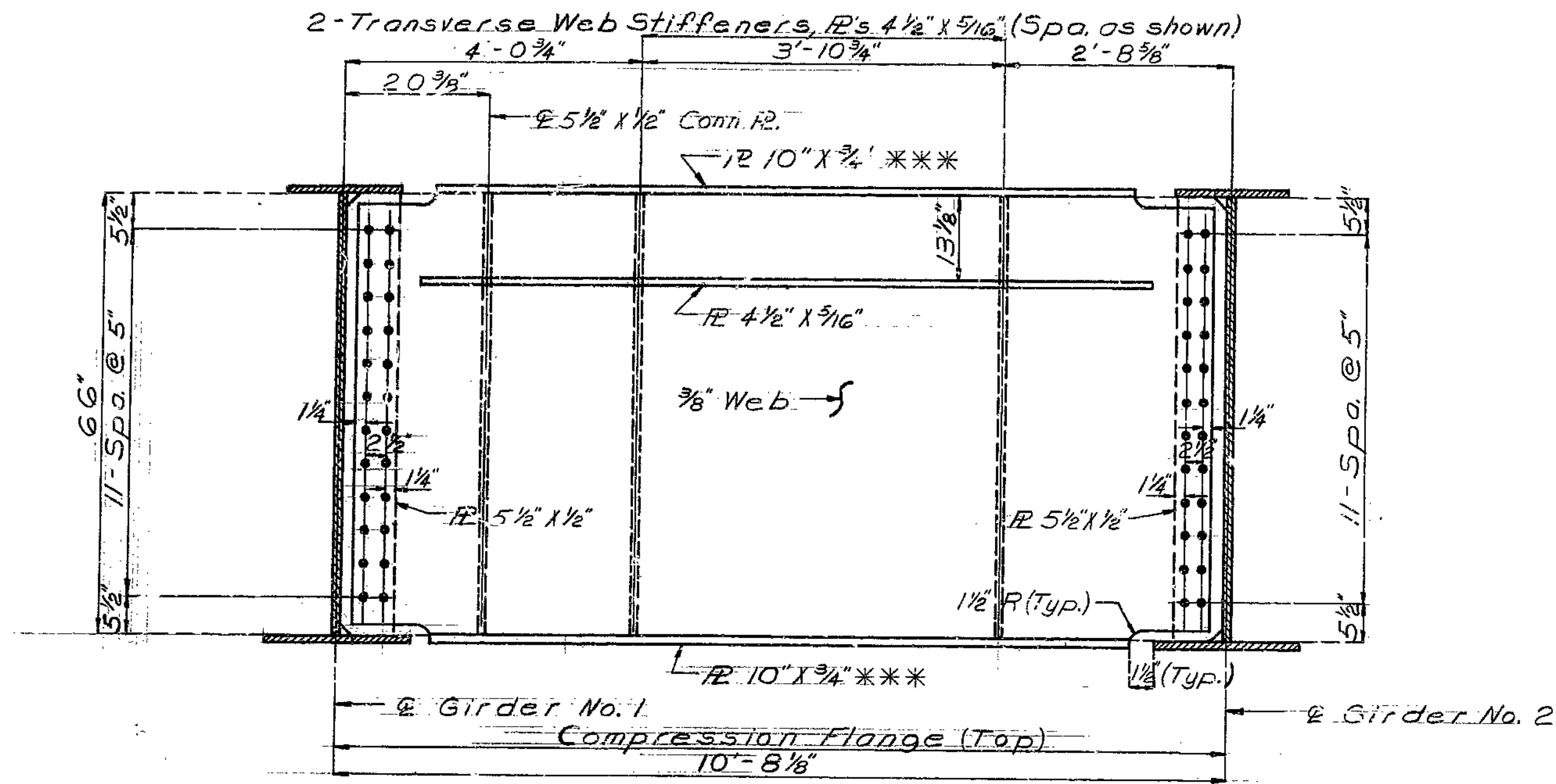
Sheet No. 13 of 28.

CLAY COUNTY

A-3375

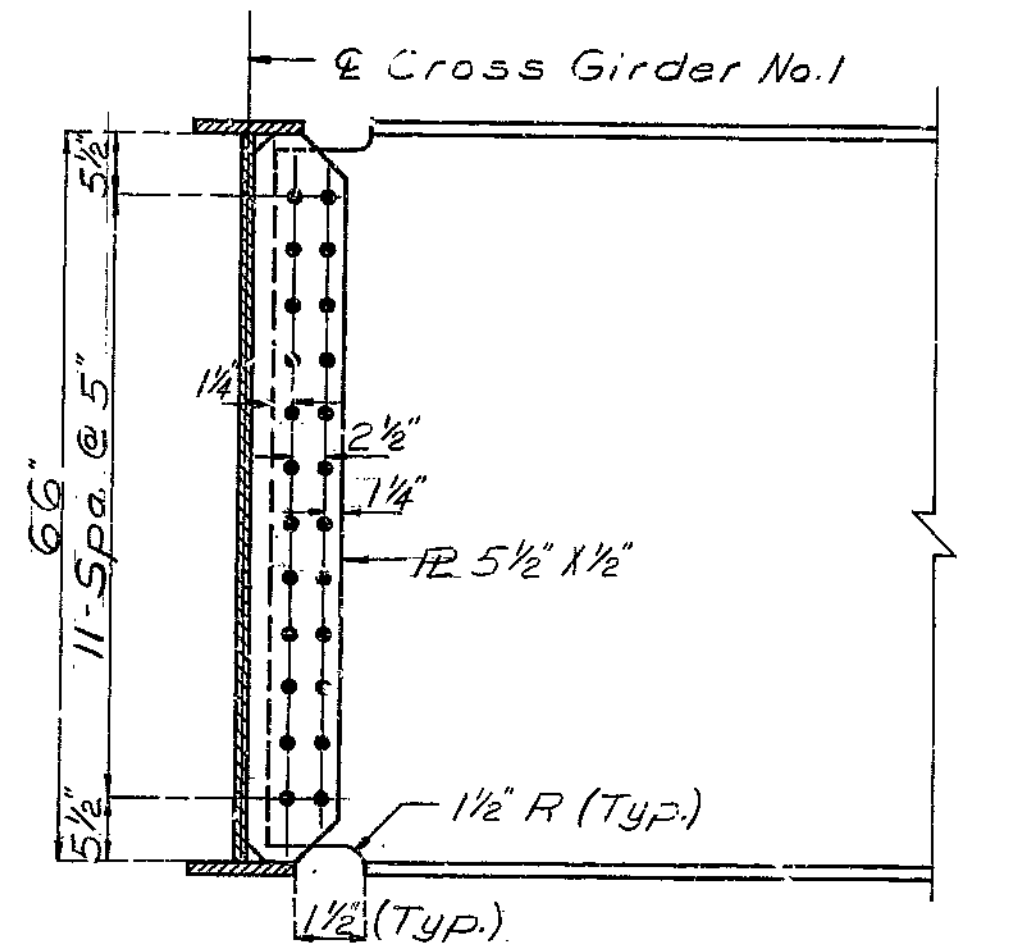


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	57	

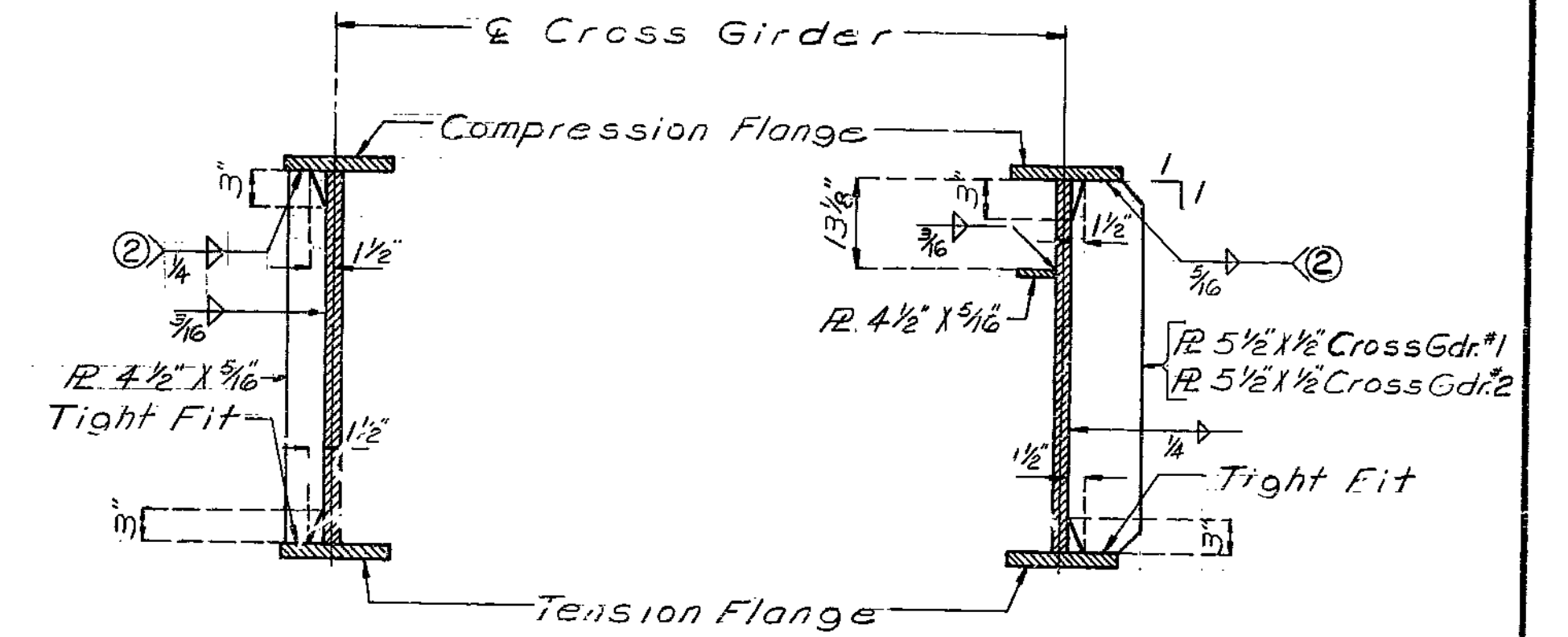


ELEVATION OF CROSS GIRDER NO. 1

Note: Use 3/4" High Strength Bolts with 3/16" Reamed Holes.

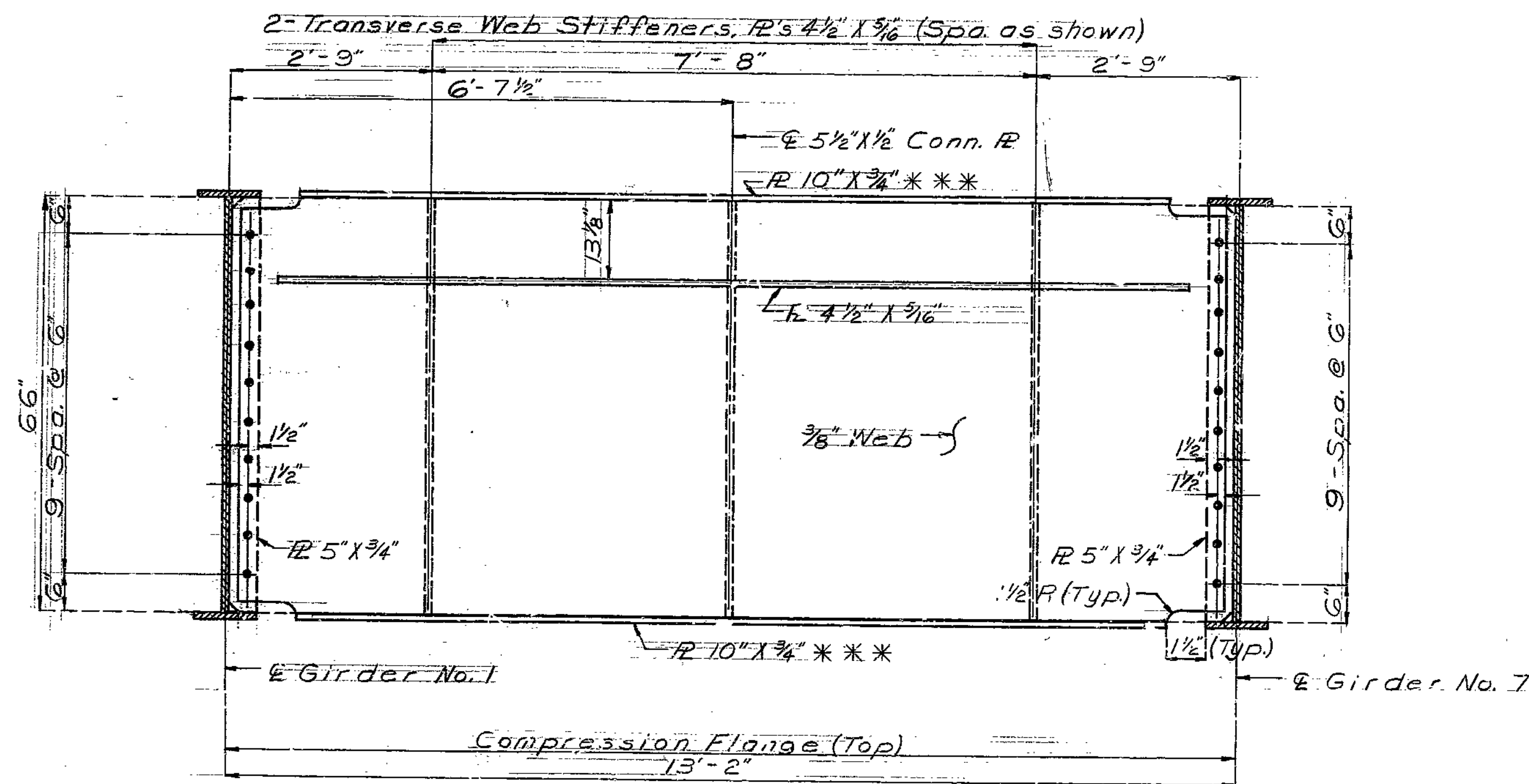


PART ELEVATION OF GIRDER NO. 7 SHOWING CONN. TO CROSS GIRDER NO. 1



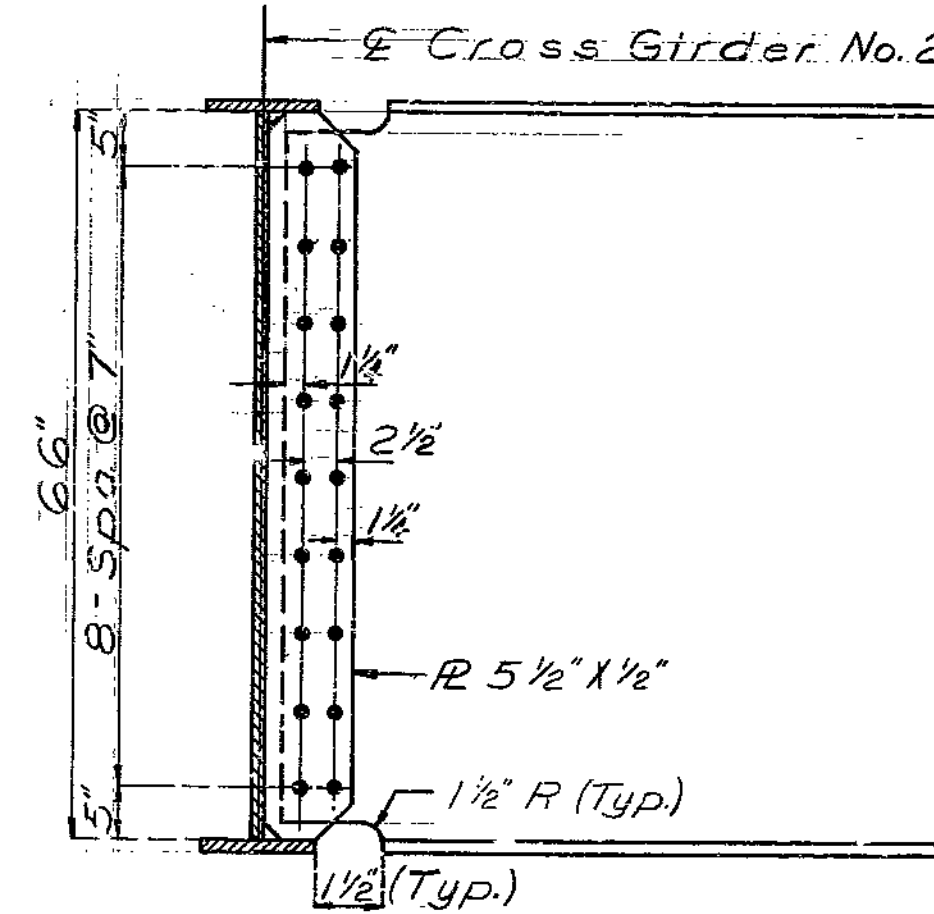
INT. WEB STIFF. (ONE SIDE ONLY)  
 LONG. WEB STIFF. CONN. R. (ONE SIDE ONLY)  
 (2) Weld to compression flange as located on Elevation of Girder.

WELDING DETAILS FOR CROSS GIRDERS



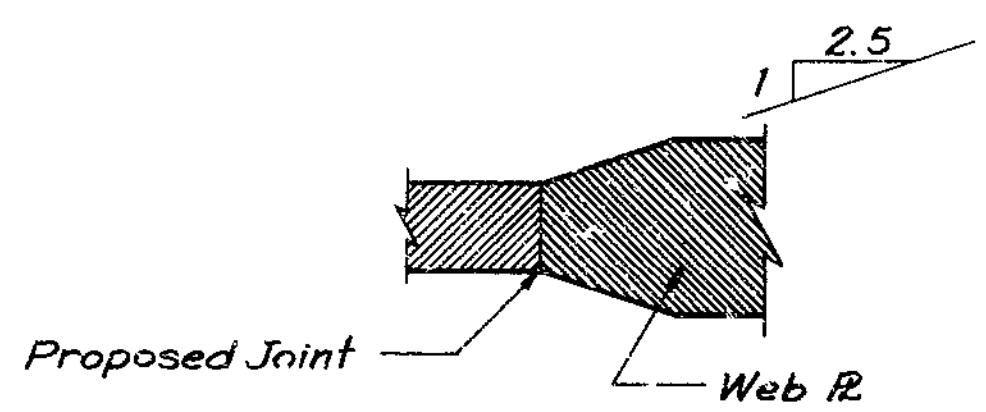
ELEVATION OF CROSS GIRDER NO. 2

Note: \*\*\* Indicates flange plates subject to notch toughness requirements.

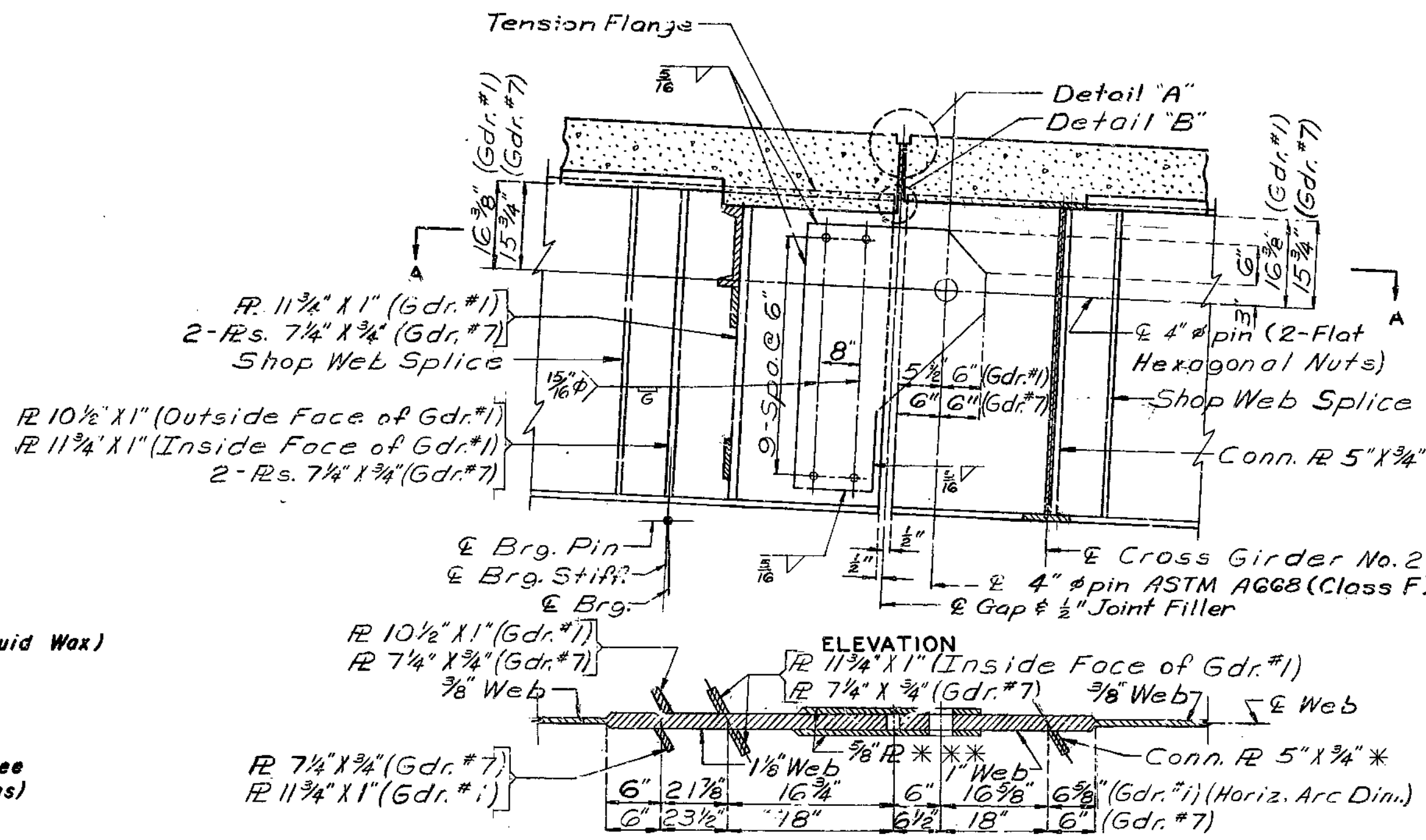


PART ELEVATION OF GIRDER NO. 8 SHOWING CONN. TO CROSS GIRDER NO. 2

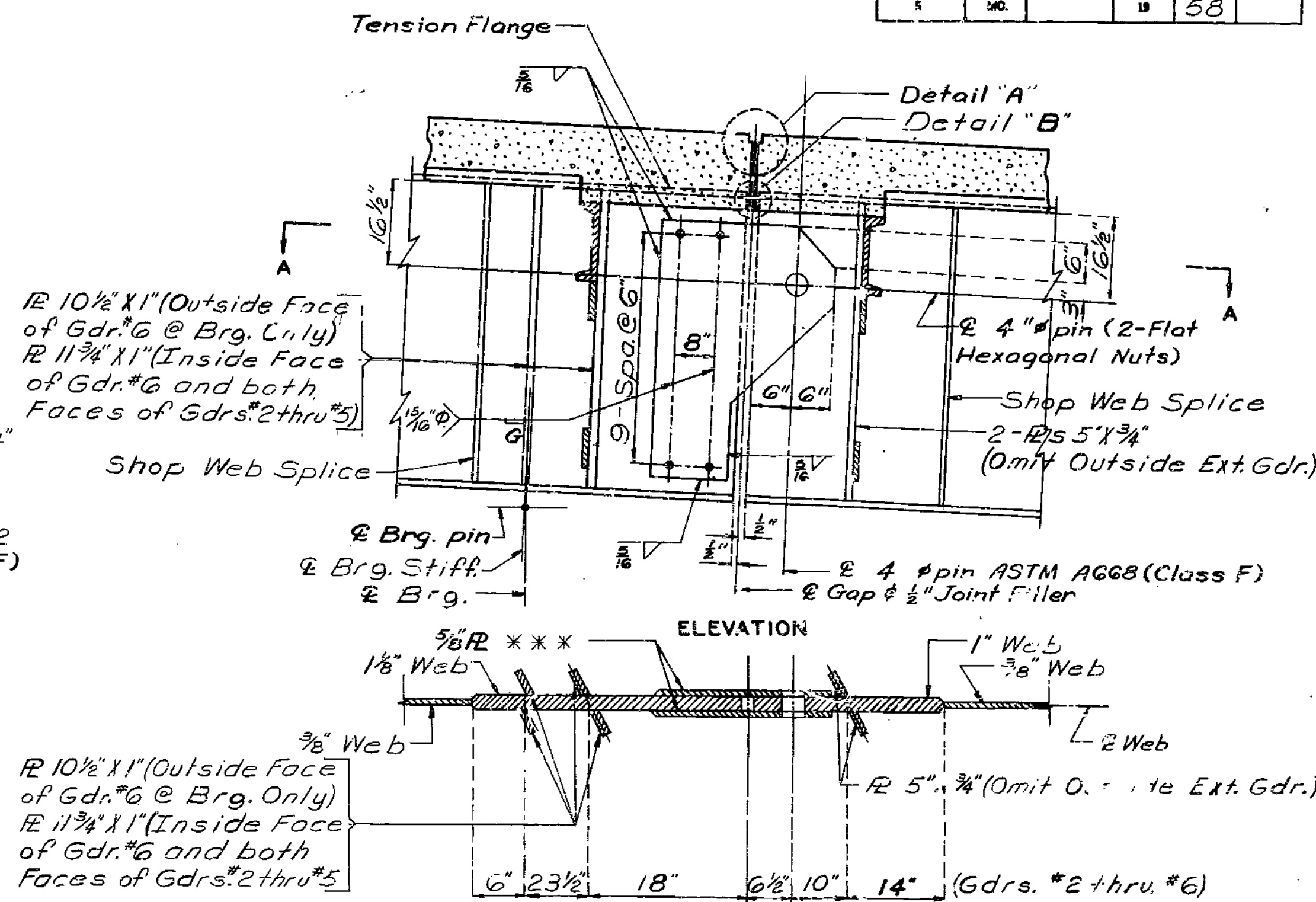
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	58	



DETAILS OF SHOP WEB SPLICE

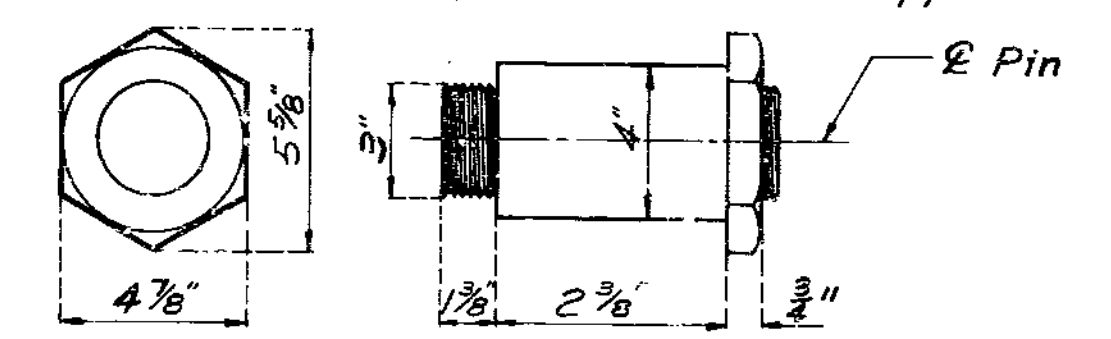


ELEVATION  
PIN PLATE CONNECTION GIRDERS NO.1 & NO.7

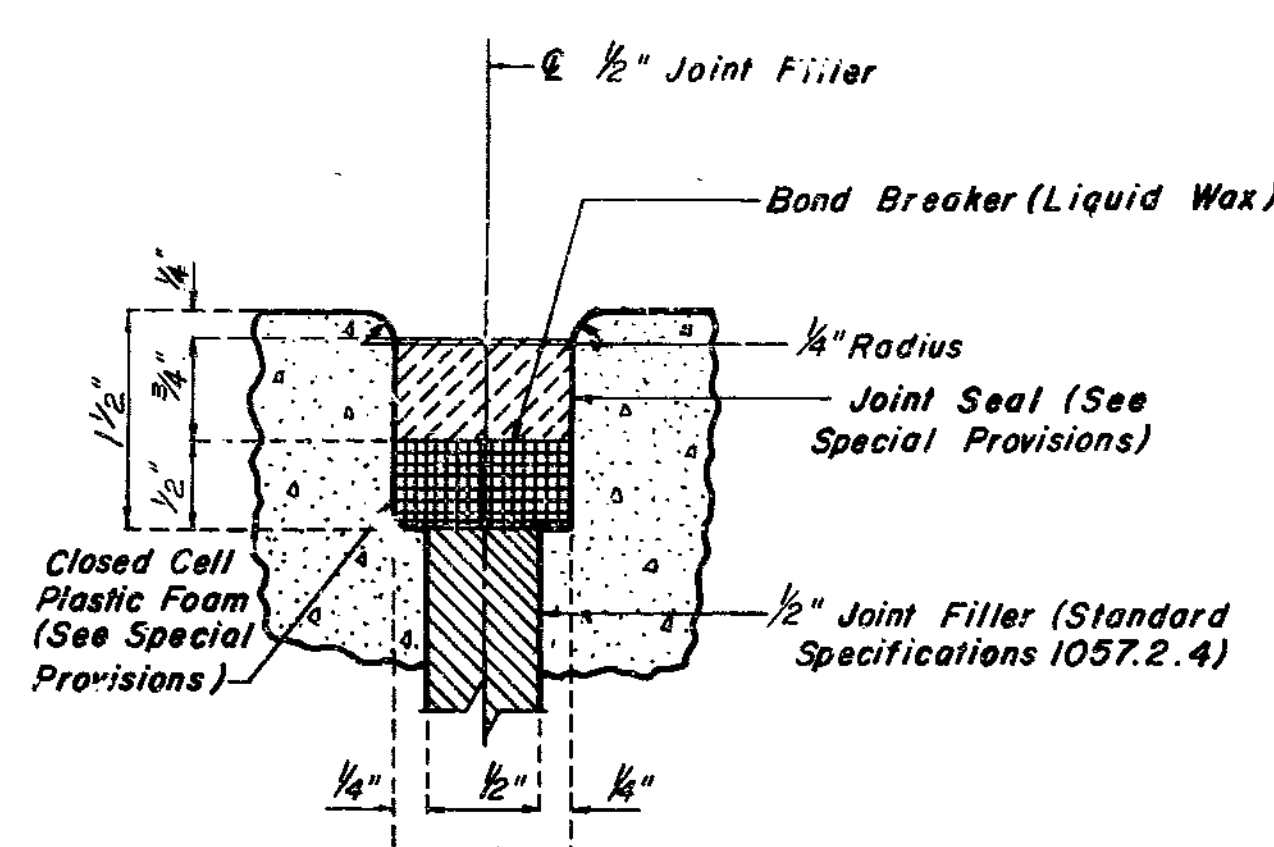


ELEVATION  
PIN PLATE CONNECTION GIRDERS NO.2 THRU NO.6

\*\*\* Indicates pin plates subject to notch toughness requirements.  
\* Conn. Plate shown for Girder No.1, Girder No.7 opposite side.

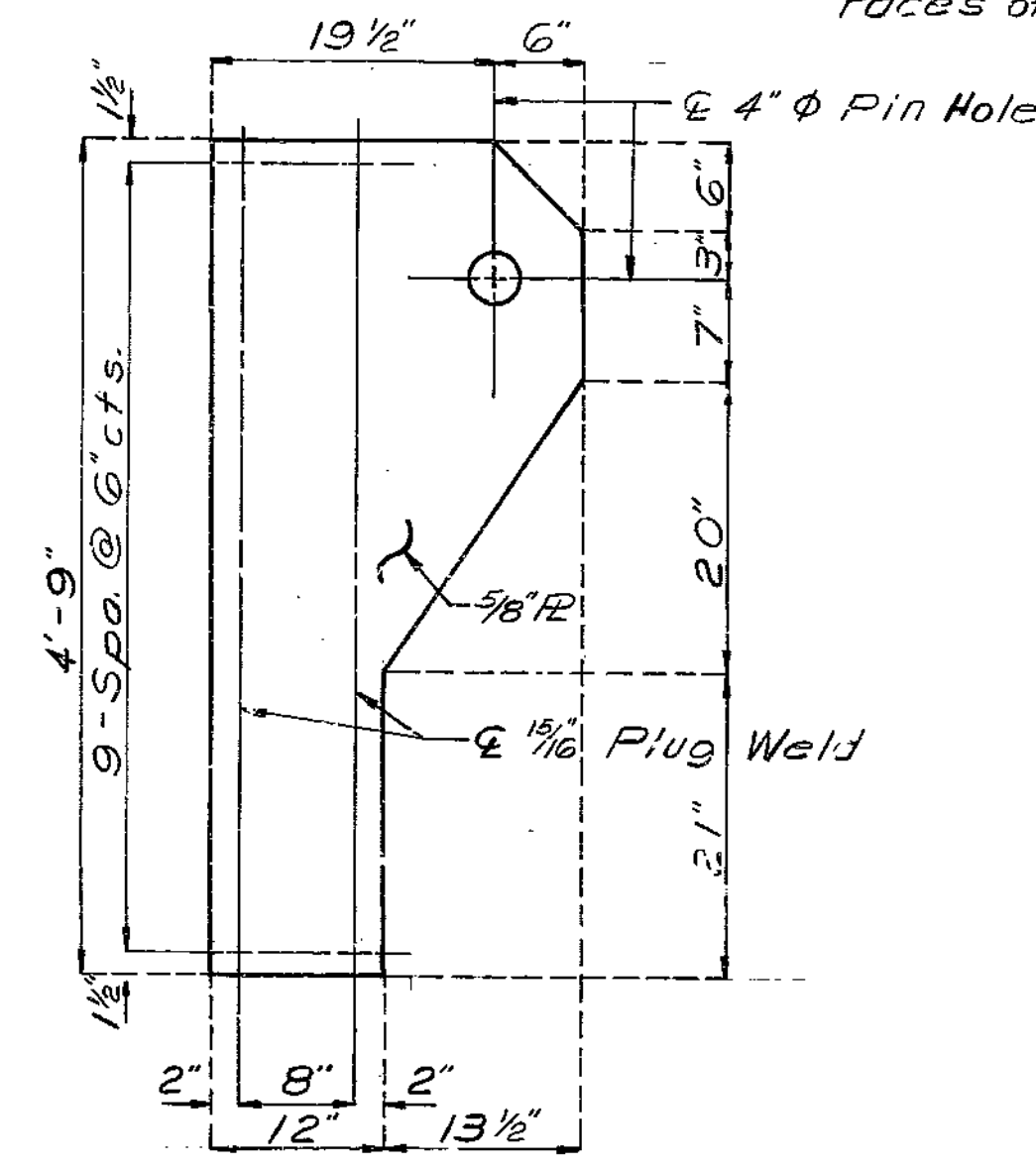


DETAILS OF PIN AND FLAT HEXAGONAL NUTS  
MATERIAL: PIN-ASTM A688 (CLASS F)  
NUT-ASTM A 38

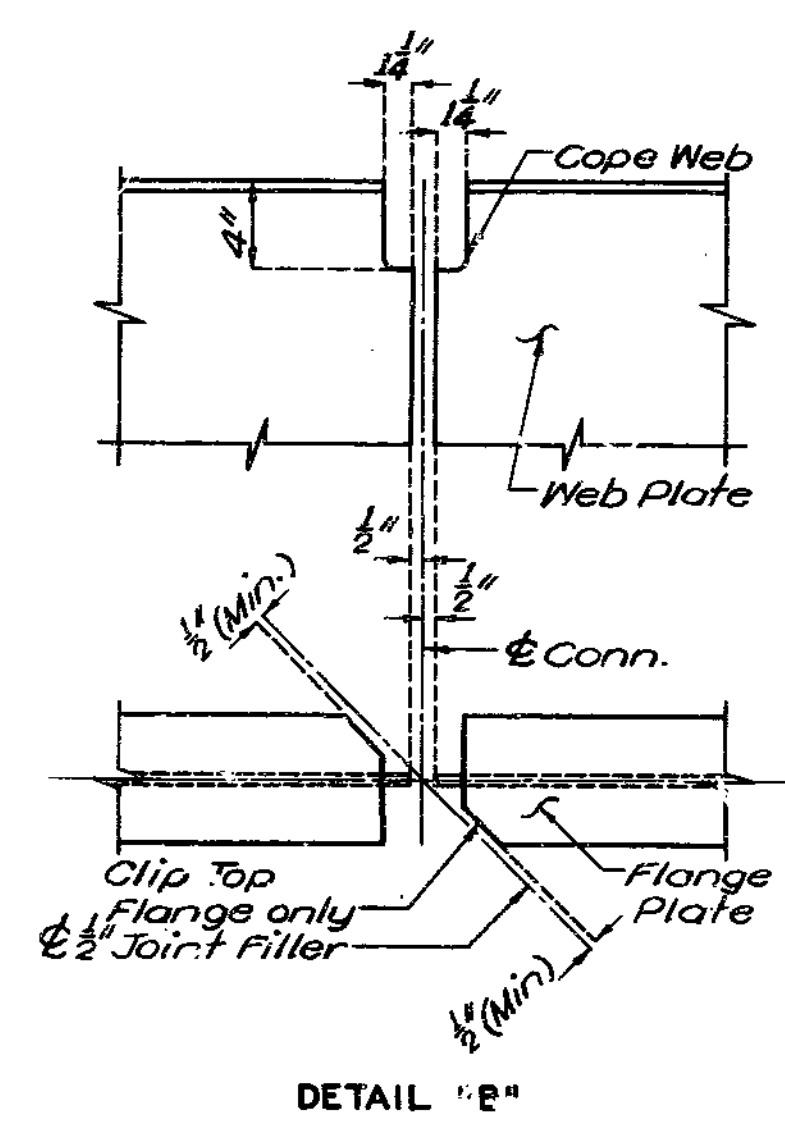


NOTE: 1" JOINT TO BE CONSTRUCTED BETWEEN ROADWAY FACES OF CURBS.

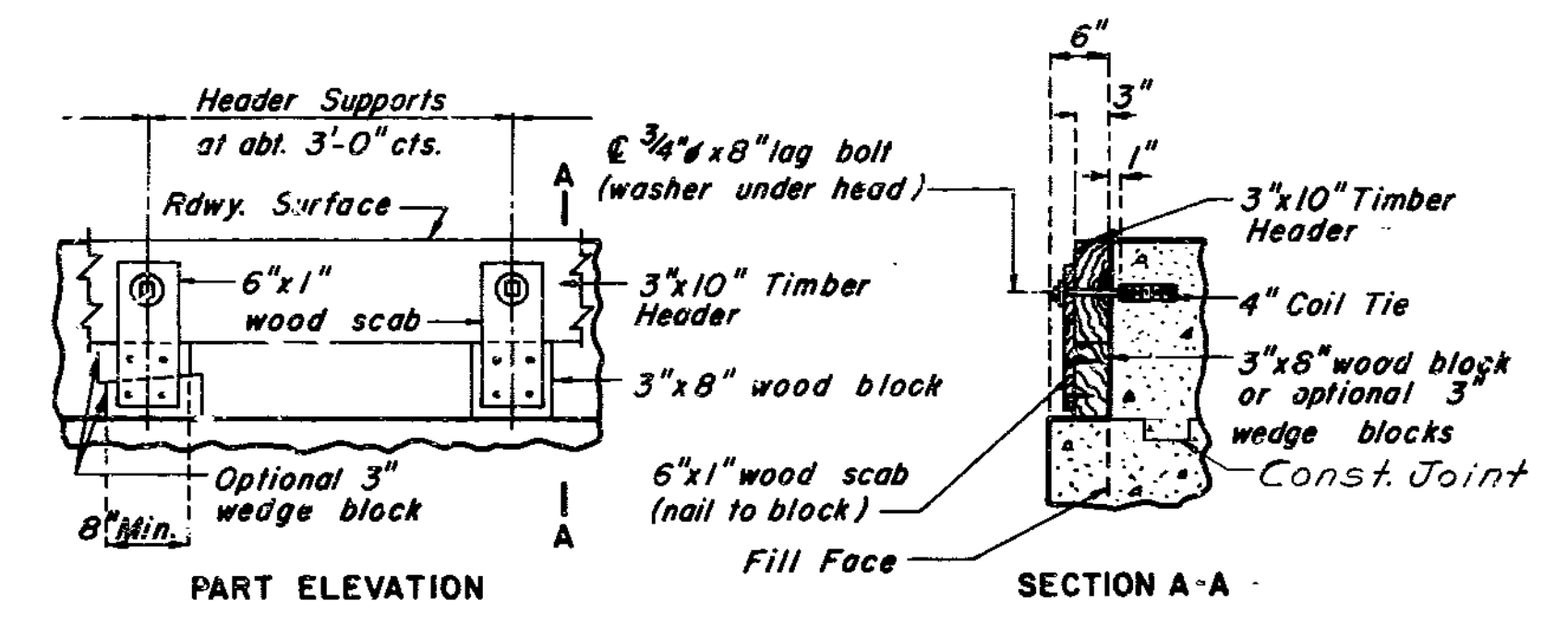
DETAIL "A"



DETAIL OF PIN PLATE



DETAIL "B"



DETAILS OF TIMBER HEADER AT END BENTS

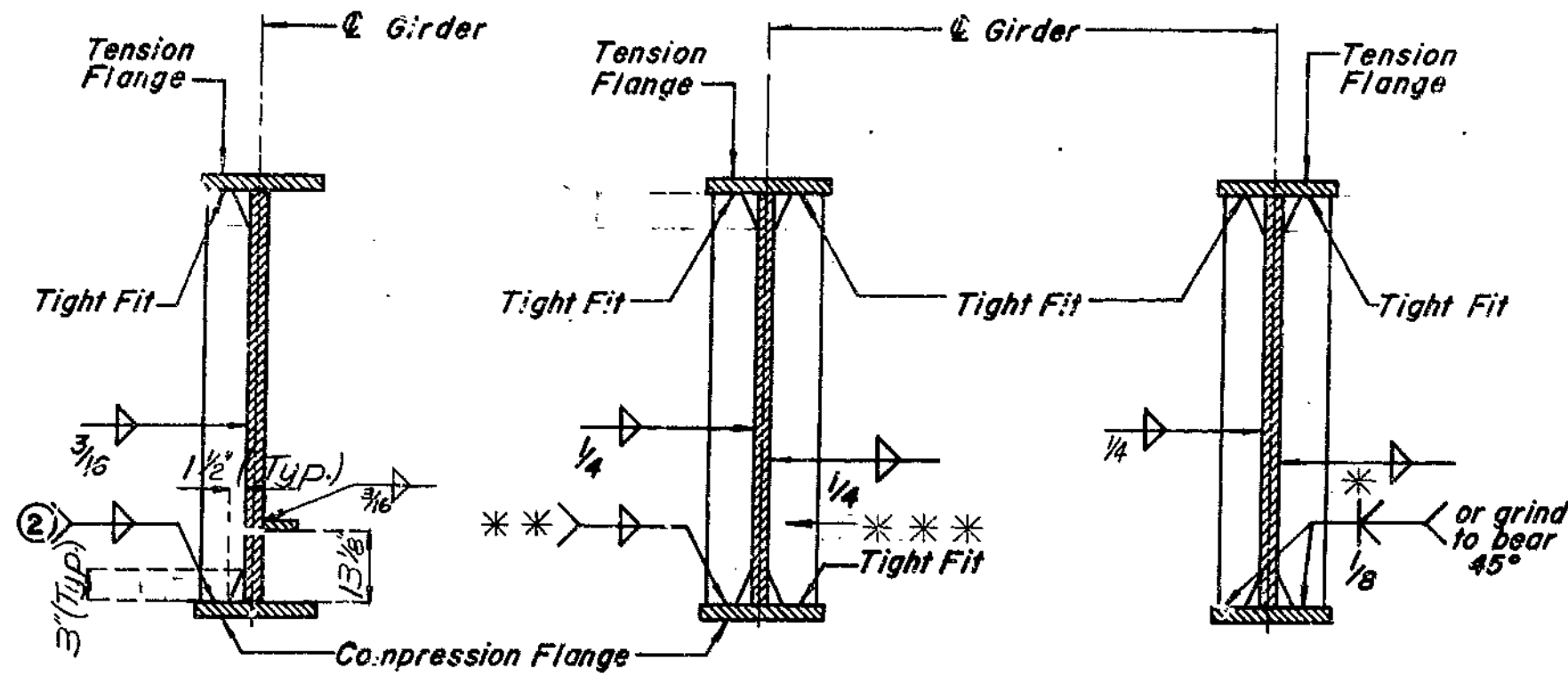
Note: Cost of timber headers complete in place to be included in price bid for concrete.

193

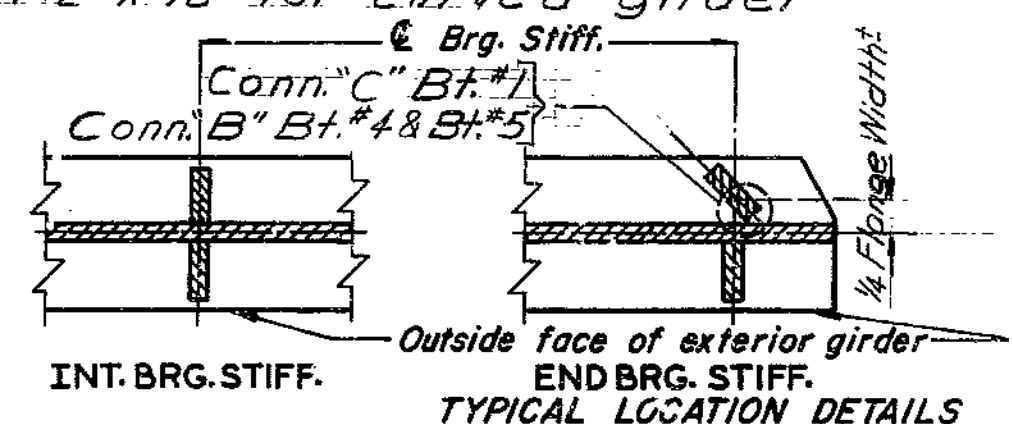
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	50	

**NOTES: TYPE "D" BEARINGS**

ANCHOR BOLTS FOR TYPE "D" BEARINGS SHALL BE 1-1/4" SWAGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE, WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS. "ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS. "X" INDICATES MACHINE FINISH SURFACE. SHOP DRAWINGS ARE NOT REQUIRED FOR LEAD PLATES AND/OR PREFORMED FABRIC PADS.



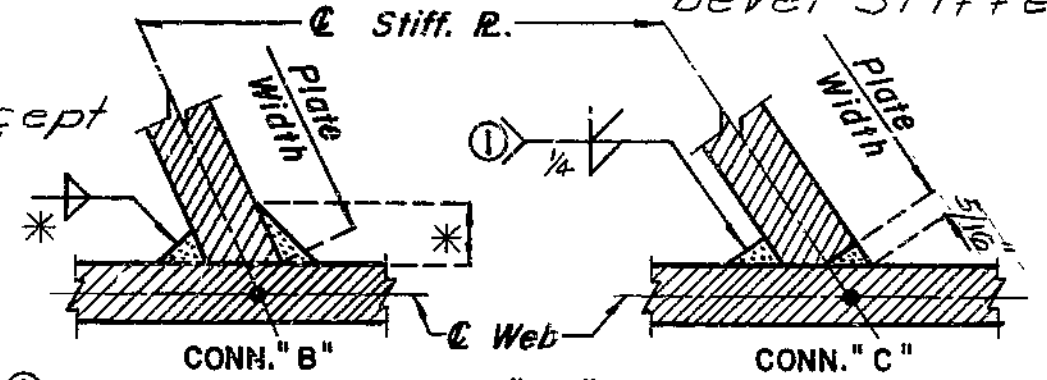
② Weld to compression flange as located on ELEVATION OF GIRDER.  
 \*\*\* Weld may be omitted on interior girders, and Tight Fit used when Int. Diaph. Conn. R. is required on both sides.  
 \*\*\* R 5 1/2" X 1/2" for Cross Girder No. 1 and R 5" X 3/4" for Cross Girder No. 2.  
 \*\*\* R 4 1/2" X 3/8" for all straight girders.  
 \*\*\* R 4 1/2" X 3/8" for curved girder



TYPICAL LOCATION DETAILS

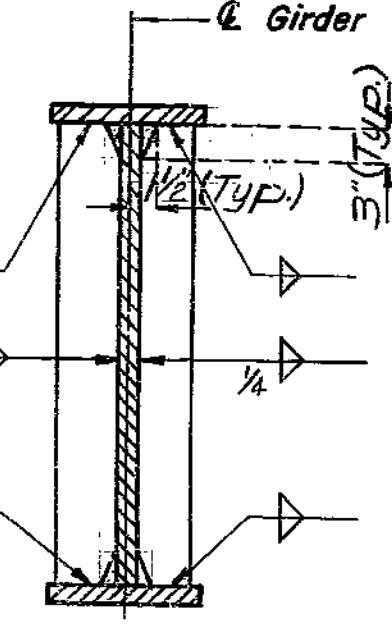
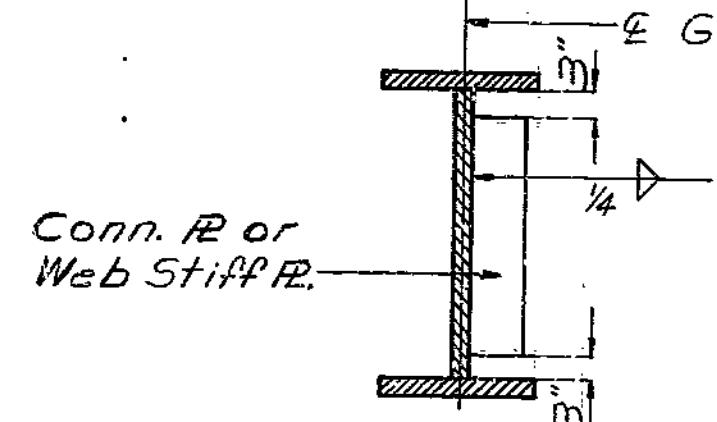
INT. WEB STIFF., BRG STIFF. AND INT. DIAPH. CONN. R'S  
 \*\*\* When dimension exceeds 1/2" bevel Stiffener Plate.

1/4" Weld for all R's except 1" R's shall be 3/8" Weld.

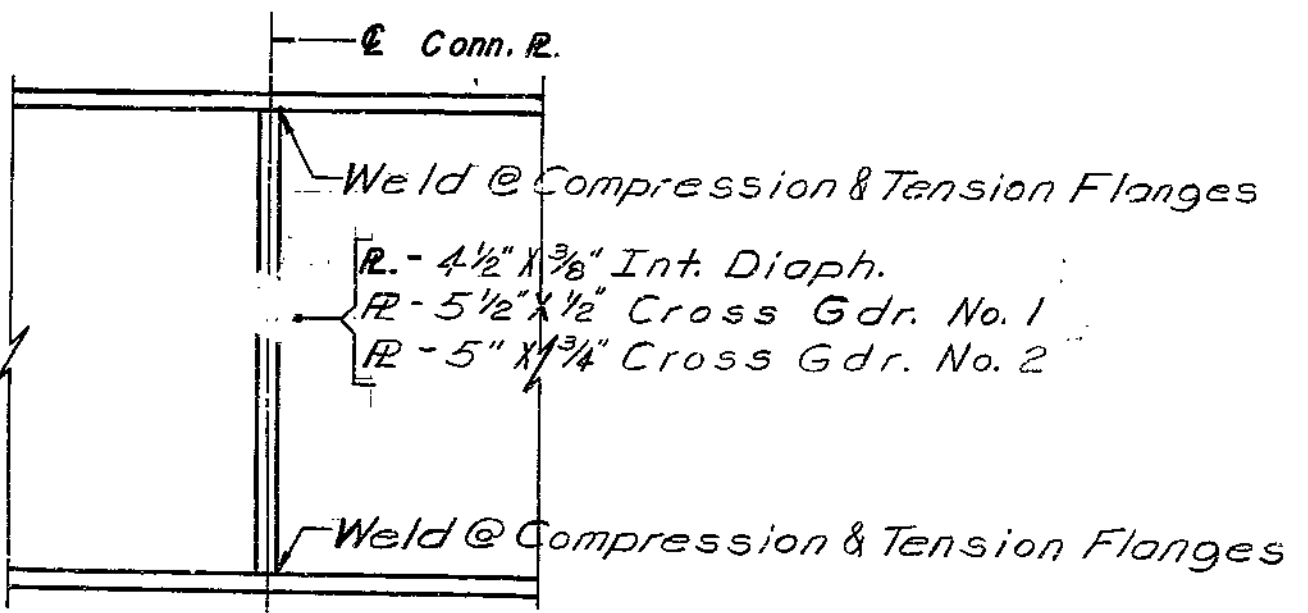


WELDING DETAILS

Note: When web stiffeners interfere with flange splice plates and bolts, clip stiffener plates as shown.

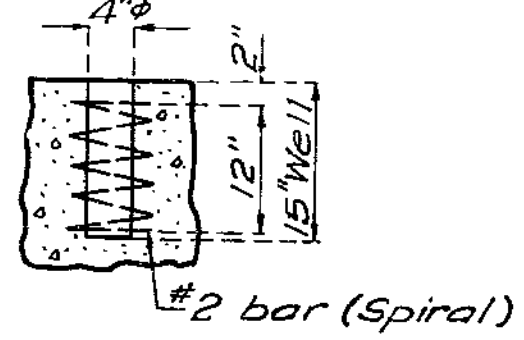


SIDE VIEW

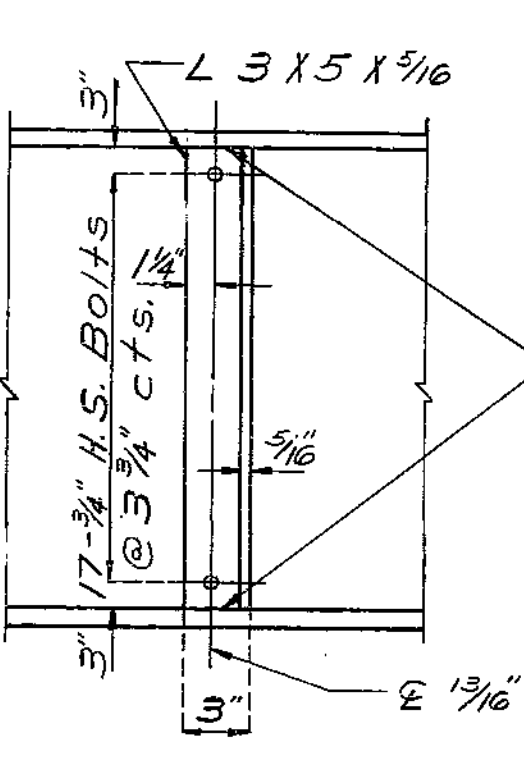


ELEVATION

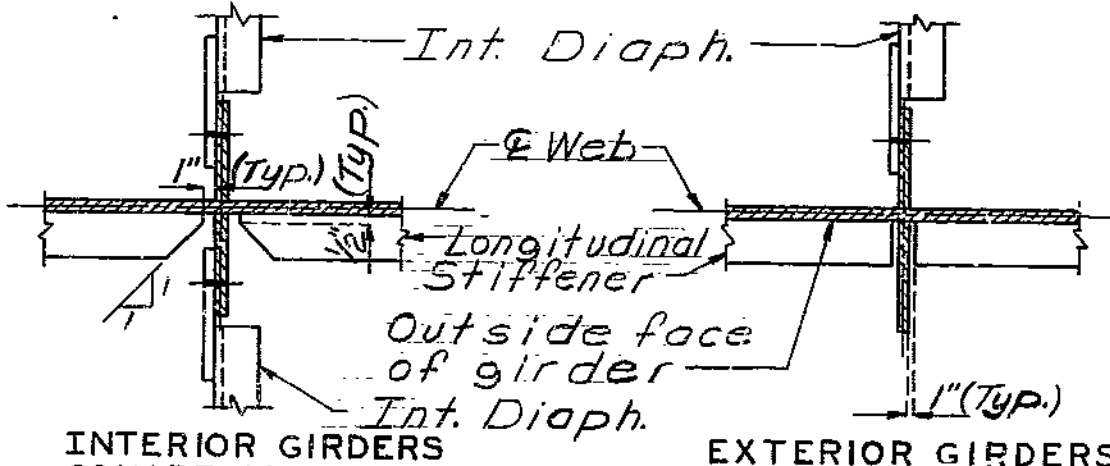
MODIFIED INTERMEDIATE DIAPHRAGM AND CROSS GIRDER CONNECTION FOR CURVED GIRDER



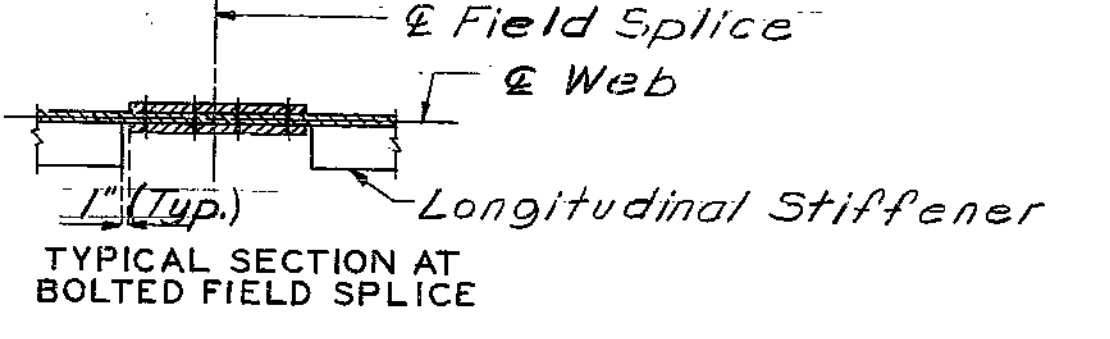
DETAIL OF ANCHOR BOLT WELLS



INT. DIAPH. CONN. R & WEB STIFF.

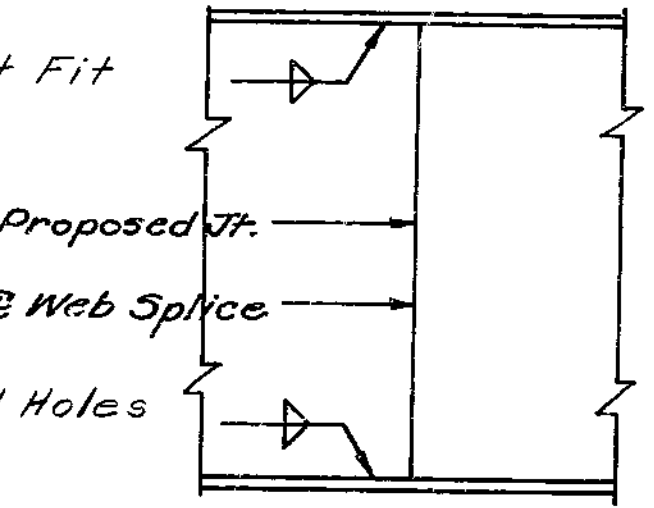


INTERIOR GIRDERS SQUARE OR SKEWED  
 EXTERIOR GIRDERS AT INTERMEDIATE BEARING STIFFENERS

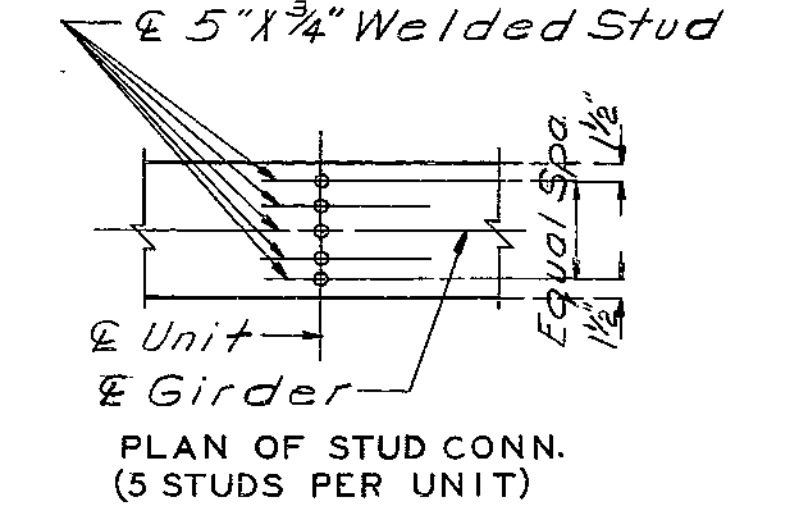


TYPICAL SECTION AT BOLTED FIELD SPLICE

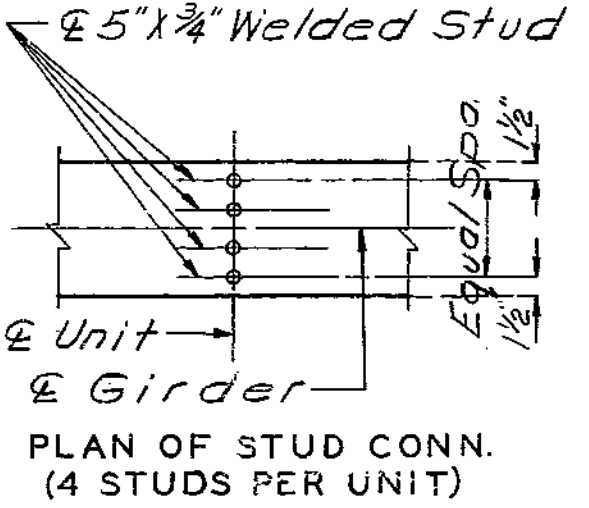
**LONGITUDINAL STIFFENER DETAILS**  
 Note: Whenever longitudinal stiffeners interfere with bolting diaphragms in place, clip stiffeners.



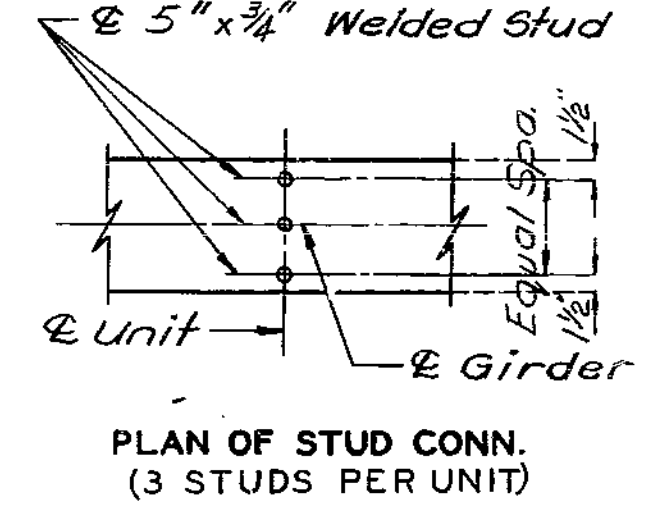
SHOP WEB SPLICE



PLAN OF STUD CONN. (5 STUDS PER UNIT)



PLAN OF STUD CONN. (4 STUDS PER UNIT)



PLAN OF STUD CONN. (3 STUDS PER UNIT)

**DETAILS OF SHEAR CONNECTORS**

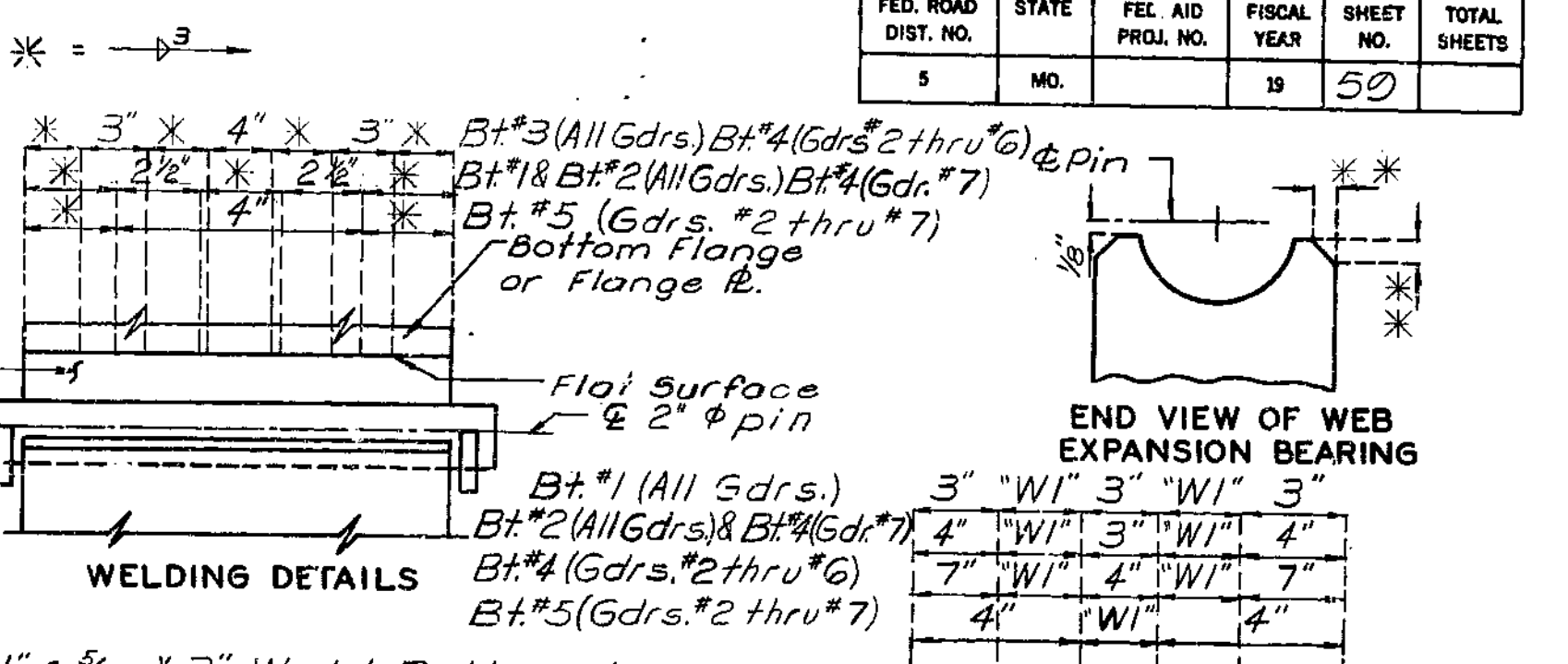
Note: Weight of 4025 lbs. of shear connectors is included in weight of Fabricated Structural Carbon Steel.

REQUIRED: 6 @ Bent No. 1  
 6 @ Bent No. 2  
 6 @ Bent No. 4  
 6 @ Bent No. 5

**TYPE "D" BEARINGS**  
 (ESTIMATED WEIGHT 12,458)

	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"R"	NO. REQ.
Bt #1 (All Gdrs.)	23 1/2	10	1 1/2	19 1/2	15	3	4 3/4	1 1/2	1 1/2	1 3/4	6 1/2	6
Bt #2 (All Gdrs.)	2'-1 1/2"	15	2 1/2	21 1/2	17	4	7 1/4	1 1/2	1 1/2	2 1/4	9 1/2	6
Bt #4 (Gdr. #7)	2'-1 1/2"	15	2 1/2	21 1/2	17	4	7 1/4	1 1/2	1 1/2	2 1/4	9 1/2	1
Bt #4 (Gdrs. #2 thru #6)	2'-8 1/2"	14	2 1/4	2'-4 1/2"	2'-0"	4	8	1 1/2	1 1/2	2	10	5
Bt #5 (Gdrs. #2 thru #7)	19 1/2	11	1 3/4	15 1/2	11	3	4 1/2	1 1/2	1 1/2	2	6 1/2	6

Note: See Sheet No. 17 for Type "E" Bearings.



WELDING DETAILS

END VIEW OF WEB EXPANSION BEARING

"W1" = 5/16 X 3" Weld Both Sides

REQUIRED: 6 @ Bent No. 1  
 6 @ Bent No. 2  
 6 @ Bent No. 4  
 6 @ Bent No. 5

\*\* 1/4" for 3" W-b  
 3/4" for 4" W-b

194

STD. D.B. REVISED FEB. 1965 OCT. 1977

DETAILED June 1979  
 CHECKED June 1979

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

Sheet No. 16 of 28

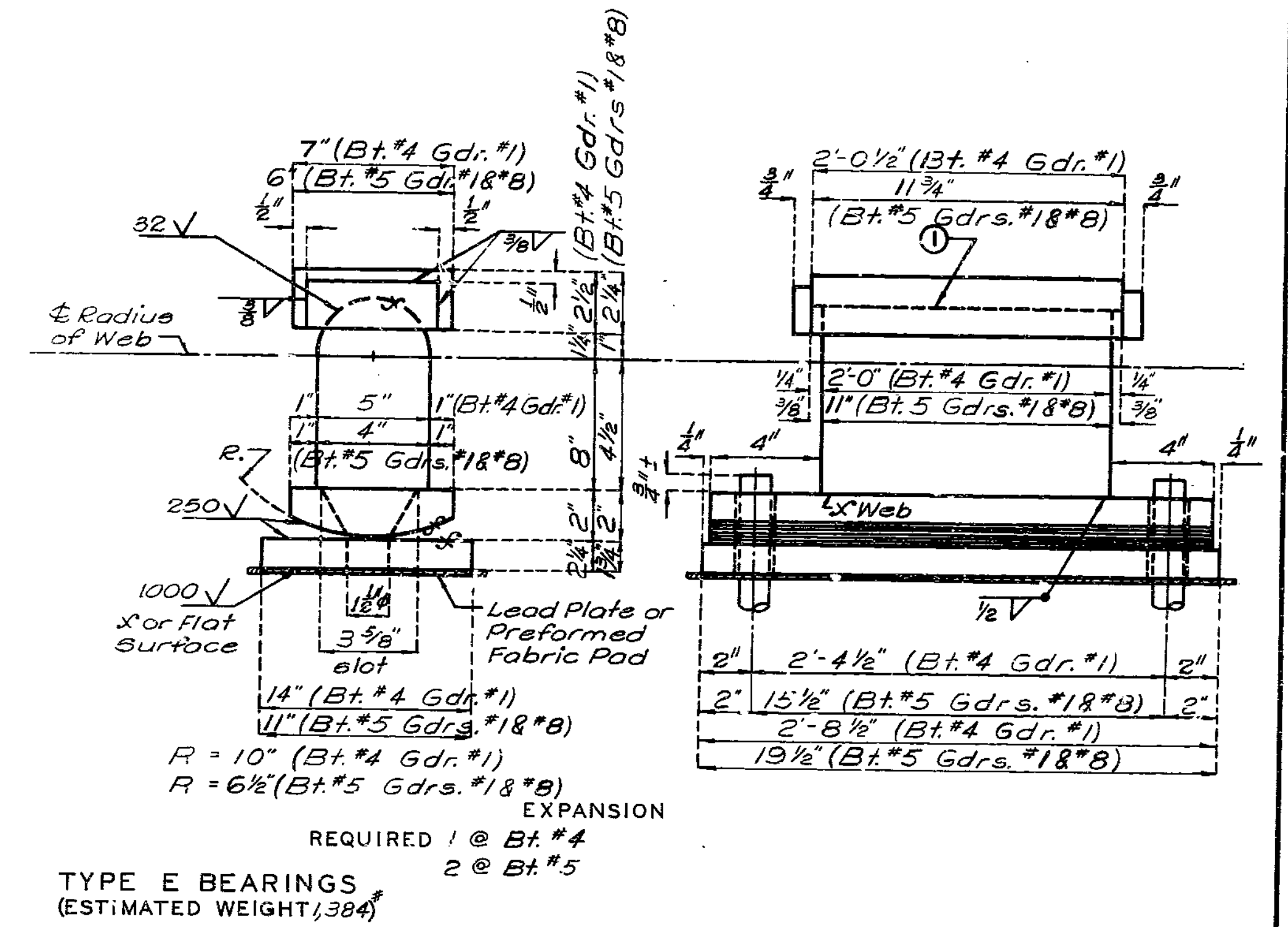
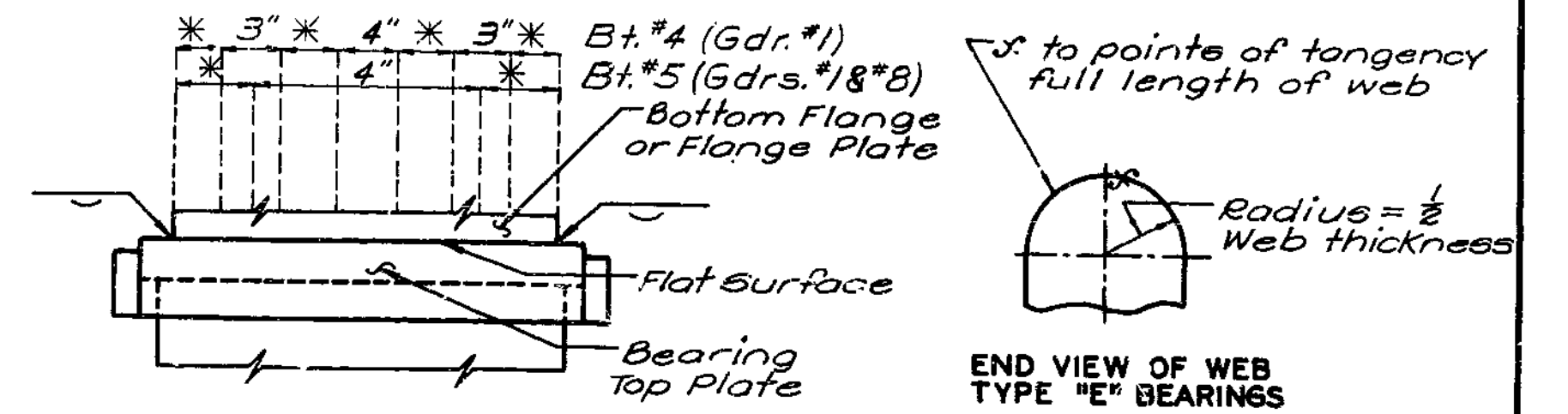
CLAY COUNTY

A-3375

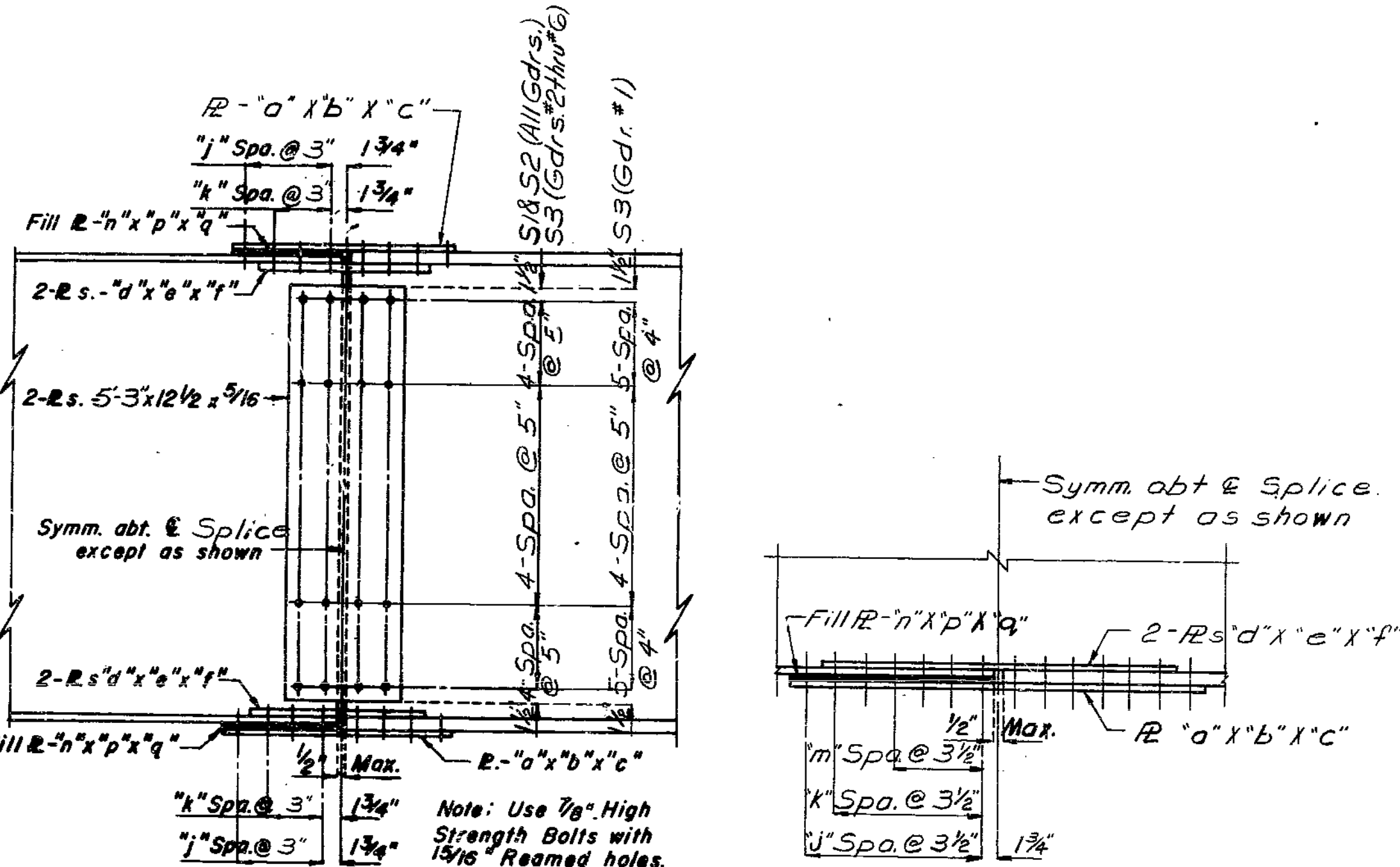
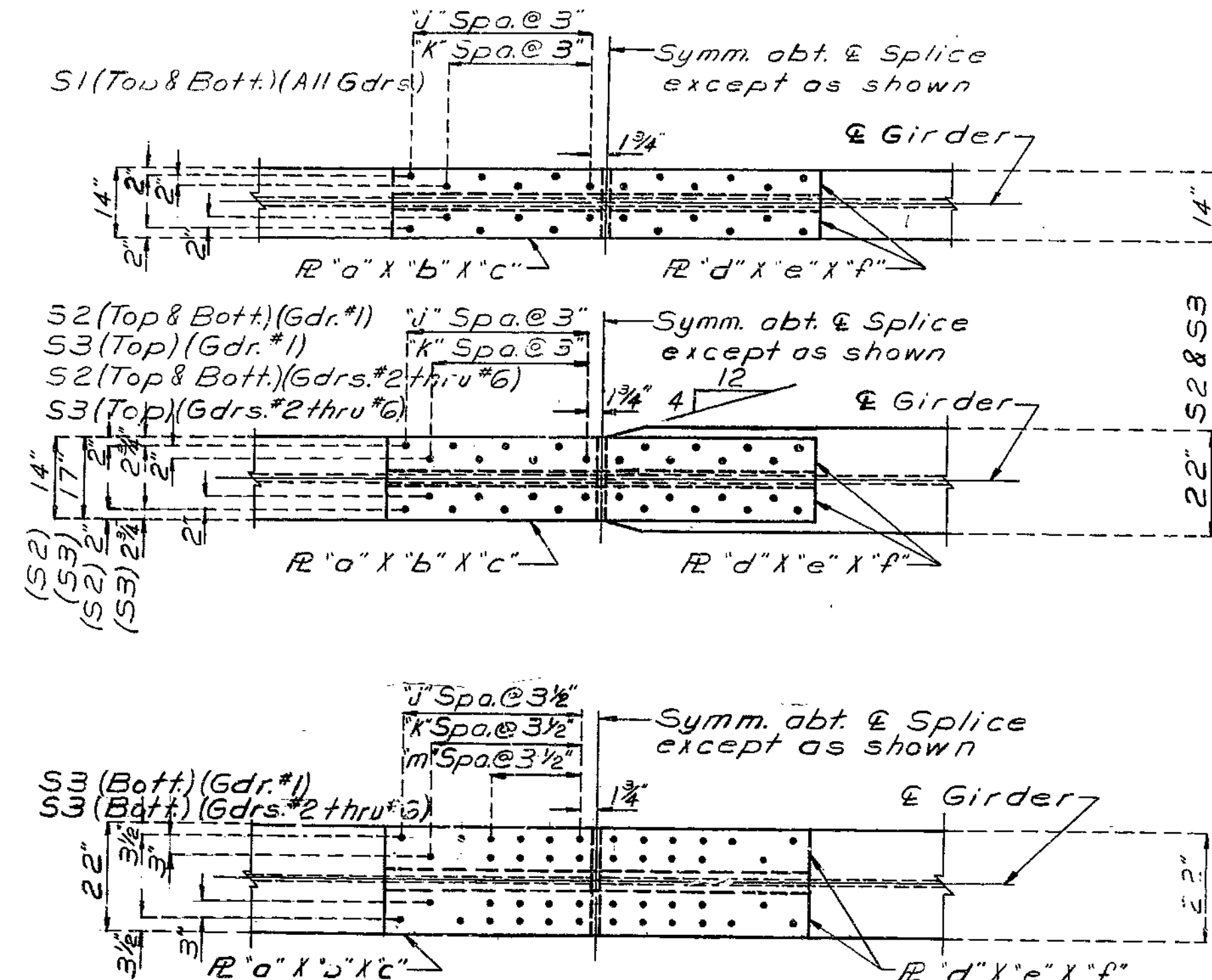
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	60	

**NOTES: TYPE "E" BEARINGS**

ANCHOR BOLTS FOR TYPE "E" BEARINGS SHALL BE 1-1/4" SWEDGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS. "ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS. "C" INDICATES MACHINE FINISH SURFACE. (1) BONDED LUBRICANT. A LUBRICANT COATING SHALL BE APPLIED IN THE SHOP TO BOTH MATING SURFACES OF THE BEARING ASSEMBLY. THE LUBRICANT, METHOD OF CLEANING, AND APPLICATION SHALL MEET THE REQUIREMENTS OF MIL-L-23398 AND MIL-L-46147 SUCH AS DOW CORNING'S MOLYKOTE 3402 BONDED LUBRICANT. THE COATED AREAS SHALL BE PROTECTED FOR SHIPPING AND ERECTION. SHOP DRAWINGS ARE NOT REQUIRED FOR LEAD PLATES AND/OR PREFORMED FABRIC PADS.



TYPE E BEARINGS (ESTIMATED WEIGHT, 384)

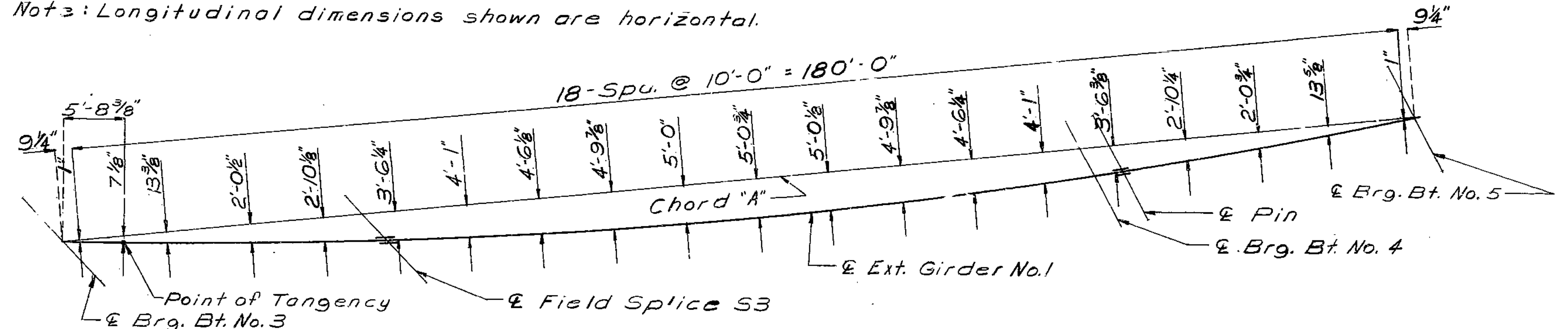


SPlice LOCATION	TABLE OF DIMENSIONS											
	"a"	"b"	"c"	"d"	"e"	"f"	"j"	"k"	"m"	"n"	"p"	"q"
S1 (Top & Bott.) (All Gdrs.)	14"	3/8"	3'-0 1/2"	6"	1/2"	3'-0 1/2"	5	5	-	-	-	-
S2 (Top & Bott.) (Gdr. #1)	14"	3/8"	3'-0 1/2"	6"	1/2"	3'-0 1/2"	5	5	-	14"	1/4"	18
S2 (Top & Bott.) (Gdrs. #2 thru #6)	14"	3/8"	3'-0 1/2"	6"	1/2"	3'-0 1/2"	5	5	-	14"	1/2"	18
S3 (Top) (Gdr. #1)	17"	1 1/8"	9'-6 1/2"	7 1/2"	1 1/2"	9'-6 1/2"	18	18	-	-	-	-
S3 (Top) (Gdrs. #2 thru #6)	17"	5/8"	6'-0 1/2"	7 1/2"	3/4"	6'-0 1/2"	11	11	-	-	-	-
S3 (Bott.) (Gdr. #1)	22"	1 1/4"	8'-1 1/2"	10"	1 1/8"	8'-1 1/2"	13	13	10	22"	1/4"	4'-0 1/2"
S3 (Bott.) (Gdrs. #2 thru #6)	22"	1"	6'-11 1/2"	10"	1"	6'-11 1/2"	11	11	8	22"	3/8"	3'-5 1/2"

Note: All splice plates shall be subject to notch toughness requirements.

DETAILS OF FIELD SPLICE

Note: Longitudinal dimensions shown are horizontal.



PART PLAN OF STRUCTURAL STEEL SHOWING PART & EXT. GIRDER NO. 1 CURVE OFFSETS

DETAILED July 1979  
CHECKED July 1979

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

Sheet No. 17 of 28.

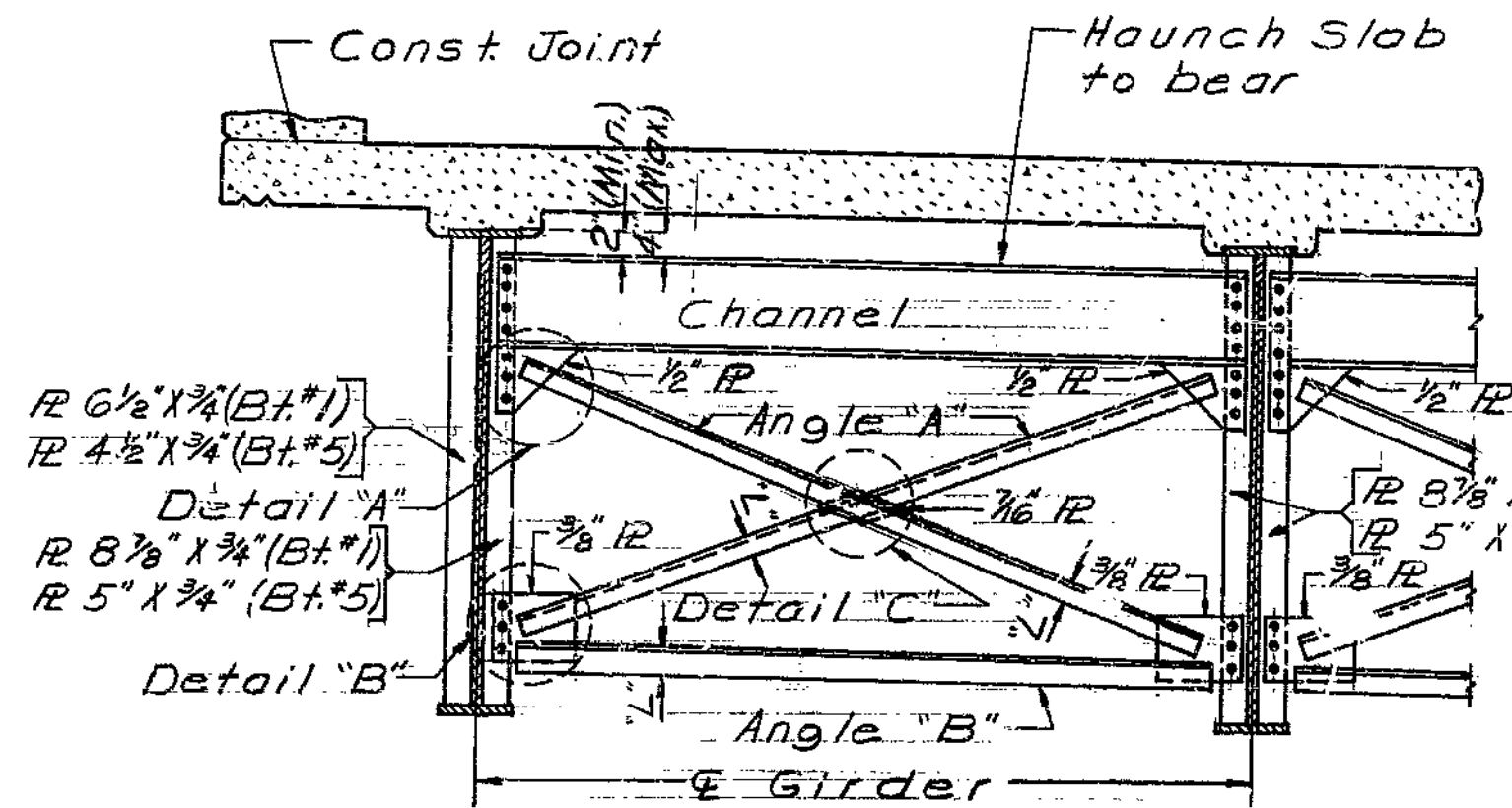
CLAY COUNTY

A-3375

195

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	61	

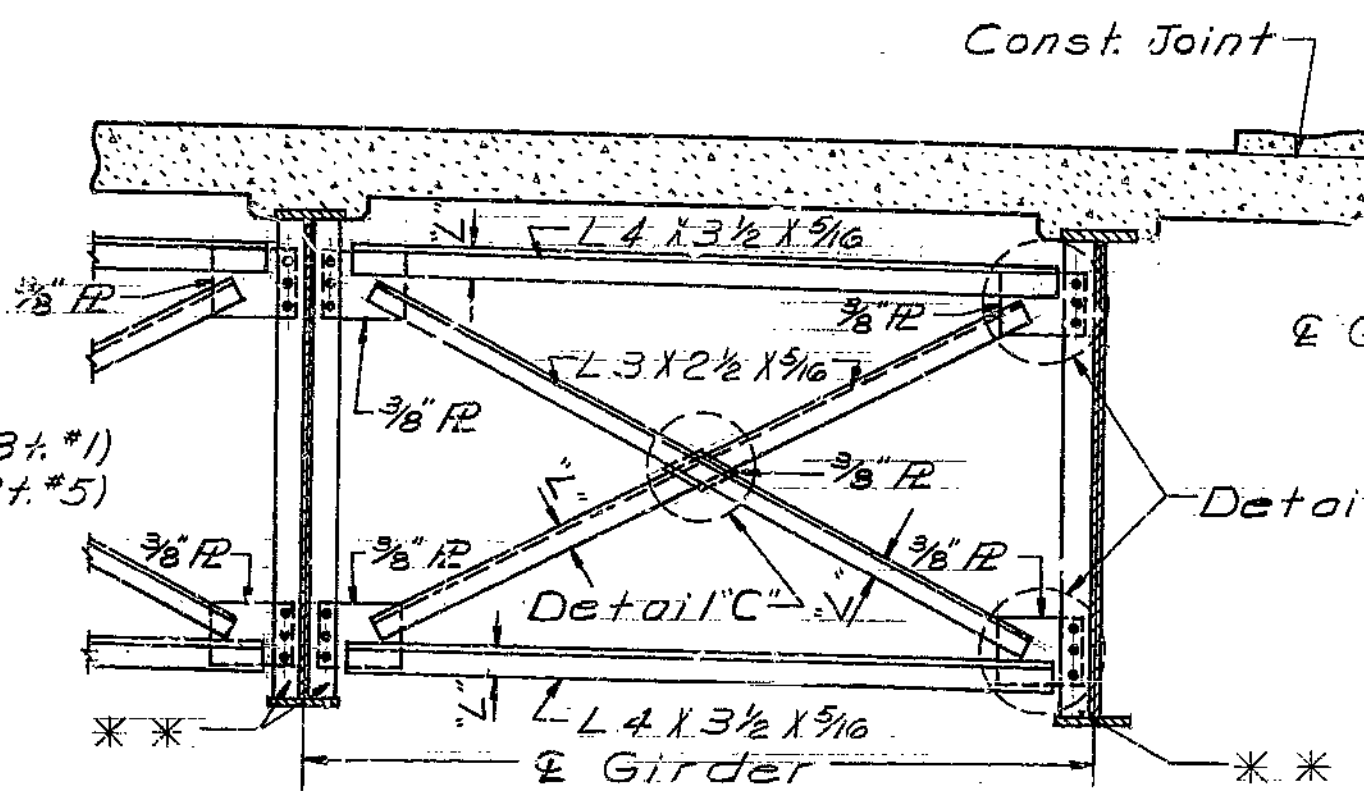
Note: \*\*\* Dimension may vary if girder camber after erection differs from plan camber by more than the 2% of Dead Load Deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variation in haunching.



TYP. PART SECTION SHOWING END DIAPHRAGMS

END DIAPHRAGMS				
GDR. SPACING	SKEW	CHANNEL SIZE	ANGLE "A"	ANGLE "B"
9'-0"	44°-10'	C 15 X 33.9	L 3 X 3 X 5/16	L 6 X 6 X 5/8
9'-0"	28°-22'	C 12 X 25	L 3 X 2 1/2 X 5/16	L 5 X 5 X 5/16
11'-0 1/2"	28°-22'	C 15 X 33.9	L 3 1/2 X 3 X 5/16	L 8 X 6 X 3/4
9'-6"	28°-22'	C 12 X 30	L 3 X 2 1/2 X 5/16	L 5 X 5 X 5/16
9'-6" *	28°-22'	C 12 X 30	L 3 X 3 X 5/16	L 6 X 6 X 1/2

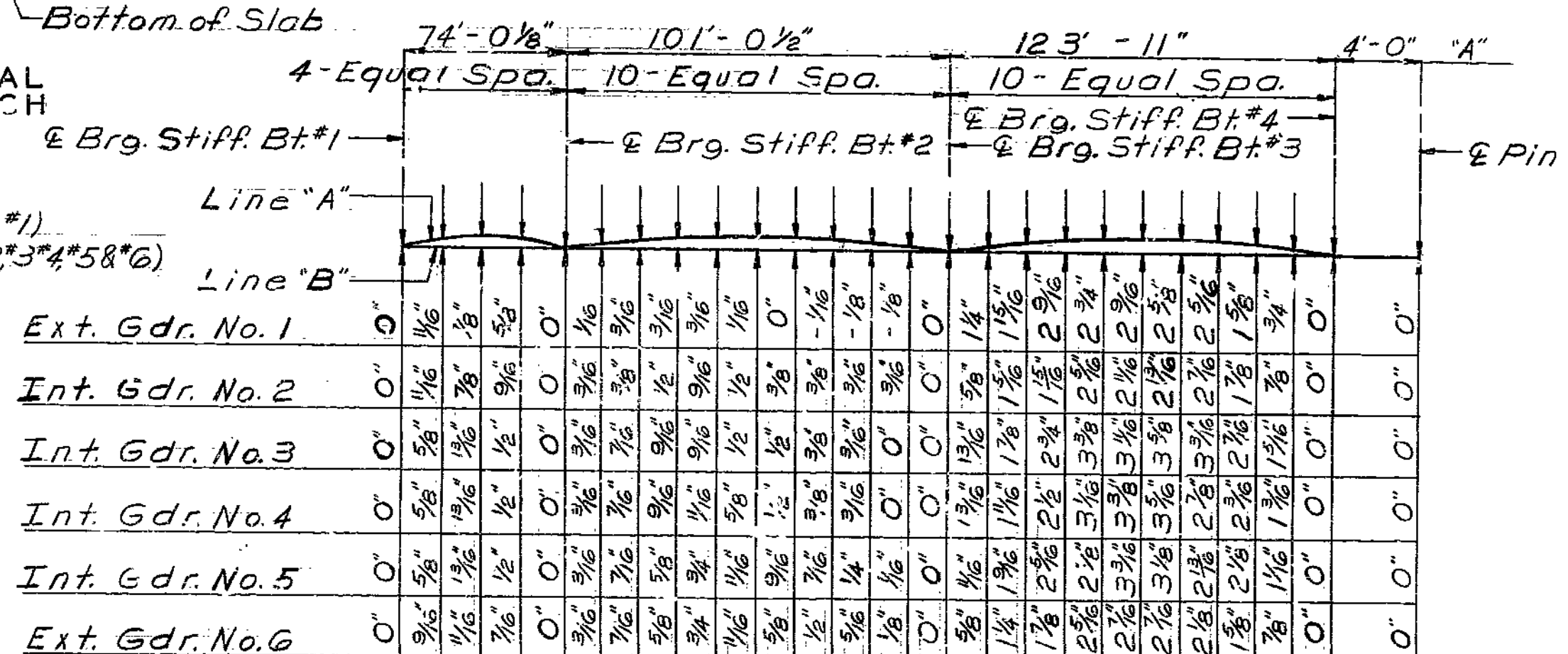
\* = Diaphragm at Bent No. 5 located between Gdr. No. 1 and Gdr. No. 8.  
 "L" = Long leg of unequal angle.



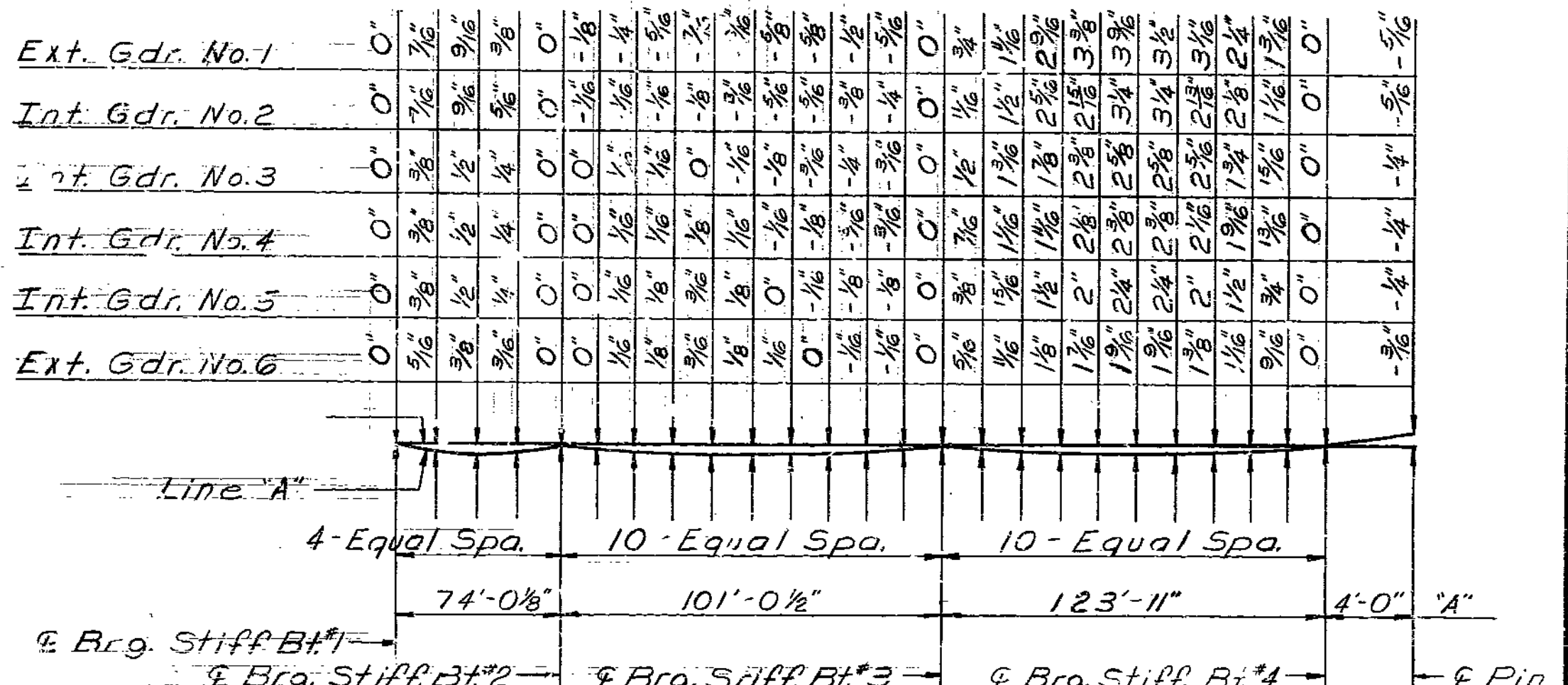
TYP. PART SECTION SHOWING INT. DIAPHRAGMS

\*\* R 4 1/2" X 3/8" for all straight girders  
 \*\* R 4 1/2" X 5/16" for curved girder.

Ext. Gdr. No. 1	3 1/8"	2 1/4"	1 3/8"	2 1/2"	2 3/4"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Int. Gdr. No. 2	2 3/8"	1 7/8"	2 1/2"	2 1/2"	2 3/8"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Int. Gdr. No. 3	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Int. Gdr. No. 4	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Int. Gdr. No. 5	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Ext. Gdr. No. 6	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	1 3/8"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"

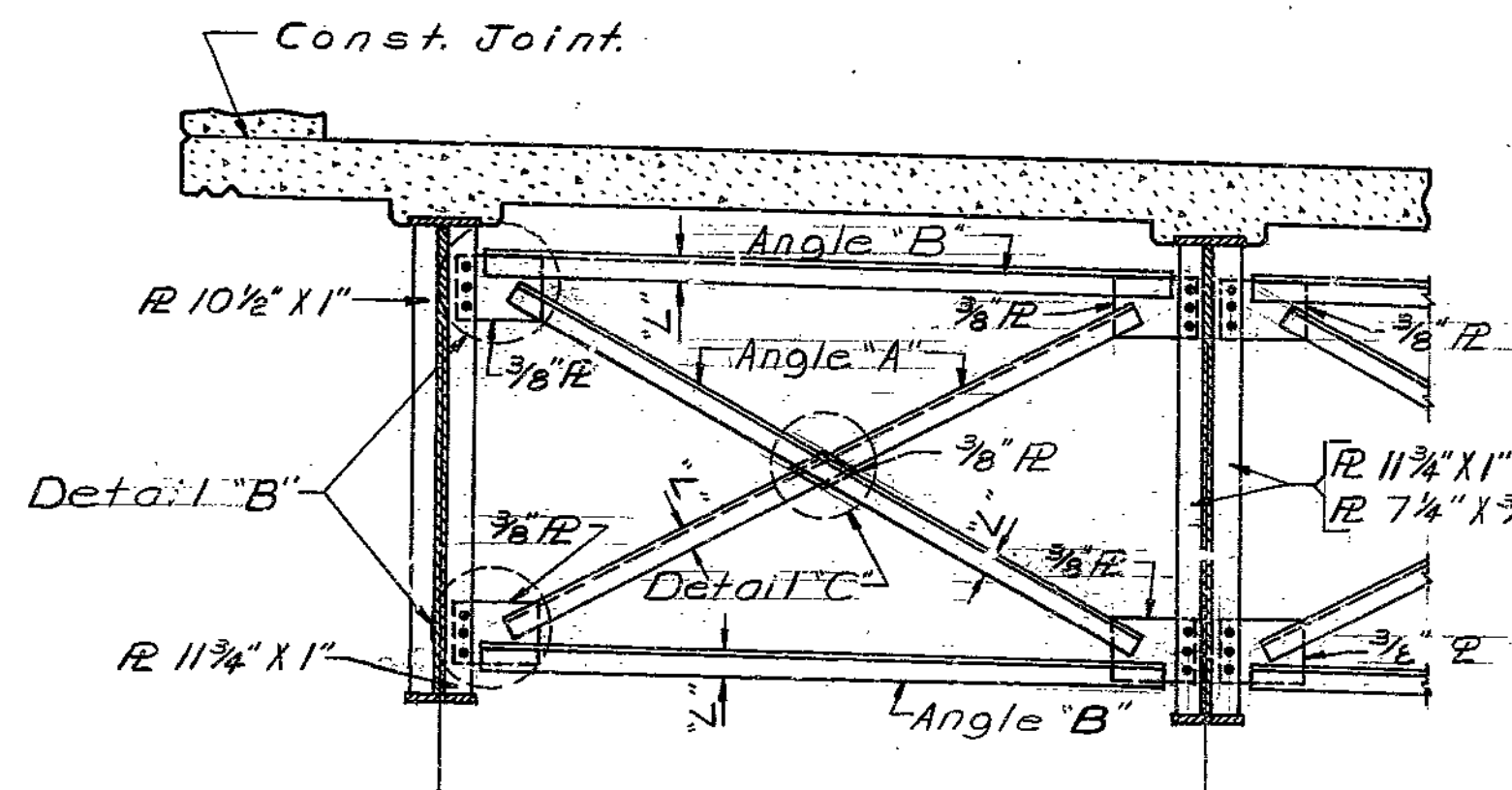
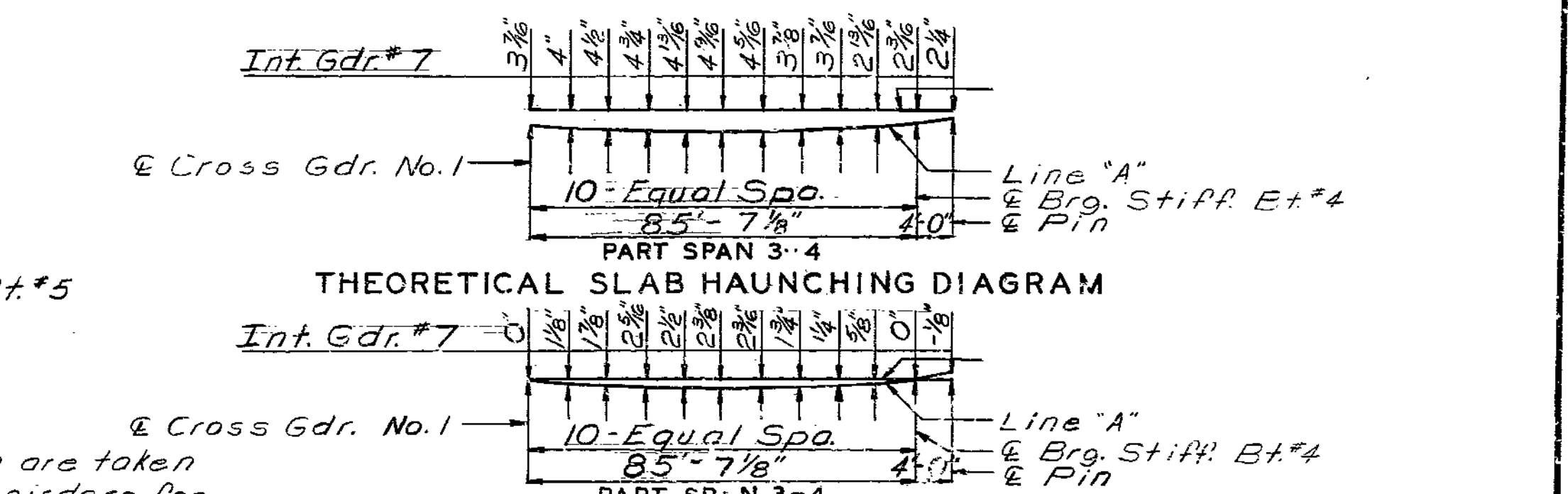


Note: Camber includes allowance for vertical curve and for dead load deflection due to concrete slab, curb and structural steel. Line "A" indicates bottom of top flange. Line "B" is a chord between bearings.



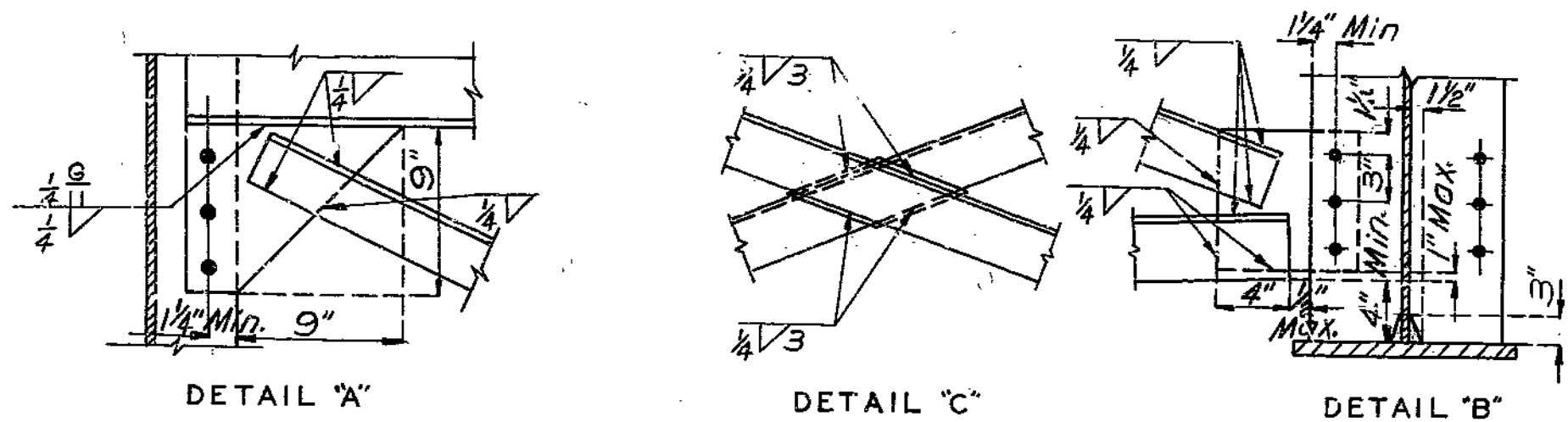
DEAD LOAD DEFLECTION

Note: "A" Dimensions shown are along top of Girder No. 6.



TYP. PART SECTION SHOWING CROSS FRAMES

CROSS FRAME			
GDR. SPACING	SKEW	ANGLE "A"	ANGLE "B"
9'-0"	28°-22'	L 3 X 2 1/2 X 5/16	L 5 X 5 X 5/16
10'-8 1/8"	28°-22'	L 3 1/2 X 3 X 5/16	L 8 X 6 X 3/4



Note: 16% of dead deflection due to weight of structural steel. Negative sign indicates upward deflection.

DEAD LOAD DEFLECTION

Note: Longitudinal dimensions shown are taken along Girder No. 6. See elevation of girders for longitudinal dimensions along girders No. 1, No. 2, No. 3, No. 4, No. 5, No. 7 and No. 8.

DATE: July 1979  
 CHECKED: July 1979

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

Sheet No. 18 of 28.

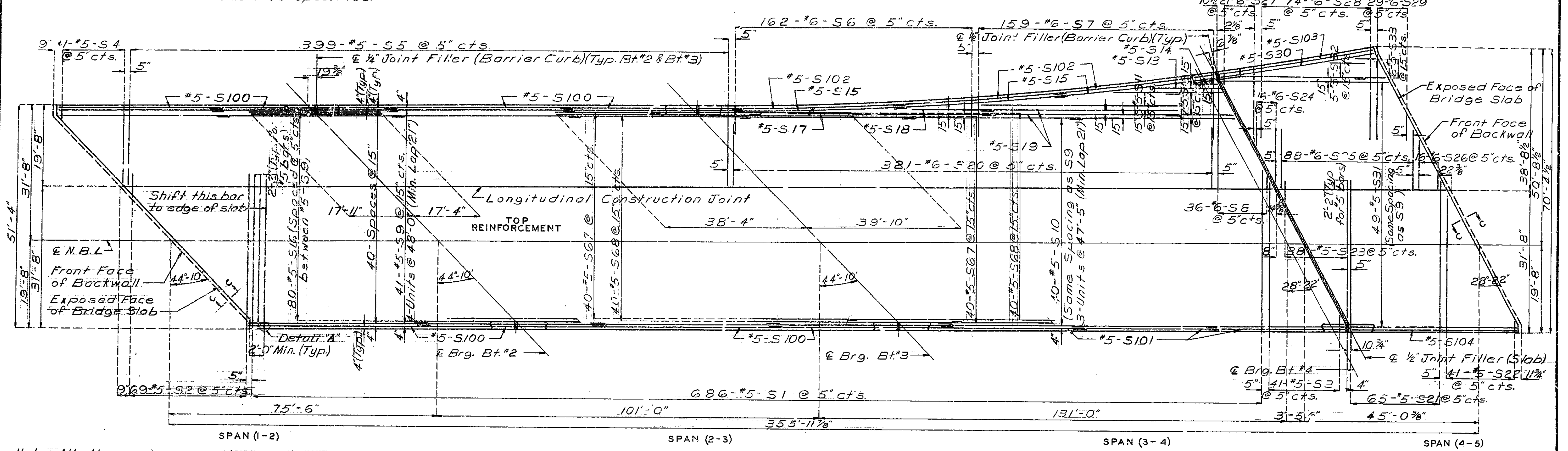
CLAY COUNTY

A-3375

196

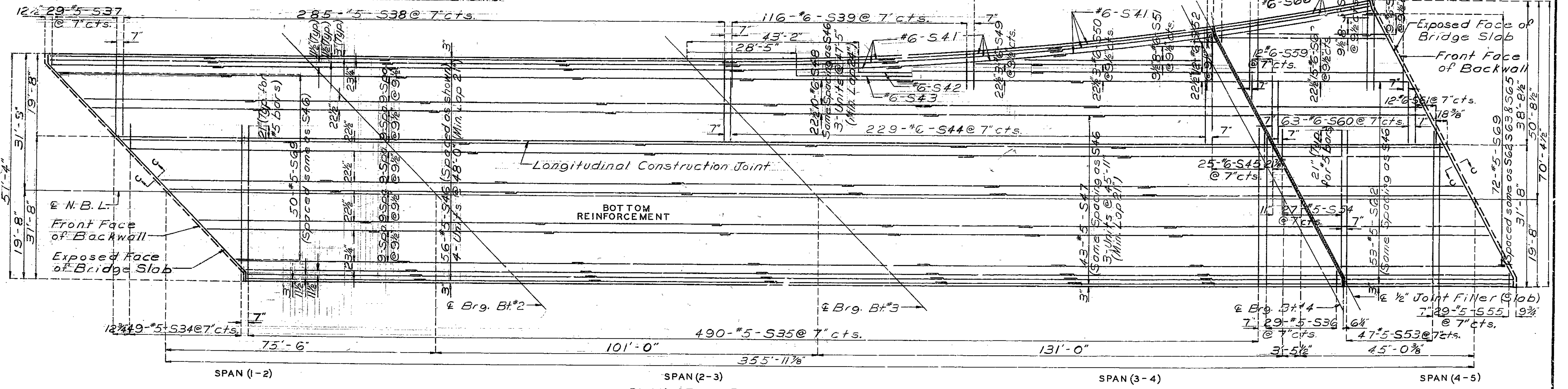
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	62	

Note: Use a minimum lap of 21" for #5 bars and 2'-0" for #6 bars unless otherwise specified.



Note: All dimensions are horizontal.  
 See Sheet No. 20 for Section Through Slab, Detail "A" and Slab Pouring Sequence.  
 See Sheet No. 18 for Camber Diagram, Dead Load Deflection and Slab Haunching.  
 See Sheet No. 23 for details of Expansion Device.  
 See Sheet No. 22 for details and location of Slab Drains.

Note: See Sheet No. 23 for Part Section C-C  
 See Sheet No. 22 for Part Plan of Slab  
 Showing Curve Ordinates.



197

DETAILED July 1979  
 CHECKED July 1979

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

PLAN OF SLAB SHOWING REINFORCEMENT

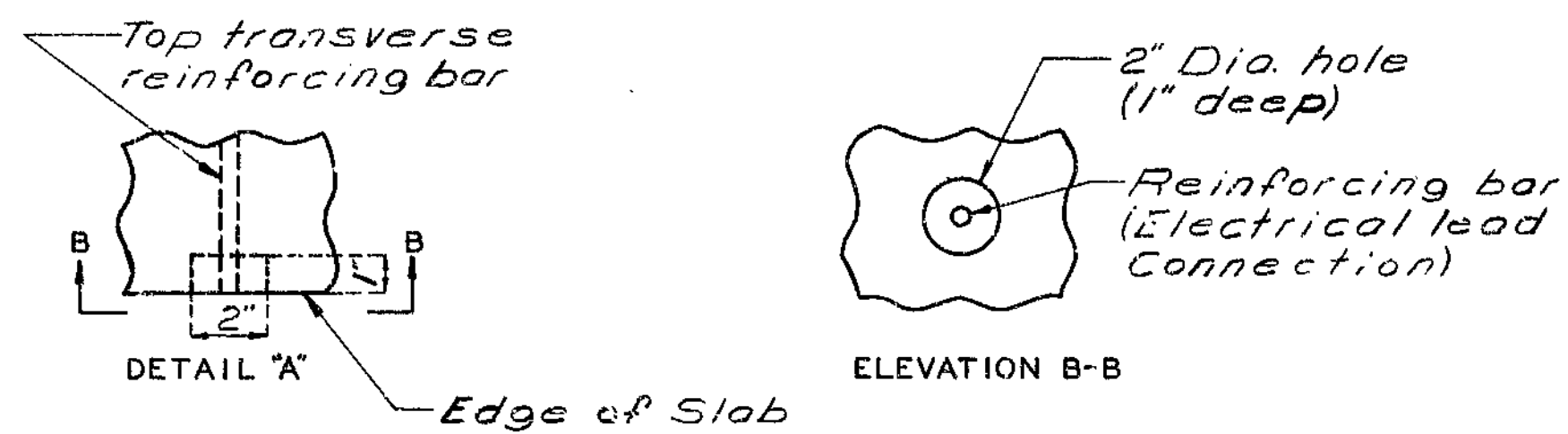
Sheet No. 19 of 28.

CLAY COUNTY

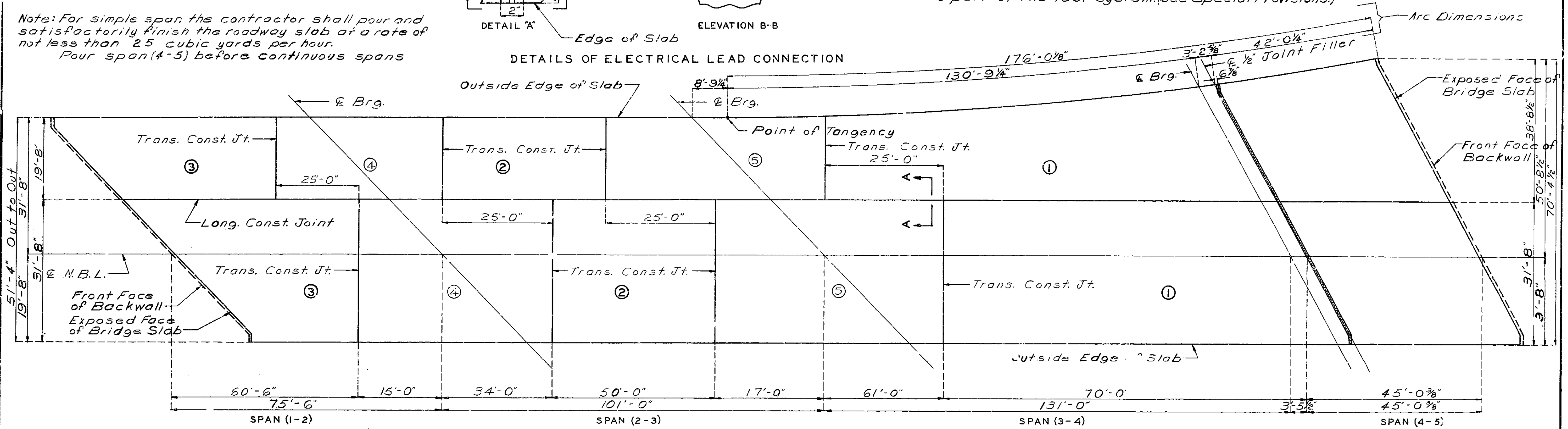
A-3375

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		18	63	

Note: For simple span the contractor shall pour and satisfactorily finish the roadway slab at a rate of not less than 25 cubic yards per hour. Pour span (4-5) before continuous spans

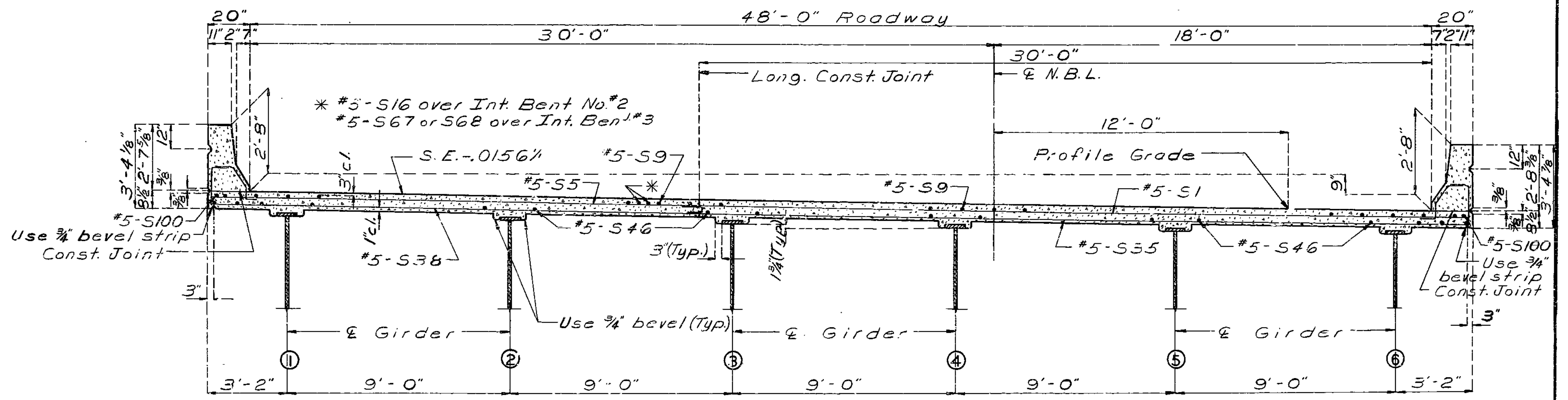


Note: Four Electrical Lead Connections required. Actual location to be designated by the Engineer as part of the test system. (See Special Provisions.)

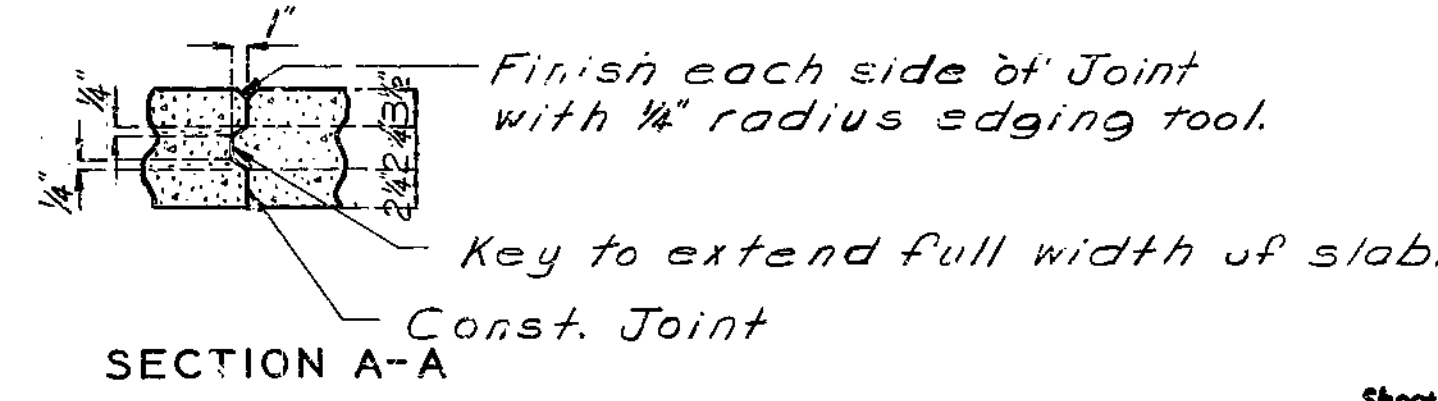


Note: All dimensions are horizontal.

SLAB POURING SEQUENCE



HALF SECTION NEAR INT. BENT SECTION THRU SLAB SPANS (1-2) AND (2-3) HALF SECTION NEAR C SPAN



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

SEQUENCE OF POURS	DIRECTION					MIN RATE OF POUR CU. YDS./HR.	
	1	2	3	4	5	WITH RETARDER	NO RETARDER
BASIC SEQUENCE	EITHER DIRECTION					25	25
ALTERNATE POURS TO THE BASIC SKIP SEQUENCE ARE SUBJECT TO THE APPROVAL OF THE ENGINEER IN ACCORDANCE WITH SECTION 703.3.12.4 OF MISSOURI STANDARD SPECIFICATIONS.							
ALTERNATE 'A' POURS	1	5+2	4+3			43	-
	END TO 5	1 TO 4	2 TO END				
ALTERNATE 'B' POURS	1+5+2	4+3				43	-
	END TO 4	2 TO END					
ALTERNATE 'C' POURS	1+5+2+4+3					43	-
	END TO END						

Note: For details and reinforcement of safety barrier curbs not shown see Sheets No. 24 and 25. For Plan of Slab Showing Reinforcement see Sheet No. 19.

198

DETAILED Nov. 1980  
CHECKED Nov. 1980

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

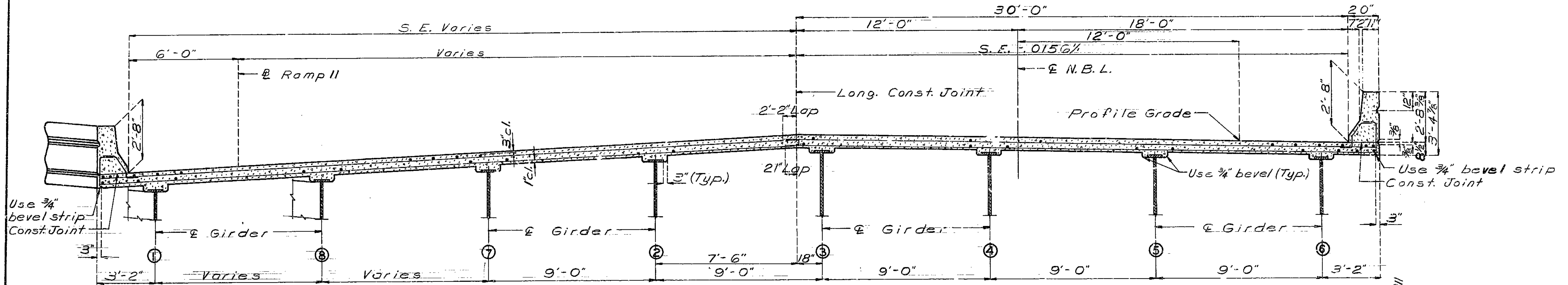
Sheet No. 20 of 28.

CLAY COUNTY

A-3375

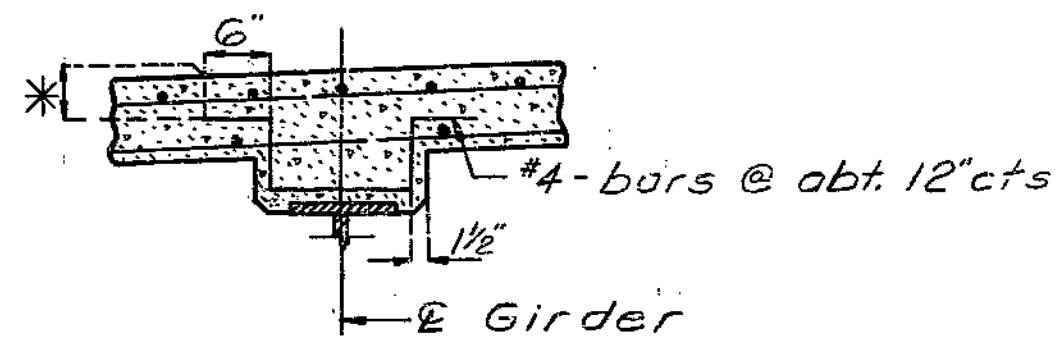
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		19	64	

Note: For details and reinforcement of safety barrier curbs not shown see Sheets No 24 and 25.



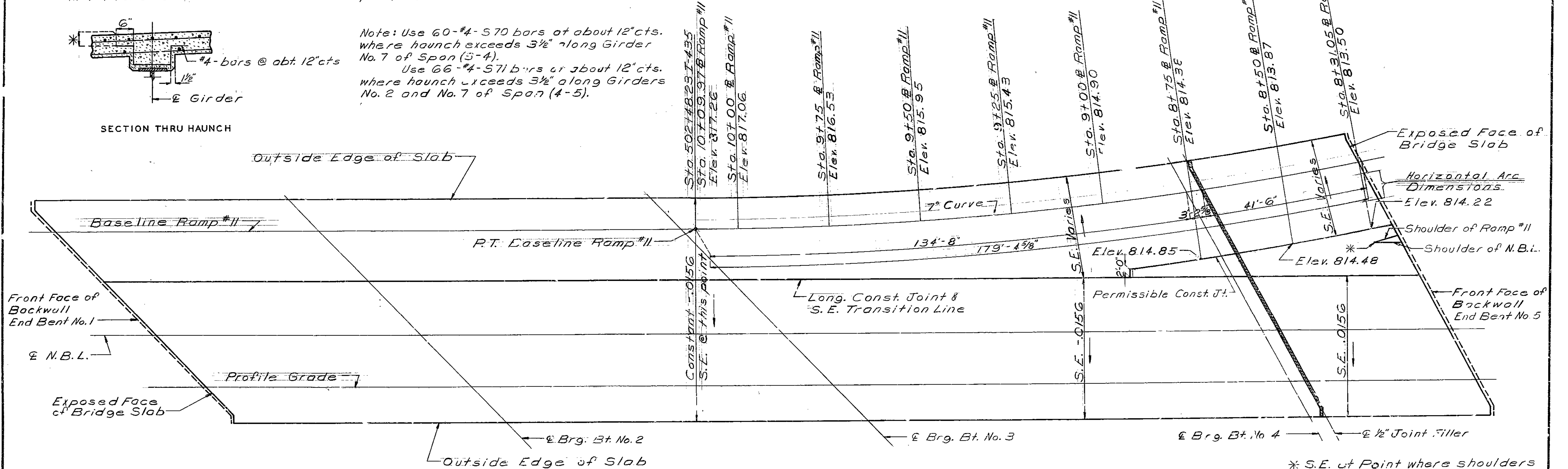
\* = 4 3/4" for Girder No.7 of Part Span (3-4)  
 \* = 4 3/4" for Girders No.2 and No.7 of Part Span (4-5)

SECTION THRU SLAB SHOWING TRANSITION



SECTION THRU HAUNCH

Note: Use 60-#4-S70 bars at about 12" cts. where haunch exceeds 3 1/2" along Girder No.7 of Span (3-4).  
 Use 66-#4-S71 bars at about 12" cts. where haunch exceeds 3 1/2" along Girders No.2 and No.7 of Span (4-5).



DETAIL OF S.E. TRANSITION

\* S.E. at Point where shoulders meet is .04% Transition to .06% S.E. in 50'

199

DETAILED July 1979  
 CHECKED July 1972

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

Sheet No. 21 of 28.

CLAY COUNTY

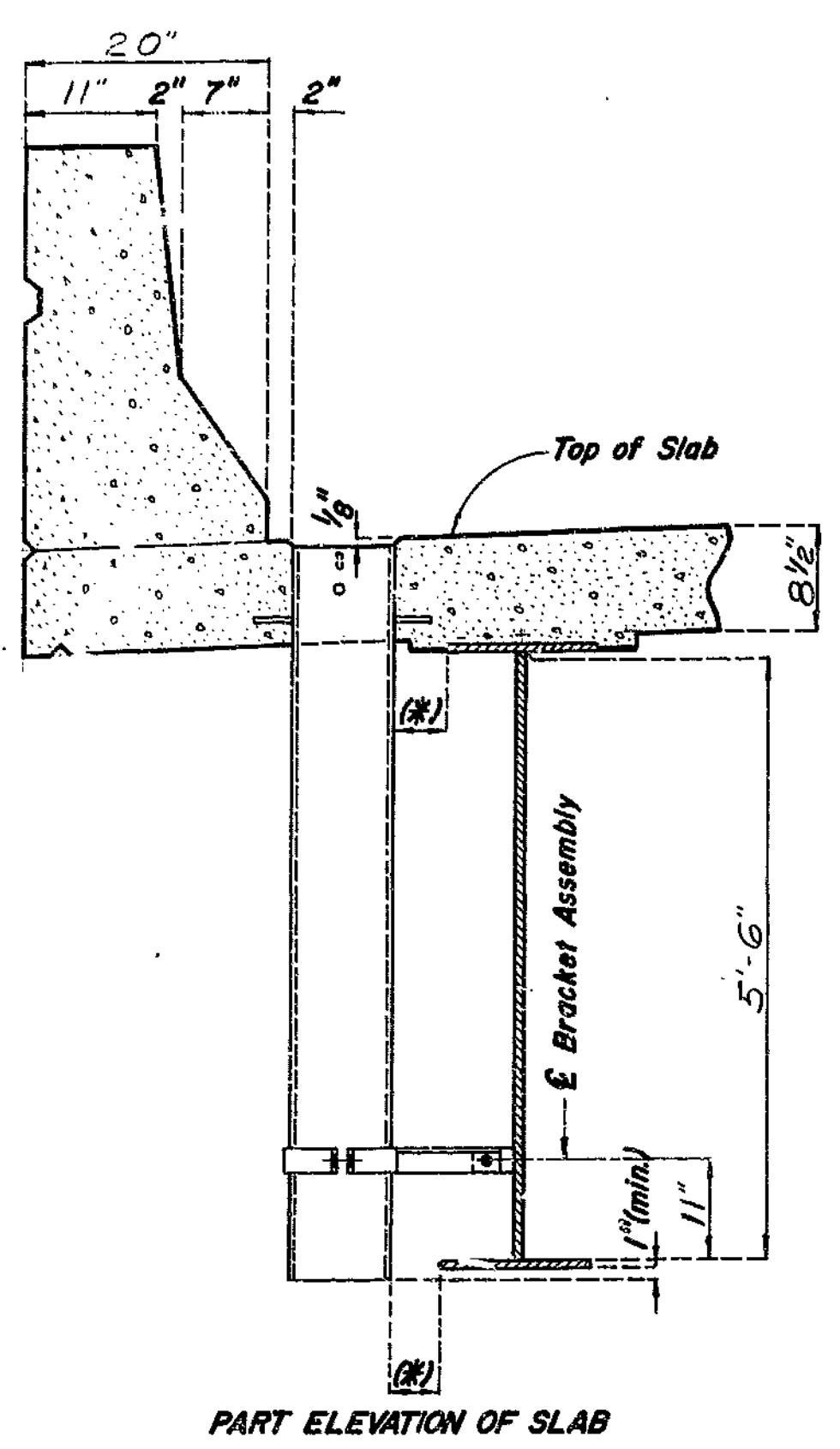
A-3375



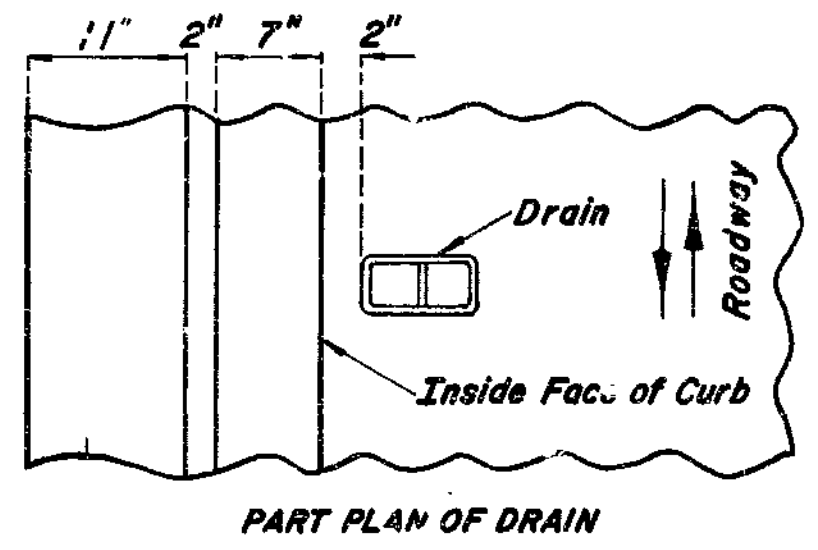
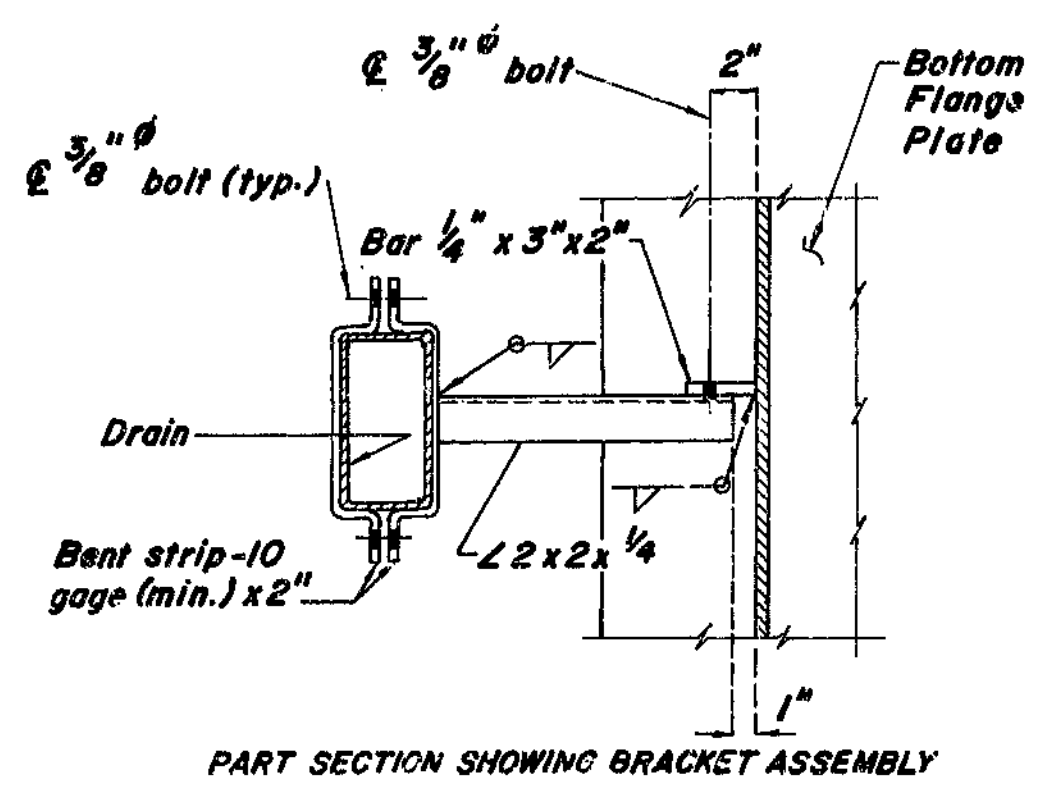
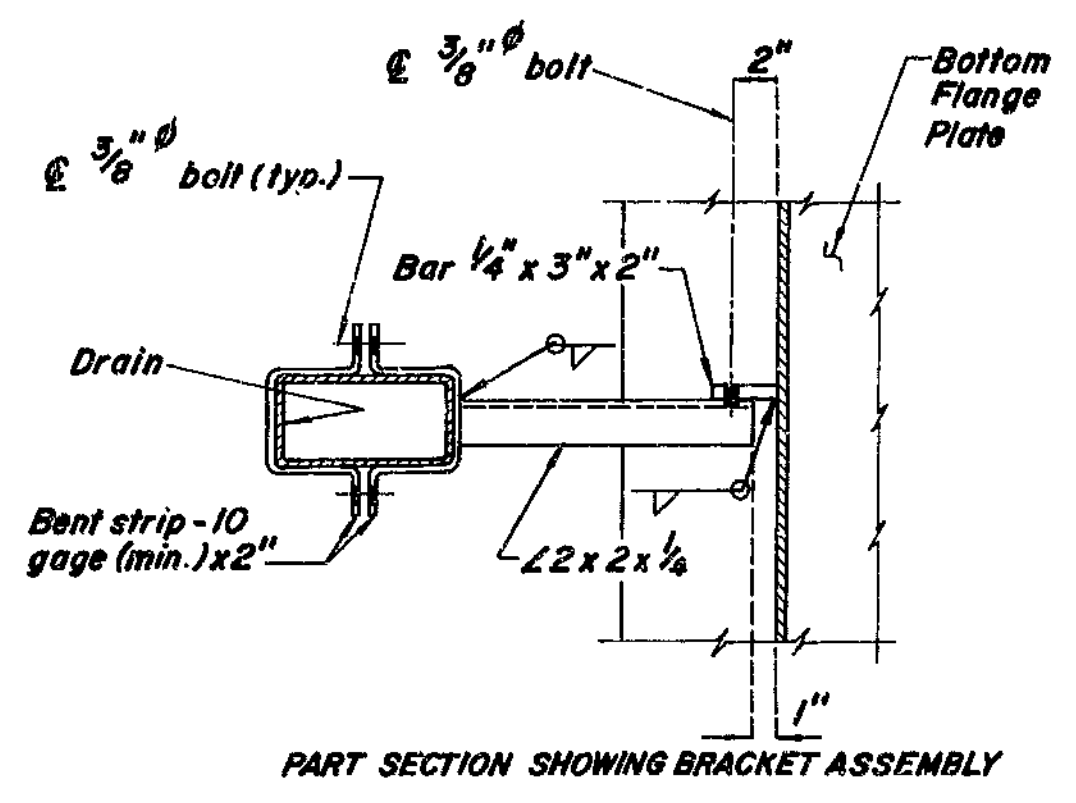
FED. ROAD DIST. NO.	STATE	FED. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	65	

**GENERAL NOTES:**

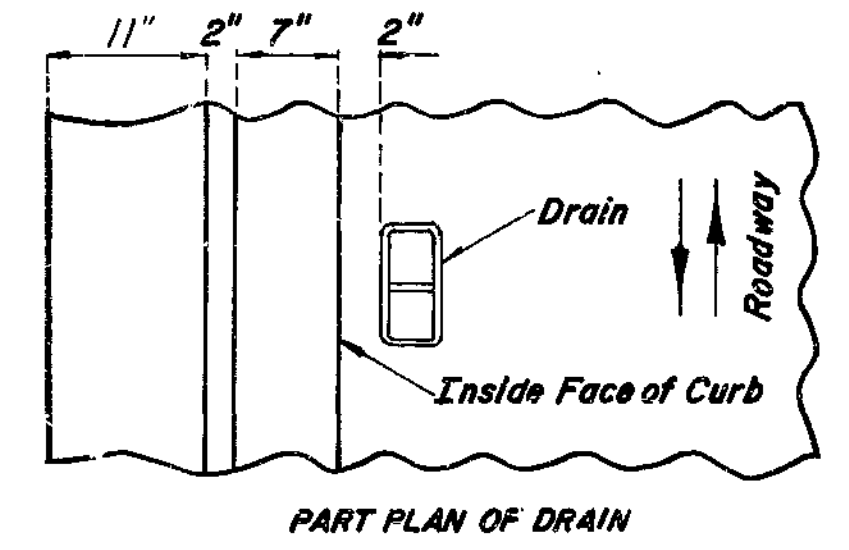
- SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.
- OUTSIDE DIMENSIONS OF DRAINS ARE 8" x 4".
- THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.
- LOCATE DRAINS IN SLAB BY DIMENSIONS SHOWN IN PART ELEVATION.
- SHIFT REINFORCING IN FIELD WHERE NECESSARY TO CLEAR DRAINS.
- THE DRAINS AND 10 GAGE BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.
- THE 1/4" x 3" x 2" BAR SHALL BE LOCATED ON THE PLATE GIRDER SHOP DRAWINGS.
- SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND THE 10 GAGE BRACKET ASSEMBLY.



**PART ELEVATION OF SLAB**  
 (\*) If dimension is less than 1", drains shall be placed parallel to roadway, otherwise place drains transverse to roadway.

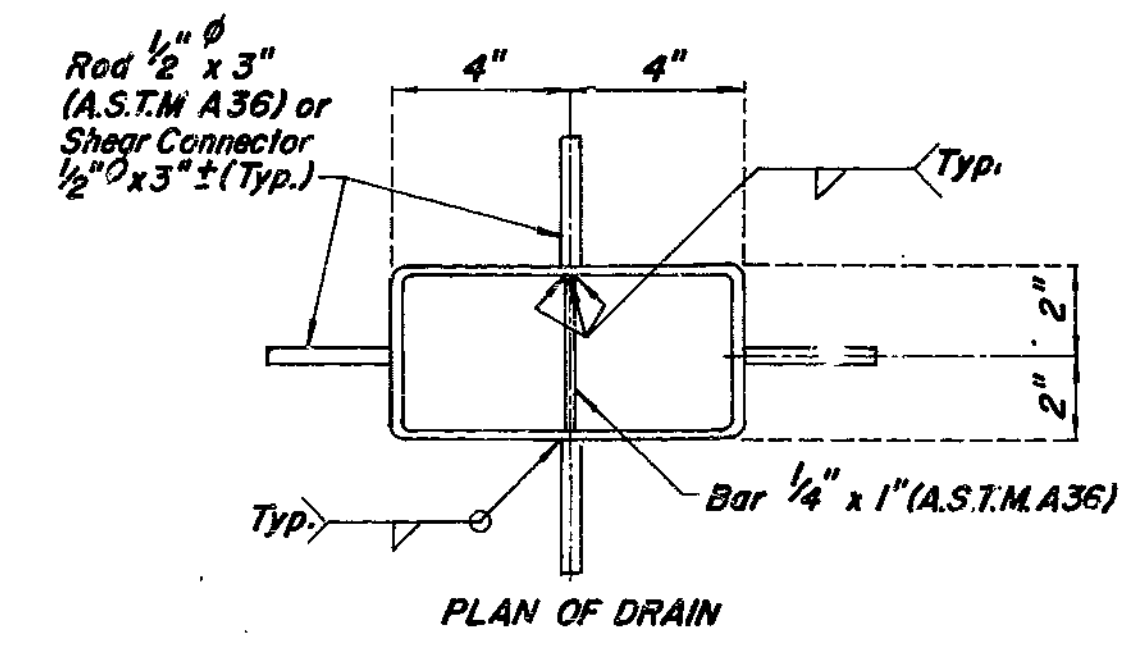
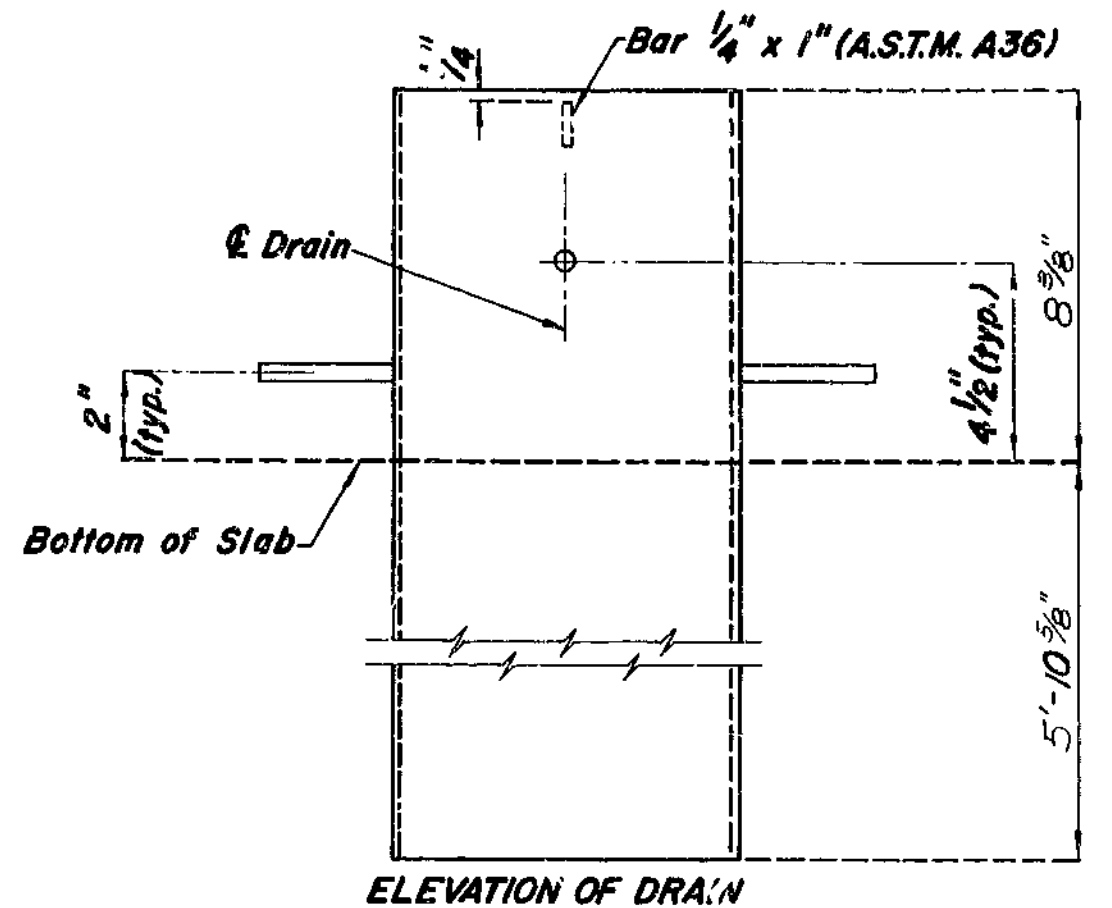


**PART PLAN OF DRAIN**  
 DETAILS OF DRAINS TRANSVERSE TO ROADWAY

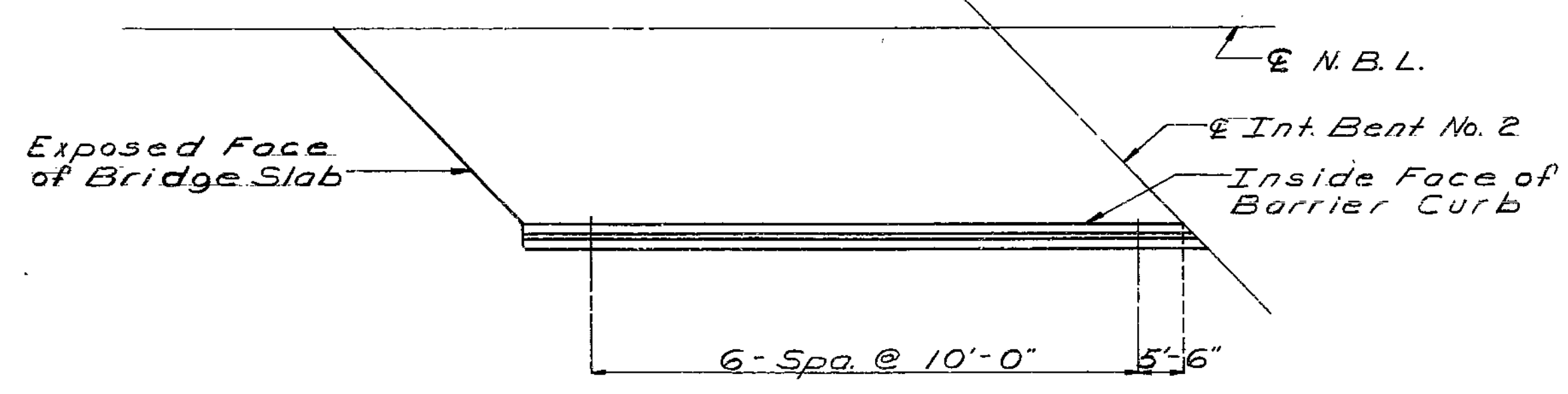


**PART PLAN OF DRAIN**  
 DETAILS OF DRAINS PARALLEL TO ROADWAY

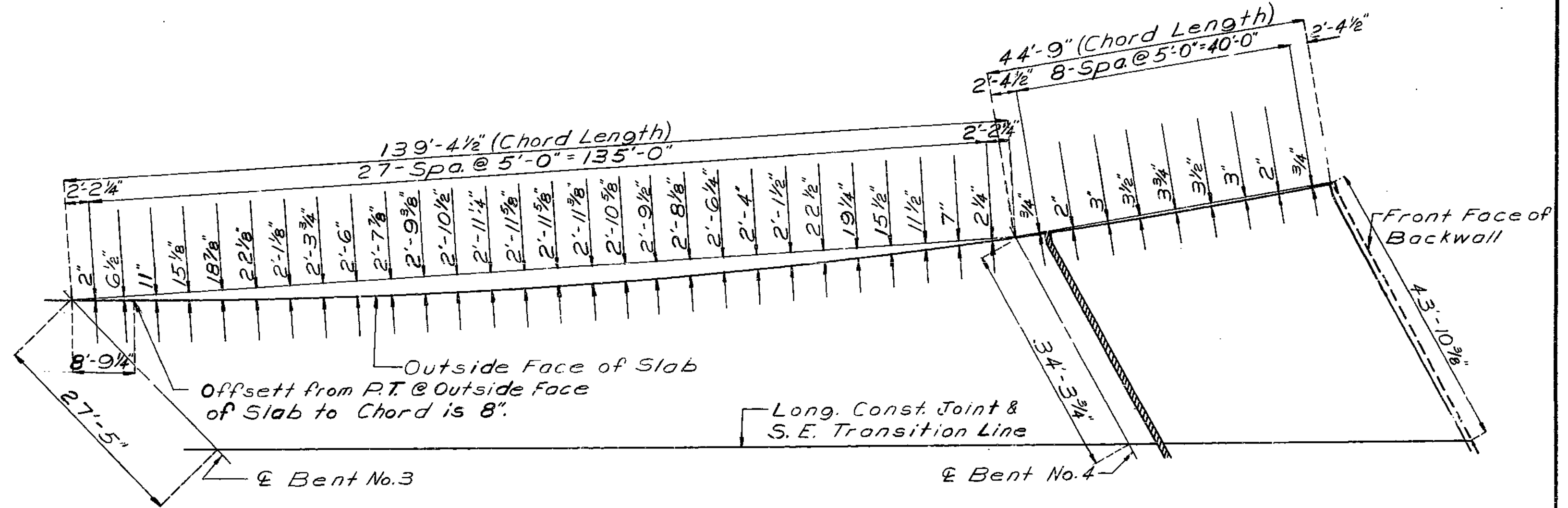
**SLAB DRAIN DETAILS**



200



**PART SPAN (1-2)**  
 PART PLAN OF SLAB SHOWING SLAB DRAIN LOCATION



**PART SPAN (3-4)**      **PART SPAN (4-5)**

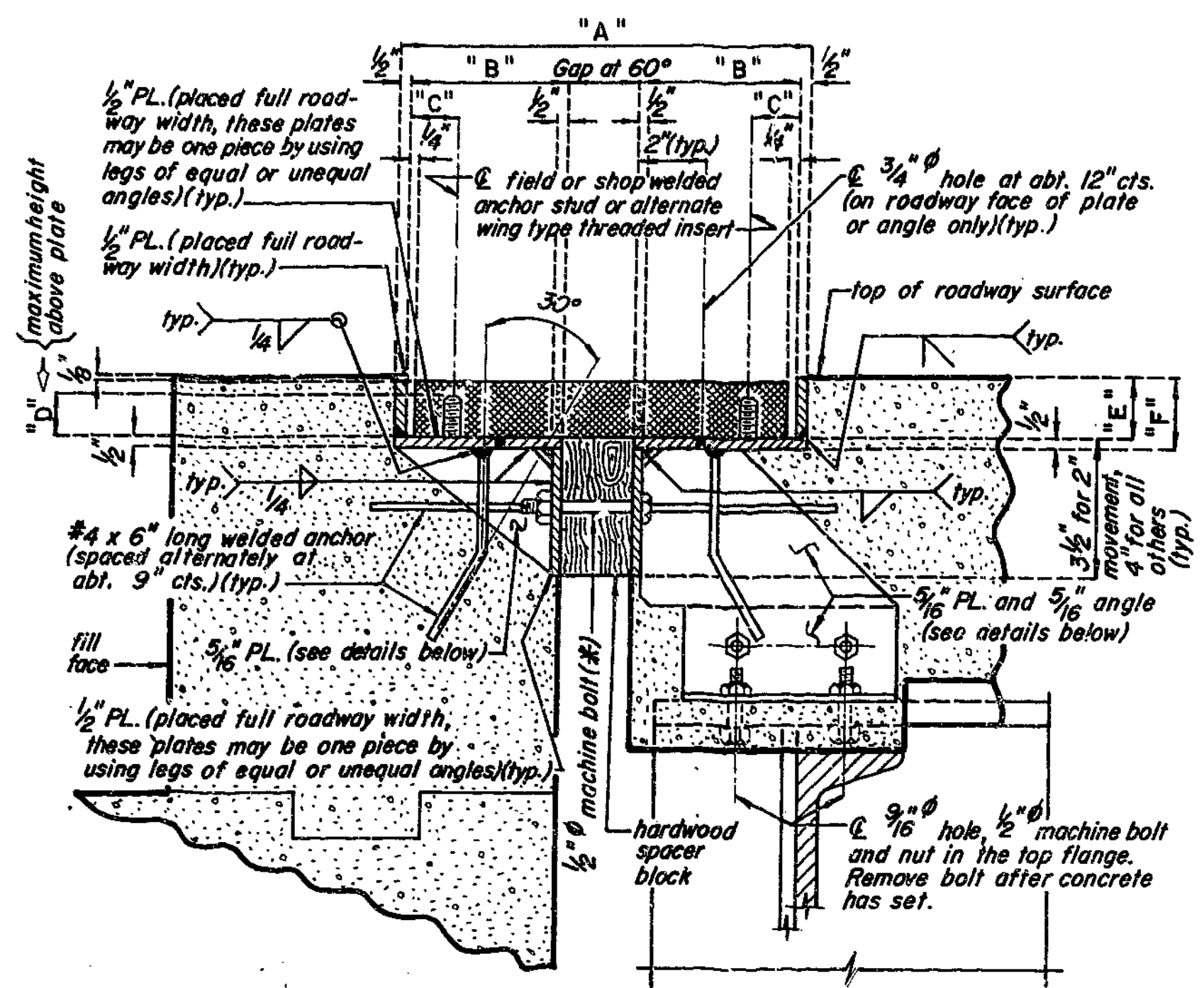
**PART PLAN OF SLAB SHOWING CURVE ORDINATES**  
 Note: All dimensions shown are horizontal.

REVISED OCT. 1979  
 STD. S.D. 46 - N.M.S. FEB. 1975

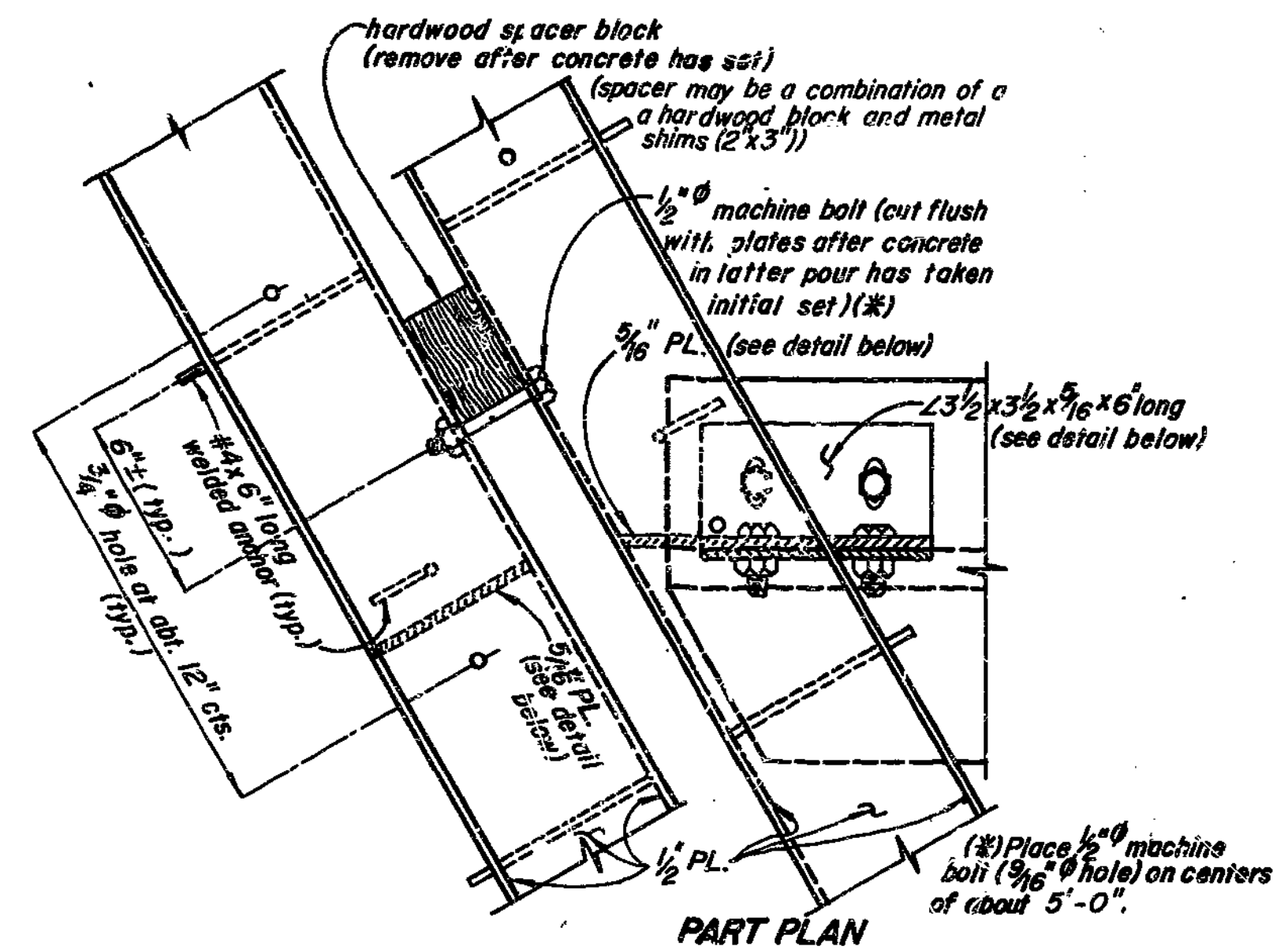
DETAILED Feb. 1980  
 CHECKED Feb. 1980

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

Sheet No. 22 of 28.



PART SECTION THRU ARMORED JOINT

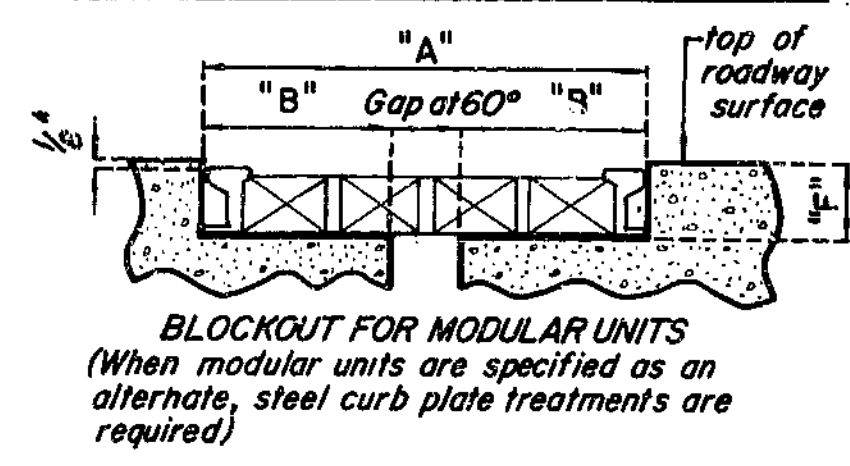


PART PLAN

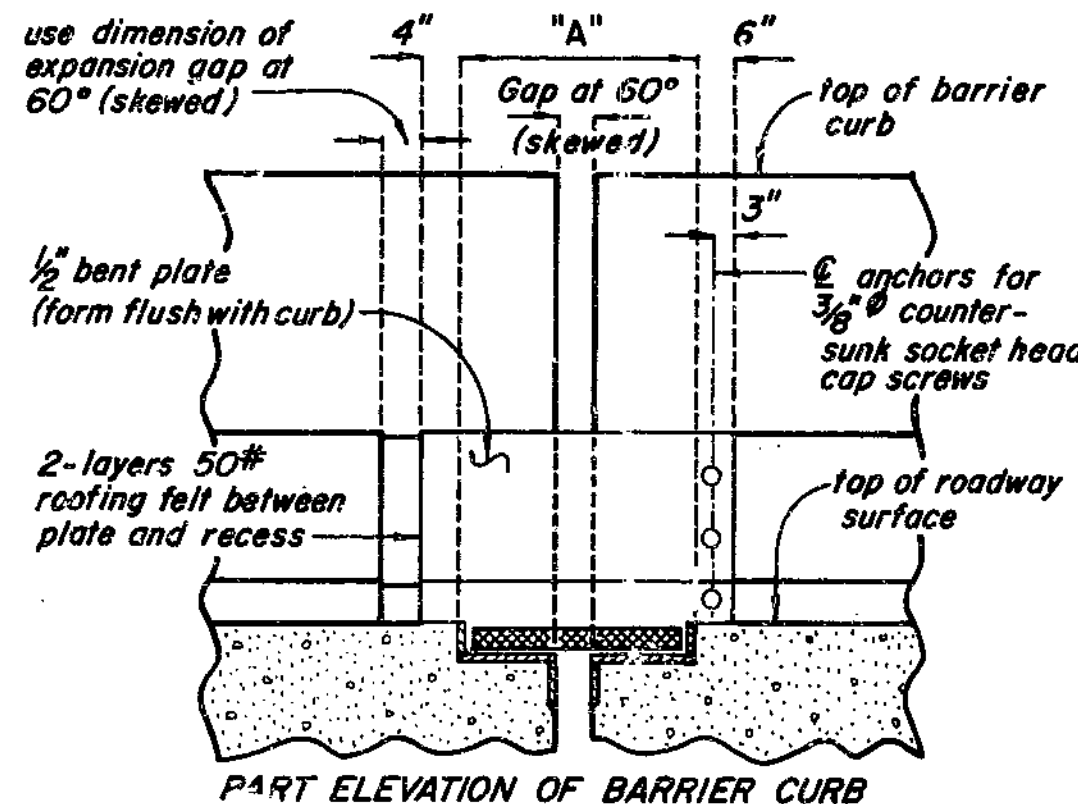
TABLE OF DIMENSIONS

LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP. GAP AT 60°	"A" AT 60°	"B"	"C"	"D"	"E"	"F"	ANCHOR STUDS SIZE "G"
End	On-Flex 45	2"	11 1/2"	4 1/4"	1 9/8"	1 1/2"	2 7/8"	3 3/8"	1/2" 65
Bents No 1 & 5	Waba-Elastodam 300(S) Fel-Span T30 SA	1 3/4"	9 1/2"	3 1/4"	1 7/8"	1 1/4"	1 1/4"	2 1/4"	1/2" 40 1/2" 50

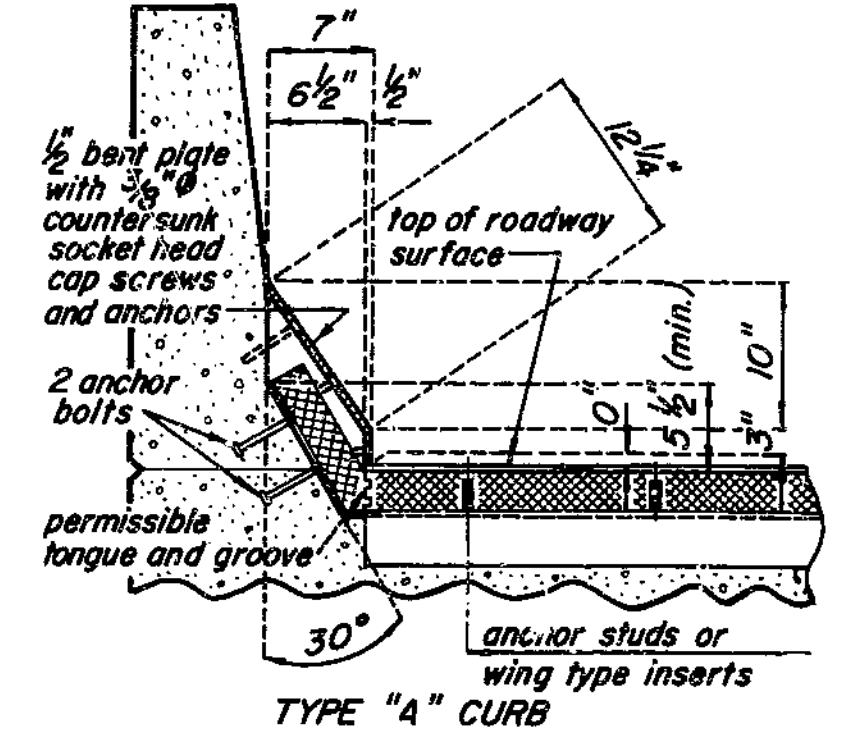
NOTE: All dimensions are at right angles. Expansion gap and dimension "A" shall be increased 1/8 inch for each 10 degree fall in temperature and decreased 1/8 inch for each 10 degree rise in temperature.



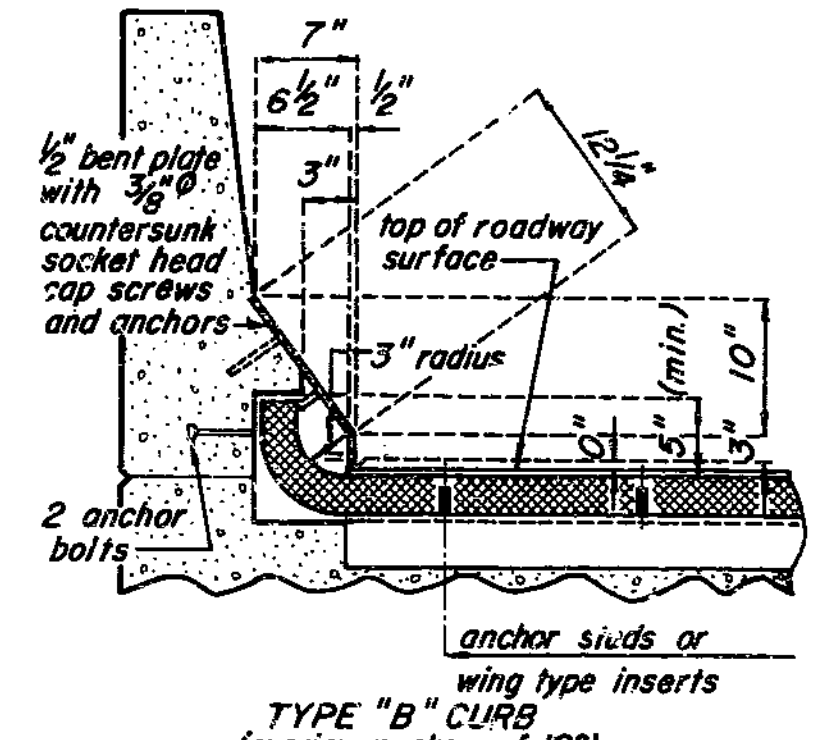
BLOCKOUT FOR MODULAR UNITS (When modular units are specified as an alternate, steel curb plate treatments are required)



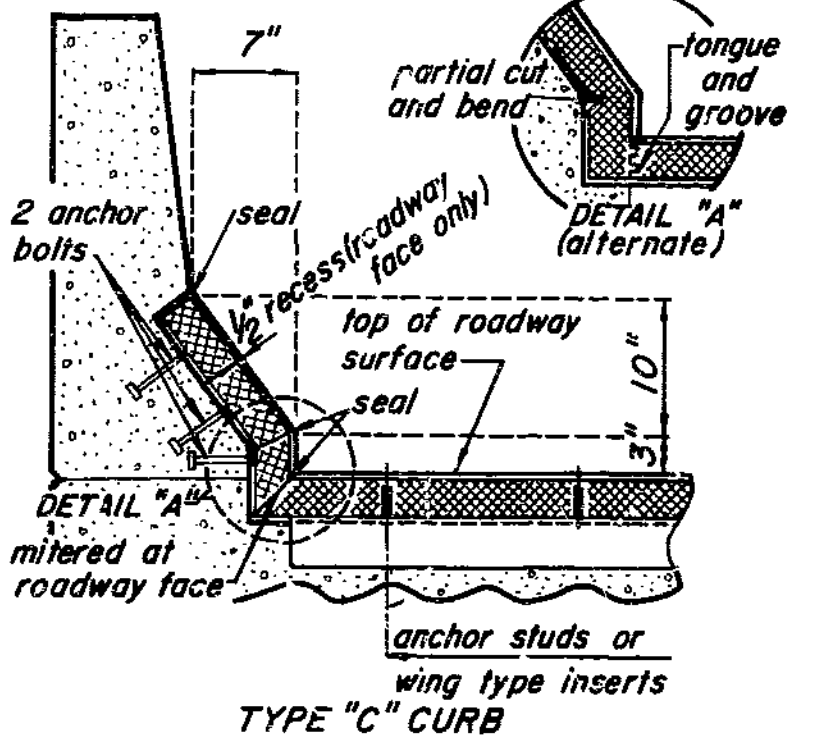
PART ELEVATION OF BARRIER CURB



TYPE "A" CURB

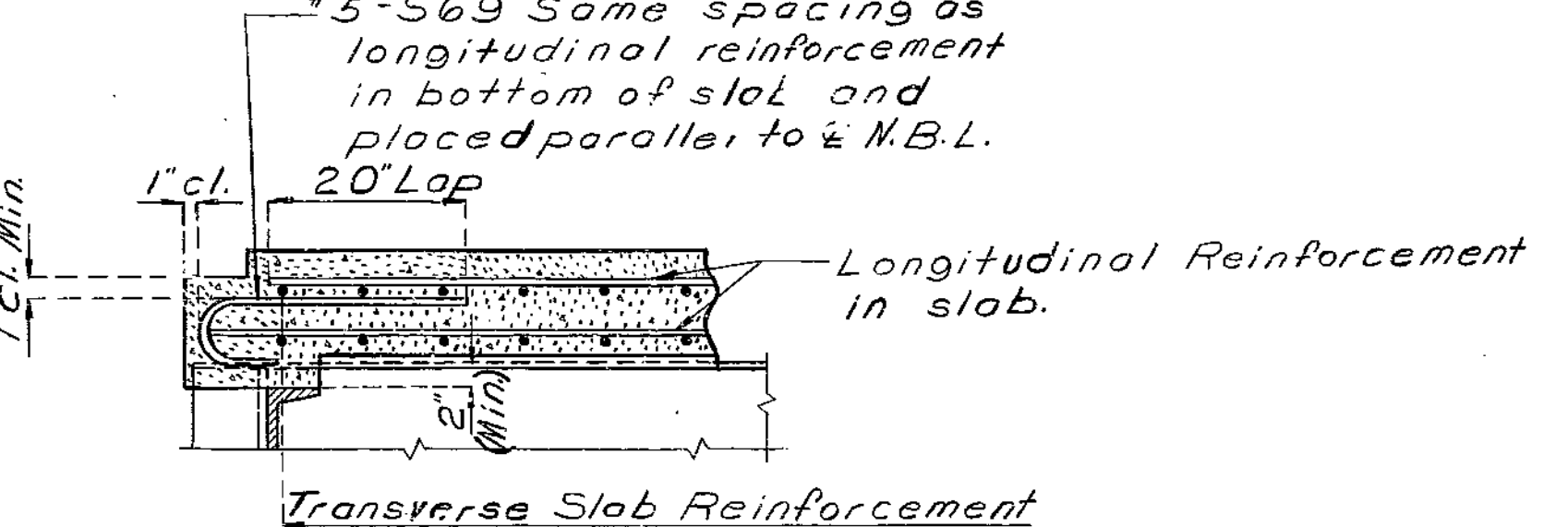


TYPE "B" CURB (maximum skew of 10°)

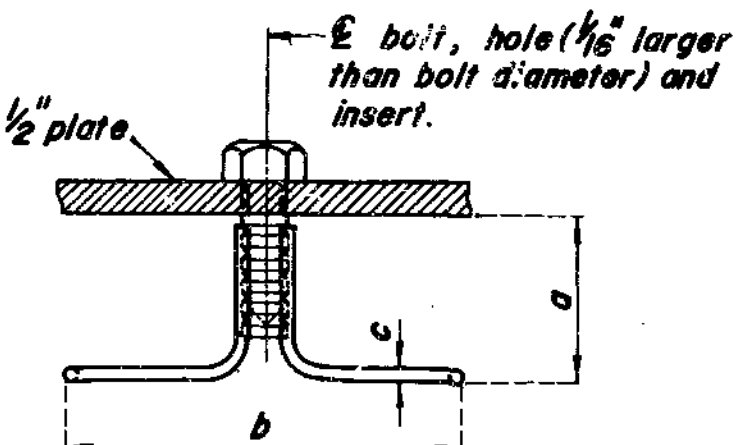


TYPE "C" CURB

ALTERNATE CURB TREATMENTS



PART SECTION C-C



DETAILS OF ALTERNATE WING TYPE THREADED INSERT

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

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENTS NO. 1 & 5

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

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

SPS - END BY REVISD FEB. 1978 AUG. 1980

DETAILED Jan. 1981  
CHECKED Jan. 1981

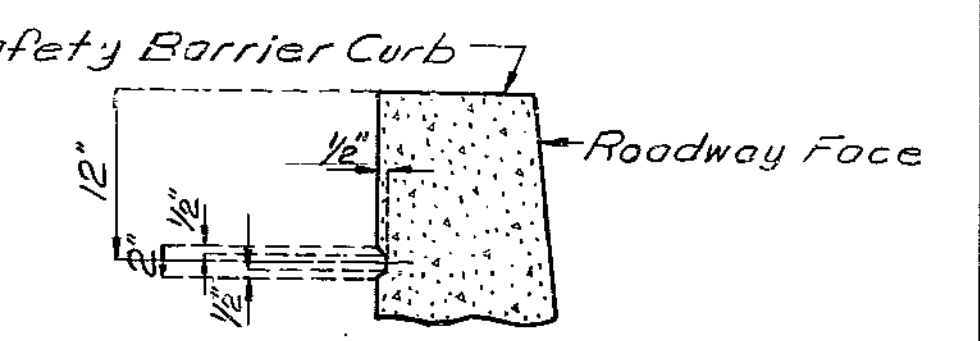
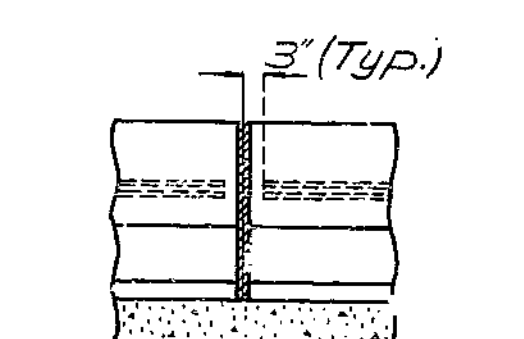
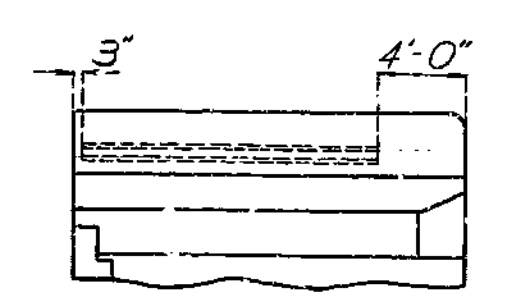
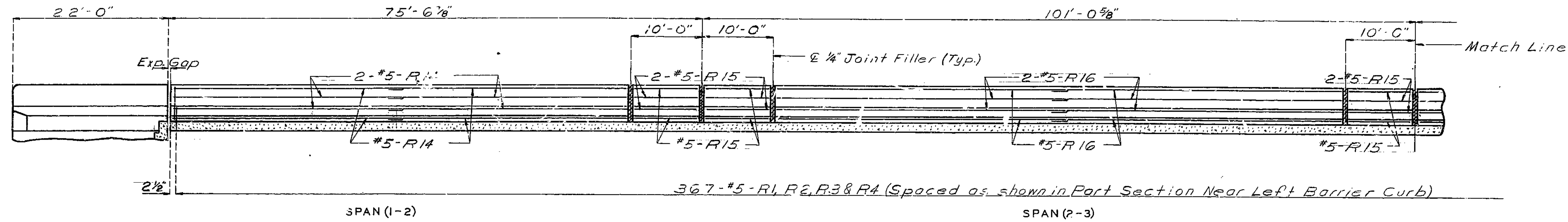
Sheet No. 23 of 28.

CLAY COUNTY

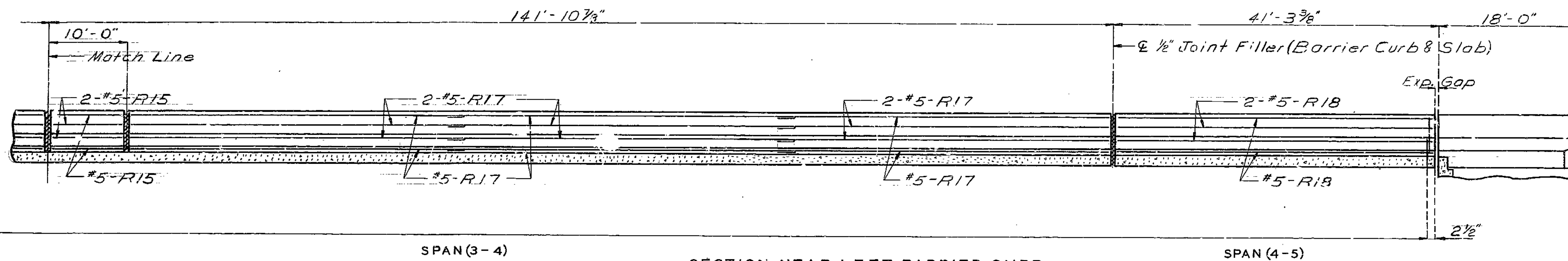
A-3375

201

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		79	67	

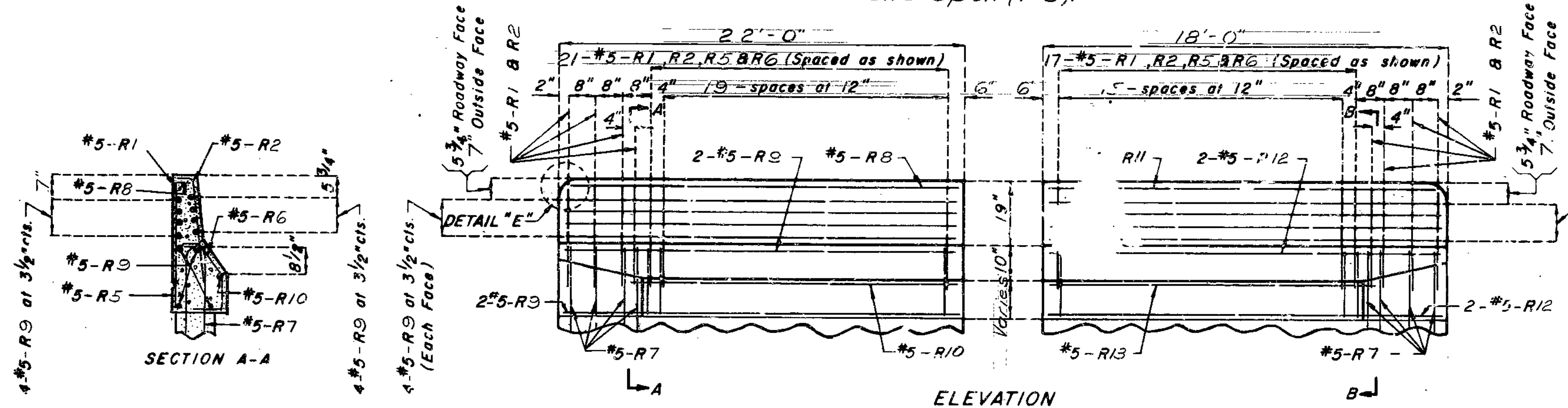


DETAILS OF RUSTICATION



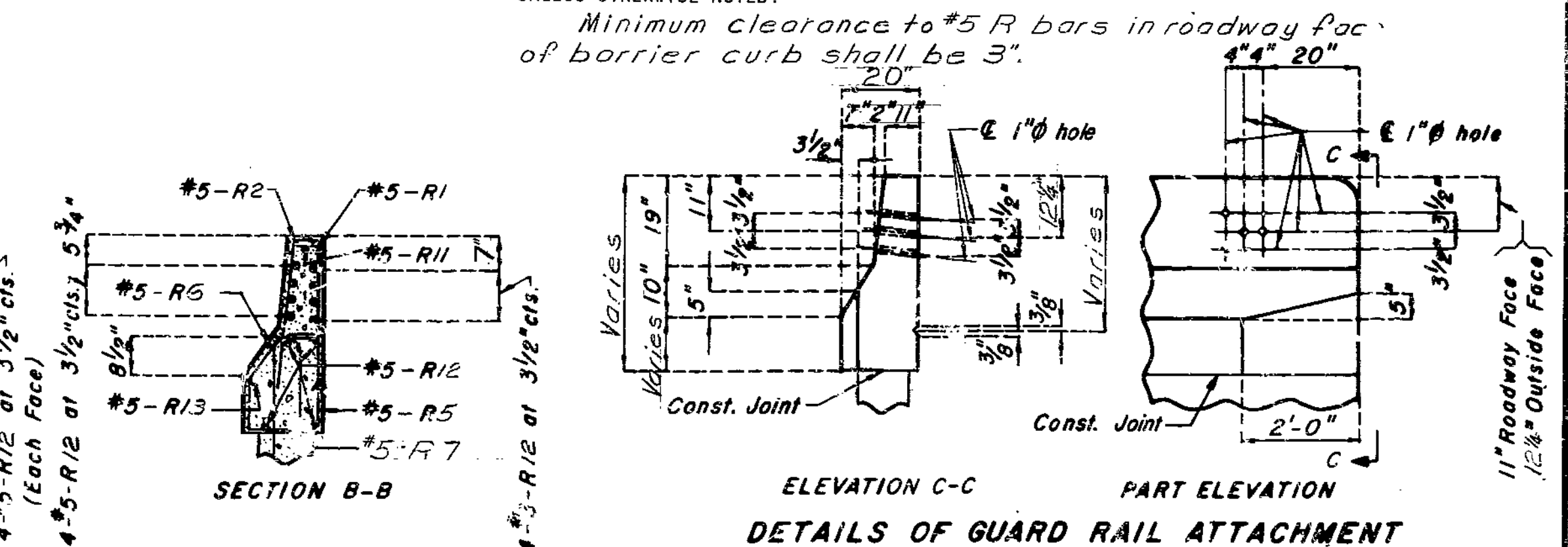
**SECTION NEAR LEFT BARRIER CURB**  
 Note: Longitudinal dimensions shown are taken along centerline of top of barrier curb parallel to grade. Dimensions are arc dimensions in Span (3-4) and Span (4-5).

**NOTES:**  
 TOP OF BARRIER CURB TO BE BUILT PARALLEL TO GRADE WITH BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE.  
 ALL EXPOSED EDGES OF BARRIER CURB SHALL HAVE 1/2" RADIUS OR 3/8" BEVEL UNLESS OTHERWISE NOTED.  
 Minimum clearance to #5 R bars in roadway face of barrier curb shall be 3".

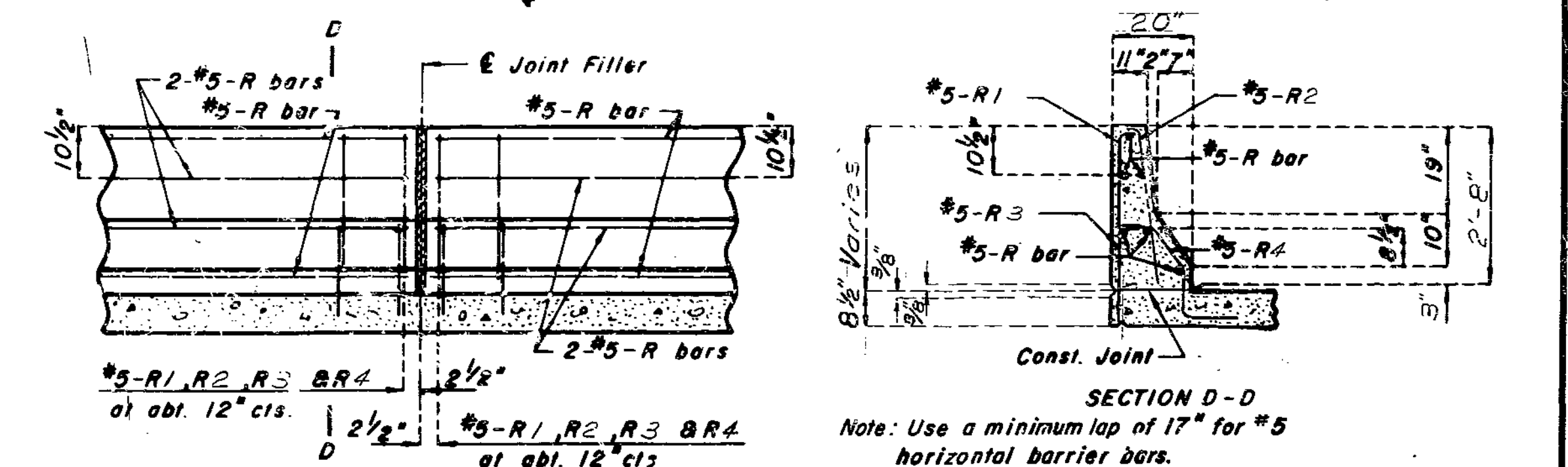


**DETAILS OF BARRIER CURB AT END BENTS**

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



**DETAILS OF GUARD RAIL ATTACHMENT**



**PART SECTION NEAR LEFT BARRIER CURB**  
 Sheet No. 24 of 28.

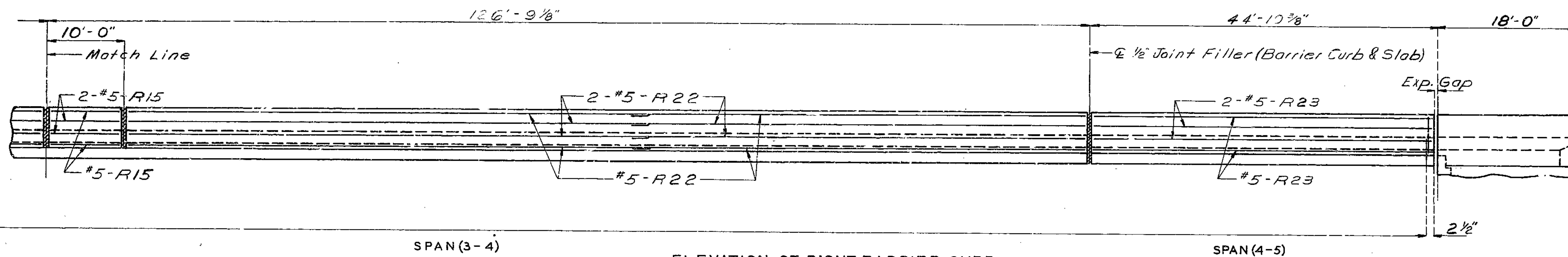
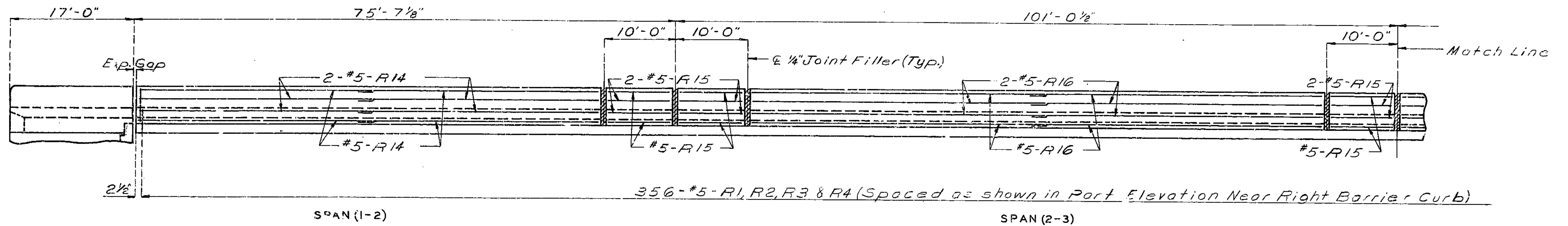
CLAY COUNTY

A-3375

202

STD. 177N REVISED  
 AUG. 1978 APRIL 1979  
 DETAILED July 1979  
 CHECKED July 1979

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			68	

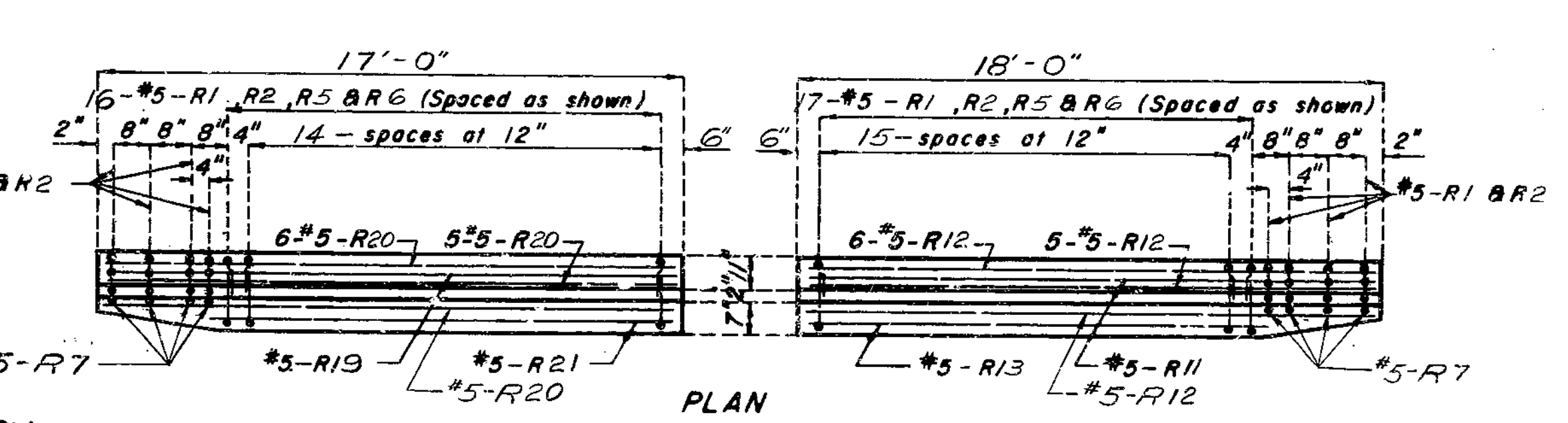
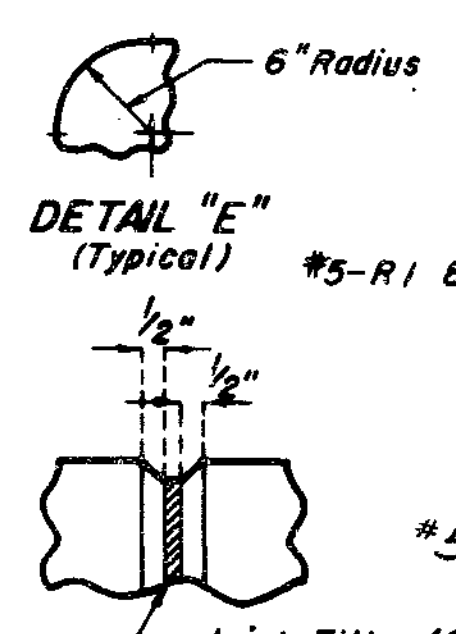
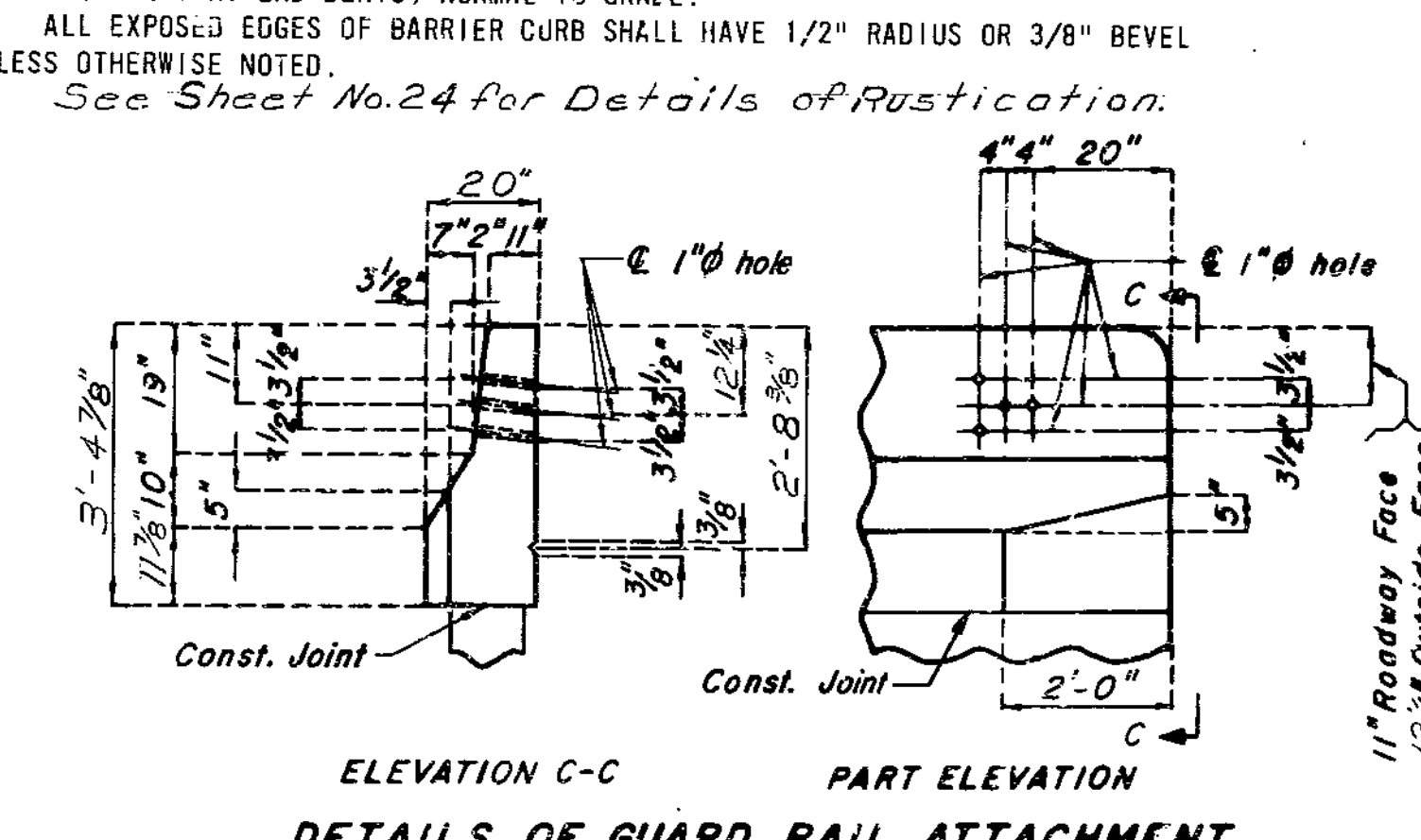
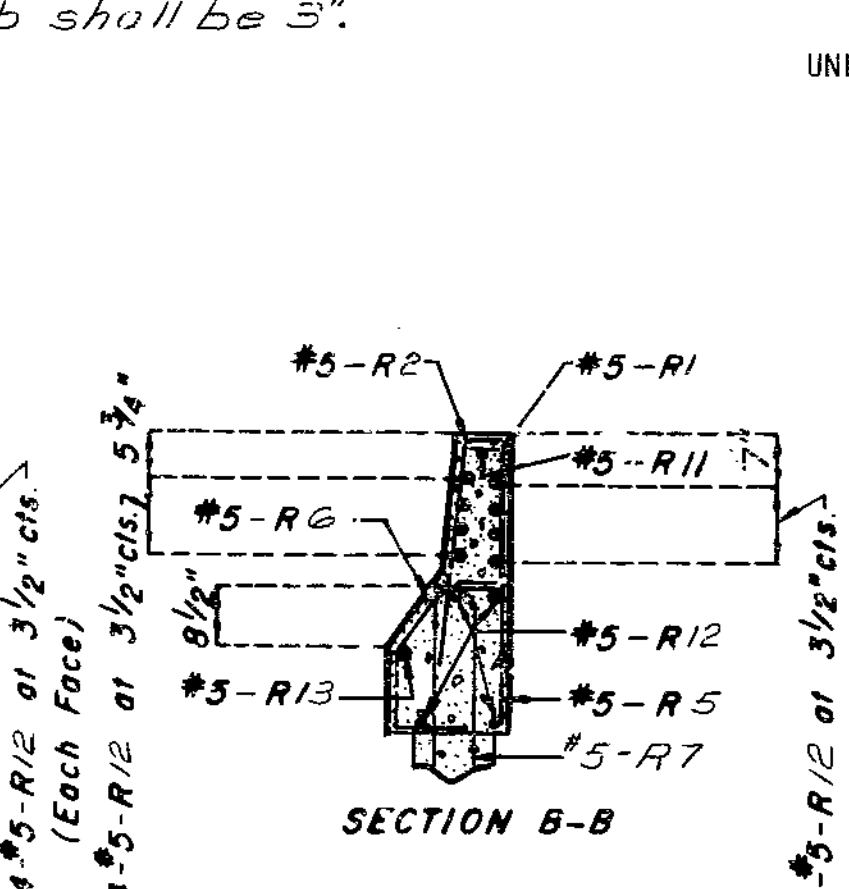
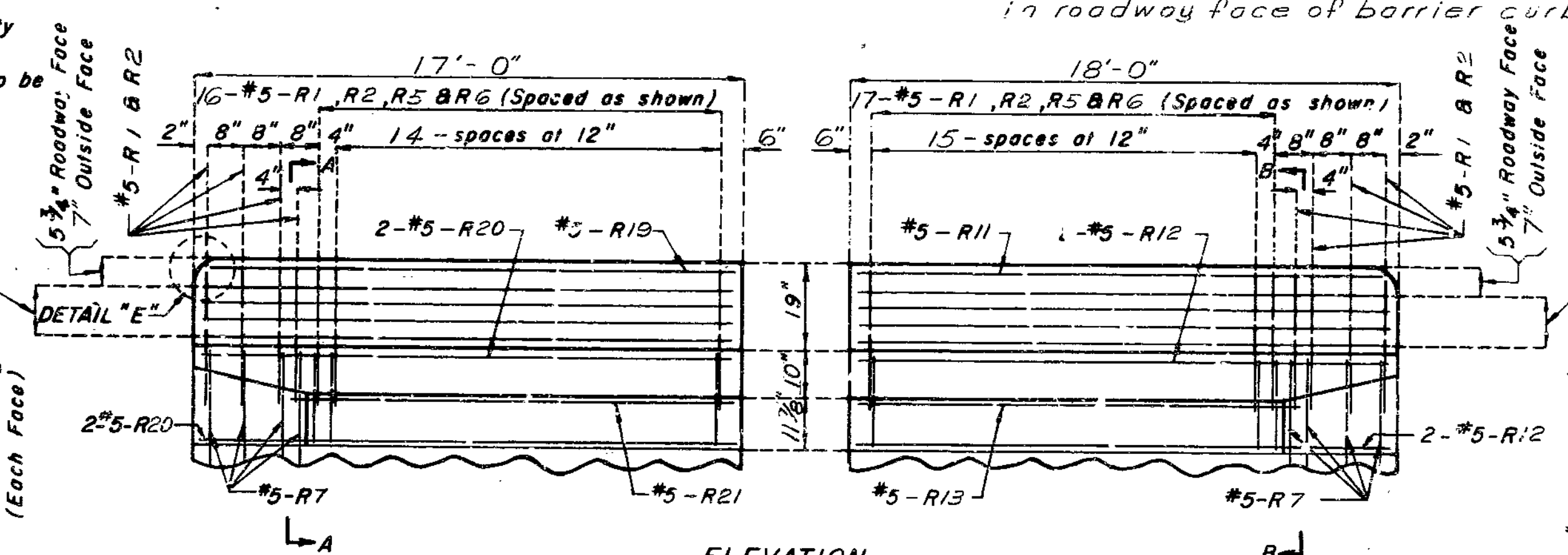
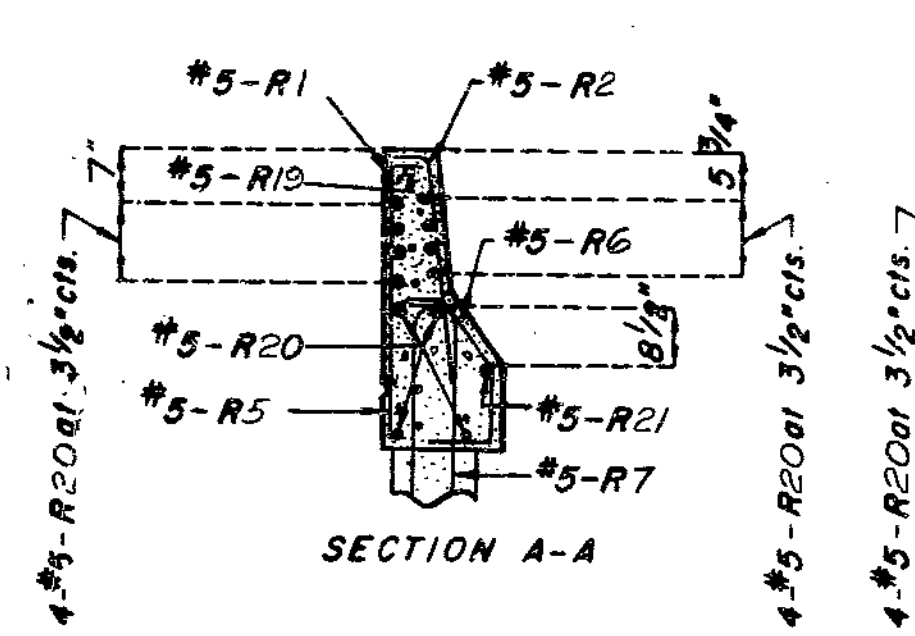


**ELEVATION OF RIGHT BARRIER CURB**  
 Note: Longitudinal dimensions shown are taken along top of barrier curb parallel to grade. Minimum clearance to #5 R bars in roadway face of barrier curb shall be 3".

**NOTES:**  
 TOP OF BARRIER CURB TO BE BUILT PARALLEL TO GRADE WITH BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE. ALL EXPOSED EDGES OF BARRIER CURB SHALL HAVE 1/2" RADIUS OR 3/8" BEVEL UNLESS OTHERWISE NOTED. See Sheet No. 24 for Details of Rustication.

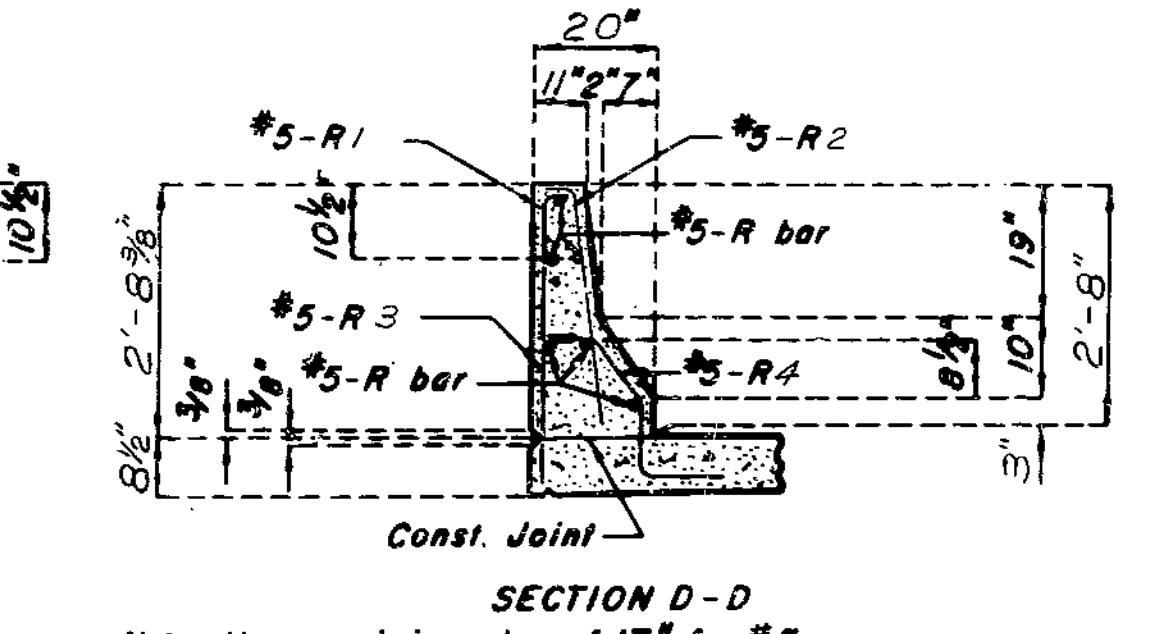
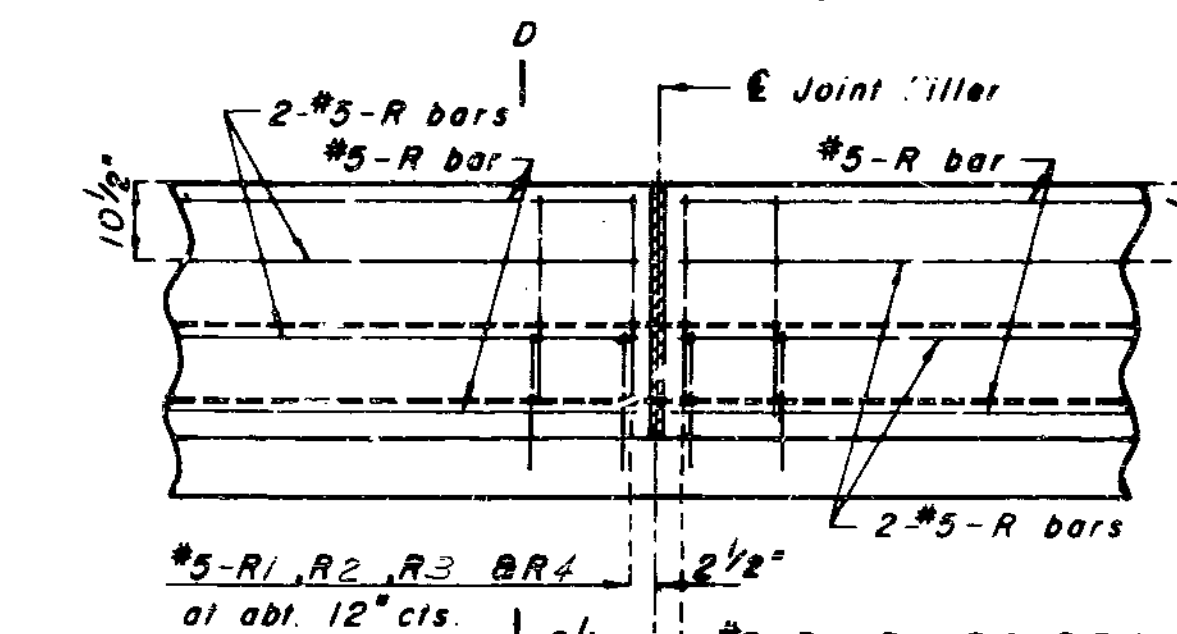
Note: Plastic waterstop shall be placed in all safety barrier curb filled joints. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

**DETAILS OF PLASTIC WATERSTOP**



**DETAILS OF BARRIER CURB AT END BENTS**

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



Note: Use a minimum lap of 17" for #5 horizontal barrier bars.

203

STD. 17.7(N) REVISED APRIL 1979  
 AUG. 1978  
 DETAILED July 1979  
 CHECKED July 1979

204

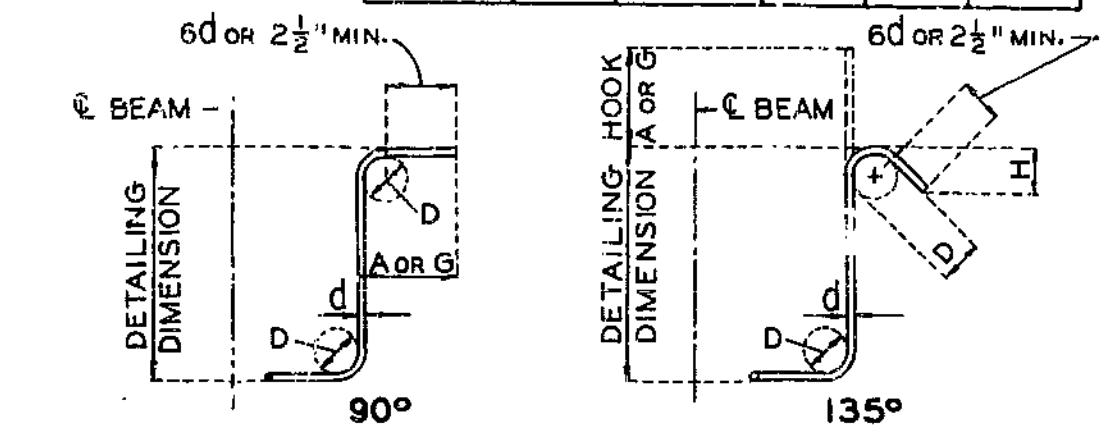
COMPLETE BILL OF REINFORCING STEEL

COMPLETE BILL OF REINFORCING STEEL

Table with columns: NO. REQD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes substructure, wing footing, wing brace, backwall, beam, and curtain wall items.

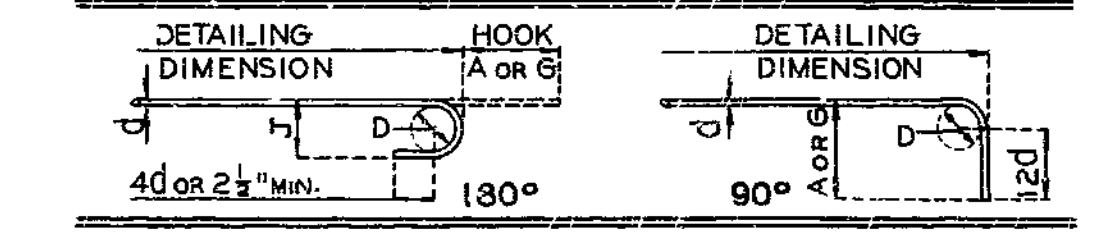
Table with columns: NO. REQD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes beam, footing, column, and well items.

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



STIRRUP HOOK DIMENSIONS table with columns: BAR SIZE, D (in.), 90° HOOK, 135° HOOK.

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



SIZE OF 180° HOOKS (GRADE 40 KSI) and SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI).

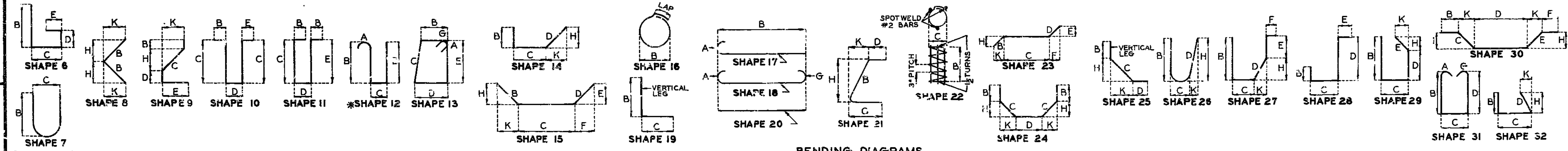
END HOOK DIMENSIONS table with columns: BAR SIZE, GRADE, 180° HOOKS, 90° HOOKS.

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 OLT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.



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

REVISED OCT. 1978, MAY 1974, CHECKED Aug. 1979

COMPLETE BILL OF REINFORCING STEEL

COMPLETE BILL OF REINFORCING STEEL

Table with columns: NO. RECD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes items like 12 2W1 A B WELL, 32 10D13 FOOTING, 8 6D14 FOOTING, etc.

Table with columns: NO. RECD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes items like 2 6T5 WING, 2 6T6 CURTAIN WALL, 2 6T7 WING, etc.

Summary table with columns: FED. ROAD DIST. NO., STATE, FED. AID PROJ. NO., FISCAL YEAR, SHEET NO., TOTAL SHEETS.

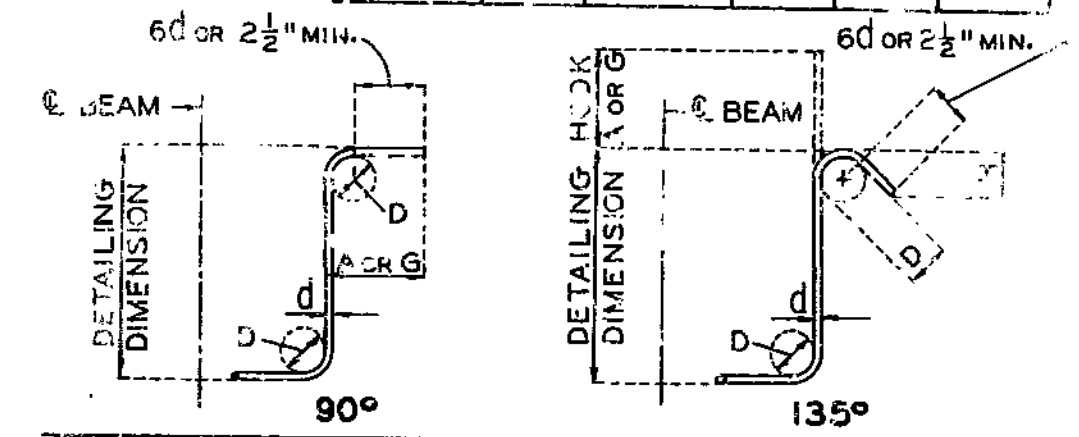
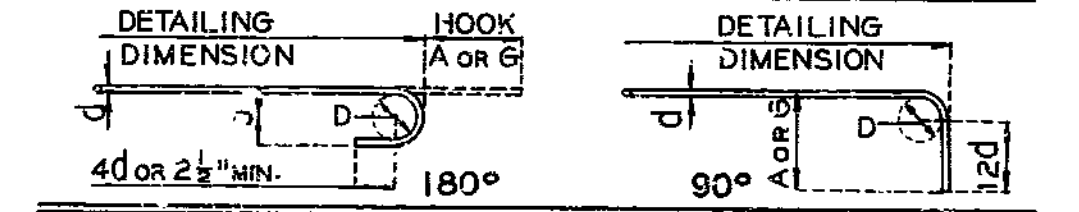


Table titled 'STIRRUP HOOK DIMENSIONS' with columns for BAR SIZE, D, 90° HOOK, 135° HOOK, and APPROX. H.

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



SIZE OF 180° HOOKS (GRADE 40 KSI) AND 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI). D=5d for #3 thru #11, D=10d for #14 and #18.

Table titled 'END HOOK DIMENSIONS' with columns for BAR SIZE, GRADE 40, GRADE 60, and ALL GRADES.

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.

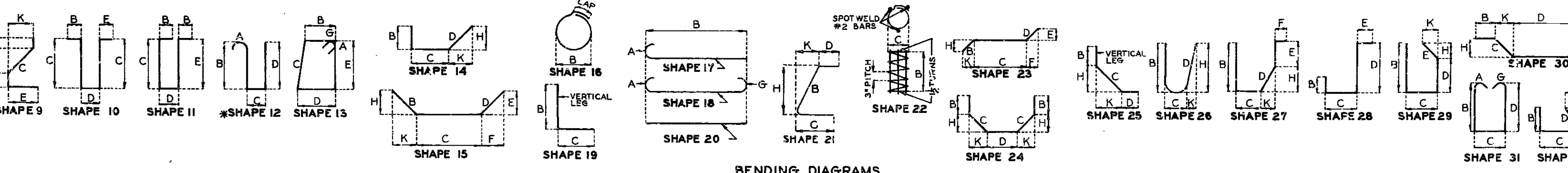
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET. E - EPOXY COATED REINFORCEMENT. S - STIRRUP. X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES. V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.

NO. EA. - NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 ONLY ARE BASED ON D=5d.

205

REVISED OCT. 1978, MAY 1974, S.D. 90-8, CHECKED Aug. 1979



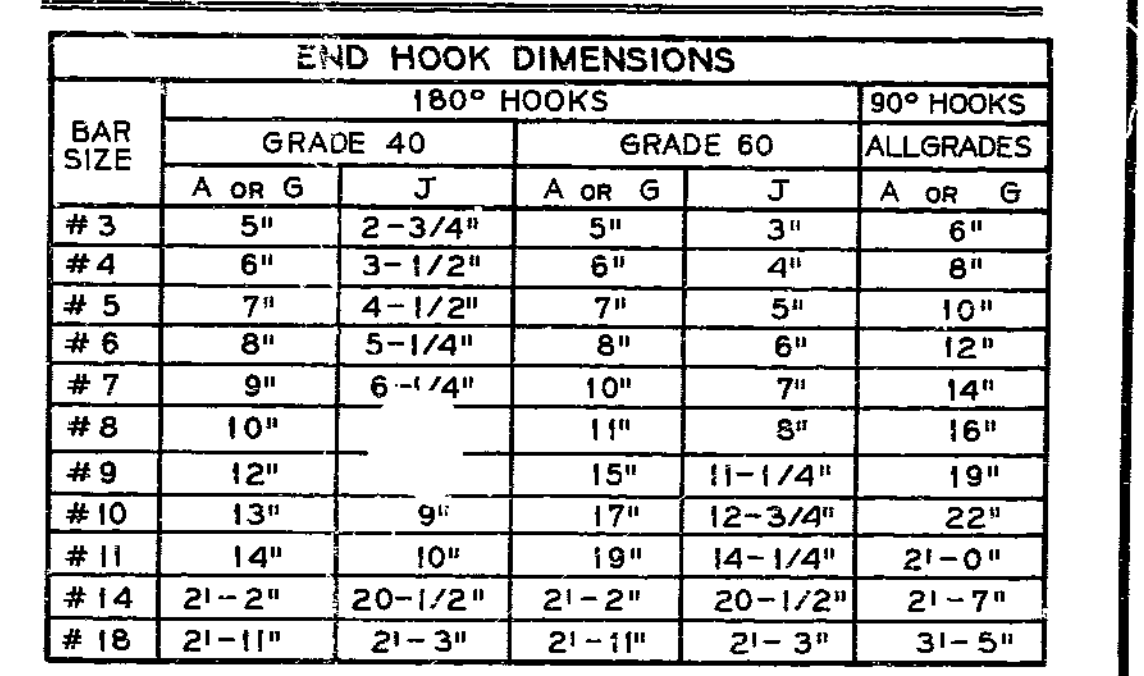
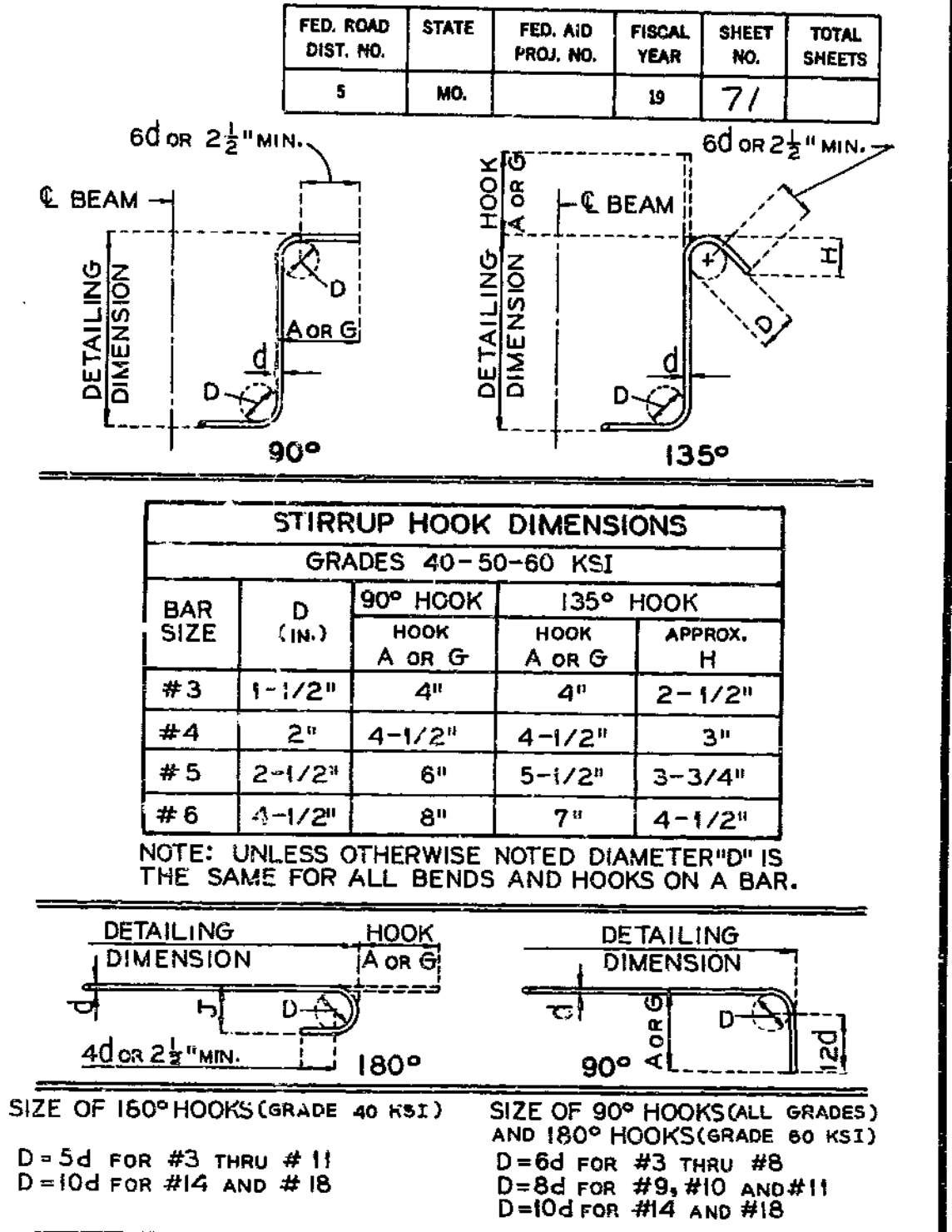
Note: This drawing is not to scale. Follow dimensions.

COMPLETE BILL OF REINFORCING STEEL

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D	E	F	H			
1	5R19	BARRIER CURB		20				16	7	16	7	17	16	7	16	7	17
12	5R20	BARRIER CURB		20				16	9	16	9	21	16	9	16	9	21
1	5R21	BARRIER CURB		20				15	0	15	0	14	15	0	15	0	14
12	5R22	BARRIER CURB		20				59	0	59	0	738	59	0	59	0	738
6	5R23	BARRIER CURB		20				44	5	44	5	278	44	5	44	5	278
68	5S1	SLAB		20				33	9	33	9	24148	33	9	33	9	24148
69	5S2	SLAB		20				2	6	2	6	1452	2	6	2	6	1452
41	5S3	SLAB		20				31	8	31	8	1229	31	8	31	8	1229
41	5S4	SLAB		20				2	0	2	0	743	2	0	2	0	743
399	5S5	SLAB		20				19	2	19	2	453	19	2	19	2	453
162	6S6	SLAB		20				7	6	7	6	8115	7	6	7	6	8115
159	6S7	SLAB		20				10	4	10	4	2170	10	4	10	4	2170
36	6S8	SLAB		20				18	7	18	7	3453	18	7	18	7	3453
166	5S9	SLAB		20				48	0	48	0	8210	48	0	48	0	8210
120	5S10	SLAB		20				47	5	47	5	5935	47	5	47	5	5935
5	5S11	SLAB		20				11	8	11	8	182	11	8	11	8	182
7	5S12	SLAB		20				14	0	14	0	117	14	0	14	0	117
3	5S13	SLAB		20				15	0	15	0	47	15	0	15	0	47
1	5S14	SLAB		20				6	9	6	9	7	6	9	6	9	7
3	5S15	SLAB		20				46	4	46	4	145	46	4	46	4	145
80	5S16	SLAB		20				35	3	35	3	2941	35	3	35	3	2941
1	5S17	SLAB		20				48	0	48	0	50	48	0	48	0	50
1	5S18	SLAB		20				17	0	17	0	18	17	0	17	0	18
2	5S19	SLAB		20				60	0	60	0	125	60	0	60	0	125
321	6S20	SLAB		20				14	8	14	8	7071	14	8	14	8	7071
65	5S21	SLAB		20				33	9	33	9	2288	33	9	33	9	2288
41	5S22	SLAB		20				2	8	2	8	773	2	8	2	8	773
38	5S23	SLAB		20				3	4	3	4	697	3	4	3	4	697
16	6S24	SLAB		20				2	9	2	9	201	2	9	2	9	201
90	6S25	SLAB		20				14	8	14	8	1985	14	8	14	8	1985
16	6S26	SLAB		20				2	9	2	9	207	2	9	2	9	207
21	6S27	SLAB		20				2	6	2	6	344	2	6	2	6	344
74	6S28	SLAB		20				19	4	19	4	344	19	4	19	4	344
29	6S29	SLAB		20				26	4	26	4	2589	26	4	26	4	2589
1	5S30	SLAB		20				40	11	40	11	43	40	11	40	11	43
49	5S31	SLAB		20				44	5	44	5	2270	44	5	44	5	2270
5	5S32	SLAB		20				8	5	8	5	115	8	5	8	5	115
6	5S33	SLAB		20				35	6	35	6	115	35	6	35	6	115
49	5S34	SLAB		20				6	11	6	11	54	6	11	6	11	54
490	5S35	SLAB		20				33	4	33	4	17036	33	4	33	4	17036

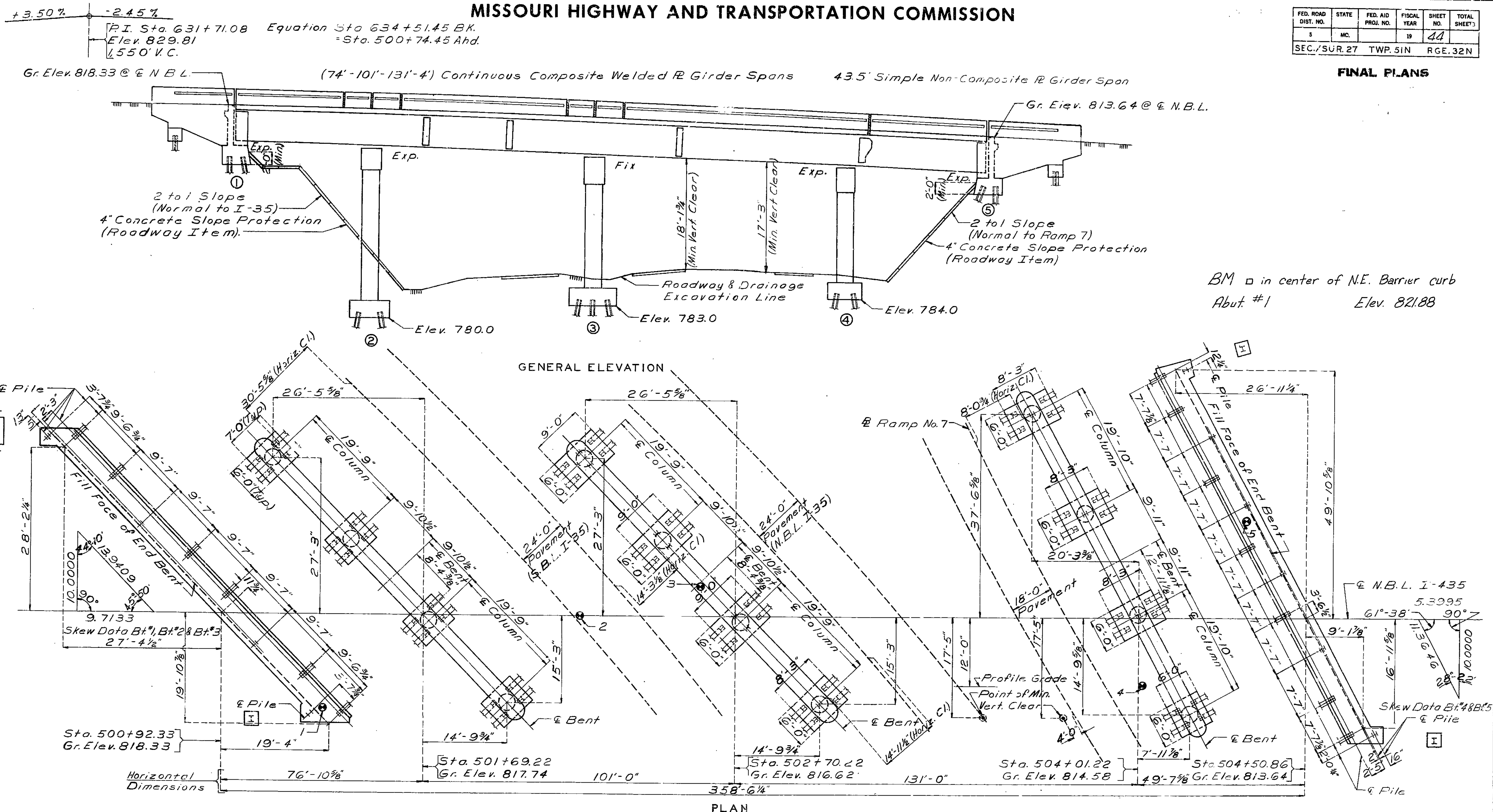
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D	E	F	H			
29	5S36	SLAB		20				1	2	2	2	2	2	2	2	2	
29	5S37	SLAB		20				1	2	2	2	2	2	2	2	2	
285	5S38	SLAB		20				19	0	19	0	320	19	0	19	0	320
116	6S39	SLAB		20				1	6	11	0	5796	1	6	11	0	5796
113	6S40	SLAB		20				1	9	9	0	1452	1	9	9	0	1452
9	6S41	SLAB		20				1	17	11	0	2655	1	17	11	0	2655
1	6S42	SLAB		20				46	2	46	2	624	46	2	46	2	624
1	6S43	SLAB		20				18	0	18	0	27	18	0	18	0	27
229	6S44	SLAB		20				32	6	32	6	49	32	6	32	6	49
25	6S45	SLAB		20				14	8	14	8	5045	14	8	14	8	5045
224	5S46	SLAB		20				29	0	29	0	601	29	0	29	0	601
129	5S47	SLAB		20				45	11	45	11	6178	45	11	45	11	6178
30	6S48	SLAB		20				47	5	47	5	2137	47	5	47	5	2137
3	6S49	SLAB		20				12	3	12	3	94	12	3	12	3	94
3	6S50	SLAB		20				29	6	29	6	234	29	6	29	6	234
8	6S51	SLAB		20				52	0	52	0	363	52	0	52	0	363
12	6S52	SLAB		20				5	8	5	8	144	5	8	5	8	144
47	5S53	SLAB		20				10	4	10	4	1634	10	4	10	4	1634
27	5S54	SLAB		20				3	2	3	2	485	3	2	3	2	485
29	5S55	SLAB		20				31	3	31	3	528	31	3	31	3	528
15	6S56	SLAB		20				2	0	2	0	230	2	0	2	0	230
54	6S57	SLAB		20				19	8	19	8	184	19	8	19	8	184
20	6S58	SLAB		20				25	10	25	10	417	25	10	25	10	417
12	6S59	SLAB		20				3	9	3	9	143	3	9	3	9	143
63	6S60	SLAB		20				13	11	13	11	1388	13	11	13	11	1388
12	6S61	SLAB		20				14	8	14	8	143	14	8	14	8	143
53	5S62	SLAB		20				44	5	44	5	1001	44	5	44	5	1001
15	6S63	SLAB		20				44	5	44	5	241	44	5	44	5	241
8	6S64	SLAB		20				34	5	34	5	78	34	5	34	5	78
9	6S65	SLAB		20				5	9	5	9	184	5	9	5	9	184
3	6S66	SLAB		20				7	6	7	6	2246	7	6	7	6	2246
80	5S67	SLAB		20				40	9	40	9	4457	40	9	40	9	4457
80	5S68	SLAB		20				26	11	26	11	339	26	11	26	11	339
60	4S70	HAUNCH		10				6.000	4.025	17.000	6.000	110	6	6	6	6	110
66	4S71	HAUNCH		10				6.000	5.250	13.000	6.000	114	6	6	6	6	114
8	5S100	SLAB		20				48	0	48	0	401	48	0	48	0	401
3	5S101	SLAB		20				47	5	47	5	148	47	5	47	5	148
3	5S102	SLAB		20				46	4	46	4	145	46	4	46	4	145
1	5S103	SLAB		20				40	11	40	11	43	40	11	40	11	43
1	5S104	SLAB		20				44	5	44	5	46	44	5	44	5	46



MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	44	
SEC./SUR. 27 TWP. 51N RGE. 32N					

FINAL PLANS



207

BM □ in center of N.E. Barrier curb  
Abut. #1 Elev. 821.88

Note: For Quantities, Pile Data, General Notes and Location Sketch see sheet No. 2.  
For Boring Data see Sheet No. 3  
⊙ Indicates location of boring.  
Grade Elevations shown are taken along & N.B.L. I-435.  
All Horizontal Clearance dimensions shown are radial dimensions.

BRIDGE OVER RTE. I-35 + RAMP 7

STATE ROAD FROM RTE. 152 TO RTE. 69  
AT I-35 + I-435 INTERCHANGE  
PROJECT NO. I-435-1(163) STA. 500+92.33  
JOB NO. 4-I-435-49H RTE I-435 (NBL)  
CLAY COUNTY

STD. 611.60
STD. 706.35
A-3375

DESIGNED Oct. 1977  
DETAILED Aug. 1979  
CHECKED Aug. 1979

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

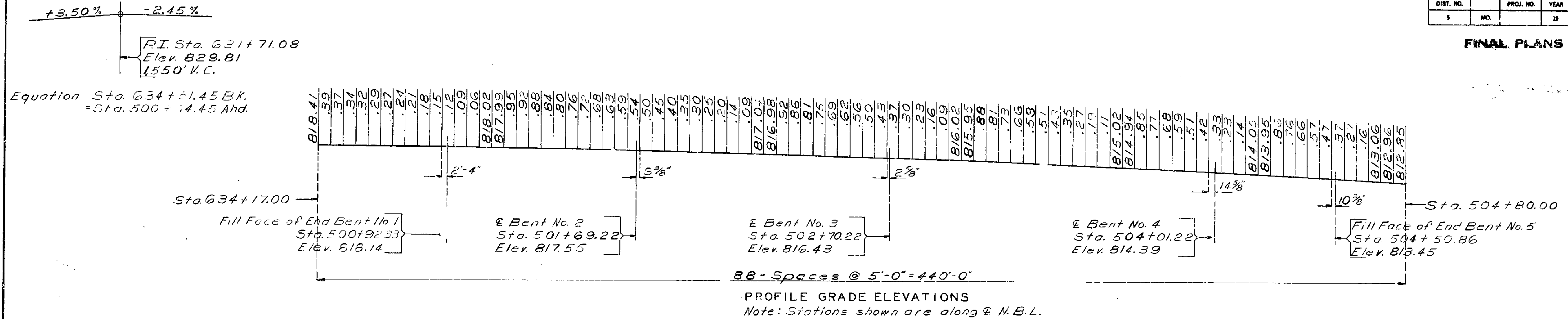
Sheet No. 1A of 28.

DATE March 16, 1981



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		58	45	

FINAL PLANS



Note: Construction Clearance (Rte I-35, N.B.L. & S.B.L.):  
A minimum vertical clearance of 15'-0" from existing lanes and a minimum lateral clearance of 28'-0" centered on existing lanes was maintained during construction.

ESTIMATED QUANTITIES			
ITEM		SUBSTR.	SUP. STR.
Class I Excavation	Cu.Yd.	429.5	429.5
Structural Steel Pile (10")	Lin.Ft.	4610	4610
Class B Concrete	Cu.Yd.	377.2	377.2
Class B2 Concrete	Cu.Yd.	640.3	640.3
Reinforcing Steel (Grade 60)	Lbs.	63,920	66,980
Reinforcing Steel (Epoxy Coated)	Lbs.	1,600	100,110
Fabricated Structural Carbon Steel	Lbs.	518,100	518,100
Fabricated Structural Low Alloy Steel	Lbs.	118,310	118,310
Painting (System B Aluminum)	Ton	316.2	316.2
Elastomeric Expansion Joint Seal (30' Lin.Ft.)		143	143
Slab Drains	Each	7	7

All concrete and reinforcement in safety barrier curbs is included with superstructure quantities

GENERAL NOTES:

Design Specifications:  
A.A.S.H.T.O.-1977 Load Factor Design Substructure.

Design Loading:  
HS20-44; 15/sq.ft. Future Wearing Surface.  
Modified 24,000\* Tandem Axle.  
Earth 120\* Equivalent Fluid Pressure 30\*  
Fatigue Stress: Case I

Design Unit Stresses:

Class B Concrete (Substructure)  $f'c = 3,000$  psi.  
Class B2 Concrete (Superstructure)  $f'c = 4,000$  psi.  
Reinforcing Steel (Substructure) (Grade 60)  $f_y = 40,000$  psi.  
Reinforcing Steel (Superstructure) (Grade 60)  $f_y = 60,000$  psi.  
Structural Carbon Steel  $f_s = 20,000$  psi.  
Structural Steel (A.S.T.M. A572) Grade 50  $f_s = 70,000$  psi.  
Steel Pile  $f_b = 9,000$  psi.

Fabricated Steel

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

Painting:

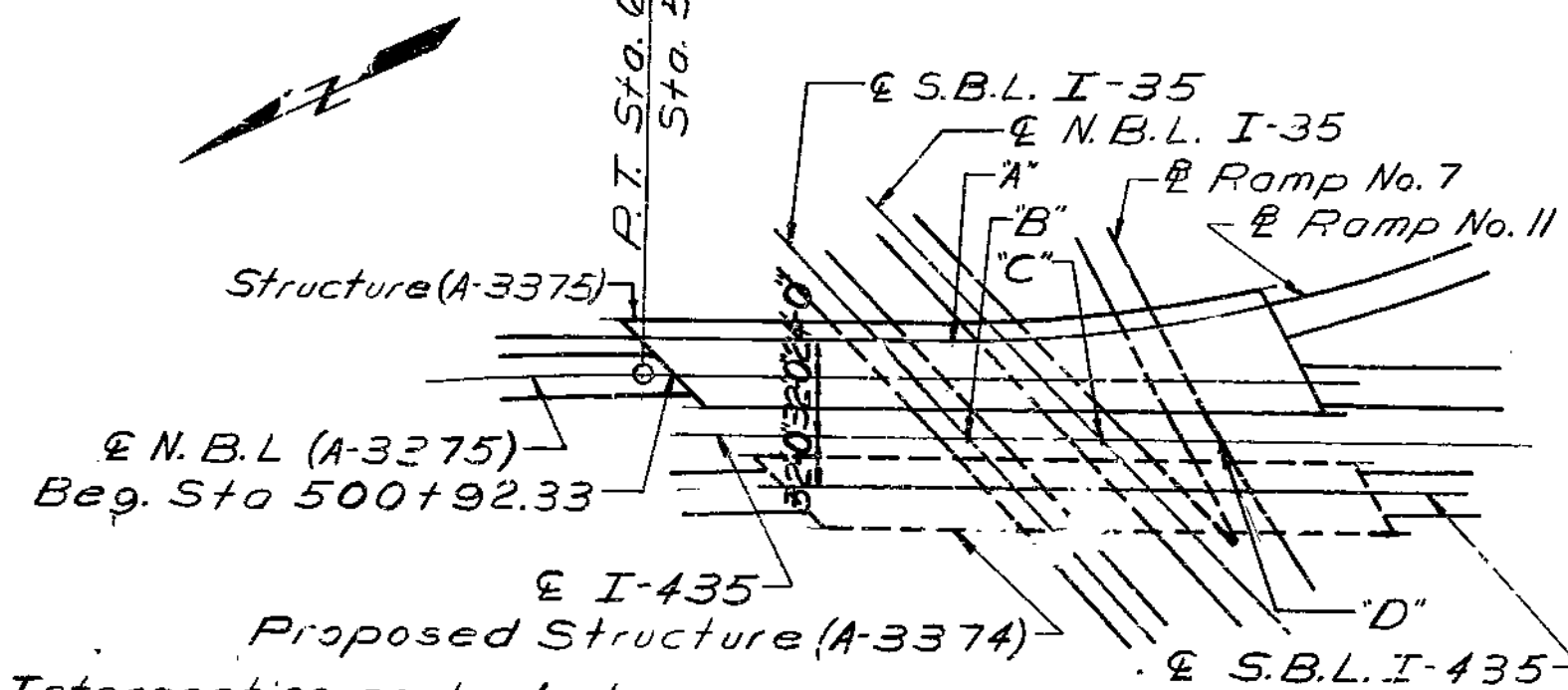
System B by contractor in accordance with Std. Spec. 712.12.  
Color of the final field coat for System B is aluminum.

Reinforcing Steel:

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

All reinforcing bars in tops of substructure beams or caps was spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}"$ .

Curve Data For Ramp No. 11:  
P.I. Sta. 7+79.18  
 $\Delta = 33^\circ - 16' - 45"$  Pt.  
 $D = 7^\circ - 00'$   
 $T = 244.62$   
 $L = 475.41$   
 $R = 818.52$   
 $S.E. = .064\%$



Intersecting angles between  
& I-435 and tangent to  
& S.B.L. I-35 =  $133^\circ - 48' - 33"$   
& N.B.L. I-35 =  $133^\circ - 12' - 02"$   
& Ramp 7 =  $119^\circ - 59' - 09"$

A' = P.T. Sta. 10+09.97 Ramp 11 = Sta. 502+48.23 & I-435  
B' = Sta. 502+62.44 & I-435 = Sta. 538+07.50 & S.B.L. I-35  
C' = Sta. 503+40.10 & I-435 = Sta. 537+55.55 & N.B.L. I-35  
D' = Sta. 504+07.96 & I-435 = Sta. 5+49.10 & Ramp 7

LOCATION SKETCH

PILE DATA							
BENT NO.	WING PILE BENT NO.	1	2	3	4	5	WING PILE BENT NO.
Pile Type and Size		HP 10X42					
Number		3	10	16	23	19	2
Approximate Length	Ft.	73	69	41	46	48	65
Design Bearing	Tons	7	54	55	55	50	49
Hammer Energy required	Ft.lbs.	100	14,200	13,000	13,000	11,800	13,100

Minimum energy requirement of hammer based on plan length and design bearing value of piles.

All pile was driven to practical refusal.

DETAILED Aug. 1973  
CHECKED Aug. 1975

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

Sheet No. 2A of 28.

CLAY COUNTY

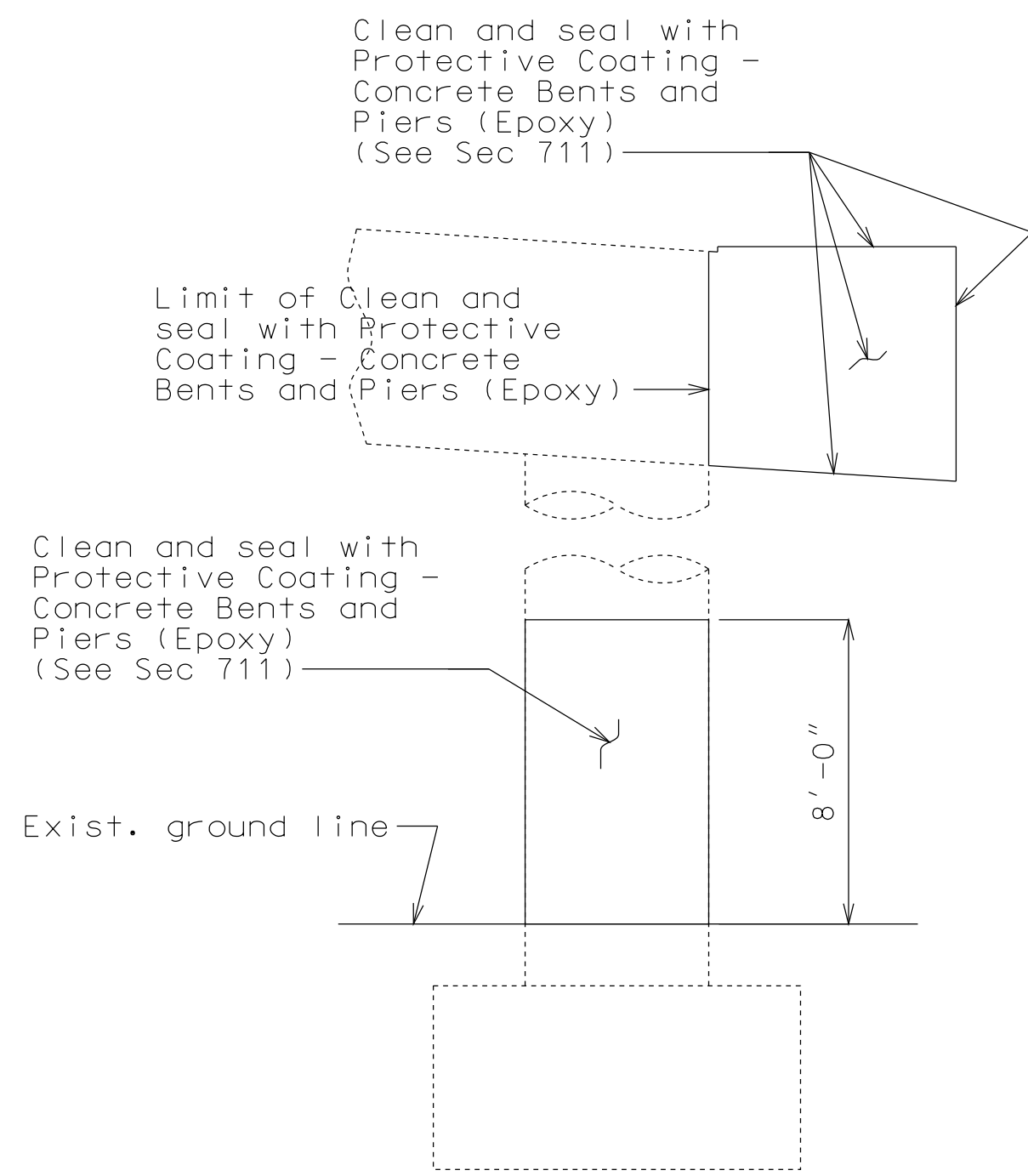
A-3375

208

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 U.I.P. & Rehabilitate Existing (57'-73'-57') Continuous Composite Plate Girder Spans

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/5/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33771	



PART ELEVATION OF INT. BENT NO 2  
 SHOWING PROTECTIVE COATING  
 (WEST END ONLY)

General Notes:

**Design Specifications:**  
 2002 - AASHTO 17th Edition  
 Load Factor Design  
 Seismic Performance Category A

**Design Loading:**  
 HS20-44 & Military 24,000# Tandem Axle (1977 & New Construction)  
 15#/Sq. Ft. Future Wearing Surface  
 Fatigue Stress - Case I

**Design Unit Stresses:**  
 Class B-1 Concrete (Superstructure and Safety Barrier Curb) f'c = 4,000 psi  
 Reinforcing Steel (Grade 60) fy = 60,000 psi

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

**Structural Steel Protective Coatings**  
 (Existing structural steel near End Bents):  
 Protective Coating: System G in accordance with Sec 1081.

**Coating Limits:** Existing bearings at End Bent No. 1 and all existing structural steel within 10 feet from end of girders at End Bent No. 4.

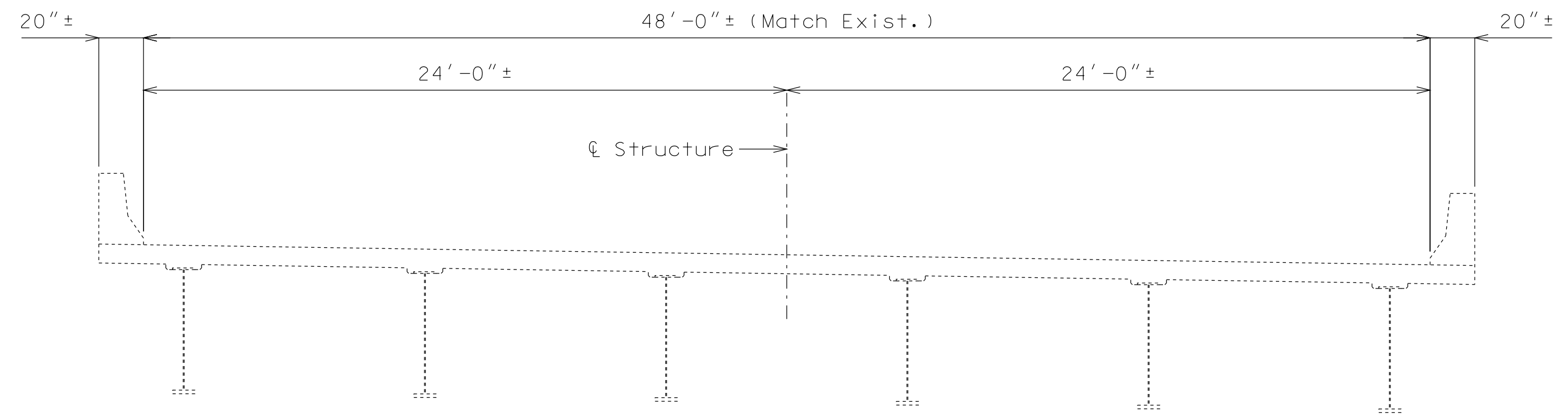
**Surface Preparation:** Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G, H or I)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Recoating Structural Steel".

**Prime Coat:** The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Field Application of Inorganic Zinc Primer". Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

**Field Coat:** The color of the field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for "Intermediate Field Coat (System G)". The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for "Finish Field Coat (System G)".

Sec 1081.4.5 shall be modified such that the word "RECOATED" is replaced by the word "RECOATED - SYSTEM G - EXPANSION AREAS ONLY".

**Concrete Protective Coatings:**  
 Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.



SECTION THRU EXISTING SLAB

General Notes (Cont.):

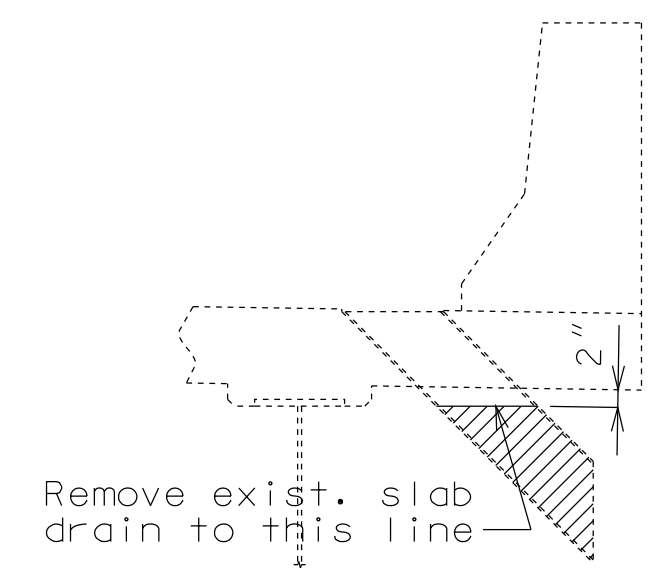
**Miscellaneous:**  
 Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

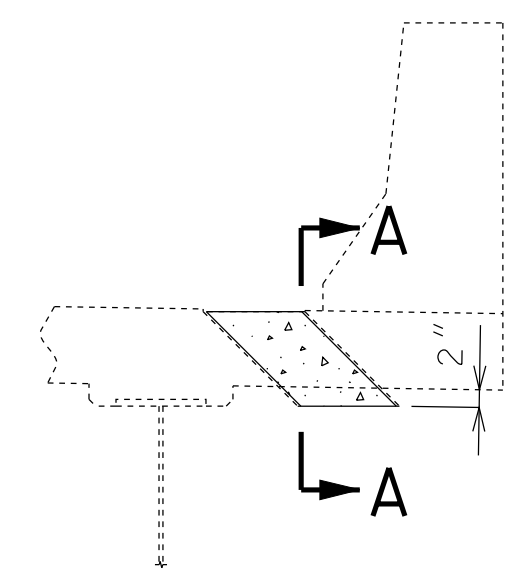
Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.

**Traffic Handling:**  
 Traffic over structure to be maintained during construction. See Sheet No. 2 for Stage Details.

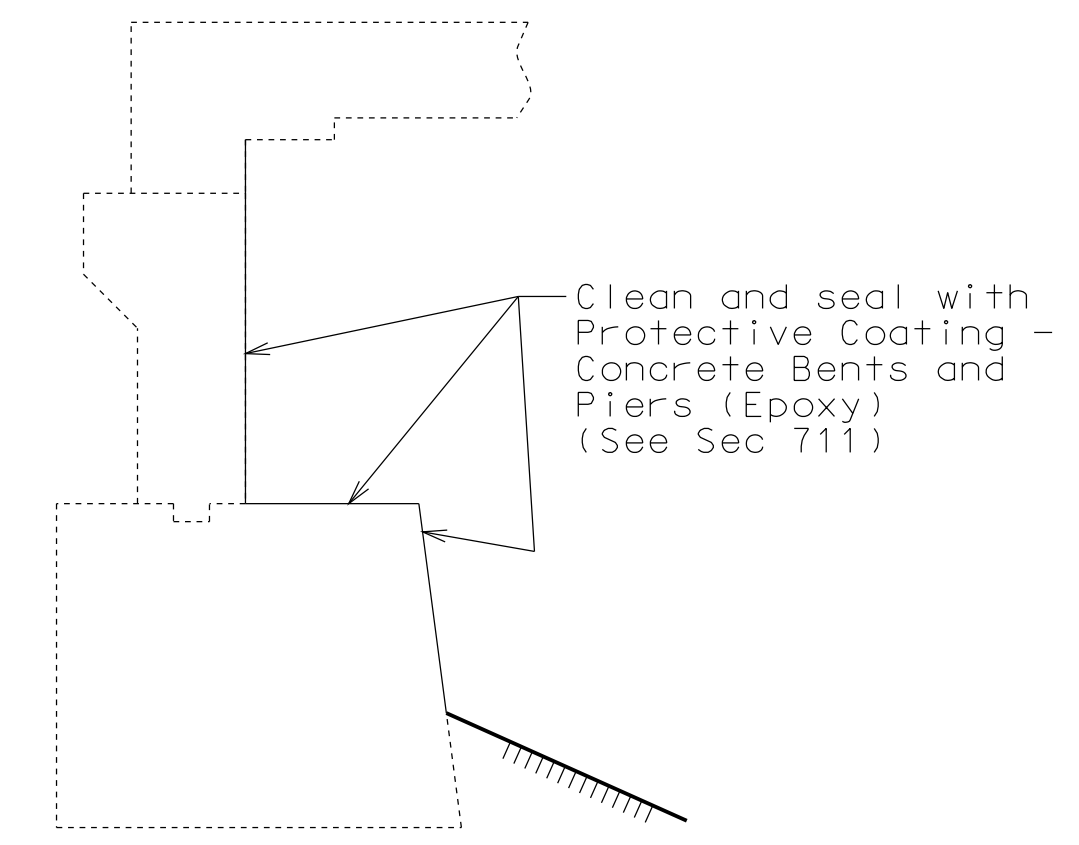
Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	62
Removal of Existing Bearing	each	6
Partial Removal and Plugging Slab Drain	each	1
Remove and Replace Barrier Curb	linear foot	8
Class B-1 Concrete	cu. yard	6.0
Reinforcing Steel (Epoxy Coated)	pound	350
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Cleaning and Coating Existing Bearings	each	6
Surface Preparation for Recoating Structural Steel	sq. foot	600
Field Application of Inorganic Zinc Primer	sq. foot	600
Intermediate Field Coat (System G)	sq. foot	600
Finish Field Coat (System G)	sq. foot	600
Laminated Neoprene Bearing Pad Assembly	each	6
Strip Seal Expansion Joint System	linear foot	62



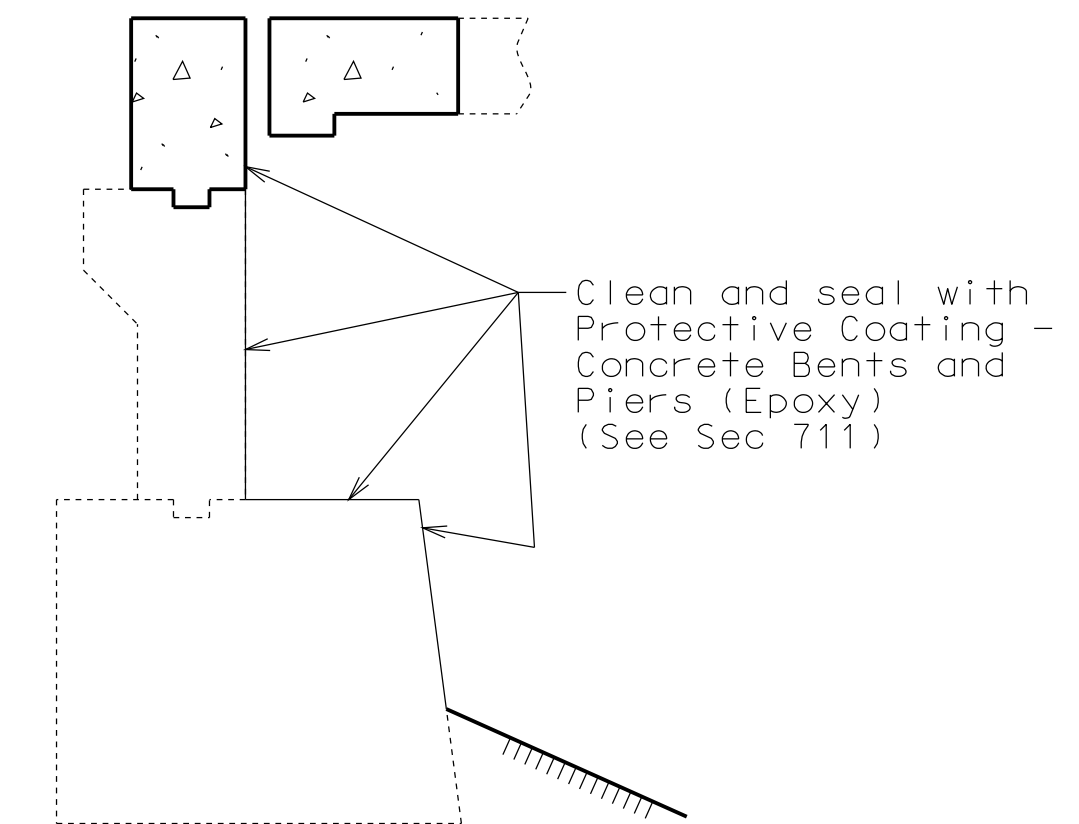
PART SECTION NEAR INT. BENT NO. 2 IN SPAN (1-2)  
 SHOWING SLAB DRAIN REMOVAL



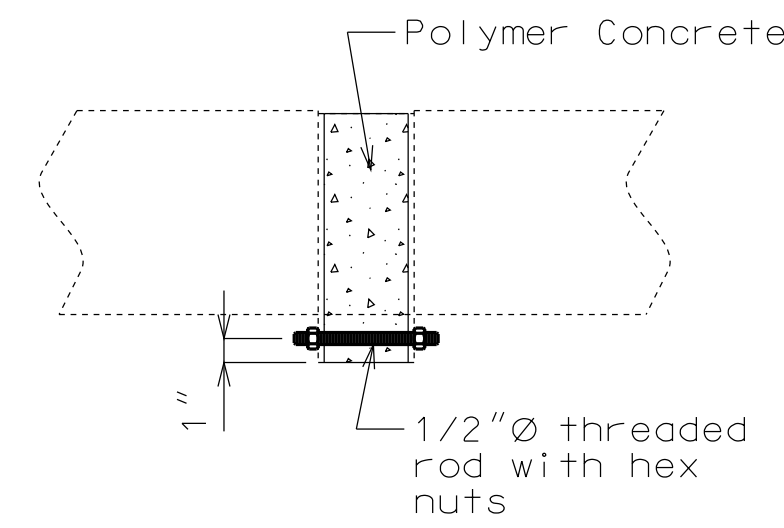
PART SECTION NEAR INT. BENT NO. 2 IN SPAN (1-2)  
 SHOWING PLUGGED SLAB DRAIN



TYPICAL SECTION THRU END BENT NO. 1



TYPICAL SECTION THRU END BENT NO. 4



SECTION A-A

**Notes:**  
 Polymer concrete shall be in accordance with Sec 623.

Payment for furnishing and installing the 1/2"Ø galvanized threaded rod with hex nuts and polymer concrete will be considered completely covered by the contract unit price for Partial Removal and Plugging Slab Drain.

Threaded rod, washers and hex nuts shall be galvanized in accordance with ASTM A153.

REPAIRS TO BRIDGE: I-435 (NB) OVER RAMP 3 (I-35 SB TO I-435 SB)  
 STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

STD. 617.20
STD. 706.35

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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DATE PREPARED  
12/4/2012

ROUTE STATE  
I-435 MO

DISTRICT SHEET NO.  
BR 2

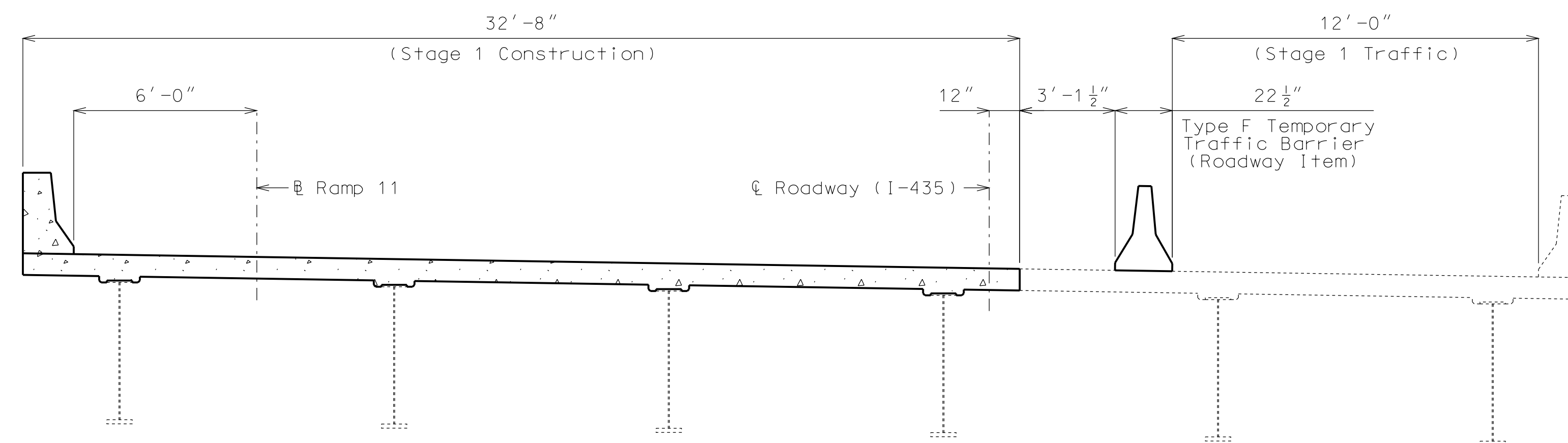
COUNTY  
CLAY

JOB NO.  
J412381

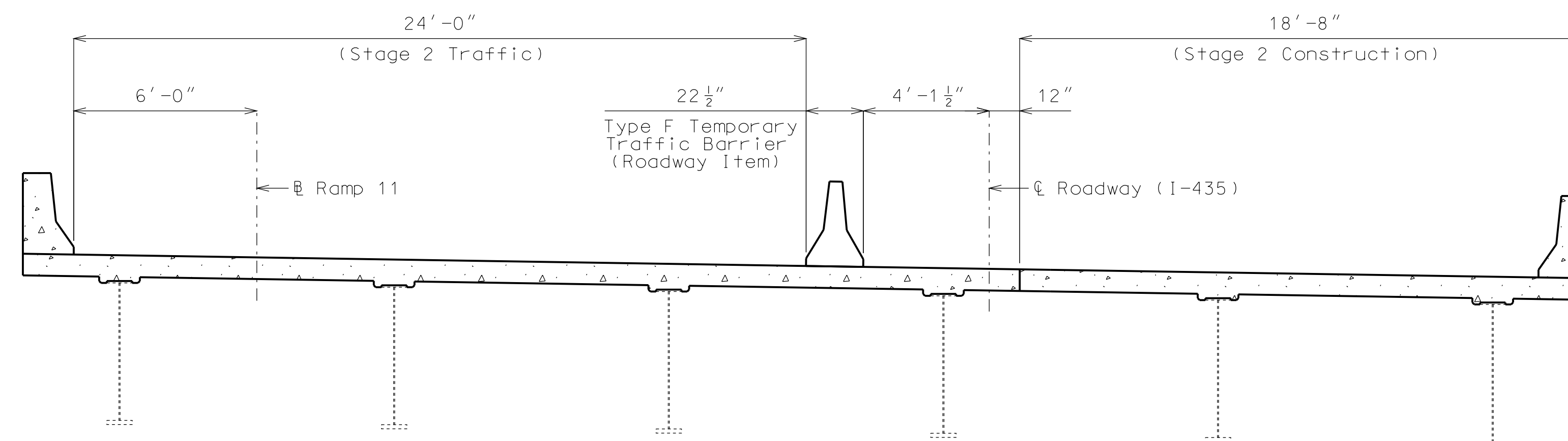
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PROJECT NO.

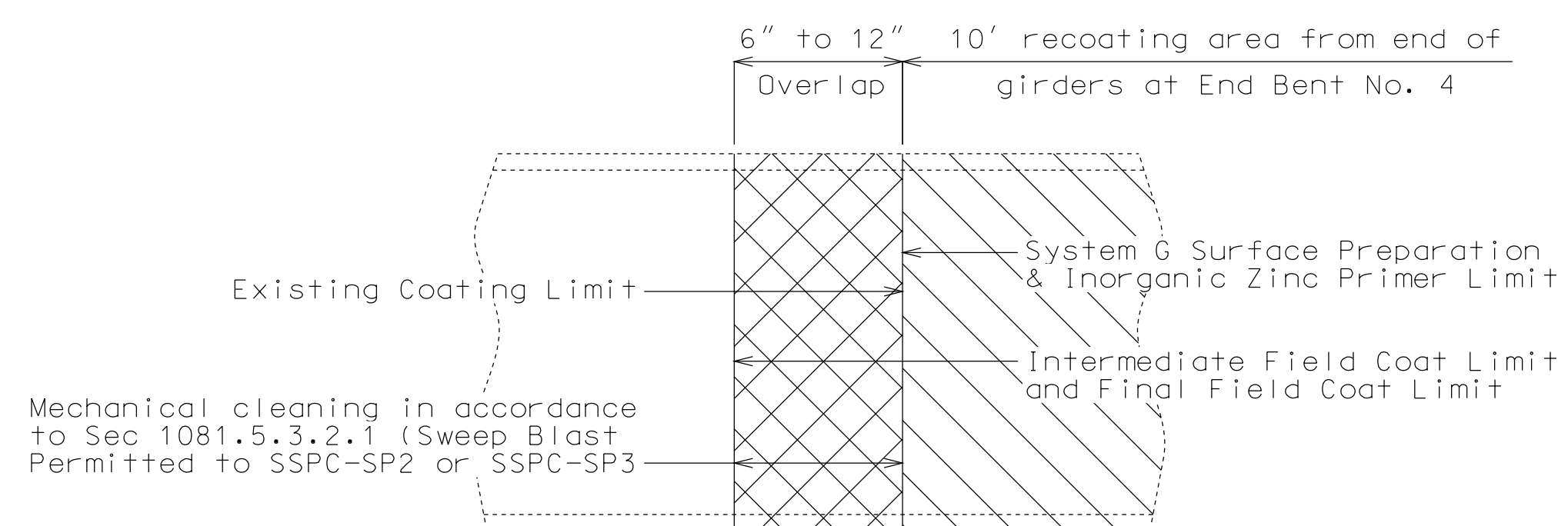
BRIDGE NO.  
A33771



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



PART ELEVATION SHOWING LIMITS OF PAINT OVERLAP  
(Vertical or horizontal paint limit. Horizontal limit shown)

Note:  
Temporary Barrier shall not be attached to the bridge.

DETAILS SHOWING STAGED CONSTRUCTION

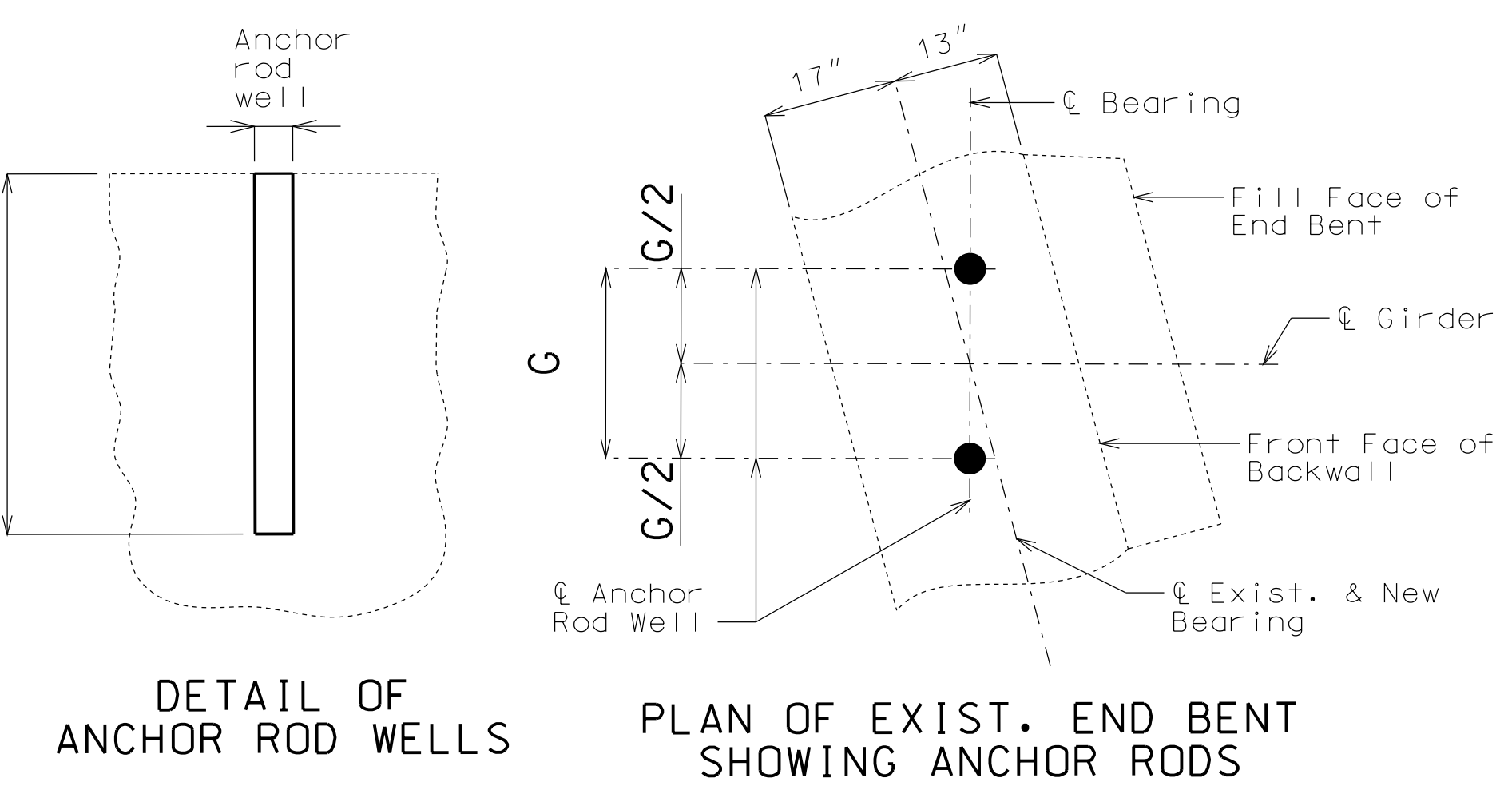
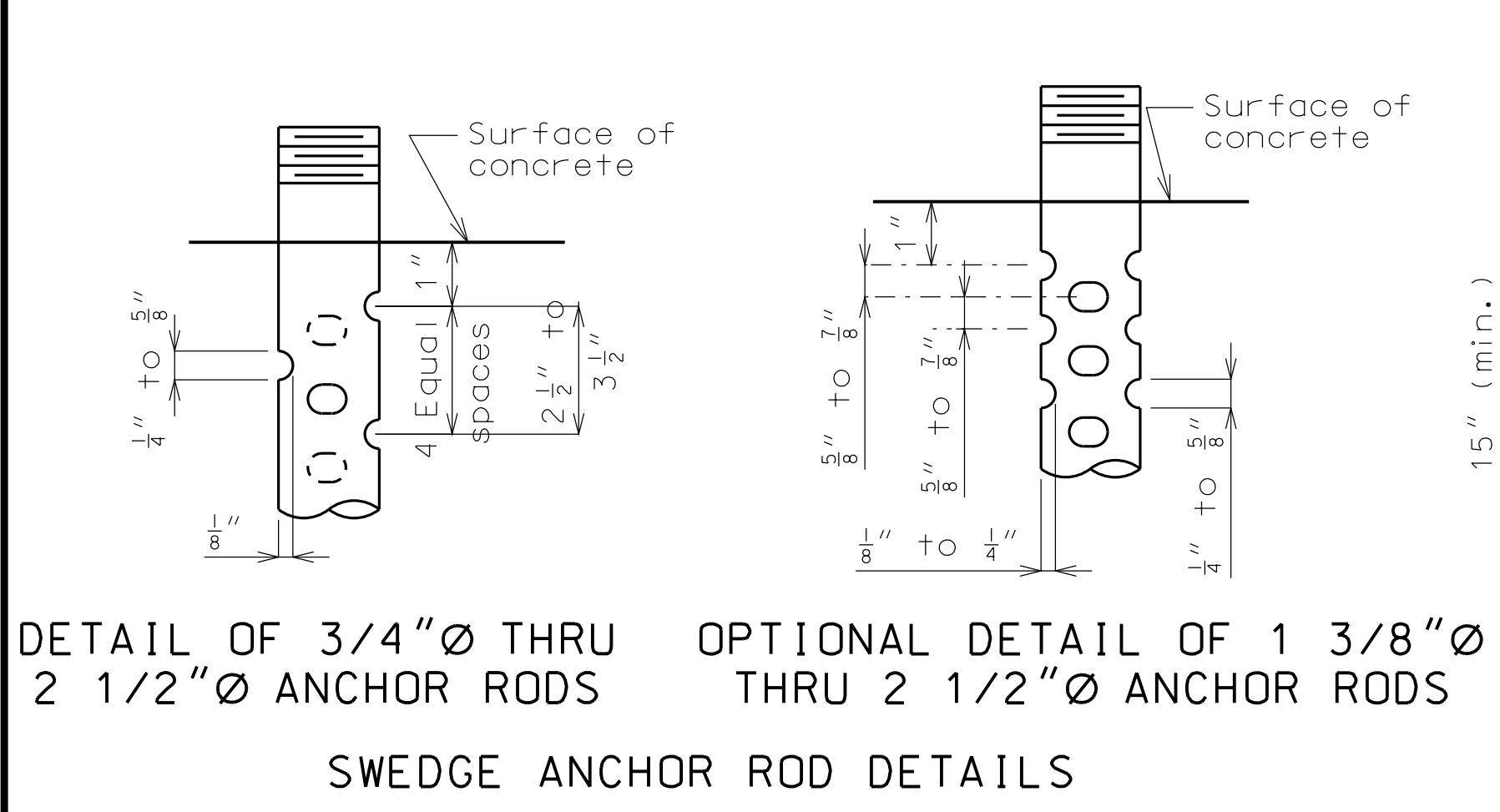
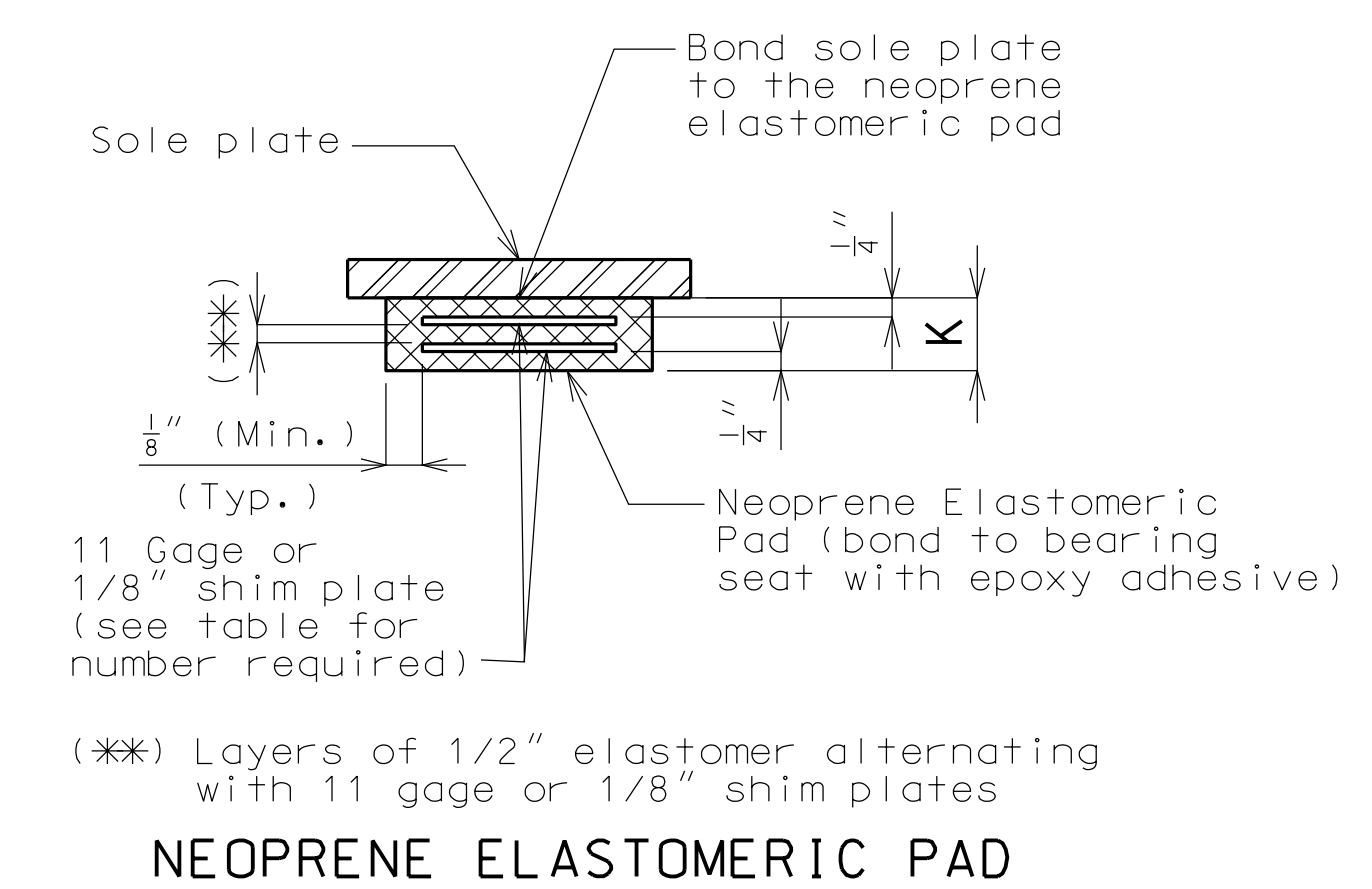
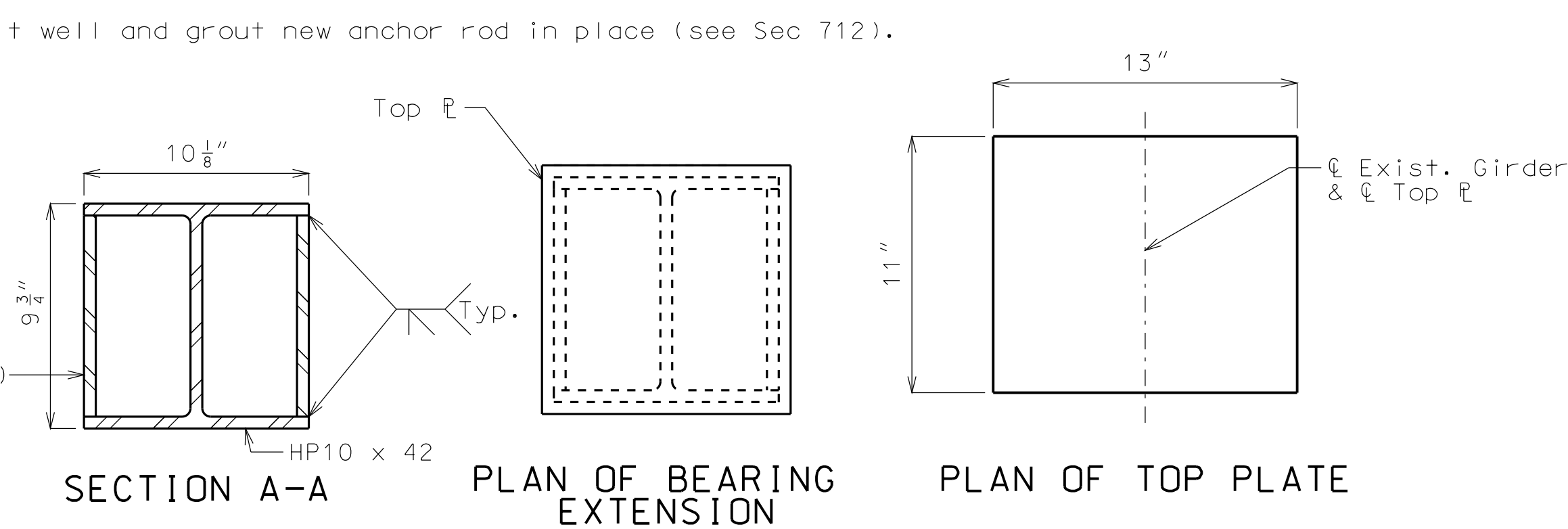
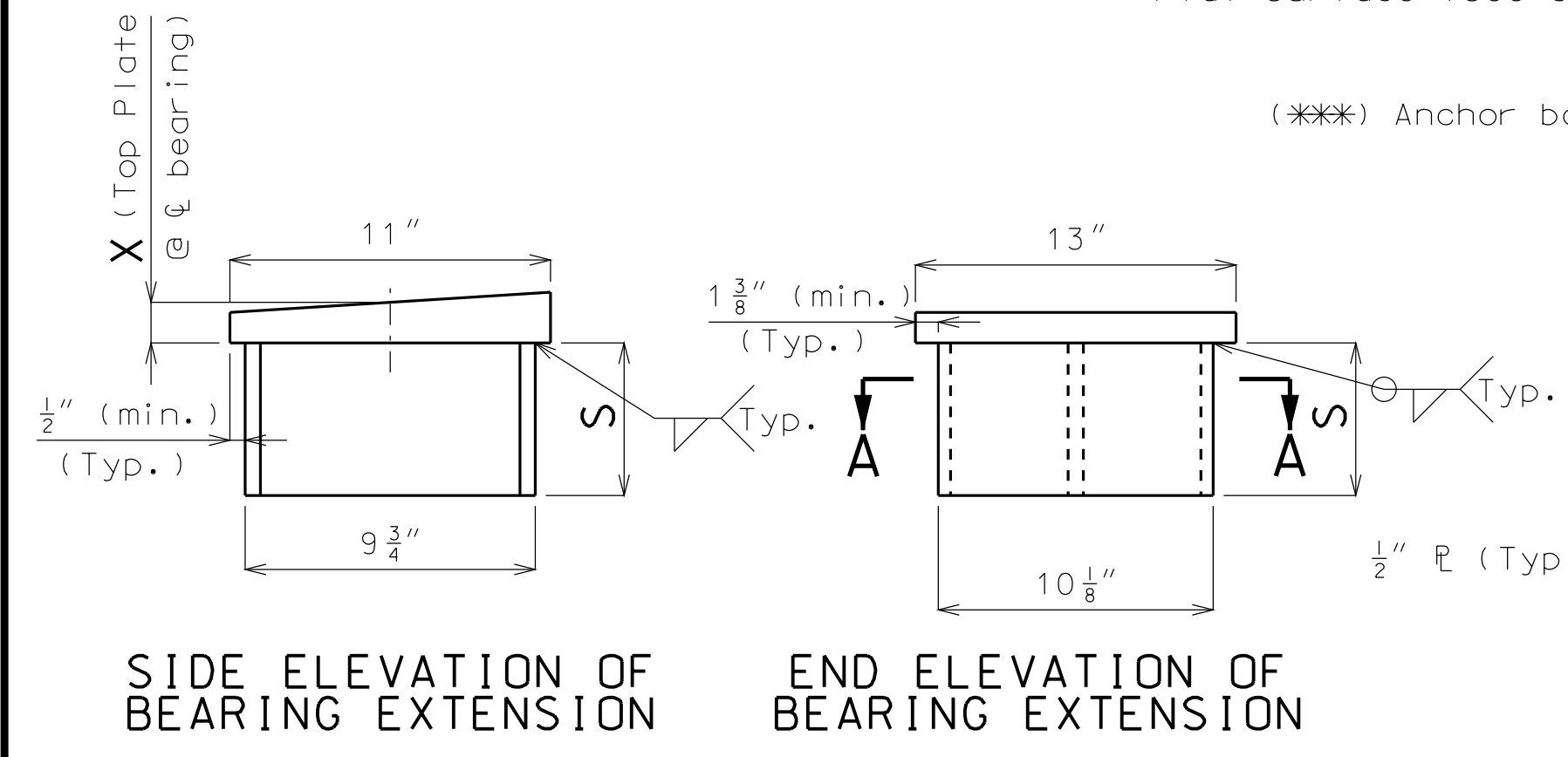
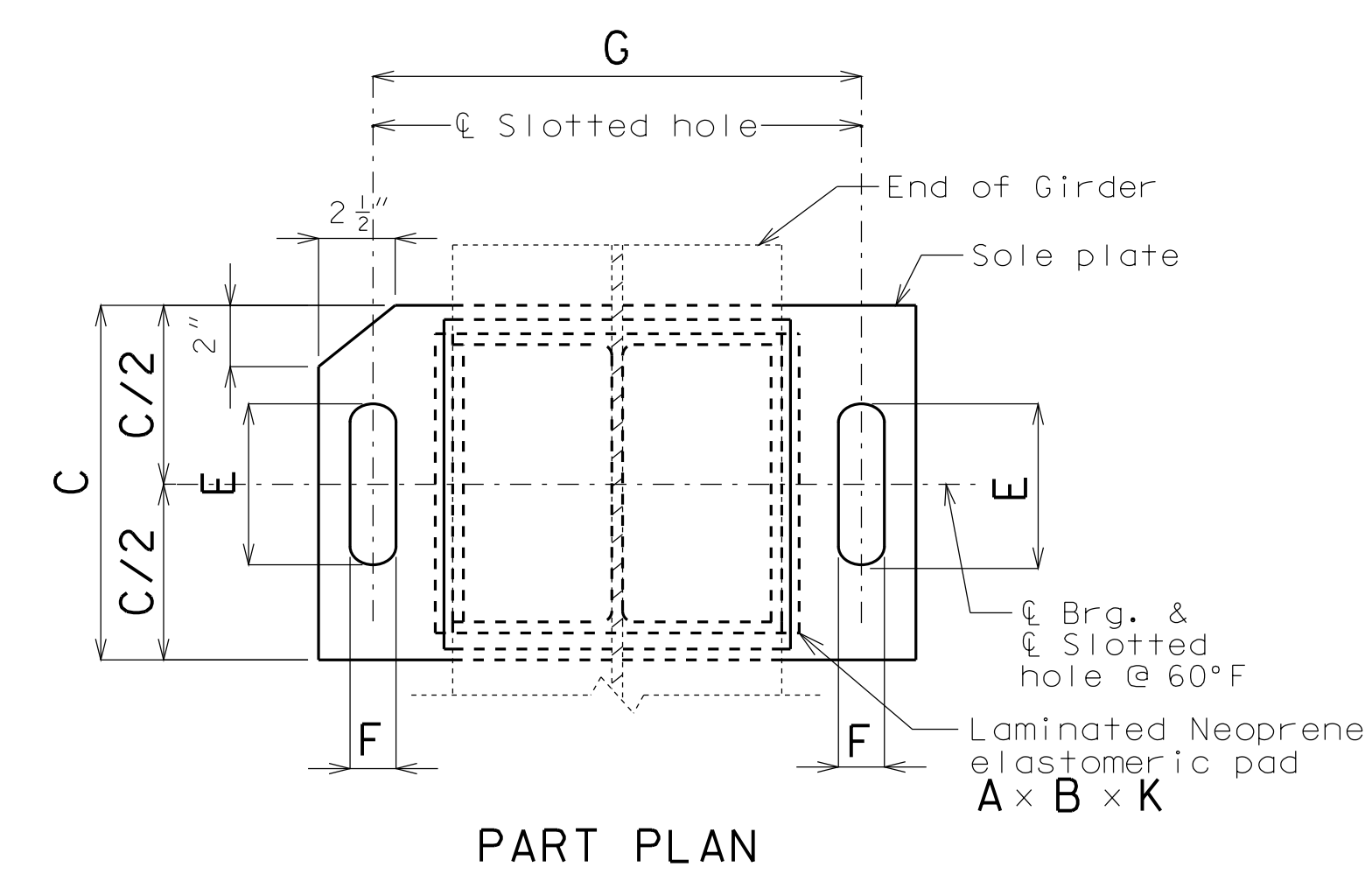
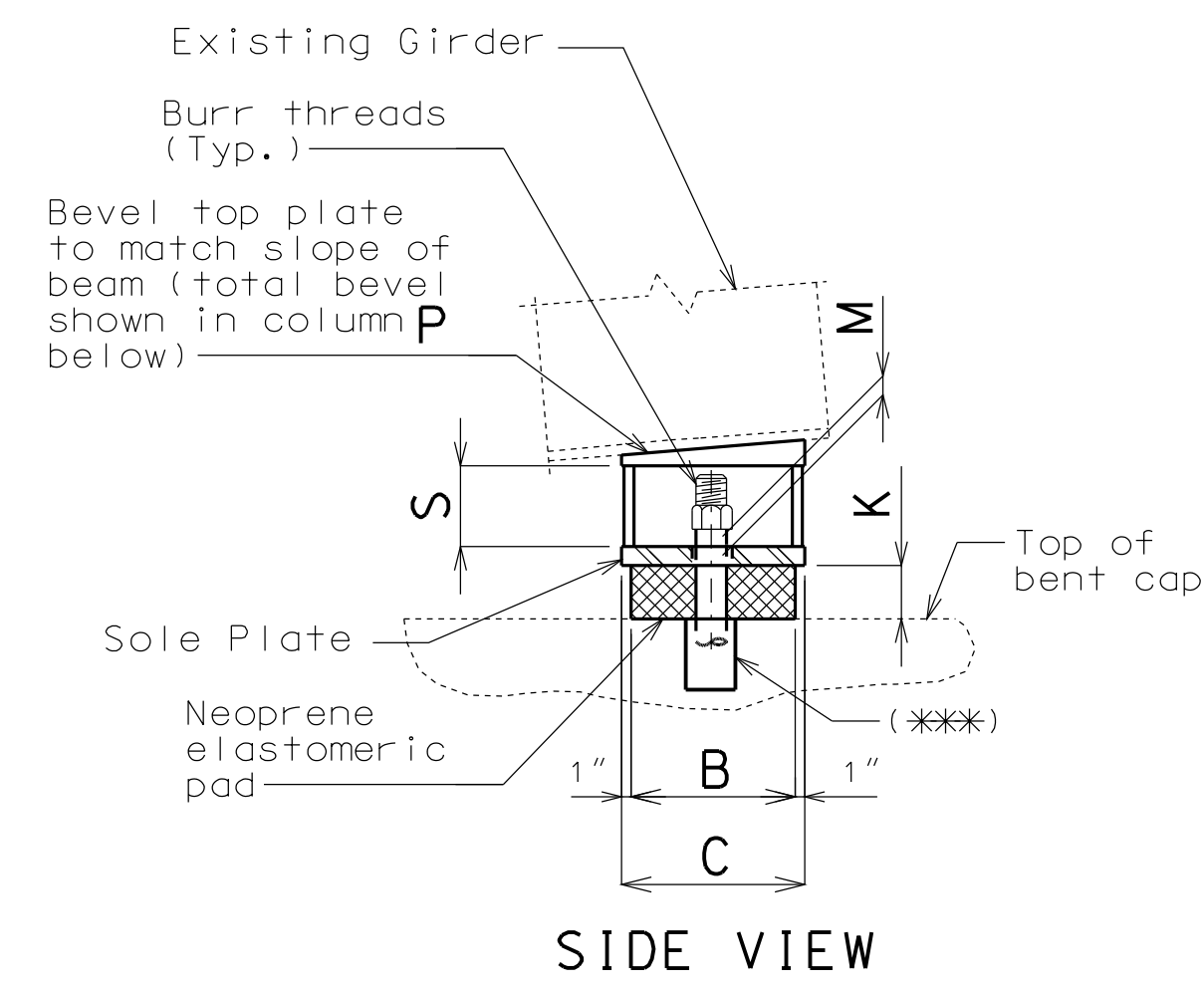
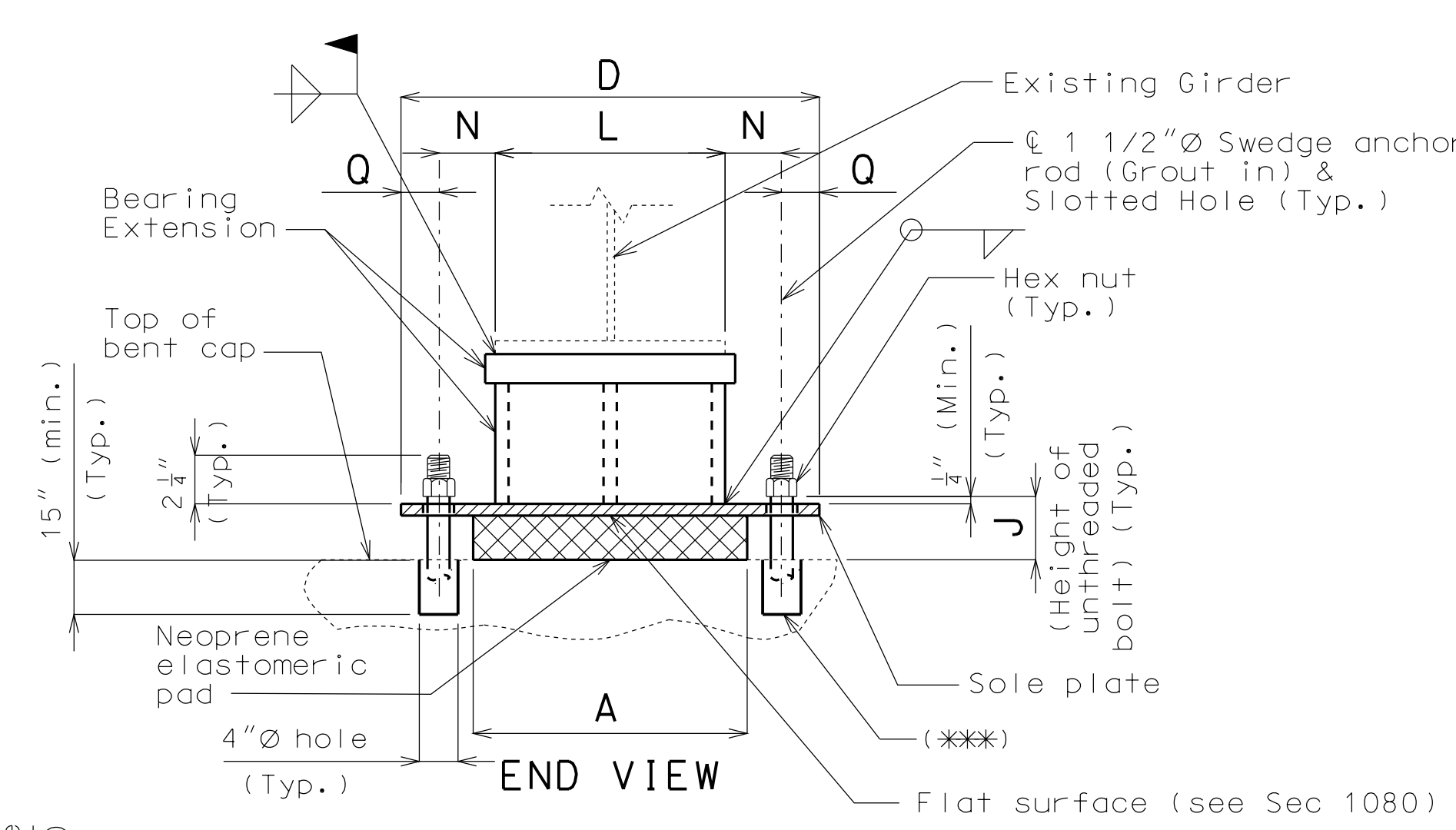
DESCRIPTION

DATE

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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:**

Anchor rods shall be 1 1/2" ASTM F1554 Grade 55 swedged rods and shall extend 15" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor rod shall be at the center of slotted hole at 60°F. Bearing position shall be adjusted 1/8" for each 10° fall or rise in temperature at installation.

All structural steel for the anchor rods and hex nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate and all bearing extension steel shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

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

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

The temporary supports shall be capable of safely supporting a service load DL & construction load of 39 kips and a LL of 60 kips per stringer if done under traffic (factor of safety not included). See Special Provisions.

EXPANSION BEARINGS																		NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	S	X			
Bent No. 4	14"	9"	11"	22"	5"	1 7/8"	17"	5 1/2"	3 3/4"	12"	1 1/2"	2 1/2"	-	2 1/2"	5 1/4"	7/8"	6	6	
																	TOTAL BEARINGS	6	

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

**DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/4/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33771	

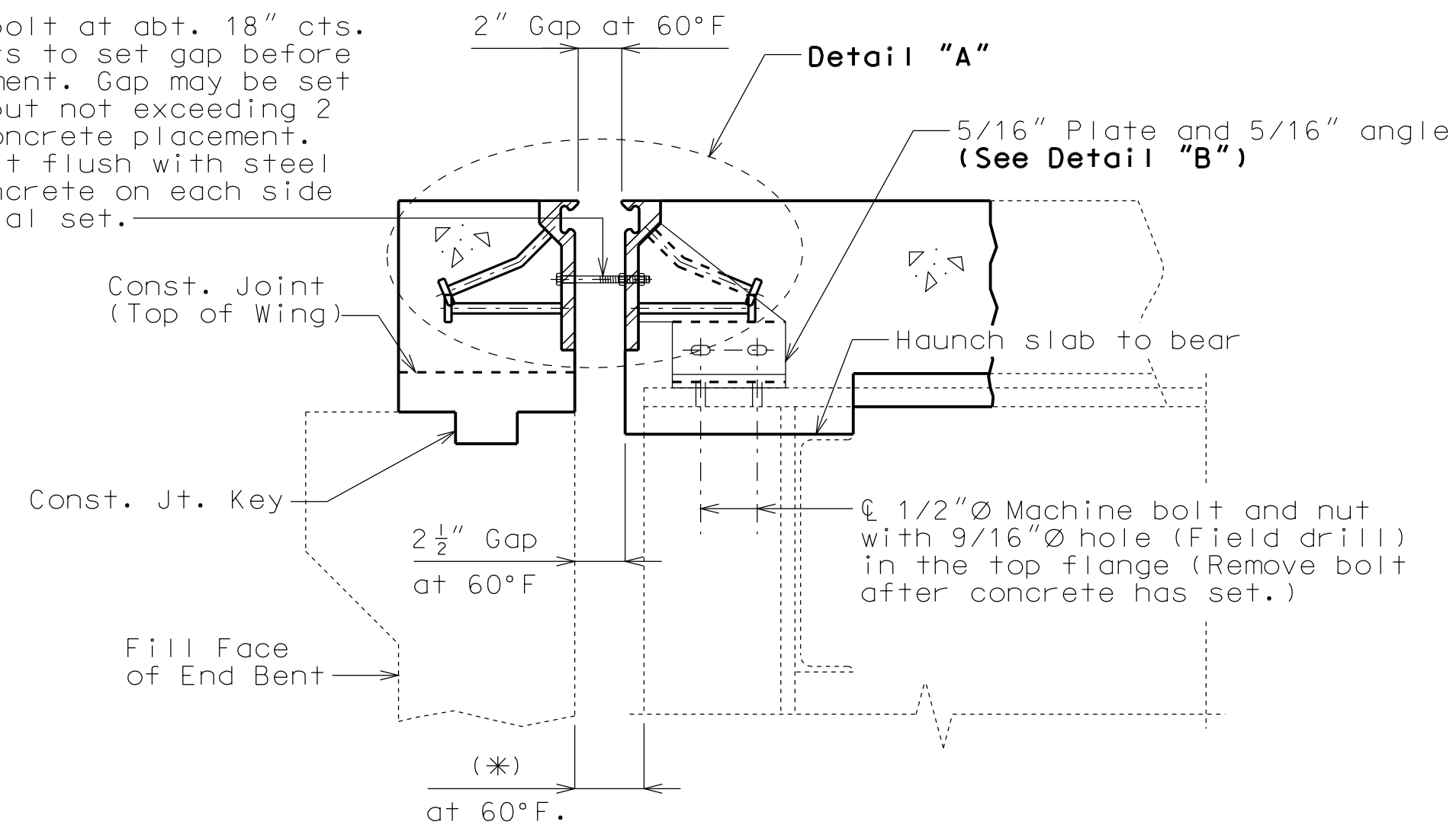
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

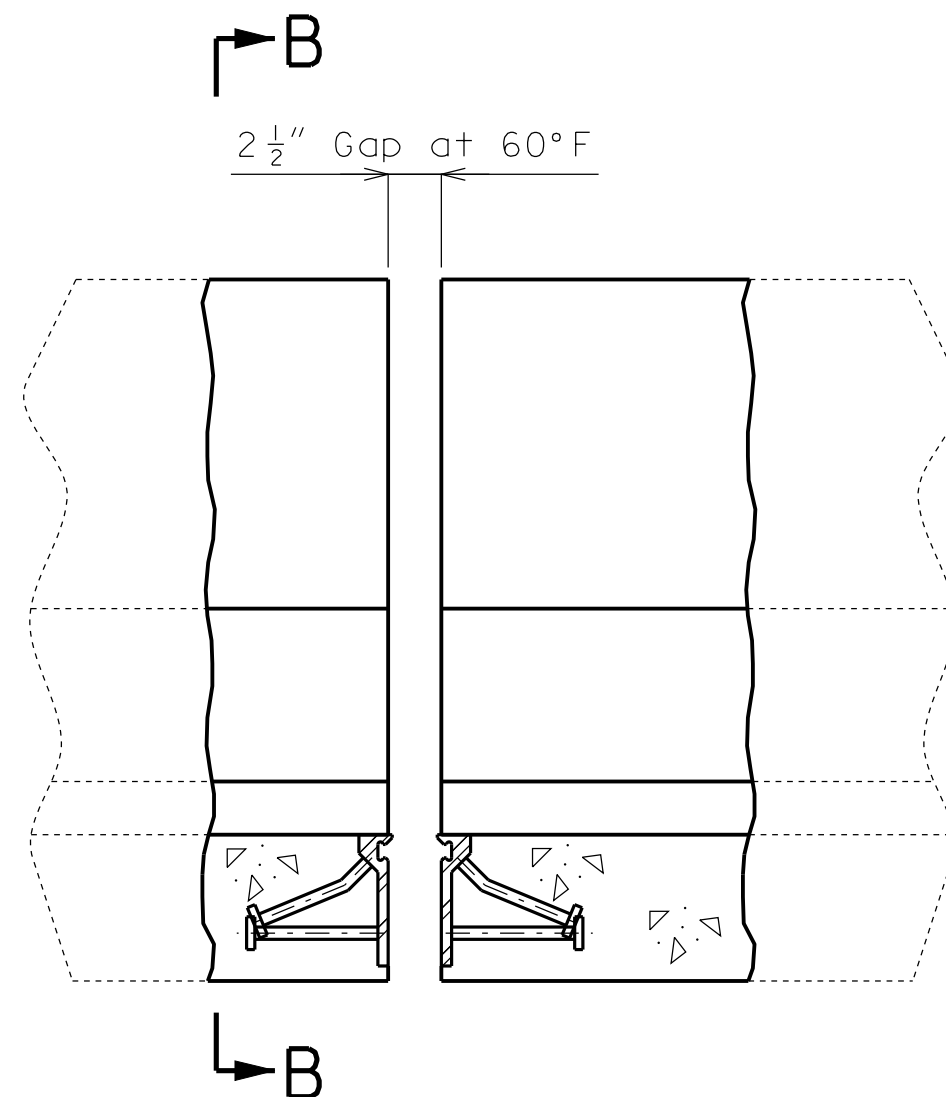
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

1/2"Ø Machine bolt at abt. 18" cts. Use two hex nuts to set gap before concrete placement. Gap may be set anytime up to but not exceeding 2 hours before concrete placement. Cut machine bolt flush with steel armor after concrete on each side has taken initial set.



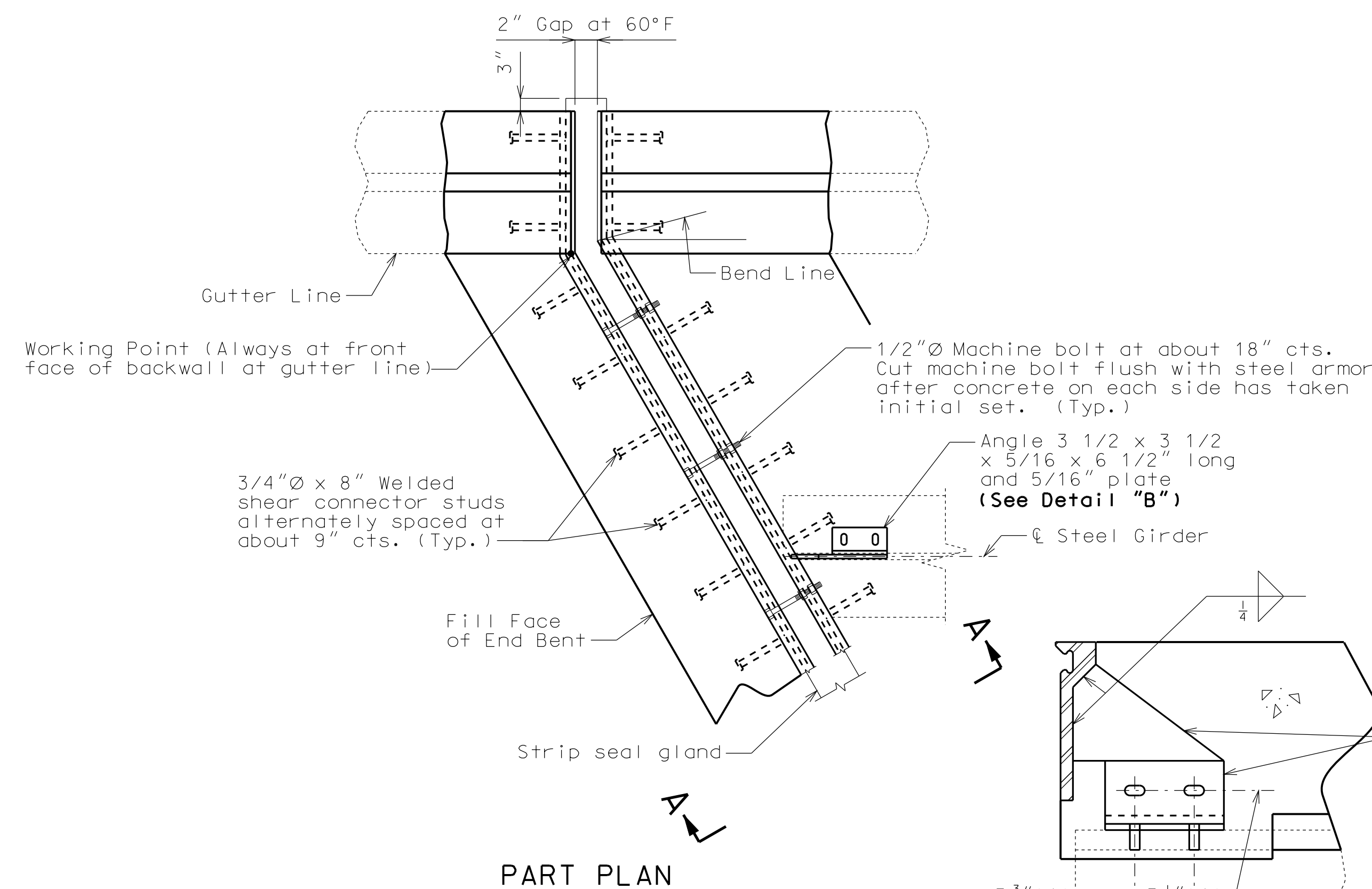
SECTION A-A

Note: Strip seal gland not shown for clarity.

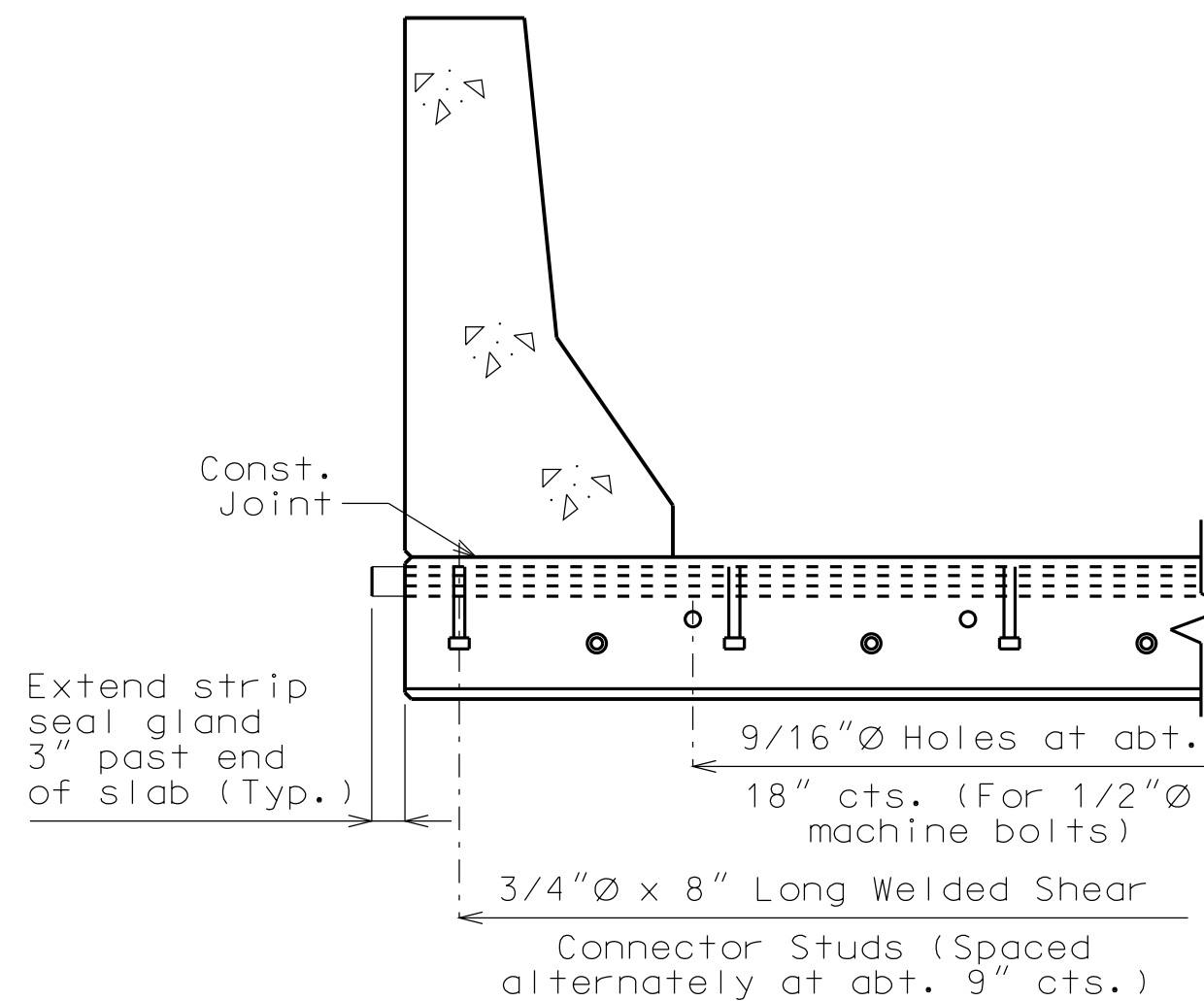


Note: Strip seal gland not shown for clarity.

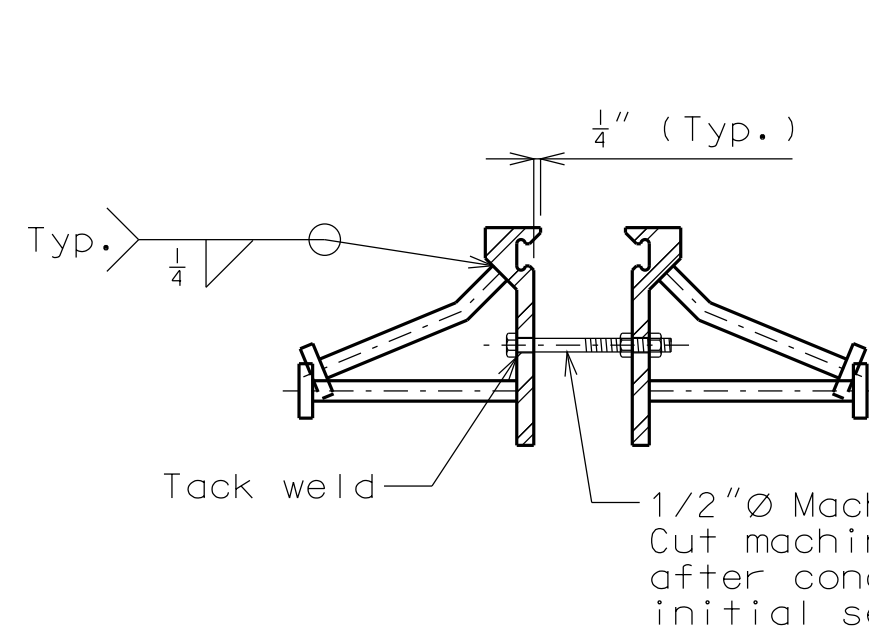
PART ELEVATION OF BARRIER CURB



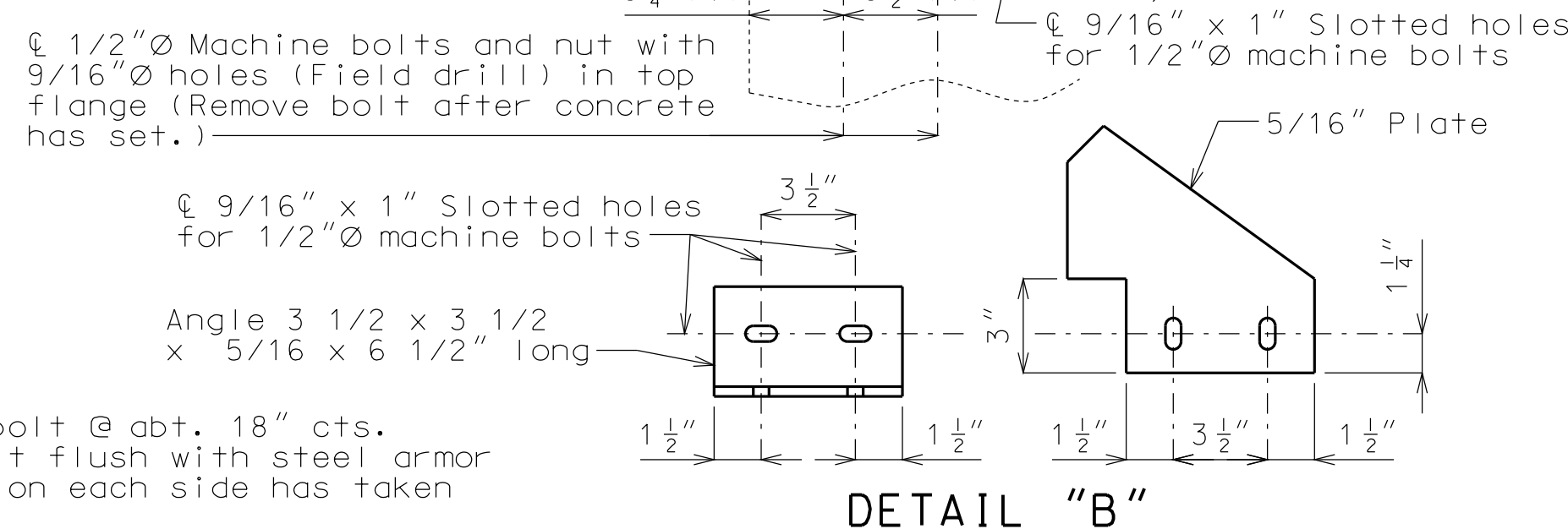
PART PLAN



PART SECTION B-B



DETAIL "A"



DETAIL "B"

DETAILS OF STRIP SEAL AT END BENT NO. 4

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

Sheet No. 4 of 6

GENERAL NOTES:

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

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

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

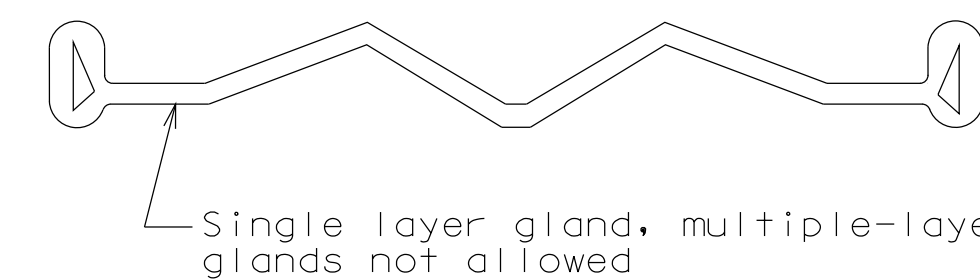
Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

Longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

(\*) Match existing.



Strip seal gland size = 4"

DETAIL OF GLAND

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED

12/4/2012

ROUTE STATE

I-435 MO

DISTRICT SHEET NO.

BR 4

COUNTY

CLAY

JOB NO.

J412381

CONTRACT ID.

PROJECT NO.

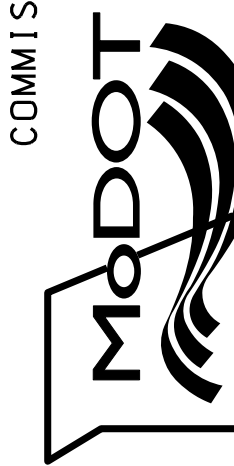
BRIDGE NO.

A33771

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

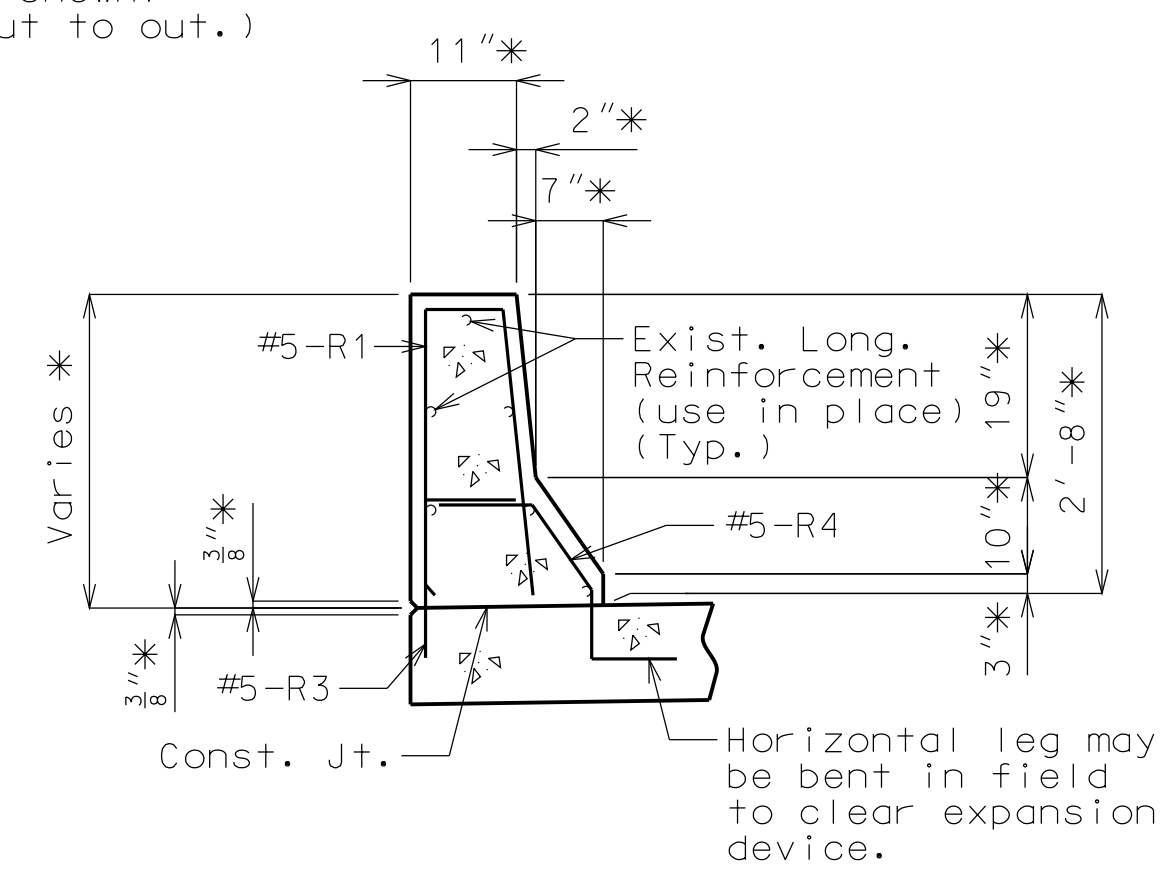
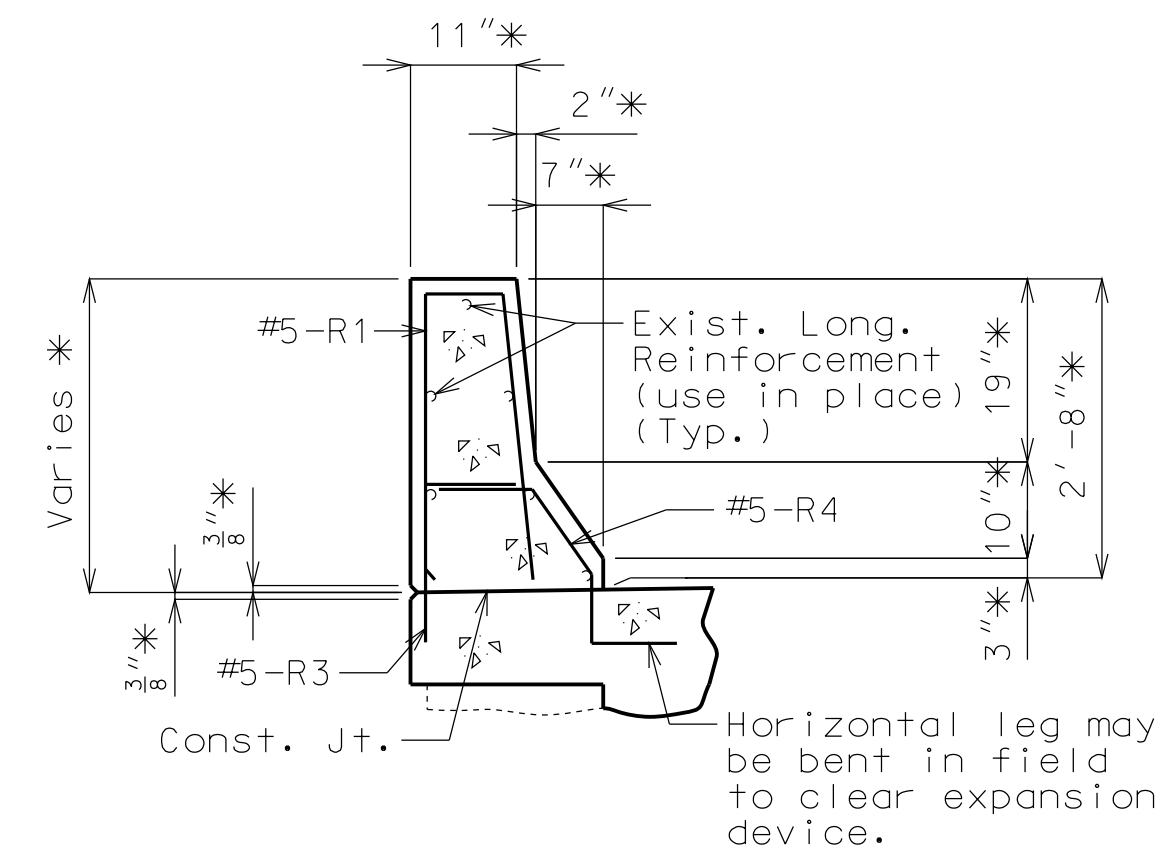
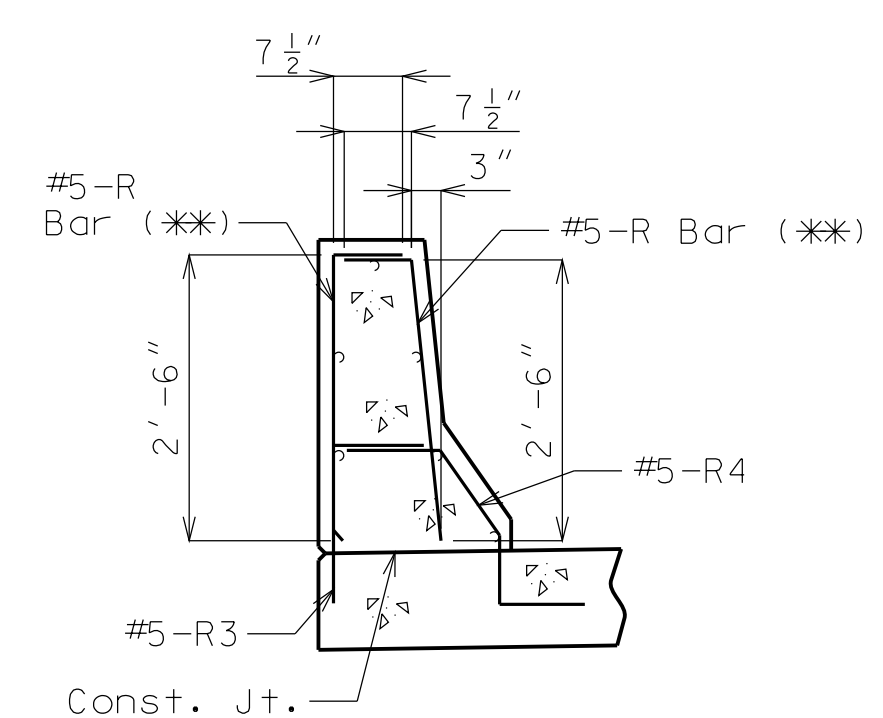
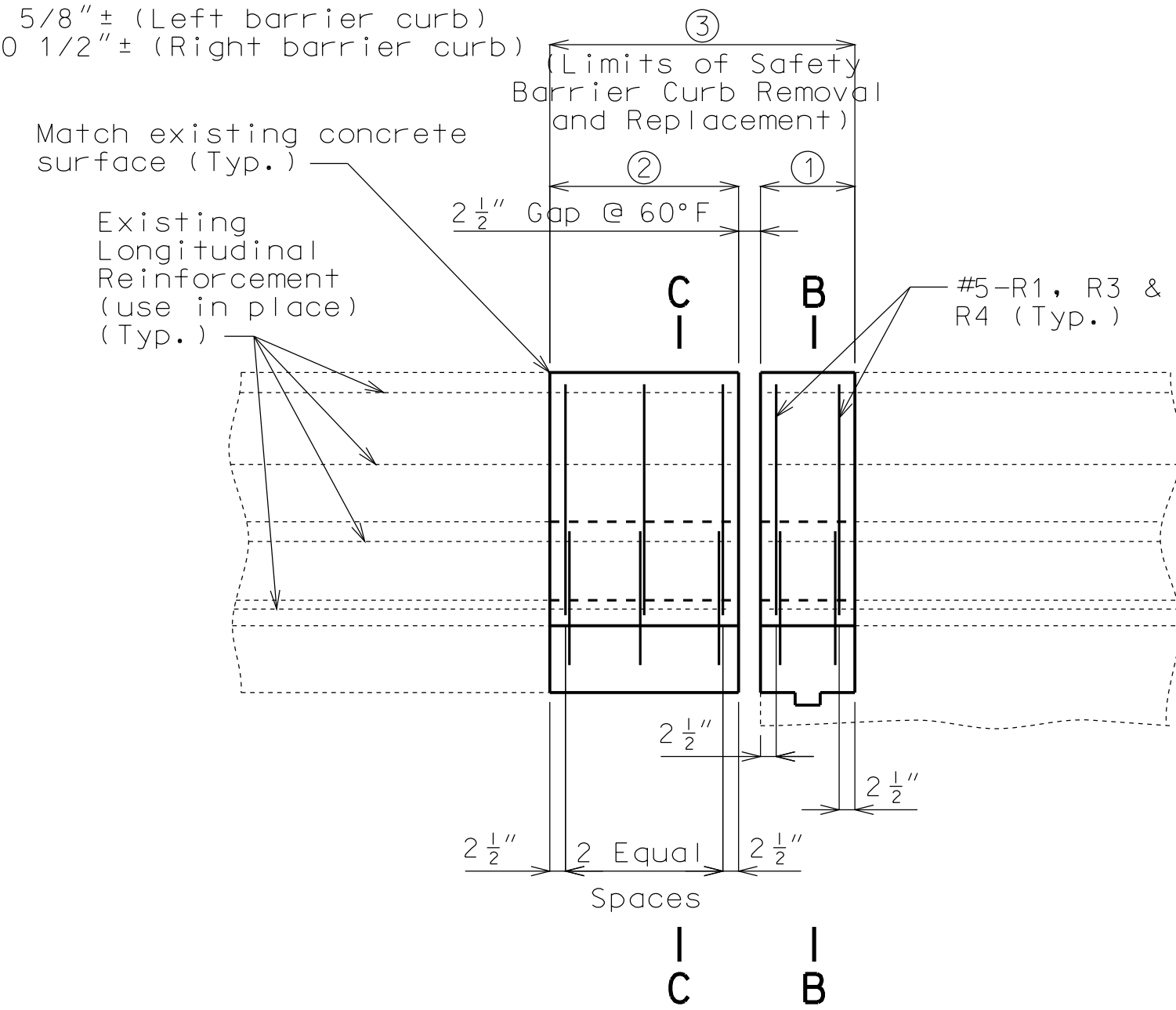
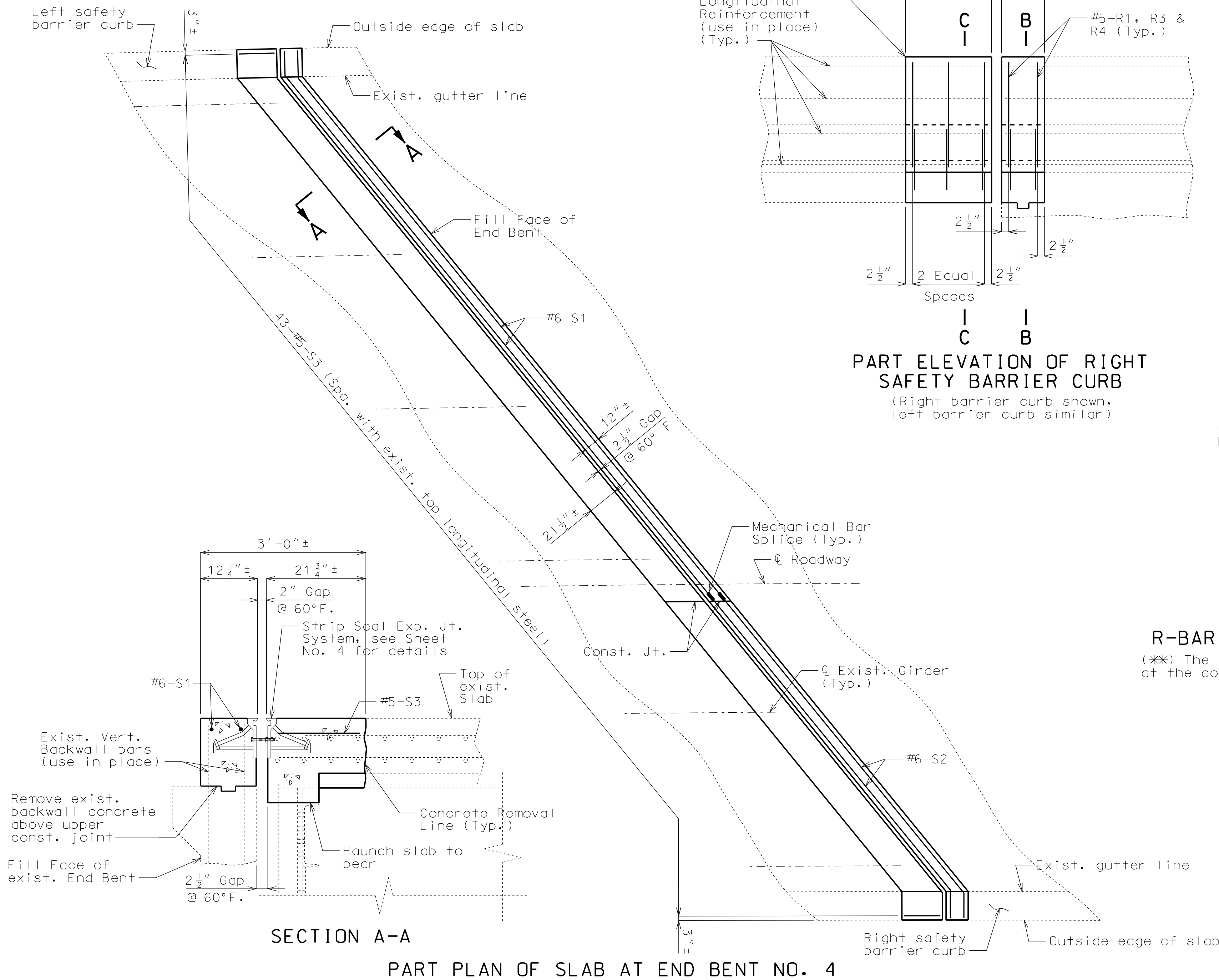


105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

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

Note:  
 The contractor shall use a mechanical bar splice for #6-S1 & S2 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.

- ① 15 1/4"± (Left barrier curb)  
 15 1/2"± (Right barrier curb)
- ② 2'-3 7/8"± (Left barrier curb)  
 2'-4 1/2"± (Right barrier curb)
- ③ 3'-9 5/8"± (Left barrier curb)  
 3'-10 1/2"± (Right barrier curb)



DATE PREPARED 12/4/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 5
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33771	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	82	
SEC./SUR. E7 TWP. 51N RGE. 32W					

**GENERAL NOTES:**

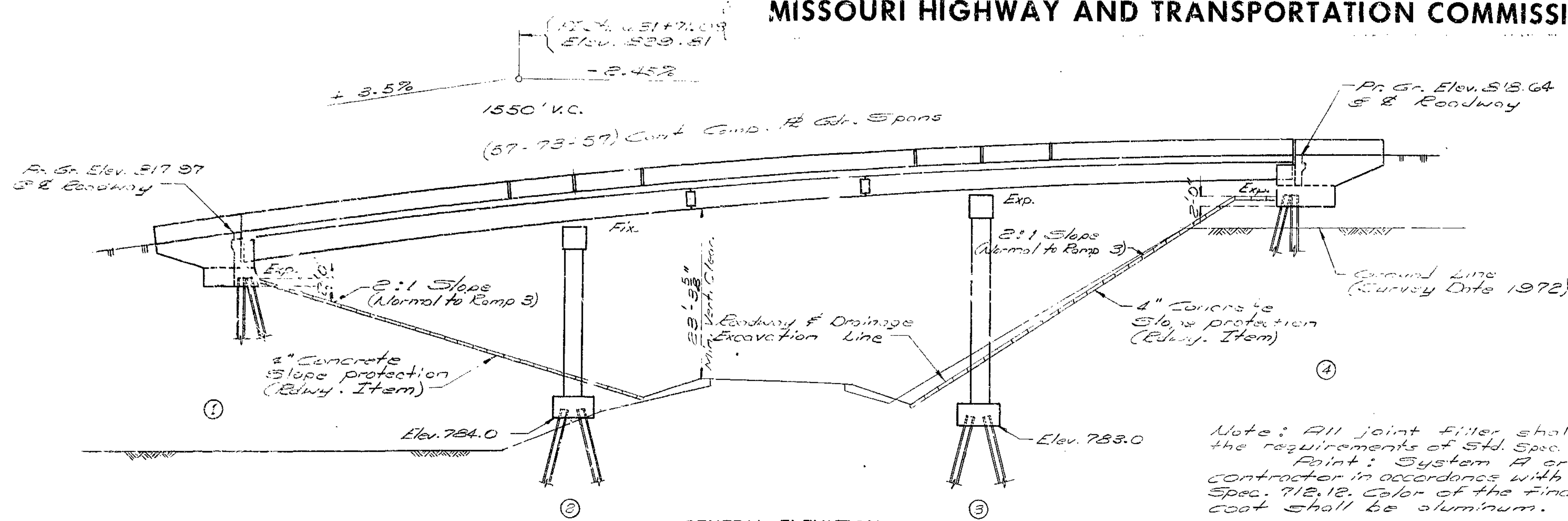
**Design Specifications:** A.A.S.H.T.O.-1977  
**Load Factor Design Substructure**  
**Design Loading:**  
 HS20-44 15' Sp/ft. Future Wearing Surface  
 Earth 120# Equivalent Fluid Pressure 30#  
 Modified 24,000# Tandem Axle  
 Fatigue Stress-Case I

**Design Unit Stresses:**  
 Class B Concrete (substructure)  $f'_c = 3,000$  psi  
 Class B2 Concrete (superstructure)  $f'_c = 4,000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
 Structural Carbon Steel  $f_s = 20,000$  psi  
 Steel Pile  $f_b = 3,000$  psi

**Fabricated Steel:**  
 Field connections, High Strength Bolts  $\frac{3}{4}$ "  $\phi$ , holes  $\frac{13}{16}$ "  $\phi$  except as noted.

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

All reinforcing bars in top of substructure beams or caps shall be spaced in clear anchor bolts for bearings by at least  $\frac{1}{2}$ "!



GENERAL ELEVATION

Note: Compacted roadway fill shall be completed to the first 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 piles are driven for any bents falling within the embankment section.

Note: All joint filler shall meet the requirements of Std. Spec. 1057.2.A. Paint: System A or B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat shall be aluminum.

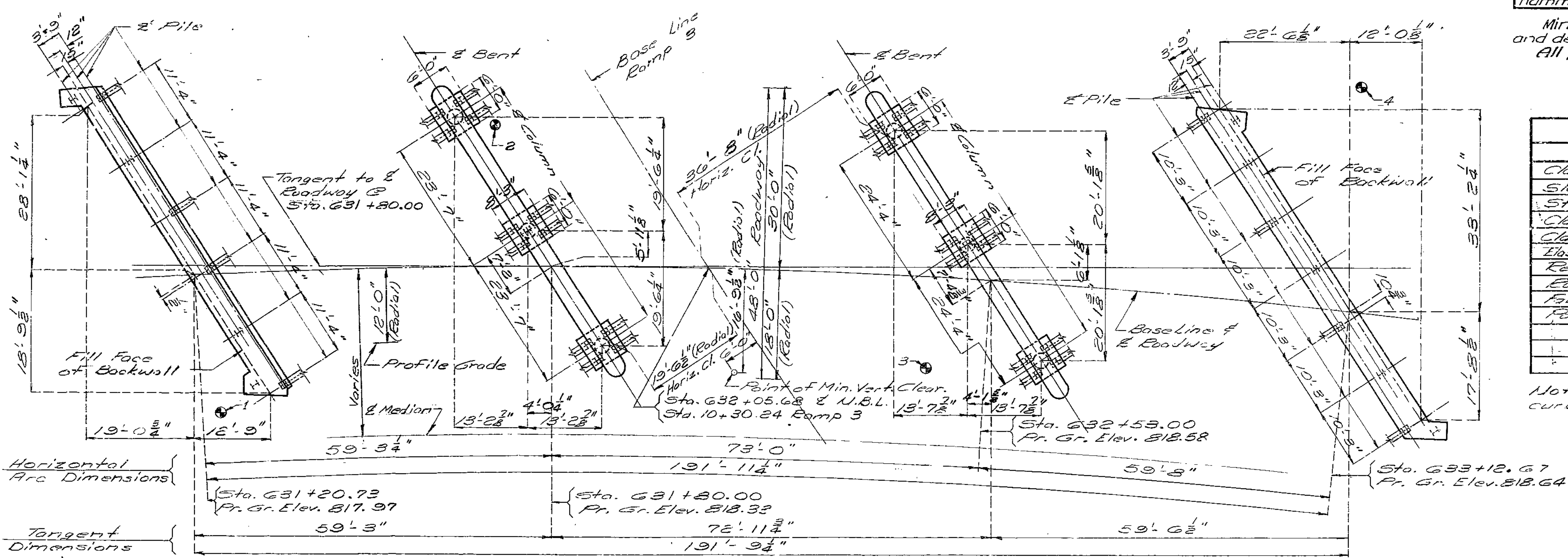
Bents cannot be accurately located from the reference point on the tangent by conventional survey methods based on 100' chords (all bents are parallel). Construction Clearance: A minimum vertical clearance of 15'-0" from crown of existing Ramp 3 and a minimum lateral clearance of 10'-0", centered on Ramp 3, shall be maintained during construction.

BENT NO.	1	2	3	4
Pile Type and Size	HP10x42	HP10x42	HP10x42	HP10x42
Number	5	13	13	9
Approximate Length Ft.	81	58	52	75
Design Bearing Tons	50	51	51	51
Hammer Energy required Ft. Lbs.	12,200	12,000	11,500	12,600

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

ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation Cu. Yd.	135		135
Slab Drains Each		10	10
Structural Steel Pile (10") Lin. Ft.	2753		2753
Class B Concrete Cu. Yd.	212.4		212.4
Class B2 Concrete Cu. Yd.		321.3	321.3
Elastomeric Expansion Joint Seal (20) Lin. Ft.		62	62
Reinforcing Steel (Grade 60) Lb.	30540	39200	69740
Reinforcing Steel (Epoxy coated) Lb.	1020	46870	47890
Fabricated Structural Carbon Steel Lb.		201900	201900
Painting (System A or B (Aluminum)) Ton		100.2	100.2

Note: All concrete and reinforcement in safety barrier curbs are included with superstructure quantities.



PLAN

Curve Data N.B.L.  
 P.I. Sta. 626+39.28  
 $\Delta = 64^\circ - 45' - 23''$  Et.  
 $D = 3^\circ - 30'$   
 $T = 1038.01$   
 $L = 1850.18$   
 $R = 1637.02$

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

Note: For Boring Data see sheet No. 2. \* Indicates Boring Location.

DESIGNED Mar. 1977  
 DETAILED Oct. 1977  
 CHECKED June 1979

Sheet No. 1 of 10.

**BRIDGE: N.B.L. I-435 OVER RAMP 3**  
**STATE ROAD FROM RTE. 152 TO RTE. I-35**  
**AT I-35 AND I-435 INTERCHANGE**  
**PROJECT NO. I-435-1(163) STA. 631+20.73**  
**JOB NO. 4-I-435-49H RTE. I-435**  
**CLAY COUNTY**

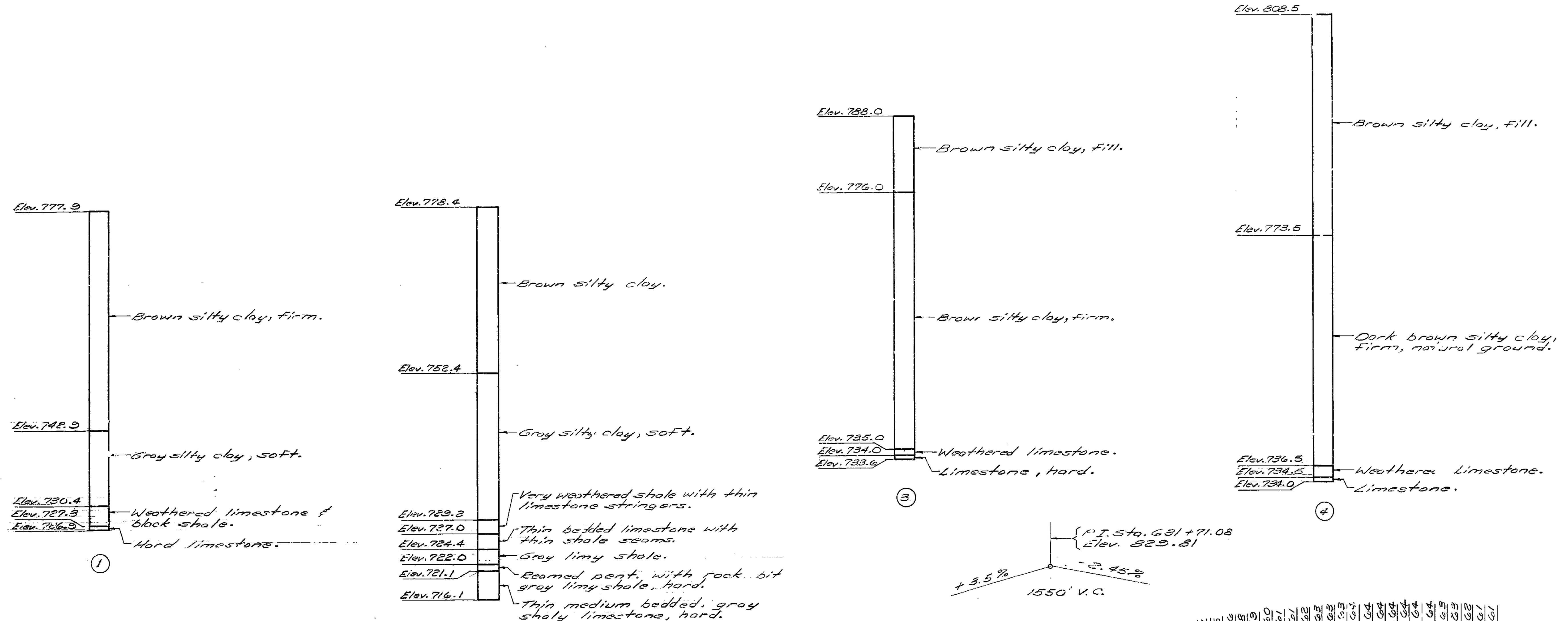
STD. 706.35
STD. 611.60
A-3377

DATE March 16, 1981

220



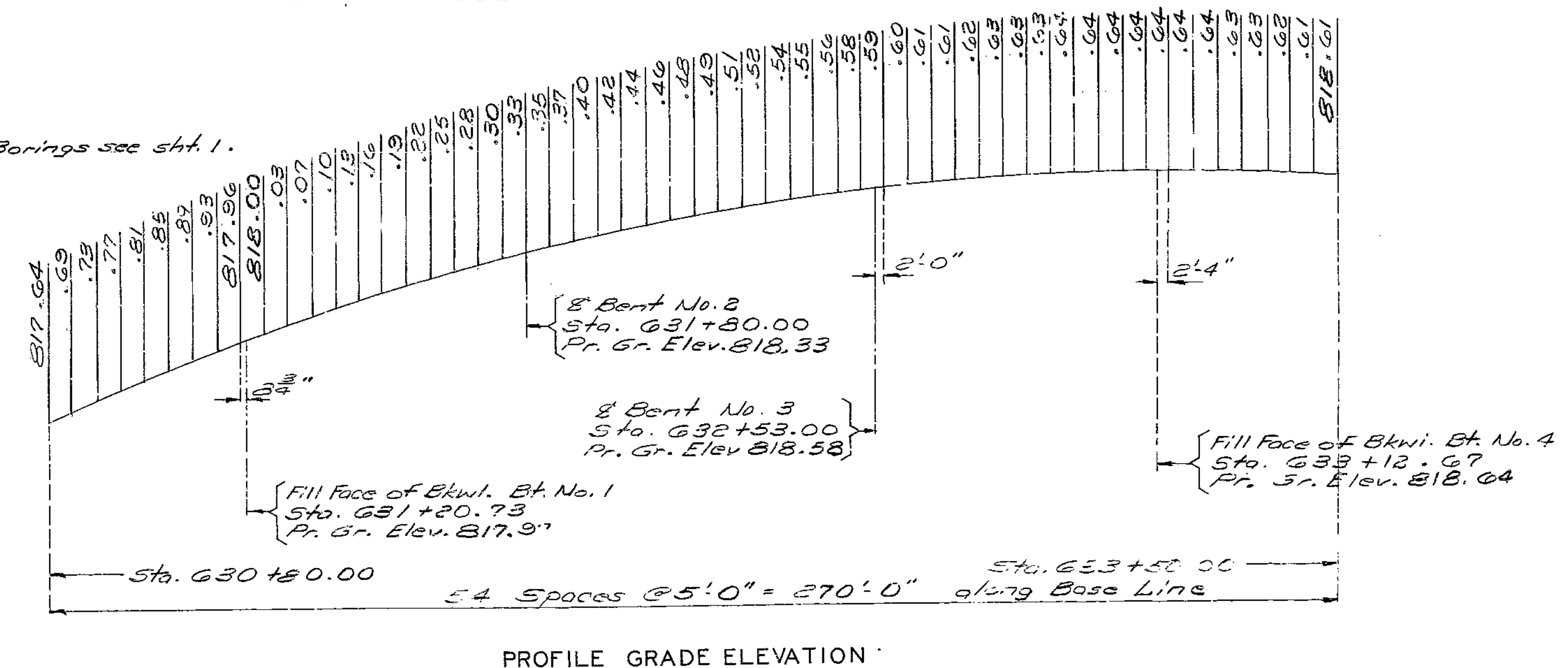
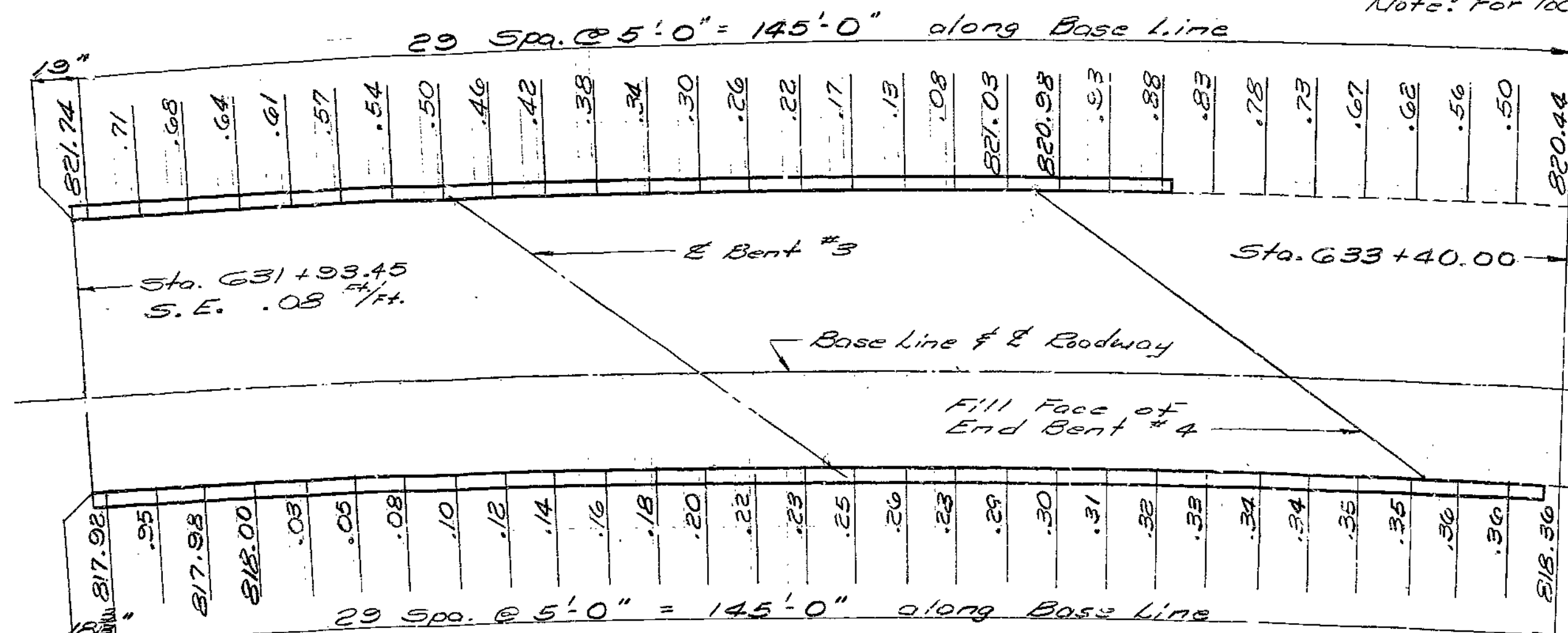
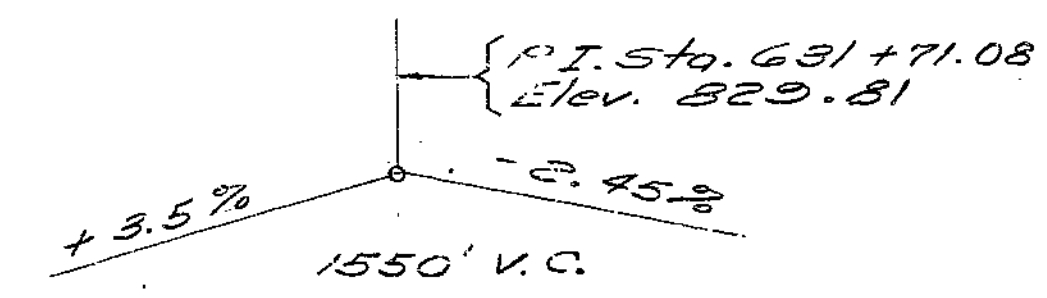
FED. ROAD DIST. NO.	STATE	FED. AID "A" NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	83	



Note: Elevations shown are taken at top of 8" concrete slab along roadway face of curb.

BORING DATA

Note: For location of Borings see sht. 1.



PROFILE GRADE ELEVATION

DETAILED June 1977  
 CHECKED June 1979

PART PLAN SHOWING SUPERELEVATION TRANSITION

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

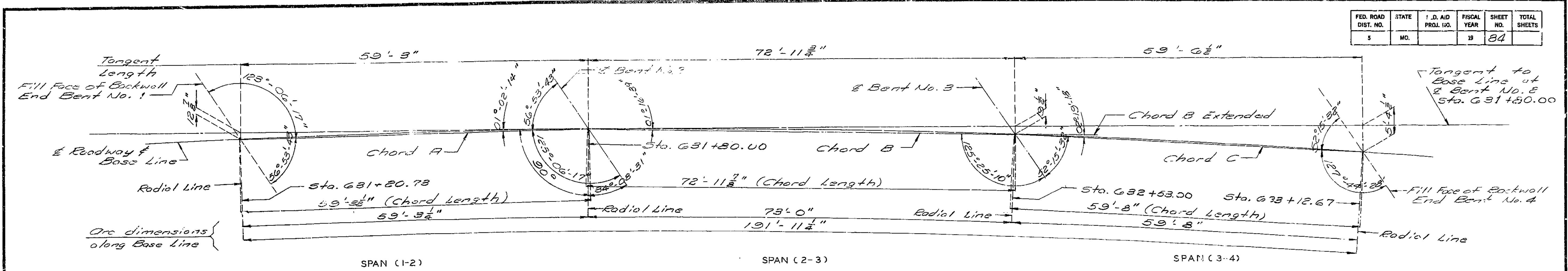
Sheet No. 2 of 10

CLAY COUNTY

A-3377

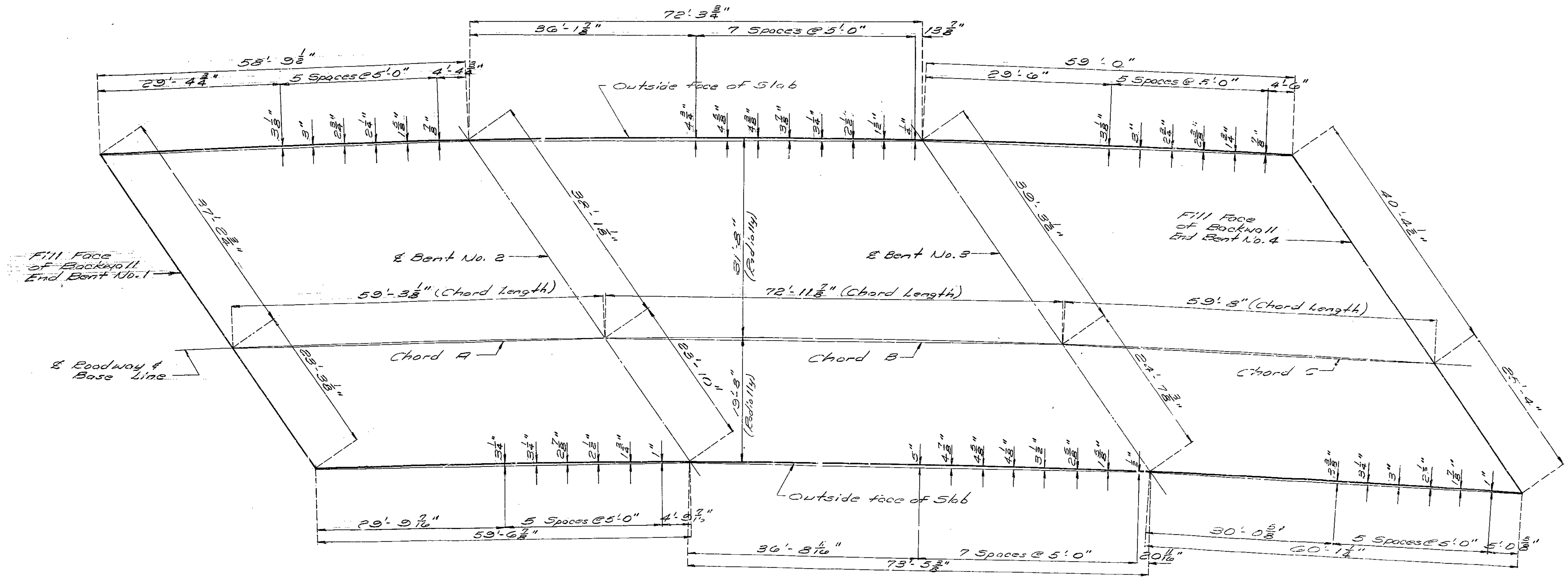
221

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



LAYOUT DATA FOR SUBSTRUCTURE

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



PLAN OF SLAB SHOWING CURVE ORDINATES

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

Sheet No. 3 of 16

CLAY COUNTY

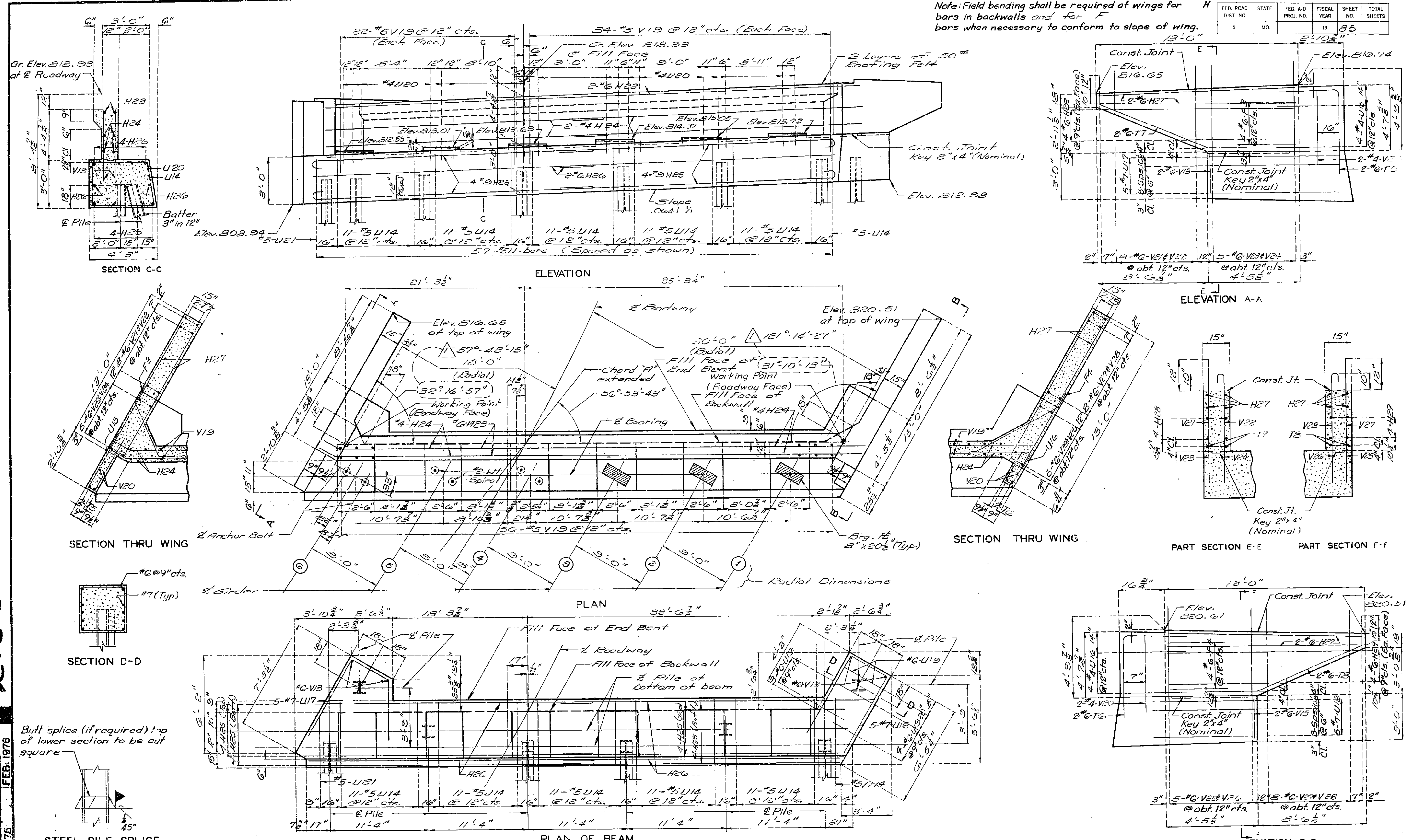
A-3377

222

DETAILED June 1977  
CHECKED June 1979

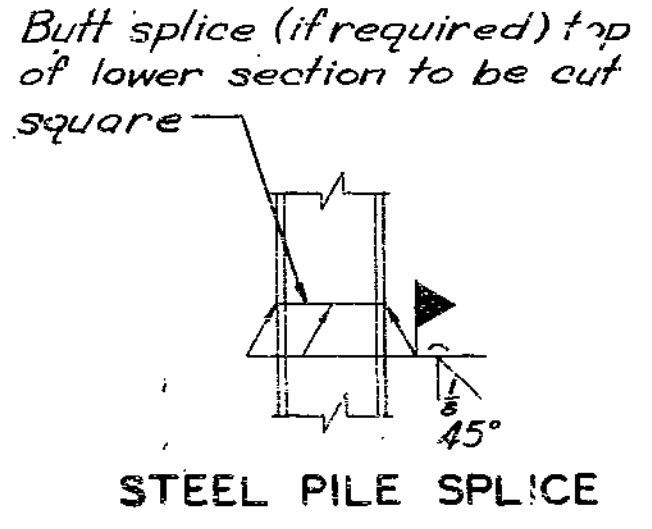
Note: Field bending shall be required at wings for bars in backwalls and for F bars when necessary to conform to slope of wing.

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



223

STD. 12.2+15" S.B. REVISED FEB. 1976  
JULY 1975

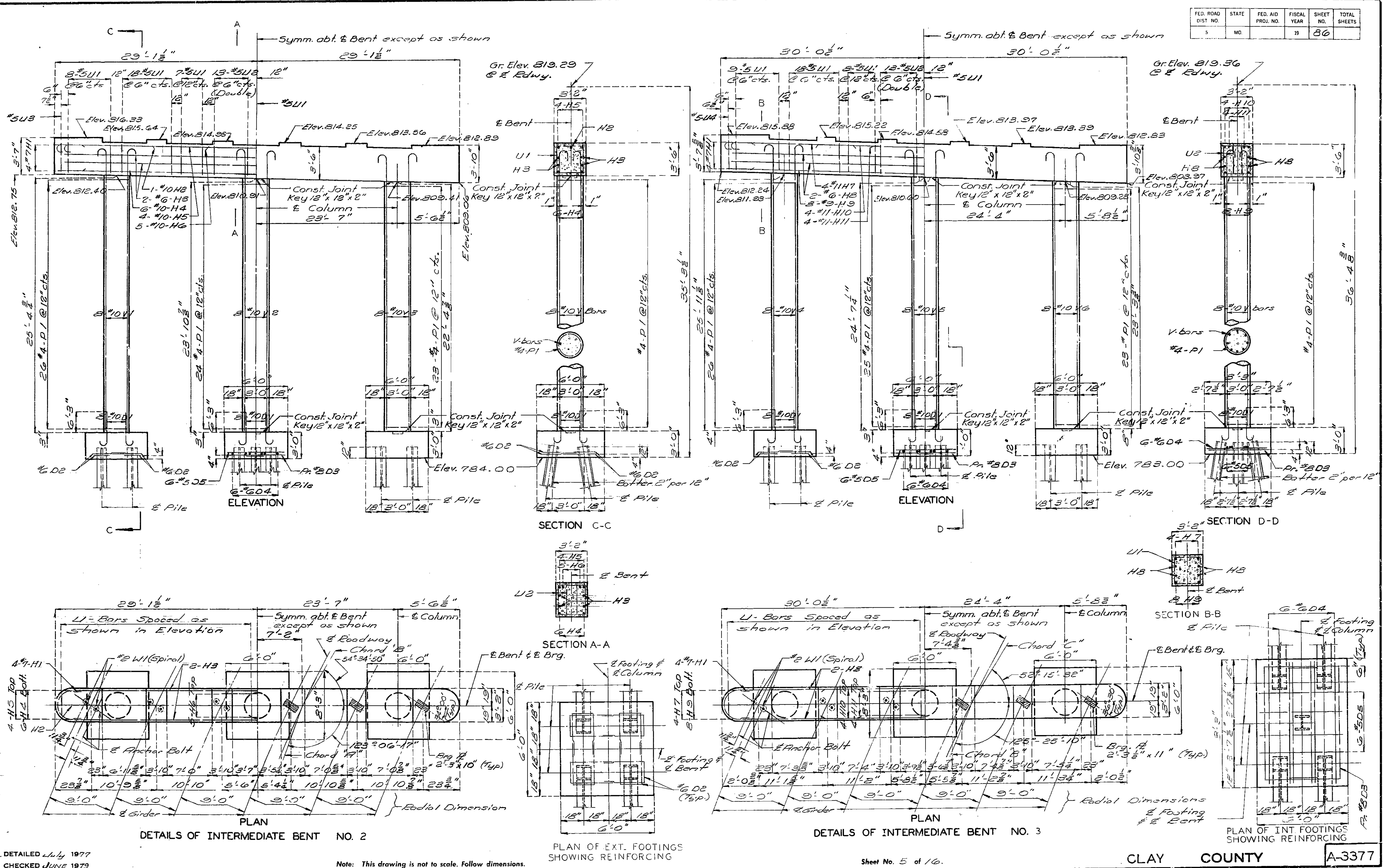


DETAILED S.P. 1977  
CHECKED JUNE 1973

PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT)  
DETAILS OF END BENT NO. 1

Sheet No. 4 of 10. Revised 3-20-81

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	86	



224

STD 196  
 REVISED  
 SEPT 1962  
 JUNE 1974  
 DETAILED July 1977  
 CHECKED JUNE 1979

DETAILS OF INTERMEDIATE BENT NO. 2

PLAN OF EXT. FOOTINGS SHOWING REINFORCING

DETAILS OF INTERMEDIATE BENT NO. 3

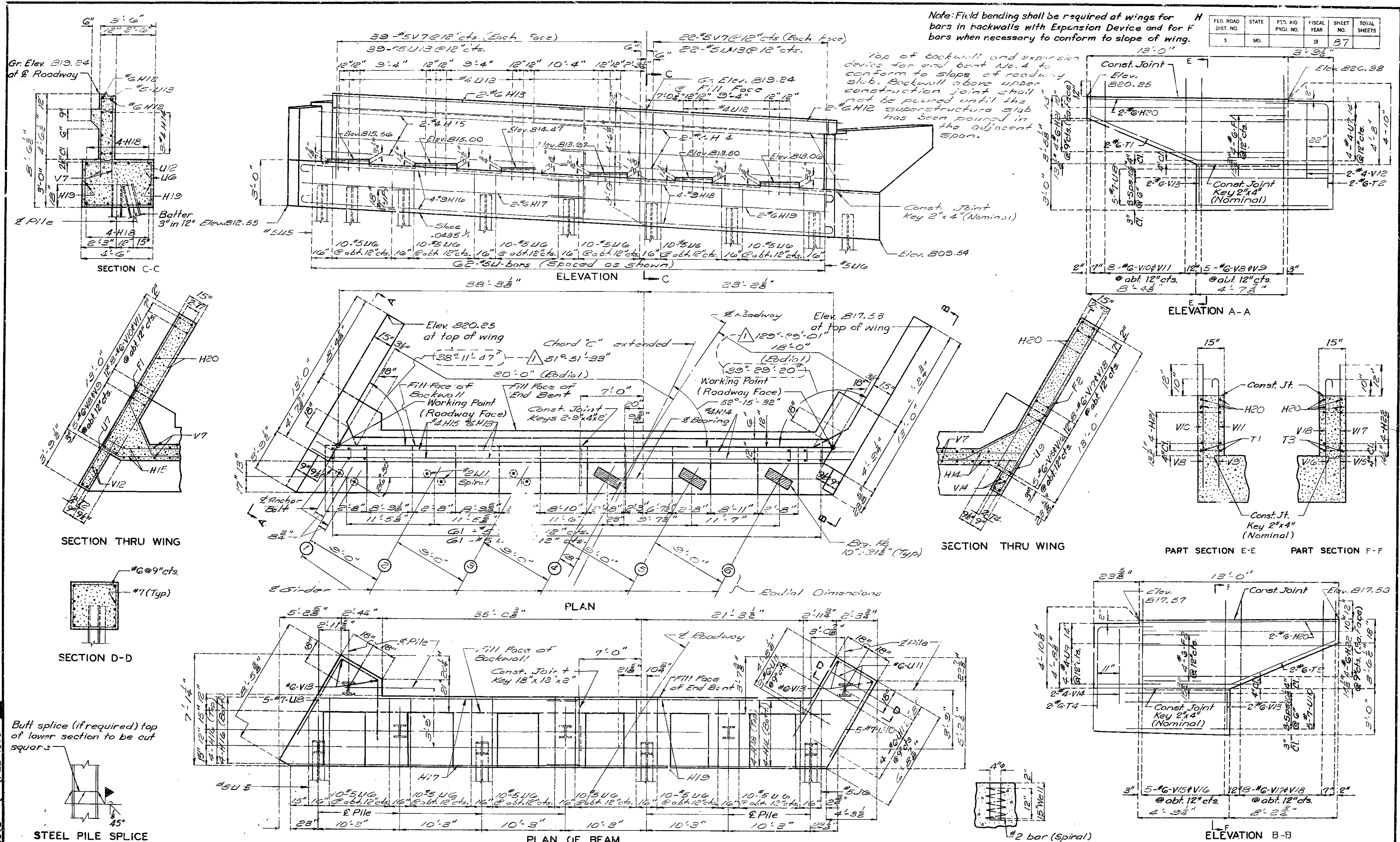
PLAN OF INT FOOTINGS SHOWING REINFORCING

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

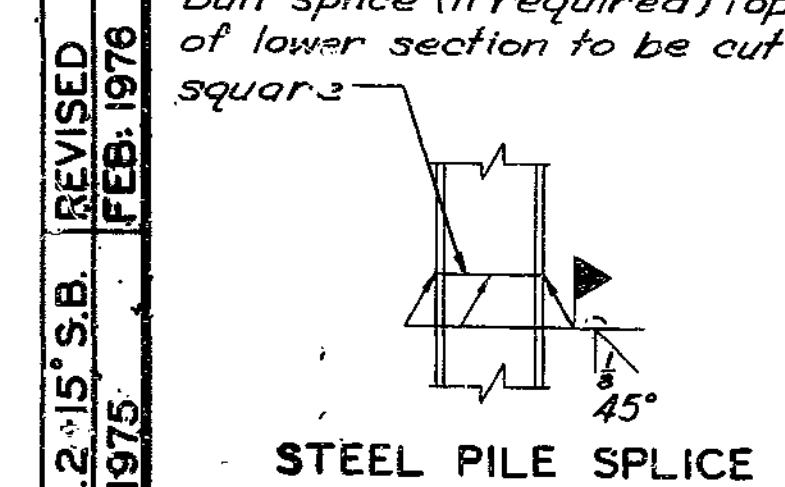
Sheet No. 5 of 16.

Note: Field bending shall be required at wings for bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	57	



225



STD. 12.2.15 S.B. REVISED FEB. 1976  
 JULY 1975  
 DETAILED Sept 1977  
 CHECKED JUNE 1979

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

PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT)  
**DETAILS OF END BENT NO. 4**

Sheet No. 6 of 10. Revised 3-20-81

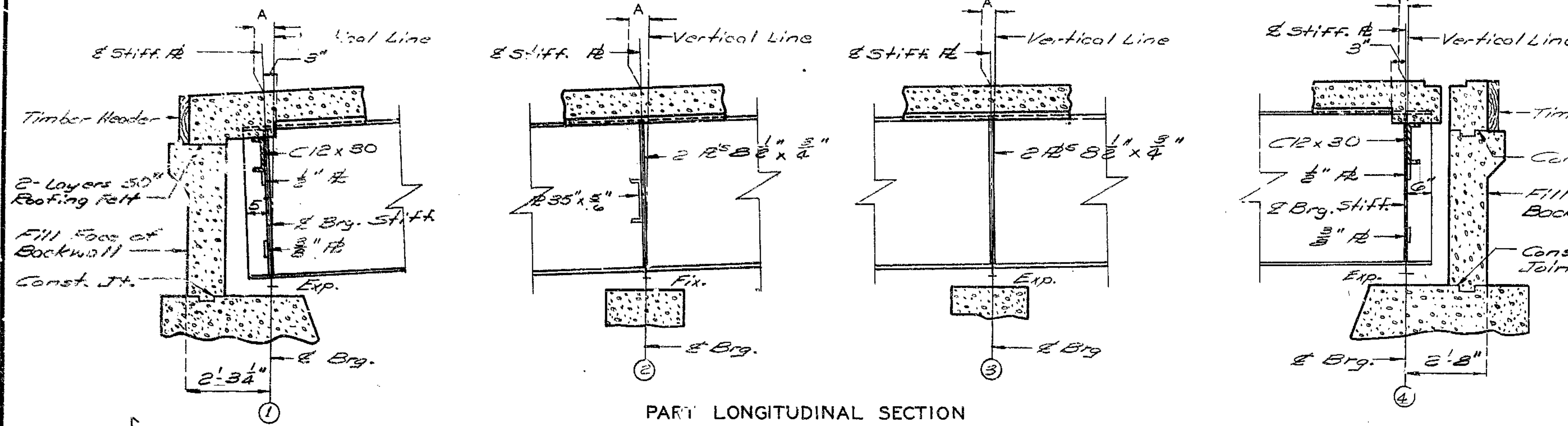
CLAY COUNTY

A-3377

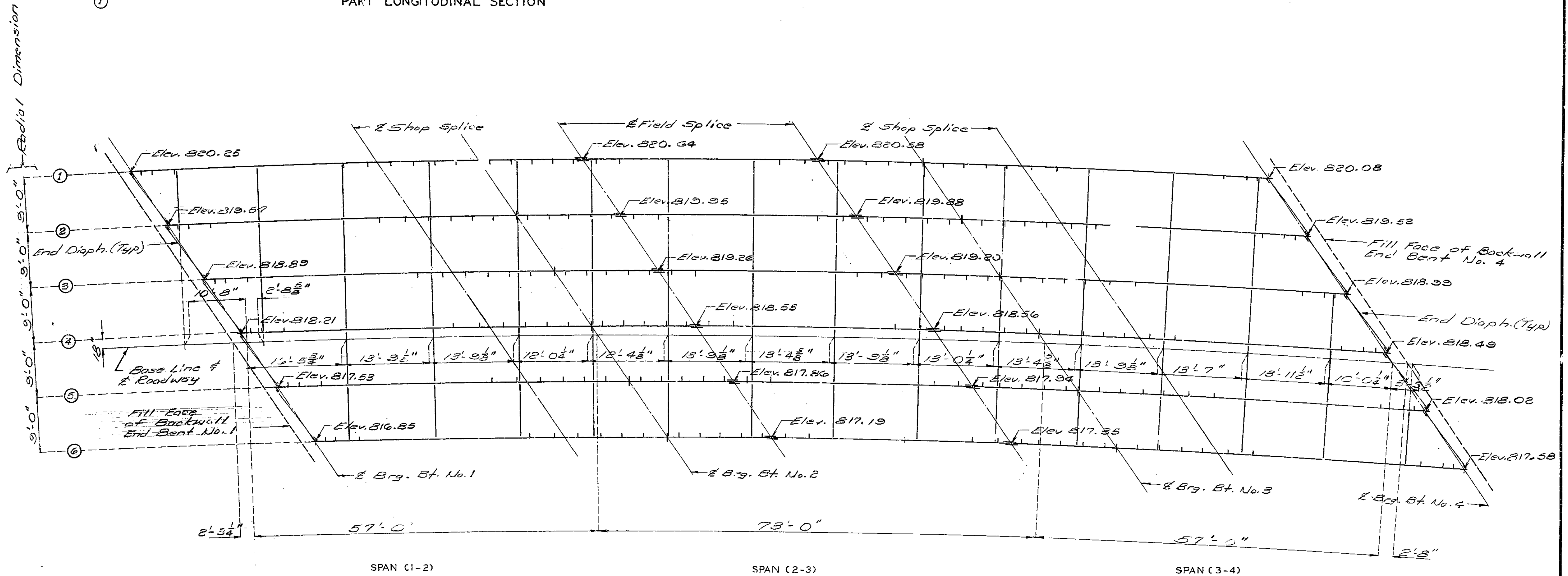
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	88	

TABLE OF DIMENSIONS

BENT NO.	GDR					
	1	2	3	4	5	6
1	2'	2'	2'	2'	2'	2'
2	2'	2'	2'	2'	2'	2'
3	2'	2'	2'	2'	2'	2'
4	2'	2'	2'	2'	2'	2'



Note: All longitudinal dimensions shown are Horizontal Arc Dimensions along & Roadway. For shear connector spacing and length of girders see sht. 8. Elevations shown are taken at bottom of top flange of & of Girders before dead load deflection. All Int. Diaphs. are placed Radially. Intermediats web stiffener plates may vary from plan dimensions by a maximum of 3" for Intermediate Diaphragms to connect to intermediate web stiffener plates.



PLAN OF STRUCTURAL STEEL

226

DETAILED JULY 19 77  
CHECKED JUNE 19 79

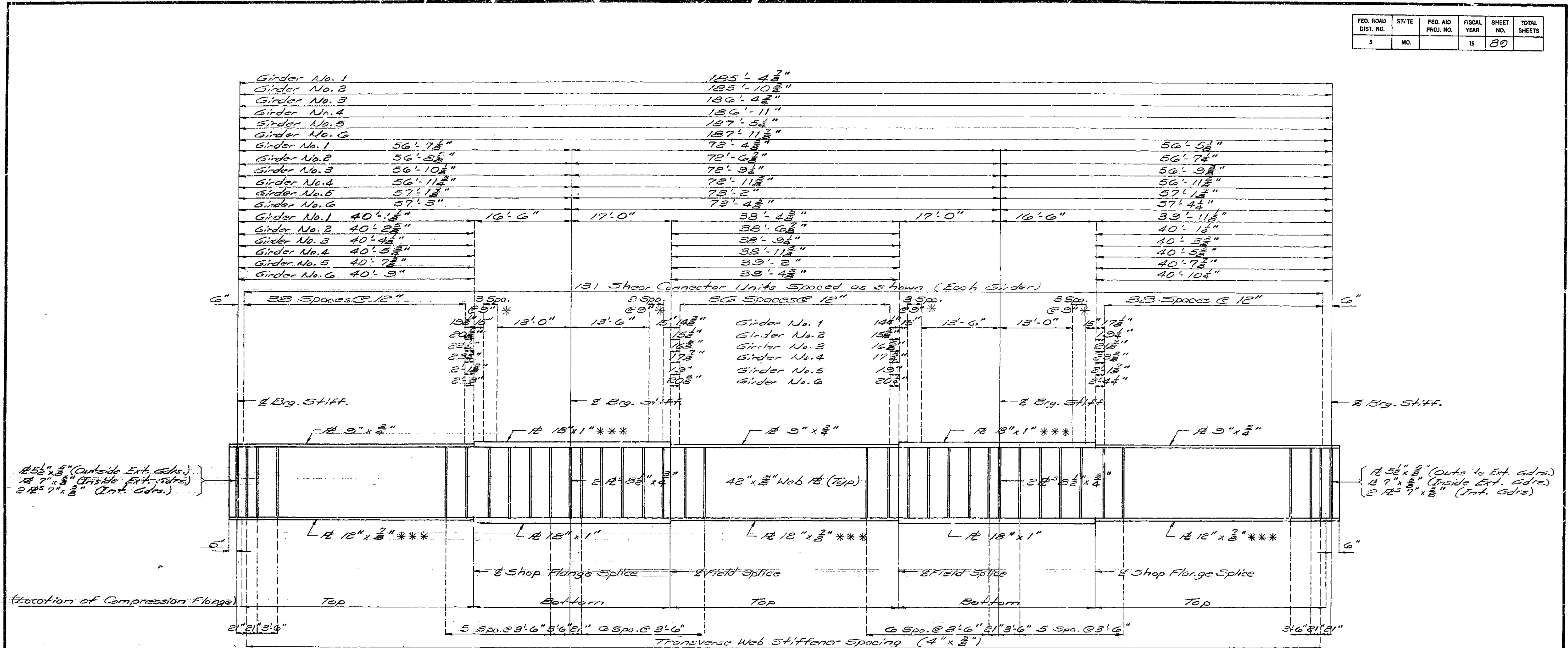
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 7 of 10

CLAY COUNTY

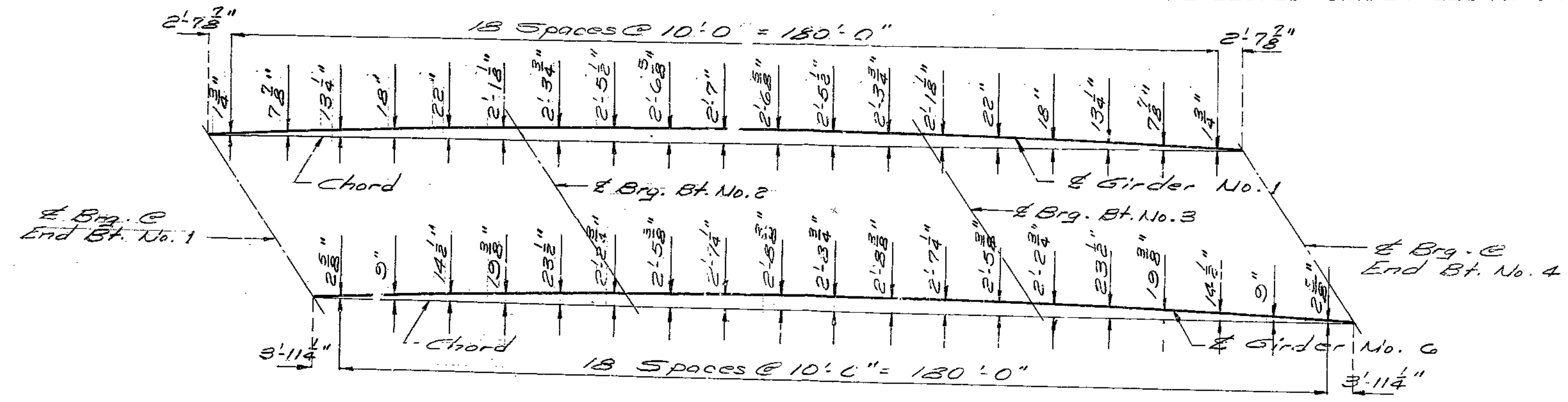
A-3377

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		15	80	



227

SPAN (1-2)      SPAN (2-3)      SPAN (3-4)  
DEVELOPED GIRDER ELEVATION



PLAN OF STRUCTURAL STEEL SHOWING @ GIRDER CURVE OFFSETS

Note: All longitudinal dimensions shown are Horizontal Arc dimensions taken at top and @ of web.  
 \*\*\* Indicates Flange Plates subject to notch toughness requirements.  
 \* Indicates 4 Shear Connectors per unit. All others 3 Shear Connectors per unit.  
 Transverse web stiffeners shall be placed as detailed on Plan of Structural Steel.  
 All web plates shall be subject to notch toughness requirements.

DETAILED July 1977  
CHECKED JUNE 1973

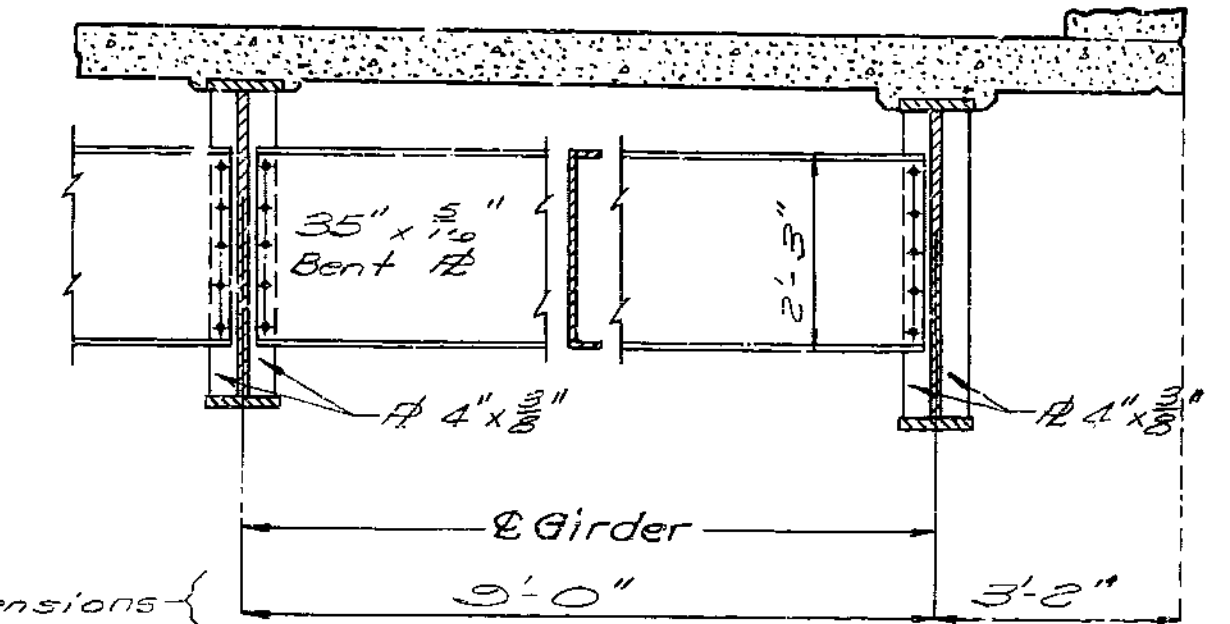
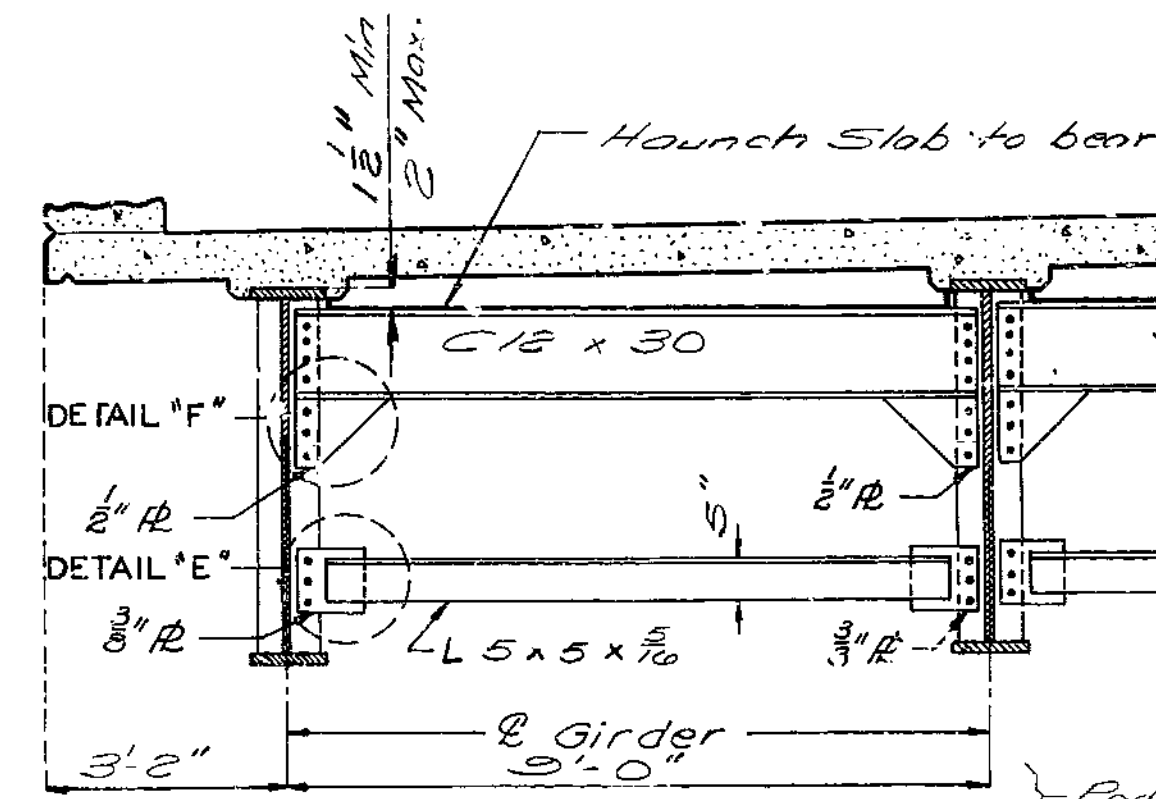
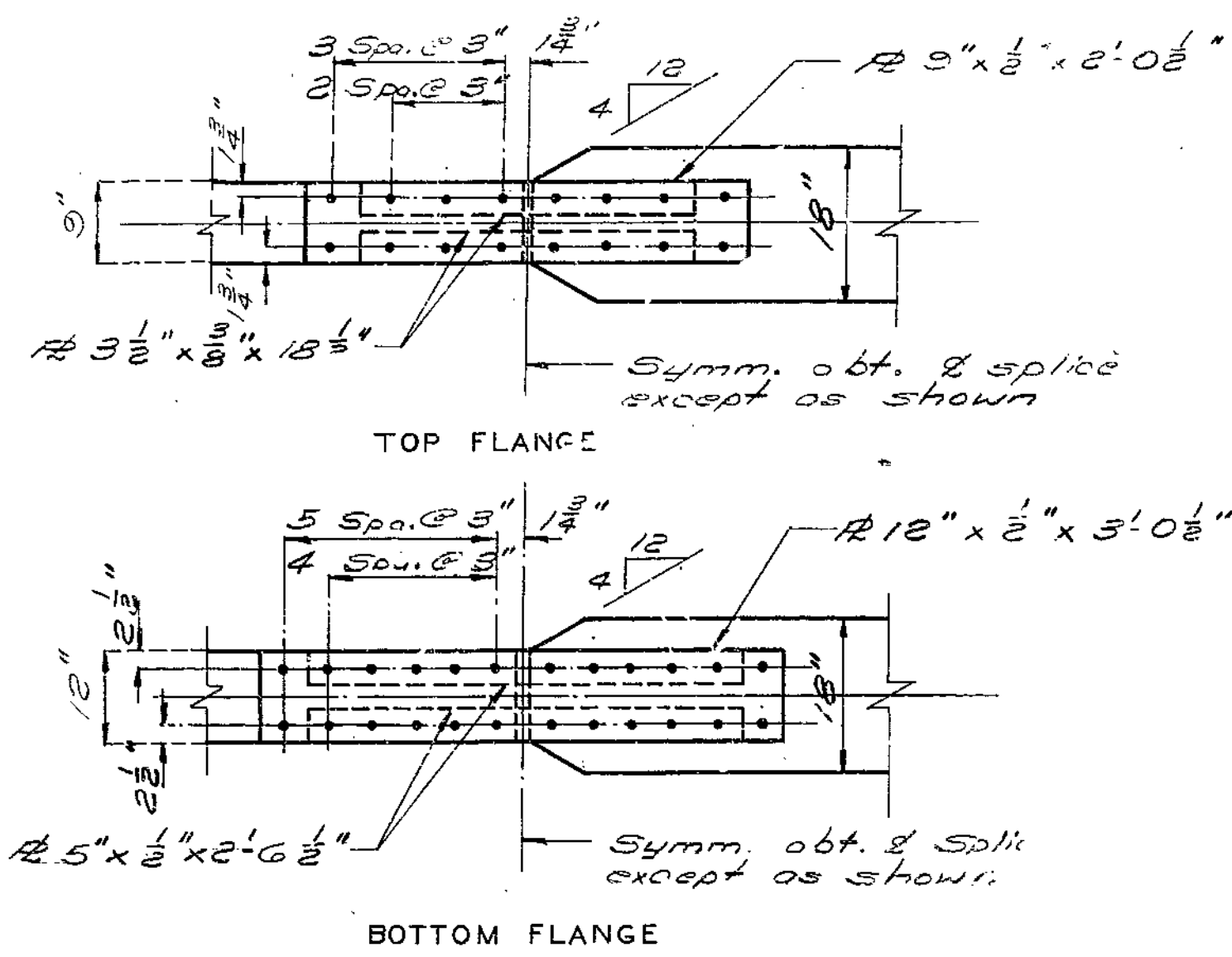
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 8 of 10

CLAY COUNTY

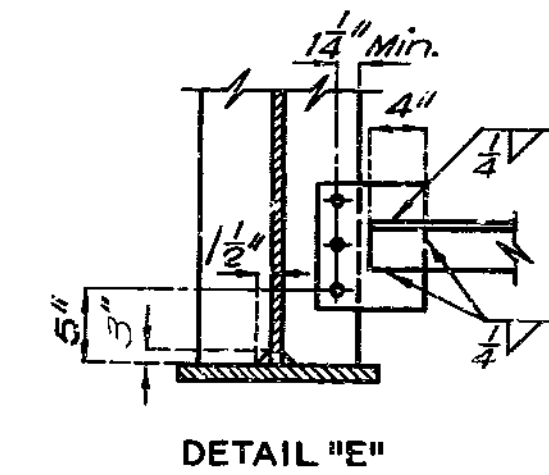
A-3377

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	90	

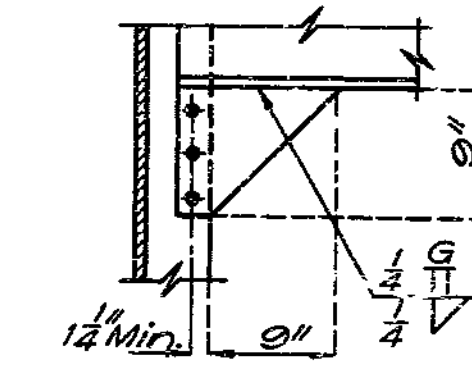


TYP. PART SECTION SHOWING END DIAPHRAGMS

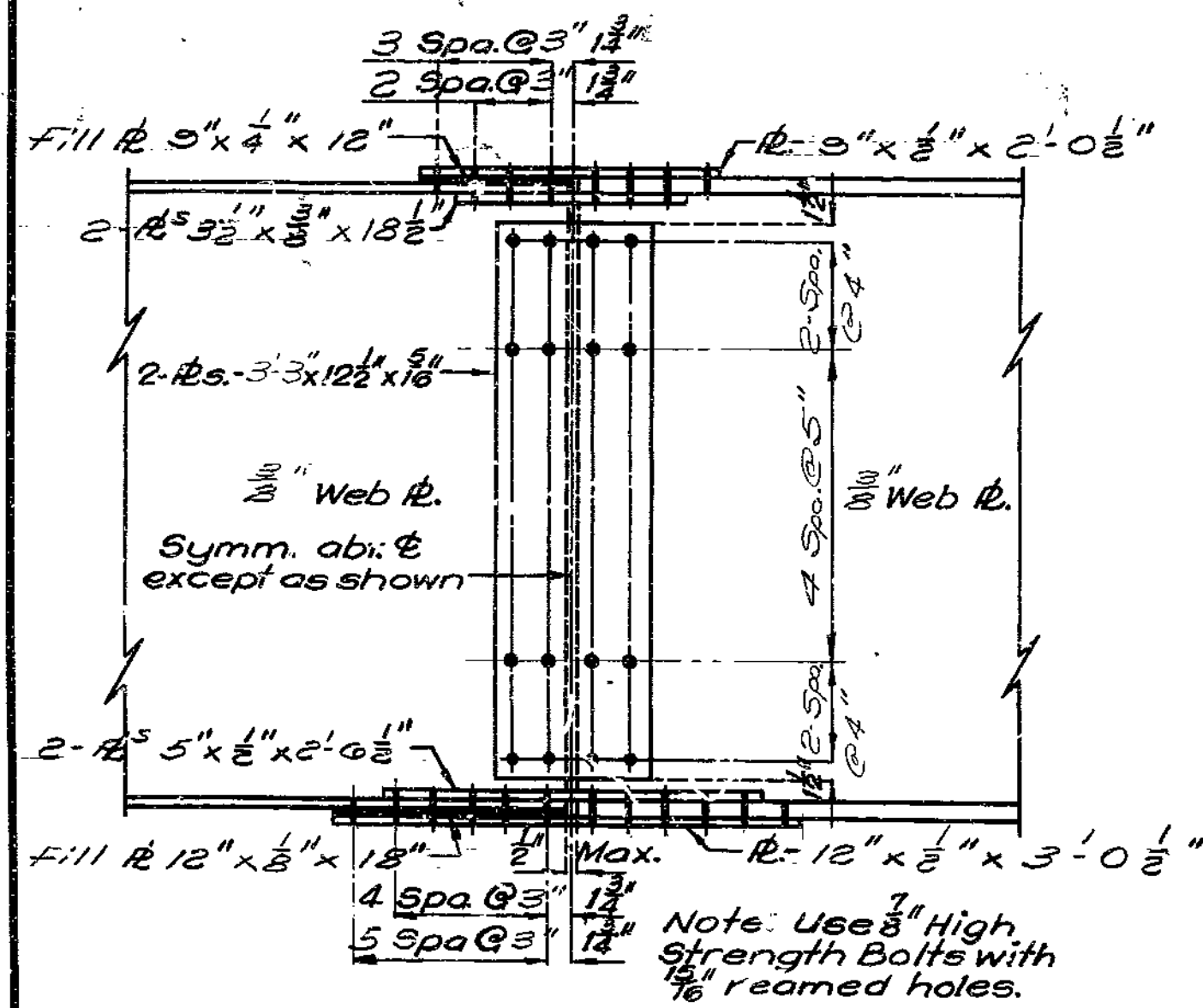
TYP. PART SECTION SHOWING INT. DIAPHRAGM



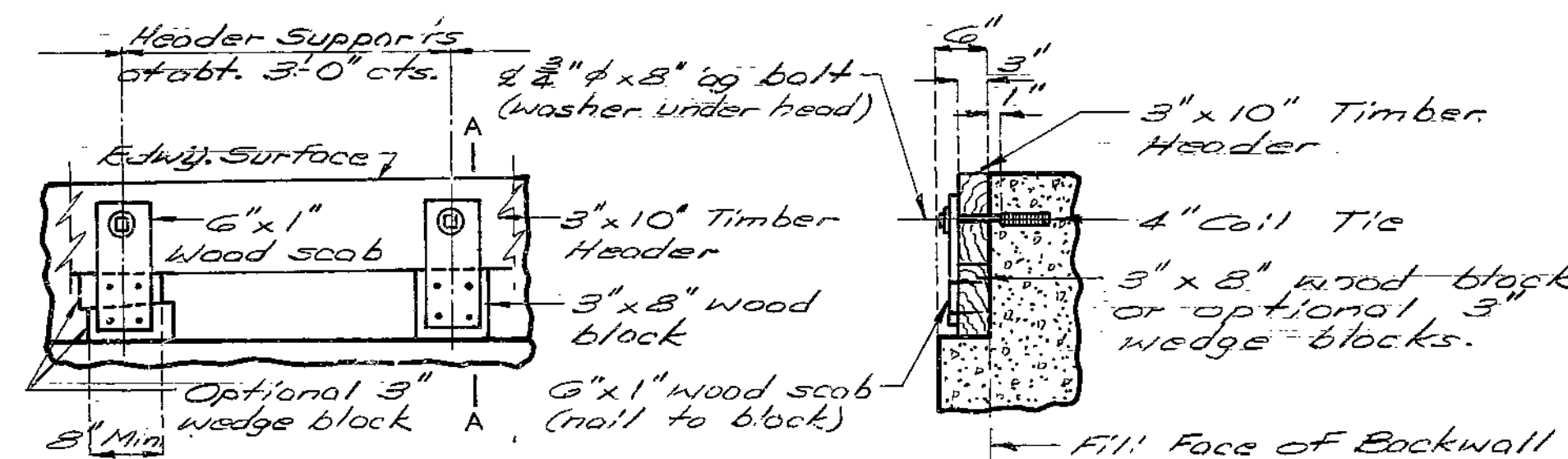
DETAIL "E"



DETAIL "F"



DETAILS OF FIELD SPLICE

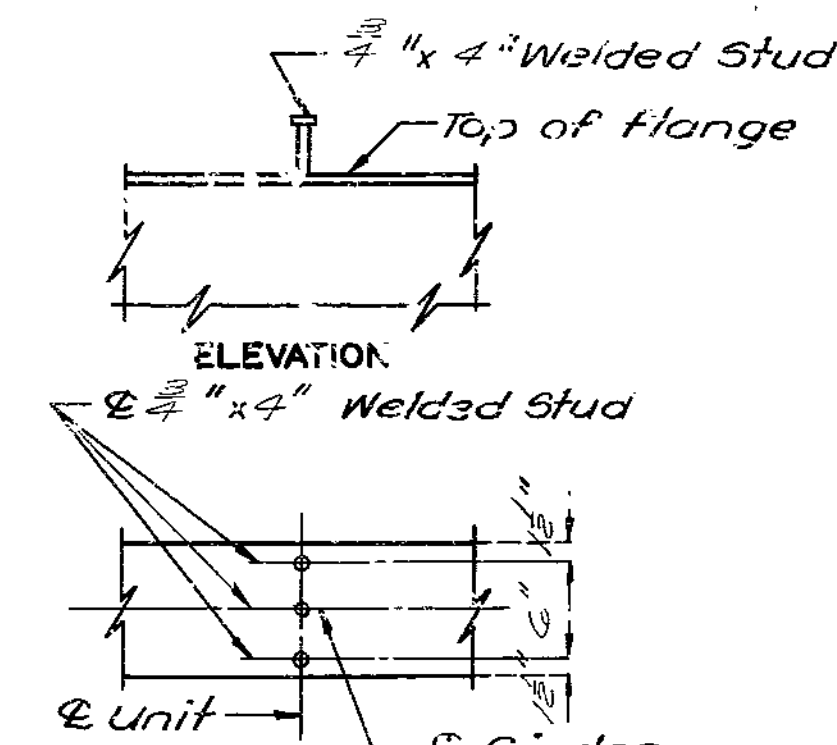


PART ELEVATION

SECTION A-A

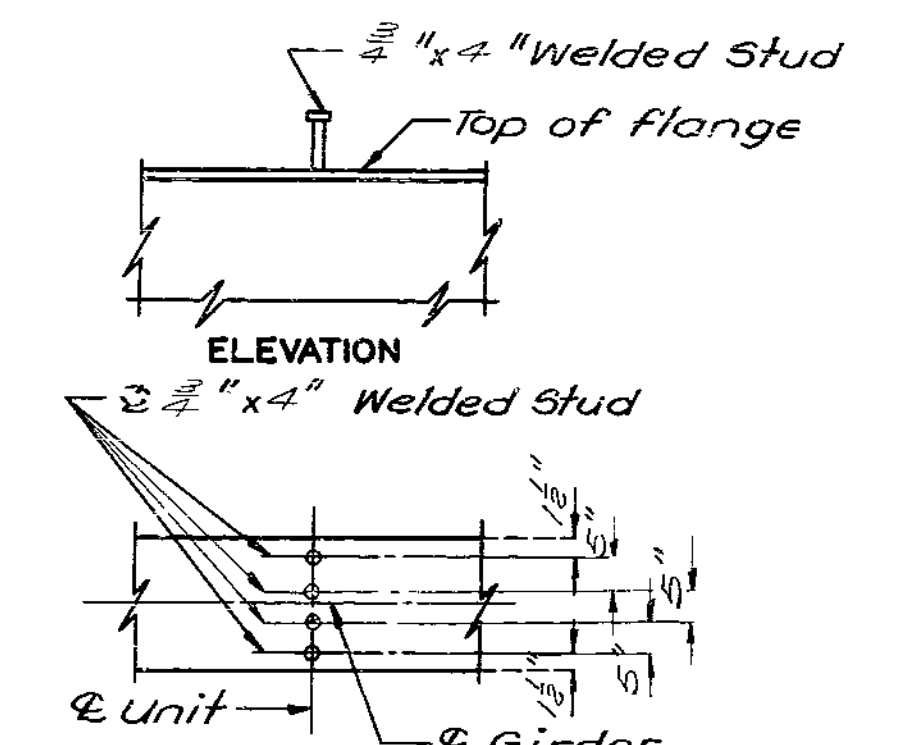
Note: Cost of timber header complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER AT END BENTS



PLAN OF STUD CONN.

DETAILS OF SHEAR CONNECTORS



PLAN OF STUD CONN.

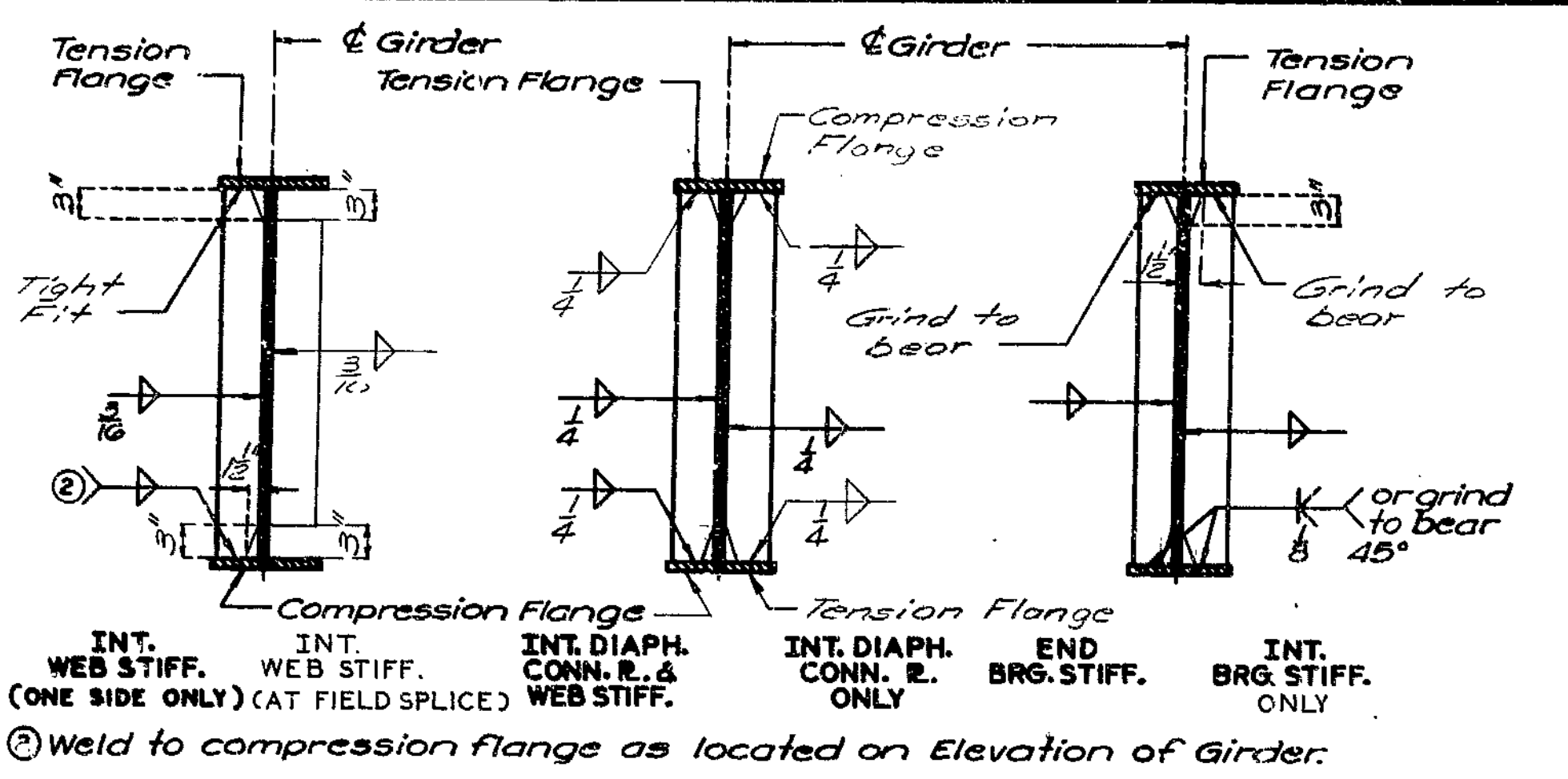
DETAILS OF SHEAR CONNECTORS

Note: Weight of 1546 lbs. of Shear Connectors is included in weight of Fabricated Structural Carbon Steel.

2228



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19 71		



**NOTES: TYPE "E" BEARINGS**  
 ANCHOR BOLTS FOR TYPE "E" BEARINGS SHALL BE 1-1/4" SWEDGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS.  
 "ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS.  
 "S" INDICATES MACHINE FINISH SURFACE.  
 ① BONDED LUBRICANT  
 A LUBRICANT COATING SHALL BE APPLIED IN THE SHOP TO BOTH MATING SURFACES OF THE BEARING ASSEMBLY. THE LUBRICANT, METHOD OF CLEANING, AND APPLICATION SHALL MEET THE REQUIREMENTS OF MIL-L-23398 AND MIL-L-46147 SUCH AS DOW CORNING'S MOLYKOTE 3402 BONDED LUBRICANT. THE COATED AREAS SHALL BE PROTECTED FOR SHIPPING AND ERECTION.  
 Shop drawings are not required for lead plates and/or preformed fabric pads.

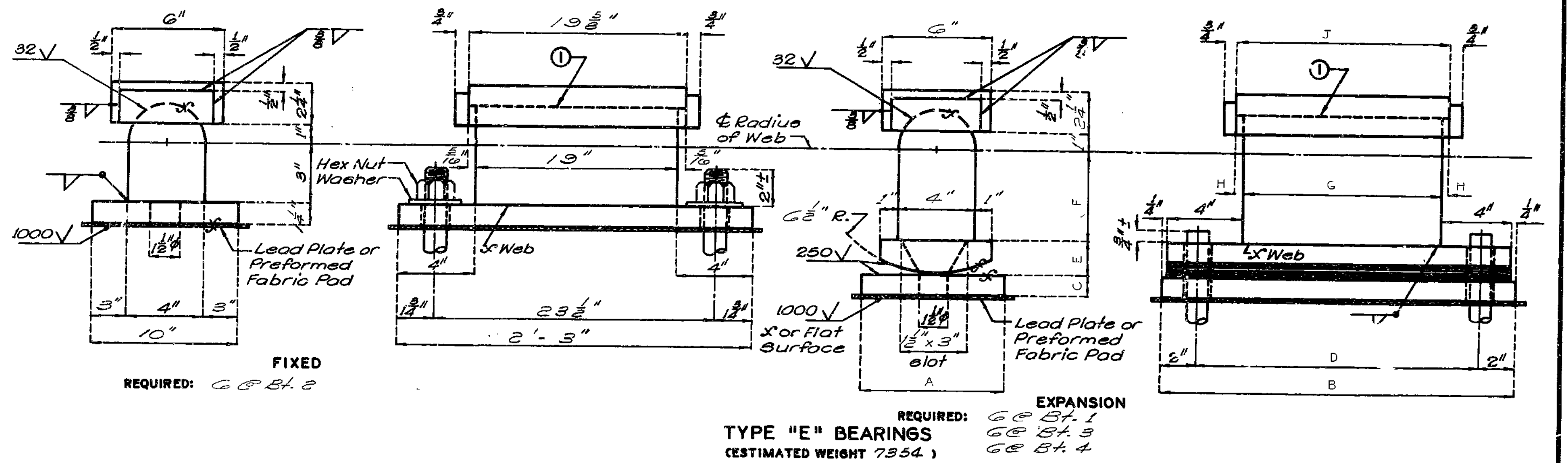
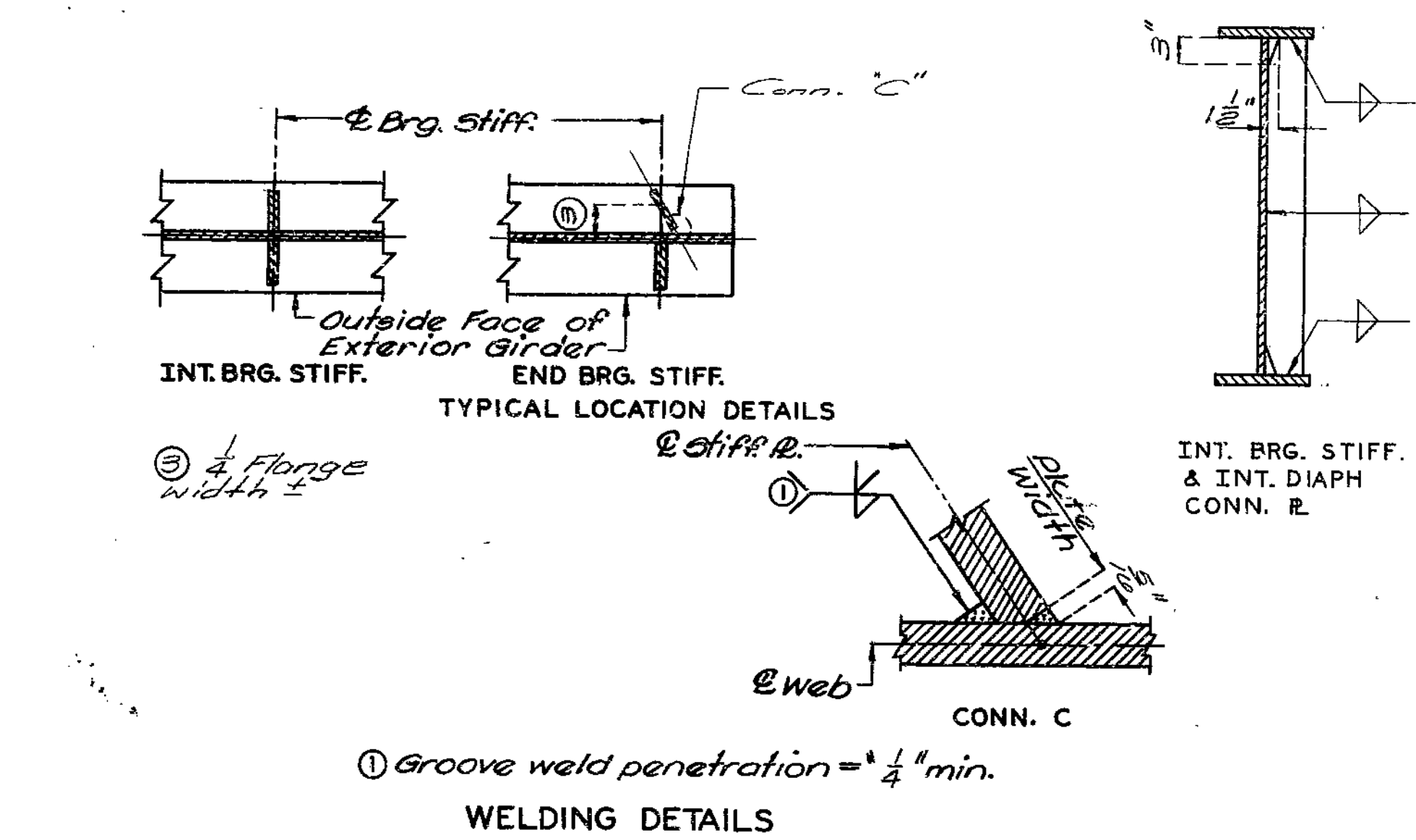
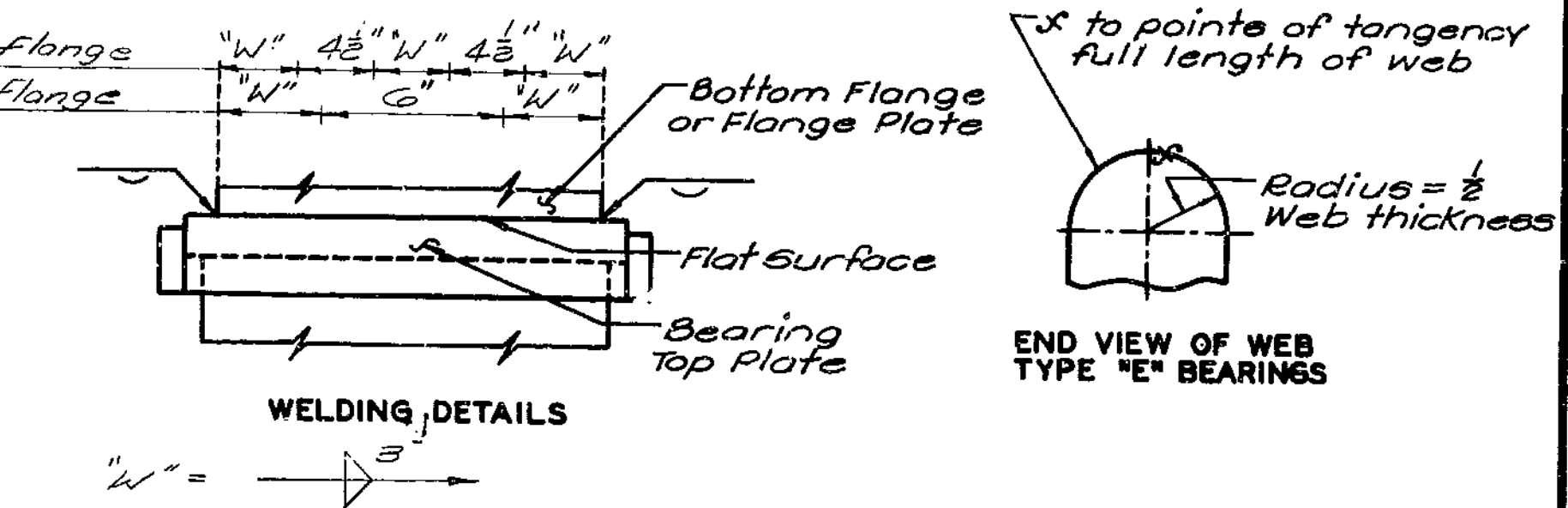
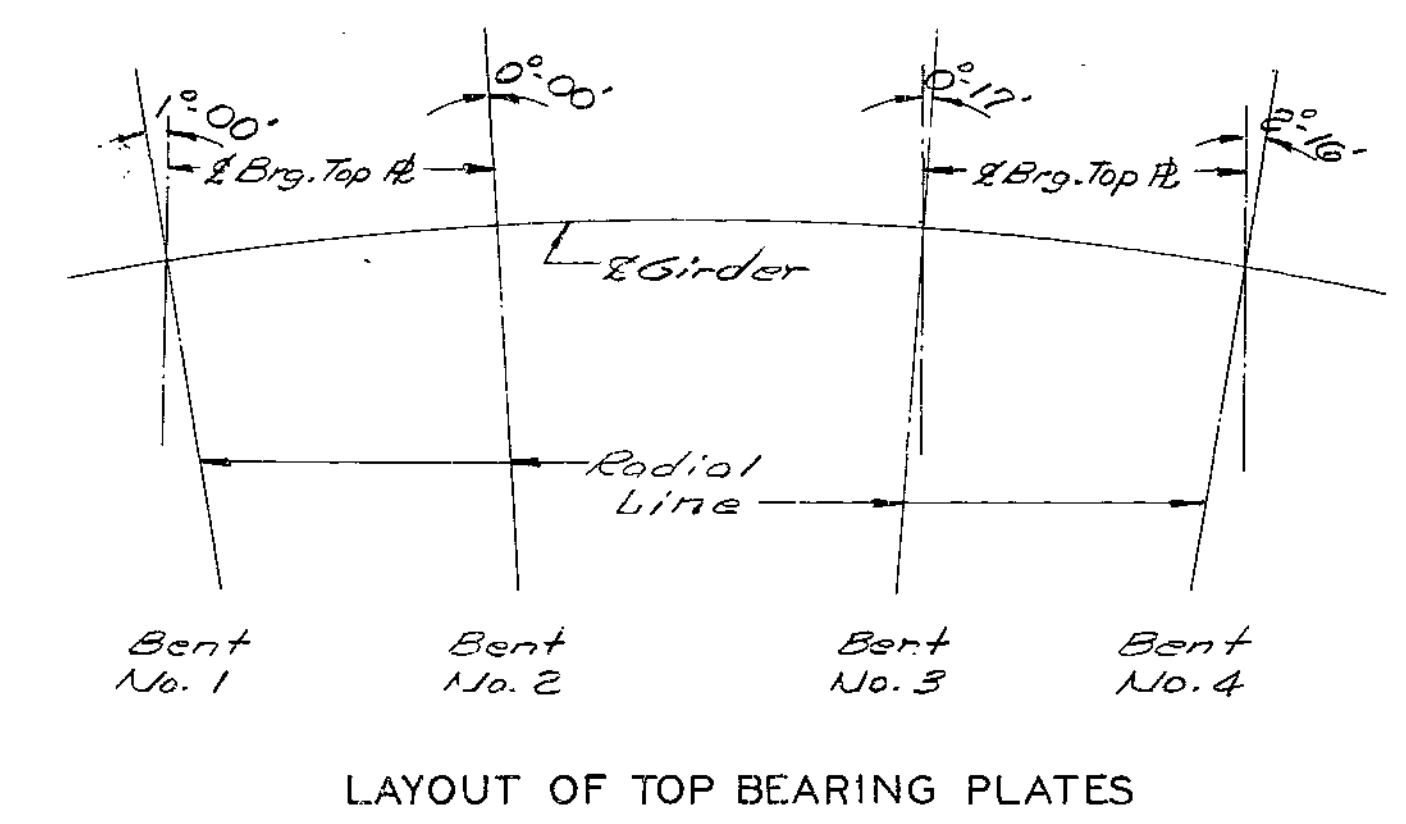
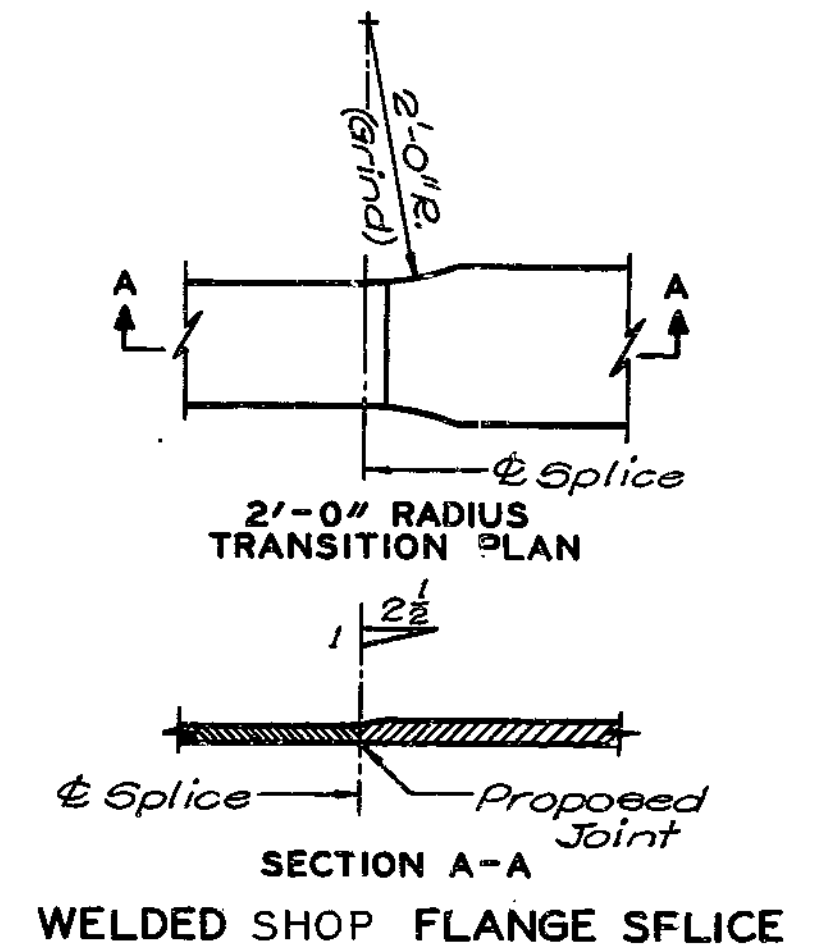
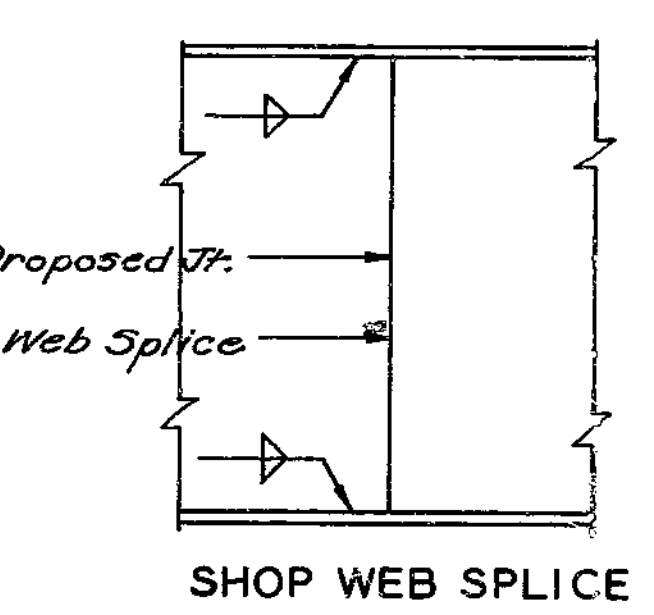


Table of Dimensions

Bent No.	A	B	C	D	E	F	G	H	J
1	8"	20 1/2"	1 1/2"	10 1/2"	1 1/2"	4 1/2"	12"	9 1/2"	12 1/2"
3	11"	21 3/4"	2"	23 1/2"	2"	4 1/2"	13"	9 1/2"	19 1/2"
4	10"	21 1/2"	1 1/2"	17 1/2"	1 1/2"	4 1/2"	13"	9 1/2"	13 1/2"



229

STD. E.B. REVISED MAR. 1973 NOV. 1976

DETAILED Aug. 19 77  
 CHECKED JUNE 1978

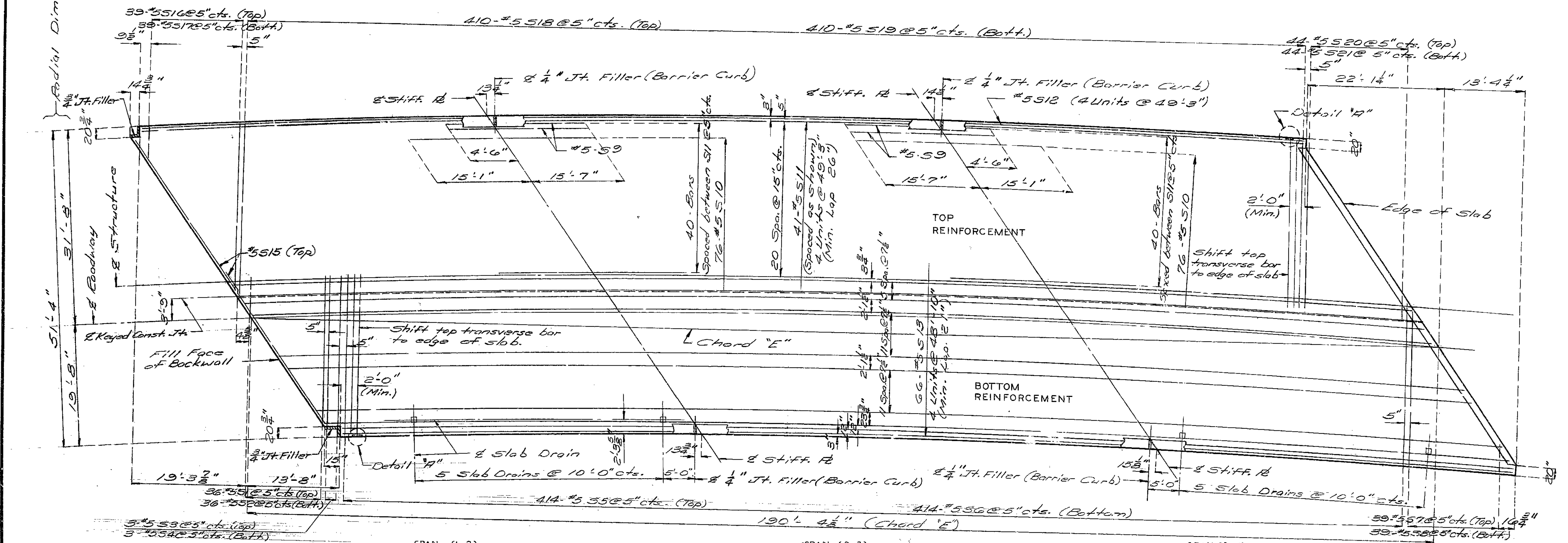
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 10 of 16

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	02	

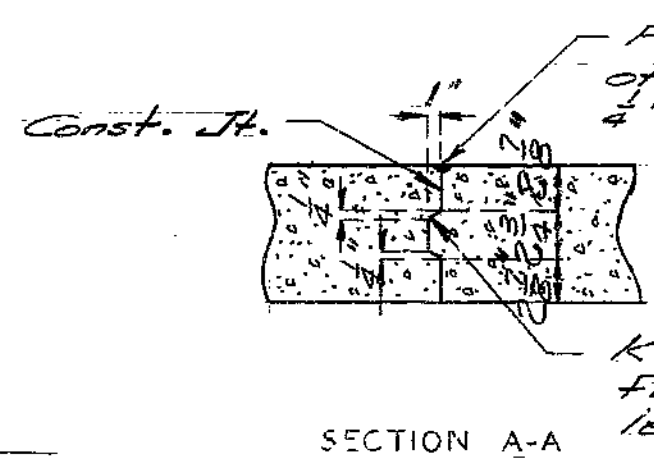
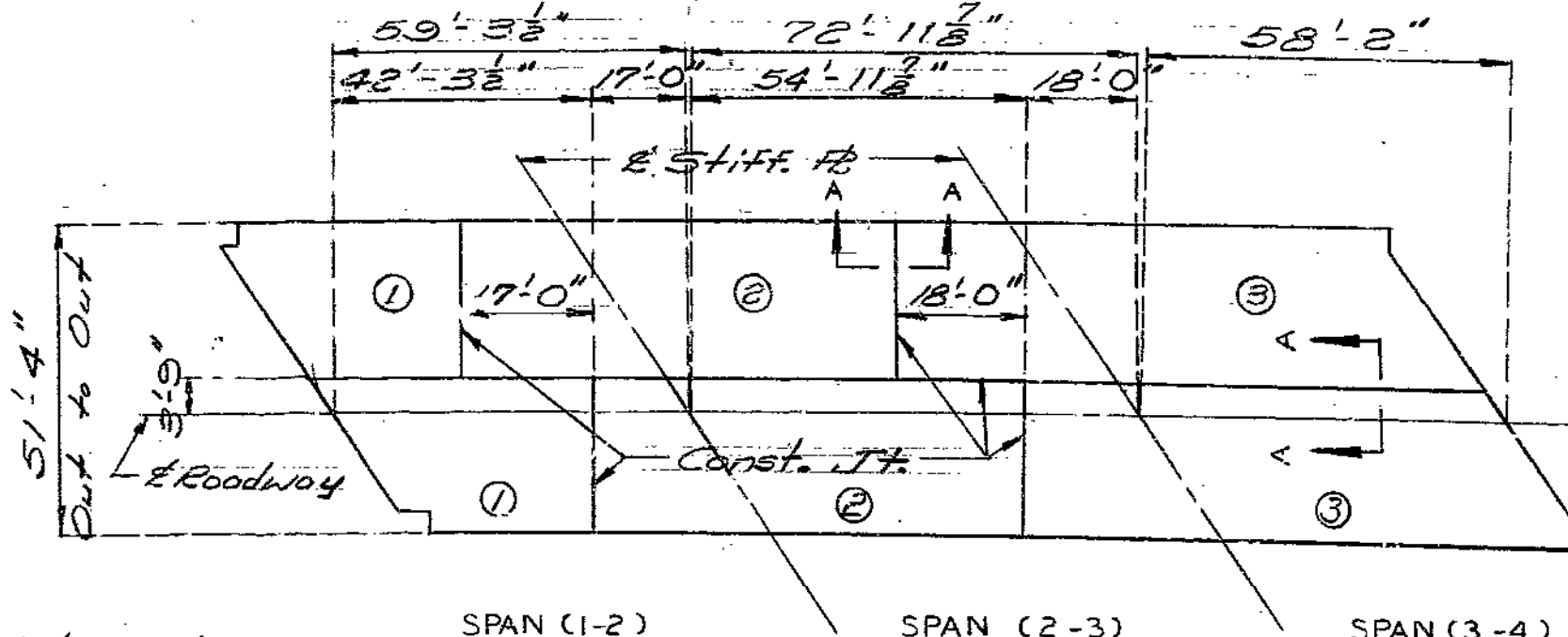
Note: Longitudinal dimensions shown are horizontal chord dimensions. Transverse S-bars are to be placed perpendicular to Chord "E".

Note: Longitudinal dimensions are based on 1/8" exp. gap.

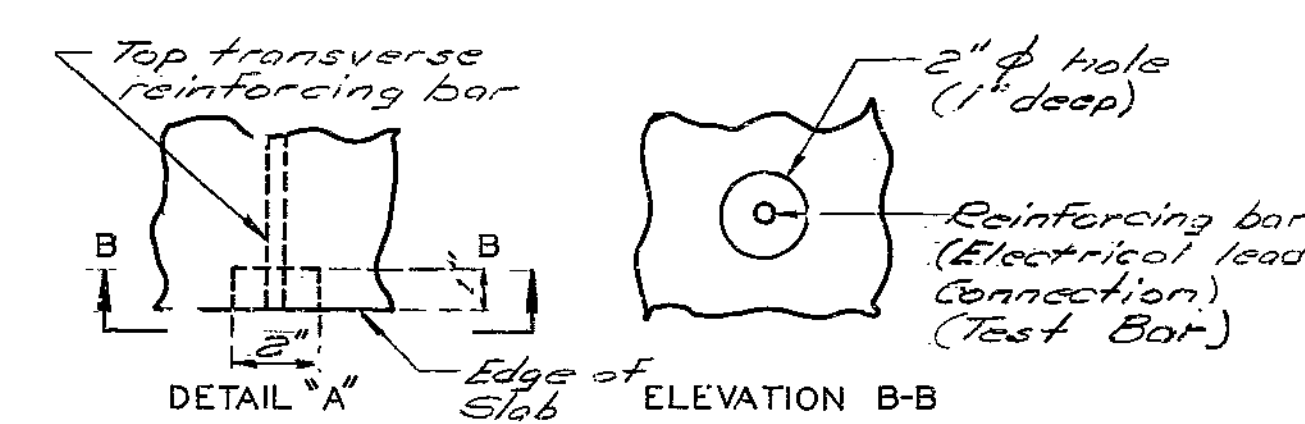


PLAN OF SLAB SHOWING REINFORCEMENT

230



Note: Electrical lead connections required. Actual location to be designated by the Engineer as part of the gas L system. (See Spec. Prov.)

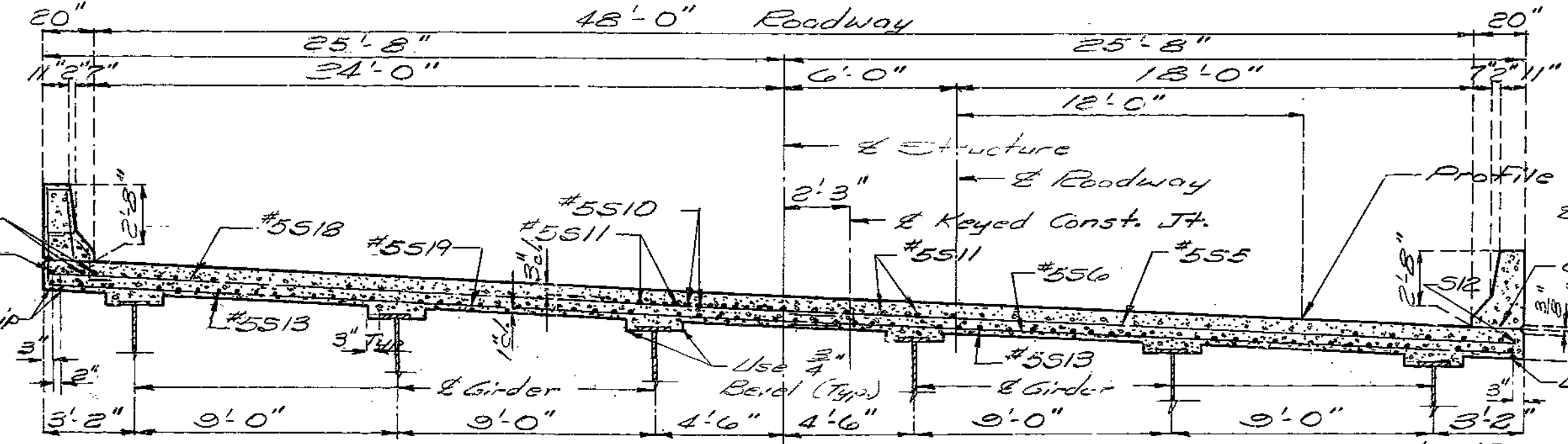


Span	Span (1-2)	Span (2-3)	Span (3-4)
Span	57'-0"	73'-0"	57'-0"
Bottom of top Flange			
Sdr. ①			
Sdr. ②			
Sdr. ③			
Sdr. ④			
Sdr. ⑤			
Sdr. ⑥			

Note: Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with section 703.3.124 of Missouri Standard Specifications.

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

Note: The contractor shall pour and satisfactorily finish the slab pours at a rate of not less than 27 cubic yards per hour unless he elects to use an approved retarder to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 25 cubic yards per hour. (Pour right side first)



Note: 12% of dead load deflection due to weight of structural steel.

Span	Span (1-2)	Span (2-3)	Span (3-4)
Span	57'-0"	73'-0"	57'-0"
DEAD LOAD DEFLECTION			
CLAY COUNTY			

DETAILED July 1977  
CHECKED June 1979

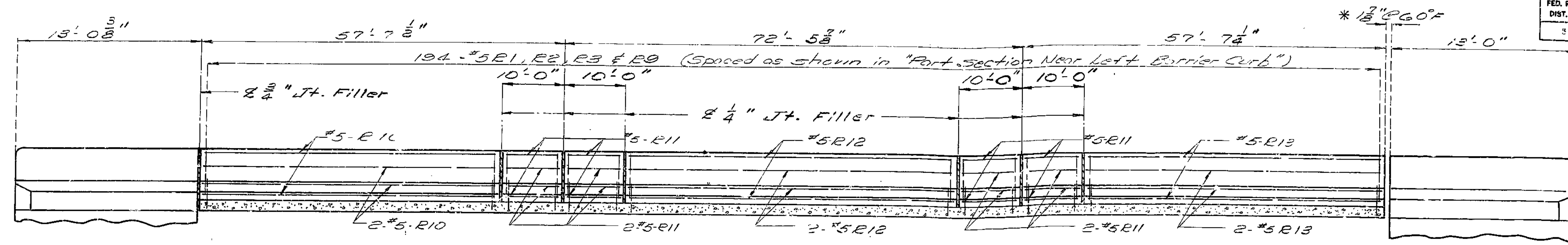
SLAB POURING SEQUENCE

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

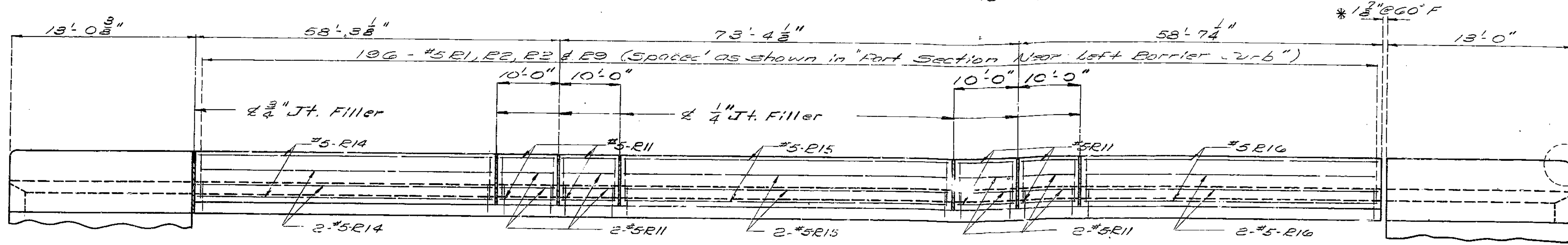
Sheet No. 11 of 16

A-3377

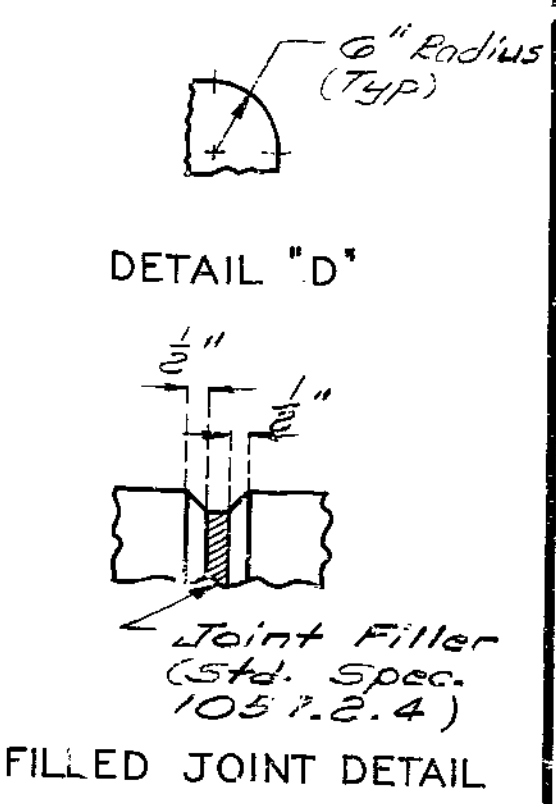
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
			1973	23	



SECTION NEAR LEFT BARRIER CURB



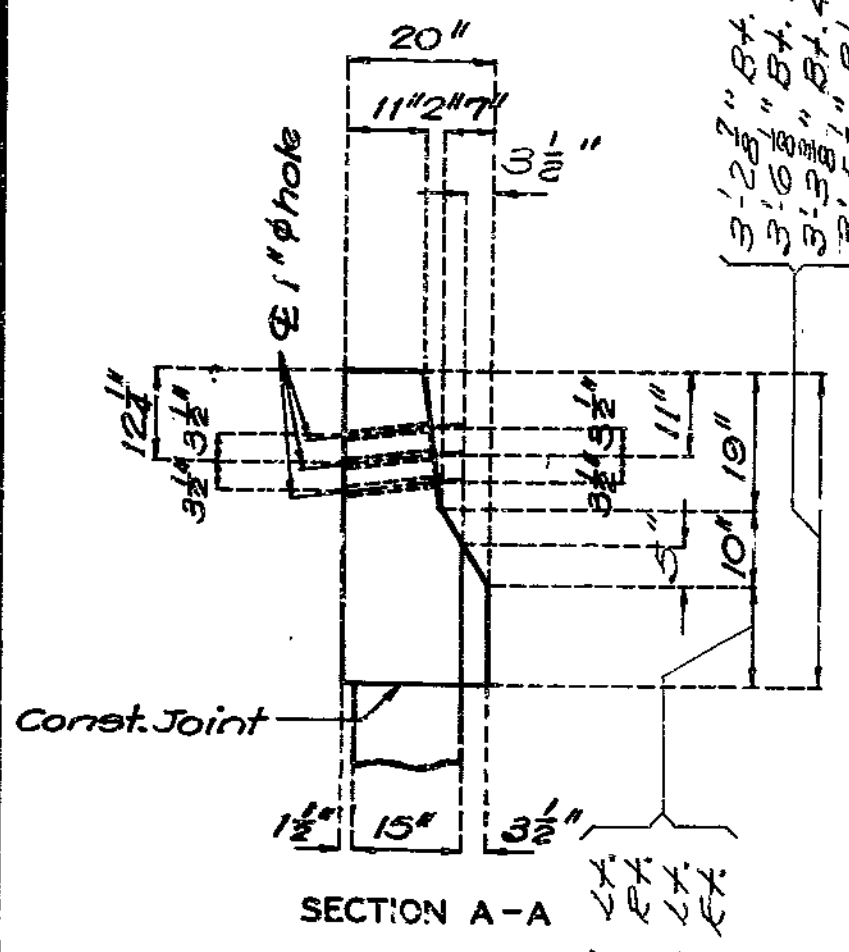
ELEVATION NEAR RIGHT BARRIER CURB



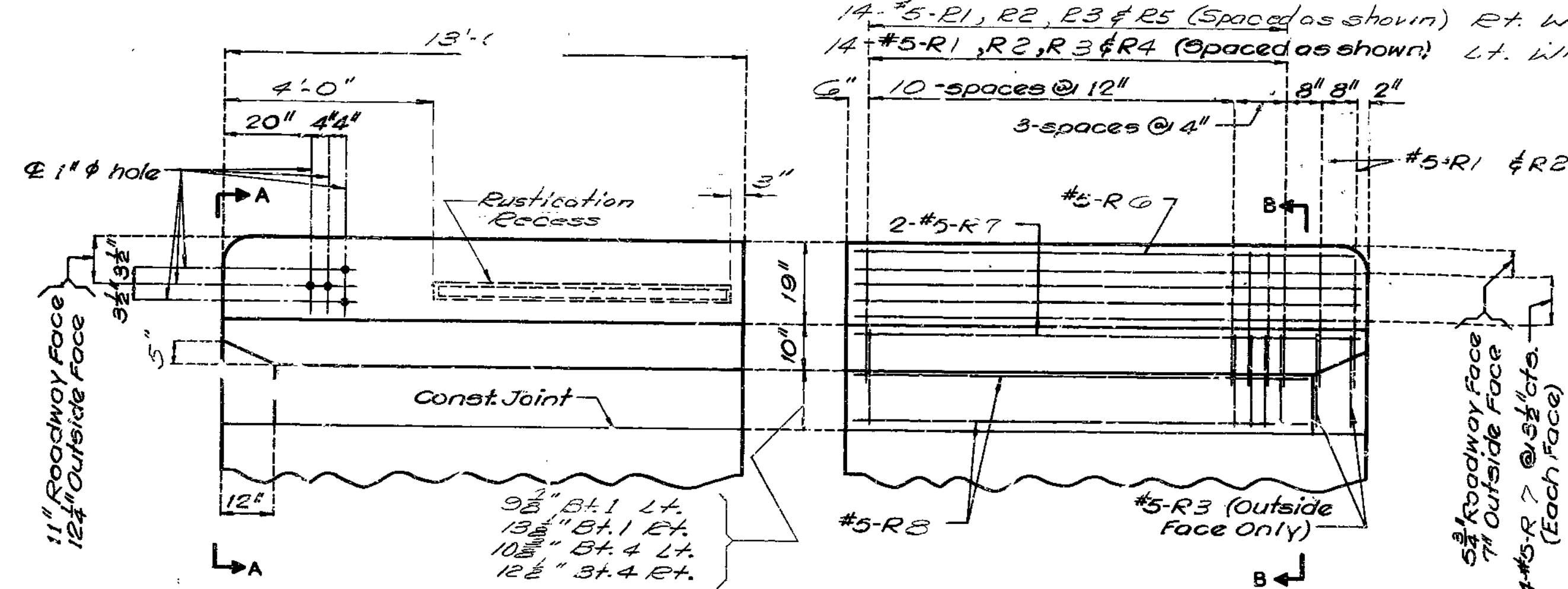
Note: Plastic waterstop shall be placed in all safety barrier curb filled joints, except at end bents. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

Note: Longitudinal dimensions are horizontal arc dimensions along centerline at top of barrier curb. Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade. All exposed edges of barrier curb shall have 1/2" radius or 3/8" bevel unless otherwise noted.

231

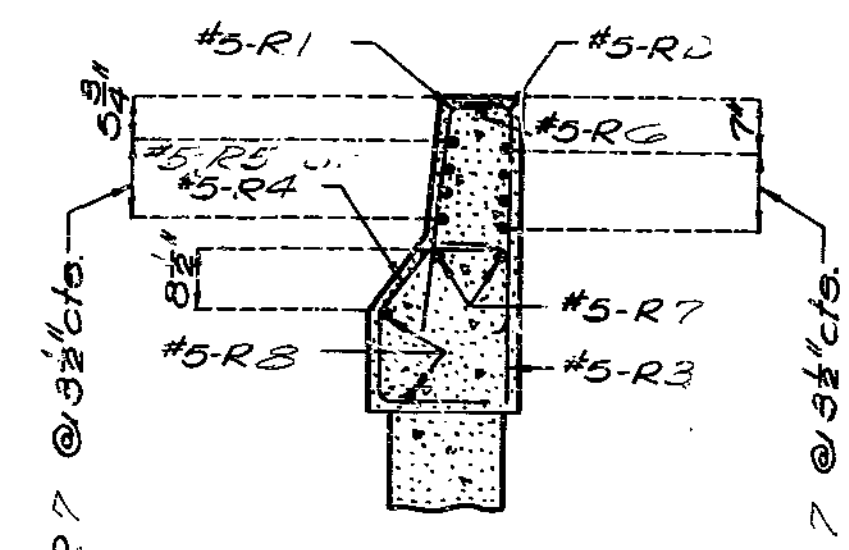


SECTION A-A

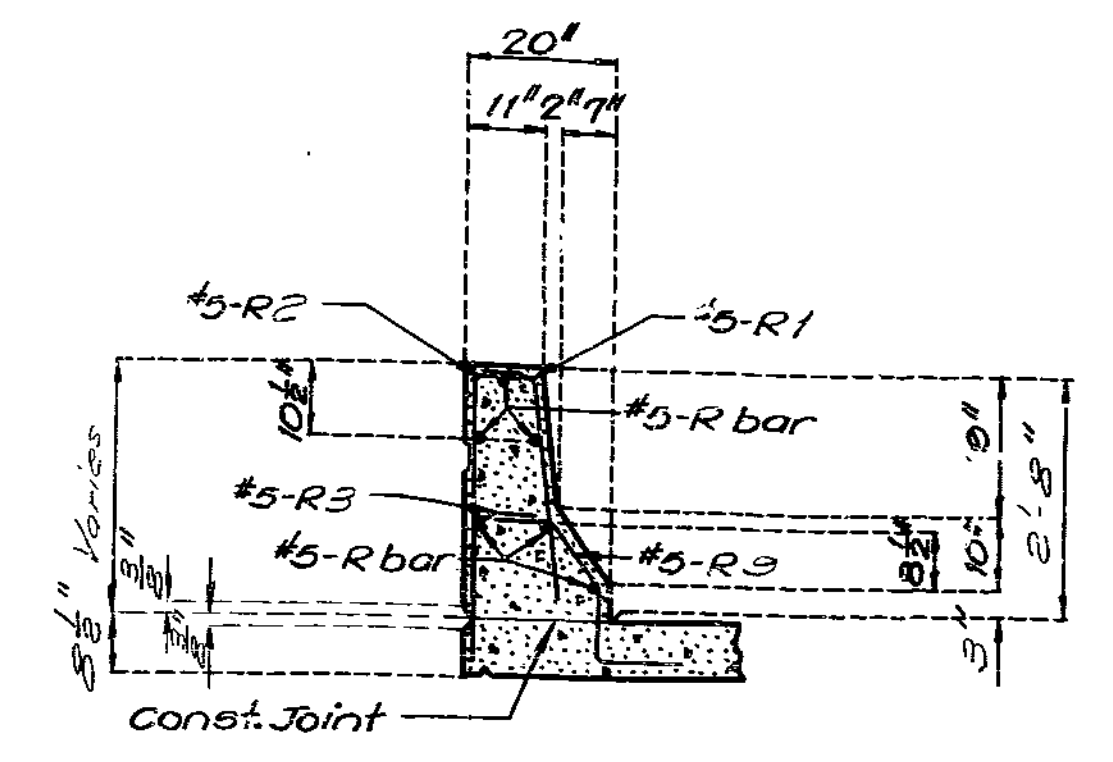


ELEVATION OF BARRIER CURB AT END BENT

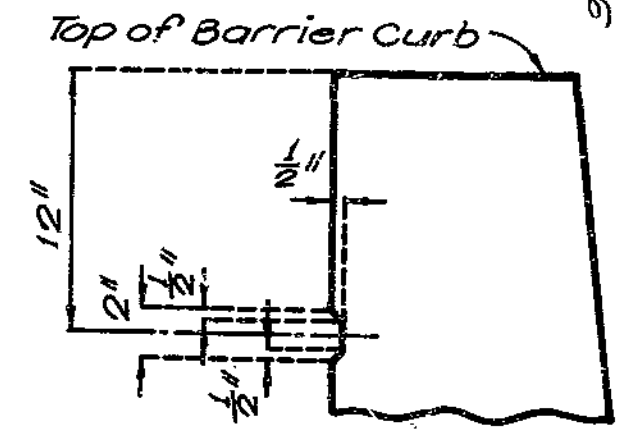
Note: Use a minimum lap of 17" for #5 horizontal barrier curb bars. Bars in top and roadway face of barrier curb shall have 3" clearance.



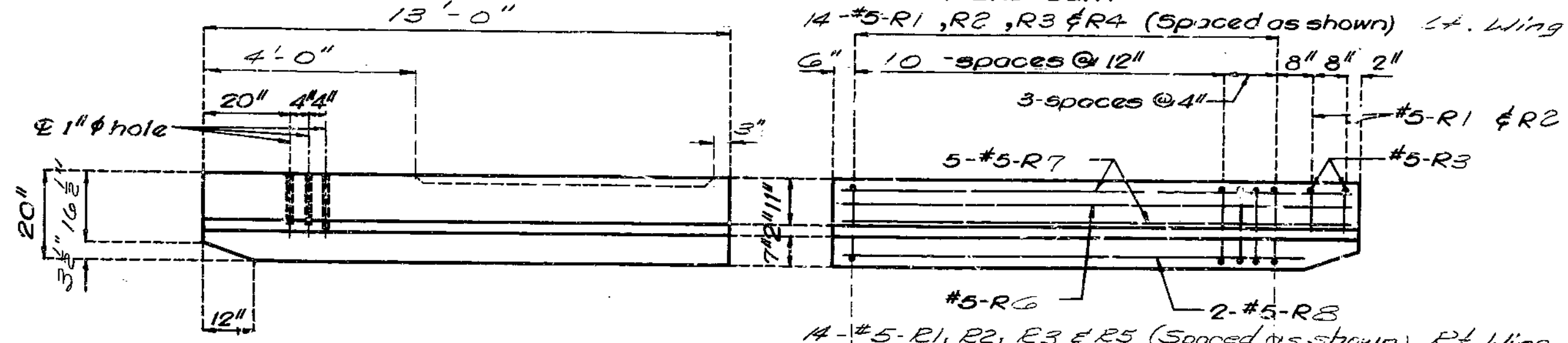
SECTION B-B



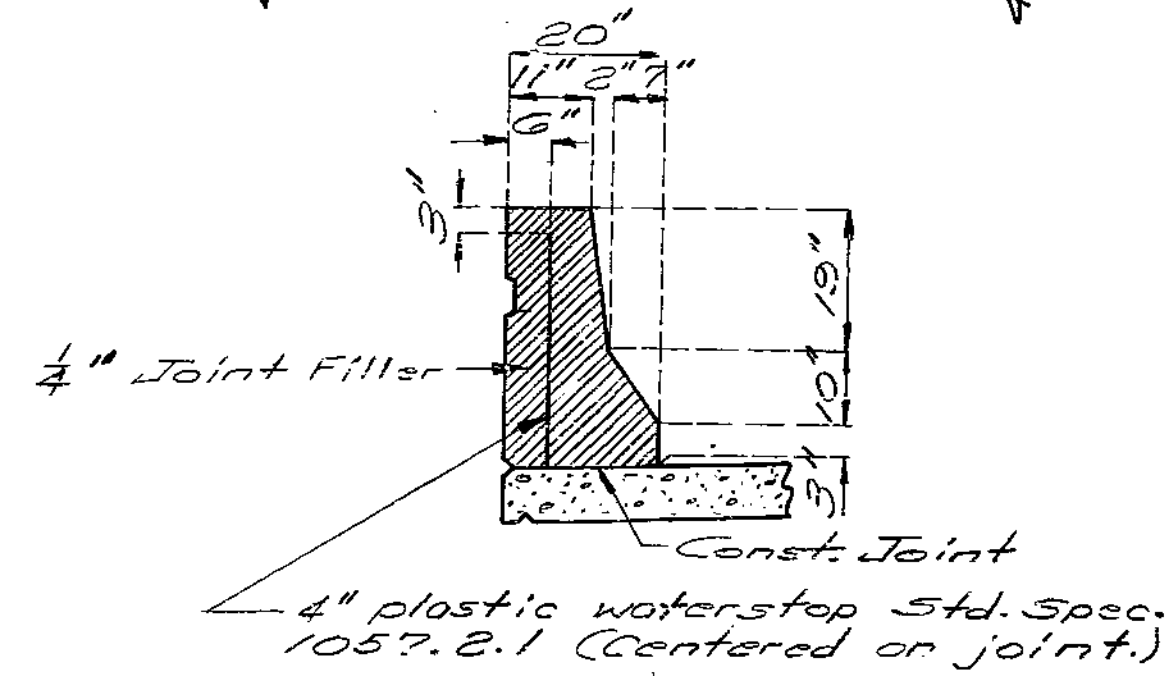
SECTION C-C



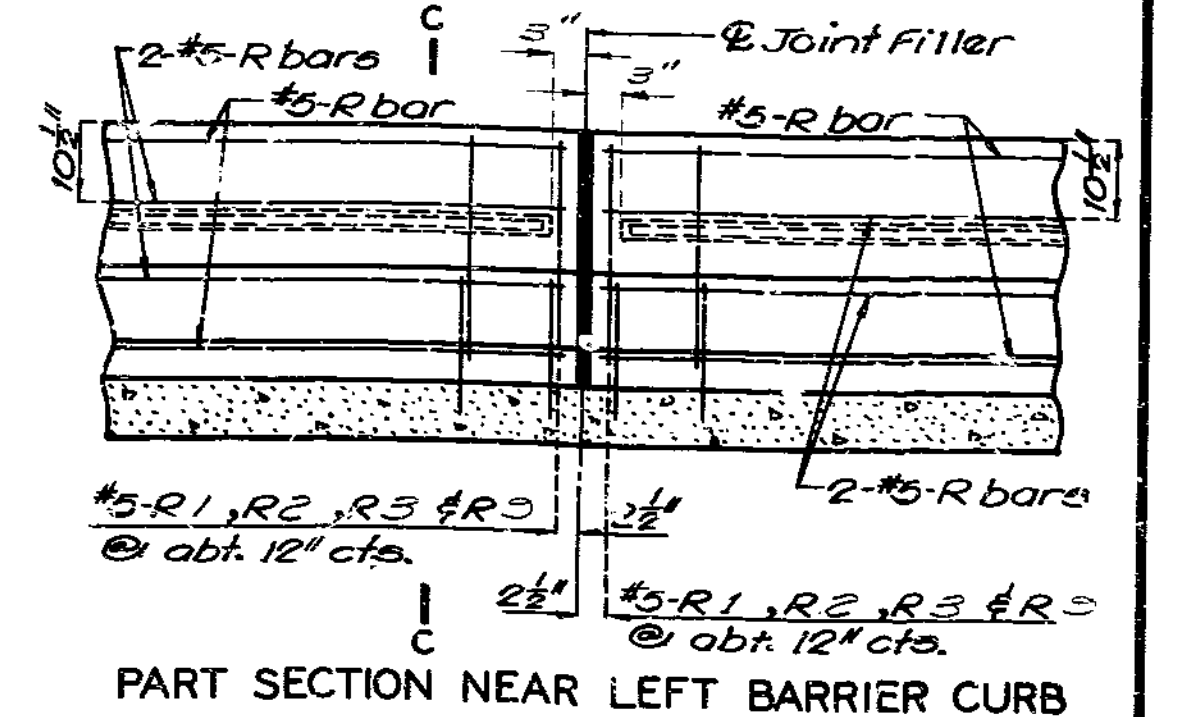
RUSTICATION DETAIL



PLAN OF BARRIER CURB AT END BENT



DETAILS OF PLASTIC WATERSTOP



PART SECTION NEAR LEFT BARRIER CURB

STD. I.7.3 REVISED NOV. 1974 MAY 1975

DETAILED Aug. 1977 CHECKED JUNE 1979

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

Sheet No. 12 of 16

CLAY COUNTY

A-3377

LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP GAP AT 60°	TABLE OF DIMENSIONS						ANCHOR STUDS SIZE "G"
			"A" AT 60°	"B"	"C"	"D"	"E"	"F"	
St. 4	On-Flex 25	1 1/2"	11"	4 1/4"	1 3/8"	1 1/2"	1 3/4"	2 1/4"	1/2" G5
	Wabic-Elastoderm 200	1 1/2"	11 1/2"	4 1/2"	1 3/8"	1"	1 1/2"	2"	1/2" G4
	Fel-Spoon 720	1 1/2"	11 3/8"	4 1/2"	1 3/8"	1"	1 1/4"	1 3/4"	1/2" G5
	Gen-Strip CCL 2"	2"	10 3/8"	3 3/8"	1 3/4"	1 1/2"	1 3/4"	2 1/4"	3/8" G5

NOTE: All dimensions are at right angles. Expansion gap and dimension "A" shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature.

GENERAL NOTES:

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE NUTS ON THE ANCHOR STUDS SHALL BE TIGHTENED TO THE FOOT POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 4 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 4 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING.

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

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

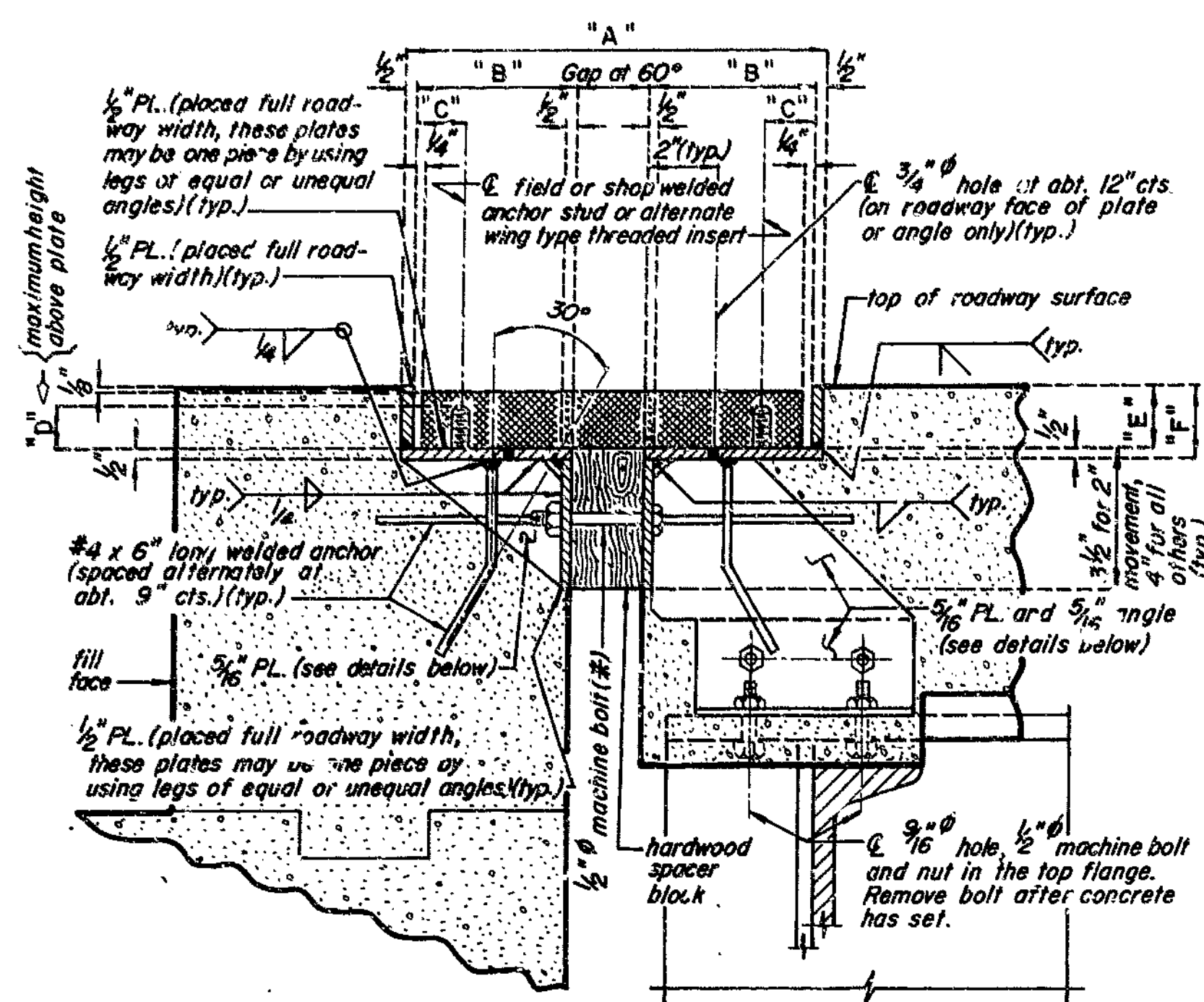
PLATES SHALL BE FIELD ADJUSTED BY ADDING OR REMOVING METAL SHIMS (2" x 3"), AS REQUIRED FOR TEMPERATURE CORRECTION. THE EXPANSION GAP SHALL BE ADJUSTED FOR ANY TEMPERATURE CORRECTION PRIOR TO POURING TOP OF END BENT BACKWALL.

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

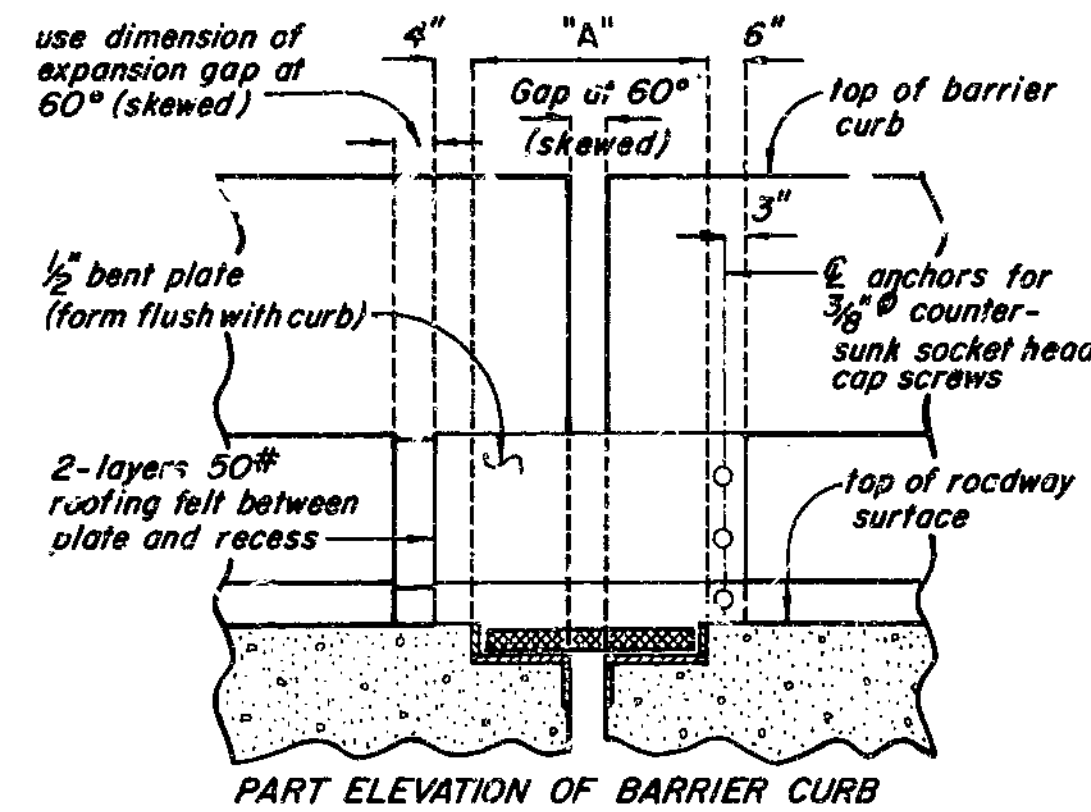
FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

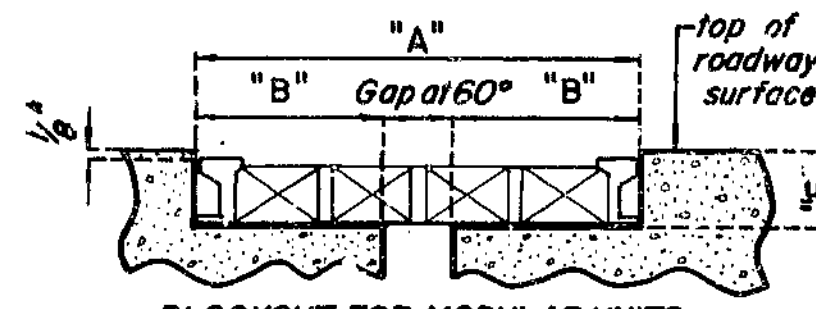
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		18	24	



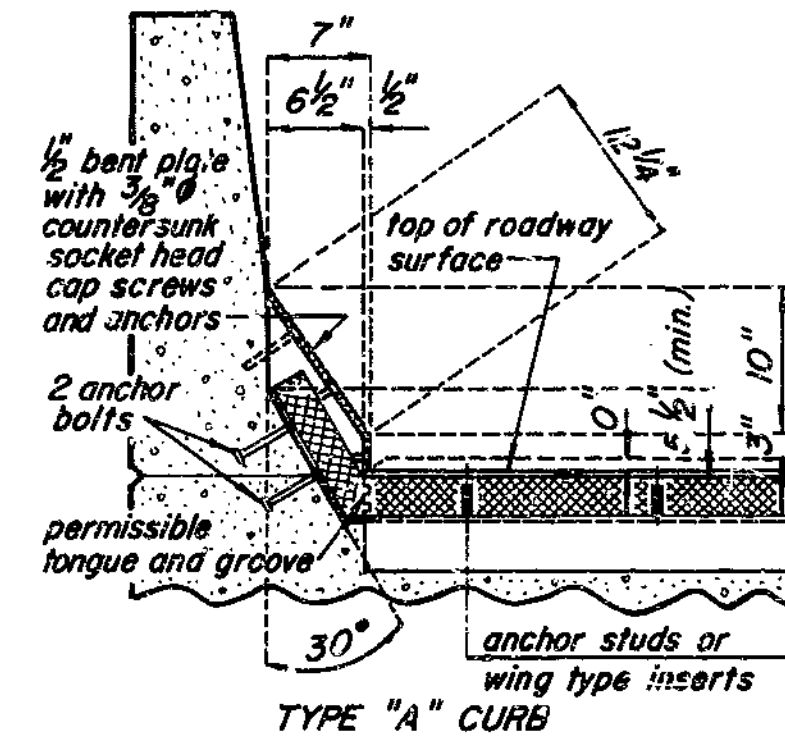
PART SECTION THRU ARMORED JOINT



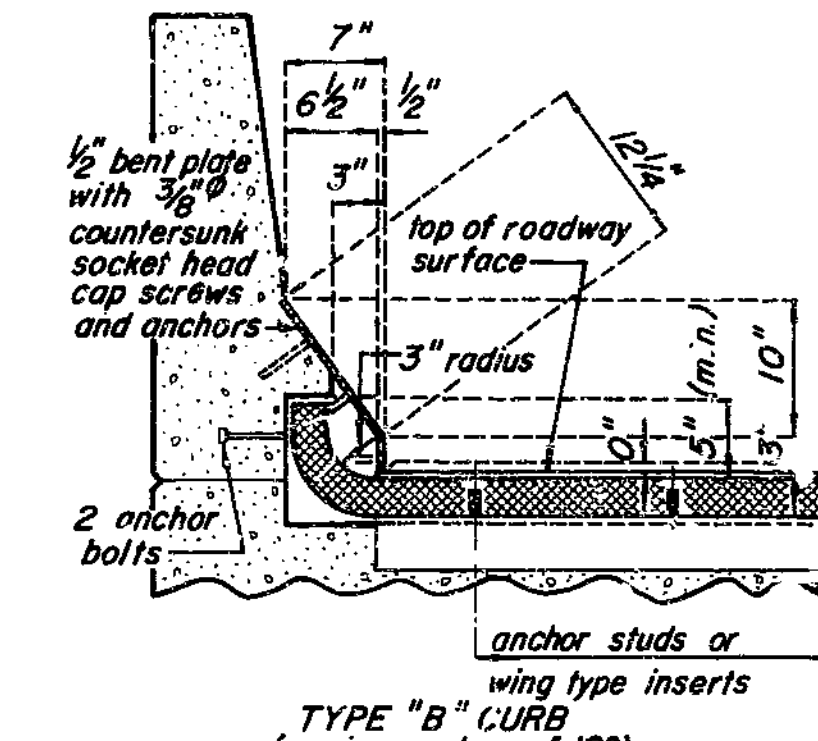
PART ELEVATION OF BARRIER CURB



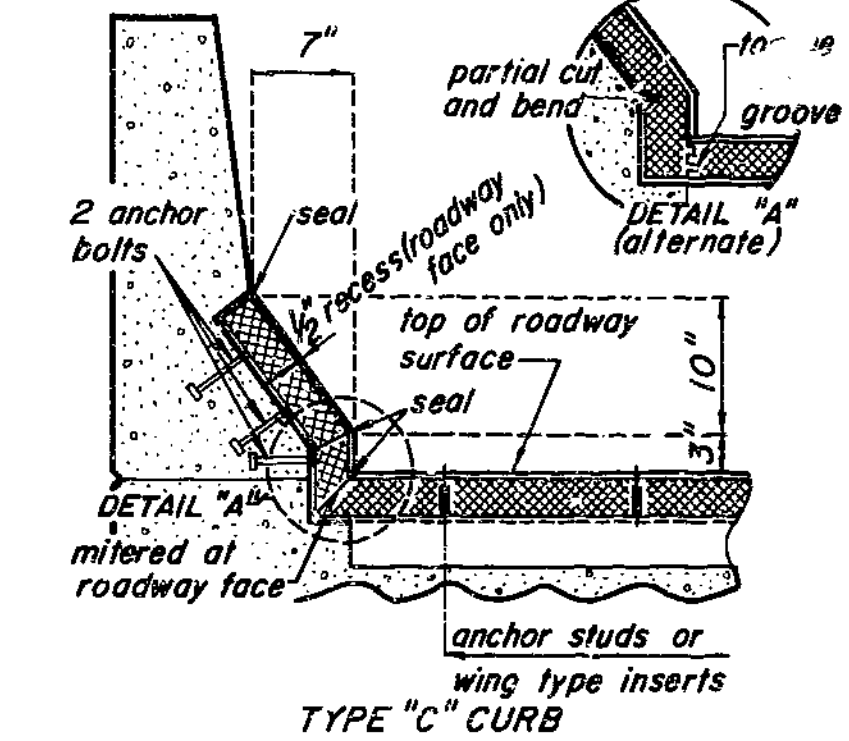
BLOC-OUT FOR MODULAR UNITS (When modular units are specified as an alternate, steel curb plate treatments are required)



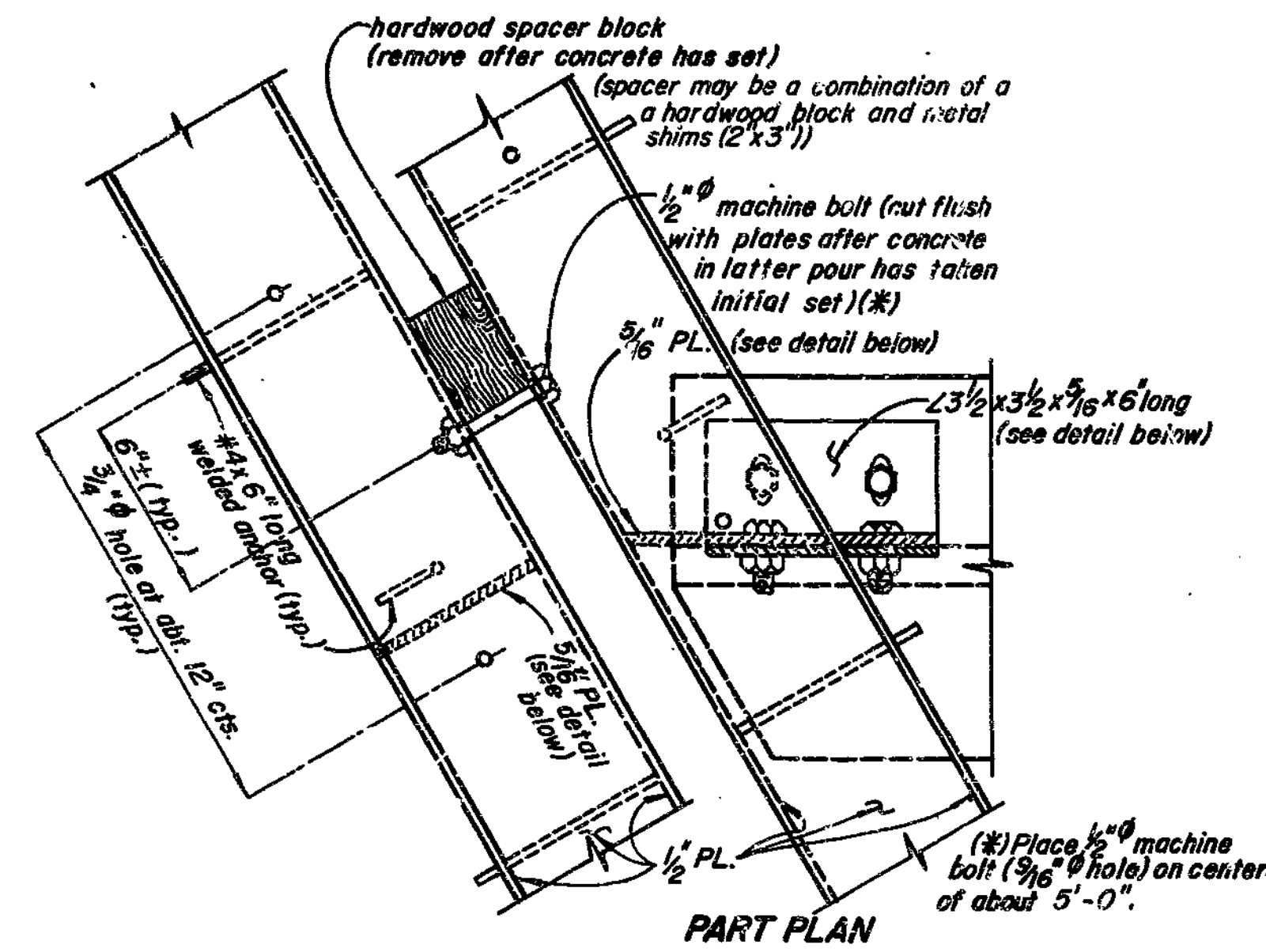
TYPE "A" CURB



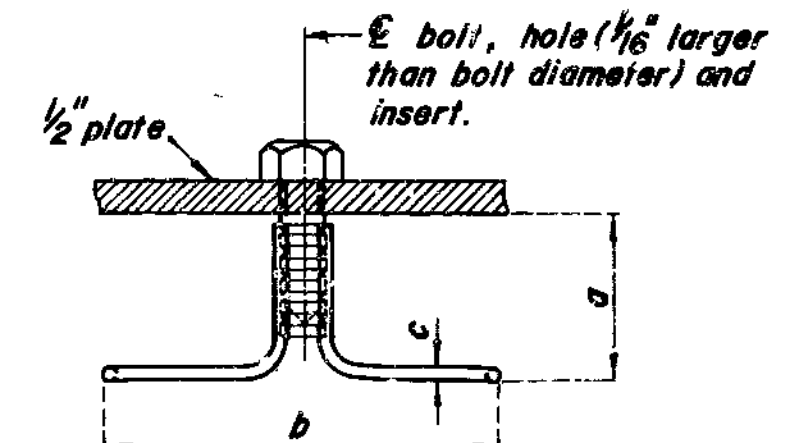
TYPE "B" CURB (maximum skew of 10°)  
ALTERNATE CURB TREATMENTS



TYPE "C" CURB



PART PLAN

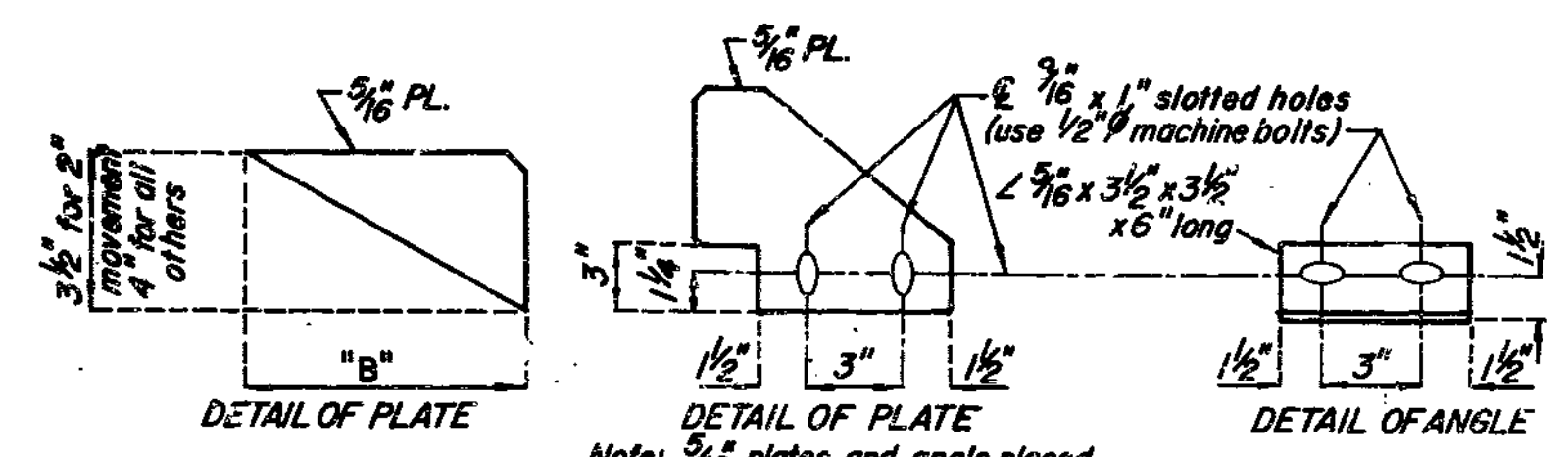


Bolt Diameter	Safe Load Tension (lbs.) (min.)	Approx. Ult. Cap. Tension (lbs.) (min.)	Dimensions		
			a	b	c
1/2"	806	8,000	1-5/8"	5"	.218"
5/8"	1,300	9,200	1-5/8"	5"	.218"
3/4"	1,800	13,200	2-1/4"	6"	.262"
7/8"	2,000	16,200	2-1/2"	6-1/2"	.306"
1"	2,000	16,200	2-1/2"	6-1/2"	.306"

DETAILS OF ALTERNATE WING TYPE THREADED INSERT

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

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 4



DETAIL OF PLATE

DETAIL OF PLATE

DETAIL OF ANGLE

Note: 3/16" plates and angle placed at each girder or stringer.

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

SPS - END BT. REVISED FEB. 1978 AUG. 1980

DETAILED MARCH 79 CHECKED JUNE 1979

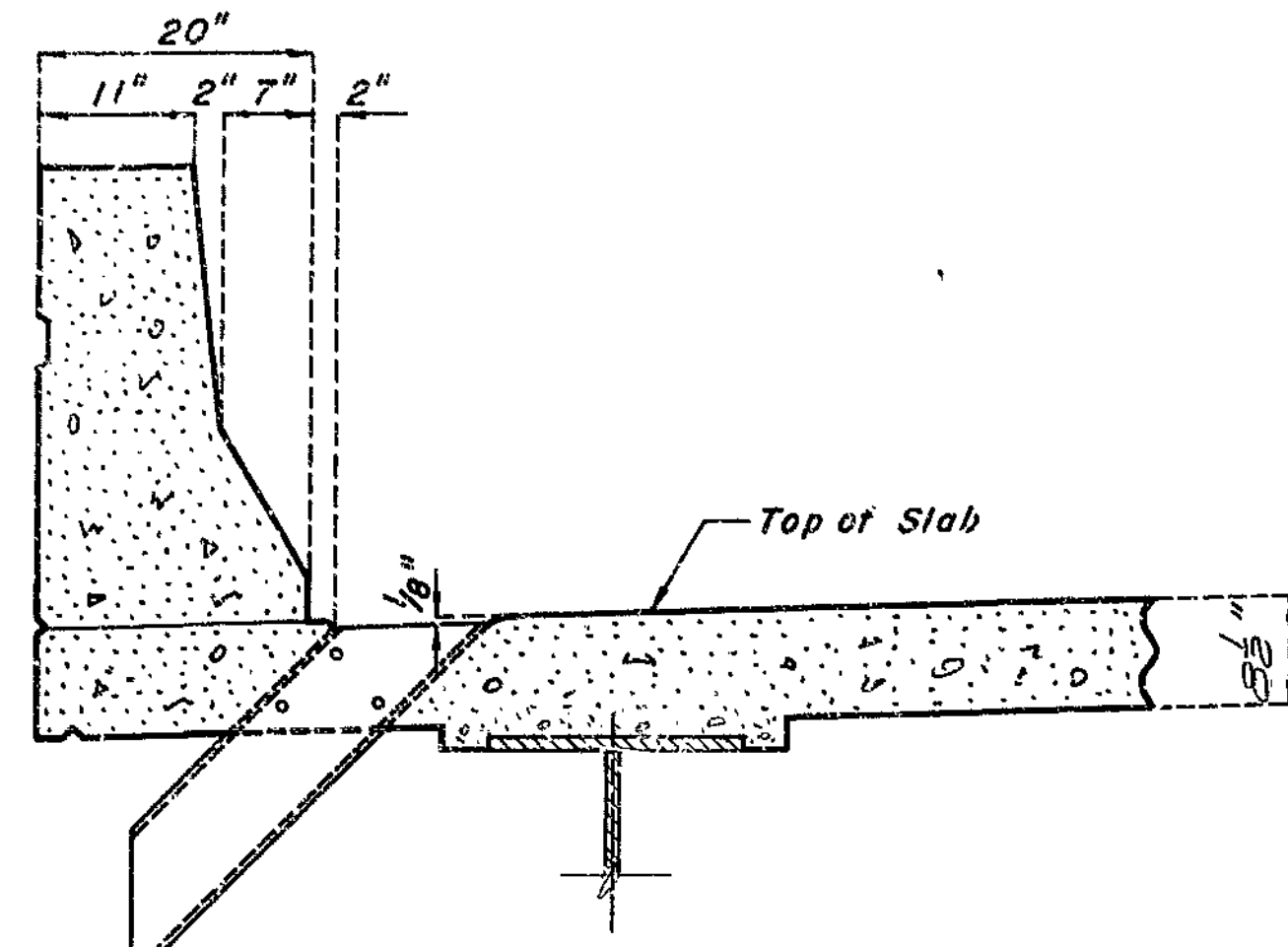
Sheet No. 13 of 16

CLAY COUNTY

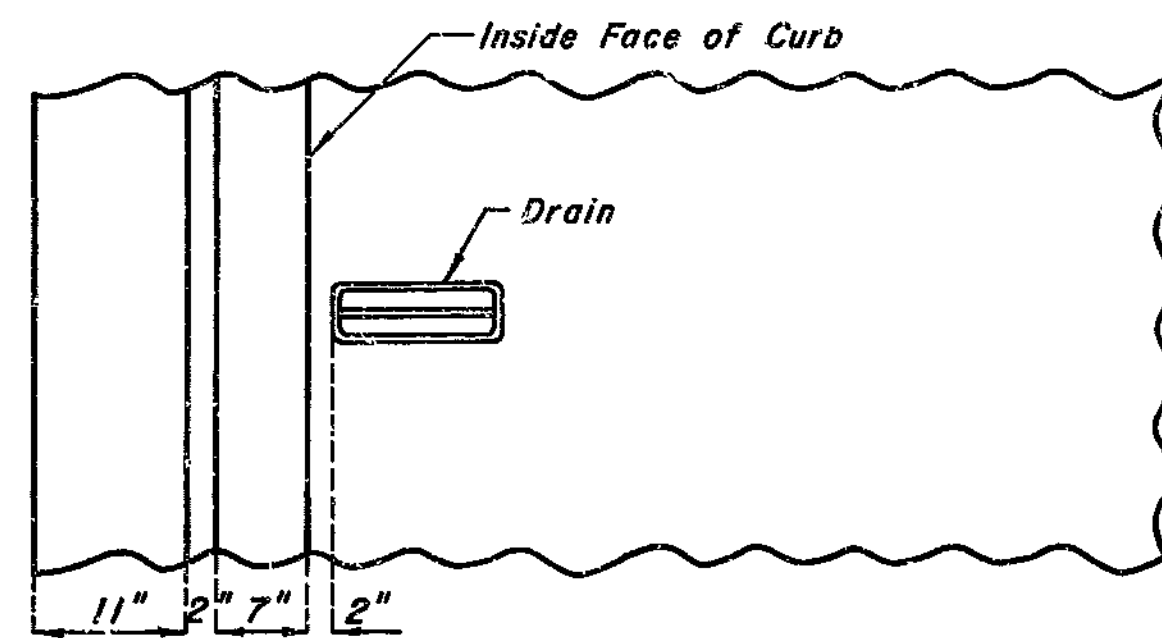
A-3377

232

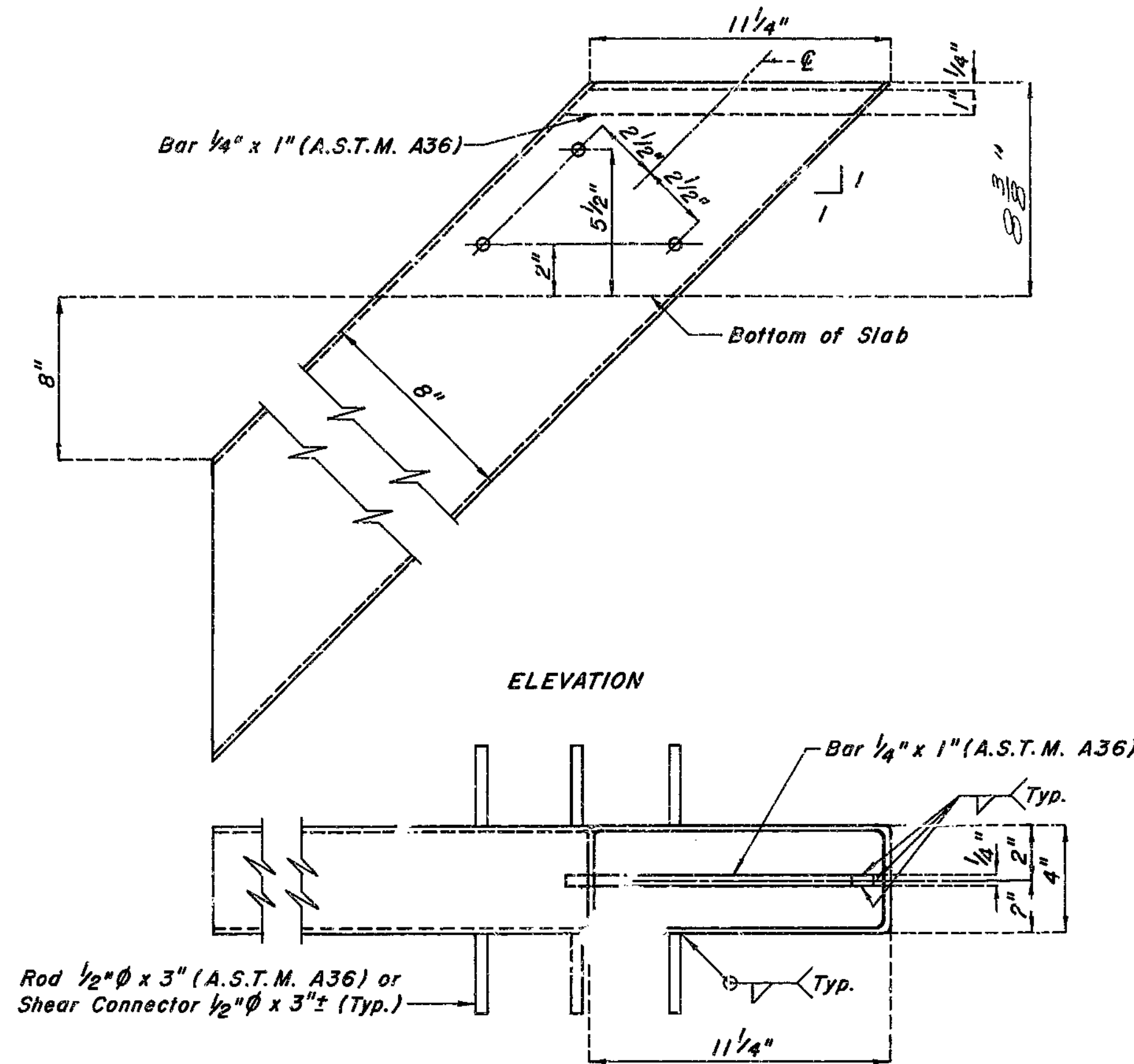
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		19	25	



PART ELEVATION OF SLAB



PART PLAN OF SLAB



SLAB DRAIN DETAILS

*Note: For location of slab drains see sheet 11. Slab drains to be placed on right side of bridge only.*

**GENERAL NOTES:**

- SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.
- OUTSIDE DIMENSIONS OF DRAINS ARE 8"x4".
- THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.
- LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.
- SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS. THE DRAINS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123. SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS.

233

STD. S. D. - M.W.S.	REVISED
FEB. 1975	MAR. 1978

DETAILED March 1978  
CHECKED JUNE 1979

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

Sheet No. 14 of 16.

CLAY COUNTY

A-3377

COMPLETE BILL OF REINFORCING STEEL

COMPLETE BILL OF REINFORCING STEEL

Table with columns: NO. REQD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes items 36-59, 102, 164, 264, 39, 410, 44, 454, 48, 6, 8, 16, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200.

Table with columns: NO. REQD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes items 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, 148, 152, 156, 160, 164, 168, 172, 176, 180, 184, 188, 192, 196, 200.

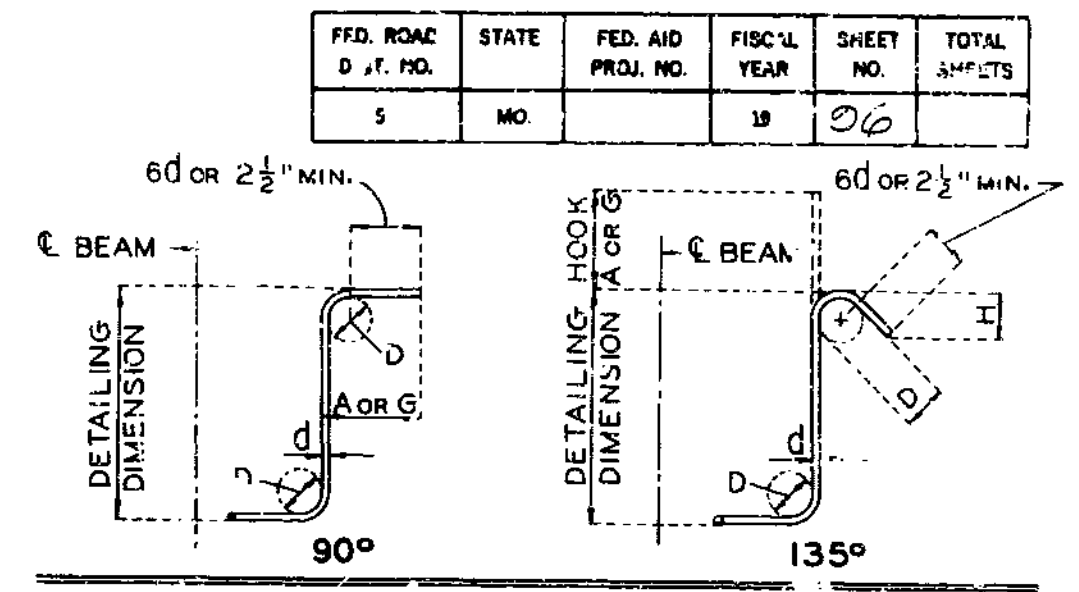
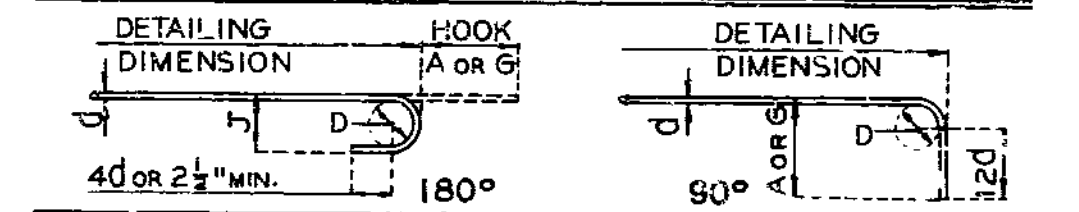


Table: STIRRUP HOOK DIMENSIONS. GRADES 40-50-60 KSI. Columns: BAR SIZE, D (IN.), 90° HOOK, 135° HOOK, APPROX. H. Rows: #3, #4, #5, #6.

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



SIZE OF 180° HOOKS (GRADE 40 KSI) SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI). D=5d FOR #3 THRU #11, D=10d FOR #14 AND #18.

Table: END HOOK DIMENSIONS. Columns: BAR SIZE, GRADE 40, GRADE 60, 90° HOOKS. Rows: #3, #4, #5, #6, #7, #8, #9, #10, #11, #14, #18.

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 135 DEG. TO BE BENT 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.

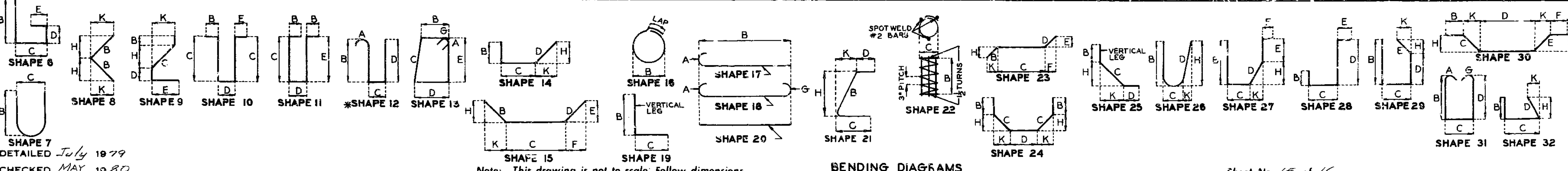
NO. EA. - NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D=5d.

TWO ADDITIONAL 25% BARS ARE INCLUDED IN BAR BILL FOR TESTING. SEE SPECIAL PROVISIONS.

234

STD. 90.8 REVISED NOV. 1974 MAY 1979

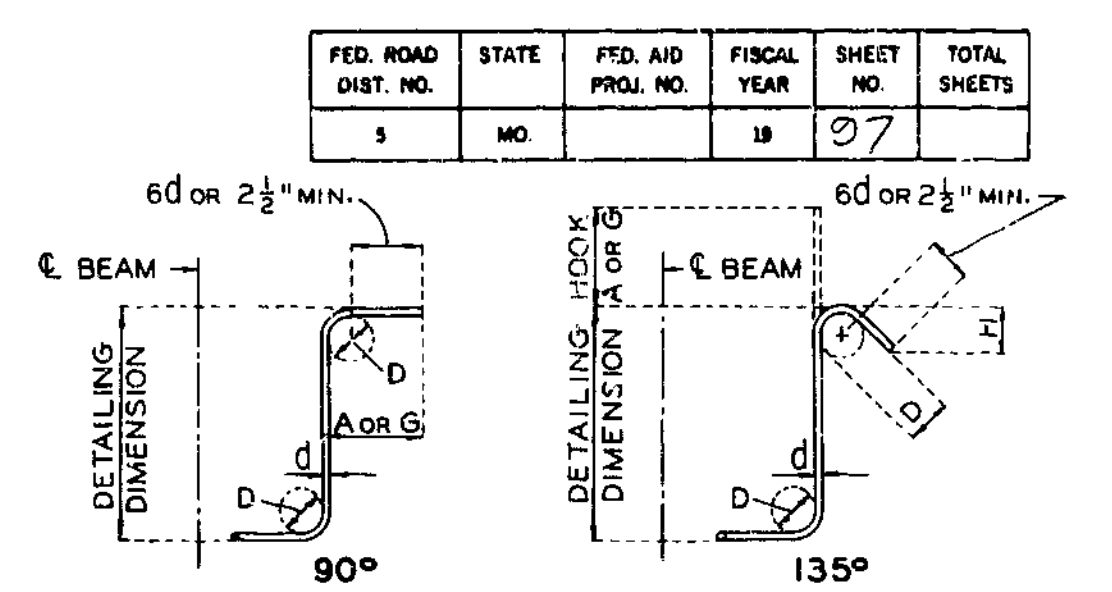


Note: This drawing is not to scale. Follow dimensions.

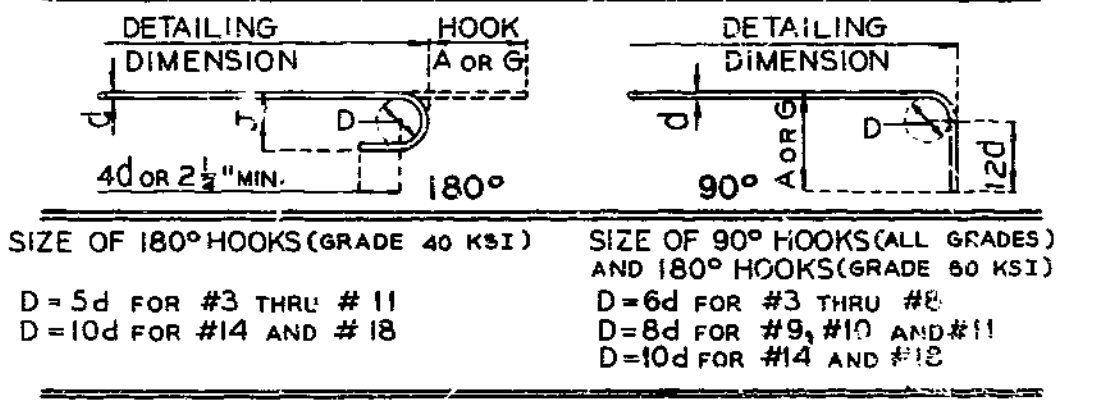
BENDING DIAGRAMS

COMPLETE BILL OF REINFORCING STEEL table with columns for NO. REQD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT.

COMPLETE BILL OF REINFORCING STEEL table with columns for NO. REQD., MARK NO., LOCATION, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT.



STIRRUP HOOK DIMENSIONS table for GRADES 40-50-60 KSI, listing BAR SIZE, D (IN.), 90° HOOK, and 135° HOOK.



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

END HOOK DIMENSIONS table for 180° HOOKS and 90° HOOKS, listing BAR SIZE, GRADE 40, GRADE 60, and ALL GRADES.

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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.

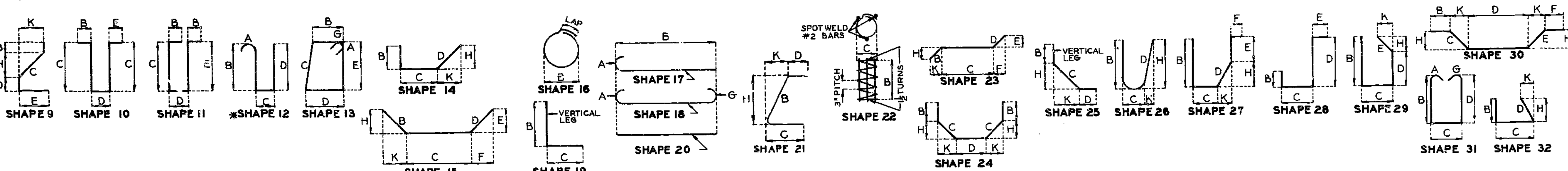
NO. EA. - NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D=5d.

TWO ADDITIONAL 2559 ARE INCLUDED IN BAR BILL FOR TESTING. SEE SPECIAL PROVISIONS.

235

REVISED NOV. 1979, MAY 1974, STD. 90.8, CHECKED MAY 1980



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

BENDING DIAGRAMS

Sheet No. 16 of 10.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		1982	82	
SEC./SUR. 27		TWP. 51N RGE. 32W			

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O - 1977  
 Load Factor Design Substructure  
 Design Loading:  
 H&D-44 15<sup>sq</sup>/ft. Future Wearing Surface  
 Earth 120 # Equivalent Fluid Pressure 30 #  
 Modified 24,000 # Tandem Axle  
 Fatigue Stress - Class I

Design Unit Stresses:

Class B Concrete (substructure)  $f'_c = 3,000$  psi  
 Class B2 Concrete (superstructure)  $f'_c = 4,000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
 Structural Carbon Steel  $f_s = 20,000$  psi  
 Steel Pile  $f_b = 9,000$  psi

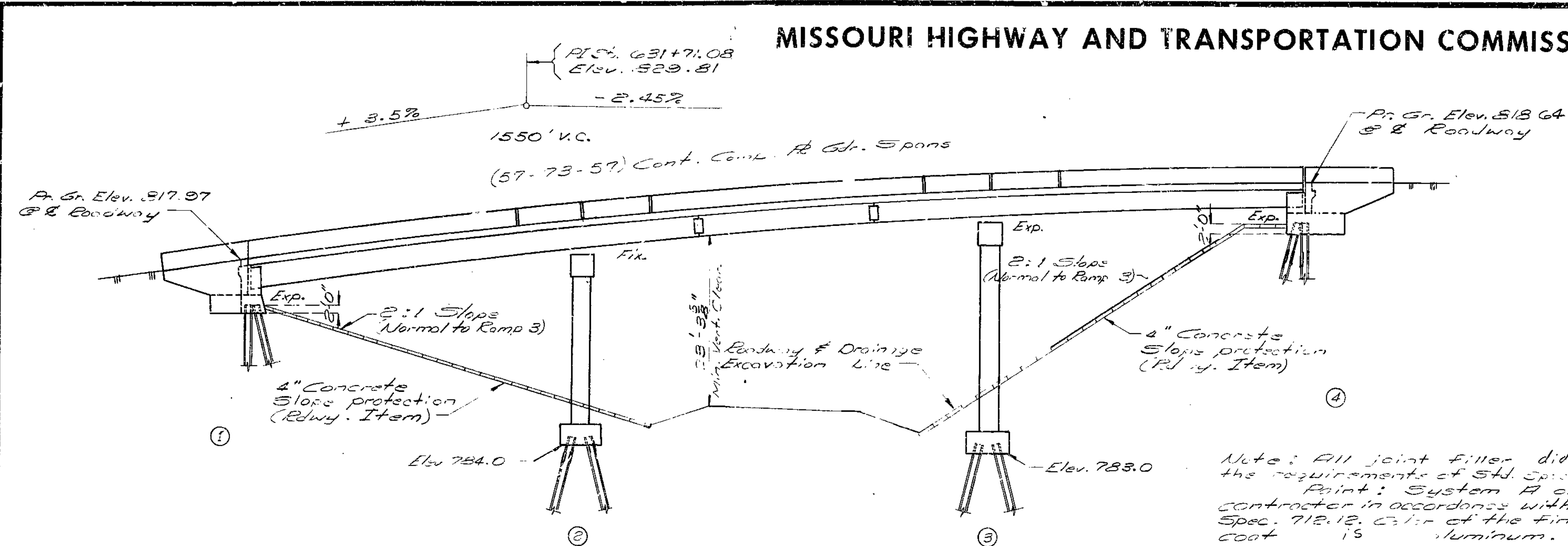
Fabricated Steel:

Field connections, High Strength Bolts  $\frac{3}{4}$ "  $\phi$ , holes  $\frac{13}{16}$ "  $\phi$  except as noted.

Reinforcing Steel:

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

All reinforcing bars in top of substructure beams or caps was spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}$ "



GENERAL ELEVATION

Note: Composite roadway fill was completed to the roadway section due to the elevation of the bottom of the concrete beam within the limits of the structure was not less than 25' in back of the fill face of the end bents before filling. Were using for any bents falling within the embankment section.

Note: All joint filler did not meet the requirements of Std. Spec. 100.3.4 Part: System A or B by contractor in accordance with Std. Spec. 712.13. Color of the final field coat is aluminum.  
 Note: The cannot be accurately located on the tangent by conventional survey methods. A minimum vertical clearance of 15'0" from crown of existing Ramp 3 and a minimum lateral clearance of 10'0" centered on Ramp 3, was maintained during construction.

PILE DATA				
BENT NO.	1	2	3	4
Pile Type and Size	HP10x42	HP10x42	HP10x42	HP10x42
Number	8	13	13	9
Approximate Length	81	58	52	75
Design Bearing	Tons	51	29	23
Hammer Energy required	Ft. lbs	12,200	12,000	11,800

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

ESTIMATED QUANTITIES			
ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation	Cu. Yd.	349.5	349.5
Slab Drains	Each	10	10
Structural Steel Pile (10")	Lin. Ft.	2818	2818
Class B Concrete	Cu. Yd.	212.4	212.4
Class B2 Concrete	Cu. Yd.	321.3	321.3
Elastomeric Expansion Joint Seal (20")	Lin. Ft.	.62	.62
Reinforcing Steel (Grade 60)	Lb.	30540	30740
Reinforcing Steel (Epoxy coated)	Lb.	1020	47870
Fabricated Structural Carbon Steel	Lb.	199860	199860
Painting (System A or B (Aluminum))	Ton	99.2	99.2

Note: All concrete and reinforcement in safety barrier curbs are included with superstructure quantities.

B.I. Elev. 821.02 □ in S.W. Cor. Barrier Curb Br A-3377

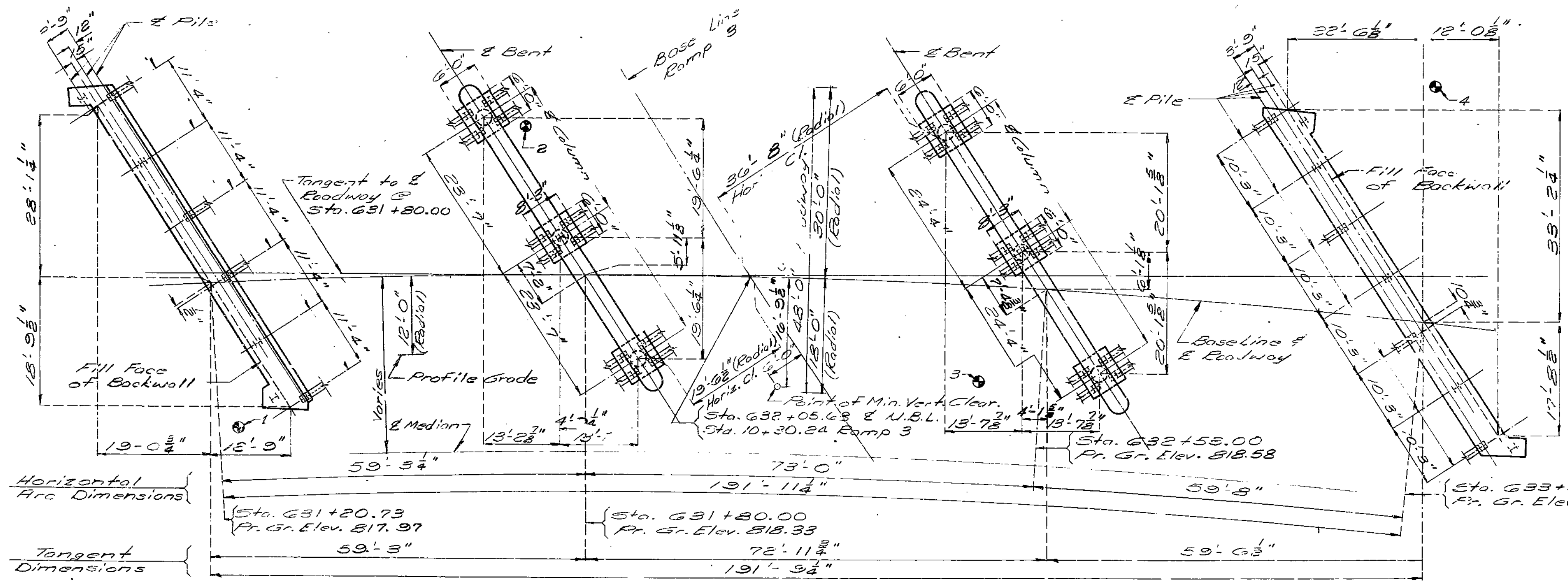
BRIDGE: N.B.L. I-435 OVER RAMP 3

STATE ROAD FROM RTE. 152 TO RTE. I-35 AT I-35 AND I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 631+20.73

JOB NO. 4-I-435-49H RTE. I-435

CLAY COUNTY



PLAN

Curve Data N.B.L.  
 P.I. Sta. 626+59.28  
 $\Delta = 64^\circ - 45' - 23''$  Et.  
 $D = 3^\circ - 30'$   
 $T = 1038.01$   
 $L = 1850.18$   
 $R = 1637.02$

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

Notes for Bearing Data see sheet No. 2. Ⓞ Indicates Bearing Location.

Sheet No. 1A of 10.

DESIGNED Mar. 1977  
 DETAILED Oct. 1977  
 CHECKED June 1979

DATE March 1, 1981

STD. 706.35
STD. 611.60
A-3377

236



MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P. & Rehabilitate Existing (49'-72'-49')  
Continuous Composite Plate Girder Spans

SEC/SUR 27 TWP 51N RGE 32W

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/4/2012

ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 1

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33781

DESCRIPTION

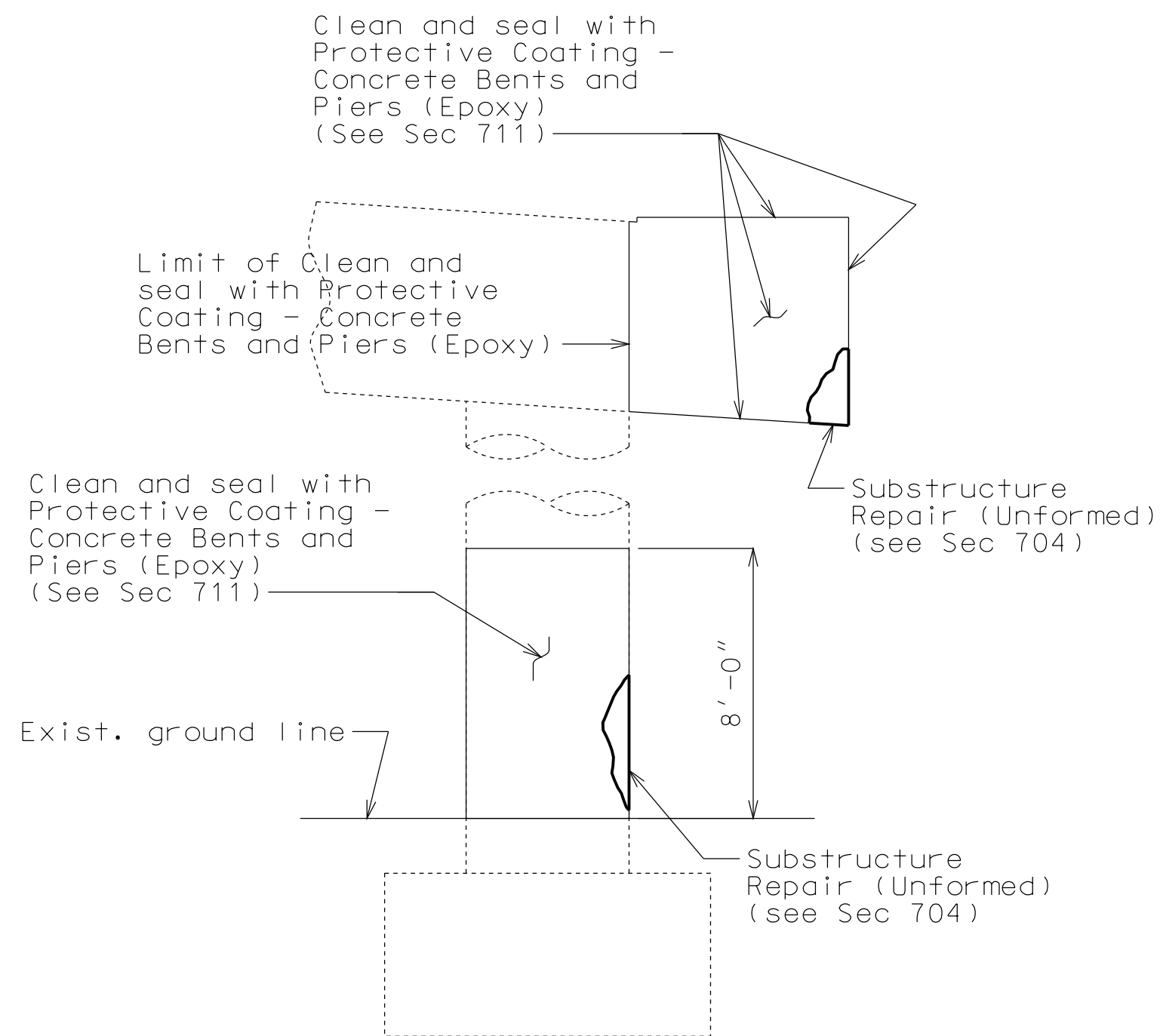
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

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



PART ELEVATION OF INT. BENT NO 2  
SHOWING PROTECTIVE COATING  
(WEST END ONLY) AND  
SUBSTRUCTURE REPAIR (UNFORMED)

General Notes:

Design Specifications:

2002 - AASHTO 17th Edition  
Load Factor Design  
Seismic Performance Category A

Design Loading:

HS20-44 & Military 24,000# Tandem Axle (1977 & New Construction)  
15#/Sq. Ft. Future Wearing Surface  
Fatigue Stress - Case II

Design Unit Stresses:

Class B-1 Concrete (Superstructure and Safety Barrier Curb)  $f'c = 4,000$  psi  
Reinforcing Steel (Grade 60)  $fy = 60,000$  psi

Reinforcing Steel:

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

Structural Steel Protective Coatings

(Existing structural steel near End Bents):

Protective Coating: System G in accordance with Sec 1081.

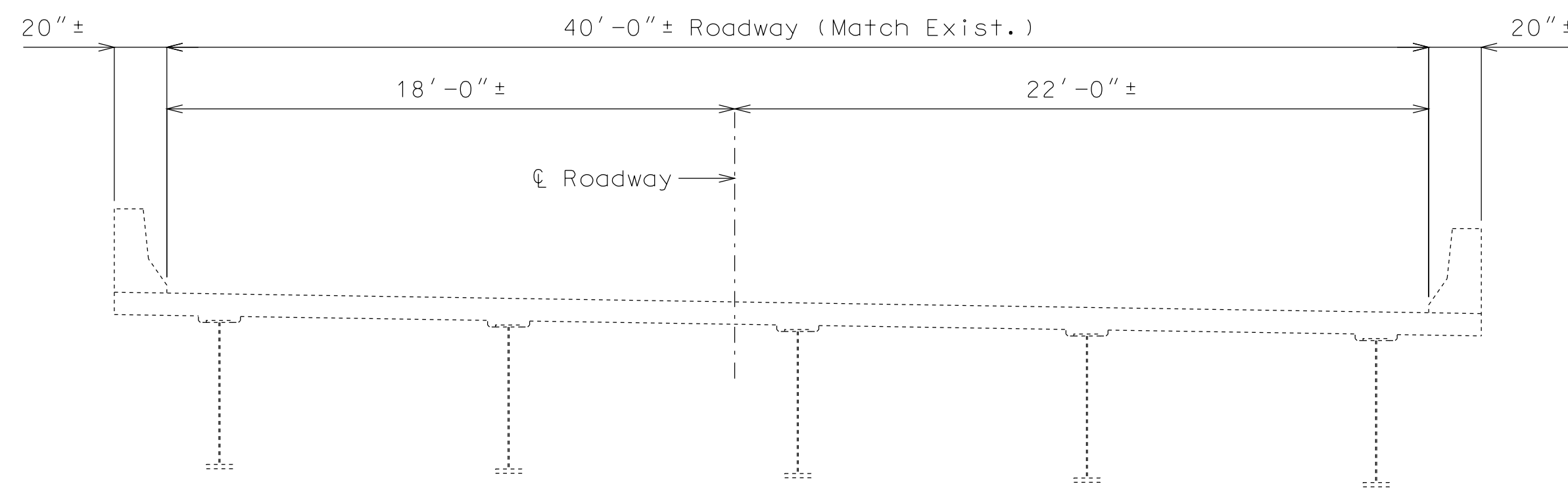
Coating Limits: Existing bearings at End Bent No. 1 and all structural steel within 10 feet from end of girders at End Bent No. 4.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G, H or I)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Recoating Structural Steel".

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Field Application of Inorganic Zinc Primer". Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for "Intermediate Field Coat (System G)". The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for "Finish Field Coat (System G)".

Sec 1081.4.5 shall be modified such that the word "RECOATED" is replaced by the word "RECOATED - SYSTEM G - EXPANSION AREAS ONLY".



SECTION THRU EXISTING SLAB

General Notes (Cont.):

Concrete Protective Coatings:

Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

Miscellaneous:

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

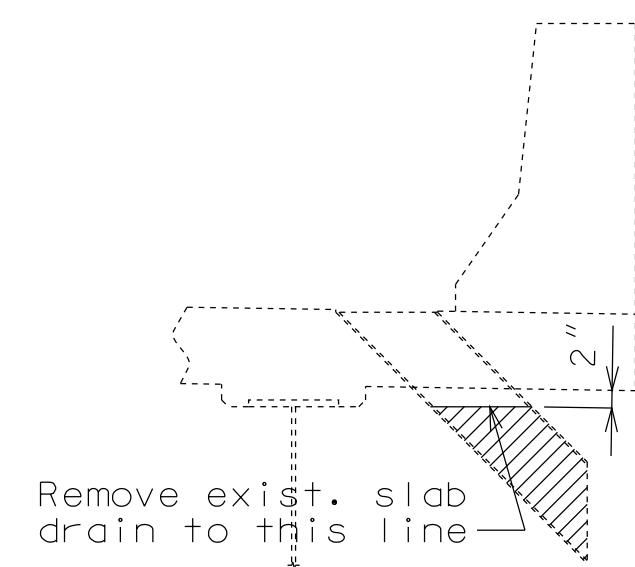
Contractor shall verify all dimensions in field before ordering new material.

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

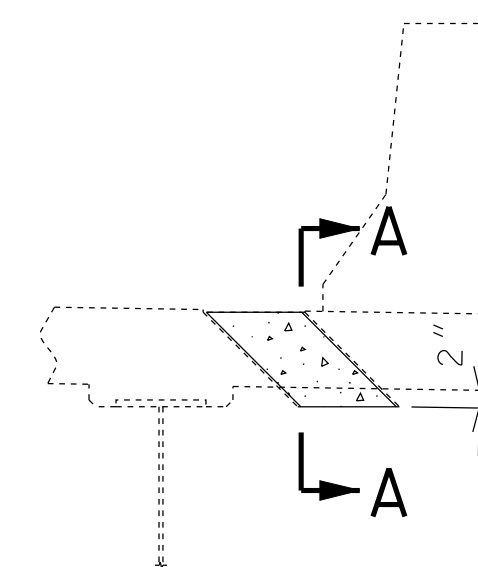
Traffic Handling:

Traffic over structure to be maintained during construction. See Sheet No. 2 for Stage Details.

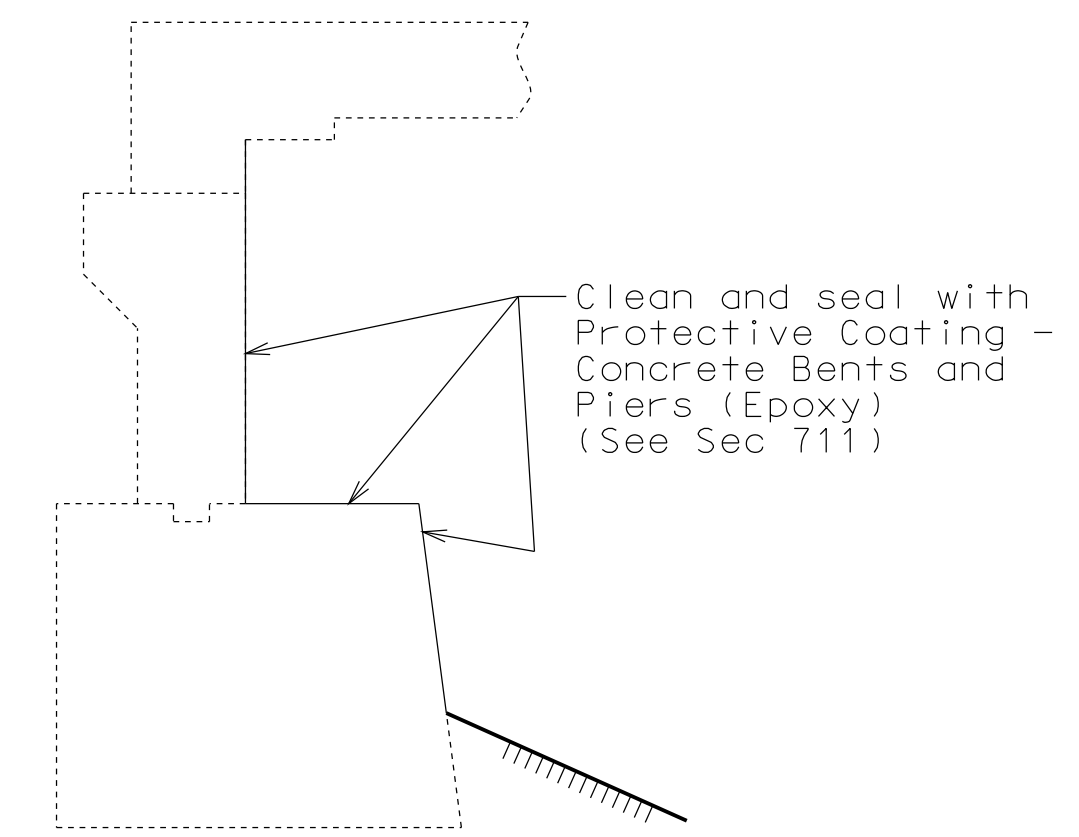
Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	52
Removal of Existing Bearing	each	5
Partial Removal and Plugging Slab Drain	each	1
Remove and Replace Barrier Curb	linear foot	8
Class B-1 Concrete	cu. yard	4.9
Substructure Repair (Unformed)	sq. foot	20
Reinforcing Steel (Epoxy Coated)	pound	300
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Cleaning and Coating Existing Bearings	each	5
Surface Preparation for Recoating Structural Steel	sq. foot	500
Field Application of Inorganic Zinc Primer	sq. foot	500
Intermediate Field Coat (System G)	sq. foot	500
Finish Field Coat (System G)	sq. foot	500
Laminated Neoprene Bearing Pad Assembly	each	5
Strip Seal Expansion Joint System	linear foot	52



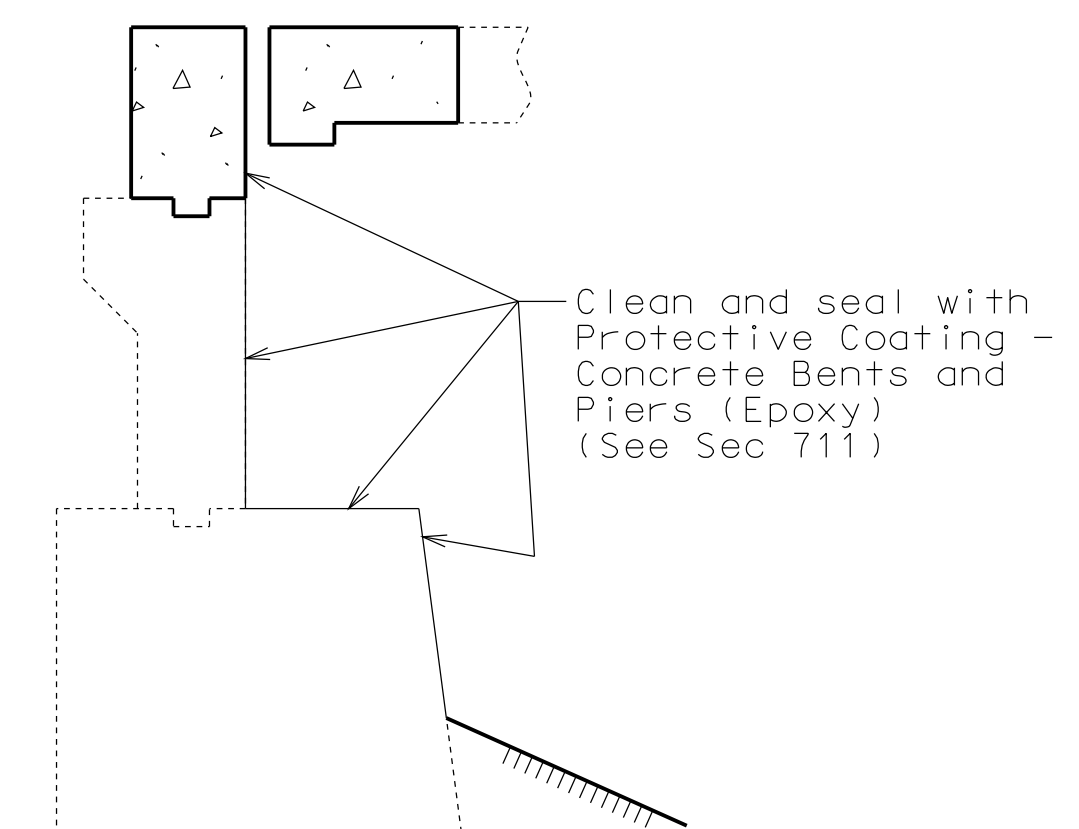
PART SECTION NEAR INT.  
BENT NO. 2 IN SPAN (1-2)  
SHOWING SLAB DRAIN REMOVAL



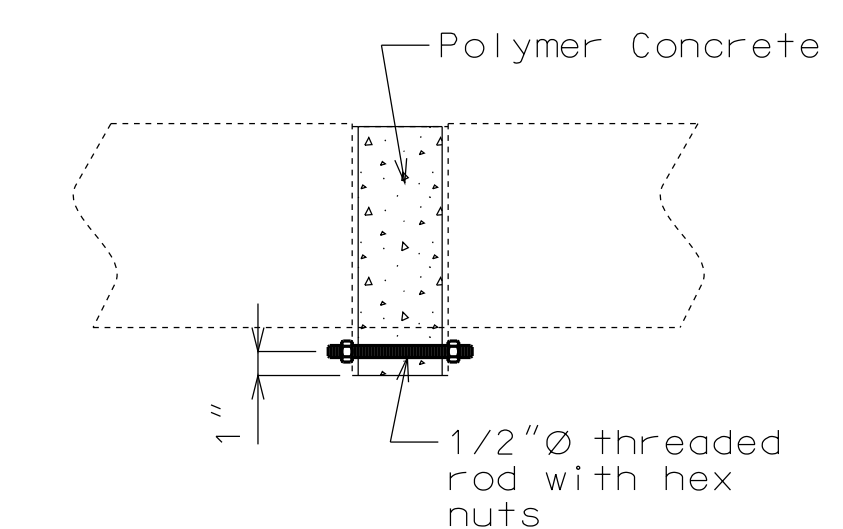
PART SECTION NEAR INT.  
BENT NO. 2 IN SPAN (1-2)  
SHOWING PLUGGED SLAB DRAIN



TYPICAL SECTION THRU  
END BENT NO. 1



TYPICAL SECTION THRU  
END BENT NO. 4



SECTION A-A

Notes:

Polymer concrete shall be in accordance with Sec 623.

Payment for furnishing and installing the 1/2"Ø galvanized threaded rod with hex nuts and polymer concrete will be considered completely covered by the contract unit price for Partial Removal and Plugging Slab Drain.

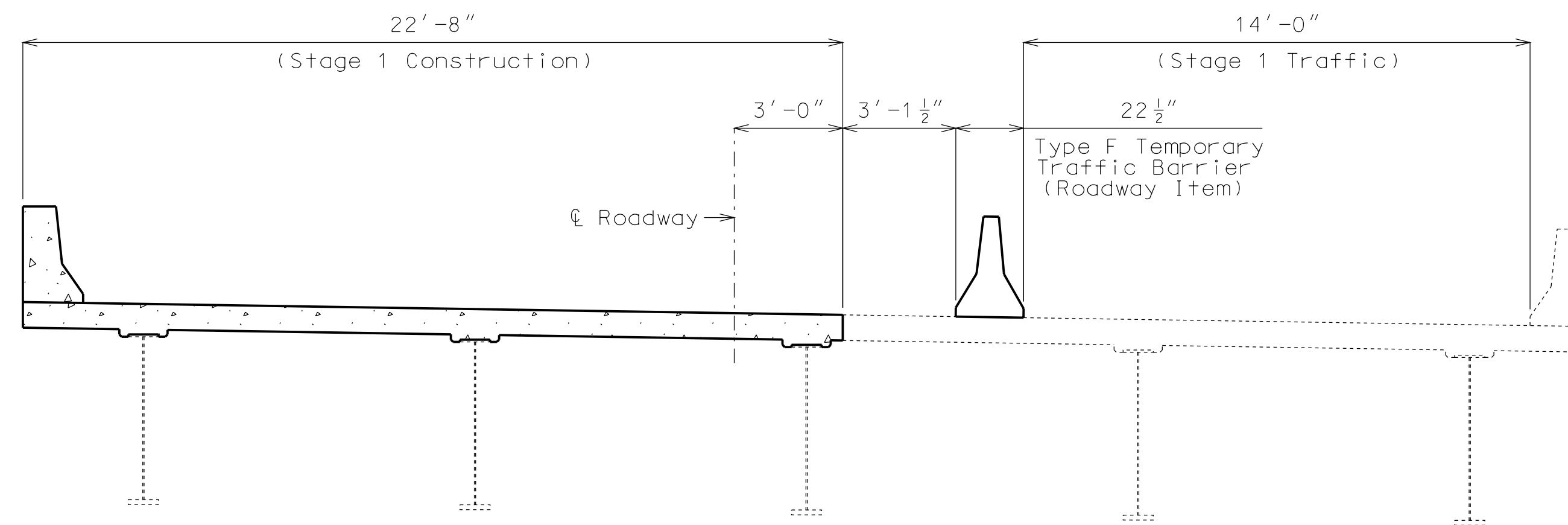
Threaded rod, washers and hex nuts shall be galvanized in accordance with ASTM A153.

REPAIRS TO BRIDGE: I-435 (SB) OVER  
RAMP 3 (I-35 SB TO I-435 SB)  
STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

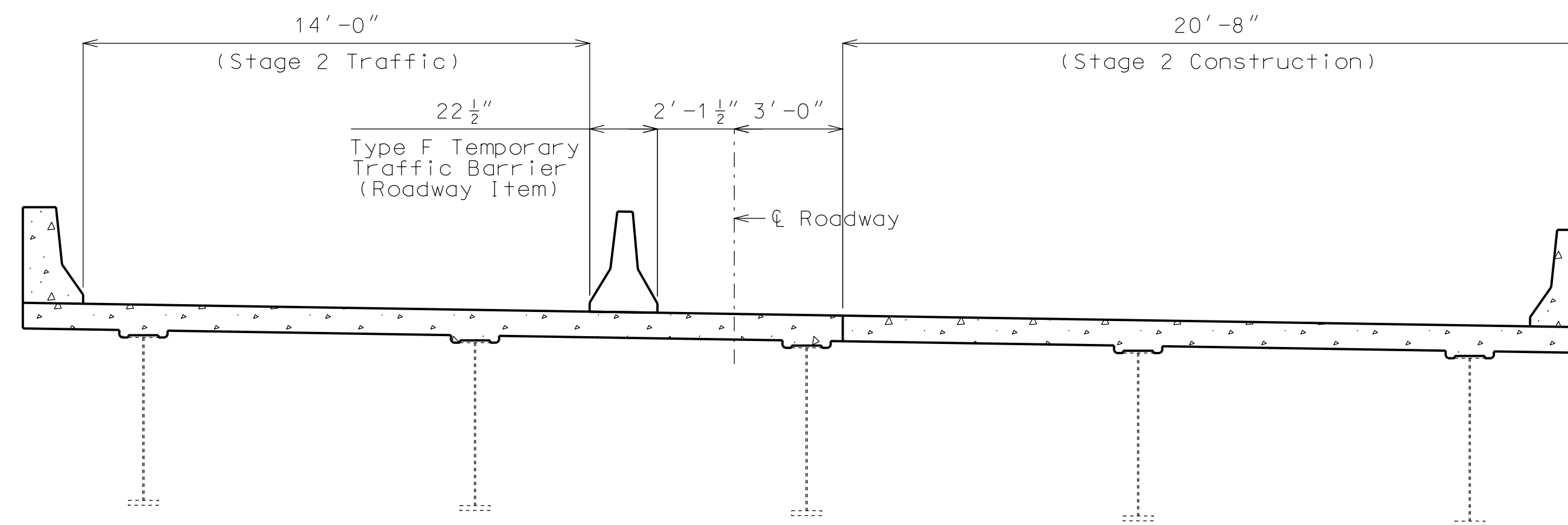
STA. 630+84.25± (I-435 SB) (Match Existing)

STD. 617.20

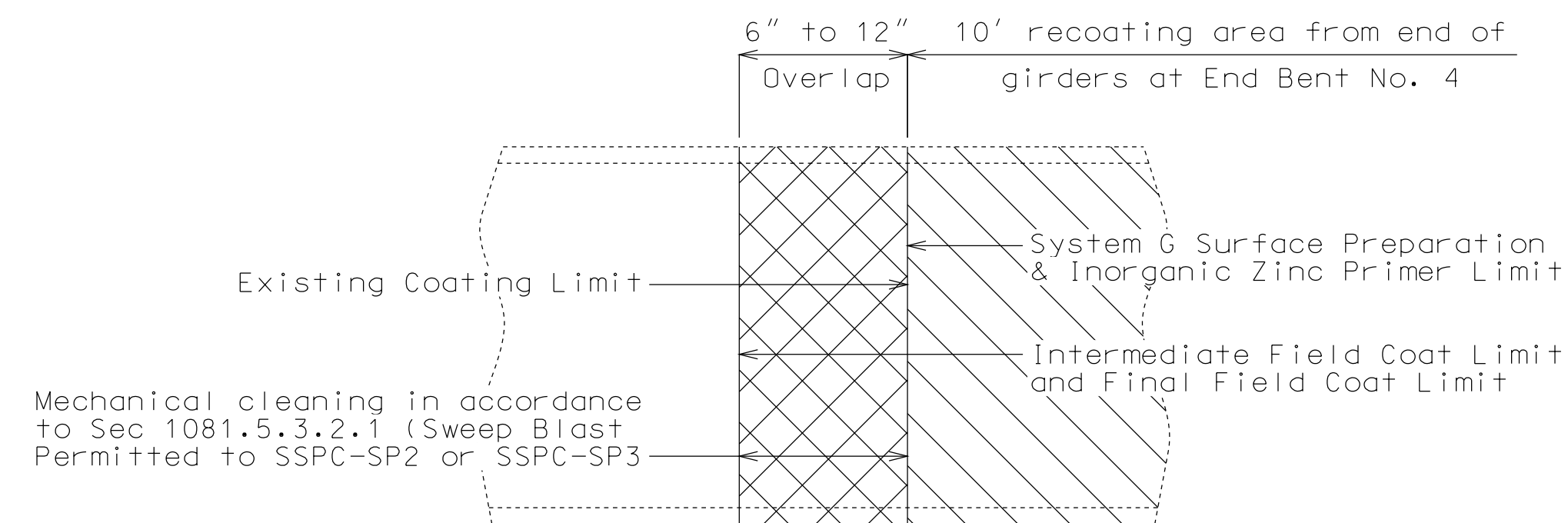
STD. 706.35



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



PART ELEVATION SHOWING LIMITS OF PAINT OVERLAP  
(Vertical or horizontal paint limit. Horizontal limit shown)


Note:  
Temporary Barrier shall not be attached to the bridge.

DETAILS SHOWING STAGED CONSTRUCTION

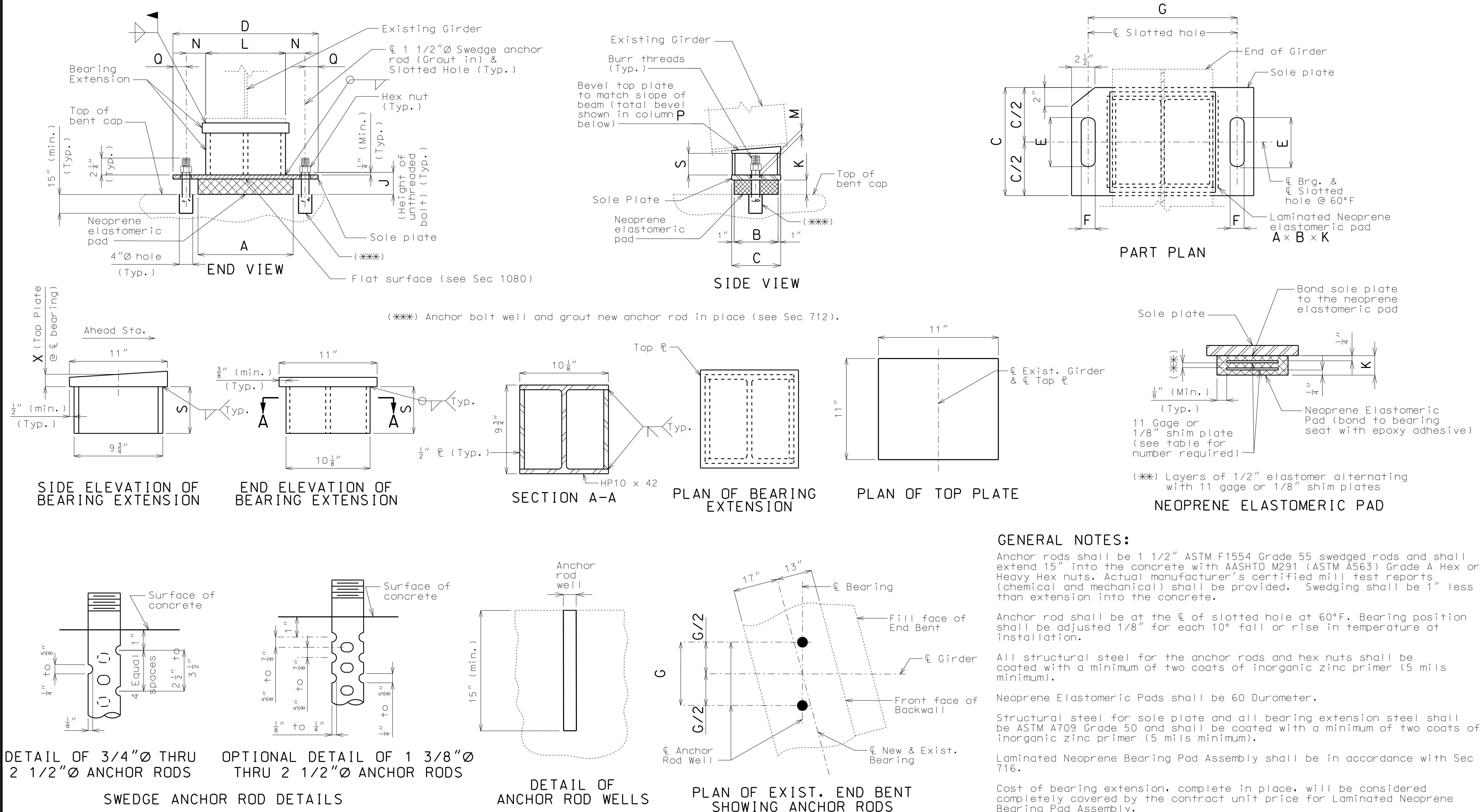
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 12/4/2012  
ROUTE: I-435 STATE: MO  
DISTRICT: BR SHEET NO.: 2  
COUNTY: CLAY  
JOB NO.: J412381  
CONTRACT ID.:  
PROJECT NO.:  
BRIDGE NO.: A33781

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

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



**GENERAL NOTES:**

Anchor rods shall be 1 1/2" ASTM F1554 Grade 55 swedged rods and shall extend 15" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor rod shall be at the center of slotted hole at 60°F. Bearing position shall be adjusted 1/8" for each 10° fall or rise in temperature at installation.

All structural steel for the anchor rods and hex nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate and all bearing extension steel shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

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

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

The temporary supports shall be capable of safely supporting a service load DL & construction load of 32 kips and a LL of 58 kips per stringer if done under traffic (factor of safety not included). See Special Provisions.

EXPANSION BEARINGS																		NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	S	X			
Bent No. 4 (Girders 1, 2 & 3)	14"	9"	11"	22"	5"	1 5/8"	17"	5 1/2"	3 3/4"	9"	1 1/2"	4"	-	2 1/2"	5 1/4"	1 1/8"	6	3	
Bent No. 4 (Girders 4 & 5)	14"	9"	11"	22"	5"	1 5/8"	17"	5 1/2"	3 3/4"	9"	1 1/2"	4"	1/8"	2 1/2"	5 1/4"	1 1/8"	6	2	
																	TOTAL BEARINGS	5	

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

**DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/4/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33781	

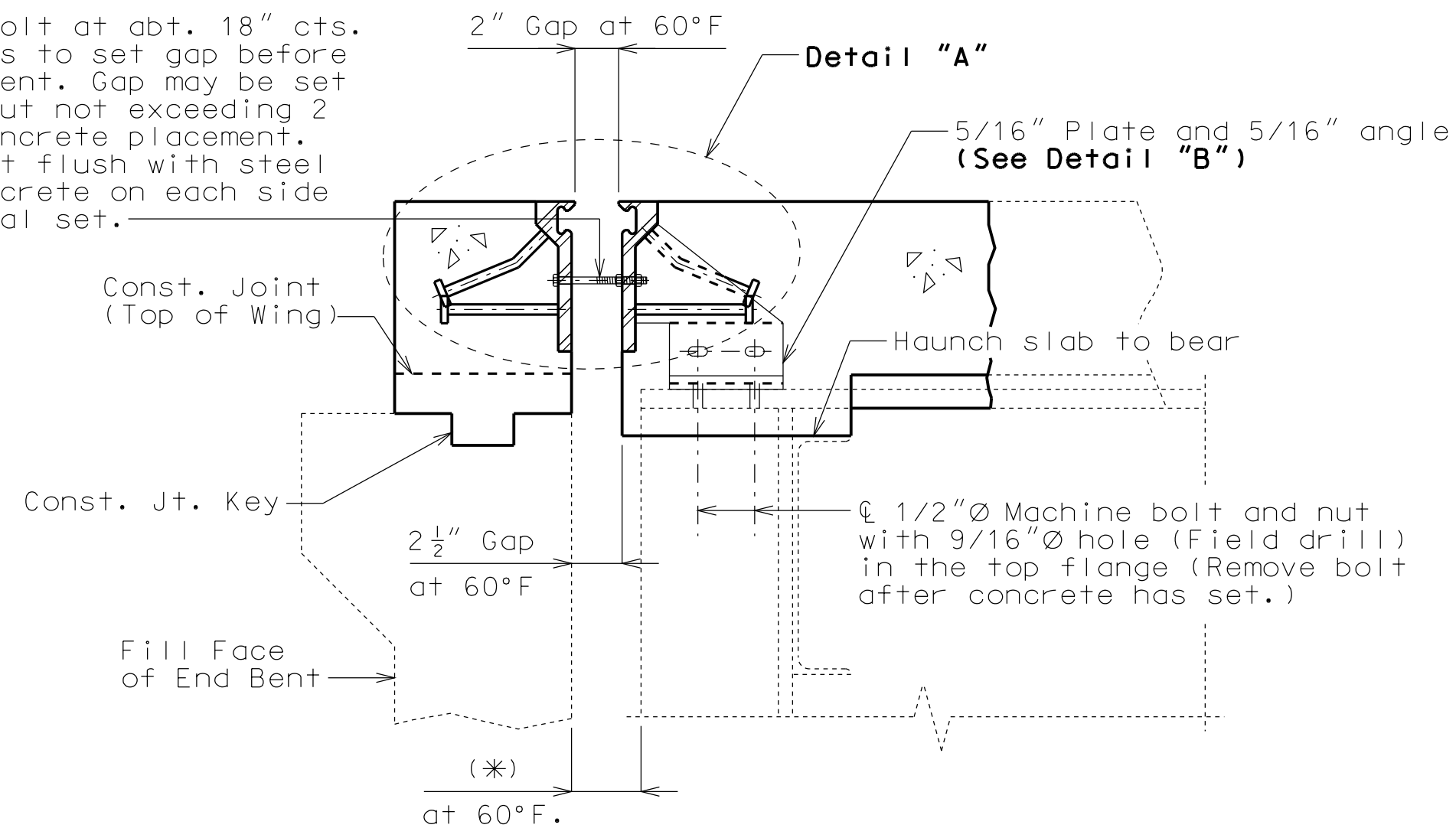
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

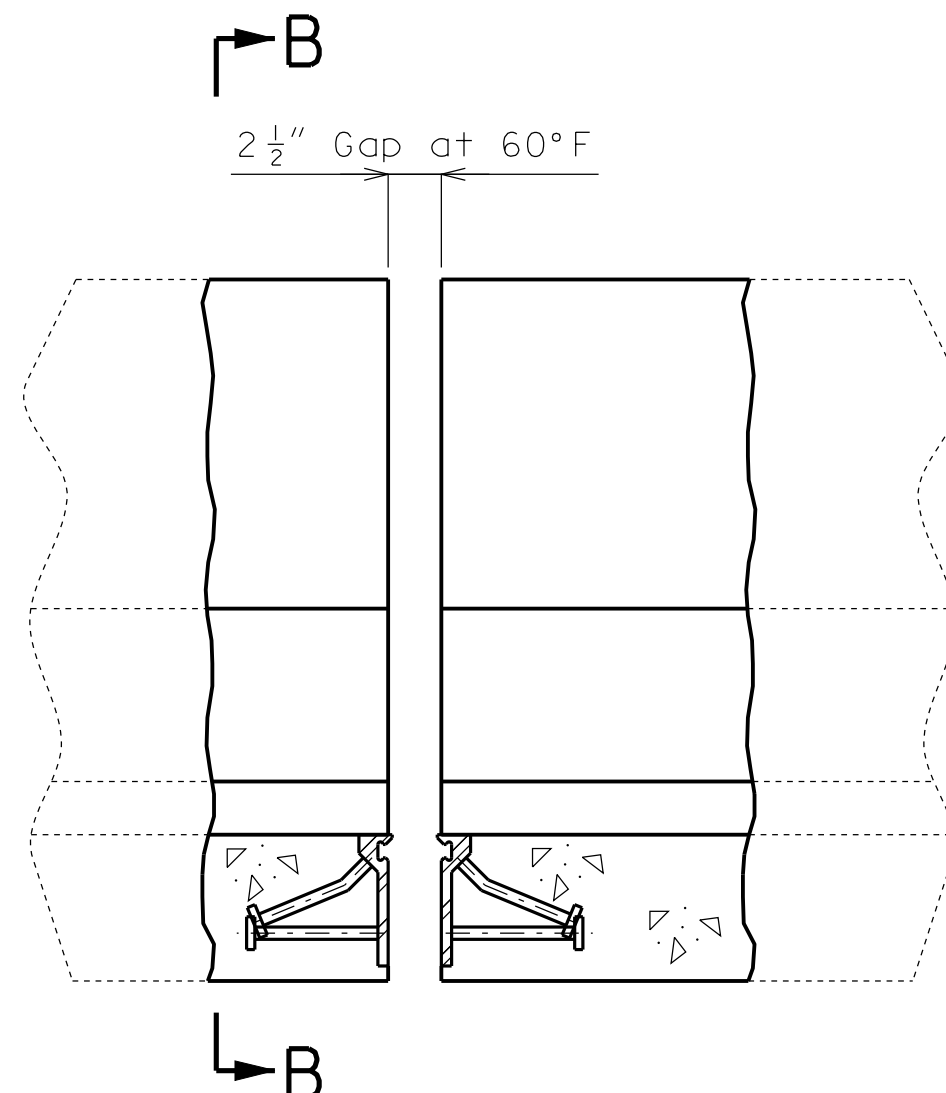
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

1/2"Ø Machine bolt at abt. 18" cts. Use two hex nuts to set gap before concrete placement. Gap may be set anytime up to but not exceeding 2 hours before concrete placement. Cut machine bolt flush with steel armor after concrete on each side has taken initial set.



SECTION A-A

Note: Strip seal gland not shown for clarity.



Note: Strip seal gland not shown for clarity.

PART ELEVATION OF BARRIER CURB

GENERAL NOTES:

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

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

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

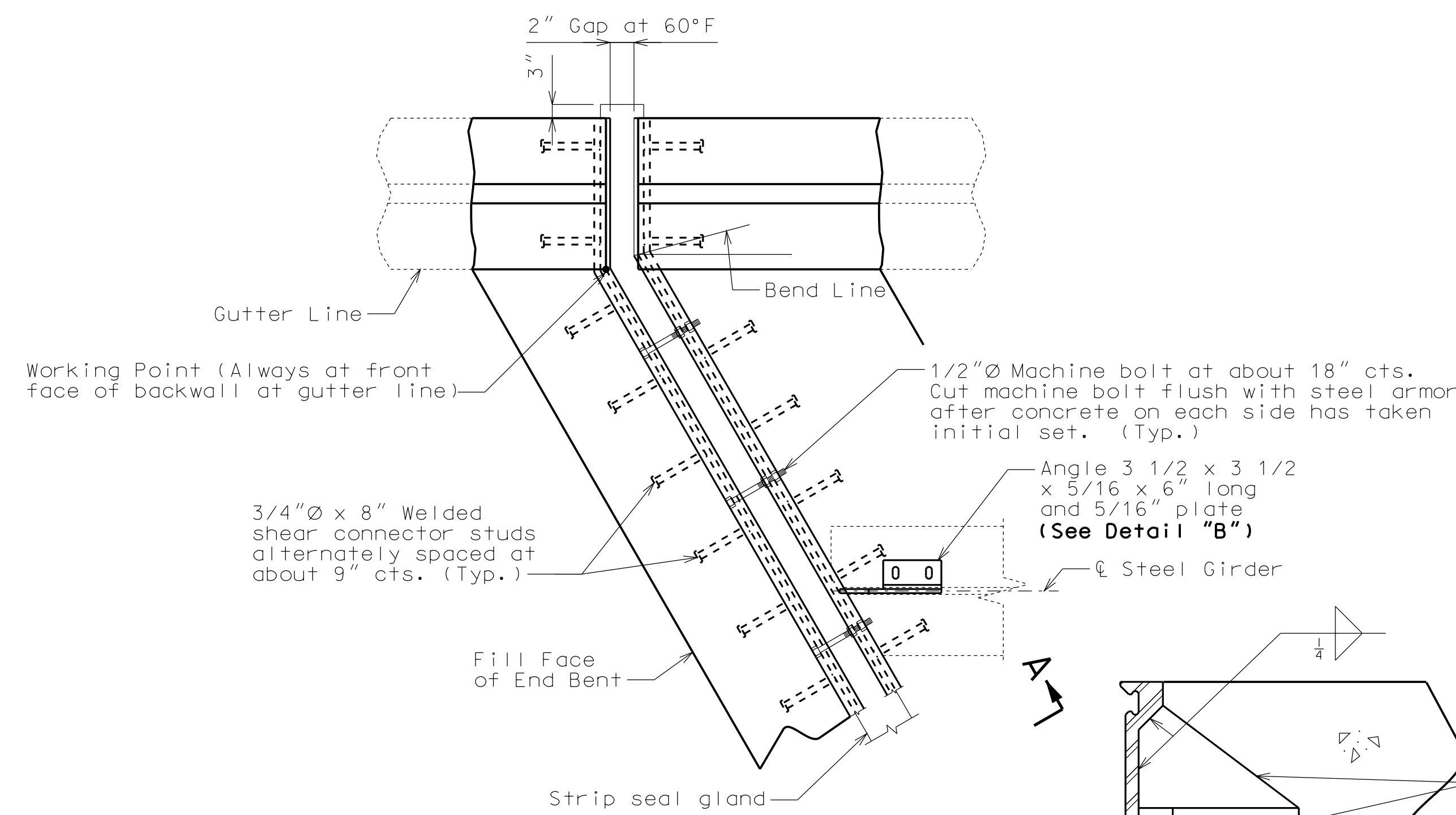
Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

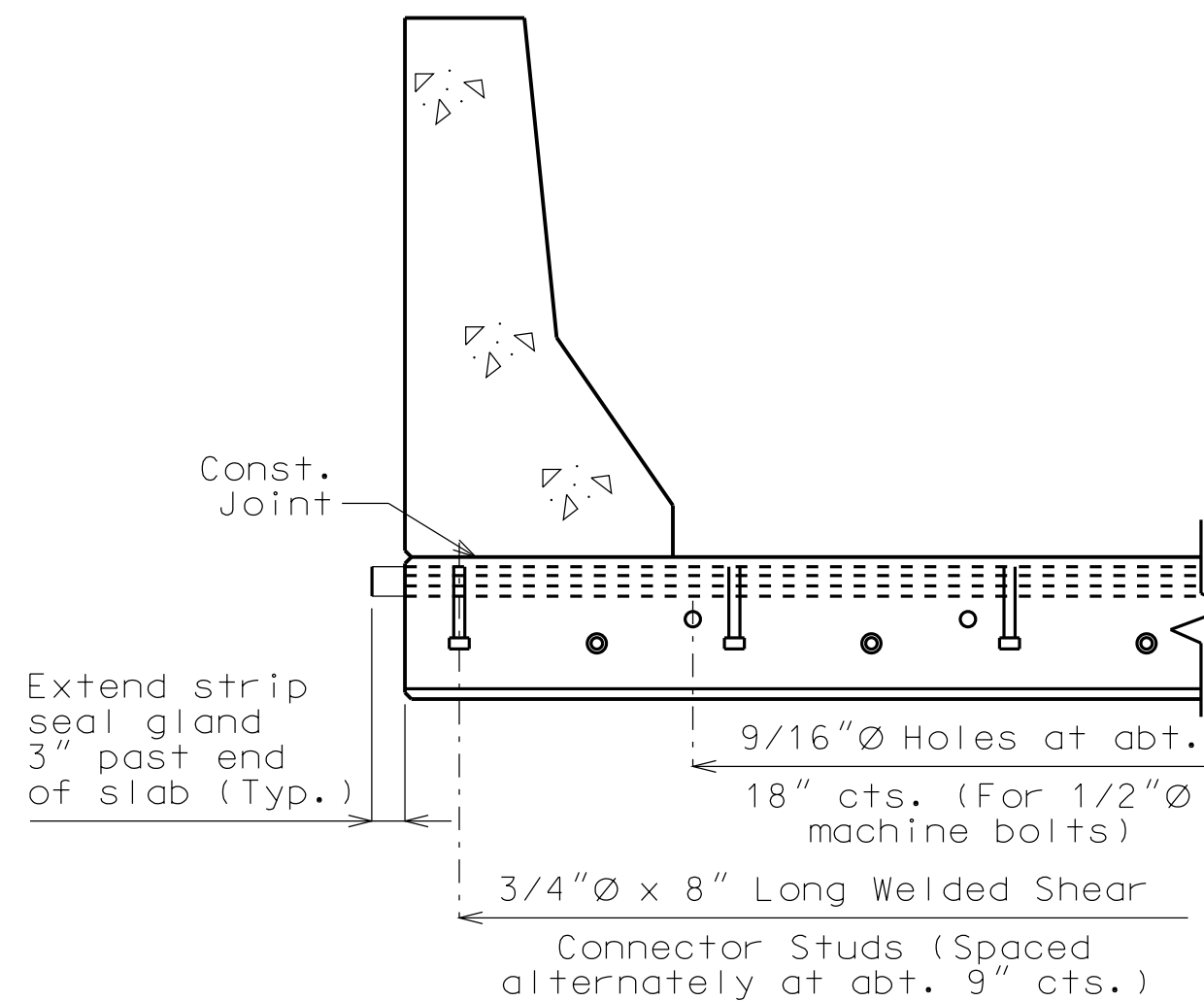
Longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

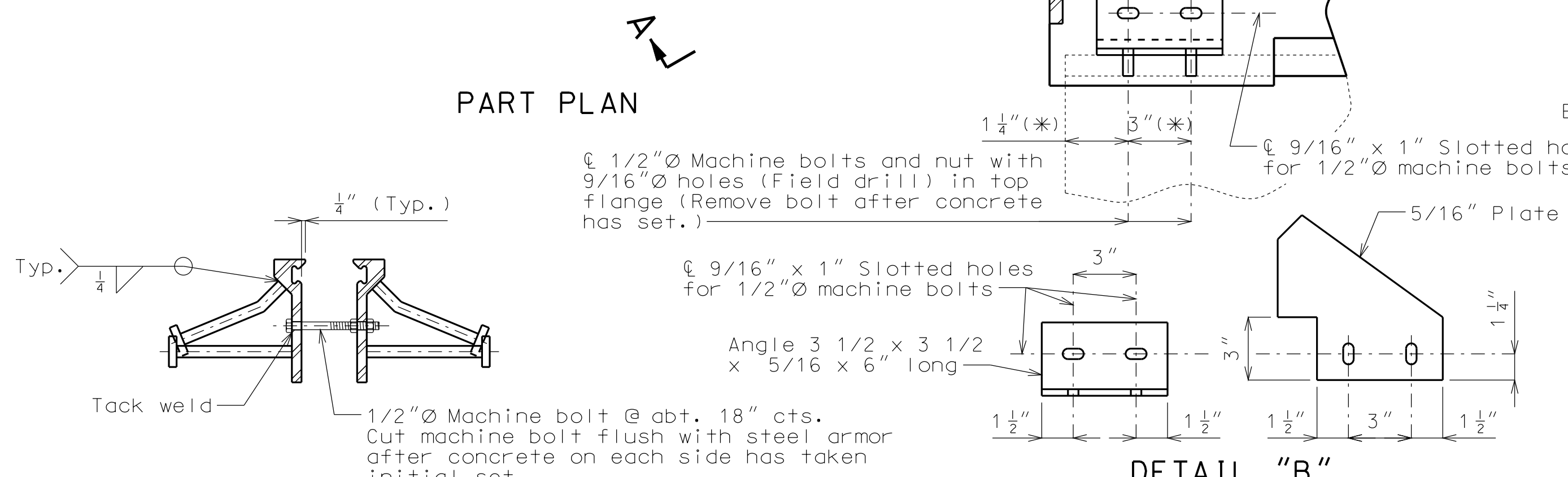
(\*) Match existing.



PART PLAN



PART SECTION B-B

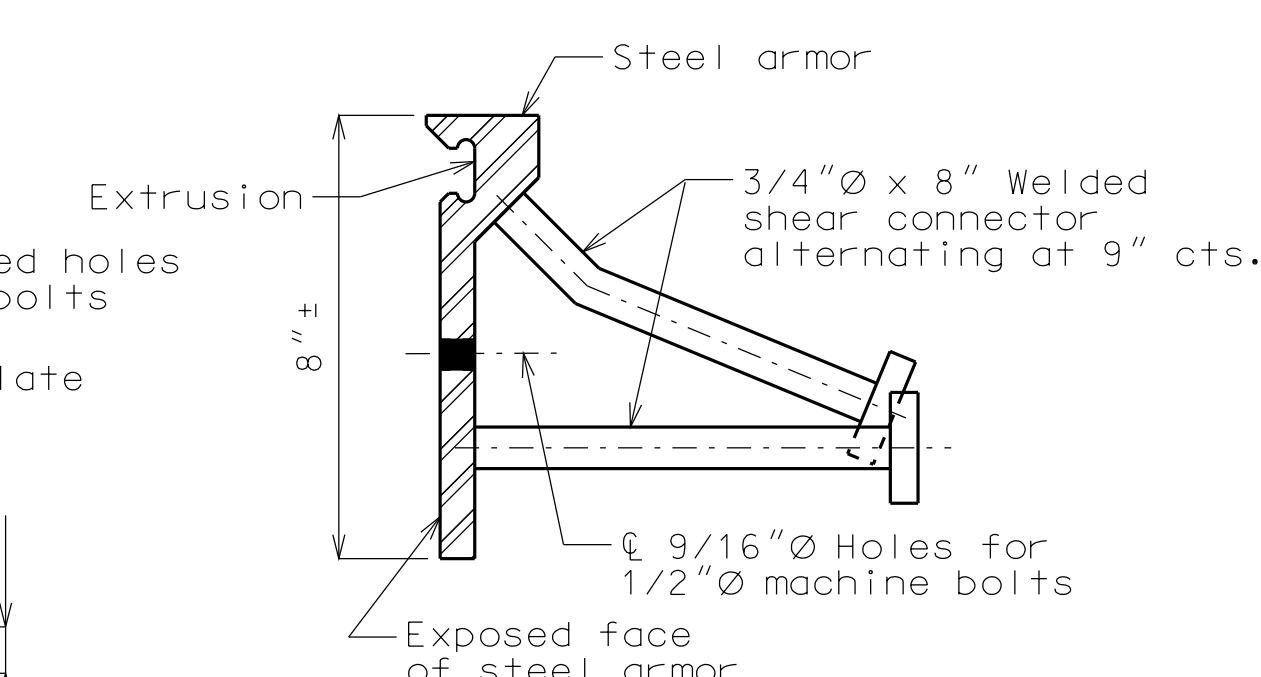


DETAIL "A"

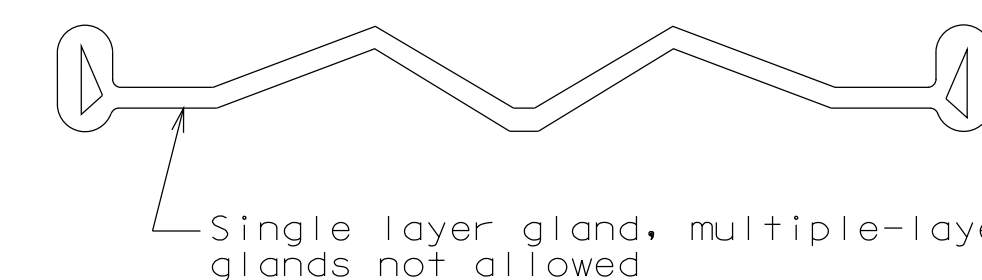
DETAILS OF STRIP SEAL AT END BENT NO. 4

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

Sheet No. 4 of 6

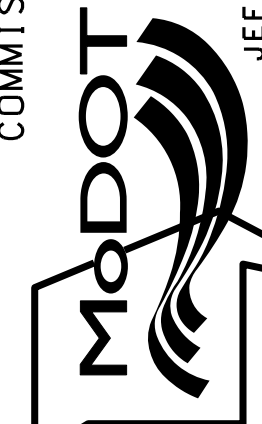


DETAIL OF JOINT ARMOR



Strip seal gland size = 4"

DETAIL OF GLAND

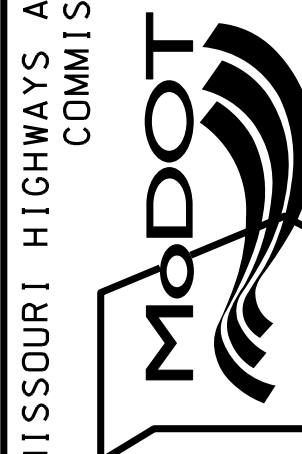
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."	
DATE PREPARED 12/4/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 4
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33781	
DESCRIPTION	DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
 105 WEST CAPITOL JEFFERSON 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.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

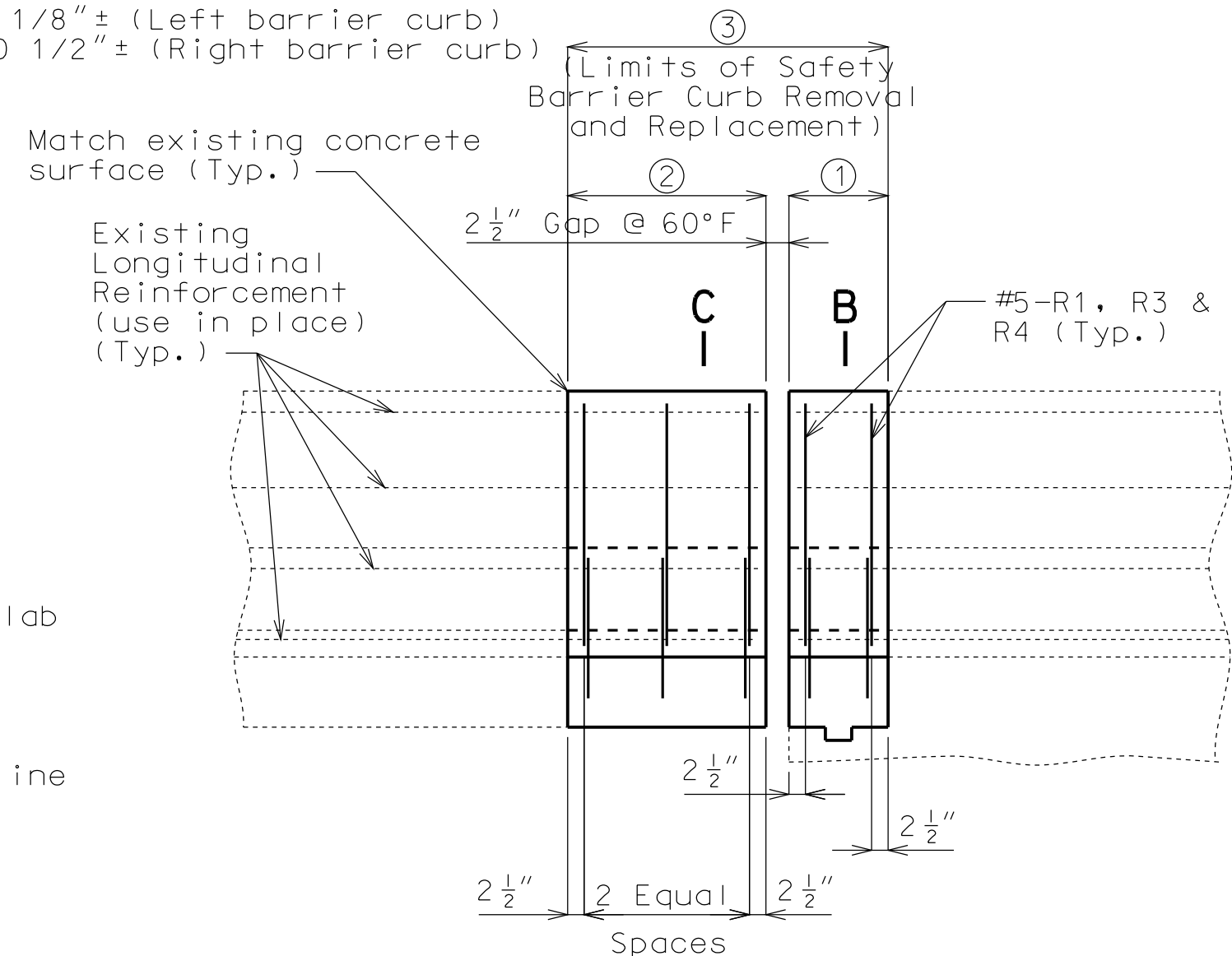


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JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)

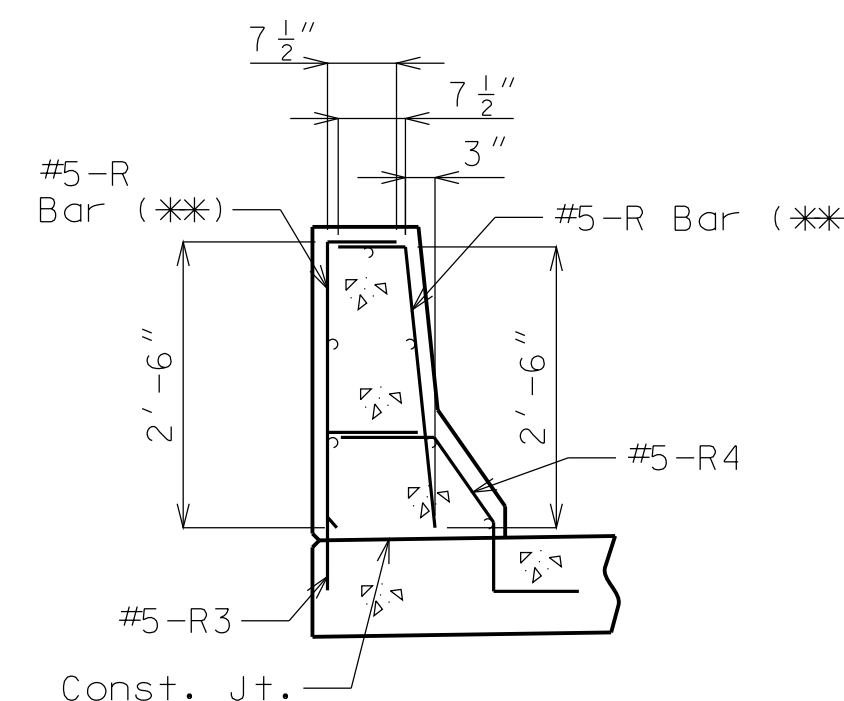
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

- ① 15"± (Left barrier curb)  
15 1/4"± (Right barrier curb)
- ② 2'-3 5/8"± (Left barrier curb)  
2'-4"± (Right barrier curb)
- ③ 3'-9 1/8"± (Left barrier curb)  
3'-10 1/2"± (Right barrier curb)

**Note:**  
The contractor shall use a mechanical bar splice for #6-S1 & S2 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706 except that no measurement will be made for mechanical bar splice and will be considered completely covered by the contract unit price for the reinforcing steel.

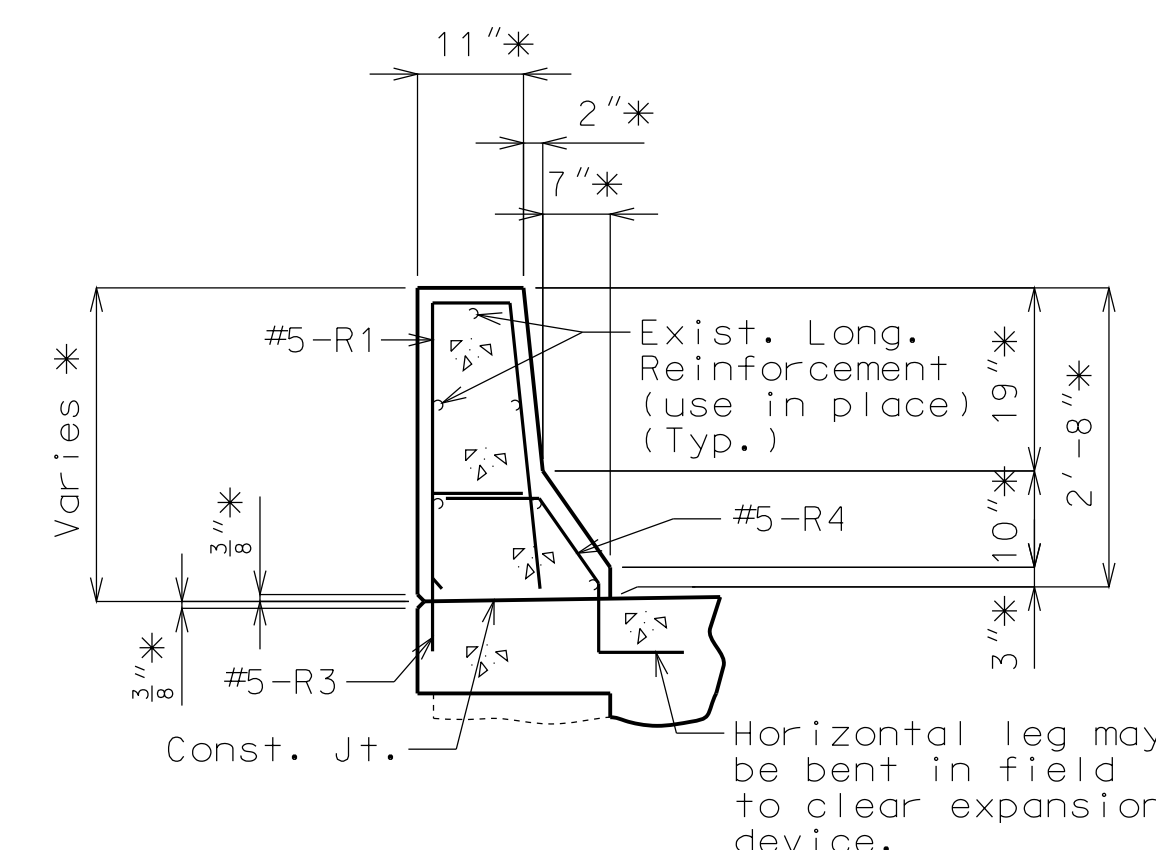


**PART ELEVATION OF RIGHT SAFETY BARRIER CURB**  
(Right barrier curb shown, left barrier curb similar)



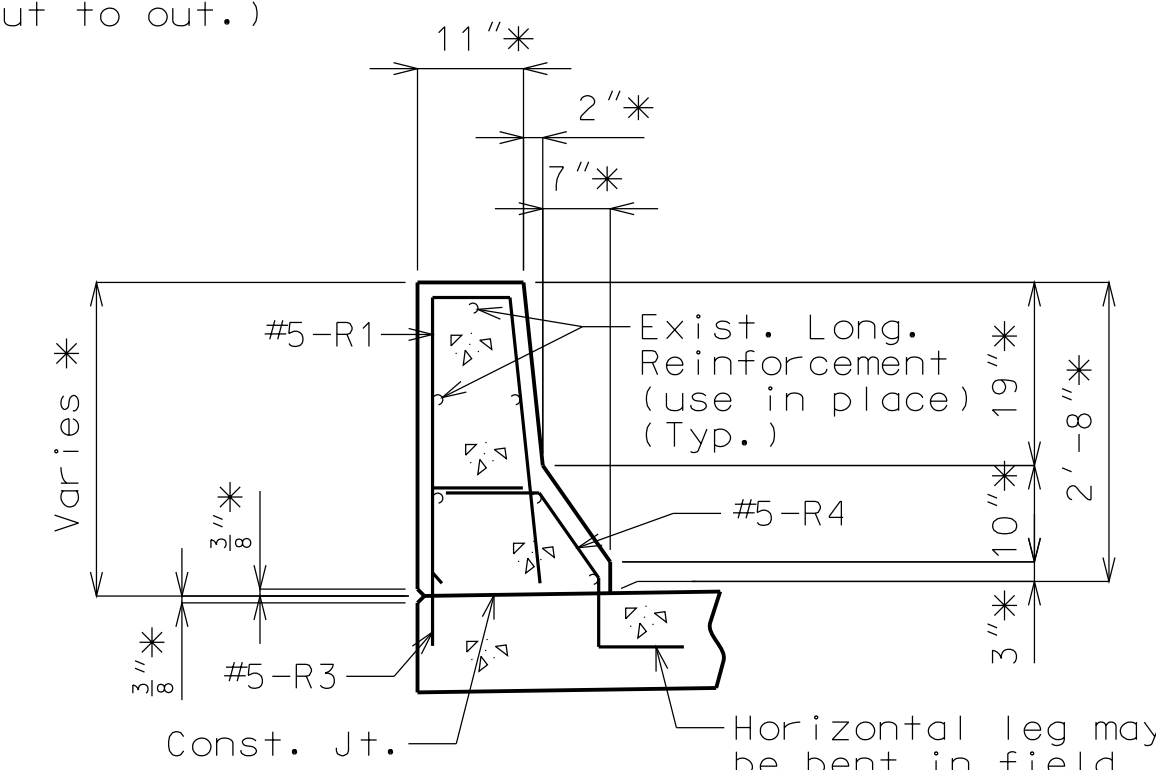
**R-BAR PERMISSIBLE ALTERNATE SHAPE**

(\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



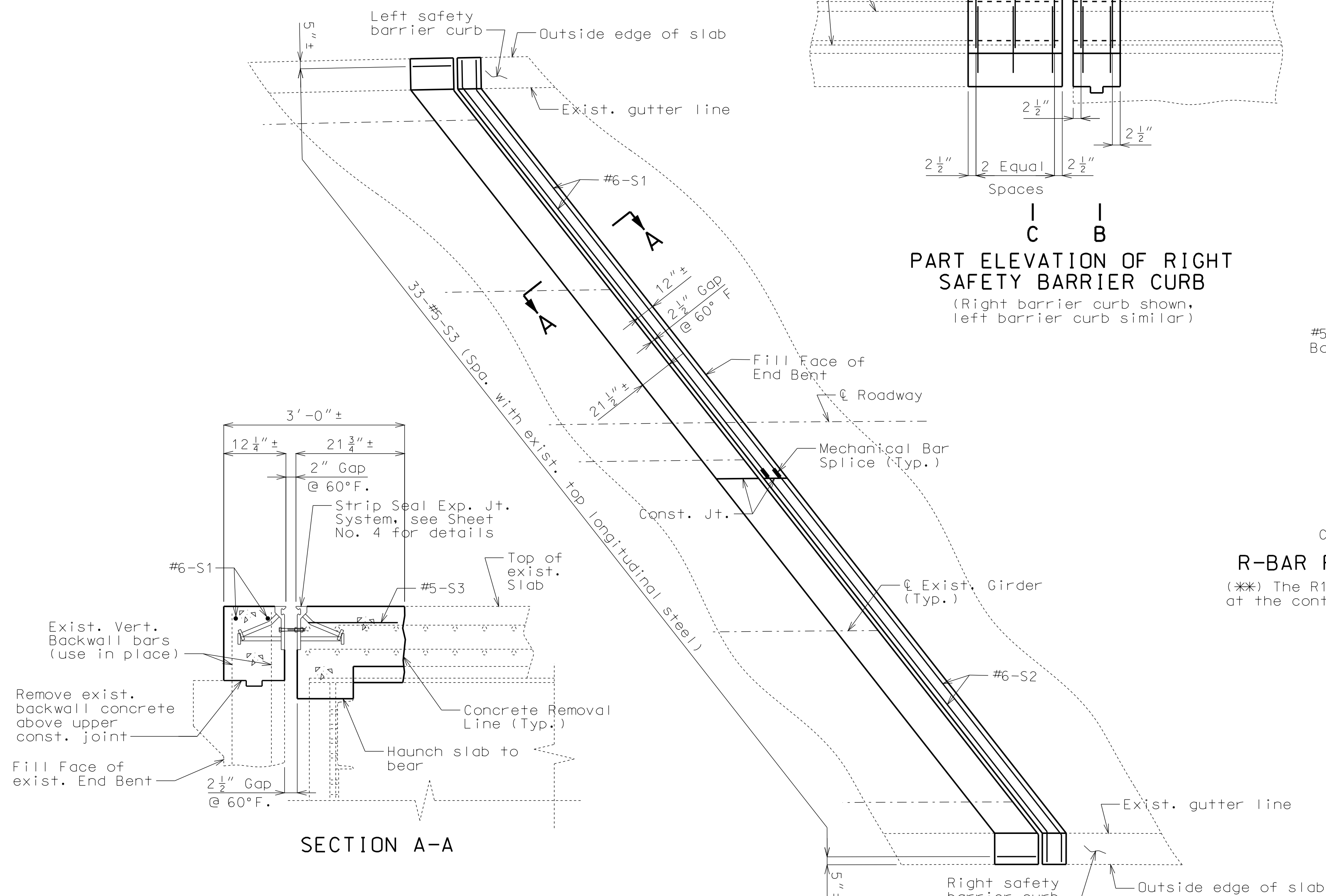
**PART SECTION B-B**

\* Match existing.



**PART SECTION C-C**

\* Match existing.



**SECTION A-A**

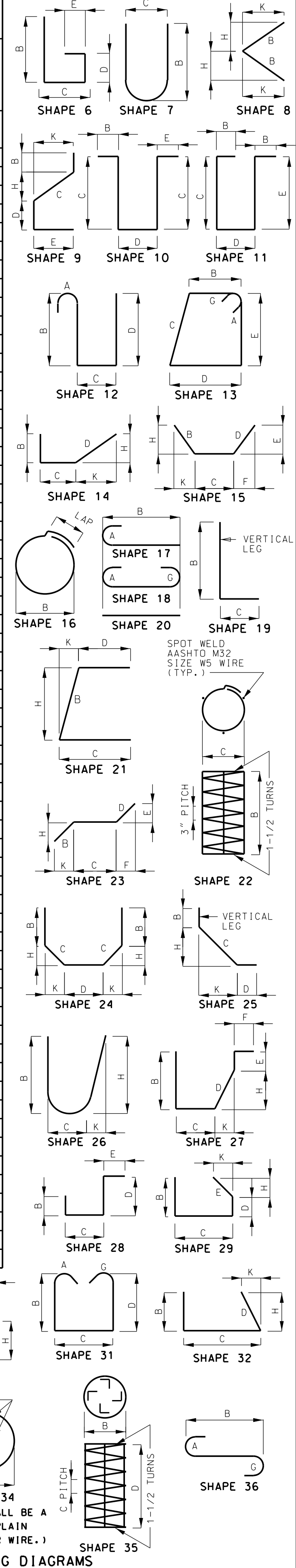
**PART PLAN OF SLAB AT END BENT NO. 4**

### BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
									B	C	D	E	F	H	K								
									FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.								
		SLAB																					
2	6 S1	SLAB	E	20					27	10.000						27	10	84					
4	6 S2	SLAB	E	20					25	8.000						25	8	154					
33	5 S3	SLAB	E	20					23	.000					0	23	0	66					
		BARRIER CURB																					
12	5 R1	BARRIER CURB	E	14					2	6.000	8.250	2	6.125		2	6.000	3.000	5	8	5	6	69	
10	5 R3	BARRIER CURB	E	19	S				17	.000	10.000							2	3	2	2	23	
10	5 R4	BARRIER CURB	E	27	S				10	.000	11.250	7	.000	12.000	9	.250	6	.375	3	4	3	2	33
TOTALS																							
5			E																				191
6			F																				238
		TOTAL																					0
		TOTAL	E																				429
		Slab on Girder																					
5			E																				66
6			E																				238
		TOTAL																					304
		Safety Barrier Curb																					
5			E																				125
		TOTAL																					125

### BILL OF REINFORCING STEEL

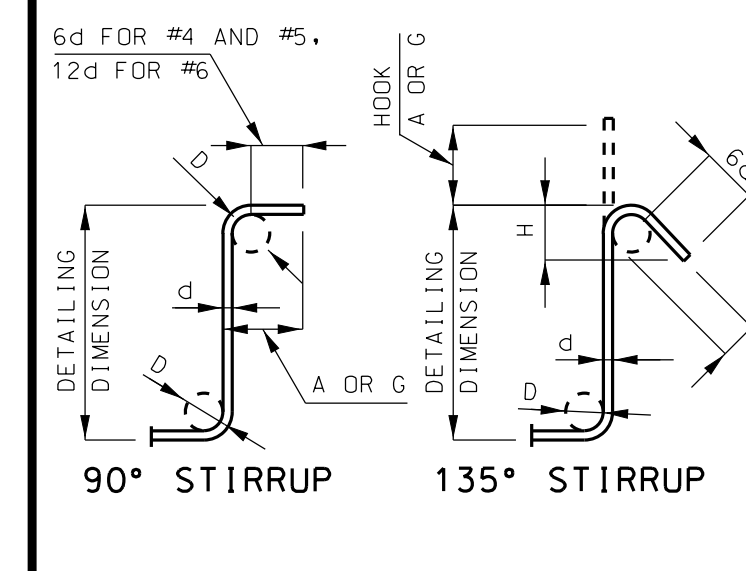
NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
									B	C	D	E	F	H	K								
									FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.								



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

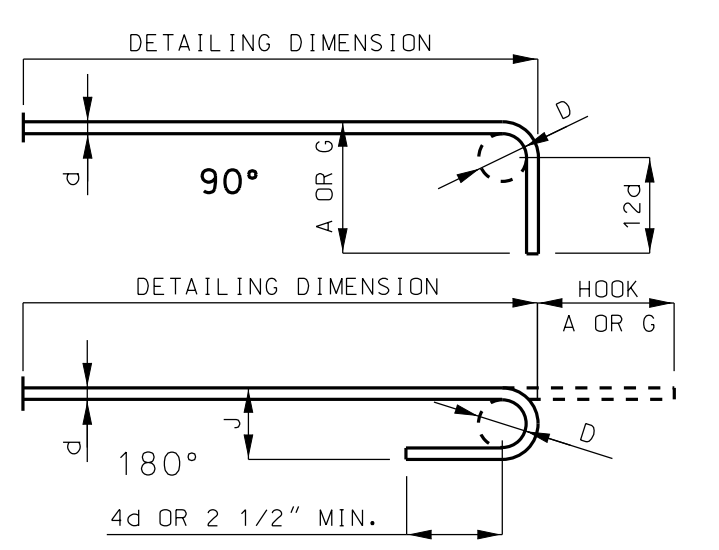
DATE PREPARED  
12/4/2012  
ROUTE I-435 STATE MO  
DISTRICT BR SHEET NO. 6  
COUNTY CLAY  
JOB NO. J412381  
CONTRACT ID.  
PROJECT NO.  
BRIDGE NO. A33781

DESCRIPTION  
DATE  
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
105 WEST CAPITOL JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-273-6636)



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

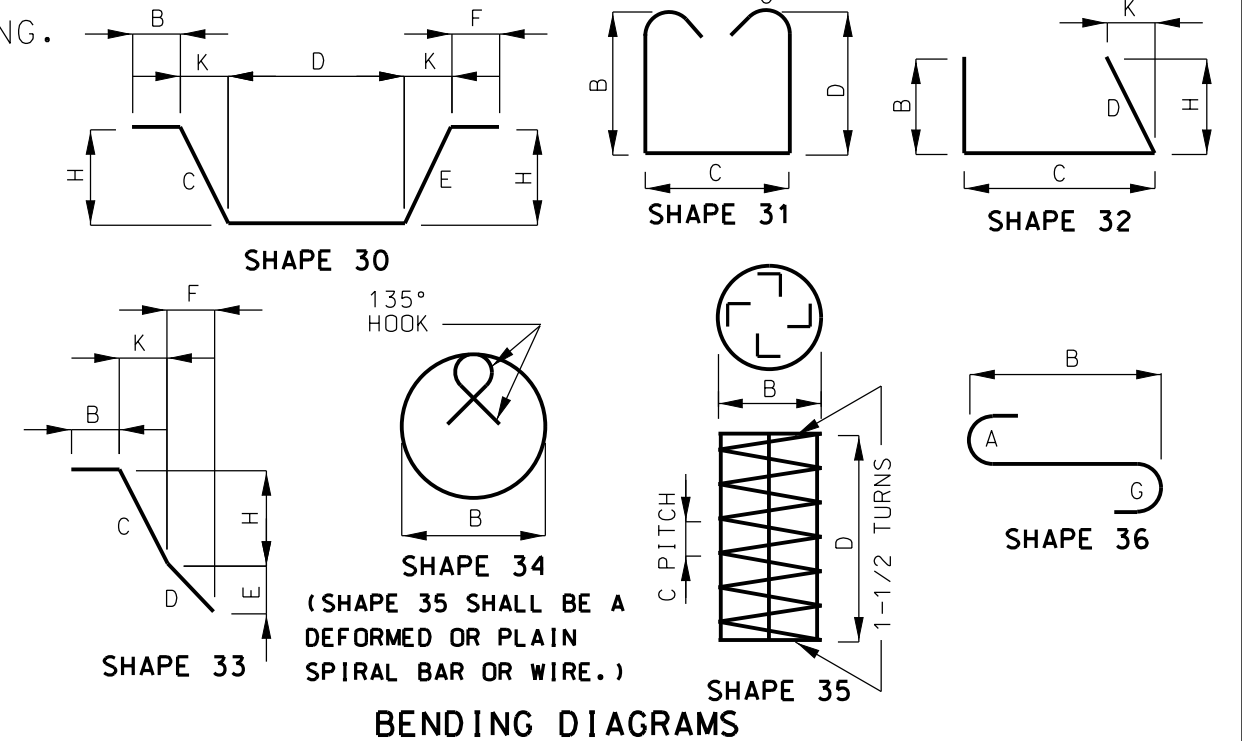
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS		90° HOOKS
		A OR C	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	11"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

TWO ADDITIONAL #6-S2 & #5-R1 ARE INCLUDED IN THE BAR BILL FOR TESTING.

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



BENDING DIAGRAMS

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		78	28	
SEC./SUR. 27 TWF. S/W RGE. 32W					

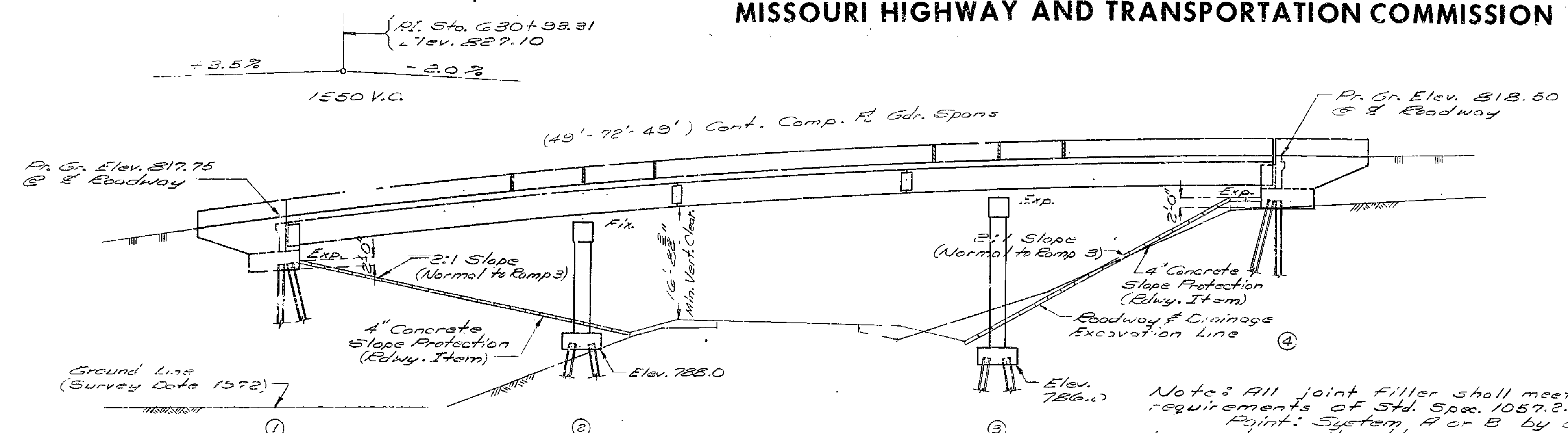
GENERAL NOTES:

Design Specifications: A.A.S.H.T.O.-1977  
 Load Factor Design Substructure  
 Design Loading:  
 HS20-44 15' eq./ft. Future Wearing Surface  
 Earth 120# Equivalent Fluid Pressure 30#  
 Modified 24,000# Tandem Axle  
 Fatigue Stress Case II  
 Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 3000$  psi  
 Class B2 Concrete (superstructure)  $f_c = 4000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
 Steel Pile  $f_b = 9,000$  psi  
 Structural Carbon Steel  $f_s = 20,000$  psi

Fabricated Steel:  
 Field connections, High Strength Bolts  $\frac{3}{4}$ "  $\phi$ , holes  $\frac{13}{16}$ "  $\phi$  except as noted.

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

All reinforcing bars in top of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}$ "



GENERAL ELEVATION

Note: Compacted 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 end bents before piles are driven for any bents falling within the embankment section.

Note: All joint filler shall meet the requirements of Std. Spec. 1057.2.4.  
 Paint: System A or B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat shall be aluminum.

Bents cannot be accurately located from the reference point on the tangent by conventional survey methods based on 100' chords (all bents are parallel).

Construction Clearance: A minimum vertical clearance of 15'-0" from crown of existing Ramp 3 and a minimum lateral clearance of 16'-0" centered on Ramp 3 shall be maintained during construction.

PILE DATA				
BENT NO.	1	2	3	4
Pile Type and Size	HP10x42	HP10x42	HP10x42	HP10x42
Number	7	12	12	8
Approximate Length Ft.	80	55	52	74
Design Bearing Tons	42	44	45	45
Hammer Energy required Ft. Lbs.	70,400	11,000	9,000	11,300

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

ESTIMATED QUANTITIES			
ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation	Cu. Yd.	120	120
S&B Drains	Each	10	10
Structural Steel Pile (10")	Lin. Ft.	2436	2436
Class B Concrete	Cu. Yd.	173.7	173.7
Class B2 Concrete	Cu. Yd.		253.5
Elastomeric Exp. Joint Seal (2.0")	Lin. Ft.		51
Reinforcing Steel (Grade 60)	Lb.	22410	29420
Reinforcing Steel (Epoxy Coated)	Lb.	1010	36410
Fabricated Structural Carbon Steel Lb.		149320	149320
Painting (System For B) (Aluminum)	Ton		74.1

Note: All concrete and reinforcement in safety barrier curbs are included with superstructure quantities.

B.M. #2 Elev. 781.21 Top E/W Post & median I-435 22' Eft. Sta. 631+22.

BRIDGE: S.B.L. I-435 OVER RAMP 3

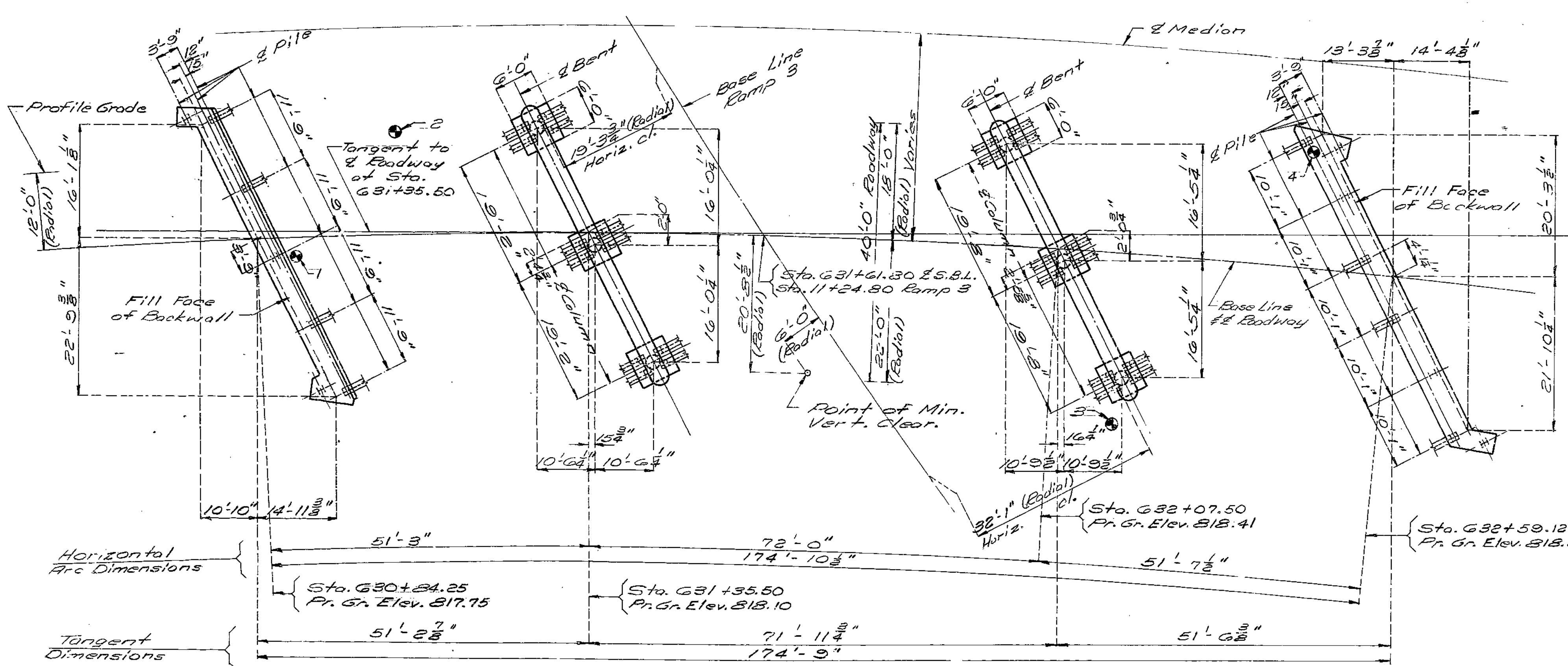
STATE ROAD FROM RTE. 152 TO RTE. I-35 AT I-35 AND I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 630+84.25

JOB NO. 4-I-435-49 H RTE. I-435

CLAY COUNTY

STD. 706.35
STD. 611.60
A-3378



PLAN

Curve Data S.B.L.  
 R.I. Sta. 626+19.45  
 $\Delta = 64^\circ 45' 23"$  Et.  
 $O = 3^\circ - 30'$   
 $T = 1038.01$   
 $L = 1250.12$   
 $E = 1637.02$

Note: For Boring Data, see sht. No. 2.  
 \* Indicates Boring Location.

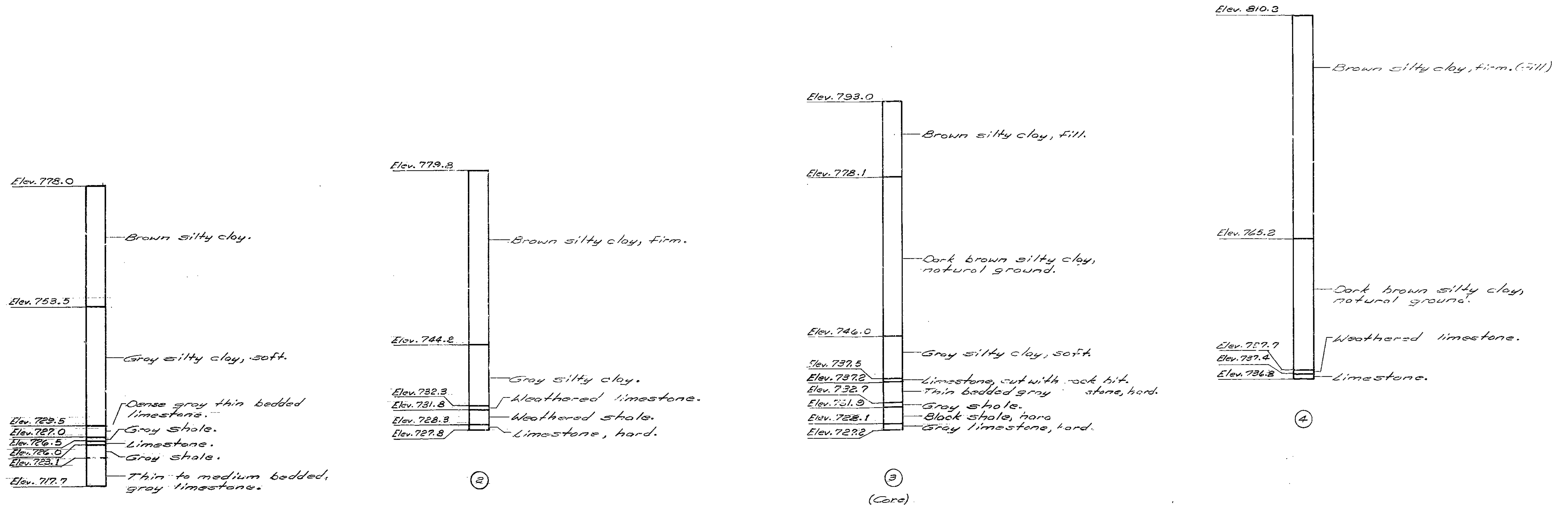
DESIGNED MAR. 1977  
 DETAILED JAN. 1978  
 CHECKED JUNE 1979

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

DATE March 16, 1981

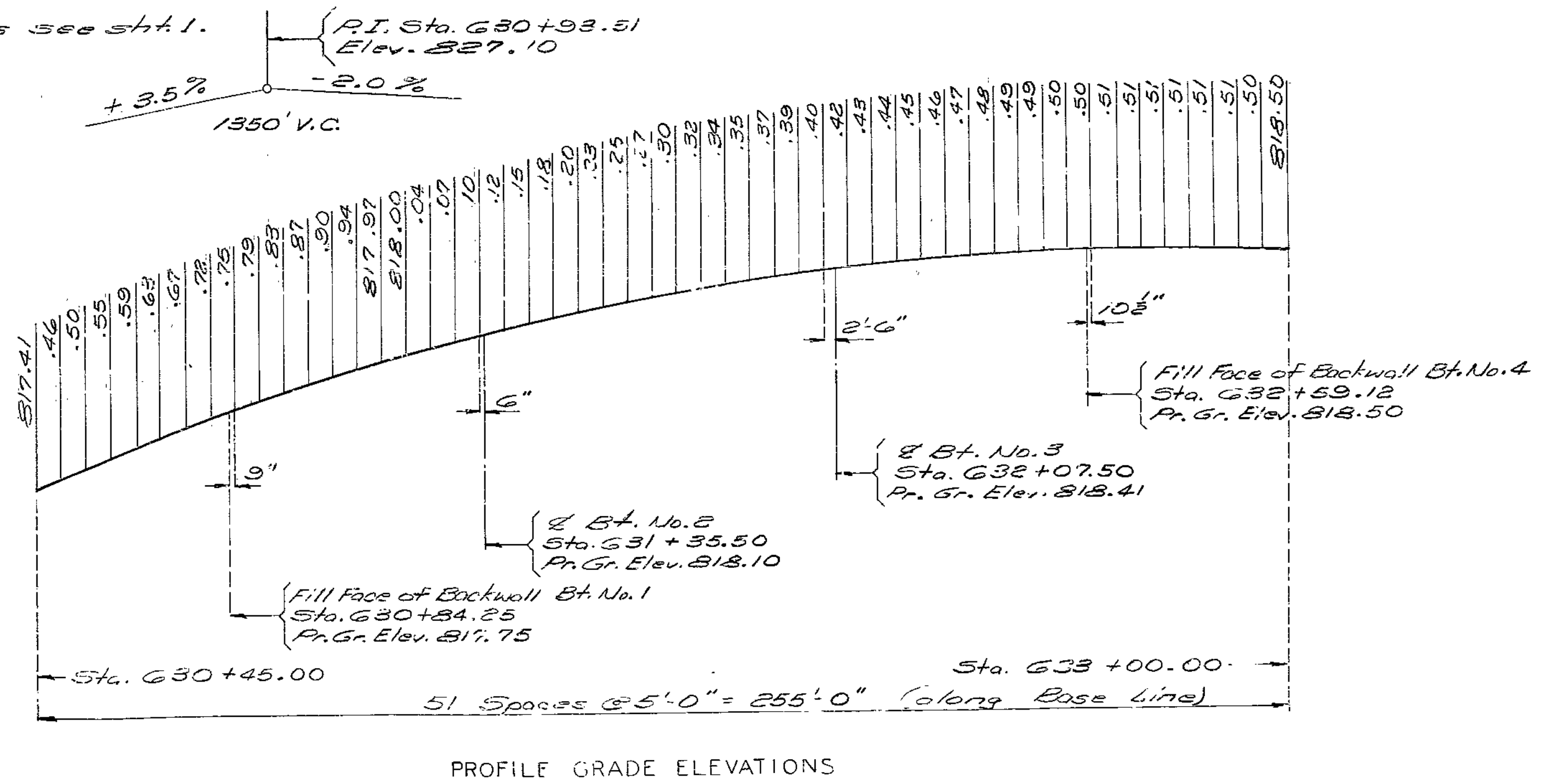
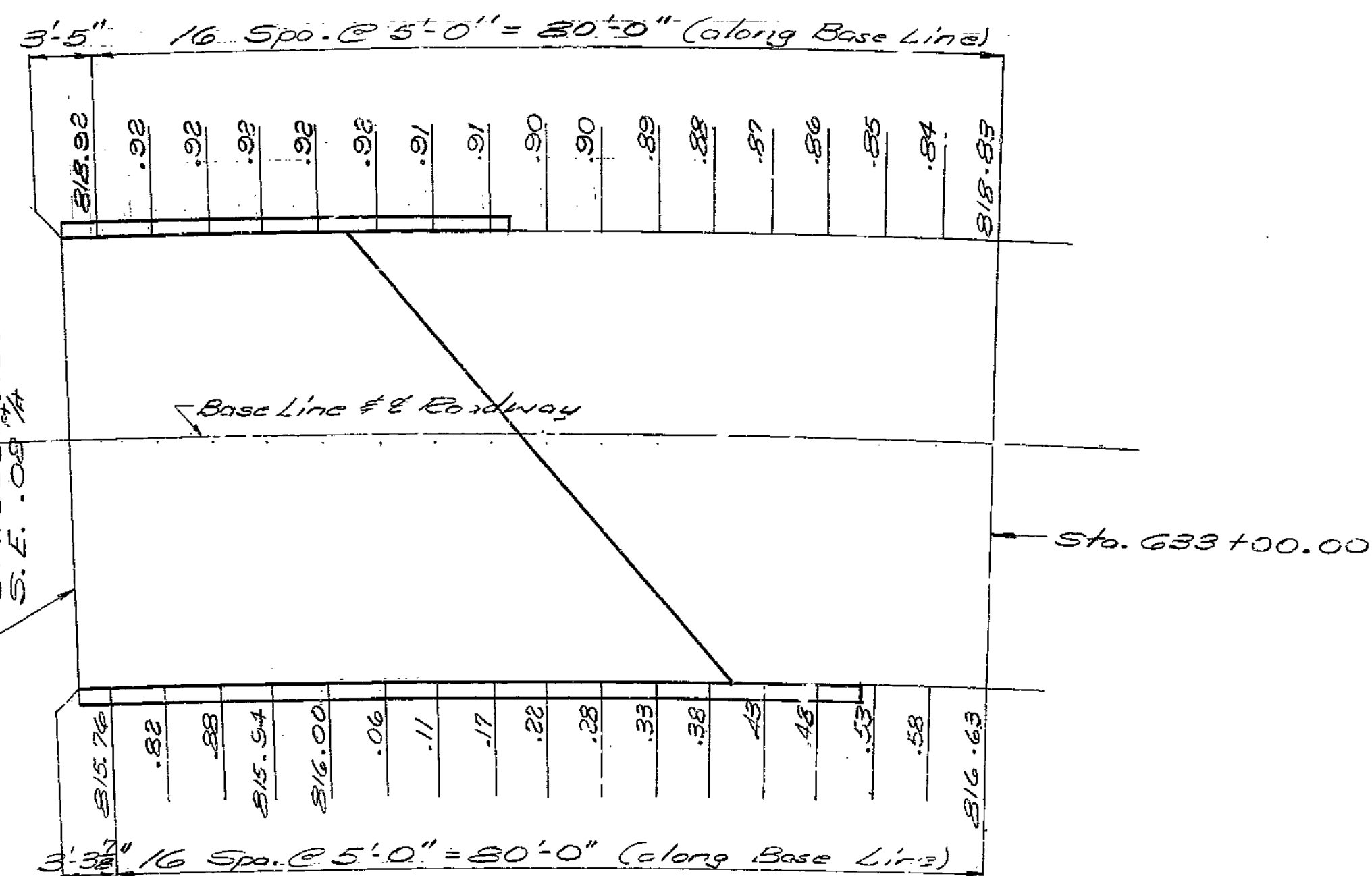
237

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	09	



BORING DATA

Note: For location of Borings see sht. 1.



238

Note: Elevations shown are taken at top of 8" concrete slab along roadway face of curb.

DETAILED Oct. 1977  
CHECKED JUNE 1979

PART PLAN SHOWING SUPERELEVATION TRANSITION

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

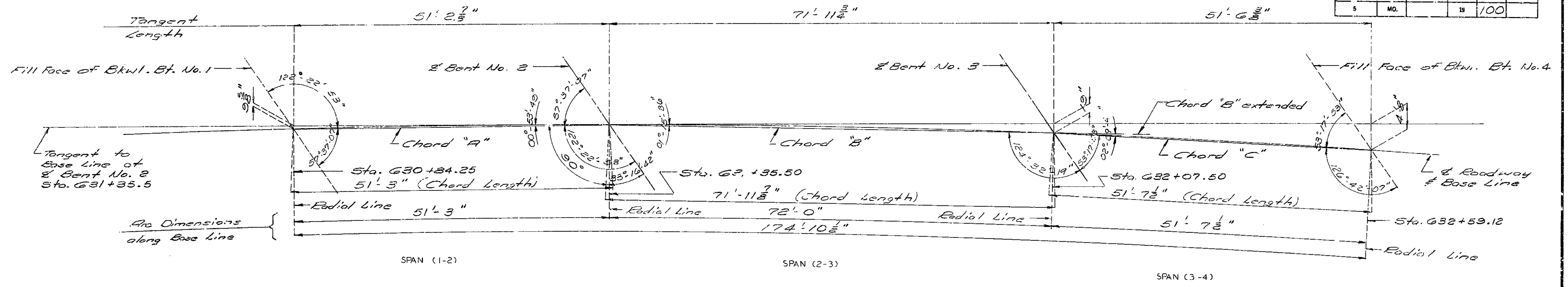
Sheet No. 2 of 10

CLAY COUNTY

A-3378

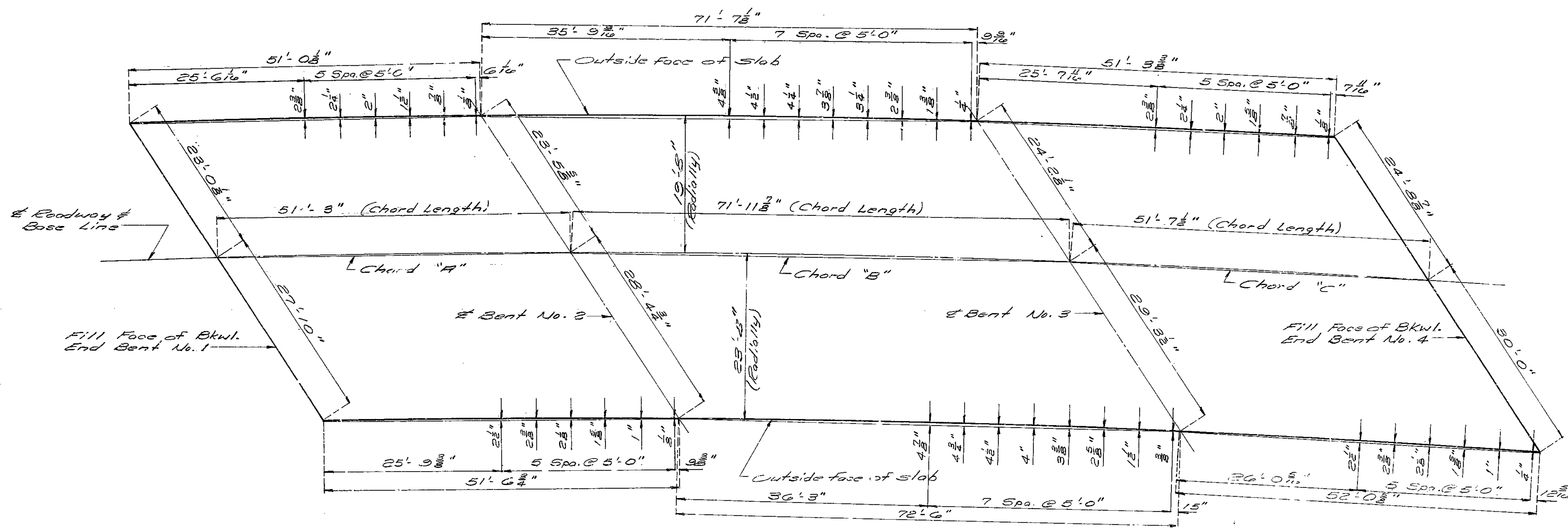


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	100	



LAYOUT DATA FOR SUBSTRUCTURE

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

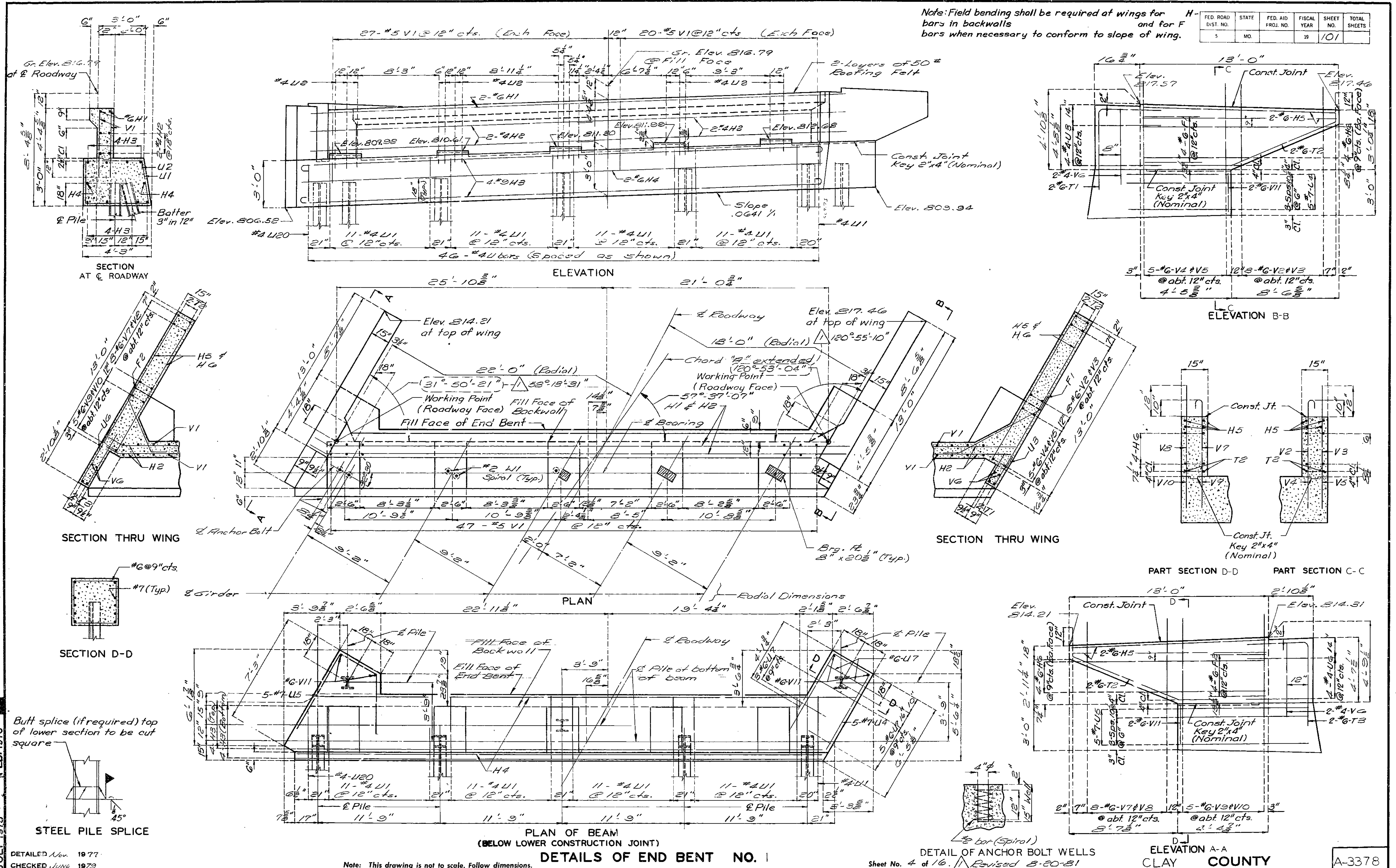


PLAN OF SLAB SHOWING CURVE ORDINATES

239

Note: Field bending shall be required at wings for H and for F bars when necessary to conform to slope of wing.

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



240

STD. 12x15" S.B. REVISED JULY 1975 FEB. 1976

DETAILED Nov. 1977 CHECKED JUNE 1979

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

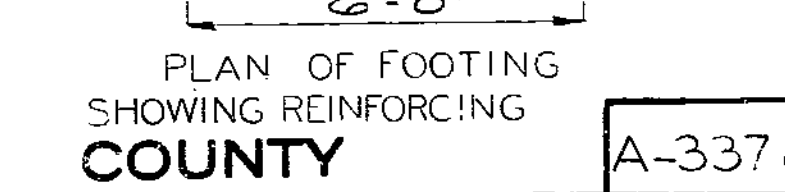
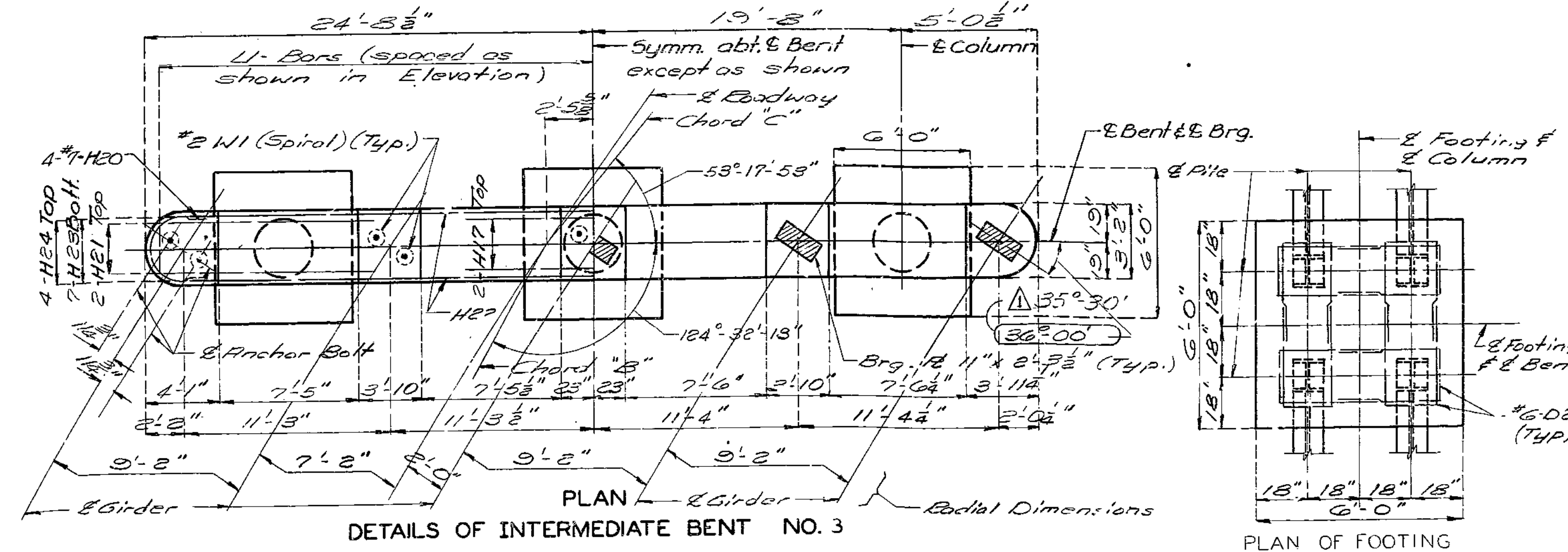
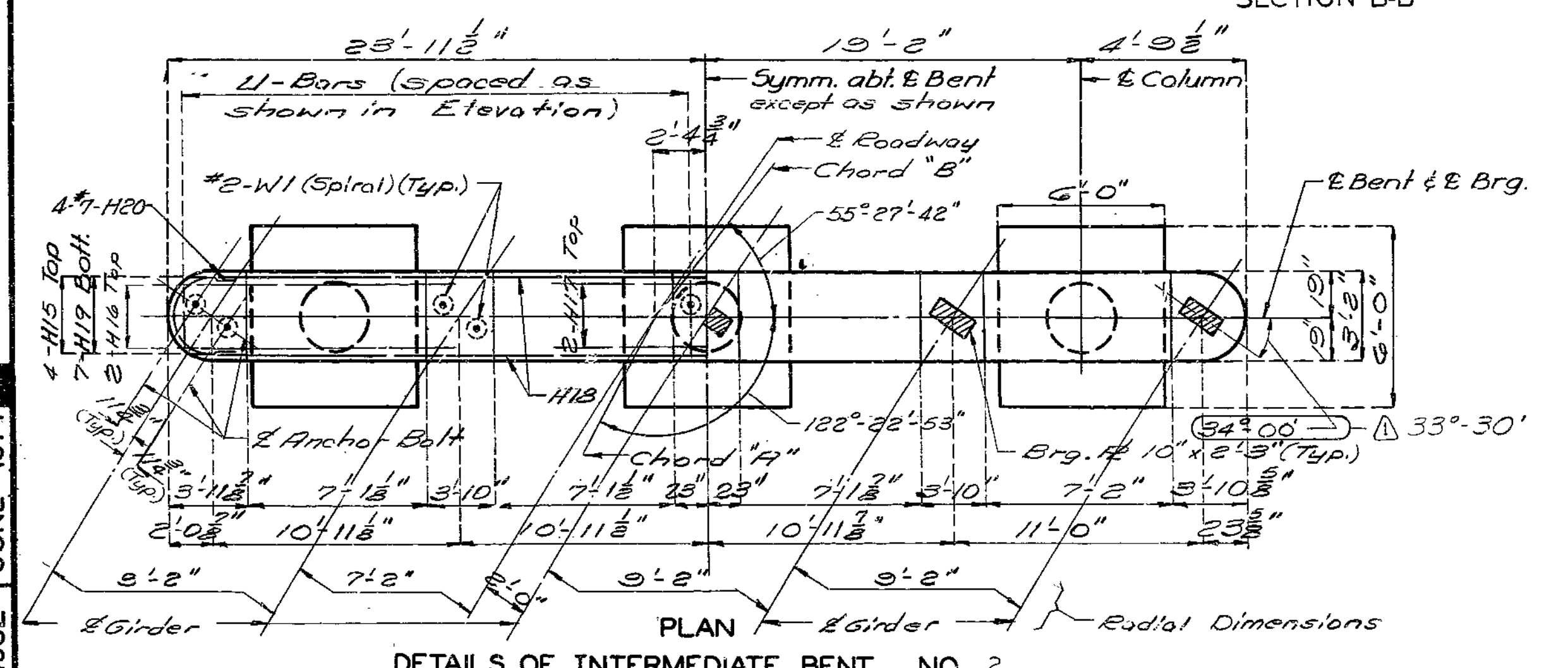
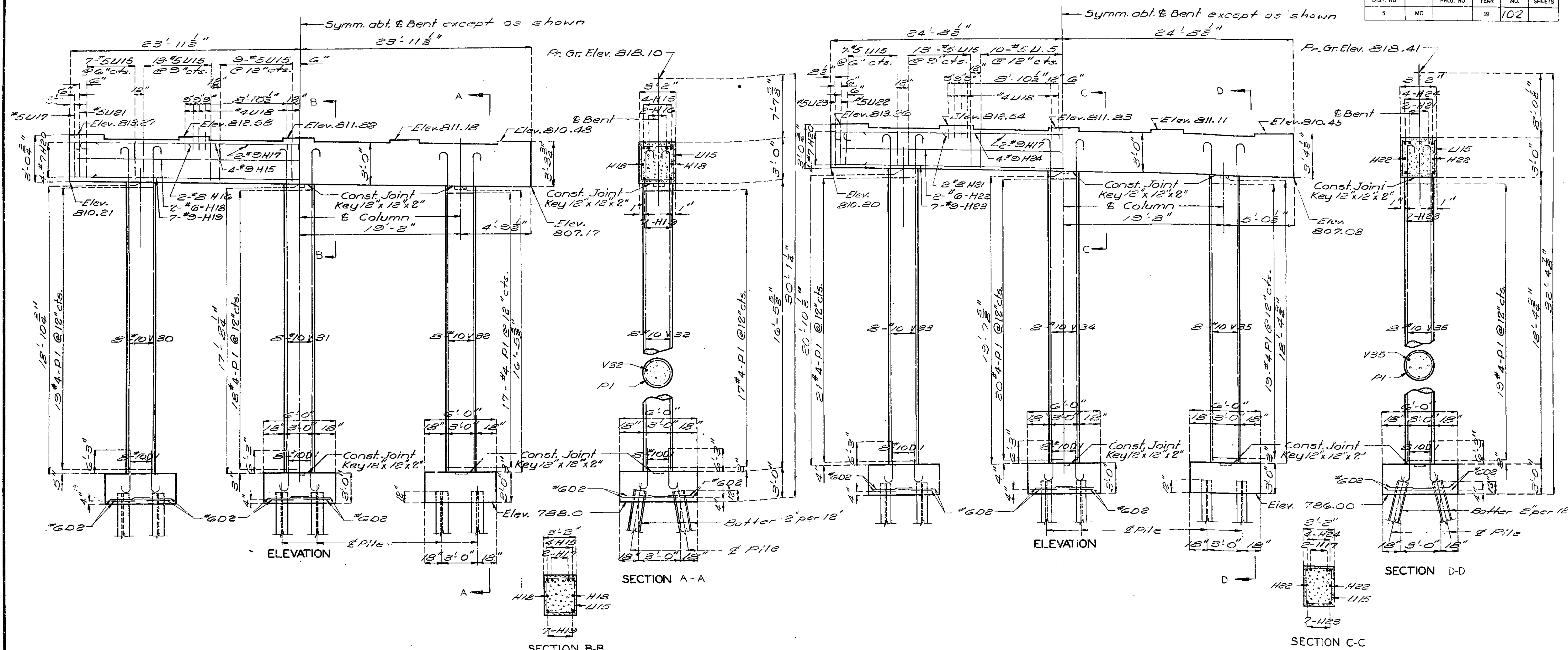
PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT) DETAILS OF END BENT NO. 1

Sheet No. 4 of 16. Revised 3-20-81

ELEVATION A-A CLAY COUNTY

A-3378

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



241

STD 196  
 SEP 1962  
 REVISED  
 JUNE 1974  
 DETAILED Jan 1978  
 CHECKED JUNE 1979

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

Sheet No. 5 of 16.

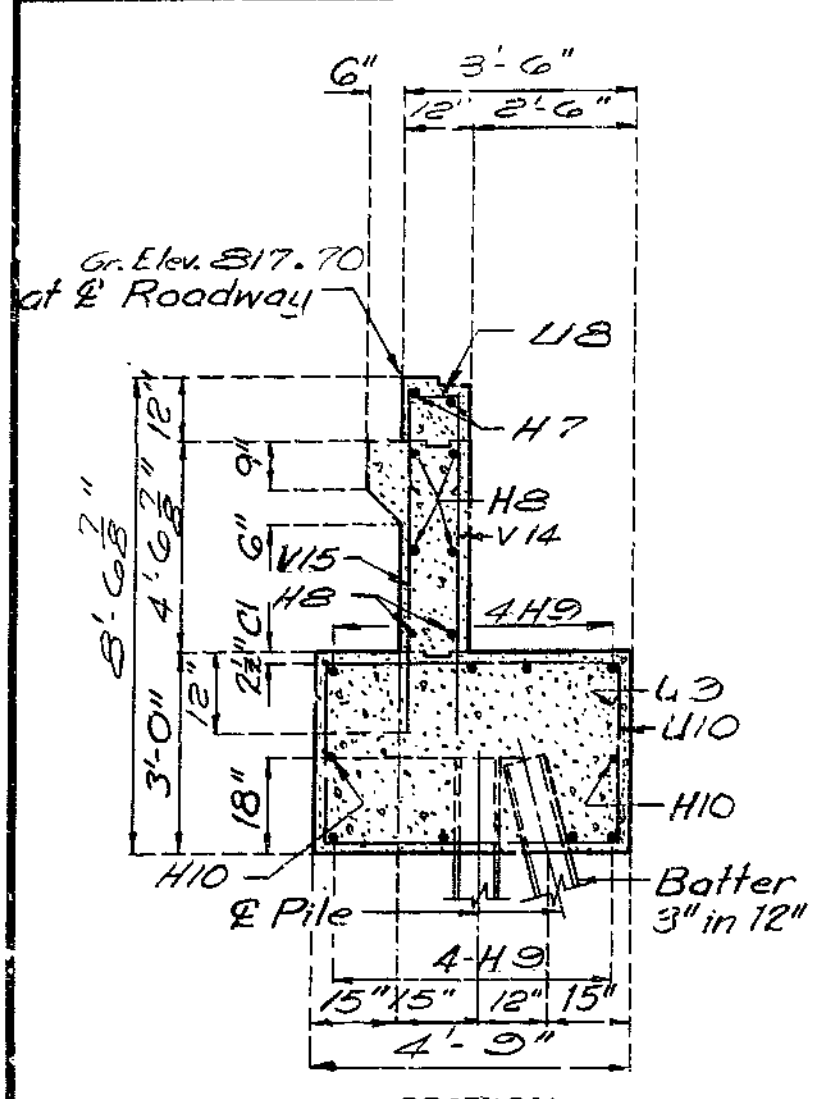
Rev. 10-27-81

CLAY

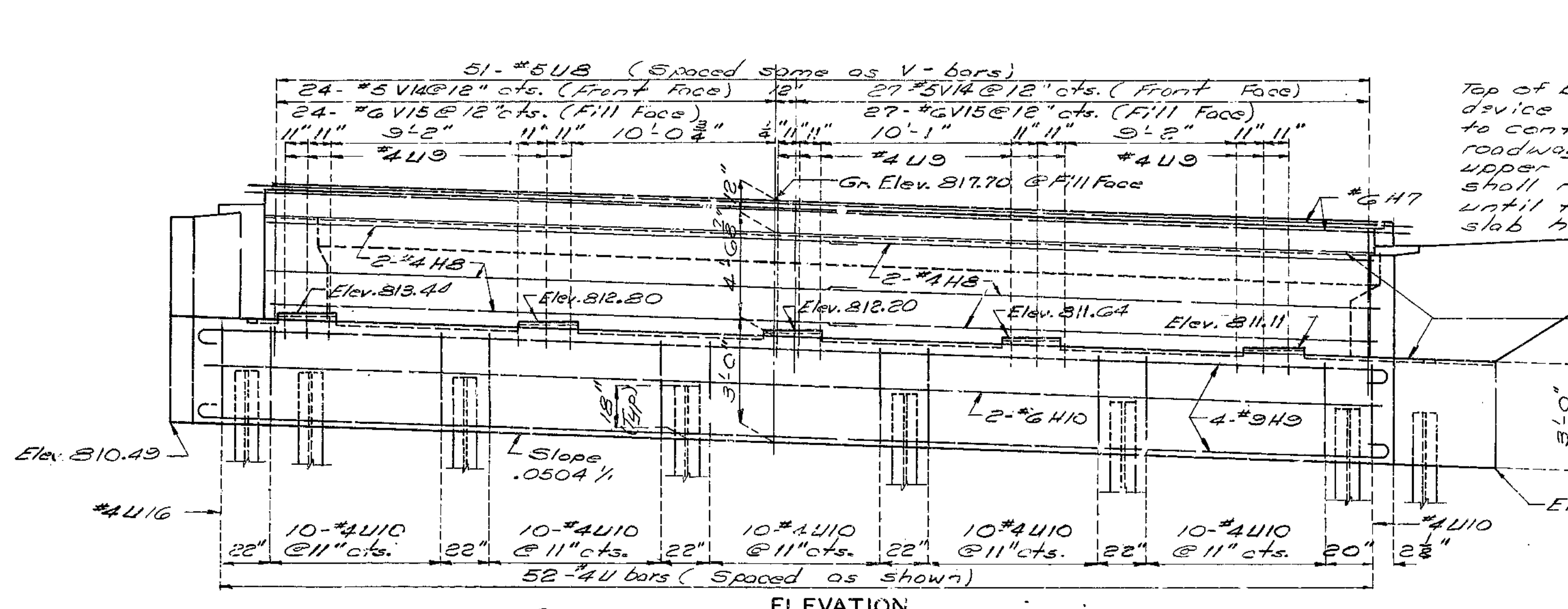
PLAN OF FOOTING SHOWING REINFORCING COUNTY

A-3378

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



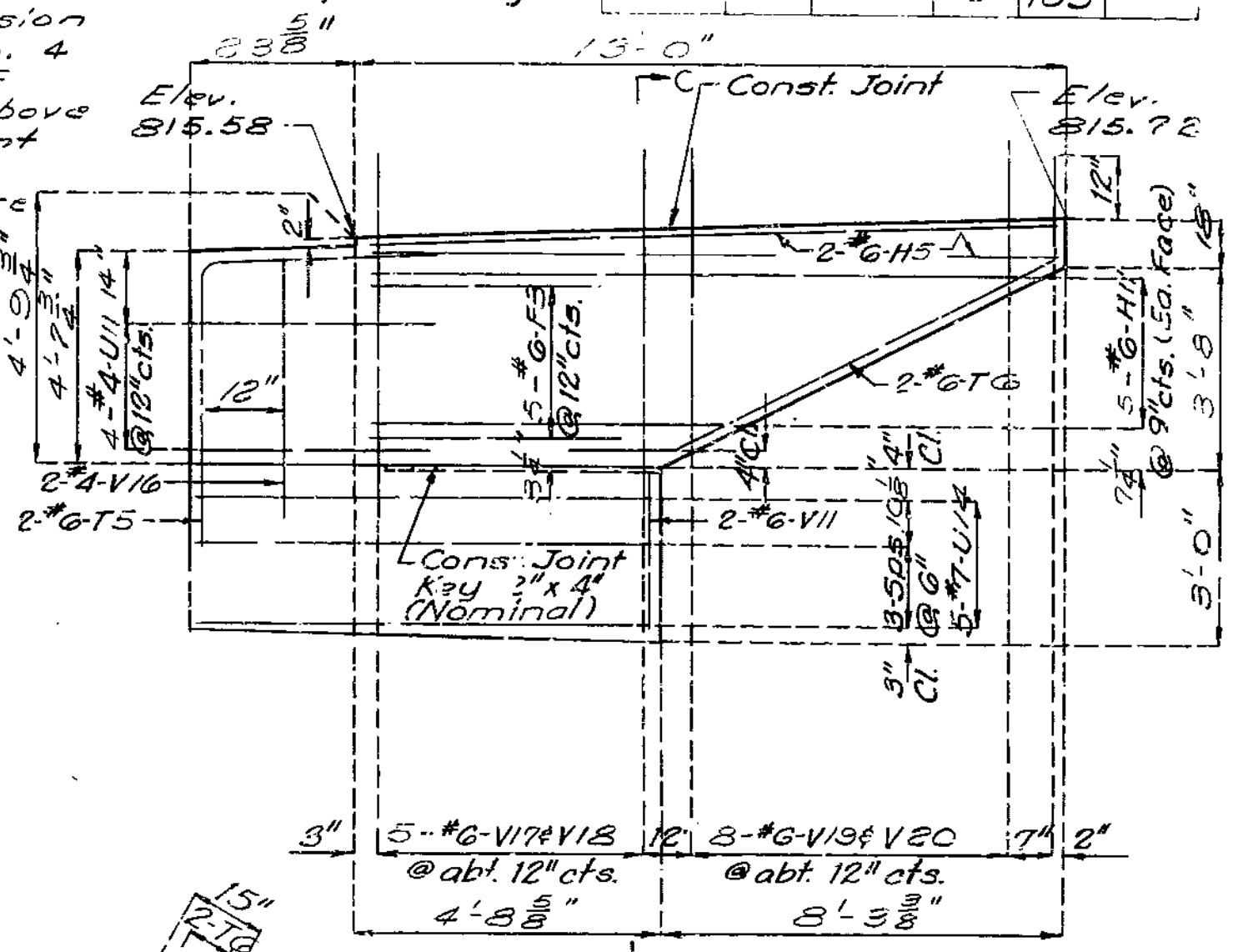
SECTION AT ROADWAY



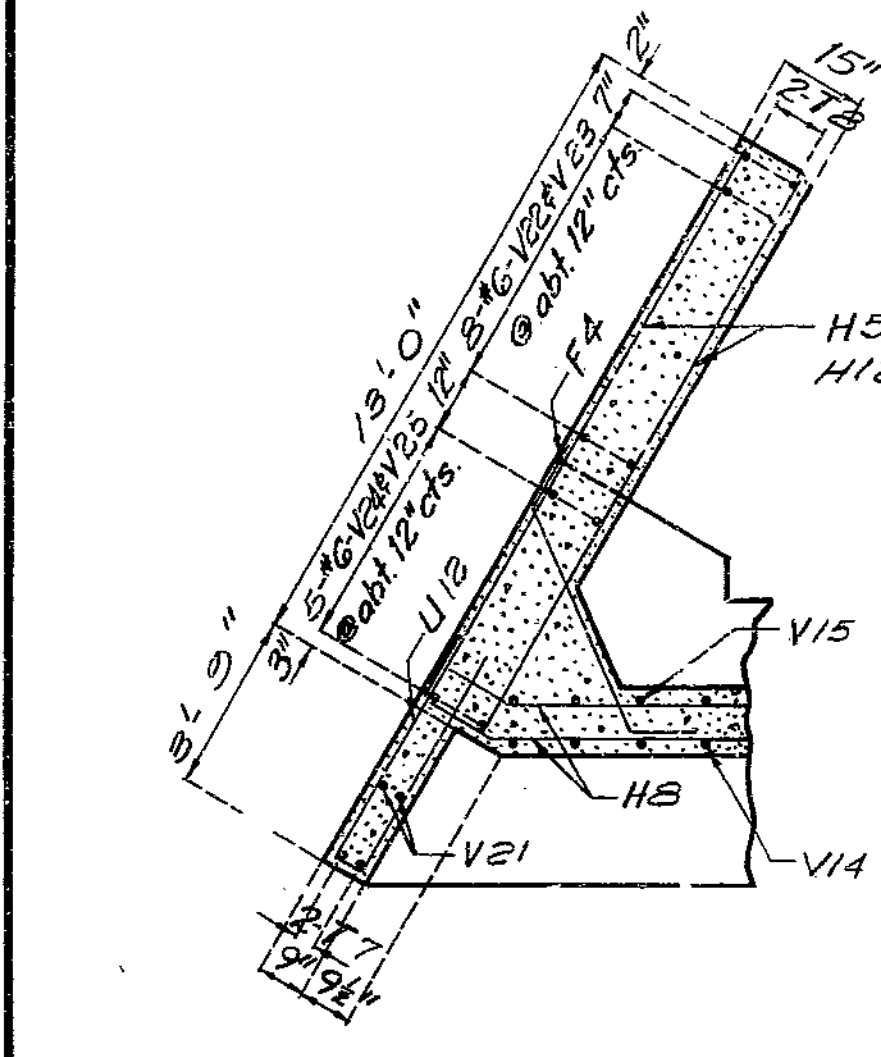
ELEVATION

Note: Field bending shall be required at wings for H bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.

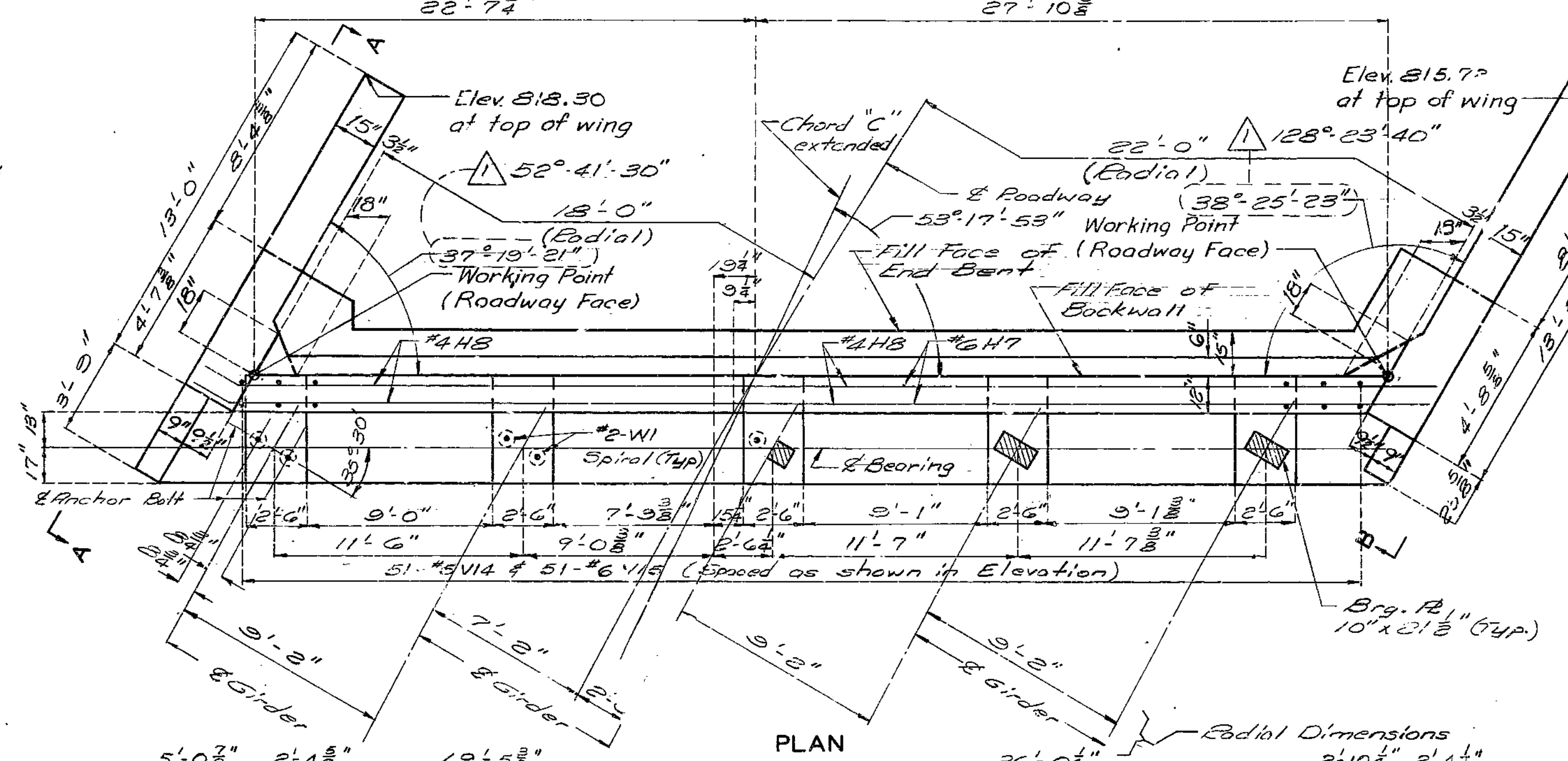
Top of backwall and expansion device for end bent No. 4 to conform to slope of roadway slab. Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.



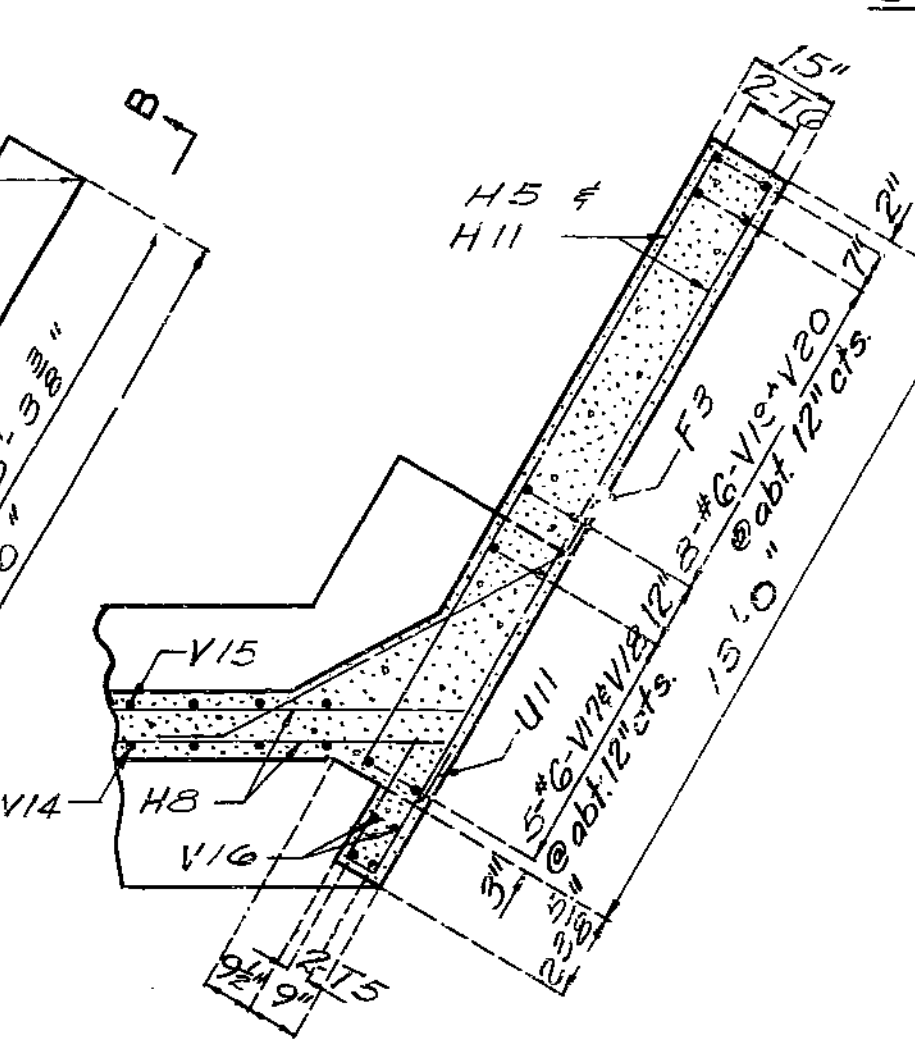
ELEVATION B-B



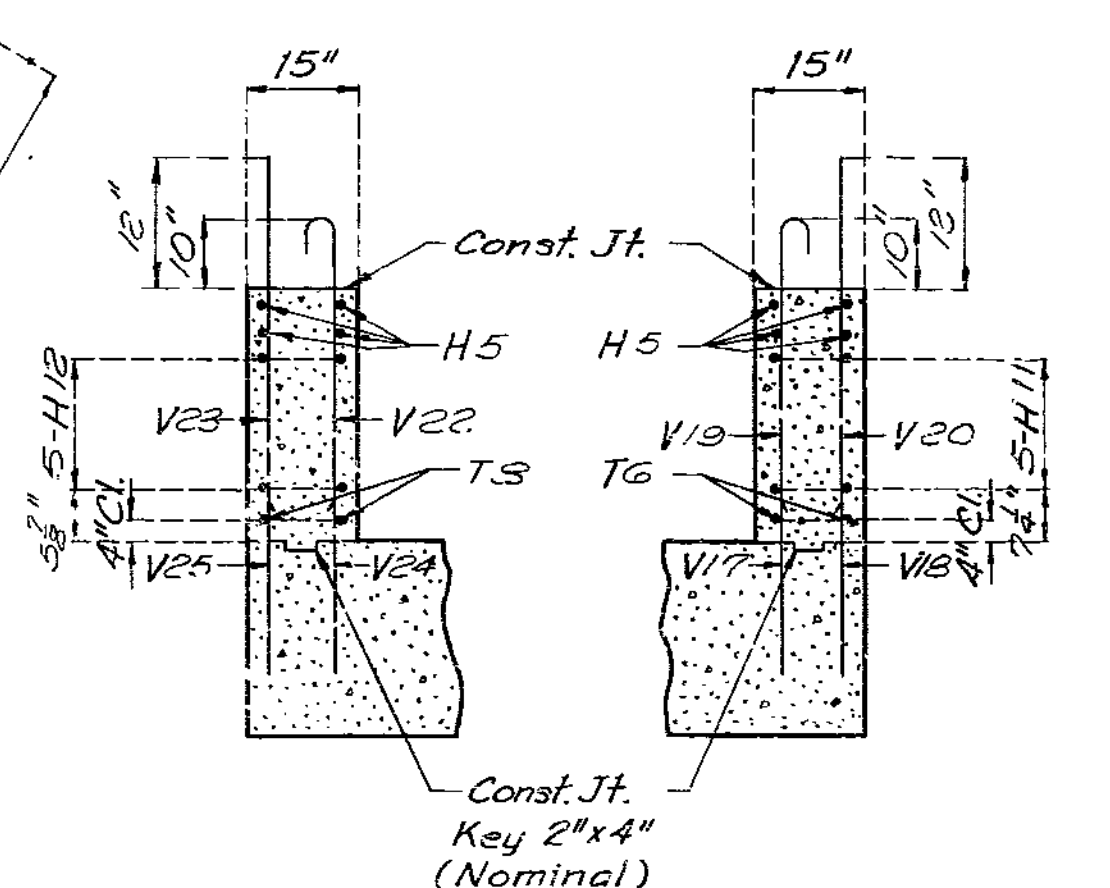
SECTION THRU WING



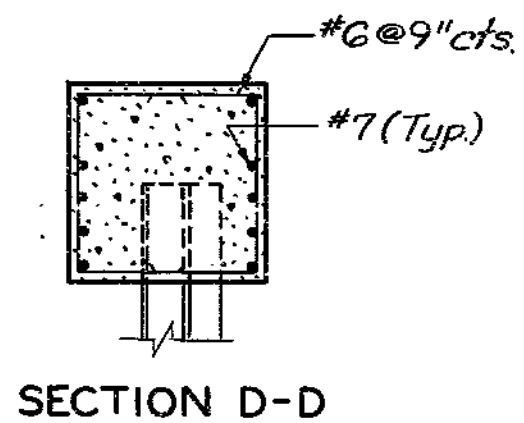
PLAN



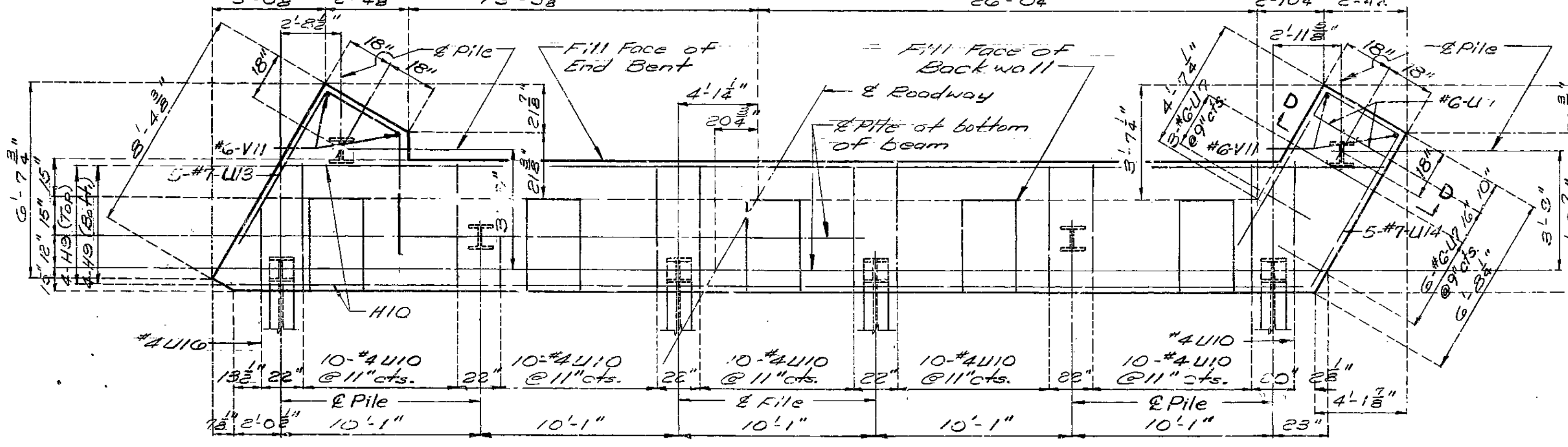
SECTION THRU WING



PART SECTION E-E PART SECTION C-C



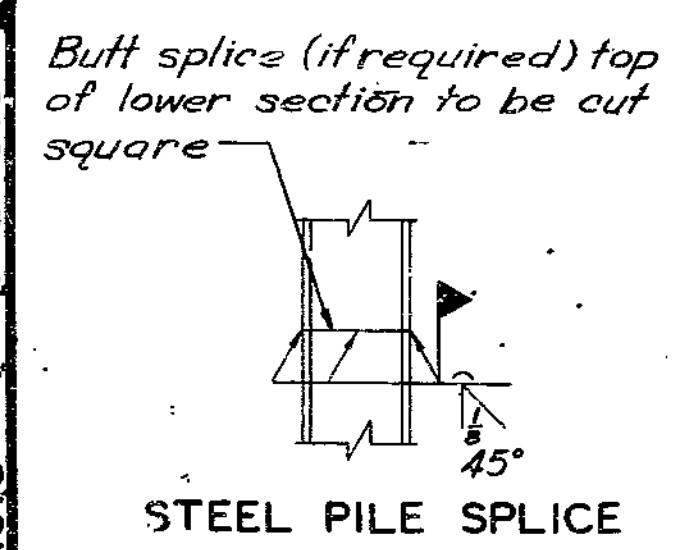
SECTION D-D



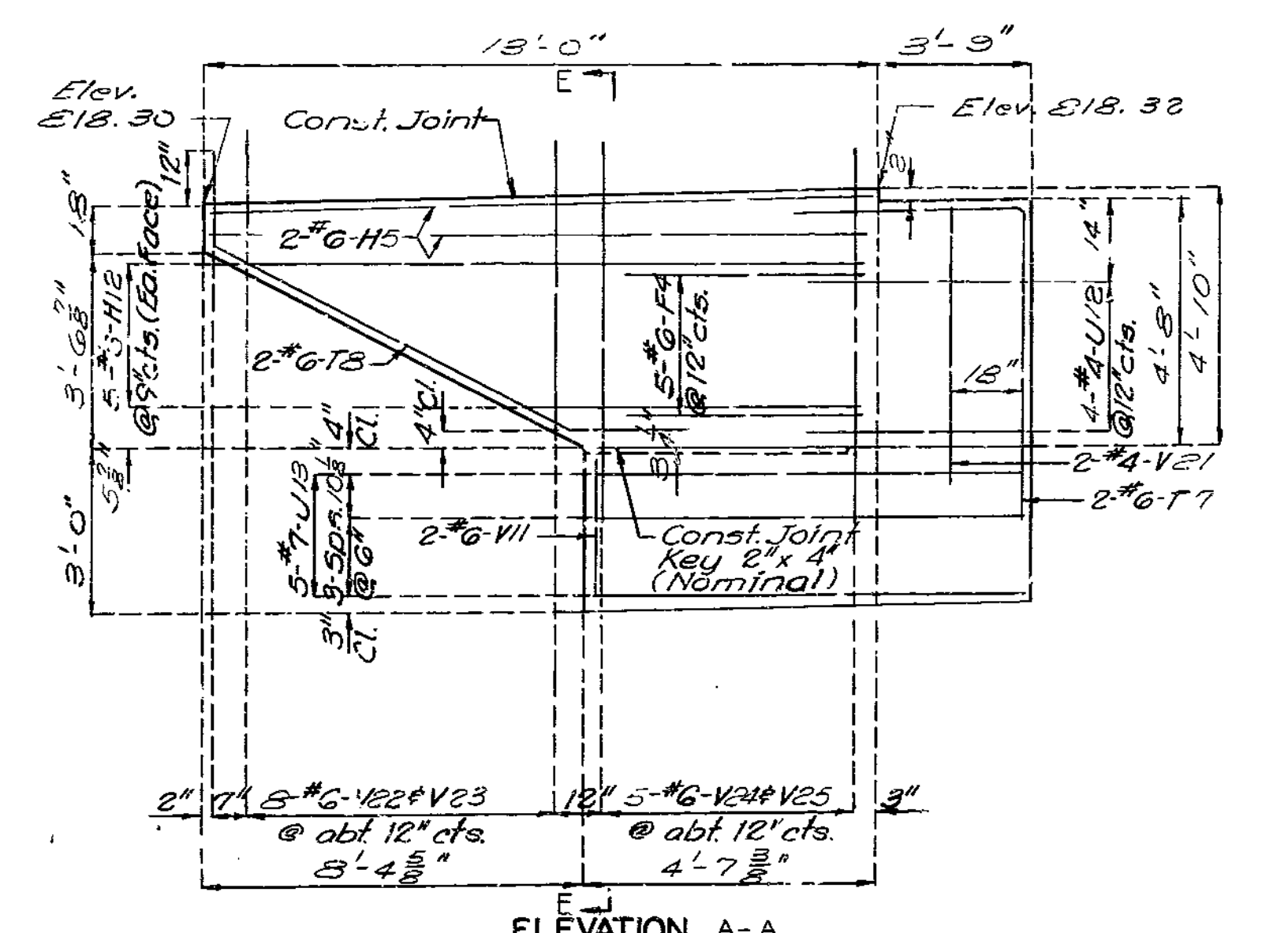
PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT)

DETAILS OF END BENT NO. 4

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



STEEL PILE SPLICE



ELEVATION A-A

242

STD 12 2x15' S.B. REVISED FEB. 1976  
 JULY 1975

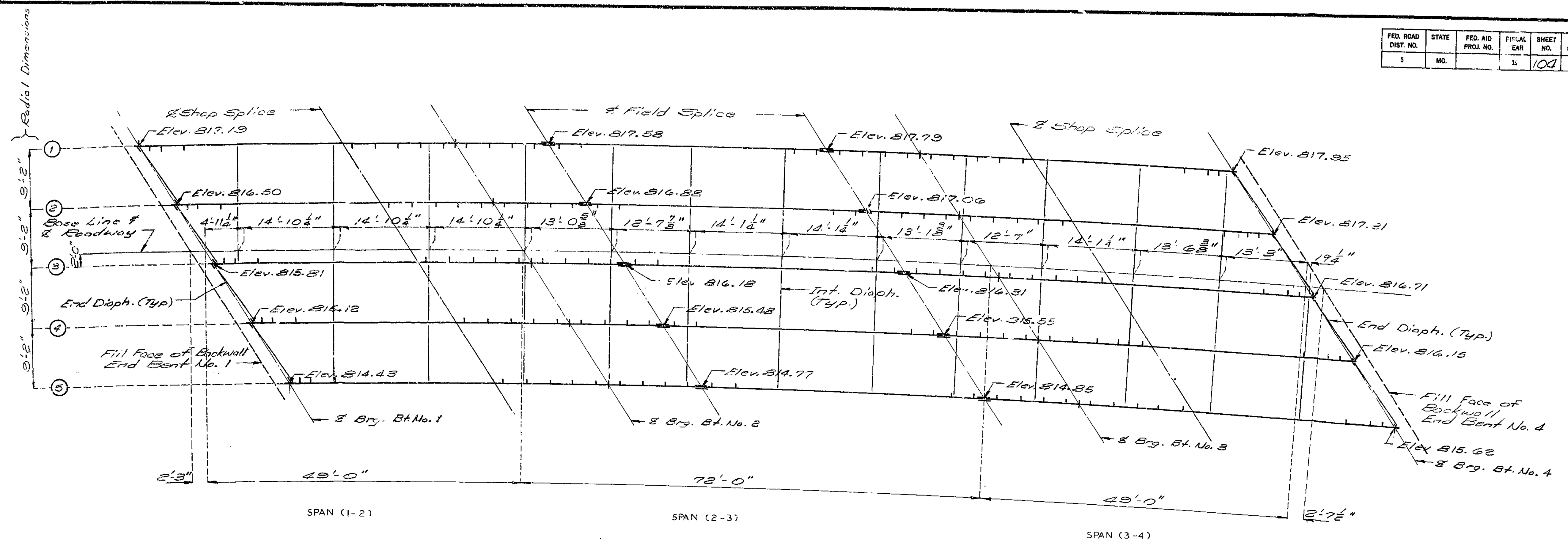
DETAILED Jan 1978  
 CHECKED June 1979

Sheet No. 6 of 16. Revised 5-20-81

CLAY COUNTY

A-3378

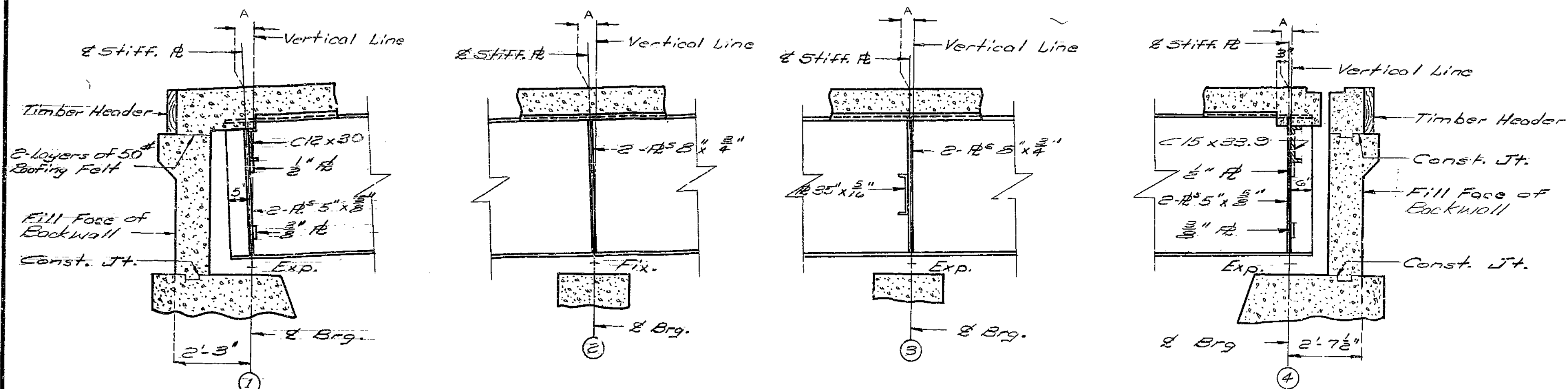
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			104	



PLAN OF STRUCTURAL STEEL

Note: All longitudinal dimensions shown are Horizontal Arc Dimensions along & Roadway.  
 For shear connector spacing and length of girders see Sht No. 8.  
 Elevations shown are taken at bottom of top flange of & at Girders before dead load deflection.  
 All Int. Diaph. are placed Radially.  
 Intermediate web stiffener plates may vary from plan dimensions by a maximum of 3" for Intermediate Diaphragms to connect to intermediate web stiffener plates.

243



PART LONGITUDINAL SECTION (Gdr. 4 shown)

BENT NO.	GDR. 1	GDR. 2	GDR. 3	GDR. 4	GDR. 5
	A	A	A	A	A
1	3/8"	3/8"	3/8"	3/8"	1/4"
2	3/8"	3/8"	3/8"	3/8"	1/4"
3	1/8"	1/4"	3/8"	1/2"	5/8"
4	1/8"	1/4"	3/8"	1/2"	5/8"

DETAILED Oct. 19 77  
 CHECKED June 19 79

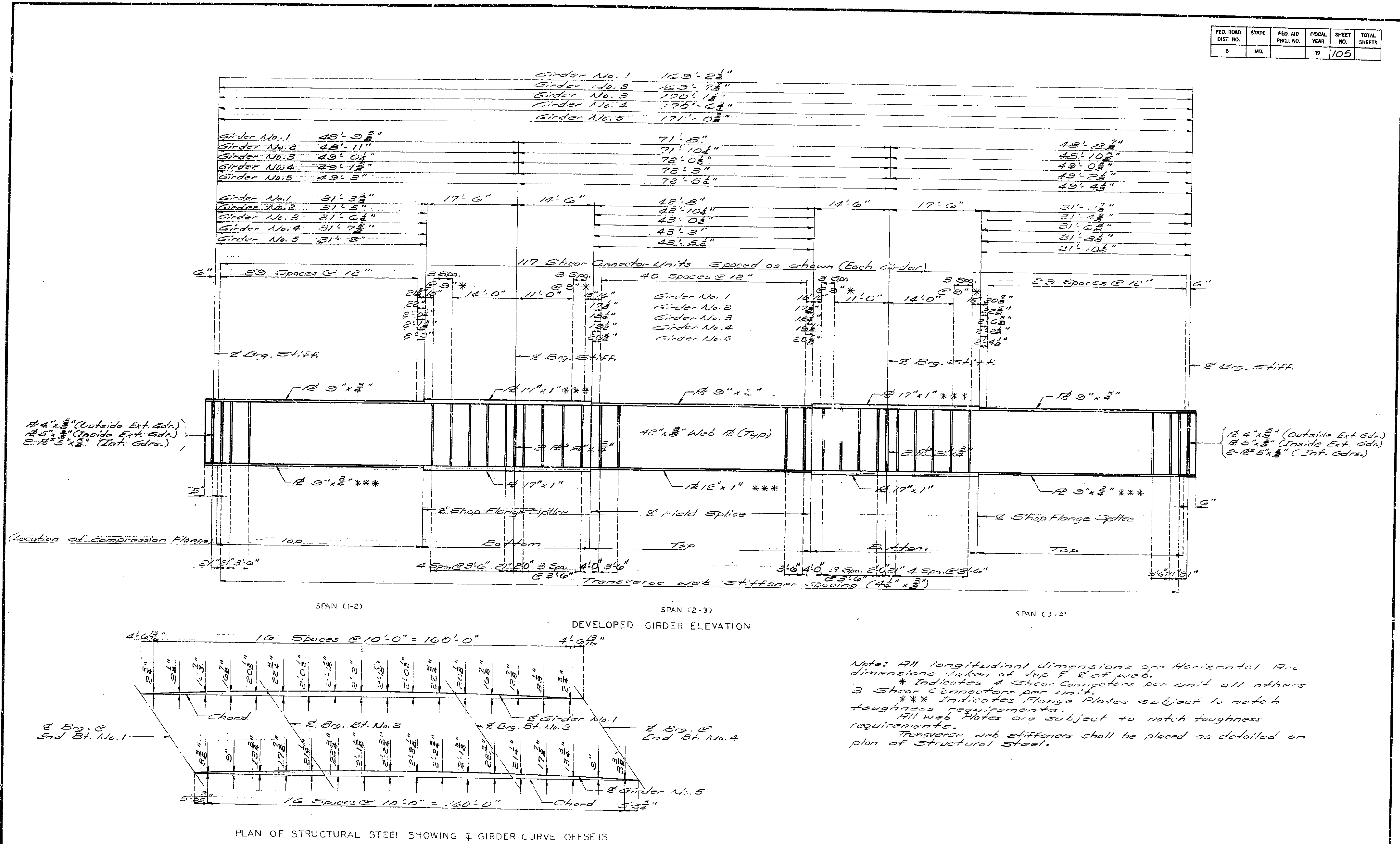
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 7 of 16

CLAY COUNTY

A-3378

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



244

DETAILED Nov. 1977  
CHECKED Jan. 1979

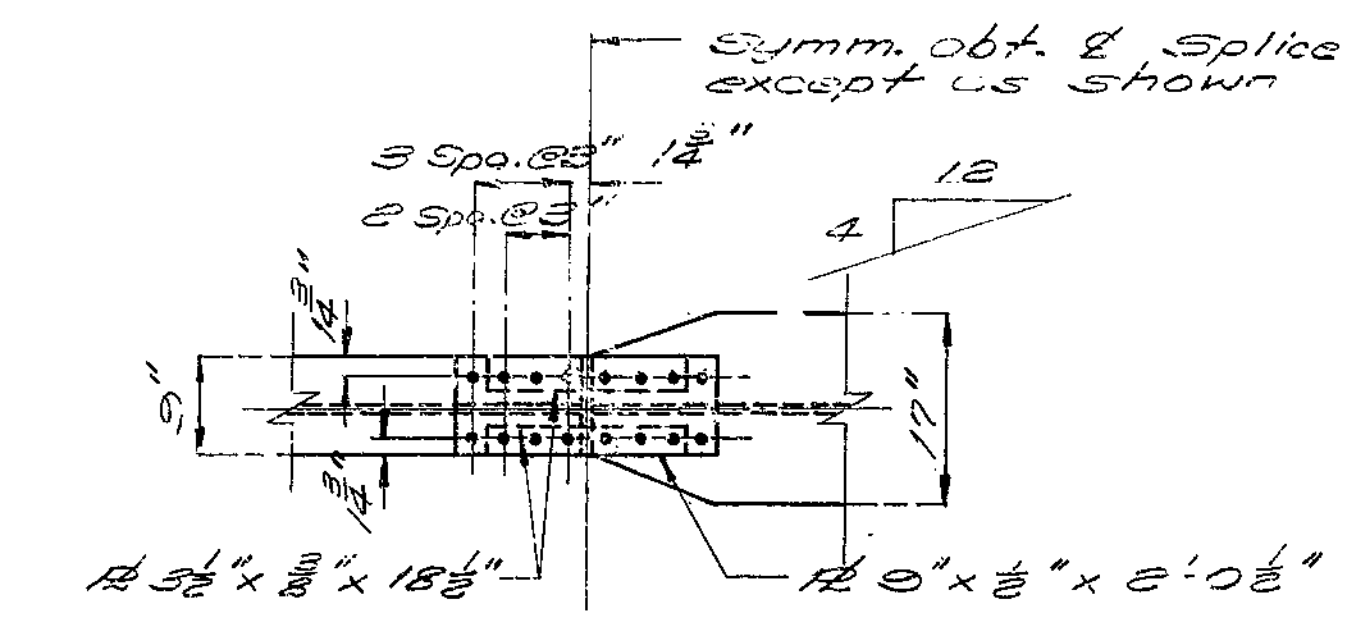
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 8 of 10

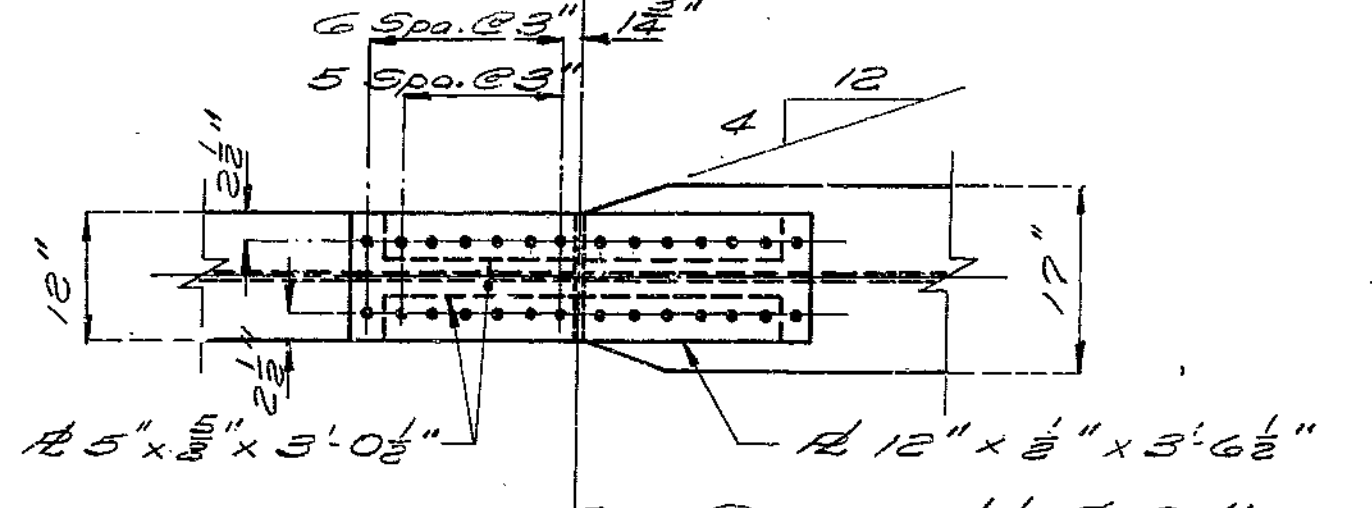
CLAY COUNTY

A-3378

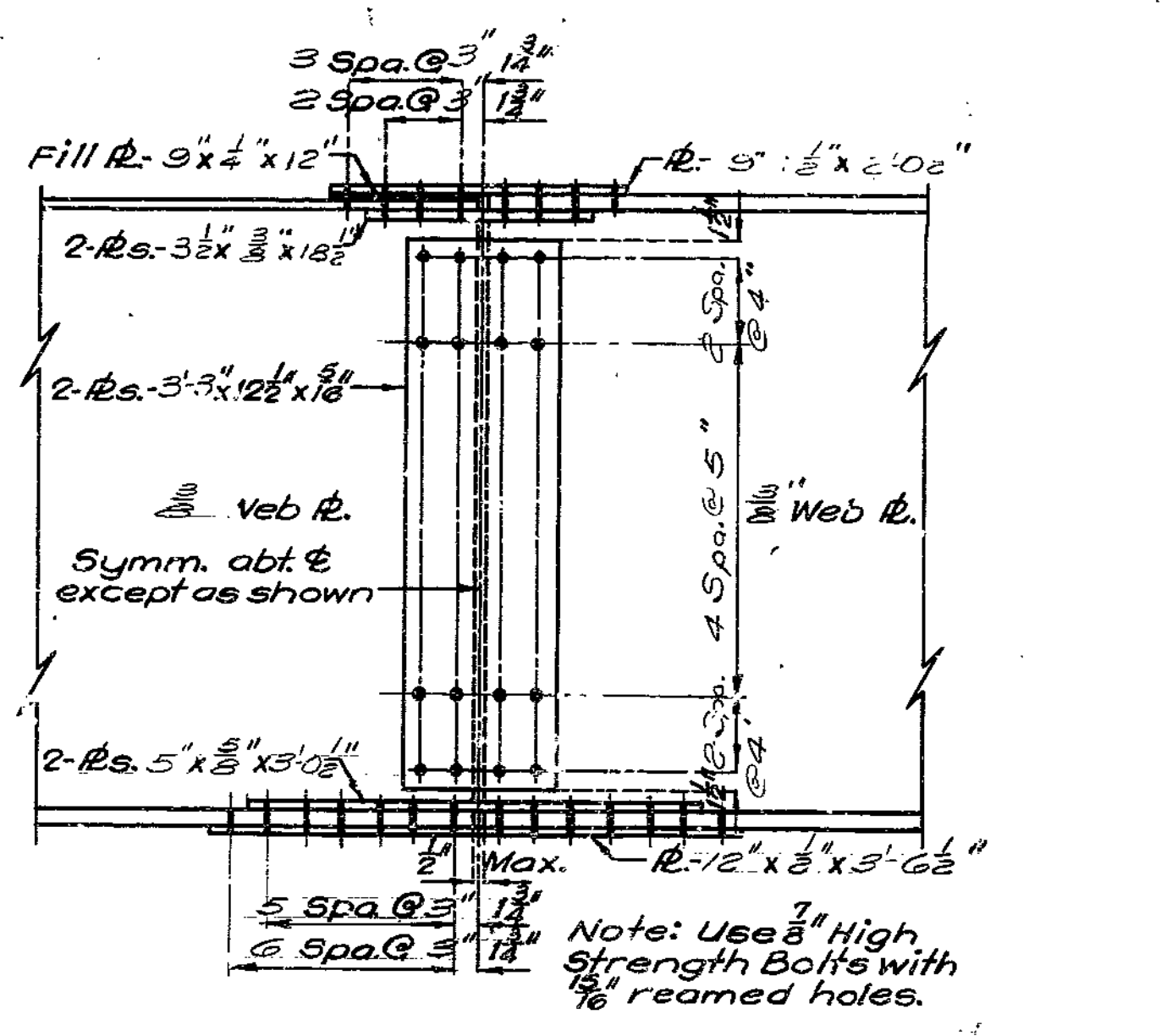
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	106	



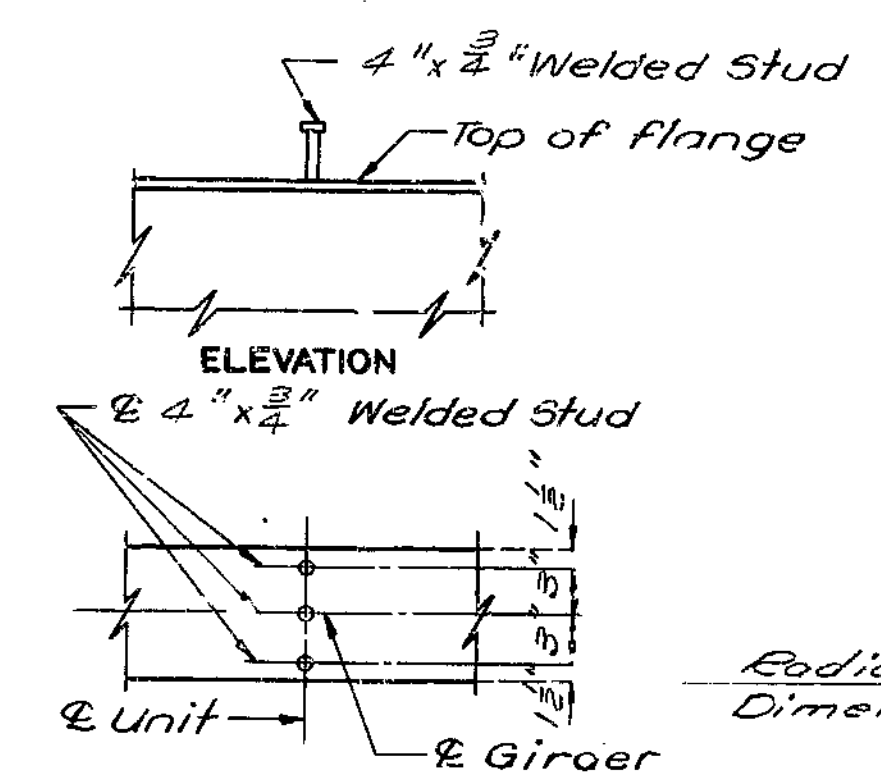
PLAN OF TOP FLANGE



PLAN OF BOTTOM FLANGE

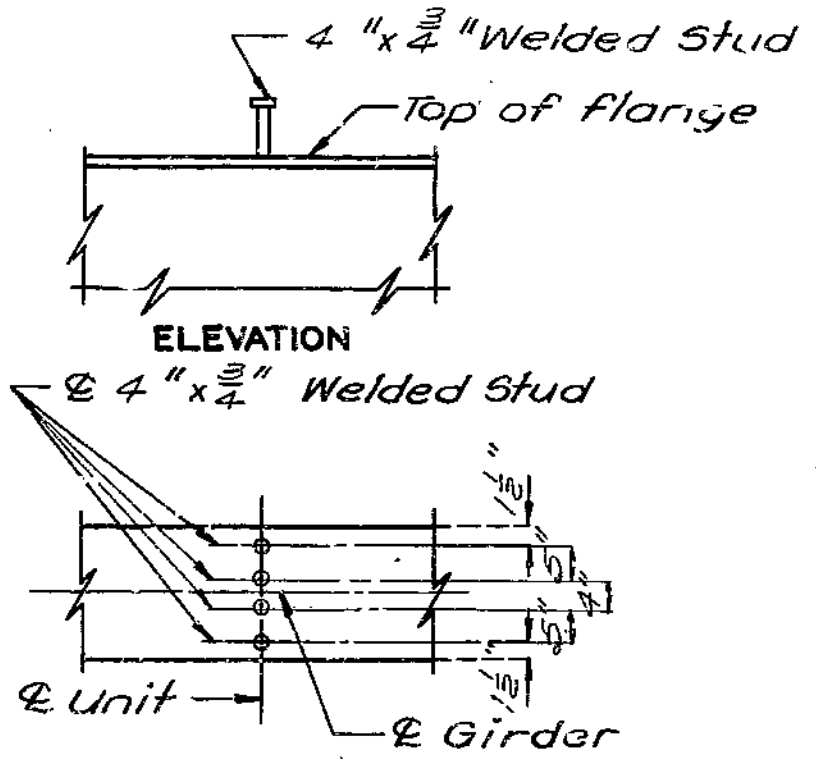


DETAIL OF FIELD SPLICE



PLAN OF STUD CONN.

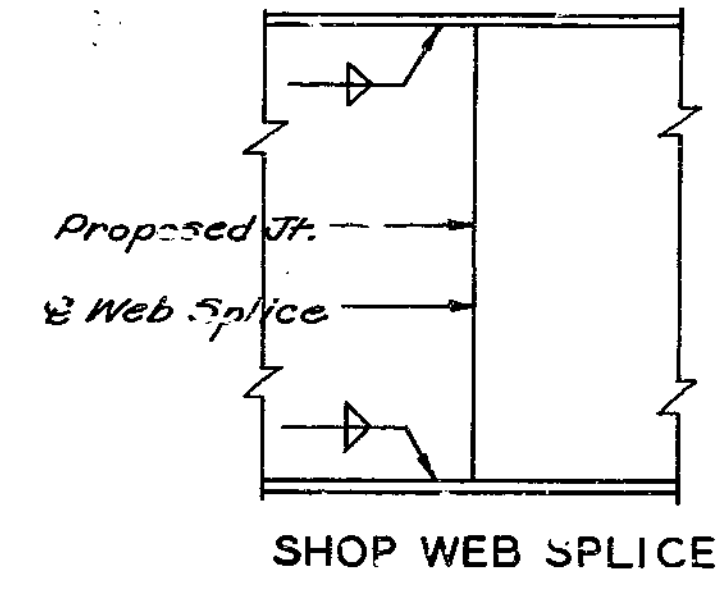
DETAILS OF SHEAR CONNECTORS



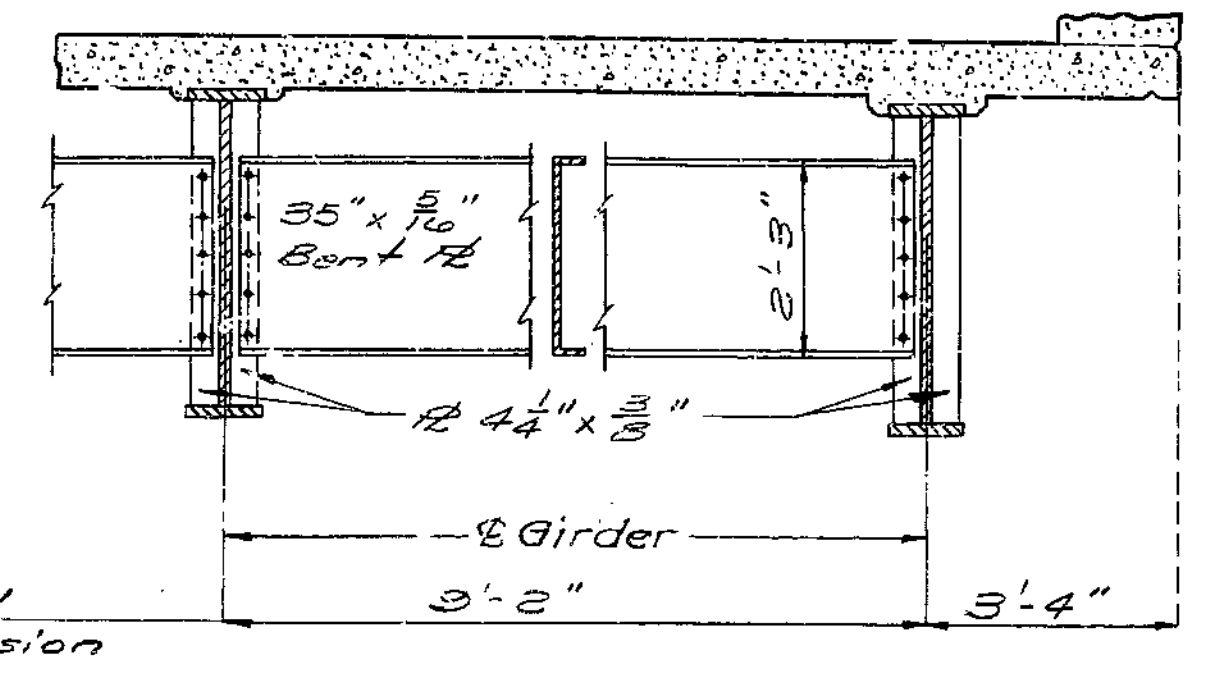
PLAN OF STUD CONN.

DETAILS OF SHEAR CONNECTORS

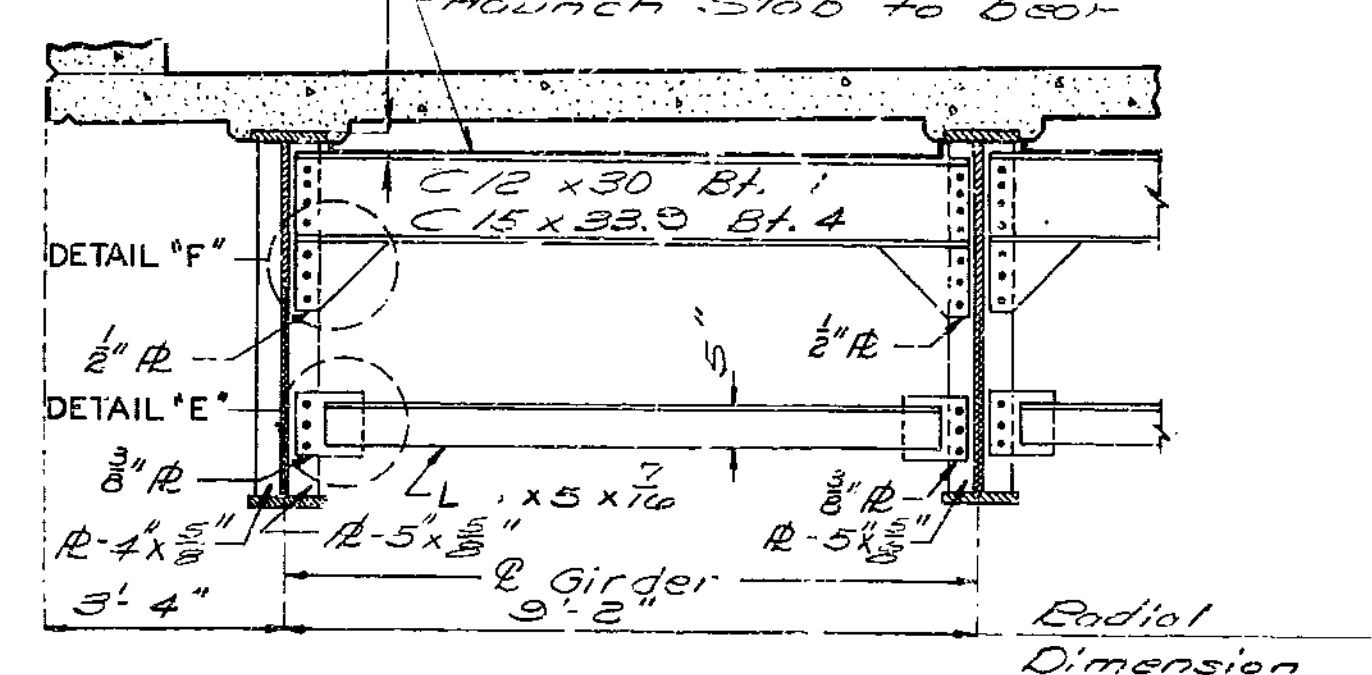
Note: Weight of 1156 lbs. of Shear Connectors is included in weight of fabricated structural carbon steel.



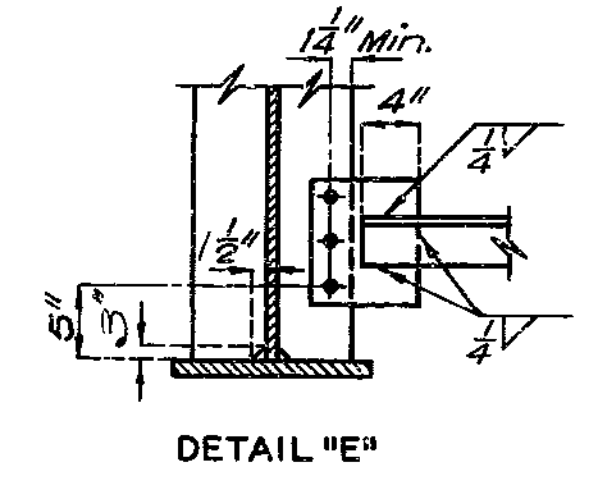
SHOP WEB SPLICE



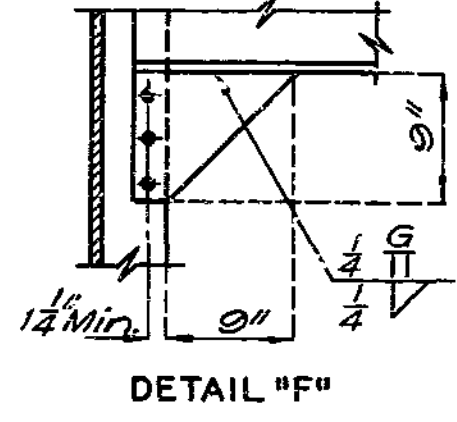
TYP. PART SECTION SHOWING INT. DIAPHRAGM



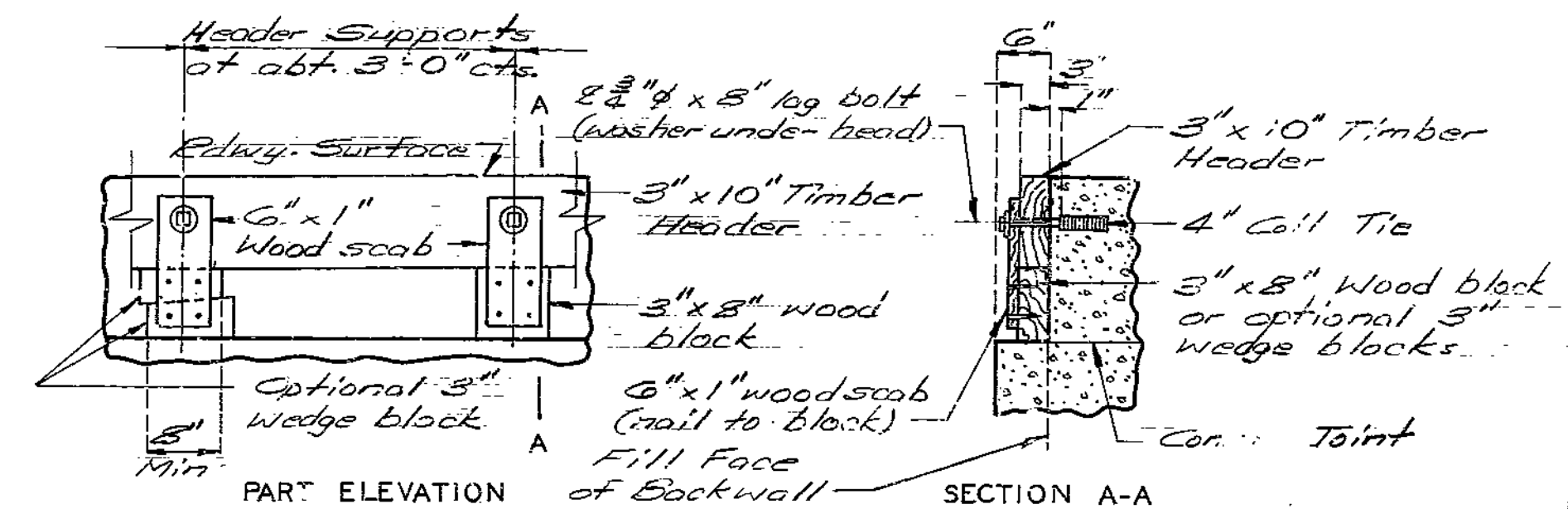
TYP. PART SECTION SHOWING END DIAPHRAGMS



DETAIL "E"

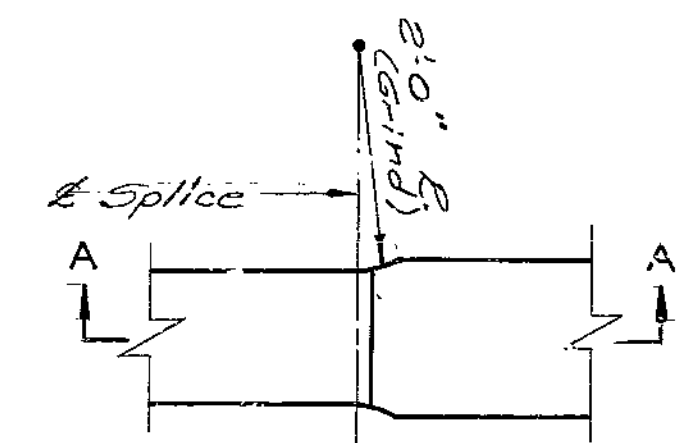


DETAIL "F"

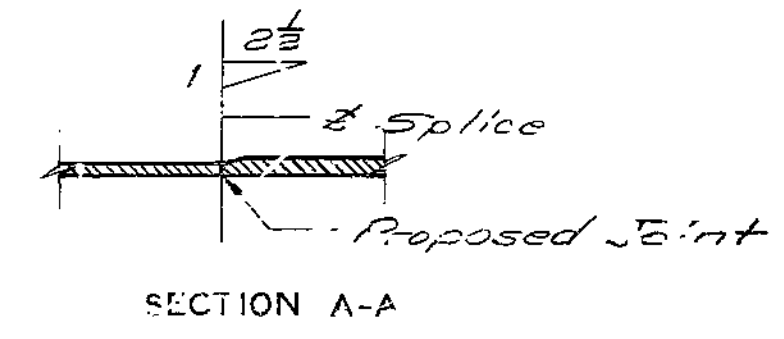


Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER AT END BENTS



PLAN

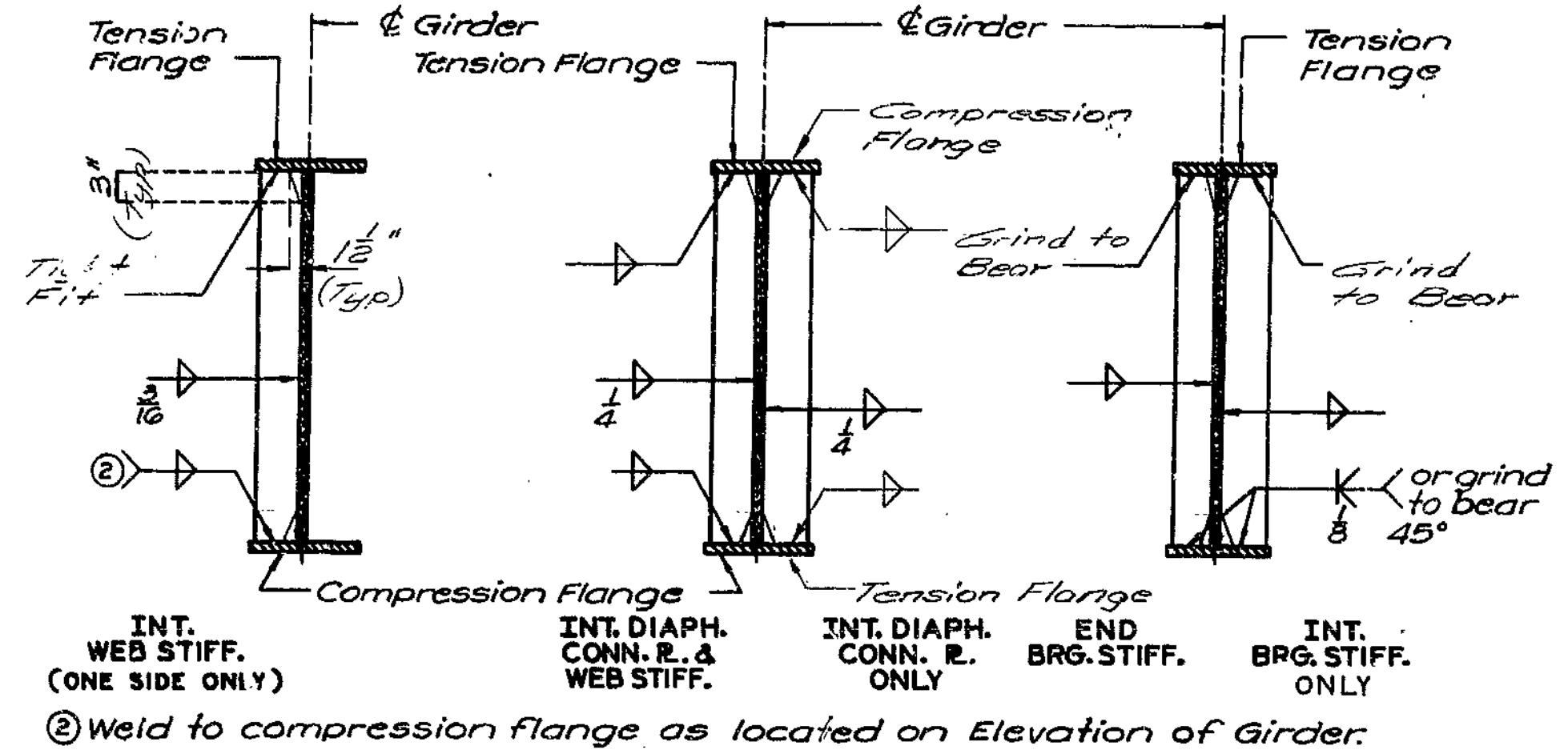


SECTION A-A

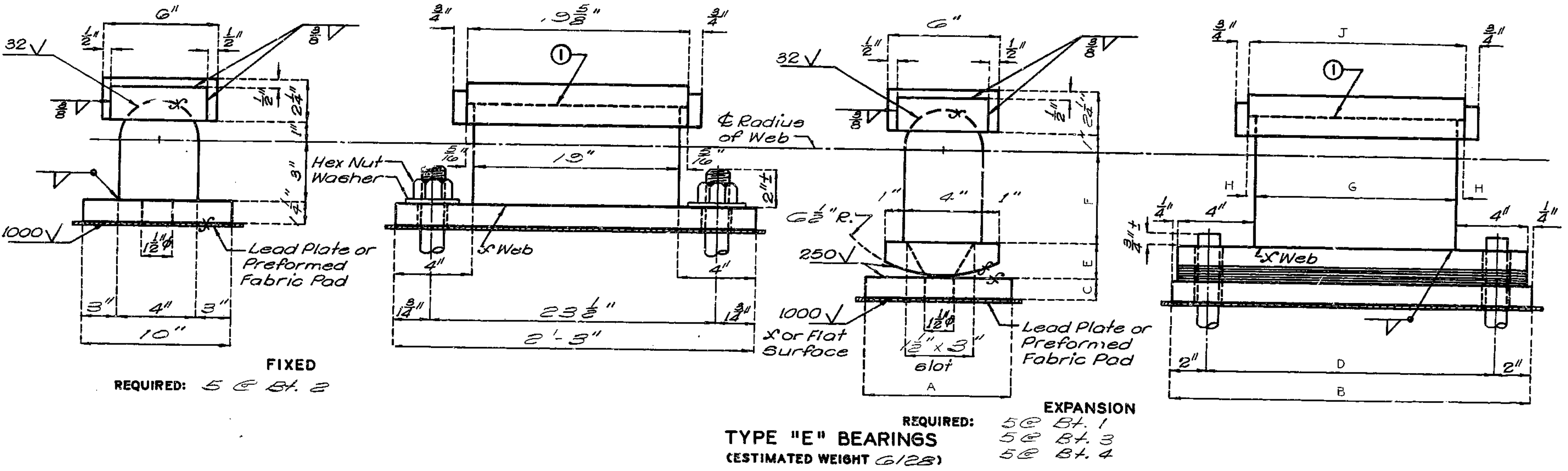
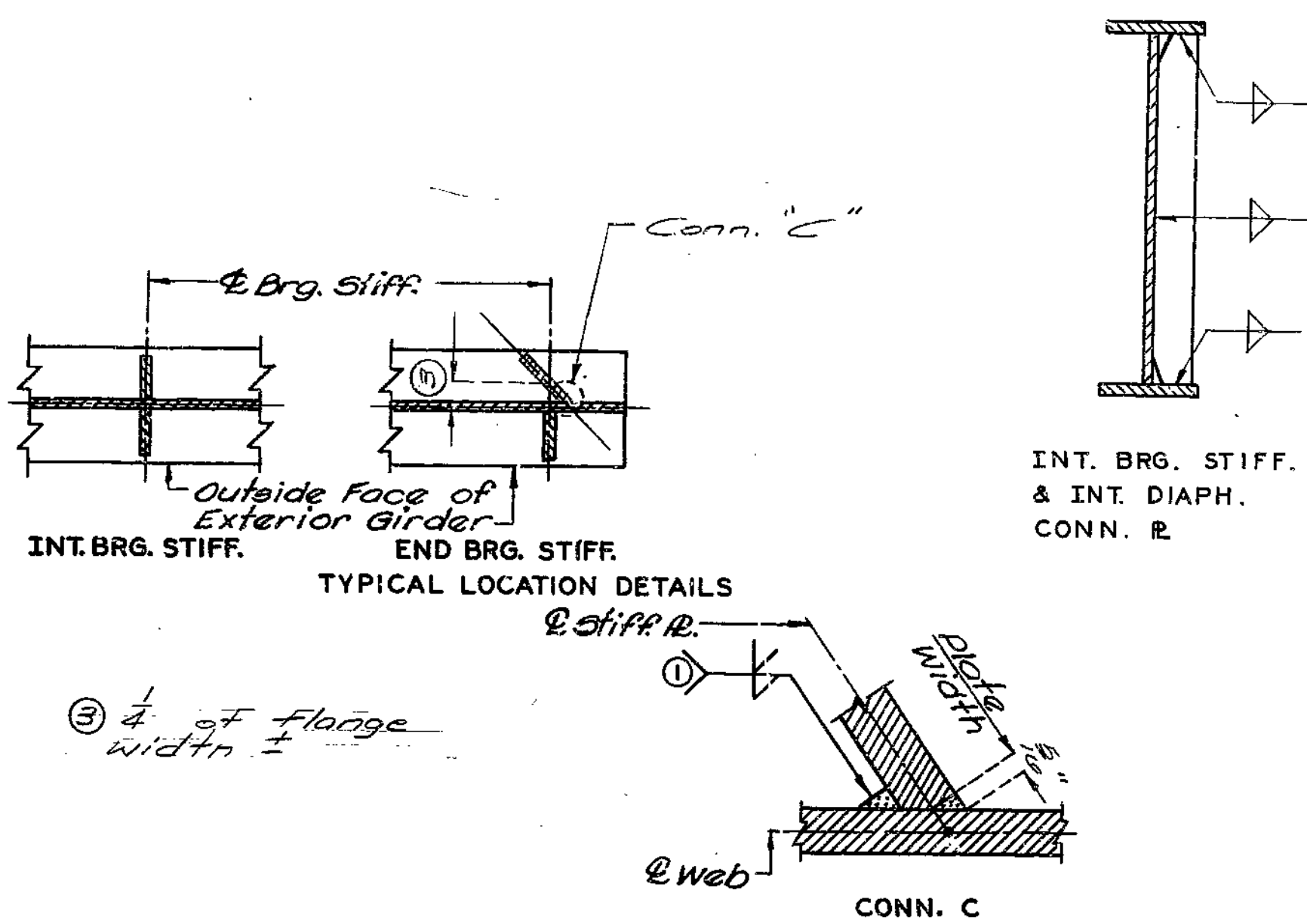
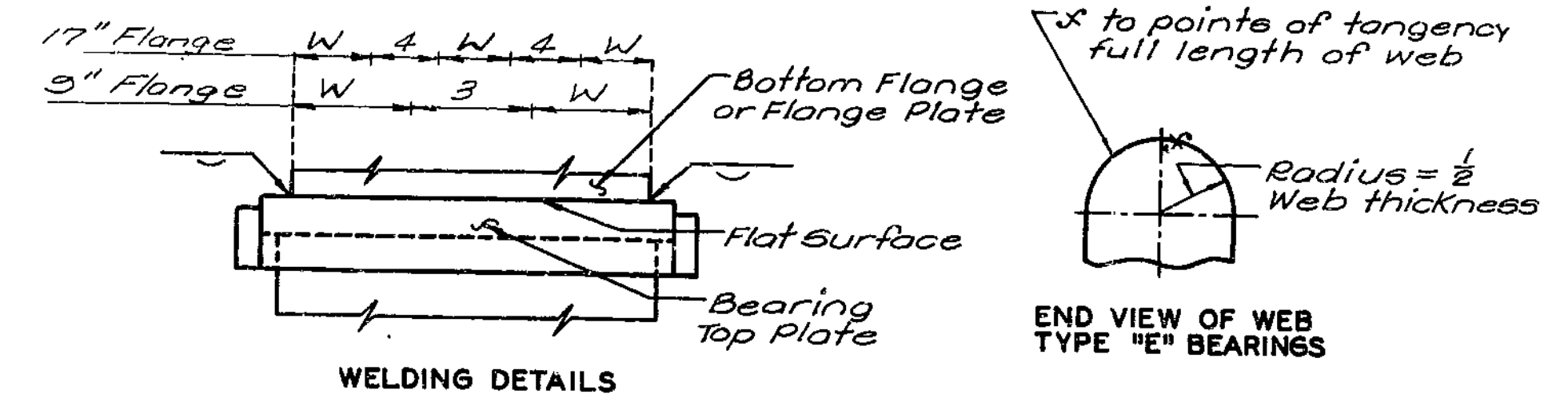
SHOP FLANGE SPLICE

245

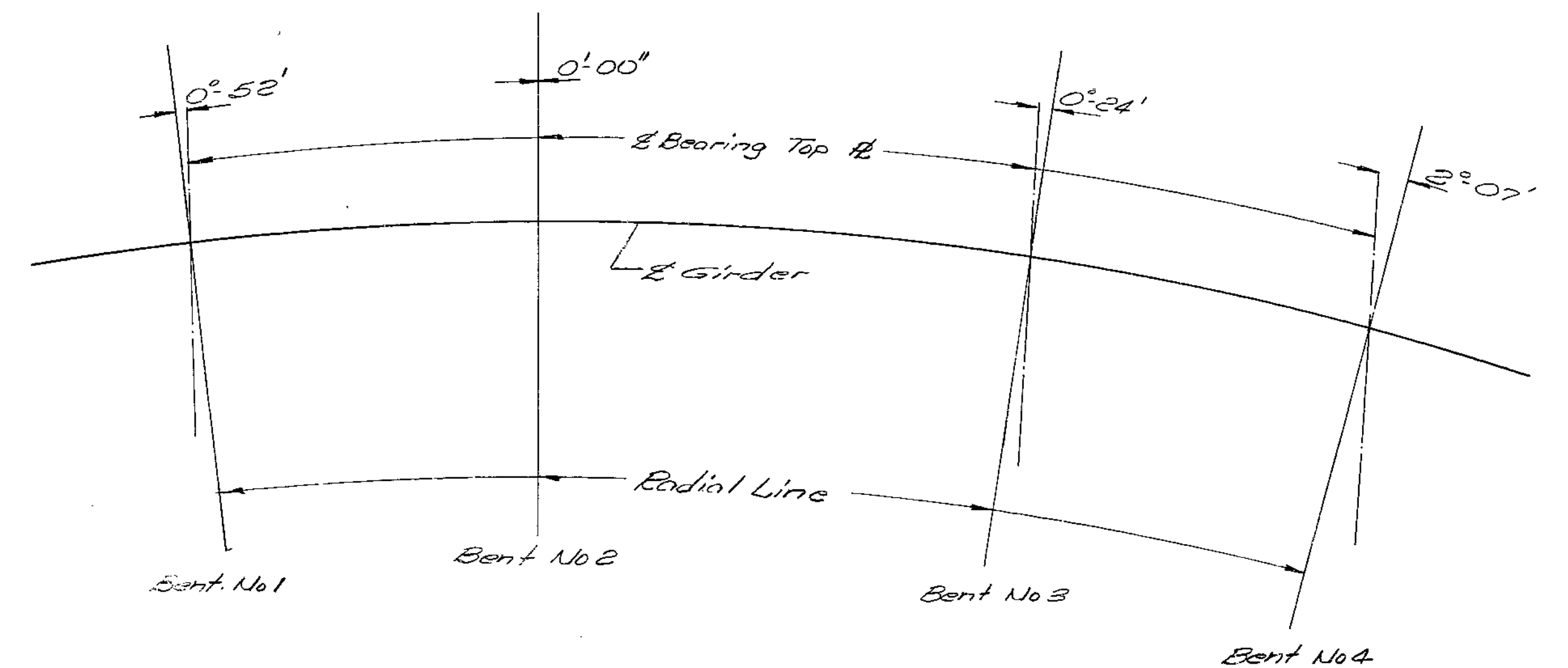
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	107	



**NOTES: TYPE "E" BEARINGS**  
 ANCHOR BOLTS FOR TYPE "E" BEARINGS SHALL BE 1-1/4" SWEDGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS.  
 "ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS.  
 "X" INDICATES MACHINE FINISH SURFACE.  
 ① BONDED LUBRICANT  
 A LUBRICANT COATING SHALL BE APPLIED IN THE SHOP TO BOTH MATING SURFACES OF THE BEARING ASSEMBLY. THE LUBRICANT, METHOD OF CLEANING, AND APPLICATION SHALL MEET THE REQUIREMENTS OF MIL-L-23398 AND MIL-L-46147 SUCH AS DOW CORNING'S MOLYKOTE 3402 BONDED LUBRICANT. THE COATED AREAS SHALL BE PROTECTED FOR SHIPPING AND ERECTION.  
 SHOP DRAWINGS ARE NOT REQUIRED FOR LEAD PLATES AND/OR PREFORMED FABRIC PADS.



Bent No.	A	B	C	D	E	F	G	H	J
1	8"	20 1/2"	13"	16 1/2"	1 1/2"	4 1/2"	12"	3/16"	12 1/2"
3	11"	21 3/4"	2"	23 1/2"	2"	4 1/2"	13"	3/16"	13 1/2"
4	10"	21 1/2"	1 1/2"	17 1/2"	1 1/2"	4 1/2"	13"	3/16"	13 1/2"



246

DETAILED Nov. 1977  
CHECKED JUNE 1979

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

Sheet No. 10 of 16.

CLAY COUNTY

A-3378

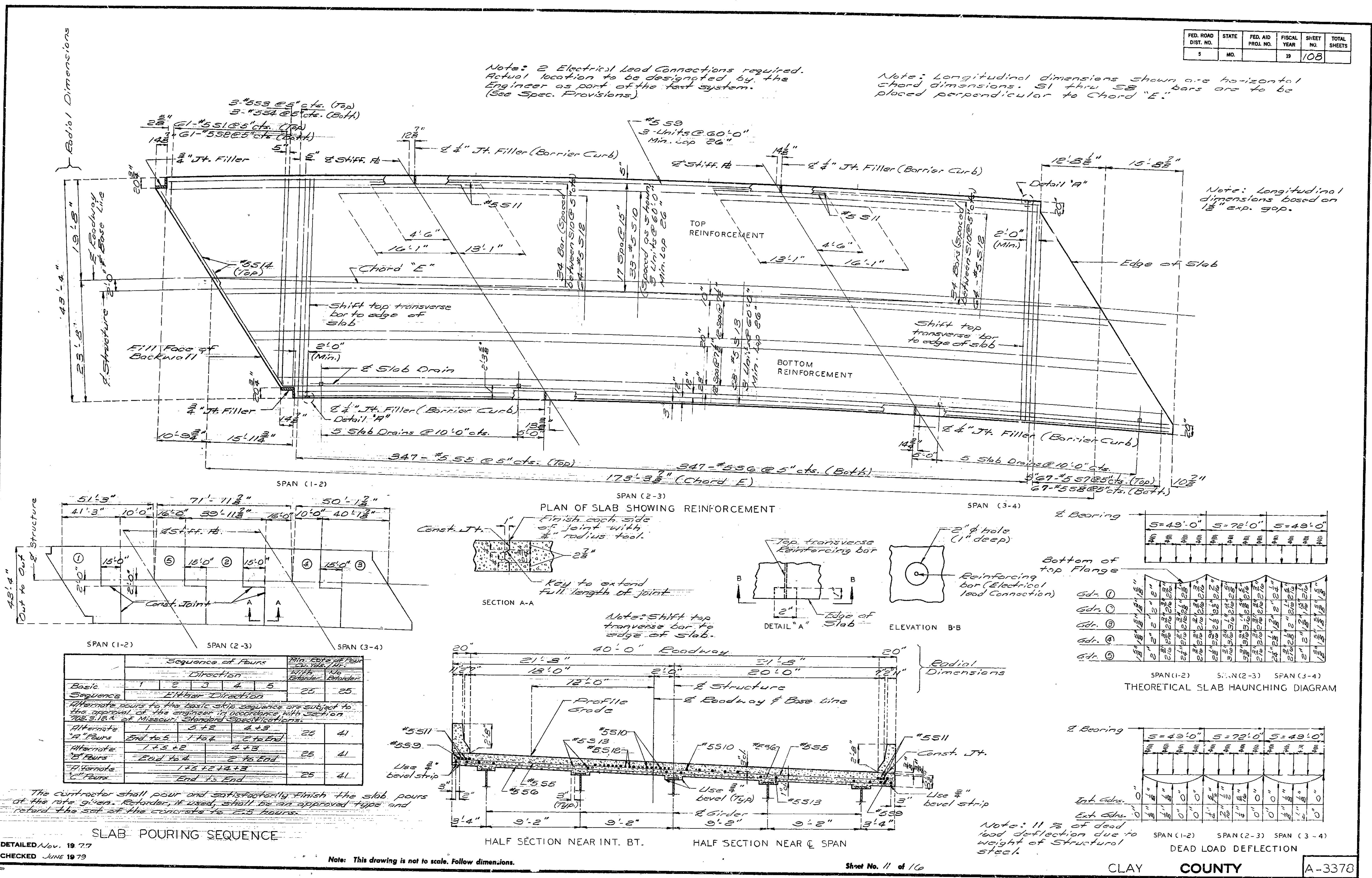


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	108	

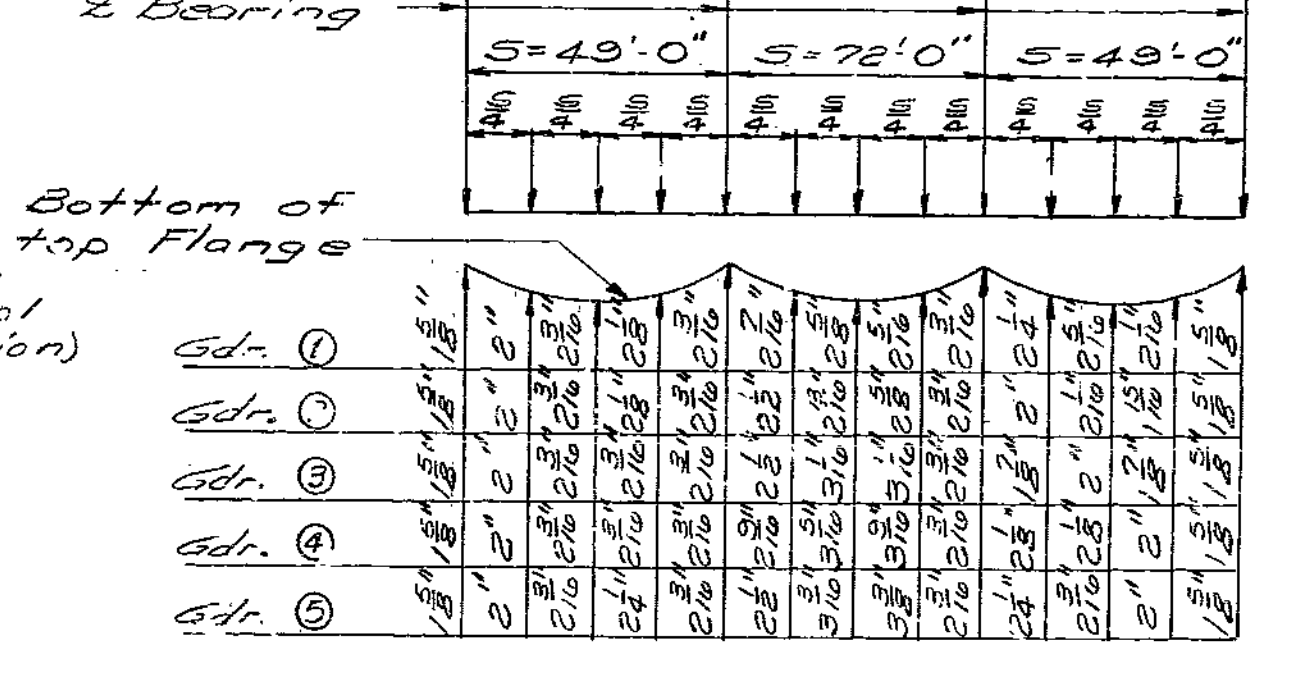
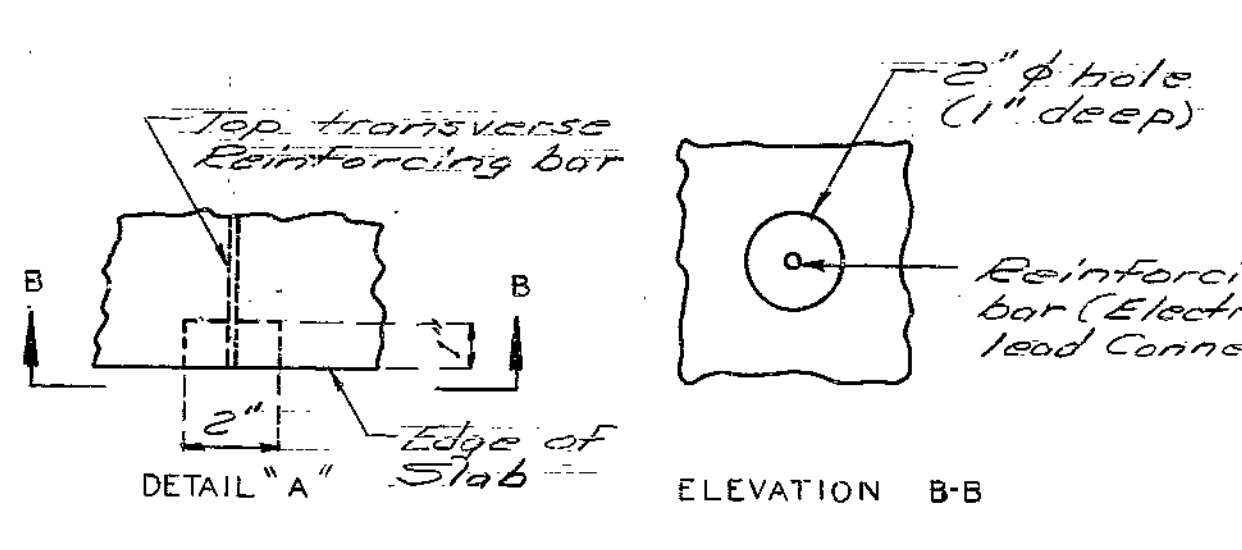
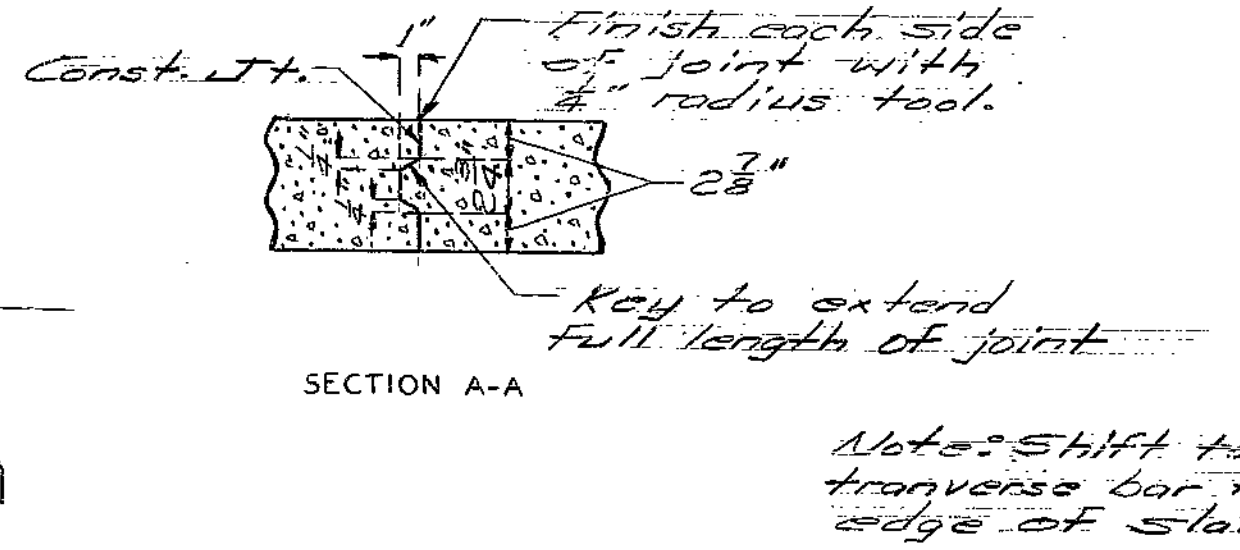
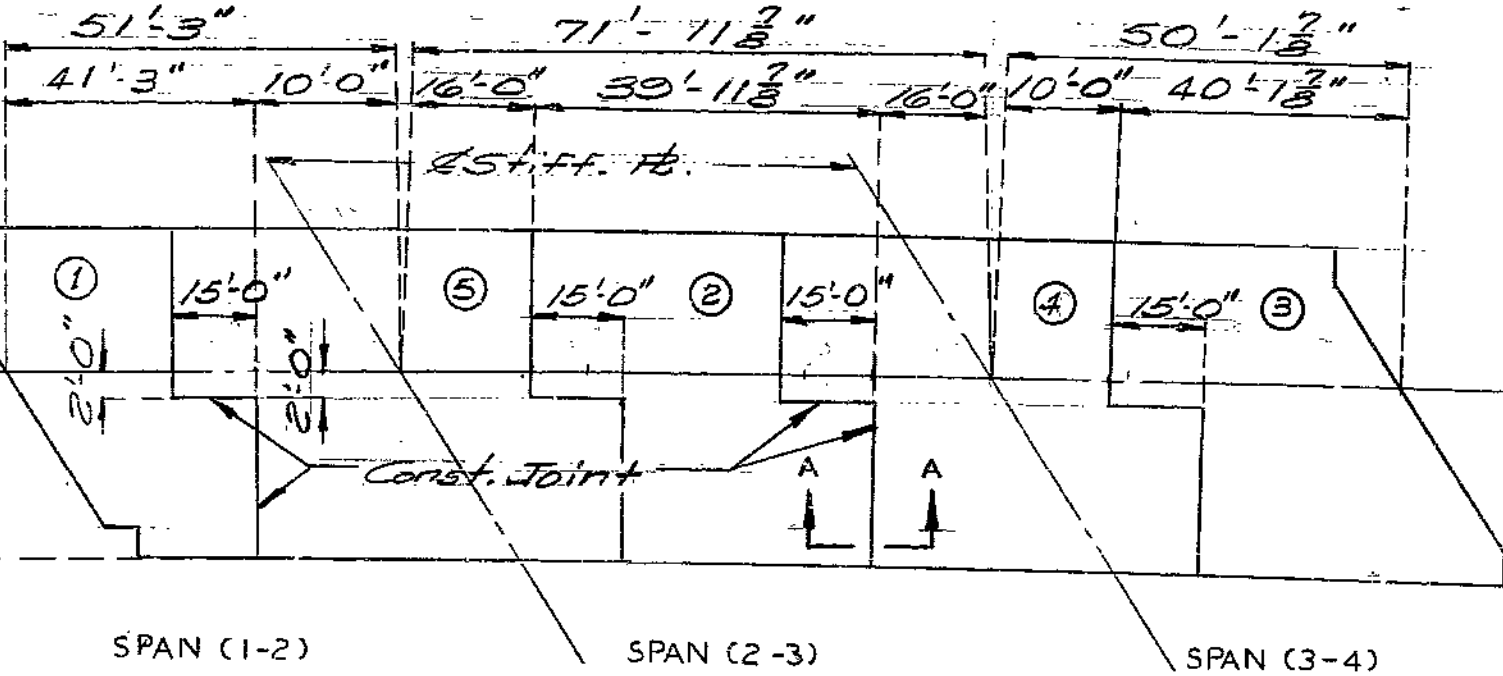
Notes: 2 Electrical Lead Connections required. Actual location to be designated by the Engineer as part of the test system. (See Spec. Provisions).

Note: Longitudinal dimensions shown are horizontal chord dimensions. S1 thru S8 bars are to be placed perpendicular to Chord "E".

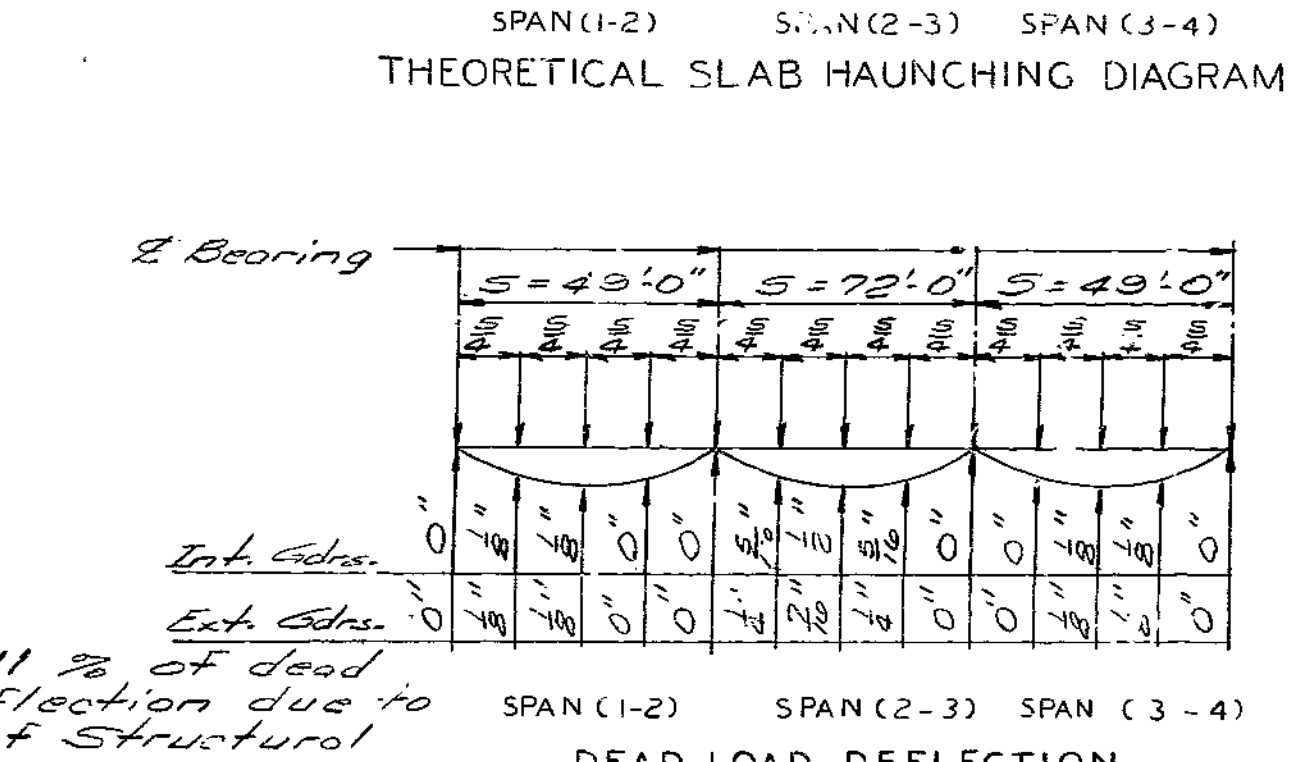
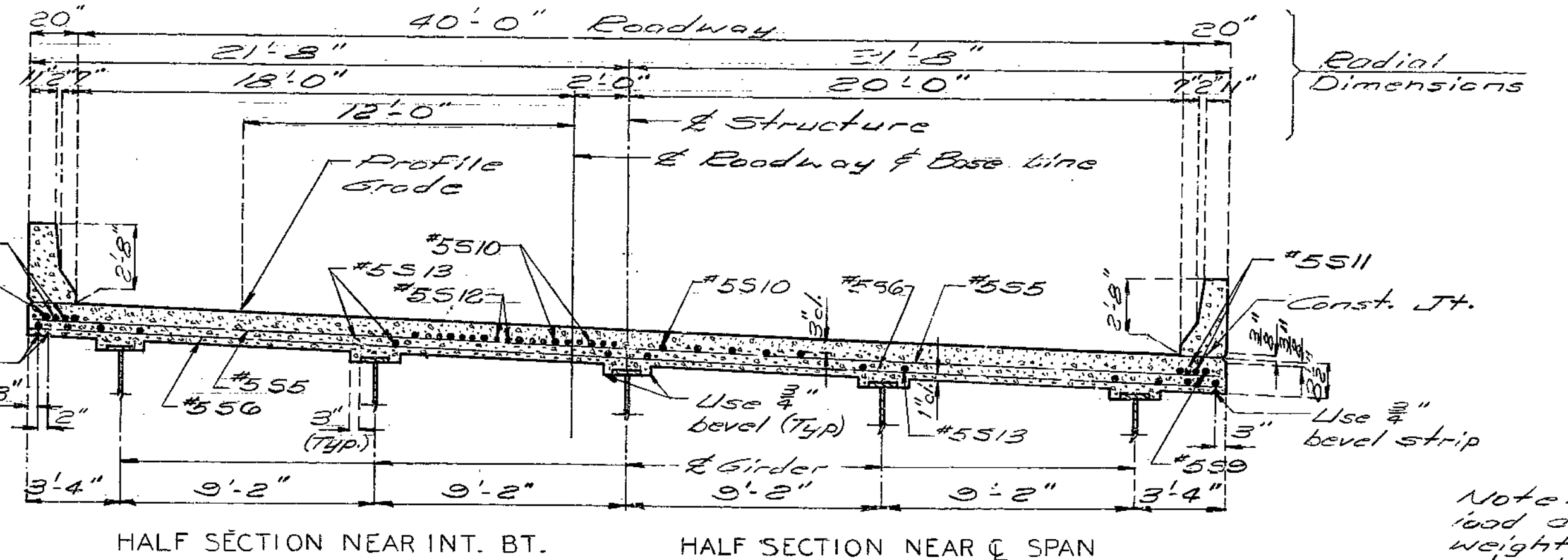
Note: Longitudinal dimensions based on 1/2" exp. gap.



247



Sequence of Pours	Direction					Min. Edge of Pour (ft.)	Min. Edge of Pour (ft.)
	1	2	3	4	5		
Basic Sequence	Either Direction					25	25
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Section 702.3.16.3 of Missouri Standard Specifications.							
Alternate "A" Pours	End to 5	1 to 2	2 to End			25	41
Alternate "B" Pours	End to 4	2 to 5	End			25	41
Alternate "C" Pours	1 to 2 to 3 to 4 to 5					25	41



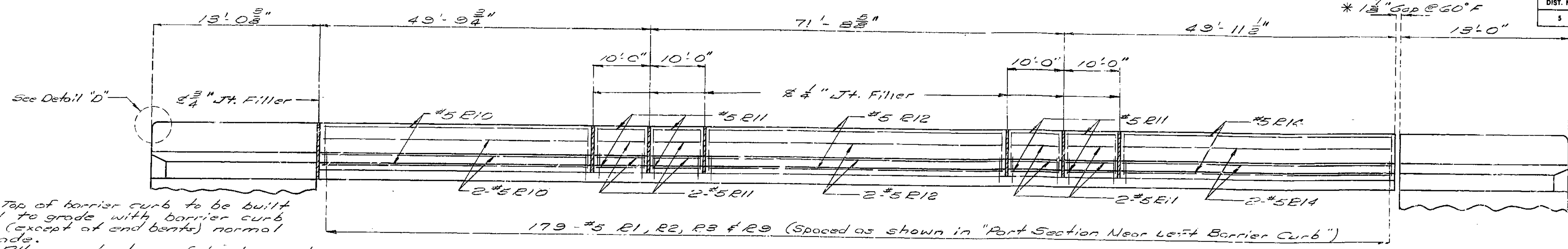
DETAILED Nov. 19 77  
CHECKED June 19 79

SLAB POURING SEQUENCE

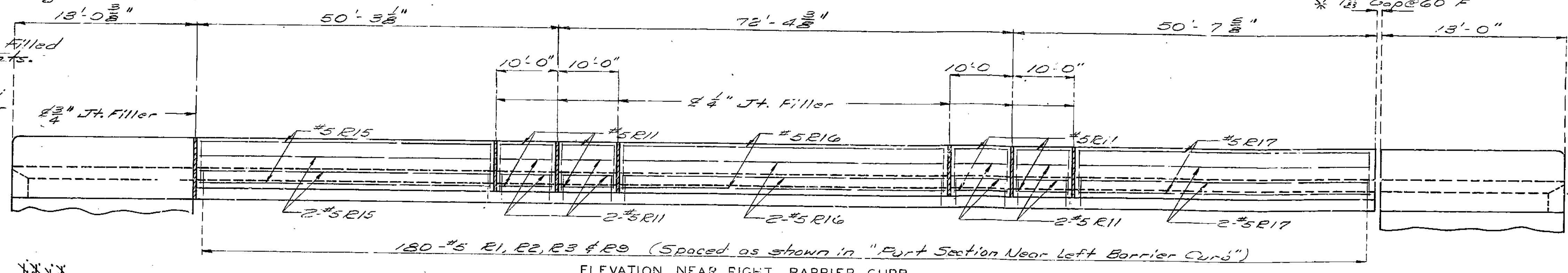
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 11 of 16

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

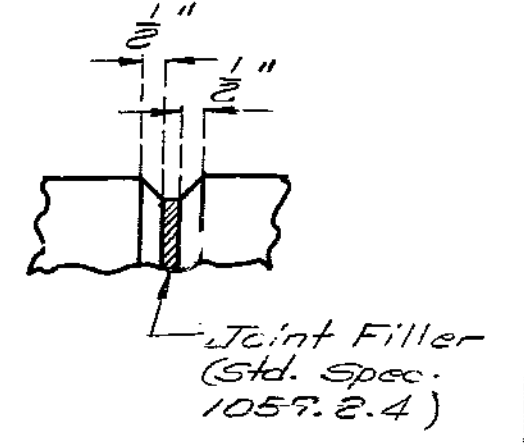


SECTION NEAR LEFT BARRIER CURB



ELEVATION NEAR RIGHT BARRIER CURB

\* Dimensions are based on expansion gap of 1/2".



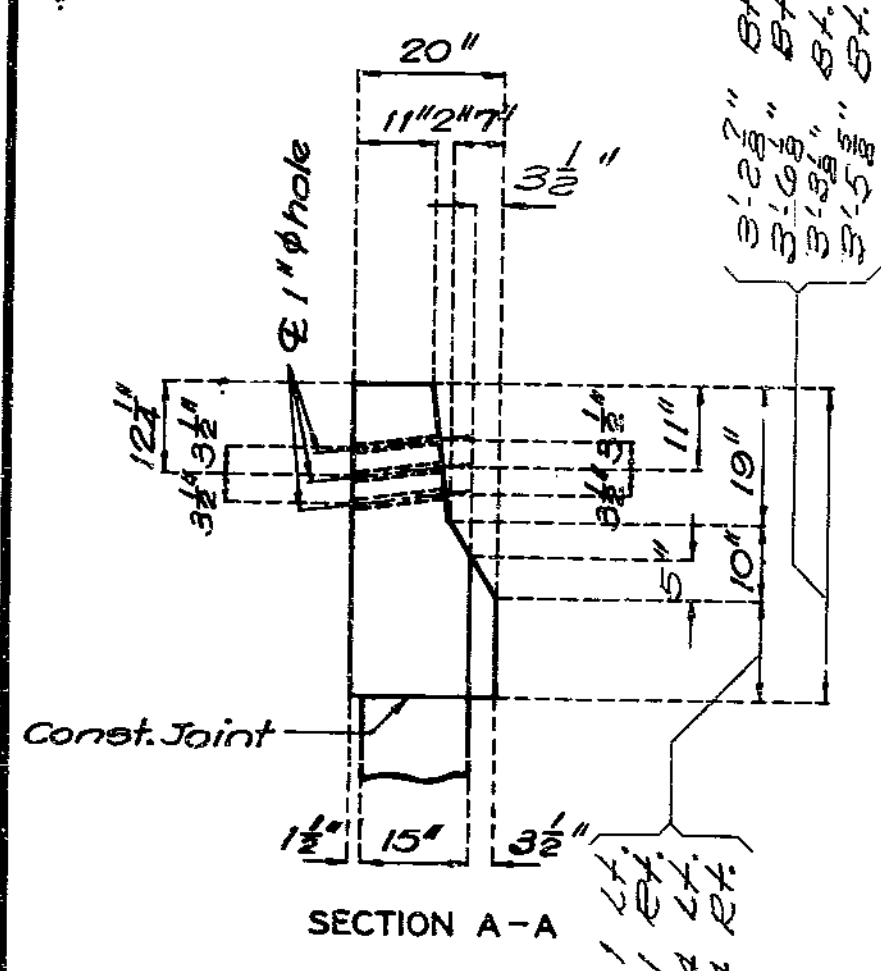
FILLED JOINT DETAIL

Notes: Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.  
 All exposed edges of barrier curb shall have 1/4" radius or 3/8" bevel unless otherwise noted.  
 Plastic waterstop shall be placed in all safety barrier curb filled joints, except at end bents.  
 Cast of plastic waterstop complete in place to be included in unit price bid for concrete.

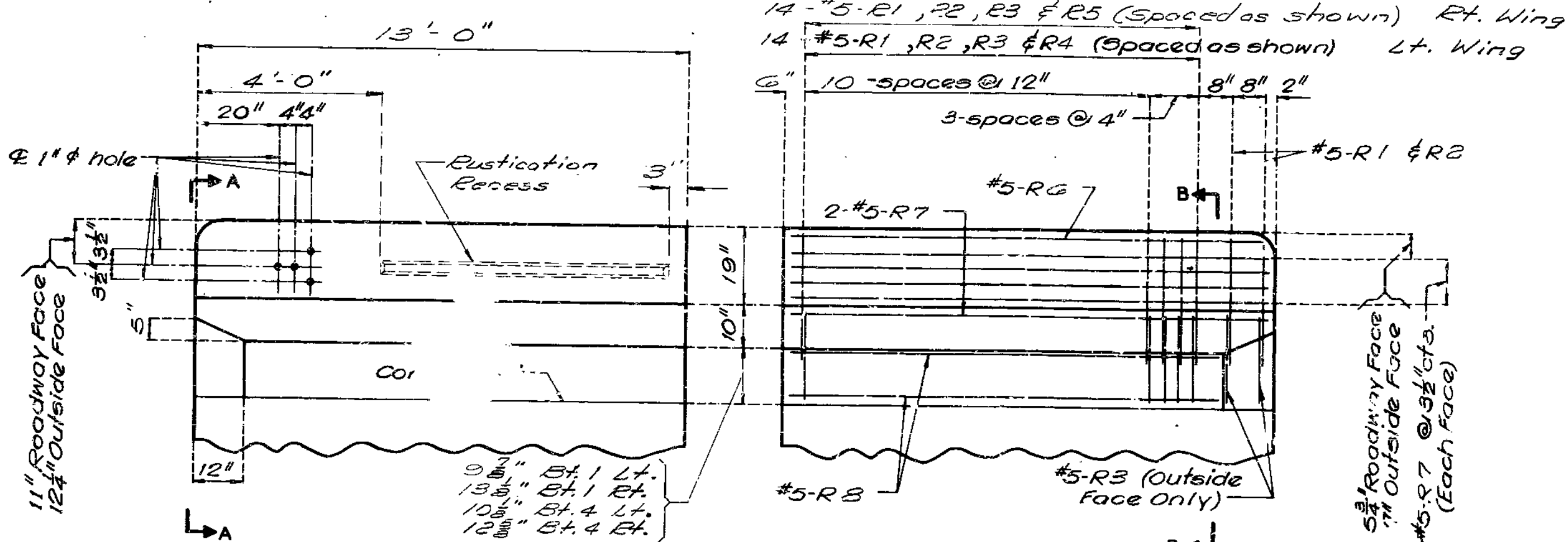
Note: Longitudinal dimensions are horizontal arc dimensions along centerline of top of barrier curb.

Note: Use a minimum lap of 17" for #5 horizontal barrier curb bars.  
 Bars in top and roadway face of barrier curb shall have 3" clearance.

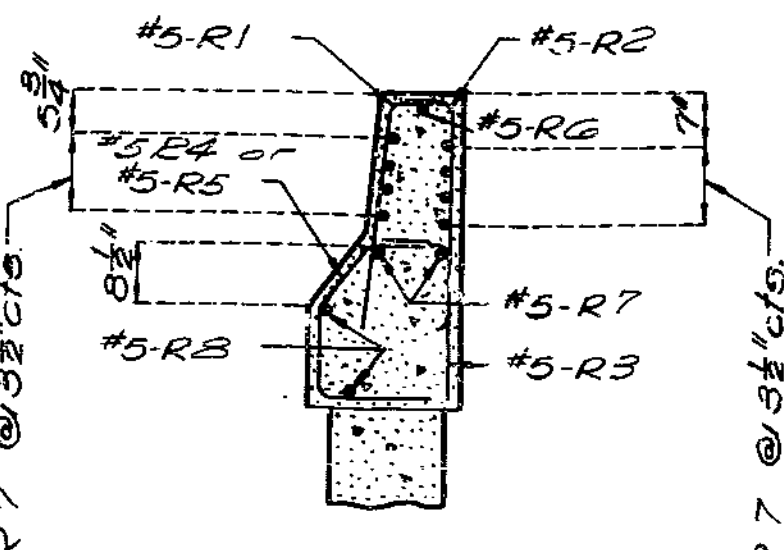
248



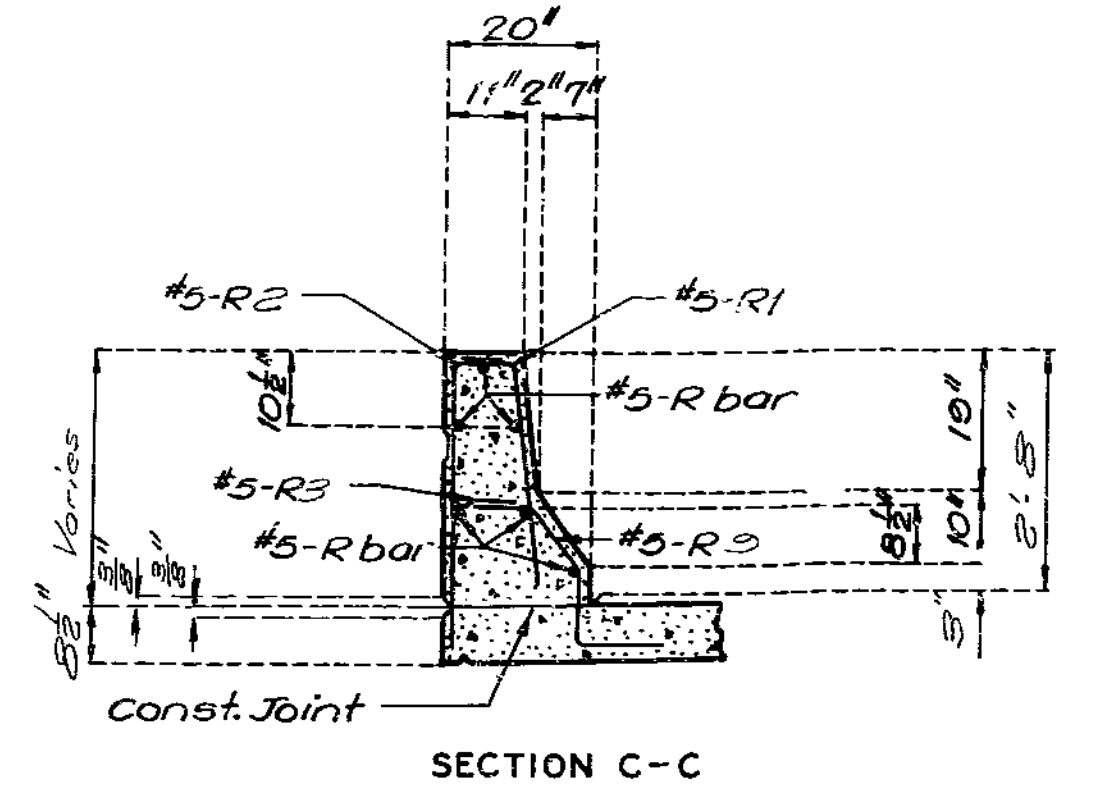
SECTION A-A



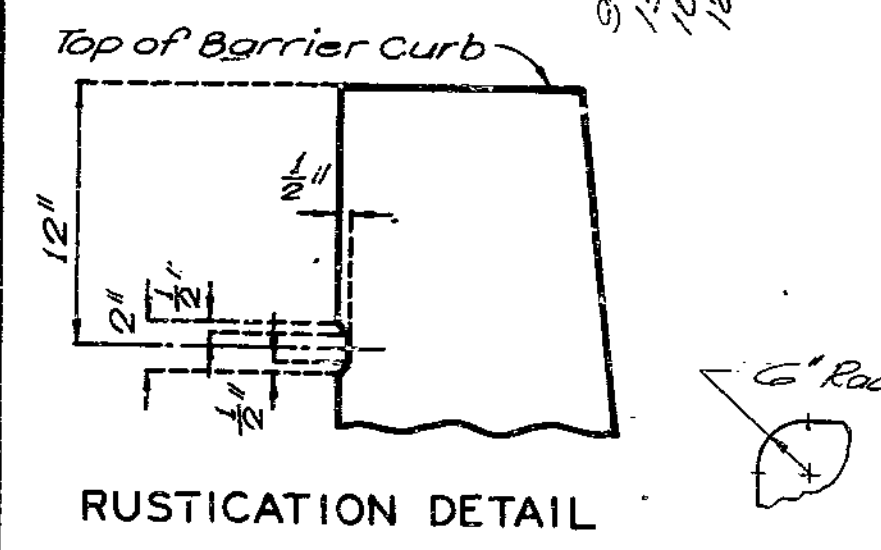
ELEVATION OF BARRIER CURB AT END BENT



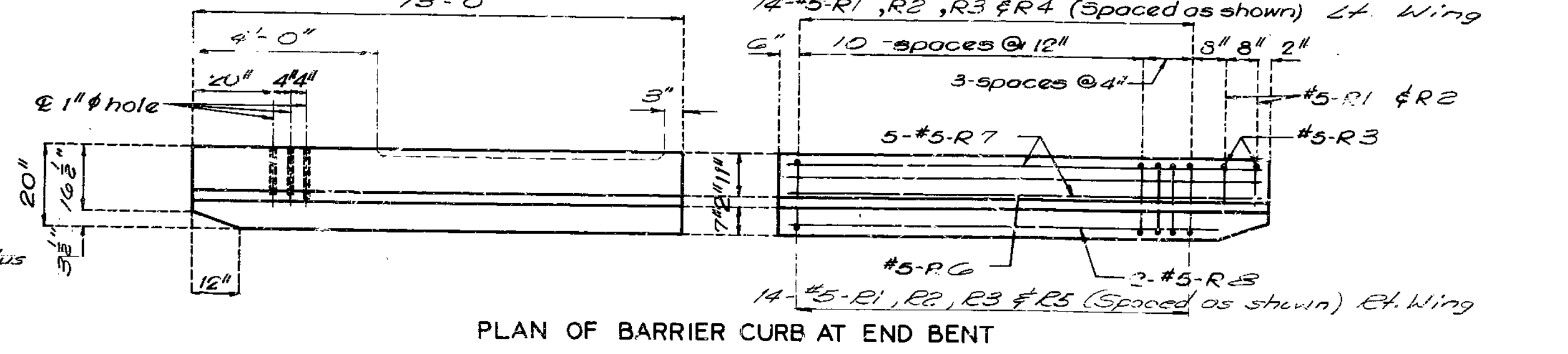
SECTION B-B



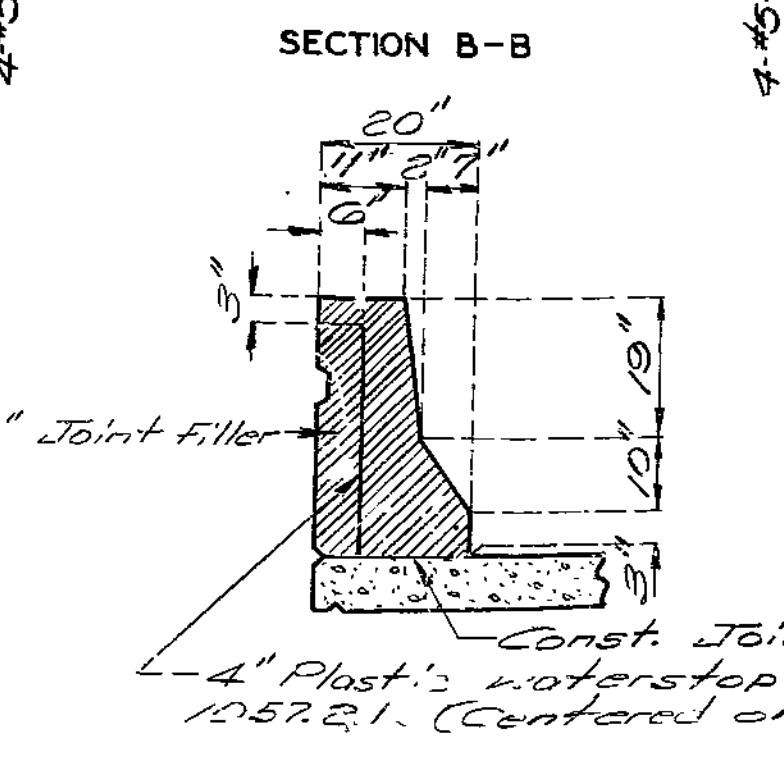
SECTION C-C



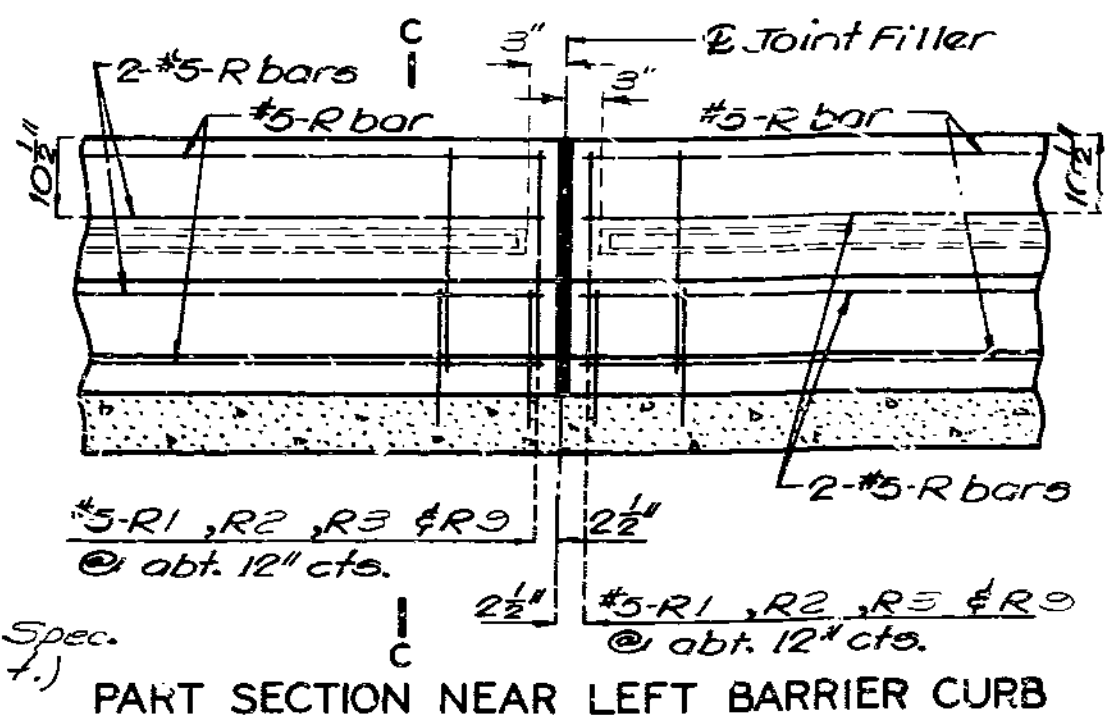
RUSTICATION DETAIL



PLAN OF BARRIER CURB AT END BENT



DETAILS OF PLASTIC WATERSTOP



PART SECTION NEAR LEFT BARRIER CURB

STD. I.7.3 REVISED  
 NOV. 1974 MAY 1975

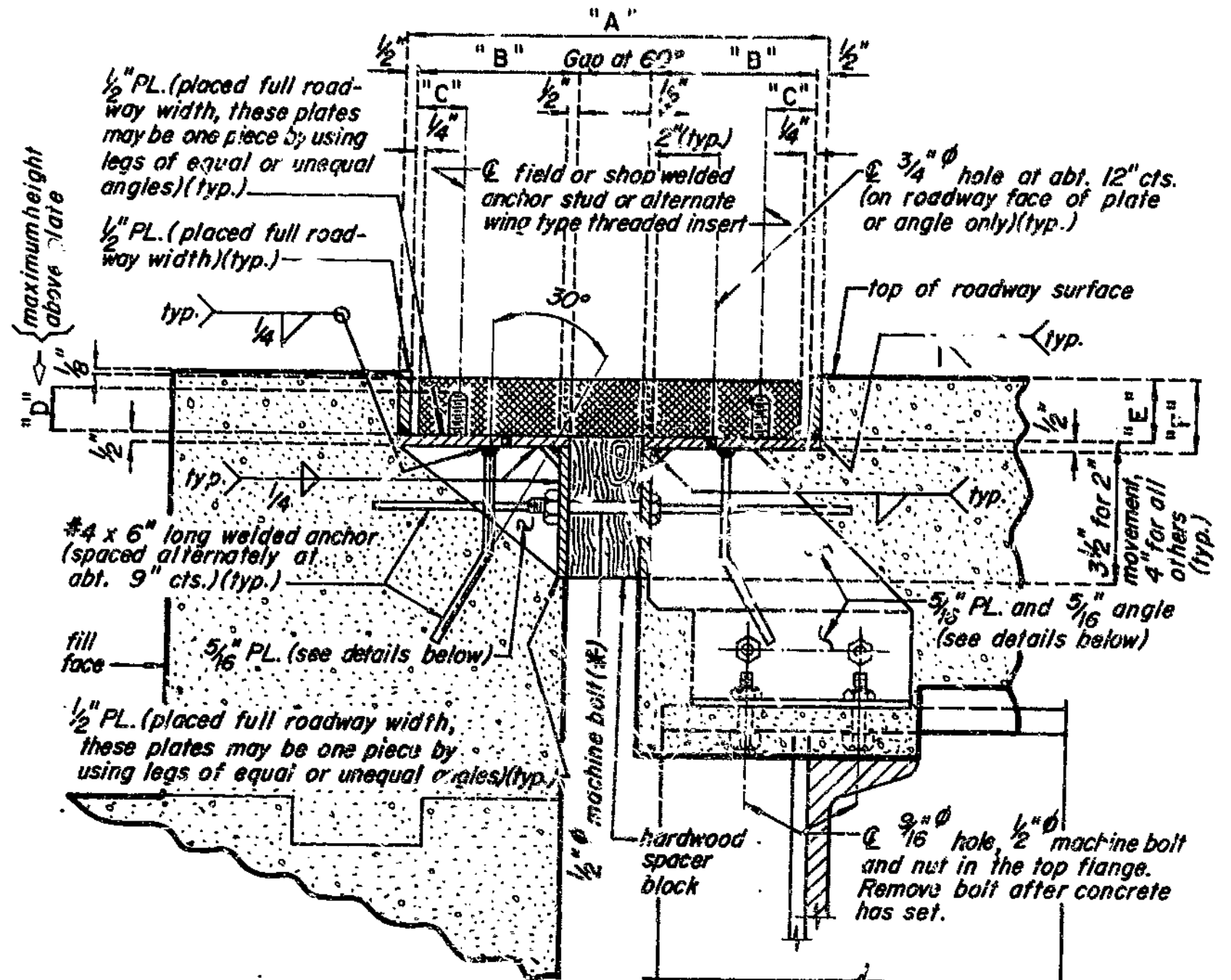
DETAILED Nov. 1977  
 CHECKED JUNE 1979

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

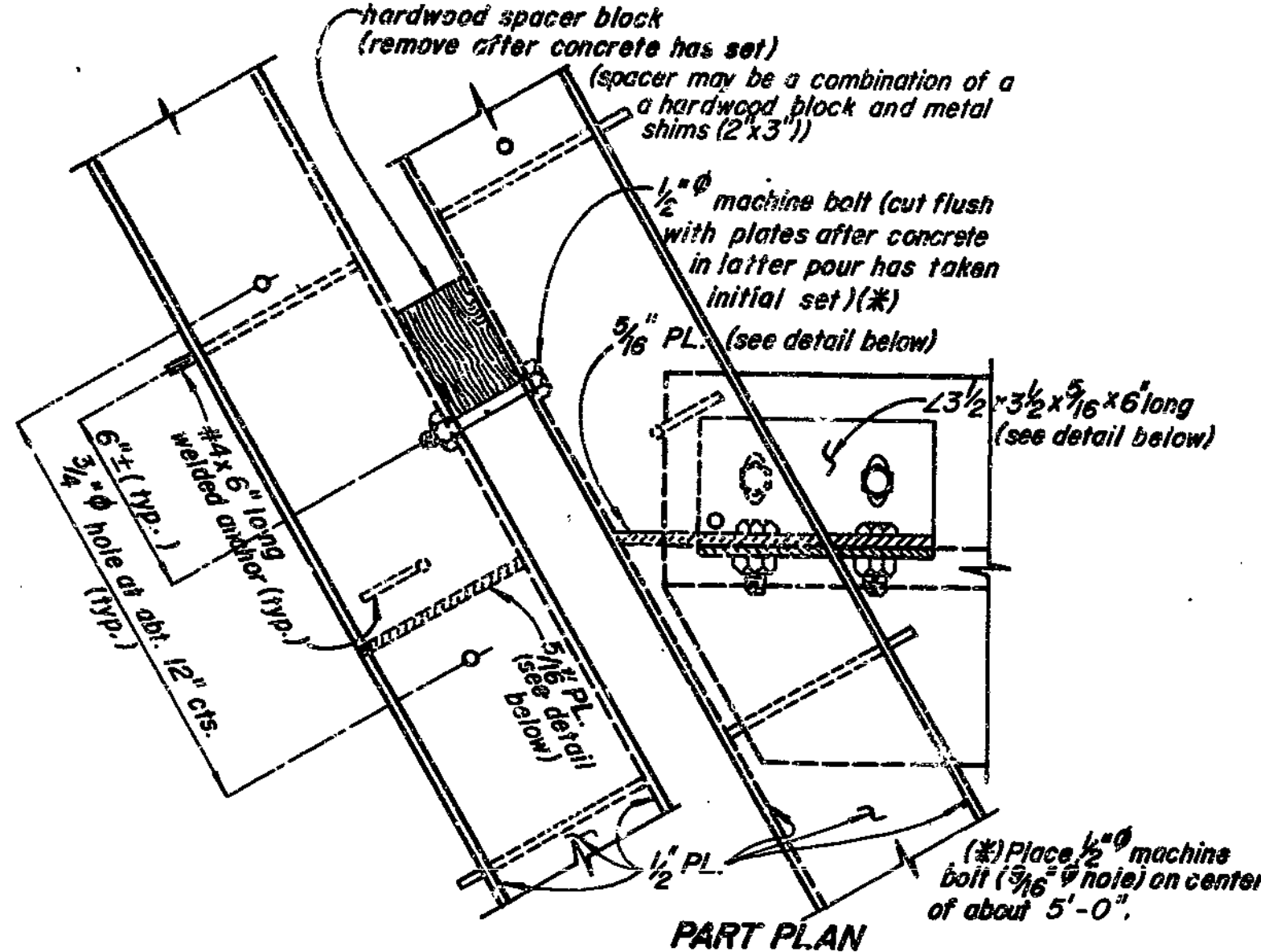
Sheet No. 12 of 10

CLAY COUNTY

A-3378



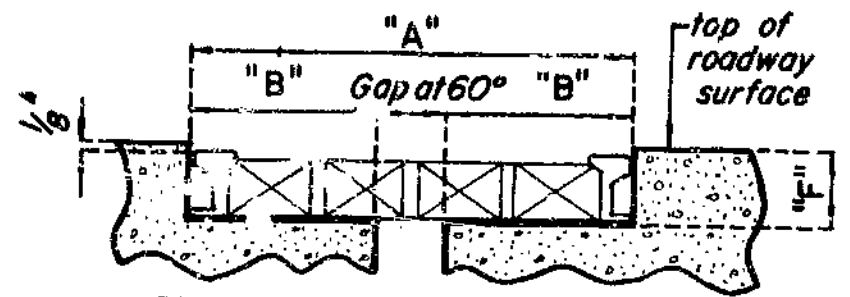
PART SECTION THRU ARMORED JOINT



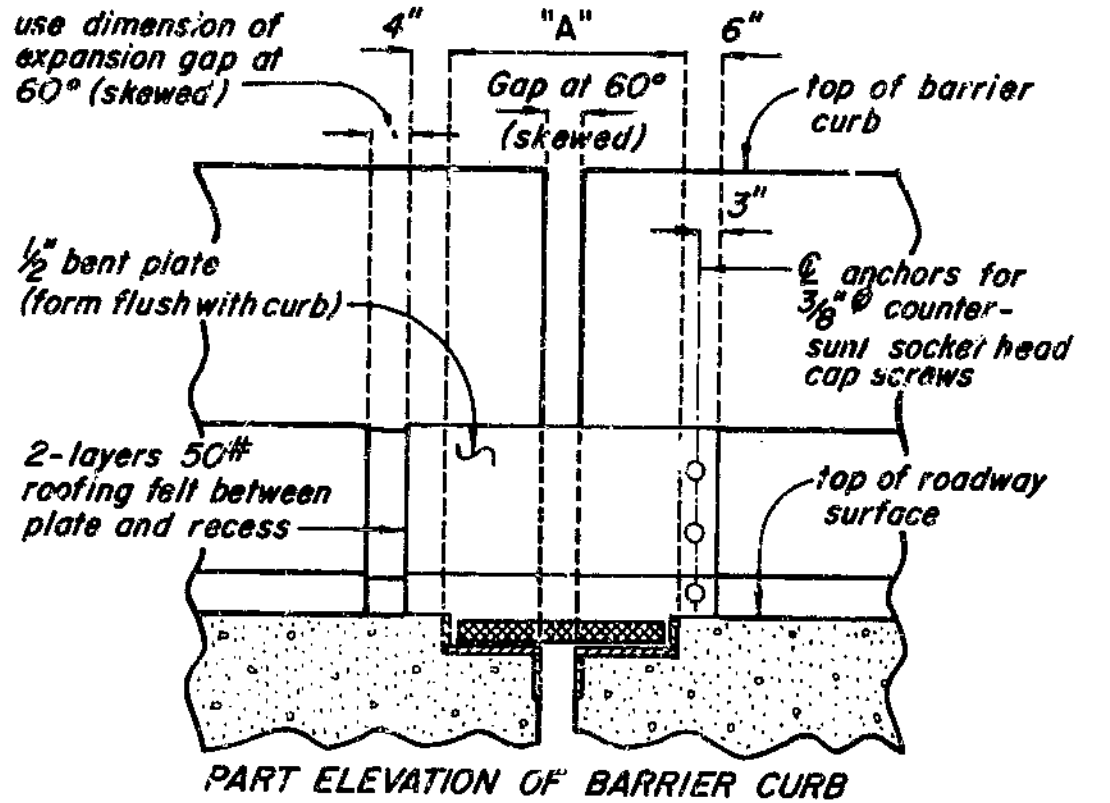
PART PLAN

LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP. GAP AT 60°	TABLE OF DIMENSIONS						ANCHOR STUDS SIZE "G"
			"A" AT 60°	"B"	"C"	"D"	"E"	"F"	
St. 4	Or-Fr. 25	1 1/2"	11"	4 1/2"	1 3/4"	1 1/2"	1 1/2"	2 1/2"	65
	Wabo - Eloris to dom 200	1 1/2"	11"	4 1/2"	1 3/4"	1 1/2"	1 1/2"	2 1/2"	40
	Fel-Sprin T 20	1 1/2"	11"	4 1/2"	1 3/4"	1 1/2"	1 1/2"	2 1/2"	50
	Gen-Strip CCL 2"	2"	10 1/2"	3 1/2"	1 1/2"	1 1/2"	1 1/2"	2 1/2"	65

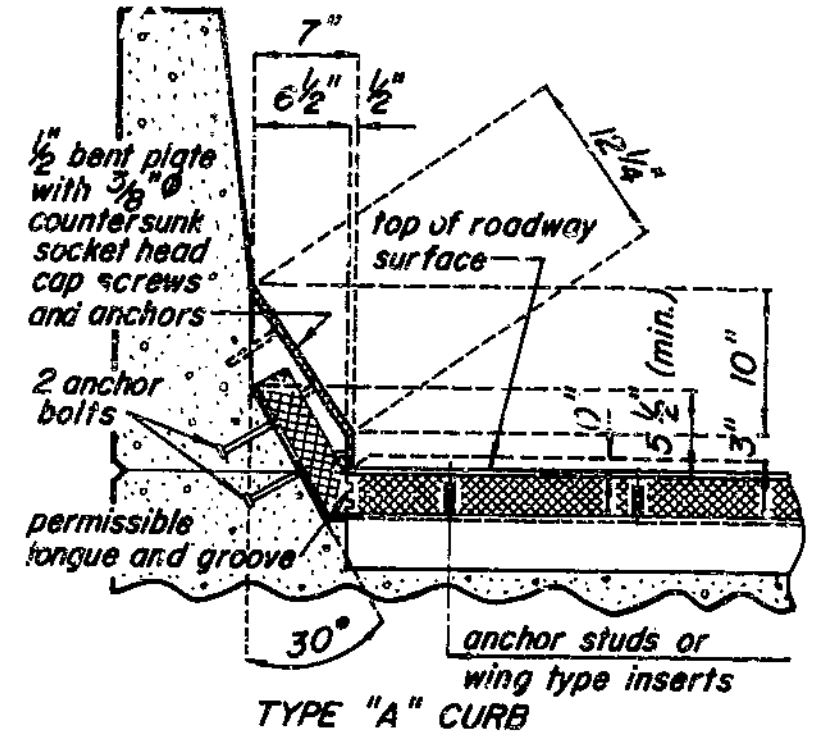
NOTE: All dimensions are at right angles.  
Expansion gap and dimension "A" shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature.



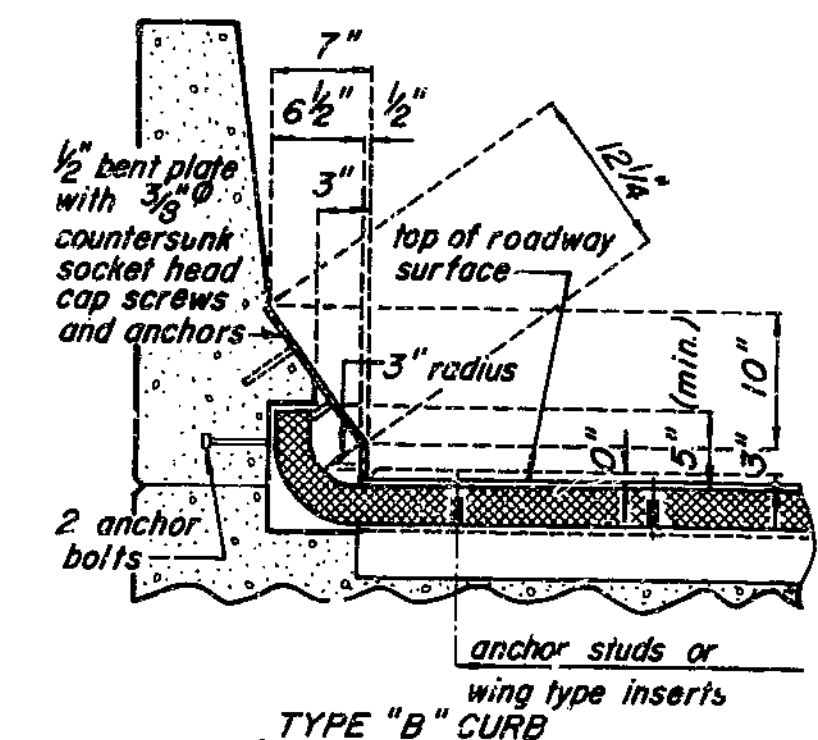
BLOCKOUT FOR MODULAR UNITS (When modular units are specified as an alternate, steel curb plate treatments are required)



PART ELEVATION OF BARRIER CURB

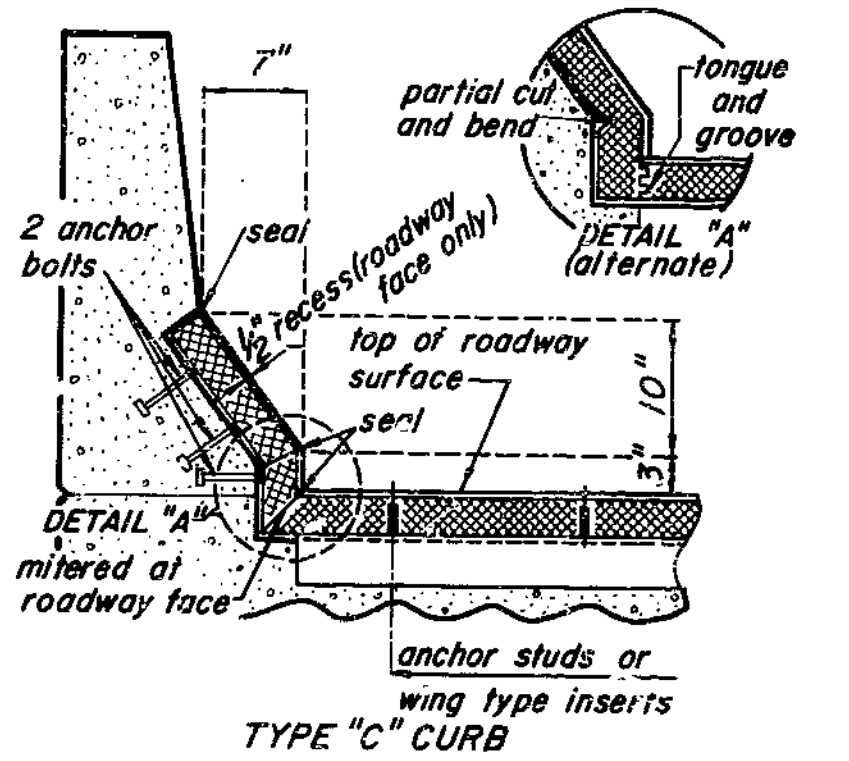


TYPE "A" CURB

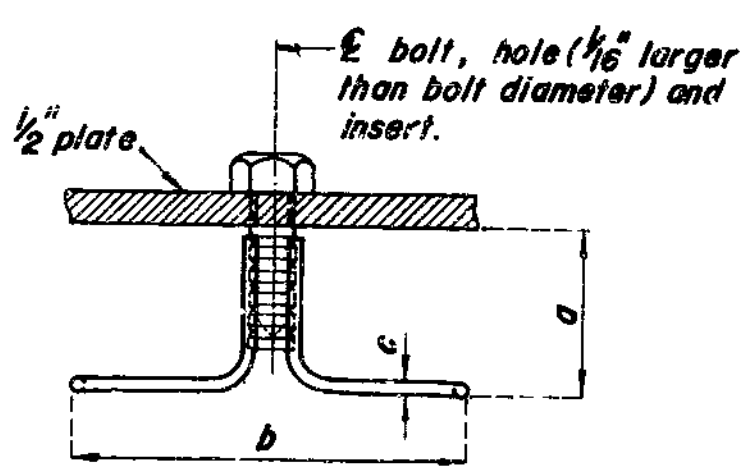


TYPE "B" CURB (maximum skew of 10°)

ALTERNATE CURB TREATMENTS



TYPE "C" CURB



Bolt Diameter	Safe Load Tension (lbs.) (min.)	Approx. Ult. Cap. Tension (lbs.) (min.)	Dimensions		
			a	b	c
1/2"	800	8,000	1-5/8"	5"	18"
5/8"	1,300	9,200	1-5/8"	5"	21.3"
3/4"	1,800	13,200	2-1/4"	6"	25.2"
7/8"	2,000	16,200	2-1/2"	6-1/2"	30.6"
1"	2,000	16,200	2-1/2"	6-1/2"	30.6"

DETAILS OF ALTERNATE WING TYPE THREADED INSERT

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

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 4

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

GENERAL NOTES:

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE NUTS ON THE ANCHOR STUDS SHALL BE TIGHTENED TO THE FOOT POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 4 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHOR (ASTM A496) MAY BE USED IN LIEU OF NO. 4 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING.

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

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

PLATES SHALL BE FIELD ADJUSTED BY ADDING OR REMOVING METAL SHIMS (2"x3"), AS REQUIRED FOR TEMPERATURE CORRECTION. THE EXPANSION GAP SHALL BE ADJUSTED FOR ANY TEMPERATURE CORRECTION PRIOR TO POURING TOP OF END BENT BACKWALL.

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

FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

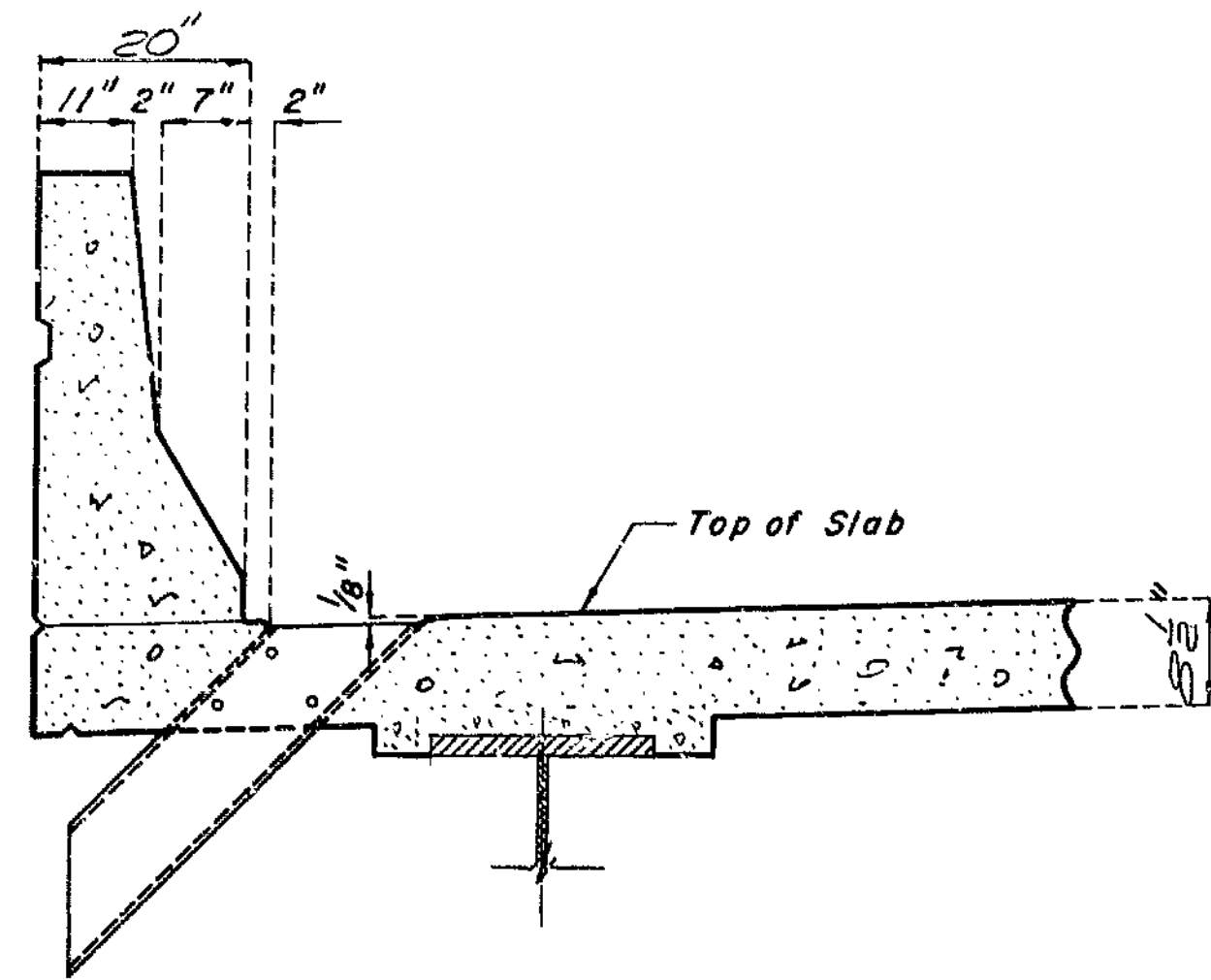
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	110	

249

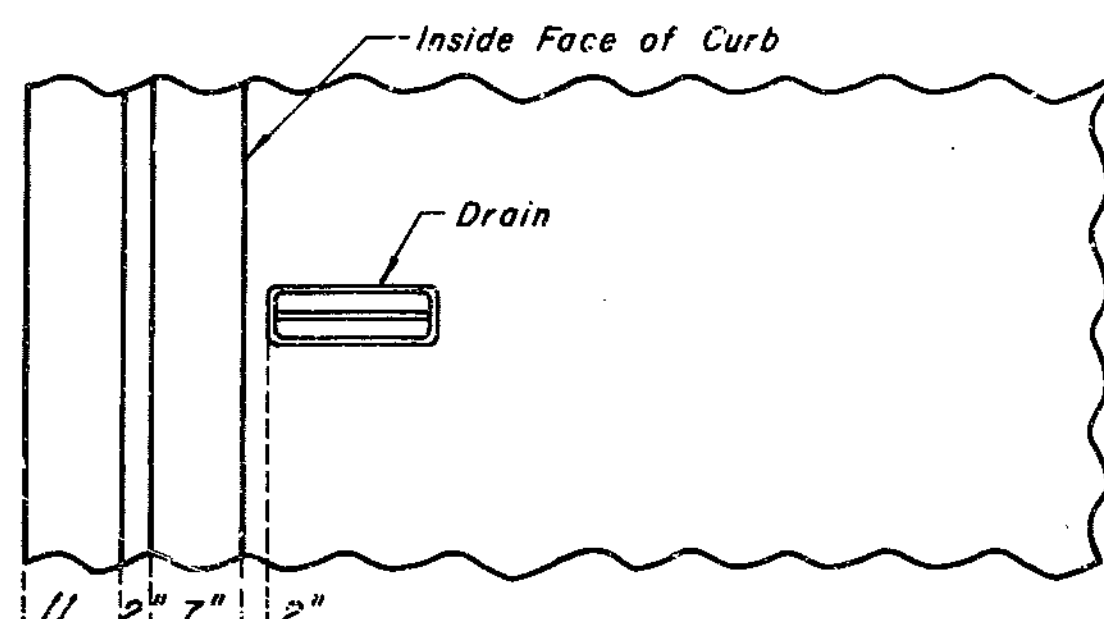
SPS - END BT. REVISED FEB. 1978 AUG. 1980

DETAILED April 19 79  
CHECKED April 19 79

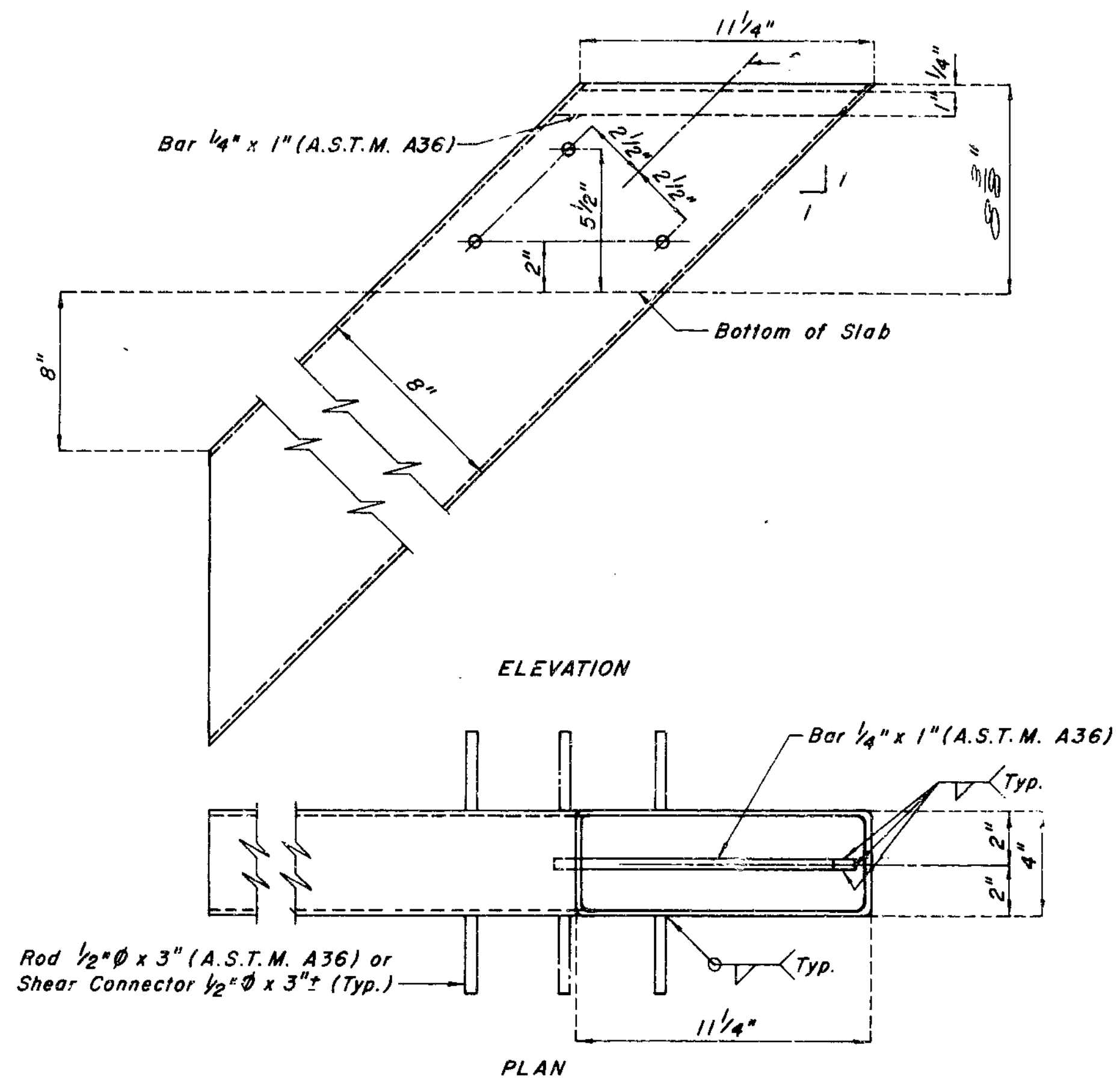
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	///	



PART ELEVATION OF SLAB



PART PLAN OF SLAB



SLAB DRAIN DETAILS

*Note: Slab Drains to be placed on right side of bridge only. For location of slab drains see sht. No. 11.*

**GENERAL NOTES:**

- SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 GR A501.
- OUTSIDE DIMENSIONS OF DRAINS ARE 8"x4".
- THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.
- LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.
- SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS. THE DRAINS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.
- SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS.

250

STD. S. D. - N.M.S. REVISED  
FEB. 1975 MAR. 1978

DETAILED April 19 79  
CHECKED JUNE 19 79

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

Sheet No. 14 of 10.

CLAY

COUNTY

A-3378



### COMPLETE BILL OF REINFORCING STEEL

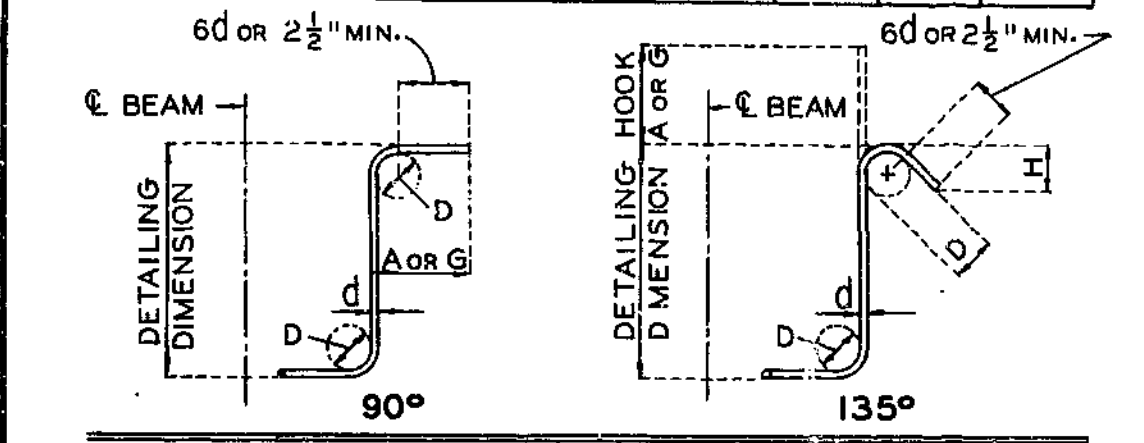
NO. REQ.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS									NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT											
								B	C	D	E	F	H	K	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	
2	9H17	BEAM		20	X			15	6	0	0						15	6	105											
8	7H20	BEAM		7	X			4	0	0	0	2	9	7			9	6	155											
4	8H21	BEAM		17	X			12	8	0	0						13	7	145											
2	6H22	BEAM		20	X			46	9	0	0						46	9	140											
7	9H23	BEAM		20	X			46	9	0	0						46	9	1113											
4	9H24	BEAM		18	X			46	9	0	0						49	3	676											
60	4P1	COLUMN		16	X			2	9	0	0						9	6	381											
59	5U15	BEAM		13	S	X		2	11	0	0	2	11	0	0	2	9	0	0				733							
12	4U18	BEAM		10	S	X						6	0	0	0	0	0		3	11	3	9		30						
2	5U22	BEAM		13	S	X		2	10	0	0	2	9	0	0	2	9	0	0				12	11	9	25				
2	5U23	BEAM		13	S	X		2	5	0	0	2	9	0	0	2	9	0	0				11	3	10	11	23			
8	10V33	COLUMN		17	X			22	6	0	0								23	11	23	11				823				
8	10V34	COLUMN		17	X			21	3	0	0								22	8	22	8				780				
8	10V35	COLUMN		17	X			20	0	0	0								21	5	21	5				737				
10	2W1	A B WELL		22	X			12	0	0	0	9	1	25					19	9	19	9				33				
END OF BAR LIST																														
5	6F3	WING		15	X			13	8	75	7	5	500	13	8	75	6	0	0	0	0	0				73				
5	6F4	WING		15	X			13	8	75	3	10	0	0	0	0	0	0	0	0	0	0				45				
8	6H5	WING		20	X			12	9	0	0								12	9	12	9				153				
2	6H7	BACKWALL		20	X			53	6	53	6								53	6	53	6				161				
12	4H8	BACKWALL		20	X			27	7	0	0								27	7	27	7				221				
8	9H9	BEAM		18	X			53	2	0	0								55	8	55	8				1514				
2	6H10	BEAM		20	X			53	2	0	0								53	2	53	2				160				
10	6H11	WING		20	X	V	2	5	9	0	0								5	9	5	9								
		INCR = 20.250 IN																		12	6	12	6				137			
10	6H12	WING		20	X	V	2	5	5	0	0								5	5	5	5								
		INCR = 21.250 IN																		12	6	12	6				135			
2	6T5	CURTAIN WALL		19	X			6	0	0	0	3	4	0	0				9	4	9	2				28				
2	6T6	WING		25	X			2	5	0	0	8	4	750	2	0	0	0		3	5	0	0	7	8	0	0	0	0	38
2	6T7	CURTAIN WALL		19	X			6	1	0	0	5	1	0	0				11	2	11	0				33				
2	6T8	WING		25	X			2	5	0	0	8	6	125	2	0	0	0		3	4	0	0	7	10	0	0		39	
11	6U7	BEAM		10	S	X						21	0	0	0	2	8	0	0				6	2	5	10		96		
51	5U8	BACKWALL		10	S	X						2	0	0	0	9	0	0		4	9	4	7				244			
15	4U9	BEAM		10	S	X						6	0	0	0	4	6	0	0				5	6	5	4		53		
51	4U10	BEAM		13	S	X		4	6	0	0	2	8	0	0	2	8	0	0				15	1	14	10		505		
4	4U11	CURTAIN WALL		10	S	X						2	10	0	0	6	0	0		6	2	6	0				16			
4	4U12	CURTAIN WALL		10	S	X						4	0	0	0	6	0	0		9	8	9	6				25			
5	7U13	BEAM		14	X			4	6	0	0	2	1	250						21	0	0	0				93			
5	7U14	BEAM		10	X			6	3	0	0	2	7	500						15	2	14	9				151			
1	4U16	BEAM		13	S	X		2	4	0	0	2	8	0	0	2	8	0	0				10	9	10	6		7		
4	6V11	BEAM		20	X			2	9	0	0									2	9	2	9				17			
51	5V14	BACKWALL		20	X			6	5	0	0									6	5	6	5				341			
51	6V15	BACKWALL		20	X			6	5	0	0									6	5	6	5				492			
2	4V16	CURTAIN WALL		20	X			5	6	0	0									5	6	5	6				7			
5	6V17	WING		17	X			6	8	0	0									7	4	7	4				55			

252

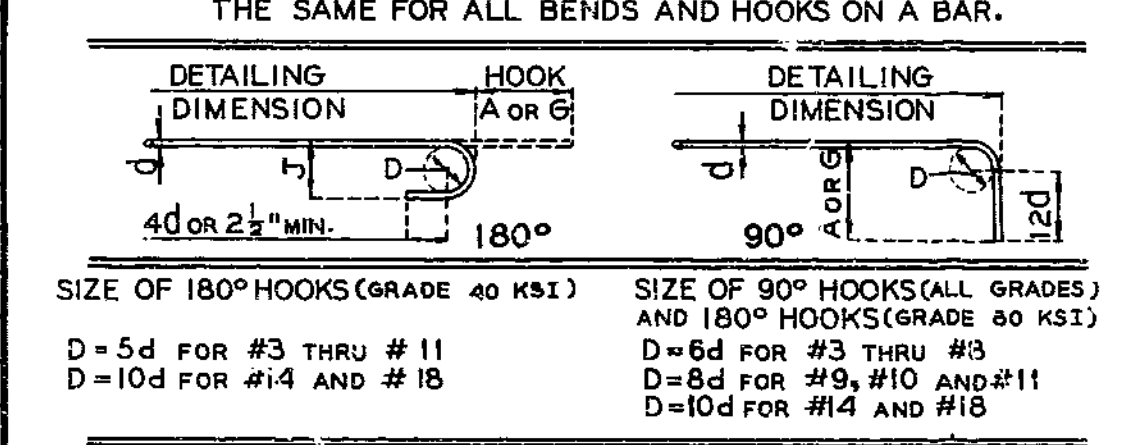
### COMPLETE BILL OF REINFORCING STEEL

NO. REQ.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS									NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT								
								B	C	D	E	F	H	K	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	6V18	WING		20	X			6	10	0	0								6	10	6	10				51	
8	6V19	WING		17	X	V	1	2	7	0	0									3	3	3	3				
		INCR = 5.125 IN																		5	7	0	0				57
8	6V20	WING		20	X	V	1	2	9	0	0									2	9	2	9				
		INCR = 5.125 IN																		5	9	5	9				51
2	4V21	CURTAIN WALL		20	X			5	7	0	0									5	7	5	7				7
8	6V22	WING		17	X	V	1	2	6	0	0									3	2	3	2				
		INCR = 5.125 IN																		6	2	6	2				56
8	6V23	WING		20	X	V	1	2	8	0	0									2	8	2	8				
		INCR = 5.125 IN																		5	8	5	8				50
5	6V24	WING		17	X			6	8	0	0									7	4	7	4				55
5	6V25	WING		20	X			6	10	0	0									6	10	6	10				51
10	2W1	A B WELL		22	X			12	0	0	0	9	1	25						19	9	19	9				33
END OF BAR LIST																											

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



BAR SIZE	D (IN.)	90° HOOK		135° HOOK		APPROX. H
		A OR G	A OR G	A OR G	A OR G	
#3	1-1/2"	4"	4"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	6"	5-1/2"	5-1/2"	3-3/4"
#6	4-1/2"	8"	8"	7"	7"	4-1/2"



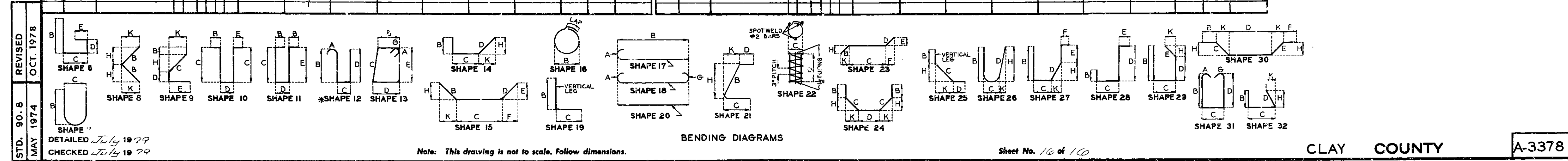
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

BAR SIZE	END HOOK DIMENSIONS				
	180° HOOKS			90° HOOKS	
	A OR G	J	A OR G	J	A OR G
#3	5"	2-3/4"	5"	3"	6"
#4	6"	3-1/2"	6"	4"	8"
#5	7"	4-1/2"	7"	5"	10"
#6	8"	5-1/4"	8"	6"	12"
#7	9"	6-1/4"	10"	7"	14"
#8	10"	7"	11"	8"	16"
#9	12"	8"	15"	11-1/4"	19"
#10	13"	9"	17"	12-3/4"	22"
#11	14"	10"	19"	14-1/4"	21-0"
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"
#18	21-11"	21-3"	21-11"	21-3"	31-5"

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.



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

REVISED OCT. 1978  
MAY 1974  
STD. 90.8

DETAILED 7/19/79  
CHECKED 7/19/79

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FINAL PLANS

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

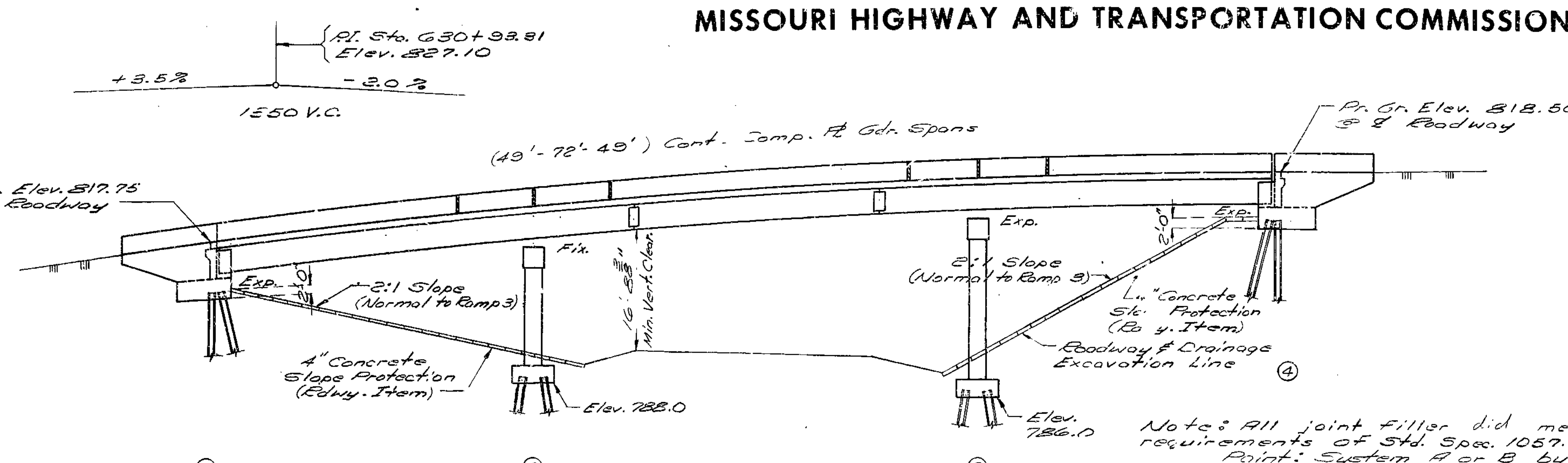
GENERAL NOTES:

Design Specifications: A.A.S.H.T.C.-1977  
 Load Factor Design Substructure  
 Design Loading:  
 H520-44 15<sup>th</sup> Sp./Ft. Future Wearing Surface  
 Earth 120 # Equivalent Fluid Pressure 30 #  
 Modified 24,000 # Tandem Axle  
 Fatigue Stress Case II  
 Design Unit Stresses:  
 Class B Concrete (substructure)  $f_c = 3000$  psi  
 Class B2 Concrete (superstructure)  $f_c = 4000$  psi  
 Reinforcing Steel (Grade 60)  $F_y = 60,000$  psi  
 Steel Pile  $F_b = 30,000$  psi  
 Structural Carbon Steel  $f_s = 20,000$  psi

Fabricated Steel:  
 Field connections, High Strength Bolts  $\frac{3}{4}$ "  $\phi$ , holes  $\frac{13}{16}$ "  $\phi$  except as noted.

Reinforcing Steel:  
 Minimum clearance to reinforcing steel  $\frac{1}{2}$ " unless otherwise shown.

All reinforcing bars in top of substructure beams or caps  $\frac{1}{2}$ " spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}$ "



GENERAL ELEVATION

Note: Compacted roadway completed to the final road surface and up to the elevation of the concrete beam within the limits of the structure and for not less than 25' in back of the fill face of end bents before piles were driven for any bents falling within the embankment section.

Note: All joint filler did meet the requirements of Std. Spec. 1057.2.4. Paint: System A or B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat is aluminum.

Bents cannot be accurately located from the reference point on the tangent by conventional survey methods based on 100' chords (all bents are parallel).

Construction Clearance: A minimum vertical clearance of 15'-0" from crown of existing Ramp 3 and a minimum lateral clearance of 16'-0" centered on Ramp 3 was maintained during construction.

PILE DATA				
BENT NO.	1	2	3	4
Pile Type and Size	HP10x42	HP10x42	HP10x42	HP10x42
Number	7	12	12	8
Approximate Length Ft.	80	55	52	74
Design Bearing Tons	42	27	24	45
Hammer Energy required Ft. Lbs.	70,400	11,000	9,000	11,000

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

ESTIMATED QUANTITIES			
ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation Cu. Yd.	290.5		290.5
Sibb Drains Each		10	10
Structural Steel Pile (10") Lin. Ft.	2511		2511
Class B Concrete Cu. Yd.	173.7		173.7
Class B2 Concrete Cu. Yd.		253.5	253.5
Historic Exp. Joint Seal (20") Lin. Ft.		51	51
Reinforcing Steel (Grade 60) Lb.	22410	29920	52330
Reinforcing Steel (Epoxy Coated) Lb.	1010	30410	31420
Fabricated Structural Carbon Steel Lb.		148540	148540
Painting (System A or B) (Aluminum) Tons		73.7	73.7

Note: All concrete and reinforcement in safety barrier curbs are included with superstructure quantities.

B.M. Elev. 819.08 S.W. Cor. Barrier Curb Br. No. A-3378

BRIDGE: S.R.L. I-435 OVER RAMP 3

STATE ROAD FROM RTE. 152 TO RTE. I-35

AT I-35 AND I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 630+84.25

JOB NO. 4-I-435-49H RTE I-435

CLAY COUNTY

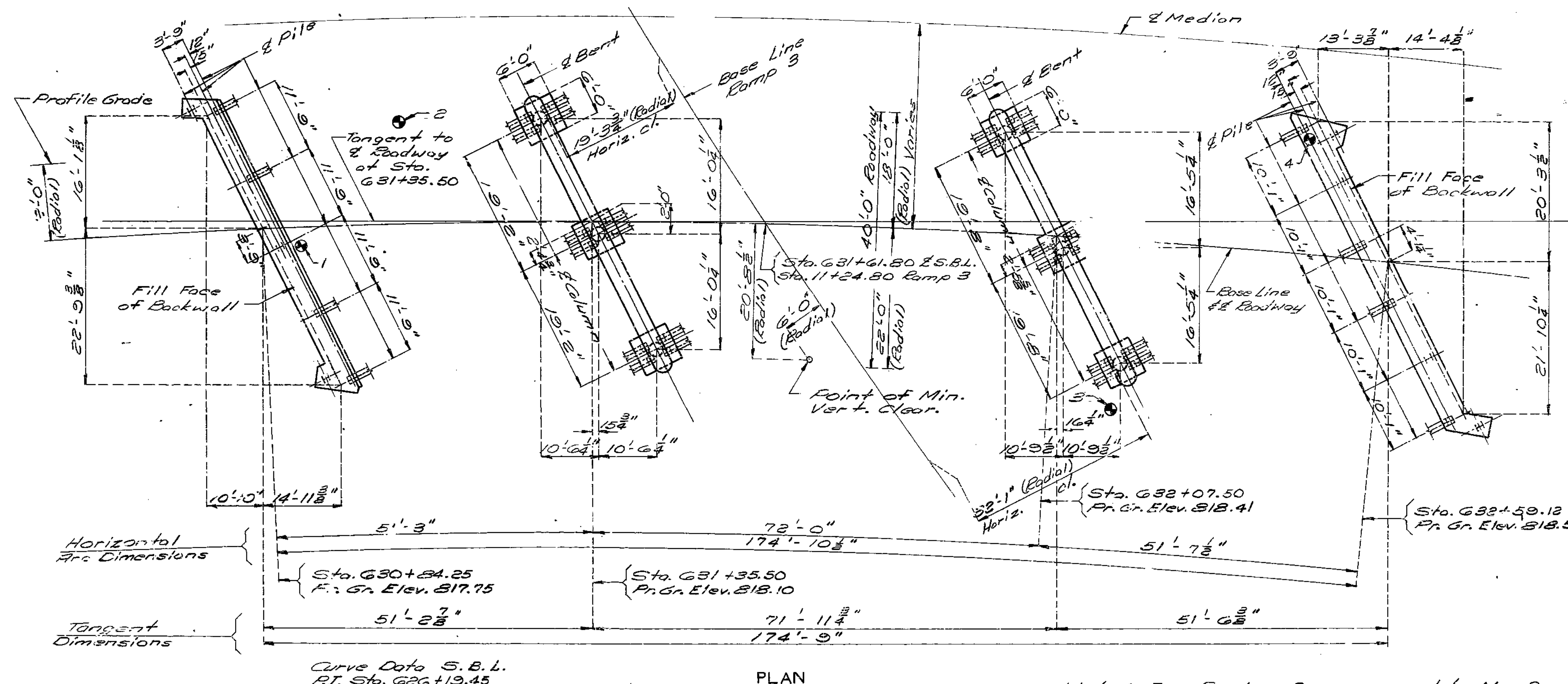
STD. 706.35

STD. 611.60

A-3378

DATE March 16, 1981

Sheet No. 1A of 16.



PLAN

Curve Data S.B.L.  
 P.I. Sta. 626+19.45  
 $\Delta = 64^\circ 45' 23''$  Ev.  
 $D = 3^\circ 30'$   
 $T = 1023.01$   
 $L = 1850.18$   
 $E = 1637.02$

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

Note: For Boring Data, see sht. No. 2.  $\odot$  Indicates Boring Location.

DESIGNED MAR. 1977  
 DETAILED Jan 1978  
 CHECKED June 1979

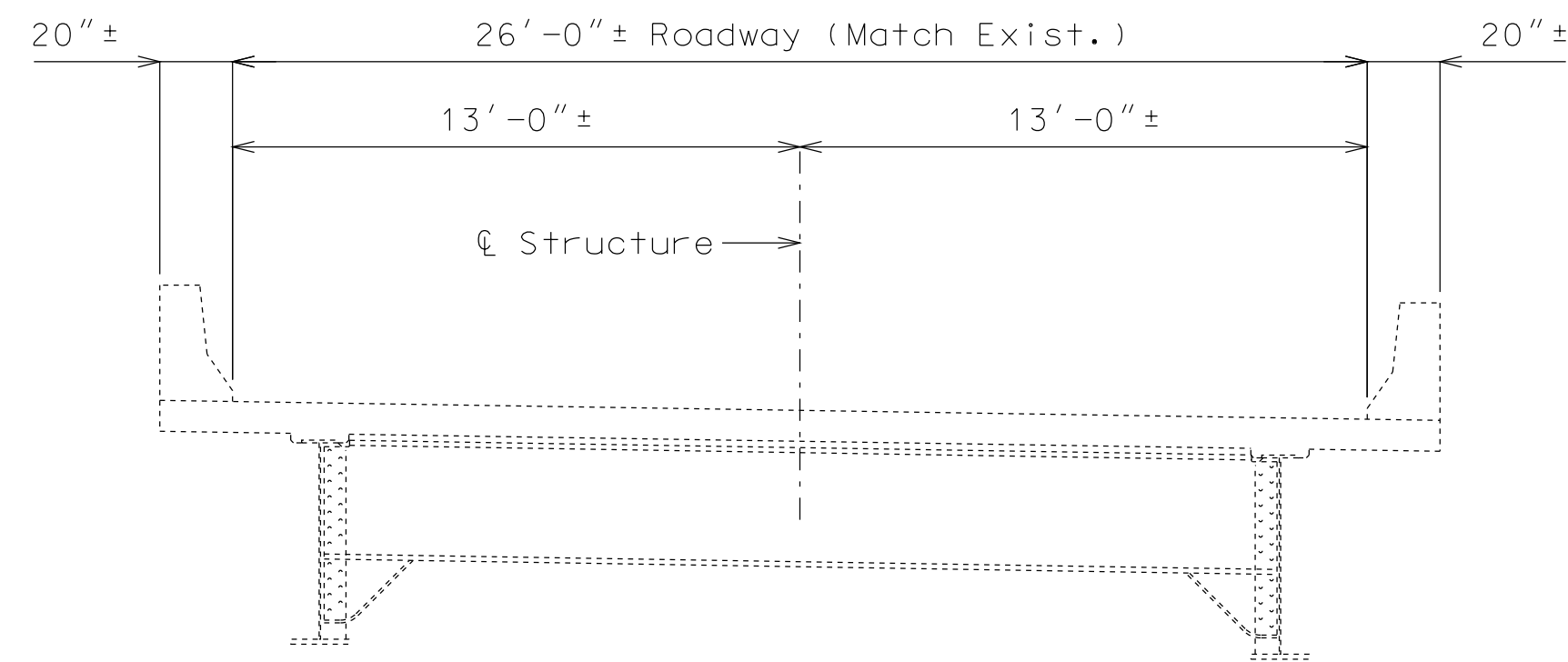
253

**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**  
**U.I.P. & Rehabilitate Existing (75'-97'-75') Continuous Composite Plate Girder Spans**

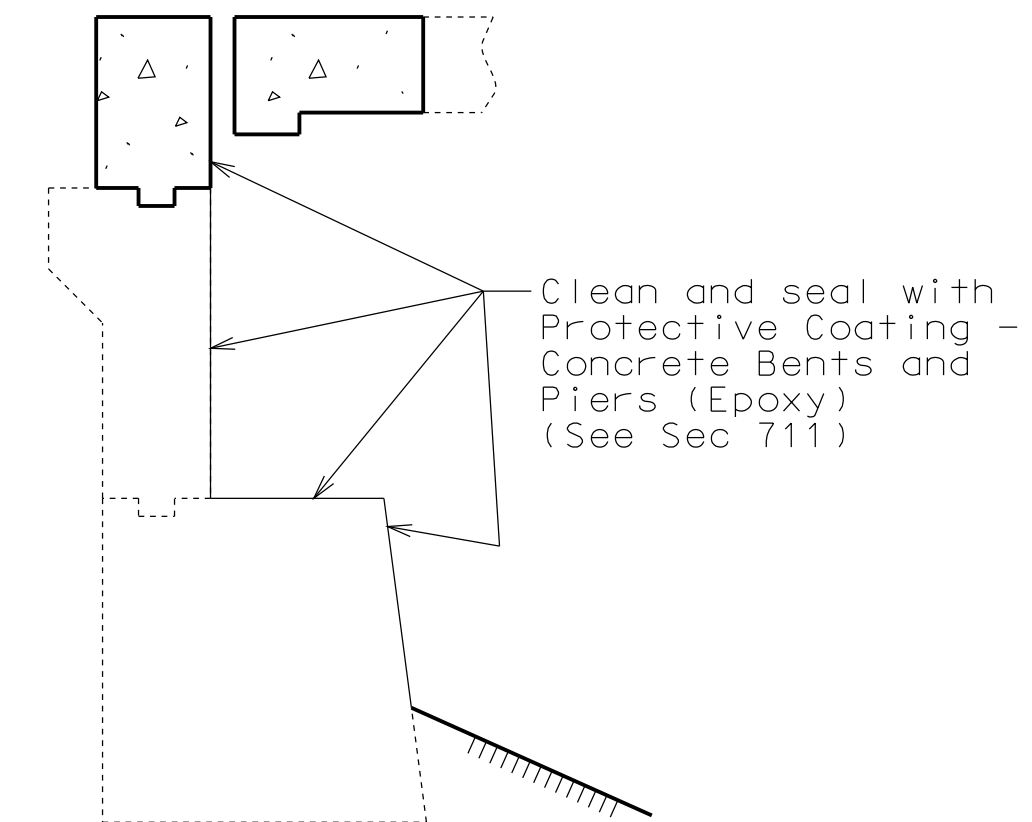
SEC/SUR 27      TWP 51N      RGE 32W

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

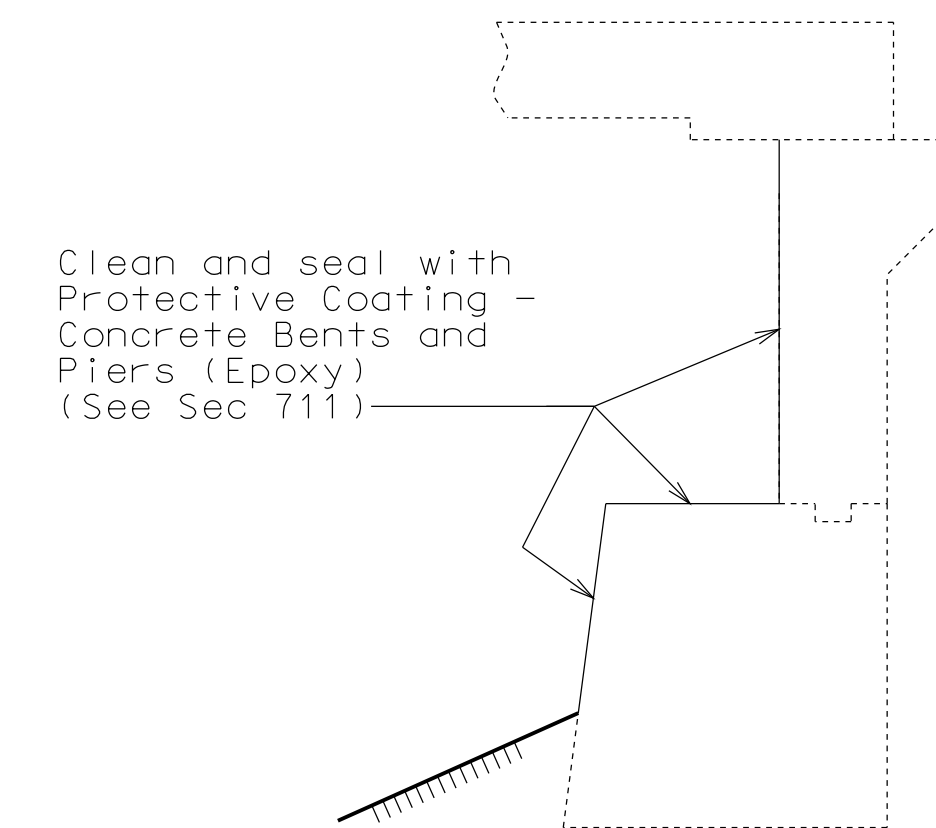
DATE PREPARED  
12/4/2012  
 ROUTE STATE  
I-435 MO  
 DISTRICT SHEET NO.  
BR 1  
 COUNTY  
CLAY  
 JOB NO.  
J412381  
 CONTRACT ID.  
 PROJECT NO.  
 BRIDGE NO.  
A33861



SECTION THRU EXISTING SLAB



TYPICAL SECTION THRU  
END BENT NO. 1  
SHOWING PROTECTIVE COATING



TYPICAL SECTION THRU  
END BENT NO. 4  
SHOWING PROTECTIVE COATING

**General Notes:**

**Design Specifications:**

2002 - AASHTO 17th Edition  
 Load Factor Design  
 Seismic Performance Category A

**Design Loading:**

HS20-44 & Military 24,000# Tandem Axle (1973 & New Construction)  
 15#/Sq. Ft. Future Wearing Surface  
 Fatigue Stress - Case II

**Design Unit Stresses:**

Class B-1 Concrete (Superstructure and Safety Barrier Curb)       $f'c = 4,000$  psi  
 Reinforcing Steel (Grade 60)       $f_y = 60,000$  psi

**Reinforcing Steel:**

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

**Structural Steel Protective Coating**

(Existing structural steel near End Bent):

Protective Coating: System G in accordance with Sec 1081.

Coating limits: Existing bearings at End Bent No. 4 and all existing structural steel within 10 feet from end of girders at End Bent No. 1.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G, H or I)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Recoating Structural Steel".

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Field Application of Inorganic Zinc Primer". Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coats: The color of the field coats shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for "Intermediate Field Coat (System G)". The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for "Finish Field Coat (System G)".

Sec 1081.4.5 shall be modified such that the word "RECOATED" is replaced by the word "RECOATED - SYSTEM G - EXPANSION AREAS ONLY".

**Miscellaneous:**

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

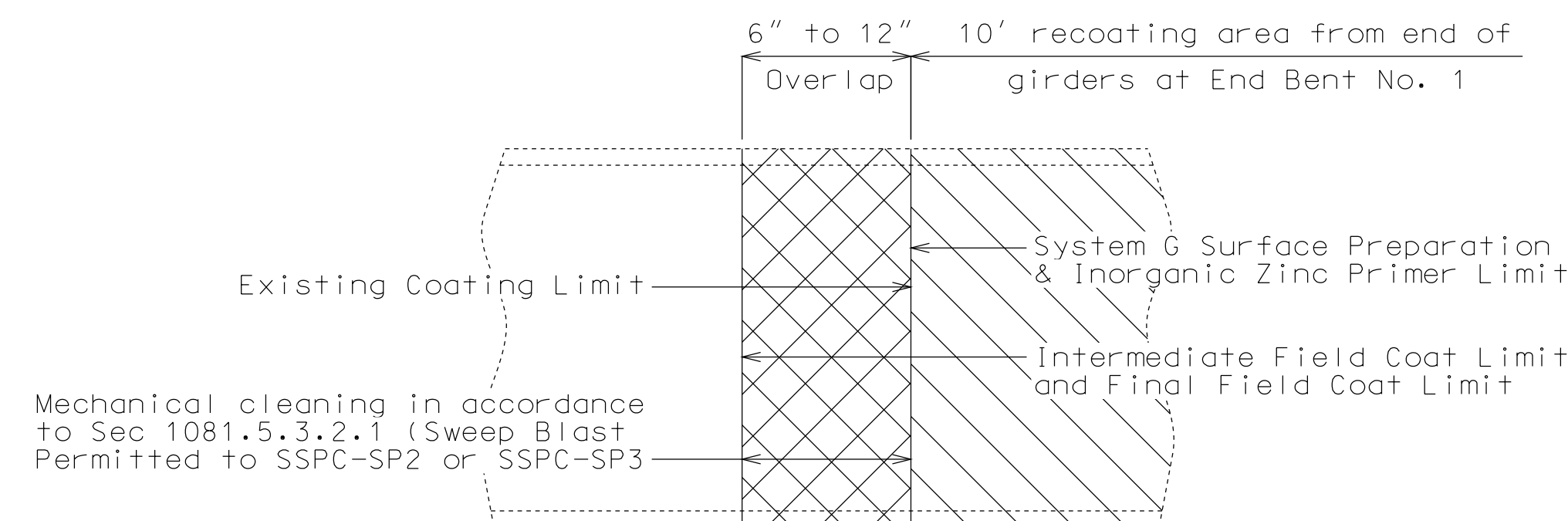
Contractor shall verify all dimensions in field before ordering new material.

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

**Traffic Handling:**

Structure to be closed during construction.

Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	50
Removal of Existing Bearing	each	2
Remove and Replace Barrier Curb	linear foot	15
Class B-1 Concrete	cu. yard	8.3
Reinforcing Steel (Epoxy Coated)	pound	510
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Expansion Device (Flat Plate)	linear foot	50
Cleaning and Coating Existing Bearings	each	2
Surface Preparation for Recoating Structural Steel	sq. foot	700
Field Application of Inorganic Zinc Primer	sq. foot	700
Intermediate Field Coat (System G)	sq. foot	700
Finish Field Coat (System G)	sq. foot	700
Laminated Neoprene Bearing Pad Assembly	each	2



PART ELEVATION SHOWING LIMITS OF PAINT OVERLAP  
 (Vertical or horizontal paint limit. Horizontal limit shown)

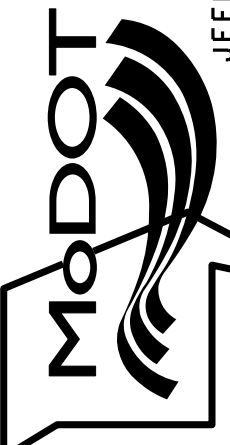
**REPAIRS TO BRIDGE: RAMP 11  
 (RTE. 69 TO I-435 (NB) OVER  
 RAMP 10 (I-435 (NB) TO I-35  
 (NB))**

STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

DESCRIPTION

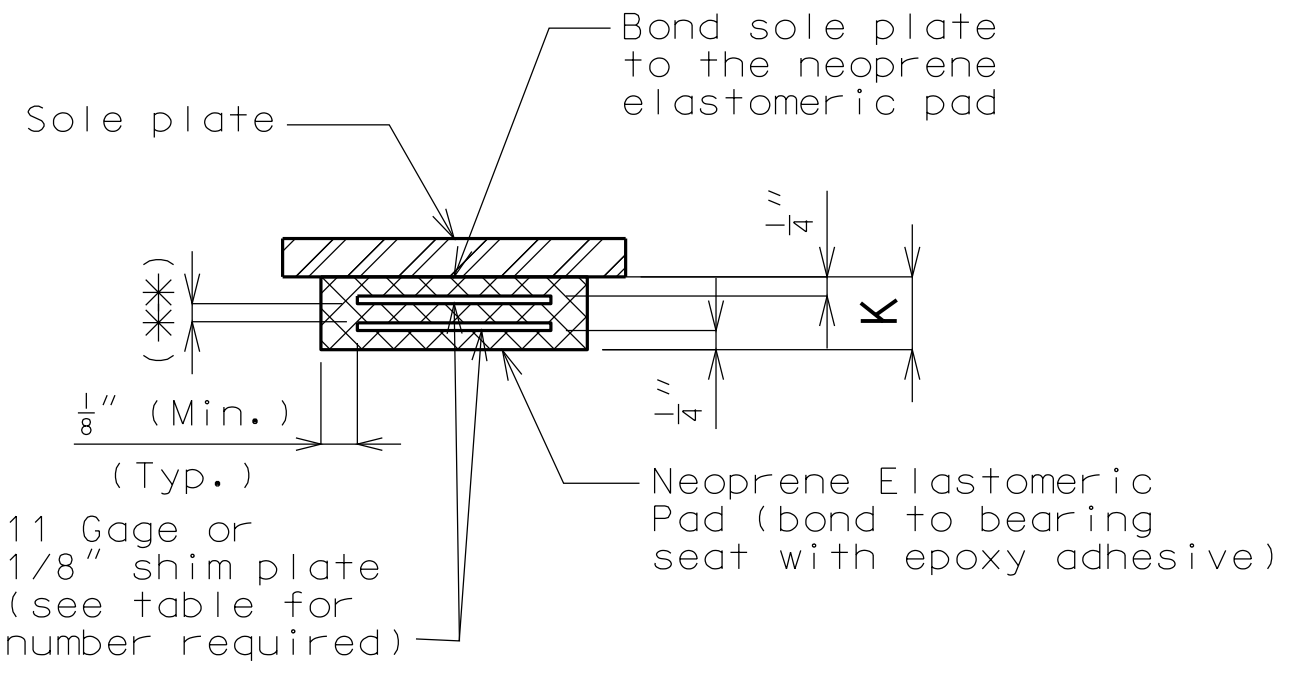
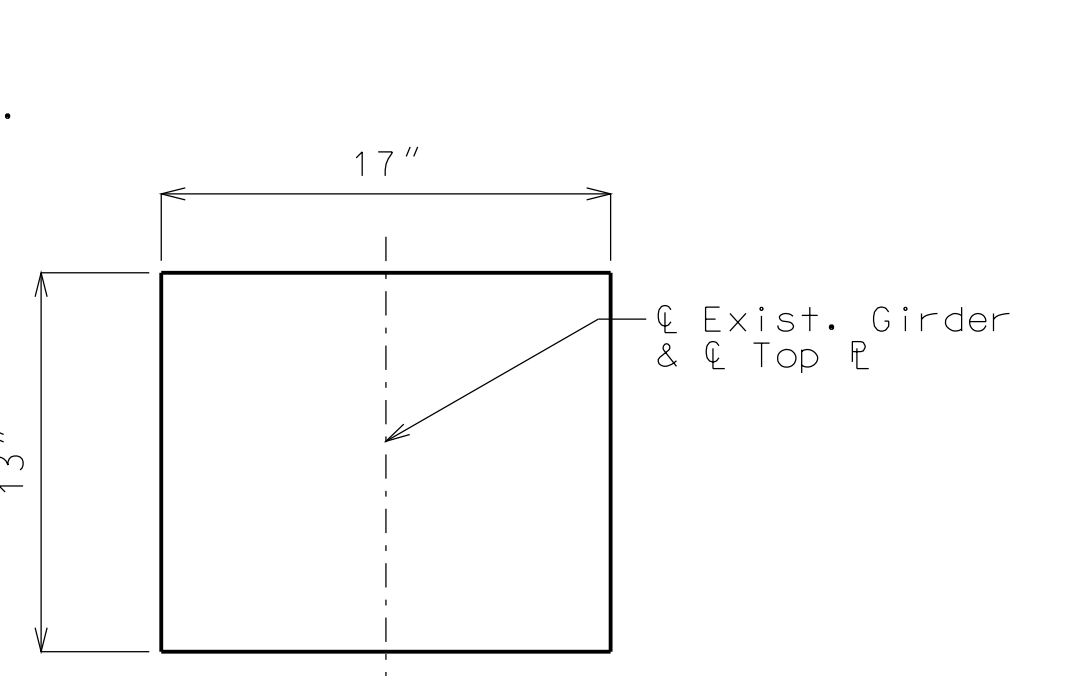
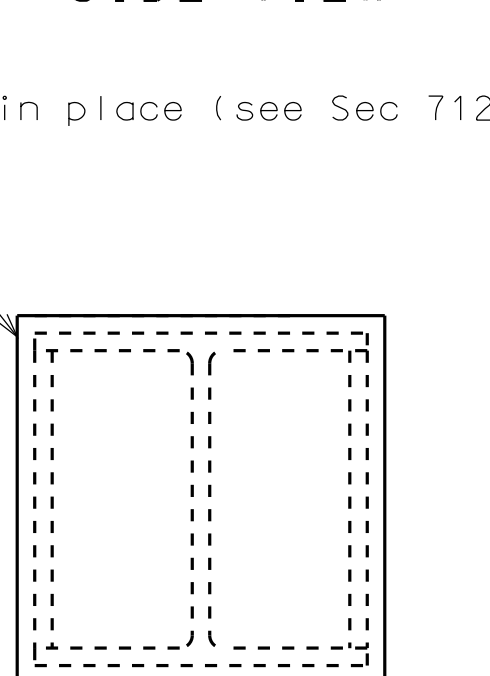
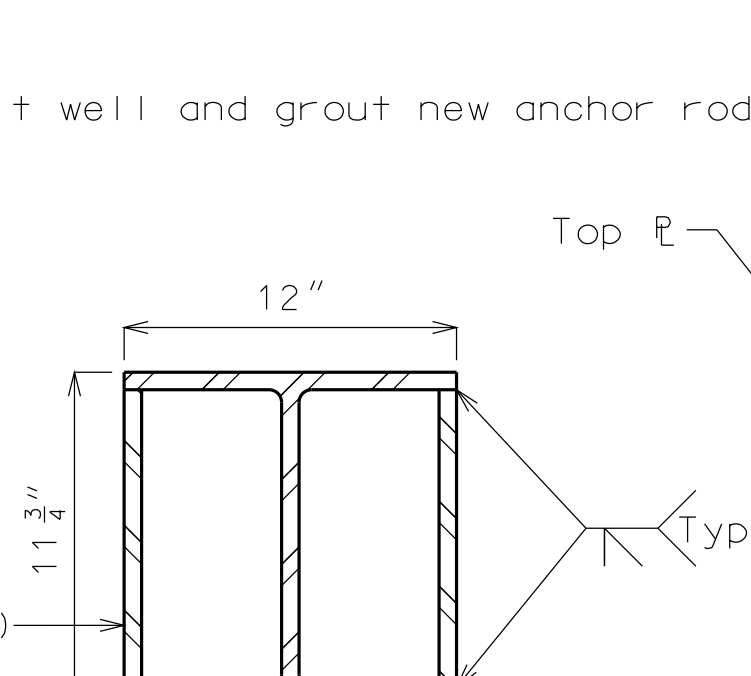
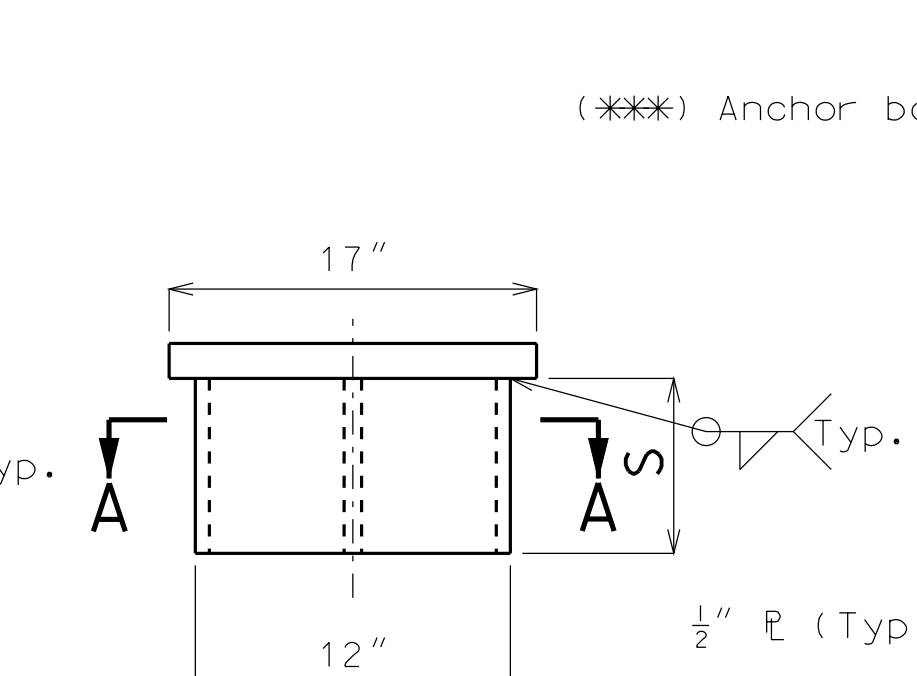
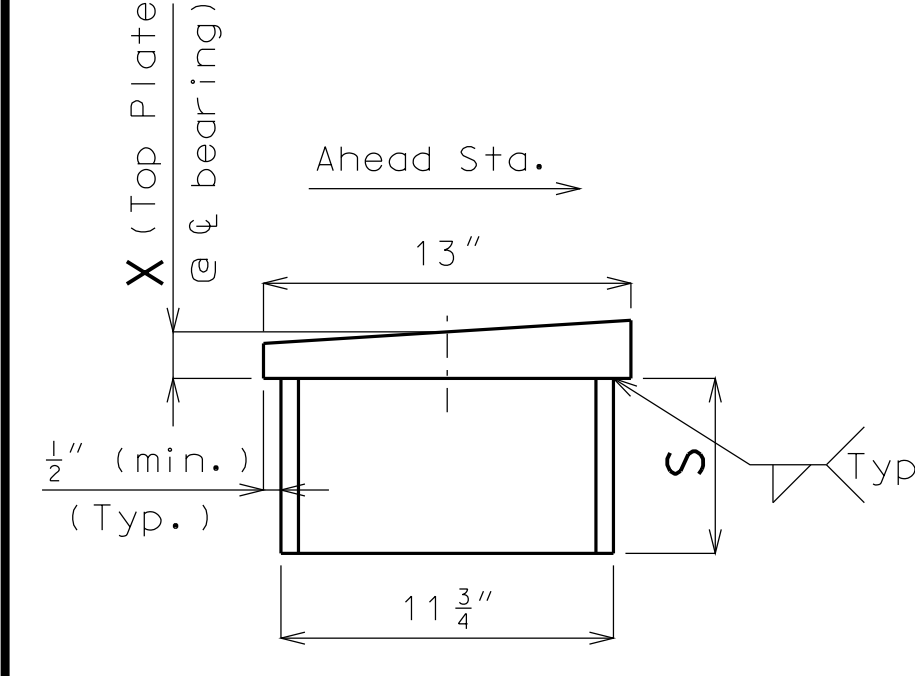
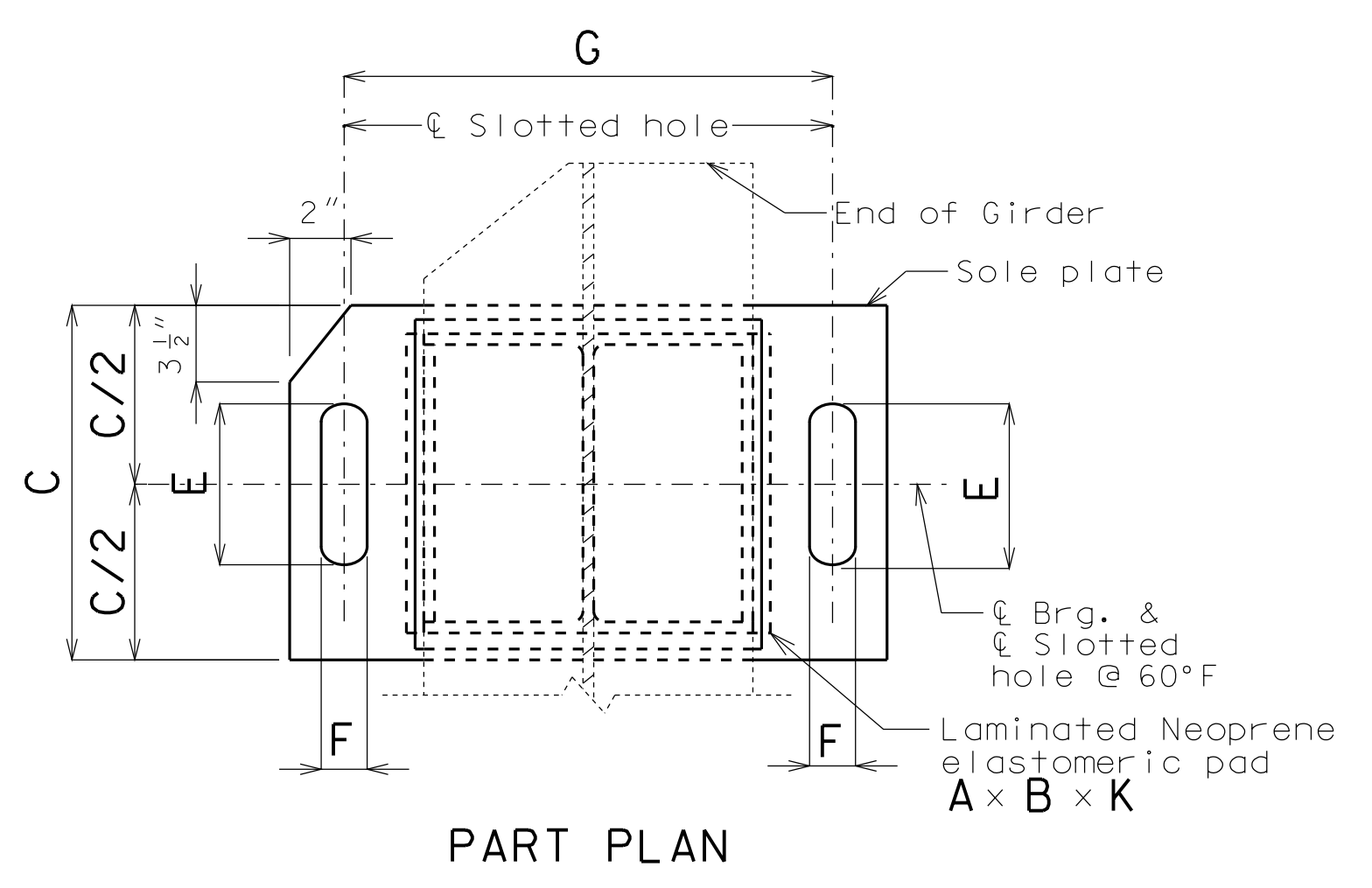
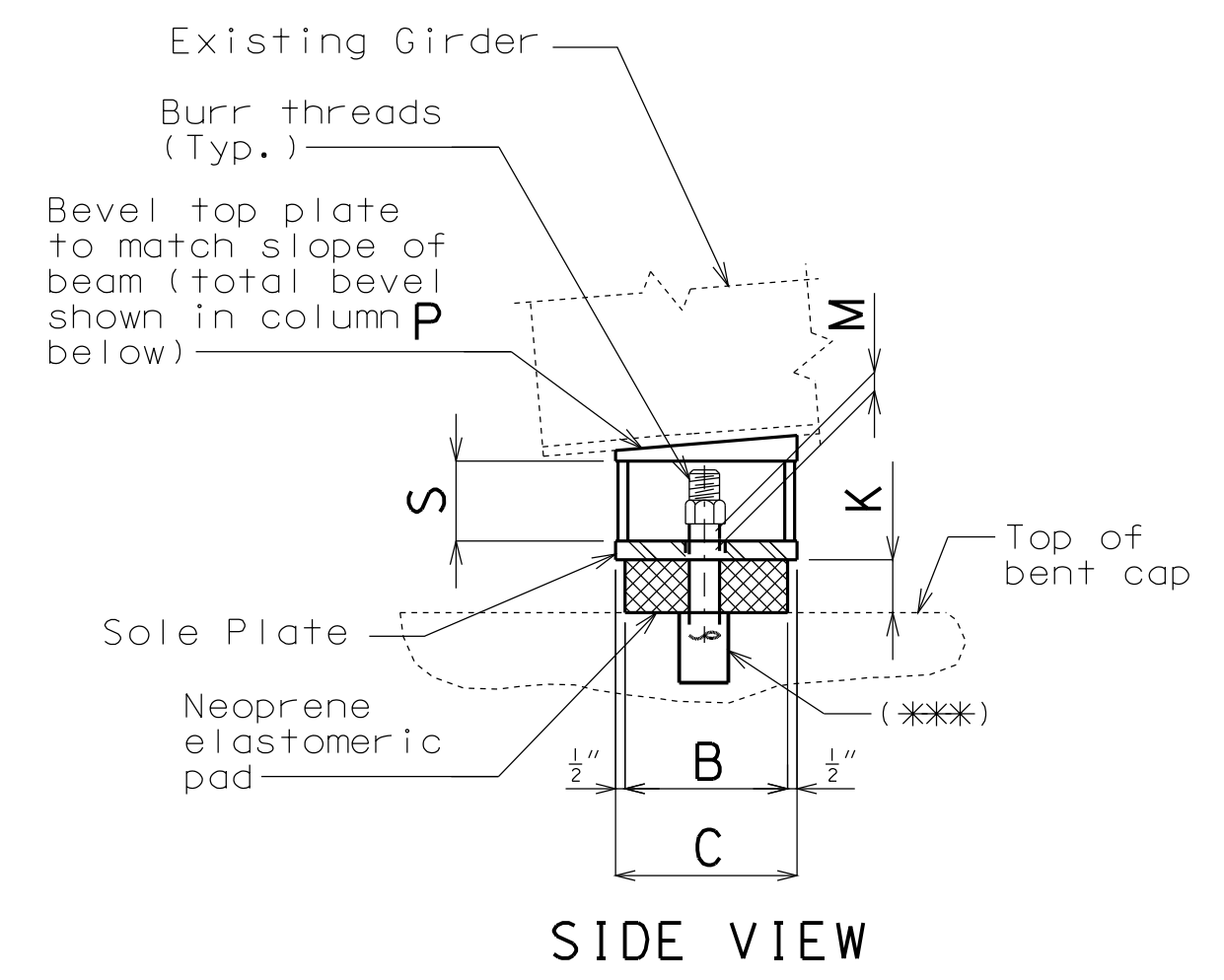
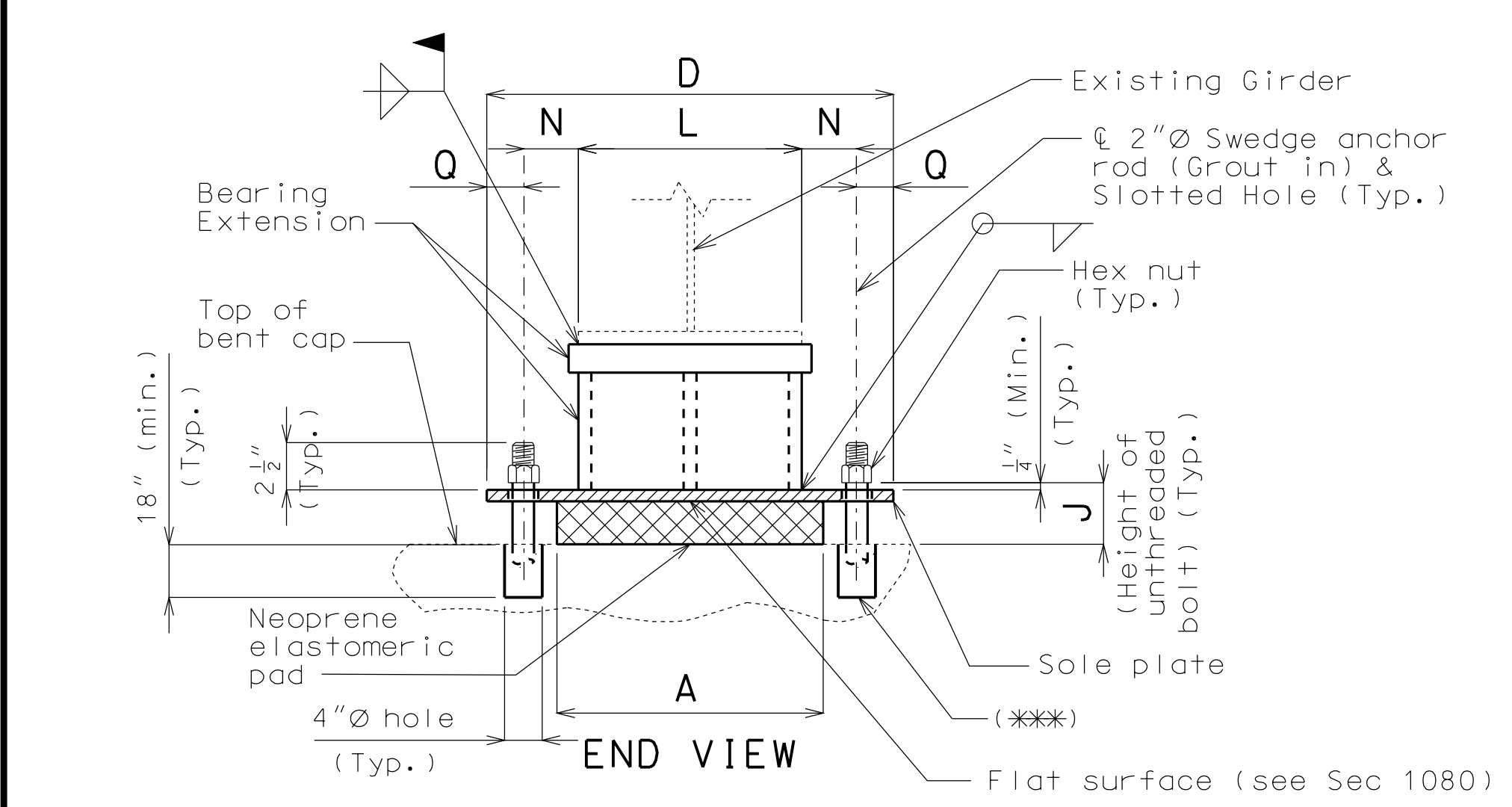
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-5636)

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

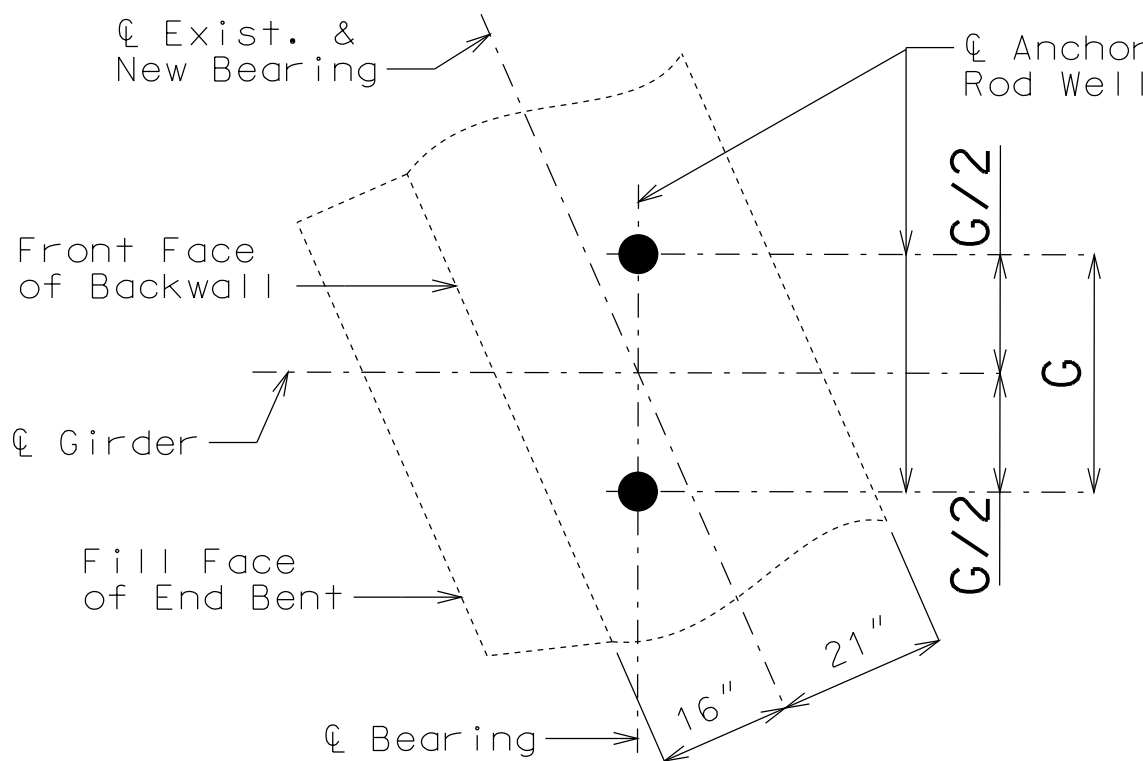
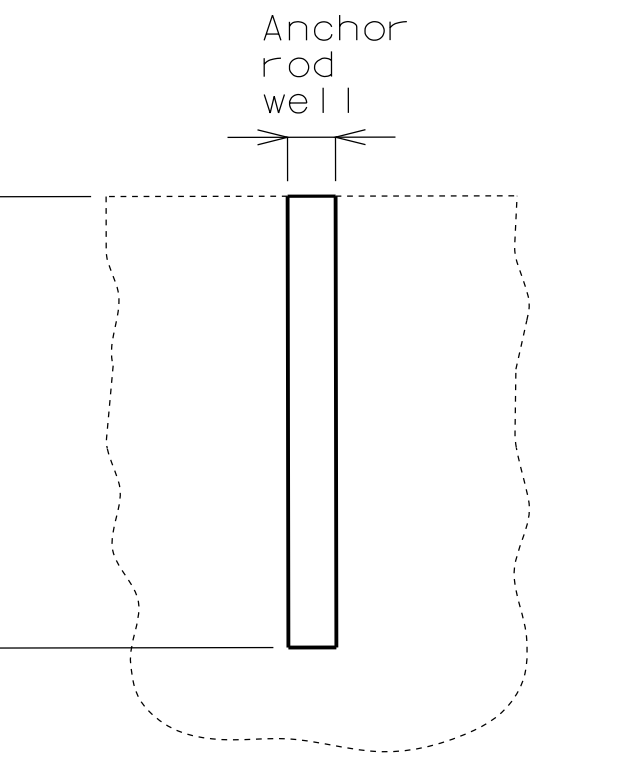
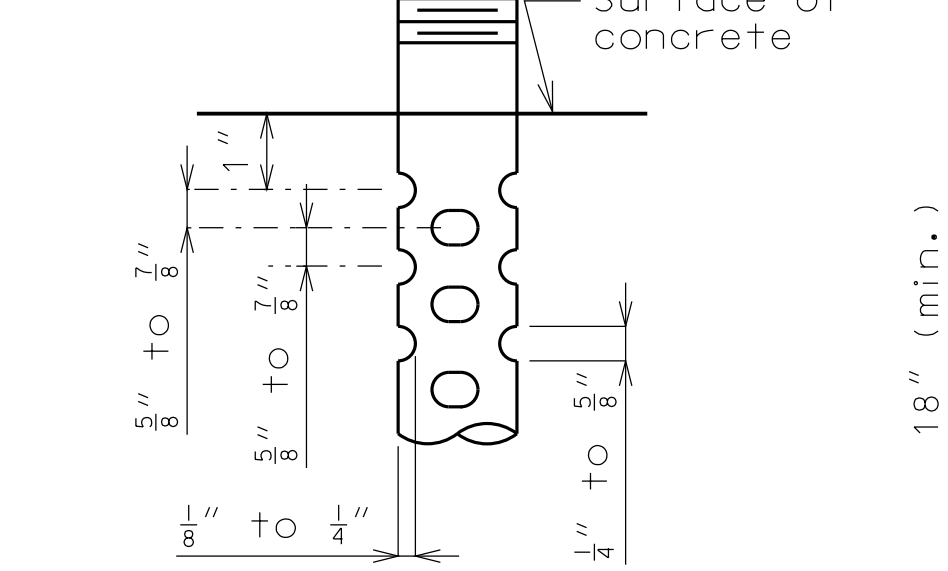
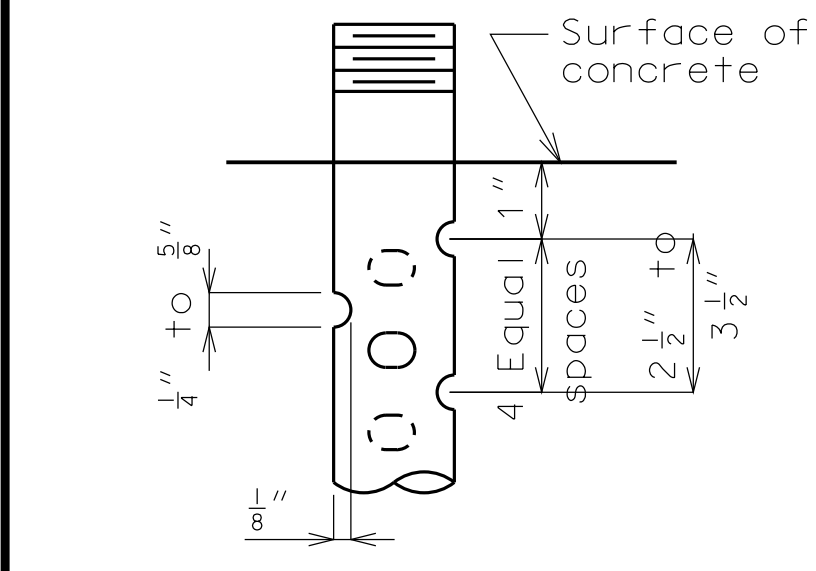




(\*\*) Anchor bolt well and grout new anchor rod in place (see Sec 712).

**GENERAL NOTES:**

- Anchor rods shall be 2" ASTM F1554 Grade 55 swaged rods and shall extend 18" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.
- Anchor rod shall be at the centerline of slotted hole at 60°F. Bearing position shall be adjusted 1/8" for each 10° fall or rise in temperature at installation.
- All structural steel for the anchor rods and hex nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).
- Neoprene Elastomeric Pads shall be 60 Durometer.
- Structural steel for sole plate and all bearing extension steel shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).
- Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.
- Cost of bearing extension, complete in place, will be considered completely covered by the contract unit price for Laminated Neoprene Bearing Pad Assembly.
- The temporary supports shall be capable of safely supporting a service load DL & construction load of 104 kips and a LL of 105 kips per stringer if done under traffic (factor of safety not included). See Special Provisions.



DETAIL OF 3/4" THRU 2 1/2" ANCHOR RODS SWEDGE ANCHOR ROD DETAILS

OPTIONAL DETAIL OF 1 3/8" THRU 2 1/2" ANCHOR RODS

DETAIL OF ANCHOR ROD WELLS

PLAN OF EXIST. END BENT SHOWING ANCHOR RODS

EXPANSION BEARINGS																NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED		
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	S			X	
Bent No. 1	16"	13"	14"	26"	6 1/4"	2 1/8"	20"	6 3/4"	5"	16"	1 1/2"	2"	3 3/8"	3"	7 1/8"	1 3/8"	8	2	
																	TOTAL BEARINGS	2	

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

**DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY**

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 12/4/2012

ROUTE: I-435 STATE: MO

DISTRICT: BR SHEET NO.: 2

COUNTY: CLAY

JOB NO.: J412381


CONTRACT ID.:

PROJECT NO.:

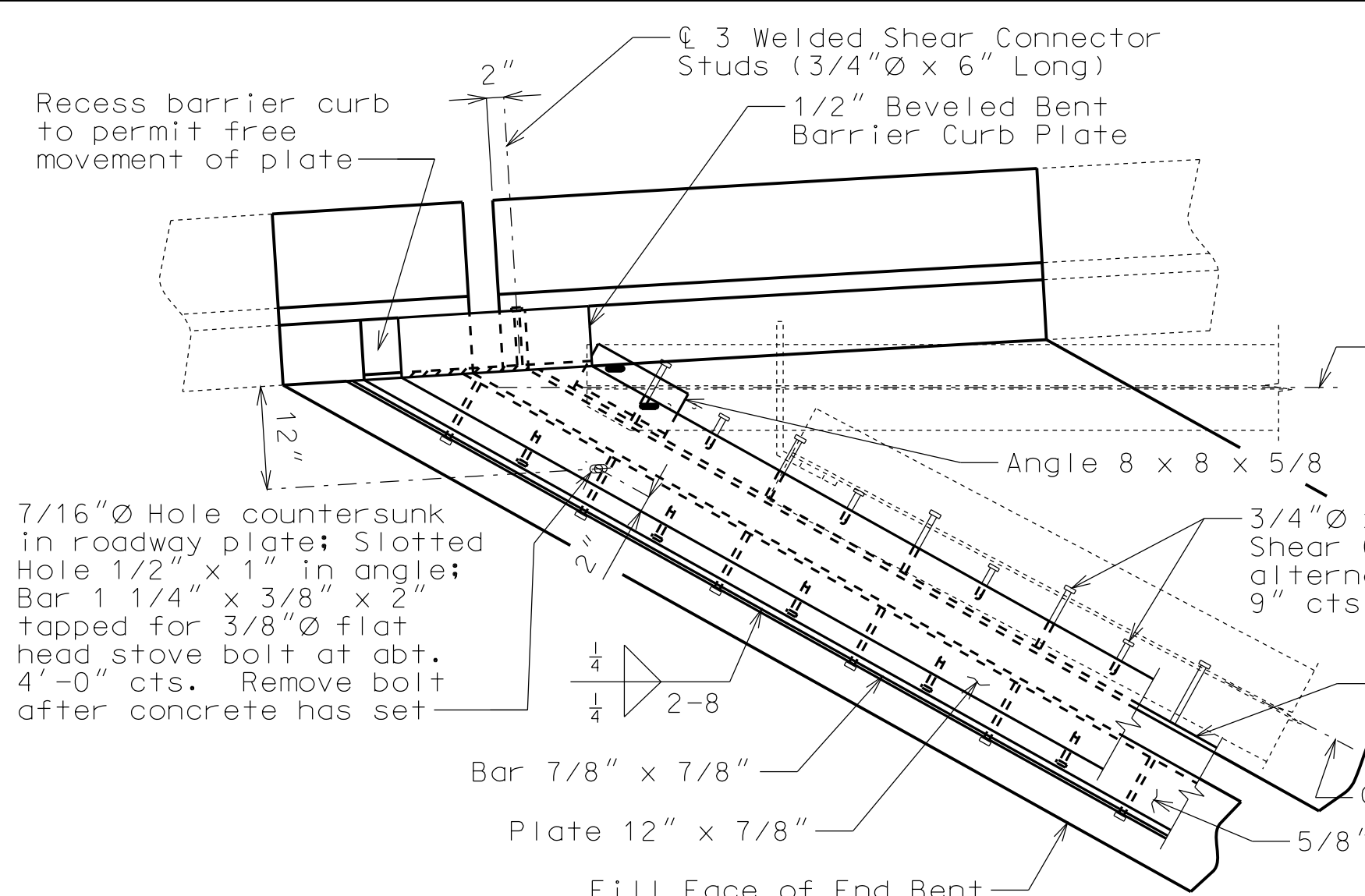
BRIDGE NO.: A33861

DESCRIPTION	DATE

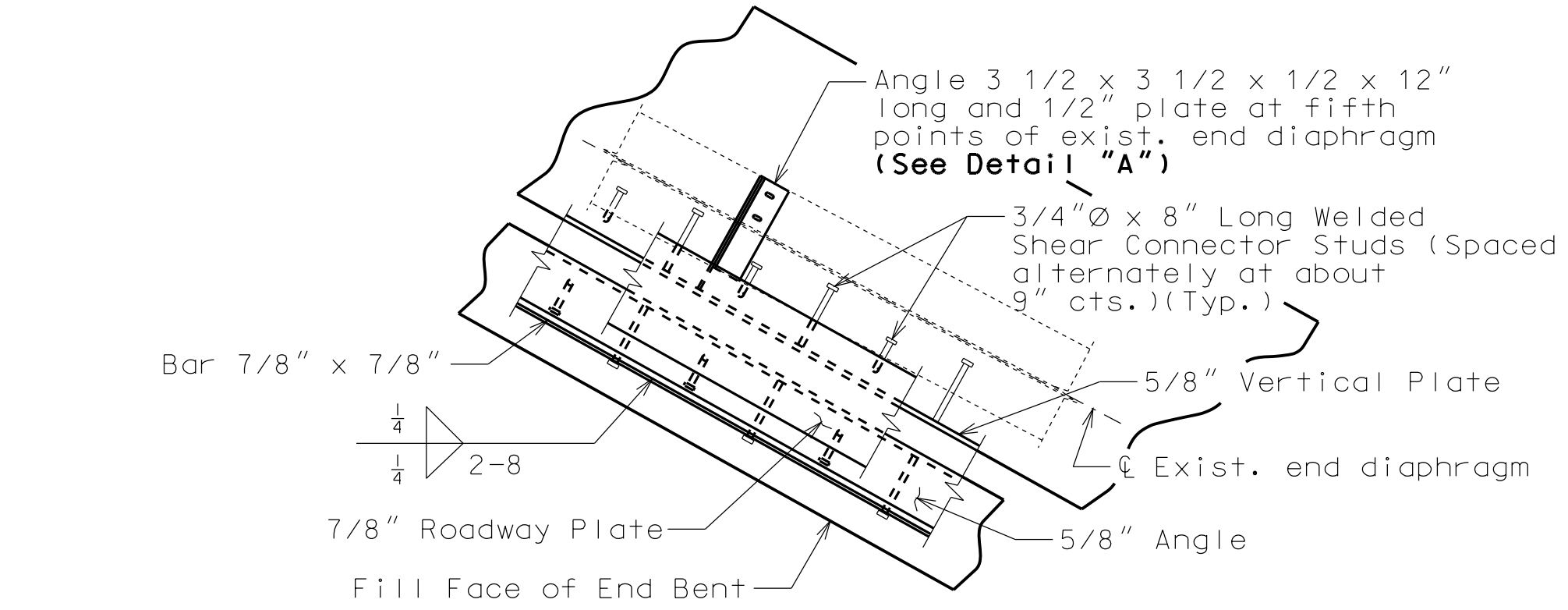
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

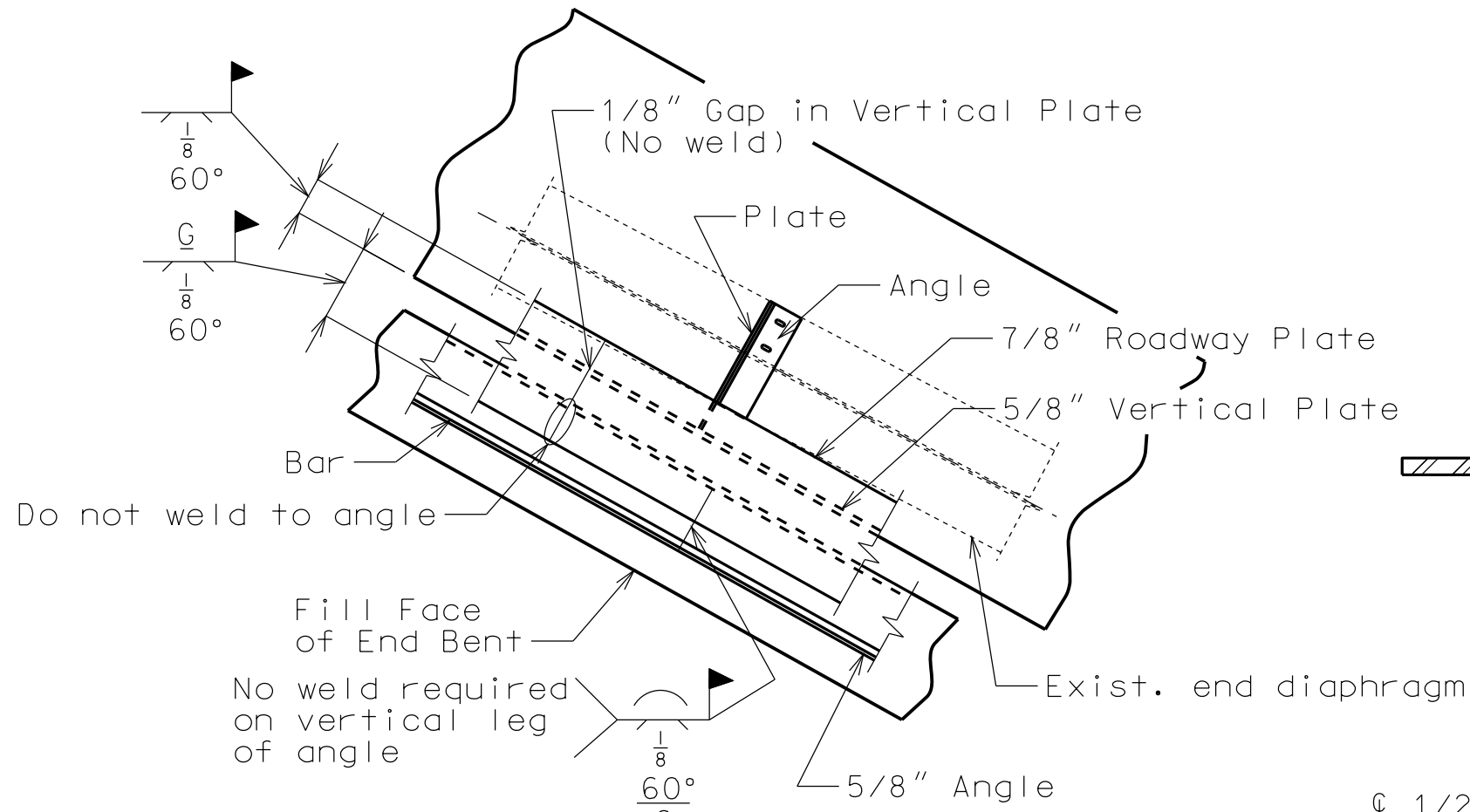
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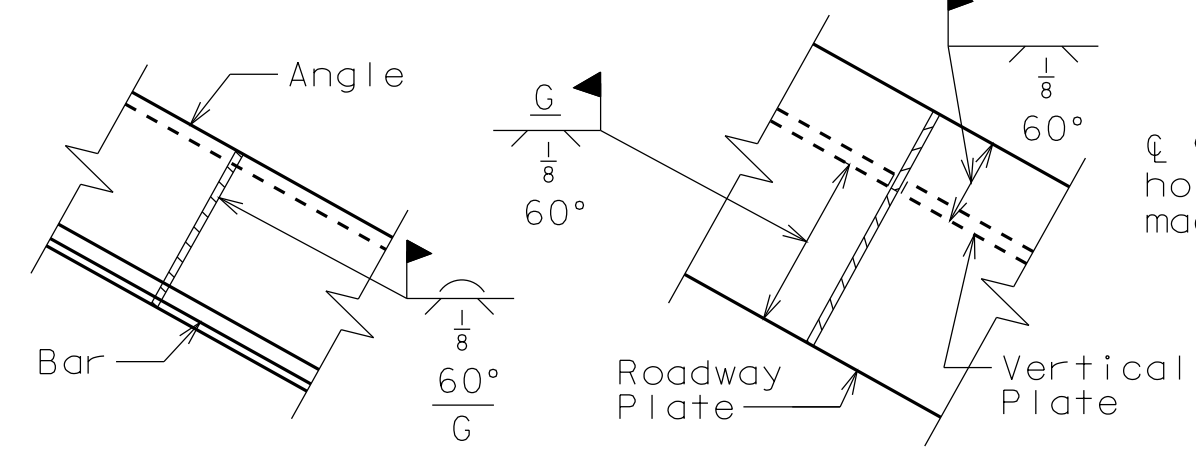
**PART PLAN SHOWING CONNECTION TO GIRDER**  
Note: Concrete vent holes not shown for clarity.



**PART PLAN SHOWING CONNECTION TO END DIAPHRAGM**  
Note: Concrete vent holes not shown for clarity.

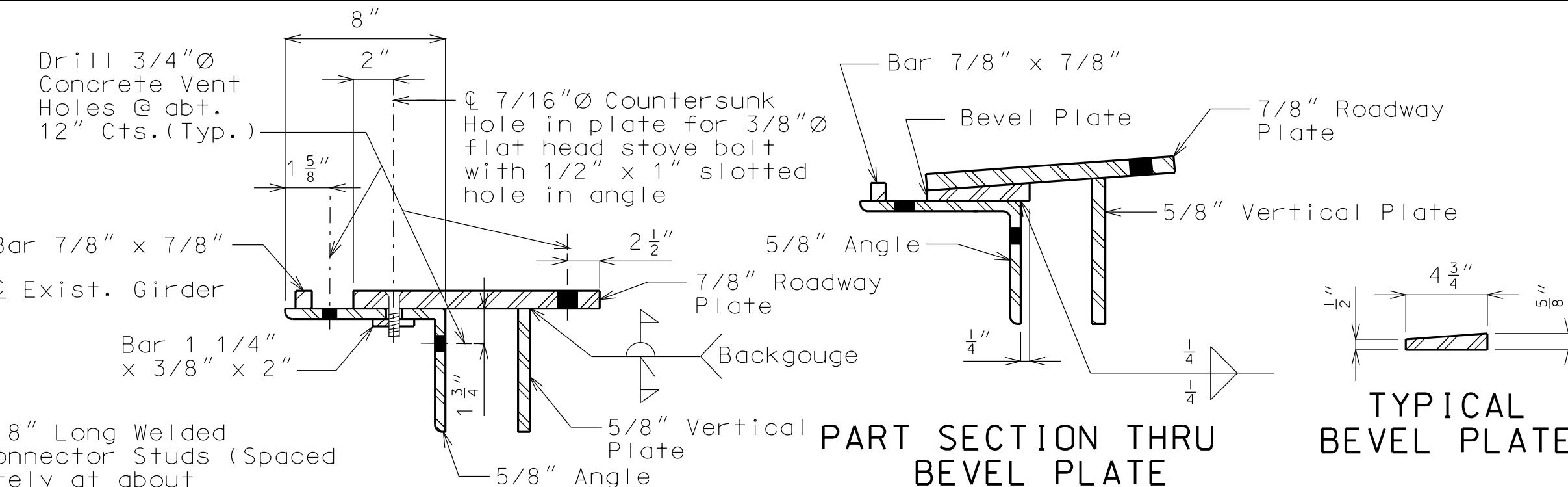


**PERMISSIBLE FIELD SPLICE AT END BENT**

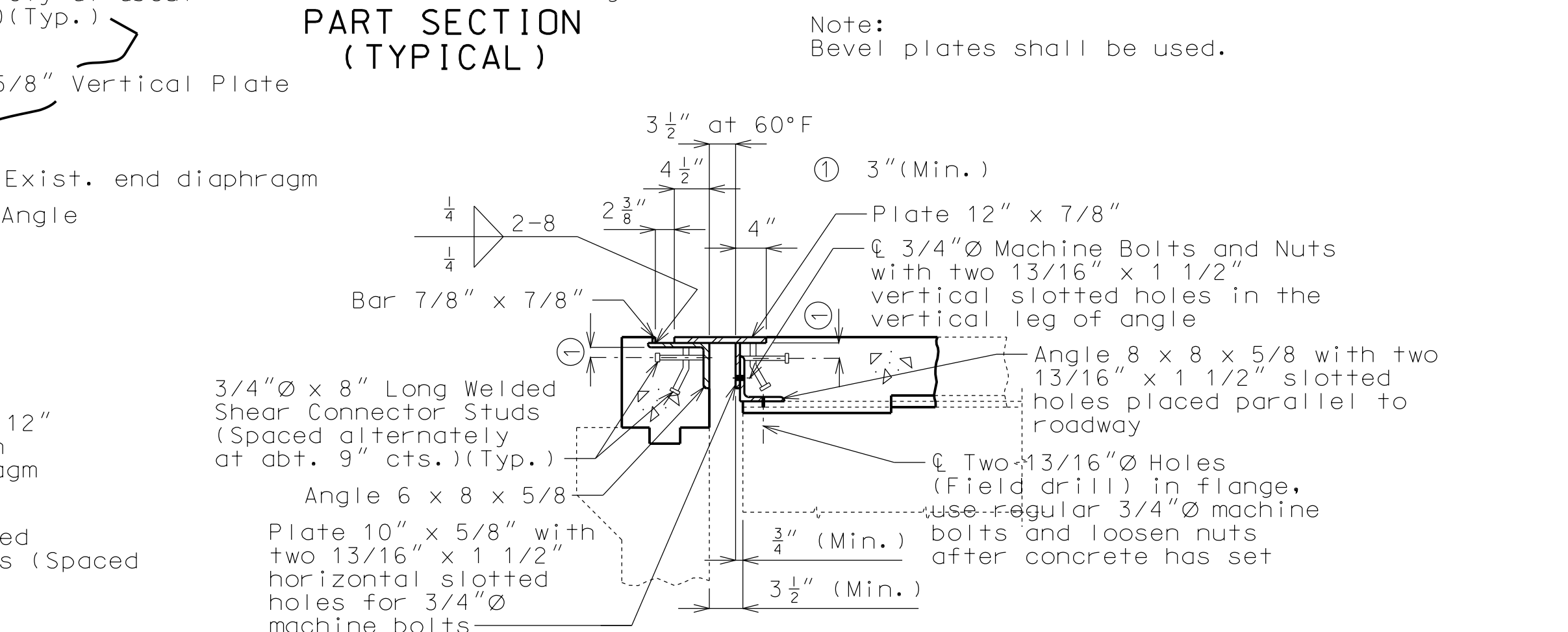


**PART PLAN OF ANGLE AND BAR**  
Detailed June 2012  
Checked July 2012

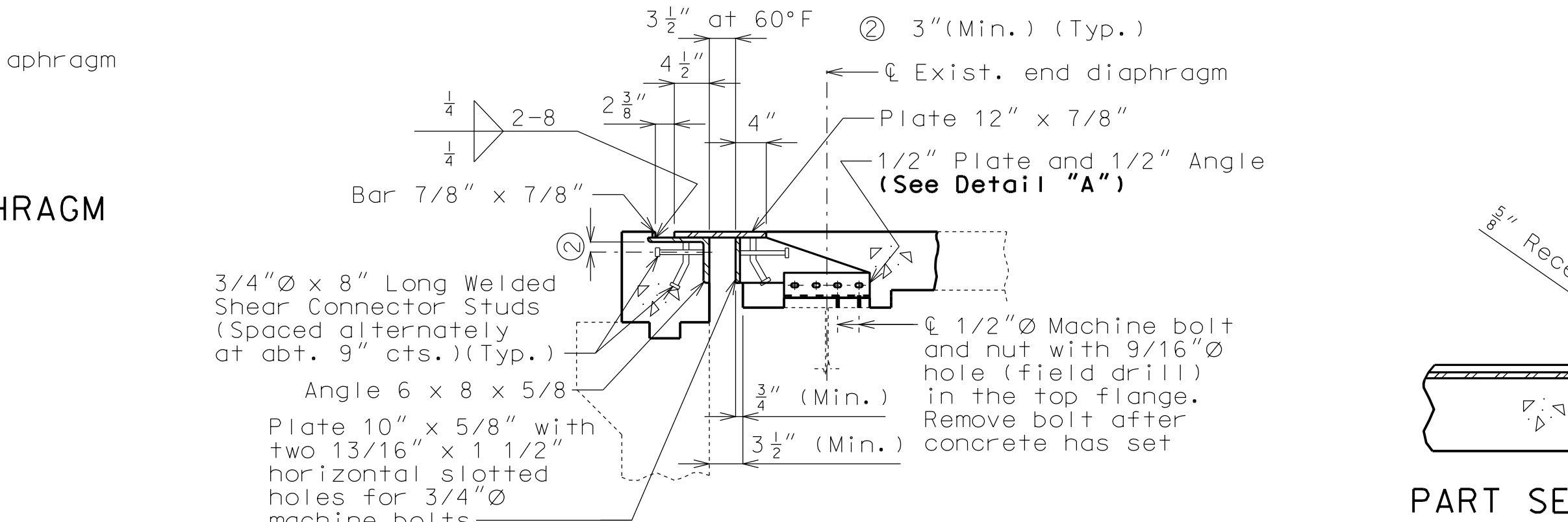
**PART PLAN ROADWAY PLATE AND VERTICAL PLATE**



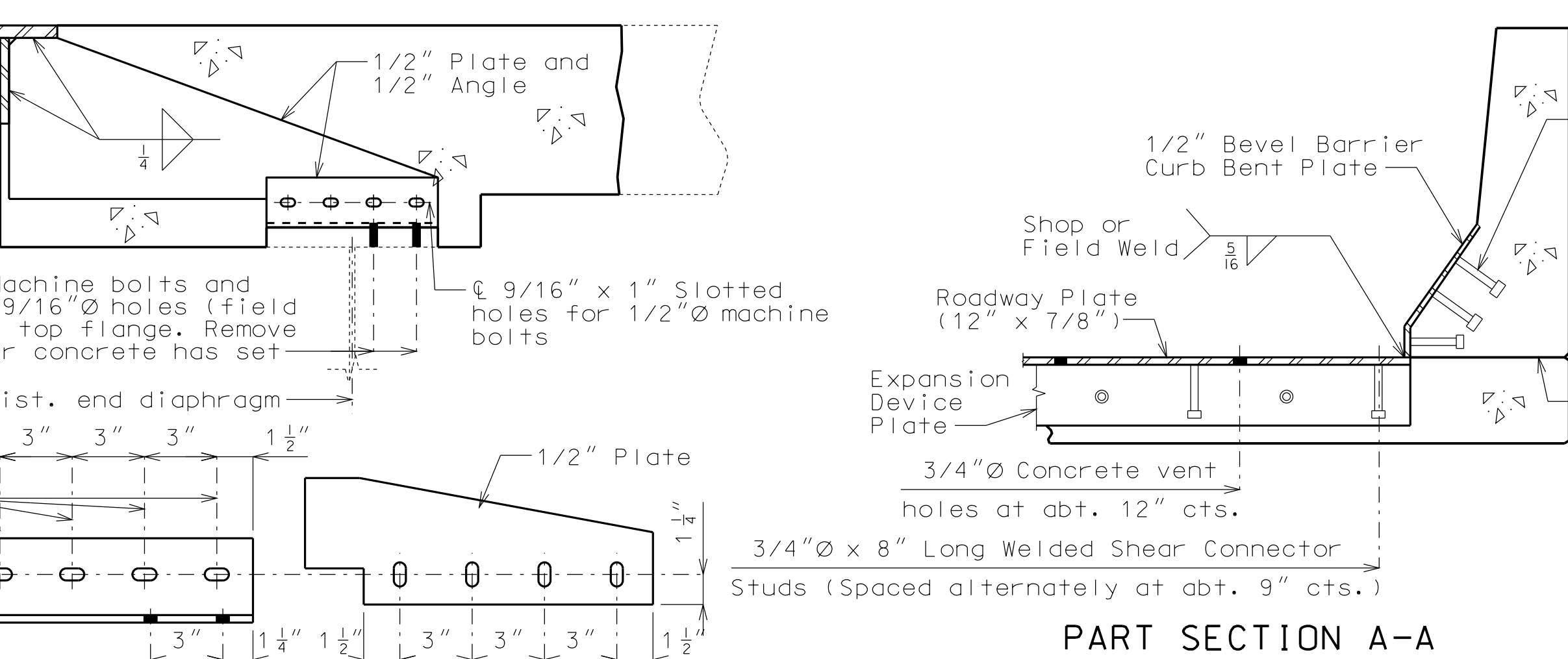
**PART SECTION THRU BEVEL PLATE**  
Note: Bevel plates shall be used.



**PART SECTION AT EXIST. GIRDER**



**PART SECTION AT EXIST. END DIAPHRAGM**



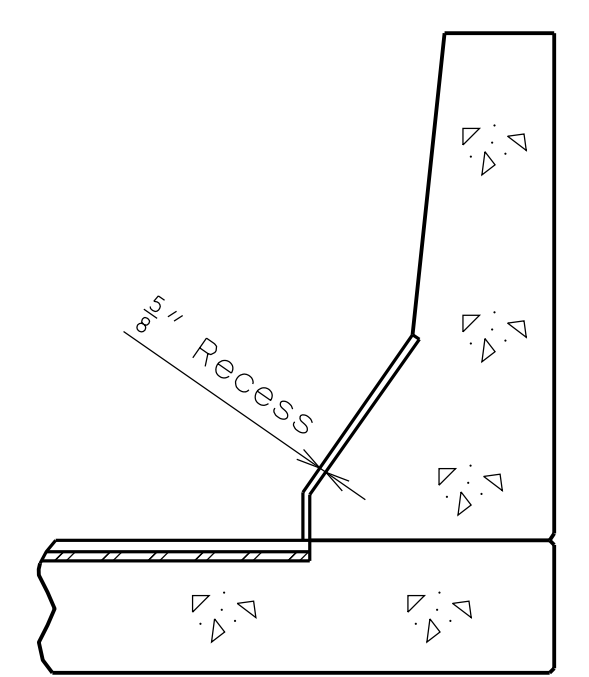
**DETAIL "A"**  
**DETAILS OF FLAT PLATE EXPANSION DEVICE AT END BENT NO. 1**

Note: This drawing is not to scale. Follow dimensions. Sheet No. 3 of 5

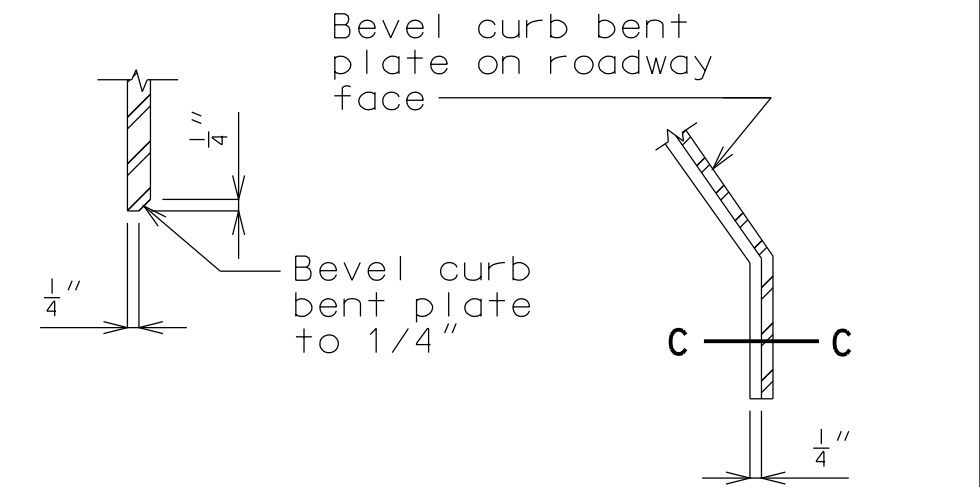
**GENERAL NOTES:**  
Expansion device shall be fabricated in one section, except for stage construction and when the length is over 50 feet. A complete joint penetration groove weld splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion device shall be fabricated and installed to the crown and grade of the roadway.  
Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" (along & Bridge) for each 10° fall or rise in temperature at installation.  
Material for the expansion device shall be ASTM A709 Grade 36 structural steel. Anchors for the expansion device shall be in accordance with Sec 1037.  
Structural steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.  
Payment for furnishing, coating or galvanizing and installing the structural steel for the expansion device will be considered completely covered by the contract unit price for Expansion Device (Flat Plate) per linear foot.  
Concrete shall be forced under and around flat plate, anchors and angles. Proper consolidation shall be achieved by localized internal vibration. Finishing of the concrete shall be achieved by hand finishing within one foot of the expansion device. The vertical and horizontal concrete vent holes shall be offset from each other. Do not alternate holes at the 12" spacing.  
Longitudinal reinforcing steel shall be cut so that ends shall not be more than 1" from vertical plate and the vertical leg of the angle at the expansion device.  
Complete joint penetration welds utilized in the fabrication of the expansion device shall be nondestructively tested by an approved method.

**GENERAL NOTES:**  
Expansion device shall be fabricated in one section, except for stage construction and when the length is over 50 feet. A complete joint penetration groove weld splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion device shall be fabricated and installed to the crown and grade of the roadway.  
Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" (along & Bridge) for each 10° fall or rise in temperature at installation.  
Material for the expansion device shall be ASTM A709 Grade 36 structural steel. Anchors for the expansion device shall be in accordance with Sec 1037.  
Structural steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.  
Payment for furnishing, coating or galvanizing and installing the structural steel for the expansion device will be considered completely covered by the contract unit price for Expansion Device (Flat Plate) per linear foot.  
Concrete shall be forced under and around flat plate, anchors and angles. Proper consolidation shall be achieved by localized internal vibration. Finishing of the concrete shall be achieved by hand finishing within one foot of the expansion device. The vertical and horizontal concrete vent holes shall be offset from each other. Do not alternate holes at the 12" spacing.  
Longitudinal reinforcing steel shall be cut so that ends shall not be more than 1" from vertical plate and the vertical leg of the angle at the expansion device.  
Complete joint penetration welds utilized in the fabrication of the expansion device shall be nondestructively tested by an approved method.

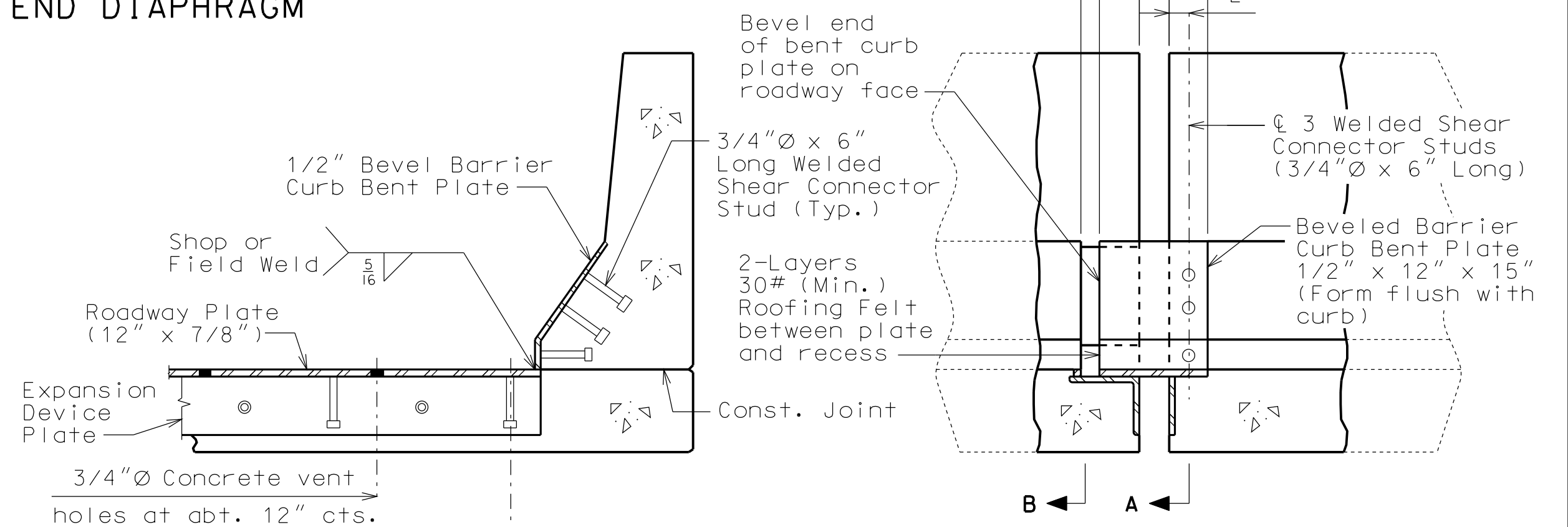
**GENERAL NOTES:**  
Expansion device shall be fabricated in one section, except for stage construction and when the length is over 50 feet. A complete joint penetration groove weld splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion device shall be fabricated and installed to the crown and grade of the roadway.  
Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" (along & Bridge) for each 10° fall or rise in temperature at installation.  
Material for the expansion device shall be ASTM A709 Grade 36 structural steel. Anchors for the expansion device shall be in accordance with Sec 1037.  
Structural steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.  
Payment for furnishing, coating or galvanizing and installing the structural steel for the expansion device will be considered completely covered by the contract unit price for Expansion Device (Flat Plate) per linear foot.  
Concrete shall be forced under and around flat plate, anchors and angles. Proper consolidation shall be achieved by localized internal vibration. Finishing of the concrete shall be achieved by hand finishing within one foot of the expansion device. The vertical and horizontal concrete vent holes shall be offset from each other. Do not alternate holes at the 12" spacing.  
Longitudinal reinforcing steel shall be cut so that ends shall not be more than 1" from vertical plate and the vertical leg of the angle at the expansion device.  
Complete joint penetration welds utilized in the fabrication of the expansion device shall be nondestructively tested by an approved method.



**PART SECTION B-B**




**PART ELEVATION AT END OF BEVELED CURB BENT PLATE**

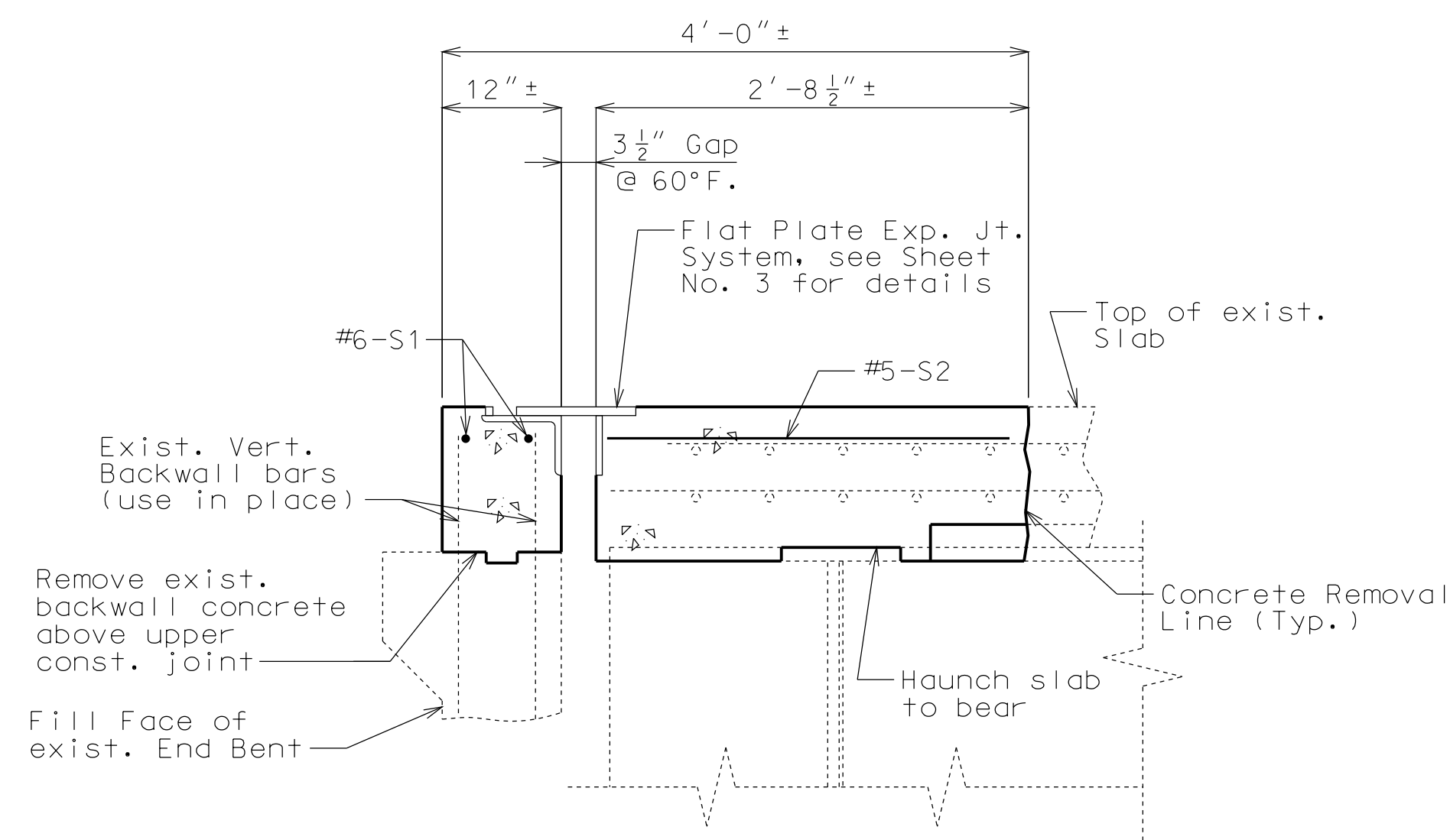


**ELEVATION OF BARRIER CURB**



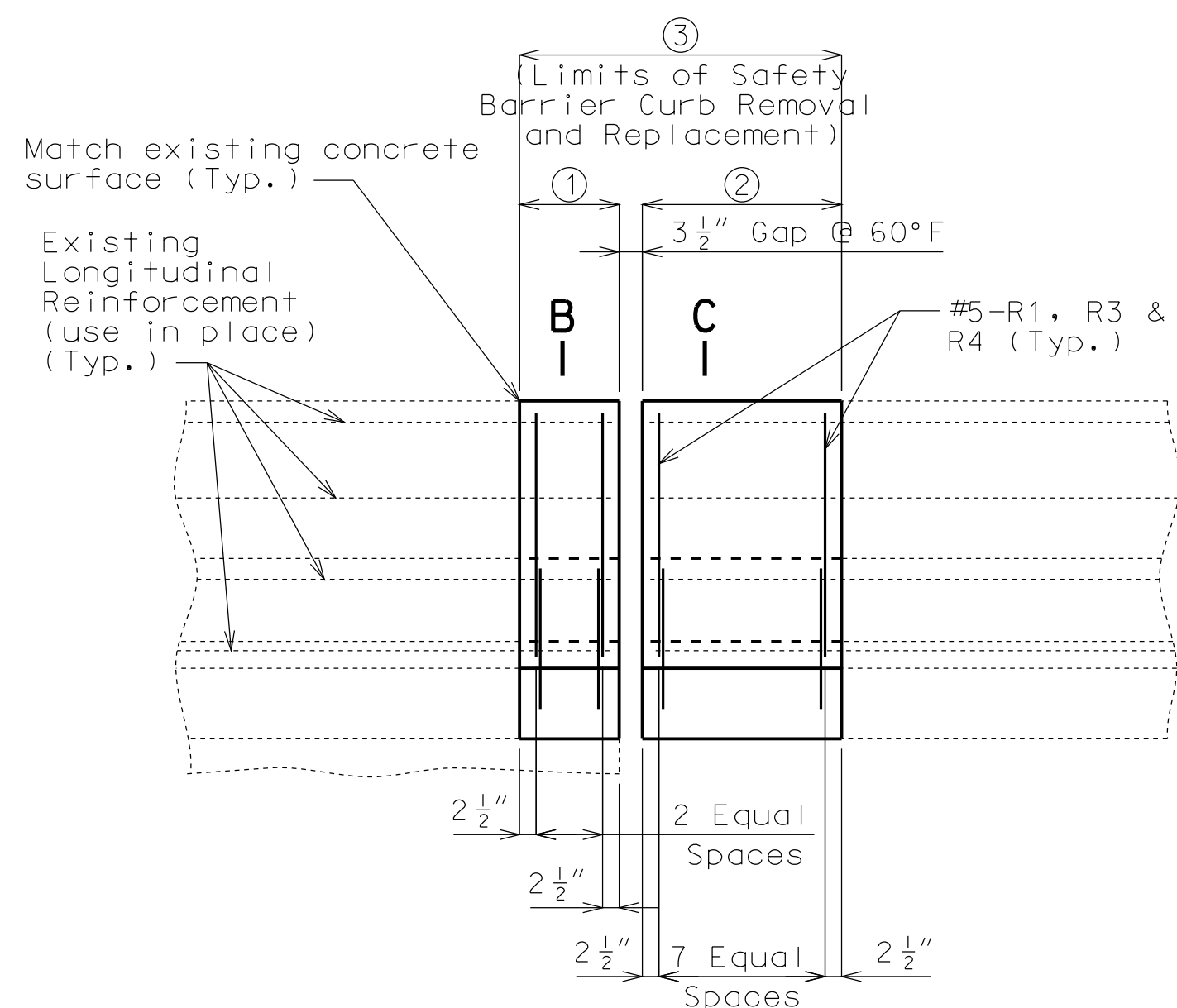
**PART SECTION A-A**

DATE PREPARED 12/4/2012		STATE MO	
ROUTE I-435	DISTRICT BR	SHEET NO. 3	COUNTY CLAY
JOB NO. J412381			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO. A33861			
DESCRIPTION	DATE		
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)			
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT." IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.			



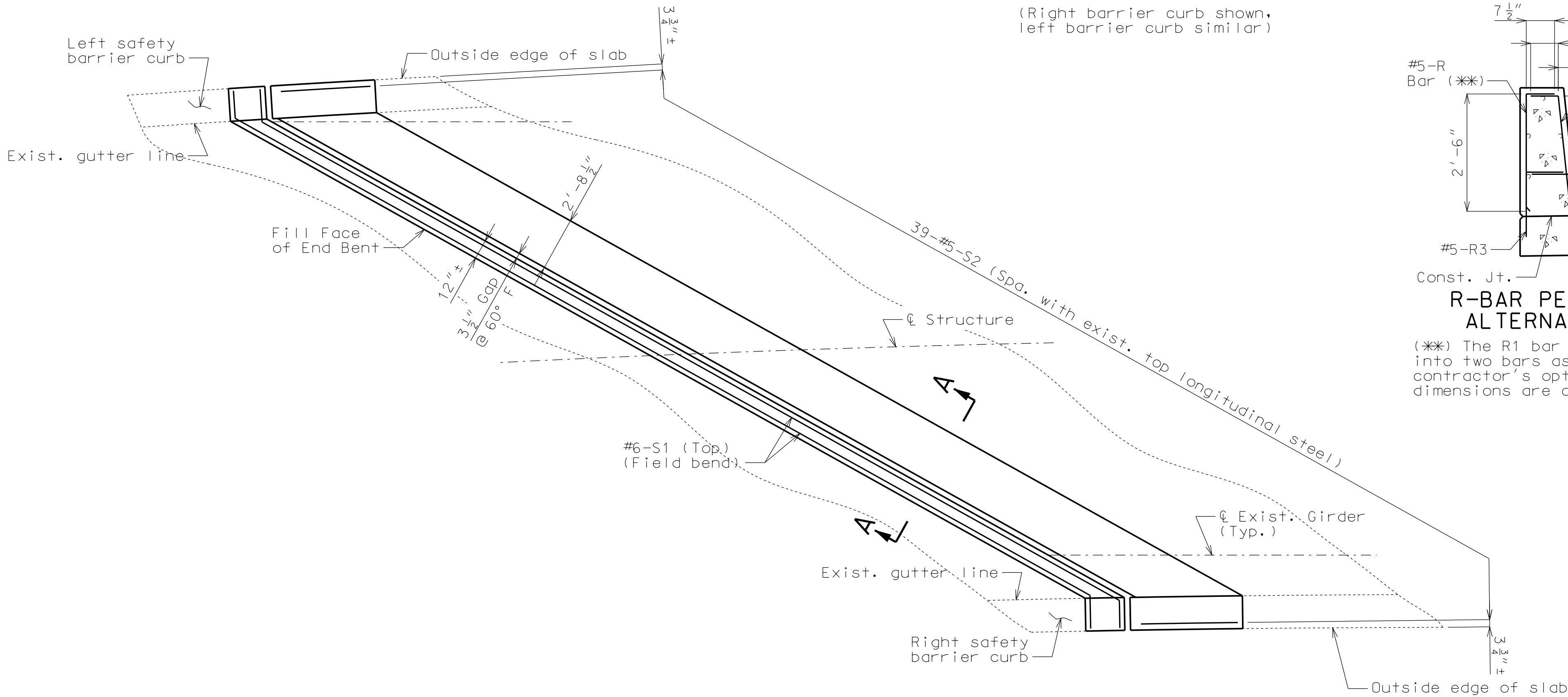
SECTION A-A

- ① 22 1/4"± (Left barrier curb)  
23 3/4"± (Right barrier curb)
- ② 5'-3 5/8"± (Left barrier curb)  
5'-9"± (Right barrier curb)
- ③ 7'-5 3/8"± (Left barrier curb)  
8'-0 1/4"± (Right barrier curb)

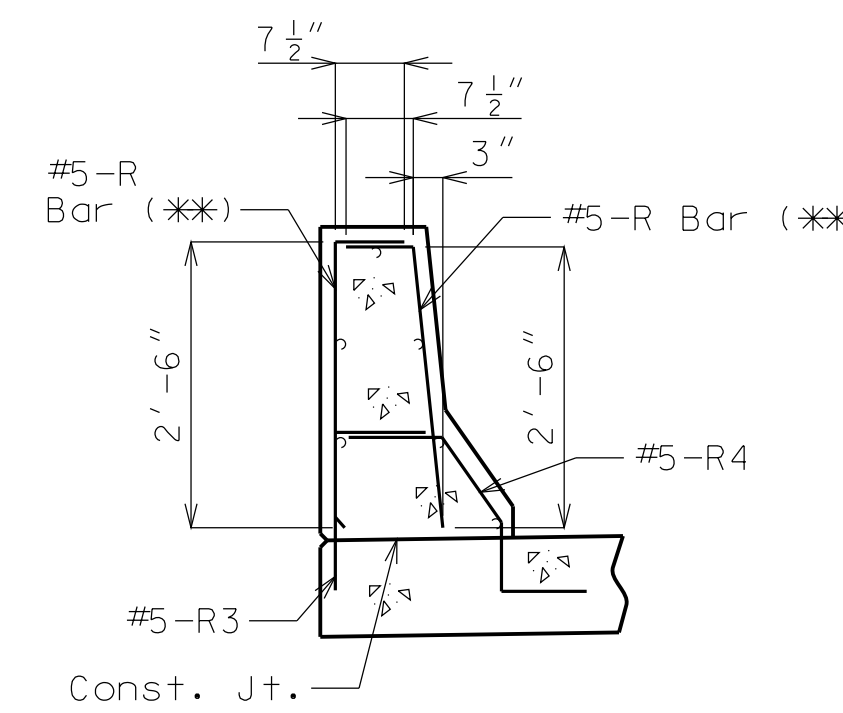


PART ELEVATION OF RIGHT SAFETY BARRIER CURB

(Right barrier curb shown, left barrier curb similar)

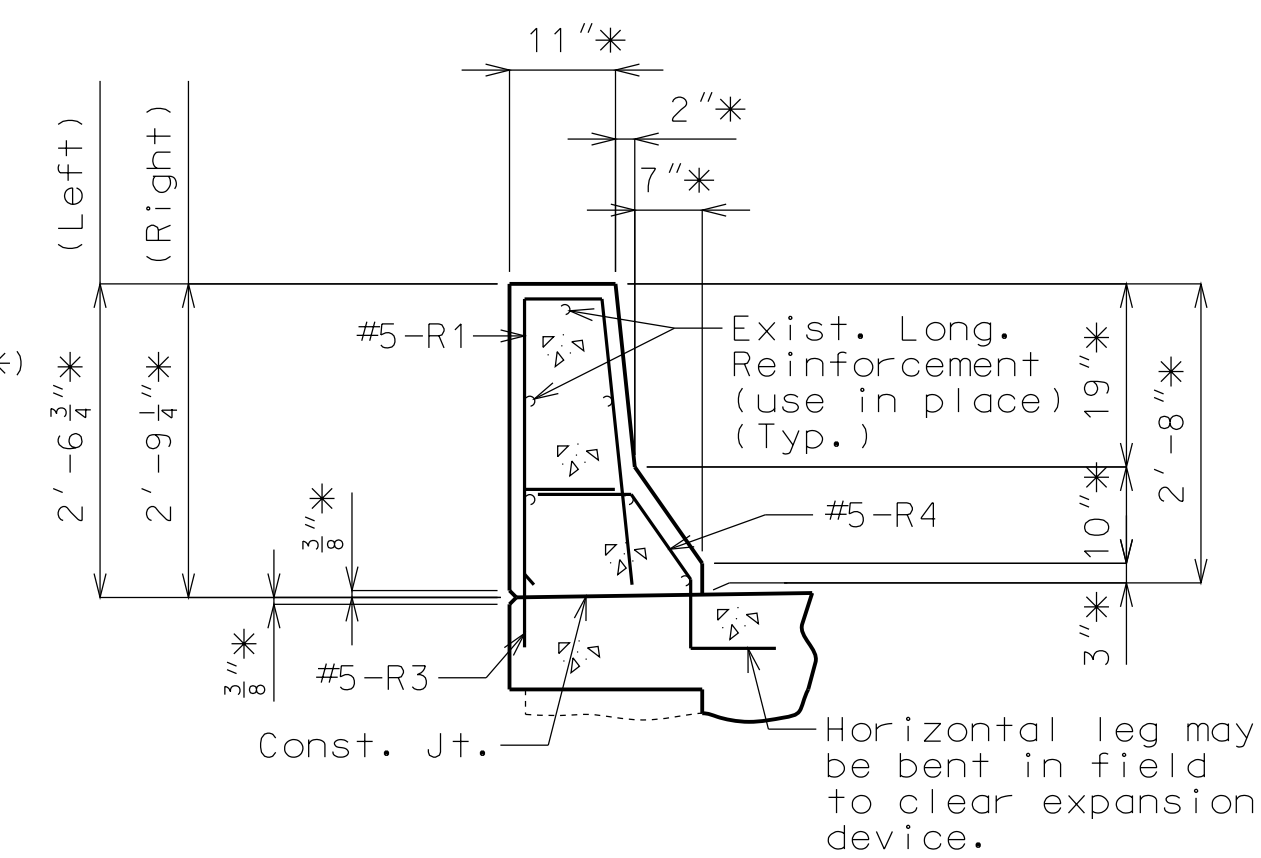


PART PLAN OF SLAB AT END BENT NO. 1



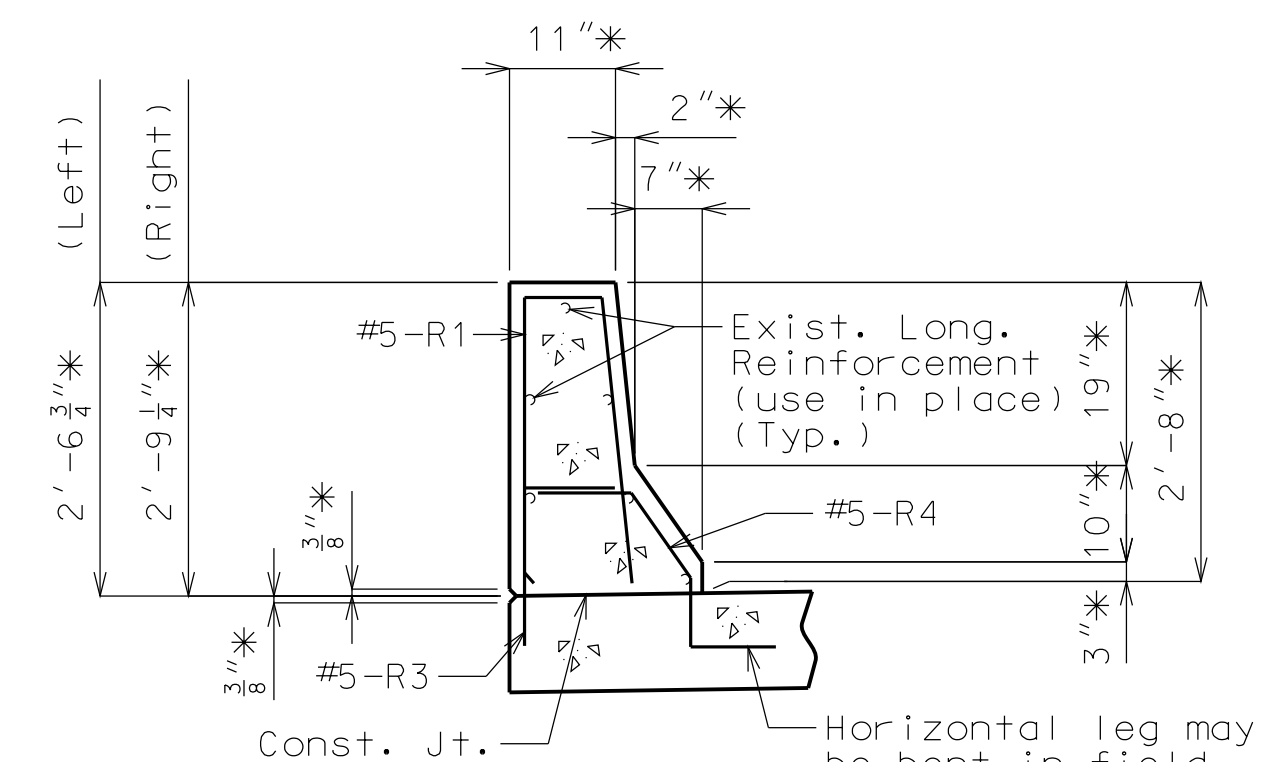
R-BAR PERMISSIBLE ALTERNATE SHAPE

(\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION B-B

\* Match existing.



PART SECTION C-C

\* Match existing.



MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		79	114	
SEC./SUR. 2		TWP. 51N. RGE. 32W			

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. - 1973 Load Factor Design

Design Loading:  
 HS20-44 Modified 24,000# Tandem Axle - 15' spacing ft. Future Wearing Surface  
 Earth 120#, Equivalent Fluid Pressure 30#  
 Fatigue Stress - Case II - Interim 1974

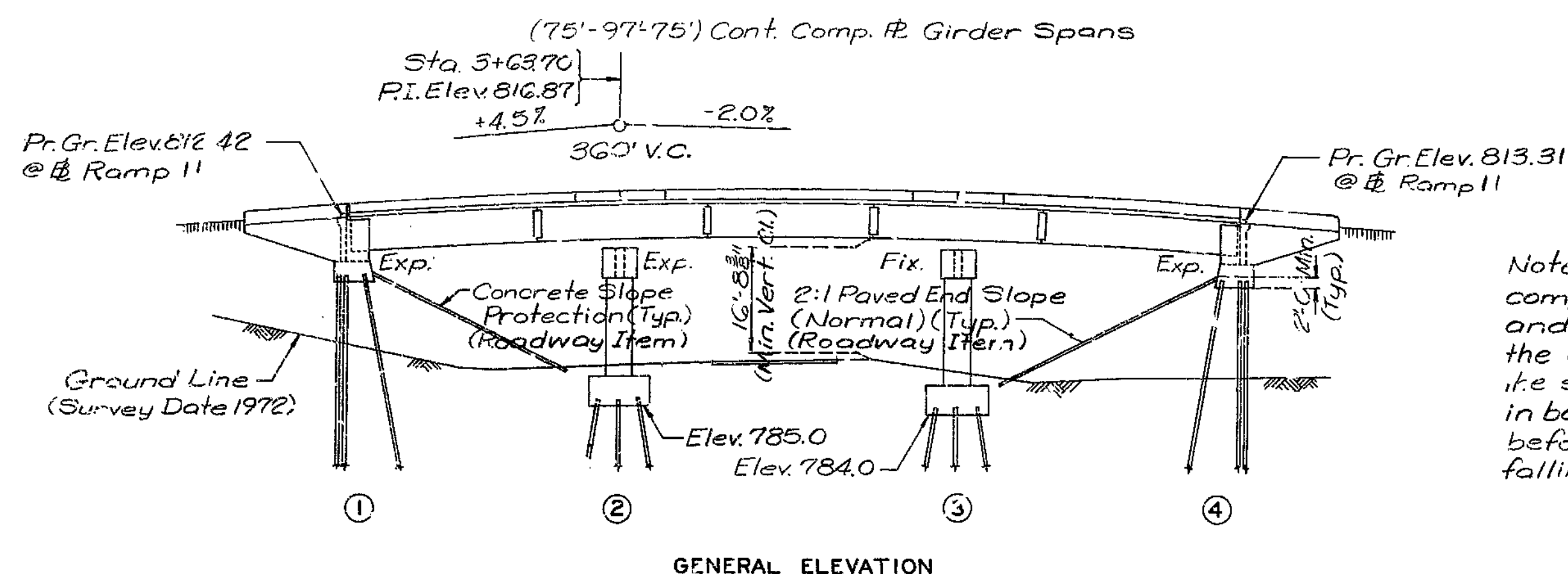
Design Unit Stresses:  
 Class B Concrete (Substructure)  $f'_c = 3000$  psi  
 Class B2 Concrete (Superstructure)  $f'_c = 4000$  psi  
 Reinforcing Steel (Grade 60) (Substructure)  $f_y = 40,000$  psi  
 Reinforcing Steel (Grade 20) (Superstructure)  $f_y = 60,000$  psi  
 Structural Carbon Steel  $f_y = 36,000$  psi  
 Structural Steel (ASTM A-572) (Grade 50)  $f_y = 50,000$  psi  
 Steel Pile  $f_b = 3000$  psi

Fabricated Steel:  
 Field connections, High Strength Bolts  $\frac{3}{4}" \phi$ , holes  $\frac{13}{16}" \phi$  except as noted.

Reinforcing Steel:  
 Minimum clearance to reinforcing steel shall be  $\frac{1}{2}"$  unless otherwise shown or noted.  
 All reinforcing bars in top of substructure beams or caps shall be spaced to clear anchor bolts by at least  $\frac{1}{2}"$ .

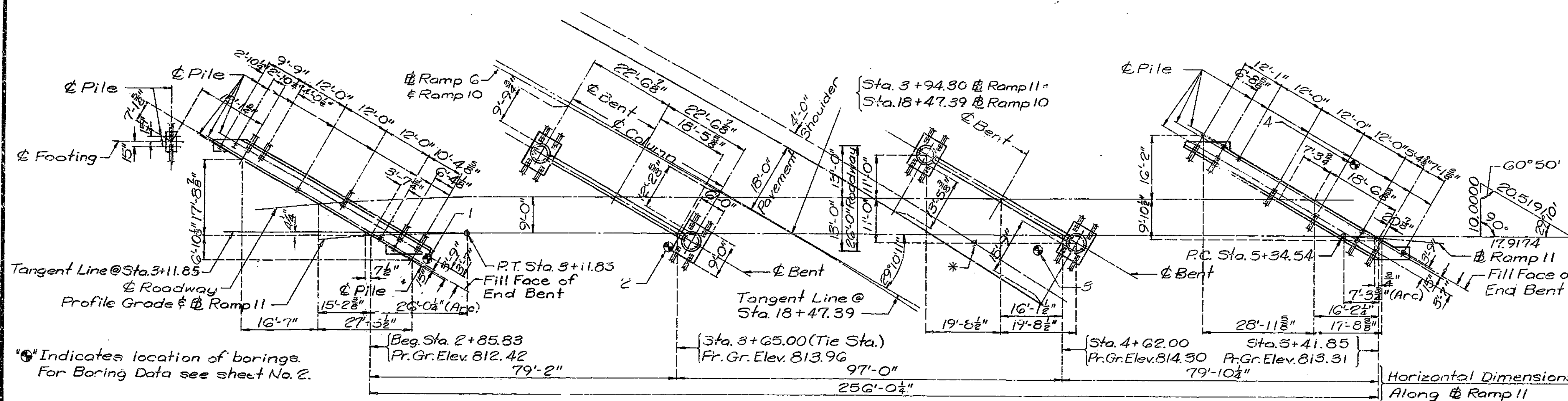
Paint:  
 System A or B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat for System B shall be aluminum.

This structure contains non-redundant Fracture Critical Members (F.C.M.). See Special Provisions for F.C.M. requirements.



Note: Compacted 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 falling within the embankment section.

Note: A minimum vertical clearance of 14'-0" from crown of existing Ramps G & 10 and a minimum lateral clearance of 16'-0" centered on existing lanes shall be maintained for traffic during construction.



ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation Cu.Yd.	75		75
Structural Steel Pile (10") Lin.Ft.	1210		1210
Class B Concrete Cu.Yd.	180.4		180.4
Class B2 Concrete Cu.Yd.		352.6	352.6
Elastomeric Exp. Joint Seal (30 in.) Lin.Ft.		50	50
Reinforcing Steel (Grade 60) Lbs.	22,870	23,460	46,330
Reinforcing Steel (Epoxy Coated) Lbs.	1,380	30,720	32,100
Fabricated Structural Carbon Steel Lbs.		133,940	133,940
Fabricated Structural Low Alloy Steel Lbs.		36,940	36,940
Painting (System A or B) Aluminum Ton		85	85

Note: All concrete and reinforcement in Safety Barrier Curbs is included in superstructure quantities.

B.M. Elev. 812.95, "a" on N.E. corner of Ramp 3 Bridge No. 1579 286' Rt. Sta. 504+28 @ Median I-435

BRIDGE: RAMP 11 OVER RAMP 10

STATE ROAD FROM RTE. I-35 TO RTE. 210

AT RTE. 69 & I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 2+85.83 (RAMP 11)

JOB NO. 4-I-435-49H RTE. I-435

CLAY COUNTY

STD. 611.60

STD. 706.35

A-3386

DATE March 16, 1981

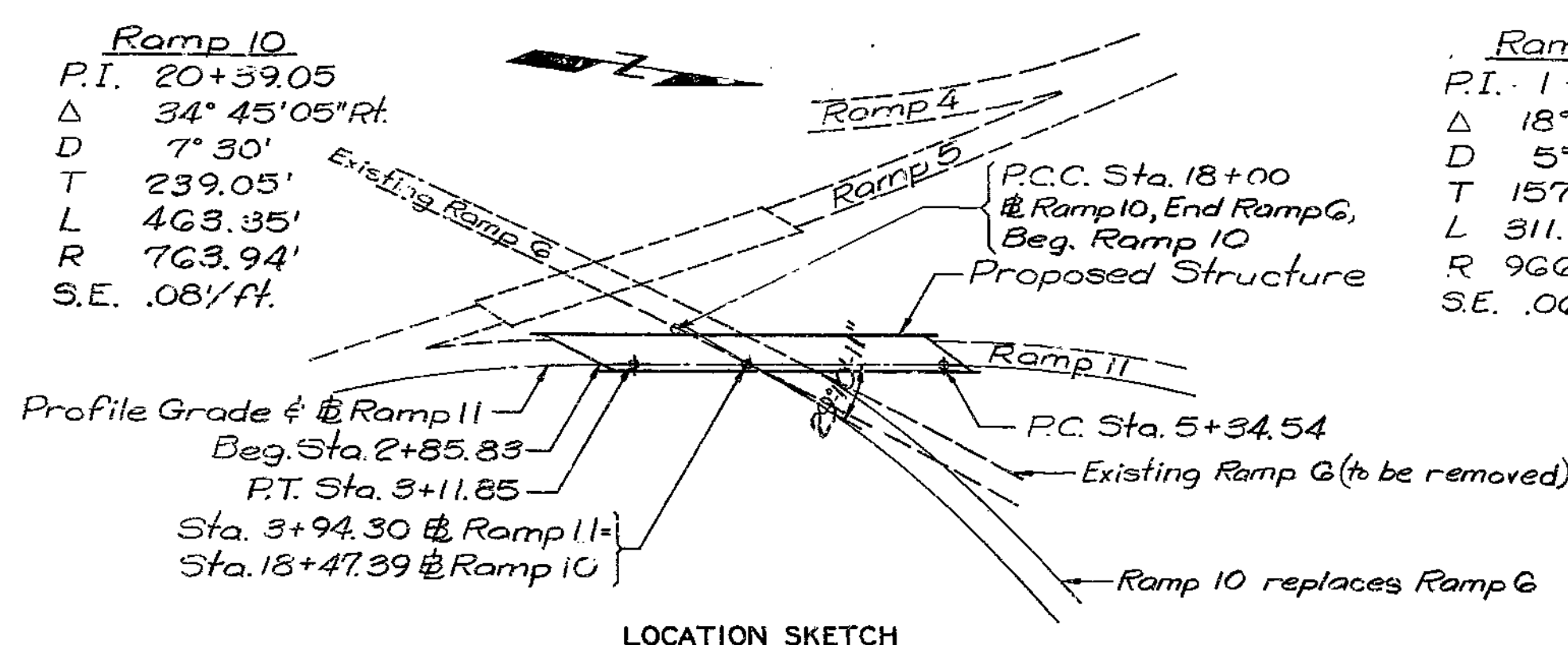
Sheet No. 1 of 18

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

Ramp 11  
 P.I. 7+79.16  
 $\Delta$  33° 16' 45" Rt.  
 D 7° 00'  
 T 244.62'  
 L 475.42'  
 R 815.51'  
 S.E. .061/ft.

Ramp 10  
 P.I. 20+39.05  
 $\Delta$  34° 45' 05" Rt.  
 D 7° 30'  
 T 239.05'  
 L 463.35'  
 R 763.94'  
 S.E. .081/ft.

Ramp 11  
 P.I. 1+57.29  
 $\Delta$  18° 28' 40" Rt.  
 D 5° 57' 26"  
 T 157.29'  
 L 311.85'  
 R 966.99'  
 S.E. .061/ft.



LOCATION SKETCH

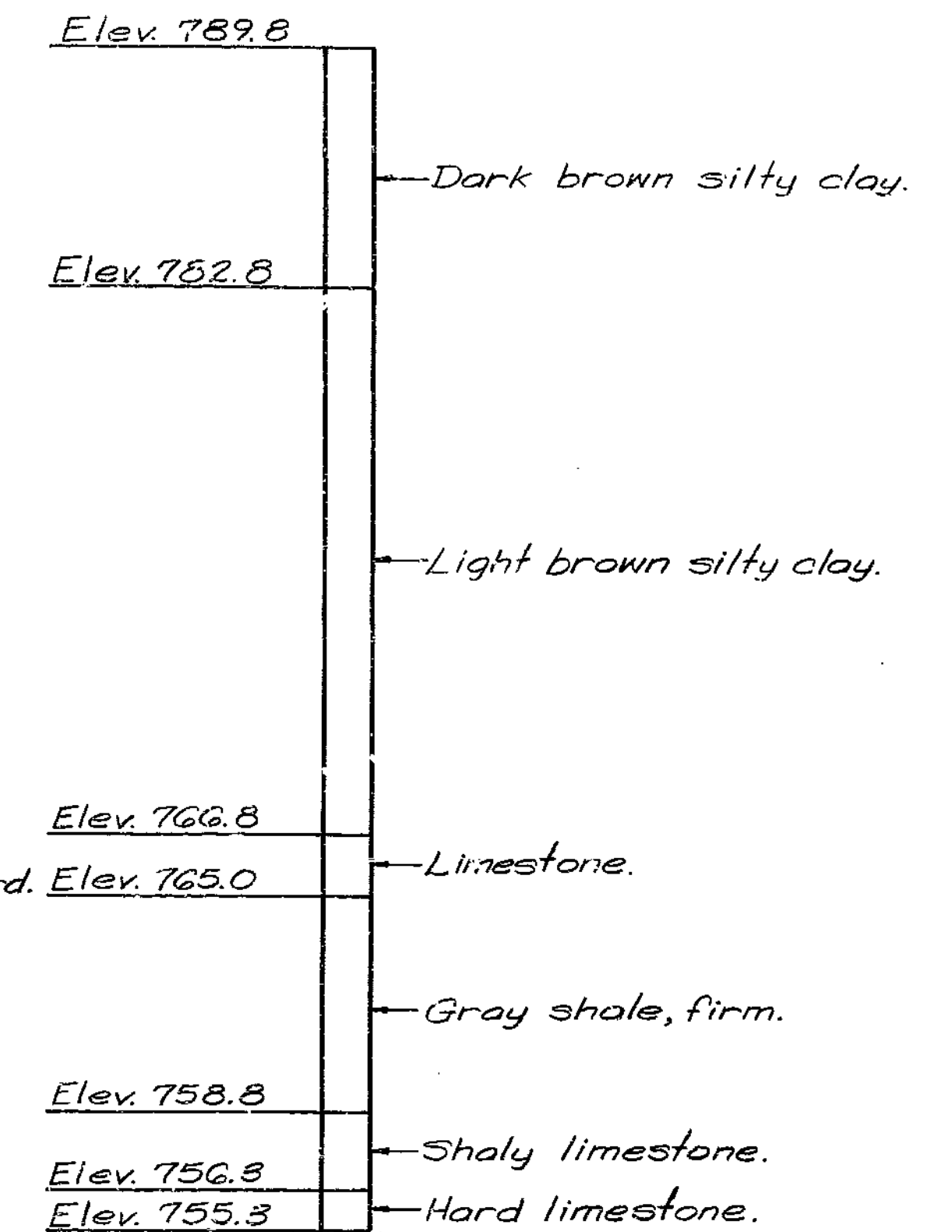
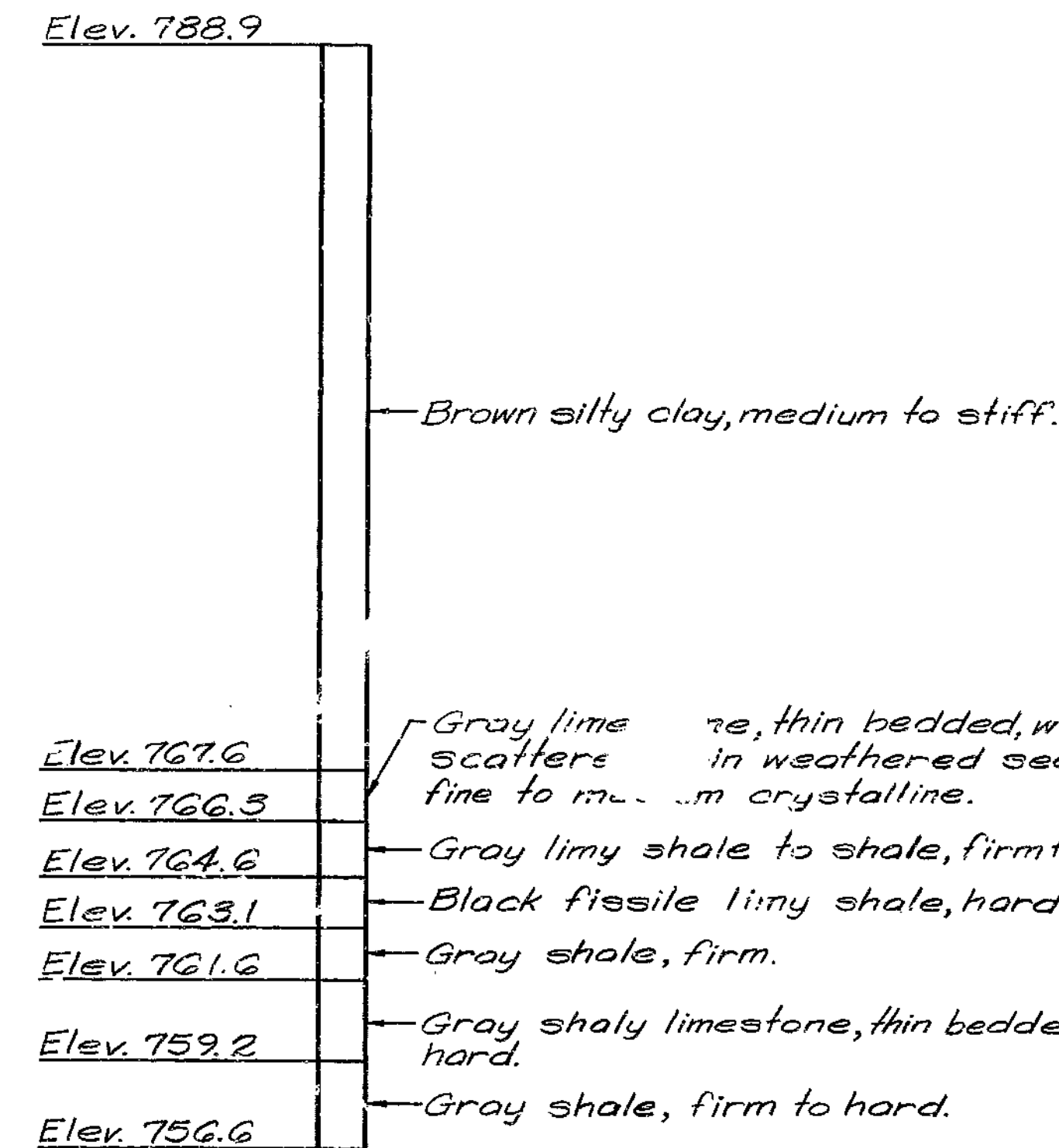
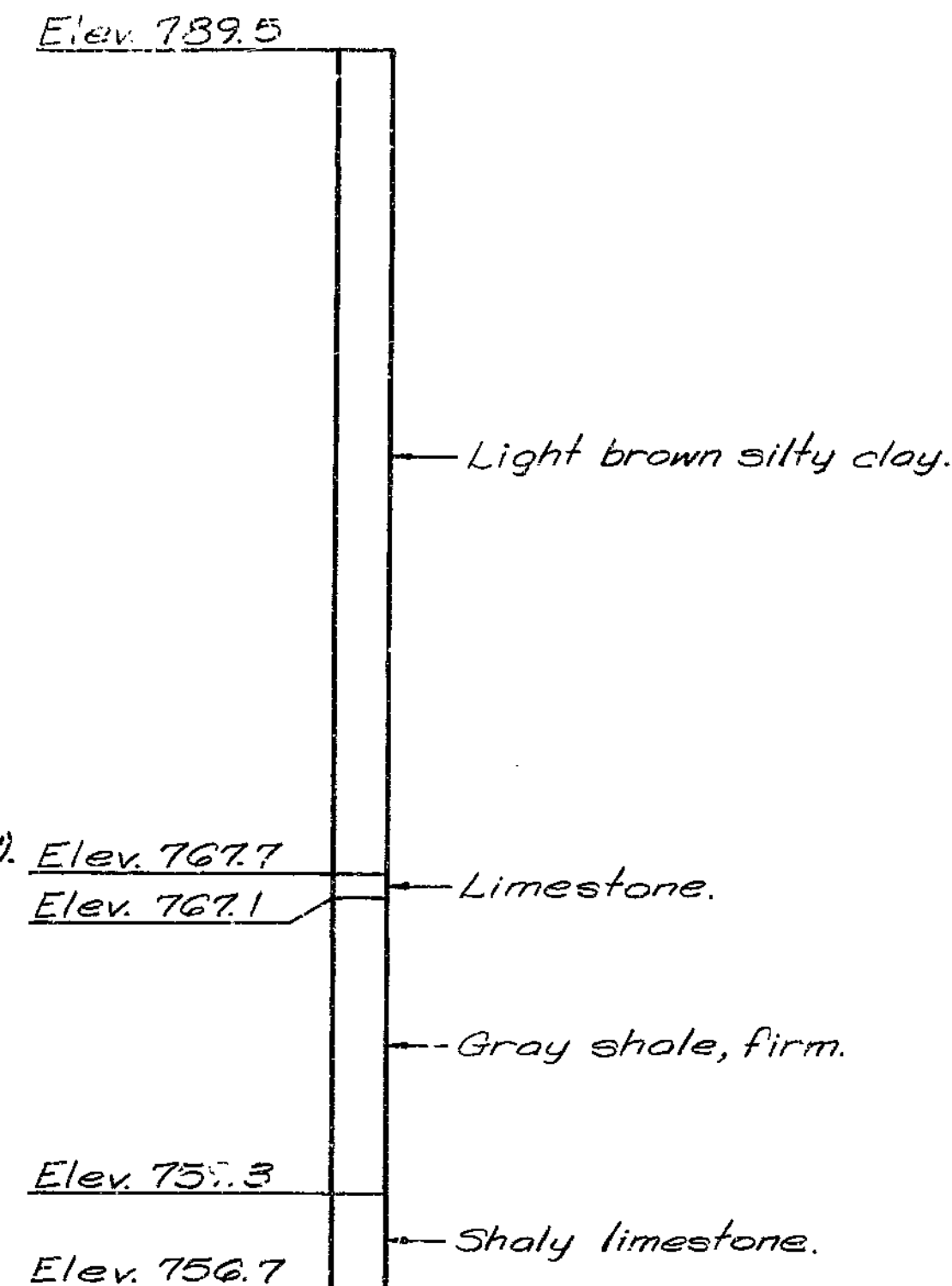
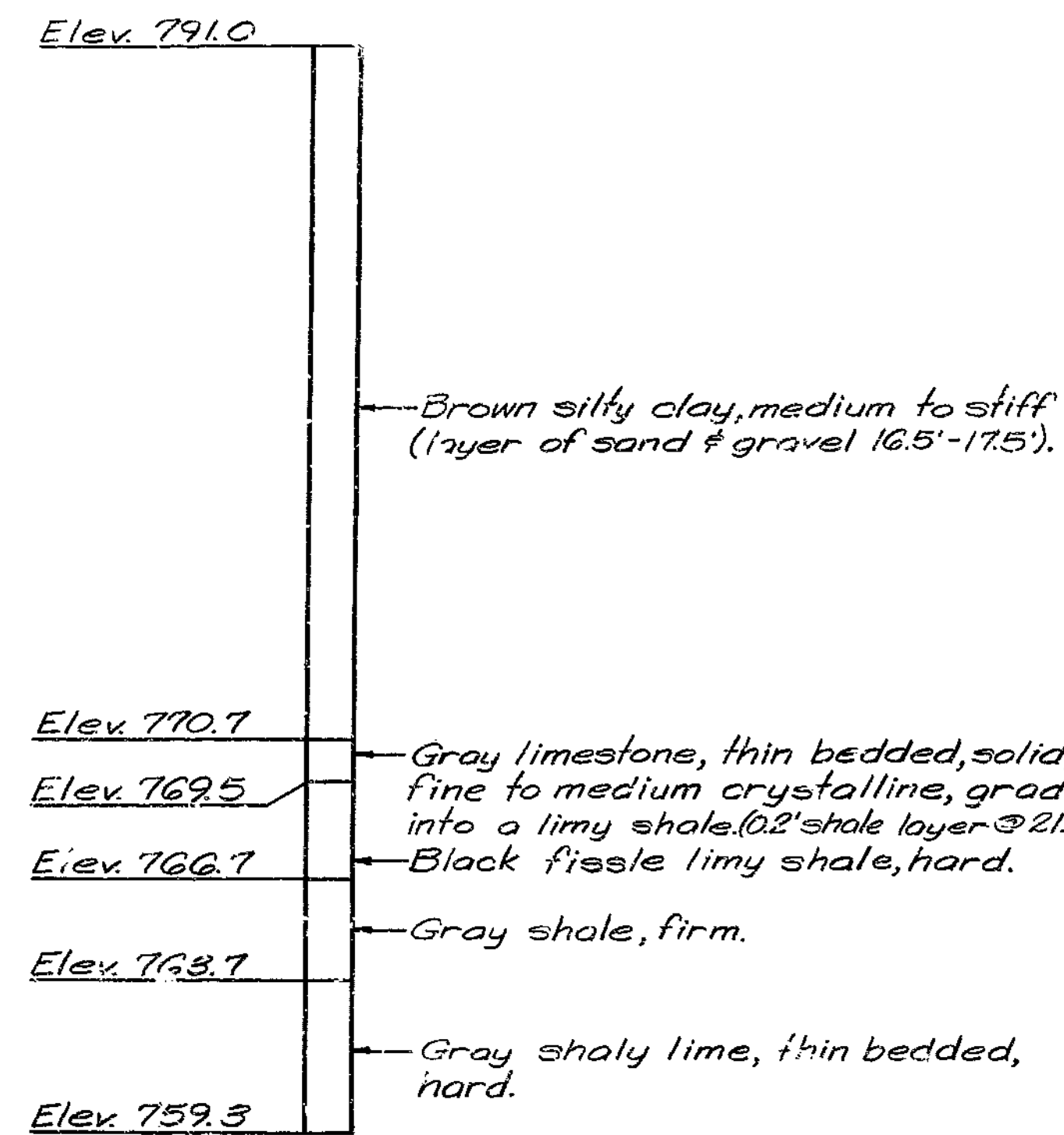
BENT NUMBER	1	2	3	4
Pile Type and Size	HPI0x42	HPI0x42	HPI0x42	HPI0x42
Number	12	12	12	10
Approximate Length Ft.	**	16	18	40
Design Bearing Tons	56	42	47	56
Hammer Energy required Ft.Lbs.	13,800	9,900	11,100	13,800

Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
 All pile shall be driven to practical refusal.  
 \*\* 33'-0" beam pile, 36'-0" wing pile.

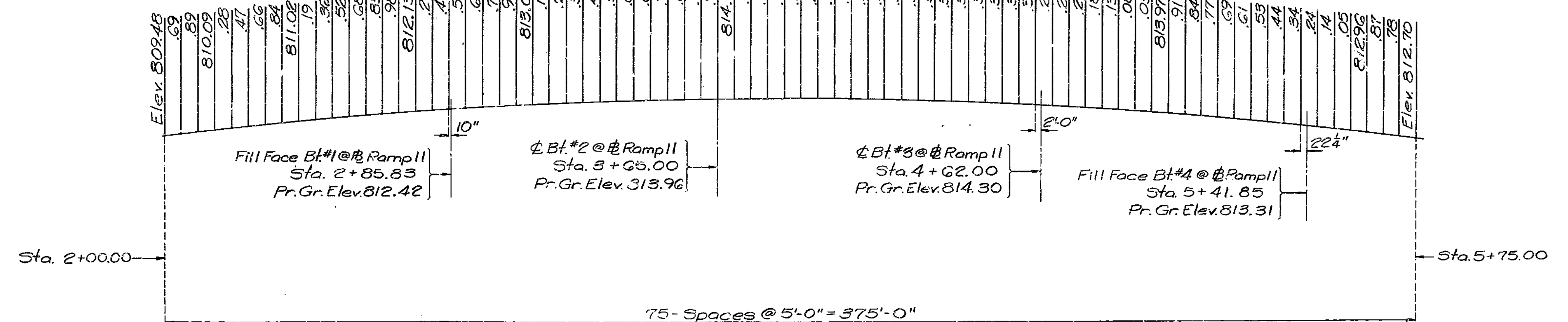
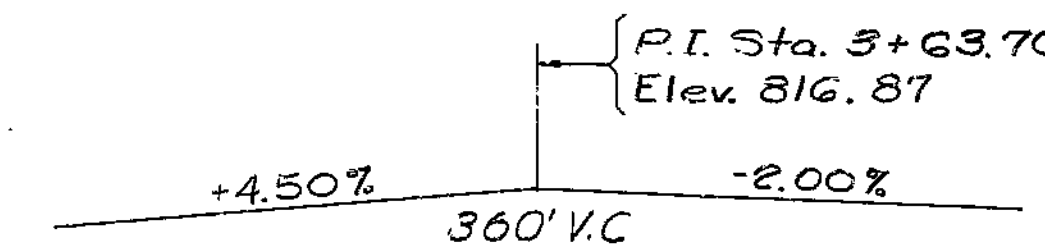
DESIGNED JUNE 1977  
 DETAILED JUNE 1978  
 CHECKED March 1979

254

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	115	



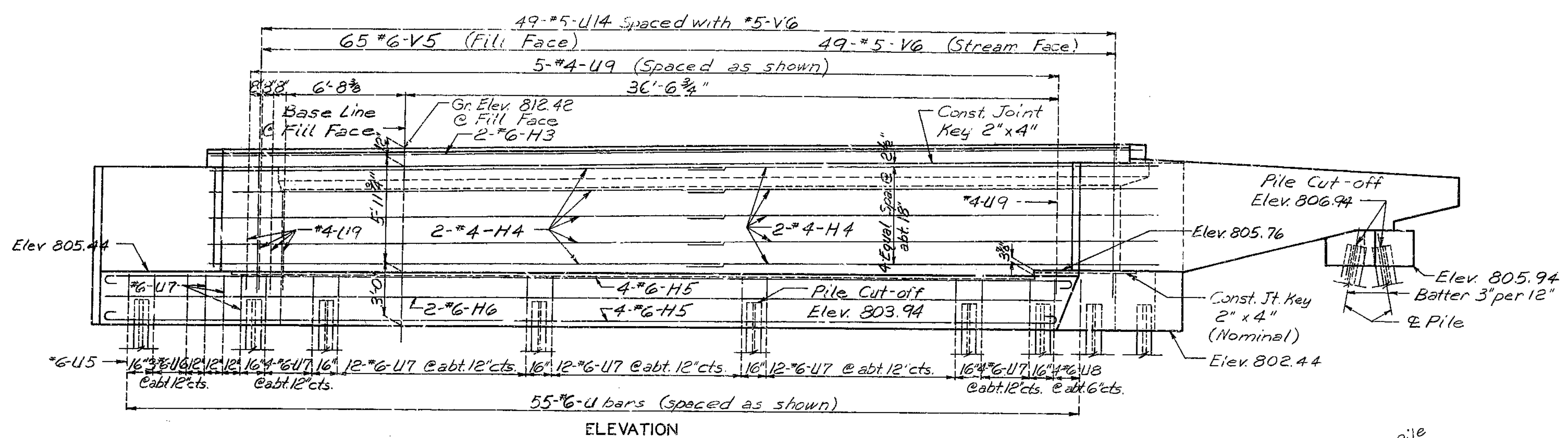
BORING DATA



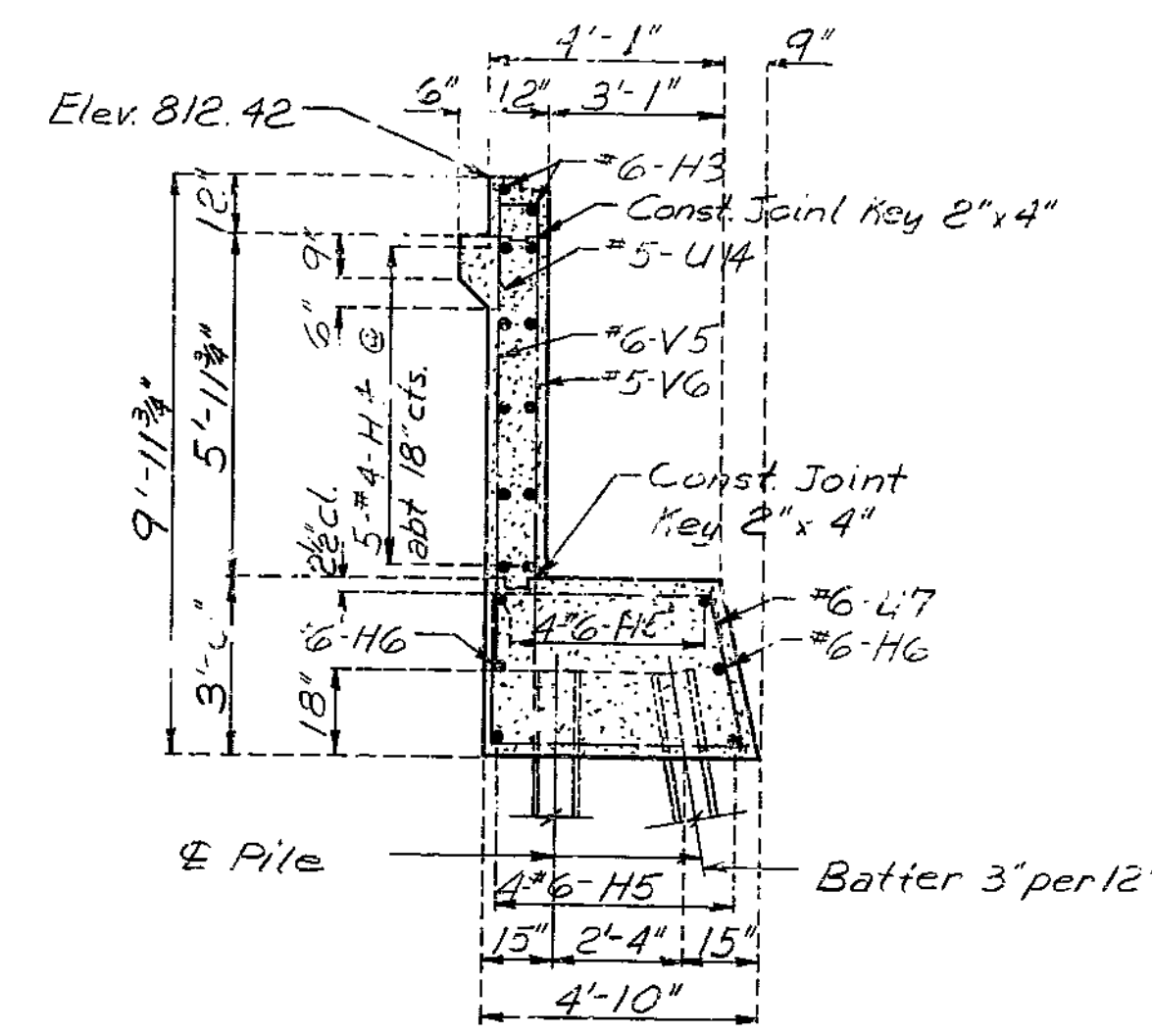
PROFILE GRADE ELEVATIONS

255

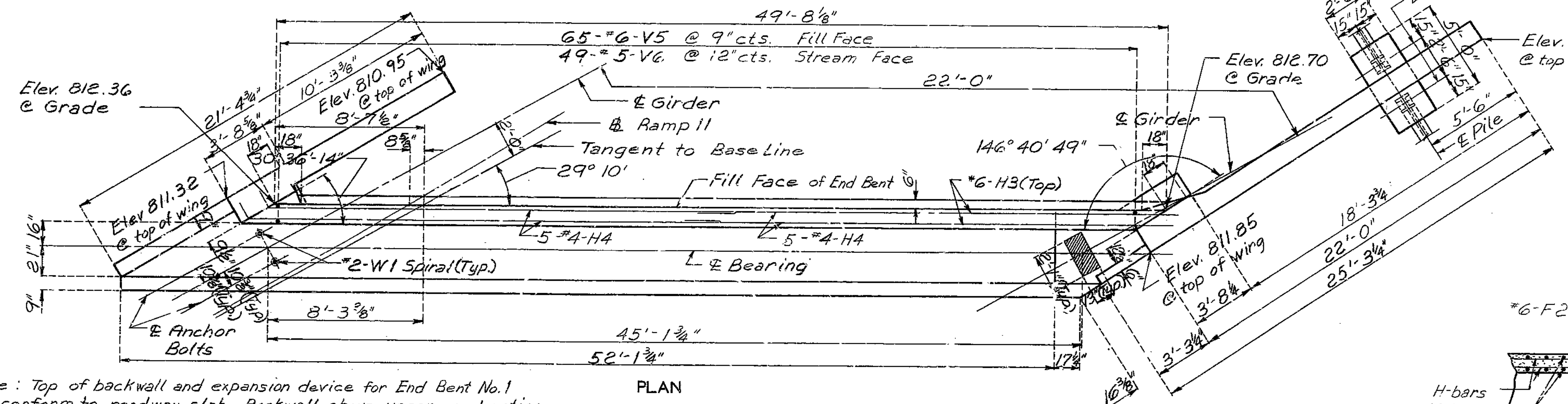
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	116	



ELEVATION



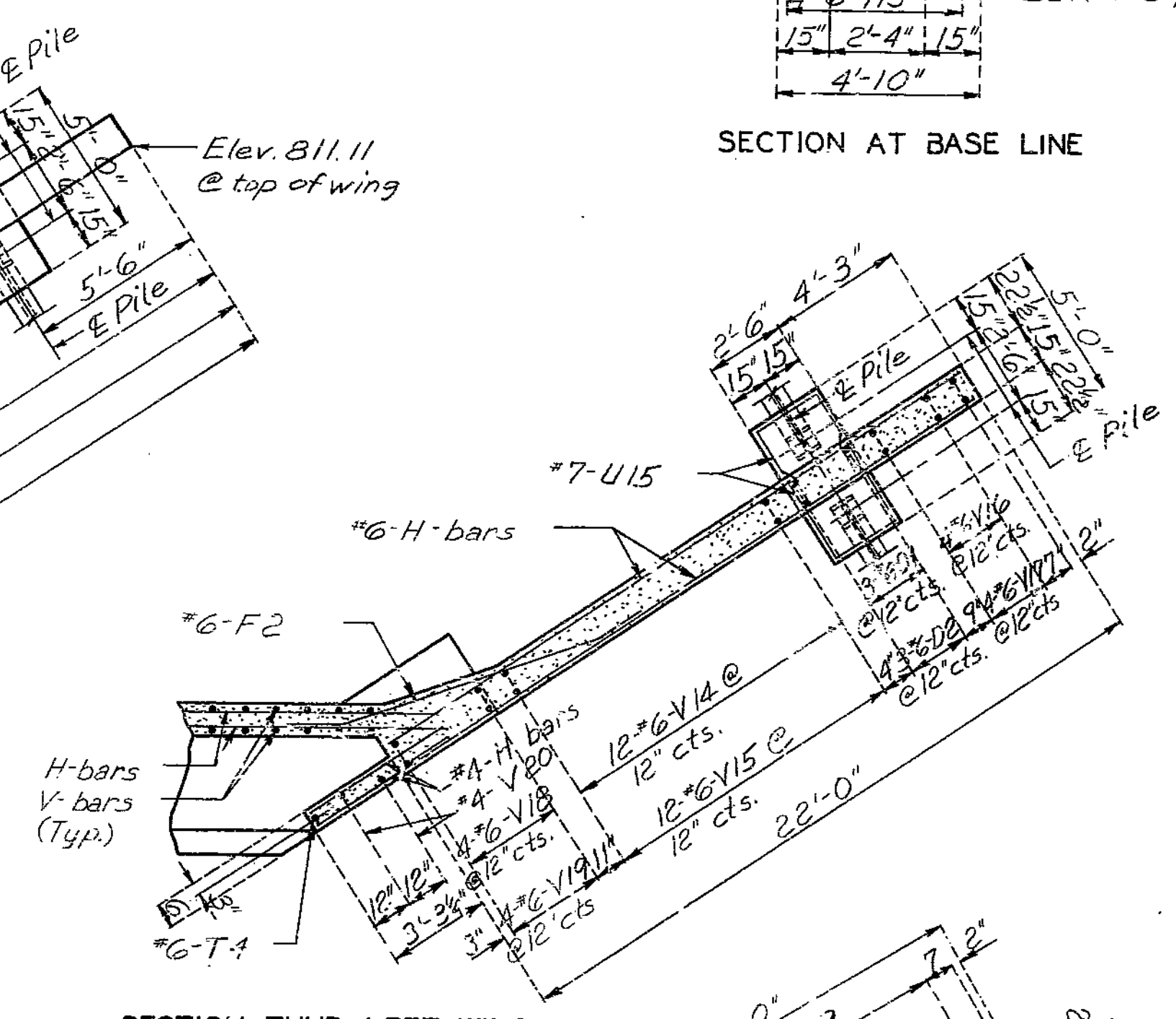
SECTION AT BASE LINE



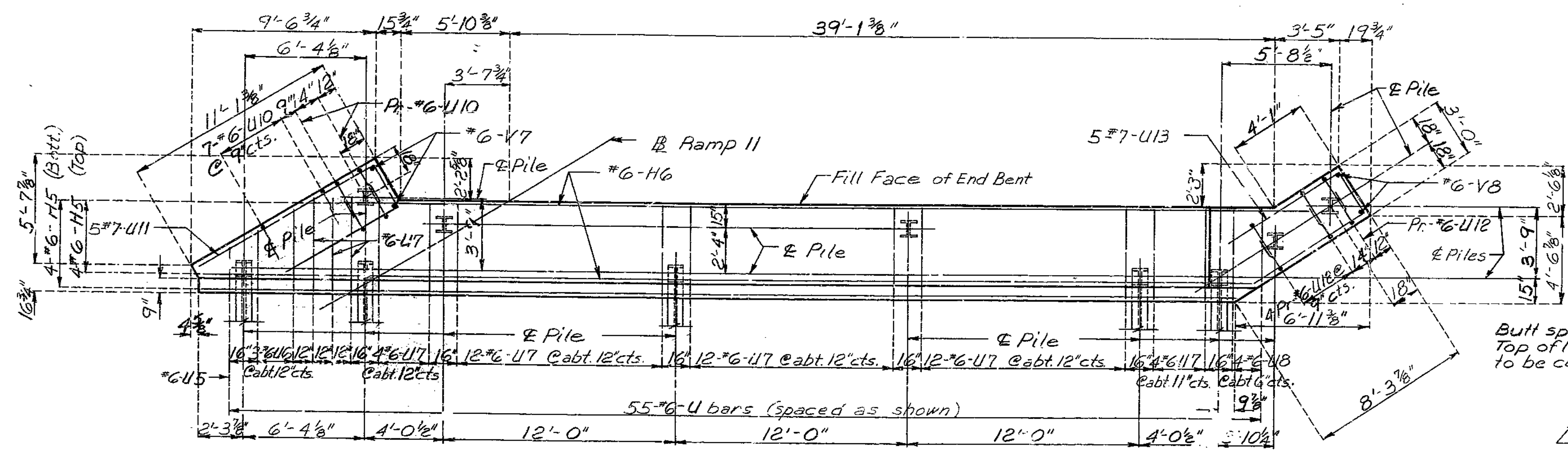
PLAN

Note: Top of backwall and expansion device for End Bent No.1 to conform to roadway slab. Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.

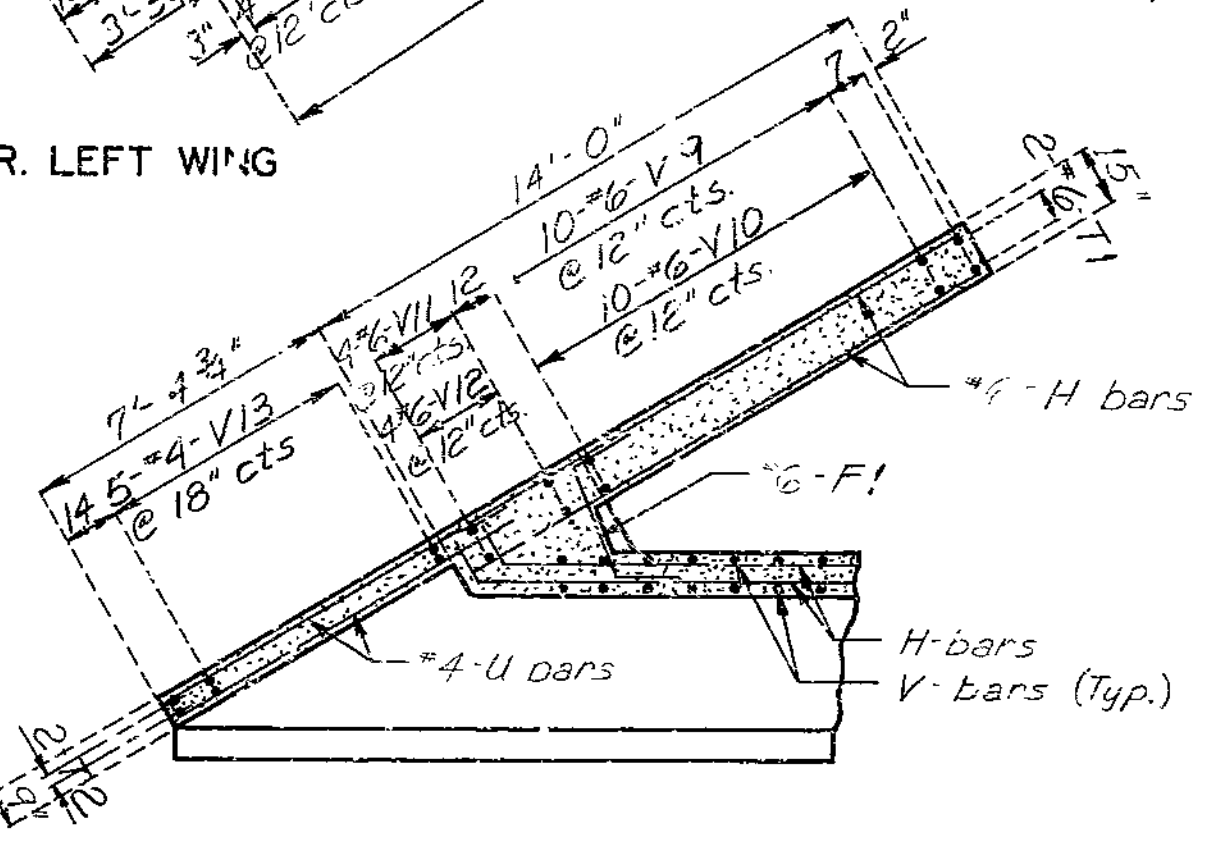
Note: For Elevations of Wings, see Sheet No. 7.



SECTION THRU LEFT WING

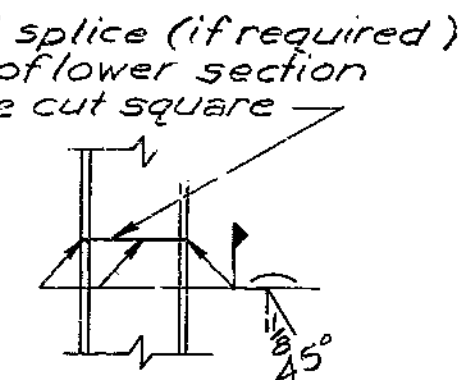


PLAN OF BEAM DETAILS OF END BENT NO. 1



SECTION THRU RIGHT WING

Note: Field bending shall be required at wings for #6-H3 & #4-H4 bars in backwall with Expansion Device and for #6-F1 & #6-F2 bars when necessary to conform to slope of wing.

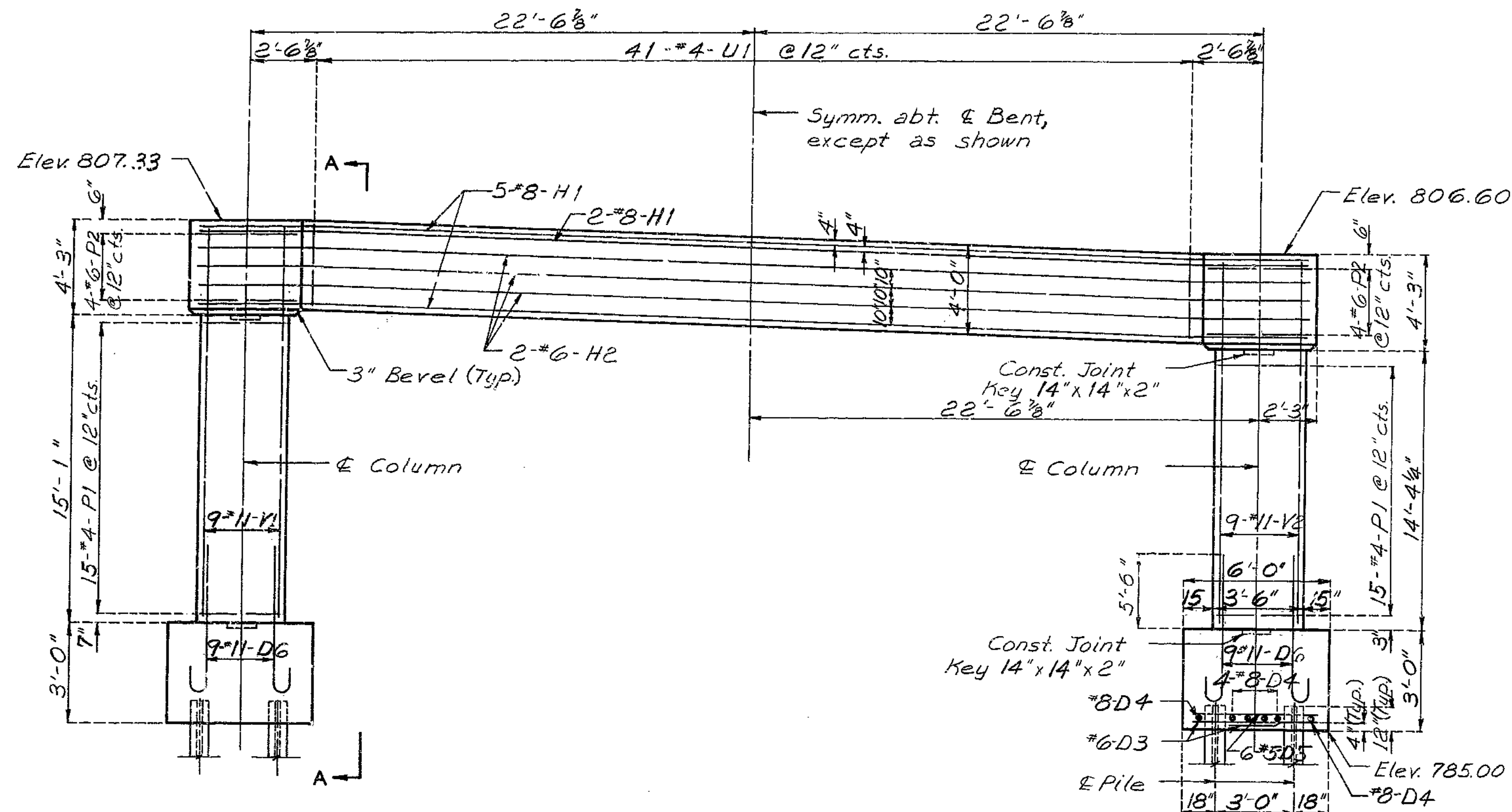


STEEL PILE SPLICE  
Sheet No. 3 of 18

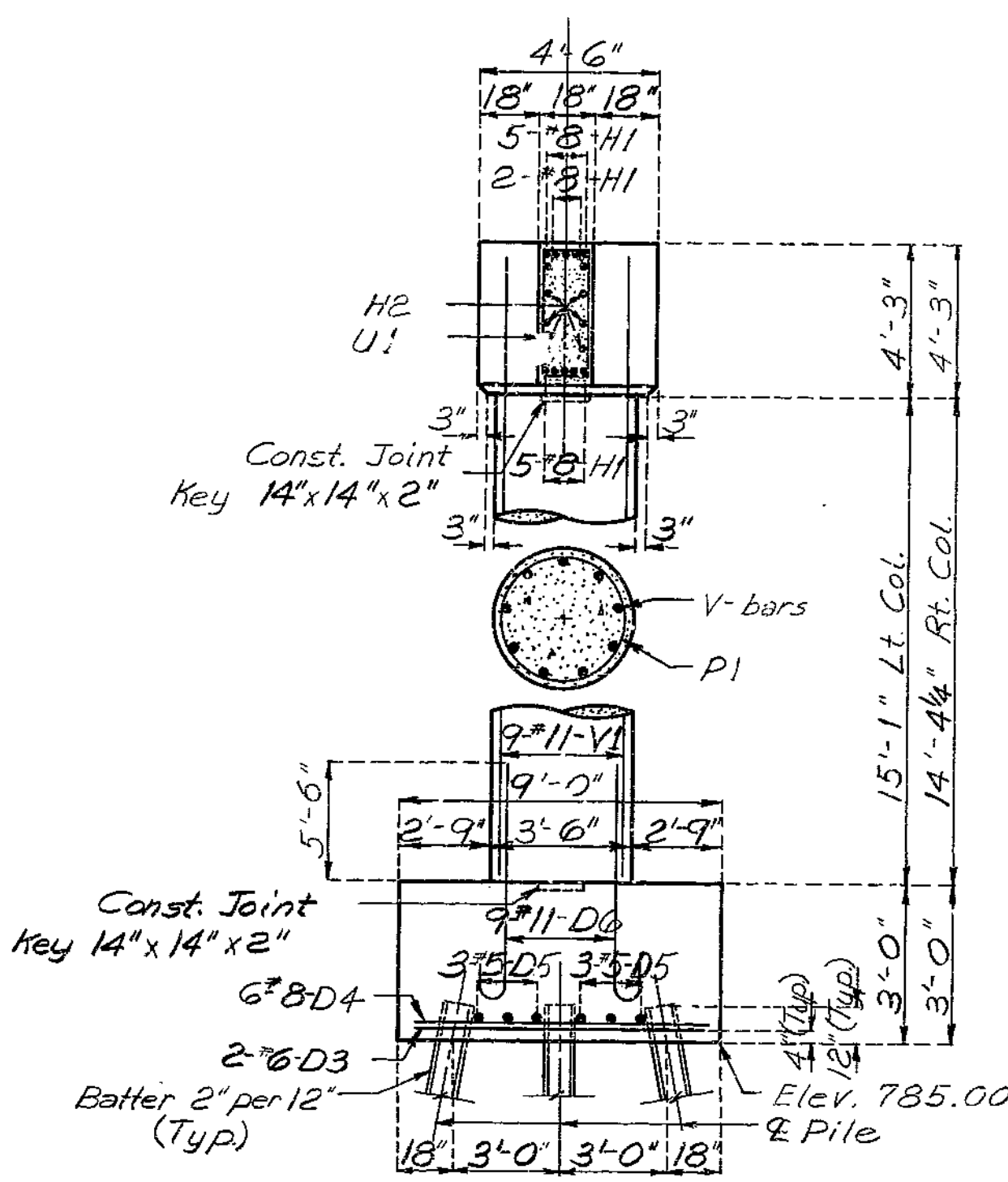
Note: This drawing is not to scale. Follow dimensions.

256  
DETAILED AUG. 1977  
CHECKED Nov. 1978

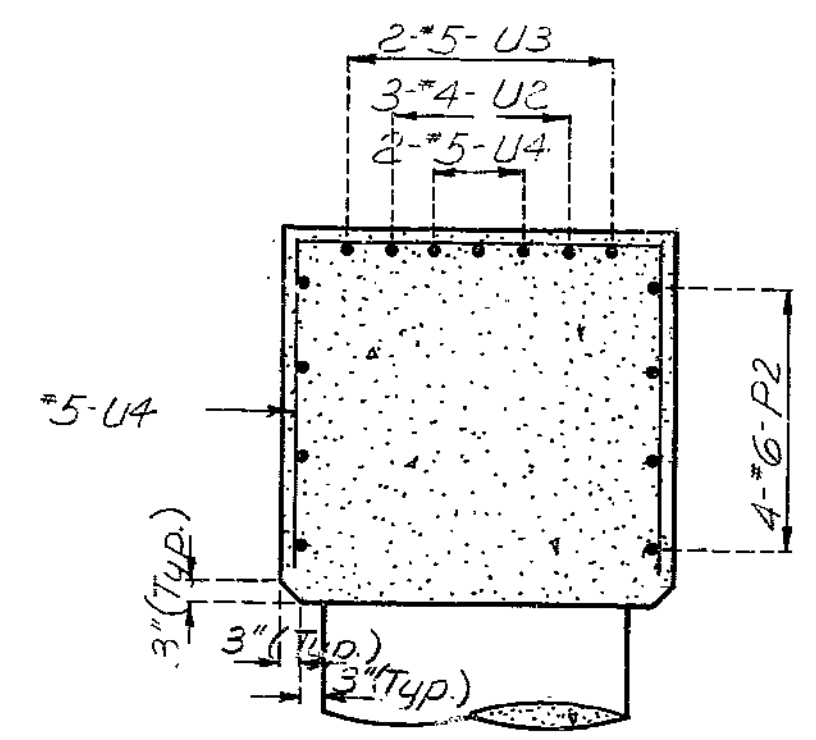
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5	MO.		19	117	



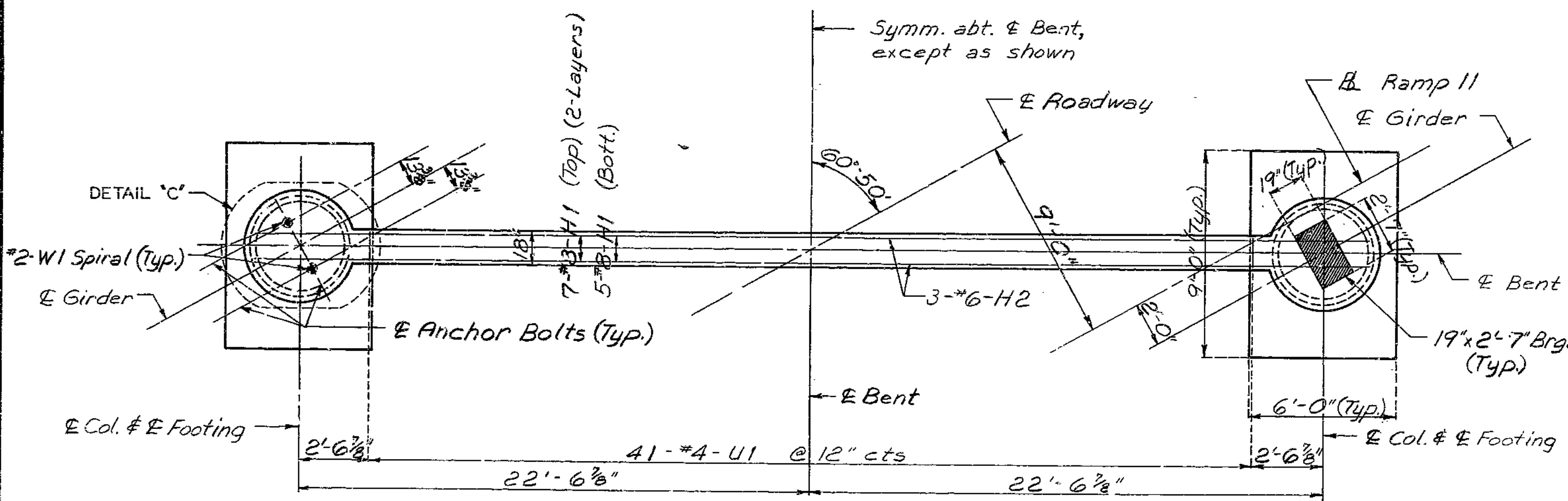
ELEVATION



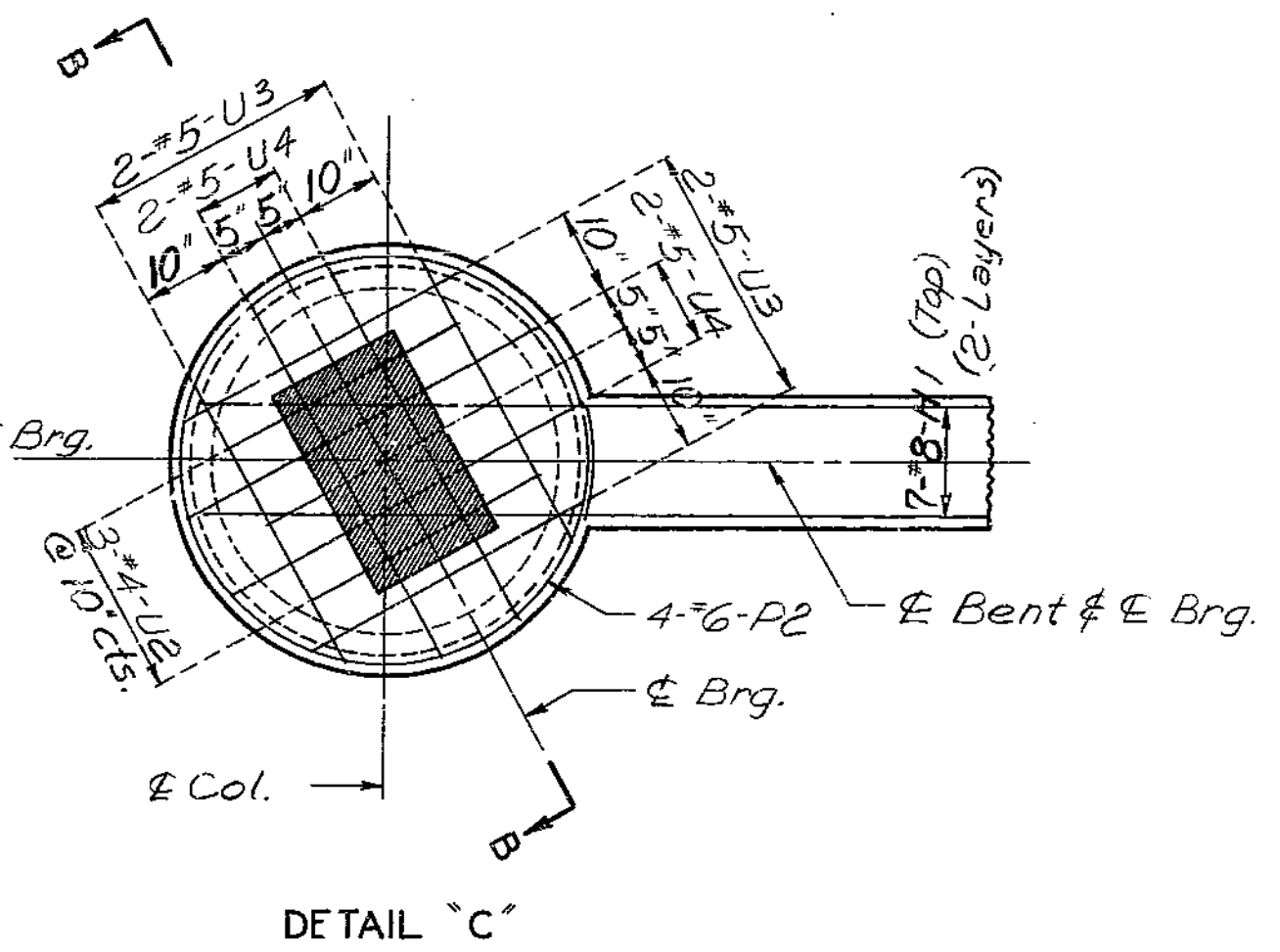
SECTION A-A



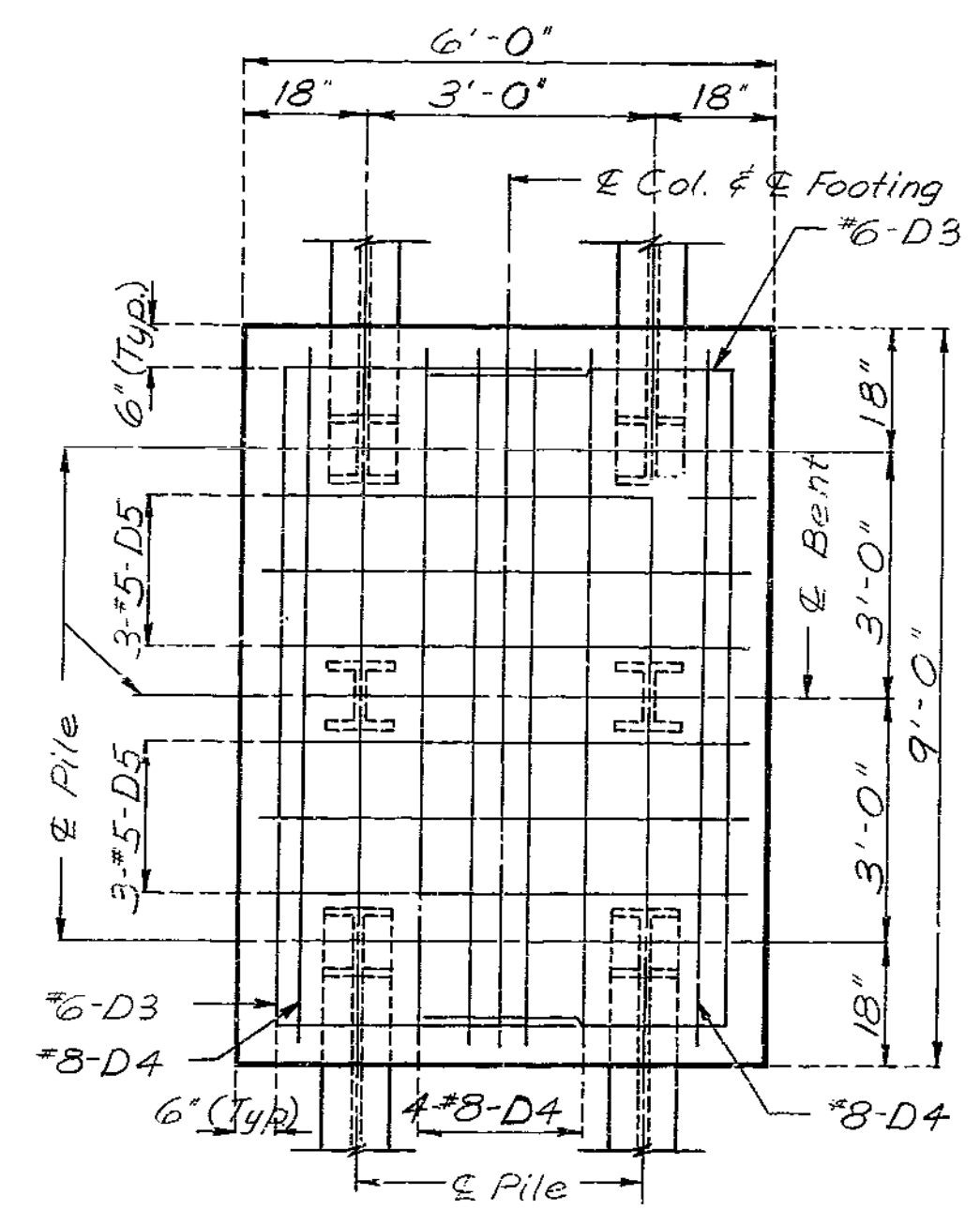
SECTION B-B



PLAN



DETAIL C-C



PLAN OF FOOTING SHOWING REINFORCEMENT

DETAILS OF INTERMEDIATE BENT NO. 2

257

DETAILED AUG. 1977  
CHECKED Oct. 1978

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

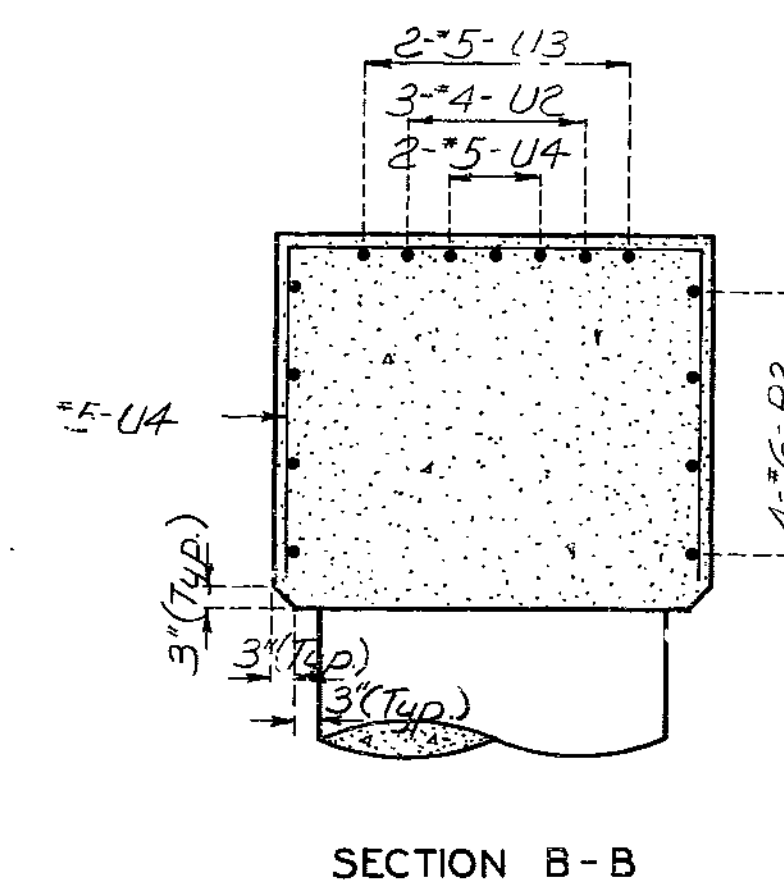
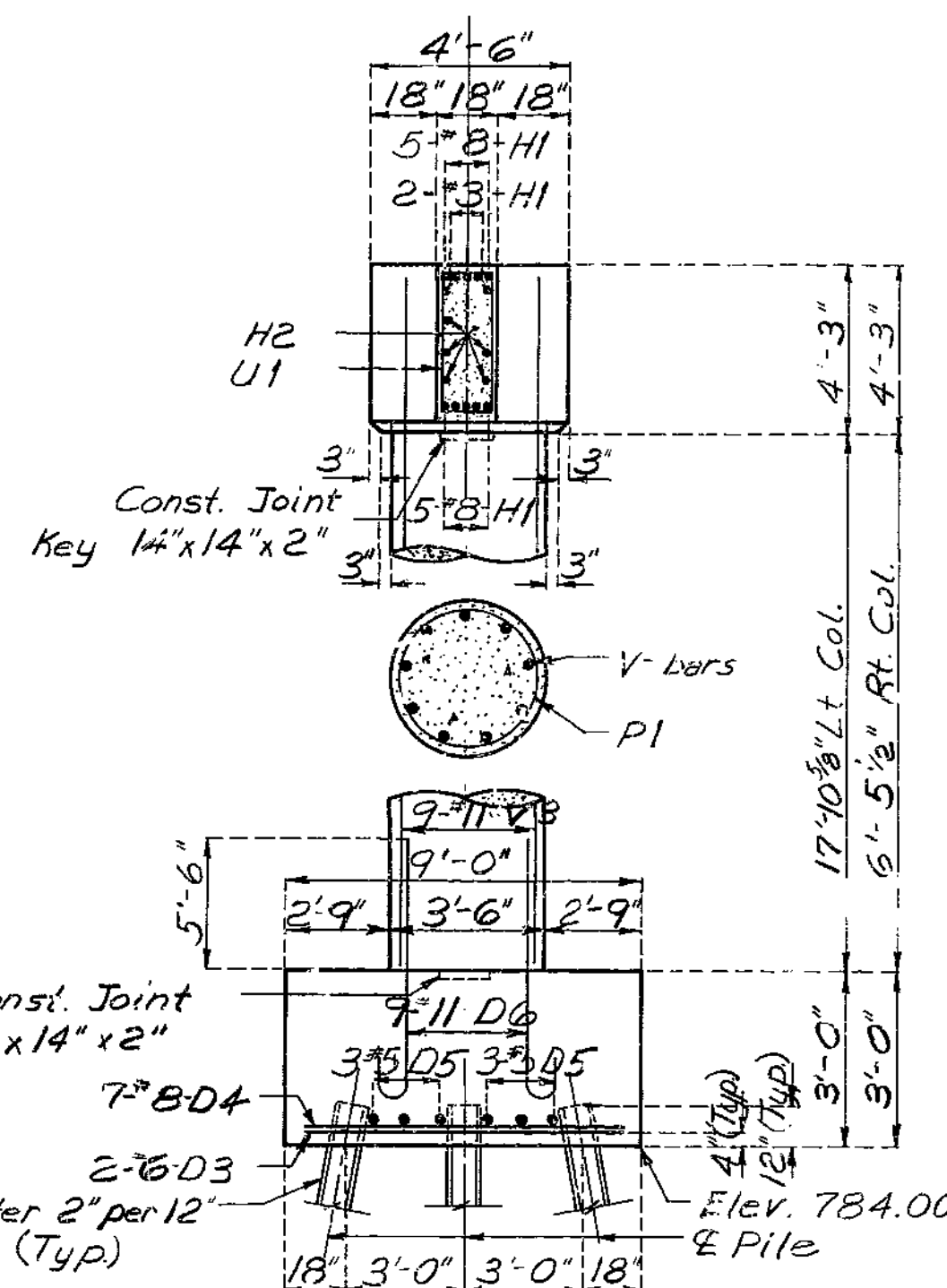
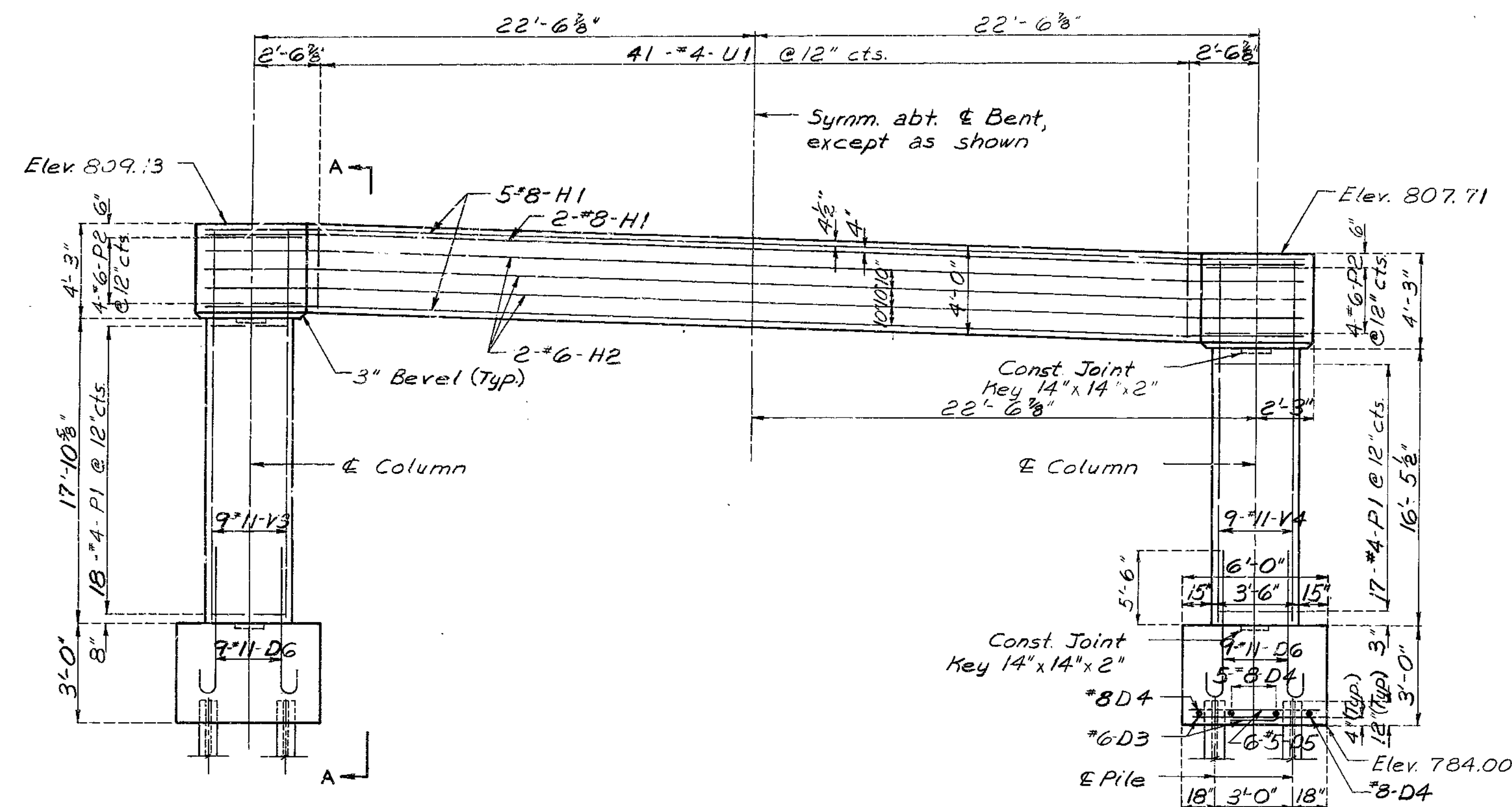
Sheet No. 4 of 18

CLAY COUNTY

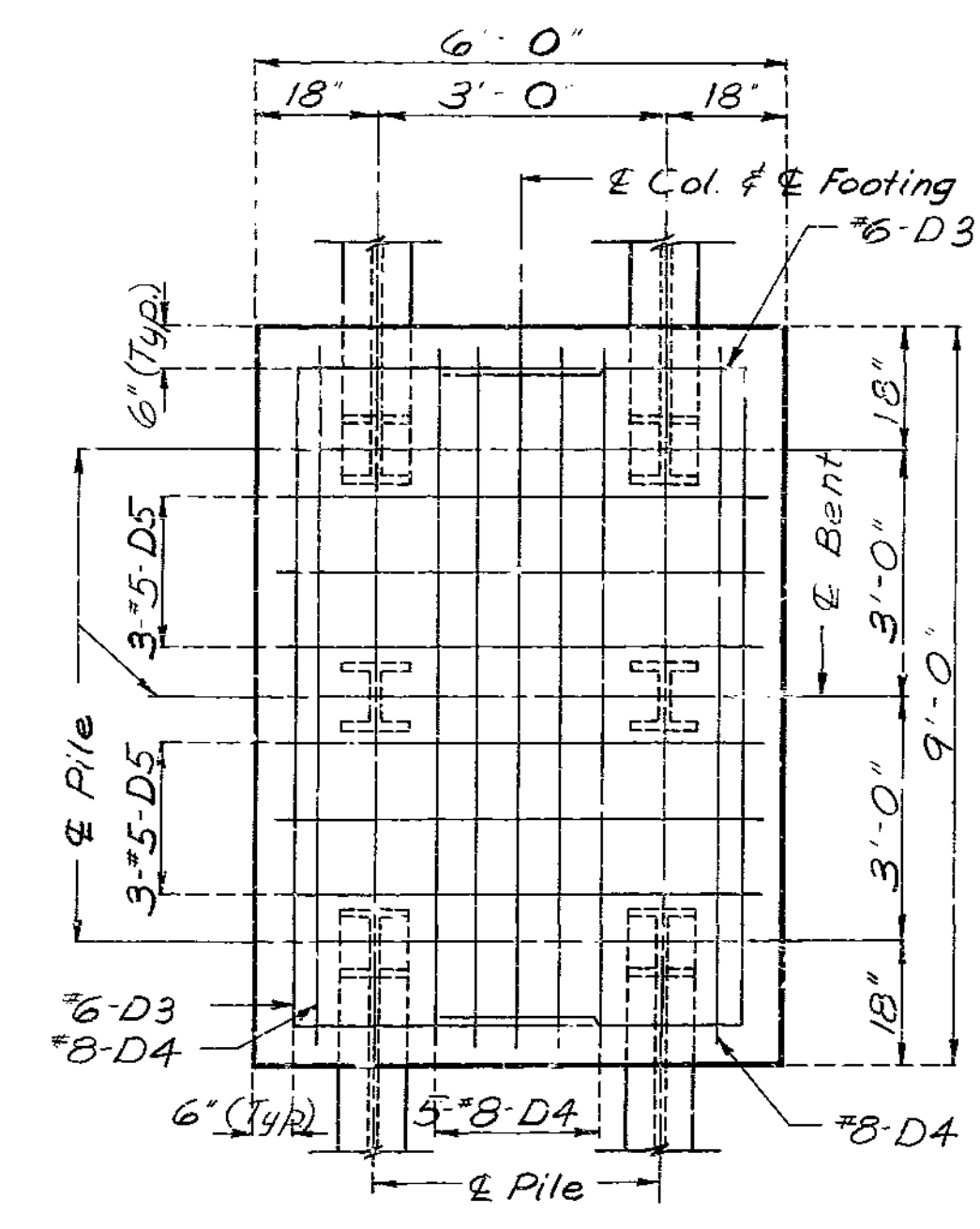
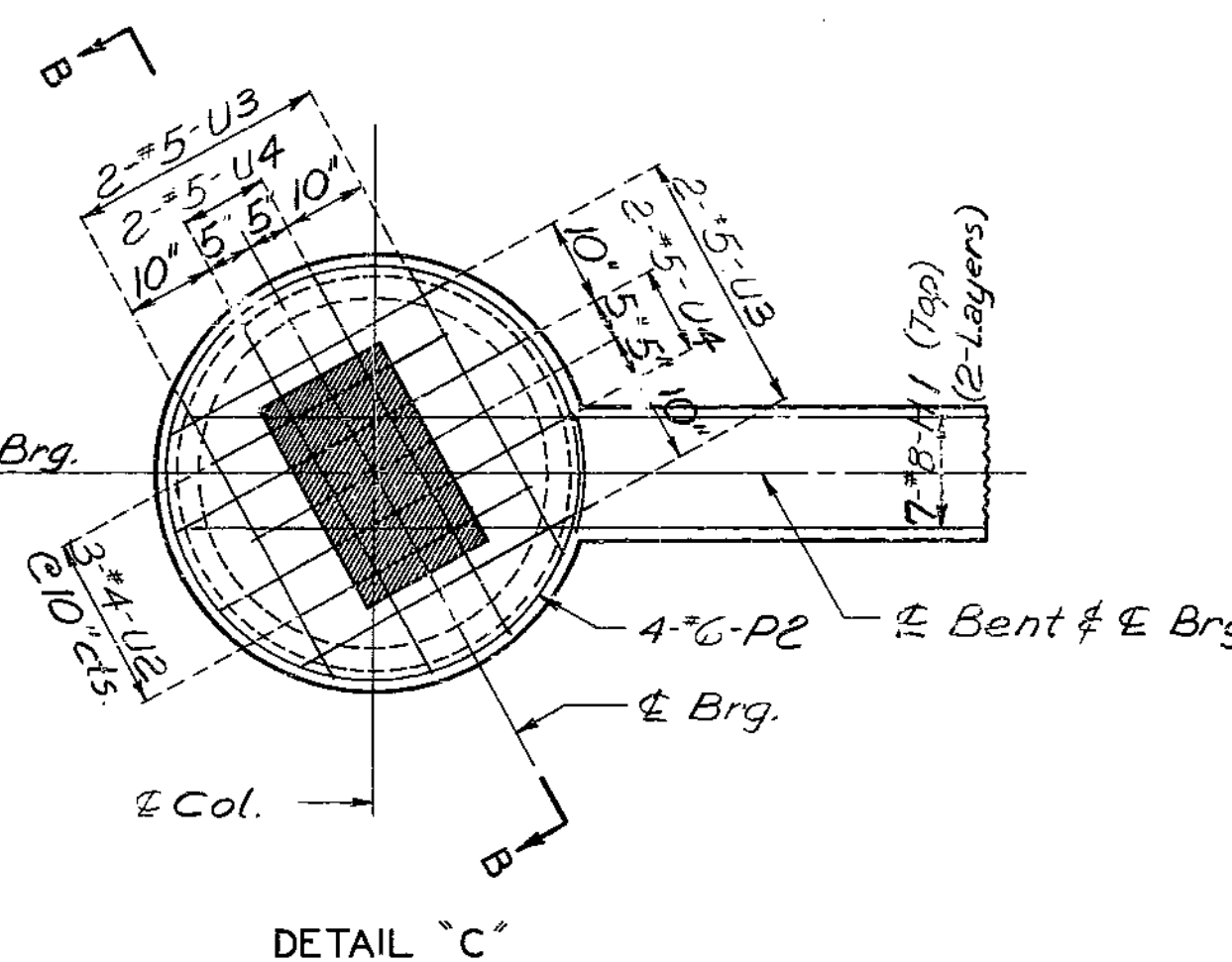
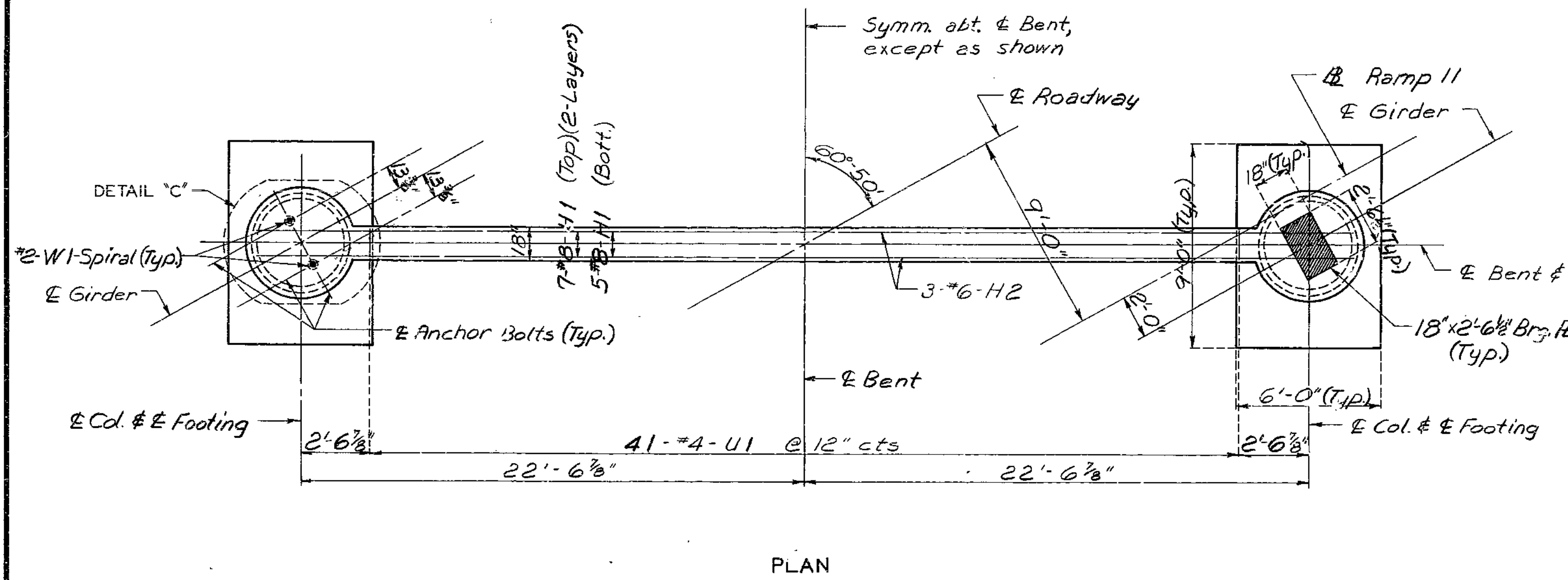
A-3386



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



258



DETAILS OF INTERMEDIATE BENT NO. 3

DETAILED AUG 1977  
CHECKED Oct 1978

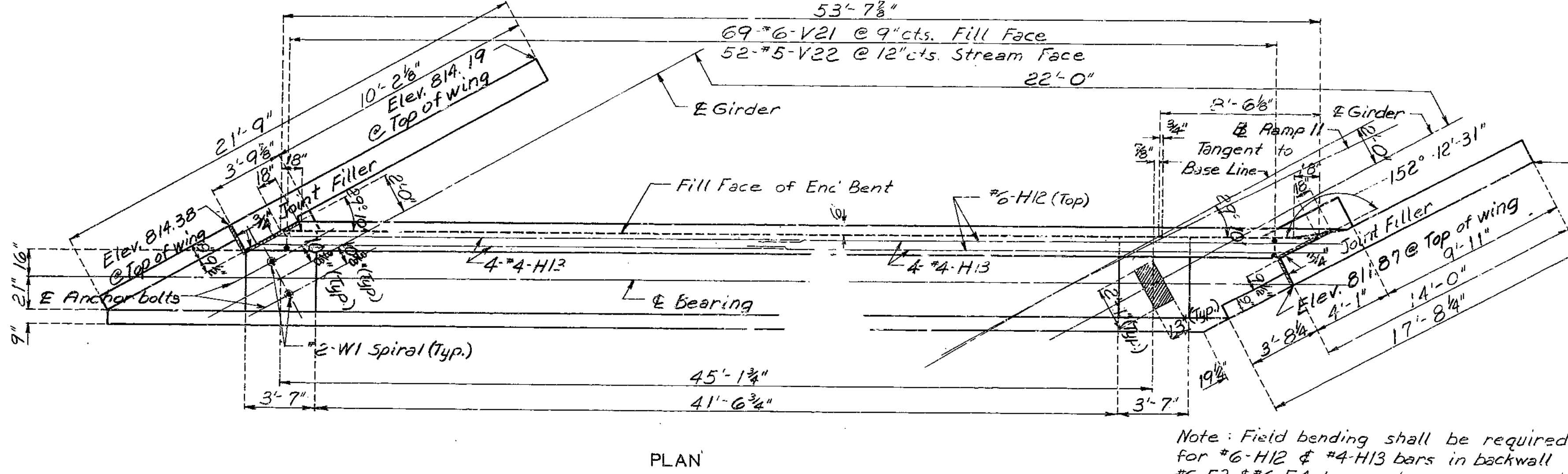
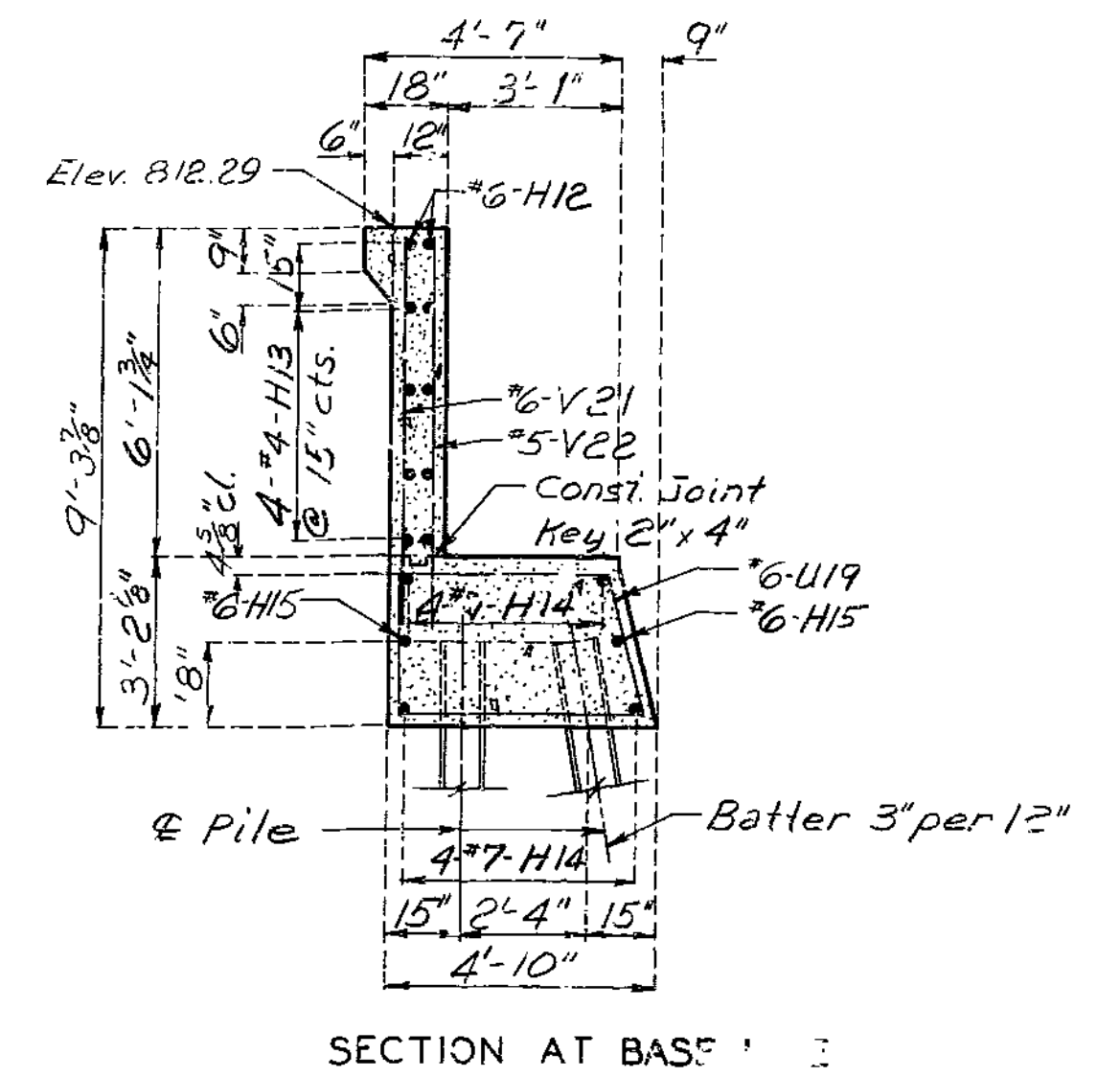
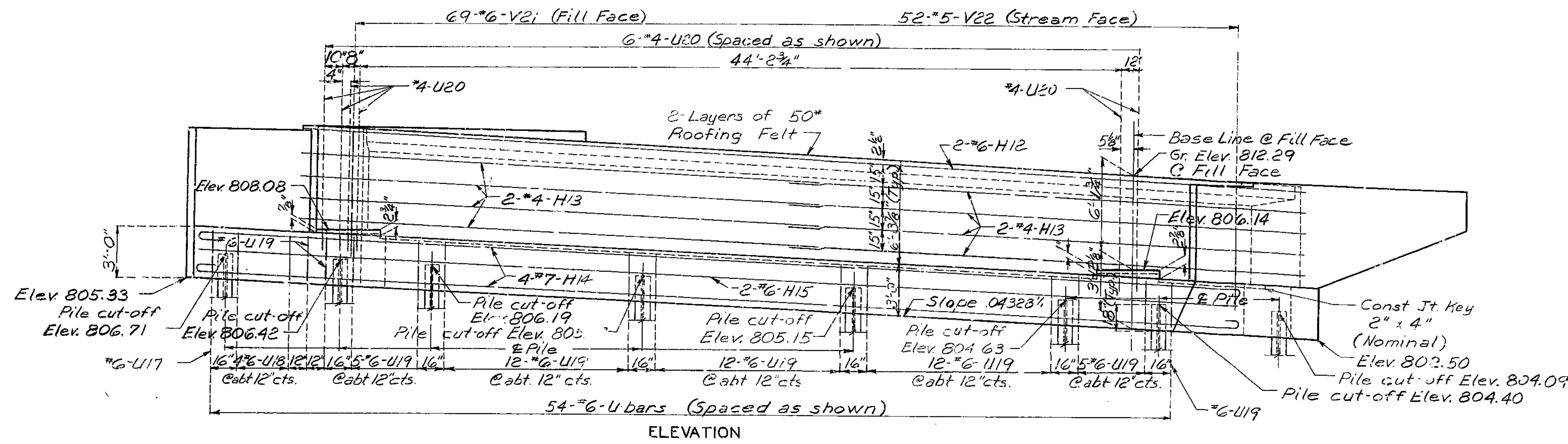
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 5 of 18

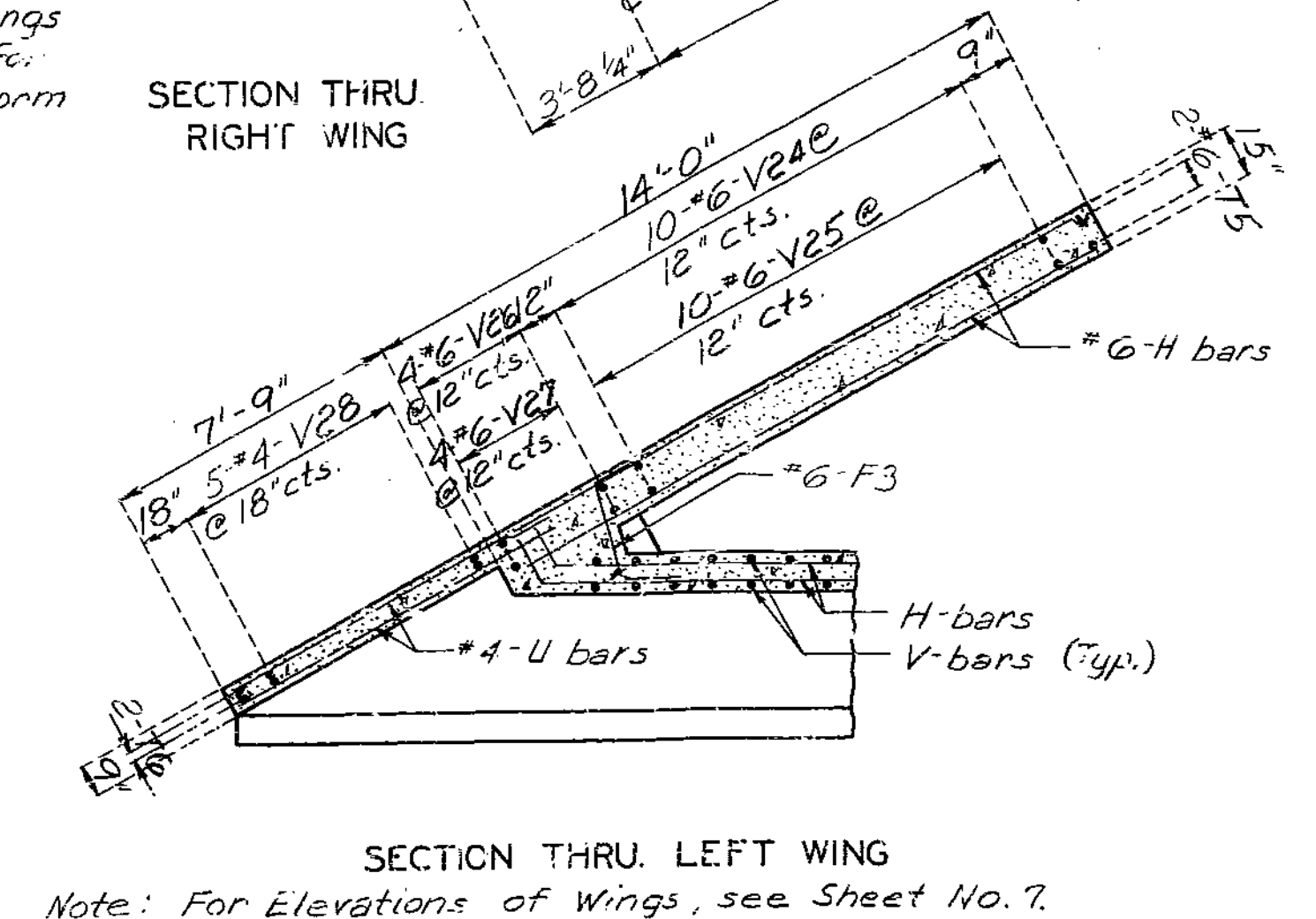
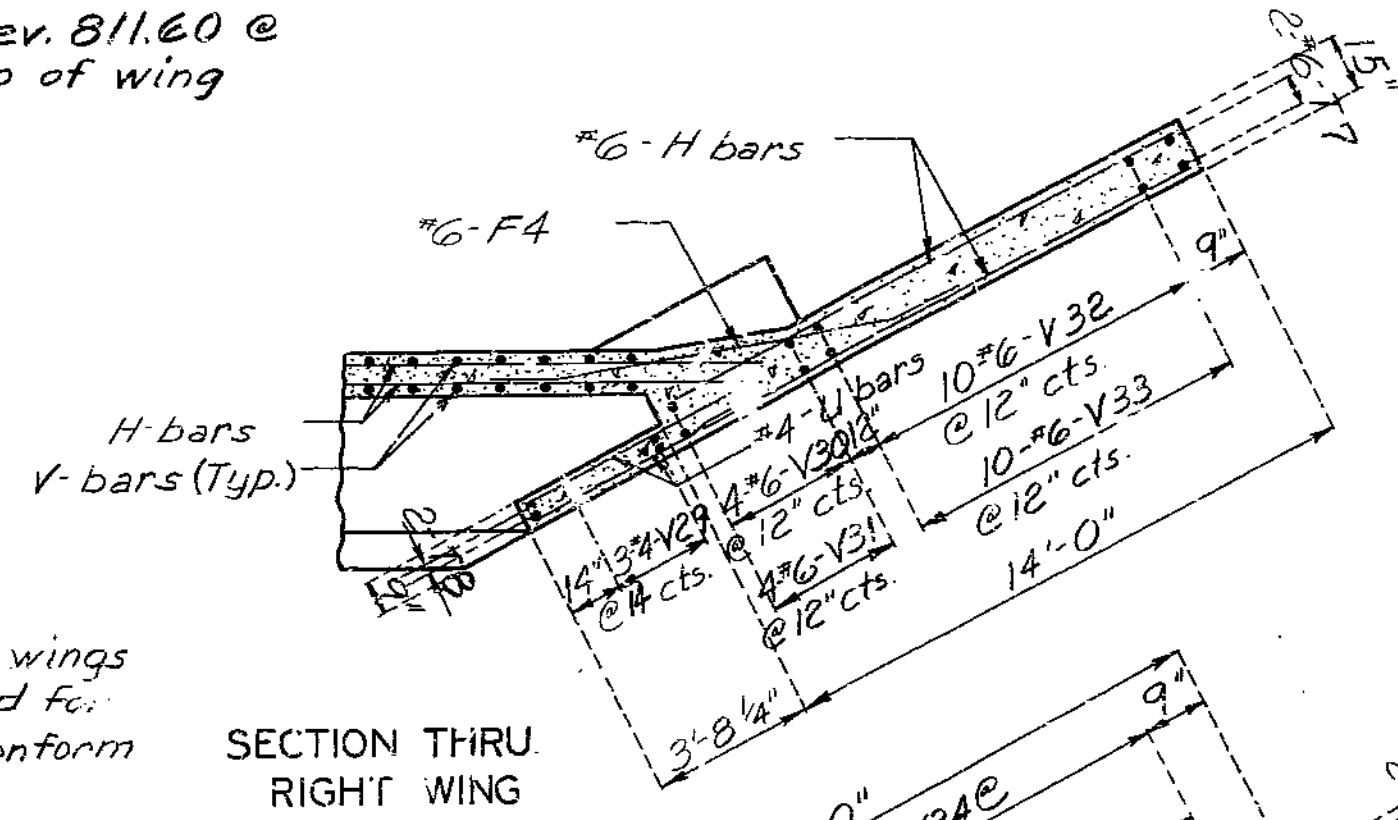
CLAY COUNTY

A-3386

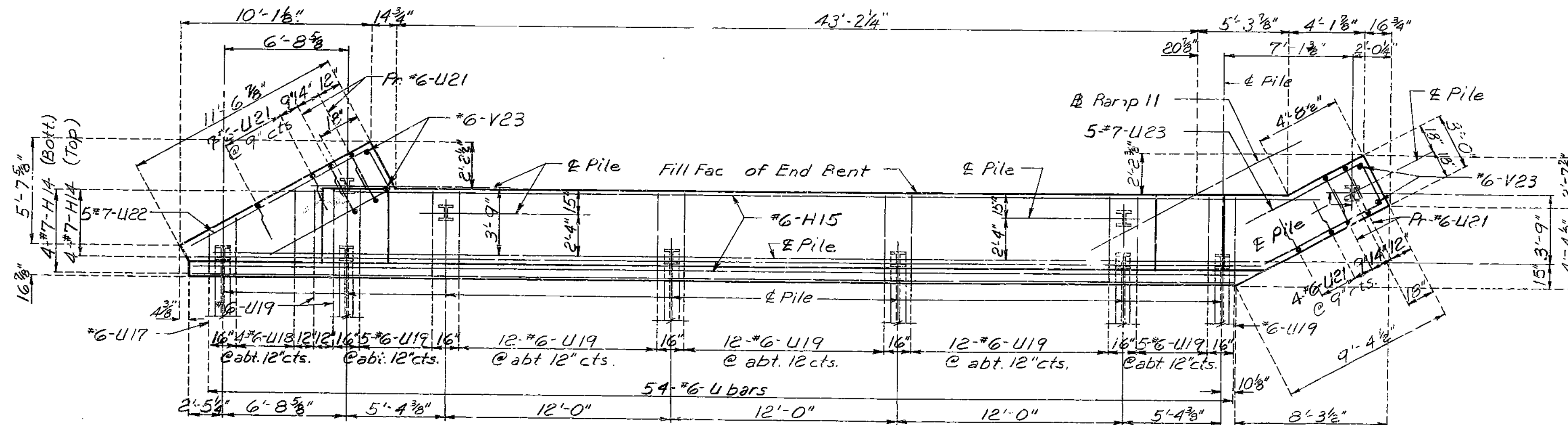
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	113	



Note: Field bending shall be required at wings for #6-H12 & #4-H13 bars in backwall and for #6-F3 & #6-F4 bars when necessary to conform to slope of wing.



Note: For Elevations of Wings, see Sheet No. 7.



PLAN OF BEAM  
 DETAILS OF END BENT NO. 4  
 Note: This drawing is not to scale. Follow dimensions.

DETAILED AUG. 1977  
 CHECKED NOV. 1978

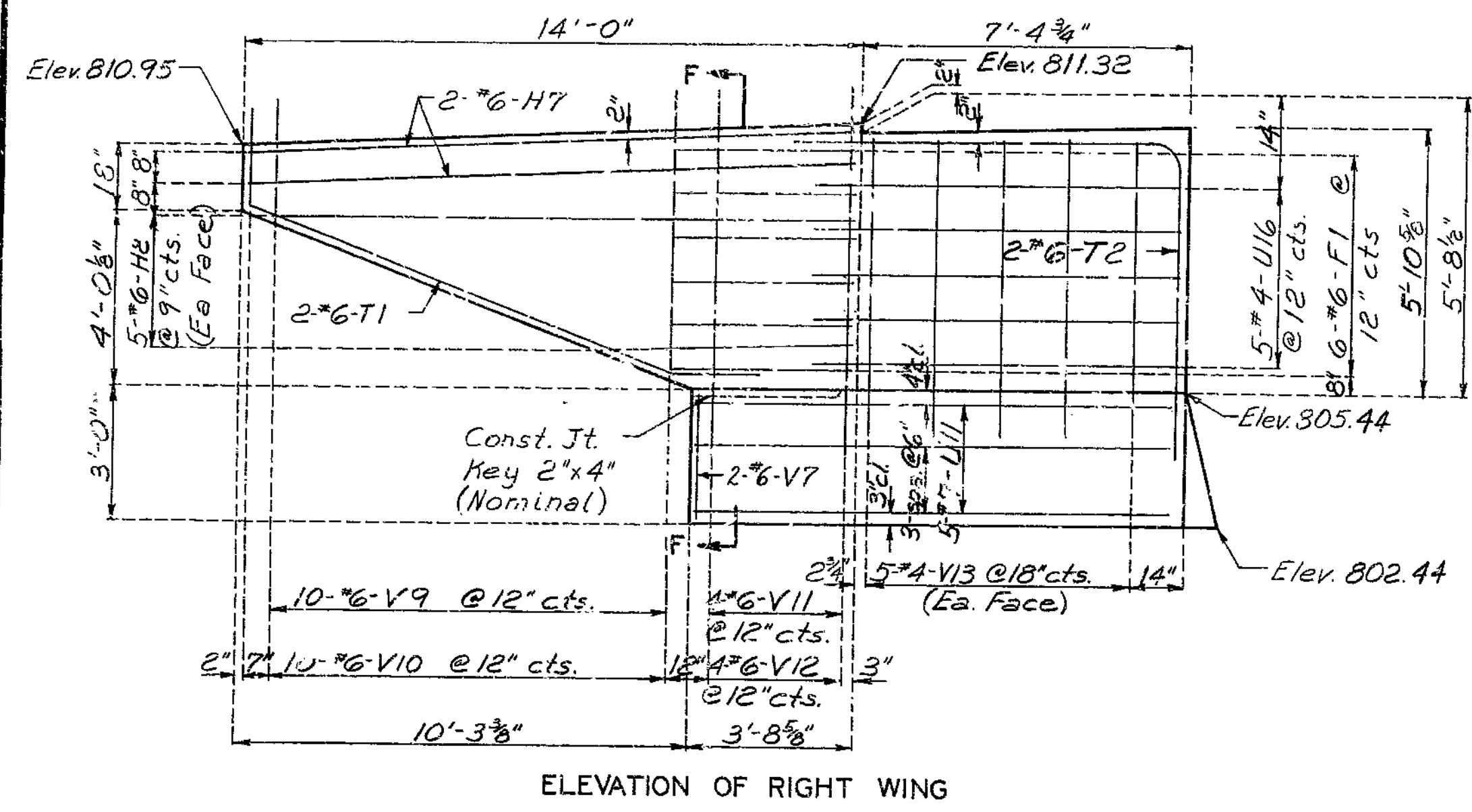
Sheet No. 6 of 18.

CLAY COUNTY

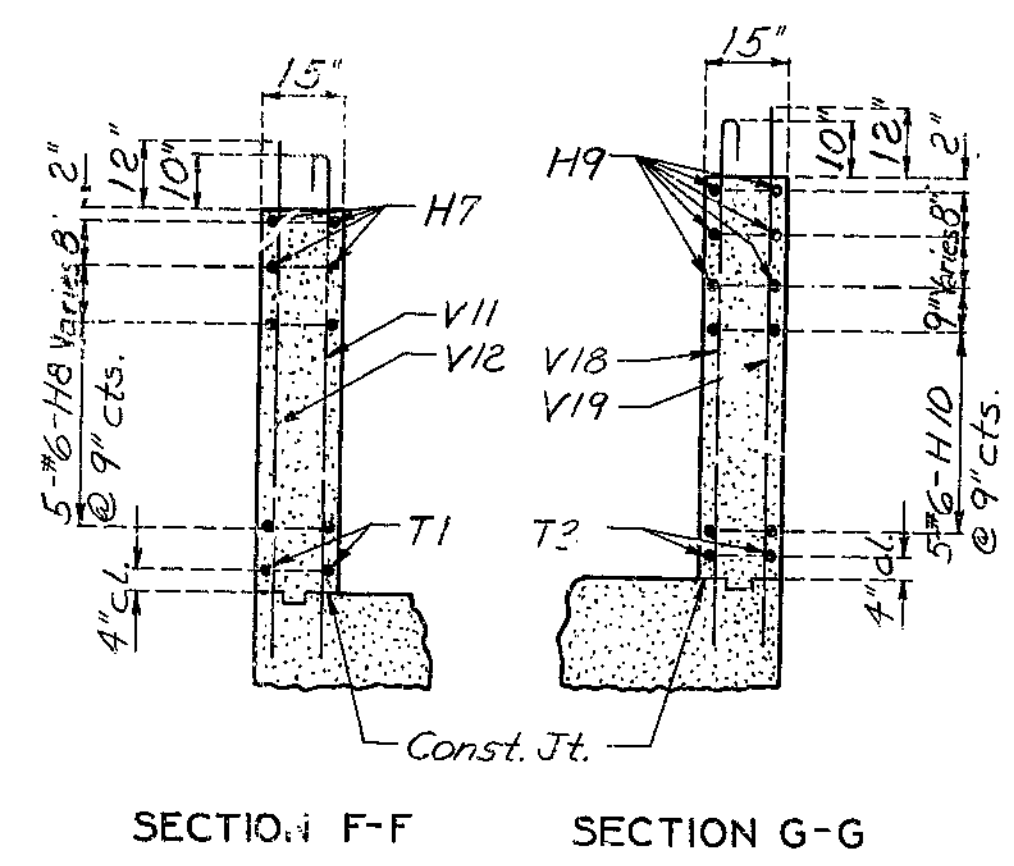
A-3386

259

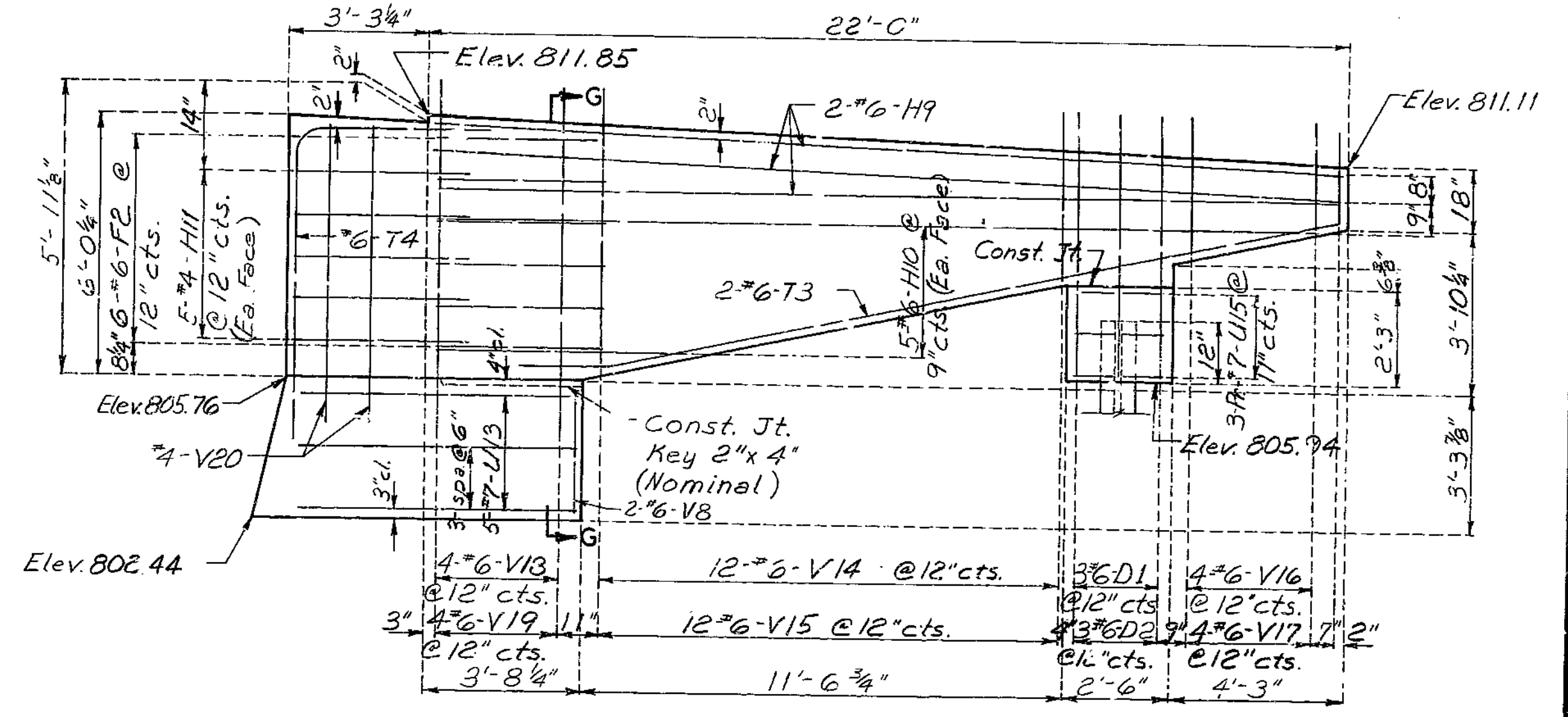
FED. ROAD DIST. I. S.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	120	



ELEVATION OF RIGHT WING



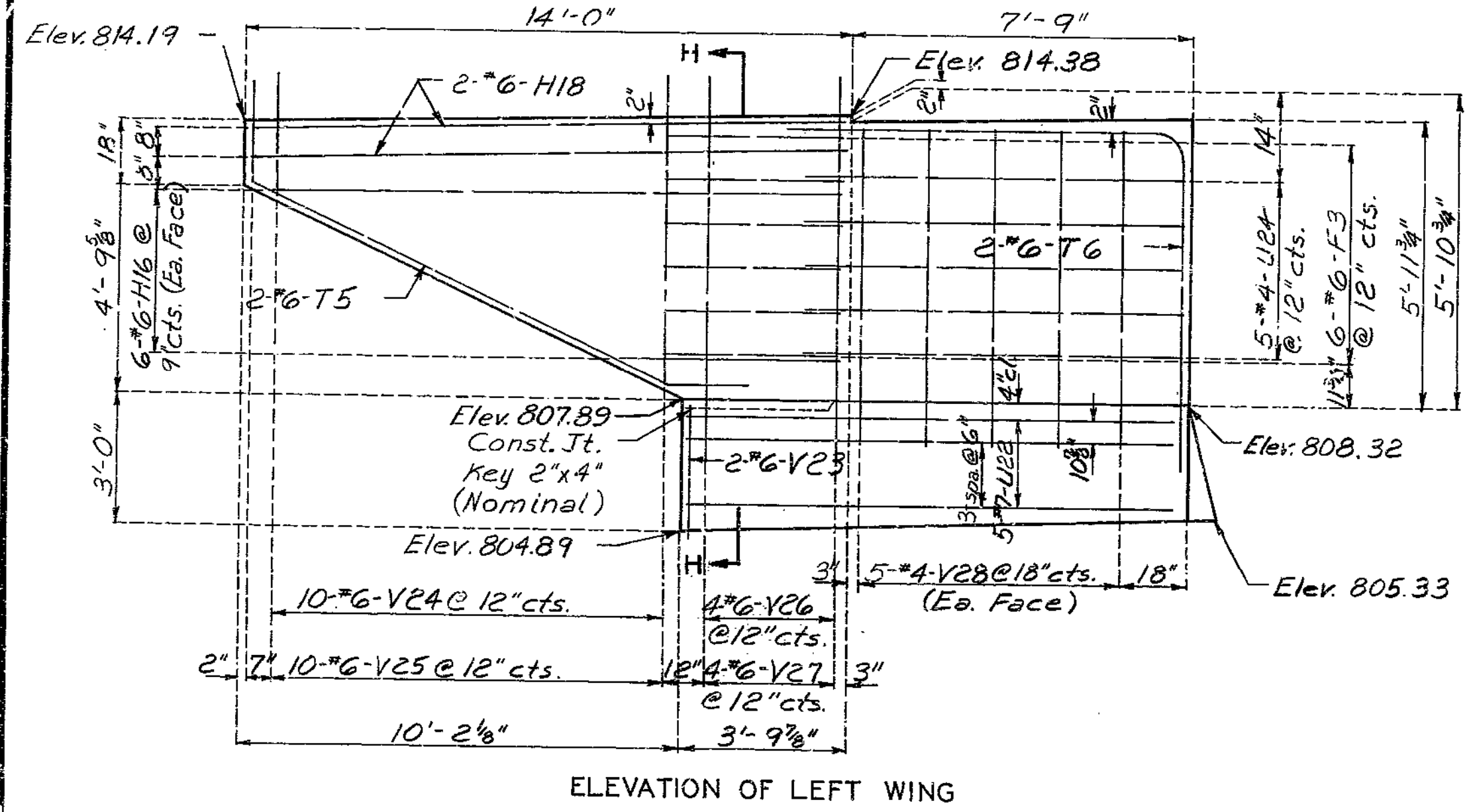
SECTION F-F SECTION G-G



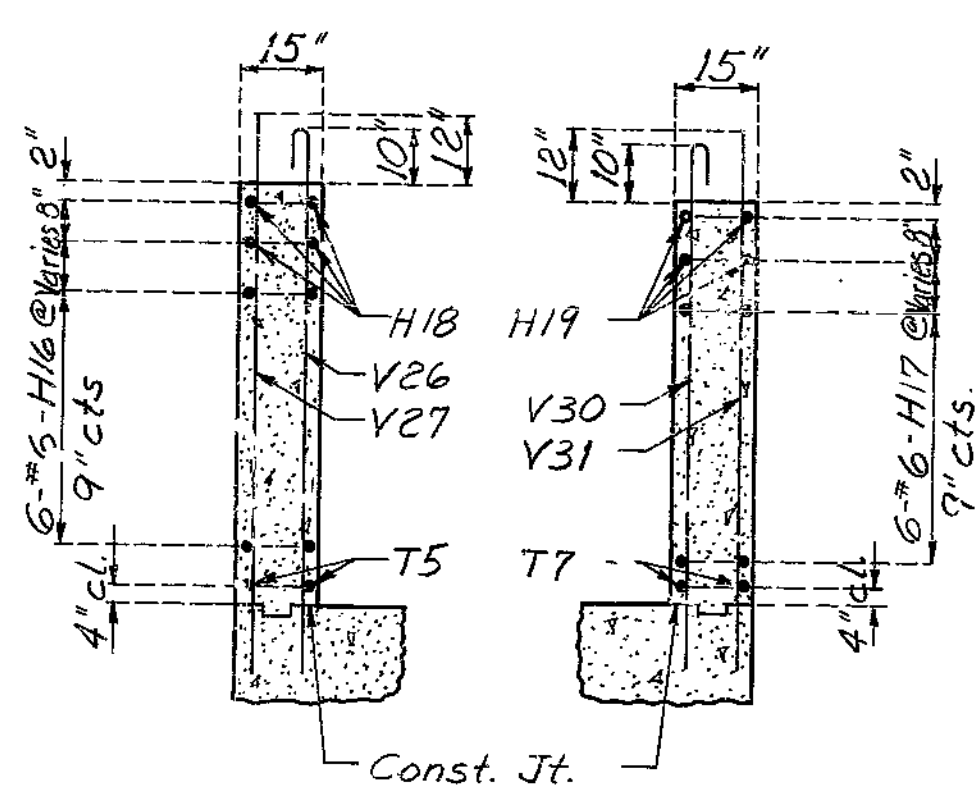
ELEVATION OF LEFT WING

DETAILS OF WINGS, END BENT NO. 1

Note: For reinforcement of Safety Barrier Curb, see Sheet No. 15.

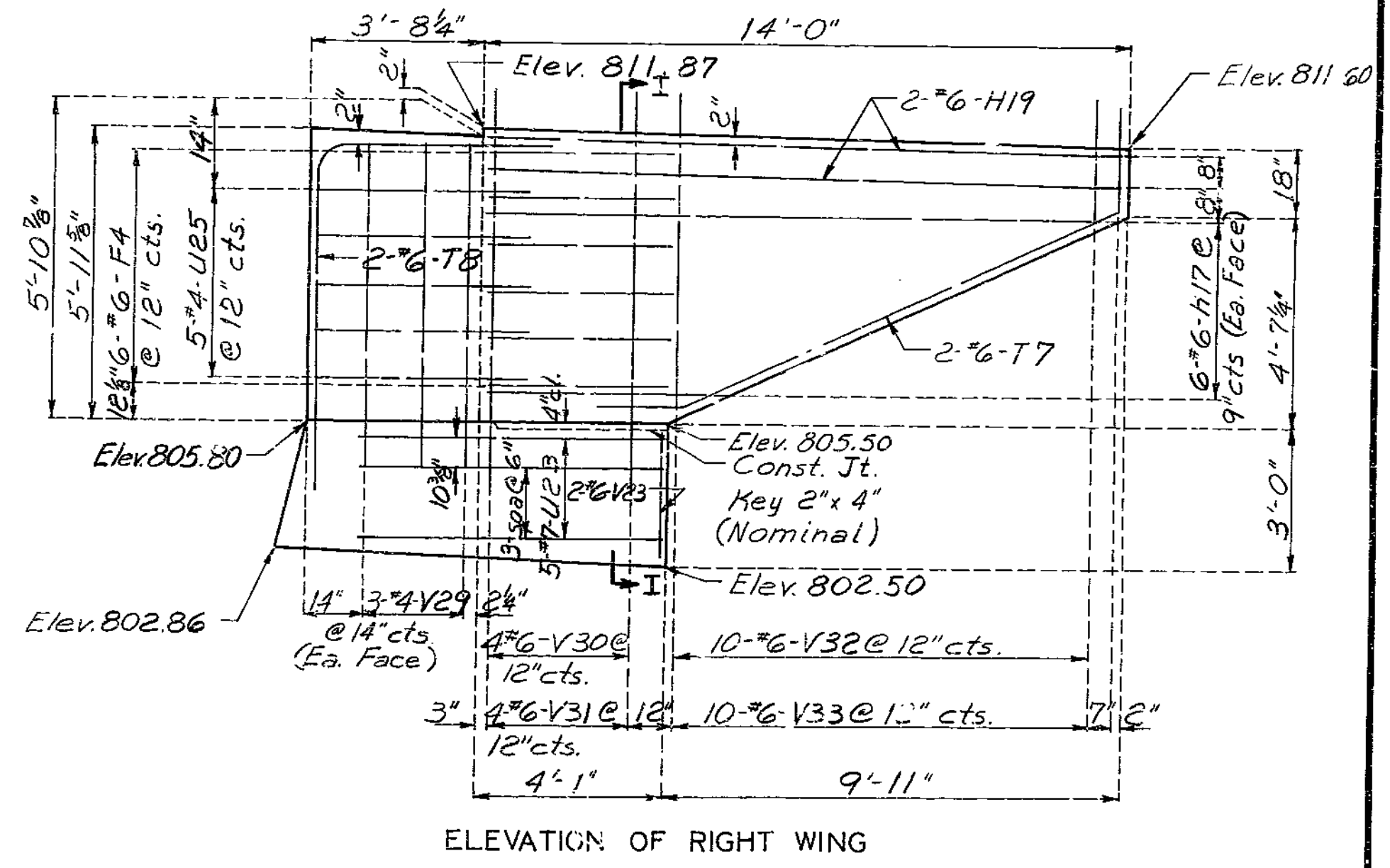


ELEVATION OF LEFT WING



SECTION H-H SECTION I-I

DETAILS OF WINGS, END BENT NO. 4



ELEVATION OF RIGHT WING

260

DETAILED SEPT. 1977  
CHECKED NOV. 1978

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

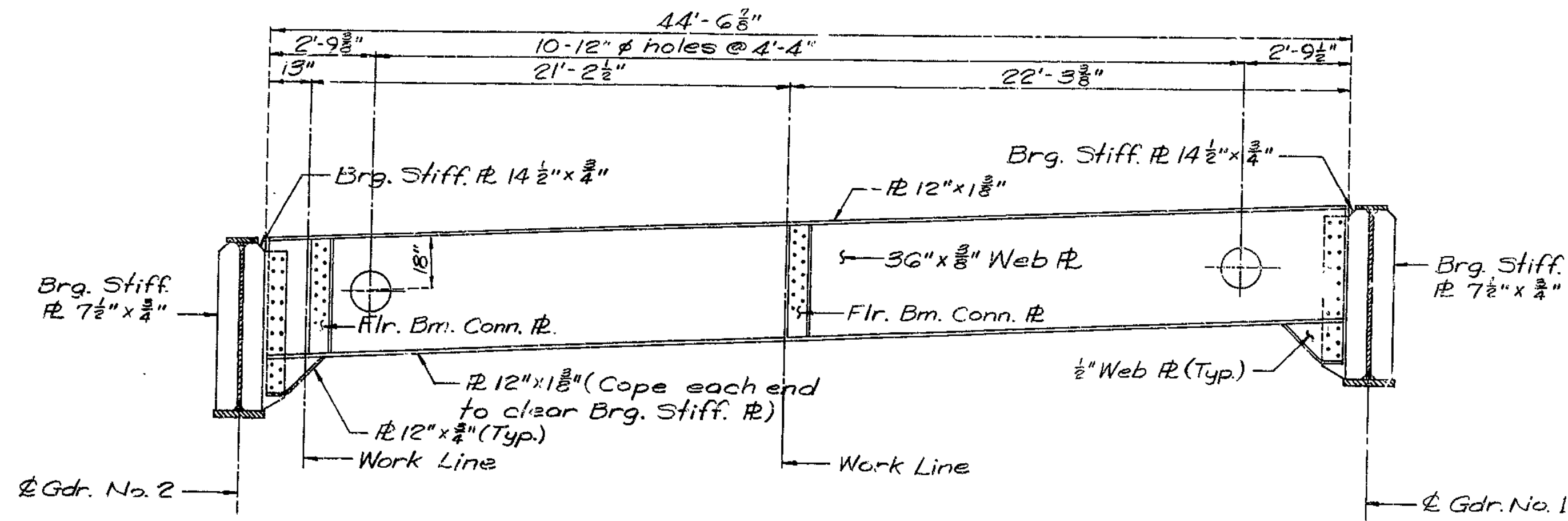
Sheet No. 7 of 18

CLAY COUNTY

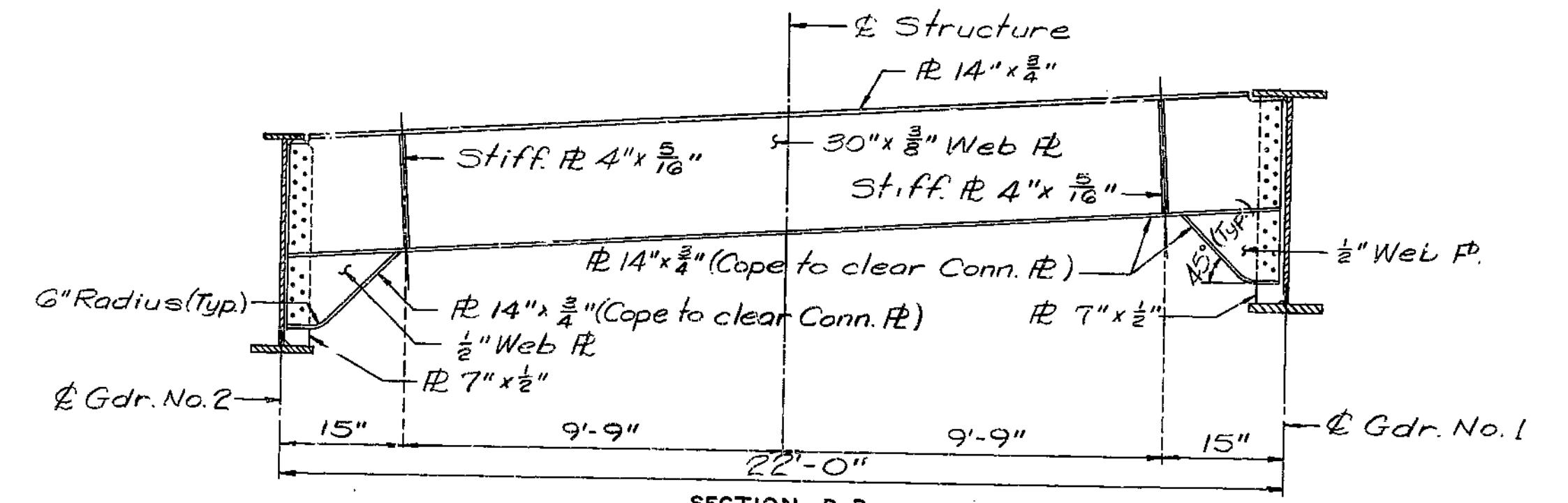
A-3386



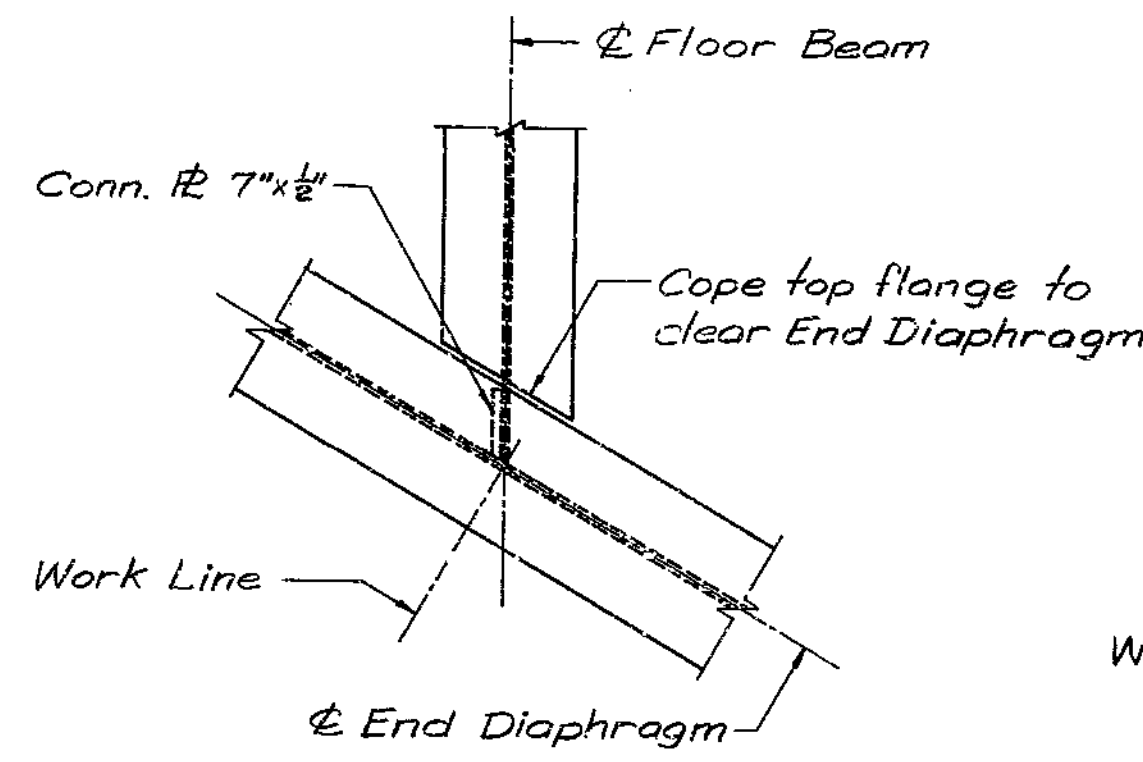
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	122	



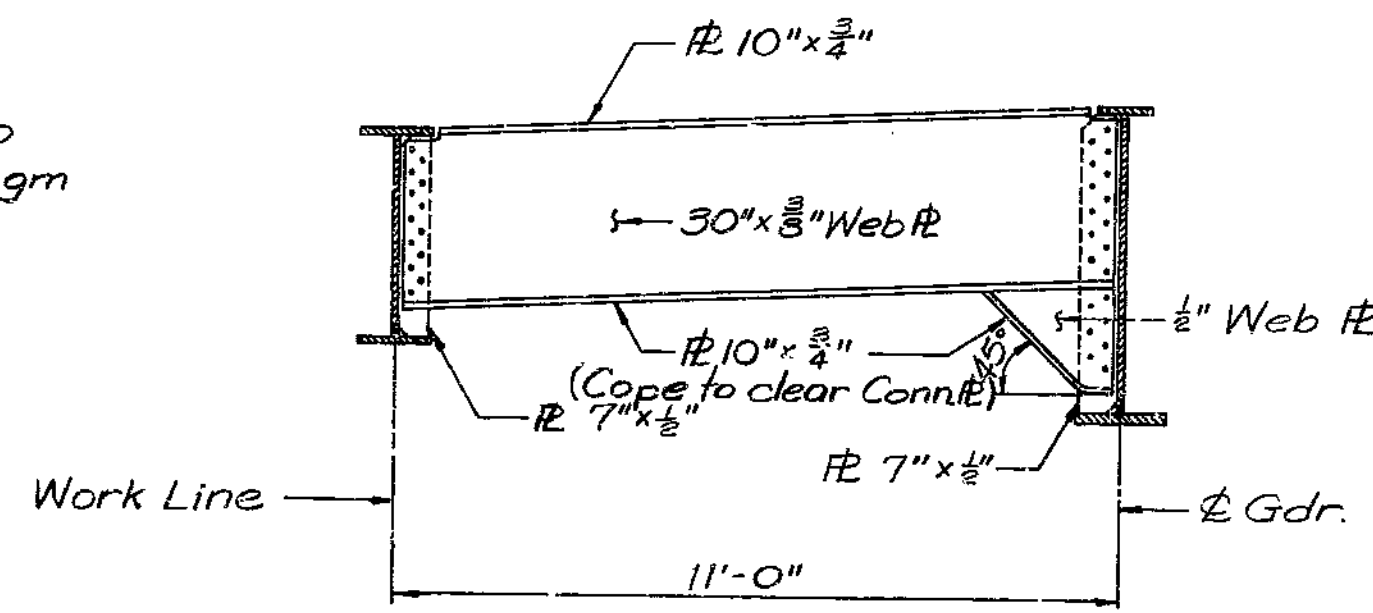
SECTION A-A



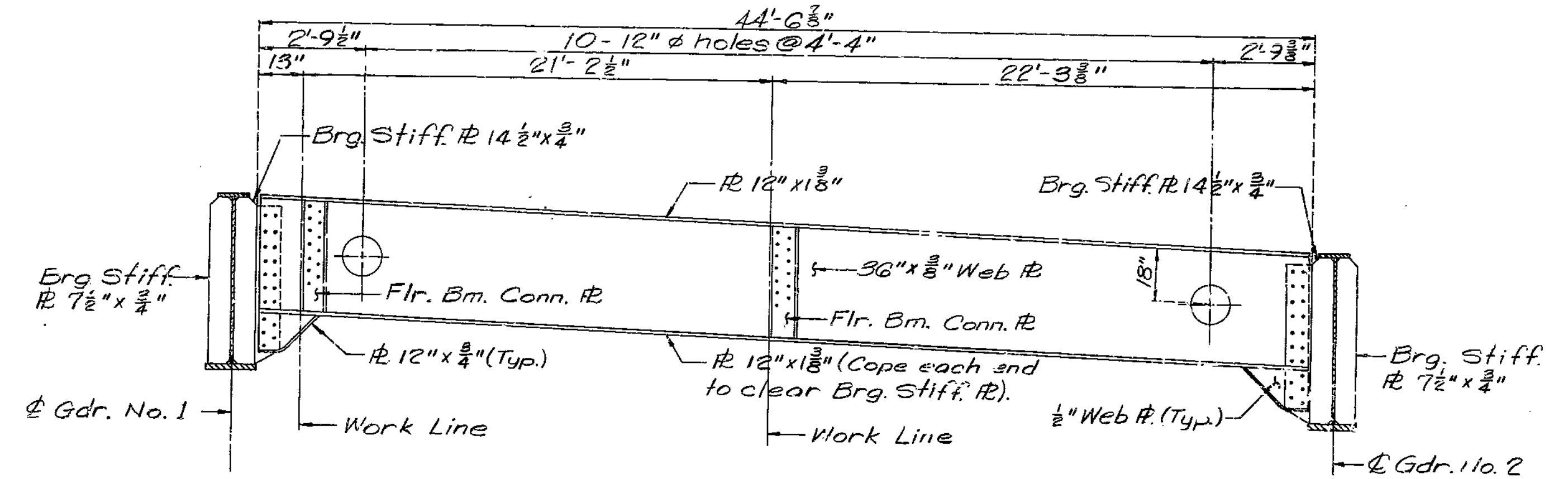
SECTION D-D  
(TYPICAL FOR FLOOR BEAMS NO. 3 THRU 12)



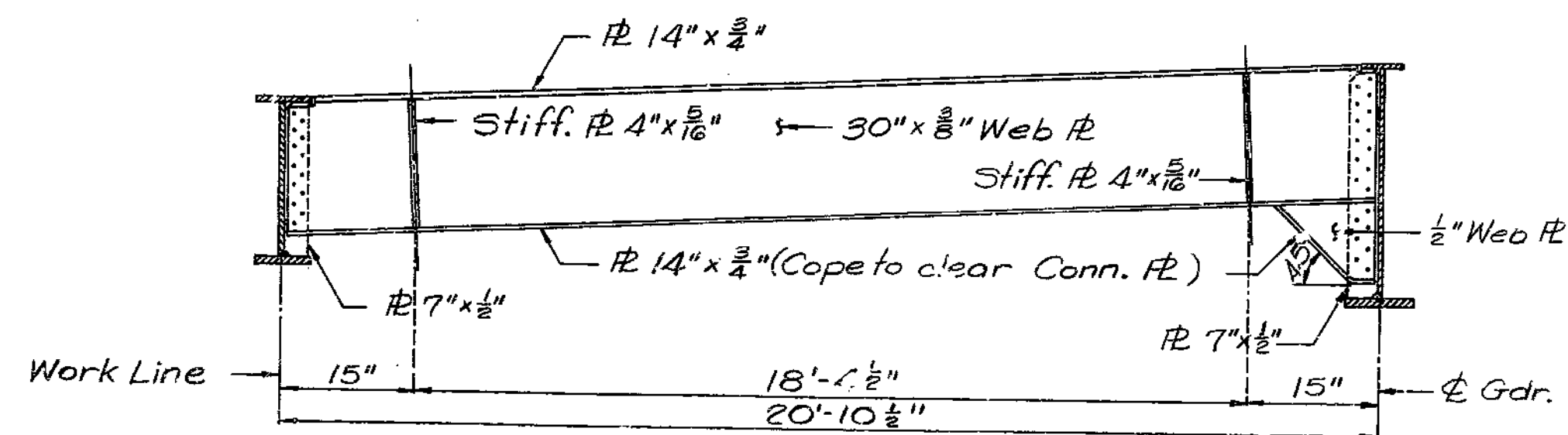
PART PLAN OF FLOOR BEAM CONN. TO END DIAPHRAGM



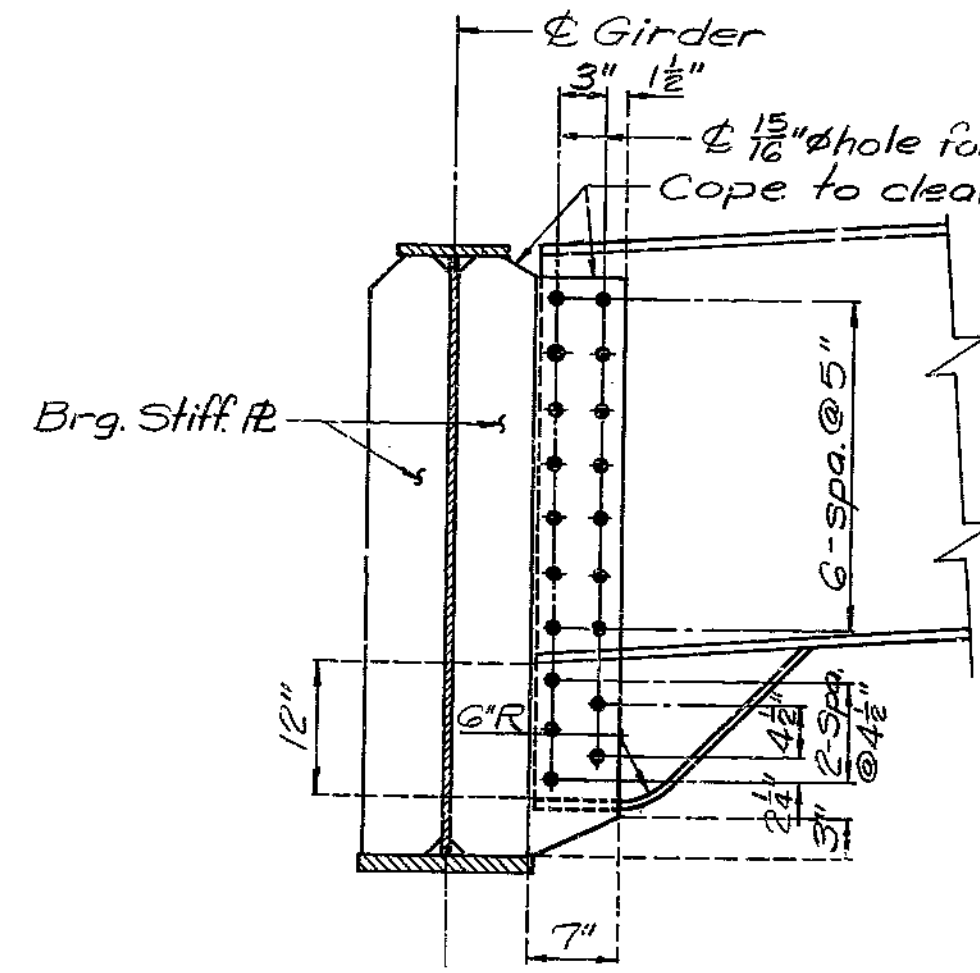
SECTION B-B  
(FLOOR BEAM NO. 1 & 14)



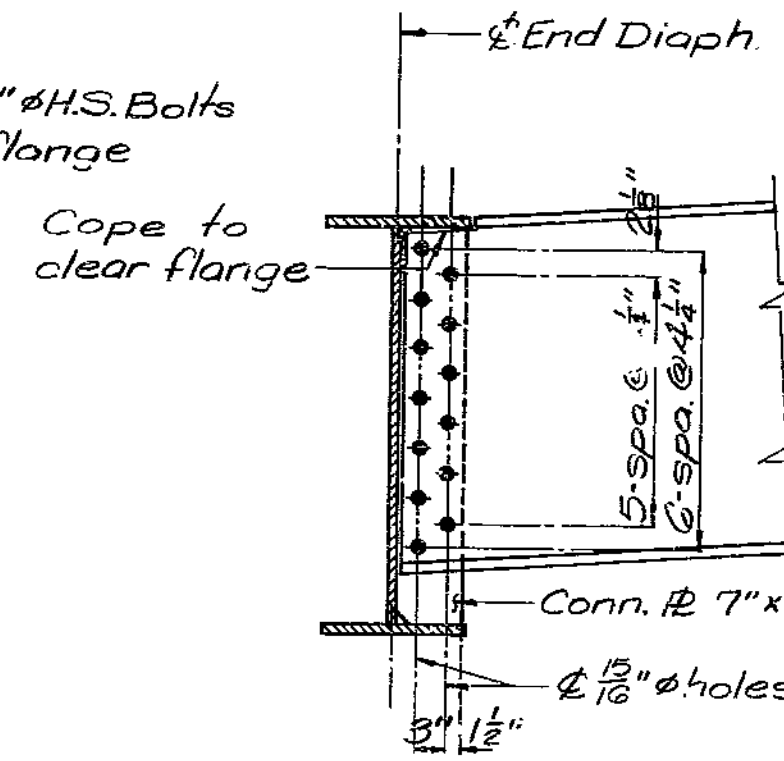
SECTION F-F



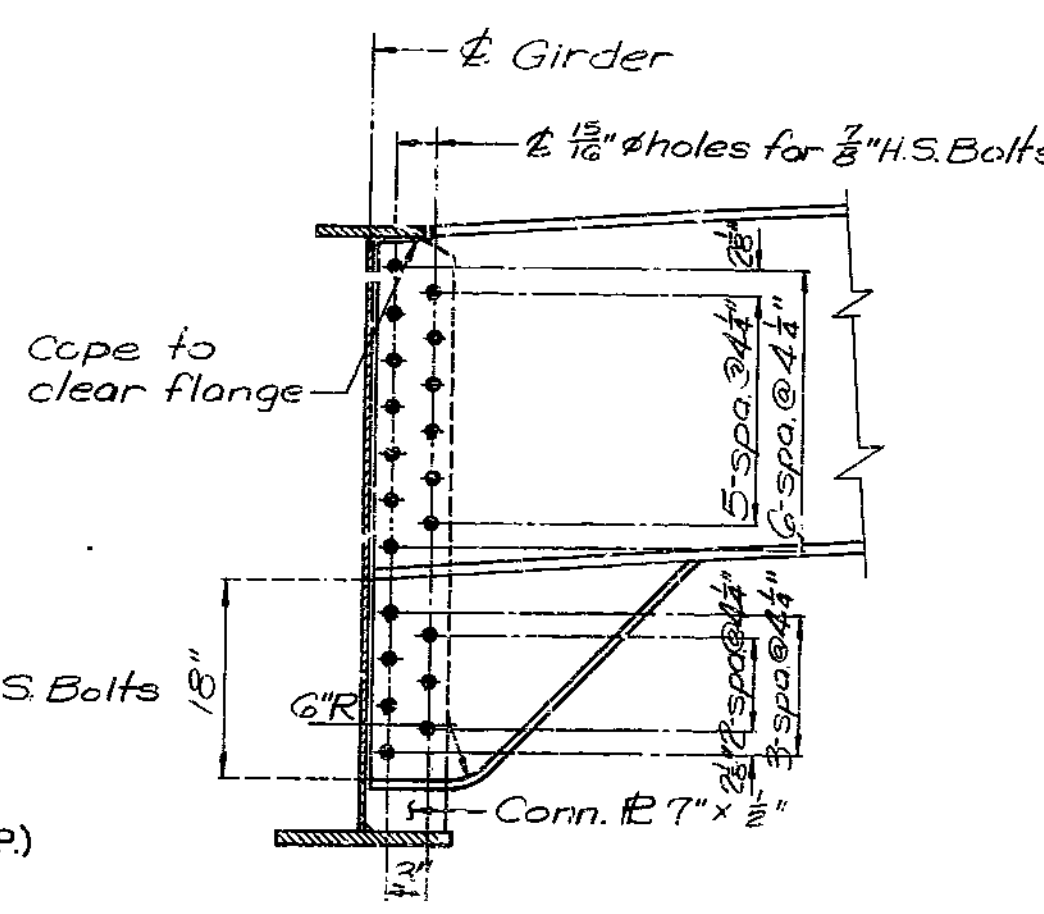
SECTION C-C  
(FLOOR BEAM NO. 2 & 13)



CONNECTION OF END DIAPH. TO GIRDER (TYP.)



CONNECTION OF FLOOR BEAM TO GIRDER (TYP.)



CONNECTION OF FLOOR BEAM TO GIRDER (TYP.)

Note: All web plates and bottom flange plates of end diaphragms and floor beams shall be subject to notch toughness requirements.

All dimensions shown are horizontal dimensions.

Note: For location of Sections A-A, B-B, C-C, D-D, E-E & F-F see sheet No. 8.

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

DETAILED OCT. 1977  
CHECKED Sept. 1978

Shee. No. 9 of 18.

CLAY COUNTY

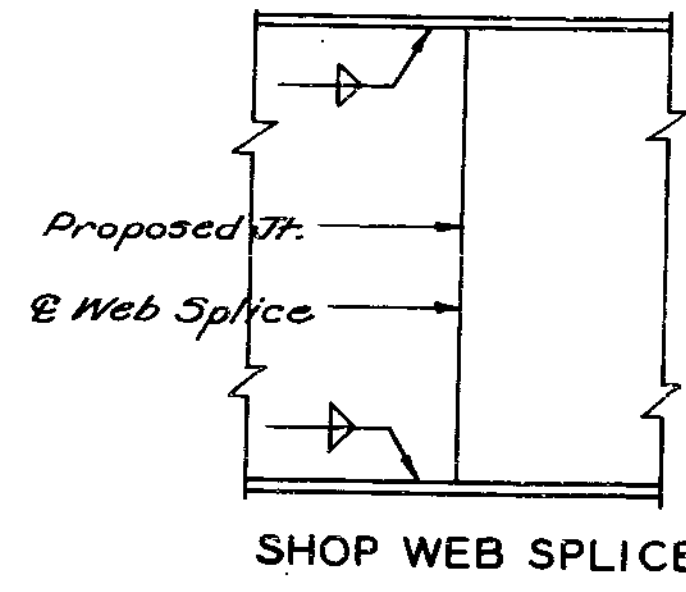
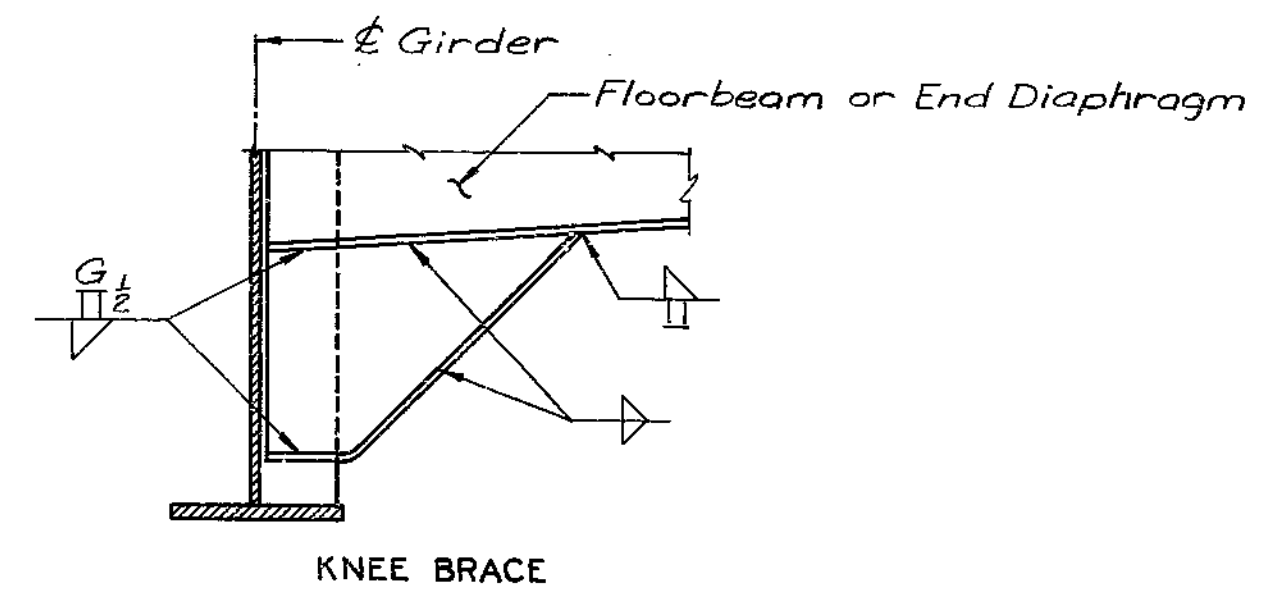
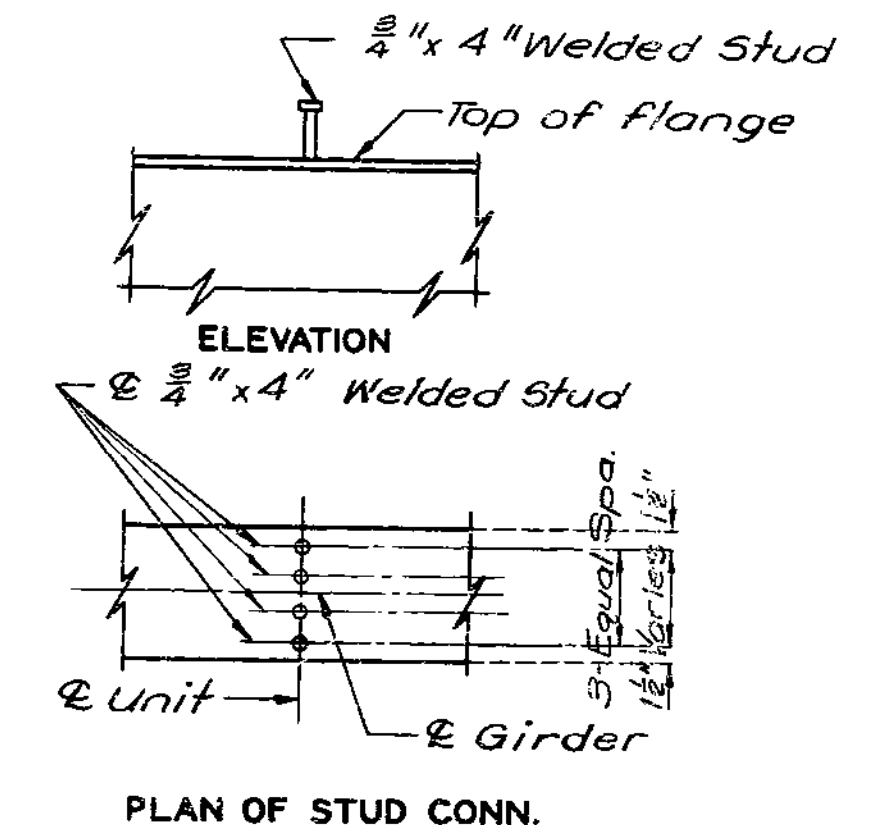
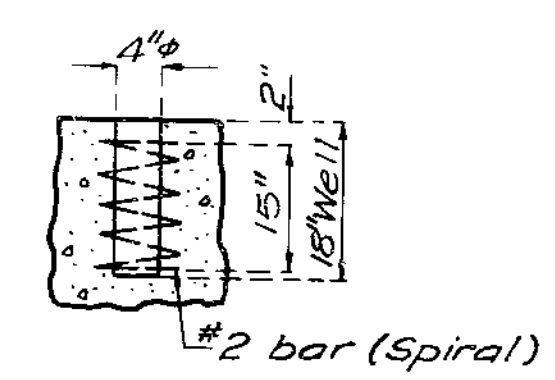
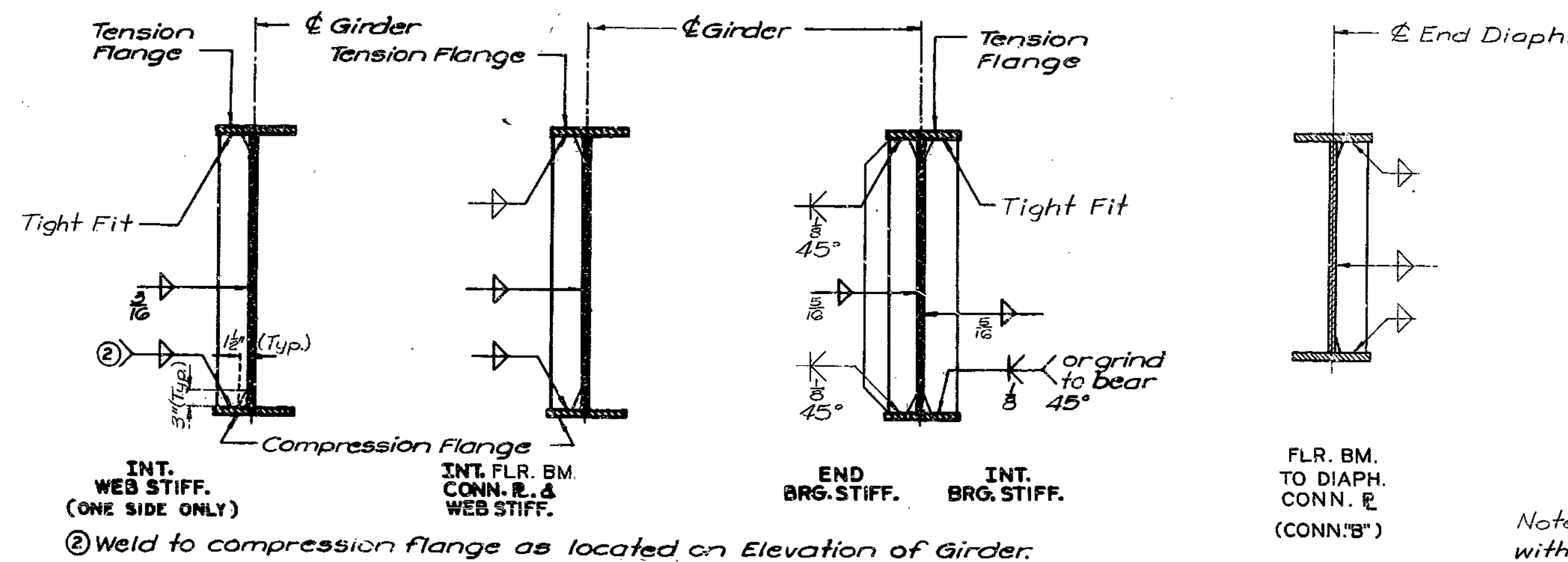
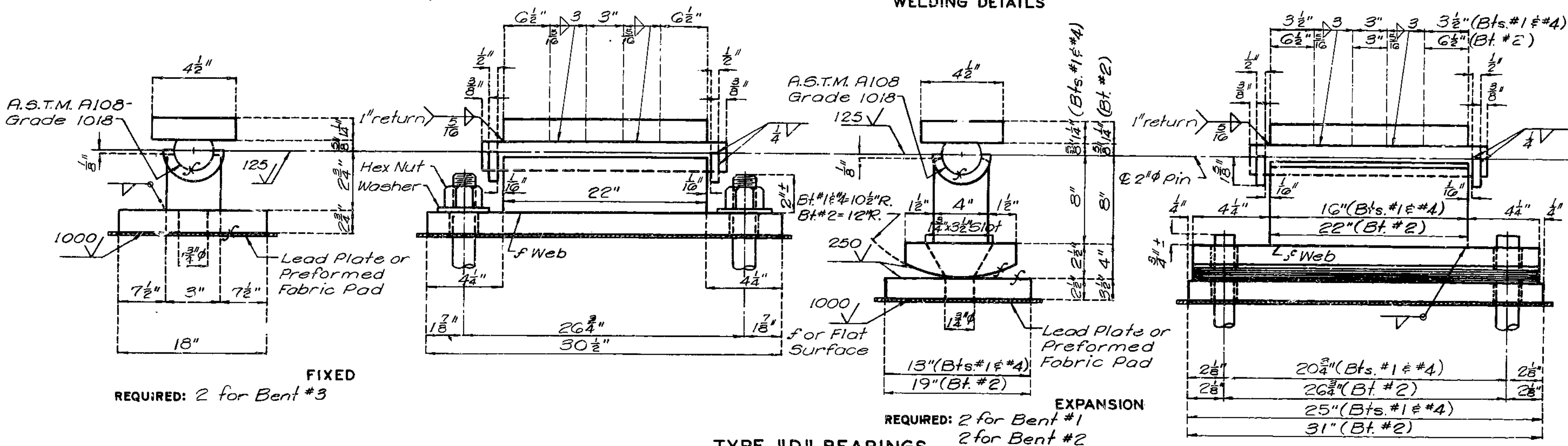
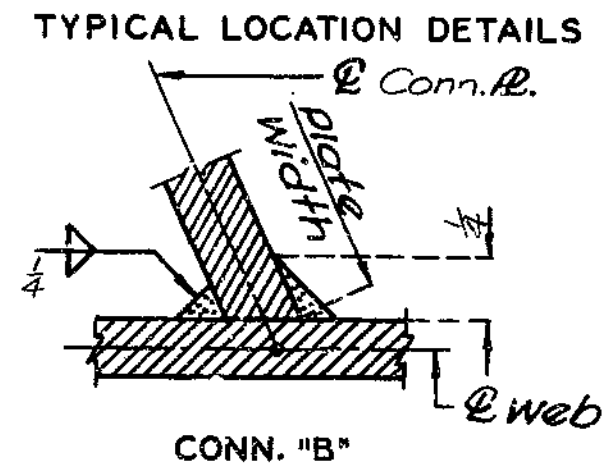
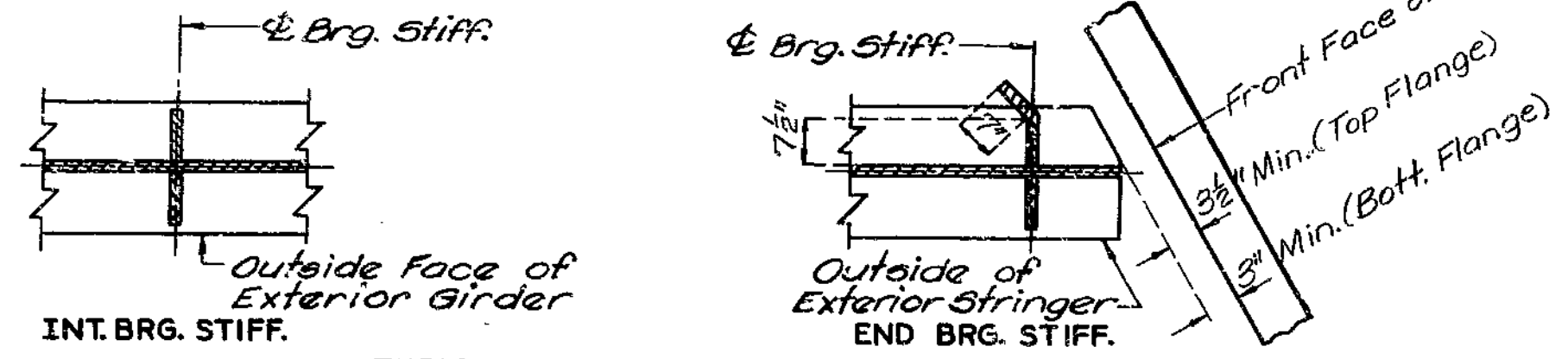
A-3386

262

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	123	

**NOTES: TYPE "D" BEARINGS**

ANCHOR BOLTS FOR TYPE "D" BEARINGS SHALL BE 1-1/2" SWAGED BOLTS AND SHALL EXTEND 15" INTO CONCRETE, WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS. "ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS. " < " INDICATES MACHINE FINISH SURFACE. SHOP DRAWINGS ARE NOT REQUIRED FOR LEAD PLATES AND/OR PREFORMED FABRIC PADS.



DETAILS OF SHEAR CONNECTORS

Note: Weight of 811# of shear connectors is included in weight of Fabricated Structural Carbon Steel.

263

DETAILED FEB. 1978  
CHECKED Oct. 1978

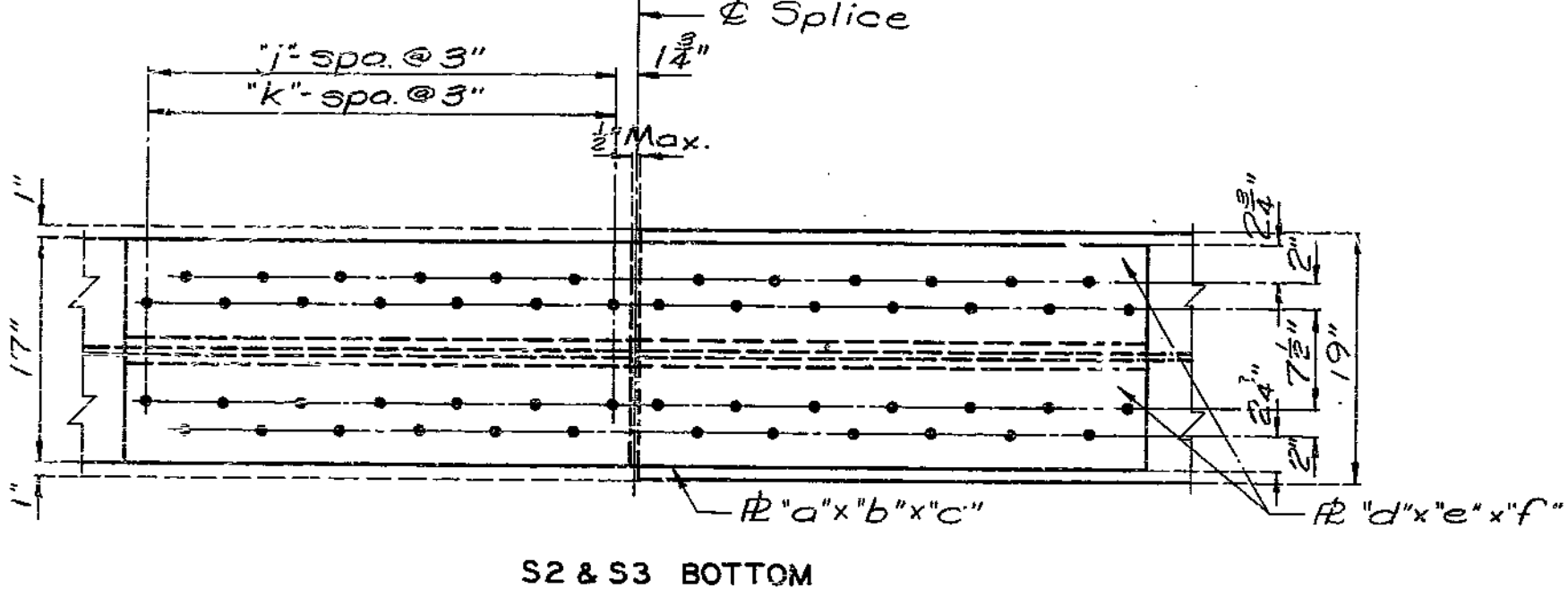
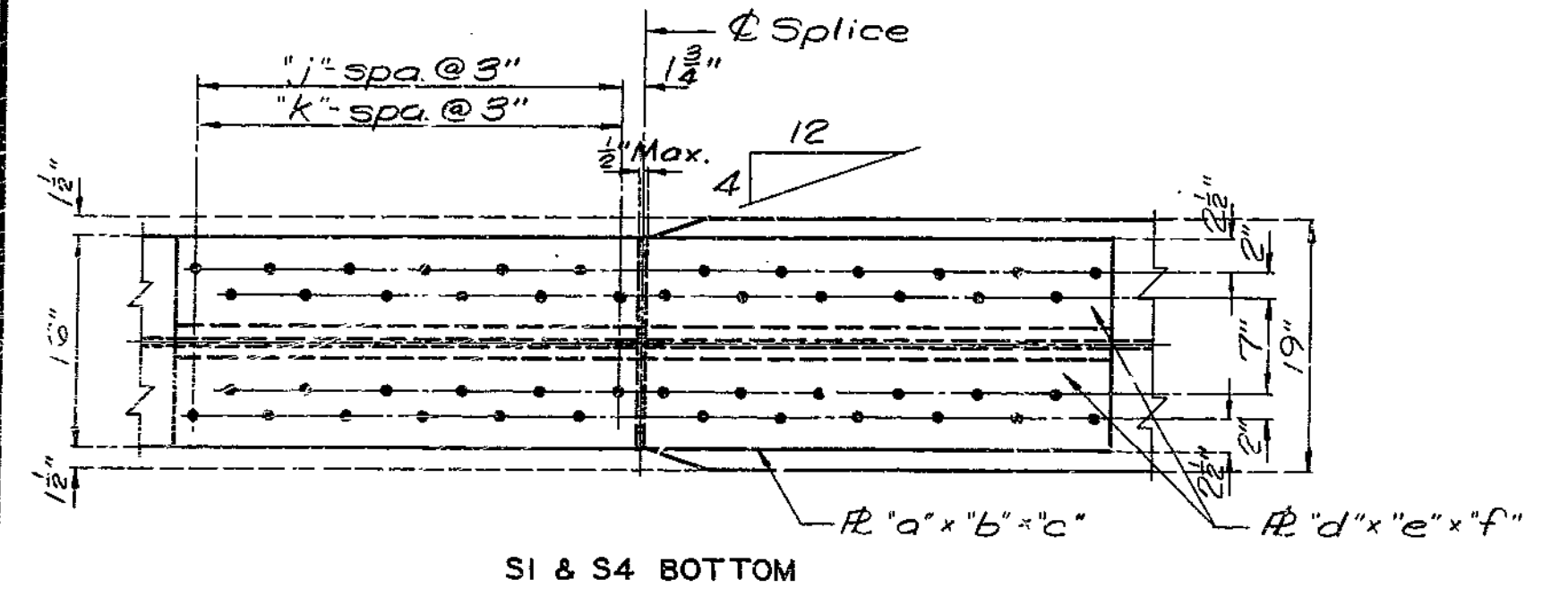
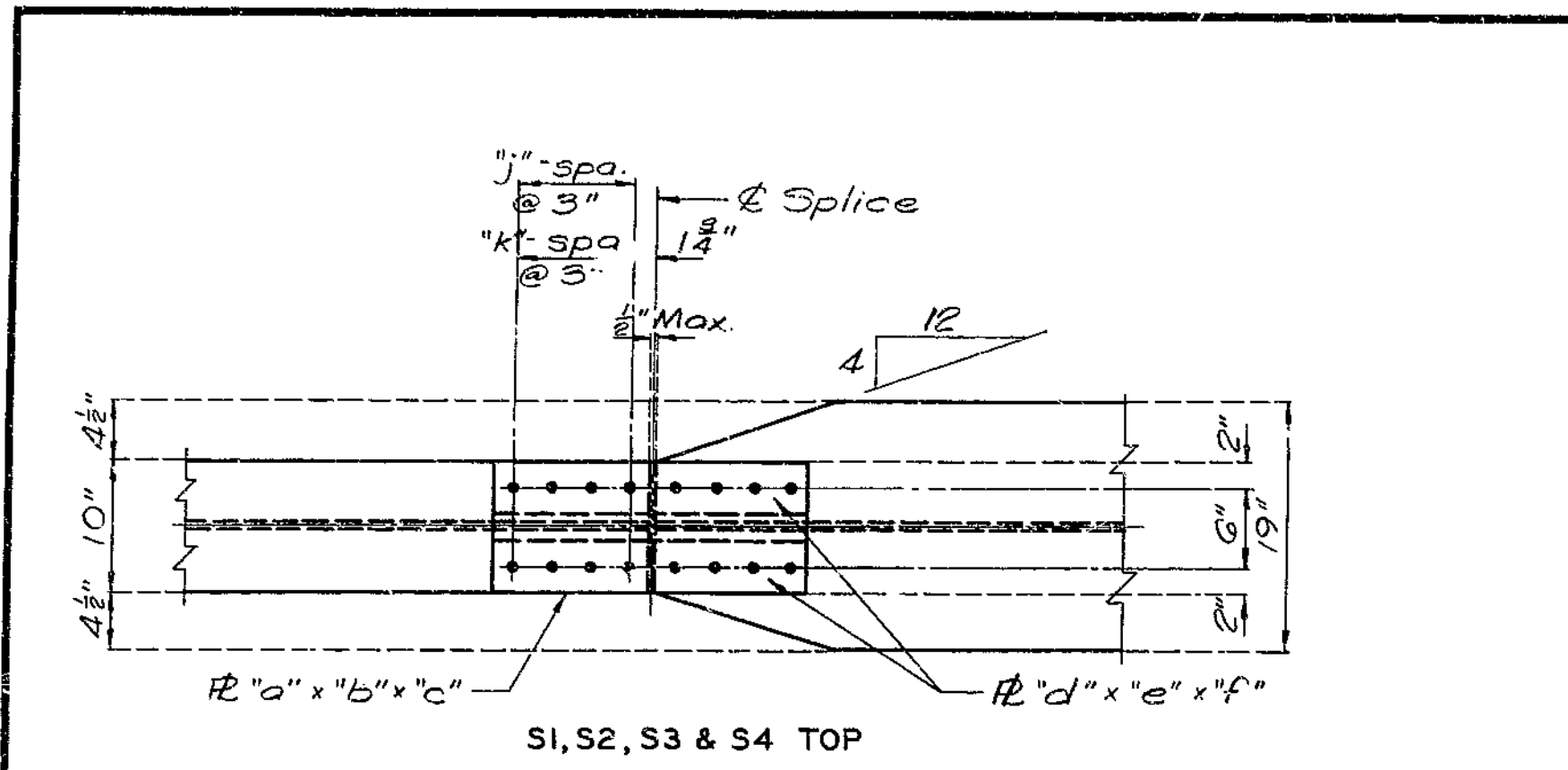
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 10 of 18.

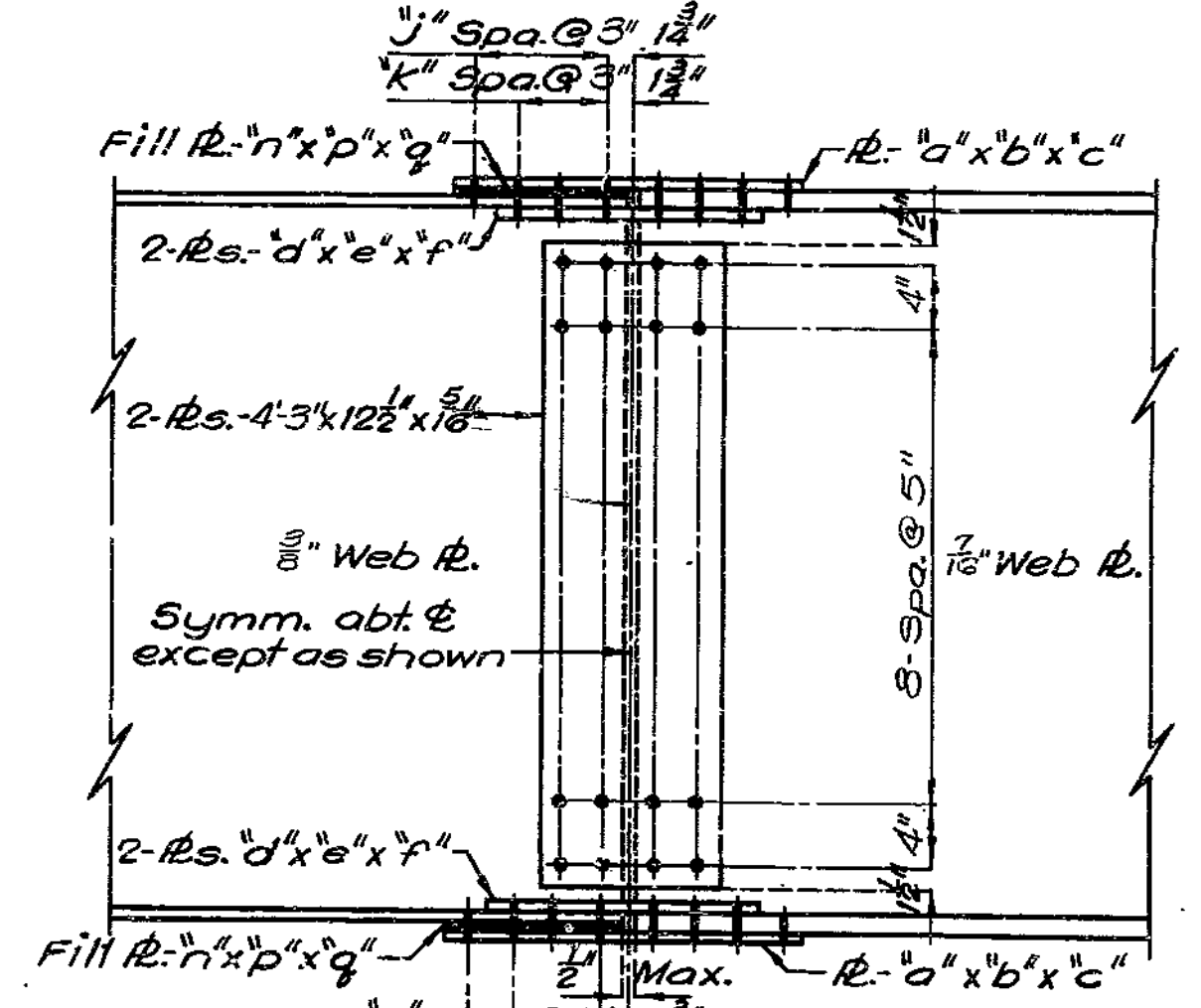
CLAY COUNTY

A-3386

FED. ROAD DIST. NO.	STATE	FED. AID PRG. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	124	



PLAN OF FLANGE SPLICES



SPLICE LOCATION	TABLE OF DIMENSIONS — FIELD SPLICE										
	"c"	"b"	"c"	"d"	"e"	"f"	"j"	"k"	"n"	"p"	"q"
S1, S2, S3 & S4 Top	10"	3/8"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	3	3	10"	3/8"	12"
S1 & S4 Bottom	16"	3/8"	6'-0 1/2"	7"	3/8"	6'-0 1/2"	11	11	—	—	—
S2 & S3 Bottom	17"	3/4"	6'-6 1/2"	7 1/2"	3/4"	6'-6 1/2"	12	12	—	—	—

Note: Use 3/8" High Strength Bolts with 1/8" reamed holes.

264

DETAILED FEB. 1978  
CHECKED SEPT. 1978

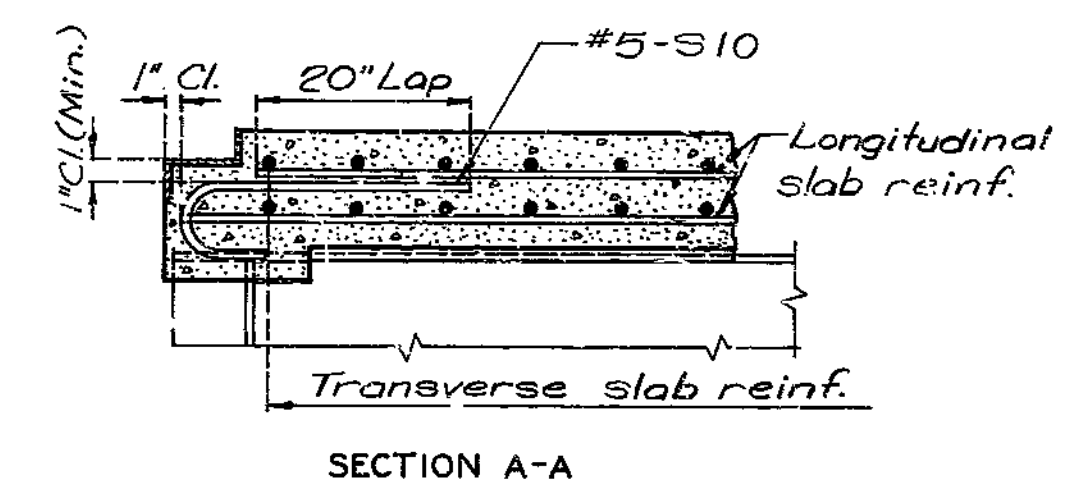
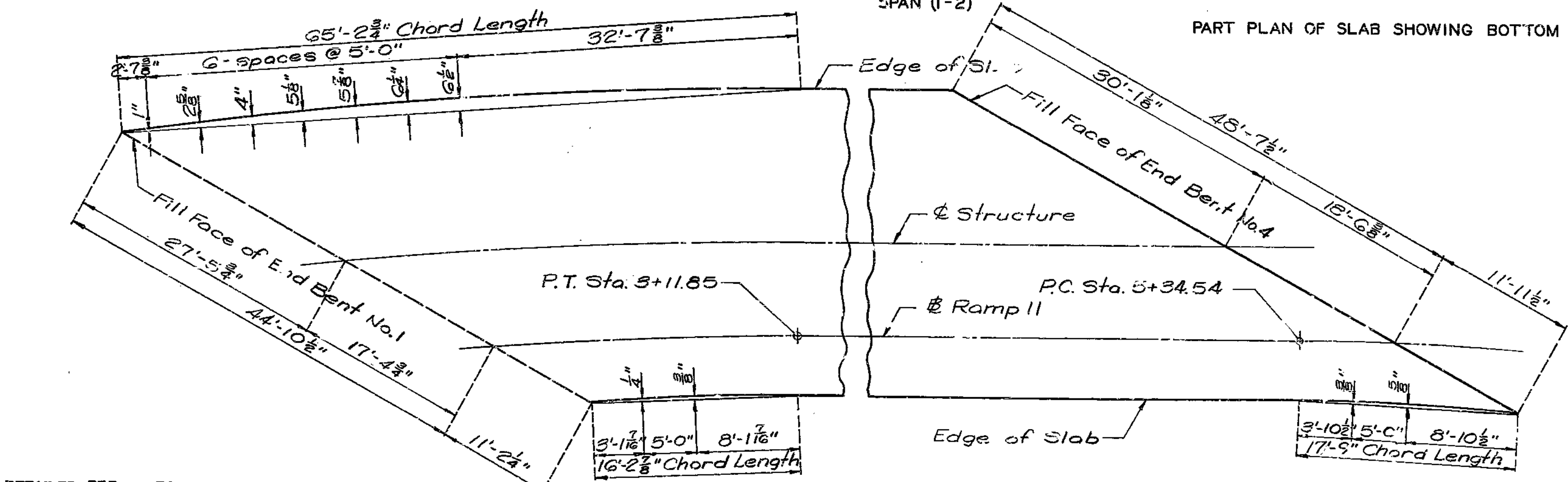
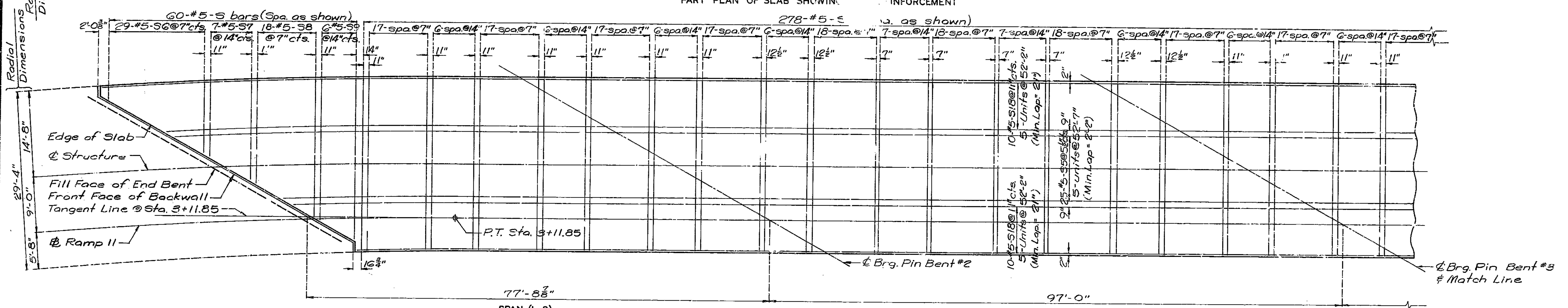
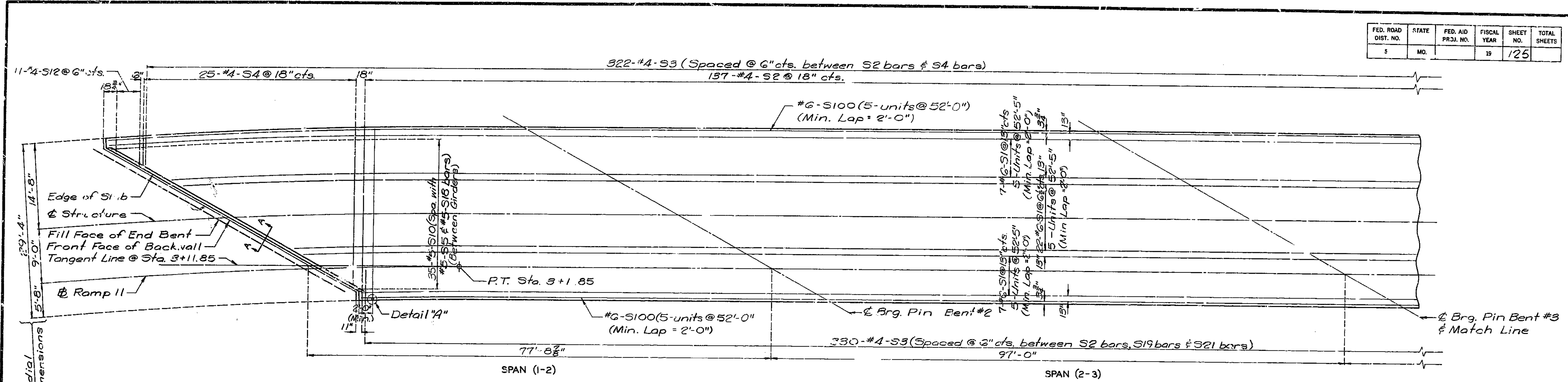
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 11 of 13.

CLAY COUNTY

A-3386

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



Note: All dimensions shown are horizontal dimensions.  
 Transverse steel to be placed perpendicular to tangent.  
 For Section Thru Slab see sheet No. 13.  
 For Slab Pouring Sequence see sheet No. 13.  
 For Dead Load Deflection, Theoretical Slab Haunching and Plate Girder Camber Diagrams see sheet No. 13.  
 For details of Electrical Lead Connections and Detail "A" see sheet No. 13.

265

DETAILED FEB. 1978  
CHECKED March 1979

Part Plan of Slab Showing Offsets  
Note: This drawing is not to scale. Follow dimensions.

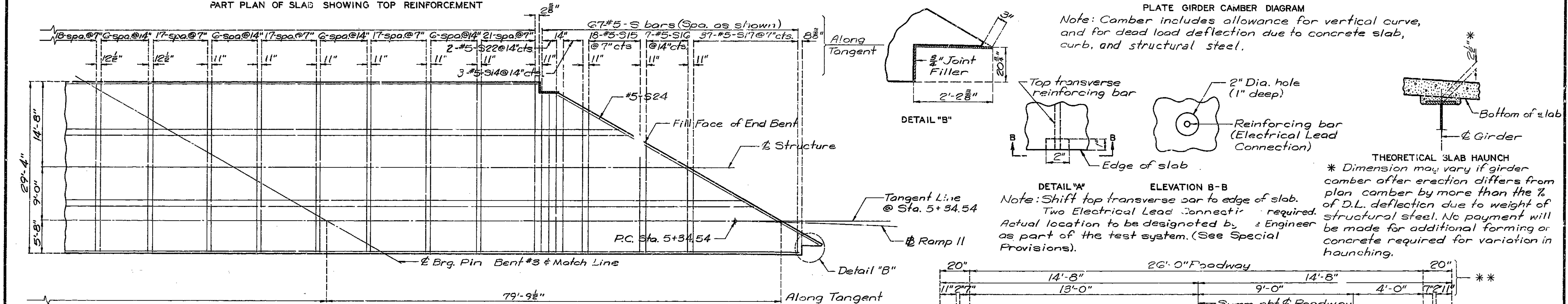
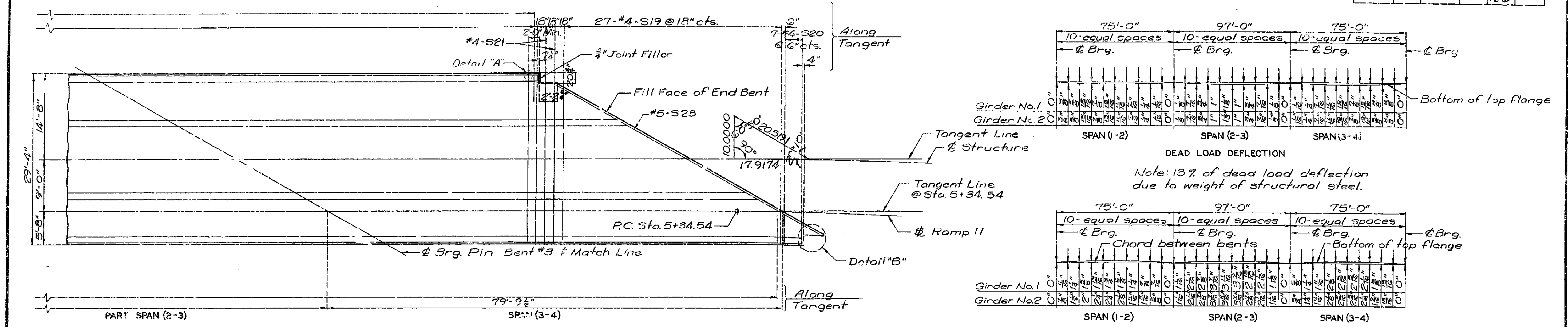
Sheet No. 12 of 16

CLAY COUNTY

A-3386



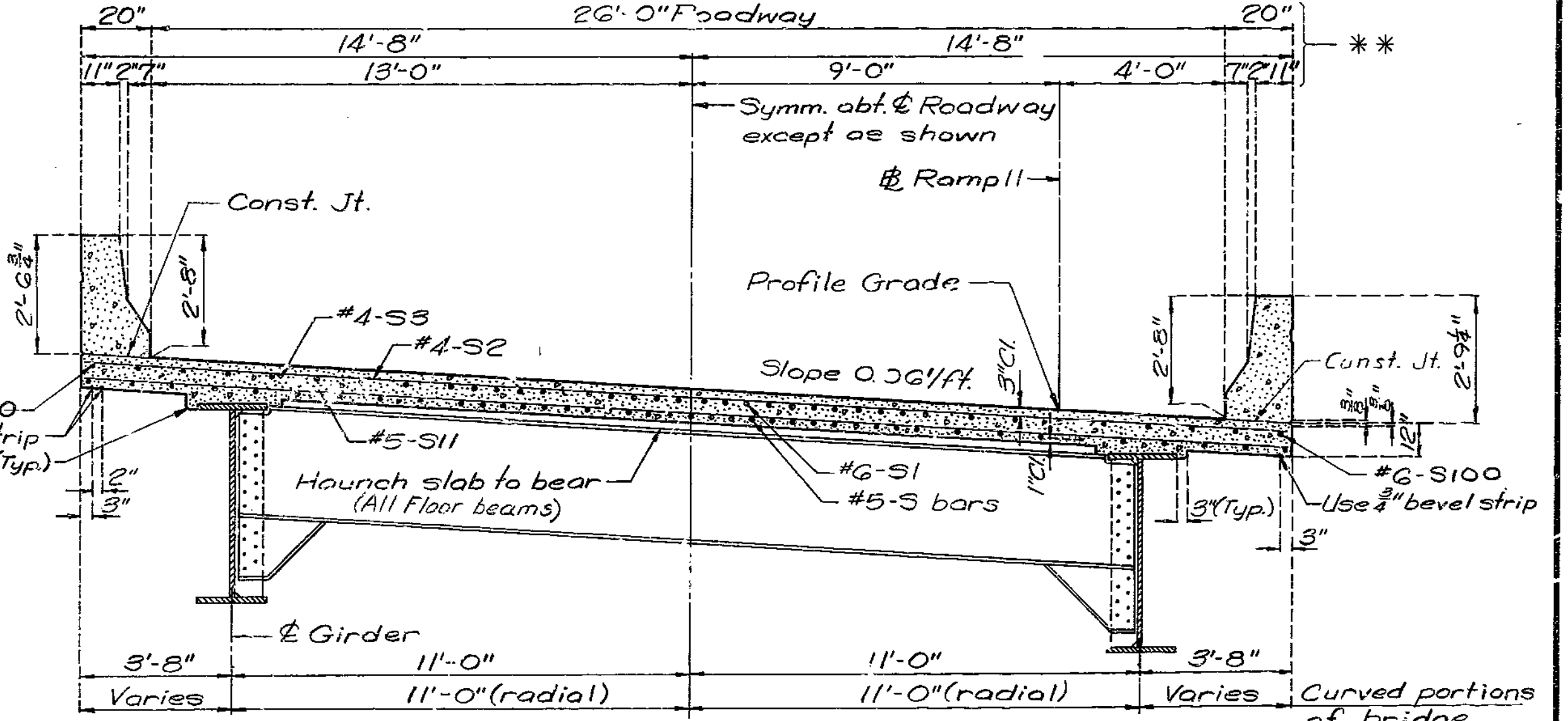
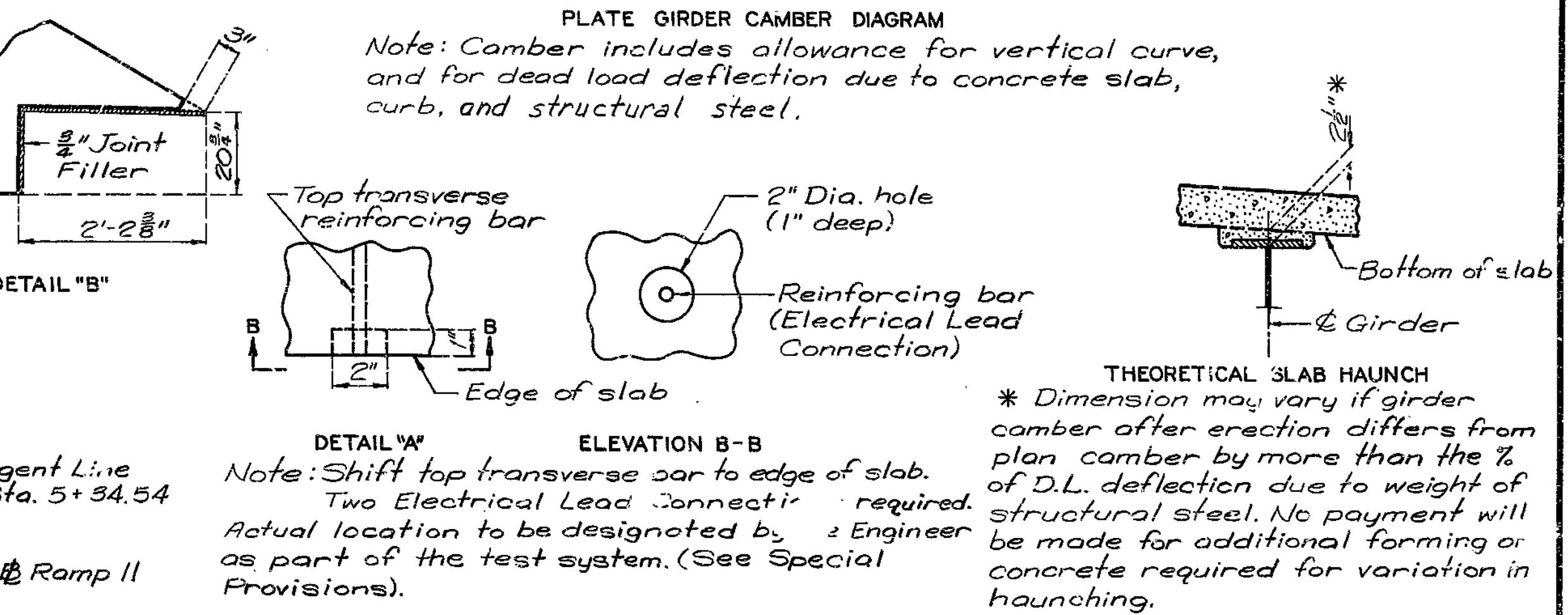
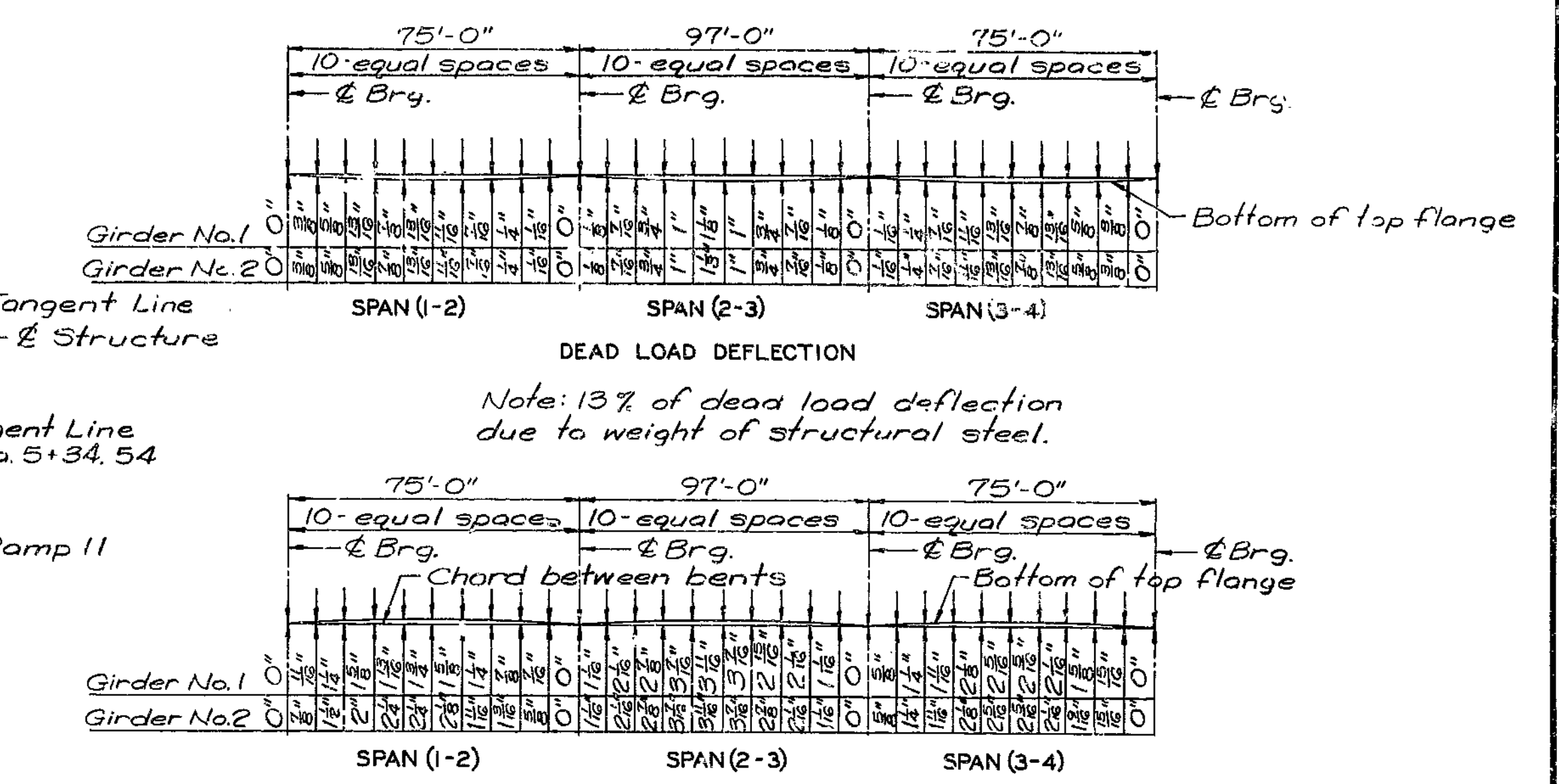
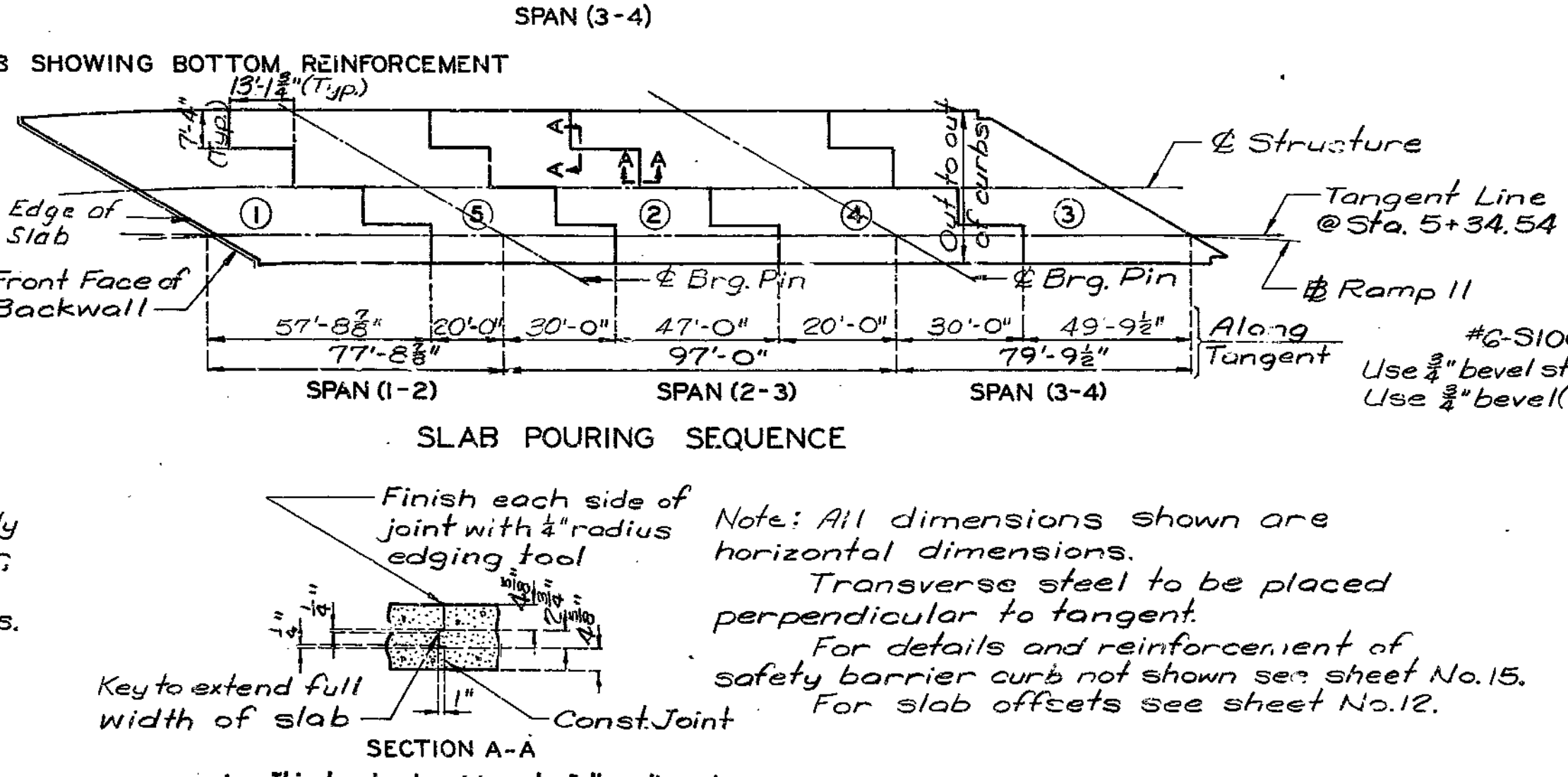
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		13	126	



266

Sequence of Pours	Min. Rate of Pour - Cu. Yds./hr.						
	W/Retarder						
Basic Sequence	1	2	3	4	5	25	25
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with section 703.3.12.4 of Missouri Standard Specifications.	Either Direction						
Alternate "A" Pours	1	5+2	4+3			32	53
Alternate "B" Pours	1+5+2	4+3	2 to End			32	53
Alternate "C" Pours	1+5+2+4+3					32	53

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



DETAILED FEB 1978  
CHECKED MAR 1979

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

SECTION THRU SLAB NEAR MID SPAN  
\*\* Radial dimensions in curved portions of bridge.

**TABLE OF DIMENSIONS**

LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP GAP AT 60°	"A" AT 60°						ANCHOR STUDS SIZE "G"
			"A"	"B"	"C"	"D"	"E"	"F"	
Bent No. 1	FEL-SPAN T305A	1 1/8"	9 5/8"	3 1/4"	1 3/8"	1 1/4"	1 1/2"	2 1/8"	50
	ON-FLEX 45	2"	11 1/2"	4 1/4"	1 3/8"	1 1/2"	2 3/8"	3 3/8"	65
	WABO-ELASTODAM 300(S)	1 3/4"	9 1/4"	3 1/4"	1 5/8"	1 1/4"	1 3/4"	2 3/4"	40

NOTE: All dimensions are at right angles. Expansion gap and dimension "A" shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature.

**GENERAL NOTES:**

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE NUTS ON THE ANCHOR STUDS SHALL BE TIGHTENED TO THE FOOT POUND. "C" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 4 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 4 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING.

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

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

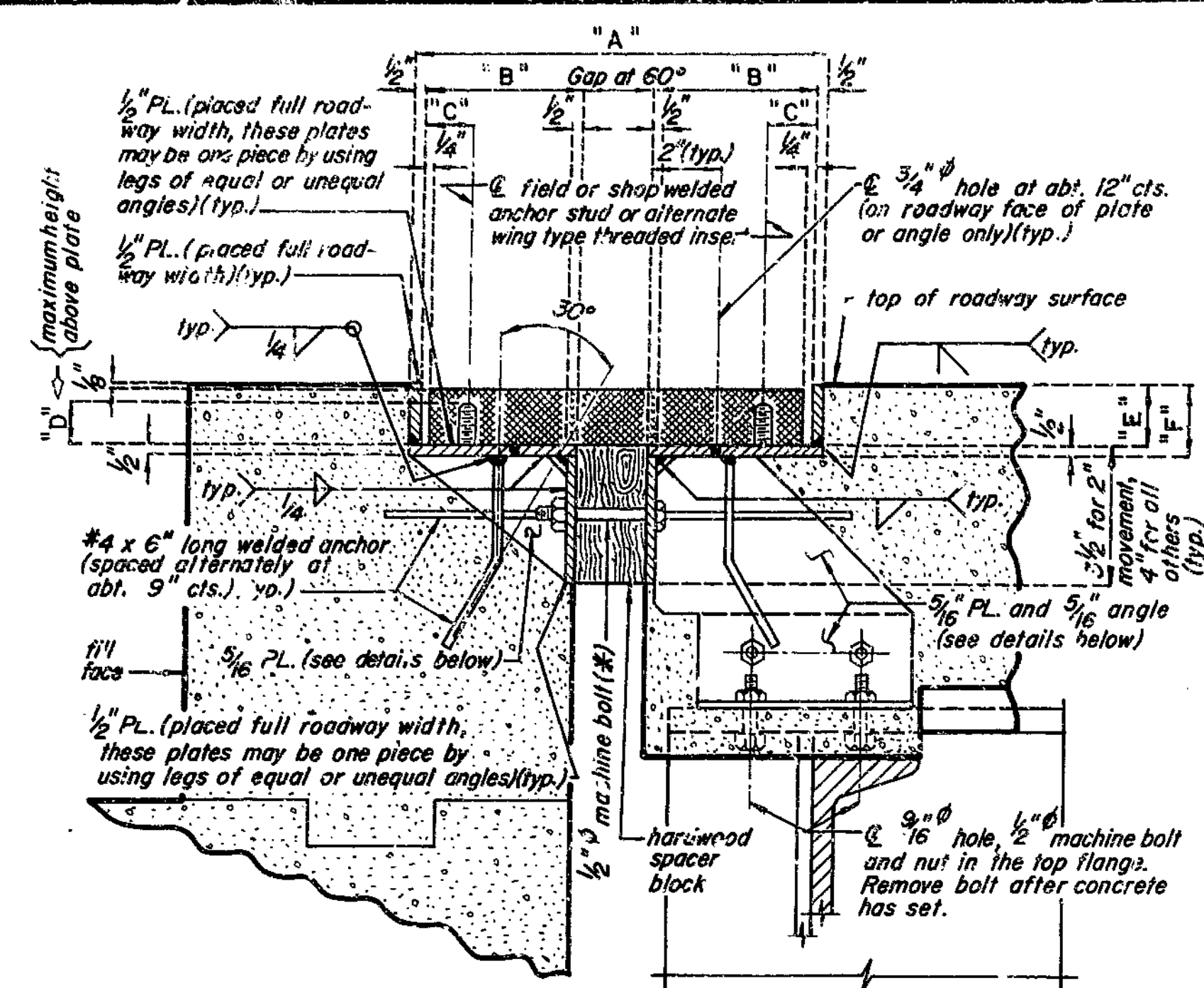
PLATES SHALL BE FIELD ADJUSTED BY ADDING OR REMOVING METAL SHIMS (2" x 3"), AS REQUIRED FOR TEMPERATURE CORRECTION. THE EXPANSION GAP SHALL BE ADJUSTED FOR ANY TEMPERATURE CORRECTION PRIOR TO POURING TOP OF END BENT BACKWALL.

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

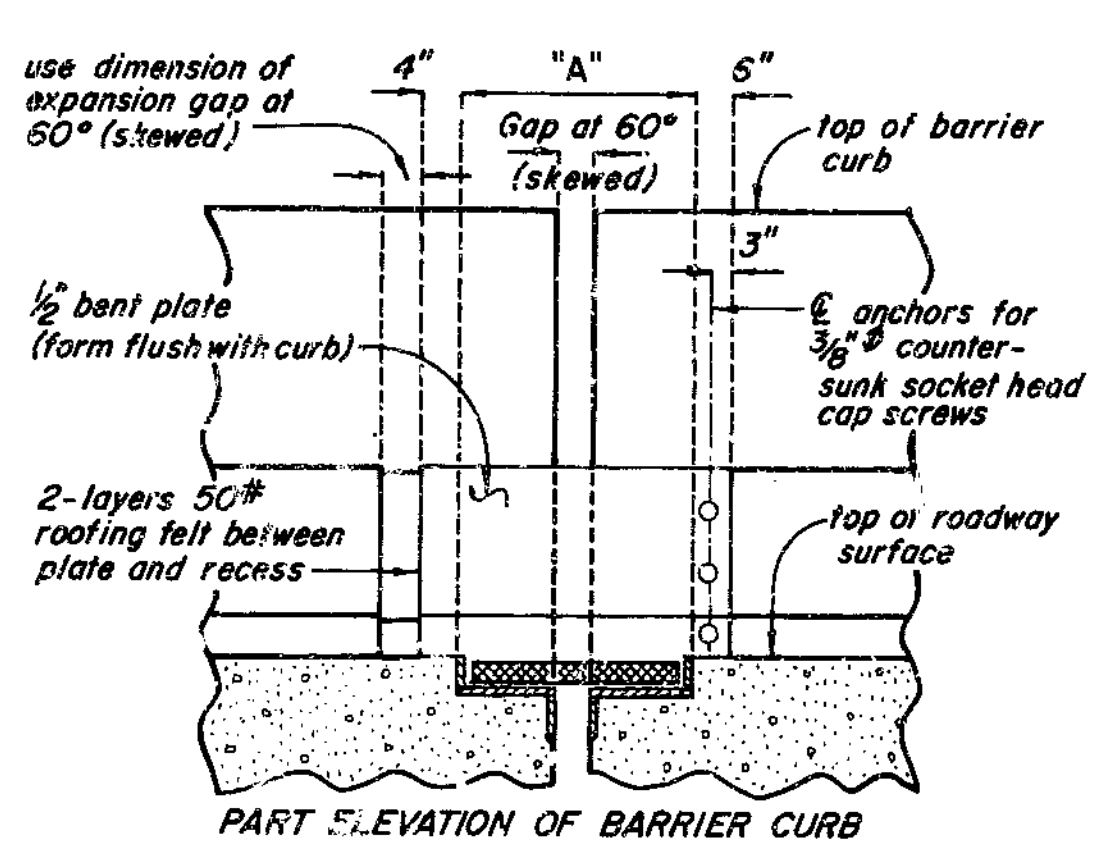
FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

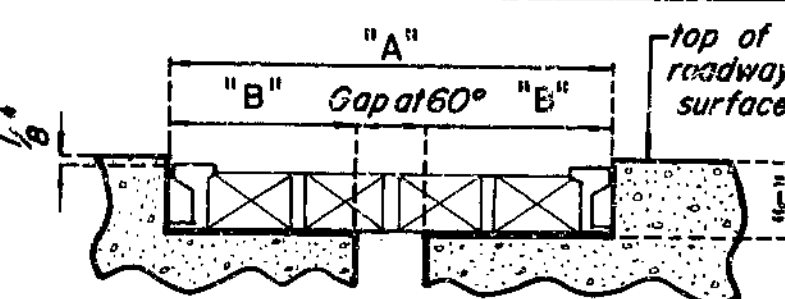
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	127	



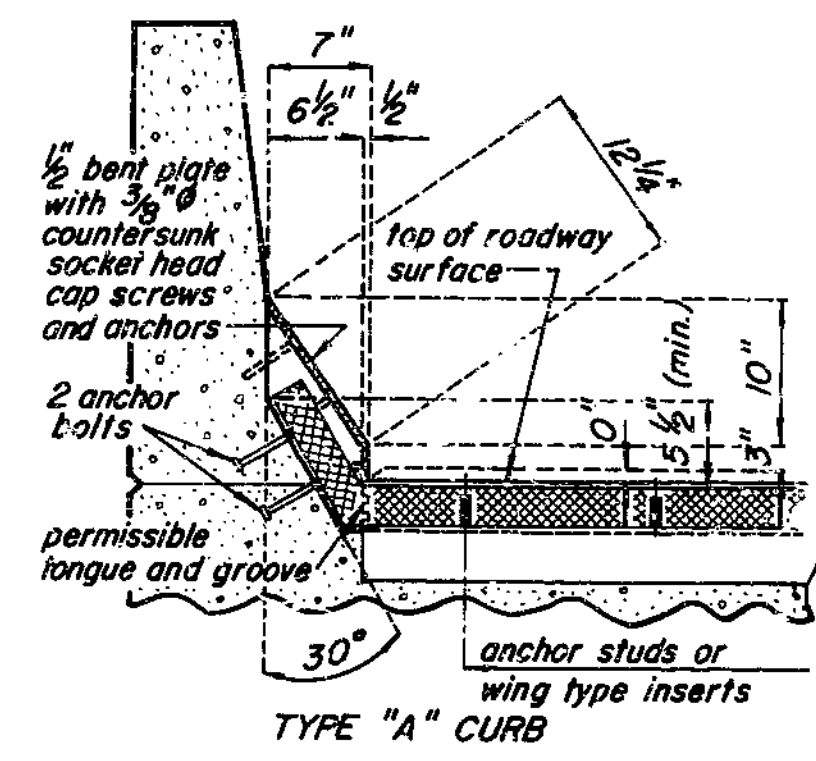
**PART SECTION THRU ARMORED JOINT**



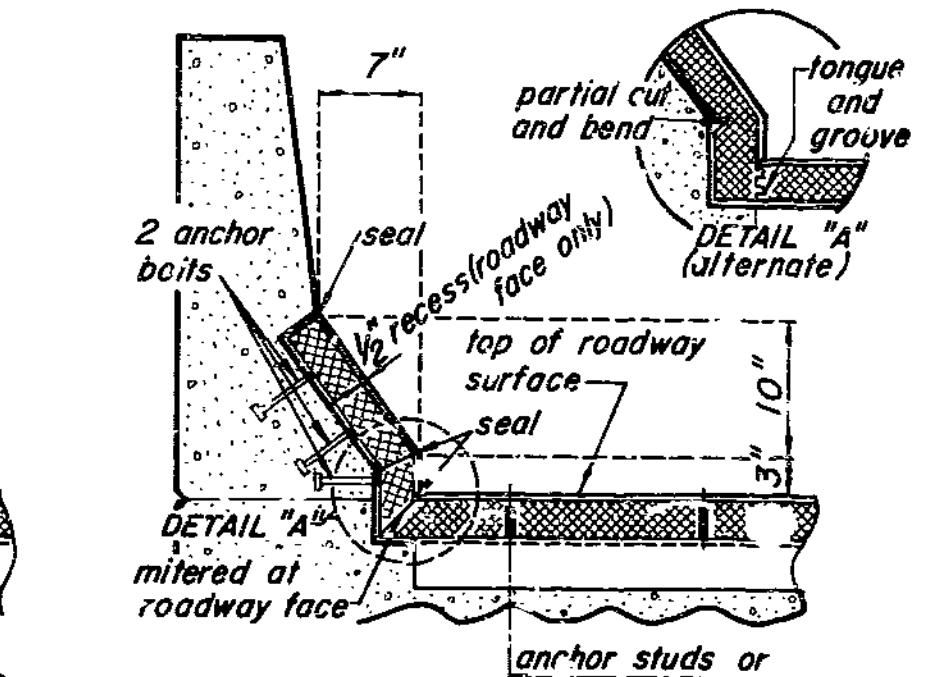
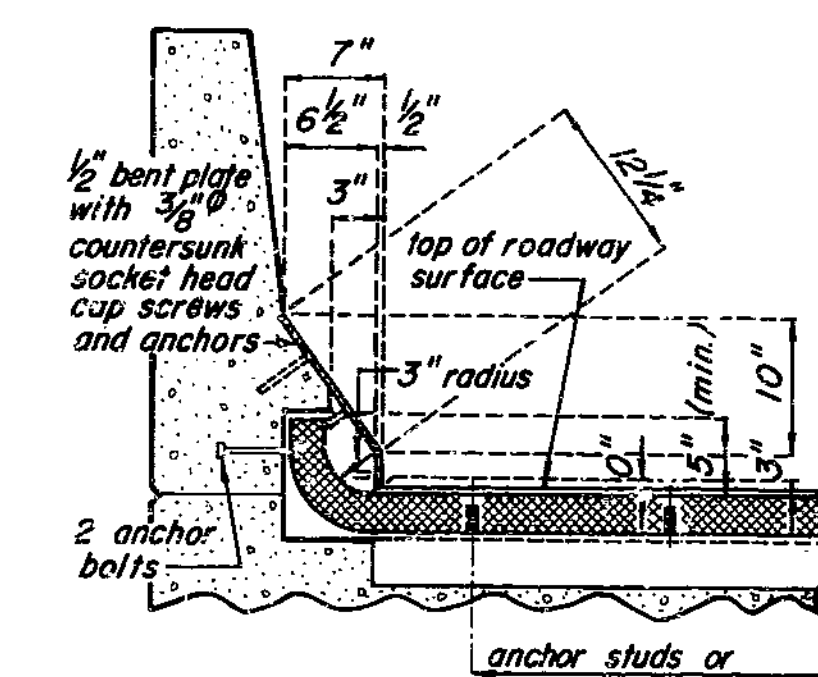
**PART ELEVATION OF BARRIER CURB**



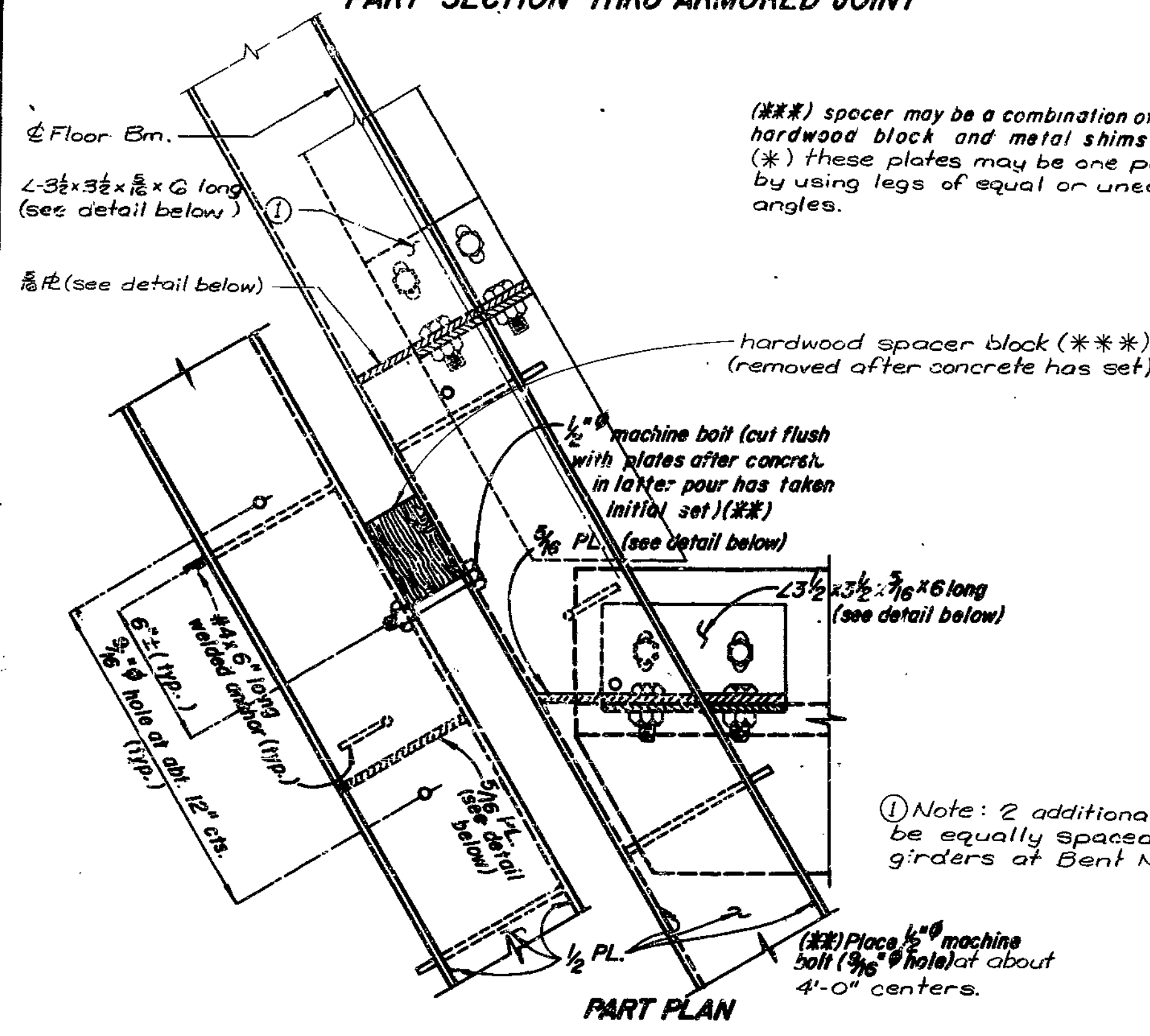
**BLOCKOUT FOR MODULAR UNITS**  
(When modular units are specified as an alternate, steel curb plate treatments are required)



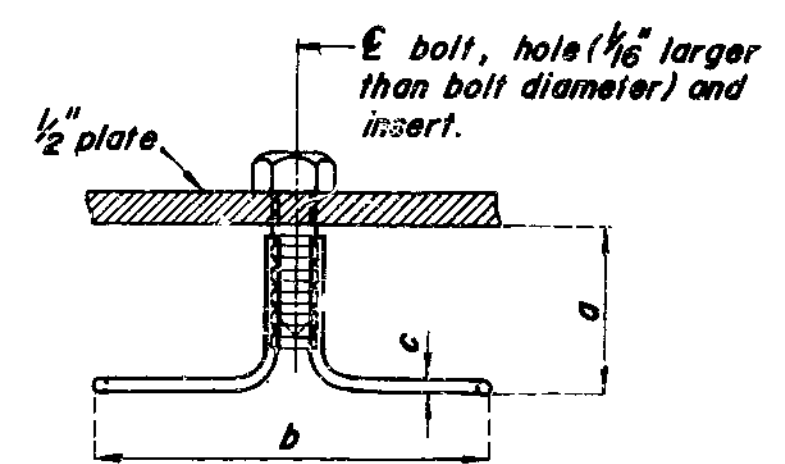
**TYPE "A" CURB**  
**ALTERNATE CURB TREATMENTS**



**TYPE "B" CURB**  
(maximum skew of 10°)  
**TYPE "C" CURB**



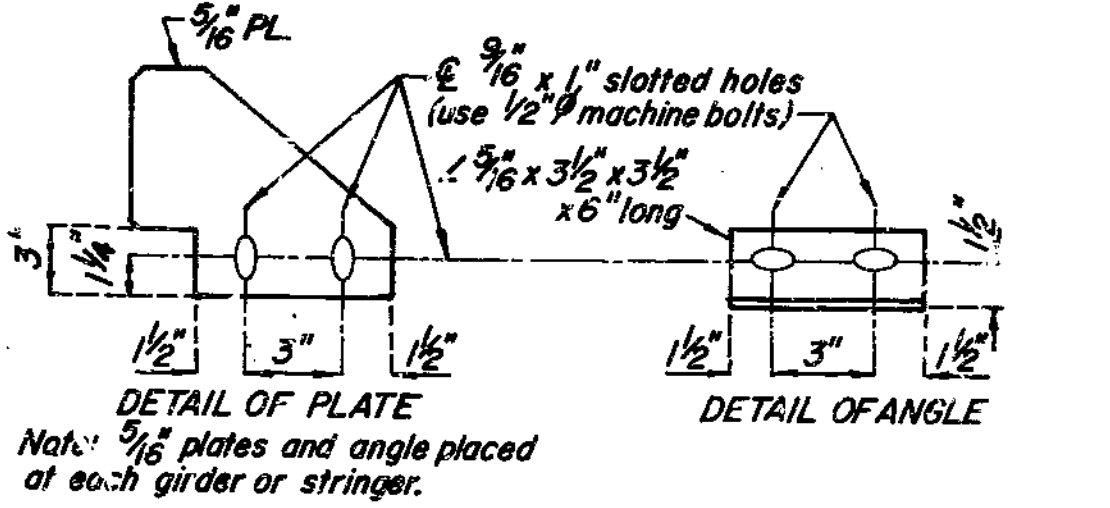
**PART PLAN**



Bolt Diameter	Safe Load Tension (lbs.) (min.)	Approx. Ult. Cap. Tension (lbs.) (min.)	Dimensions (min.)		
			t	b	c
1/2"	800	8,000	1-5/8"	5"	.218"
5/8"	1,500	9,200	1-5/8"	5"	.218"
3/4"	1,800	13,200	2-1/4"	6"	.262"
7/8"	2,000	16,200	2-1/2"	6-1/2"	.306"
1"	2,000	16,200	2-1/2"	6-1/2"	.306"

**DETAILS OF ALTERNATE WING TYPE THREADED INSERT**  
(Machine bolts need only be used to secure the Wing Type Threaded Inserts to the steel plate until the concrete has attained 3,000 p.s.i.)

**DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 1**



**DETAILS OF PLATE**  
Note: 5/16 plates and angle placed at each girder or stringer.

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

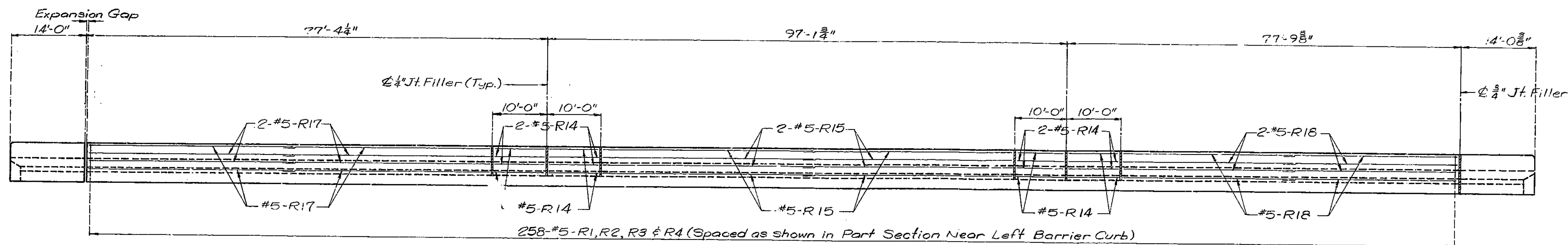
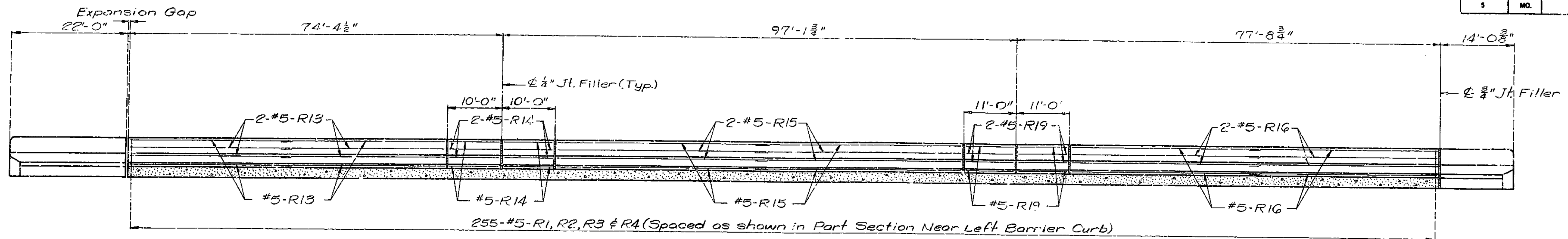
267

SPS - END BT. REVISED FEB. 1978 AUG. 1980

DETAILED JUNE 1978  
CHECKED MAR. 1979

Sheet No. 14 of 18.

FED. RD'D DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	123	

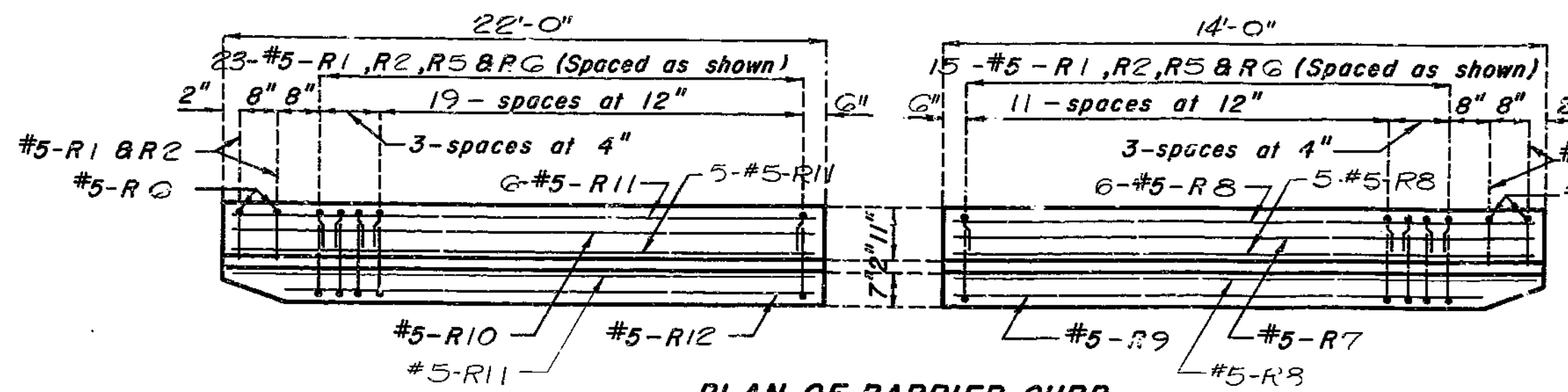
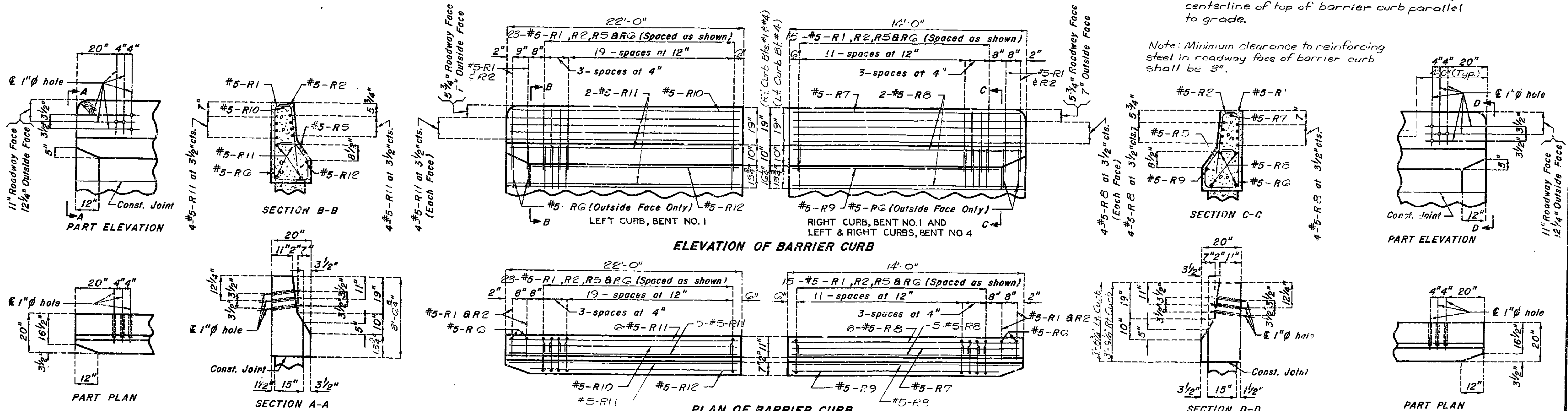


Note: For Part Section Near Left Barrier Curb see sheet No. 16.

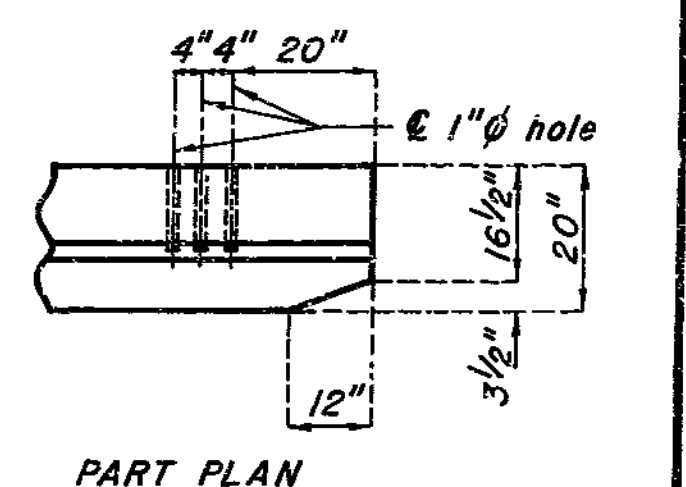
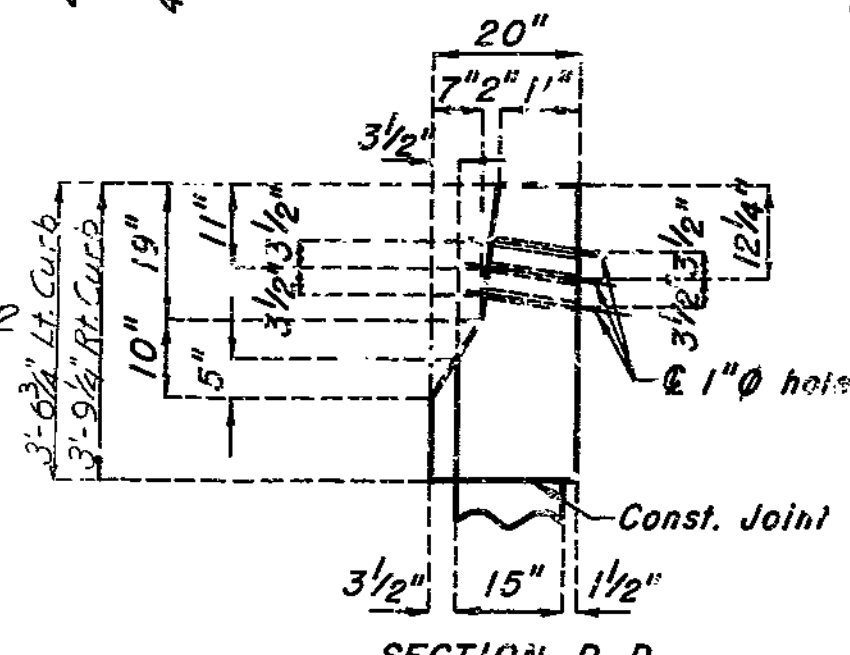
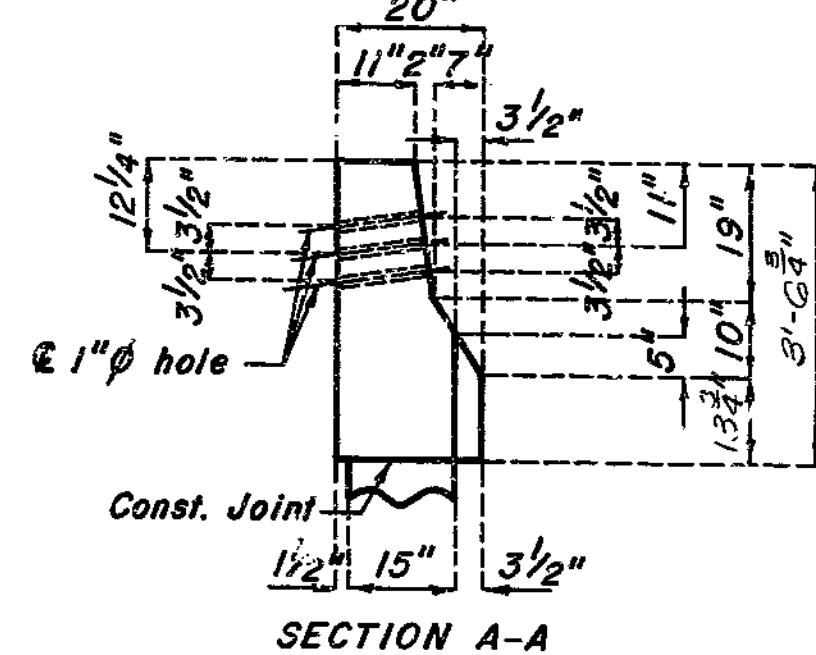
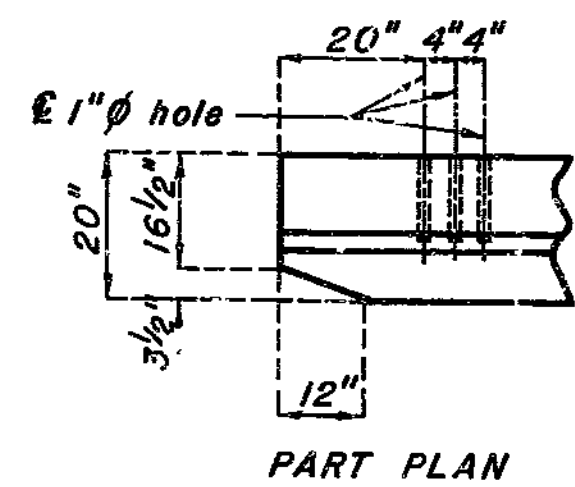
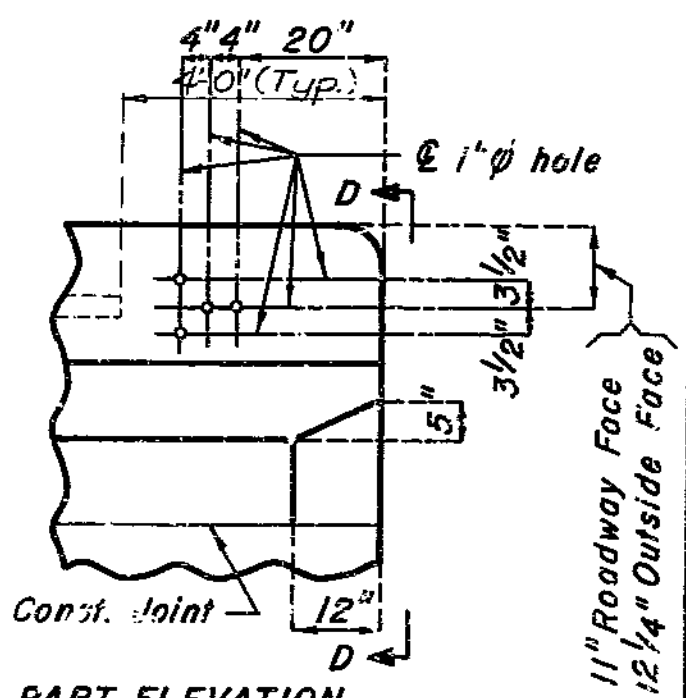
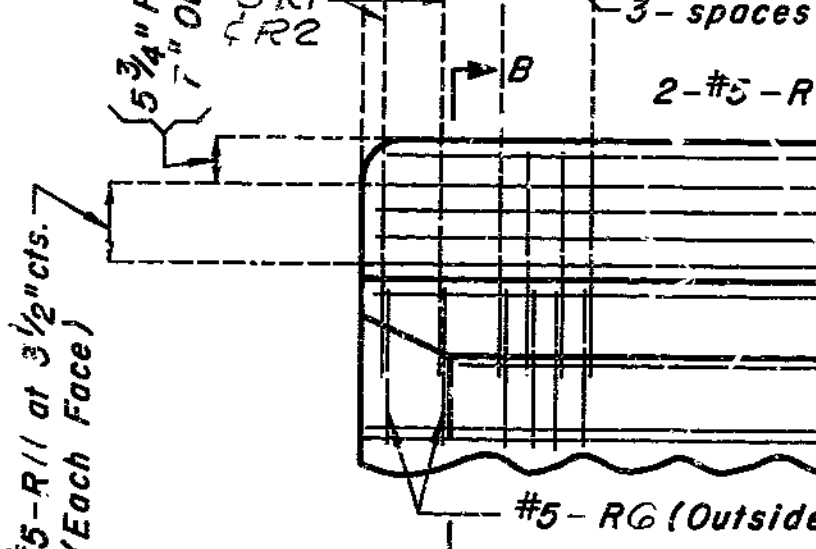
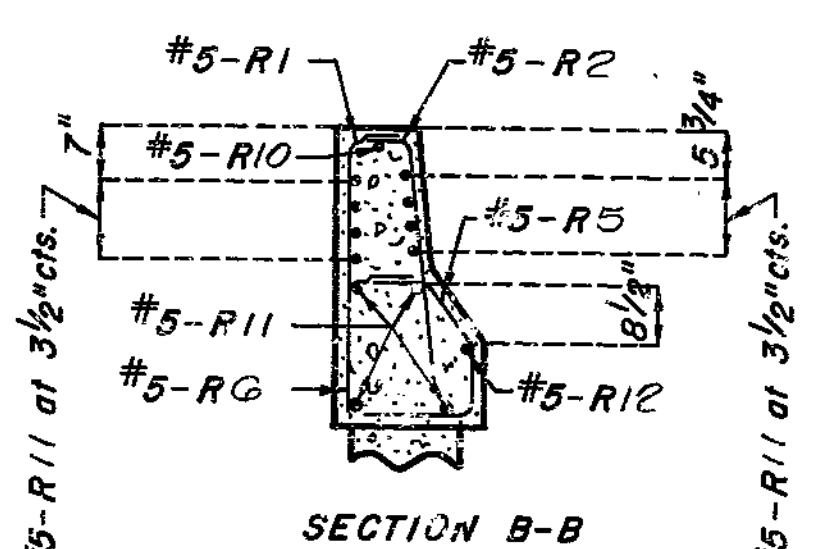
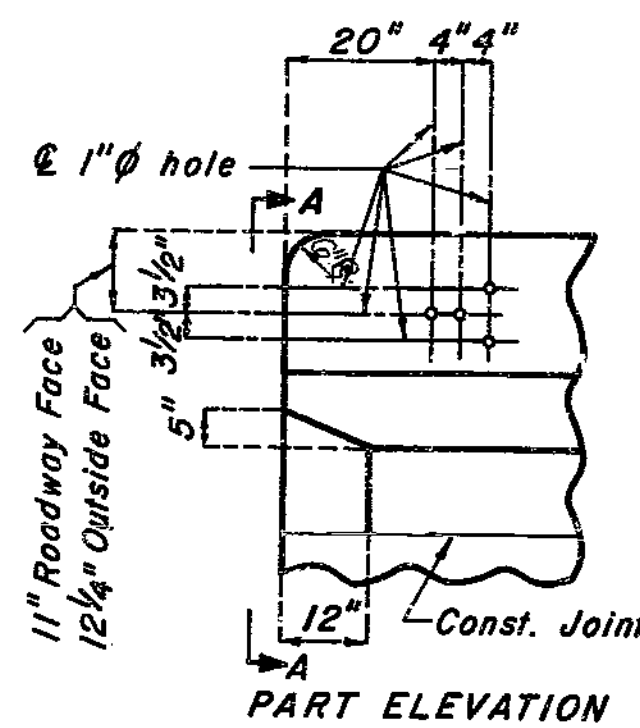
Note: Use a minimum lap of 17" for #5 horizontal barrier curb bars.

Note: Longitudinal dimensions are along centerline of top of barrier curb parallel to grade.

Note: Minimum clearance to reinforcing steel in roadway face of barrier curb shall be 3".



DETAILS OF BARRIER CURB AT END BENTS



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

Sheet No. 15 of 18.

CLAY COUNTY

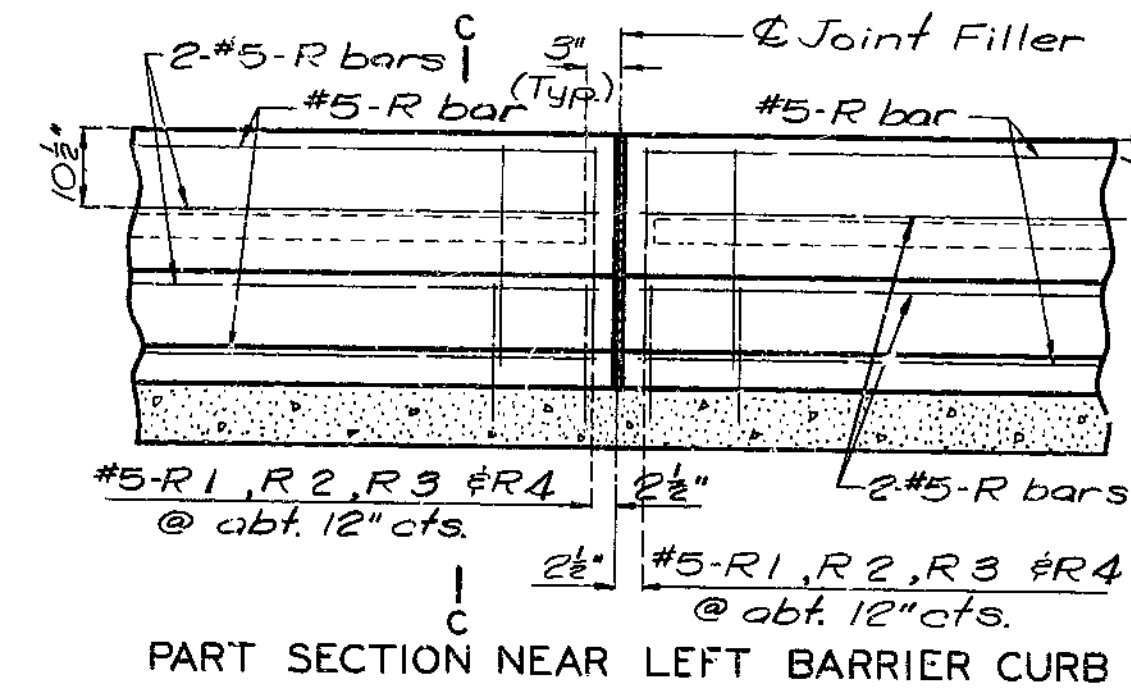
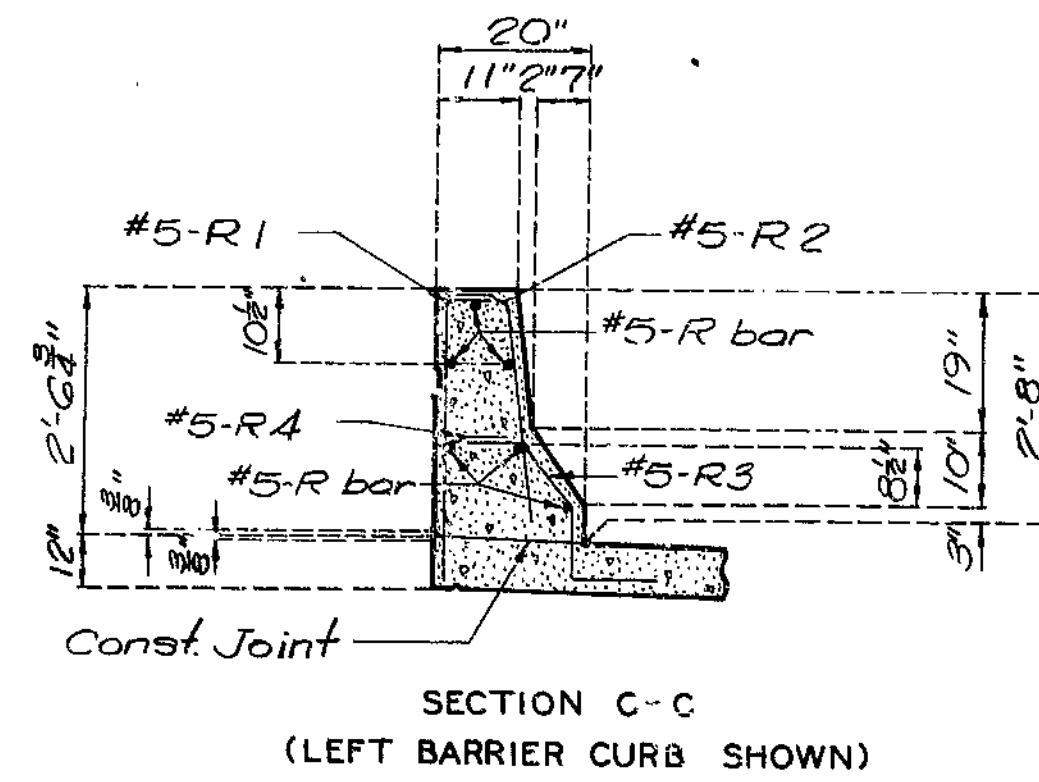
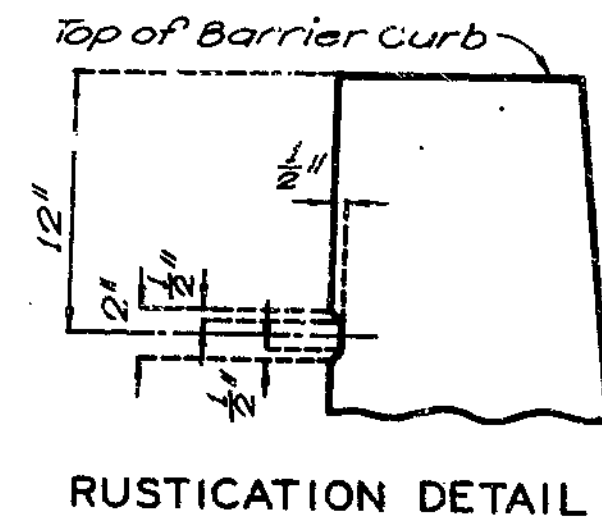
A-3386

268

STD. 1.7.3 REVISED  
NOV. 1974 MAR. 1978

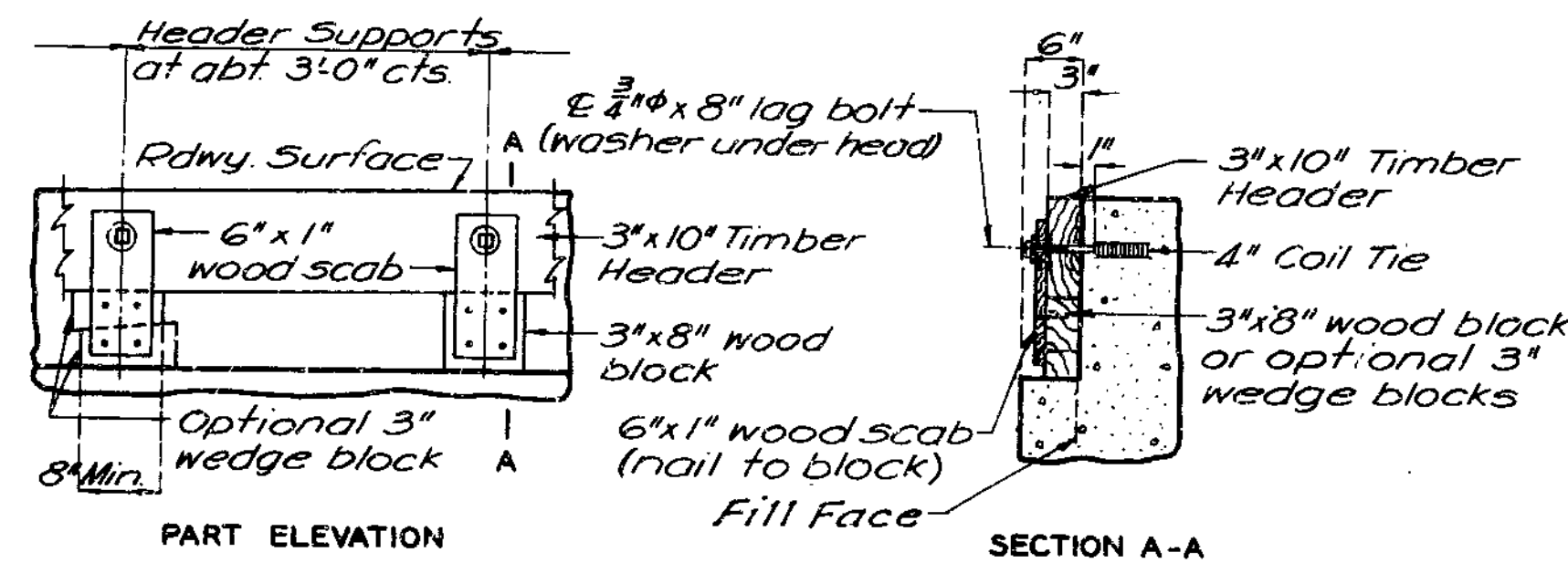
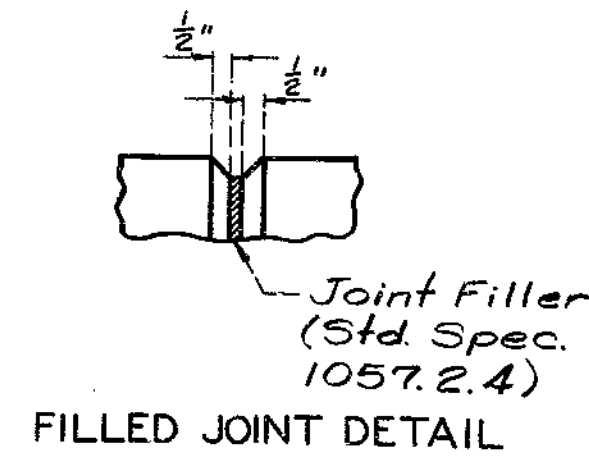
DETAILED JUNE 1978  
CHECKED MAR. 1979

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

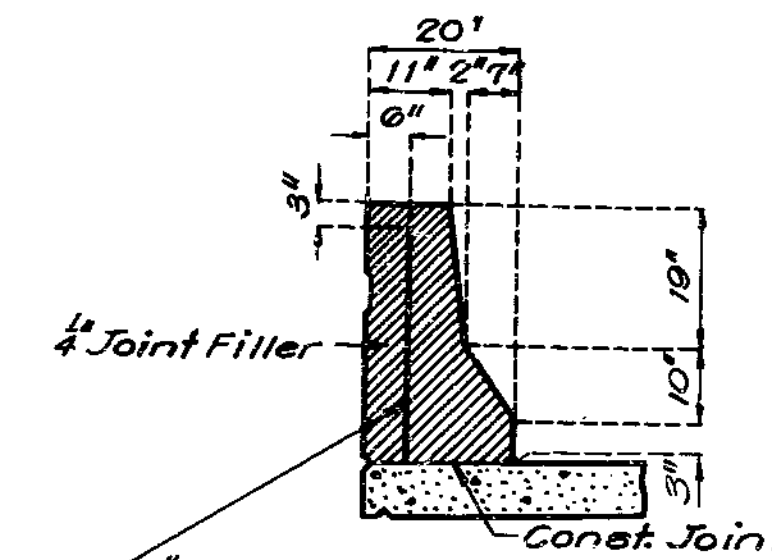


GENERAL BRIDGE RAIL NOTES:

TOP OF BARRIER CURB TO BE BUILT PARALLEL TO GRADE WITH BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE.  
ALL EXPOSED EDGES OF BARRIER CURB SHALL HAVE 1/2" RADIUS OR 3/8" BEVEL UNLESS OTHERWISE NOTED.



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



Note: Plastic waterstop shall be placed in all Right Safety Barrier Curb filled joints except at End Bents.  
Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

269

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

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT						
								B		C		D		E					F		H		K	
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.
3	6D1	FOOTING		E 17	X			6	1.000							6	9	6	9	30				
3	6D2	FOOTING		E 20	X			6	3.000							6	3	6	3	28				
6	6F1	BEAM		E 15	X			14.000	2 11.875	14.000	13.500	3.750	13.500	3.750	5	4	5	2	47					
6	6F2	BEAM		E 15	X			14.125	9 5.250	14.125	4.000	13.500	4.000	13.500	11	10	11	9	106					
2	6H3	BACKWALL		E 20	X			51	9.000						51	9	51	9	155					
20	6H4	BACKWALL		E 20	X			26	9.000						26	9	26	9	357					
8	6H5	BEAM		E 18	X			53	8.000						53	0	53	0	661					
2	6H5	BEAM		E 20	X			53	8.000						53	8	53	8	161					
4	6H7	WING		E 20	X			13	9.000						13	9	13	9	83					
10	6H8	WING		E 20	X	V	2	13	5.000						13	5	13	5						
6	6H9	WING		E 20	X			5	9.000						5	9	5	9	144					
10	6H10	WING		E 20	X	V	2	20	9.000						20	9	20	9	196					
10	6H11	WING		E 20	X			4	1.750						4	2	4	2	28					
2	6T1	WING		E 25	X			2	2.000	5.375	2	0.000	3	9.000	9	9.000	14	7	14	6	44			
2	6T2	MUDWALL		E 19	X			7	0.500	8	9.250					15	10	15	8	47				
2	6T3	WING		E 25	X			2	2.000	17	6.125	2	6.000	3	6.500	17	1.750	22	2	22	1	66		
1	6T4	MUDWALL		E 19	X			7	3.125	4	7.500					11	11	11	9	18				
1	6U5	BEAM		E 13	X			19.000	2	9.250	2	4.000	2	8.000		10	6	10	0	15				
3	6U6	BEAM		E 13	X	V	1	2	5.000	2	9.250	3	2.000	2	8.000		12	2	11	8				
47	6U7	BEAM		E 13	X			3	10.000	2	9.250	4	7.000	2	9.000		14	4	13	10	57			
4	6U8	BEAM		E 13	X			3	8.000	3	0.000	3	8.000	3	0.000		15	0	14	6	1024			
5	6U9	BEAM		E 10	X			6.000	3	10.000					4	10	4	8	16					
11	6U10	BEAM		E 10	X			23.500	2	8.000					6	7	6	3	103					
5	7U11	BEAM		E 11	X			10.375	2	7.500	7	0.000			20	6	20	1	205					
10	6U12	BEAM		E 10	X			23.500	3	0.875					7	0	6	8	100					
5	7U13	BEAM		E 10	X			6	8.000	2	7.500				16	0	15	7	159					
49	5U14	BACKWALL		E 10	X			21.000	9.000					4	3	4	1	209						
6	7U15	FOOTING		E 10	X			3	10.000	2	3.000				9	11	9	7	118					
5	4U16	MUDWALL		E 10	X			8	3.250	6.000					17	1	16	11	57					
65	6V5	BACKWALL		E 20	X			8	2.000						8	2	8	2	797					
49	5V6	BACKWALL		E 20	X			8	0.000						8	0	8	0	409					
2	6V7	BEAM		E 20	X			2	9.000						2	9	2	9	8					
2	6V8	BEAM		E 20	X			3	0.875						3	1	3	1	9					
10	6V9	WING		E 17	X	V	1	2	6.000						3	2	3	2						
10	6V10	WING		E 20	X	V	1	2	8.000						2	8	2	8	76					
4	6V11	WING		E 17	X			8	2.500						6	6	6	6	69					
4	6V12	WING		E 20	X			8	4.500						8	11	8	11	54					
10	4V13	MUDWALL		E 20	X			6	9.000						6	9	6	9	45					
12	6V14	WING		E 17	X	V	1	3	11.000						4	7	4	7						
12	6V15	WING		E 20	X	V	1	4	1.000						7	2	7	2	106					
4	6V16	WING		E 17	X	V	1	2	4.000						4	1	4	1						
4	6V17	WING		E 20	X	V	1	2	6.000						3	10	3	10	21					
4	6V18	WING		E 17	X			3	4.000						2	6	2	6	97					
4	6V19	WING		E 20	X			8	4.000						3	4	3	4	18					
4	6V19	WING		E 20	X			8	6.000						9	0	9	0	54					
								8	6	8	6	51			9	6	8	6	51					

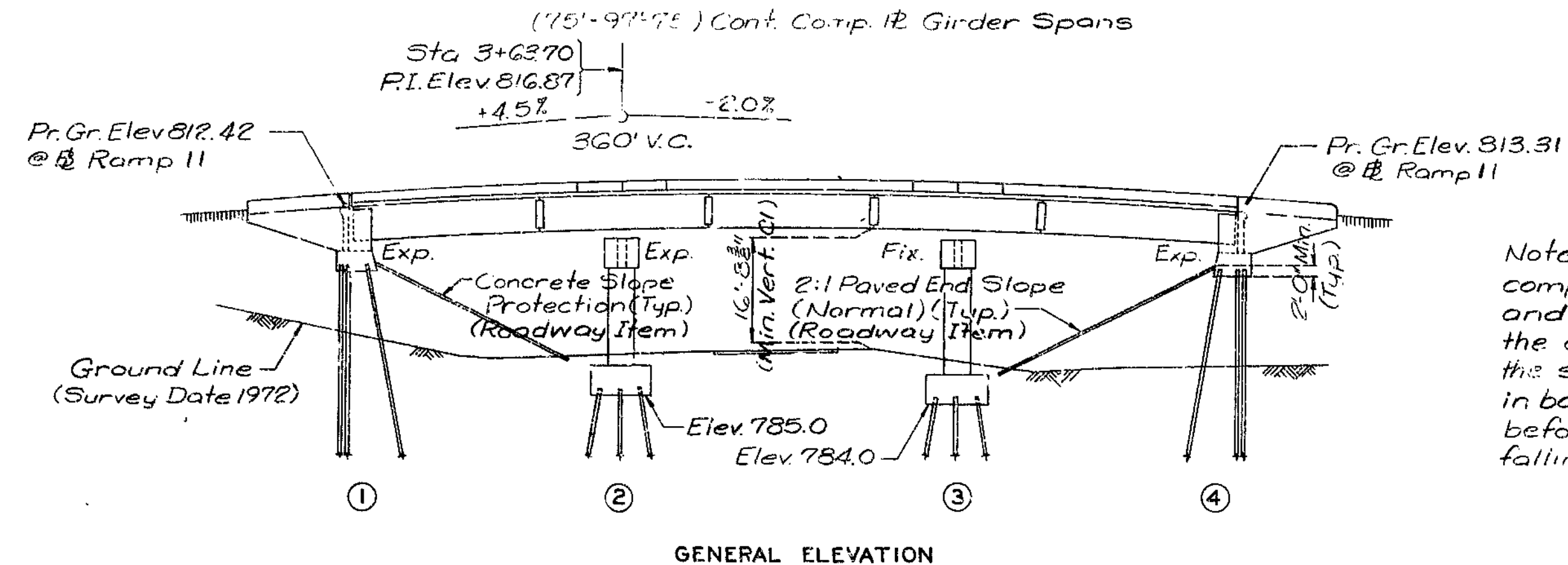
COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT						
								B		C		D		E					F		H		K	
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.
2	4V20	MUDWALL		E 20	X			6	10.500							6	11	6	11	9				
4	2W1	A B WELLS		E 22	X			15.000	9.125							23	0	23	0	15				
4	6D3	FOOTING		E 10	X			3	6.000	8	0.000					15	0	14	8	88				
12	8D4	FOOTING		E 20	X			8	9.000							8	9	8	9	280				
12	5D5	FOOTING		E 20	X			5	9.000							5	9	5	9	72				
18	11D6	COLUMN		E 17	X			6	9.000							8	4	8	4	797				
12	8H1	BEAM		E 20	X			46	0.000							46	0	46	0	1473				
6	6H2	BEAM		E 20	X			43	8.000							43	8	43	8	394				
30	4P1	COLUMN		E 16	X			3	3.000							11	1	11	1	222				
8	6P2	COLUMN		E 16	X			4	1.750							14	4	14	4	172				
41	4U1	BEAM		E 13	X			15.000	3	9.000	15.000	3	9.000			10	9	10	6	288				
6	4U2	COLUMN		E 10	X			12.000	2	7.625						4	8	4	6	18				
8	5U3	COLUMN		E 10	X			3	10.000	3	5.250					11	1	10	11	91				
8	5U4	COLUMN		E 10	X			3	10.000	4	2.125					11	10	11	8	97				
9	11V1	COLUMN		E 20	X			18	2.000							18	2	18	2	869				
9	11V2	COLUMN		E 20	X			17	6.000							17	6	17	6	837				
4	2W1	A B WELLS		E 22	X			15.000	9.125							23	0	23	0	15				
		INT. BT. NO3																						
4	6D3	FOOTING		E 10	X			3	6.000	8	0.000					15	0	14	8	88				
14	8D4	FOOTING		E 20	X			8	9.000							8	9	8	9	327				
12	5D5	FOOTING		E 20	X			5	9.000							5	9	5	9	72				
18	11D6	COLUMN		E 17	X			6	9.000							8	4	8	4	797				
12	8H1	BEAM		E 20	X			46	0.000							46	0	46	0	1473				
6	6H2	BEAM		E 20	X			43	8.000							43	8	43	8	394				
35	4P1	COLUMN		E 16	X			3	3.000							11	1	11	1	259				
8	6P2	COLUMN		E 16	X			4	1.750							14	4	14	4	172				
41	4U1	BEAM		E 13	X			15.000	3	9.000	15.000	3	9.000			10	9	10	6	288				
6	4U2	COLUMN		E 10	X			12.000	2	7.625						4	8	4	6	18				
8	5U3	COLUMN		E 10	X			3	10.000	3														



MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		89	114	
SEC./SUR. 27 TWP. 51N RGE. 22W					



Note: Compacted 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 this structure and for not less than 25' in back of the fill face of the end bents before piles were driven for any bents falling within the embankment section.

Note: A minimum vertical clearance of 14'-0" from crown of existing ramps G & 10 and a minimum lateral clearance of 16'-0" centered on existing lanes were maintained for traffic during construction.

GENERAL NOTES:  
Design Specifications: A.A.S.H.T.O. - 1973-Load Factor Design  
Design Loading:  
HS20-44 Modified 24,000# Tandem Axle - 15#/sq. ft. Future Wear-in; Surface Earth 120#, Equivalent Fluid Pressure 30#  
Fatigue Stress - Case II - Interim 1974

FINAL PLAN

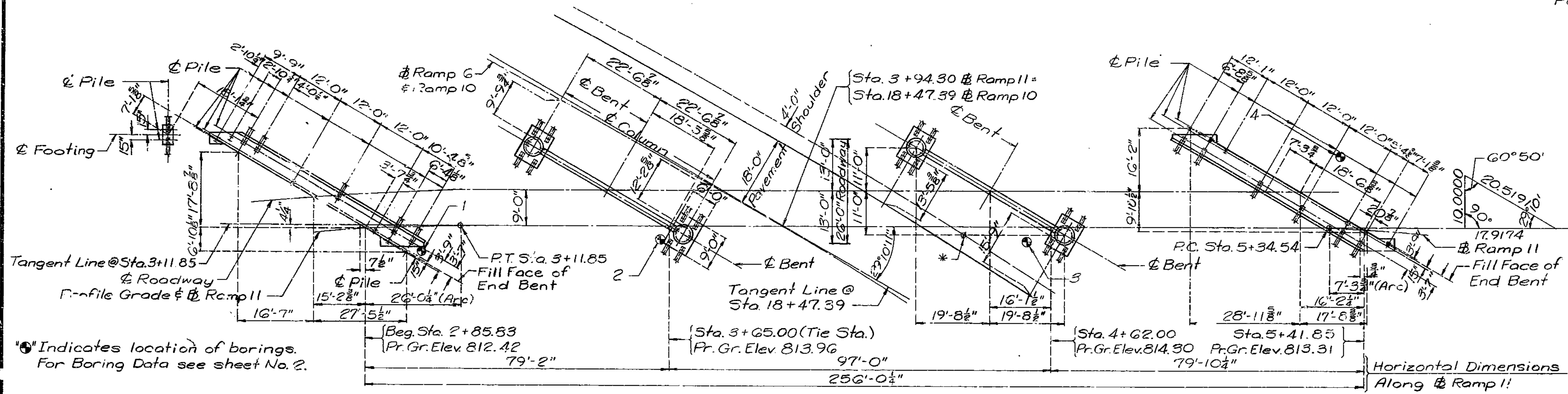
Design Unit Stresses:  
Class B Concrete (Substructure)  $f_c = 3000$  psi  
Class B2 Concrete (Superstructure)  $f_c = 4000$  psi  
Reinforcing Steel (Grade 60) (Substructure)  $f_y = 40,000$  psi  
Reinforcing Steel (Grade 60) (Superstructure)  $f_y = 60,000$  psi  
Structural Carbon Steel  $f_y = 36,000$  psi  
Structural Steel (ASTM A-572) (Grade 50)  $f_y = 50,000$  psi  
Steel Pile  $f_b = 9,000$  psi

Fabricated Steel:  
Field connections, High Strength Bolts  $\frac{3}{4}" \phi$ , holes  $\frac{13}{16}" \phi$  except as noted.

Reinforcing Steel:  
Minimum clearance to reinforcing steel  $1\frac{1}{2}"$  unless otherwise shown or noted.  
All reinforcing bars in top of substructure beams or caps were spaced to clear anchor bolts by at least  $\frac{1}{2}"$ .

Paint:  
System B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat for System B is aluminum.

This structure contains non-redundant Fracture Critical Members (F.C.M.). See Special Provisions for F.C.M. requirements



ESTIMATED QUANTITIES				
ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation	Cu. Yd.	244.0		244.0
Structural Steel Pile (10")	Lin. Ft.	1321		1321
Class B Concrete	Cu. Yd.	180.4		180.4
Class B2 Concrete	Cu. Yd.		352.6	352.6
Elastomeric Exp Joint Seal (30 in.)	Lin. Ft.		50	50
Reinforcing Steel (Grade 60)	Lbs.	22,870	23,460	46,330
Reinforcing Steel (Epoxy Coated)	Lbs.	1,380	30,720	32,100
Fabricated Structural Carbon Steel	Lbs.		132,450	132,450
Fabricated Structural Low Alloy Steel	Lbs.		36,770	36,770
Painting (System B) Aluminum	Ton		84.2	84.2

Note: All concrete and reinforcement in Safety Barrier Curbs is included in superstructure quantities.

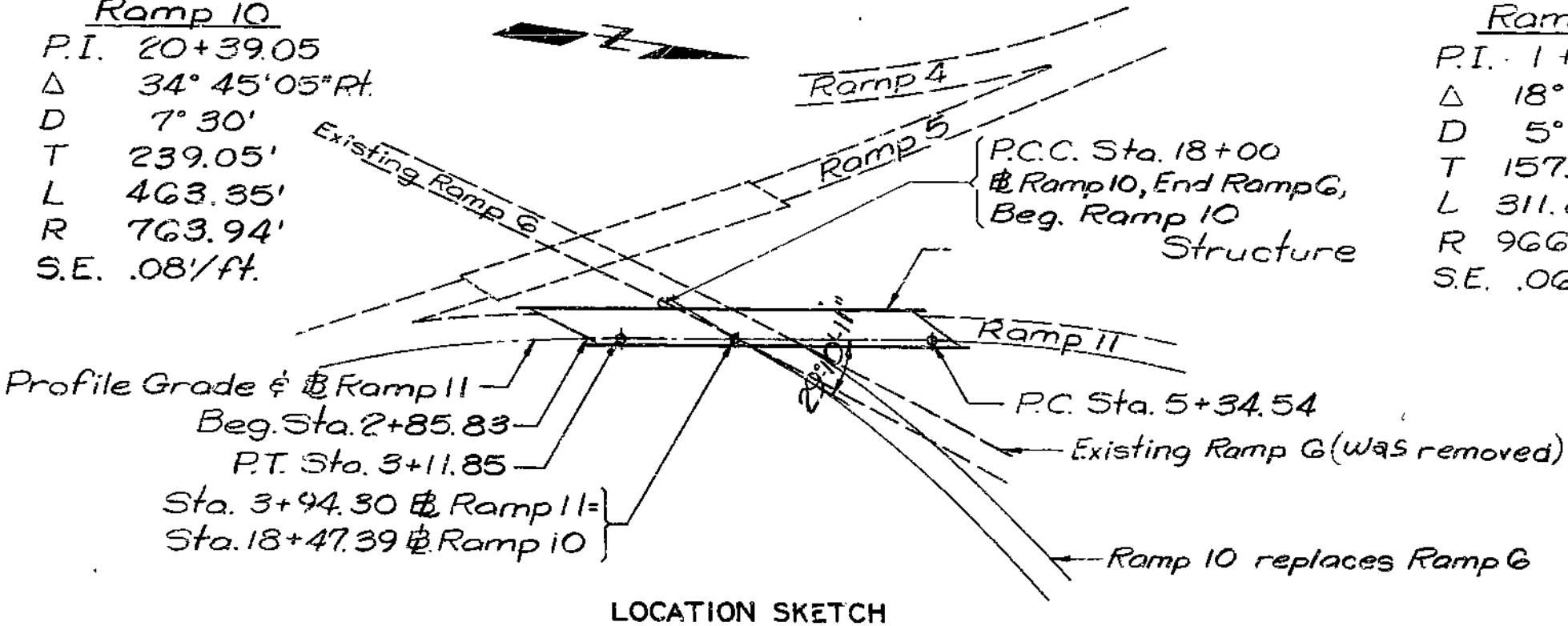
B.M.  $\square$  on S.E. wing of Abut. #1  
Elev. 814.81

BRIDGE: RAMP 11 OVER RAMP 10  
STATE ROAD FROM RTE. I-35 TO RTE. 210  
AT RTE. 69 & I-435 INTERCHANGE  
PROJECT NO. I-435-1(163) STA. 2+85.83 (RAMP 11)  
JOB NO. 4-I-435-49H RTE. I-435

Ramp 11  
P.I. 7+79.16  
 $\Delta$  33° 16' 45" Rt.  
D 7° 00'  
T 244.62'  
L 475.42'  
R 818.51'  
S.E. .061/ft.

Ramp 10  
P.I. 20+39.05  
 $\Delta$  34° 45' 05" Rt.  
D 7° 30'  
T 239.05'  
L 463.35'  
R 763.94'  
S.E. .081/ft.

Ramp 11  
P.I. 1+57.29  
 $\Delta$  18° 28' 40" Rt.  
D 5° 57' 26"  
T 157.29'  
L 311.85'  
R 966.99'  
S.E. .061/ft.



PILE DATA	BENT NUMBER			
	1	2	3	4
Pile Type and Size	HPI0x42	HPI0x42	HPI0x42	HPI0x42
Number	12	12	12	10
Approximate Length	16	16	18	40
Design Bearing	56	42	47	56
Hammer Energy required Ft.Lbs.	13,800	9,900	11,100	13,800

Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
All pile were driven to practical refusal.  
\*\* 33'-0" beam pile, 36'-0" wing pile.

DESIGNED JUNE 1977  
DETAILED JUNE 1978  
CHECKED March 1979

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

Sheet No. 1A of 1B

DATE March 16, 1981

STD. 611.60
STD. 706.35
A-3386

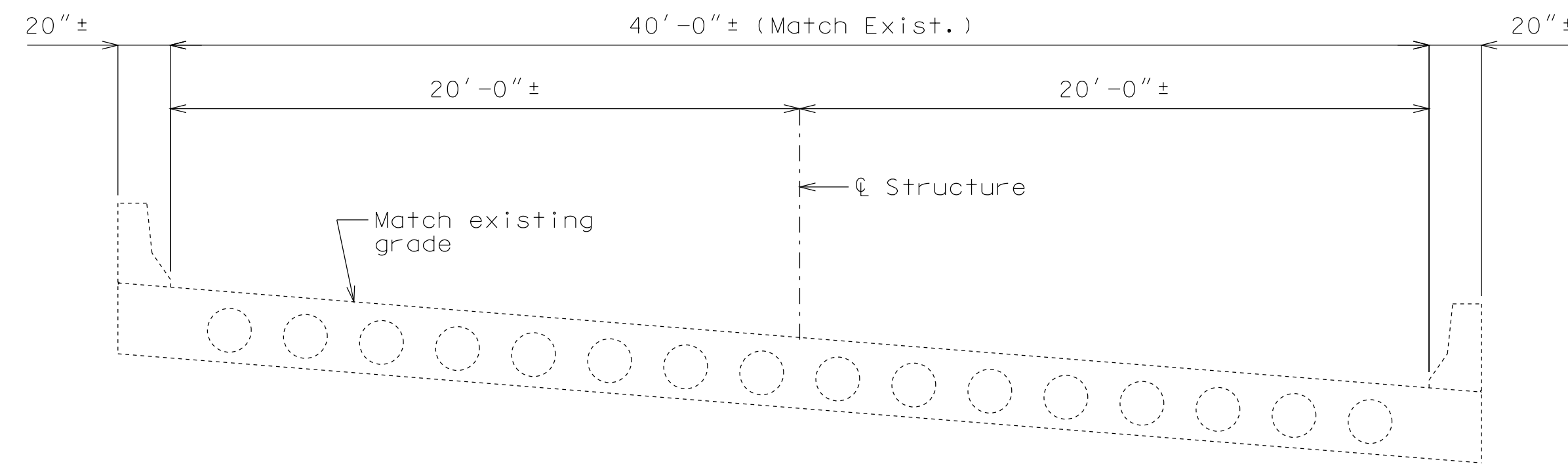
272

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

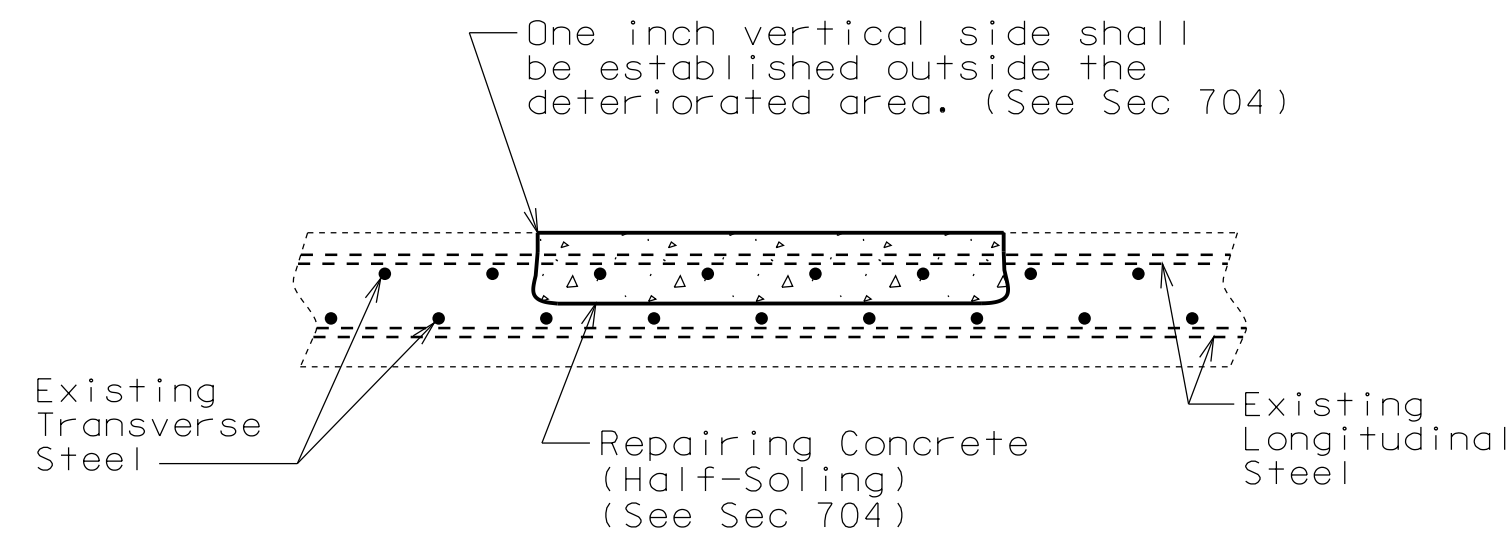
U.I.P. Existing (32'-62'-62'-62'-53')  
Continuous Concrete Voids Slab Spans

SEC/SUR 22 TWP 51N RGE 32W

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."



SECTION THRU EXISTING SLAB



DETAIL SHOWING APPROACH SLAB REPAIR AT END BENT NO. 6 (HALF-SOLING)

Note:  
The contractor shall repair the approach slab in accordance with "Repairing Concrete Deck (Half-Soling)", see Sec 704.

General Notes:

Design Specifications:  
2002 - AASHTO 17th Edition  
Load Factor Design  
Bridge Deck Rating = 7

Traffic Control:  
Traffic over structure to be maintained during construction. See Roadway plans for traffic control.

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

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

Estimated Quantities		
Item	Unit	Total
Repairing Concrete Deck (Half-Soling)	sq. foot	200

REPAIRS TO BRIDGE: RAMP 8 (I-435 S TO RTE 69 & I-35 S) OVER BIG SHOAL CREEK

STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

STA. 5+13.41± (Ramp 8) (Match Existing) STD. 706.35

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.

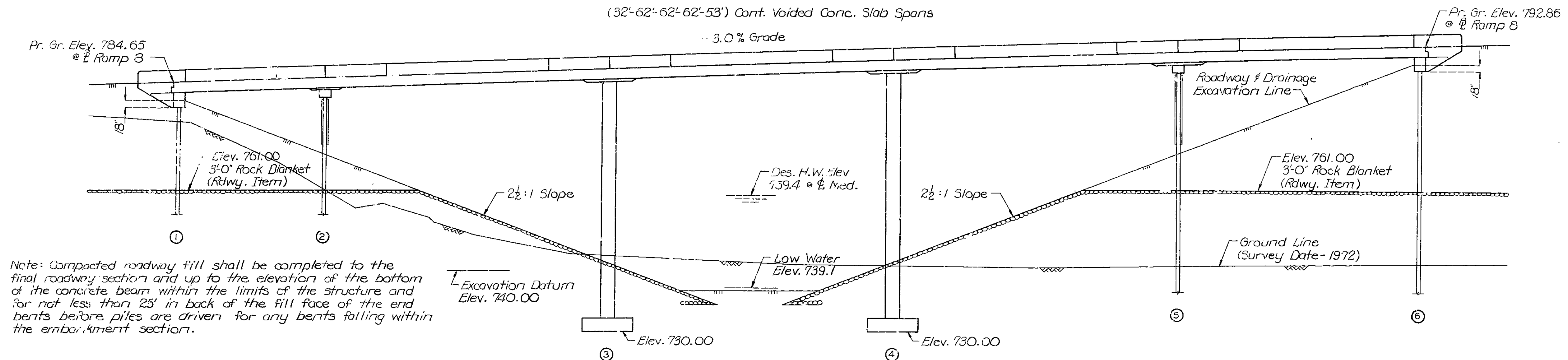


MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		15	138	

(32'-62'-62'-62'-53') Cont. Voided Conc. Slab Spans

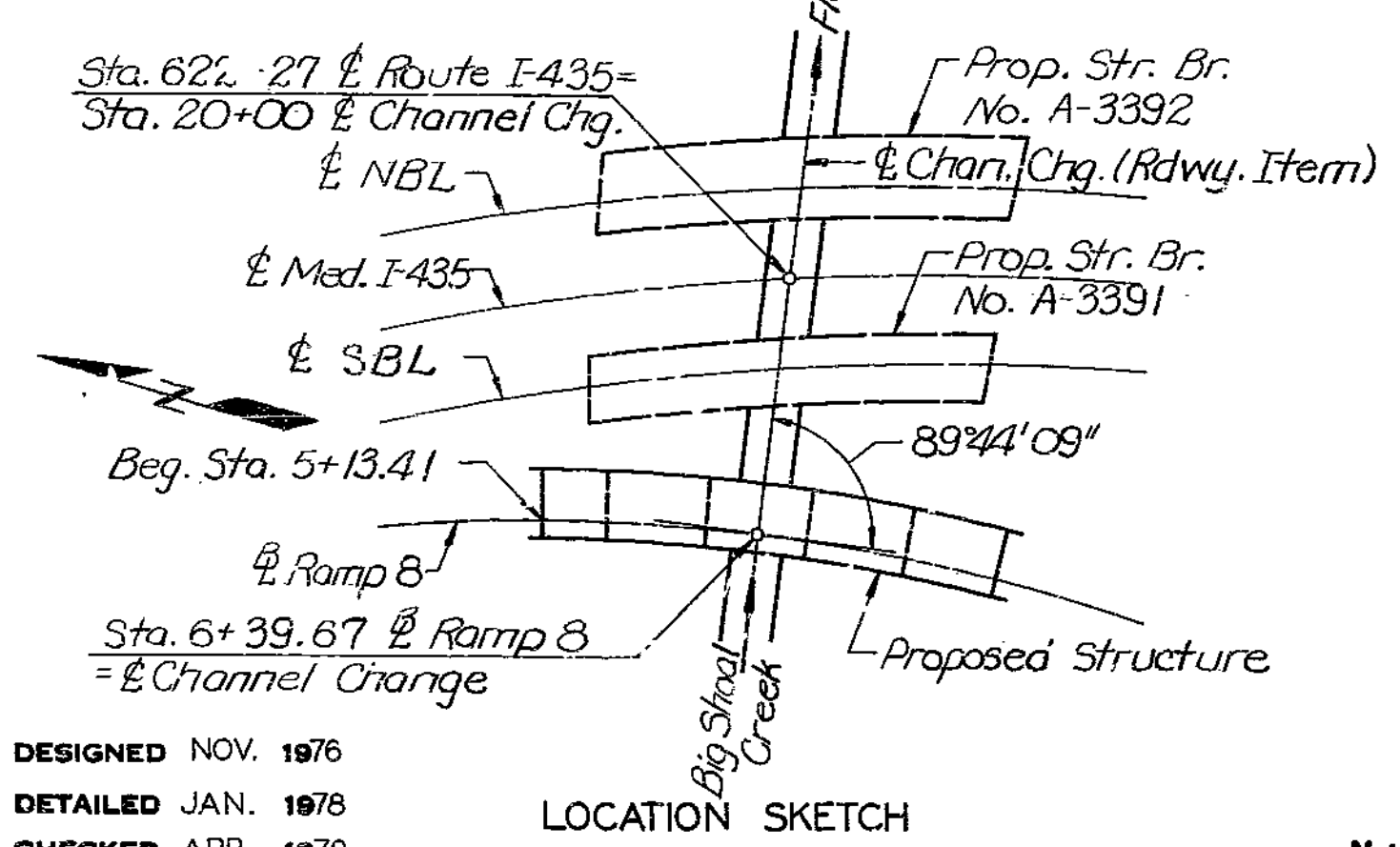
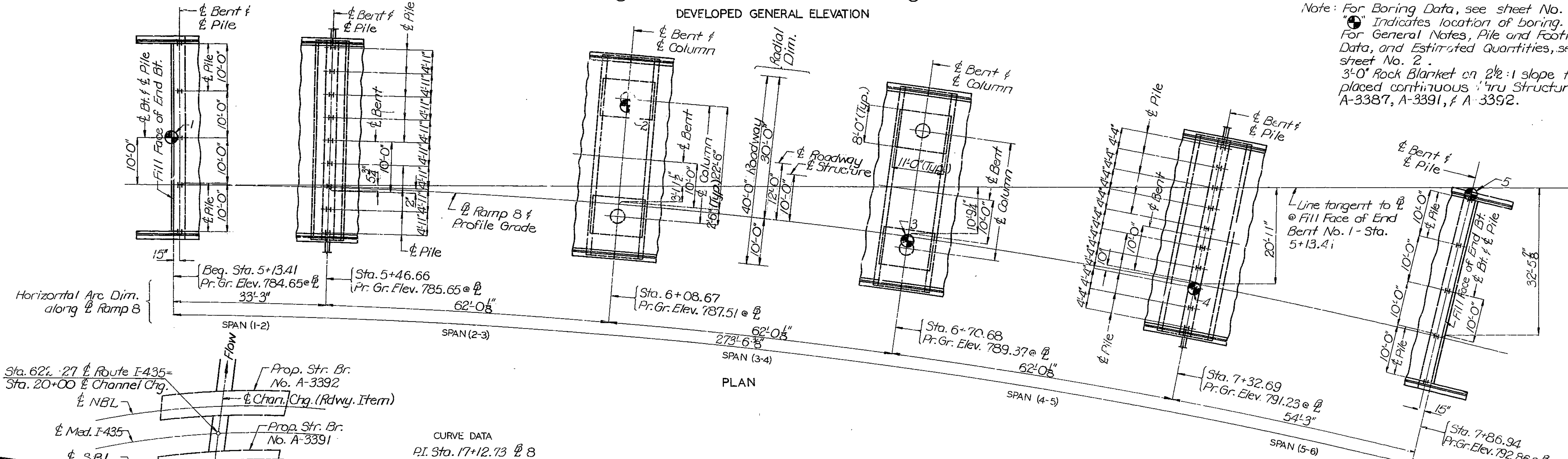
3.0% Grade



Note: Compacted 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 piles are driven for any bents falling within the embankment section.

Note: For Boring Data, see sheet No. 2.   
 ● Indicates location of boring.   
 For General Notes, Pile and Footing Data, and Estimated Quantities, see sheet No. 2.   
 3'-0" Rock Blanket on 2 1/2:1 slope to be placed continuous thru Structures A-3387, A-3391, & A-3392.

515



CURVE DATA

PI Sta. 17+12.73 @ 8
$\Delta = 112^\circ 25' 49''$ Rt.
$D = 5^\circ 00'$ (Arc)
$T = 1712.73'$
$L = 2248.61'$
$R = 1145.92'$
$SE = .081/i$
$LT = 200'$
$W = 0$

HYDRAULIC DATA	
Drainage Area	= 28 sq. mi. (Hilly)
Des. Discharge	= 19,000 cfs (Urban)
Des. H.W. Elev.	= 759.4 @ Med.
Frequency	= 50 yrs.
BASIC FLOOD DATA	
Discharge	= 21,600 cfs
H. W. Elev.	= 760.4

B.M. #60 - Elev. 776.63 - 100d spike in E. side of 24" oak at top of bank 225' Rt. Sta. 620+30

BRIDGE: RAMP 8 OVER BIG SHOAL CREEK

STATE ROAD FROM RTE. I-35 TO RTE. 152  
 AT I-35 & I-435 INTERCHANGE  
 PROJECT NO. I-435-(153) STA. 5+13.41 (RAMP 8)  
 JOB NO. 4-I-435-49 C RTE. I-435  
 CLAY COUNTY

STD.
STD. 706.35
A-3387

DESIGNED NOV. 1976  
 DETAILED JAN. 1978  
 CHECKED APR. 1979

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

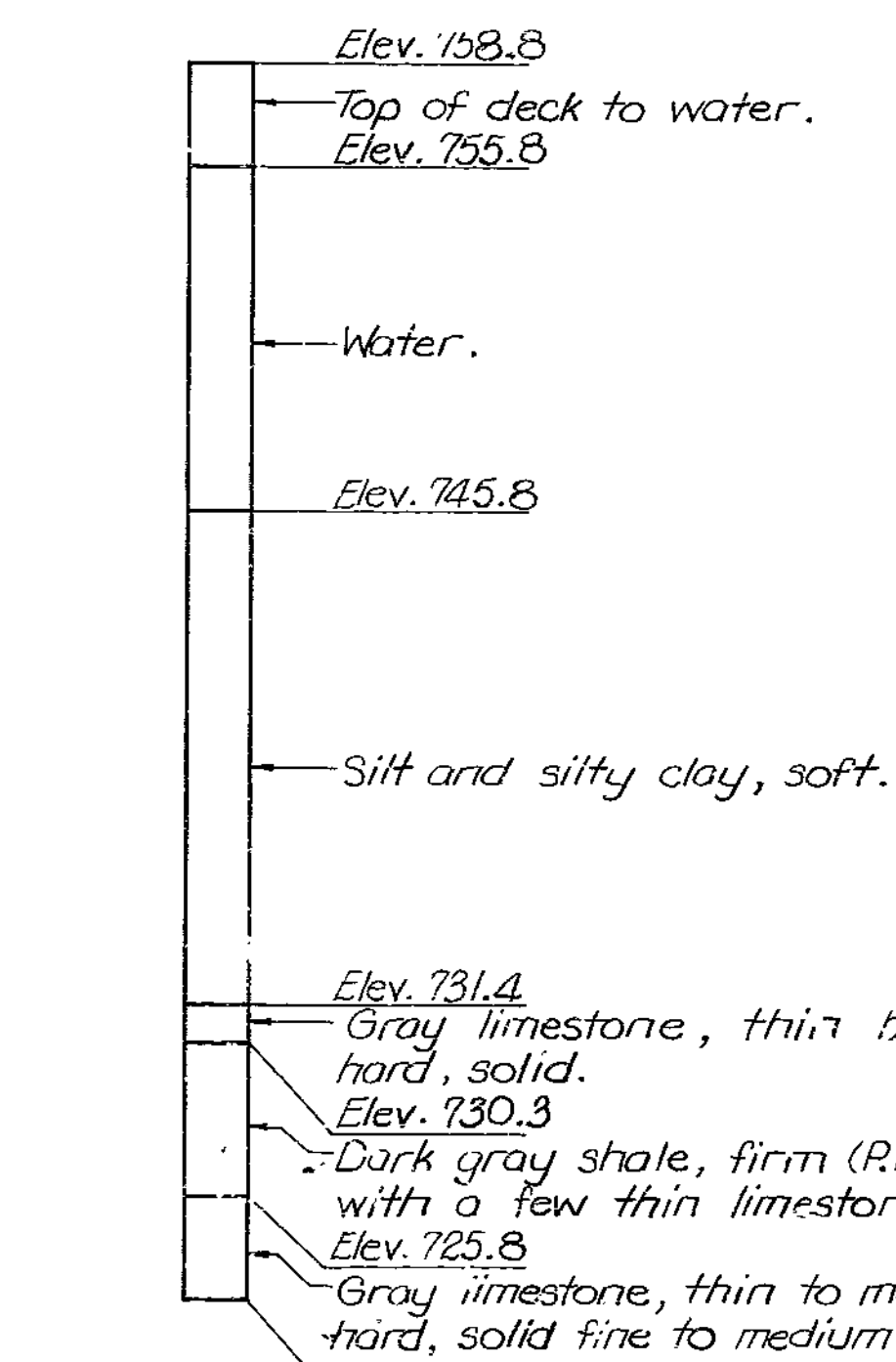
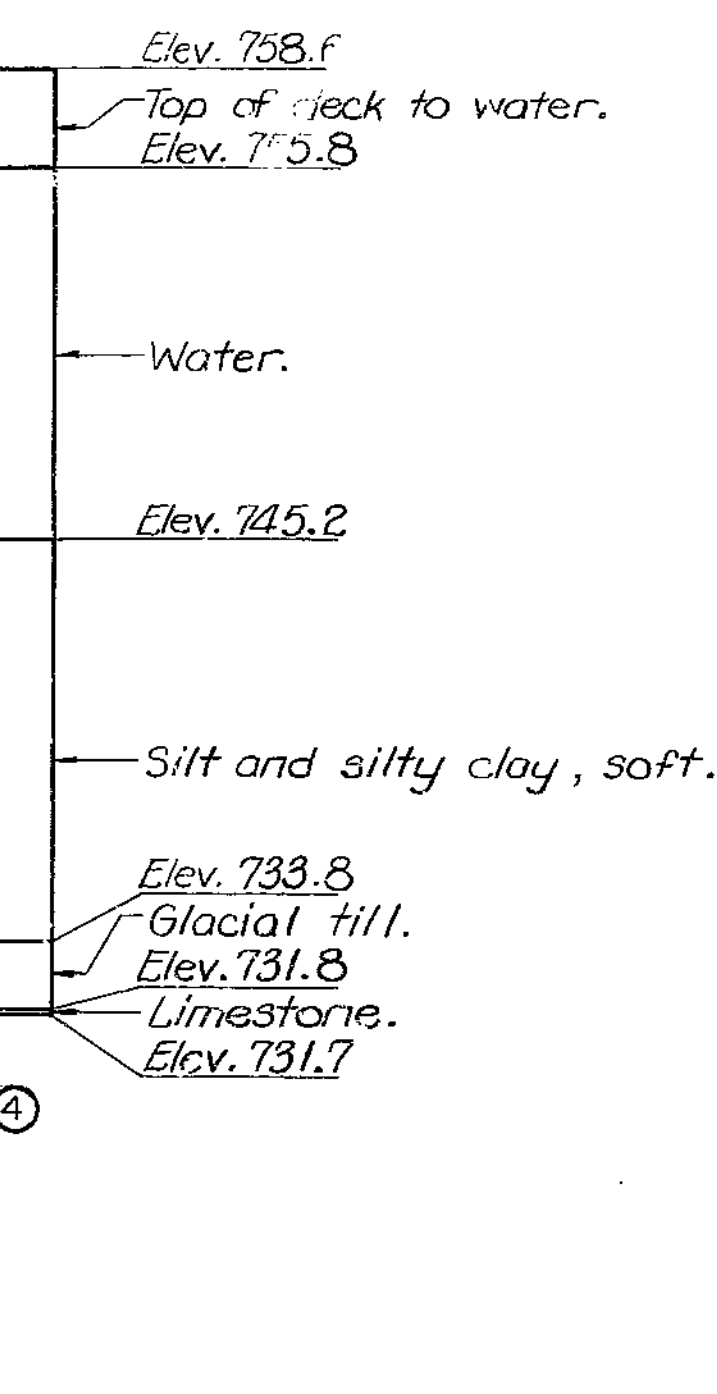
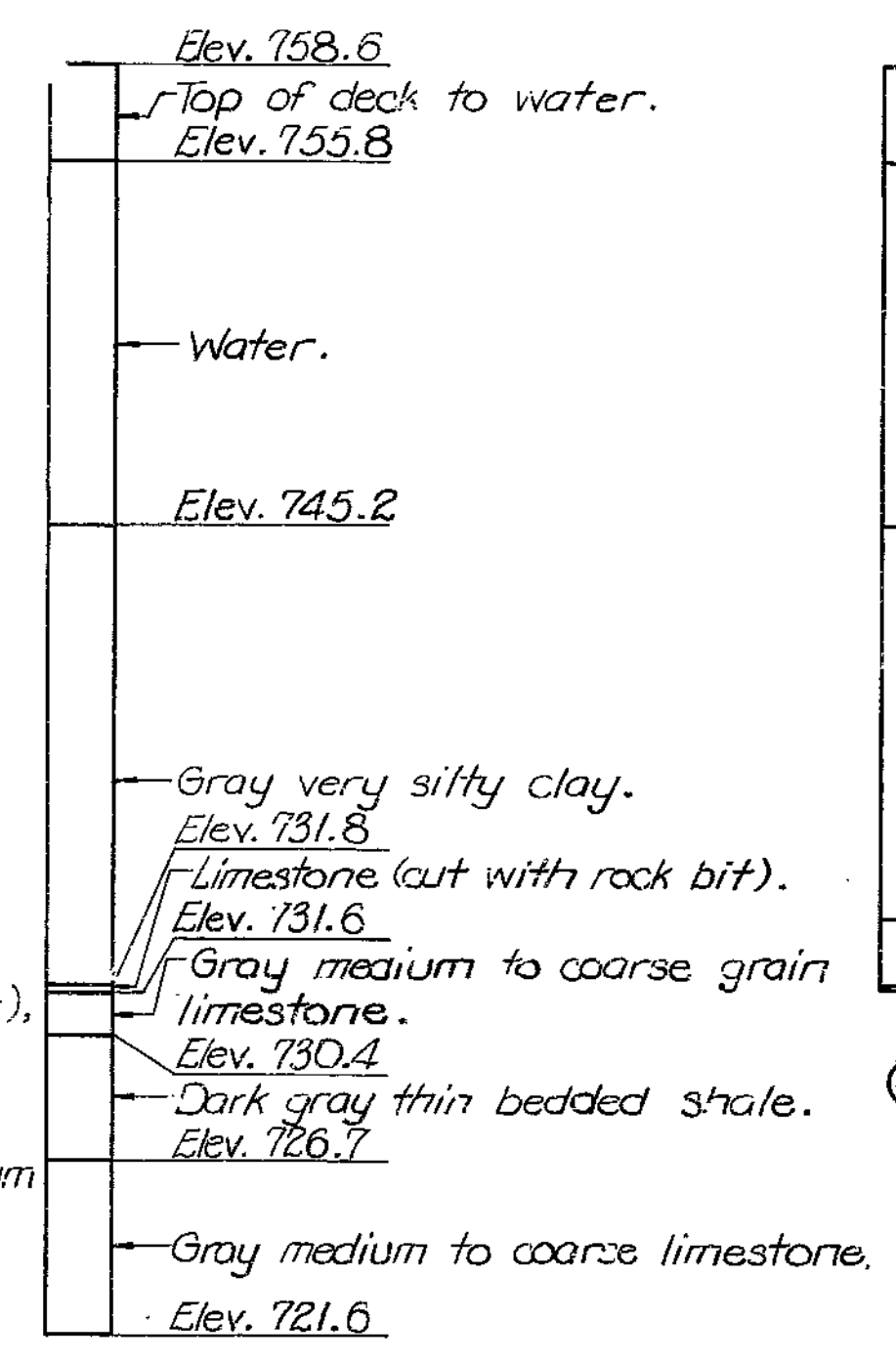
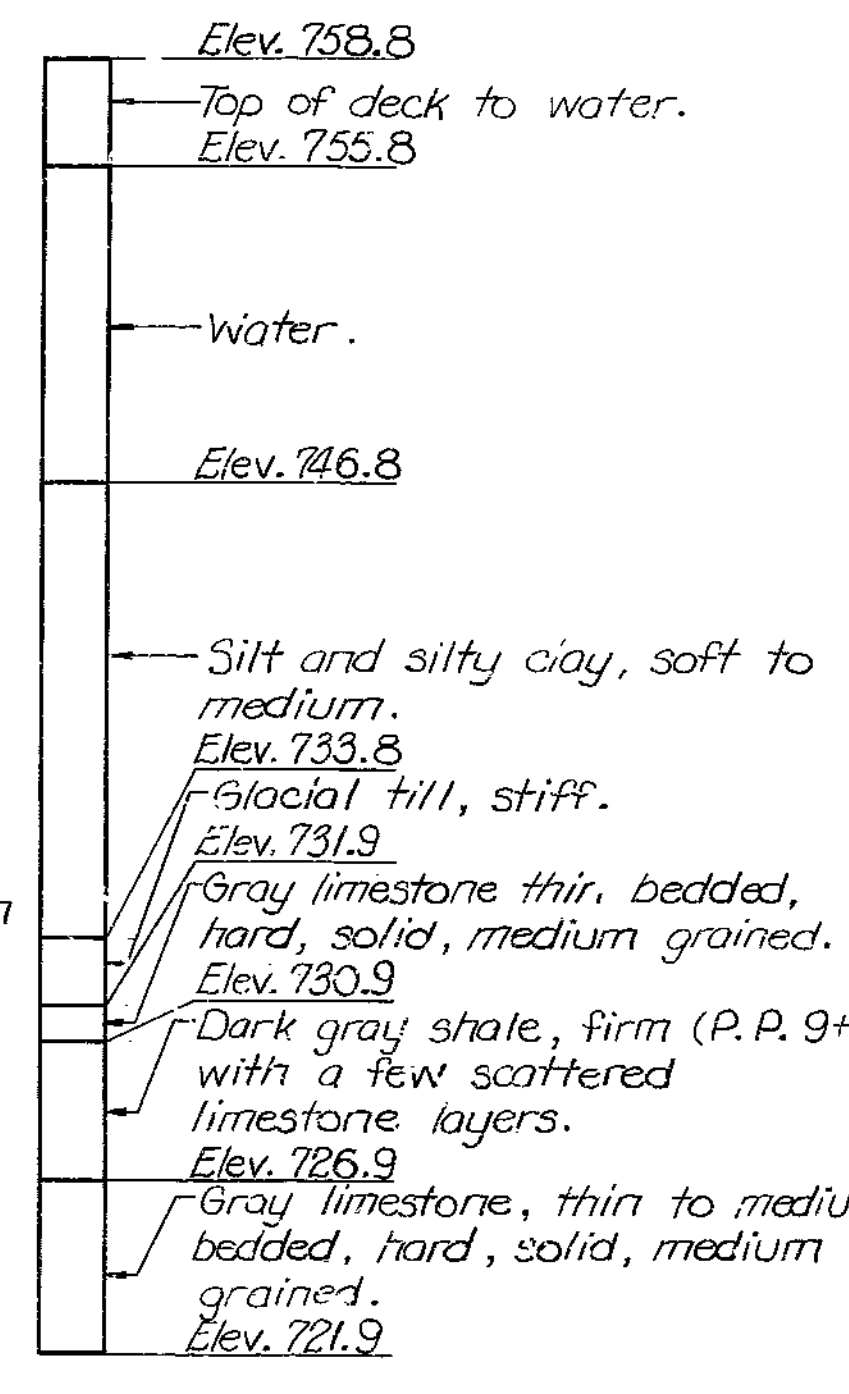
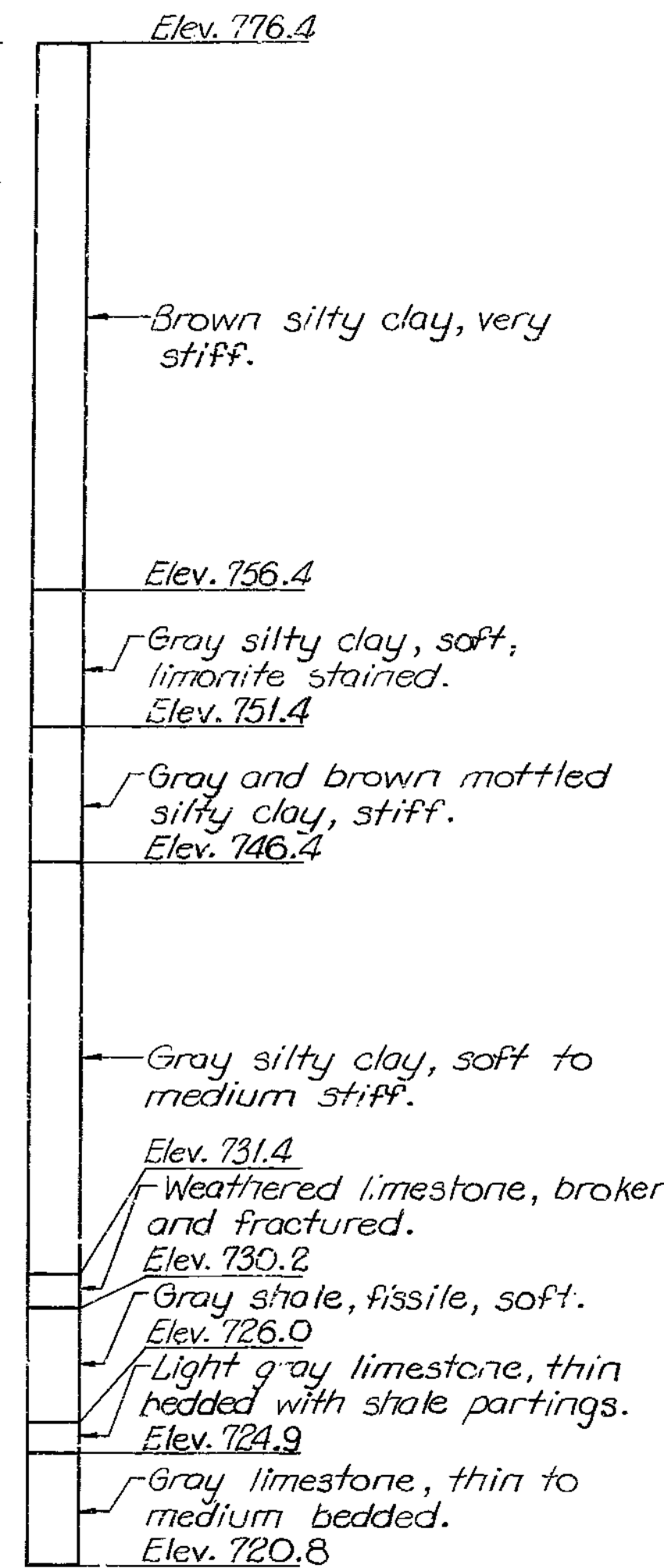
Sheet No. 1 of 18

DATE 12-28-79

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	139	

Standard Penetration Test  
Depth Blows/6" R.P.(TSF)

5'	5/6/10	2.5/2.75
15'	7/7/11	2.5
20'	2/2/4	.50
25'	4/4/6	1.0/2.0
30'	2/2/3	.50
35'	3/2/4	.50



BORING DATA

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

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O.-1977 Load Factor Design  
Design Loading: HS20-44, 15 ft. Future Wearing Surface  
Modified 24,000# Tandem Axle  
Earth 120#, Equivalent Fluid Pressure 30#

Design Unit Stresses: Class B2 Concrete (Superstructure)  $f'_c = 4000$  psi  
Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
Steel Pile  $f_b = 9,000$  psi  
Class B1 Concrete (Int. Bl. Columns & Footings)  $f'_c = 4000$  psi

Paint: Shop. None, Field all exposed surfaces of steel piles and bracing shall be painted in accordance with Std. Spec. 702.4.7 using System A or B. Color of the final coat shall be aluminum.

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

PILE & FOOTING DATA							
BENT NO.		1	2	3	4	5	6
BEARING PILE	Pile Type and Size	HP10x42				HP10x42	
	Number	5	9			10	5
	Approximate Length Ft.	50	50			55	57
	Design Bearing Tons	44	53			53	50
	Min. Tip Penetration Elev.	730.5	731.5			732.0	
SPREAD FOOTINGS		Foundation Material		Rock	Rock		
		Design Bearing Tons/Sq. Ft.		5	5		

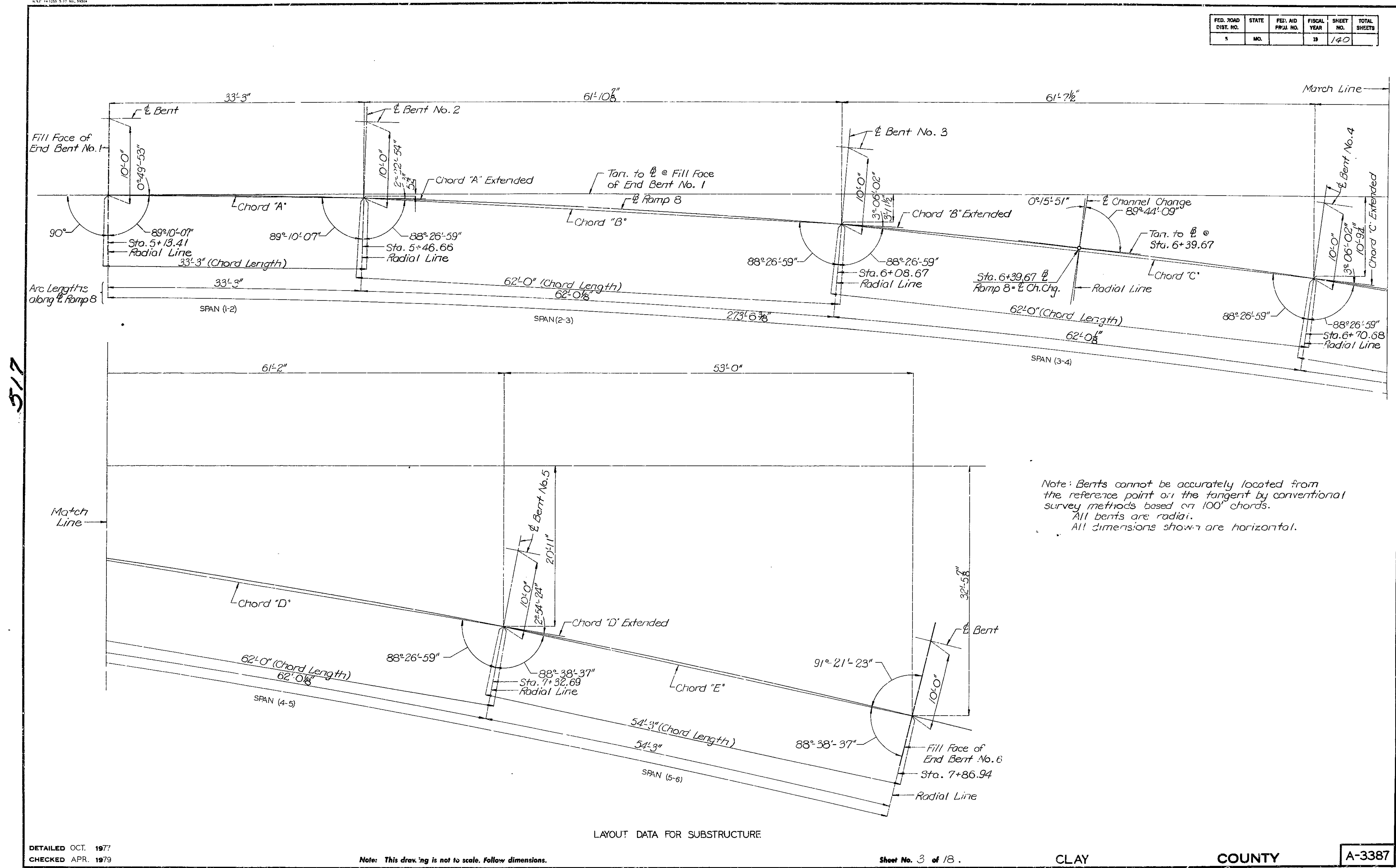
Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
All pile shall be driven to the minimum penetrations and to practical refusal.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class 1 Excavation	Cu. Yd.	120
Class 2 Excavation	Cu. Yd.	228
Structural Steel Pile (10")	Lin. Ft.	1535
Class B2 Concrete	Cu. Yd.	939.6
Slab Drains	Each	14
Reinforcing Steel (Epoxy Coated)	Lb.	98,700
Reinforcing Steel (Grade 60)	Lb.	97,600
Class B1 Concrete	Cu. Yd.	95.1

Note: No direct payment will be made for furnishing, installing, cleaning and painting of bracing at intermediate bents.  
Concrete in columns and footings of Int. Bts No. 3 & 4 shall be Class B1.

SEE FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	140	



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

LAYOUT DATA FOR SUBSTRUCTURE

DETAILED OCT. 1977  
 CHECKED APR. 1979

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

Sheet No. 3 of 18.

CLAY

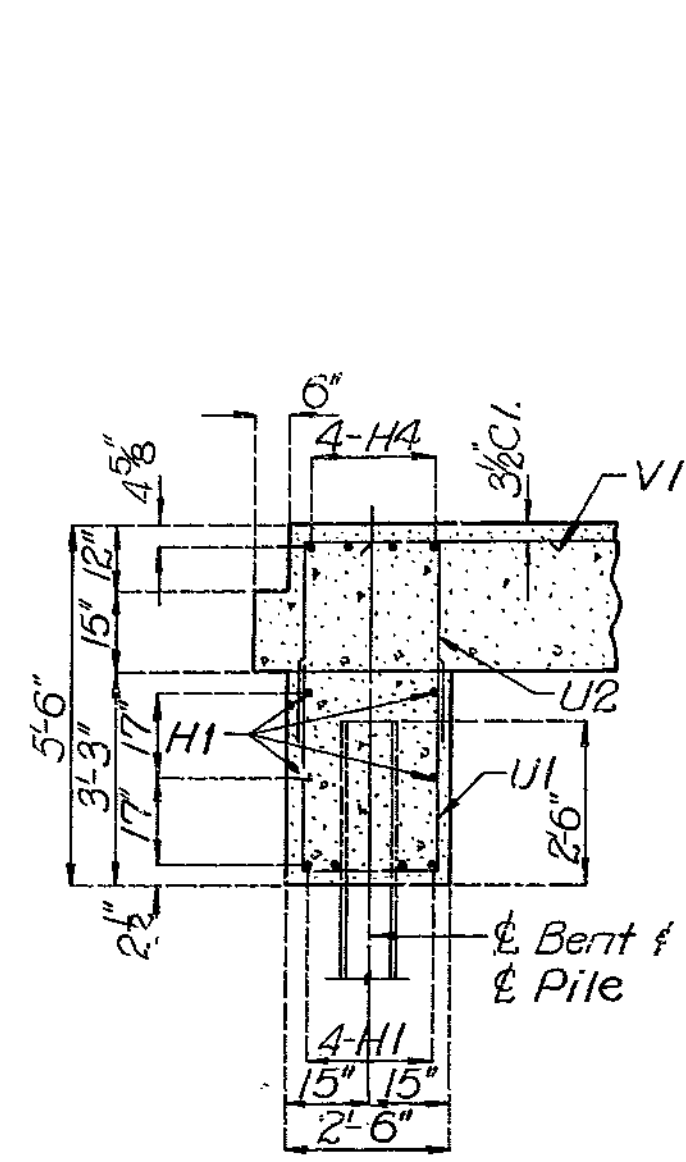
COUNTY

A-3387

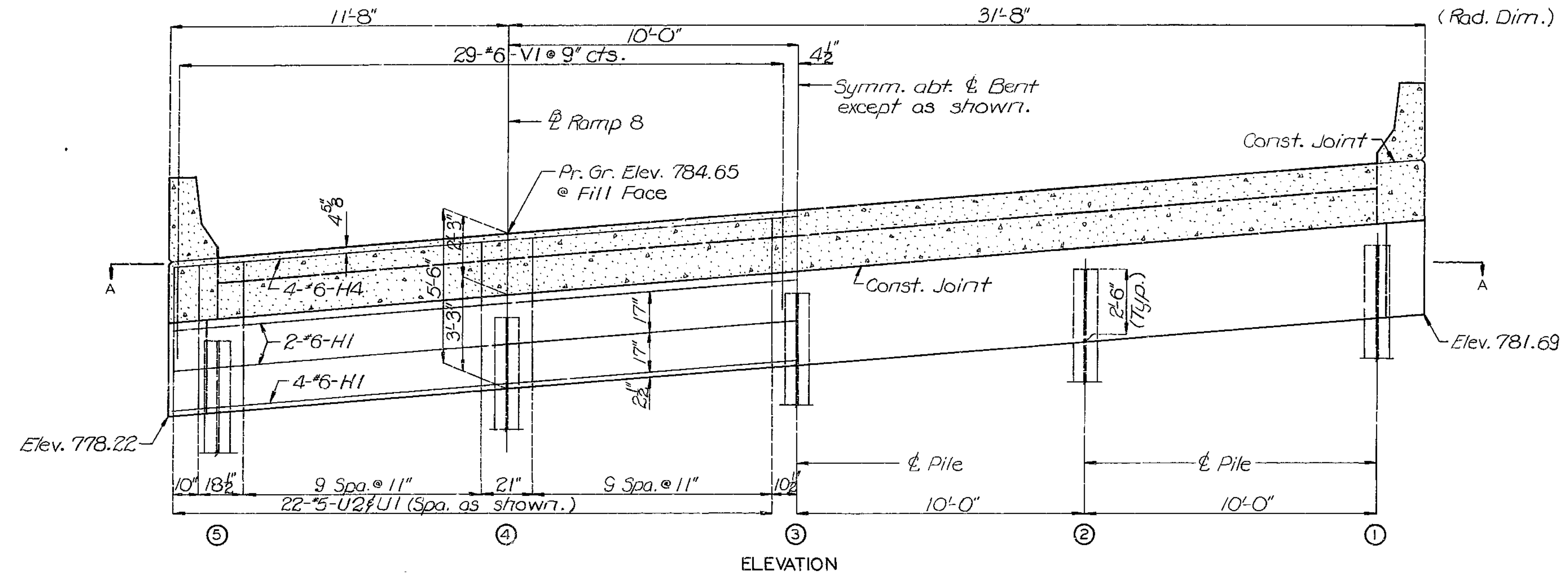
517

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	141	

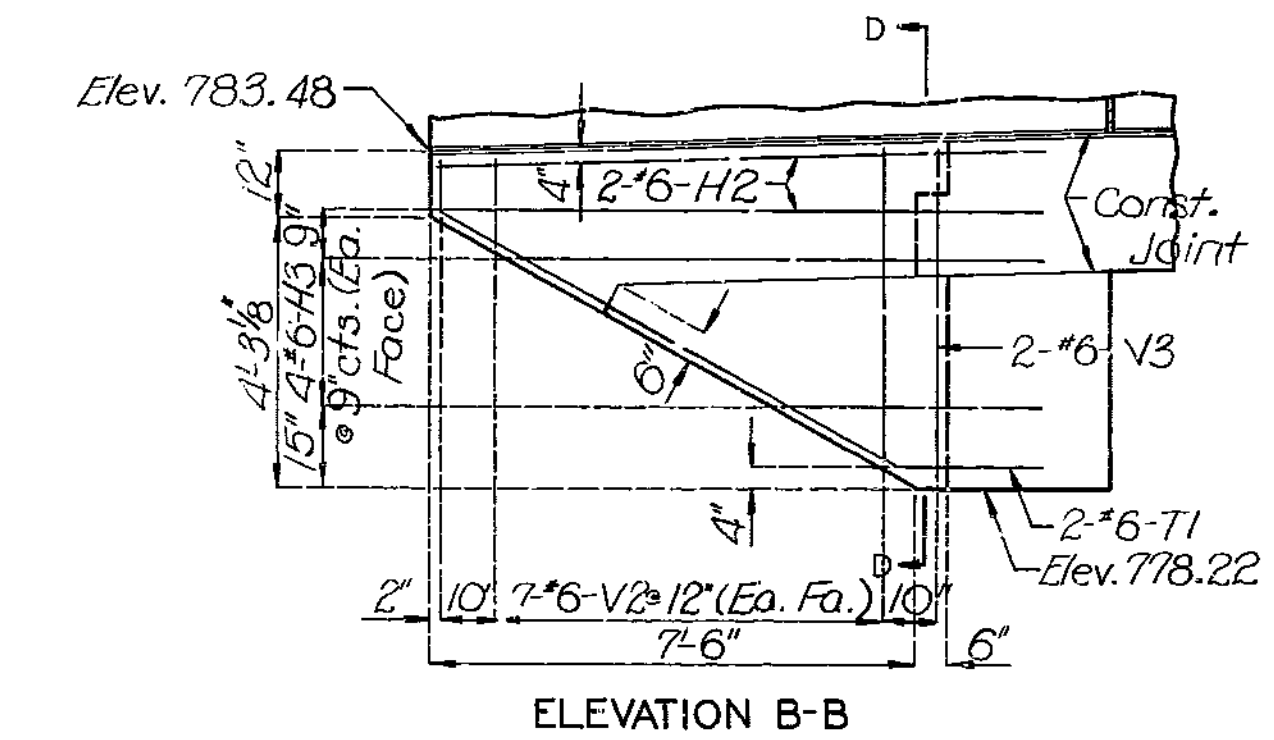
Note: See Sheet No. 15 & 16 for details of barrier curb. Barrier curb R bars shall be cast in End Bent concrete as shown on sheet No. 15 & 16.



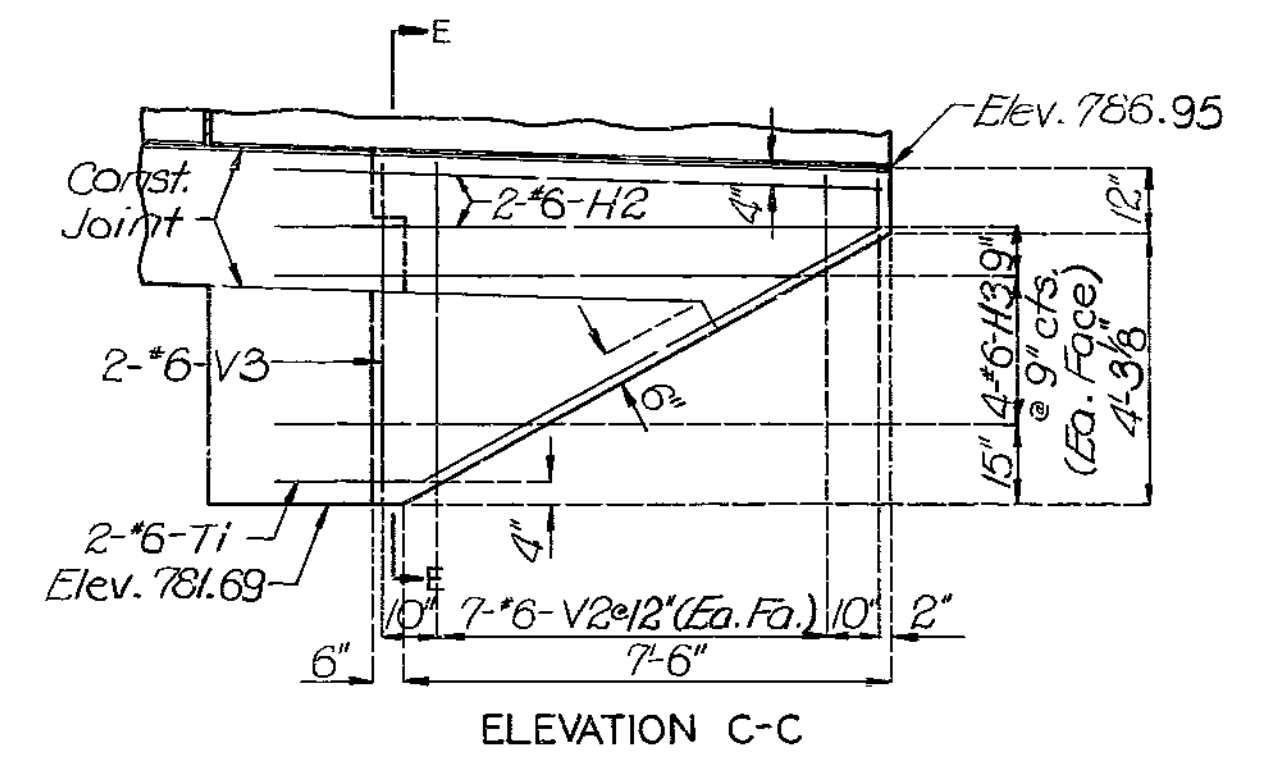
SECTION NEAR Pile



ELEVATION

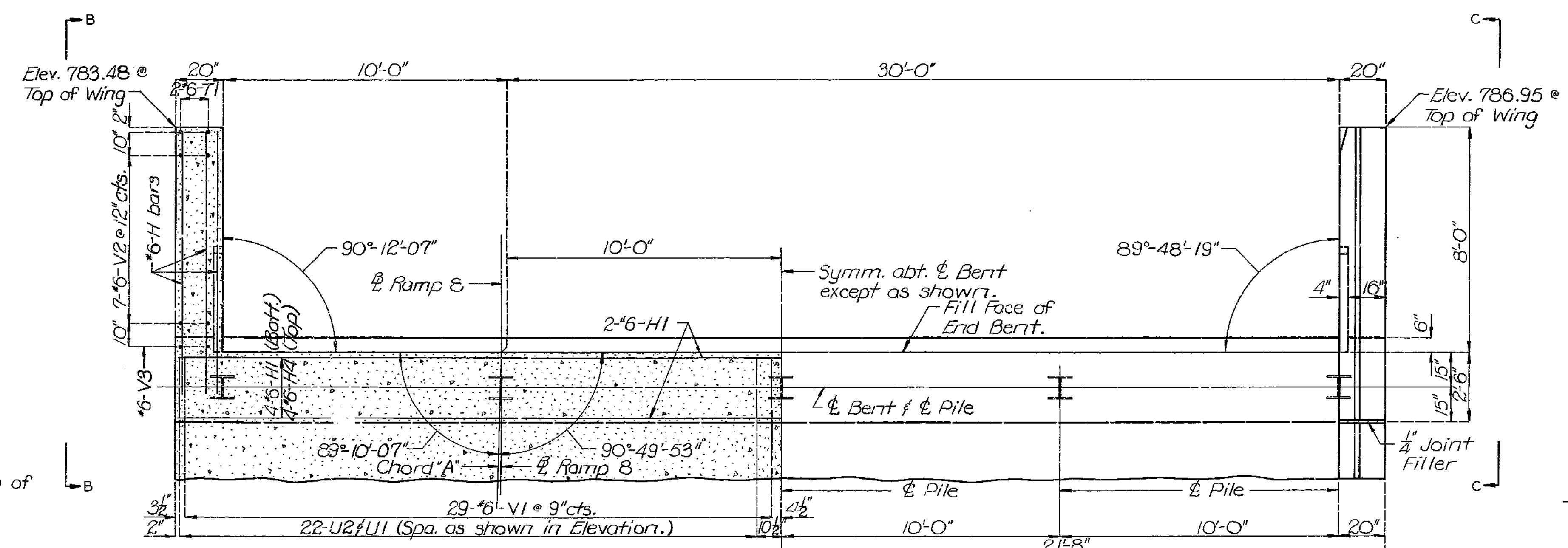


ELEVATION B-B



ELEVATION C-C

PILE NO.	CUT-OFF ELEV.
1	784.05
2	783.25
3	782.45
4	781.65
5	780.85

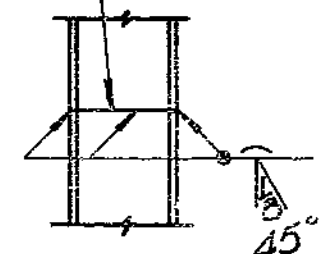


HALF SECTION A-A

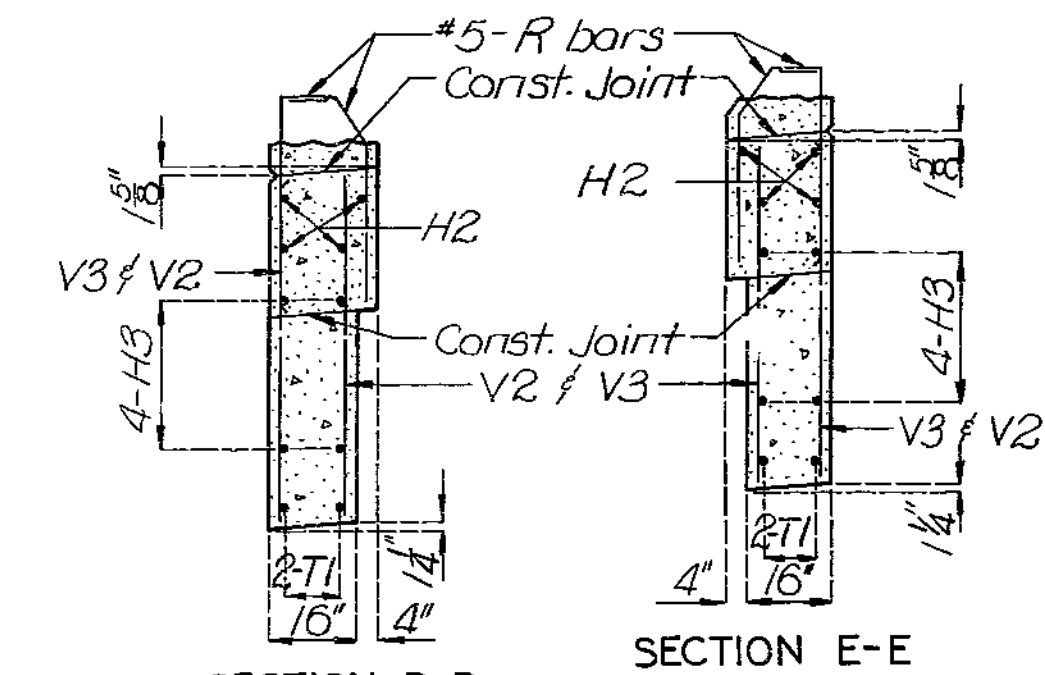
HALF PLAN

DETAILS OF END BENT NO. 1

Butt Splice (if required) Top of lower section to be cut square.



STEEL PILE SPLICE



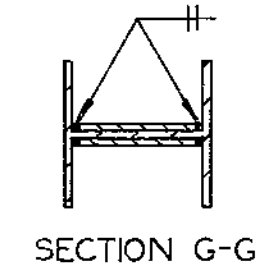
SECTION D-D

SECTION E-E

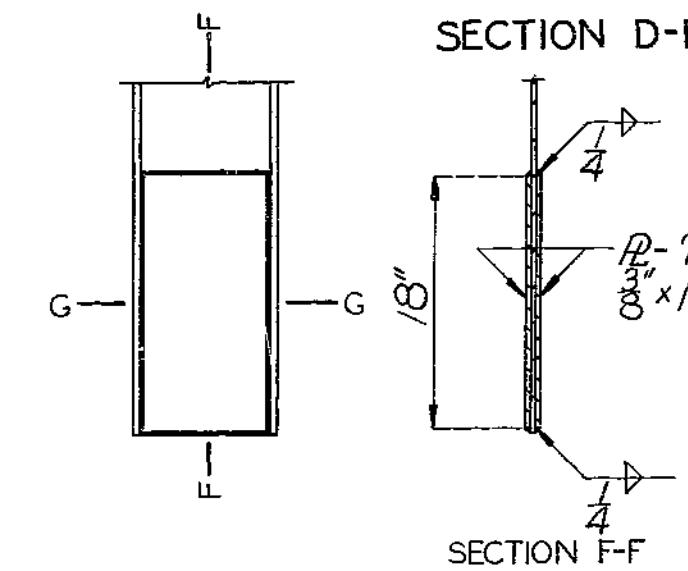
Note: Payment for furnishing plates and welding in position will be included in unit price bid for driving piles in place.

Required: 2-#2s - 7/8" x 8" x 18" per pile at Bents No. 1, 2, 5, & 6.

Note: An approved commercial pile tip reinf. may be used in lieu of details shown.



SECTION G-G



PILE TIP REINFORCEMENT CLAY

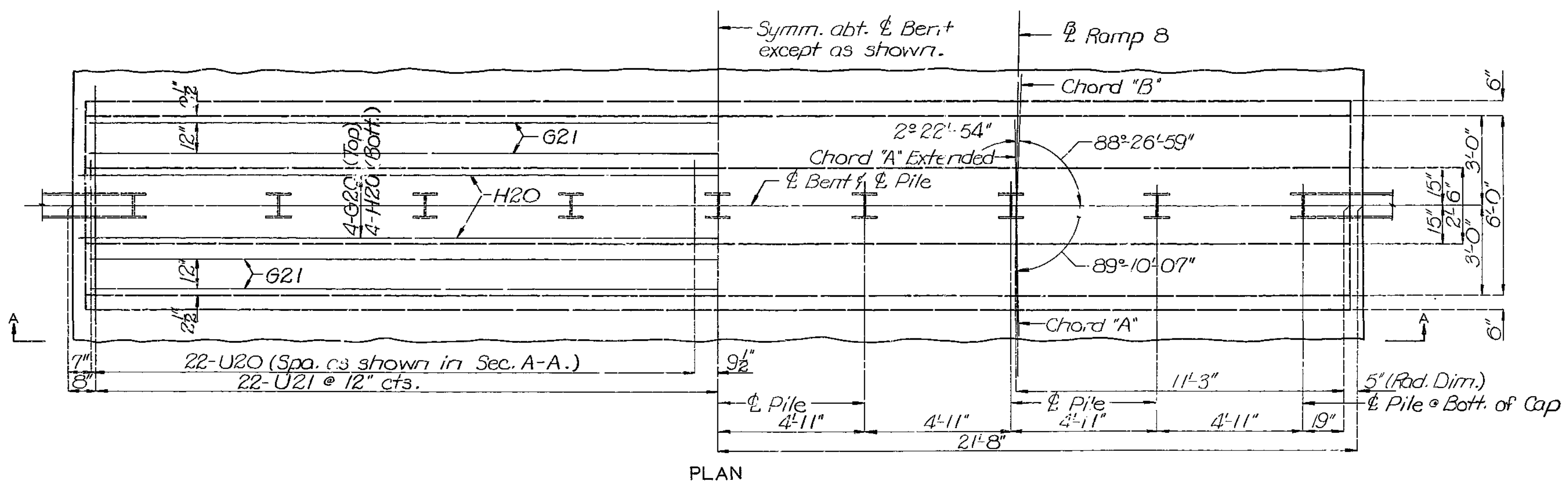
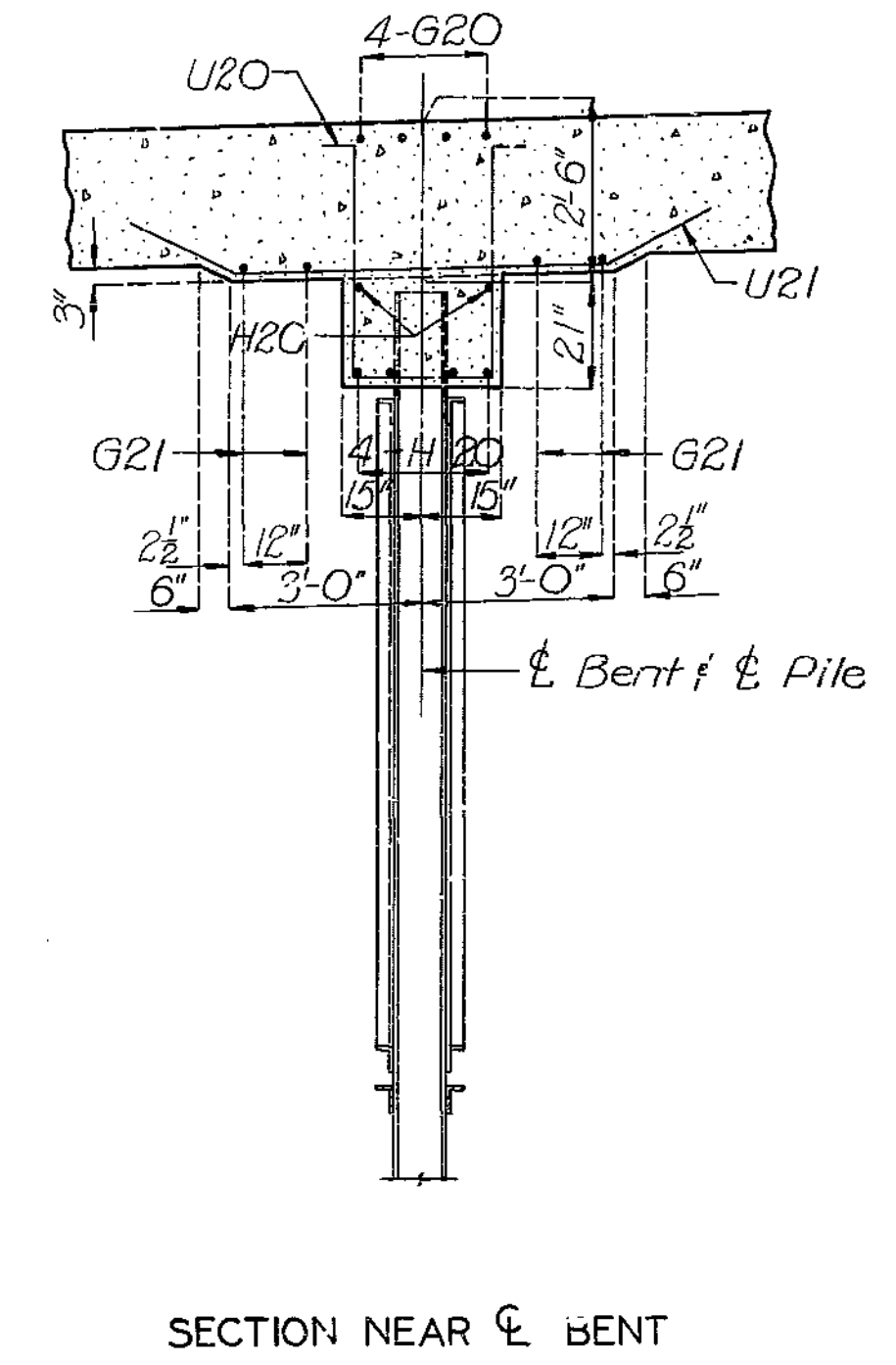
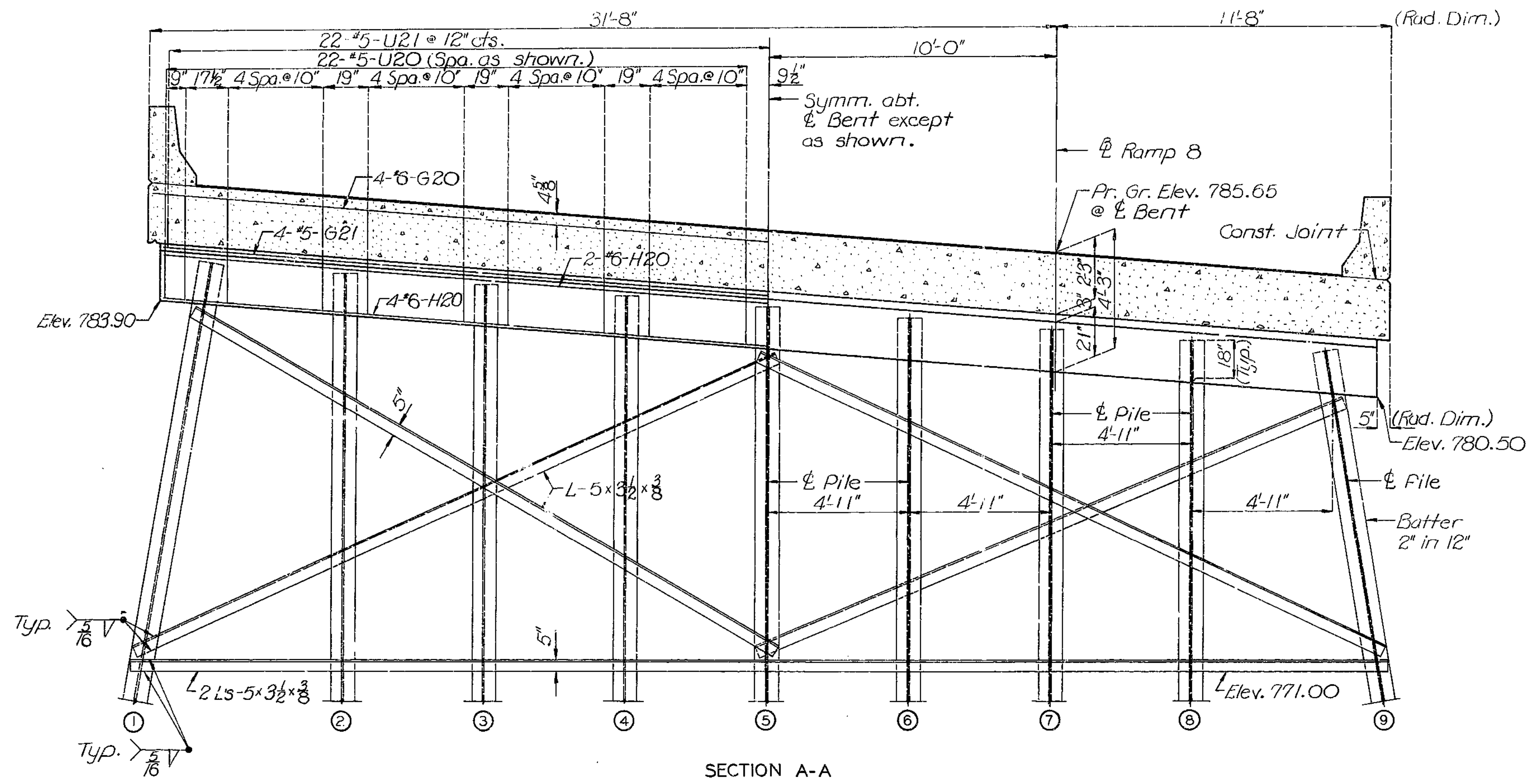
DETAILED JAN. 1978  
CHECKED APR. 1979

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

Sheet No. 4 of 18.

COUNTY A-3387

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	142	



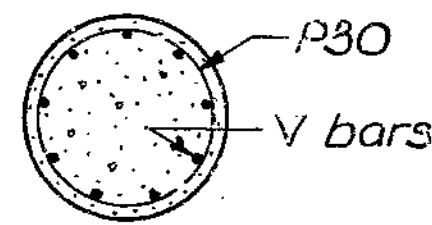
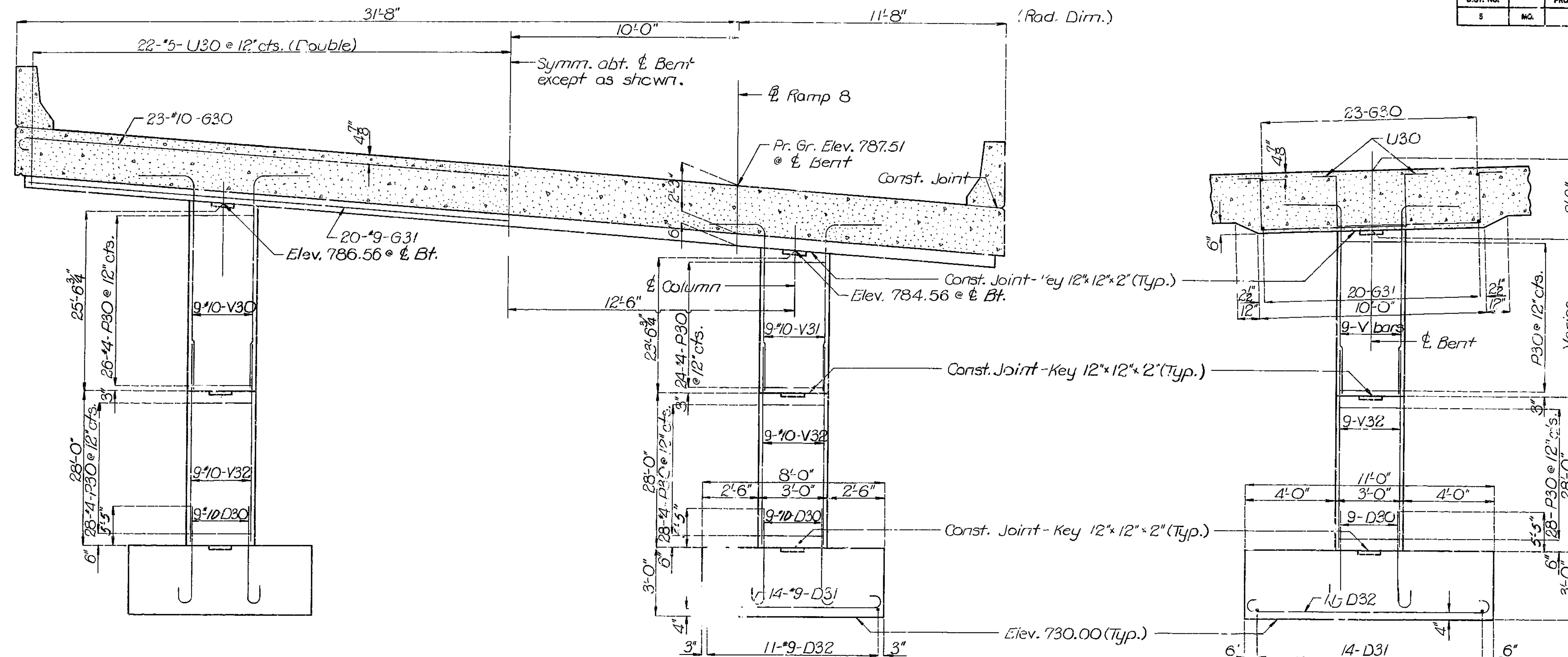
Note: For detail of Steel Pile Splice and Pile Tip Reinforcement, see sheet No. 4.

PILE NO.	CUT-OFF ELEV.
1	785.25
2	784.88
3	784.49
4	784.03
5	783.70
6	783.31
7	782.91
8	782.52
9	782.15

DETAILS OF INTERMEDIATE BENT NO. 2

519

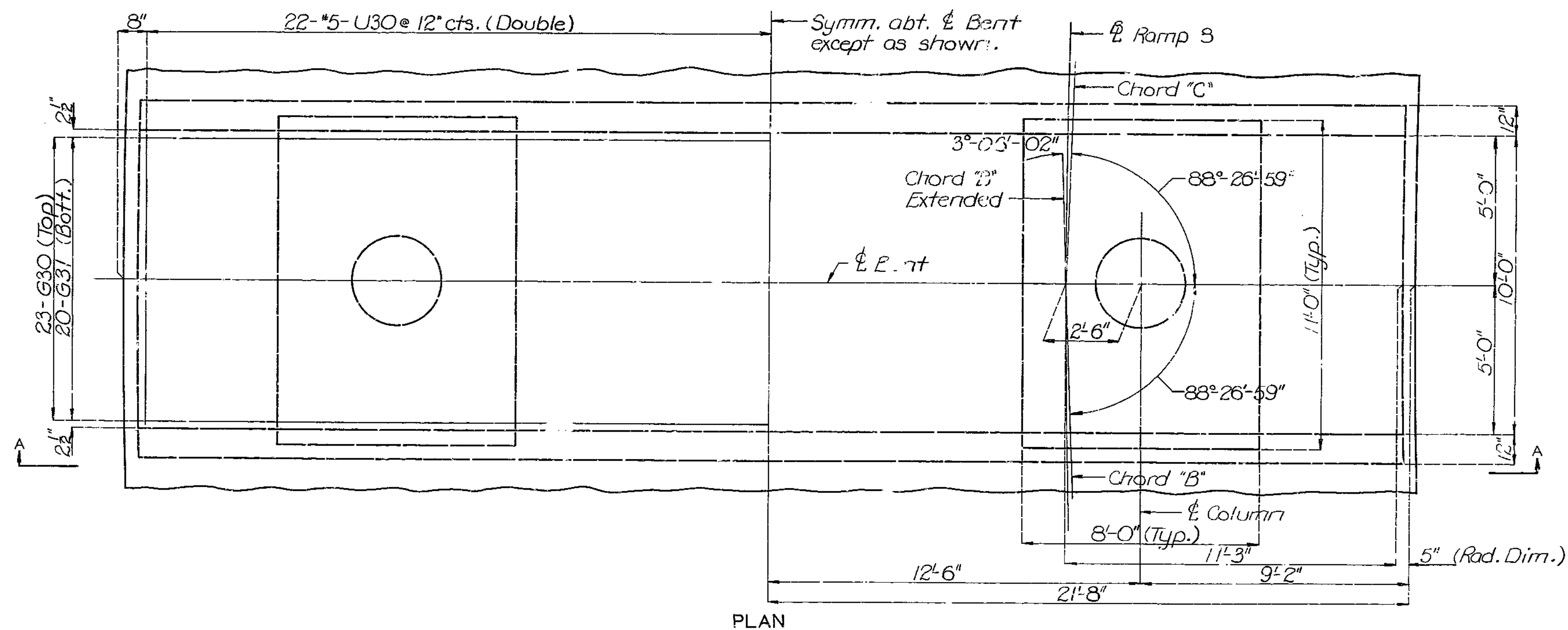
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	(TOTL) SHEETS
5	MO.		19	145	



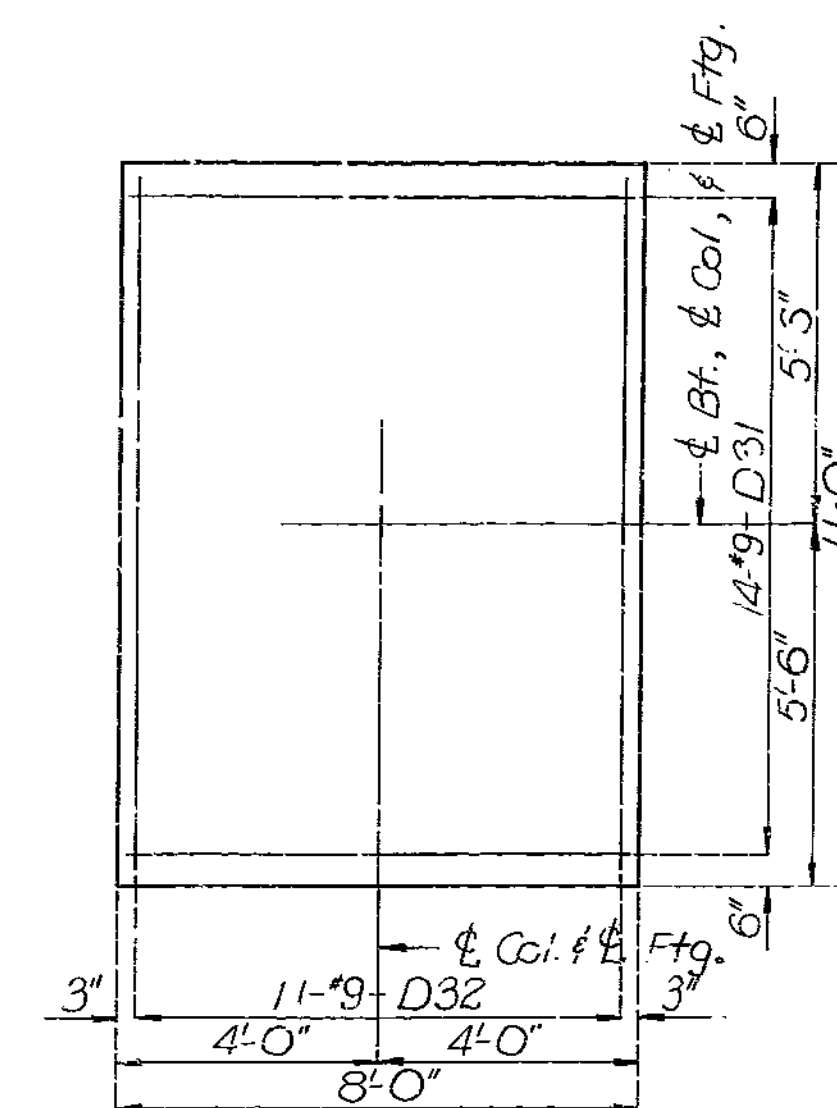
TYPICAL SECTION THRU COLUMN

SECTION A-A

SECTION AT BENT



PLAN



PLAN OF FOOTING SHOWING REINFORCEMENT

DETAILS OF INTERMEDIATE BENT NO. 3

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

Sheet No. 6 of 12.

SEE FINAL PLAN

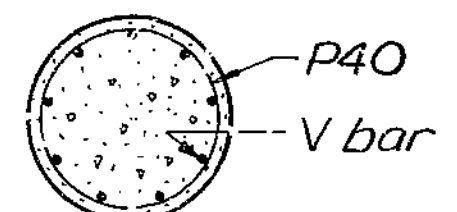
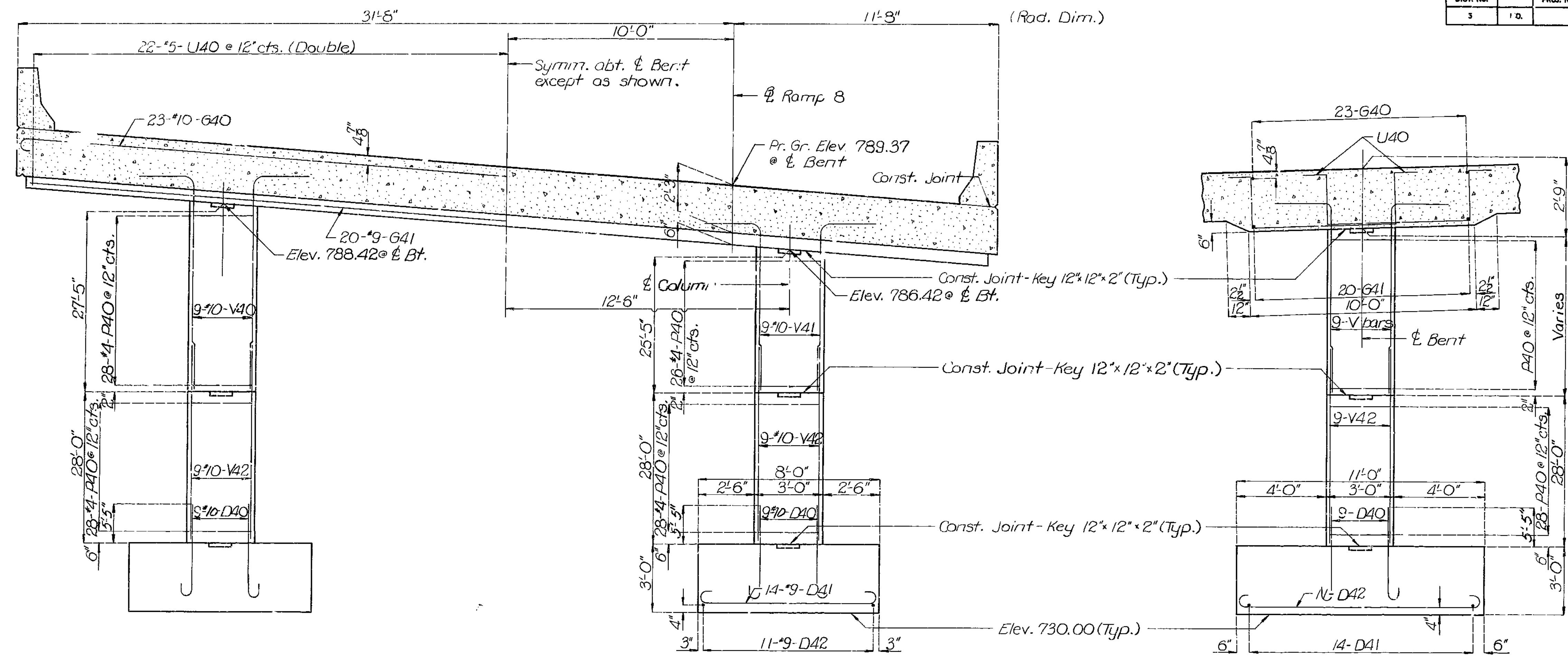
CLAY

COUNTY

A-3387

520

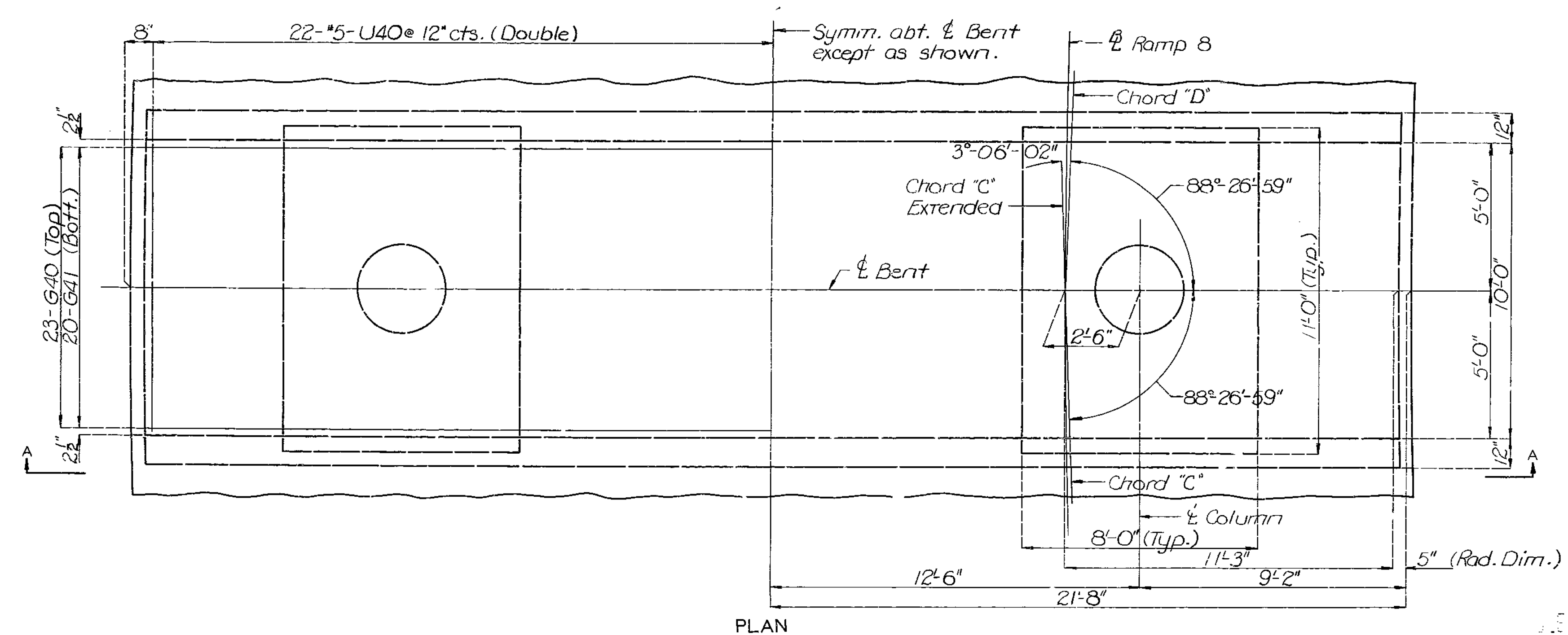
FED. ROAD DIST. NO.	STATE I. D.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	10		18	144	



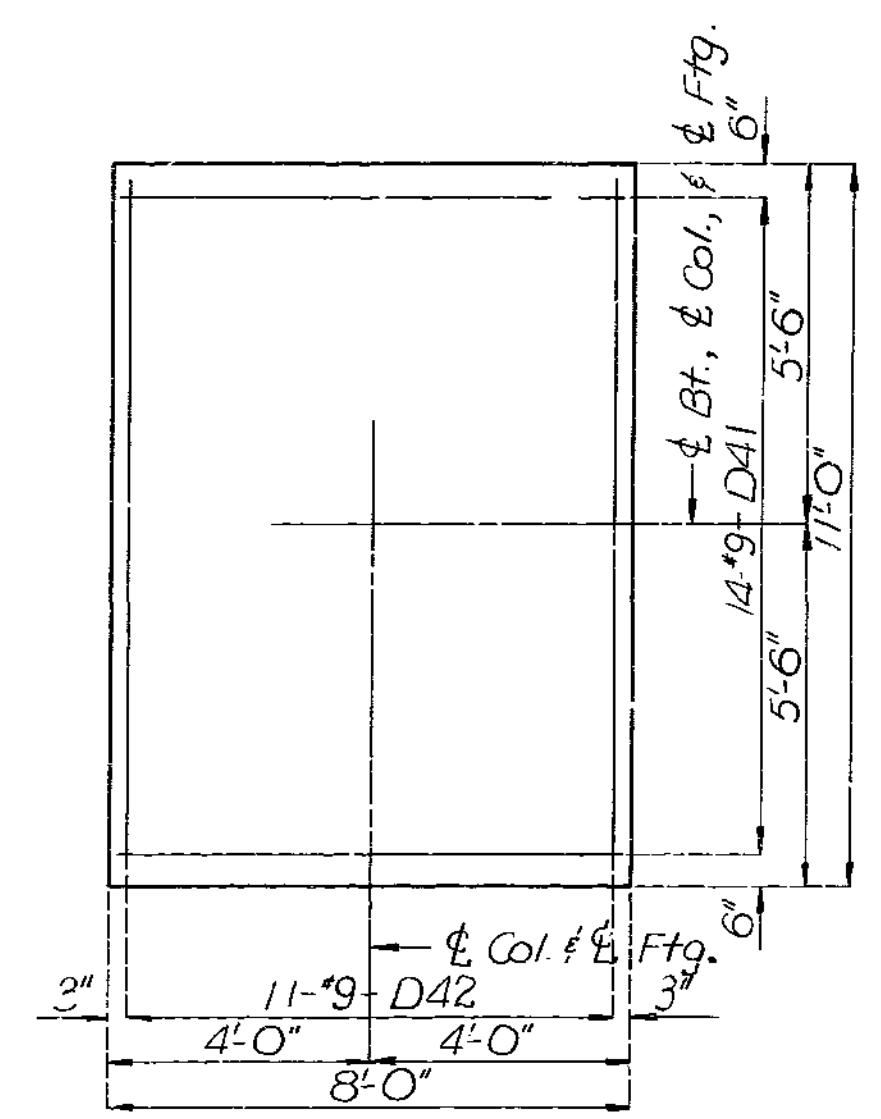
TYPICAL SECTION THRU COLUMN

SECTION A-A

SECTION AT BENT



PLAN



PLAN OF FOOTING SHOWING REINFORCEMENT

DETAILS OF INTERMEDIATE BENT NO. 4

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

Sheet No. 7 of 18.

CLAY

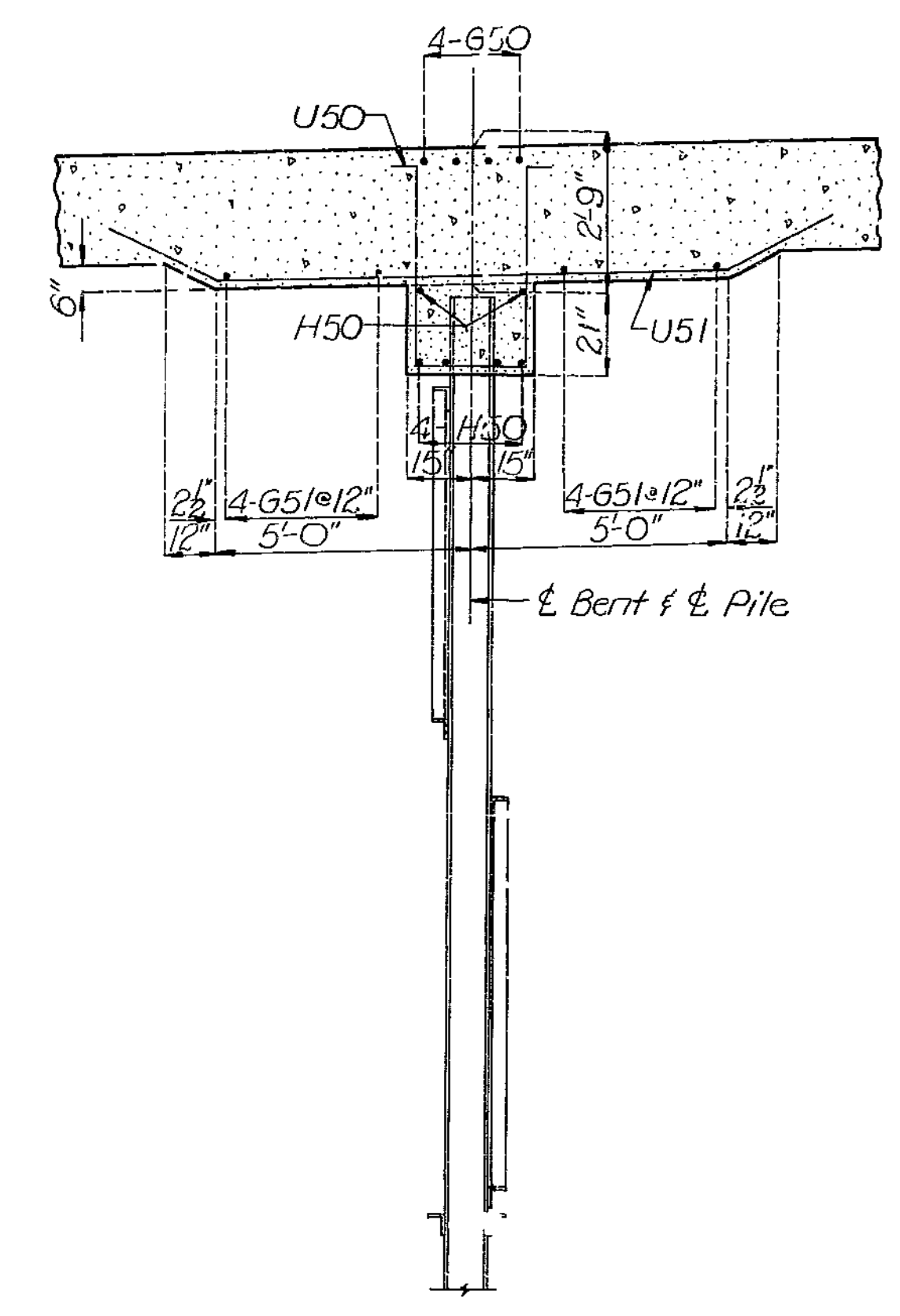
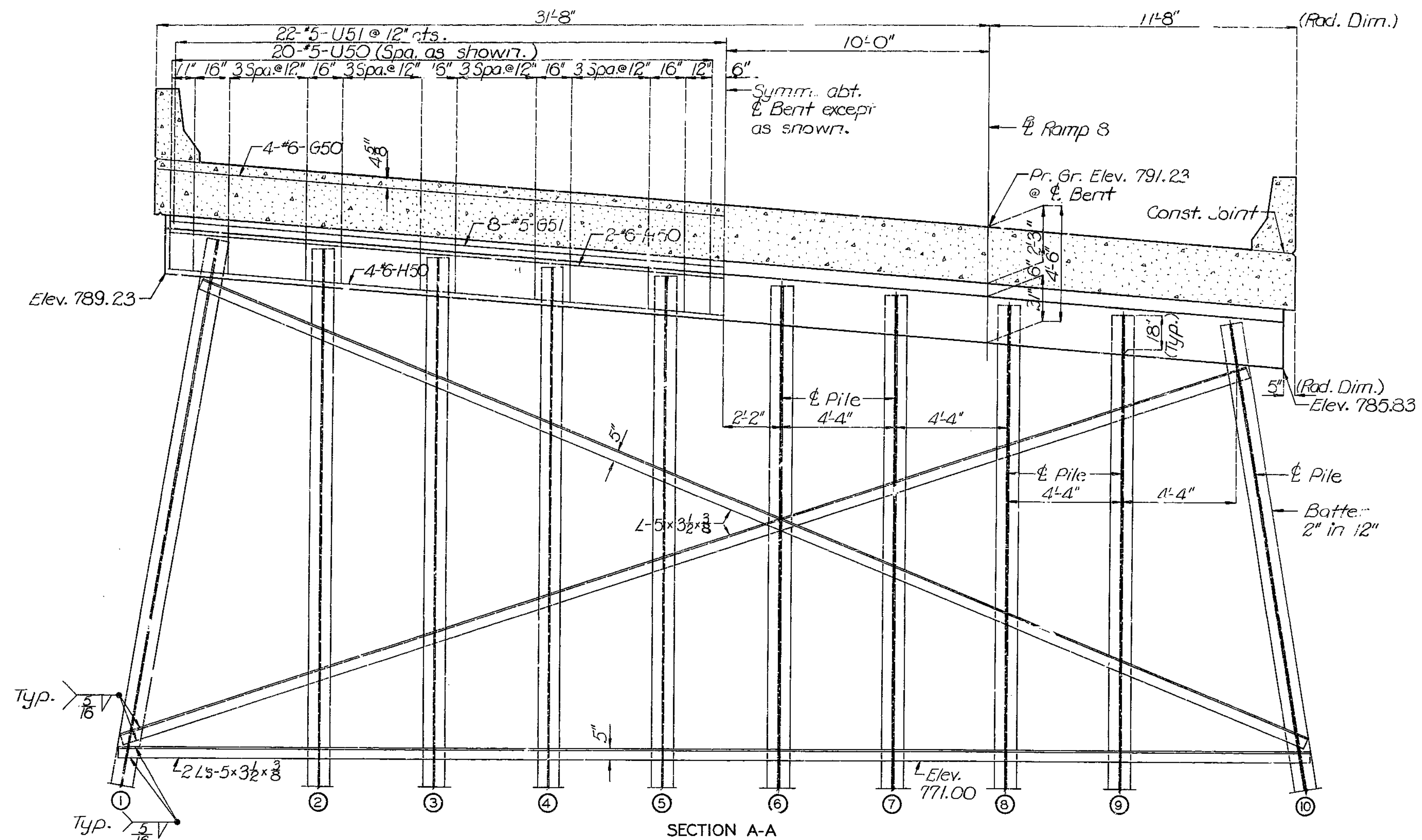
COUNTY

A-3387

521

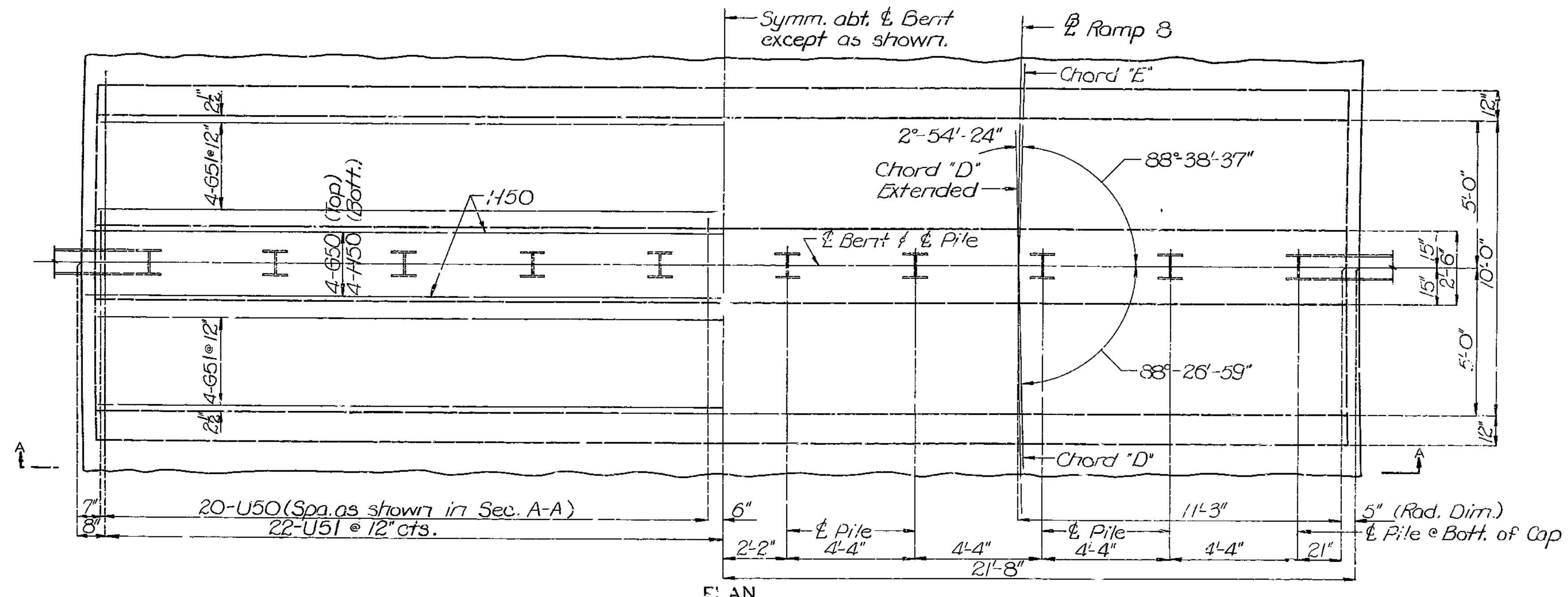
DETAILED DEC. 1977  
CHECKED APR. 1979

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	145	



SECTION AT Bent

Note: For detail of Steel Pile Splice and Pile Tip Reinforcement, see sheet No. 4.



PLAN

TABLE OF PILE CUT-OFF ELEVATIONS

PILE NO.	CUT-OFF ELEV.
1	790.57
2	790.24
3	789.30
4	789.55
5	789.20
6	788.86
7	788.51
8	788.16
9	787.82
10	787.49

522

DETAILED JAN. 1978  
CHECKED APR. 1979

DETAILS OF INTERMEDIATE BENT NO. 5

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

Sheet No. 8 of 18.

CLAY

COUNTY

A-3387



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	146	

Note: See Sheet No. 15 of 16 for details of barrier curb. Barrier curb R bars shall be cast in End Bent concrete as shown on sheet No. 15 of 16.

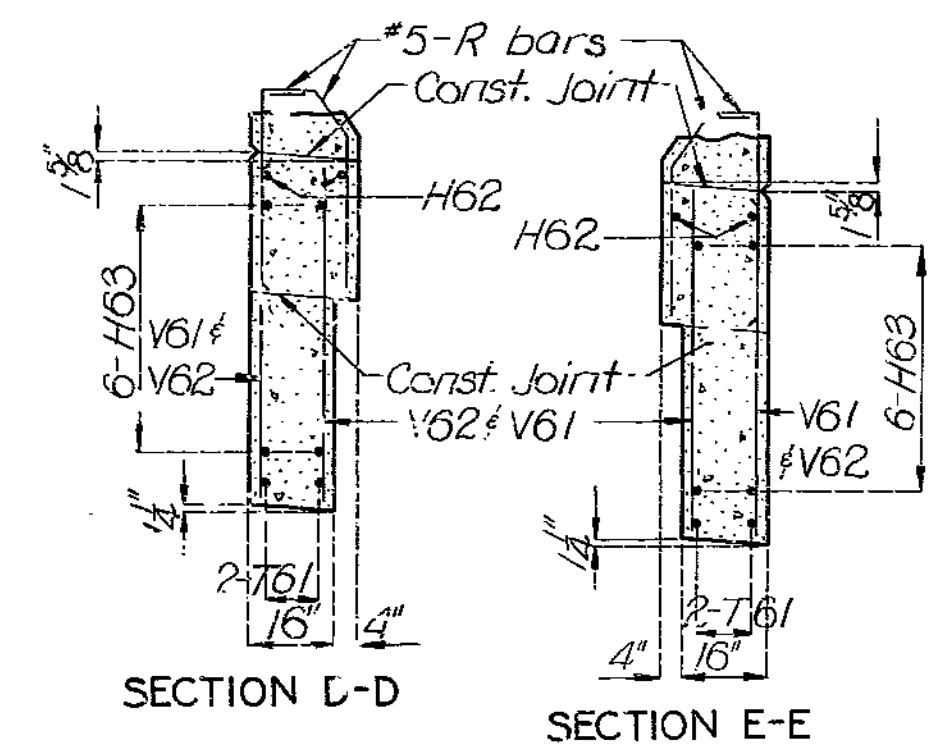
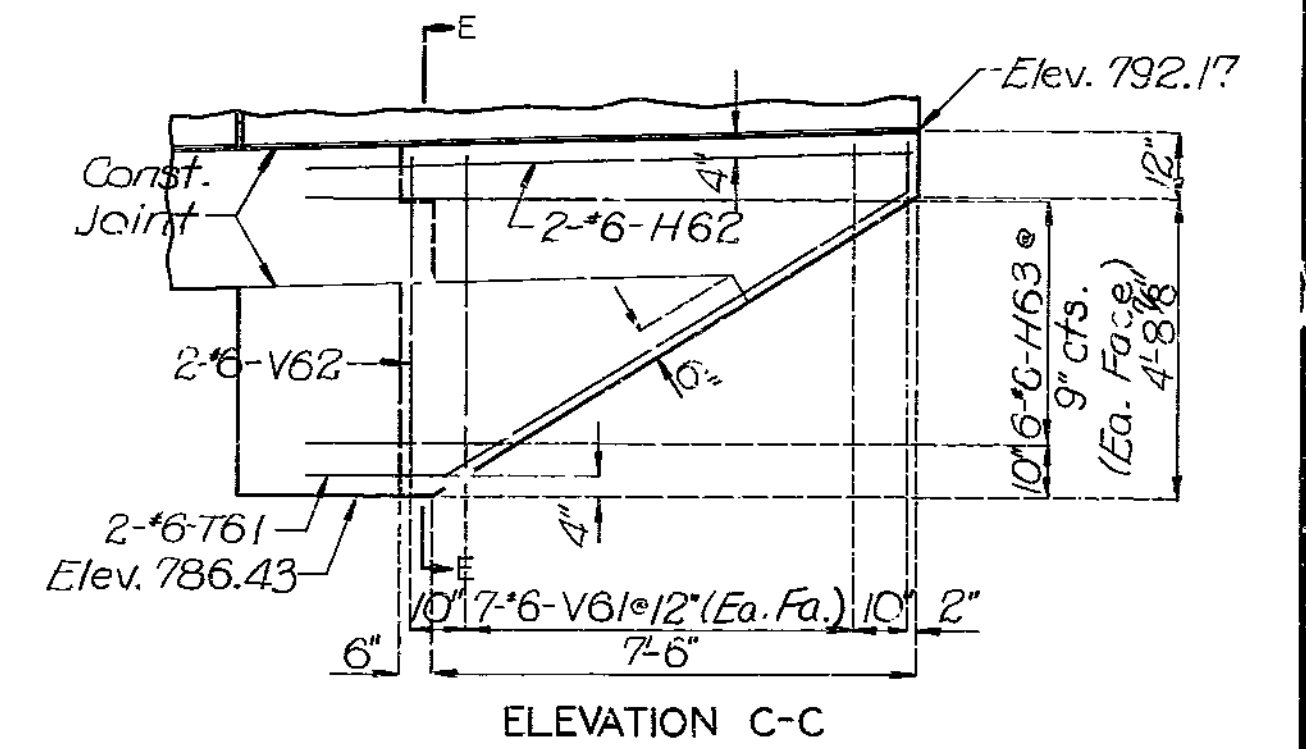
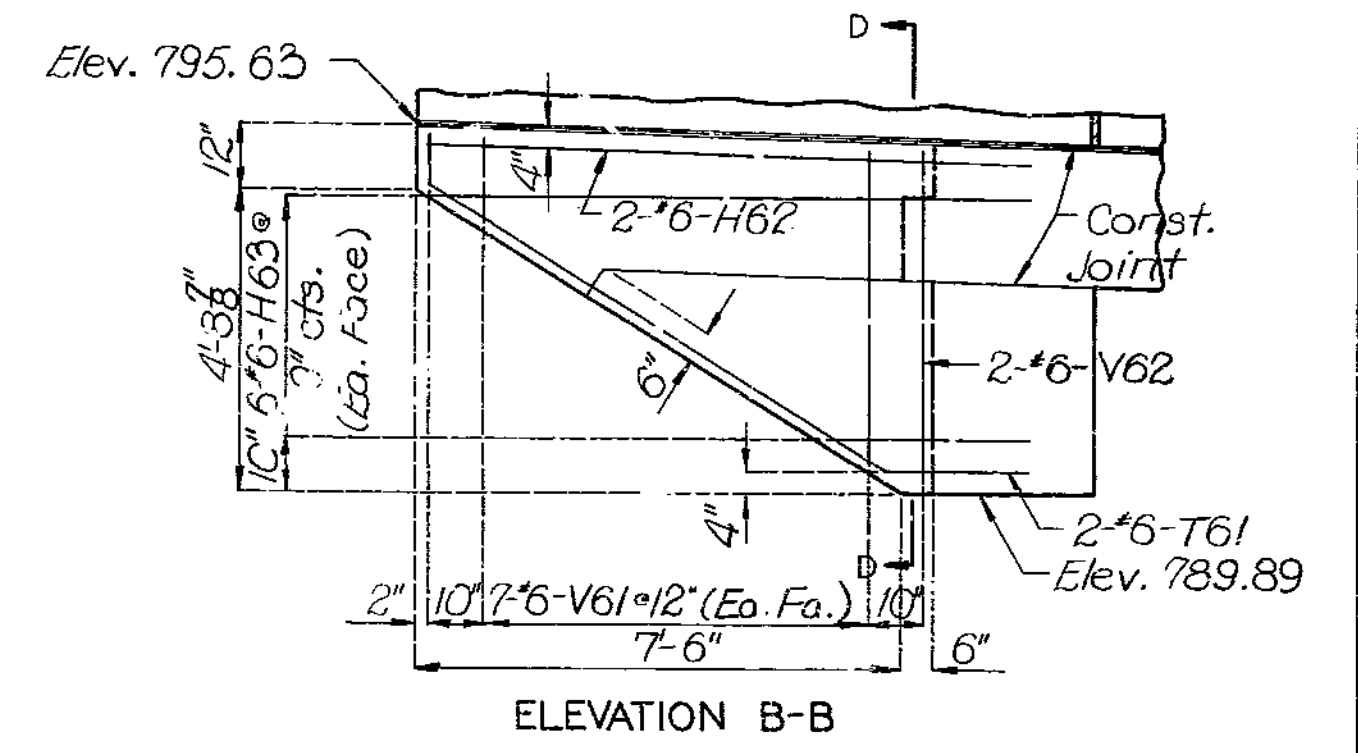
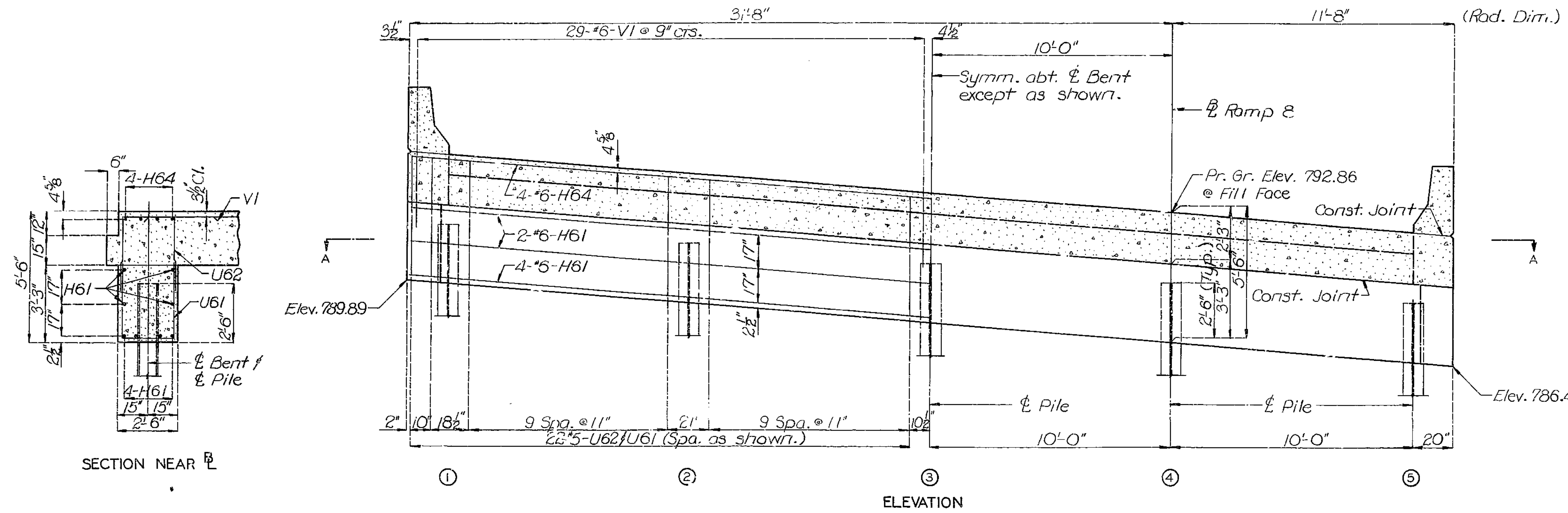
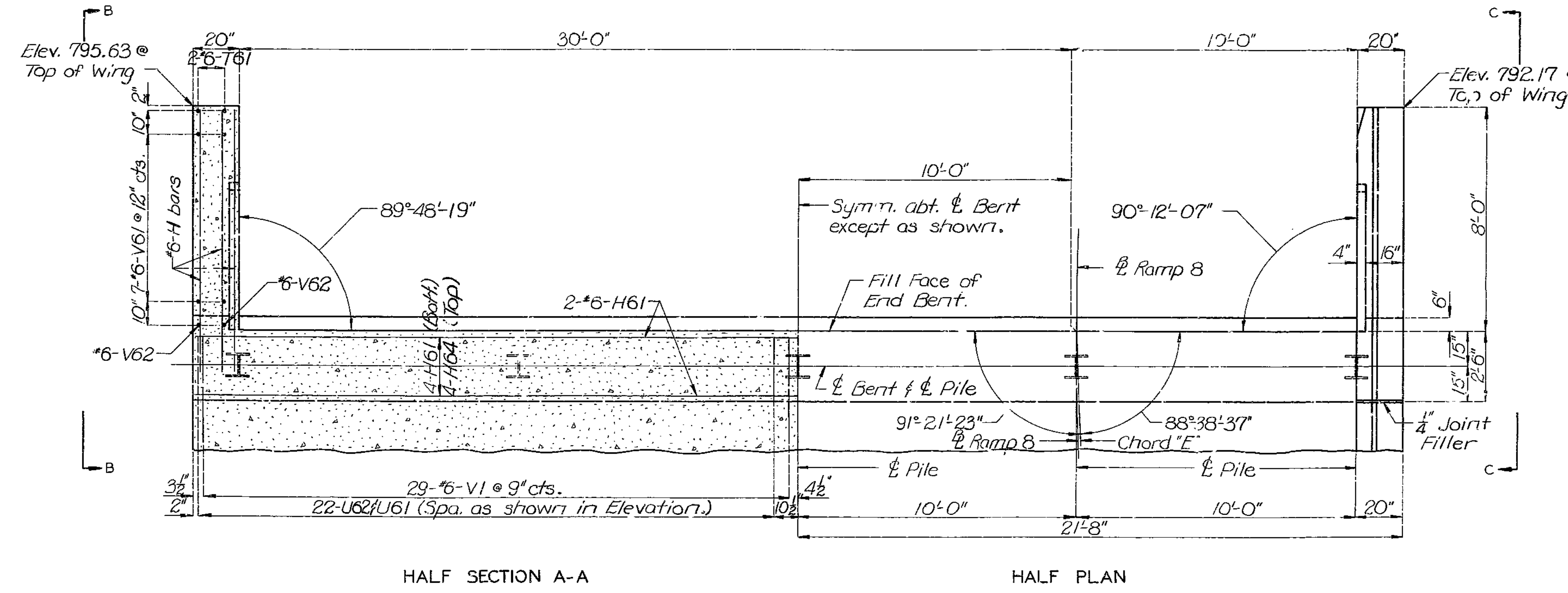


TABLE OF PILE CUT-OFF ELEVATIONS

PILE NO.	CUT-OFF ELEV.
1	792.26
2	791.46
3	790.66
4	789.86
5	789.06



DETAILS OF END BENT NO. 6

Note: For Detail of Steel Pile Splice and Pile Tip Reinforcement, see sheet No. 4.

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

Sheet No. 9 of 18.

CLAY

COUNTY

A-3387

523

DETAILED JAN. 1978  
CHECKED APR. 1979

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	147	



Note: Longitudinal dimensions shown are horizontal.

524

DETAILED OCT. 1977  
CHECKED APR. 1979

PLAN OF SLAB SHOWING CURB ORDINATES  
Note: This drawing is not to scale. Follow dimensions.

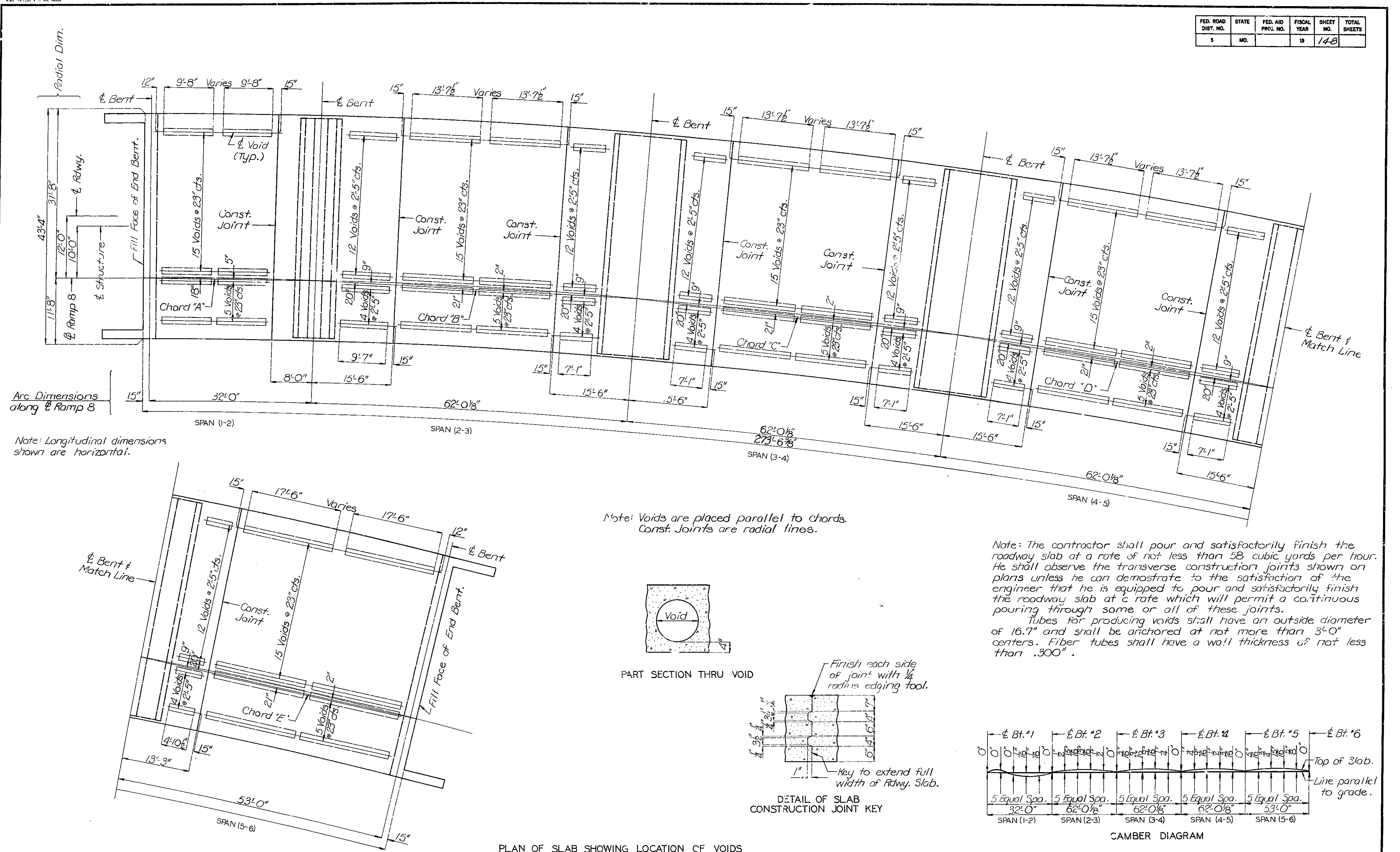
Sheet No. 10 of 18.

CLAY COUNTY

A-3387

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	148	

525



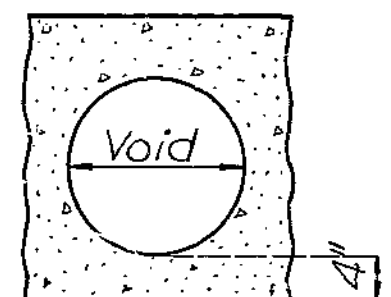
Arc Dimensions along Ramp 8

Note: Longitudinal dimensions shown are horizontal.

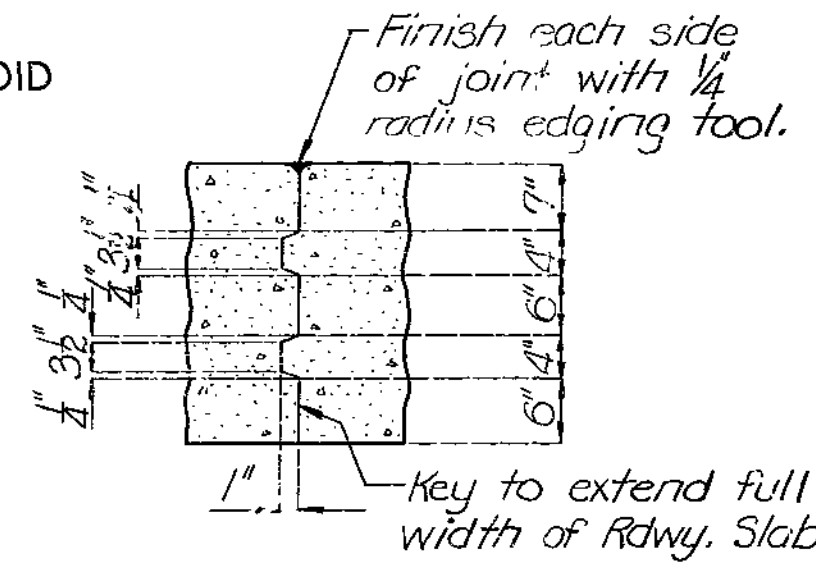
Note: Voids are placed parallel to chords. Const. Joints are radial lines.

Note: The contractor shall pour and satisfactorily finish the roadway slab at a rate of not less than 58 cubic yards per hour. He shall observe the transverse construction joints shown on plans unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slab at a rate which will permit a continuous pouring through some or all of these joints.

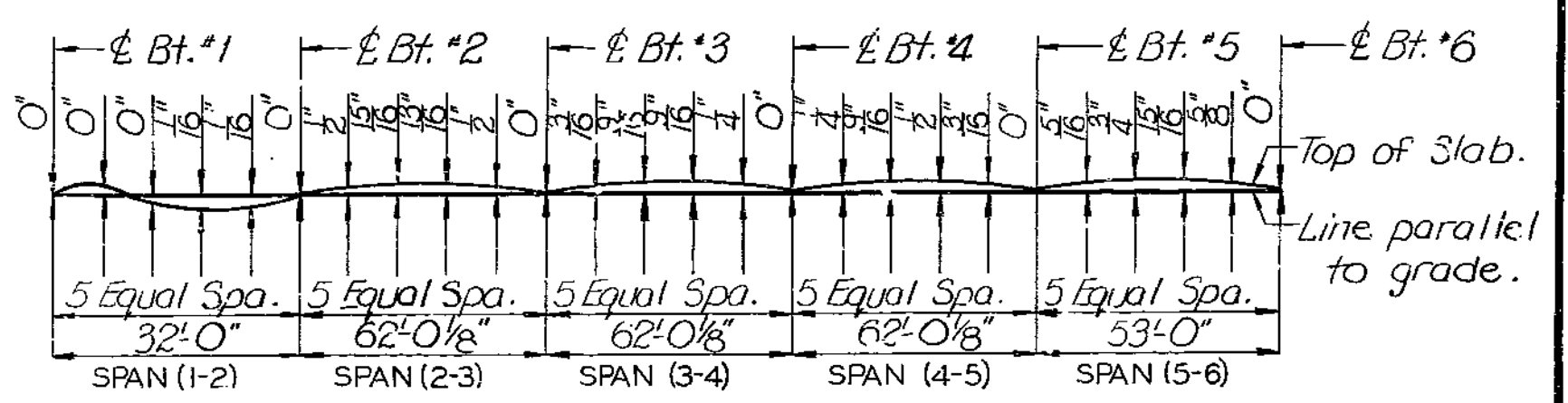
Tubes for producing voids shall have an outside diameter of 16.7" and shall be anchored at not more than 3'-0" centers. Fiber tubes shall have a wall thickness of not less than .300".



PART SECTION THRU VOID



DETAIL OF SLAB CONSTRUCTION JOINT KEY



CAMBER DIAGRAM

PLAN OF SLAB SHOWING LOCATION OF VOIDS

DETAILED NOV. 1977  
CHECKED APR. 1979

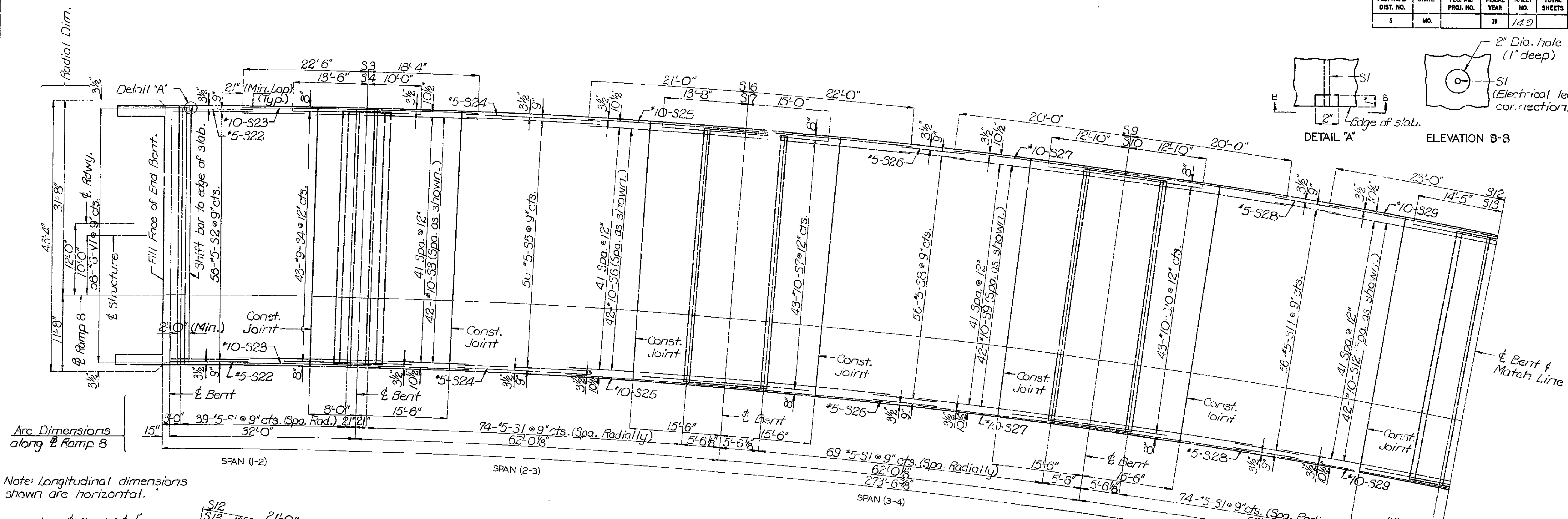
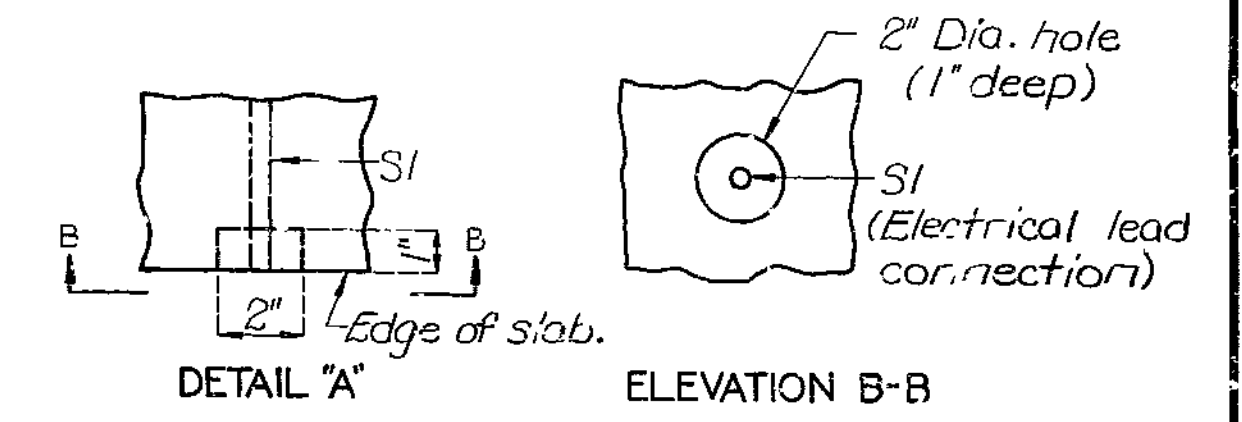
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 11 of 18.

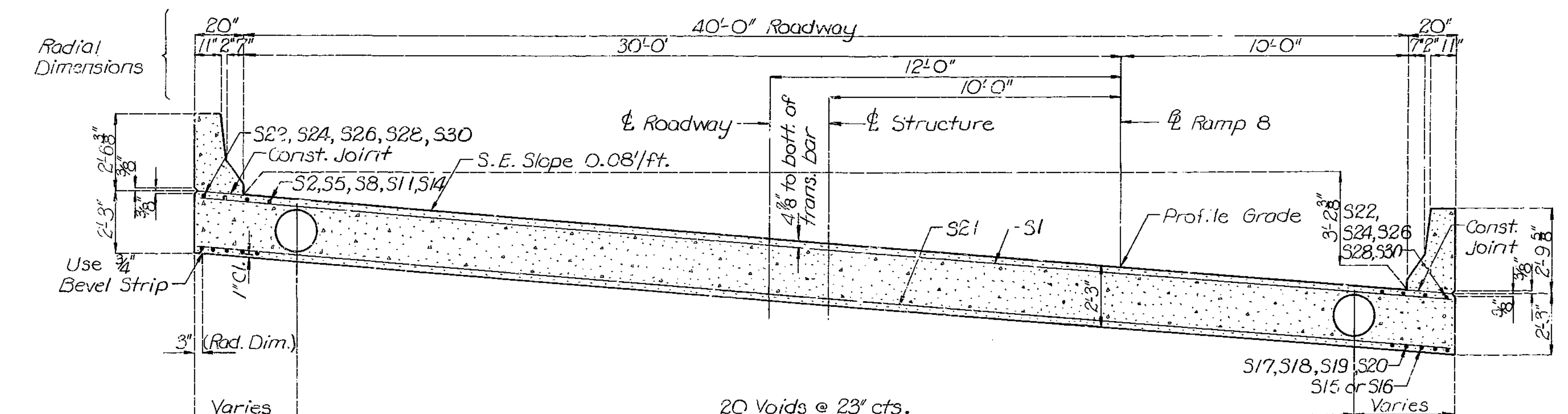
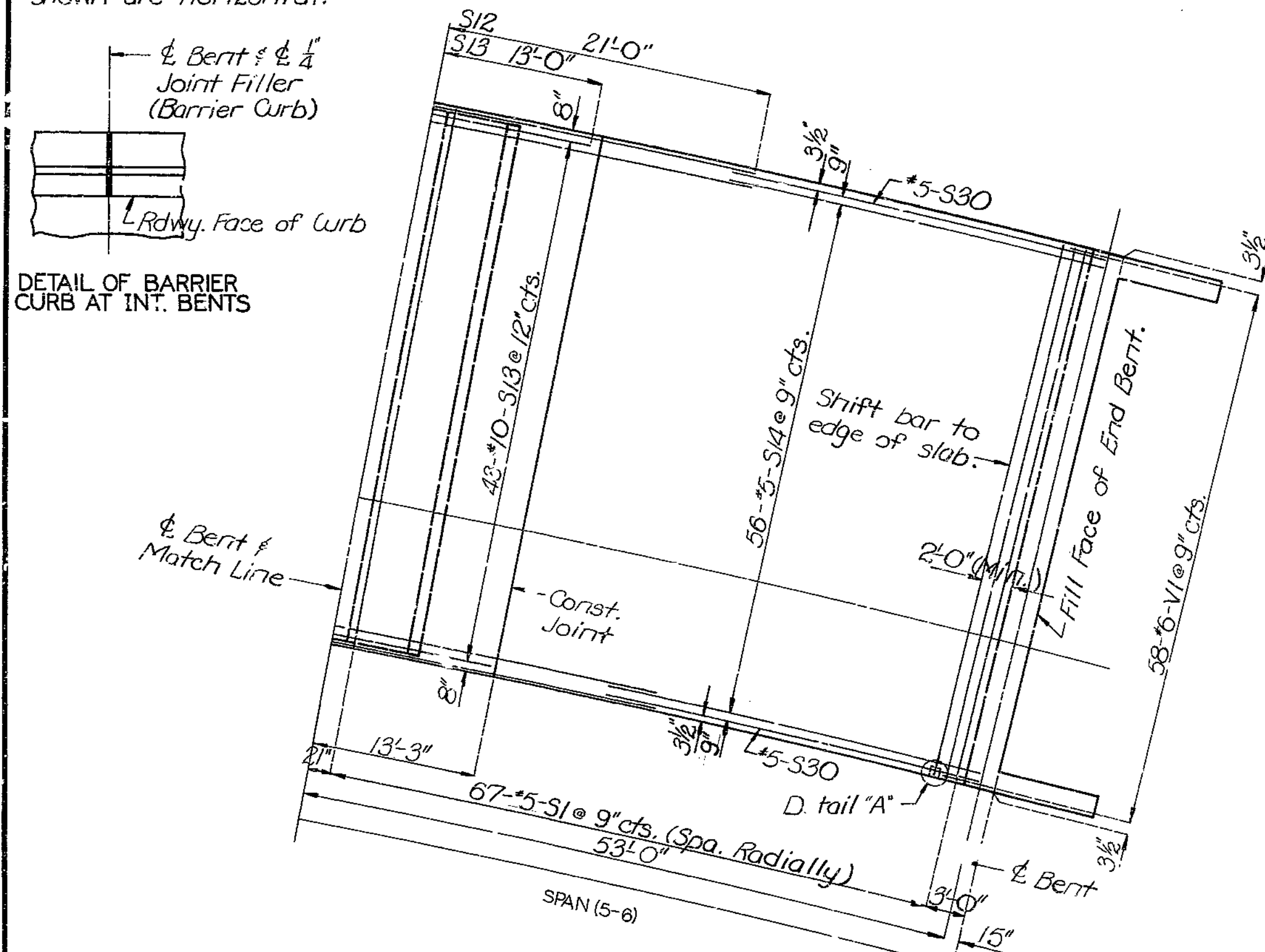
CLAY COUNTY

A-3387

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	140	



Note: Two electr lead connections required. Actual location designated by the Engineer as part of the system. (See Special Provisions.)



Note: For details and reinforcement of safety barrier bridge curb, see sheet No. 15 & 16.

DETAILED NOV. 1977  
CHECKED APR. 1979

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

Sheet No. 12 of 18.

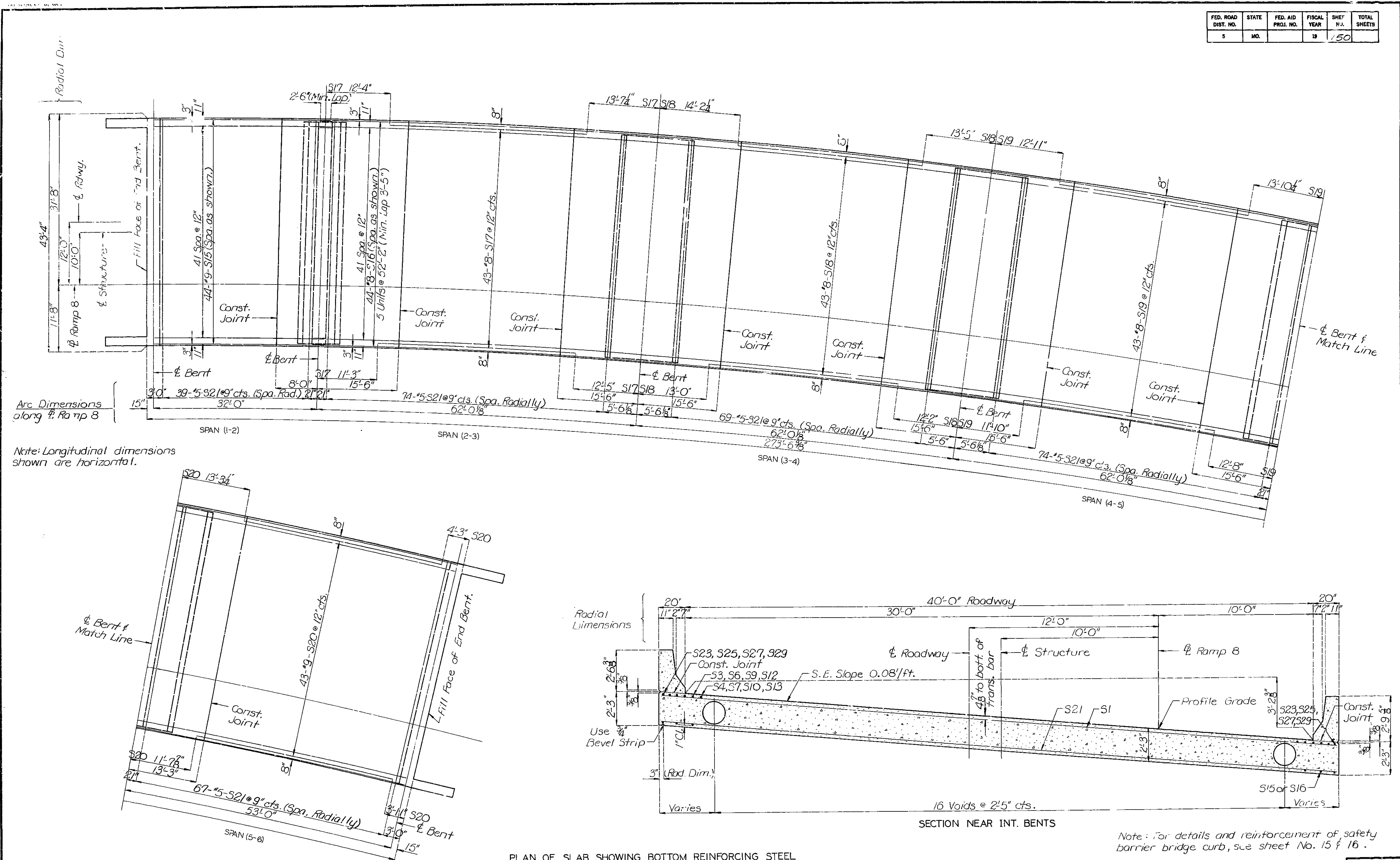
CLAY

COUNTY

A-3387

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	150	

527



Arc Dimensions along  $\phi$  Ramp 8

Note: Longitudinal dimensions shown are horizontal.

PLAN OF SLAB SHOWING BOTTOM REINFORCING STEEL

SECTION NEAR INT. BENTS

Note: For details and reinforcement of safety barrier bridge curb, see sheet No. 15 & 16.

DETAILED NOV. 1977  
CHECKED APR. 1979

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

Sheet No. 13 of 18.

CLAY

COUNTY

A-3387

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	151	

**GENERAL NOTES: SLAB DRAINS**

SLAB DRAINS MAY BE FABRICATED OF EITHER 1 4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1 4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE 8"x4".

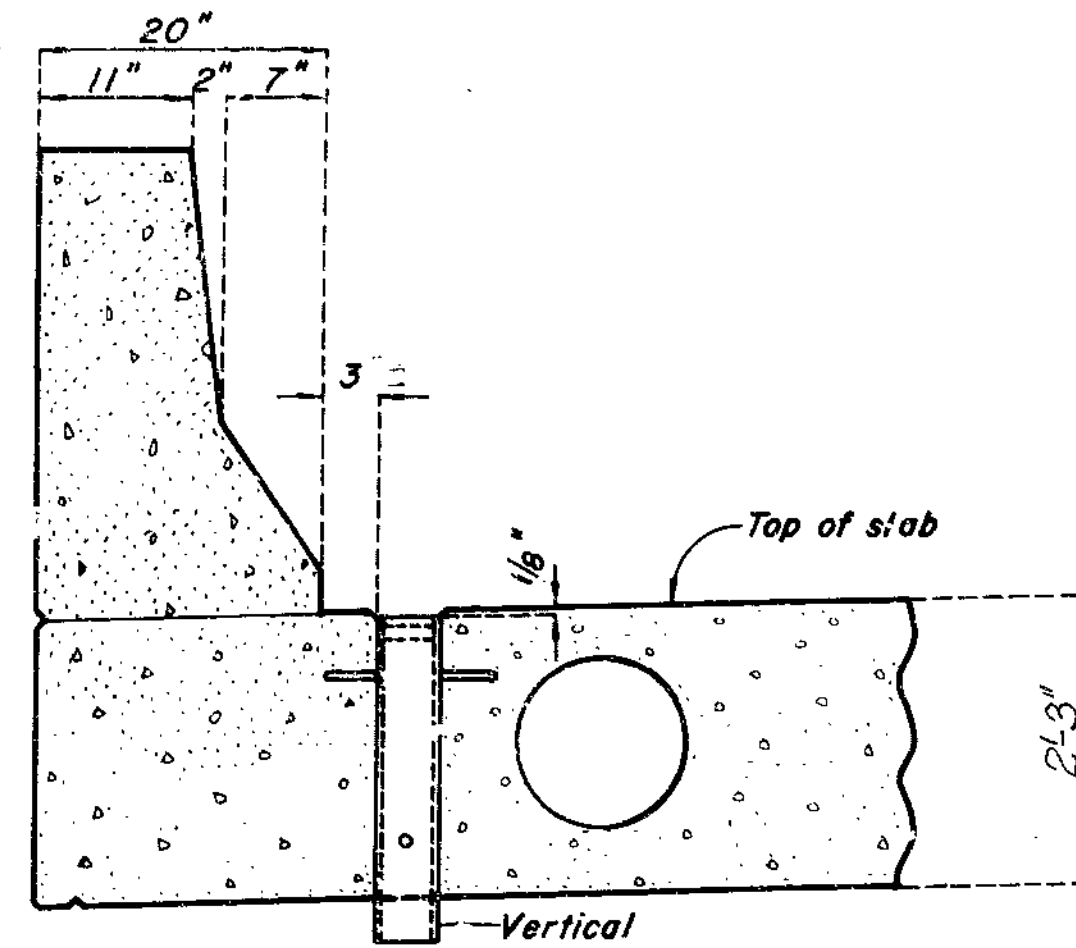
THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1 8" BELOW THE FINISHED CONCRETE LINE.

LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.

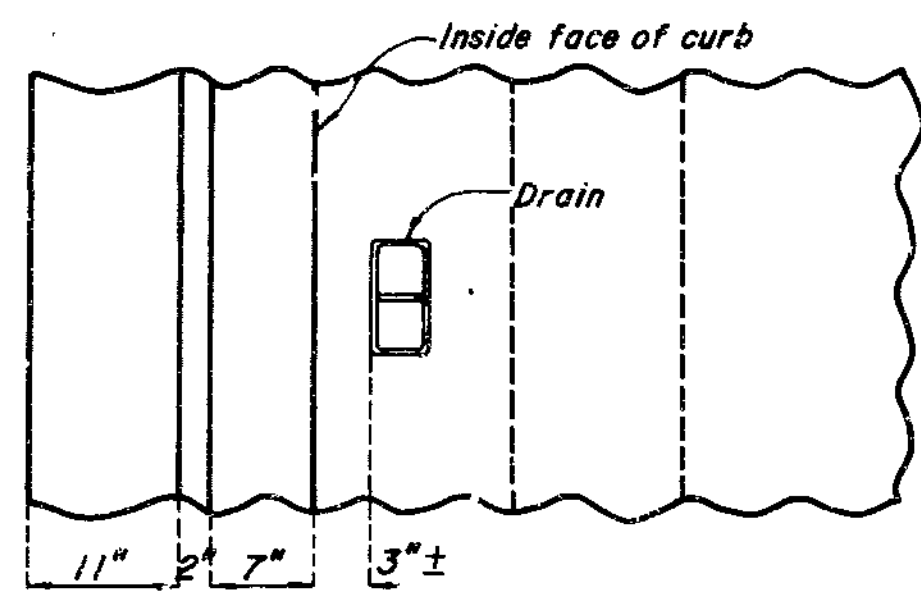
SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

THE DRAINS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

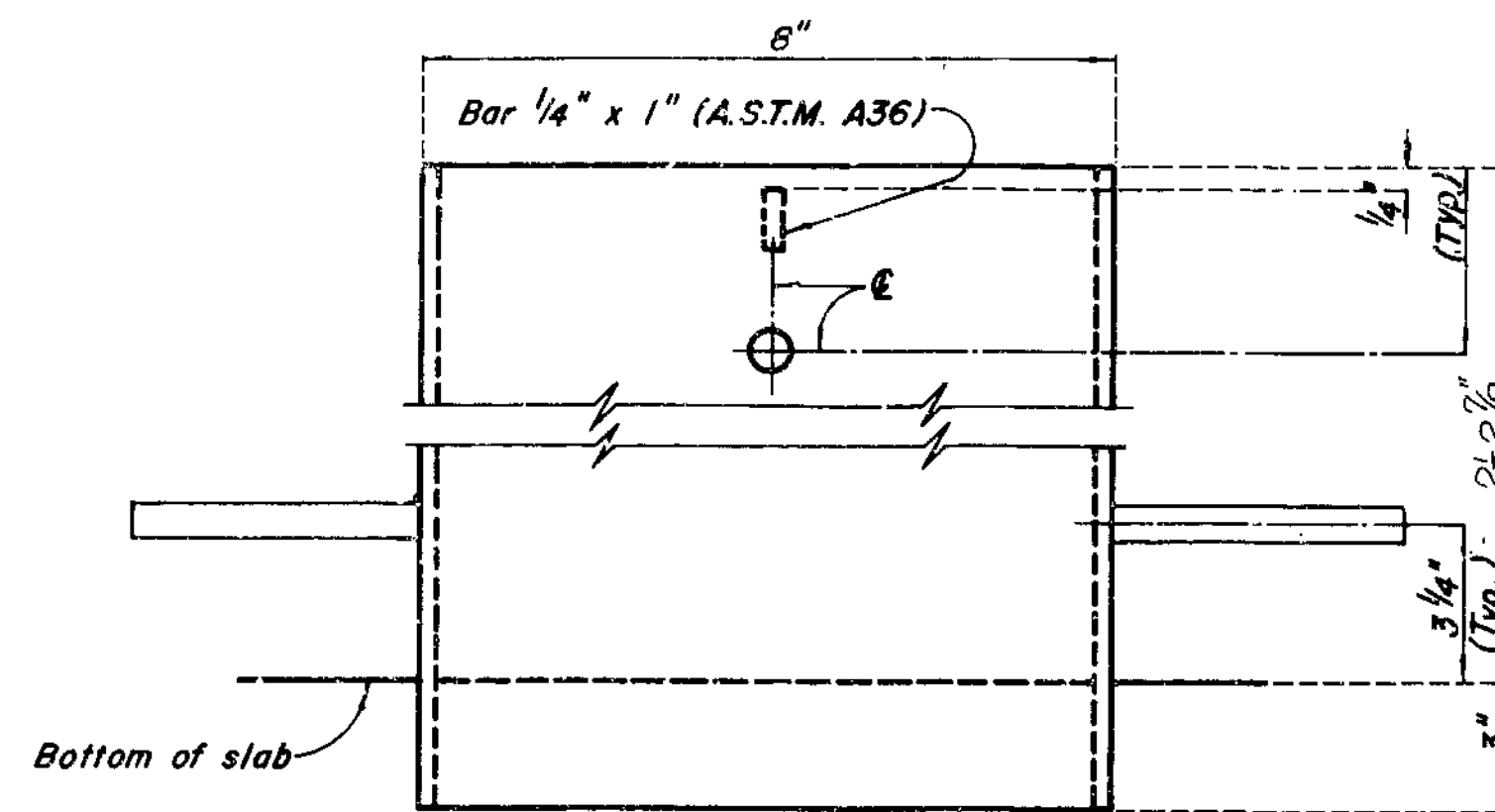
SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS.



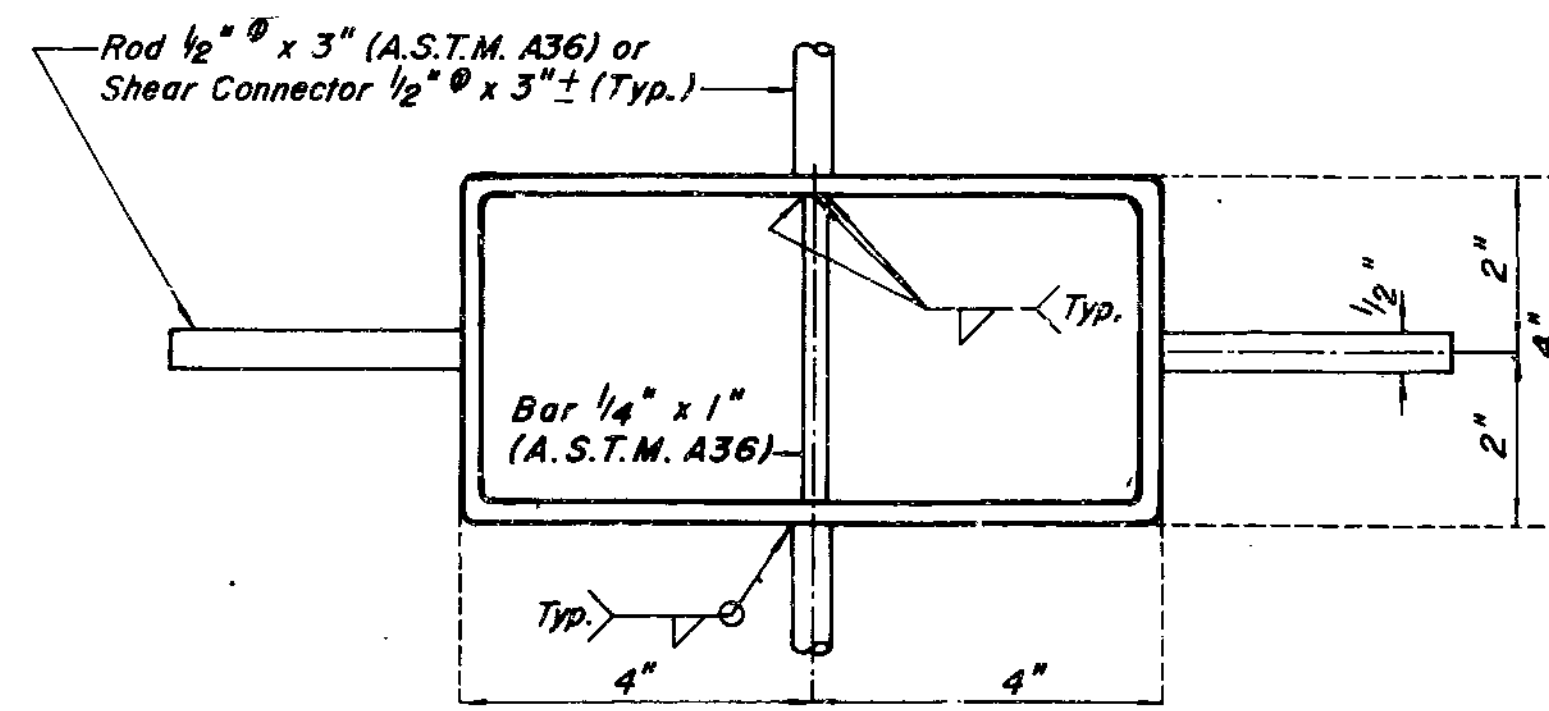
PART ELEVATION OF SLAB



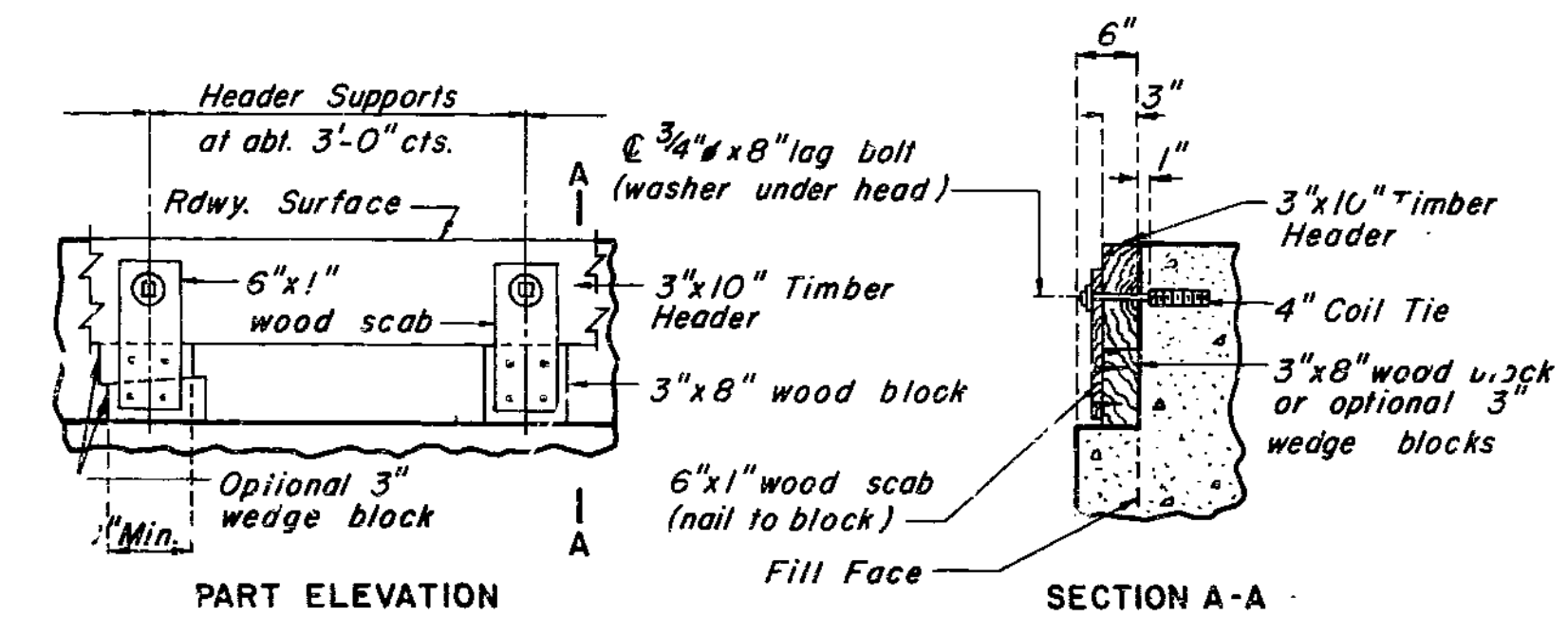
PART PLAN OF SLAB



ELEVATION

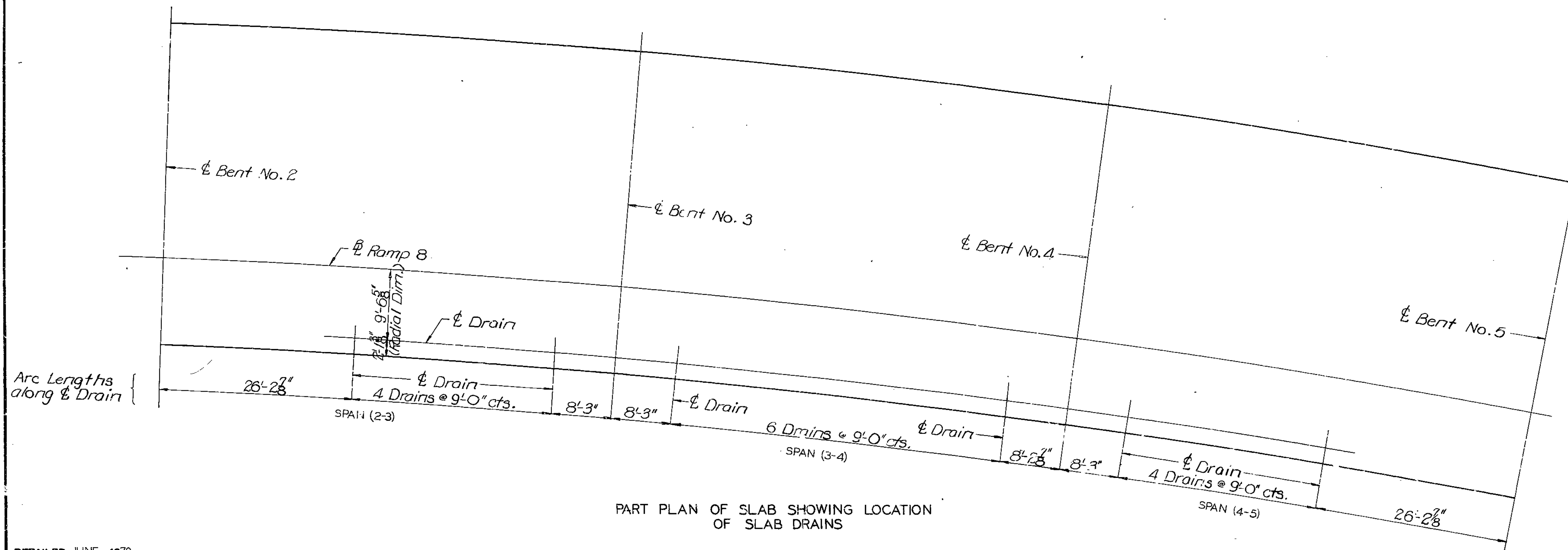


PLAN  
SLAB DRAIN DETAILS



Note: Cast of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER AT END BENTS



PART PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

DETAILED JUNE 1979  
CHECKED JUNE 1979

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

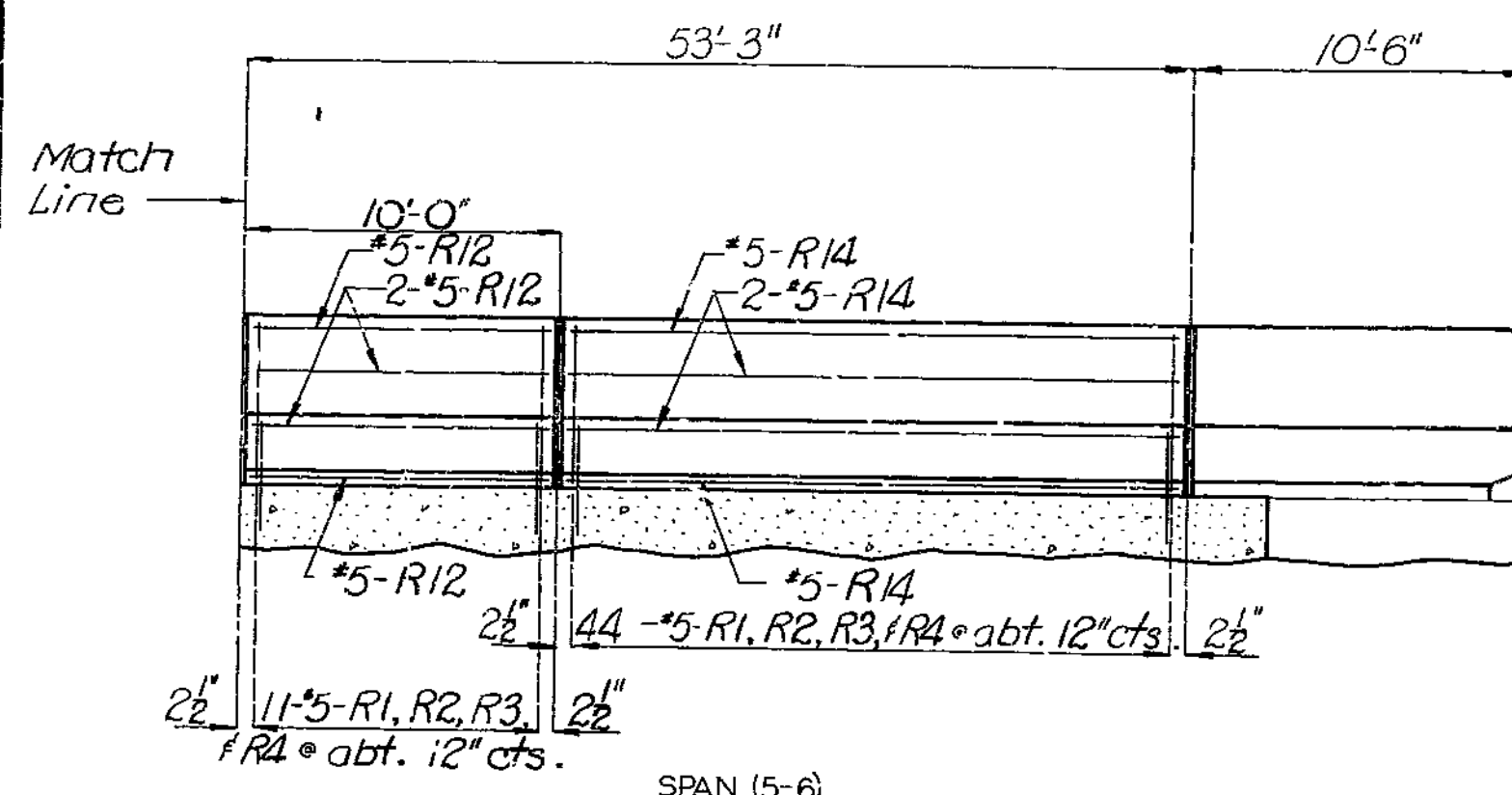
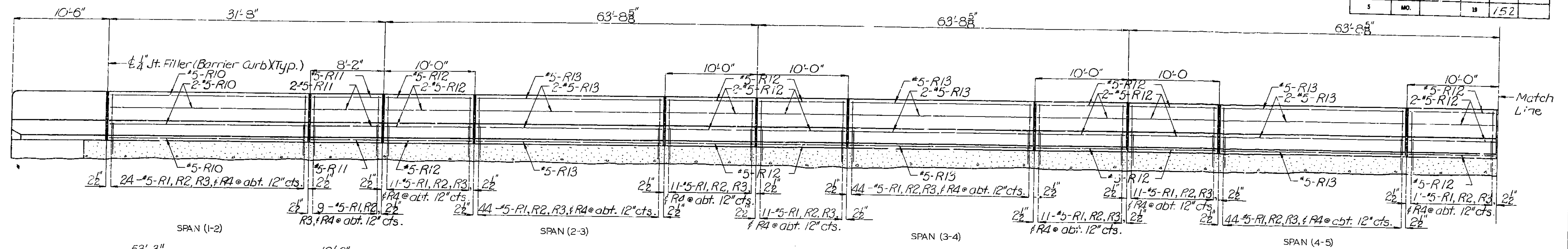
Sheet No. 14 of 18.

CLAY

COUNTY

A-3387

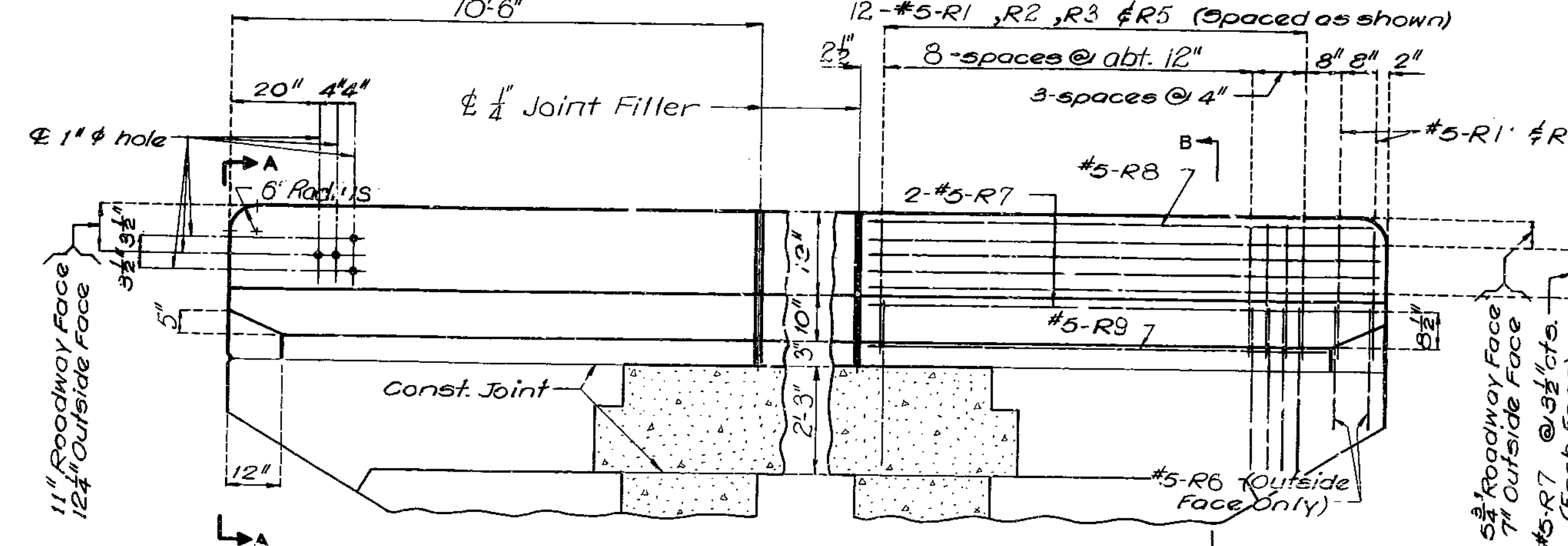
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	152	



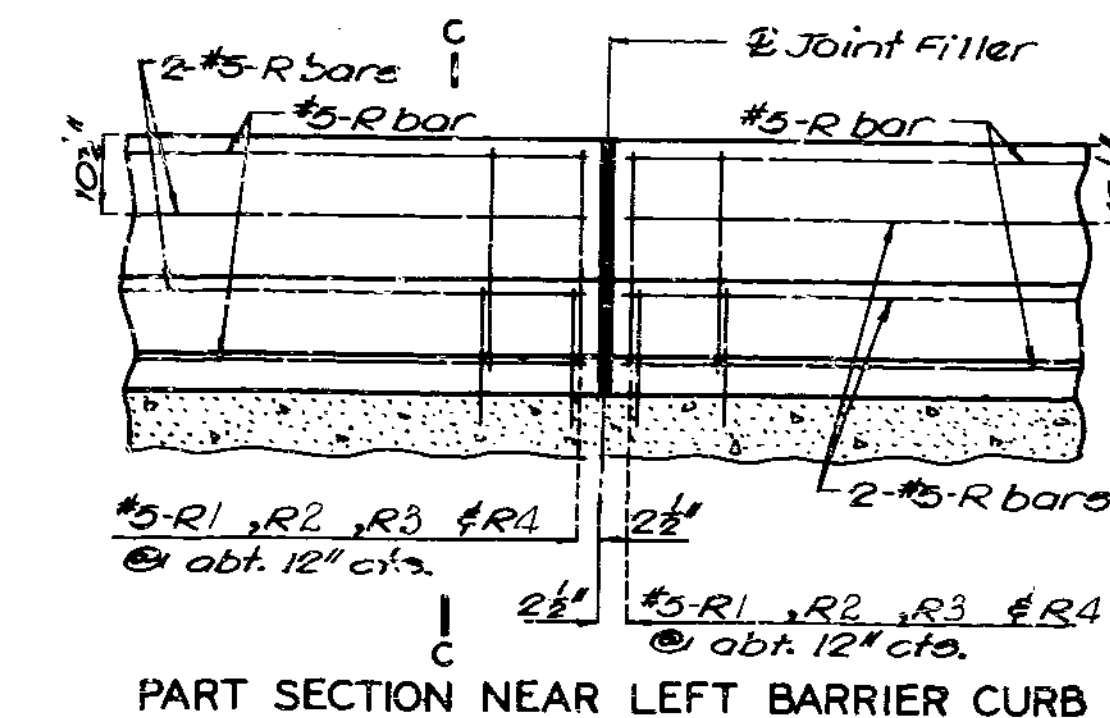
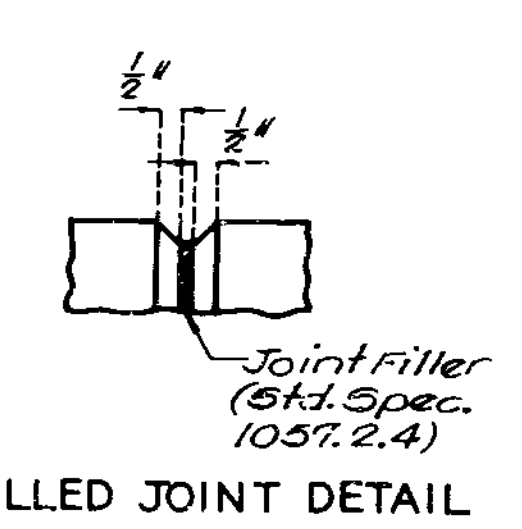
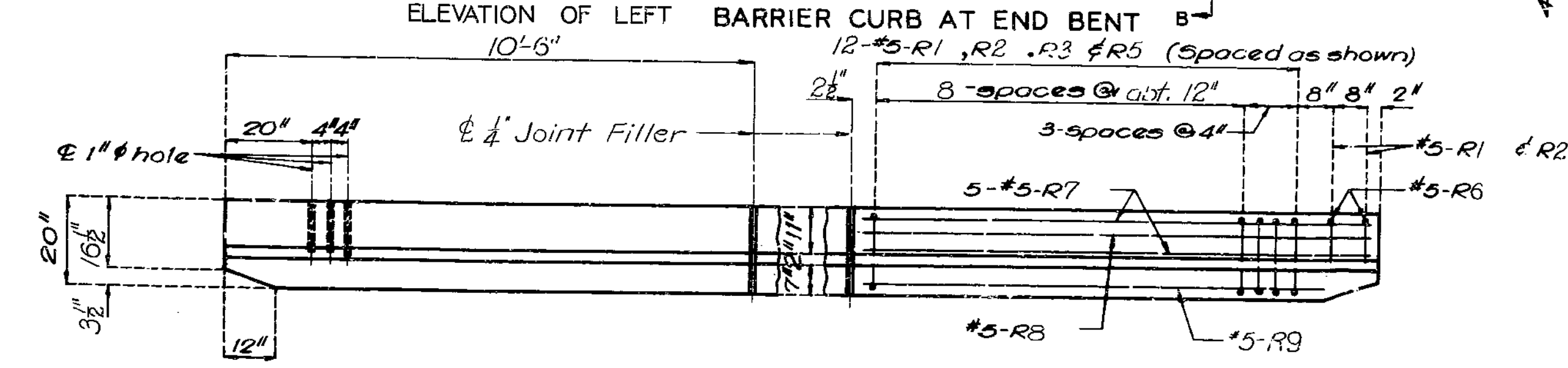
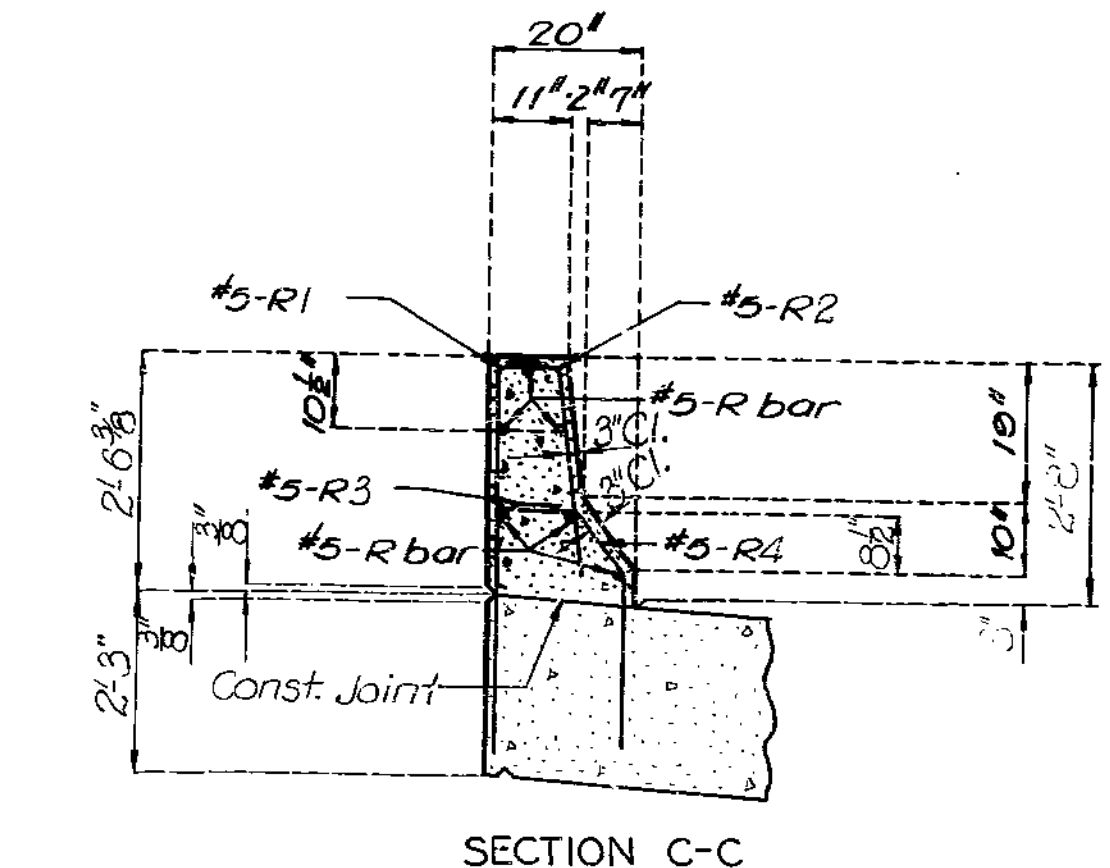
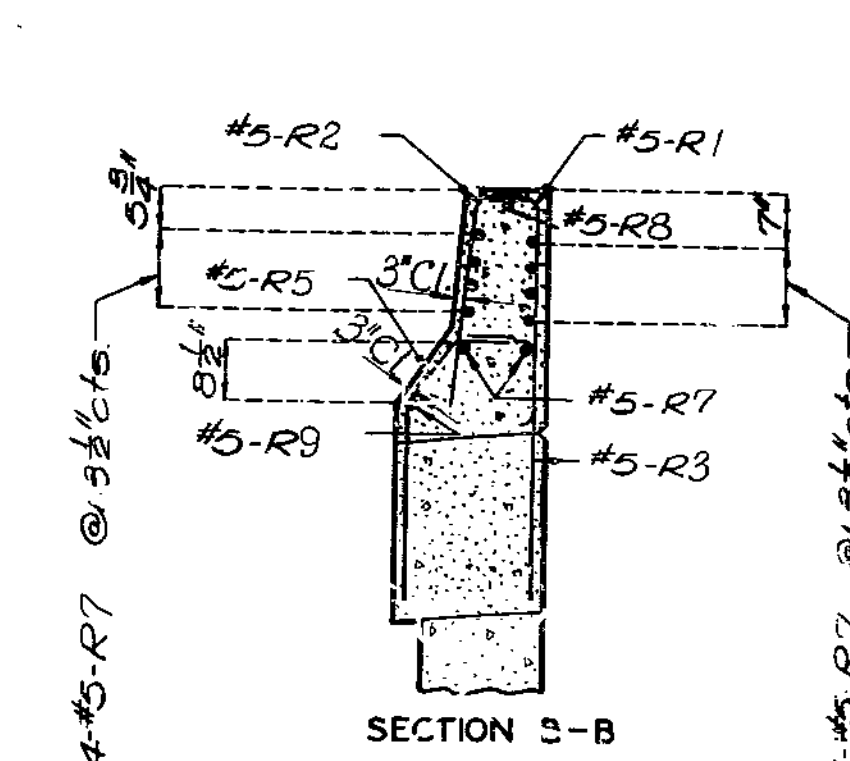
Note: Longitudinal dimensions are horizontal arc dimensions along outside of slab.

Note: Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.  
All exposed edges of barrier curb shall have 1/2" radius or 3/8" bevel unless otherwise noted.

PART SECTION NEAR LEFT BARRIER CURB



Note: Use a minimum lap of 17" for #5 horizontal barrier curb bars.

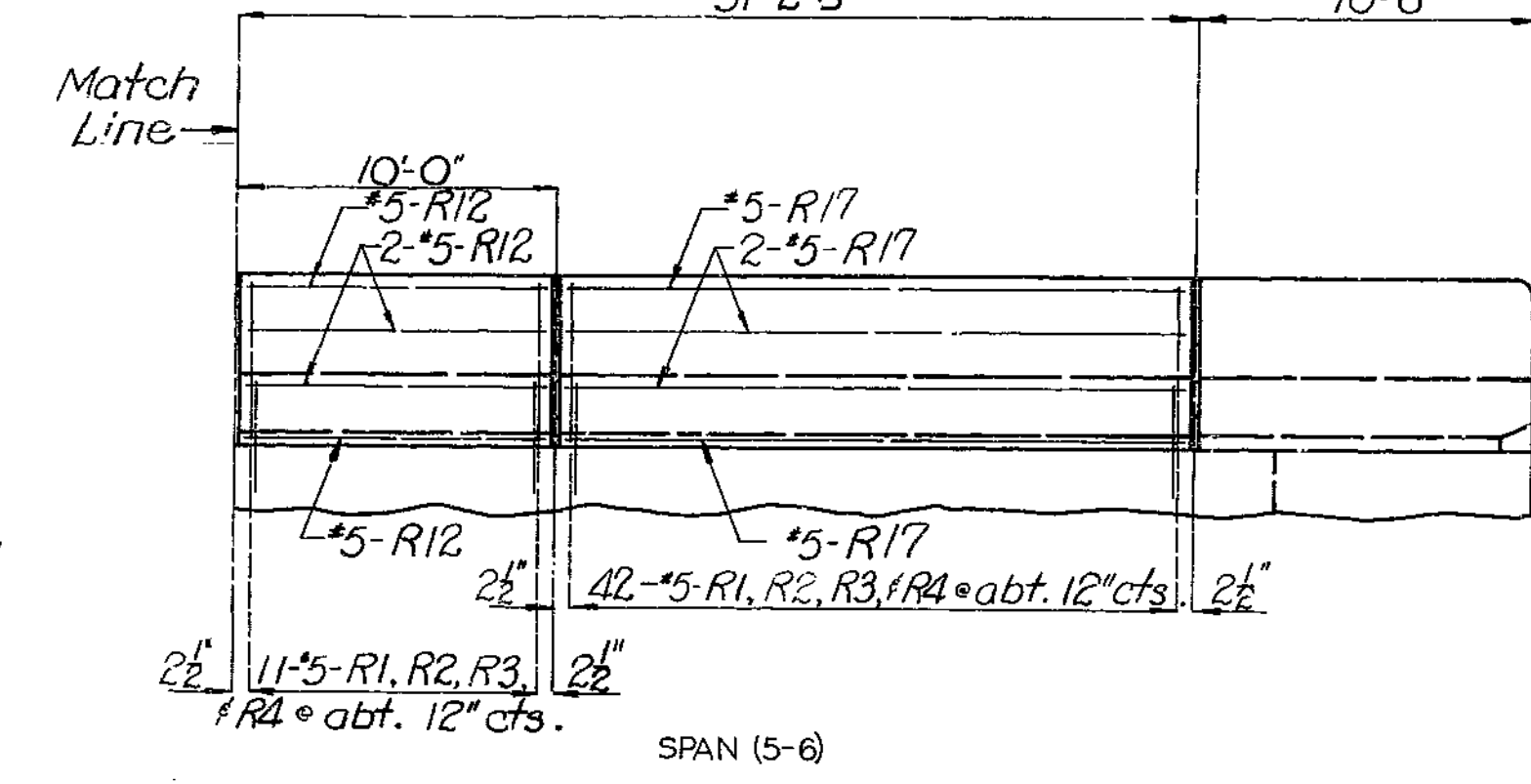
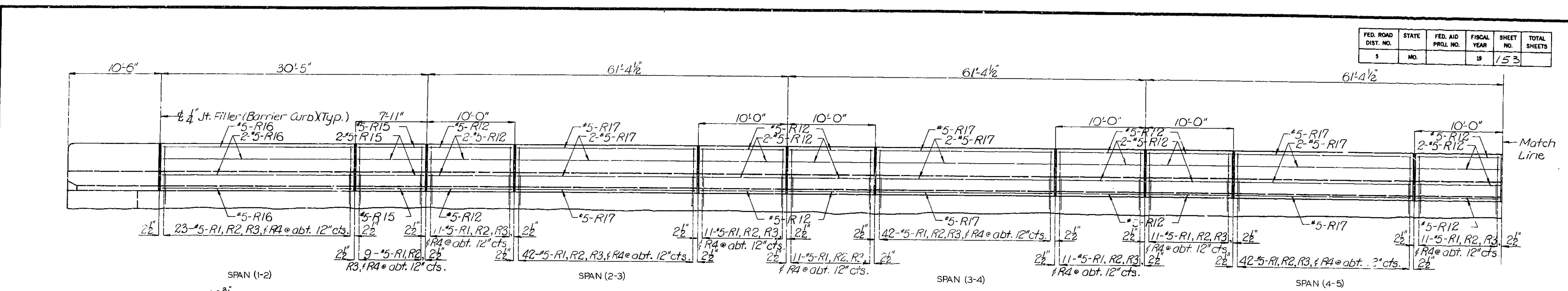


Note: This drawing is not to scale. Follow dimensions.

ST. 1.7.4 REVISED NOV. 1974 MAY 1975

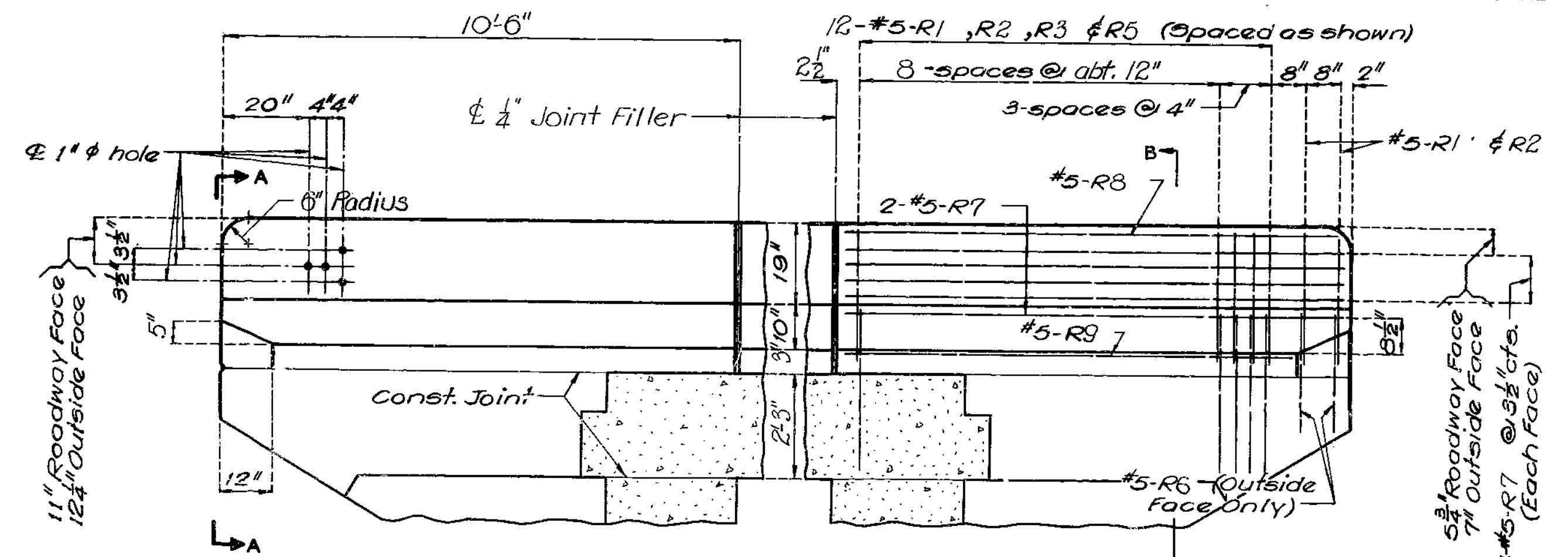
DETAILED DEC. 1977 CHECKED APR. 1979

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	153	

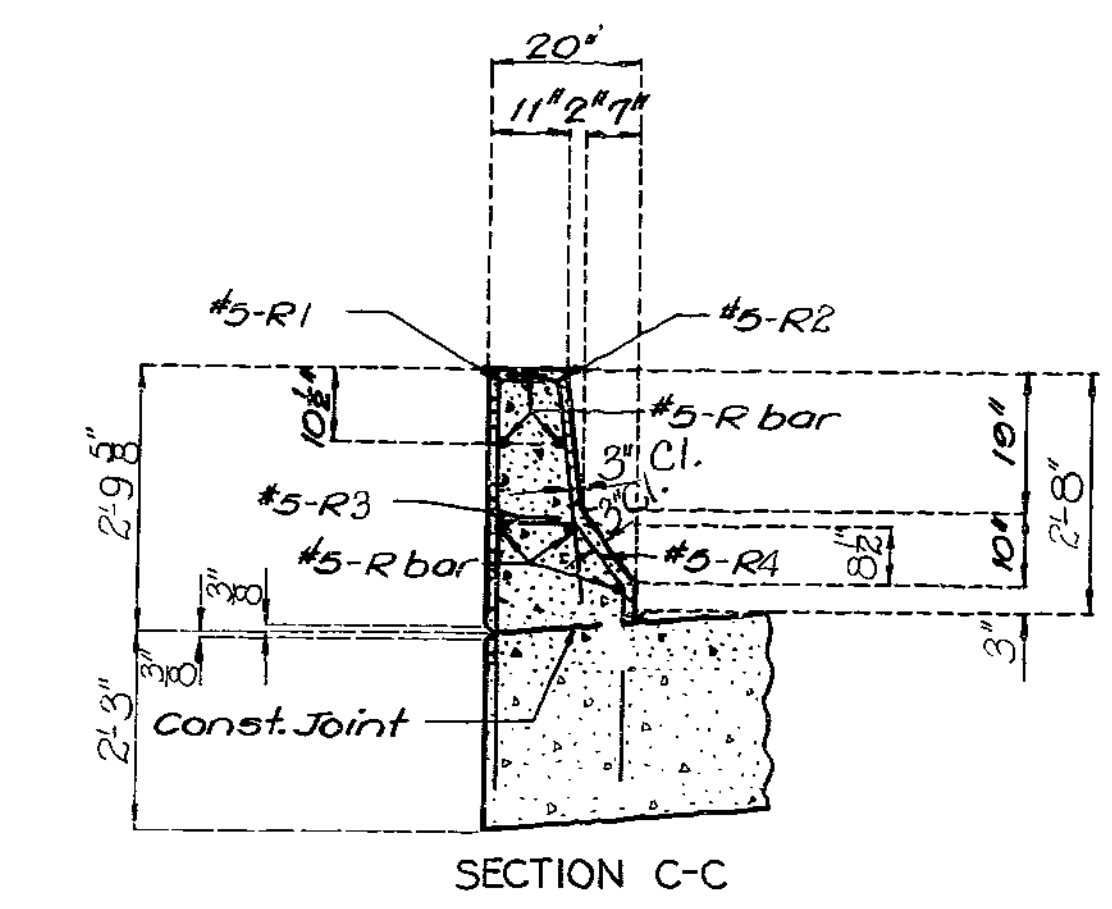
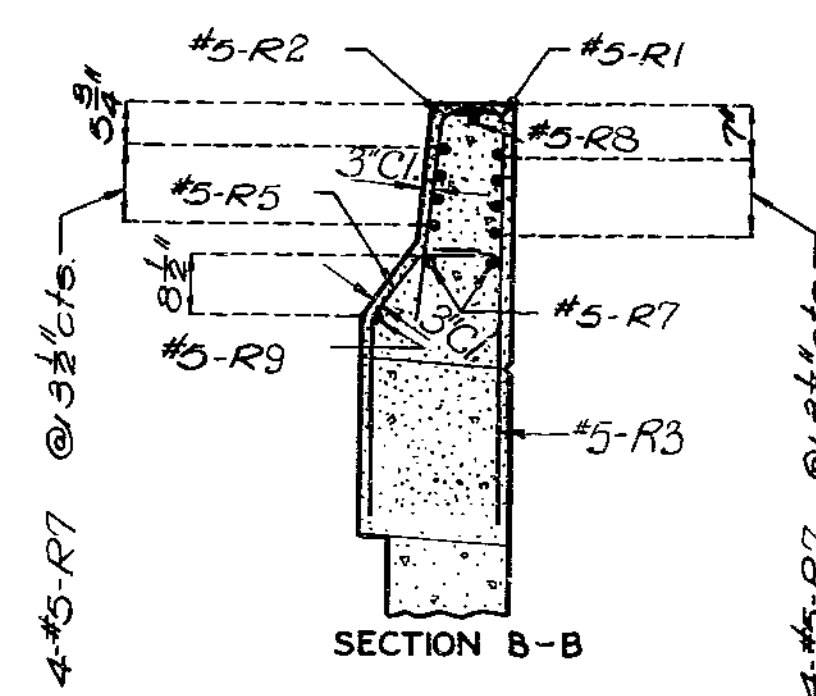


Note: Longitudinal dimensions are horizontal arc dimensions along outside of slab.

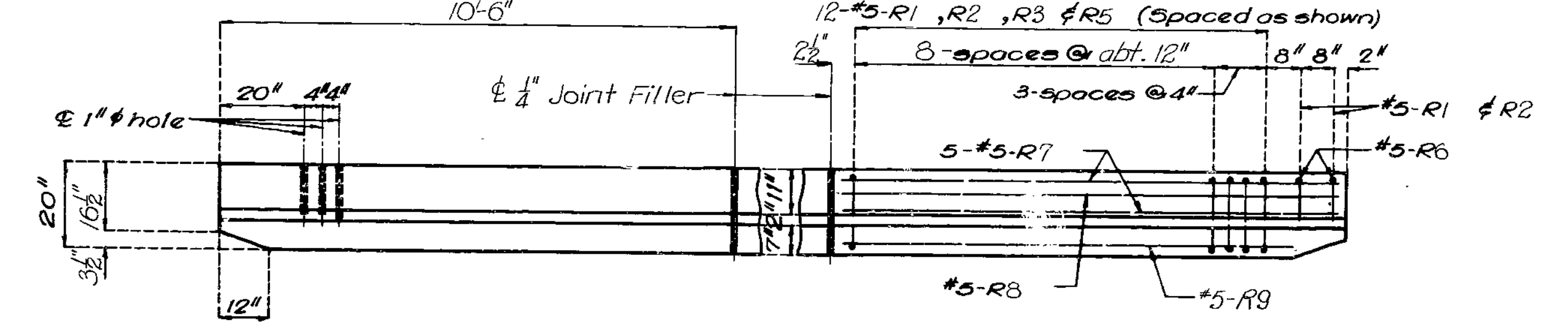
PART ELEVATION NEAR RIGHT BARRIER CURB



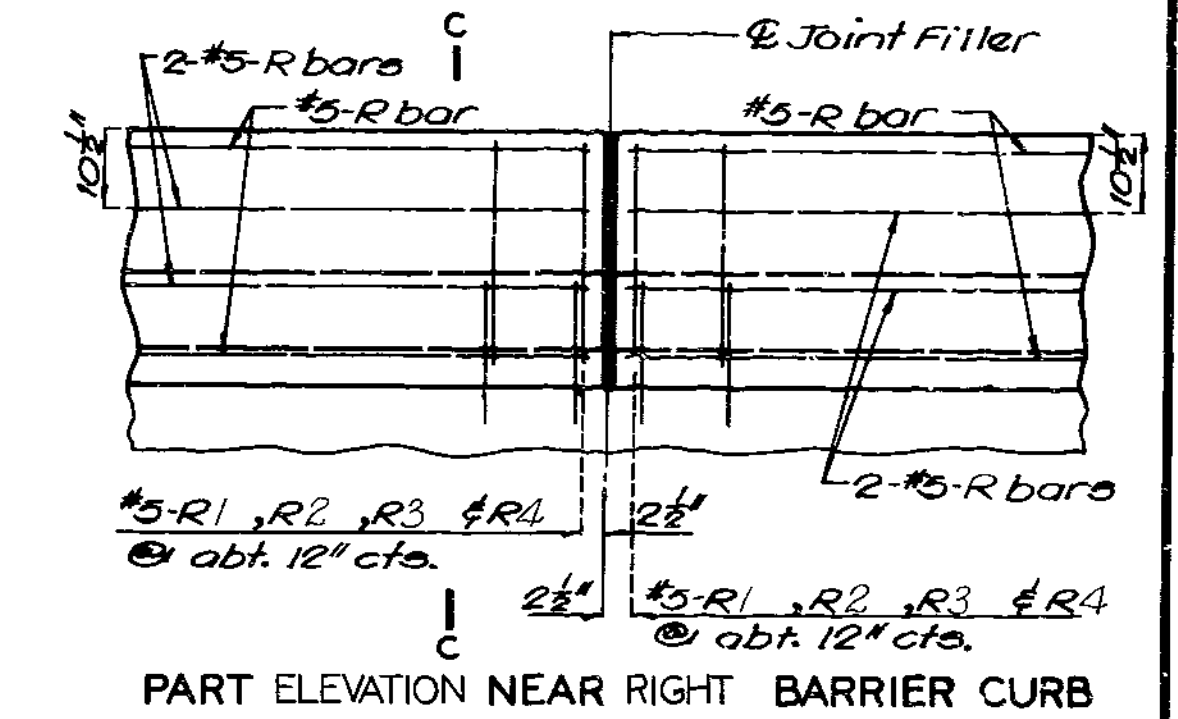
Note: Use a minimum lap of 17" for #5 horizontal barrier curb bars.



ELEVATION OF RIGHT BARRIER CURB AT END BENT



PLAN OF RIGHT BARRIER CURB AT END BENT



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

530

STD. I.7.4 REVISED NOV. 1974 MAY 1975

DETAILED DEC. 1977 CHECKED APR. 1979

Sheet No. 16 of 18

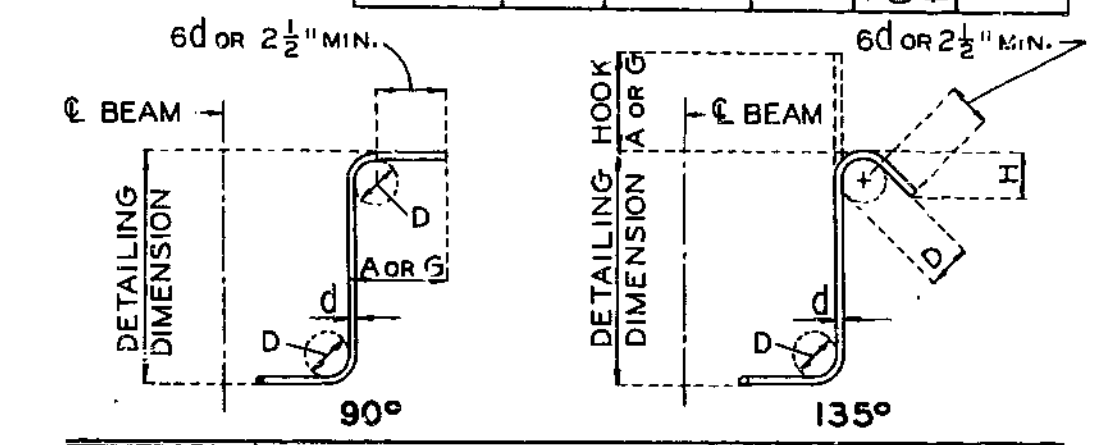
CLAY

COUNTY

A-3387

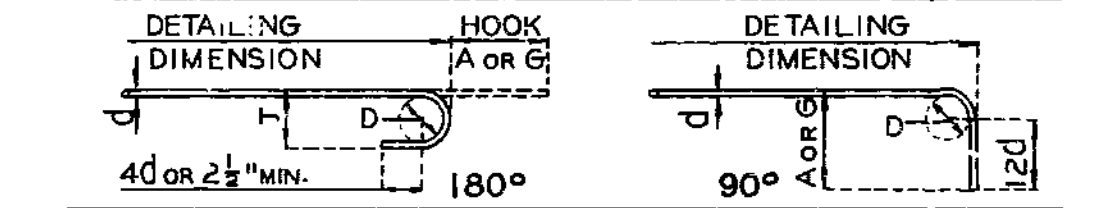


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	154	



STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

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



SIZE OF 180° HOOKS (GRADE 40 KSI)     SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)

D = 5d FOR #3 THRU #11     D = 6d FOR #3 THRU #8  
 D = 10d FOR #14 AND #18     D = 8d FOR #9, #10 AND #11  
 D = 10d FOR #14 AND #18

BAR SIZE	180° HOOKS				90° HOOKS	
	GRADE 40		GRADE 60		ALL GRADES	
	A OR G	J	A OR G	J	A OR G	A OR G
#3	5"	2-3/4"	5"	3"	6"	6"
#4	6"	3-1/2"	6"	4"	8"	8"
#5	7"	4-1/2"	7"	5"	10"	10"
#6	8"	5-1/4"	8"	6"	12"	12"
#7	9"	6-1/4"	10"	7"	14"	14"
#8	10"	7"	11"	8"	16"	16"
#9	12"	8"	15"	11-1/4"	19"	19"
#10	13"	9"	17"	12-3/4"	22"	22"
#11	14"	10"	19"	14-1/4"	21-0"	21-0"
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"	21-7"
#18	21-11"	21-3"	21-11"	21-3"	31-5"	31-5"

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 I.F. SUBSTRUCTURE QUANTITIES.  
 V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.  
 NO. EA. - NUMBER OF BARS OF EACH LENGTH.  
 NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)  
 ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.

Note: Two additional H4 are included in bar bill for testing. See Special Provisions.

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS									NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT					
									B	C	D	E	F	H	K										
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.				IN.	FT.	IN.		
		END BENT NO 1																							
8	6H1	BEAM		20				43	1.000					43	1.43	1	518								
8	6H2	WING		20				9	6.000					9	6	114									
16	6H3	WING		20		V	4	7	11.000					7	11	711									
		INCR = 1.5625 IN						4	0.000					4	0	143									
6	6H4	BEAM	E	20				43	1.000					43	1.43	1	388								
4	6T1	WING		25	S			9.000	8	1.750	2	4.000			4	0.250	7	1.000	11	3	11	2	67		
44	5U1	BEAM		10	S				3	2.000	2	3.000					8	7	8	5				386	
44	5U2	BEAM	E	10	S				3	2.000	2	3.000					8	7	8	5				386	
58	6V1	BEAM	E	19	S			3	7.500	4	0.500						7	8	7	6				693	
28	6V2	WING		20		V	4	4	11.000								4	11	4	11					
		INCR = 7.125 IN							16	0.000							16								131
4	6V3	WING		20				5	3.000								5	3	5	3					32
		INT BENT NO 2																							
4	6G20	BEAM	E	20				43	1.000								43	1	43	1					259
4	5G21	DROP PANEL		20				42	3.000								42	3	42	3					176
6	6H20	BEAM		20				42	3.000								42	3	42	3					381
44	5U20	BEAM	E	10	S			6.000	3	8.500	2	3.000	6.000				10	8	10	3					470
43	5U21	DROP PANEL		15	S			21.750	5	11.000	21.750	9.750	19.500	9.750	19.500		9	7	9	6					426
		INT BENT NO 3																							
18	9D30	FOOTING		17				7	6.000								8	11	8	11					691
28	9D31	FOOTING		18				7	9.000								10	3	10	3					976
22	9D32	FOOTING		18				10	9.000								13	3	13	3					991
		INT BENT NO 4																							
23	10G30	BEAM	E	18				43	1.000								45	11	45	11					4544
20	9G31	BEAM		20				42	3.000								42	3	42	3					2873
106	4P30	COLUMN		16				2	9.000								9	6	9	6					673
86	5U30	BEAM	E	10	S			6.000	2	5.000	6	6.000	6.000				12	4	11	11					1069
9	10V30	COLUMN		19				27	6.000	22.000							29	4	29	0					1123
9	10V31	COLUMN		19				25	6.000	22.000							27	4	27	0					1046
18	10V32	Column		20				34	2.000								34	2	34	2					2646
		INT BENT NO 4																							
18	10D40	FOOTING		17				7	6.000								8	11	8	11					691
28	9D41	FOOTING		18				7	9.000								10	3	10	3					976
22	9D42	FOOTING		18				10	9.000								13	3	13	3					991
23	10G40	BEAM	E	18				43	1.000								45	11	45	11					4544
20	9G41	BEAM		20				42	3.000								42	3	42	3					2873

COMPLETE BILL OF REINFORCING STEEL

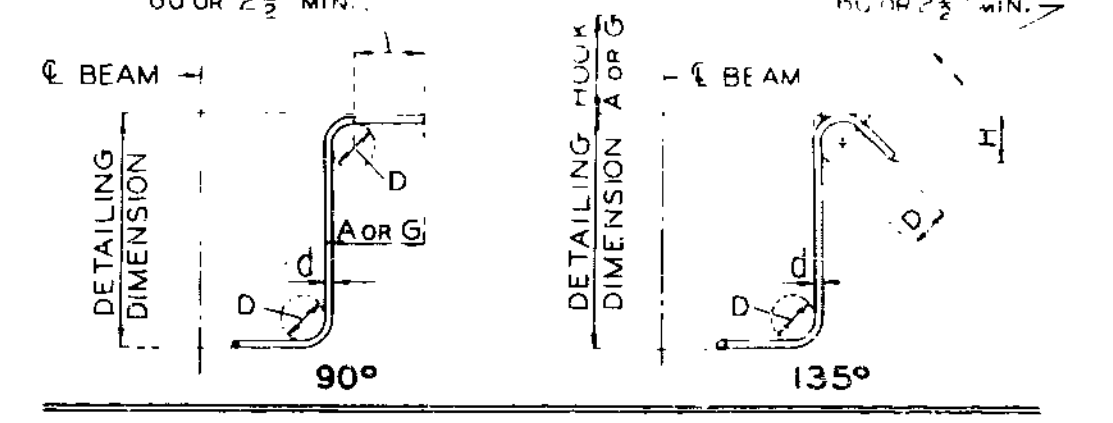
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS									NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT					
									B	C	D	E	F	H	K										
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.				IN.	FT.	IN.		
110	4P40	COLUMN		16				2	9.000								9	6	9	6					698
86	5U40	BEAM	E	10	S			6.000	2	5.000	6	6.000	6.000				12	4	11	11					1069
9	10V40	COLUMN		19				29	6.000	22.000							31	4	31	0					1201
9	10V41	COLUMN		19				27	6.000	22.000							29	4	29	0					1123
18	10V42	Column		20				34	2.000								34	2	34	2					2646
		INT BENT NO 5																							
4	6G50	BEAM	E	20				43	1.000								43	1	43	1					259
8	5G51	DROP PANEL		20				42	3.000								42	3	42	3					353
6	6H50	BEAM		20				42	3.000								42	3	42	3					381
40	5U50	BEAM	E	10	S			6.000	3	11.500	2	3.000	6.000				11	2	10	9					448
43	5U51	DROP PANEL		15	S			21.750	9	11.000	21.750	9.750	19.500	9.750	19.500		13	7	13	6					605
		END BENT NO 6																							
8	6H61	BEAM		20				43	1.000								43	1	43	1					518
4	6H62	WING		20				9	6.000								9	6	9	6					57
24	6H63	WING		20		V	4	9	0.000								9	0	9	0					218
		INCR = 14.250 IN							3	1.000							3	1	3	1					218
4	6H64	BEAM	E	20				43	1.000								43	1	43	1					259
4	6T61	WING		25	S			9.000	8	5.125	2	3.000					4	6.000	7	1.500	11	5	11	4	68
44	5U61	BEAM		10	S			3	2.000	2	3.000						8	7	8	5					386
44	5U67	BEAM	E	10	S			3	2.000	2	3.000						8	7	8	5					386
58	6V1	BEAM	E	19	S			3	7.500	4	0.500						7	8	7	6					653
28	6V61	WING		20		V	4	5	0.000								5	0	5	0					135
		INCR = 7.125 IN							17	0.000							17								135
4	6V62	WING		20				5	3.000								5	3	5	3					32
619	5R1	BARRIER CURB	E	19	S			2	4.000	6.000							2	10	2	9					1775
619	5R2	BARRIER CURB	E	15	S			2	6.125	6.000							2	6.000	3.000	3	0	2	11		1883
611	5R3	BARRIER CURB	E	19	S			2	10.000	9.000							3	7	3	6					2230
563	5R4	BARRIER CURB	E	27	S			2	3.000	11.125	9.000														

532

COMPLETE BILL OF REINFORCING STEEL

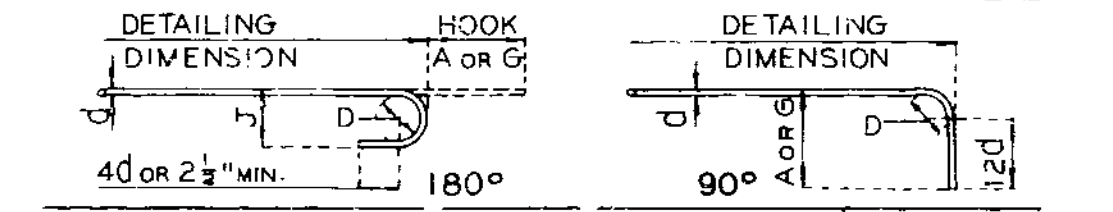
NO. REQ.	MARK NO.	LOCATION	EPOXY	SHAPE NO.	STIRRUP (S)	SUBSTR. (V)	VARIES (V)	NO. EACH	DIMENSIONS									NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
									B	C	D	E	F	H	K					
323	551	TOP SLAB	E	23				43	1.000								43	1	14514	
58	552	TOP SLAB	E	20				12	2.000								12	2	736	
42	1053	TOP SLAB	E	20				40	10.000								40	10	7380	
45	954	TOP SLAB	E	20				23	6.000								23	6	3996	
51	555	TOP SLAB	E	20				27	11.000								27	11	1631	
42	1056	TOP SLAB	E	20				43	0.000								43	0	7771	
42	1057	TOP SLAB	E	20				28	8.000								28	8	5304	
42	558	TOP SLAB	E	20				25	3.000								25	3	1475	
42	1059	TOP SLAB	E	20				40	0.000								40	0	7229	
45	10510	TOP SLAB	E	20				25	8.600								25	8	4973	
56	5511	TOP SLAB	E	20				24	3.000								24	3	1416	
42	10512	TOP SLAB	E	20				44	0.000								44	0	7552	
43	10513	TOP SLAB	E	20				27	5.000								27	5	5073	
56	5514	TOP SLAB	E	20				35	3.000								35	3	2059	
44	9515	BOTT SLAB		20				33	11.000								33	11	5074	
220	8516	BOTT SLAB		20				52	2.000								52	2	30643	
43	8517	BOTT SLAB		20				37	9.000								37	9	4334	
43	8518	BOTT SLAB		20				36	3.000								36	3	4162	
43	8519	BOTT SLAB		20				36	11.000								36	11	4238	
43	9520	BOTT SLAB		20				38	2.000								38	2	5580	
323	5521	BOTT SLAB		20				43	1.000								43	1	14514	
2	5522	TOP SLAB		20				12	2.000								12	2	25	
2	10523	TOP SLAB		20				40	10.000								40	10	351	
2	5524	TOP SLAB		20				27	11.000								27	11	58	
2	10525	TOP SLAB		20				43	0.000								43	0	370	
2	5526	TOP SLAB		20				25	3.000								25	3	55	
2	10527	TOP SLAB		20				40	0.000								40	0	344	
2	5528	TOP SLAB		20				24	3.000								24	3	51	
2	10529	TOP SLAB		20				44	0.000								44	0	379	
2	5530	TOP SLAB		20				35	3.000								35	3	74	
END OF BAR LIST																				

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MO		19	155	



STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK		135° HOOK
		A OR G	HOOK	APPROX. H
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

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



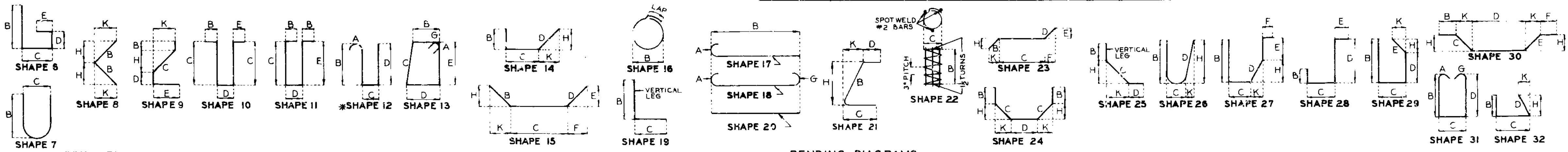
SIZE OF 180° HOOKS (GRADE 40 KSI) AND 180° HOOKS (ALL GRADES) AND 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)  
 D = 5d FOR #3 THRU #11  
 D = 10d FOR #14 AND #18  
 G = 6d FOR #3 THRU #8  
 G = 8d FOR #9, #10 AND #11  
 G = 10d FOR #14 AND #18

BAR SIZE	END HOOK DIMENSIONS					
	180° HOOKS				90° HOOKS	
	GRADE 40		GRADE 60		ALL GRADES	
	A OR G	J	A OR G	J	A OR G	
#3	5"	2-3/4"	5"	3"	6"	
#4	6"	3-1/2"	6"	4"	8"	
#5	7"	4-1/2"	7"	5"	10"	
#6	8"	5-1/4"	8"	6"	12"	
#7	9"	6-1/4"	10"	7"	14"	
#8	10"	7"	11"	8"	16"	
#9	12"	8"	15"	11-1/4"	19"	
#10	13"	9"	17"	12-3/4"	22"	
#11	14"	10"	19"	14-1/4"	21-0"	
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"	
#18	21-11"	21-3"	21-11"	21-3"	31-5"	

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)  
 ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.  
 \* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.

Note: Two additional 52, 54, 1510 are included in bar bill for testing. See Special Provisions.

STD. 90.8.5  
 MAY 1974  
 REVISED OCT. 1978



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

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FINAL PLANS

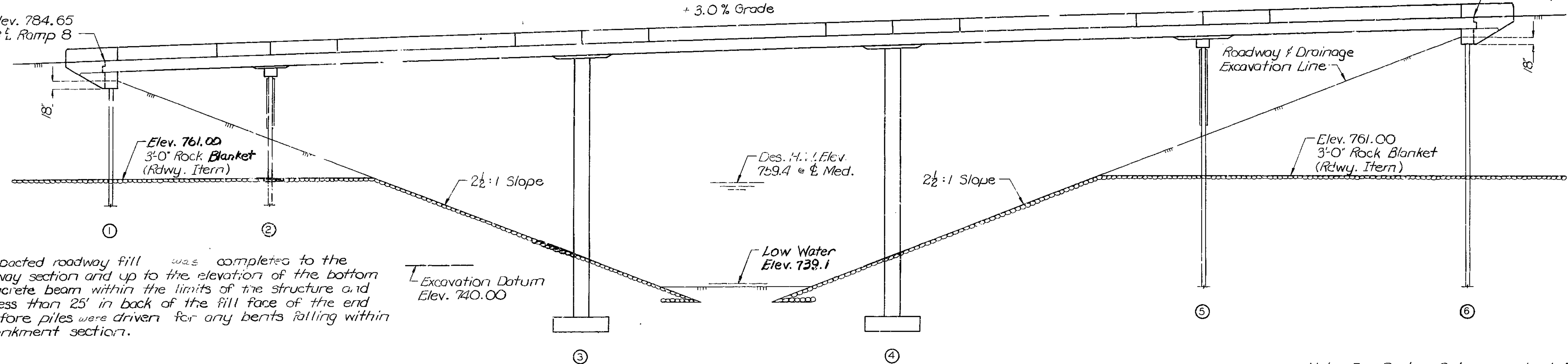
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	138	

(32'-62'-62'-62'-53') Cont. Voided Conc. Slab Spans

+ 3.0% Grade

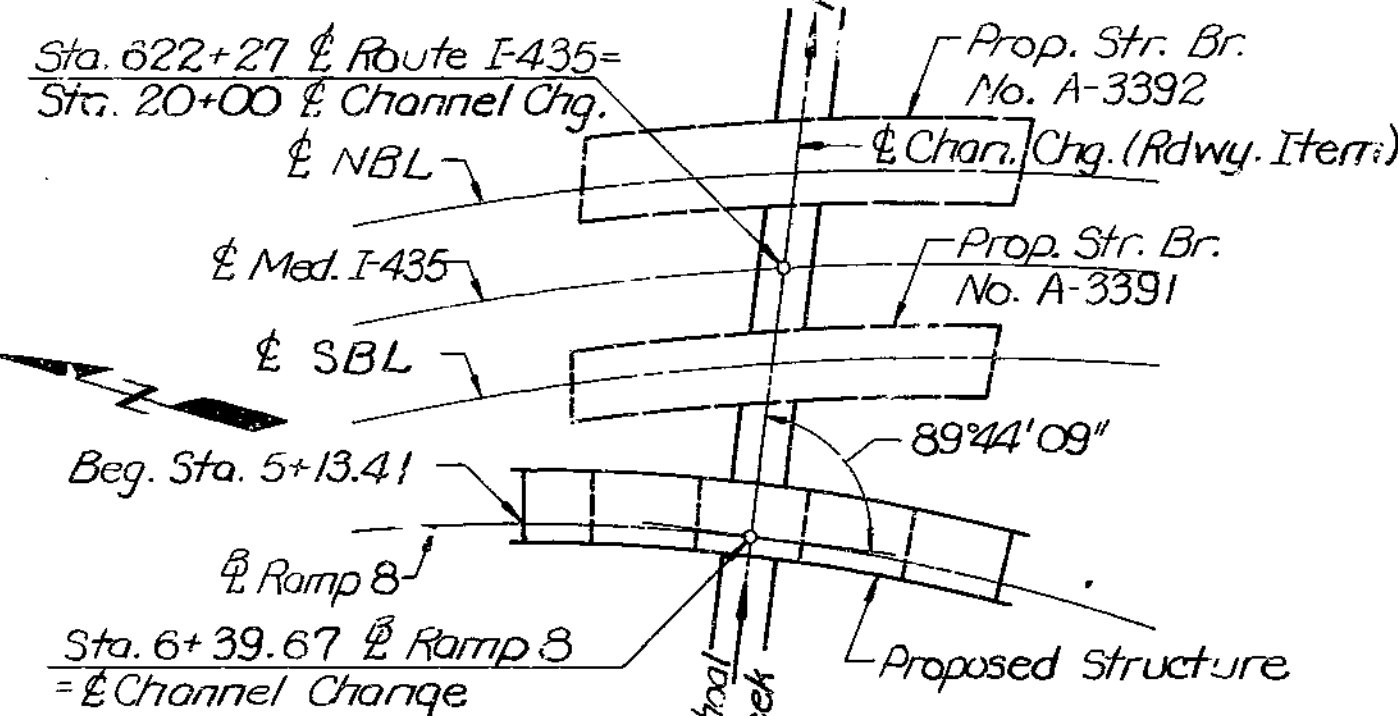
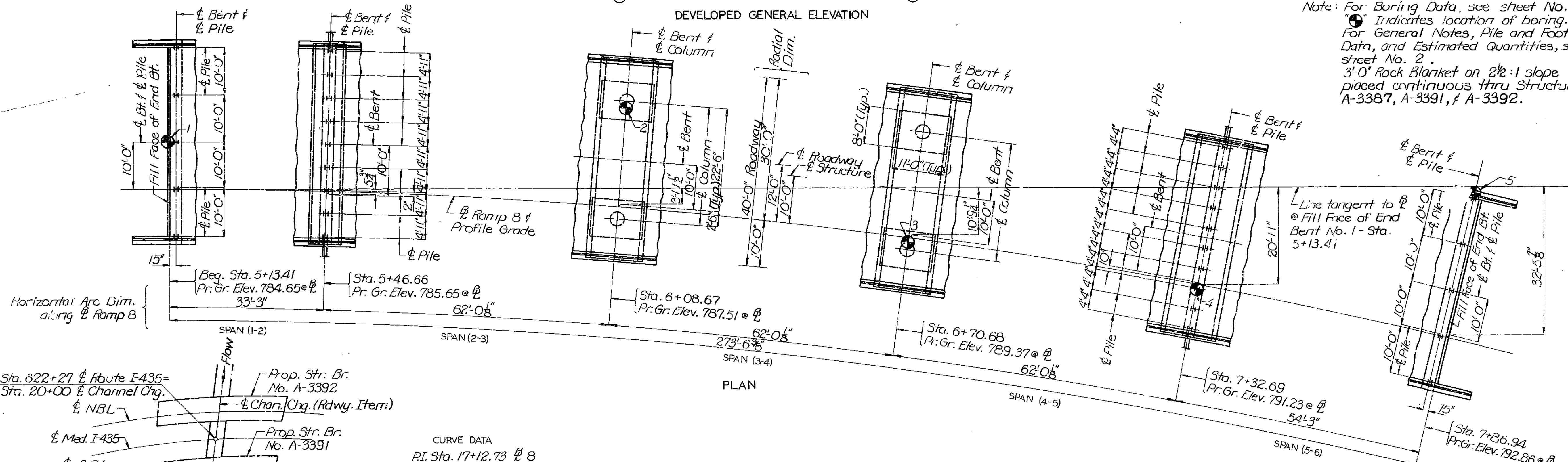
Pr. Gr. Elev. 784.65 @ Ramp 8

Pr. Gr. Elev. 792.86 @ Ramp 8



Note: Compacted roadway fill was 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 piles were driven for any bents falling within the embankment section.

Note: For Boring Data, see sheet No. 2.   
 ● Indicates location of boring.   
 For General Notes, Pile and Footing Data, and Estimated Quantities, see sheet No. 2.   
 3'-0" Rock Blanket on 2 1/2:1 slope placed continuous thru Structures A-3387, A-3391, & A-3392.



CURVE DATA  
 P.I. Sta. 17+12.73 @ 8  
 $\Delta = 112^\circ 25' 49''$  Rt.  
 $D = 5^\circ 00'$  (Arc)  
 $T = 1712.73'$   
 $L = 2248.61'$   
 $R = 1145.92'$   
 $SE = .08/1$   
 $LT = 200'$   
 $W = 0$

HYDRAULIC DATA	
Drainage Area	= 28 sq. mi. (Hilly)
Des. Discharge	= 19,000 cfs (Urban)
Des. H.W. Elev.	= 759.4 @ Med.
Frequency	= 50 yrs.
BASIC FLOOD DATA	
Discharge	= 21,600 cfs
H.W. Elev.	= 760.4

B.M. "1" ON S.E. COR. LT. END POST  
 Bt. #6 798.13

BRIDGE: RAMP 8 OVER BIG SHOAL CREEK

STATE ROAD FROM RTE. I-35 TO RTE. 152  
 AT I-35 & I-435 INTERCHANGE

PROJECT NO. I-435-1(153) STA. 5+13.41 (RAMP 8)

JOB NO. 4-I-435-49 C

RTE. I-435

CLAY

COUNTY

STD.
STD. 706.35
A-3387

DESIGNED NOV. 1976  
 DETAILED JAN. 1976  
 CHECKED APR. 1979

LOCATION SKETCH

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

Sheet No. 1A of 18.

DATE 12-28-79

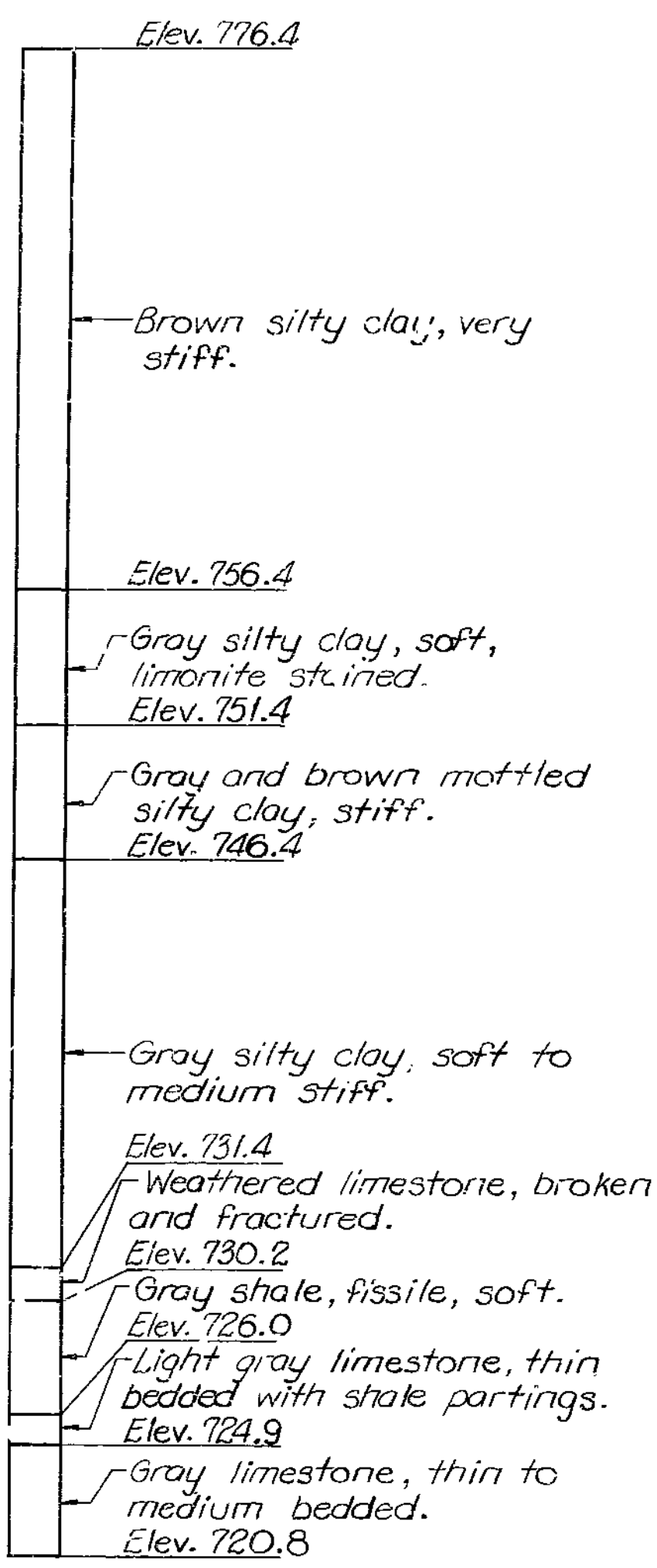
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	139	

GENERAL PLANS

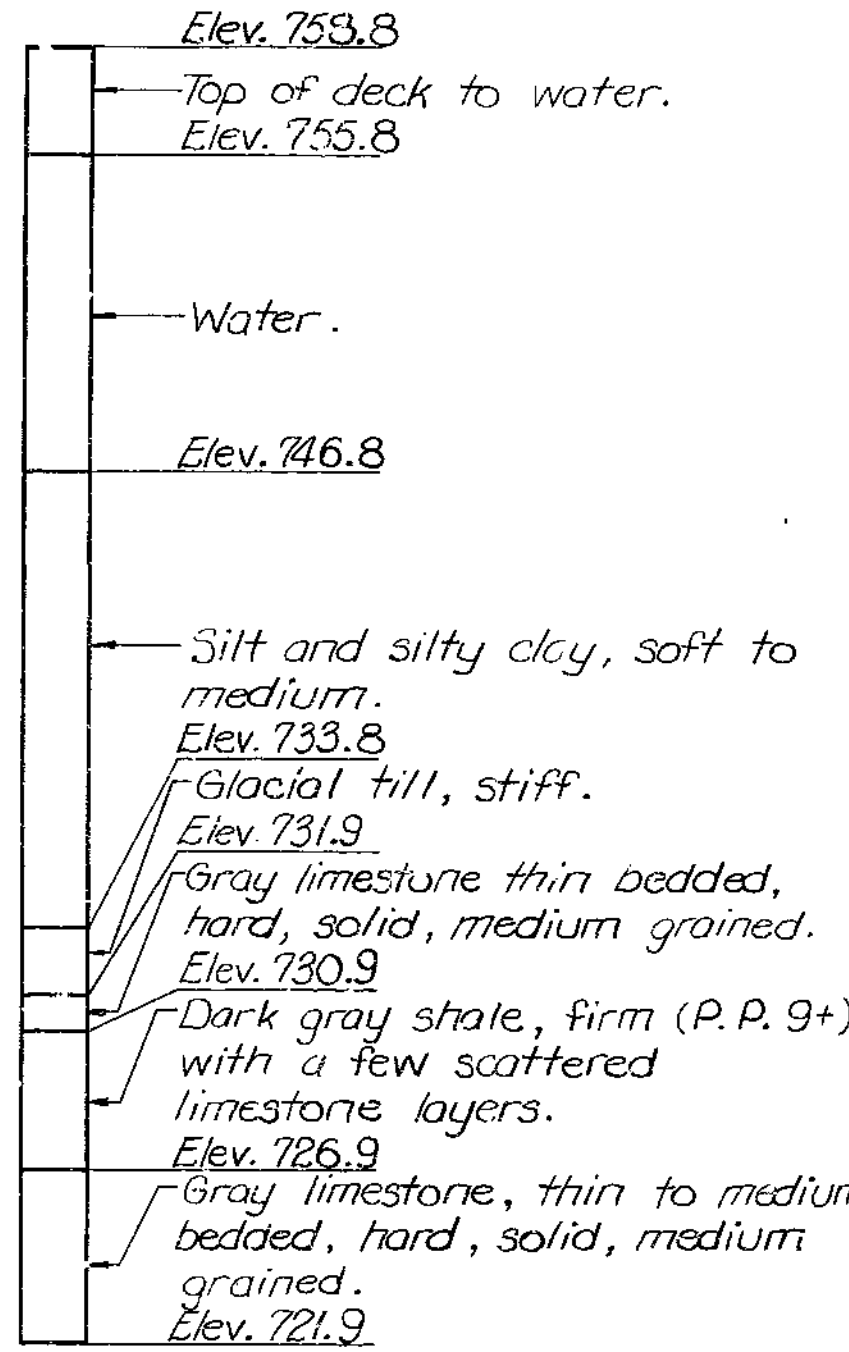
534

Standard Penetration Test

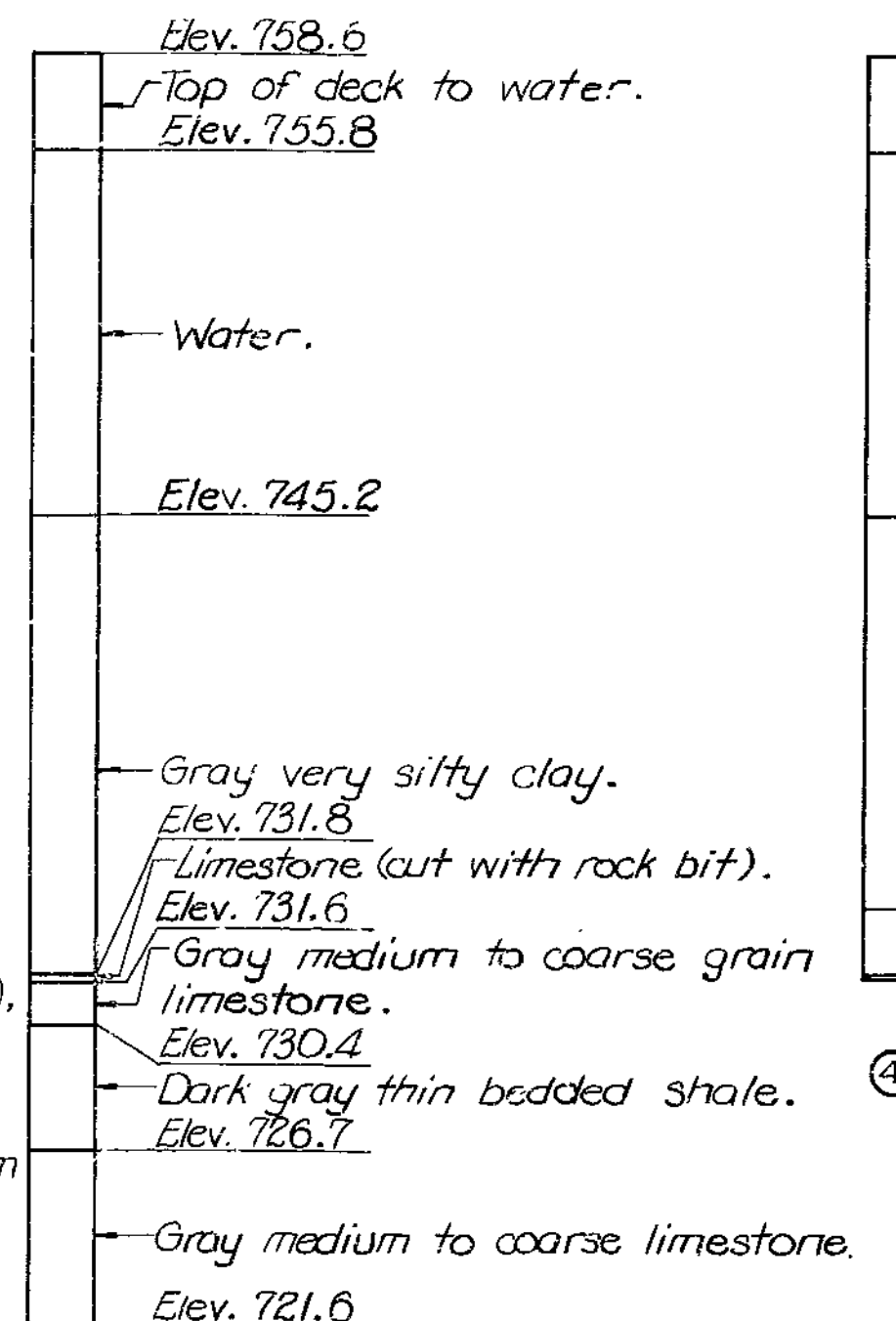
Depth	Blows/10'	P.P.(TSF)
5'	5/6/10	2.5/2.75
15'	7/7/11	2.5
20'	2/2/4	.50
25'	4/4/6	1.0/2.0
30'	2/2/3	.50
35'	3/2/4	.50



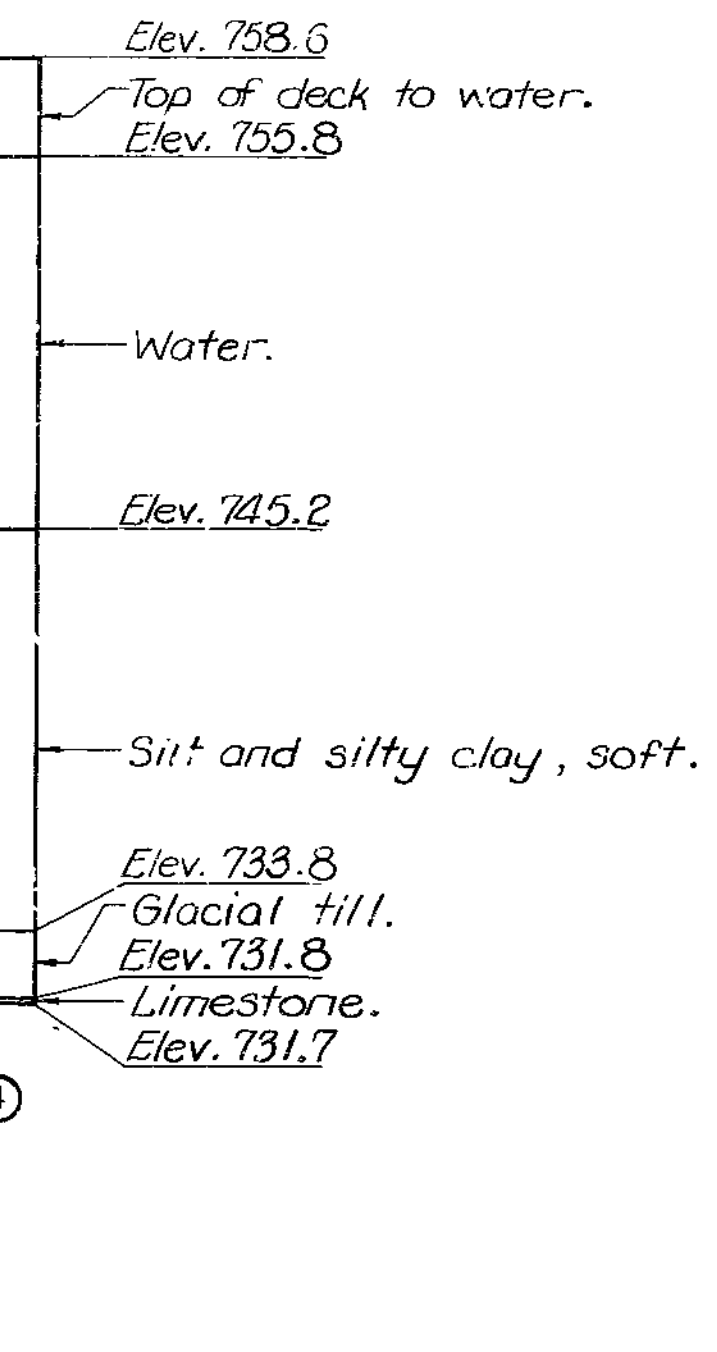
① (CORE)



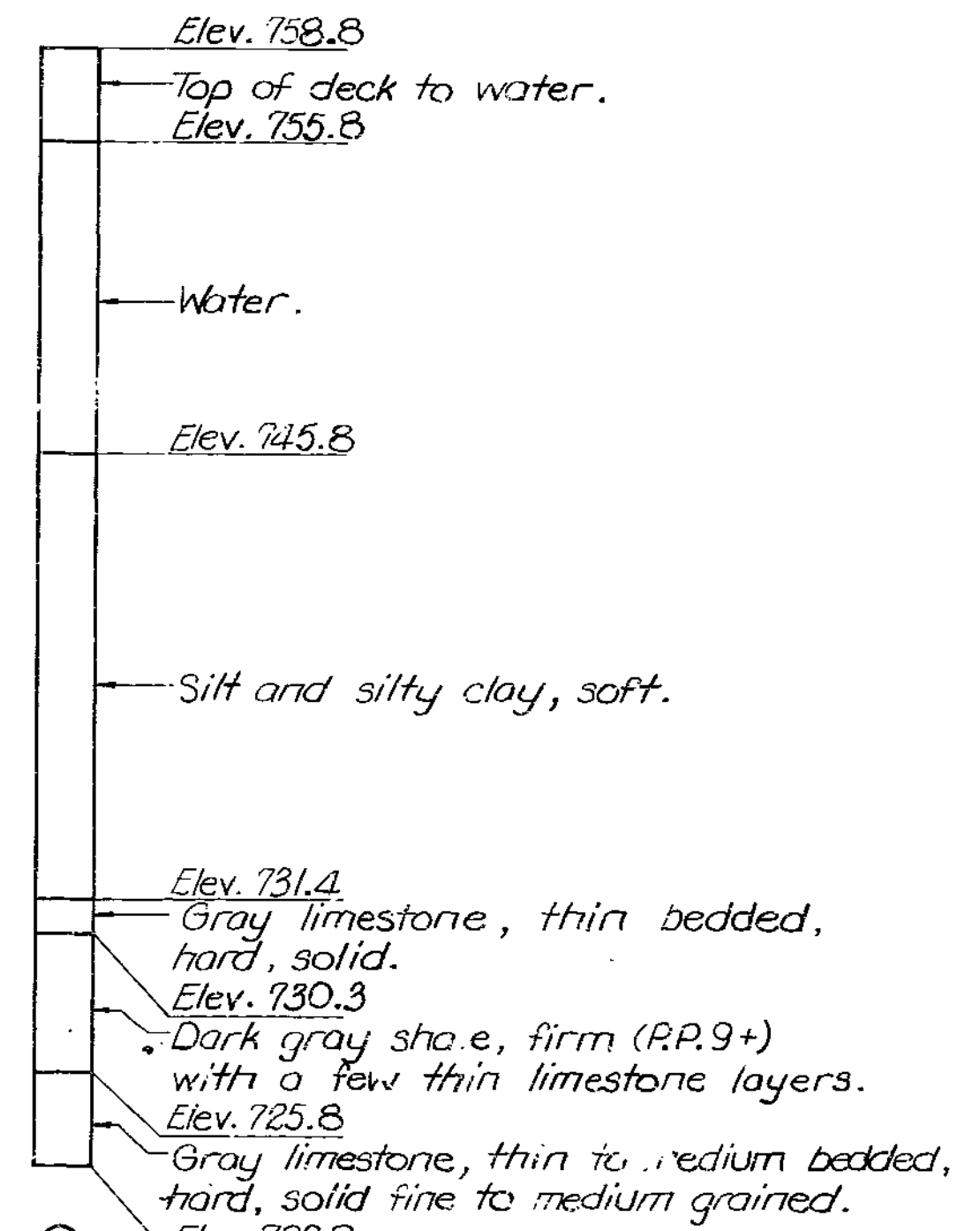
② (CORE)



③ (CORE)



④ (CORE)



⑤ (CORE)

BORING DATA

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

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O.-1977 Load Factor Design  
 Design Loading: HS20-44, 15 ft. Future Wearing Surface  
 Modified 24,000\* Tandem Axle  
 Earth: 120\*, Equivalent Fluid Pressure 30\*

Design Unit Stresses: Class B2 Concrete (Superstructure)  $f'_c = 4000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
 Steel Pile  $f_b = 9,000$  psi  
 Class B1 Concrete (Int. Bt. Columns & Footings)  $f'_c = 4000$  psi

Paint: Shop Prime, Field all exposed surfaces of steel piles and bracing is painted in accordance with Std. Spec. 702.4.7 using System A or B. Color of the final coat is aluminum.

Reinforcing Steel: Minimum clearance to reinforcing steel  $\frac{1}{2}$  unless otherwise shown.

PILE & FOOTING DATA							
BENT NO.		1	2	3	4	5	6
BEARING PILE	Pile Type and Size	HP10x42				HP10x42	
	Number	5	9			10	5
	Approximate Length Ft.	50	50			55	57
	Design Bearing Tons	44	53			53	50
	Min. tip Penetration Elev.	730.5	731.5			732.0	
SPREAD FOOTINGS	Foundation Material			Rock	Rock		
	Design Bearing Tons/Sq. Ft.			5	5		

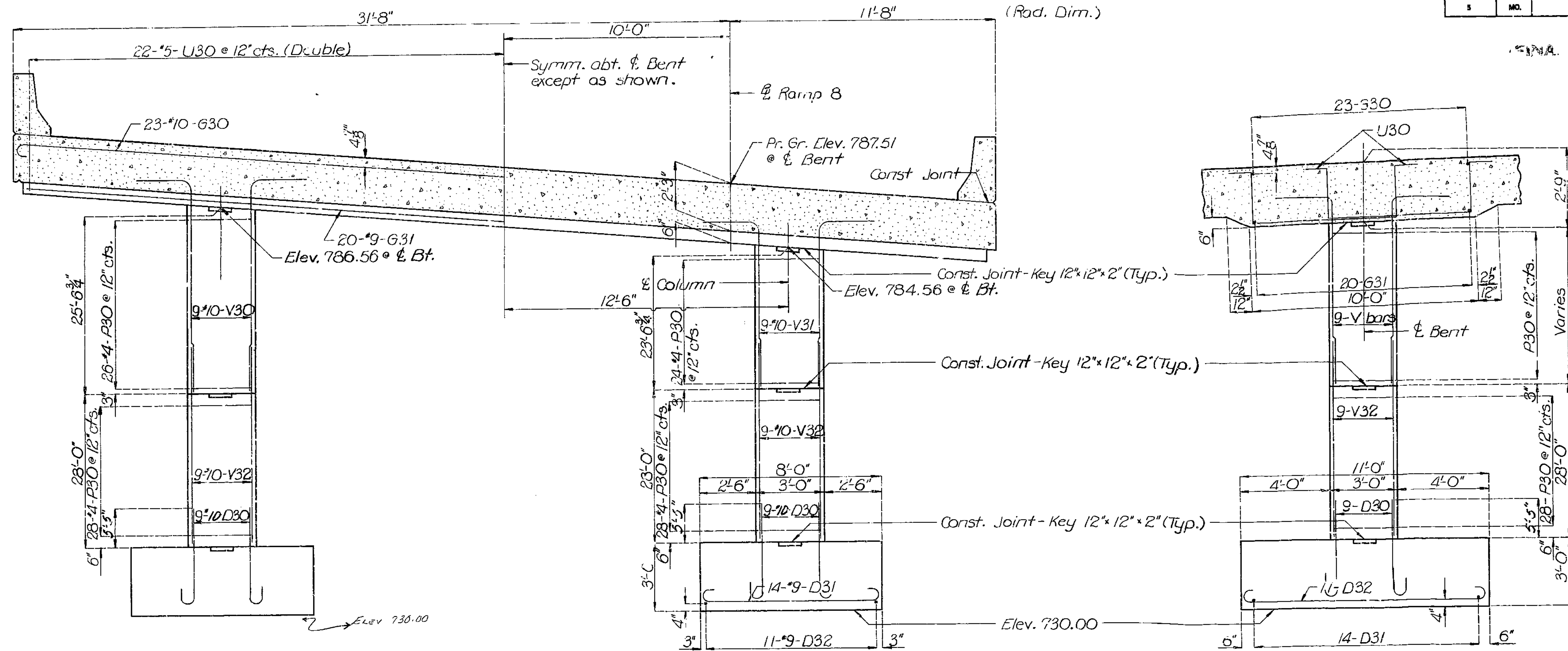
Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
 All pile driven to the minimum penetrations and to practical refusal.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class 1 Excavation	Cu. Yd.	204.0
Class 2 Excavation	Cu. Yd.	213.0
Structural Steel Pile (10")	Lin. Ft.	1666.3
Class B2 Concrete	Cu. Yd.	939.6
Slab Drains	Each	14
Reinforcing Steel (Epoxy Coated)	Lb.	98,700
Reinforcing Steel (Grade 60)	Lb.	97,600
Class B1 Concrete	Cu. Yd.	95.1
Test Holes	Lin. Ft.	161

Note: No direct payment made for furnishing, installing, cleaning and painting of bracing at intermediate bents. Concrete in columns and footings of Int. Bts. No. 3 & 4 Class B1.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	143	

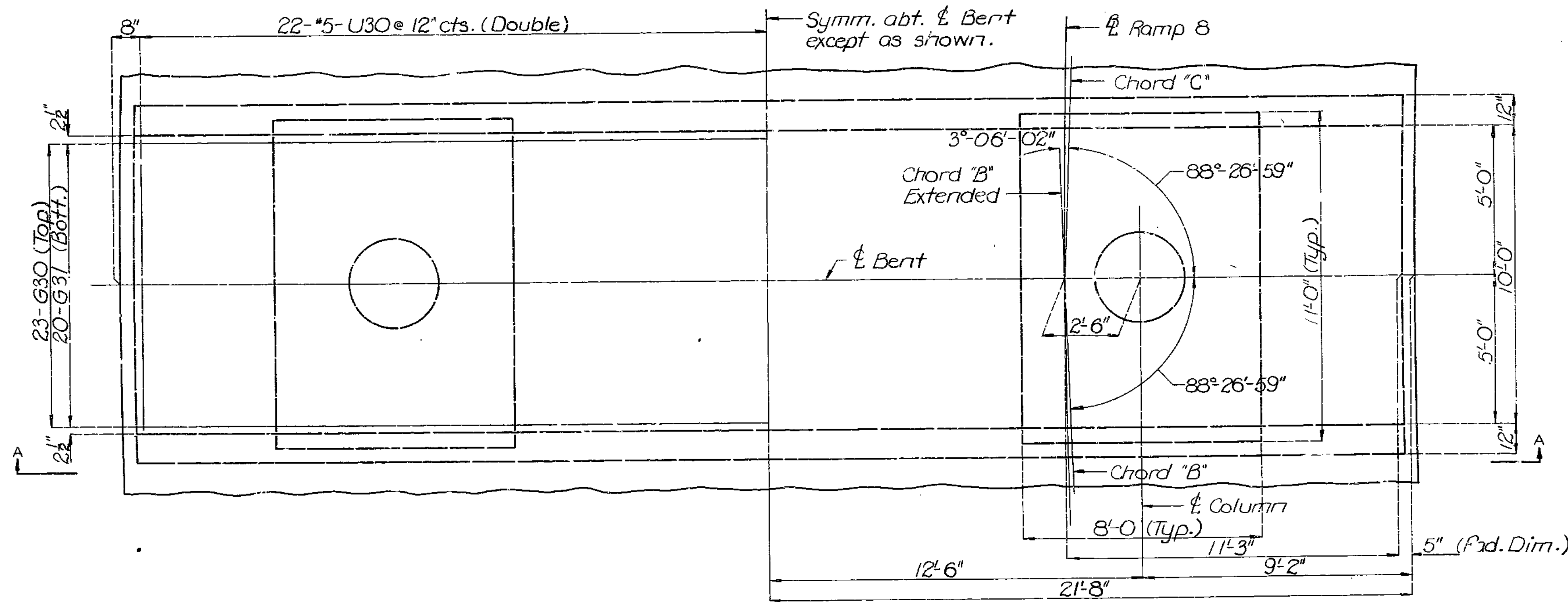
GENERAL PLANS



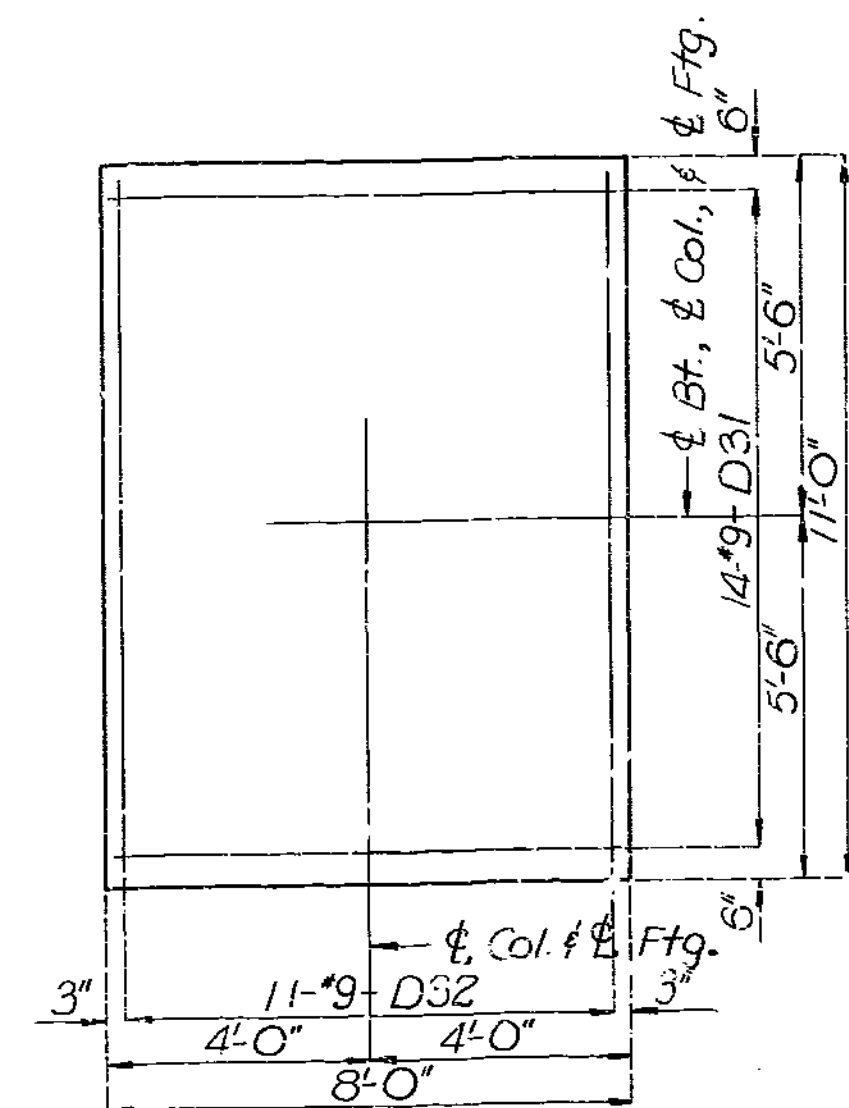
TYPICAL SECTION THRU COLUMN

SECTION A-A

SECTION AT BENT



PLAN



PLAN OF FOOTING SHOWING REINFORCEMENT

DETAILS OF INTERMEDIATE BENT NO. 3

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

Sheet No. 6A of 18.

DETAILED DEC. 1977  
CHECKED APR. 1979

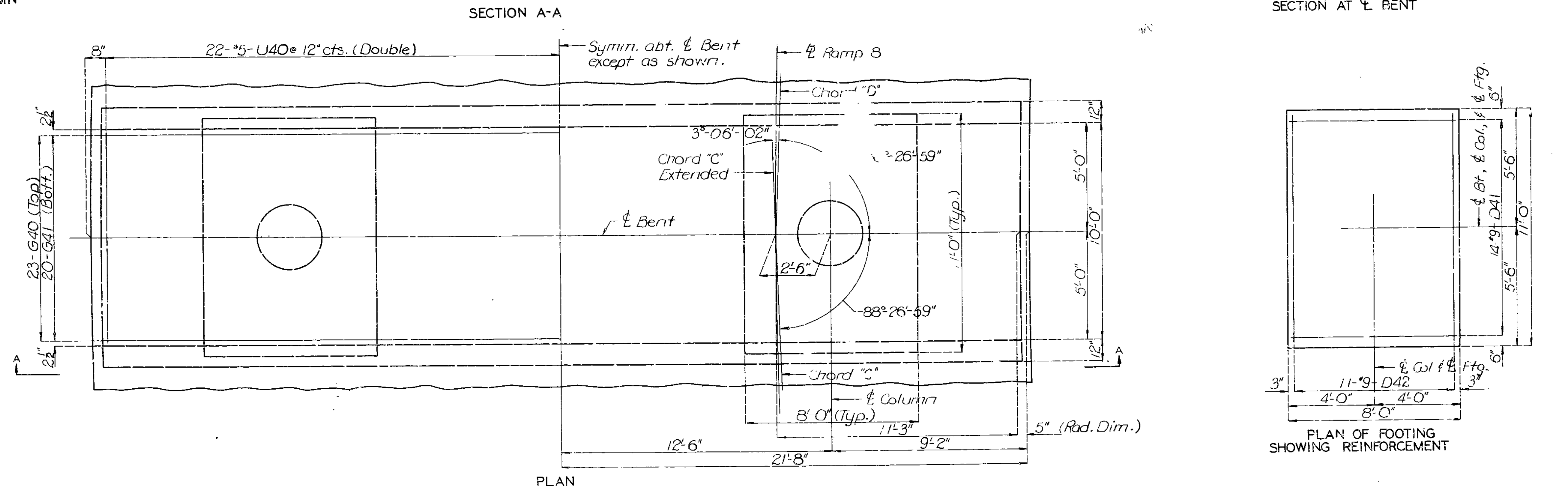
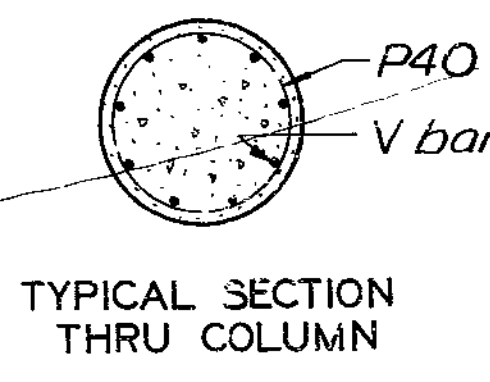
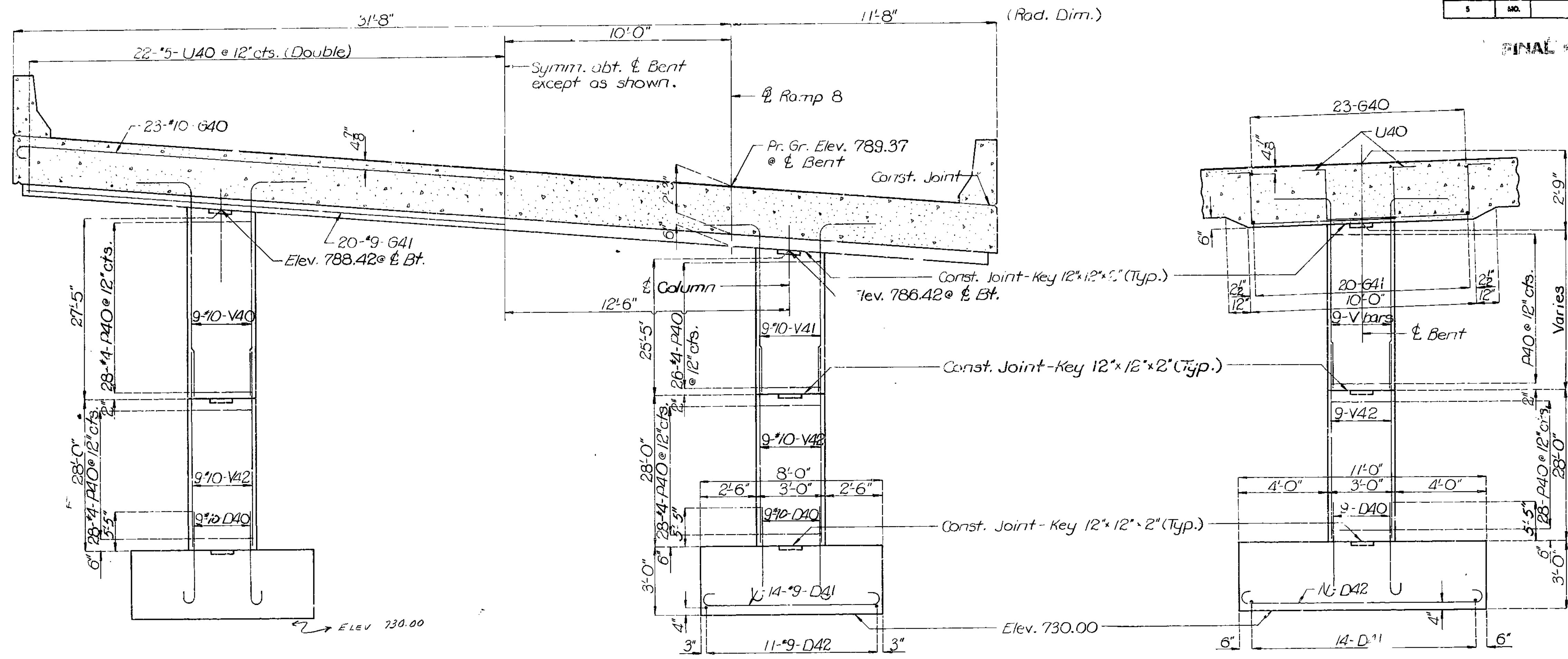
CLAY

COUNTY

A-3387

535

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	124	



DETAILS OF INTERMEDIATE BENT NO. 4

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

Sheet No. 7A of 18.

DETAILED DEC. 1977  
CHECKED APR. 1979

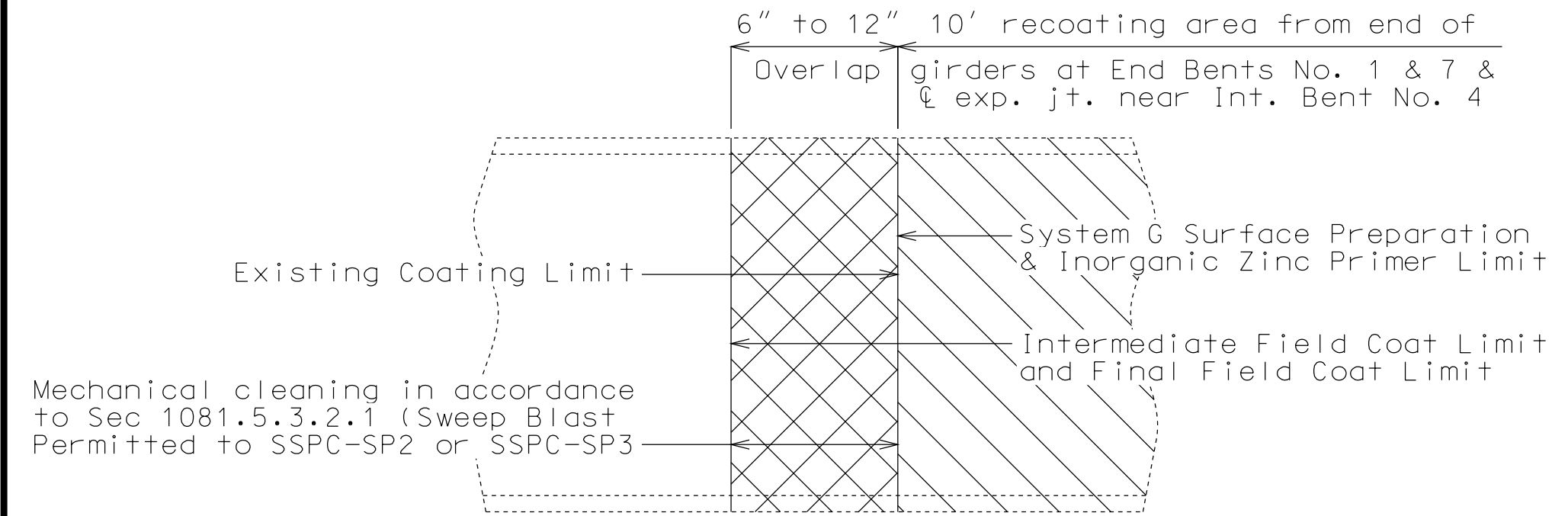
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

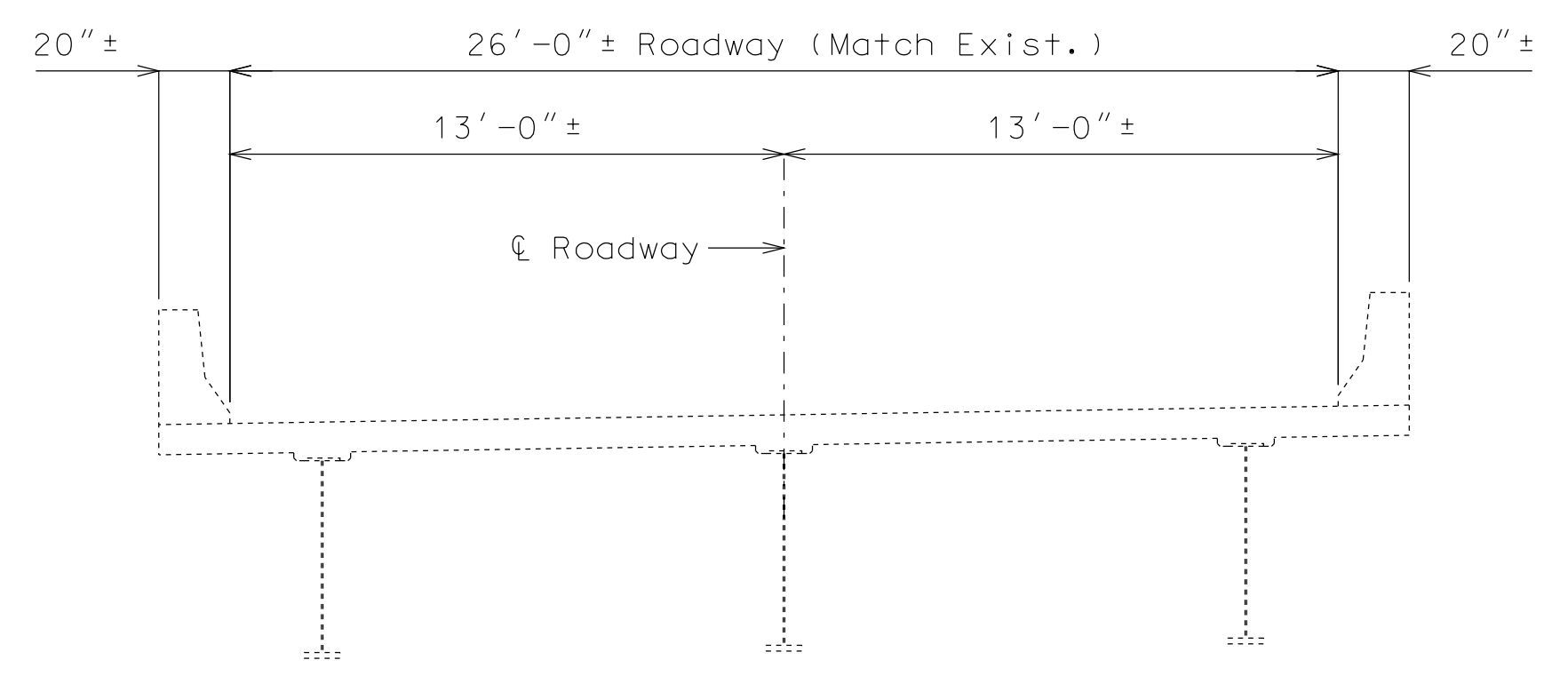
U.I.P. & Rehabilitate Existing (85'-117'-99'-5') (65'-84'-65')  
Continuous Composite Plate Girder Spans

SEC/SUR 27 TWP 51N RGE 32W

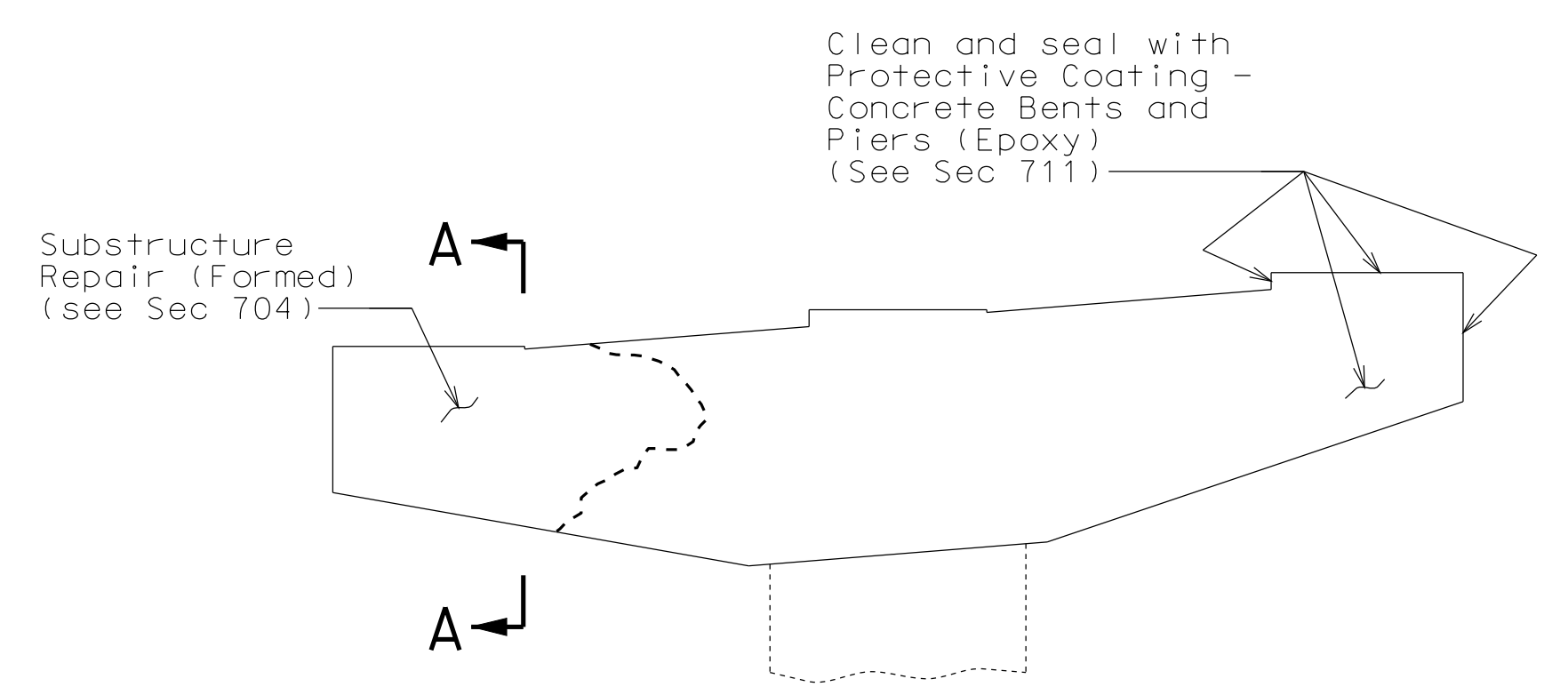
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."



PART ELEVATION SHOWING LIMITS OF PAINT OVERLAP  
(Vertical or horizontal paint limit. Horizontal limit shown)



SECTION THRU EXISTING SLAB



PART ELEVATION OF INT. BENT NO. 4  
SHOWING PROTECTIVE COATING  
AND SUBSTRUCTURE REPAIR

General Notes:

**Design Specifications:**  
2002 - AASHTO 17th Edition  
Load Factor Design  
Seismic Performance Category A

**Design Loading:**  
HS20-44 & Military 24,000# Tandem Axle (1973 & New Construction)  
15#/Sq. Ft. Future Wearing Surface  
Fatigue Stress - Case II

**Design Unit Stresses:**  
Class B-1 Concrete (Superstructure and Safety Barrier Curb)  $f'c = 4,000$  psi  
Reinforcing Steel (Grade 60)  $fy = 60,000$  psi

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

**Structural Steel Protective Coatings**  
(Existing structural steel near End Bents and near Int. Bent No. 4):  
Protective Coating: System G in accordance with Sec 1081.

**Coating Limits:** All existing structural steel within 10 feet from end of girders at End Bents No. 1 & 7 and within 10 feet each direction of  $\phi$  expansion joint near Int. Bent No. 4.

**Surface Preparation:** Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G, H or I)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Recoating Structural Steel".

**Prime Coat:** The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Field Application of Inorganic Zinc Primer". Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

**Field Coat:** The color of the field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for "Intermediate Field Coat (System G)". The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for "Finish Field Coat (System G)".

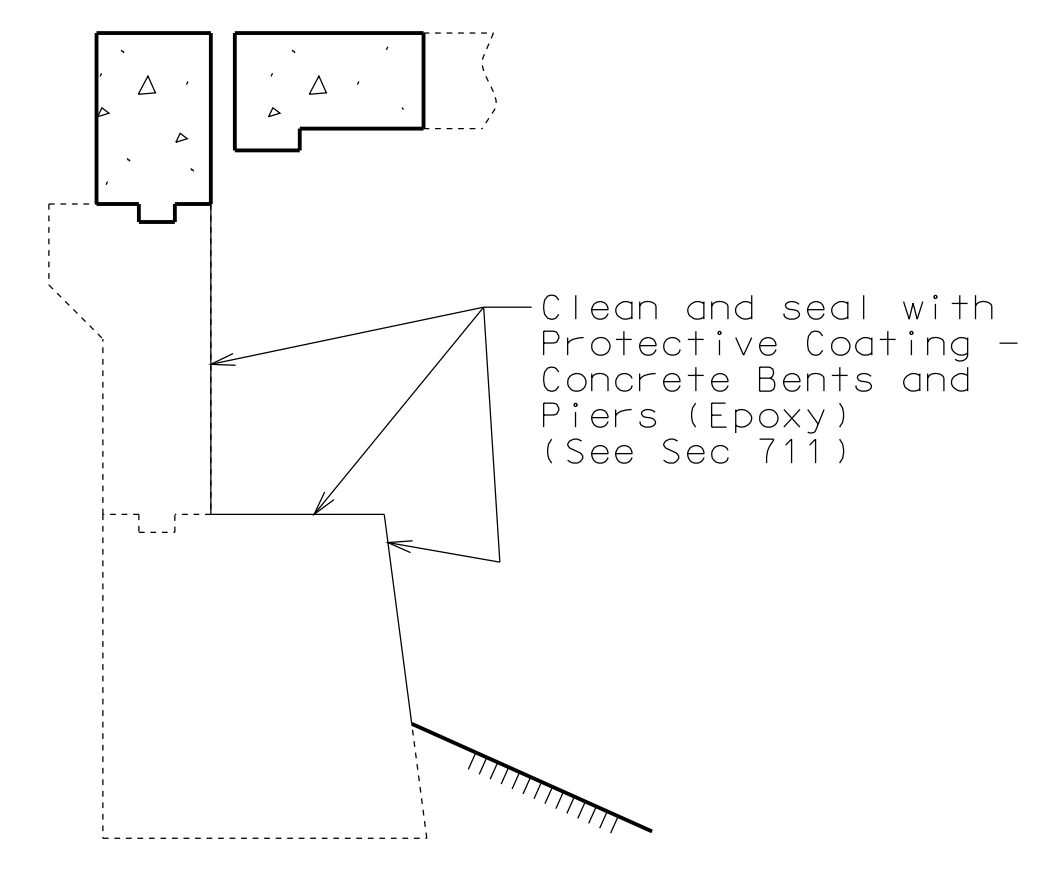
Sec 1081.4.5 shall be modified such that the word "RECOATED" is replaced by the word "RECOATED - SYSTEM G - EXPANSION AREAS ONLY".

**Concrete Protective Coatings:**  
Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec 711.

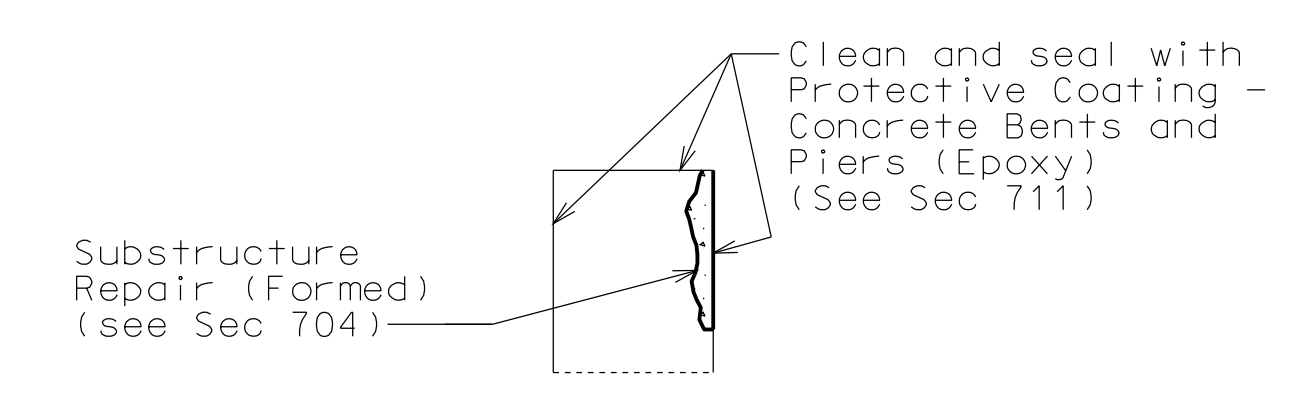
**Miscellaneous:**  
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

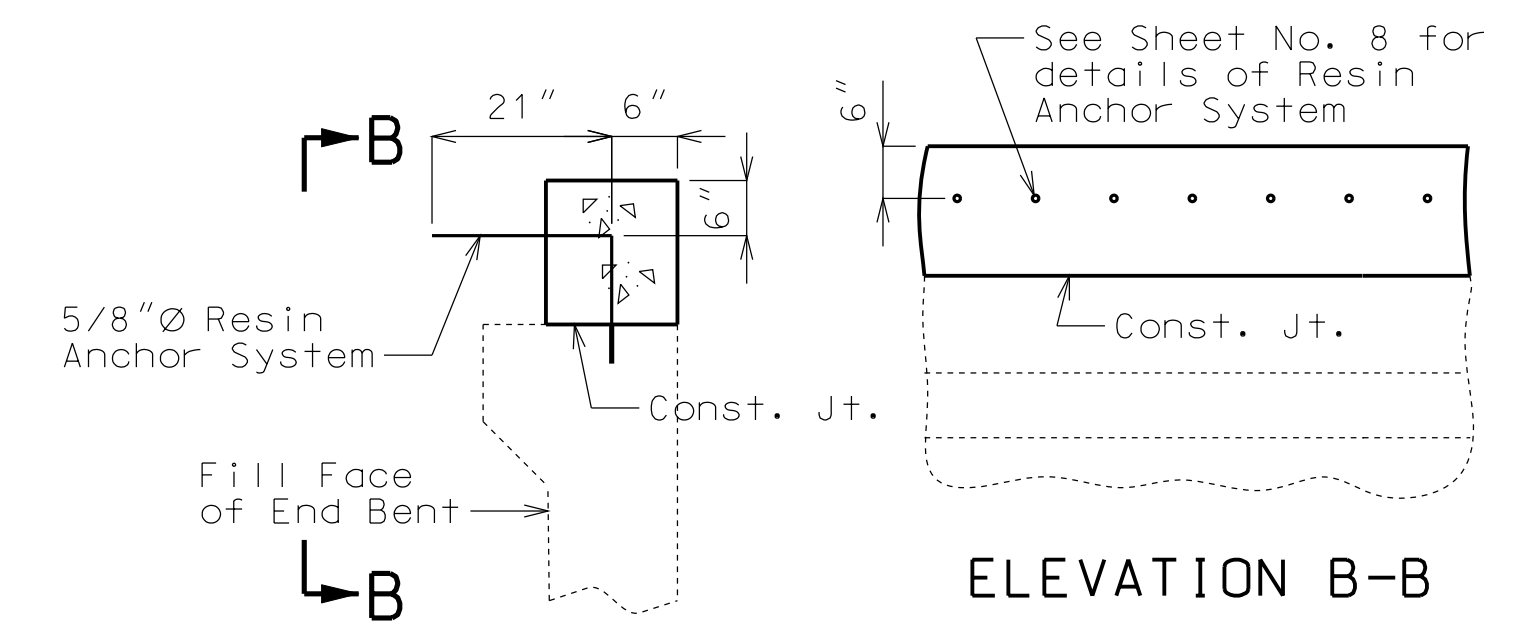
Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.



TYPICAL SECTION THRU  
END BENT NO. 1 & 7  
SHOWING PROTECTIVE COATING



SECTION A-A



DETAIL OF RESIN ANCHOR SYSTEM  
AT END BENT NO. 1  
(26 req'd.)

Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	78
Removal of Existing Bearing	each	6
Remove and Replace Barrier Curb	linear foot	19
Bridge Approach Slab (Bridge)	sq. yard	74
Class B-1 Concrete	cu. yard	8.8
Substructure Repair (Formed)	sq. foot	50
Reinforcing Steel (Epoxy Coated)	pound	1820
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Surface Preparation for Recoating Structural Steel	sq. foot	1700
Field Application of Inorganic Zinc Primer	sq. foot	1700
Intermediate Field Coat (System G)	sq. foot	1700
Finish Field Coat (System G)	sq. foot	1700
Laminated Neoprene Bearing Pad Assembly	each	6
Strip Seal Expansion Joint System	linear foot	78

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

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

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

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

REPAIRS TO BRIDGE: RAMP 7 (I-35 N TO I-435 N) OVER I-35 AND RAMP 3 (I-35 S TO I-435 S)

STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

Traffic Handling:  
Structure to be closed during construction.

Detailed June 2012  
Checked July 2012

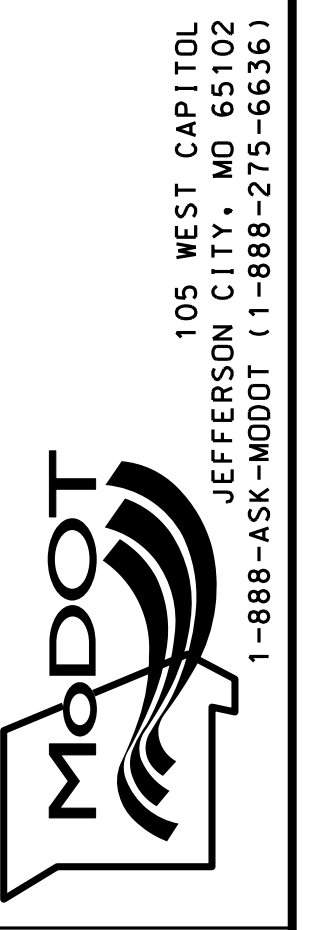
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 9

STA. 11+73.96± (Ramp 7) (Match Existing)

STD. 609.00
STD. 706.35

DESCRIPTION DATE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

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DATE PREPARED  
12/4/2012

ROUTE I-435 STATE MO

DISTRICT BR SHEET NO. 2

COUNTY CLAY

JOB NO. J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A33881

DESCRIPTION

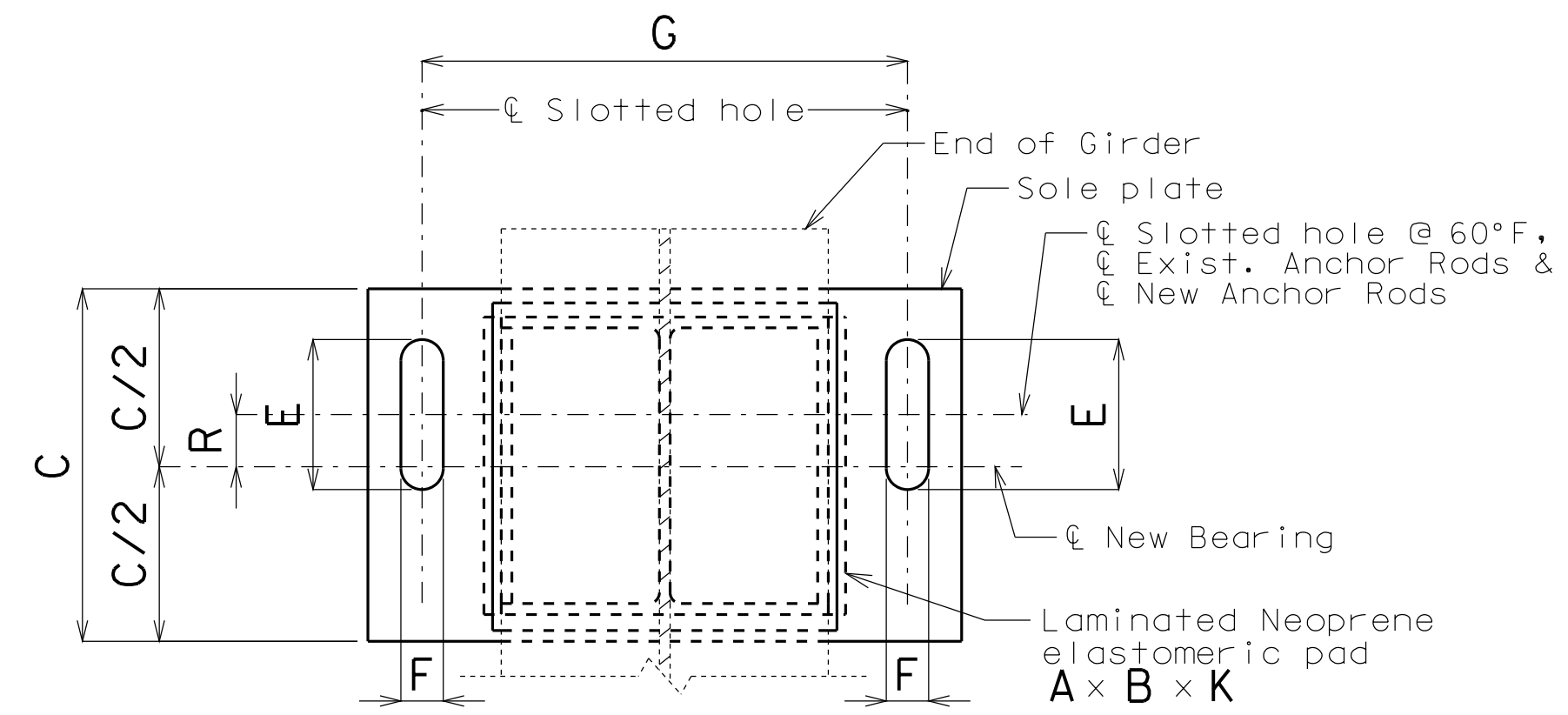
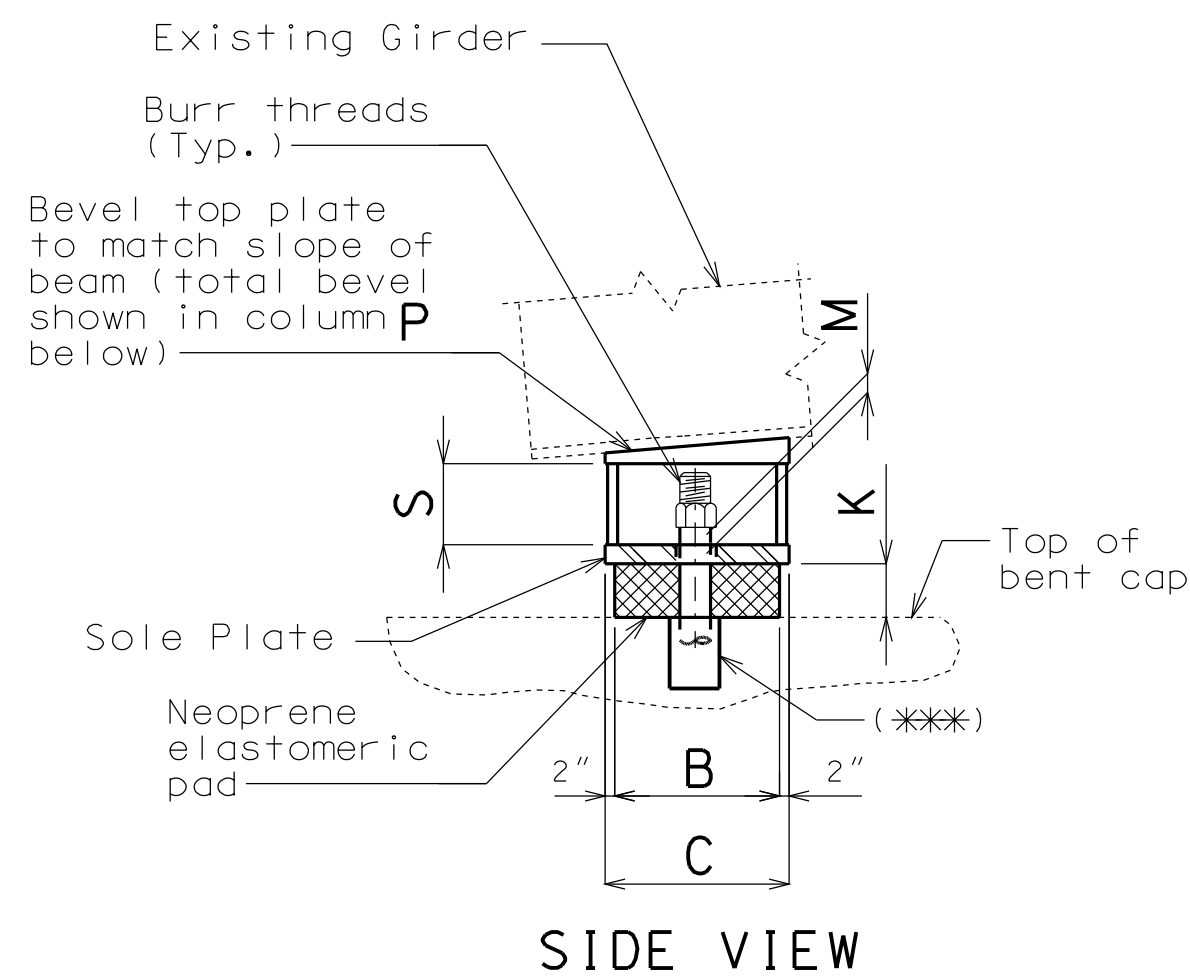
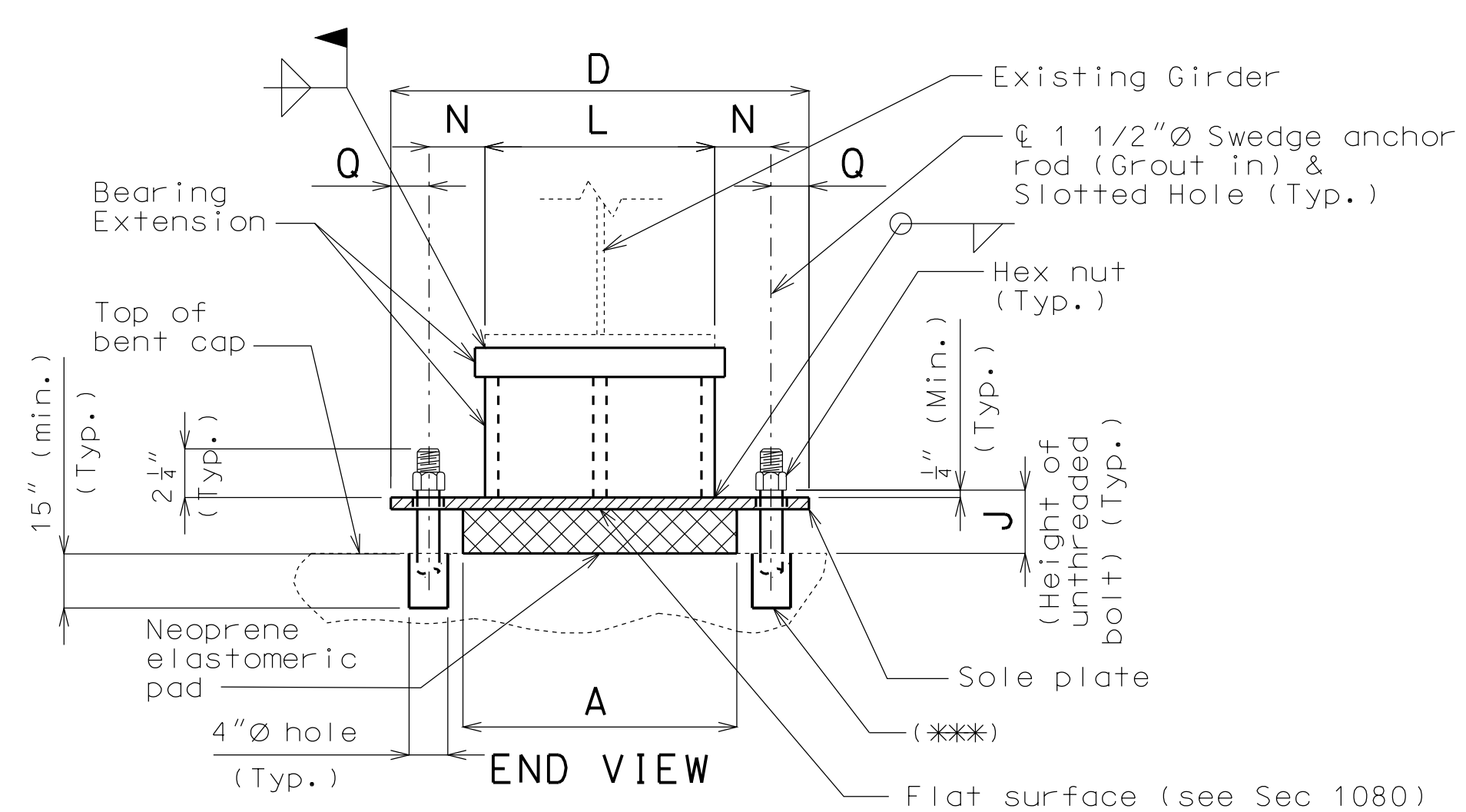
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

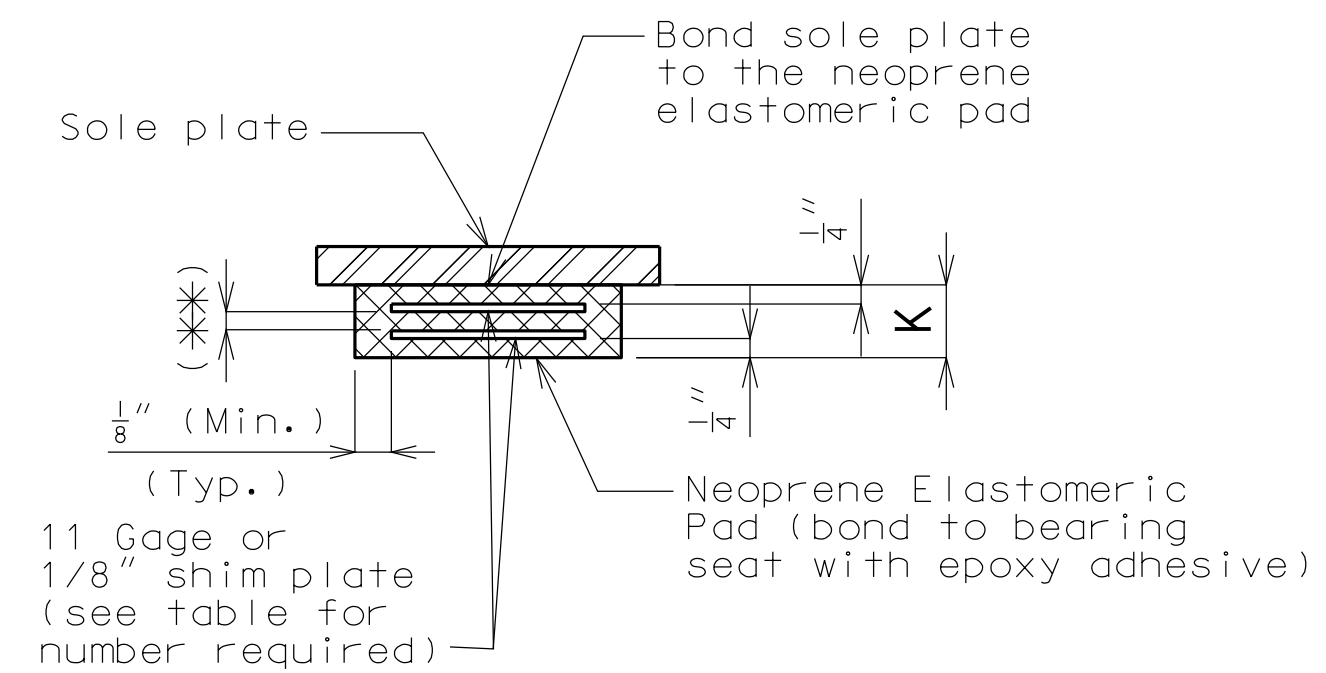
105 WEST CAPITOL JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

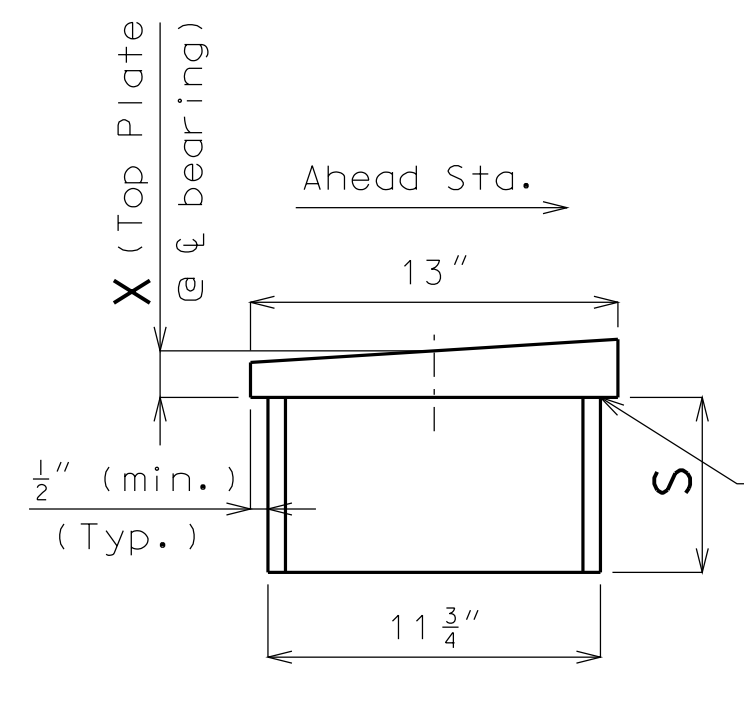
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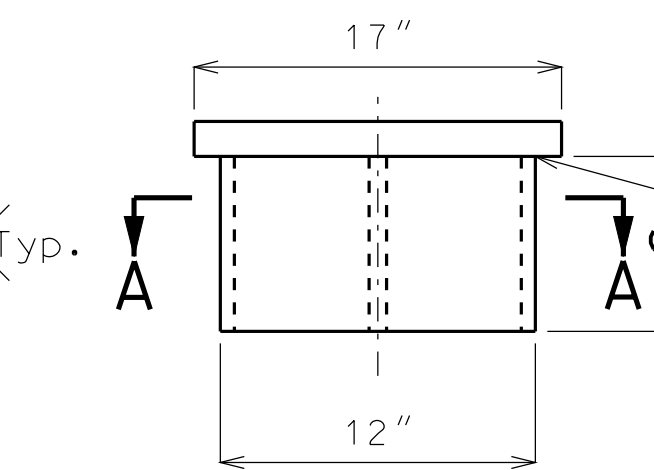
PART PLAN



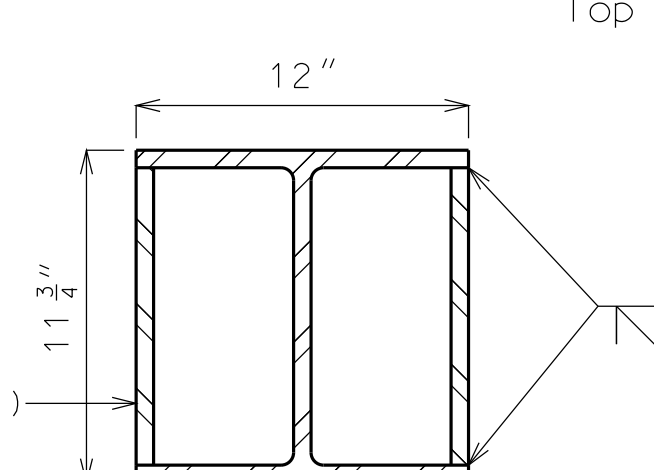
NEOPRENE ELASTOMERIC PAD



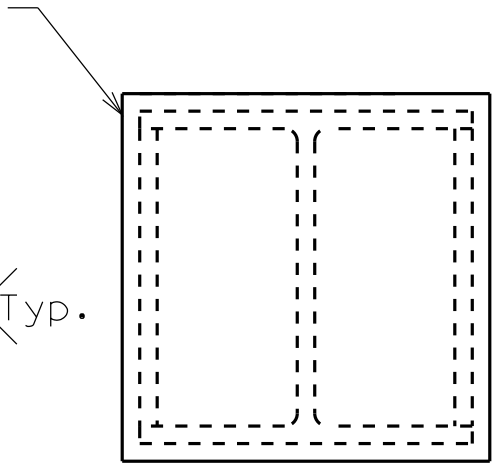
SIDE ELEVATION OF BEARING EXTENSION



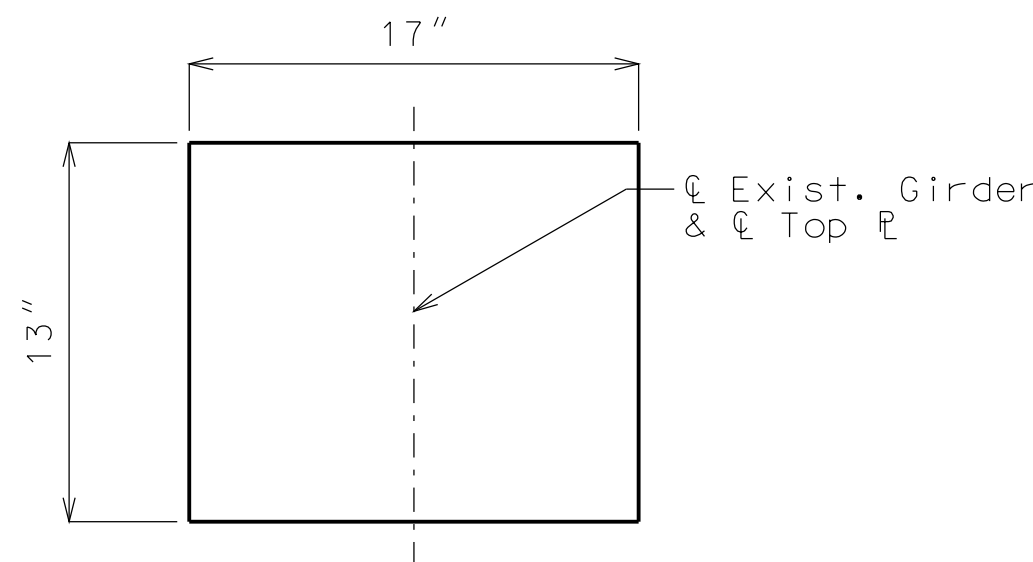
END ELEVATION OF BEARING EXTENSION



SECTION A-A



PLAN OF BEARING EXTENSION



PLAN OF TOP PLATE

(\*\*) Layers of 1/2" elastomer alternating with 11 gage or 1/8" shim plates

(\*\*) Anchor bolt well and grout new anchor rod in place (see Sec 712).

GENERAL NOTES:

Anchor rods shall be 1 1/2" ASTM F1554 Grade 55 swedged rods and shall extend 15" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor rod shall be at the center of slotted hole at 60°F. Bearing position shall be adjusted 1/8" for each 10° fall or rise in temperature at installation.

All structural steel for the anchor rods and hex nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

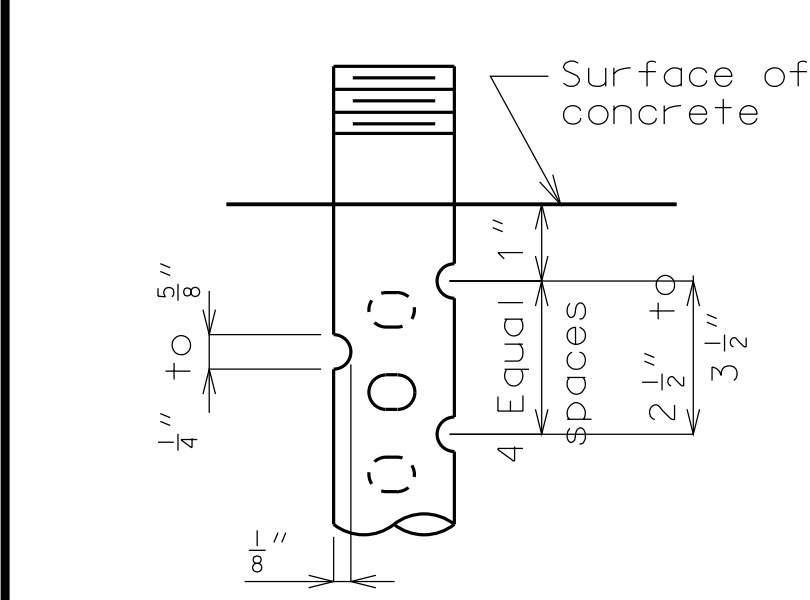
Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate and all bearing extension steel shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

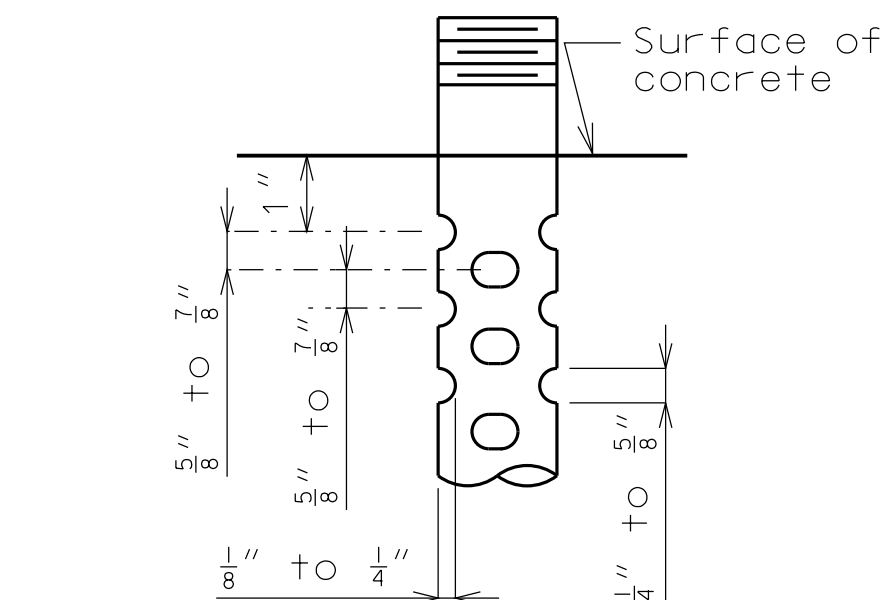
Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

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

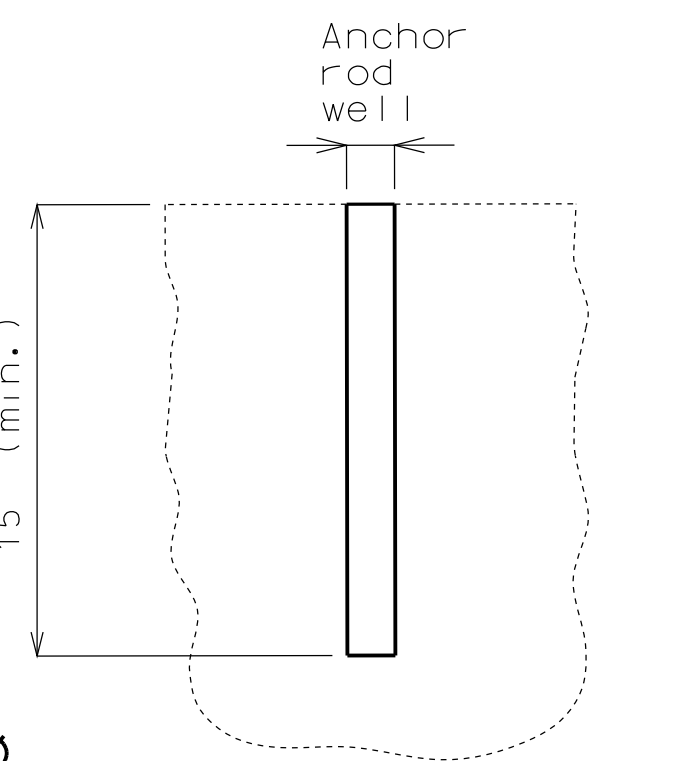
The temporary supports shall be capable of safely supporting a service load DL & construction load of 75 kips and a LL of 77 kips per stringer if done under traffic (factor of safety not included). See Special Provisions.



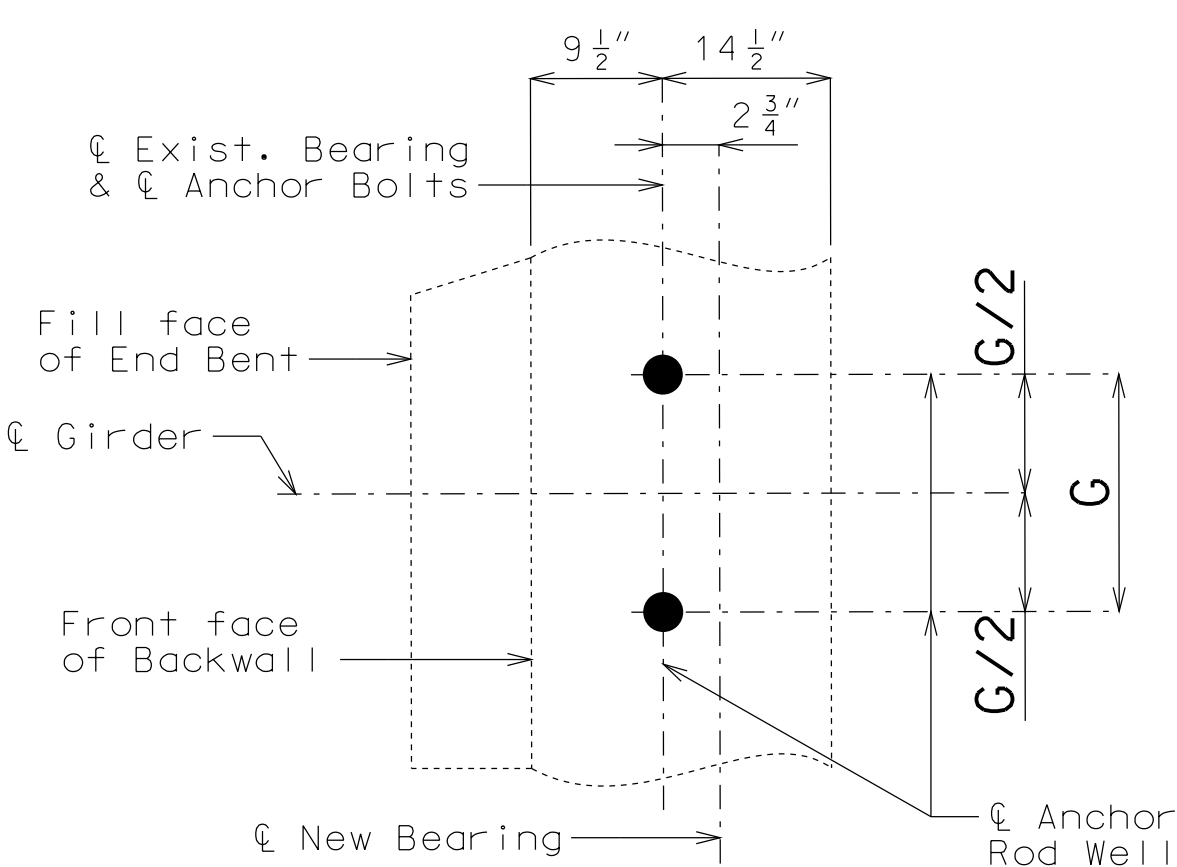
DETAIL OF 3/4" THRU 2 1/2" ANCHOR RODS



OPTIONAL DETAIL OF 1 3/8" THRU 2 1/2" ANCHOR RODS



DETAIL OF ANCHOR ROD WELLS



PLAN OF EXIST. END BENT SHOWING ANCHOR RODS

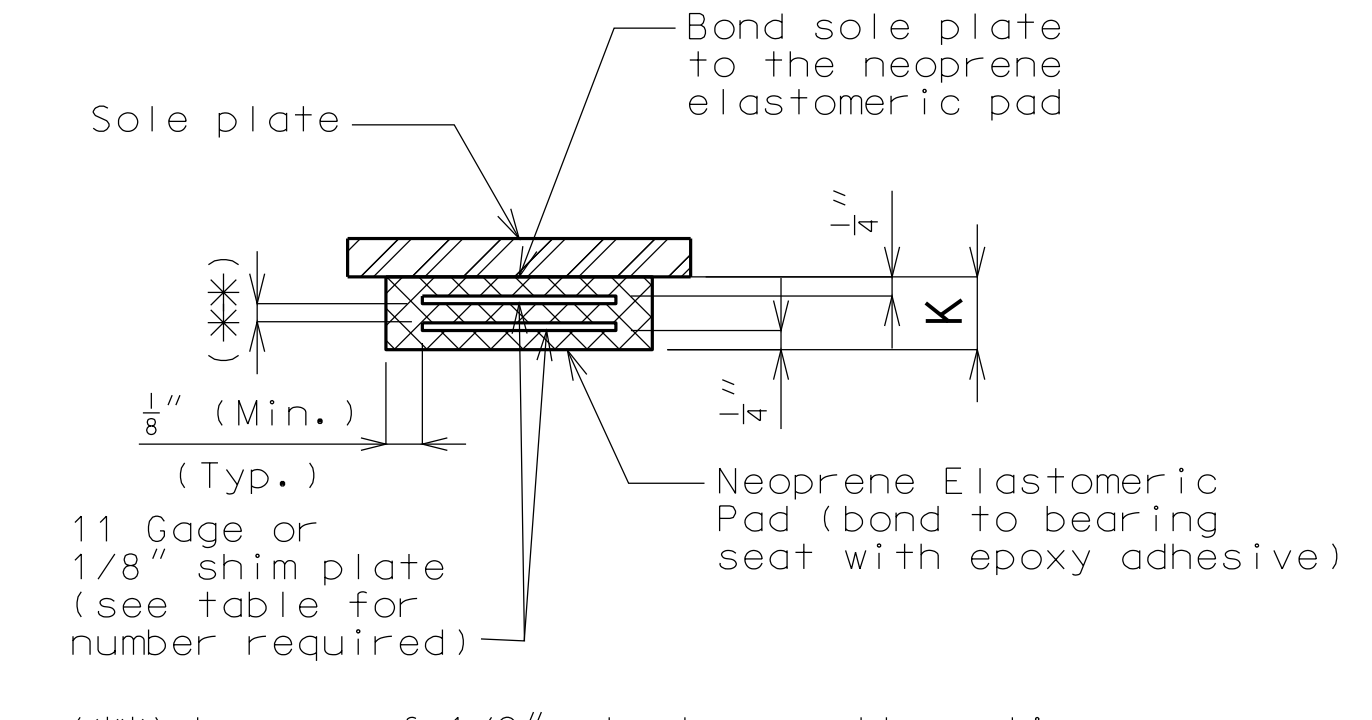
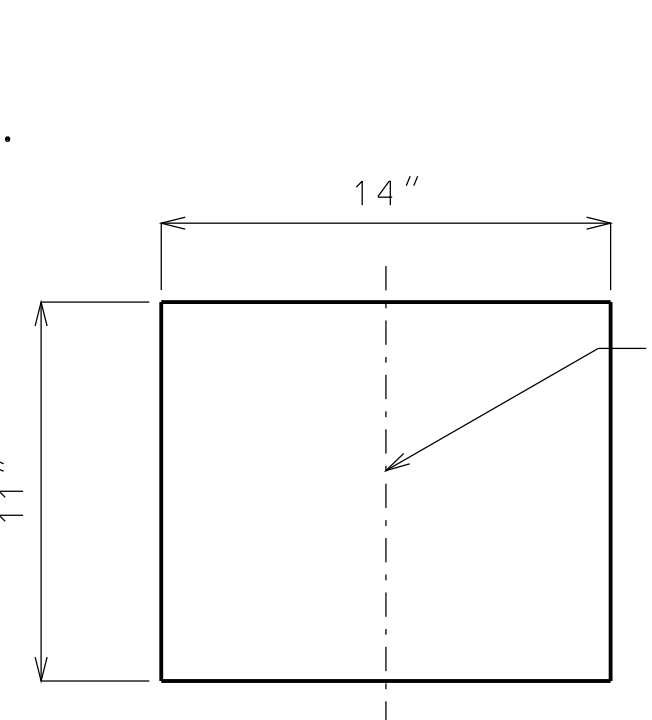
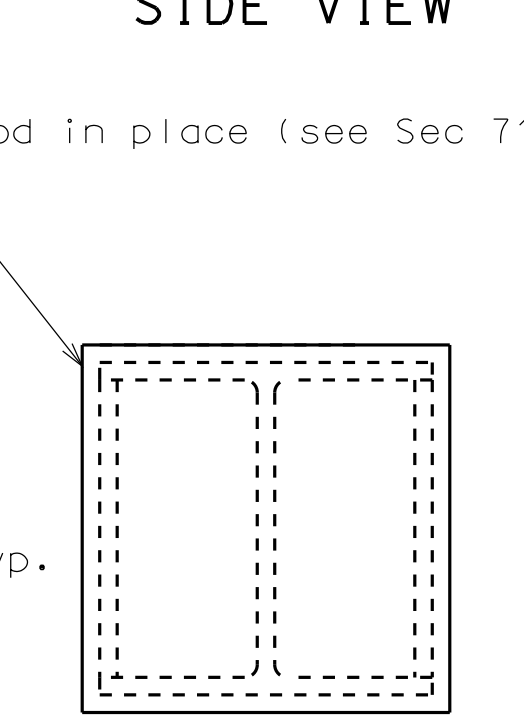
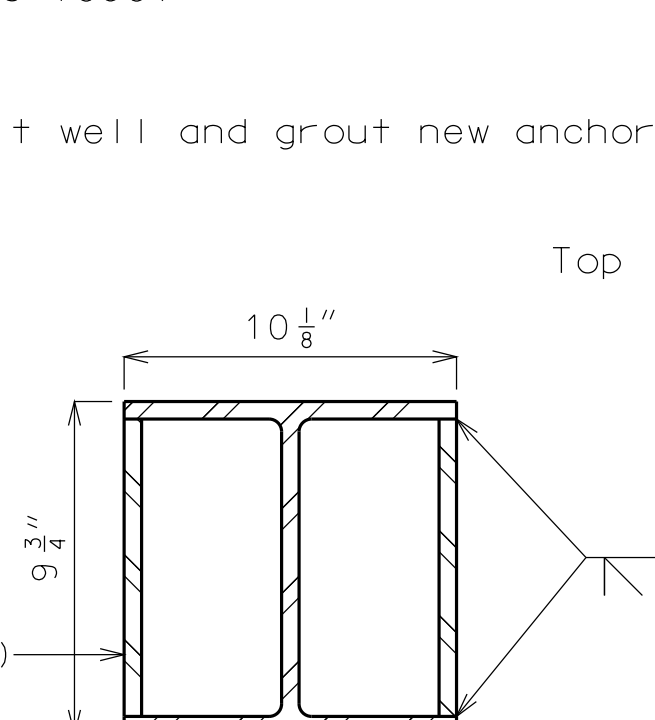
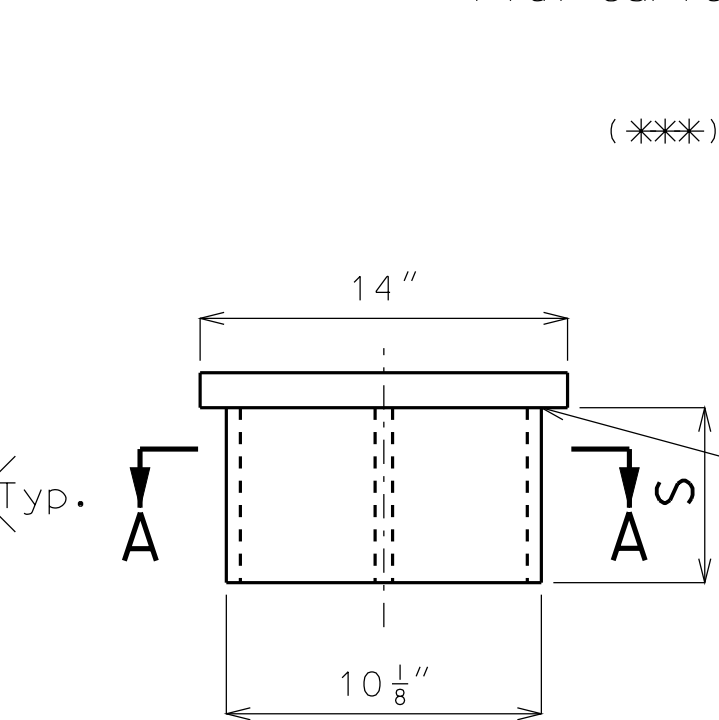
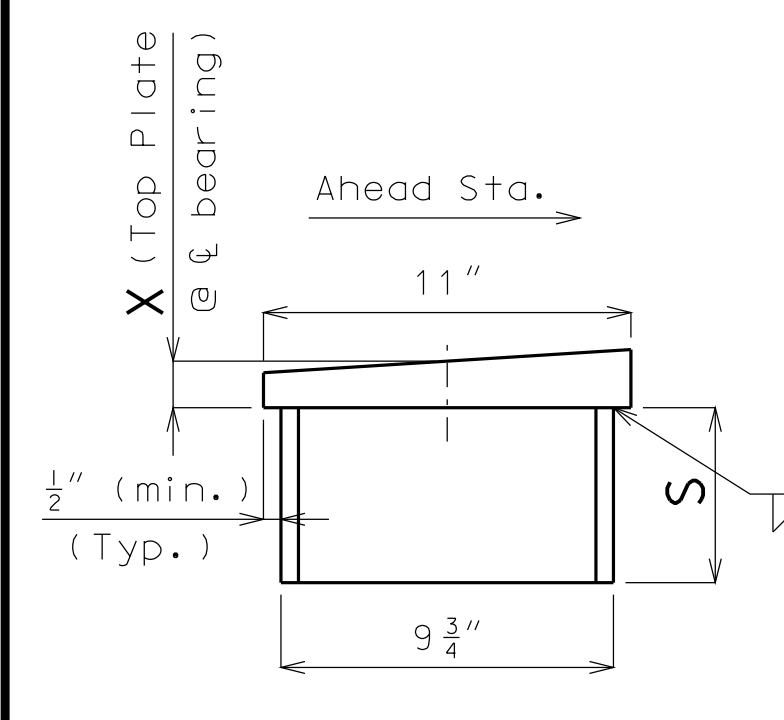
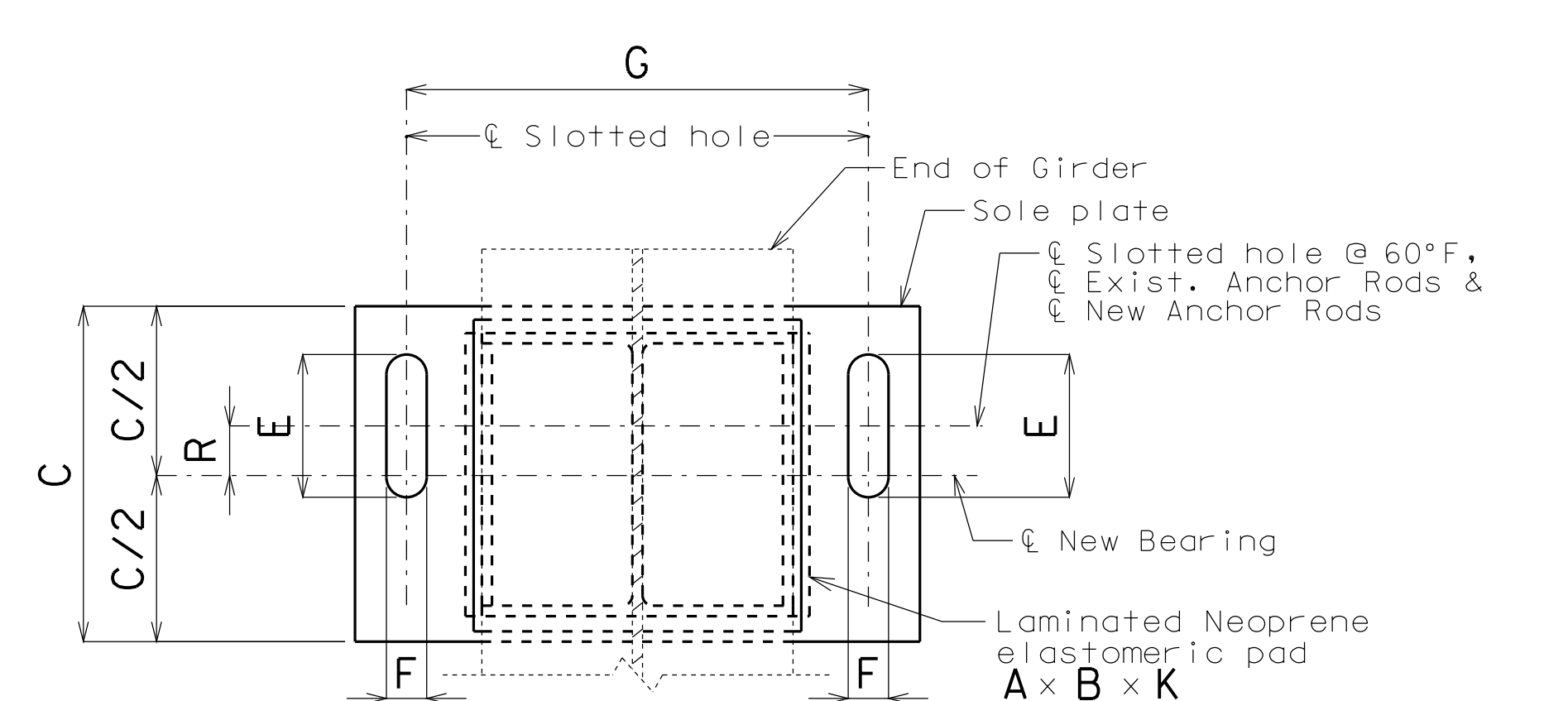
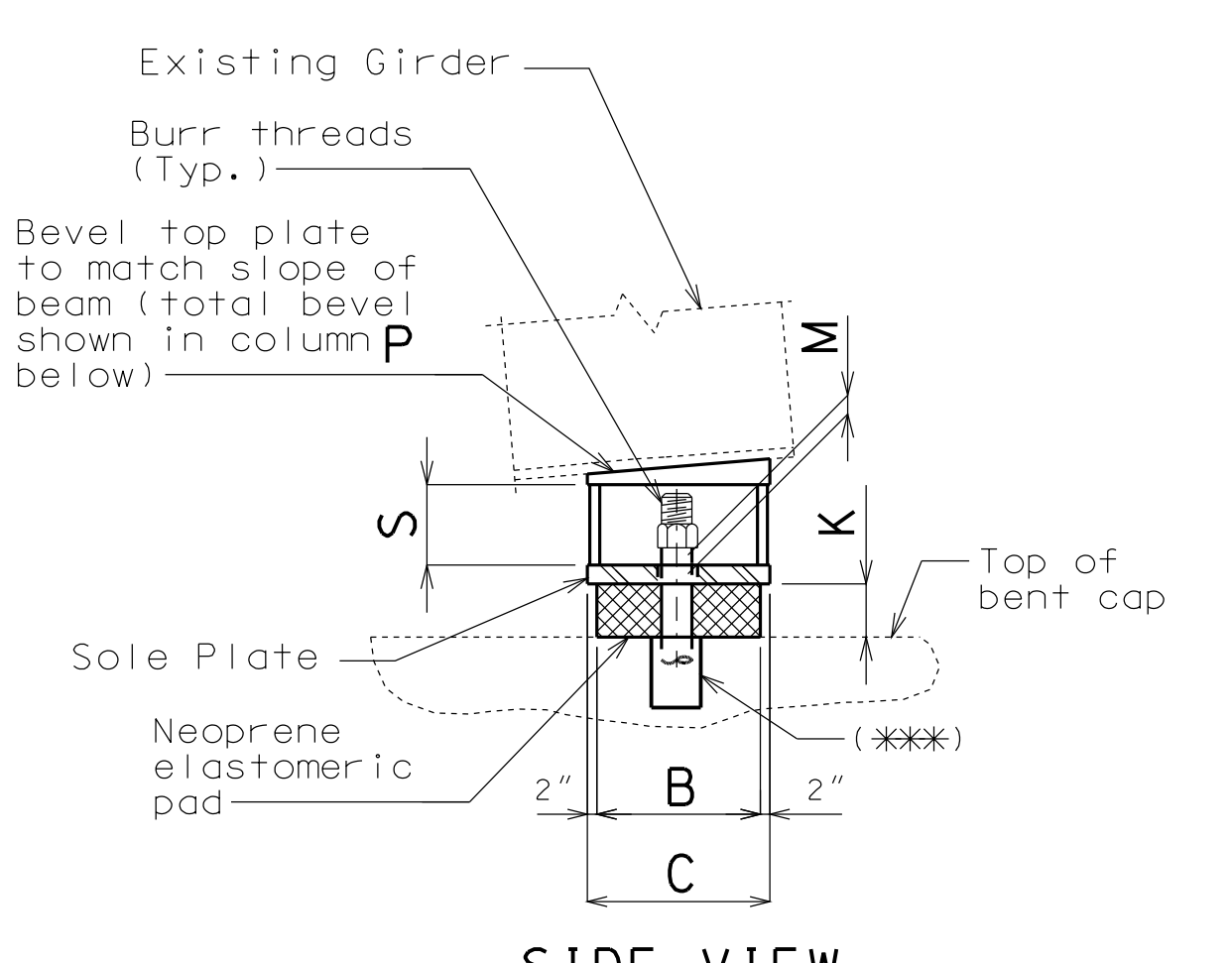
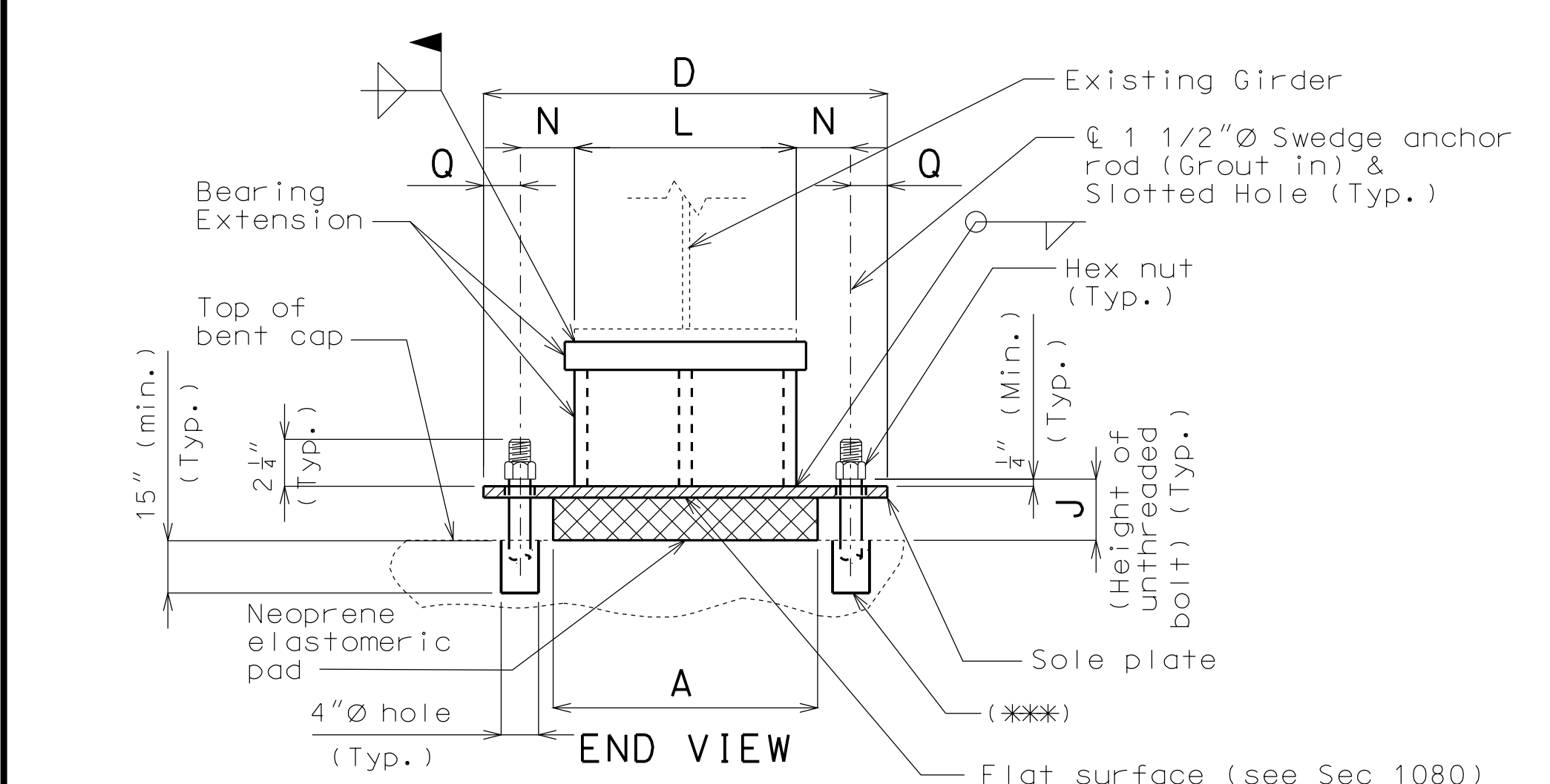
EXPANSION BEARINGS

BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	X	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
Bent No. 1	14"	12"	16"	26"	6 1/4"	1 5/8"	21"	6 3/4"	5"	16"	1 1/2"	2 1/2"	1 1/2"	2 1/2"	2 3/4"	4 1/8"	1"	8	3
																		TOTAL BEARINGS	3

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

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY





SIDE ELEVATION OF BEARING EXTENSION

END ELEVATION OF BEARING EXTENSION

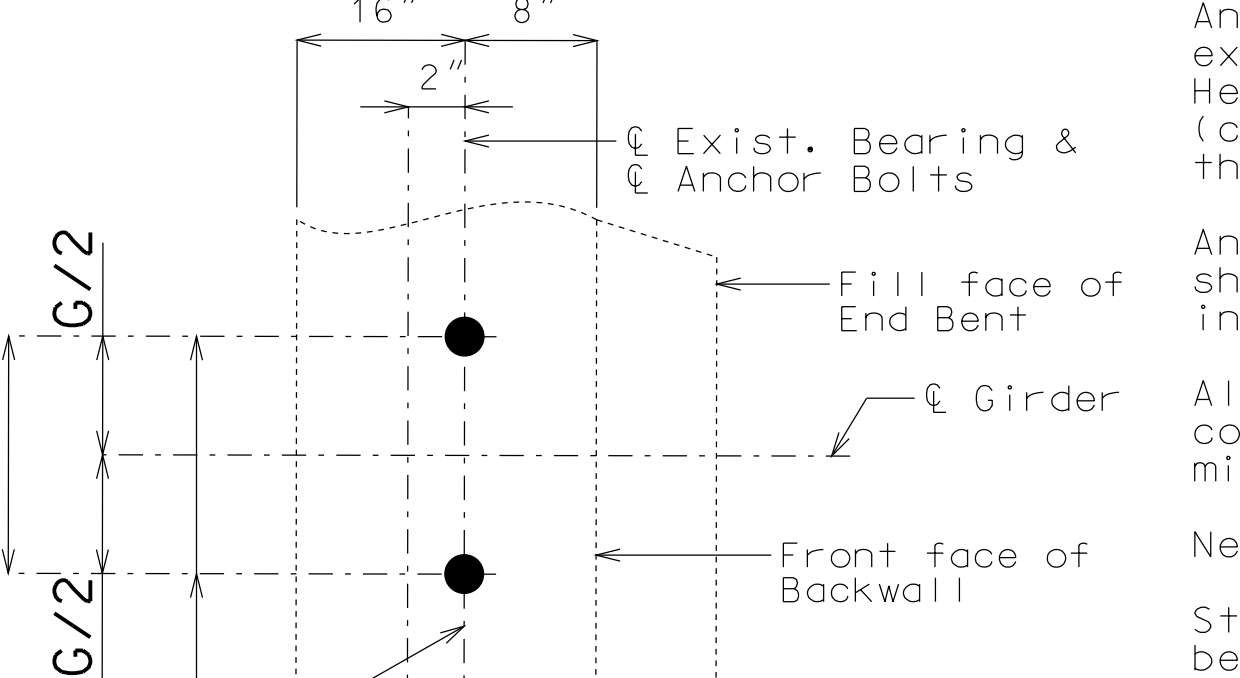
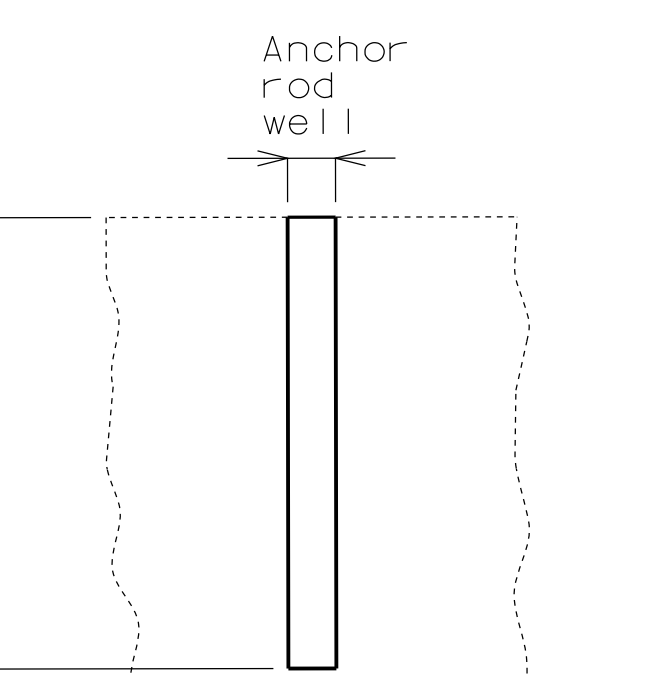
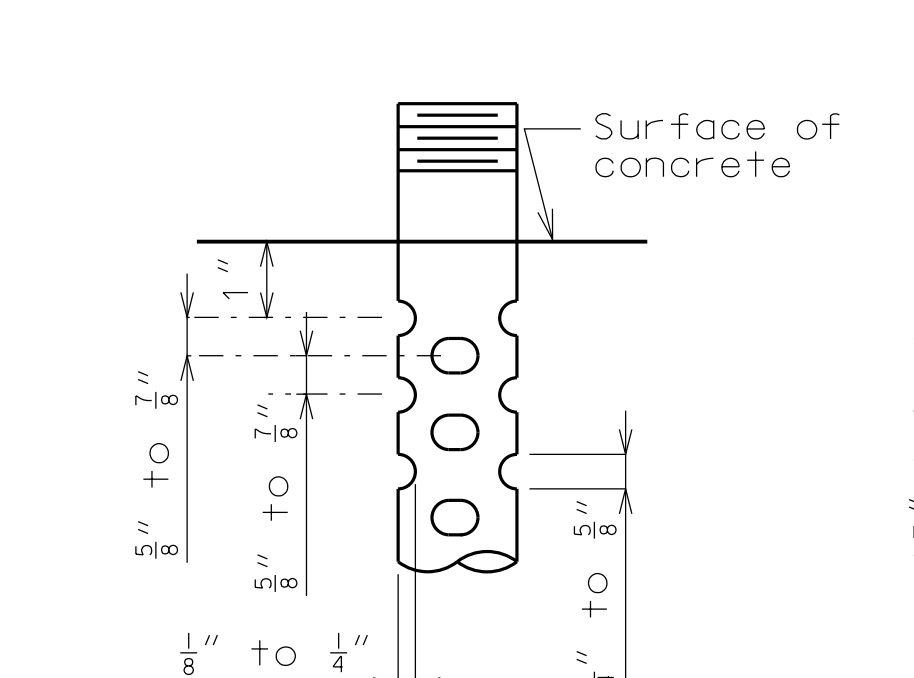
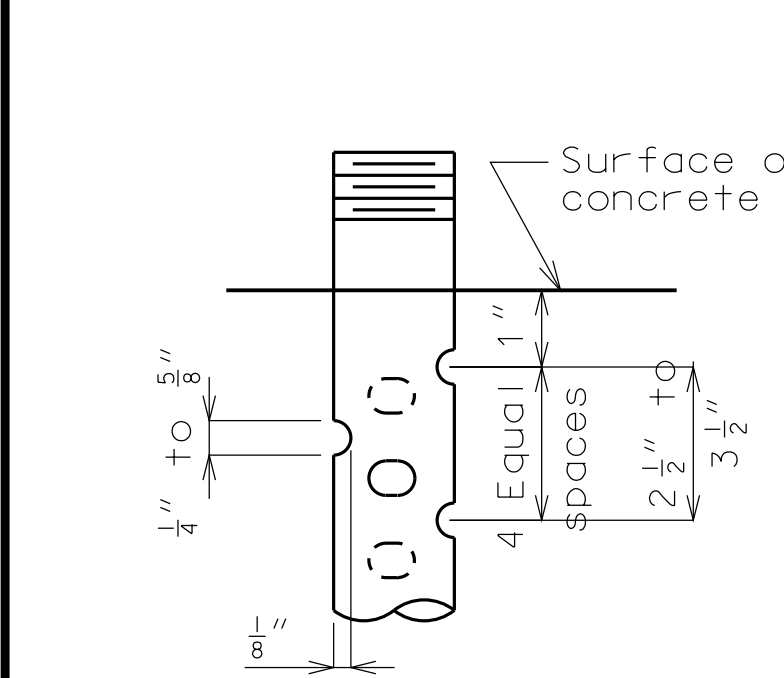
SECTION A-A

PLAN OF BEARING EXTENSION

PLAN OF TOP PLATE

NEOPRENE ELASTOMERIC PAD

(\*\*) Anchor bolt well and grout new anchor rod in place (see Sec 712).



DETAIL OF 3/4" THRU 2 1/2" ANCHOR RODS

OPTIONAL DETAIL OF 1 3/8" THRU 2 1/2" ANCHOR RODS

DETAIL OF ANCHOR ROD WELLS

PLAN OF EXIST. END BENT SHOWING ANCHOR RODS

**GENERAL NOTES:**

- Anchor rods shall be 1 1/2" ASTM F1554 Grade 55 swedged rods and shall extend 15" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.
- Anchor rod shall be at the centerline of slotted hole at 60°F. Bearing position shall be adjusted 1/8" for each 10° fall or rise in temperature at installation.
- All structural steel for the anchor rods and hex nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).
- Neoprene Elastomeric Pads shall be 60 Durometer.
- Structural steel for sole plate and all bearing extension steel shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).
- Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.
- Cost of bearing extension, complete in place, will be considered completely covered by the contract unit price for Laminated Neoprene Bearing Pad Assembly.
- The temporary supports shall be capable of safely supporting a service load DL & construction load of 59 kips and a LL of 73 kips per stringer if done under traffic (factor of safety not included). See Special Provisions.

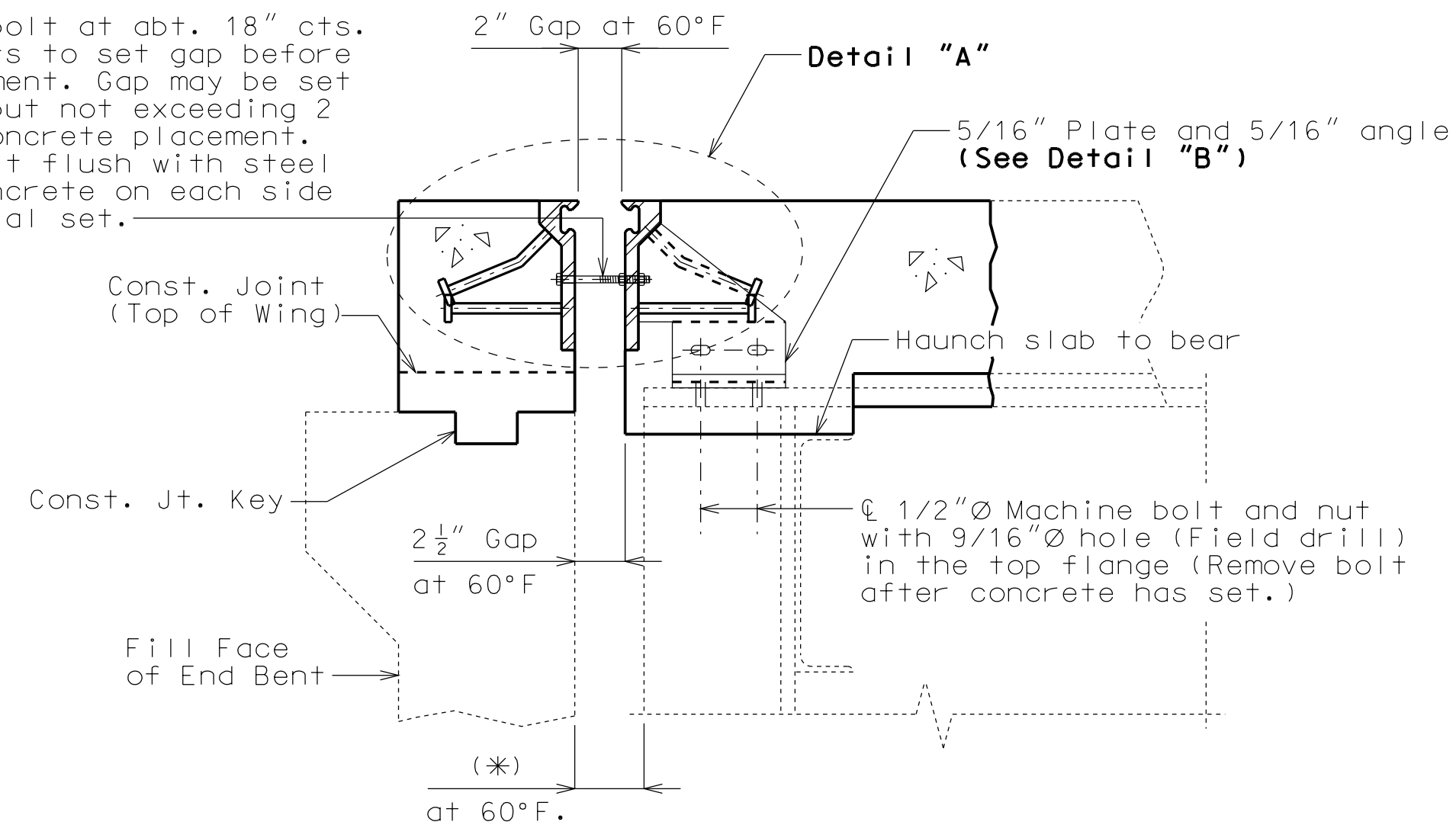
EXPANSION BEARINGS																		NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	X		
Bent No. 7	16"	10"	14"	24"	5 1/4"	1 5/8"	1 9/16"	5 1/2"	3 3/4"	13"	1 5/8"	3 1/4"	-	2 1/4"	2"	5 1/4"	1"	6	3
																		TOTAL BEARINGS	3

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

**DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY**

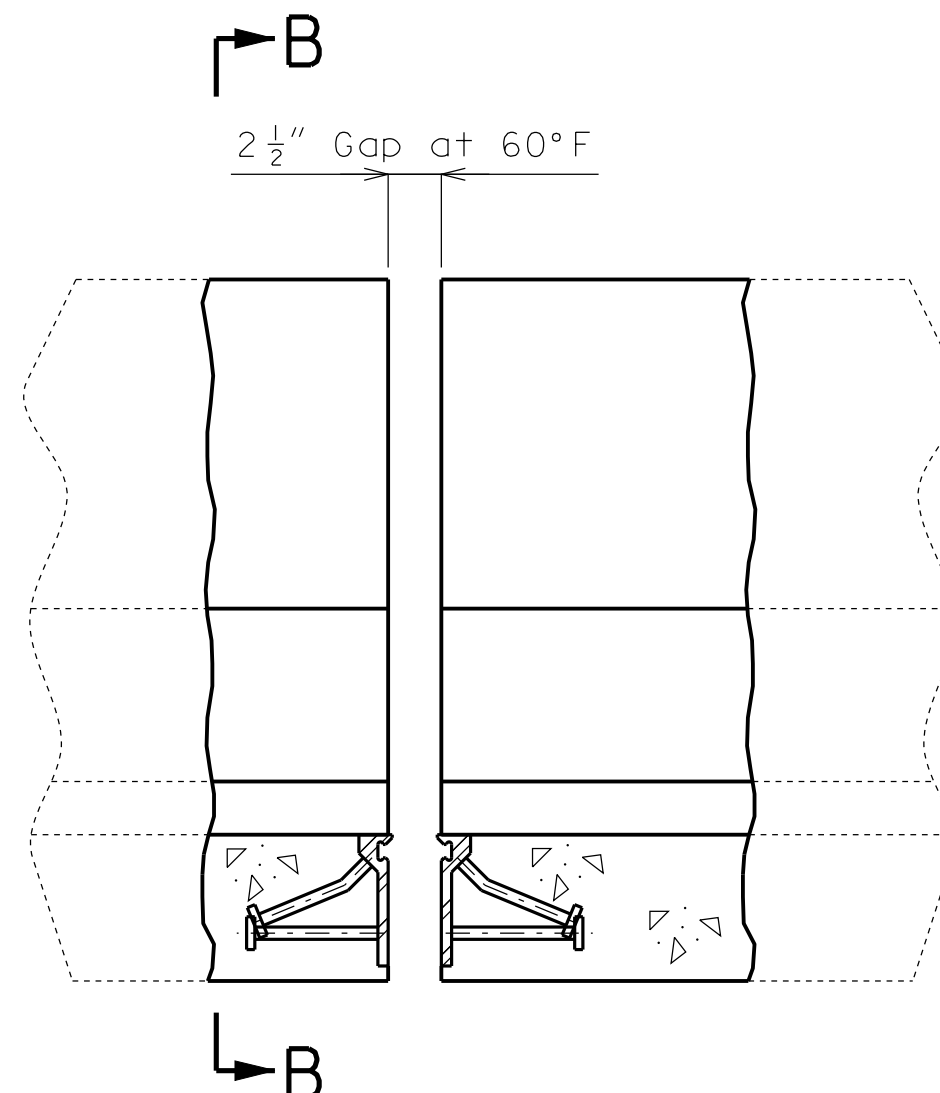
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."  
 DATE PREPARED: 12/4/2012  
 ROUTE: I-435 STATE: MO  
 DISTRICT: BR SHEET NO.: 3  
 COUNTY: CLAY  
 JOB NO.: J412381  
 CONTRACT ID.:  
 PROJECT NO.:  
 BRIDGE NO.: A33881  
 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

1/2"Ø Machine bolt at abt. 18" cts. Use two hex nuts to set gap before concrete placement. Gap may be set anytime up to but not exceeding 2 hours before concrete placement. Cut machine bolt flush with steel armor after concrete on each side has taken initial set.



SECTION A-A

Note: Strip seal gland not shown for clarity.



Note: Strip seal gland not shown for clarity.

PART ELEVATION OF BARRIER CURB

GENERAL NOTES:

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

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

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

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

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

Longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

(\*) Match existing.

- ① 2"(\*) (End Bent No. 1)
- 2 1/2"(\*) (End Bent No. 7)
- ② 3"(\*) (End Bents No. 1 & 7)

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED

12/4/2012

ROUTE STATE

I-435 MO

DISTRICT SHEET NO.

BR 4

COUNTY

CLAY

JOB NO.

J412381

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

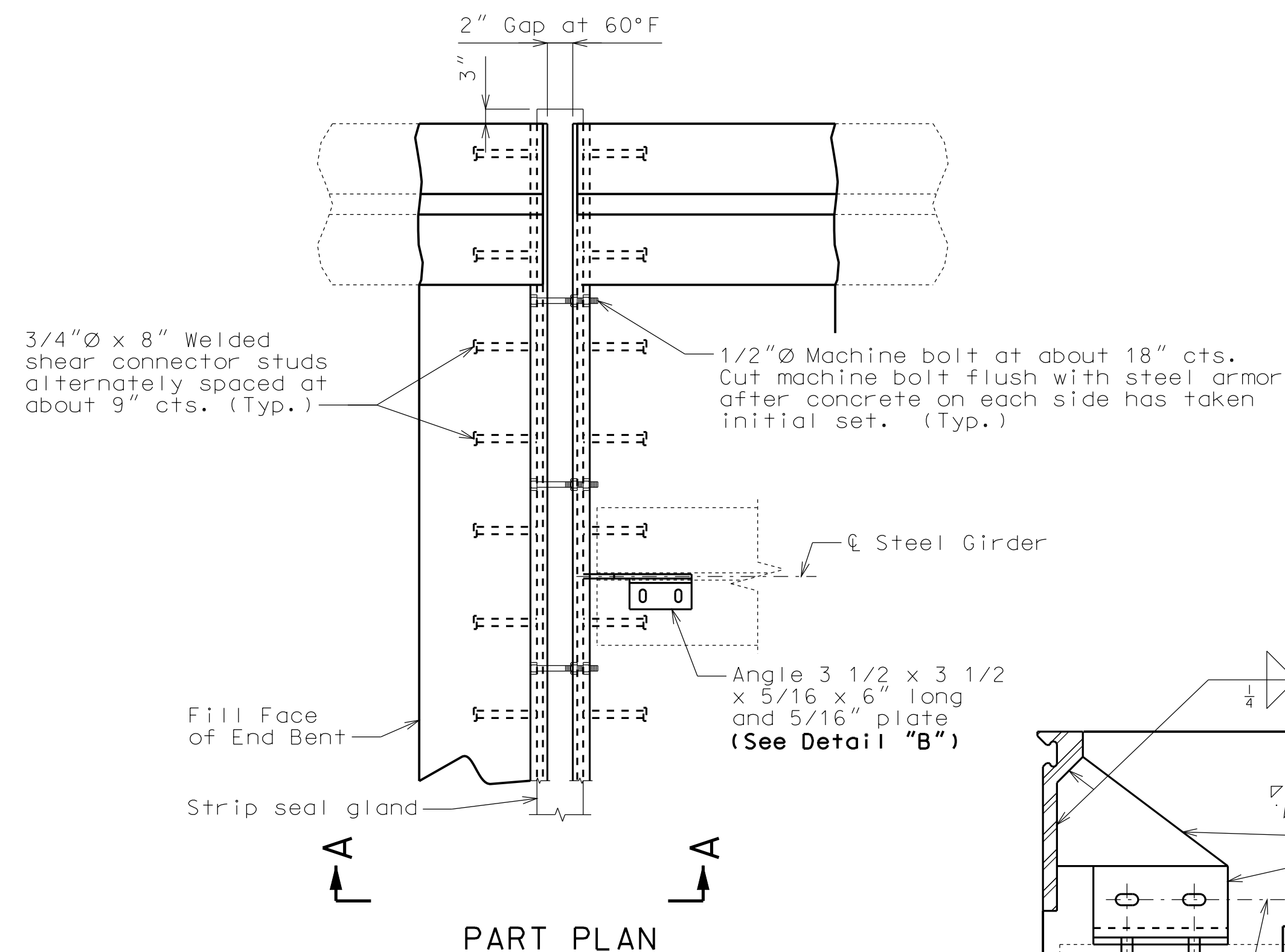
A33881

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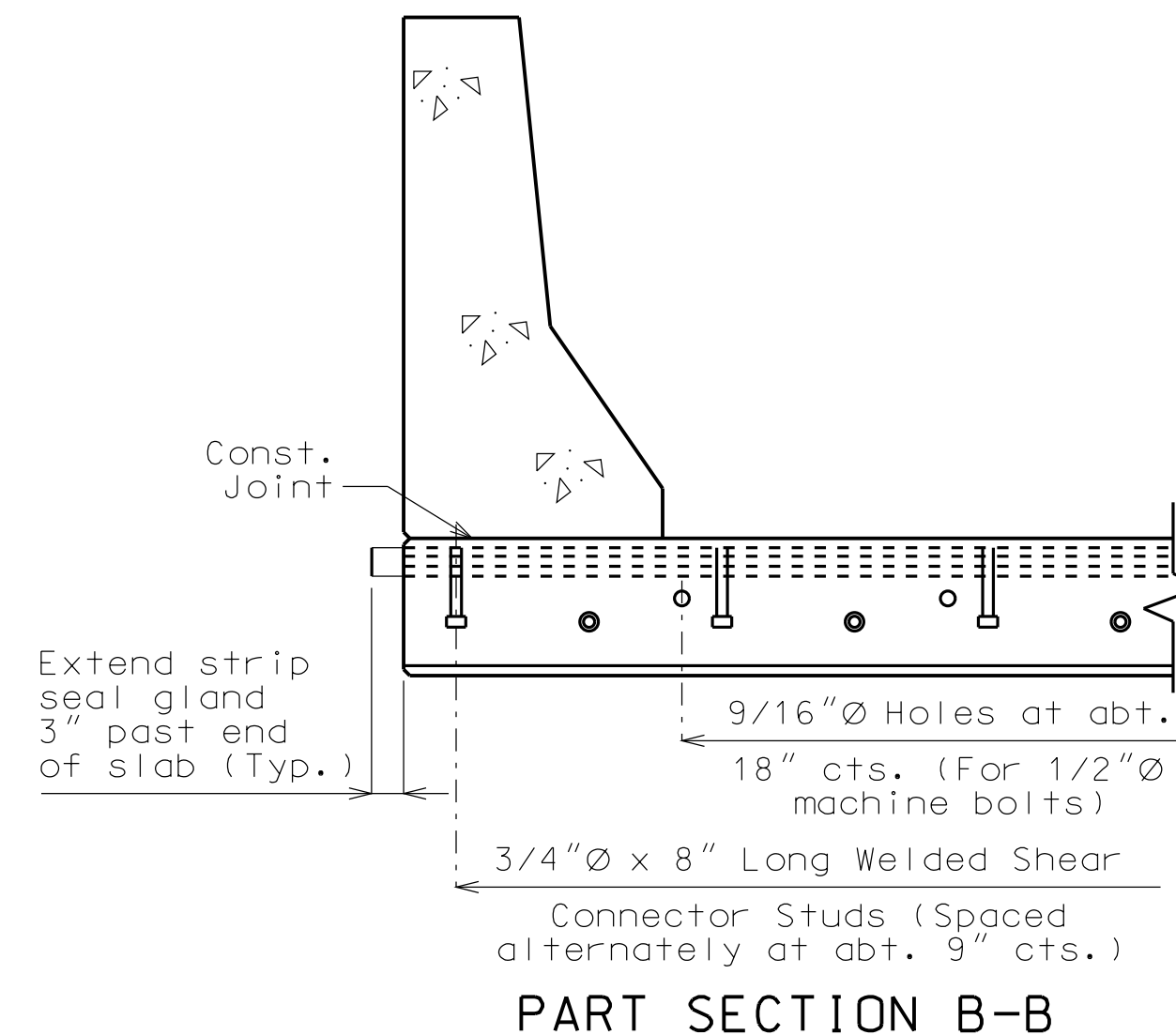
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

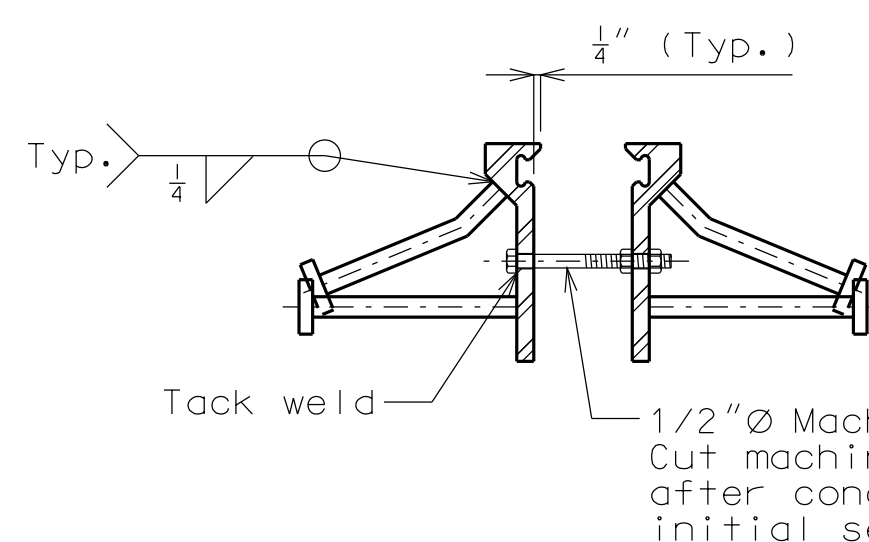
MoDOT  
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



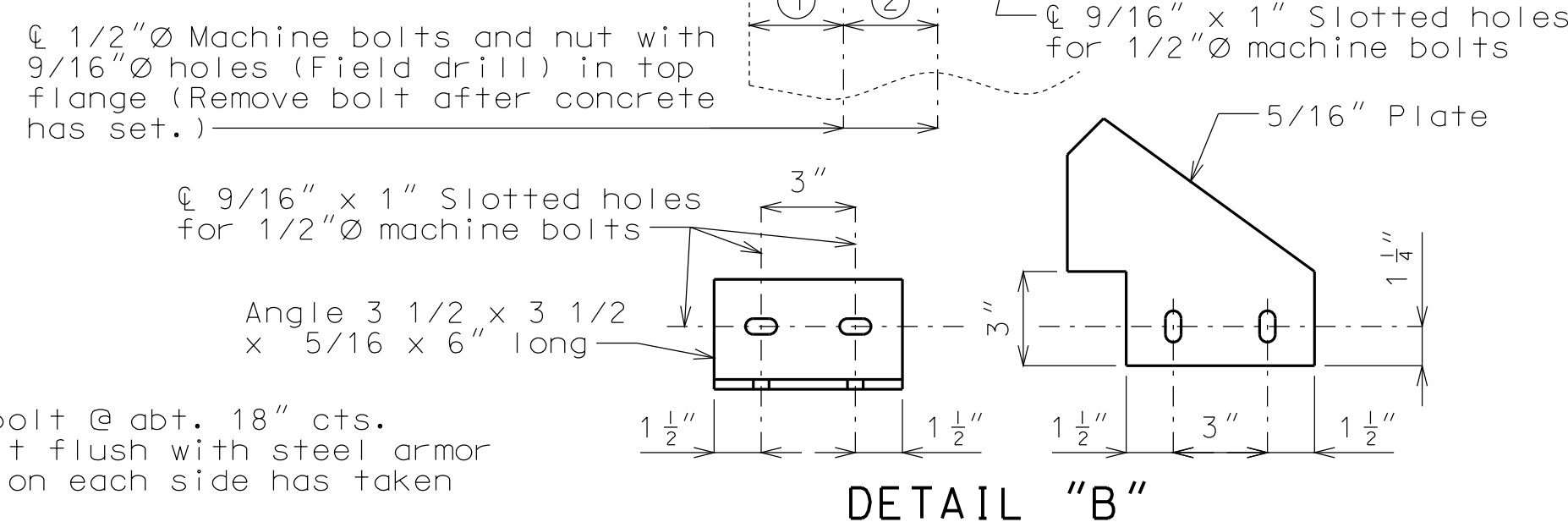
PART PLAN



PART SECTION B-B



DETAIL "A"



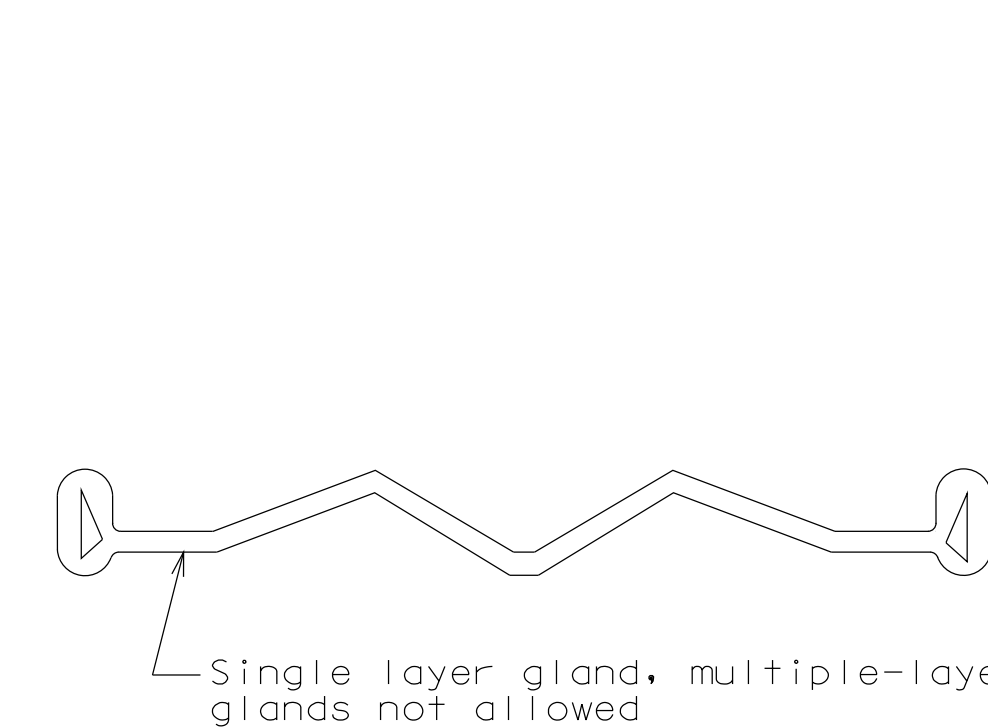
DETAIL "B"

DETAILS OF STRIP SEAL AT END BENTS NO. 1 & 7

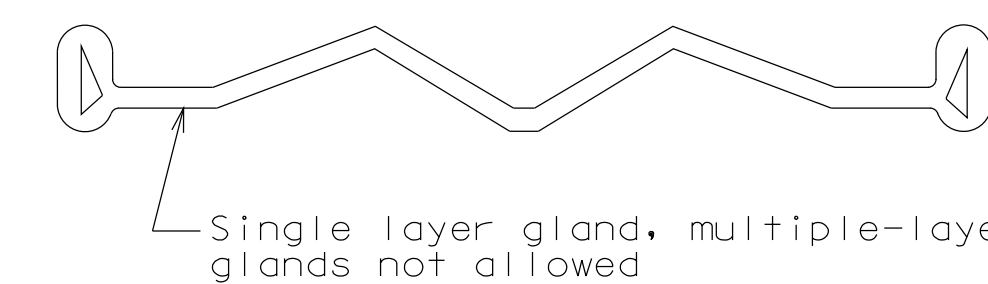
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 9

Detailed June 2012  
Checked July 2012



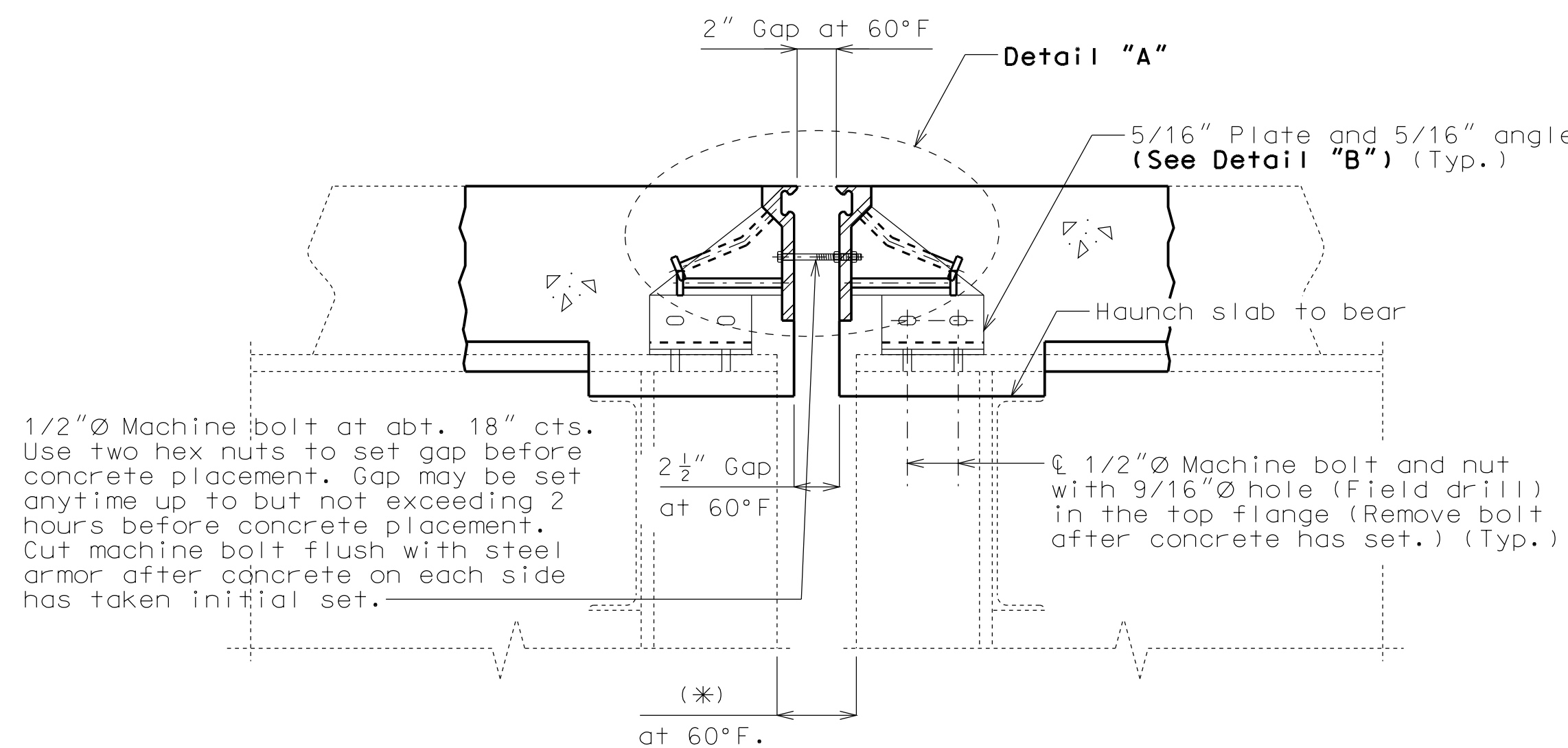
DETAIL OF JOINT ARMOR



DETAIL OF GLAND

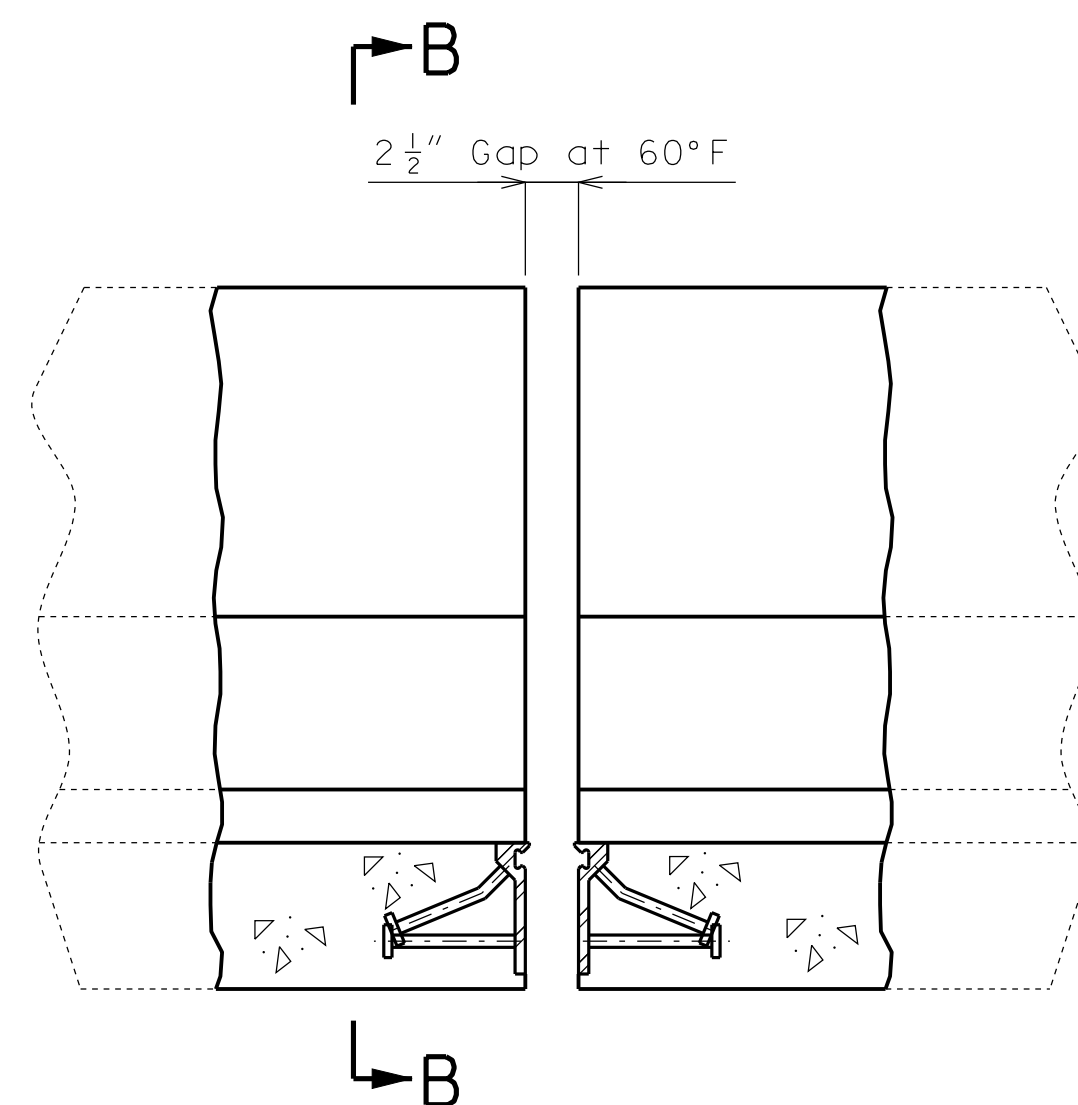
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REV.



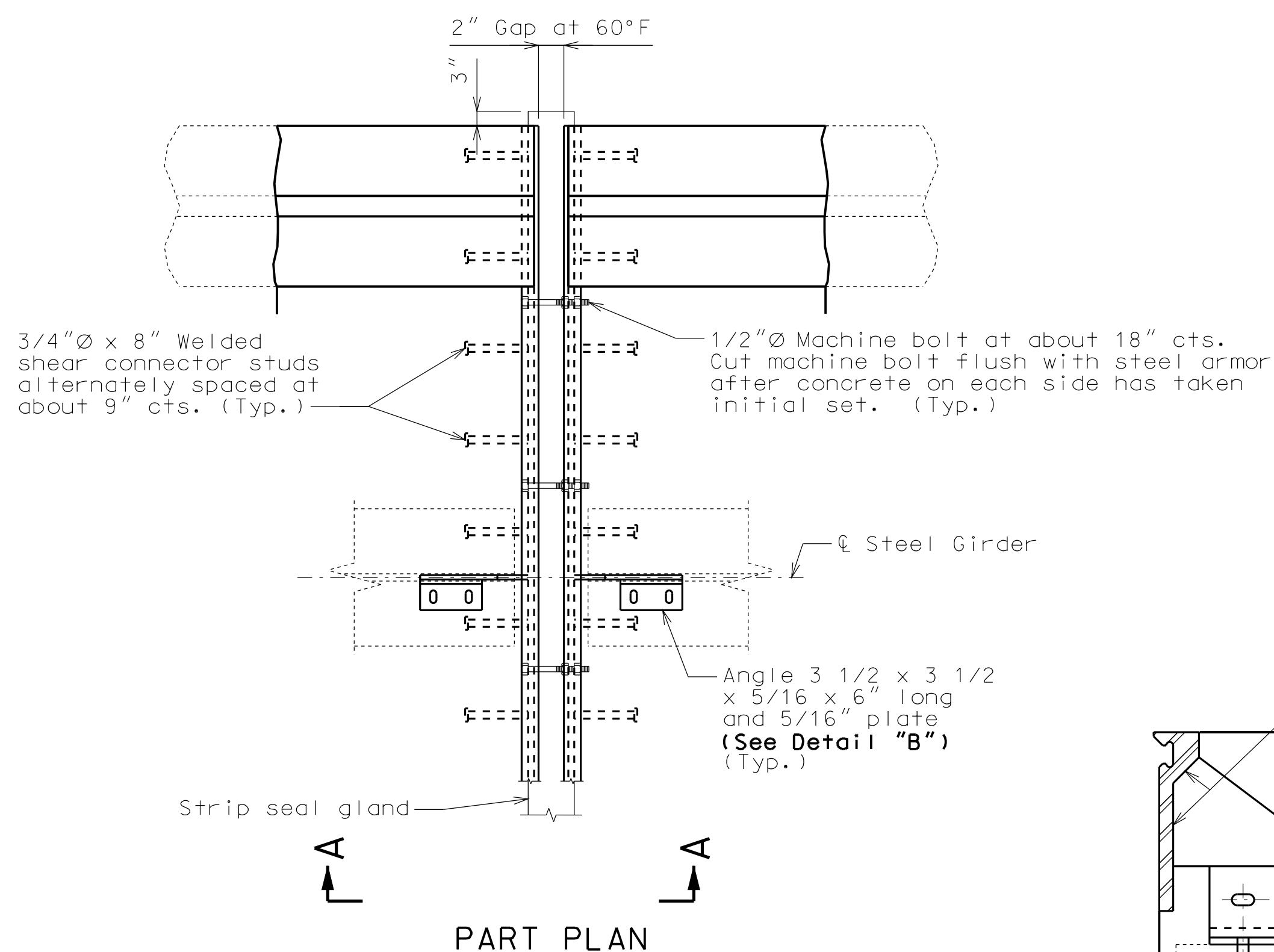
SECTION A-A

Note: Strip seal gland not shown for clarity.

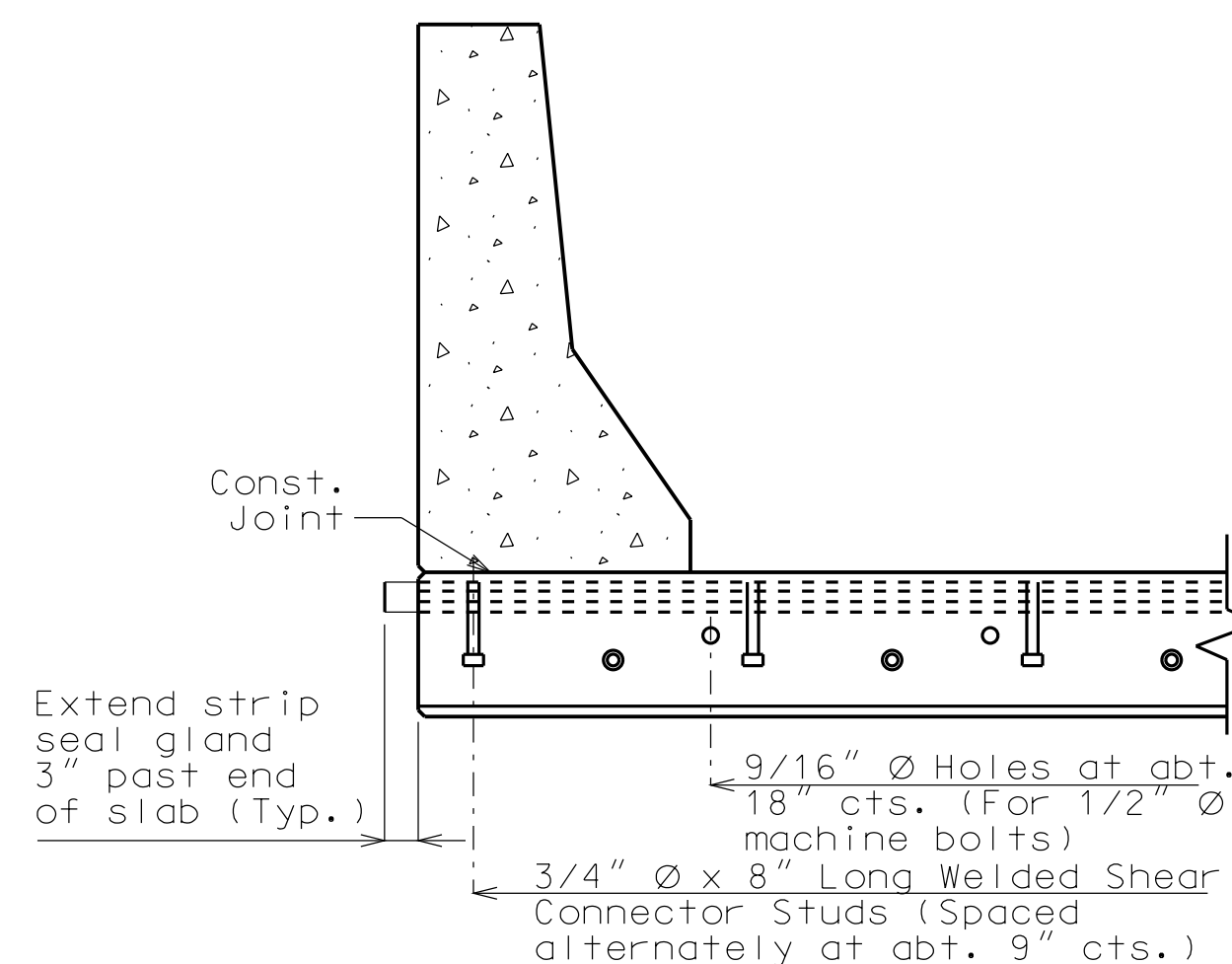


PART ELEVATION OF BARRIER CURB

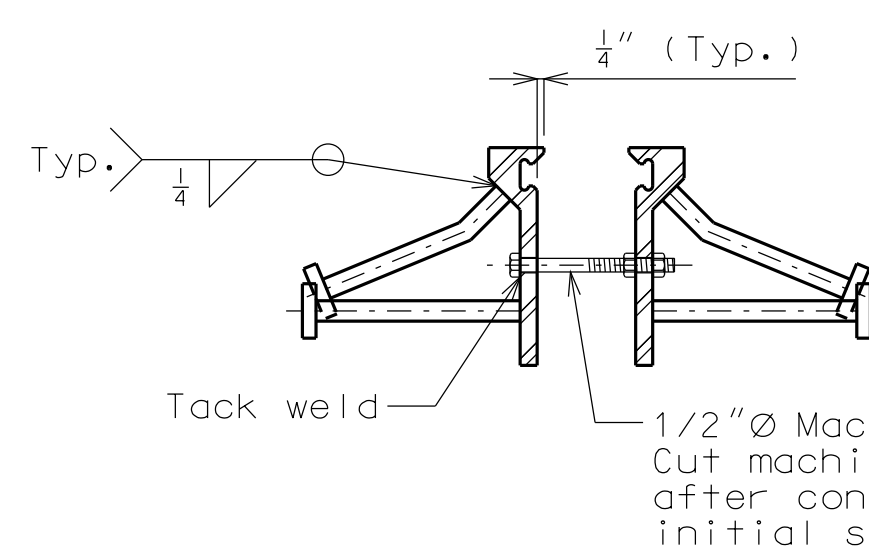
Note: Strip seal gland not shown for clarity.



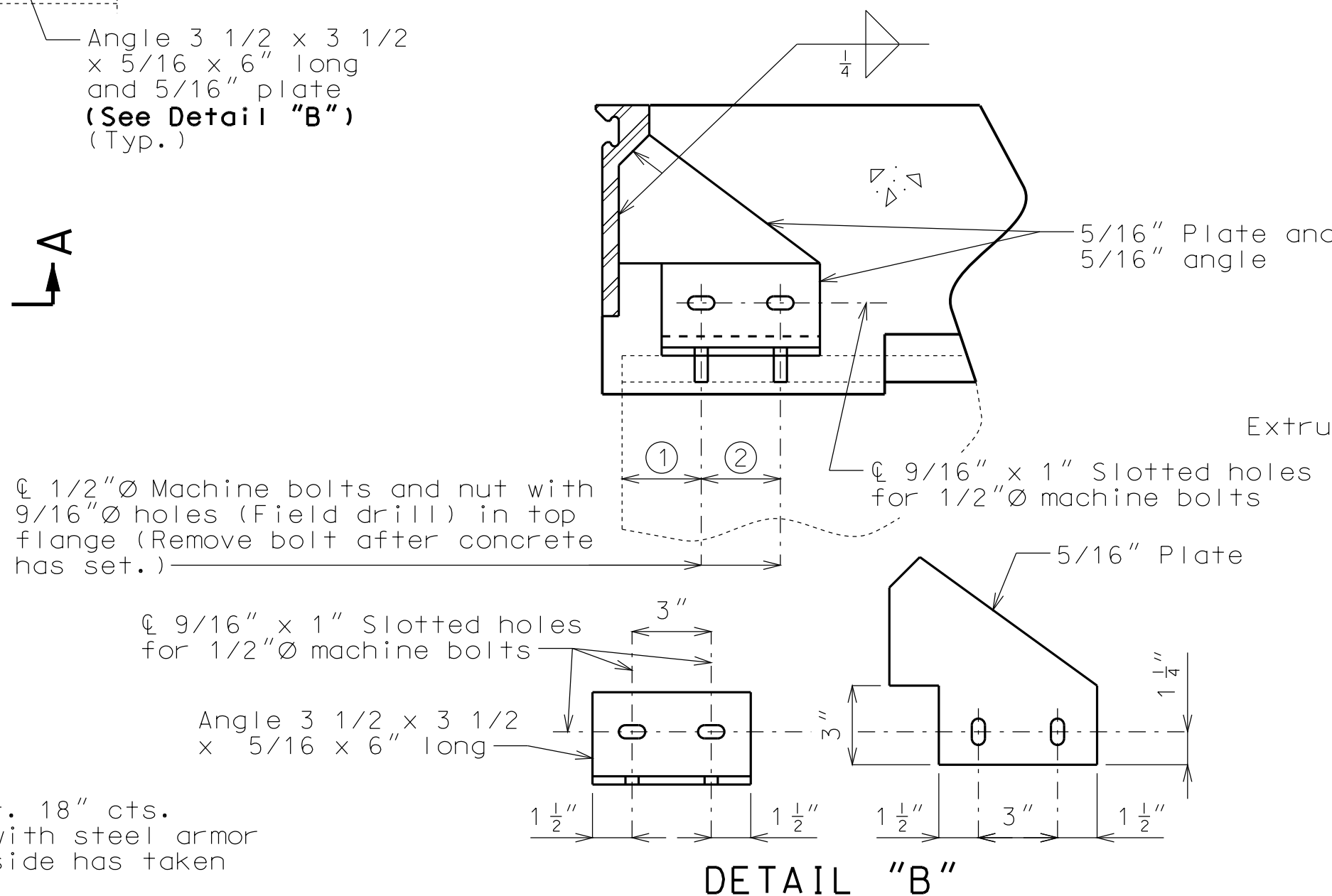
PART PLAN



PART SECTION B-B

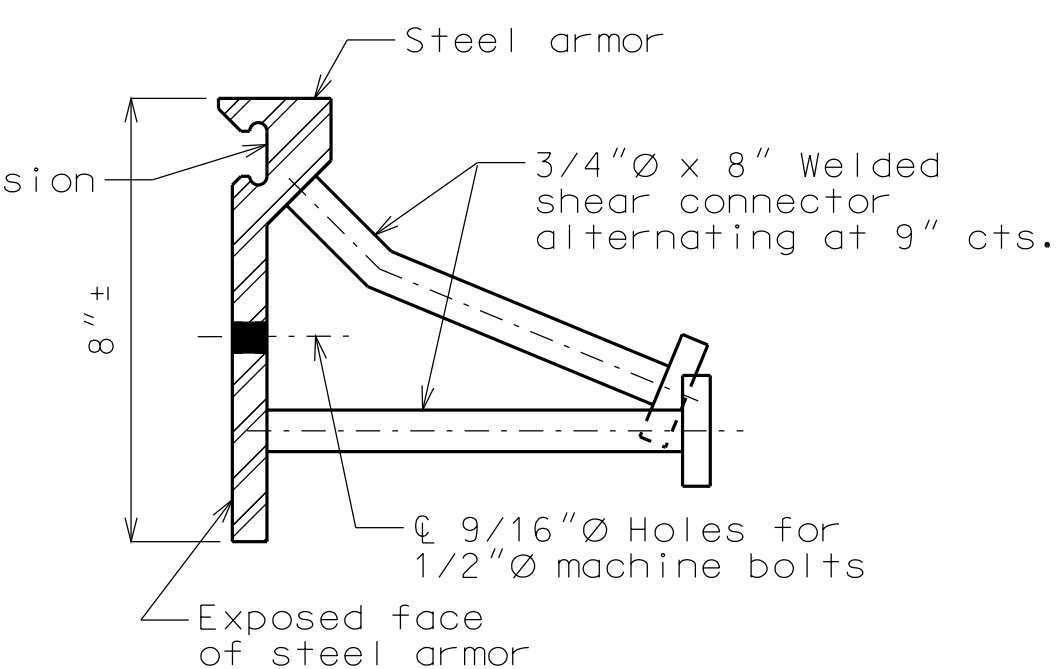


DETAIL "A"

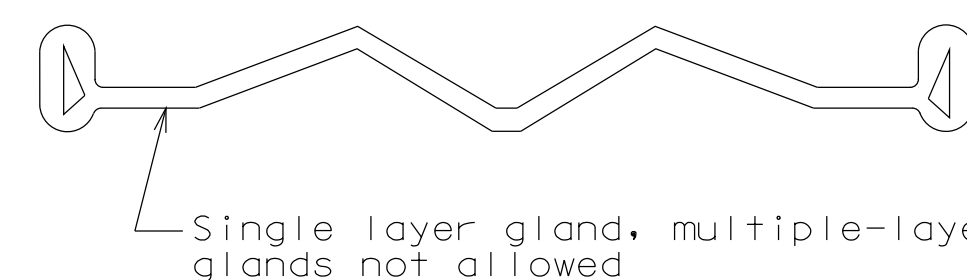


DETAIL "B"

DETAILS OF STRIP SEAL NEAR INTERMEDIATE BENT NO. 4



DETAIL OF JOINT ARMOR



Strip seal gland size = 4"

DETAIL OF GLAND

GENERAL NOTES:

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

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

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

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

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

Longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

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

(\* Match existing.)

- ① 1 1/2" (\*) (Span (3-4))
- 4 1/2" (\*) (Span (4-5))
- ② 3" (\*) (Spans (3-4) & (4-5))

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED

12/4/2012

ROUTE STATE

I-435 MO

DISTRICT SHEET NO.

BR 5

COUNTY

CLAY

JOB NO.

J412381

CONTRACT ID.

PROJECT NO.

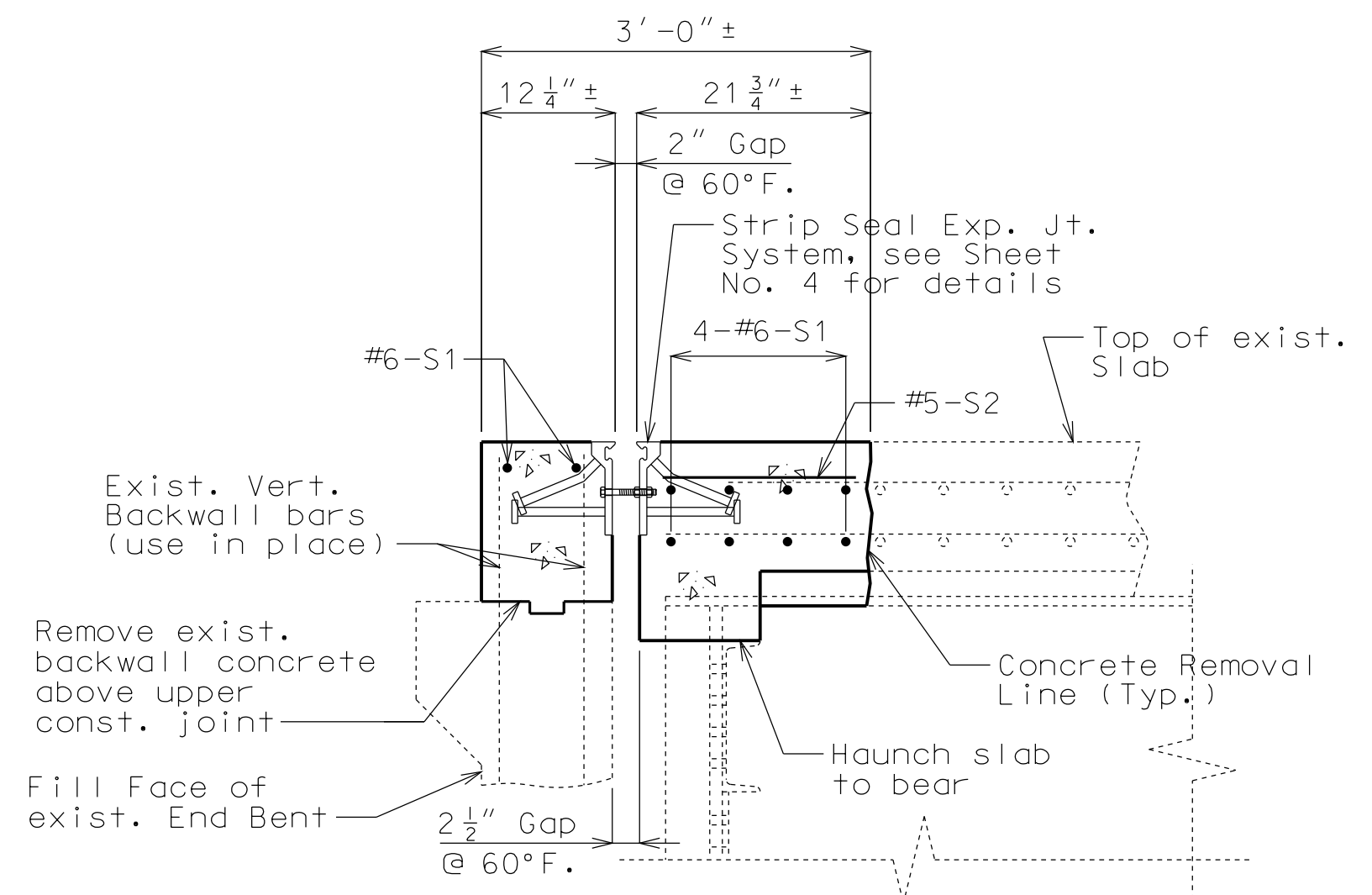
BRIDGE NO.

A33881

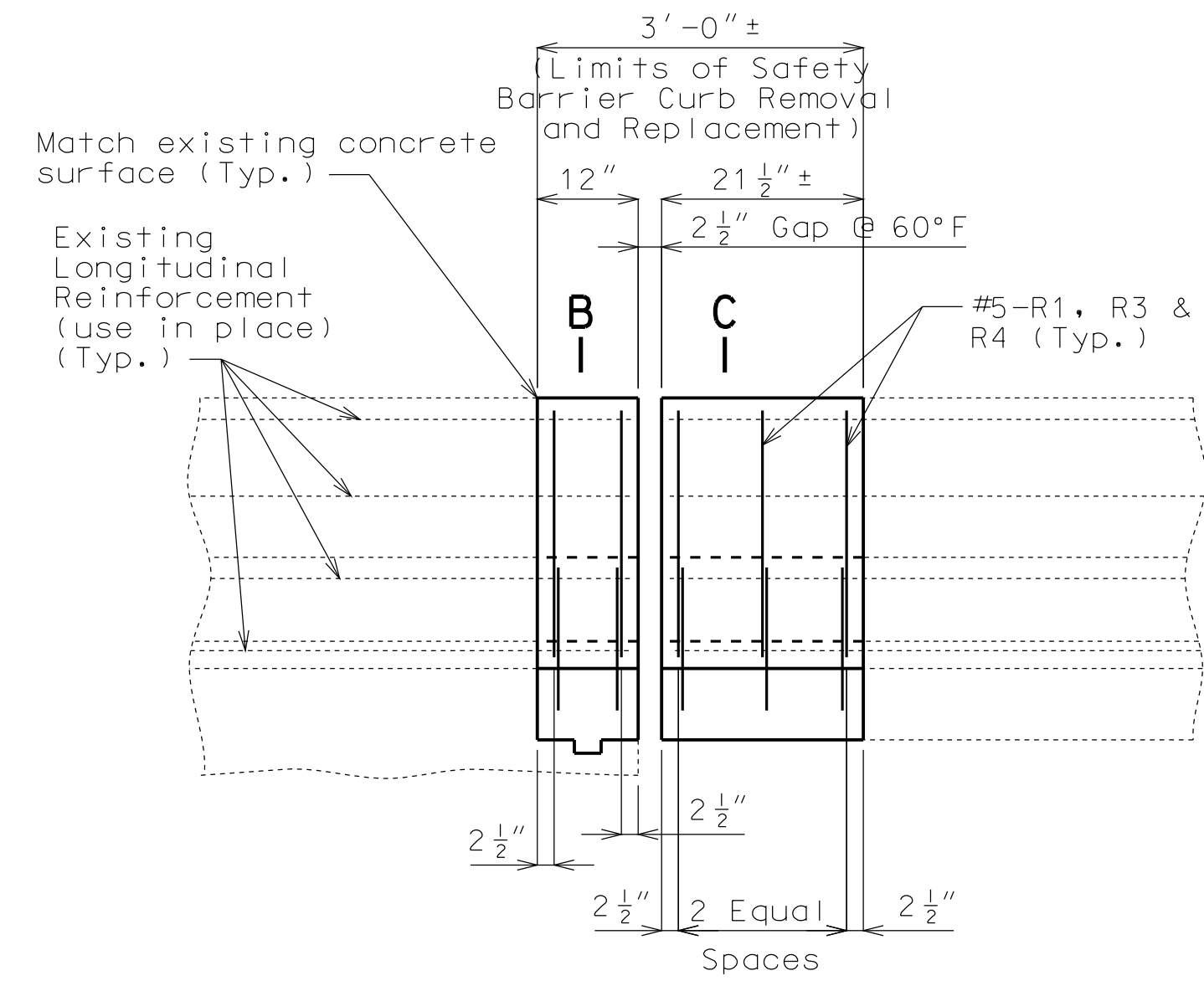
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

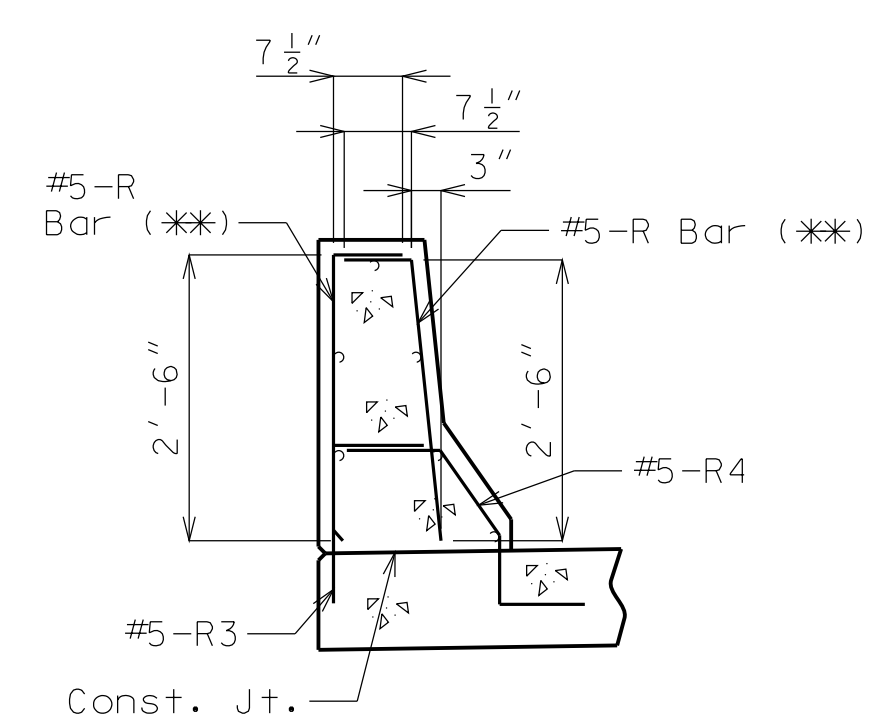
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



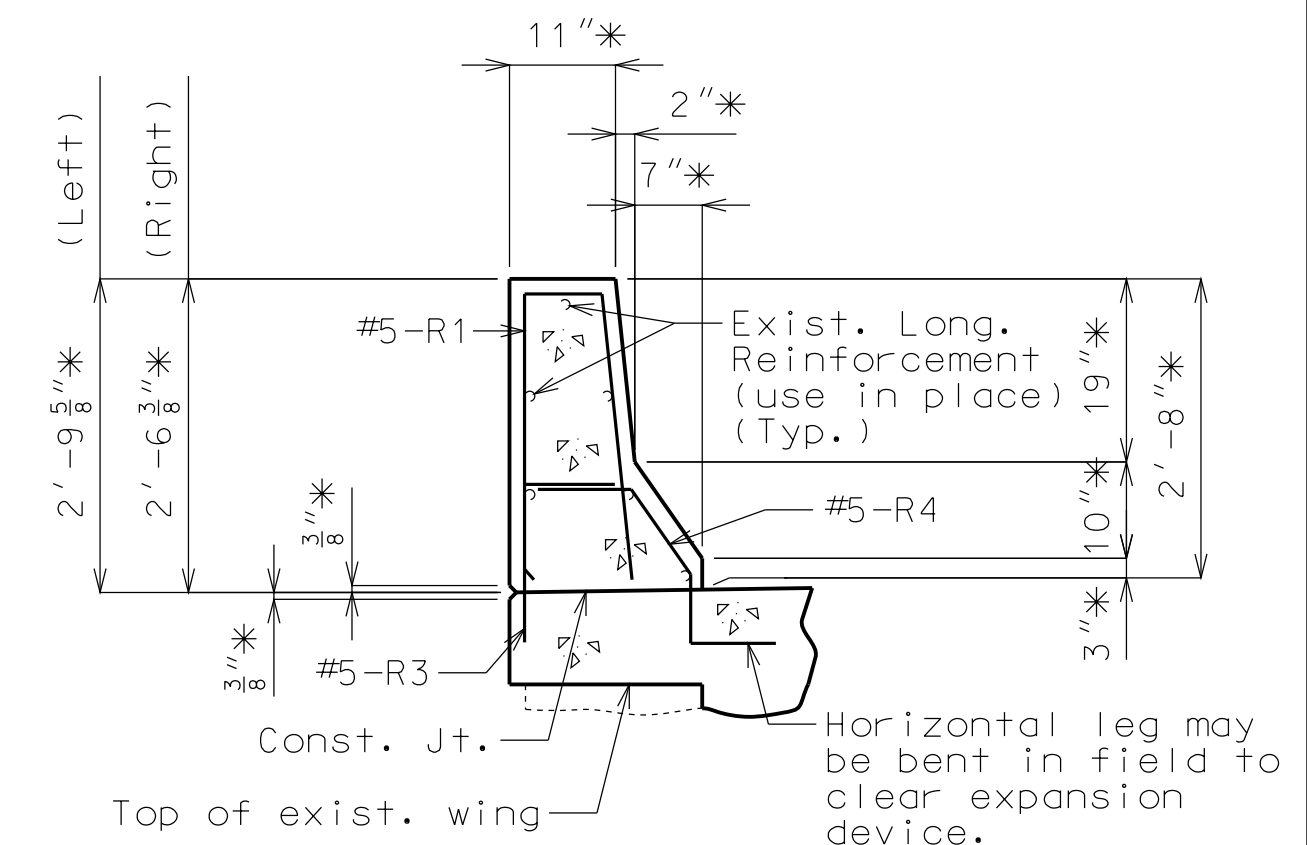
SECTION A-A



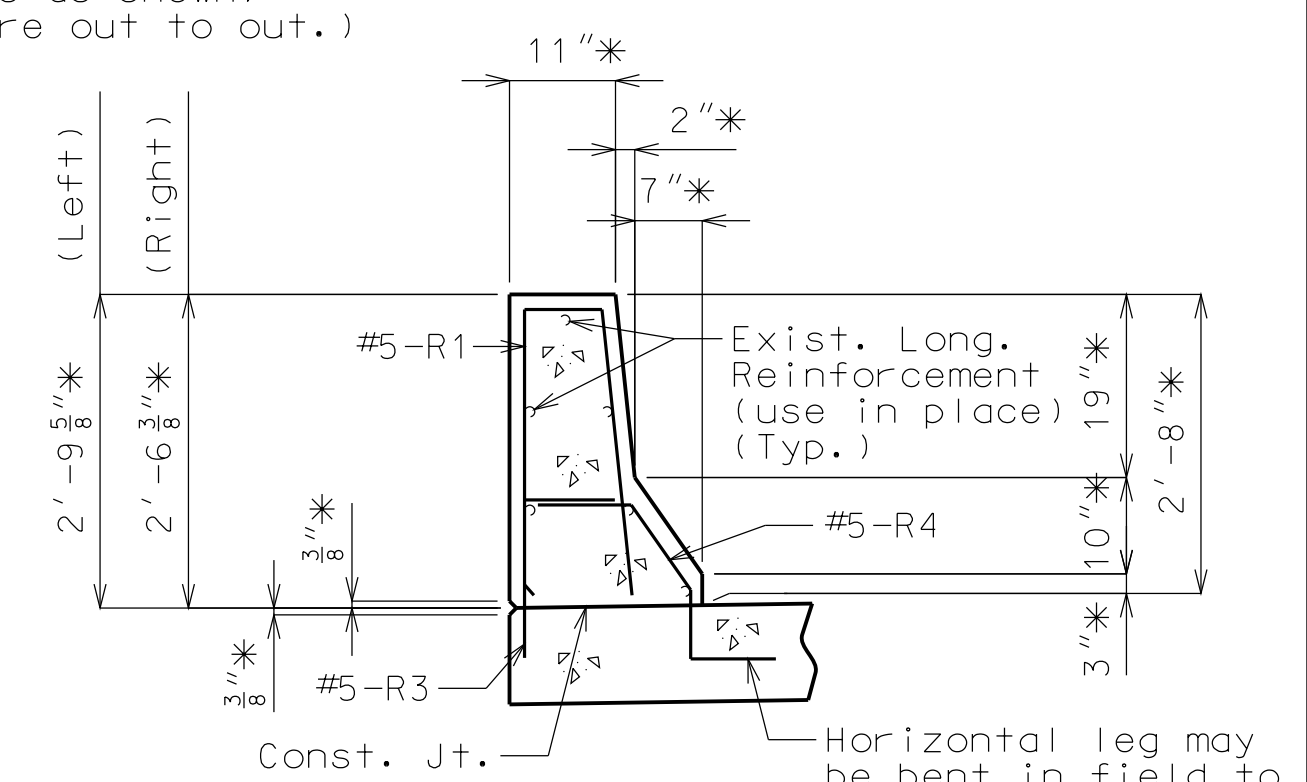
PART ELEVATION OF RIGHT SAFETY BARRIER CURB  
(Right barrier curb shown, left barrier curb similar)



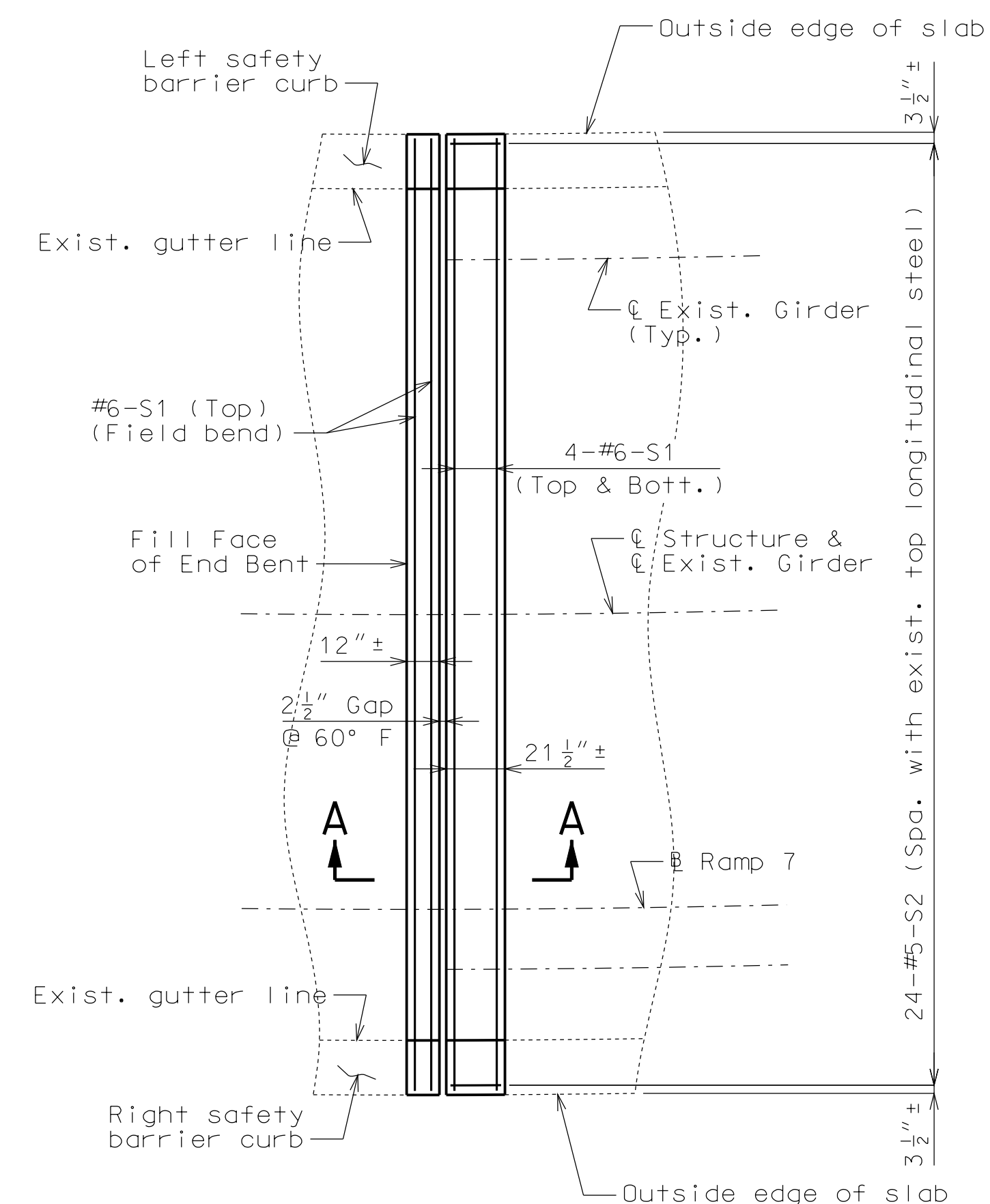
R-BAR PERMISSIBLE ALTERNATE SHAPE  
(\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION B-B  
\* Match existing.



PART SECTION C-C  
\* Match existing.



PART PLAN OF SLAB AT END BENTS NO. 1 & 7  
(End Bent No. 1 shown, End Bent No. 7 similar)

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 12/4/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 6
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33881	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 MoDOT  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

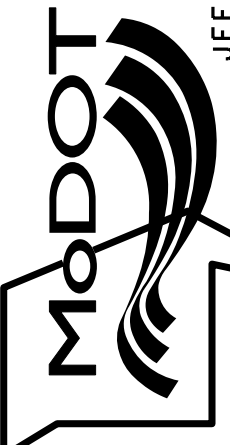
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

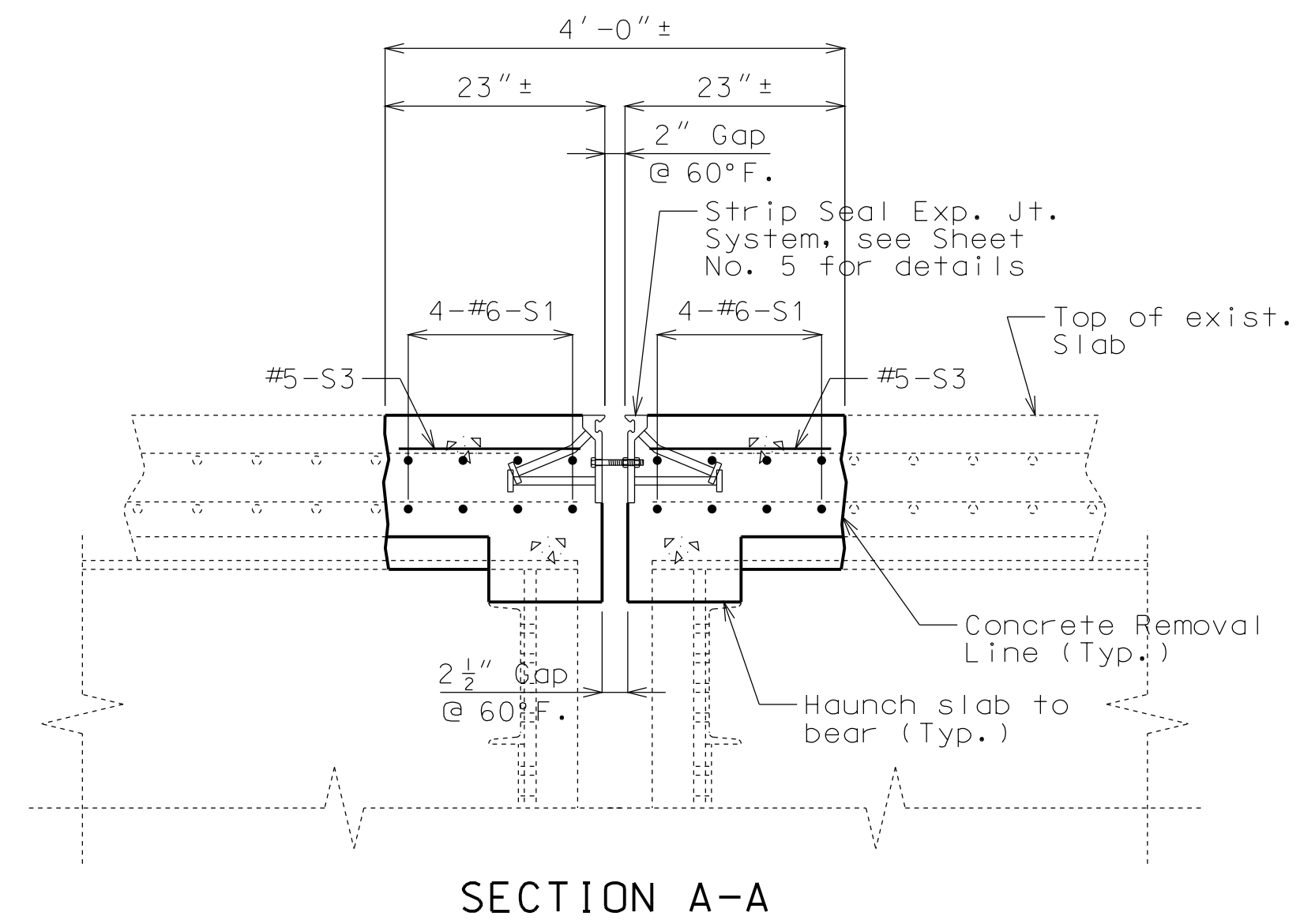
DATE PREPARED 12/4/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 7
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33881	

DATE	DESCRIPTION

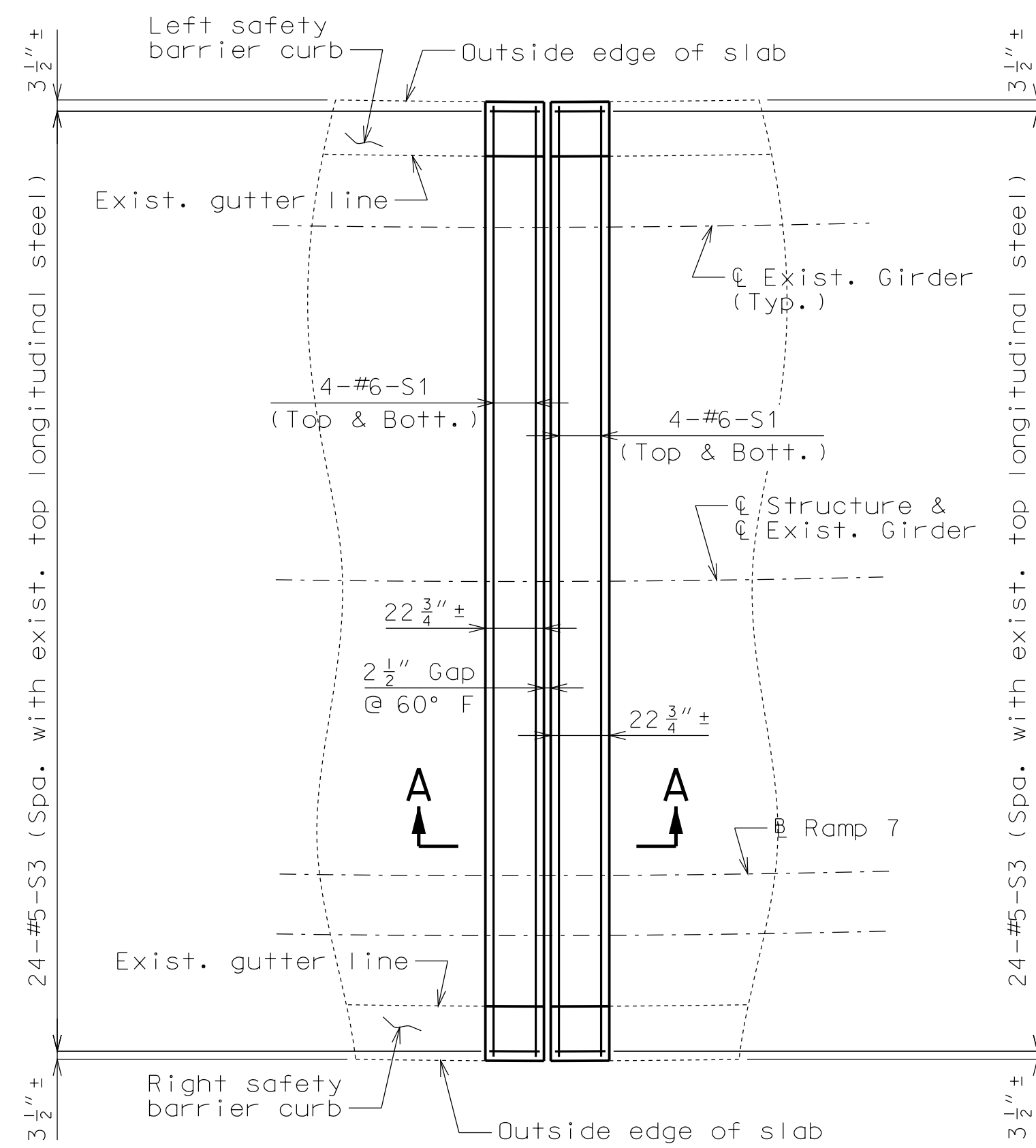
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION


  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-273-6636)

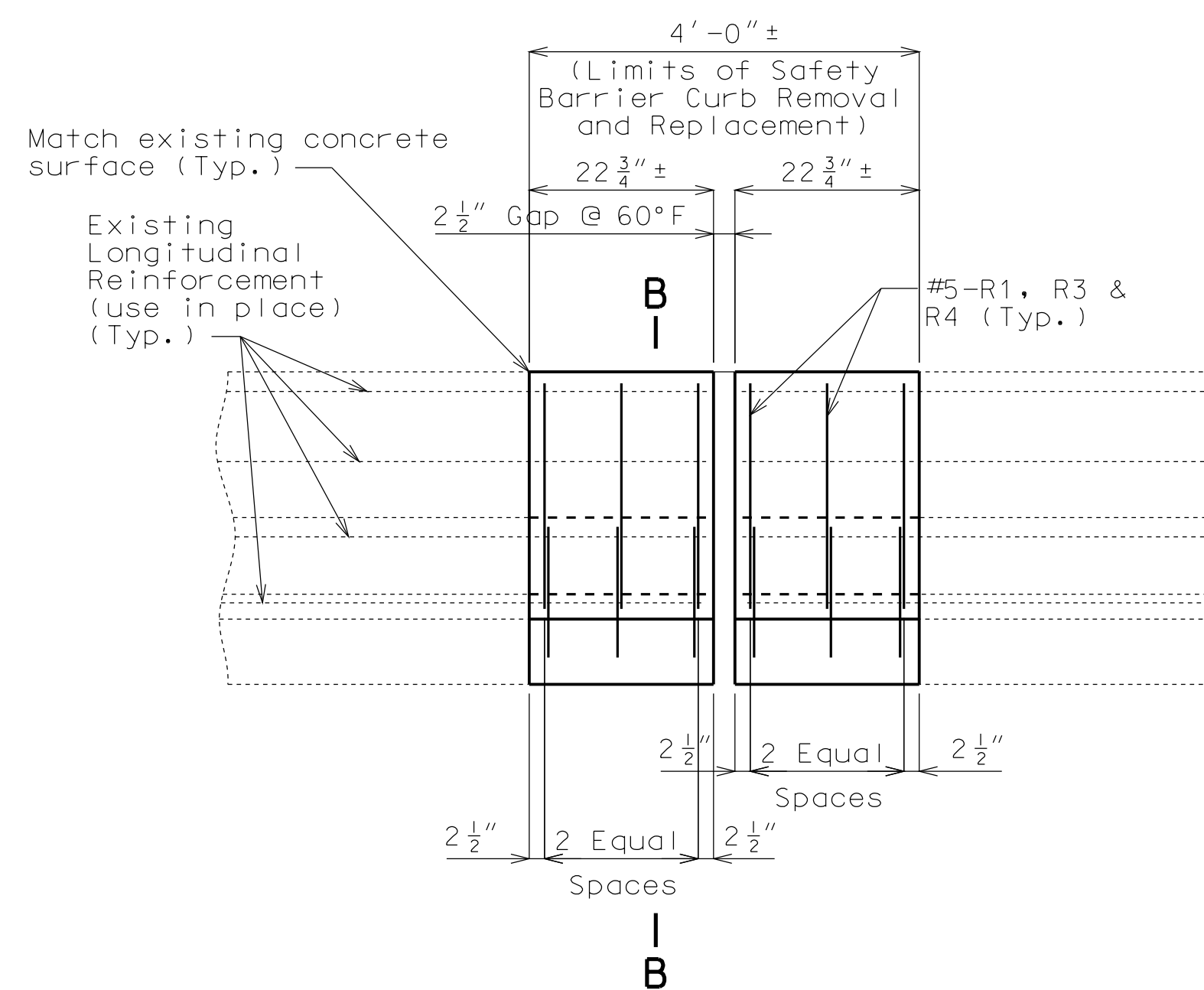
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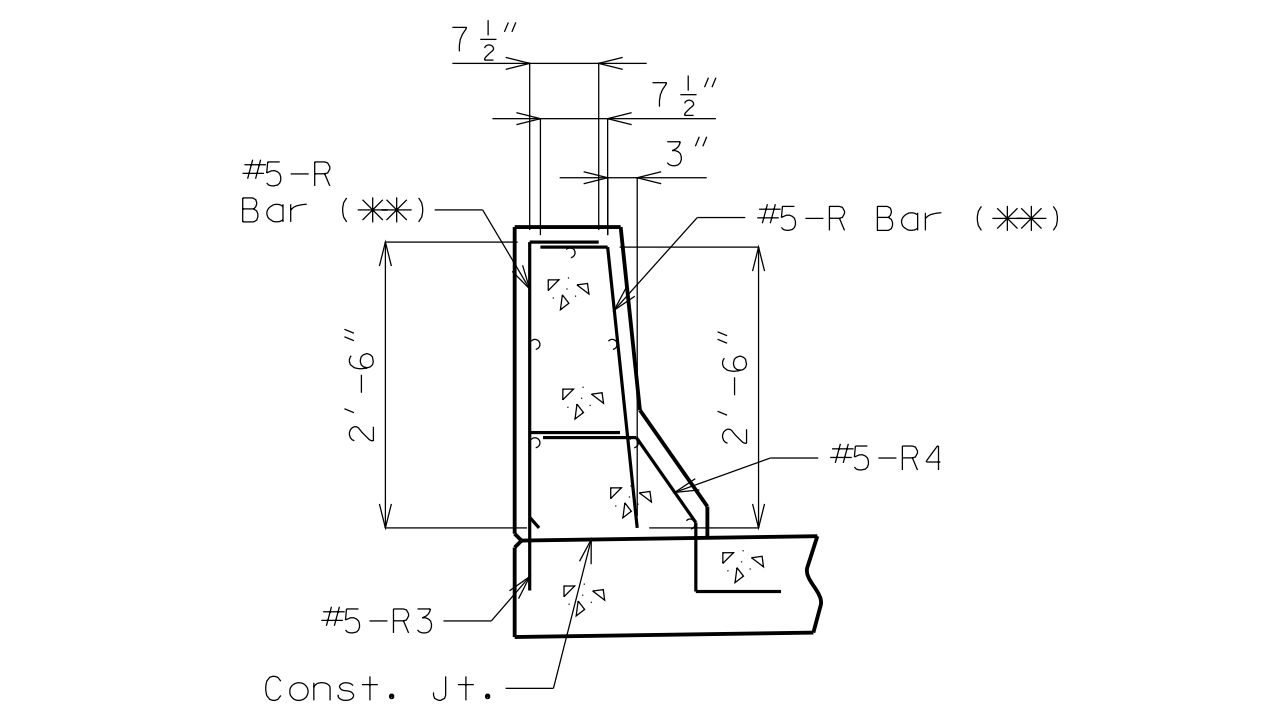
SECTION A-A



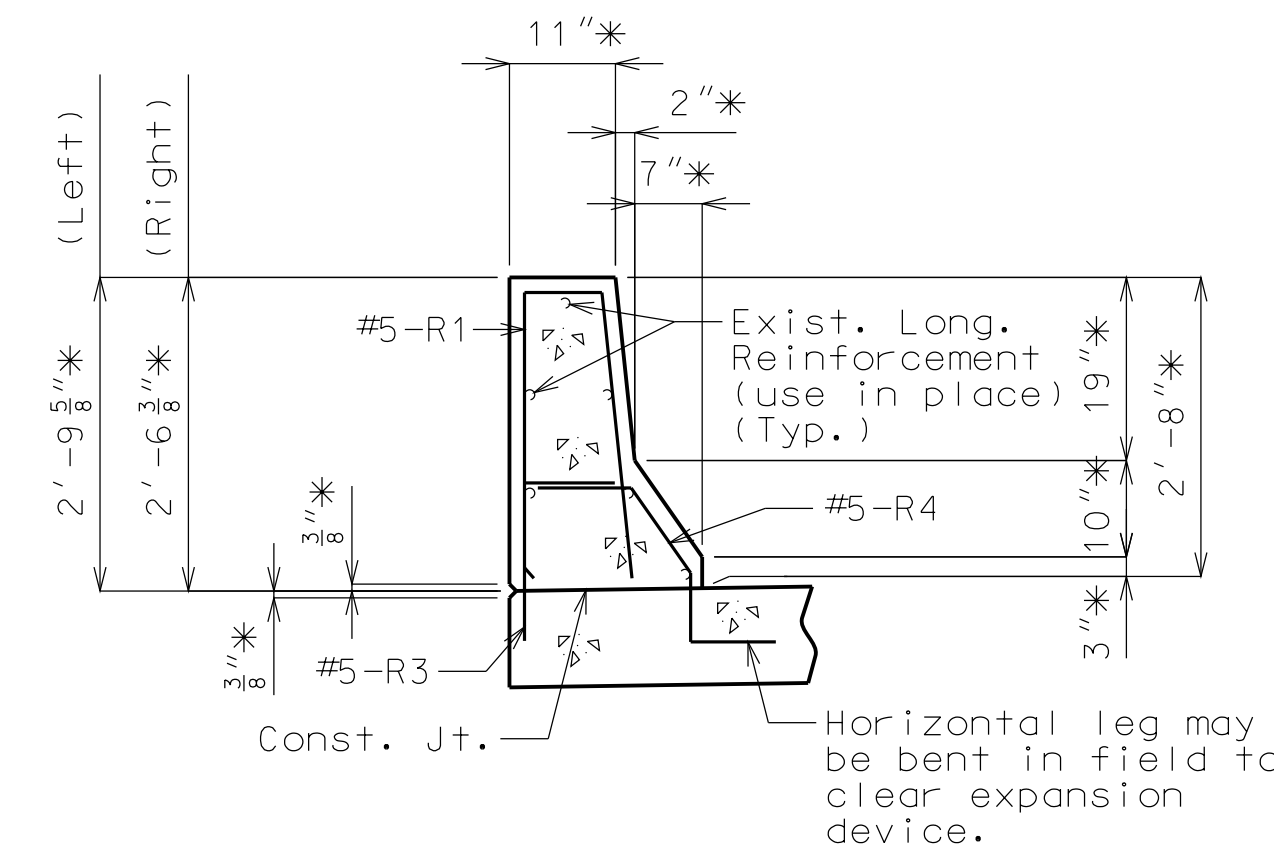
PART PLAN OF SLAB NEAR INT. BENT NO. 4



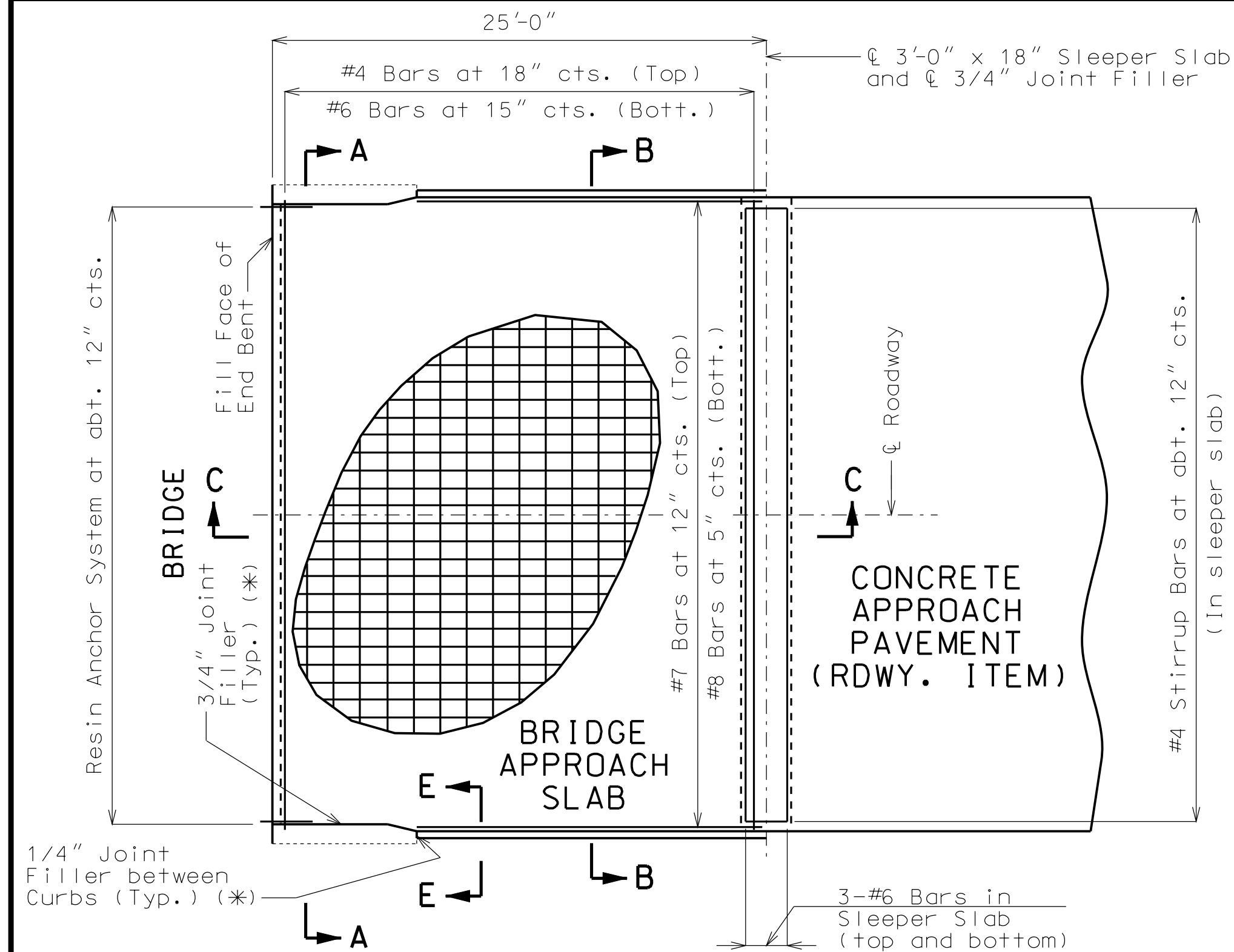
PART ELEVATION OF RIGHT SAFETY BARRIER CURB  
(Right barrier curb shown, left barrier curb similar)



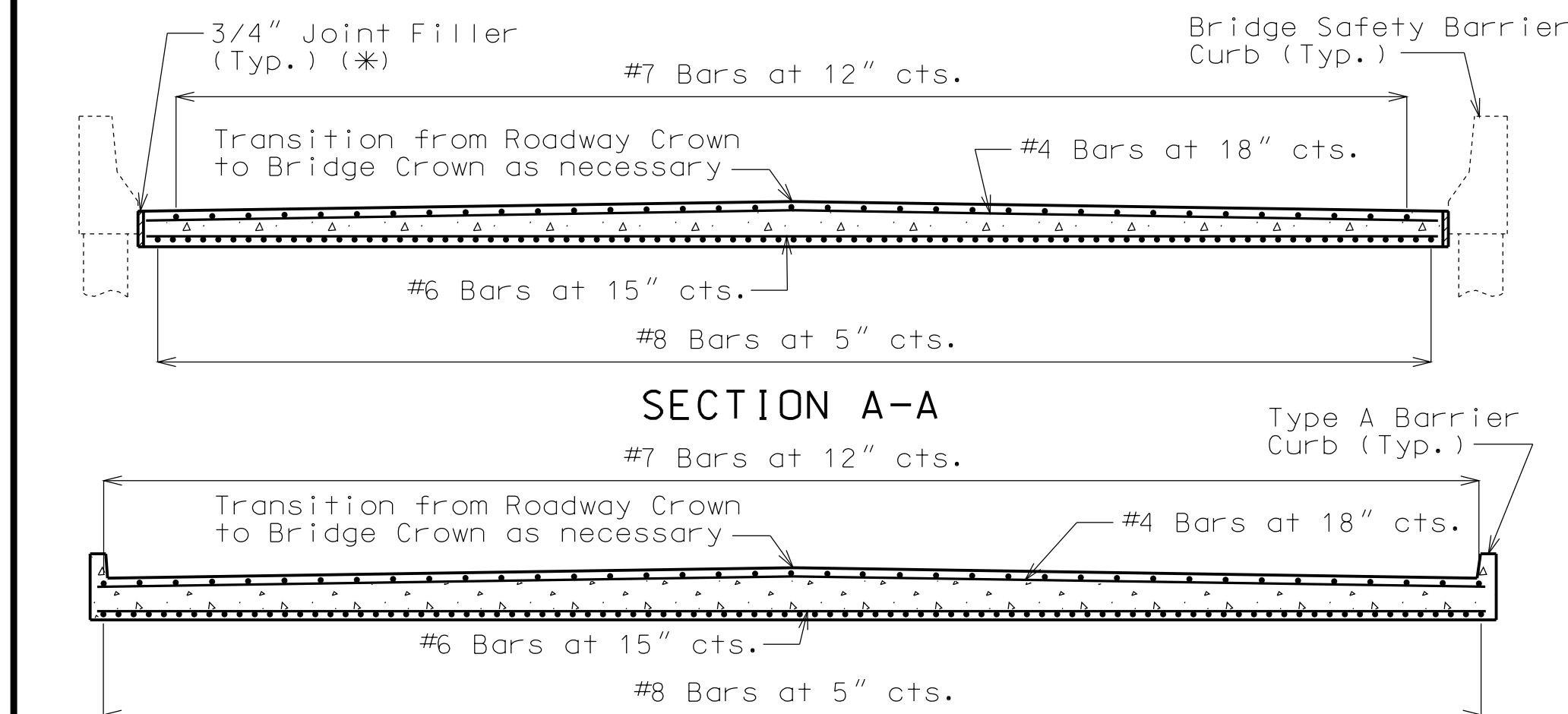
R-BAR PERMISSIBLE ALTERNATE SHAPE  
(\*\*) The R1 bar may be separated into two bars as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION B-B  
\* Match existing.



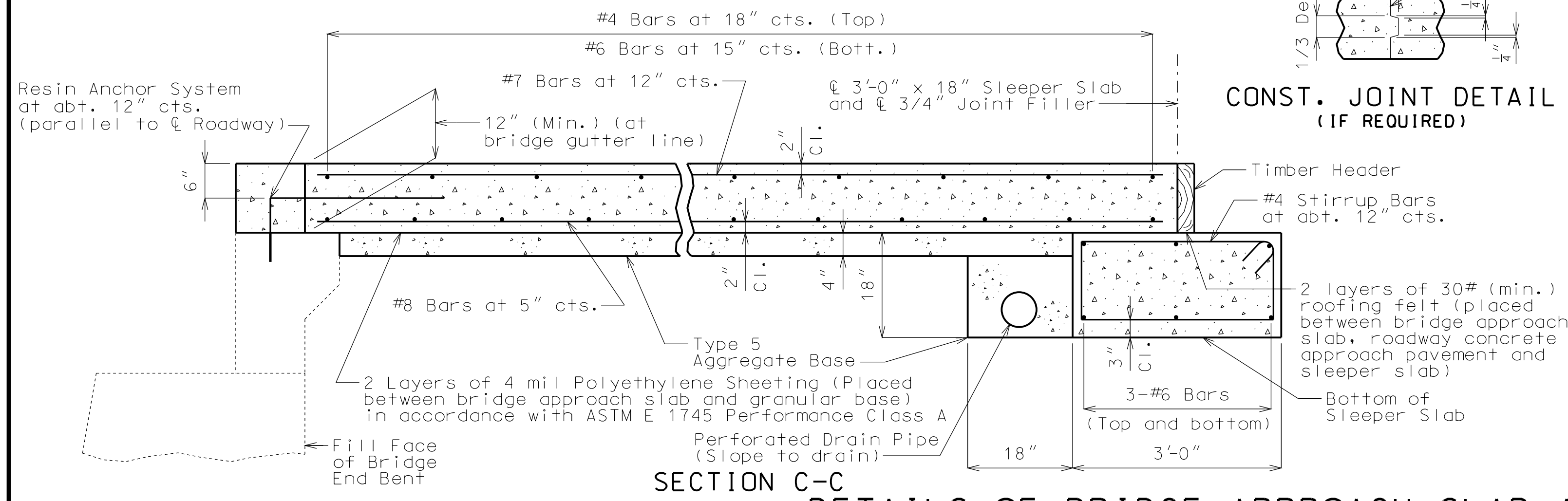
PART PLAN SHOWING REINFORCEMENT



SECTION A-A

SECTION B-B

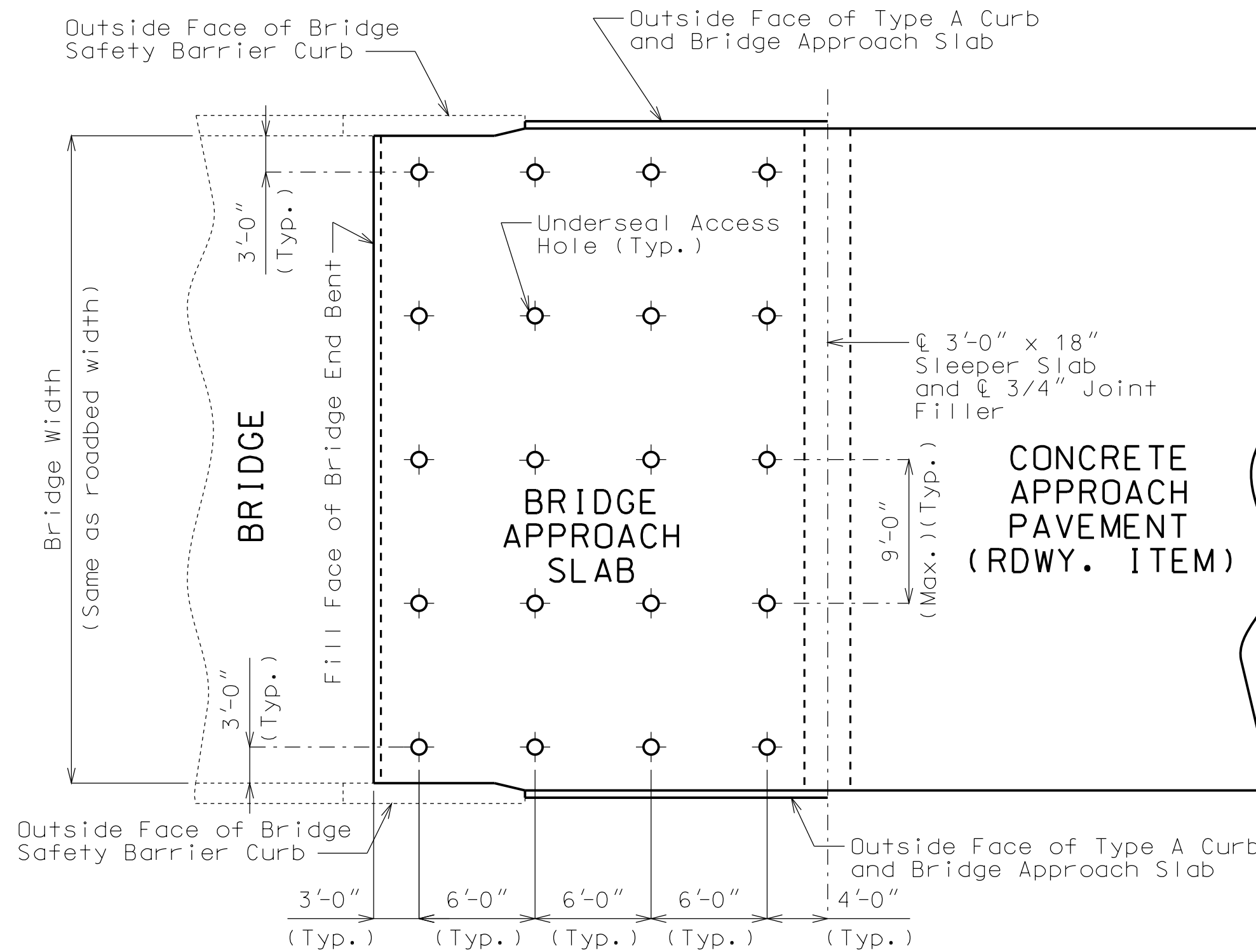
Note: With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



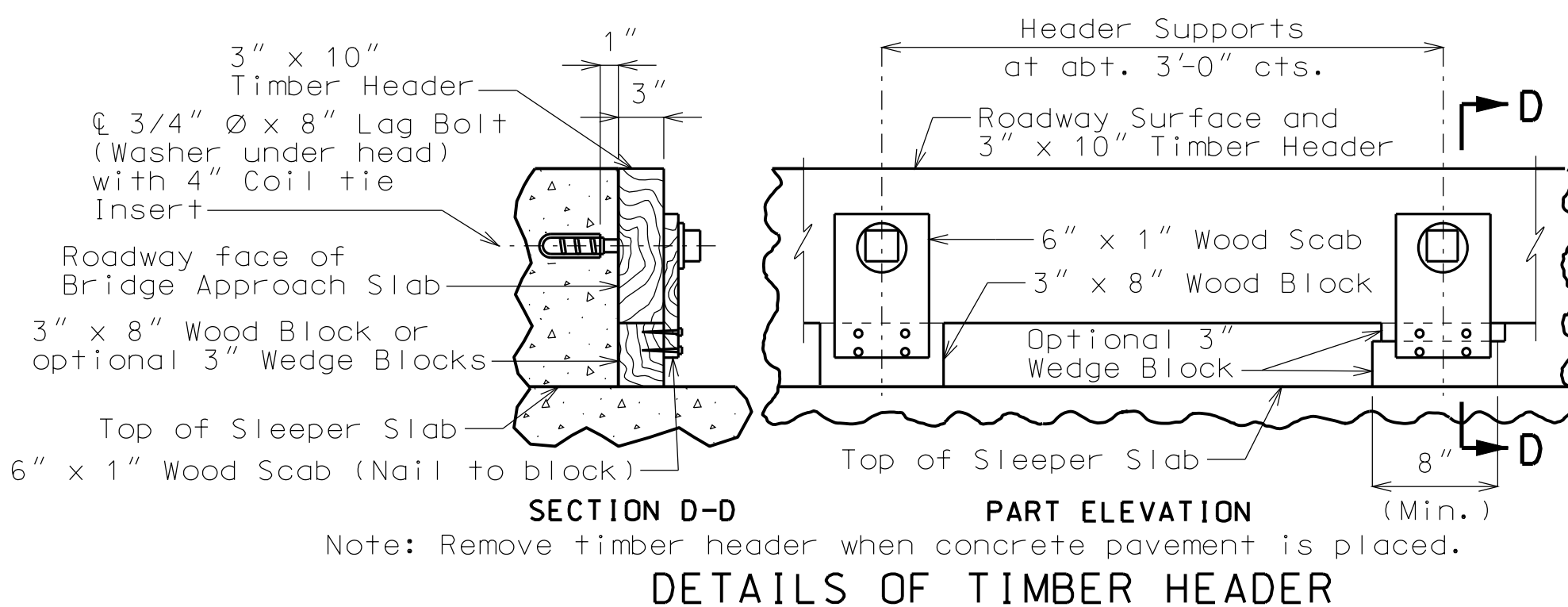
SECTION C-C

DETAILS OF BRIDGE APPROACH SLAB AT END BENT NO. 1

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



PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

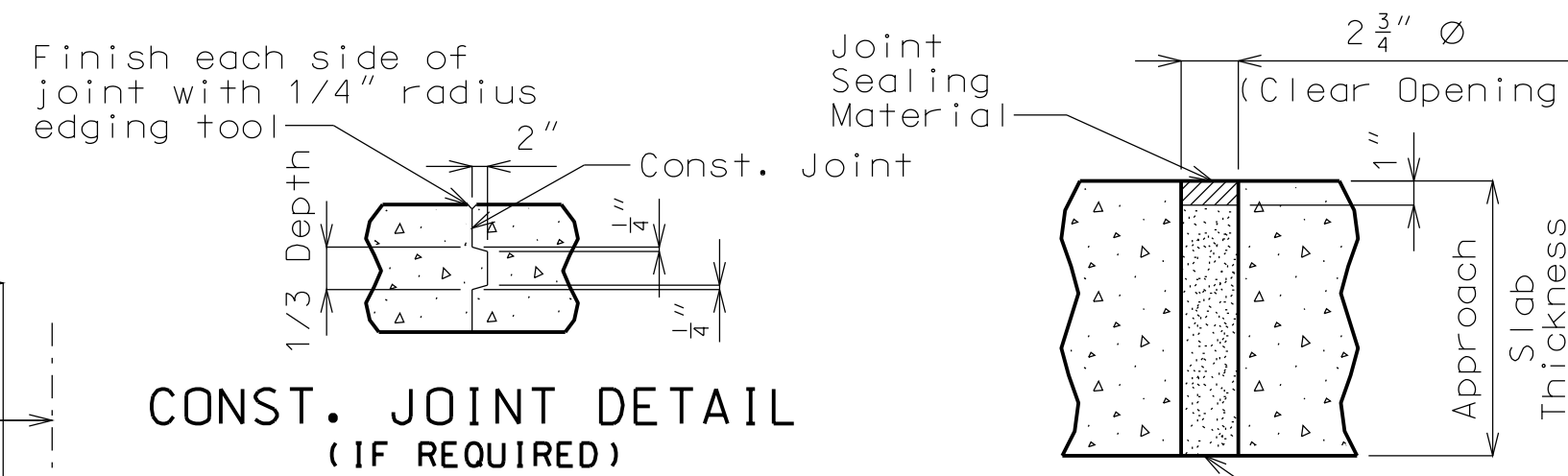


SECTION D-D

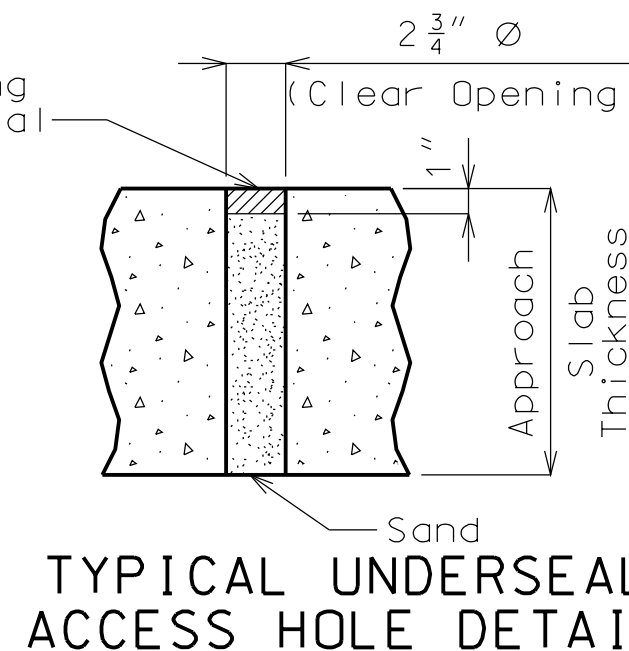
PART ELEVATION

DETAILS OF TIMBER HEADER

Note: Remove timber header when concrete pavement is placed.



CONST. JOINT DETAIL (IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

GENERAL NOTES:

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with Fy = 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\"/>

Mechanical bar splices shall be in accordance with Sec 706.

(\* 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.

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

The contractor shall pour and satisfactorily finish the bridge or semi-deep slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

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, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

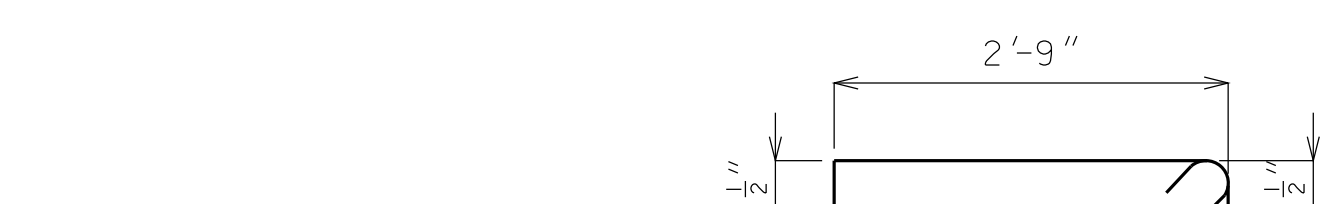
For Concrete Approach Pavement details, see roadway plans.

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

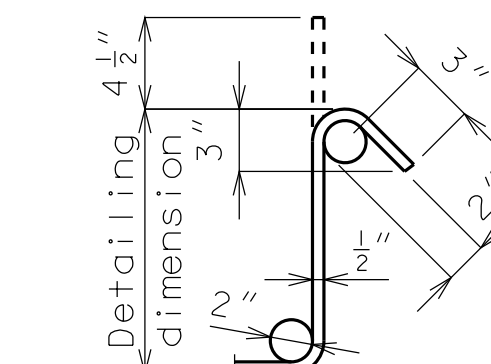
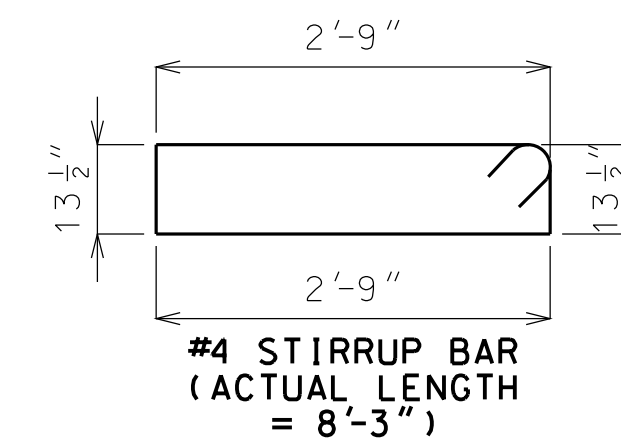
At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

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\"/>

Drain pipe may be either 6\"/>



SECTION E-E (BETWEEN CURBS)



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).

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

Table with project details: DATE PREPARED 12/4/2012, ROUTE I-435, STATE MO, DISTRICT BR, SHEET NO. 8, COUNTY CLAY, JOB NO. J412381, CONTRACT ID., PROJECT NO., BRIDGE NO. A33881

Table with 2 columns: DATE, DESCRIPTION

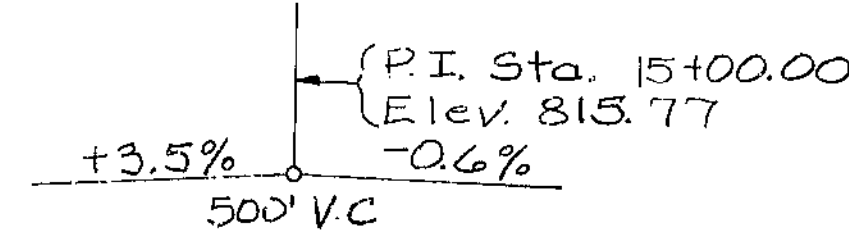
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION logo and address: 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-5636)

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

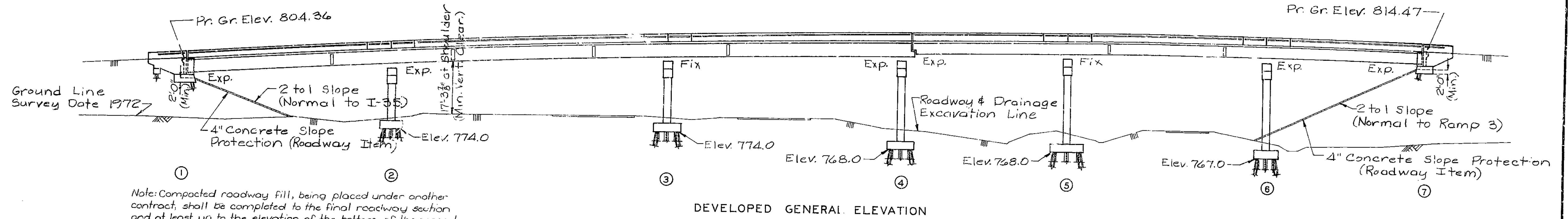


MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		1982	132	
SEC./SUR. 27		TWP 51N		RGE. 32W	

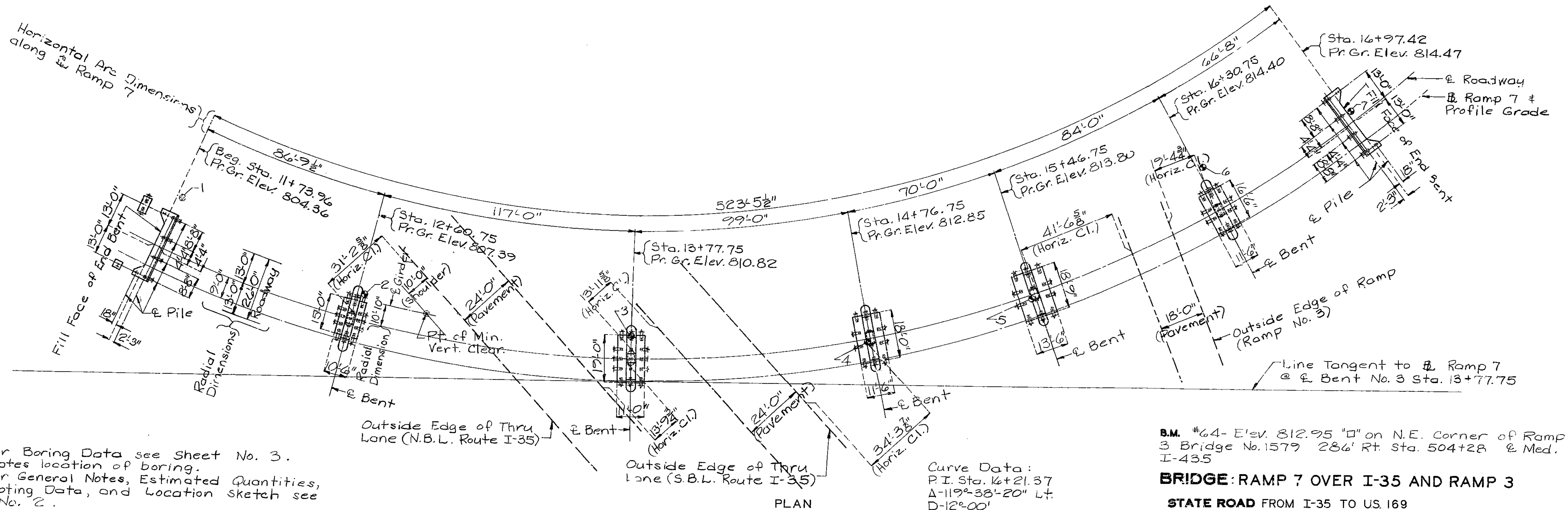


(85'-117'-99'-5') (65'-84'-65') Cont. Comp. Curved  $\pi$  Girder Spans



Note: Compacted roadway fill, being placed under another contract, shall be completed to the final roadway section and at least 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 piles are driven for any bents falling within the embankment section.

DEVELOPED GENERAL ELEVATION



Curve Data:  
 P.I. Sta. 16+21.37  
 $\Delta=119^\circ-38'-20''$  Lt.  
 $D=12^\circ-00'$   
 $T=821.00'$   
 $L=996.98'$   
 $R=477.46'$   
 $S.E.=.08'/Ft.$

Note: For Boring Data see Sheet No. 3.  
 \*O\*-Indicates location of boring.  
 For General Notes, Estimated Quantities, Pile & Footing Data, and Location sketch see Sheet No. 2.

B.M. #64- Elev. 812.95 "O" on N.E. Corner of Ramp 3 Bridge No. 1579 286' Rt. Sta. 504+28 & Med. I-435

BRIDGE: RAMP 7 OVER I-35 AND RAMP 3

STATE ROAD FROM I-35 TO US 169

AT I-35, I-435 INTERCHANGE

PROJECT NO. I-435-1(163)

STA. 11+73.96 (RAMP 7)

JOB NO. 4-I435-49H

RTE. I-435

CLAY

COUNTY

DATE March 16, 1981

STD. 706 35

STD. 611.60

A-3388

DESIGNED OCT. 1977  
 DETAILED OCT. 1978  
 CHECKED Nov. 1978

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

Sheet No. 1 of 31.

273



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	133	

BENT NO.	PILE DATA						
	1	2	3	4	5	6	7
Pile Type and Size	HP10x42						
Number	9	15	15	12	12	12	6
Approximate Length Ft.	60	39	37	32	35	41	80
Design Bearing Tons	44	46	50	46	51	50	37
Min. Tip Penetration Elev.	735.5	736.0	738.0	737.0	734.0	727.5	726.0
Hammer Energy Required Ft. Lbs.	10,800	10,800	11,800	10,800	12,100	11,800	10,000

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

ESTIMATED QUANTITIES			
ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	Cu. Yd. 465		465
Slab Drains	Each	20	20
Structural Steel Pile (10")	Lin. Ft. 3,456		3,456
Class B Concrete	Cu. Yd. 339.4		339.4
Class B2 Concrete	Cu. Yd.	538.7	538.7
Elastomeric Exp. Jt. Seal (2.0 inches)	Lin. Ft.	26	26
Elastomeric Exp. Jt. Seal (2.5 inches)	Lin. Ft.	52	52
Reinforcing Steel (Grade 60)	lb. 61,270	59,620	120,890
Reinforcing Steel (Epoxy Coated)	lb. 1,320	90,810	92,130
Fabricated Structural Carbon Steel	lb.	304,080	304,080
Fabricated Structural Low Alloy Steel (A572)	lb.	71,710	71,710
Painting (System A or B) Aluminum	Ton	186.7	186.7

Note: All concrete and reinforcement in safety barrier curbs is included with superstructure quantities.

GENERAL NOTES:  
Design Specifications:  
A.A.S.H.T.O. - 1973 Load Factor Design Substructure

Design Loading:  
HS20-44 Modified 24,000# Tandem Axle  
15#/sq. ft. Future Wearing Surface Earth 120#  
Equivalent Fluid Pressure 30#  
Fatigue Stress-Case II Interim 1974

Design Unit Stresses:  
Class B Concrete (substructure)  $f'_c = 3,000$  psi  
Class B2 Concrete (superstructure)  $f'_c = 4,000$  psi  
Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
Structural Carbon Steel  $f_s = 20,000$  psi  
Structural Steel (A.S.T.M. A572) Grade 50  $f_s = 27,000$  psi  
Steel Pile  $f_b = 9,000$  psi

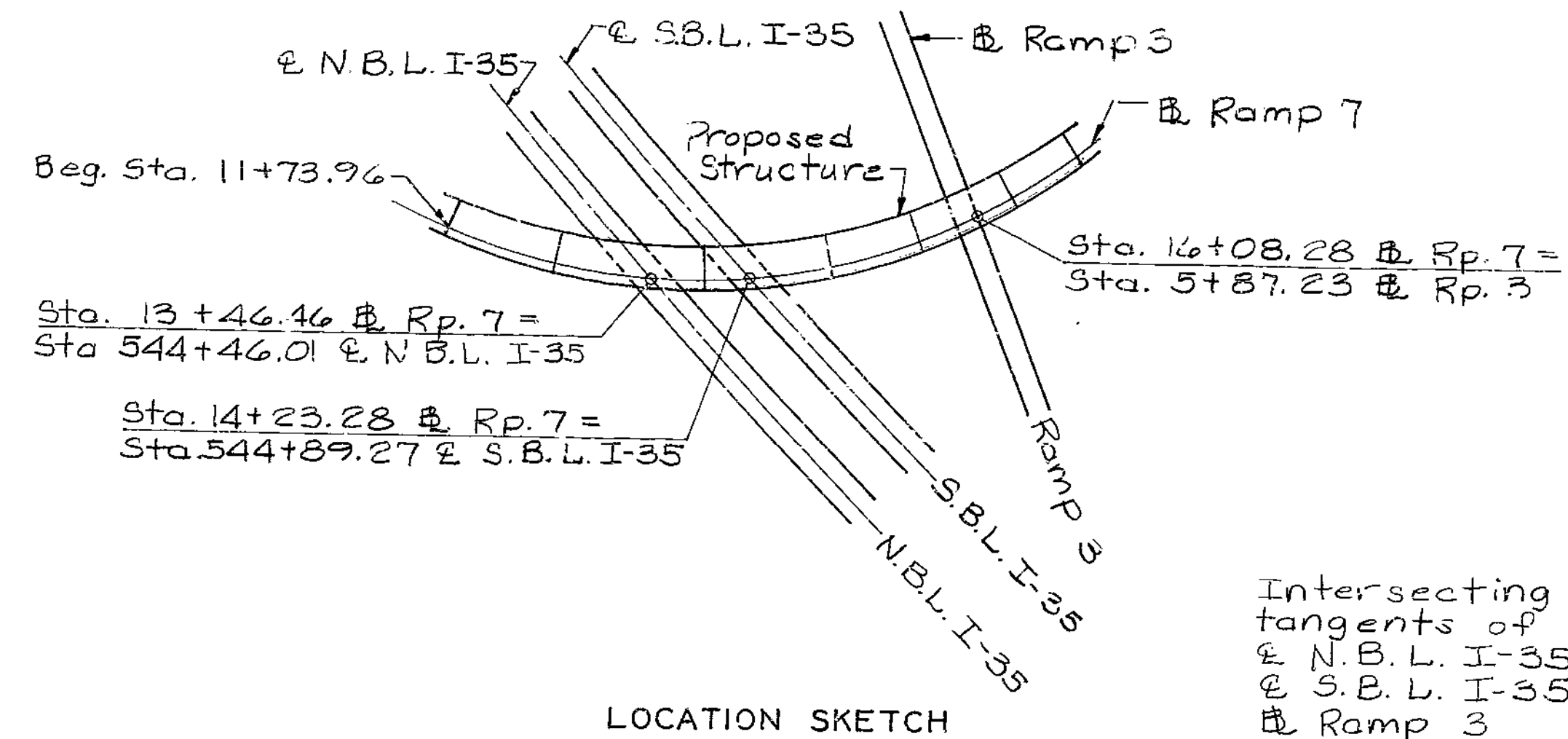
Fabricated Steel:  
Field connections, High Strength Bolts  $\frac{3}{4}$ "  $\phi$ ,  
holes  $\frac{13}{16}$ "  $\phi$  except as noted.

Painting:  
Paint: System A or B by contractor in accordance with Std. Spec. 712.12. (Color of the final field coat for System B shall be aluminum.)

Reinforcing Steel:  
Minimum clearance to reinforcing steel shall be  $\frac{1}{2}$ " unless otherwise shown. All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}$ ".

Construction Clearance (Rte. I-35, N.B.L. & S.B.L.):  
A minimum vertical clearance of 15'-0" from existing lanes and a minimum lateral clearance of 28'-0", centered on existing lanes shall be maintained during construction.

Construction Clearance (Ramp 3):  
A minimum vertical clearance of 15'-0" from existing lanes and a minimum lateral clearance of 16'-0", centered on existing lane shall be maintained during construction.

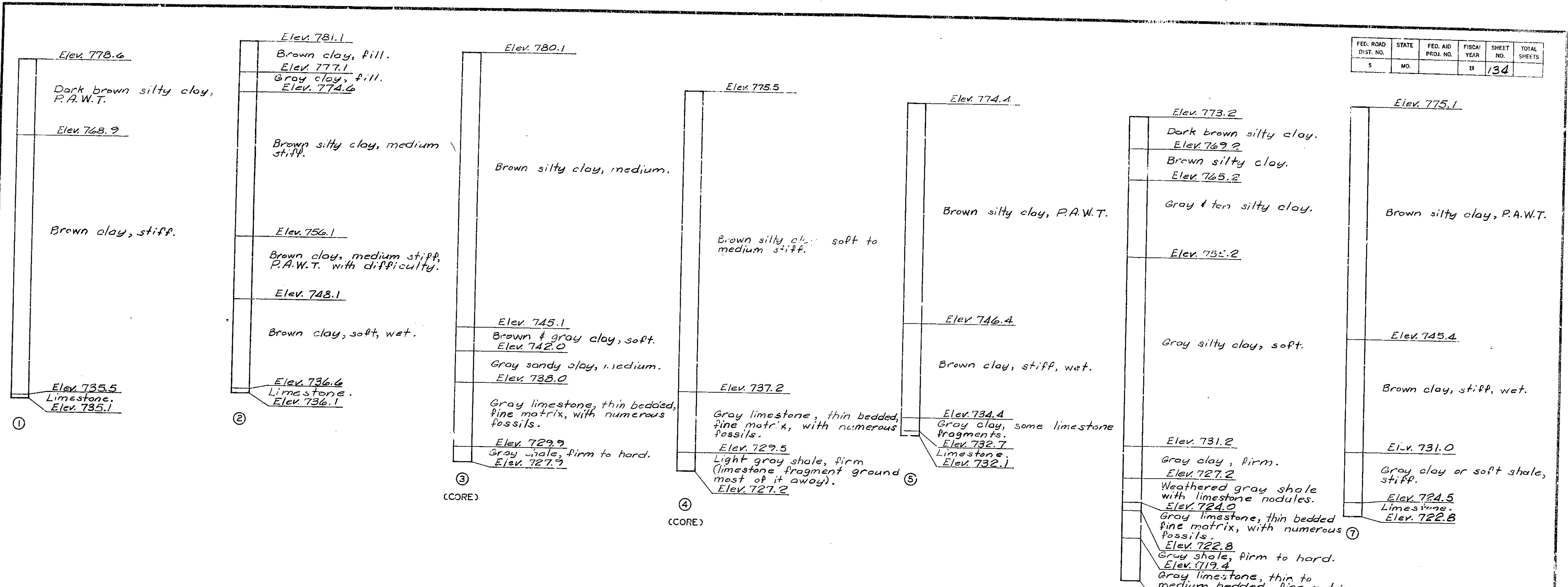


LOCATION SKETCH

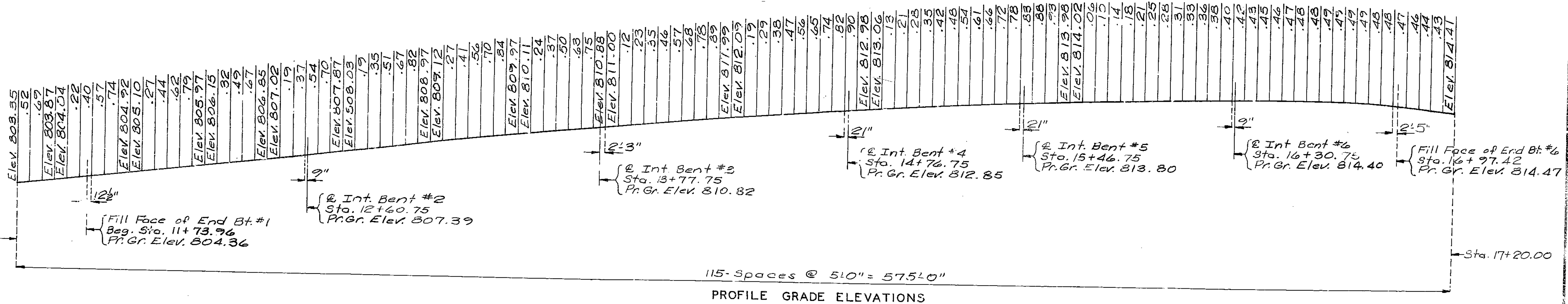
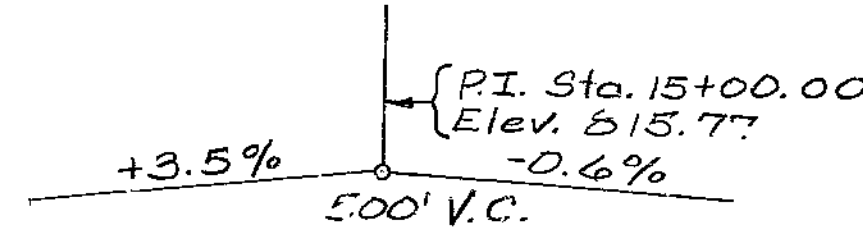
Intersecting angles between tangents of Ramp 7 and:  
 N.B.L. I-35 =  $43^\circ 26' 22''$   
 S.B.L. I-35 =  $52^\circ 08' 02''$   
 Ramp 3 =  $95^\circ 07' 09''$

274

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	134	



BORING DATA



PROFILE GRADE ELEVATIONS

275

DETAILED SEPT. 1977  
CHECKED Aug. 1978

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

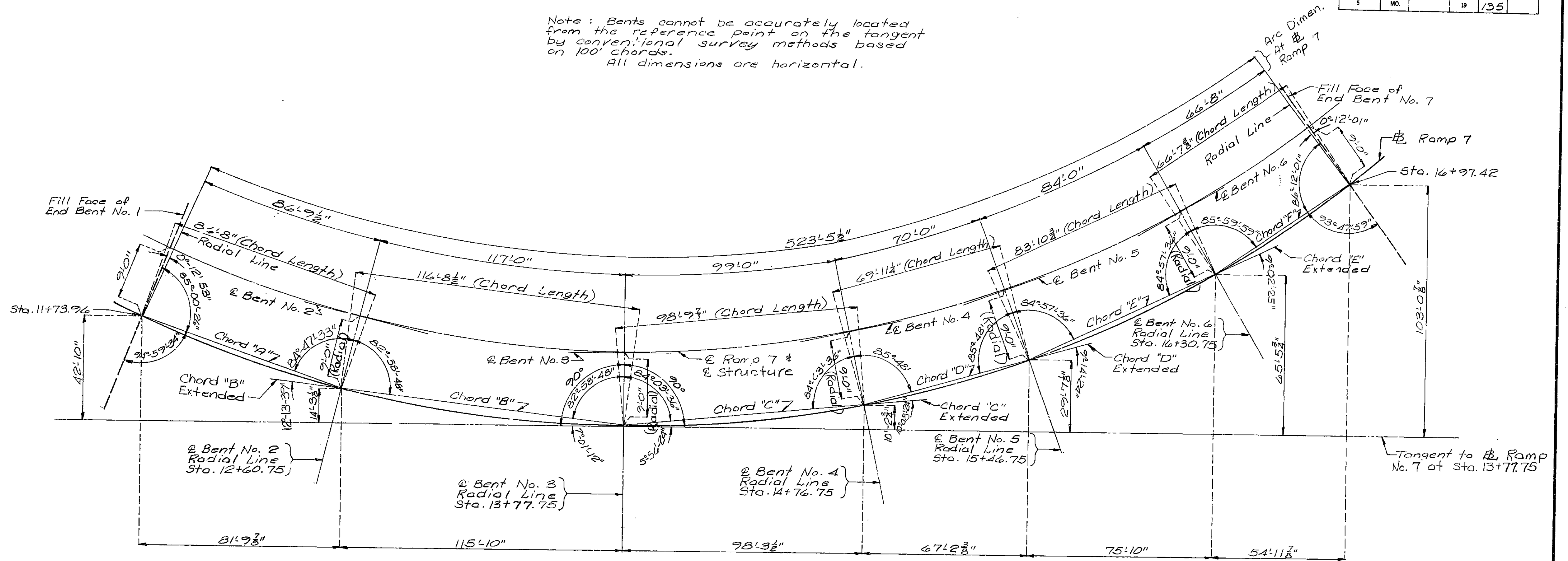
Sheet No. 3 of 31.

CLAY COUNTY

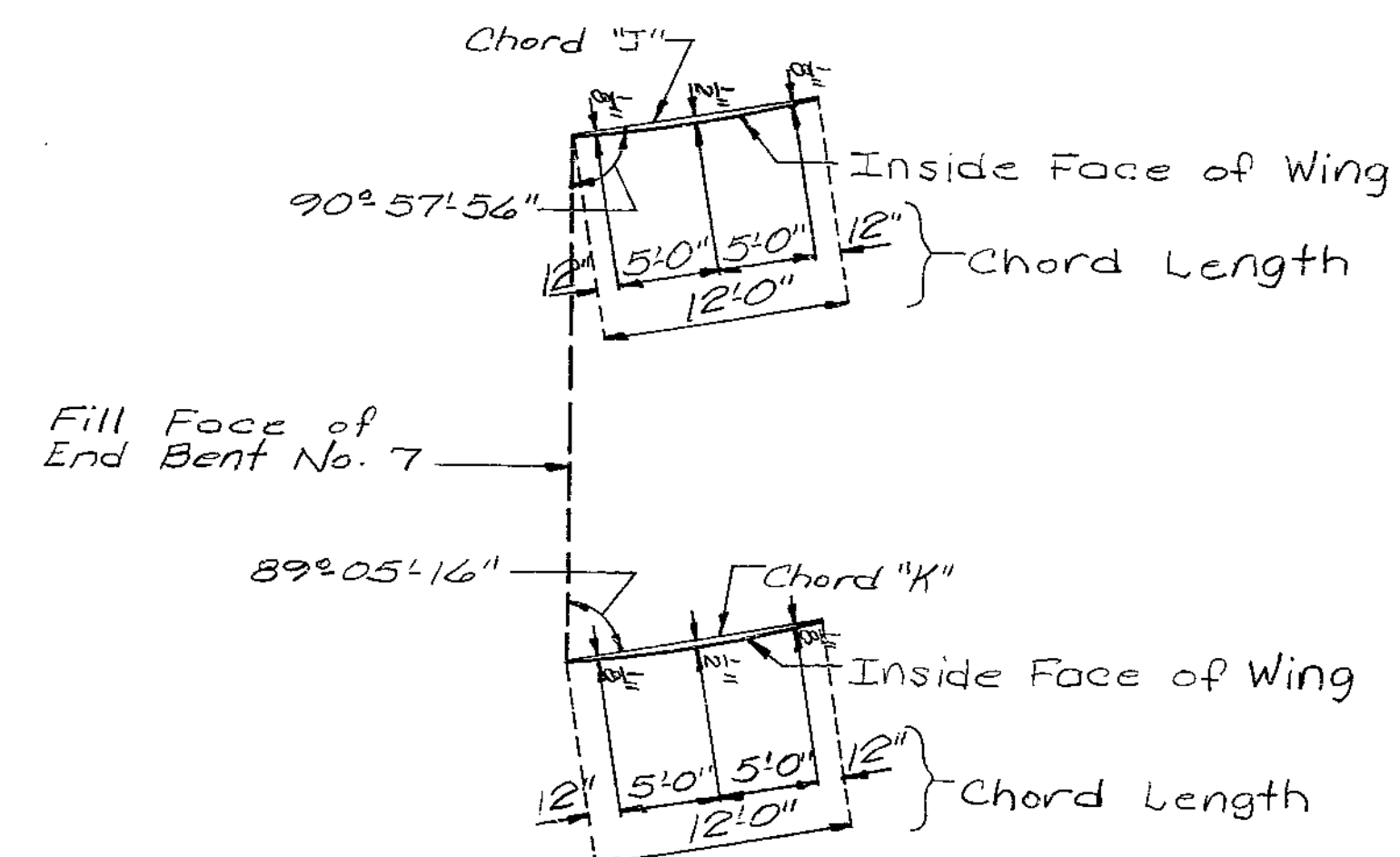
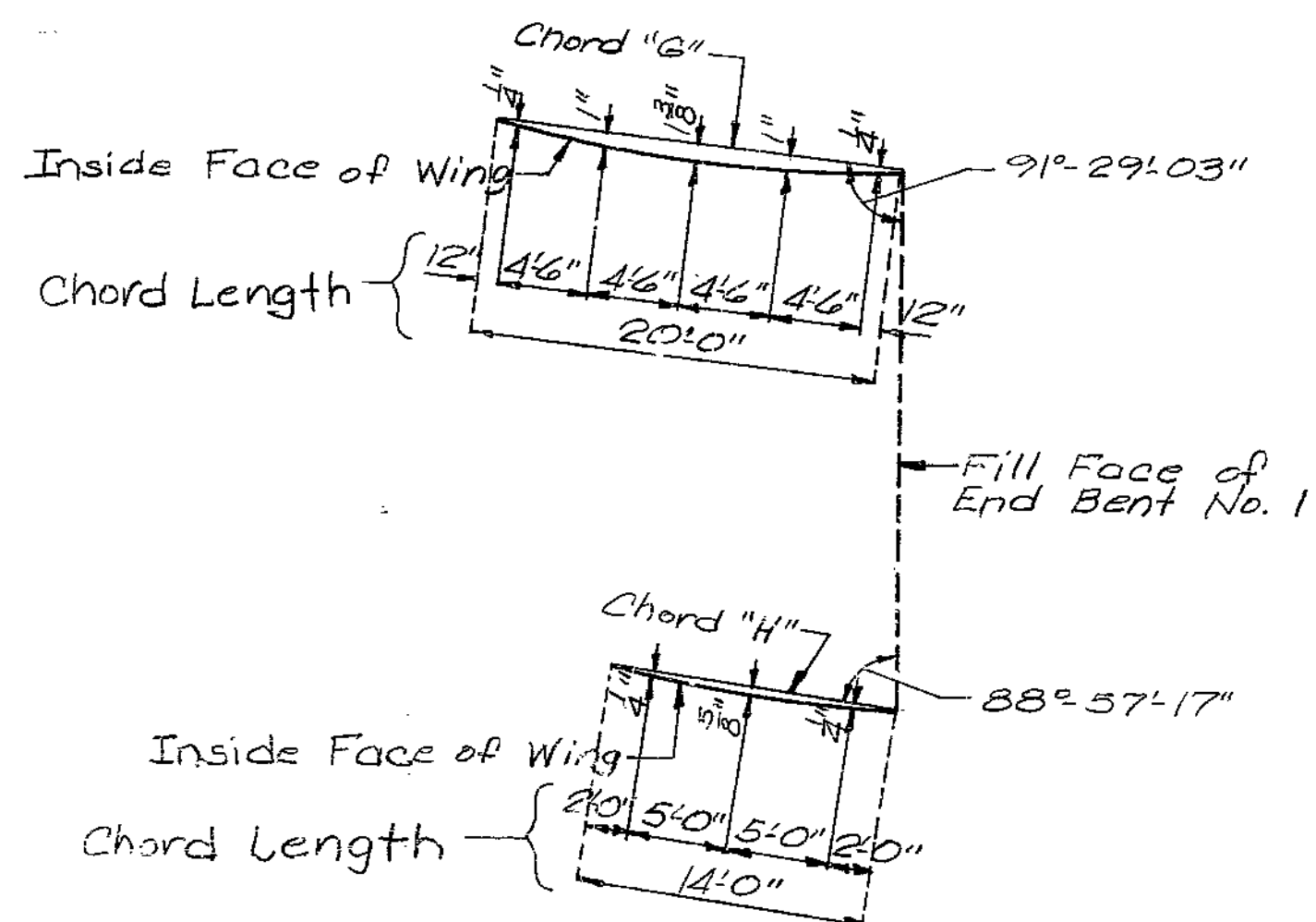
A-3388

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	135	

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



LAYOUT DATA FOR SUBSTRUCTURE



PLAN SHOWING WING CURVE ORDINATES

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

Sheet No. 4 of 31.

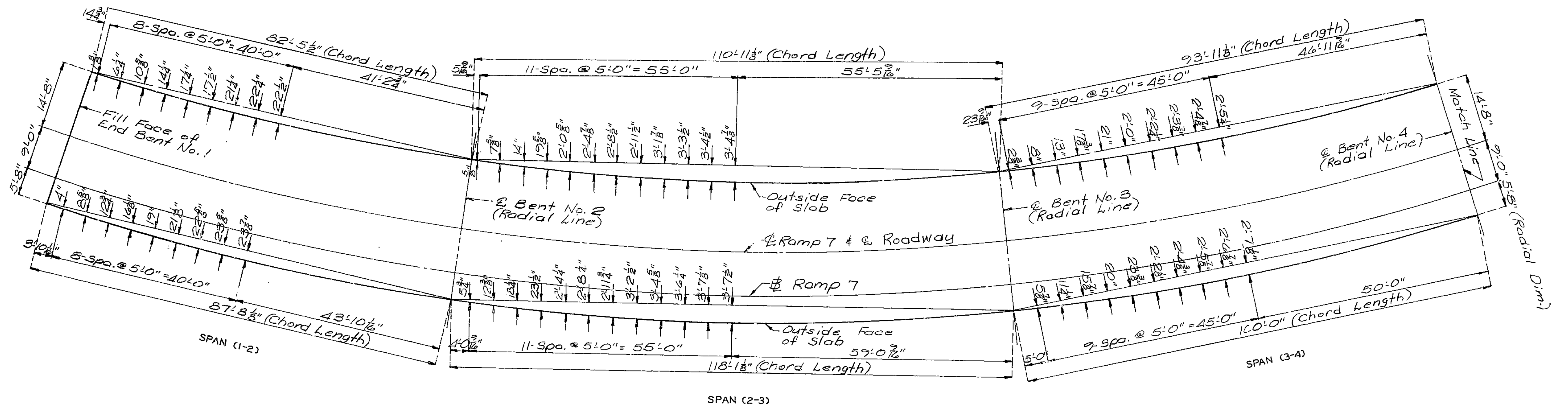
CLAY COUNTY

A-3388

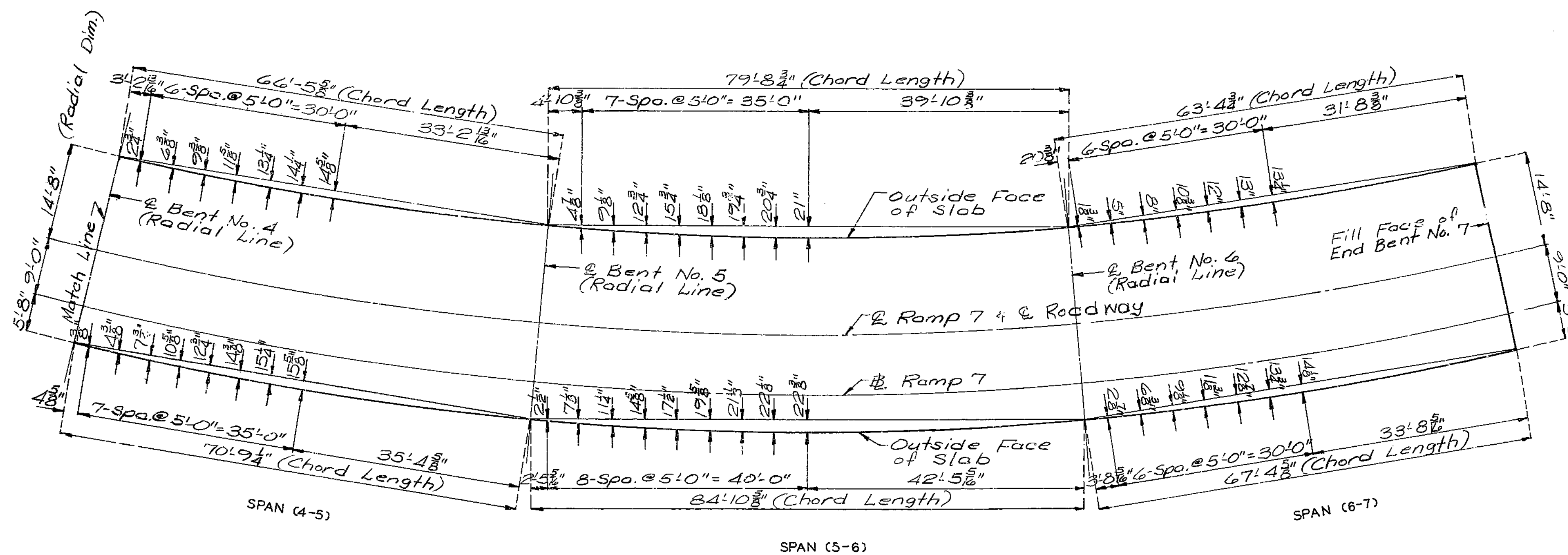
276

DETAILED SEPT. 1977  
CHECKED Oct. 1978

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



Note: All dimensions are horizontal.



PLAN OF SLAB SHOWING CURVE ORDINATES

277

DETAILED SEPT. 1977  
CHECKED AUG. 1978

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

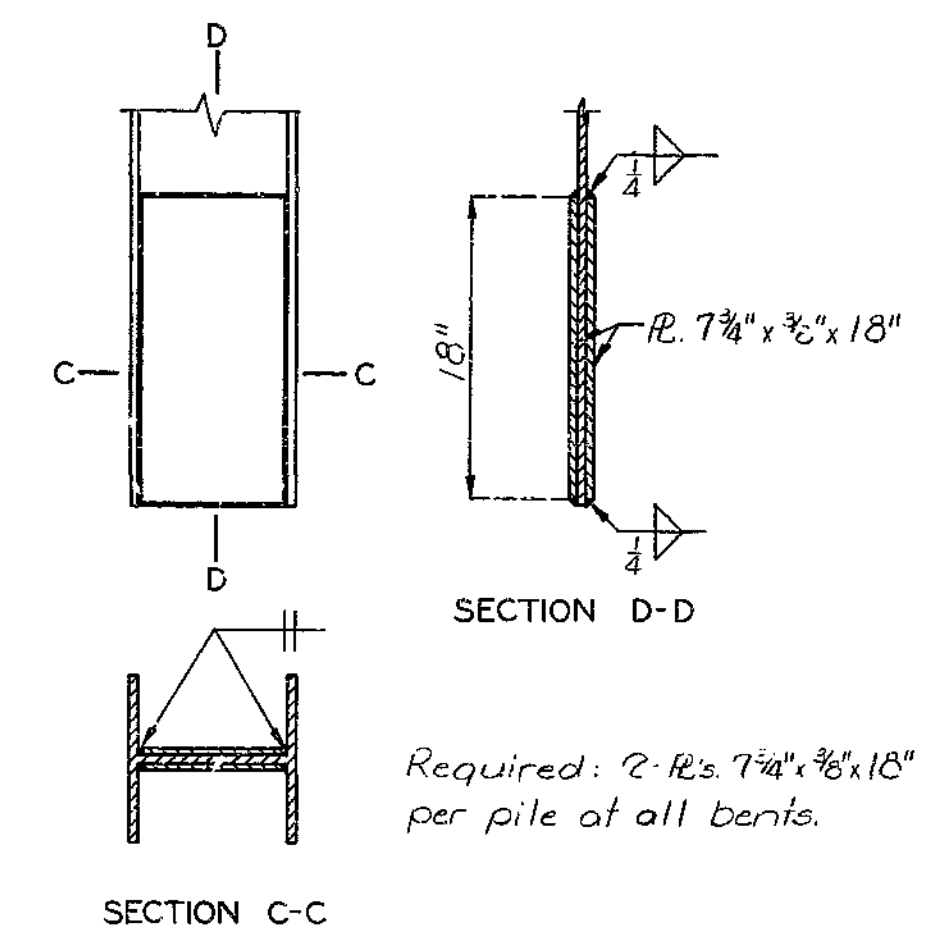
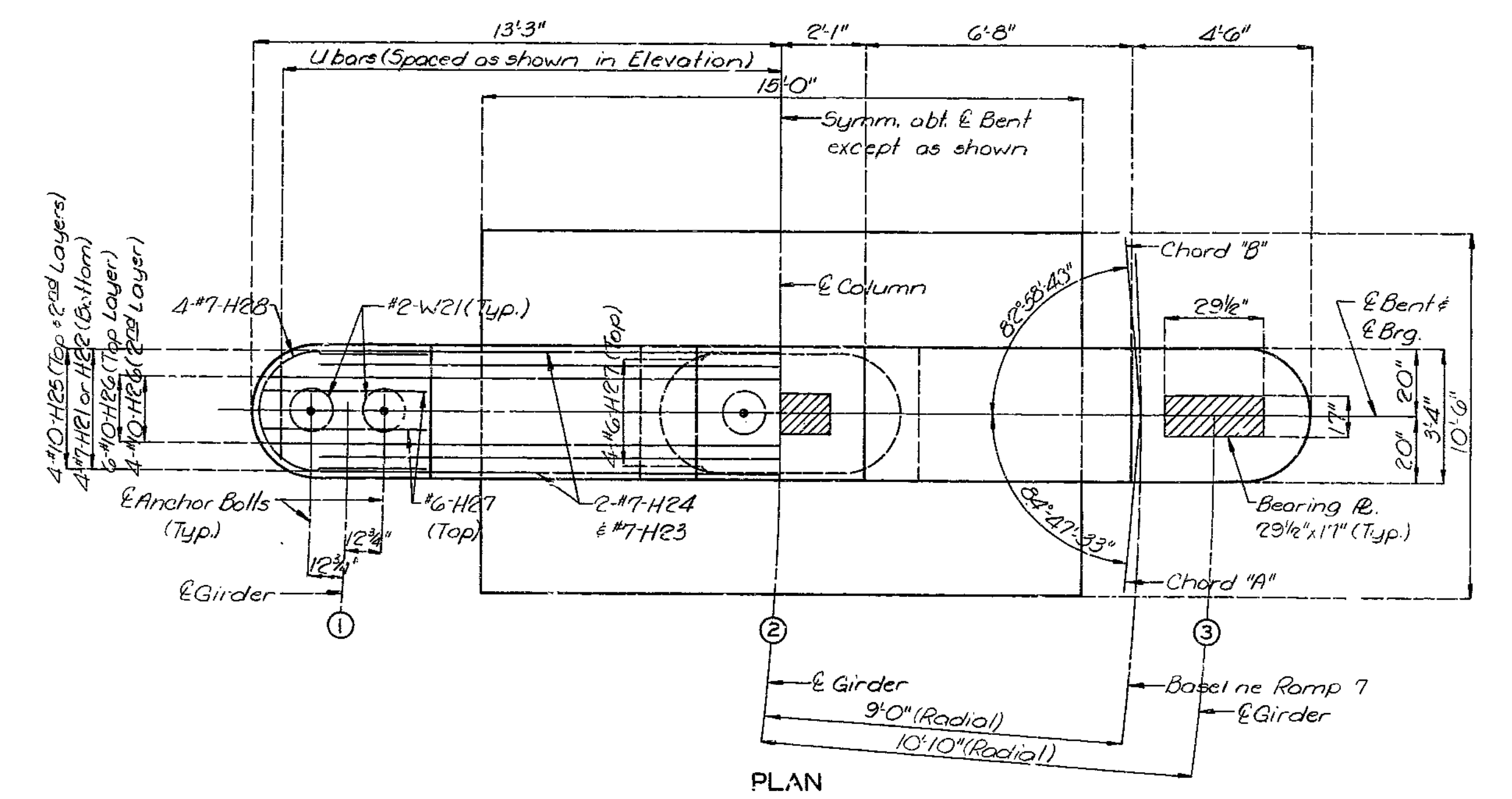
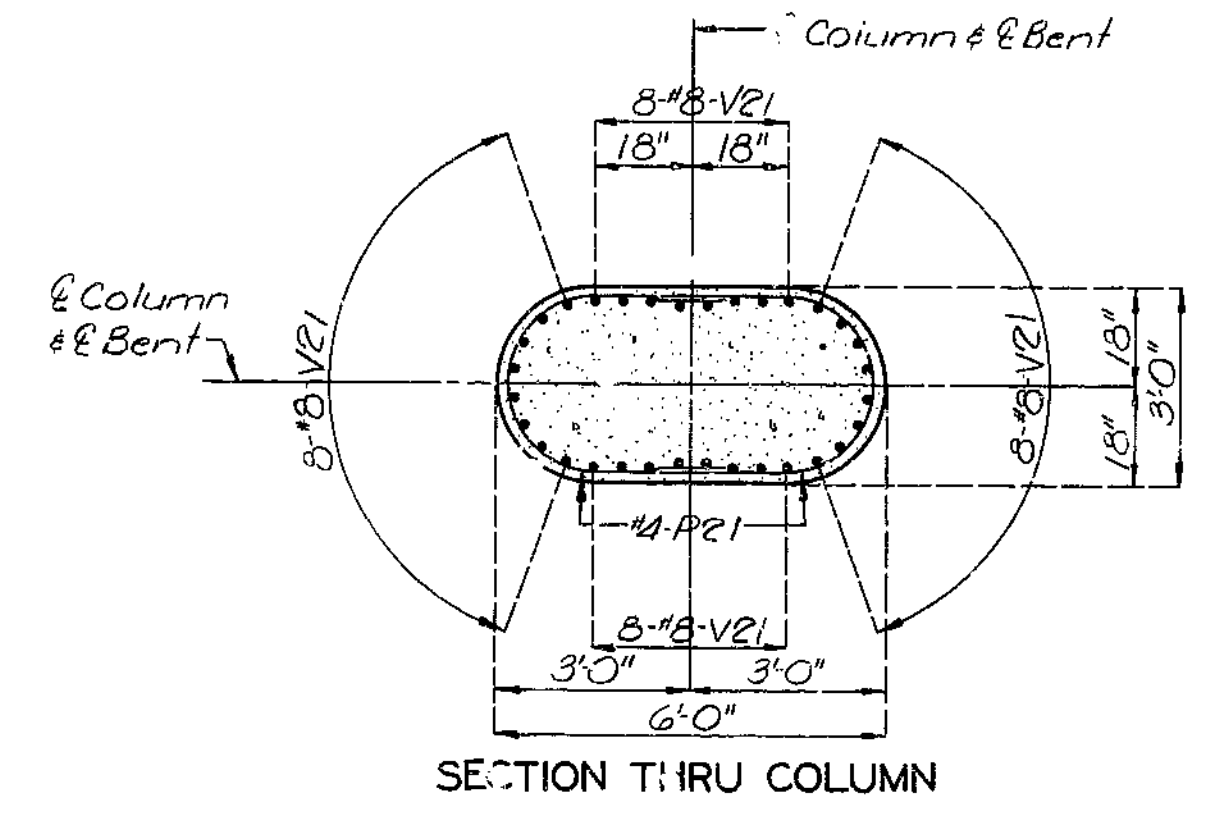
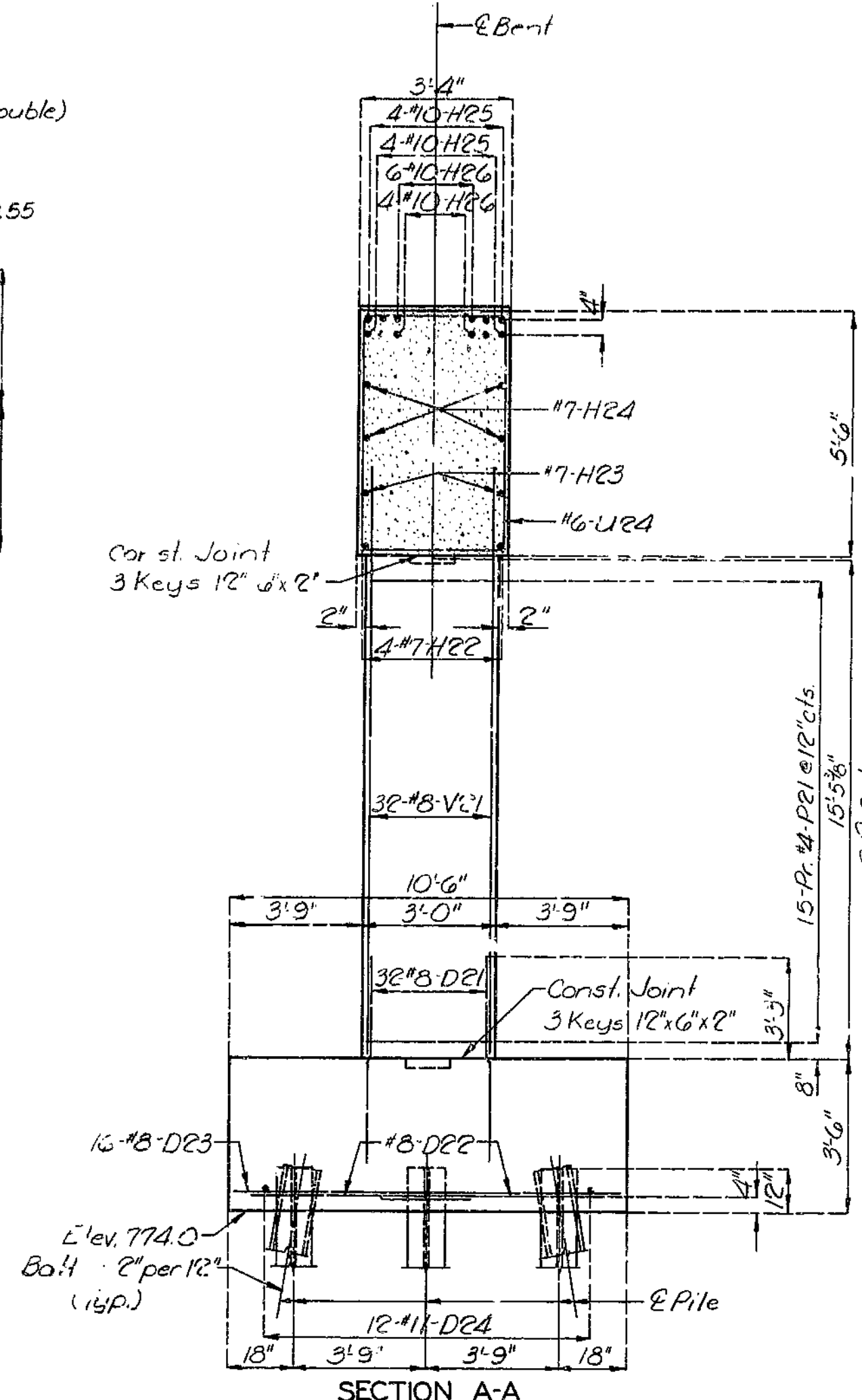
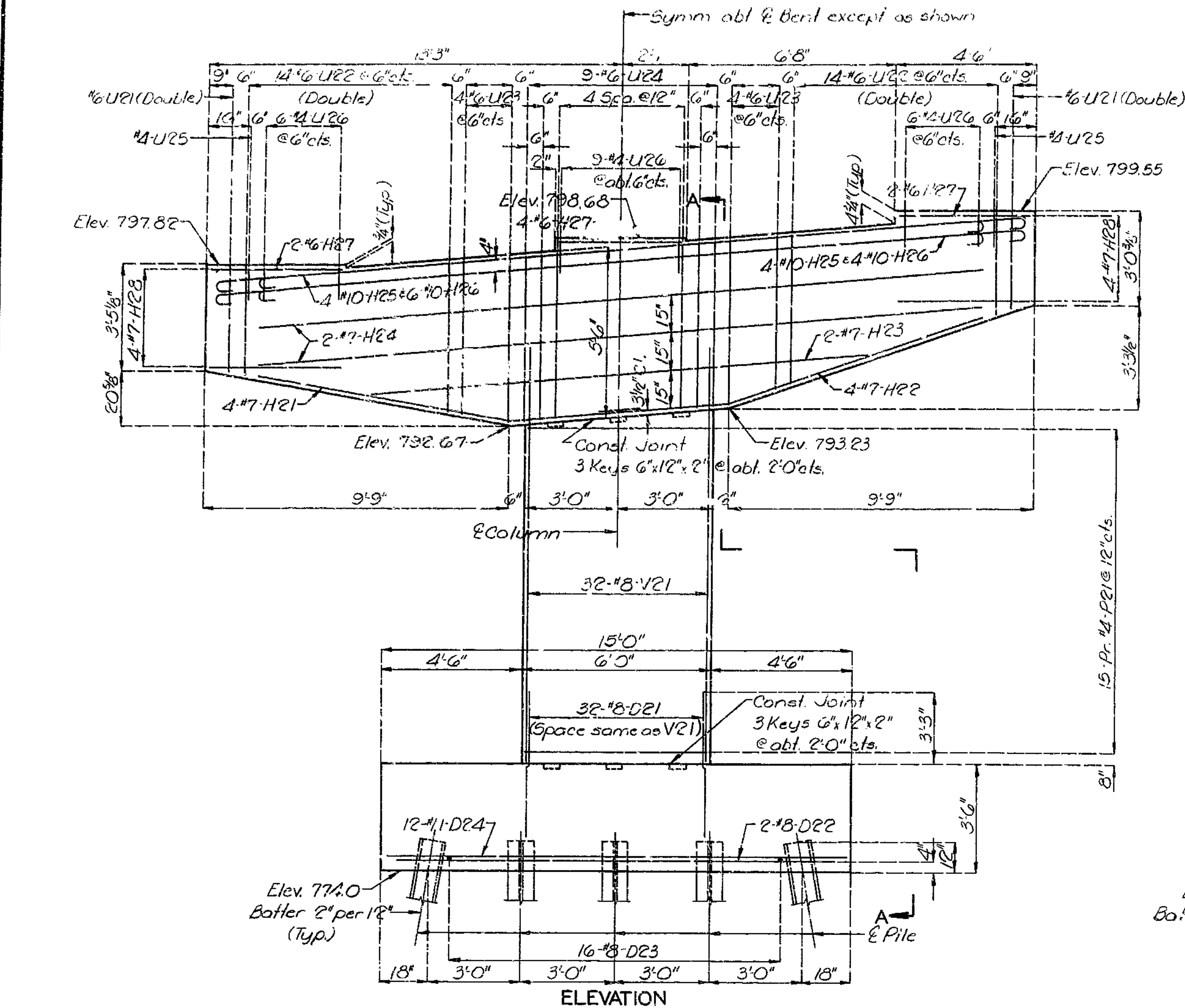
Sheet No. 5 of 31.

CLAY COUNTY

A-3388

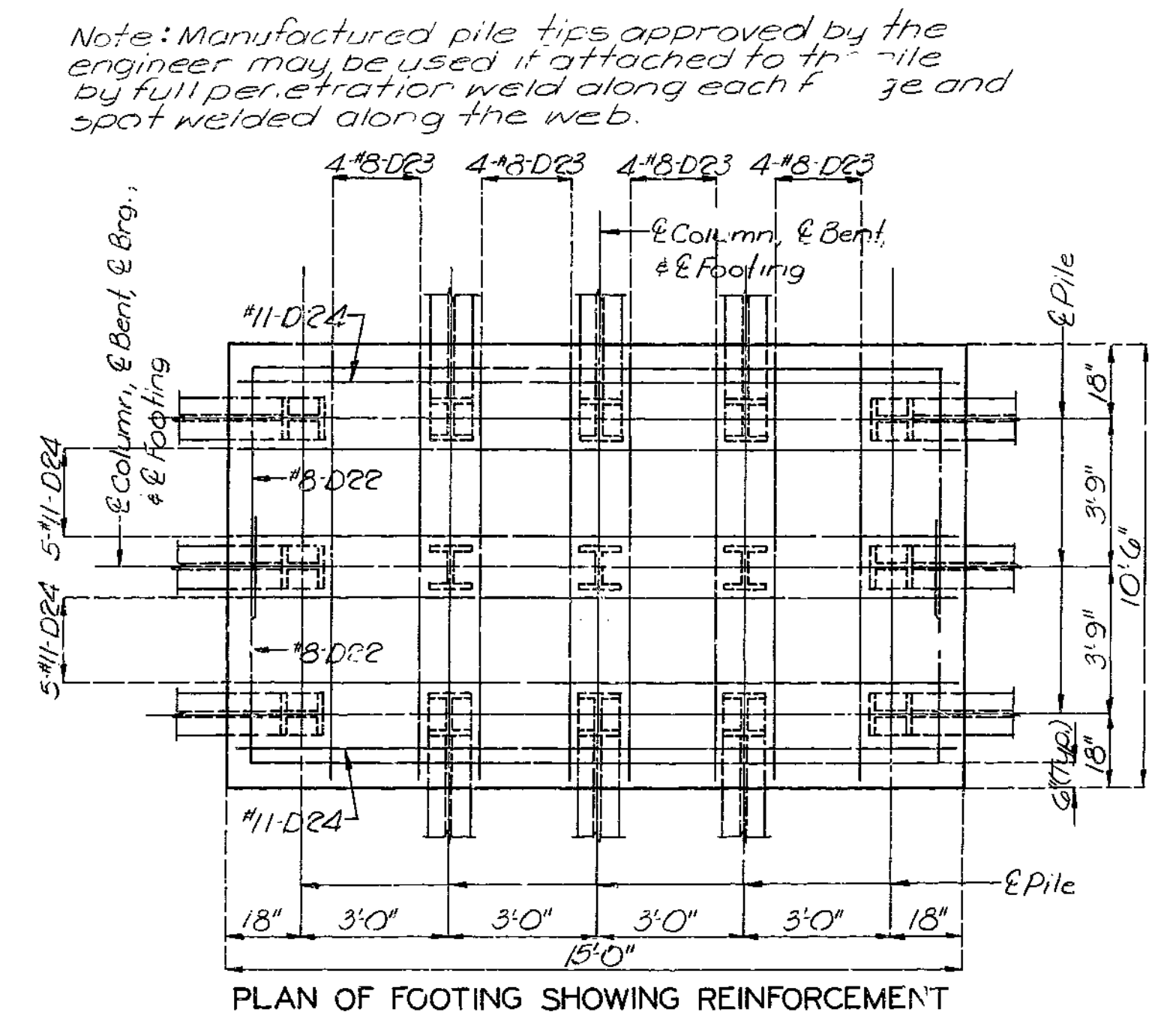


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	138	



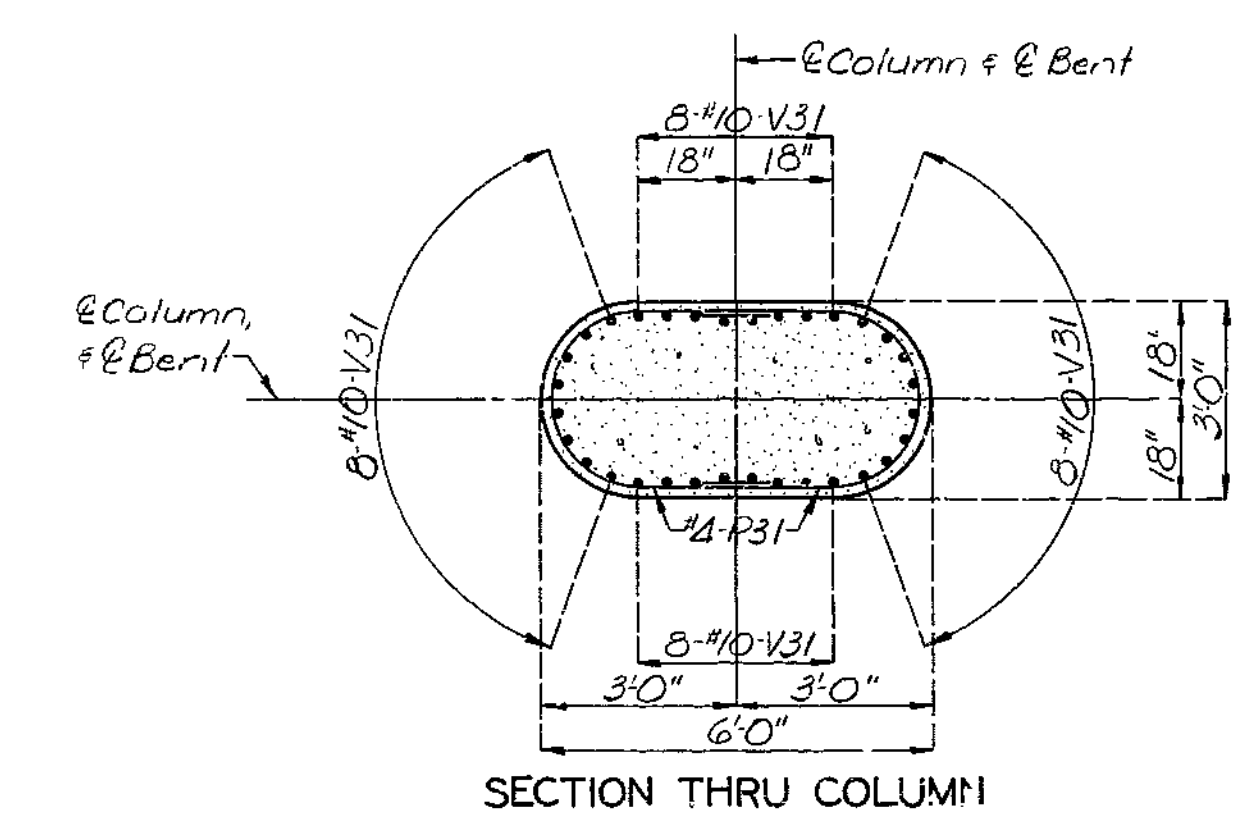
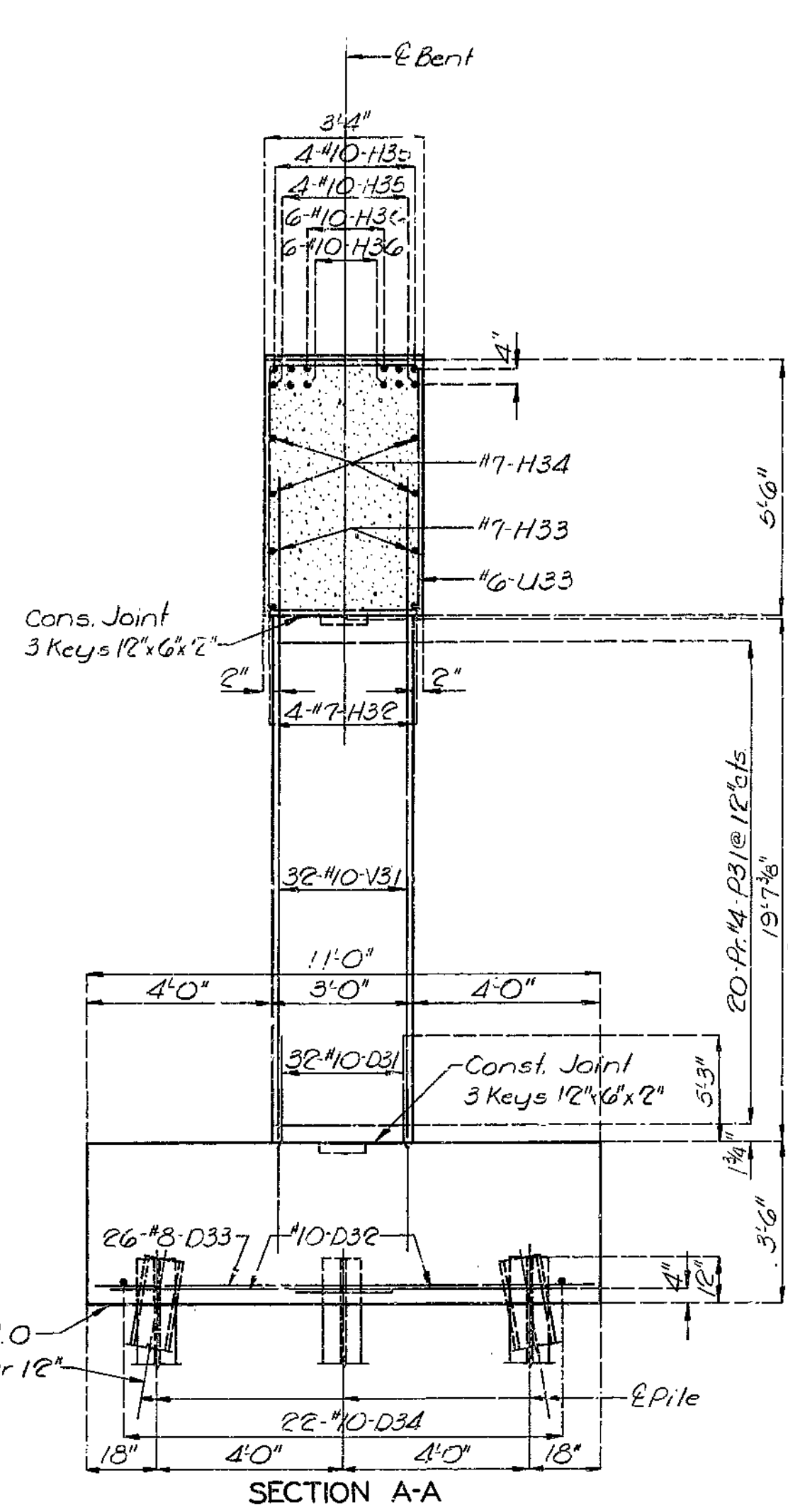
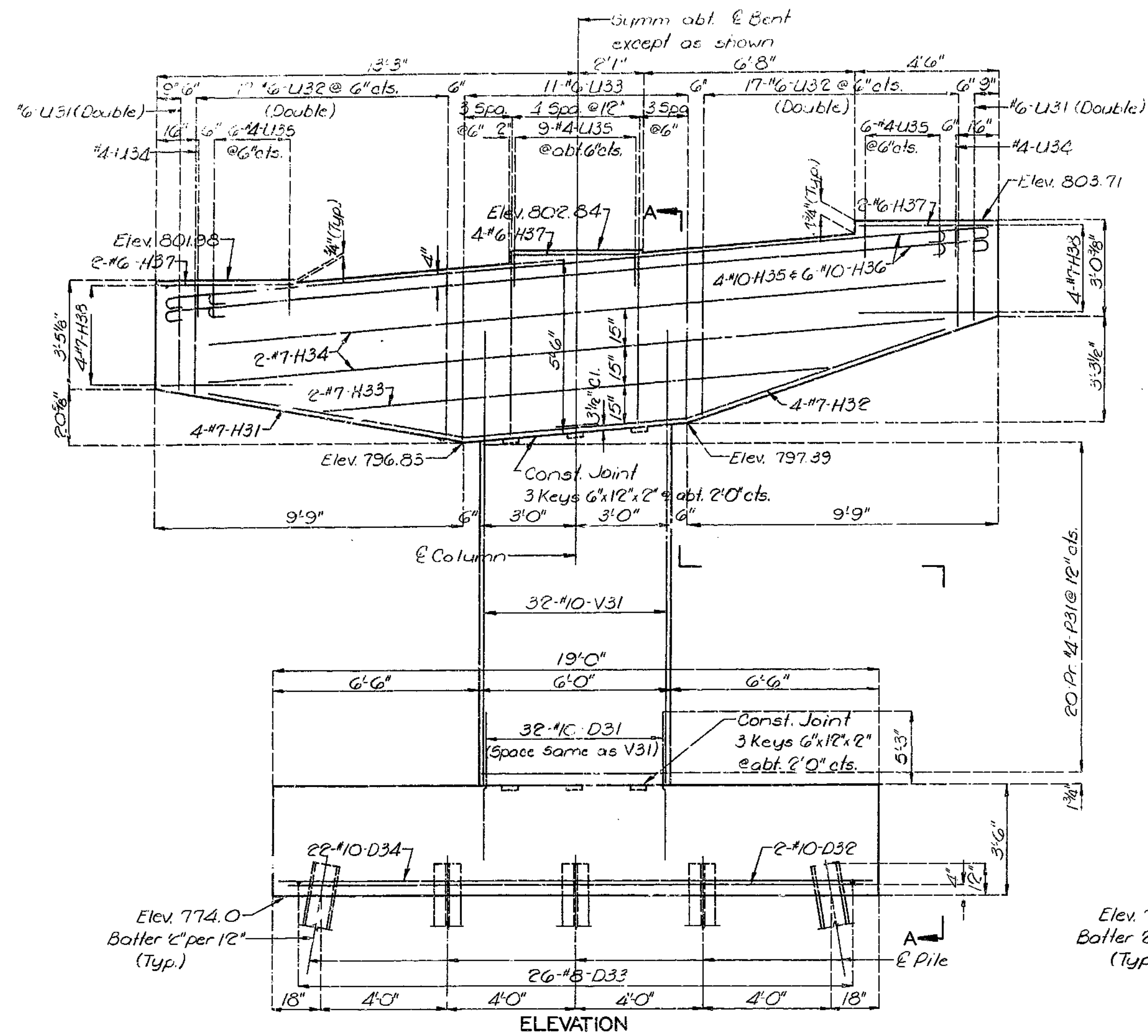
Note: Payment for furnishing plates and welding in position will be included in unit price bid for driving piles in place.

PILE TIP REINFORCEMENT

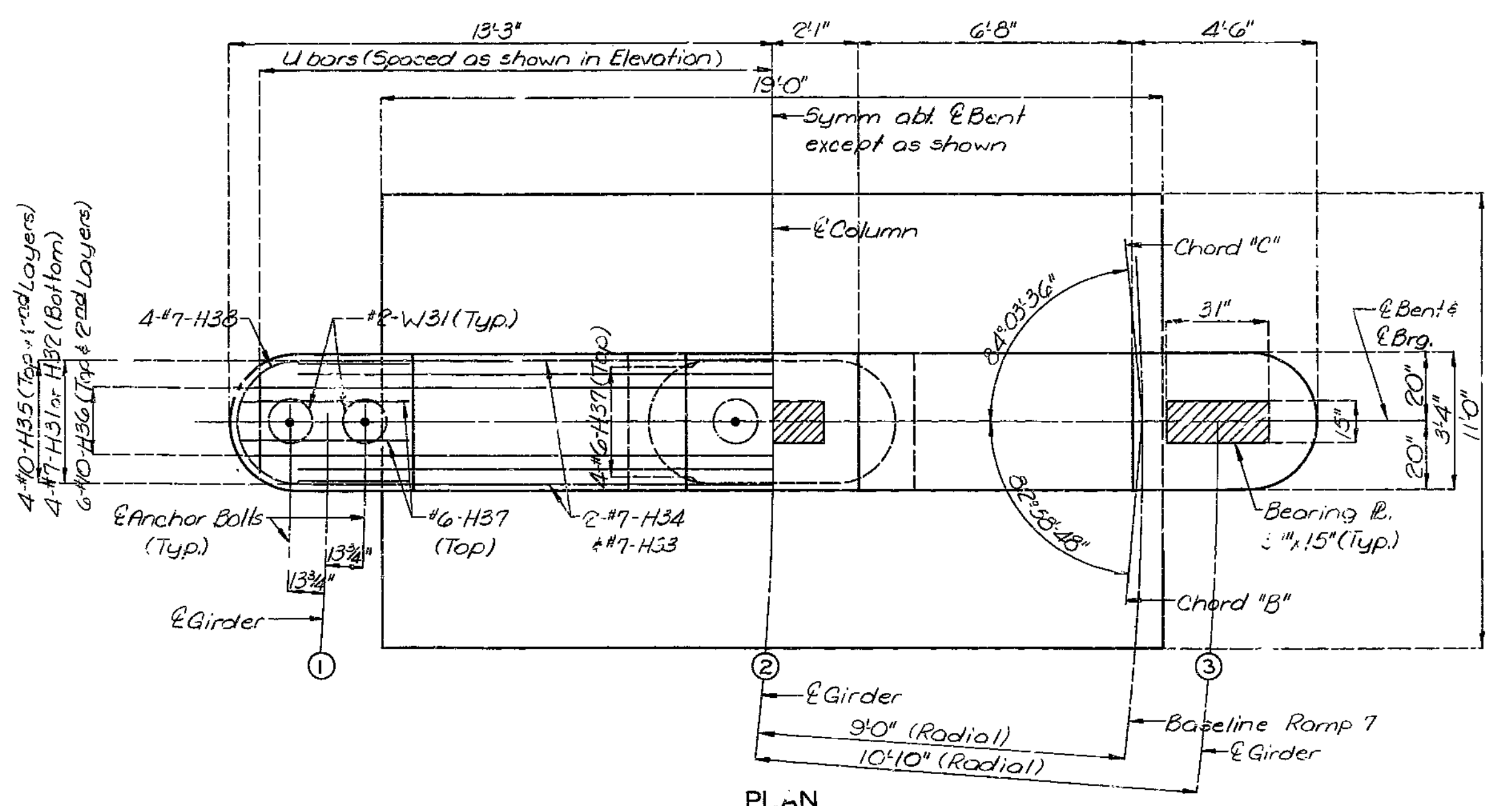


279

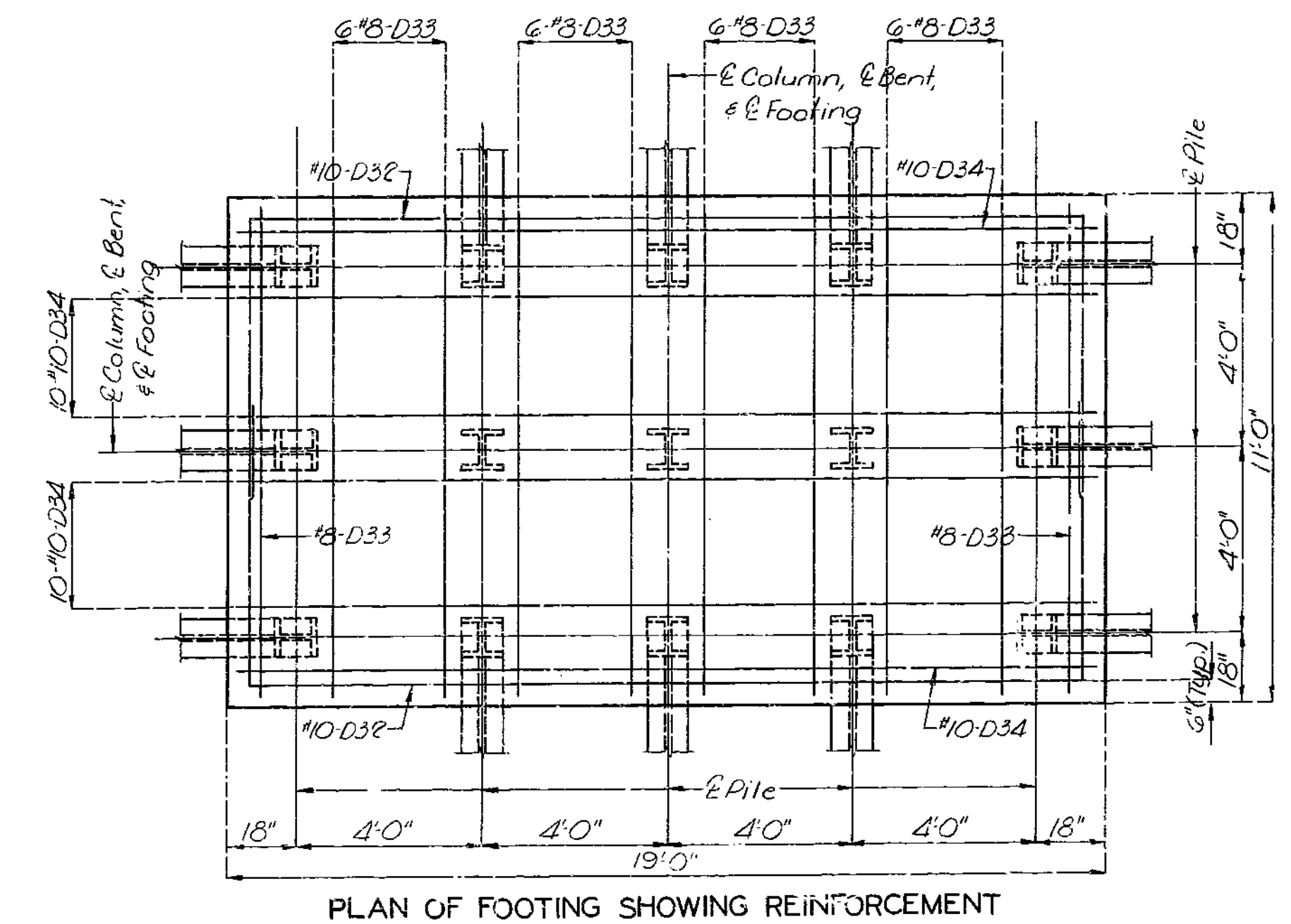
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	130	



280



Note: For Pile Tip Reinforcement see Sheet No. 7.



DETAILED Dec. 197  
CHECKED Oct. 1978

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

DETAILS OF INTERMEDIATE BENT NO. 3

Sheet No. 8 of 31.

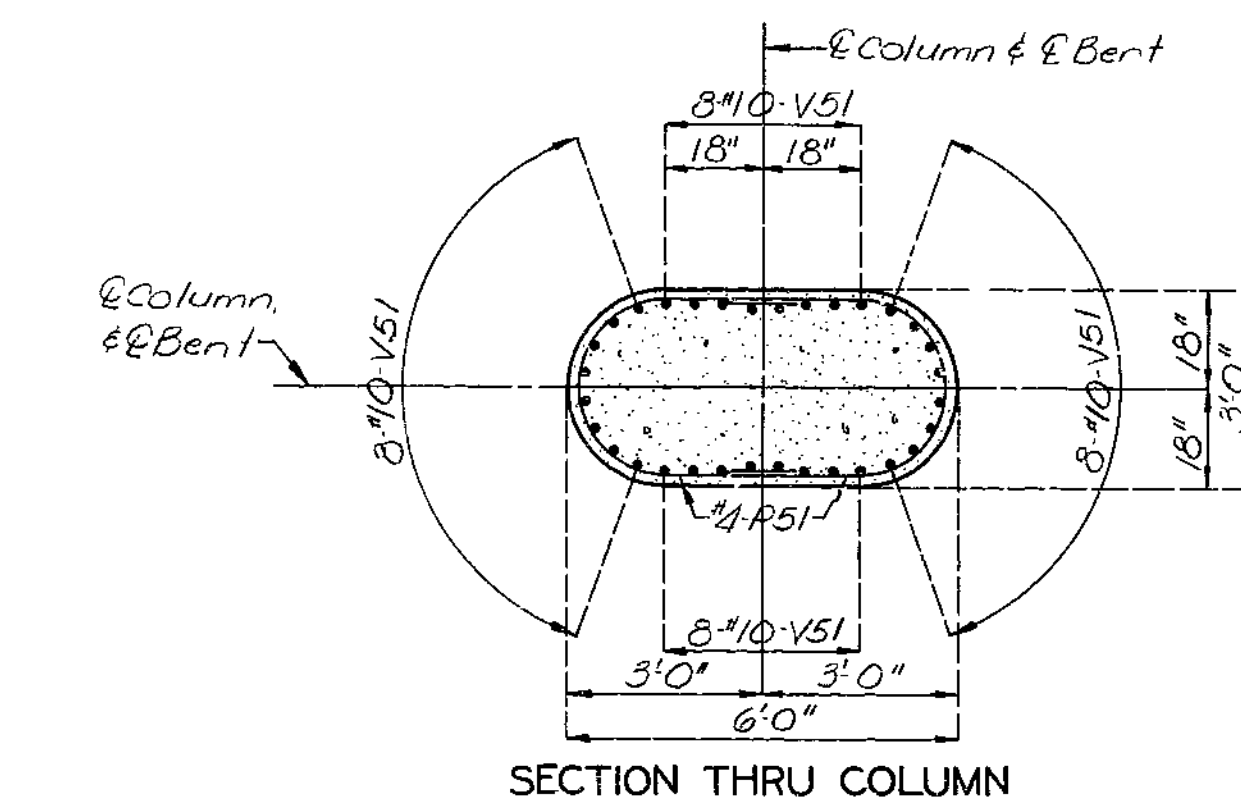
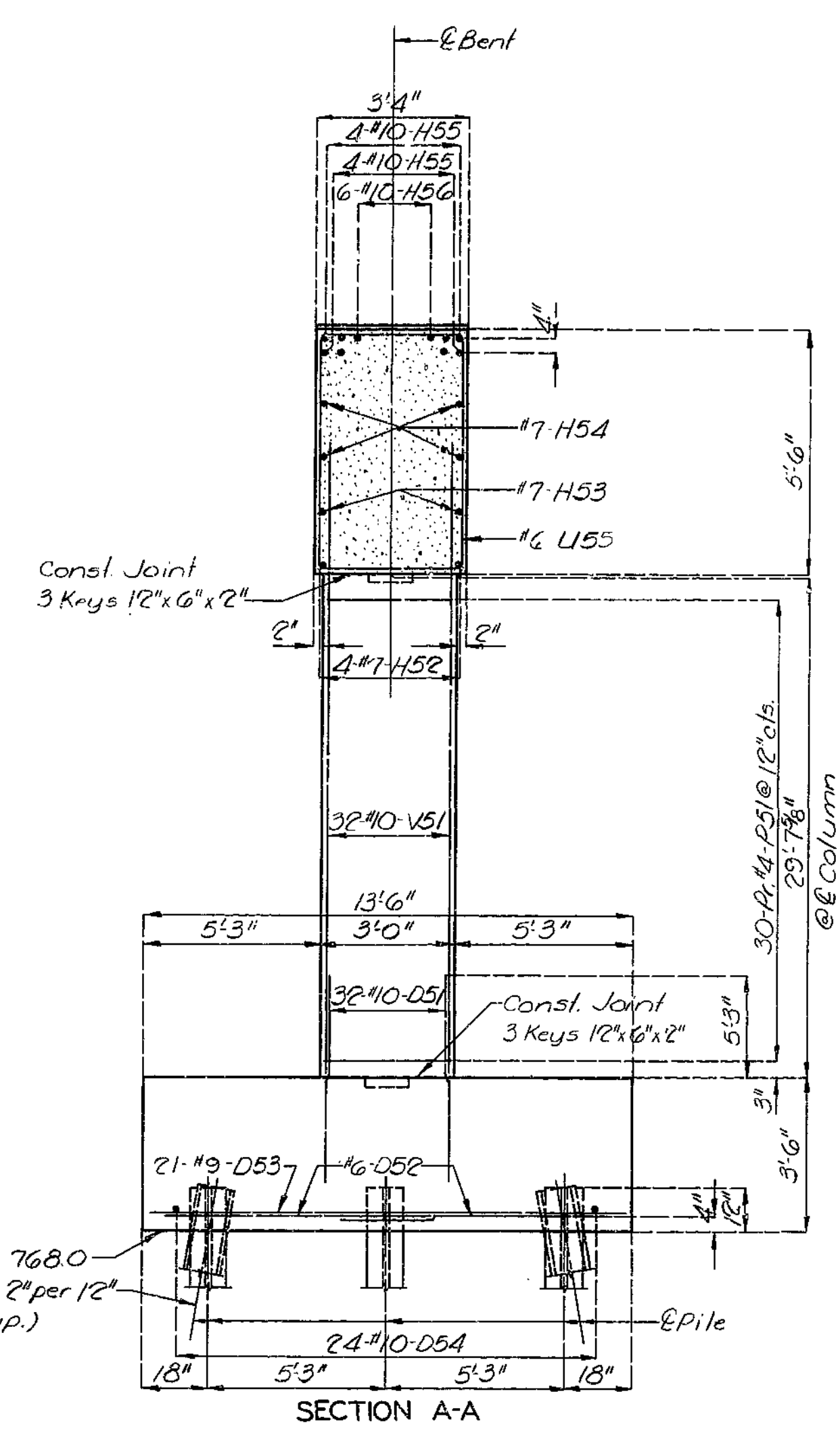
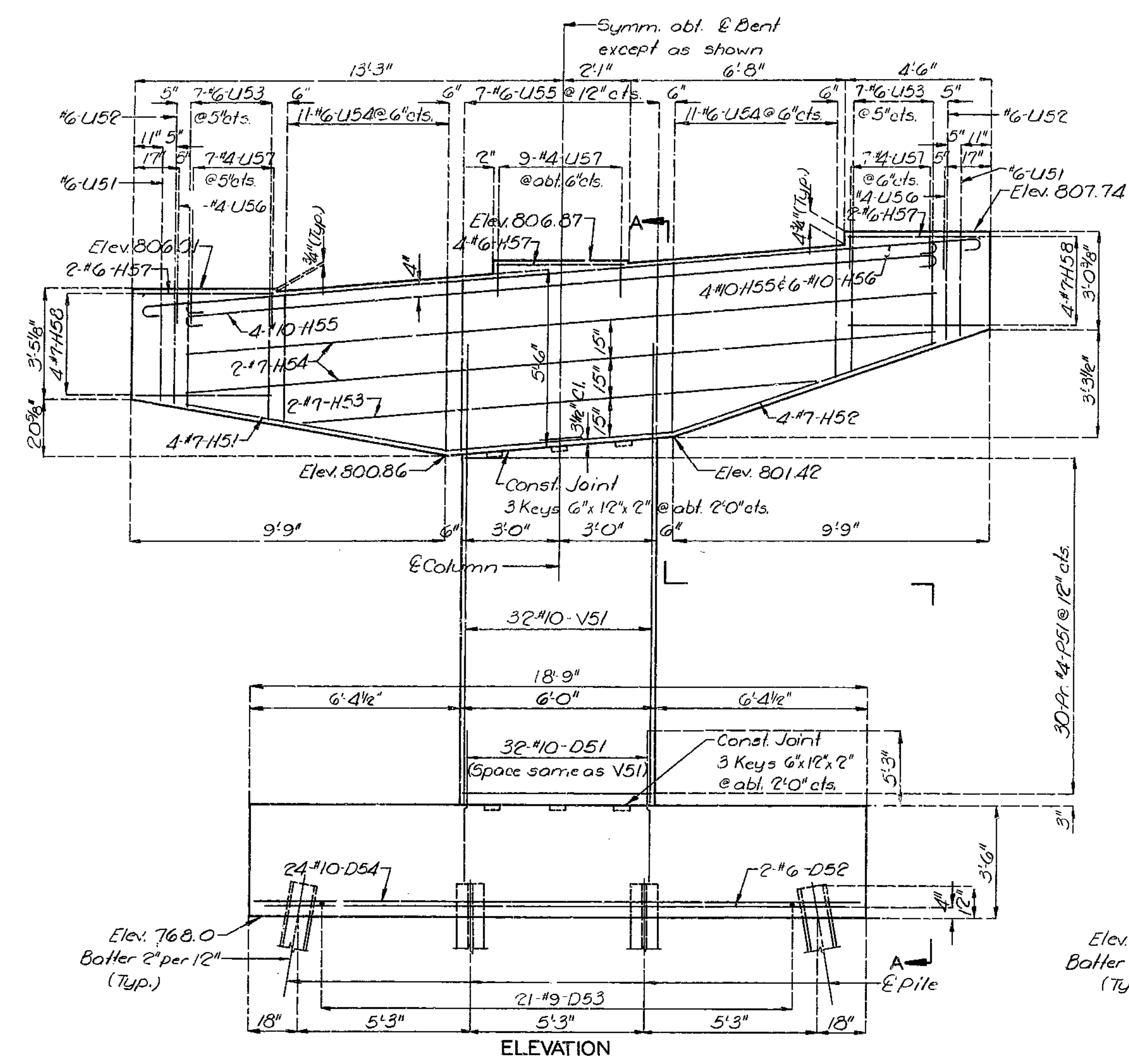
CLAY COUNTY

A-3383

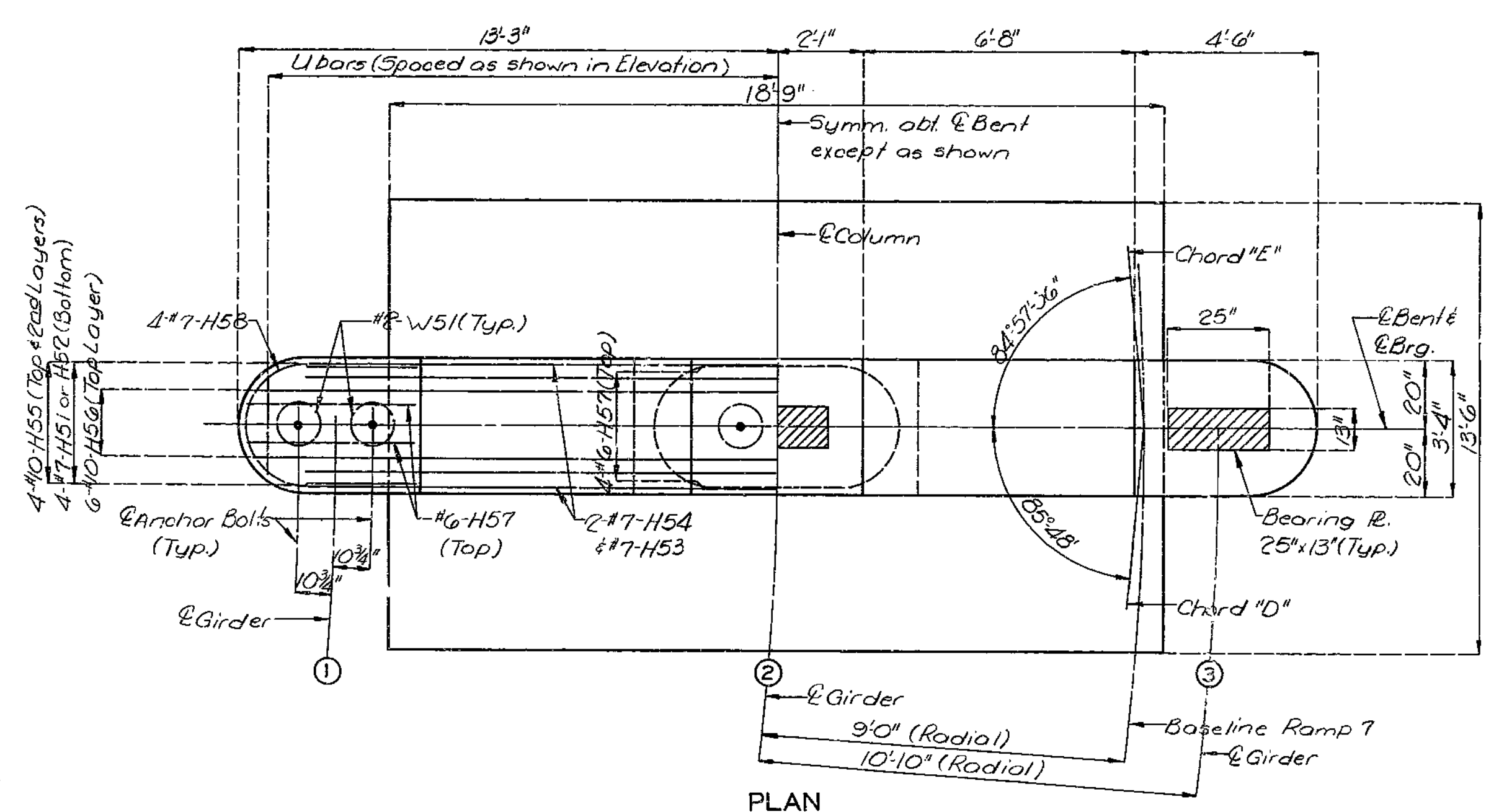




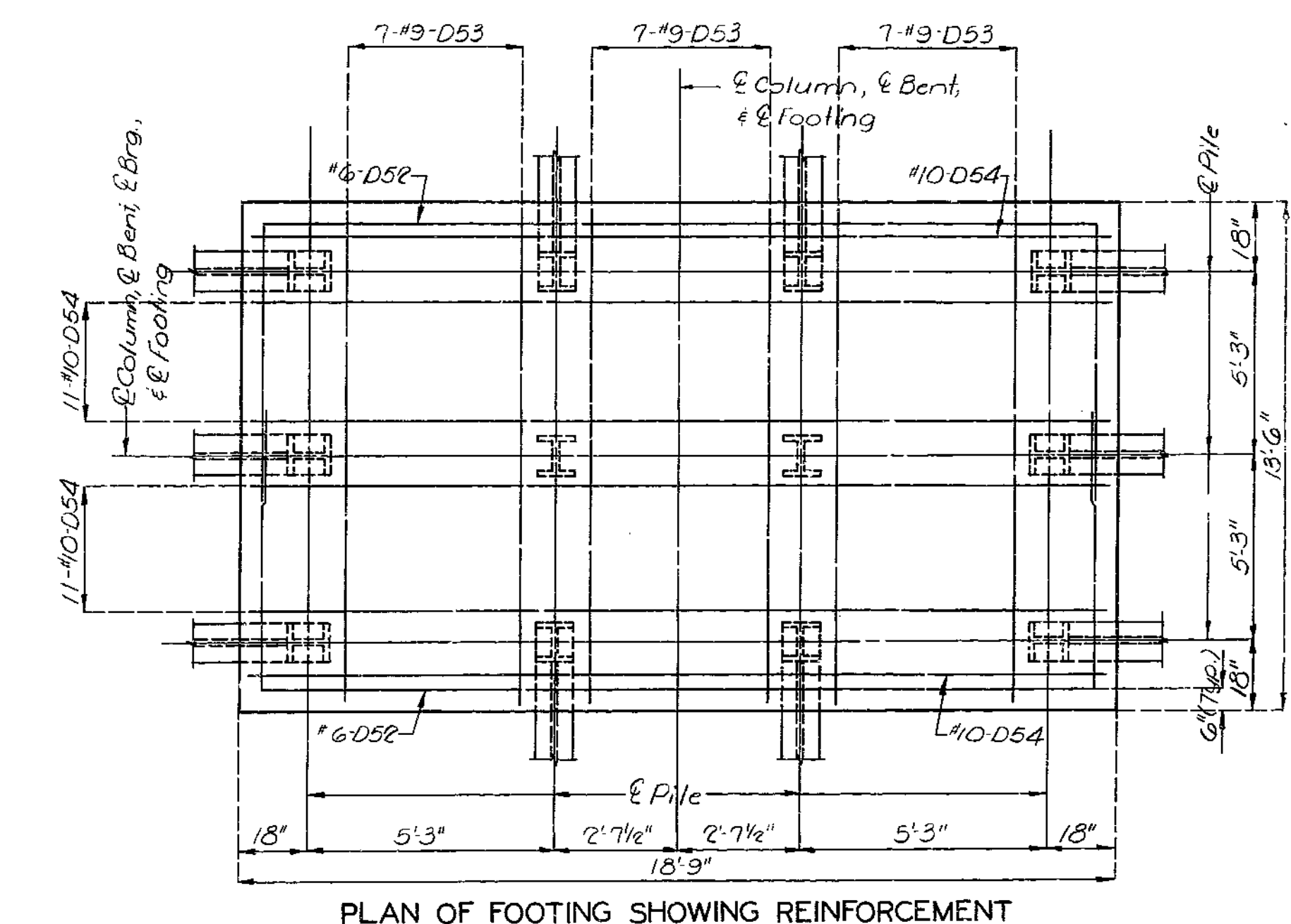
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	141	



282



Note: For Pile Tip Reinforcement see Sheet No. 7.



DETAILED Dec. 1977  
CHECKED Oct. 1978

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

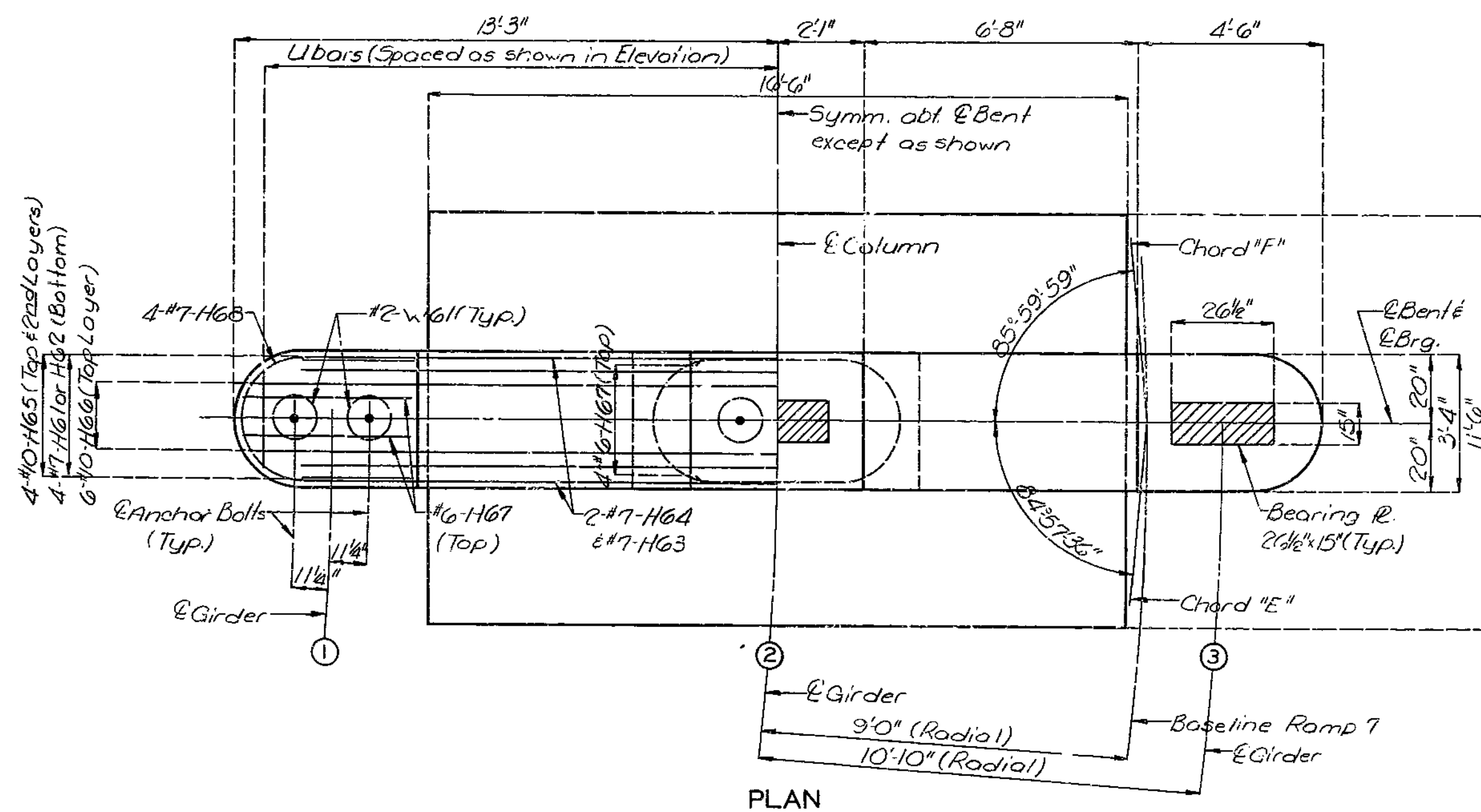
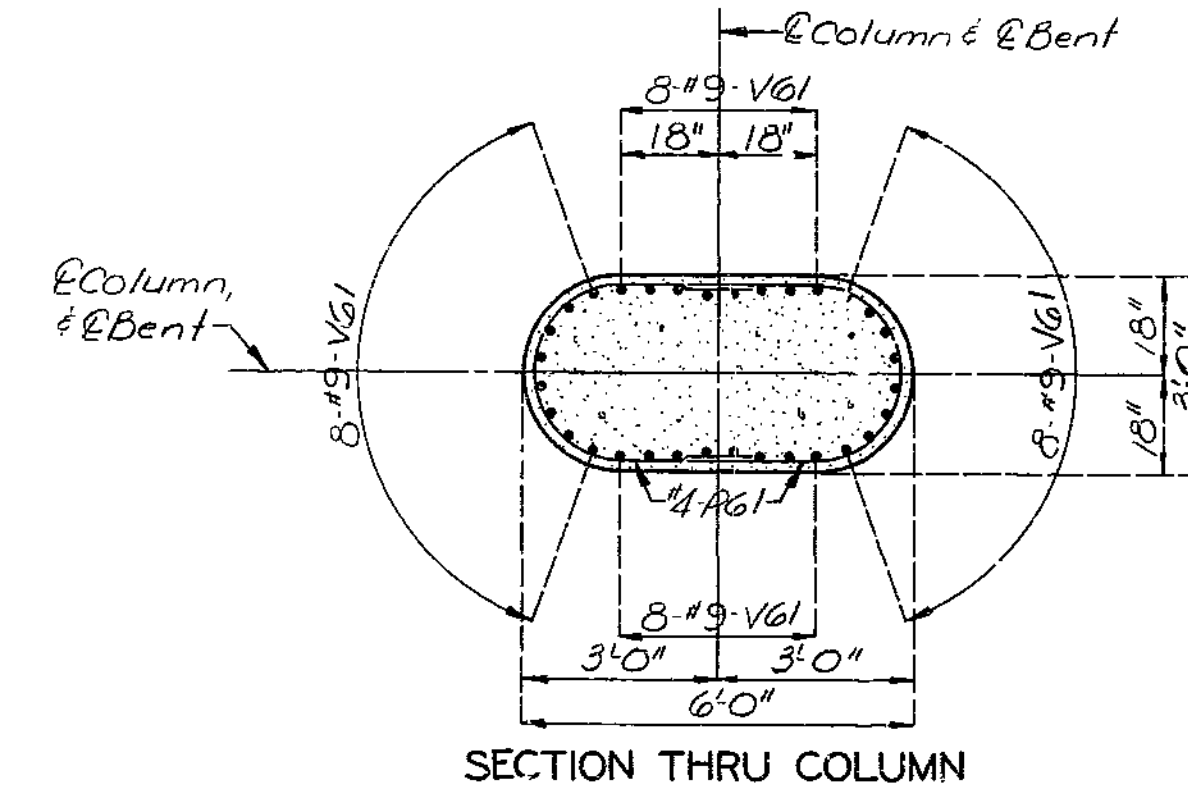
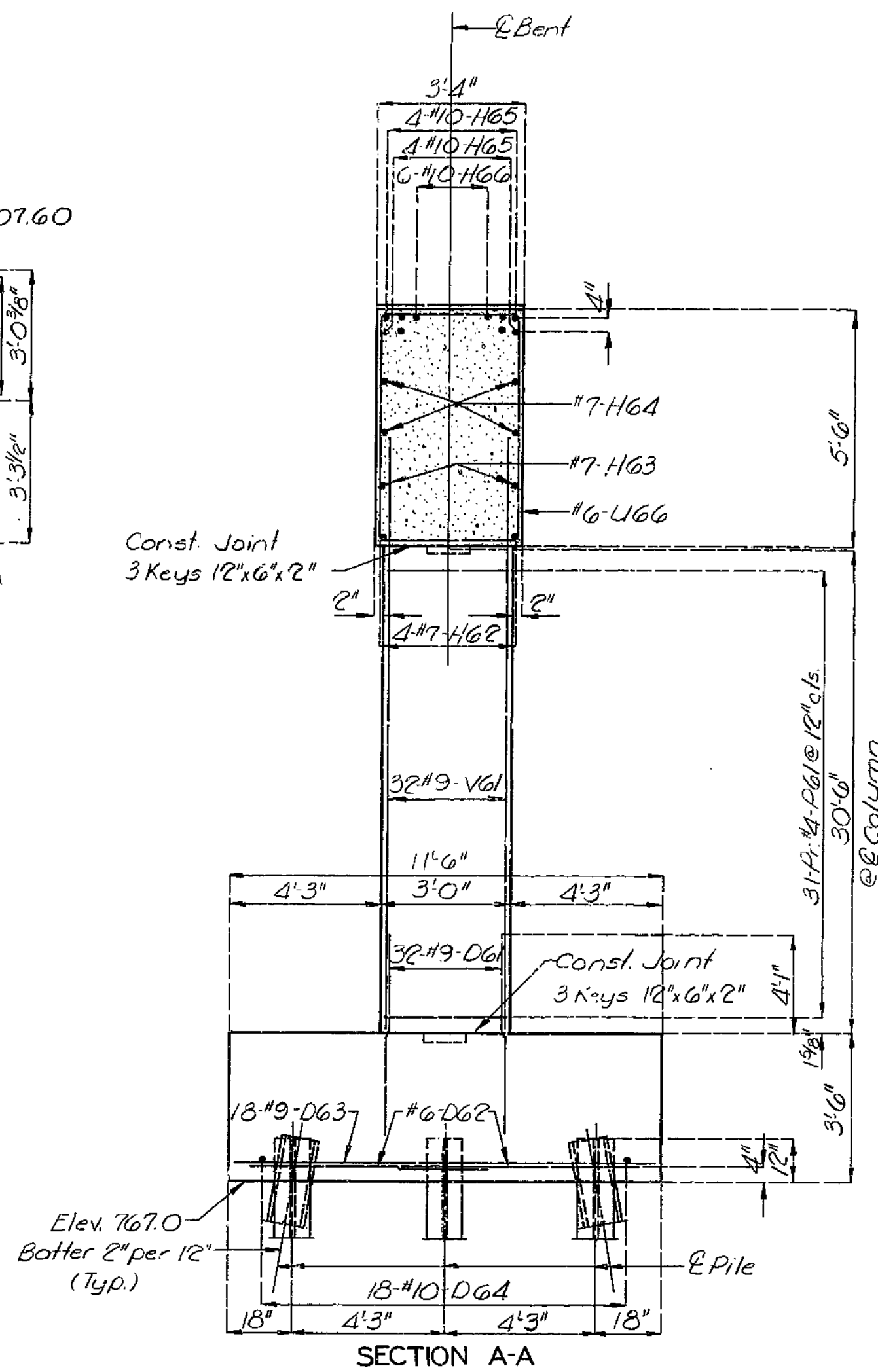
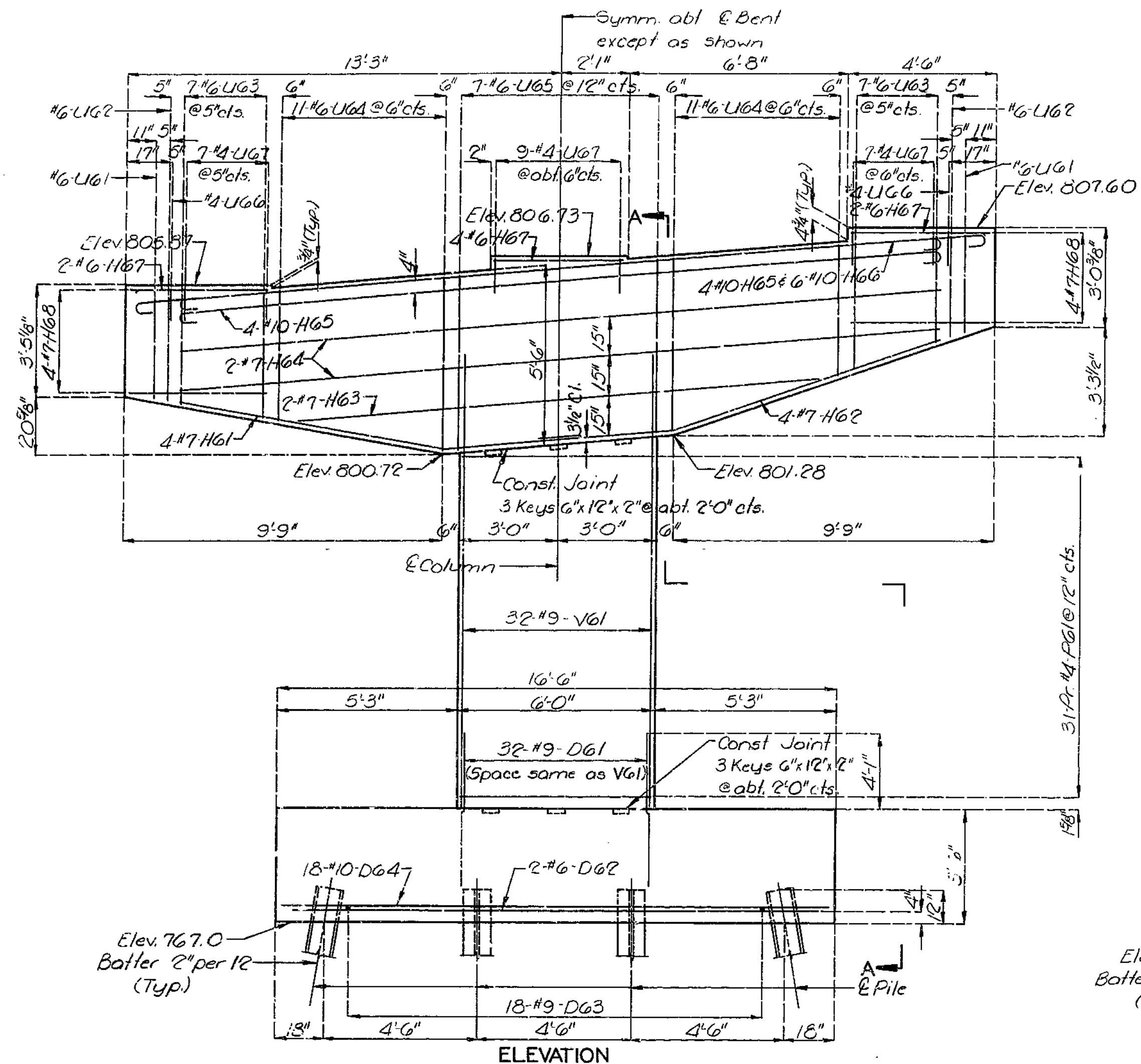
DETAILS OF INTERMEDIATE BENT NO. 5

Sheet No. 10 of 31.

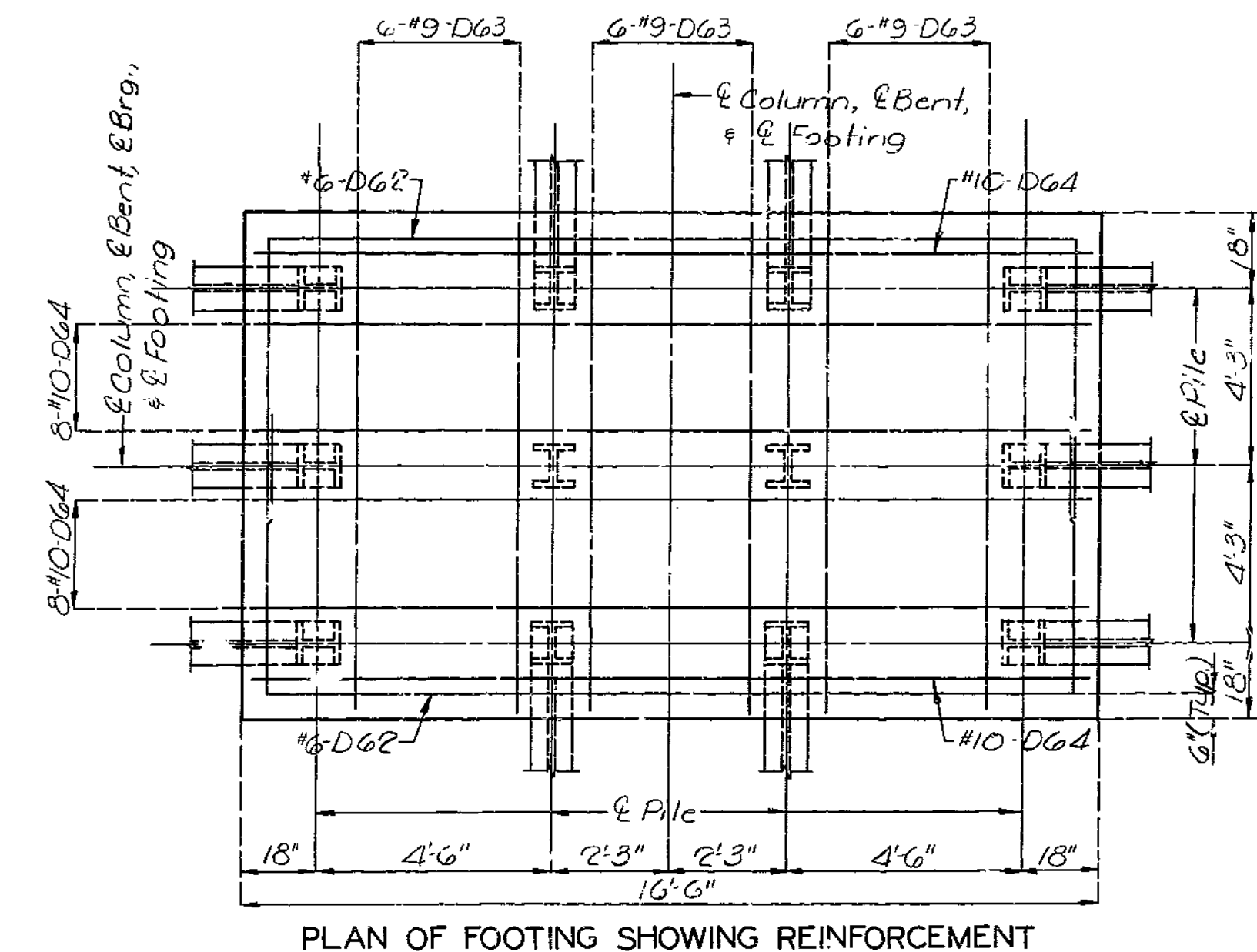
CLAY COUNTY

A-3388

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



Note: For Pile Tip Reinforcement see Sheet No. 7.



283

DETAILED Dec. 1977  
CHECKED Oct. 1978

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

DETAILS OF INTERMEDIATE BENT NO. 6

Sheet No. 11 of 31.

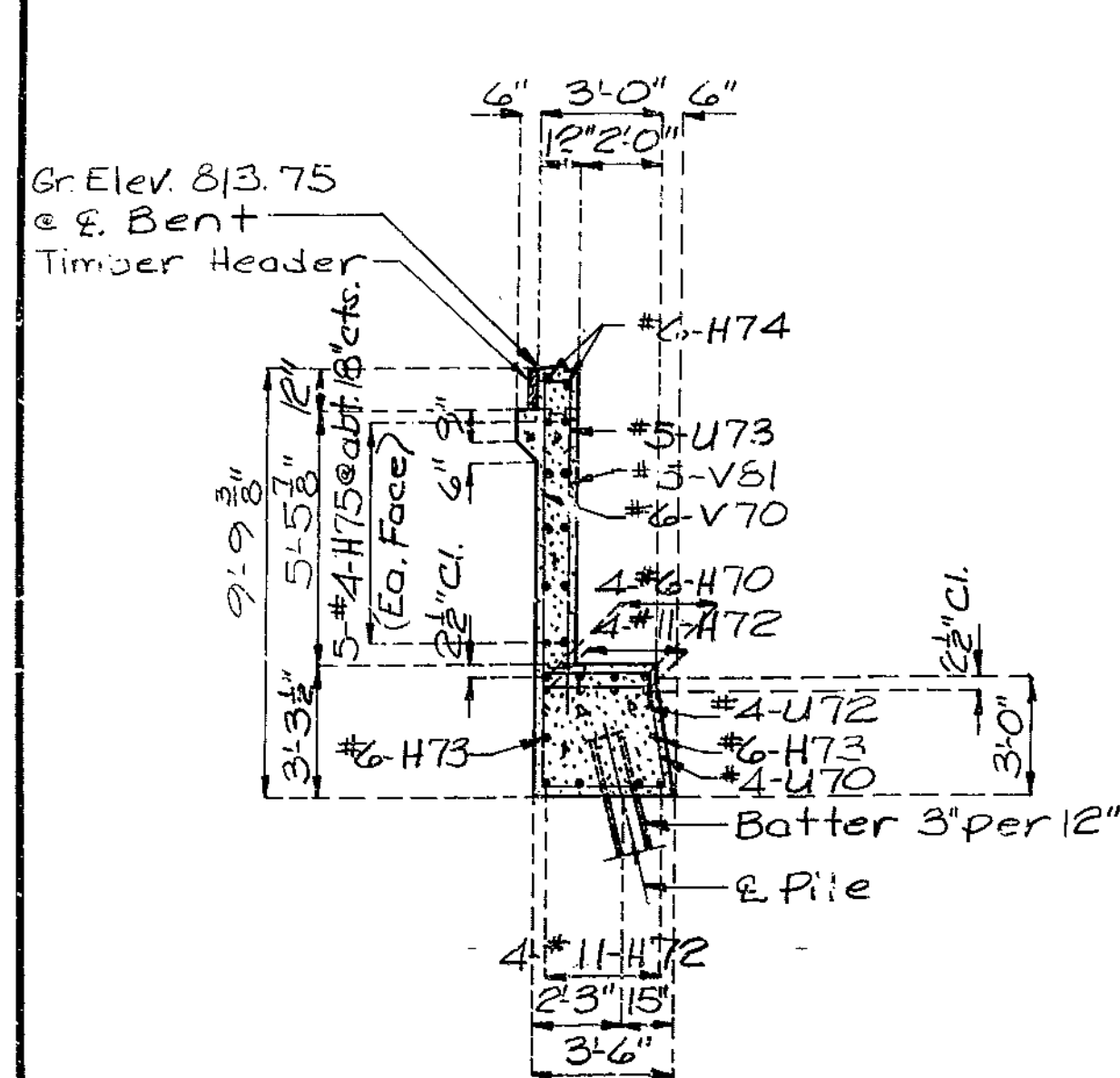
CLAY COUNTY

A-3388

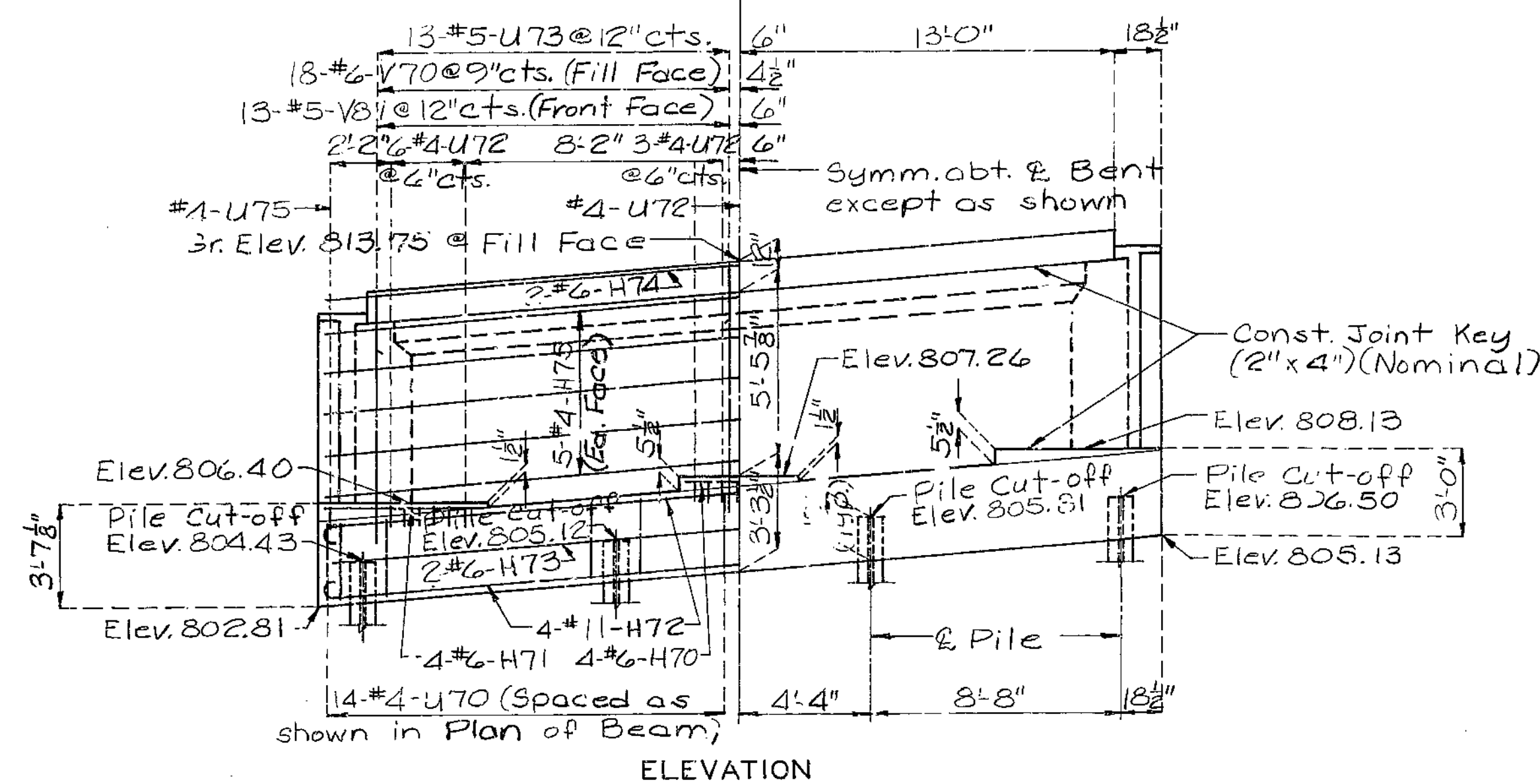
Note: For details and reinforcement of safety barrier curb see sheets No. 27 & 28.

Note: Field bending shall be required at wings for F70 & F71 bars when necessary to conform to slope of wing.

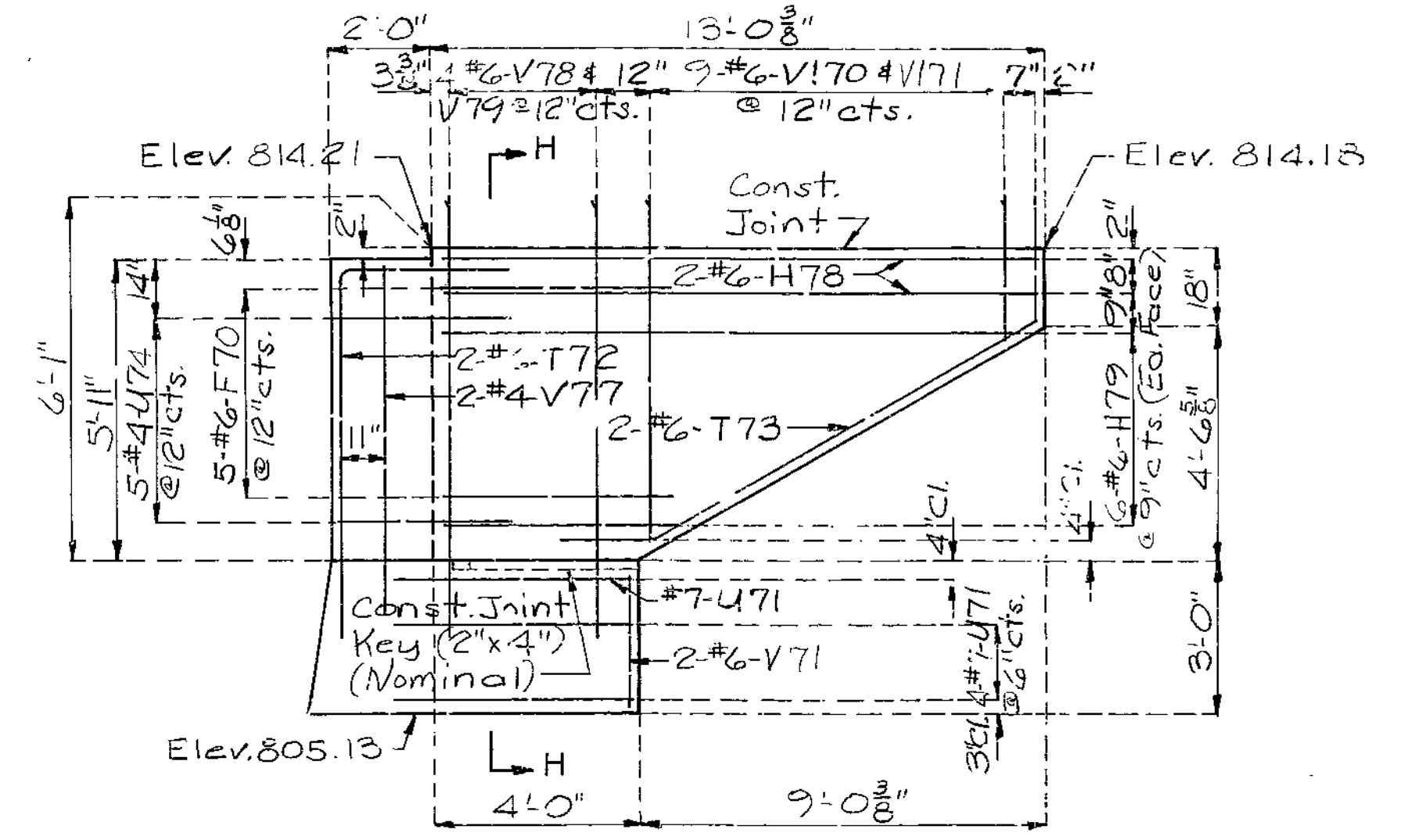
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	43	



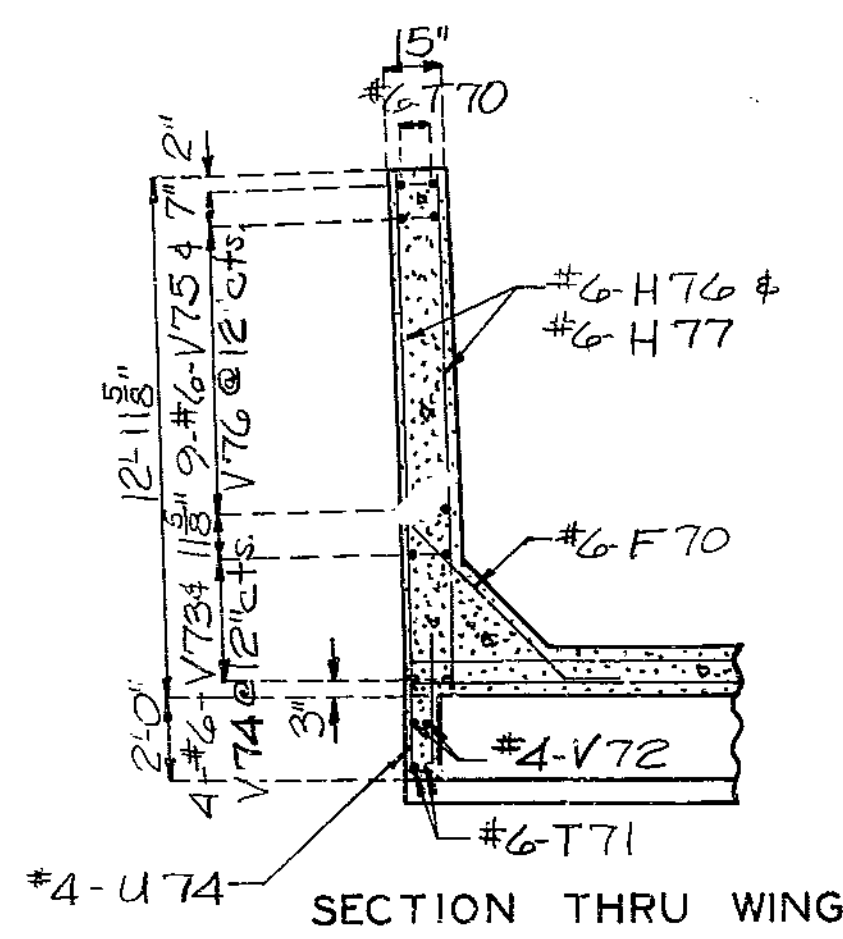
SECTION THRU C BENT



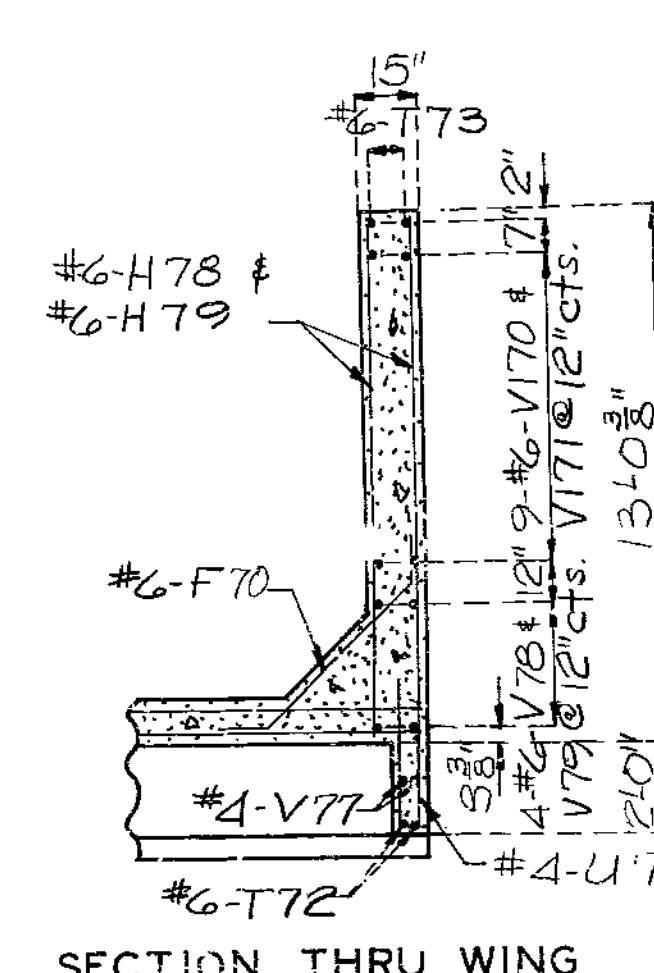
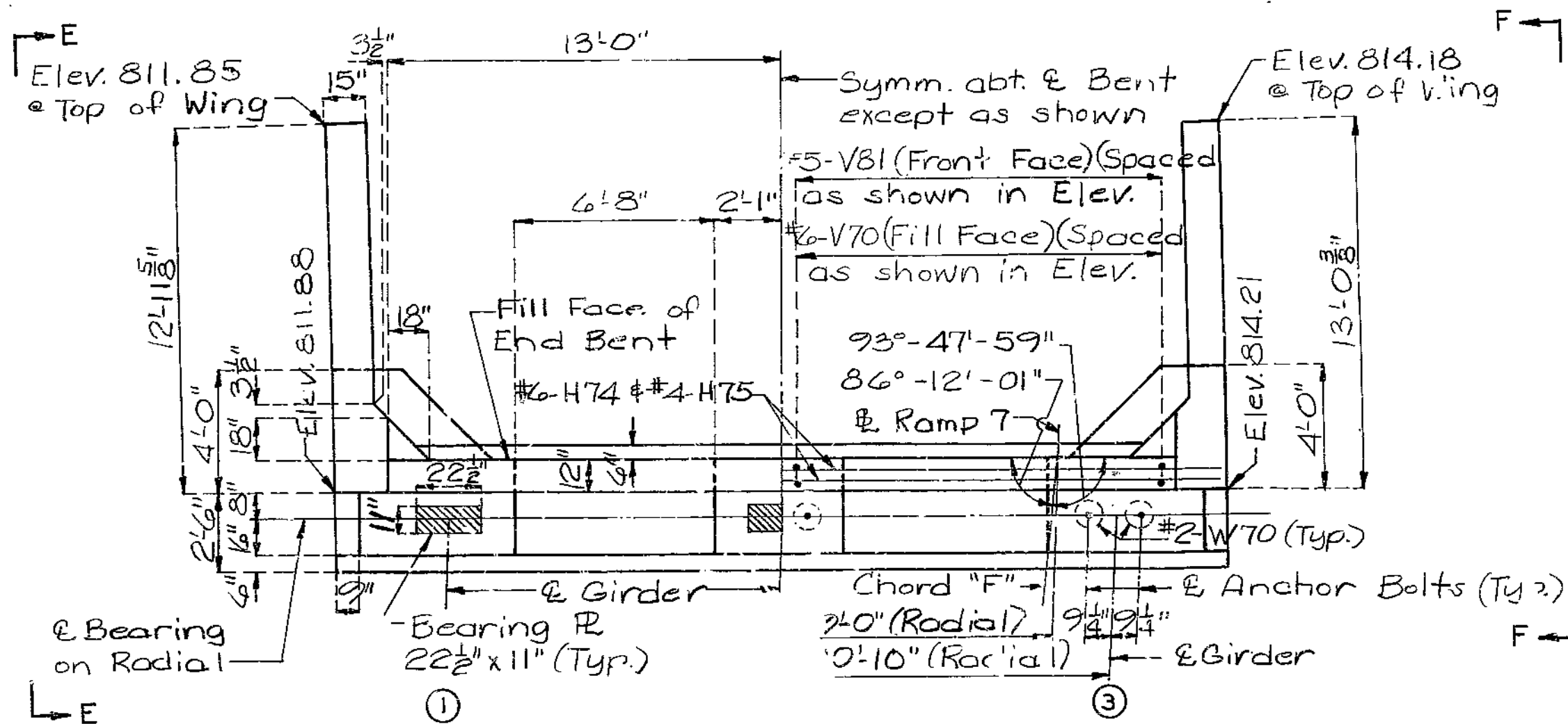
ELEVATION



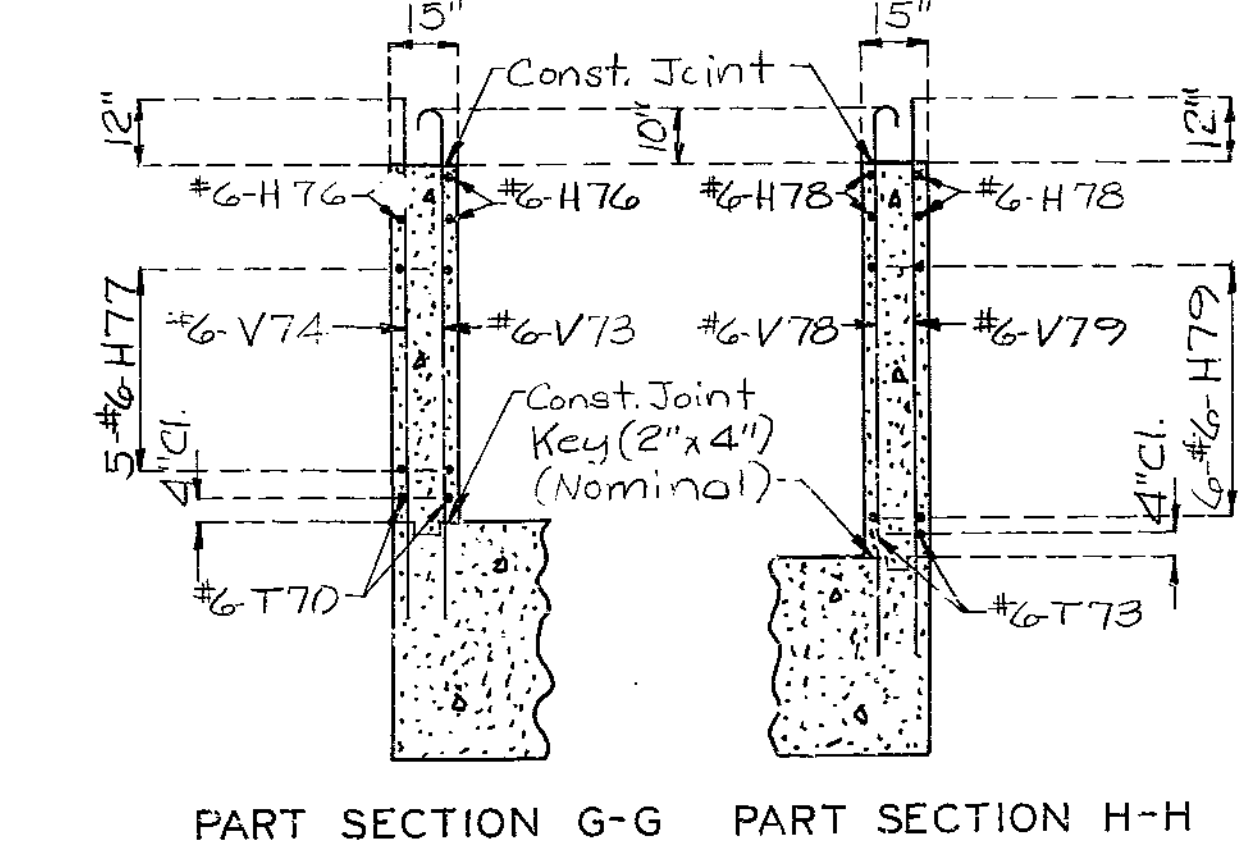
ELEVATION F-F



SECTION THRU WING

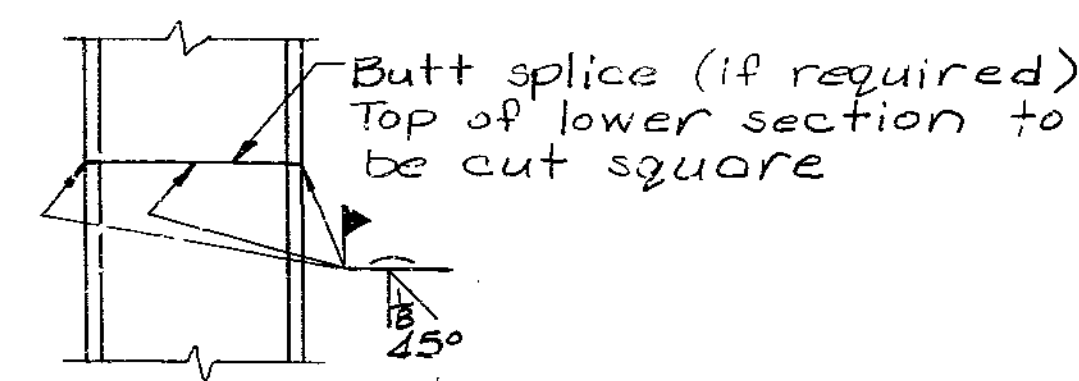


SECTION THRU WING

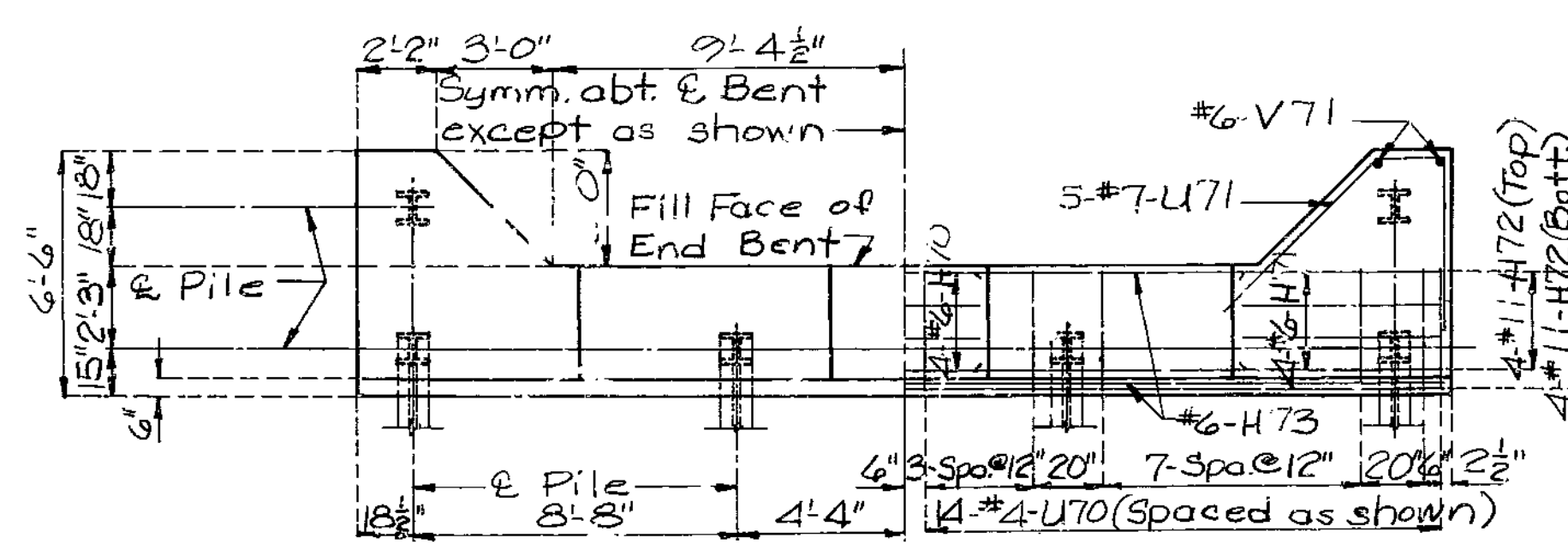


PART SECTION G-G PART SECTION H-H

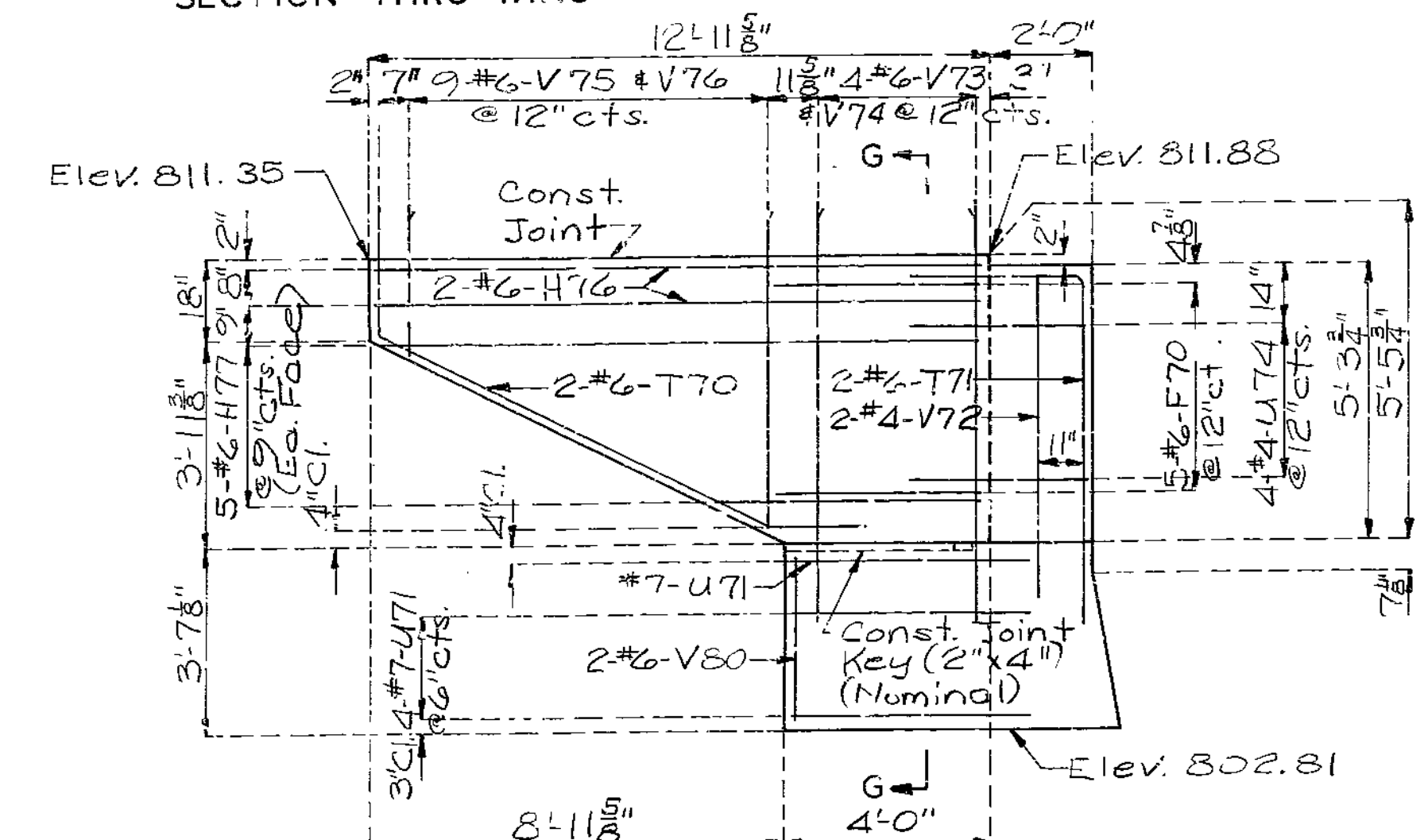
Note: Top of backwall and expansion device for End Bent No. 7 to conform to roadway slab. Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.



DETAIL OF STEEL PILE SPLICE



PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT) DETAILS OF END BENT NO. 7



ELEVATION E-E

Note: For Plan Showing Wing Curve Ordinates see Sheet No. 4.

DETAILED SEPT. 1978  
CHECKED Nov. 1978

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

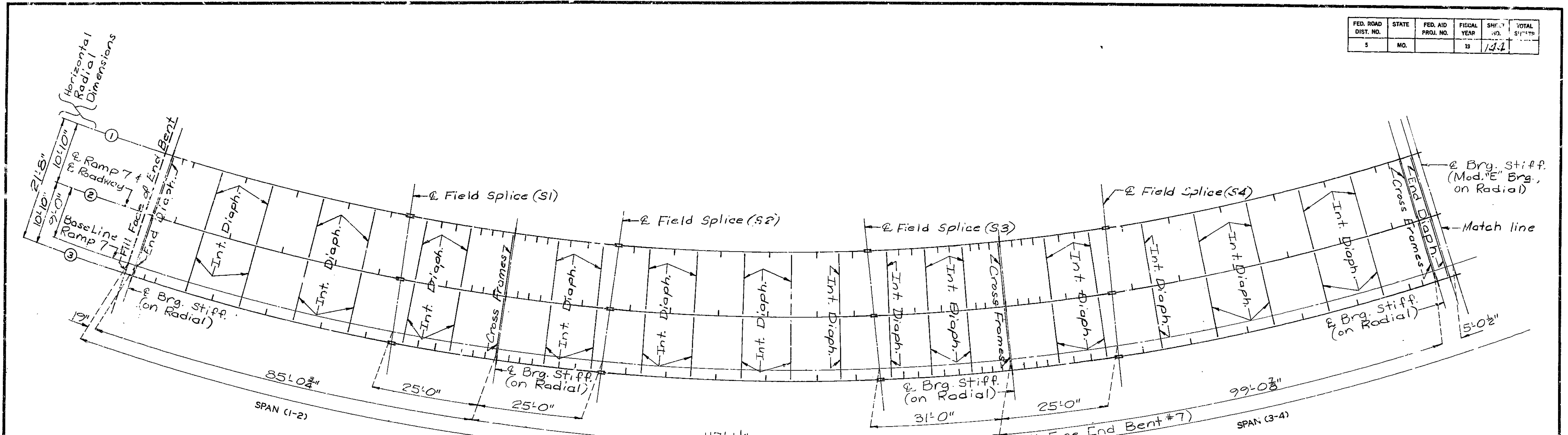
Sheet No. 12 of 31.

CLAY COUNTY

A-3388

284

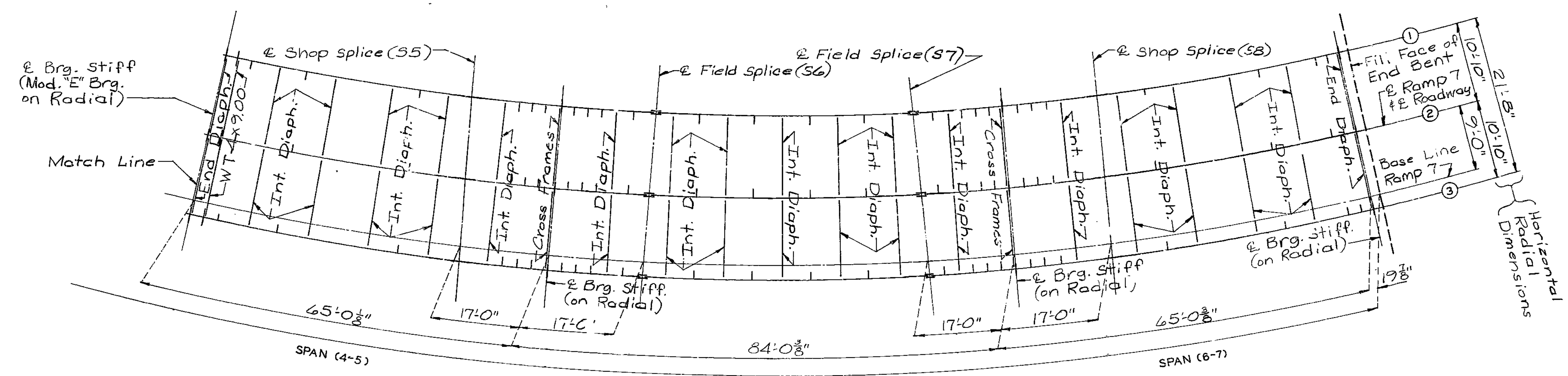
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	142	



Note: Longitudinal dimensions are arc dimensions along top of web at Base Line Ramp 7, see Part Longitudinal Section, Sheet No. 15.  
 For spacing of Shear Connectors, see Sheet No. 16, #17.  
 For details of Hinged Girder Connection, see Sheet No. 18.

Note: Int. web stiffeners shall be placed as detailed.  
 For Details of Exterior Order Curve Offsets, see Sheet No. 14.  
 For Details of Part Elevation of Girder, see Sheets No. 16, #17.

285



PLAN OF STRUCTURAL STEEL

DETAILED OCT. 1977  
 CHECKED SEPT. 1978

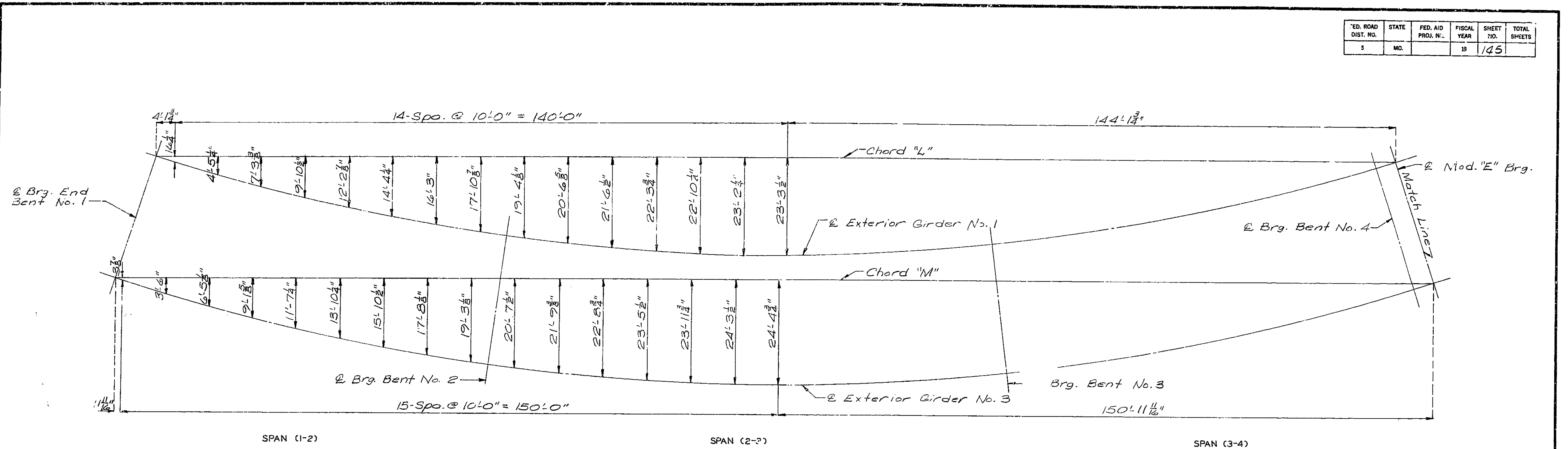
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 13 of 31.

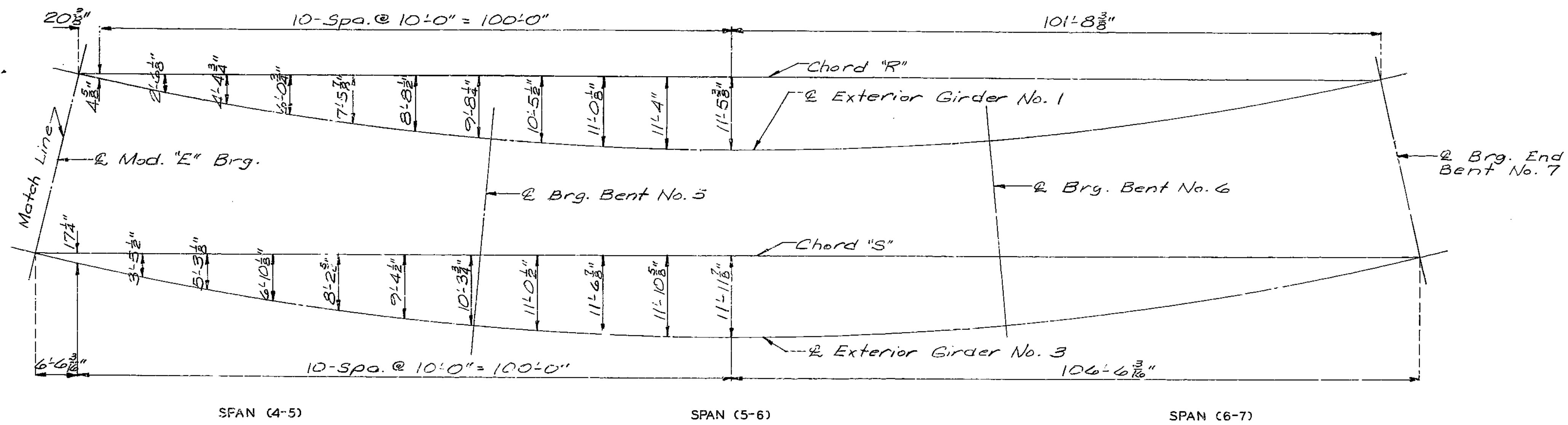
CLAY COUNTY

A-3388

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	145	



Note: All dimensions are horizontal.

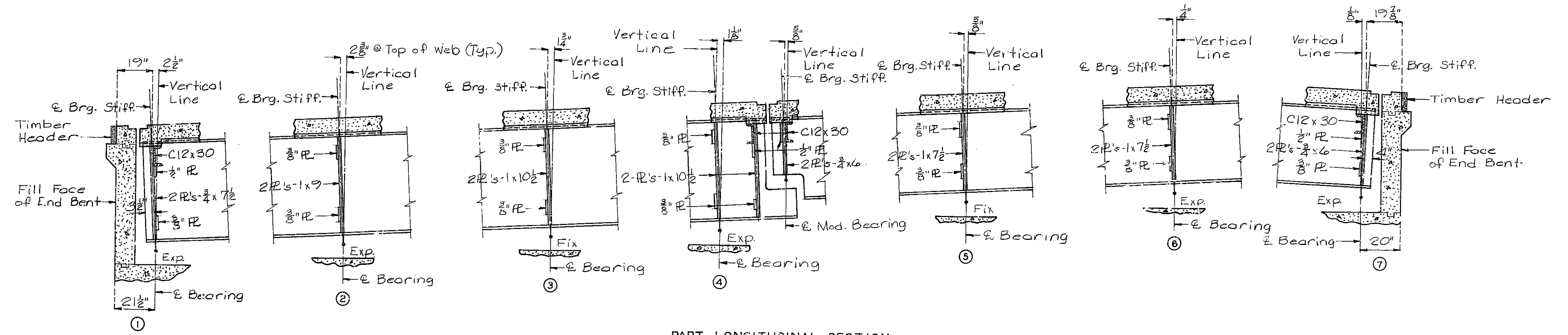


PART PLAN OF STRUCTURAL STEEL SHOWING  
EXTERIOR GIRDER CURVE OFFSETS

286

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	146	

287



PART LONGITUDINAL SECTION

Note: For Details of Hinged Girder Connection see Sheet No. 18.

DETAILED SEPT. 1978  
CHECKED SEPT. 1978

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

Sheet No. 15 of 31.

CLAY COUNTY

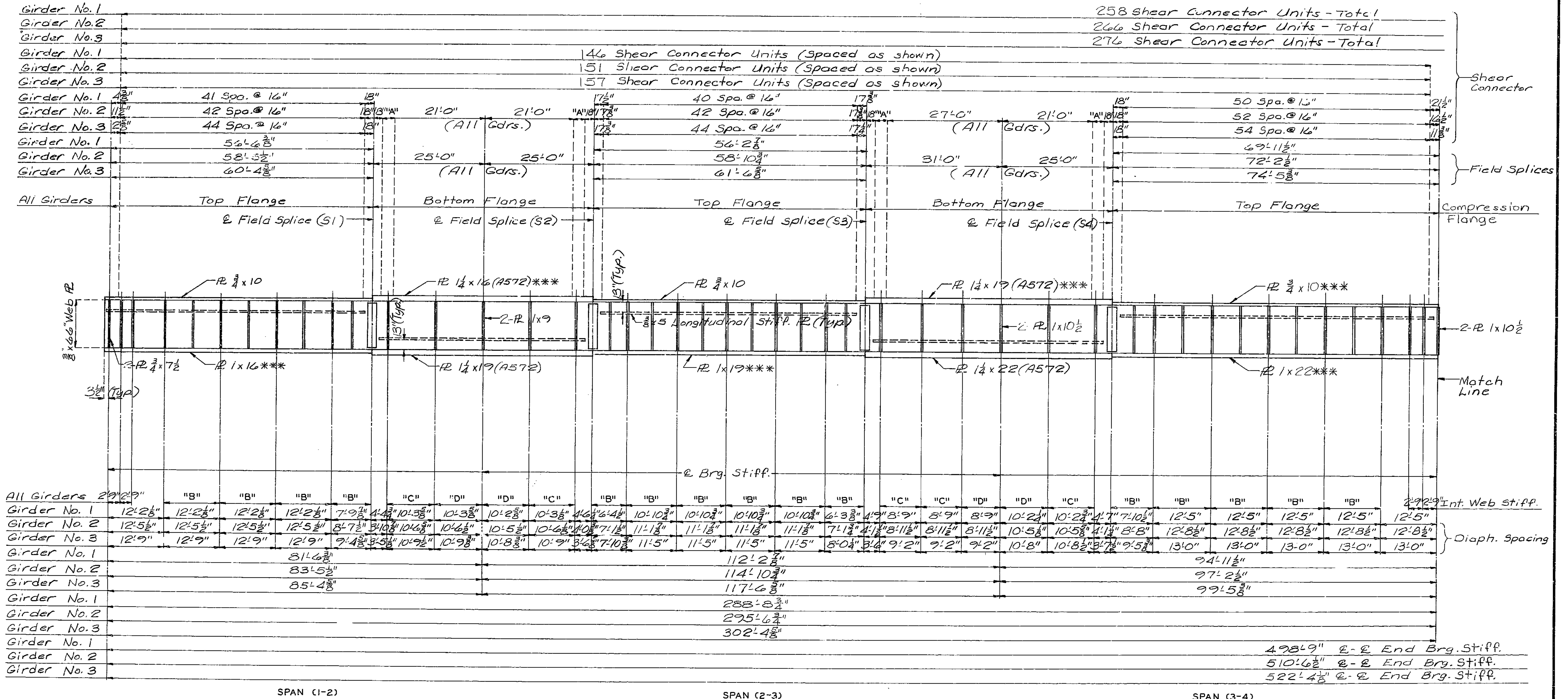
A-3388

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	147	

Note: Plate girders shall be fabricated to conform with Camber Diagram shown on Sheet No. 23.  
 Whenever longitudinal stiffeners (R 3/8 x 5) interfere with bolting the diaphragms and cross frames in place, clip stiffeners. Longitudinal web stiffeners (R 3/8 x 5) shall be placed on the outside of exterior girders and on the side opposite to Int. web stiffener plates for interior girders.  
 Fabricated structural steel shall be A36 except as noted. Longitudinal dimensions are as dimensions along top of web at centerline of girder. See Part Longitudinal Section, Sheet No. 15.  
 Flanges for girders shall be fabricated by flame cutting the flanges to the specified horizontal curvature. Heat curving will not be permitted.

Note: All web plates shall be subject to notch toughness requirements.  
 \*\*\* - Indicates Flange Plates subject to notch toughness requirements.  
 "A" - Indicates 3 Spaces @ 10" for Shear Connectors.  
 "B" - Indicates 2 Equal Spaces for Int. Web Stiff. (R 7/8 x 5 1/2)  
 "C" - Indicates 3 Equal Spaces for Int. Web Stiff. (R 7/8 x 5 1/2)  
 "D" - Indicates 4 Equal Spaces for Int. Web Stiff. (R 7/8 x 5 1/2)

288



PART ELEVATION OF GIRDERS

Note: Plate girders shall be fabricated to conform with Camber Diagram shown on Sheet No. 23.

Fabricated structural steel shall be A36 except as noted. Longitudinal dimensions are dimensions along top of web at centerline of girder. See Part Longitudinal Section, Sheet No. 15.

Flanges for girders shall be fabricated by flame cutting the flanges to the specified horizontal curvature. Heat curving will not be permitted.

Note: All web plates shall be subject to notch toughness requirements.

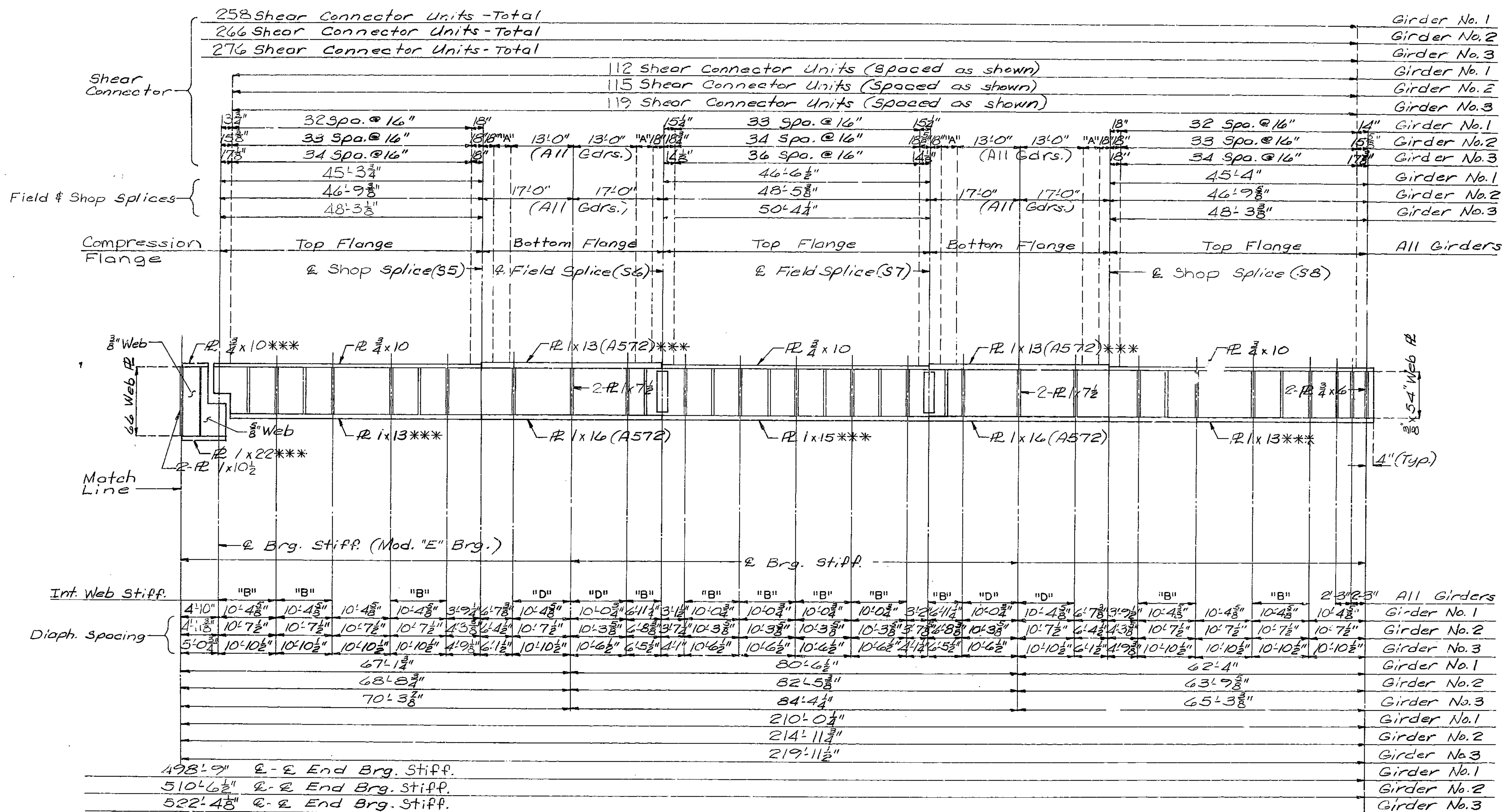
\*\*\*-Indicates Flange Plates subject to notch toughness requirements.

"A"-Indicates 3 Spaces @ 10" for Shear Connectors.

"B"-Indicates 2 Equal Spaces for Int. Web Stiff. ( $R \frac{3}{8} \times 4$ )

"D"-Indicates 4 Equal Spaces for Int. Web Stiff. ( $R \frac{3}{8} \times 4$ )

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	148	



289

DETAILED OCT. 1977  
CHECKED SEPT. 1978

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

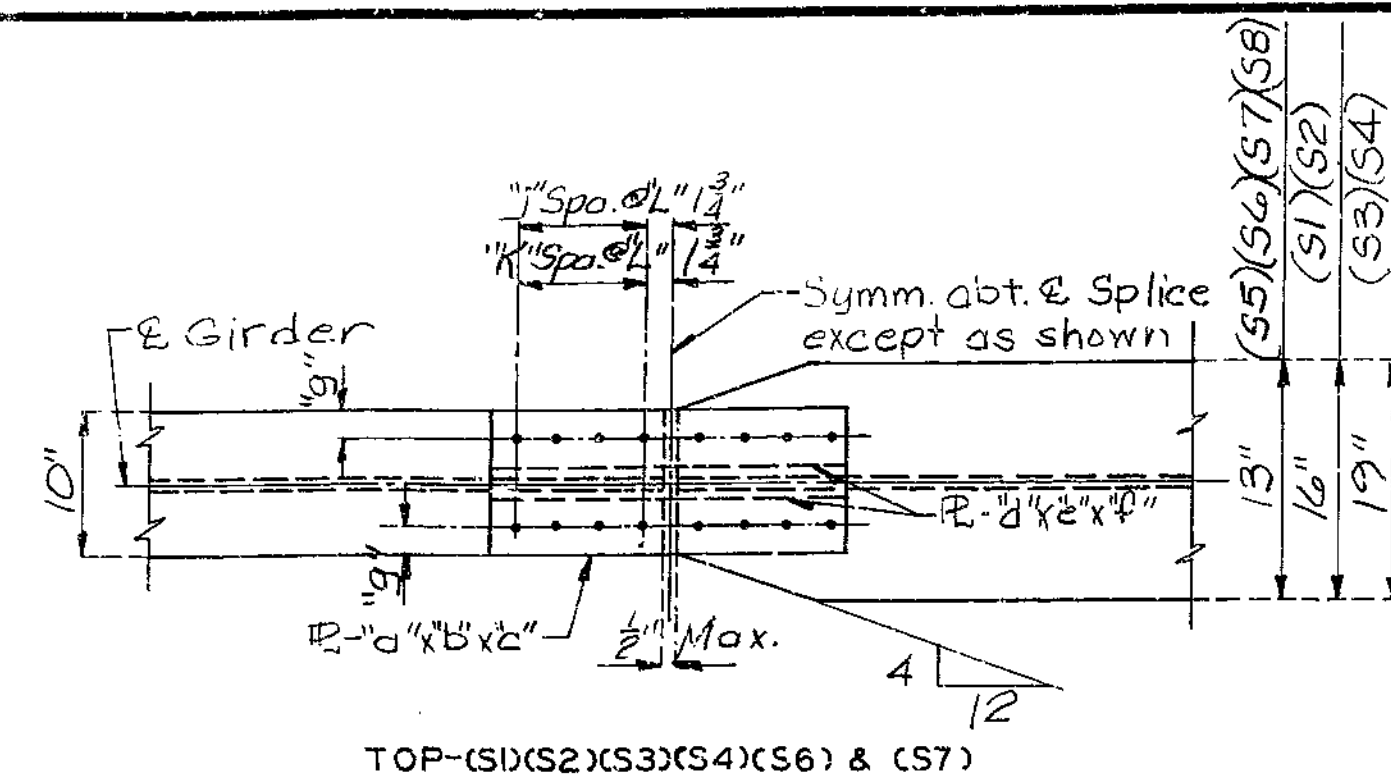
Sheet No. 17 of 31.

CLAY COUNTY

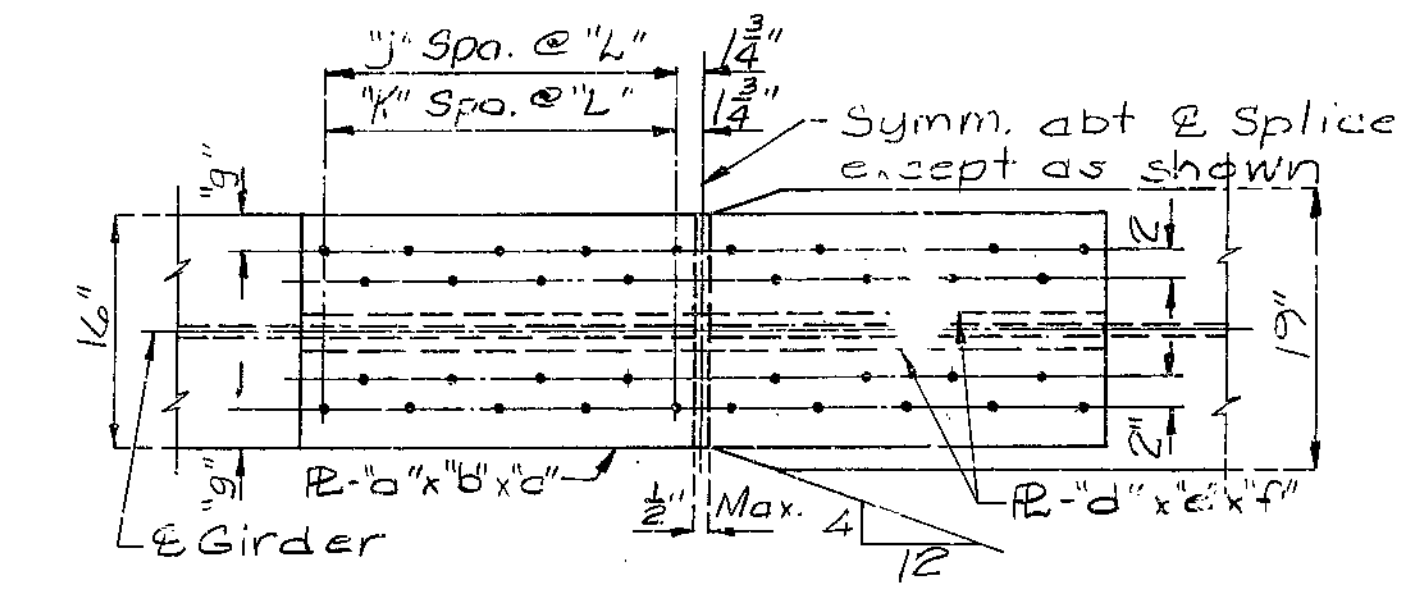
A-3388



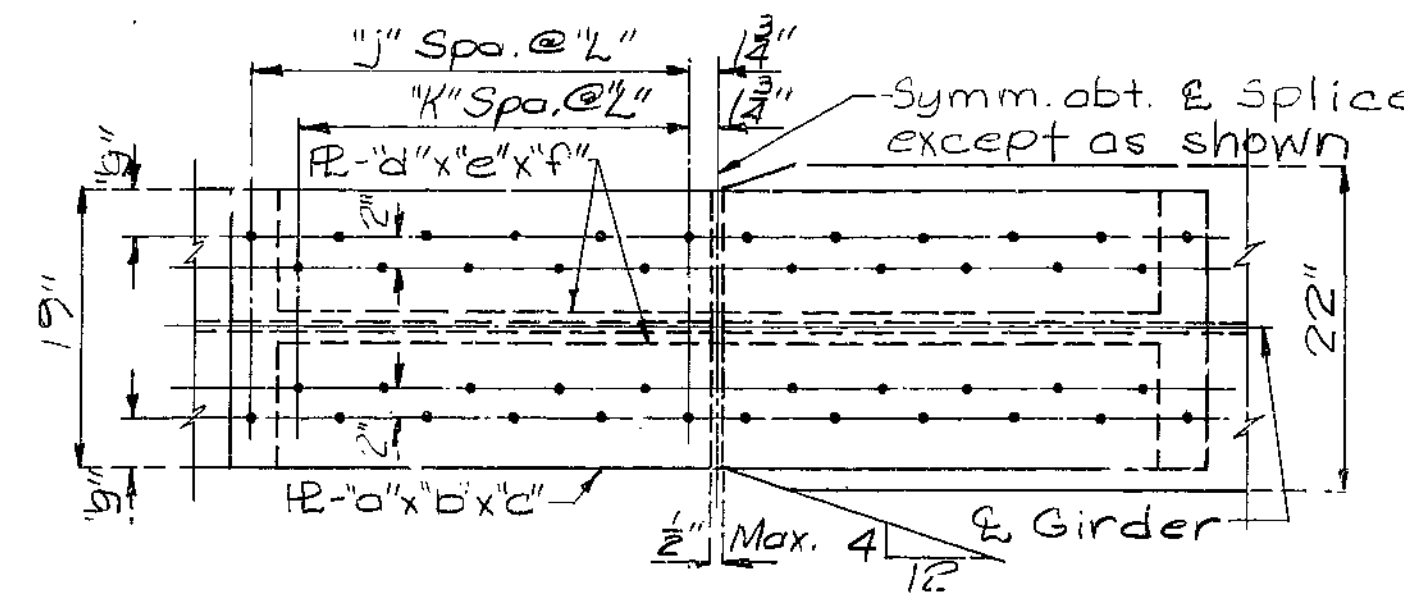
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. I.D.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	140	



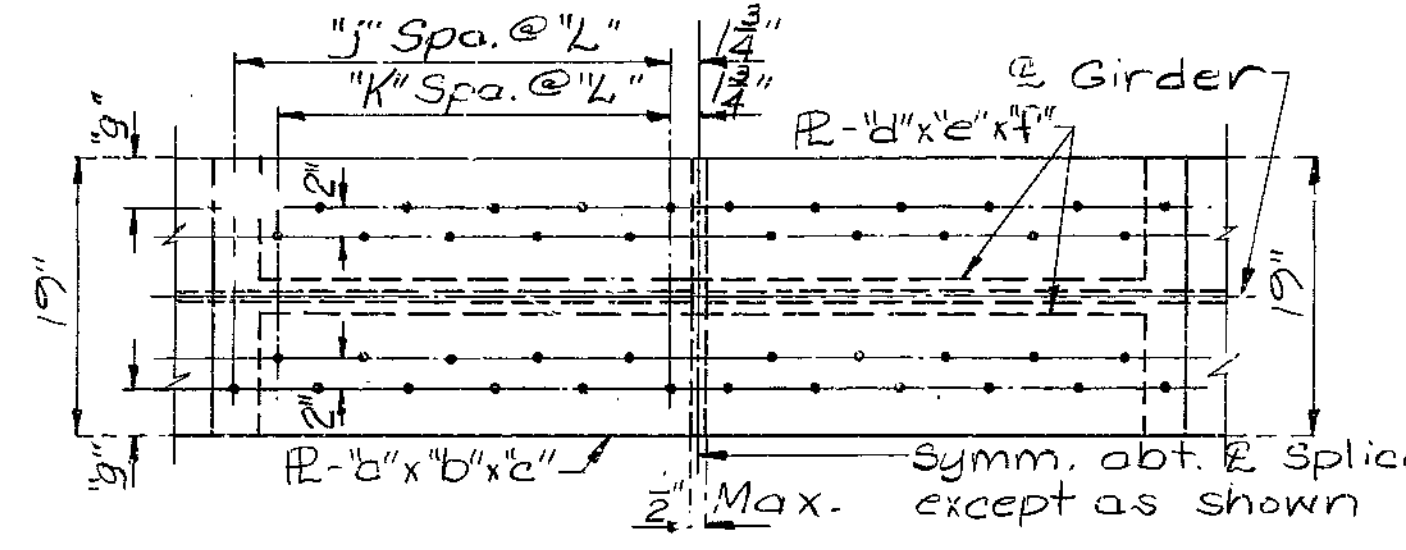
TOP-(S1)(S2)(S3)(S4)(S6) & (S7)



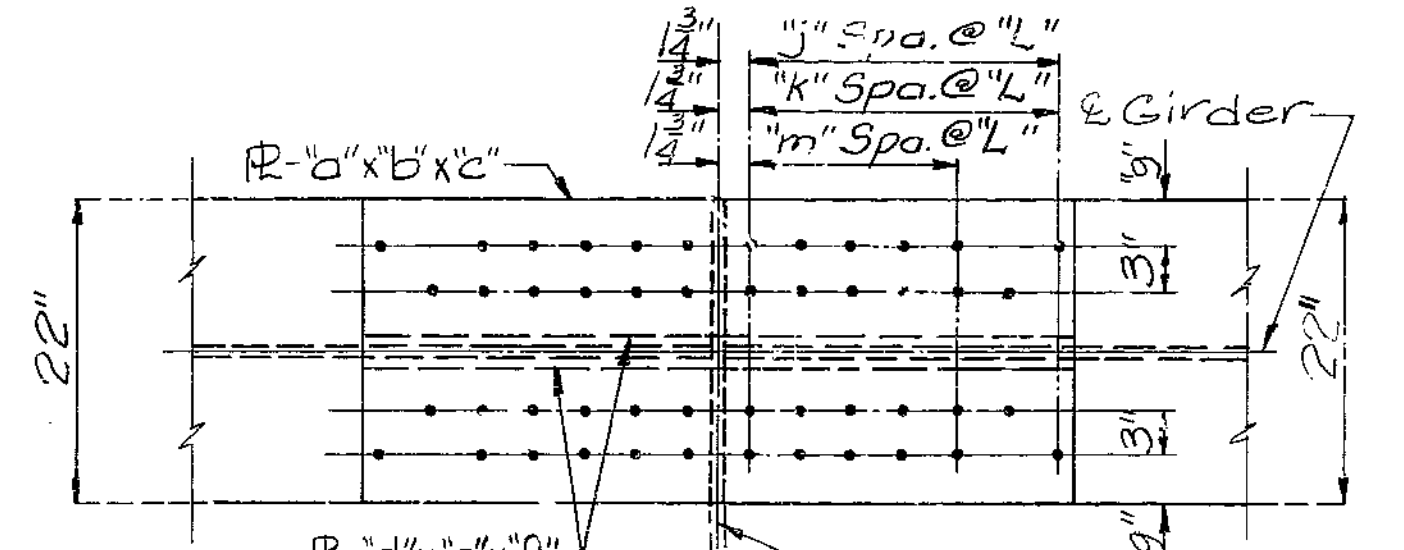
BOTTOM (S1)



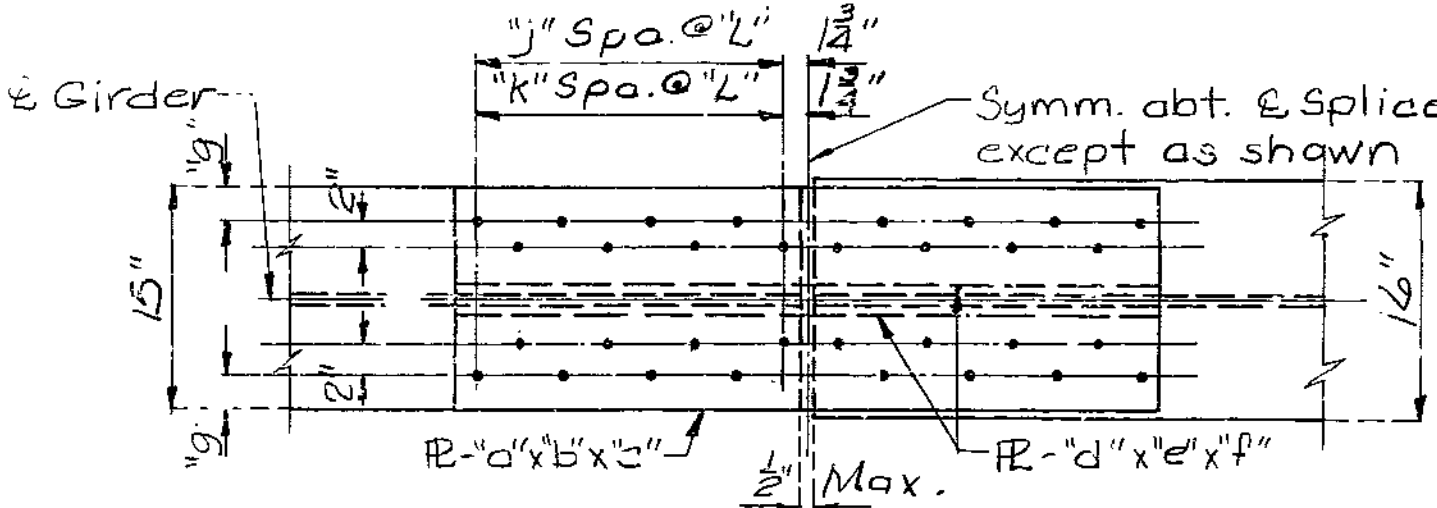
BOTTOM (S3)



BOTTOM (S2)

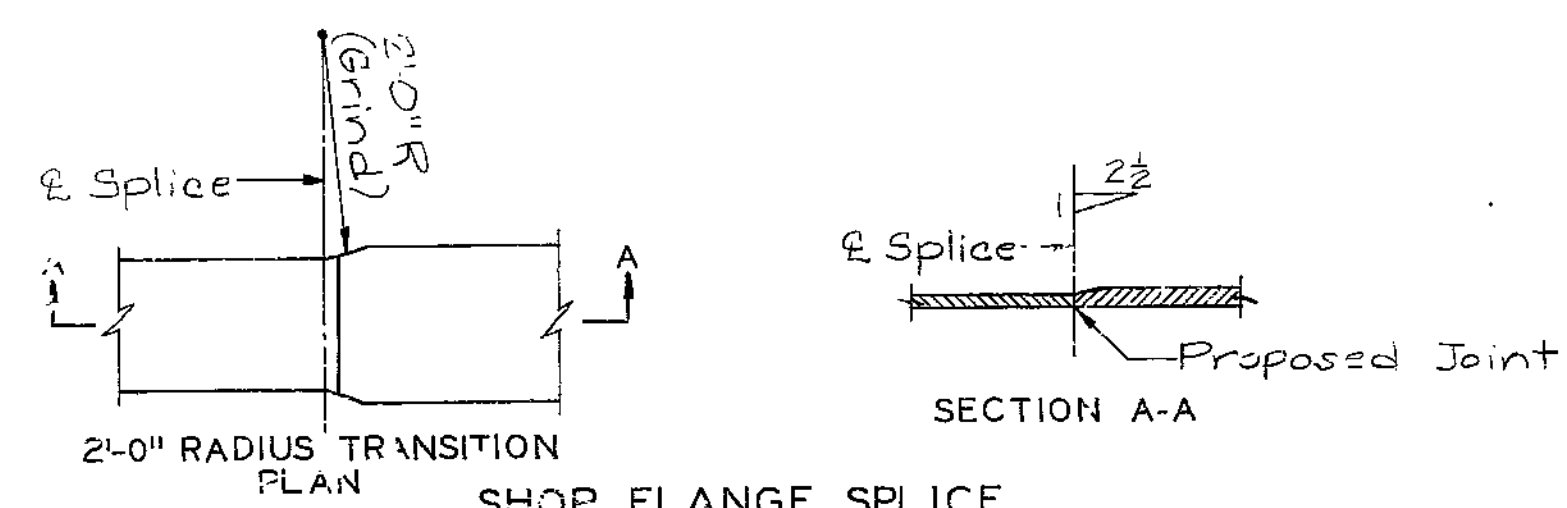


BOTTOM (S4)

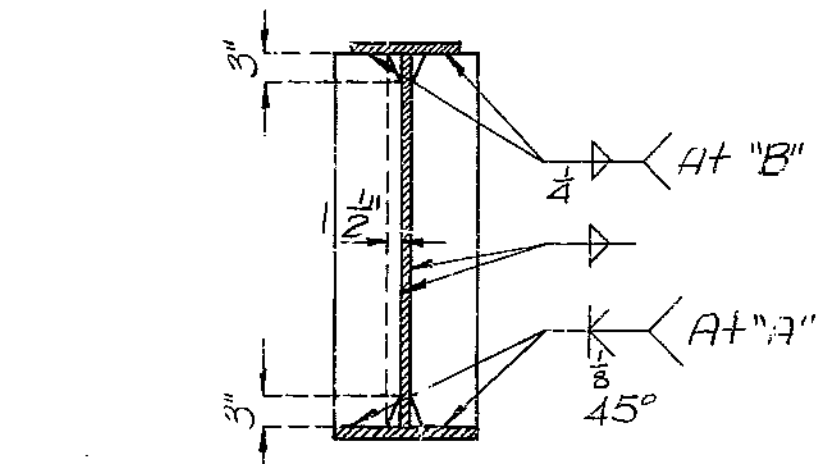


BOTTOM (S6)(S7)

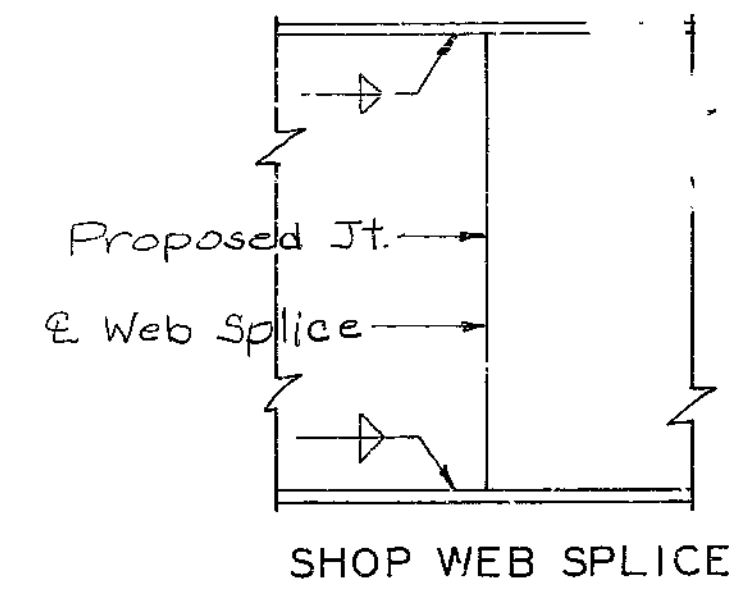
PLAN OF FLANGES



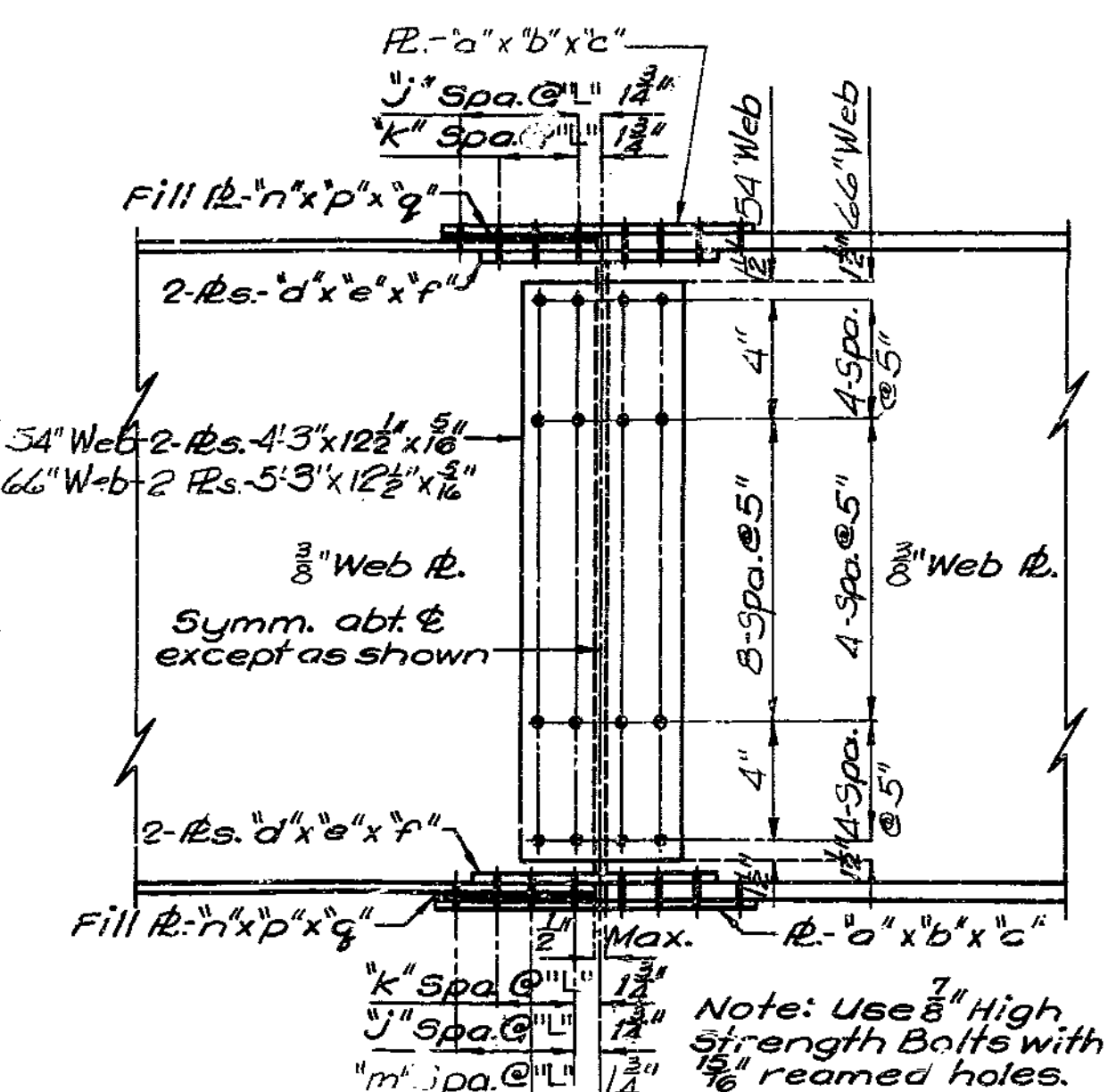
SHOP FLANGE SPLICE



TYPICAL WELDING DETAILS FOR STIFF PLATES



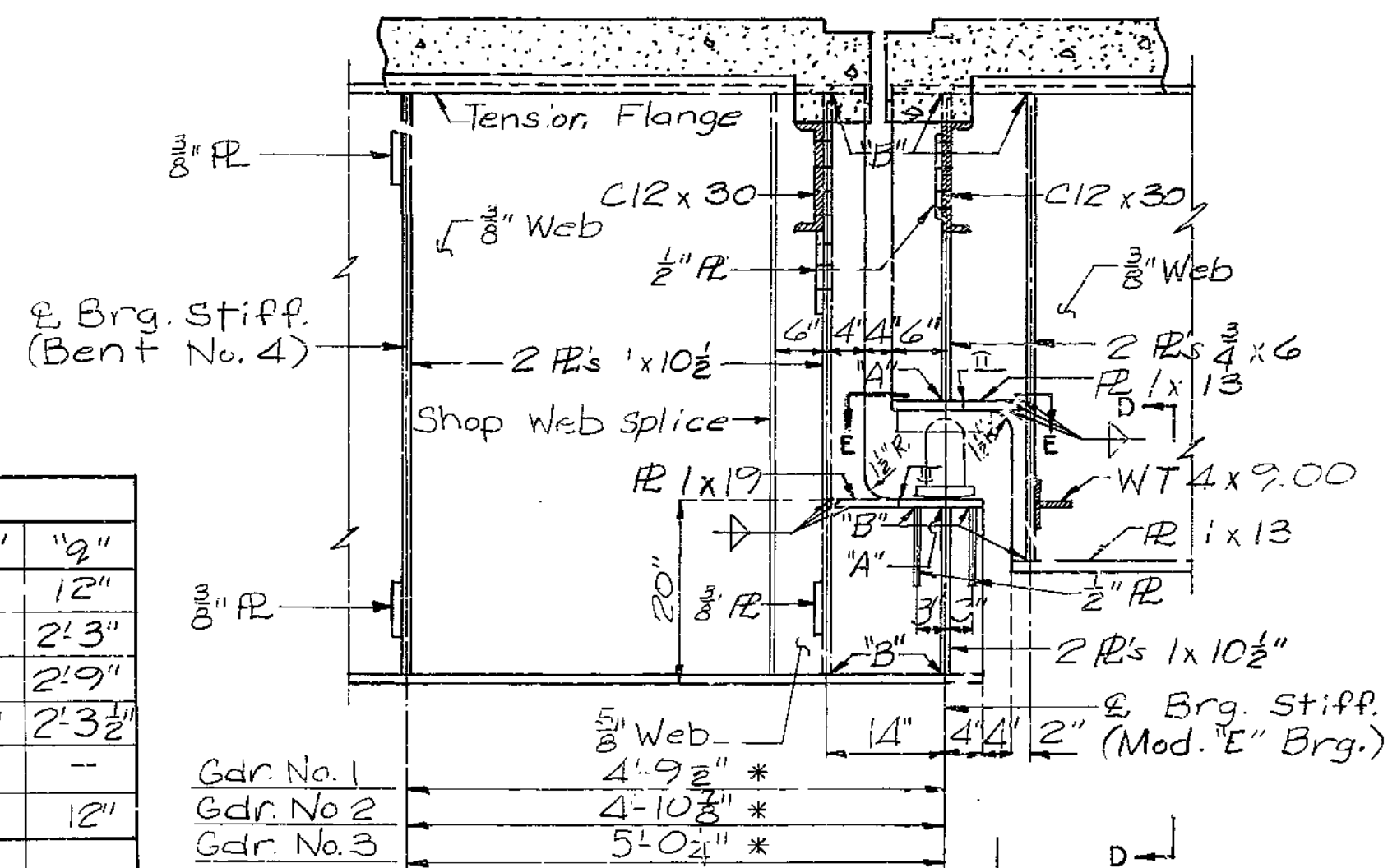
SHOP WEB SPLICE



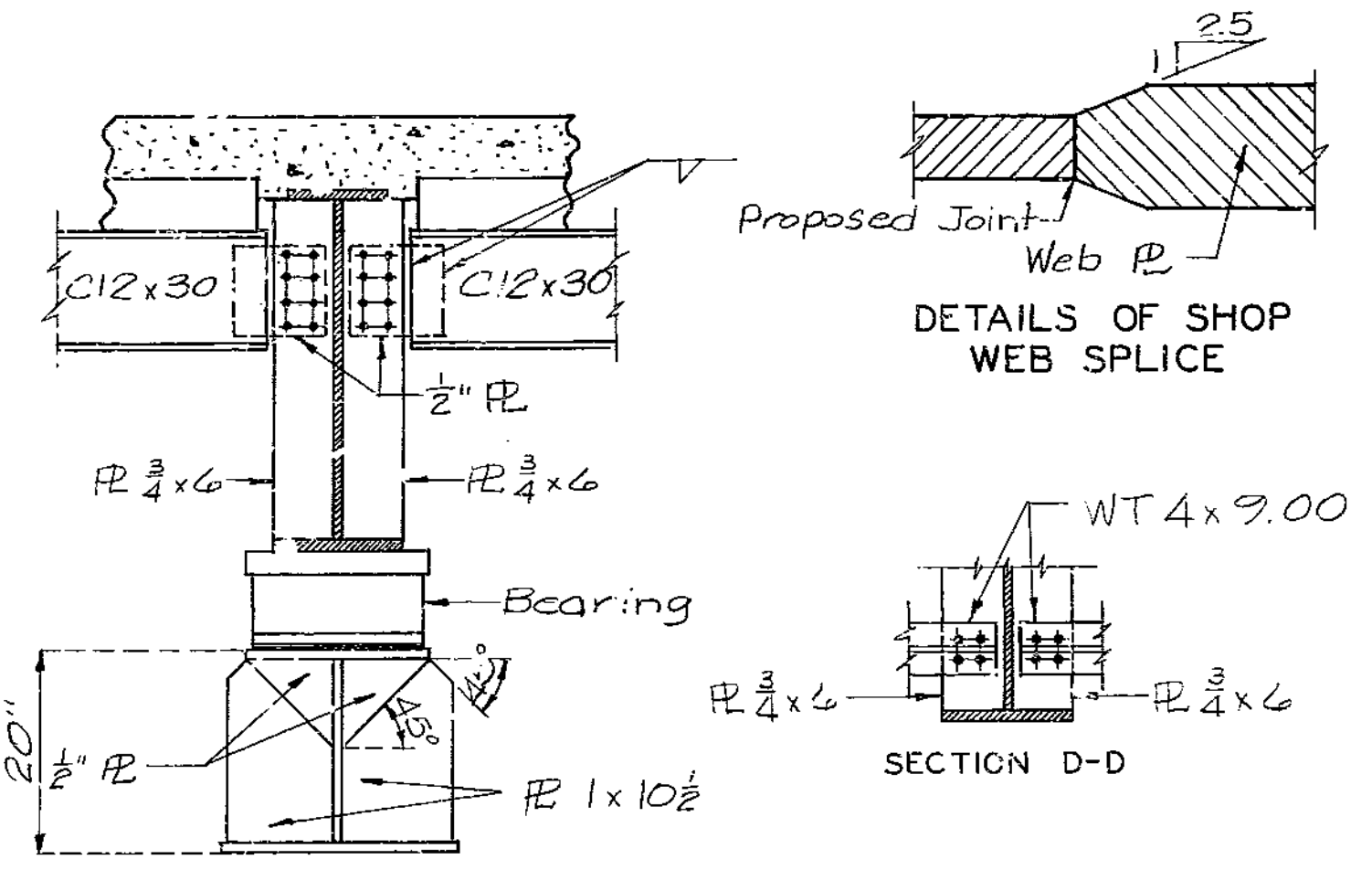
Note: Use 7/8" High Strength Bolts with 1/8" reamed holes.

SPLICE LOCATION		TABLE OF DIMENSIONS-FIELD SPLICE													
FLANGE	SPLICE NO.	"a"	"b"	"c"	"d"	"e"	"f"	"g"	"j"	"k"	"l"	"m"	"n"	"p"	"q"
Top	(S1)(S2)(S3)(S4)	10"	10 1/2"	2'-0 1/2"	4"	1/2"	2'-0 1/2"	2"	3	3	3"	-	10"	1/2"	12"
Bottom	(S1)	16"	2"	4'-6 1/2"	7"	1/2"	4'-6 1/2"	2 1/2"	8	8	3"	-	16"	1/4"	2'-3"
Bottom	(S2)(S3)	19"	1/2"	5'-6 1/2"	8 1/2"	1/2"	5'-0 1/2"	3 1/2"	10	9	3"	-	19"	1/4"	2'-9"
Bottom	(S4)	27"	3"	4'-7 1/2"	10"	1/2"	4'-0 1/2"	3 1/2"	7	6	3 1/2"	4	22"	1/4"	2'-3 1/2"
Bottom	(S6)(S7)	15"	1/2"	4'-0 1/2"	6 1/2"	1/2"	4'-0 1/2"	2 1/2"	7	7	3"	-	-	-	-
Top	(S6)(S7)	10"	3/8"	2'-2"	4"	1/2"	2'-0 1/2"	2"	3	3	3"	-	10"	1/4"	12"

DETAILS OF FIELD SPLICES



DETAILS OF HINGED GIRDER CONNECTION



DETAILS OF SHOP WEB SPLICE

SECTION C-C

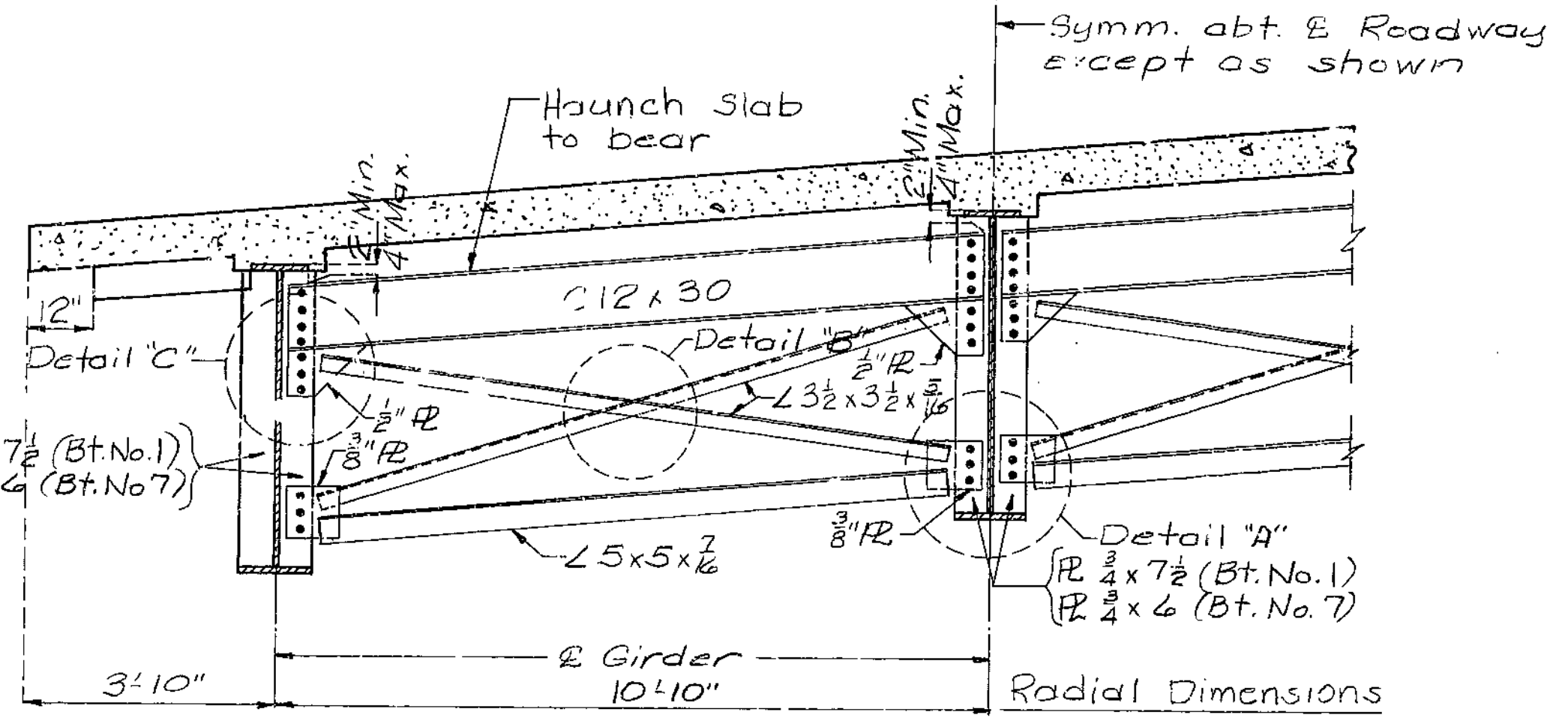
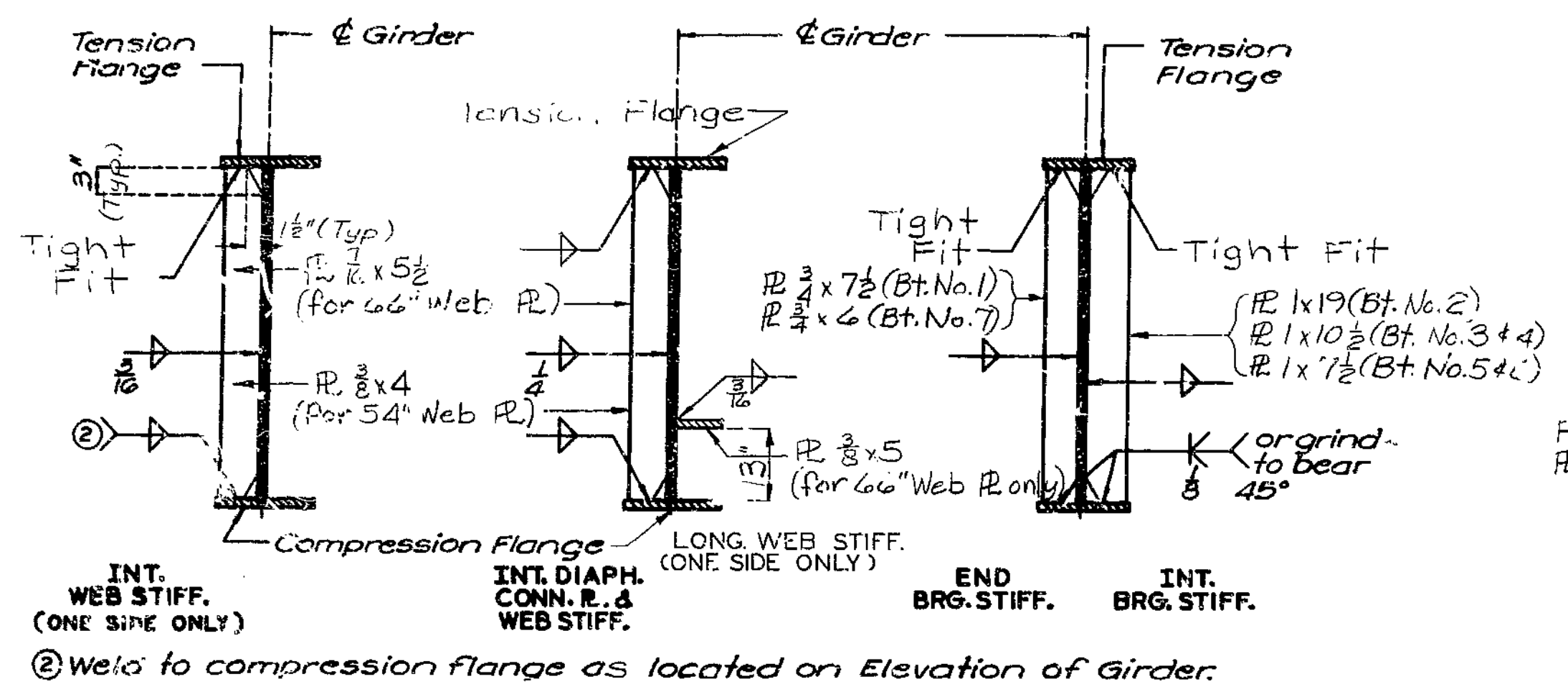


SECTION E-E

Note: Clip corner of flange R at intersection with Brg. Stiff. (Typ.)

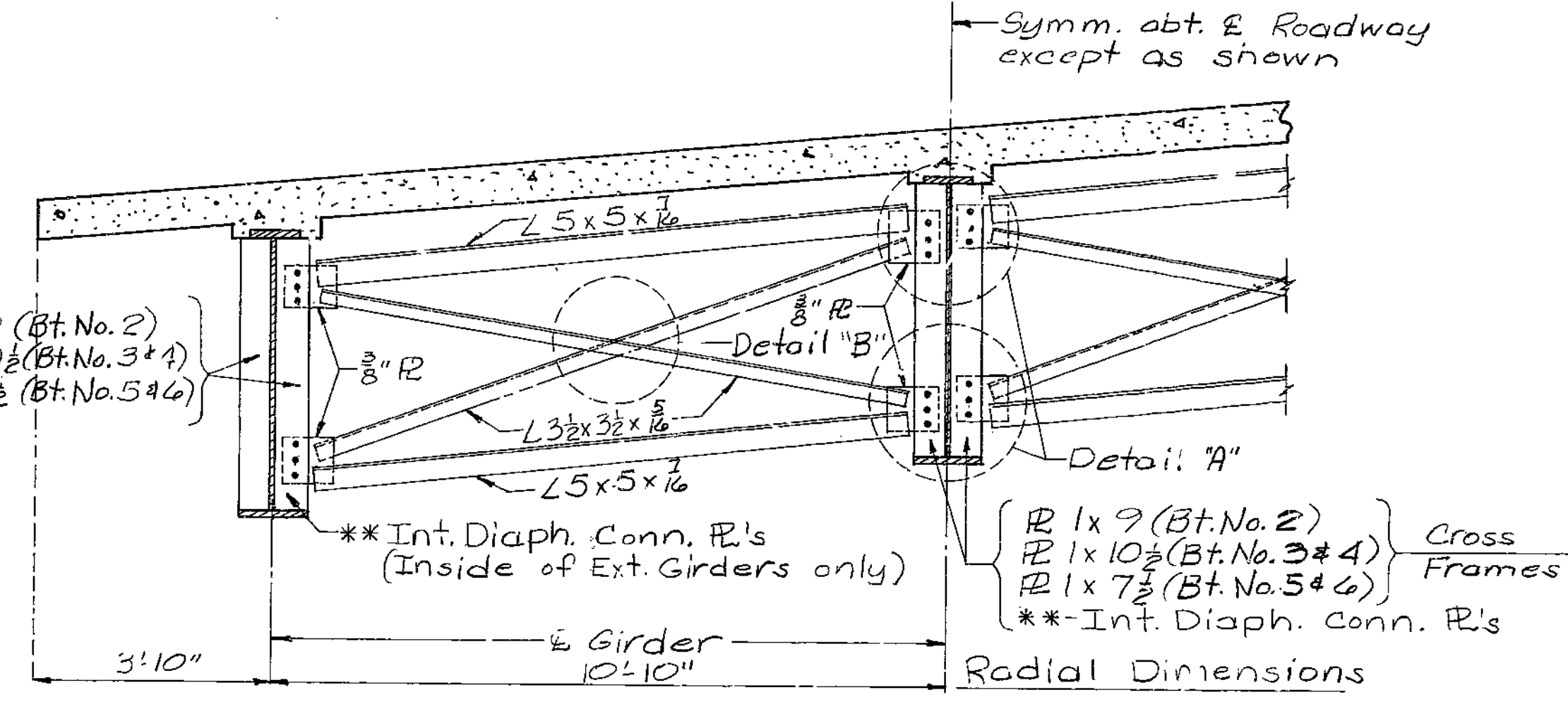
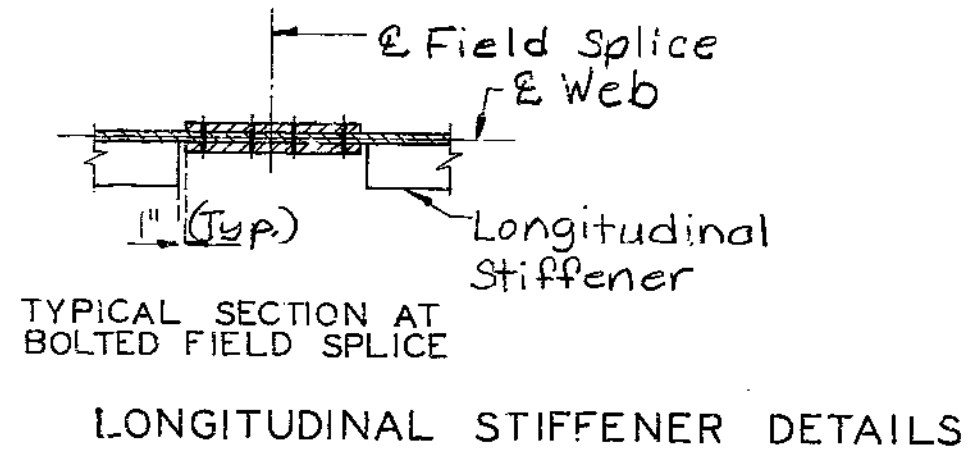
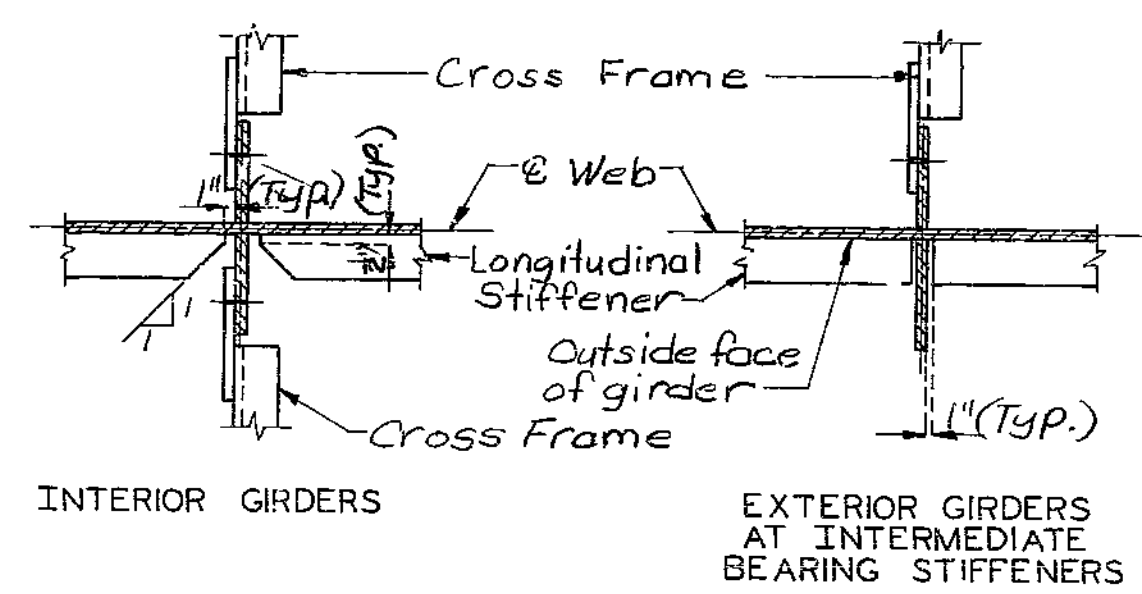
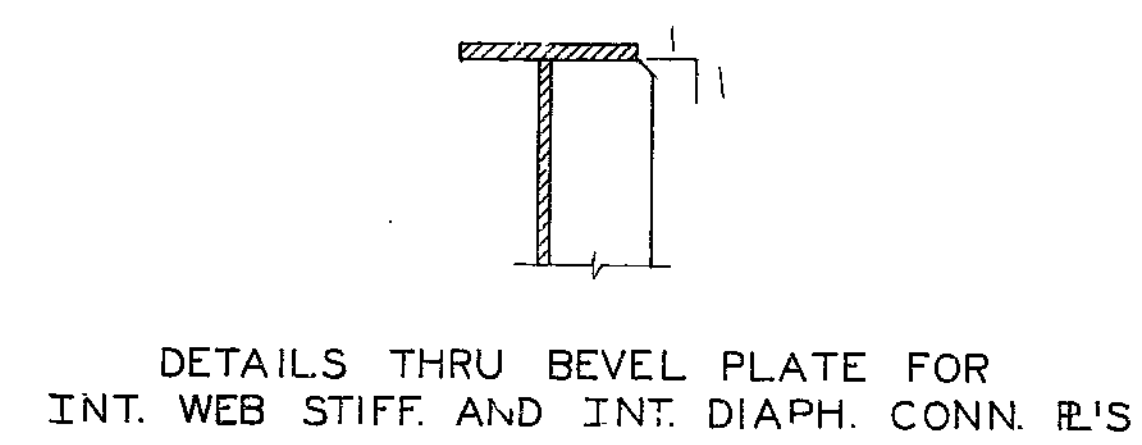
290

FED. RD. DIST. NO.	STAY NO.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	150	

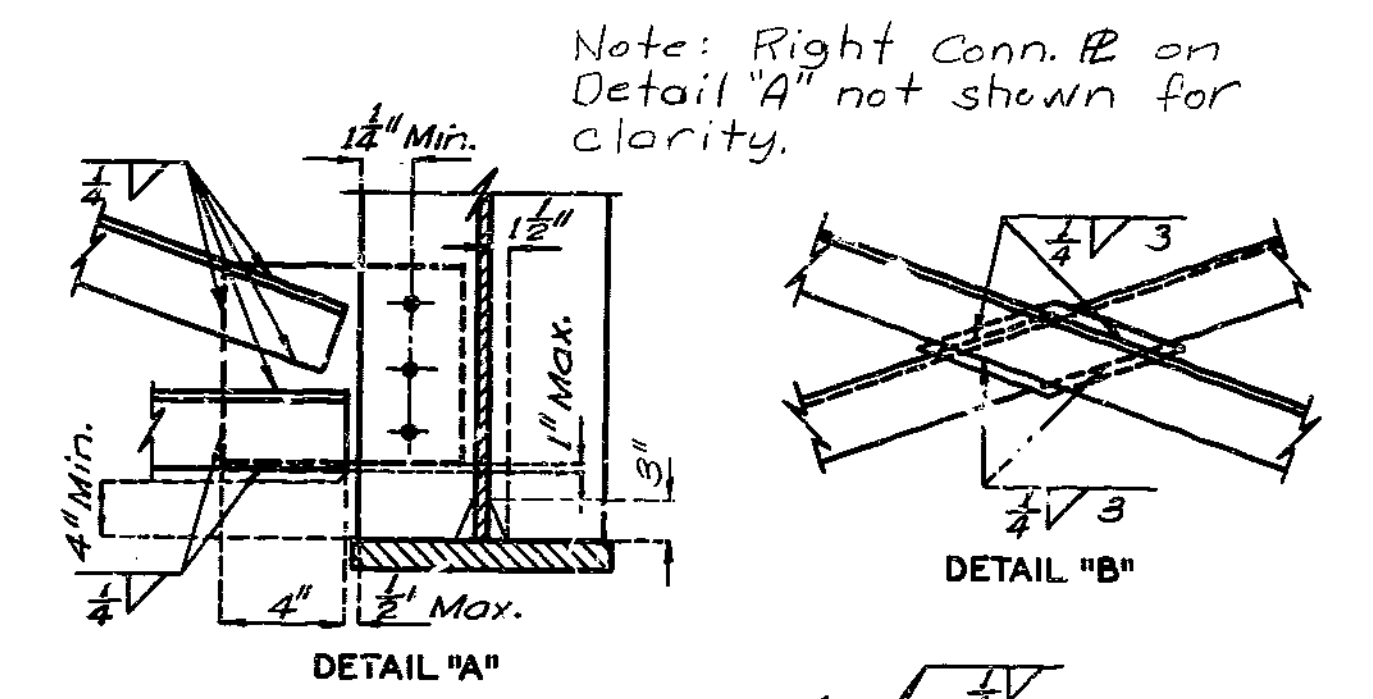


TYP. PART SECTION SHOWING END DIAPHRAGMS  
Note: For details of End Diaphragms at & Mod. "E" Brg., see Sheet No. 18.

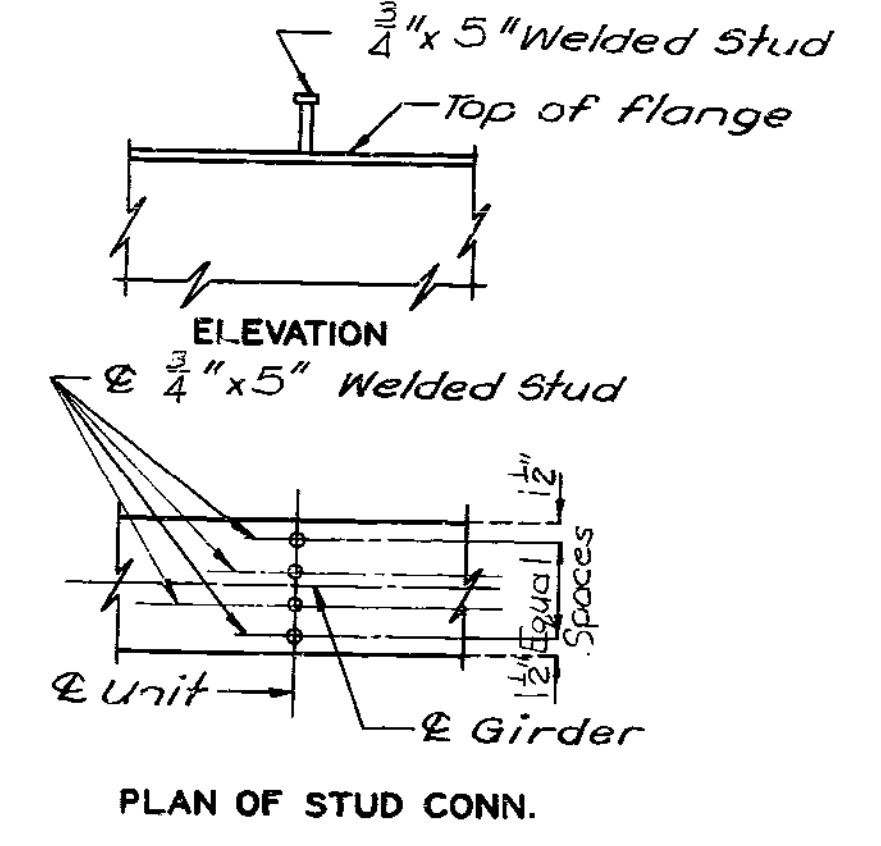
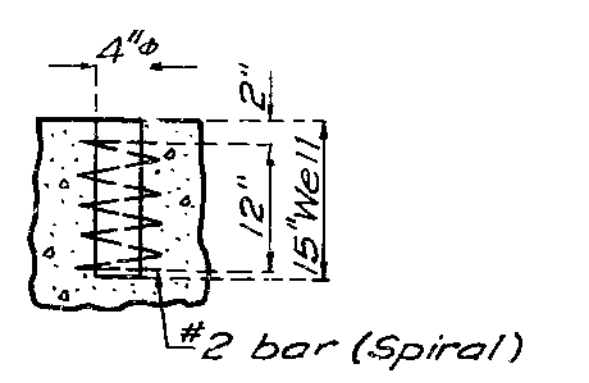
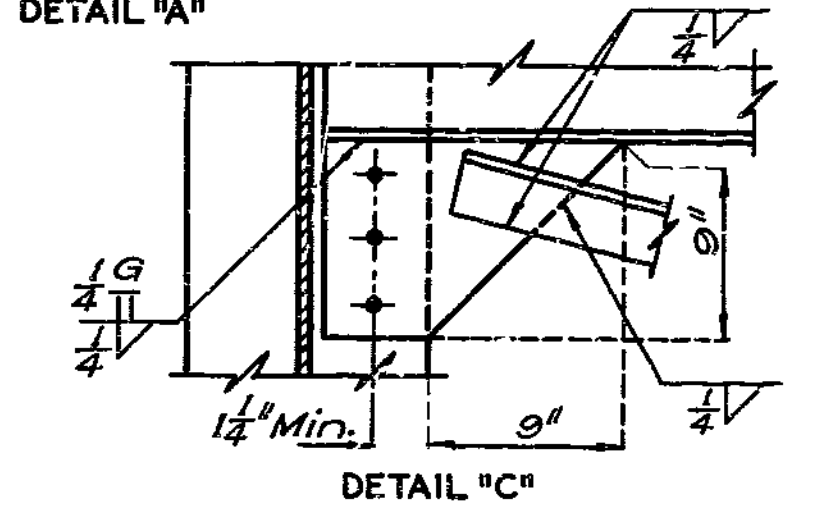
WELDING DETAILS



TYP. PART SECTION SHOWING INT. DIAPHRAGMS & CROSS FRAMES  
\*\* Int. Diaph. Conn. P.'s (Inside of Ext. Girders only)  
\*\* Int. Diaph. Conn. P.'s



Note: Right Conn. P. on Detail "A" not shown for clarity.



DETAILS OF SHEAR CONNECTORS  
Note: Weight of 2,416 lbs. of shear connectors is included in weight of Fabricated Structural Carbon Steel.

291

**NOTES: TYPE "E" BEARINGS**

ANCHOR BOLTS FOR TYPE "E" BEARINGS SHALL BE 1-1/4" SWEDGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS.

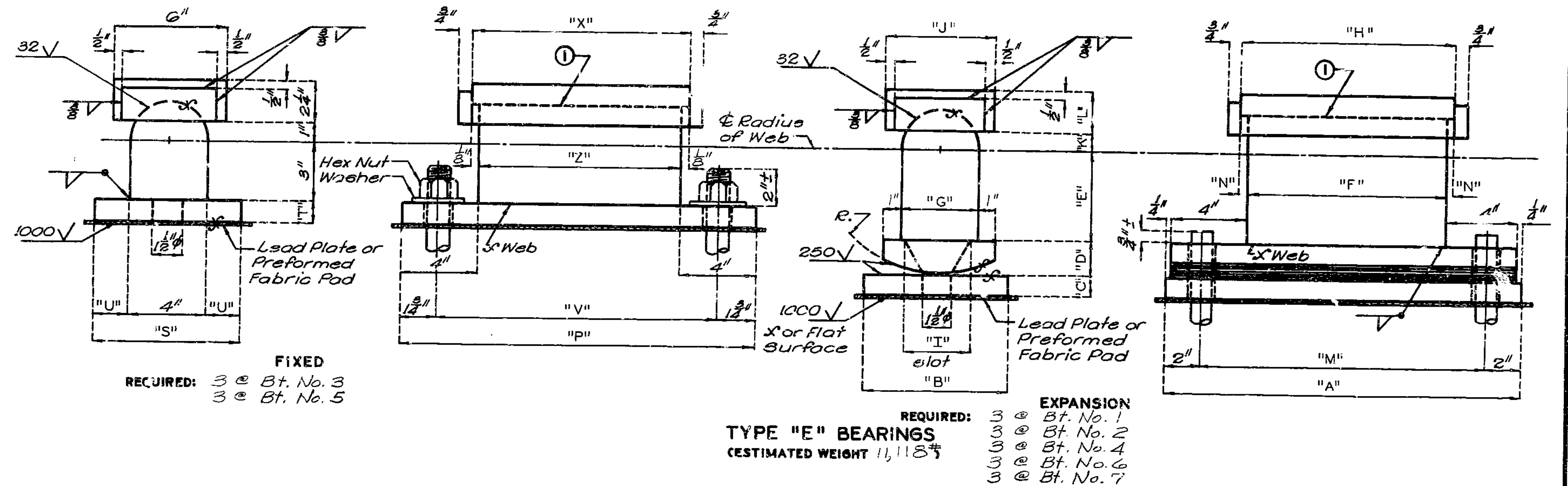
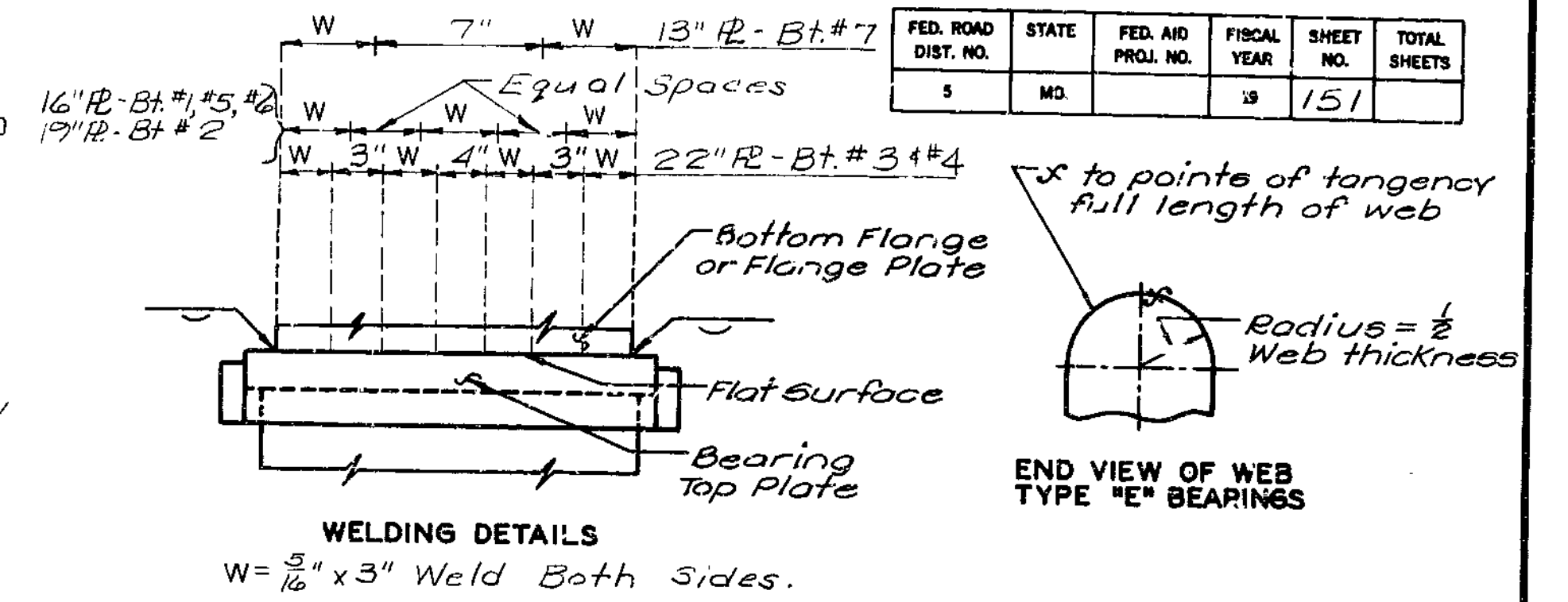
"ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS.

"C" INDICATES MACHINE FINISH SURFACE.

① BONDED LUBRICANT

A LUBRICANT COATING SHALL BE APPLIED IN THE SHOP TO BOTH MATING SURFACES OF THE BEARING ASSEMBLY. THE LUBRICANT, METHOD OF CLEANING, AND APPLICATION SHALL MEET THE REQUIREMENTS OF MIL-L-23398 AND MIL-L-46147 SUCH AS DOW CORNING'S MOLYKOTE 3402 BONDED LUBRICANT. THE COATED AREAS SHALL BE PROTECTED FOR SHIPPING AND ERECTION.

Shop drawings are not required for lead plates and/or preformed fabric pads.

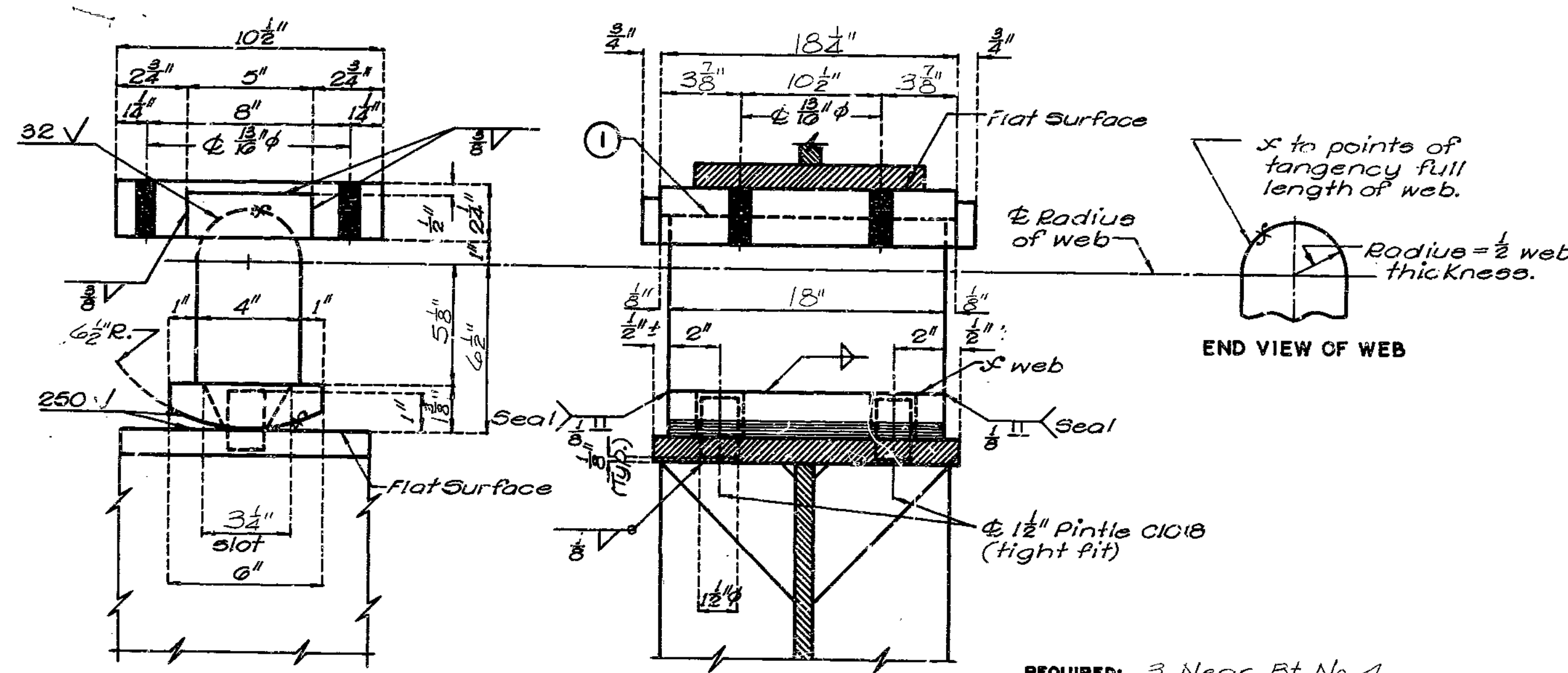


**FIXED**  
REQUIRED: 3 @ Bt. No. 3  
3 @ Bt. No. 5

**EXPANSION**  
REQUIRED: 3 @ Bt. No. 1  
3 @ Bt. No. 2  
3 @ Bt. No. 4  
3 @ Bt. No. 6  
3 @ Bt. No. 7

**TYPE "E" BEARINGS**  
ESTIMATED WEIGHT 11,118#

292



Note: Place heads of 3/4" bolts on bottom side of top bearing plate.

**TYPE "E" MODIFIED BEARINGS**  
(ESTIMATED WEIGHT 855#)

REQUIRED: 3 Near Bt. No. 4.

DIMENSIONS OF TYPE E EXPANSION BEARINGS															
LOCATION	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"	R.
Bent No. 1	25 1/2"	11"	1 3/4"	2"	4 1/2"	17"	4"	17 1/2"	3 3/4"	6"	1"	2 1/4"	21 1/2"	1/4"	6 1/2"
Bent No. 2	29 1/2"	17"	3"	2 1/2"	8"	21"	5"	21 1/4"	4 1/4"	7"	1 1/4"	2 1/2"	25 1/2"	1/8"	10 1/2"
Bent No. 4	30 1/2"	12"	2"	2"	4 1/2"	22"	4"	22 1/4"	3 3/4"	6"	1"	2 1/4"	26 1/2"	1/8"	6 1/2"
Bent No. 6	26 1/2"	15"	2 3/4"	2 1/2"	8"	18"	5"	18 1/4"	4 1/4"	7"	1 1/4"	2 1/2"	22 1/2"	1/8"	10 1/2"
Bent No. 7	22 1/2"	11"	1 3/4"	2"	4 1/2"	14"	4"	14 1/4"	3 3/4"	6"	1"	2 1/4"	18 1/2"	1/8"	6 1/2"

DIMENSIONS OF TYPE E FIXED BEARINGS							
LOCATION	"P"	"S"	"T"	"U"	"V"	"Z"	"X"
Bent No. 3	31"	15"	2 1/4"	5 1/2"	27 1/2"	23"	23 1/2"
Bent No. 5	25"	13"	1 3/4"	4 1/2"	21 1/2"	17"	17 1/4"

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

Sheet No. 20 of 31.

CLAY COUNTY

A-3388

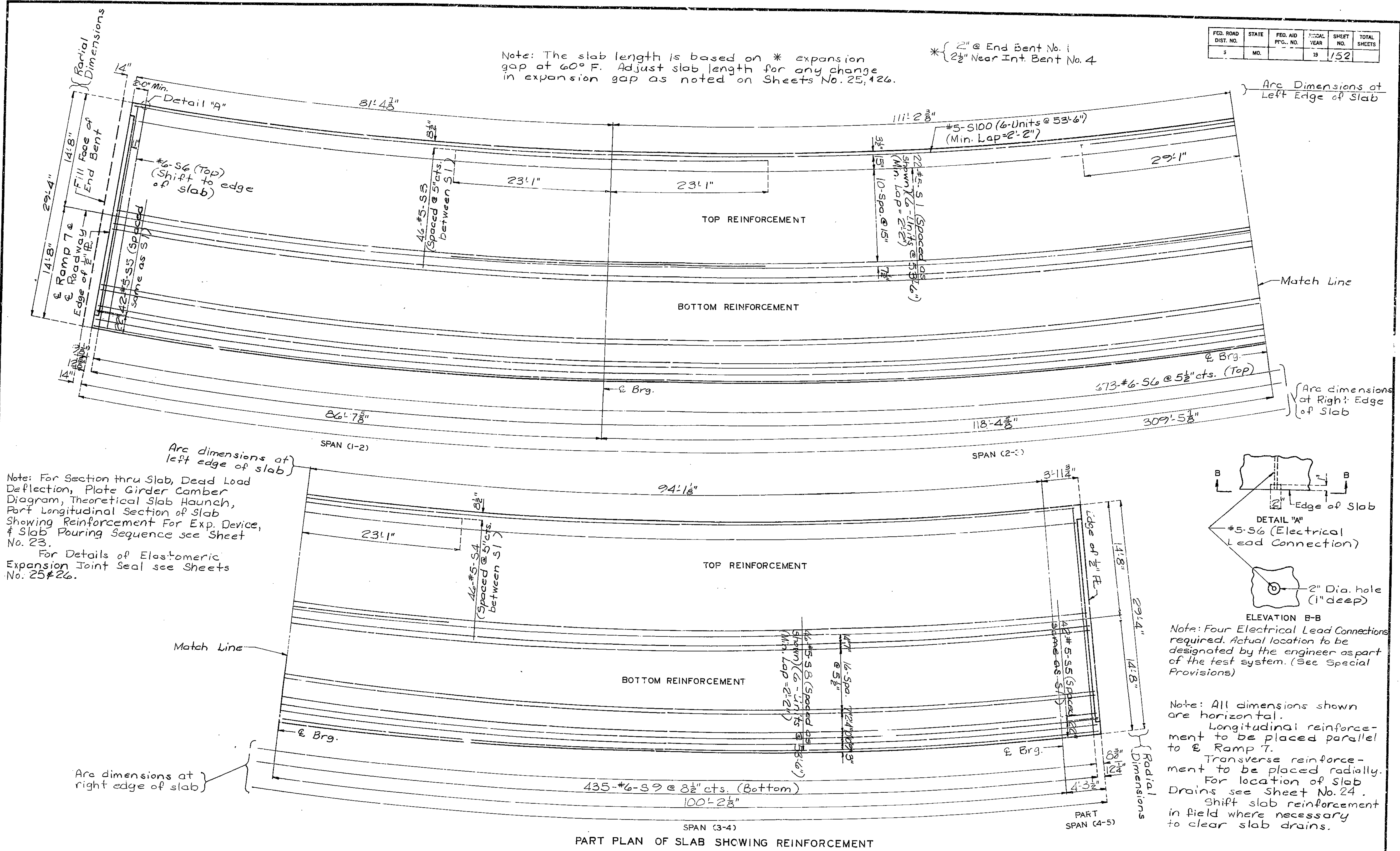
STD. E.B. REVISED  
 MAR. 1973 NOV. 1976

DETAILED OCT. 1977  
 CHECKED Aug. 1978

FED. ROAD DIST. NO.	STATE	FED. AID PFG. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	152	

Note: The slab length is based on \* expansion gap at 60° F. Adjust slab length for any change in expansion gap as noted on Sheets No. 25, 26.

\* { 2" @ End Bent No. 1  
2 1/2" Near Int. Bent No. 4



Note: For Section thru Slab, Dead Load Deflection, Plate Girder Camber Diagram, Theoretical Slab Haunch, Part Longitudinal Section of Slab Showing Reinforcement For Exp. Device, & Slab Pouring Sequence see Sheet No. 23.  
For Details of Elastomeric Expansion Joint Seal see Sheets No. 25 & 26.

Note: Four Electrical Lead Connections required. Actual location to be designated by the engineer as part of the test system. (See Special Provisions)

Note: All dimensions shown are horizontal. Longitudinal reinforcement to be placed parallel to E Ramp 7. Transverse reinforcement to be placed radially. For location of Slab Drains see Sheet No. 24. Shift slab reinforcement in field where necessary to clear slab drains.

293

DESIGNED JUN. 1978  
CHECKED SEPT. 1978

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

Sheet No. 21 of 31.

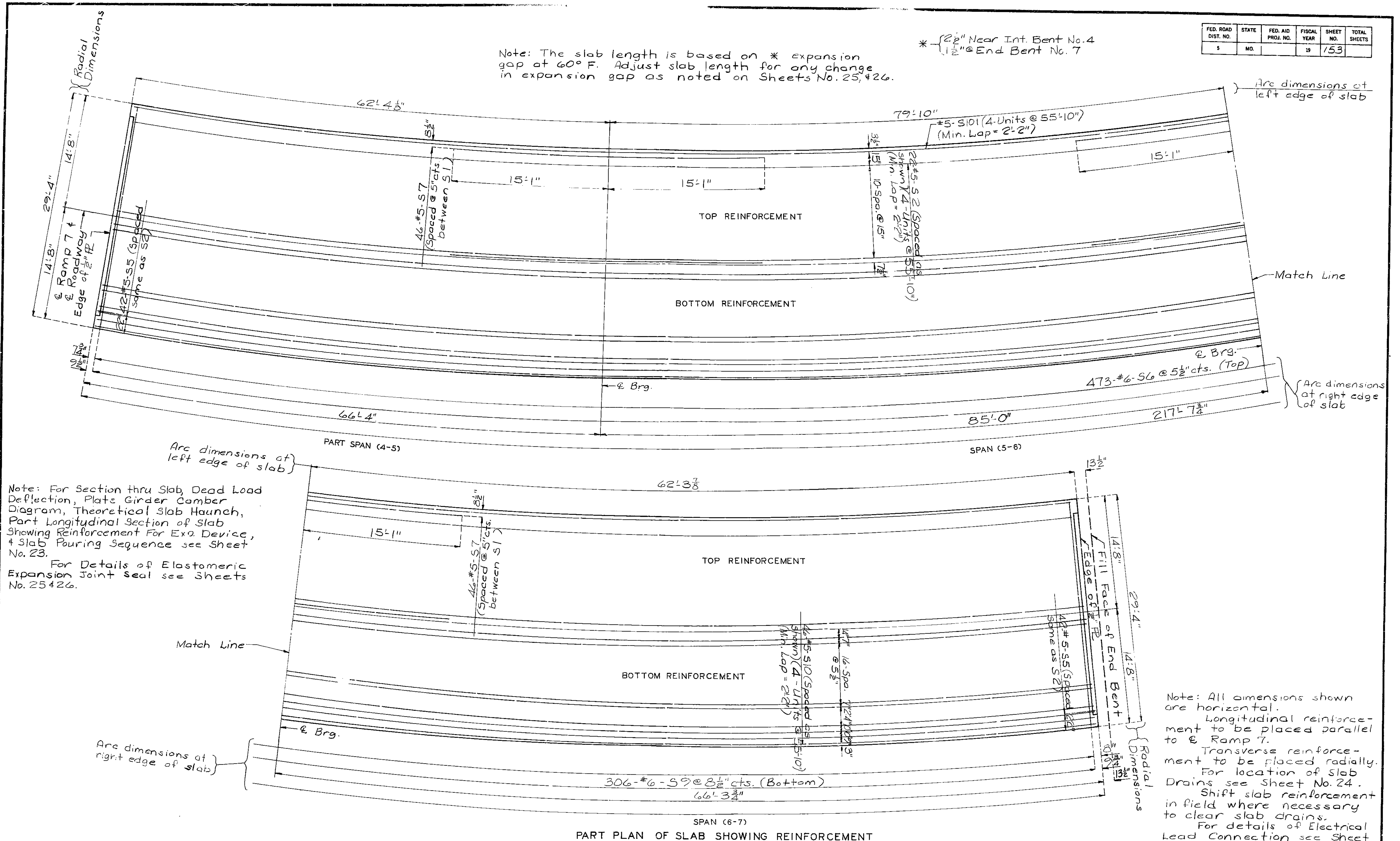
CLAY COUNTY

A-3388

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	153	

Note: The slab length is based on \* expansion gap at 60° F. Adjust slab length for any change in expansion gap as noted on Sheets No. 25, 26.

\* { 2 1/2" Near Int. Bent No. 4  
1 1/2" @ End Bent No. 7



Note: For Section thru Slab, Dead Load Deflection, Plate Girder Camber Diagram, Theoretical Slab Haunch, Part Longitudinal Section of Slab, Showing Reinforcement For Exo. Device, † Slab Pouring Sequence see Sheet No. 23.

For Details of Elastomeric Expansion Joint Seal see Sheets No. 25 & 26.

Note: All dimensions shown are horizontal.  
Longitudinal reinforcement to be placed parallel to & Ramp 7.  
Transverse reinforcement to be placed radially.  
For location of Slab Drains see Sheet No. 24.  
Shift slab reinforcement in field where necessary to clear slab drains.  
For details of Electrical Lead Connection see Sheet No. 21.

294

DETAILED JUN. 1978  
CHECKED SEPT. 1978

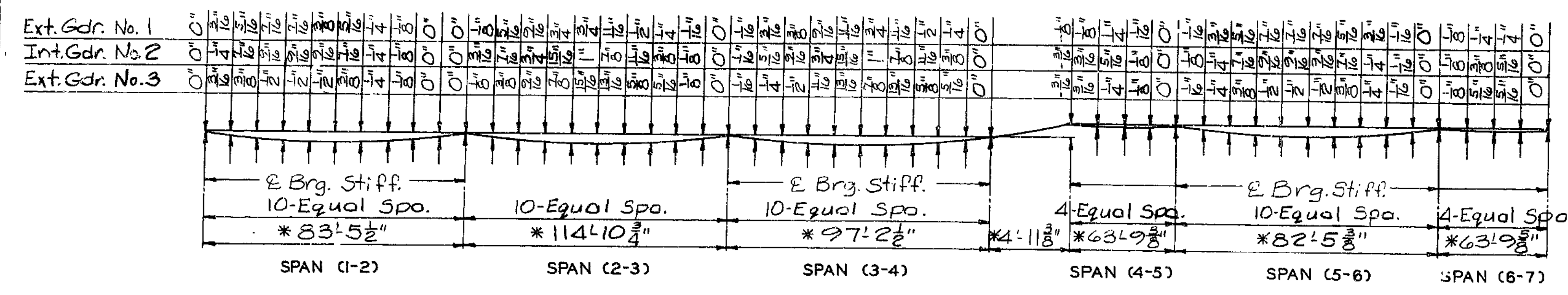
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 22 of 31.

CLAY COUNTY

A-3388

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	154	



DEAD LOAD DEFLECTION

Note: 17% of dead load deflection due to weight of structural steel.  
\*- Arc dimensions at top of web along & Girder No. 2.  
Line "A" indicates bottom of top flange.  
Line "B" is a chord between & Brg. Stiff.

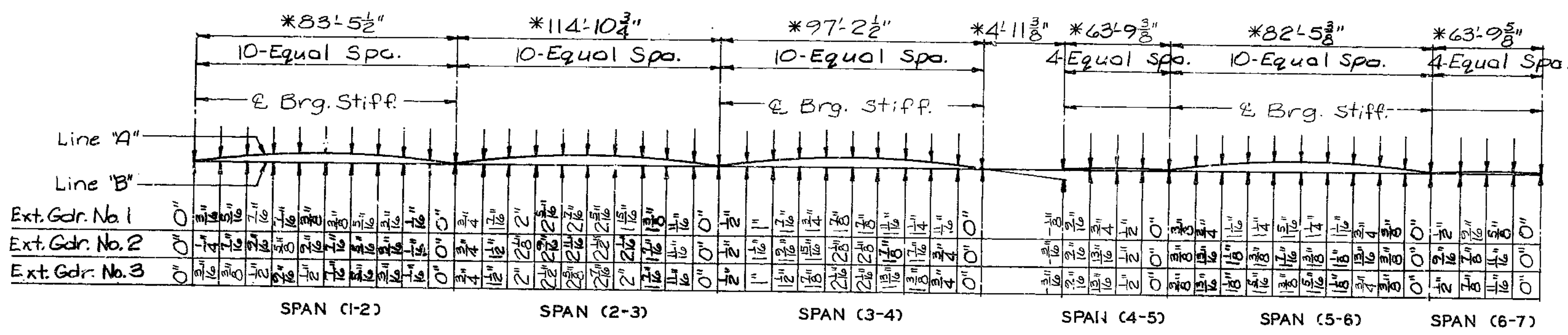
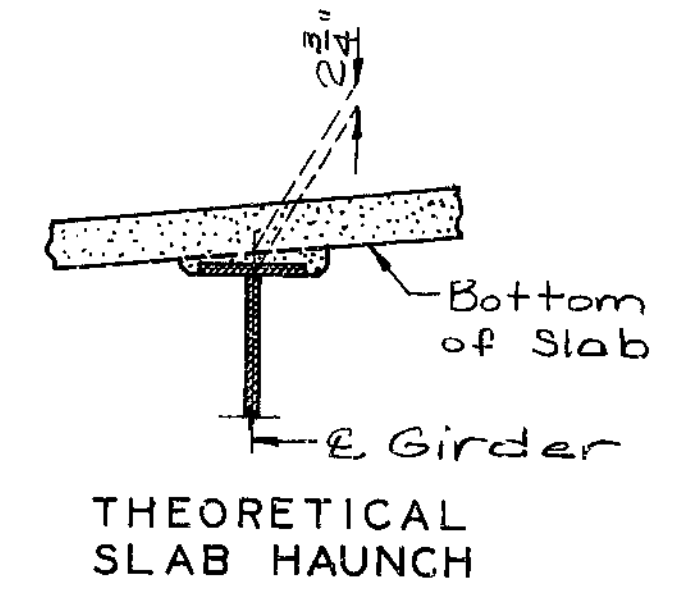
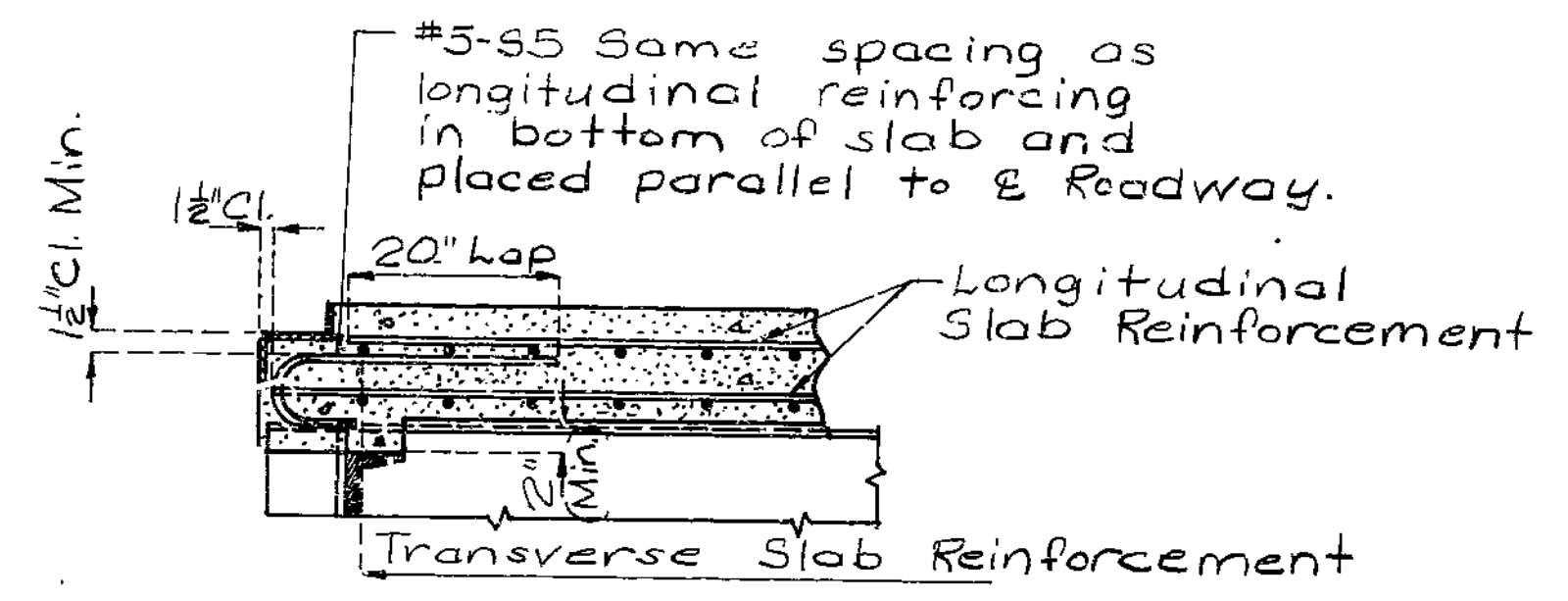


PLATE GIRDER CAMBER DIAGRAM

Note: Camber includes allowance for vertical curve and for dead load deflection due to concrete slab, curb, and structural steel.

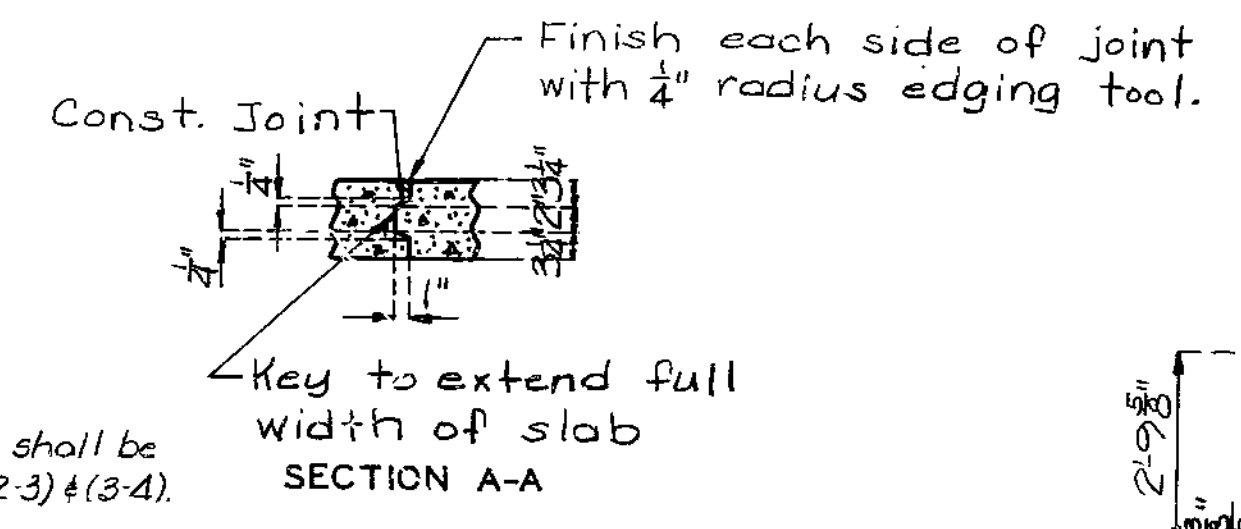
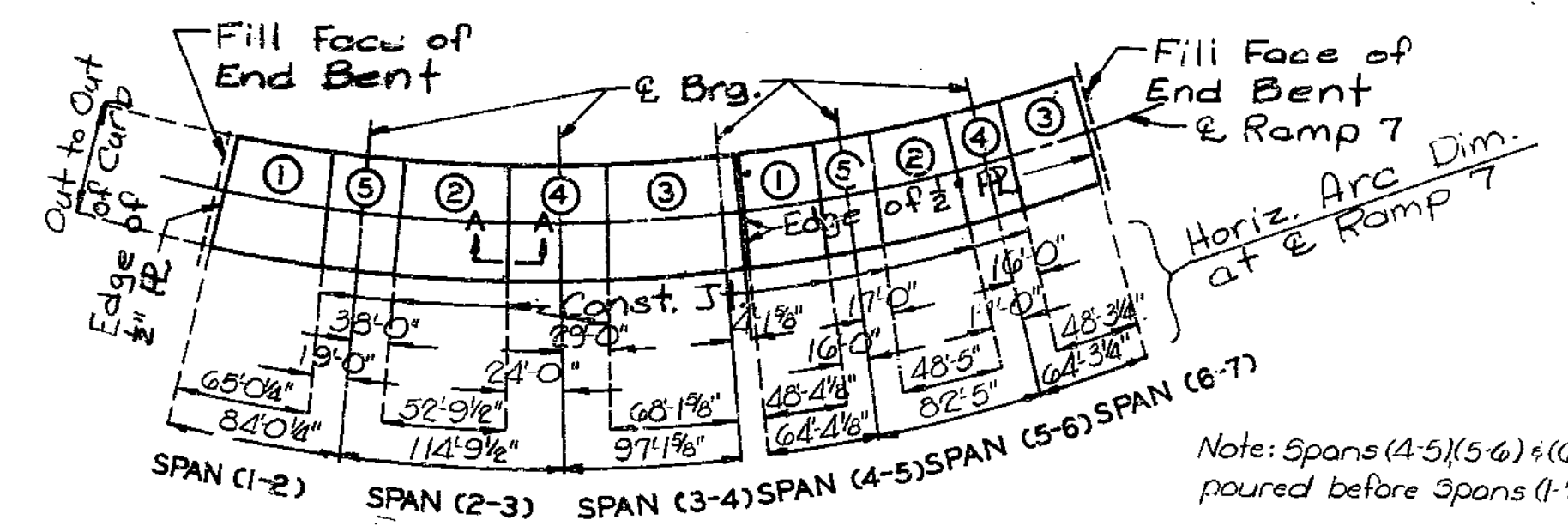


Note: 2 1/4" Dimension may vary if girder camber after erection differs from plan camber by more than the % of D.L. deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variation in haunching.



PART LONGITUDINAL SECTION OF SLAB SHOWING REINFORCEMENT FOR EXP. DEVICE

295

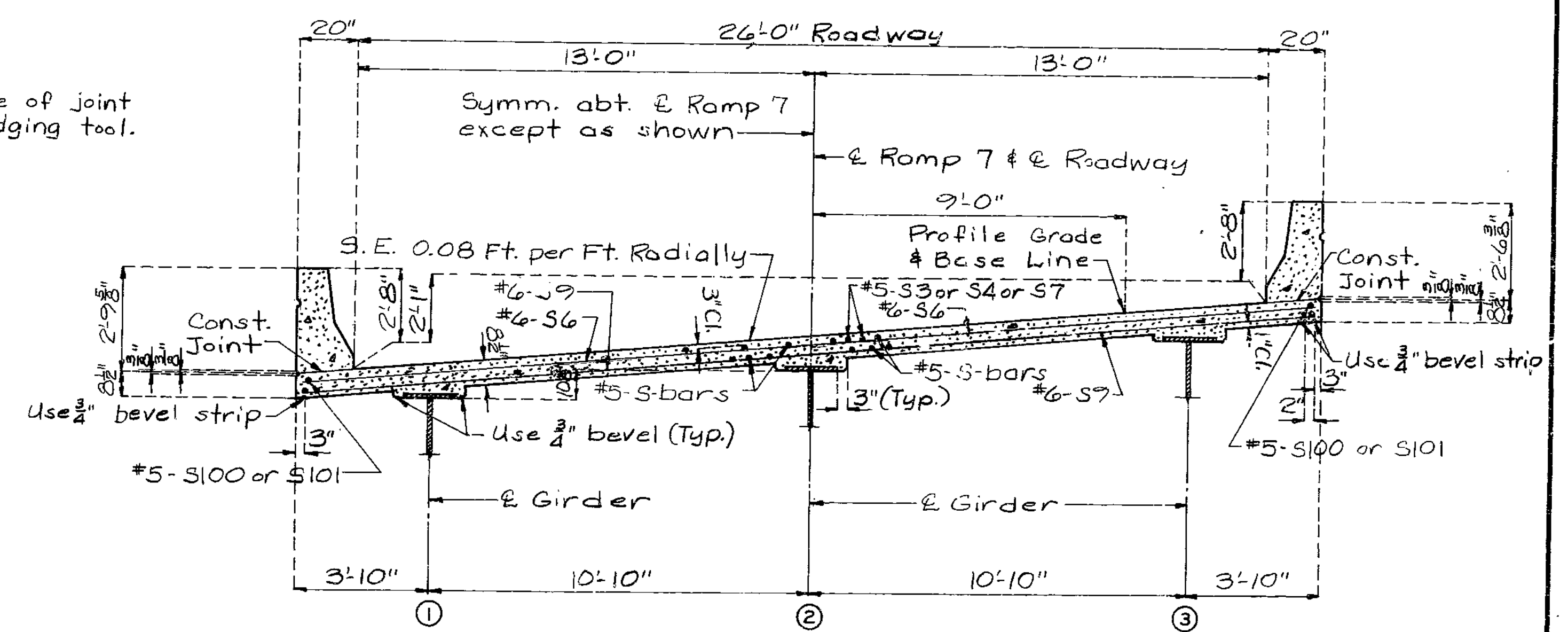


Note: Spans (4-5), (5-6) & (6-7) shall be poured before Spans (1-2), (2-3) & (3-4).

Sequence of Pours	Direction					Minimum Rate of Pour (cubic yards per hour)	
	1	2	3	4	5	With Retarder	No Retarder
Basic Sequence	1	2	3	4	5	25	25
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with section 703.3.12.4 of Missouri Standard Specifications.							
Alternate "A" Pours	1	5 + 2	4 + 3	2	End to 5	27	44
Alternate "B" Pours	1 + 5 + 2	1 to 4	4 + 3	2 to End		27	44
Alternate "C" Pours	1 + 5 + 2 + 4 + 3	End to End				27	44

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

SLAB POURING SEQUENCE



RADIAL HALF SECTION NEAR & SPANS RADIAL HALF SECTION NEAR INT. BENTS

Note: For details of barrier curb not shown see Sheets No. 27 & 28.

DETAILED JUN. 1978  
CHECKED SEPT. 1978

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

Sheet No. 23 of 31.

CLAY COUNTY

A-3388

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	55	

**GENERAL NOTES:**

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE 8" x 4".

THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.

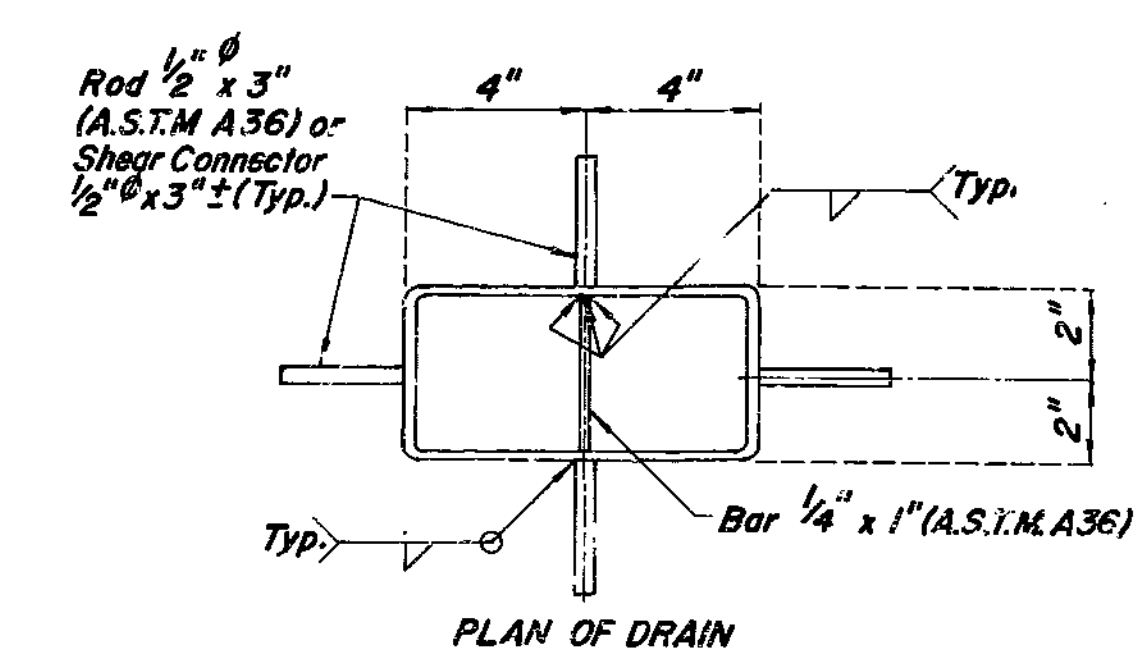
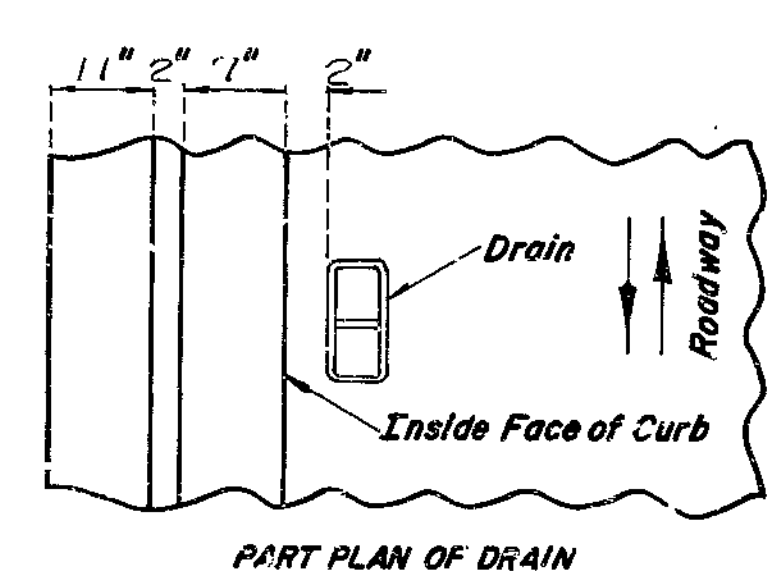
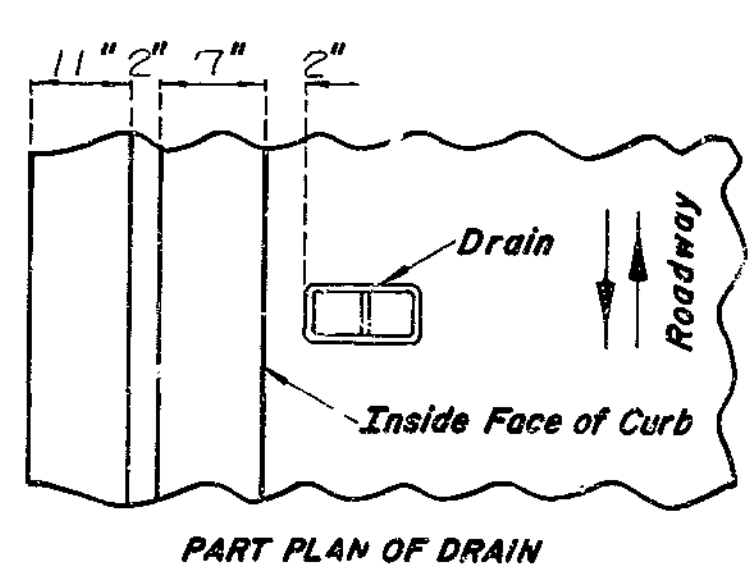
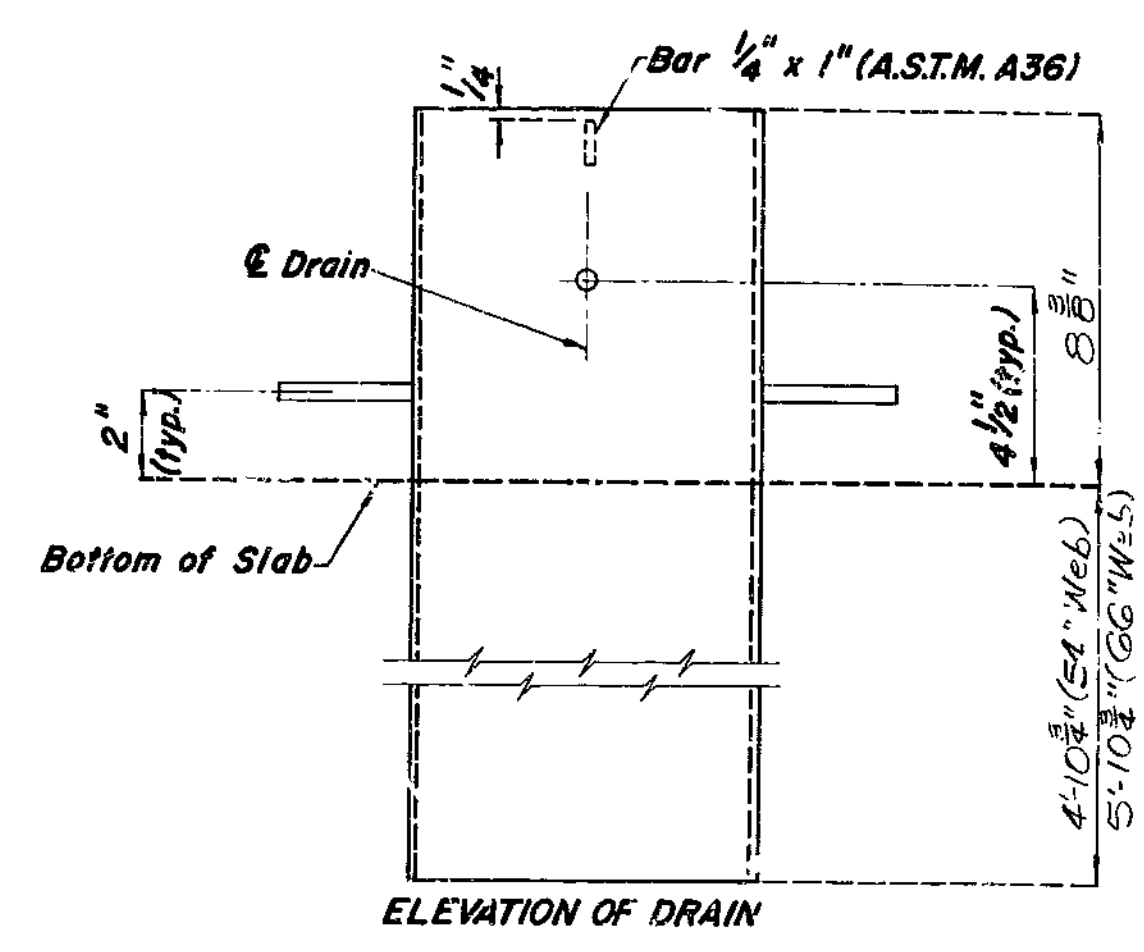
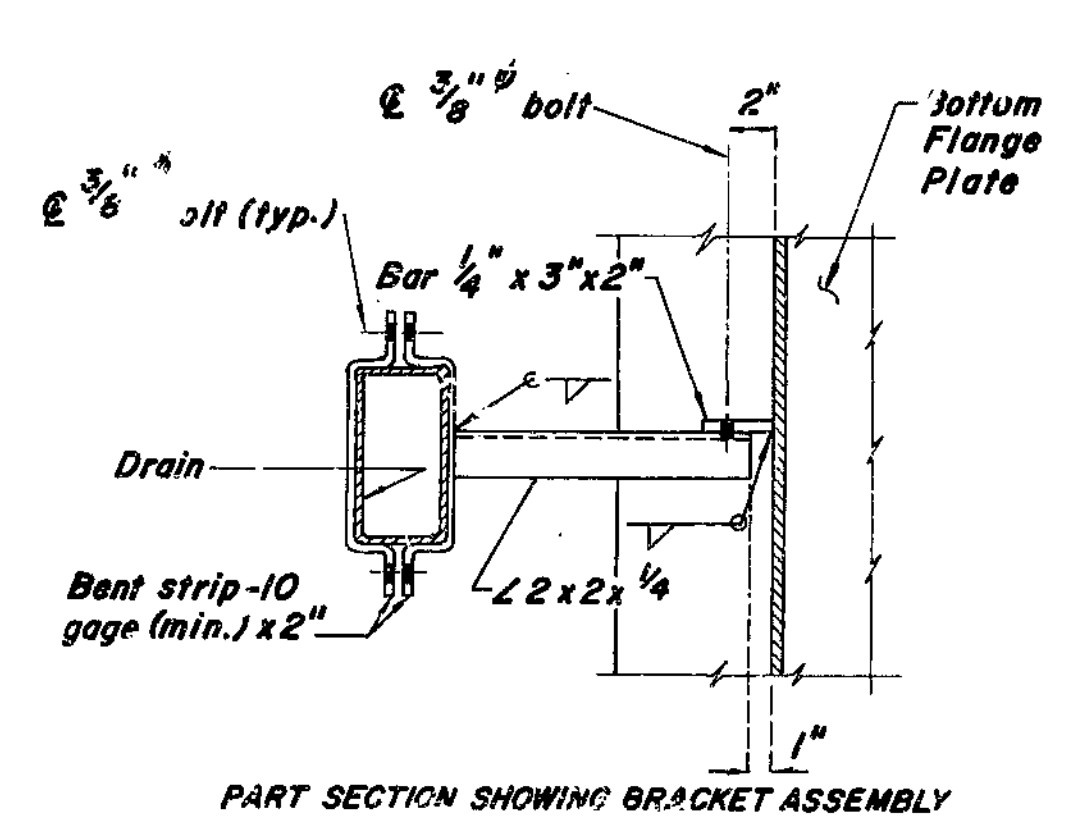
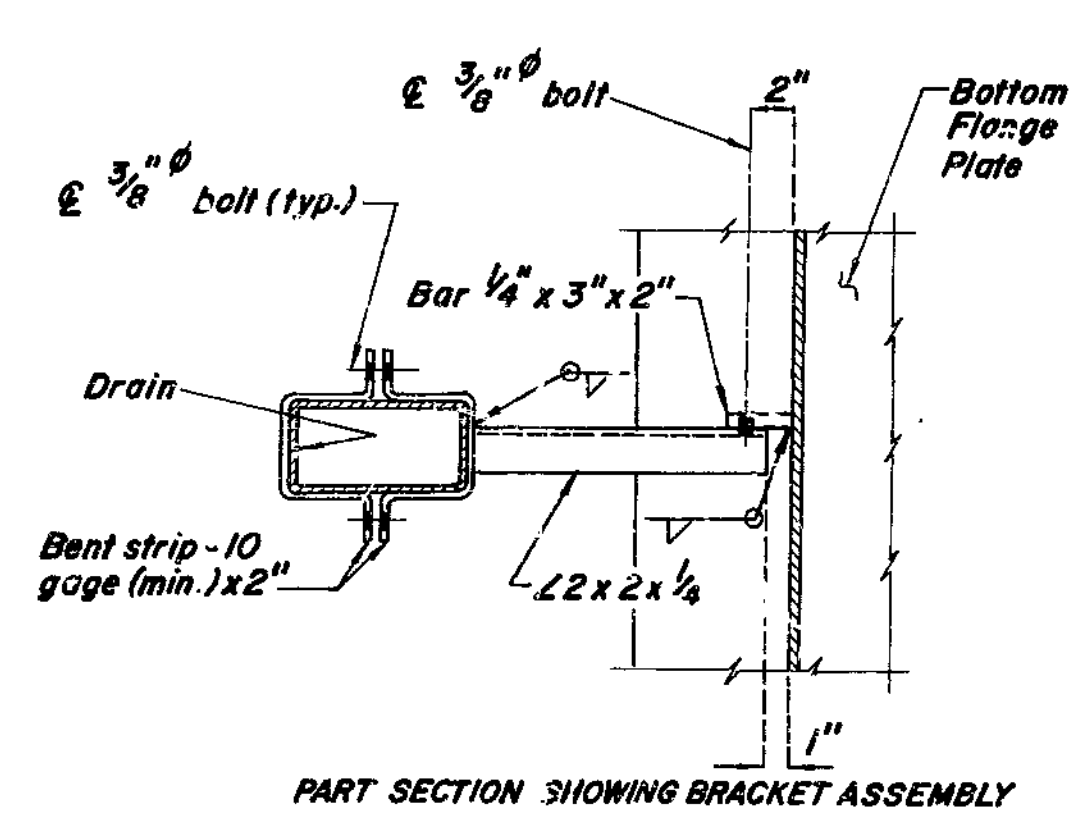
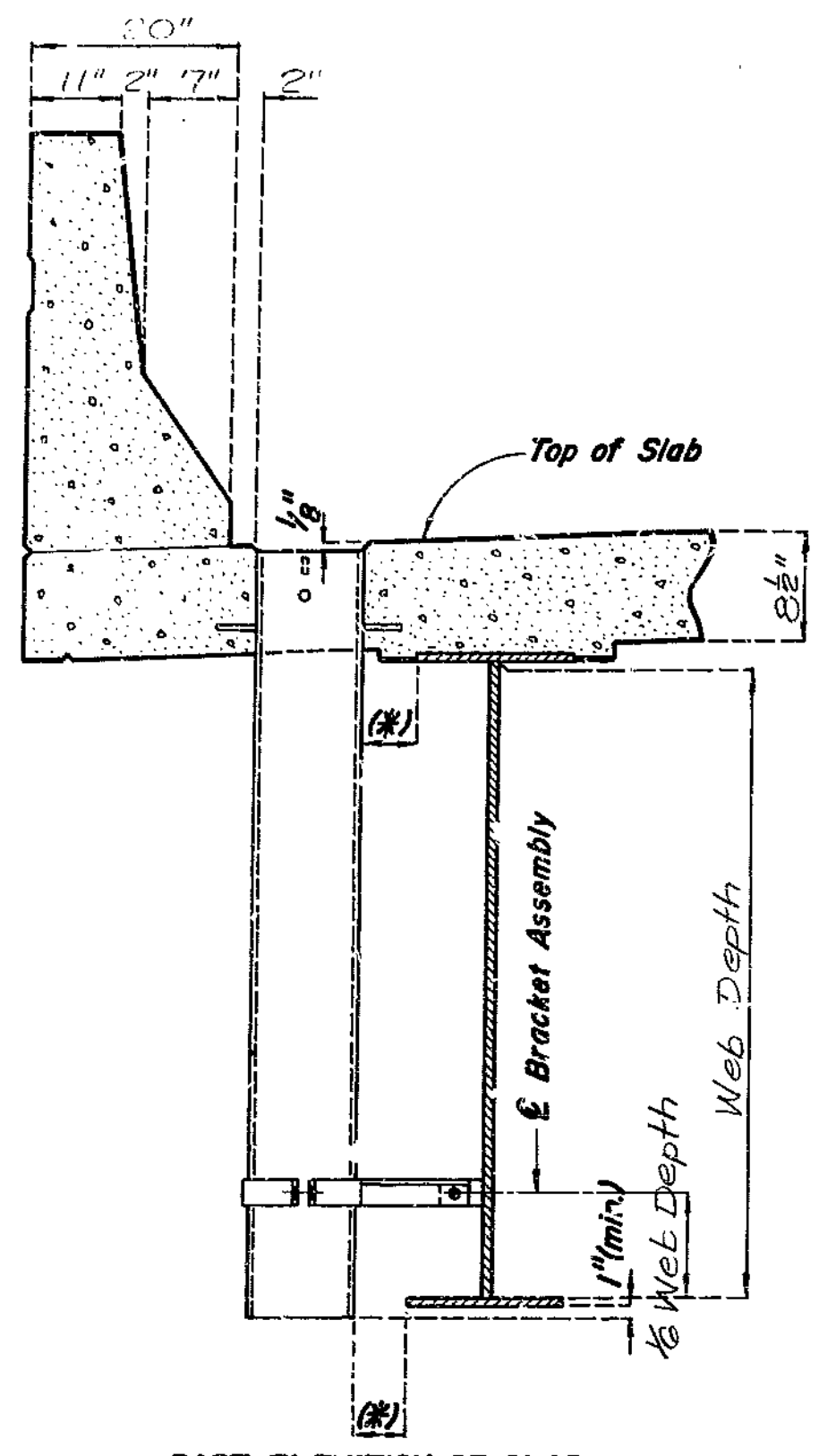
LOCATE DRAINS IN SLAB BY DIMENSIONS SHOWN IN PART ELEVATION.

SHIFT REINFORCING IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

THE DRAINS AND 10 GAGE BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

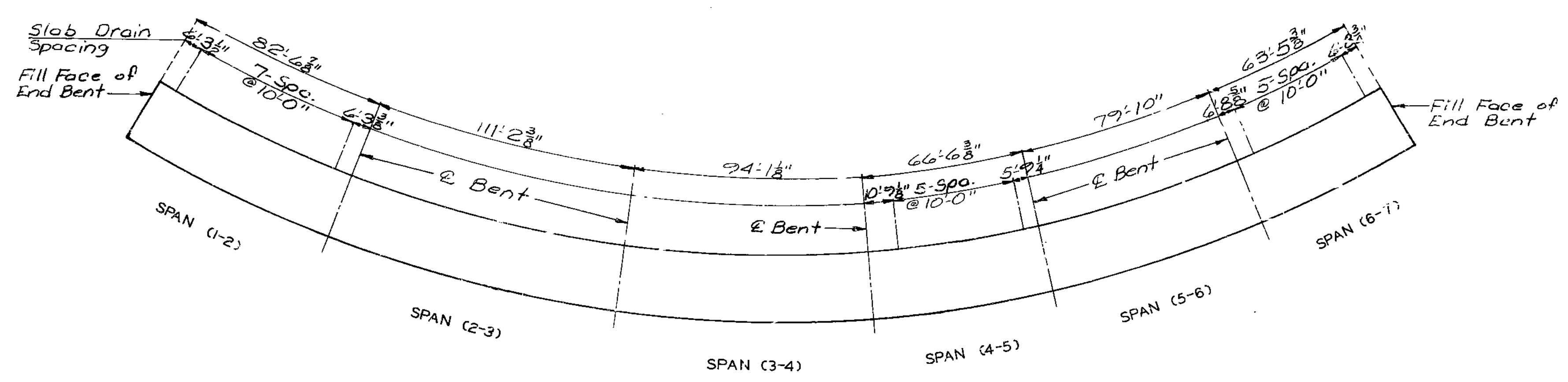
THE 1/4" x 3" x 2" BAR SHALL BE LOCATED ON THE PLATE GIRDER SHOP DRAWINGS.

SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND THE 10 GAGE BRACKET ASSEMBLY.



**SLAB DRAIN DETAILS**

(\* If dimension is less than 1", drains shall be placed parallel to roadway, otherwise place drains transverse to roadway.



**PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS**  
 Note: Longitudinal dimensions are horizontal arc dimensions along left edge of slab.

296

REVISED	OCT. 1979
REVISED	FEB. 1975

DETAILED NOV 1978  
 CHECKED NOV. 1978

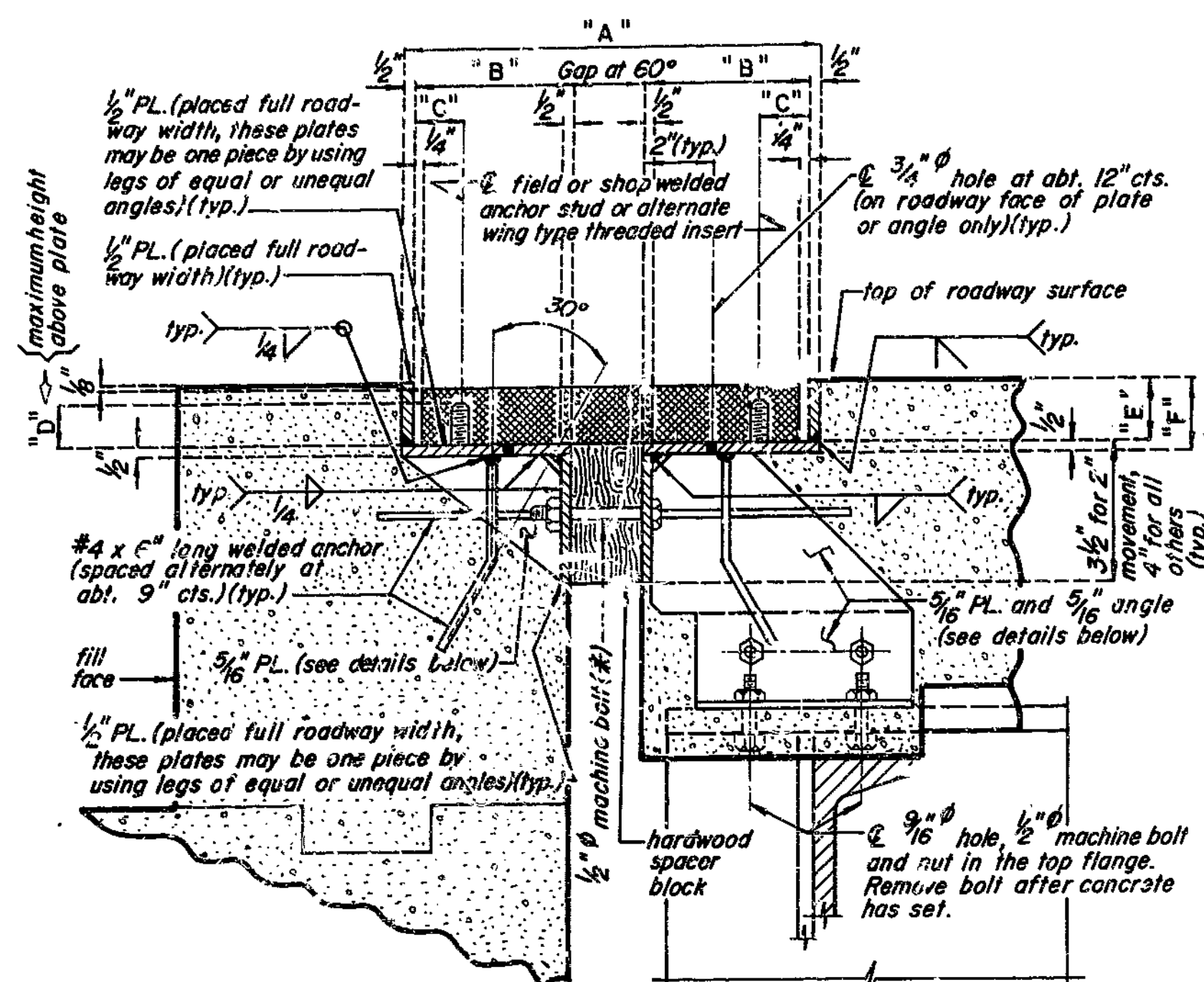
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 24 of 31.

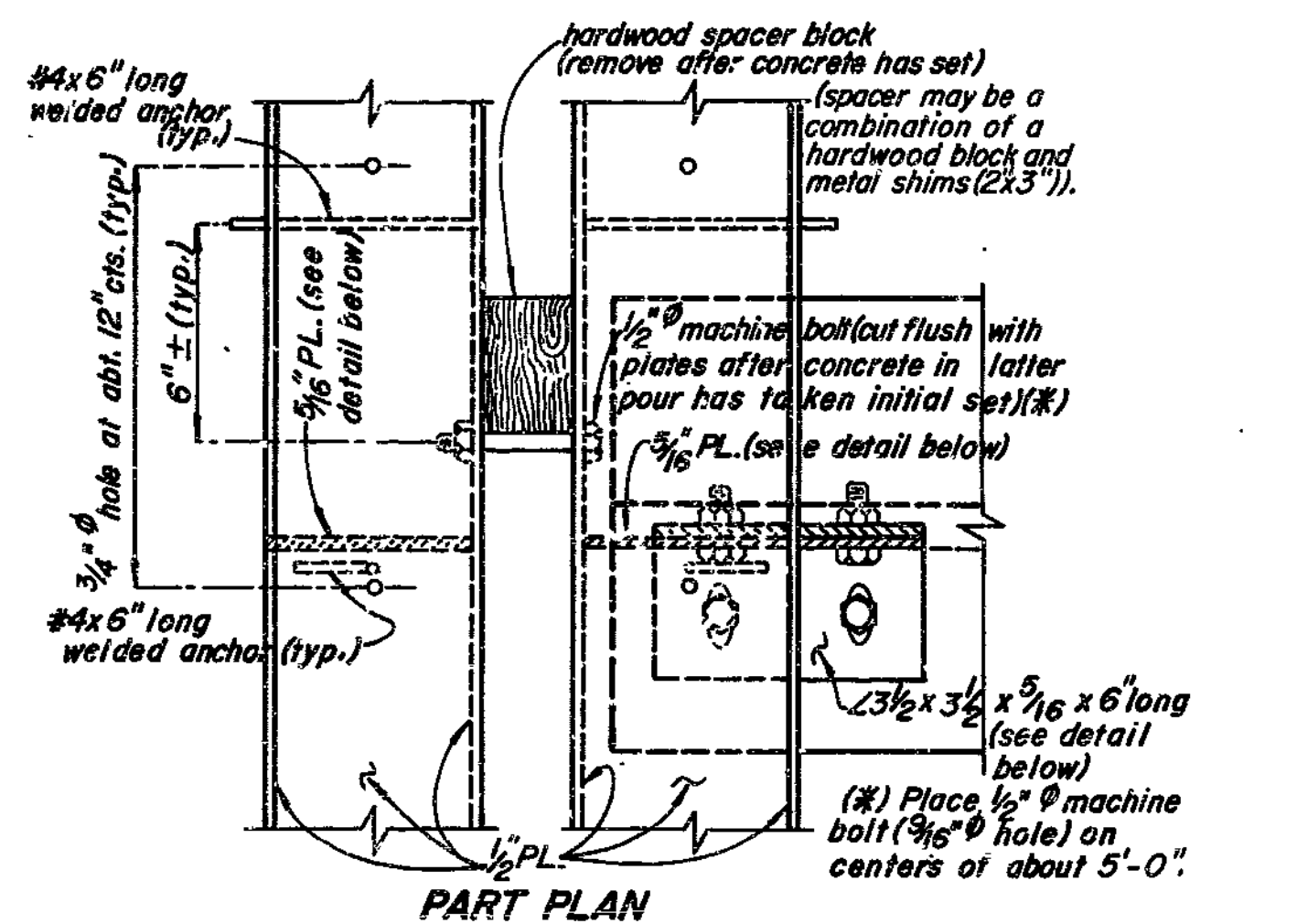
CLAY COUNTY

A-3388

297



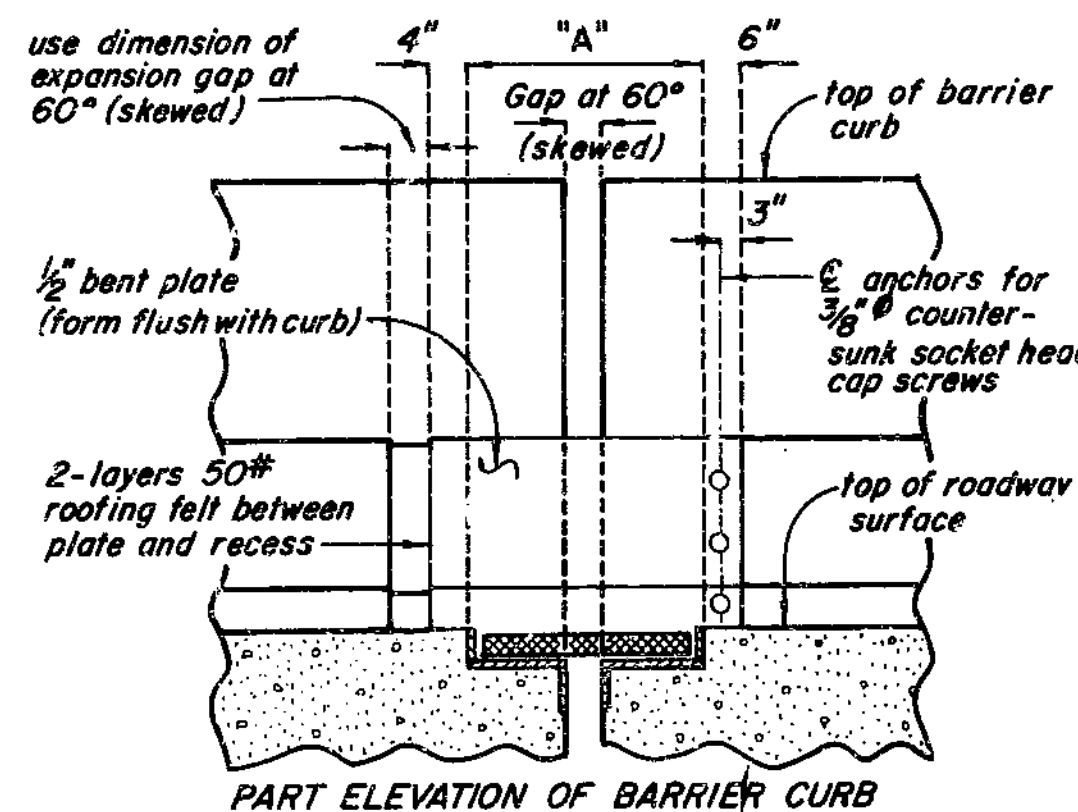
PART SECTION THRU ARMORED JOINT



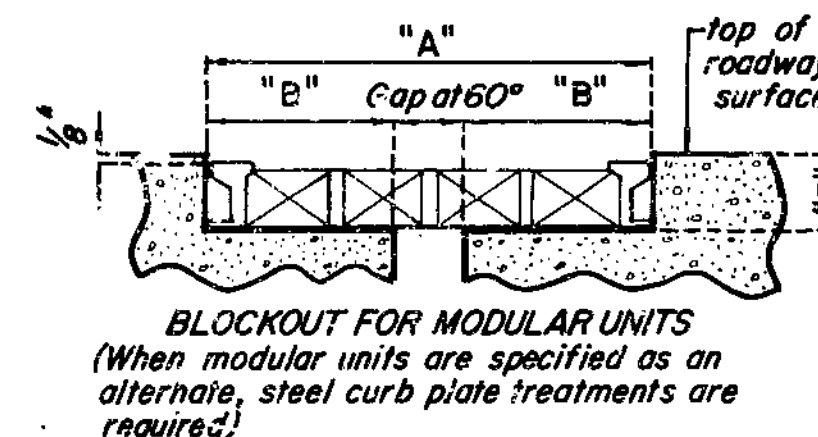
PART PLAN

TABLE OF DIMENSIONS									
LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP. GAP AT 60°	"A" AT 60°	"B"	"C"	"D"	"E"	"F"	ANCHOR STUDS SIZE "G"
End Bent No. 1	GEN-STRIP CCL 2 1/2"	2 1/4"	10"	3 1/2"	1 3/4"	1 1/2"	1 3/4"	2 1/4"	5/8"
	ACME TROJAN TR300	2"	11 1/2"	4 1/4"	1 3/8"	1 1/8"	1 3/4"	2 1/4"	1/2"
	DELASTIFLEX LM300	2"	12 3/8"	4 1/4"	2 3/8"	1"	2"	2 1/2"	1/2"
	FEL-SPAN T305A	1 3/8"	9 1/4"	3 1/4"	1 1/2"	1 1/4"	1 1/4"	2 3/4"	1/2"
	ON-FLEX 45	2"	11 1/2"	4 1/4"	1 3/8"	1 1/2"	2 3/8"	3 3/8"	1/2"
End Bent No. 7	WABO-ELASTODAM 300(S)	1 3/4"	9 1/4"	3 1/4"	1 1/8"	1 1/4"	1 3/4"	2 1/4"	1/2"
	ACME-TROJAN TR300	2"	11 1/2"	4 1/4"	1 3/8"	1 1/8"	1 3/4"	2 1/4"	1/2"
	DELASTIFLEX LM200	1 1/2"	11 3/8"	4 1/4"	2 3/8"	1"	2"	2 1/2"	1/2"
	FEL-SPAN T20	1 3/8"	11 3/8"	4 1/4"	1 3/8"	1 1/4"	1 3/8"	1 3/8"	1/2"
	GEN-STRIP CCL 2"	2"	10 1/8"	3 3/8"	1 3/4"	1 1/2"	1 3/4"	2 1/8"	5/8"
	ON-FLEX 25	1 1/2"	11"	4 1/4"	1 3/8"	1 1/4"	1 3/4"	2 1/4"	1/2"
	WABO-ELASTODAM 200	1 1/4"	11 1/4"	4 1/2"	1 3/8"	1"	1 1/2"	2"	1/2"

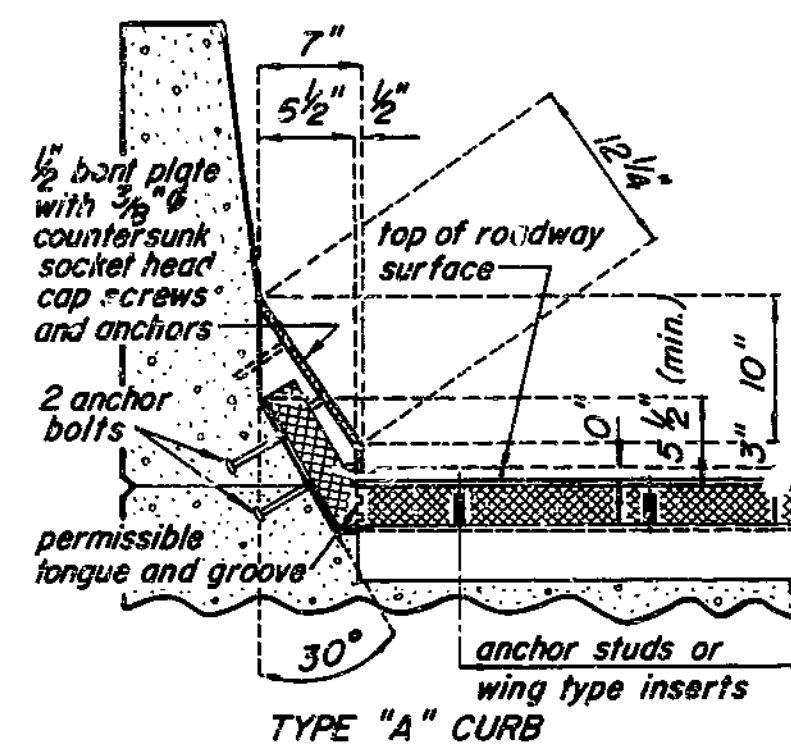
NOTE: All dimensions are at right angles. Expansion gap and dimension "A" shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature.



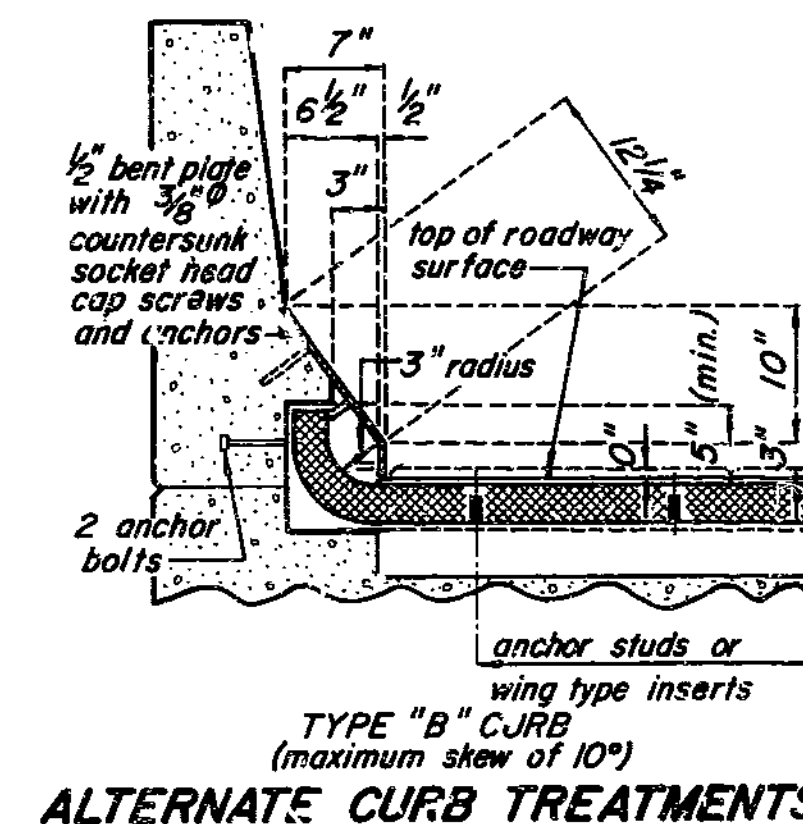
PART ELEVATION OF BARRIER CURB



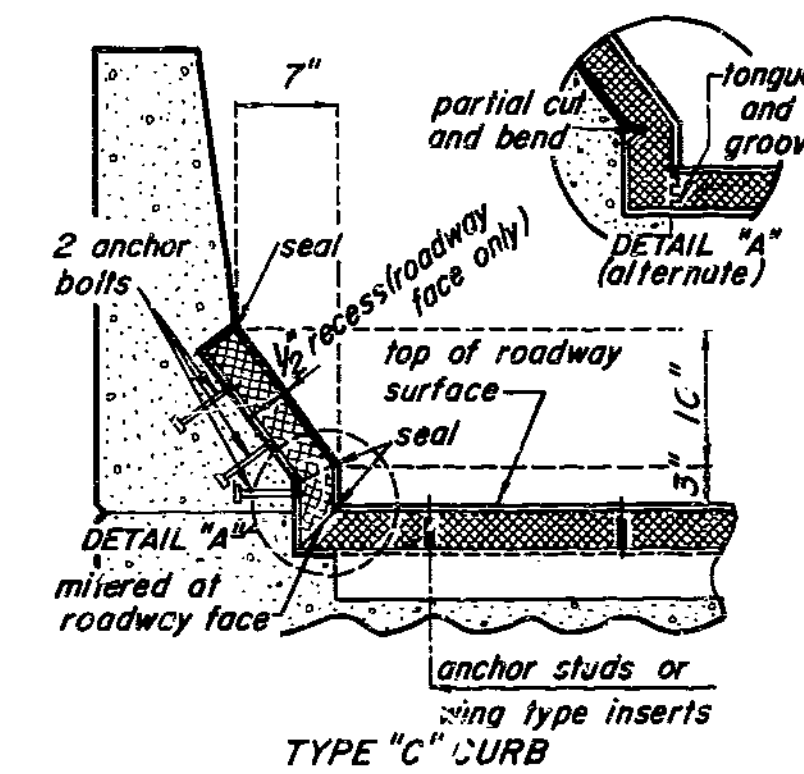
BLOCKOUT FOR MODULAR UNITS (When modular units are specified as an alternate, steel curb plate treatments are required.)



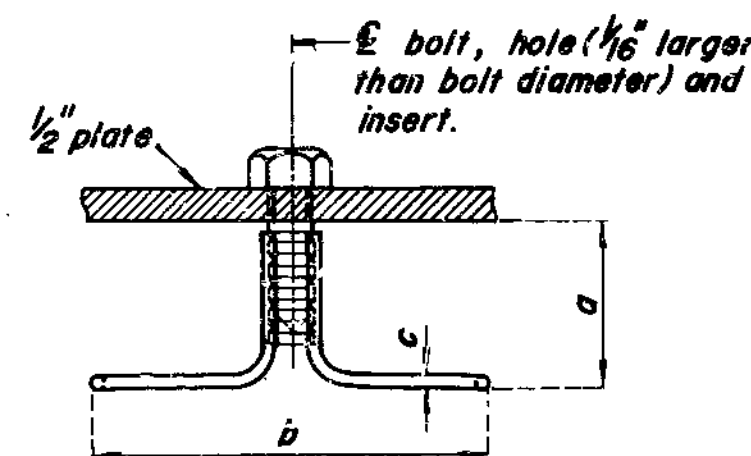
TYPE "A" CURB



TYPE "B" CURB (maximum skew of 10°) ALTERNATE CURB TREATMENTS



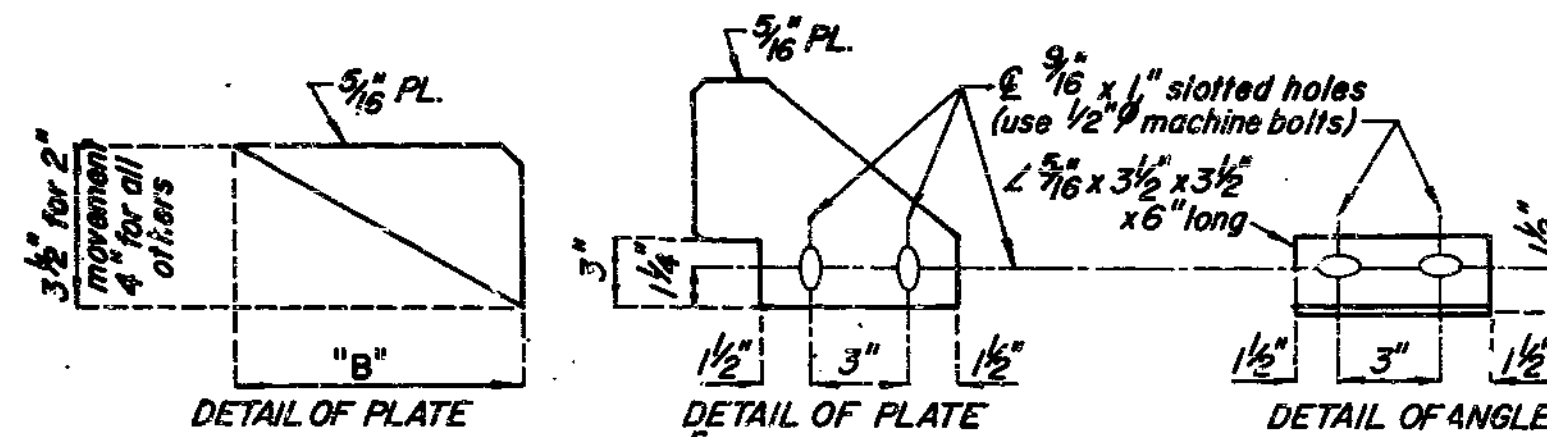
TYPE "C" CURB



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

DETAILS OF ALTERNATE WING TYPE THREADED INSERT

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



DETAIL OF PLATE

DETAIL OF PLATE

DETAIL OF ANGLE

Note: 3/16" plates and angle placed at each girder or stringer.

GENERAL NOTES:

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE NUTS ON THE ANCHOR STUDS SHALL BE TIGHTENED TO THE FOOT POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 4 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 4 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING.

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

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

PLATES SHALL BE FIELD ADJUSTED BY ADDING OR REMOVING METAL SHIMS (2" x 3"), AS REQUIRED FOR TEMPERATURE CORRECTION. THE EXPANSION GAP SHALL BE ADJUSTED FOR ANY TEMPERATURE CORRECTION PRIOR TO POURING TOP OF END BENT BACKWALL.

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

FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	156	

SPS - END BT. REVISED FEB. 1978 AUG. 1980

DETAILED Jan. 1981  
CHECKED Jan. 1981

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENTS NO. 1 & 7

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

Sheet No. 25 of 31.

CLAY COUNTY

A-3388



TABLE OF DIMENSIONS									
LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP. GAP AT 60°	"A" AT 60°	"B"	"C"	"D"	"E"	"F"	ANCHOR STUDS SIZE "G"
Int Bent No. 4	GEN-STRIP CCL 2 1/2"	2 1/2"	10"	3 1/2"	1 3/4"	1 1/2"	1 3/4"	2 1/4"	5/8"
	ACME TROJAN TR300	2"	11 1/2"	4 1/4"	1 7/8"	1 1/8"	1 3/4"	2 1/4"	1/2"
	DELASTIFLEX LM300	2"	12 3/8"	4 1/4"	2 1/8"	1"	2"	2 1/2"	1/2"
	FEL-SPAN T30A	1 3/8"	13 1/8"	5 1/4"	2 1/4"	1 1/4"	1 1/4"	2 3/8"	5/8"
	ON-FLEX 45	2"	11 1/2"	4 1/4"	1 3/8"	1 1/2"	2 3/8"	3 3/8"	1/2"
WABO-ELASTODAM 300(S)	1 3/4"	9 1/4"	3 1/4"	1 3/8"	1 1/4"	1 3/4"	2 1/4"	1/2"	

NOTE: All dimensions are at right angles. Expansion gap and dimension "A" shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature.

GENERAL NOTES:

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE NUTS ON THE ANCHOR STUDS SHALL BE TIGHTENED TO THE FOOT POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 4 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 4 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING.

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

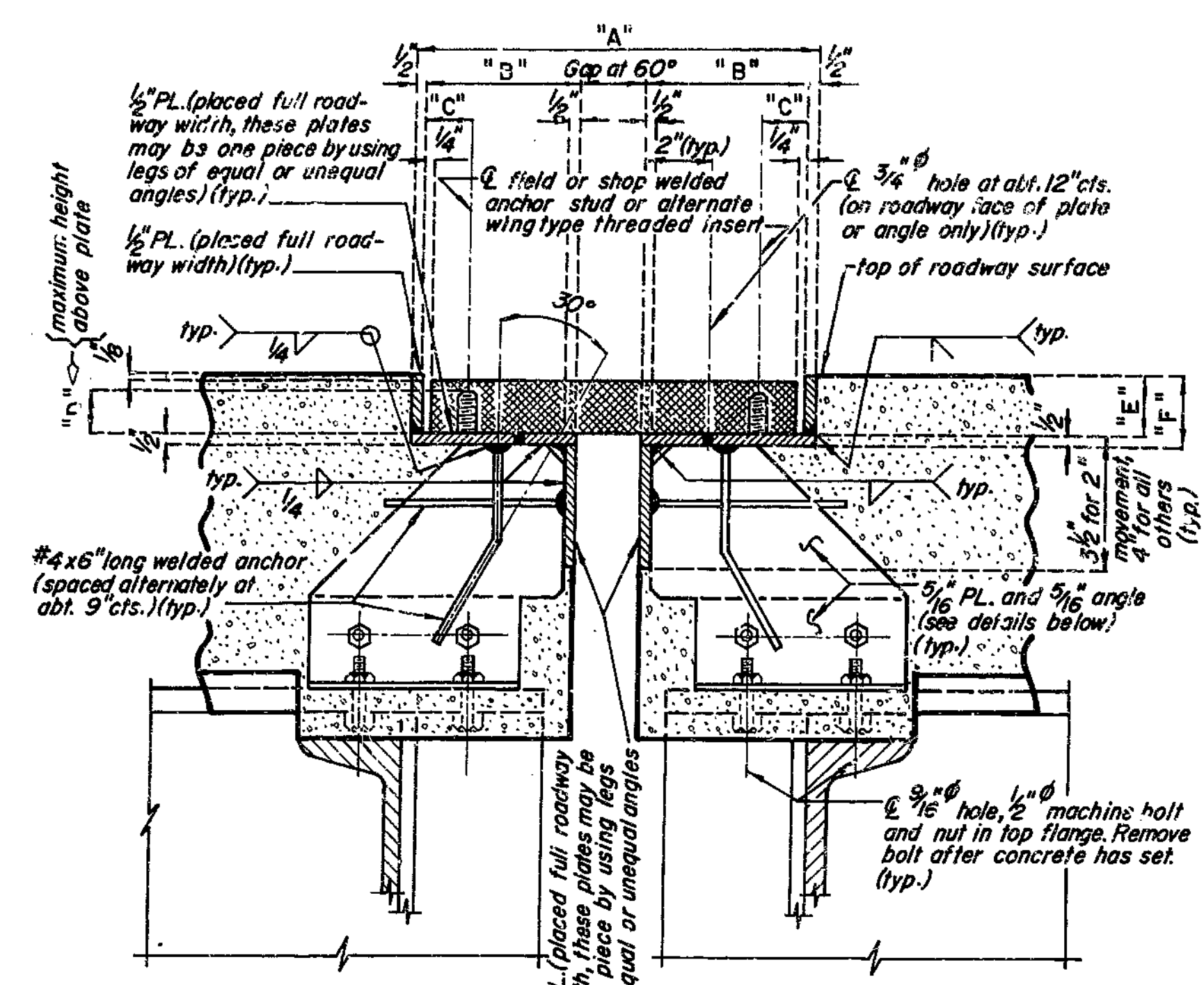
PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60°F. THE EXPANSION GAP AND OTHER DIMENSIONS SHALL BE ADJUSTED DURING INSTALLATION FOR COMPLIANCE WITH ANY TEMPERATURE CHANGE.

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

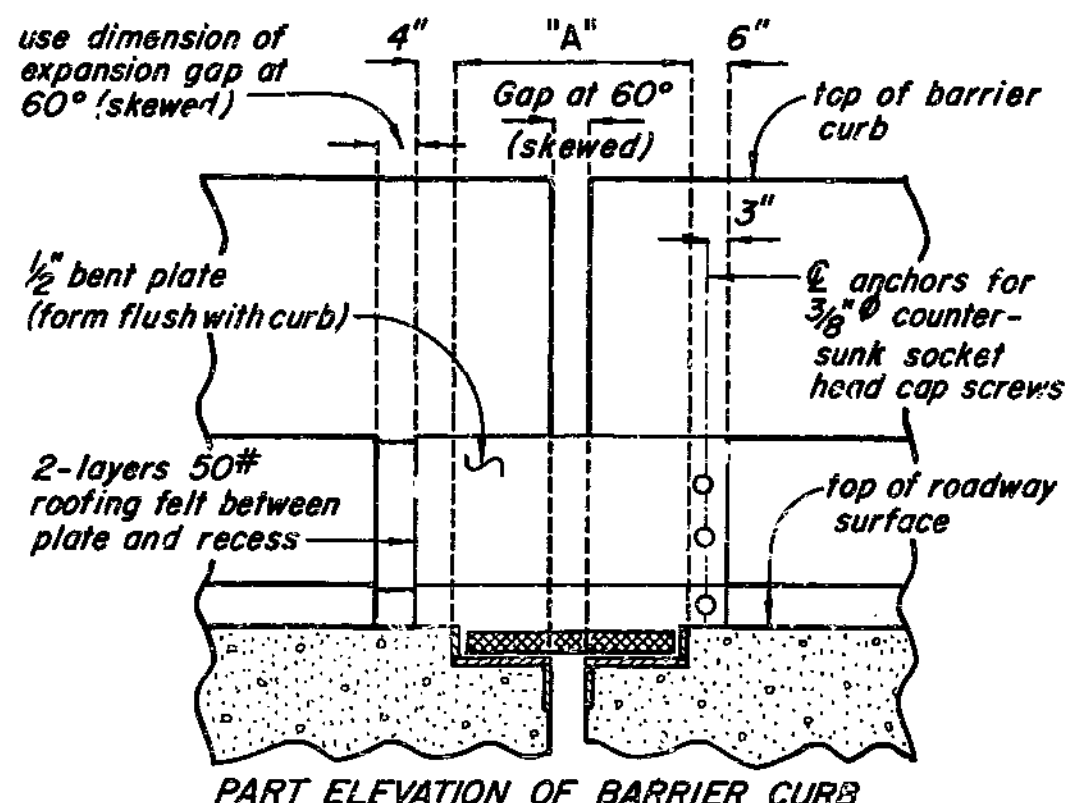
FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

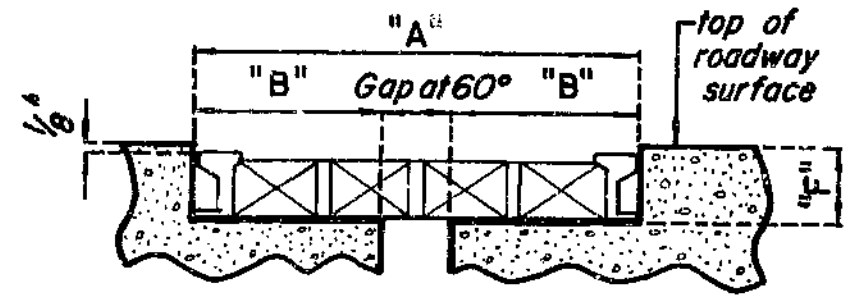
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	157	



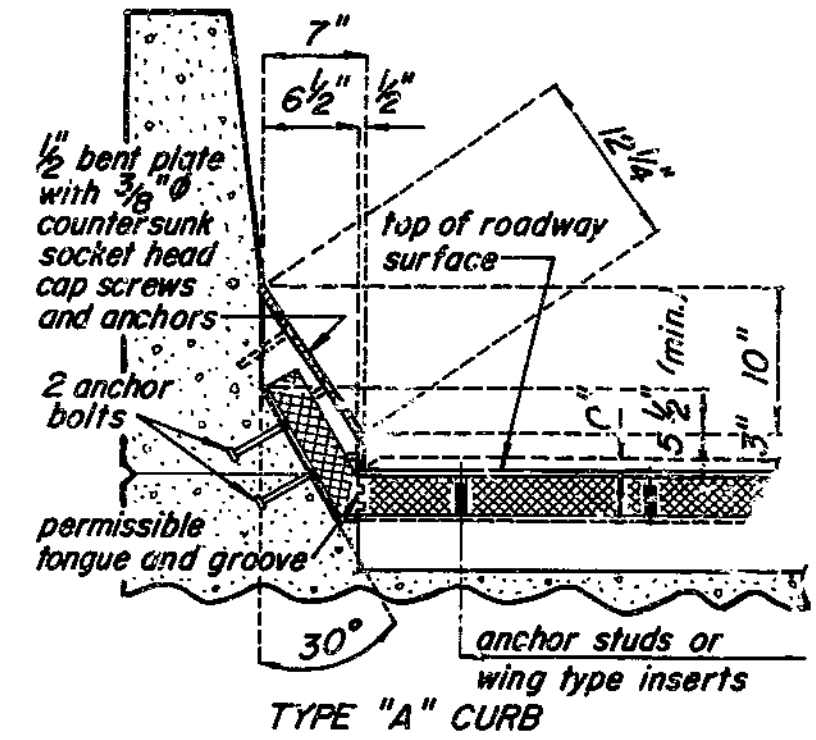
PART SECTION THRU ARMORED JOINT



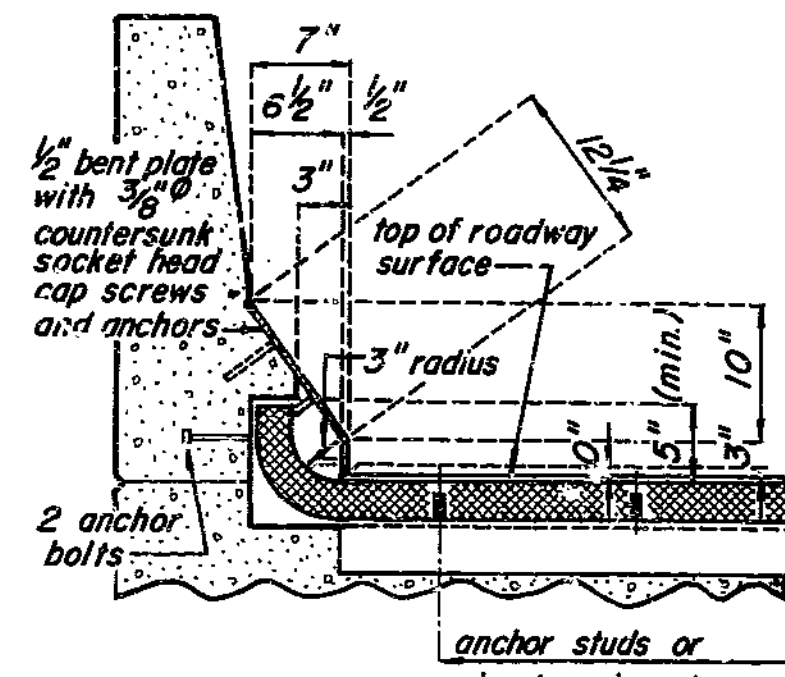
PART ELEVATION OF BARRIER CURB



BLOCKOUT FOR MODULAR UNITS (When modular units are specified as an alternate, steel curb plate treatments are required)

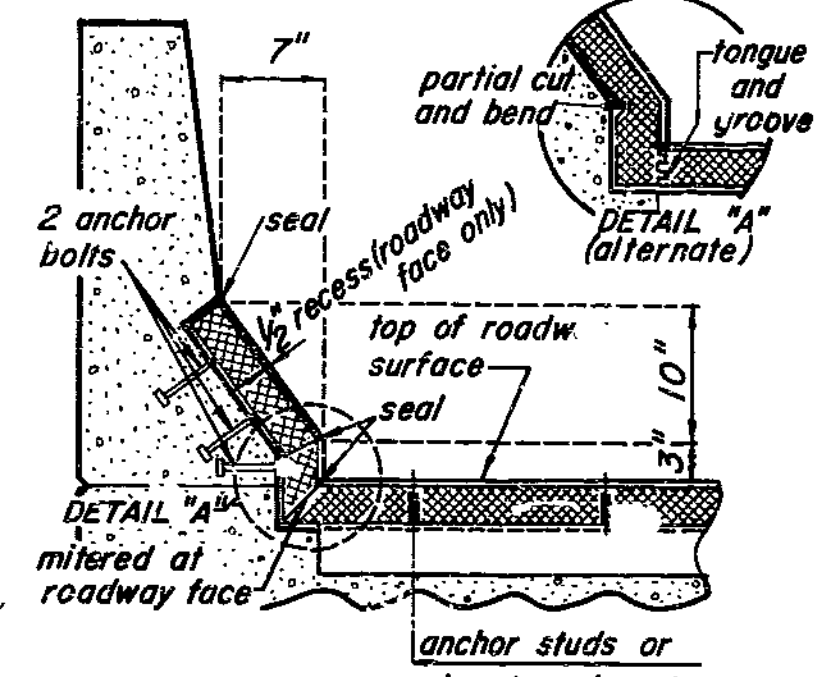


TYPE "A" CURB

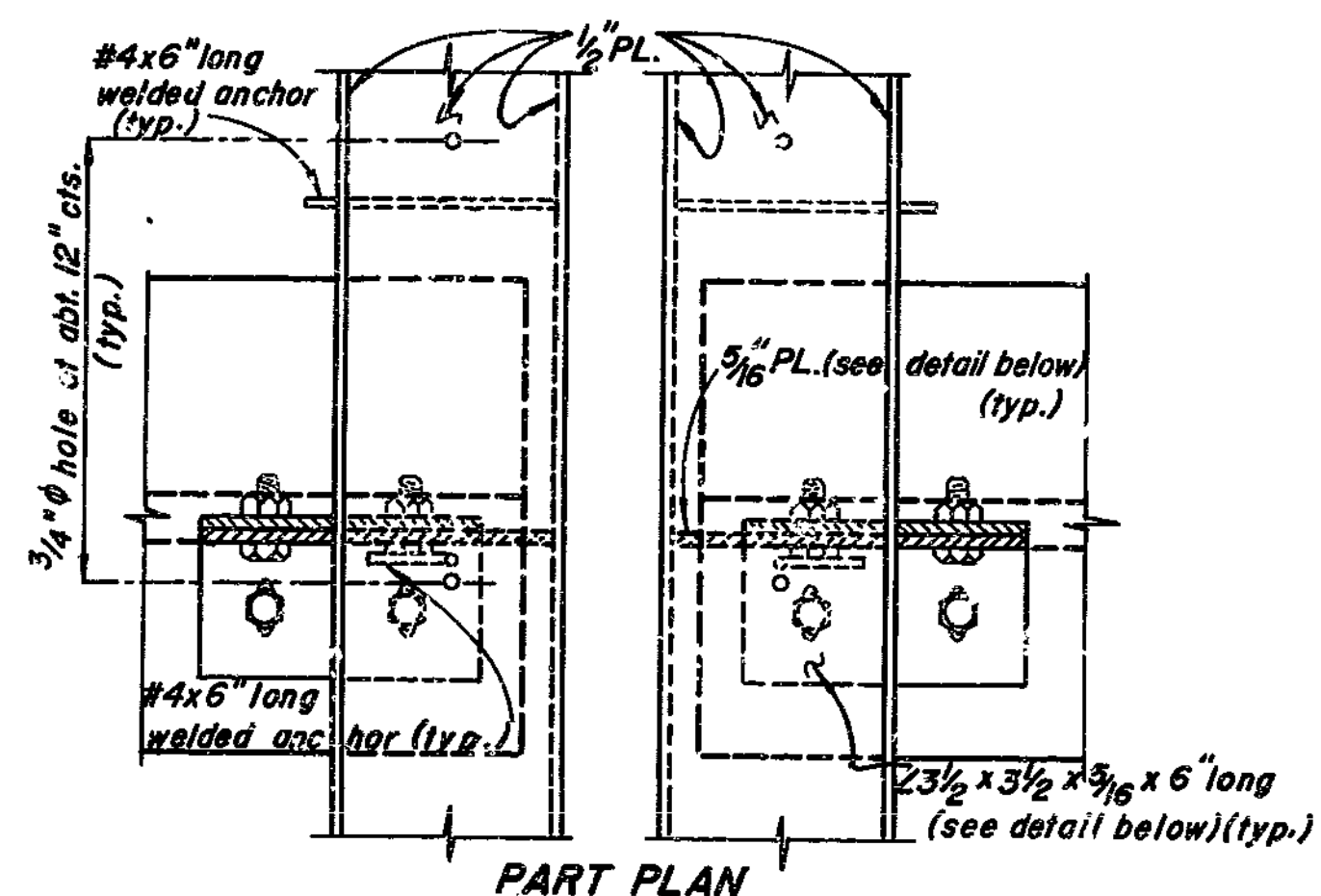


TYPE "B" CURB (maximum skew of 10°)

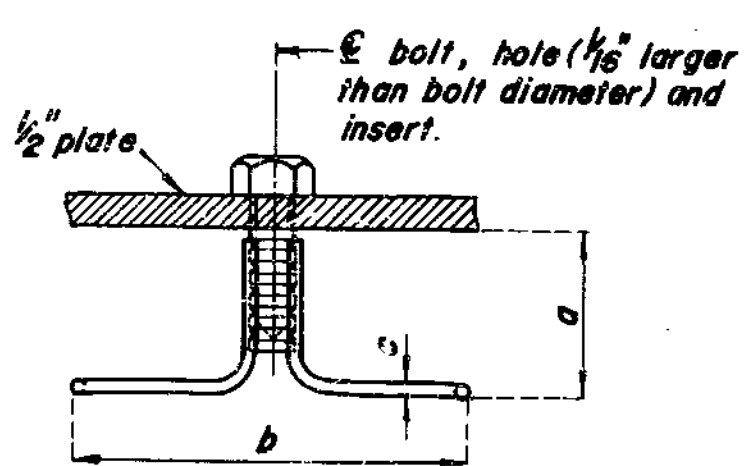
ALTERNATE CURB TREATMENTS



TYPE "C" CURB



PART PLAN

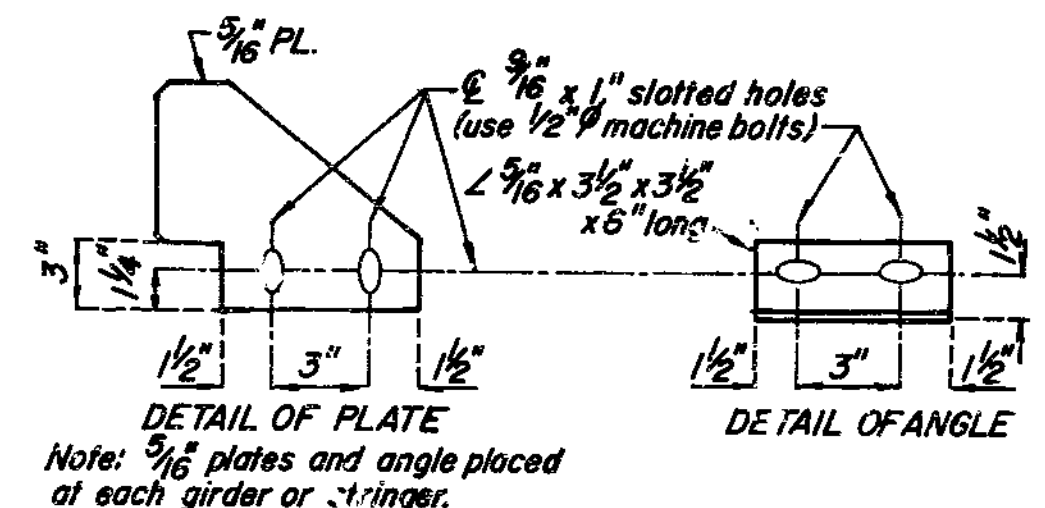


Bolt Diameter	Safe Load Tension (lbs.) (min.)	Approx. Ult. Cap. Tension (lbs.) (min.)	Dimensions (min.)		
			a	b	c
1/2"	800	8,000	1-5/8"	5"	.218"
5/8"	1,300	9,200	1-5/8"	5"	.218"
3/4"	1,800	13,200	2-1/4"	6"	.262"
7/8"	2,000	16,200	2-1/2"	6-1/2"	.306"
1"	2,000	16,200	2-1/2"	6-1/2"	.306"

DETAILS OF ALTERNATE WING TYPE THREADED INSERT

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

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 4



DETAIL OF PLATE Note: 3/16 plates and angle placed at each girder or stringer.

DETAIL OF ANGLE

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

298

SPS - INT. BY. REVISED FEB. 1978 AUG. 1980

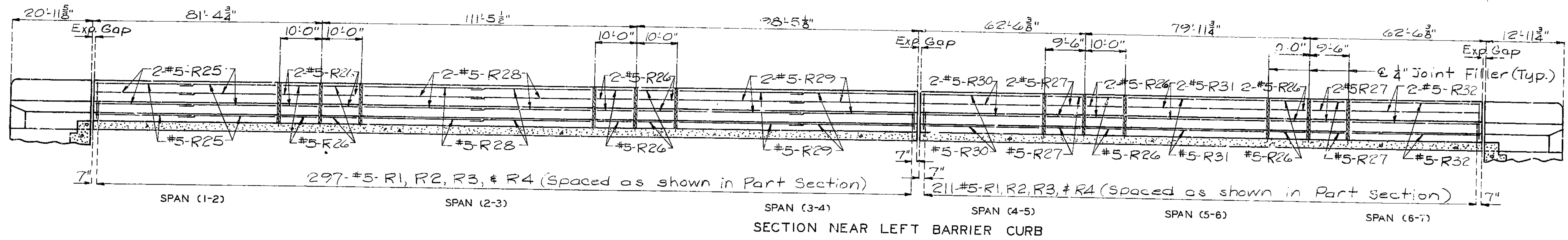
DETAILED Jan. 1981 CHECKED Jan. 1981

Sheet No. 26 of 31.

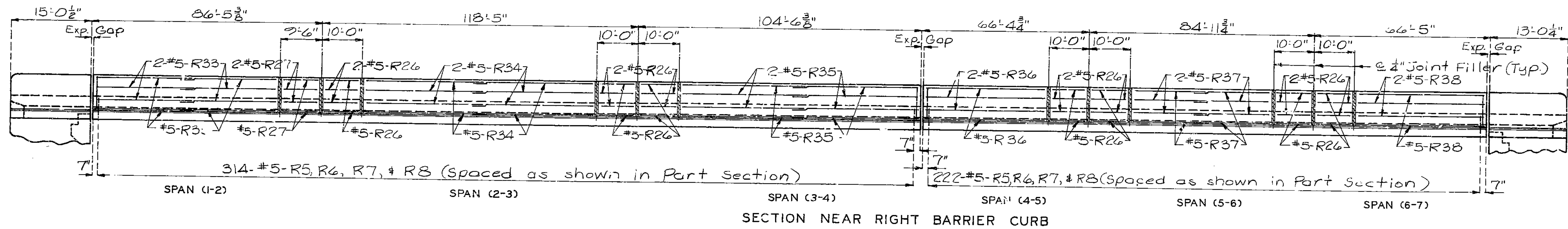
CLAY COUNTY

A-3388

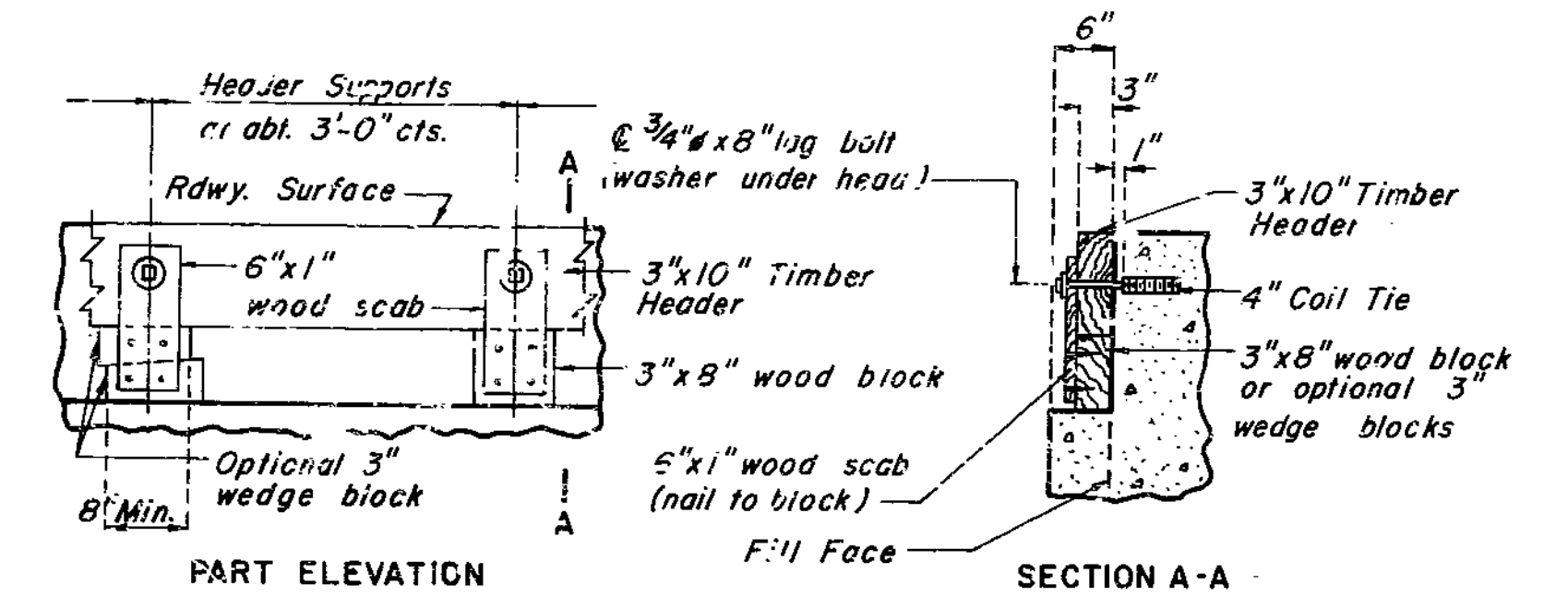
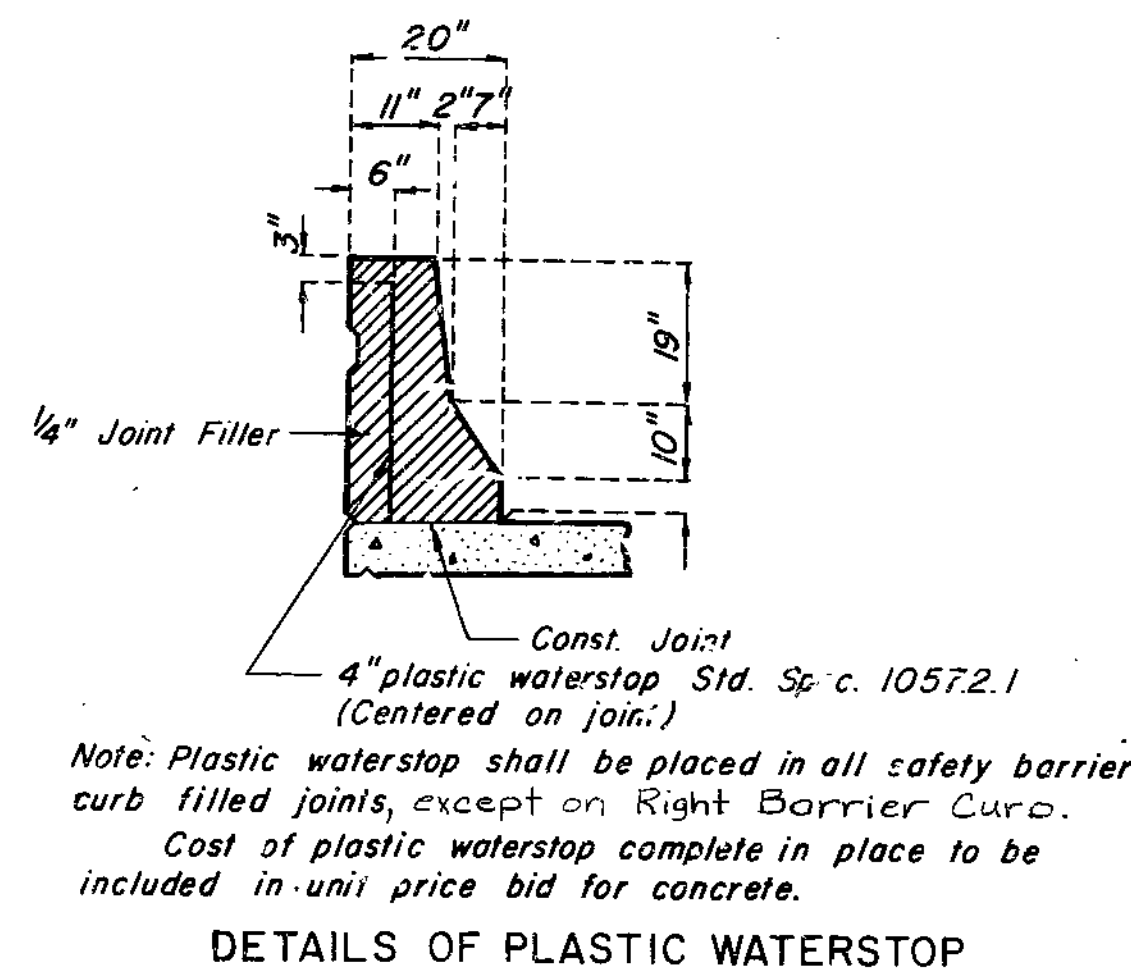
FED. ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	138	



Note: Longitudinal dimensions shown are arc dimensions along centerline of top of barrier curb parallel to grade.  
 For details not shown see Sheets No. 28.  
 For Exp. Gap, see Sheets No. 25 & 26.



Note: Use a minimum lap of 17" for #5 horizontal barrier curb bars.



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

299

DETAILED AUG. 1978  
 CHECKED NOV. 1978

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

Sheet No. 7 of 31.

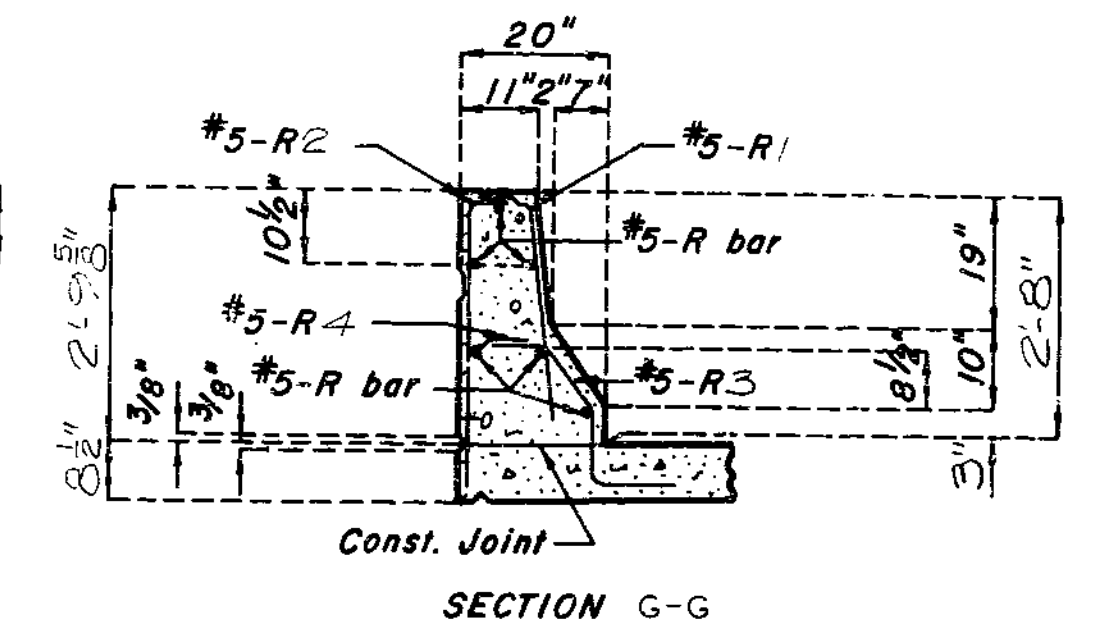
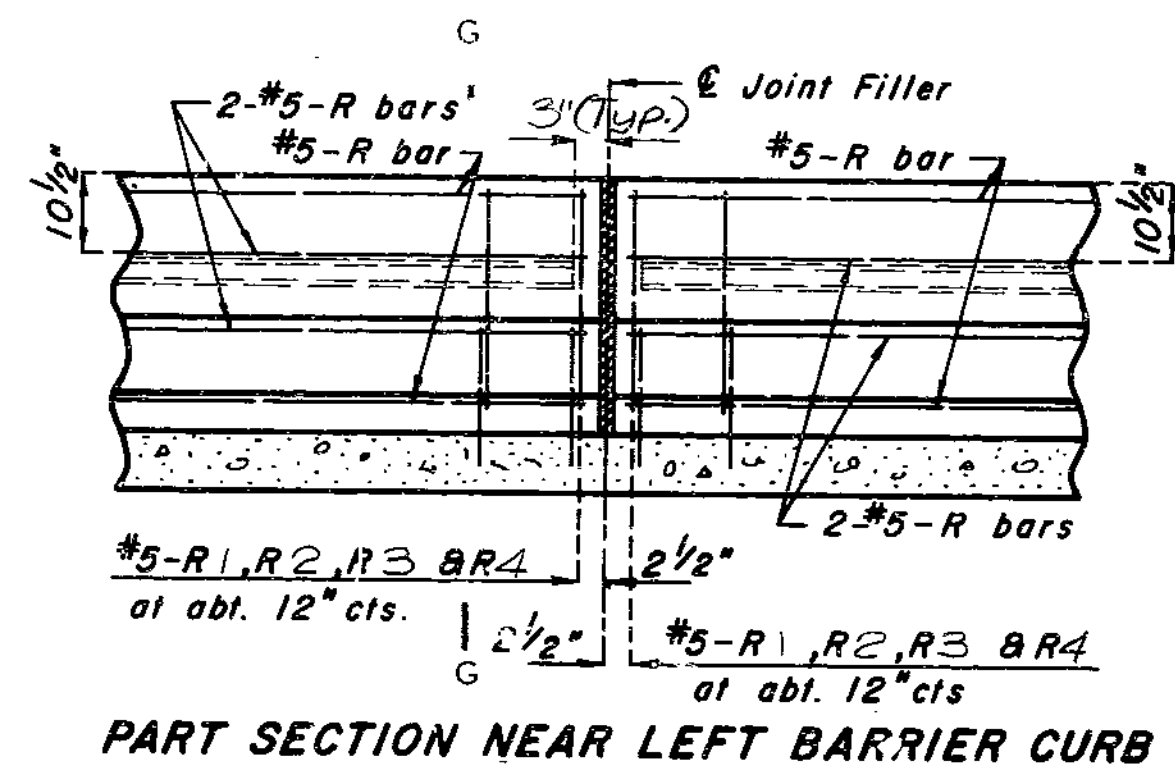
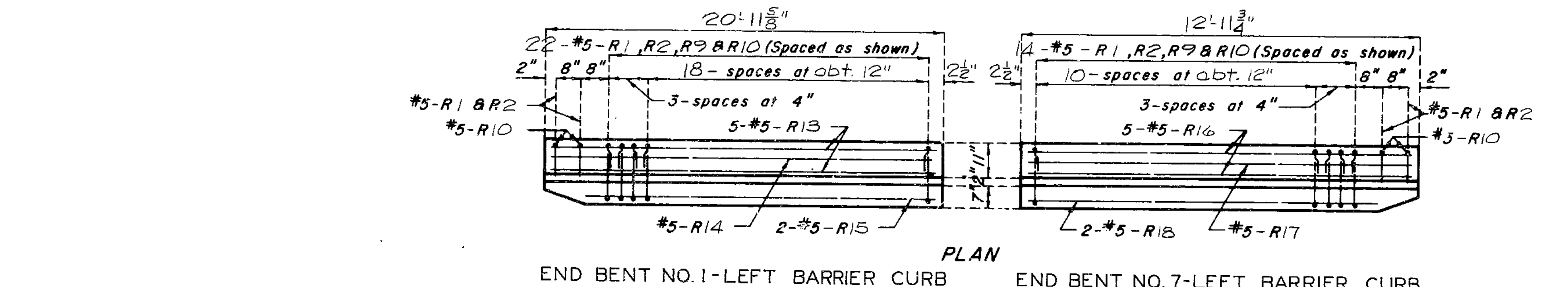
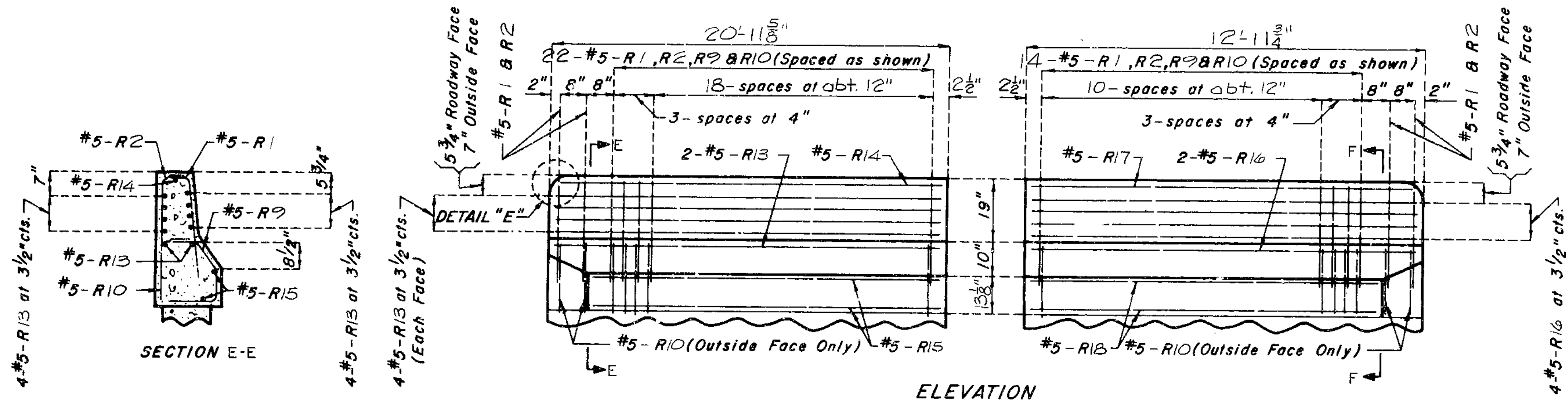
CLAY COUNTY

A-3388

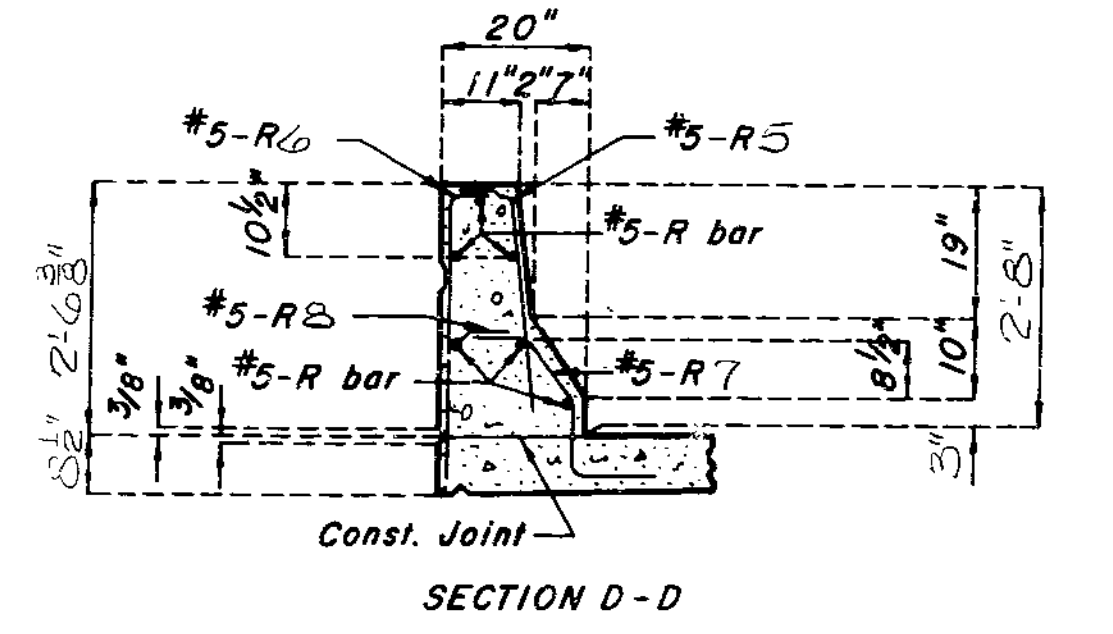
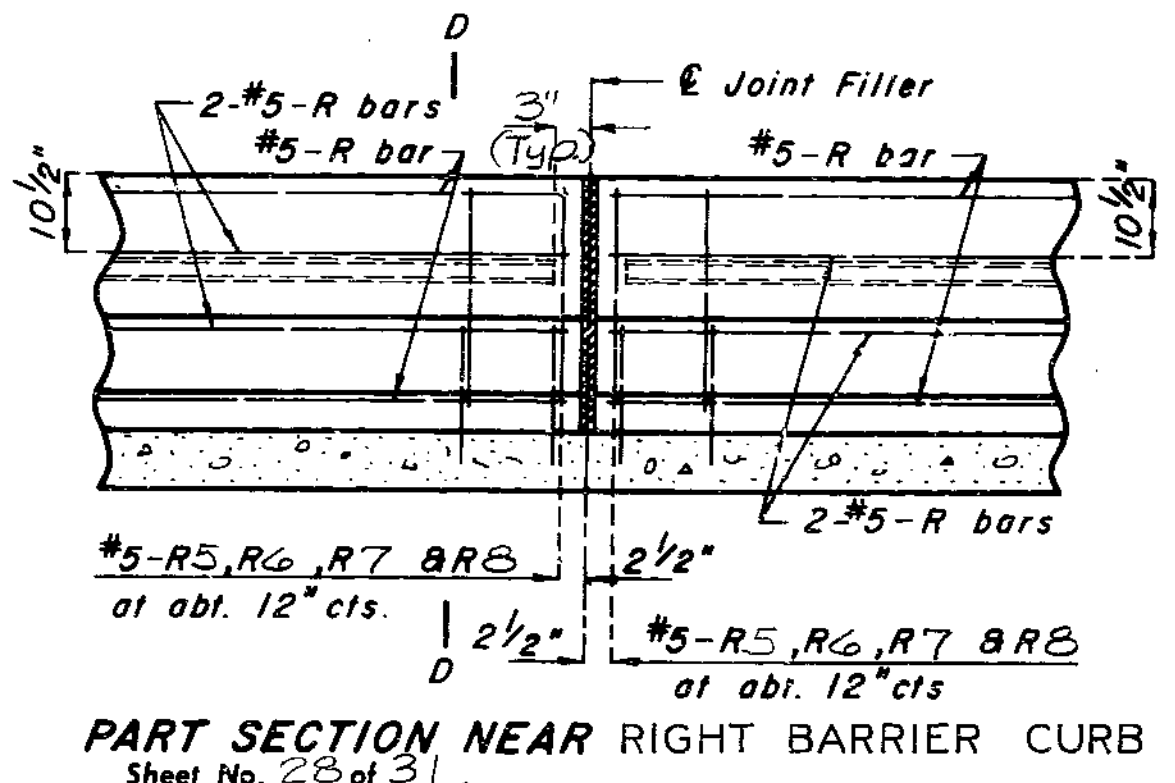
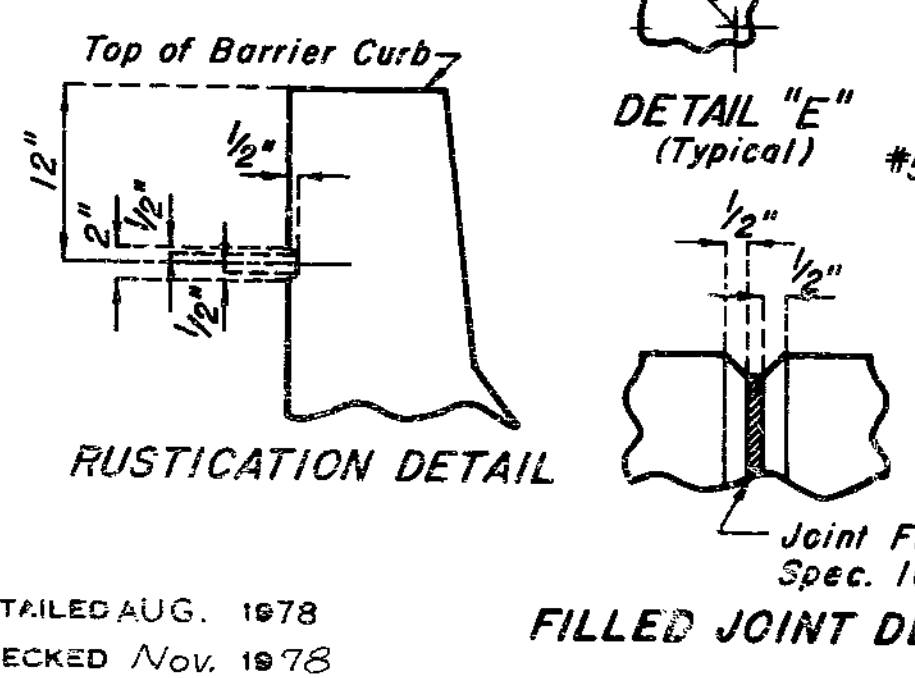
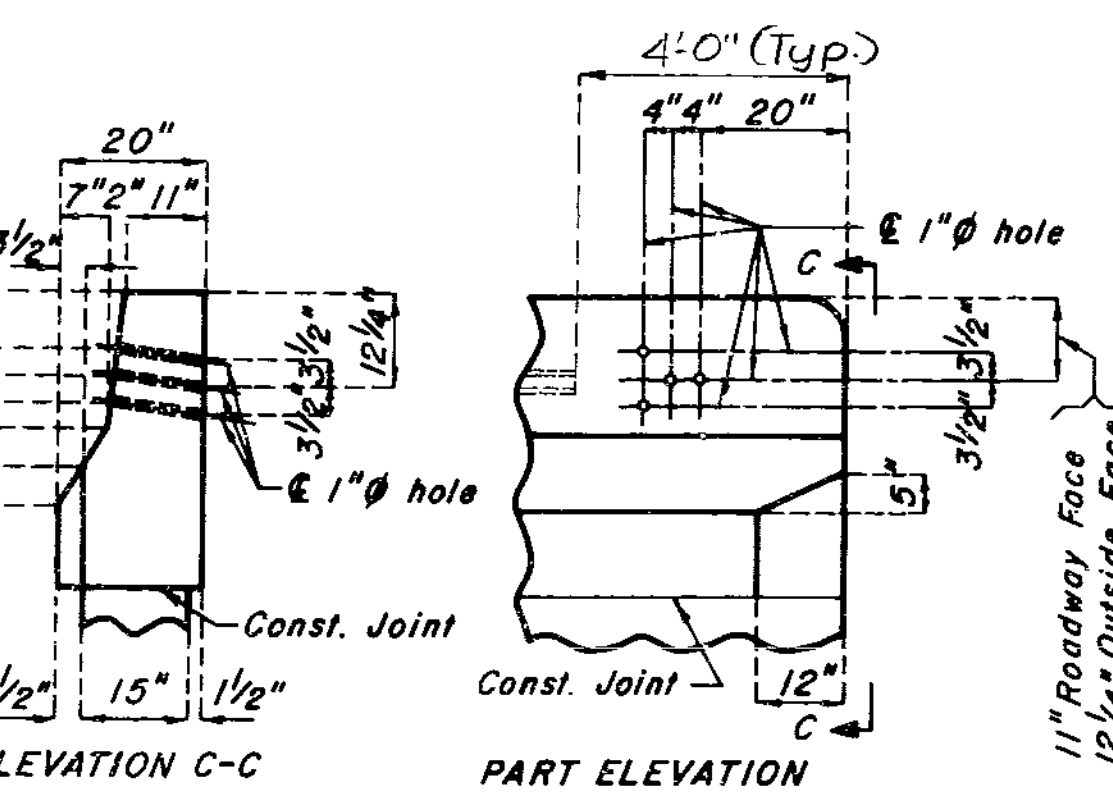
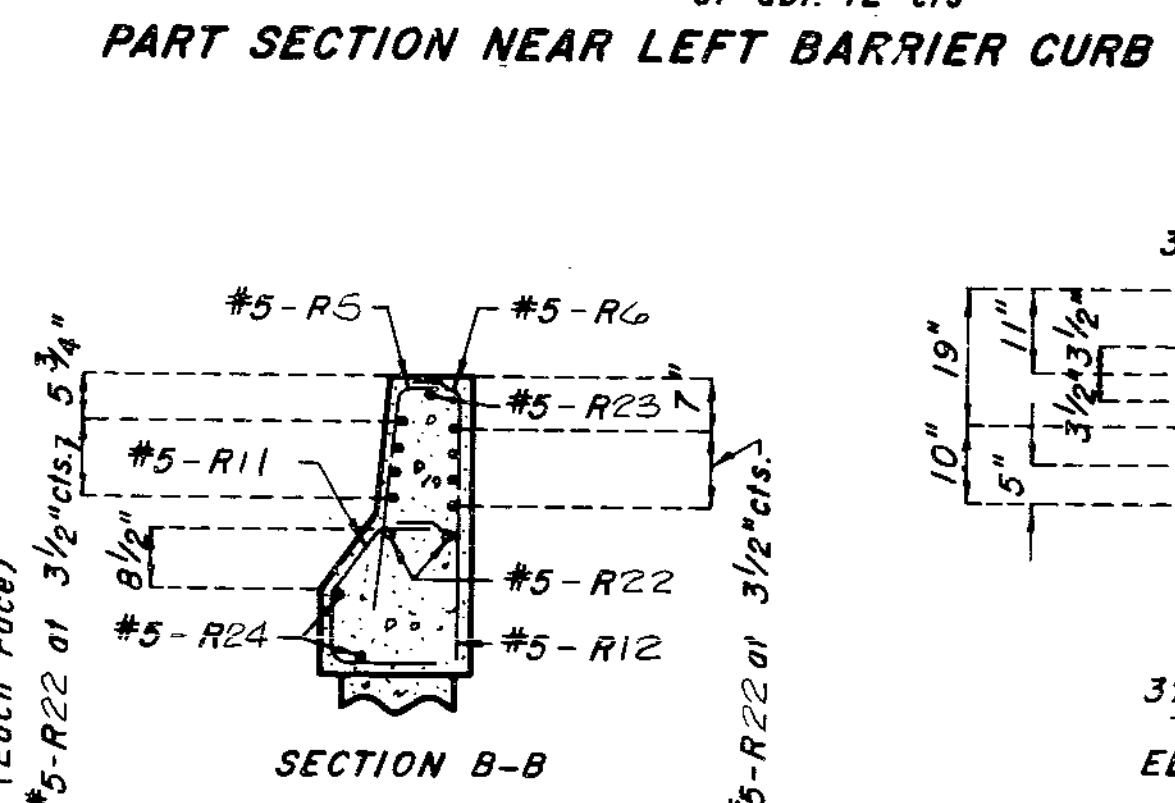
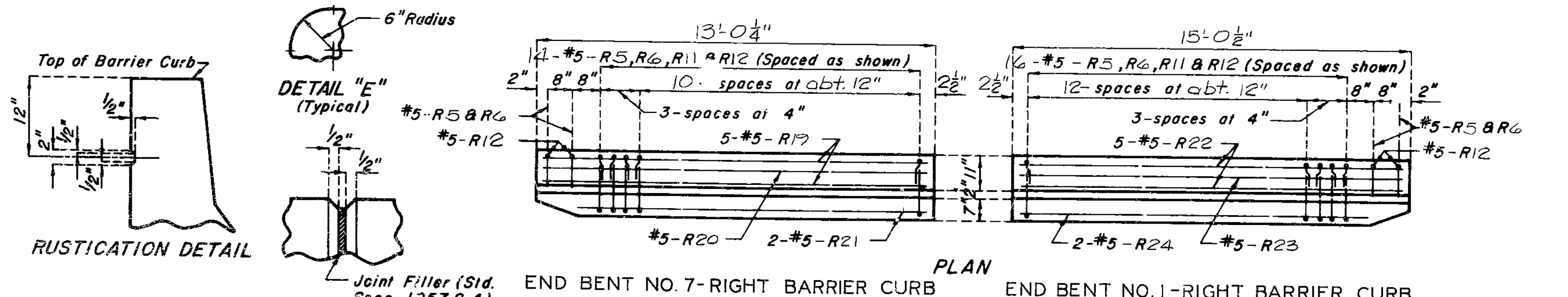
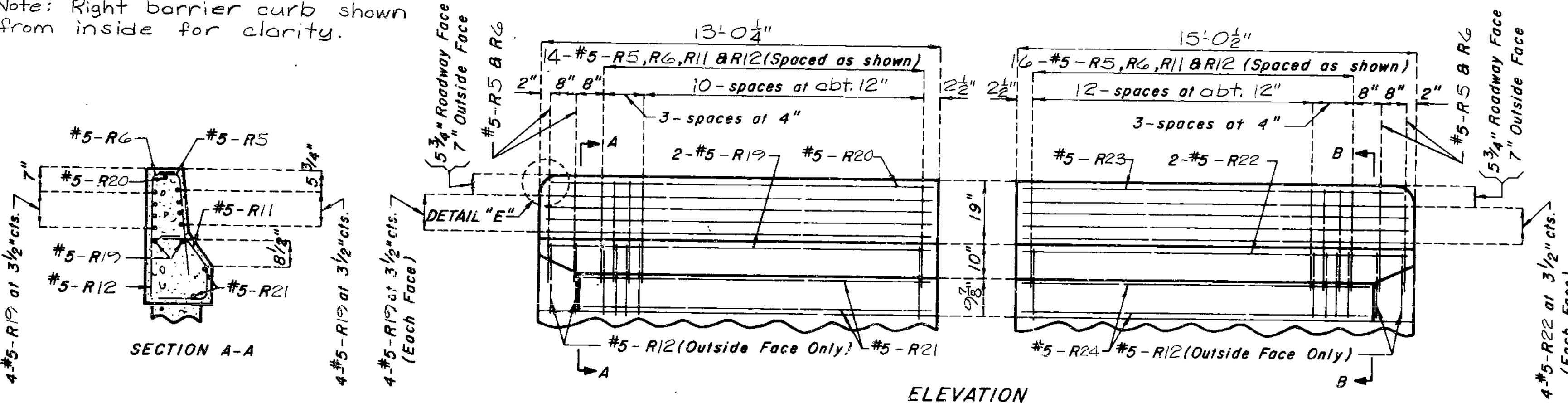
FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	19	159	

Note: Longitudinal dimensions shown are arc dimensions along centerline of top of barrier curb parallel to grade.  
 Top of barrier curb to be built parallel to grade with barrier curb joint (except at end bents) normal to grade.  
 All exposed edges of barrier curb shall have  $\frac{1}{2}$ " radius or  $\frac{3}{8}$ " bevel unless otherwise noted.

Note: Minimum clearance to reinforcing steel in roadway face of barrier curb shall be 3".



Note: Right barrier curb shown from inside for clarity.



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

300

STD. I.T. 3 REVISED  
 NOV. 1974 MAR. 1972

DETAILED AUG. 1978  
 CHECKED NOV. 1978

PART SECTION NEAR RIGHT BARRIER CURB  
 Sheet No. 28 of 31

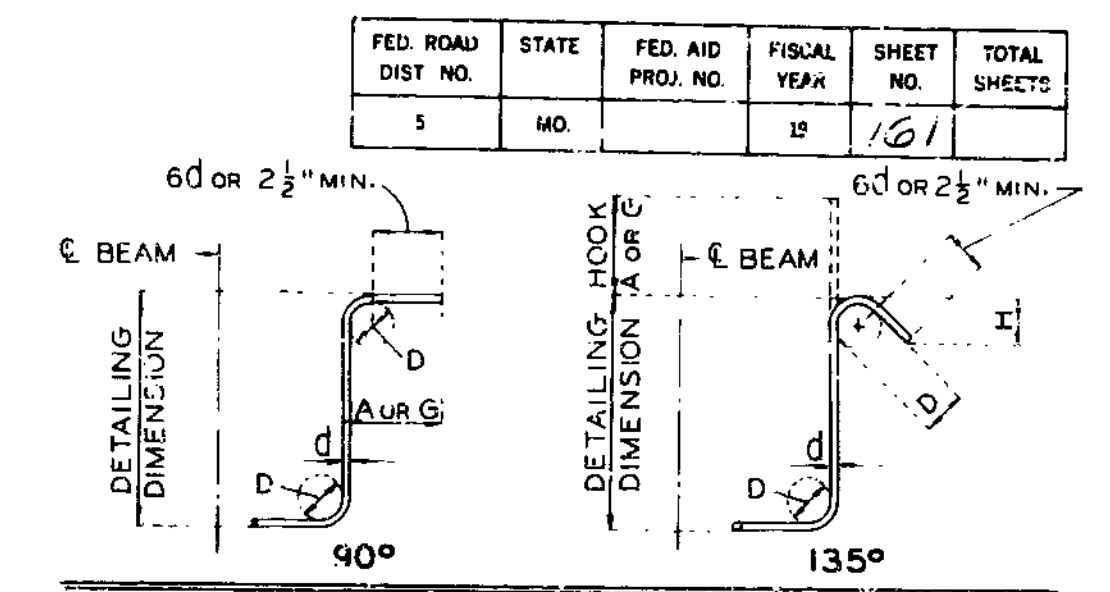


COMPLETE BILL OF REINFORCING STEEL

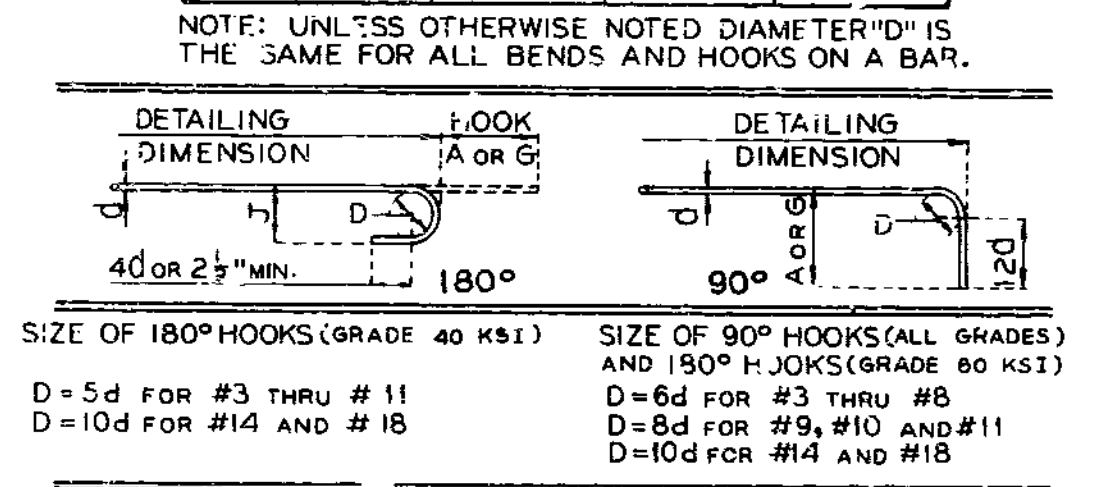
COMPLETE BILL OF REINFORCING STEEL

Table with columns: NO. REQD., MARK NO., LOCATION, EPOXY SHAPE NO., STIRRUP SUBSTR. VARIES, NO. EACH, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes items like FOOTING, BEAM, COLUMN, and A B WELLS.

Table with columns: NO. REQD., MARK NO., LOCATION, EPOXY SHAPE NO., STIRRUP SUBSTR. VARIES, NO. EACH, DIMENSIONS (B, C, D, E, F, H, K), NOMINAL LENGTH, ACTUAL LENGTH, WEIGHT. Includes items like BEAM, COLUMN, and A B WELLS.



STIRRUP HOOK DIMENSIONS table for GRADES 40-50-60 KSI, showing BAR SIZE, D, 90° HOOK, 135° HOOK, and APPROX. H.

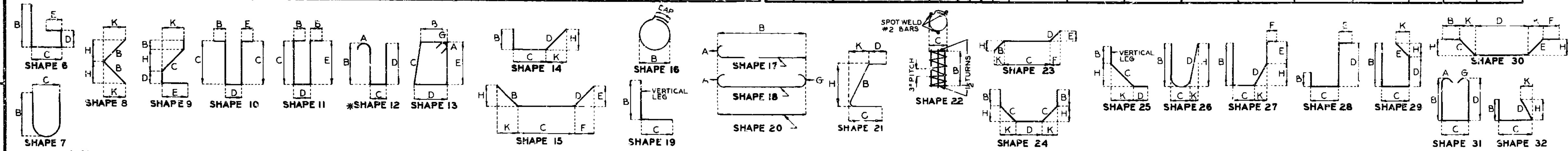


END HOOK DIMENSIONS table for 180° and 90° HOOKS, showing BAR SIZE, GRADE 40, GRADE 60, and ALL GRADES.

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH. \* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.

3002

STD. 90.8 MAY 1974 REVISED OCT. 1978



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

Sheet No. 30 of 31.

FED. ROAD DIST. NO.	STATE	FED. AID PRG. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	162	

COMPLETE BILL OF REINFORCING STEEL																								
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT							
								B	C	D	E	F	H	K										
2	6T70	WING		25	X			2	5.500	9	0.750	2	0.000			3	7.750	8	3.500	13	6	13	5	40
2	6T71	CURTAIN WALL		19	X			6	9.000	3	5.000					10	2	10	0					30
2	6T72	CURTAIN WALL		19	X			7	4.000	3	5.000					10	0	10	0					52
2	6T73	WING		25	X			2	5.500	9	5.375	23	0.000			4	3.500	8	5.000	13	10	13	9	41
28	4U70	BEAM		13	S	X		2	8.500	3	2.000	2	8.000			12	0	11	9					220
10	7U71	BEAM		14	S	X		4	7.000	23	2.50	5	9.625			4	1.250	4	1.250	12	4	12	1	247
19	4U72	BEAM		10	S	X		2	8.500	2	8.500					4	3	4	1					52
26	5U73	BACKWALL		10	S	X		2	1.000	9	0.000					4	3	4	1					111
9	4U74	CURTAIN WALL		10	S	X		2	11.000	6	0.000					4	7	4	5					37
2	4U75	BEAM		10	S	X		11	0.000	2	8.500					4	7	4	5					6
36	6V70	BACKWALL		20	X			7	4	7	4					7	4	7	4					397
2	6V71	BEAM		20	X			2	9	2	9					2	9	2	9					8
2	4V72	CURTAIN WALL		20	X			6	2	0.000						6	2	6	2					8
4	6V73	WING		17	X			8	0	0	0					8	0	0	0					48
4	6V74	WING		20	X			7	6	0.000						7	6	7	6					45
9	6V75	WING		17	X	V		2	7.000							3	3	3	3					67
		INCR = 5.125 IN						6	0.000							2	9	2	9					
9	6V76	WING		20	X	V		2	9.000							6	2	6	2					60
		INCR = 5.125 IN						6	2.000							6	10	6	10					9
2	4V77	CURTAIN WALL		20	X			6	10.000							9	1	9	1					55
4	6V78	WING		17	X			8	5.000							8	7	8	7					52
4	6V79	WING		20	X			8	7.000							3	4	3	4					10
2	6V80	BEAM		20	X			3	4.000							7	4	7	4					199
26	5V81	BACKWALL		20	X			7	4.000							3	3	3	3					72
9	6V170	WING		17	X	V		2	7.000							7	4	7	4					65
		INCR = 6.125 IN						6	8.000							2	9	2	9					
9	6V171	WING		20	X	V		2	9.000							6	10	6	10					65
		INCR = 6.125 IN						6	10.000							19	9	19	9					29
6	2W70	A B WELL		22	X			12	0.000	9	1.25					19	9	19	9					29
SUPERSTRUCTURE																								
548	5R1	BARRIER CURB		15	S			2	6.125	6	300					3	0	2	11					1667
548	5R2	BARRIER CURB		19	S			2	7.000	6	000					3	1	3	0					1715
508	5R3	BARRIER CURB		27	S			9	0.000	11	125	7	000	12	000	9	125	6	375	3	3	1		1634
508	5R4	BARRIER CURB		19	S			18	0.000	9	000					2	3	2	2					1149
570	5R5	BARRIER CURB		15	S			2	6.125	6	000					3	0	2	11					1734
570	5R6	BARRIER CURB		19	S			2	4.000	6	000					2	10	2	9					1635
536	5R7	BARRIER CURB		27	S			9	0.000	11	125	7	000	12	000	9	125	6	375	3	3	1		1724
536	5R8	BARRIER CURB		19	S			16	0.000	9	000					2	1	2	0					1118
34	5R9	BARRIER CURB		27	S			12	0.000	11	000	11	125	9	000	6	375	9	125	3	7	3	5	128
40	5R10	BARRIER CURB		19	S			20	0.000	9	000					2	5	2	4					97
30	5R11	BARRIER CURB		27	S			12	0.000	8	000	11	125	9	000	6	375	9	125	3	4	3	2	99
34	5R12	BARRIER CURB		19	S			16	0.000	9	000					2	1	2	0					71
10	5R13	BARRIER CURB		20	S			20	8.000						20	8	20	8						216
1	5R14	BARRIER CURB		20	S			20	6.000						20	6	20	6						21
2	5R15	BARRIER CURB		20	S			19	8.000						19	8	19	8						41
10	5R16	BARRIER CURB		20	S			12	8.000						12	8	12	8						132
1	5R17	BARRIER CURB		20	S			12	6.000						12	6	12	6						13
2	5R18	BARRIER CURB		20	S			11	8.000						11	8	11	8						24
10	5R19	BARRIER CURB		20	S			12	9.000						12	9	12	9						133
1	5R20	BARRIER CURB		20	S			12	7.000						12	7	12	7						13
2	5R21	BARRIER CURB		20	S			11	9.000						11	9	11	9						25

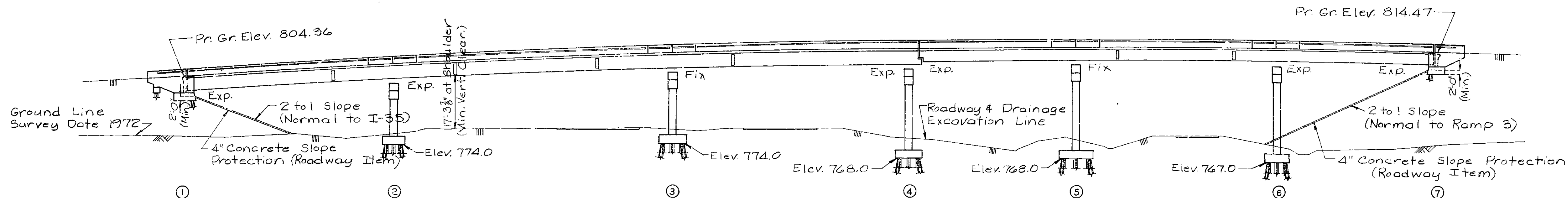
COMPLETE BILL OF REINFORCING STEEL																								
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT							
								B	C	D	E	F	H	K										
10	5R22	BARRIER CURB		20				14	9.000						14	9	14	9						154
1	5R23	BARRIER CURB		20				14	7.000						14	7	14	7						15
2	5R24	BARRIER CURB		20				13	9.000						13	9	13	9						29
12	5R25	BARRIER CURB		20				36	3.000						36	3	36	3						454
78	5R26	BARRIER CURB		20				9	9.000						9	9	9	9						793
18	5R27	BARRIER CURB		20				9	3.000						9	3	9	3						174
12	5R28	BARRIER CURB		20				46	4.000						46	4	46	4						580
12	5R29	BARRIER CURB		20				44	10.000						44	10	44	10						561
6	5R30	BARRIER CURB		20				52	6.500						52	7	52	7						329
6	5R31	BARRIER CURB		20				57	1.000						57	0	57	0						373
6	5R32	BARRIER CURB		20				52	7.000						52	7	52	7						329
12	5R33	BARRIER CURB		20				39	0.000						39	0	39	0						488
12	5R34	BARRIER CURB		20				49	10.000						49	10	49	10						624
12	5R35	BARRIER CURB		20				47	11.000						47	11	47	11						600
6	5R36	BARRIER CURB		20				55	11.000						55	11	55	11						350
12	5R37	BARRIER CURB		20				33	1.000						33	1	33	1						414
6	5R38	BARRIER CURB		20				56	0.000						56	0								

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	132	
SEC./SUR. 27		TWP. 51N		RGE. 32W	

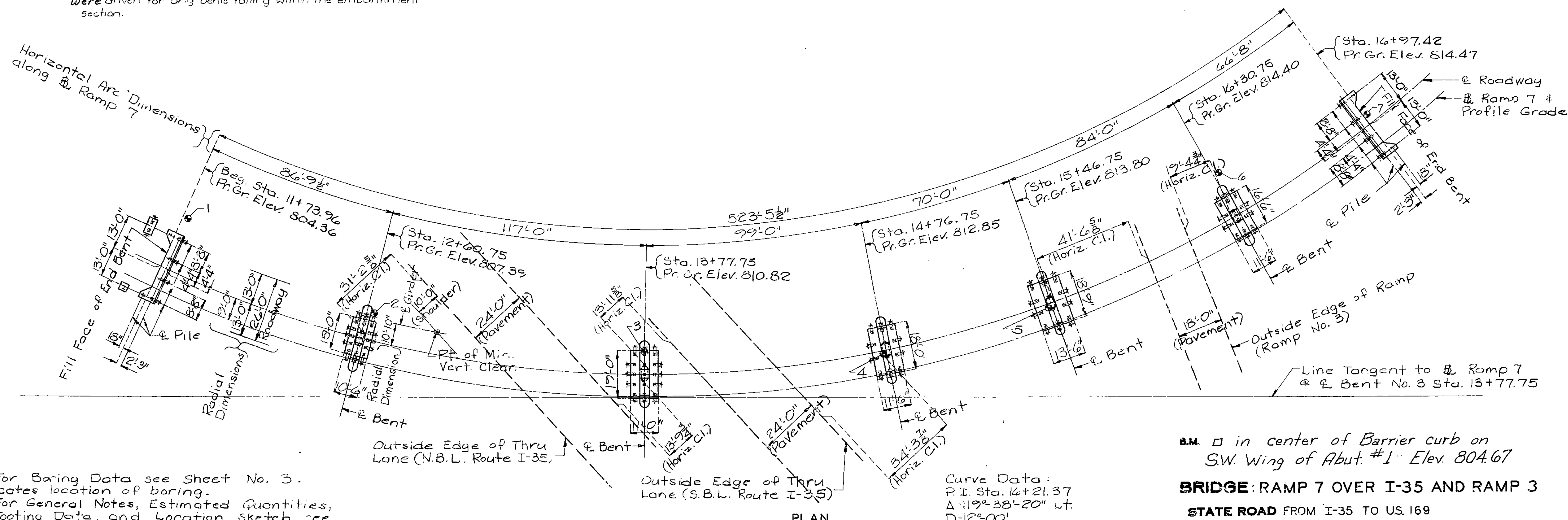
FINAL PLANS

(85'-117'-99'-5') (65'-84'-65') Cont. Comp. Curved R/Girder Spans



DEVELOPED GENERAL ELEVATION

Note: Compacted roadway fill, being placed under another contract, was completed to the final roadway section and at least 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 piles were driven for any bents falling within the embankment section.



PLAN

Note: For Boring Data see Sheet No. 3.  
 \* - Indicates location of boring.  
 For General Notes, Estimated Quantities, Pile & Footing Data, and Location sketch see Sheet No. 2.

Curve Data:  
 P.I. Sta. 14+21.37  
 Δ: 119° 38' 20" Lt.  
 D: 12° 00'  
 T: 821.00'  
 L: 996.98'  
 R: 477.46'  
 S.E.: .08'/Ft.

B.M. □ in center of Barrier curb on S.W. Wing of Abut. #1 Elev. 804.67

BRIDGE: RAMP 7 OVER I-35 AND RAMP 3

STATE ROAD FROM I-35 TO US. 169  
 AT I-35, I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 11+73.96 (RAMP 7)

JOB NO. 4-I435-49H RTE. I-435  
 CLAY COUNTY

DATE March 16, 1981

STD. 706.35
STD. 611.60
A-3388

DESIGNED OCT. 1977  
 DETAILED OCT. 1978  
 CHECKED Nov. 1978

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

Sheet No. 1A of 31.

304

FED. ROAD DIST. NO.	STATE	FED. AID PRCL. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	133	

BENT NO.	PILE DATA						
	1	2	3	4	5	6	7
Pile Type and Size	HP10x42						
Number	9	15	15	12	12	12	6
Approximate Length Ft.	60	39	37	32	35	41	80
Design Bearing Tons	44	46	50	46	51	50	37
Min. Tip Penetration Elev.	735.5	736.0	738.0	737.0	734.0	727.0	726.0
Hammer Energy Required Ft. Lbs.	10,800	10,800	11,800	10,800	12,100	11,800	10,000

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

ITEM	ESTIMATED QUANTITIES		
	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation	Cu. Yd.	500.0	500.0
Slab Drains	Each	20	20
Structural Steel Pile (10")	Lin. Ft.	3520	3520
Class B Concrete	Cu. Yd.	339.4	339.4
Class B2 Concrete	Cu. Yd.	538.7	538.7
Elastomeric Exp. Jt. Seal (2.0 inches)	Lin. Ft.	26	26
Elastomeric Exp. Jt. Seal (2.5 inches)	Lin. Ft.	52	52
Reinforcing Steel (Grade 60)	lb.	61,270	59,620
Reinforcing Steel (Epoxy Coated)	lb.	1,320	90,810
Fabricated Structural Carbon Steel	lb.		303,110
Fabricated Structural Low Alloy Steel (A572)	lb.		7,440
Painting (System B) Aluminum	Ton		186.0

Note: All concrete and reinforcement in safety barrier curbs is included with superstructure quantities.

GENERAL NOTES:  
Design Specifications:  
A. A. S. H. T. O. - 1973 Load Factor Design Substructure

FINAL PLANS

Design Loading:  
HS20-44 Modified 24,000# Tandem Axle  
15#/sq. ft. Future Wearing Surface Earth 120#  
Equivalent Fluid Pressure 30#  
Fatigue Str. - Case II Interim 1974

Design Unit Stresses:  
Class B Concrete (substructure)  $f'c = 3,000$  psi  
Class B2 Concrete (superstructure)  $f'c = 4,000$  psi  
Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
Structural Carbon Steel  $f_s = 20,000$  psi  
Structural Steel (A.S.T.M. A572) Grade 50  $f_s = 27,000$  psi  
Steel Pile  $f_b = 9,000$  psi

Fabricated Steel:  
Field connections, High Strength Bolts  $\frac{3}{4}$ "  $\phi$ ,  
holes  $\frac{1}{16}$ "  $\phi$  except as noted.

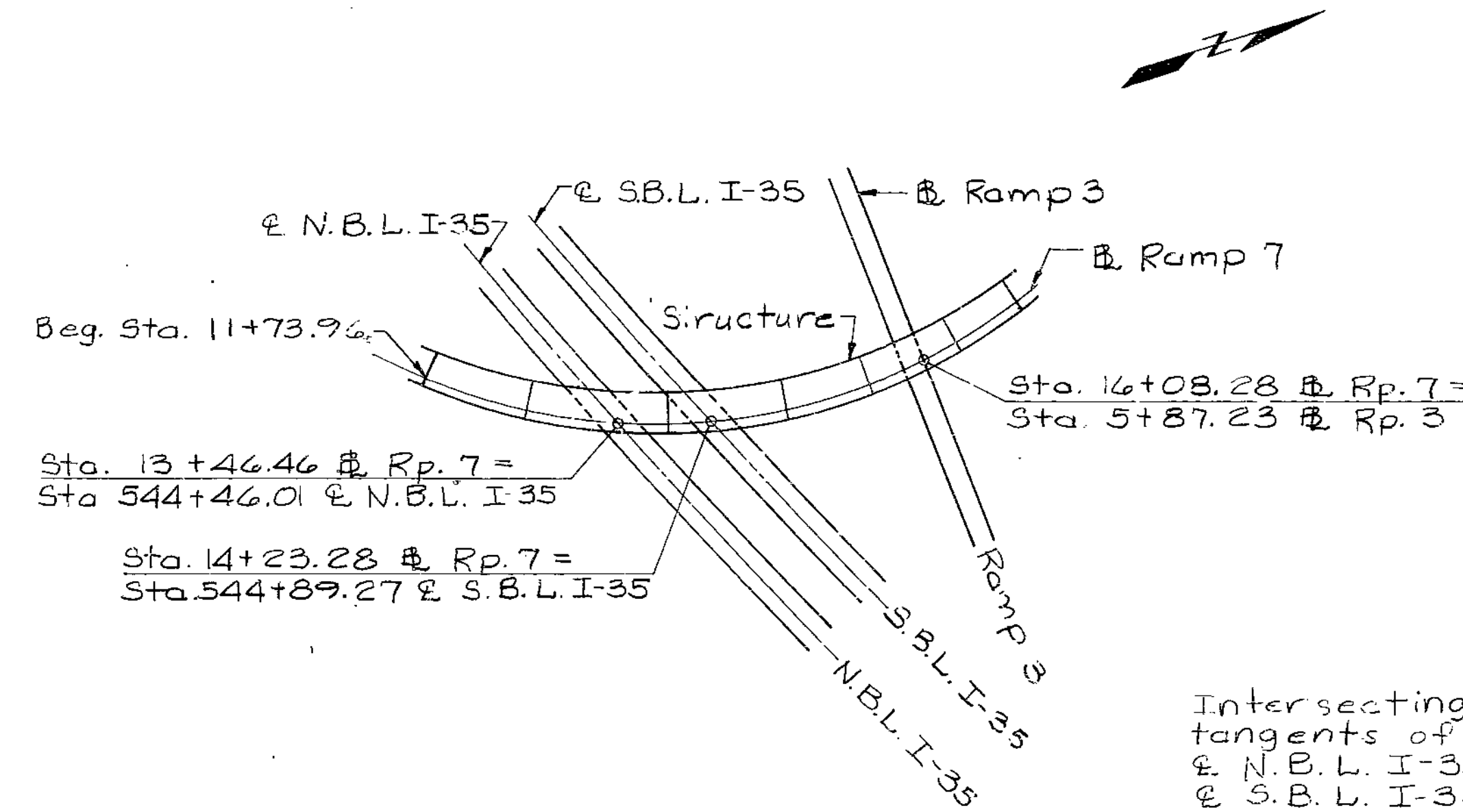
Painting:  
Paint: System B by contractor in accordance with Std. Spec. 712.12. (Color of the final field coat for System B aluminum.)

Reinforcing Steel:  
Minimum clearance to reinforcing steel is  $\frac{1}{2}$ " unless otherwise shown. All reinforcing bars in tops of substructure beams or caps were spaced to clear anchor bolts for bearings by at least  $\frac{1}{2}$ ".

305

Construction Clearance (Rt. I-35, N.B.L. & S.B.L.):  
A minimum vertical clearance of 15'-0" from existing lanes and a minimum lateral clearance of 28'-0", centered on existing lanes was maintained during construction.

Construction Clearance (Ramp 3):  
A minimum vertical clearance of 15'-0" from existing lanes and a minimum lateral clearance of 16'-0", centered on existing lane was maintained during construction.



LOCATION SKETCH

Intersecting angles between tangents of Ramp 7 and:  
 E. N.B.L. I-35 = 43°-26'-22"  
 E. S.B.L. I-35 = 52°-08'-02"  
 Ramp 3 = 95°-07'-09"

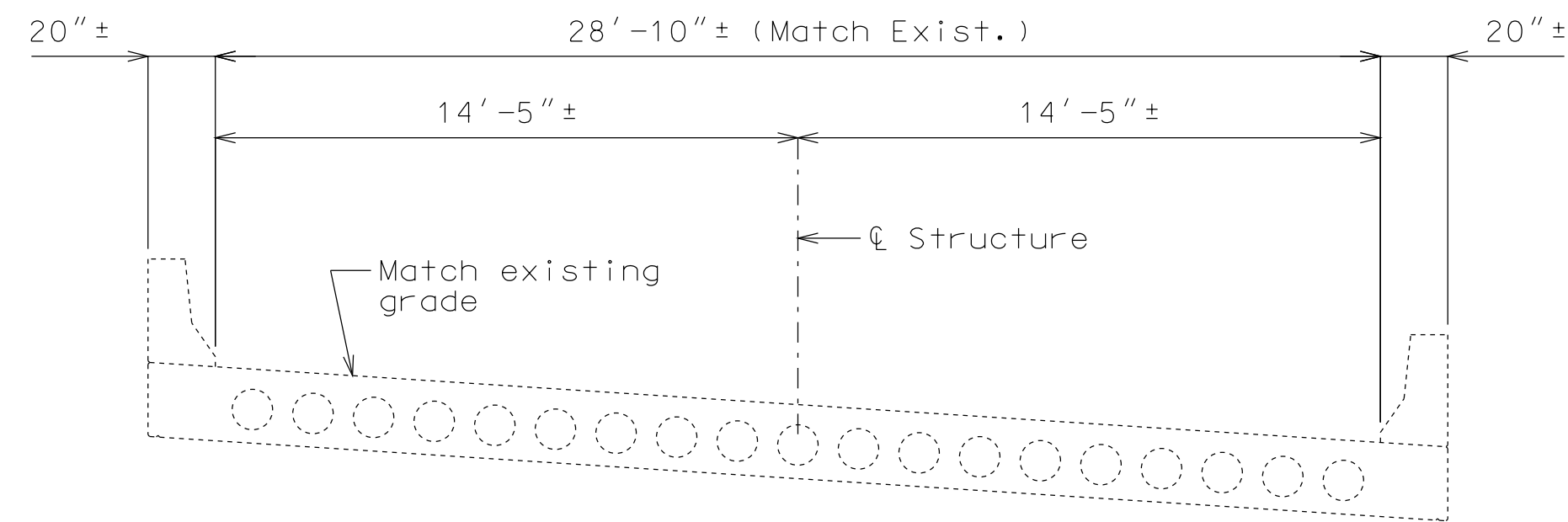


MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

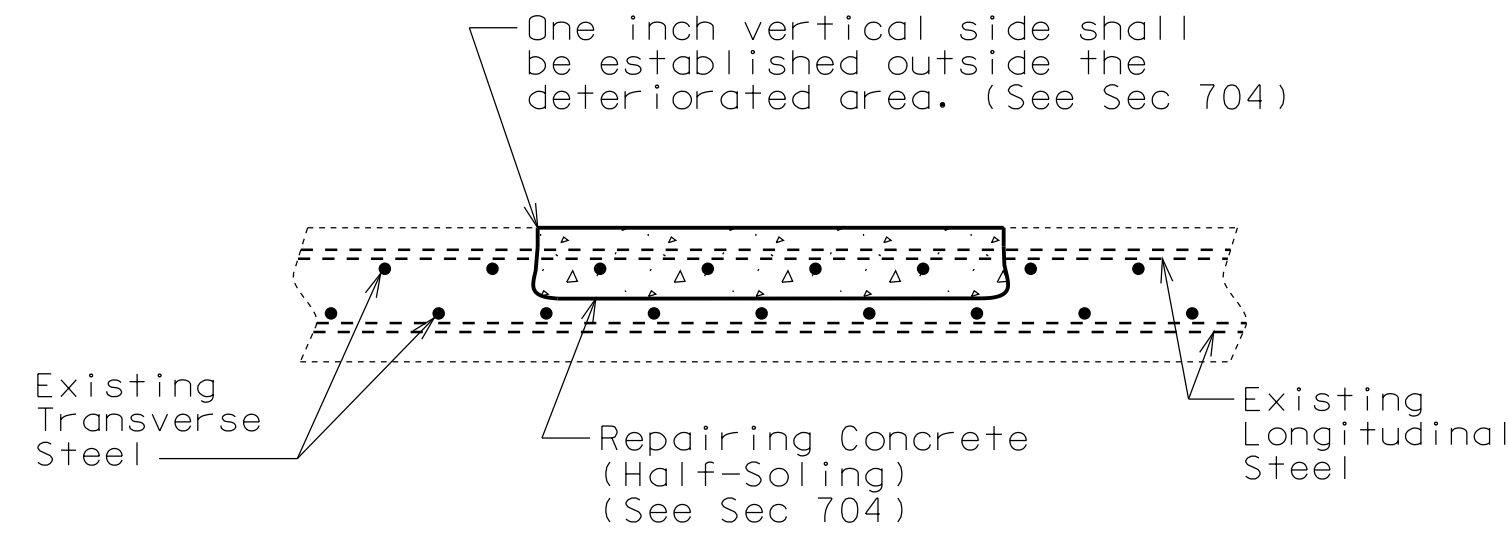
U.I.P. Existing (48'-60'-48'-35')  
Continuous Concrete Voids Slab Spans

SEC/SUR 27 TWP 51N RGE 32W

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."



SECTION THRU EXISTING SLAB



DETAIL SHOWING APPROACH SLAB REPAIR AT END BENT NO. 1 (HALF-SOLING)

Note:  
The contractor shall repair the approach slab in accordance with "Repairing Concrete Deck (Half-Soling)", see Sec 704.

General Notes:

Design Specifications:  
2002 - AASHTO 17th Edition  
Load Factor Design  
Bridge Deck Rating = 8

Traffic Control:  
Traffic over structure to be maintained during construction. See Roadway plans for traffic control.

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

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

Estimated Quantities

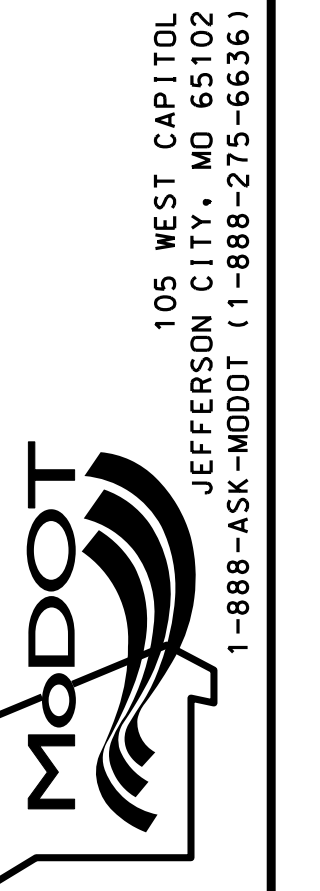
Item	sq. foot	Total
Repairing Concrete Deck (Half-Soling)		200

REPAIRS TO BRIDGE: RAMP 2 (I-435 N TO I-435 S) OVER RAMP 9 (I-435 S TO RTE. 69)

STATE ROAD WITHIN I-35/RTE. 69 INTERCHANGE

STA. 9+35.32± (Ramp 2) (Match Existing) STD. 706.35

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

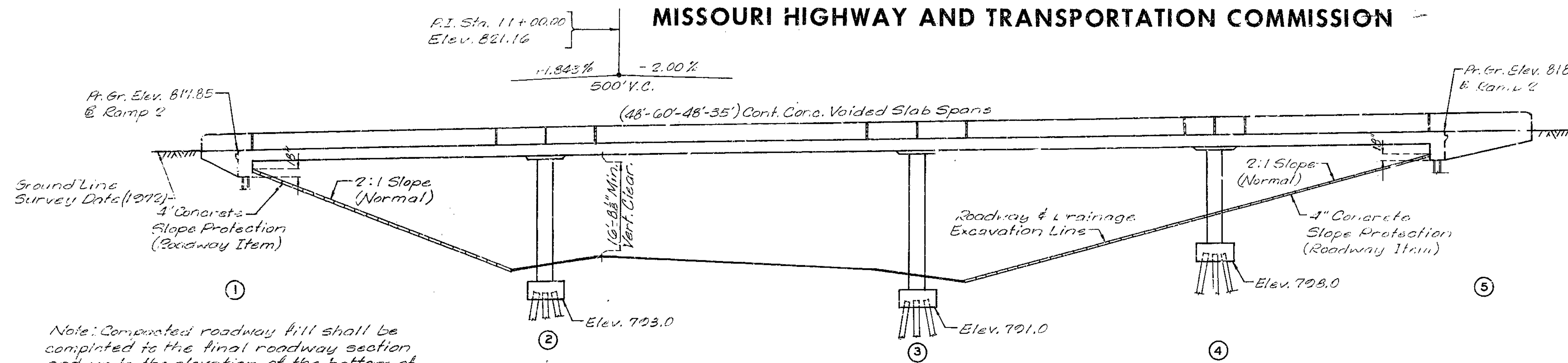


IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED 12/31/2012	
ROUTE I-435	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CLAY	
JOB NO. J412381	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A33901	

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	172	
SEC./SUR.27 TWP.51N RGE.32W					



**GENERAL NOTES**

Design Specifications:  
A.A.E.H.T.O. - 1973 Local Factor Design.

Design Loading:  
HS20-44, 15' Sp. Ft. Future Wearing Surface  
Modified 24,000# Tandem Axle  
Earth 120# Equivalent Fluid Pressure 30#

Design Unit Stresses:  
Class B1 Concrete  $f_c = 4,000$  psi  
Class B2 Concrete  $f_c = 4,000$  psi  
Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
Steel Pile  $f_b = 2,000$  psi

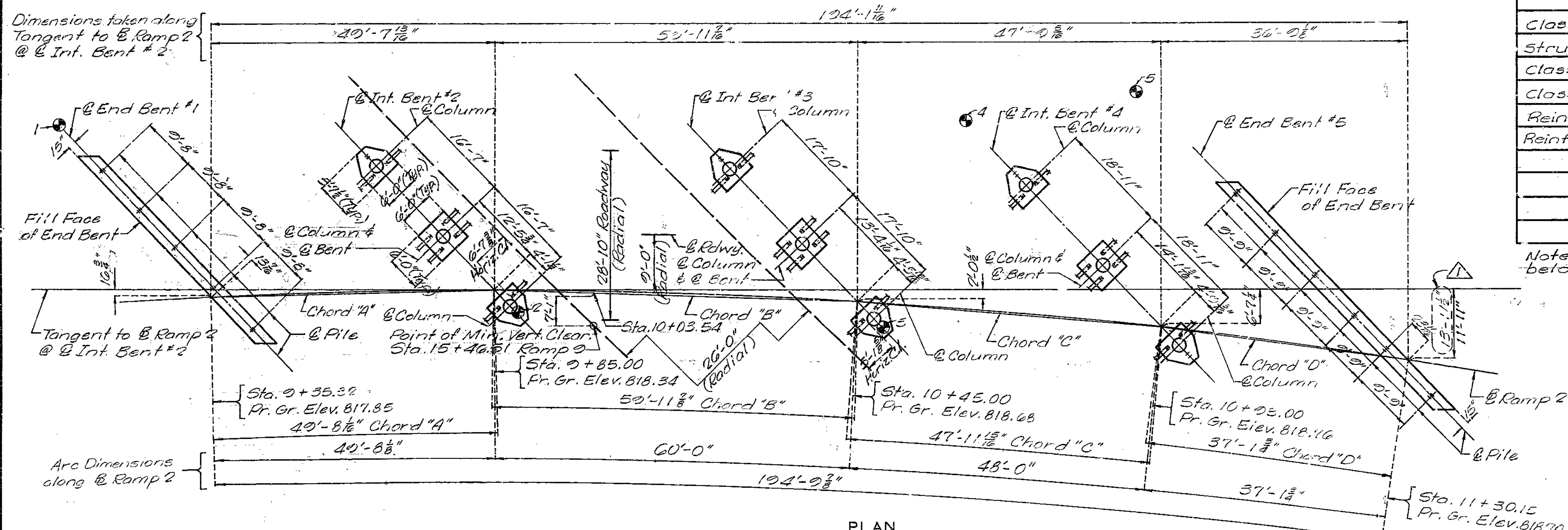
Reinforcing Steel:  
Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.

Note: Compacted roadway fill shall be compacted 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 piles are driven for any bents falling within the embankment section.

GENERAL ELEVATION

ESTIMATED QUANTITIES	
ITEM	TOTAL
Class I Excavation	Cu.Yd. 130
Structural Steel Pile (HP10x42)	Lin.Ft. 1179
Class B1 Concrete	Cu.Yd. 97.9
Class B2 Concrete	Cu.Yd. 429.4
Reinforcing Steel (Grade 60)	Lbs. 48,270
Reinforcing Steel (Grade 60) (Epoxy Coated) Lbs.	50,580

Note: All concrete above construction joint below slab is included in B2 quantities.



PLAN

PILE DATA					
BENT NO.	1	2	3	4	5
Pile Type and Size	HP10x42	HP10x42	HP10x42	HP10x42	HP10x42
Number	5	10	10	10	6
Approx. Length Ft.	48	22	20	35	44
Design Bearing Tons	35	52	30	44	27
Hammer Energy Req'd Ft.Lbs	7000	12,000	9200	10,400	7000

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

B.M. #61 - Elev. 812.05 "D" on N.E. Corner of Ramp 2 Bridge No. A-1570 @ Median I-435 282' R.H. Sta. 501+68

**BRIDGE: RAMP 2 OVER RAMP 9**  
STATE ROAD FROM RTE. I-35 TO RTE. 210  
AT I-35 & I-435 INTERCHANGE  
PROJECT NO. I-435-1(163) STA. 9+35.32 (RAMP 2)

JOB NO. 4-I-435-49H RTE. I-435  
CLAY COUNTY

STD. 706.35
STD. 611.60
A-3390

Ramp 2 CURVE DATA  
P.I. = 10+86.23  
 $\Delta = 101^\circ-51'-05"$  R.H.  
D = 6'-30"  
T = 1086.23'  
L = 1567.70'  
R = 881.05' (Chord)  
B.E. = 0.065%

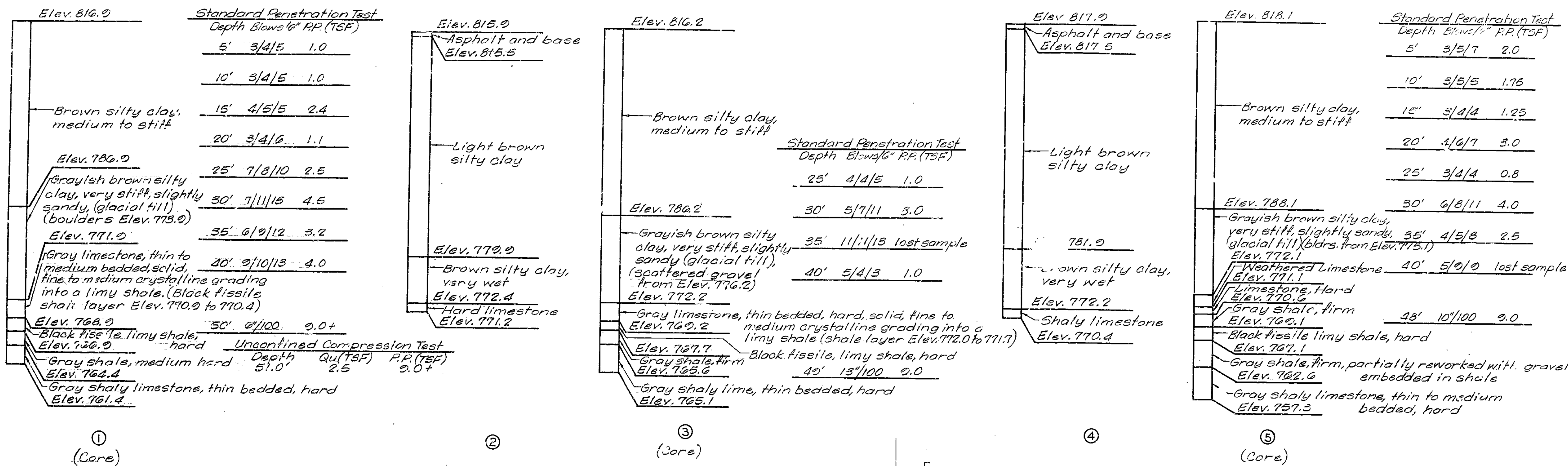
Note: Bents cannot be accurately located from the reference point on the tangent by conventional survey methods based on 100' chords. All bents are parallel.

Note: Longitudinal dimensions shown are horizontal. For boring data see Sheet No. 2. 'D' indicates location of borings. For substructure layout data see Sheet No. 3.

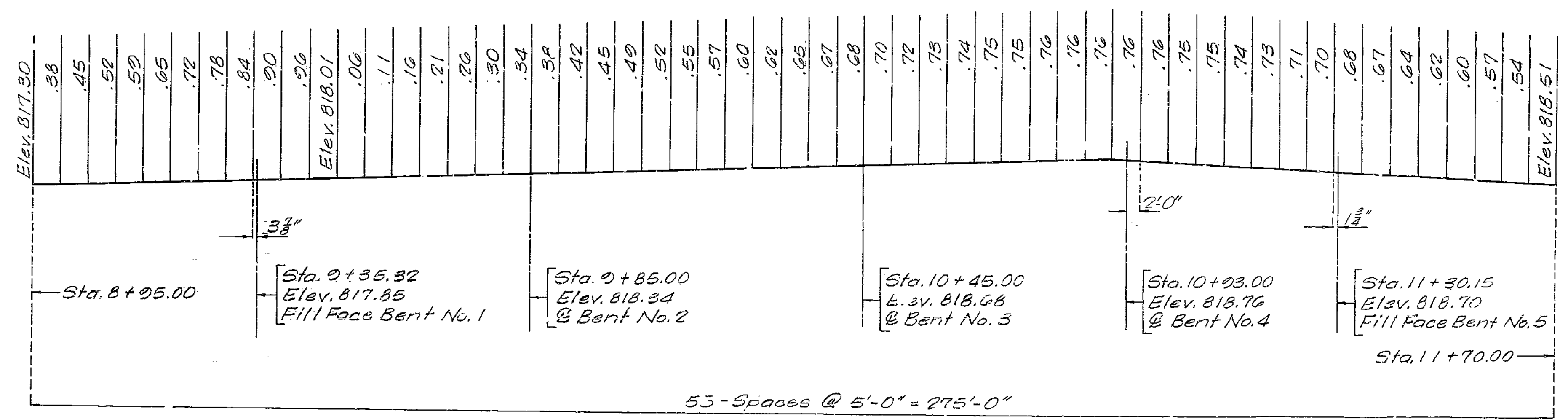
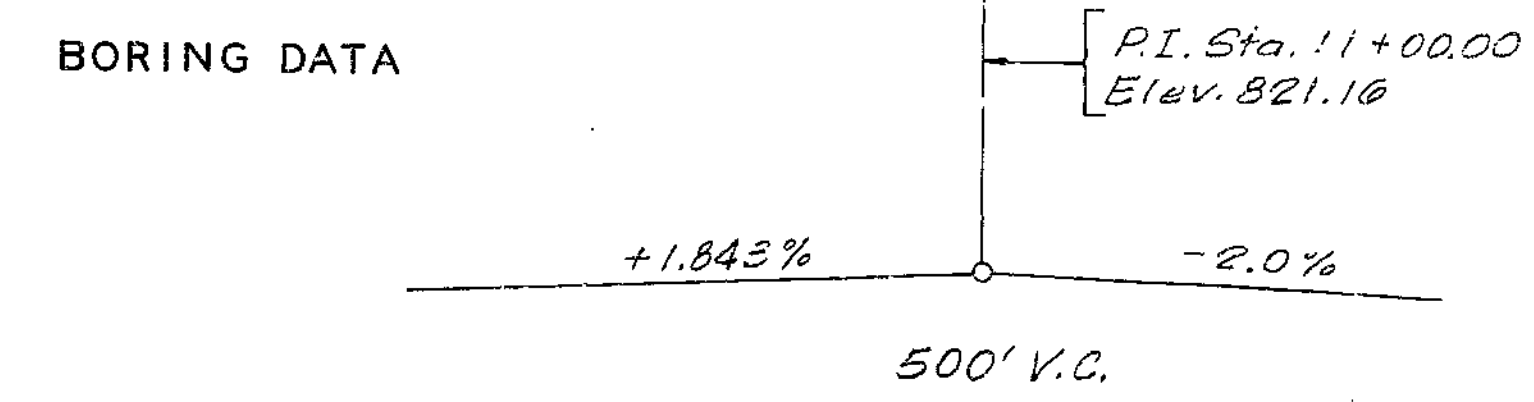
Note: This drawing is not to scale. Follow dimensions.

316

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	173	



Note: For location of borings see Sheet No. 1.



317

DETAILED June 1978  
 CHECKED Oct. 1978

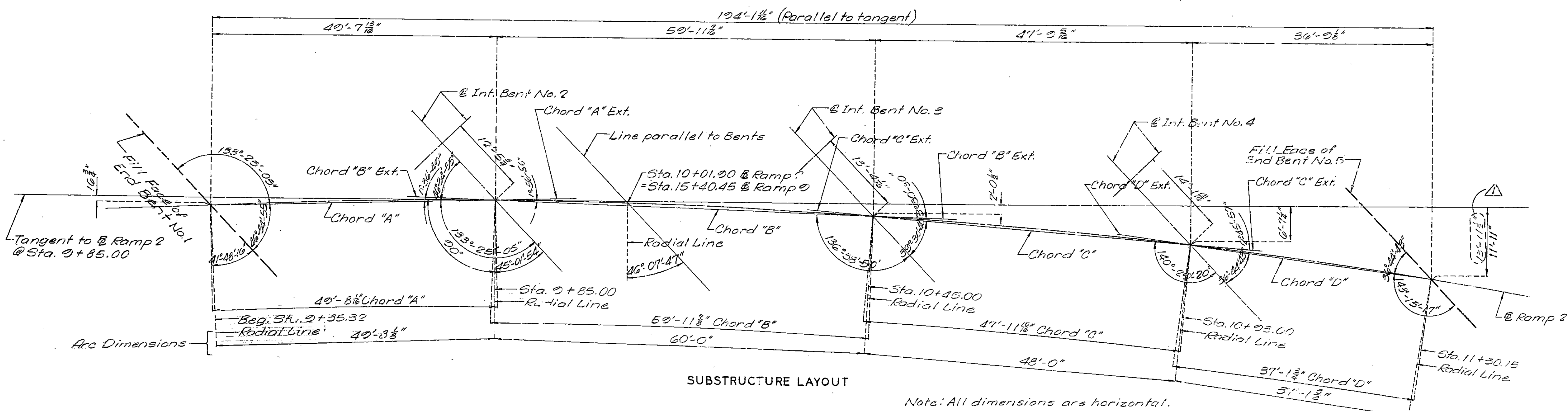
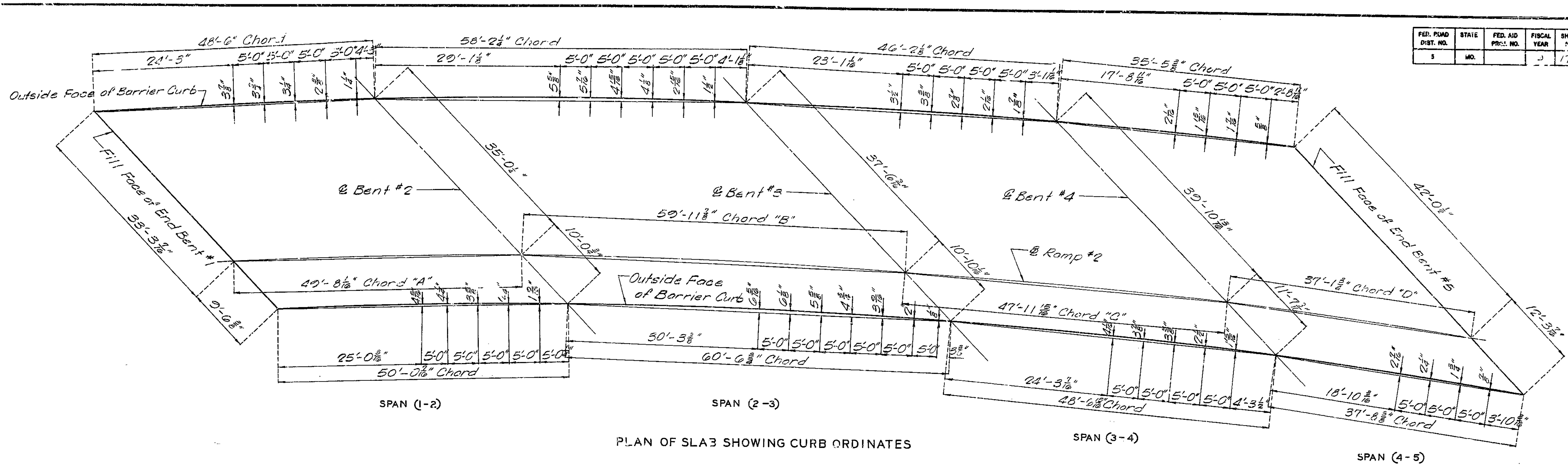
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2 of 13.

CLAY COUNTY

A-3390

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		3	174	



318

DATE: July 1978  
CHECKED: Oct. 1978

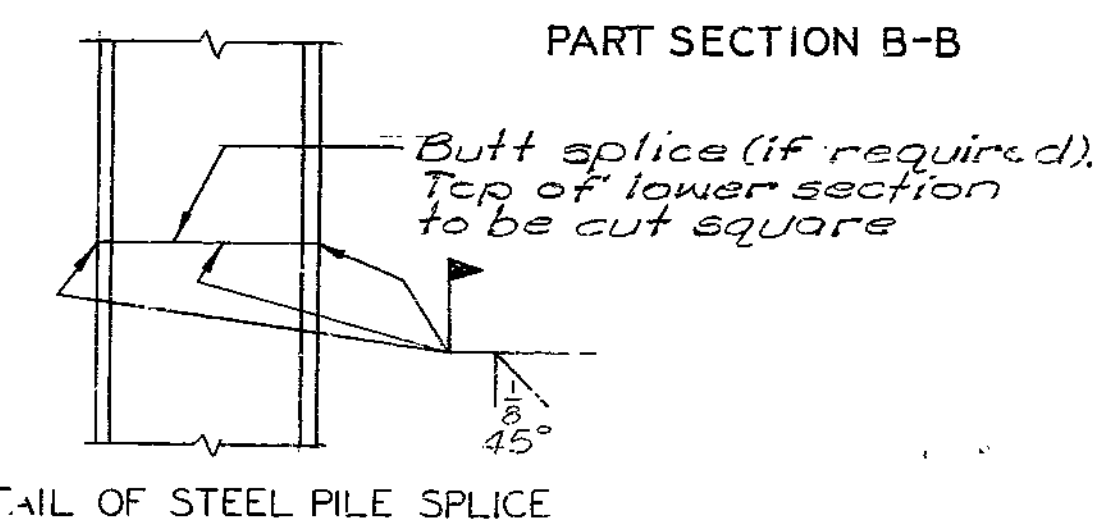
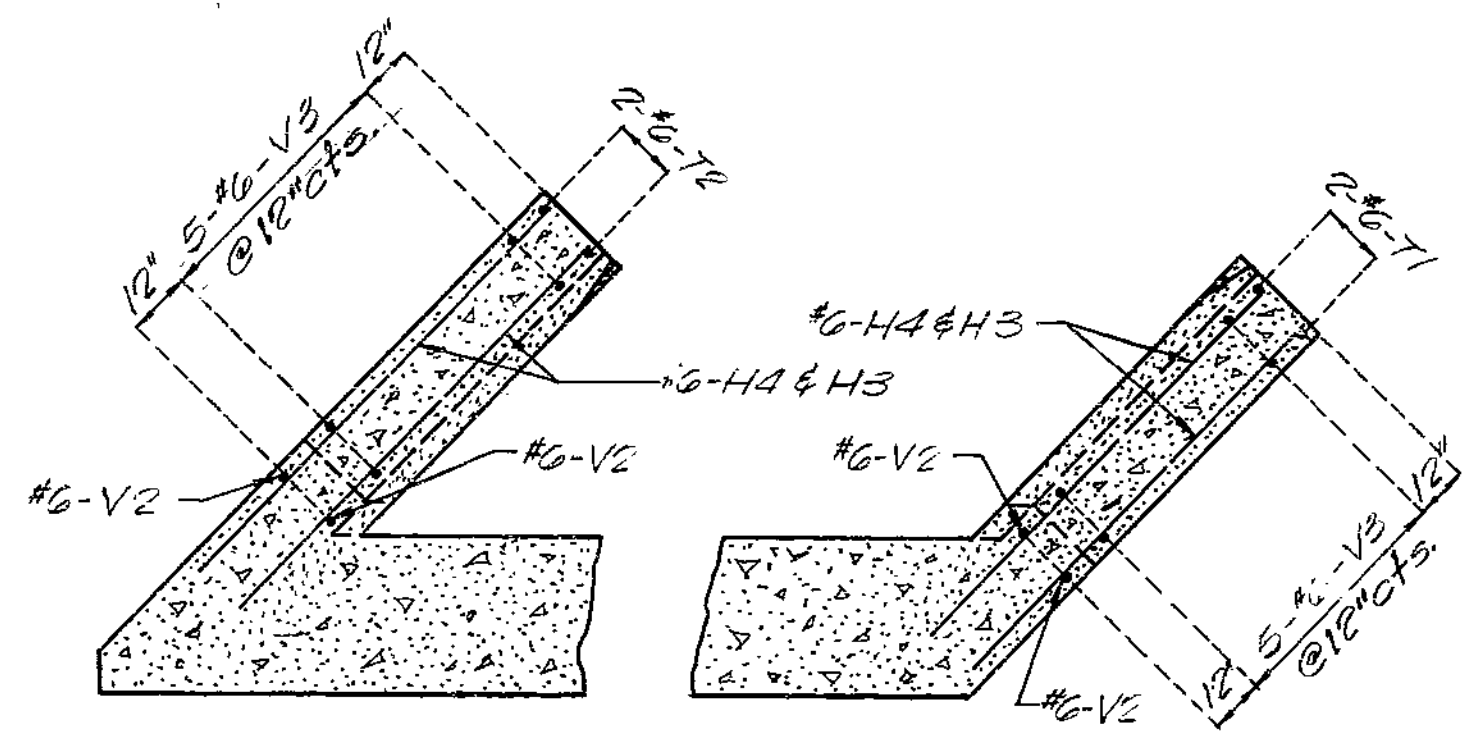
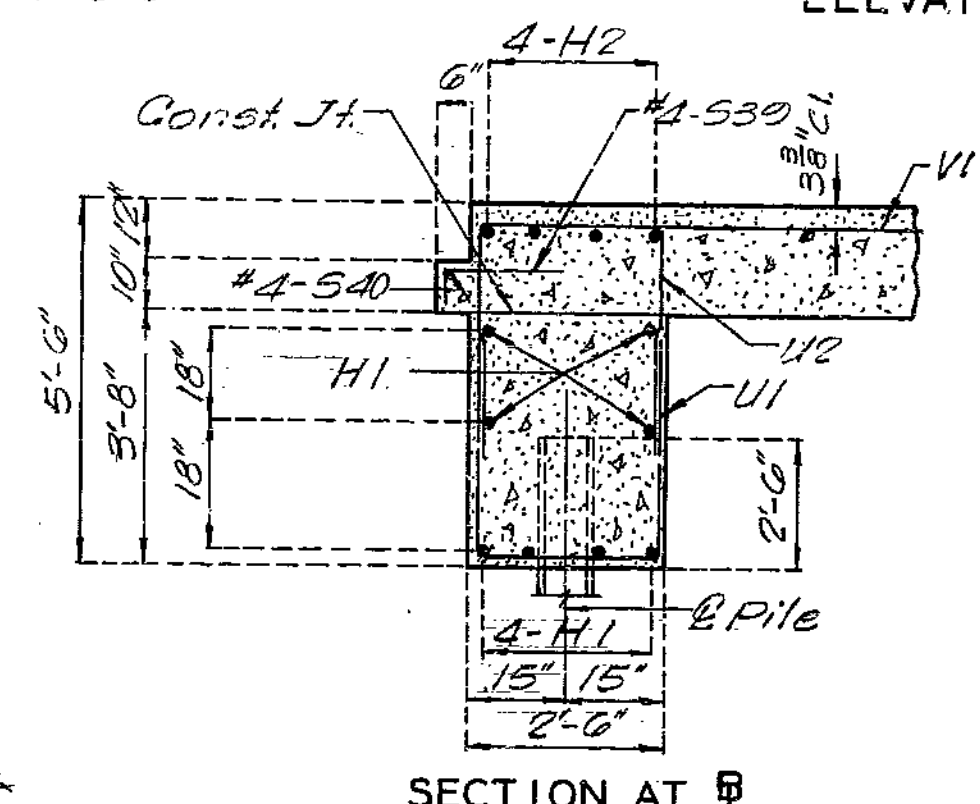
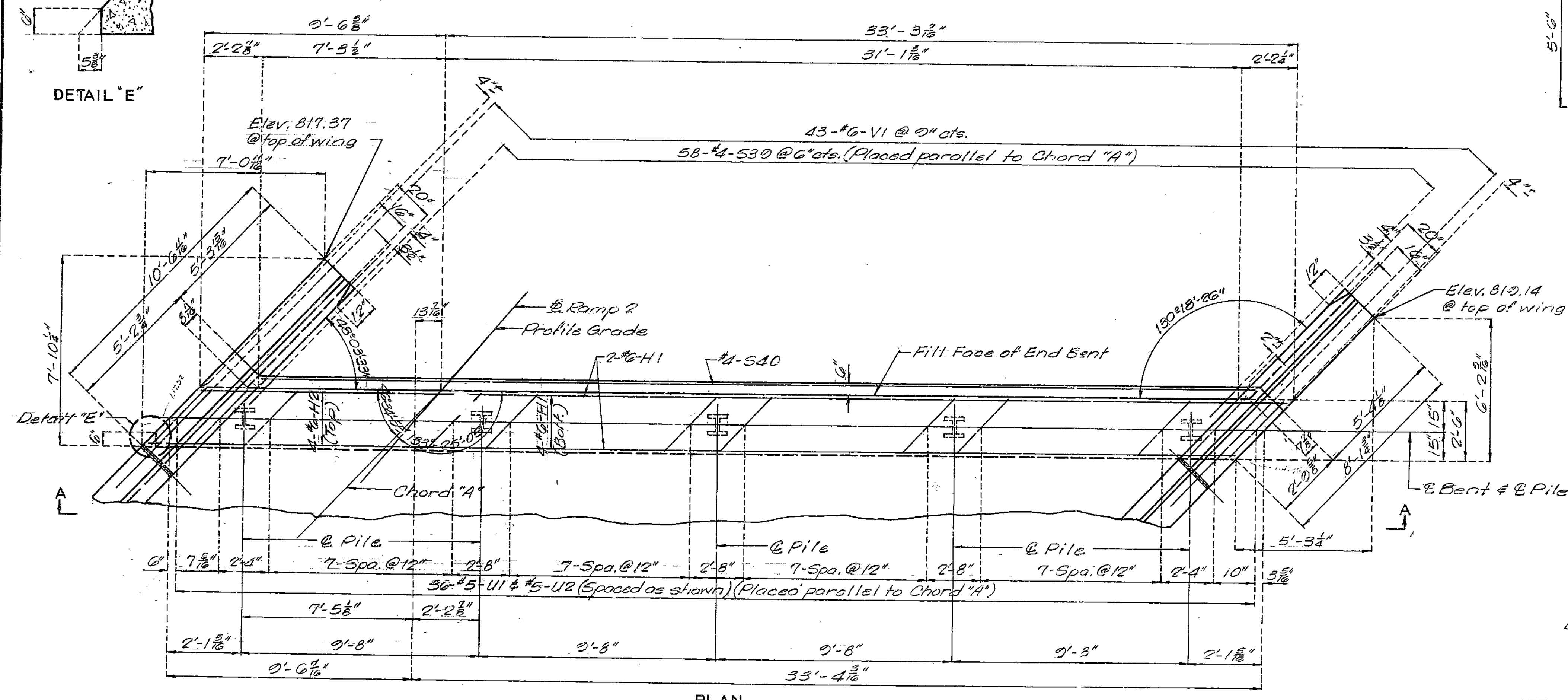
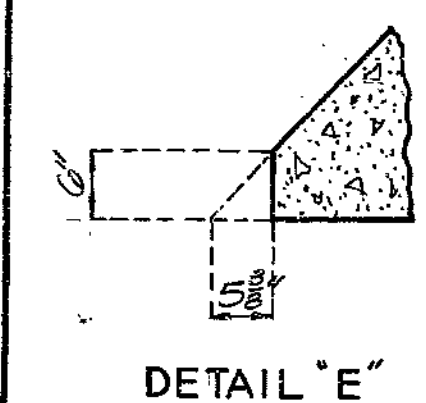
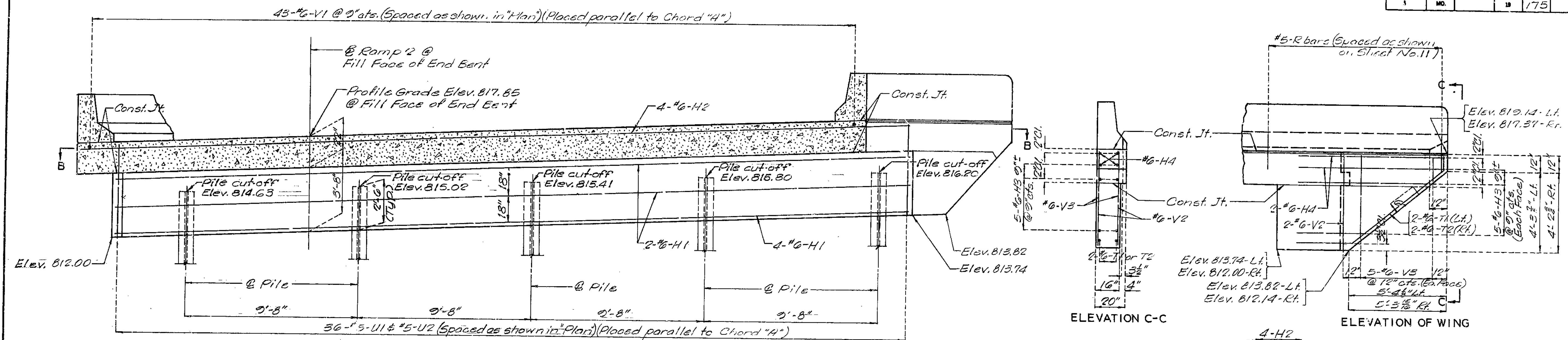
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 3 of 13. Revised 10-29-81

CLAY COUNTY

A-3390

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MO.		18	175	



319

DETAILED July 1978  
CHECKED Oct. 1978

DETAILS OF END BENT NO. 1

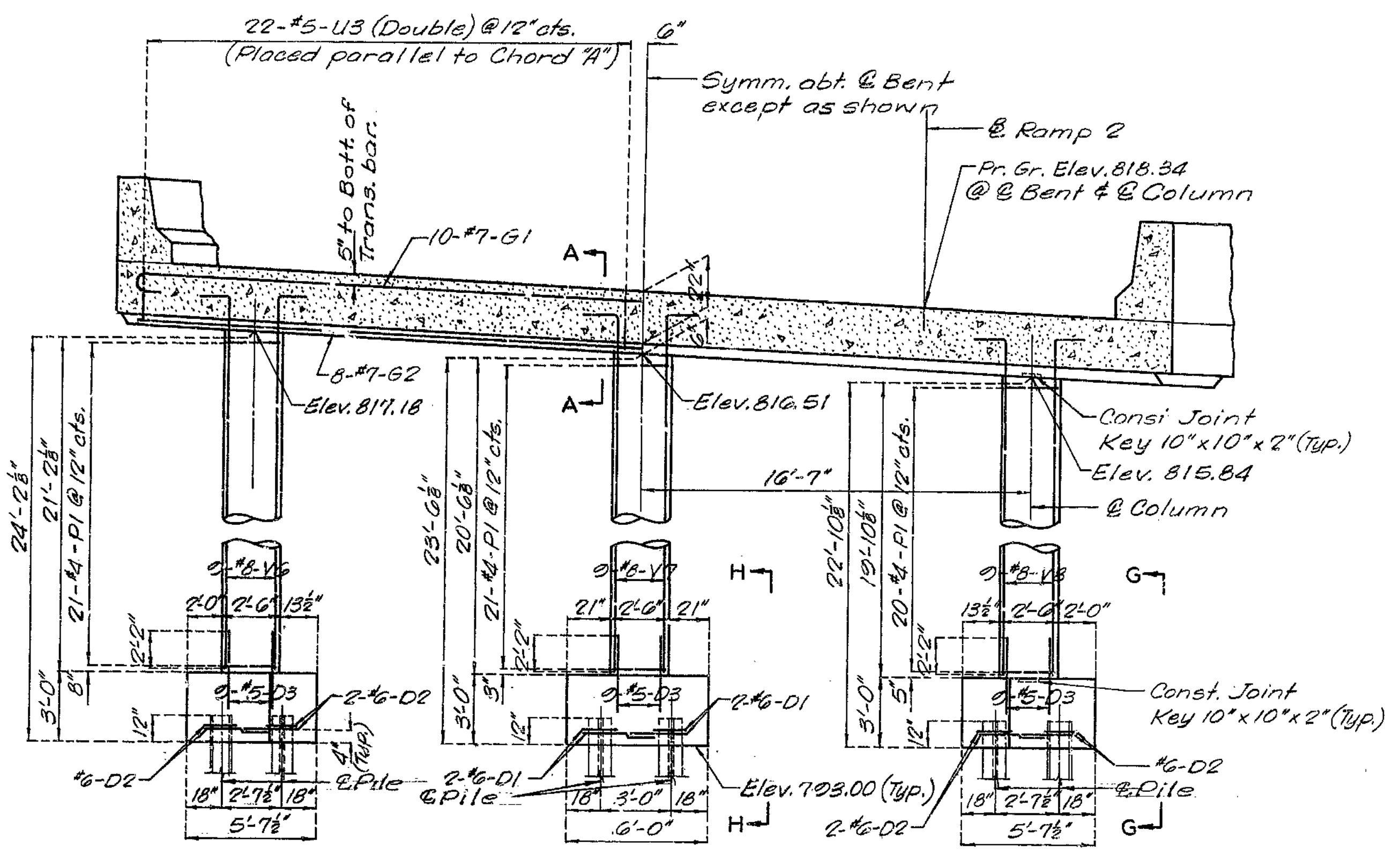
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 13.

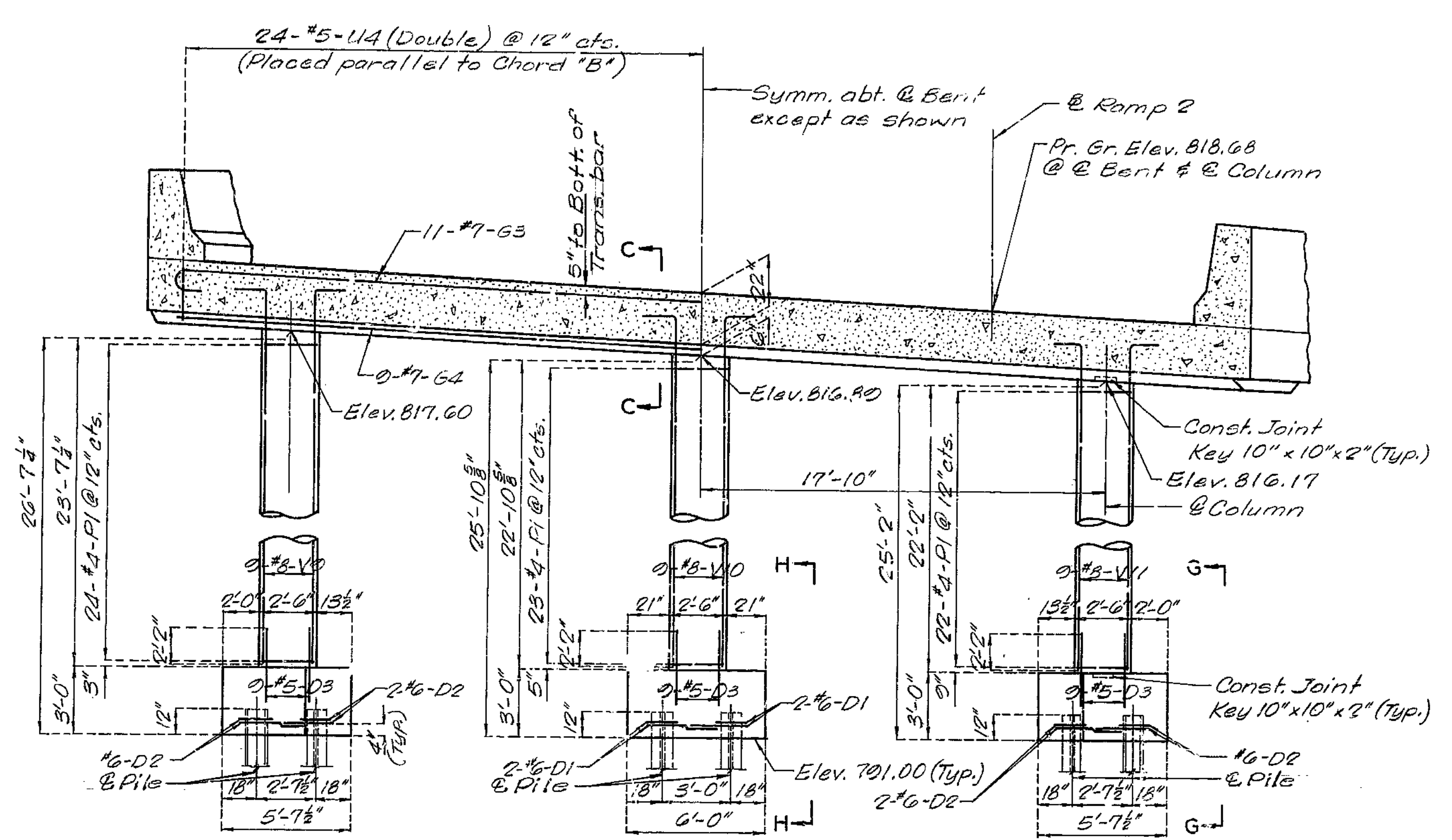
CLAY COUNTY

A-3390

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	176	

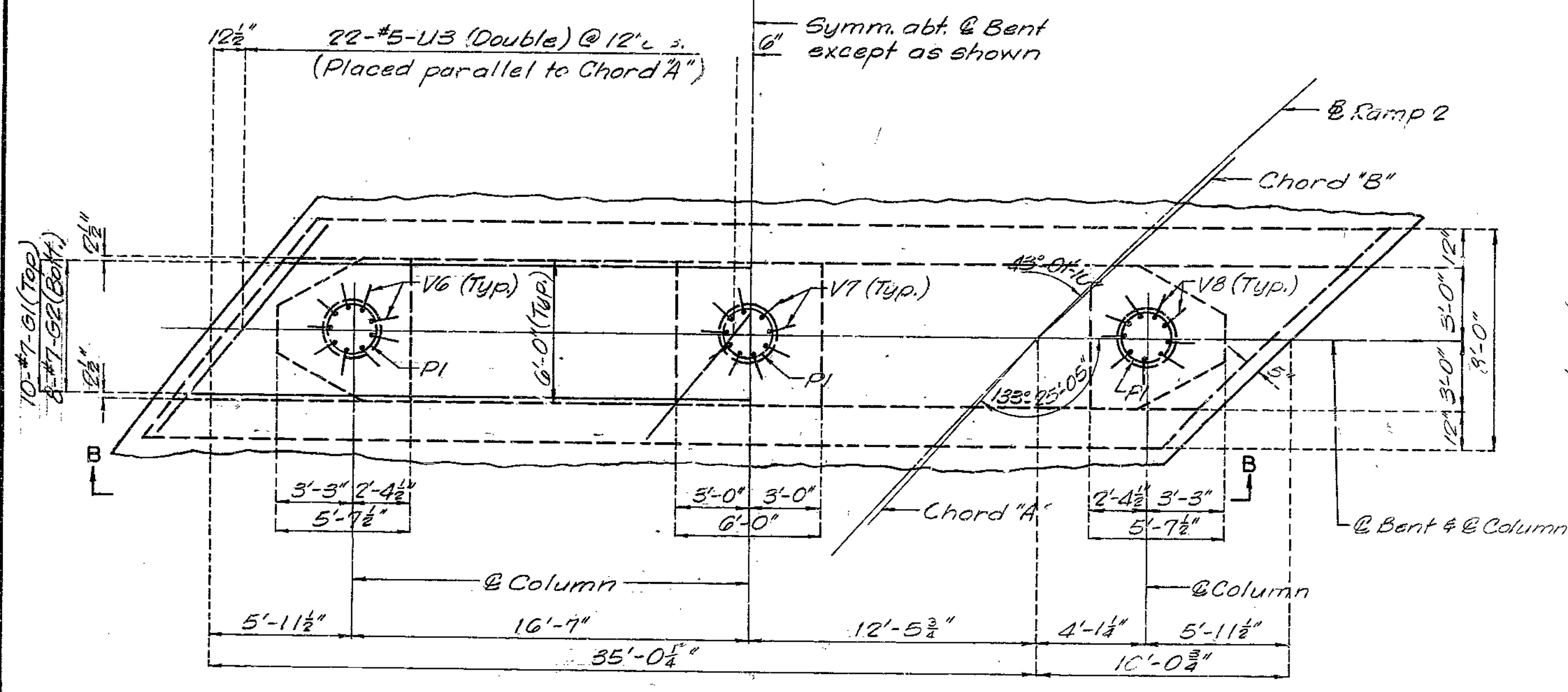


SECTION B-B



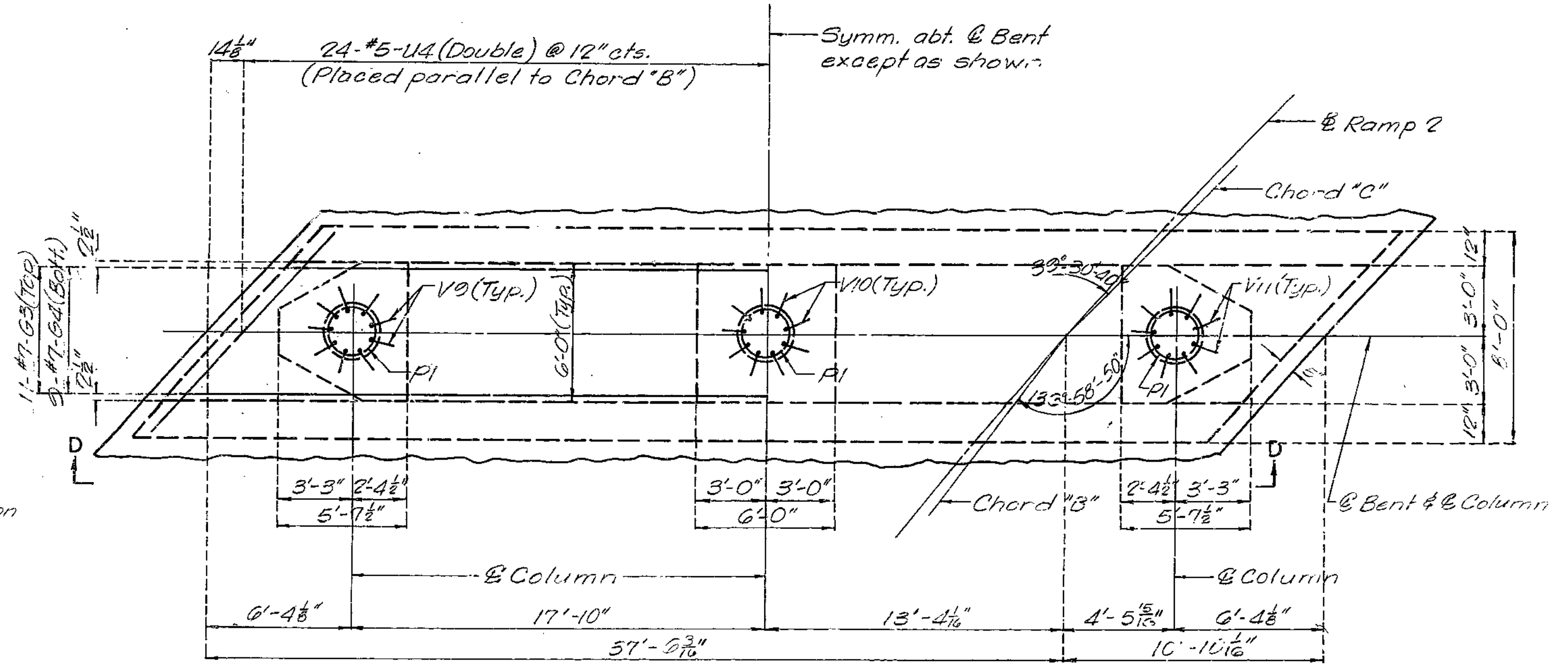
SECTION D-D

Note: For details and reinforcement of footings see Sheet No. 6.  
For Sections A-A, C-C, E-E and H-H see Sheet No. 6.



PLAN

DETAILS OF INTERMEDIATE BENT NO. 2



PLAN

DETAILS OF INTERMEDIATE BENT NO. 3

320

DETAILED June 19 78  
CHECKED Nov. 19 78

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

Sheet No. 5 of 13.

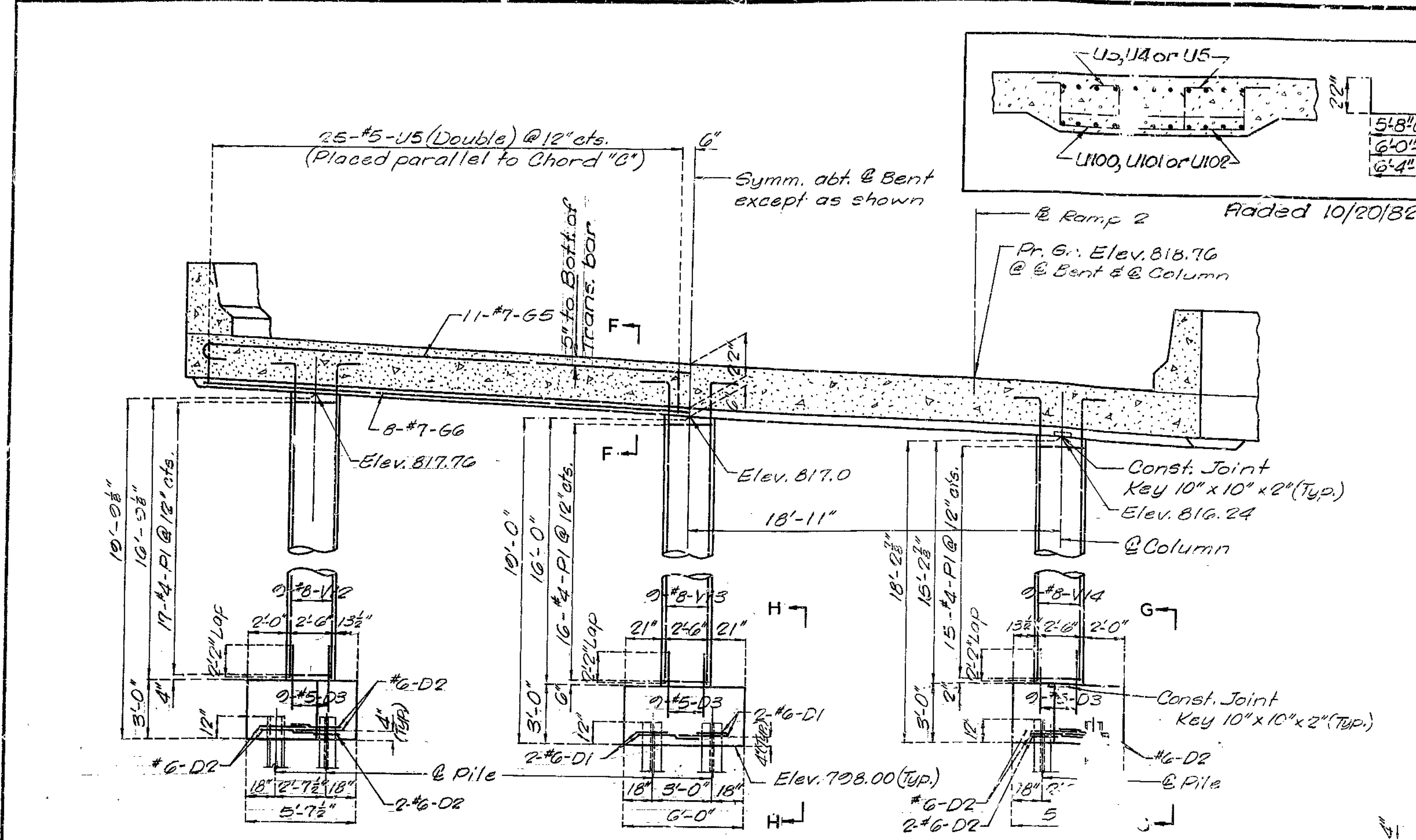
CLAY COUNTY

A-3390

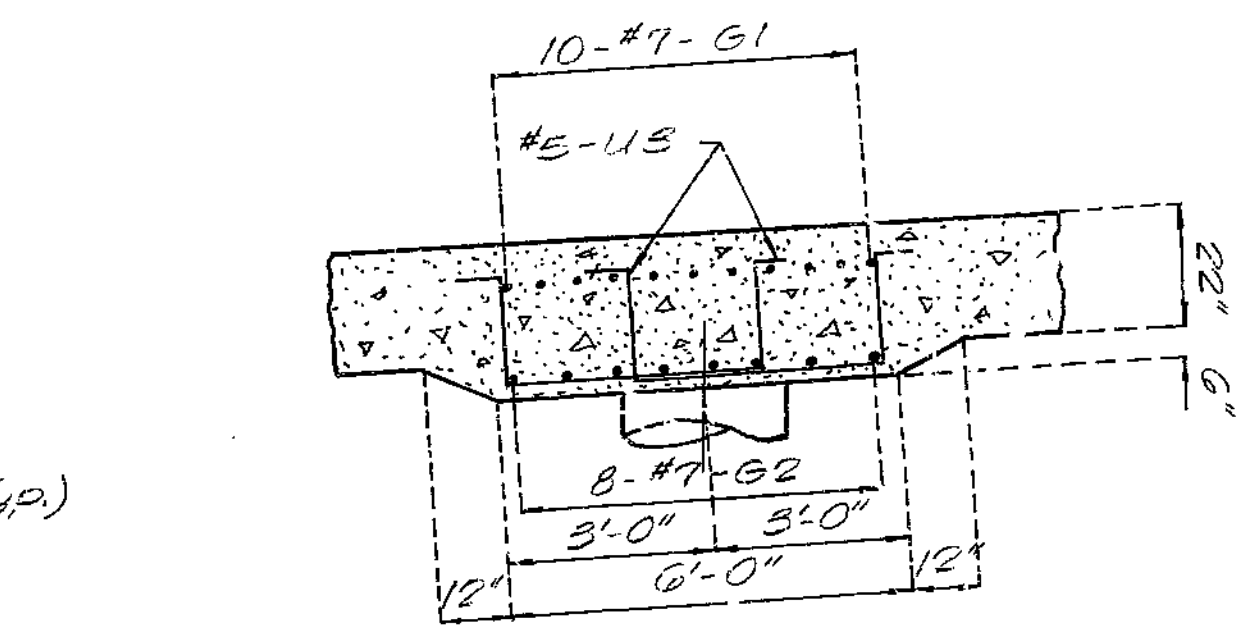
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	177	

Note: For location of Sections A-A and C-C see Sheet No. 5.

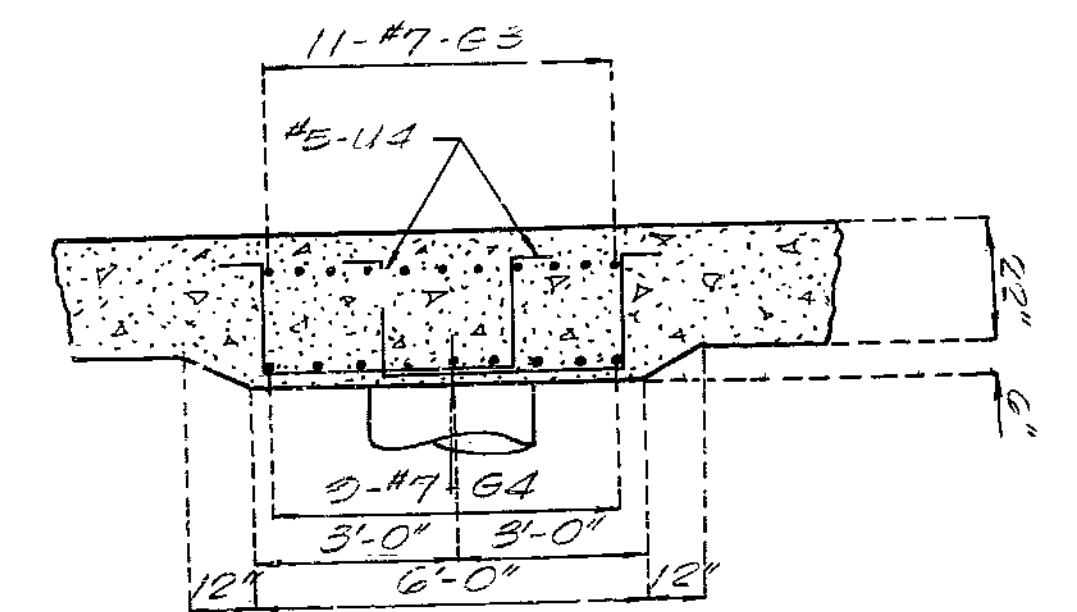
REQ'D.	WT.
B#2	88#5-U100 840#
B#3	94#5-U101 930#
B#4	100#5-U102 1020#
	<b>Total Wt. 2790#</b>



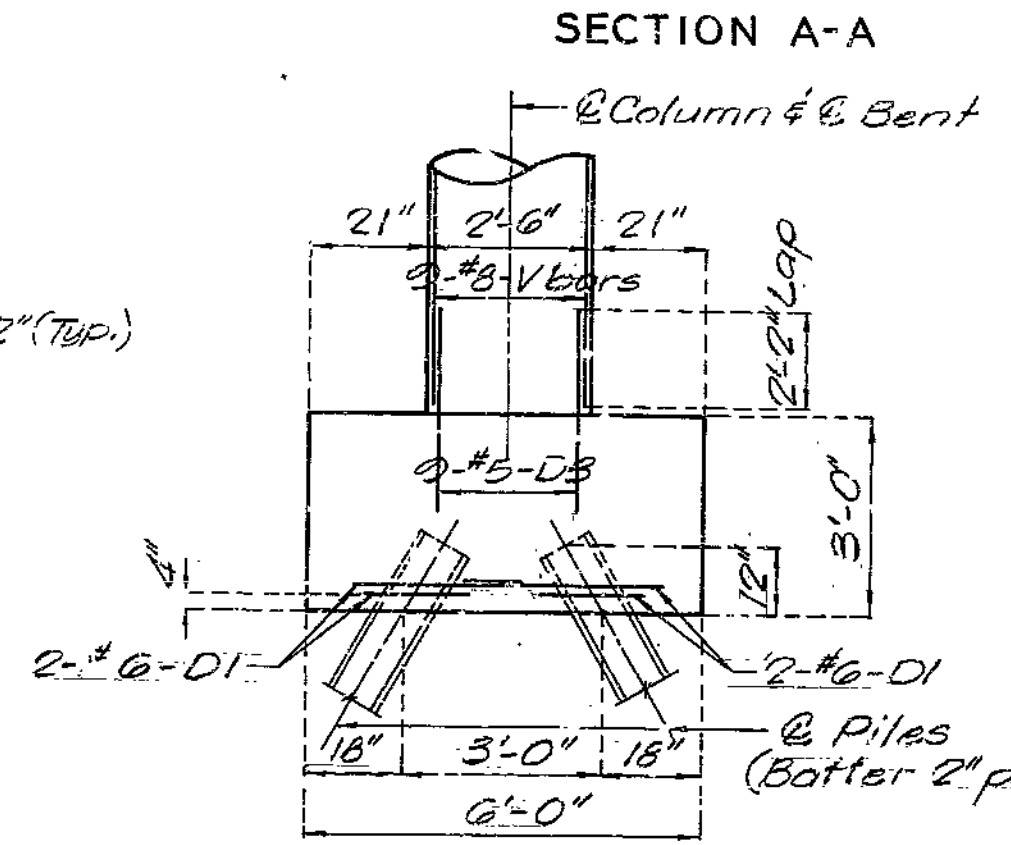
SECTION E-E



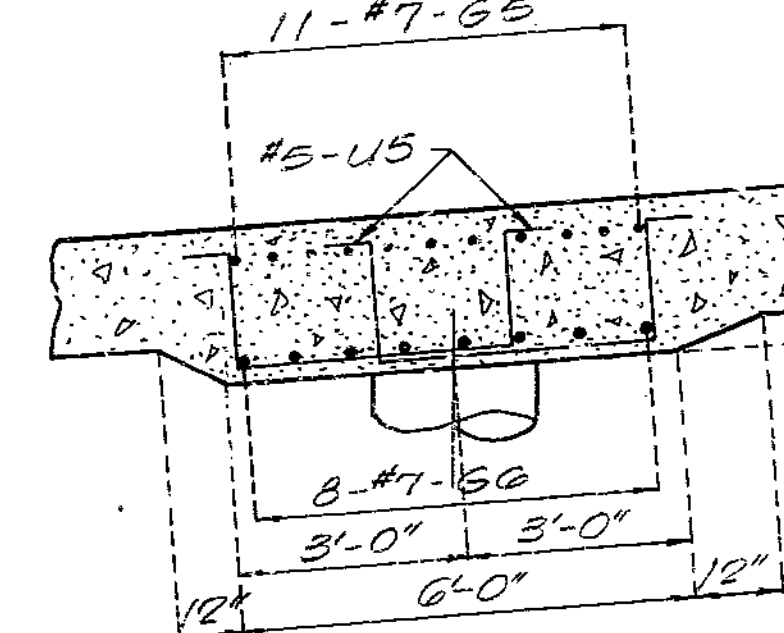
SECTION A-A



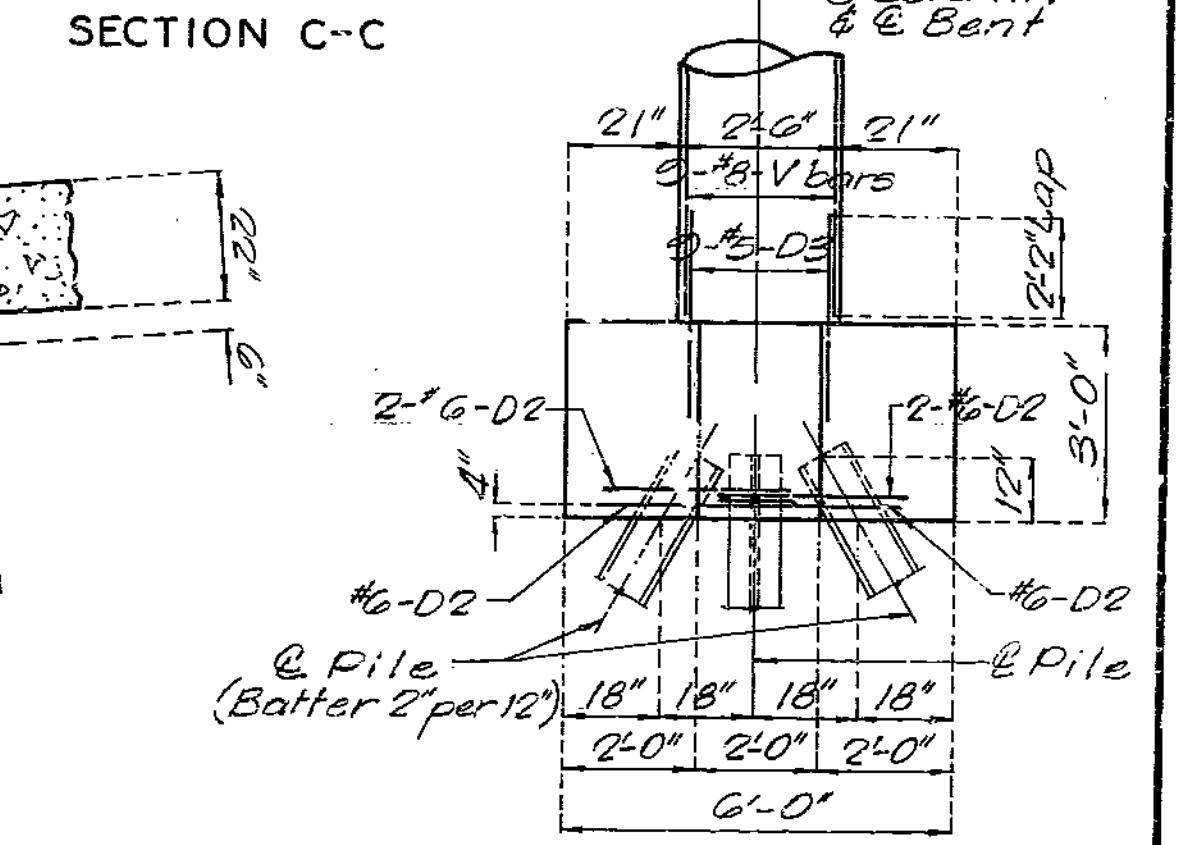
SECTION C-C



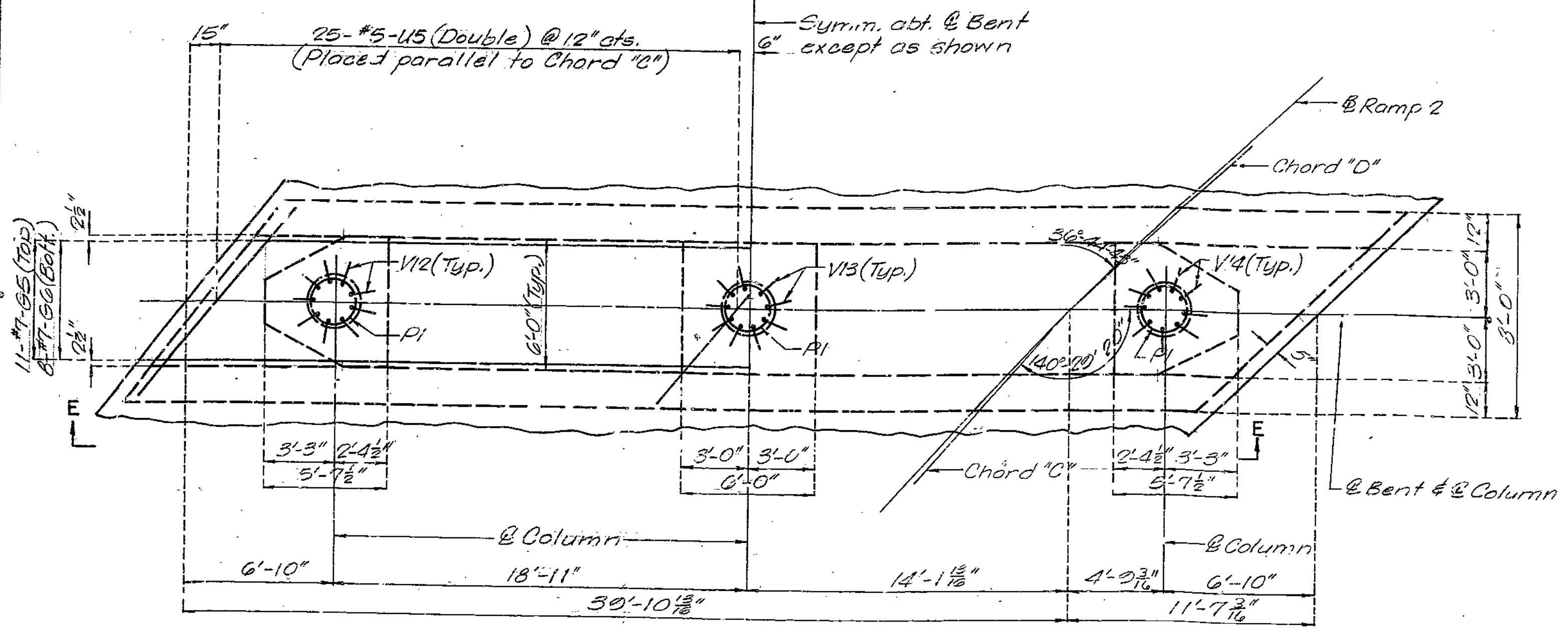
SECTION H-H



SECTION F-F

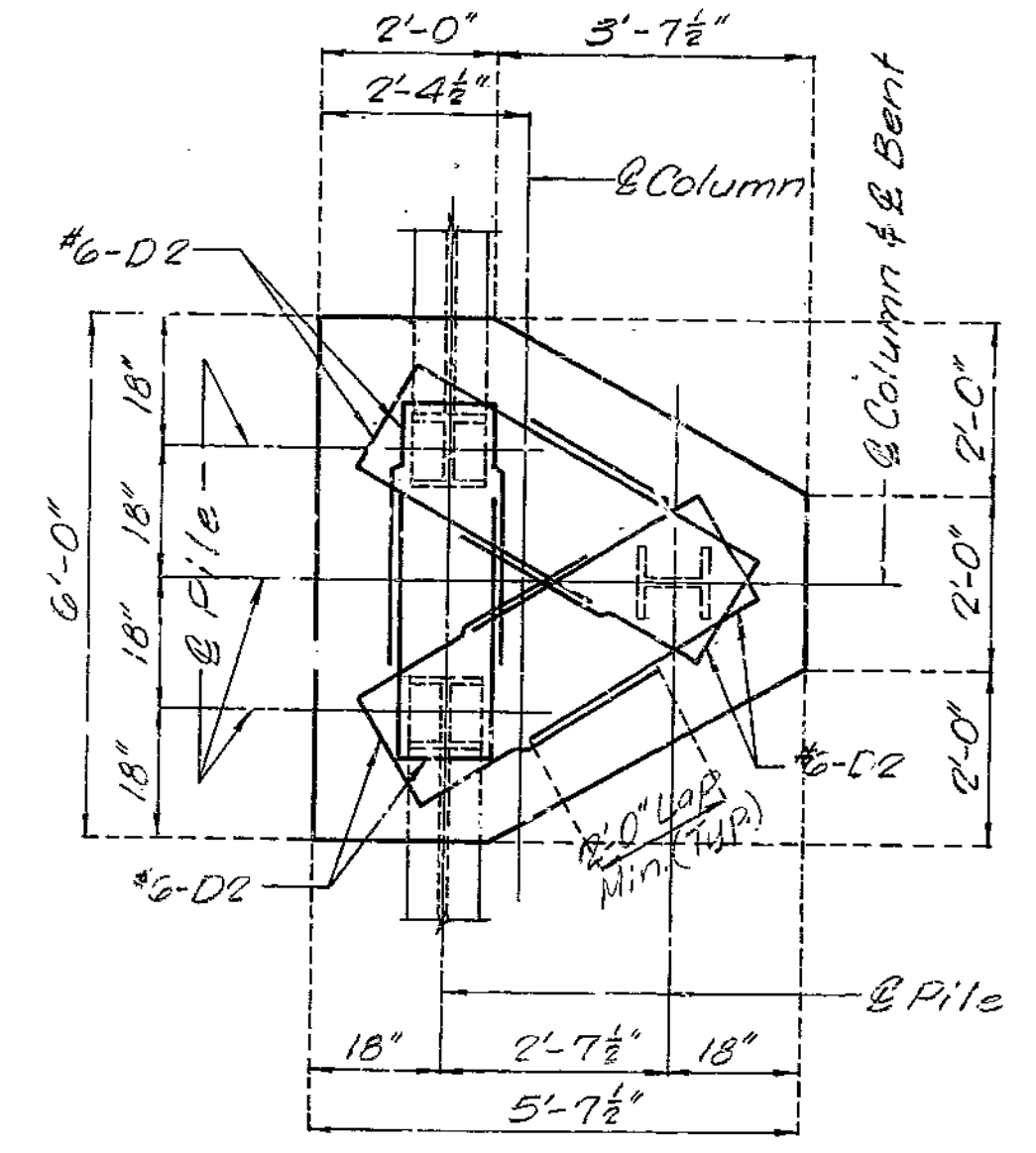


SECTION G-G

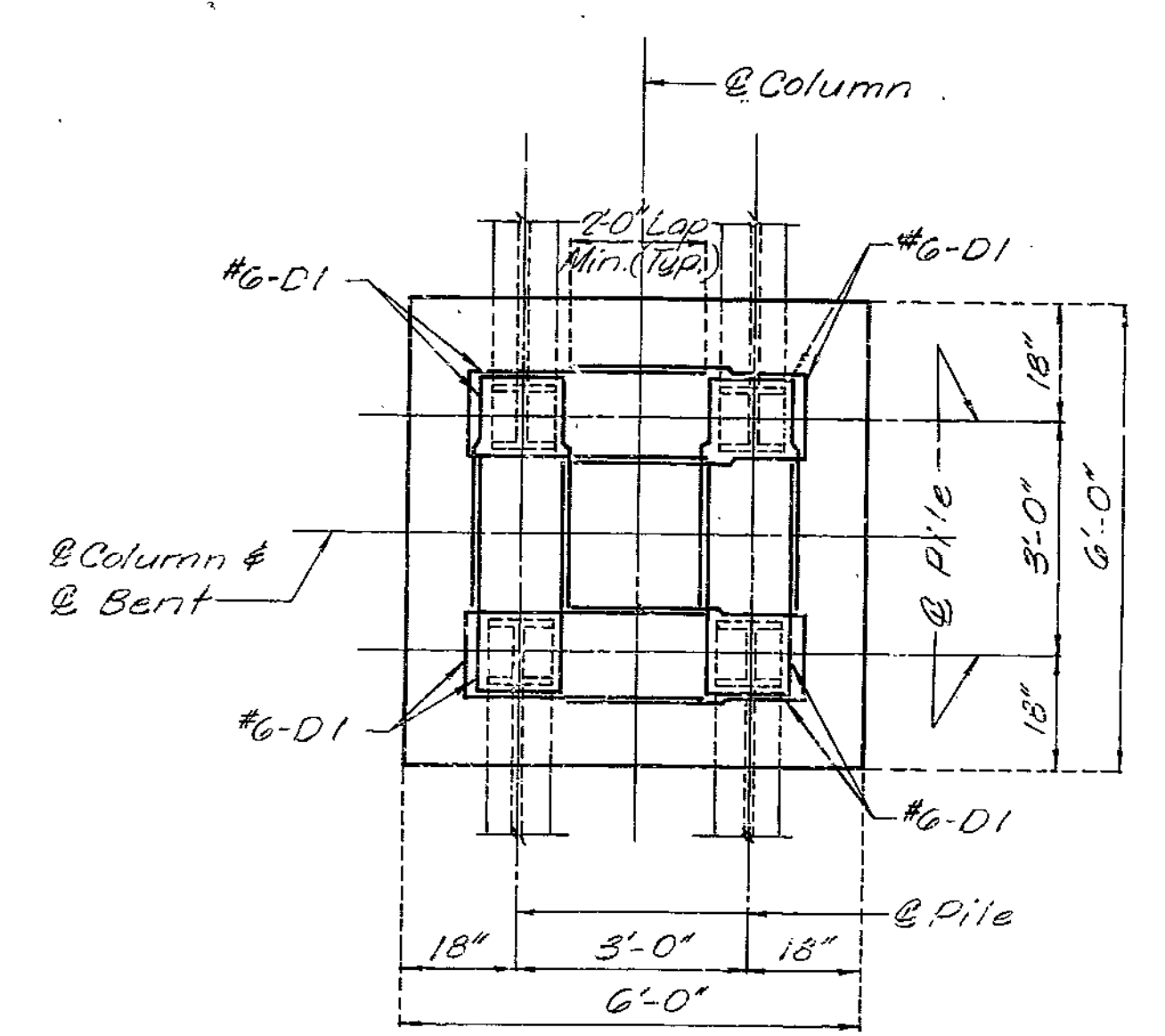


PLAN

DETAILS OF INTERMEDIATE BENT NO. 4



DETAIL OF EXTERIOR FOOTINGS INT. BENT 2, 3, & 4



DETAIL OF INTERIOR FOOTINGS INT. BENT 2, 3, & 4

321

DETAILED June 1976  
CHECKED Nov. 1978

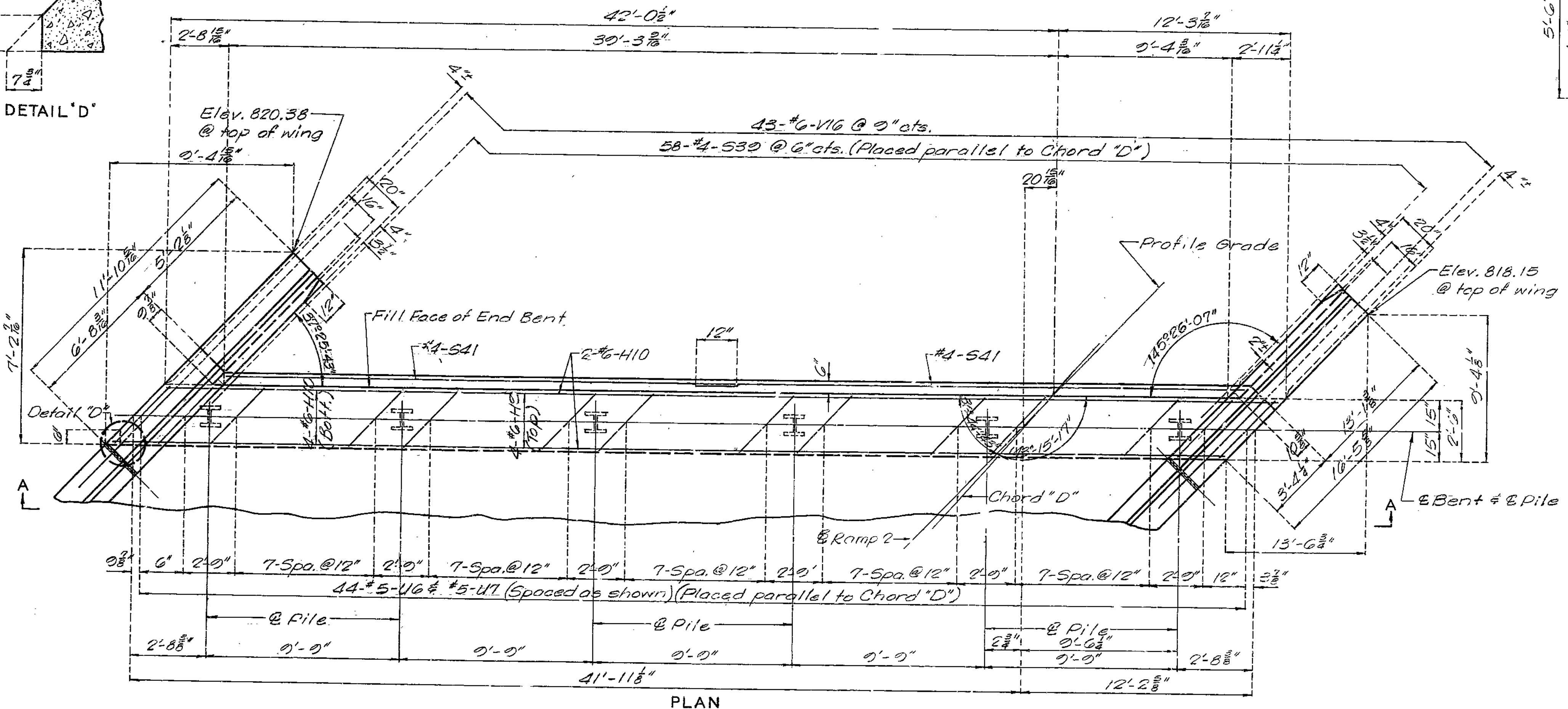
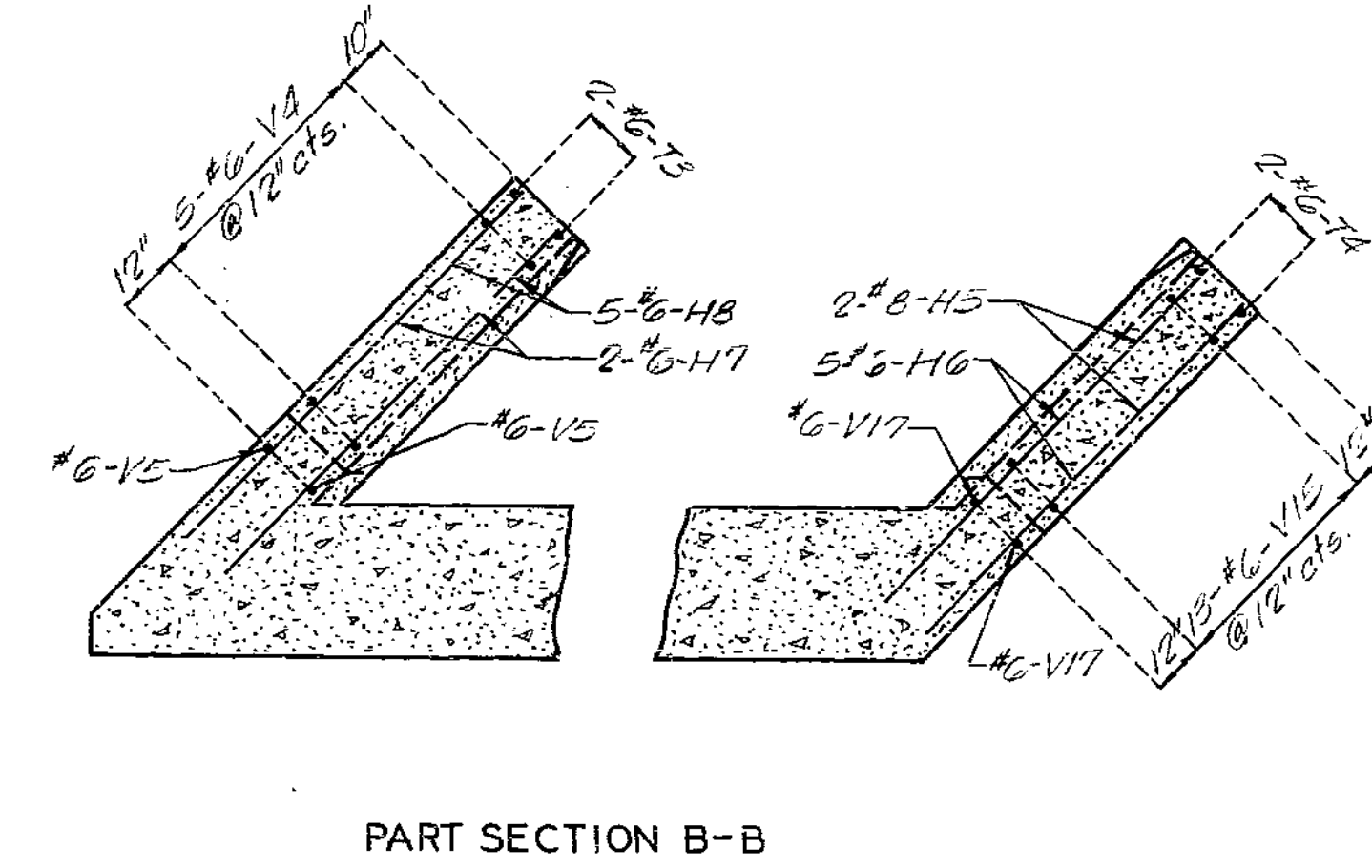
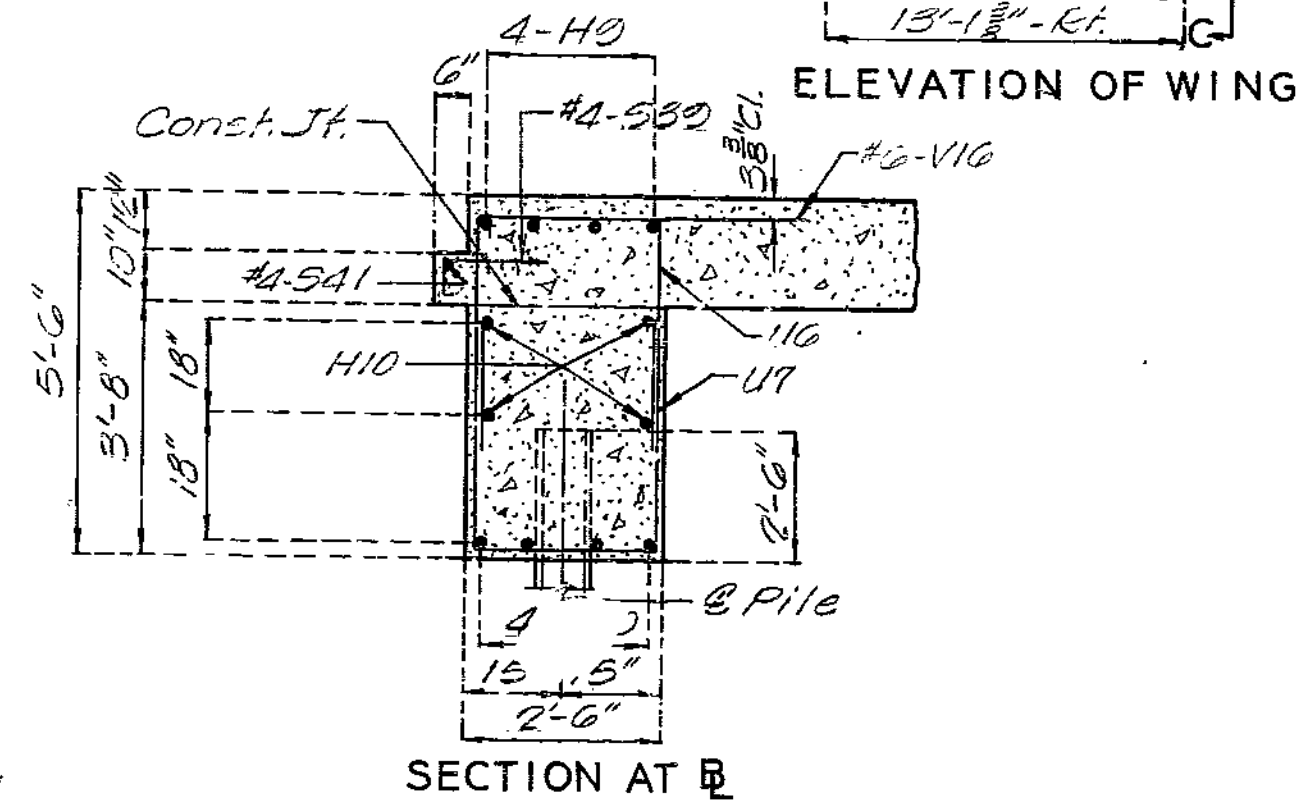
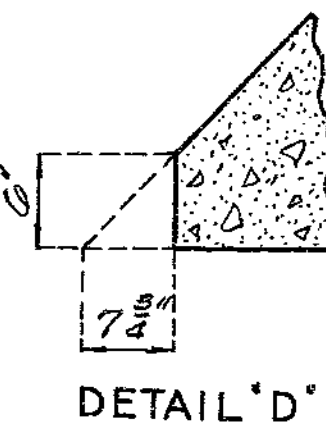
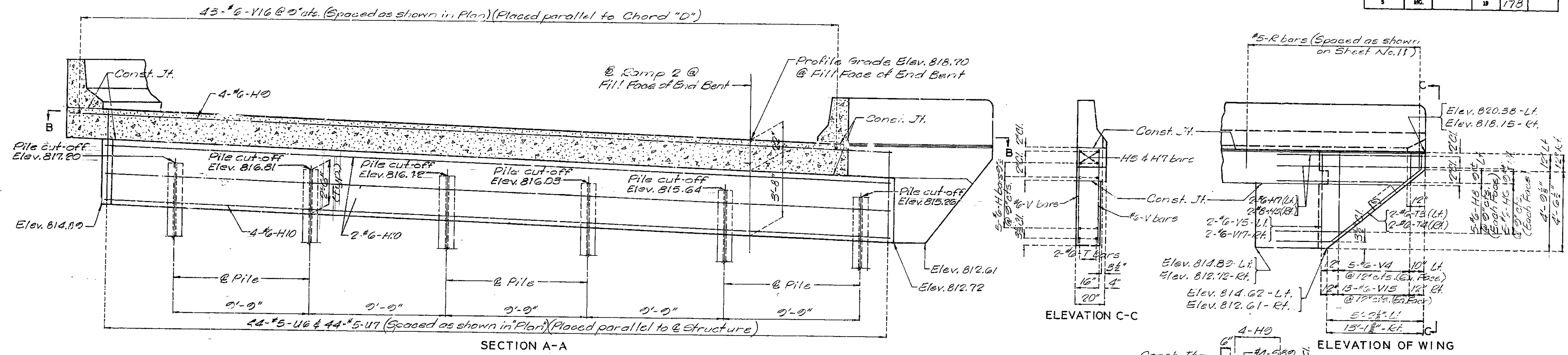
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 13.

CLAY COUNTY

A-3390

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MS.		19	178	



322

DETAILED July 1978  
CHECKED Nov. 1978

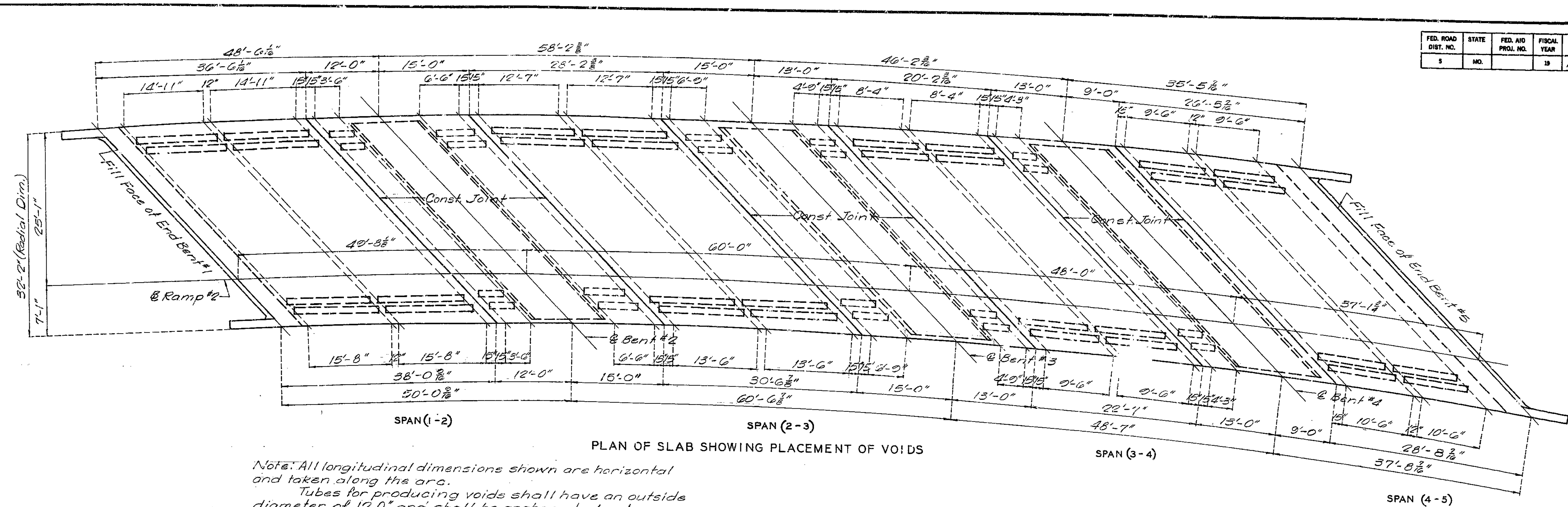
DETAILS OF END BENT NO. 5  
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 7 of 13.

CLAY COUNTY A-3390



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	179	

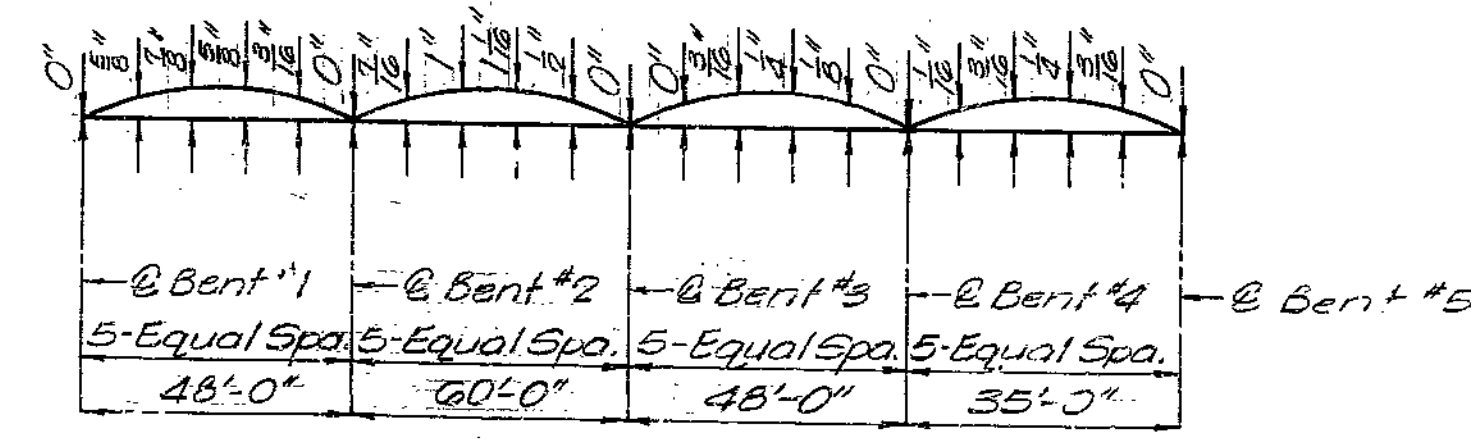


Note: All longitudinal dimensions shown are horizontal and taken along the arc.  
 Tubes for producing voids shall have an outside diameter of 12.0" and shall be anchored at not more than 4'-0" centers. Fiber tubes shall have a wall thickness of not less than .225".  
 Lengths of voids shown along edges of slab are at @ voids for voids adjacent to edge of slab. Lengths of voids vary in even increments between dimensions shown.

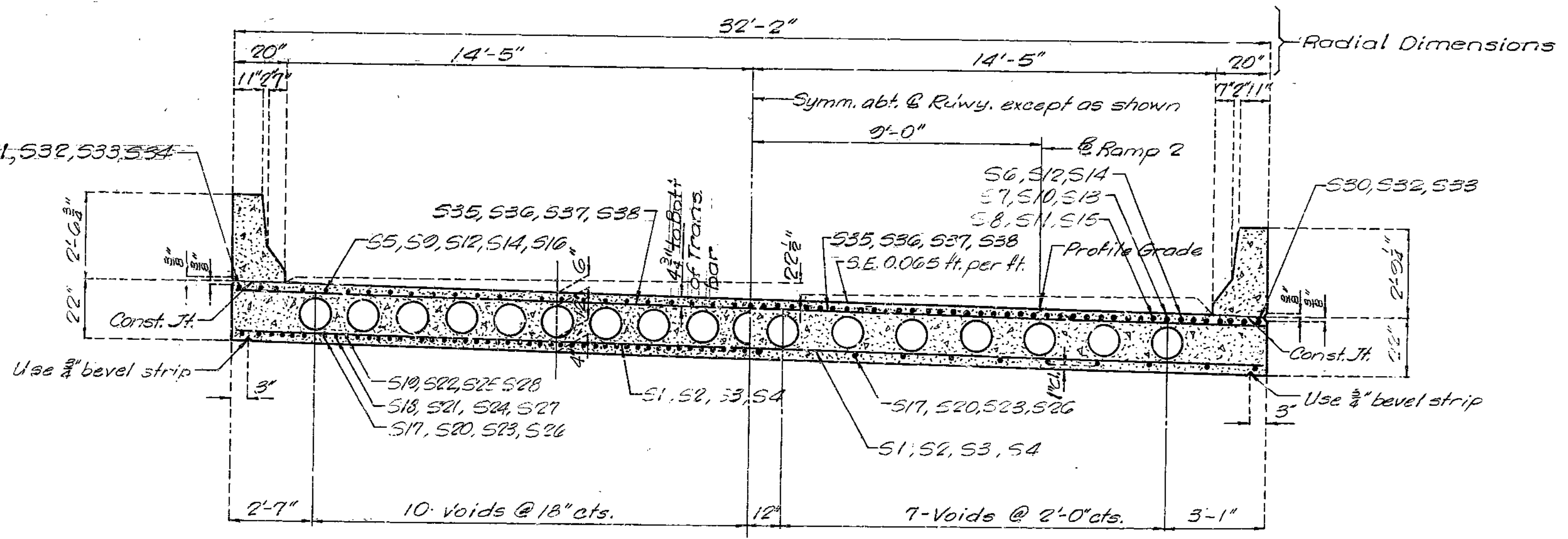
Note: For "Plan of Slab Showing Reinforcement" see Sheet No. 9.

SLAB POURING NOTE:

The contractor shall furnish an approved retarder to retard the set of the concrete to 25 hours and shall pour and satisfactorily finish the roadway slab at a rate of not less than 37 cubic yards per hour. (The contractor shall observe the transverse construction joints shown on 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.)



CAMBER DIAGRAM



HALF SECTION NEAR CENTER OF SPANS      HALF SECTION NEAR INT. BENTS

Note: Transverse spacing for voids shown in section thru slab is radial spacing at ends of voids.

323

DETAILED July 19 78  
 CHECKED Oct 13 78

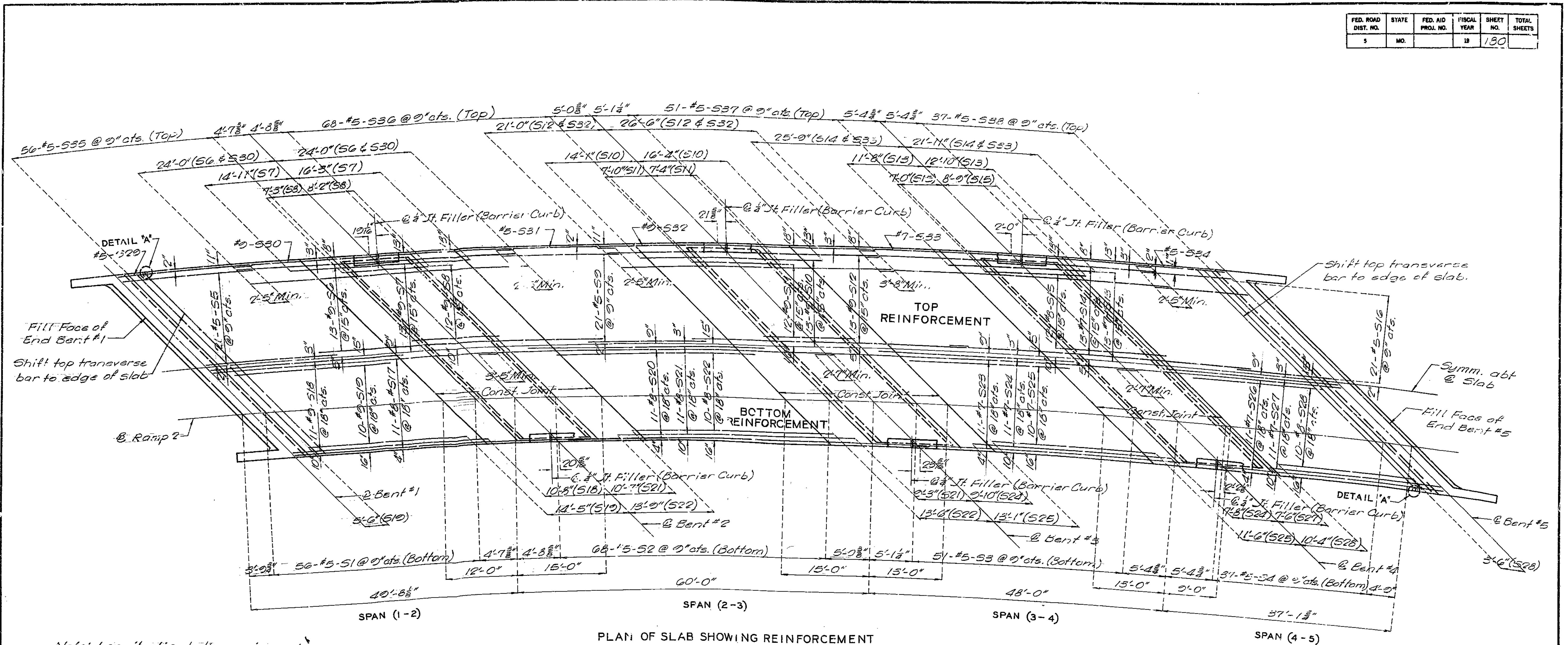
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 8 of 13.

CLAY COUNTY

A-3390

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	180	

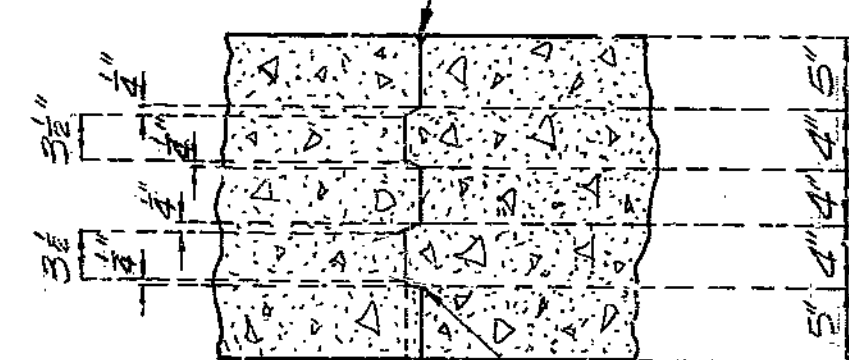


PLAN OF SLAB SHOWING REINFORCEMENT

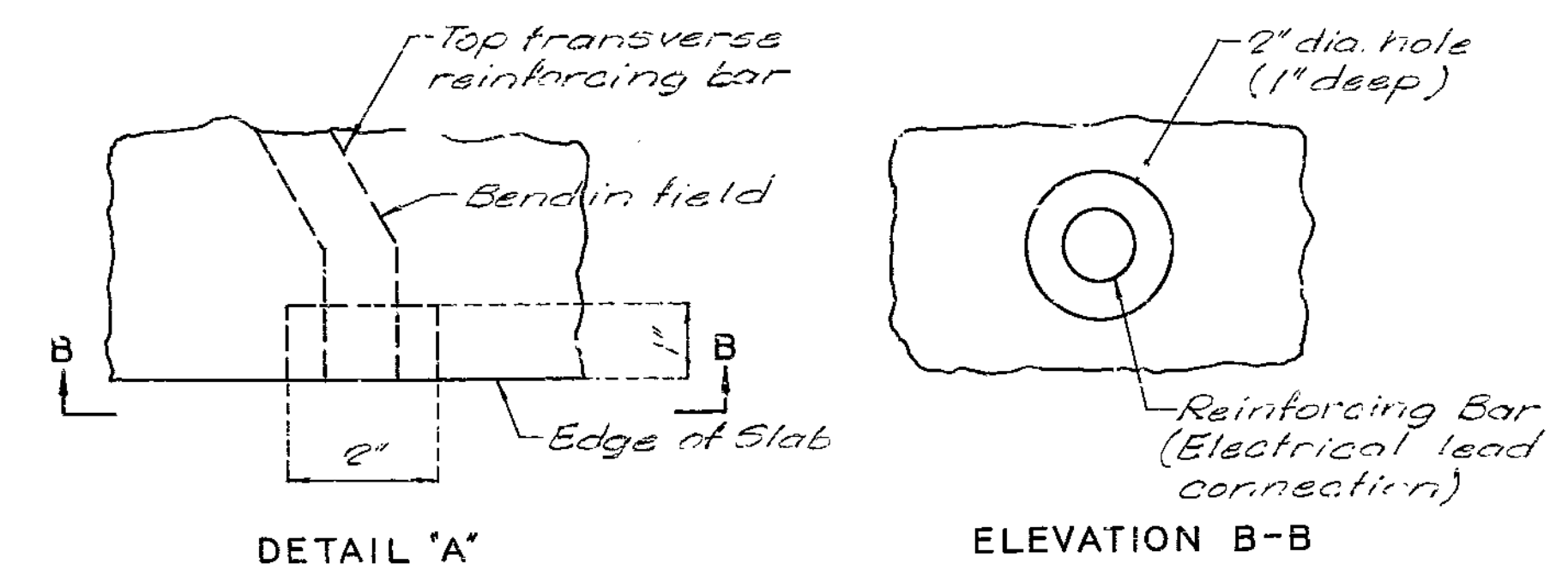
Note: Longitudinal dimensions shown are horizontal and taken along the @ arc. For details and reinforcement of barrier curbs see Sheet No. 10 & 11.

Note: Longitudinal dimensions to reinforcing steel indicates maximum distance from @ Bents and minimum distances either side of @ Bents.

Finish each side of joint with 1/4" radius edging tool.



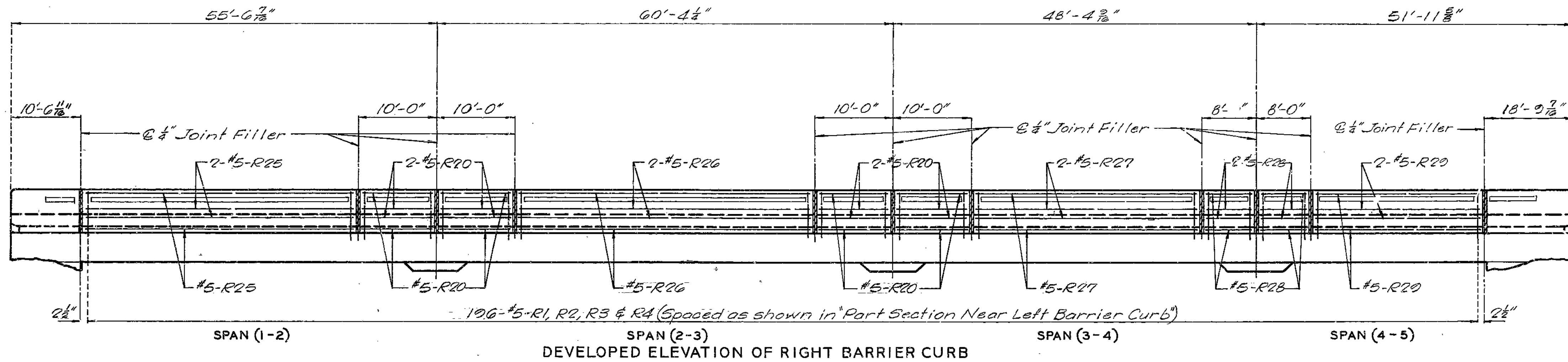
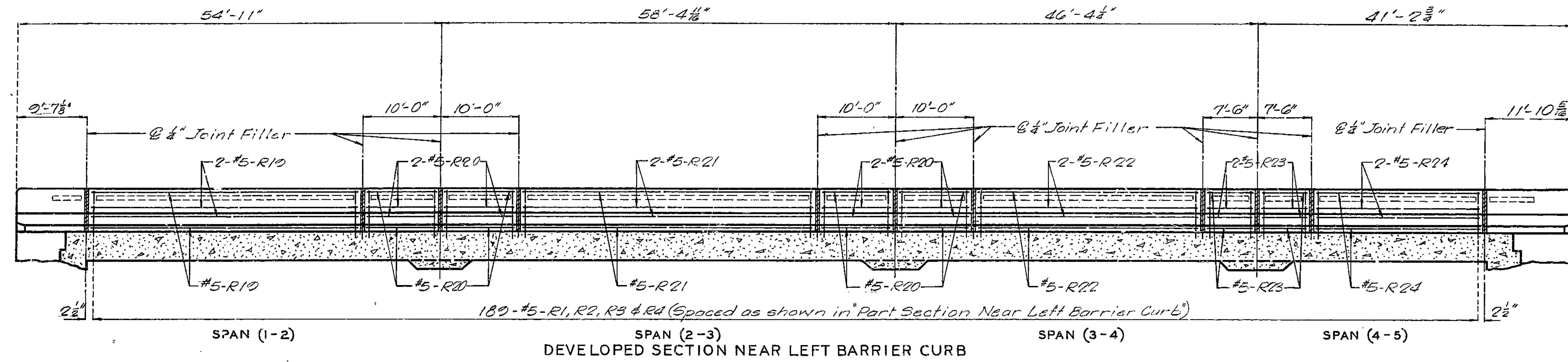
DETAIL OF CONST. JOINT KEY



Note: Two Electrical Lead Connections are required. Actual location to be designated by the Engineer as part of the test system. (See Special Provisions.)

324

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	131	

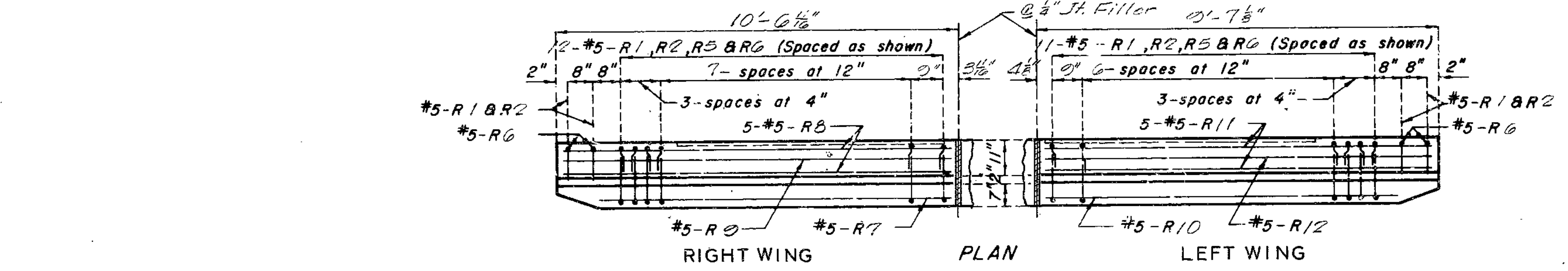
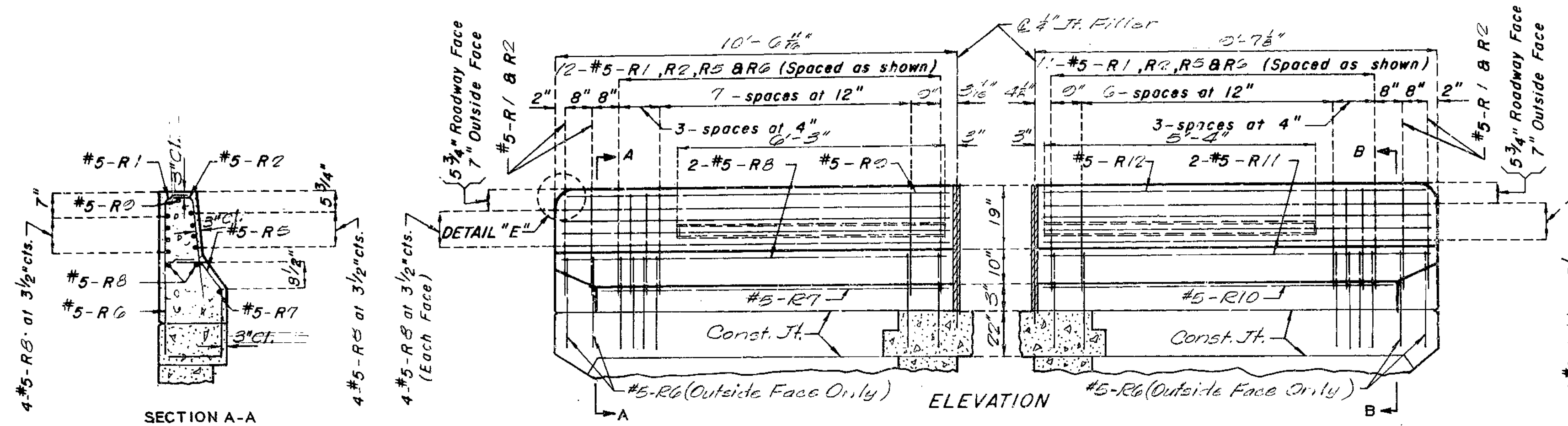


Note: Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.  
 All exposed edges of barrier curb shall have 1/2" radius or 3/8" bevel unless otherwise noted.

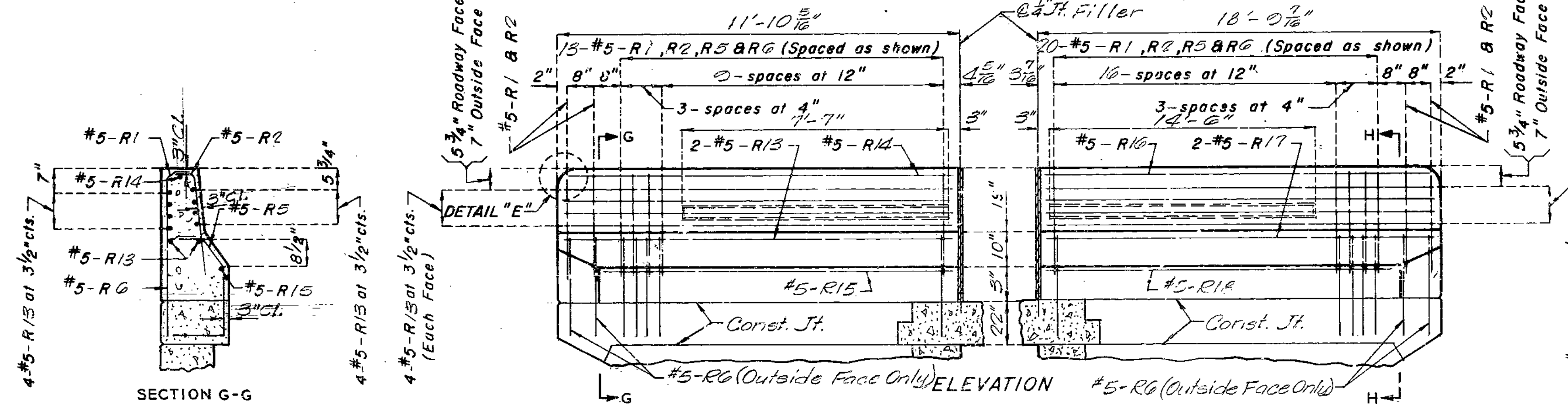
Note: Longitudinal dimensions are arc dimensions along centerline of top of barrier curb parallel to grade.  
 For Details of Barrier at End Bents & "Part Section Near Left Barrier Curb" See Sheet No. 11.

325

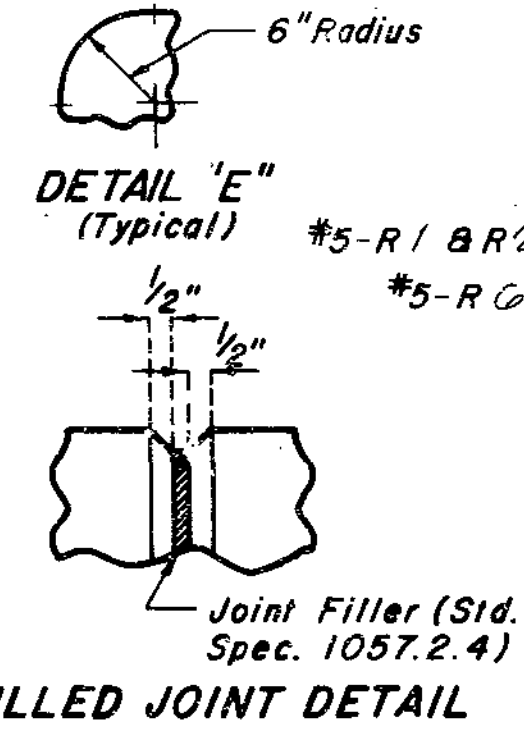
STATE	FED. AID	FISCAL	SHEET	TOTAL
MO.	PRJ. NO.	YEAR	NO.	SHEETS
			132	



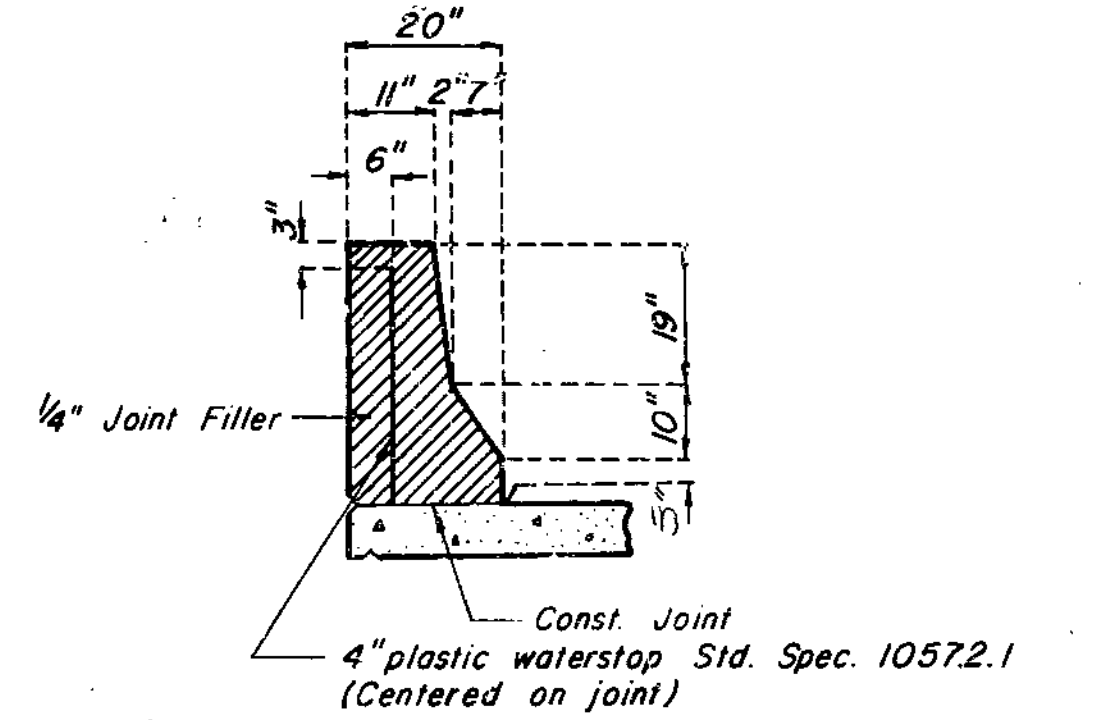
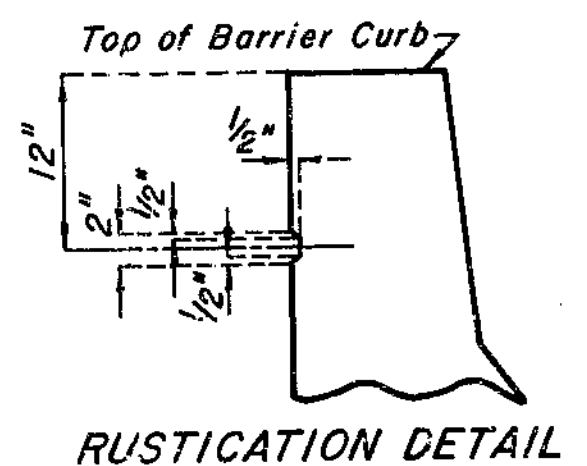
DETAILS OF BARRIER CURB AT END BENT NO. 1



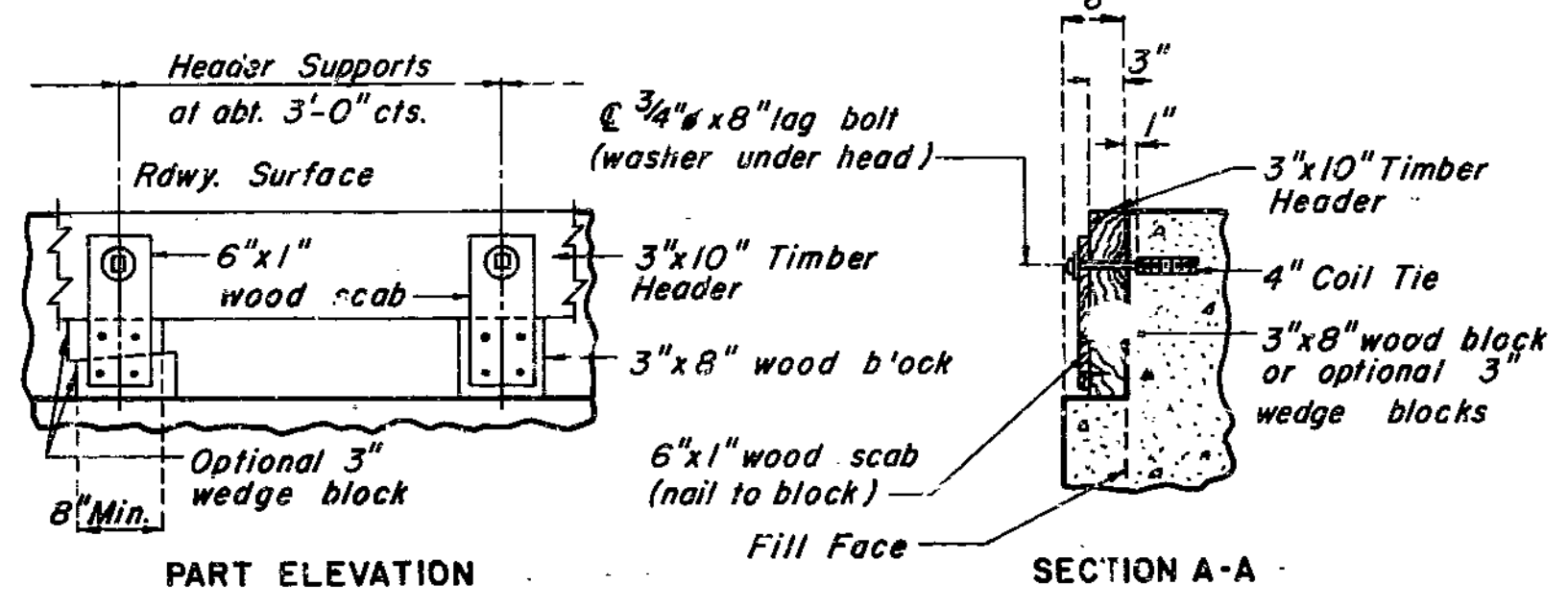
DETAILS OF BARRIER CURB AT END BENT NO. 5



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

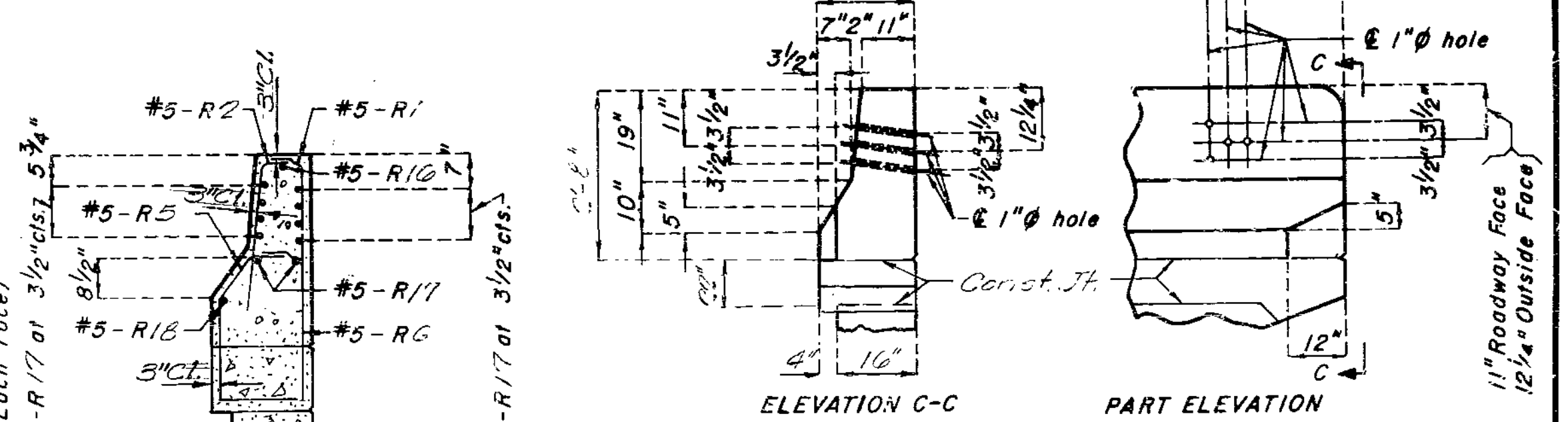


Note: Plastic waterstop shall be placed in all safety barrier curb filled joints. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

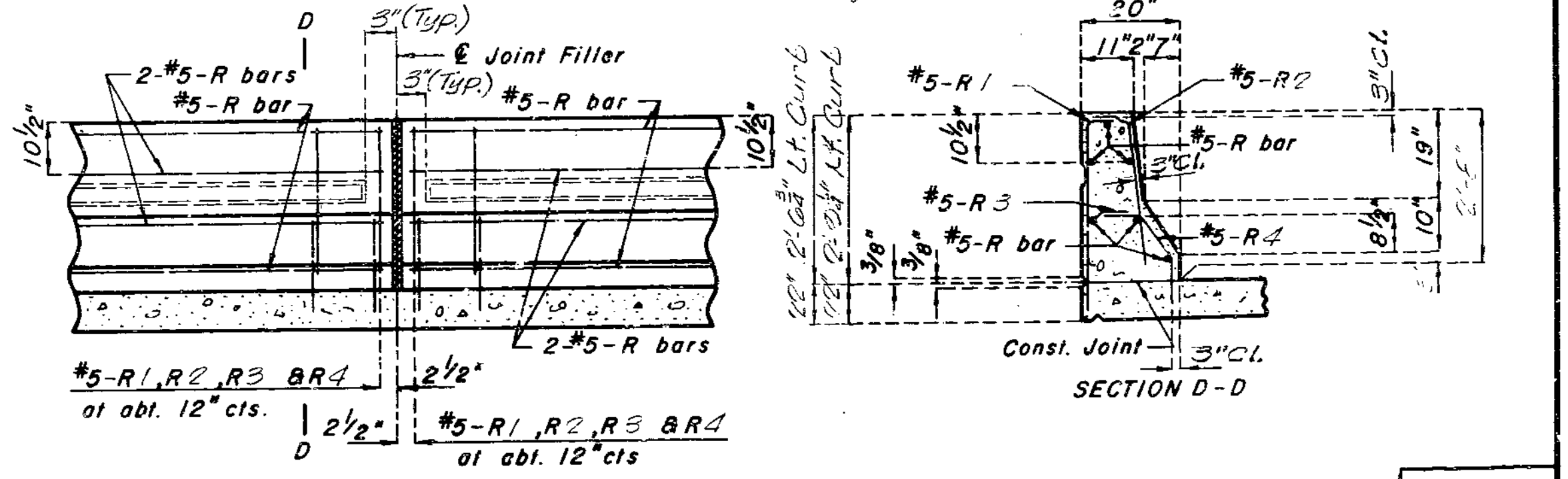


Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER AT END BENTS



DETAILS OF GUARD RAIL ATTACHMENT



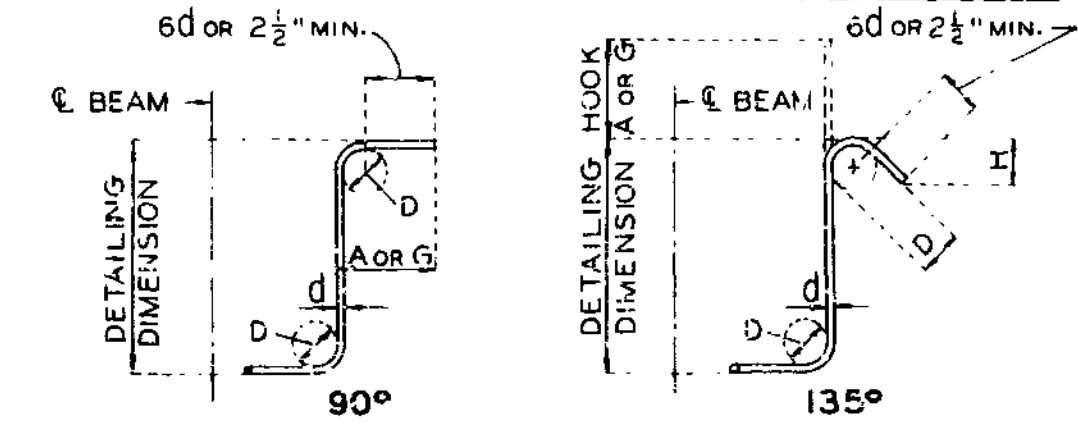
PART SECTION NEAR LEFT BARRIER CURB

326

REVISED  
NOV. 1974  
MAR. 1978

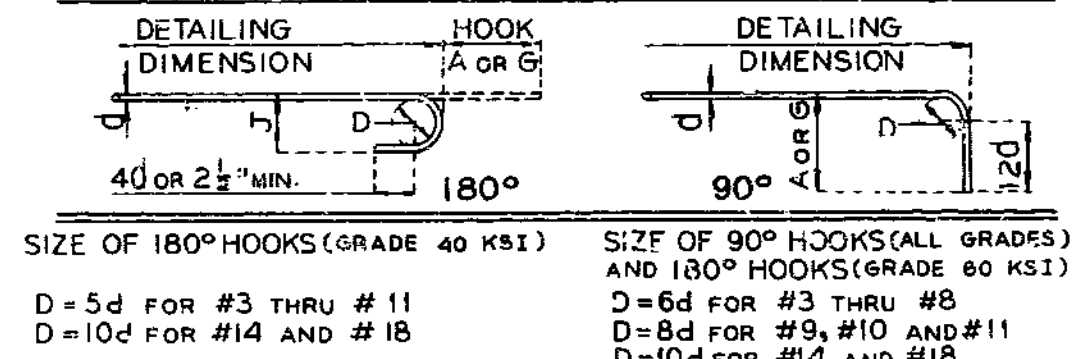
DETAILED A-19, 1978  
CHECKED Oct. 1978

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	123	



BAR SIZE	D (IN.)	90° HOOK		135° HOOK	
		A OR G	HOOR A OR G	HOOR A OR G	APPROX. H
#3	1-1/2"	4"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	7"	4-1/2"

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



SIZE OF 180° HOOKS (GRADE 40 KSI) AND 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)  
 D=5d FOR #3 THRU #11  
 D=10d FOR #14 AND #18  
 D=6d FOR #3 THRU #8  
 D=8d FOR #9, #10 AND #11  
 D=10d FOR #14 AND #18

BAR SIZE	180° HOOKS		90° HOOKS	
	GRADE 40	GRADE 60	ALL GRADES	ALL GRADES
#3	5"	2-3/4"	5"	3"
#4	6"	3-1/2"	6"	4"
#5	7"	4-1/2"	7"	5"
#6	8"	5-1/4"	8"	6"
#7	9"	6-1/4"	10"	7"
#8	10"	7"	11"	8"
#9	12"	8"	15"	11-1/4"
#10	13"	9"	17"	12-3/4"
#11	14"	10"	19"	14-1/4"
#14	21-2"	20-1/2"	21-2"	20-1/2"
#18	21-11"	21-3"	21-11"	21-5"

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT 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 OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST 1/8".

\* ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.

Note: Two additional #5-5/8, #6-1/2, #7-5/8, #8-5/8 and #9-5/8 are included in bar bill for testing. See Special Provisions.

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS										NOMINAL LENGTH FT.	ACTUAL LENGTH FT.	WEIGHT LBS.				
								B		C		D		E		F					H		K	
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.
SUPERSTRUCTURE																								
END BENT NO 1																								
8	6H1	BEAM		20				42	3.000								42	3	42	3	508			
4	6H2	SLAB		20				42	3.000								42	3	42	3	254			
20	6H3	WING		20		V	4	6	6.000								6	6	6	6				
									INCR = 11.250 IN								2	9	2	9	139			
8	6H4	WING		20				7	5.000								7	5	7	5	89			
2	6T1	WING		25				9	5.000	6	6.000	2	4.000				9	8	9	7	29			
2	6T2	WING		25				9	5.000	6	7.250	2	4.000				9	9	9	8	29			
36	5U1	BEAM		10	S			3	3.000	3	1.250						9	11	9	9	366			
36	5U2	BEAM		10	S			3	6.000	3	1.250						10	1	9	11	372			
45	6V1	BEAM		19	S			3	7.000	5	6.000						9	1	8	11	603			
4	6V2	WING		20				4	11.000								4	11	4	11	30			
20	6V3	WING		20		V	4	17	5.000								18	18						
									INCR = 9.500 IN								4	8	4	8	93			
INT BENT NO 2																								
8	6D1	FOOTING		10				3	3.000	16	0.000						7	10	7	6	90			
12	6D2	FOOTING		10				3	4.000	18	0.000						8	2	7	10	141			
27	5D3	FOOTING		20				3	2.000								3	2	3	2	89			
10	7G1	BEAM		18	V	1	44	7.000									46	3	46	3				
									INCR = 0.500 IN								46	8	46	8	950			
8	7G2	DROP PANEL		20	V	1	43	5.000									43	5	43	5				
									INCR = 0.750 IN								43	10	43	11	713			
88	5U3	DROP PANEL		10	S			6.000	17.000	5	8.000	6.000					9	6	9	1	834			
9	8V6	COLUMN		19				22	3.000	20.000							23	11	23	9	571			
9	8V7	COLUMN		19				21	7.000	20.000							23	3	23	1	555			
9	8V8	COLUMN		19				20	11.000	20.000							22	7	22	5	539			
62	4P1	COLUMN		16				2	3.000								7	11	7	11	328			
INT BENT NO 3																								
8	6D1	FOOTING		10				3	3.000	16	0.000						7	10	7	6	90			
12	6D2	FOOTING		10				3	4.000	18	0.000						8	2	7	10	141			
27	5D3	FOOTING		20				3	2.000								3	2	3	2	89			
11	7G3	BEAM		18	V	1	47	9.000									49	5	49	5				
									INCR = 0.150 IN								50	0	50	0	1118			
9	7G4	DROP PANEL		20	V	1	46	7.000									46	7	46	7				
									INCR = 0.750 IN								47	1	47	1	862			
94	5U4	DROP PANEL		10	S			6.000	17.000	6	0.000	6.000					9	10	9	5	923			
9	8V9	COLUMN		19				24	8.000	20.000							26	4	26	2	629			
9	8V10	COLUMN		19				23	11.000	20.000							25	7	25	5	611			
9	8V11	COLUMN		19				24	11	24	9						24	11	24	9	595			
69	4P1	COLUMN		16				2	3.000								7	11	7	11	365			
INT BENT NO 4																								
8	6D1	FOOTING		10				3	3.000	16	0.000						7	10	7	6	90			
12	6D2	FOOTING		10				3	4.000	18	0.000						8	2	7	10	141			

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS										NOMINAL LENGTH FT.	ACTUAL LENGTH FT.	WEIGHT LBS.				
								B		C		D		E		F					H		K	
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.
27	5D3	FOOTING		20				3	2.000								3	2	3	2	89			
11	7G5	BEAM		18	V	1	50	10.000									52	6	52	6				
									INCR = 0.750 IN								51	6	51	6	1188			
8	7G6	DROP PANEL		20	V	1	49	6.000									49	6	49	6				
									INCR = 1.125 IN								50	2	50	2	815			
100	5U5	DROP PANEL		10	S			6.000	17.000	6	4.000	6.000					10	2	9	9	1017			
9	8V12	COLUMN		19				17	10.000	20.000							19	6	19	4	465			
9	8V13	COLUMN		19				17	1.000	20.000							18	9	18	7	447			
9	8V14	COLUMN		19				16	4.000	20.000							18	0	17	10	429			
48	4P1	COLUMN		16				2	3.000								7	11	7	11	253			
END BENT NO 5																								
4	8H5	WING		20				14	9.000								14	9	14	9	158			
10	6H6	WING		20	V	2	12	9.000									12	9	12	9				
									INCR = 26.250 IN								4	0	4	0	126			
4	6H7	WING		20				7	7.000								7	7	7	7	46			
10	6H8	WING		20	V	2	6	9.000									6	9	6	9				
									INCR = 9.750 IN								3	6	3	6	77			
4	6H9	SLAB		20				53	1.000								53	1	53	1	319			
8	6H10	BEAM		20				53	1.000								53	1	53	1	638			
2	6T3	WING		25				9	5.000	6	6.250	2	9.000				4	5.000	4	9.500	10	1</		



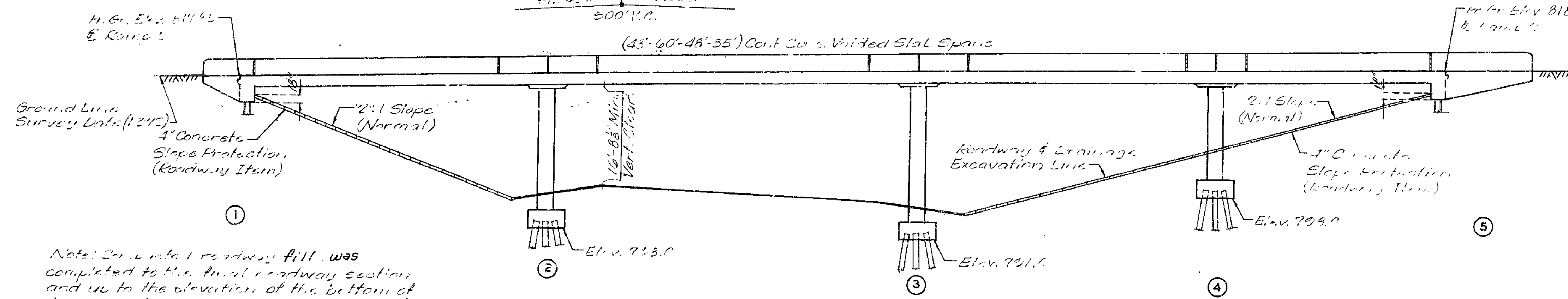
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	172	

SEC./SUR.27 TWP.51N RGE.32W

GENERAL NOTES

**DESIGN SPECIFICATIONS: FINAL PLANS**  
 Design Loading:  
 HS20-44, 15' Spat. From Wheel Spacing  
 Modified 22,000# Tandem Axle  
 Earth: 120# Equivalent Fluid Pressure 30#  
 Design Unit Stresses:  
 Class B1 Concrete  $f_c = 4,000$  psi  
 Class B2 Concrete  $f_c = 4,000$  psi  
 Reinforcing Steel (Gr. 60)  $f_y = 60,000$  psi  
 Steel Pile  $f_b = 9,000$  psi  
 Reinforcing Steel:  
 Minimum clear cover to reinforcing steel is 1 1/2" unless otherwise shown

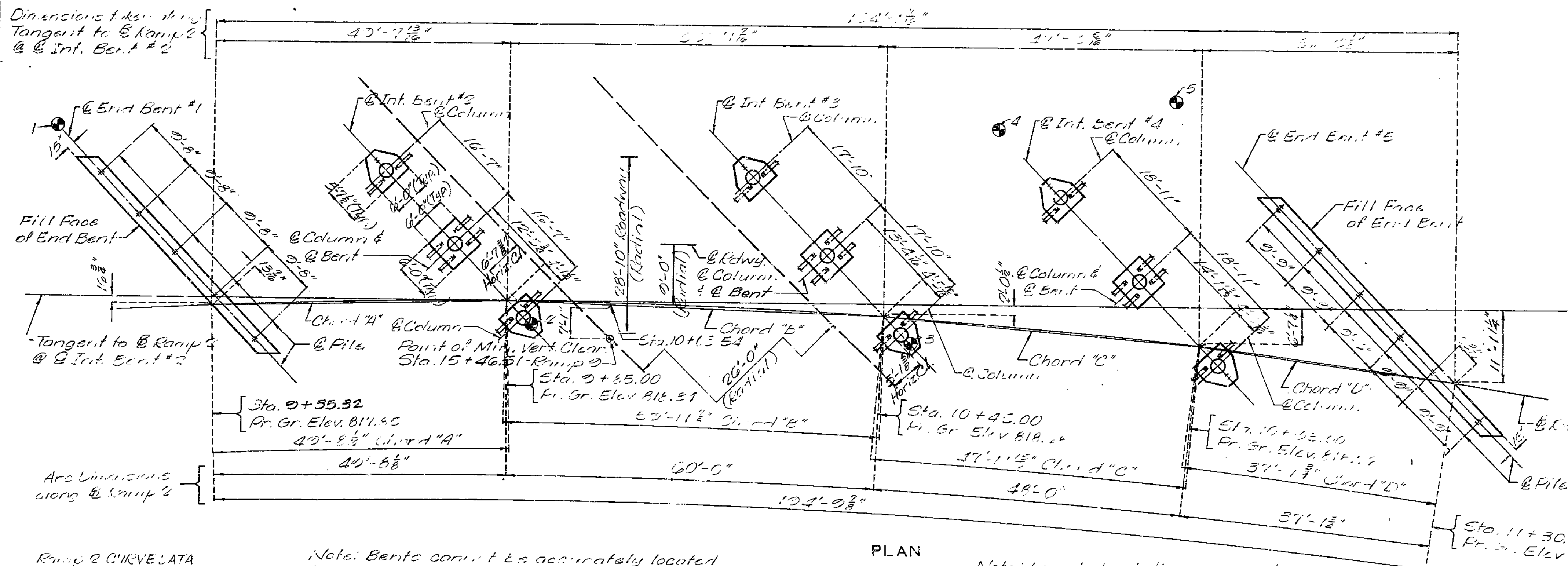


GENERAL ELEVATION

Note: Some initial roadway fill was 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 2' in back of the fill face of the end bents before piles were driven for any bents falling within the embankment section.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class I Excavation	Cu.Yd.	208.5
Structural Steel Pile (HP10x42)	Lin.Ft.	1129
Class B1 Concrete	Cu.Yd.	97.9
Class B2 Concrete	Cu.Yd.	429.4
Reinforcing Steel (Grade 60)	Lbs.	51,000
Reinforcing Steel (Grade 60) (Epoxy Coated)	Lbs.	50,520

Note: All concrete above construction joint below slab is included in B2 quantities.



PLAN

PILE DATA					
BENT NO.	1	2	3	4	5
Pile Type and Size	HP10x42	HP10x42	HP10x42	HP10x42	HP10x42
Number	5	10	10	10	6
Aspx x Spacing	42	20	20	20	42
Design Bearing Tons	35	52	30	44	27
Hammer Energy (ft-lbs)	1900	15,200	2300	10,400	7000

Minimum energy requirement of hammer based on pile length and design bearing capacity of pile.  
 All pile were driven to practical refusal.

B.M.  $\square$  in center of Barrier curb on NW. Wing of Abut. #1 Elev. 820.29

BRIDGE: RAMP 2 OVER RAMP 9

STATE ROAD FROM RTE. I-35 TO RTE. 210

AT I-35 & I-435 INTERCHANGE

PROJECT NO. I-435-1(163) STA. 9+32.32 (RAMP 2)

JOB NO. 4-I-435-49H

RTE. I-435

CLAY

COUNTY

STD. 706.35

STD. 611.60

A-3390

DATE: March 16, 1981

DESIGNED June 1977  
 DETAILED July 1978  
 CHECKED Nov. 1978

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

Sheet No. 1A of 13.

329