

CURVE DATA

Δ = 29°03'24.5"
 R = 1432.395'
 D = 4°00'
 T = 371.200'
 L = 726.419'

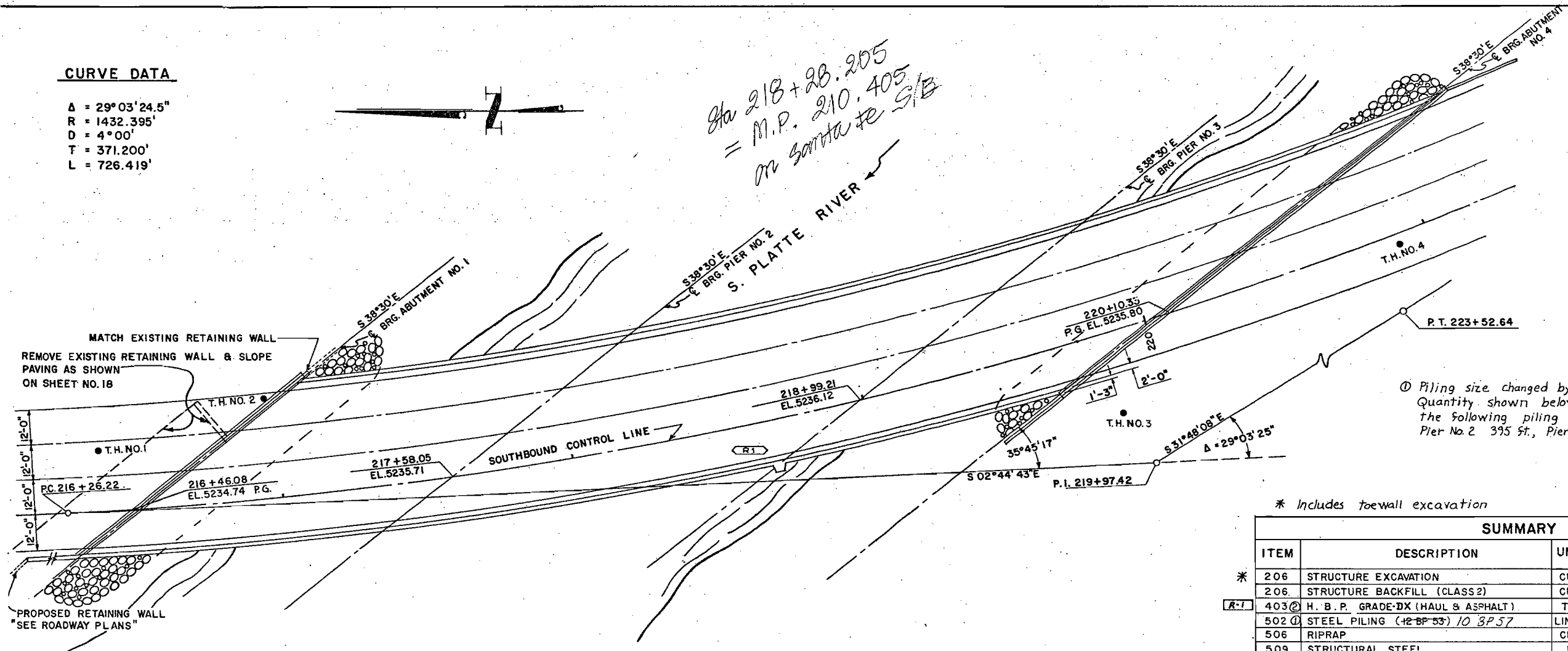


*Sta 218+28.205
 = M.P. 210.405
 on Santa Fe S/E*

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F085-2(3)	13	

REVISIONS				
R1	8-18-71	Added light standard		NJH
	8-18-71	Rev. Quants		W.E.M.

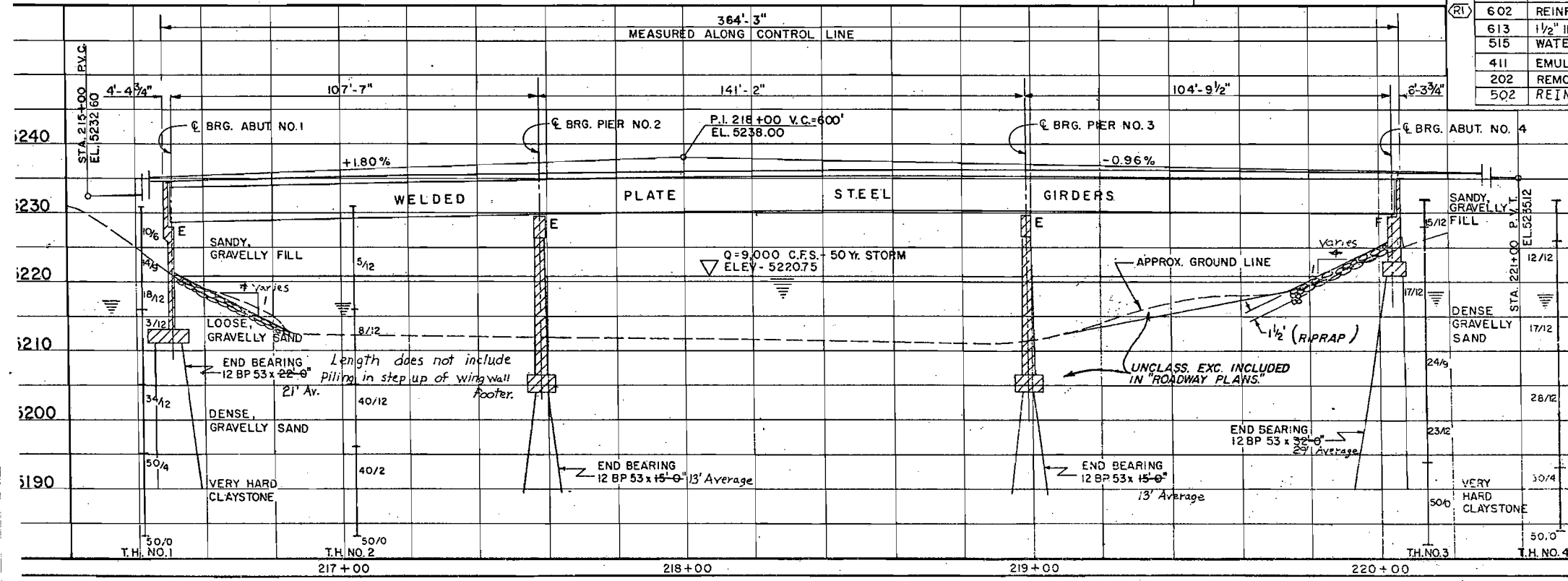
AS CONSTRUCTED
REVISED DATE



* Includes toe wall excavation

SUMMARY OF QUANTITIES [R-1]								
ITEM	DESCRIPTION	UNIT	SUPER STRUCTURE	ABUT. NO. 1	PIER NO. 2	PIER NO. 3	ABUT. NO. 4	STRUCTURE TOTALS
* 206	STRUCTURE EXCAVATION	CU. YD.		808	290	345	503,350	1793,989
206	STRUCTURE BACKFILL (CLASS 2)	CU. YD.		1056	160	208	510,454	1878,194
[R-1] 403	H. B. P. GRADE-DX (HAUL & ASPHALT)	TONS	135.75					237,357
502	STEEL PILING (12 BP 53) 10 SP 57	LIN. FT.		902	318,236	367,420	1056	2758,282
506	RIPRAP	CU. YD.		3278			375	699,702
509	STRUCTURAL STEEL	LB.	668850		645	706	917	671,118
509	STRUCTURAL STEEL (GALVANIZED)	LB.	31144					31144
512	BEARING DEVICE (6-8 INCH)	EACH		8				8
512	BEARING DEVICE (9-12 INCH)	EACH			8	8		16
518	BRIDGE EXPANSION DEVICE (TYPE 4)	LIN. FT.	92.6					92.6
601	CONCRETE CLASS A	CU. YD.		308	283	360	297	1248,256
601	CONCRETE CLASS D	CU. YD.	492	49,693	17,670	22,524	18,039	279,492
[R-1] 602	REINFORCING STEEL	LB.	171,150	47,650	17,675	22,007	17,347	264,629
613	1/2" INCH ELECTRICAL CONDUIT	LIN. FT.	370,343	3037			10	390,380
515	WATERPROOFING (MEMBRANE)	SQ. YD.	2160					2160
411	EMULSIFIED ASPHALT (SS-1H)	GAL.	2773					2773
202	REMOVAL OF PORTIONS OF PRES. STRUCTURE	EA.		1				1
502	REINFORCING TIPS	EA.		41	24	28	33	126

LEGEND
 E = EXPANSION BEARING
 F = FIXED BEARING



200 Sq. Ft. of 1/2" Expansion Joint Material To Be Included In The Bid Price for Item 601, Concrete, Class A.
 COMPOSITE, CURVED, WELDED PLATE GIRDER THREE-SPAN CONTINUOUS 108' - 141' - 105'
 Added: 403 H.B.P. Grade -E (Haul & Asphalt) Superstructure 135.75 Tons

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS APPLICABLE TO THE PROJECT.

ALL REINFORCING STEEL SHALL BE INTERMEDIATE GRADE STEEL OF A DEFORMED TYPE. EACH BAR SHALL BE TAGGED WITH THE BAR DESIGNATION AND STATION NUMBER OF THE PROJECT.

IF BY PERMISSION OF THE ENGINEER, END SHELS OF VARYING BARS ARE SPICED, THEY SHALL LAP A MINIMUM OF 40 DIAMETERS FOR BARS LARGER THAN 12 INCHES OF CONCRETE UNDER THE BASE AND 24 DIAMETERS FOR BARS NEAR BOTTOM OF MEMBERS. SECONDARY BARS WHEN SPICED SHALL LAP 24 DIAMETERS OF THE BAR.

DIMENSIONS FOR REINFORCING STEEL NOT SHOWN AS CLEAR SHALL BE TO THE CENTERLINE OF THE BAR.

FOUNDATIONS AND DEPTH OF FOOTINGS ARE IN ACCORDANCE WITH THE BEST AVAILABLE DATA, AND WHEN DIFFERENT CONDITIONS ARE ENCOUNTERED THE BRIDGE ENGINEER WILL INSPECT AND DETERMINE IF REVISION IS NECESSARY.

FOOTINGS IN ROCK SHALL BE POLISHED TO ROCK AND NOT FORMED.

WHERE EXCAVATING FOR FOOTINGS THE FINAL ONE FOOT IN DEPTH SHALL BE DONE BY HAND-LABOR METHODS.

FOR DETAILS OF STRUCTURAL EXCAVATION AND STRUCTURE BACKFILL, SEE STANDARD, M-208-A ALL CONCRETE SURFACES MARKED WITH THE SYMBOL F SHALL RECEIVE CLASS 2 SURFACE FINISH.

ALL STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH SECTION 508 FOR GREEN PAINT.

ALL BOLTS SHALL BE 7/8" INCH DIAMETER UNLESS OTHERWISE NOTED.

ALL BOLTS SHALL BE HIGH TENSILE STRENGTH.

BOLTS SHALL BE FURNISHED IN THE END OF TWO PERCENT IN EXCESS OF THE NORMAL NUMBER REQUIRED FOR EACH SIZE AND LENGTH.

WELDING SHALL CONFORM TO THE LATEST EDITION OF THE A.W.S. STANDARD SPECIFICATIONS FOR WELDING HIGHWAY BRIDGES.

FOR WELDED GIRDERS ALL SHOP WELDS IN FLANGES AND WEBS SHALL BE MADE BEFORE WELDING INTO GIRDERS.

SHOP WELDS SHALL BE INSPECTED RADIOGRAPHICALLY OR BY THE PENETRANT DYE METHOD.

ALL CONCRETE CHAMBERS TO BE 3/4" INCH UNLESS OTHERWISE NOTED.

ALL PILE LENGTHS ARE ESTIMATED & PILING MUST BE DRIVEN TO END BEARING.

NO WELDING OF ANY KIND SHALL BE PERMITTED ON THE FLANGES OF STEEL GIRDERS UNLESS SPECIFICALLY CALLED FOR ON THE PLANS.

* BEGIN BRIDGE STA. 216+46.08 - END BRIDGE STA. 220+10.33
 STRUCTURE NO. F-16-1K...

LOADING DATA
 LIVE LOAD - A.A.S.H.O. HS 20-44 OR ALT.
 DEAD LOAD ASSUMES 25 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/2" INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA
 A.A.S.H.O. 1988 UNIT STRESSES, EXCEPT AS NOTED.
 Reinforcing Steel fs = 20000 lbs. per sq. in.
 Structural Steel fs = 20000 lbs. per sq. in. (A-36 STEEL)
 Concrete fc = 1200 lbs. per sq. in.
 n = 10

DIVISION OF HIGHWAYS

LAYOUT AND SUMMARY OF QUANTITIES

Across SOUTH PLATTE RIVER
 Sta. _____
 Near DENVER Sec. 15 T.4S. R.68W

Designed by R.M.K. Approved by _____
 Made by K.L.L. Bridge Engineer
 Checked by _____ Date: 1970

BAR LIST - SUPERSTRUCTURE

MARK	SIZE	NO. REQ'D	LENGTH	TYPE	DIMENSIONS	
#	#				ℓ	m
401	4	747	2'-7"	II	10"	11"
499	4	107	4'-8"	I	1'-2"	10"
501	5	814 827	55'	Str.		
502	5	15 14	31'	"		
503	5	20	22'-4"	"		
504	5	12	15'-6"	"		
505	5	11	9'	"		
506	5	5	3'	"		
507	5	11	50'-6"	"		
508	5	12	45'	"		
509	5	12	40'	"		
510	5	10	35'	"		
511	5	12	30'	"		
512	5	11 12	25'	"		
601	6	814 827	54'-3"	Str.		
6001	6	2 Ea.	5'-0"	Str.		
6129	6	2 Ea.	54'-0"	Str.		
6308	6	2 Ea.	54'-0"	Str.		
6542	6	2 Ea.	5'-0"	Str.		
901	9	64	60'-0"	Str.		
475	4	2	6'-10"	V		
697	6	2	4'-8"	VI	1'-5"	
698	6	2	6'-8"	VI	2'-5"	
699	6	4	7'-8"	II	3'-5"	0'-10"

Additional Bars

Size #	No.	Length	Type
6	1	2.00	Str.
6	1	2.50	"
6	1	3.00	"
6	1	3.50	"
6	1	4.00	"
6	1	4.50	"
6	1	1.50	"
6	1	1.90	"
6	1	1.90	"
6	1	2.30	"
6	1	2.70	"
6	1	3.10	"
6	1	3.50	"
6	1	3.00	"
6	1	3.22	"
6	1	3.44	"
6	1	3.66	"
6	1	3.88	"
6	1	4.10	"
6	1	4.32	"
6	1	4.54	"
6	1	4.76	"
6	1	5.00	"
6	1	1.30	"
6	1	1.47	"
6	1	1.64	"
6	1	1.81	"
6	1	1.98	"
6	1	2.15	"
6	1	2.32	"
6	1	2.49	"
6	1	2.66	"
6	1	2.83	"
6	1	3.00	"
6	1	3.17	"
6	1	3.34	"
6	1	3.51	"
6	1	3.68	"
6	1	3.85	"
6	1	4.02	"
6	1	4.20	"
6	1	4.37	"
6	1	4.54	"
6	1	4.71	"
6	1	4.87	"
6	1	5.04	"
6	1	5.21	"

BAR SUMMARY

2444	2444	lin. ft. No. 4 at 0.668 lbs. per lin. ft. =	4633	1630
49251	4844	lin. ft. No. 5 at 1.043 lbs. per lin. ft. =	5555	51,369
63970	6304	lin. ft. No. 6 at 1.502 lbs. per lin. ft. =	9465	105,095
	3840	lin. ft. No. 9 at 3.400 lbs. per lin. ft. =	13056	
TOTAL			171,150	

BAR LIST - ABUTMENT NO. 1

MARK	SIZE	NO. REQ'D	LENGTH	TYPE	DIMENSIONS	
#	#				ℓ	m
402	4	96 97	10'-4"	VII	7'-10"	2'-6"
403	4	96	9'-0"	Str.		
404	4	96	1'-10"	II	4"	1'-2"
405	4	96	3'-3"	Str.		
406	4	16	10'-8"	"		
407	4	21	21'-8"	"		
408	4	35	15'-2"	"		
409	4	25	14'-9"	"		
410	4	25	14'-0"	"		
411	4	12	13'-6"	"		
412	4	12	19'-4"	"		
415	4	1 Ea.	to	Str.		
416	4	16	14'-9"	Str.		
417	4	30	10'-9"	"		
418	4	52 74	52'-0"	"		
419	4	2	34'-4"	"		
420	4	144 154	4'-0"	"		
421	4	16	6'-11"	"		
422	4	123	11'-9"	"		
6263	6	16	6'-11"	Str.		
6264	6	16	14'-9"	"		
802	8	16	10'-8"	Str.		
903	9	52	52'-0"	"		
904	9	26	19'-9"	"		
906	9	16	8'-11"	IV	1'-11"	4'-3/4"
1001	10	184 170	11'-8"	Str.		
1101	11	30	21'-8"	Str.		
1102	11	35	15'-2"	"		
1103	11	25	14'-9"	"		
1104	11	25	14'-0"	"		
1105	11	12	13'-6"	"		
1106	11	1	19'-4"	"		
1110	11	1 Ea.	to	Str.		
1112	11	132	11'-9"	IV	4'-0"	5'-4-3/4"

BAR SUMMARY

11657	10709	lin. ft. No. 4 at 0.668 lbs. per lin. ft. =	7154	7,787
	347	lin. ft. No. 6 at 1.502 lbs. per lin. ft. =	521	
3531	9592	lin. ft. No. 9 at 3.400 lbs. per lin. ft. =	12008	12,000
2074	1927	lin. ft. No. 10 at 4.303 lbs. per lin. ft. =	8292	9,010
3835	3703	lin. ft. No. 11 at 5.313 lbs. per lin. ft. =	19674	20,375
TOTAL			47658	49,693

Additional bars Abut. No. 1 due to change of south end

Size #	No. Req'd	Length	Type
4	11	7.80	Str.
4	11	8.00	Str.
4	3	16.75	Str.
4	2	17.00	Str.
4	6	3.00	Str.
10	7	4.00	Str.
10	6	11.50	Str.
11	6	16.75	Str.
11	5	6.00	Str.

BAR SUMMARY

2444	2444	lin. ft. No. 4 at 0.668 lbs. per lin. ft. =	4633	1630
49251	4844	lin. ft. No. 5 at 1.043 lbs. per lin. ft. =	5555	51,369
63970	6304	lin. ft. No. 6 at 1.502 lbs. per lin. ft. =	9465	105,095
	3840	lin. ft. No. 9 at 3.400 lbs. per lin. ft. =	13056	
TOTAL			171,150	

BAR LIST - PIER NO. 2

MARK	SIZE	NO. REQ'D	LENGTH	TYPE	DIMENSIONS	
#	#				ℓ	m
513	5	164	7'-10"	Str.		
514	5	32	41'-6"	"		
6238	6	20	21'-0"	Str.		
6237	6	86	41'-0"	"		
6238	6	100	12'-0"	"		
to	6	4 Ea.	to	Str.		
6243	6	4 Ea.	4'-0"	"		
6244	6	2 Ea.	20'-8"	"	9'-0"	
to	6	2 Ea.	to	III	2'-0"	2'-3"
6257	6	4	7'-2"	Str.		
6258	6	2	29'-0"	"		
6260	6	8	26'-0"	"		
6298	6	30	21'-5"	"		
6299	6	28	21'-9"	"		
6300	6	28	22'-2"	"		
6301	6	30	22'-6"	"		
6302	6	22	22'-10"	"		
6307	6	158	6'-0"	IV	0'-0"	3'-1-3/4"
1111	11	6	20'-0"	IV	16'-7-3/4"	1'-0"
1112	11	8	25'-0"	IV	21'-7-3/4"	1'-0"

BAR SUMMARY

2613	2613	lin. ft. No. 5 at 1.043 lbs. per lin. ft. =	2720	2724
8819	8895	lin. ft. No. 6 at 1.502 lbs. per lin. ft. =	13249	13,246
	320	lin. ft. No. 11 at 5.313 lbs. per lin. ft. =	1700	
TOTAL			17675	1,760

BAR LIST - PIER NO. 3

MARK	SIZE	NO. REQ'D	LENGTH	TYPE	DIMENSIONS	
#	#				ℓ	m
513	5	288 210	7'-10"	Str.		
514	5	32	41'-6"	"		
515	5	16	21'-6"	"		
6236	6	38	21'-0"	Str.		
6237	6	100	41'-0"	"		
6238	6	100	12'-0"	"		
to	6	4 Ea.	to	Str.		
6243	6	4 Ea.	4'-0"	"		
6244	6	2 Ea.	20'-8"	"	9'-0"	
to	6	2 Ea.	to	III	2'-0"	2'-3"
6257	6	4	7'-2"	Str.		
6258	6	2	29'-0"	"		
6260	6	8	26'-0"	"		
6261	6	36	21'-8"	"		
6298	6	30	21'-5"	"		
6299	6	28	21'-9"	"		
6300	6	28	22'-2"	"		
6301	6	30	22'-6"	"		
6302	6	22	22'-10"	"		
6307	6	158	6'-0"	IV	0'-0"	3'-1-3/4"
6308	6	28	23'-4"	"		
6309	6	28	23'-4"	"		
6307	6	206	6'-0"	IV	0'-0"	3'-1-3/4"
1111	11	6	20'-0"	IV	16'-7-3/4"	1'-0"
1112	11	8	25'-0"	IV	21'-7-3/4"	1'-0"

BAR SUMMARY

3445	3392	lin. ft. No. 5 at 1.043 lbs. per lin. ft. =	3444	3593
11472	11277	lin. ft. No. 6 at 1.502 lbs. per lin. ft. =	16663	17,231
	320	lin. ft. No. 11 at 5.313 lbs. per lin. ft. =	1700	
TOTAL			22,007	22,524

Additional length (spliced bars)

Additional bars Abut. 4 as required for proper spacing and clearance

Size #	No. Req'd	Length	Type
4	1	17.00	Str.
4	1	64.00	"
4	1	107.00	"
4	1	125.00	"
4	1	176.00	"
4	1	52.00	"
4	1	72.00	"
4	1	104.00	"
4	1	154.00	"
4	2	5.00	"
4	16	3.00	"
4	6	3.50	"
4	6	1.00	"
4	6	.67	"

BAR SUMMARY

11428	10456	lin. ft. No. 4 at 0.668 lbs. per lin. ft. =	6968	7634
4416	4445	lin. ft. No. 5 at 1.043 lbs. per lin. ft. =	4636	4,606
2,933	2994	lin. ft. No. 6 at 1.502 lbs. per lin. ft. =	4392	4,405
	522	lin. ft. No. 8 at 2.670 lbs. per lin. ft. =	1384	
TOTAL			17347	18,039

*** Entire lengths (including splices) field measured*

BAR LIST - ABUTMENT NO. 4

MARK	SIZE	NO. REQ'D	LENGTH	TYPE	DIMENSIONS	
#	#				ℓ	m
418	4	48	52'-0"	Str.		
423	4	168 167	6'-6"	"		
424	4	25	4'-1"	"		
425	4	23	4'-8"	"		
426	4	21	5'-4"	"		
427	4	22	6'-0"	"		
428	4	20	6'-8"	"		
429	4	19	7'-1"	"		
430	4	20	7'-7"	"		
431	4	17	8'-1"	"		
432	4	25	9'-1"	"		
433	4	23	9'-9"	"		
434	4	21	10'-4"	"		
435	4	22	11'-0"	"		
436	4	20	11'-6"	"		
437	4	19	12'-1"	"		
438	4	20	12'-7"	"		
439	4	17	13'-1"	"		
440	4	6	14'-10"	"		
441	4	1 Ea.	to	Str.		
461	4	18	24'-0"	Str.		
462	4	18	24'-0"	Str.		
463	4	18	24'-0"	Str.		
to	4	2 Ea.	to	Str.		
468	4	25	22'-3"	"		
469	4	25	10'-4"	"		
470	4	22	24'-8"	"		
471	4	2	20'-8"	"		
472	4	386	3'-8"	"		
473	4	167	3'-2"	"		
474	4	16	20'-0"	"		
516	5	338	5'-11"	Str.		
517	5	42	57'-8"	"		
6263	6	164	6'-11"	Str.		
6265	6	9	14'-10"	"		
6266	6	9	14'-6"	"		
to	6	1 Ea.	to	Str.		

PROJECT NO. F 085-2(3)
STRUCTURE NO. F-16-1K

SOUTH SANTA FE
SOUTHBOUND OVER SO. PLATTE RIVER
STATION 218

INPUT DATA FOR BRIDGE F-16-1K

POC = 216 + 26.2220
PI = 218 + 0.0000
CTLST = 216 + 26.2220
BTSTA = 215 + 6.2220
HPOFF = .0001
ALPHA = -54°14'43.00"
EPI = 5230.0000
RADIUS = 1432.3950
VC = 600.
ETSTA = 217 + 6.2220
SMIN = .0150
PLOFF = 0.0000
CLOFF = 0.0000
CTLS = 0.0000
PLES = 0.0000
PCSTA = 216 + 26.2220
SMAX = .0620
GBK = 1.8000
GAH = -.9600
SUPER = .0150

AS CONSTRUCTED
NO REVISIONS DATE AUG 27 1970

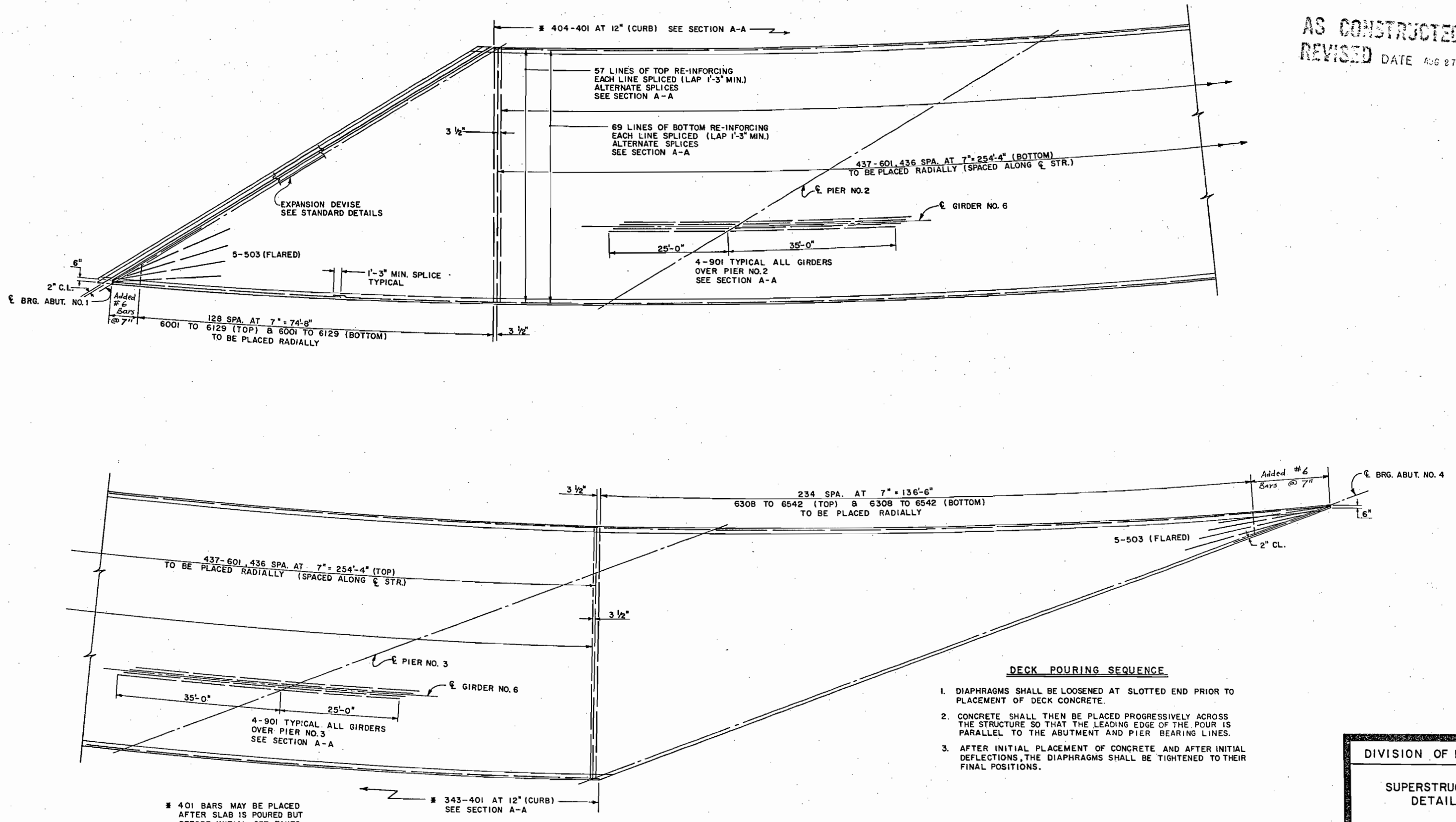
Table with 8 columns for GIRDERS (GIRDER NO. 1 to 8) and 2 columns for Station and Elevation. It lists elevation data for various points including Centerline Abut. 1, Centerline Pier 2, Centerline Pier 3, and Centerline Abut. 4, with 10th and 10th stations for each pier.

NOTE:
ELEVATIONS TO TOP OF ASPHALT.

DIVISION OF HIGHWAYS
TENTH POINT DECK ELEVATIONS
Across SOUTH PLATTE RIVER
Sta 218 + 30.
Near DENVER Sec 15 T. 4 S. R. 66 W.
Designed by R.M.K. Approved by A.M.W.
Checked by R.J.D. Date: 1970

FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F085-2(3)	17	

AS CONSTRUCTED
 REVISED DATE AUG 27 1973



DECK POURING SEQUENCE

1. DIAPHRAGMS SHALL BE LOOSENEED AT SLOTTED END PRIOR TO PLACEMENT OF DECK CONCRETE.
2. CONCRETE SHALL THEN BE PLACED PROGRESSIVELY ACROSS THE STRUCTURE SO THAT THE LEADING EDGE OF THE POUR IS PARALLEL TO THE ABUTMENT AND PIER BEARING LINES.
3. AFTER INITIAL PLACEMENT OF CONCRETE AND AFTER INITIAL DEFLECTIONS, THE DIAPHRAGMS SHALL BE TIGHTENED TO THEIR FINAL POSITIONS.

* 401 BARS MAY BE PLACED AFTER SLAB IS POURED BUT BEFORE INITIAL SET TAKES PLACE.

SUPERSTRUCTURE DETAILS
 (NO SCALE)

DIVISION OF HIGHWAYS

SUPERSTRUCTURE DETAILS

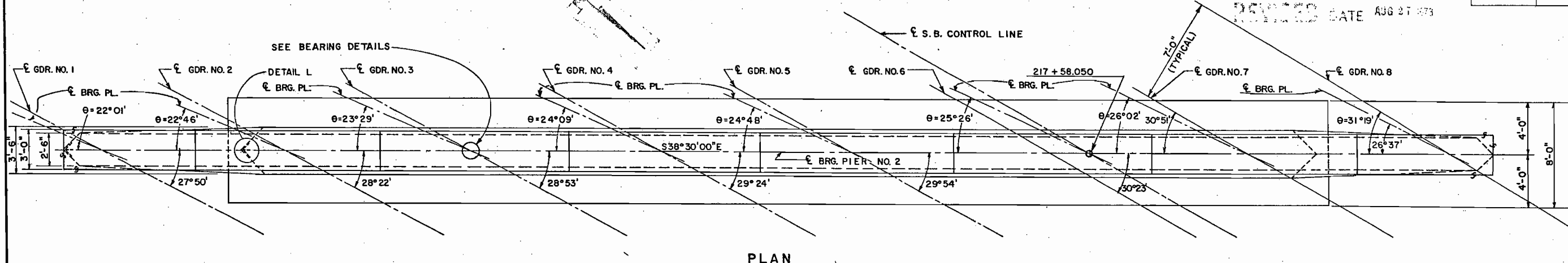
Across SOUTH PLATTE RIVER
 Sta. 218+30

Near DENVER Sec. 15 T.4S. R.68W.

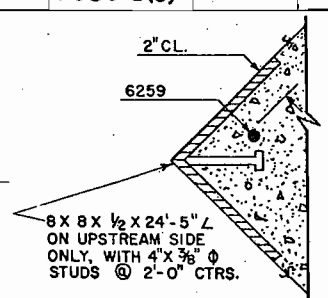
Designed by R.M.K. Approved by
 Made by K.L.L. Checked by *[Signature]* Date: 1970

AS CONSTRUCTED
REVISED DATE AUG 27 1973

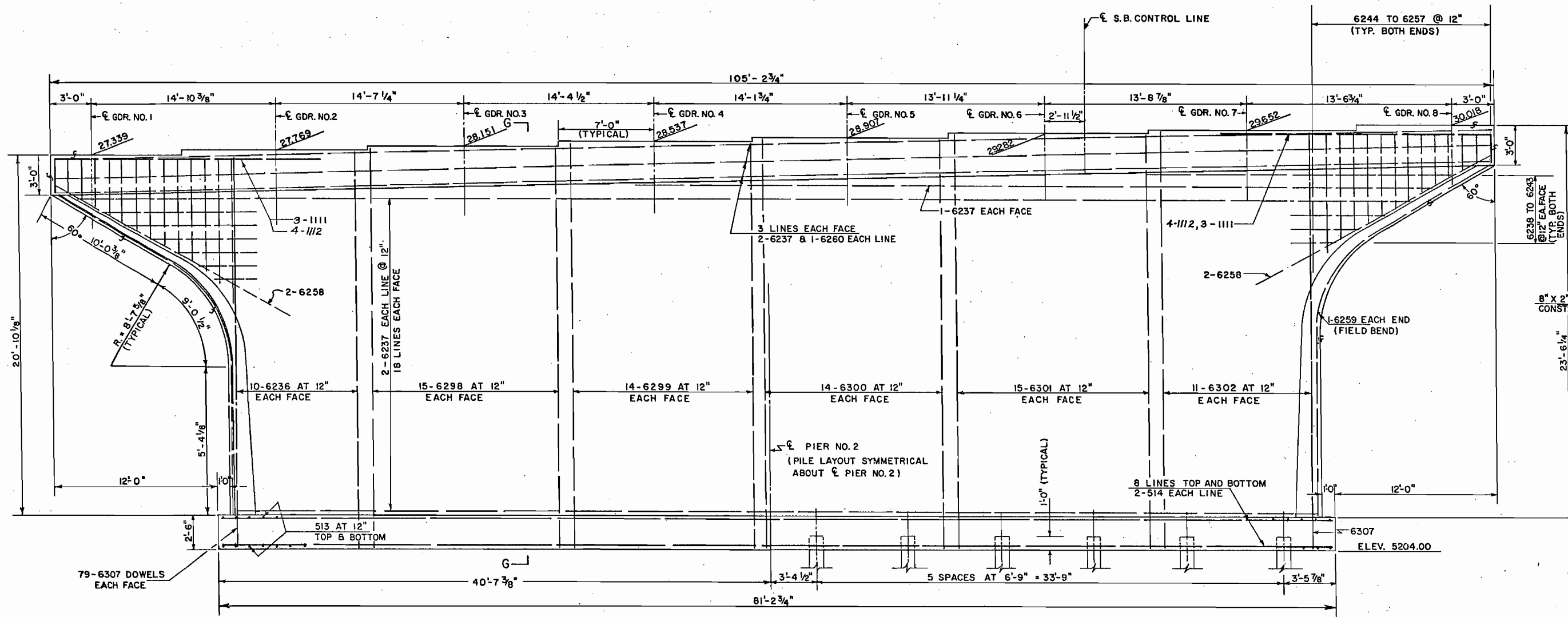
FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F085-2(3)	19	



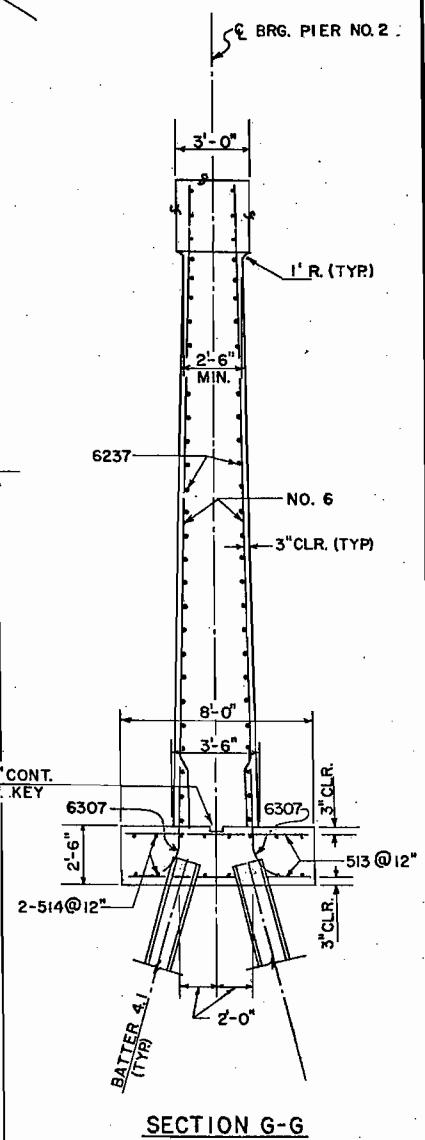
PLAN



DETAIL L



ELEVATION



SECTION G-G

Front Row	#42 16.5	#43 16.0	#44 15.4	#45 18.0	#46 18.0	#47 18.0	#48 18.0	#49 16.5	#50 17.9	#51 14.0	#52 14.0	#53 13.6
Back Row	#65 16.7	#64 18.0	#63 18.0	#62 18.0	#61 15.9	#60 16.0	#59 16.0	#58 16.7	#57 18.0	#56 18.0	#55 14.0	#54 14.0

10 BP 57
ALL PILES 12-8P-53
MAXIMUM PILE PRESSURE 70 TONS
Piling lengths shown excluding welds.

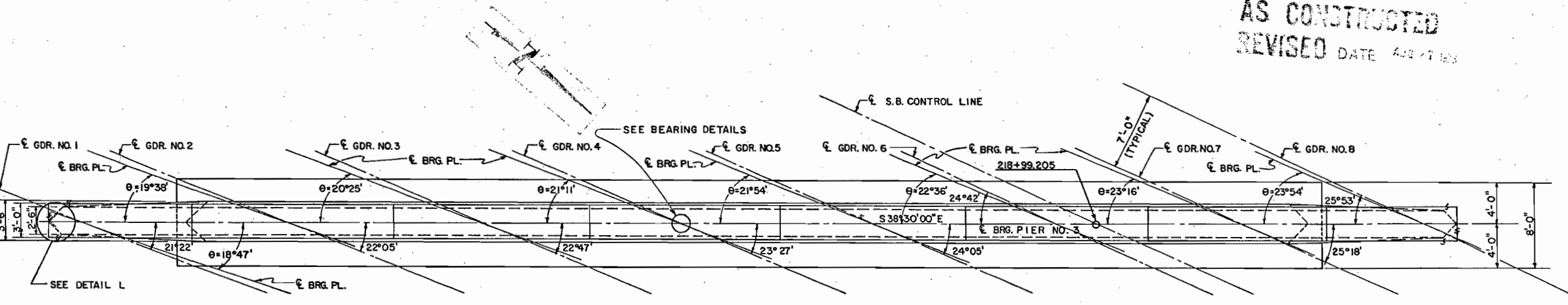
STRUCTURE NO. F-16-IK

DIVISION OF HIGHWAYS

PIER NO. 2

Across SOUTH PLATTE RIVER
Sta. 218 + 30
Near DENVER Sec. 15 T. 4 S. R. 68 W.
Designed by R.M.K. Approved by
Made by R.J.D.
Checked by *[Signature]* Date: 1970

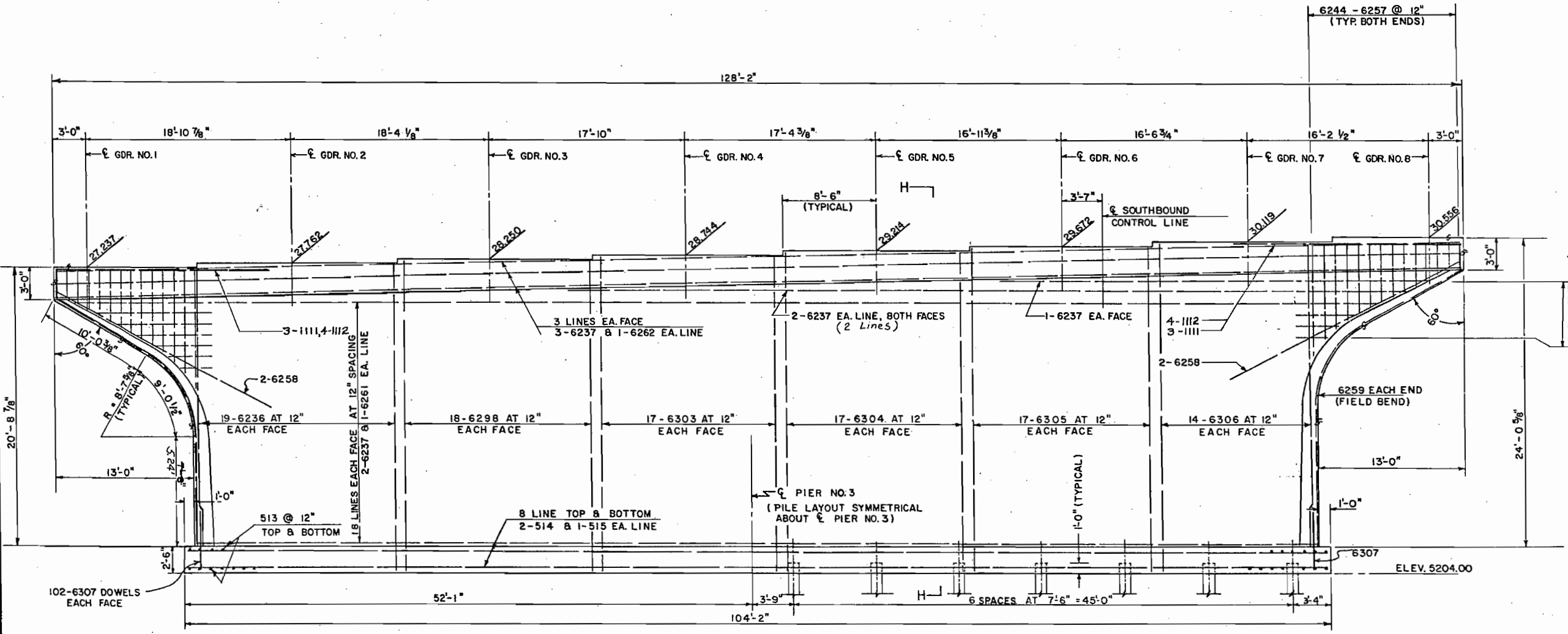
AS CONSTRUCTED
REVISED DATE 4/8/70



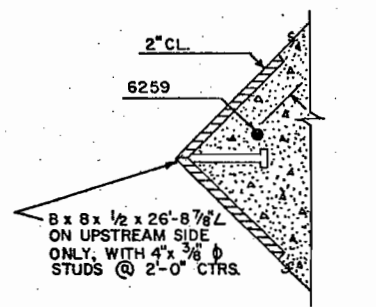
PLAN

Piling lengths shown excluding welds.

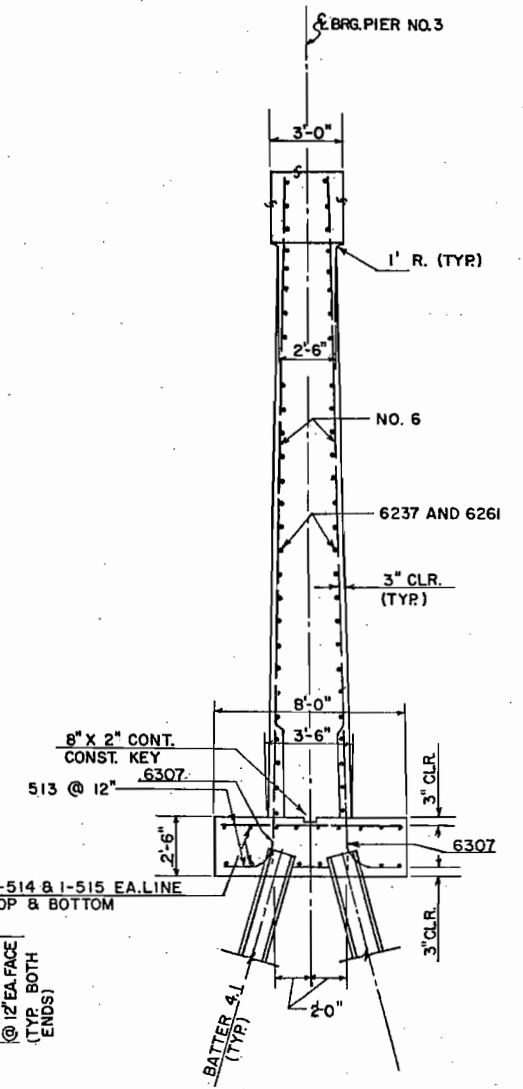
Front Row	#66	11.8	#67	11.4	#68	12.0	#69	12.1	#70	12.0	#71	11.5	#72	12.3	#73	12.5	#74	12.0	#75	12.0	#76	14.0	#77	14.0	#78	14.9	#79	16.0
Back Row	#93	12.5	#92	14.1	#91	11.7	#90	14.0	#89	12.3	#88	11.6	#87	11.3	#86	12.6	#85	11.8	#84	14.1	#83	12.8	#82	15.1	#81	16.0	#80	16.0



ELEVATION



DETAIL L



SECTION H-H

DIVISION OF HIGHWAYS

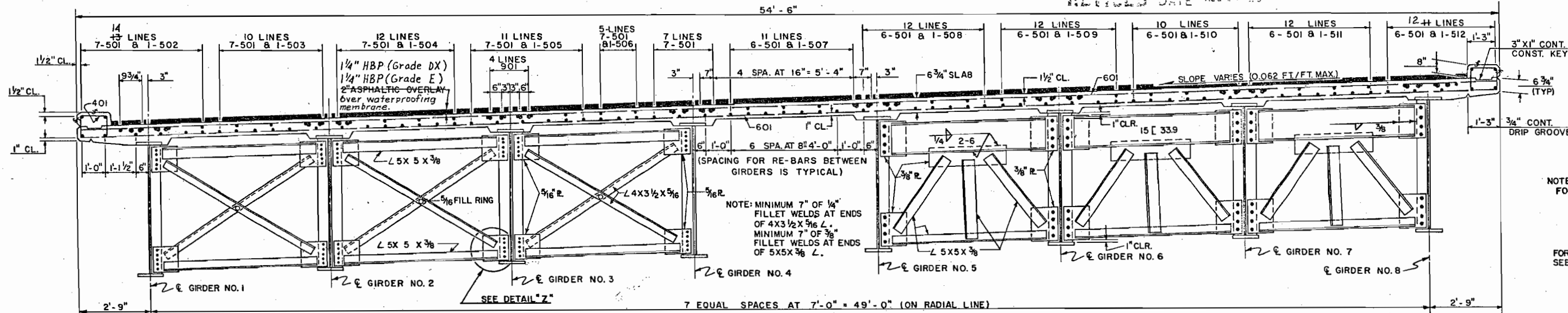
PIER NO. 3

Across SOUTH PLATTE RIVER
Sta. 218 + 30
Near DENVER Sec. 15 T. 4 S. R. 68 W.

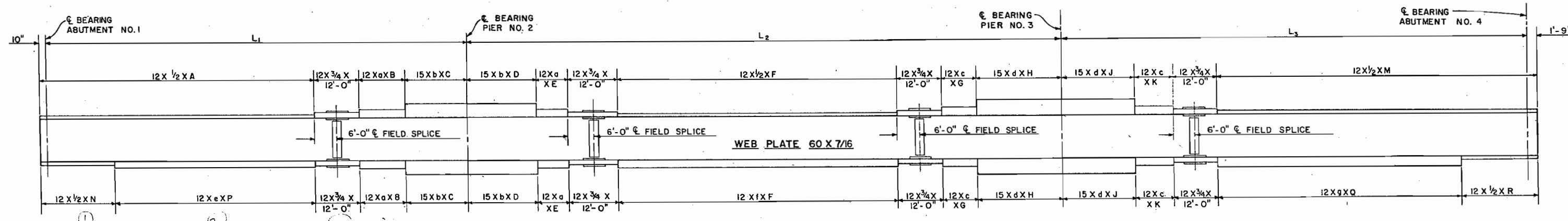
Designed by R.M.K. Approved by
Made by R.J.D. Checked by [Signature] Date: 1970

AS CONSTRUCTED
REVISED DATE AUG 27 1973

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F085-2(3)	22	

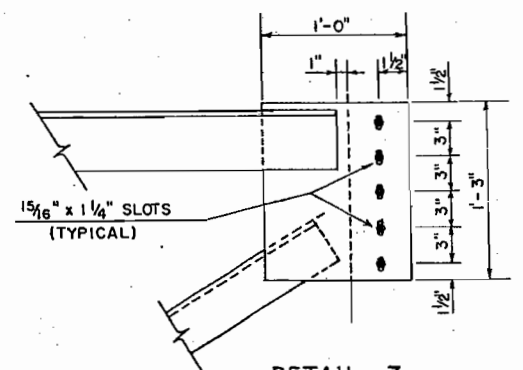


NOTE:
FOR BRIDGE RAIL, SEE SHEET 28
401 BARS MAY BE PLACED AFTER SLAB IS POURED BUT BEFORE INITIAL SET TAKES PLACE.
FORM BRIDGE RAIL POCKETS SEE SHEET 28.



GIRDER FLANGE DETAIL
(NO SCALE)

GIRDER NO.	SPAN LENGTHS			FLANGE PLATE LENGTH													FLANGE PLATE THICKNESS								
	L ₁	L ₂	L ₃	A	B	C	D	E	F	G	H	J	K	M	N	P	Q	R	a	b	c	d	e	f	g
1	115'-4 1/8"	157'-5 1/8"	125'-9 1/2"	74'-10"	12'-0"	17'-4 1/8"	18'-0"	10'-0"	74'-0"	9'-0"	22'-5 1/8"	19'-0"	10'-0"	86'-6 1/2"	20'-10"	54'-0"	65'-0"	21'-6 1/2"	1 1/4"	2 1/4"	1 1/4"	2 1/2"	7/8"	1 1/4"	1 1/8"
2	113'-8"	153'-9"	120'-7 3/8"	73'-10"	12'-0"	16'-8"	17'-0"	9'-0"	73'-0"	9'-0"	21'-9"	18'-0"	10'-0"	82'-4 3/8"	19'-10"	54'-0"	61'-0"	21'-4 3/8"	1"	2"	1 1/4"	2 1/4"	7/8"	1 1/8"	1 1/8"
3	112'-1 1/8"	150'-4 1/2"	116'-1 3/8"	72'-10"	11'-0"	17'-1 1/8"	16'-0"	10'-0"	73'-0"	10'-0"	17'-4 1/2"	17'-0"	9'-0"	79'-10 3/8"	19'-10"	53'-0"	60'-0"	19'-10 3/8"	1"	2"	1 1/4"	2 1/4"	7/8"	1 1/8"	1 1/8"
4	110'-7 1/4"	147'-3 1/8"	112'-1 3/8"	71'-10"	11'-0"	16'-7 1/4"	16'-0"	9'-0"	69'-0"	9'-0"	20'-3 1/8"	17'-0"	8'-0"	76'-10 5/8"	19'-10"	52'-0"	57'-0"	19'-10 5/8"	1"	1 7/8"	1"	2"	7/8"	1"	1"
5	109'-2 3/8"	144'-4 5/8"	108'-7 1/4"	70'-10"	10'-0"	17'-2 3/8"	16'-0"	9'-0"	71'-0"	9'-0"	15'-4 5/8"	16'-0"	11'-0"	71'-4 1/4"	19'-10"	51'-0"	51'-0"	20'-4 1/4"	1"	1 7/8"	1"	1 7/8"	3/4"	1"	3/4"
6	107'-10 1/4"	141'-8 1/2"	105'-5 1/4"	72'-10"	8'-0"	15'-10 1/4"	16'-0"	8'-0"	70'-0"	8'-0"	15'-8 1/2"	16'-0"	8'-0"	71'-2 1/4"	18'-10"	54'-0"	52'-0"	19'-2 1/4"	1"	1 3/4"	1"	1 3/4"	3/4"	1"	3/4"
7	106'-7"	139'-2 5/8"	102'-6 7/8"	71'-10"	7'-0"	16'-7"	15'-0"	11'-0"	63'-0"	11'-0"	15'-2 5/8"	17'-0"	6'-0"	69'-3 7/8"	18'-10"	53'-0"	51'-0"	18'-3 7/8"	7/8"	1 5/8"	7/8"	1 5/8"	5/8"	7/8"	5/8"
8	105'-4 1/2"	136'-10 5/8"	99'-11 5/8"	70'-10"	8'-0"	15'-4 1/2"	15'-0"	8'-0"	66'-0"	8'-0"	15'-10 5/8"	15'-0"	8'-0"	66'-8 5/8"	25'-10"	45'-0"	37'-0"	29'-8 5/8"	3/4"	1 1/2"	3/4"	1 1/2"	3/4"	3/4"	1/2"



NOTE: TYPICAL OF ALL INTERM. DIAPHRAGM PLATES TOWARDS CENTER OF BRIDGE.

DIVISION OF HIGHWAYS

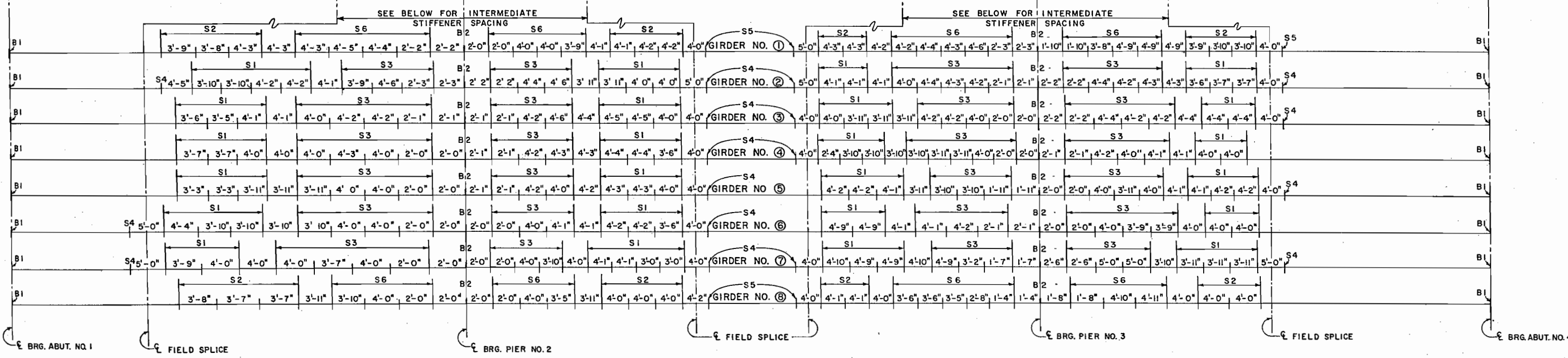
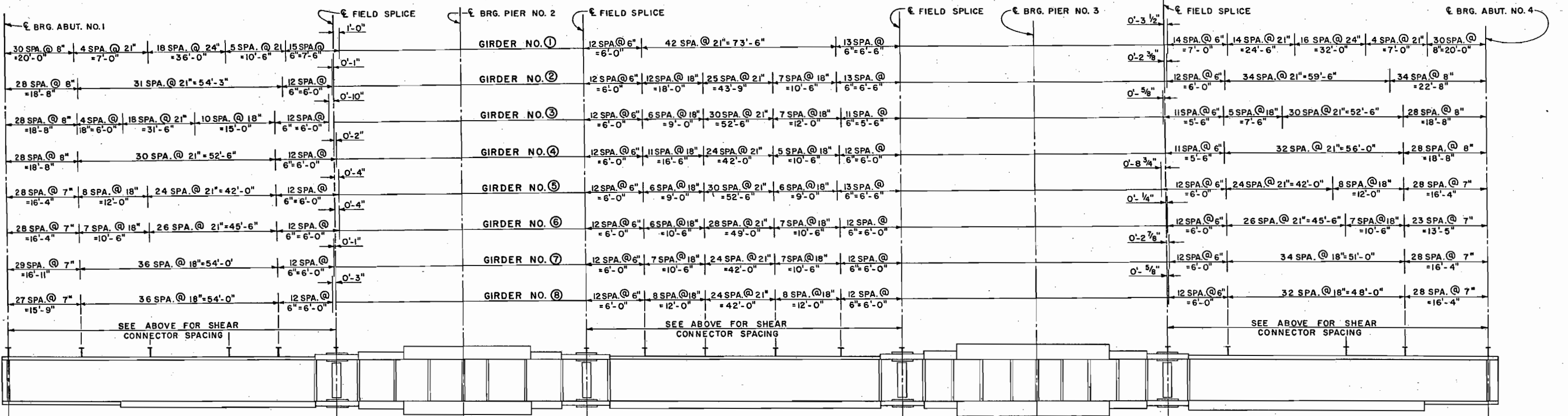
TYPICAL SECTION AND GIRDER FLANGE DETAILS

Across SOUTH PLATTE RIVER
Sta. 218 + 30
Near DENVER Sec. 15 T. 4 S. R. 68 W.

Designed by R.M.K. Approved by _____
Made by K.L.L.
Checked by _____ Date: 1970.

AS CONSTRUCTED
NO REVISIONS DATE AUG 27 1973

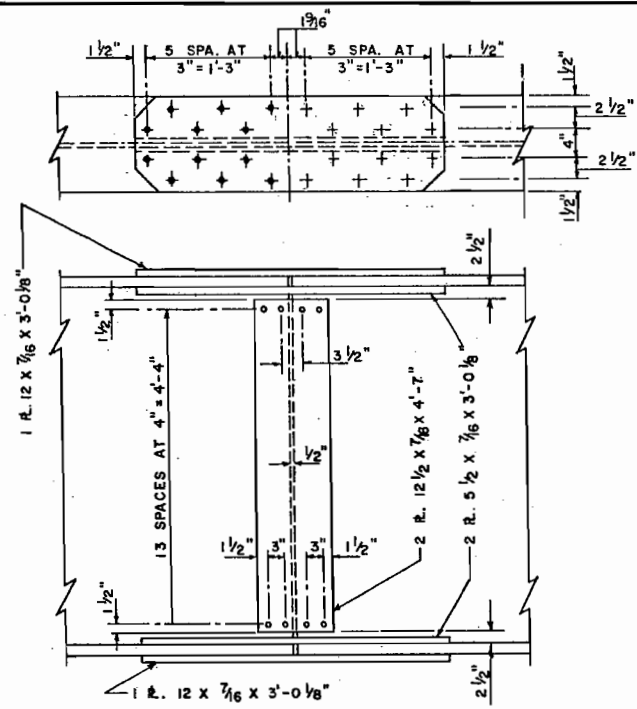
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F085-2(3)	23	



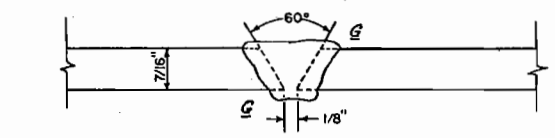
DIVISION OF HIGHWAYS
INTERMEDIATE STIFFENERS
SPACING
&
SHEAR CONNECTOR
SPACING

Across SOUTH PLATTE RIVER
Sta. 218+30
Near DENVER Sec. 15 T.4 S. R.62W

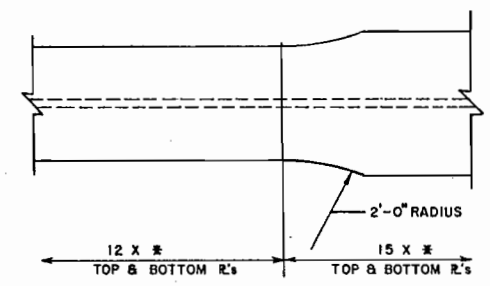
Designed by R.M.K. Approved by
Made by K.L.L.
Checked by [Signature] Date: 1970



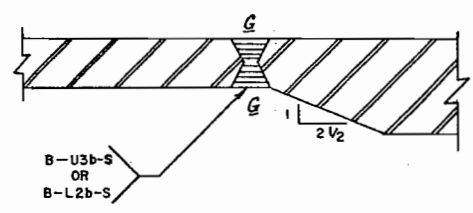
FIELD SPLICE



WEB SPLICE B-L2-S



FLANGE PLATE TRANSITION SPLICE

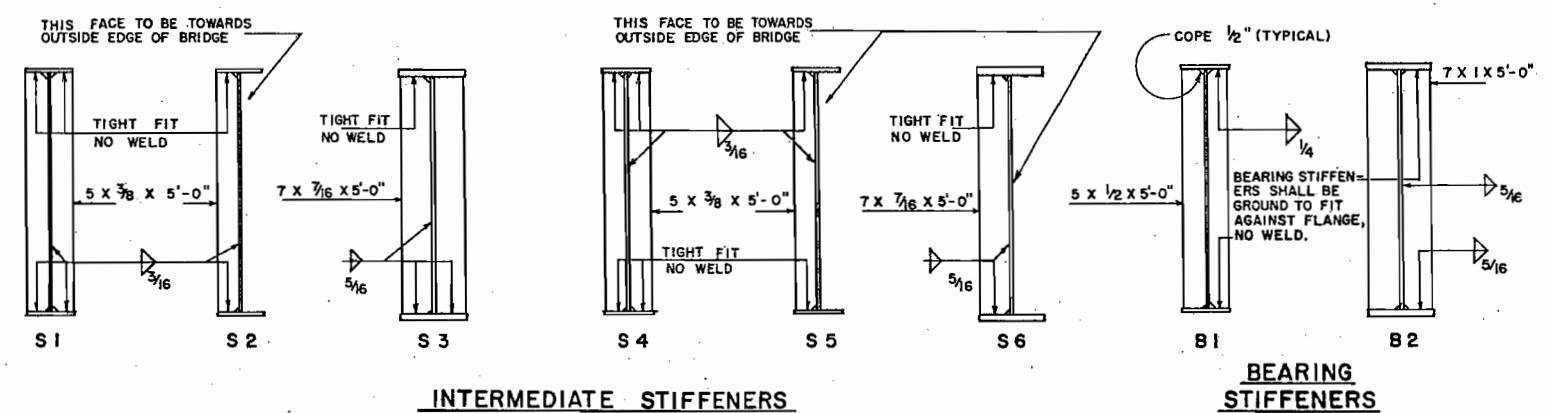


DETAIL M

TYPICAL AT CHANGES IN FLANGE PLATE THICKNESS

NOTES

- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM SPECIFICATIONS A-36.
- FIELD SPLICE IS A HIGH-TENSILE STRENGTH BOLT FRICTION TYPE JOINT. ALL BOLTS ARE 7/8" φ HIGH STRENGTH STEEL BOLTS A A S H O M-164 (ASTM-325).
- SUBPUNCH FIELD SPLICE HOLES 19/16" AND REAM TO 15/16" φ WITH PARTS ASSEMBLED IN POSITION IN SHOP.
- TWO ADJACENT GIRDERS MUST BE SET WITH DIAPHRAGMS IN PLACE BEFORE RELEASE OF EXTERNAL SUPPORT.

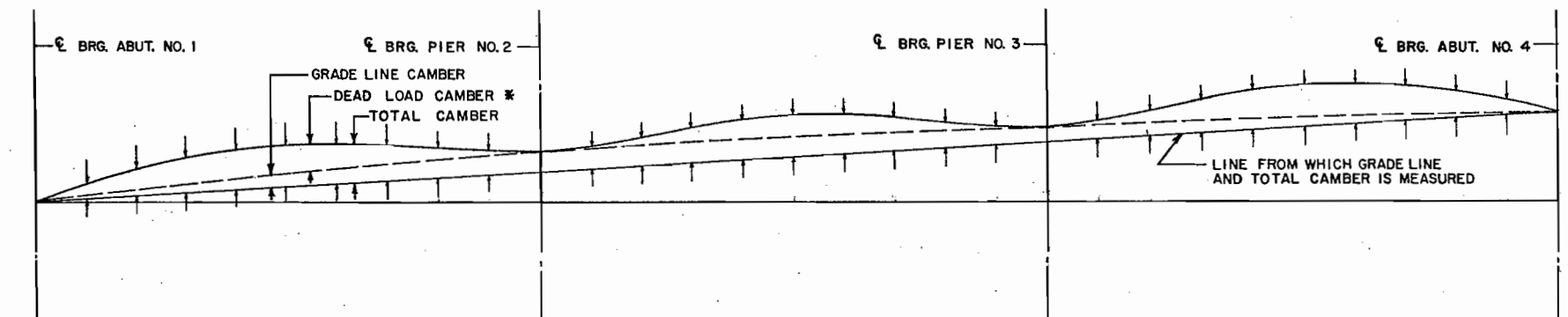


INTERMEDIATE STIFFENERS

BEARING STIFFENERS

SHEAR CONNECTOR DETAIL

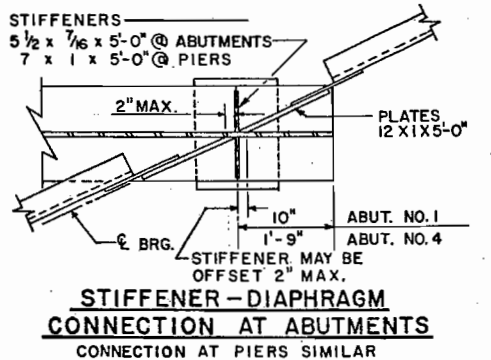
GIRDER EMBEDMENT DETAIL



TENTH POINTS																														
GIRDER 1																														
0	.051	.091	.116	.122	.109	.083	.051	.022	.004	0	.021	.062	.112	.151	.163	.143	.099	.048	.012	0	.014	.044	.087	.133	.167	.181	.169	.132	.074	0
0	.157	.300	.422	.518	.589	.640	.679	.715	.755	.803	.879	.964	1.046	1.105	1.124	1.100	1.040	.960	.884	.820	.786	.760	.740	.715	.670	.598	.492	.353	.186	0
10 SPACES @ 11.534' = 115'-4 1/8"										10 SPACES @ 15.742' = 157'-5 1/8"										10 SPACES @ 12.579' = 125'-9 1/2"										
GIRDER 2																														
0	.050	.090	.114	.120	.109	.084	.052	.022	.004	0	.027	.075	.129	.170	.182	.164	.119	.064	.021	0	.010	.035	.071	.109	.138	.150	.141	.111	.062	0
0	.028	.169	.287	.382	.453	.504	.542	.576	.615	.663	.747	.842	.931	.996	1.020	1.003	.947	.871	.795	.730	.698	.675	.655	.631	.590	.526	.433	.313	.166	0
10 SPACES @ 11.367' = 113'-8"										10 SPACES @ 15.375' = 153'-9"										10 SPACES @ 12.062' = 120'-7 3/8"										
GIRDER 3																														
0	.046	.083	.106	.111	.100	.077	.047	.019	.003	0	.022	.063	.112	.150	.163	.148	.108	.060	.020	0	.007	.028	.059	.091	.116	.127	.119	.094	.052	0
0	.092	.157	.205	.295	.363	.414	.451	.485	.524	.571	.650	.739	.824	.888	.916	.905	.858	.793	.725	.666	.635	.612	.593	.568	.529	.470	.386	.278	.148	0
10 SPACES @ 11.209' = 112'-1 1/8"										10 SPACES @ 15.038' = 150'-4 1/2"										10 SPACES @ 11.611' = 116'-1 3/8"										
GIRDER 4																														
0	.045	.081	.102	.108	.098	.076	.047	.020	.003	0	.021	.062	.109	.146	.160	.145	.107	.060	.021	0	.004	.020	.048	.077	.100	.110	.104	.082	.046	0
0	.076	.138	.182	.269	.334	.382	.416	.447	.482	.525	.602	.690	.773	.836	.865	.855	.813	.751	.687	.630	.598	.572	.551	.526	.489	.433	.355	.255	.136	0
10 SPACES @ 11.060' = 110'-7 1/4"										10 SPACES @ 14.726' = 147'-3 1/8"										10 SPACES @ 11.214' = 112'-1 5/8"										
GIRDER 5																														
0	.044	.079	.101	.106	.096	.074	.046	.020	.004	0	.020	.058	.104	.140	.154	.141	.106	.061	.022	0	.005	.022	.048	.076	.098	.107	.101	.079	.044	0
0	.100	.185	.251	.297	.356	.398	.428	.455	.486	.524	.597	.678	.758	.818	.847	.839	.799	.739	.676	.620	.587	.562	.539	.514	.476	.421	.345	.247	.131	0
10 SPACES @ 10.920' = 109'-2 3/8"										10 SPACES @ 14.438' = 144'-4 5/8"										10 SPACES @ 10.861' = 108'-7 1/4"										
GIRDER 6																														
0	.044	.079	.101	.107	.098	.077	.049	.023	.005	0	.020	.058	.102	.136	.148	.135	.102	.059	.021	0	.002	.015	.037	.062	.081	.090	.086	.067	.038	0
0	.121	.228	.317	.385	.432	.467	.491	.411	.534	.564	.633	.710	.784	.839	.862	.851	.811	.752	.688	.632	.594	.562	.533	.503	.461	.404	.330	.234	.124	0
10 SPACES @ 10.786' = 107'-10 1/2"										10 SPACES @ 14.171' = 141'-8 1/2"										10 SPACES @ 10.544' = 105'-5 1/4"										
GIRDER 7																														
0	.043	.078	.100	.106	.097	.076	.048	.021	.004	0	.018	.054	.096	.130	.143	.132	.100	.058	.021	0	.001	.014	.035	.058	.076	.085	.081	.063	.035	0
0	.140	.266	.375	.462	.529	.579	.594	.606	.621	.645	.705	.774	.841	.890	.910	.896	.853	.792	.726	.667	.623	.586	.552	.516	.470	.409	.332	.235	.123	0
10 SPACES @ 10.659' = 106'-7"										10 SPACES @ 13.922' = 139'-2 5/8"										10 SPACES @ 10.257' = 102'-6 7/8"										
GIRDER 8																														
0	.042	.077	.097	.104	.095	.075	.048	.022	.005	0	.022	.061	.104	.138	.151	.139	.106	.063	.023	0	.000	.010	.030	.052	.070	.078	.075	.059	.032	0
0	.156	.300	.424	.530	.615	.684	.740	.744	.751	.764	.820	.885	.945	.987	1.000	.980	.930	.862	.788	.722	.671	.624	.583	.540	.488	.421	.339	.240	.125	0
10 SPACES @ 10.538' = 105'-9 1/2"										10 SPACES @ 13.688' = 136'-10 5/8"										10 SPACES @ 9.997' = 99'-11 5/8"										

CAMBER DIAGRAM
(GIRDER WEB TO REMAIN CONSTANT DEPTH)

DEAD LOAD DEFLECTION PLUS VERTICAL CURVE CORRECTION IN FT.
* DEAD LOAD DEFLECTION IN FT.
* FOR FABRICATOR'S USE.



STIFFENER-DIAPHRAGM CONNECTION AT ABUTMENTS
CONNECTION AT PIERS SIMILAR

AS CORRECTED
 AUG 27 1973
 NO REVISIONS DATE

DIVISION OF HIGHWAYS

SUPERSTRUCTURE DETAILS AND CAMBER DIAGRAM

Across SOUTH PLATTE RIVER
Sta. 218 + 30
Near DENVER Sec. 15 T. 4 S. R. 68 W

Designed by R.M.K. Approved by _____
Made by R.J.D. Bridge Engineer
Checked by _____ Date: 1970

SPECIFICATIONS

A. SCOPE: Provide self-lubricating rotational slide and rotational fixed bearings as shown and specified, as complete factory-produced assemblies. Assemblies shall include all directly connected or welded anchorage hardware.

B. BEARING DESCRIPTIONS: Bearings shall be rotational - non-translation sliding units as shown on the drawings, in the locations indicated, meeting the loading requirements of the design and conforming to the details on the drawings. Slide bearing shall consist of a slightly tapered loading piston operating on a suitably proportioned bridge-bearing neoprene pad confined in a steel cylindrical retainer welded to a correctly sized bearing plate.

And in addition shall have the interface between the upper and lower bearing halves provided with a sliding upper surface of burnished stainless steel operating against a bearing surface of special bearing quality Teflon recessed into the upper surface of the loading piston, operating at a coefficient of static friction of not more than .03. Material components shall be as follows:

1. Steel: Structural steel plates for all parts, ASTM A 36, except that cylindrical retainer may be cut from ASTM A 53 pipe, Grade B.
2. Stainless Steel Sliding Surface: Chromium-Nickel Steel Sheet, ASTM A 167, Alloy 316, polished and burnished.
3. Neoprene Elastomer: Bridge bearing quality neoprene, cast in molds under pressure and heat, with a minimum tensile strength of 2,250 psi and a Shore A Hardness of 55 ± 5.
4. Special Bearing Quality Teflon (opposite stainless steel): 100 percent virgin tetrafluoroethylene polymer of special quality cast into pads and bonded into recesses in the backing plate substrata with a special heat cured, high temperature epoxy.

The material, operating against its opposing polished and burnished stainless steel plate shall have a static coefficient when loaded, of not more than .03, at initial installation.

5. Shop Coating: All carbon steel surfaces shall be prepared by commercial blast or pickling and shop coated with not less than 1.5 mil thick shop coat of Fed. Spec. TT-P-615d, Basic Lead Chromate, Type II.

C. SHOP DRAWINGS AND DATA: Submit five copies, shop drawings, load data and material descriptions or specifications for review and approval by the Engineer, prior to furnishing material for job.

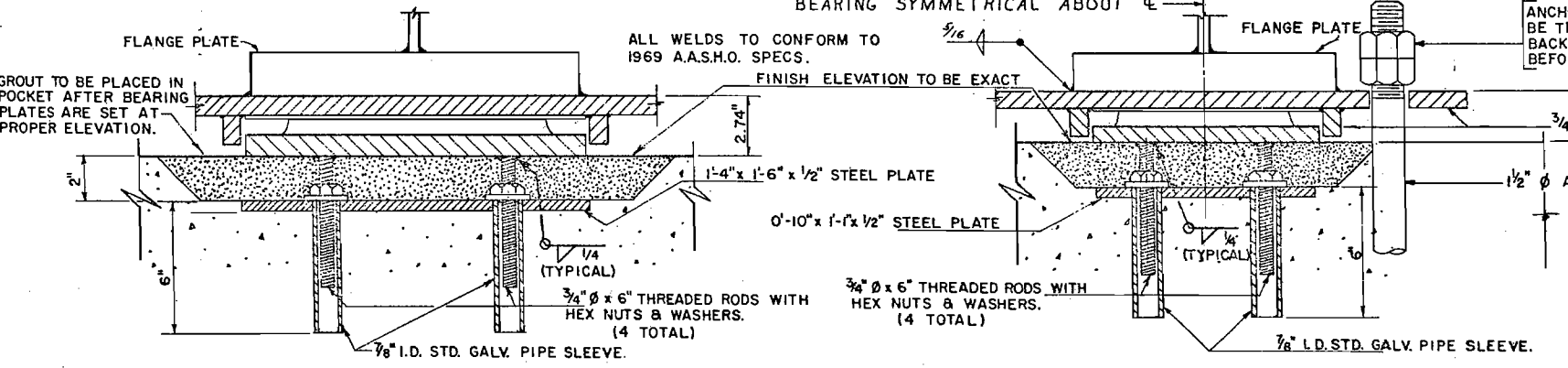
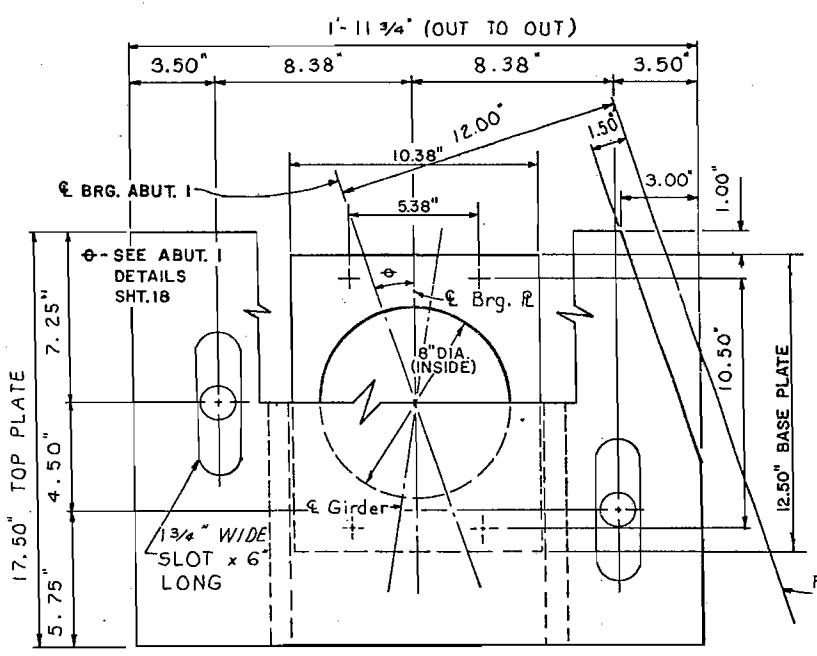
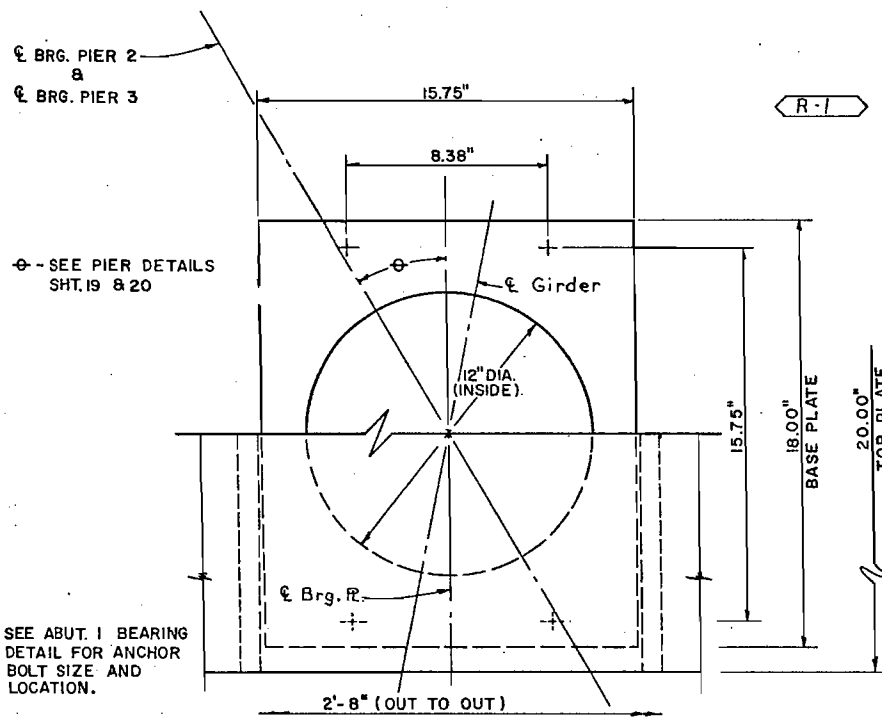
D. INSTALLATION: By the Contractor, install bearings in conformance with project and shop drawings, in the exact locations, at required elevations, true to orientation and level, assuring that the correct half of each bearing is in its proper position. Store bearings to protect from weather and mechanical damage prior to installation, and protect during and after installation, and protect during and after installation from contamination and damage due to placing of concrete and other materials. Clean operating surfaces of bearings thoroughly before final bearing assembly.

E. The manufacturer of the bearing device is to submit in writing to the Engineer a certificate of compliance that the bearing device and all materials used in the construction of the device meet all of the above specifications.

Load Data:
 Abutment 1 85 Kip/Bearing
 Pier 2 240 Kip/Bearing
 Pier 3 250 Kip/Bearing
 Maximum Rotation 0°15'

FEDERAL ROAD DISTRICT	PROJ.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F085-2(3)	25

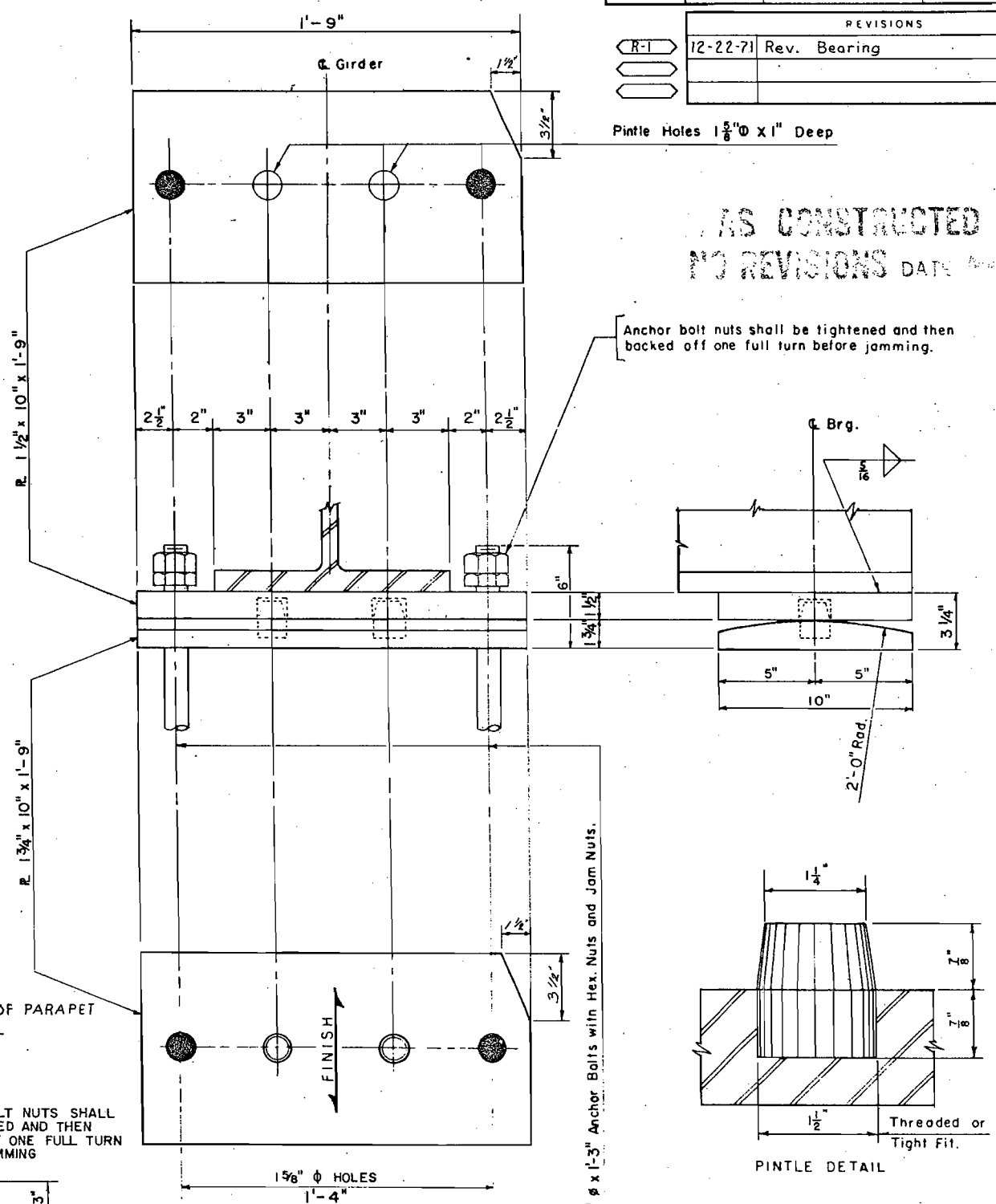
REVISIONS			
R-1	12-22-71	Rev. Bearing	K.G.S.



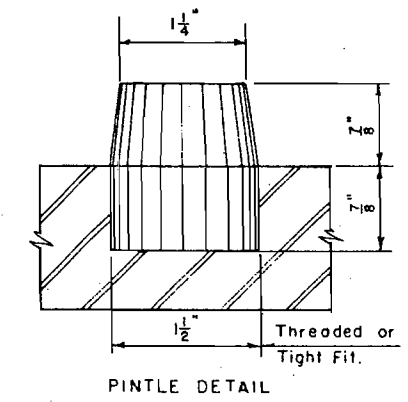
PIER 2 & PIER 3 - 16 REQUIRED

ABUTMENT 1 - 8 REQUIRED

FREE ROTATION - RESTRICTED TRANSLATION BEARING



AS CONSTRUCTED
 NO REVISIONS DATE



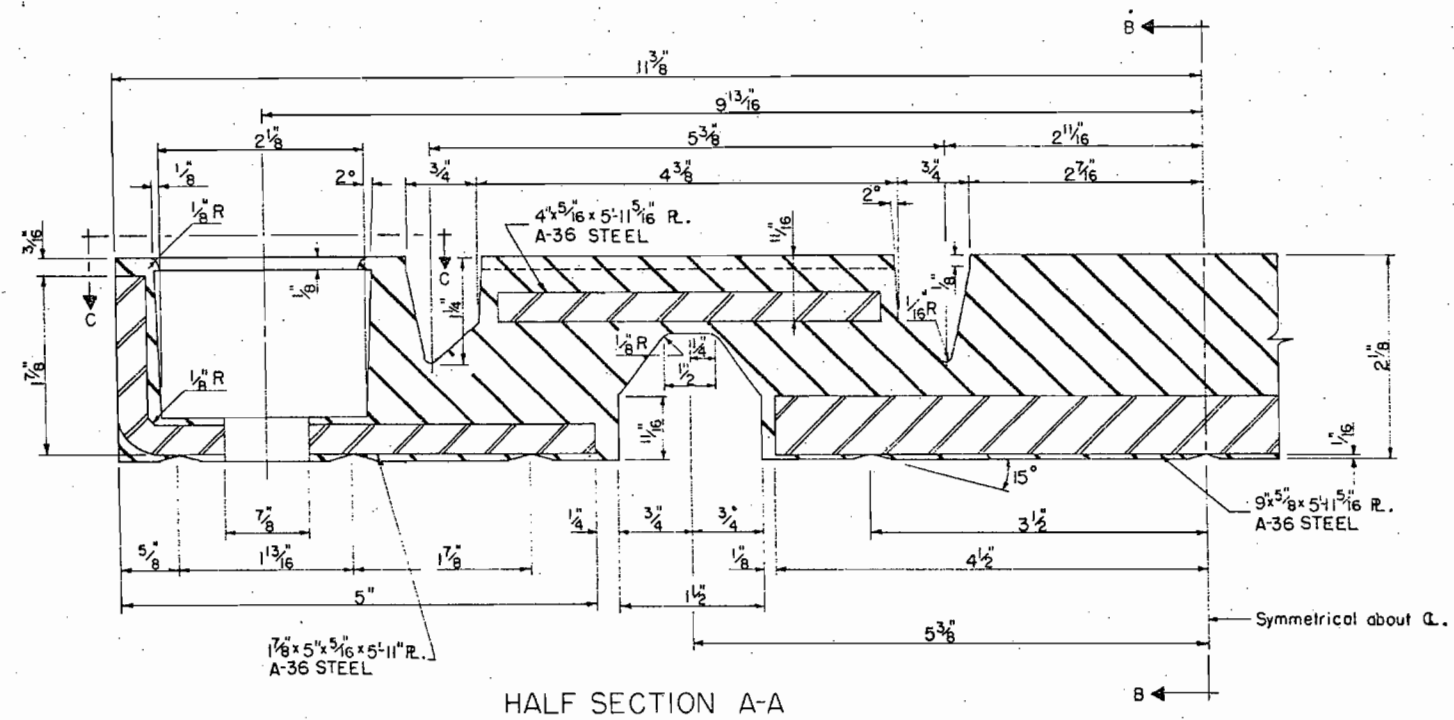
Number of bolts required 16

DIVISION OF HIGHWAYS

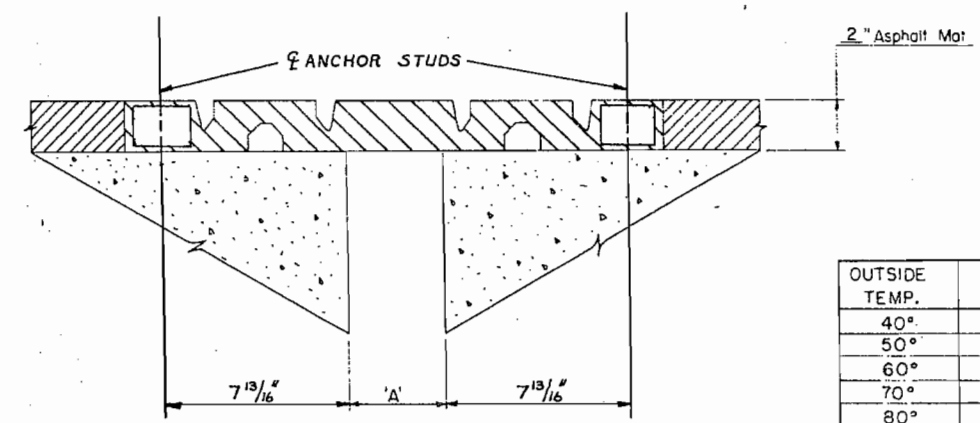
BEARING DETAILS

Approved _____ Designer R.M.K. Detainer R.J.D.
 Bridge Engineer _____ Structure Numbers F-16-1K
 Date 1970 DWG. No. 8 OF

PROJECT NO.	DATE	SCALE	SHEET NO.	TOTAL SHEETS
			26	
F085-2(3)				
PRELIMINARY				

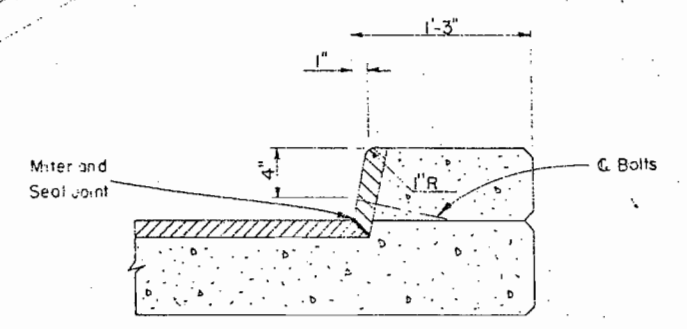
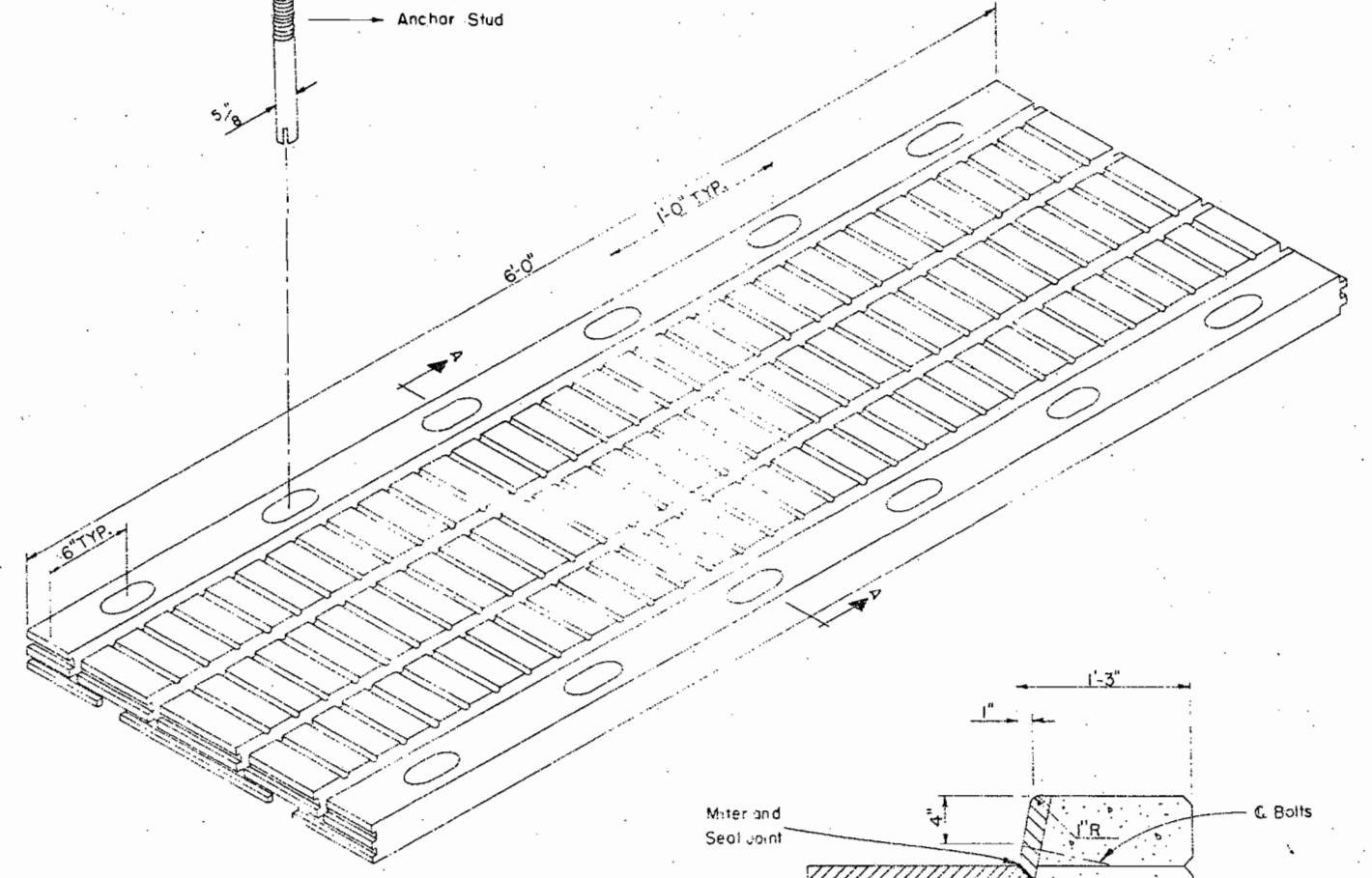
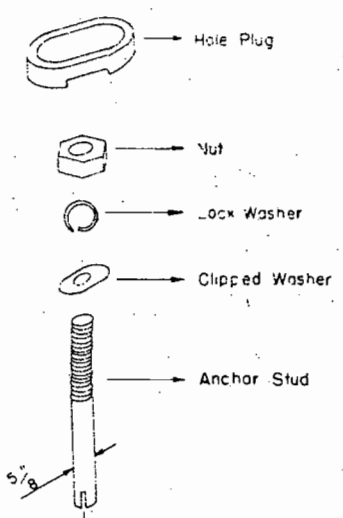


HALF SECTION A-A

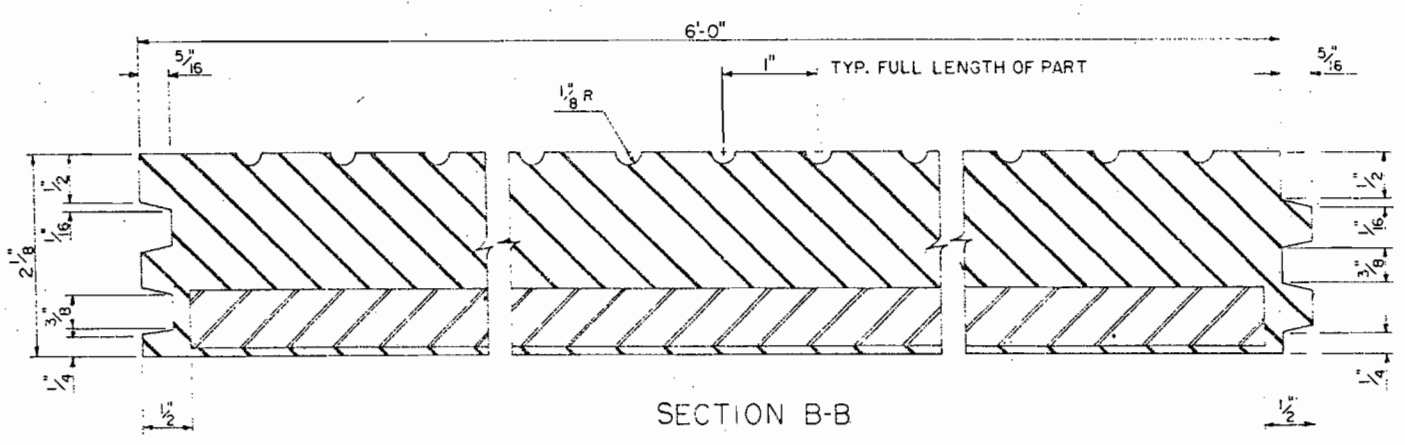


SECTION Q PIER OR ABUTMENT

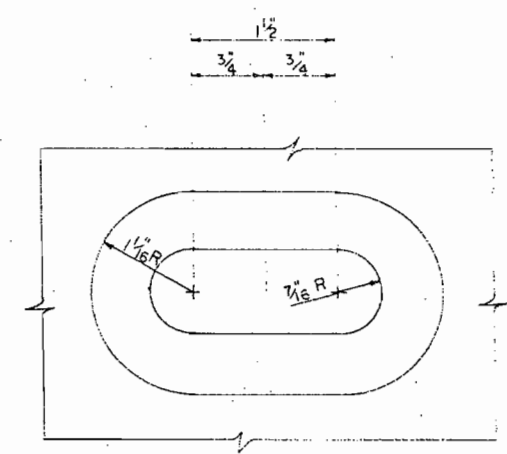
OUTSIDE TEMP.	DIM 'A' (MIN.)	DIM 'A' (MIN.)	DIM 'A' (MIN.)
40°	4 1/8"		
50°	3 7/8"		
60°	3 5/8"		
70°	3 1/4"		
80°	3"		
90°	2 3/4"		
100°	2 1/2"		



TYPICAL SECTION @ CURB



SECTION B-B



SECTION C-C

DIVISION OF HIGHWAYS

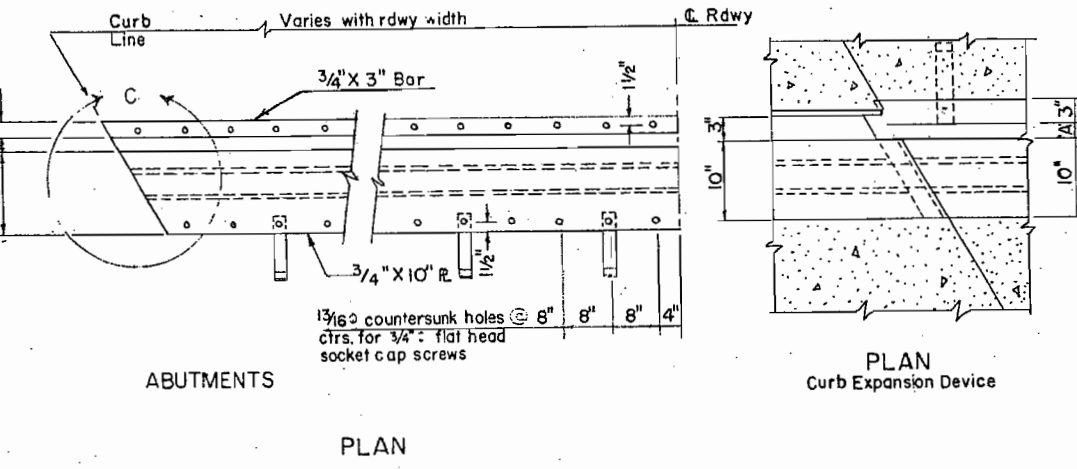
BRIDGE EXPANSION DEVICE
PREMCLDED (TYPE 4)

Checked	R.M.K.	K.L.L.
Designed	F-16-1K	
Drawn		
DWG No. 8		

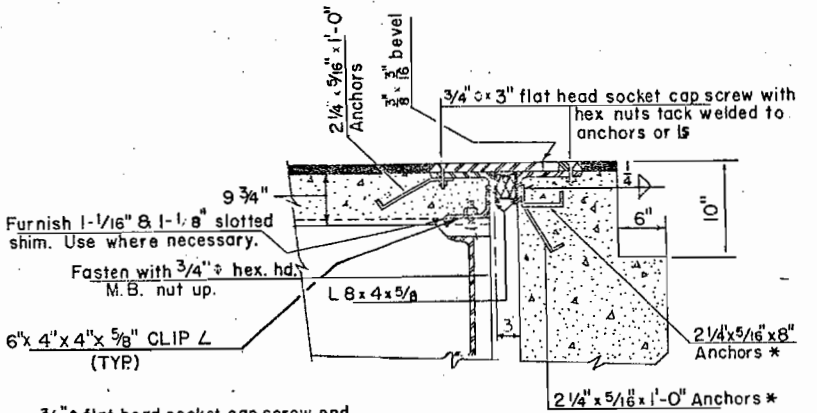
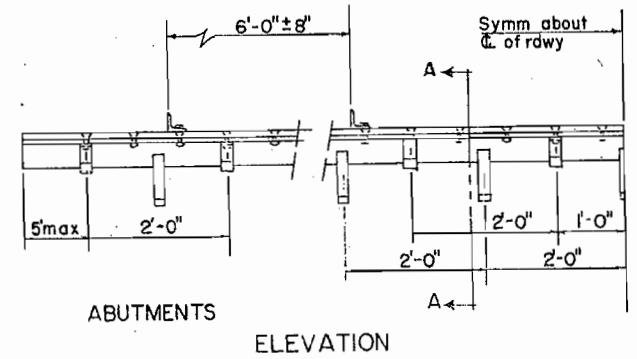
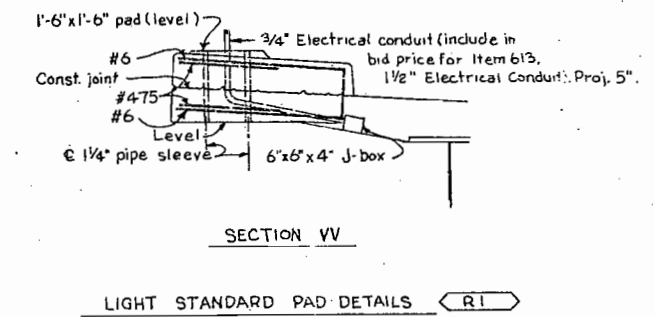
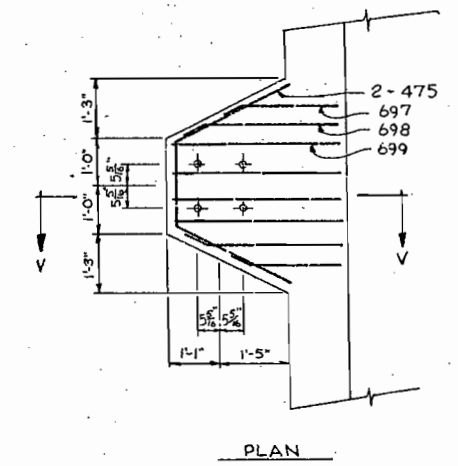
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	FO85-2(3)	27	

REVISIONS		
R1	8-18-71	Added Light Standard NJH

AS CONSTRUCTED
REVISED DATE

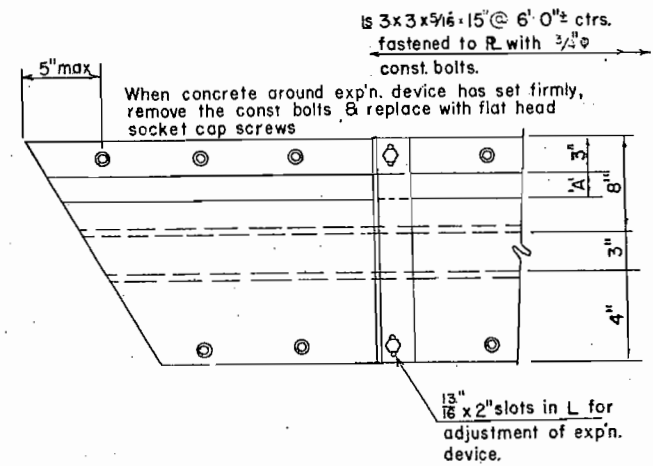


*Note: Granular flux filled concrete anchors 1/2" automatically end welded, spaced similar to 2 1/4 x 5/16 anchors, may be used as an alternate.



3/4" flat head socket cap screw end threads to be coated with tallow & white lead.

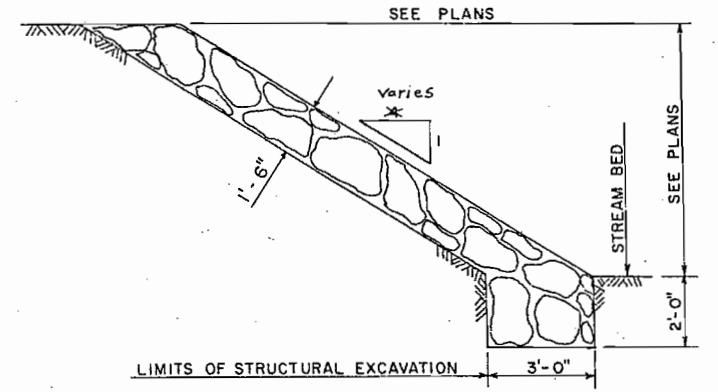
NOTES
FORM THE CURB FACES TO THE PROPER DIMENSION TO RECEIVE JOINT SEALER.
DO NOT PAINT STEEL SURFACES IN CONTACT WITH CONCRETE AND COMPRESSION JOINT SEALER.



DETAIL 'C'

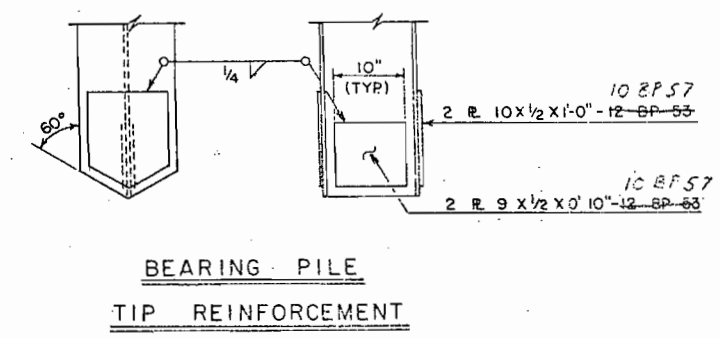
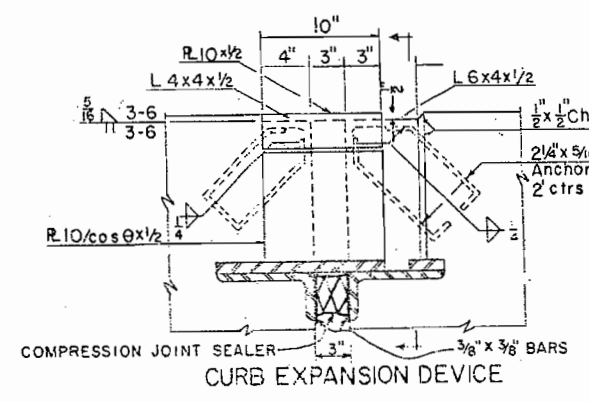
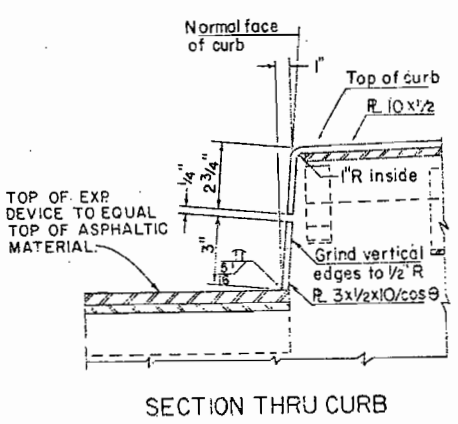
NOTE: AFTER CONCRETE HAS ATTAINED INITIAL SET, LOOSEN CONST. BOLTS TO ALLOW MOVEMENT DUE TO TEMP. CHANGE.

OUTSIDE TEMP	DIMENSION 'A'
40° F.	2 3/4"
60° F.	2 1/8"
80° F.	1 1/2"
100° F.	7/8"



DETAIL OF RIPRAP WITH TOE

NOTES: TRANSITION ENDS OF RIPRAP MAY BE MODIFIED BY THE ENGINEER TO FIT CONDITIONS ENCOUNTERED IN THE FIELD.



BEARING PILE TIP REINFORCEMENT

DETAILS of EXPANSION DEVICE - Concrete Slab & Steel Girder (May be made from A7 steel) (Alternate)

STRUCTURE NO. F-16-1K

DIVISION OF HIGHWAYS

MISCELLANEOUS DETAILS

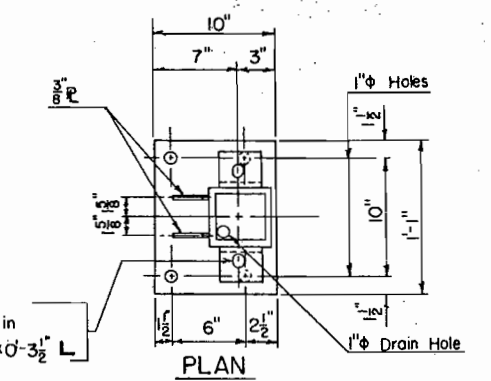
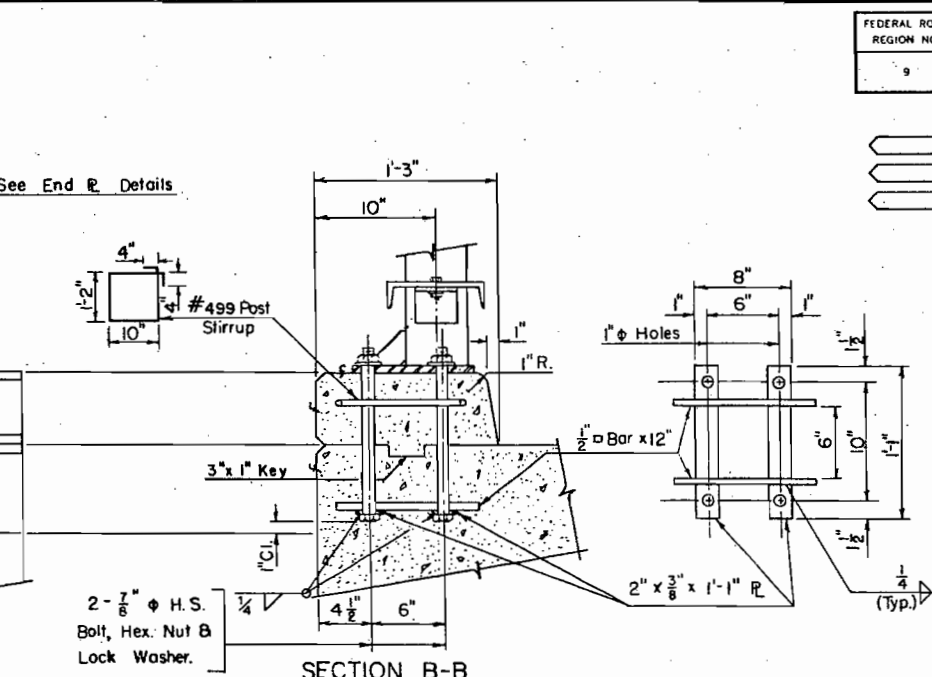
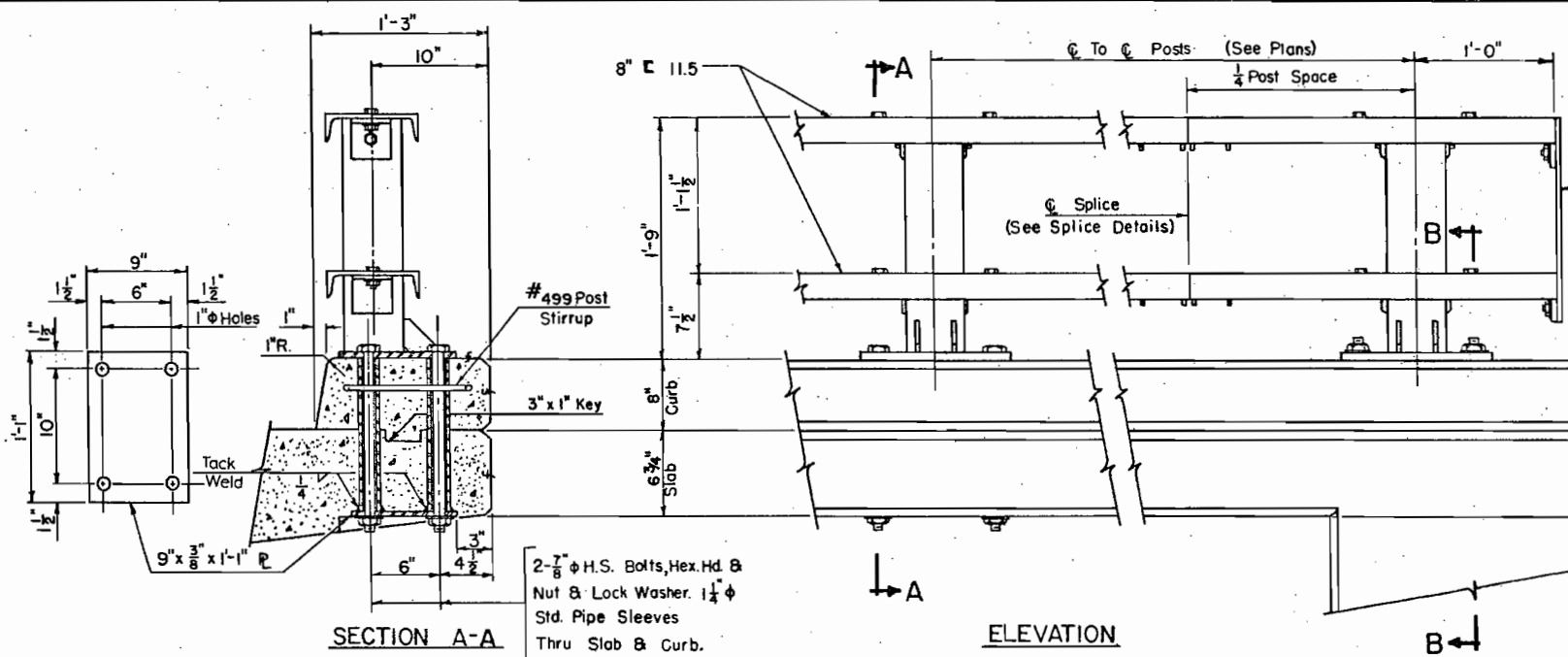
Across SOUTH PLATTE RIVER
Sta. 218+30
Near DENVER Sec. 15 T. 4 S. R. 68 W

Designed by R.M.K. Approved by
Made by R.J.D. Bridge Engineer
Checked by Date 1970

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	FOB5-2(3)	28	

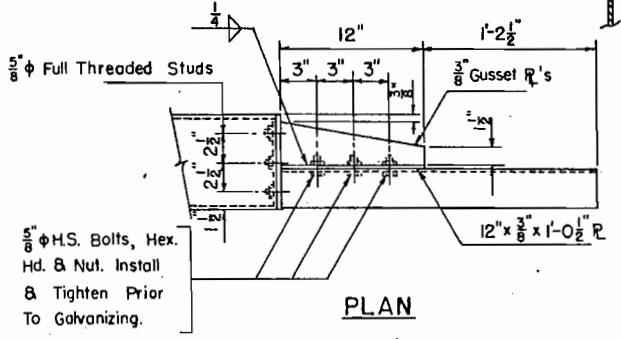
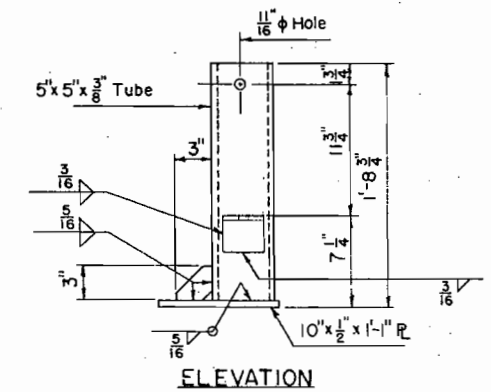
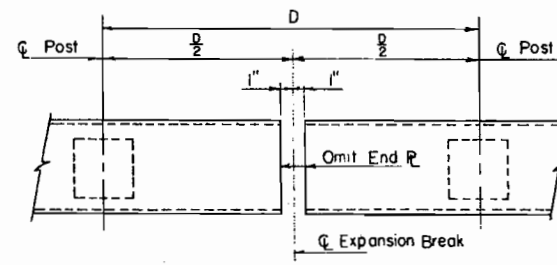
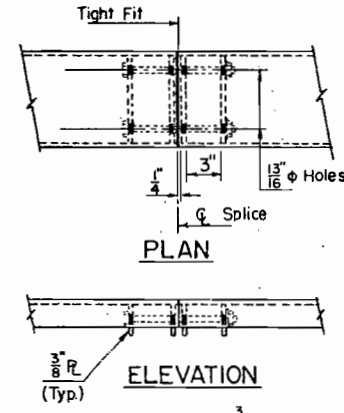
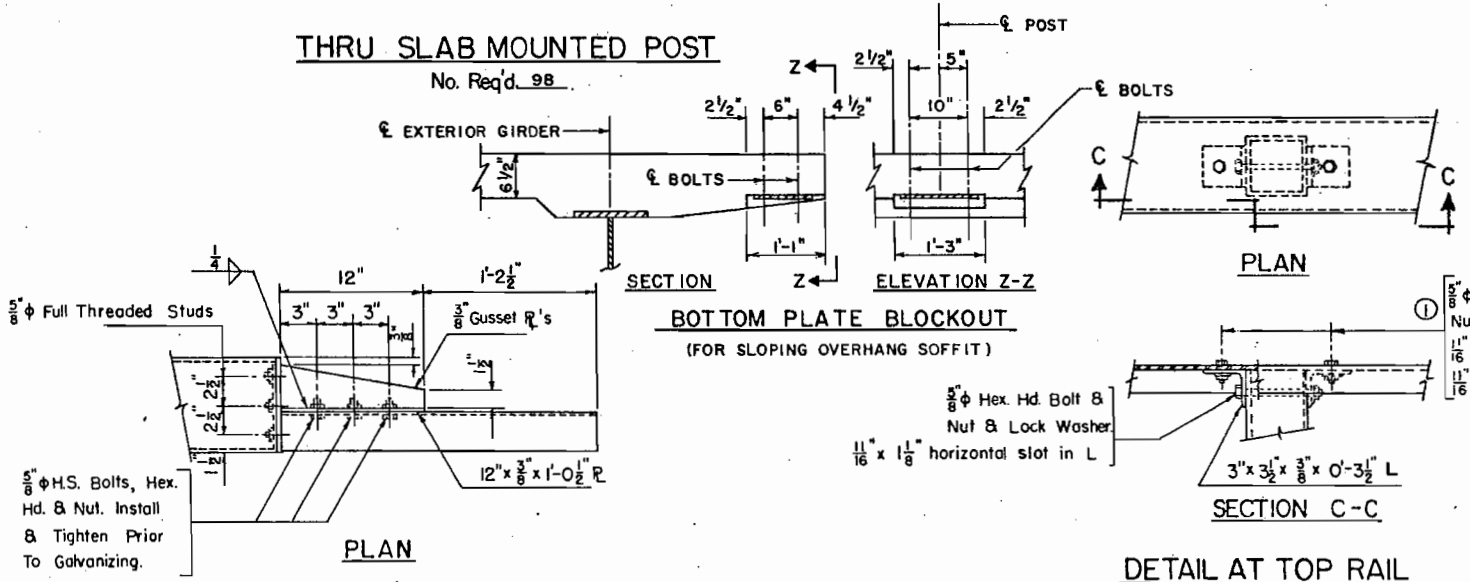
REVISIONS	

AS CONSTRUCTED
NO REVISIONS DATE *Aug 1970*



THRU SLAB MOUNTED POST
 No. Req'd. 98

END ANCHORED POST
 No. Req'd. 9



BOTTOM PLATE BLOCKOUT
 (FOR SLOPING OVERHANG SOFFIT)

DETAIL AT TOP RAIL

DETAIL AT EXPANSION BREAK

POST DETAIL

NOTES:

Posts shall be perpendicular to grade and slope of the deck.

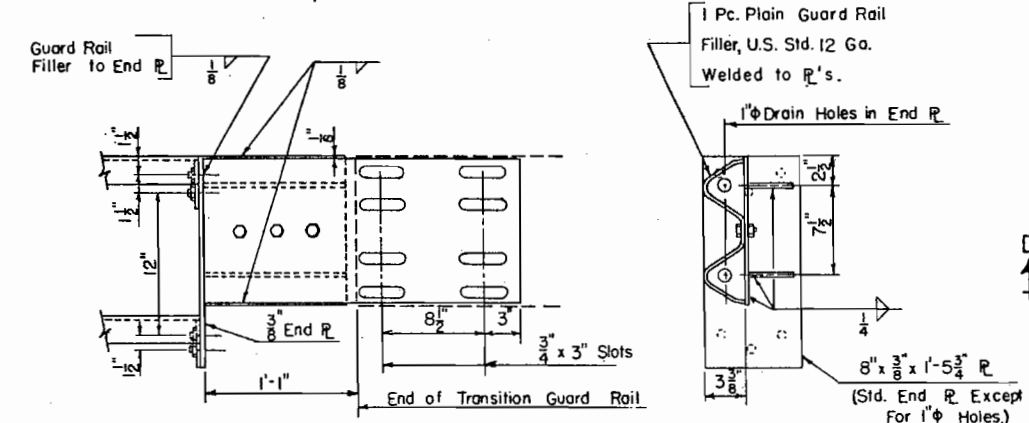
All rail elements, anchor assemblies, anchor bolts, nuts and washers shall be galvanized after fabrication in accordance with the specifications.

A.I.S.I. 1144 Steel Rods May Be Used In Lieu Of H.S. Bolts Shown. 10° Wedge Test Not Req. For Either Bolts Or Rods Used In Rail Assembly.

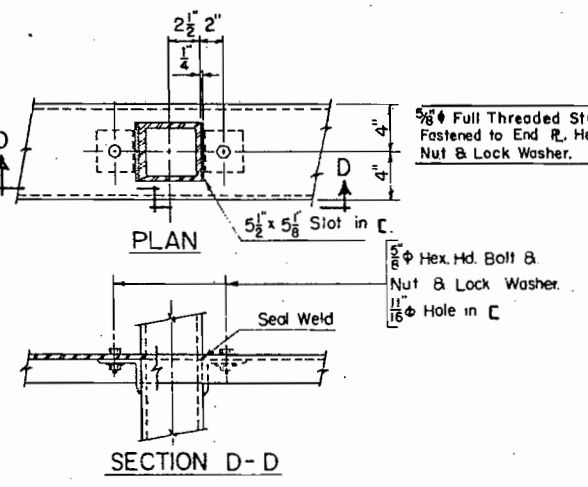
5/8" Standard Full Threaded Studs Welded To The Channel May Be Used. Increase Size Of Slot In The Angle To 1 1/2" x 1 1/4".

Channels Shall Be Continuous Over 3 Or 4 Posts Before Splicing.

When thru slab mounted posts are used, prior to setting the posts and tightening the nuts a perimeter bead of caulking grade, polyurethane joint sealer, shall be placed on the concrete 1" inside the edges of the post base plate.

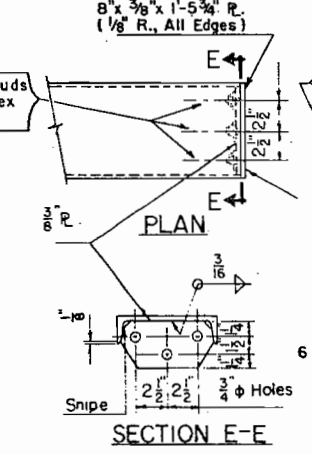


DETAIL OF END CONNECTION FOR FASTENING BRIDGE RAIL TO TRANSITION GUARD RAIL

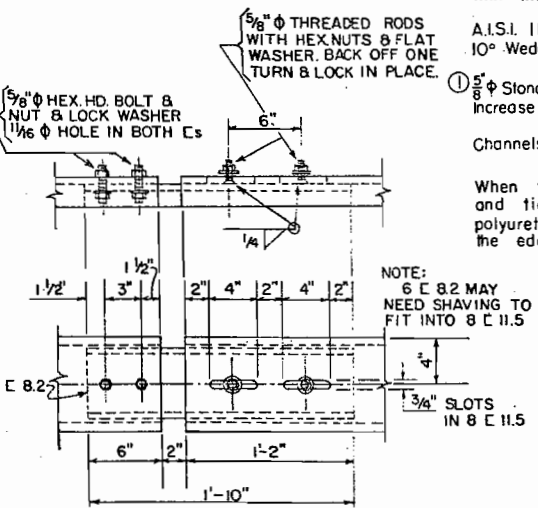


DETAIL AT BOTTOM RAIL

SPLICE DETAIL



END PLATE DETAIL
 No. Req'd. 2



SLEEVE DETAIL
 No. Req'd. 2

DIVISION OF HIGHWAYS

DETAILS OF GALVANIZED STEEL BRIDGE RAIL

Approved: _____ Designer: R.M.K. Detailer: R.J.D.

Bridge Engineer: _____ Structure Numbers: F-16-1K

Date: 1970 DWG. No. B OF

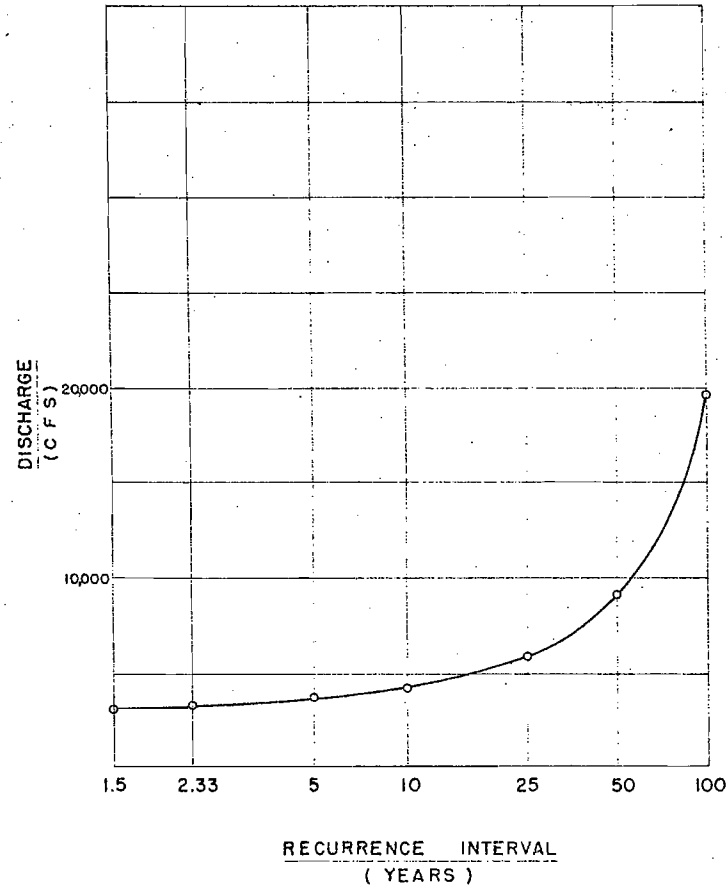
Complete Unit Shall Be Galvanized After Fabrication
 Detail Shown is For Right Hand Rail. No. Req'd. 1
 Opposite Hand For Left Hand Rail. No. Req'd. 1

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	CO. GRAAG	F085-2(3)	29	

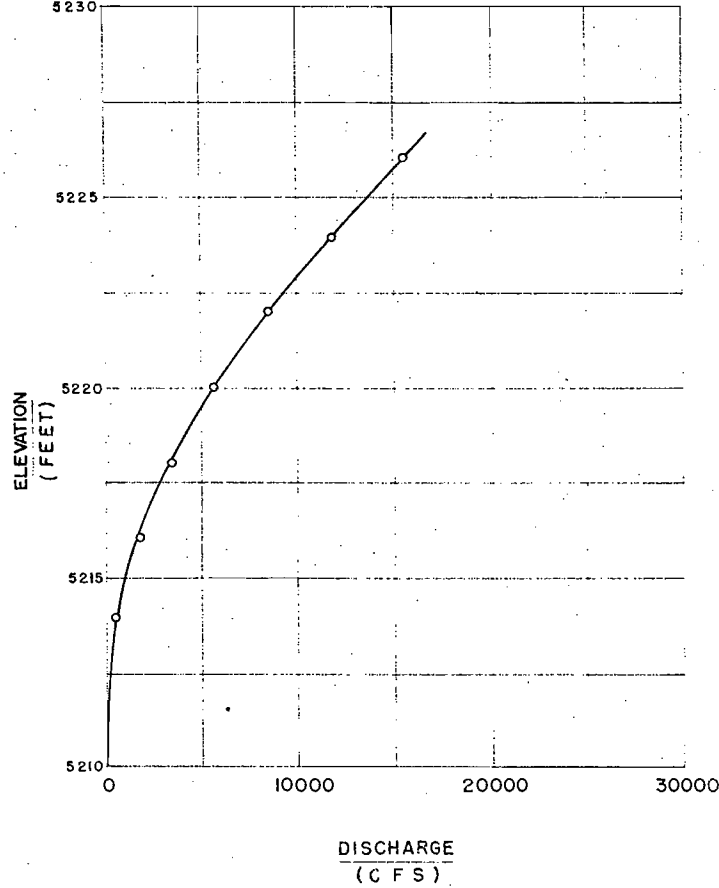
BRIDGE HYDRAULIC INFORMATION

REVISIONS			

FLOOD FREQUENCY CURVE



STAGE - DISCHARGE CURVE



AS CONSTRUCTED
NO REVISIONS DATE 11/27/70

SUMMARIZED STREAM DATA

NATURAL (BEFORE NEW CONSTRUCTION)

- Drainage Area (or Water Right) PLATTE RIVER BASIN
- Average Slope of Streambed 0.0008 Ft./Ft.
- Description of Channel: RANGES FROM VERY SMOOTH TO VERY ROUGH
- Stability of Channel: Stable Aggrading Degrading
- Drift: Insignificant Brush & Debris Large Trees & Logs Other _____
- Ice: Yes No Unknown
- Streambed Elevation 5211.5
- Design Flow Elevation 5220.75
- Maximum Velocity at Design Flow 8.07 F.P.S
- Remarks _____

- Probable Design Velocity Through Structure 8.07 F.P.S
- Remarks: DESIGN BASED ON THE ASSUMPTION THAT CHATFIELD DAM WILL BE CONSTRUCTED AND IN PLACE.

DESIGN (AFTER NEW CONSTRUCTION)

- Design Frequency 50 Year
- Design Discharge (or Water Right) 9000 C.F.S
- Source of Design Discharge: DEPARTMENT OF THE ARMY, OMAHA DISTRICT, CORPS OF ENGINEERS
- Water Surface Elevation at Upstream Edge of Structure 5220.75
- Maximum Backwater Increase Due To Structure 0.115 Ft.

DIVISION OF HIGHWAYS

BRIDGE HYDRAULIC INFORMATION
SOUTH PLATTE RIVER & SOUTH SANTA FE

Approved	Designed <u>R.M.K.</u>	Checked <u>K.L.L.</u>
Bridge Engineer	Specimen Number <u>F-16-1K</u>	
Date <u>1970</u>	DWG. No. <u>8</u>	OF _____