FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2 (52) 197	41	

	REVISIONS		
R-1	5-6-75	Note	WCB

VOID BY CONSTRUCTION DATE 6-24-77

GENERAL NOTES:

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

ALL CONCRETE SURFACES AS REFERRED TO IN THE SPECIFICATIONS SHALL RECEIVE A CLASS 7 SURFACE FINISH.

ALL CONCRETE CHAMFERS SHALL BE 3/4 INCH UNLESS OTHERWISE NOTED.

EXPANSION JOINT MATERIAL SHALL MEET A.A.S.H.O. SPECIFICATION M 213-65 AND SHALL BE INCLUDED IN THE PAYMENT FOR ITEM NO. 601.

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

WHEN EXCAVATING FOR FOOTINGS, THE FINAL SIX INCHES IN DEPTH SHALL BE DONE BY HAND LABOR METHODS.

FOOTINGS IN ROCK SHALL NOT BE FORMED BUT SHALL BE PLACED AGAINST UNDISTURBED ROCK.

FOR DETAILS OF STRUCTURE EXCAVATION AND STRUCTURE BACKFILL, SEE STANDARD M-206-AA.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE A.A.S.H.O. SPECIFICATION M-183. (ASTM A36)

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE PAINTED IN ACCORDANCE WITH SECTION 509 FOR (   ) PAINT.

GRADE 60 REINFORCING STEEL REQUIRED FOR #5 BARS AND LARGER GRADE 40 OR GRADE 60 MAY BE FURNISHED FOR #4 BARS.

FORM, CONSTRUCTION EQUIPMENT, AND ADDITIONAL CONSTRUCTION LOADS WERE NOT CONSIDERED IN ANALYZING THIS STRUCTURE.

DESIGN PROVISIONS WERE MADE FOR A ONE SEGMENT UNBALANCED CANTILEVER MOMENT AT THE END OF THE CANTILEVER DURING CONSTRUCTION STAGES. FOR THE UNBALANCED MOMENT VALUES, SEE DWG. NO. B-9. THIS APPLIES TO THE FOOTINGS ONLY.

APPLIED WIND LOADS AND EARTHQUAKE LOADS WERE NOT CONSIDERED IN ANALYZING THE STRUCTURE FOR STABILITY DURING THE CONSTRUCTION STAGES.

THE SEQUENCE OF CONSTRUCTION SHALL BE AS SHOWN ON DWG. NO. B-12. ANY CHANGE IN THIS CONSTRUCTION SEQUENCE SHALL BE WITH THE APPROVAL OF THE ENGINEER.

APPLY EPOXY JOINT SEALER TO ALL MATCHING SURFACES OF PRECAST SEGMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.

GROUT ALL ANCHORAGE BLOCKOUTS AND MATCH EXPOSED SURFACES TO PRECAST SEGMENTS.

BEFORE ANY FORMS ARE REMOVED FROM THE PRECAST SEGMENTS, F'_c SHALL OBTAIN A COMPRESSIVE STRENGTH OF 3000 P.S.I.

THE FOLLOWING TABLE SHOWS THE MINIMUM LAP FOR COMMON BAR SIZES.

BAR SIZE NUMBER		4	5	6	7	8	9	10	11
SPLICE	GRADE 40	1'-0"	1'-3"	1'-6"	1'-9"	2'-2"	2'-8"	3'-5"	4'-3"
LENGTH	GRADE 60	1'-6"	1'-11"	2'-3"	2'-8"	3'-0"	3'-5"	4'-2"	5'-0"

E.F. = EACH FACE
N.F. = NEAR FACE
F.F. = FAR FACE

CROSS REFERENCE DRAWING NUMBER

SECTION OR DETAIL IDENTIFICATION

DESIGNED BY	A.E.	3-75	CHECKED BY	L.M.	3-75
CHECKED BY	H.G.	3-75	QUANTITIES BY	A.E.	3-75
DETAILED BY	R.B.	3-75	CHECKED BY		

LOADING DATA

LIVELOAD: A.A.S.H.T.O. HS-20-44 OR INTERSTATE ALTERNATE
DEADLOAD: ASSUMES 25 LBS. PER. SQ. FT. FOR BITUMINOUS PAVEMENT

DESIGN DATA:

A.A.S.H.T.O. 1973 UNIT STRESSES, AND 1974 INTERIM SPECIFICATIONS, EXCEPT AS NOTED.

REINFORCING STEEL:	GRADE 60 -	FY = 60,000 LBS. PER SQ. IN. FS = 24,000 LBS. PER SQ. IN.
	GRADE 40 -	FY = 40,000 LBS. PER SQ. IN. FS = 20,000 LBS. PER SQ. IN.
STRUCTURAL STEEL:	A36, GRADE 36 -	FY = 36,000 LBS. PER SQ. IN.
	A588, GRADE 50 -	FY = 50,000 LBS. PER SQ. IN.
CONCRETE:	CLASS A & D -	F'_C = 3000 LBS. PER SQ. IN. N = 9
	CLASS S - (FOR LIMITS SEE PLANS.)	F'_C = 5000 LBS. PER SQ. IN.
		F'_C = 6000 LBS. PER SQ. IN.

Summary of Quantities

	Item	Description	Unit	Super-Structure	Abut. 1	Pier 2	Abut. 3	Totals
	206	Structure Excavation	Cu. Yd.		114	153	116	383
	206	Structure Backfill (Class 2)	Cu. Yd.		52	84	54	190
④	403	Hot Bituminous Pavement	Ton	122				122
④	411	Asphalt Cement	Ton					
	502	Steel Piling (HP 12 X 74)	Lin. Ft.		245		373	618
	509	Structural Steel	Lbs.		123		123	246
①	512	Bearing Device (0 to 250 Ton Capacity)	Ea.		2		2	4
①	512	Bearing Device (501 to 750 Ton Capacity)	Ea.			2		2
④	515	Waterproofing (Membrane)	Sq. Yd.	1128				1128
	518	Bridge Expansion Device (Type 1)	Lin. Ft.	76				76
	601	Conc. Class A (Bridge)	Cu. Yd.			50		50
	601	Conc. Class A (Bridge)(Colored)	Cu. Yd.		24		23	47
	601	Conc. Class D (Bridge)(Colored)	Cu. Yd.	(80)	62		60	202
	602	Reinforcing Steel	Lbs.		10,006	2639	9656	22,301
②	618	Conc. Segmental Superstr. (F-12-AM)	L.S.	1				1
③	618	Conc. Segmental Pier (F-12-AM)	L.S.					1
	626	Mobilization	L.S.					0.2

① Masonry Plates to be Included.

R-1 ②+③ Approximate Quantities for Information only.

② Conc. Class S (Colored)(Precast) 589.24 Cu. Yd.
Reinforcing Steel 122,983 Lbs.
Conc. Class S
Prestressing Strands 26,800 Lbs.

③ Conc. Class S (Colored)(Precast) 60 Cu. Yd.
Reinforcing Steel 6053 Lbs.
Conc. Class S (Colored)(Cast-in-Place) 19 Cu. Yd.
Prestressing Strands for Pier 1560 Lbs.

④ Future Items

INDEX OF DRAWINGS

BRIDGE DESCRIPTION

Two Continuous Spans (120'-0", 120'-0") Segmental Post-Tensioned Concrete box Girder Bridge.

Over Smith Gulch, Sta. 914 +00 Near Vail Pass. Curved, 1637.02' Radius, 8% Bridge Rail Type 4.

A. JOE MCHENRY REGISTERED PROFESSIONAL ENGINEER 2638 STATE OF COLORADO

Details Reviewed
P. Chwarsky P.E.
Bridge Engineer Date 3/26/75

DIVISION OF HIGHWAYS

GENERAL INFORMATION
SUMMARY OF QUANTITIES

Station 913 +10.00 to
Station 915 + 80.00

Near Vail Pass Sec. T. 6 S. R. 79 W.

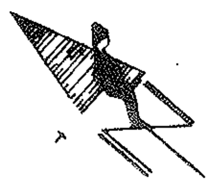
Designer A. Eriksen — Structure Numbers F-12-AM
Detailer R. Burns

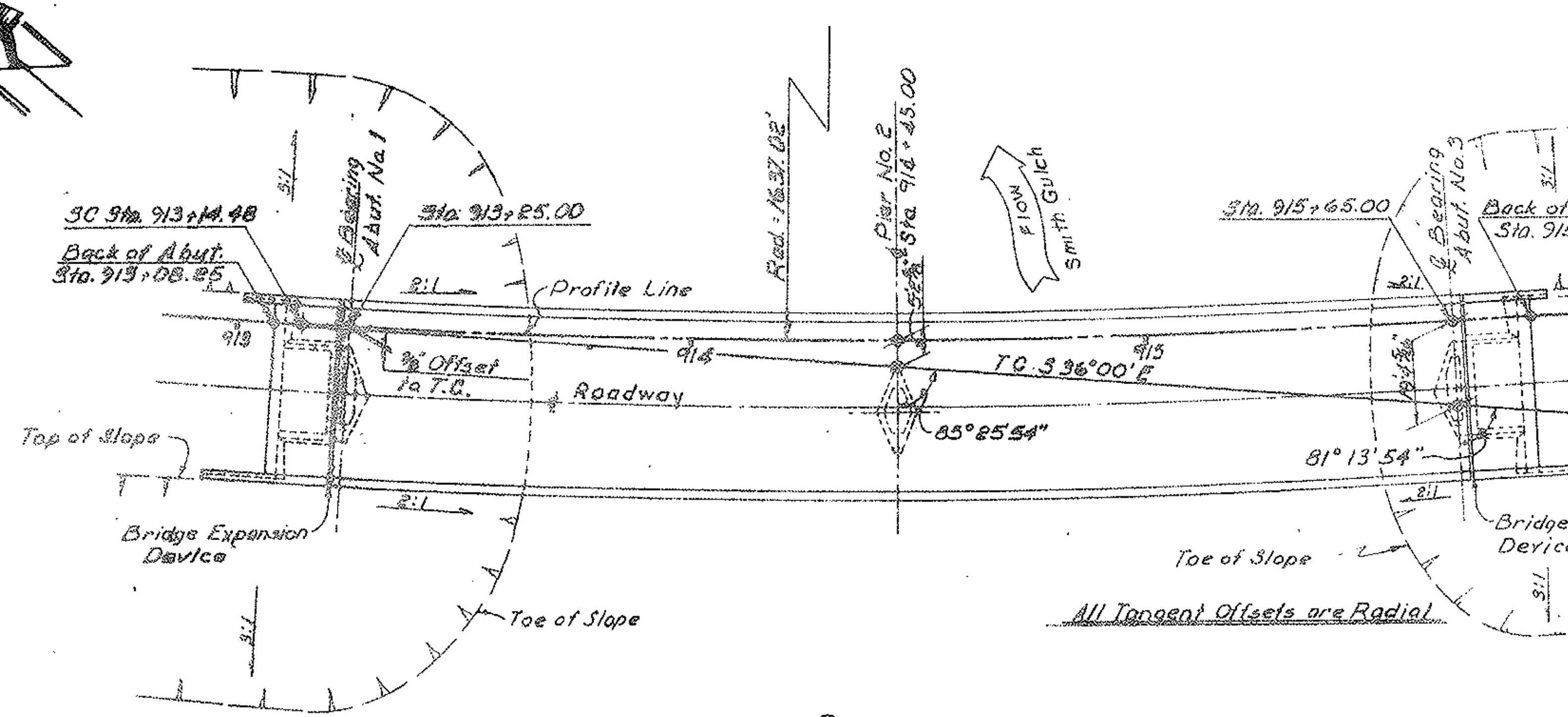
Drawing Number B-1 of 17 Drawings

Federal Road Region No.	District	Proj. No.	Sheet No.	Total Sheets
VIII	Colorado	I70-2(52)197	42	

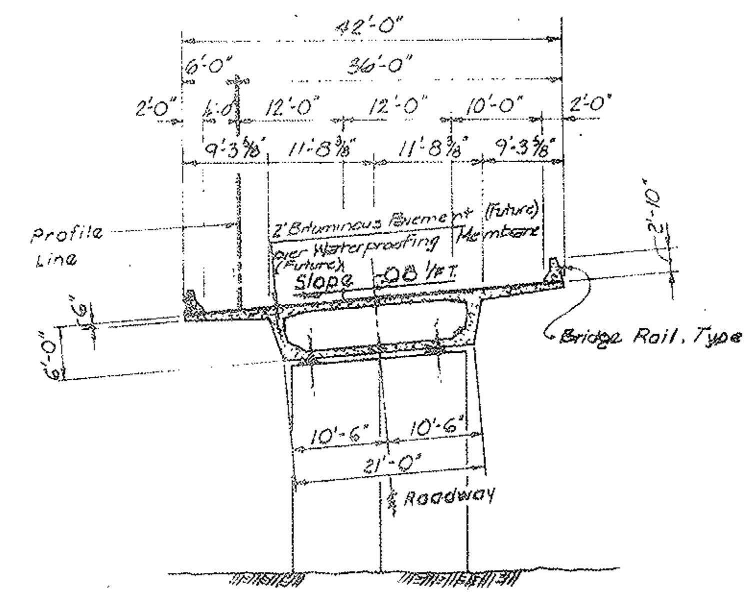
REVISIONS

VOID BY CONSTRUCTION DATE 6-24-77





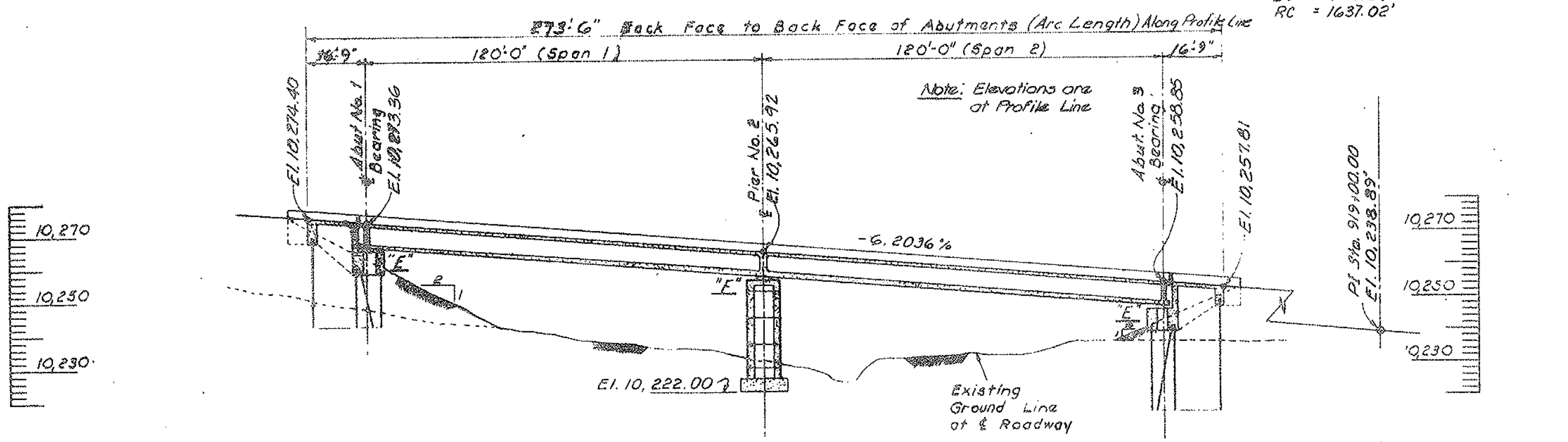
PLAN
Orig. Scale: 1"=20'



TYPICAL SECTION
Orig. Scale: 1"=10'

HORIZONTAL CURVE DATA
(E.B. Projected)

TS = 907+14.48	θs = 10°30'		
SC = 913+14.48	Ls = 600'		
Δs = 47°24' Lt.	LT = 400.71'		
TS = 1022.28'	ST = 200.64'		
ES = 160.80'			
Δc = 26°24' Lt.	S = 0.080'/ft		
DC = 3°30'	MDS = 70 mph		
TC = 383.96'	SSD > 600'		
LC = 754.29'			
RC = 1637.02'			



SECTION TAKEN AT CENTERLINE OF ROADWAY
Orig. Scale: 1"=20'

"E" Indicates Expansion Bearing
"F" Indicates Fixed Bearing
Elevations are to Finished Roadway

Piling Notes

Piling Size	Location	Est. Tip Elev.
HP 12x74	Abut. No1	10,242.00'
HP 12x74	Abut. No3	10,215.00'

DIVISION OF HIGHWAYS

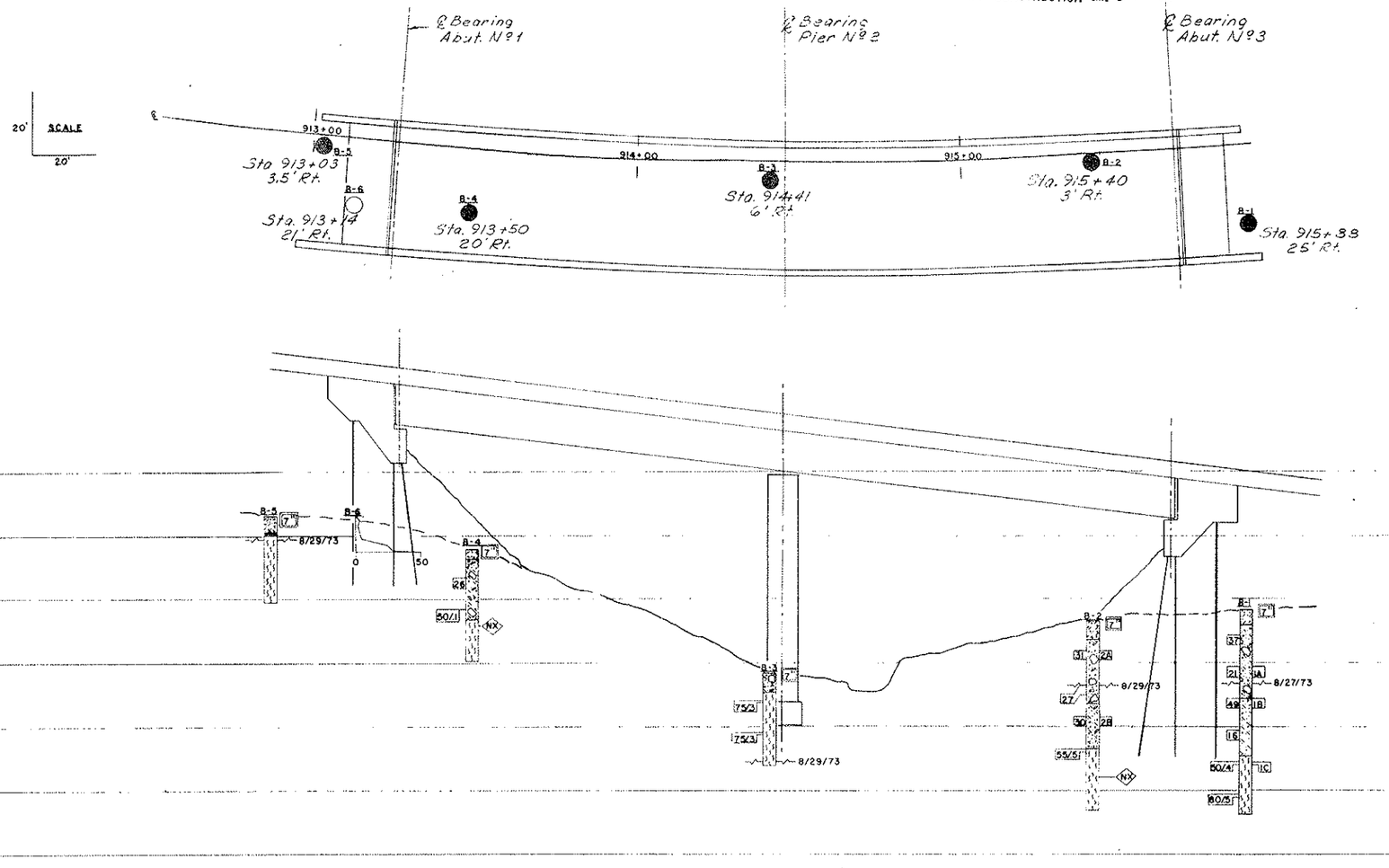
GENERAL LAYOUT

Designer: A. Eriksen	Structure Numbers	F-12-AM	
Detailer: L. McNamee			
Drawing Number B-2	of 17	Drawings	

FM NO. 160
OCTOBER, 1970

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	[illegible]	43	

VOID
BY CONSTRUCTION DATE 6-24-77



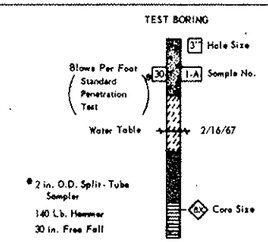
SUMMARY OF TEST RESULTS

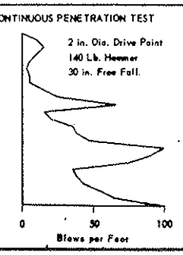
Sample No.	Depth	Classification: Curve of Engrs. or Visual	Classification: AASHO	Grading Analysis: Percent Gravel	Coarse Sand	Fine Sand	Silt and Clay	Atterberg Limits: Liquid Limit L_w	Plastic Limit P_w	Plastic Index I_w	Water Cont. W %	Wet Unit Weight γ P.C.F.	Unconfined Strength Q_u T.S.F.	Triaxial Shear Strength: Unconsolidated ϕ	C T.S.F.	Consolidated ϕ	C T.S.F.	Time hrs.	Press P.S.I.	Dia. Of Sample (inches)
1A	9.0-10.5	GRAVELLY SAND	A-1-b(0)	40	31	19	10	NV	NP	NP	7.4									
1B	14.0-15.5	GRAVELLY SANDY SILT	A-4(0)	22	9	26	43	NV	NP	NP	20.2									
1C	24.0-24.4	SILTY SANDY GRAVEL	A-1-b(0)	51	11	16	22	19	19	0	10.4									
2A	4.5-6.0	SILTY SANDY GRAVEL	A-1-a(0)	53	17	19	11	NV	NP	NP	6.4									
2B	15.0-16.5	SILTY SANDY GRAVEL	A-1-b(0)	41	17	23	19	NV	NP	NP	14.1									

TYPE OF MATERIAL

- SILT, GRAVELLY
- SILT, SANDY
- GRAVEL, SANDY W/COBBLES & BOULDERS
- SANDSTONE
- GRAVEL & COBBLES
- SILT, SANDY, GRAVELLY
- GRAVEL, SANDY, SILTY
- SAND, GRAVELLY, SILTY W/COBBLES
- GRAVEL, SANDY, SILTY W/BOULDERS
- GRAVEL, SANDY, SILTY W/COBBLES & BOULDERS

LEGEND





- Location of Test Boring
- Location of Continuous Penetration Test
- Rotary Boring
- Auger Boring
- Core Boring

DIVISION OF HIGHWAYS
STATE OF COLORADO

ENGINEERING GEOLOGY

Across SMITH GULCH
Sta 913+10.00 to 915+80.00
Near VAIL PASS Sec. 28 T. 6S R. 79W
Geologist A.C.E.
Made by D.L.S.
Checked by G.C.P.
Approved by Bridge Engineer
Date: 19

STRUCTURE NO. F-18-AM
DWG. NO. 8-3 OF 17

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1955

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	44	

REVISIONS		
4/21/75	REPEAT	WCB

VOID
BY CONSTRUCTION DATE 6-24-77

Note: Elevations are to Top of Concrete

BRIDGE GEOMETRICS OUTPUT

BRIDGE BEGINS ON CIRCULAR CURVE.. ENDS ON CIRCULAR CURVE

ARC LENGTH OF BRIDGE : 240.000000 FT
CHORD LENGTH OF BRIDGE : 239.78519 FT
BEGIN OF BRIDGE STATION : 913+25.000
END OF BRIDGE STATION : 915+65.000

DEFLECTION ANGLE BETWEEN BK TANGENT AND CHORD : 15 4 5.54
DEFLECTION ANGLE BETWEEN FWD TANGENT AND CHORD : 32 19 55.13

MAX NORMAL OFFSET FROM CHORD TO CONSTRUCTION CL: 4.3963

***** BENT LINE INPUT ***** DISTANCE FROM REFERENCE LINE(TYPE)	DESCRIPTION OF BENT LINE	DESCRIPTION OF LINE	SKEW ANGLE OF BENT LINE REFERENCED TO CHORD OR TANGENT	STATION OF INTERSECTION OF LINE AND BENT LINE	ROADWAY ELEVATION AT INTERSECTION OF LINE AND BENT LINE
0.000000	REFERENCE LINE	CONSTR. CL	4 12 .0 RIGHT SKEW	913+25.000	10273.1965
		NE OUT CB		913+25.000	10272.7180
		NE IN CB		913+25.000	10272.8775
		PRO-CONTRL		913+25.000	10273.1965
		CL BRIDGE		913+25.000	10274.3927
		SW IN CB		913+25.000	10275.9078
		SW OUT CB		913+25.000	10276.0673
	Back Face Abut. 1				
		N.E. Outside		913+08.189	10,273.7767
		Profile Line		913+08.250	10,274.2552
		C.L. Roadway		913+08.402	10,275.4514
		S.W. Outside		913+08.610	10,277.1260
	1/4 Pt.				
		N.E. Outside		913+11.889	10,273.5436
		Profile Line		913+11.938	10,274.0221
		C.L. Roadway		913+12.056	10,275.2183
		S.W. Outside		913+12.218	10,276.8929
	1/2 Pt.				
		N.E. Outside		913+15.590	10,273.3105
		Profile Line		913+15.625	10,273.7890
		C.L. Roadway		913+15.710	10,274.9852
		S.W. Outside		913+15.826	10,276.6598
	3/4 Pt.				
		N.E. Outside		913+19.292	10,273.0775
		Profile Line		913+19.313	10,273.5560
		C.L. Roadway		913+19.364	10,274.7522
		S.W. Outside		913+19.434	10,276.4268
	Front Face Abut. 1				
		N.E. Outside		913+22.993	10,272.8444
		N.E. Inside		913+22.995	10,273.1711
		Profile Line		913+23.000	10,273.4896
		C.L. Roadway		913+23.018	10,274.6858
		S.W. Inside		913.23.041	10,276.2004
		S.W. Outside		913+23.044	10,276.1937
0.000000	CL BRG ABUT 1	CONSTR. CL	4 12 .0 RIGHT SKEW	913+25.000	10273.1965
ARC/REF B.T.		NE OUT CB		913+25.000	10272.7180
		NE IN CB		913+25.000	10272.8775
		PRO-CONTRL		913+25.000	10273.1965
		CL BRIDGE		913+25.000	10274.3927
		SW IN CB		913+25.000	10275.9078
		SW OUT CB		913+25.000	10276.0673
6.000000	1/ 20 PT.* 1	CONSTR. CL	3 59 24.0 RIGHT SKEW	913+31.000	10272.8243
ARC/REF B.T.		NE OUT CB		913+31.000	10272.3458
		NE IN CB		913+31.000	10272.5053
		PRO-CONTRL		913+31.000	10272.8243
		CL BRIDGE		913+31.000	10274.0204
		SW IN CB		913+31.000	10275.5356
		SW OUT CB		913+31.000	10275.6951
12.000000	2/ 20 PT.* 1	CONSTR. CL	3 46 48.0 RIGHT SKEW	913+37.000	10272.4520
ARC/REF B.T.		NE OUT CB		913+37.000	10271.9736
		NE IN CB		913+37.000	10272.1331
		PRO-CONTRL		913+37.000	10272.4520
		CL BRIDGE		913+37.000	10273.6482
		SW IN CB		913+37.000	10275.1634
		SW OUT CB		913+37.000	10275.3229
18.000000	3/ 20 PT.* 1	CONSTR. CL	3 34 12.0 RIGHT SKEW	913+43.000	10272.0798
ARC/REF B.T.		NE OUT CB		913+43.000	10271.6014
		NE IN CB		913+43.000	10271.7608
		PRO-CONTRL		913+43.000	10272.0798
		CL BRIDGE		913+43.000	10273.2760
		SW IN CB		913+43.000	10274.7912
		SW OUT CB		913+43.000	10274.9507
24.000000	4/ 20 PT.* 1	CONSTR. CL	3 21 36.0 RIGHT SKEW	913+49.000	10271.7076
ARC/REF B.T.		NE OUT CB		913+49.000	10271.2291
		NE IN CB		913+49.000	10271.3886
		PRO-CONTRL		913+49.000	10271.7076
		CL BRIDGE		913+49.000	10272.9038
		SW IN CB		913+49.000	10274.4189
		SW OUT CB		913+49.000	10274.5784
30.000000	5/ 20 PT.* 1	CONSTR. CL	3 9 .0 RIGHT SKEW	913+55.000	10271.3354
ARC/REF B.T.		NE OUT CB		913+55.000	10270.8569
		NE IN CB		913+55.000	10271.0164
		PRO-CONTRL		913+55.000	10271.3354
		CL BRIDGE		913+55.000	10272.5316
		SW IN CB		913+55.000	10274.0467
		SW OUT CB		913+55.000	10274.2062
36.000000	6/ 20 PT.* 1	CONSTR. CL	2 56 24.0 RIGHT SKEW	913+61.000	10270.9632
ARC/REF B.T.		NE OUT CB		913+61.000	10270.4847
		NE IN CB		913+61.000	10270.6442
		PRO-CONTRL		913+61.000	10270.9632
		CL BRIDGE		913+61.000	10272.1594
		SW IN CB		913+61.000	10273.6745
		SW OUT CB		913+61.000	10273.8340
42.000000	7/ 20 PT.* 1	CONSTR. CL	2 43 48.0 RIGHT SKEW	913+67.000	10270.5910
ARC/REF B.T.		NE OUT CB		913+67.000	10270.1125
		NE IN CB		913+67.000	10270.2720
		PRO-CONTRL		913+67.000	10270.5910
		CL BRIDGE		913+67.000	10271.7871
		SW IN CB		913+67.000	10273.3023
		SW OUT CB		913+67.000	10273.4618
48.000000	8/ 20 PT.* 1	CONSTR. CL	2 31 12.0 RIGHT SKEW	913+73.000	10270.2187
ARC/REF B.T.		NE OUT CB		913+73.000	10269.7403
		NE IN CB		913+73.000	10269.8998
		PRO-CONTRL		913+73.000	10270.2187
		CL BRIDGE		913+73.000	10271.4149
		SW IN CB		913+73.000	10272.9301
		SW OUT CB		913+73.000	10273.0896
54.000000	9/ 20 PT.* 1	CONSTR. CL	2 18 36.0 RIGHT SKEW	913+79.000	10269.8465
ARC/REF B.T.		NE OUT CB		913+79.000	10269.3681
		NE IN CB		913+79.000	10269.5275
		PRO-CONTRL		913+79.000	10269.8465
		CL BRIDGE		913+79.000	10271.0427
		SW IN CB		913+79.000	10272.5579
		SW OUT CB		913+79.000	10272.7174
60.000000	10/ 20 PT.* 1	CONSTR. CL	2 6 .0 RIGHT SKEW	913+85.000	10269.4743
ARC/REF B.T.		NE OUT CB		913+85.000	10268.9958
		NE IN CB		913+85.000	10269.1553
		PRO-CONTRL		913+85.000	10269.4743
		CL BRIDGE		913+85.000	10270.6705
		SW IN CB		913+85.000	10272.1857
		SW OUT CB		913+85.000	10272.3451
66.000000	11/ 20 PT.* 1	CONSTR. CL	1 53 24.0 RIGHT SKEW	913+91.000	10269.1021
ARC/REF B.T.		NE OUT CB		913+91.000	10268.6236
		NE IN CB		913+91.000	10268.7831
		PRO-CONTRL		913+91.000	10269.1021
		CL BRIDGE		913+91.000	10270.2983
		SW IN CB		913+91.000	10271.8134
		SW OUT CB		913+91.000	10271.9729
72.000000	12/ 20 PT.* 1	CONSTR. CL	1 40 48.0 RIGHT SKEW	913+97.000	10268.7299
ARC/REF B.T.		NE OUT CB		913+97.000	10268.2514
		NE IN CB		913+97.000	10268.4109
		PRO-CONTRL		913+97.000	10268.7299
		CL BRIDGE		913+97.000	10269.9261
		SW IN CB		913+97.000	10271.4412
		SW OUT CB		913+97.000	10271.6007
78.000000	13/ 20 PT.* 1	CONSTR. CL	1 28 12.0 RIGHT SKEW	914+ 3.000	10268.3577
ARC/REF B.T.		NE OUT CB		914+ 3.000	10267.8792
		NE IN CB		914+ 3.000	10268.0387
		PRO-CONTRL		914+ 3.000	10268.3577
		CL BRIDGE		914+ 3.000	10269.5538
		SW IN CB		914+ 3.000	10271.0690
		SW OUT CB		914+ 3.000	10271.2285
84.000000	14/ 20 PT.* 1	CONSTR. CL	1 15 36.0 RIGHT SKEW	914+ 9.000	10267.9855
ARC/REF B.T.		NE OUT CB		914+ 9.000	10267.5070
		NE IN CB		914+ 9.000	10267.6665
		PRO-CONTRL		914+ 9.000	10267.9855
		CL BRIDGE		914+ 9.000	10269.1816
		SW IN CB		914+ 9.000	10270.6968
		SW OUT CB		914+ 9.000	10270.8563
90.000000	15/ 20 PT.* 1	CONSTR. CL	1 3 .0 RIGHT SKEW	914+15.000	10267.6132
ARC/REF B.T.		NE OUT CB		914+15.000	10267.1348
		NE IN CB		914+15.000	10267.2943
		PRO-CONTRL		914+15.000	10267.6132
		CL BRIDGE		914+15.000	10268.8094
		SW IN CB		914+15.000	10270.3246
		SW OUT CB		914+15.000	10270.4841
96.000000	16/ 20 PT.* 1	CONSTR. CL	0 50 24.0 RIGHT SKEW	914+21.000	10267.2410
ARC/REF B.T.		NE OUT CB		914+21.000	10266.7625
		NE IN CB		914+21.000	10266.9220
		PRO-CONTRL		914+21.000	10267.2410
		CL BRIDGE		914+21.000	10268.4372
		SW IN CB		914+21.000	10269.9524
		SW OUT CB		914+21.000	10270.1118
102.000000	17/ 20 PT.* 1	CONSTR. CL	0 37 48.0 RIGHT SKEW	914+27.000	10266.8688
ARC/REF B.T.		NE OUT CB		914+27.000	10266.3903
		NE IN CB		914+27.000	10266.5498
		PRO-CONTRL		914+27.000	10266.8688
		CL BRIDGE		914+27.000	10268.0650
		SW IN CB		914+27.000	10269.5801
		SW OUT CB		914+27.000	10269.7396
108.000000	18/ 20 PT.* 1	CONSTR. CL	0 25 12.0 RIGHT SKEW	914+33.000	10266.4966
ARC/REF B.T.		NE OUT CB		914+33.000	10266.0181
		NE IN CB		914+33.000	10266.1776
		PRO-CONTRL		914+33.000	10266.4966
		CL BRIDGE		914+33.000	10267.6928
		SW IN CB		914+33.000	10269.2079
		SW OUT CB		914+33.000	10269.3674
114.000000	19/ 20 PT.* 1	CONSTR. CL	0 12 36.0 RIGHT SKEW	914+39.000	10266.1244
ARC/REF B.T.		NE OUT CB		914+39.000	10265.6459
		NE IN CB		914+39.000	10265.8054
		PRO-CONTRL		914+39.000	10266.1244
		CL BRIDGE		914+39.000	10267.3205
		SW IN CB		914+39.000	10268.8357
		SW OUT CB		914+39.000	10268.9952
120.000000	CL BRG PIER 2	CONSTR. CL	0 0 .0 RIGHT SKEW	914+45.000	10265.7522
ARC/REF B.T.		NE OUT CB		914+45.000	10265.2737
		NE IN CB		914+45.000	10265.4332
		PRO-CONTRL		914+45.000	10265.7522
		CL BRIDGE		914+45.000	10266.9483
		SW IN CB		914+45.000	10268.4635
		SW OUT CB		914+45.000	10268.6230
126.000000	1/ 20 PT.* 2	CONSTR. CL	-0 12 36.0 LEFT SKEW	914+51.000	10265.3799
ARC/REF B.T.		NE OUT CB		914+51.000	10264.9015
		NE IN CB		914+51.000	10265.0610
		PRO-CONTRL		914+51.000	10265.3799
		CL BRIDGE		914+51.000	10266.5761
		SW IN CB		914+51.000	10268.0913
		SW OUT CB		914+51.000	10268.2508
132.000000	2/ 20 PT.* 2	CONSTR. CL	-0 25 12.0 LEFT SKEW	914+57.000	10265.0077
ARC/REF B.T.		NE OUT CB		914+57.000	10264.5293
		NE IN CB		914+57.000	10264.6887
		PRO-CONTRL		914+57.000	10265.0077
		CL BRIDGE		914+57.000	10266.2039
		SW IN CB		914+57.000	10267.7191
		SW OUT CB		914+57.000	10267.8785
138.000000	3/ 20 PT.* 2	CONSTR. CL	-0 37 48.0 LEFT SKEW	914+63.000	10264.6355
ARC/REF B.T.		NE OUT CB		914+63.000	10264.1570
		NE IN CB		914+63.000	10264.3165
		PRO-CONTRL		914+63.000	10264.6355
		CL BRIDGE		914+63.000	10265.8317
		SW IN CB		914+63.000	10267.3468
		SW OUT CB		914+63.000	10267.5063
144.000000	4/ 20 PT.* 2	CONSTR. CL	-0 50 24.0 LEFT SKEW	914+69.000	10264.2633
ARC/REF B.T.		NE OUT CB		914+69.000	10263.7848
		NE IN CB		914+69.000	10263.9443
		PRO-CONTRL		914+69.000	10264.2633
		CL BRIDGE		914+69.000	10265.4595
		SW IN CB		914+69.000	10266.9746
		SW OUT CB		914+69.000	10267.1341
150.000000	5/ 20 PT.* 2	CONSTR. CL	-1 3 .0 LEFT SKEW	914+75.000	10263.8911
ARC/REF B.T.		NE OUT CB		914+75.000	10263.4128
		NE IN CB		914+75.000	10263.5721
		PRO-CONTRL		914+75.000	10263.8911
		CL BRIDGE		914+75.000	10265.0873
		SW IN CB		914+75.000	10266.6024
		SW OUT CB		914+75.000	10266.7619
156.000000	6/ 20 PT.* 2	CONSTR. CL	-1 15 36.0 LEFT SKEW	914+81.000	10263.5189
ARC/REF B.T.		NE OUT CB		914+81.000	10263.0404
		NE IN CB		914+81.000	10263.1999
		PRO-CONTRL		914+81.000	10263.5189
		CL BRIDGE		914+81.000	10264.7150
		SW IN CB		914+81.000	10266.2302
		SW OUT CB		914+81.000	10266.3897

	INITIAL	DATE		INITIAL	DATE
DESIGNED BY	AE	3/75	QUANTITIES BY	MC	3/75
CHECKED BY	LM	3/75	CHECKED BY	AE	3/75
DETAILED BY	LM	3/75	CHECKED		

DIVISION OF HIGHWAYS

ELEVATIONS

Designer A. Eriksen	Structure Numbers	F-12-AM	
Detailer L. McNamee			
Drawing Number B - 4	of ...	Drawings	

Revision Dates (Preliminary Stage Only)

FORM 10-7199 12-75 MC1611

FEDERAL ROAD REGION NO	DISTRICT	PROJ. NO.	SHEET NO	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	45	

REVISIONS		

VOID
BY CONSTRUCTION 6-24-77

BENT LINE INPUT	DISTANCE FROM REFERENCE LINE(TYPE)	DESCRIPTION OF BENT LINE	DESCRIPTION OF LINE	SKEW ANGLE OF BENT LINE REFERENCED TO CHORD OR TANGENT	STATION OF INTERSECTION OF LINE AND BENT LINE	ROADWAY ELEVATION AT INTERSECTION OF LINE AND BENT LINE
	162.000000 7/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 26 12.0 LEFT SKEW	914+87.000	10263.1446
			NE OUT CB		914+87.000	10268.6682
			NE IN CB		914+87.000	10262.8277
			PRO-CONTRL		914+87.000	10263.1446
			CL BRIDGE		914+87.000	10264.3428
			SW IN CB		914+87.000	10265.8580
			SW OUT CB		914+87.000	10266.0175
	168.000000 8/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 40 48.0 LEFT SKEW	914+93.000	10262.7744
			NE OUT CB		914+93.000	10262.2968
			NE IN CB		914+93.000	10262.4554
			PRO-CONTRL		914+93.000	10262.7744
			CL BRIDGE		914+93.000	10263.9706
			SW IN CB		914+93.000	10265.4858
			SW OUT CB		914+93.000	10265.6453
	174.000000 9/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 53 24.0 LEFT SKEW	914+99.000	10262.4022
			NE OUT CB		914+99.000	10261.9237
			NE IN CB		914+99.000	10262.0832
			PRO-CONTRL		914+99.000	10262.4022
			CL BRIDGE		914+99.000	10263.5984
			SW IN CB		914+99.000	10265.1135
			SW OUT CB		914+99.000	10265.2730
	180.000000 10/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 6 .0 LEFT SKEW	915+ 5.000	10262.0300
			NE OUT CB		915+ 5.000	10261.5515
			NE IN CB		915+ 5.000	10261.7110
			PRO-CONTRL		915+ 5.000	10262.0300
			CL BRIDGE		915+ 5.000	10263.2262
			SW IN CB		915+ 5.000	10264.7413
			SW OUT CB		915+ 5.000	10264.9008
	186.000000 11/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 18 36.0 LEFT SKEW	915+11.000	10261.6570
			NE OUT CB		915+11.000	10261.1793
			NE IN CB		915+11.000	10261.3388
			PRO-CONTRL		915+11.000	10261.6570
			CL BRIDGE		915+11.000	10262.8540
			SW IN CB		915+11.000	10264.3691
			SW OUT CB		915+11.000	10264.5284
	192.000000 12/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 31 12.0 LEFT SKEW	915+17.000	10261.2856
			NE OUT CB		915+17.000	10260.8071
			NE IN CB		915+17.000	10260.9666
			PRO-CONTRL		915+17.000	10261.2856
			CL BRIDGE		915+17.000	10262.4817
			SW IN CB		915+17.000	10263.9969
			SW OUT CB		915+17.000	10264.1564
	198.000000 13/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 43 48.0 LEFT SKEW	915+23.000	10260.9133
			NE OUT CB		915+23.000	10260.4349
			NE IN CB		915+23.000	10260.5944
			PRO-CONTRL		915+23.000	10260.9133
			CL BRIDGE		915+23.000	10262.1095
			SW IN CB		915+23.000	10263.6247
			SW OUT CB		915+23.000	10263.7842
	204.000000 14/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 56 24.0 LEFT SKEW	915+29.000	10260.5411
			NE OUT CB		915+29.000	10260.0627
			NE IN CB		915+29.000	10260.2221
			PRO-CONTRL		915+29.000	10260.5411
			CL BRIDGE		915+29.000	10261.7373
			SW IN CB		915+29.000	10263.2529
			SW OUT CB		915+29.000	10263.4120
	210.000000 15/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 9 .0 LEFT SKEW	915+35.000	10260.1689
			NE OUT CB		915+35.000	10259.6904
			NE IN CB		915+35.000	10259.8499
			PRO-CONTRL		915+35.000	10260.1689
			CL BRIDGE		915+35.000	10261.3651
			SW IN CB		915+35.000	10262.8803
			SW OUT CB		915+35.000	10263.0397
	216.000000 16/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 21 36.0 LEFT SKEW	915+41.000	10259.7967
			NE OUT CB		915+41.000	10259.3182
			NE IN CB		915+41.000	10259.4777
			PRO-CONTRL		915+41.000	10259.7967
			CL BRIDGE		915+41.000	10260.9929
			SW IN CB		915+41.000	10262.5080
			SW OUT CB		915+41.000	10262.6675
	222.000000 17/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 34 12.0 LEFT SKEW	915+47.000	10259.4248
			NE OUT CB		915+47.000	10258.9466
			NE IN CB		915+47.000	10259.1095
			PRO-CONTRL		915+47.000	10259.4245
			CL BRIDGE		915+47.000	10260.6207
			SW IN CB		915+47.000	10262.1358
			SW OUT CB		915+47.000	10262.2953
	228.000000 18/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 46 48.0 LEFT SKEW	915+53.000	10259.0523
			NE OUT CB		915+53.000	10258.5738
			NE IN CB		915+53.000	10258.7333
			PRO-CONTRL		915+53.000	10259.0523
			CL BRIDGE		915+53.000	10260.2484
			SW IN CB		915+53.000	10261.7636
			SW OUT CB		915+53.000	10261.9231
	234.000000 19/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 59 24.0 LEFT SKEW	915+59.000	10258.6801
			NE OUT CB		915+59.000	10258.2016
			NE IN CB		915+59.000	10258.3611
			PRO-CONTRL		915+59.000	10258.6801
			CL BRIDGE		915+59.000	10259.8762
			SW IN CB		915+59.000	10261.3914
			SW OUT CB		915+59.000	10261.5509
	240.000000 CL BRG ABUT 3 ARC/REF B.T.	CONSTR. CL		-4 12 .0 LEFT SKEW	915+65.000	10258.3878
			NE OUT CB		915+65.000	10257.8294
			NE IN CB		915+65.000	10257.9889
			PRO-CONTRL		915+65.000	10258.3078
			CL BRIDGE		915+65.000	10259.5040
			SW IN CB		915+65.000	10261.0192
			SW OUT CB		915+65.000	10261.1787

Front Face Abut. 3

N.E. Outside	915+67.007	10,257.7030
N.E. Inside	915+67.005	10,258.0297
Profile Line	915+67.000	10,258.3481
C.L. Roadway	915+66.937	10,259.3443
S.W. Inside	915+66.959	10,261.3590
S.W. Outside	915+66.957	10,261.0523

1/4 Pt.

N.E. Outside	915+70.708	10,257.4699
Profile Line	915+70.687	10,257.9483
C.L. Roadway	915+70.636	10,259.1445
S.W. Outside	915+70.565	10,260.8199

1/2 Pt.

N.E. Outside	915+74.415	10,257.2369
Profile Line	915+74.375	10,257.7153
C.L. Roadway	915+74.295	10,258.9115
S.W. Outside	915+74.173	10,260.6861

3/4 Pt.

N.E. Outside	915+78.110	10,257.0038
Profile Line	915+78.062	10,257.4822
C.L. Roadway	915+77.944	10,258.6784
S.W. Outside	915+77.781	10,260.3531

Back Face Abut. 3

N.E. Outside	915+81.811	10,256.7707
Profile Line	915+81.750	10,257.2491
C.L. Roadway	915+81.597	10,258.4453
S.W. Outside	915+81.389	10,260.1200

DIVISION OF HIGHWAYS

ELEVATIONS

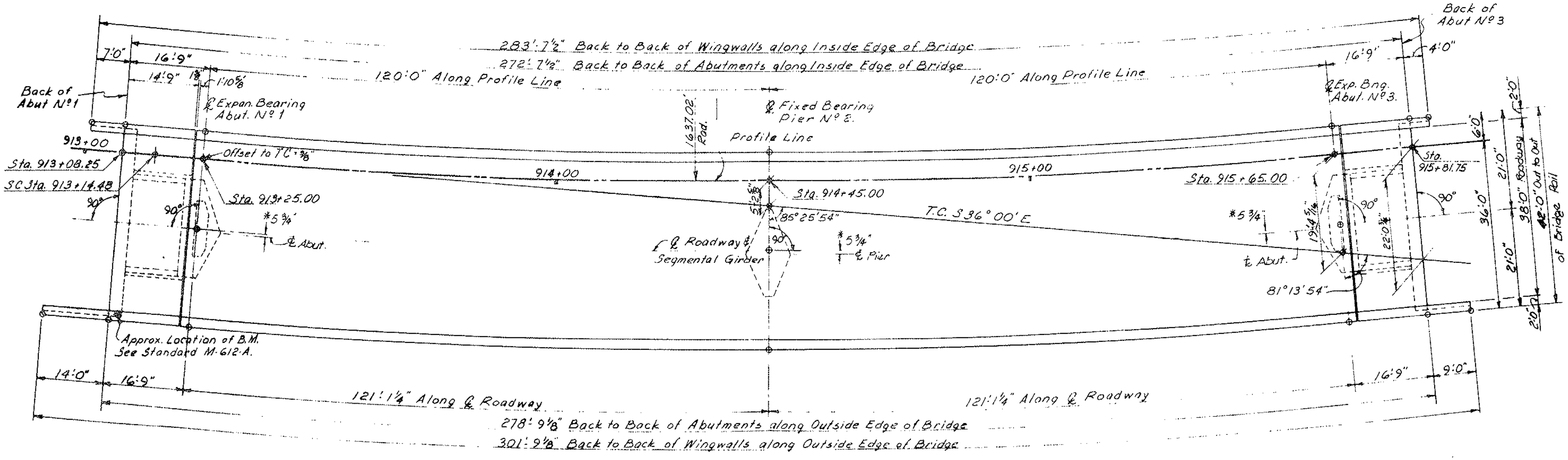
Designer A. Eriksen		Structure Numbers	F-12-AM
Detailer L. McNamee			
Drawing Number E-5	of	Drawings	

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	46	

REVISIONS

VOID
BY CONSTRUCTION DATE 6-24-77



Note:
Tangent Offsets are Radial.
* Location of Abutments and Pier Footing is offset by a Distance Equal to Rate of Superelevation Times Depth of Superstructure (6'-0")

CONSTRUCTION LAYOUT
Orig. Scale: 3/32" = 1'-0"

	INITIAL	DATE		
DESIGNED BY	A.E.	3-75	CHECKED BY	LM 3-75
CHECKED BY	H.G.	3-75	QUANTITIES BY	LM 3-75
DETAILED BY	L.M.	3-75	CHECKED BY	A.E. 3-75

DIVISION OF HIGHWAYS

CONSTRUCTION LAYOUT

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	L. McNamee		
Drawing Number B-6		of 17	Drawings

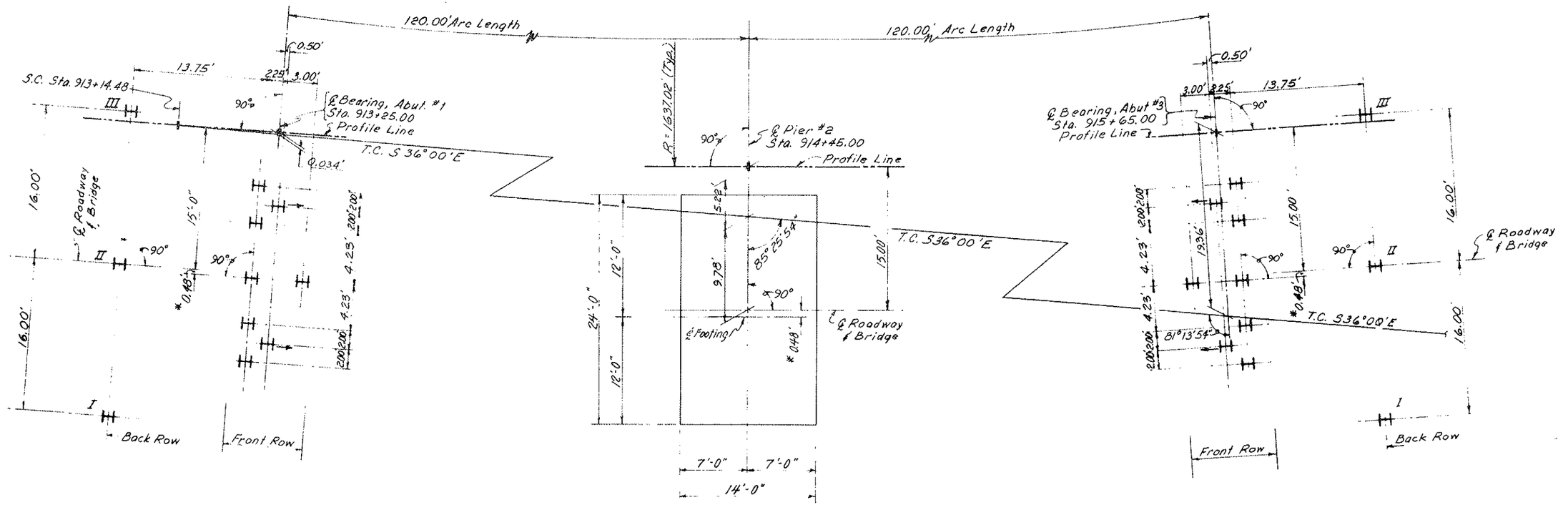
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO 117
REV. OCTOBER 1972

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	47	

REVISIONS		

VOID
BY CONSTRUCTION DATE 6-24-77



FOOTING AND PILING LAYOUT

Orig. Scale: 3/16" = 1'0"

* Location of Abutment and Pier Footings is offset by a distance equal to rate of Superelevation times depth of Superstructure (6'-0").

PILING ELEVATIONS

ABUT. Nº	LOCATION	PILE Nº	TOP ELEV.	*BOT. ELEV.
1	Back Row	I	10,271.52	10,242.00
1	" "	II	10,270.24	10,242.00
1	" "	III	10,268.96	10,242.00
1	Front Row	All	10,261.76	10,242.00
3	Front Row	All	10,246.87	10,215.00
3	Back Row	I	10,254.87	10,215.00
3	" "	II	10,253.59	10,215.00
3	" "	III	10,252.31	10,215.00

* Bottom Elevations to be Verified in Field.

Notes:
1. All Dimensions are at bottom of concrete.
2. Piling shall be end bearing HP12x74 with max design pile load of 72 tons.
3. → Indicates piling to be battered at 3:12 (2 per Abutment)
4. Max. Allowable Bearing Pressure @ Pier = 5 tons per Sq. Ft.
   Max. Design Pressure = 4.75 Tons per sq. ft.

DESIGNED BY	CHECKED BY	DETAILED BY	CHECKED BY	QUANTITIES BY	CHECKED BY	CHECKED BY
A.E.	A.E.	L.M.	A.E.	A.E.	A.E.	A.E.
3-75	3-75	3-75	3-75	3-75	3-75	3-75

DIVISION OF HIGHWAYS

FOOTING AND PILING LAYOUT

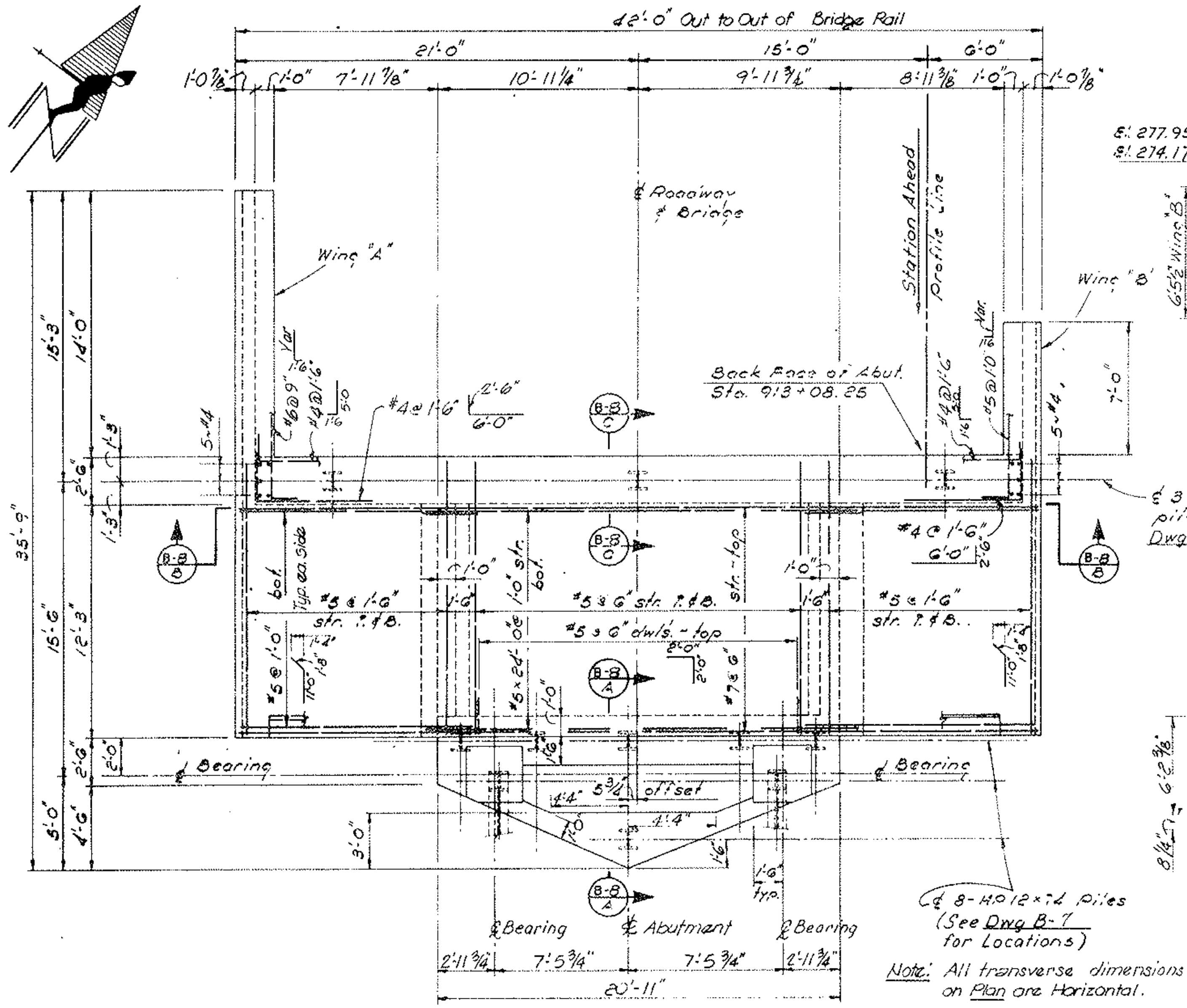
Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	L. McNamee		
Drawing Number	B-7	of 17	Drawings

Revision Dates	(Preliminary Stage Only)							

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1973

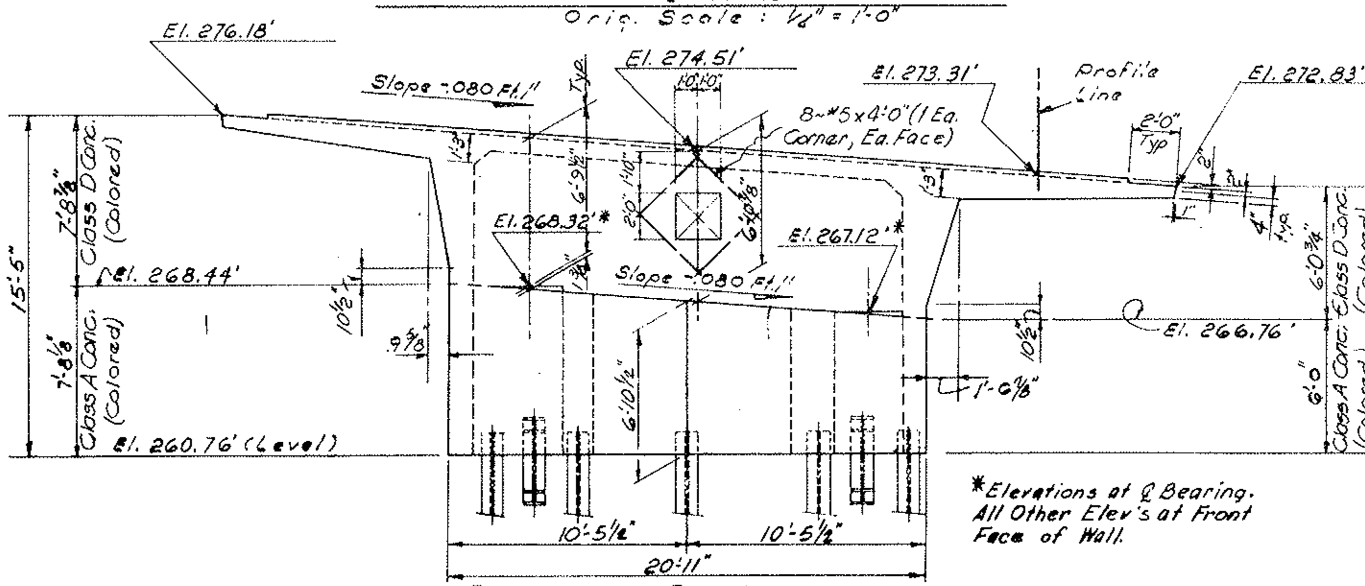
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I70-2(52)197	48	

REVISIONS		
R-1	4/4/75 REPRINT	WCB
R-2		



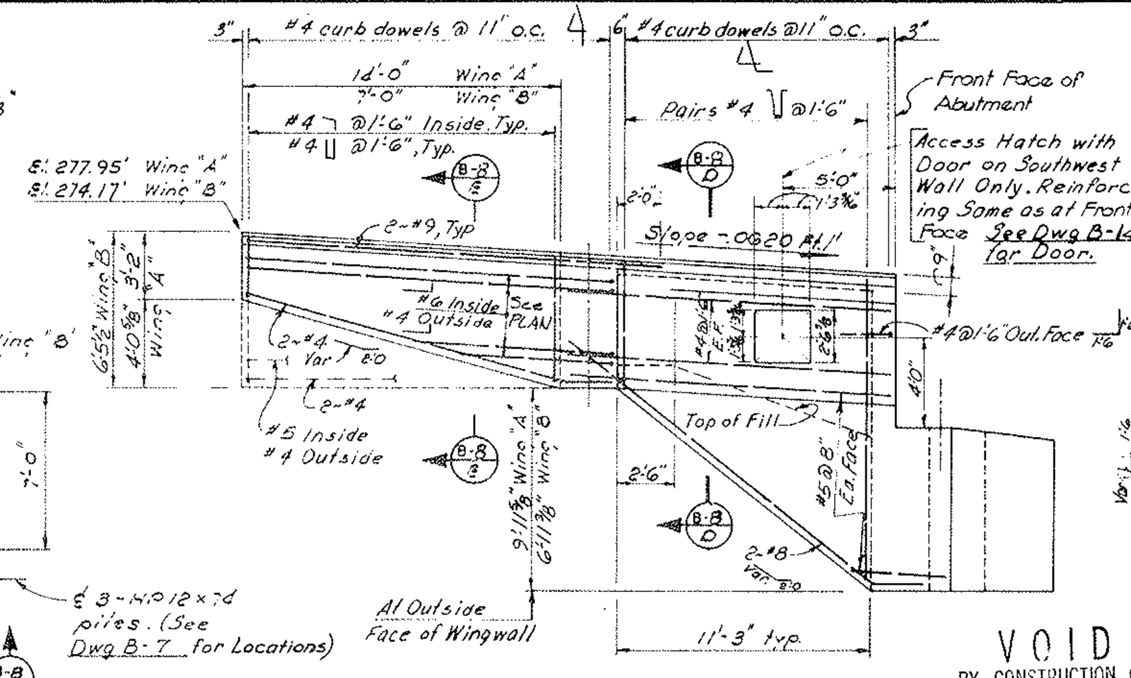
Note: All transverse dimensions on Plan are Horizontal.

PLAN
Orig. Scale: 1/4" = 1'-0"



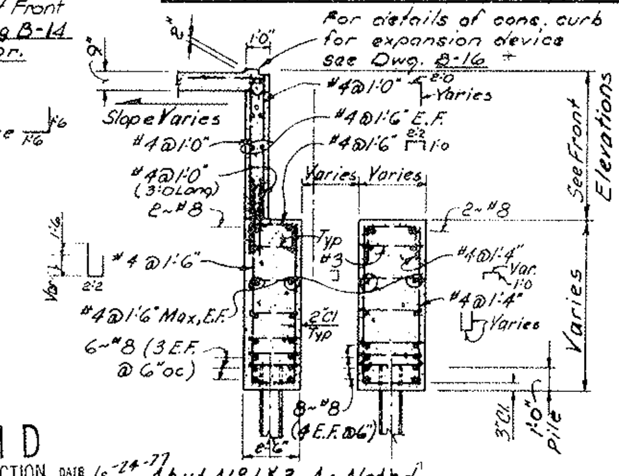
*Elevations at ℄ Bearing. All Other Elev's at Front Face of Wall.

FRONT ELEVATION
Orig. Scale: 1/4" = 1'-0"

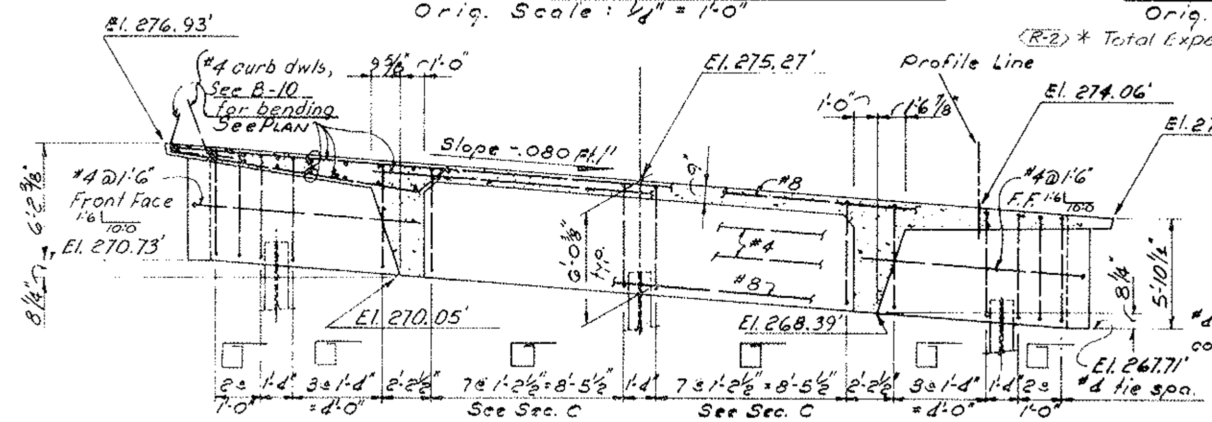


SIDE ELEVATION
Orig. Scale: 1/4" = 1'-0"

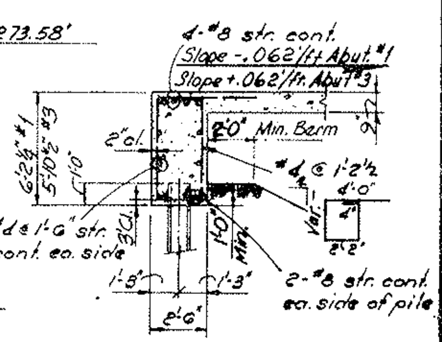
VOID BY CONSTRUCTION DATE 6-24-77



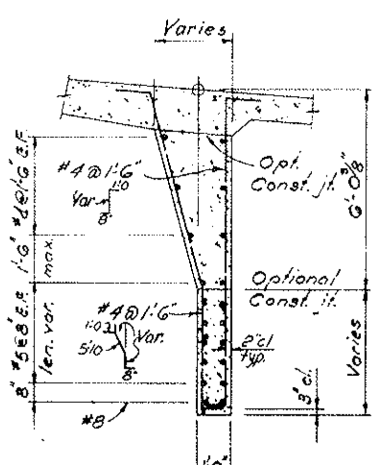
Abut No 1 & 3 As Noted
SECTION B-B / A
Orig. Scale: 1/4" = 1'-0"
(R-2) * Total Expected Movement = 1 1/4"



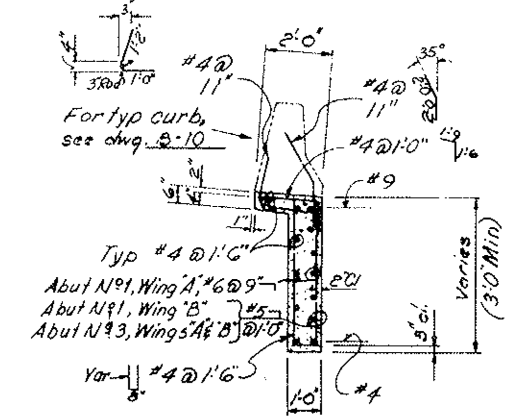
Elevations at Front Face
SECTION B-B / B
Orig. Scale: 1/4" = 1'-0"



Abut. No 1 & 3 As Noted
SECTION B-B / C
Orig. Scale: 1/4" = 1'-0"



Abut. No 1 & 3 As Noted
SECTION B-B / D
Orig. Scale: 3/8" = 1'-0"



Abut. No 1 & 3 As Noted
SECTION B-B / E
Orig. Scale: 3/8" = 1'-0"

Notes:
1. This dwg to be worked with Dwg B-9
2. All Elevations are plus 10,000 ft.
3. Location of all construction joints shall be approved by Engineer.
4. For expansion joint details, see Dwg B-16.
5. Fill Abutment to bearing level with Class II Backfill.
6. For classes of concrete see this Dwg.

INITIAL		DATE
DESIGNED BY	A.E.	3/75
CHECKED BY	H.G.	3-75
DETAILED BY	DG/LM	3-75
CHECKED BY		
QUANTITIES BY	L.M.	3/75
CHECKED BY	A.E.	3/75

DIVISION OF HIGHWAYS

ABUTMENT No. 1 DETAILS

Designer A. Eriksen	Structure Numbers	F-12-AM	
Detailer Grogan; McNamee			
Drawing Number B-8	of 17	Drawings	

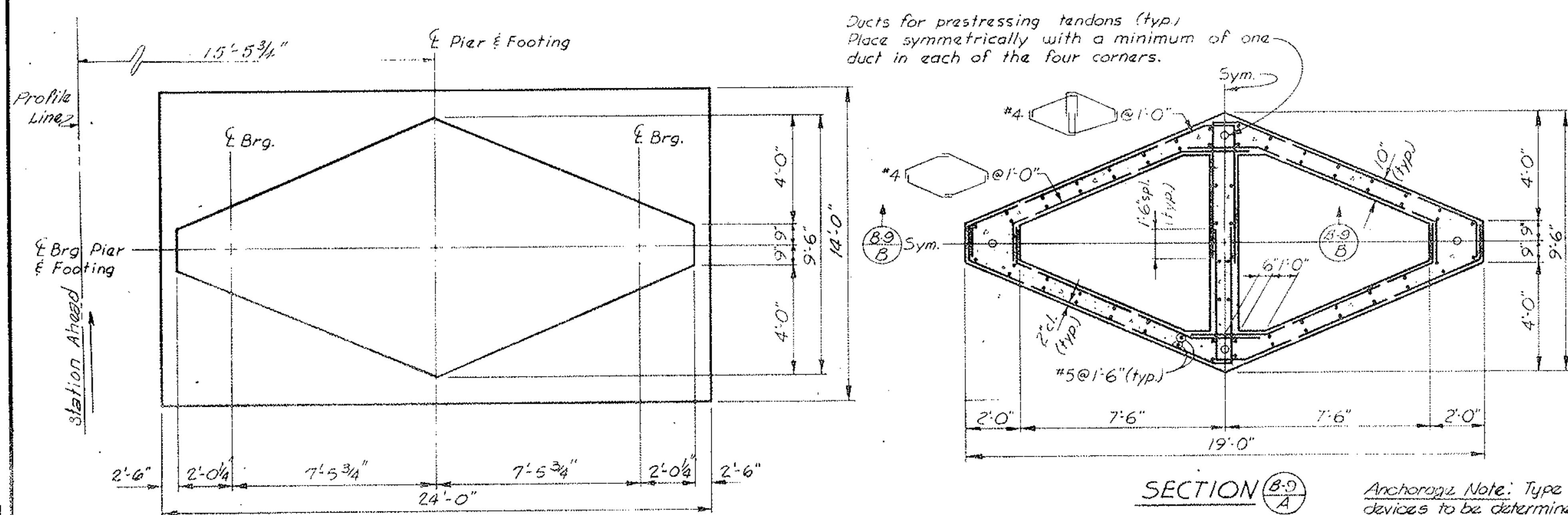
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS—STATE OF COLORADO

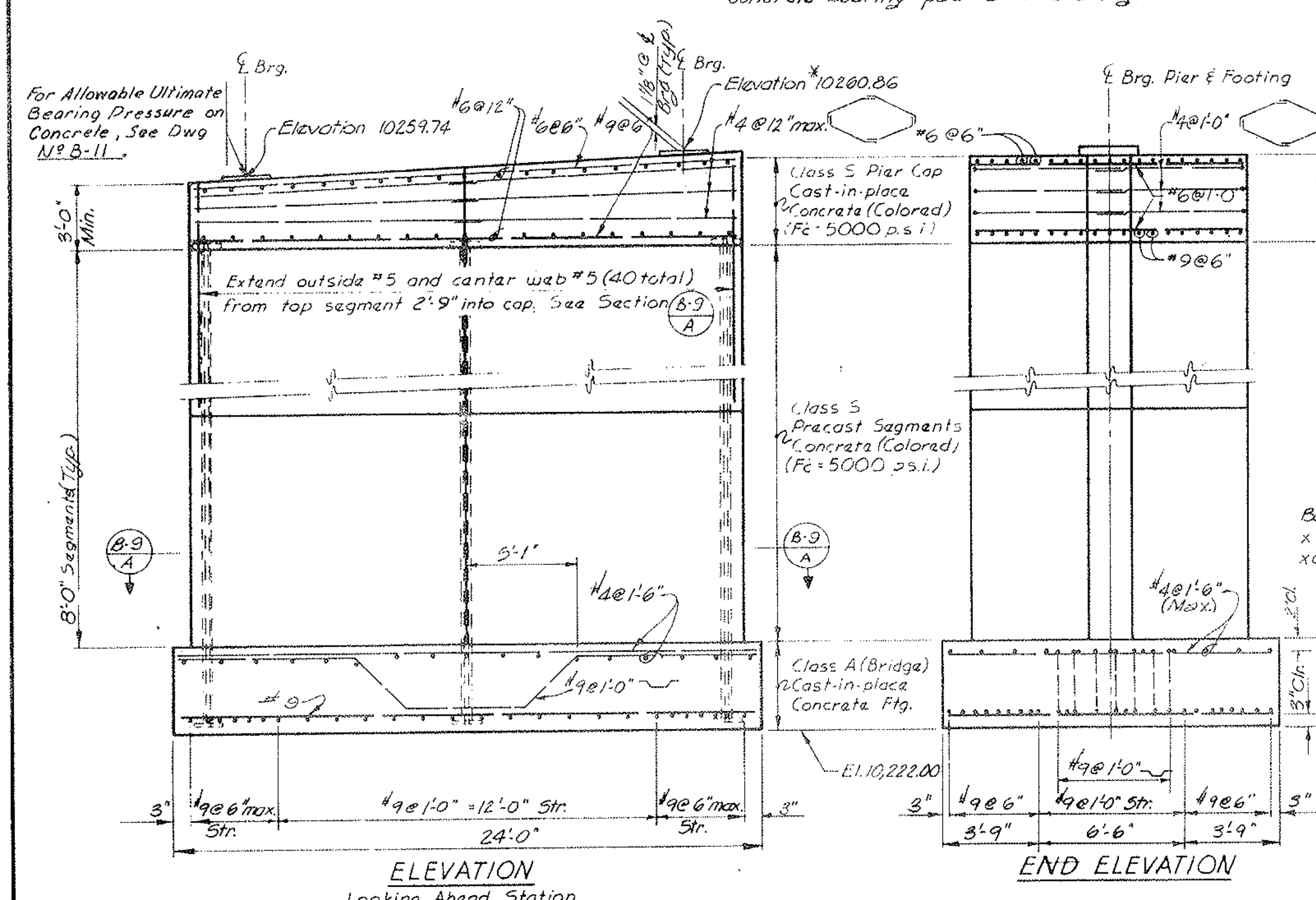
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2(32)197	49	

REVISIONS		
R1 4-17-75	Added Note & Changed Anchorage	CLB
R2 4-29-75	Rev. Note #4	JRE

VOID BY CONSTRUCTION DATE 6-24-77



* These elevations are to top of concrete bearing pad at ℄ bearing.



(1) FORCE F IS THE POST-TENSIONING FORCE REQUIRED FOR SERVICE LOADS. IF THE PIER IS TO BE SUBJECT TO THE ONE SEGMENT, UNBALANCED MOMENT THAT THE FOOTINGS ARE DESIGNED FOR, CALCULATIONS MUST BE SUBMITTED FOR THE ADDITIONAL POST-TENSIONING FORCE NEEDED.

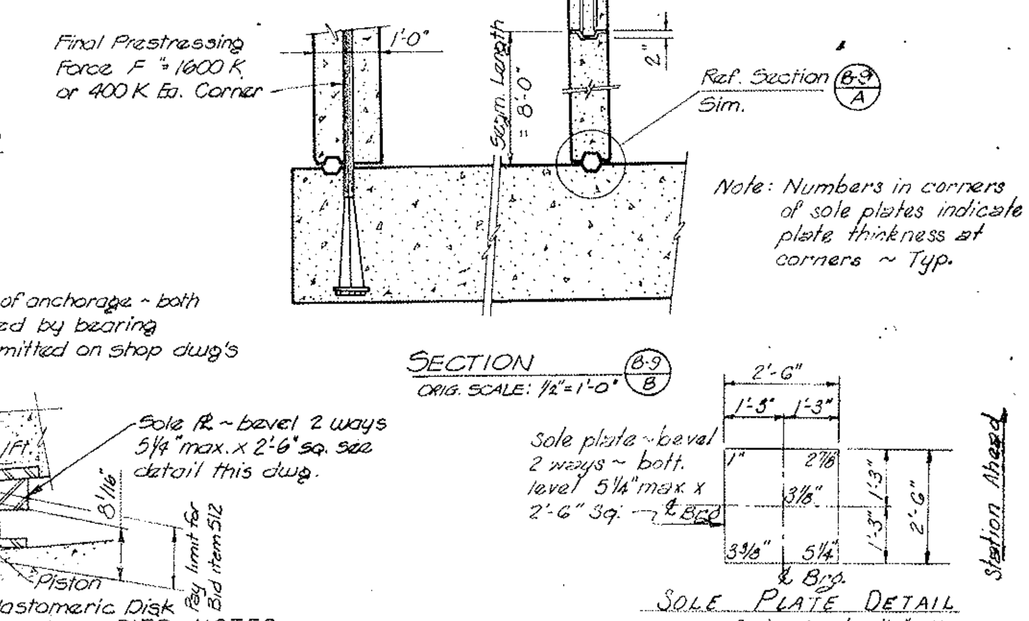
(1) FORCE F IS THE POST-TENSIONING FORCE REQUIRED IN THE PIERS AFTER ALL LOSSES INCLUDING CREEP, SHRINKAGE, FRICTION, AND ELASTIC SHORTENING FROM THE SUPERSTRUCTURE LOADS. POST-TENSIONING FORCE F IS TO BE THE SUM OF FOUR EQUAL FORCES, ONE AT EACH CORNER OF THE PIER AS SHOWN IN SECTION

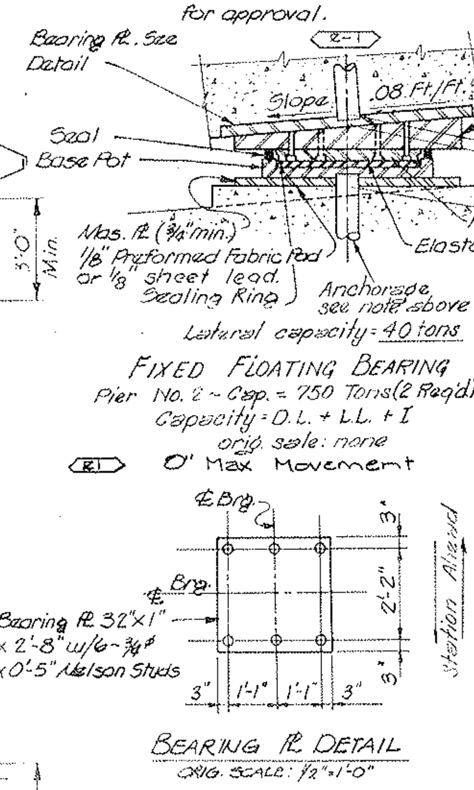
BEARING DEVICES

ITEM	BEARING TYPE & CAPACITY TONS	HORIZ. CAPACITY LONGITUDINAL (KIPS)	HORIZ. CAPACITY TRANSVERSE (KIPS)	ACTUAL* LOAD (KIPS)	ULTIMATE LOAD (KIPS)
Pier 2	F-750	35	80	1405	2036

Note: For additional notes on Bearing Device See Dwg. No. B-10
* Actual load shall be used to determine bearing capacity (R1)

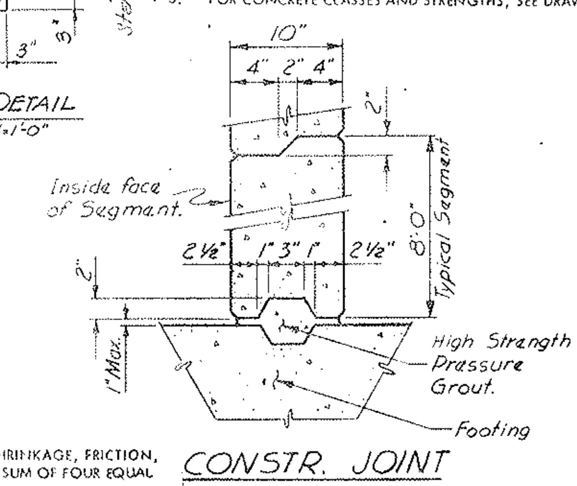
Anchorage Note: Type of anchorage ~ both devices to be determined by bearing manufacturer and submitted on shop dwg's for approval.





PIER NOTES:

1. DESIGN PROVISIONS WERE MADE FOR A ONE SEGMENT, UNBALANCED CANTILEVER MOMENT AT THE END OF THE CANTILEVER DURING THE CONSTRUCTION STAGE. THE PIER COLUMN IS NOT DESIGNED FOR SUCH UNBALANCED MOMENT, BUT THE PIER FOOTING IS DESIGNED FOR AN UNBALANCED MOMENT OF 3,000 FOOT KIPS. THIS MOMENT IS BASED ON AN ALLOWABLE SOIL PRESSURE OF 5.0 TONS PER SQ. FOOT AND A VERTICAL LOAD OF 2190 KIPS (DEAD LOAD CANTILEVER AND PIER AND FOOTING.)
2. POST-TENSIONING TENDON ANCHORAGES IN PIER FOOTINGS AND PIER CAPS SHALL BE DETERMINED BY THE MANUFACTURER AND SUBMITTED FOR APPROVAL.
3. END BLOCKS SHALL BE USED TO DISTRIBUTE THE CONCENTRATED POST-TENSIONING FORCES AT THE ANCHORAGE. CLOSELY SPACED REINFORCEMENT SHALL BE PLACED BOTH VERTICALLY AND HORIZONTALLY THROUGHOUT THE LENGTH OF THE END BLOCK IN ACCORDANCE WITH ACCEPTED METHODS OF END BLOCK ANALYSIS.
4. ALL SEGMENTS SHALL BE MATCH-CAST TO ENSURE PROPER FIT DURING THE ERECTION STAGE. PRECAST SEGMENT HEIGHT PER BRIDGE MAY BE REVISED IN ORDER TO MINIMIZE THE CAST IN PLACE PORTION. (R2)
5. CARE SHALL BE EXERCISED IN JOINING THE SEGMENTS WITH EPOXY TO ENSURE THAT COMPRESSION IS MAINTAINED OVER THE ENTIRE JOINT AREA UNTIL THE PERMANENT POST-TENSIONED TENDONS ARE STRESSED.
6. FOR CONCRETE CLASSES AND STRENGTHS, SEE DRAWINGS, THIS SHEET.



IECO INTERNATIONAL ENGINEERING COMPANY, INC.
Barton, Stoddard, Milhollin and Higgins Division
1777 S Bellaire St. Denver, Colorado 80222

DIVISION OF HIGHWAYS

PIER DETAILS

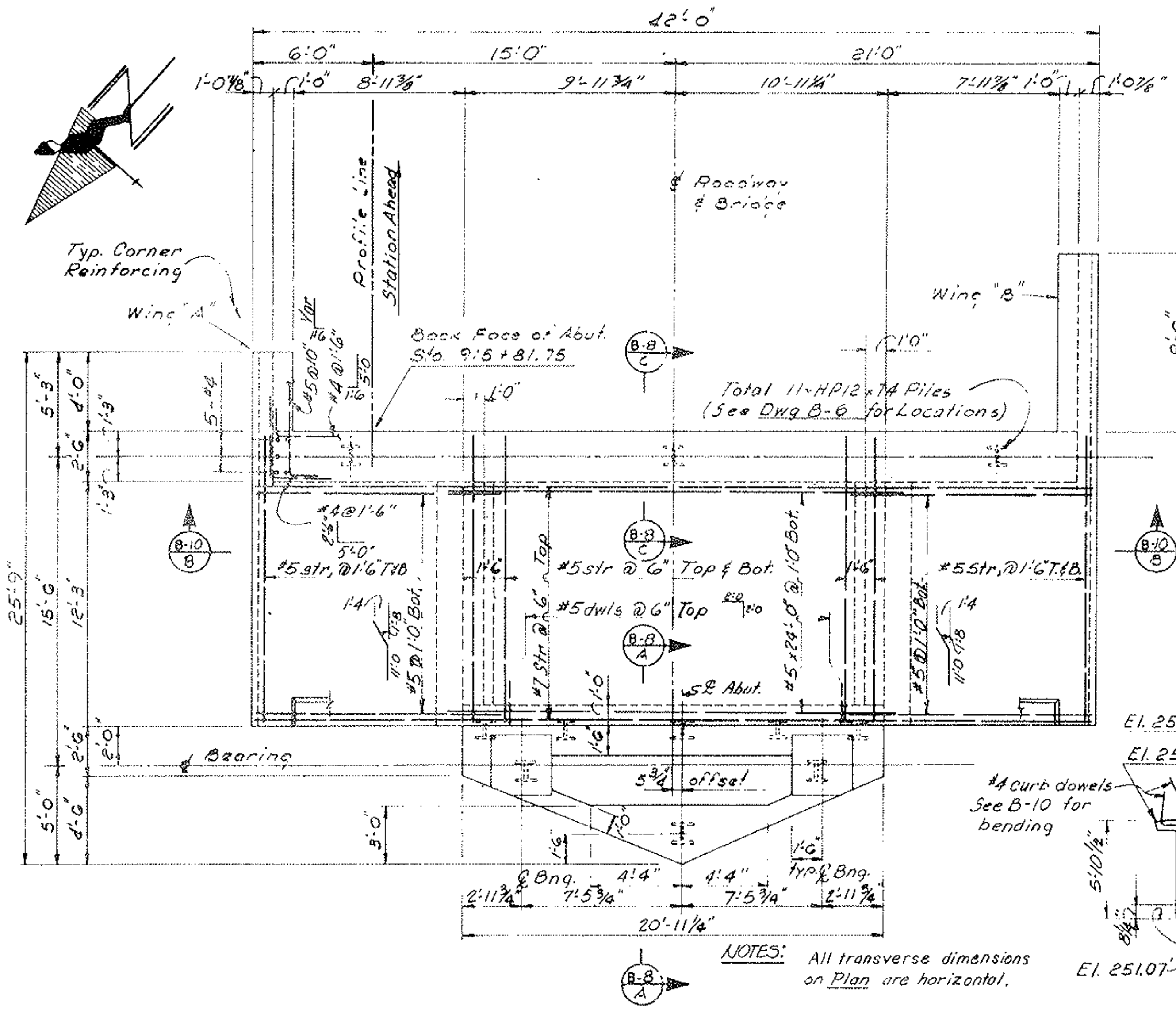
Designer A. Eriksen		Structure Numbers	F-12-AM
Detailer D. Froman			
Drawing Number B-11		of 17	Drawings

INITIAL	DATE		
C.L.B.	6-74	DESIGNED BY	CHECKED BY C.L.B. 8-74
C.L.B.		DETAILED BY	CHECKED BY R.A.H. 1-75
D.F.			QUANTITIES BY

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I70-2(52)197	50	

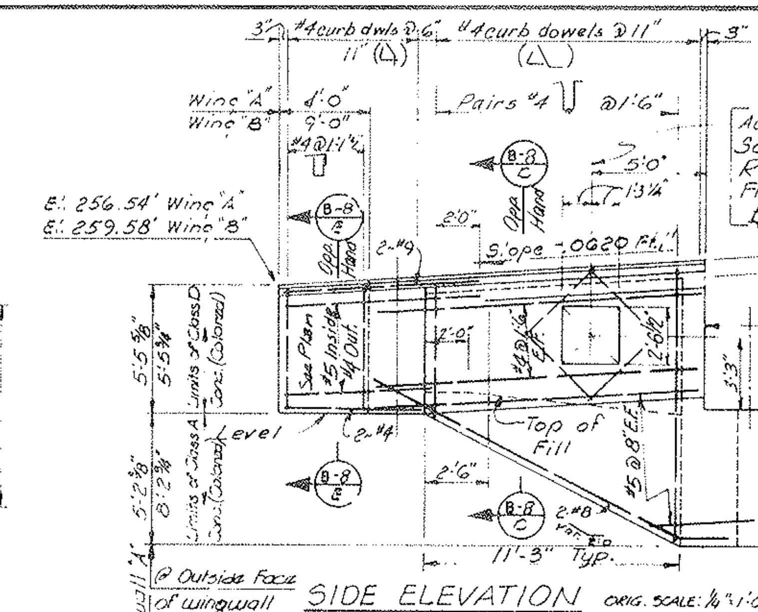
	REVISIONS	
4/14/75	REPRINT	WCB
4-17-75	Added Note & Changed Anchorage	LLB

VOID
BY CONSTRUCTION DATE 6-24-77



NOTES: All transverse dimensions on Plan are horizontal.

PLAN
Orig. Scale: 1/4" = 1'-0"



SIDE ELEVATION Orig. Scale: 1/4" = 1'-0"

Access Hatch with Door on Southwest Wall Only. Reinforcing Same as at Front Face, See Dwg B-12 For Door Detail.

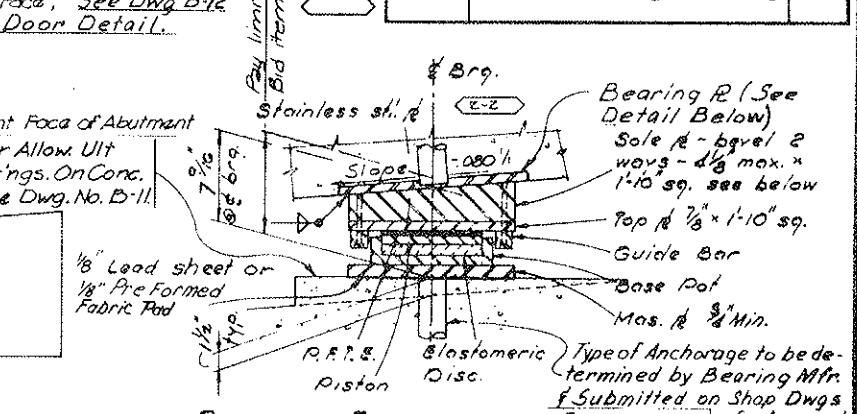
Front Face of Abutment

For Allow. Ult Brings. On Conc. See Dwg. No. B-11

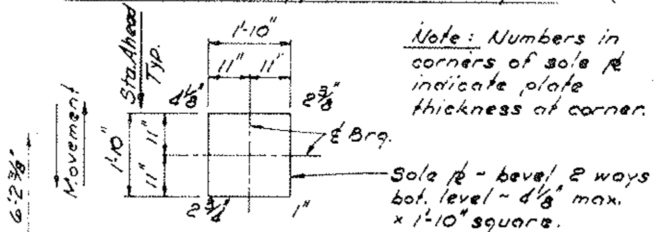
BEARING DEVICES

Item	Bearing Type & Capacity	Horz. Capacity Longitudinal (Kips)	Horz. Capacity Transverse (Kips)	Actual* Load (Kips)	Ultimate Load (Kips)
Abut. 1	E-250	12	50	462	636
Abut. 3	E-250	12	50	462	636

* Actual load shall be used to determine bearing capacity

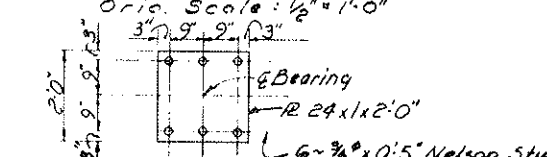


GUIDED EXPANSION BEARING
Cap. = 250 Tons ~ Lat. Cap. = 25 T. (4 Req'd.)
Capacity = D.L. + L.L. + I. Total Mov. = 7/8"
Orig. Scale: None
Abut. No. 3 ~ as shown (2 Req'd.)
Abut. No. 1 ~ opp. hand (2 Req'd.)

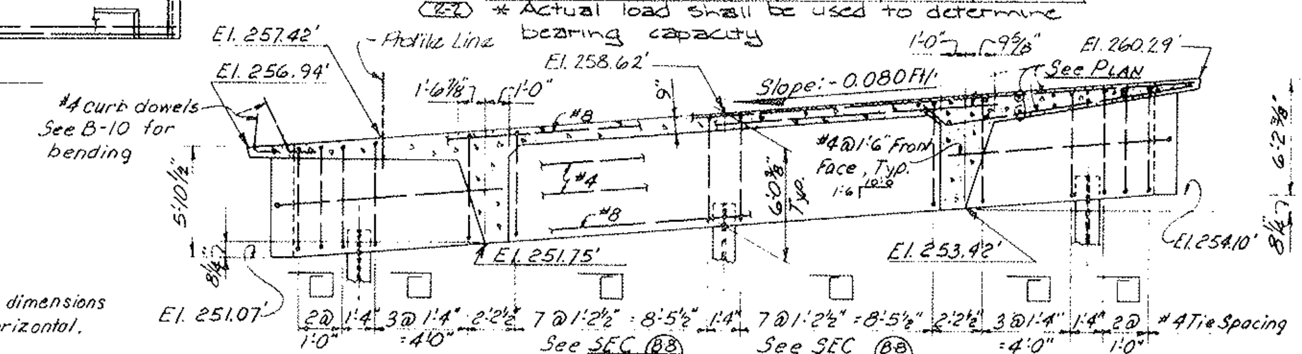


Note: Numbers in corners of sole ℞ indicate plate thickness at corner.

SOLE PLATE DETAIL
Orig. Scale: 1/2" = 1'-0"



BEARING PLATE DETAIL

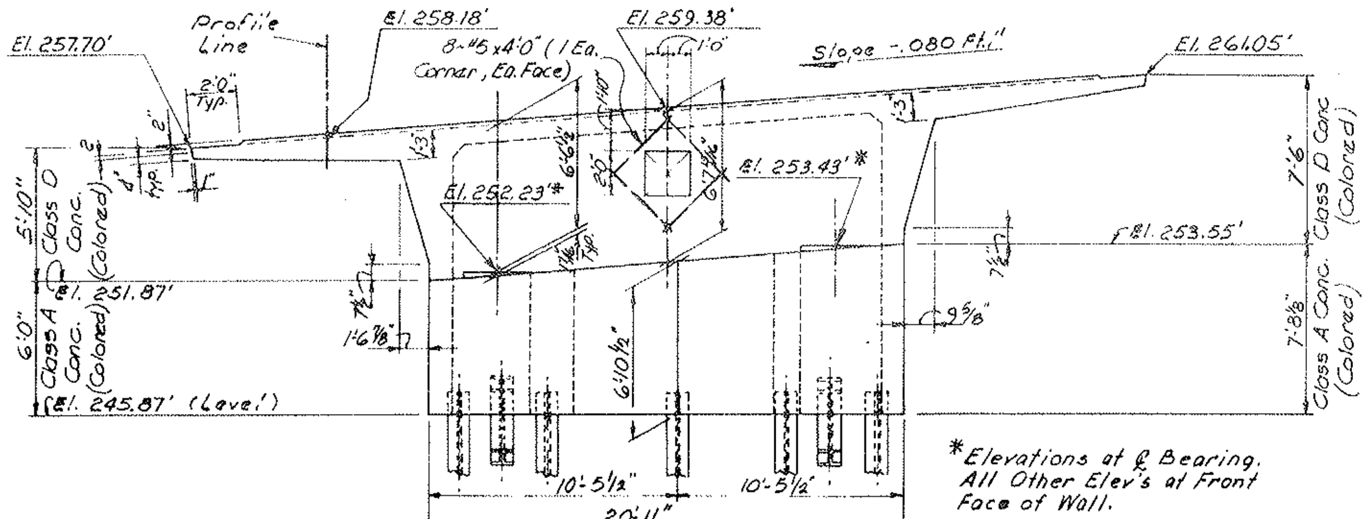


Elevations are at Front Face

SECTION B-10/B
Orig. Scale: 1/4" = 1'-0"

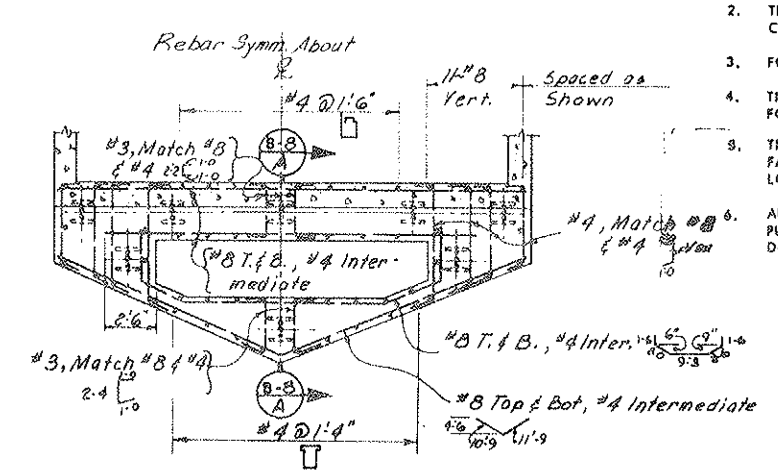
BEARING NOTES:

1. STEEL FOR THE BEARING DEVICES, MASONRY PLATES, AND SOLE PLATES SHALL BE A.A.S.H.T.O. SPECIFICATION M-183 (A.S.T.M. A36).
2. THE TYPE OF ANCHORAGE FOR BEARING DEVICES SHALL BE DETERMINED BY THE CONTRACTOR AND SUBMITTED ON SHOP DRAWINGS FOR APPROVAL.
3. FOR ALLOWABLE BEARING PRESSURE ON CONCRETE, SEE DRAWING B 11.
4. THE SOLE PLATES SHALL BE SUPPLIED WITH BEVELS AND CROSSFALLS AS REQUIRED FOR GRADE AND SUPERELEVATION.
5. THE SIZES OF MASONRY PLATES SHALL BE DETERMINED BY THE BEARING MANUFACTURER. THE ALLOWABLE ULTIMATE BEARING PRESSURES AND THE ULTIMATE LOADS SHALL BE USED TO DETERMINE THE MASONRY PLATE SIZES.
6. ALL BEARING DETAILS, INCLUDING WELDS, ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING DETAILS OF THE SPECIFIC BEARING DEVICE TO BE USED.



*Elevations at ℄ Bearing. All Other Elev's at Front Face of Wall.

FRONT ELEVATION
Orig. Scale: 1/4" = 1'-0"



REINFORCING PLAN, ABUTS Nº 1 (SHOWN) & Nº 3 (OPP. HAND)
Orig. Scale: 1/4" = 1'-0"

INITIAL	DATE		
DESIGNED BY	AE	3-75	CHECKED BY
CHECKED BY	H.G.	3-75	QUANTITIES BY LM 3-75
DETAILED BY	DG; LM	3-75	CHECKED BY AE 3-75

DIVISION OF HIGHWAYS

ABUTMENT No. 3 DETAILS

Designer A. Eriksen		Structure Numbers	F-12-AM
Detailer Grogan; McNamee			
Drawing Number B-10	of 17	Drawings	

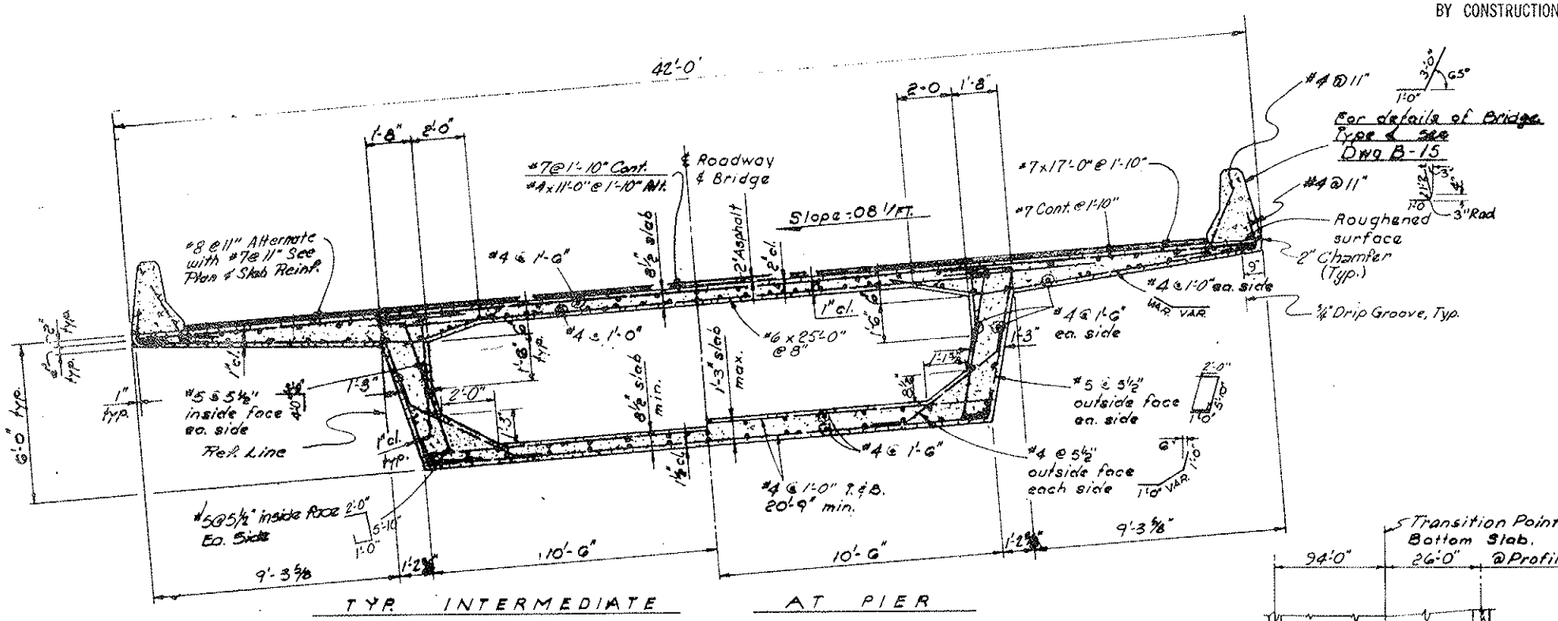
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO
D-X FORM NO. 117
JULY 1960

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(58)197	51	

REVISIONS			
R-1	4/4/75	REPRINT	WCB
R-2	4-17-75	REVISED BEARING PRESSURES	CJB
		# Pos. PRESTRESS FORCES	

VOID
BY CONSTRUCTION DATE 6-22-77



TYP. INTERMEDIATE AT PIER

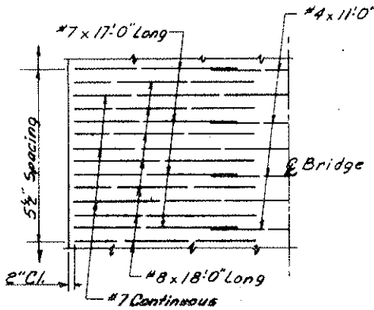
TYPICAL DECK SECTION
Orig Scale : 3/8" = 1'-0"

NOTE: Concrete shall be class S (Bridge) (colored) unless otherwise noted. For Prestressing notes see Drawing No. B-13.

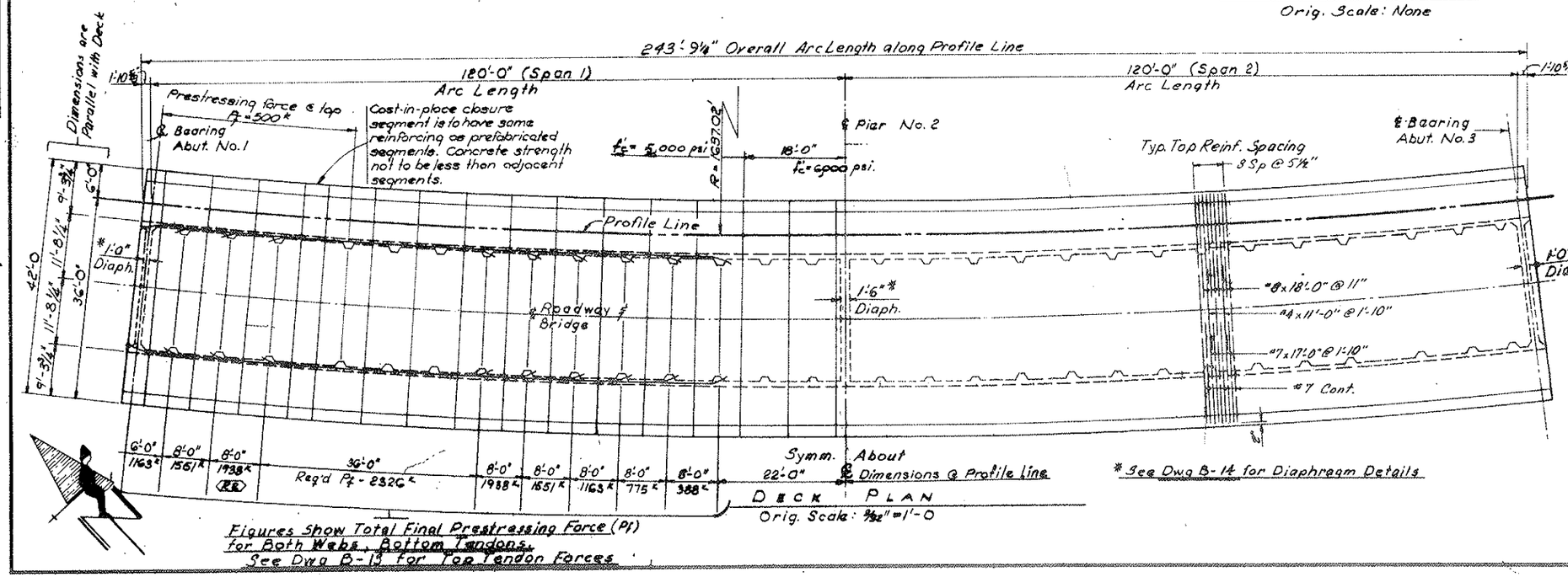
(R-2)
ALLOWABLE ULTIMATE BEARING PRESSURES:

At Abutments: 1785 psi (f'c = 3000 psi)
At Piers: 2975 psi (f'c = 5000 psi)
In Superstructure: 3873 psi (f'c = 3500 psi)

LONGITUDINAL SECTION
Orig. Scale: None



HALF PLAN
TOP SLAB REINFORCING
No Scale



DECK PLAN
Orig. Scale: 3/32" = 1'-0"

* See Dwg B-14 for Diaphragm Details

Figures Show Total Final Prestressing Force (Pf) for Both Webs, Bottom Tendons. See Dwg B-13 for Top Tendon Forces

DESIGNED BY	A.E.	QUANTITIES BY	L.M.	3.75
CHECKED BY	A.E.	CHECKED BY	A.E.	3.75
DETAILED BY	S.M.	DATE	3/75	

DIVISION OF HIGHWAYS

DECK PLAN AND TYPICAL DECK SECTION

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	S. Martinez		
Drawing Number B-11		of 17	Drawings

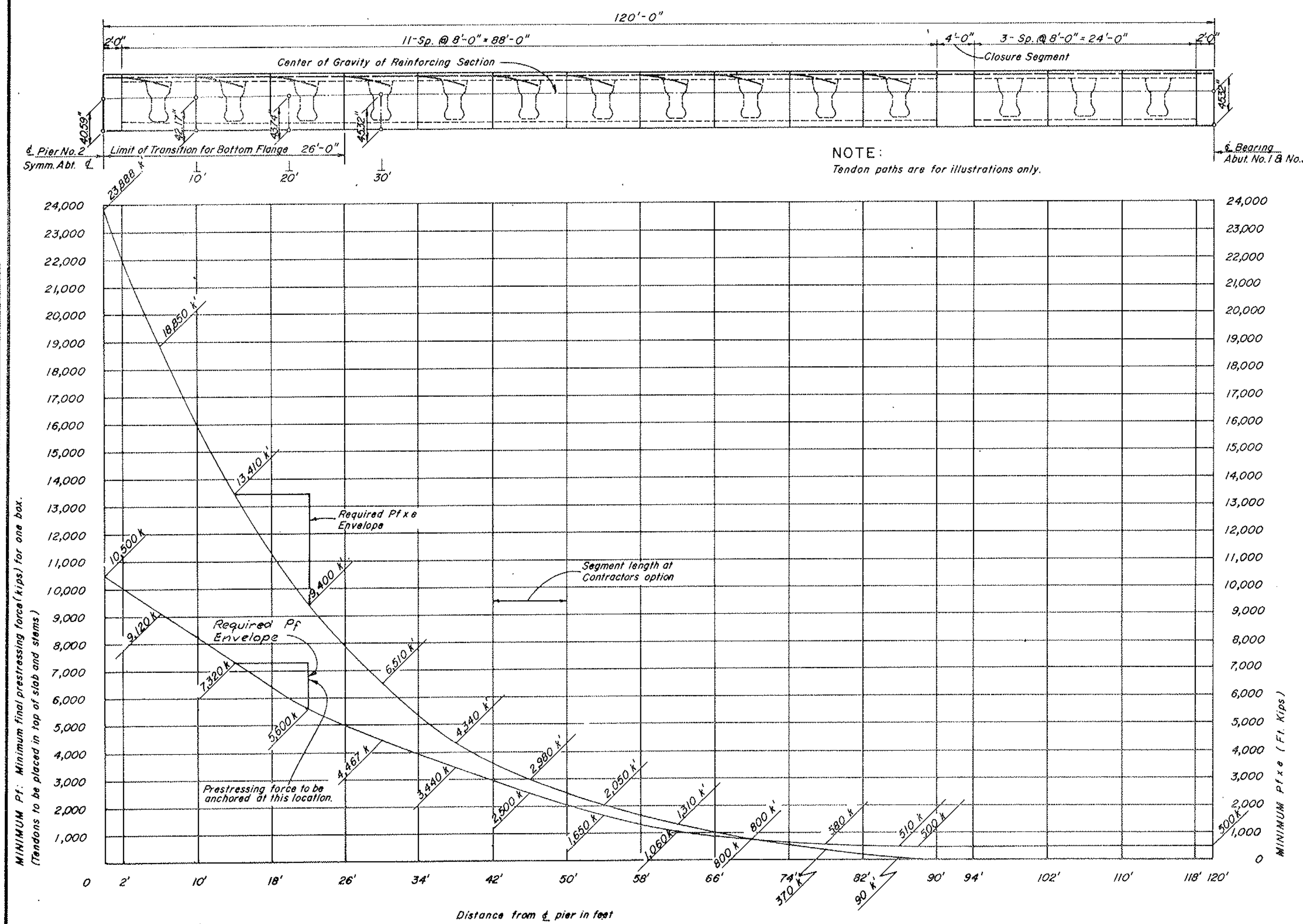
STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS—STATE OF COLORADO
CDH FORM NO. 117
REV. DEC. 1972

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2(52)197	52	

REVISIONS

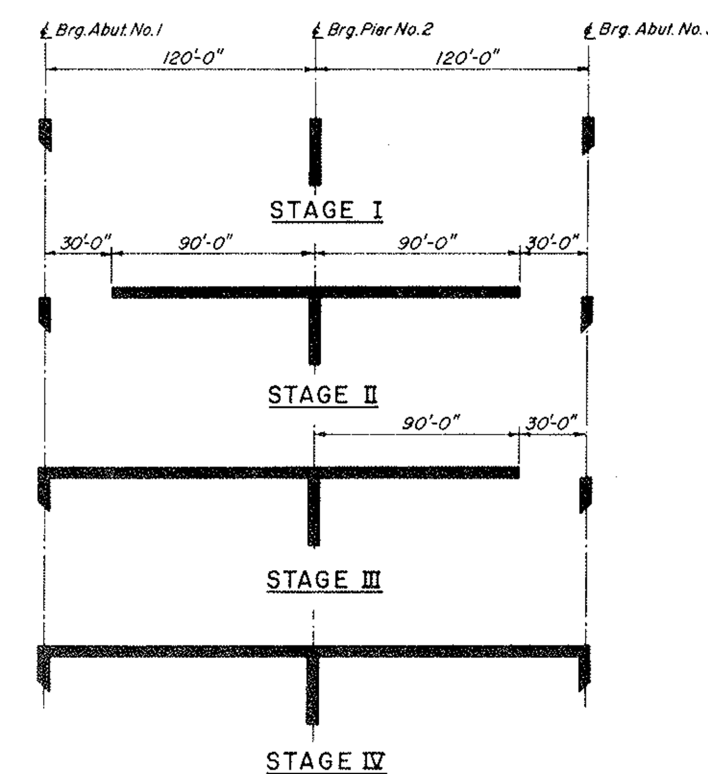
VOID BY CONSTRUCTION 6-24-77

DESIGNED BY	A.E.	3-75	CHECKED BY	C.M.	3-75
CHECKED BY	H.G.	3-75	QUANTITIES BY		
DETAILED BY	P.S.	3-75	CHECKED BY	A.E.	5-75



SPANS NO. 1 & NO. 2

Minimum Prestressing Forces & Prestressing Moments for Top (Negative) Tendons.



SEQUENCE OF CONSTRUCTION

(Assumed in Design)

DIVISION OF HIGHWAYS

90 FOOT CANTILEVER CONSTRUCTION SEQUENCE

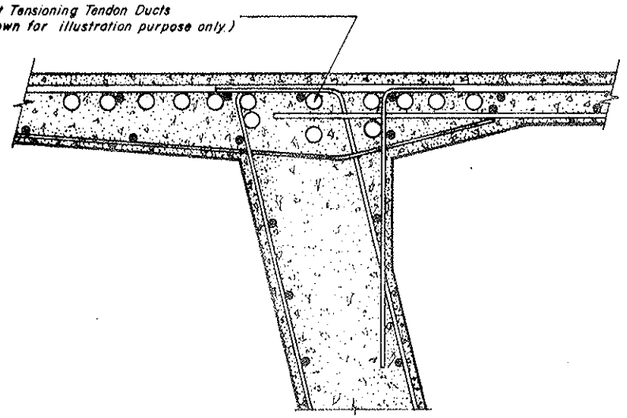
Designer A. ERIKSEN		Structure Numbers	F-12-AM
Detailer P. SCOFIELD			
Drawing Number B-12		of 17	Drawings

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS STATE OF COLORADO
FORM NO. 417
REV DEC 1962

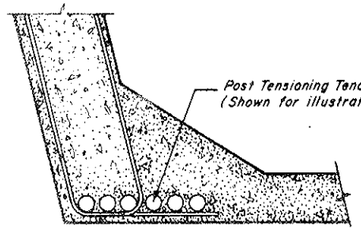
FEDERAL ROAD REGION NO	DISTRICT	PROJ. NO.	SHEET NO	TOTAL SHEETS
VIII	COLORADO	FAP 2(32)197	53	

VOID
BY CONSTRUCTION DATE 6-24-77

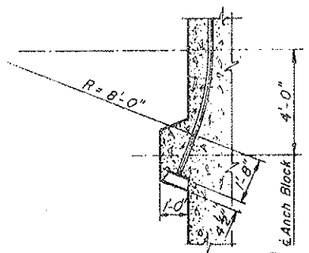
REVISIONS			
R-1	5-14-15	Added Note	CLB



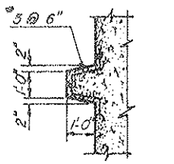
PART SECTION NEAR PIER
NO SCALE.



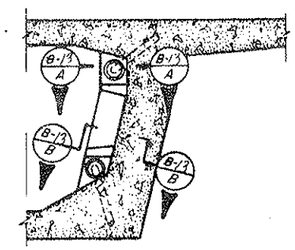
PART SECTION NEAR MID-SPAN
NO SCALE



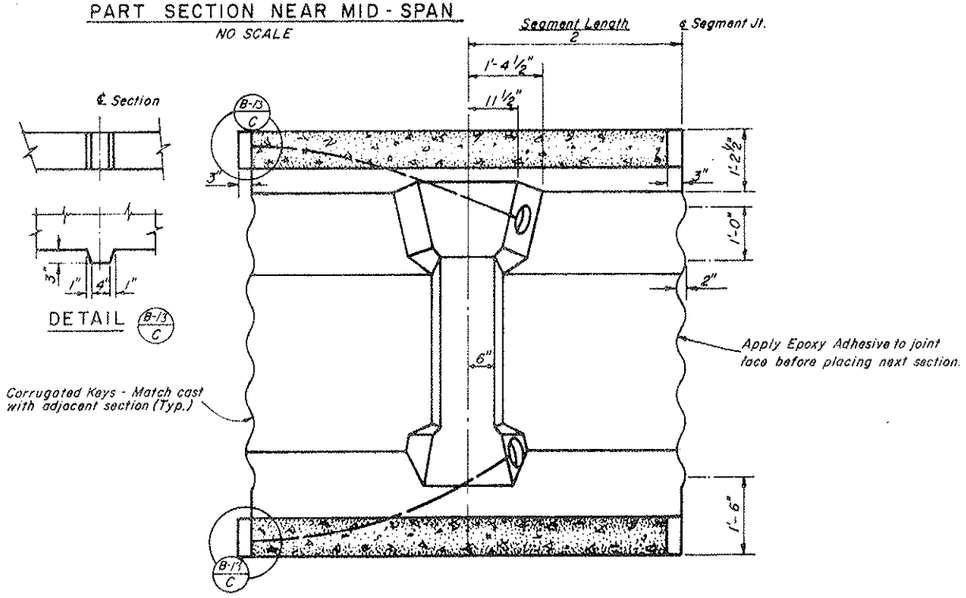
SECTION B-13/A



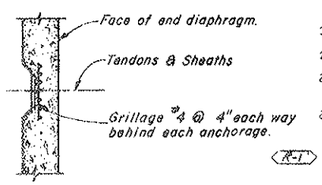
SECTION B-13/B



ANCHOR BLOCK DETAIL



TYPICAL SEGMENT ELEVATION
NO SCALE



PART PLAN ANCHORAGE AT ABUTMENTS
NO SCALE

PRESTRESSING NOTES:

1. "P_f" IS THE TOTAL PRESTRESSING FORCE REMAINING AT A SPECIFIC POINT AFTER ALL LOSSES INCLUDING CREEP, SHRINKAGE AND ELASTIC SHORTENING OF CONCRETE, CREEP AND ELONGATION OF STEEL TENDONS AND FRICTION.
2. THE VALUE OF P_f SHALL BE FURNISHED AT THE MIDDLE OF LENGTH FOR WHICH IT IS GIVEN IN THE CASE OF BOTTOM PRESTRESSING THROUGH THE CLOSURE POURS. P_f FOR ALL OTHER BOTTOM PRESTRESSING SHALL BE FURNISHED AT THE END NEAREST MID-SPAN OF THE LENGTH FOR WHICH IT IS GIVEN. P_f FOR TOP PRESTRESSING SHALL BE FURNISHED AT END NEAREST THE SUPPORT OF THE LENGTH FOR WHICH IT IS GIVEN.
3. "e" IS THE ECCENTRICITY OF THE PRESTRESSING FORCE ABOVE OR BELOW THE CENTER OF GRAVITY OF THE CONCRETE BOX CROSS-SECTION.
4. PRESTRESSING OF THE STRUCTURES SHALL BE DONE IN A MANNER SUCH THAT NO TENSILE STRESSES ARE CREATED IN THE CONCRETE.
5. ALL SEGMENTS SHALL BE MATCH CAST TO ENSURE PROPER FIT DURING THE ERECTION STAGES. DURING CASTING, SEGMENTS MUST BE ALIGNED TO ACHIEVE FINAL STRUCTURE GEOMETRY. AT THIS TIME, ALL CORRECTIONS FOR DEFLECTIONS, CAMBER, AND DEFORMATIONS DUE TO CREEP, ELASTIC SHORTENING, ETC. MUST BE COMPENSATED FOR IN THE FORM.
6. PRESTRESSING STEEL PROPERTIES USED IN THE DESIGN CALCULATIONS ARE FOR TENDONS WITH AN ULTIMATE STRENGTH OF 270 K.S.I. CALCULATIONS MUST BE SUBMITTED FOR DEPARTMENT APPROVAL IF ANOTHER TYPE OF PRESTRESSING STEEL IS SUBSTITUTED. TENDONS SHALL BE SHIPPED IN MOISTURE-PROOF CONTAINERS THAT CAN BE STORED AT THE JOB SITE FOR AN EXTENDED PERIOD OF TIME WITHOUT CORRODING FROM ATMOSPHERIC CONDITIONS.
7. REQUIRED PRESTRESSING FORCES (P_f) AND MOMENTS ($P_f \times e$) ARE BASED ON A SEGMENT LENGTH OF 8'-0" AND ON THE CONSTRUCTION SEQUENCE SHOWN ON DRAWING NUMBER B-12. DESIGN CALCULATIONS FOR ALTERNATIVE CONSTRUCTION SCHEMES MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
8. PROVISIONAL PRESTRESSING USED DURING CONSTRUCTION MUST HAVE ENGINEERS APPROVAL.
9. IF ONE END STRESSING IS USED, ALTERNATE TENDONS SHALL BE STRESSED FROM OPPOSITE ENDS. LONGITUDINAL TENDONS LOCATED IN BOTTOM SLAB SHALL BE STRESSED AFTER CLOSURE POUR IS MADE AND TOP SLAB TENDONS ARE STRESSED.
10. RECTANGULAR ANCHOR PLATES SHALL BE USED TO MINIMIZE FLARES. ALTERNATE ANCHORAGE AND CONSTRUCTION JOINT DETAILS, TO FIT THE PRESTRESSING SYSTEM USED, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
11. GIRDER STEMS SHALL BE FLARED AS NECESSARY NEAR ANCHORAGE TO PROVIDE A 2" MINIMUM OF CONCRETE COVERING THE DUCTS: THE FLARE SHALL BE ON INSIDE OF THE GIRDER ONLY.
12. BAR REINFORCING INTERFERING WITH THE PRESTRESSING TENDON ALIGNMENT SHALL BE ADJUSTED AS DIRECTED BY ENGINEER.
13. TENDON DUCTS MUST BE PRECISELY ALIGNED DURING PRODUCTION. INFLATABLE RUBBER OR SUITABLY RIGID MATERIAL SHALL BE USED TO PREVENT ANY INDENTATIONS OR COLLAPSE OF DUCTS
14. PROVIDE ADEQUATE SUPPORT FOR TENDON DUCTS TO PREVENT ALIGNMENT CHANGES DURING CONCRETE PLACEMENT.
15. A MAXIMUM OF 3 DUCTS MAY BE BUNDLED INTO VERTICAL UNITS. MINIMUM HORIZONTAL CLEARANCE BETWEEN DUCT UNITS SHALL BE 2-1/2 IN. MINIMUM VERTICAL CLEARANCE BETWEEN DUCT UNITS SHALL BE 3 IN.
16. GROUTING IS TO BE DONE AFTER PRESTRESSING IS COMPLETED IN ANY ONE SPAN IN SUCH A WAY THAT GROUTING CANNOT INTERFERE WITH THREADING AND STRESSING OF TENDONS.
17. CARE SHALL BE EXERCISED IN JOINING THE SEGMENTS WITH EPOXY TO ENSURE THAT COMPRESSION IS MAINTAINED OVER THE ENTIRE JOINT AREA UNTIL THE PERMANENT POST-TENSIONED TENDONS ARE STRESSED.
18. SEGMENT JOINTS SHALL HAVE A THOROUGH COATING OF EPOXY TO ELIMINATE VOIDS BETWEEN TENDON DUCTS.
19. A COMPLETE SET OF DEFLECTION CALCULATIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL 60 DAYS PRIOR TO STARTING SUPERSTRUCTURE CONSTRUCTION.
20. THE CAMBER TO BE USED WILL DEPEND ON SEGMENT LENGTH, STRENGTH, WEIGHT AND CREEP OF CONCRETE, PRESTRESSING, WEIGHT OF FALSE-WORK, AND INCIDENTAL CONSTRUCTION LOADS.
21. CONTRACTOR WILL BE REQUIRED TO CHECK CAMBER AT INTERMEDIATE ERECTION STEPS AND PROVIDE CAMBER ADJUSTMENTS WITH SUPPORTING CALCULATIONS.
22. FALSEWORK AT CLOSURE POURS SHALL BE SUPPORTED SUCH THAT APPLIED LOADS WILL RESULT IN EQUAL DEFLECTIONS OF EACH CANTILEVER.
23. TYPICAL SECTION REINFORCING (SEE DWG. NO. B-11) SHALL EXTEND INTO CLOSURE POURS.
24. A MINIMUM OF 30 P.S.I. COMPRESSION SHALL BE REQUIRED DURING AND AFTER INITIAL PRESTRESSING.
25. SUPERSTRUCTURE CONCRETE FOR 2 SEGMENTS ADJACENT TO PIER EACH SIDE TO HAVE f'_c = 6,000 P.S.I. ALL OTHER SUPERSTRUCTURE CONCRETE TO HAVE f'_c = 5,000 P.S.I.
26. WEB STIFFENERS AS SHOWN ON THE PLANS ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR MUST SUBMIT CALCULATIONS FOR DEPARTMENT'S APPROVAL IF OTHER TYPES OF ANCHORAGE DETAILS ARE TO BE USED.
R-1 27. WEB STIFFENER REINFORCING DETAILS SHALL BE SUBMITTED FOR THE ANCHORAGE SYSTEM USED.

	UNCHECKED	QUANTITIES	CHECKED BY
INITIAL	A.C.	A.C.	A.C.
DESIGNED BY	S.T.S.	S.T.S.	S.T.S.
CHECKED BY	S.T.S.	S.T.S.	S.T.S.
DETAILED BY	S.T.S.	S.T.S.	S.T.S.

DIVISION OF HIGHWAYS

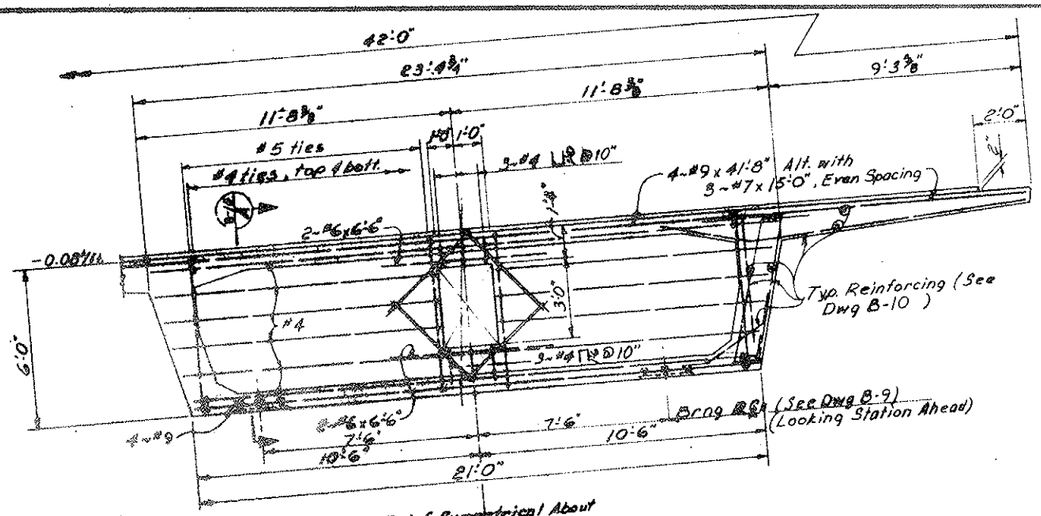
PRESTRESSING DETAILS

Designer	J. Keller	Structure Numbers	F-12-AM
Detailer	PHS		
Drawing Number	B-13	of 17	Drawings

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
STD. PLATE NO. 111
REV. SEPTEMBER 1975

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	54	

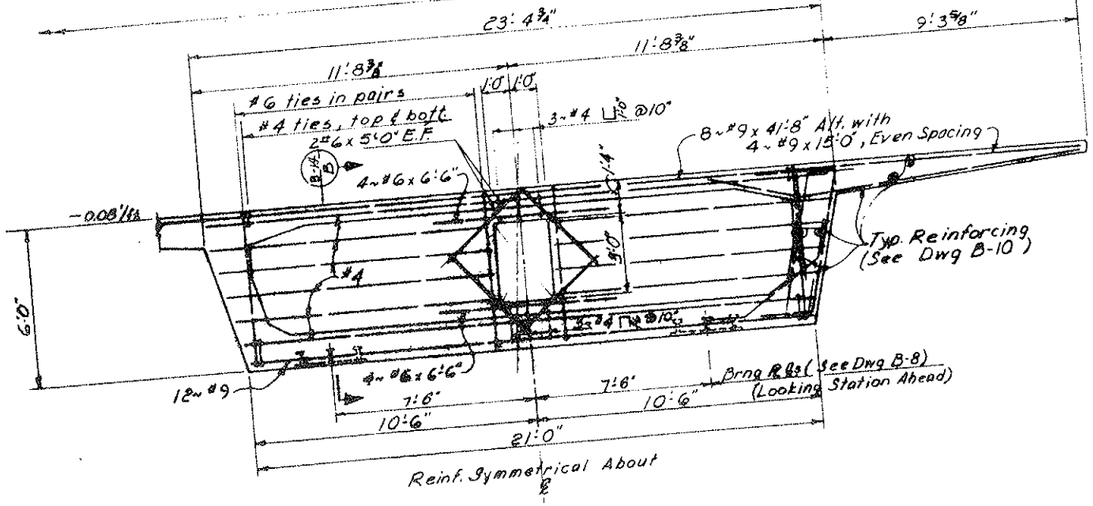
REVISIONS		



See Typ. Section Dwg B-10 for Add'l Dimensions.

DIAPHRAGM ELEVATION AT ABUTMENTS Nº1 & Nº3

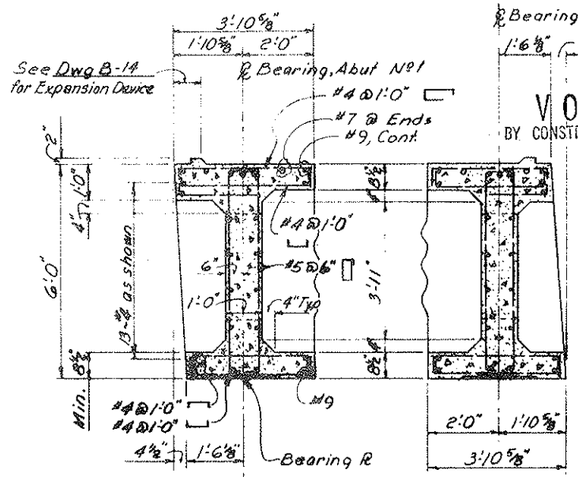
Orig. Scale: ⅜"=1'-0"



See Typ. Section Dwg B-10 for Add'l Dimensions.

DIAPHRAGM ELEVATION AT PIER Nº 2 (LOOKING STATION AHEAD)

Orig. Scale: ⅜"=1'-0"

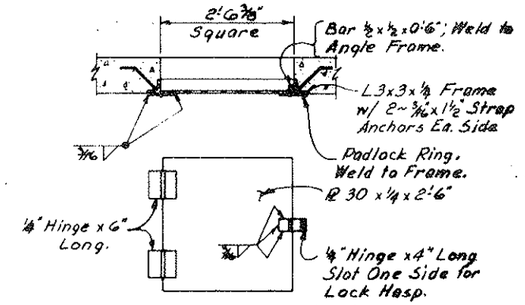


Reinf. & Dim's not shown are same, each Abut.

END DIAPH. ABUT Nº1 END DIAPH. ABUT Nº3

SECTION (B-1A A)

Orig. Scale: ½"=1'-0"

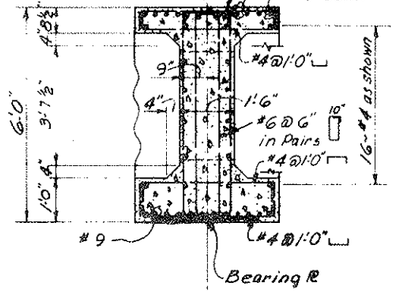


Req'd 2 (One Each Abut.)

METAL ACCESS DOOR DETAIL

(See Dwgs B-7 & B-9 for Abut's)

Orig. Scale: ¾"=1'-0"



SECTION (B-1A B)

Orig. Scale: ½"=1'-0"

Note: Coordinate with Bearing Manufacturer before casting diaphragms.

DESIGNED BY	DATE	CHECKED BY
DRAWN BY		QUANTITIES BY
CHECKED BY		CHECKED BY
DETAILED BY		

REVISED	DATE	QUANTITIES BY
AF	3-75	
AG	5-75	CHECKED BY
GM	5-75	

VOID BY CONSTRUCTION DATE 6-24-77

DIVISION OF HIGHWAYS

DIAPHRAGM DETAILS

Designer	A. Eriksen	Structure Numbers	F-18-AM
Detailer	L. McNamee		
Drawing Number	B-1A	of 17	Drawings

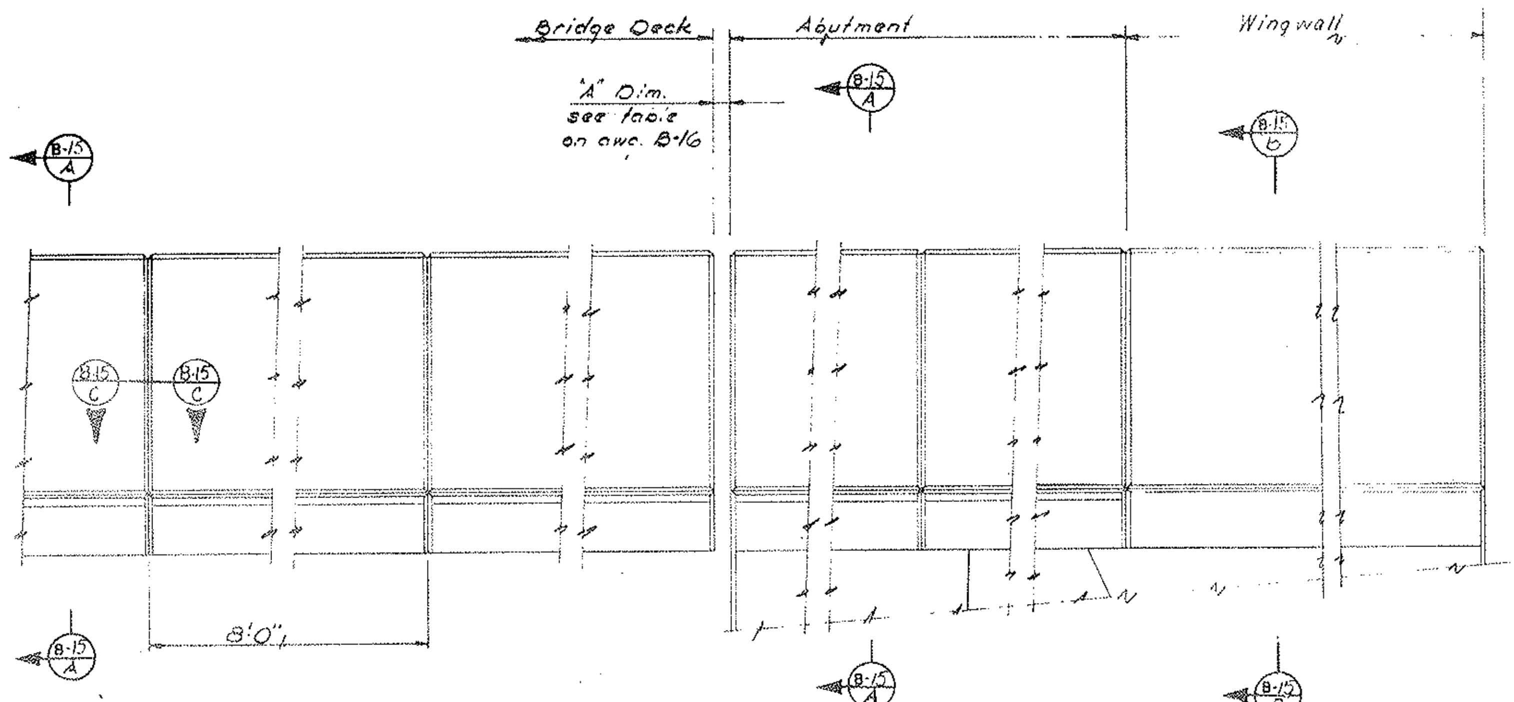
Revision Dates									(Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 111
REV. OCTOBER 1972

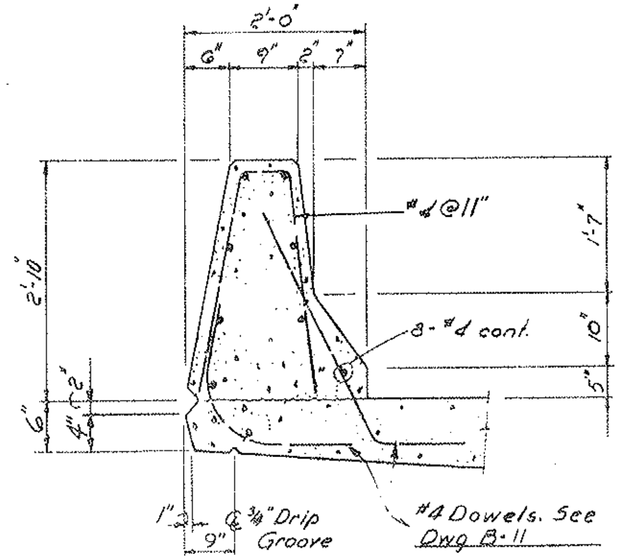
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I70-2(52)197	55	

REVISIONS

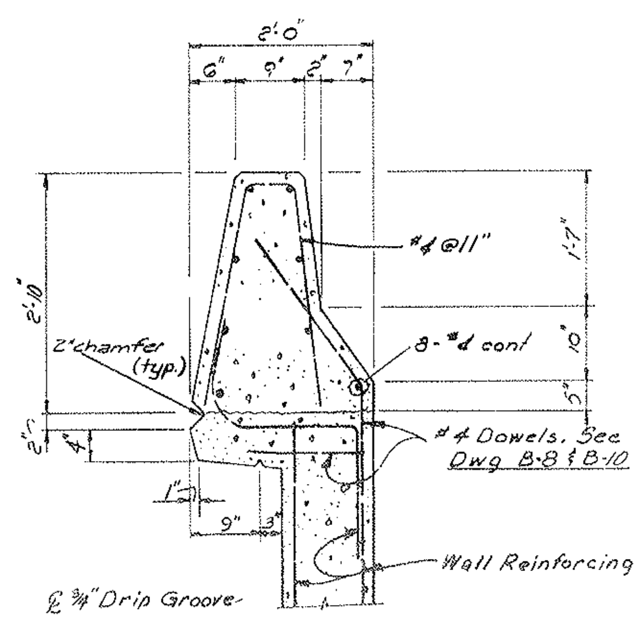
VOID
BY CONSTRUCTION DATE 6-24-77



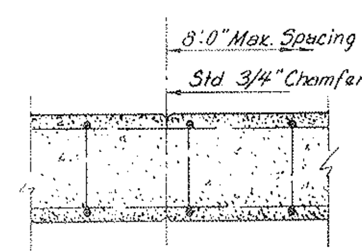
TYPICAL ELEVATION AT ABUTMENT
Orig. Scale: 1" = 1'-0"



SECTION (B-15 A)
Cantilever detail
Orig. Scale: 1"=1'-0"



SECTION (B-15 B)
Wall detail
Orig. Scale: 1"=1'-0"



SECTION (B-15 C)
Curb Detail
No Scale

	INITIAL	DATE		
DESIGNED BY	AE	3-75	CHECKED BY	
CHECKED BY	HG	3-75	QUANTITIES BY	LM 3-75
DETAILED BY	LM	3-75	CHECKED BY	AE 3-75

DIVISION OF HIGHWAYS

BRIDGE RAIL TYPE 4

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	L. McNamee		
Drawing Number B-15		of 17	Drawings

Revision Dates (Preliminary Stage Only)

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I70-2(52)197	56	

BRIDGE STANDARD -40-

VOID BY CONSTRUCTION DATE 6-24-77

REVISIONS		

NOTES

THE EXPANSION DEVICE SHALL BE INSTALLED ON GRADE, PARALLEL TO THE SLOPE AND GRADE OF THE DECK.

AFTER THE CONCRETE HAS ATTAINED INITIAL SET, THE ATTACHMENTS USED TO HOLD THE ANGLE ASSEMBLY IN ITS PROPER POSITION SHALL BE REMOVED.

DO NOT PAINT STEEL SURFACES IN CONTACT WITH CONCRETE AND PREMOLDED EXPANSION DEVICE.

"W", "T", "⊕", AND "△" DIMENSIONS ARE DEPENDENT UPON THE PARTICULAR PREMOLDED DEVICE SUPPLIED, AND SHALL BE SHOWN ON THE SHOP DRAWINGS.

THE SHOP DRAWINGS SHALL INDICATE THE "W" DIMENSION AT A RANGE OF TEMPERATURES FROM 30° TO 100° ASSUMING A MID-POINT TEMPERATURE OF 40°.

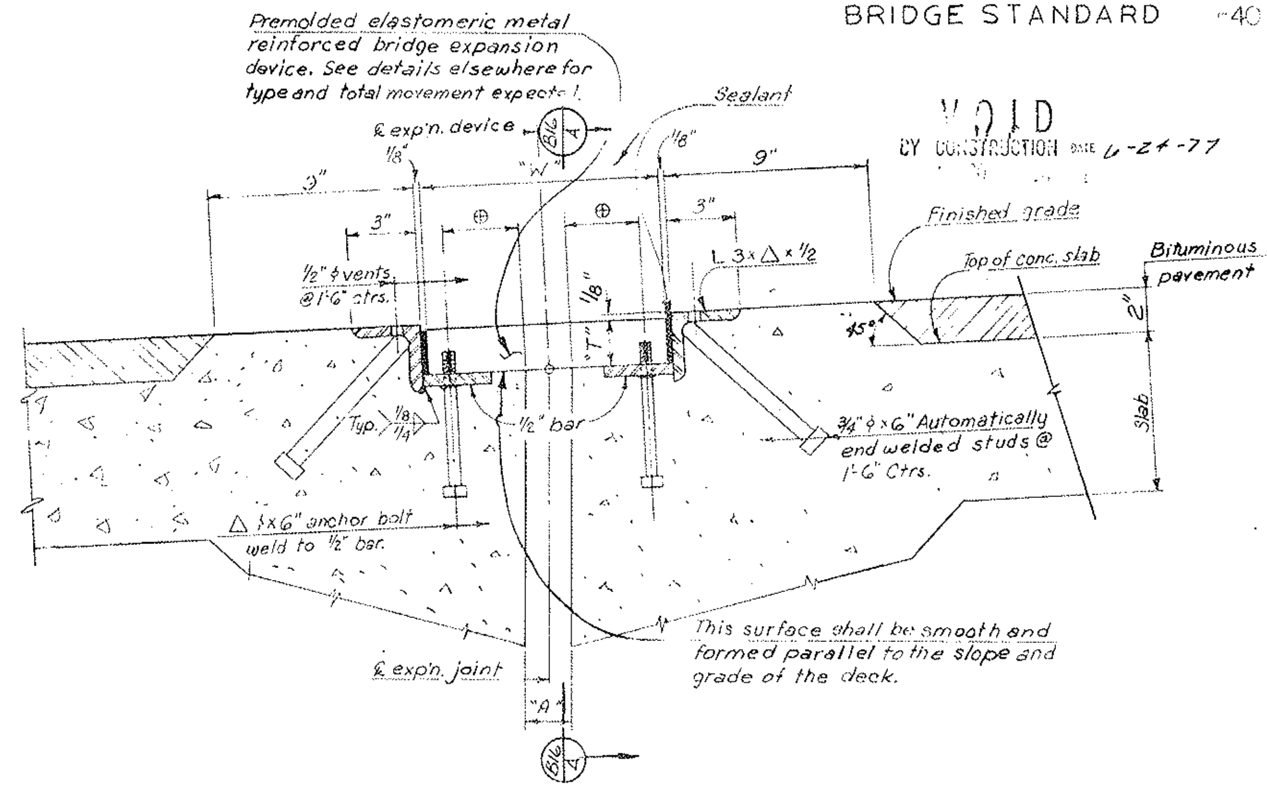
ANGLE AND PLATE ASSEMBLIES TO EXTEND GUTTER TO GUTTER ONLY.

ALL SECTIONS OF THE PREMOLDED EXPANSION DEVICE SHALL BE JOINED BY USING THE MANUFACTURER'S STANDARD WATERPROOF JOINT.

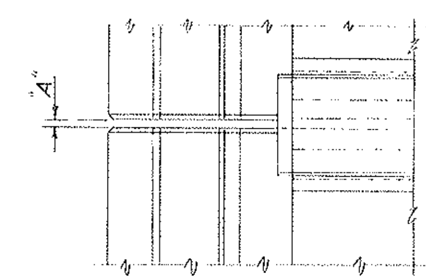
ALL CURB UNITS SHALL BE FULL WIDTH, ON GUTTER LINE, FOR SKEW ANGLES AS SPECIFIED ON THE PLANS.

ALL ANCHORS SHALL BE CAST IN PLACE BOLTS OR THREADED CAST IN PLACE CONCRETE INSERTS EXCEPT FOR CURB AND WALK UNITS WHICH MAY BE INSTALLED BY THE USE OF APPROVED DRILLED IN PLACE ANCHOR UNITS.

OPENING IN CURB AND SIDEWALK TO BE CONSTRUCTED TO THE EXACT WIDTH OF THE EXISTING DECK OPENING.



SECTION THRU EXP'N. DEVICE



PLAN

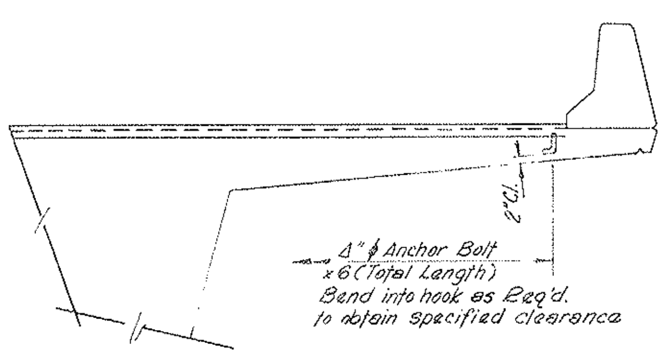
Outside Temp.	* (Type 1) Dim. "A" (Min.)	(Type 2) Dim. "A" (Min.)	(Type 3) Dim "A" (Min.)
30°	1 5/8"	2 1/4"	2 3/4"
40°	1 1/2"	2 1/8"	2 5/8"
50°	1 3/8"	2"	2 1/2"
60°	1 1/4"	1 7/8"	2 3/8"
70°	1 1/8"	1 5/8"	2 1/8"
80°	1"	1 1/2"	2"
90°	7/8"	1 3/8"	1 3/4"
100°	3/4"	1 1/4"	1 5/8"

Premolded Bridge Expansion Device

Outside Temp.	(Type 4) Dim. "A" (Min.)	(Type 6) Dim "A" (Min.)	(Type) Dim. "A" (Min.)
30°	4 3/8"	5 3/8"	
40°	4 1/8"	4 7/8"	
50°	3 7/8"	4 1/2"	
60°	3 5/8"	4"	
70°	3 1/4"	3 5/8"	
80°	3"	3 1/4"	
90°	2 3/4"	2 3/4"	
100°	2 1/2"	2 3/4"	

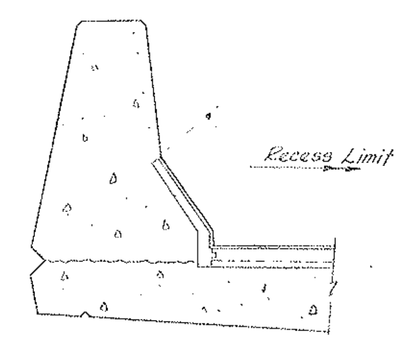
Premolded Bridge Expansion Device

* Bridge Expansion Device Type 1 to be used.



△" ϕ Anchor Bolt x 6 (Total Length)
Bend into hook as Req'd. to obtain specified clearance

SECTION (A)



ELEVATION

DETAILS OF EXPANSION JOINT AT BRIDGE RAIL

	INITIAL	DATE	
DESIGNED BY	A.E.	11-72	CHECKED BY
CHECKED BY			QUANTITIES BY
DETAILED BY	JRE	10-73	CHECKED BY

DIVISION OF HIGHWAYS

BRIDGE EXPANSION DEVICE
PREMOLDED ARMORED

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	J.R. Ewert		

Drawing Number B-16 of 17 Drawings

Revision Dates (Preliminary Stage Only)

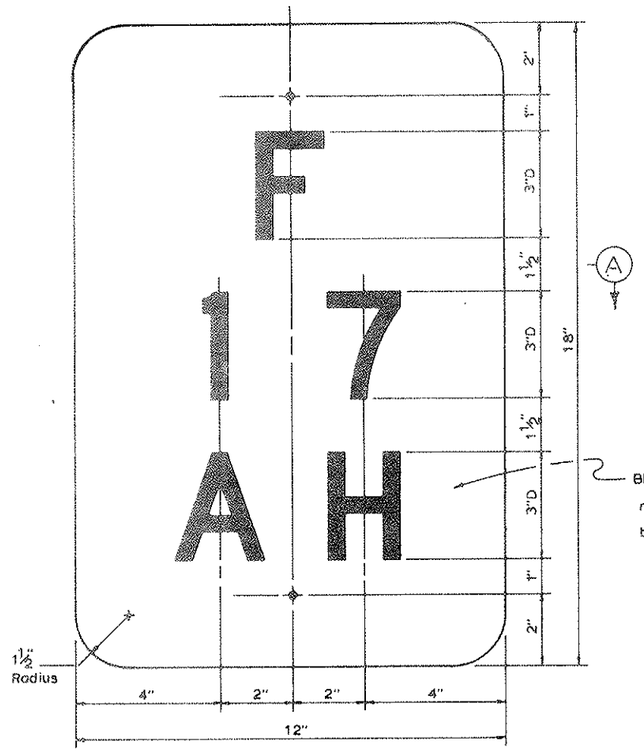
(11/14)

BRIDGE STANDARD -80-

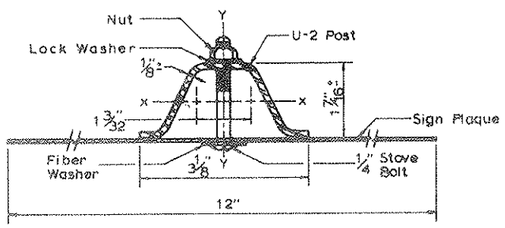
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	57	

REVISIONS		

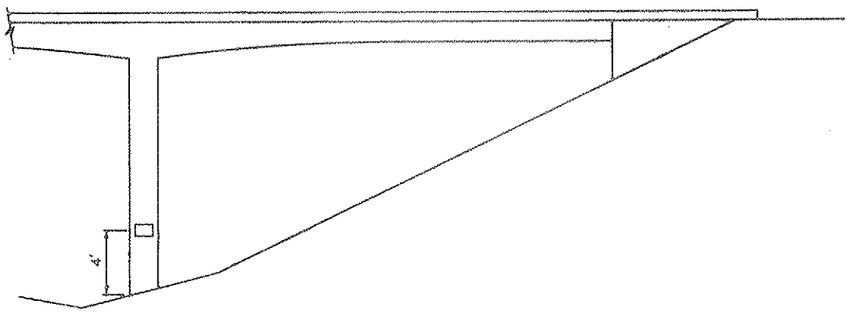
VOID
BY CONSTRUCTION DATE 6-24-77



STRUCTURE IDENTIFICATION PANEL
(SAMPLE NUMBERS & LETTERS)



SECTION (A)



STRUCTURE NUMBER LOCATION
ON PIERS

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.

SIGN PANEL SHALL BE FABRICATED FROM EITHER SHEET STEEL 0.0598 MIN. THICKNESS OR SHEET ALUMINUM 0.080 MIN. THICKNESS.

SIGN PANEL SHALL BE GROUND MOUNTED.

U-2 POST SHALL MEET REQUIREMENTS OF PAR. 4.5 U.S. DEPT. OF COMMERCE, COMMERCIAL STANDARD 184-81. ACCEPTABLE MATERIAL INCLUDES REROLLED RAILROAD RAILS. U-2 POST SHALL WEIGH 2 LBS. PER FT. EXCEPT THAT A MILL TOLERANCE OF MINUS 3-1/2% OF THE WEIGHT OF ANY ONE POST WILL BE ALLOWED. ALTERNATE METAL POST WILL BE ACCEPTABLE IF SECTION MODULUS IS AT LEAST 0.200 IN.^{3} ABOUT THE X-X AXIS AND AT LEAST 0.280 IN.^{3} ABOUT THE Y-Y AXIS.

SIGN PANEL SHALL BE FASTENED DIRECTLY TO THE POST WITH TWO 1/4" GALVANIZED OR CADMIUM PLATED STOVE BOLTS. A PLASTIC FIBER WASHER SHALL BE PLACED BETWEEN THE BOLTS HEAD AND THE FACE OF THE PANEL. A GALVANIZED OR CADMIUM PLATED LOCK WASHER SHALL BE PLACED UNDER THE NUT ON THE BACK OF THE POST. EXPOSED BOLT HEADS AND FIBER WASHERS ON THE FACE OF THE SIGN PANEL SHALL BE PAINTED TO MATCH THE SURROUNDING COLOR.

LETTERS AND NUMBERS SHALL BE SERIES "D". THEY SHALL BE 3" HIGH.

THE CORRECT STRUCTURE NUMBER IS SHOWN ON THE PLANS.

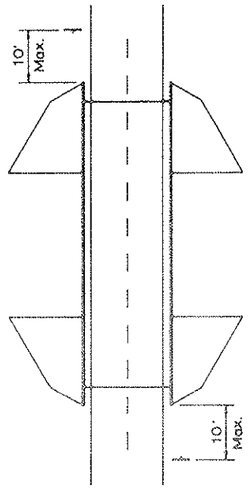
(1) OMIT STRUCTURE NUMBER STANDARDS WHERE A RAILROAD TRACK CROSSES OVER THE ROADWAY.

STRUCTURE NUMBER STANDARD SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE WORK.

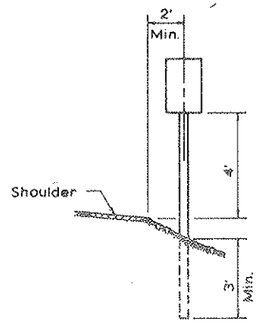
IN ADDITION TO THE REQUIREMENTS STATED ABOVE, STRUCTURE NUMBERS FOR HIGHWAYS PASSING UNDER CROSSROADS ARE TO BE PLACED AT THE FOLLOWING POINTS:

(A) FOR STRUCTURES OF THREE OR MORE SPANS, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF THE END COLUMN OF THE RIGHT HAND PIER.

(B) FOR TWO SPAN STRUCTURES, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF EACH END COLUMN OF THE CENTER PIER.



(1) STANDARD LOCATION DETAIL



U-2 POST IN GROUND

DESIGNED BY A.E. 11-73
CHECKED BY
DETAILED BY B.R. 1-78

DIVISION OF HIGHWAYS

STRUCTURE NUMBER STANDARD

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	B.R.Lee		
Drawing Number	B-17	of 17	Drawings

(7-1-74)

Revision Dates (Preliminary Stage Only)

FEDERAL ROAD REGION NO	DISTRICT	PROJ NO	SHEET NO	TOTAL SHEETS
VIII	COLORADO	I 70 2(52)197	58	

	REVISIONS		
R1	4-17-75	Rev. Summary	JRE
R2	4-29-75	Rev. Summary, Note	B.D.E.
~~R3~~	~~5-6-75~~	~~Note~~	WCB

GENERAL NOTES:

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

ALL CONCRETE SURFACES AS REFERRED TO IN THE SPECIFICATIONS SHALL RECEIVE A CLASS 7 SURFACE FINISH.

ALL CONCRETE CHAMFERS SHALL BE 3/4 INCH UNLESS OTHERWISE NOTED.

EXPANSION JOINT MATERIAL SHALL MEET A.A.S.H.T.O. SPECIFICATION M 213-65 AND SHALL BE INCLUDED IN THE PAYMENT FOR ITEM NO. 601.

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

WHEN EXCAVATING FOR FOOTINGS, THE FINAL SIX INCHES IN DEPTH SHALL BE DONE BY HAND LABOR METHODS.

FOOTINGS IN ROCK SHALL NOT BE FORMED BUT SHALL BE PLACED AGAINST UNDISTURBED ROCK.

FOR DETAILS OF STRUCTURE EXCAVATION AND STRUCTURE BACKFILL, SEE STANDARD M-206-AA.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE A.A.S.H.T.O. SPECIFICATION M-222 (A.S.T.M. A 588).

STRUCTURAL STEEL FOR ALL SECONDARY MEMBERS WITH THE EXCEPTION OF BEARING STIFFENERS AND LONGITUDINAL STIFFENERS IN THE BOTTOM FLANGE MAY BE AASHTO SPECIFICATION M-183 (A.S.T.M. A36).

IF A.S.T.M. A 36 STRUCTURAL STEEL IS USED FOR SECONDARY MEMBERS, ALL SUCH MEMBERS SHALL BE PAINTED WITH TWO COAT SHOP PAINT EXCEPT FOR EXTERIOR DIAPHRAGMS (R2) EXTERIOR DIAPHRAGMS SHALL BE LEFT UNPAINTED.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE PAINTED IN ACCORDANCE WITH SECTION 509 FOR ( ) PAINT.

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

BOLTS SHALL BE FURNISHED IN THE AMOUNT OF TWO PERCENT IN EXCESS OF THE NOMINAL NUMBER REQUIRED.

STRUCTURE WAS ANALYZED USING LOAD FACTOR DESIGN EXCEPT TRANSVERSE DECK SLAB WHICH WAS ANALYZED USING SERVICE LOAD DESIGN.

GRADE 60 REINFORCING STEEL REQUIRED FOR #5 BARS AND LARGER. GRADE 40 OR GRADE 60 MAY BE FURNISHED FOR #4 BARS.

THE FOLLOWING TABLE SHOWS THE MINIMUM LAP FOR COMMON BAR SIZES.

BAR SIZE NUMBER		4	5	6	7	8	9	10	11
SPLICE	GRADE 40	1'-0"	1'-3"	1'-6"	1'-9"	2'-2"	2'-8"	3'-5"	4'-3"
LENGTH	GRADE 60	1'-6"	1'-11"	2'-3"	2'-8"	3'-0"	3'-5"	4'-2"	5'-0"

E.F. = EACH FACE
N.F. = NEAR FACE
F.F. = FAR FACE

(B) CROSS REFERENCE DRAWING NUMBER
SECTION OR DETAIL IDENTIFICATION

DESIGNED BY	A.E.	3-75	CHECKED BY	L.A.W.	3-75
CHECKED BY	A.G.	3-75	QUANTITIES BY		
DETAILED BY	R.B.	3-75	CHECKED BY	A.E.	3-75

Bottom Elevations of Piling Shown are for Estimating Purposes. Final Elevations to be Determined in Field.

LOADING DATA:

LIVELOAD: A.A.S.H.T.O. HS-20-44 OR INTERSTATE ALTERNATE
DEADLOAD: ASSUMES 25 LBS. PER SQ. FT. FOR BITUMINOUS PAVEMENT.

DESIGN DATA:

A.A.S.H.T.O. 1973 UNIT STRESSES, AND 1974 INTERIM SPECIFICATIONS, EXCEPT AS NOTED.

REINFORCING STEEL:	GRADE 60 –	FY = 60,000 LBS. PER SQ. IN. FS = 24,000 LBS. PER SQ. IN.
	GRADE 40 –	FY = 40,000 LBS. PER SQ. IN. FS = 20,000 LBS. PER SQ. IN.
STRUCTURAL STEEL:	A36, GRADE 36 –	FY = 36,000 LBS. PER SQ. IN.
	A588, GRADE 50 –	FY = 50,000 LBS. PER SQ. IN.
CONCRETE:	CLASS A & D –	F'c = 3000 LBS. PER SQ. IN. N = 9
	CLASS S – (FOR LIMITS SEE PLANS.)	F'c = 5000 LBS. PER SQ. IN.

SUMMARY OF QUANTITIES

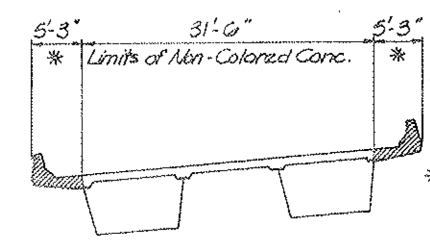
	Item	Discription	Unit	Super-Structure	Abut. 1	Pier 2	Abut. 3	Totals	
	206	Structure Excavation	Cu. Yd.		~~123~~ ~~116~~	~~125~~ ~~154~~	~~116~~ ~~118~~	~~388~~ 364	
	206	Structure Backfill (Class 2)	Cu. Yd.		~~54~~ 57	~~82~~ 64	~~56~~ 50	~~192~~ 171	
①	403	Hot Bituminous Pavement ( )	Ton	122				122	
①	411	Asphalt Cement ( )	Ton						
	502	Steel Piling (HP 12X74)	Lin. Ft.		237.1 ~~248~~		383.3 ~~399~~	620.4 ~~625~~	
	509	Structural Steel	Lbs.	275,192				275,192	R2
②	512	Bearing Device (0 to 250 Tons Capacity)	Ea.		2		2	4	
②	512	Bearing Device (251 to 500 Tons Capacity)	Ea.			2		2	
①	515	Waterproofing (Membrane)	Sq. Yd.	1147				1147	
	518	Bridge Expansion Device (Type I)	Lin. Ft.	76				76	R1
	601	Concrete Class A (Bridge)	Cu. Yd.			35.39 ~~36~~		~~36~~	35.39
	601	Concrete Class A (Bridge) (Colored)	Cu. Yd.		39.03		~~42~~ 38.78	~~81~~	77.81
	601	Concrete Class D (Bridge)	Cu. Yd.	~~222~~ 207.48			54.85	~~272~~	207.48
	601	Concrete Class D (Bridge) (Colored)	Cu. Yd.	~~80~~ 141.62	63	57.23	57	~~200~~	255.70
	602	Reinforcing Steel	Lbs.	~~90,491~~ 97,080	~~10,020~~ 12,162	~~2,826~~ 2,901	~~9,728~~ 11,827	~~113,065~~	123,970
~~③~~	618	Concrete Segmental Pier (F-12-AM)	L.S.					1	
	626	Mobilization						0.2	

① Future Items

② Includes Masonry Plates

~~(R3) ③ Approximate Quantities for Information only.~~

~~③ Concrete Class S (Colored) F'c = 5000 psi (Precast) — 61 Cu. Yd.~~
~~Concrete Class S (Colored) F'c = 5000 psi (Cast-in-Place) — 20 Cu. Yd.~~
~~Reinforcing Steel — 8289 Lbs.~~
~~Prestressing Strands — 1161 Lbs.~~



PORTIONS OF DECK TO BE POURED WITH COLORED CONCRETE
Orig. Scale: 1/4" = 1'-0"

"The exterior face of the outside web of each steel box girder shall be sand blast cleaned in accordance with subsection 509.33 (b) 2 of the standard specifications. All other exposed surfaces shall be cleaned as outlined in section 509.33 (b) 1"

"Welds which are exposed to view will require weld metal with coloring characteristics similar to that of the base metal"

INDEX OF DRAWINGS

AS CONSTRUCTED
REVISED DATE: 6-24-77

BRIDGE EXPANSION DEVICES
TRANSFLEX, TYPES (150C) 200A, 400A, 650

BRIDGE DESCRIPTION

2 Cont. Spans (120'-0", 120'-0") Along Profile Line Composite Concrete Slab and welded Steel box Girders.

Over Smith Gulch Sta. 914+00 Near Vail Pass Curved, 1637.02' Radius, 8% Super, 38'-0" Roadway Curb to Curb, 2'-0" Bridge Rail Type 4

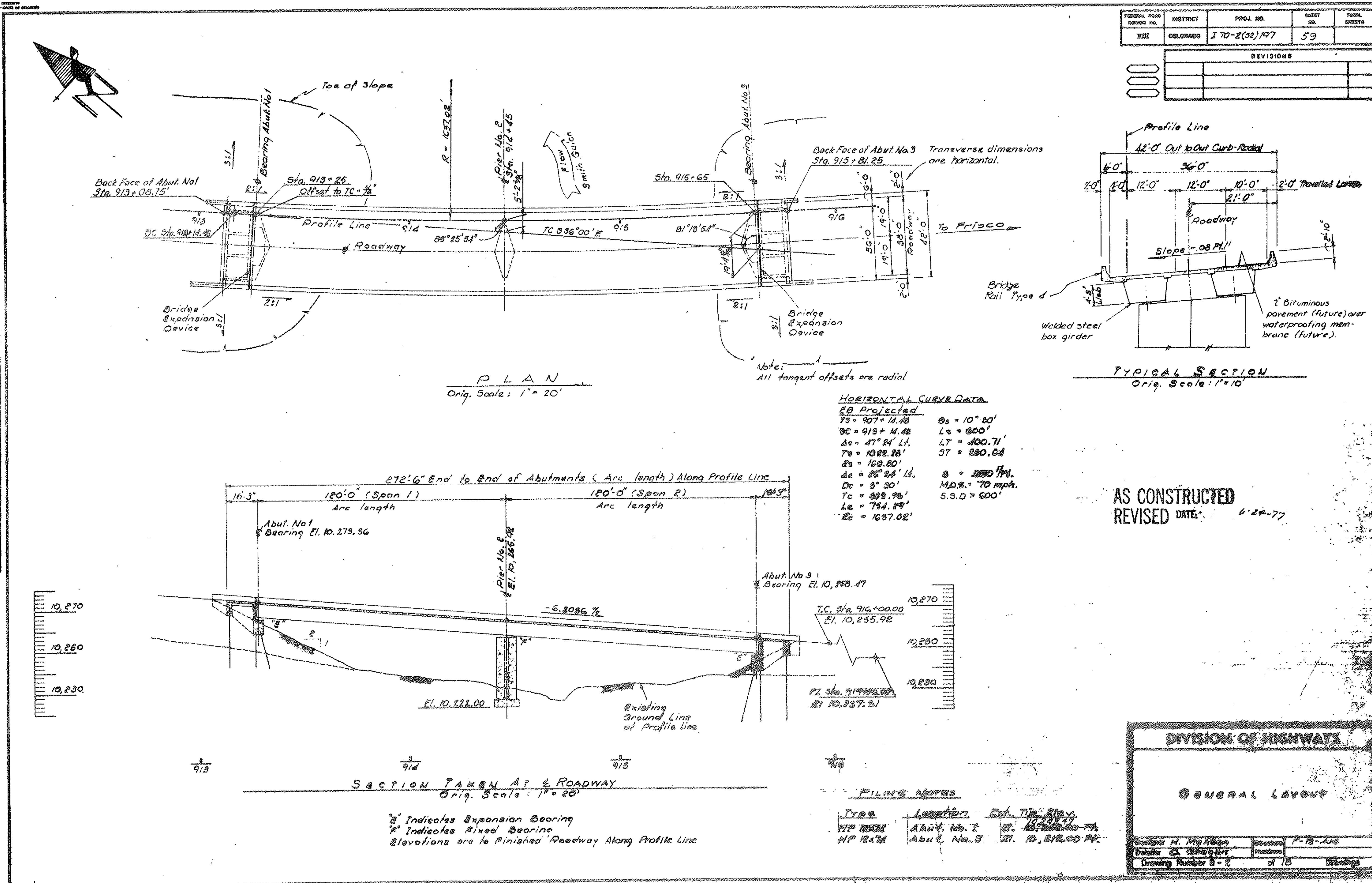
H. JOE ME... REGISTERED PROFESSIONAL ENGINEER STATE OF COLORADO

Details Reviewed
R. Schumacher P.E.
Bridge Engineer Date 3/26/75

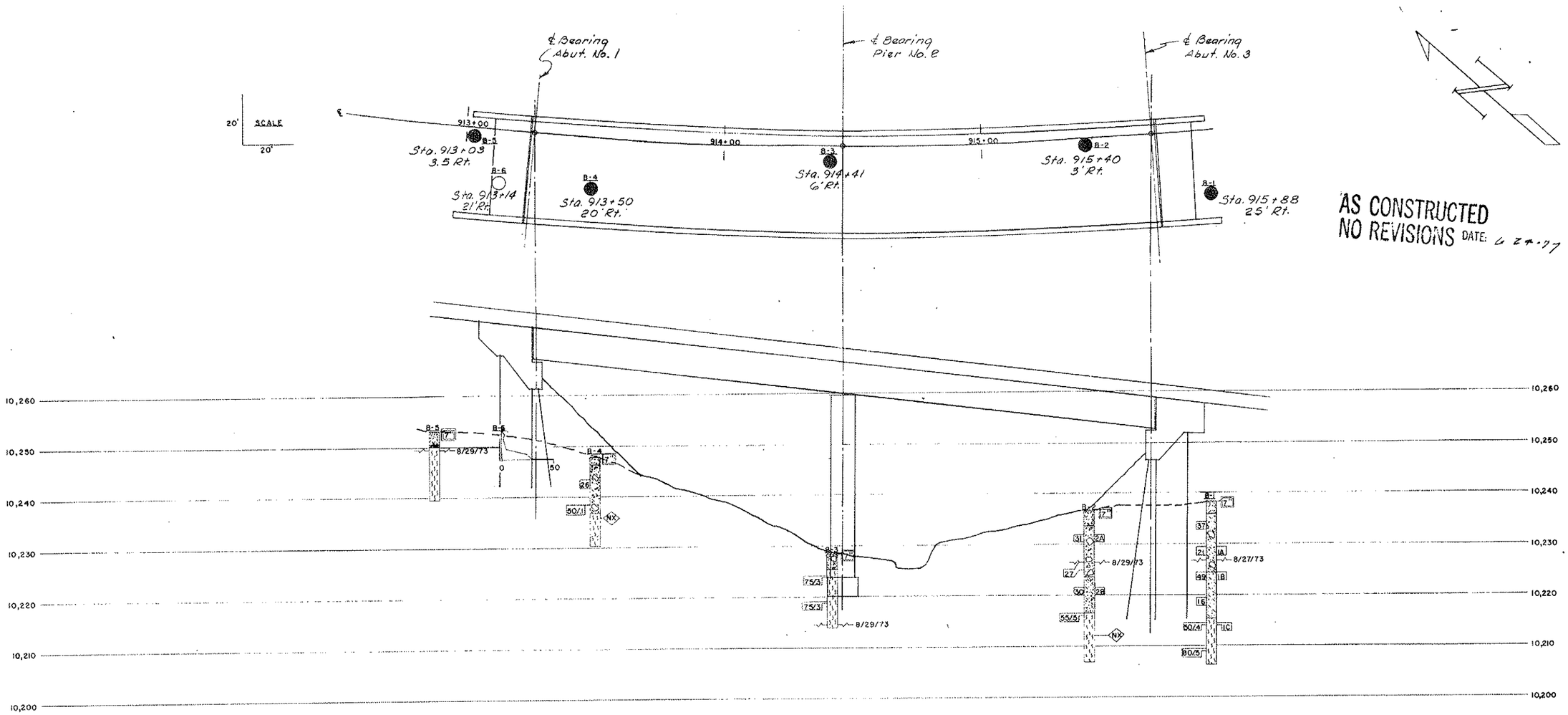
DIVISION OF HIGHWAYS

GENERAL INFORMATION
SUMMARY OF QUANTITIES

Station 913+08.75 to		
Station 915+81.25		
Near Vail Pass Sec.	T. 6 S.	R. 79 W.
Designer A. Eriksen	Structure Numbers	F-12-AM
Detailer R. Burns		
Drawing Number B-1	of 18	Drawings


FEDERAL ROAD REGION NO. XIII
DISTRICT COLORADO
PROJ. NO. I 70-2(52)197
SHEET NO. 59
REVISIONS
Toe of Slope
Bearing Abut. No.1
R = 1637.02'
Pier No. 2
Sta. 914+45
Flow
Smith Gulch
Bearing Abut. No.3
Back Face of Abut. No.1
Sta. 913+08.75'
Sta. 913+25
Offset to TC
Sta. 915+65
Back Face of Abut. No.3
Sta. 915+81.25
Transverse dimensions are horizontal.
Profile Line
Roadway
TC S36°00' E
To Frisco
Bridge Expansion Device
Note:
All tangent offsets are radial
PLAN
Orig. Scale: 1" = 20'
Profile Line
42'-0" Out to Out Curb-Radial
36'-0"
12'-0"
10'-0"
21'-0"
2'-0" Traveled Lane
Roadway
Slope -.08 Ft./1'
Bridge Rail Type d
Welded steel box girder
2" Bituminous pavement (future) over waterproofing membrane (future).
TYPICAL SECTION
Orig. Scale: 1" = 10'
HORIZONTAL CURVE DATA
EB Projected
TS = 907+14.48
SC = 913+14.48
Δs = 47°24' Lt.
Ts = 1022.28'
Es = 169.80'
Δc = 26°24' Lt.
Dc = 3°30'
Tc = 383.96'
Lc = 754.29'
Rc = 1637.02'
θs = 10°30'
Ls = 600'
LT = 400.71'
ST = 200.64
M.D.S. = 70 mph.
S.S.D = 600'
AS CONSTRUCTED
REVISED DATE: 6-24-77
272'-6" End to End of Abutments (Arc length) Along Profile Line
16'-3"
120'-0" (Span 1)
Arc length
120'-0" (Span 2)
Arc length
16'-3"
Abut. No.1
Bearing El. 10,273.36
Pier No. 2
El. 10,266.92
Abut. No.3
Bearing El. 10,258.47
-6.2096 %
T.C. Sta. 916+00.00
El. 10,255.92
El. 10,222.00
Existing Ground Line of Profile Line
P.I. Sta. 917+00.00
El. 10,237.31
10,270
10,250
10,230
913
914
915
916
SECTION TAKEN AT ℄ ROADWAY
Orig. Scale: 1" = 20'
"E" Indicates Expansion Bearing
"F" Indicates Fixed Bearing
Elevations are to Finished Roadway Along Profile Line
PILING NOTES
Type
Location
Est. Tip Elev.
HP 12x53
Abut. No. 1
HP 12x74
Abut. No. 3
El. 10,216.00 Ft.
DIVISION OF HIGHWAYS
General Layout
Drawing Number B-2
of 18
Drawings

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	I70-2(52)197	60	



AS CONSTRUCTED
NO REVISIONS DATE: 6-27-77

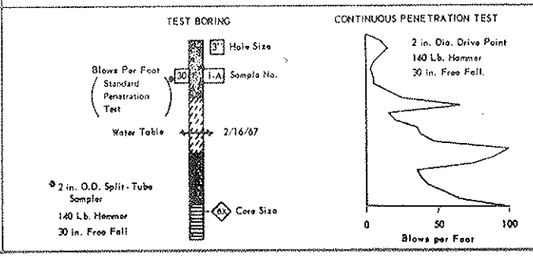
SUMMARY OF TEST RESULTS

Sample No.	Depth	Classification: Corps of Engrs. or Visual	Classification: AASHO	Grading Analysis: Percent Gravel	Coarse Sand	Fine Sand	Silt and Clay	Atterberg Limits: Liquid Limit L_w	Plastic Limit P_w	Plasticity Index I_w	Water Cont. w %	Wet Unit Weight γ P.C.F.	Unconfined Strength Q_u T.S.F.	Triaxial Shear Strength: Unconsolidated ϕ	C T.S.F.	Consolidated ϕ	C T.S.F.	Time hrs.	Press P.S.I.	Dia. Of Sample (Inches)
1A	9.0-10.5	GRAVELLY SAND	A-1-b(0)	40	31	19	10	NV	NP	NP	7.4									
1B	14.0-15.5	GRAVELLY SANDY SILT	A-4(0)	22	9	26	43	NV	NP	NP	20.2									
1C	24.0-24.4	SILTY SANDY GRAVEL	A-1-b(0)	51	11	16	22	19	19	0	10.4									
2A	4.5-6.0	SILTY SANDY GRAVEL	A-1-a(0)	53	17	19	11	NV	NP	NP	6.4									
2B	15.0-16.5	SILTY SANDY GRAVEL	A-1-b(0)	41	17	23	19	NV	NP	NP	14.1									

TYPE OF MATERIAL

- SILT, GRAVELLY
- SILT, SANDY
- GRAVEL, SANDY W/COBBLES & BOULDERS
- SANDSTONE
- GRAVEL & COBBLES
- SILT, SANDY, GRAVELLY
- GRAVEL, SANDY, SILTY
- SAND, GRAVELLY, SILTY W/COBBLES
- GRAVEL, SANDY, SILTY W/BOULDERS
- GRAVEL, SANDY, SILTY W/COBBLES & BOULDERS

LEGEND



DIVISION OF HIGHWAYS
STATE OF COLORADO

ENGINEERING GEOLOGY

Across SMITH GULCH
Sta 913+00.75 to 915+81.25
Near VAIL PASS Sec. 22 T. 6S R. 79W
Geologist A.C.B.
Made by D.L.S.
Checked by G.C.R.
Approved by
Bridge Engineer
Date: 19

STRUCTURE NO. F-18-AM
DWG. NO. B-3 OF 16

BRIDGE GEOMETRICS OUTPUT

BRIDGE BEGINS ON CIRCULAR CURVE.. ENDS ON CIRCULAR CURVE

ARC LENGTH OF BRIDGE = 240.000000 FT
CHORD LENGTH OF BRIDGE = 239.785119 FT
BEGIN OF BRIDGE STATION = 913+25.000
END OF BRIDGE STATION = 915+65.000

DEFLECTION ANGLE BETWEEN BK TANGENT AND CHORD : 15 4 5.54
DEFLECTION ANGLE BETWEEN FWD TANGENT AND CHORD : 32 19 55.13

MAX NORMAL OFFSET FROM CHORD TO CONSTRUCTION CL: 4.3963

DISTANCE FROM REFERENCE LINE(TYPE)	DESCRIPTION OF BENT LINE	DESCRIPTION OF LINE	SKEW ANGLE OF BENT LINE REFERENCED TO CHORD OR TANGENT	STATION OF INTERSECTION OF LINE AND BENT LINE	ROADWAY ELEVATION AT INTERSECTION OF LINE AND BENT LINE
.000000	REFERENCE LINE	CONSTR. CL	4 12 .0 RIGHT SKEW	913+25.000	10273.1985
		NE OUT CB		913+25.000	10272.7180
		CL GW 1		913+25.000	10273.1367
		PRO-CONTRL		913+25.000	10273.1965
		CL GW 2		913+25.000	10273.9740
		CL BRIDGE		913+25.000	10274.3927
		CL GW 3		913+25.000	10274.8113
		CL GW 4		913+25.000	10275.6486
		SW OUT CB		913+25.000	10276.0673
6.000000	1/ 20 PT.= 1 CONSTR. CL		3 56 24.0 RIGHT SKEW	913+31.000	10272.8243
ARC/REF B.T.		NE OUT CB		913+31.000	10272.3458
		CL GW 1		913+31.000	10272.7645
		PRO-CONTRL		913+31.000	10272.8243
		CL GW 2		913+31.000	10273.6018
		CL BRIDGE		913+31.000	10274.0209
		CL GW 3		913+31.000	10274.4391
		CL GW 4		913+31.000	10275.2764
		SW OUT CB		913+31.000	10275.6951
12.000000	2/ 20 PT.= 1 CONSTR. CL		3 46 48.0 RIGHT SKEW	913+37.000	10272.4520
ARC/REF B.T.		NE OUT CB		913+37.000	10271.9736
		CL GW 1		913+37.000	10272.3922
		PRO-CONTRL		913+37.000	10272.4520
		CL GW 2		913+37.000	10273.2296
		CL BRIDGE		913+37.000	10273.6482
		CL GW 3		913+37.000	10274.0669
		CL GW 4		913+37.000	10274.9042
		SW OUT CB		913+37.000	10275.3229
18.000000	3/ 20 PT.= 1 CONSTR. CL		3 36 12.0 RIGHT SKEW	913+43.000	10272.6798
ARC/REF B.T.		NE OUT CB		913+43.000	10271.8014
		CL GW 1		913+43.000	10272.0208
		PRO-CONTRL		913+43.000	10272.0798
		CL GW 2		913+43.000	10272.9573
		CL BRIDGE		913+43.000	10273.3760
		CL GW 3		913+43.000	10273.7947
		CL GW 4		913+43.000	10274.6320
		SW OUT CB		913+43.000	10274.9507
24.000000	4/ 20 PT.= 1 CONSTR. CL		3 21 36.0 RIGHT SKEW	913+49.000	10271.7076
ARC/REF B.T.		NE OUT CB		913+49.000	10271.2291
		CL GW 1		913+49.000	10271.6478
		PRO-CONTRL		913+49.000	10271.7076
		CL GW 2		913+49.000	10272.4851
		CL BRIDGE		913+49.000	10272.9038
		CL GW 3		913+49.000	10273.3225
		CL GW 4		913+49.000	10274.1598
		SW OUT CB		913+49.000	10274.5786

Back Face Abut. 1

	N.E. Outside	913+08.691	10,273.7451
	Profile Line	913+09.250	10,274.2336
	C.L. Roadway	913+09.098	10,275.4198
	S.W. Outside	913+09.130	10,277.0944
1/4 Pt.	N.E. Outside	913+12.392	10,273.5120
	Profile Line	913+12.444	10,273.9905
	C.L. Roadway	913+12.552	10,275.1867
	S.W. Outside	913+12.708	10,276.8613
1/2 Pt.	N.E. Outside	913+16.092	10,273.2789
	Profile Line	913+16.127	10,273.7674
	C.L. Roadway	913+16.206	10,274.9538
	S.W. Outside	913+16.316	10,276.6287
3/4 Pt.	N.E. Outside	913+19.793	10,273.0459
	Profile Line	913+19.811	10,273.5344
	C.L. Roadway	913+19.860	10,274.7206
	S.W. Outside	913+19.924	10,276.3952

Front Face Abut. 1

	N.E. Outside	913+23.494	10,272.8128
	N.E. Inside	913+23.496	10,273.1395
	Profile Line	913+23.580	10,273.4580
	C.L. Roadway	913+23.514	10,274.6544
	S.W. Inside	913+23.531	10,276.1688
	S.W. Outside	913+23.532	10,276.1621

30.000900	5/ 20 PT.= 1 CONSTR. CL		3 9 .0 RIGHT SKEW	913+55.000	10271.4356
ARC/REF B.T.		NE OUT CB		913+55.000	10270.9569
		CL GW 1		913+55.000	10271.2756
		PRO-CONTRL		913+55.000	10271.3354
		CL GW 2		913+55.000	10272.1129
		CL BRIDGE		913+55.000	10272.5318
		CL GW 3		913+55.000	10272.9502
		CL GW 4		913+55.000	10273.7876
		SW OUT CB		913+55.000	10274.2062
36.000000	6/ 20 PT.= 1 CONSTR. CL		2 56 24.0 RIGHT SKEW	913+61.000	10270.9632
ARC/REF B.T.		NE OUT CB		913+61.000	10270.4847
		CL GW 1		913+61.000	10270.9034
		PRO-CONTRL		913+61.000	10270.9632
		CL GW 2		913+61.000	10271.7407
		CL BRIDGE		913+61.000	10272.1596
		CL GW 3		913+61.000	10272.5780
		CL GW 4		913+61.000	10273.4153
		SW OUT CB		913+61.000	10273.8340
42.000000	7/ 20 PT.= 1 CONSTR. CL		2 44 48.0 RIGHT SKEW	913+67.000	10270.5910
ARC/REF B.T.		NE OUT CB		913+67.000	10270.1125
		CL GW 1		913+67.000	10270.5312
		PRO-CONTRL		913+67.000	10270.5910
		CL GW 2		913+67.000	10271.3685
		CL BRIDGE		913+67.000	10271.7871
		CL GW 3		913+67.000	10272.2058
		CL GW 4		913+67.000	10273.0431
		SW OUT CB		913+67.000	10273.4618
48.000000	8/ 20 PT.= 1 CONSTR. CL		2 31 12.0 RIGHT SKEW	913+73.000	10270.2187
ARC/REF B.T.		NE OUT CB		913+73.000	10269.7403
		CL GW 1		913+73.000	10270.1589
		PRO-CONTRL		913+73.000	10270.2187
		CL GW 2		913+73.000	10270.9963
		CL BRIDGE		913+73.000	10271.4149
		CL GW 3		913+73.000	10271.8336
		CL GW 4		913+73.000	10272.6709
		SW OUT CB		913+73.000	10273.0896
54.000000	9/ 20 PT.= 1 CONSTR. CL		2 18 36.0 RIGHT SKEW	913+79.000	10269.8065
ARC/REF B.T.		NE OUT CB		913+79.000	10269.3681
		CL GW 1		913+79.000	10269.7867
		PRO-CONTRL		913+79.000	10269.8465
		CL GW 2		913+79.000	10270.6240
		CL BRIDGE		913+79.000	10271.0427
		CL GW 3		913+79.000	10271.4614
		CL GW 4		913+79.000	10272.2987
		SW OUT CB		913+79.000	10272.7174
60.000000	10/ 20 PT.= 1 CONSTR. CL		2 6 .0 RIGHT SKEW	913+85.000	10269.4743
ARC/REF B.T.		NE OUT CB		913+85.000	10268.9958
		CL GW 1		913+85.000	10269.4145
		PRO-CONTRL		913+85.000	10269.4743
		CL GW 2		913+85.000	10270.2518
		CL BRIDGE		913+85.000	10270.6705
		CL GW 3		913+85.000	10271.0892
		CL GW 4		913+85.000	10271.9265
		SW OUT CB		913+85.000	10272.3451
66.000000	11/ 20 PT.= 1 CONSTR. CL		1 53 24.0 RIGHT SKEW	913+91.000	10269.1021
ARC/REF B.T.		NE OUT CB		913+91.000	10268.6236
		CL GW 1		913+91.000	10269.0423
		PRO-CONTRL		913+91.000	10269.1021
		CL GW 2		913+91.000	10269.8796
		CL BRIDGE		913+91.000	10270.2983
		CL GW 3		913+91.000	10270.7169
		CL GW 4		913+91.000	10271.5543
		SW OUT CB		913+91.000	10271.9729
72.000000	12/ 20 PT.= 1 CONSTR. CL		1 40 48.0 RIGHT SKEW	913+97.000	10268.7299
ARC/REF B.T.		NE OUT CB		913+97.000	10268.2514
		CL GW 1		913+97.000	10268.6701
		PRO-CONTRL		913+97.000	10268.7299
		CL GW 2		913+97.000	10269.5076
		CL BRIDGE		913+97.000	10269.9261
		CL GW 3		913+97.000	10270.3447
		CL GW 4		913+97.000	10271.1821
		SW OUT CB		913+97.000	10271.6007
78.000000	13/ 20 PT.= 1 CONSTR. CL		1 28 12.0 RIGHT SKEW	914+ 3.000	10268.3577
ARC/REF B.T.		NE OUT CB		914+ 3.000	10267.8792
		CL GW 1		914+ 3.000	10268.2979
		PRO-CONTRL		914+ 3.000	10268.3577
		CL GW 2		914+ 3.000	10269.1352
		CL BRIDGE		914+ 3.000	10269.5538
		CL GW 3		914+ 3.000	10269.9725
		CL GW 4		914+ 3.000	10270.8098
		SW OUT CB		914+ 3.000	10271.2285
84.000000	14/ 20 PT.= 1 CONSTR. CL		1 15 36.0 RIGHT SKEW	914+ 9.000	10267.9855
ARC/REF B.T.		NE OUT CB		914+ 9.000	10267.5070
		CL GW 1		914+ 9.000	10267.9256
		PRO-CONTRL		914+ 9.000	10267.9855
		CL GW 2		914+ 9.000	10268.7630
		CL BRIDGE		914+ 9.000	10269.1816
		CL GW 3		914+ 9.000	10269.6003
		CL GW 4		914+ 9.000	10270.4376
		SW OUT CB		914+ 9.000	10270.8563

90.000000	15/ 20 PT.= 1 CONSTR. CL		1 3 .0 RIGHT SKEW	914+15.000	10267.6132
ARC/REF B.T.		NE OUT CB		914+15.000	10267.1368
		CL GW 1		914+15.000	10267.5534
		PRO-CONTRL		914+15.000	10267.6132
		CL GW 2		914+15.000	10268.3907
		CL BRIDGE		914+15.000	10268.8094
		CL GW 3		914+15.000	10269.2281
		CL GW 4		914+15.000	10270.0654
		SW OUT CB		914+15.000	10270.4841
96.000000	16/ 20 PT.= 1 CONSTR. CL		0 50 24.0 RIGHT SKEW	914+21.000	10267.2410
ARC/REF B.T.		NE OUT CB		914+21.000	10266.7625
		CL GW 1		914+21.000	10267.1812
		PRO-CONTRL		914+21.000	10267.2410
		CL GW 2		914+21.000	10268.0185
		CL BRIDGE		914+21.000	10268.4372
		CL GW 3		914+21.000	10268.8559
		CL GW 4		914+21.000	10269.6932
		SW OUT CB		914+21.000	10270.1119
102.000000	17/ 20 PT.= 1 CONSTR. CL		0 37 48.0 RIGHT SKEW	914+27.000	10266.8688
ARC/REF B.T.		NE OUT CB		914+27.000	10266.3903
		CL GW 1		914+27.000	10266.8090
		PRO-CONTRL		914+27.000	10266.8688
		CL GW 2		914+27.000	10267.6463
		CL BRIDGE		914+27.000	10268.0650
		CL GW 3		914+27.000	10268.4836
		CL GW 4		914+27.000	10269.3210
		SW OUT CB		914+27.000	10269.7396
108.000000	18/ 20 PT.= 1 CONSTR. CL		0 25 12.0 RIGHT SKEW	914+33.000	10266.4966
ARC/REF B.T.		NE OUT CB		914+33.000	10266.0181
		CL GW 1		914+33.000	10266.4368
		PRO-CONTRL		914+33.000	10266.4966
		CL GW 2		914+33.000	10267.2741
		CL BRIDGE		914+33.000	10267.6928
		CL GW 3		914+33.000	10268.1114
		CL GW 4		914+33.000	10268.9488
		SW OUT CB		914+33.000	10269.3674
114.000000	19/ 20 PT.= 1 CONSTR. CL		0 12 36.0 RIGHT SKEW	914+39.000	10266.1244
ARC/REF B.T.		NE OUT CB		914+39.000	10265.6459
		CL GW 1		914+39.000	10266.0646
		PRO-CONTRL		914+39.000	10266.1244
		CL GW 2		914+39.000	10266.9019
		CL BRIDGE		914+39.000	10267.3205
		CL GW 3		914+39.000	10267.7392
		CL GW 4		914+39.000	10268.5765
		SW OUT CB		914+39.000	10268.9952
120.000000	CL BRG PIER 2 CONSTR. CL		0 0 .0 RIGHT SKEW	914+45.000	10265.7522
ARC/REF B.T.		NE OUT CB		914+45.000	10265.2737
		CL GW 1		914+45.000	10265.6923
		PRO-CONTRL		914+45.000	10265.7522
		CL GW 2		914+45.000	10266.5297
		CL BRIDGE		914+45.000	10266.9483
		CL GW 3		914+45.000	10267.3670
		CL GW 4		914+45.000	10268.2043
		SW OUT CB		914+45.000	10268.6230
126.000000	1/ 20 PT.= 2 CONSTR. CL		-0 12 36.0 LEFT SKEW	914+51.000	10265.3799
ARC/REF B.T.		NE OUT CB		914+51.000	10264.9015
		CL GW 1		914+51.000	10265.3201
		PRO-CONTRL		914+51.000	10265.3799
		CL GW 2		914+51.000	10266.1575
		CL BRIDGE		914+51.000	10266.5761
		CL GW 3		914+51.000	10266.9948
		CL GW 4		914+51.000	10267.8321
		SW OUT CB		914+51.000	10268.2508
132.000000	2/ 20 PT.= 2 CONSTR. CL		-0 25 12.0 LEFT SKEW	914+57.000	10265.0077
ARC/REF B.T.		NE OUT CB		914+57.000	10264.5293
		CL GW 1		914+57.000	10264.9479
		PRO-CONTRL		914+57.000	10265.0077
		CL GW 2		914+57.000	10265.7852
		CL BRIDGE		914+57.000	10266.2039
		CL GW 3		914+57.000	10266.6226
		CL GW 4		914+57.000	10267.4599
		SW OUT CB		914+57.000	10267.8786
138.000000	3/ 20 PT.= 2 CONSTR. CL		-0 37 48.0 LEFT SKEW	914+63.000	10264.6355
ARC/REF B.T.		NE OUT CB		914+63.000	10264.1570
		CL GW 1		914+63.000	10264.5757
		PRO-CONTRL		914+63.000	10264.6355
		CL GW 2		914+63.000	10265.4130
		CL BRIDGE		914+63.000	10265.8317
		CL GW 3		914+63.000	10266.2503
		CL GW 4		914+63.000	10267.0877
		SW OUT CB		914+63.000	10267.5063
144.000000	4/ 20 PT.= 2 CONSTR. CL		-0 50 24.0 LEFT SKEW	914+69.000	10266.2633
ARC/REF B.T.		NE OUT CB		914+69.000	10263.7848
		CL GW 1		914+69.000	10264.2035
		PRO-CONTRL		914+69.000	10264.2633
		CL GW 2		914+69.000	10265.0408
		CL BRIDGE		914+69.000	10265.4595
		CL GW 3		914+69.000	10265.8781
		CL GW 4		914+69.000	10266.7155
		SW OUT CB		914+69.000	10267.1361
150.000000	5/ 20 PT.= 2 CONSTR. CL		-1 3 .0 LEFT SKEW	914+75.000	10263.8911
ARC/REF B.T.		NE OUT CB		914+75.000	10263.4126
		CL GW 1		914+75.000	10263.8313
		PRO-CONTRL		914+75.000	10263.8911
		CL GW 2		914+75.000	10264.6686
		CL BRIDGE		914+75.000	10265.0873
		CL GW 3		914+75.000	10265.5059
		CL GW 4		914+75.000	10266.3432
		SW OUT CB		914+75.000	10266.7619

FEDERAL ROAD REGION NO.	DISTRICT	PROJ NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I70-2(52) 197	61	

REVISIONS		

Note: ~~Elevations are at top of concrete deck.~~

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

DESIGNED BY | DRAWN BY | CHECKED BY | QUANTITIES BY | CHECKED BY

DIVISION OF HIGHWAYS

ELEVATIONS
(SHEET 1 OF 2)

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	L. McNamee		
Drawing Number	8 -4	of 18	Drawings

Revision Dates (Preliminary Stage Only)

BRIDGE GEOMETRICS OUTPUT (CONT.)

***** BENT LINE INPUT ***** DISTANCE FROM REFERENCE LINE (TYPE)	DESCRIPTION OF BENT LINE	DESCRIPTION OF LINE	SKEW ANGLE OF BENT LINE REFERENCED TO CHORD OR TANGENT	STATION OF INTERSECTION OF LINE AND BENT LINE	ROADWAY ELEVATION AT INTERSECTION OF LINE AND BENT LINE
156.000000 6/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 15 36.0 LEFT SKEW	914+81.000	10263.5189
		NE OUT CB		914+81.000	10263.9606
		CL GW 1		914+81.000	10263.6591
		PRO-CONTRL		914+81.000	10263.5189
		CL GW 2		914+81.000	10264.2964
		CL BRIDGE		914+81.000	10264.7150
		CL GW 3		914+81.000	10265.1337
		CL GW 4		914+81.000	10265.9710
		SW OUT CB		914+81.000	10266.3897
162.000000 7/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 28 12.0 LEFT SKEW	914+87.000	10263.1400
		NE OUT CB		914+87.000	10262.6682
		CL GW 1		914+87.000	10263.0868
		PRO-CONTRL		914+87.000	10263.1468
		CL GW 2		914+87.000	10263.9262
		CL BRIDGE		914+87.000	10264.3428
		CL GW 3		914+87.000	10264.7615
		CL GW 4		914+87.000	10265.5988
		SW OUT CB		914+87.000	10266.0175
168.000000 8/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 40 48.0 LEFT SKEW	914+93.000	10262.7764
		NE OUT CB		914+93.000	10262.2980
		CL GW 1		914+93.000	10262.7166
		PRO-CONTRL		914+93.000	10262.7764
		CL GW 2		914+93.000	10263.5519
		CL BRIDGE		914+93.000	10263.9706
		CL GW 3		914+93.000	10264.3893
		CL GW 4		914+93.000	10265.2286
		SW OUT CB		914+93.000	10265.6453
174.000000 9/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-1 53 24.0 LEFT SKEW	914+99.000	10262.4022
		NE OUT CB		914+99.000	10261.9237
		CL GW 1		914+99.000	10262.3424
		PRO-CONTRL		914+99.000	10262.4022
		CL GW 2		914+99.000	10263.1797
		CL BRIDGE		914+99.000	10264.0171
		CL GW 3		914+99.000	10264.8544
		CL GW 4		914+99.000	10265.2730
180.000000 10/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 6 .0 LEFT SKEW	915+ 5.000	10262.0300
		NE OUT CB		915+ 5.000	10261.5515
		CL GW 1		915+ 5.000	10261.9702
		PRO-CONTRL		915+ 5.000	10262.0300
		CL GW 2		915+ 5.000	10262.8075
		CL BRIDGE		915+ 5.000	10263.2262
		CL GW 3		915+ 5.000	10263.6448
		CL GW 4		915+ 5.000	10264.4822
		SW OUT CB		915+ 5.000	10264.9008
186.000000 11/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 18 36.0 LEFT SKEW	915+11.000	10261.6578
		NE OUT CB		915+11.000	10261.1793
		CL GW 1		915+11.000	10261.5980
		PRO-CONTRL		915+11.000	10261.6578
		CL GW 2		915+11.000	10262.4353
		CL BRIDGE		915+11.000	10262.8540
		CL GW 3		915+11.000	10263.2725
		CL GW 4		915+11.000	10264.1099
		SW OUT CB		915+11.000	10264.5286
192.000000 12/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 31 12.0 LEFT SKEW	915+17.000	10261.2856
		NE OUT CB		915+17.000	10260.8071
		CL GW 1		915+17.000	10261.2258
		PRO-CONTRL		915+17.000	10261.2856
		CL GW 2		915+17.000	10262.0631
		CL BRIDGE		915+17.000	10262.4817
		CL GW 3		915+17.000	10262.9004
		CL GW 4		915+17.000	10263.7377
		SW OUT CB		915+17.000	10264.1564
198.000000 13/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 43 48.0 LEFT SKEW	915+23.000	10260.9133
		NE OUT CB		915+23.000	10260.4349
		CL GW 1		915+23.000	10260.8535
		PRO-CONTRL		915+23.000	10260.9133
		CL GW 2		915+23.000	10261.6909
		CL BRIDGE		915+23.000	10262.1095
		CL GW 3		915+23.000	10262.5282
		CL GW 4		915+23.000	10263.3655
		SW OUT CB		915+23.000	10263.7842
204.000000 14/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-2 56 24.0 LEFT SKEW	915+29.000	10260.5411
		NE OUT CB		915+29.000	10260.0627
		CL GW 1		915+29.000	10260.4813
		PRO-CONTRL		915+29.000	10260.5411
		CL GW 2		915+29.000	10261.3186
		CL BRIDGE		915+29.000	10261.7373
		CL GW 3		915+29.000	10262.1560
		CL GW 4		915+29.000	10262.9933
		SW OUT CB		915+29.000	10263.4120
210.000000 15/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 9 .0 LEFT SKEW	915+35.000	10260.1689
		NE OUT CB		915+35.000	10259.6906
		CL GW 1		915+35.000	10260.1091
		PRO-CONTRL		915+35.000	10260.1689
		CL GW 2		915+35.000	10260.9466
		CL BRIDGE		915+35.000	10261.3651
		CL GW 3		915+35.000	10261.7838
		CL GW 4		915+35.000	10262.6211
		SW OUT CB		915+35.000	10263.0397
216.000000 16/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 21 36.0 LEFT SKEW	915+41.000	10259.7967
		NE OUT CB		915+41.000	10259.3182
		CL GW 1		915+41.000	10259.7369
		PRO-CONTRL		915+41.000	10259.7967
		CL GW 2		915+41.000	10260.5742
		CL BRIDGE		915+41.000	10260.9929
		CL GW 3		915+41.000	10261.4115
		CL GW 4		915+41.000	10262.2489
		SW OUT CB		915+41.000	10262.6675
222.000000 17/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 36 12.0 LEFT SKEW	915+47.000	10259.4245
		NE OUT CB		915+47.000	10258.9460
		CL GW 1		915+47.000	10259.3647
		PRO-CONTRL		915+47.000	10259.4245
		CL GW 2		915+47.000	10260.2020
		CL BRIDGE		915+47.000	10260.6207
		CL GW 3		915+47.000	10261.0393
		CL GW 4		915+47.000	10261.8767
		SW OUT CB		915+47.000	10262.2953
228.000000 18/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 46 48.0 LEFT SKEW	915+53.000	10259.0523
		NE OUT CB		915+53.000	10258.5738
		CL GW 1		915+53.000	10258.9925
		PRO-CONTRL		915+53.000	10259.0523
		CL GW 2		915+53.000	10259.8298
		CL BRIDGE		915+53.000	10260.2484
		CL GW 3		915+53.000	10260.6671
		CL GW 4		915+53.000	10261.5044
		SW OUT CB		915+53.000	10261.9231
234.000000 19/ 20 PT.= 2 ARC/REF B.T.	CONSTR. CL		-3 57 24.0 LEFT SKEW	915+59.000	10258.6801
		NE OUT CB		915+59.000	10258.2016
		CL GW 1		915+59.000	10258.6202
		PRO-CONTRL		915+59.000	10258.6801
		CL GW 2		915+59.000	10259.4576
		CL BRIDGE		915+59.000	10259.8762
		CL GW 3		915+59.000	10260.2949
		CL GW 4		915+59.000	10261.1322
		SW OUT CB		915+59.000	10261.5509
240.000000 CL BRG ABUT 3 ARC/REF B.T.	CONSTR. CL		-4 12 .0 LEFT SKEW	915+65.000	10258.1078
		NE OUT CB		915+65.000	10257.8294
		CL GW 1		915+65.000	10258.2480
		PRO-CONTRL		915+65.000	10258.3078
		CL GW 2		915+65.000	10259.0853
		CL BRIDGE		915+65.000	10259.5040
		CL GW 3		915+65.000	10259.9227
		CL GW 4		915+65.000	10260.7600
		SW OUT CB		915+65.000	10261.1787

Front Face Abut. 3

N.E. Outside	915+66.506	10,257.7346
N.E. Inside	915+66.564	10,258.0613
Profile Line	915+66.500	10,258.3797
C.L. Roadway	915+66.486	10,259.5729
S.W. Inside	915+66.469	10,260.7572
S.W. Outside	915+66.468	10,261.0838

1/4 Pt.

N.E. Outside	915+70.207	10,257.5015
Profile Line	915+70.187	10,257.9799
C.L. Roadway	915+70.140	10,259.1761
S.W. Outside	915+70.076	10,260.8508

1/2 Pt.

N.E. Outside	915+73.908	10,257.2685
Profile Line	915+73.875	10,257.7464
C.L. Roadway	915+73.794	10,258.9431
S.W. Outside	915+73.684	10,260.6178

3/4 Pt.

N.E. Outside	915+77.608	10,257.0354
Profile Line	915+77.562	10,257.5138
C.L. Roadway	915+77.448	10,258.7100
S.W. Outside	915+77.292	10,260.3847

Back Face Abut. 3

N.E. Outside	915+81.309	10,256.9023
Profile Line	915+81.250	10,257.2807
C.L. Roadway	915+81.102	10,258.4769
S.W. Outside	915+80.900	10,260.1516

Note:
Elevations are at top of Concrete deck.

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	62	

REVISIONS		

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

DESIGNED BY | CHECKED BY | DETAILED BY | CHECKED BY | QUANTITIES BY | CHECKED BY | INITIAL | DATE

DIVISION OF HIGHWAYS

ELEVATIONS
(SHEET 2 OF 2)

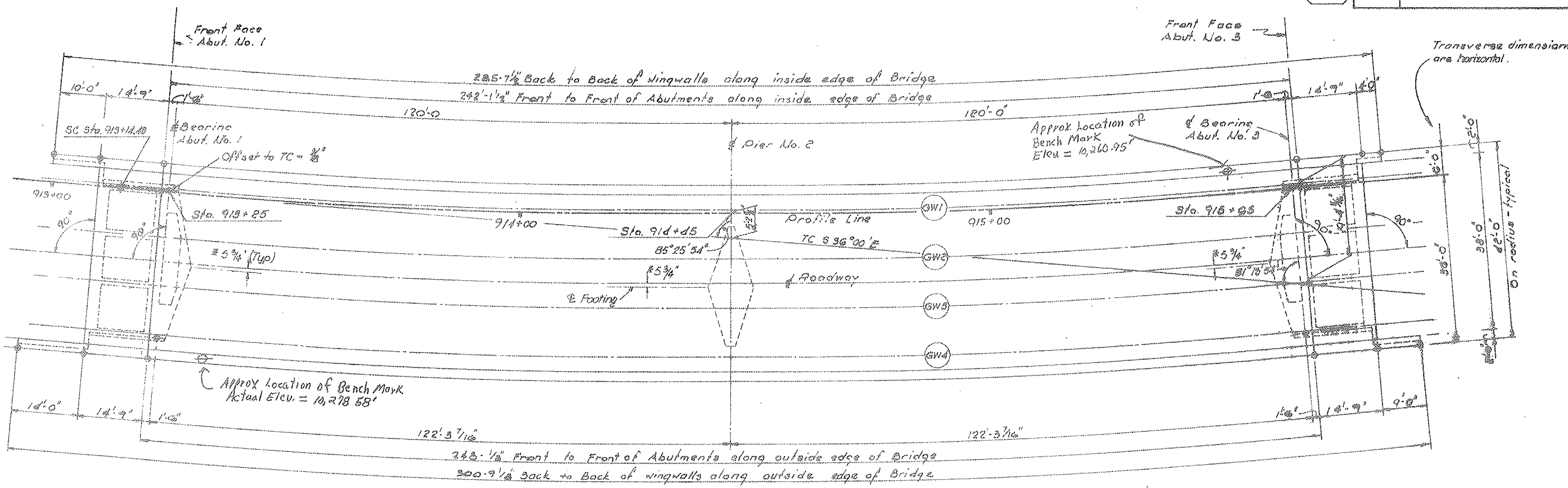
Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	L. McNamee		
Drawing Number	B - 5 of 18	Drawings	

Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2 (52) 197	63	

REVISIONS



Note:
Tangent offsets are radial.

CONSTRUCTION LAYOUT
Orig. Scale: 3/32" = 1'-0"

* Location of Abutment and Pier Footing is offset by a distance equal to rate of Superelevation times 6'-0"

AS CONSTRUCTED
REVISED DATE: 6-24-77

DIVISION OF HIGHWAYS

CONSTRUCTION LAYOUT

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	D. Grogan		

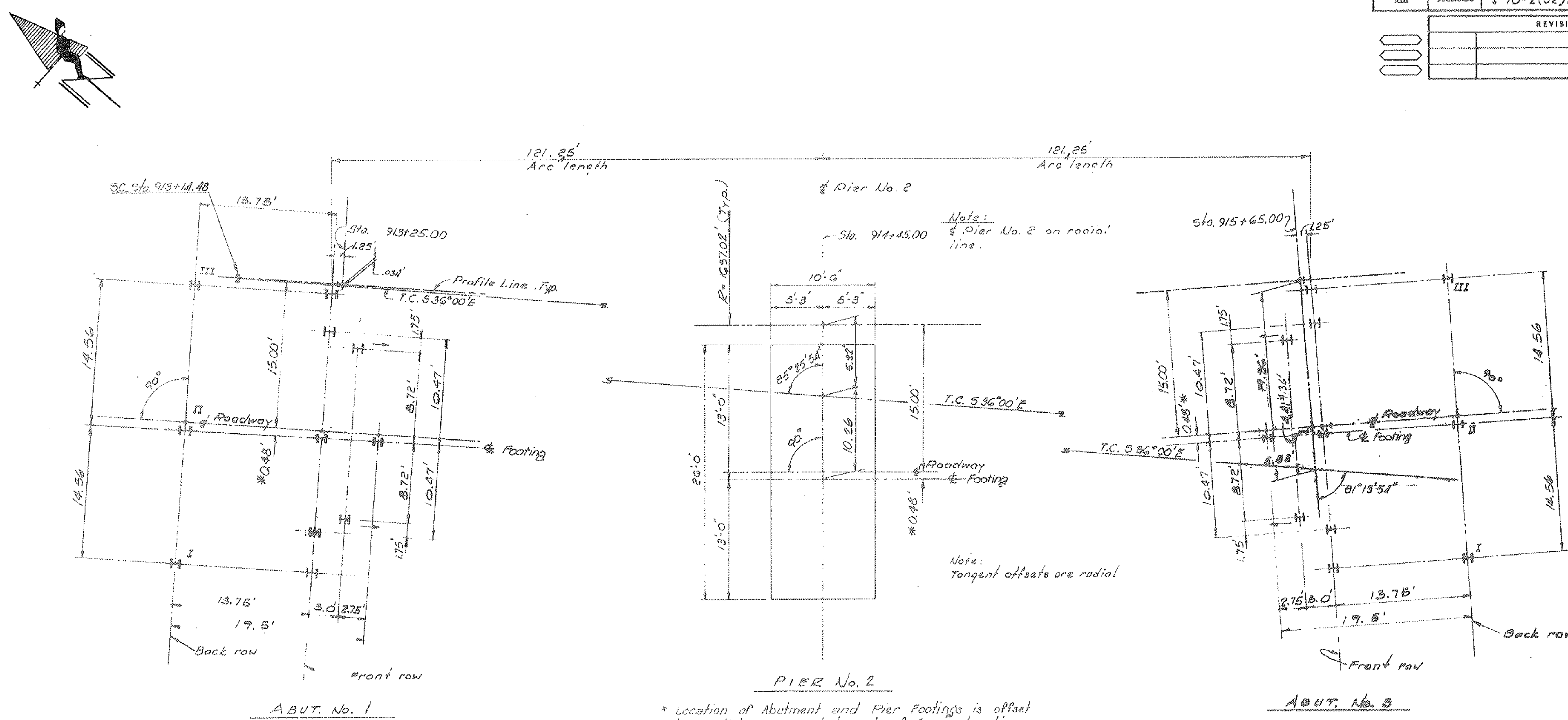
Drawing Number 3 - G of 18 Drawings

Revision Dates (Preliminary Usage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1973

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	64	

REVISIONS



* Location of Abutment and Pier Footings is offset by a distance equal to rate of Superelevation times 6'-0"

FOOTING AND PILING LAYOUT
Orig. Scale: 3/8" = 1'-0"

PILING ELEVATIONS

Abut No.	Location	Pile No.	Top El.	* Bott. El.
1	Back row	I	~~10,271.70~~	~~10,246.82~~ ~~10,248.00~~
1	Back row	II	[illegible]	[illegible]
1	Back row	III	[illegible]	[illegible]
1	Front row	All	10, 262.32	~~10,248.00~~
3	Front row	All	10, 247.50	~~10,215.00~~
3	Back row	I	10, 255.25	10,215.25 ~~10,215.00~~
3	Back row	II	10, 254.00	[illegible]
3	Back row	III	10, 252.90	[illegible]

* Bott. elevations to be verified in field.

1 10,242.45
2 10,238.15
3 10,242.20
4 10,243.74
5 10,241.90
6 10,243.74
7 10,247.15
8 10,243.95

9 10,215.00
10 10,214.75
11 10,219.75
12 10,213.79
13 10,213.42
14 10,216.38
15 10,216.13
16 10,213.04

AS CONSTRUCTED
REVISED DATE: 6-24-77

Notes:
1. All dimensions are at bottom of concrete.
2. Piling shall be End bearing HP 12 × 74 with maximum allowable pile load of 98 Tons. Maximum pile design load = 70 Tons.
3. ← Indicates piling to be battered at 3:12 – 4 per abutment.
4. Max. allowable footing pressure = 5 Tons Sq.Ft. Max design footing pressure = 5 Tons Sq.Ft.

DIVISION OF HIGHWAYS

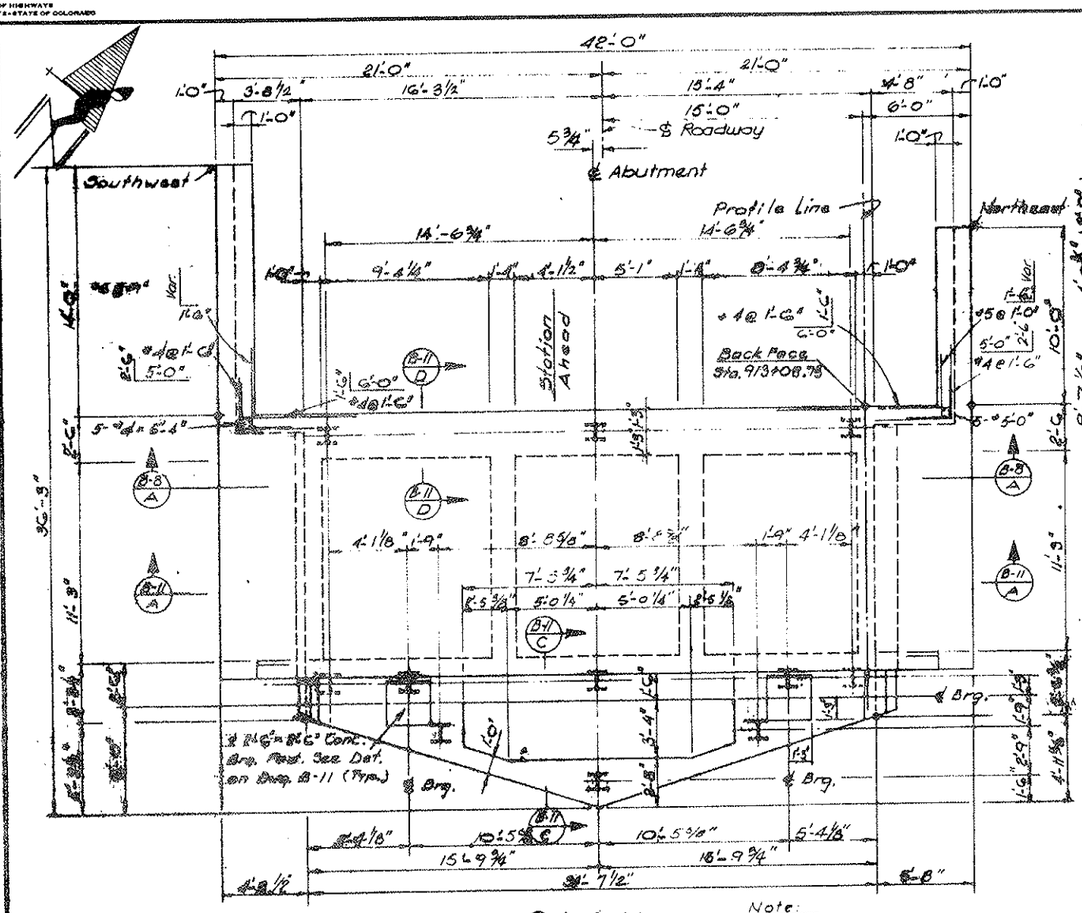
FOOTING AND PILING LAYOUT

Designer A. Eriksen
Detailer D. Eriksen
Structure Number F-[illegible]-AM
Drawing Number 3-7 of [illegible]

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS • STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1972

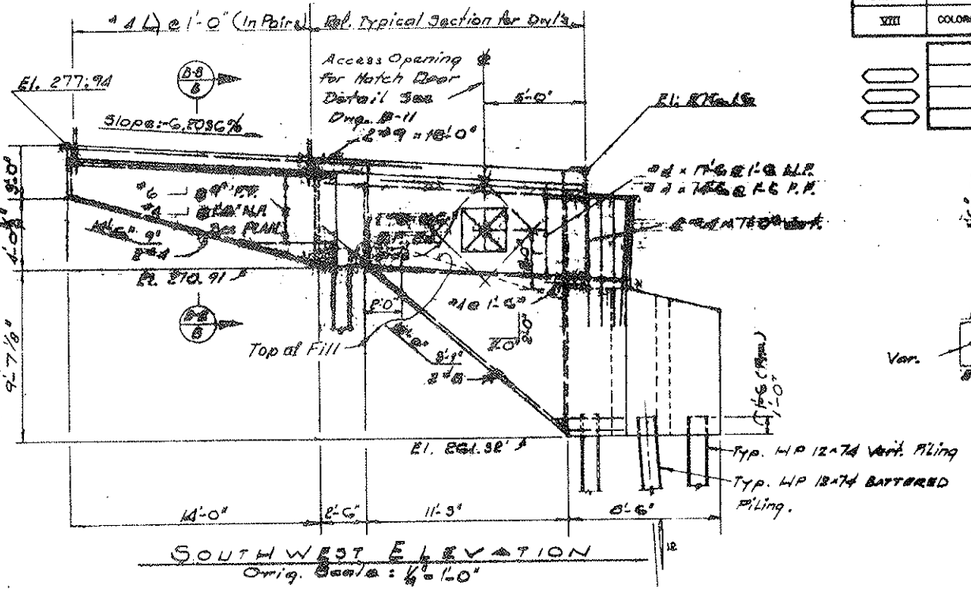
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(32) 197	65	

REVISIONS			

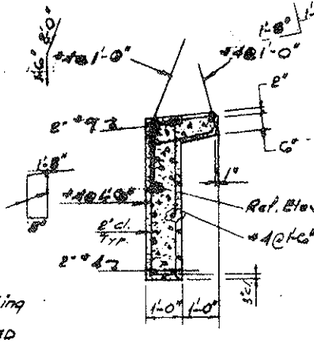


PLAN
Orig. Scale: ¼" = 1'-0"

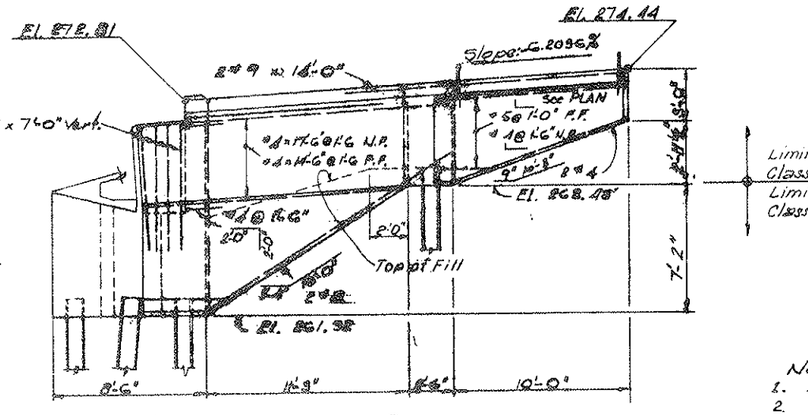
Note:
All transverse dimensions on PLAN are Horizontal.



SOUTHWEST ELEVATION
Orig. Scale: ¼" = 1'-0"



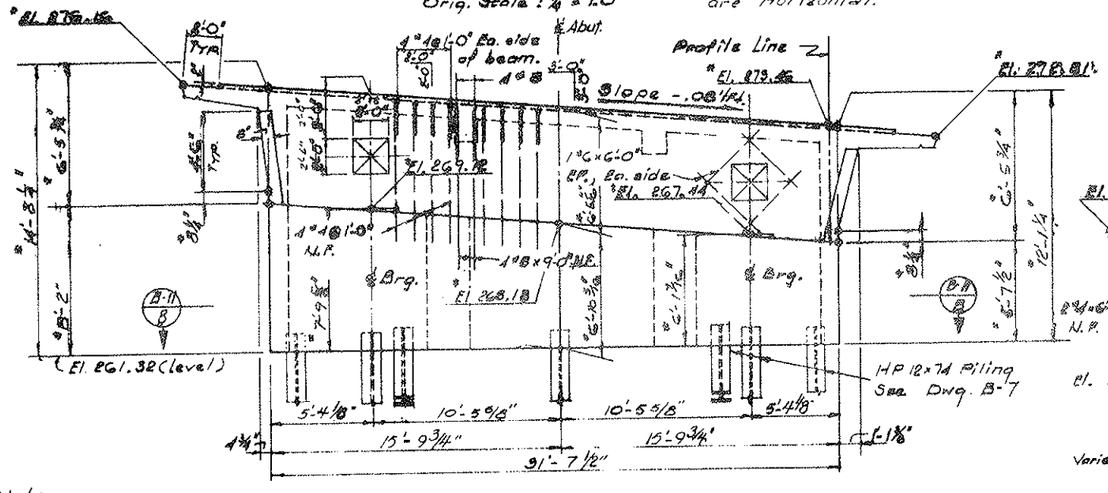
SECTION
Orig. Scale: ½" = 1'-0" (B-8 B)



NORTHEAST ELEVATION
Orig. Scale: ¼" = 1'-0"

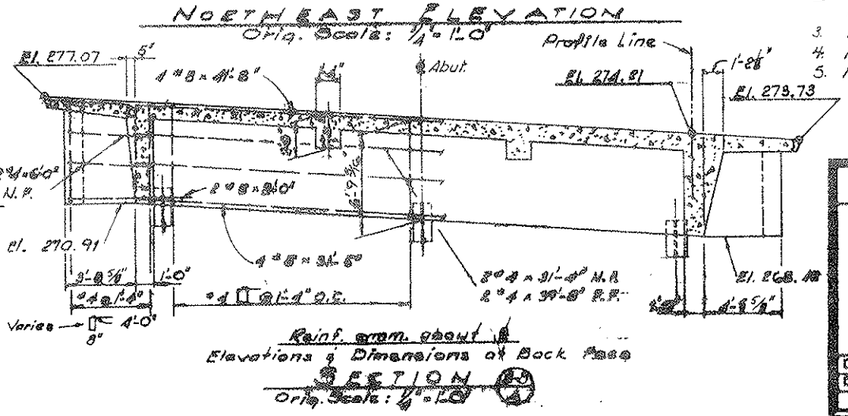
Limits of Conc. Class D (colored)
Limits of Conc. Class A (colored)

AS CONSTRUCTED
REVISED DATE: 6-24-77



Note:
* Dimensions & Elevations @ Front Face of Abut.
* Dim. & El. @ ℄ Brg.

FRONT ELEVATION
Orig. Scale: ¼" = 1'-0"



Reinf. arrgm. about ℄
Elevations & Dimensions at Back Face

SECTION
Orig. Scale: ½" = 1'-0" (B-8 A)

Notes:
1. All elevations are + 10,000 ft.
2. Fill Abutment to bearing level with Class II Backfill.
3. Reinforcing at openings shall be field cut.
4. For Concrete Limits see this Drawing.
5. For Bearing Notes See Drawing B-11.

DIVISION OF HIGHWAYS

ABUTMENT No. 1 DETAILS

Designed	A. Eriksen	Structure Number	No. 18-A41
Detailed	A. Eriksen		
Drawing Number	8 of 65 Drawings		
Revision Dates		Preliminary Issue Only	

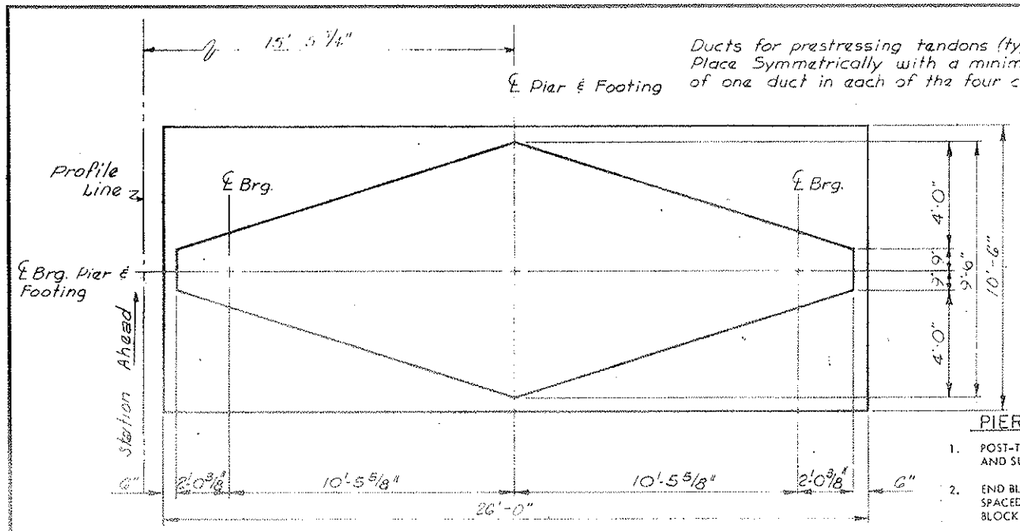
STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
STANDARD NO. 111
REV. OCTOBER 1973

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2(...) ...	66	

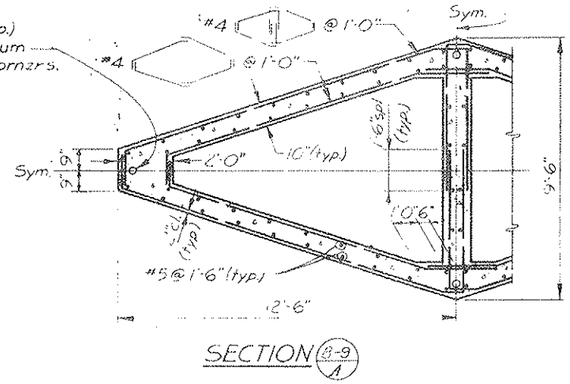
REVISIONS			
R1	4-29-75	Addition to Note	B.D.E.

VOID
BY CONSTRUCTION DATE 6-24-77

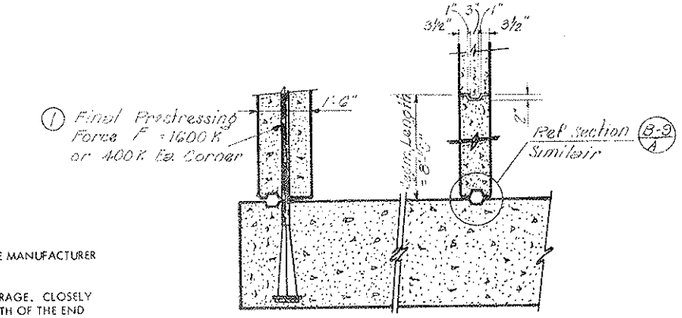
DESIGNED BY	INITIAL	DATE
CHECKED BY	A.E.	2-75
QUANTITIES BY	A.M.	2-75
CHECKED BY	A.E.	2-75
DETAILED BY	D.S.	2-75



PLAN



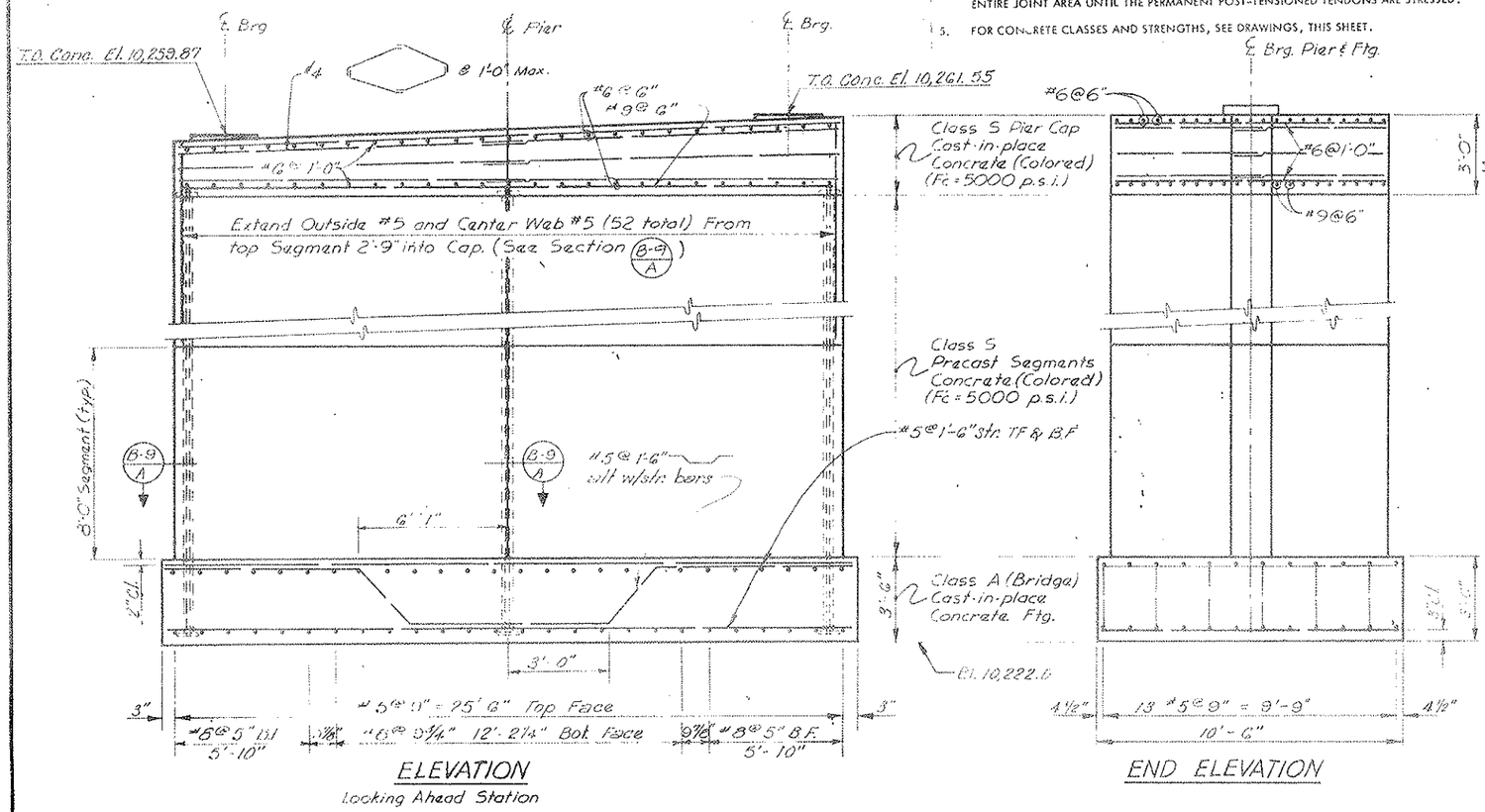
SECTION (B-9 / A)



PIER NOTES:

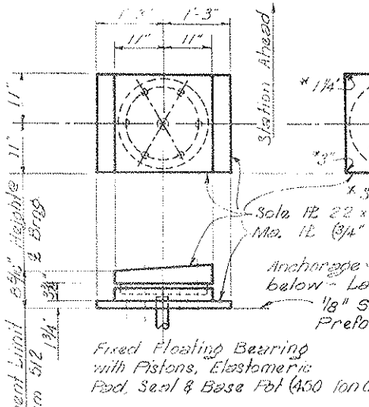
1. POST-TENSIONING TENDON ANCHORAGES IN PIER FOOTINGS AND PIER CAPS SHALL BE DETERMINED BY THE MANUFACTURER AND SUBMITTED FOR APPROVAL.
2. END BLOCKS SHALL BE USED TO DISTRIBUTE THE CONCENTRATED POST-TENSIONING FORCES AT THE ANCHORAGE. CLOSELY SPACED REINFORCEMENT SHALL BE PLACED BOTH VERTICALLY AND HORIZONTALLY THROUGHOUT THE LENGTH OF THE END BLOCK IN ACCORDANCE WITH ACCEPTED METHODS OF END BLOCK ANALYSIS.
3. ALL SEGMENTS SHALL BE MATCH-CAST TO ENSURE PROPER FIT DURING THE ERECTION STAGE. PRECAST SEGMENT HEIGHT PER BRIDGE MAY BE REVISED IN ORDER TO MINIMIZE THE CAST-IN-PLACE PORTION (R1)
4. CARE SHALL BE EXERCISED IN JOINING THE SEGMENTS WITH EPOXY TO ENSURE THAT COMPRESSION IS MAINTAINED OVER THE ENTIRE JOINT AREA UNTIL THE PERMANENT POST-TENSIONED TENDONS ARE STRESSED.
5. FOR CONCRETE CLASSES AND STRENGTHS, SEE DRAWINGS, THIS SHEET.

SECTION (B-9 / B)
Orig. Scale 1/2" = 1'-0"



ELEVATION
Looking Ahead Station

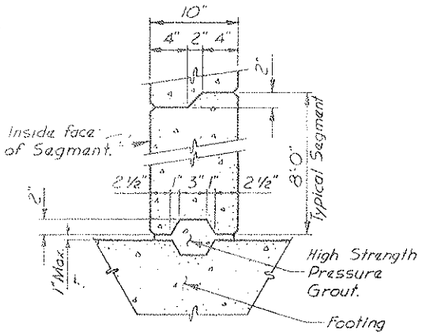
END ELEVATION



Sole Pl. to be plug welded to Girder by Field.

For Bearing notes See Dwg. B-11.

BEARING DETAIL
2 Reqd.
Orig. Scale: 3/4" = 1'-0"



CONSTR. JOINT

① FORCE F IS THE POST-TENSIONING FORCE REQUIRED IN THE PIERS AFTER ALL LOSSES INCLUDING CREEP, SHRINKAGE, FRICTION, AND ELASTIC SHORTENING FROM THE SUPERSTRUCTURE LOADS. POST-TENSIONING FORCE F IS TO BE THE SUM OF FOUR EQUAL FORCES, ONE AT EACH CORNER OF THE PIER AS SHOWN IN SECTION . .

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
Barton, Stoddard, Mathaltin and Higgins Division
1777 S. Bellaire St. Denver, Colorado 80222

DIVISION OF HIGHWAYS

PIER DETAILS

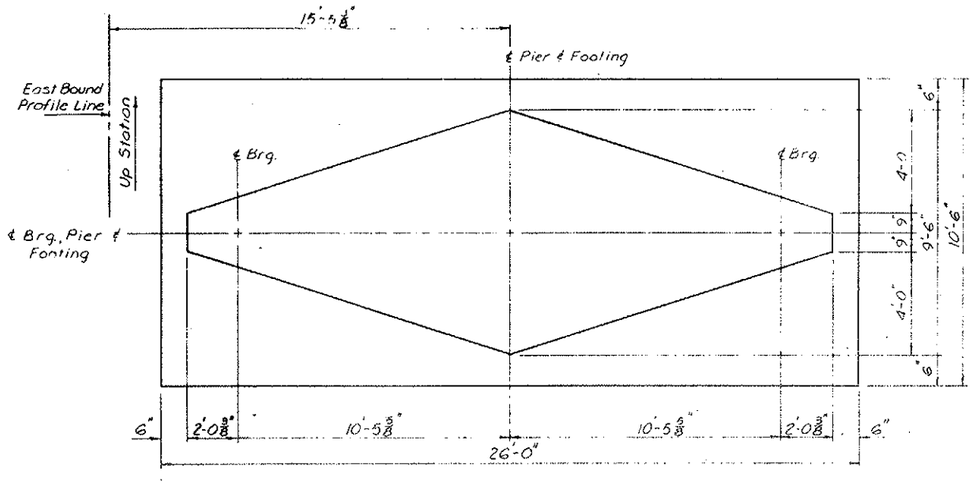
Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	D. Froman		
Drawing Number	B 9	of 178	Drawings

Revision Dates (Preliminary Stage Only)

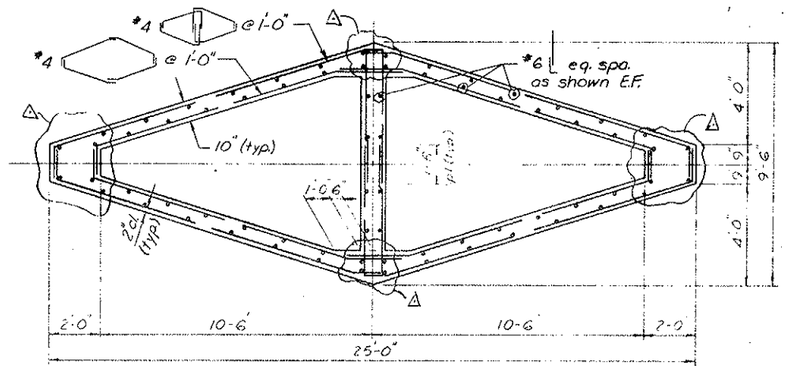
66AX

AS CONSTRUCTED
REVISED DATE: 6-24-77

07253

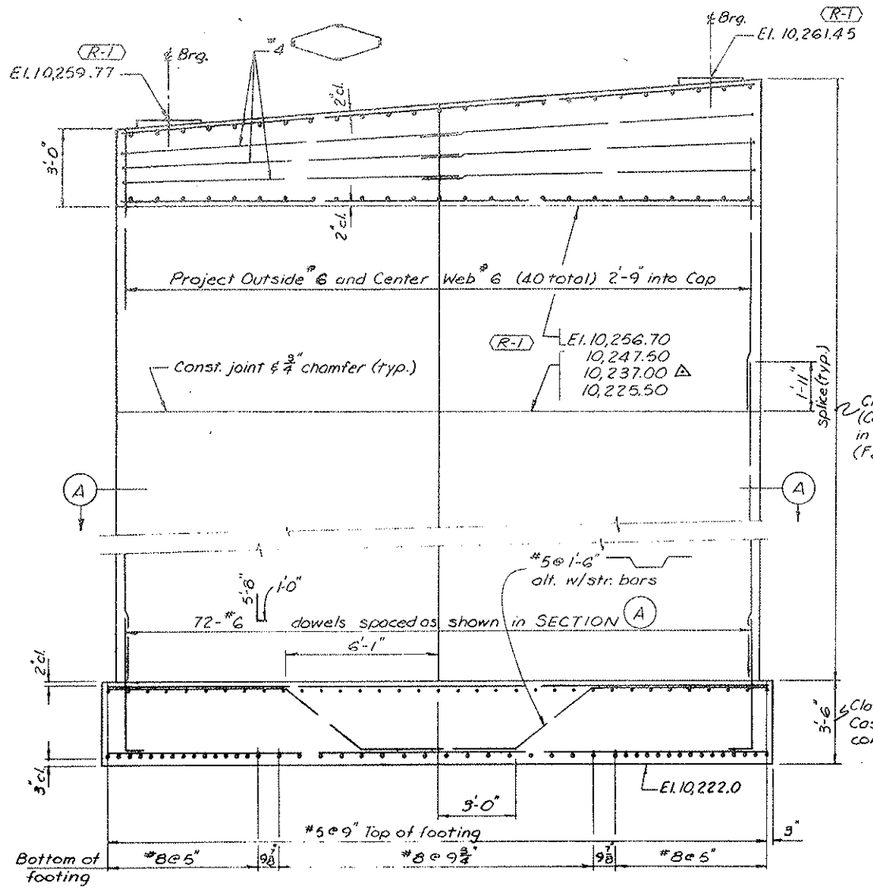


PLAN

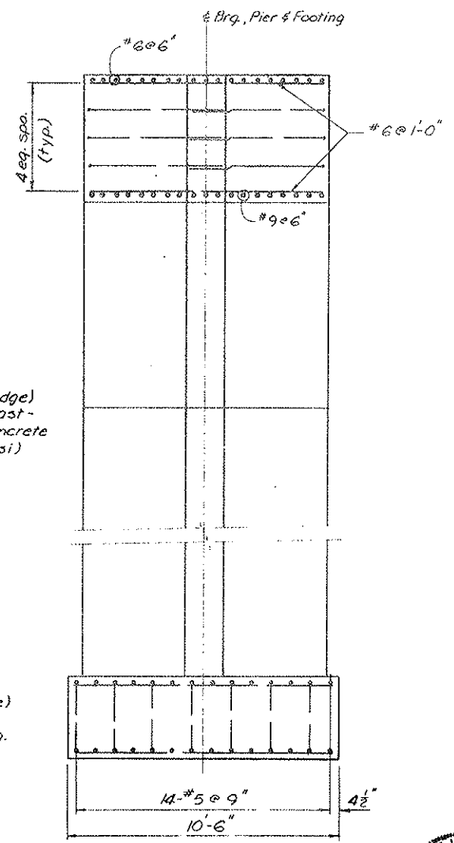


SECTION (A)

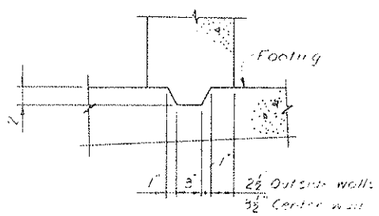
△ Do not lap bars at designated elevations (R-2)



ELEVATION



END ELEVATION



CONST. JOINT

QUANTITIES				
ITEM	DESCRIPTION	UNIT	PIER 2	
601	Concrete Class A (Bridge)	Cu.Yd.	35.4	
601	Concrete CLS (Bridge)(colored)	Cu.Yd.	82.0	
(1) 602	Reinforcing Steel (Gr. 60)	Lb.	11,380	(R-1) (R-2)
(1) Former Reinf. Steel Quantity		Lb.	9594	
Additional Reinf. Steel		Lb.	1786	(R-1) (R-2)

REVISIONS			
R-1	6-19-75	Rev. elevs., quant., Add const. jt.	CLB
R-2	6-25-75	Rev. laps & quant.	HH

I 70-2(52) 197 VAIL PASS STR. F-12-AM

CONVENTIONAL REINFORCING FOR PIER 2

INTERNATIONAL ENGINEERING COMPANY, INC.

Designed RAH Chkd. RAH Submitted
Drawn TCF Insp. Recommended
Approved

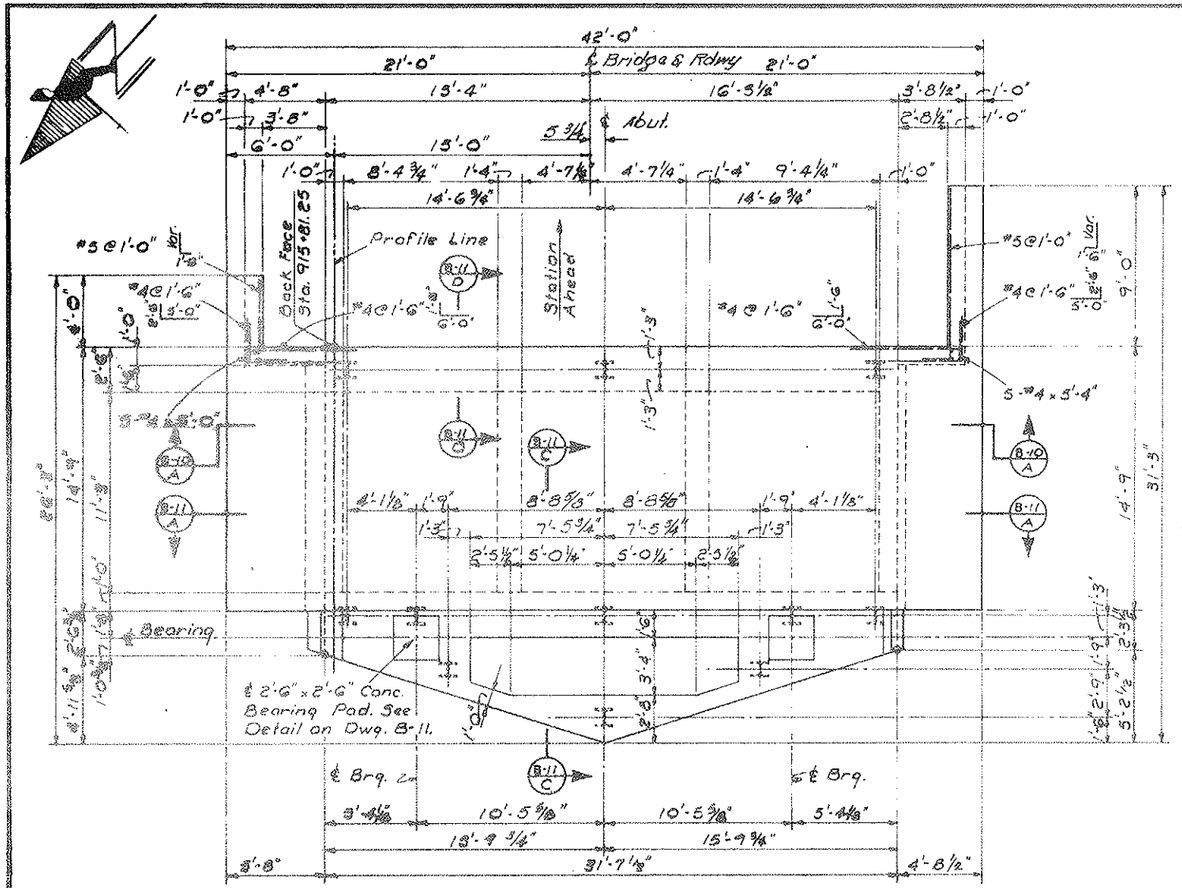
DENVER, COLORADO
DATE June 6, 1975

SHEET NO. 1

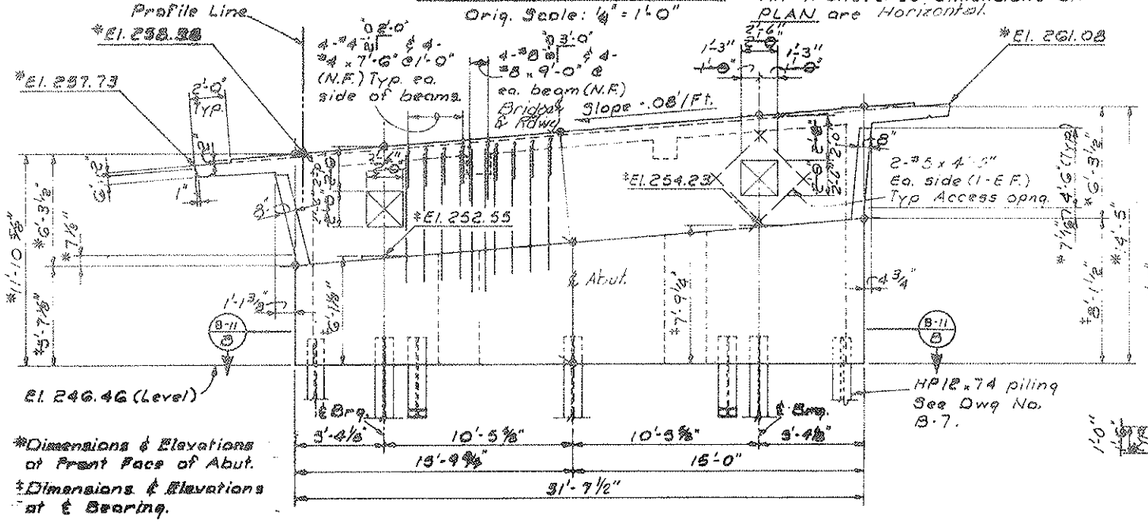
STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
FORM NO. 117
REV. OCTOBER 1973

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	67	

REVISIONS			



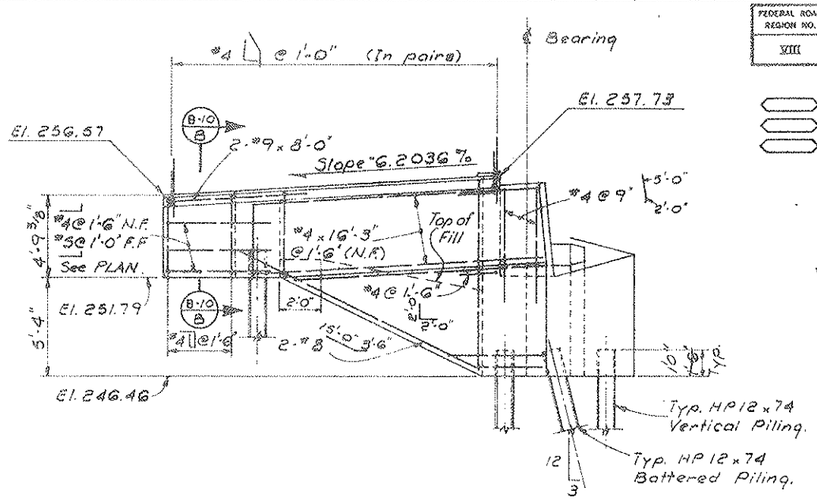
PLAN
Orig. Scale: 1/4" = 1'-0"



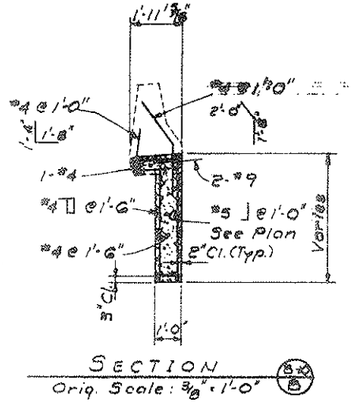
*Dimensions & Elevations at Front Face of Abut.
‡Dimensions & Elevations at ℄ Bearing.

FRONT ELEVATION
Orig. Scale: 1/4" = 1'-0"

Note:
All transverse dimensions on PLAN are Horizontal.

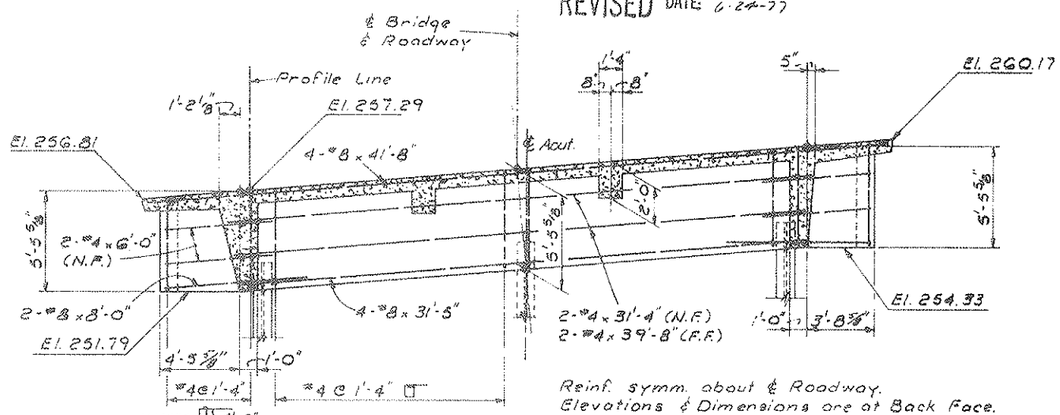


NORTHEAST ELEVATION
Orig. Scale: 1/4" = 1'-0"



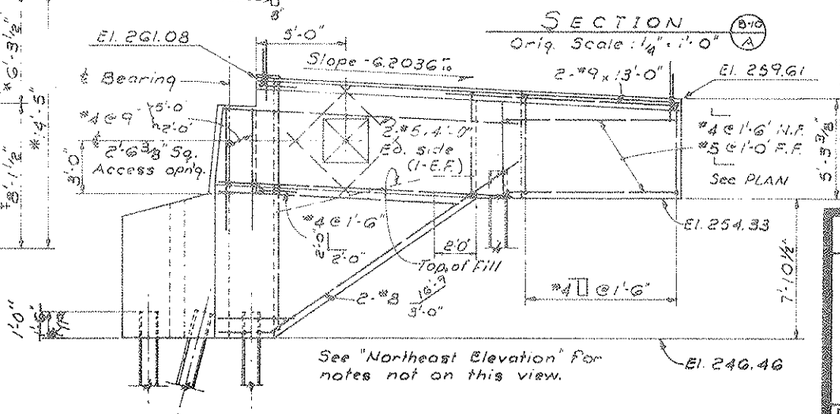
SECTION
Orig. Scale: 3/8" = 1'-0"

AS CONSTRUCTED
REVISED DATE: 6-24-77



Reinf. symm. about ℄ Roadway.
Elevations & Dimensions are at Back Face.

SECTION
Orig. Scale: 1/4" = 1'-0"



SOUTHWEST ELEVATION
Orig. Scale: 1/4" = 1'-0"

Notes:
1. All elevations are + 10.000 ft.
2. Fill Abutment to bearing level with Class II Backfill.
3. For conc. limits see Drawing B-8
4. For Bearing Notes See Drawing B-11

DIVISION OF HIGHWAYS

ABUTMENT No. 3 DETAILS

Designer	A. Erikson	Structure Numbers	F-12-AM
Detailer	D. Griner		
Drawing Number B-10		of 18	Drawings

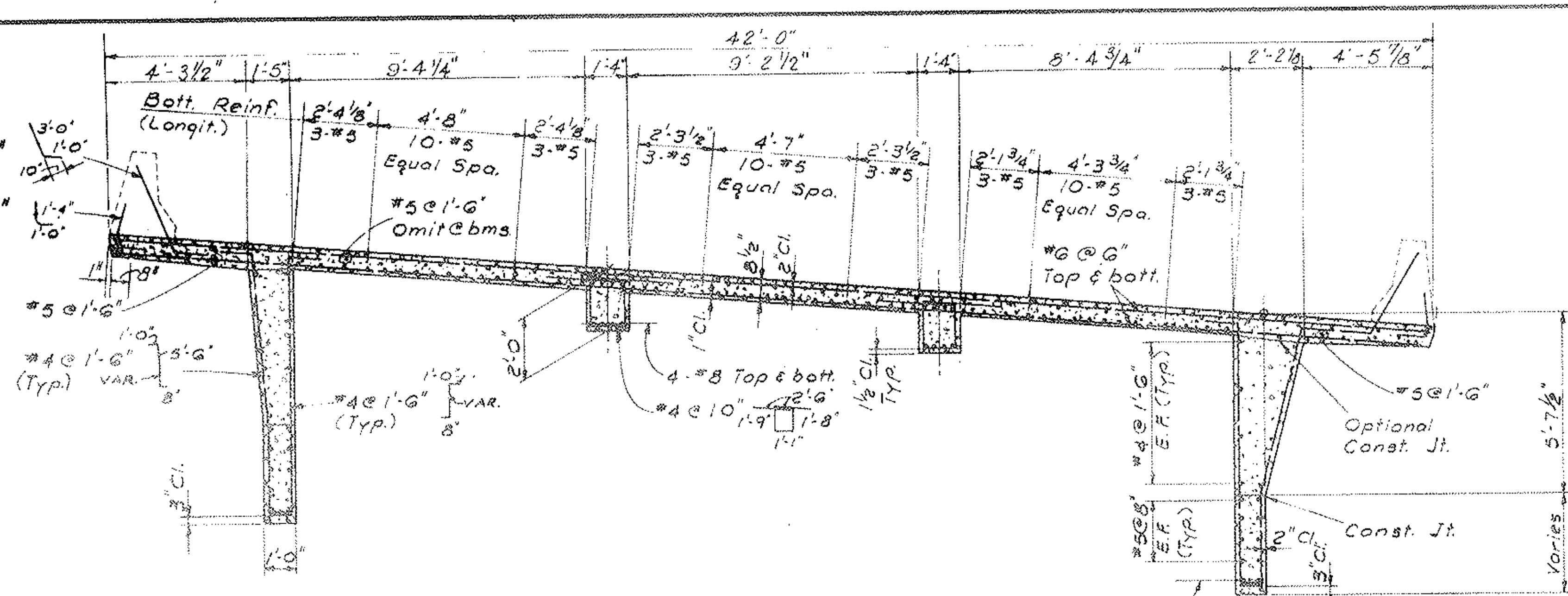
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1973

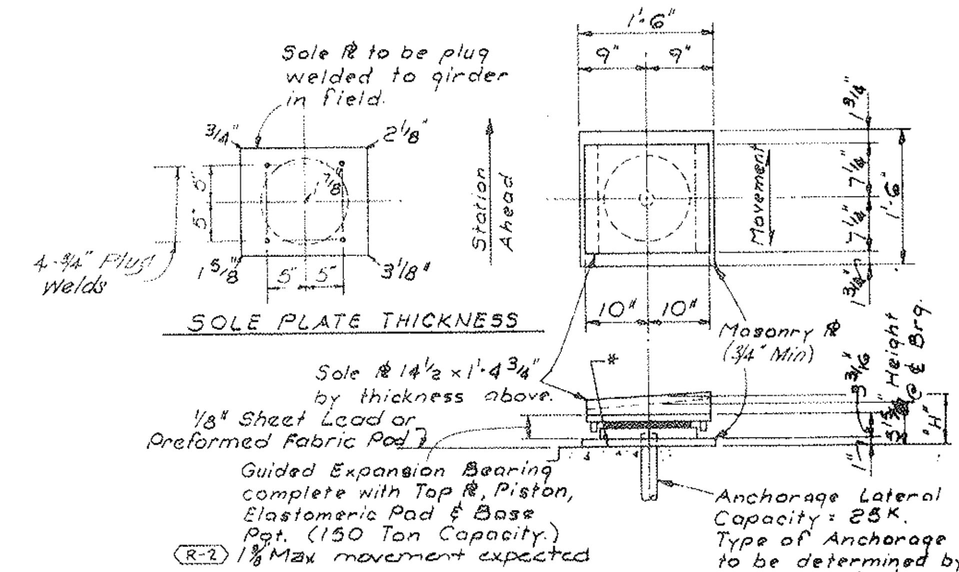
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2 (52) 197	68	

AS CONSTRUCTED
NO REVISIONS DATE: 6-27-77

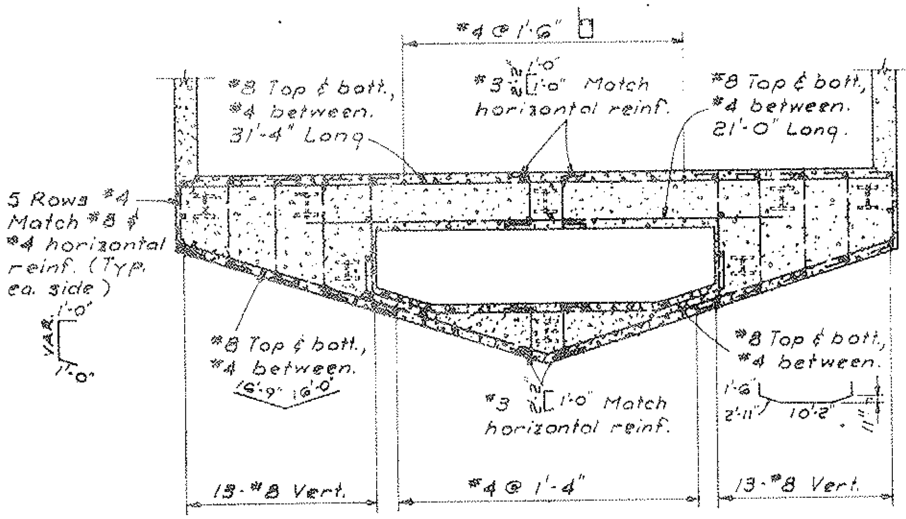
REVISIONS			
R-1	4/4/75	Reprint	WCB
R-2	4-17-75	Rev. Brg. Pressure; Added Note	CLB



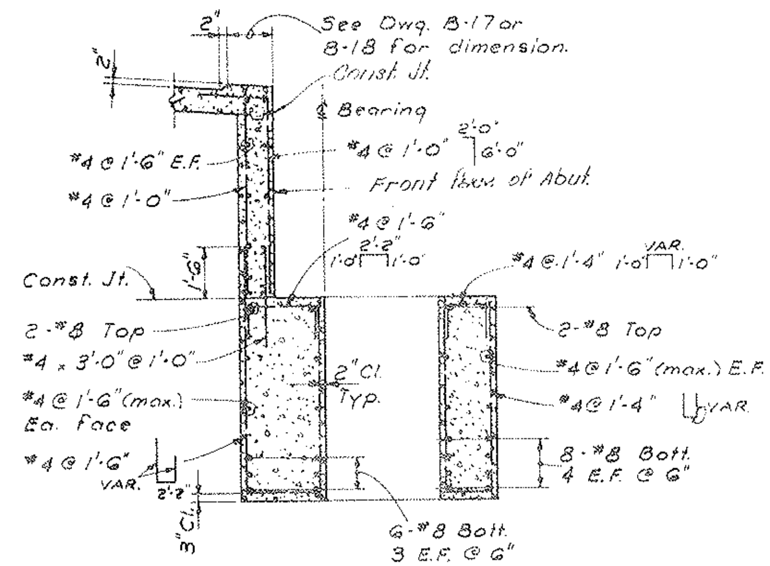
SECTION 8-8 A
Orig. Scale: ⅜" = 1'-0"



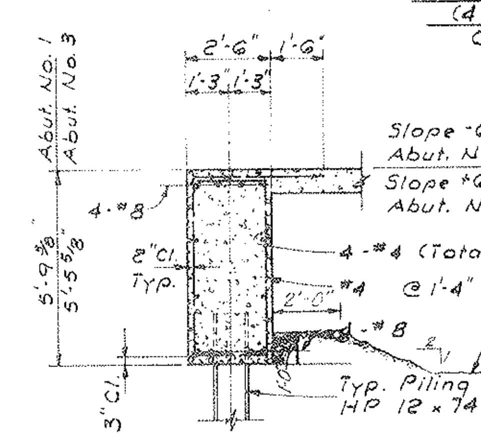
BEARING DETAIL
(4 REQ'D. ~ 2 EA. ABUT.)
Orig. Scale: 1" = 1'-0"



SECTION 8-8 B
Orig. Scale: ¼" = 1'-0"



SECTION 8-8 C
Orig. Scale: ⅜" = 1'-0"



SECTION 8-8 D
Orig. Scale: ⅜" = 1'-0"

R-2 ALLOWABLE ULTIMATE BEARING PRESSURES:

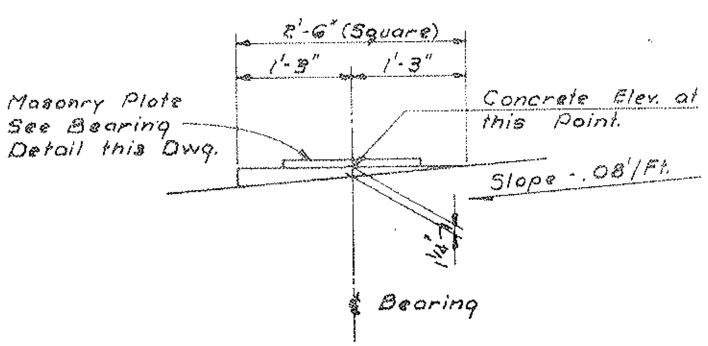
At Abutments: (f'c = 3000 psi)
1765 psi

At Piers: (f'c = 5000 psi)
2975 psi

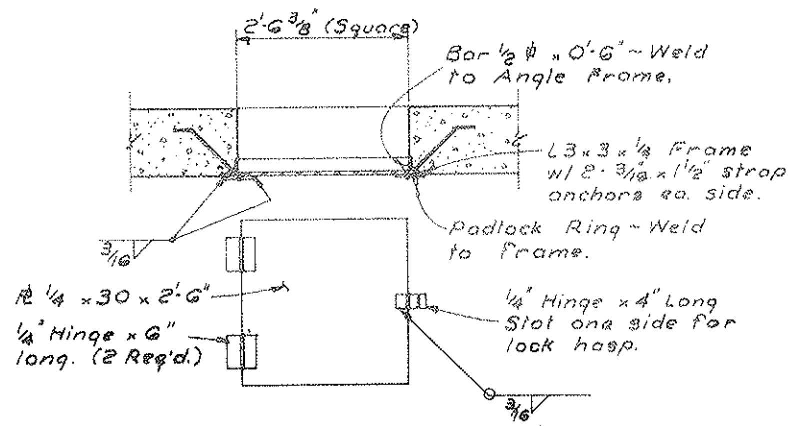
BEARING DEVICES

Item	Bearing Type & Capacity Tons	Horiz. Capacity Longitudinal Kips	Horiz. Capacity Traverse (Kips)	Actual Load (Kips)	Ultimate Load (Kips)
Abut. 1	E 150	9	20	300	475
Pier 2	F 450	54	30	817	1255
Abut. 3	E 150	9	20	300	475

Note: Capacity = D.L. + L.L. + I
E = Expansion, F = Fixed



CONCRETE BEARING PAD DETAIL
Orig. Scale: 1" = 1'-0"



METAL ACCESS DOOR DETAIL
(2 REQ'D. ~ 1 EA. ABUT.)
Orig. Scale: ¾" = 1'-0"

BEARING NOTES:

1. STEEL FOR THE BEARING DEVICES, MASONRY PLATES, AND SOLE PLATES SHALL BE A.A.S.H.T.O. SPECIFICATION M-183 (A.S.T.M. A36).
2. THE TYPE OF ANCHORAGE FOR BEARING DEVICES SHALL BE DETERMINED BY THE CONTRACTOR AND SUBMITTED ON SHOP DRAWINGS FOR APPROVAL.
3. FOR ALLOWABLE BEARING PRESSURE ON CONCRETE, SEE DRAWINGS.
4. THE SOLE PLATES SHALL BE SUPPLIED WITH BEVELS AND CROSSFALLS AS REQUIRED FOR GRADE AND SUPERELEVATION.
5. DIMENSION "H" IS THE LIMIT REQUIRED FOR BID ITEM NO. 512, "BEARING DEVICES".
6. THE SIZES OF MASONRY PLATES SHALL BE DETERMINED BY THE BEARING MANUFACTURER. THE ALLOWABLE ULTIMATE BEARING PRESSURES AND THE ULTIMATE LOADS SHALL BE USED TO DETERMINE THE MASONRY PLATE SIZES.
7. ALL BEARING DETAILS, INCLUDING WELDS, ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING DETAIL OF THE SPECIFIC BEARING DEVICE TO BE USED.

INITIAL		DATE		
DESIGNED BY	A.E.	3-75	CHECKED BY	
CHECKED BY	H.G.	3-75	QUANTITIES BY	L.M. 3-75
DETAILED BY	D.G.	3-75	CHECKED BY	A.E. 3-75

DIVISION OF HIGHWAYS

ABUTMENT 1 AND 3 DETAILS

Designer A. Eriksen	Structure Numbers	F-12-AM	
Detailer D. Briner			
Drawing Number B-11	of 18	Drawings	

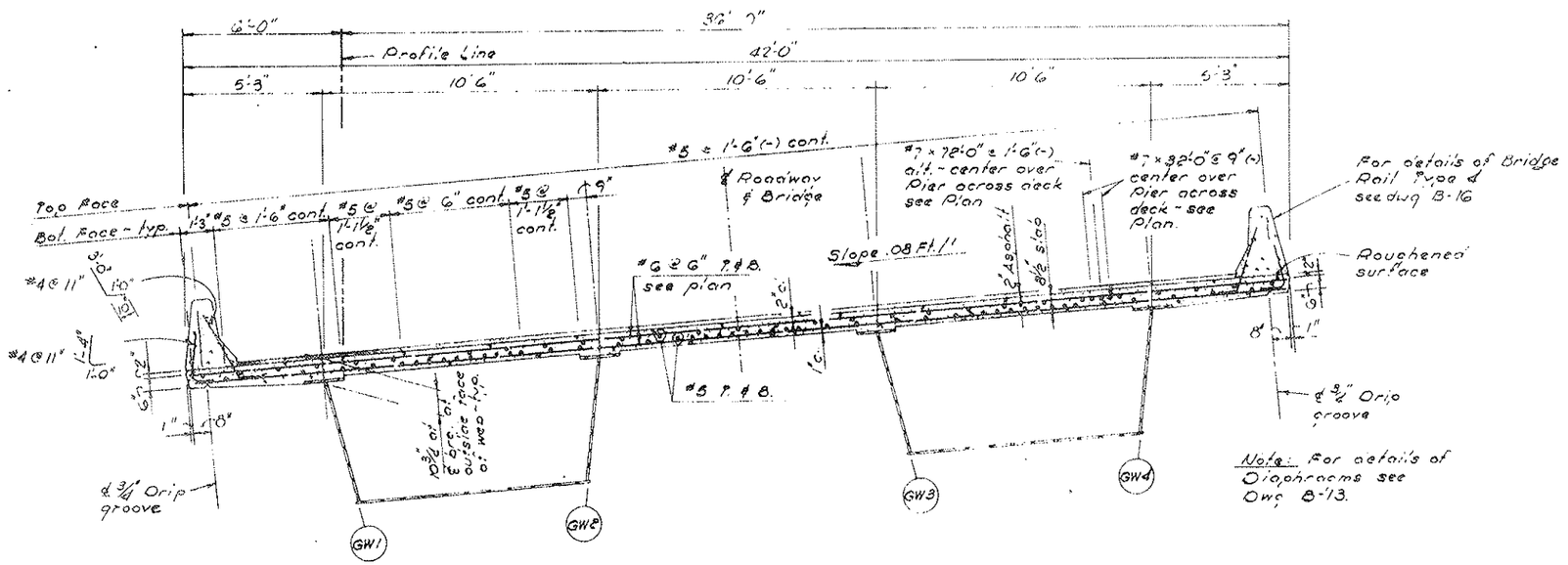
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
CDH FORM NO. 111
REV. OCTOBER 1953

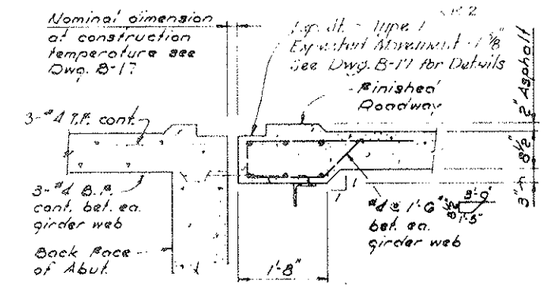
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	69	

REVISIONS			
12-1	4/6/75	REPRINT	WCB
12-2	4/17/75	Changed Movement Dimension	CCB

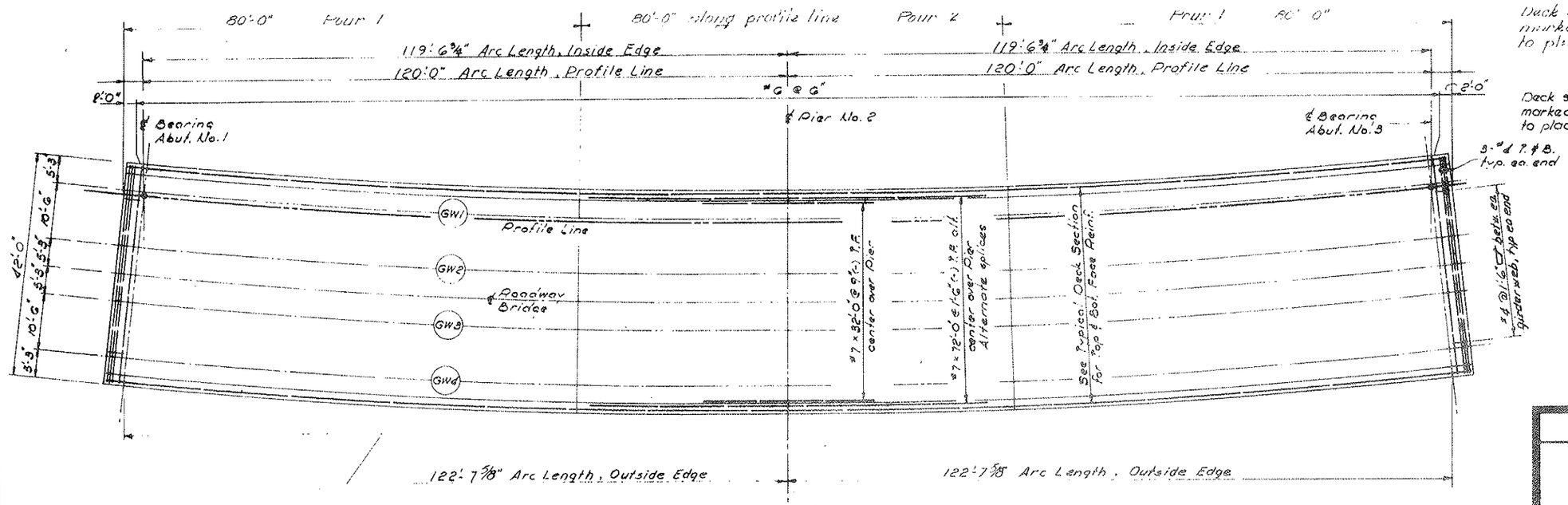
AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77



TYPICAL DECK SECTION
Orig. Scale: 3/8" = 1'-0"



SECTION THRU END OF DECK
Orig. Scale: 3/4" = 1'-0"



DECK PLAN
Orig. Scale: 3/32" = 1'-0"

Deck Slab Pouring Sequence - Sections marked "Pour 1" must be in place prior to placing section marked "Pour 2".

Deck slab Pouring Sequence - Sections marked "Pour 1" must be in place prior to placing section marked "Pour 2"

DETAILED BY	DATE	QUANTITIES BY	DATE
AE	3-75	MG	3-75
CHECKED BY	DATE	CHECKED BY	DATE
MG	3-75	AE	3-75
DESIGNED BY	DATE		
CB	3-75		

DIVISION OF HIGHWAYS

DECK PLAN AND TYPICAL DECK SECTION

Designer A. Eriksen		Structure Numbers	F-12-AM
Detailer D. Gregen			
Drawing Number B-12	of 18	Drawings	

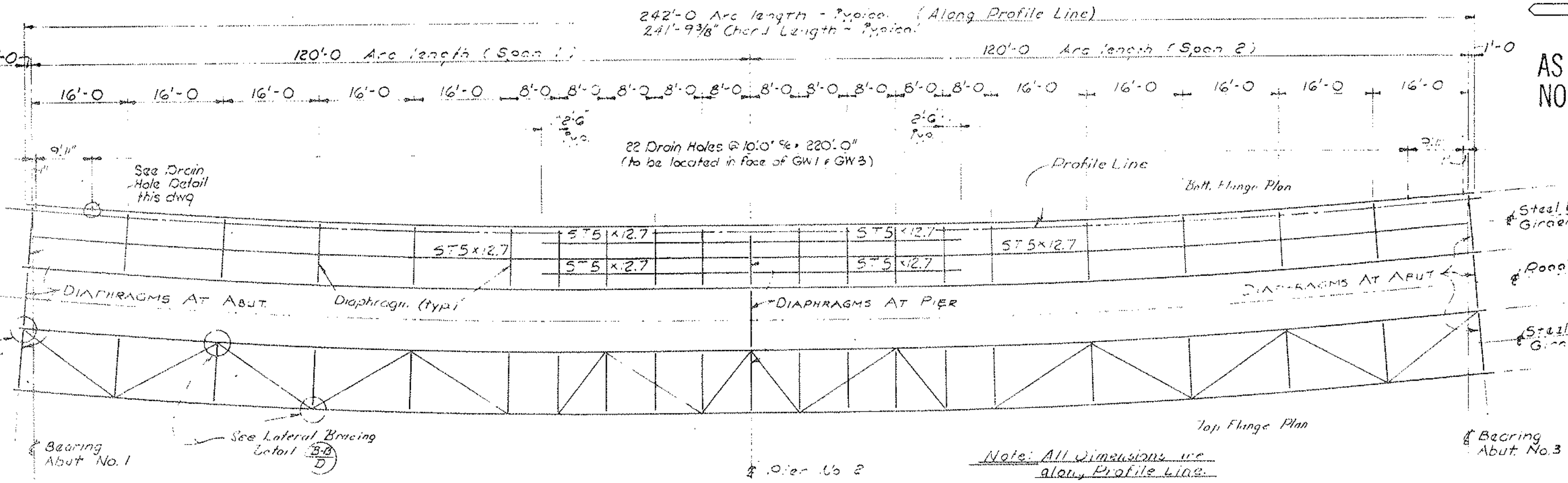
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 111
REV. OCTOBER 1975

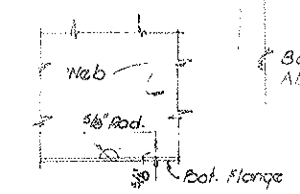
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	70	

REVISIONS			
R-1	4-4-75	Reprint	W.C.B.
R-2	4-29-75	Added Note 4	B.O.E.

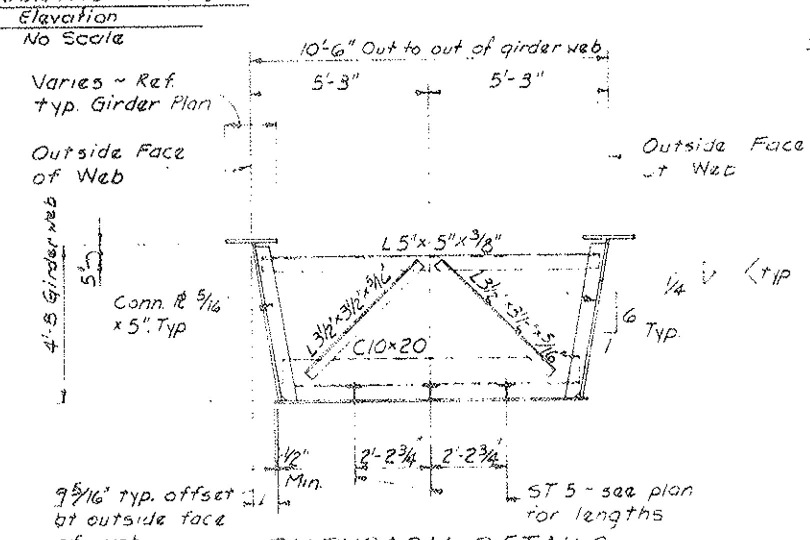
AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77


242'-0 Arc length - Typical (Along Profile Line)
241'-9 3/8" Chord Length - Typical
120'-0 Arc length (Span 1)
120'-0 Arc length (Span 2)
1'-0
16'-0
8'-0
22 Drain Holes @ 10'-0" = 220'-0"
(to be located in face of GW1 & GW3)
See Drain Hole Detail this dwg
Profile Line
Bott. Flange Plan
ST 5 x 12.7
DIAPHRAGMS AT ABUT.
Diaphragm (typ.)
DIAPHRAGMS AT PIER
DIAPHRAGMS AT ABUT
See Lateral Bracing Detail B-13 C
See Lateral Bracing Detail B-13 D
Bearing Abut No. 1
Pier No. 2
Bearing Abut. No. 3
Top Flange Plan
*Out to Out of Girder Web
Steel Box Girder "A"
Roadway
Steel Box Girder "B"
GW1
GW2
GW3
GW4
Note: All Dimensions are along Profile Line.

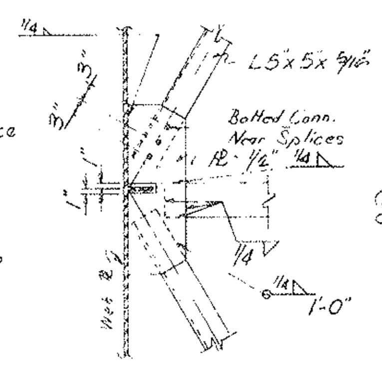
SUPERSTRUCTURE FRAMING PLAN
Orig. Scale: 3/32" = 1'-0"



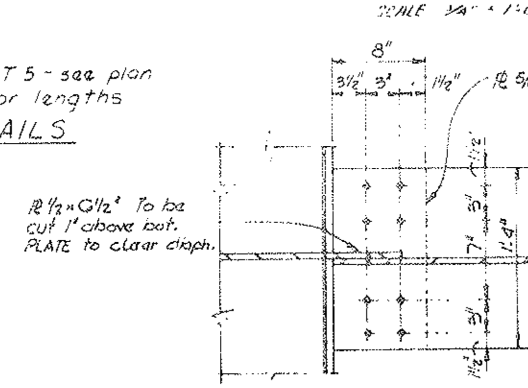
DRAIN HOLE DETAIL
Elevation
No Scale



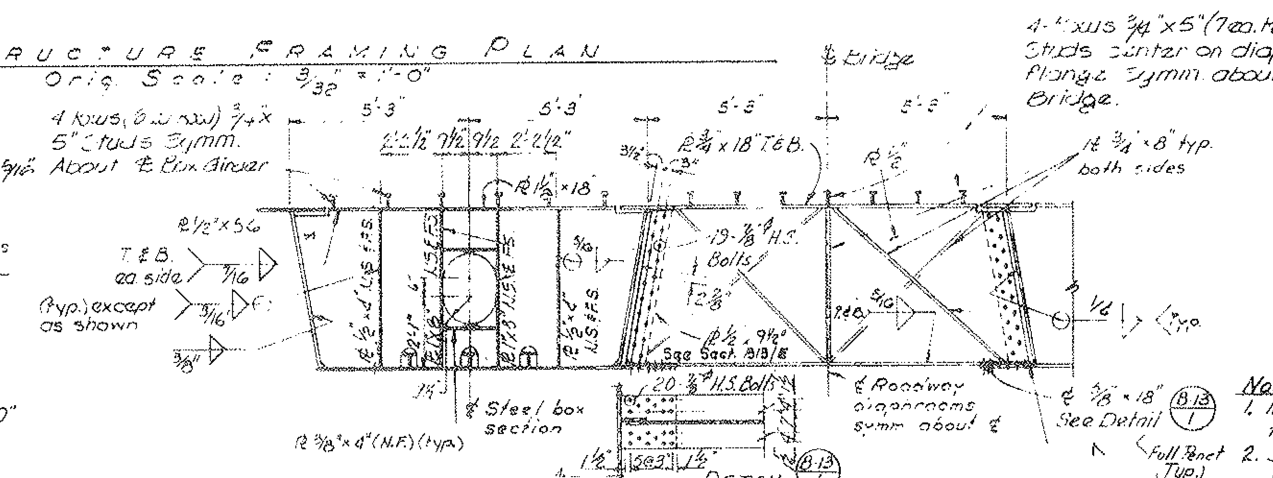
DIAPHRAGM DETAILS
ORIG. SCALE: 3/8" = 1'-0"



LATERAL BRACING DETAIL (B-13 D)
SCALE 3/4" = 1'-0"

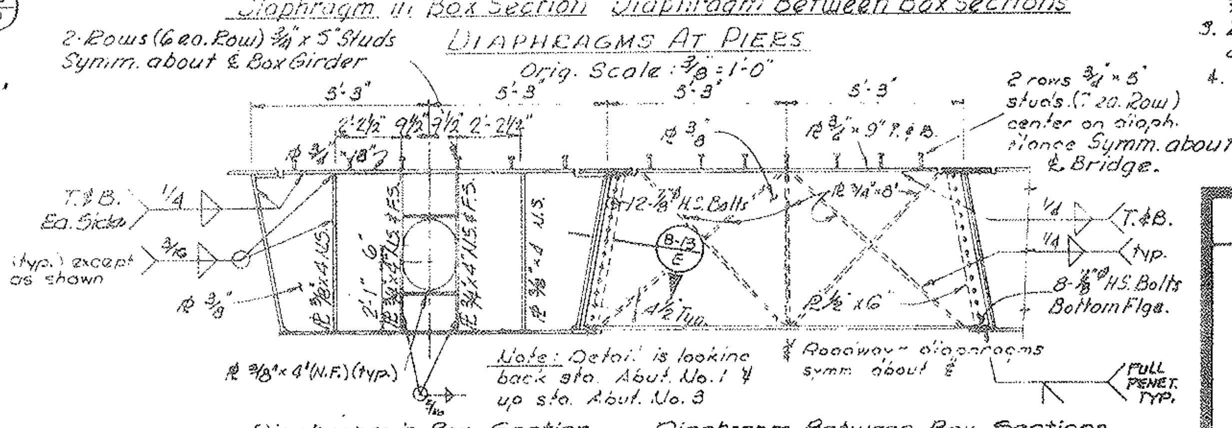


SECTION (B-13 E)
Orig. Scale: 1 1/2" = 1'-0"


4-Rows (5 ea. Row) 3/4"x5" Studs Symm. About ℄ Box Girder
4-Rows 3/4"x5" (7ea. Row) Studs center on diaph. Flange Symm. about ℄ Bridge.
℄ Bridge
5'-3"
℞ 3/4" x 18" T.&B.
℞ 1/2"x 18"
T.&B. ea side
(typ.) except as shown
19-7/8" H.S. Bolts
20-7/8" H.S. Bolts
℄ Roadway diaphragms symm. about ℄
Steel box section
℞ 3/4" x 8" typ. both sides
5/8" x 18" See Detail
Full Penet. (Typ.)
DETAIL (B-13 F)

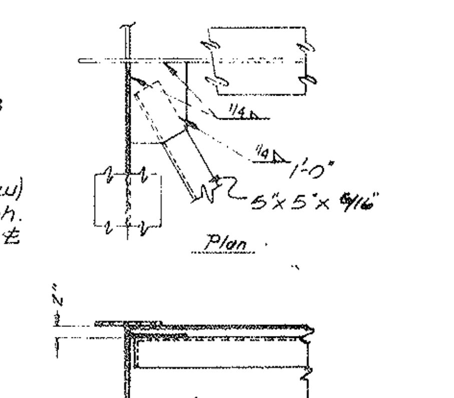
Diaphragm in Box Section   Diaphragm Between Box Sections

DIAPHRAGMS AT PIERS
Orig. Scale: 3/8" = 1'-0"


2-Rows (6 ea. Row) 3/4"x5" Studs Symm. about ℄ Box Girder
2 rows 3/4"x5" studs (7 ea. Row) center on diaph. flange Symm. about ℄ Bridge.
T.&B. Ea. Side
(typ.) except as shown
8-7/8" H.S. Bolts Bottom Flge.
℄ Roadway diaphragms symm. about ℄
FULL PENET. TYP.
Note: Detail is looking back sta. Abut. No. 1 & up sta. Abut. No. 3

Diaphragm in Box Section   Diaphragm Between Box Sections

DIAPHRAGMS AT ABUTMENTS
Orig. Scale: 3/8" = 1'-0"



LATERAL BRACING DETAIL @ (B-13 C)

DIAPHRAGM
ORIG. SCALE: 3/4" = 1'-0"

Notes:

1. Interior connector plates ~ tight fit on tension flange - weld to compression flange.
2. Seal remaining welded contact surfaces between members and gusset plates with 3/16" minimum fillet weld.
3. Details shown for top and bottom flanges of the Girder are similar for both boxes.
4. All bolts shall be ASTM A325 Grade 3 (R-2)

WELD LENGTHS REQ'D

MEMBER	LENGTH OF 1/4" FILLET WELD
ST 5"x 12.7"	Continuous
C 10"x 20"	29"
L5"x5"x 5/16"	15"
L5"x5"x 3/8"	18"
L3 1/2"x3 1/2"x 5/16	10"

NOTE: THESE ARE MINIMUM LENGTHS OF 1/4" FILLET WELDS TO SECURE MEMBERS TO GUSSET PLATES AND OTHER MEMBERS.

	INITIAL	DATE
DESIGNED BY	AE	3-75
DETAILED BY	SM	3-75
CHECKED BY		
QUANTITIES BY	HG	3-75
CHECKED BY	AE	3-75

DIVISION OF HIGHWAYS

SUPERSTRUCTURE FRAMING PLAN AND DETAILS

Designer A. Eriksen	Structure Numbers	F-18-AM
Detailer S. Martinez		
Drawing Number B-13	of 18	Drawings

Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1973

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	71	

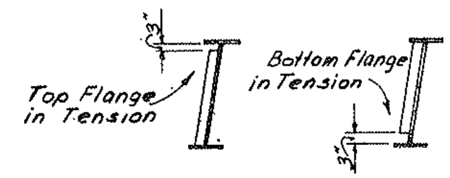
REVISIONS

R-1	4/4/75	Reprint	WCB
R2	4-29-75	Added Note No. 11	BDE

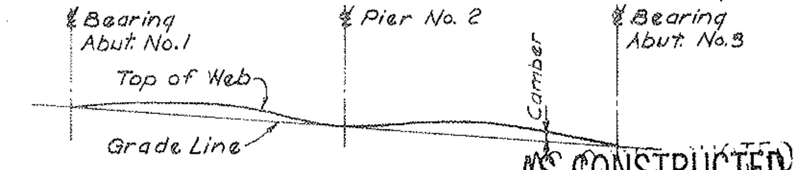
AS CONSTRUCTED
REVISED DATE: 6-24-77

GIRDER RADIUS TABLE

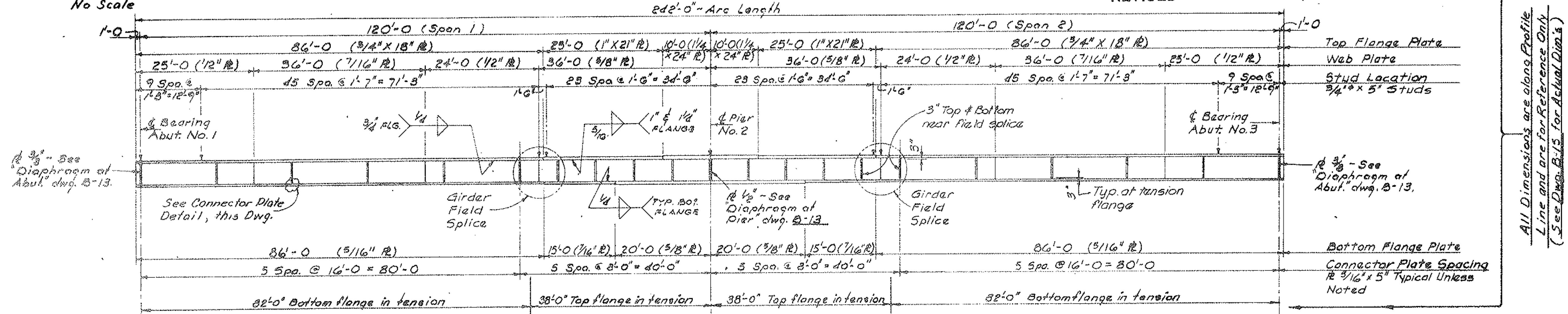
Girder	Radius
Girder Web 1	1636.27'
Girder Web 2	1646.77'
Girder Web 3	1657.27'
Girder Web 4	1667.77'



CONNECTOR PLATE DETAIL
No Scale



CAMBER DIAGRAM



Location at 20th point

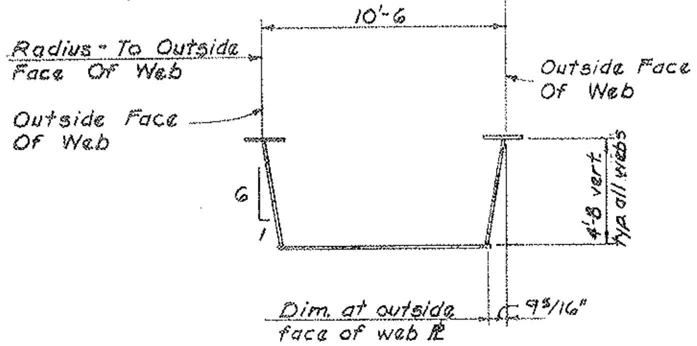
	℄ Brg.	.05L	.10L	.15L	.20L	.25L	.30L	.35L	.40L	.45L	.50L	.55L	.60L	.65L	.70L	.75L	.80L	.85L	.90L	.95L
GW 1 & GW 2	.00	.05	.09	.13	.17	.20	.22	.23	.23	.23	.22	.20	.18	.15	.12	.09	.06	.04	.02	.01
GW 3 & GW 4	.00	.05	.10	.14	.18	.21	.23	.24	.25	.24	.23	.21	.19	.16	.13	.10	.07	.04	.02	.01
Girder D.L.	.00	.01	.01	.02	.02	.02	.03	.03	.03	.03	.03	.03	.02	.02	.01	.01	.01	.00	.00	.00

	℄ Brg.	.05L	.10L	.15L	.20L	.25L	.30L	.35L	.40L	.45L	.50L	.55L	.60L	.65L	.70L	.75L	.80L	.85L	.90L	.95L	℄ Brg.
GW 1 & GW 2	.00	.01	.02	.04	.06	.09	.12	.15	.18	.20	.22	.23	.23	.23	.22	.20	.17	.13	.09	.05	.00
GW 3 & GW 4	.00	.01	.02	.04	.07	.10	.13	.16	.19	.21	.23	.24	.25	.24	.23	.21	.18	.14	.10	.05	.00
Girder D.L.	.00	.00	.00	.01	.01	.01	.02	.02	.02	.03	.03	.03	.03	.03	.03	.03	.02	.02	.01	.01	.00

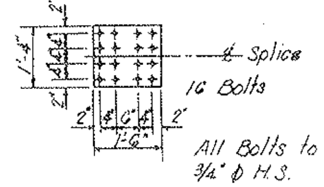
Dead Load Deflection (GW rows)

Dead Load of Girder (Total wt acting on girder including wt of girder)

TYPICAL GIRDER
4 Required - Curved ~ As Noted
Orig. Scale: 3/32" = 1'-0

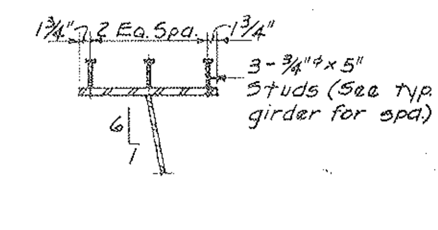


TYPICAL GIRDER SECTION
Orig. Scale: 1/4" = 1'-0

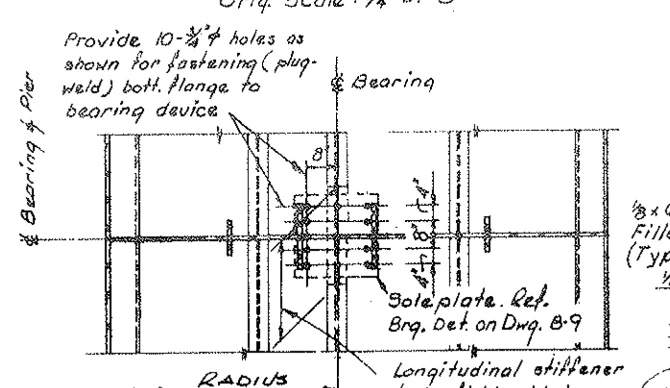


T	T_1
Over 1/2 to 1	1/4
Over 1 to 1 1/2	1/2
Over 1 1/2 to 2	5/8

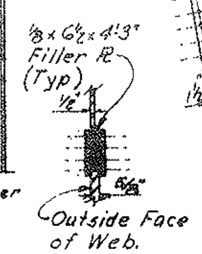
LIMITATIONS FOR JOINT B-L2c-5



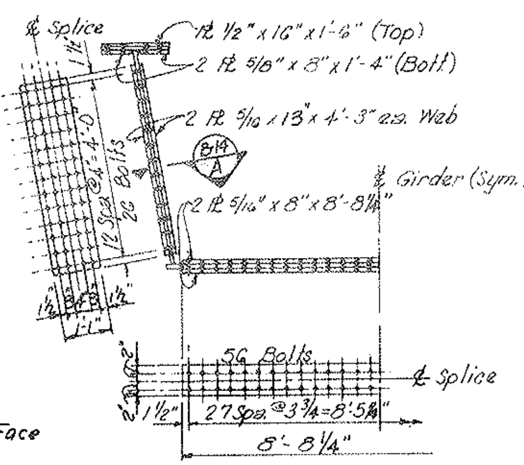
SHEAR CONNECTOR DETAIL
Orig. Scale: 3/4" = 1'-0



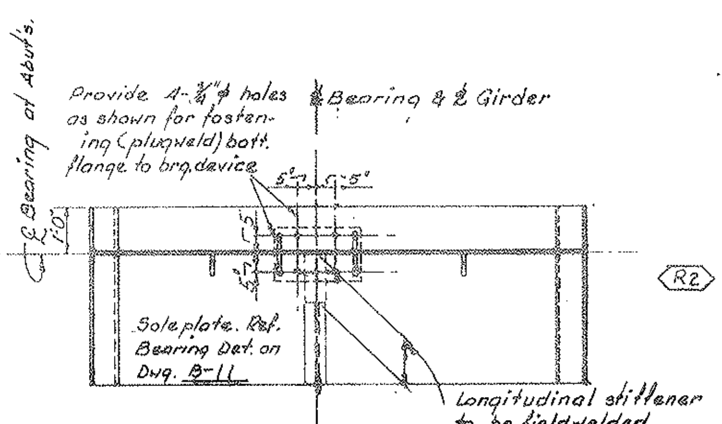
BEARING DETAIL AT PIER
Orig. Scale: 1/2" = 1'-0"



SECTION (B-14 / A)
No Scale



GIRDER FIELD SPLICE
Orig. Scale: 1/2" = 1'-0



BEARING DETAIL AT ABUTMENTS
Orig. Scale: 1/2" = 1'-0"

NOTES:

1. ALTERNATE GIRDER SPLICES WILL BE PERMITTED SUBJECT TO APPROVAL BY THE ENGINEER.
2. COMPLETE WEB TO FLANGE FILLET WELDS AFTER WELDING FLANGE AND WEB BUTT WELDS.
3. GRINDING IS NOT REQUIRED FOR SHOP BUTT WELDS IN TOP FLANGES WHICH ARE IN COMPRESSION, EXCEPT THE EDGES OF ALL FLANGE BUTT WELDS SHALL BE GROUND. OTHER AREAS SHALL BE GROUND AS DIRECTED BY THE ENGINEER.
4. WEB BUTT JOINTS SHALL BE FULL PENETRATION GROOVE WELDS. IF FIELD SPLICES ARE WELDED, WEB WELDS SHALL BE GROUND FLUSH.
5. STIFFENERS NEAR A FIELD SPLICE MAY BE FIELD WELDED.
6. GIRDER ENDS AND BEARING STIFFENERS SHALL BE VERTICAL EXCEPT THAT THEY MAY BE NORMAL TO GRADE FOR GRADES LESS THAN 2%.
7. AT THE CONTRACTORS OPTION, WELDED GIRDER SPLICES MAY BE USED WHEN BOLTED SPLICES ARE SHOWN ON THE PLANS.
8. METHOD OF SUPPORTING GIRDERS WHILE GIRDER FIELD WELDED SPLICES ARE BEING MADE SHALL BE SHOWN ON THE SHOP DRAWINGS.
9. Girder view shown is inside face of one girder - 4 req'd. Typical girder detailed is Girder Web 1 & 3 as shown and similar for Girder Web 2 & 4.
10. Connector plate locations shown shall be for inside face of box girder. See Superstructure Framing Plan on Dwg. B-15 for additional plates inside and outside of box girder.
11. (R2) All bolts shall be ASTM A325 Grade 3

DESIGNED BY	A.E.	DATE 3-75	CHECKED BY	L.M.	3-75
CHECKED BY	A.E.	3-75	QUANTITIES BY	L.M.	3-75
DETAILED BY	S.M.	3-75	CHECKED BY	A.E.	3-75

DIVISION OF HIGHWAYS

GIRDER DETAILS
(SHEET 1 OF 2)

Designer	A. Eriksen	Structure Numbers	F-18-AM
Detailer	S. Martinez		
Drawing Number B-14		of 18	Drawings

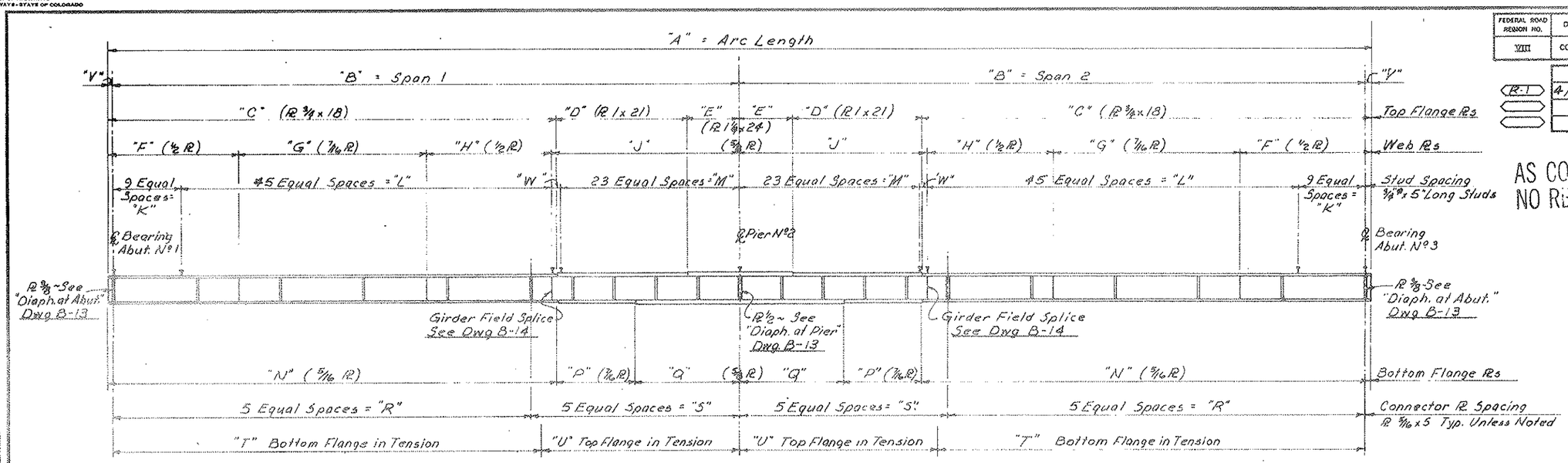
Revision Dates (Preliminary Stage Only)

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
DOH FORM NO. 117
REV. OCTOBER 1973

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	F 70-2(52)197	72	

REVISIONS			
R-1	4/4/75	REPRINT	MEB

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77



See Dwg. B-14 for Welding Details

TYPICAL GIRDER

4 Required - Curved - See Schedule for Dimensions
Orig. Scale : None

GIRDER DIMENSION SCHEDULE

DIMENSION	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"	"U"	"V"	"W"
GIRDER (EM)	241'-10 3/8"	119'-11 5/16"	85'-11 5/16"	24'-11 5/16"	9'-11 5/16"	24'-11 3/8"	35'-11 1/16"	23'-11 5/16"	35'-11 7/16"	12'-8 3/8"	71'-2 5/8"	34'-5 3/16"	85'-11 1/2"	14'-11 5/16"	19'-11 1/8"	79'-11 3/16"	39'-11 1/8"	81'-11 3/16"	37'-11 1/8"	1'-0"	1'-6"
GIRDER (EM2)	243'-5 1/8"	120'-8 3/16"	86'-6 5/8"	25'-1 3/8"	10'-0 5/16"	25'-1 3/4"	36'-2 3/16"	24'-1 1/16"	36'-2 9/16"	12'-9 3/16"	71'-8 1/8"	34'-8 1/2"	86'-6 1/8"	15'-1 1/16"	20'-1 3/8"	80'-5 1/16"	40'-2 5/8"	82'-5 1/8"	38'-2 5/8"	1'-0"	1'-6"
GIRDER (EM3)	244'-11 7/8"	121'-5 3/16"	87'-0 3/16"	25'-3 7/16"	10'-1 1/2"	25'-3 3/8"	36'-5 3/16"	24'-3 3/8"	36'-5 5/16"	12'-10 1/8"	72'-1 3/16"	34'-11 1/8"	87'-0 5/16"	15'-2 3/16"	20'-3"	80'-11 1/8"	40'-5 1/8"	83'-0 5/8"	38'-5 1/16"	1'-0 1/8"	1'-6 3/16"
GIRDER (EM4)	246'-6 3/8"	122'-3"	87'-7 5/16"	25'-5 5/16"	10'-2 1/4"	25'-5 3/8"	36'-8 1/8"	24'-5 5/16"	36'-8 1/8"	12'-11 1/8"	72'-7"	35'-1 3/16"	87'-7 3/8"	15'-3 3/8"	20'-4 1/16"	81'-6"	40'-9"	83'-6 3/8"	38'-8 3/8"	1'-0 3/16"	1'-6 5/16"

DESIGNED BY	A.E.	1-75
CHECKED BY	A.E.	2-75
DETAILED BY	L.M.	3-75
CHECKED BY		3-75
QUANTITIES BY		3-75
DESIGNED BY		3-75

DIVISION OF HIGHWAYS

GIRDER DETAILS
- (SHEET 2 OF 2)

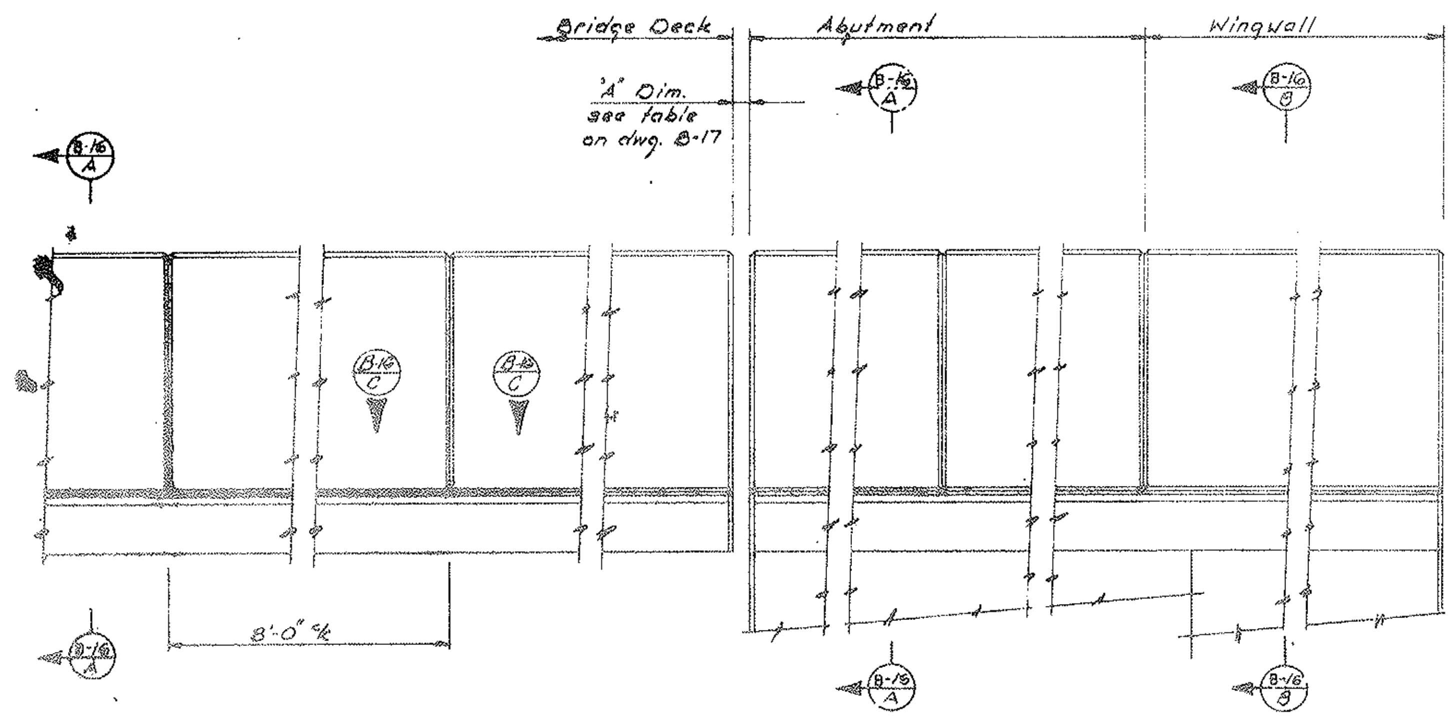
Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	L. McNamee		
Drawing Number	B-16	of 18	Drawings

Revision Dates (Preliminary Sizes Only)

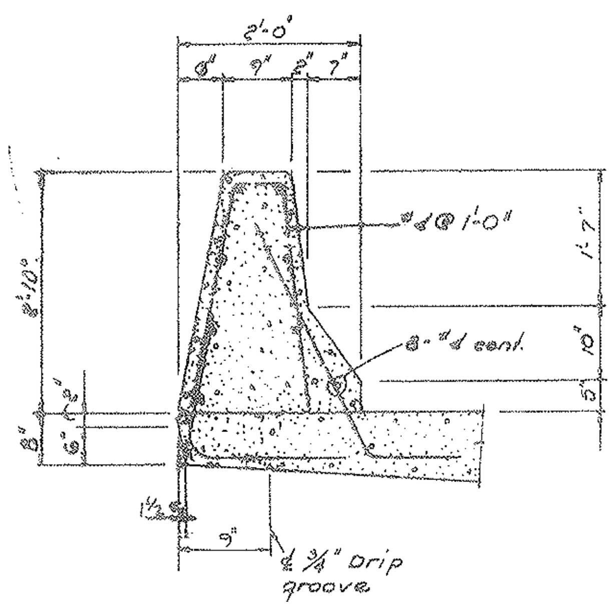
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70 - 2(82) 197	73	

REVISIONS

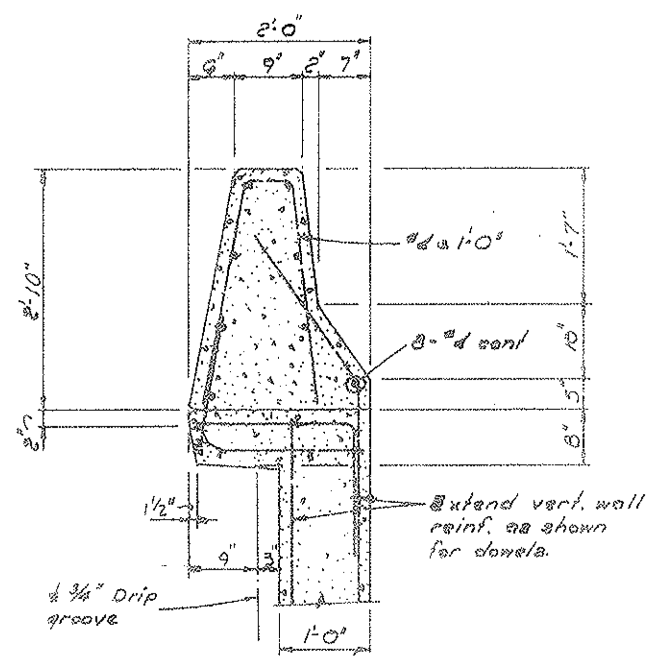
AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77



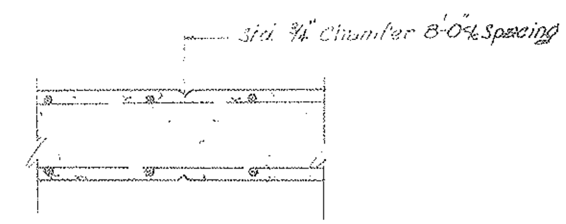
TYPICAL ELEVATION AT ABUTMENT
Orig. Scale : 1" = 1'-0"



SECTION (B-16 / A)
Cantilever detail
Orig. Scale : 1"=1'-0"



SECTION (B-16 / B)
Wall detail
Orig. Scale : 1"=1'-0"



SECTION (B-16 / C)
Curb Detail
Orig. Scale 1"=1'-0"

DIVISION OF HIGHWAYS

BRIDGE RAIL TYPE 4

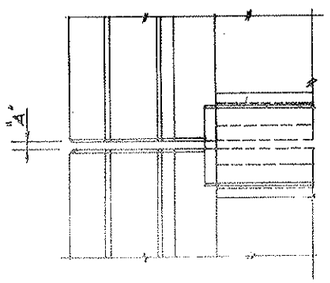
Designer	A. Eriksen	Structure Numbers	F-18-AM
Detailer	D. Grogan		
Drawing Number B-16		of 18	Drawings

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS—STATE OF COLORADO
DOH FORM NO. 117
REV. DEC., 1928

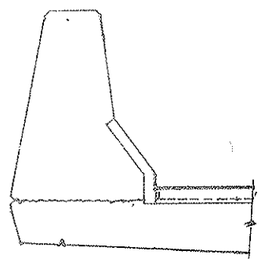
BRIDGE STANDARD -40-

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	F 73-3 (5), 17	74	

REVISIONS		

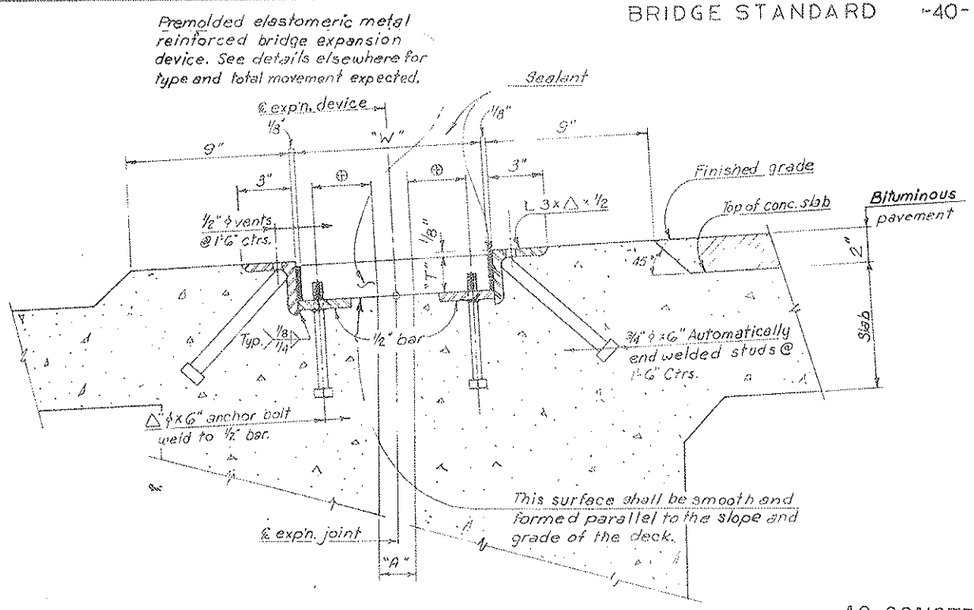


PLAN



ELEVATION

DETAILS OF EXPANSION JOINT @ GUARDRAIL



SECTION THRU EXP'N. DEVICE

* Bridge Expansion Device Type 1 to be used.

NOTES
THE EXPANSION DEVICE SHALL BE INSTALLED ON GRADE, PARALLEL TO THE SLOPE AND GRADE OF THE DECK.

AFTER THE CONCRETE HAS ATTAINED INITIAL SET, THE ATTACHMENTS USED TO HOLD THE ANGLE ASSEMBLY IN ITS PROPER POSITION SHALL BE REMOVED.

DO NOT PAINT STEEL SURFACES IN CONTACT WITH CONCRETE AND PREMOLDED EXPANSION DEVICE.

"W", "T", "Θ", AND "△" DIMENSIONS ARE DEPENDENT UPON THE PARTICULAR PREMOLDED DEVICE SUPPLIED, AND SHALL BE SHOWN ON THE SHOP DRAWINGS.

THE SHOP DRAWINGS SHALL INDICATE THE "W" DIMENSION AT A RANGE OF TEMPERATURES FROM 30° TO 100° ASSUMING A MID-POINT TEMPERATURE OF 40°.

ANGLE AND PLATE ASSEMBLIES TO EXTEND GUTTER TO GUTTER ONLY.

ALL SECTIONS OF THE PREMOLDED EXPANSION DEVICE SHALL BE JOINED BY USING THE MANUFACTURER'S STANDARD WATERPROOF JOINT.

ALL CURB UNITS SHALL BE FULL WIDTH, ON GUTTER LINE, FOR SKEW ANGLES AS SPECIFIED ON THE PLANS.

ALL ANCHORS SHALL BE CAST IN PLACE BOLTS OR THREADED CAST IN PLACE CONCRETE INSERTS EXCEPT FOR CURB AND WALK UNITS WHICH MAY BE INSTALLED BY THE USE OF APPROVED DRILLED IN PLACE ANCHOR UNITS.

OPENING IN CURB AND SIDEWALK TO BE CONSTRUCTED TO THE EXACT WIDTH OF THE EXISTING DECK OPENING.

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

Premolded Bridge Expansion Device			
Outside Temp.	*(Type 1)	(Type 2)	(Type 3)
	Dim. "A" (Min.)	Dim. "A" (Min.)	Dim. "A" (Min.)
30°	1 5/8"	2 1/4"	2 3/8"
40°	1 1/2"	2 1/8"	2 3/8"
50°	1 3/8"	2"	2 1/2"
60°	1 1/4"	1 7/8"	2 3/8"
70°	1 1/8"	1 5/8"	2 1/8"
80°	1"	1 1/2"	2"
90°	7/8"	1 3/8"	1 3/4"
100°	3/4"	1 1/4"	1 5/8"

Premolded Bridge Expansion Device			
Outside Temp.	(Type 4)	(Type 6)	(Type)
	Dim. "A" (Min.)	Dim "A" (Min.)	Dim. "A" (Min.)
30°	4 3/8"	5 3/8"	
40°	4 1/8"	4 7/8"	
50°	3 7/8"	4 1/2"	
60°	3 5/8"	4"	
70°	3 1/4"	3 5/8"	
80°	3"	3 1/4"	
90°	2 3/4"	2 3/4"	
100°	2 1/2"	2 7/8"	

DIVISION OF HIGHWAYS

BRIDGE EXPANSION DEVICE
PREMOLDED ARMORED

Designer	A. Eriksen	Structure Numbers	F-12-AM
Detailer	J.R. EWERT		
Drawing Number	8-17	of 15	Drawings

Revision Dates								(Preliminary Stage Only)

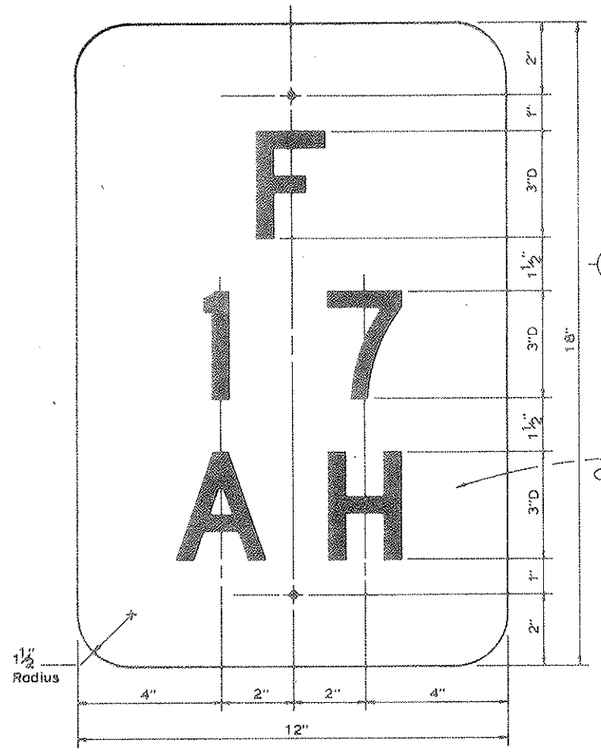
(7-1-74)

DESIGNED BY		INITIAL	
CHECKED BY		DATE	10-73
DETAILED BY	JRE	CHECKED BY	
CHECKED BY		QUANTITIES BY	
		CHECKED BY	

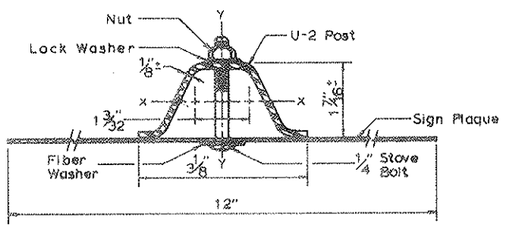
BRIDGE STANDARD -80-

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	[illegible]	75	

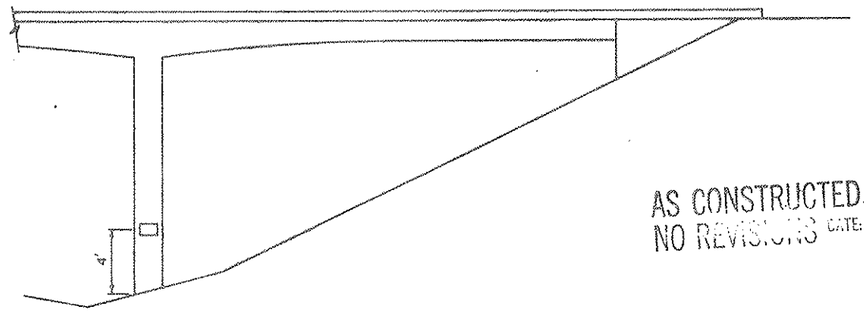
REVISIONS		



STRUCTURE IDENTIFICATION PANEL
(SAMPLE NUMBERS & LETTERS)



SECTION (A)



STRUCTURE NUMBER LOCATION
ON PIERS

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.

SIGN PANEL SHALL BE FABRICATED FROM EITHER SHEET STEEL 0.0598 MIN. THICKNESS OR SHEET ALUMINUM 0.080 MIN. THICKNESS.

SIGN PANEL SHALL BE GROUND MOUNTED.

U-2 POST SHALL MEET REQUIREMENTS OF PAR. 4.5 U.S. DEPT. OF COMMERCE, COMMERCIAL STANDARD 184-61. ACCEPTABLE MATERIAL INCLUDES REROLLED RAILROAD RAILS. U-2 POST SHALL WEIGH 2 LBS. PER FT. EXCEPT THAT A MILL TOLERANCE OF MINUS 3-1/2% OF THE WEIGHT OF ANY ONE POST WILL BE ALLOWED. ALTERNATE METAL POST WILL BE ACCEPTABLE IF SECTION MODULUS IS AT LEAST 0.200 IN.^{3} ABOUT THE X-X AXIS AND AT LEAST 0.280 IN.^{3} ABOUT THE Y-Y AXIS.

SIGN PANEL SHALL BE FASTENED DIRECTLY TO THE POST WITH TWO 1/4" GALVANIZED OR CADMIUM PLATED STOVE BOLTS. A PLASTIC FIBER WASHER SHALL BE PLACED BETWEEN THE BOLTS HEAD AND THE FACE OF THE PANEL. A GALVANIZED OR CADMIUM PLATED LOCK WASHER SHALL BE PLACED UNDER THE NUT ON THE BACK OF THE POST. EXPOSED BOLT HEADS AND FIBER WASHERS ON THE FACE OF THE SIGN PANEL SHALL BE PAINTED TO MATCH THE SURROUNDING COLOR.

LETTERS AND NUMBERS SHALL BE SERIES "D". THEY SHALL BE 3" HIGH.

THE CORRECT STRUCTURE NUMBER IS SHOWN ON THE PLANS.

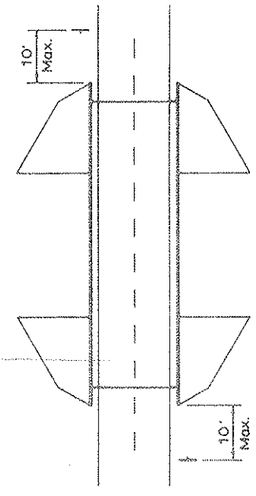
① OMIT STRUCTURE NUMBER STANDARDS WHERE A RAILROAD TRACK CROSSES OVER THE ROADWAY.

STRUCTURE NUMBER STANDARD SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE WORK.

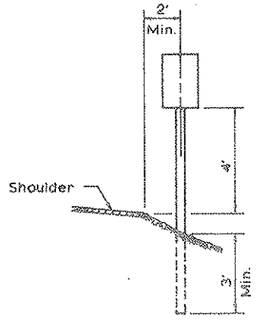
IN ADDITION TO THE REQUIREMENTS STATED ABOVE, STRUCTURE NUMBERS FOR HIGHWAYS PASSING UNDER CROSSROADS ARE TO BE PLACED AT THE FOLLOWING POINTS:

(A) FOR STRUCTURES OF THREE OR MORE SPANS, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF THE END COLUMN OF THE RIGHT HAND PIER.

(B) FOR TWO SPAN STRUCTURES, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF EACH END COLUMN OF THE CENTER PIER.



① STANDARD LOCATION DETAIL



U-2 POST IN GROUND

DIVISION OF HIGHWAYS

STRUCTURE NUMBER STANDARD

Designer A. Eriksen	Structure Numbers	F-12-AM	
Detailer B.E. Lee			
Drawing Number 8 of 15			Drawings

(7-1-74)

Revision Dates (Preliminary Stage Only)								