

**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-18. 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. B24. 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<sub>c</sub> SHALL OBTAIN A COMPRESSIVE STRENGTH OF 3000 P.S.I.

**SUMMARY OF QUANTITIES**

Item	Description	Unit	Super-structure	Abut. N#1	Pier N#2	Pier N#3	Abut. N#4	Totals
206	Structure Excavation	Cu. Yd.		84	205	187	84	560
206	Structure Backfill (Class 2)	Cu. Yd.		57	124	110	57	348
①	403 Hot Bituminous Pavement ( )	Ton	306	11			11	328
①	411 Asphalt Cement ( )	Ton						
⑤	503 Drilled Coissons (48" φ)	Lin. Ft.		82			49	131
⑤	503 Drilled Coissons (30" φ)	Lin. Ft.		139			108	247
	509 Structural Steel	Lbs.		126			126	252
②	512 Bearing Device (Capacity = 0 to 250 Tons)	Ea.		2			2	4
②	512 Bearing Device (Capacity = 1,001 to 1,250 Tons)	Ea.			2	2		4
①	515 Waterproofing (Membrane)	Sq. Yd.	2,541	87			87	2,715
(R-1)	518 Bridge Expansion Device (Type 1)	Lin. Ft.		38				38
(R-1)	518 Bridge Expansion Device (Type 4)	Lin. Ft.					38	38
	601 Concrete, Class "A" (Bridge)	Cu. Yd.			47	47		94
	601 Concrete, Class "A" (Bridge) (Colored)	Cu. Yd.		38			38	76
	601 Concrete, Class "D" (Bridge) (Colored)	Cu. Yd.	160	92			90	342
	602 Reinforcing Steel	Lbs.	9652	11,300	2630	2630	11,180	37,392
③	618 Conc. Segmental Superstructure (F-12-AP)	L.S.						1
④	618 Concrete Segmental Pier (F-12-AP)	L.S.						1
	620 Mobilization							0.3

**VOID**  
BY CONSTRUCTION DATE 6-27-77

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	I70-2(52) 197	142	

REVISIONS			
(R-1)	4/17/75	Changed Quantity	CLB
(R-2)	5-6-75	Note	WCB

**INDEX OF DRAWINGS**

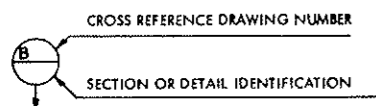
Dwg. N#	Title
B-1	General Information ~ Summary of Quantities
B-2	General Layout
B-3	Engineering Geology
B-4	Elevations
B-5	Construction Layout
B-6	Footing and Coisson Layout
B-7	Abutment N#1 Details (Sheet 1 of 2)
B-8	Abutment N#1 Details ~ Bearing Details (Sheet 2 of 2)
B-9	Pier N#2 Details ~ Pier N#3 Details
B-10	Bearing Device, Pier N#2 and Pier N#3
B-11	Abutment N#4 Details (Sheet 1 of 2)
B-12	Abutment N#4 Details (Sheet 2 of 2)
B-13	Deck Plan and Typical Deck Section
B-14	Bottom Prestressing Tendon Layout and Diaphragm Details
B-15	Negative (Cantilever) Prestressing Curve and Prestressing Details
B-16	Construction Sequence and Prestressing Notes
B-17	Bridge Rail Type 4
B-18	Bridge Expansion Device - Premolded
B-19	Structure Number Standard

DATE	CHECKED BY	DATE	CHECKED BY
3-75	AS	3-75	AS
3-75	AS	3-75	AS
3-75	AS	3-75	AS

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



**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.

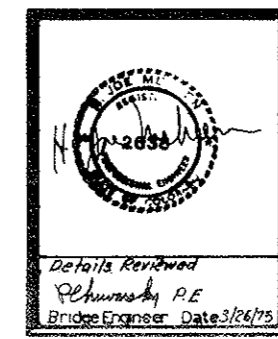
REINFORCING STEEL:	GRADE 60 -	FY = 60,000 LBS. PER SQ. IN. FS = 24,000 LBS. PER SQ. IN.
	GRADE 40 -	FY = 40,000 LBS. PER SQ. IN. FS = 20,000 LBS. PER SQ. IN.
STRUCTURAL STEEL:	A36, GRADE 36 -	FY = 36,000 LBS. PER SQ. IN.
	A588, GRADE 50 -	FY = 50,000 LBS. PER SQ. IN.
CONCRETE:	CLASS A & D -	F <sub>c</sub> = 3000 LBS. PER SQ. IN. N = 9
	CLASS S -	F <sub>c</sub> = 5000 LBS. PER SQ. IN.
	(FOR LIMITS SEE PLANS.)	F <sub>c</sub> = 5500 LBS. PER SQ. IN. F <sub>c</sub> = 6000 LBS. PER SQ. IN.

- ① Futura Items
- ② Masonry Plates to be Included
- ③ a. Concrete Class "S" (Colored) = 1,320 Cu. Yd. (F<sub>c</sub> = 5000 p.s.i.) (Precast)
- b. Concrete Class "S" (Colored) = 400 Cu. Yd. (F<sub>c</sub> = 6000 p.s.i.) (Precast)
- c. Reinforcing Steel = 343,500 Lb.
- d. Prestressing Strands = 98,450 Lb.
- ④ a. Concrete Class "S" (Colored) = 145 Cu. Yd. (F<sub>c</sub> = 5000 p.s.i.) (Precast)
- b. Concrete Class "S" (Colored) = 24 Cu. Yd. (F<sub>c</sub> = 5000 p.s.i.) (Cast-in-place)
- c. Reinforcing Steel = 15,697 Lb.
- d. Prestressing Strands = 4,800 Lb.
- ⑤ It is estimated that there is approximately 110 cu. yd. of concrete and 19,470 lb. of reinforcing steel in Coissons. These quantities are not included in the above Summary.

(R-2) ③ ④ Approximate Quantities for Information only.

**BRIDGE DESCRIPTION**  
Three Continuous Spans (170'0", 260'0", 170'0")  
Segmental Post-Tensioned Concrete Box  
Girder Bridge

Over West Ten Mile Creek Sta. 1011+00 Near  
Vail Pass  
58'0" Roadway, 2'0" Bridge Rails Type 4



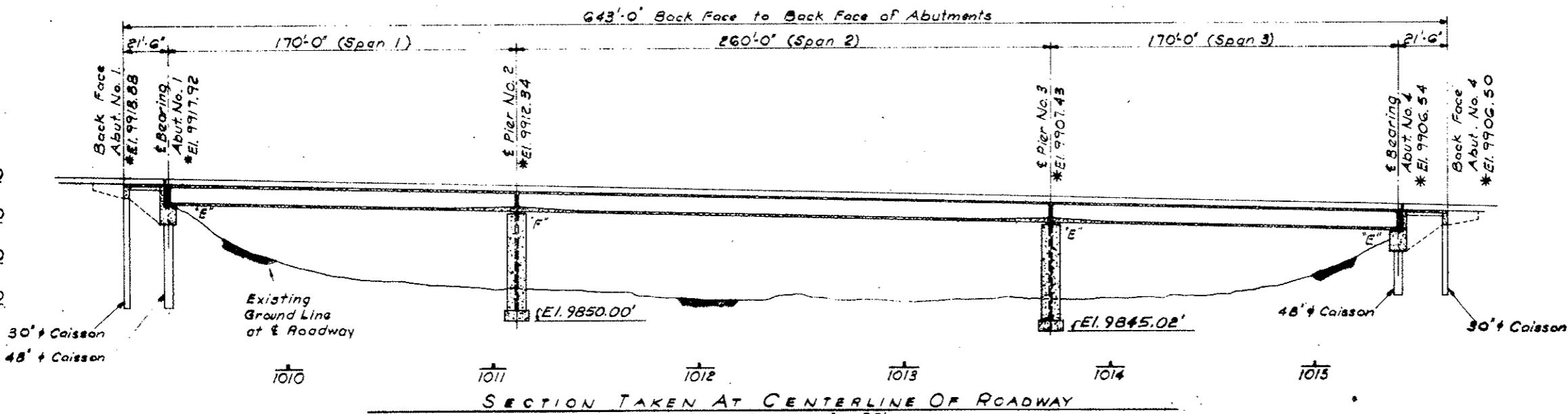
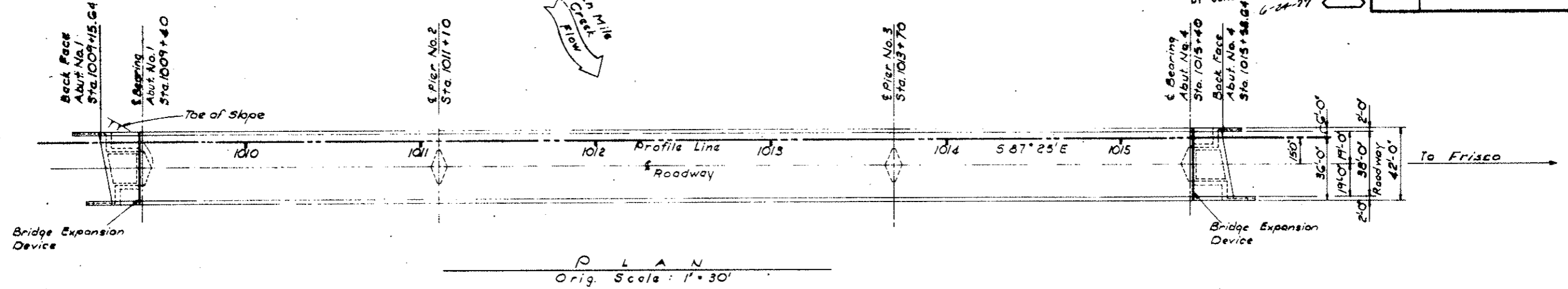
DIVISION OF HIGHWAYS	
GENERAL INFORMATION	
SUMMARY OF QUANTITIES	
Station 1009+5.64 to 1015+58.64	
Station	
Near Vail Pass Sec. 25 T. 6S R. 79W	
Designer A. Erikson	Structure Numbers F-12-AP
Drafter J. Williams	of 19 Drawings
Drawing Number B 1	

**HYDRAULIC DATA:**

Drainage Area = 22.3 Sq. Miles  
Q<sub>100</sub> = 350 C.F.S.

PROJECT ROAD NUMBER	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
170	COLORADO	170-2(62)197	143	
REVISIONS				

VOID BY CONSTRUCTION DATE 6-24-77

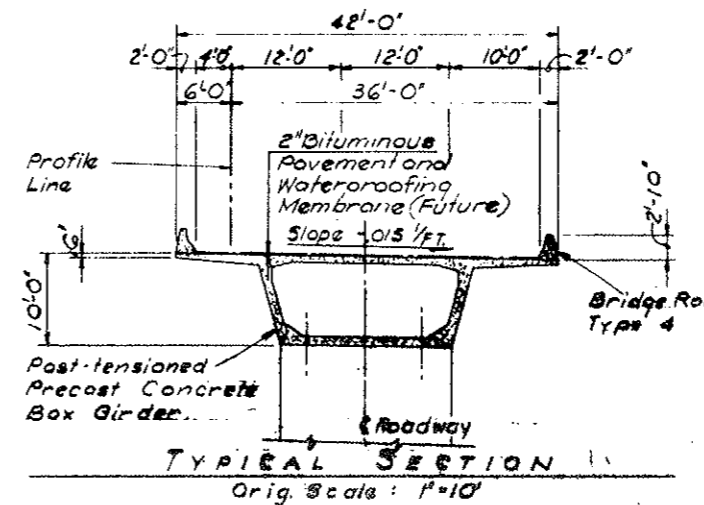
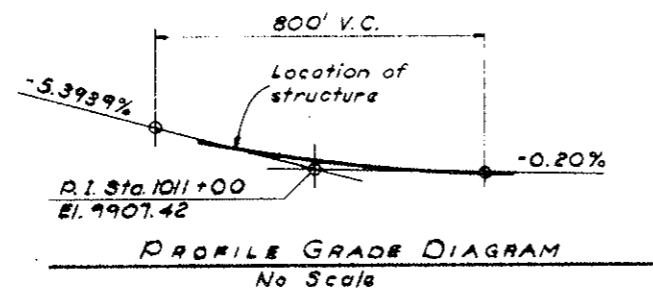


'E' Indicates Expansion Bearing  
'F' Indicates Fixed Bearing  
\*Elevations are to Finished Roadway along the Profile Line.

Live Loading HS-20-44 or Interstate Alternate.

Caisson Size	Location	Specified Tip Elev.
30" Dia.	Abut. No. 1	9858.00
48" Dia.	Abut. No. 1	9858.00
30" Dia.	Abut. No. 4	9863.00
48" Dia.	Abut. No. 4	9863.00

All Caissons are end bearing.

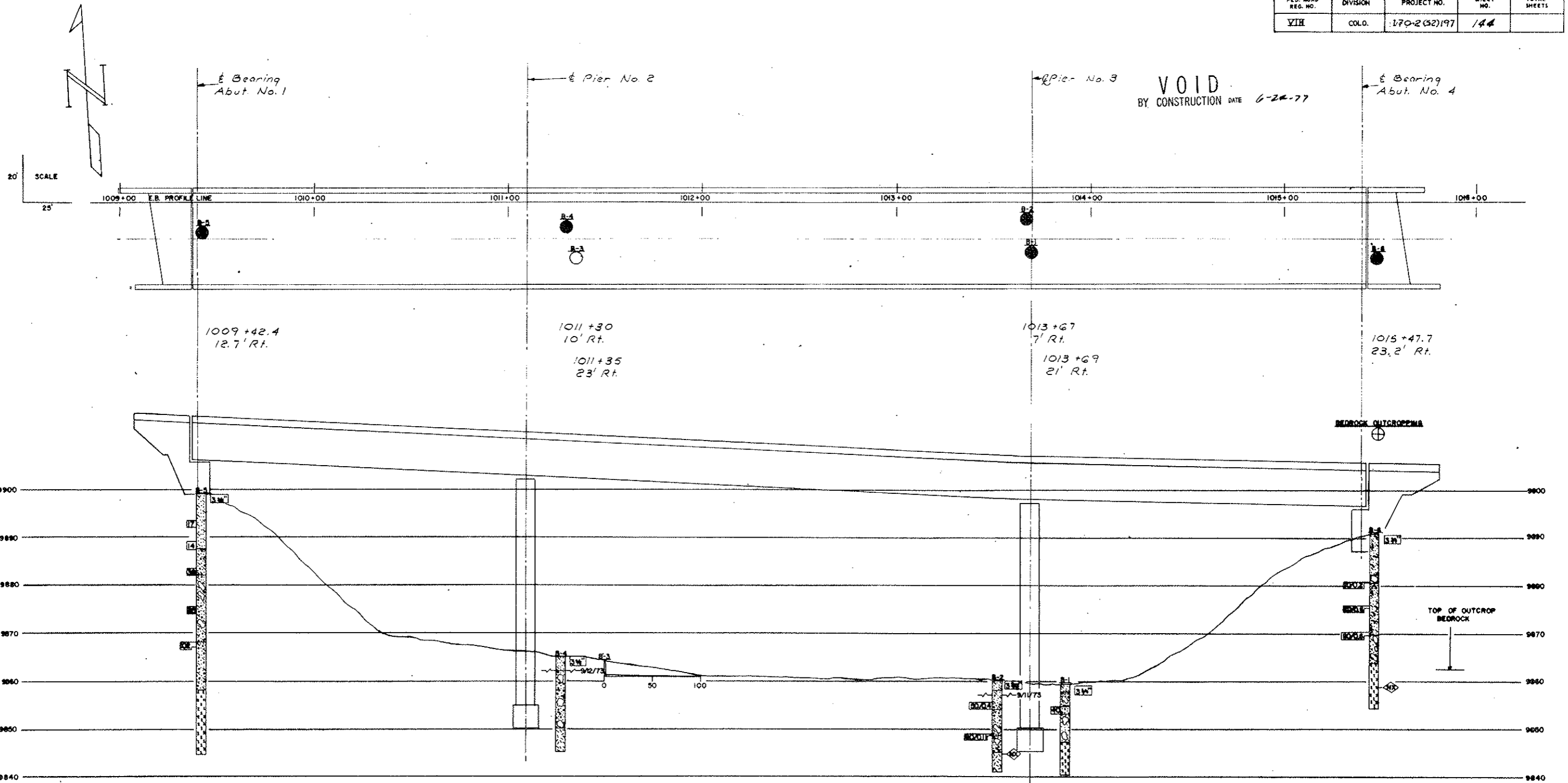


**DIVISION OF HIGHWAYS**

**GENERAL LAYOUT**

Designed by: A. Erikson  
Checked by: E. Forster  
Drawing Number: 11-2  
Sheet: 19 of 19  
Revision: 1  
Preliminary Stage Only

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
YTH	COLO.	170-2(52)197	144	



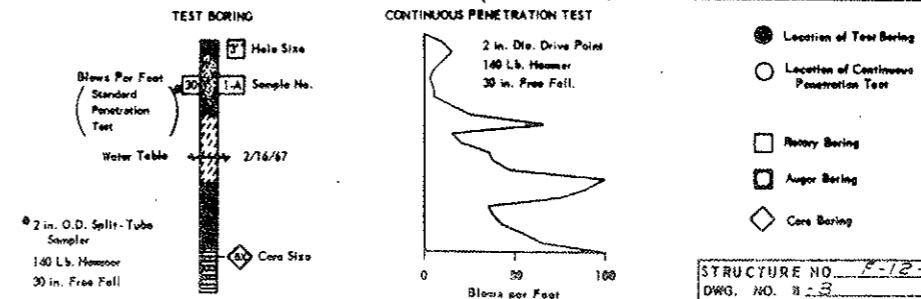
**SUMMARY OF TEST RESULTS**

Sample No.	Depth	Classification	Grading Analysis				Atterberg Limits			Water Cont. %	Dry Unit Weight	Unconfined Strength	Triaxial Shear Strength					Dist. Sample (inches)
			Coars. or Visual	AASHTO	Gravel	Coars. Sand	Fine Sand	Silt and Clay	Liquid Limit				Plastic Limit	Plastic Index	Unconsolidated	Consolidated		
												$\sigma_1$	$\sigma_3$	$\phi$	$c$	Time	Press.	

**TYPE OF MATERIAL**

- SILTY SAND
- SAND & GRAVEL
- SAND & BOULDERS
- BOULDER
- SILTY SAND & GRAVEL
- GRANITE BEDROCK
- SILTY SAND W/COBBLES
- SILTY SAND W/BOULDERS
- SAND & GRAVEL W/COBBLES & BOULDERS
- METAMORPHIC BEDROCK
- SILTY SAND & GRAVEL W/BOULDERS

**LEGEND**



**DIVISION OF HIGHWAYS  
 STATE OF COLORADO**  
**ENGINEERING GEOLOGY**  
 WEST  
 Across TEM MILE CREEK  
 Sta. 1009+15.64 To 1015+58.64  
 Near W. PASS EAST, Sec. 25, T. 35, R. 27W.  
 Geologist R.K.B.  
 Made by D.L.S.  
 Checked by D.L.S.  
 Approved by  
 Bridge Engineer  
 Date: 19

STRUCTURE NO. P-12-A  
 DWG. NO. B-3 OF 19

VAIL PASS STA 1011+00  
SEGMENTAL CONCRETE BRIDGE  
NEHEEN ENGINEERING CO  
ELEVATIONS ARE AT TOP OF  
CONCRETE DECK

INPUT DATA FOR BRIDGE

POT = 1009 + 37.5000 ALPHA = 0 0 0.00 RDSY = 38.0000 GBK = -5.3939  
PI = 1011 + 0.0000 EPI = 9907.2533 VC = 888 GAH = -2.000  
TYPE = 1 SLOPE = -.0158

STATION ELEVATION

STATION	ELEVATION
SOUTH INSIDE STA BACK 1009 + 40.00	9917.26
1 20TH 1009 + 48.50	9916.92
2 20TH 1009 + 57.00	9916.60
3 20TH 1009 + 65.50	9916.29
4 20TH 1009 + 74.00	9915.98
5 20TH 1009 + 82.50	9915.67
6 20TH 1009 + 91.00	9915.37
7 20TH 1009 + 99.50	9915.08
8 20TH 1010 + 8.00	9914.79
9 20TH 1010 + 16.50	9914.50
10 20TH 1010 + 25.00	9914.22
11 20TH 1010 + 33.50	9913.94
12 20TH 1010 + 42.00	9913.67
13 20TH 1010 + 50.50	9913.40
14 20TH 1010 + 59.00	9913.14
15 20TH 1010 + 67.50	9912.88
16 20TH 1010 + 76.00	9912.63
17 20TH 1010 + 84.50	9912.38
18 20TH 1010 + 93.00	9912.13
19 20TH 1011 + 1.50	9911.90
STA AHEAD 1011 + 10.00	9911.66
SOUTH OUTSIDE STA BACK 1009 + 40.00	9917.21
1 20TH 1009 + 48.50	9916.89
2 20TH 1009 + 57.00	9916.57
3 20TH 1009 + 65.50	9916.26
4 20TH 1009 + 74.00	9915.95
5 20TH 1009 + 82.50	9915.64
6 20TH 1009 + 91.00	9915.34
7 20TH 1009 + 99.50	9915.05
8 20TH 1010 + 8.00	9914.76
9 20TH 1010 + 16.50	9914.47
10 20TH 1010 + 25.00	9914.19
11 20TH 1010 + 33.50	9913.91
12 20TH 1010 + 42.00	9913.64
13 20TH 1010 + 50.50	9913.37
14 20TH 1010 + 59.00	9913.11
15 20TH 1010 + 67.50	9912.85
16 20TH 1010 + 76.00	9912.60
17 20TH 1010 + 84.50	9912.35
18 20TH 1010 + 93.00	9912.10
19 20TH 1011 + 1.50	9911.87
STA AHEAD 1011 + 10.00	9911.63
CL BEARING PIER 2 CL BEARING PIER 3 NORTH OUTSIDE STA BACK 1011 + 10.00	9912.26
1 20TH 1011 + 23.00	9911.91
2 20TH 1011 + 36.00	9911.57
3 20TH 1011 + 49.00	9911.24
4 20TH 1011 + 62.00	9910.93
5 20TH 1011 + 75.00	9910.62
6 20TH 1011 + 88.00	9910.33
7 20TH 1012 + 1.00	9910.04
8 20TH 1012 + 14.00	9909.77
9 20TH 1012 + 27.00	9909.51
10 20TH 1012 + 40.00	9909.26
11 20TH 1012 + 53.00	9909.02
12 20TH 1012 + 66.00	9908.79
13 20TH 1012 + 79.00	9908.57
14 20TH 1012 + 92.00	9908.36
15 20TH 1013 + 5.00	9908.17
16 20TH 1013 + 18.00	9907.98
17 20TH 1013 + 31.00	9907.81
18 20TH 1013 + 44.00	9907.65
19 20TH 1013 + 57.00	9907.49
STA AHEAD 1013 + 70.00	9907.35
NORTH INSIDE STA BACK 1011 + 10.00	9912.23
1 20TH 1011 + 23.00	9911.88
2 20TH 1011 + 36.00	9911.54
3 20TH 1011 + 49.00	9911.21
4 20TH 1011 + 62.00	9910.90
5 20TH 1011 + 75.00	9910.59
6 20TH 1011 + 88.00	9910.30
7 20TH 1012 + 1.00	9910.01
8 20TH 1012 + 14.00	9909.74
9 20TH 1012 + 27.00	9909.48
10 20TH 1012 + 40.00	9909.23
11 20TH 1012 + 53.00	9908.99
12 20TH 1012 + 66.00	9908.76
13 20TH 1012 + 79.00	9908.54
14 20TH 1012 + 92.00	9908.33
15 20TH 1013 + 5.00	9908.14
16 20TH 1013 + 18.00	9907.95
17 20TH 1013 + 31.00	9907.78
18 20TH 1013 + 44.00	9907.62
19 20TH 1013 + 57.00	9907.46
STA AHEAD 1013 + 70.00	9907.32
PROFILE LINE STA BACK 1011 + 10.00	9912.17
1 20TH 1011 + 23.00	9911.82
2 20TH 1011 + 36.00	9911.48
3 20TH 1011 + 49.00	9911.15
4 20TH 1011 + 62.00	9910.84
5 20TH 1011 + 75.00	9910.53
6 20TH 1011 + 88.00	9910.24
7 20TH 1012 + 1.00	9909.95
8 20TH 1012 + 14.00	9909.68
9 20TH 1012 + 27.00	9909.42
10 20TH 1012 + 40.00	9909.17
11 20TH 1012 + 53.00	9908.93
12 20TH 1012 + 66.00	9908.70
13 20TH 1012 + 79.00	9908.48
14 20TH 1012 + 92.00	9908.27
15 20TH 1013 + 5.00	9908.08
16 20TH 1013 + 18.00	9907.89
17 20TH 1013 + 31.00	9907.72
18 20TH 1013 + 44.00	9907.56
19 20TH 1013 + 57.00	9907.40
STA AHEAD 1013 + 70.00	9907.26

STATION ELEVATION

STATION	ELEVATION
CL BRIDGE STA BACK 1011 + 10.00	9911.95
1 20TH 1011 + 23.00	9911.69
2 20TH 1011 + 36.00	9911.26
3 20TH 1011 + 49.00	9910.93
4 20TH 1011 + 62.00	9910.61
5 20TH 1011 + 75.00	9910.31
6 20TH 1011 + 88.00	9910.01
7 20TH 1012 + 1.00	9909.73
8 20TH 1012 + 14.00	9909.46
9 20TH 1012 + 27.00	9909.19
10 20TH 1012 + 40.00	9908.94
11 20TH 1012 + 53.00	9908.70
12 20TH 1012 + 66.00	9908.47
13 20TH 1012 + 79.00	9908.26
14 20TH 1012 + 92.00	9908.05
15 20TH 1013 + 5.00	9907.85
16 20TH 1013 + 18.00	9907.67
17 20TH 1013 + 31.00	9907.49
18 20TH 1013 + 44.00	9907.33
19 20TH 1013 + 57.00	9907.18
STA AHEAD 1013 + 70.00	9906.61
SOUTH INSIDE STA BACK 1011 + 10.00	9911.66
1 20TH 1011 + 23.00	9911.31
2 20TH 1011 + 36.00	9910.97
3 20TH 1011 + 49.00	9910.64
4 20TH 1011 + 62.00	9910.33
5 20TH 1011 + 75.00	9910.02
6 20TH 1011 + 88.00	9909.73
7 20TH 1012 + 1.00	9909.48
8 20TH 1012 + 14.00	9909.17
9 20TH 1012 + 27.00	9908.86
10 20TH 1012 + 40.00	9908.62
11 20TH 1012 + 53.00	9908.42
12 20TH 1012 + 66.00	9908.19
13 20TH 1012 + 79.00	9907.97
14 20TH 1012 + 92.00	9907.76
15 20TH 1013 + 5.00	9907.57
16 20TH 1013 + 18.00	9907.38
17 20TH 1013 + 31.00	9907.21
18 20TH 1013 + 44.00	9907.05
19 20TH 1013 + 57.00	9906.89
STA AHEAD 1013 + 70.00	9906.75
SOUTH OUTSIDE STA BACK 1011 + 10.00	9911.63
1 20TH 1011 + 23.00	9911.28
2 20TH 1011 + 36.00	9910.94
3 20TH 1011 + 49.00	9910.61
4 20TH 1011 + 62.00	9910.30
5 20TH 1011 + 75.00	9910.00
6 20TH 1011 + 88.00	9909.70
7 20TH 1012 + 1.00	9909.41
8 20TH 1012 + 14.00	9909.14
9 20TH 1012 + 27.00	9908.88
10 20TH 1012 + 40.00	9908.63
11 20TH 1012 + 53.00	9908.39
12 20TH 1012 + 66.00	9908.16
13 20TH 1012 + 79.00	9907.94
14 20TH 1012 + 92.00	9907.73
15 20TH 1013 + 5.00	9907.54
16 20TH 1013 + 18.00	9907.35
17 20TH 1013 + 31.00	9907.18
18 20TH 1013 + 44.00	9907.02
19 20TH 1013 + 57.00	9906.84
STA AHEAD 1013 + 70.00	9906.72
CL BEARING PIER 3 CL BEARING PIER 4 NORTH OUTSIDE STA BACK 1013 + 70.00	9907.35
1 20TH 1013 + 83.00	9907.27
2 20TH 1013 + 96.00	9907.18
3 20TH 1013 + 95.50	9907.11
4 20TH 1014 + 4.00	9907.03
5 20TH 1014 + 12.50	9906.97
6 20TH 1014 + 21.00	9906.90
7 20TH 1014 + 29.50	9906.85
8 20TH 1014 + 38.00	9906.79
9 20TH 1014 + 46.50	9906.74
10 20TH 1014 + 55.00	9906.70
11 20TH 1014 + 63.50	9906.66
12 20TH 1014 + 72.00	9906.62
13 20TH 1014 + 80.50	9906.59
14 20TH 1014 + 89.00	9906.57
15 20TH 1014 + 97.50	9906.55
16 20TH 1014 + 106.00	9906.53
17 20TH 1015 + 14.50	9906.51
18 20TH 1015 + 23.00	9906.50
19 20TH 1015 + 31.50	9906.48
STA AHEAD 1015 + 40.00	9906.46
NORTH INSIDE STA BACK 1013 + 70.00	9907.32
1 20TH 1013 + 83.00	9907.24
2 20TH 1013 + 96.00	9907.15
3 20TH 1013 + 95.50	9907.08
4 20TH 1014 + 4.00	9907.00
5 20TH 1014 + 12.50	9906.94
6 20TH 1014 + 21.00	9906.87
7 20TH 1014 + 29.50	9906.82
8 20TH 1014 + 38.00	9906.76
9 20TH 1014 + 46.50	9906.71
10 20TH 1014 + 55.00	9906.67
11 20TH 1014 + 63.50	9906.63
12 20TH 1014 + 72.00	9906.60
13 20TH 1014 + 80.50	9906.58
14 20TH 1014 + 89.00	9906.56
15 20TH 1014 + 97.50	9906.54
16 20TH 1015 + 6.00	9906.52
17 20TH 1015 + 14.50	9906.50
18 20TH 1015 + 23.00	9906.47
19 20TH 1015 + 31.50	9906.46
STA AHEAD 1015 + 40.00	9906.43

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	170-2(52)197	145	

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	4/4/75	REPAIR	WCB

**VOID**  
BY CONSTRUCTION DATE  
6-28-77

DATE	CHECKED BY	QUANTITIES BY	CHECKED BY

STATION	ELEVATION
BACKFACE ABUT 1 NORTH OUTSIDE 1009 + 14.00	9918.64
PROFILE LINE 1009 + 16.84	9918.71
CL BRIDGE 1009 + 18.90	9918.38
SOUTH OUTSIDE 1009 + 22.90	9917.89
.28L NORTH OUTSIDE 1009 + 20.38	9918.61
PROFILE LINE 1009 + 21.23	9918.49
CL BRIDGE 1009 + 23.98	9918.17
SOUTH OUTSIDE 1009 + 28.38	9917.74
.60L NORTH OUTSIDE 1009 + 26.26	9918.38
PROFILE LINE 1009 + 28.82	9918.27
CL BRIDGE 1009 + 28.28	9917.98
SOUTH OUTSIDE 1009 + 30.26	9917.60
.78L NORTH OUTSIDE 1009 + 32.13	9918.10
PROFILE LINE 1009 + 32.41	9918.08
CL BRIDGE 1009 + 33.13	9917.79
SOUTH OUTSIDE 1009 + 34.13	9917.44
FRONT FACE ABUT 1 NORTH OUTSIDE 1009 + 38.00	9917.82
NORTH INSIDE 1009 + 38.00	9917.49
PROFILE LINE 1009 + 38.00	9918.00
CL BRIDGE 1009 + 38.00	9917.78
SOUTH INSIDE 1009 + 38.00	9917.49
SOUTH OUTSIDE 1009 + 38.00	9917.29
CL BEARING ABUT 1 NORTH OUTSIDE 1009 + 40.00	9917.84
NORTH INSIDE 1009 + 40.00	9917.81
PROFILE LINE 1009 + 40.00	9917.75
CL BRIDGE 1009 + 40.00	9917.53
SOUTH INSIDE 1009 + 40.00	9917.24
SOUTH OUTSIDE 1009 + 40.00	9917.21
CL BEARING PIER 2 NORTH OUTSIDE 1011 + 10.00	9912.26
NORTH INSIDE 1011 + 10.00	9912.23
PROFILE LINE 1011 + 10.00	9912.17
CL BRIDGE 1011 + 10.00	9912.08
SOUTH INSIDE 1011 + 10.00	9911.86
SOUTH OUTSIDE 1011 + 10.00	9911.63
CL BEARING PIER 3 NORTH OUTSIDE 1013 + 70.00	9907.35
NORTH INSIDE 1013 + 70.00	9907.32
PROFILE LINE 1013 + 70.00	9907.26
CL BRIDGE 1013 + 70.00	9907.08
SOUTH INSIDE 1013 + 70.00	9906.75
SOUTH OUTSIDE 1013 + 70.00	9906.72
CL BEARING ABUT 4 NORTH OUTSIDE 1015 + 40.00	9906.46
NORTH INSIDE 1015 + 40.00	9906.43
PROFILE LINE 1015 + 40.00	9906.37
CL BRIDGE 1015 + 40.00	9906.15
SOUTH INSIDE 1015 + 40.00	9905.86
SOUTH OUTSIDE 1015 + 40.00	9905.83
FRONT FACE ABUT 4 NORTH OUTSIDE 1015 + 42.00	9906.46
NORTH INSIDE 1015 + 42.00	9906.00
PROFILE LINE 1015 + 42.00	9906.54
CL BRIDGE 1015 + 42.00	9906.31
SOUTH INSIDE 1015 + 42.00	9906.03
SOUTH OUTSIDE 1015 + 42.00	9906.83
.28L NORTH OUTSIDE 1015 + 45.88	9906.45
PROFILE LINE 1015 + 46.18	9906.36
CL BRIDGE 1015 + 46.88	9906.13
SOUTH OUTSIDE 1015 + 47.88	9906.82
.60L NORTH OUTSIDE 1015 + 49.75	9906.44
PROFILE LINE 1015 + 50.32	9906.32
CL BRIDGE 1015 + 51.75	9906.12
SOUTH OUTSIDE 1015 + 53.75	9906.81
.78L NORTH OUTSIDE 1015 + 53.68	9906.44
PROFILE LINE 1015 + 54.46	9906.34
CL BRIDGE 1015 + 55.83	9906.11
SOUTH OUTSIDE 1015 + 58.83	9906.79
BACKFACE ABUT 4 NORTH OUTSIDE 1015 + 57.50	9906.43
PROFILE LINE 1015 + 58.84	9906.33
CL BRIDGE 1015 + 61.50	9906.10
SOUTH OUTSIDE 1015 + 65.50	9906.78

**DIVISION OF HIGHWAYS**

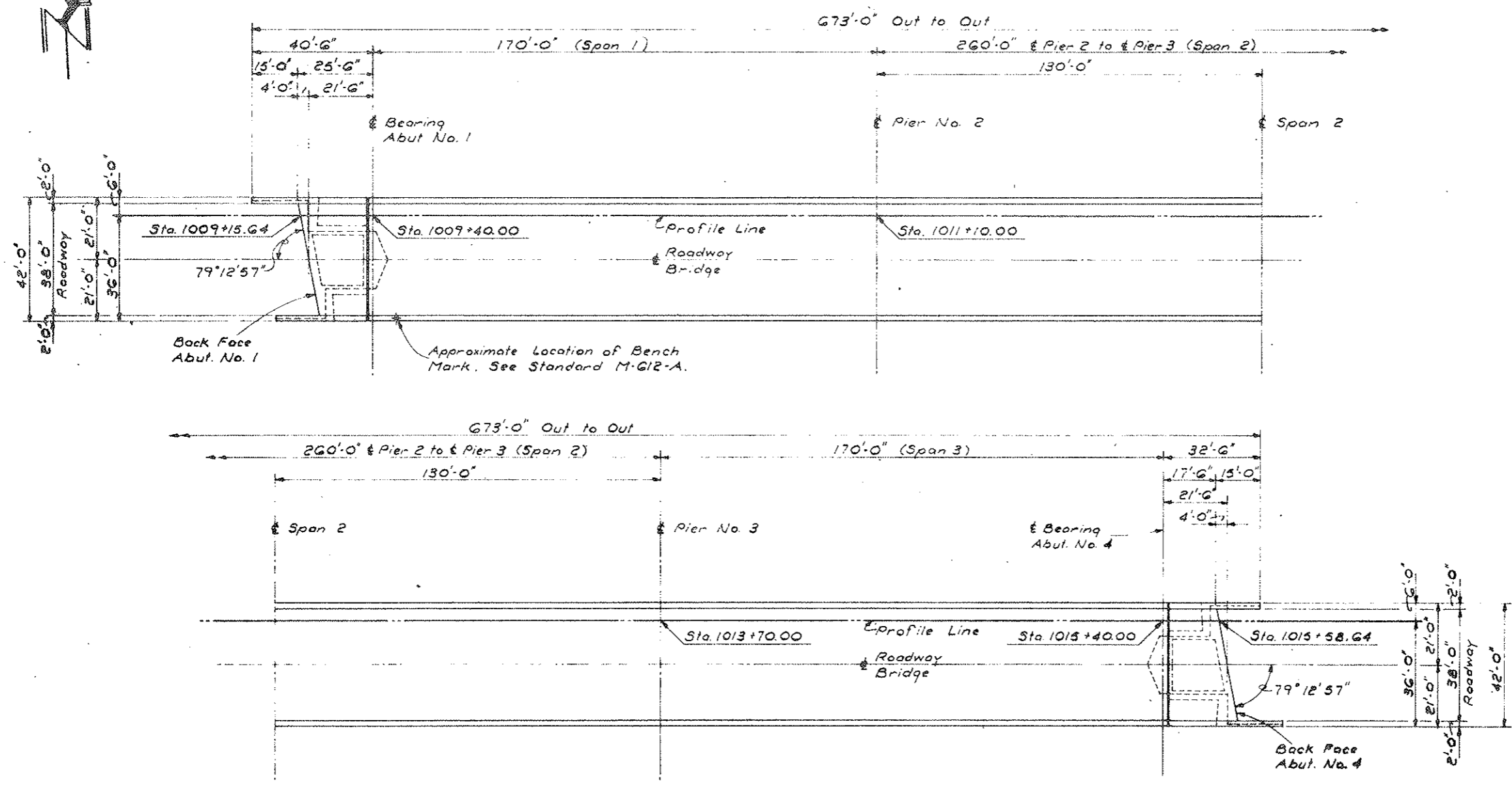
*ELEVATIONS*

Designer <i>A. Erikson</i>	Structure <i>F-12-AP</i>
Dataller <i>D. Griner</i>	Numbers
Drawing Number <i>B-4</i> of <i>19</i> Drawings	

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(32)197	146	

REVISIONS	

**VOID**  
BY CONSTRUCTION DATE 6-22-77



DATE	BY	REVISION
3-7-75	AE	DESIGNED BY
3-7-75	AE	CHECKED BY
5-7-75	AE	REVISIONS BY
5-7-75	AE	CHECKED BY
		DATE
		BY

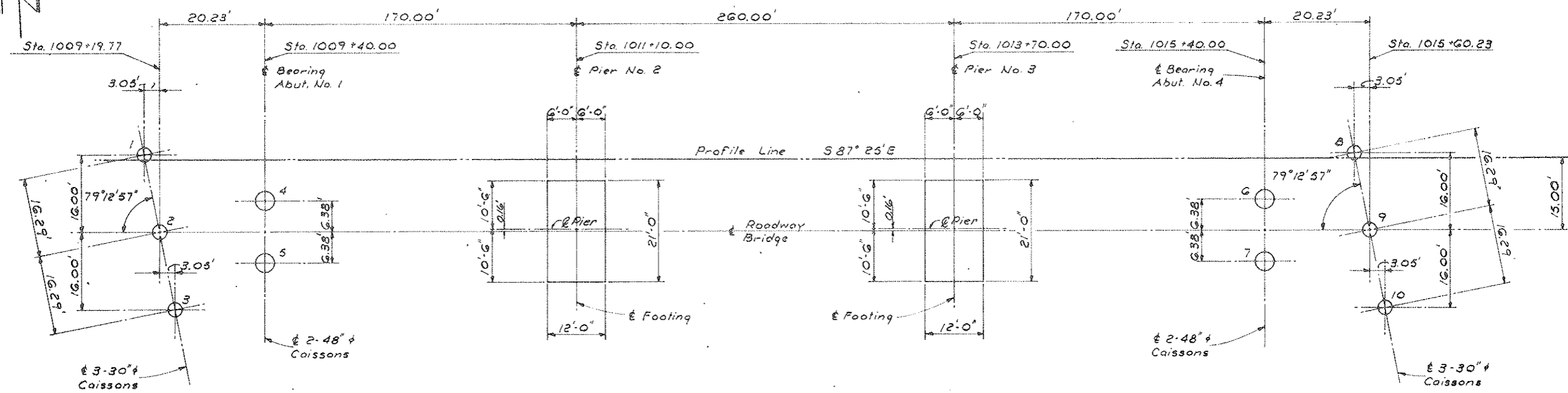
**CONSTRUCTION LAYOUT**  
Orig. Scale: 1"=20'

<b>DIVISION OF HIGHWAYS</b>	
CONSTRUCTION LAYOUT	
Designer <b>A. Eriksen</b>	Structures <b>P-12-AP</b>
Detailer <b>D. Griner</b>	Numbers
Drawing Number <b>B-5</b> of <b>19</b> Drawings	
Barbara Dostal	Barbara Dostal

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52)197	147	

VOID BY CONSTRUCTION DATE 6-24-77

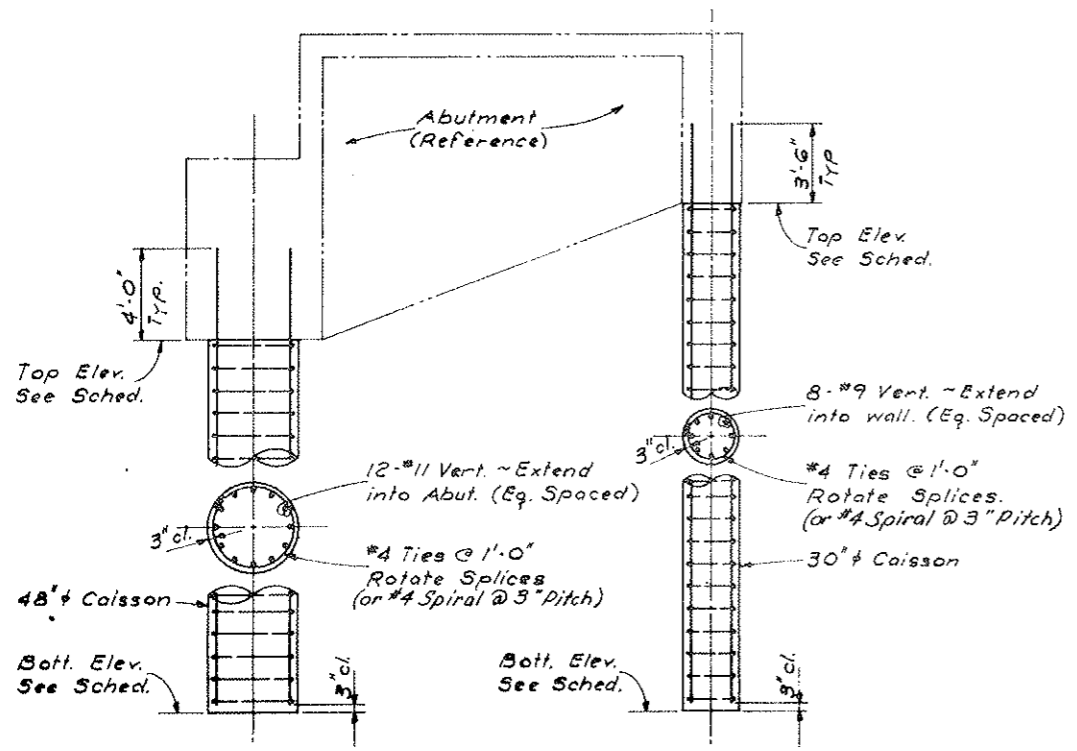
REVISIONS			
R-1	4/4/75	REPRINT	WCB



**FOOTING AND CAISSON LAYOUT**  
Orig. Scale: 3/32" = 1'-0"

- Notes:**
- All dimensions are at the bottom of concrete.
  - All Caissons are end bearing. Allowable Bearing Pressure = 25 tons per square foot. Max. Design = 23.9 tons/ft<sup>2</sup>.
  - Pier Footing Pressure = Allowable = 15 tons per square foot. Max. Design = 15 tons per square foot.
  - All Caissons shall bear on solid bedrock.

No.	Top Elev.	Bott. Elev.
1	9911.00	9858.00
2	9911.00	9858.00
3	9911.00	9858.00
4	9898.90	9858.00
5	9898.90	9858.00
6	9887.57	9863.00
7	9887.57	9863.00
8	9898.90	9863.00
9	9898.90	9863.00
10	9898.90	9863.00



**CAISSON DETAIL**  
No Scale

DESIGNED BY	AE	CHECKED BY	AE
QUANTITIES BY	AE	DATE	3-75
DETAILS BY	AE	DATE	3-75

**DIVISION OF HIGHWAYS**

**FOOTING AND CAISSON LAYOUT**

Designer	A. Eriksen	Structure Numbers	F-12-AP
Detailer	D. Griner	Drawing Number	8 - 6 of 19 Drawings

Revision Dates: (Preliminary Stage Only)

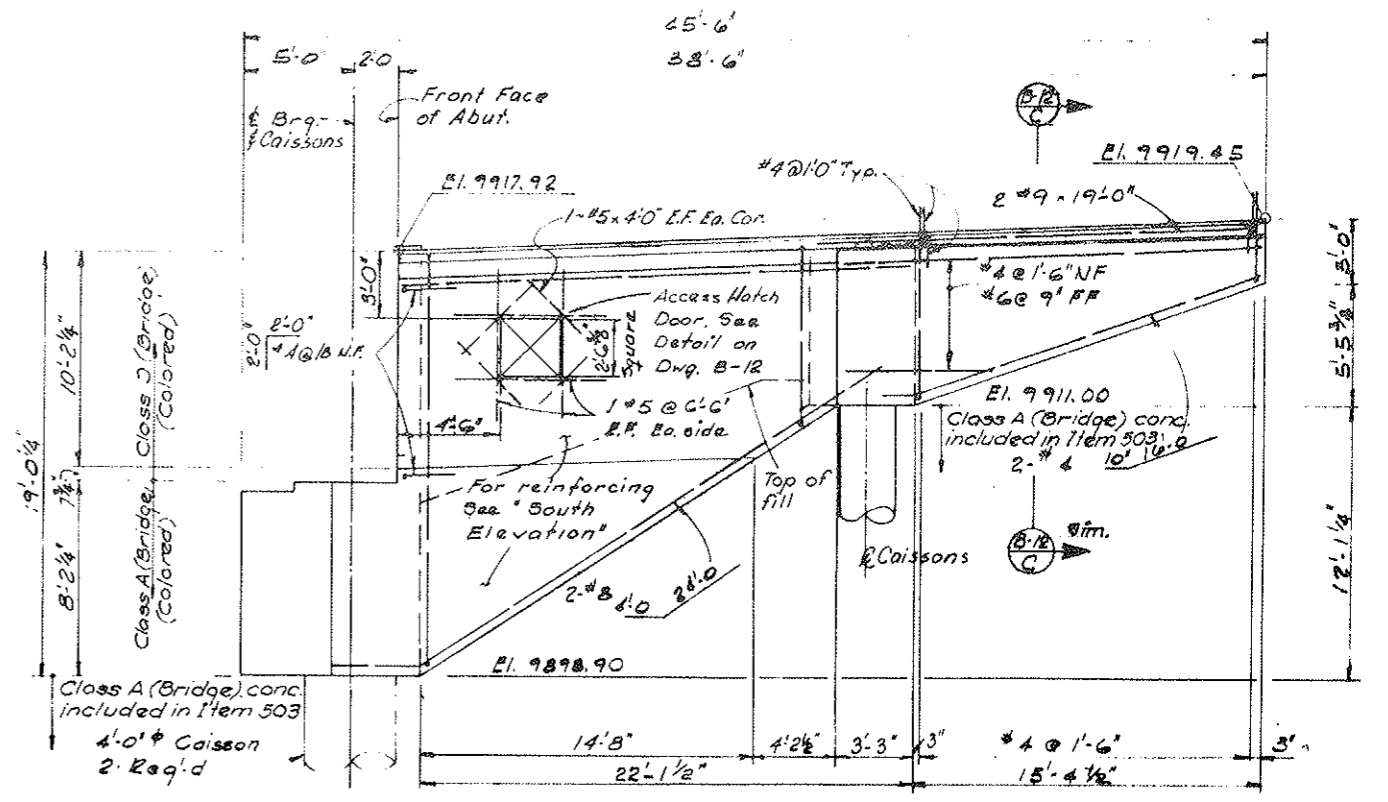
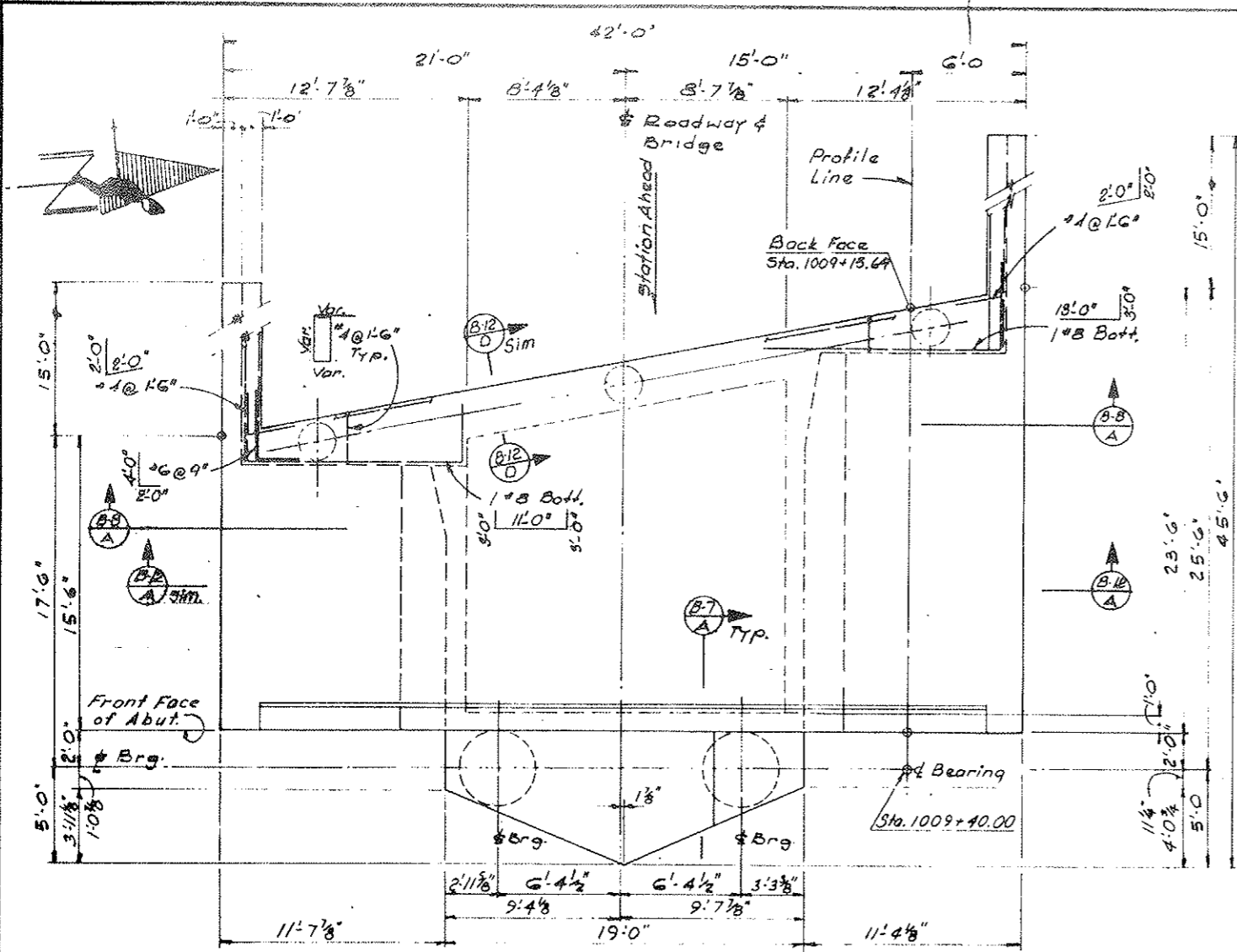
**VOID**  
BY CONSTRUCTION DATE 6-24-77

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52)197	148	

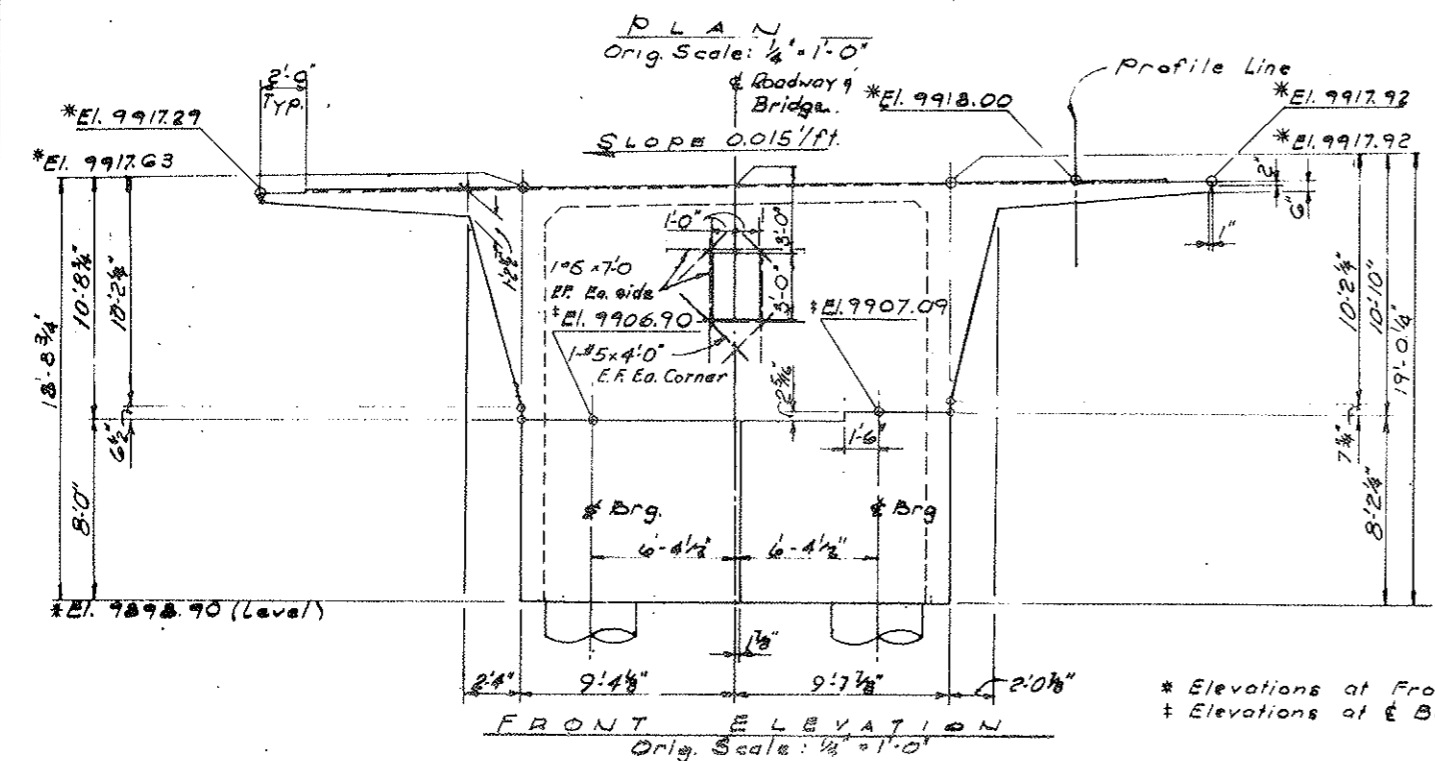
REVISIONS				
R-1	4/14/75	REPRINT		WCB

REVISION	DATE	CHECKED BY	QUANTITIES BY
1	3-7-72	AE	AE
2	3-7-72	AE	AE
3	3-7-72	AE	AE
4	3-7-72	AE	AE



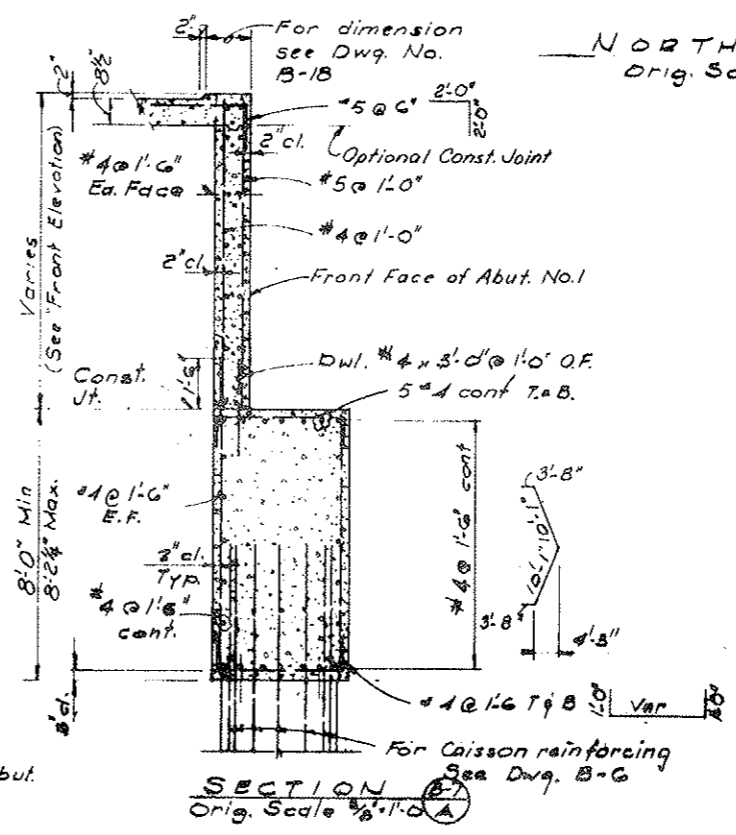
**NORTH ELEVATION**  
Orig. Scale: 1/2" = 1'-0"

Note: Fill Abutments to bearing level with Class II Backfill



**FRONT ELEVATION**  
Orig. Scale: 1/2" = 1'-0"

\* Elevations at Frontface of Abut.  
† Elevations at E Bearing.



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

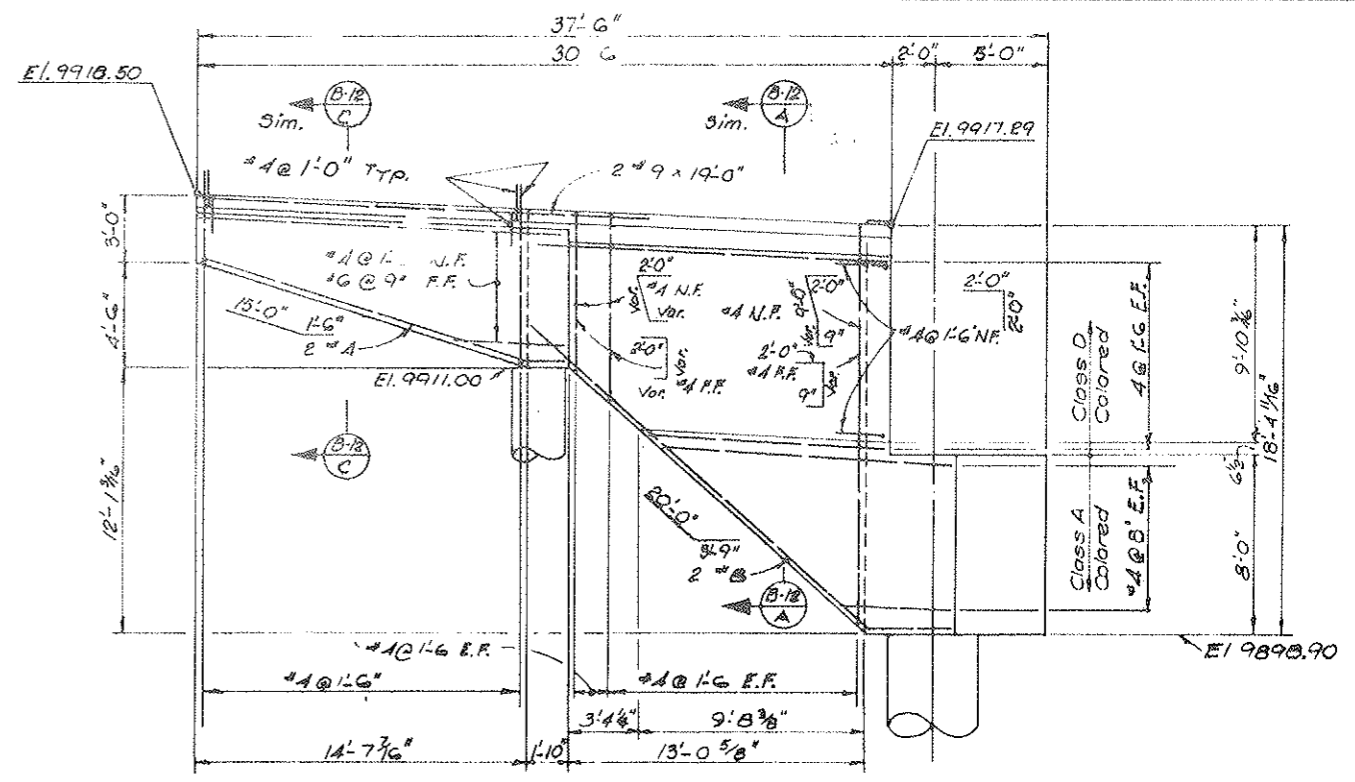
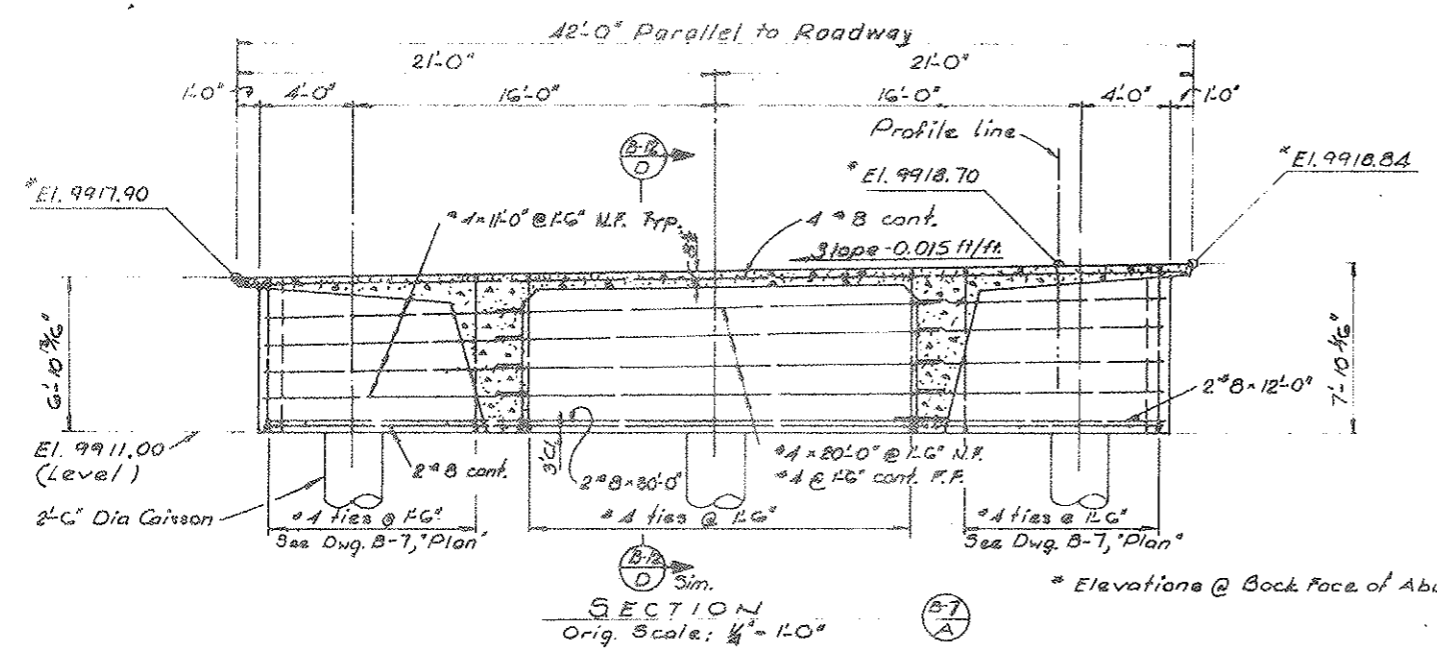
<b>DIVISION OF HIGHWAYS</b>		
ABUTMENT No. 1 DETAILS		
Sheet 1 of 2		
Designer <b>A. Erikson</b>	Structure Numbers	<b>F-12-AP</b>
Detailer <b>R.E. Fiskard</b>		
Drawing Number <b>B-7</b>	of <b>19</b>	Drawings

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2 (52) 197	149	

REVISIONS	
1	4-17-78 Rev. Brq. Pressure, Added Movement Tables, CLB

VOID  
BY CONSTRUCTION DATE  
6-28-77

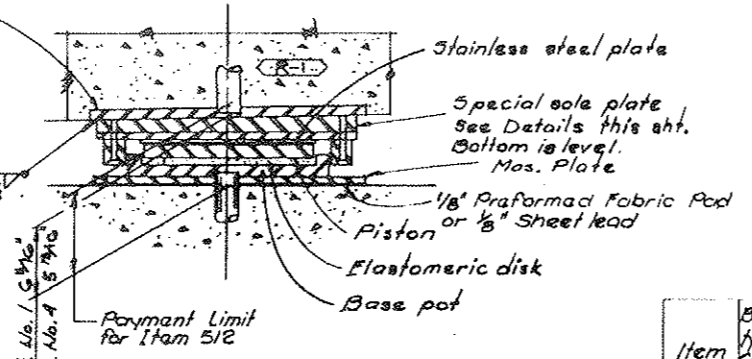


SECTION  
Orig. Scale: 1/4" = 1'-0"

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

Anchorage Note: Type of anchorage to be determined by bearing manufacturer and submitted on shop drawings for the Department's approval.

Masonry Plate Embedded (3/8" min.)  
See plan below



Lateral capacity = 18 Tons

GUIDED EXPANSION BEARING

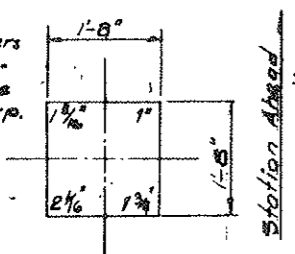
Abut. No. 1 & 4 Capacity = 230 Tons - 4 Req'd. (RT)  
Capacity = DL + LL + I  
Orig. Scale: None

BEARING DEVICES

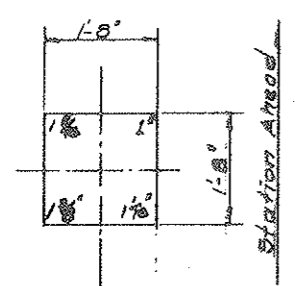
Item	Bearing type & Capacity	Horiz. Capacity Longitu. Trans. dinal (kips) verse	Actual load (kips)	Ultimate load (kips)	H (in.)	Max Movement (in.)	
Abut. 1	E-250	12	113	380	598	6 3/16	5 1/16
Abut. 2	E-250	12	113	380	598	5 18/16	3 1/16

\* Actual load shall be used to determine bearing capacity

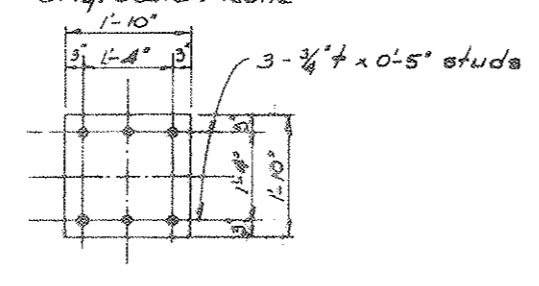
Note: Numbers in corners indicate plate thickness. Typ.



SOLE PLATE DETAIL  
Abut. No. 1  
Orig. Scale: 1/4" = 1'-0"



SOLE PLATE DETAIL  
Abut. No. 4  
Orig. Scale: 1/4" = 1'-0"



BEARING PLATE DETAIL  
Typ. each Abut.  
Orig. Scale: 1/4" = 1'-0"

ALLOWABLE ULTIMATE BEARING PRESSURES:

- At Abutments: (f'c = 3890 psi)  
1785 psi
- At Piers: (f'c = 5000 psi)  
2975 psi
- In Superstructure: (f'c = 5500 psi)  
3273 psi

DIVISION OF HIGHWAYS

ABUTMENT NO. 1 DETAILS  
BEARING DETAILS

Sheet 2 of 2

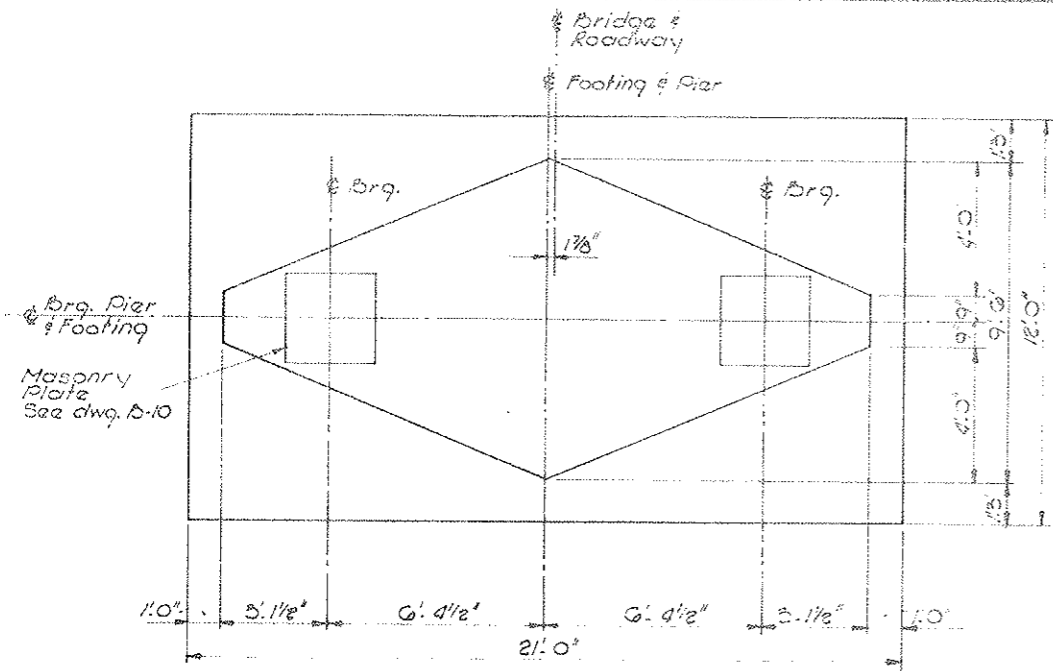
Designer	A. Eriksen	Structure	F-12-AP
Detailer	A. Eriksen	Number	
Drawing Number	B-8	of 19	Drawings



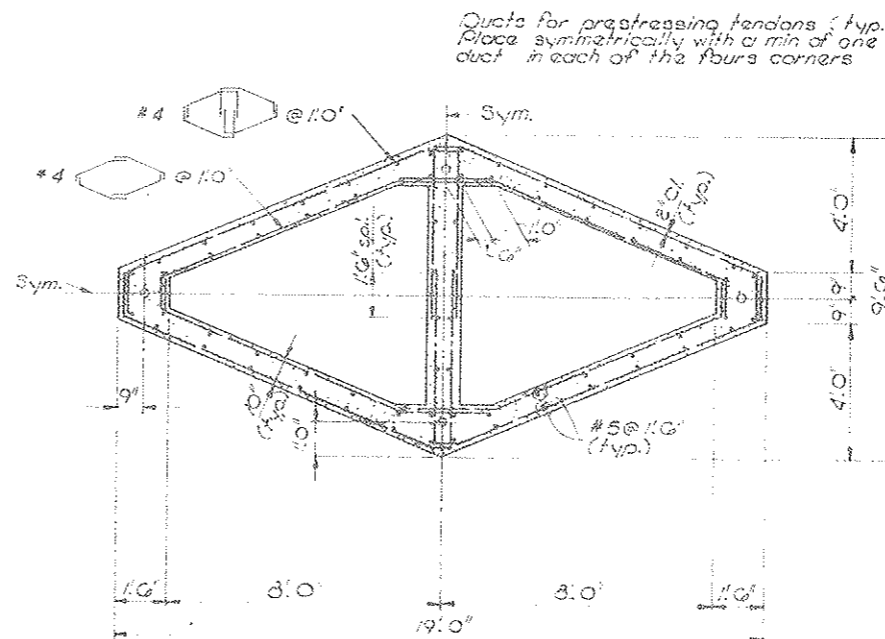
FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52) 197	150	

REVISIONS				
R-1	4/4/75	REPRINT		WCB
R-2	4-29-75	Addition to note		B.D.E.

VOID  
BY CONSTRUCTION DATE 6-24-77



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



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

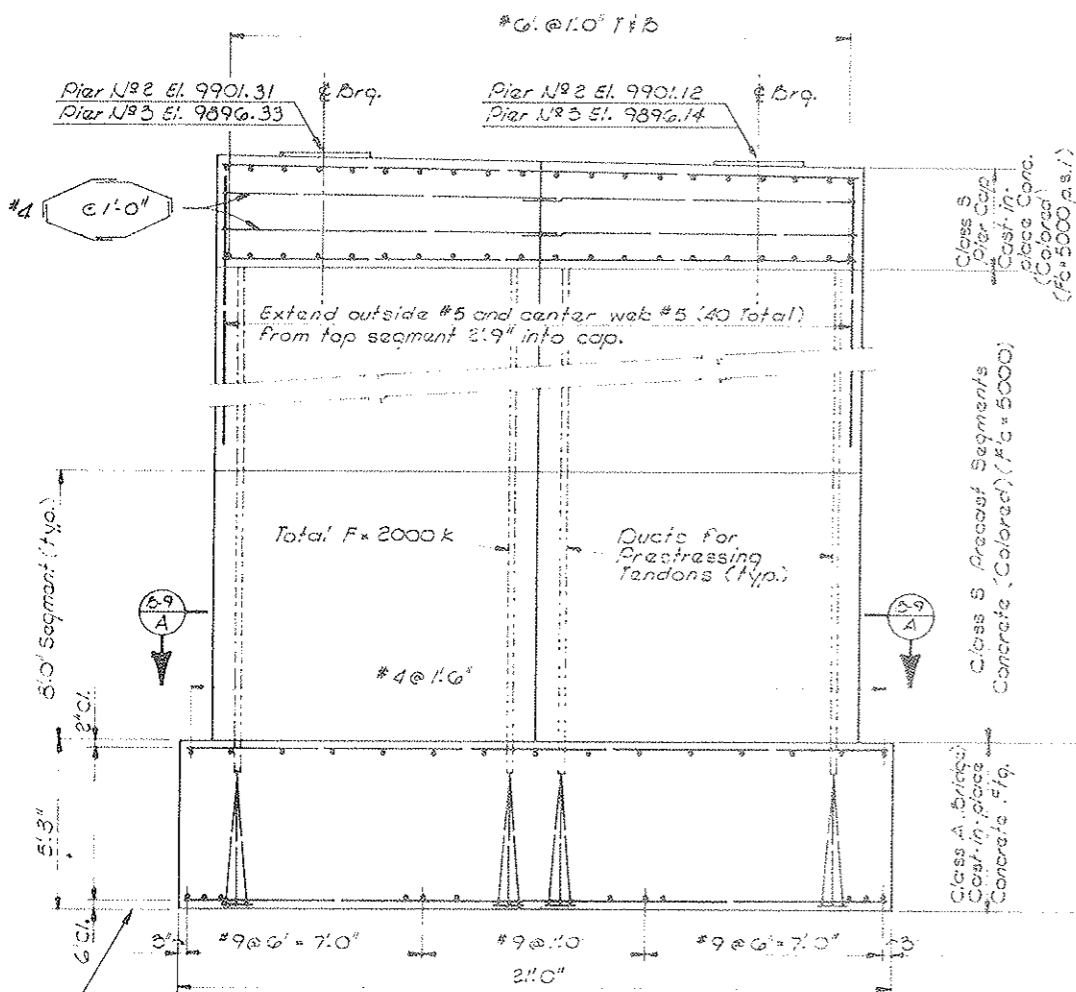
① FORCE F IS THE POST-TENSIONING FORCE REQUIRED IN THE PIERS AFTER ALL LOSSES INCLUDING CREEP, SHRINKAGE, FRICTION, AND ELASTIC SHORTENING FROM THE SUPERSTRUCTURE LOADS. POST-TENSIONING FORCE F IS TO BE THE SUM OF EIGHT EQUAL FORCES TOWARD EACH CORNER OF THE PIER AS SHOWN IN SECTION

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.

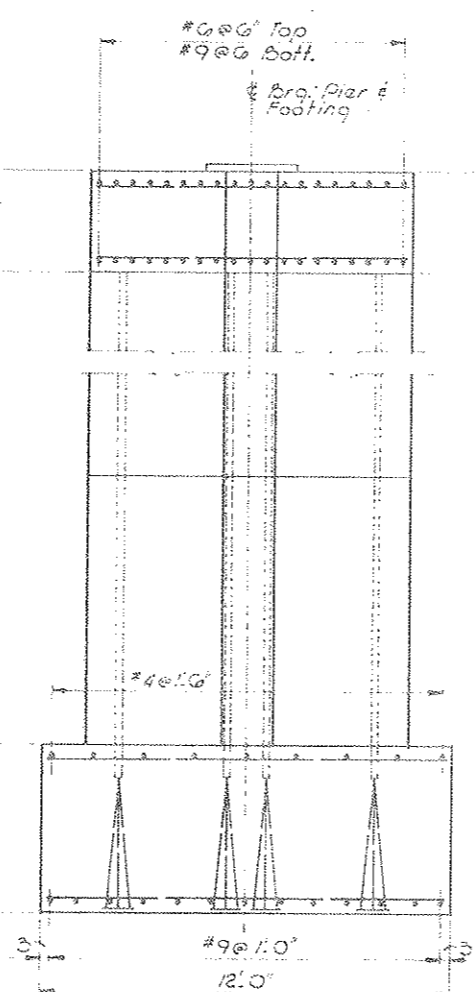
PIER NOTES:

- DURING CONSTRUCTION, THE PIER FOOTINGS ARE DESIGNED FOR AN UNBALANCED CANTILEVER MOMENT OF 6200 KIP-FEET WITH AN AXIAL LOAD OF 3100 KIPS. THE PIER COLUMNS ARE NOT DESIGNED FOR UNBALANCED CANTILEVER MOMENT.
- POST-TENSIONING TENDON ANCHORAGES IN PIER FOOTINGS AND PIER CAPS SHALL BE DETERMINED BY THE MANUFACTURER AND SUBMITTED FOR APPROVAL.
- 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.
- 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)
- 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.
- FOR CONCRETE CLASSES AND STRENGTHS, SEE DRAWINGS, THIS SHEET.

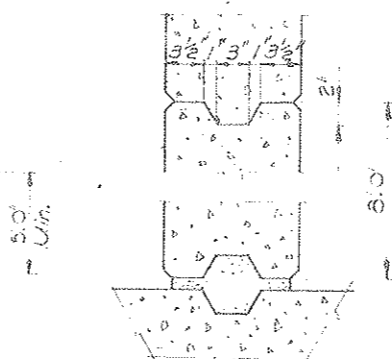
DATE	DESIGNED BY	CHECKED BY	QUANTITIES BY	CHECKED BY
3/75	AE	AE	AE	AE
3/75	AE	AE	AE	AE
3/75	AE	AE	AE	AE



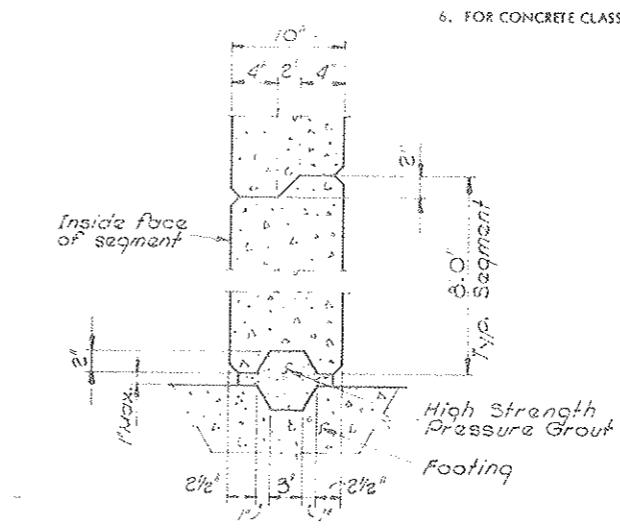
ELEVATION  
Orig. Scale: 3/8" = 1'0"  
(Looking Station Ahead)



END ELEVATION  
Orig. Scale: 3/8" = 1'0"



TYPICAL CONSTR. JT.  
No Scale  
(At Center Web)



TYPICAL CONSTR. JOINT  
No Scale  
(At Outside Walls)

**DIVISION OF HIGHWAYS**

**PIER No. 2 DETAILS  
PIER No. 3 DETAILS**

Designer <b>A. Erikson</b>	Structure <b>F-12 AP</b>
Designer <b>J. Williams</b>	Numbers <b>of 19</b>
Drawing Number <b>B 9</b>	Drawings

(Preliminary Stage Only)

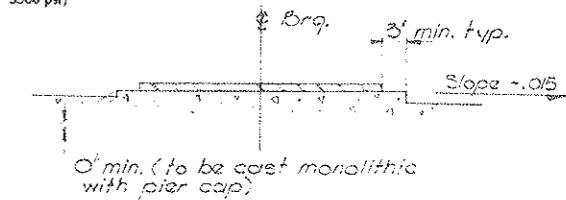
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	I 70-2(52)197	151	

REVISIONS				
R-1	4/4/75	REPRINT		MLB
R-2	4-17-75	Rev. Brg. Pressures; Added Movement of Nobs		
		Rev Anchorage		CLB

ALLOWABLE ULTIMATE BEARING PRESSURES:

- At Abutments: (f'c = 3000 psi) 1785 psi
- At Piers: (f'c = 5000 psi) 2975 psi
- In Superstructure: (f'c = 5500 psi) 3273 psi

VOID BY CONSTRUCTION DATE 6-29-77



TYPICAL BEARING PEDESTAL ELEVATION

BEARING NOTES:

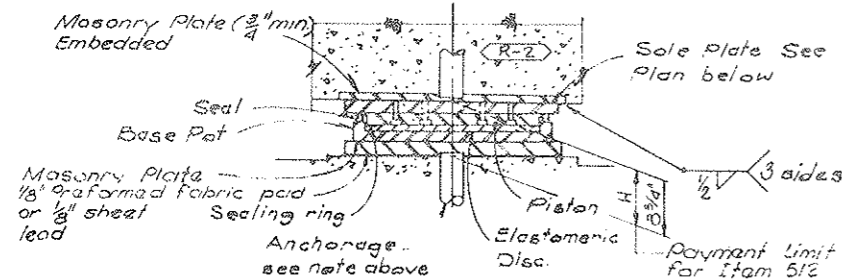
- STEEL FOR THE BEARING DEVICES, MASONRY PLATES, AND SOLE PLATES SHALL BE A.A.S.H.T.O. SPECIFICATION M-183 (A.S.T.M. A36).
- THE TYPE OF ANCHORAGE FOR BEARING DEVICES SHALL BE DETERMINED BY THE CONTRACTOR AND SUBMITTED ON SHOP DRAWINGS FOR APPROVAL.
- FOR ALLOWABLE BEARING PRESSURE ON CONCRETE, SEE DRAWINGS.
- THE SOLE PLATES SHALL BE SUPPLIED WITH BEVELS AND CROSSFALLS AS REQUIRED FOR GRADE AND SUPERELEVATION.
- DIMENSION "A" IS THE LIMIT REQUIRED FOR BID ITEM NO. 512, "BEARING DEVICES".
- 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.
- 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.

BEARING DEVICES

Item	Bearing Type #	Horiz Capacity (Tons)	Actual load (kips)	Ultimate load (kips)	Max. H Movement (in)		
Pier 2	F-1049	121	113	2090	2977	8 3/4	0
Pier 3	E-1049	63	113	2090	2977	9 5/8	1 5/16

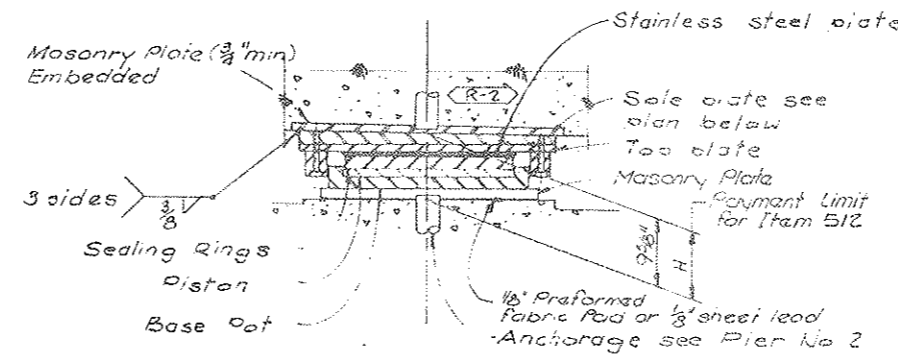
\* Actual loads shall be used to determine bearing capacity.

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



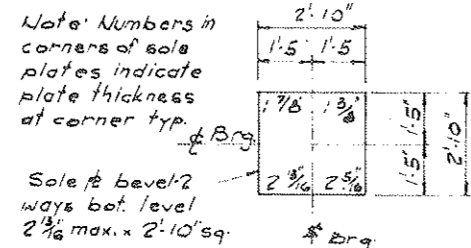
Lateral capacity = 30 Tons

FIXED FLOATING BEARING  
Pier No 2 - Cap = 1049 Tons 2-Req'd  
Capacity = DL + LL + I  
Orig. Scale: None



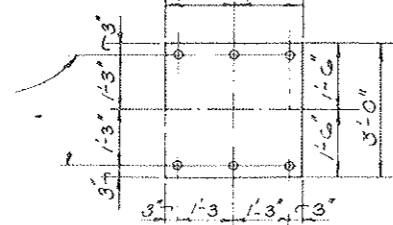
GUIDED EXPANSION BEARING  
Pier No 3 - Cap = 1049 Tons 2-Req'd  
Capacity = DL + LL + I  
Orig. Scale: None

DESIGNED BY	DATE	CHECKED BY
AF	3/75	RP
CHECKED BY	DATE	QUANTITIES BY
RP	3/75	AE
DETAILED BY		



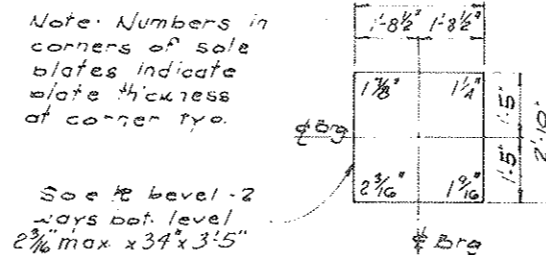
SOLE PLATE DETAIL  
Orig. Scale: 1/2" = 1'-0"

3 ~ 3/4" x 0.5" Nelson studs (typ.)



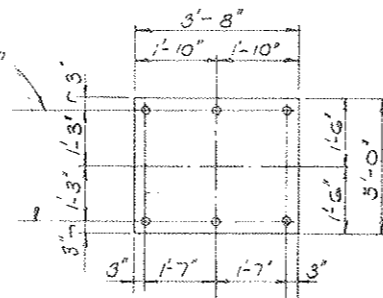
BEARING PLATE DETAIL  
Orig. Scale: 1/8" = 1'-0"

PIER No. 2



SOLE PLATE DETAIL  
Orig. Scale: 1/4" = 1'-0"

3 ~ 3/4" x 0.5" Nelson studs (typ.)



BEARING PLATE DETAIL  
Orig. Scale: 1/8" = 1'-0"

PIER No. 3

DIVISION OF HIGHWAYS

BEARING DEVICE, PIER No. 2  
AND PIER No. 3

Designer	A. Erickson	Structure Number	F-12-AP
Detailer	R.E. Pickard	Drawing Number	B-10 of 19 Drawings

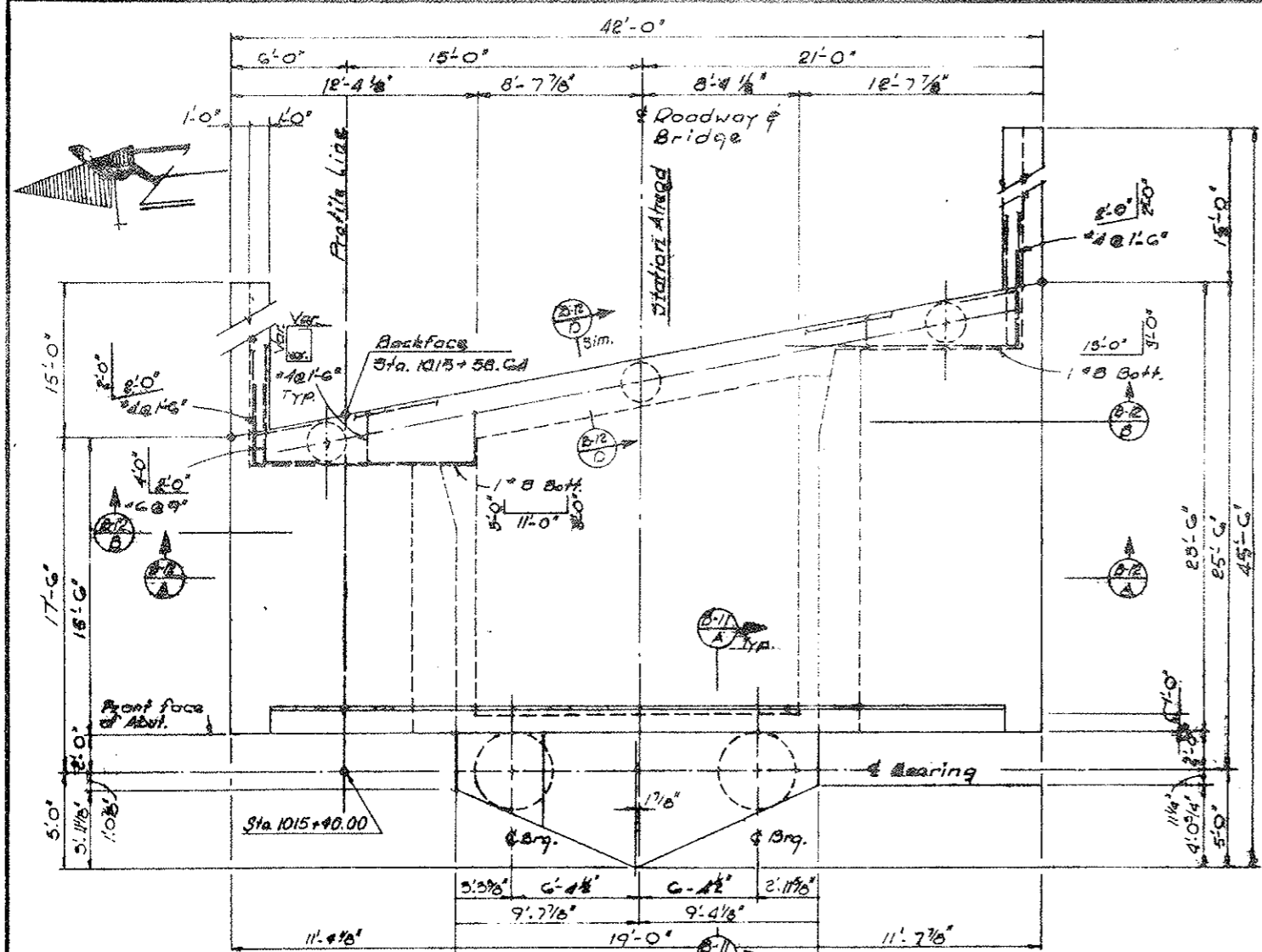
Revision Dates (Preliminary Stage Only)

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(58) 197	152	

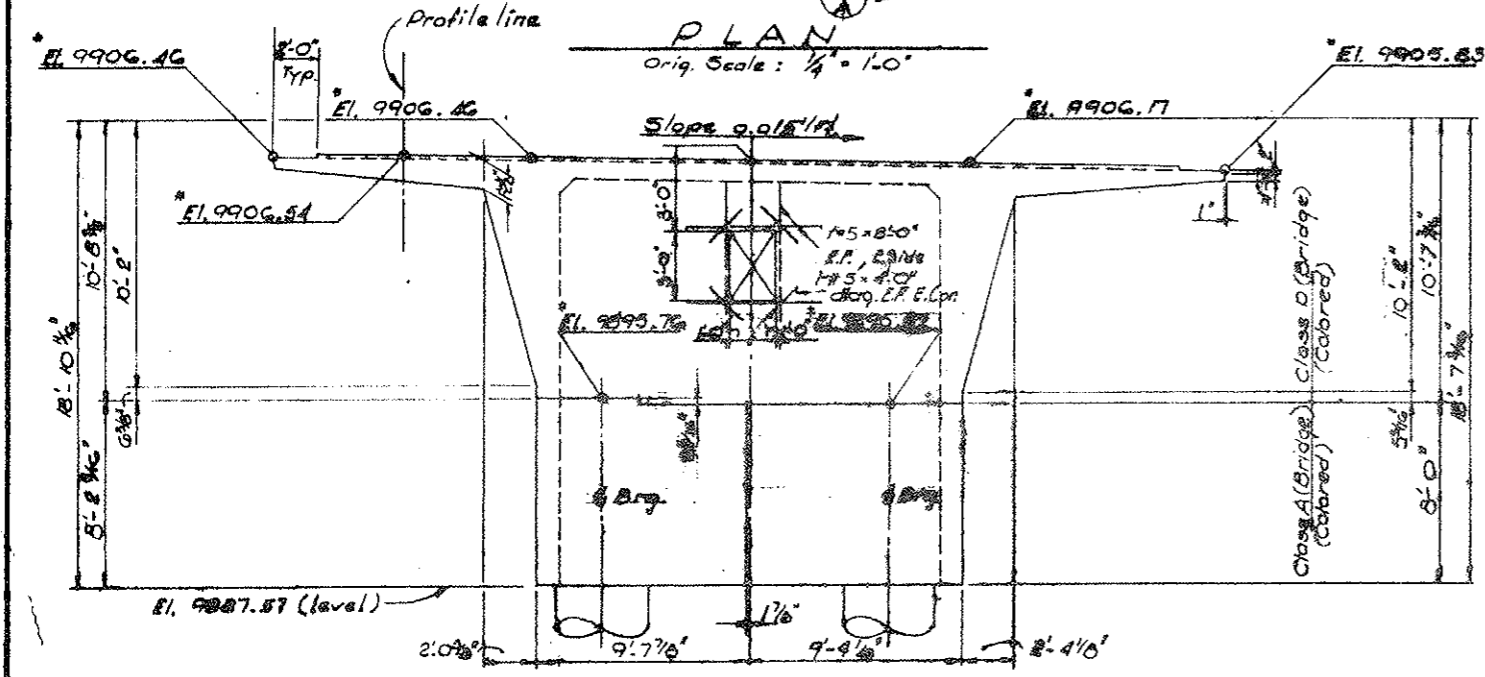
REVISIONS	

VOID  
BY CONSTRUCTION DATE 6-22-77



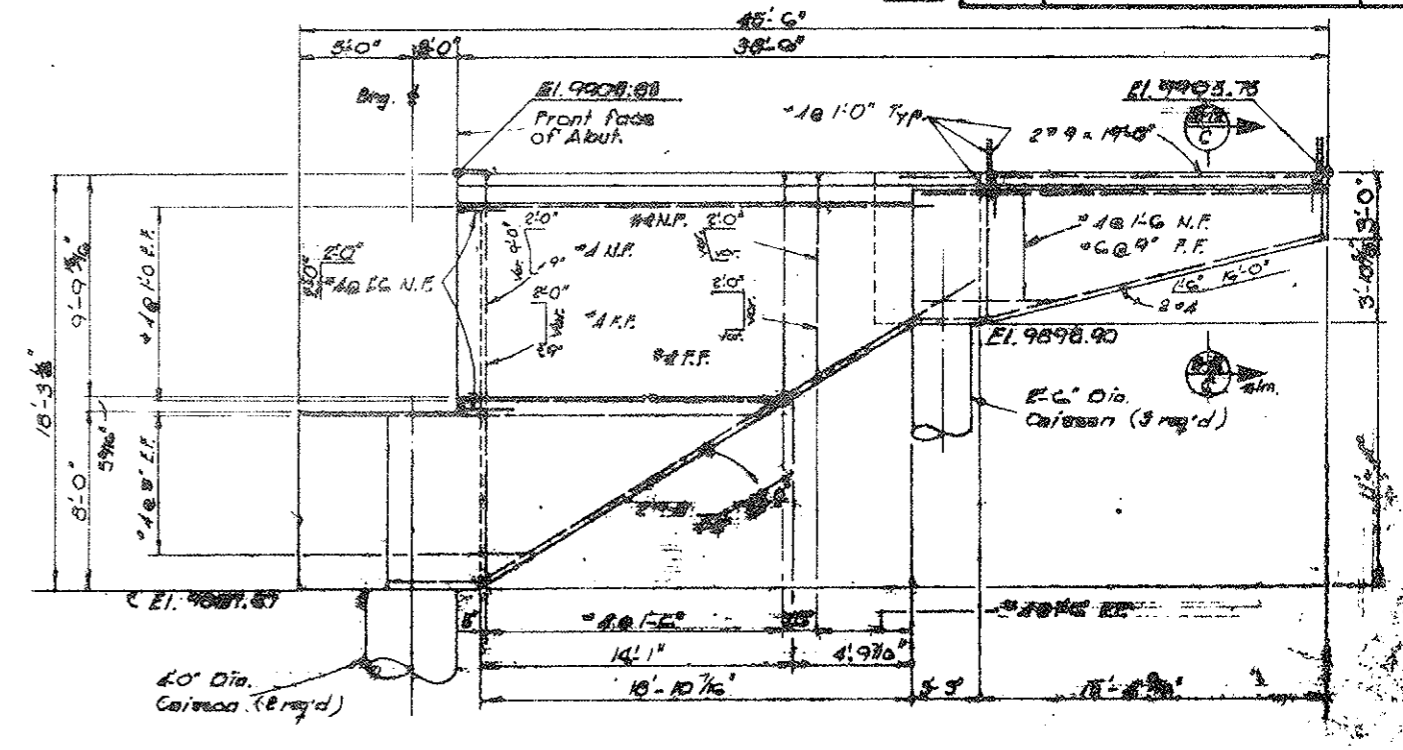
DATE	CHANGED BY	QUANTITY BY	BY
5/25	AE	5/25	DG
5/25	AE	5/25	AE
5/25	AE	5/25	AE

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

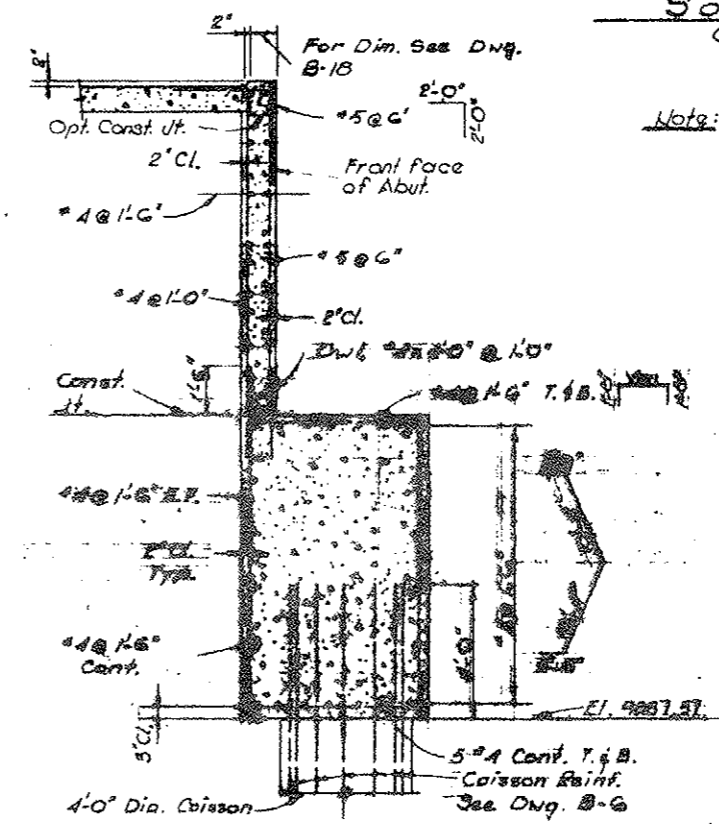


**FRONT ELEVATION**  
Orig. Scale: 1/4" = 1'-0"

\* Elevations @ Frontface of Abut.  
\* Elevations @ Bearing



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



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

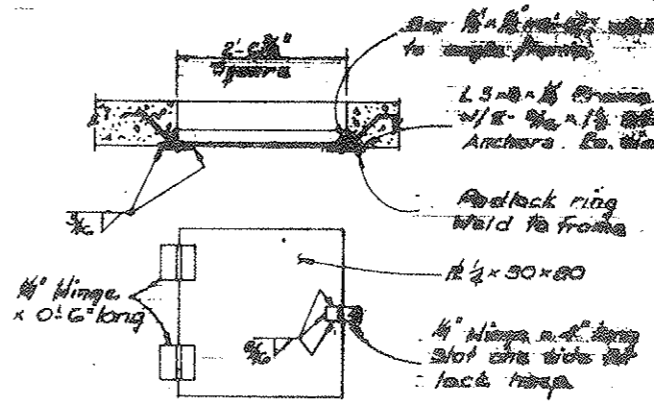
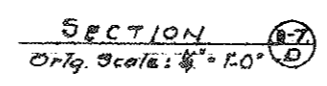
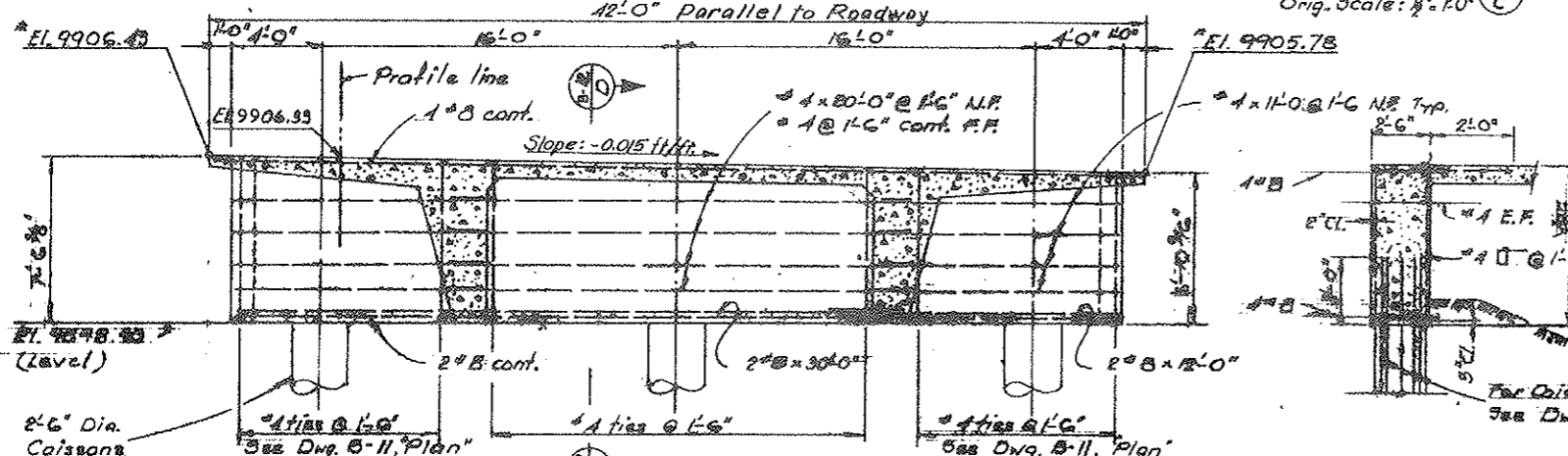
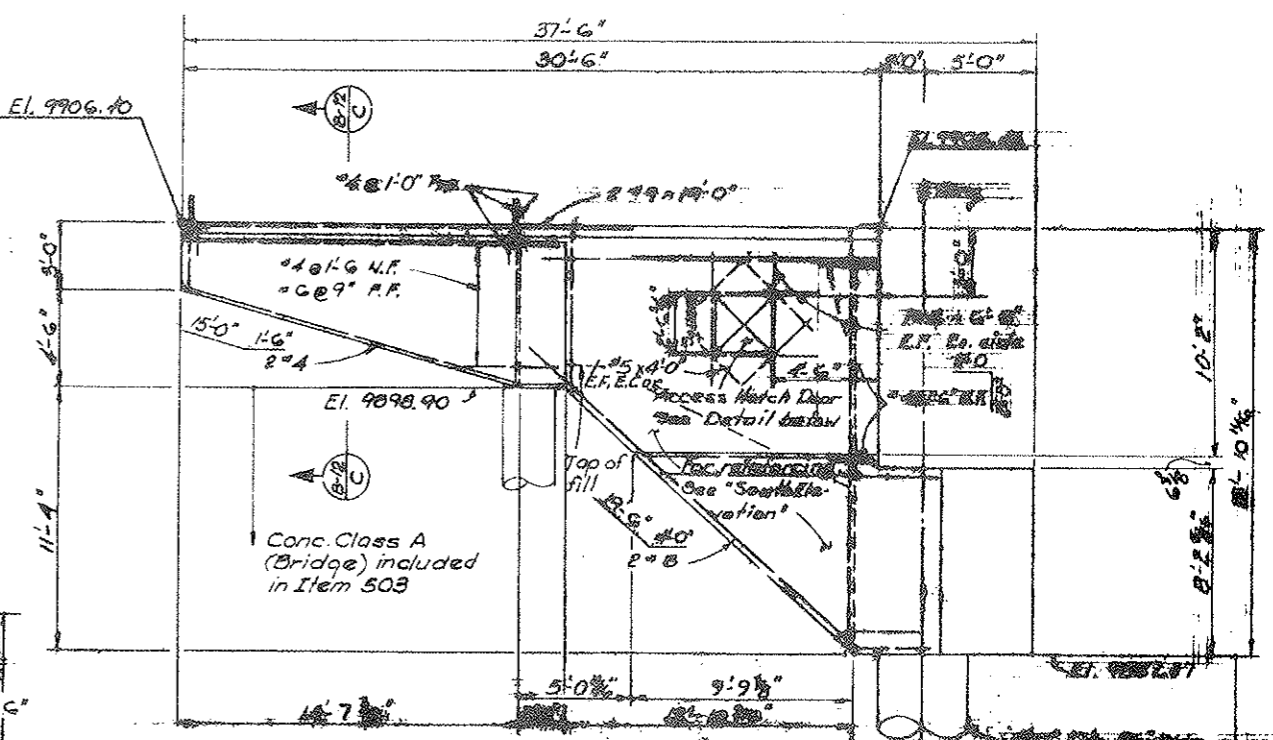
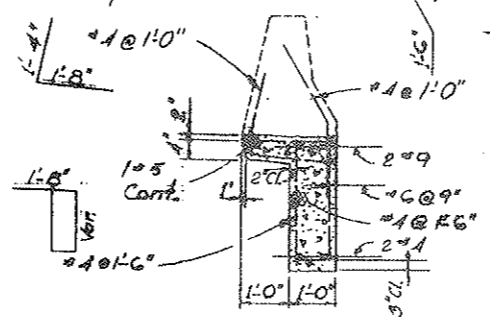
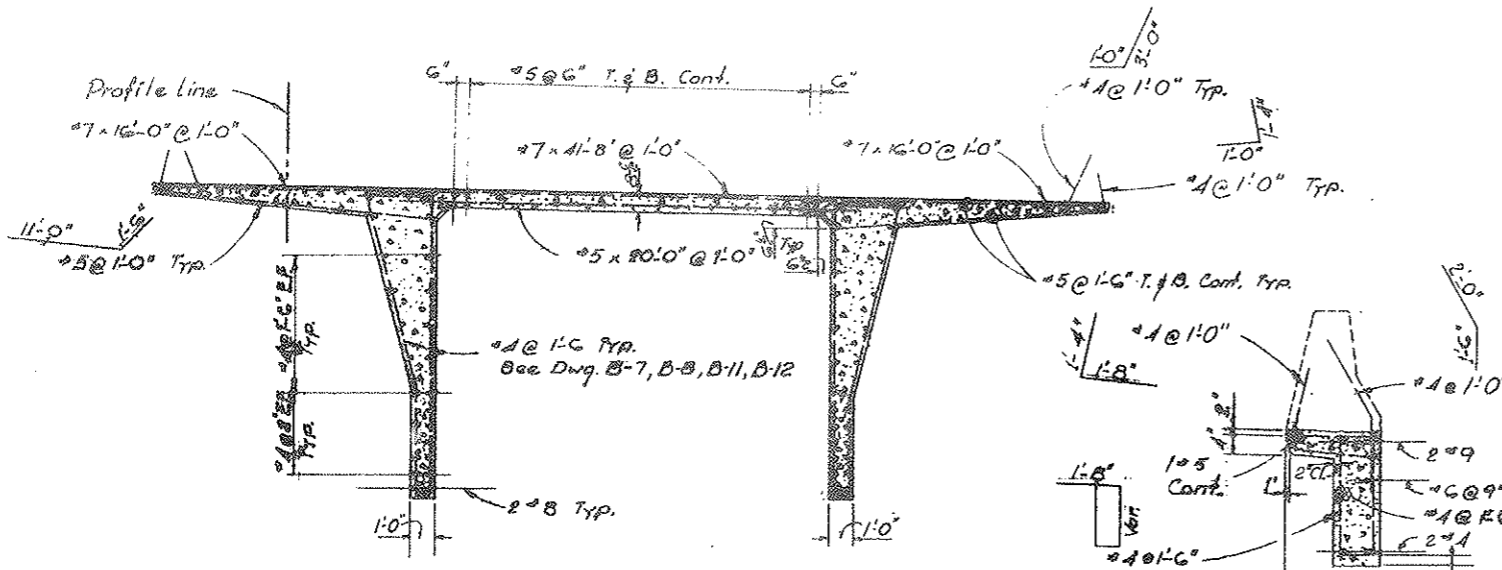
Note: Fill Abutments to bearing level with Class II backfill

DIVISION OF HIGHWAYS	
ABUTMENT No. 4 DETAILS	
SHEET 1 OF 8	
Designer: A. E. HENY	Standard: P-2-A
Checker: A. E. HENY	Revisions:
Drawing No. B-11	6-19

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII COLORADO	I 70-2(52) 197	153	

**VOID**  
BY CONSTRUCTION DATE 6-28-77

REVISIONS	



DATE	DESIGNED BY	CHECKED BY
3-7-77	AE	AE
3-7-77	AE	AE
3-7-77	AE	AE

**DIVISION OF HIGHWAYS**

**ALTIMENTINE & BOYER**

Sheet 8 of 8

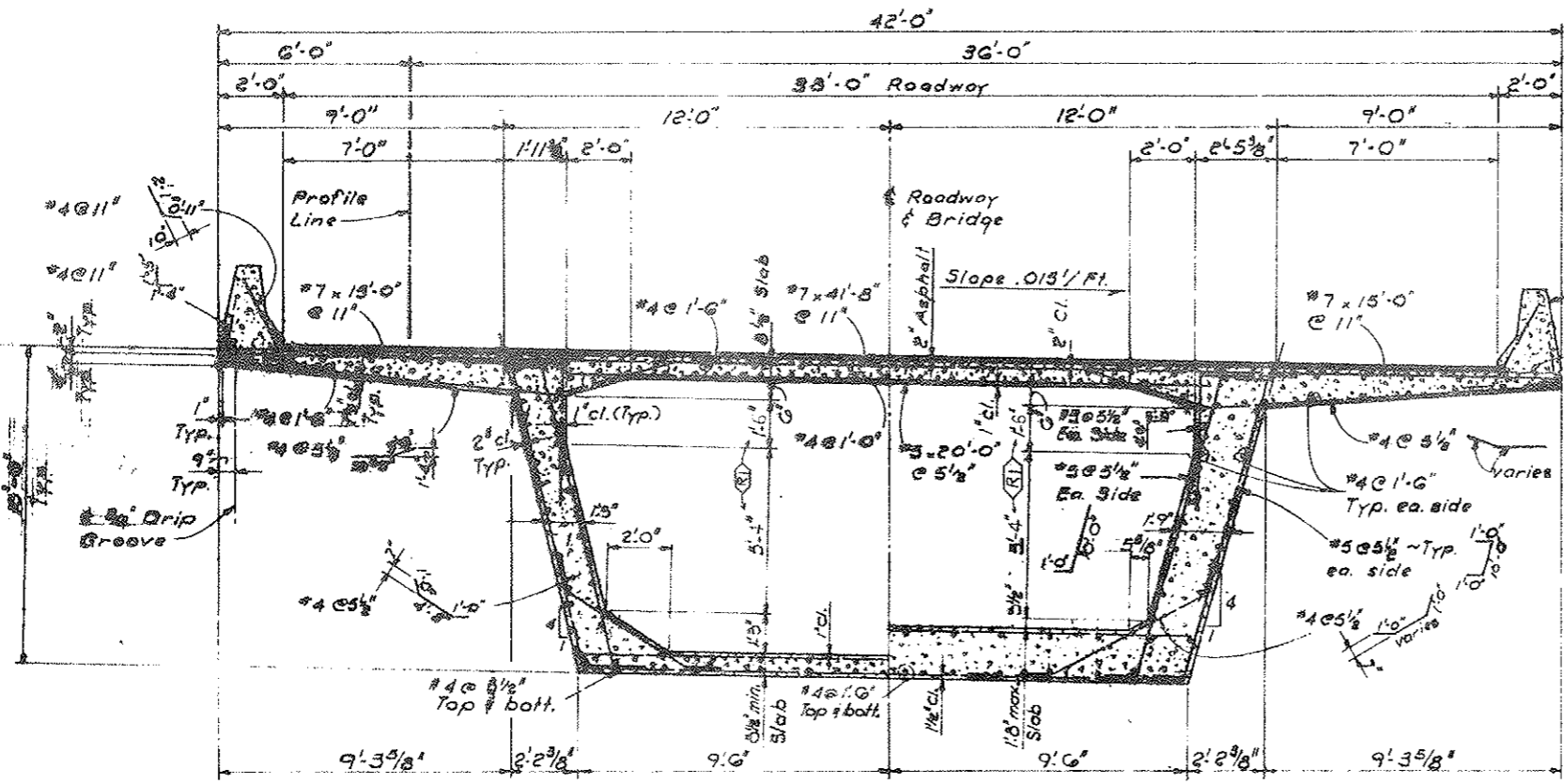
Drawing Number B-12 of 12

**VOID**  
BY CONSTRUCTION DATE 6-22-77

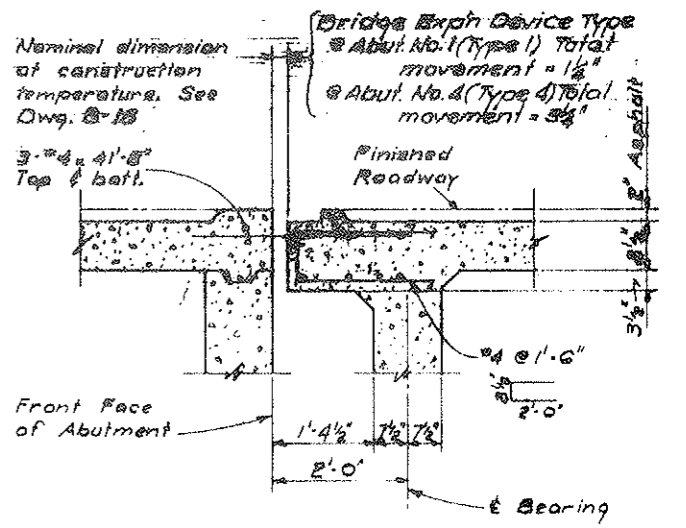
FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
YES	CALIFORNIA	170-2(82)197	154	

REVISIONS	
RI	4-29-75 Changed Dimensions B.O.D.



Bridge Rail Type #. See Dwg. B-17 for details. Cast-in-place Conc. Class D (Bridge) (Colored) Roughened Surface - Typ.

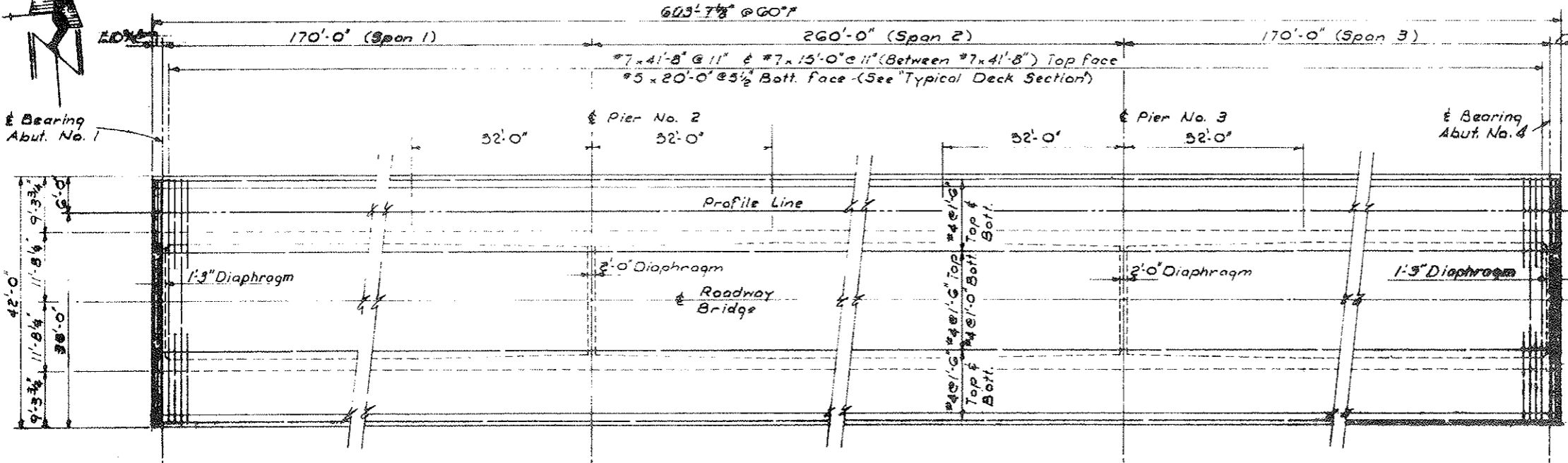


SECTION THRU END OF DECK  
Orig. Scale: 3/8" = 1'-0"

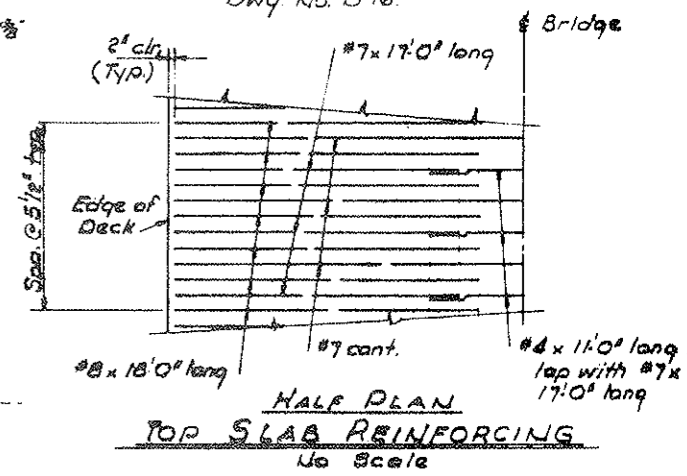
Note: Concrete shall be Class 5 (Bridge) (Colored) unless otherwise noted. For prestressing notes see Dwg. No. B-16.

TYPICAL INTERMEDIATE AT A PIER  
(Make uniform transition to Typical Intermediate Section @ 34'-0" each side of Piers)  
TYPICAL DECK SECTION  
Orig. Scale: 3/8" = 1'-0"

DESIGNED BY	DATE	QUANTITIES BY	DATE	CHECKED BY	DATE
AG	3/75	AG	3/75	AG	3/75
REVISIONS					
NO.	DESCRIPTION	DATE	BY	CHECKED BY	DATE
1					
2					
3					



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

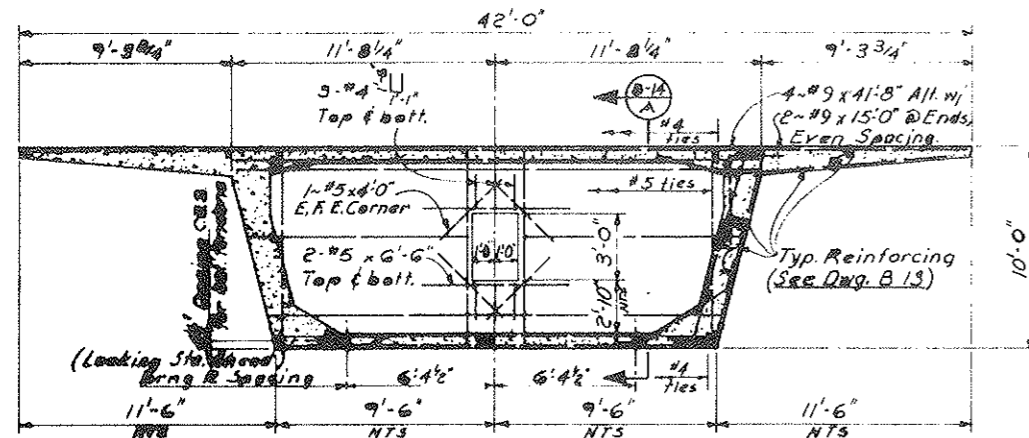
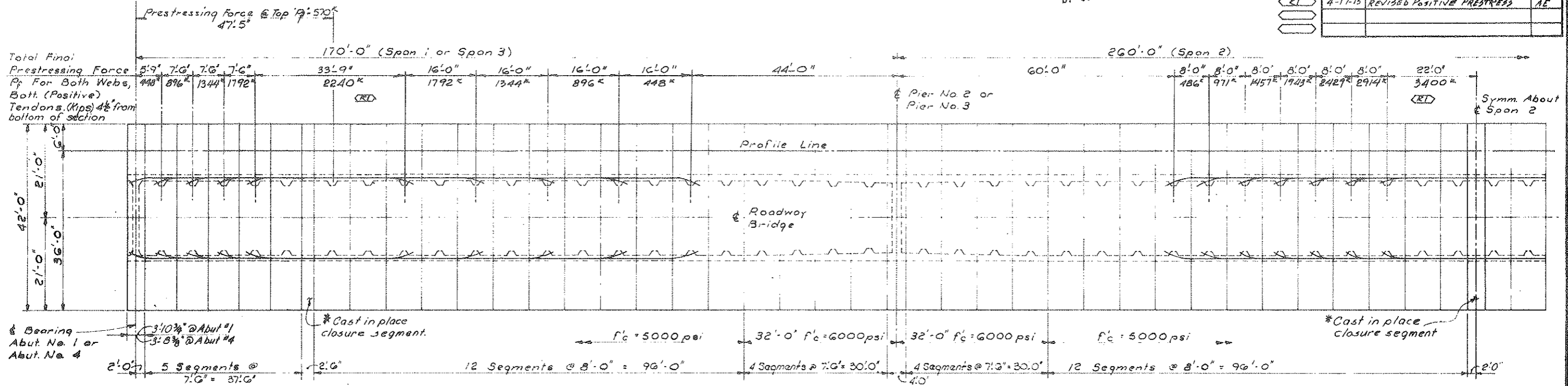


HALF PLAN  
TOP SLAB REINFORCING  
No Scale

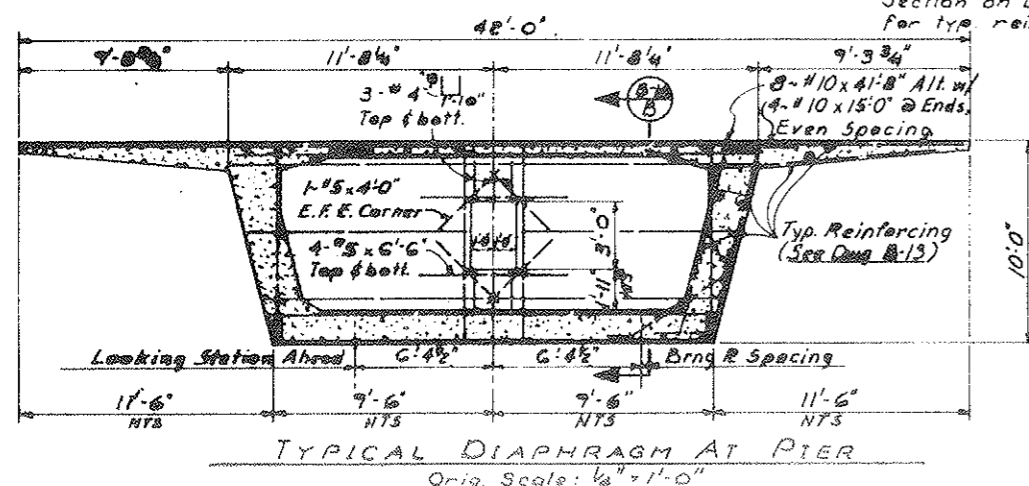
<b>DIVISION OF HIGHWAYS</b>	
DECK PLAN AND TYPICAL DECK SECTION	
Designer A. Erksen	Structure F-12-AP
Detailer D. Griner	Numbers
Drawing Number B-13	of 19 Drawings

VOID  
BY CONSTRUCTION DATE 6-24-77

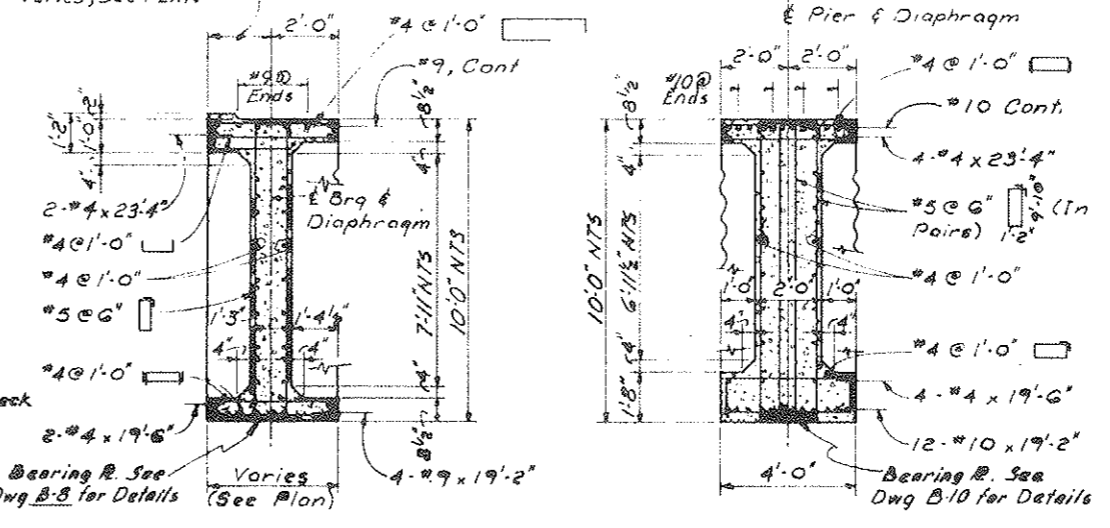
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52)197	155	
REVISIONS				
RI	4-17-75	REVISED POSITIVE PRESTRESS	AE	



NOTE: Only Diaphragm reinf. shown. See "Typical Deck Section" on Dwg. B-13 for typ. reinforcing.



**BOTTOM (CONTINUITY) PRESTRESSING TENDON LAYOUT**  
Orig. Scale: 3/32" = 1'-0"



\*Note: Cast in place closure segment is to have same reinforcing as prefabricated segments. Concrete strength to be not less than adjacent segments.

**DIVISION OF HIGHWAYS**

**BOTTOM PRESTRESSING TENDON LAYOUT AND DIAPHRAGM DETAILS**

Designer	A. Eriksen	Structural	P-12-AP
Draftsman	D. Griner	Number	
Drawing Number	B-14	of	19 Drawings

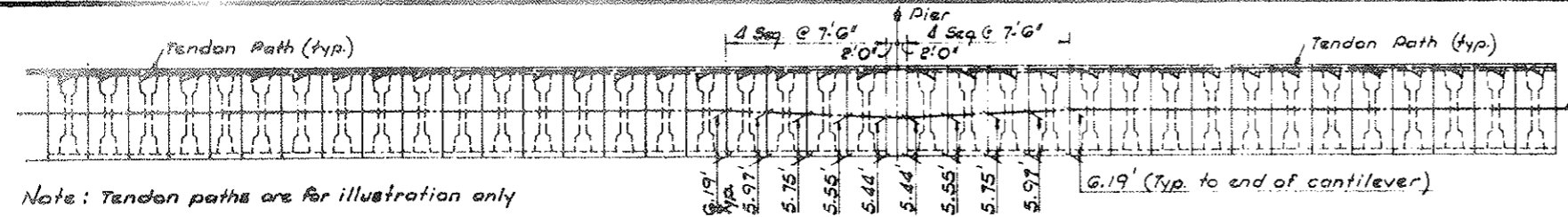
Revision Date: \_\_\_\_\_ (Preliminary Design Only)

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
III	COLORADO 170-8 (82) 197	156	

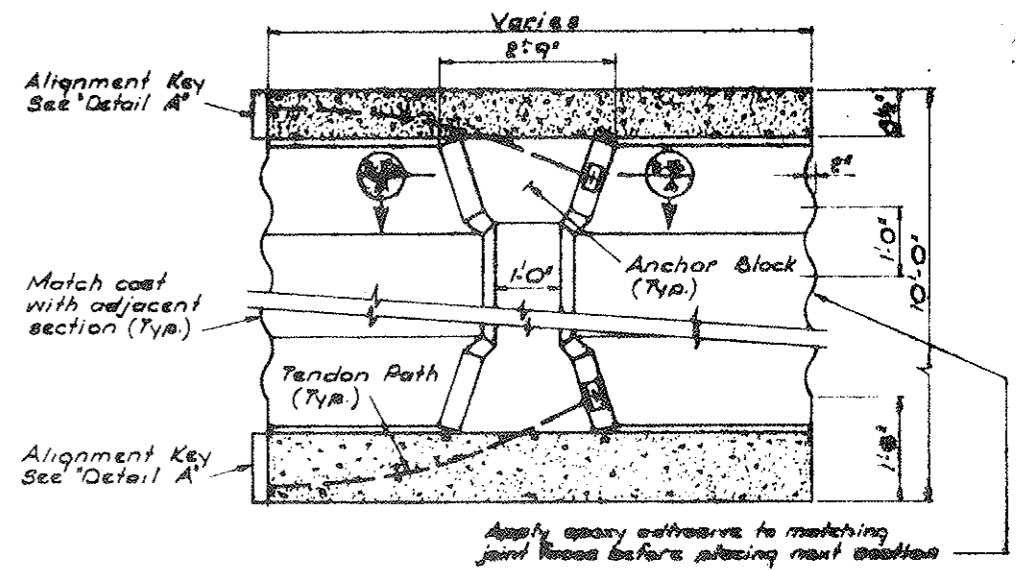
  

REVISIONS	

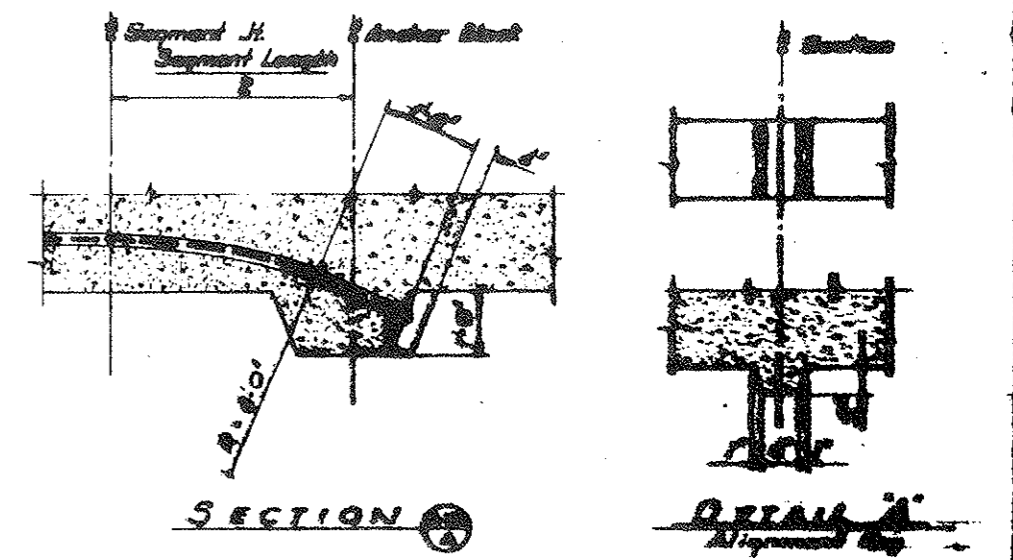
VOID  
 BY CONSTRUCTION DATE 6-24-77



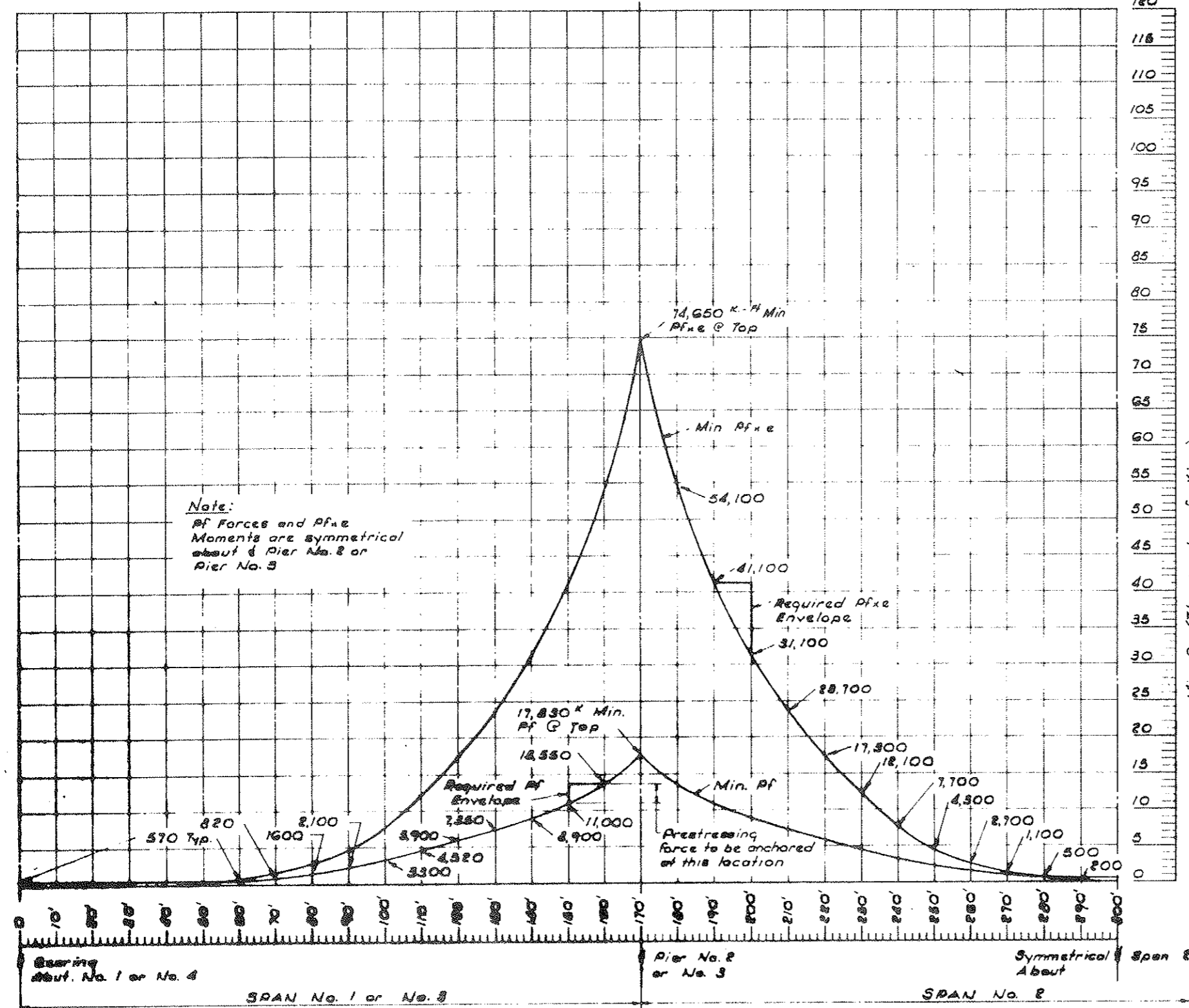
Note: Tendon paths are for illustration only



TYPICAL SEGMENT ELEVATION



SECTION and DETAIL



Note:  
 P<sub>f</sub> Forces and P<sub>f</sub>x<sub>e</sub> Moments are symmetrical about Pier No. 2 or Pier No. 3

Pier No. 2 or No. 3

Symmetrical About

SPAN No. 1 or No. 3

SPAN No. 2

MINIMUM PRESTRESSING FORCES AND PRESTRESSING MOMENTS FOR TOP (NEGATIVE) TENDONS

**DIVISION OF HIGHWAYS**

**NEGATIVE (CANTILEVER) PRESTRESSING CURVE AND PRESTRESSING DETAILS**

Designer: A. Eriksen      Structures: F-18-AP  
 Detailer: P. Lantier      Numbers:      of 14 Drawings  
 Drawing Number 8-15

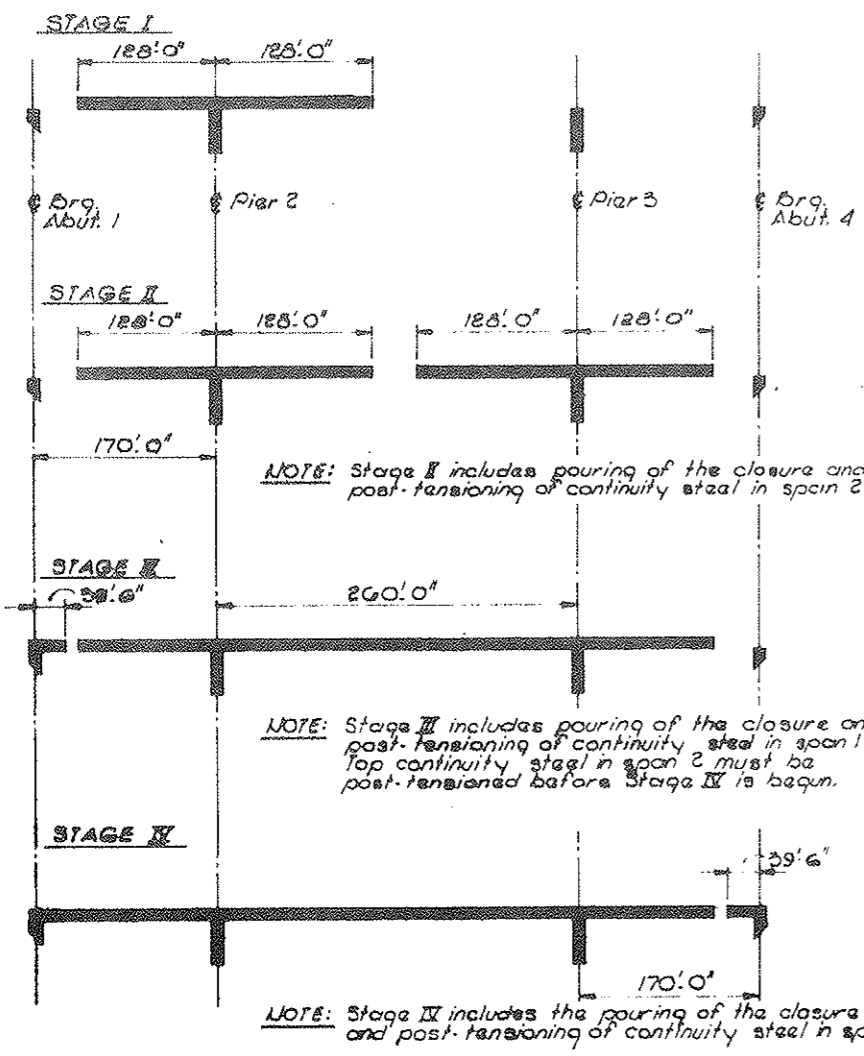
Scale: As Shown      Preliminary Stage Only

VOID  
BY CONSTRUCTION DATE 6-24-77

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(32) 197	157

REVISIONS			
R-1	4/4/75	Reprint	WCB
R-2	5-14-75	Added Note	CLB



Longitudinal continuity tendons in the bottom slab shall be stressed after the closure pour has reached design strength. All longitudinal dimensions are along  $\bar{c}$  of bridge.

CONSTRUCTION SEQUENCE

PRESTRESSING NOTES:

- " $P_t$ " 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.
- THE VALUE OF  $P_t$  SHALL BE FURNISHED AT THE MIDDLE OF LENGTH FOR WHICH IT IS GIVEN IN THE CASE OF BOTTOM PRESTRESSING THROUGH THE CLOSURE POURS.  $P_t$  FOR ALL OTHER BOTTOM PRESTRESSING SHALL BE FURNISHED AT THE END NEAREST MID-SPAN OF THE LENGTH FOR WHICH IT IS GIVEN.  $P_t$  FOR TOP PRESTRESSING SHALL BE FURNISHED AT END NEAREST THE SUPPORT OF THE LENGTH FOR WHICH IT IS GIVEN.
- " $e$ " IS THE ECCENTRICITY OF THE PRESTRESSING FORCE ABOVE OR BELOW THE CENTER OF GRAVITY OF THE CONCRETE BOX CROSS-SECTION.
- PRESTRESSING OF THE STRUCTURES SHALL BE DONE IN A MANNER SUCH THAT NO TENSILE STRESSES ARE CREATED IN THE CONCRETE.
- 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.
- 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 CORROSION FROM ATMOSPHERIC CONDITIONS.
- REQUIRED PRESTRESSING FORCES ( $P_t$ ) AND MOMENTS ( $M_t \times e$ ) ARE BASED ON A SEGMENT LENGTH OF 3' - 0" AND ON THE CONSTRUCTION SEQUENCE SHOWN ON DRAWING NUMBER B-18. DESIGN CALCULATIONS FOR ALTERNATIVE CONSTRUCTION SCHEMES MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- PROVISIONAL PRESTRESSING USED DURING CONSTRUCTION MUST HAVE ENGINEER APPROVAL.
- 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.
- RECTANGULAR ANCHOR PLATES SHALL BE USED TO MINIMIZE FLARES. ALTERNATE ANCHORS AND CONSTRUCTION SCHEM DETAILS, TO FIT THE PRESTRESSING SYSTEM USED, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- 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.
- BAR REINFORCING INTERFERING WITH THE PRESTRESSING TENDON ALIGNMENT SHALL BE ADJUSTED AS DIRECTED BY ENGINEER.
- TENDON DUCTS MUST BE PRECISELY ALIGNED THROUGH PRECASTERS. INFLAMMABLE COVER OR SIMILARLY LIGHT MATERIAL SHALL BE USED TO PREVENT ANY INDENTATIONS OR COLLAPSE OF DUCTS.
- PROVIDE ADEQUATE SUPPORT FOR TENDON DUCTS TO MAINTAIN ALIGNMENT THROUGHOUT CONCRETE PLACEMENT.
- A MAXIMUM OF 3 DUCTS MAY BE BUNDLED INTO VERTICAL GROUPS. MINIMUM HORIZONTAL CLEARANCE BETWEEN DUCT GROUPS SHALL BE 2-1/2 IN. MINIMUM VERTICAL CLEARANCE BETWEEN DUCT GROUPS SHALL BE 3 IN.
- GROUTING IS TO BE DONE AFTER PRESTRESSING IS COMPLETED ON ANY ONE BEAM OR SUCH A WAY THAT GROUTING DOES NOT INTERFERE WITH THREADING AND STRESSING OF REBAR.
- CARE SHALL BE EXERCISED IN JOINING THE SEGMENTS WITH EPOXY TO ENSURE THAT A MINIMUM COMPRESSION OF 30 P.S.I. IS MAINTAINED OVER THE ENTIRE JOINT AREA UNTIL THE PERMANENT POST-TENSIONED TENDONS ARE STRESSED.
- SEGMENT JOINTS SHALL HAVE A THROUGH COVER OF EPOXY TO ELIMINATE Voids BETWEEN TENDON DUCTS.
- A COMPLETE SET OF DEFLECTION CALCULATIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL AS SOON AS THE BRIDGE SUPERSTRUCTURE CONSTRUCTION.
- THE CAMBER TO BE USED WILL DEPEND ON SEGMENT LENGTH, STRENGTH, WEIGHT AND CURE OF CONCRETE, PRESTRESSING, WEIGHT OF FALSE-WORK, AND INCREMENTAL CONSTRUCTION BEAMS.
- CONTRACTOR WILL BE REQUIRED TO CHECK CAMBER AT SUPERSTRUCTURE SECTION BEAMS AND PROVIDE CAMBER ADJUSTMENTS WITH SUPPORTING CALCULATIONS.
- FALSWORK AT CLOSURE ENDS SHALL BE SUPPORTED SUCH THAT APPLIED LOADS WILL RESULT IN EQUAL DEFLECTIONS OF EACH CANTILEVER.
- TYPICAL SECTION REINFORCING (SEE ENDS, FIG. B-18) SHALL EXTEND INTO CLOSURE ENDS.
- BOTTOM SLAB AND WEB VARY LINEARLY IN THICKNESS FROM THE FIRST SEGMENT ADJACENT TO THE PIER TO THE END OF THE 4" SEGMENT FROM THE PIER - TRANSITION LENGTH = 52' - 0".
- SUPERSTRUCTURE CONCRETE FOR THE SEGMENTS ADJACENT TO PIER EACH ENDS TO HAVE  $P_c = 1200$  psi. ALL OTHER SUPERSTRUCTURE CONCRETE TO HAVE  $P_c = 1200$  psi.
- WEB STIFFENERS AS SHOWN ON THE PLANS ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR MUST SUBMIT CALCULATIONS FOR APPROVAL IF OTHER TYPES OF ANCHORAGE DETAILS ARE TO BE USED.
- WEB STIFFENER REINFORCING DETAILS SHALL BE SUBMITTED FOR THE ANCHORAGE SYSTEM USED.

NO.	DATE	CONTRACTOR BY	DESIGNED BY	CHECKED BY	APPROVED BY
1	3/1/75	WCB	WCB	WCB	WCB
2	3/1/75	WCB	WCB	WCB	WCB
3	3/1/75	WCB	WCB	WCB	WCB
4	3/1/75	WCB	WCB	WCB	WCB
5	3/1/75	WCB	WCB	WCB	WCB
6	3/1/75	WCB	WCB	WCB	WCB
7	3/1/75	WCB	WCB	WCB	WCB
8	3/1/75	WCB	WCB	WCB	WCB
9	3/1/75	WCB	WCB	WCB	WCB
10	3/1/75	WCB	WCB	WCB	WCB

**DIVISION OF HIGHWAYS**

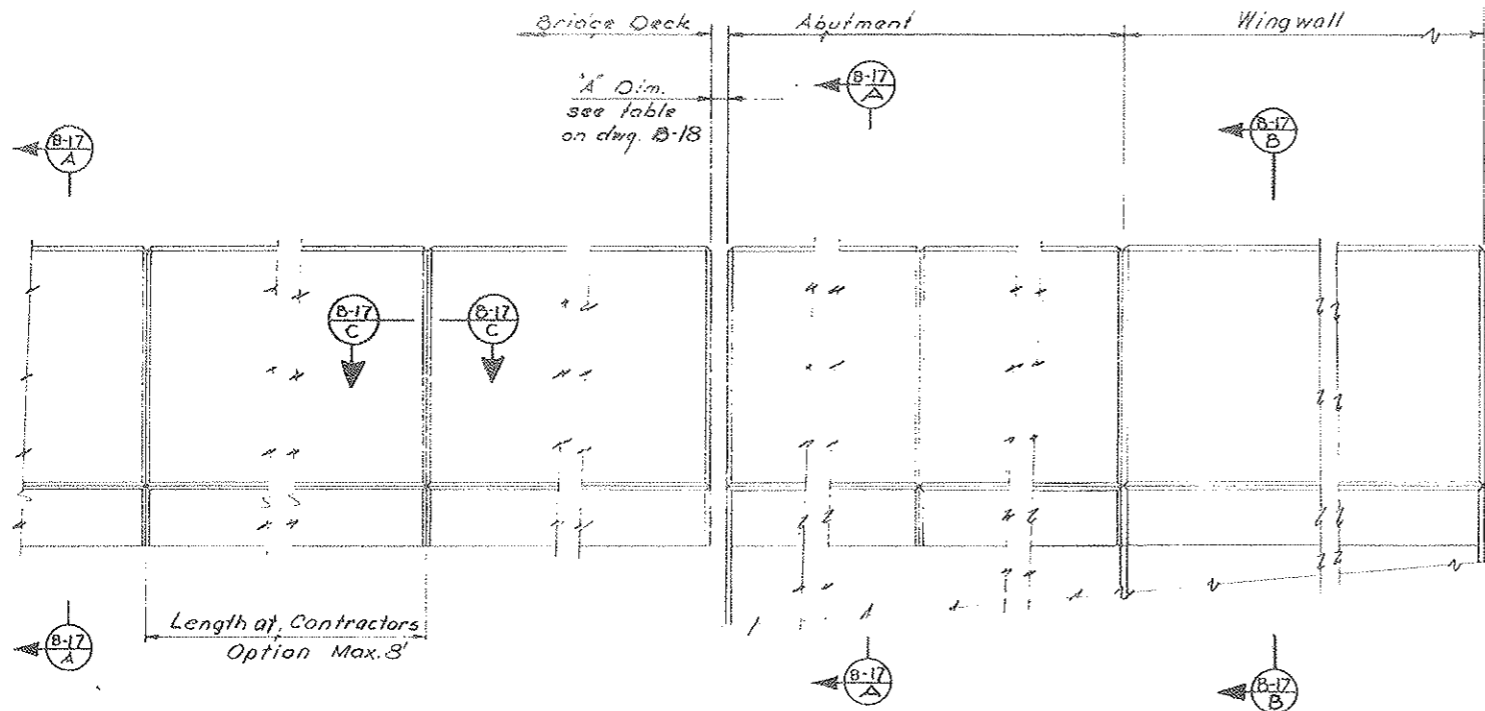
**CONSTRUCTION SEQUENCE AND PRESTRESSING NOTES**

Designer	A. Erikson	Structure Number	F-12-AP
Detainer	J. Williams	Drawing Number	B-18
		of 19	Drawings

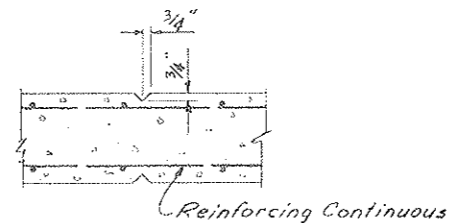
Project Dates: \_\_\_\_\_ (Preliminary Stage Only)



FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	158	
REVISIONS				

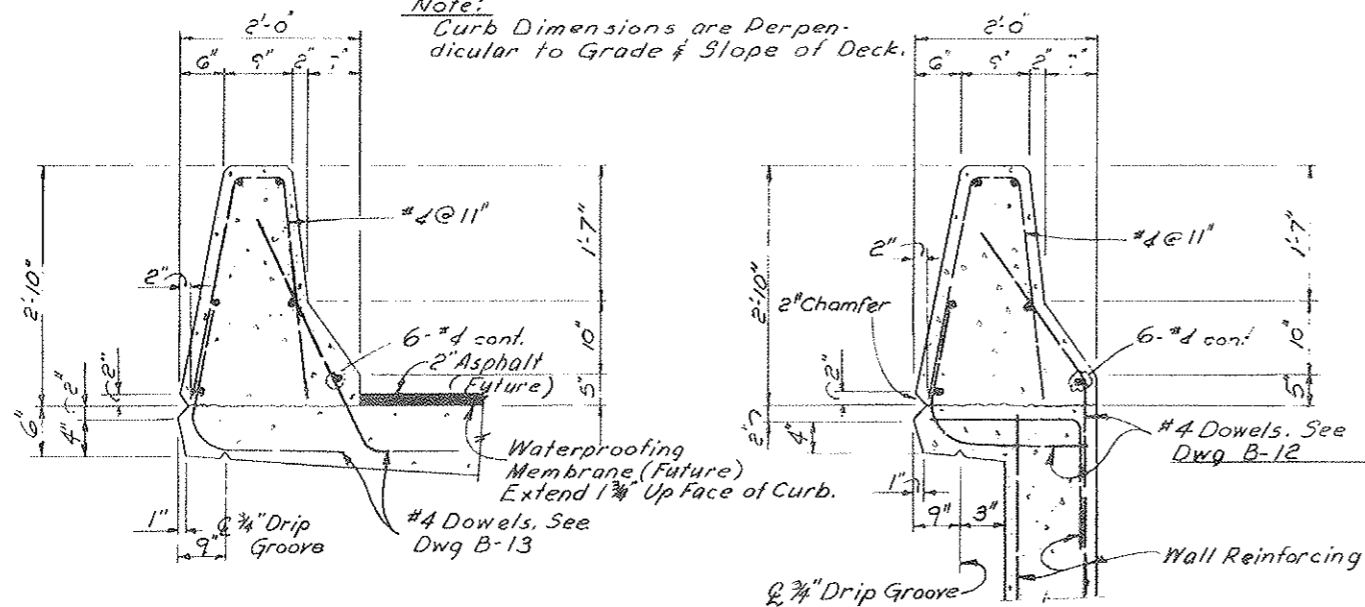


VOID BY CONSTRUCTION DATE 6-24-77



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

Note: Curb Dimensions are Perpendicular to Grade & Slope of Deck.



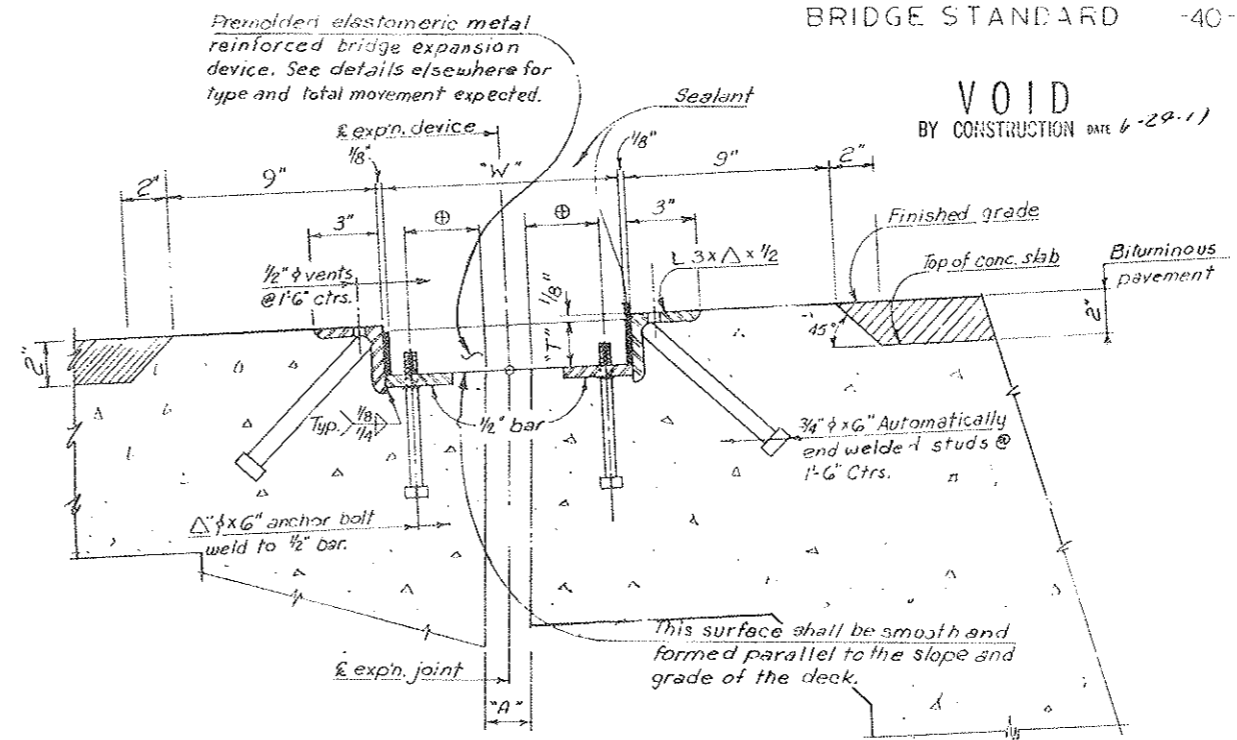
INITIAL	DATE	CHECKED BY
AE	3-75	AE
LS	3-75	AE
LS	3-75	AE

DIVISION OF HIGHWAYS		
BRIDGE RAIL TYPE 4		
Designer	A. Eriksen	Structure Numbers
Detailer	L. McNamee	F-12-AP
Drawing Number	B 17	of 19 Drawings

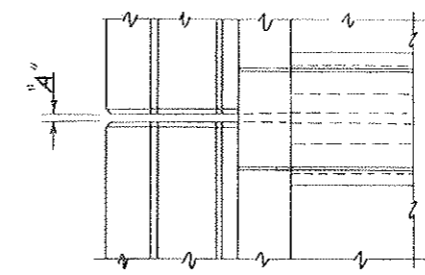
FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	159	

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", "Ø", AND "Δ" 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.



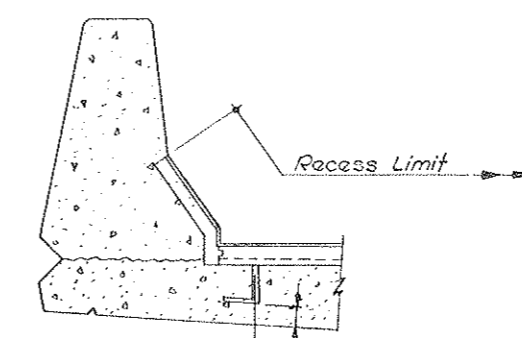
SECTION THRU EXPN. DEVICE



PLAN

Premolded Bridge Expansion Device to be used:  
Abut. No 1 (Type 1)  
Abut. No 4 (Type 4)

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 3/16"
50°	1 3/8"	2"	2 1/2"
60°	1 1/4"	1 7/8"	2 3/16"
70°	1 1/8"	1 3/4"	2 1/8"
80°	1"	1 1/2"	2"
90°	7/8"	1 1/4"	1 3/4"
100°	3/4"	1 1/4"	1 3/8"



ELEVATION  
DETAILS OF EXPANSION JOINT AT GUARDRAIL

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 3/8"	4"	
70°	3 1/4"	3 3/8"	
80°	3"	3 1/4"	
90°	2 3/4"	2 3/4"	
100°	2 1/2"	2 3/8"	

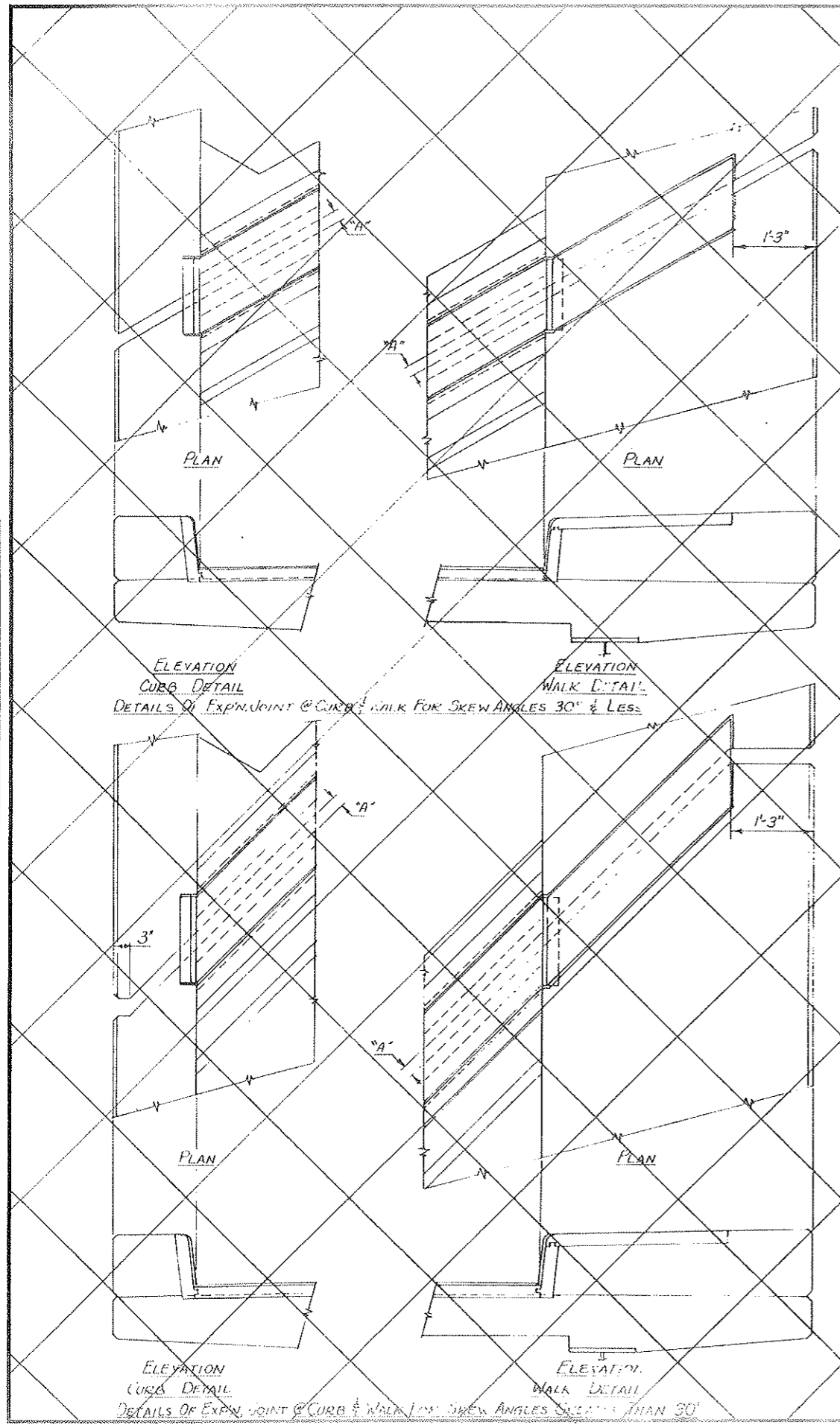
**DIVISION OF HIGHWAYS**

**BRIDGE EXPANSION DEVICE  
PREMOLDED ARMORED**

Designer <b>A. Eriksen</b>	Structure	<b>F-12-AP</b>
Detailer <b>J.R. EWERT</b>	Numbers	
Drawing Number <b>B-18</b>	of <b>19</b>	Drawings

(Preliminary Stage Only)

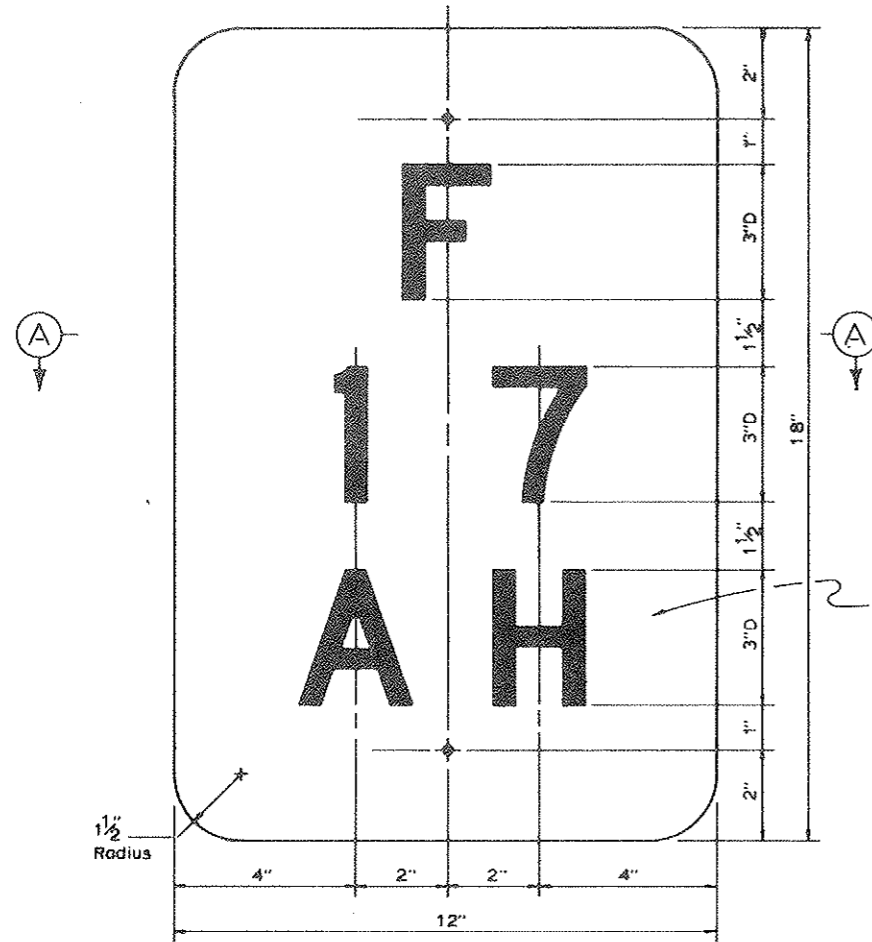
DESIGNED BY	DATE	CHECKED BY
AE	3-75	AE
CHECKED BY	QUANTITIES BY	
UE	10-73	AE
DETAILS BY		



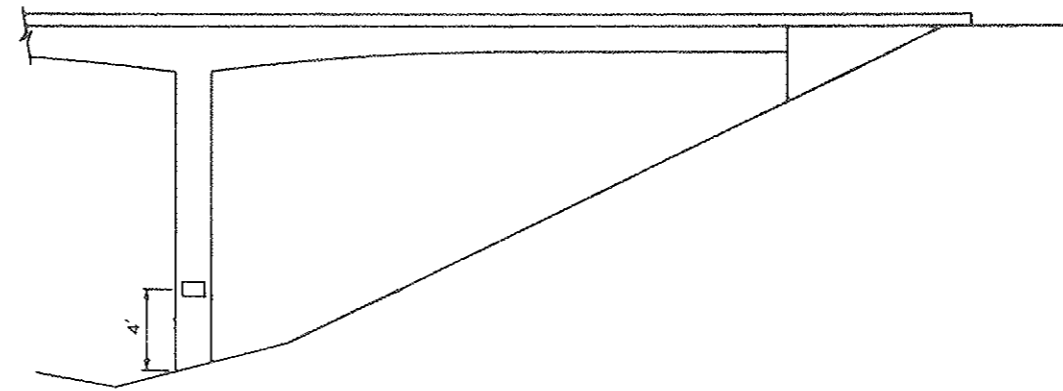
FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	160	

VOID BY CONSTRUCTION DATE 6-24-77

REVISIONS	



Black letters and numbers on white background.



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-B1. ACCEPTABLE MATERIAL INCLUDES REROLLED RAILROAD RAILS. U-2 POST SHALL WEIGH 2 LBS. PER FT. EXCEPT THAT A MILL TOLERANCE OF MINUS 3-1/28 OF THE HEIGHT OF ANY ONE POST WILL BE ALLOWED. ALTERNATE METAL POST WILL BE ACCEPTABLE IF SECTION MODULUS IS AT LEAST 0.200 IN.<sup>3</sup> ABOUT THE X-X AXIS AND AT LEAST 0.260 IN.<sup>3</sup> 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.

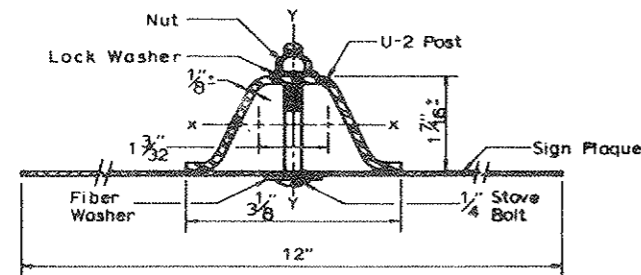
STRUCTURE NUMBER STANDARD SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE WORK.

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

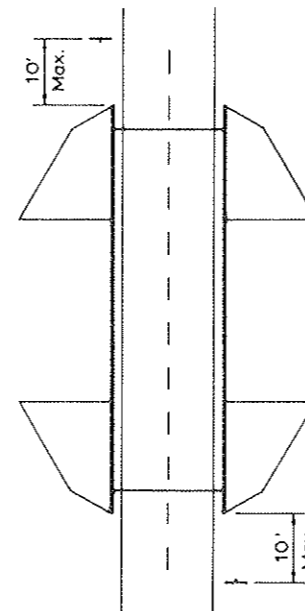
- (A) FOR STRUCTURES OF THREE OR MORE SPANS, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF THE END COLUMN OF THE RIGHT HAND PIER.
- (B) FOR TWO SPAN STRUCTURES, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF EACH END COLUMN OF THE CENTER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

DESIGNED BY	CHECKED BY	DATE
ALG	ALG	3-7-74
ALG	ALG	3-7-74
ALG	ALG	3-7-74
ALG	ALG	3-7-74

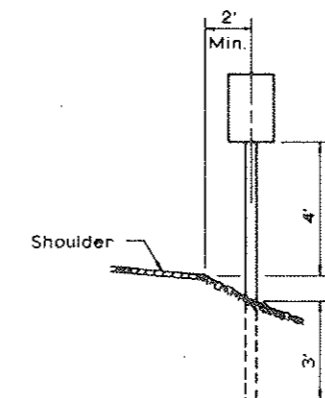
STRUCTURE IDENTIFICATION PANEL (SAMPLE NUMBERS & LETTERS)



SECTION A



① STANDARD LOCATION DETAIL



U-2 POST IN GROUND

DIVISION OF HIGHWAYS	
STRUCTURE NUMBER STANDARD	
Designer <i>A. Eriksen</i>	Structure <i>F-12-AP</i>
Detailer <i>B.P. LERE</i>	Numbers
Drawing Number <i>B-19</i>	of <i>19</i> Drawings

(7-1-74)

Revision Dates	(Preliminary Stage Only)

**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. 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.

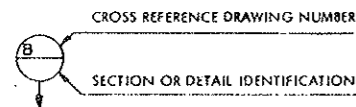
GRADE 60 REINFORCING STEEL REQUIRED FOR #5 BARS AND LARGER. GRADE 40 OR GRADE 60 MAY BE FURNISHED FOR #4 BARS.

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

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

BAR SIZE NUMBER	LAP LENGTHS											
	4	5	6	7	8	9	10	11	12	13	14	
SPICE	GRADE 40	1'-0"	1'-3"	1'-6"	1'-9"	2'-2"	2'-8"	3'-5"	4'-3"	5'-0"	5'-6"	6'-0"
LENGTH	GRADE 60	1'-6"	1'-11"	2'-3"	2'-8"	3'-0"	3'-5"	4'-2"	5'-0"	5'-6"	6'-0"	6'-6"

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



**LOADING DATA**

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

**DESIGN DATA:**

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

REINFORCING STEEL:	GRADE 60 -	FY = 60,000 LBS. PER SQ. IN.
	GRADE 40 -	FY = 40,000 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.
	CLASS S -	f'c = 5000 LBS. PER SQ. IN.
	(FOR LIMITS SEE PLANS.)	f'c = 5500 LBS. PER SQ. IN.

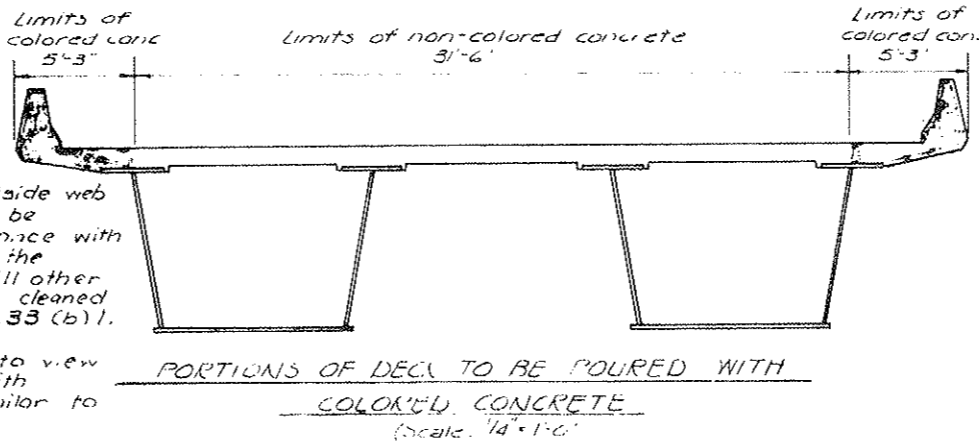
**Note:**  
The exterior face of the outside web of eo. steel box girder shall be sandblast cleaned in accordance with Subsection 509.33 (b) 2 of the Standard Specifications. All other exposed surfaces shall be cleaned as outlined in Section 509.33 (b) 1.

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

**SUMMARY OF QUANTITIES**

Item	Description	Unit	F-12-AP (EBL)						Total
			Super	Abut 1	Pier 2	Pier 3	Abut 4		
206	Structure Excavation	Cu Yd		164	258			109	764
				82	257	233		82	654
306	Structure Backfill (Class 2)	Cu Yd		24	150	133		178	535
				48	151	134		56	597
② 403	Hot Bituminous Pavement	Ton	327						327
② 411	Asphalt cement	Ton							
503	Drilled Caisson (30" Dia)	Lin Ft		1862			815	7178	10255
503	Drilled Caisson (48" Dia)	Lin Ft		8730			18287	782	13529
③ 507	Structural Steel	bs	983,560	70			70		983,700
512	Bearing Device (0 to 200 Tons)	EA		2				2	4
512	Bearing Device (501-750 Tons)	EA			2	2			4
② 515	Waterproofing Membrane	Sq Yd	2711						2711
518	Bridge Expansion Device (Type 2)	Lin Ft	38						38
518	Bridge Expansion Device (Type 6)	Lin Ft	38						38
601	Concrete Class A (Bridge)	Cu Yd		3671	5620	5100		4334	19620
601	Concrete Class A (Br. Exp.) (Colored)	Cu Yd		35				35	9905
601	Concrete Class D (Bridge)	Cu Yd	610.87						510.99
601	Concrete Class D (Bridge) (Colored)	Cu Yd	379	94.60			106.28		552.97
601	Concrete Class D (Bridge) (Colored)	Cu Yd	323	94			92		552.97
602	Reinforcing Steel	Lbs	241,094	14,664	2675	2675	14,664		275,772
① 618	Concrete Segmental Pier (F12AP)	LS							1

- ① Concrete Class S (Colored) (f'c = 5000 psi) (Precast) 178 CY (R-1) ① Approximate Quantities for Information Only.
- Concrete Class S (Colored) (f'c = 5000 psi) (Cast-in-Place) 28 CY
- Reinforcing Steel 35,552 lbs
- Reinforcing Strands 1,500 lbs
- ② Future Items
- ③ Includes 140 lb. A.S.T.M. A36 steel for access doors.



FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	161	

REVISIONS		
5-6-75	Rev. Item 503	Adt. Note
5-14-75	Rev. Item 509	

**INDEX OF DRAWINGS**

GENERAL INFORMATION - SUMMARY OF QUANTITIES	8-1
GENERAL LAYOUT	8-2
ENGINEERING GEOLOGY	8-3
ELEVATIONS	8-4
ELEVATIONS	8-5
CONSTRUCTION LAYOUT	8-6
FOOTING AND CAISSON LAYOUT	8-7
ABUTMENT NO. 1 DETAILS	8-8
ABUTMENT NO. 1 DETAILS	8-9
ABUTMENT NO. 4 DETAILS	8-10
ABUTMENT NO. 4 DETAILS	8-11
PIER DETAILS	8-12
SUPERSTRUCTURE FRAMING PLAN AND DETAILS	8-13
GIRDER DETAILS	8-14
DECK PLAN AND TYPICAL DECK SECTION	8-15
BRIDGE RAIL TYPE 4	8-16
BLARING DETAILS	8-17
BRIDGE EXPANSION DEVICE	8-18
STRUCTURE NUMBER STANDARD	8-19

AS CONSTRUCTED  
REVISED DATE: 6-28-77

BRIDGE EXPANSION DEVICES  
TRANSFLEX TYPE 1000  
ADD A, 650

**FOUNDATION PRESSURES**

	Allowable	Actual
Caissons (End Bearing)	25 Tons/Sq Ft	20 Tons/Sq Ft
Pier Footings	15 Tons/Sq Ft	11 Tons/Sq Ft

**BRIDGE DESCRIPTION**

3 Continuous Spans (180'-0", 240'-0", 180'-0")  
Composite Concrete Slab and Welded Steel Box Girders

Over West Ten Mile Creek Sta 1011+00 near Veil Pass  
38'-0" Roadway, 2'-0" Bridge Rail Type 4

Details Reviewed  
Whitman 11.6  
Bridge Engineer Date 3/17/75

**DIVISION OF HIGHWAYS**

GENERAL INFORMATION  
SUMMARY OF QUANTITIES

Station 1007+16.14 to 1015+58.14  
Station

Near Veil Pass Sec. 25 T. 6S R. 79 W

Designer D. Hotlin  
Detailer B. Eisner  
Drawing Number B-1 of 17 Drawings

Structure Numbers F-12-AP

Revision Dates (Preliminary Stage Only)

Str. No. F-12-AP

(West Ten Mile)

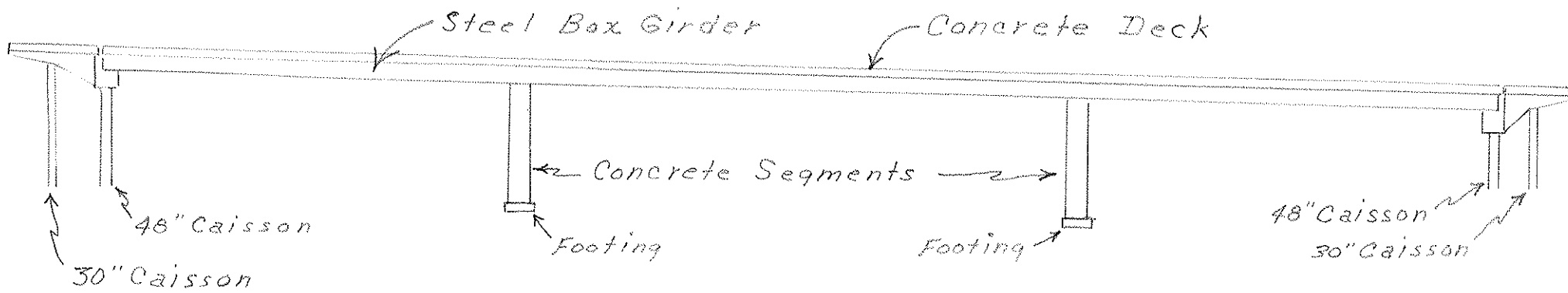


Abut. No. 1

Pier No. 2

Pier No. 3

Abut. No. 4

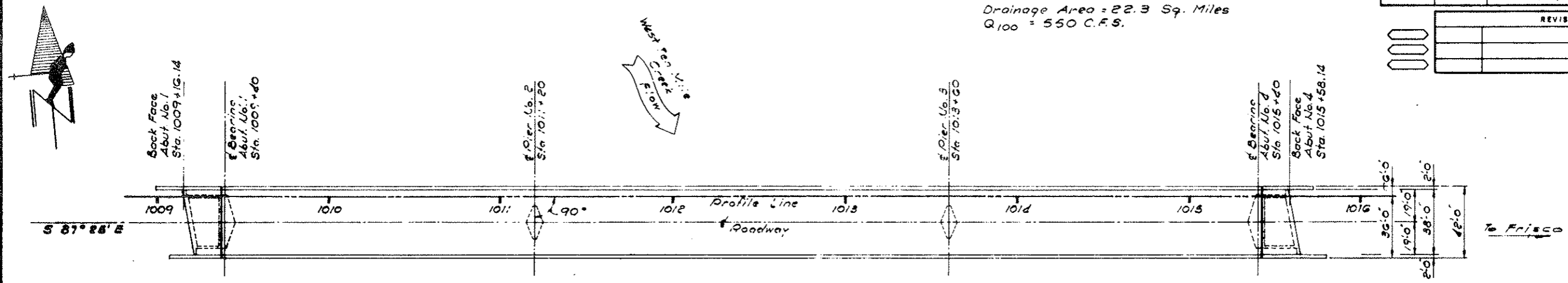


**HYDRAULIC DATA:**  
Drainage Area = 22.3 Sq. Miles  
 $Q_{100} = 550 \text{ C.F.S.}$

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2 (62) 197	162	

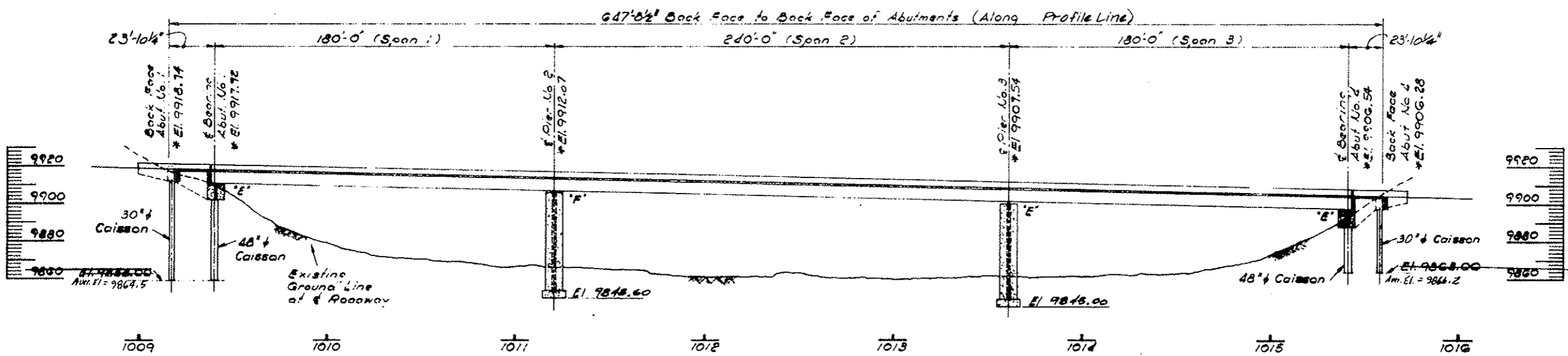
  

REVISIONS	



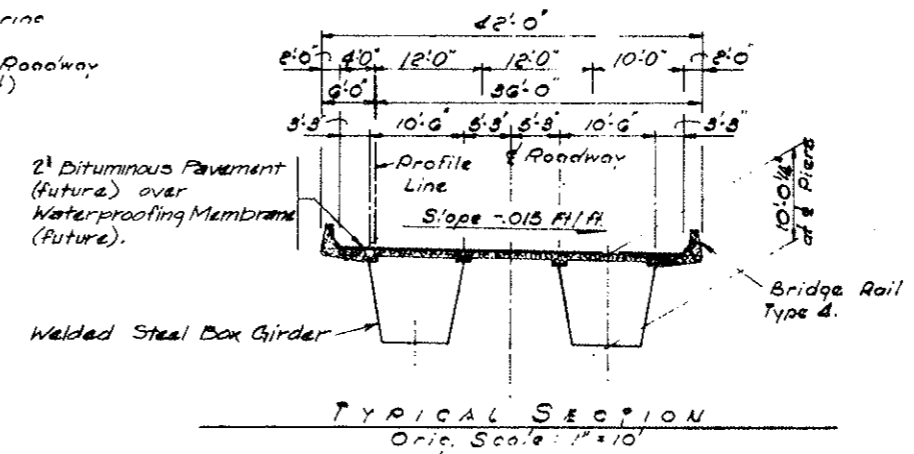
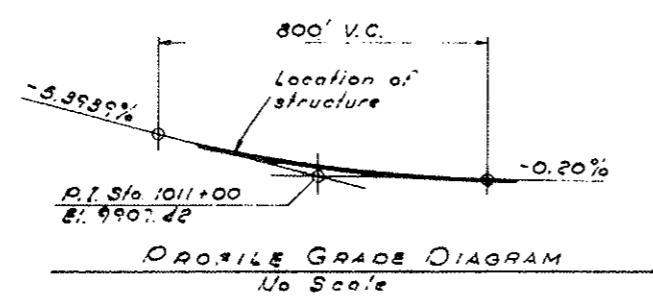
**PLAN**  
Orig. Scale: 1" = 30'

AS CONSTRUCTED  
REVISED DATE: 6-22-77



**SECTION TAKEN AT CENTERLINE OF ROADWAY**  
Orig. Scale: 1" = 30'

S Indicates Expansion Bearing  
F Indicates Fixed Bearing  
\* Elevations are to finished roadway at Profile Line (top of asphalt)

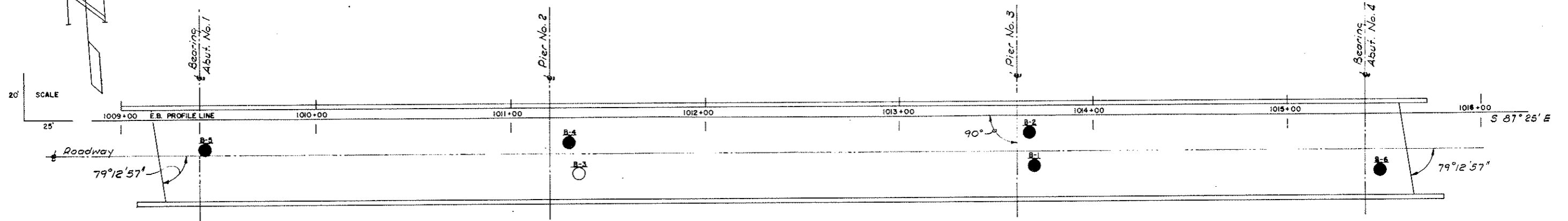


DATE	CHECKED BY	QUANTITIES BY
7/2/77		

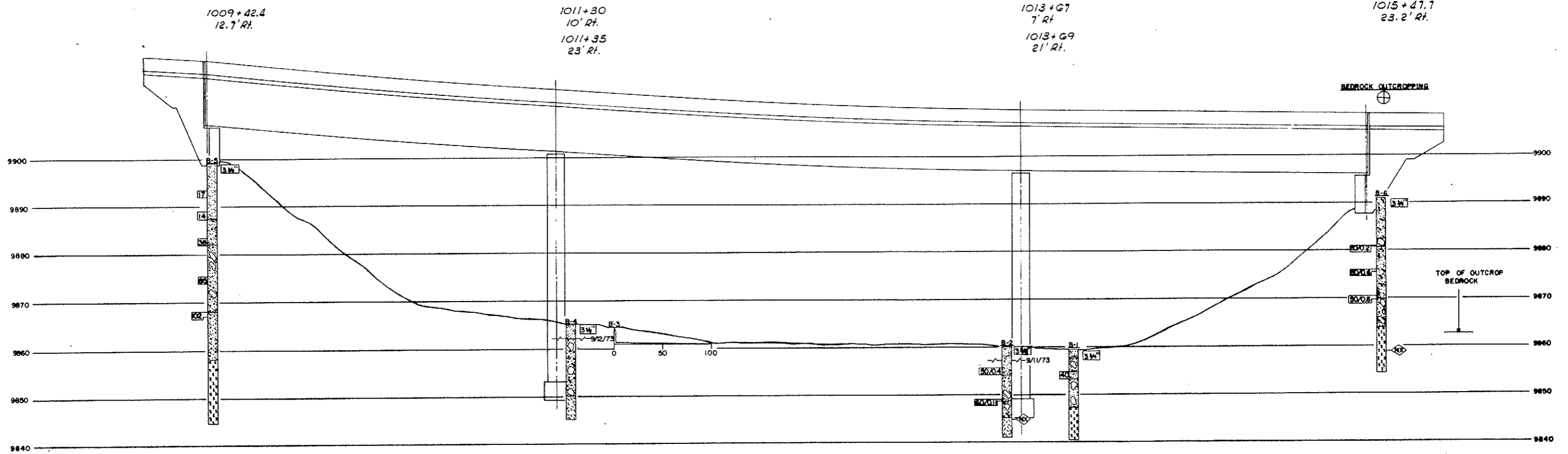
<b>DIVISION OF HIGHWAYS</b>	
<b>GENERAL LAYOUT</b>	
Designer: D. Hoflin	Structure: F-12-AD
Detailer: P. Lentis	Numbers:
Drawing Number: B-2	of 19 Drawings

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLD.	I 70-2 (32) 197	163	

AS CONSTRUCTED  
NO REVISIONS DATE: 6-22-77

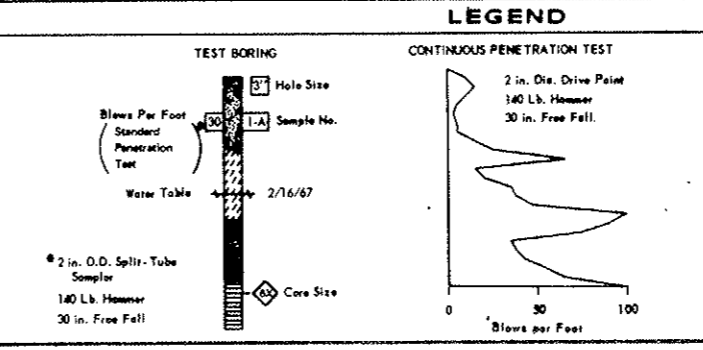


P L A N



SUMMARY OF TEST RESULTS														
Sample No.	Depth	Classification	Grading Analysis				Water Cont. %	Wet Unit Weight	Unconsolidated Strength $Q_u$ T.S.F.	Triaxial Shear Strength				Dia. of Sample (inches)
			Coarse Sand	Fine Sand	Silt and Clay	Percent				Unconsolidated	Consolidated	Time	Press.	

TYPE OF MATERIAL	
	SILTY SAND
	SAND & GRAVEL
	SAND & BOULDERS
	BOULDER
	SILTY SAND & GRAVEL
	GRANITE BEDROCK
	SILTY SAND W/ COBBLES
	SILTY SAND W/ BOULDERS
	SAND & GRAVEL W/ COBBLES & BOULDERS
	SILTY SAND & GRAVEL W/ BOULDERS
	METAMORPHIC BEDROCK



**DIVISION OF HIGHWAYS  
STATE OF COLORADO**

**ENGINEERING GEOLOGY**

WEST  
Across TEN MILE CREEK  
Sta. 1009+10.14 to 1015+58.14  
Near V.M. PASS EAST, Sec. 25 T. 25 S. R. 79W

Geologist R.R.B. Approved by  
Made by D.L.S. Bridge Engineer  
Checked by D.L.S. Date: 19

STRUCTURE NO. F-12-AD  
DWG. NO. B-3 OF 19

DIVISION OF HIGHWAYS  
STATE OF COLORADO  
BRIDGE GEOMETRICS  
DATE OF RUN: 75/06/84.

DATE OF DATA: 02/28/75  
DESIGNER: D. HOFFLIN  
CHECKER: P. LANIUS

JOB DESCRIPTION: STRUCTURE F-12-AP VAIL PASS BRIDGE  
AT STATION 1011+00. ELEVATIONS ARE  
0.1667 FT. BELOW FINISHED GRADE.

INPUT DATA

HORIZONTAL ALIGNMENT DATA.....

DEGREE OF CURVATURE: -8 -8 -0

VERTICAL ALIGNMENT DATA.....

VERTICAL CURVE NO. 1 | PI STATION 1011+00 | PI ELEV 9987.283 | VC LENGTH 600.000 | G1 -5.393900 | G2 -2.008800

BENT LINE INPUT \* \* \* \* \* SKEW ANGLE  
DESCRIPTION OF BENT LINE OR TANGENT TO CHORD OF BENT LINE | REFERENCE STATION OF INTERSECTION OF BENT LINE AND TANGENT | STATION OF INTERSECTION OF BENT LINE AND TANGENT | ELEVATION AT INTERSECTION OF BENT LINE AND TANGENT

DESCRIPTION OF BENT LINE OR TANGENT TO CHORD OF BENT LINE	REFERENCE STATION OF INTERSECTION OF BENT LINE AND TANGENT	STATION OF INTERSECTION OF BENT LINE AND TANGENT	ELEVATION AT INTERSECTION OF BENT LINE AND TANGENT
BF ADUT. 1 CONSTR. CL -10 47 3.0 LEFT SKEW	1009+16.143	9918.8866	4/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+15.000	9918.8223	NORTH OUT
CL GW 1	1009+16.000	9918.7836	CL GW 1
PRO LINE	1009+16.143	9918.8866	PRO LINE
CL GW 2	1009+18.000	9918.8666	CL GW 2
CL ROADWAY	1009+19.000	9918.8479	CL ROADWAY
CL GW 3	1009+20.000	9918.8284	CL GW 3
CL GW 4	1009+22.000	9917.9927	CL GW 4
SOUTH OUT	1009+23.000	9917.8745	SOUTH OUT
1/ 4 PT.= 1 CONSTR. CL -8 7 48.0 LEFT SKEW	1009+22.187	9918.4498	5/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+21.250	9918.5737	NORTH OUT
CL GW 1	1009+22.000	9918.4652	CL GW 1
PRO LINE	1009+22.187	9918.4498	PRO LINE
CL GW 2	1009+24.000	9918.4485	CL GW 2
CL ROADWAY	1009+24.250	9918.1402	CL ROADWAY
CL GW 3	1009+25.000	9918.0320	CL GW 3
CL GW 4	1009+26.500	9917.8155	CL GW 4
SOUTH OUT	1009+27.250	9917.7074	SOUTH OUT
2/ 4 PT.= 1 CONSTR. CL -5 20 25.0 LEFT SKEW	1009+28.072	9918.2152	6/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+27.500	9918.3276	NORTH OUT
CL GW 1	1009+28.000	9918.2293	CL GW 1
PRO LINE	1009+28.072	9918.2152	PRO LINE
CL GW 2	1009+29.000	9918.0324	CL GW 2
CL ROADWAY	1009+29.500	9917.9344	CL ROADWAY
CL GW 3	1009+30.000	9917.8301	CL GW 3
CL GW 4	1009+31.000	9917.6396	CL GW 4
SOUTH OUT	1009+31.500	9917.5414	SOUTH OUT
3/ 4 PT.= 1 CONSTR. CL -2 43 34.6 LEFT SKEW	1009+34.036	9917.9830	7/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+33.750	9918.0840	NORTH OUT
CL GW 1	1009+34.000	9917.9956	CL GW 1
PRO LINE	1009+34.036	9917.9830	PRO LINE
CL GW 2	1009+34.500	9917.8187	CL GW 2
CL ROADWAY	1009+34.750	9917.7303	CL ROADWAY
CL GW 3	1009+35.000	9917.6419	CL GW 3
CL GW 4	1009+35.500	9917.4651	CL GW 4
SOUTH OUT	1009+35.750	9917.3766	SOUTH OUT
CL BRG ADUT 1 CONSTR. CL 0 0 .0 ZERO SKEW	1009+40.000	9917.7530	8/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+40.000	9917.8430	NORTH OUT
CL GW 1	1009+40.000	9917.7843	CL GW 1
PRO LINE	1009+40.000	9917.7530	PRO LINE
CL GW 2	1009+40.000	9917.6068	CL GW 2
CL ROADWAY	1009+40.000	9917.5280	CL ROADWAY
CL GW 3	1009+40.000	9917.4493	CL GW 3
CL GW 4	1009+40.000	9917.2918	CL GW 4
SOUTH OUT	1009+40.000	9917.2130	SOUTH OUT
1/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1009+49.000	9917.6105	9/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+49.000	9917.5005	NORTH OUT
CL GW 1	1009+49.000	9917.4217	CL GW 1
PRO LINE	1009+49.000	9917.6105	PRO LINE
CL GW 2	1009+49.000	9917.2642	CL GW 2
CL ROADWAY	1009+49.000	9917.1855	CL ROADWAY
CL GW 3	1009+49.000	9917.1067	CL GW 3
CL GW 4	1009+49.000	9916.9692	CL GW 4
SOUTH OUT	1009+49.000	9916.8705	SOUTH OUT
2/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1009+58.000	9917.0731	10/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+58.000	9917.1631	NORTH OUT
CL GW 1	1009+58.000	9917.0844	CL GW 1
PRO LINE	1009+58.000	9917.0731	PRO LINE
CL GW 2	1009+58.000	9916.9269	CL GW 2
CL ROADWAY	1009+58.000	9916.8481	CL ROADWAY
CL GW 3	1009+58.000	9916.7694	CL GW 3
CL GW 4	1009+58.000	9916.6119	CL GW 4
SOUTH OUT	1009+58.000	9916.5331	SOUTH OUT
3/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1009+67.000	9916.7411	11/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW
NORTH OUT	1009+67.000	9916.8311	NORTH OUT
CL GW 1	1009+67.000	9916.7523	CL GW 1
PRO LINE	1009+67.000	9916.7411	PRO LINE
CL GW 2	1009+67.000	9916.5948	CL GW 2
CL ROADWAY	1009+67.000	9916.5161	CL ROADWAY
CL GW 3	1009+67.000	9916.4373	CL GW 3
CL GW 4	1009+67.000	9916.2798	CL GW 4
SOUTH OUT	1009+67.000	9916.2011	SOUTH OUT

DATE	CHECKED BY	QUANTITIES BY

12/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1010+48.000	9913.9091	NORTH OUT	1010+48.000	9914.0791
			CL GW 1	1010+48.000	9914.0083
			PRO LINE	1010+48.000	9913.9891
			CL GW 2	1010+48.000	9913.8428
			CL ROADWAY	1010+48.000	9913.7641
			CL GW 3	1010+48.000	9913.6853
			CL GW 4	1010+48.000	9913.5278
			SOUTH OUT	1010+48.000	9913.4491
13/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1010+57.000	9913.7096	NORTH OUT	1010+57.000	9913.7996
			CL GW 1	1010+57.000	9913.7209
			PRO LINE	1010+57.000	9913.7096
			CL GW 2	1010+57.000	9913.5634
			CL ROADWAY	1010+57.000	9913.4846
			CL GW 3	1010+57.000	9913.4059
			CL GW 4	1010+57.000	9913.2484
			SOUTH OUT	1010+57.000	9913.1696
14/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1010+66.000	9913.4354	NORTH OUT	1010+66.000	9913.5254
			CL GW 1	1010+66.000	9913.4466
			PRO LINE	1010+66.000	9913.4354
			CL GW 2	1010+66.000	9913.2891
			CL ROADWAY	1010+66.000	9913.2104
			CL GW 3	1010+66.000	9913.1316
			CL GW 4	1010+66.000	9912.9741
			SOUTH OUT	1010+66.000	9912.8954
15/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1010+75.000	9913.1664	NORTH OUT	1010+75.000	9913.2564
			CL GW 1	1010+75.000	9913.1777
			PRO LINE	1010+75.000	9913.1664
			CL GW 2	1010+75.000	9913.0202
			CL ROADWAY	1010+75.000	9912.9414
			CL GW 3	1010+75.000	9912.8627
			CL GW 4	1010+75.000	9912.7052
			SOUTH OUT	1010+75.000	9912.6264
16/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1010+84.000	9912.9027	NORTH OUT	1010+84.000	9912.9927
			CL GW 1	1010+84.000	9912.9140
			PRO LINE	1010+84.000	9912.9027
			CL GW 2	1010+84.000	9912.7565
			CL ROADWAY	1010+84.000	9912.6777
			CL GW 3	1010+84.000	9912.5990
			CL GW 4	1010+84.000	9912.4415
			SOUTH OUT	1010+84.000	9912.3627
17/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1010+93.000	9912.6443	NORTH OUT	1010+93.000	9912.7343
			CL GW 1	1010+93.000	9912.6555
			PRO LINE	1010+93.000	9912.6443
			CL GW 2	1010+93.000	9912.4980
			CL ROADWAY	1010+93.000	9912.4193
			CL GW 3	1010+93.000	9912.3405
			CL GW 4	1010+93.000	9912.1830
			SOUTH OUT	1010+93.000	9912.1043
18/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1011+ 2.000	9912.3911	NORTH OUT	1011+ 2.000	9912.4411
			CL GW 1	1011+ 2.000	9912.4823
			PRO LINE	1011+ 2.000	9912.3911
			CL GW 2	1011+ 2.000	9912.2448
			CL ROADWAY	1011+ 2.000	9912.1661
			CL GW 3	1011+ 2.000	9912.0873
			CL GW 4	1011+ 2.000	9911.9298
			SOUTH OUT	1011+ 2.000	9911.8511
19/ 20 PT.= 1 CONSTR. CL 0 0 .0 ZERO SKEW	1011+11.000	9912.1432	NORTH OUT	1011+11.000	9912.2332
			CL GW 1	1011+11.000	9912.1544
			PRO LINE	1011+11.000	9912.1432
			CL GW 2	1011+11.000	9911.9969
			CL ROADWAY	1011+11.000	9911.9182
			CL GW 3	1011+11.000	9911.8394
			CL GW 4	1011+11.000	9911.6819
			SOUTH OUT	1011+11.000	9911.6032
CL PIER 2 CONSTR. CL 0 0 .0 ZERO SKEW	1011+20.000	9911.9005	NORTH OUT	1011+20.000	9911.9905
			CL GW 1	1011+20.000	9911.9117
			PRO LINE	1011+20.000	9911.9005
			CL GW 2	1011+20.000	9911.7542
			CL ROADWAY	1011+20.000	9911.6755
			CL GW 3	1011+20.000	9911.5967
			CL GW 4	1011+20.000	9911.4392
			SOUTH OUT	1011+20.000	9911.3605
1/ 20 PT.= 2 CONSTR. CL 0 0 .0 ZERO SKEW	1011+32.000	9911.5851	NORTH OUT	1011+32.000	9911.6751
			CL GW 1	1011+32.000	9911.5964
			PRO LINE	1011+32.000	9911.5851
			CL GW 2	1011+32.000	9911.4389
			CL ROADWAY	1011+32.000	9911.3601
			CL GW 3	1011+32.000	9911.2814
			CL GW 4	1011+32.000	9911.1239
			SOUTH OUT	1011+32.000	9911.0451

2/ 20 PT.= 2 CONSTR. CL 0 0 .0 ZERO SKEW	1011+44.000	9911.2791	NORTH OUT	1011+44.000	9911.3691
			CL GW 1	1011+44.000	9911.2903
			PRO LINE	1011+44.000	9911.2791
			CL GW 2	1011+44.000	9911.1320
			CL ROADWAY	1011+44.000	9911.0541
			CL GW 3	1011+44.000	9910.9753
			CL GW 4	1011+44.000	9910.8178
			SOUTH OUT	1011+44.000	9910.7391
3/ 20 PT.= 2 CONSTR. CL 0 0 .0 ZERO SKEW	1011+56.000	9910.9824	NORTH OUT	1011+56.000	9911.0724
			CL GW 1	1011+56.000	9910.9937
			PRO LINE	1011+56.000	9910.9824
			CL GW 2	1011+56.000	9910.8362
			CL ROADWAY	1011+56.000	9910.7574
			CL GW 3	1011+56.000	9910.6787
			CL GW 4	1011+56.000	9910.5212
			SOUTH OUT	1011+56.000	9910.4424
4/ 20 PT.= 2 CONSTR. CL 0 0 .0 ZERO SKEW	1011+68.000	9910.6951	NORTH OUT	1011+68.000	9910.7851
			CL GW 1	1011+68.000	9910.7063



AS CONSTRUCTED  
NO REVISIONS DATE: 6-24-77

BENT LINE INPUT	DESCRIPTION OF BENT LINE	SKW ANGLE OF BENT LINE TO CHORD OR TANGENT	STATION OF INTERSECTION OF LINE AND BENT LINE	ELEVATION AT INTERSECTION OF LINE AND BENT LINE	DESCRIPTION OF BENT LINE	SKW ANGLE OF BENT LINE TO CHORD OR TANGENT	STATION OF INTERSECTION OF LINE AND BENT LINE	ELEVATION AT INTERSECTION OF LINE AND BENT LINE
7/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+23.000	9906.7995	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+23.000	9906.8895 9906.8107 9906.7995 9906.6532 9906.5745 9906.4957 9906.3382 9906.2595
8/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+32.000	9906.7391	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+32.000	9906.8291 9906.7504 9906.7391 9906.5929 9906.5141 9906.4354 9906.2779 9906.1991
9/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+41.000	9906.6840	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+41.000	9906.7740 9906.6952 9906.6840 9906.5377 9906.4599 9906.3802 9906.2227 9906.1440
10/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+50.000	9906.6342	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+50.000	9906.7242 9906.6454 9906.6342 9906.4879 9906.4092 9906.3304 9906.1729 9906.0942
11/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+59.000	9906.5896	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+59.000	9906.6796 9906.6008 9906.5896 9906.4433 9906.3646 9906.2858 9906.1283 9906.0496
12/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+68.000	9906.5502	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+68.000	9906.6402 9906.5615 9906.5502 9906.4040 9906.3252 9906.2465 9906.0890 9906.0102
13/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+77.000	9906.5162	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+77.000	9906.6062 9906.5274 9906.5162 9906.3699 9906.2912 9906.2124 9906.0549 9905.9762
14/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+86.000	9906.4874	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+86.000	9906.5774 9906.4986 9906.4874 9906.3411 9906.2624 9906.1836 9906.0261 9905.9474
15/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+95.000	9906.4638	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+95.000	9906.5538 9906.4751 9906.4638 9906.3176 9906.2388 9906.1601 9906.0026 9905.9238
16/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1014+14.000	9906.8651	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1014+14.000	9906.9551 9906.8763 9906.8651 9906.7188 9906.6401 9906.5613 9906.4038 9906.3251
17/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1015+13.000	9906.4278	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1015+13.000	9906.5178 9906.4383 9906.4278 9906.2807 9906.2020 9906.1233 9905.9657 9905.8870
18/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1015+22.000	9906.4090	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1015+22.000	9906.4990 9906.4202 9906.4090 9906.2627 9906.1840 9906.1052 9905.9477 9905.8690
19/ 20 PT.= 3	CONSTR. CL	0 0 .0 ZERO SKEW	1015+31.000	9906.3910	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1015+31.000	9906.4810 9906.4022 9906.3910 9906.2447 9906.1660 9906.0872 9905.9297 9905.8510
CL BRG ABUT 4	CONSTR. CL	0 0 .0 ZERO SKEW	1015+40.000	9906.3730	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	0 0 .0 ZERO SKEW	1015+40.000	9906.4630 9906.3843 9906.3730 9906.2267 9906.1488 9906.0693 9905.9117 9905.8330
1/ 4 PT.= 1	CONSTR. CL	-2 43 34.6 LEFT SKEW	1015+44.536	9906.3639	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	-2 43 34.6 LEFT SKEW	1015+44.536	9906.4545 9906.3752 9906.3639 9906.2167 9906.1375 9906.0583 9905.8998 9905.8205
2/ 4 PT.= 1	CONSTR. CL	-5 26 25.0 LEFT SKEW	1015+49.071	9906.3549	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	-5 26 25.0 LEFT SKEW	1015+49.071	9906.4468 9906.3676 9906.3549 9906.2067 9906.1270 9906.0473 9905.8878 9905.8088
3/ 4 PT.= 1	CONSTR. CL	-8 7 48.0 LEFT SKEW	1015+53.607	9906.3458	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	-8 7 48.0 LEFT SKEW	1015+53.607	9906.4375 9906.3572 9906.3458 9906.1967 9906.1165 9906.0363 9905.8758 9905.7955
8F ABUT 4	CONSTR. CL	-10 47 3.0 LEFT SKEW	1015+58.143	9906.3367	NORTH OUT CL GW 1 PRO LINE CL GW 2 CL ROADWAY CL GW 3 CL GW 4 SOUTH OUT	-10 47 3.0 LEFT SKEW	1015+58.143	9906.4290 9906.3482 9906.3367 9906.1867 9906.1060 9906.0253 9905.8638 9905.7830

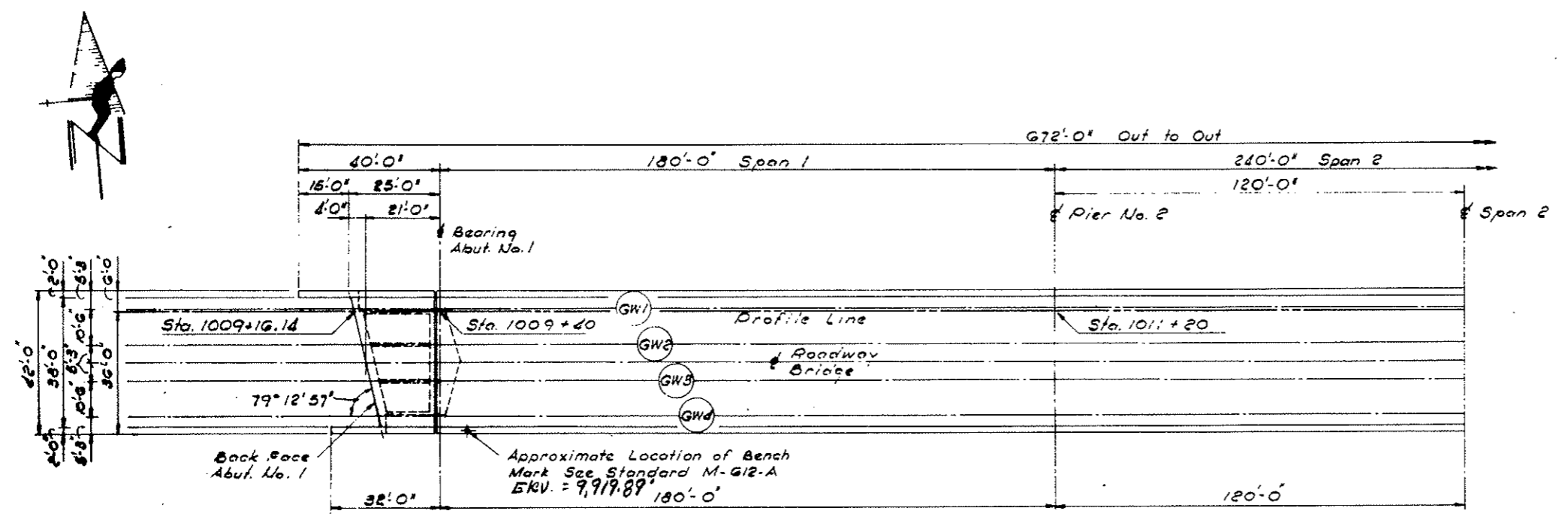
DIVISION OF HIGHWAYS

ELEVATIONS

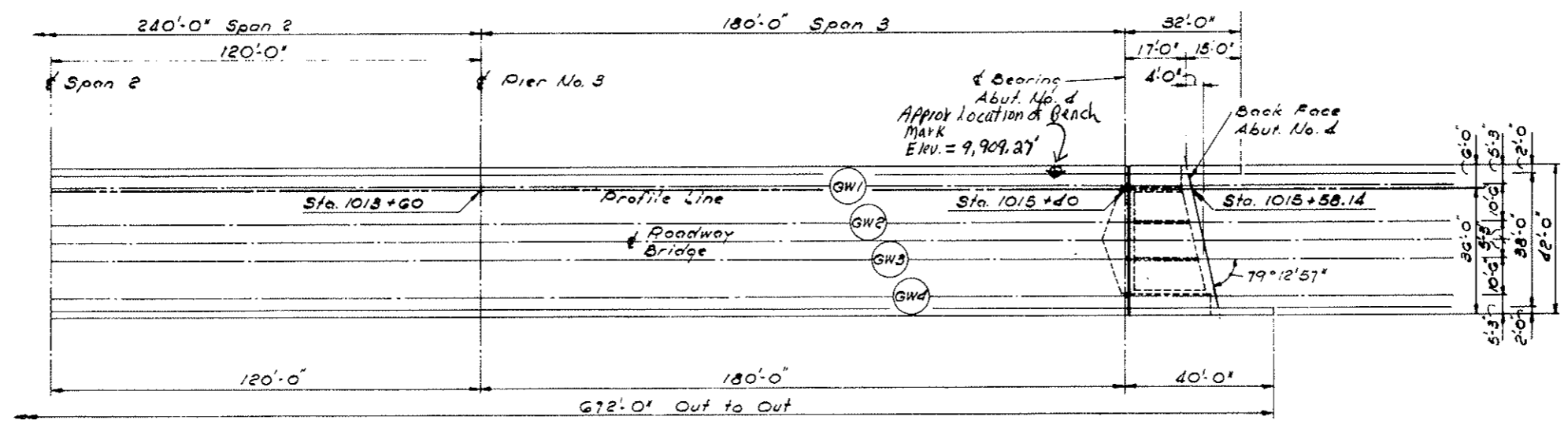
FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII COLORADO	I 70-2 (52) 197	166	

REVISIONS		

**AS CONSTRUCTED**  
 REVISED DATE 6-24-77



CONSTRUCTION LAYOUT  
 Orig. Scale: 1" = 20'



CONSTRUCTION LAYOUT  
 Orig. Scale: 1" = 20'

DATE	BY	CHECKED BY	QUANTITIES BY
12-2-74	PL	PL	PL

**DIVISION OF HIGHWAYS**

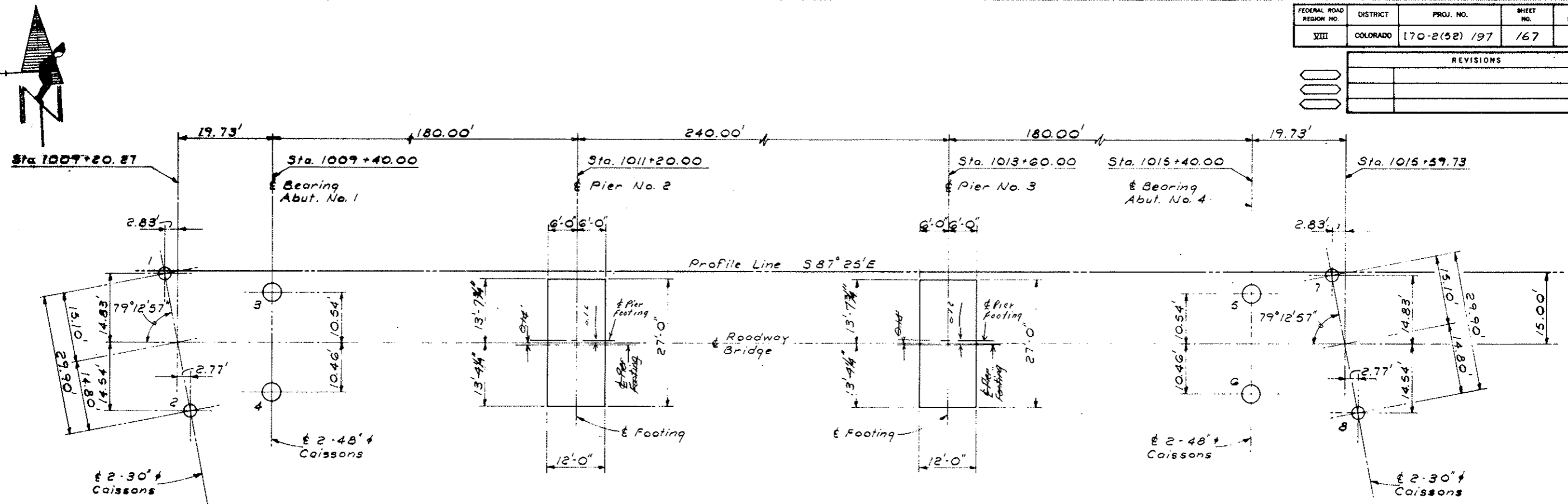
CONSTRUCTION LAYOUT

Designer O. Hoffin	Structure F-12-AP
Detailer P. Lentis	Numbers
Drawing Number B-6	of 19 Drawings

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	167	

REVISIONS	

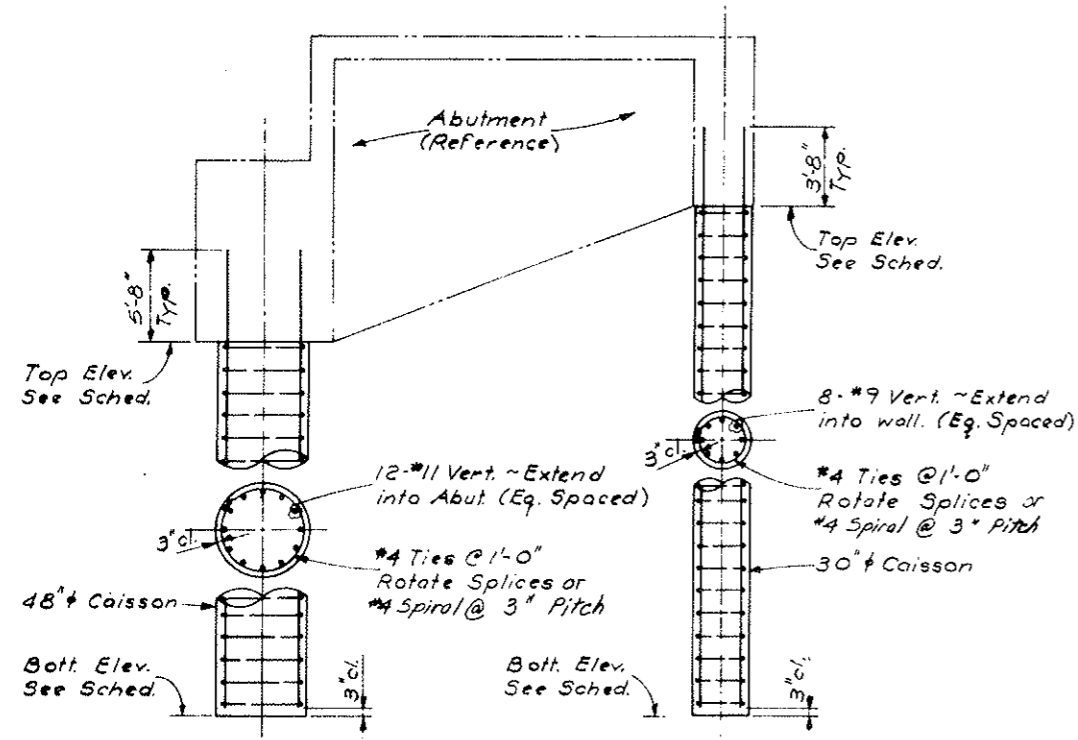


**FOOTING AND CAISSON LAYOUT**  
Orig. Scale:  $\frac{3}{32}'' = 1'-0''$

- Notes:**
- All dimensions are at the bottom of concrete
  - All Caissons are end bearing. Allowable bearing pressure = 25 Tons per square foot (20 TONS/FT<sup>2</sup>).
  - Allowable pier footing pressure = 15 TONS per square foot (11 TONS/FT<sup>2</sup>).
  - Pier footings are offset from  $\pm$  Roadway by an amount equal to depth of superstructure ( $10 \cdot 0.14'$ ) times superelevation (0.015/ft.).
- \* Figures in (\*) are actual foundation pressures.

No.	Top Elev.	Bott. Elev.	
1	9911.01	9858.00	9864.6
2	9911.01	9858.00	9866.0
3	9898.75	9858.00	9861.75
4	9898.75	9858.00	9863.75
5	9887.38	9863.00	9863.4
6	9887.38	9863.00	9860.6
7	9898.89	9863.00	9873.7
8	9898.89	9863.00	9867.1

AS CONSTRUCTED  
REVISED DATE: 6-24-77

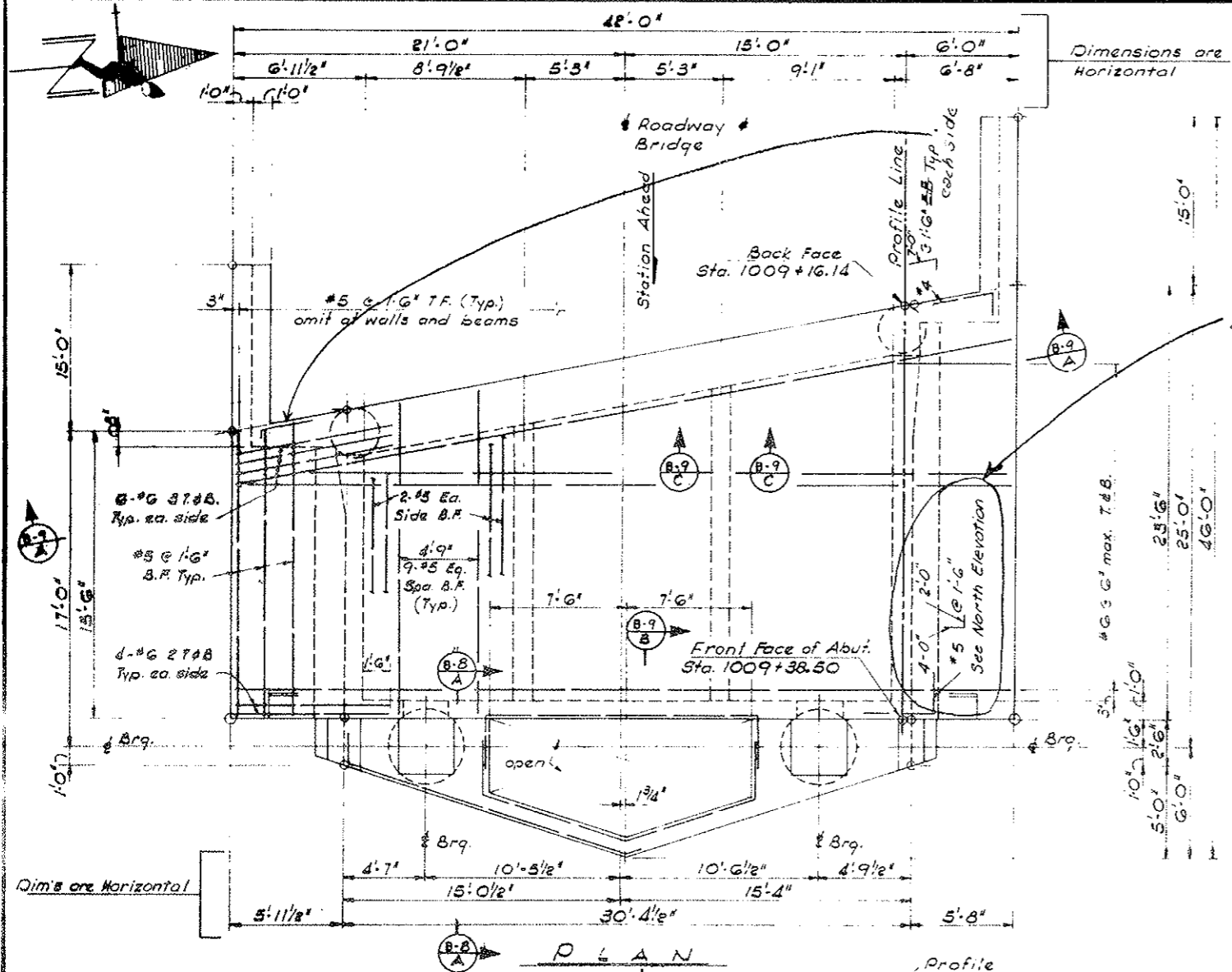


**CAISSON DETAIL**  
No Scale

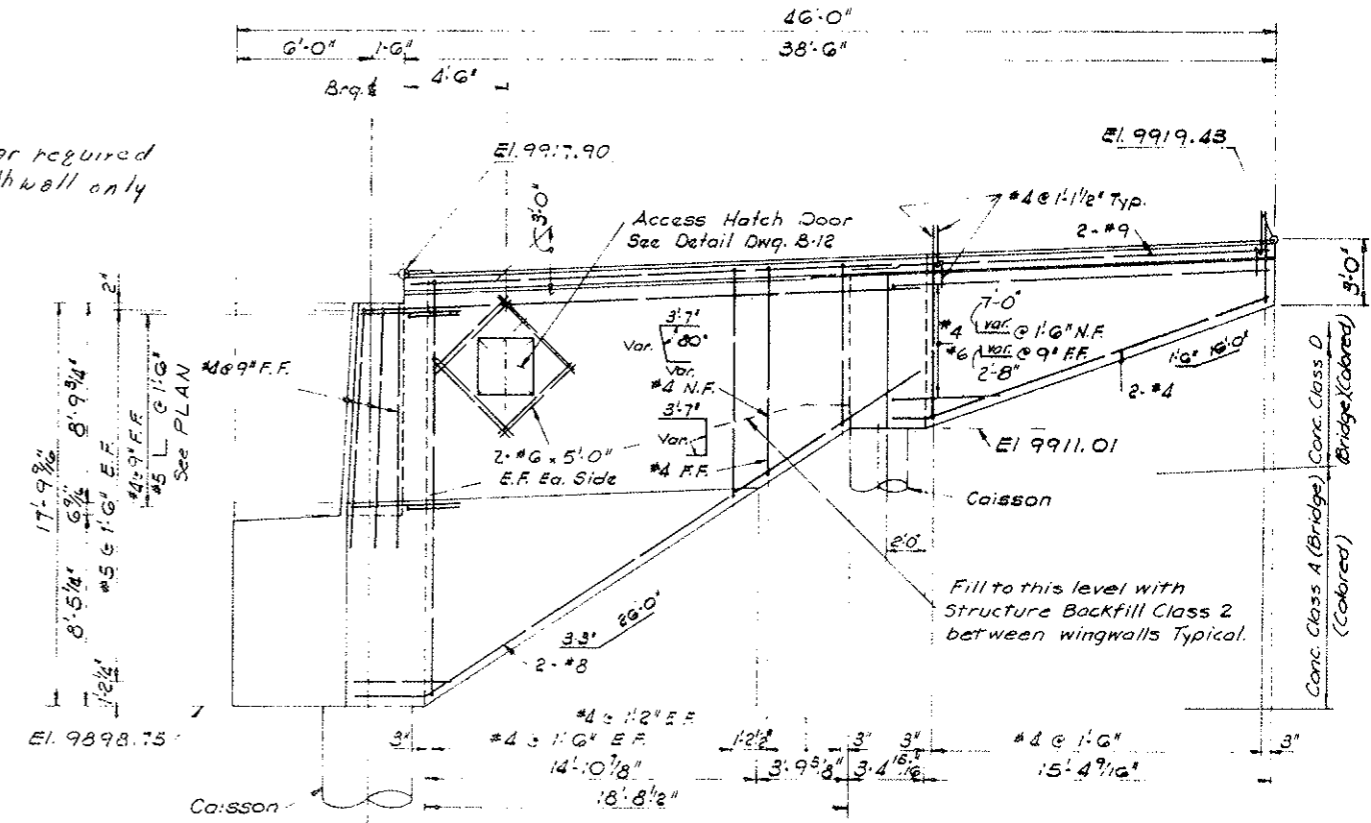
DIVISION OF HIGHWAYS	
FOOTING AND CAISSON LAYOUT	
Designer: A. Eriksen	Structure: F-12-AP
Detailer: D. Garner	Numbers:
Drawing Number: 8-7	of 17 Drawings

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	I 70-2 (52) 197	168	

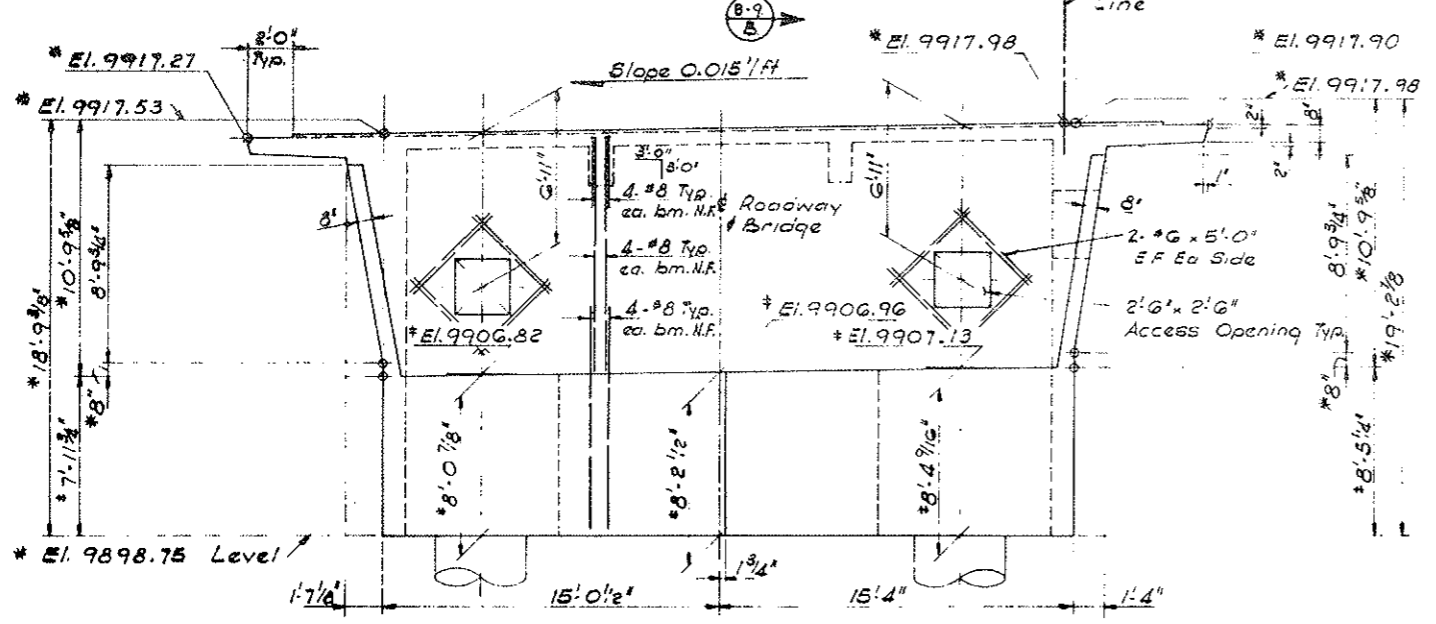
REVISIONS	



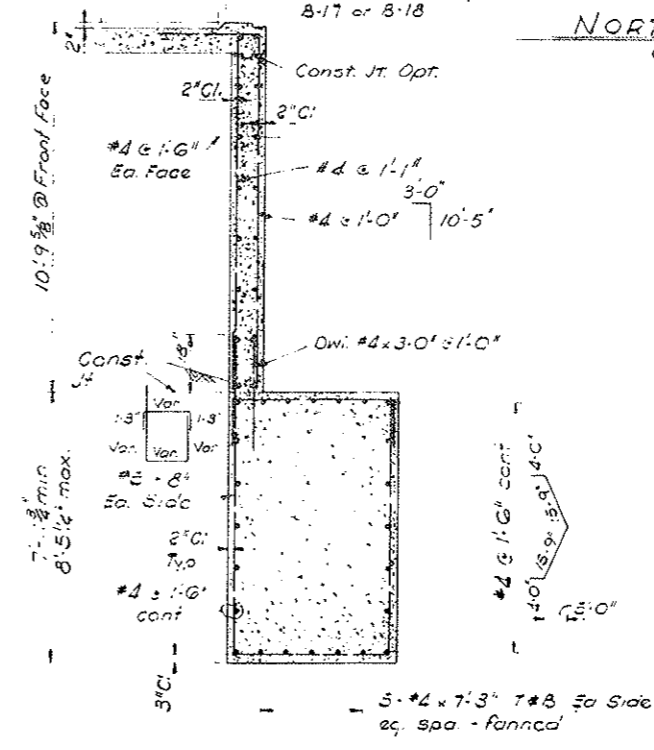
This bar required on north wall only



AS CONSTRUCTED  
REVISED DATE: 6-24-11



\* Elevations & Dimensions at Front Face.  
† Elevations & Dimensions at @ Bearing.



**DIVISION OF HIGHWAYS**

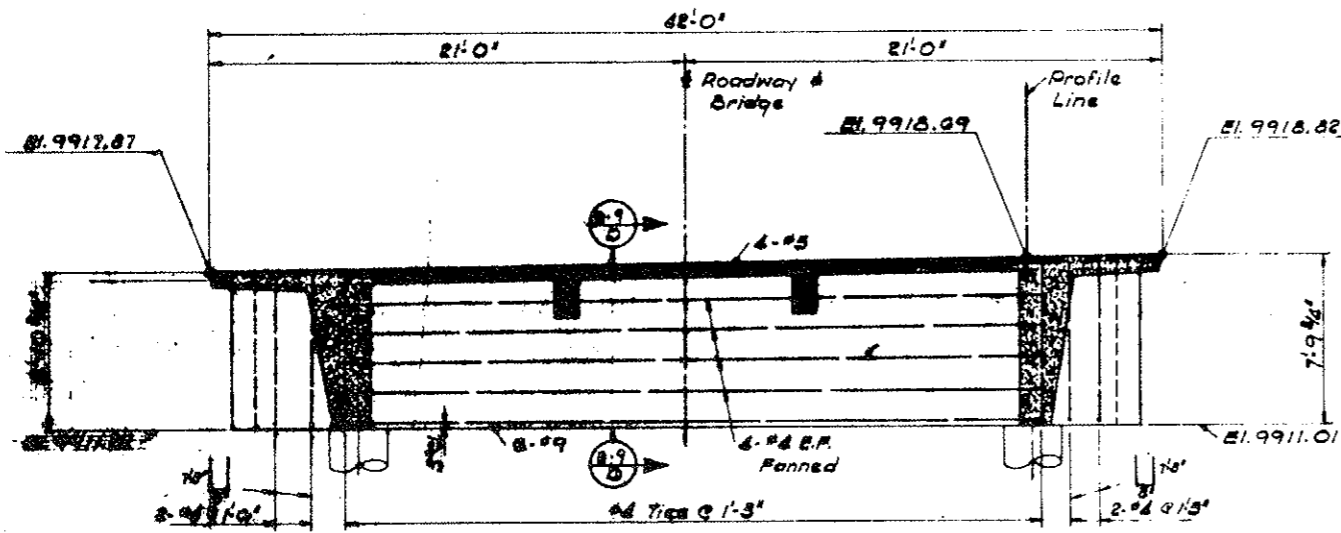
ABUTMENT No. 1 DETAILS  
(SHEET 1 of 2)

Designer: D. Hoflin	Structure: F-12-AD
Detailer: R. Lantis	Numbers:
Drawing Number: B-8	of 19 Drawings

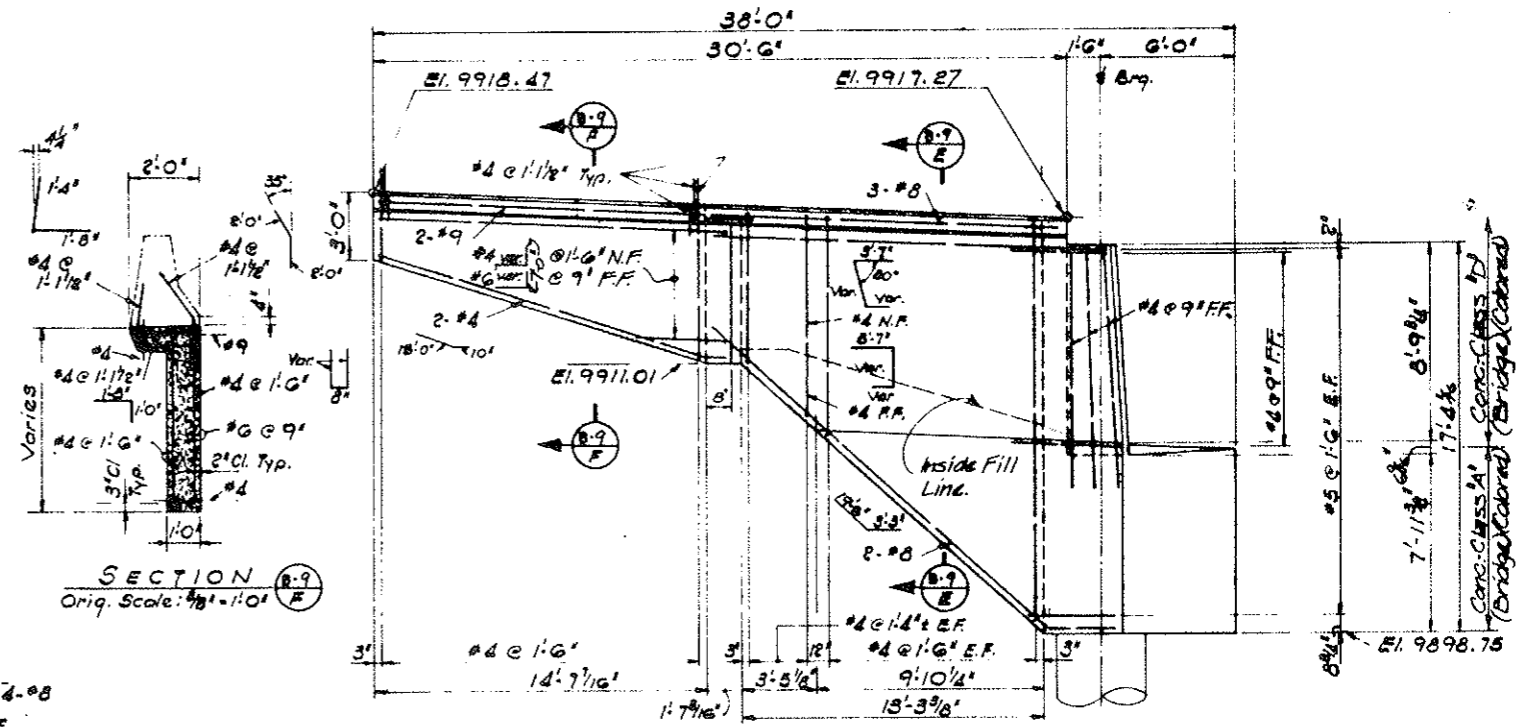
Revision Dates: (Preliminary Stage Only)

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2 (SR) 197	169	

REVISIONS	

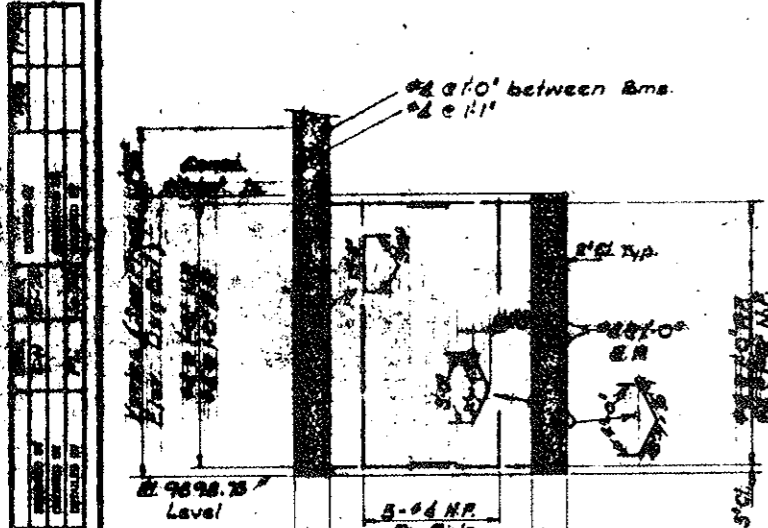


SECTION A-A  
 Orig. Scale: 1/4"=1'-0"

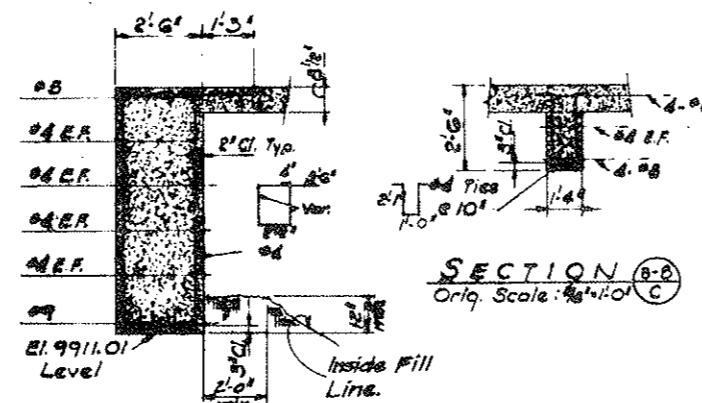


SOUTH ELEVATION  
 Orig. Scale: 1/4"=1'-0"

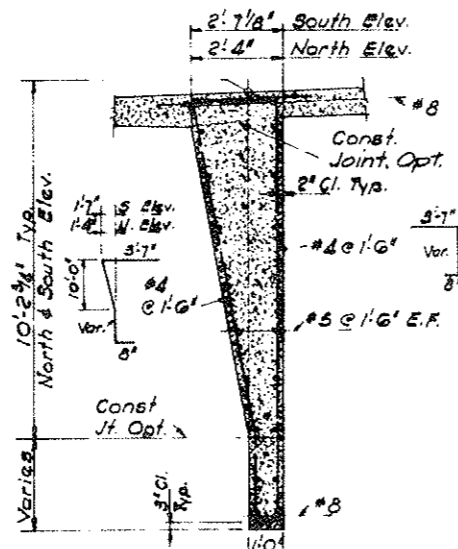
AS CONSTRUCTED  
 NO REVISIONS DATE: 6-24-77



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



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



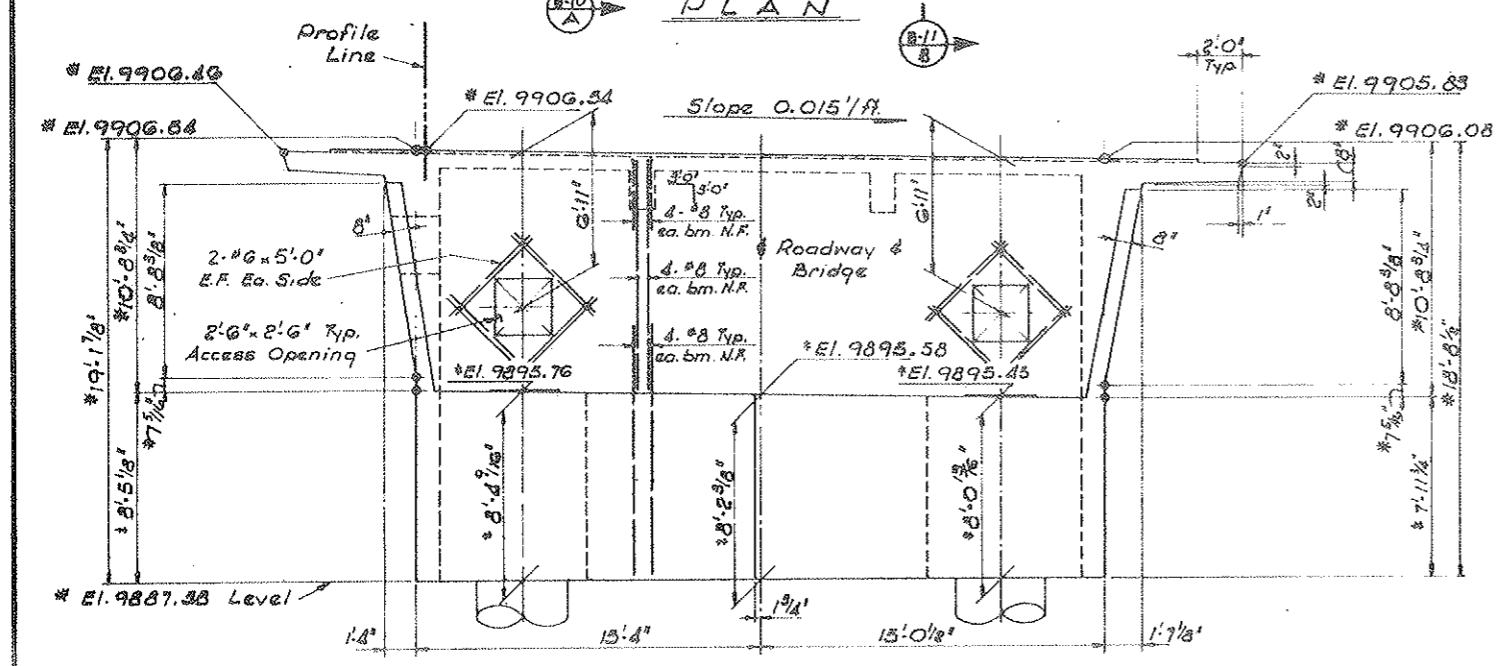
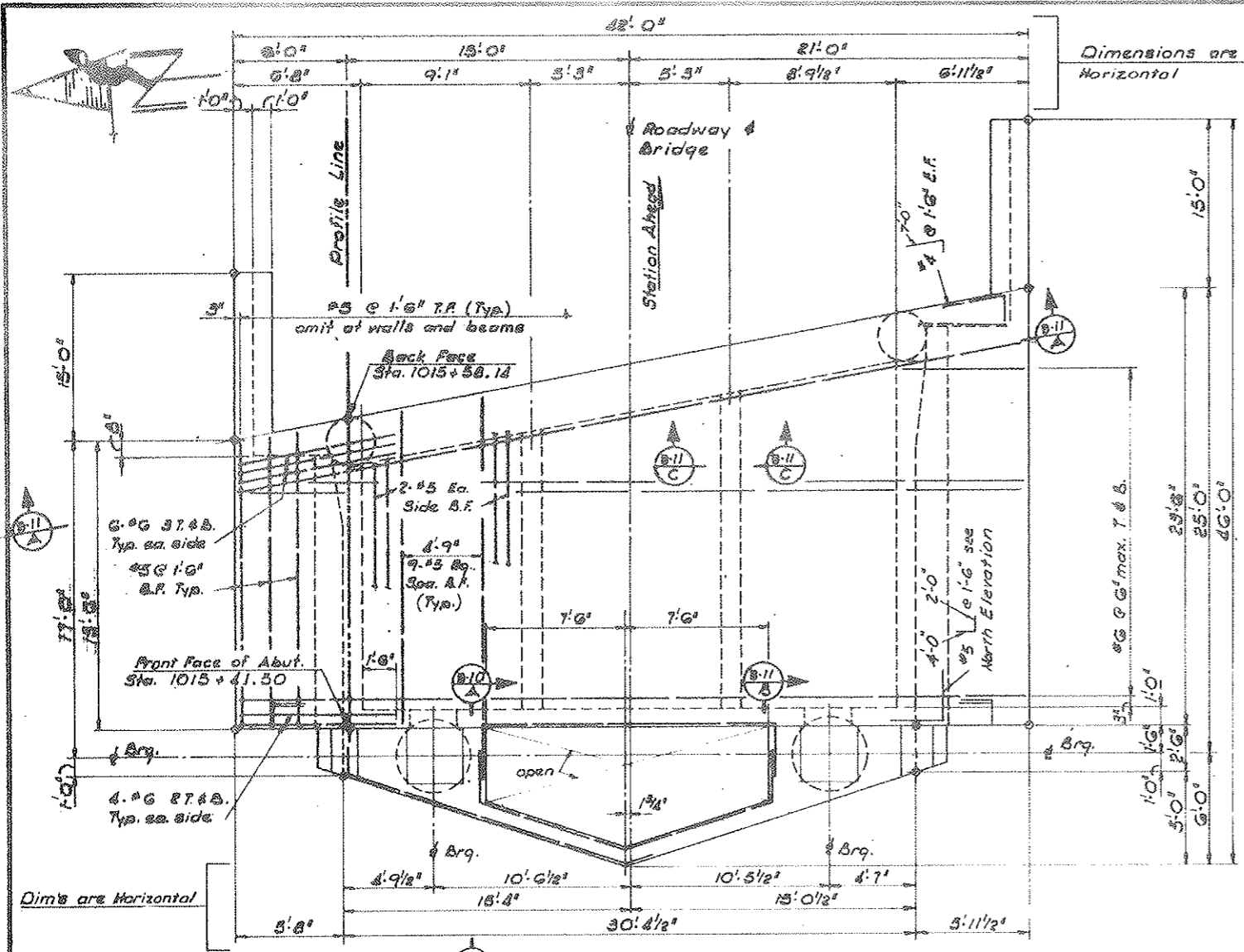
SECTION D-D  
 Orig. Scale: 3/8"=1'-0"

DIVISION OF HIGHWAYS			
ABUTMENT No. 1 DETAILS (SHEET 2 of 2)			
Designer	D. Hoffin	Structure	F-12-AP
Detailer	D. Lantier	Numbers	
Drawing Number	B-9	of	19 Drawings
Revision Date		Preliminary Stage Only	

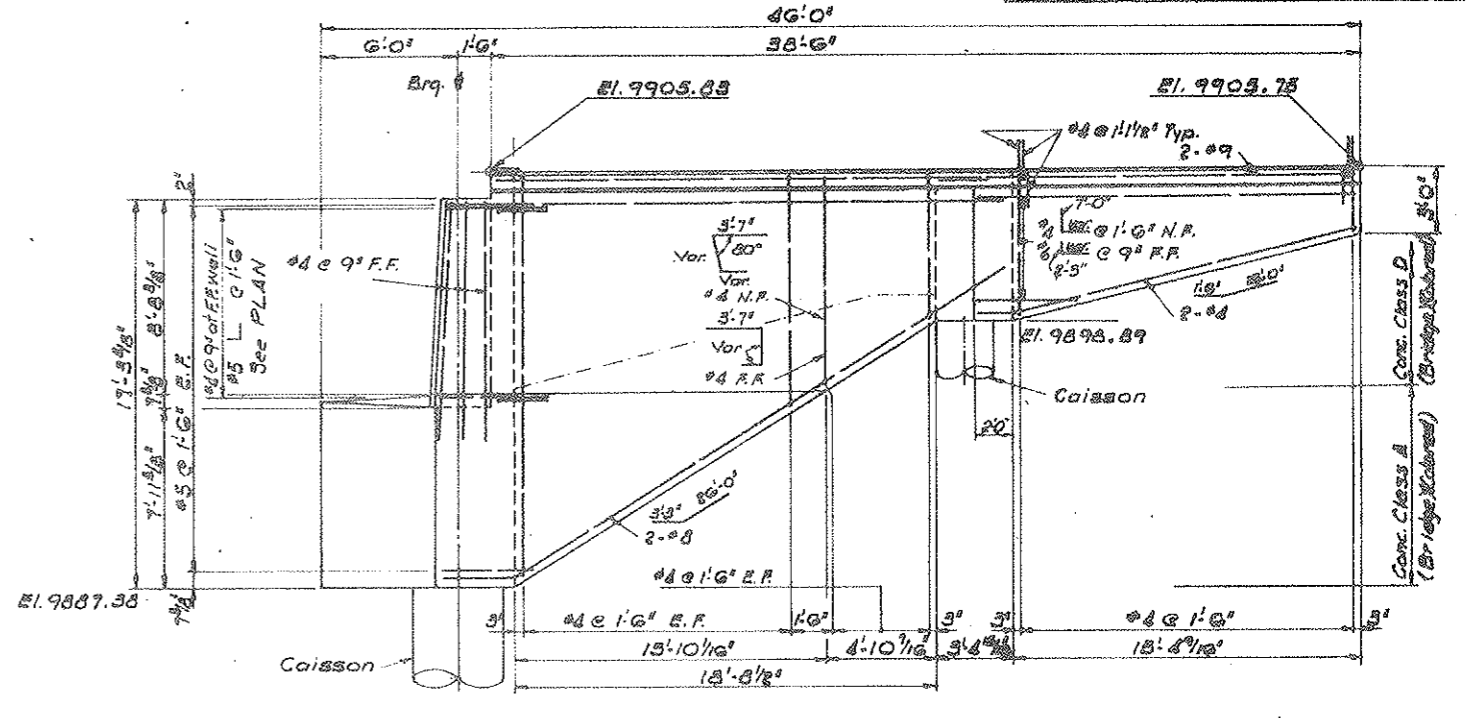
FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52)197	176	

REVISIONS	
1	4/4/75 REPRINT
2	

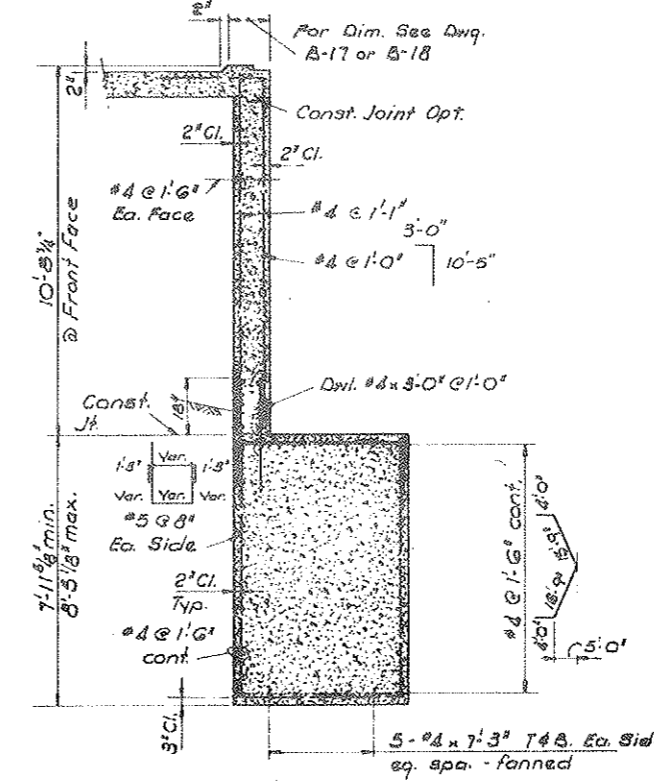
AS CONSTRUCTED  
NO REVISIONS DATE: 6-24-77



\* Elevations & Dimensions are at Front Face  
\* Elevations & Dimensions are at B. Bearing



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



Note:  
Reinforcing steel shall be cut to clear access openings.

**DIVISION OF HIGHWAYS**

**ABUTMENT No. 4 DETAILS**  
(Sheet 1 of 2)

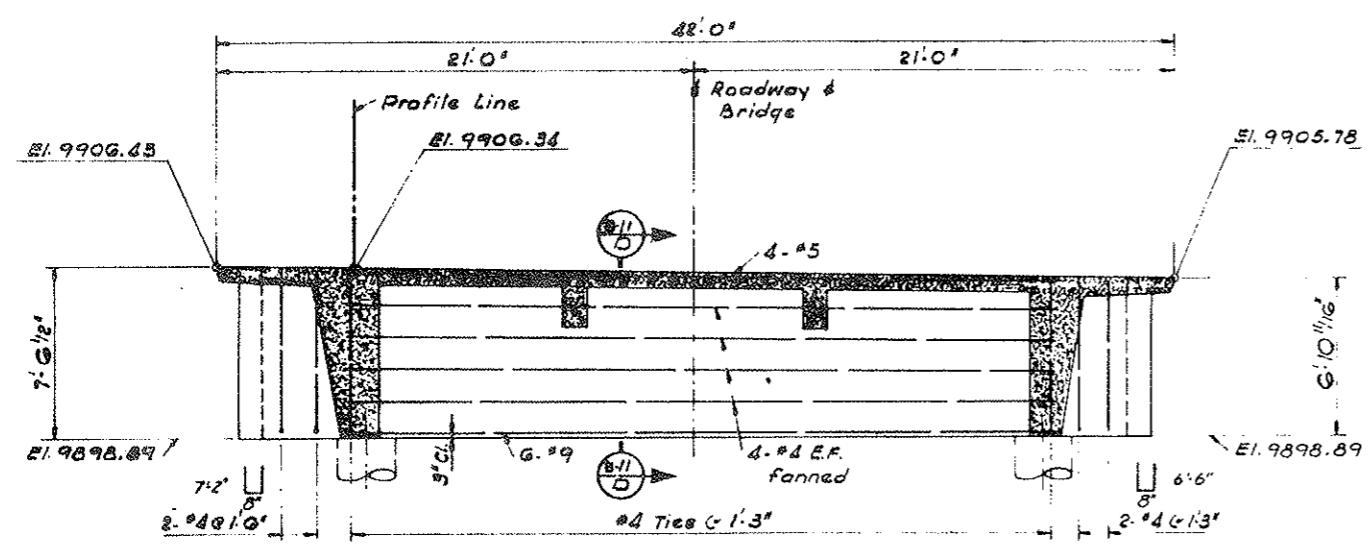
Designer	O. Hoplin	Structure	F-12-AD
Checker	R. Lantis	Number	
Drawing Number	8-10	of 19	Drawings



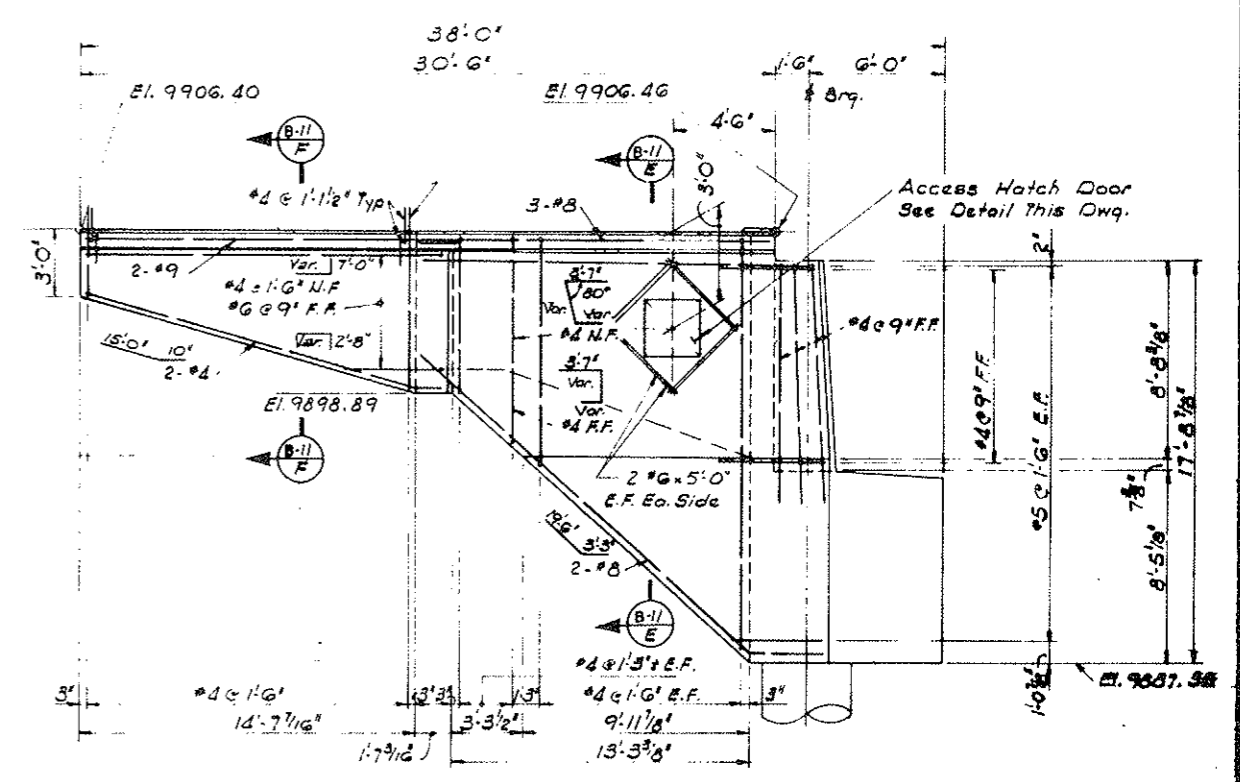
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2 (52) 197	171	

REVISIONS	



**SECTION (B-10) A**  
Orig. Scale: 1/4" = 1'-0"

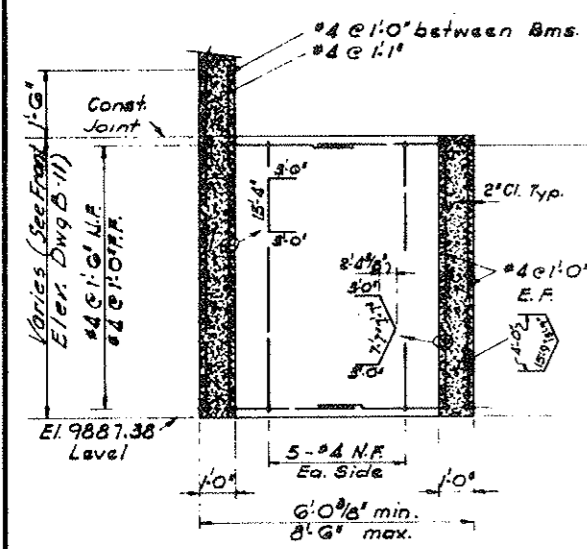


**SOUTH ELEVATION**  
Orig. Scale: 1/4" = 1'-0"

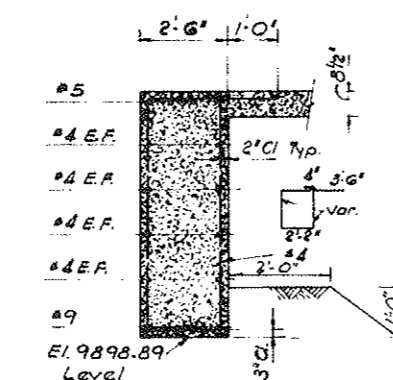
DATE	CHECKED BY
10-78	D.H.
11-74	H.C.
10-74	P.C.

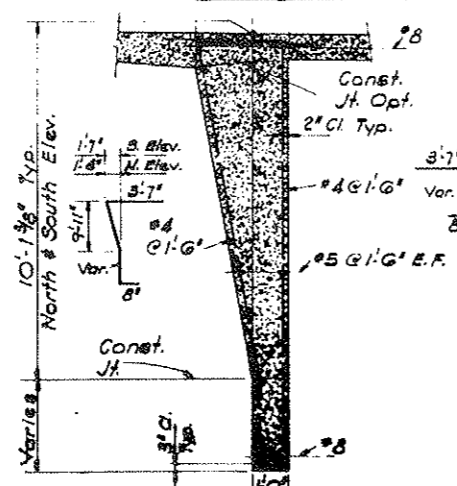
DATE	CHECKED BY
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11-74	H.C.
10-74	P.C.



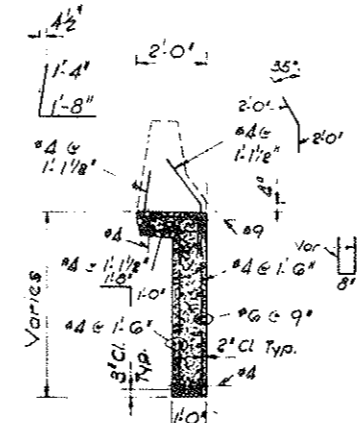
**SECTION (B-10) B**  
Orig. Scale: 1/8" = 1'-0"



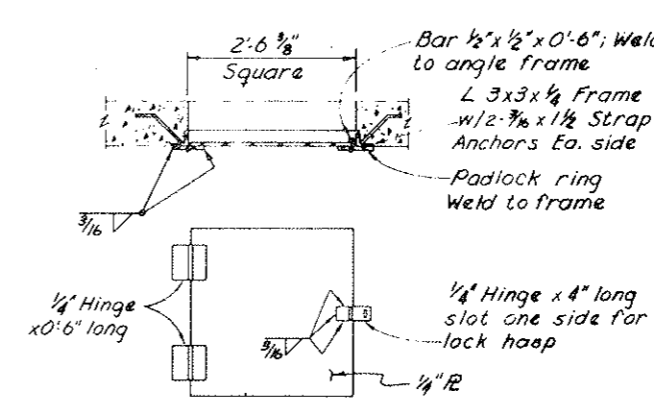
**SECTION (B-10) C**  
Orig. Scale: 1/8" = 1'-0"



**SECTION (B-10) D**  
Orig. Scale: 1/8" = 1'-0"



**SECTION (B-10) E**  
Orig. Scale: 1/8" = 1'-0"



**ACCESS DOOR DETAIL**  
Orig. Scale: 1/8" = 1'-0"  
1- Req'd Abutment No. 1  
1- Req'd Abutment No. 2

AS CONSTRUCTED  
NO REVISIONS DATE: 6-28-77

**DIVISION OF HIGHWAYS**

**ABUTMENT No. 4 BRIDGE**  
(Sheet 2 of 2)

Designer: D. McFlin	Structure: 7-A-4
Detailer: B. Lonis	Numbers:
Drawing Number: B-11	of 19 Drawings

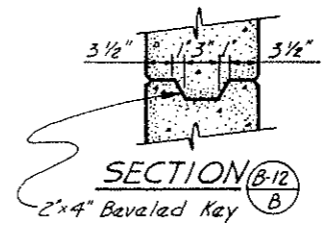
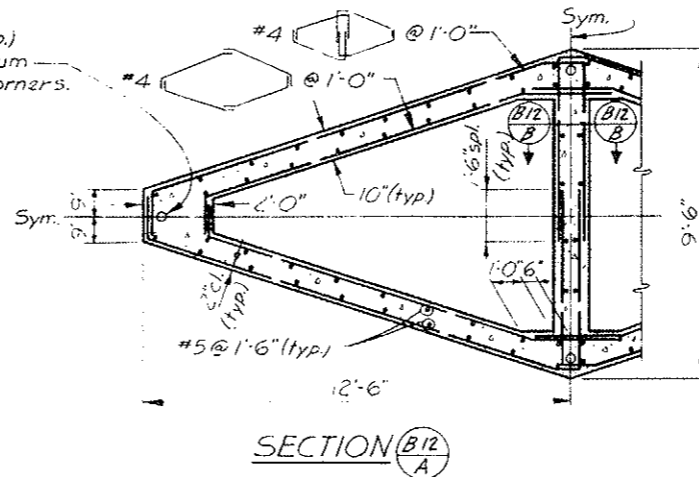
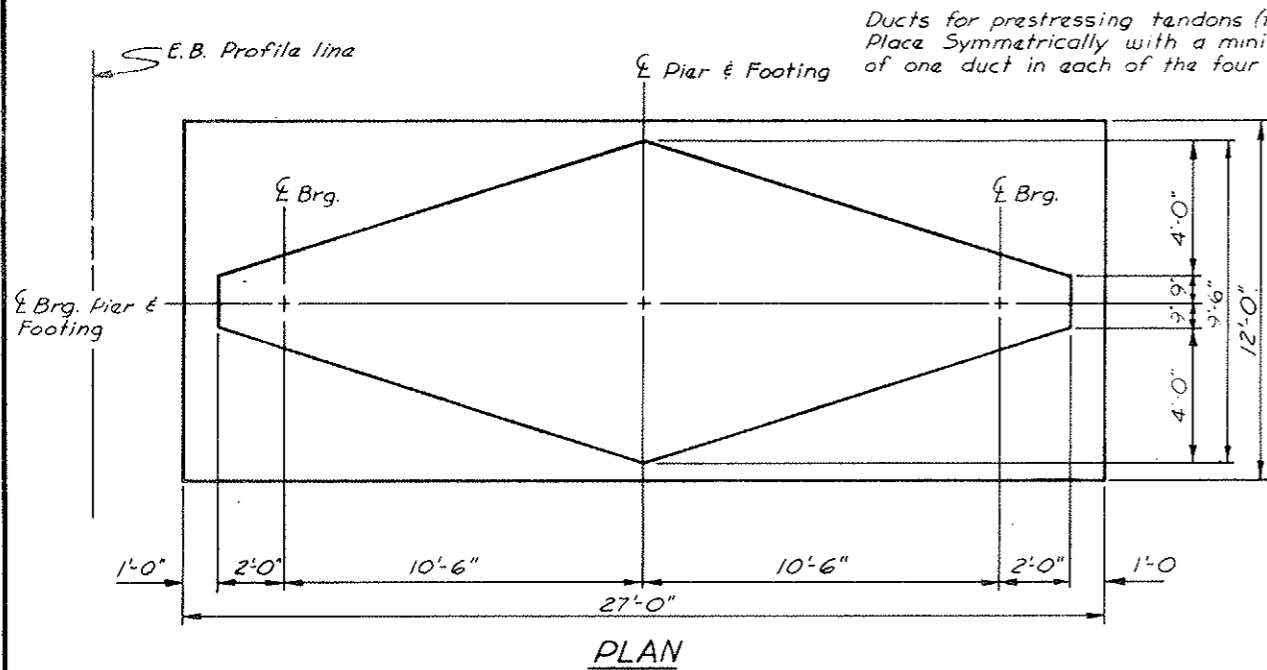
Revision: \_\_\_\_\_ (Preliminary Stage Only)



**VOID**  
BY CONSTRUCTION *mm 6-28-77*

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	F-70-2(52) 197	172	

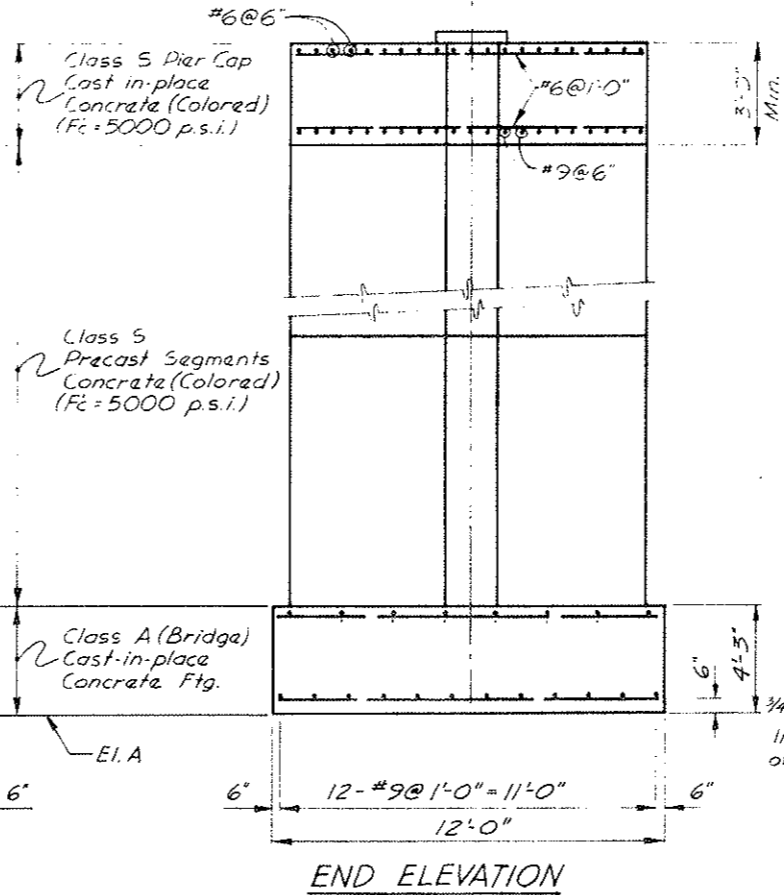
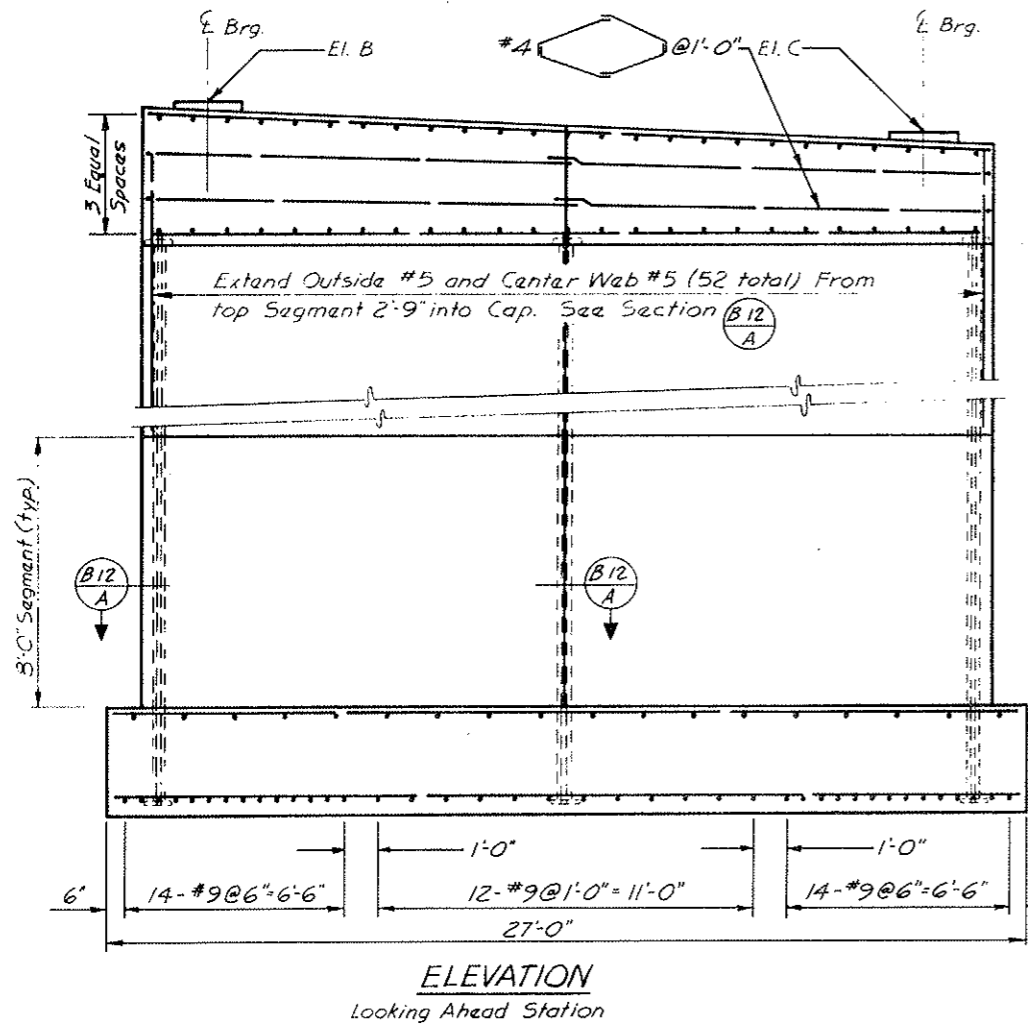
REVISIONS			
<b>A1</b>	4-29-75	Rev. note #9	J.R.E.



**EASTBOUND**

	Pier 2	Pier 3
EI. A	9848.6	9844.8
EI. B	9901.27	9896.67
EI. C	9899.96	9896.36
	9900.96	
Force F	2000 Kips	2000 Kips

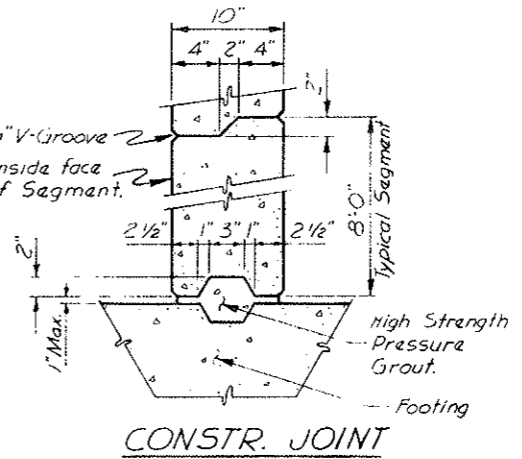
DESIGNED BY	DATE	CHECKED BY	DATE
BY	3/75	BY	3/75
CHECKED BY		CHECKED BY	
DETAILED BY		DETAILED BY	



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 (B-12) A.

**PIER NOTES:**

- POST-TENSIONING TENDON ANCHORAGES IN PIER FOOTINGS AND PIER CAPS SHALL BE DETERMINED BY THE MANUFACTURER AND SUBMITTED FOR APPROVAL.
- 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.
- ALL SEGMENTS SHALL BE MATCH-CAST TO ENSURE PROPER FIT DURING THE ERECTION STAGE. PRE CAST SEGMENT HEIGHT PER BRIDGE MAY BE REVISED IN ORDER TO MINIMIZE THE CAST IN PLACE PORTION. (R)
- 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.
- FOR CONCRETE CLASSES AND STRENGTHS, SEE DRAWINGS, THIS SHEET.



**IECO** INTERNATIONAL ENGINEERING COMPANY, INC.  
Bertha, Stoddard, Mihaluk and Higgins Division  
1777 S. Ballou St. Denver, Colorado 80222

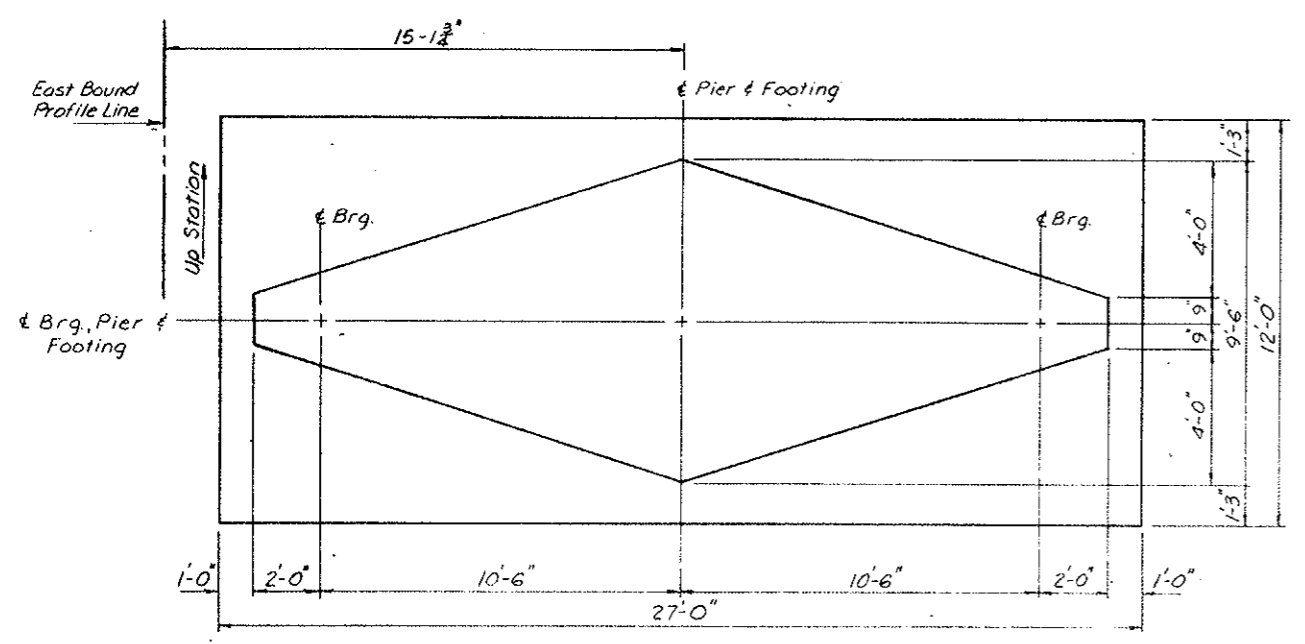
**DIVISION OF HIGHWAYS**

**PIER DETAILS**

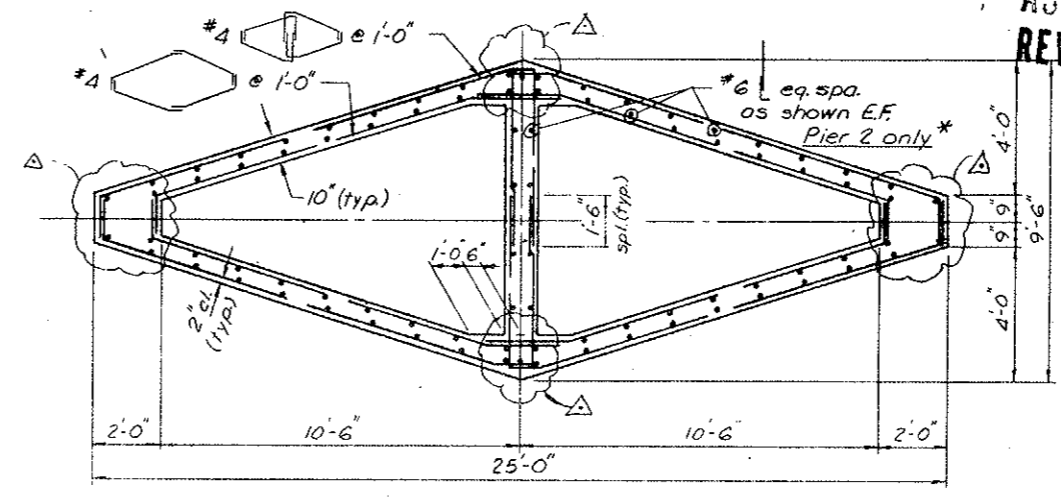
Designer <i>A. Erickson</i>	Structure Numbers <i>F-12-AP E.B.</i>
Detailer <i>D. Froman</i>	
Drawing Number <i>B 11</i>	of <i>19</i> Drawings

AS CONSTRUCTED  
REVISED DATE 6-24-77

REVISED FOR  
CHANGE ORDER  
NO. 07253



PLAN

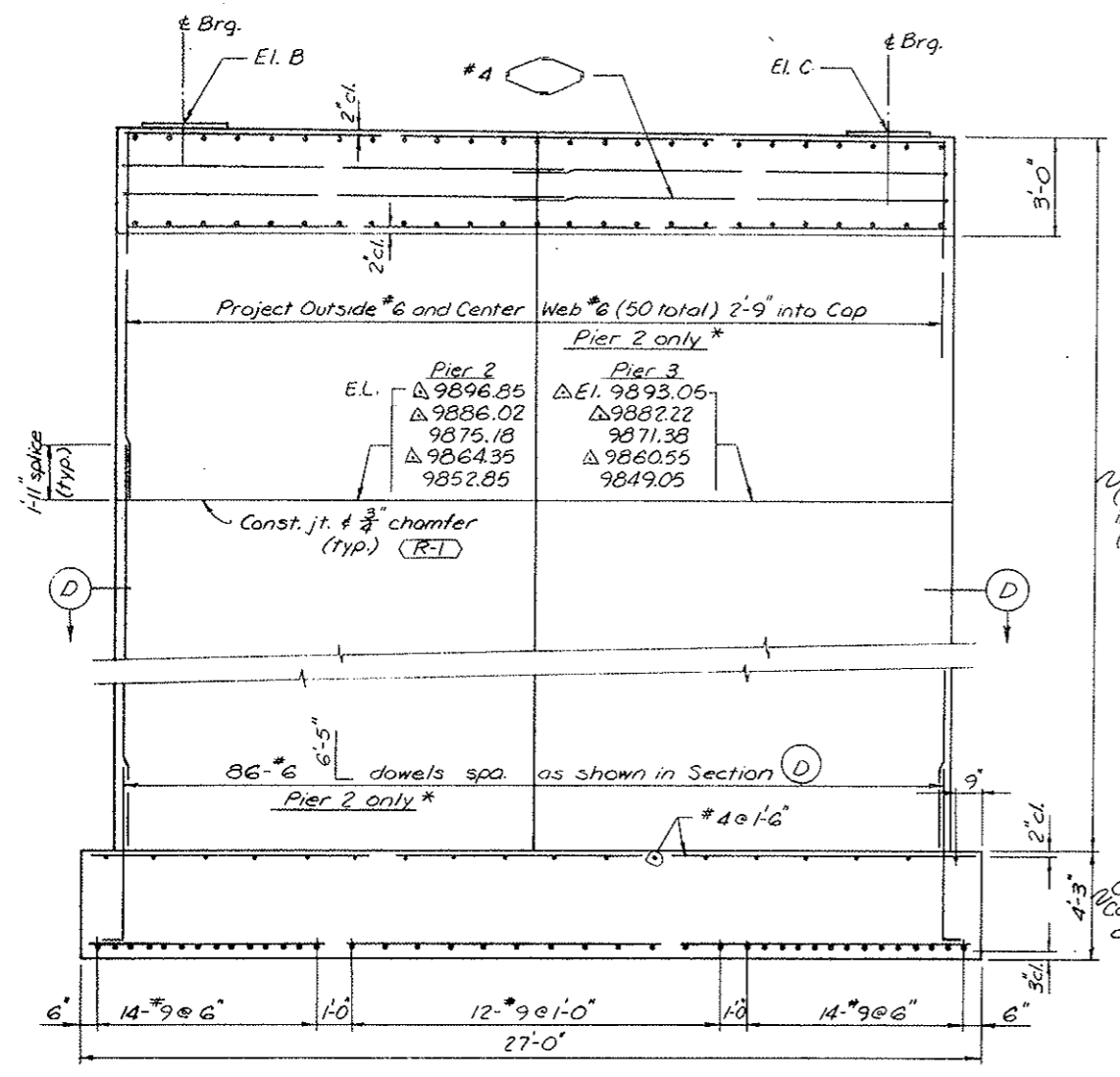


SECTION (D)

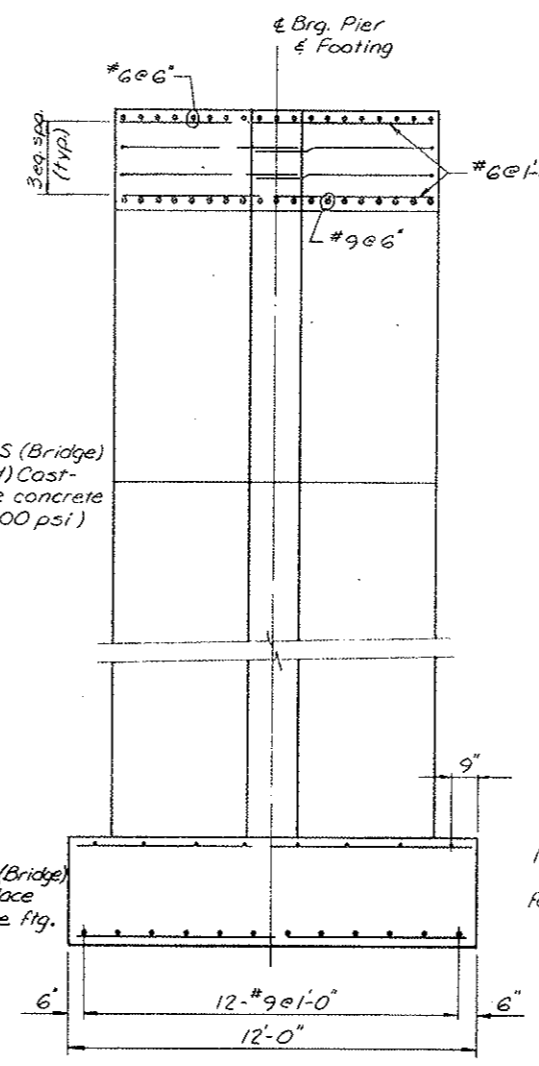
\* For details of Pier 3 see SECTION (C) & ELEVATION, Str. F-12-AO

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

	Pier 2	Pier 3
EI. A	98486	98448
EI. B	990127	989667
EI. C	990096	989636



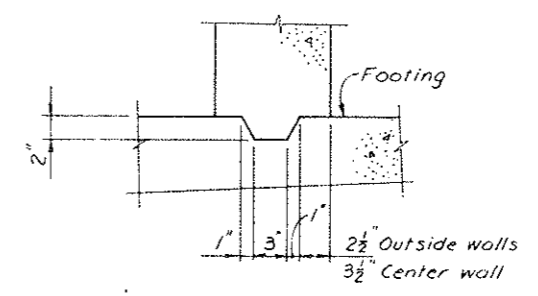
ELEVATION



END ELEVATION

Class S (Bridge) (Colored) Cast-in-place concrete (F<sub>c</sub> = 5000 psi)

Class A (Bridge) Cast-in-place concrete ftg.



CONST. JOINT

Note: Footing details are typical for Pier 2 and Pier 3, F-12-AP.

QUANTITIES				
ITEM	DESCRIPTION	UNIT	PIER 2	PIER 3
601	Concrete Class A (Bridge)	Cu. Yd.	51.0	51.0
601	Concrete Cl. S (Bridge) (Colored)	Cu. Yd.	105.3	103.7
①	602 Reinforcing Steel (Gr. 60)	Lb.	15,449	16,086
①	Former Reinf. Steel Quantity =	Lb.	12,813	12,658
	Additional Reinf. Steel =	Lb.	2636	3428
	Total =	604 Lbs.		

REVISIONS				
R-1	6-19-75	Rev. quant. Add const. jt. Rev. elev's	CLB	
R-2	6-23-75	Rev. Laps & govt	HHH	

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

CONVENTIONAL REINFORCING FOR PIERS

INTERNATIONAL ENGINEERING COMPANY, INC.

Designed CLB Chkd RAW Submitted \_\_\_\_\_  
 Drawn TCF Insp \_\_\_\_\_ Recommended \_\_\_\_\_  
 Approved \_\_\_\_\_

DENVER, COLORADO  
DATE June 6, 1975

SHEET NO. 4

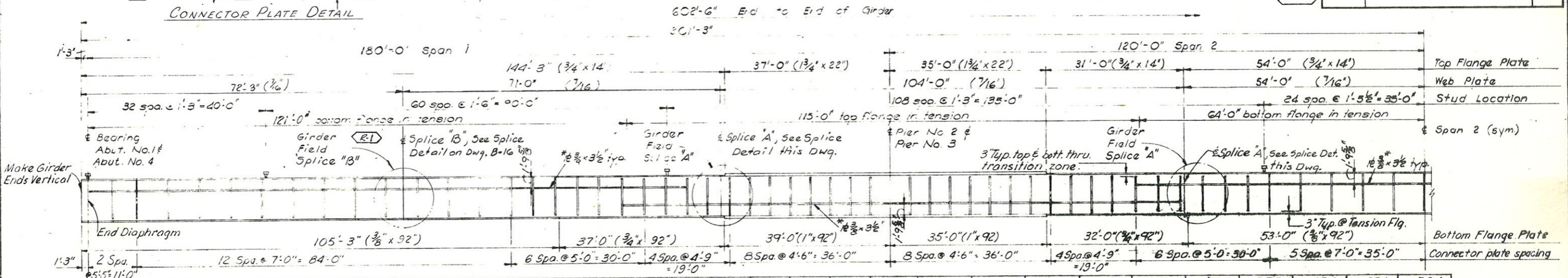
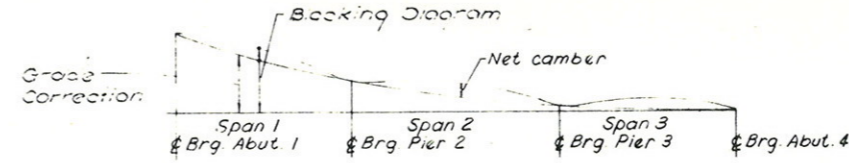
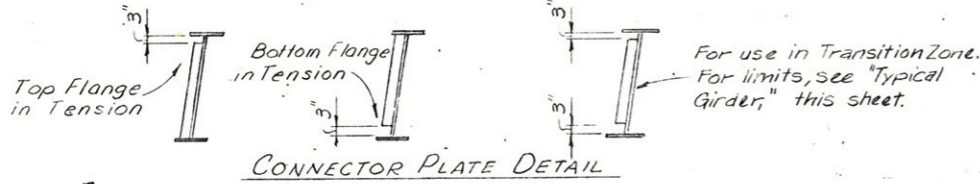




FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52) 197	174	

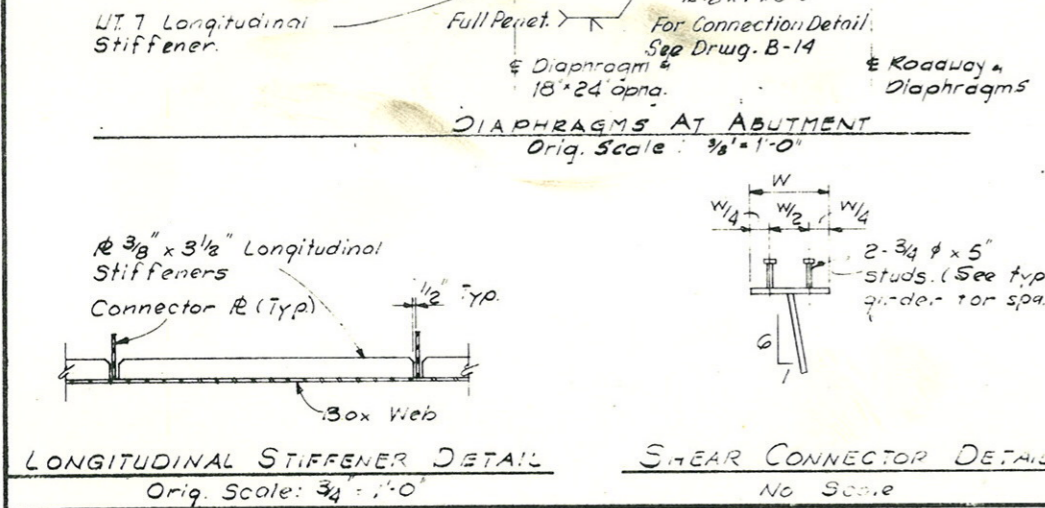
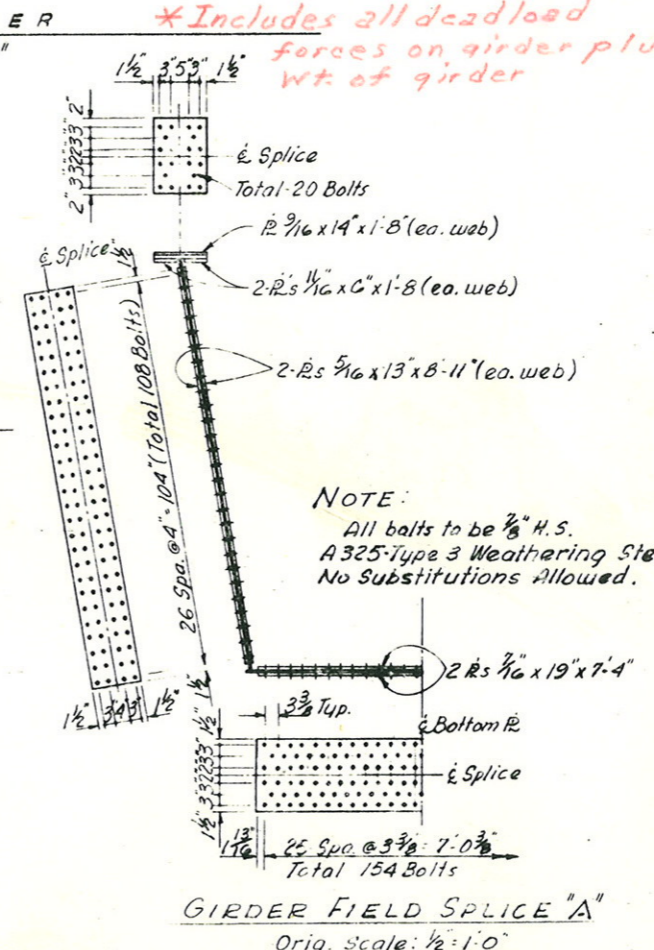
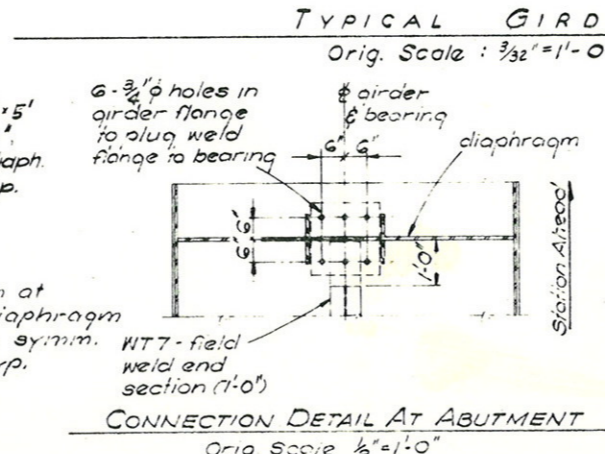
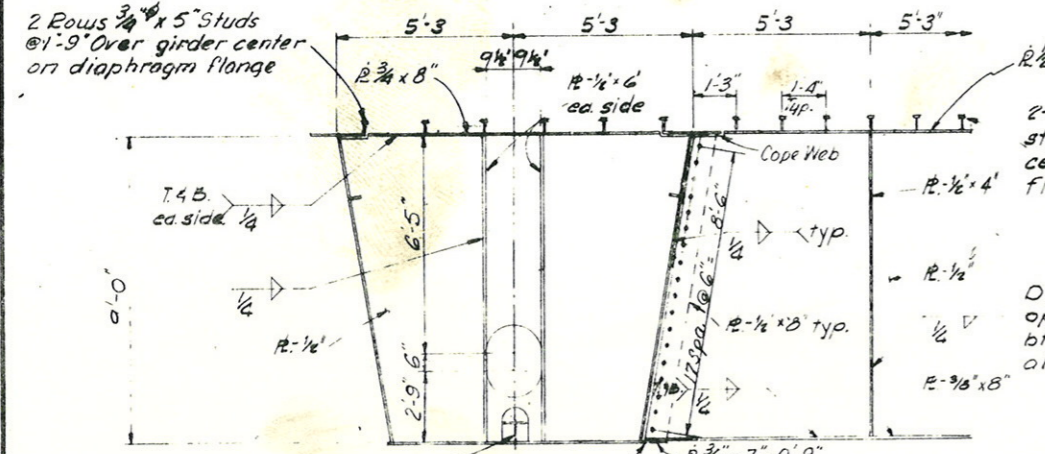
  

REVISIONS				
②-1	5-14-75	Added Girder Field Splice "B" AE		



Station	0.5L	1.0L	1.5L	2.0L	2.5L	3.0L	3.5L	4.0L	4.5L	5.0L	5.5L	6.0L	6.5L	7.0L	7.5L	8.0L	8.5L	9.0L	9.5L	0.5L	1.0L	1.5L	2.0L	2.5L	3.0L	3.5L	4.0L	4.5L	5.0L	D.L. (Girder) *	Deflection (DL)	Grade Correction	Backing Diag.	Grade Correction	Backing Diag.	
0	.01	.02	.02	.03	.03	.04	.04	.04	.04	.03	.03	.02	.02	.01	.01	0	0	0	0	.01	.01	.02	.02	.03	.04	.05	.06	.06	.06							
0	.05	.10	.15	.19	.22	.24	.25	.25	.23	.21	.18	.15	.11	.08	.05	.03	.01	0	0	.02	.05	.10	.15	.21	.27	.33	.39	.40								
0	.02	.04	.05	.07	.09	.11	.14	.18	.22	.26	.31	.36	.43	.49	.56	.64	.72	.81	.90	.99	1.14	1.28	1.44	1.60	1.78	1.96	2.16	2.36	2.57	2.86						
0	.07	.14	.20	.26	.31	.35	.40	.43	.47	.49	.52	.54	.57	.60	.63	.69	.74	.82	.90	.99	1.16	1.33	1.54	1.76	2.00	2.25	2.49	2.74	2.98	3.39						

DESIGNED BY	DATE	CHECKED BY



- NOTES:
- ALTERNATE GIRDER SPLICES WILL BE PERMITTED SUBJECT TO APPROVAL BY THE ENGINEER.
  - COMPLETE WEB TO FLANGE FILLET WELDS AFTER WELDING FLANGE AND WEB BUTT WELDS.
  - 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 GRIND, OTHER AREAS SHALL BE GRIND AS DIRECTED BY THE ENGINEER.
  - WEB BUTT JOINTS SHALL BE FULL PENETRATION GROOVE WELDS. IF FIELD SPLICES ARE WELDED, WEB WELDS SHALL BE GROUND FLUSH.
  - STIFFENERS NEAR A FIELD SPICE MAY BE FIELD WELDED.
  - GIRDER ENDS AND BEARING STIFFENERS SHALL BE VERTICAL EXCEPT THAT THEY MAY BE NORMAL TO GRADE FOR GRADES LESS THAN 2%.
  - AT THE CONTRACTORS OPTION, WELDED GIRDER SPLICES MAY BE USED WHEN BOLTED SPLICES ARE SHOWN ON THE PLANS.
  - METHOD OF SUPPORTING GIRDERS WHILE GIRDER FIELD WELDED SPLICES ARE BEING MADE SHALL BE SHOWN ON THE SHOP DRAWINGS.

\*Includes all dead load forces on girder plus wt of girder

\*Discontinue Long. Stiffeners @ Splice.

Notes:

- Girder view shown is inside face of girder web. 4 req'd. Typical girder detail is for girder web 1A3 as shown and similar for girder web 2#4.
- All steel shall be A.S.T.M. A588 except angles, channels, and misc. stiffener R's may be A.S.T.M. A36 (Bearing stiffeners and bottom flange longitudinal stiffeners to be A588.)
- Connector plate locations shown shall be for inside face of box girder. See superstructure framing plan on dwg. B-14 for additional plates inside and outside box girders.

(R-1) See Dwg. B-16 for Girder Field Splice "B".

**DIVISION OF HIGHWAYS**

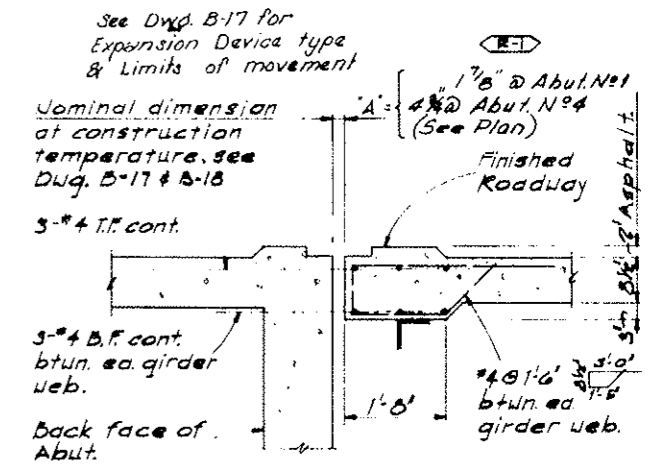
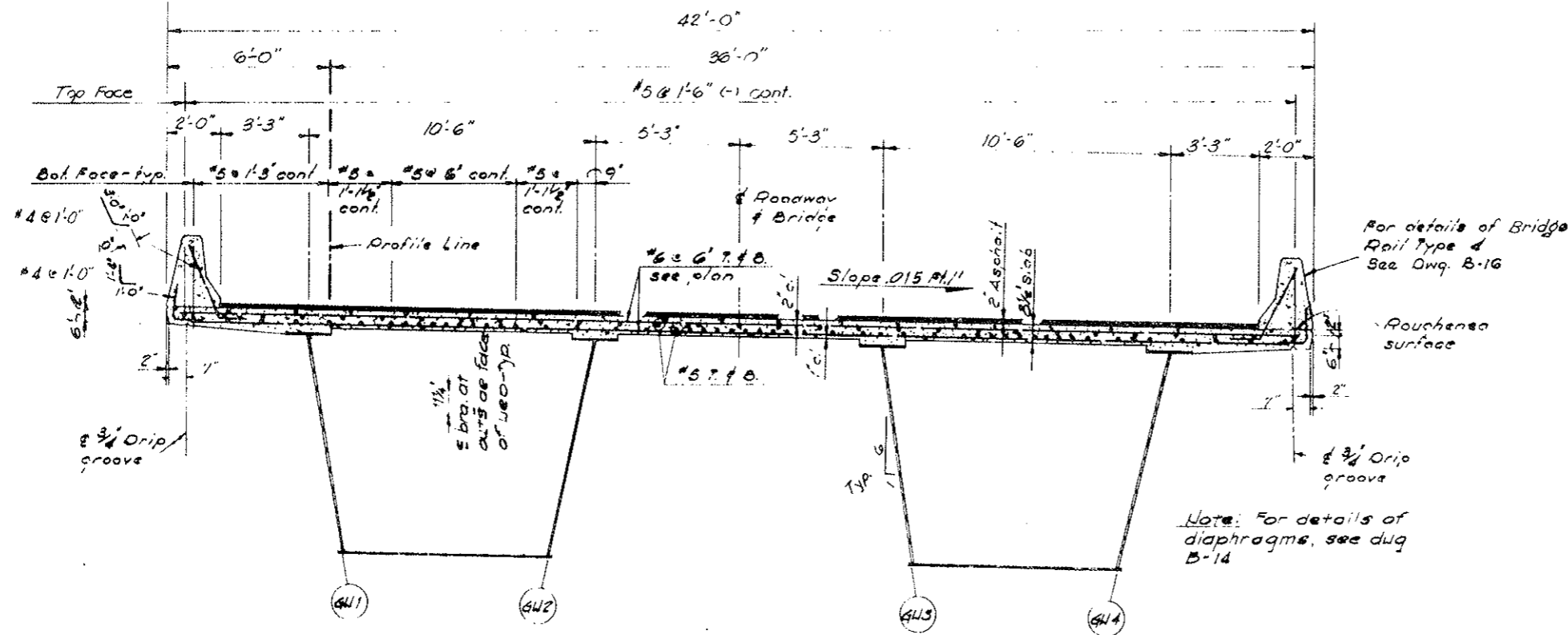
Girder Details

Designer	D. Hoflin	Structure Numbers	F-12-AP
Detailer	S. Martinez		
Drawing Number	B-14	of 19	Drawings

Revision Dates: \_\_\_\_\_ (Preliminary Stage Only)

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO 170-2 (32) 197	175	

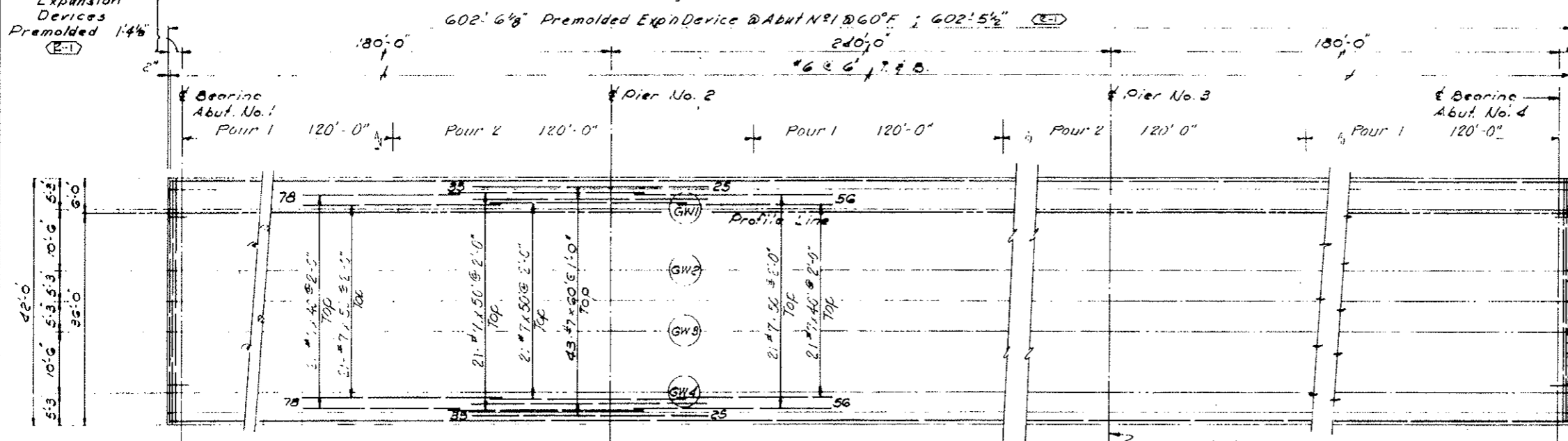
REVISIONS		
E-1	4-17-78	Eliminated Fabricated Device



SECTION THRU END OF DECK  
Orig. Scale:  $\frac{3}{4}'' = 1'-0''$

INITIAL	DATE	CHECKED BY
	8-74	
	10-77	
	8-78	

Expansion Devices  
Premolded 1-4/8"  
E-1



Deck slab pouring Sequence: All sections marked pour 1 must be in place prior to placing sections marked pour 2.

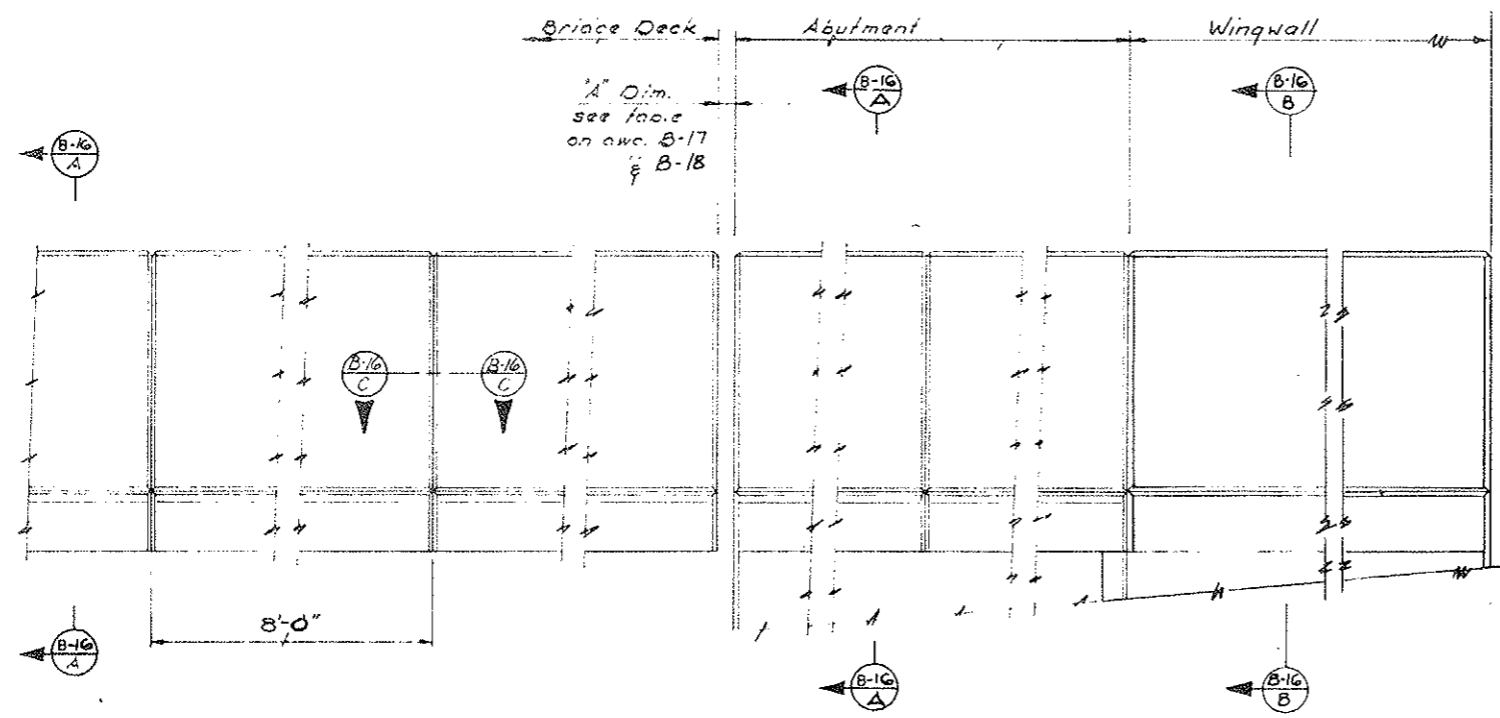
1/4 @ 1'-6" betw. girder web-typ. & end.  
See Typical Deck Section for Top & Bot. Face Reinft.

AS CONSTRUCTED  
NO REVISIONS DATE: 6-24-77

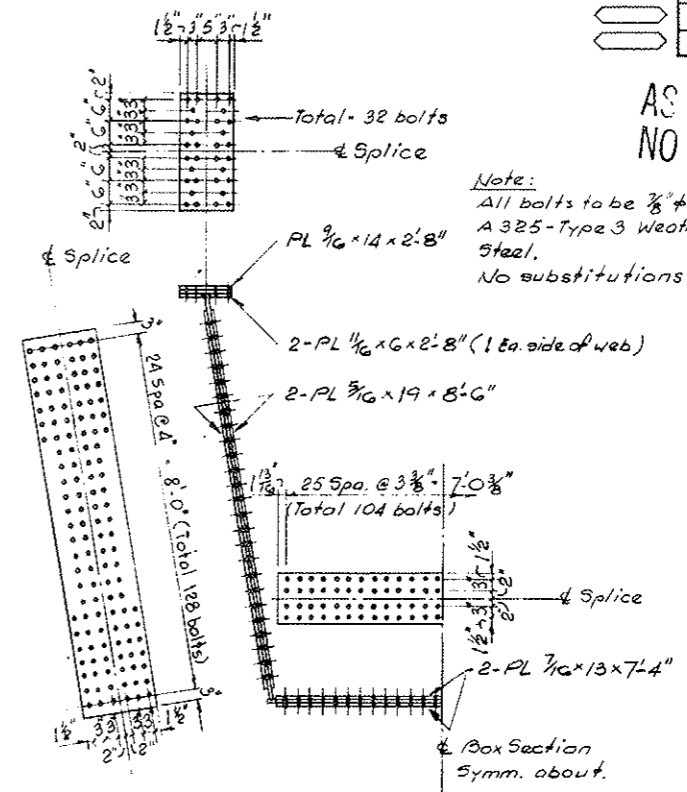
DIVISION OF HIGHWAYS			
DECK PLAN AND TYPICAL DECK SECTION			
Designer	B. Hoflin	Structure	F-12-A/P
Detailer	F.E. Day	Numbers	
Drawing Number B-15		of 19 Drawings	

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	I 70-2(52)197	176	

REVISIONS			
R-1	5-14-75	Added Girder Field Splice "B"	AE



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

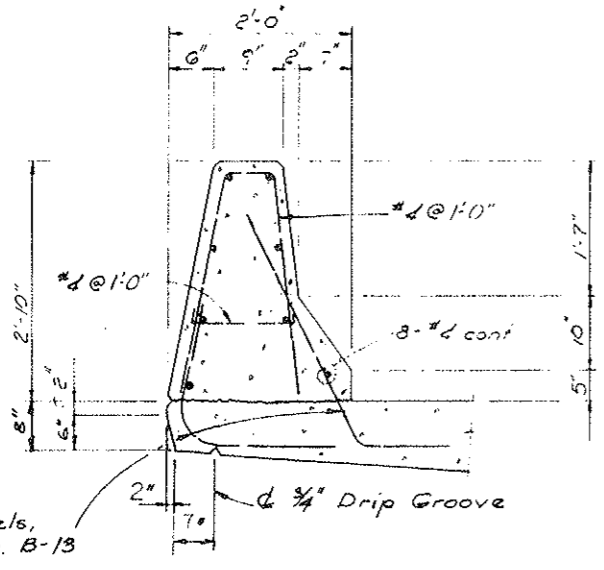


Note:  
All bolts to be 3/8" # H.S.  
A 325-Type 3 Weathering Steel.  
No substitutions allowed.

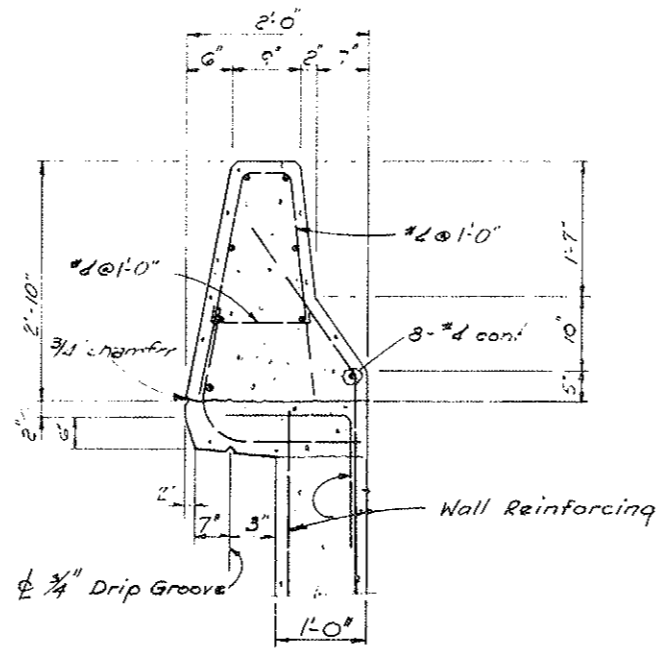
AS CONSTRUCTED  
NO REVISIONS DATE: 4-27-77

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

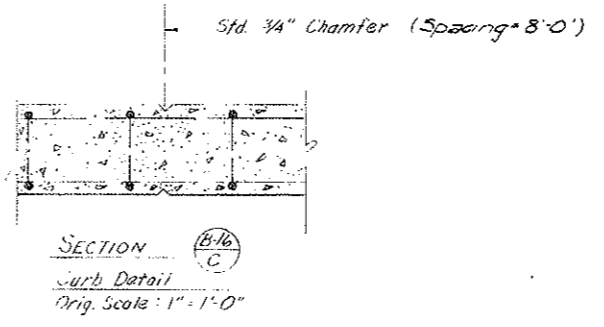
INITIAL	DATE	CHECKED BY
W	5-74	
A.E.	6-74	
D.C.	6-74	



SECTION A  
Cantilever detail  
Orig. Scale: 1" = 1'-0"

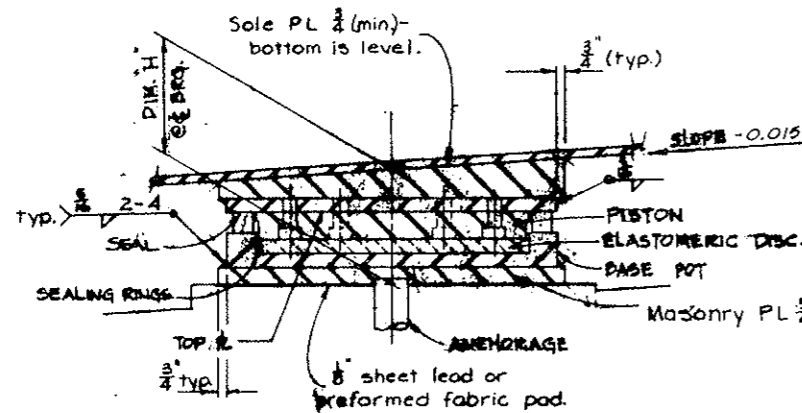


SECTION B  
Wall detail  
Orig. Scale: 1" = 1'-0"

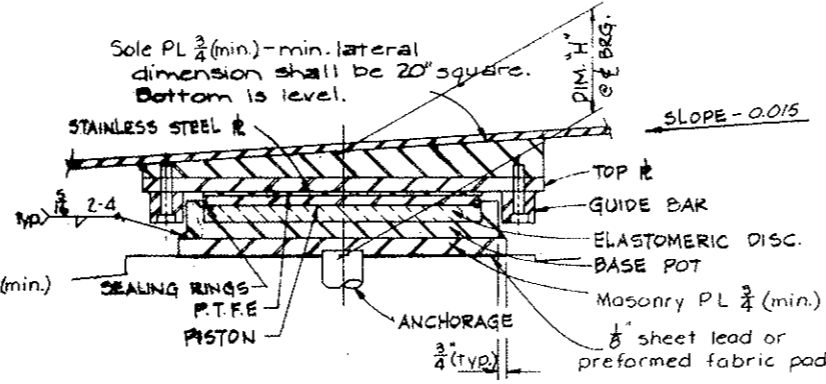


<b>DIVISION OF HIGHWAYS</b>	
<b>BRIDGE RAIL TYPE 4</b>	
Designer <b>D. HOFLIN</b>	Structure <b>F-12-AP</b>
Detaller <b>D. GEORGAN</b>	Number
Drawing Number <b>B-16</b>	of <b>19</b> Drawings
Revision Dates	(Preliminary Stage Only)

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	[70-2(52) 197	177	
REVISIONS				
2-	4-17-75	Rev. Prg. Pressures, Added Movements & Able's		CLC



SECTION THRU ASSEMBLED FIXED  
 FLOATING BEARING



SECTION THRU ASSEMBLED GUIDED  
 EXPANSION BEARING

(R-1)  
 BEARING NOTES:

- 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).
- THE TYPE OF ANCHORAGE FOR BEARING DEVICES SHALL BE DETERMINED BY THE CONTRACTOR AND SUBMITTED ON SHOP DRAWINGS FOR APPROVAL.
- FOR ALLOWABLE BEARING PRESSURE ON CONCRETE, SEE DRAWINGS.
- THE SOLE PLATES SHALL BE SUPPLIED WITH BEVELS AND CROSSFALLS AS REQUIRED FOR GRADE AND SUPERELEVATION.
- DIMENSION "H" IS THE LIMIT REQUIRED FOR BID ITEM NO. 512, "BEARING DEVICES".
- 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.
- 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.

BEARING DETAILS  
 ORIG SCALE: 1/2"=1'-0"

Note: Sole Pl's. To Be Plug Welded To Flange In Field. See Dwg. No B-25 For Details

BEARING TYPE & CAPACITY (TONS)	Horiz Capacity		Actual Load (kips)	Dim. "H" (in)	Ultimate Load (kips)	Max. Movement (in)
	Longitudinal (kips)	Transverse (kips)				
ABUT. 1 200	18K	22K	372K	7 1/8"	600K	1 1/16"
PIER 2 650	52K	50K	1294K	6 1/2"	1960K	0
PIER 3 650	52K	50K	1294K	7 3/8"	1960K	2 1/2"
ABUT. 4 200	18K	22K	372K	7 1/8"	600K	0

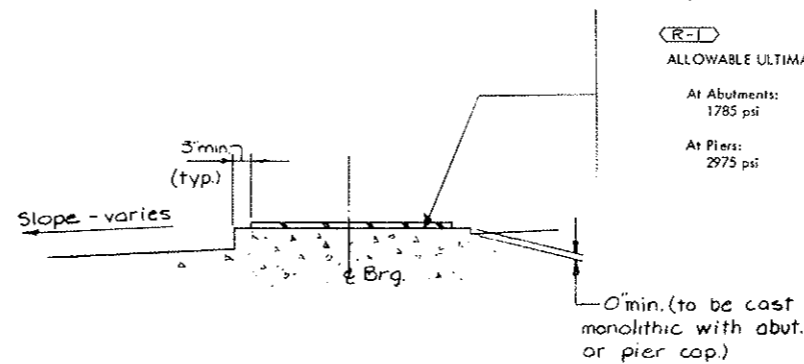
AS CONSTRUCTED  
 NO REVISIONS DATE: 6-24-77

(R-1) \* Actual load shall be used to determine bearing capacity.

CAPACITY = D.L. + L.L. + I  
 E = EXPANSION F = FIXED  
 Longitudinal Capacity = 3% of Actual Load (kips)  
 Transverse Capacity = 10% of Bearing Capacity (kips)

(R-1)  
 ALLOWABLE ULTIMATE BEARING PRESSURES:

- At Abutments: (f'c = 3000 psi)  
1785 psi
- At Piers: (f'c = 5000 psi)  
2975 psi



TYPICAL BEARING PEDESTAL ELEVATION

DESIGNED BY	DATE	CHECKED BY	DATE
BY	0-72	BY	
CHECKED BY		QUANTITIES BY	
DATE		BY	

**IECO** INTERNATIONAL ENGINEERING COMPANY  
 1777 & Centennial St., Denver, Colorado 80202

**DIVISION OF HIGHWAYS**

**BEARING DETAILS**

Designer A. ERICSON	Structure F-12-AP
Detaller F.E. DAY	Numbers
Drawing Number B 11	of 19 Drawings

Revision Dates [Preliminary Stage Only]

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52) 197	178	

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", "A", AND "Δ" 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°.

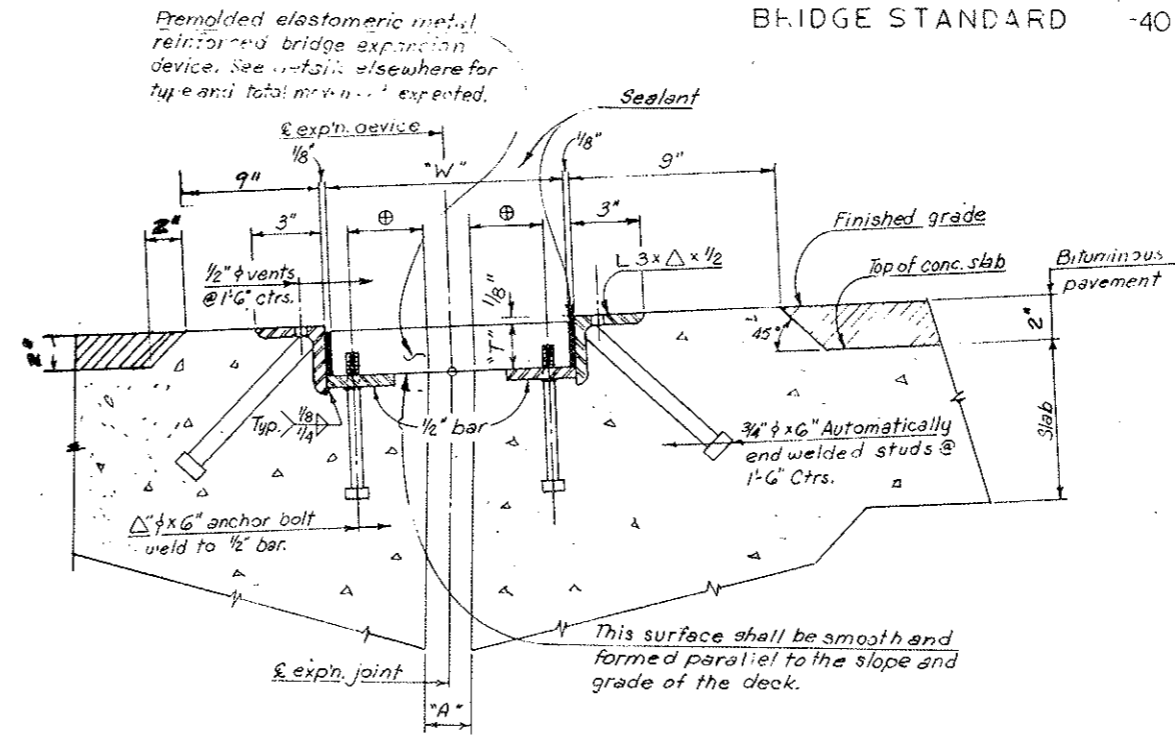
ANGLE AND PLATE ASSEMBLIES TO EXTEND GUTTER TO GUTTER ONLY.

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

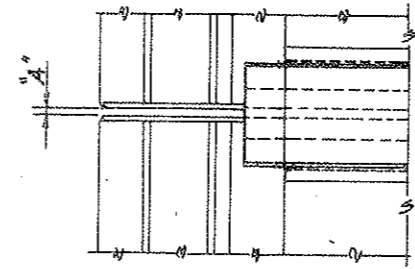
ALL CURB UNITS SHALL BE FULL WIDTH, ON GUTTER LINE, FOR SKEW ANGLES AS SPECIFIED ON THE PLANS.

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.

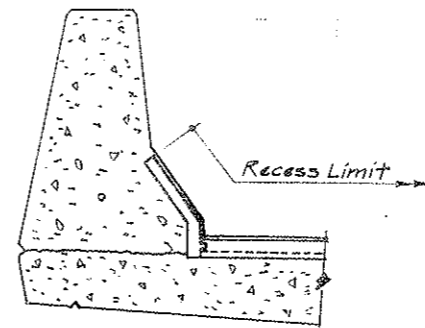


SECTION THRU EXPN. DEVICE



PLAN

Premoldd Bridge Expansion Device to be used:  
Abutment No. 1 (Type 2)  
Abutment No. 4 (Type 6)



ELEVATION

DETAILS OF EXPANSION JOINT AT GUARDRAIL

Outside Temp.	Premoldd Bridge Expansion Device		
	(Type 1)	(Type 2)	(Type 3)
30°	1 5/8"	2 1/4"	2 3/8"
40°	1 7/8"	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 3/8"	2 1/8"
80°	1"	1 1/2"	2"
90°	7/8"	1 1/8"	1 3/4"
100°	3/4"	1 1/4"	1 3/8"

Outside Temp.	Premoldd Bridge Expansion Device		
	(Type 4)	(Type 6)	(Type )
30°	4 3/8"	5 3/8"	
40°	4 1/8"	4 3/8"	
50°	3 7/8"	4 1/2"	
60°	3 3/8"	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 3/8"	

**DIVISION OF HIGHWAYS**

BRIDGE EXPANSION DEVICE  
PREMOLDED REINFORCED

Designer <b>A. Erikson</b>	Structure Numbers <b>F-12-AP</b>
Detailer <b>J.P. EWERT</b>	Drawings <b>18</b> of <b>18</b>

INITIAL	DATE	CHECKED BY	QUANTITIES BY

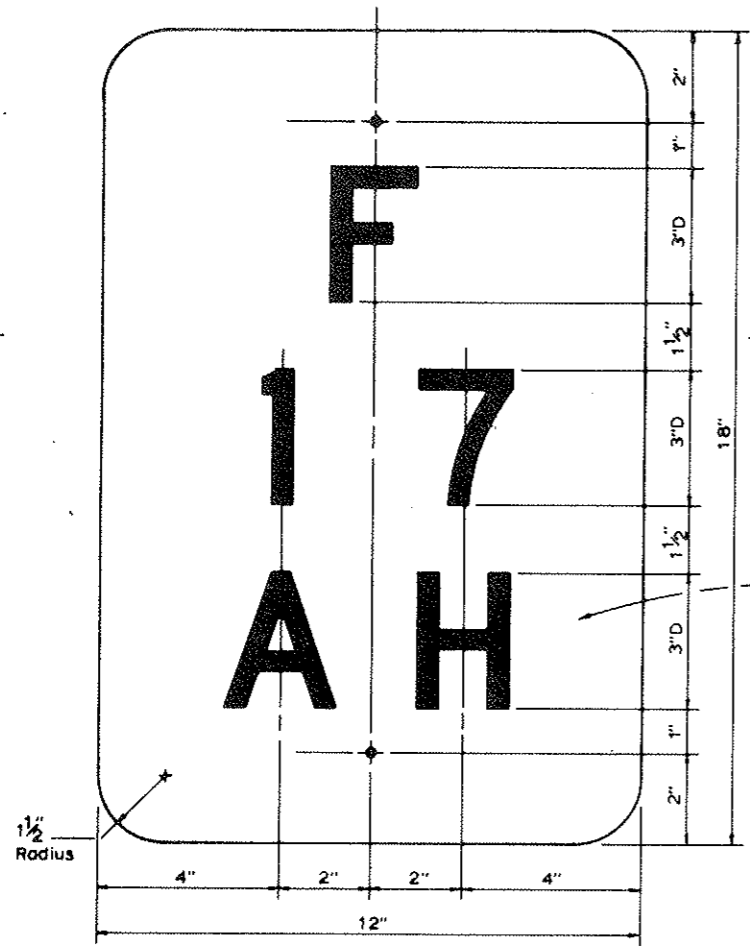
ELEVATION CURB DETAIL  
ELEVATION WALK DETAIL  
DETAILS OF EXPN. JOINT @ CURB & WALK FOR SKEW ANGLES 30° & LESS

ELEVATION CURB DETAIL  
ELEVATION WALK DETAIL  
DETAILS OF EXPN. JOINT @ CURB & WALK FOR SKEW ANGLES GREATER THAN 30°



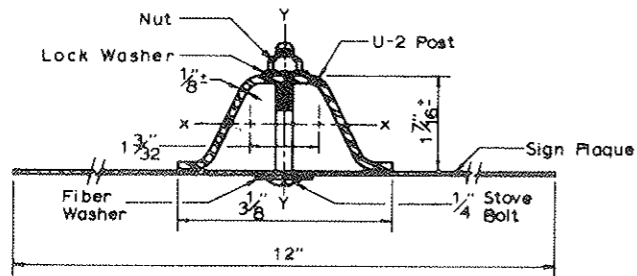
FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I 70-2(52)197	179	

REVISIONS				

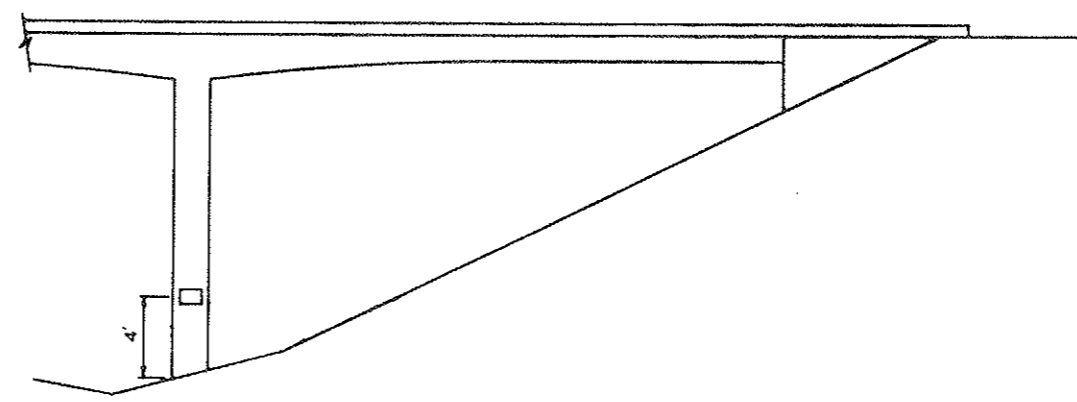


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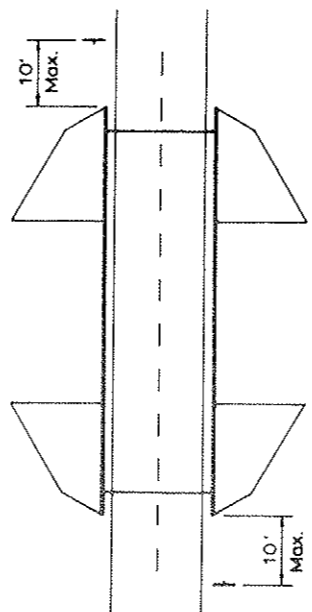
STRUCTURE IDENTIFICATION PANEL  
(SAMPLE NUMBERS & LETTERS)



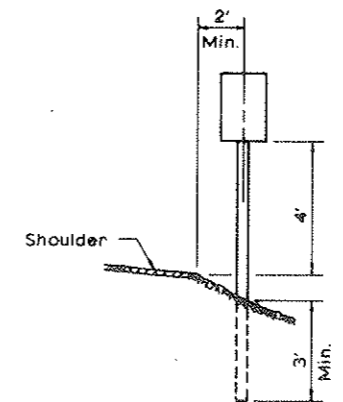
SECTION (A)



STRUCTURE NUMBER LOCATION ON PIERS



STANDARD LOCATION DETAIL



U-2 POST IN GROUND

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 3-1/22 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.<sup>3</sup> ABOUT THE X-X AXIS AND AT LEAST 0.260 IN.<sup>3</sup> 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.
- 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.

AS CONSTRUCTED  
NO REVISIONS DATE: 6-24-77

DIVISION OF HIGHWAYS			
STRUCTURE NUMBER STANDARD			
Designer	Structure Number	F-12-AP	
Detailer S.P. LADD	Number	179	
Drawing Number 8-19	of 19	Drawings	

REVISION NO.	DATE	BY	DESCRIPTION