

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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. B13. ANY CHANGE IN THIS CONSTRUCTION SEQUENCE SHALL BE WITH THE APPROVAL OF THE ENGINEER.

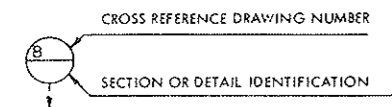
APPLY EPOXY JOINT SEALER TO ALL MATCHING SURFACES OF PRECAST SEGMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.

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

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



DATE	11-73	RAH	11-73
DESIGNED BY	CLB	QUANTITIES BY	TGF
CHECKED BY	BE	CHECKED BY	RAN

SUMMARY OF QUANTITIES

Sta. F-12-A0							
Item	Description	Unit	Super.	Abut. 1	Pier 2	Pier 3	Abut. 4
206	Structure Excavation	Cu Yd		87	232	152	179
207	Structure Backfill (Class 2)	Cu Yd		119.8	164	92	57.2
403	Hot Bituminous Pavement (Gr.)	Ton	195				
411	Asphalt Cement ()	Ton					
503	Drilled Caissons (12 inch)	L.F.		174		158	332
503	Drilled Caisson (48 inch)	L.F.		58		30	88
509	Structural Steel	Lbs.		70		70	140
512	Bearing Device (0-250 Ton)	Ea		2		2	4
512	Bearing Device (501-750 Ton)	Ea			2	2	4
511	Waterproofing (Membrane)	Sq. Yd	1819				1819
518	Bridge Expansion Device (Type 1)	Lin. Ft.	38				38
513	Bridge Expansion Device (Type 4)	Lin. Ft.	38				38
601	Concrete Class A (Bridge)	Cu Yd		11	56.5	56.5	12
601	Concrete Class A (Bridge) (Colored)	Cu Yd		56		65	121
601	Concrete Class A (Bridge) (Colored)	Cu Yd	104.0	250		290	158
602	Reinforcing Steel	Lbs.	5703	19,226	4328	4328	21,013
618	Concrete Segmental Superstructure (F-12-A0)	L.S.	1				1
618	Concrete Segmental Pier (F-12-A0)	L.S.					1

- ① Concrete Class 5 (Colored) (f'c = 5500 psi) (Precast) 850 Cu Yds. (R-2) ① ② Approximate Quantities for Information only.
- (R-1) Reinforcing Steel 156,904 Lbs.
- Prestressing Strands 29,520 Lbs.
- Structural Steel 976 Lbs.
- ② Concrete Class 5 (Colored) (f'c = 5000 psi) (Precast) 140 Cu Yds.
- Concrete Class 5 (Colored) (f'c = 5000 psi) (Cast-in-Place) 24 Cu Yds.
- Reinforcing Steel 17,602 Lbs.
- Prestressing Strands 195 Lbs.
- ③ Future Items

LOADING DATA

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

DESIGN DATA:

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

REINFORCING STEEL:	GRADE 60 -	FY = 60,000 LBS. PER SQ. IN. FS = 24,000 LBS. PER SQ. IN.
	GRADE 40 -	FY = 40,000 LBS. PER SQ. IN. FS = 20,000 LBS. PER SQ. IN.
STRUCTURAL STEEL:	A36, GRADE 36 -	FY = 36,000 LBS. PER SQ. IN.
	A588, GRADE 50 -	FY = 50,000 LBS. PER SQ. IN.
CONCRETE:	CLASS A & D -	f'c = 3000 LBS. PER SQ. IN. N = 9
	CLASS 5 -	f'c = 5000 LBS. PER SQ. IN.
	(FOR LIMITS SEE PLANS.)	f'c = 5500 LBS. PER SQ. IN.

VOID
BY CONSTRUCTION DATE 6-24-77

FEDERAL ROAD REGION NO	DISTRICT	PROJ. NO.	SHEET NO	TOTAL SHEETS
VIII	COLORADO	I 70-2(52) 197	109	

REVISIONS			
R-1	4/17/75	Rev Rebar quantity	CLB
R-2	5-6-75	Note	WCB

INDEX OF DRAWINGS

DWG. NO. 81	GENERAL INFORMATION - SUMMARY OF QUANTITIES
DWG. NO. 82	GENERAL LAYOUT
DWG. NO. 83	ENGINEERING GEOLOGY ELEVATIONS
DWG. NO. 84	CONSTRUCTION LAYOUT - FOOTING LAYOUT
DWG. NO. 85	ABUTMENT 1
DWG. NO. 86	ABUTMENT 4
DWG. NO. 87	ABUTMENT DETAILS
DWG. NO. 88	PIER DETAILS
DWG. NO. 89	PIER DETAILS
DWG. NO. 90	SUPERSTRUCTURE DETAILS
DWG. NO. 91	79'-9" CANTILEVER
DWG. NO. 92	GIRDER ELEVATION
DWG. NO. 93	CONSTRUCTION SEQUENCE DIAGRAM
DWG. NO. 94	BEARING DETAILS
DWG. NO. 95	BRIDGE EXPANSION DEVICE
DWG. NO. 96	STRUCTURE NUMBER STANDARD

DESIGN FOUNDATION PRESSURES

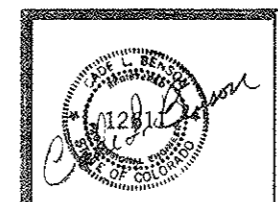
	ACTUAL
① Pier Footing	6.4 Tons/Sq Ft
Caissons	16 Tons/Sq Ft
② Wingwall Caissons (4 Req'd)	17.2 Tons/Sq Ft
② Wingwall Caissons (3 Req'd)	18.8 Tons/Sq Ft

- ① 4'-0" Ø Caissons
- ② 1'-0" Ø Caissons

BRIDGE DESCRIPTION

3 spans (104'-0", 160'-0", 104'-0") EBL
Continuous, Segmental Posttensioned Concrete Box Girder Bridges

Over Guller Gulch
38'-0" Roadway Curb to Curb
Radial Substructure
2'-0" Curbs



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

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

DIVISION OF HIGHWAYS

GENERAL INFORMATION SUMMARY OF QUANTITIES

Station 985+22.00 to 993+33.00			
Station			
Near Vail	Sec. 25	T. 6 S	R. 79 W
Designer Om Garg	Structural	F-12-A0 EB	
Dataller B Eisner	Numbers		
Drawing Number B	1	of 16	Drawings

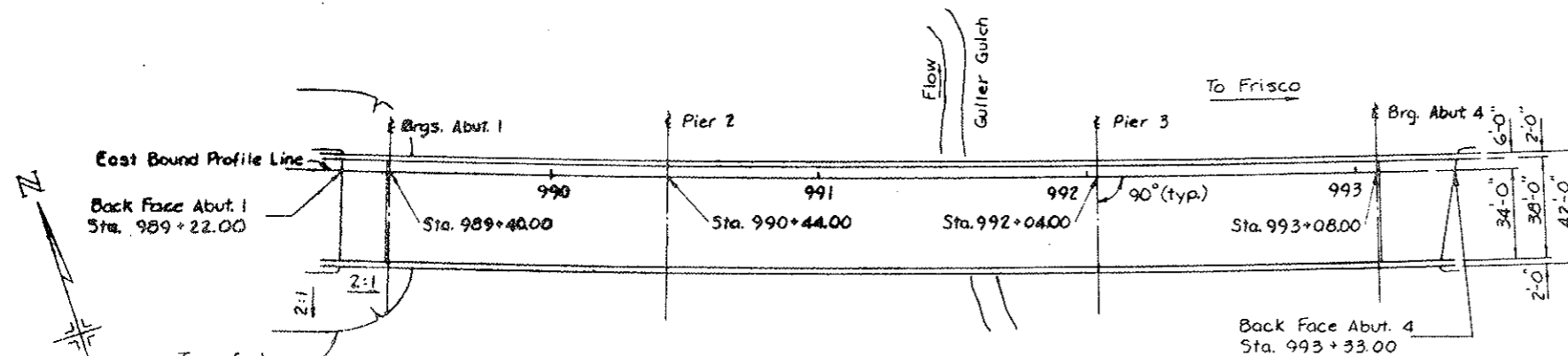
C(10-19-73)

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII COLORADO	I 70-2(52)197	110	

REVISIONS	

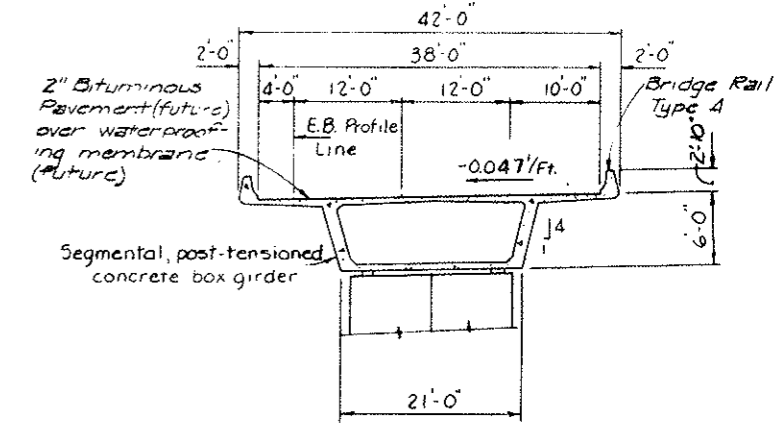
ALIGNMENT DATA	
PI	997+21.80
Δ	18° 26' 11"
Dc	1° 00'
Lc	1843.33'
Rc	5729.58'
S	0.047/ft.

VOID
BY CONSTRUCTION DATE 6-29-77

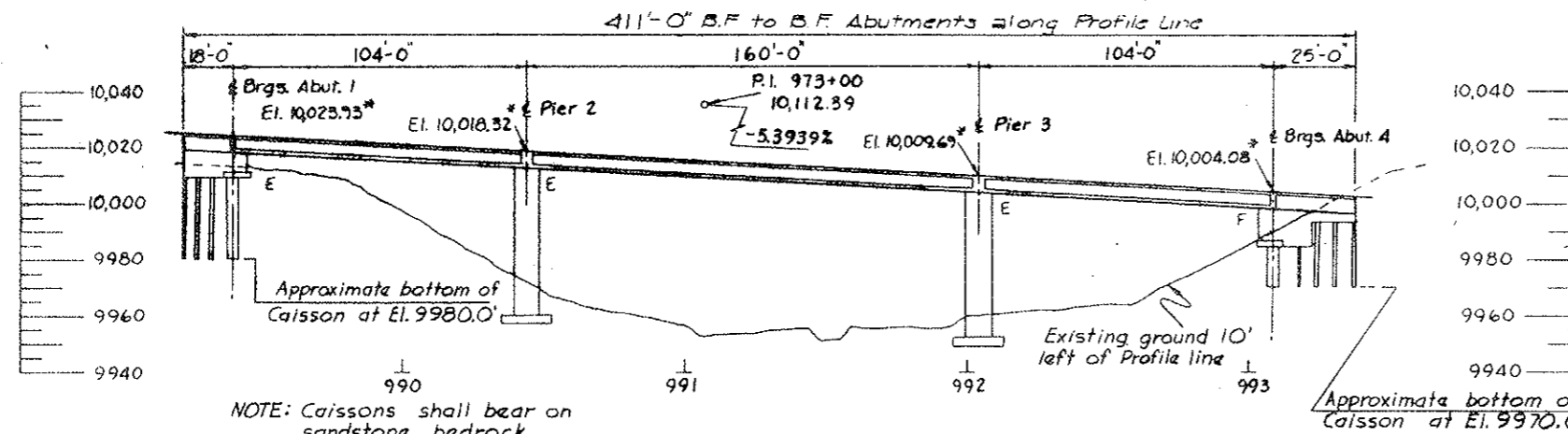


PLAN
Orig. scale 1"=30'

Note: Abutments and piers are radial.



TYPICAL SECTION
Orig. scale 1"=10'



SECTION
(Taken at & Roadway)
Orig. Scale: 1"=30'-0"
*Finished roadway elevations along Profile Line

NOTE: Caissons shall bear on sandstone bedrock.

DESIGNED BY	CHECKED BY	DATE

Live Loading HS-20-44 or Interstate Alternative

IECO INTERNATIONAL ENGINEERING CONSULTANTS ORGANIZATION
777 A Street, N.E., Washington, D.C. 20002

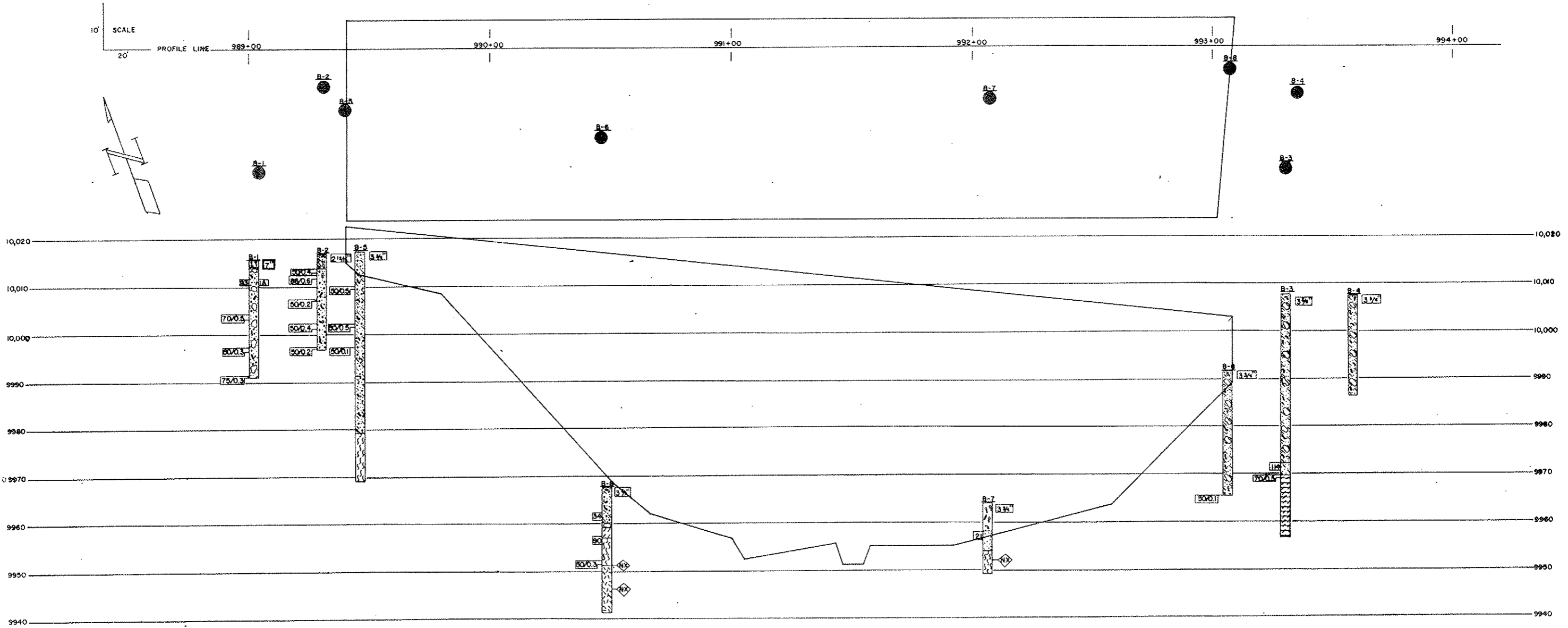
DIVISION OF HIGHWAYS

GENERAL LAYOUT

Designer	Om Garg	Structure	F-12-A.O. E.S.
Detailer	T. Fischer	Number	
Drawing Number	8 Z	of	16 Drawings

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	170-2(52)197	111	

VOID
BY CONSTRUCTION DATE 6-24-77



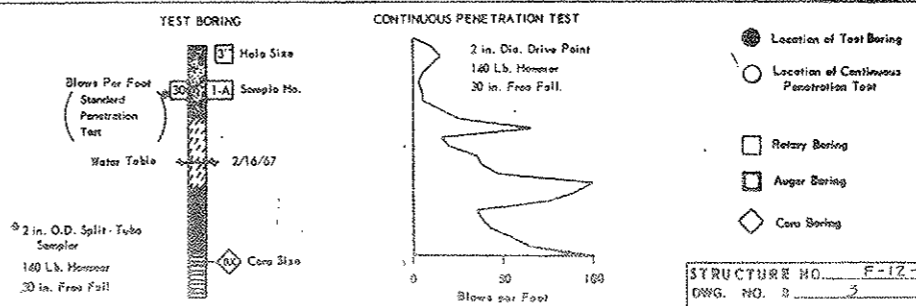
SUMMARY OF TEST RESULTS

Sample No.	Depth	Classification	Grading Analysis				Atterberg Limits				Water Cont. %	Max. Unit Weight	Unconfined Strength	Triaxial Shear Strength						Dia. of Sample (Inches)
			Percent				Liquid Limit	Plasticity Index	Shrinkage	Unconsolidated				Consolidated						
			Overall	Coarse Sand	Fine Sand	Silt and Clay				σ_1				σ_3	ϕ	σ_1	σ_3	ϕ	Time	
1A	35.5-37.0	SANDY GRAVEL	27	28	21	24														

TYPE OF MATERIAL

- GRAVELLY SILT
- SAND & GRAVEL W/ COBBLES & BOULDERS
- SAND & GRAVEL W/ COBBLES
- SILTY SAND W/ COBBLES & BOULDERS
- SILTY SAND
- SILTSTONE
- SAND & GRAVEL, SILTY, W/ COBBLES & BOULDERS
- BOULDER
- SANDSTONE
- SANDSTONE & CONGLOMERATE
- COBBLES
- SAND

LEGEND



**DIVISION OF HIGHWAYS
STATE OF COLORADO**

ENGINEERING GEOLOGY

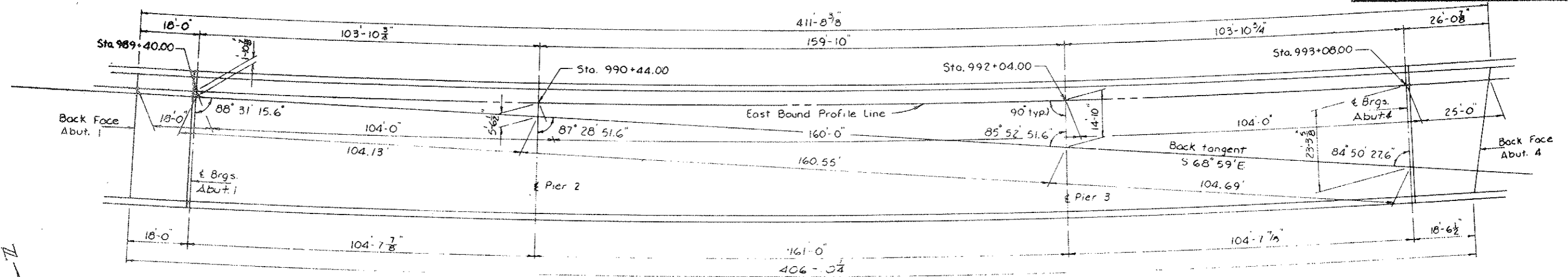
Across GULLER GULCH
Sta. 389+22.00 to 993+33.00
New V.I.B. PASS, Sec. 25, T. 6 S. R. 79 W.
Geologist R.L.B. Made by D.L.S. Checked by D.L.S.
Approved by Bridge Engineer Date: 17

STRUCTURE NO. F-12-AO
DWG. NO. 3 OF 16

VOID
BY CONSTRUCTION DATE 6-28-77

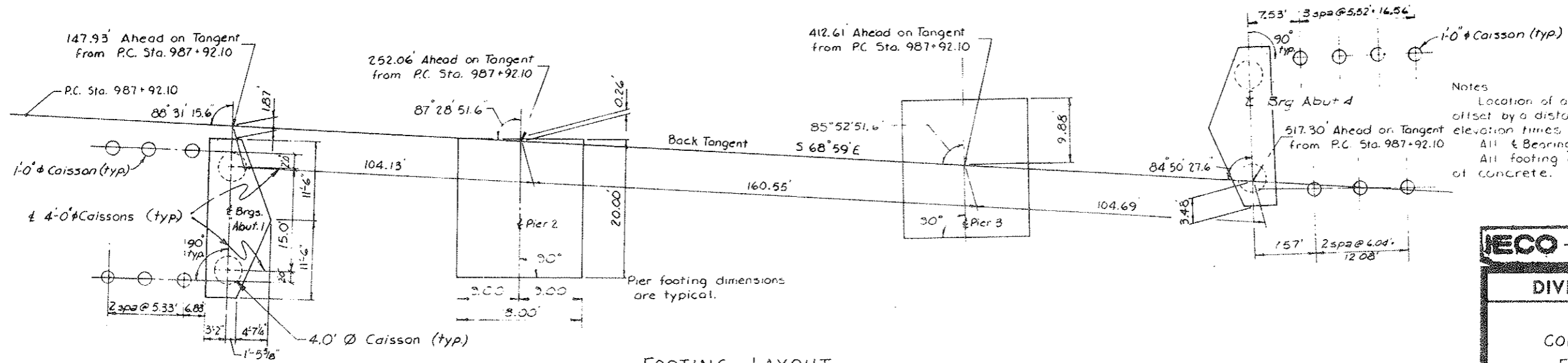
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(82)197	113	

REVISIONS	



CONSTRUCTION LAYOUT
Scale: 1" = 15'

DATE	BY	REVISION
9-7-73	C.L.B.	DESIGNED BY
10-7-74	T.C.F.	CHECKED BY



Notes
Location of abutment and pier footings is offset by a distance equal to rate of super-elevation times depth of superstructure (6'-0")
All bearings and Piers are radial.
All footing dimensions are at bottom of concrete.

FOOTING LAYOUT

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
DESIGN, CONSULTING, SURVEYING AND PROJECT MANAGEMENT
1777 & Daniels St. Denver, Colorado 80202

DIVISION OF HIGHWAYS

**CONSTRUCTION LAYOUT
FOOTING LAYOUT**

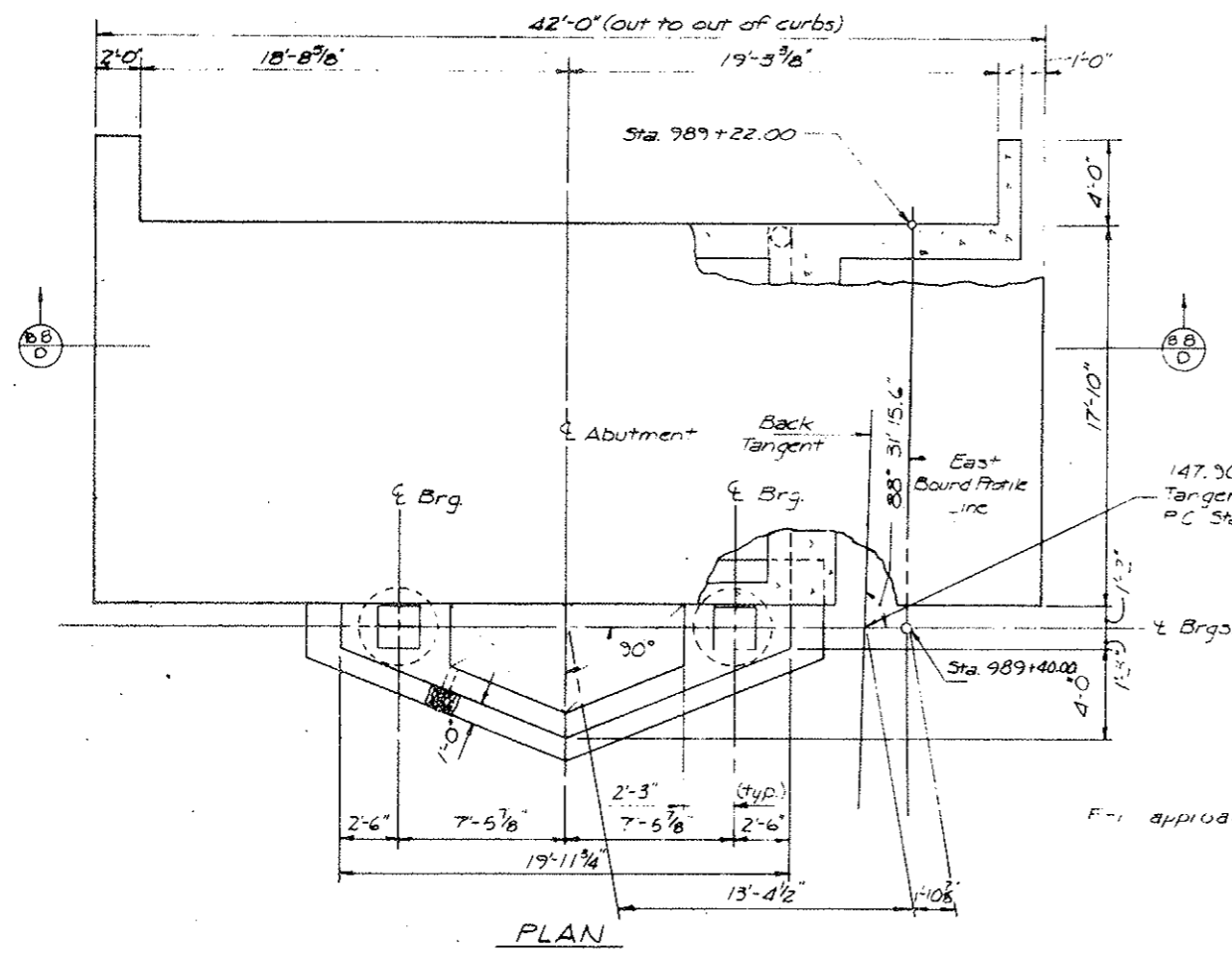
Designer: O. Garg	Drawings: F-12-A0 (E.B.)
Detailer: T. Fischer	Numbers:
Drawing Number: 5	of 16

Revision Dates

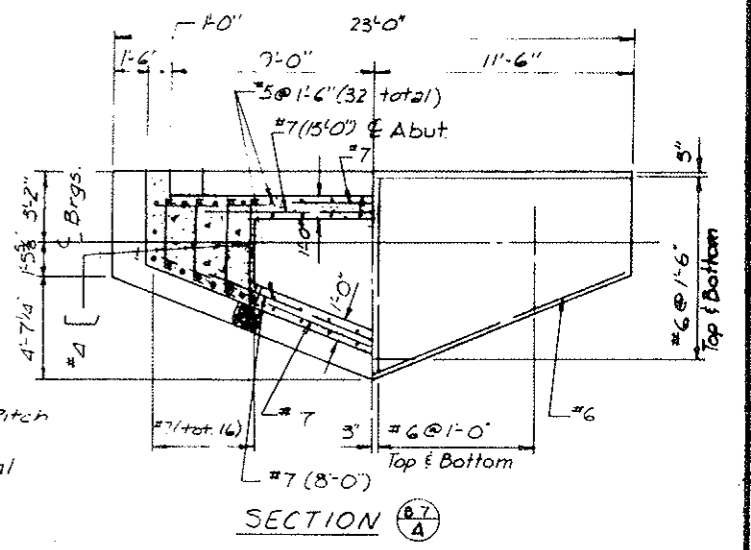
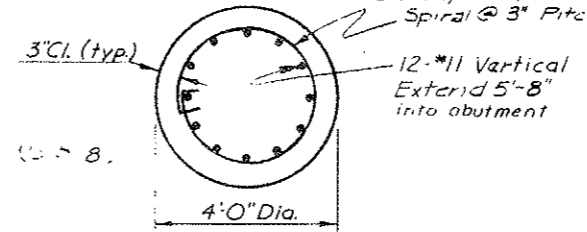
VOID
CONSTRUCTION DATE 6-24-77

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	114	

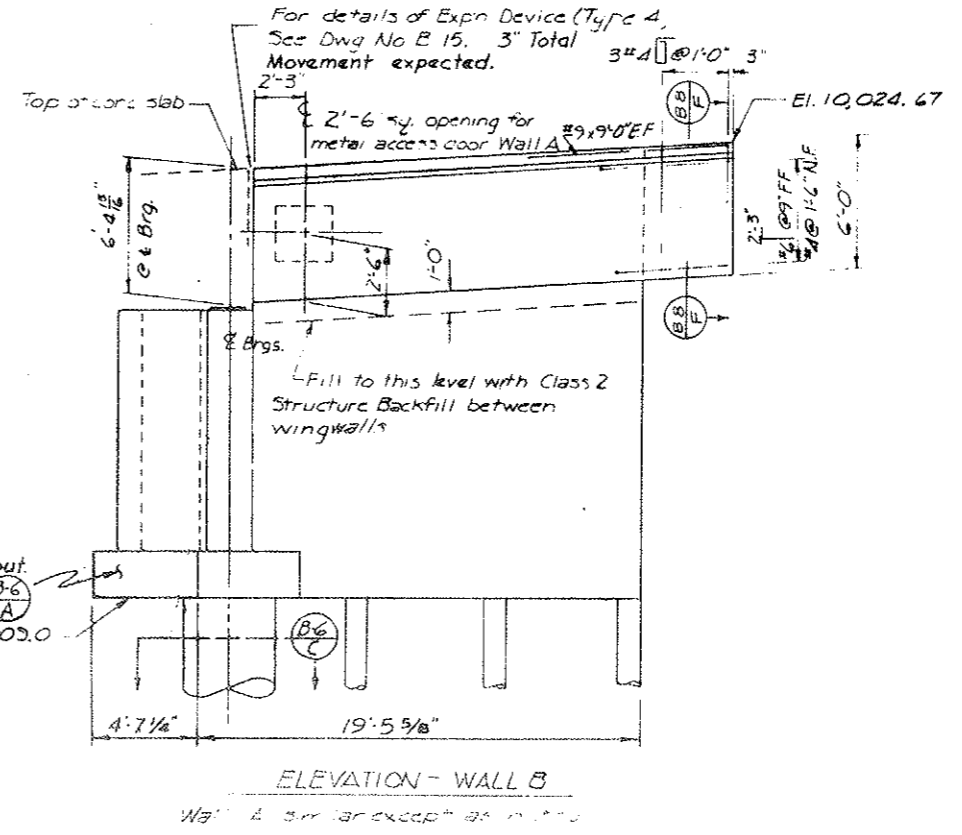
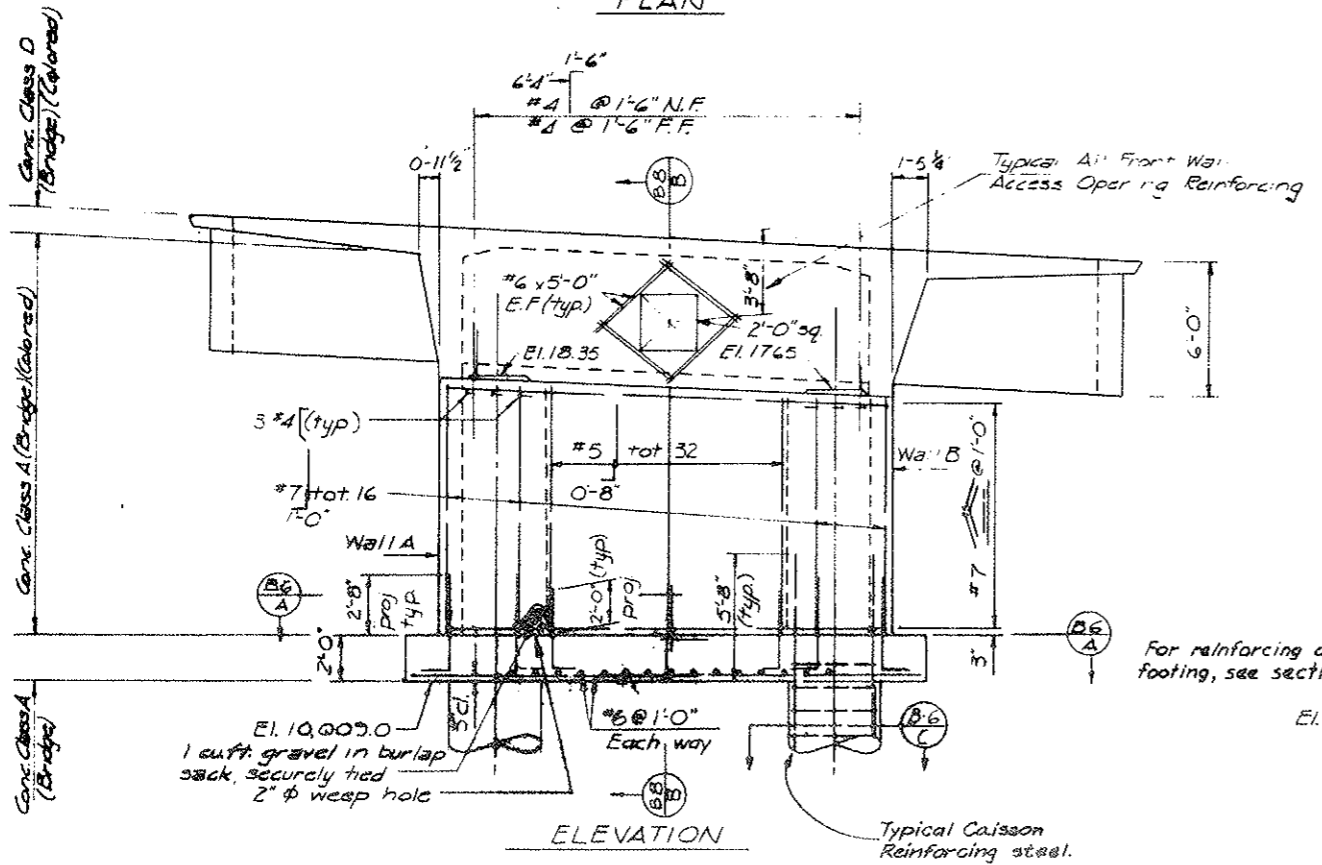
REVISIONS	



Notes: For abutment structure, see drawing B-15. For details of Expn Device (Type 4), see drawing B-15. 3" Total Movement expected.



DATE	BY	REVISION
10/7/74	CHG	REVISION
10/7/74	CHG	REVISION
10/7/74	CHG	REVISION
10/7/74	CHG	REVISION



IECO INTERNATIONAL ENGINEERING COMPANY, INC.
Berth, Denver, Colorado and Highways
1777 & Denver St. Denver, Colorado

DIVISION OF HIGHWAYS

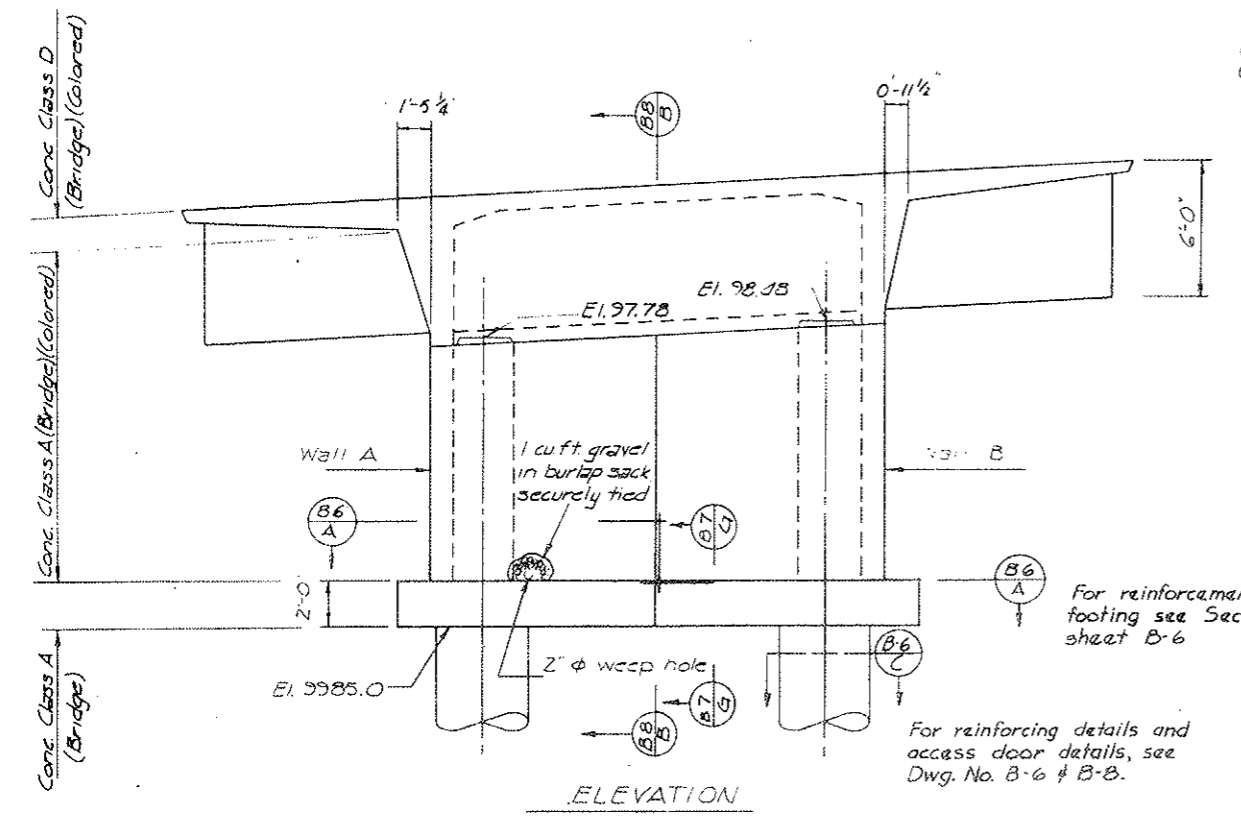
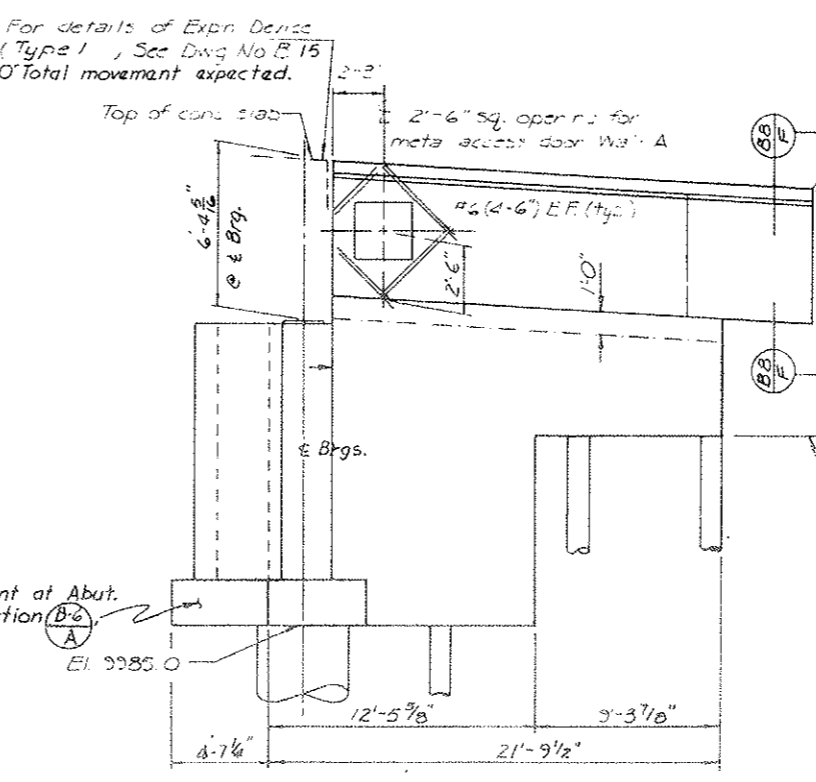
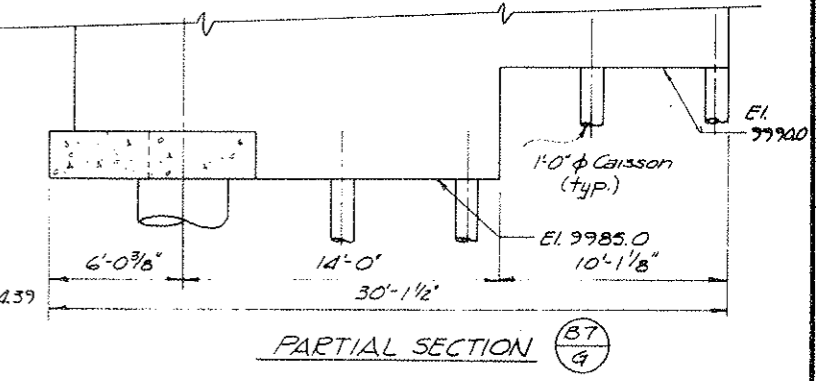
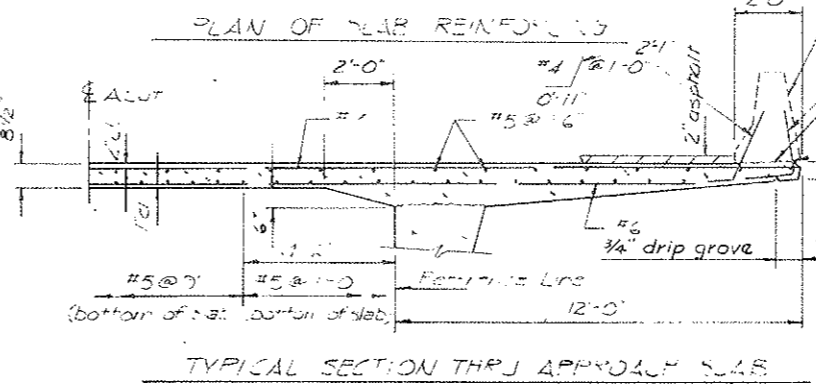
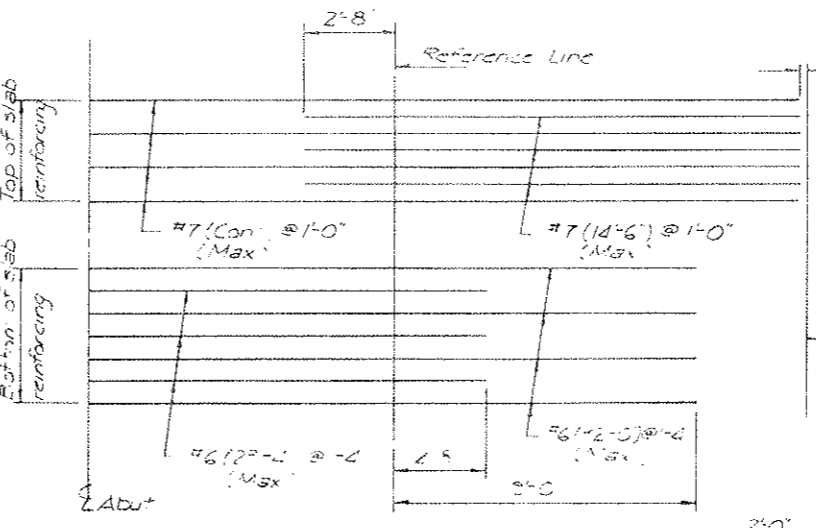
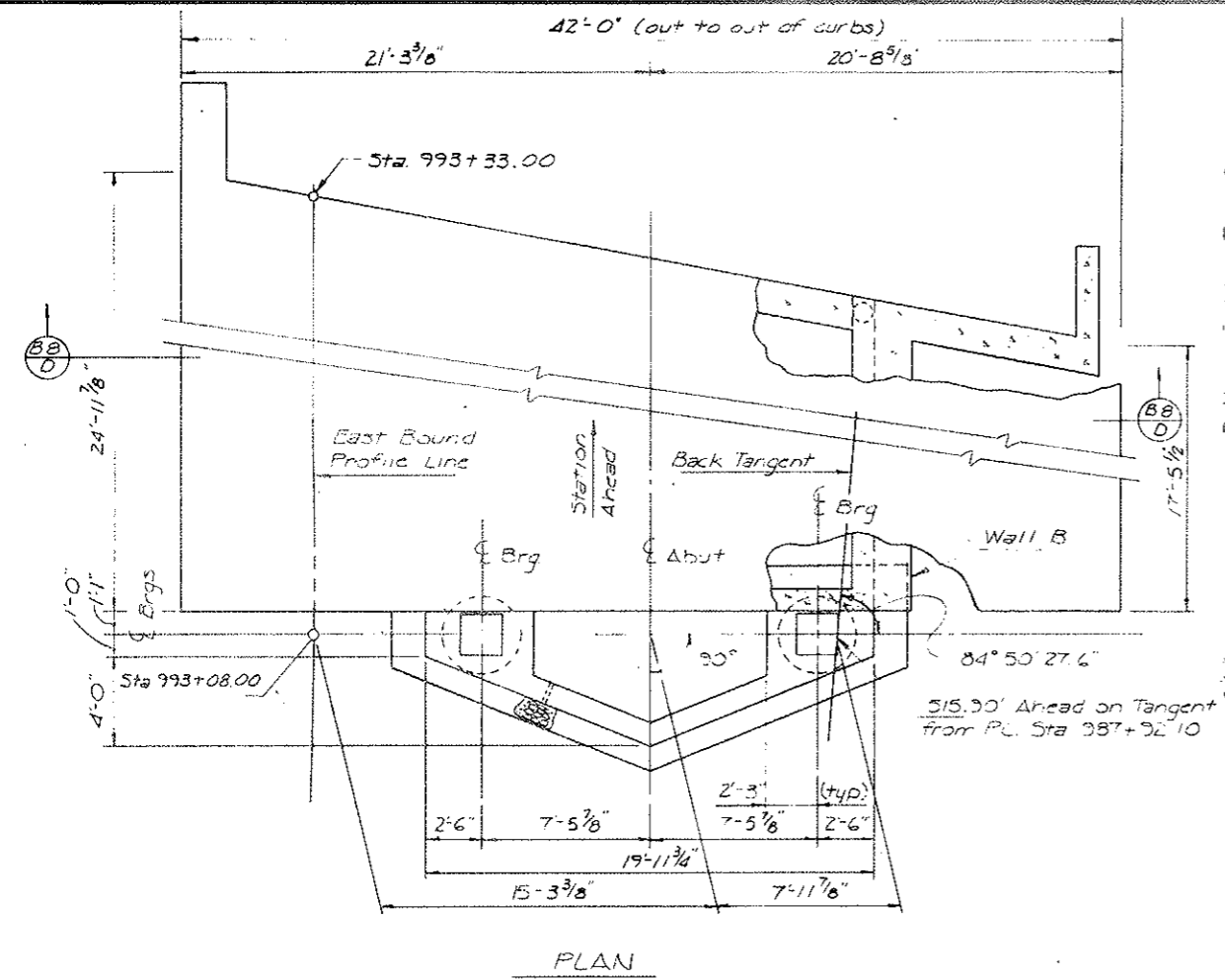
ABUTMENT I DETAILS

Designer: O Garg Structure: F-12-A0 (EB)
Detailer: B Eisner
Drawing Number: 6 of 16 Drawings

Revision Dates: (Preliminary Stage Only)

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2152197	115	
REVISIONS				
R-1	4/4/75	REPRINT		WCB

VOID
BY CONSTRUCTION DATE 6-24-77



Note:
For access door and wall reinforcing details,
see Dwg. No. B-7.

DESIGNED BY	1/74
CHECKED BY	1/74
QUANTITIES BY	1/74
CHECKED BY	1/74
DATE	1/74
INITIAL	

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
Denver, St. Louis, Houston and Chicago Offices
1777 S. Belknap St. Denver, Colorado 80222

DIVISION OF HIGHWAYS

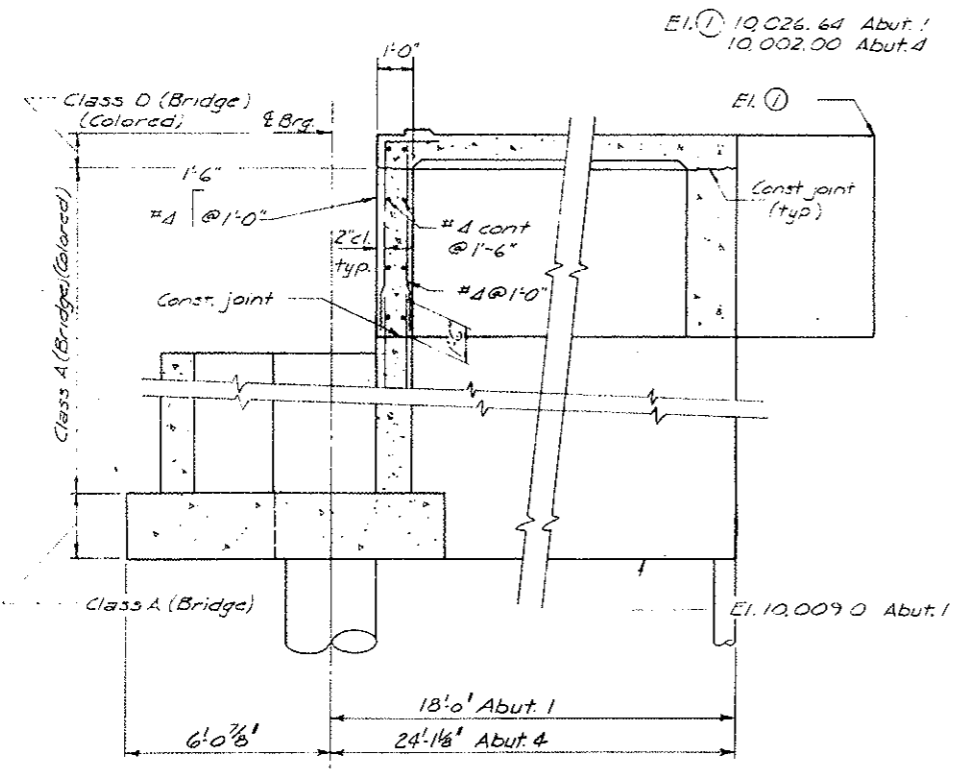
ABUTMENT 4 DETAILS

Designer	O. Garg	Structure	F-12-AO E.B.
Detailer	B. Eganer	Numbers	
Drawing Number	B-7	of	16 Drawings
Revision Date		(Preliminary Stage Only)	

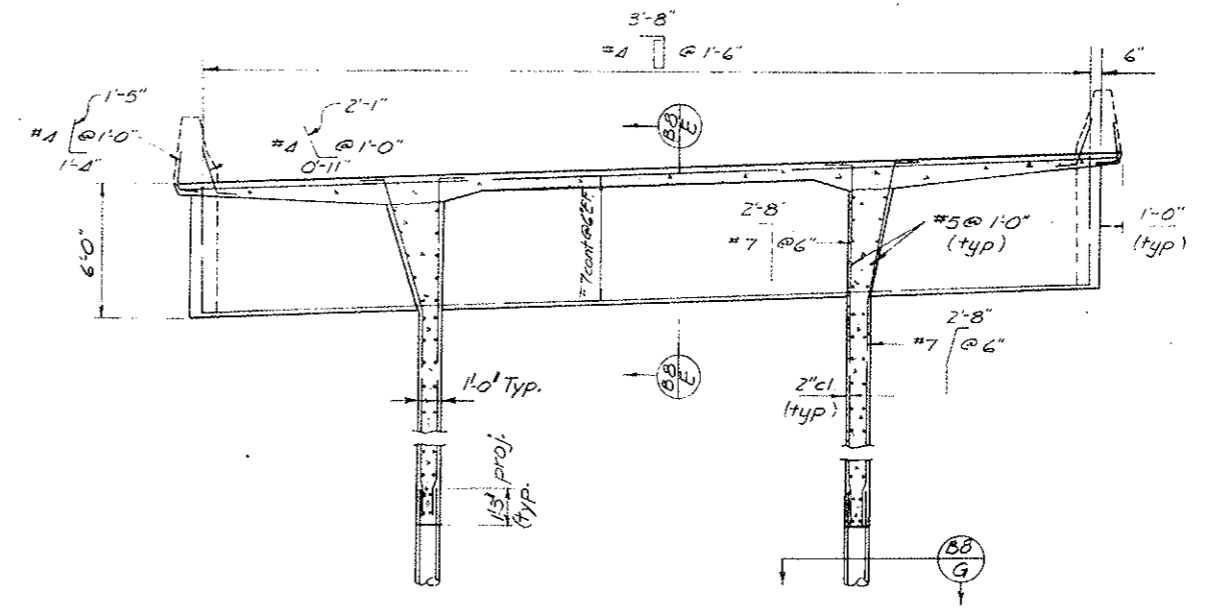
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52)197	116	

REVISIONS	

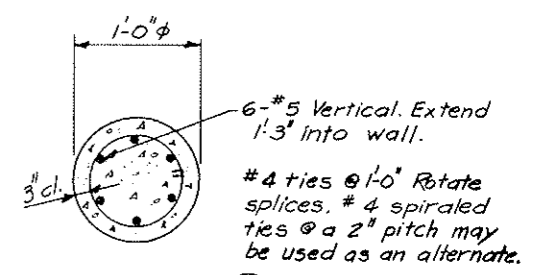
VOID
BY CONSTRUCTION DATE 6-24-77



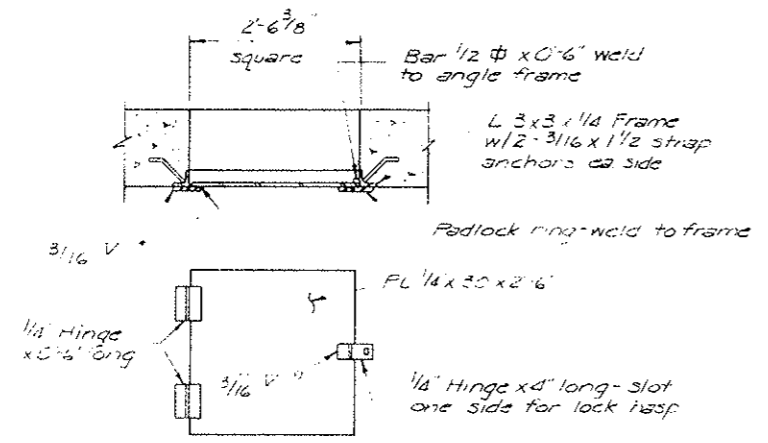
SECTION $\frac{BB}{B}$



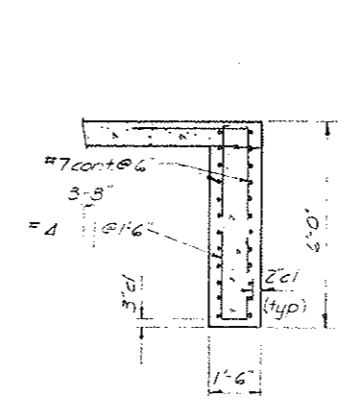
SECTION $\frac{BB}{B}$



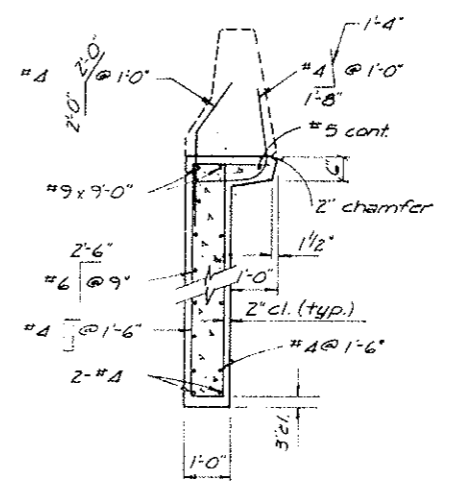
SECTION $\frac{BB}{G}$



ACCESS DOOR DETAIL



SECTION $\frac{BB}{E}$



SECTION $\frac{BB}{F}$

INITIAL	DATE	CHECKED BY
OG	10-74	CHECKED BY QUANTITIES BY
BE	1-75	CHECKED BY

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

DIVISION OF HIGHWAYS

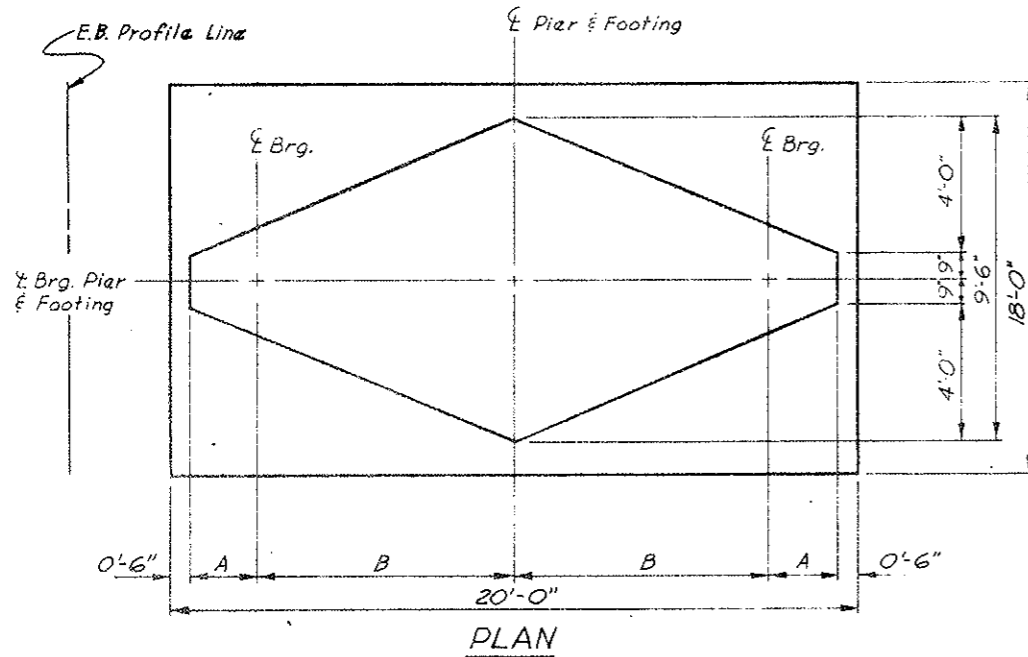
ABUTMENT DETAILS

Designer <i>Orn Garg</i>	Structure <i>F-12-AG</i>
Detailer <i>B Fisher</i>	Numbers
Drawing Number <i>B 8</i>	of <i>16</i> Drawings

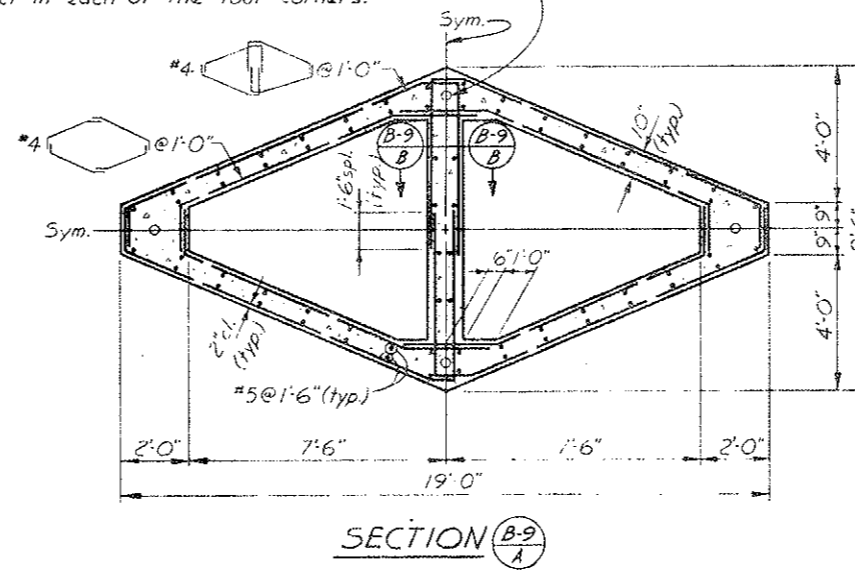
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2(52)197	117	

VOID
BY CONSTRUCTION DATE 6-12-77

REVISIONS		
RT	4-29-75	Addition to note B.D.E

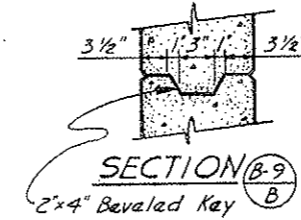
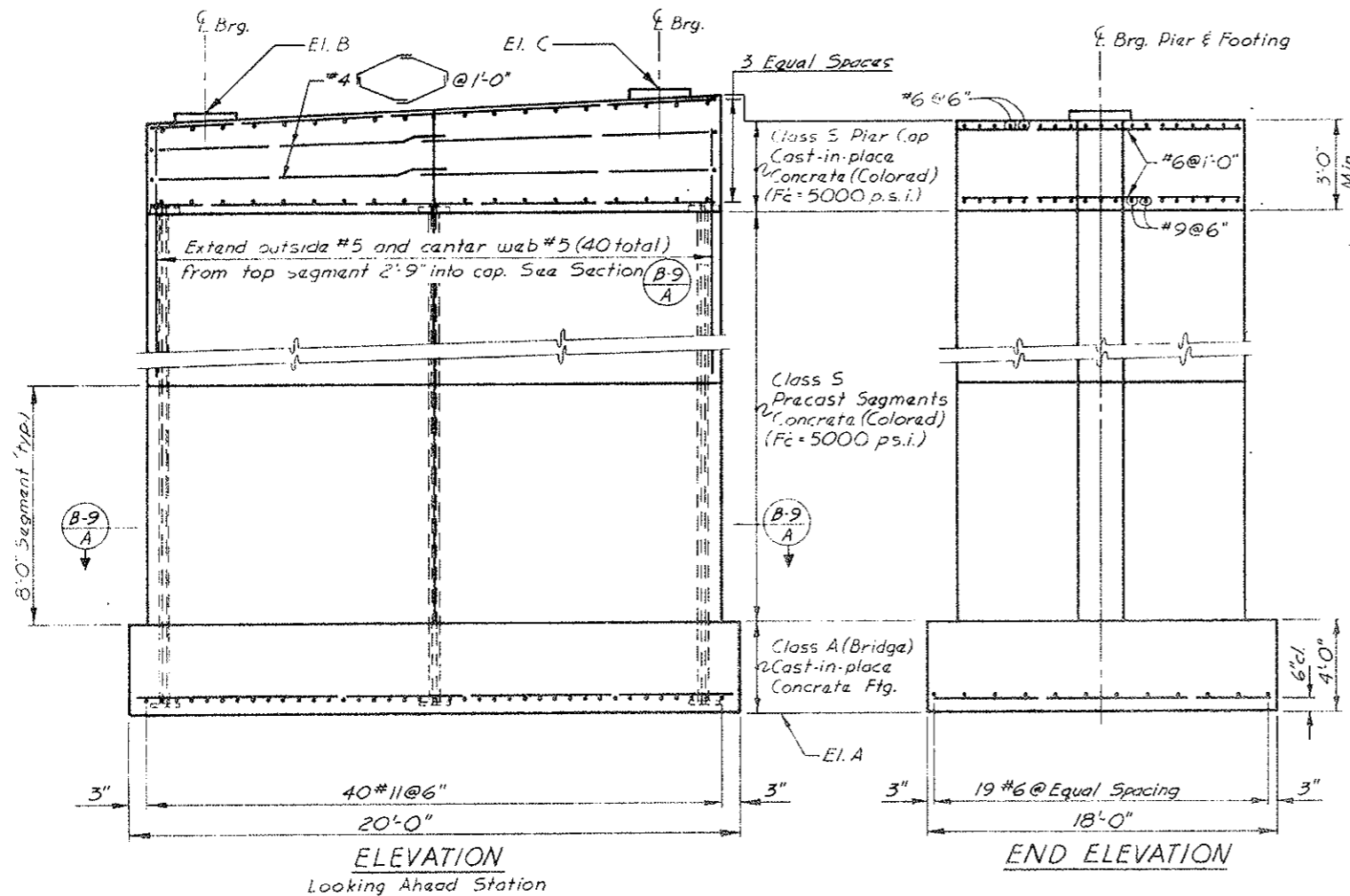


Ducts for prestressing tendons (typ.)
Place symmetrically with a minimum of one duct in each of the four corners.



	EASTBOUND	
	Pier 2	Pier 3
EI. A	9957.0	9954.0
EI. B	10011.80	10003.17
EI. C	10012.50	10003.87
① Force F	807 Kips	576 Kips

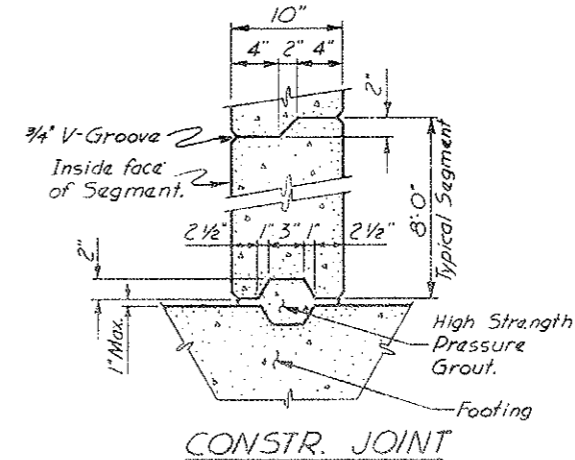
DESIGNED BY	C. Z. B.	CHECKED BY	R. A. H.
CHECKED BY	R. A. H.	DATE	6-75
QUANTITIES BY	R. A. H.	DATE	7-75
DETAILS BY		DATE	



- 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-9) A
- 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:

- DESIGN PROVISIONS WERE MADE FOR A ONE SEGMENT, UNBALANCED CANTILEVER MOMENT AT THE END OF THE CANTILEVER DURING THE CONSTRUCTION STAGE. THE PIER COLUMNS ARE NOT DESIGNED FOR SUCH UNBALANCED MOMENTS, BUT ALL PIER FOOTINGS ARE DESIGN FOR AN UNBALANCED MOMENT OF 6040 FOOT KIPS.
- 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
- 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.
Berlton, Stoddard, Milhollin and Higgins Division
1777 S. Bellaire St. Denver, Colorado 80222

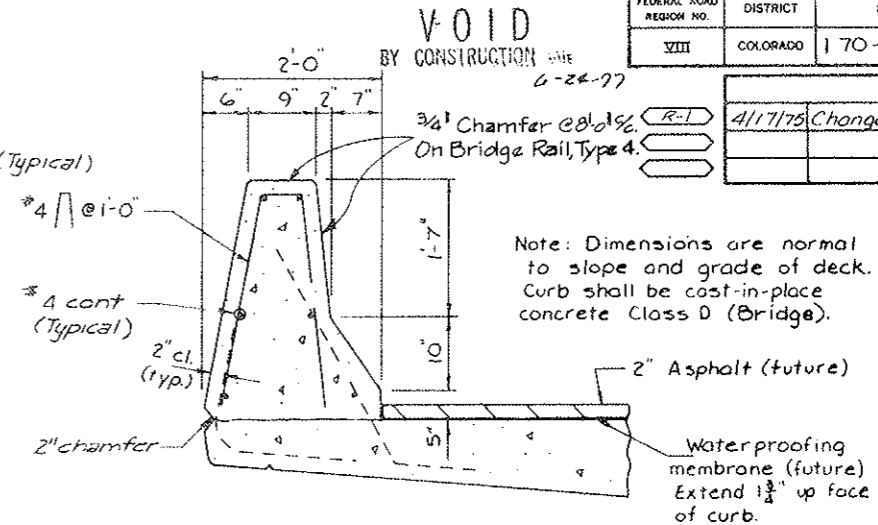
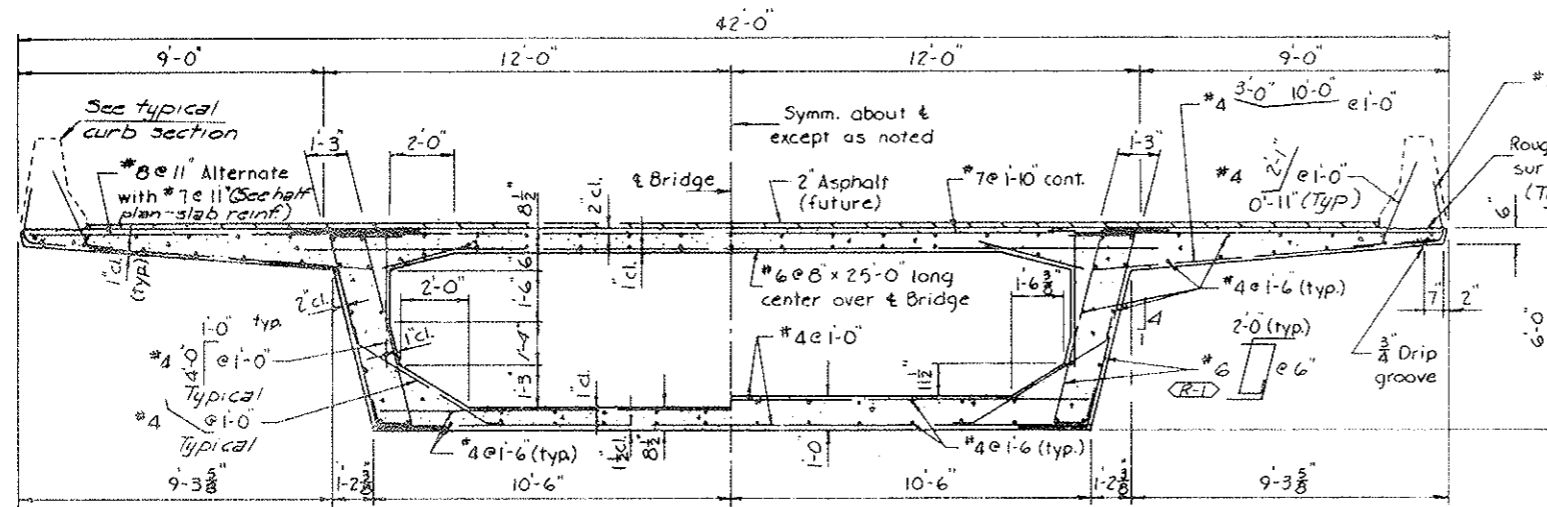
DIVISION OF HIGHWAYS

PIER DETAILS

Designer C. Banson	Structure Numbers	F-12-40 E.B
Detailer D. Froman	Drawing Number	9 of 16 Drawings

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO 170-2(52)197	118	

REVISIONS		
R-1	4/17/75 Change bar size	CLB



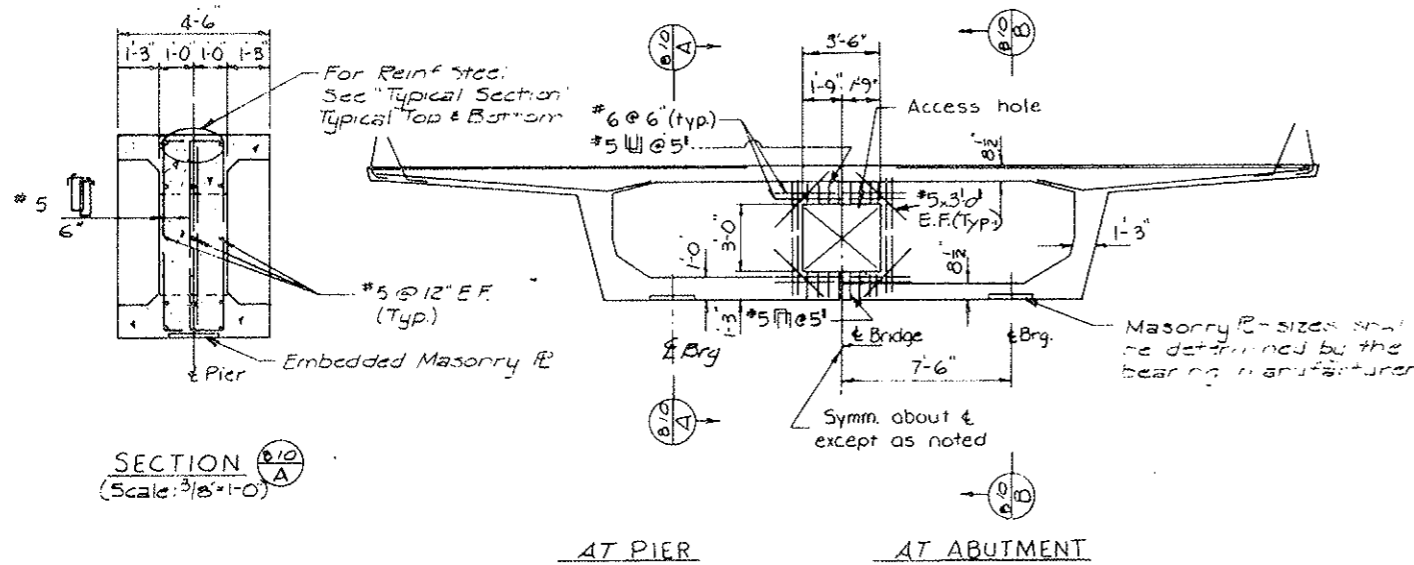
Note: Dimensions are normal to slope and grade of deck. Curb shall be cast-in-place concrete Class D (Bridge).

MID-SPAN

NEAR & PIER

TYPICAL SECTION

DESIGNED BY	DATE	CHECKED BY	DATE
CLB	9-22	SJM	11-74
CHECKED BY	DATE	CHECKED BY	DATE
ZEL	9-22	ZEL	11-74
DETAILS BY	DATE	DETAILS BY	DATE
ZEL	9-22	ZEL	11-74



SECTION A-A
(Scale: 3/8" = 1'-0")

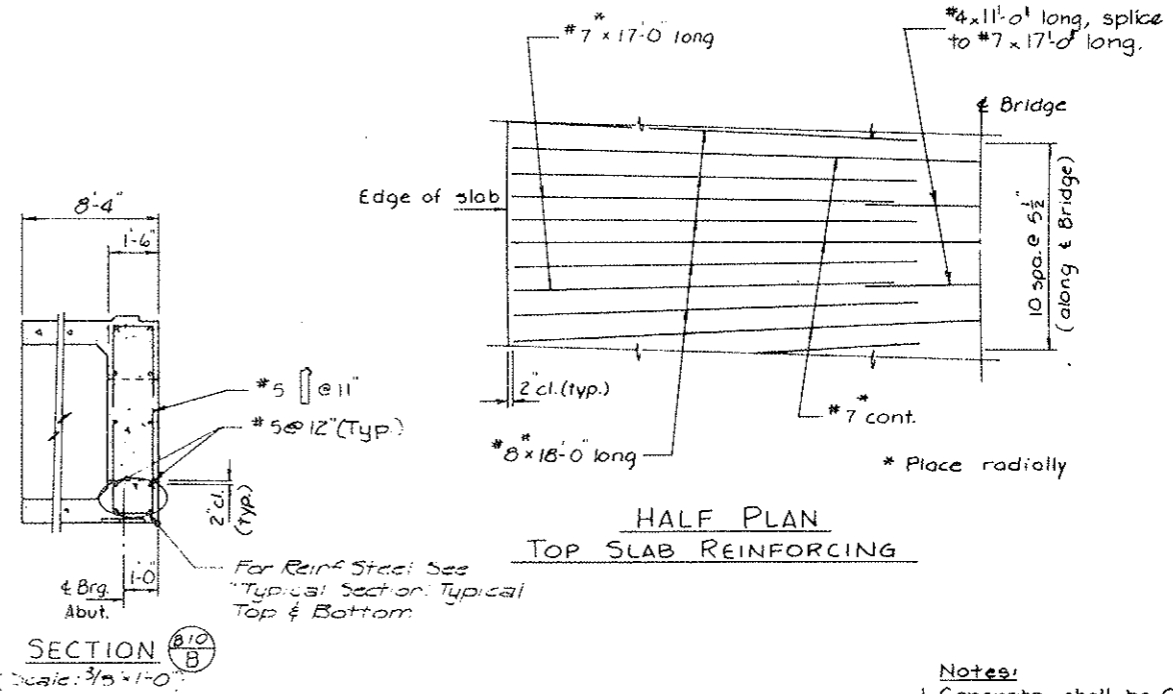
AT PIER

AT ABUTMENT

ELEVATION
(Scale: 3/8" = 1'-0")

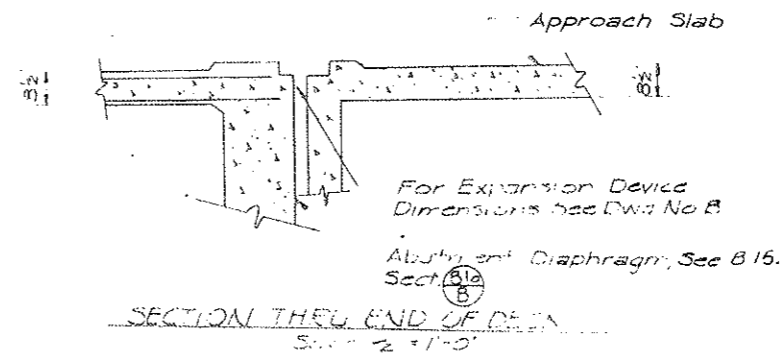
DIAPHRAGM DETAILS

Note: Overall dimensions are similar to TYPICAL SECTION except as noted.



HALF PLAN
TOP SLAB REINFORCING

- Notes:
- Concrete shall be Class 5 (Bridge) (Colored) unless otherwise noted.
 - For prestressing notes, see Dwg. No. B-11.



SECTION THROUGH END OF DECK
(Scale: 3/8" = 1'-0")

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

DIVISION OF HIGHWAYS

SUPERSTRUCTURE DETAILS

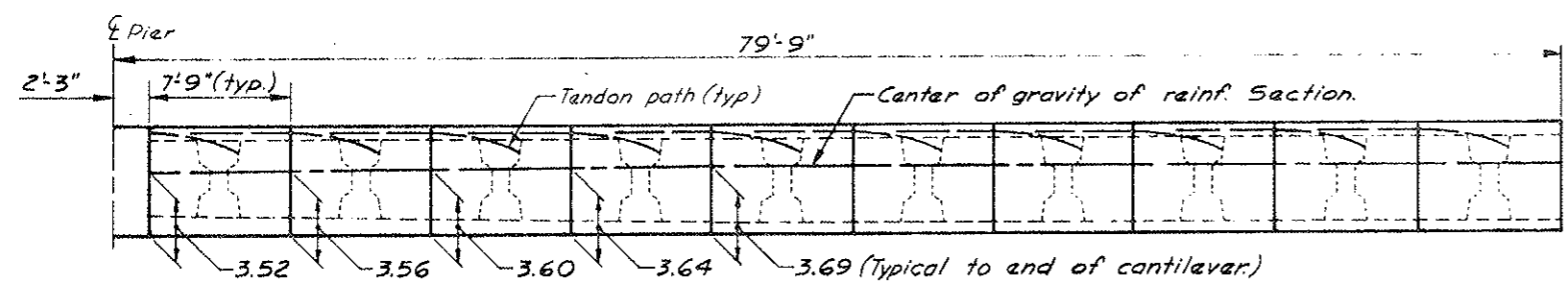
Designer	C. Benson	Structure Numbers	F-12-AO E.B.
Detailer	T. Fischer	Number	
Drawing Number B 10		of	16 Drawings

Revision Dates (Preliminary Steps Only)

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII COLORADO	F-102(52)197	119	

REVISIONS			
R1	4-17-75	Rev. Envelope	JRE
R2	5-14-75	Added Note	CLB

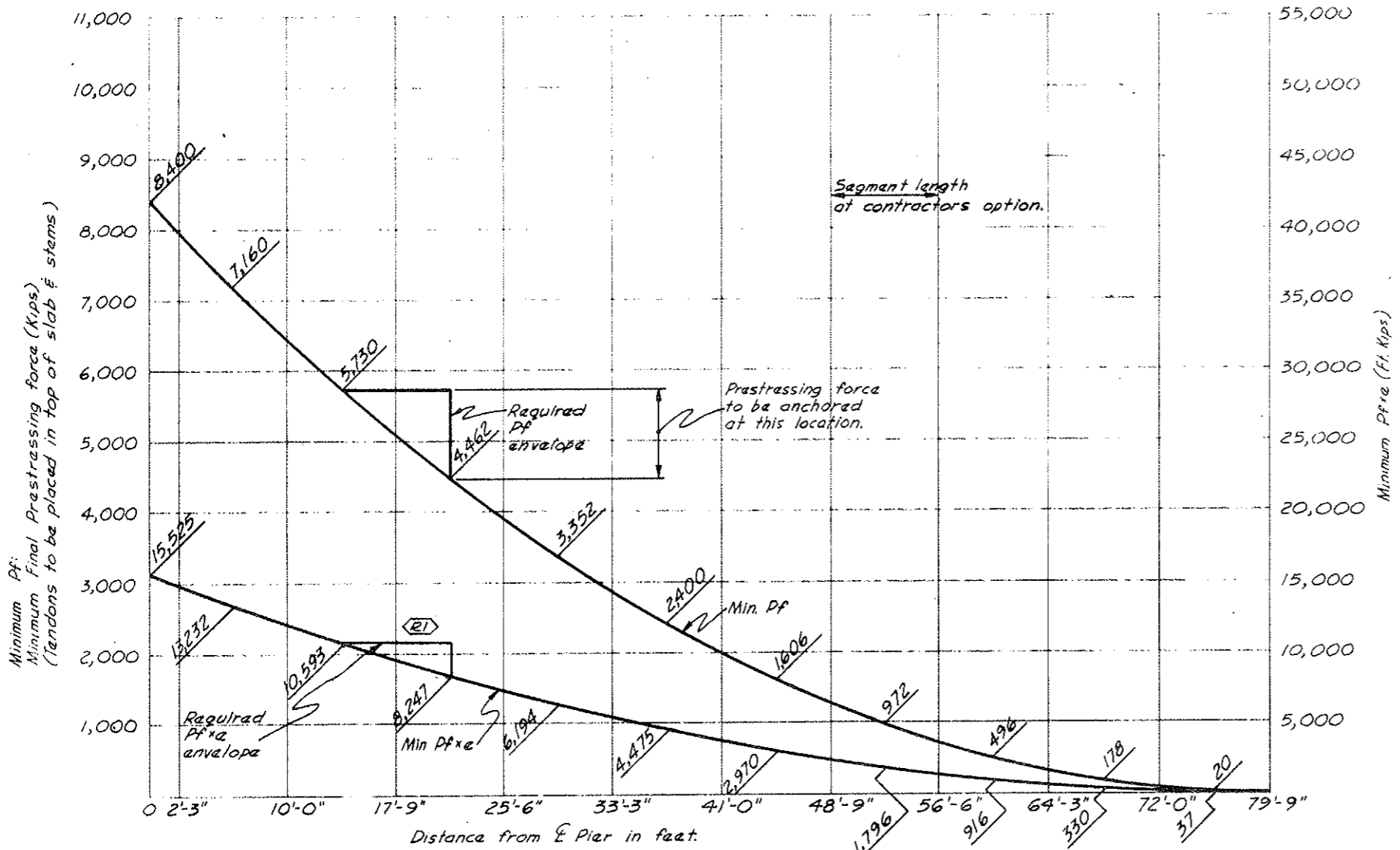
VOID
BY CONSTRUCTION DATE 6-26-77



NOTE: Tendon paths are for illustration only.

PRESTRESSING NOTES:

- "P_i" 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_i SHALL BE FURNISHED AT THE MIDDLE OF LENGTH FOR WHICH IT IS GIVEN IN THE CASE OF BOTTOM PRESTRESSING THROUGH THE CLOSURE POURS. P_i FOR ALL OTHER BOTTOM PRESTRESSING SHALL BE FURNISHED AT THE END NEAREST MID-SPAN OF THE LENGTH FOR WHICH IT IS GIVEN. P_i 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 SEVEN-WIRE, 1/2" Ø STRANDS WITH AN ULTIMATE STRENGTH OF 270 K. S.F. CALCULATIONS MUST BE SUBMITTED FOR DEPARTMENT APPROVAL IF ANOTHER TYPE OF PRESTRESSING STEEL IS SUBSTITUTED. TENDONS SHALL BE SHIPPED IN MOISTURE-PROOF CONTAINERS THAT CAN BE STORED AT THE JOB SITE FOR AN EXTENDED PERIOD OF TIME WITHOUT CORRODING FROM ATMOSPHERIC CONDITIONS.
- REQUIRED PRESTRESSING FORCES (P_i) AND MOMENTS (P_i × e) ARE BASED ON A SEGMENT LENGTH OF 7' - 9" AND ON THE CONSTRUCTION SEQUENCE SHOWN ON DRAWING NUMBER 8-18. DESIGN CALCULATIONS FOR ALTERNATIVE CONSTRUCTION SCHEMES MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- PROVISIONAL PRESTRESSING USED DURING CONSTRUCTION MUST HAVE ENGINEERS 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 ANCHORAGE AND CONSTRUCTION JOINT DETAILS, TO FIT THE PRESTRESSING SYSTEM USED, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- GIRDER WEBS 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 DURING PRODUCTION. INFLATABLE RUBBER OR SUITABLY RIGID MATERIAL SHALL BE USED TO PREVENT ANY INDENTATIONS OR COLLAPSE OF DUCTS.
- PROVIDE ADEQUATE SUPPORT FOR TENDON DUCTS TO PREVENT ALIGNMENT CHANGES DURING CONCRETE PLACEMENT.
- A MAXIMUM OF 3 DUCTS MAY BE BUNDLED INTO VERTICAL UNITS. MINIMUM HORIZONTAL CLEARANCE BETWEEN DUCT UNITS SHALL BE 2-1/2 IN. MINIMUM VERTICAL CLEARANCE BETWEEN DUCT UNITS SHALL BE 3 IN.
- GROUTING IS TO BE DONE AFTER PRESTRESSING IS COMPLETED IN ANY ONE SPAN IN SUCH A WAY THAT GROUTING CANNOT INTERFERE WITH THREADING AND STRESSING OF TENDONS.
- 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.
- SEGMENT JOINTS SHALL HAVE A THOROUGH COATING OF EPOXY TO ELIMINATE VOIDS BETWEEN TENDON DUCTS.
- A COMPLETE SET OF DEFLECTION CALCULATIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL 60 DAYS PRIOR TO STARTING SUPERSTRUCTURE CONSTRUCTION.
- THE CAMBER TO BE USED WILL DEPEND ON SEGMENT LENGTH, STRENGTH, WEIGHT AND CREEP OF CONCRETE, PRESTRESSING, WEIGHT OF FALSE-WORK, AND INCIDENTAL CONSTRUCTION LOADS.
- CONTRACTOR WILL BE REQUIRED TO CHECK CAMBER AT INTERMEDIATE ERECTION STEPS AND PROVIDE CAMBER ADJUSTMENTS WITH SUPPORTING CALCULATIONS.
- FALSEWORK AT CLOSURE POURS SHALL BE SUPPORTED SUCH THAT APPLIED LOADS WILL RESULT IN EQUAL DEFLECTIONS OF EACH CANTILEVER.
- TYPICAL SECTION REINFORCING (SEE DWG. NO. 8-10) SHALL EXTEND INTO CLOSURE POURS.
- BOTTOM SLAB AND WEBS VARY LINEARLY IN THICKNESS FROM THE FIRST SEGMENT ADJACENT TO THE PIER TO THE END OF THE 4TH SEGMENT FROM THE PIER - TRANSITION LENGTH = 31' - 0".



DESIGNED BY	DATE	APPROVED BY
CLB	10/74	RAH
CHECKED BY		
D.J.F.	1/75	CLB
ON BEHALF OF		RAH

25. A MINIMUM RESIDUAL COMPRESSIVE STRESS OF 30psi SHALL BE MAINTAINED AT SEGMENT JOINTS DURING CONSTRUCTION ONCE EPOXY AND PROVISIONAL OR FINAL POSTTENSIONING HAVE BEEN APPLIED.

26. 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.

27. WEB STIFFENER REINFORCING DETAILS SHALL BE SUBMITTED FOR THE ANCHORAGE SYSTEM USED.

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
 Denver, Boulder, Colorado and Virginia Division
 1777 S. Ballou St. Denver, Colorado 80222

DIVISION OF HIGHWAYS

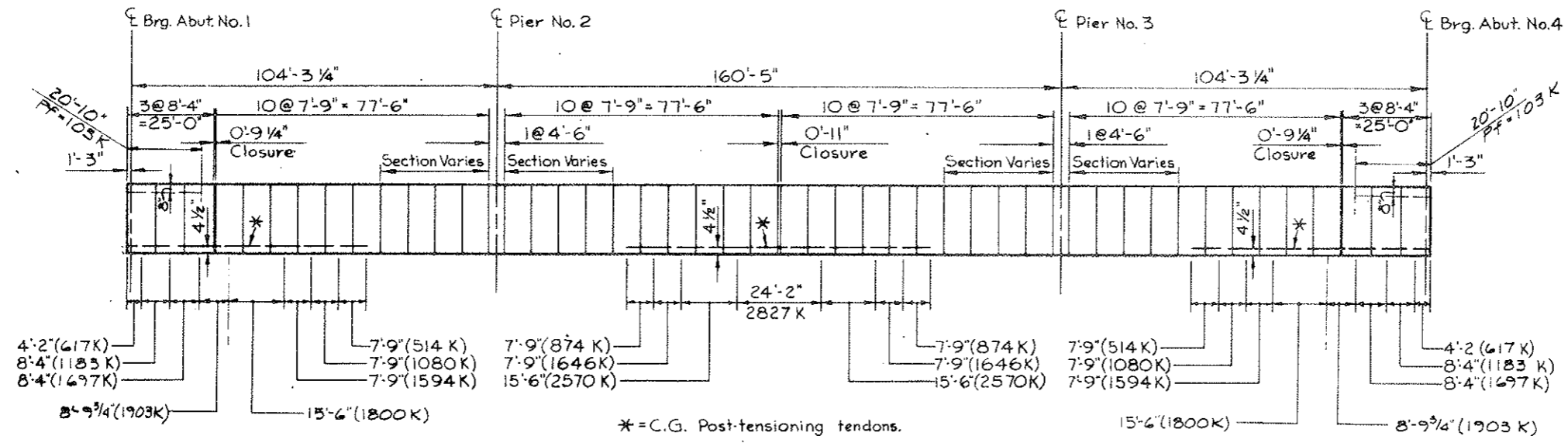
79'-9" CANTILEVER

Designer <i>C. Benson</i>	Structure Numbers
Detailer <i>D. Froman</i>	<i>F-12-AO E.B.</i>
Drawing Number <i>B 11</i>	of <i>16</i> Drawings

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2(52) 197	120	

REVISIONS		
R-1	4/17/75 Add Notes.	CLB

VOID BY CONSTRUCTION DATE 4-17-77



* = C.G. Post-tensioning tendons.

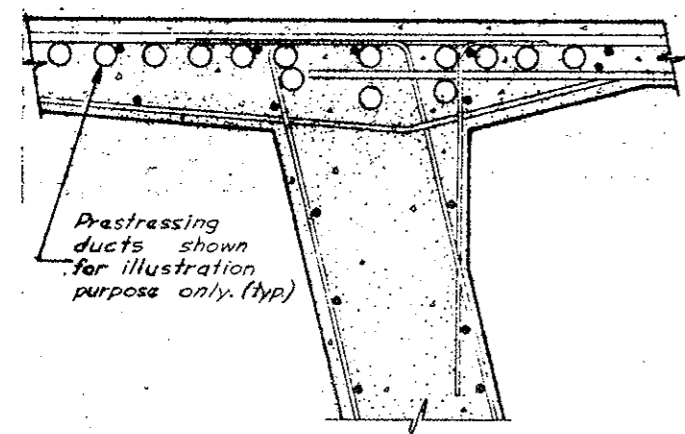
Notes:
 *6 Stirrups to be placed @ 0'-6" in each web for entire length. Stirrups to be included in closure pours also.
 All closures to be reinforced in the transverse direction with steel as indicated in the typical section and half plan, Dwg. No B-10. Typical.

DESIGNED BY	DATE	CHECKED BY
CLB	11/74	CLB
CHECKED BY	DATE	QUANTITIES BY
DJF	11/74	RAH
DETAILS BY		

IECO INTERNATIONAL ENGINEERING COMPANY, INC.	
Dwgs., Standards, Structures and Marine Division 1777 S. Bascom St. San Jose, Calif. 95128	
DIVISION OF HIGHWAYS	
GIRDER ELEVATION	
Designer C. Benson	Structure
Detailer D. Froman	Number F-12-A0 E.D.
Drawing Number B 12	of 16 Drawings
(Preliminary Stage Only)	

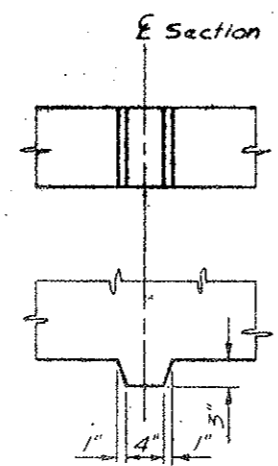
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	I-70-2(52)197	121	
REVISIONS				

VOID
 BY CONSTRUCTION DATE 6-24-77

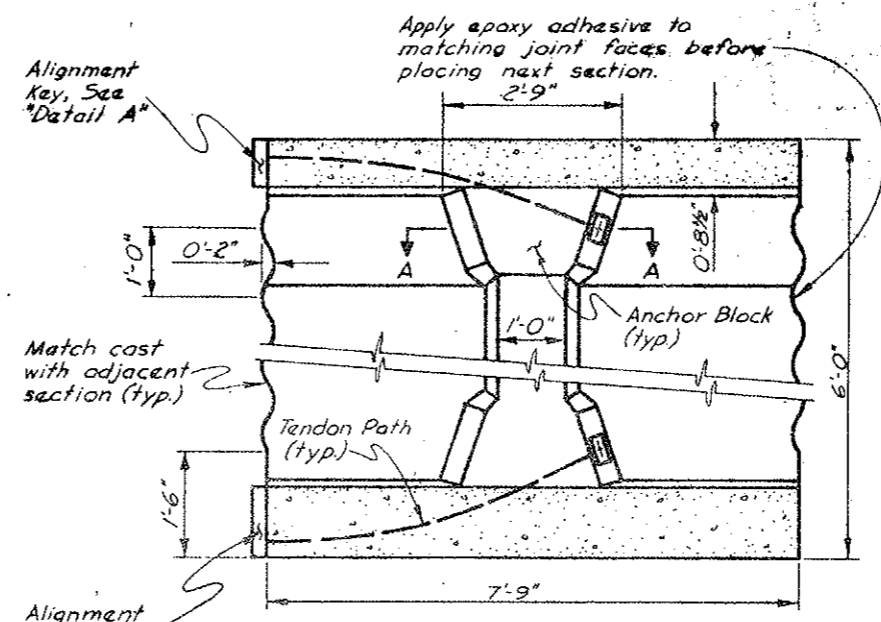


PART. SECTION NEAR PIER

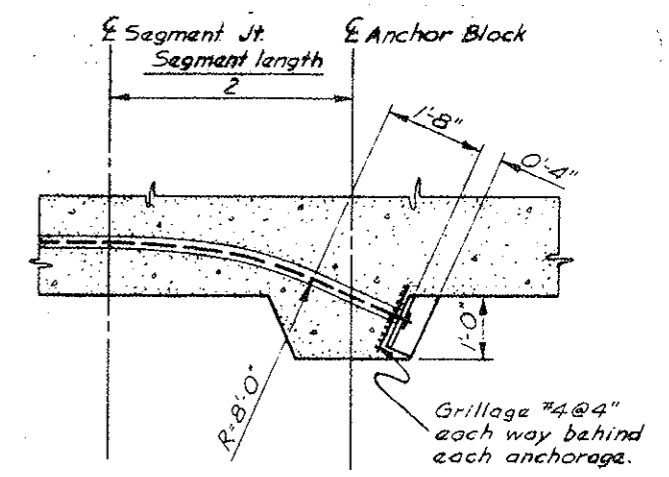
Prestressing ducts shown for illustration purpose only. (typ)



"DETAIL A"
 Alignment Key

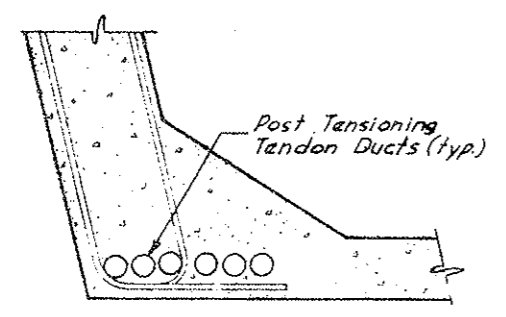


TYPICAL SEGMENT ELEVATION



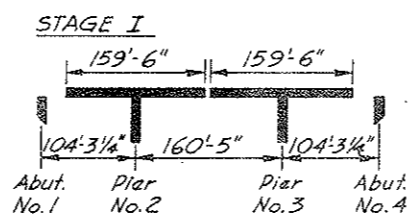
SECTION A-A

NOTE: Longitudinal continuity tendons in the bottom slab shall be stressed after the closure pour has reached design strength.

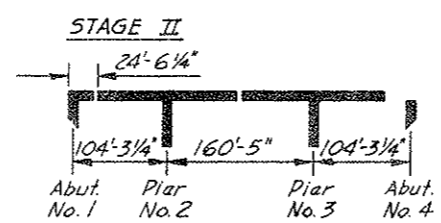


PART. SECTION NEAR MID-SPAN

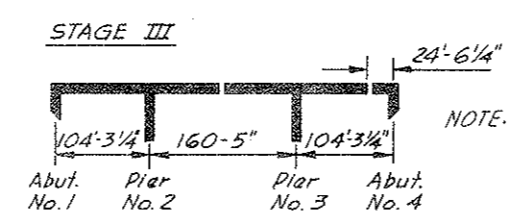
Post Tensioning Tendon Ducts (typ)



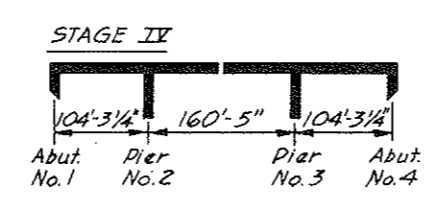
NOTE: Stage I includes erection of two cantilevers.



NOTE: Stage II includes the pouring of the closure and post-tensioning of continuity steel in span No. 1.

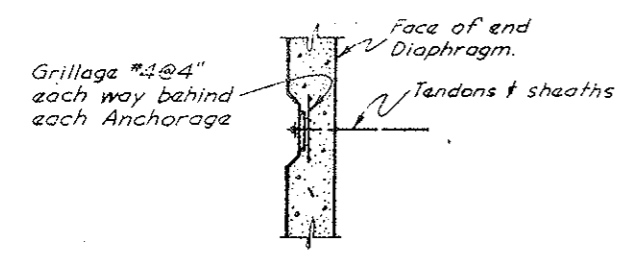


NOTE: Stage III includes the pouring of the closure and post-tensioning of continuity steel in span No. 3.



NOTE: Stage IV is the pouring of the closure and post-tensioning of continuity steel in span No. 2.

EAST BOUND



PART. PLAN ANCHORAGE AT ABUTMENTS

DESIGNED BY	DATE	CHECKED BY	DATE
CLB	2/75	CLB	2/75
DESIGNED BY	DATE	CHECKED BY	DATE
CLB	11/74	CLB	11/74
DESIGNED BY	DATE	CHECKED BY	DATE
CLB	2/75	CLB	2/75

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
 Boston, Stoddard, Wichita and Hesperus Divisions
 1777 S. Bellvue St. Denver, Colorado 80222

DIVISION OF HIGHWAYS

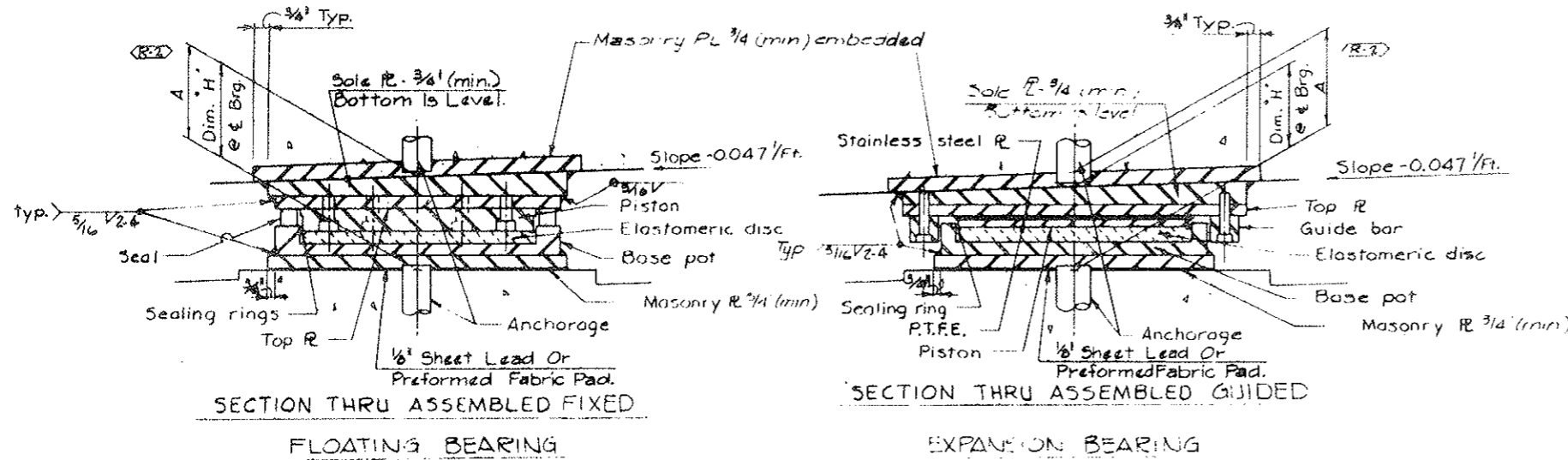
CONSTRUCTION SEQUENCE DIAGRAM

Designer <i>C. Benson</i>	Structure Numbers	F-12-AO E.B.
Detailer <i>D. Froman</i>	Drawing Number B	13 of 16 Drawings

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII COLORADO	170-2(52)197	122	

REVISIONS			
R-1	4/9/75	REPRINT	WCB
R-2	4-17-75	Rev. P. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122	WCB

VOID BY CONSTRUCTION DATE 6-24-77



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. 312, "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 DETAILS
Orig Scale: 1/2" = 1'-0"

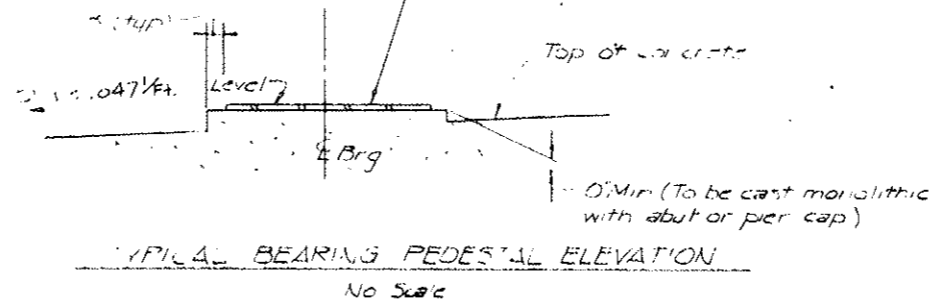
Bearing Type & Capacity (tons)	Horz. capacity (tons)		Actual Load (kips)	Dim. H (inches)	Ultimate Load (Kips)	Max. Movement (in)
	Longitudinal (kips)	Transverse (kips)				
Abut. 1 E 150	7.8	26.1	261	5 3/8	861	3
Pier 2 E 600	35.2	117.3	1173	8 3/8	1700	2 1/8
Pier 3 E 600	35.2	117.3	1173	8 3/8	1700	0 3/8
Abut. 4 E 150	7.8	26.1	261	5 1/8	861	0

Notes: Capacity = DL + LL + I
E = Expansion F = Fixed
Longitudinal Capacity = 5% of Actual Load
Transverse Capacity = 10% of Bearing Capacity (kips)

(R-2) * Actual loads shall be used to determine bearing capacity

ALLOWABLE ULTIMATE BEARING PRESSURES:

- At Abutments: (f'c = 3000 psi) 1785 psi
- At Piers: (f'c = 5000 psi) 2973 psi
- In Superstructure: (f'c = 5500 psi) 3273 psi



IECO INTERNATIONAL ENGINEERING COMPANY, INC.
Baron, Steadard, Mitchell and Higgins Division
1777 E. Belaire St. Denver, Colorado 80202

DIVISION OF HIGHWAYS

BEARING DETAILS

Designer C. Benson	Structure F-12-AO E.B.
Detailer T. Fischer	Numbers
Drawing Number B 74	of 16 Drawings

Revision Date: (Preliminary Stage Only)

DATE	10/7/74
CHECKED BY	WCB
QUANTITIES BY	WCB
CHECKED BY	WCB
DATE	10/7/74
CHECKED BY	WCB
QUANTITIES BY	WCB
CHECKED BY	WCB

FEDERAL ROAD DISTRICT NO.	RELEASE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	123	

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", "Y", "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 BUTTER TO GUTTER ONLY.

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

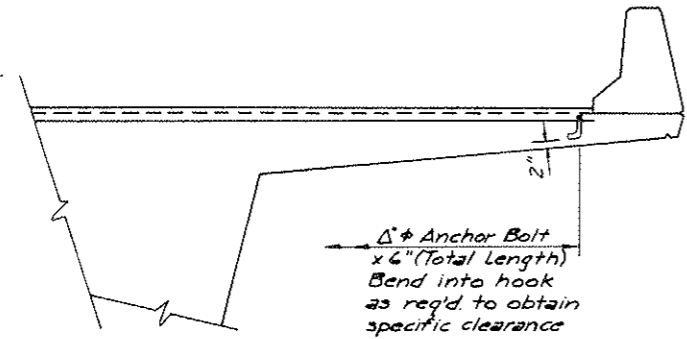
ALL CURB UNITS SHALL BE FULL WIDTH, ON GUTTER LINE, FOR SKEW ANGLES AS SPECIFIED ON THE PLANS.

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.

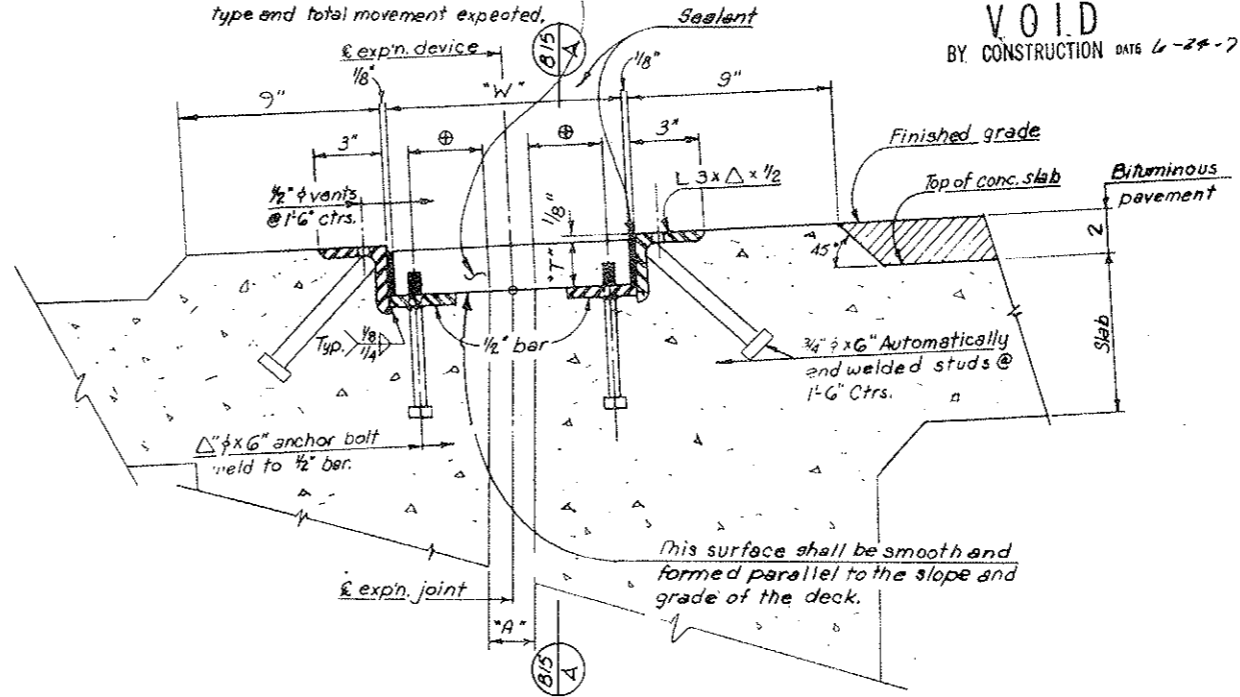
OPENING IN CURB AND SIDEWALK TO BE CONSTRUCTED TO THE EXACT WIDTH OF THE EXISTING DECK OPENING.

Premolded elastomeric metal reinforced bridge expansion device. See details elsewhere for type and total movement expected.

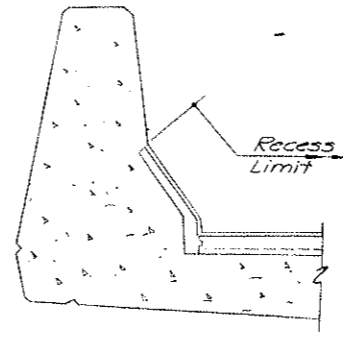
VOID
BY CONSTRUCTION DATE 6-28-77



SECTION $\frac{B15}{A}$



SECTION THRU EXPN. DEVICE



ELEVATION
DETAIL OF EXPANSION JOINT
AT GUARDRAIL

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

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

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 1/8"	

DIVISION OF HIGHWAYS

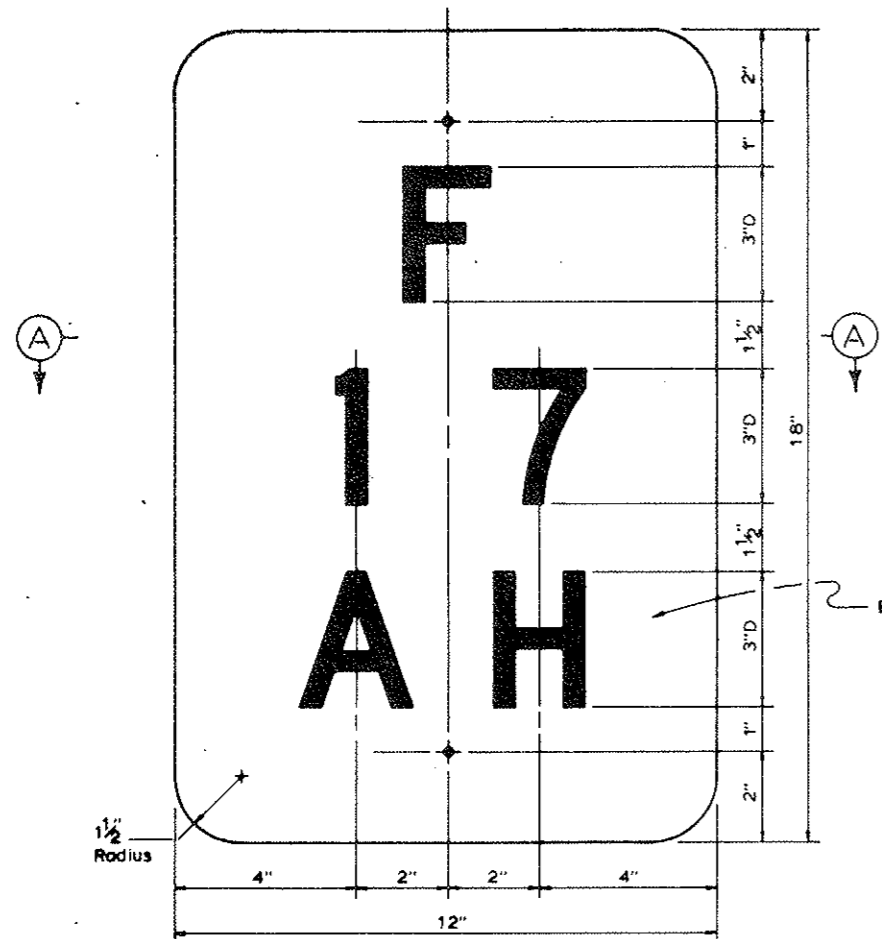
BRIDGE EXPANSION DEVICE
PREMOLDED ARMORED

Designer	O. Garg	Structure	F-12-A0 EB.
Detailer	J.R. EWERT	Numbers	
Drawing Number	B 15	of	16 Drawings

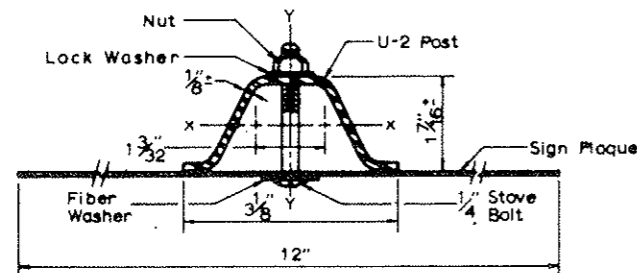
VOID
BY CONSTRUCTION DATE 6-24-77

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
72E	COLORADO	170-2(52)197	124	

REVISIONS	

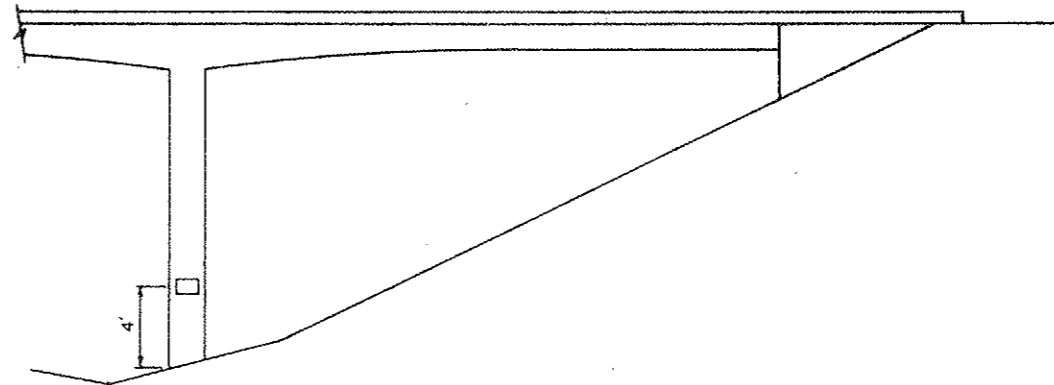


STRUCTURE IDENTIFICATION PANEL
(SAMPLE NUMBERS & LETTERS)

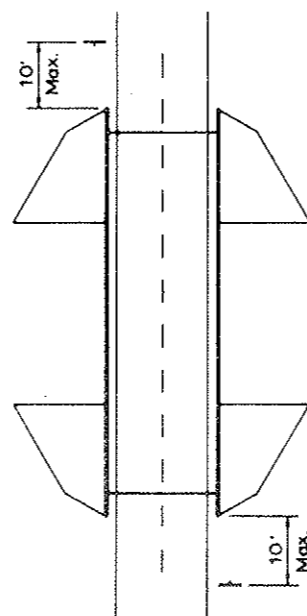


SECTION (A)

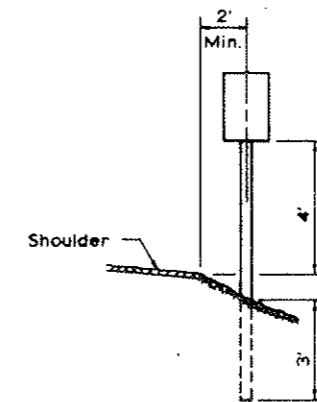
Black letters and numbers on white background.



STRUCTURE NUMBER LOCATION ON PIERS



① 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 104-51. ACCEPTABLE MATERIAL INCLUDES REROLLED RAILROAD RAILS. U-2 POST SHALL WEIGH 2 LBS. PER FT. EXCEPT THAT A MILL TOLERANCE OF MINUS 3-1/2% OF THE WEIGHT OF ANY ONE POST WILL BE ALLOWED. ALTERNATE METAL POST WILL BE ACCEPTABLE IF SECTION MODULUS IS AT LEAST 0.200 IN.³ ABOUT THE X-X AXIS AND AT LEAST 0.250 IN.³ ABOUT THE Y-Y AXIS.

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

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

THE CORRECT STRUCTURE NUMBER IS SHOWN ON THE PLANS.

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

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

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

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

DIVISION OF HIGHWAYS

STRUCTURE NUMBER STANDARD

Designer	O. GORG	Structure	F-12-AO	E.B.
Detailer	B. F. LEE	Drawings	Number	16
Drawing Number 8		of 16 Drawings		

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 UNOBTURBED 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 (R) 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 40 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.

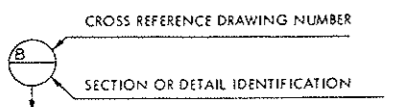
THE EXTERIOR FACE OF THE OUTSIDE WEB OF EACH STEEL BOX GIRDER SHALL BE SAND BLAST CLEANED IN ACCORDANCE WITH SUBSECTION 509.33 (b) 2 OF THE STANDARD SPECIFICATIONS. ALL OTHER EXPOSED SURFACES SHALL BE CLEANED AS OUTLINED IN SECTION 509.33 (b) 1.

WELDS WHICH ARE EXPOSED TO VIEW WILL REQUIRE WELD METAL WITH COLORING CHARACTERISTICS SIMILAR TO THAT OF THE BASE METAL.

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

LAP SIZE NUMBER	4	5	6	7	8	9	10	11
SPICE 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"

L. 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 15 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 - F_y = 60,000 LBS. PER SQ. IN.
F_s = 24,000 LBS. PER SQ. IN.
GRADE 40 - F_y = 40,000 LBS. PER SQ. IN.
F_s = 20,000 LBS. PER SQ. IN.

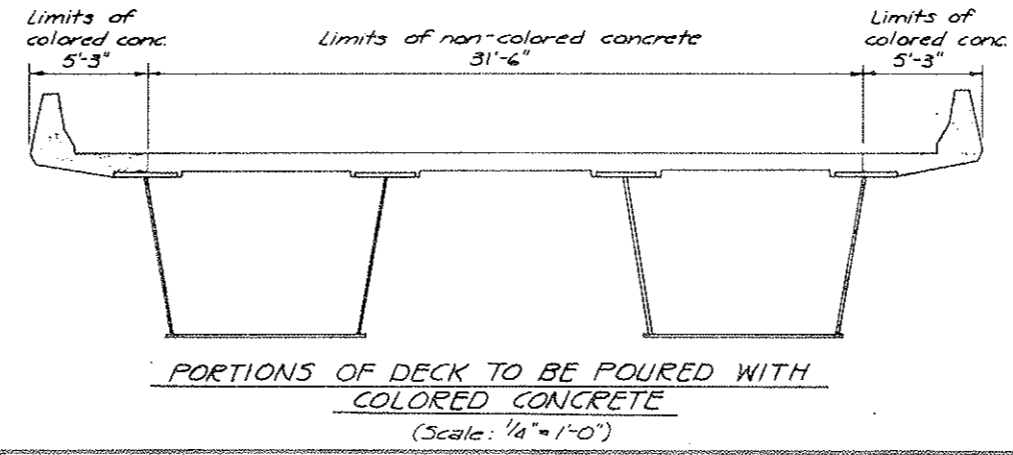
STRUCTURAL STEEL: A36, GRADE 36 - F_y = 36,000 LBS. PER SQ. IN.
A588, GRADE 50 - F_y = 50,000 LBS. PER SQ. IN.

CONCRETE: CLASS A & D - F'_c = 3000 LBS. PER SQ. IN.
N = 9
CLASS 5 - F'_c = 5000 LBS. PER SQ. IN.

SUMMARY OF QUANTITIES

Item	Description	Unit	Str. F-12-AO					Total	
			Super	Abut.1	Pier 2	Pier 3	Abut.4		
206	Structure Excavation	CuYd		214 100	232 202	167 132	341 218	954 660	
206	Structure Backfill (Class 2)	CuYd		113 145	126 155	93 95	138 65	472 460	
② 403	Hot Bituminous Pavement (Gr)	Ton	195					195	
② 411	Asphalt Cement ()	Ton							
503	See Section 503.056 - Additional Depth Drilled Caissons (30 in) Contract Price + 15%	L.F.					1.5	1.5	
503	Drilled Caissons (20" dia) 10" #22.5 #	L.F.		52.5			46.5	99.0	
503	Drilled Caissons (12" dia) Deleted	L.F.		17.4			26.5	23.0	
503	Drilled Caissons (48 in)	L.F.		582.0			30.3	612.3	
③ 509	Structural Steel	Lb	450,100	70			70	450,240	
503	See Section 503.056 - Additional Depth Drilled Caissons (48 in) Contract Price + 15%	L.F.					2.0	2.0	
512	Bearing Device (0-250 TONS)	Ea		2			2	4	
512	Bearing Device (251-500 TONS)	Ea			2	2		4	
② 515	Waterproofing (Membrane)	SqYd	1819					1819	
518	Bridge Expansion Device (Type 1)	Lin Ft	38					38	
518	Bridge Expansion Device (Type 4)	Lin Ft	38					38	
601	Concrete Class A (Bridge)	CuYd		176.4 15	51.78 36.0	42.99 36.0	17.13 19	486 183	129.85
601	Concrete Class A (Bridge) (Colored)	CuYd		1934.81			102.99	183	86.38
601	Concrete Class D (Bridge)	CuYd	307	1014.42			1316.16	329	356.38
601	Concrete Class D (Bridge) (Colored)	CuYd	265	364.91			38.88	334	317.33
602	Reinforcing Steel	Lb	110,250	21,606	10,048	10,048	26,482	160,444	201,134
④ 618	Concrete Segmental Pier (F-12-AO)	L.S.	150,692	21,286	7,535	7,535	26,706		

- ① Concrete Class 5 (colored) (f_c = 5000 psi) (precast) +85 Cu Yds.
- ② Future Items
- ③ Concrete Class 5 (colored) (f_c = 5000 psi) (cast in place) 32 Cu Yds.
- ④ Item 509 includes 140" A36 for access doors
- Reinforcing Steel 20,606 Lbs.
- ⑤ Approximate Quantities for information only.
- Prestressing Strands 195 Lbs.



AS CONSTRUCTED
REVISED DATE: 4-29-77

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	125	

REVISIONS			
RI	4-29-75	Deleted "D2" from note	B.D.E.
RI	5-6-75	Note	MGB

INDEX OF DRAWINGS

DWG. NO.	DESCRIPTION
DWG. NO. 81	GENERAL INFORMATION - SUMMARY OF QUANTITIES
DWG. NO. 82	GENERAL LAYOUT
DWG. NO. 83	ENGINEERING GEOLOGY
DWG. NO. 84	ELEVATIONS
DWG. NO. 85	ELEVATIONS
DWG. NO. 86	CONSTRUCTION LAYOUT - FOOTING LAYOUT
DWG. NO. 87	ABUTMENT 1
DWG. NO. 88	ABUTMENT 4
DWG. NO. 89	ABUTMENT DETAILS
DWG. NO. 90	PIER DETAILS
DWG. NO. 91	GIRDER DETAILS - CAMBER DIAGRAM
DWG. NO. 92	FRAMING PLAN - DIAPHRAGM DETAILS
DWG. NO. 93	SUPERSTRUCTURE DETAILS
DWG. NO. 94	DECK PLAN - TYPICAL SECTION
DWG. NO. 95	BEARING DETAILS
DWG. NO. 96	BRIDGE EXPANSION DEVICE
DWG. NO. 97	STRUCTURE NUMBER STANDARD

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

DESIGN FOUNDATION PRESSURES

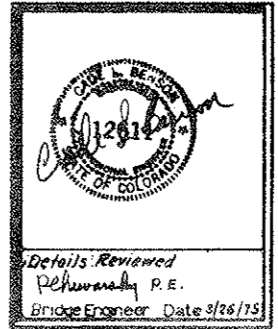
① Abut. Caissons, End Bearing	16 tons/sq.ft
Pier Footings	4.7 tons/sq.ft
② Wingwall Caissons (4 Req'd)	17.2 tons/sq.ft
③ Wingwall Caissons (3 Req'd)	18.8 tons/sq.ft

- ① 4'-0" @ Caissons
- ② 1'-0" @ Caissons Deleted - Add 30 in Caissons, 4 Total

BRIDGE DESCRIPTION

3 spans (104'-0", 160'-0", 104'-0")
Continuous, Composite Concrete Slab and Welded Steel Box Girder Bridges

Over Guller Gulch
38'-0" Roadway, Curb to Curb
Radial Substructure
2'-0" Curbs



IECO INTERNATIONAL ENGINEERING COMPANY, INC.
Berion, Stoddard, Mithell and Higgins Division
1777 S. Ballou St. Denver, Colorado 80222

DIVISION OF HIGHWAYS

GENERAL INFORMATION
SUMMARY OF QUANTITIES

Station 985+22.00 to 993+33.00
Station

Near Varl Sec. 25 T. 6 S R. 79 W.

Designer Om Garg Structure F-12-AO EB
Detailer B. Eisner Numbers
Drawing Number B 1 of 17 Drawings

Str. No. F-12-A0

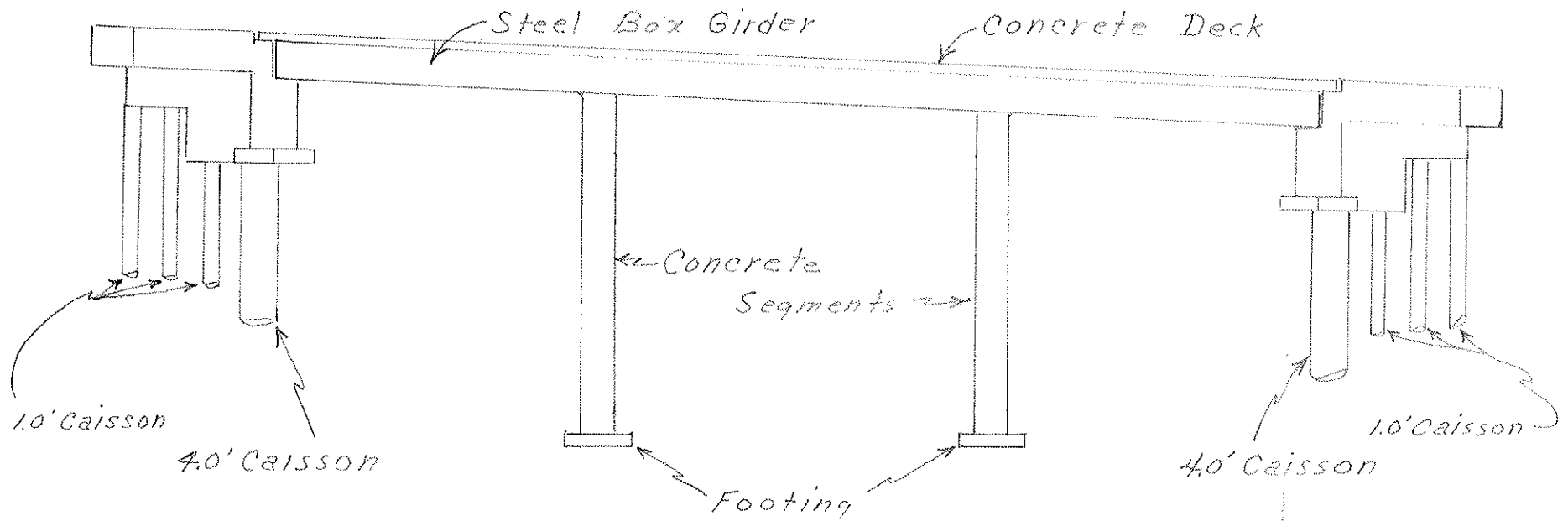


Abut. No. 1

Pier No. 2

Pier No. 3

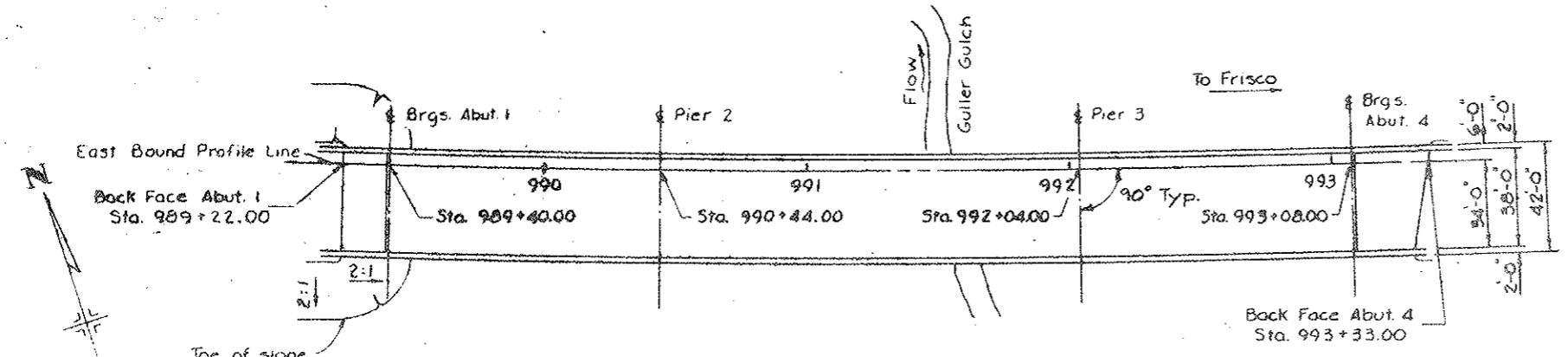
Abut. No. 4



PROJECT NO.	DISTRICT	FORM. NO.	DATE	BY
2211	COLORADO	I 70-2(62)197	126	

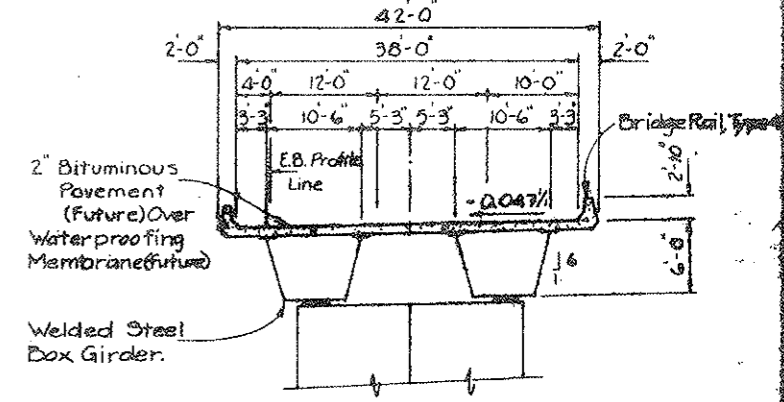
REVISIONS	

ALIGNMENT DATA	
PI	997+21.80
Δ	18° 26' Lt.
D _c	1' 00"
L _c	1843.33'
R _c	5729.58'
S	0.0471/Ft



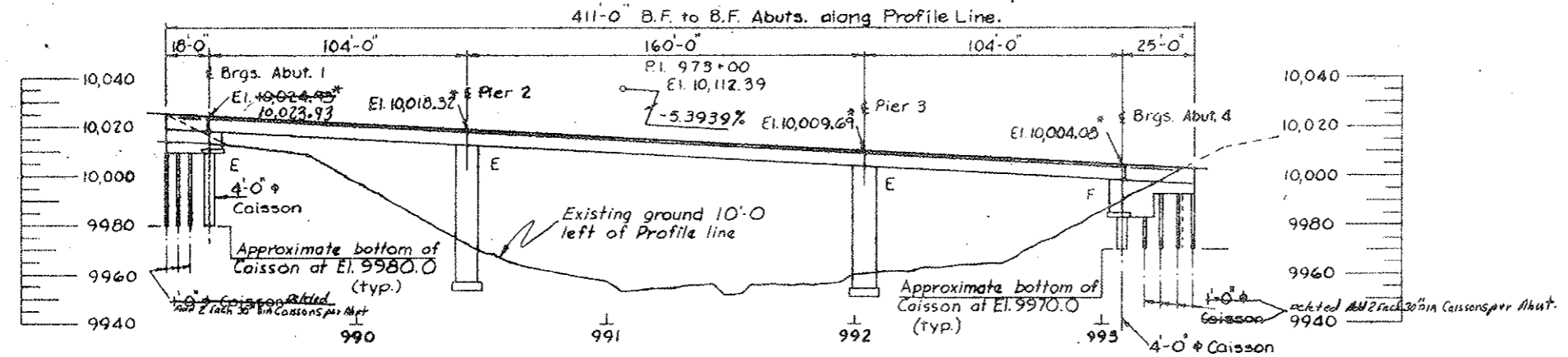
PLAN
Orig. scale: 1"=30'

Note: Abutments and piers are radial.



TYPICAL SECTION

AS CONSTRUCTED
REVISED DATE: 6-24-77



SECTION
(Taken at E Roadway)
Orig. scale: 1"=30'

* Finished roadway elevations along Profile Line.

NOTE: Caissons shall bear on sandstone bedrock.

Live Loading HS-20-44 or Interstate Alternate

DATE	BY	REVISION
11-24	W.F.	1-1
11-24	W.F.	2-1
11-24	W.F.	3-1
11-24	W.F.	4-1
11-24	W.F.	5-1
11-24	W.F.	6-1
11-24	W.F.	7-1
11-24	W.F.	8-1
11-24	W.F.	9-1
11-24	W.F.	10-1
11-24	W.F.	11-1
11-24	W.F.	12-1
11-24	W.F.	13-1
11-24	W.F.	14-1
11-24	W.F.	15-1
11-24	W.F.	16-1
11-24	W.F.	17-1
11-24	W.F.	18-1
11-24	W.F.	19-1
11-24	W.F.	20-1
11-24	W.F.	21-1
11-24	W.F.	22-1
11-24	W.F.	23-1
11-24	W.F.	24-1
11-24	W.F.	25-1
11-24	W.F.	26-1
11-24	W.F.	27-1
11-24	W.F.	28-1
11-24	W.F.	29-1
11-24	W.F.	30-1
11-24	W.F.	31-1
11-24	W.F.	32-1
11-24	W.F.	33-1
11-24	W.F.	34-1
11-24	W.F.	35-1
11-24	W.F.	36-1
11-24	W.F.	37-1
11-24	W.F.	38-1
11-24	W.F.	39-1
11-24	W.F.	40-1
11-24	W.F.	41-1
11-24	W.F.	42-1
11-24	W.F.	43-1
11-24	W.F.	44-1
11-24	W.F.	45-1
11-24	W.F.	46-1
11-24	W.F.	47-1
11-24	W.F.	48-1
11-24	W.F.	49-1
11-24	W.F.	50-1
11-24	W.F.	51-1
11-24	W.F.	52-1
11-24	W.F.	53-1
11-24	W.F.	54-1
11-24	W.F.	55-1
11-24	W.F.	56-1
11-24	W.F.	57-1
11-24	W.F.	58-1
11-24	W.F.	59-1
11-24	W.F.	60-1
11-24	W.F.	61-1
11-24	W.F.	62-1
11-24	W.F.	63-1
11-24	W.F.	64-1
11-24	W.F.	65-1
11-24	W.F.	66-1
11-24	W.F.	67-1
11-24	W.F.	68-1
11-24	W.F.	69-1
11-24	W.F.	70-1
11-24	W.F.	71-1
11-24	W.F.	72-1
11-24	W.F.	73-1
11-24	W.F.	74-1
11-24	W.F.	75-1
11-24	W.F.	76-1
11-24	W.F.	77-1
11-24	W.F.	78-1
11-24	W.F.	79-1
11-24	W.F.	80-1
11-24	W.F.	81-1
11-24	W.F.	82-1
11-24	W.F.	83-1
11-24	W.F.	84-1
11-24	W.F.	85-1
11-24	W.F.	86-1
11-24	W.F.	87-1
11-24	W.F.	88-1
11-24	W.F.	89-1
11-24	W.F.	90-1
11-24	W.F.	91-1
11-24	W.F.	92-1
11-24	W.F.	93-1
11-24	W.F.	94-1
11-24	W.F.	95-1
11-24	W.F.	96-1
11-24	W.F.	97-1
11-24	W.F.	98-1
11-24	W.F.	99-1
11-24	W.F.	100-1

INTERNATIONAL ENGINEERING CONSULTANTS, INC.
1217 L Street, N.W., Washington, D.C. 20004

DIVISION OF HIGHWAYS

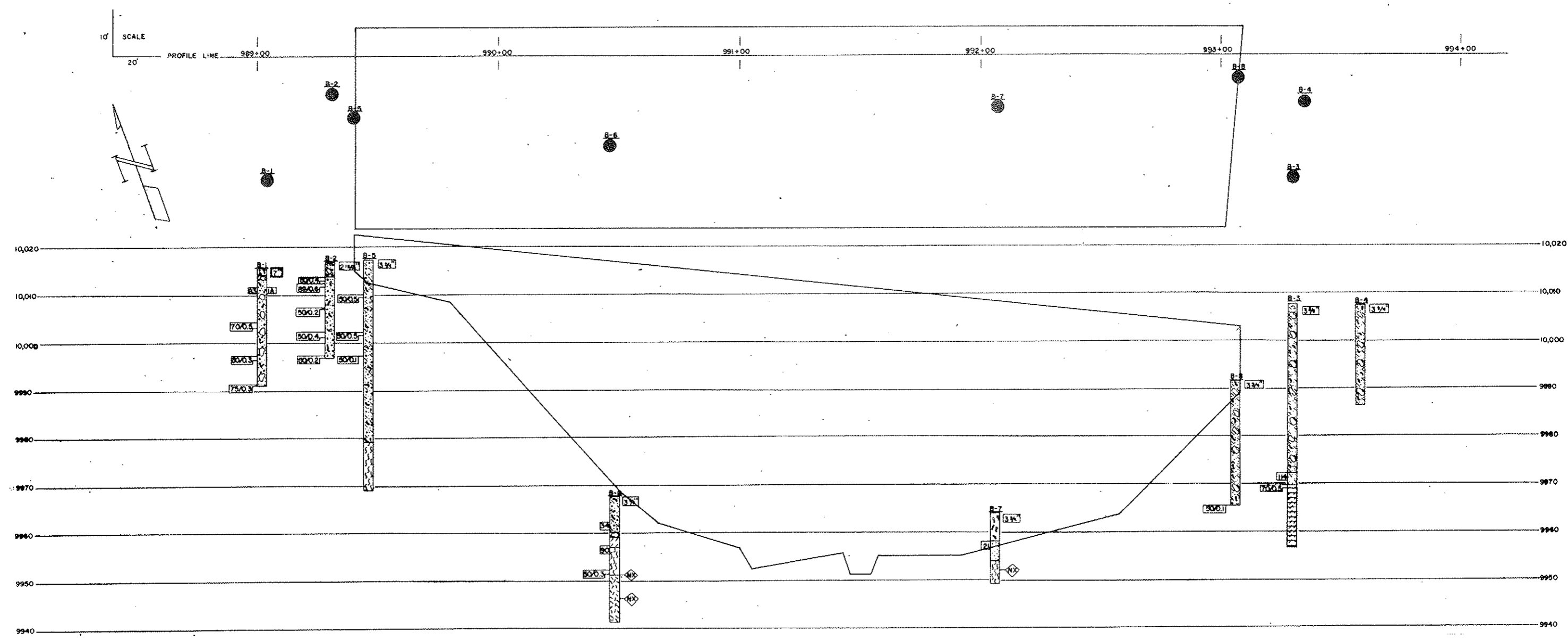
GENERAL LAYOUT

Designer: **Om. Barn** Checker: **Fischer** Drawing Number: **17** of **17** Drawings

Revision Data: _____

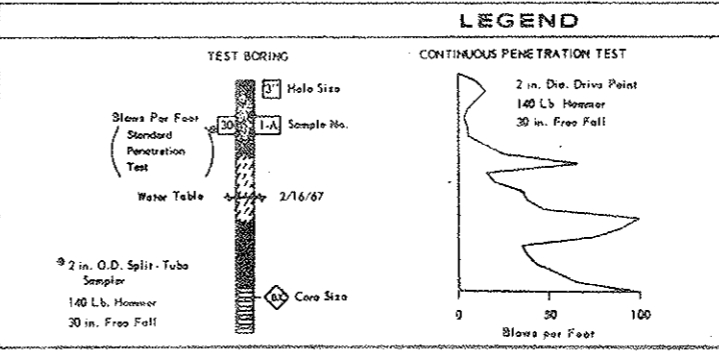
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	170-2(52)197	127	

AS CONSTRUCTED
NO REVISIONS DATE: 6-29-77



Sample No.	Depth	Classification	Grading Analysis				Atterberg Limits			Wet. Cont. %	Wet. Unit Weight	Unconfined Strength	Triaxial Shear Strength				Dia. of Sample (inches)
			Percent				Liquid Limit	Plastic Index	Flow Index				Unconsolidated		Consolidated		
			Gravel	Coarse Sand	Fine Sand	Silt and Clay							q	c	σ _v	σ _h	
1A	36.5-37.0	SANDY GRAVEL	27	28	21	24											

TYPE OF MATERIAL	
GRAVELLY SILT	BOULDER
SAND & GRAVEL w/ COBBLES & BOULDERS	SANDSTONE
SAND & GRAVEL w/ COBBLES	SANDSTONE & CONGLOMERATE
SILTY SAND w/ COBBLES & BOULDERS	COBBLES
SILTY SAND	SAND
SILTSTONE	
SAND & GRAVEL, SILTY, w/ COBBLES & BOULDERS	



**DIVISION OF HIGHWAYS
STATE OF COLORADO**

ENGINEERING GEOLOGY

Across GULLER GULCH
Sta. 289+22.00 to 993+33.00

Near WALK PASS Sec. 25 T. 6 S. R. 79 W

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

STRUCTURE NO. F-12-AO
DWG. NO. B 3 OF 17

DESIGNED BY	CHECKED BY	QUANTITIES BY
CHECKED BY	CHECKED BY	CHECKED BY
DATE	DATE	DATE
INITIAL	INITIAL	INITIAL

DESCRIPTION OF BENT LINE	DESCRIPTION OF LINE	SKEW ANGLE OF BENT LINE TO CHORD OR TANGENT	STATION OF INTERSECTION OF BENT LINE	ELEVATION AT INTERSECTION OF BENT LINE	NO 50 SLAB	FLG NO. 1	PROF GRADE	CTR NO GDR	FLG NO. 2	CL ROADWAY	FLG NO. 3	CTR SO GDR	FLG NO. 4	SO 50 SLAB
1/ 20 PT. = 4 CONSTR. CL		-4 10 15.6 LEFT SKEW	992+9.200	10009.2418	992+9.200	10008.9598	992+9.200	10009.2065	992+9.200	10009.2418	992+9.200	10009.4533	992+9.200	10009.7080
14/ 20 PT. = 3 CONSTR. CL		-3 38 20.5 LEFT SKEW	991+56.000	10012.1113	991+56.000	10011.8293	991+56.000	10012.4761	991+56.000	10012.1113	991+56.000	10012.3228	991+56.000	10012.5696
15/ 20 PT. = 3 CONSTR. CL		-3 43 8.6 LEFT SKEW	991+64.000	10011.6798	991+64.000	10011.3978	991+64.000	10011.6446	991+64.000	10011.6798	991+64.000	10011.8913	991+64.000	10012.1381
16/ 20 PT. = 3 CONSTR. CL		-3 47 56.4 LEFT SKEW	991+72.000	10011.2483	991+72.000	10010.9663	991+72.000	10011.2483	991+72.000	10011.4598	991+72.000	10011.7066	991+72.000	10011.9533
17/ 20 PT. = 3 CONSTR. CL		-3 52 44.4 LEFT SKEW	991+80.000	10010.8168	991+80.000	10010.5348	991+80.000	10010.8168	991+80.000	10011.0283	991+80.000	10011.2750	991+80.000	10011.5218
18/ 20 PT. = 3 CONSTR. CL		-3 57 32.4 LEFT SKEW	991+88.000	10010.3853	991+88.000	10010.1033	991+88.000	10010.3853	991+88.000	10010.5968	991+88.000	10010.8435	991+88.000	10011.0903
19/ 20 PT. = 3 CONSTR. CL		-4 2 20.4 LEFT SKEW	991+96.000	10009.9538	991+96.000	10009.6718	991+96.000	10009.9538	991+96.000	10010.1653	991+96.000	10010.4120	991+96.000	10010.6588
CL PIER NO. 3 CONSTR. CL		-4 7 8.4 LEFT SKEW	992+4.000	10009.5222	992+4.000	10009.2402	992+4.000	10009.5222	992+4.000	10009.7337	992+4.000	10009.9805	992+4.000	10010.2272
2/ 20 PT. = 4 CONSTR. CL		-4 13 22.0 LEFT SKEW	992+14.400	10008.9613	992+14.400	10008.6793	992+14.400	10008.9613	992+14.400	10009.1728	992+14.400	10009.4195	992+14.400	10009.6663
3/ 20 PT. = 6 CONSTR. CL		-4 16 30.0 LEFT SKEW	992+19.600	10008.6808	992+19.600	10008.3988	992+19.600	10008.6808	992+19.600	10008.8923	992+19.600	10009.1390	992+19.600	10009.3858
4/ 20 PT. = 4 CONSTR. CL		-4 19 37.2 LEFT SKEW	992+24.800	10008.4003	992+24.800	10008.1183	992+24.800	10008.4003	992+24.800	10008.6018	992+24.800	10008.8533	992+24.800	10009.1053
5/ 20 PT. = 4 CONSTR. CL		-4 22 44.4 LEFT SKEW	992+30.000	10008.1198	992+30.000	10007.8378	992+30.000	10008.1198	992+30.000	10008.3313	992+30.000	10008.5781	992+30.000	10008.8248
6/ 20 PT. = 4 CONSTR. CL		-4 25 51.6 LEFT SKEW	992+35.200	10007.8393	992+35.200	10007.5573	992+35.200	10007.8393	992+35.200	10008.0508	992+35.200	10008.2976	992+35.200	10008.5443
7/ 20 PT. = 4 CONSTR. CL		-4 28 58.8 LEFT SKEW	992+40.400	10007.5588	992+40.400	10007.2768	992+40.400	10007.5588	992+40.400	10007.7703	992+40.400	10008.0171	992+40.400	10008.2638
8/ 20 PT. = 4 CONSTR. CL		-4 32 6.0 LEFT SKEW	992+45.600	10007.2784	992+45.600	10006.9964	992+45.600	10007.2784	992+45.600	10007.4099	992+45.600	10007.7366	992+45.600	10007.9834
9/ 20 PT. = 4 CONSTR. CL		-4 35 13.2 LEFT SKEW	992+50.800	10006.9979	992+50.800	10006.7159	992+50.800	10006.9979	992+50.800	10007.2094	992+50.800	10007.4561	992+50.800	10007.7029
10/ 20 PT. = 4 CONSTR. CL		-4 38 20.4 LEFT SKEW	992+56.000	10006.7174	992+56.000	10006.4354	992+56.000	10006.7174	992+56.000	10006.9289	992+56.000	10007.1756	992+56.000	10007.4224
11/ 20 PT. = 4 CONSTR. CL		-4 41 27.6 LEFT SKEW	992+61.200	10006.4369	992+61.200	10006.1549	992+61.200	10006.4369	992+61.200	10006.9309	992+61.200	10007.1819	992+61.200	10007.4287
12/ 20 PT. = 4 CONSTR. CL		-4 44 34.8 LEFT SKEW	992+66.400	10006.1564	992+66.400	10005.8744	992+66.400	10006.1564	992+66.400	10006.6479	992+66.400	10006.8147	992+66.400	10007.0814
13/ 20 PT. = 4 CONSTR. CL		-4 47 42.0 LEFT SKEW	992+71.600	10005.8759	992+71.600	10005.5939	992+71.600	10005.8759	992+71.600	10006.3387	992+71.600	10006.5849	992+71.600	10006.8312
14/ 20 PT. = 4 CONSTR. CL		-4 50 49.2 LEFT SKEW	992+76.800	10005.5954	992+76.800	10005.3134	992+76.800	10005.5954	992+76.800	10006.0304	992+76.800	10006.2767	992+76.800	10006.5239
15/ 20 PT. = 4 CONSTR. CL		-4 53 56.4 LEFT SKEW	992+82.000	10005.3150	992+82.000	10005.0330	992+82.000	10005.3150	992+82.000	10005.7532	992+82.000	10006.0008	992+82.000	10006.2467
16/ 20 PT. = 4 CONSTR. CL		-4 57 3.6 LEFT SKEW	992+87.200	10005.0345	992+87.200	10004.7525	992+87.200	10005.0345	992+87.200	10005.4695	992+87.200	10006.1927	992+87.200	10006.4395
17/ 20 PT. = 4 CONSTR. CL		-5 0 10.0 LEFT SKEW	992+92.400	10004.7540	992+92.400	10004.4720	992+92.400	10004.7540	992+92.400	10005.2122	992+92.400	10005.4590	992+92.400	10006.1925
18/ 20 PT. = 4 CONSTR. CL		-5 3 18.0 LEFT SKEW	992+97.600	10004.4735	992+97.600	10004.1915	992+97.600	10004.4735	992+97.600	10005.1785	992+97.600	10005.4293	992+97.600	10006.1888
19/ 20 PT. = 4 CONSTR. CL		-5 6 25.2 LEFT SKEW	993+2.800	10004.1930	993+2.800	10003.9110	993+2.800	10004.1930	993+2.800	10004.6045	993+2.800	10004.8513	993+2.800	10005.0980
CL BRG ABUT 4 CONSTR. CL		-5 9 32.4 LEFT SKEW	993+8.000	10003.9125	993+8.000	10003.6305	993+8.000	10003.9125	993+8.000	10004.3240	993+8.000	10004.5708	993+8.000	10004.8175
1/ 4 PT. = 1 CONSTR. CL		-2 37 9.3 LEFT SKEW	993+14.250	10003.5784	993+14.250	10003.2964	993+14.250	10003.5784	993+14.250	10004.2719	993+14.250	10004.5187	993+14.250	10004.7654
2/ 4 PT. = 1 CONSTR. CL		-0 4 46.2 LEFT SKEW	993+20.500	10003.2383	993+20.500	10002.9563	993+20.500	10003.2383	993+20.500	10003.9119	993+20.500	10004.1592	993+20.500	10004.4119
3/ 4 PT. = 1 CONSTR. CL		2 27 36.9 RIGHT SKEW	993+26.750	10002.9012	993+26.750	10002.6192	993+26.750	10002.9012	993+26.750	10003.4549	993+26.750	10003.7012	993+26.750	10003.9479
BF ABUT 4 CONSTR. CL		5 0 0 RIGHT SKEW	993+33.000	10002.5640	993+33.000	10002.2820	993+33.000	10002.5640	993+33.000	10003.2177	993+33.000	10003.4645	993+33.000	10003.7172

FEDERAL ROAD REGION NO	DISTRICT	PROJ. NO.	SHEET NO	TOTAL SHEETS
VIII	COLORADO	I-10-2(52)197	129	

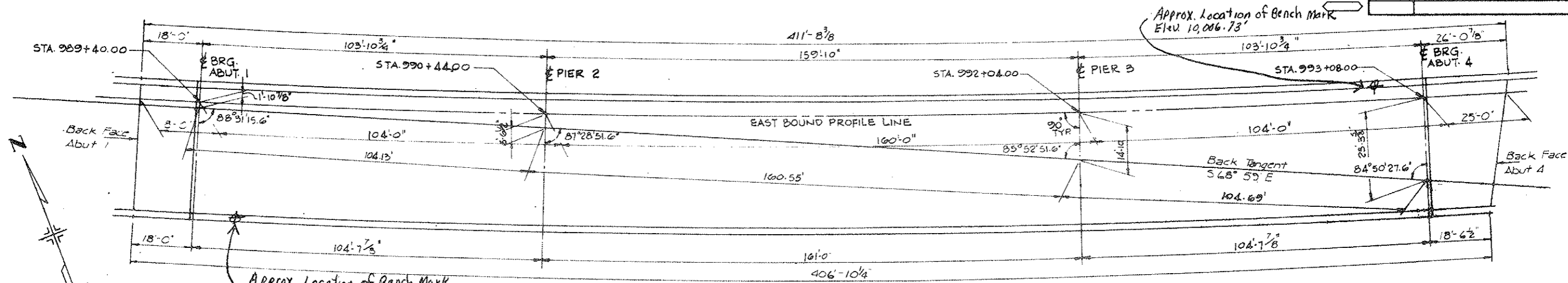
REVISIONS		
4/4/75	Reprint	WCB

AS CONSTRUCTED
NO REVISIONS
DATE: 6-24-77

DIVISION OF HIGHWAYS	
<i>ELEVATIONS</i>	
Designer	Structure I-12-AO.E.B.
Detailer <i>Rex McCoy</i>	Numbers
Drawing Number B 5	of 17 Drawings

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO 170-2(32)197	130	

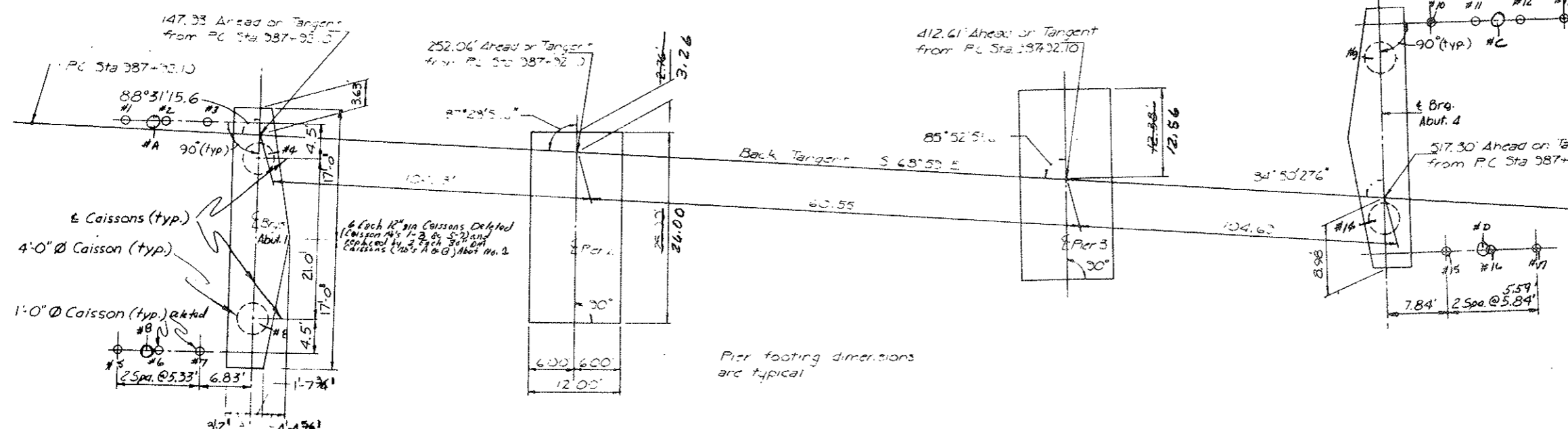
REVISIONS		



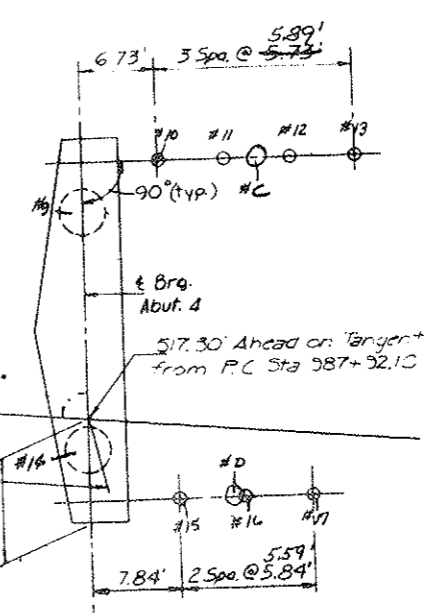
CONSTRUCTION LAYOUT
SCALE: 1"=15'

AS CONSTRUCTED
REVISED DATE: 6-24-77

DATE	CHECKED BY	DATE	CHECKED BY
11-74	RAH	11-74	RAH
10-74	RAH	10-74	RAH
10-74	RAH	10-74	RAH



FOOTING LAYOUT



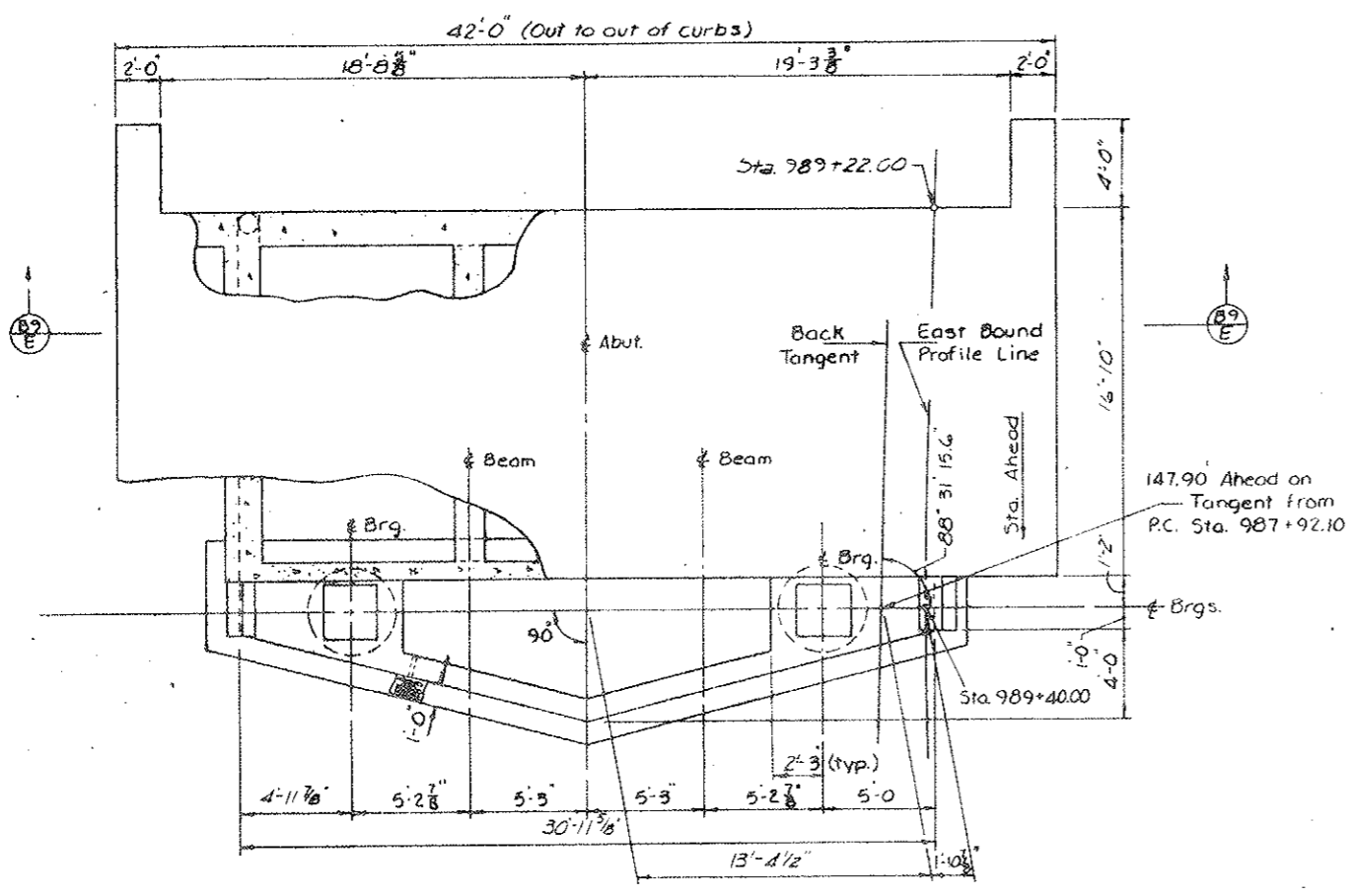
Notes:
Location of abutment and pier footings is offset by a distance equal to rate of super-elevation times depth of super-structure.
All E Bearings and E Piers are radial.
All footing dimensions are at bottom of concrete.

7 Each 12" Dia Caissons Deleted (Caissons #1, 2, 4, 5, 15-17) and replaced by 2 Each 36" Dia Caissons (#1, 2 & 4) Abut. No. 4

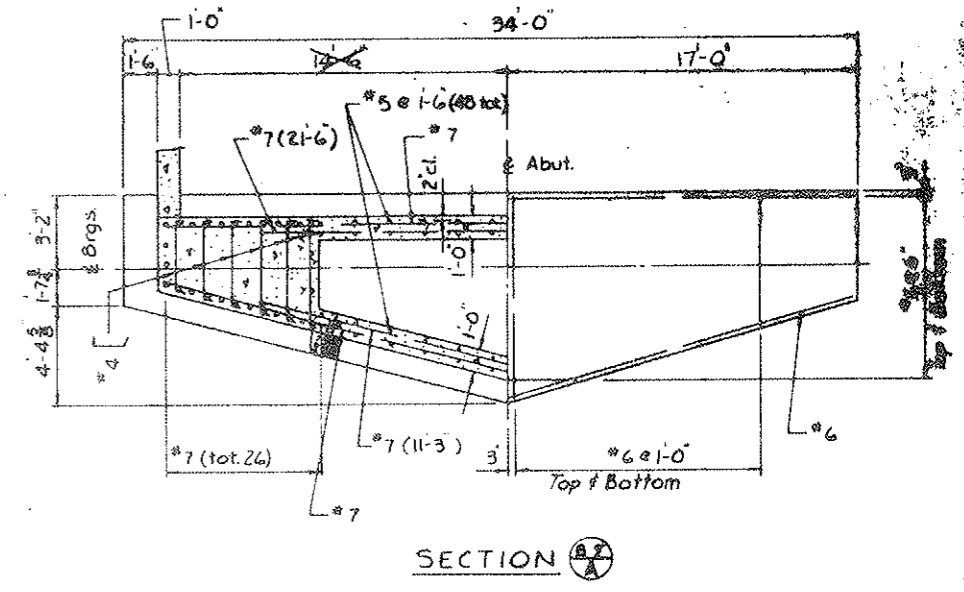
NECO INTERNATIONAL ENGINEERING COMPANY, INC.	
DIVISION OF HIGHWAYS	
CONSTRUCTION LAYOUT FOOTING LAYOUT	
Designer: CHS	Structure: F-12-AD BR
Detailer: B. Eigner	Members:
Drawing Number: 6	of 17 Drawings
Revision Date:	(Preliminary Stage Only)

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	131	

REVISIONS	

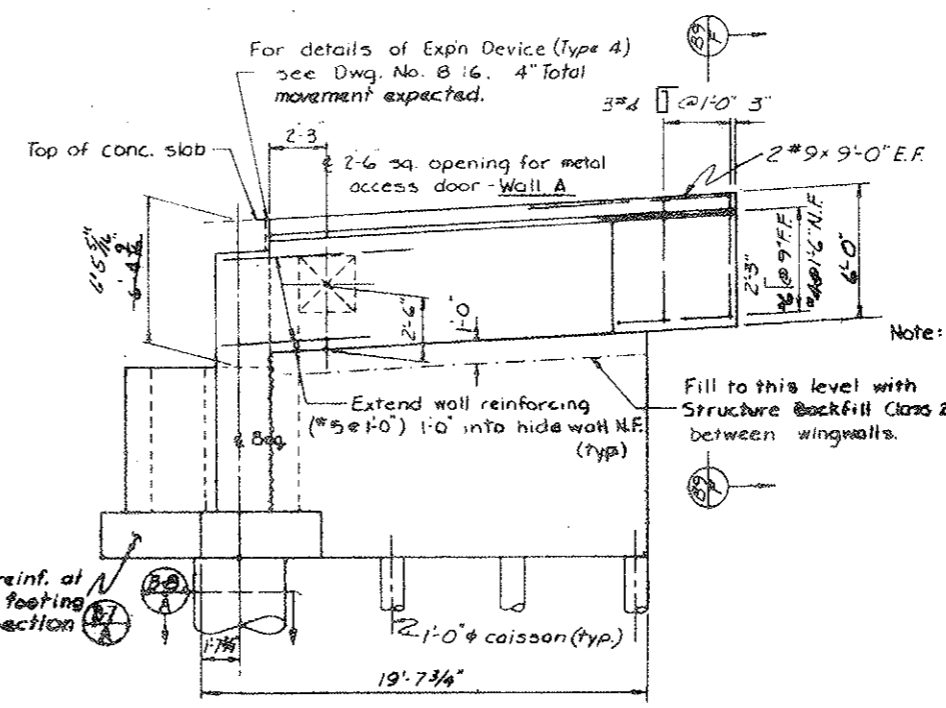
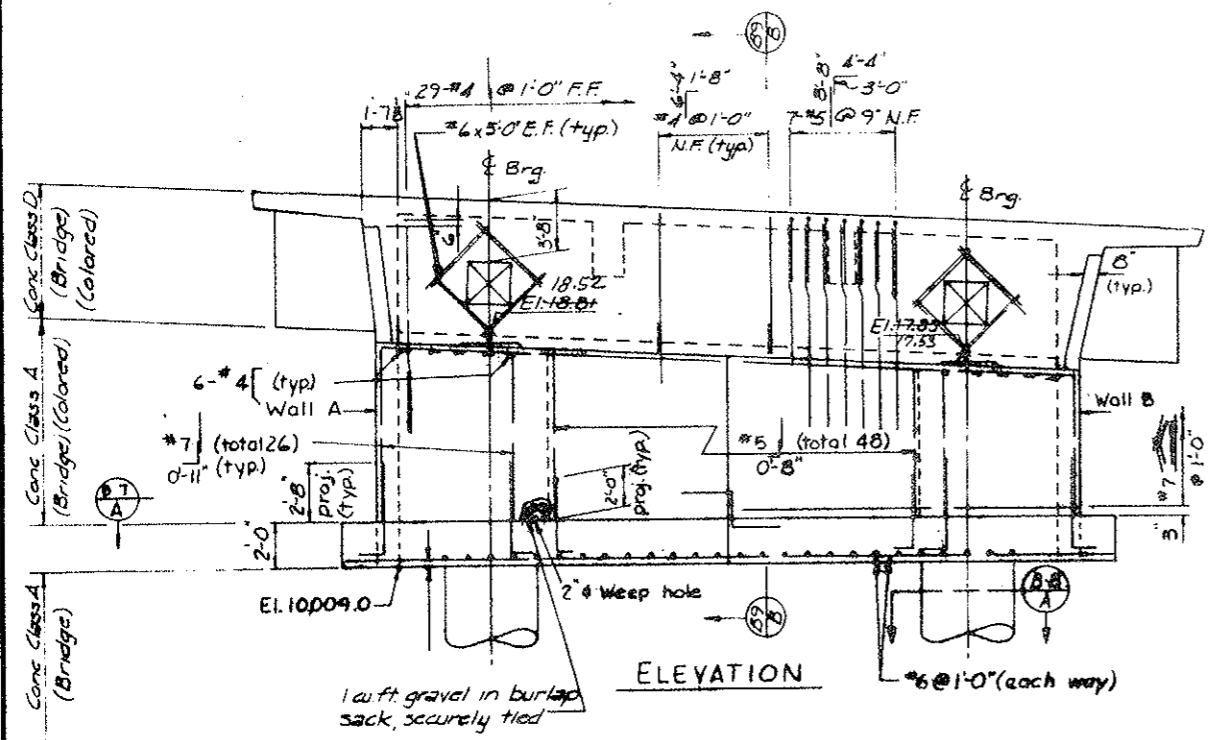


Note:
For approach slab details, see Dwg. No. B 8:



AS CONSTRUCTED
REVISED DATE 6-24-79

DESIGNED BY	CHKD BY	CHECKED BY	DATE
DRAWN BY	OPD	10-74	17-74
CHECKED BY	T.C.F.	10-74	17-74
REVISED BY			



Note: Reinforcing may be cut to clear access opening. For additional reinforcing around access opening, see Dwg. No. B 8.

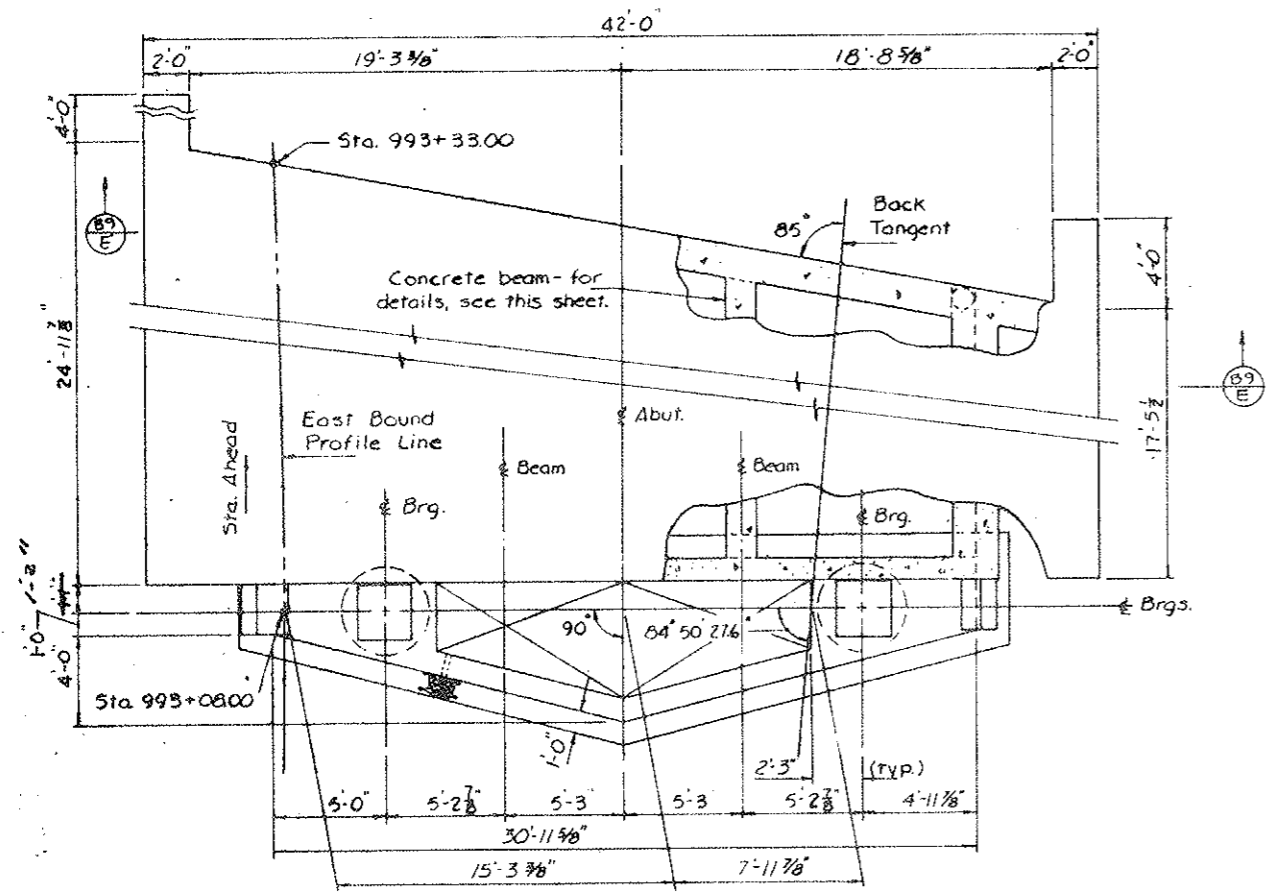
DIVISION OF HIGHWAYS

ABUTMENT I DETAILS

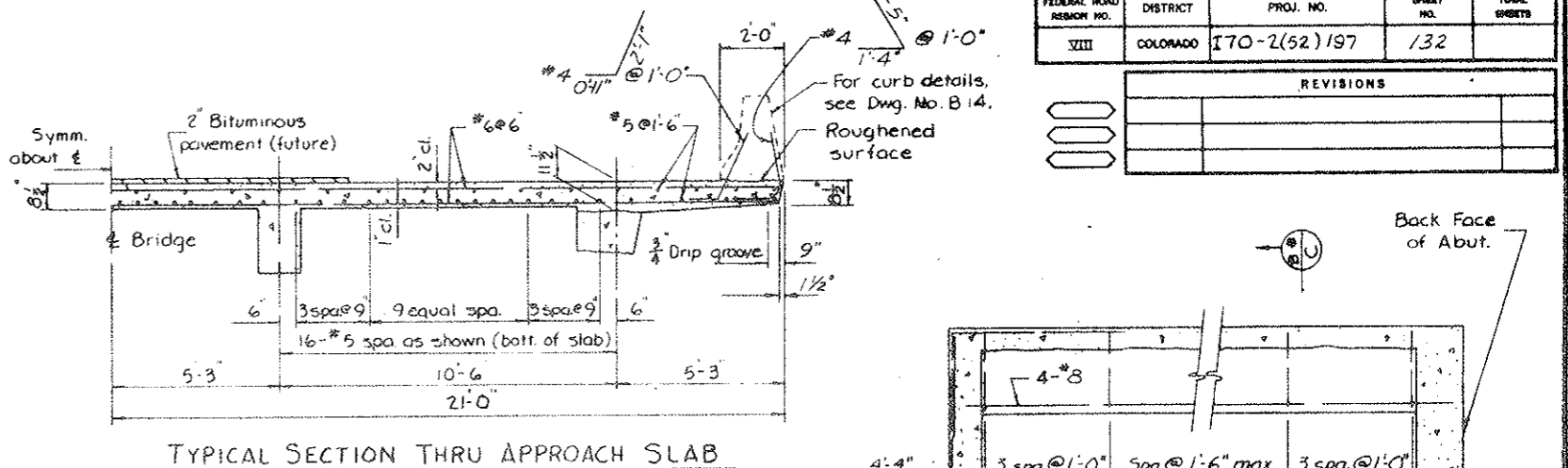
Designer O. Gorg	Structure Numbers F-1240
Detailer T. Fischer	
Drawing Number B 7 of 17 Drawings	

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII COLORADO	I70-2(52)197	132	

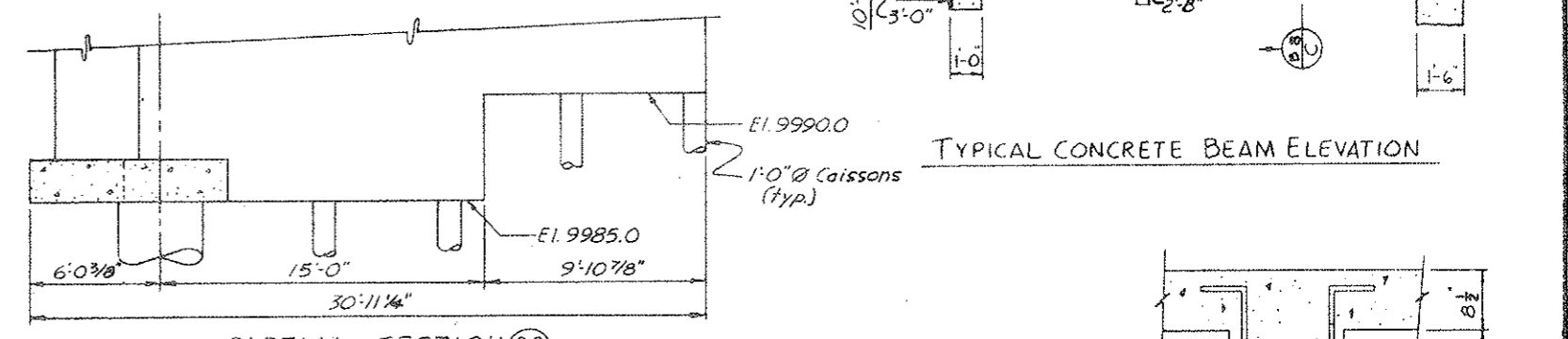
REVISIONS	



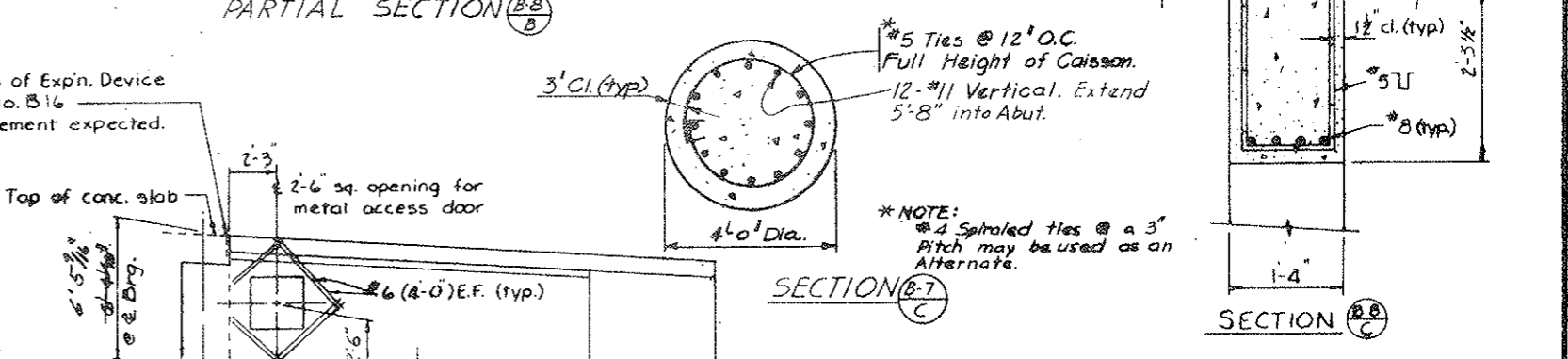
PLAN



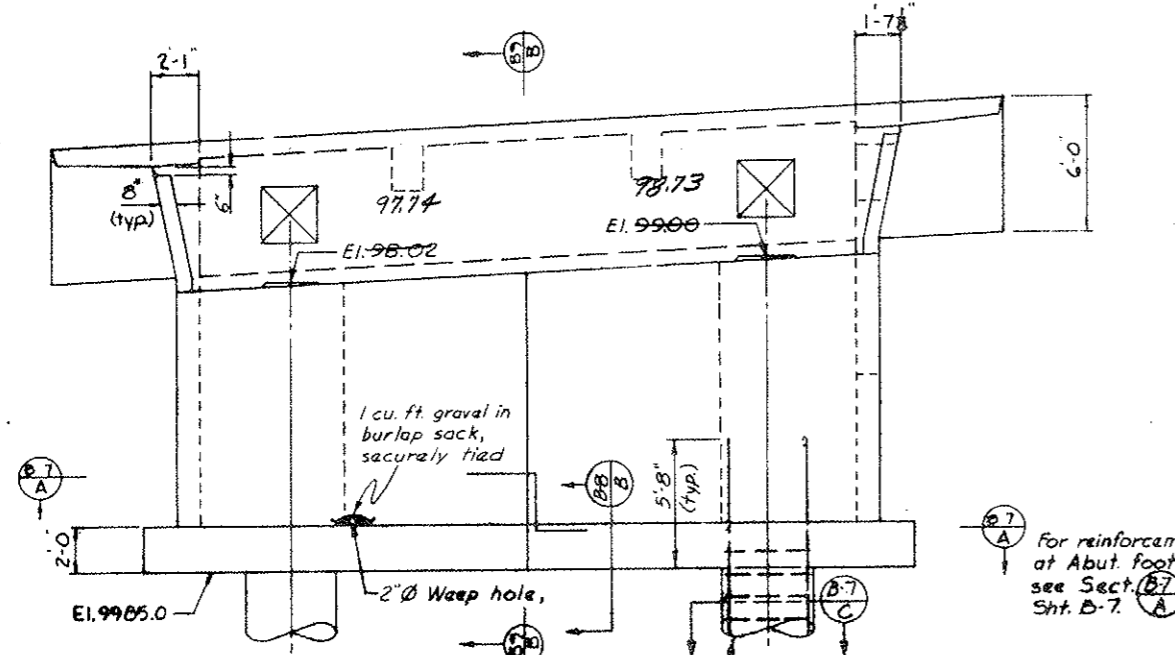
TYPICAL SECTION THRU APPROACH SLAB



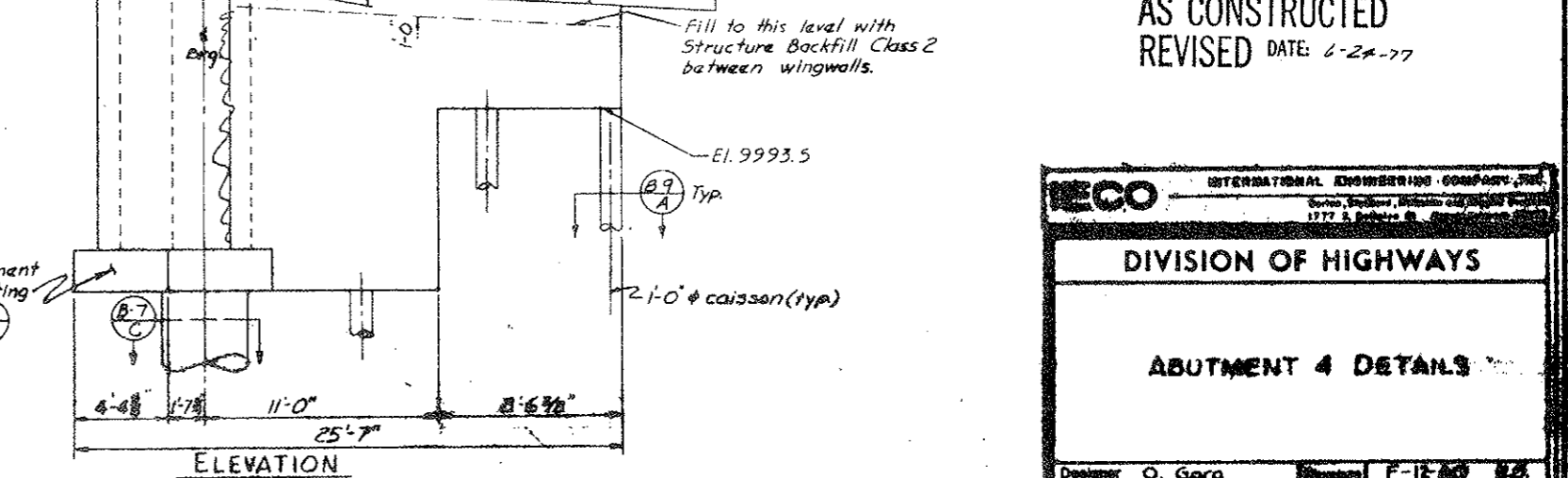
TYPICAL CONCRETE BEAM ELEVATION



AS CONSTRUCTED
REVISED DATE: 6-24-77



ELEVATION



ELEVATION

INTERNATIONAL ENGINEERING COMPANY, INC.
1772 S. Peoria St.
Denver, Colorado 80202

DIVISION OF HIGHWAYS

ABUTMENT 4 DETAILS

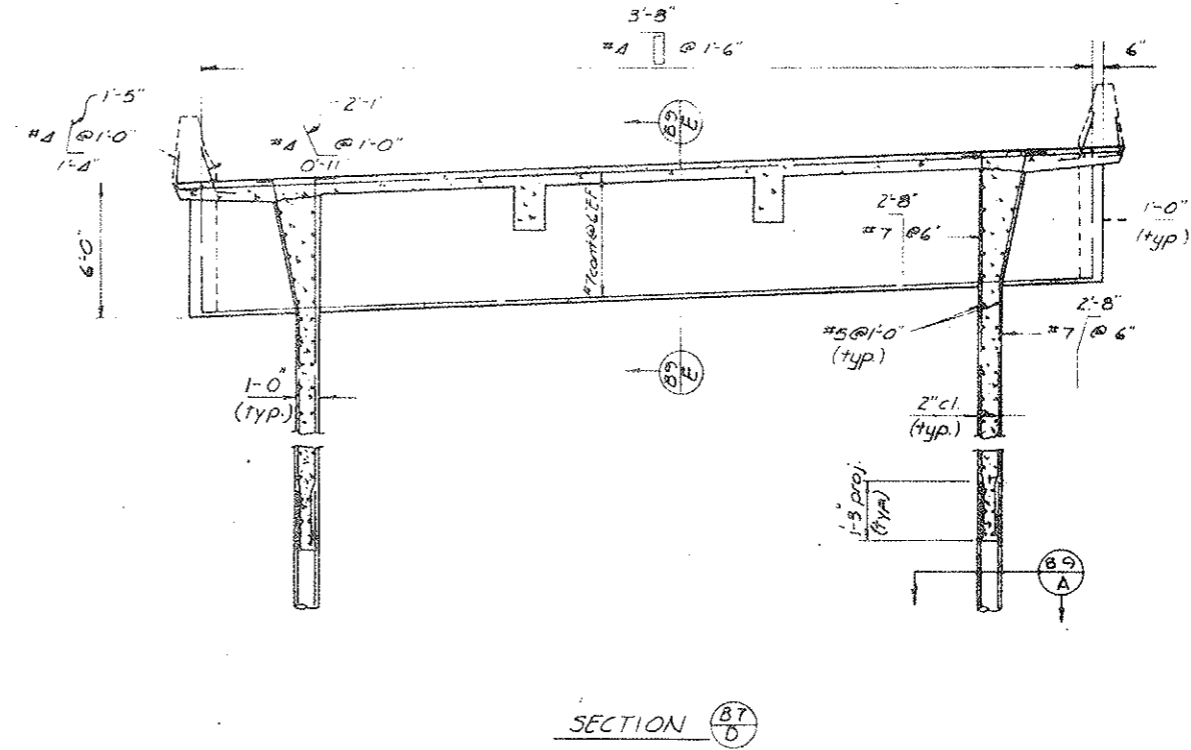
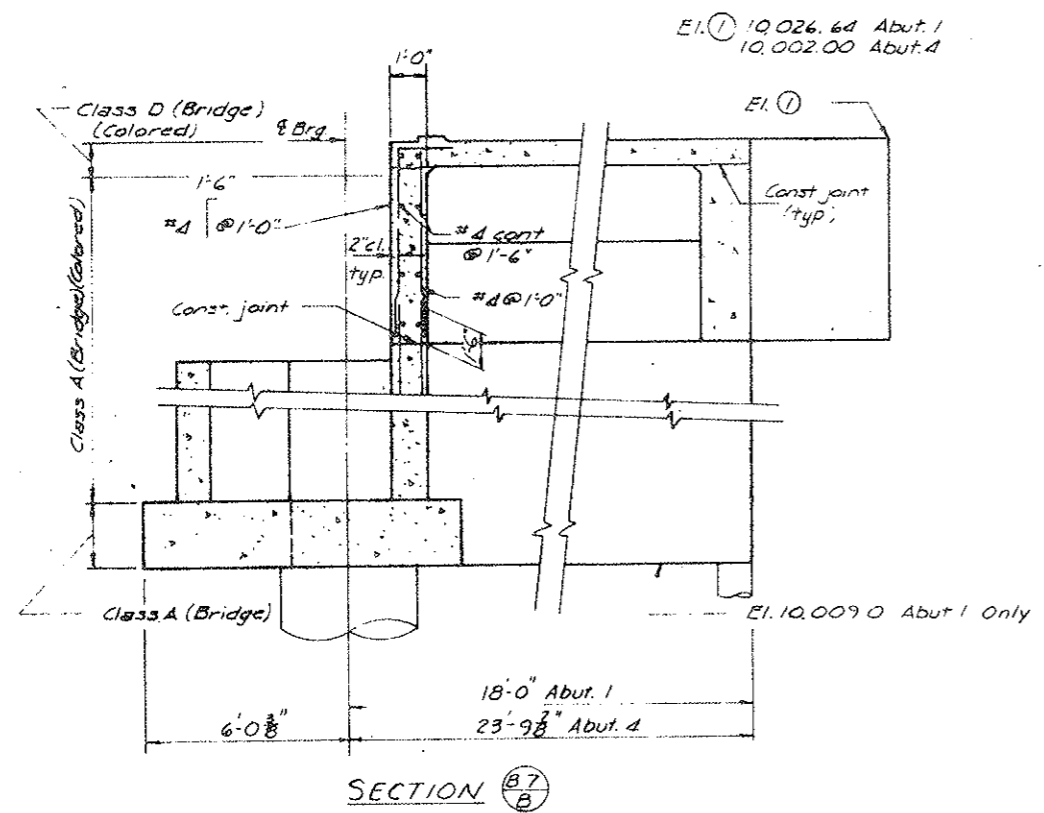
Designer	O. Garg	Structure Number	F-12-A
Detailer	T. Fischer	Sheet	132
Drawing Number	B	of	17 Drawings

Revision Date: (Preliminary Stage Only)

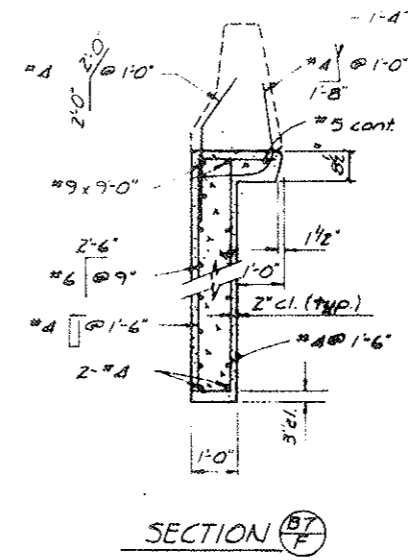
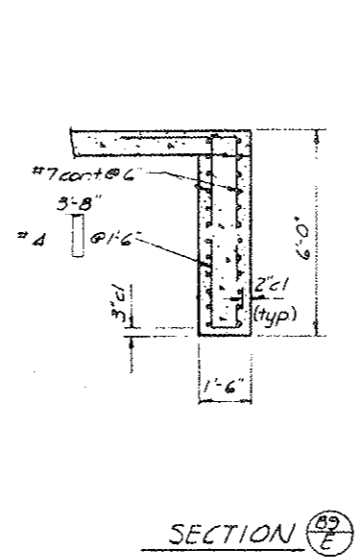
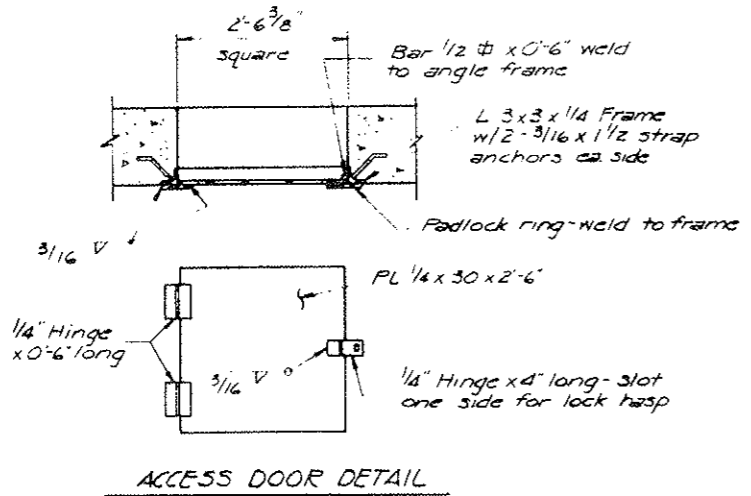
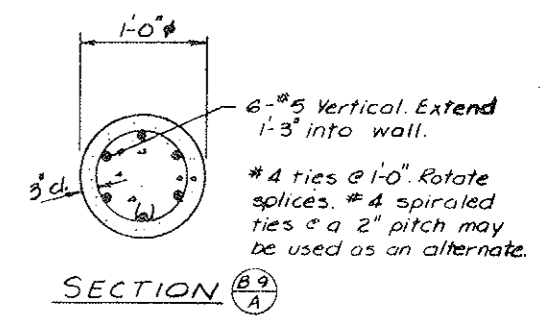
DESIGNED BY	DATE	CHECKED BY
CPG	10-74	RAM
DETAILS BY		
TCF	10-74	

FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
YR1 COLORADO	170-2(32)197	133	

REVISIONS	



AS CONSTRUCTED
 NO REVISIONS DATE: 6-24-77



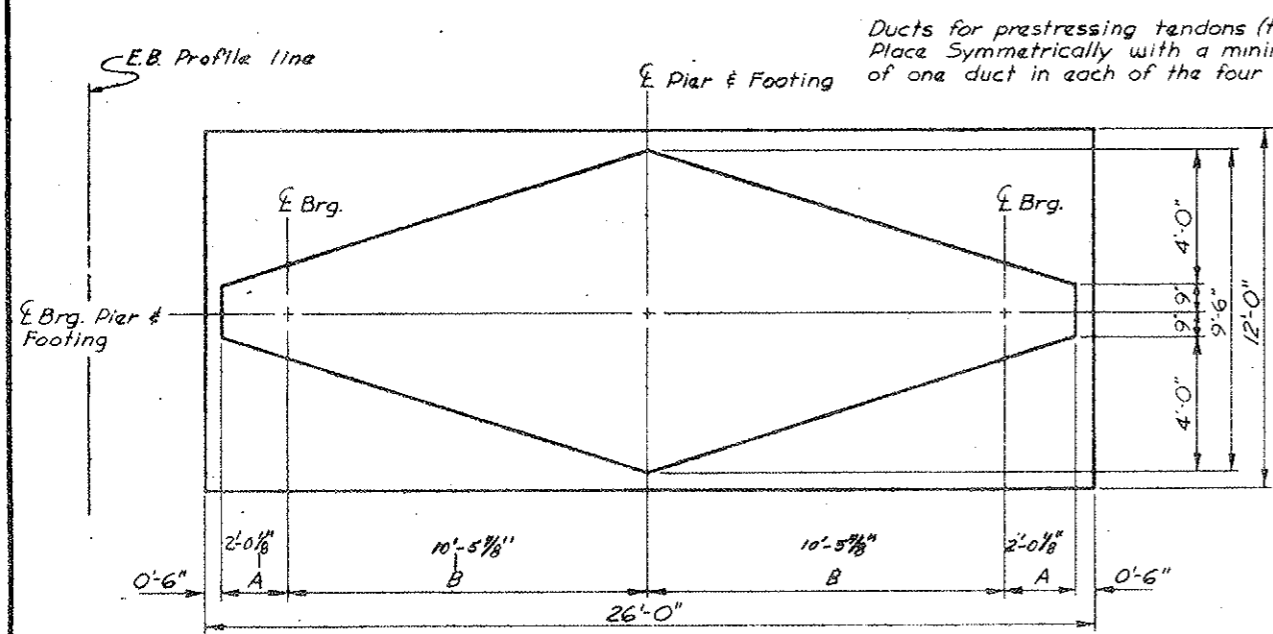
DATE	DESIGNED BY	CHECKED BY	QUANTITY BY	CHECKED BY
10-2-74				
1-75				

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
 DIVISION OF HIGHWAYS
ABUTMENT DETAILS
 Designer *Om Gung* Structure *F-12-A0*
 Detailer *B. Fianer* Numbers
 Drawing Number *B 9* of *17* Drawings

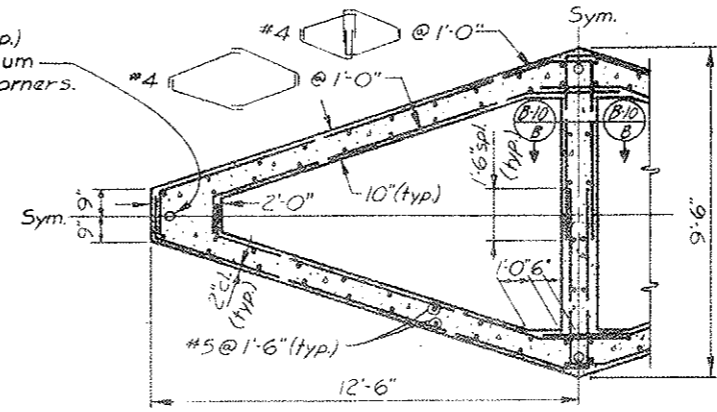
VOID
BY CONSTRUCTION DATE 6-24-77

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	I-70-2(52)197	134	

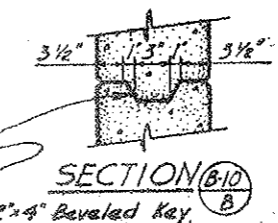
REVISIONS		
RT	4-29-75	Addition to note



PLAN



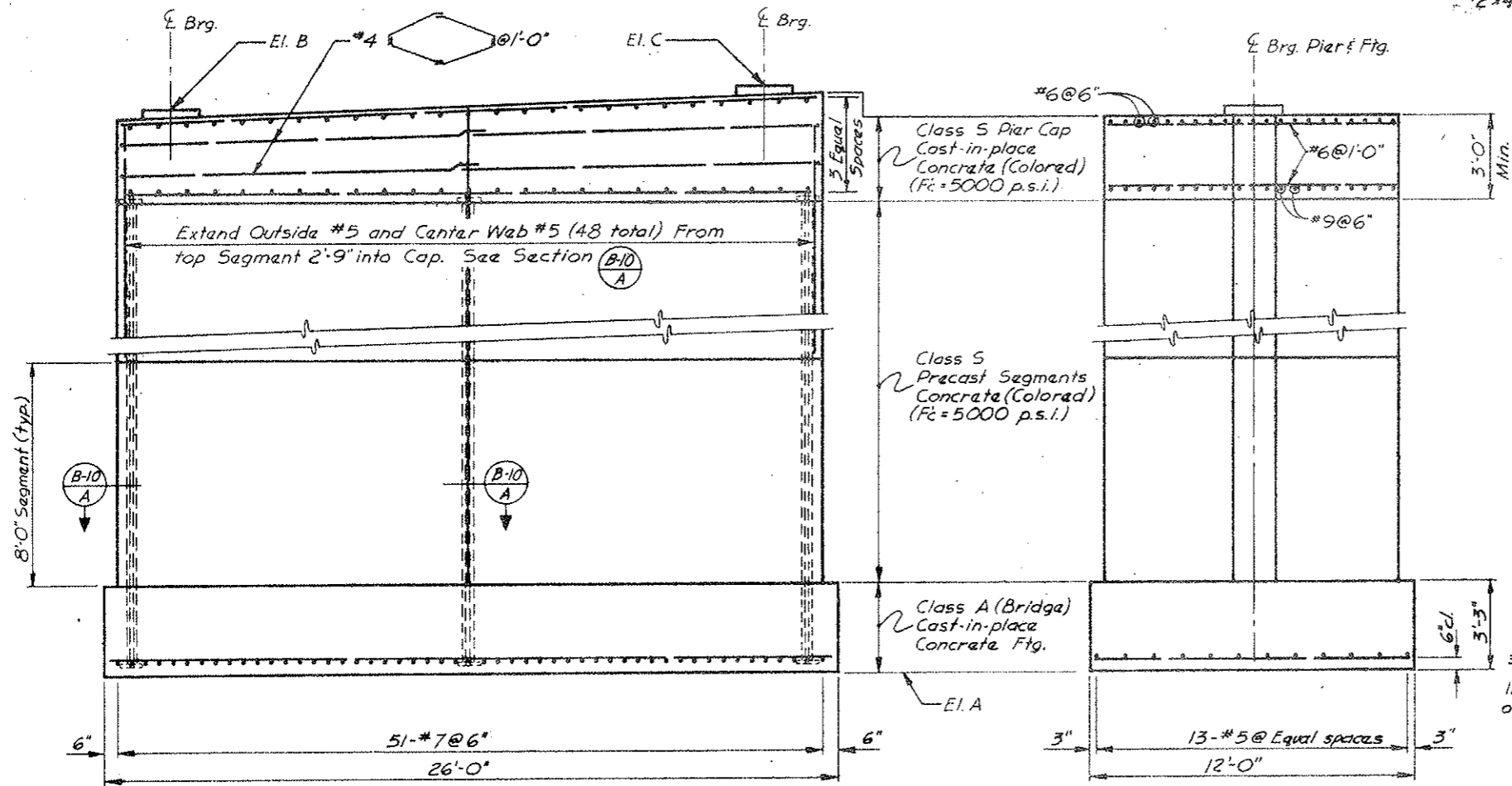
SECTION (B-10) A



SECTION (B-10) B

EASTBOUND				
	Pier 2	Pier 3		
10,011.65	EI. A 9957.0	9954.0		
10,012.64	EI. B 10011.71	10007.08	10,003.02	
	EI. C 10012.70	10004.07	10,004.01	
①	Force F	385 Kips	385 Kips	

DESIGNED BY	C.L.B.	DATE	8-75
CHECKED BY	R.A.H.	QUANTITY BY	11-74
DESIGNED BY	C.L.B.	DATE	6-74
CHECKED BY	D.F.	QUANTITY BY	1-75



ELEVATION

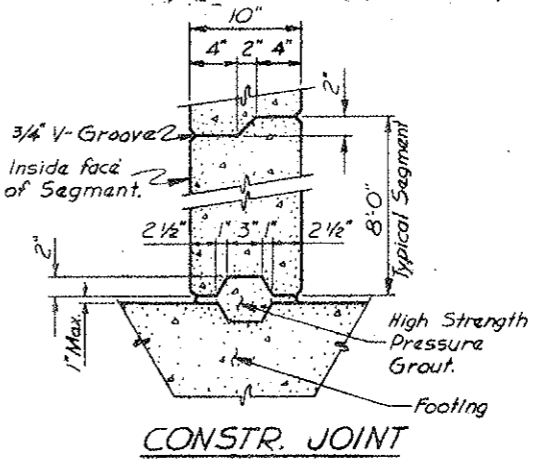
Looking Ahead Station

END ELEVATION

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-10) 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. PRECAST SEGMENT HEIGHT FOR BRIDGES MAY BE REVERSED IN ORDER TO MINIMIZE THE CAST-IN-PLACE PORTION. 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.



CONSTR. JOINT

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

DIVISION OF HIGHWAYS

PIER DETAILS

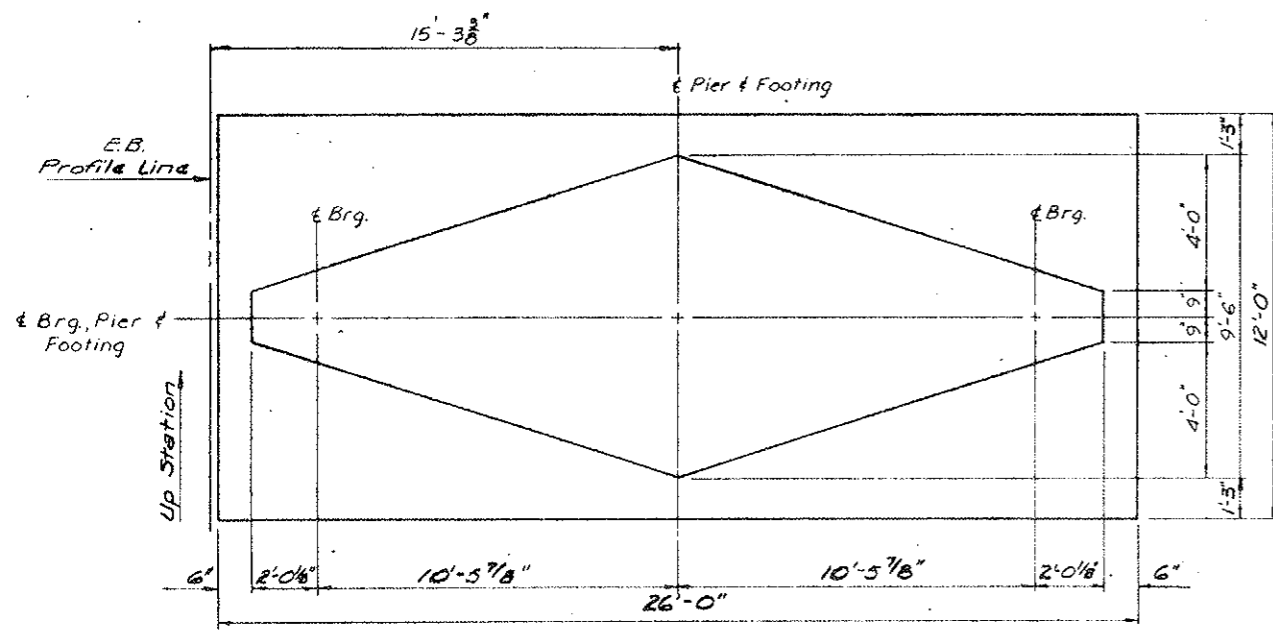
Designer	C. Banson	Structure	
Detailer	D. Froman	Numbers	F-12-AO E.B.
Drawing Number	B 10	of	17 Drawings

Revision Dates (Preliminary Stage Only)

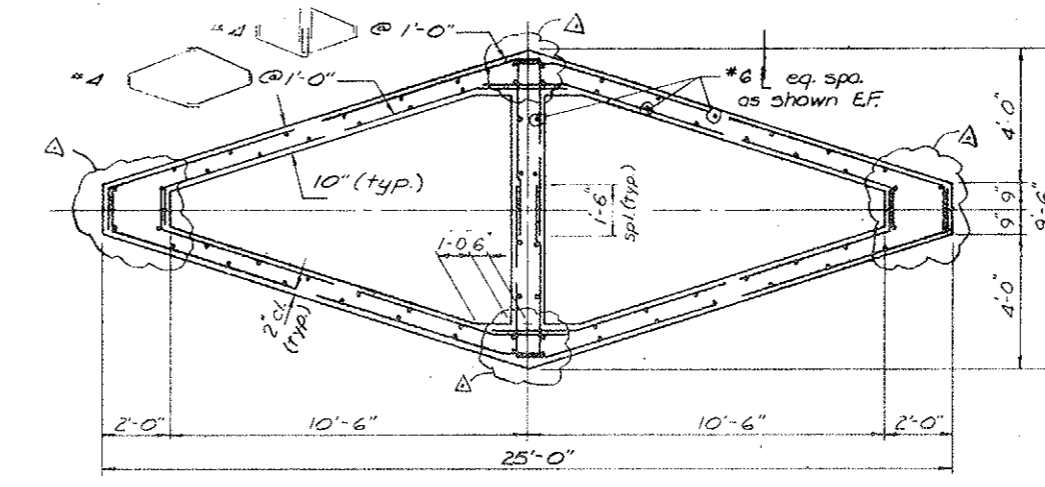
AS CONSTRUCTED
 REVISED DATE: 6-24-77

134AX

REVISED FOR
 CHANGE ORDER
 NO. 07253



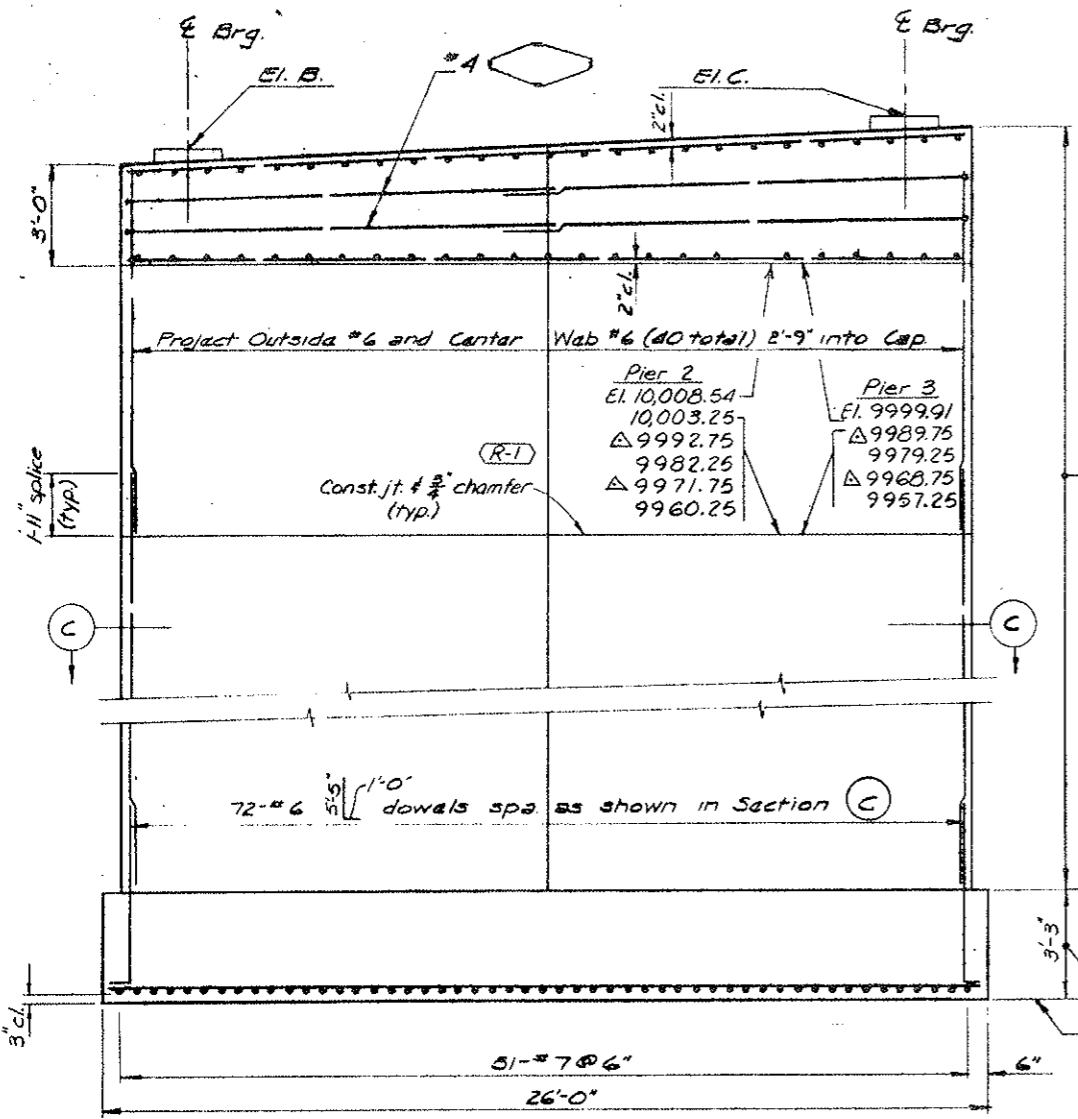
PLAN



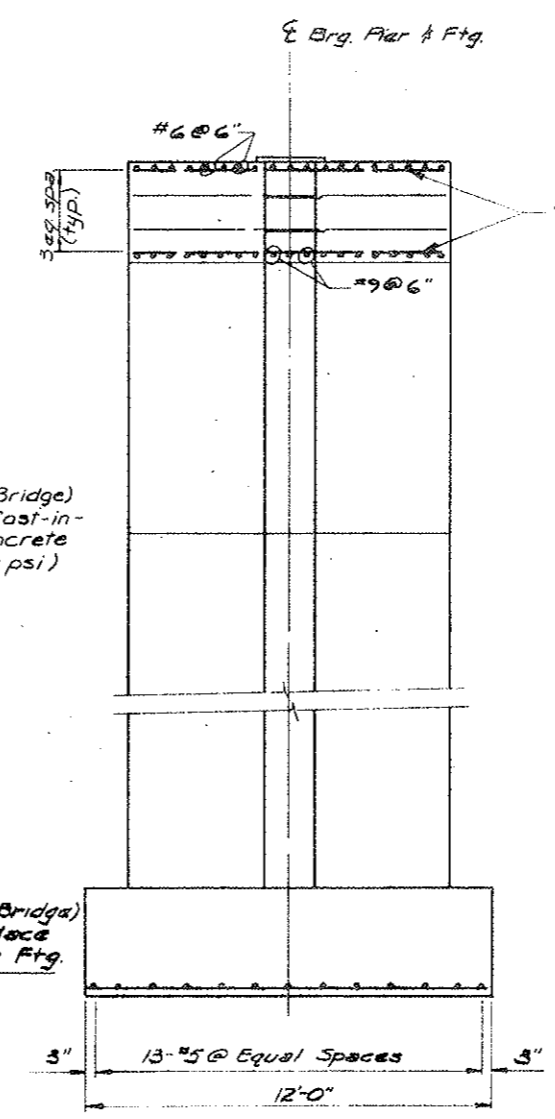
SECTION C

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

	Pier 2	Pier 3
EI. A	9957.0	9954.0
(R-1) EI. B	10011.65	10003.02
(R-1) EI. C	10012.64	10004.01

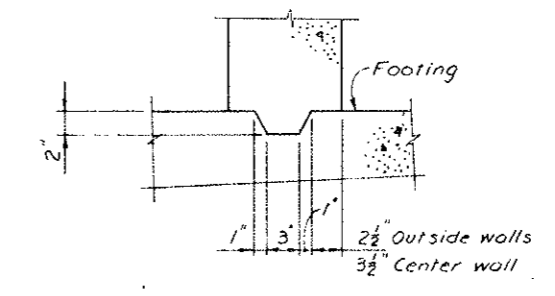


ELEVATION



END ELEVATION

QUANTITIES				
ITEM	DESCRIPTION	UNIT	PIER 2	PIER 3
601	Concrete Class A (Bridge)	Cu. Yd.	37.6	37.6
601	Concrete Class S (Bridge) (Colored)	Cu. Yd.	114.1	103.0
① 602	Reinforcing Steel (Gr. 60)	Lb.	14,472	13,144
①	Former Reinf. Steel Quantity =	Lb.	11,974	10,971
	Additional Reinf. Steel =	Lb.	2,498	2,175
			Total 4673 Lbs. (R-1) (R-2)	



CONST. JOINT



REVISIONS			
R-1	6-19-75	Rev elev's. quant; Add const. jt.	CLB
R-2	6-23-75	Rev lops & quant	HHB

170-2(52) 197 Vail Pass Str. No. P-12-AO

CONVENTIONAL REINFORCING FOR PIERS

INTERNATIONAL ENGINEERING COMPANY, INC.

Designed: RAH
 Drawn: BE

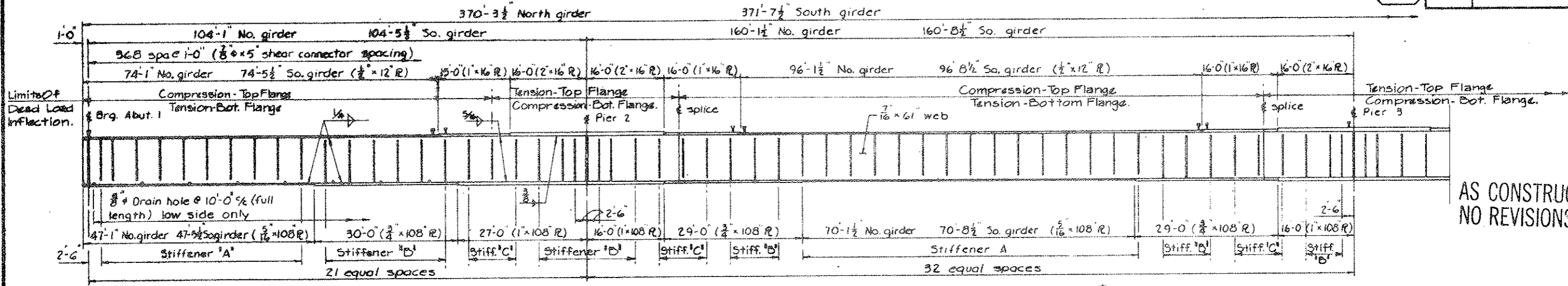
Chkd: RAH
 Insp:

Submitted: _____
 Recommended: _____
 Approved: _____

DENVER, COLORADO
 SHEET NO. 3

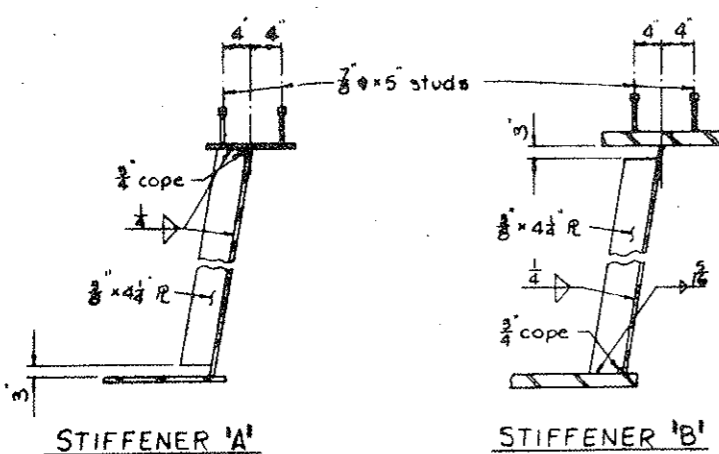
FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
III	COLORADO 170-2(52)/97	135	

REVISIONS	

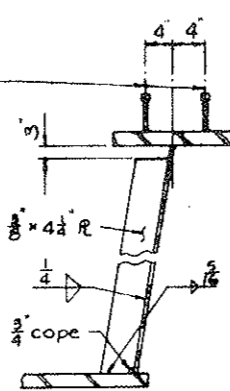


AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

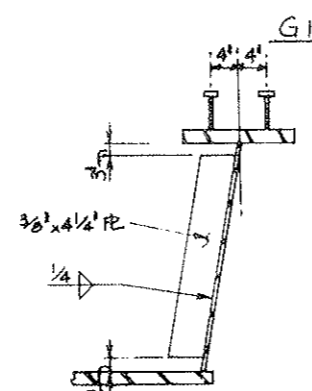
Note:
Span 3 similar to Span 1.
Dimensions are along & box.
Stiffeners are on the inside of webs.



STIFFENER 'A'



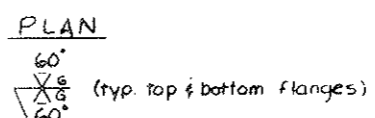
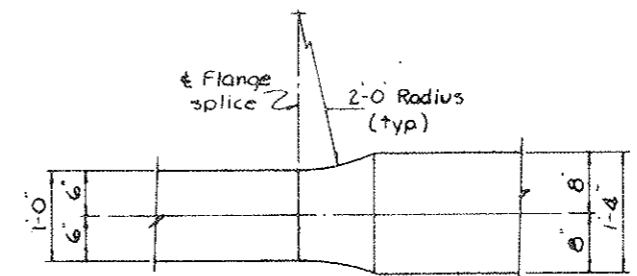
STIFFENER 'B'



STIFFENER 'C'

STIFFENER DETAILS

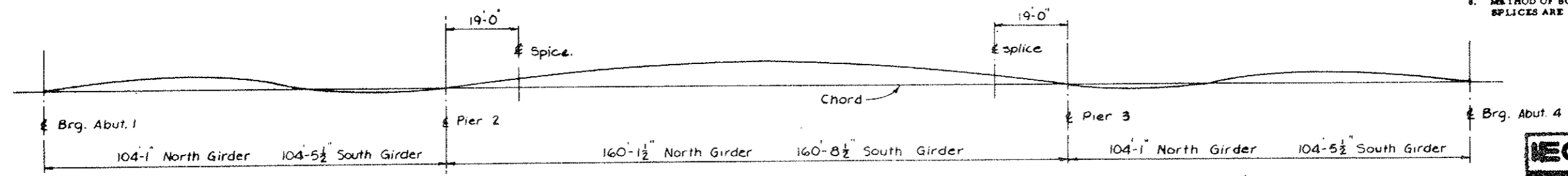
GIRDER ELEVATION



TOP FLANGE SPLICE
Splices of Plates The Same Width
Shall Use The Above Detail.

NOTES:

- ALTERNATE GIRDER SPLICES WILL BE PERMITTED SUBJECT TO APPROVAL BY THE ENGINEER.
- COMPLETE WEB TO FLANGE FILET WELDS AFTER WELDING FLANGES 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 GROUND. OTHER AREAS SHALL BE GROUNDED 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 SPLICE 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.



①	0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
②	0	0	.01	.01	.01	.01	0	0	0	0	.01	.02	.03	.04	.04	.04	.03	.02	.01	0	0	0	0	0	.01	.01	.01	.01	0	0	
③	0	.03	.05	.06	.06	.04	.01	-.01	-.02	-.02	0	.07	.19	.31	.40	.43	.40	.30	.18	.08	0	-.02	-.02	-.01	.01	.04	.05	.06	.05	.03	0

- ① Tenth Point
- ② Dead Load Deflection (ft.)-Girder.
- ③ Dead Load Deflection (ft.)-Girder & Slab.

CAMBER DIAGRAM

INTERNATIONAL ENGINEERING COMPANY, INC.
3070 15th St., Suite 100, Denver, CO 80202
303 733-1111

DIVISION OF HIGHWAYS

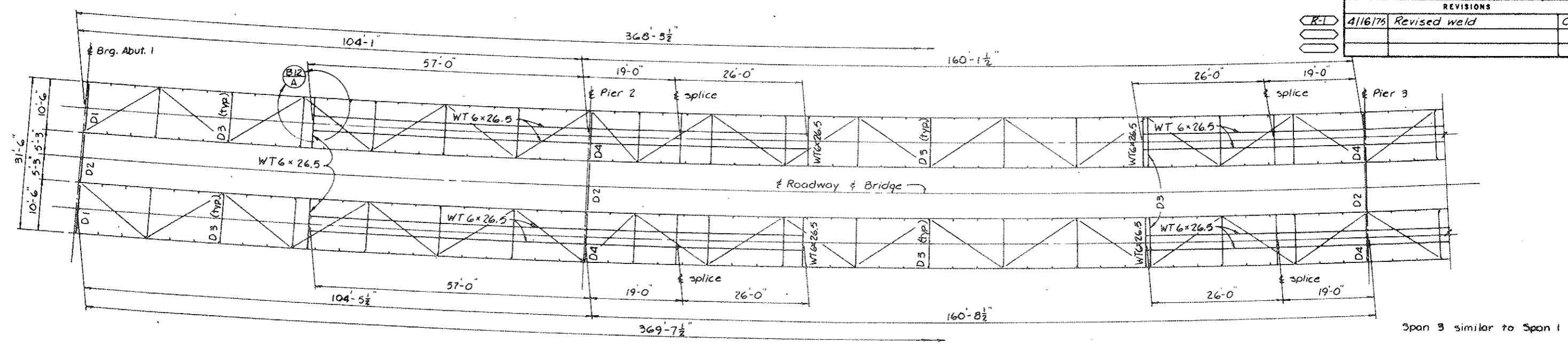
**GIRDER DETAILS
CAMBER DIAGRAM**

Designer: O. Garg Structures: F-12-AO EA
Detailer: T. Fischer Numbers:
Drawing Number B // of 17 Drawings

Revision Dates: (Preliminary Stage Only)

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	170-2(52)197	136	

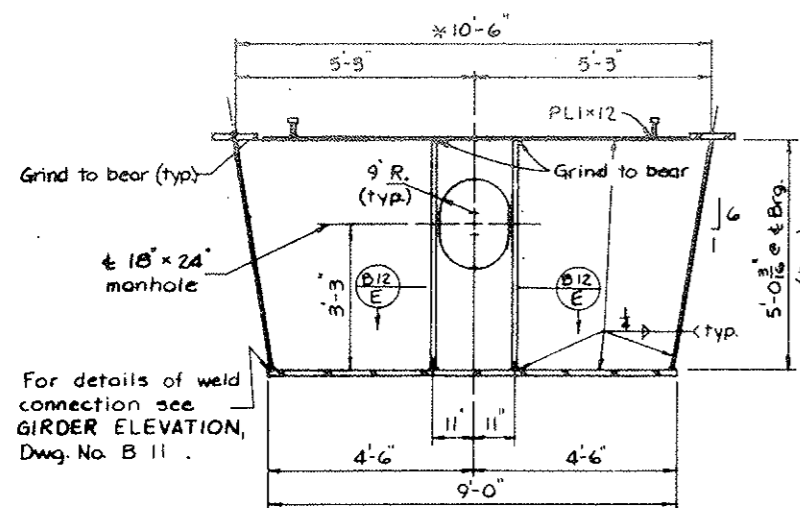
REVISIONS			
KL	4/16/75	Revised weld	CLB



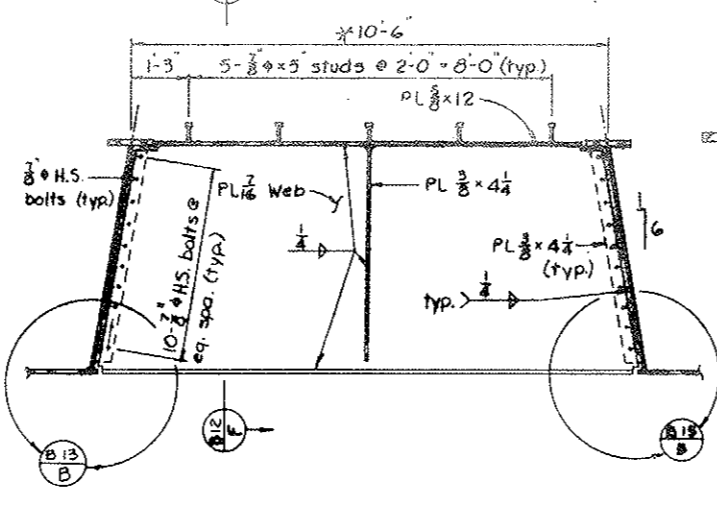
FRAMING PLAN

* To outside of girder webs

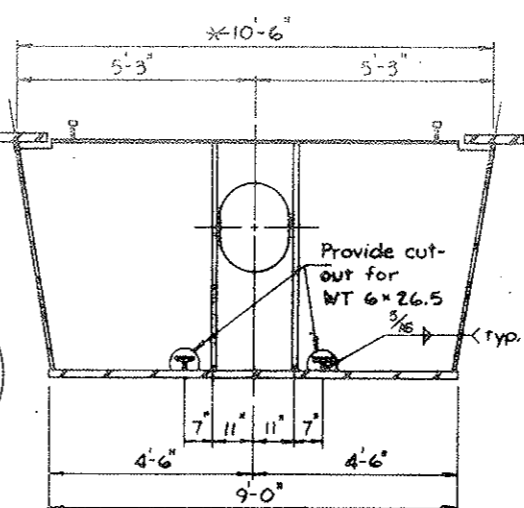
AS CONSTRUCTED
REVISED DATE: 6-24-77



DIAPHRAGM D1

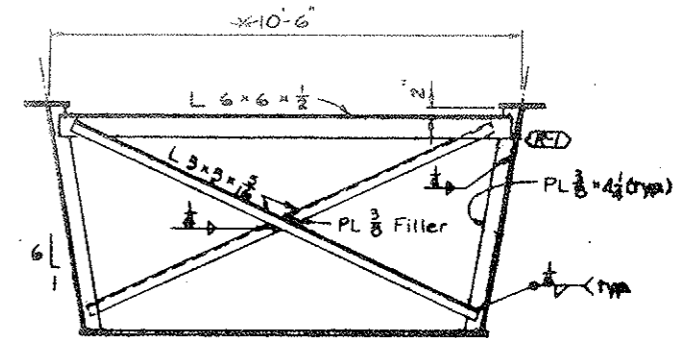


DIAPHRAGM D2



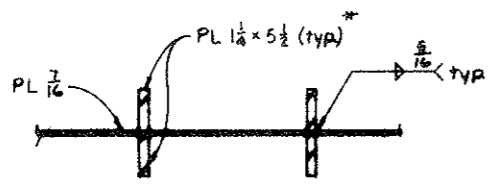
DIAPHRAGM D4

For additional details, see DIAPHRAGM D1.

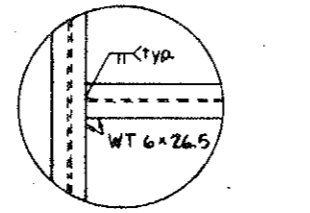


DIAPHRAGM D3

* Note:
Bearing stiffeners -
grind to bear on
bottom flange, tight
fit on top flange.



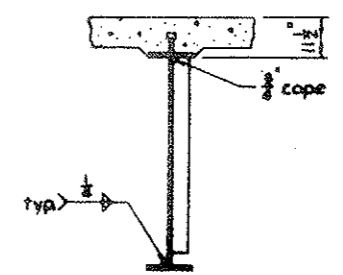
SECTION A-A



ENLARGED DETAIL A-A

DIAPHRAGM DETAILS

For additional notes see Dwg. No. B 11.



SECTION B-B

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
1177 1/2 Duquesne St., Denver, Colorado 80202

DIVISION OF HIGHWAYS

**FRAMING PLAN
DIAPHRAGM DETAILS**

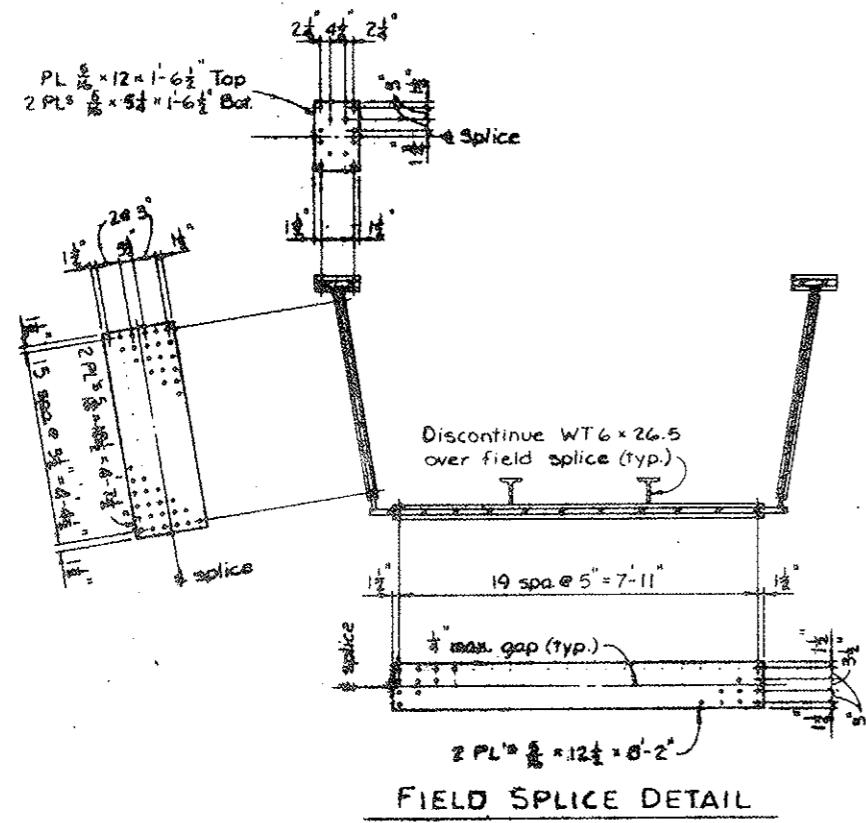
Designer: O. Borg	Structure: F-12-AD 6A
Detailer: T. Fischer	Number: 12 of 17 Drawings
Drawing Number: B 12	

Revision Date: Preliminary Stage Only

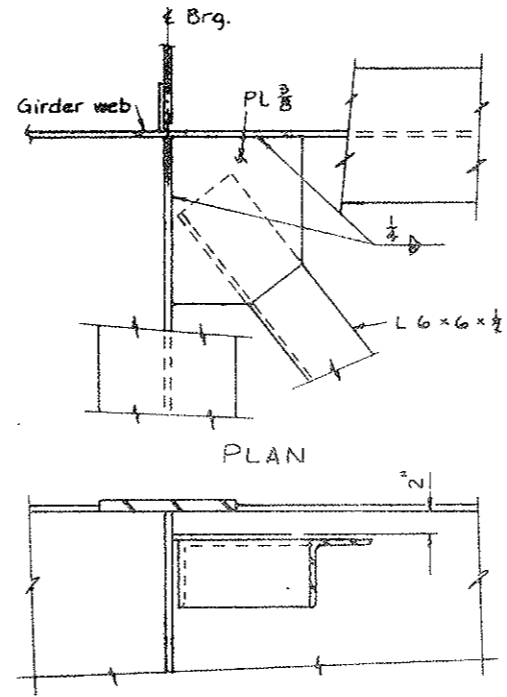
FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
III	COLORADO	I 70-2(52)197	137	

REVISIONS			
RT	4-29-75	Deleted non-weathering bolt note	B.D.E.

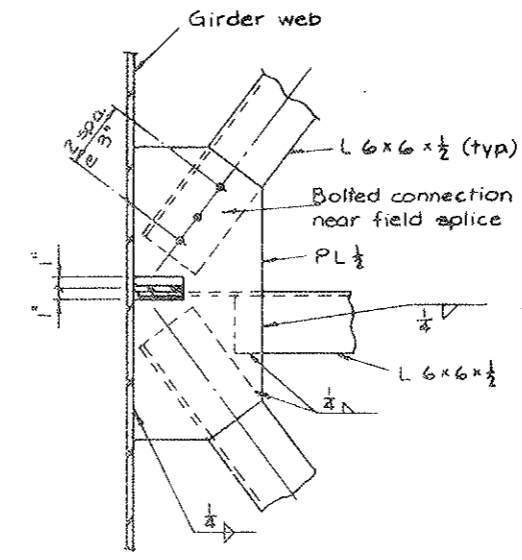
AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77



FIELD SPLICE DETAIL

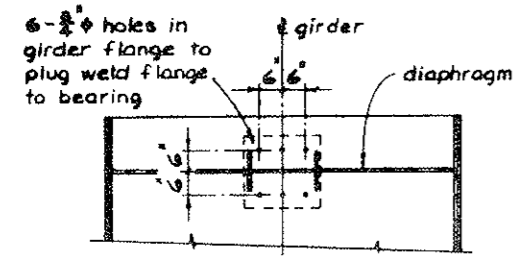


ELEVATION
DETAIL AT DIAPHRAGM D1 or D4

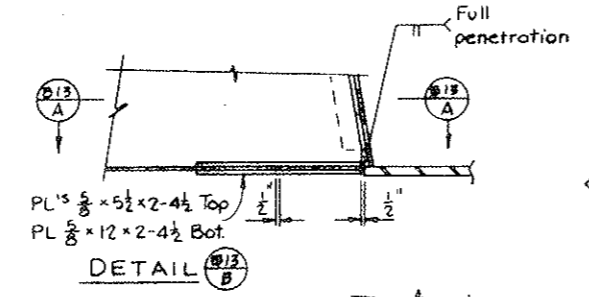


DETAIL AT DIAPHRAGM D3

LATERAL BRACING DETAILS

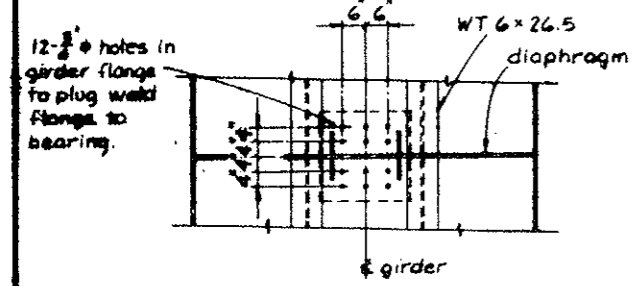


CONNECTION DETAIL AT ABUTMENTS

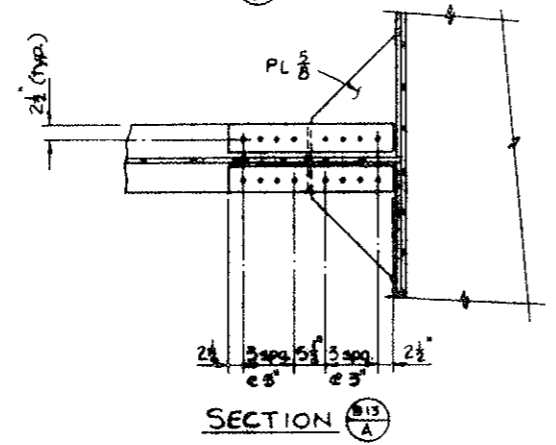


DETAIL 13 A/B

Notes: All girder webs and flanges shall require 7/8" ASTM A-325 Type 3 weathering steel bolts. No substitutions will be allowed.



CONNECTION DETAIL AT PIERS



SECTION 13 A

WELD LENGTHS REQ'D	
MEMBER	LENGTH OF 1/4" FILLET WELD.
WT 7 x 30.5	CONTINUOUS
L 3 x 3 x 5/16	6" & 14"
L 5 x 5 x 5/16	12"
L 6 x 6 x 1/2	9"

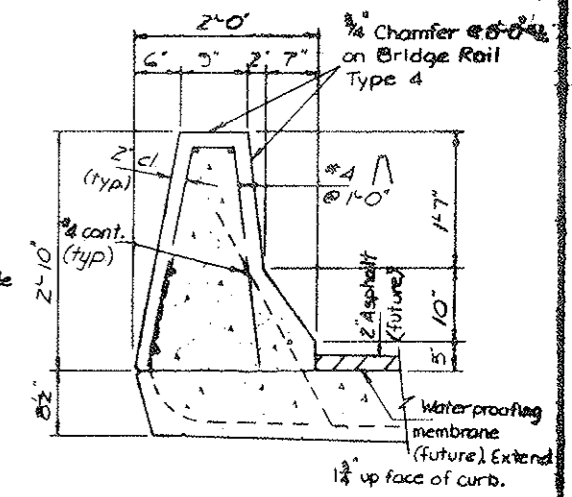
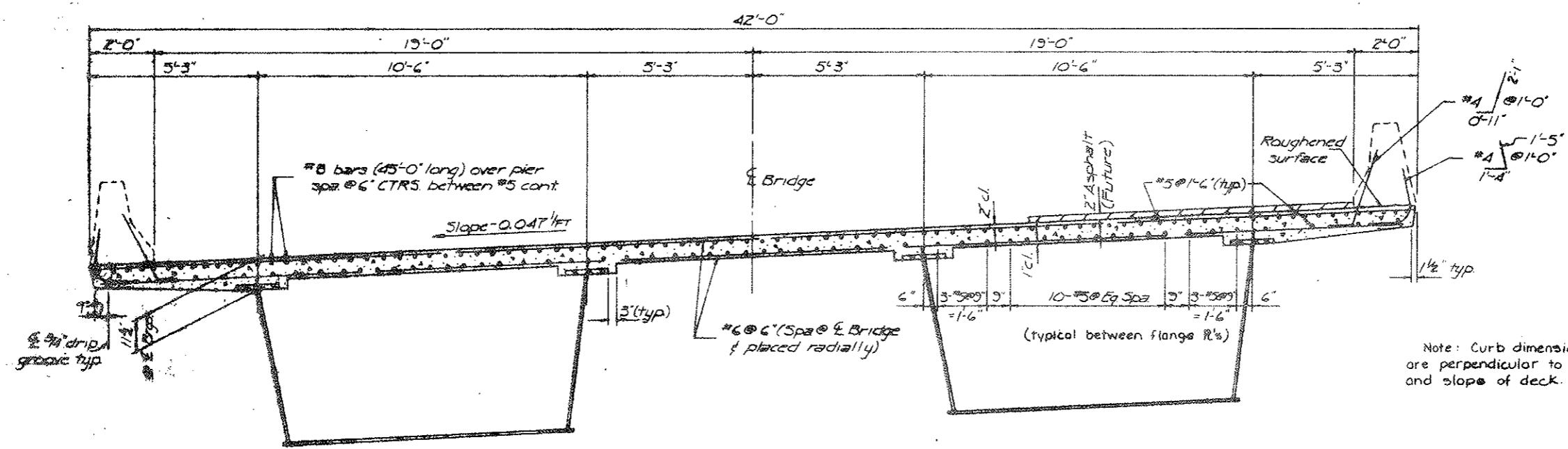
NOTE: THESE ARE MINIMUM LENGTHS OF 1/4" PRET WELDS TO SECURE MEMBERS TO GUSSET PLATES AND OTHER MEMBERS.

DESIGNED BY	DATE	BY	DATE
CHECKED BY	DATE	BY	DATE
APPROVED BY	DATE	BY	DATE

DIVISION OF HIGHWAYS	
SUPERSTRUCTURE DETAILS	
Designer: O. Garg	Structure: F-12-A0
Detailer: T. Fischer	Number: 13 of 17 Drawings

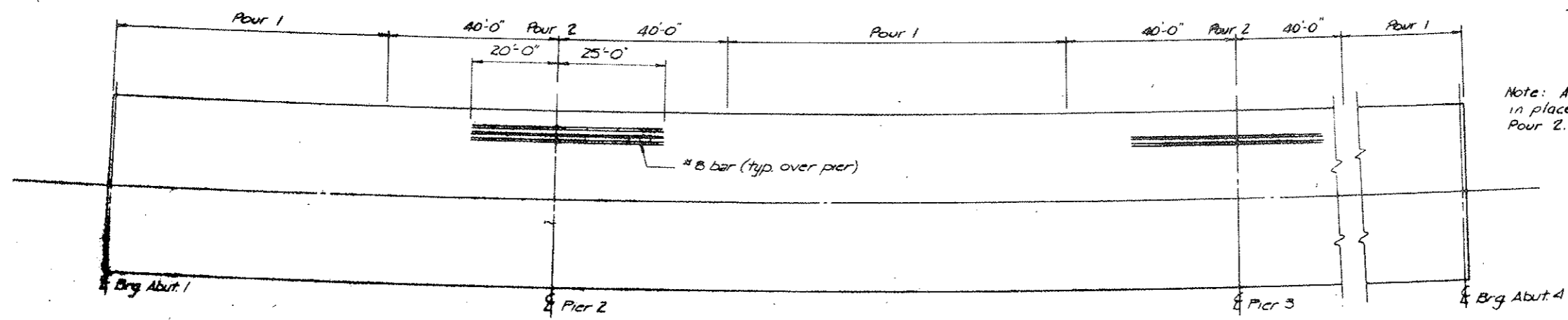
FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
170-2(2)197	138		

REVISIONS	



TYPICAL DECK SLAB SECTION
(Distances are radial unless otherwise noted)

TYPICAL SECTION OF CURB
Scale: 1" = 1'-0"

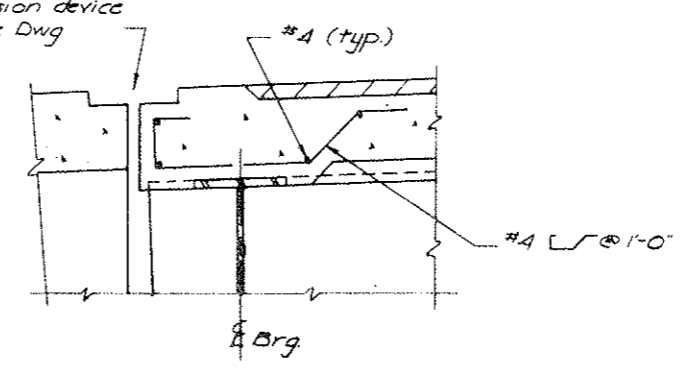


Note: All concrete in Pour 1 shall be in place 24 hours before starting Pour 2.

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

DECK PLAN

For expansion device details, see Dwg No. B 16.

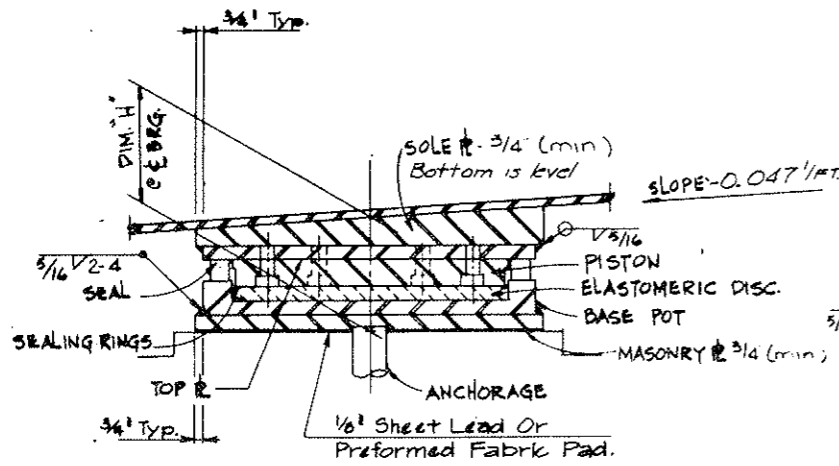


SECTION THRU END OF DECK

DIVISION OF HIGHWAYS	
DECK PLAN TYPICAL SECTION	
Designer O. Gery	Number 17-40-14
Detailer S. Eitzer	Sheet 14 of 17 Drawings

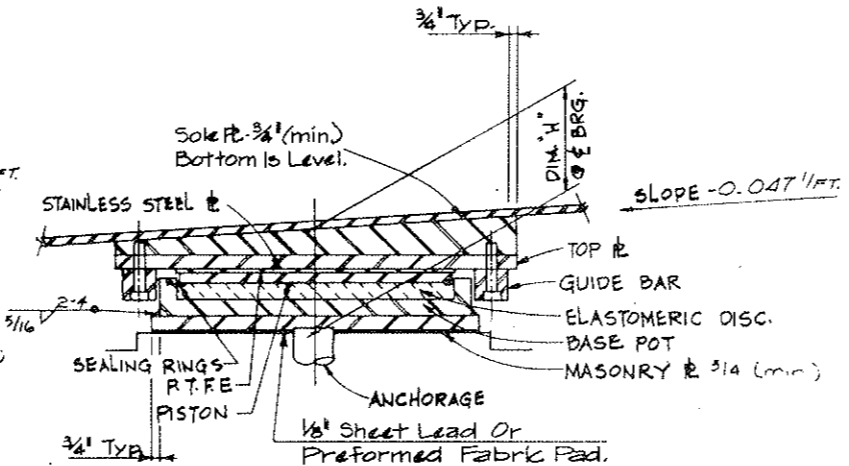
FEDERAL ROAD DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
COLO. DISTRICT	70-2(82) 197	139	

REVISIONS			
R-1	4-14-75	PREP. INT.	WCB
R-2	4-17-75	Rev. Brg. Pressure; Added Movement & Notes	CLB



SECTION THRU ASSEMBLED FIXED

FLOATING BEARING



SECTION THRU ASSEMBLED GUIDED

EXPANSION BEARING

BEARING NOTES:

- STEEL FOR THE BEARING DEVICES, MASONRY PLATES, AND SOLE PLATES SHALL BE A.A.S.H.T.O. SPECIFICATION M-100 (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"

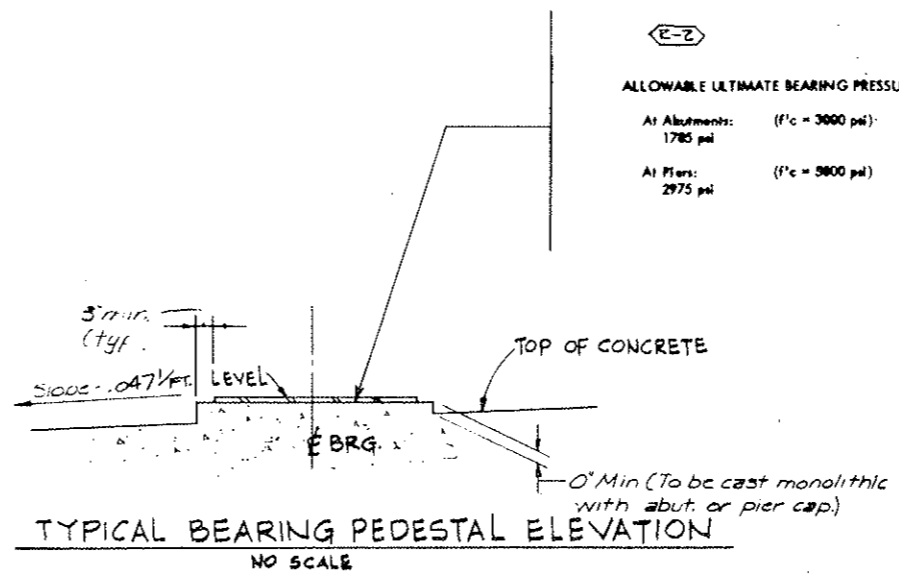
Note:
Sole Pl's. To Be Plug Welded To The Flange In The Field. See Dwg. No. B-13, For Details.

BEARING TYPE & CAPACITY (TONS)	Horiz. Capacity (tons)		Actual Load (kips)	Dim. "H" (inches)	Ultimate Load (Kips)	Max Movement (in)
	Longitudinal (kips)	Transverse (kips)				
ABUT. 1 E 125	24.4	13.87	244	5 1/8"	430	4
PIER 2 E 450	84.9	35.21	849	7 5/8"	1310	2 7/8
PIER 3 E 450	84.9	35.21	849	7 5/8"	1310	1 1/8
ABUT. 4 F 125	24.4	13.87	244	5 3/8"	430	0

Capacity = D.L + L.L + I
 -- Expan -- or -- Fixed --
 Longitudinal Capacity = 3% of Actual Load (kips)
 Transverse Capacity = 10% of Bearing Capacity (kips)
 * Actual load shall be used to determine bearing capacity

AS CONSTRUCTED
NO REVISIONS DATE: 6-24-77

ALLOWABLE ULTIMATE BEARING PRESSURES:
 At Abutments: (f'c = 3000 psi) 1785 psi
 At Piers: (f'c = 3800 psi) 2975 psi



TYPICAL BEARING PEDESTAL ELEVATION
NO SCALE

DESIGNED BY	DATE	CHECKED BY	DATE
QUANTITIES BY	DATE	DETAILS BY	DATE

IECO INTERNATIONAL ENGINEERING COMPANY, INC.
 Denver, Stoddard, Arithon and Higgins Division
 1777 S. Belknap St. Denver, Colorado 80202

DIVISION OF HIGHWAYS

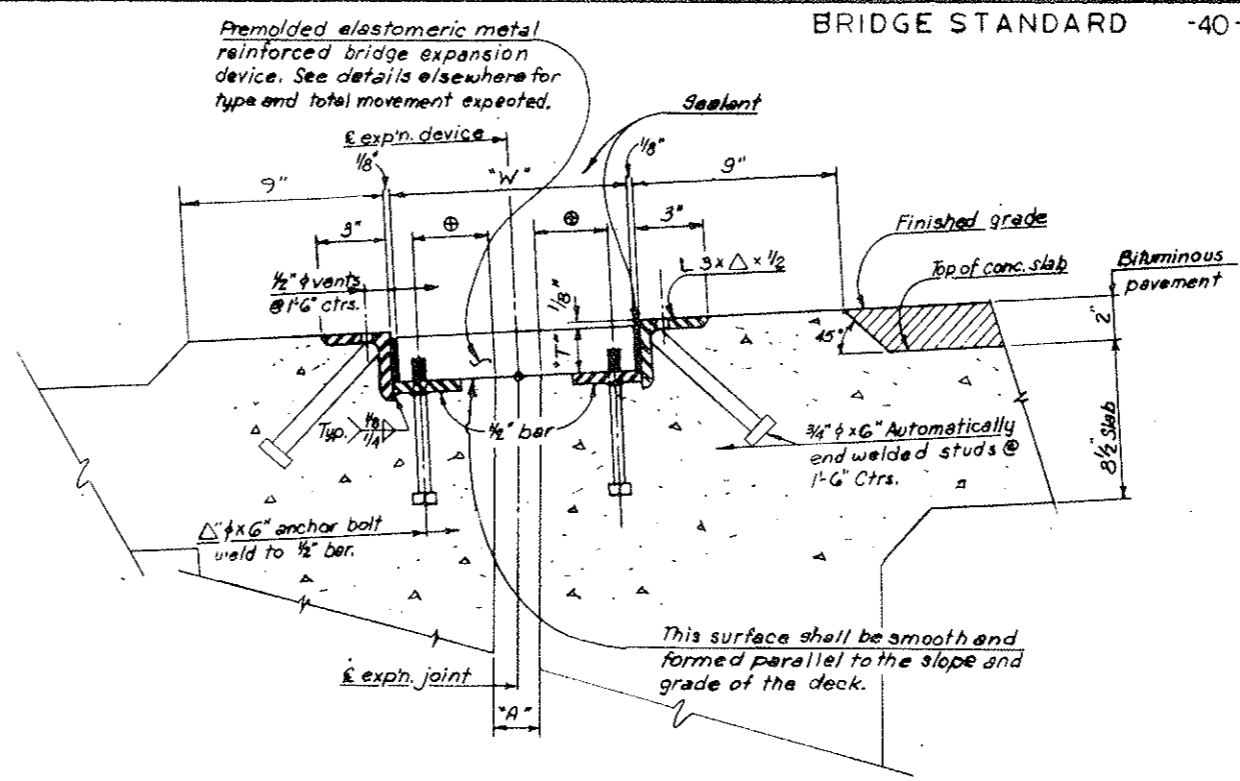
BEARING DETAILS

Designer	OH GARG	Structure	F-12-40 E.B.
Detailer	G. MARTIN	Numbers	
Drawing Number	B 15	of	17 Drawings

Revision Date: Preliminary Stage Only

FEDERAL ROAD DISTRICT NO.	REGION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	170-2(52)197	140	

REVISIONS	

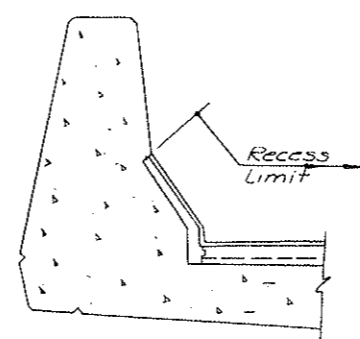


SECTION THRU EXPN. DEVICE

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", "W", AND "A" 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 BUTTER 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 SEEN ANGLES AS SPECIFIED ON THE PLANS.
ALL ANCHORS SHALL BE CAST IN PLACE BOLTS OR THREADED CAST IN PLACE CONCRETE INSERTS EXCEPT FOR CURB AND WALK UNITS WHICH MAY BE INSTALLED BY THE USE OF APPROVED DRILLED IN PLACE ANCHOR UNITS.
OPENING IN CURB AND SIDEWALK TO BE CONSTRUCTED TO THE EXACT WIDTH OF THE EXISTING DECK OPENING.

AS CONSTRUCTED
NO REVISIONS DATE: 4-24-77

INITIAL	DATE	CHECKED BY	QUANTITIES BY
JBE	10-73	SAH	11-74
DESIGNED BY	CHECKED BY	DETAILED BY	



ELEVATION
DETAIL OF EXPANSION JOINT
AT GUARDRAIL

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

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

DIVISION OF HIGHWAYS

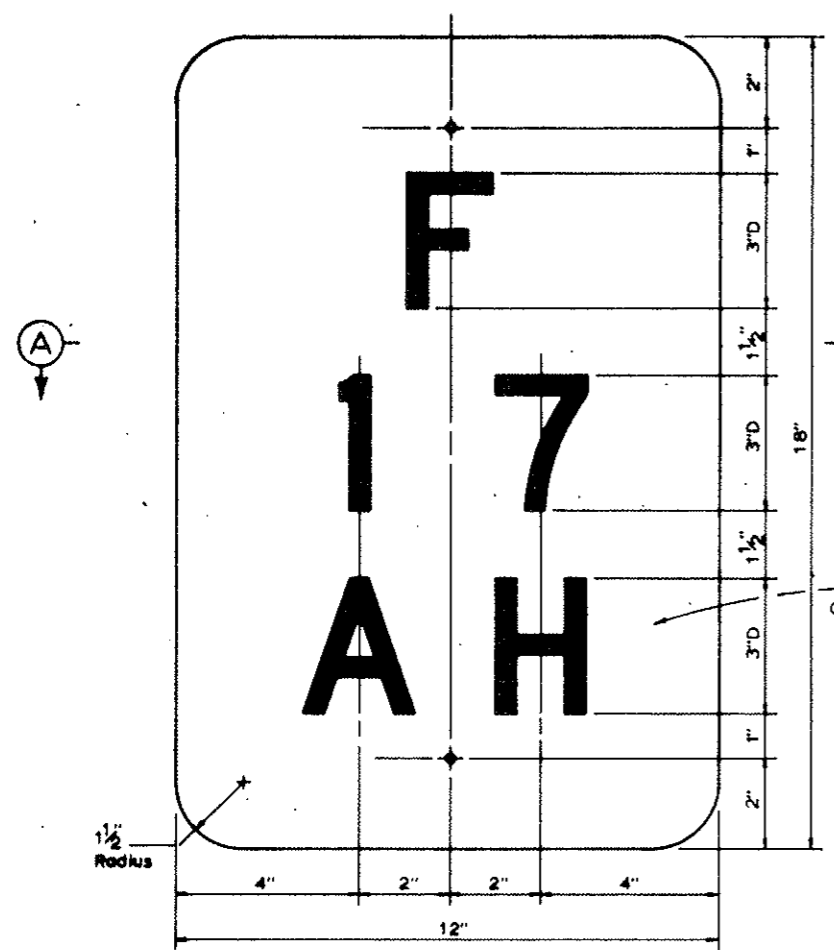
BRIDGE EXPANSION DEVICE
PREMOLDED ARMORED

Designer	Structure	F-12-A0 EB
Detailer	Numbers	
Drawing Number B		16 of 17 Drawings

(7-1-74)

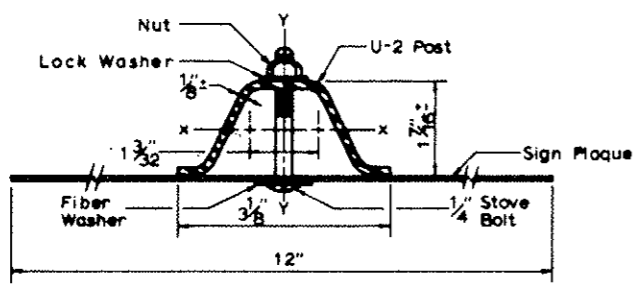
FEDERAL ROAD DISTRICT NO.	DEVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
222	COLORADO	170-2(52)197	141	

REVISIONS	

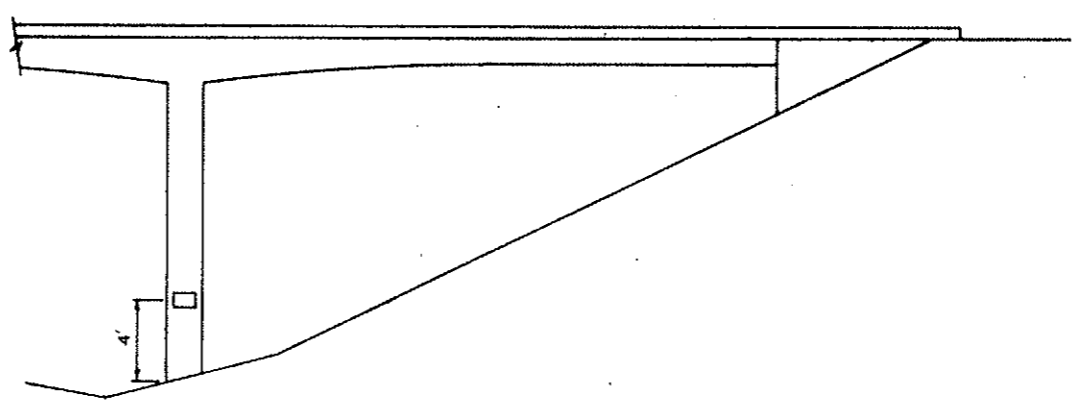


Black letters and numbers on white background.

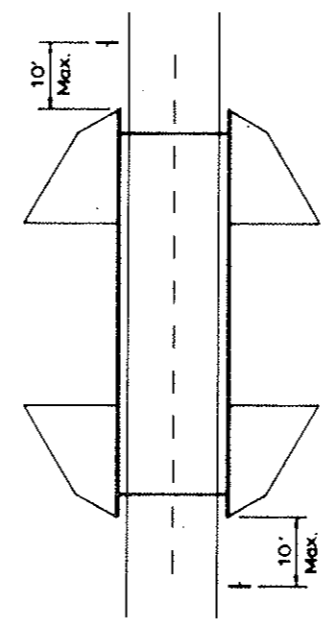
STRUCTURE IDENTIFICATION PANEL (SAMPLE NUMBERS & LETTERS)



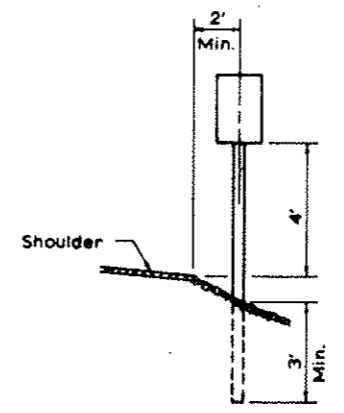
SECTION A



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 184-53. ACCEPTABLE MATERIAL INCLUDES REROLLED RAILROAD RAILS. U-2 POST SHALL WEIGH 2 LBS. PER FT. EXCEPT THAT A MELL TOLERANCE OF MINUS 2-1/2% OF THE WEIGHT OF ANY ONE POST WILL BE ALLOWED. ALTERNATE METAL POST WILL BE ACCEPTABLE IF SECTION MODULUS IS AT LEAST 0.200 IN.³ ABOUT THE X-X AXIS AND AT LEAST 0.250 IN.³ ABOUT THE Y-Y AXIS.

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

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

THE CORRECT STRUCTURE NUMBER IS SHOWN ON THE PLANS.

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

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

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

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

AS CONSTRUCTED NO REVISIONS DATE: 6-28-77

DIVISION OF HIGHWAYS			
STRUCTURE NUMBER STANDARD			
Designer	Structure Numbers	F-12-AO E.A.	
Detailer <i>B. J. LARSEN</i>	Drawing Number	17	of 17 Drawings
Revising Dates	Preliminary Stage 9/1/77		