

BAR LIST FOR ABUTMENTS No. 1 & No. 5

Mark	Size	No	Req'd. Length	Type	ℓ	m
501	5/8" φ	4	26'-1"	Str.		
502	"	4	25'-8"	Str.		
503	"	8	2'-8"	Str.		
504	"	28	10'-8"	I	4'-9"	1'-2"
505	"	4	12'-10"	I	5'-10"	1'-2"
506	"	4	13'-6"	I	6'-2"	1'-2"
507	"	2ea.	18'-2"	II	7'-5"	1'-2"
510	"	2ea.	21'-8"	II	9'-2"	1'-2"
511	"	2ea.	18'-2"	II	7'-5"	1'-2"
514	"	2ea.	22'-4"	II	9'-6"	1'-2"
515	"	32	18'-10"	III		
601	3/4" φ	20	5'-0"	Str.		
602	"	4	26'-1"	Str.		
603	"	4	25'-8"	Str.		
701	7/8" φ	9	26'-1"	Str.		
702	"	9	25'-8"	Str.		
703	"	38	17'-8"	Str.		

BAR SUMMARY FOR ABUTMENT No. 1

779	Linear Feet	5/8" φ @ 1.043 lbs./Linear Foot	=	812'
154	"	3/4" φ @ 1.502 "	"	231'
570	"	7/8" φ @ 2.044 "	"	1165'
		1% ± Overrun	=	22'
		Total	=	2230'

BAR SUMMARY FOR ABUTMENT No. 5

777	Linear Feet	5/8" φ @ 1.043 lbs./Linear Foot	=	810'
153	"	3/4" φ @ 1.502 "	"	230'
567	"	7/8" φ @ 2.044 "	"	1159'
		1% ± Overrun	=	21'
		Total	=	2220'

BAR LIST FOR PIERS No. 2 - No. 3 & No. 4

Mark	Size	No.	Req'd. Length	Type	ℓ	m
520	5/8" φ	12	16'-8"	Str.		
521	"	60	17'-7"	IV	16'-7"	
522	"	60	5'-7"	IV	4'-7"	
523	"	24	8'-8"	Str.		
524	"	84	14'-4"	V	8'-8"	4'-8"
525	"	72	18'-2"	II	5'-2"	3'-5"
605	3/4" φ	72	17'-2"	Str.		

BAR SUMMARY FOR PIER No. 2

1436	Linear Feet	5/8" φ @ 1.043 lbs./Linear Foot	=	1498'
412	"	3/4" φ @ 1.502 "	"	619'
		1% ± Overrun	=	23'
		Total	=	2140'

Note: PIER No. 3 & No. 4 SIMILAR

BAR LIST FOR 2 FLOATING SLABS

Mark	Size	No.	Req'd. Length	Type	ℓ	m
401	1/2" φ	2ea.	7'-0"	Str.		
413	"	2ea.	9'-6"	Str.		
414	"	36	12'-6"	Str.		
415	"	26	7'-8"	Str.		

BAR SUMMARY FOR 2 FLOATING SLABS

864	Linear Feet	1/2" φ @ .668 lbs./Linear Foot	=	577'
		1% ± Overrun	=	8'
		Total	=	585'

Revised by E.F.W. 2-16-56

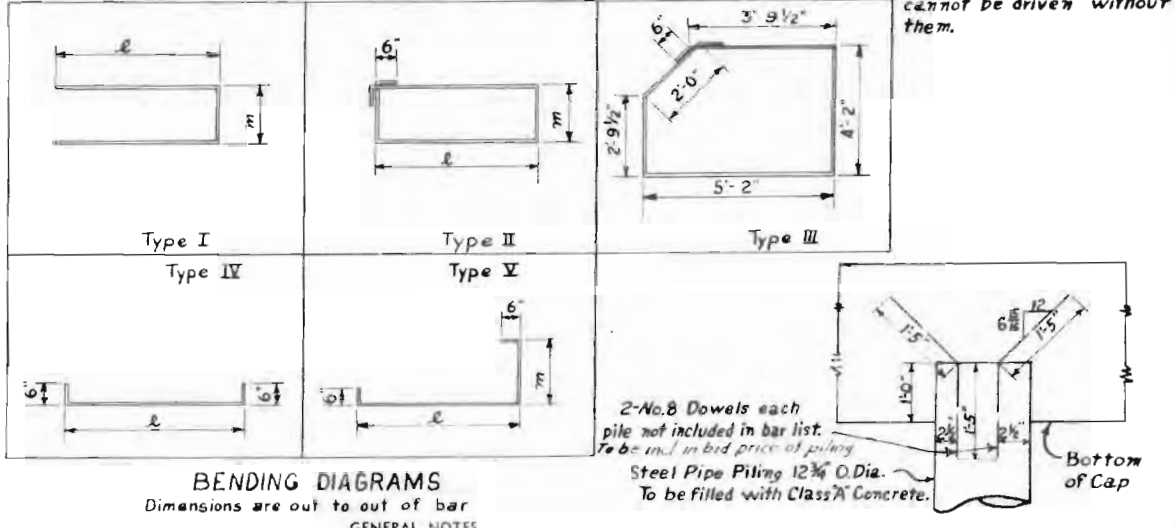
FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F1002-2(32)	11	

UNIT-2

SUMMARY OF QUANTITIES

ITEM No.	DESCRIPTION	UNIT	SUBSTRUCTURE			TOTAL
			SPANS 1, 2, 3 & 4	ABUT. No. 1	PIERS No. 2, 3 & 4	
13c	Unclassified Excavation	Cu. Yds.				
14b	Dry Common Excavation (Str.)	Cu. Yds.			62	62
14d	Wet Common Excavation (Str.)	Cu. Yds.				
16a	Structure Backfill (Class I)	Cu. Yds.			21	21
16c	Mechanical Tamping	Hours		5	3	5
18a	Station Yard Overhaul	St. Yd.				
18b	Yard Mile Overhaul	Yd. Mi.				
42b	Treated Bridge Timber	Mft. bm.	31.248			31.248
46a	Class "A" Concrete	Cu. Yds.	* 28.0	125.1	* 27.9	181
47	Reinforcing Steel (including 1% Overrun)	Lb.		2520	6420	8940
48	Structural Steel (including 1/2% for Paint)	Lb.	285530	2070	8700	298370
61a	Timber Deck Hardware	Lb.	1782			1782
61a2	Steel Piling 14BP @ 73" or Steel Pipe Piling 12 3/4" O.D. x 7ga.	Lin. Ft.		336	1320	1656
60x	Drilling Holes to Facilitate Pile Driving	Lin. Ft.		324	840	1164
Δ	Alumilastic	Gal.		4.5		4.5
Δ	Petrolatum	Lb.	3100			3100
φ	1/2" Premolded Expansion Joint Material Type I	Sq. Ft.		3		3

- * Includes 7230 Lbs. Handrail Steel.
- φ Expansion Joint Material shall be included in the bid price of Class "A" Concrete and shall be according to A.A.S.H.O. Designation M-153-52 of the type shown.
- Δ To be included in the bid price of Structural Steel.
- * Includes 8 cu. yds. for two floating slabs
- * Includes 585 lbs. for two floating slabs
- ** To be included in bid price per Mft. bm. of Treated Timber
- φ See Special Provisions.
- o Holes for piles shall not be drilled until it is definitely determined by the engineer that the piles cannot be driven without them.



BENDING DIAGRAMS

Dimensions are out to out of bar

GENERAL NOTES

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

ALL CONCRETE SHALL BE CLASS "A" AND AS SPECIFIED AS NOTED.

ALL CONCRETE SURFACES EXPOSED TO VIEW SHALL RECEIVE CLASS "1" SURFACE FINISH EXCEPT THE UNDERSIDE OF FLOOR SLABS AND ABUTMENT FACES BETWEEN OUTSIDE STRINGERS.

CONCRETE GUTTERS, FLOOR SLABS AND CURBS SHALL BE FORMED MONOLITHICALLY.

FORMS FOR CONCRETE SURFACES EXPOSED TO THE FINISHED WORK SHALL BE CONSTRUCTED OF SHEEP OR TONGUE AND GROOVE LUMBER 2" x 4" UNLESS SPECIFIED OTHERWISE.

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

DATA AND WHEN DIFFERENT CONDITIONS ARE ENCOUNTERED THE BRIDGE ENGINEER WILL IN SPECIFY AND DETERMINE IF REVISION IS NECESSARY.

ALL REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A-36 OR OF THE LATEST REVISION THEREOF, AND SHALL BE INTERMEDIATE GRADE STEEL OR A DEFORMED TYPE. EACH BAR SHALL BE TAGGED WITH THE NUMBER DESIGNATION AND THE STATION NUMBER OF THE PROJECT. PRIMARY BARS SHALL NOT BE SPLICED AND SECONDARY BARS WHEN SPLICED SHALL LAP 20 DIAMETERS OF THE BAR. DIMENSIONS FOR REINFORCING STEEL NOT SHOWN AS CLEAR SHALL BE TO THE CENTER LINE OF THE BAR.

ALL STRUCTURAL STEEL SHALL BE PAINTED ONE SHOP COAT OF ZINC CHROMATE AND TWO FIELD COATS OF ALUMINUM UNLESS OTHERWISE NOTED. EXCEPT THE INTERIOR PORTION OF STEEL PILING NEED NOT BE PAINTED.

HANDRAIL BOLTS SHALL HAVE NUTS AND LOCK WASHERS UNLESS OTHERWISE SPECIFIED AND ALL BOLTS EXCEPT AS NOTED ARE 1/2" DIA. AND SHALL BE FOWNA BENTH.

WHEN TREATED TIMBER OR PILING IS SHOWN ON THE DRAWING THE PRESERVATIVE FOR TREATMENT SHALL BE CROCIDITE OIL.

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

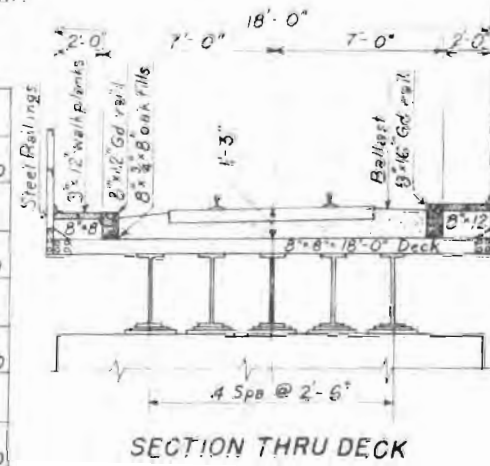
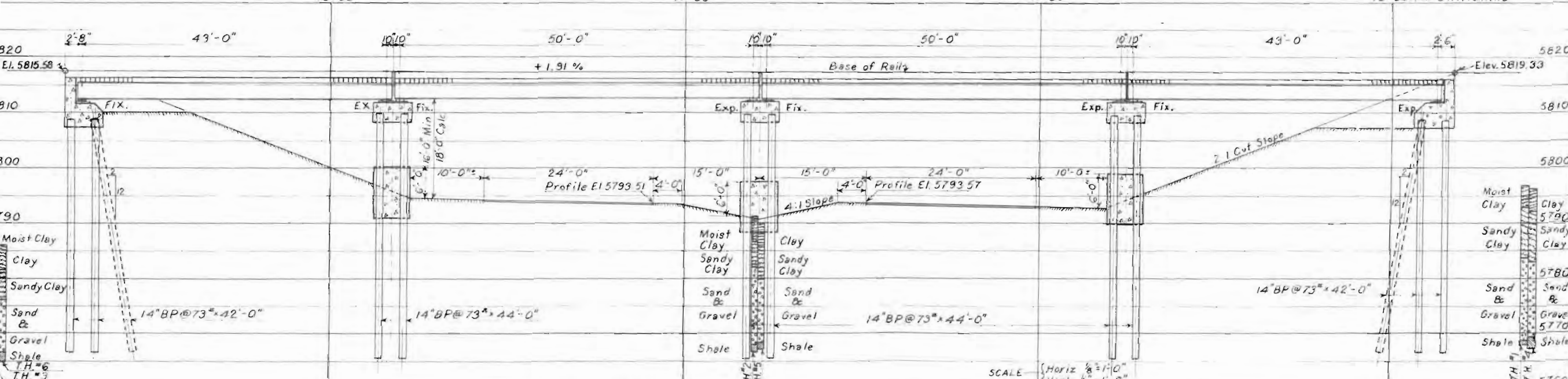
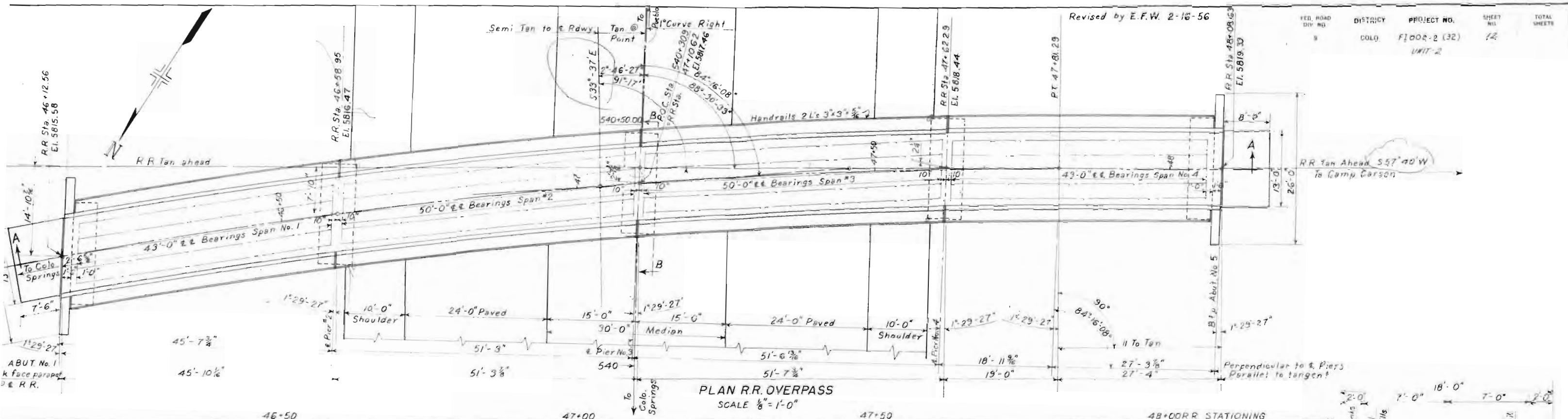
HIGH TENSILE STRENGTH BOLTS MAY BE SUBSTITUTED FOR FIELD RIVETS BUT AT NO ADDITIONAL EXPENSE TO THE STATE. THE BOLTS SHALL BE ASSEMBLED IN ACCORDANCE WITH SPECIFICATIONS APPROVED BY THE RESEARCH COUNCIL ON RIVETED AND BOLTED STRUCTURAL MEMBERS OF THE ENGINEERING FOUNDATION - JAN. 31, 1951.

COLORADO
DEPARTMENT OF HIGHWAYS
GENERAL LAYOUT, NOTES AND
SUMMARY OF QUANTITIES

Under GOVERNMENT SPUR
Sta 540+
Near FORT CARSON Sec 4 T 15S R 66W
Designed by E.F.S. Approved by J.L.G.
Made by J.L.G. Bridge Engineer
Checked by Date: Aug. 17, 1955

REVISIONS

FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLG.	FLOOR-2 (32)	12	
UNIT-2				



LIVE LOAD = COOPERS E-72
 SPECS. AREA, B, C, D, H

COLORADO
 DEPARTMENT OF HIGHWAYS
 FORT CARSON UNDERPASS
 CONSTRUCTION LAYOUT

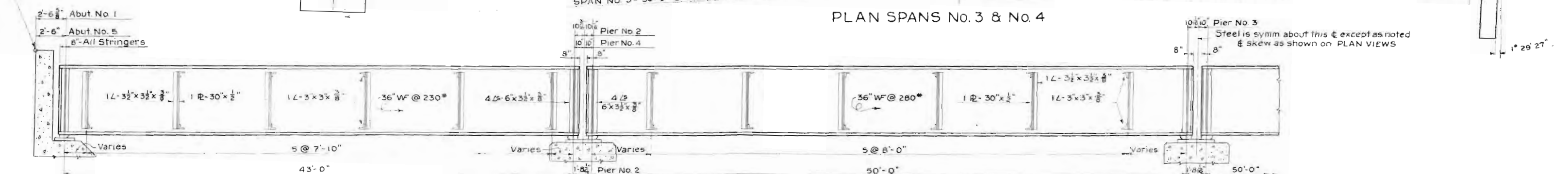
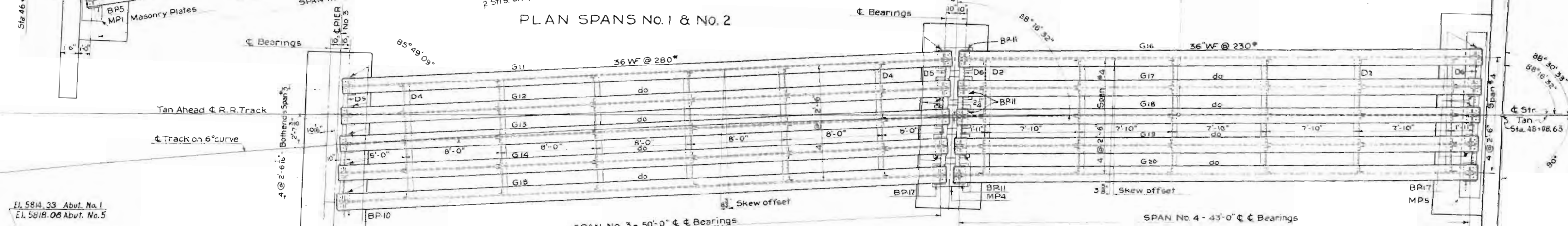
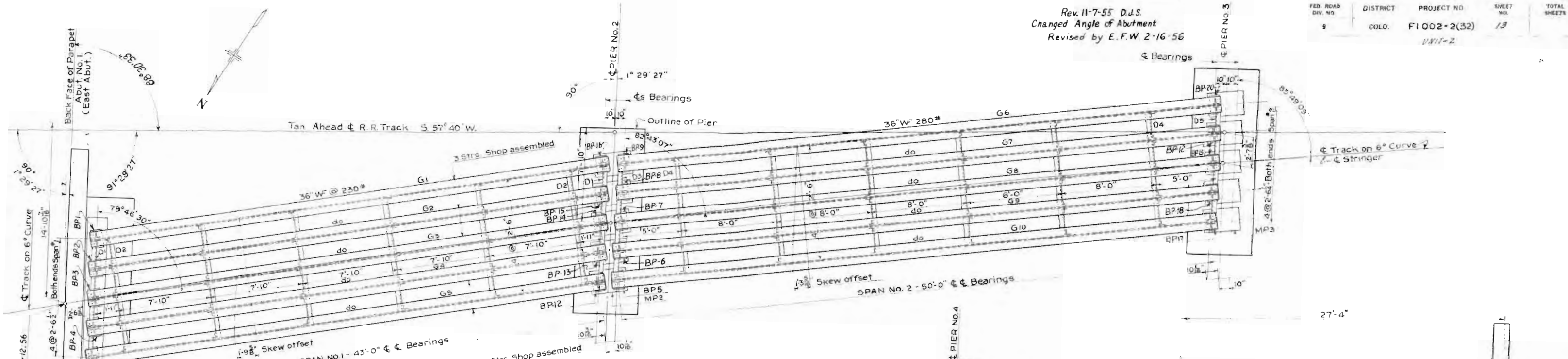
Under GOVERNMENT SPUR
 Sta. 540+
 Near FORT CARSON Sec. 4 T. 15 S. R. 66 W.
 Designed by E. F. W. Approved by [Signature]
 Made by E. F. W. Bridge Engineer
 Checked by [Signature] Date [Date] 1955

REVISIONS

Rev. 11-7-55 D.J.S.
 Changed Angle of Abutment
 Revised by E.F.W. 2-16-56

FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F1002-2(32)	13	

UNIT-2



HALF ELEVATION-SECTION ALONG & OF MIDDLE STRINGER

GENERAL NOTES FOR STEEL

Live Load = COOPERS E-72
 SPECIFICATIONS: Material & workmanship shall be according to the A.R.E.A. Specs. for 1953 and any subsequent revision thereof.
 RIVETS: All shop rivets shall be 7/8" & holes shall be subpunched 1/16" and reamed to 15/16" or drilled.
 FIELD CONNECTIONS: High tensile strength bolts shall be used. The bolts shall be assembled in accordance with specifications approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation dated Jan. 31, 1951, or the latest revision thereof. Bolts shall be assembled with one hardened steel washer under each head and nut.
 WELDING: Arc welding shall be done in accordance with the current A.W.S. Specs. for Highway & Railway Bridges.
 PAINT: All Structural Steel shall receive one shop coat of zinc chromate and two field coats of aluminum paint. No paint between shop riveted connections.

DESIGN DATA

LOADS	43'-0" SPANS		50'-0" SPANS	
	MOMENT	SHEAR	MOMENT	SHEAR
DL @ 4110 L.F. #	95.0	90.5		
DL @ 4380 L.F. #			136.9	11.4
LIVE LOAD	267.4	28.4	342.4	31.4
IMPACT @ 70%	187.2	19.9	239.6	22.0
TOTAL	549.6		718.9	
SEC. MOD. REQD.	366.4.0		479.2.7	
SEC. MOD. PER STR.	732.8		958.6	
STRINGER = 36WF@230			36WF@280	

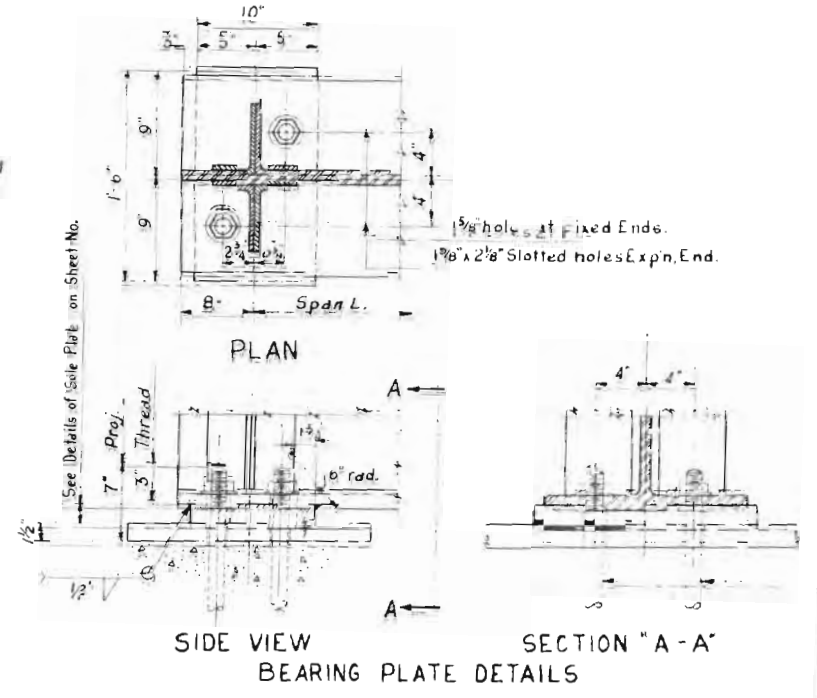
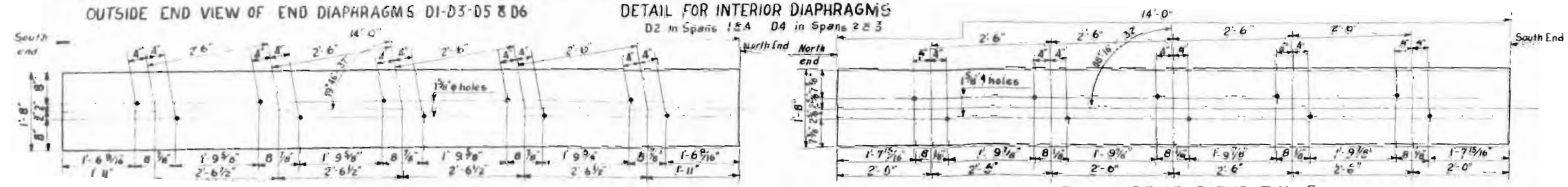
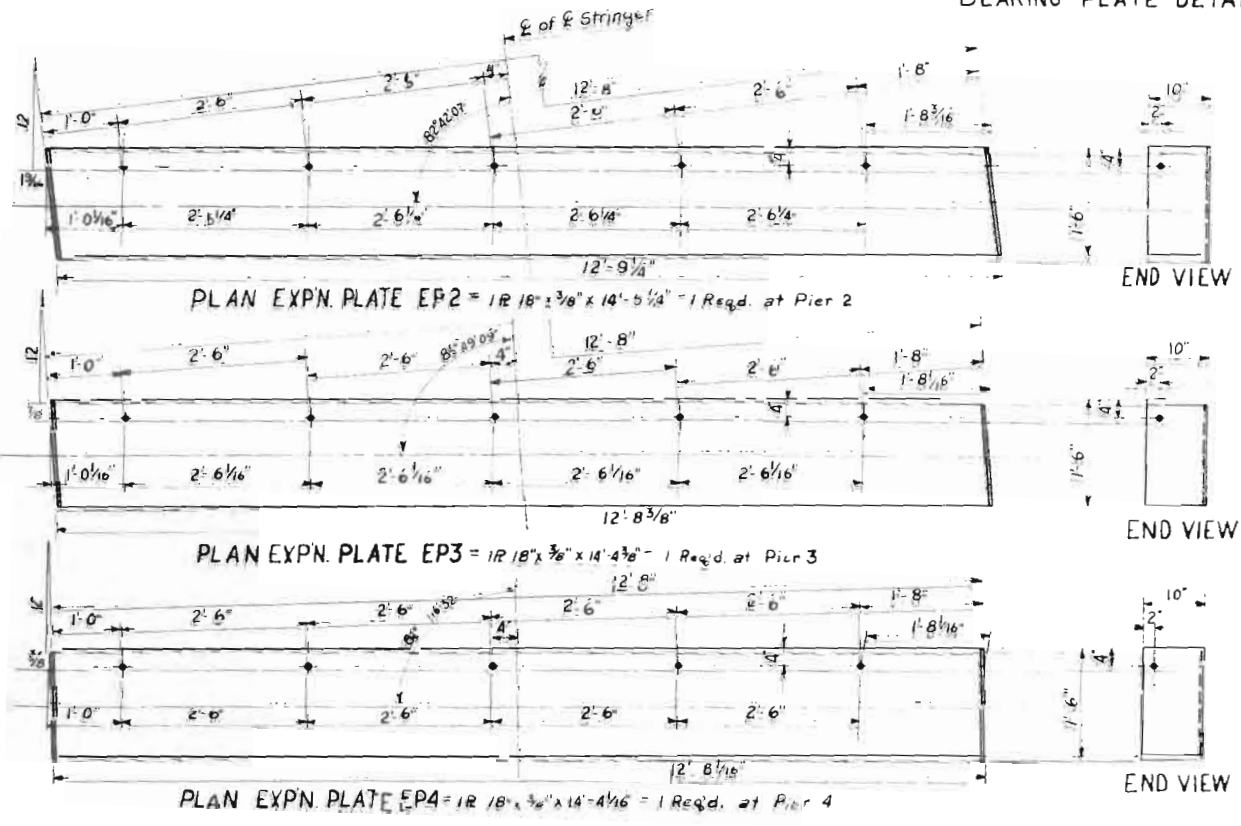
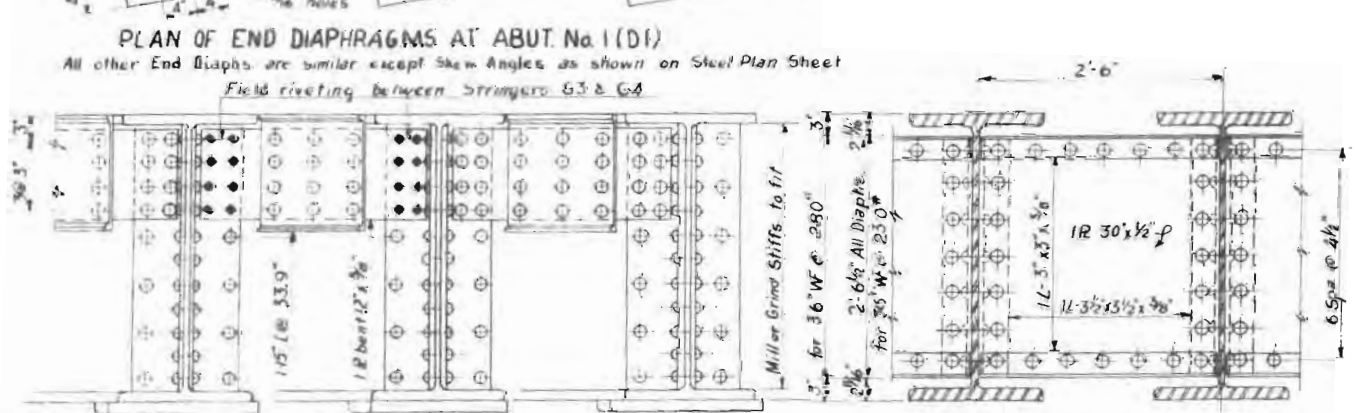
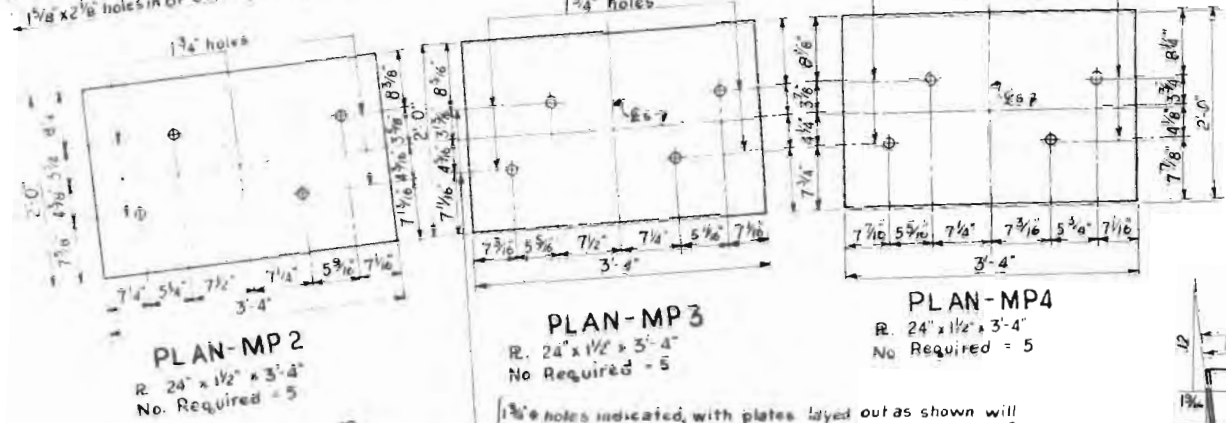
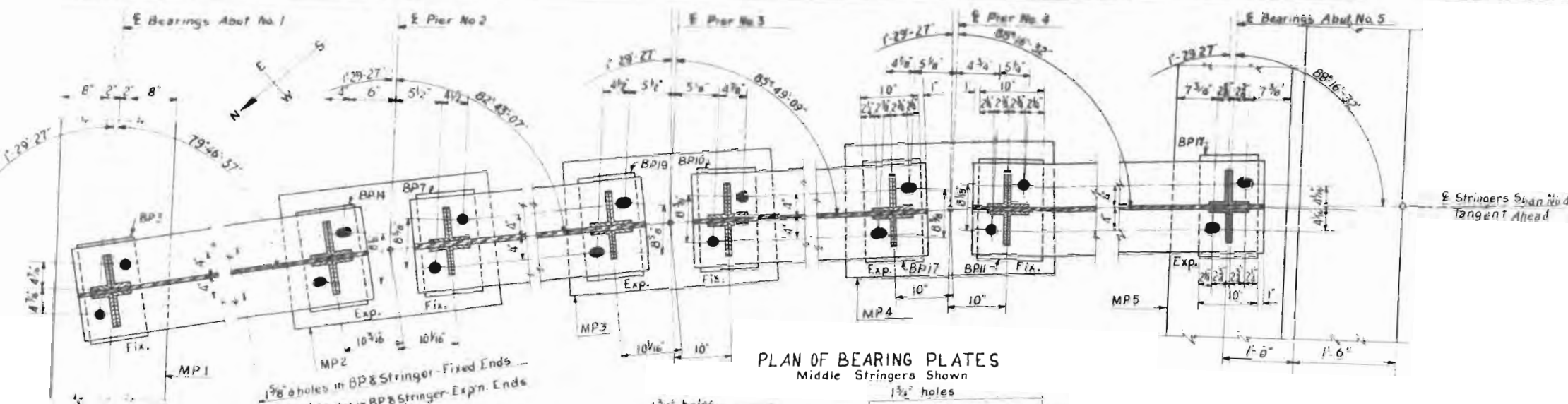
MOMENTS IN FOOT KIPS SHEAR IN KIPS

LIVE LOAD - COOPER'S E-72
 SPECS. A.R.E.A. & C.D.H.
 fs = 18000 #/sq

COLORADO
 DEPARTMENT OF HIGHWAYS
 FORT CARSON UNDERPASS
 SUPERSTRUCTURE
 STEEL DETAILS SPANS NO. 1, 2, 3 & 4

Under GOVERNMENT SPUR
 Sta. 5+40+
 Near Fort Carson, Sec. 4, T. 15S., R. 66W.

Designed by E.F.W. Approved by J.D. [Signature]
 Made by E.F.W. Bridge Engineer
 Checked by Date: Aug. 17, 1955

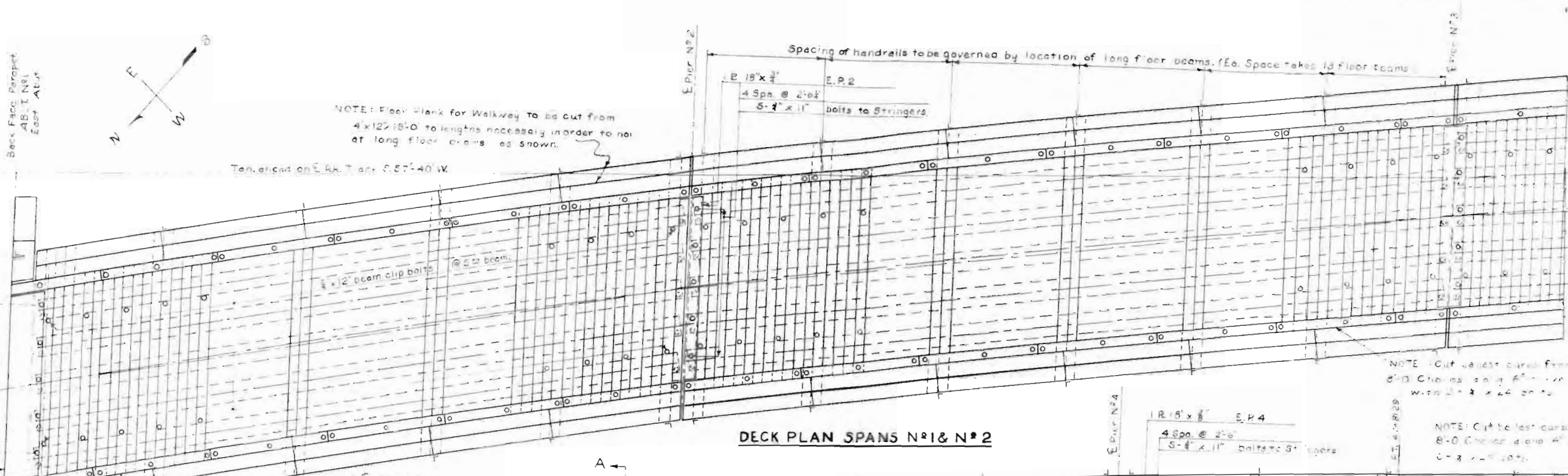


COLORADO
DEPARTMENT OF HIGHWAYS
FORT CARSON UNDERPASS
BEARING & MASONRY PLATE DETAILS

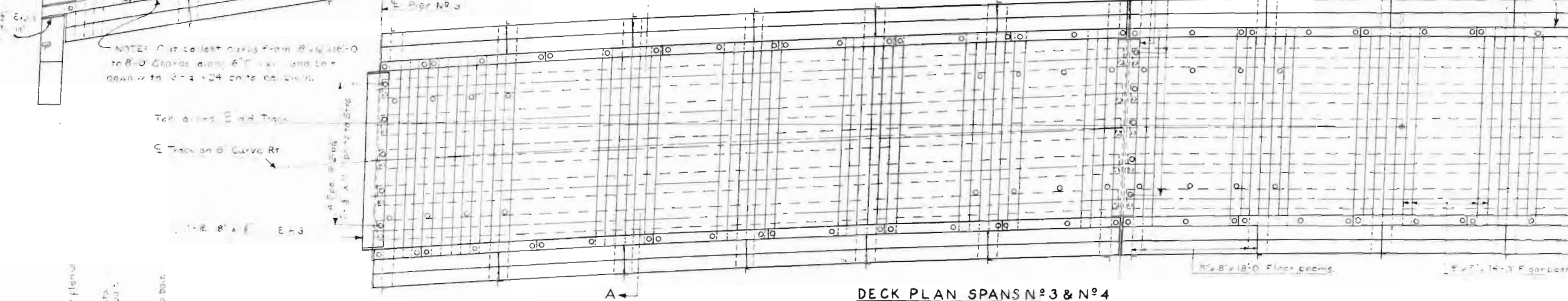
Under GOVERNMENT SPUR
Sta. 540+
Near East Canyon, Sec. 4 T.155 R.63W

Designed by EFW
Made by L.F.M.
Checked by

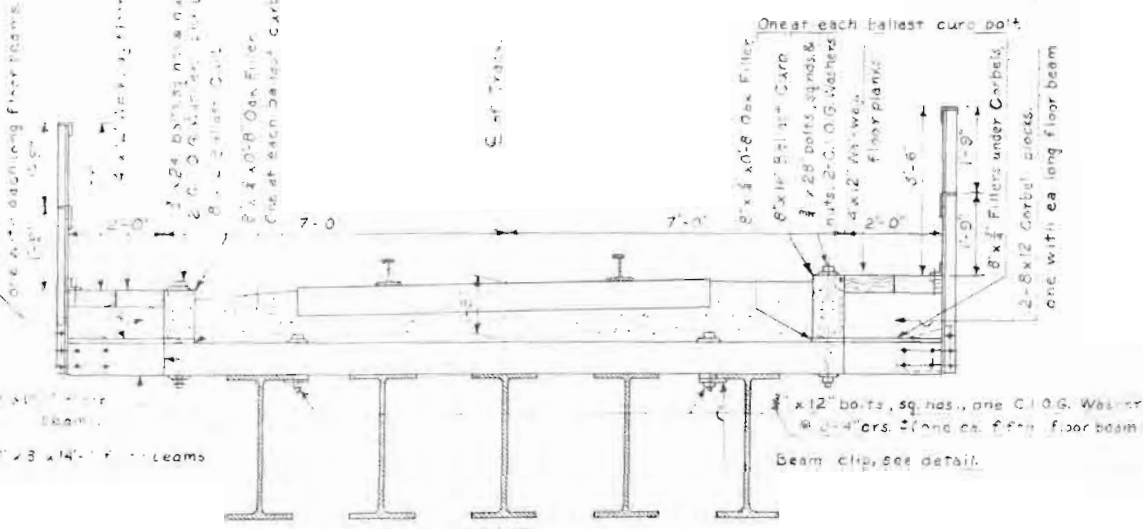
Approved by
Bridge Engineer
Date: Jan. 17 1955



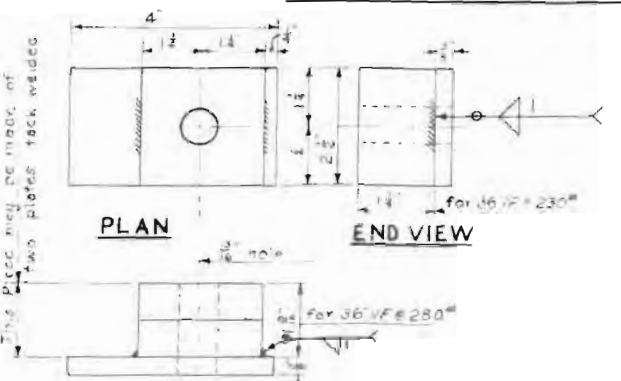
DECK PLAN SPANS N°1 & N°2



DECK PLAN SPANS N°3 & N°4



SECTION 'A-A' (Typical)



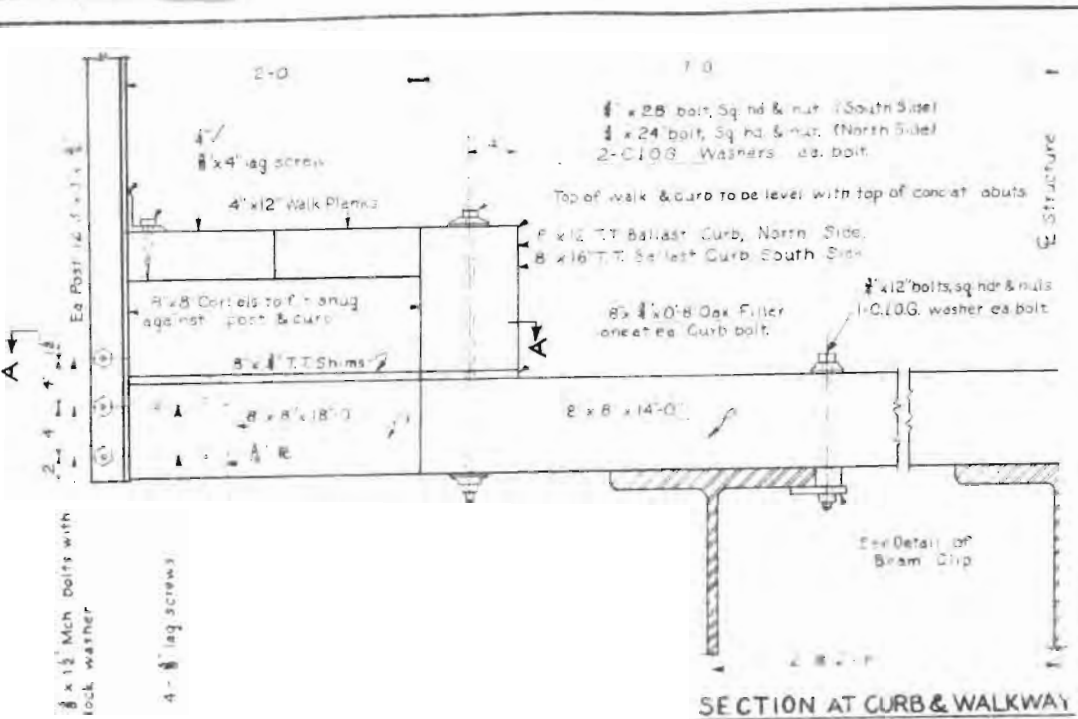
DETAIL OF BEAM CLIP 120 Required (Str's Steel)

GENERAL NOTES FOR TIMBER

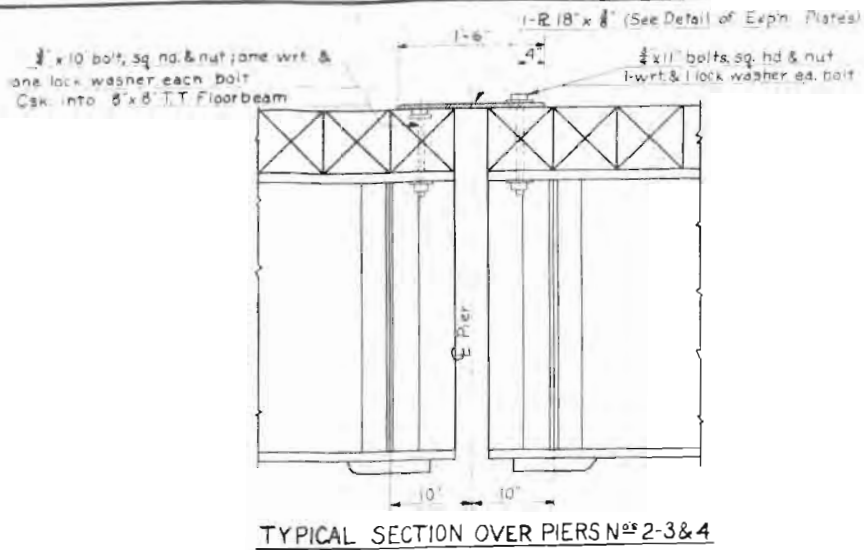
GENERAL NOTES:
All timber shall have a creosote preservative treatment and be yellow pine or Douglas fir.
For general notes on handling of treated timber hardware and other items, see G.E.S. 5282.
For special instructions on installation of drive spikes in wellway planks, see G.E.S. 5285.
Apron plates shall be given a heavy coat of petroleum before being placed in position, where necessary used. Deck timbers shall be packed as tight as practical. After a sufficient amount of any remaining space into which a regular width timber cannot be inserted shall be filled with a 2"x4" thick filler timber. A filler timber shall be inserted between the deck timbers, from one end cut to such length and thickness as required to result in a tight deck. Details shown are actual sizes.
Holes in wall supports for handrail posts shall be field bored.

LIVE LOAD = COOPERS E-72
SPECS. AREA & G.C.H.
Fs = 18000#/ft² Ft = 1600#/ft²

COLORADO
DEPARTMENT OF HIGHWAYS
FORT CARSON UNDERPASS
SUPERSTRUCTURE
DECK TIMBER DETAILS SPANS 1-2-3-4
UNDER GOVERNMENT SPUR
Sta. 540+
Near Ft. Carson, Sec. 4 T. 156 R. 96 W.
Designed by EFW Approved by J.S. [Signature]
Made by EFW Bridge Engineer
Checked by [Signature] Date: 10 19 55



SECTION AT CURB & WALKWAY

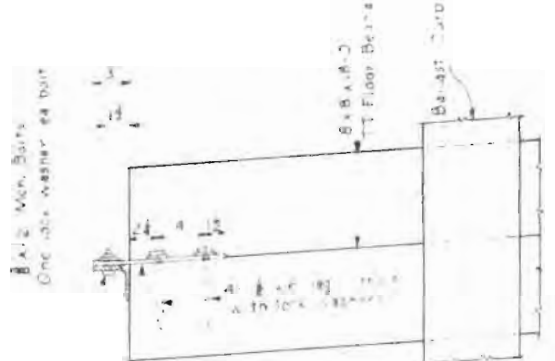


TYPICAL SECTION OVER PIERS N°S 2-3&4

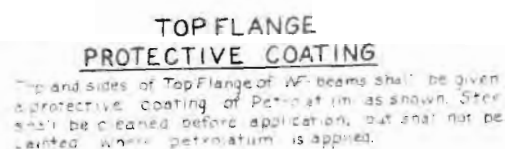
TREATED TIMBER				
DESCRIPTION	No	SIZE	LENGTH	BD. FT.
Deck Floor Beams	52	8 x 8	18'-0"	4992
Deck Floor Beams	236	8 x 8	14'-0"	17622
Ballast Curbs	26	8 x 12	8'-0"	1664
Ballast Curbs	26	8 x 16	8'-0"	2218
Corbels (Field cut to fit)	9	8 x 8	12'-0"	576
Corbels (Field cut to fit)	9	8 x 12	12'-0"	864
Walkway Plank	44	4 x 12	18'-0"	3168
Corbel Shims	18	4 x 8	12'-0"	108
Total				31213
Oak Fillers	156	4 x 8	0'-8"	22

HARDWARE-BOLT LIST			
DESCRIPTION	N°PCS	SIZE	WEIGHT
Ballast Curbs to Floor beams	78	1/2 x 24	259
Floor beam to WF beam clips	120	3/4 x 12	218
Pier Expansion Plates to WF beam	15	3/4 x 11	26
Abut. Exph. Plates to WF beam	10	3/4 x 11	17
End Floor beams to WF beams	15	3/4 x 10	24
Handrail Posts to Plates with Bolts	144	3/4 x 15	46
Top Rail to Abutments	2	3/4 x 6	6
Ballast Curbs to Floor Beams	78	1/2 x 28	298
Lead Clinch Anchors	48	1/2	
C.I.G. Washers	432	1/2	540
Wrought Washers	50	1/2	6
Lock Washers	440	3/4	11
Lock Washers	54	1/2	2
Double grip Screws for walkway planks	352	8 long	88
60d. wire nails (5-60d nails per ft. on)	440		131
Lag Screws-Post Clips to Walkway Plank	96	3/4 x 4	52
Lag Screws-Post Plates to Floor Beams	192	3/4 x 6	99
Lag Screws-Exph. Plates to Ballast Curbs	14	3/4 x 6	11

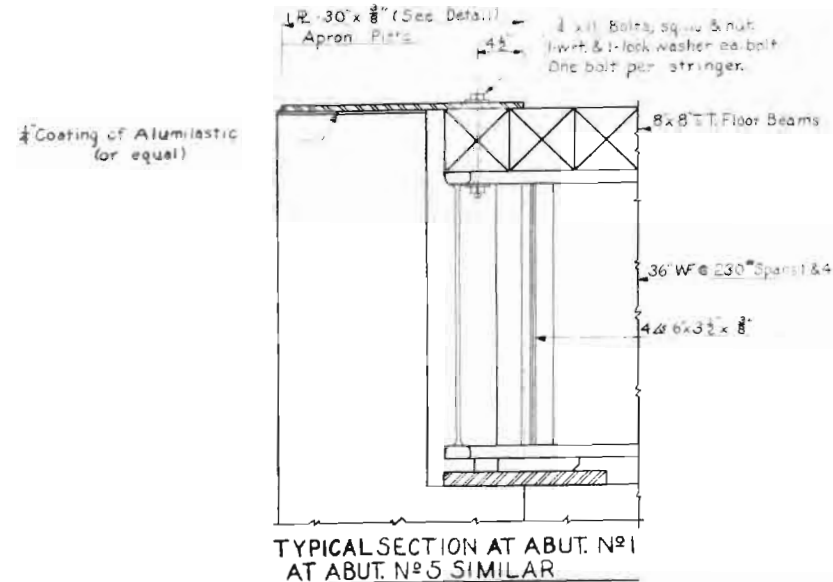
NOTE: All bolts thru timber to have grip lock nuts. * To be included in bid price per lb of Structural Steel. All other hardware to be included in bid price per M bd. ft. of Treated Timber.



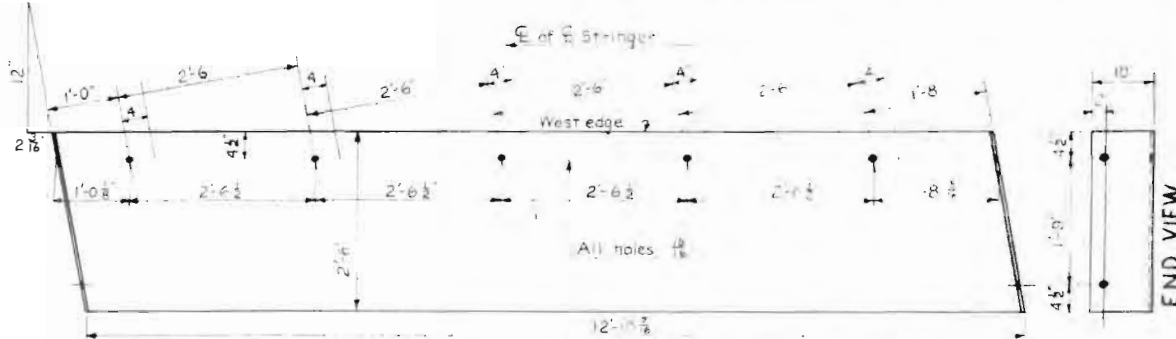
SECTION 'A-A'



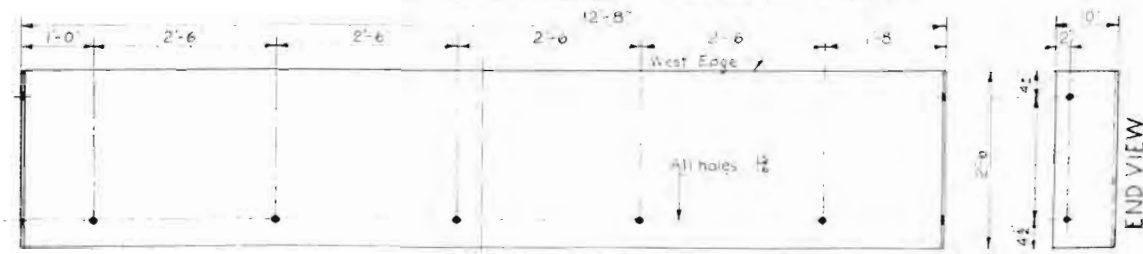
TOP FLANGE PROTECTIVE COATING



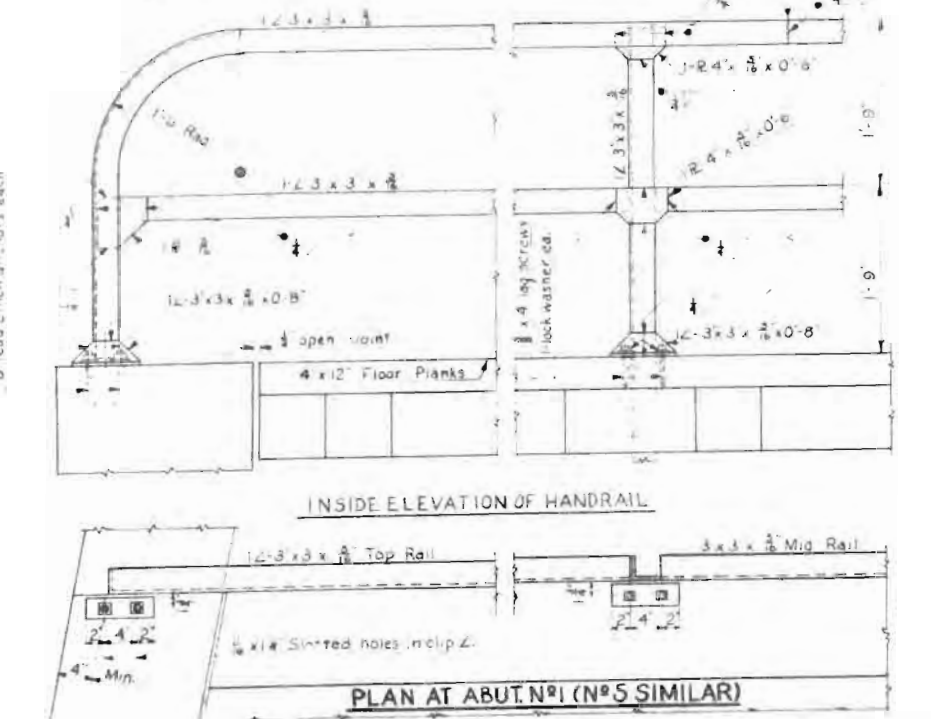
TYPICAL SECTION AT ABUT. N°1 AT ABUT. N°5 SIMILAR



APRON PLATE-EPI-1R 30' x 14'-6 1/2" ONE REQD AT ABUT. N°1

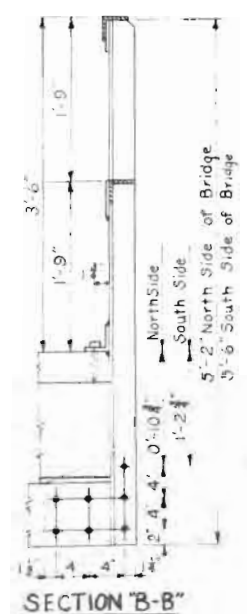


APRON PLATE-EP5-1R 30' x 14'-4" ONE REQD AT ABUT. N°5

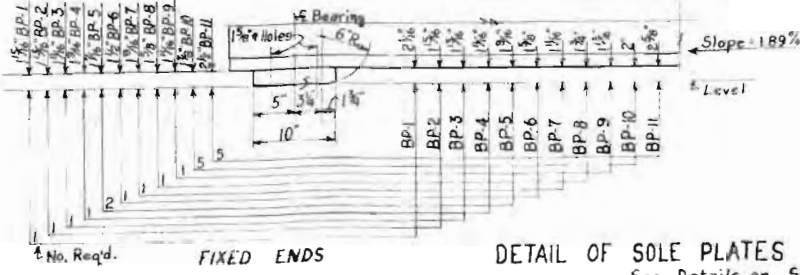


INSIDE ELEVATION OF HANDRAIL

PLAN AT ABUT. N°1 (N°5 SIMILAR)

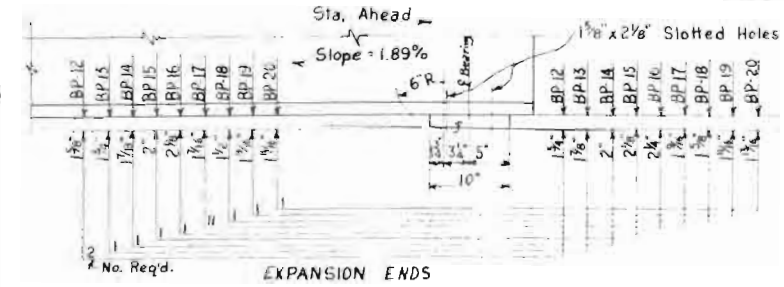


SECTION 'B-B'



FIXED ENDS

DETAIL OF SOLE PLATES - TOTAL 40 See Details on Sheet No. 14

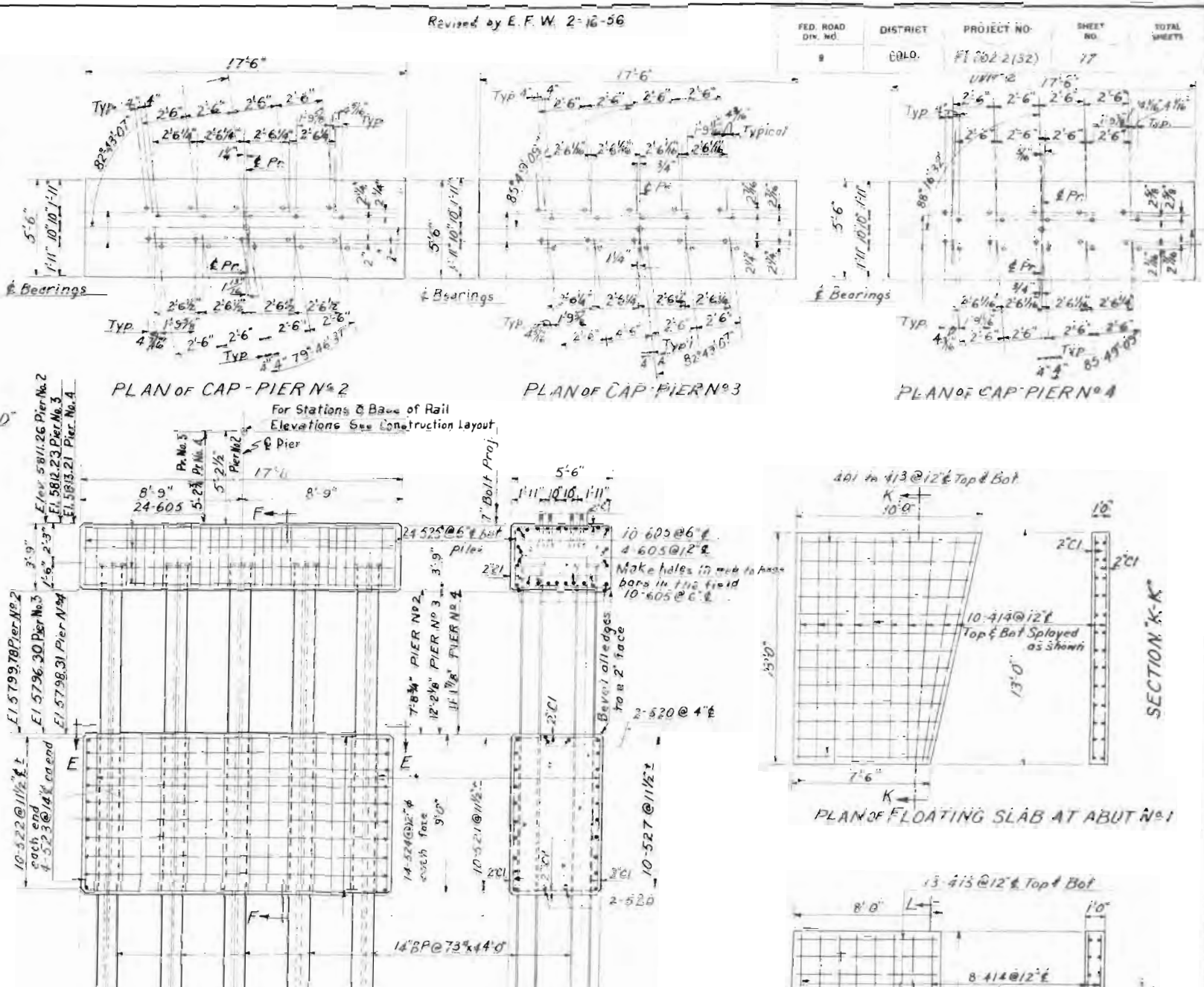
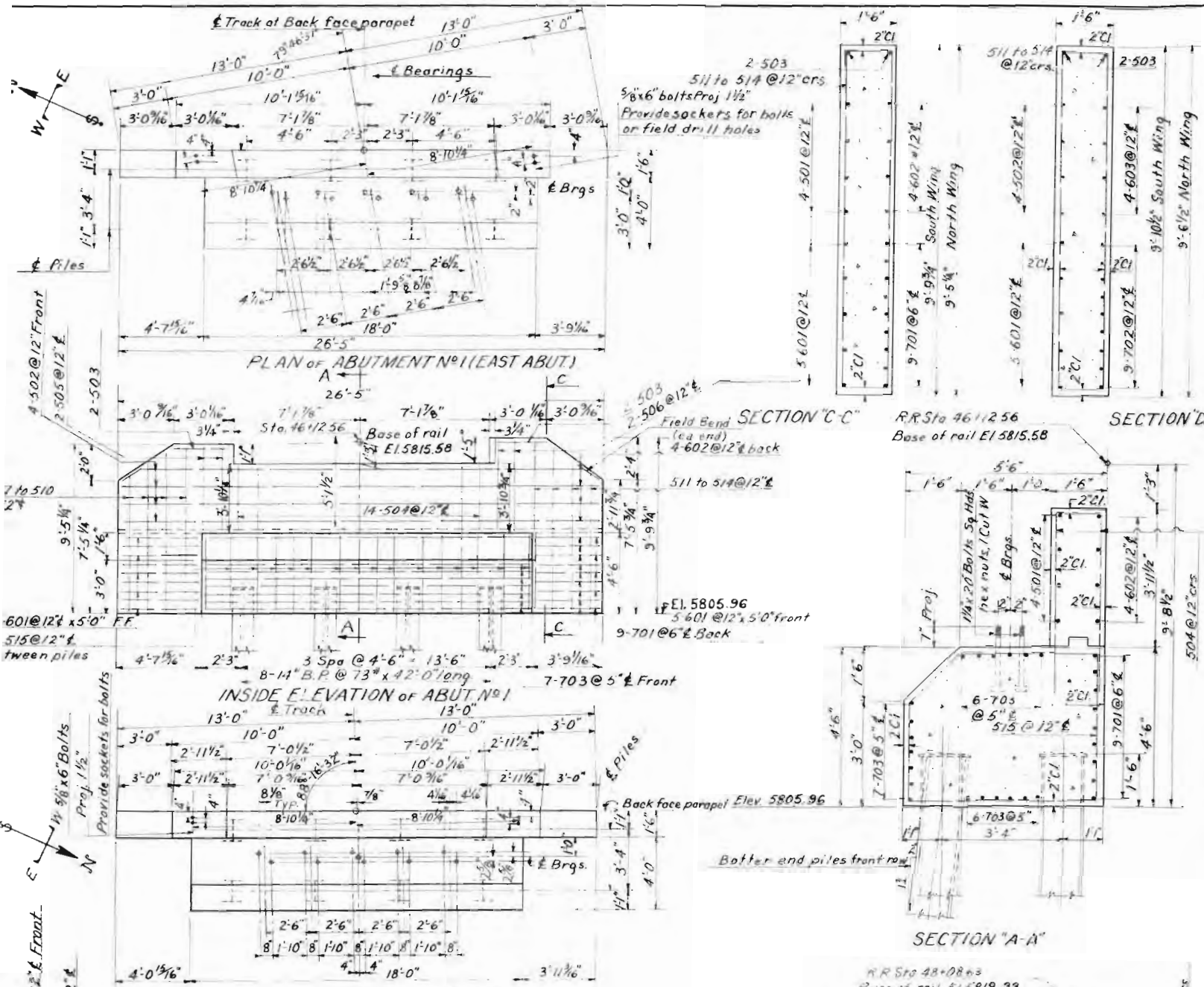


EXPANSION ENDS

COLORADO DEPARTMENT OF HIGHWAYS
FORT CARSON UNDERPASS SUPERSTRUCTURE
 HANDRAILS & MISCELLANEOUS DETAILS
 UNDER GOVERNMENT SPUR
 Sta. 540+
 Near Fort Carson Sec. 4 T. 15S R. 66W
 Designed by E.F.W. Approved by *[Signature]*
 Made by E.F.W. Bridge Engineer
 Checked by *[Signature]* Date *Dec 17, 1955*

Revised by E. F. W. 2-16-56

FED. ROAD DIST. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
	COLO.	FI 002 2(32)	17	



COLORADO
 DEPARTMENT OF HIGHWAYS
 FORT CARSON UNDERPASS
 ABUTMENTS NO. 1 & 5
 PIERS NO. 2, 3 & 4

Under Government Spur
 Sta. 5+00
 Near Fort Carson Sec. 4 T. 15S R. 66W

Designed by EFW
 Made by EFW
 Checked by

Approved by R. K. ...
 Bridge Engineer
 Date: Aug. 17, 1955

DETAIL of PILE CAP PLATES
 FOR PIERS & ABUTMENTS
 STRUCTURE NO. I-17-B1