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- ALIGNMENT PLAN AND PROFILE
- GRADING PLAN AND PIT LOCATION
- CROSS SECTIONS.

COLORADO

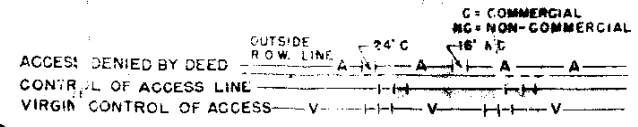
DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

FEDERAL AID PROJECT NO. 1092-2(5)

STATE HIGHWAY NO. 1

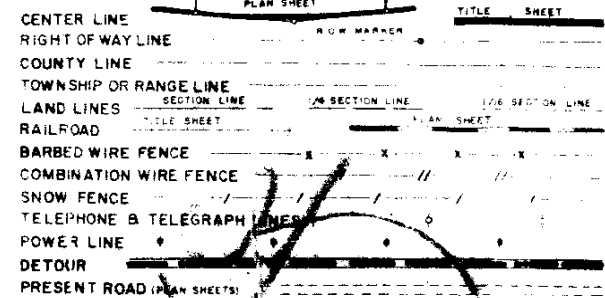
EL PASO COUNTY



FEDERAL ROAD REGION NO.	DIVISION	ROI NO.
9	COLORADO	1092-2(5)

REV. BEG STA - 11-13 57-EE0
 Rev. Index 2-28-58 J.L.K.
 REV. 1-28-59, ADDED ACCESS, E.E.O.

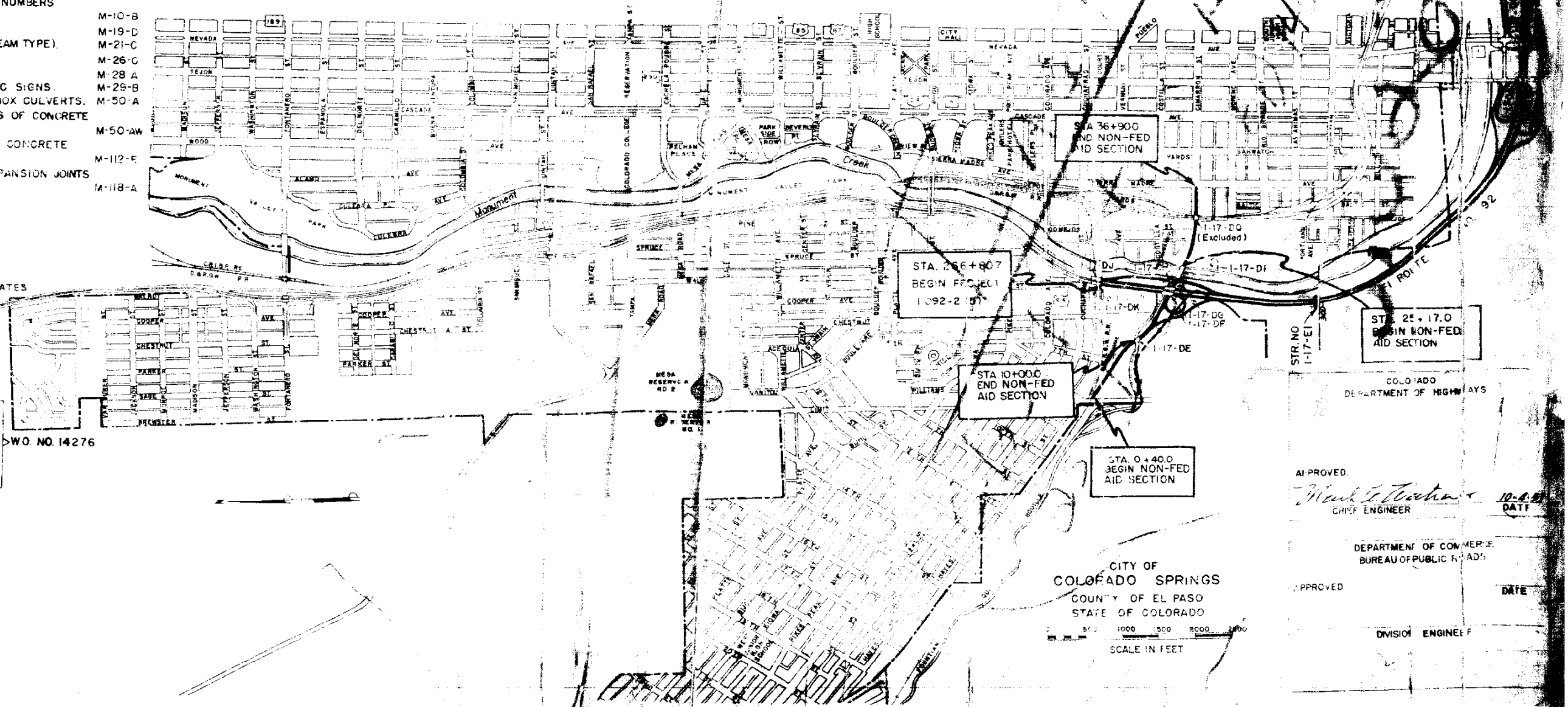
CONVENTIONAL SIGNS



SCALES
 ON PLAN, 1" = 100 FT
 ON PROFILE, 1" = 100 FT HORIZONTAL
 1" = 10 FT VERTICAL
 GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
 GROSS LENGTH OF PROJECT 10,735.3 Feet = 2.033 Miles
 NET LENGTH OF PROJECT

NOTE TO BIDDERS:
 It is recommended that bidders of this project go over the plan details with one of the field representatives of this Department, listed on page 10 of the Special Provisions.

STA. 36+90.4
 END 1092-2(5)
 STA 373+88.4
 IN 002-2(5)



ADDED SHEETS (2-28-58)
 STANDARD GIRDERS
 STANDARD GIRDERS - STANDARD BEARING PLATES
 ELEVATION REVISIONS

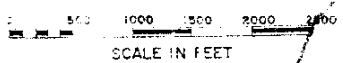
ADDED SHEETS (2-5-59)
 DETAILS OF STR. NO. 1-17-M (W.O. NO. 14123)
 TYPICAL SECTION, SUMMARY OF EARTHWORK QUANTITIES, TABULATION OF CURB AND GUTTER, SURFACING PLAN, DETAILS OF CURB, GUTTERS AND DRIVEWAYS.
 PLAN AND PROFILE SHEET (ARVADA STREET)
 CROSS SECTIONS.

CITY OF COLORADO SPRINGS
 COUNTY OF EL PASO
 STATE OF COLORADO

APPROVED: *Mark E. ...*
 CHIEF ENGINEER
 DATE: 10-2-59

DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS
 APPROVED: _____
 DATE: _____

DIVISION ENGINEER



TYPICAL SECTIONS

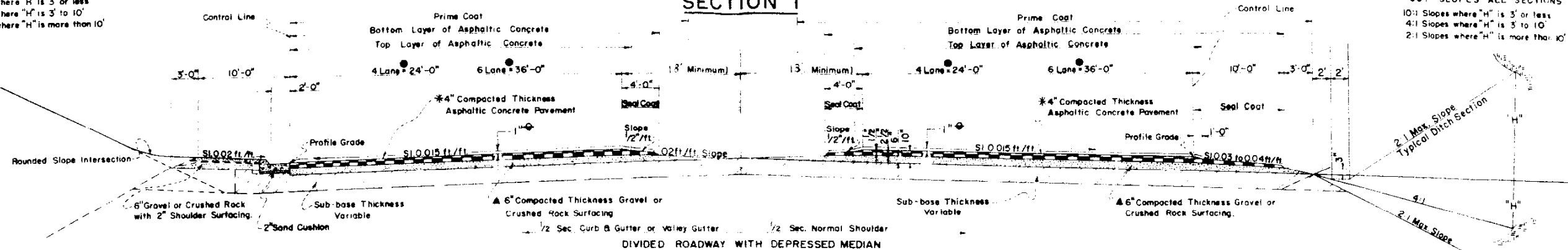
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-211		

Rev. Sect To Show Future Overlay, E.L.O. 1-16-61

FILL SLOPES ALL SECTIONS
 10:1 Slopes where "H" is 3' or less
 4:1 Slopes where "H" is 3' to 10'
 2:1 Slopes where "H" is more than 10'

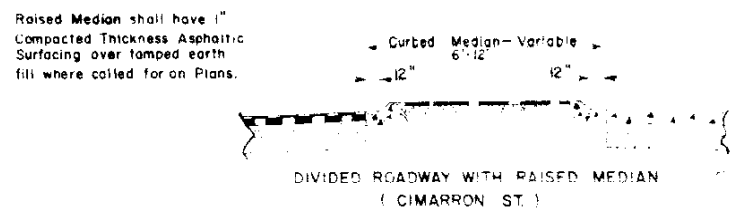
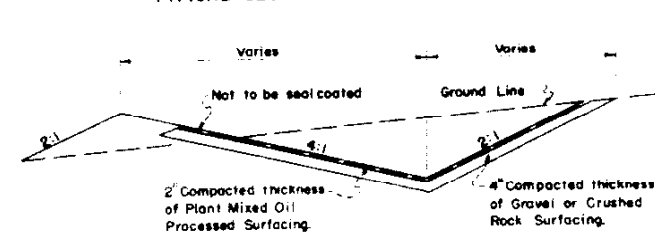
CUT SLOPES ALL SECTIONS
 10:1 Slopes where "H" is 3' or less
 4:1 Slopes where "H" is 3' to 10'
 2:1 Slopes where "H" is more than 10'

SECTION 1



DIVIDED ROADWAY WITH DEPRESSED MEDIAN

TYPICAL SECTION - INTERCEPTING DITCHES



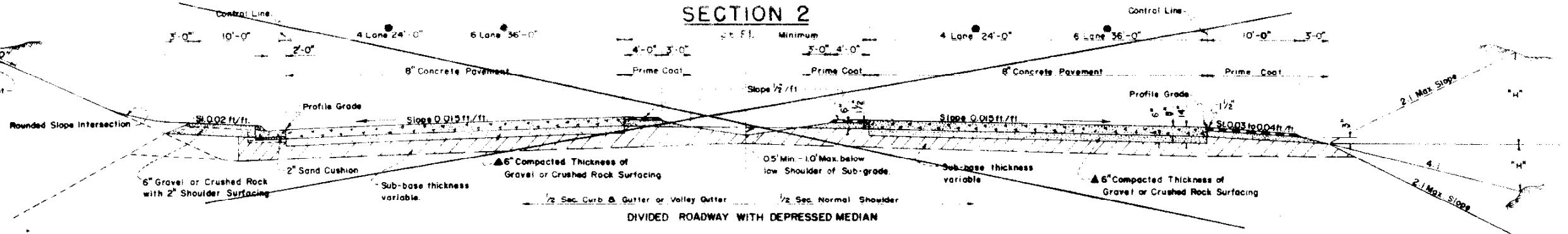
DIVIDED ROADWAY WITH RAISED MEDIAN (CIMARRON ST.)

INSIDE SHOULDER DETAIL

OUTSIDE SHOULDER DETAIL

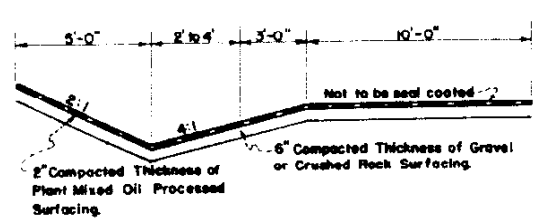
(ASPHALTIC CONCRETE PAVEMENT)

SECTION 2



DIVIDED ROADWAY WITH DEPRESSED MEDIAN

TYPICAL SECTION FOR ROADWAY DITCH PAVING



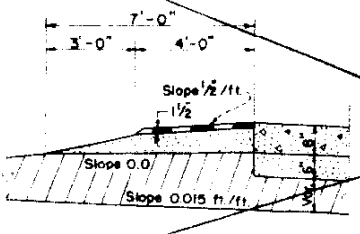
NOTE: Ditches to be cited where called for on plans or as directed by the Engineer.

● Where speed change lanes are required the pavement shall be widened 12' outside of control line. Concrete gutter and shoulder to be constructed in same relation to either widened or standard pavement.
 1" Asphaltic Concrete Pavement Future Overlay

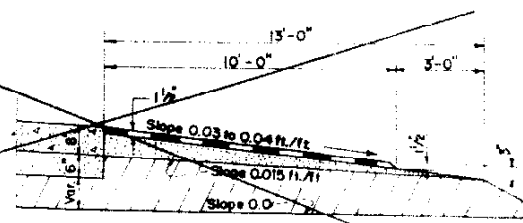
▲ 6" Compacted Thickness of Gravel or Crushed Rock Surfacing to be placed in Two 3" Courses.

* Projects using a mat of 4" thickness shall be laid in two Courses. Bottom Course of 2 1/2" Top Course of 1 1/2"

Note: Bottom 2 1/2" Layer of Asphaltic Concrete Pavement to be "Leveling Course" and top 1 1/2" Layer to be "Surface Type 5"



INSIDE SHOULDER DETAIL



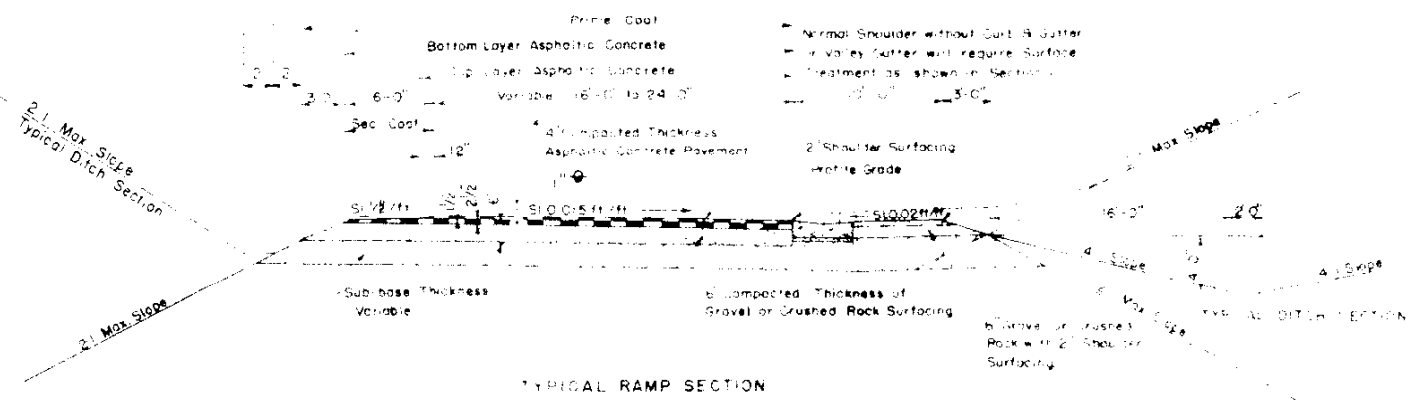
OUTSIDE SHOULDER DETAIL

(CONCRETE PAVEMENT)

TYPICAL SECTIONS

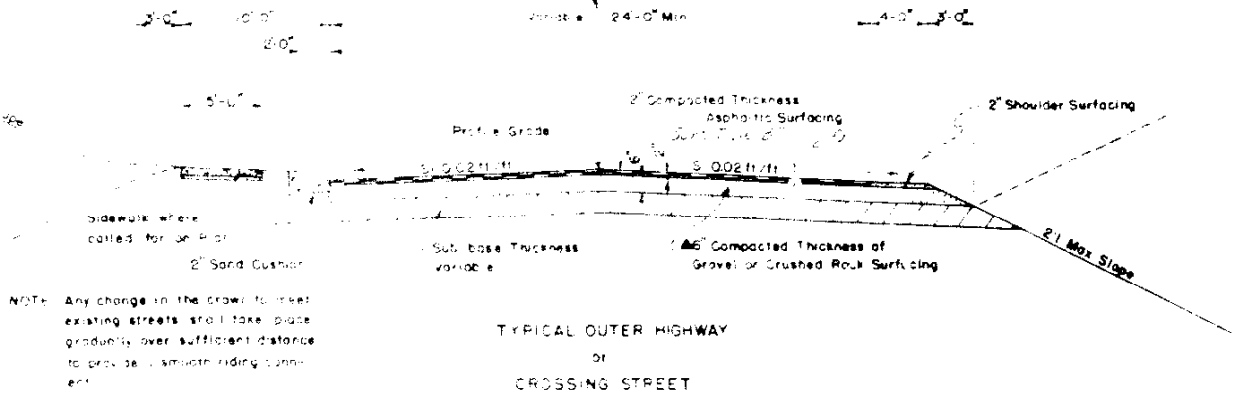
FED. ROAD DIST. NO. STATE PROJ. NO. SHEET NO. TOTAL SHEETS
 9 0000 092 3 5
 REV. SENT TO SHOW FUTURE OVERLAY, E.F.C. 4-8-61

SECTION 3



TYPICAL RAMP SECTION

SECTION 4



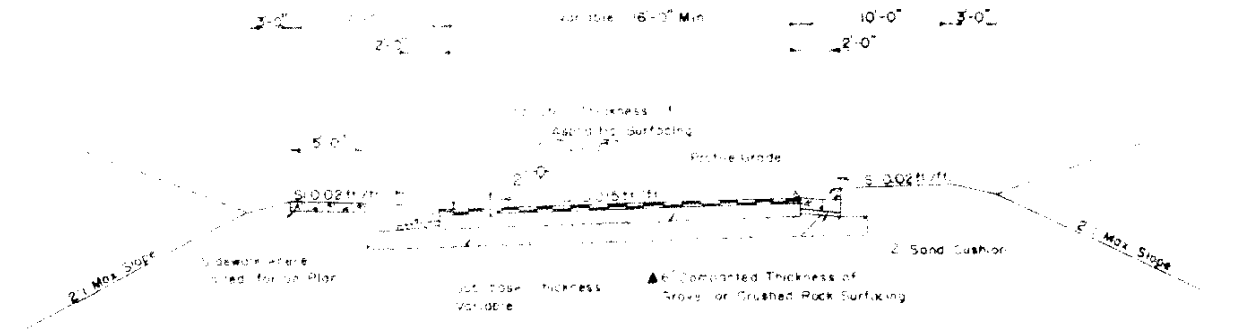
TYPICAL OUTER HIGHWAY OR CROSSING STREET

▲ 6" Compacted Thickness of Gravel or Crushed Rock Surfacing to be Placed in Two 3" Courses
 ● Asphaltic Concrete Pavement
 ○ Asphaltic Concrete Pavement - Future Overlay

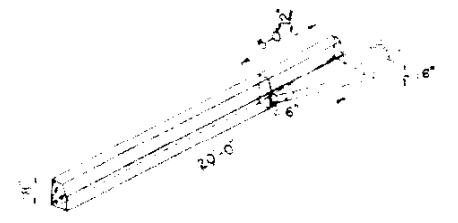
DETAILS OF SHOULDER ROLL



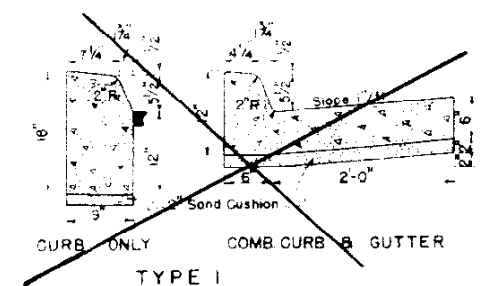
SECTION 5



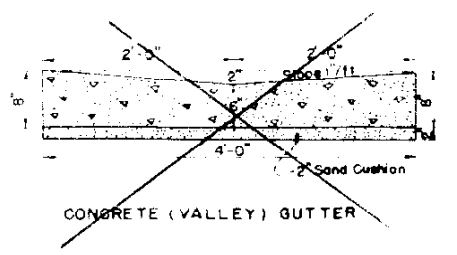
TYPICAL OUTER HIGHWAY (ONE WAY)



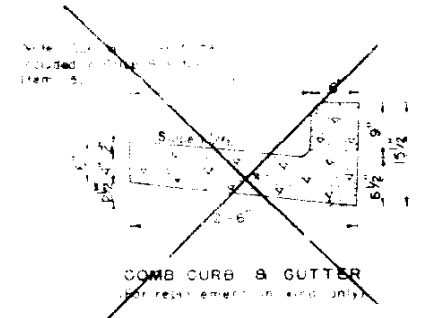
TRANSITION FROM CURB & GUTTER TO BARRIER CURB



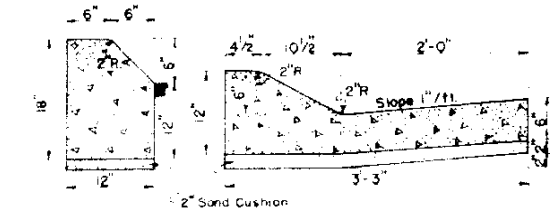
TYPE 1



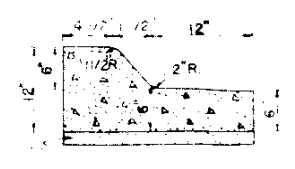
CONCRETE (VALLEY) GUTTER



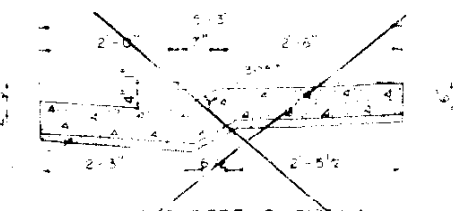
COMB CURB & GUTTER (for replacement in kind only)



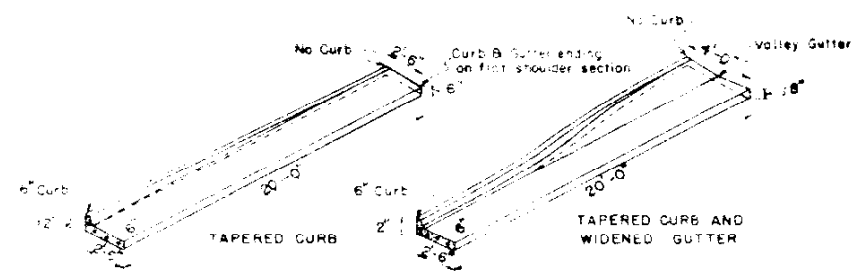
TYPE 2



COMB CURB & GUTTER TYPE 3



COMB CURB & GUTTER, & SIDEWALK (for use to match existing curb & gutter only - not called for on Plan)



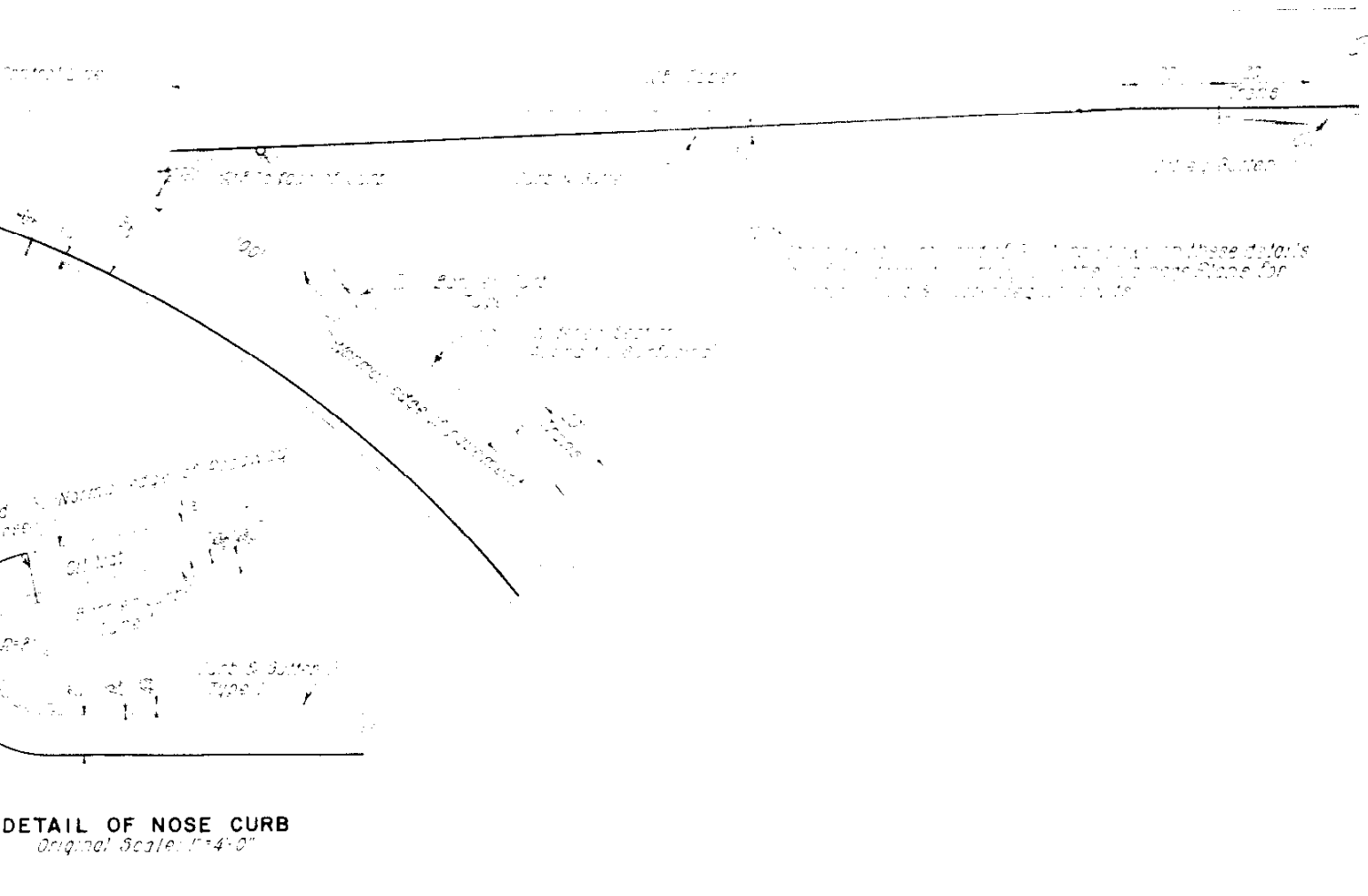
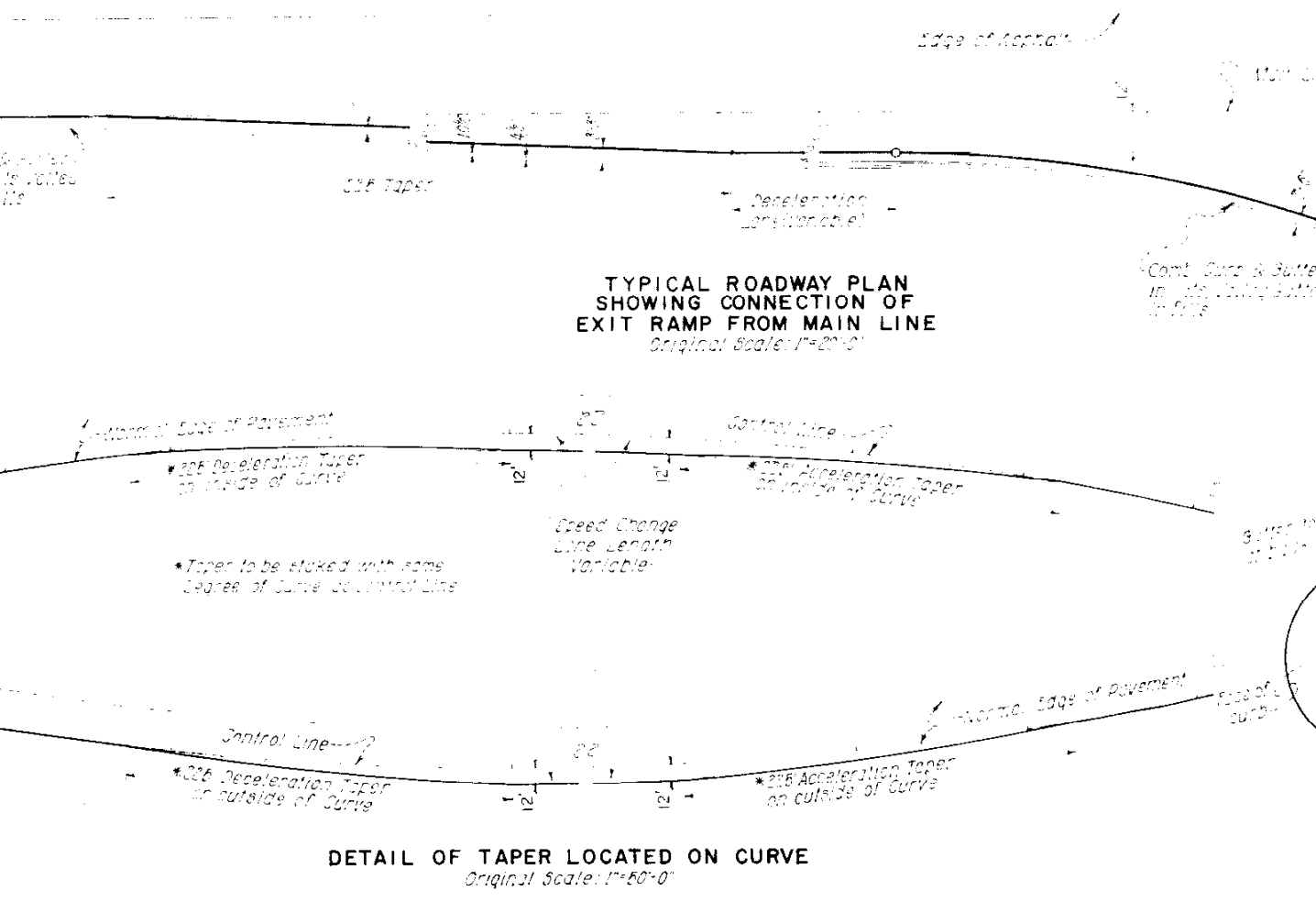
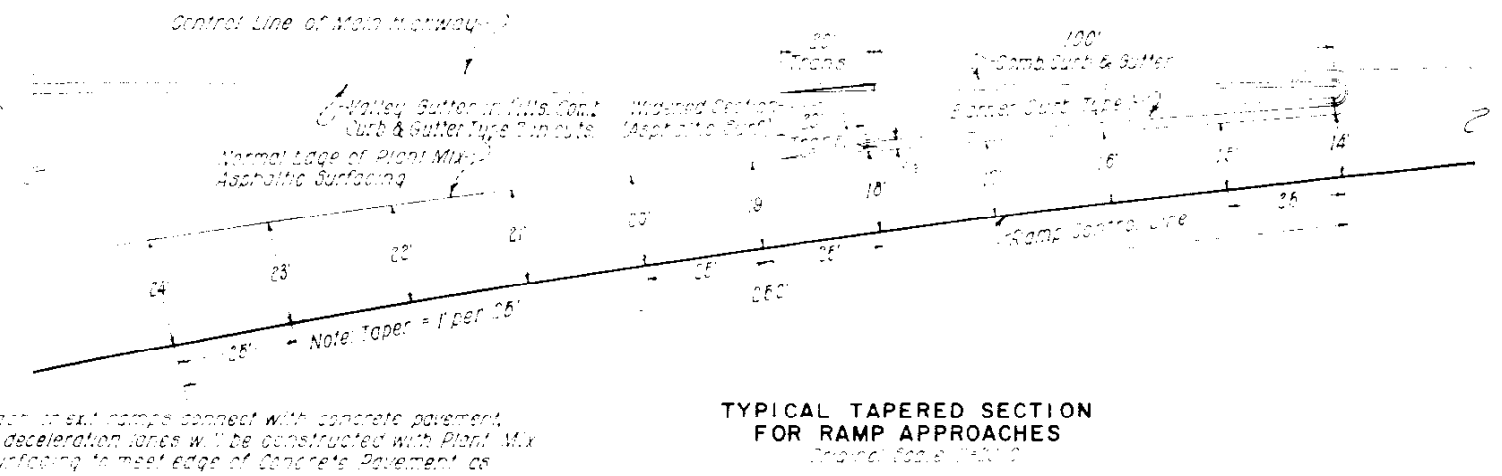
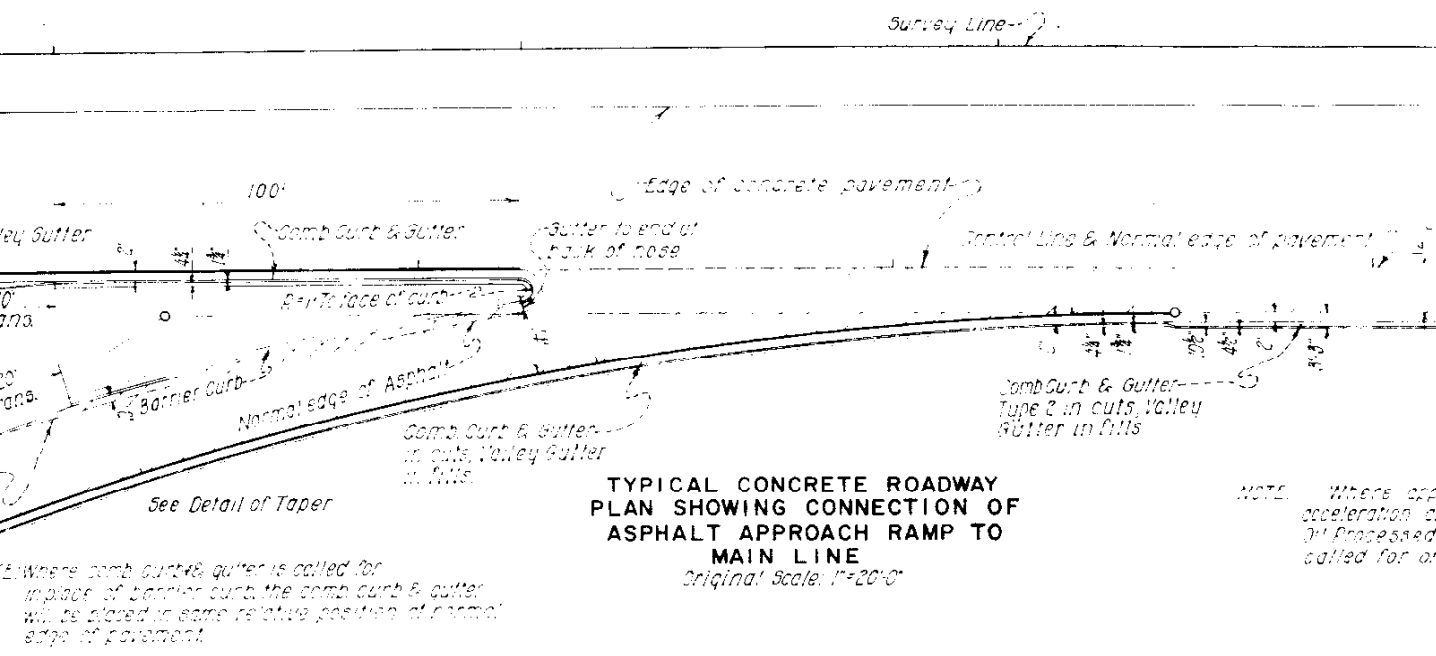
CURB TRANSITION DETAIL

1. Curb and gutter gradually cut shall be tapered to zero height over a distance of 20' as shown above.
 2. On the inside of curve where the gutter shall have the same slope as the pavement.
 3. Transition area to be finished and paid for as Concrete Combination Curb and Gutter.

TYPICAL RAMP DETAILS

SHOWING CURB & GUTTER DETAIL

FED ROAD DIVISION NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	4	



TABULATION OF LENGTH & DESIGN DATA

STATION	ROADWAY		BRIDGE	
	LIN. FT.	LIN. FT.	LIN. FT.	
266+80.7 Begin I 092-2(5) 274+47.3	766.6			
I-17-DF & DG 277+49.6 296+85.0	1,935.4		302.3	
I-17-E1 DBL. 14x10' C.B.C. 297+16.0			31.0	
309+48.6 Bk = 309+21.0 An. 343+10.7	1,232.6 3,389.7			
I-17-DA & DB 344+77.7 348+13.3	335.6		167.0	
351+00 Begin IN 002-2(42) 351+26.3			286.7 26.3	
373+88.4 End I 092-2(5) = Sta. 373+88.4 on IN 002-2(42)	2,262.1			
	9,922.0		813.3	
SUMMARY		LIN. FT.	MILES	
Roadway		9,922.0	1.879	
Bridges		813.3	0.154	
Total Length		10,735.3	2.033	
DESIGN DATA				
Maximum Degree of Curve	5°00'			
Maximum Grade	3.00%			
Minimum N.F.S.D. - Horizontal	>1,200'			
Minimum N.P.S.D. - Vertical	470'			
Maximum Design Speed	50 M.P.H.			

GENERAL NOTES

This project is to be constructed in conformity with the Standard Specifications of the Colorado Department of Highways adopted JUNE 1, 1952.

All quantities on preliminary plans are to be considered approximate only.

All concrete used on this project shall be "Air-Entrained Concrete" Class "A".

All curves are to be superelevated and widened as provided by the standard Superelevation sheet included with the plans.

For preliminary plan quantities of asphaltic road materials, asphaltic concrete pavement, asphalt & stone screenings, the following rates of application were used:

Prime Coat (over concrete) R.C.	at	10 gal. per sq. yd.
Prime Coat (over other areas) M.C.	at	40 gal. per sq. yd.
Asphaltic Concrete Pavement	at	110.00 lbs. per sq. yd.
		per 1" thickness
Asphalt (90-100 penetration)	at	6.50 lbs. per sq. yd.
		per 1" thickness
Seal Coat R.C.	at	25 gal. per sq. yd.
Stone Screenings (type I)	at	25.00 lbs. per sq. yd.

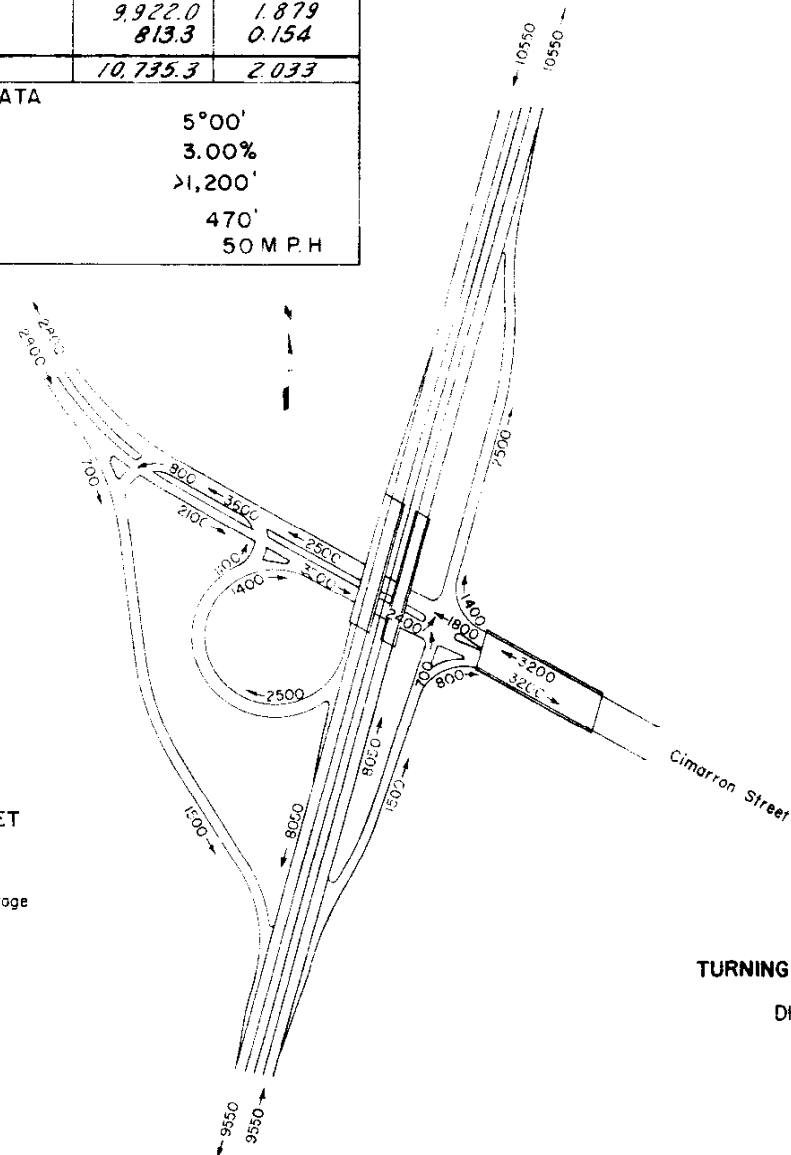
Rate of application and grade of oil shall be as determined by the engineer at the time of application.

Rolling Quantities estimated as follows:

Rolling with Flat Wheeled Roller (Oil Mat)	50 tons per hour per unit
Rolling with Flat Wheeled Roller (Top Embankment)	2350 sq. yds. per hour per unit
Rolling with Flat Wheeled Roller (Surfacing)	360 tons per hour per unit
Rolling with Rubber Tired Roller (Oil Mat)	500 tons per hour
Rolling with Rubber Tired Roller (Subgrade & Surfacing)	240 tons per hour
Wetting (Embankment)	30 gal. per cu. yds.
Wetting (Subgrade & Surfacing)	15 gal. per ton

CIMARRON STREET INTERCHANGE

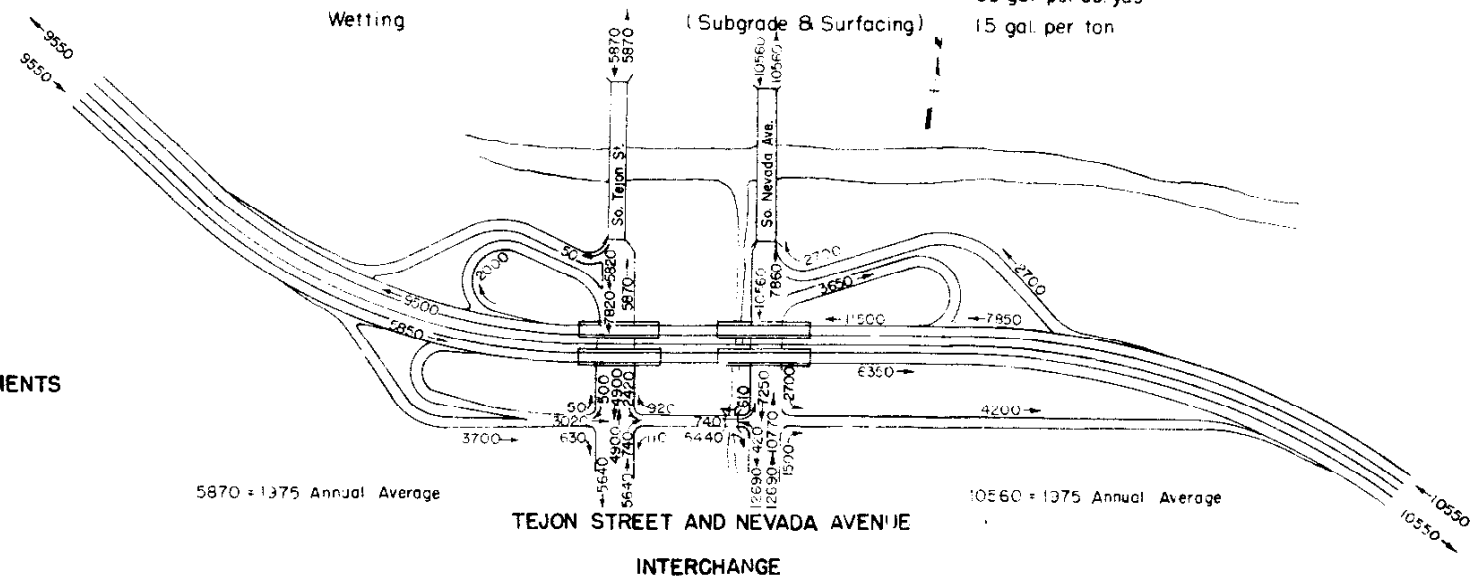
3200 = 1975 Annual Average



TURNING MOVEMENTS

DHV 1975

TEJON STREET AND NEVADA AVENUE INTERCHANGE



5870 = 1975 Annual Average

10560 = 1975 Annual Average

Rev. 10-18-57, Non-Fed. Aid, J.C.R.
 Rev. 2-5-59, Work Orders, W.L.J.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	ROADWAY	STRUCTURES 1-17-DG 1-17-DF	STRUCTURE 1-17-DI	STRUCTURE 1-17-DH	STRUCTURE 1-17-DE	STRUCTURE 1-17-EI	STRUCTURE 1-17-DA 1-17-DB	STRUCTURES 1-17-DC 1-17-DD	ARVADA STREET W.O. #14276 Non Fed. Aid	ROADWAY NON-FEDERAL AID	PROJECT TOTAL	PROJECT TOTAL INCLUDING WORK ORDER
89c	Drain Pipe (Concrete Floor) (4" x 2'-3")	Each			8								8	8
90b	Electrical Conduit with Junction Boxes (1/2")	Lin. Ft.		678	600	120	265		672	1,038			3,363	3,363
92	Timber Guard Posts	Each	370										370	370
110vb	3" Gate Valve and Valve Box	Each	21										21	21
110vc	6" Gate Valve and Valve Box	Each	1										1	1
110vx	1 1/2" Angle Valve and Valve Box	Each	14										14	14
113xb	3" Cast Iron Water Pipe	Lin. Ft.	1,252										1,252	1,252
113xe	6" Cast Iron Water Pipe	Lin. Ft.	2,230										2,230	2,230
130a(3)	Drop Inlets (Type 1A) 3 ft. Deep	Each	1										1	1
130a(4)	Drop Inlets (Type 1A) 4 ft. Deep	Each	1										2	2
130m(3)	Drop Inlets (Type 4C) 3 ft. Deep	Each	3										3	3
130m(4)	Drop Inlets (Type 4C) 4 ft. Deep	Each	46										47	48
130m(5)	Drop Inlets (Type 4C) 5 ft. Deep	Each	7										7	7
132cx	15" Reinforced Concrete Pipe Sewer	Lin. Ft.	3,276								198	60	3,336	3,534
132cxg	18" Reinforced Concrete Pipe Sewer	Lin. Ft.	698										698	698
132cxh	24" Reinforced Concrete Pipe Sewer	Lin. Ft.	738										738	738
132cxk	30" Reinforced Concrete Pipe Sewer	Lin. Ft.	780									460	1,240	1,240
132cxl	36" Reinforced Concrete Pipe Sewer	Lin. Ft.									9		9	9
132ma(8)	Manholes (Type 1A) 8 ft. Deep	Each	3									3	3	3
132ma(10)	Manholes (Type 1A) 10 ft. Deep	Each										3	3	3
132ma(15)	Manholes (Type 1A) 15 ft. Deep	Each										1	1	1
132vf	15" Vitrified Pipe Sewer	Lin. Ft.	1,070									966	2,036	2,036
132vi	24" Vitrified Pipe Sewer	Lin. Ft.	426										426	426
152ax	Flared End Sections for 15" Reinf. Conc. Culvert Pipe	Each	24										25	25
152bx	Flared End Sections for 18" Reinf. Conc. Culvert Pipe	Each	10										10	10
152cx	Flared End Sections for 24" Reinf. Conc. Culvert Pipe	Each	9										9	9
152dx	Flared End Sections for 30" Reinf. Conc. Culvert Pipe	Each	8										9	9
FORCE ACCOUNT														
	Install 2-6" Water Meters and Vaults	Lump Sum												
STATE FURNISHED MATERIAL														
	15,000 L Mercury Vapor Luminaires with 30' Poles	Each	179										179	179
	4,000 L Incandescent Luminaires	Each	24										24	24
NON-FEDERAL AID														
	Royalty on Borrow Material From Pits 1 and 2 Used on Federal Aid Portion	Qu. Yr.										600,000	600,000	600,000

* Shown as 11a on W.O. 14276

TABULATION OF SURFACING

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.
9	COLORADO	1092-2(5)	8

LOCATION	STATION	STATION	LENGTH	SUB-BASE MATERIAL (CLASS 1)		BASE COURSE GRAVEL SURFACING GRADING C		ASPHALTIC CONCRETE PAVEMENT		PRIME COAT MC		SEAL COAT RC		STONE SCREENINGS (TYPE 1)		2" SAND CUSHION		
				CU. FT.	TONS	CU. FT.	TONS	CU. FT.	TONS	SQ. YDS.	GALS.	SQ. YDS.	GALS.	SQ. YDS.	TONS	CU. FT.	CU. YDS.	
MAIN ROADWAY, RT. LANE																		
FLARE SECTION	267+04	267+58.70 BK.	54.70	1,956.13	152.04	1,051.00	70.94	437.60	32.05	165.74	66.31	--	--	--	--	27.35	4.01	
FLARE SECTION	267+36.05 AH.	267+74	307.95	1,414.55	95.48	757.87	51.16	503.60	22.24	114.98	45.99	--	--	--	--	18.97	4.70	
CURBED SECTION	267+74	272+00	426.00	20,164.00	1,361.07	8,892.75	600.26	3,718.60	272.39	1,988.00	795.20	189.33	47.33	--	2.4	213.00	7.69	
TAPERED RAMP	272+00	273+64	164.00	8,746.67	590.40	3,915.50	264.30	1,759.57	128.89	874.67	349.87	72.89	18.22	0.9	82.00	3.04		
TAPERED FLARE	273+64	274+25	61.00	2,525.83	170.50	1,344.25	90.74	777.98	56.99	246.53	98.61	--	--	--	--	30.50	1.13	
WIDENED SECTION	274+25	274+34	9.00	399.00	26.93	211.50	14.28	123.56	9.05	39.33	15.73	--	--	--	4.50	0.17		
RAMP WITH FLARE	277+42	278+22	80.00	3,734.17	252.06	1,973.75	133.22	1,160.83	85.03	370.43	148.17	--	--	--	--	40.00	1.48	
RAMP SECTION	278+22	279+04	82.00	4,428.00	298.89	2,183.25	147.37	1,189.00	87.09	492.00	196.80	127.50	31.89	1.0	--	--		
TAPERED RAMP	279+04	281+29	225.00	12,000.00	810.00	5,371.88	362.60	2,411.00	17.65	1,200.00	480.00	--	--	--	112.50	4.17		
NORMAL WITH CURB	281+29	283+38	209.00	9,892.67	667.75	4,362.88	293.49	1,824.38	133.64	975.33	390.13	--	--	--	104.50	3.67		
WIDENED SECTION	283+38	284+10	72.00	3,888.00	262.44	1,917.00	129.40	1,044.00	76.47	432.00	172.80	112.00	28.00	1.4	--	--		
RAMP WIDENING	284+10	287+94	384.00	22,784.00	1,537.92	10,320.00	696.60	4,887.97	358.04	2,304.00	921.60	170.66	42.67	2.1	192.00	7.11		
RAMP TAPER	287+94	290+19	225.00	12,000.00	810.00	5,371.88	362.60	2,414.05	176.83	1,200.00	480.00	100.00	25.00	1.3	112.50	4.17		
SUB-TOTAL (RIGHT LANE, MAIN LINE)																		
				10,267.72	36,518.09		14,672.84		7,615.25		22,993.51		2,767.26	130.6		57.45		
MAIN ROADWAY, LT. LANE																		
FLARE WITH RAMP	266+40	267+13.41 BK.	73.41	2,561.09	172.87	1,378.43	93.04	699.78	47.50	243.26	97.30	--	--	--	36.71	1.36		
FLARE WITH RAMP	267+36.05 AH.	267+43.00	6.95	224.72	15.17	121.03	8.21	55.60	4.07	21.06	8.42	--	--	--	3.40	0.13		
WIDENED SECTION	267+43.00	268+10.00	67.00	5,238.00	353.57	2,582.03	174.33	1,406.50	103.03	582.00	232.8	150.79	37.72	1.9	--	--		
CURBED SECTION	268+10.00	273+73.00	533.00	25,228.66	1,702.93	11,126.38	751.03	4,652.61	340.80	2,487.33	994.53	216.20	58.22	3.0	260.50	9.67		
FLARE SECTION	273+73.00	274+52.00	79.00	2,741.83	185.07	1,476.25	99.65	694.50	50.87	260.20	104.00	--	--	--	39.50	1.46		
CURBED FLARE SECTION	277+59.00	278+30.00	71.00	2,483.17	167.61	1,336.25	90.20	830.50	48.18	235.90	94.38	--	--	--	36.5	1.31		
CURBED SECTION	278+30.00	279+49.00	119.00	5,632.67	380.21	2,484.13	167.68	1,038.76	76.09	558.33	222.18	50.00	13.22	0.7	53.50	2.20		
RAMP TAPER	279+49.00	281+70.00	221.00	11,786.07	795.60	5,276.38	356.18	2,371.13	173.60	1,178.67	471.47	98.22	24.56	1.2	110.50	4.09		
WIDENED SECTION	281+70.00	284+00	230.00	12,420.00	838.35	6,121.75	413.35	3,335.00	244.29	1,380.00	552.00	367.78	88.45	4.4	--	--		
RAMP SECTION	284+00	285+50	150.00	8,900.00	600.00	4,031.25	272.11	1,909.37	139.88	900.00	360.00	66.67	10.67	0.6	75.00	2.78		
RAMP TAPER	285+50	287+75	225.00	12,000.00	810.00	5,371.88	362.60	2,414.05	176.83	1,200.00	480.00	100.00	25.00	1.3	112.50	4.17		
CURBED TAPER	287+75	287+95	20.00	1,140.00	76.95	412.5	27.84	212.66	15.58	122.22	48.89	29.00	7.25	0.4	--	--		
STANDARD SECTION	287+95	309+07.06 BK.	2,112.06	118,275.36	7,983.55	43,561.24	2,940.30	12,176.63	1,624.43	12,907.03	5,162.81	3,285.43	821.35	41.1	--	--		
STANDARD SECTION	309+21.00 AH.	325+03	1,582.00	88,592.00	5,979.96	32,628.75	2,262.44	16,611.00	1,216.76	9,667.78	3,667.11	2,460.88	615.22	30.8	--	--		
CURBED TAPER	325+03	325+23	20.00	1,140.00	76.95	512.5	27.84	212.66	15.58	122.22	48.89	29.00	7.25	0.4	--	--		
RAMP TAPER	325+23	327+48.00	225.00	12,000.00	810.00	5,371.88	362.60	2,414.05	176.83	1,200.00	480.00	100.00	25.00	1.3	112.50	4.17		
CURBED RAMP	327+48.00	331+00	352.00	20,865.33	1,409.70	9,400.00	638.55	4,480.64	328.21	2,112.00	844.80	156.44	39.11	2.0	176.00	6.52		
WIDENED SECTION	331+00	331+98	98.00	5,292.00	357.21	2,609.25	176.12	1,421.00	104.09	588.00	235.20	152.44	38.11	1.9	--	--		
CURBED SECTION	331+98	335+40	342.00	16,188.00	1,092.69	7,139.25	487.90	2,985.35	218.68	1,596.00	638.40	152.00	38.00	1.9	173.00	6.33		
RAMP TAPER	335+40	337+65	225.00	12,000.00	810.00	5,371.88	362.60	2,414.05	176.83	1,200.00	480.00	100.00	25.00	1.3	112.50	4.17		
WIDENED SECTION	337+65	338+64.48	99.48	5,371.92	362.60	2,648.60	178.78	1,442.46	105.66	596.88	238.75	154.75	38.69	1.9	--	--		

TABULATION OF SURFACING

FEDERAL ROAD REGION NO.	DIVISION	PROJ NO.	SHEET NO.
9	COLORADO	1092-7(5)	9
REVISED QUANTITIES 4-22-58			E.E.O.

LOCATION	STATION	STATION	LENGTH	● SUB-BASE MATERIAL (CLASS 1)		BASE COURSE GRAVEL SURFACING GRADING C		ASPHALTIC CONCRETE PAVEMENT		PRIME COAT MC		SEAL COAT RC		STONE SCREENINGS (TYPE 1)		2" SAND CUSHION		
				CU. FT.	TONS	CU. FT.	TONS	CU. FT.	TONS	SQ. YDS.	GALS.	SQ. YDS.	GALS.	SQ. YDS.	TONS	CU. FT.	CU. YDS.	
MAIN ROADWAY, LT. LANE (CONTD.)																		
RAMP SECTION	338+64.48	340+14.48	150.00	8,900.00	600.75	4,031.25	272.11	1,909.37	139.86	900.00	161.00	66.67	16.67	0.8	75.00	2.78		
RAMP TAPER	340+74.48	341+14.48 BK.	100.00	5,333.33	360.00	2,387.50	161.16	1,072.91	76.59	533.33	213.33	44.44	11.11	0.6	50.00	1.65		
RAMP TAPER	341+46.31	342+39.48	93.17	4,969.07	335.41	2,224.43	150.15	999.63	73.22	490.91	198.76	41.41	10.35	0.5	46.59	1.73		
CURBED FLARE	342+39.48	343+10.00	60.52	2,507.43	169.25	1,334.41	90.06	772.35	56.57	244.75	97.90	--	--	--	30.26	1.12		
CURBED FLARE	344+79.00	345+94.00	75.00	2,612.50	176.34	1,406.25	94.92	662.50	48.53	246.08	99.23	--	--	--	37.50	1.36		
CURBED SECTION	345+54.00	347+37.22	183.22	8,672.41	585.39	3,824.72	258.17	1,599.35	117.15	855.03	242.01	61.45	20.56	1.0	91.61	3.30		
CURBED FLARE	347+37.22	348+12.22	75.00	2,612.50	176.34	1,406.25	94.92	662.50	48.53	246.08	99.23	--	--	--	37.50	1.39		
FLARE RAMP TAPER	351+25.22	352+00.22	75.00	3,062.50	206.72	1,631.25	101.99	942.18	69.01	298.33	119.33	--	--	--	37.50	1.39		
RAMP TAPER	352+00.22	352+87.00	86.78	4,628.27	312.41	2,071.87	136.85	931.07	68.26	462.83	165.13	38.57	9.65	0.5	43.39	1.61		
RAMP SECTION	352+87.00	356+99.00	412.00	24,445.33	1,650.06	11,072.50	747.39	5,244.39	384.15	2,472.00	980.60	183.11	48.78	2.3	206.00	7.63		
WIDENED SECTION	356+99.00	357+37.00	38.00	2,052.00	138.51	1,013.63	68.42	331.00	40.30	228.00	91.20	59.11	14.78	0.7	--	--		
CURBED SECTION	357+37.00	358+85.00	148.00	7,005.33	472.86	3,089.50	208.54	1,291.91	94.63	690.67	276.27	65.78	16.45	0.8	74.00	2.74		
RAMP TAPER	358+85.00	361+10.00	225.00	11,925.00	804.94	5,484.38	370.20	2,664.06	187.82	1,250.00	500.00	100.00	25.00	1.3	37.50	1.39		
WIDENED SECTION	361+10.00	362+25.00	115.00	6,210.00	419.18	3,061.88	206.68	1,667.50	122.14	690.00	276.00	170.89	44.72	2.2	--	--		
RAMP SECTION	362+25.00	363+75.00	150.00	8,850.00	597.38	4,106.25	277.17	2,009.37	147.19	933.33	366.67	100.00	25.00	0.8	25.00	0.93		
RAMP TAPER	363+75.00	366+00.00	225.00	11,925.00	804.94	5,484.38	370.20	2,564.06	187.82	1,250.00	500.00	100.00	25.00	1.3	37.50	1.39		
SUB-TOTAL (LEFT LANE, MAIN LINE)			9,092.59		32,792.32		13,799.36		7,249.73		20,362.60		2,176.16		109.1		79.29	
CIMARRON ST. NE #1 RAMP	0+00	2+77.82	937.17	VARIABLE	1,961.21	VARIABLE	977.29	VARIABLE	489.10	VARIABLE	1,361.27	VARIABLE	161.67	2.1	VARIABLE	18.86		
CIMARRON ST. SE #1 RAMP	0+00	7+24.56	849.56	VARIABLE	1,716.68	VARIABLE	939.15	VARIABLE	484.87	VARIABLE	1,112.84	VARIABLE	78.33	3.9	VARIABLE	11.85		
CIMARRON ST. SW #1 RAMP	0+00	11+84.52	1,184.52	VARIABLE	3,011.33	VARIABLE	1,403.43	VARIABLE	721.90	VARIABLE	1,887.50	VARIABLE	327.38	16.4	VARIABLE	2.73		
CIMARRON ST. SW #2 RAMP	0+00	7+46.13	746.13	VARIABLE	1,676.20	VARIABLE	658.45	VARIABLE	392.26	VARIABLE	1,079.33	VARIABLE	101.39	5.1	VARIABLE	11.78		
TEJON ST. NW #1 RAMP	0+00	13+51.88	1,271.38	VARIABLE	3,179.13	VARIABLE	1,618.48	VARIABLE	816.63	VARIABLE	2,033.98	VARIABLE	218.07	10.7	VARIABLE	15.80		
TEJON ST. NW #2 RAMP	0+00	9+54.39	954.39	VARIABLE	2,059.73	VARIABLE	1,084.04	VARIABLE	530.55	VARIABLE	1,291.54	VARIABLE	47.22	2.4	VARIABLE	20.82		
TEJON ST. SW #1 RAMP	0+00	6+50	650	VARIABLE	1,950	VARIABLE	952	VARIABLE	492	VARIABLE	779	VARIABLE	185	1.0	VARIABLE	2.06		
TEJON ST. SW #2 RAMP	0+00	8+50.28	850.28	VARIABLE	2,241.48	VARIABLE	1,078.48	VARIABLE	543.87	VARIABLE	1,179.00	VARIABLE	170.00	2.0	VARIABLE	7.90		
NEVADA ST. NE #1 RAMP	0+00	13+44.88	1,344.88	VARIABLE	3,396.69	VARIABLE	1,689.86	VARIABLE	840.55	VARIABLE	2,169.00	VARIABLE	260.10	13.0	VARIABLE	14.04		
NEVADA ST. NE #2 RAMP	0+00	10+14.18	1,014.18	VARIABLE	2,214.18	VARIABLE	1,217.49	VARIABLE	586.73	VARIABLE	1,442.11	VARIABLE	76.11	1.8	VARIABLE	23.74		
CIMARRON ST. RT. LANE	12+00	25+11	1,320.66	VARIABLE	3,002.76	VARIABLE	1,656.57	VARIABLE	1,097.45	VARIABLE	1,517.20	VARIABLE	71.50	1.0	VARIABLE	20.83		
CIMARRON ST. LT. LANE	16+00	25+11	1,054.47	VARIABLE	3,776.53	VARIABLE	1,797.02	VARIABLE	1,173.12	VARIABLE	2,271.82	VARIABLE	169.00	8.4	VARIABLE	17.17		
TEJON ST.			295	VARIABLE	101.5	VARIABLE	20.30	VARIABLE	281.44	VARIABLE	343.90	VARIABLE	--	--	VARIABLE	93		
NEVADA ST.			260	VARIABLE	89.1	VARIABLE	44.60	VARIABLE	317.53	VARIABLE	388.50	VARIABLE	--	--	VARIABLE	63		
OLIVER HIGHWAY (WALNUT ST.)	261+	268+	270	VARIABLE	947.70	VARIABLE	6,345.00	VARIABLE	428.29	VARIABLE	1,320.00	VARIABLE	--	--	VARIABLE	--		
SUB-TOTAL (RAMPS & CROSSING STREETS)			13,790.63		31,840.44		15,711.26		8,870.48		19,498.31		1,813.61		82.5		178.48	
TOTAL			33,150.94		101,150.85		44,383.46		23,935.46		62,874.70		6,787.03		330.2		315.22	
NON-FEDERAL AID																		
CIMARRON ST. RT. LANE	00+40	10+00	960	VARIABLE	2,929.93	VARIABLE	1,335.37	VARIABLE	678.05	VARIABLE	1,644.44	VARIABLE	167.87	8.4	VARIABLE	12.43		
CIMARRON ST. RT. LANE	25+11	37+00	1,200.16	VARIABLE	2,794.75	VARIABLE	1,240.24	VARIABLE	--	VARIABLE	--	VARIABLE	--	--	VARIABLE	--		
CIMARRON ST. LT. LANE	00+40	10+00	960	VARIABLE	2,929.58	VARIABLE	1,335.19	VARIABLE	678.84	VARIABLE	1,644.44	VARIABLE	277.77	13.9	VARIABLE	12.43		
CIMARRON ST. LT. LANE	25+11	37+00	1,177.84	VARIABLE	2,730.96	VARIABLE	1,211.75	VARIABLE	--	VARIABLE	--	VARIABLE	--	--	VARIABLE	--		
TOTAL, NON-FEDERAL AID			4,298.00		11,385.22		5,122.57		1,357.69		3,788.88		445.64		22.3		24.86	
BRIDGES, MAIN ROADWAY, RT. LANE																		
CIMARRON BRIDGE (STR. NO. 1-17-DI)	274+34	277+42	308.00	--	--	--	--	2,156.00	157.93	1,437.33	143.73*	--	--	--	--	--	--	
TEJON BRIDGE (STR. NO. 1-17-DB)	343+10	344+79	169.00	--	--	--	--	845.00	61.90	563.33	56.33*	--	--	--	--	--	--	
NEVADA ST. BRIDGE (STR. NO. 1-17-DC)	348+14.36	351+27.38	313.00	--	--	--	--	1,565.00	114.64	1,043.33	104.33*	--	--	--	--	--	--	
BRIDGES, MAIN ROADWAY, LT. LANE																		
CIMARRON BRIDGE (STR. NO. 1-17-DG)	274+57.0	277+59.0	307.00	--	--	--	--	1,535.00	112.44	1,023.33	102.33*	--	--	--	--	--	--	
TEJON BRIDGE (STR. NO. 1-17-DA)	343+10.0	344+79.0	169.00	--	--	--	--	845.00	61.90	563.33	56.33*	--	--	--	--	--	--	
NEVADA ST. BRIDGE (STR. NO. 1-17-DE)	348+12.22	351+25.22	313.00	--	--	--	--	1,565.00	114.64	1,043.33	104.33*	--	--	--	--	--	--	
RAMP-FOUNTAIN CRK (STR. NO. 1-17-DH)																		
CIMARRON ST. (STR. NO. 1-17-CE)	0+64.34	1+90.22	112	--	--	--	--	--	47.00	423.11	42.31*	--	--	--	--	--	--	
CIMARRON ST. (STR. NO. 1-17-CE)	10+00.09	11+25.90	125	--	--	--	--	--	86.00	778.78	77.78*	--	--	--	--	--	--	
CIMARRON ST. (STR. NO. 1-17-DE)	22+37.15	25+25.15	288	--	--	--	--	--	282.00	2,560.00	256.00*	--	--	--	--	--	--	
<p>● THICKNESS OF SUB-BASE 13" BASED ON DESIGN CURVE "E"</p> <p>* USE RC (PRIME) ON BRIDGE DECKS.</p>																		

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.
9	COLORADO	092-2(5)	10

REVISED QUANTITIES 4-22-58 E.E.O.

LOCATION	STATION	STATION	TYPE 2 CURB & GUTTER		TYPE 2 CURB	TYPE 3 CURB & GUTTER		ASPHALTIC SHOULDER & SIDEWALK	4" VALLEY GUTTER		CURB RETURN		REMARKS	
			LIN. FT.	NO.		LIN. FT.	NO.		LIN. FT.	NO.	LIN. FT.	NO.		
MAIN LINE, Left Control Line	268+44	274+33	609											
	277+62	281+70	408											
	284+00	287+75	375			2,574								
	292+75	328+18												
	324+49	331+00	651											
	331+98	337+64	556											
	338+70	343+10	440											
	344+79	348+14	335											
	351+24	356+99	575											
	357+41	359+36	150		150									
	359+36	360+90			375									
	362+25	366+00			375				1,525					
		334+29	336+54		225									
		344+80	348+16		60									
		348+16	362+75		337				1,151					
	351+24													
CIMARRON STREET RAMPS		0+00	64											
	Northwest No. 1	Rt. Edge	1+91	3+74										
		Rt. Edge	3+74	6+96										
		Rt. Edge	6+96	8+83	187									
		Lt. Edge	7+83											
		Rt. Edge	5+00	5+00										
		Rt. Edge	6+91	6+91	191									
		Lt. Edge	2+23	6+63	440									
		Rt. Edge	0+00	3+19	319									
		Rt. Edge	9+42	11+85	242									
		Lt. Edge	1+66	2+66										
		Lt. Edge	10+20	11+20	100									
		Rt. Edge	0+00	7+46	746									
		Rt. Edge	0+00	1+92										
		Lt. Edge	5+72	6+72	100									
	TEJON STREET RAMPS		1+07	3+97	200									
		Northwest No. 1	Rt. Edge	8+25	428									
			Rt. Edge	13+51	151									
		Rt. Edge	0+88	3+97	309									
		Lt. Edge	6+30											
		Lt. Edge	11+28	12+28	100									
		Rt. Edge	0+00	9+55	955									
		Lt. Edge	1+80	1+80	100									
		Lt. Edge	3+50	9+11	561									
		Rt. Edge	0+00	2+25	225									
		Lt. Edge	4+02	4+02										
		Lt. Edge	1+25	2+25	100									
	Lt. Edge	0+00	0+00	100										
	Lt. Edge	0+00	0+00	100										
	Lt. Edge	0+00	0+00	100										
	Lt. Edge	0+00	0+00	100										
NEVADA AVE. RAMPS		0+00	3+57	357										
	Northwest No. 1	Rt. Edge	6+114											
		Rt. Edge	1+05	2+05	292									
		Lt. Edge	5+50	7+93	243									
		Lt. Edge	7+93	12+90	497									
		Rt. Edge	0+00	10+14										
		Lt. Edge	0+00	7+50	700									
		Lt. Edge	8+90	9+90	100									
		Median	11+25	14+70										
		Island	17+18	20+79										
		R.C.L.	14+35	14+60										
		Island	14+83	17+06										
		R.C.L.	17+45	18+05										
		Island	18+50	21+23										
		Island	21+50	22+50	773									
TEJON STREET, West Side		14+70												
		16+79												
		20+79												
TEJON STREET, East Side		14+70												
		16+79												
		20+79												
APPROACH CURBS FOR STRUCTURE	273+73	274+48												
	277+75	278+50												
	302+35	343+10												
	344+75	345+54												
	347+42	348+17												
	351+20	351+95												
		14+70												
		16+79												
		20+79												
		22+29												
FROM CURB RETURN COLUMN		14+70												
		16+79												
		20+79												
		22+29												
		24+29												
TOTALS		12,514	7,753	2,009	5,250									
NON-FEDERAL AID														
	CIMARRON STREET, Median													
	FROM CURB RETURN COLUMN					1,920						20		
	TOTAL (NON-FEDERAL AID)					1,920						20		

◆ TYPE 2 CURB.
 ▲ TYPE 2 CURB AND GUTTER
 □ TYPE 3 CURB AND GUTTER

SANITARY SEWERS

NO.	INLET OR MANHOLE				VERTICAL SEWER PIPE				REMARKS						
	LOCATION	M.H. TYPE	H	ELEVATION		LENGTH	FLAP END SECTION	LINE							
				RIM	INVERT			IN		OUT	FROM	TO			
A	STA. 262+30	100' RT. OF R.C.L.L.				250		A	C			MANHOLE IN PLACE PLUG MANHOLE			
B	264+00	10' RT. OF R.C.L.L.				400		C	E			PLUG MANHOLE			
C	264+70	90' RT. OF R.C.L.L.				570		L	H			PLUG MANHOLE			
D	267+10	15' LT. OF R.C.L.L.	8.1 APPROX.												
E	269+00	85' RT. OF R.C.L.L.	5.10	43.90											
F	271+60	5' LT. OF L.C.L.L.	7.70	46.56											
G	271+65	50' LT. OF L.C.L.L.													
H	272+65	90' RT. OF R.C.L.L.	8.40	45.00	420		45.00	H	M			MANHOLE IN PLACE PLUG MANHOLE			
I	272+70	130' RT. OF R.C.L.L.	6.90	46.20											
J	272+80	75' RT. OF L.C.L.L.	9.48	43.30											
K	274+35	90' LT. OF L.C.L.L.	7.52	41.75											
L	274+75	110' LT. OF L.C.L.L.		45.00											
M	275+25	150' LT. OF L.C.L.L.		42.50			42.50	M	N			MANHOLE IN PLACE PLUG MANHOLE			
N	275+70	200' LT. OF L.C.L.L.		37.51			37.51	N	D			MANHOLE IN PLACE			
TOTALS										3					
NON-FEDERAL AID															
D	STA. 26+40	100' RT. R.C.L.L.		36.57				D	P			MANHOLE IN PLACE			
F	27+10	285' RT. R.C.L.L.		36.53				F	OUT			MANHOLE IN PLACE			
Q	28+10	70' RT. R.C.L.L.	10.14	41.16				Q	P			MANHOLE WILL BE COVERED BY FILL			
R	28+40	70' RT. R.C.L.L.		41.57				R	G			MANHOLE IN PLACE			
T	30+30	R.C.L.L.		49.70				T	S			MANHOLE IN PLACE			
U	30+90	50' RT. R.C.L.L.	14.03	49.67	320		49.67	U	G			MANHOLE IN PLACE			
V	33+55	50' RT. R.C.L.L.	14.03	57.17	300		57.17	V	U			MANHOLE IN PLACE			
W	34+50	"		72.54				W	V			MANHOLE IN PLACE			
X	37+25	"	9.00	51.70	400		51.70	X	T			MANHOLE IN PLACE			
TOTALS, NON-FEDERAL AID										4					
MANHOLE ADJUSTMENT															
TOTALS										7					
S	STA. 28+75	CIMARRON 55' LT. L.C.L.L.		44.77				S	Q			RAISE RING & COVER 9.5'			
AA	STA. 7+00	SN-1 10' LT. OF C.L.L.		43.4								RAISE RING & COVER			
BB	SN-2 55' LT. OF 1+40			42.3								RAISE RING & COVER			

* NON-FEDERAL AID

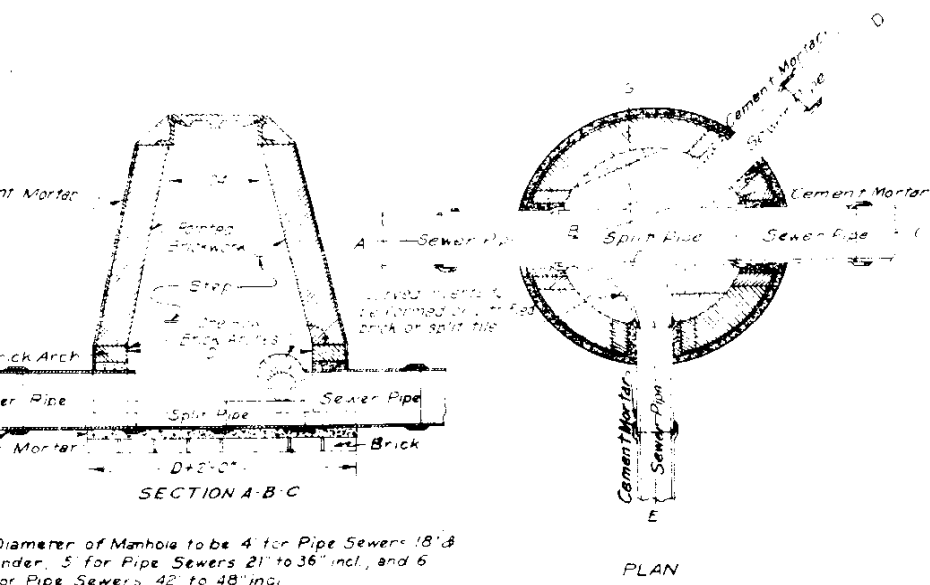
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.
9	COLORADO	1 C92-2(5)	12

REV. M.H. ADJ. (C-18-57) E.E.O. ALSO EARTHWORK

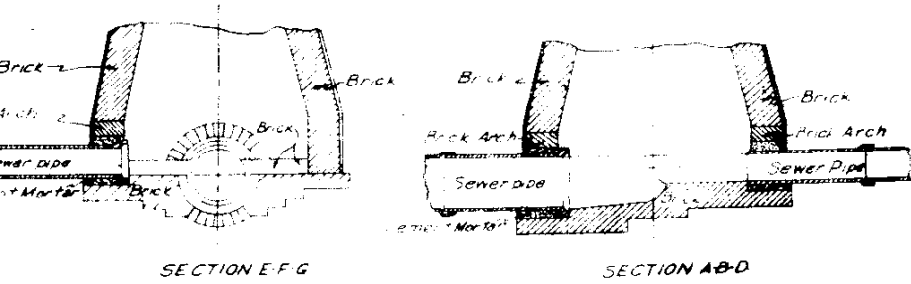
SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION FROM CROSS SECTIONS	ROADWAY (CU. YDS.)	NON-FEDERAL AID (CU. YDS.)	PROJ. TOTALS (CU. YDS.)
Mainline	51.76	(51.76
Cimarron St.	7,340	1,478	10,818
Cimarron Ramps			
Tejon Ramps	2,174		2,174
Nevada Ramps	1,590		1,590
BORROW			
Pit No. 1	200,000		200,000
Pit No. 2	400,000		400,000
Pit Nos 3 & 4	522,175	107,030	629,205
SUB-TOTALS	1,170,005	108,905	1,278,910
ESTIMATED FOR SUBSIDENCE	119,100	(10,000)	109,100
TOTALS	1,289,097	110,796	1,400,000
EQUANIMITY			
FROM CROSS SECTIONS			
Mainline	770,715	(770,715
Cimarron St.	141,005	10,754	151,759
Cimarron Ramps	52,788		52,788
Tejon Ramps	38,175		38,175
Nevada Ramps	29,150		29,150
TOTALS	1,001,833	10,754	1,012,587
EQUIPMENT x FACTOR (1.20 Factor Used)			
Mainline	659,689		659,689
Cimarron St.	170,171		170,171
Cimarron Ramps	62,346		62,346
Tejon Ramps	45,810		45,810
Nevada Ramps	34,990		34,990
TOTALS	973,006		973,006
STATION YARD OVERHAUL			
FROM MASS DIAGRAM			
EST. FOR SUBSIDENCE	1,243,025	1,177,330	2,420,355
TOTALS	1,243,025	1,177,330	2,420,355
YARD MILE OVERHAUL			
FROM MASS DIAGRAM			
EST. FOR SUBSIDENCE	15,378,316	1,295,063	16,673,379
TOTALS	15,378,316	1,295,063	16,673,379
TOTALS			
	599,568	59,957	659,525
	59,957	61,309	121,266
	659,525	121,266	780,791

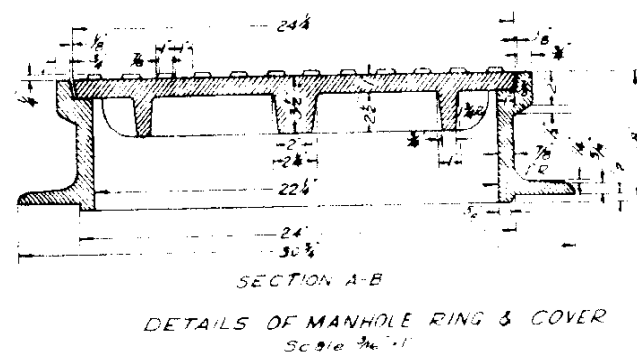
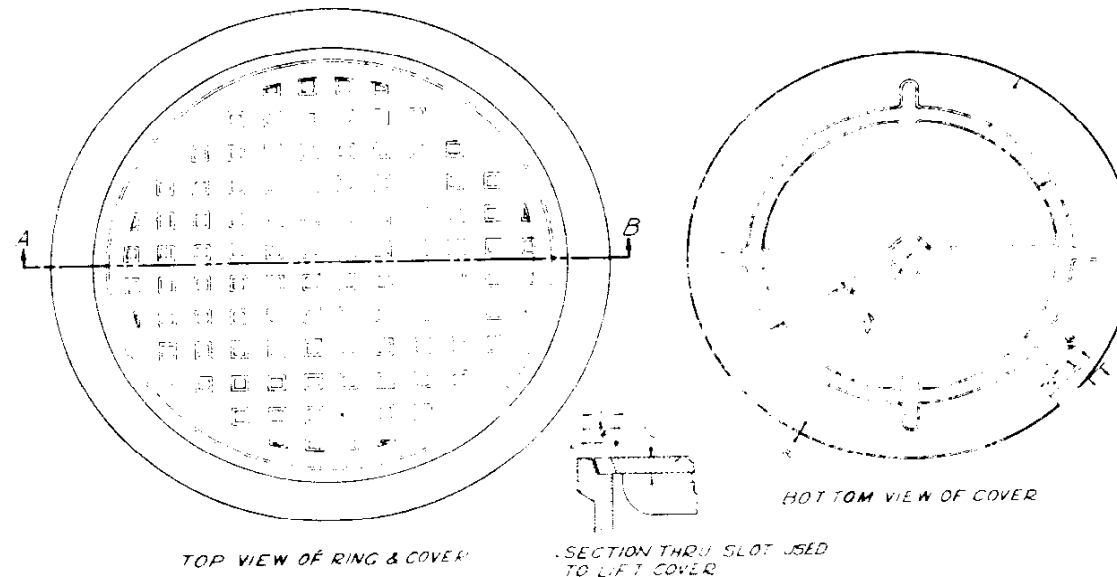
FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	13	



Diameter of Manhole to be 4' for Pipe Sewers 18" and under, 5' for Pipe Sewers 21" to 36" incl., and 6' for Pipe Sewers 42" to 48" incl.



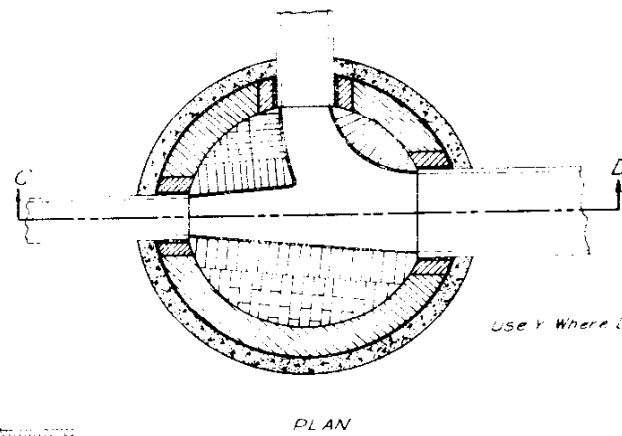
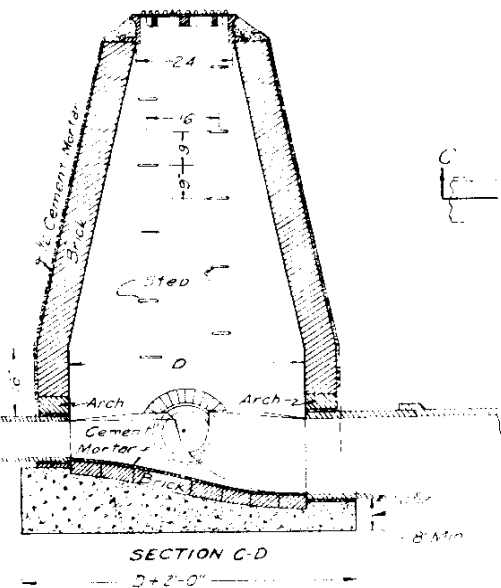
TYPE I MANHOLE (STORM & SANITARY)
Scale 1/2"=1'-0"



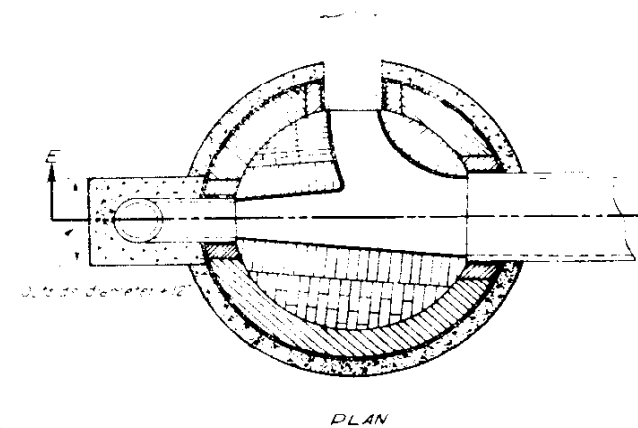
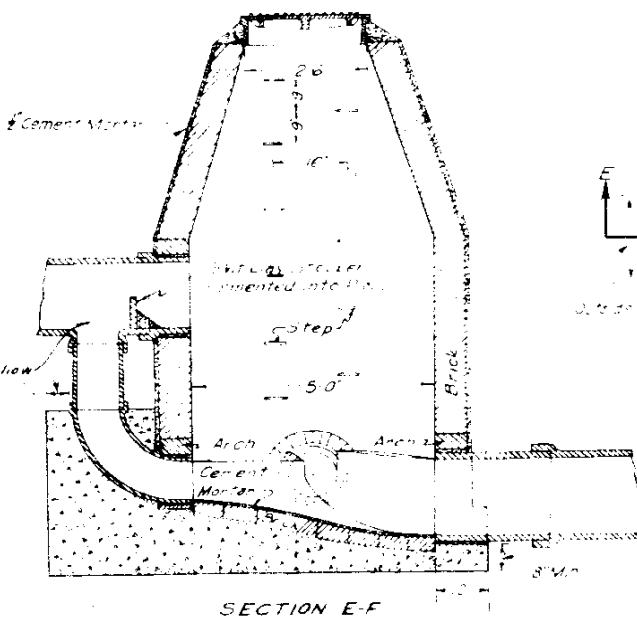
Weight Frame Approx 224"
Cover Approx 176"
40"
Dipped or Painted with Asphalt
or Coal Tar & Oil

DETAILS OF MANHOLE RING & COVER
Scale 1/2"=1'-0"

GENERAL NOTES
1. The manhole shall be constructed of brick or concrete blocks of grade M4 or A3 (No. 2500) or better. Manhole bottoms may be of brick or concrete. The manhole shall be finished with a coat of asphalt.
2. Alternate design for Manholes using Precast Concrete Blocks, Cast in place concrete, or Precast Concrete Manholes will be permitted after approval of Plans by the Department.



TYPE I-A MANHOLE
Scale 1/2"=1'-0"
SANITARY & STORM SEWERS



TYPE 2 MANHOLE (SANITARY ONLY)
Scale 1/2"=1'-0"

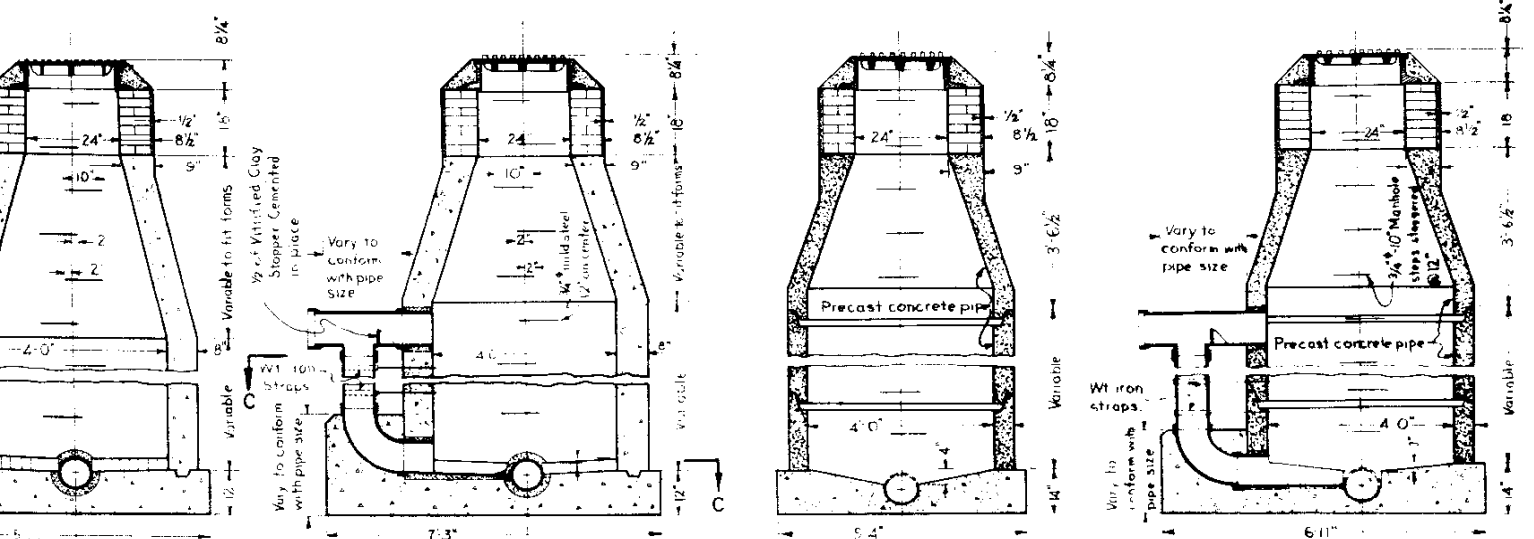
COLORADO
DEPARTMENT OF HIGHWAYS

MANHOLE DETAILS
TYPE I, IA, 2

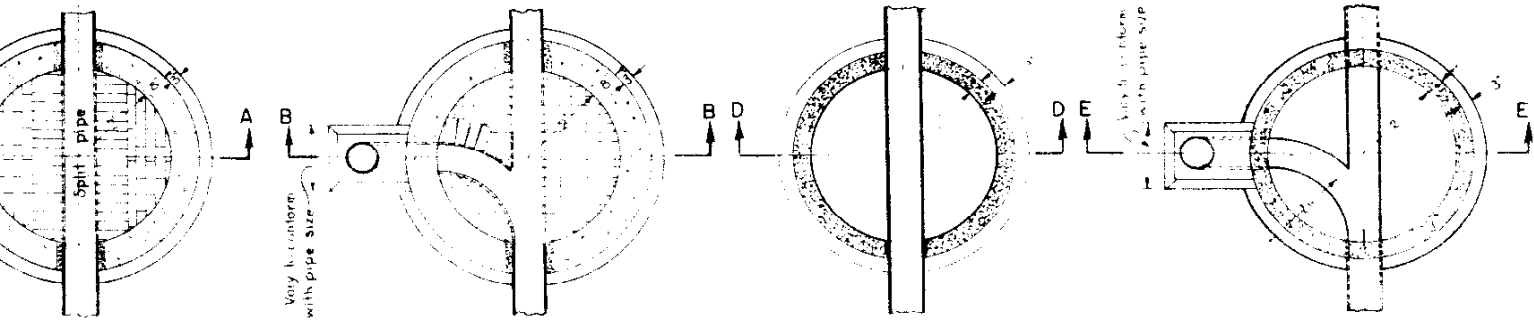
Designed by: _____
Made by: _____
Checked by: _____

Approved by: _____
Date: _____

FED ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092-2(5)	14	

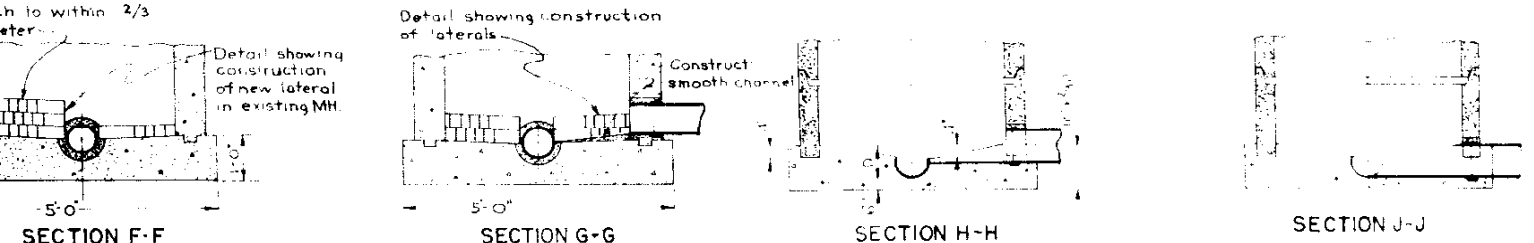


SECTION A-A SECTION B-B SECTION D-D SECTION E-E

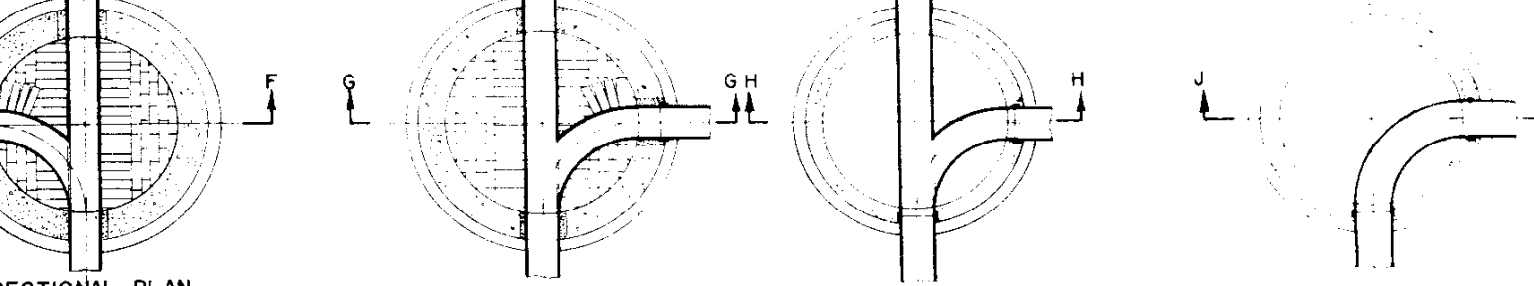


SECTIONAL PLAN SECTION C-C SECTIONAL PLAN SECTIONAL PLAN

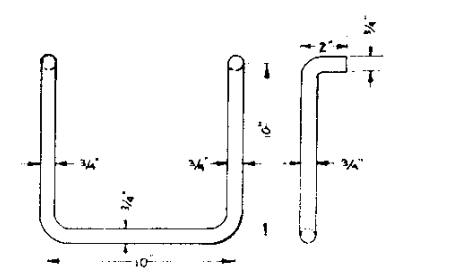
TYPE 3 TYPE 3A TYPE 4 TYPE 4A



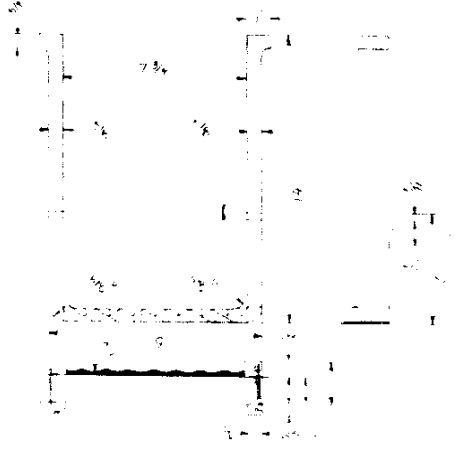
SECTION F-F SECTION G-G SECTION H-H SECTION J-J



SECTIONAL PLAN TYPE 3B SECTIONAL PLAN TYPE 3C SECTIONAL PLAN TYPE 4B SECTIONAL PLAN TYPE 4C



MILD STEEL STEPS
For Concrete Manholes



CAST IRON STEPS
For Concrete Manholes

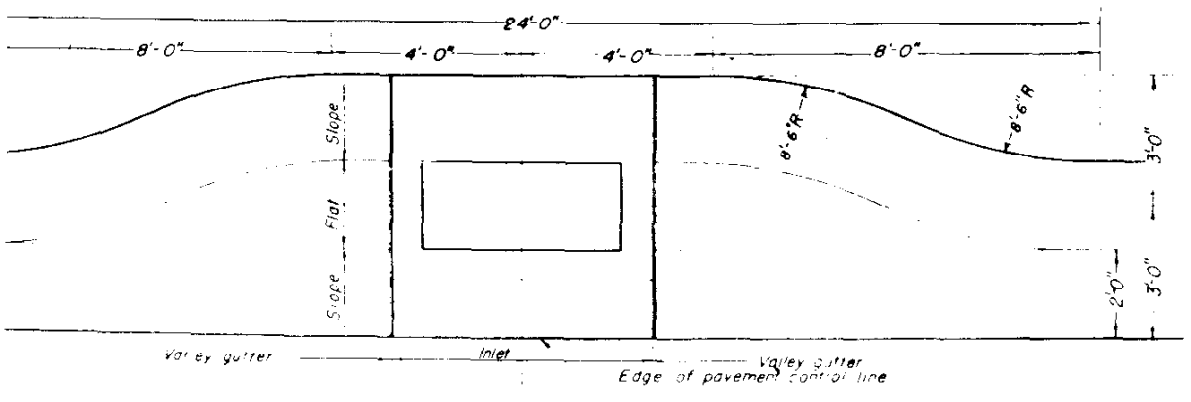
COLORADO
DEPARTMENT OF HIGHWAYS

MANHOLE DETAILS
TYPE 3,3A,3B,3C, 4,4A,4B,4C

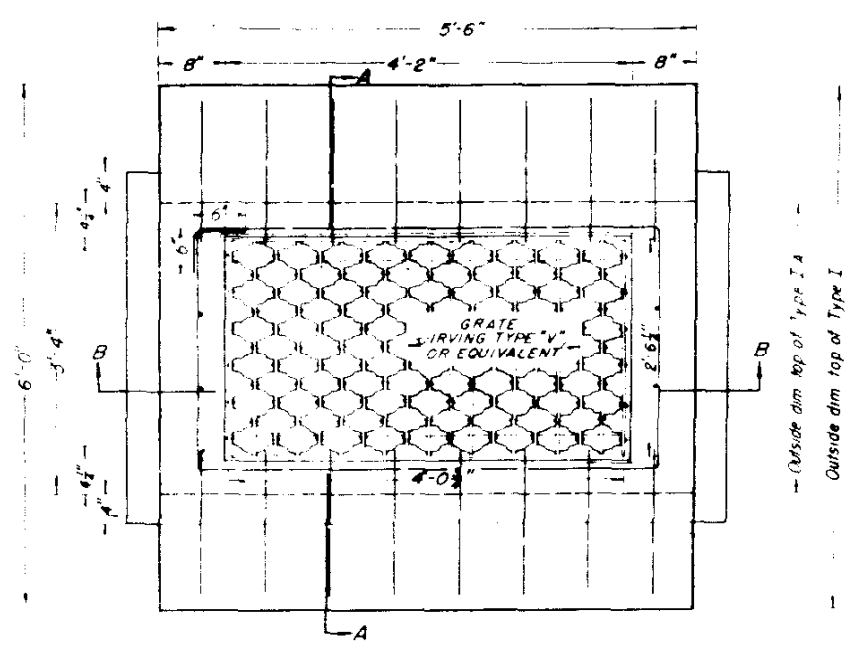
Designed by:	Approved by:
Made by:	
Checked by:	Date:

Rev 3-26-52 ELP-100 & Sub

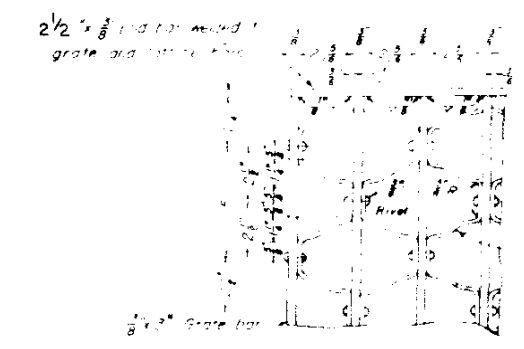
FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092-2(5)	15	



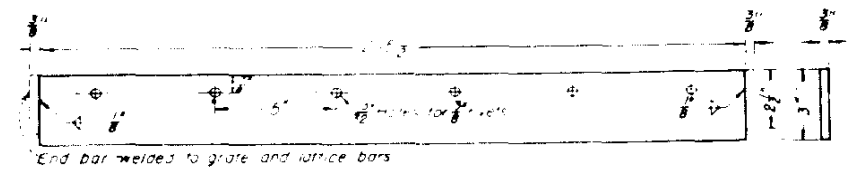
PLAN OF WIDENING OF VALLEY GUTTER AT INLETS
Scale 1/4" = 1'-0"



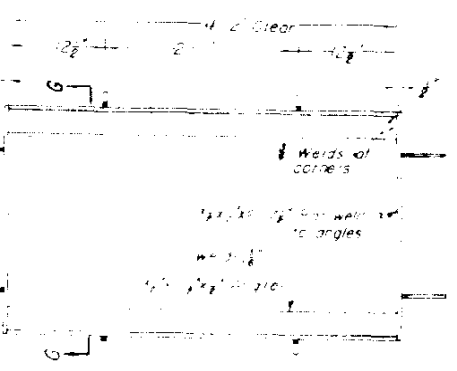
PLAN DROP INLET TYPE I
Scale 1/4" = 1'-0"



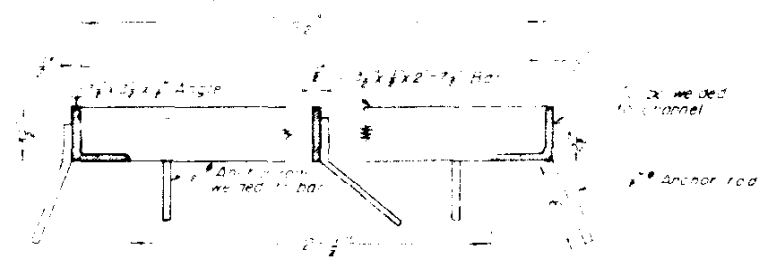
ENLARGED PLAN CORNER OF GRATE
Scale 3/8" = 1'-0"



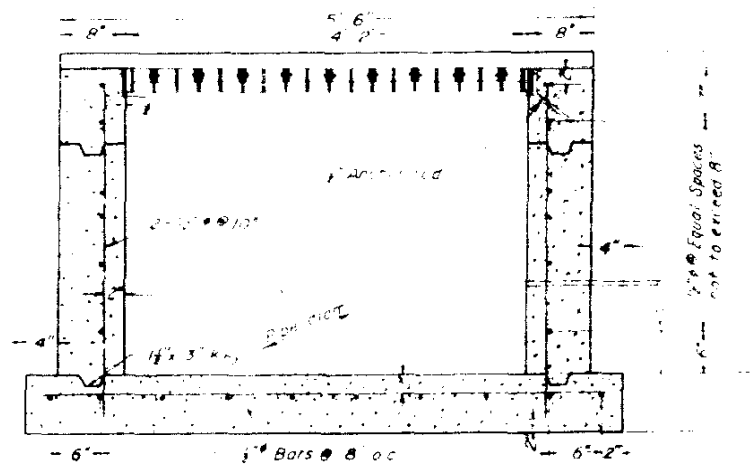
DETAIL GRATE BAR
Scale 3/8" = 1'-0"



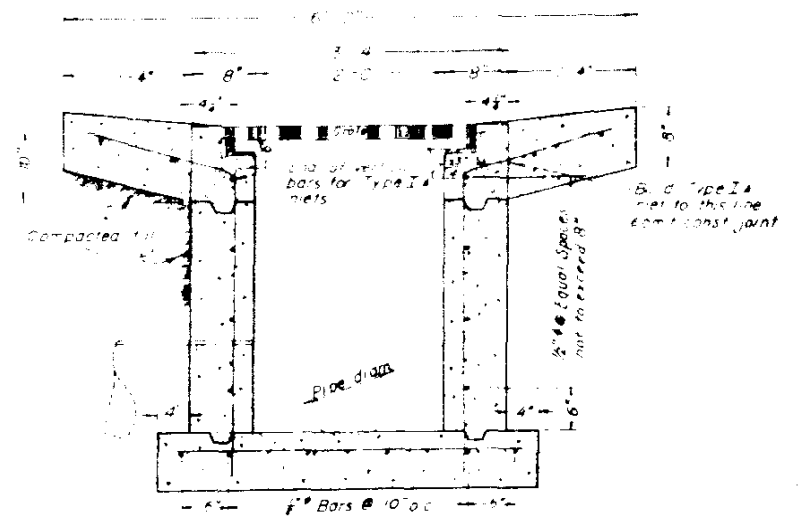
PLAN OF FRAME
Scale 1/4" = 1'-0"



SECTION G-G
Scale 1/4" = 1'-0"

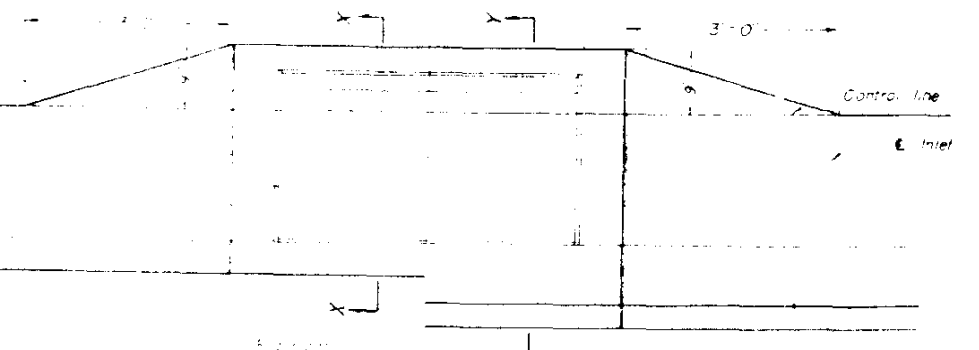


SECTION B-B
Scale 1/4" = 1'-0"



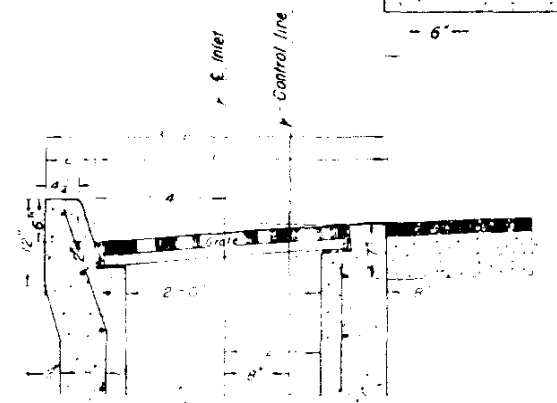
SECTION A-A
Scale 1/4" = 1'-0"

Note: DROP INLET TYPE IA IN MEDIAN STA. 334+ SHOULD BE FABRICATED OPEN BAR TYPE OF DIMENSIONS SHOWN ABOVE



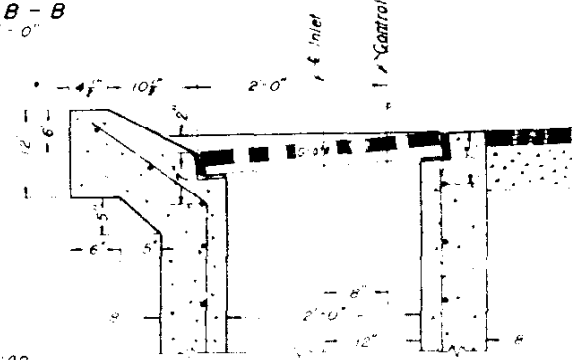
DROP INLETS IN CURB & GUTTER
Scale 1/4" = 1'-0"

NOTE: WHEN DEPTH OF INLET IS OVER 4" STEPS MUST BE PROVIDED



TYPE I-B SECTION X-X
Scale 1/4" = 1'-0"

NOTE: Lower portion of Types I-B & I-C same as Type I-A

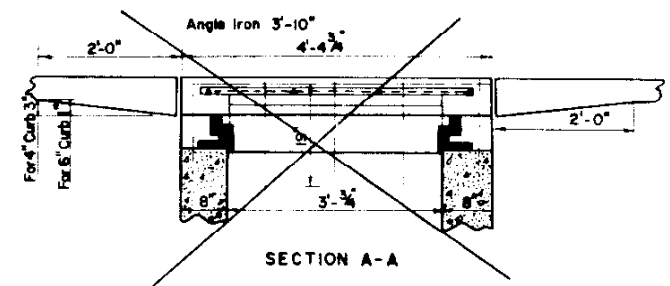
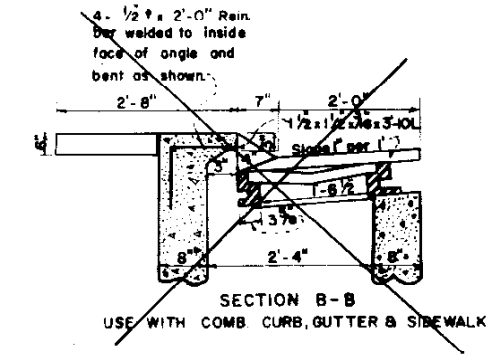
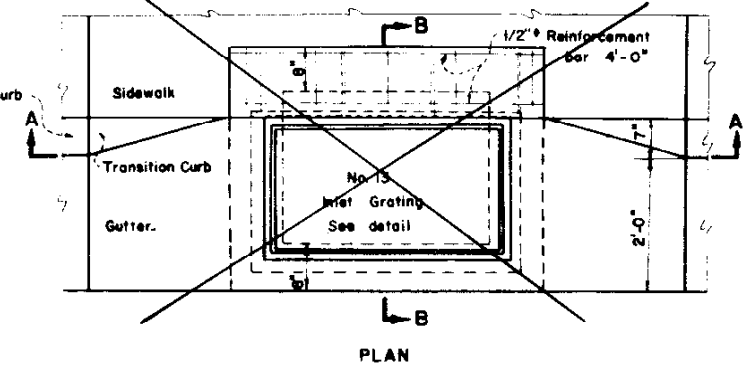
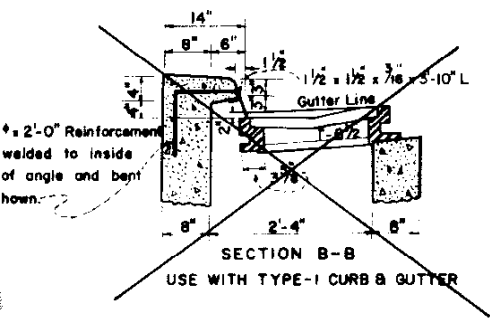


TYPE I-C SECTION Y-Y
Scale 1/4" = 1'-0"

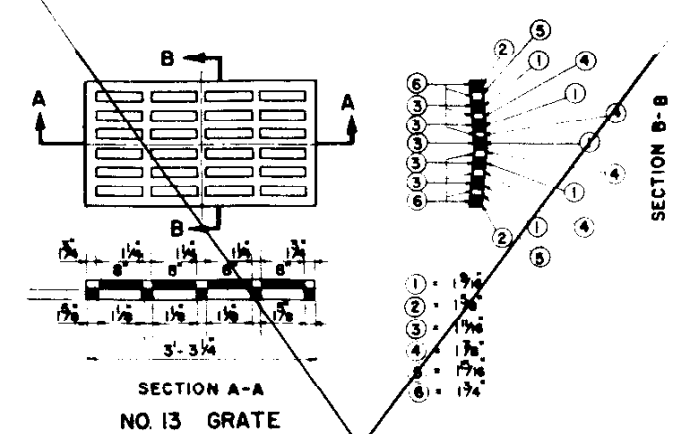
COLORADO
DEPARTMENT OF HIGHWAYS

DROP INLET DETAILS

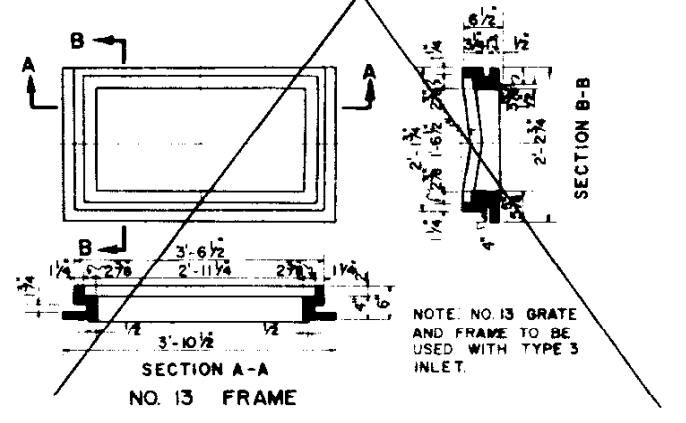
Designed by:	Approved by:
Made by:	
Checked by:	Date:



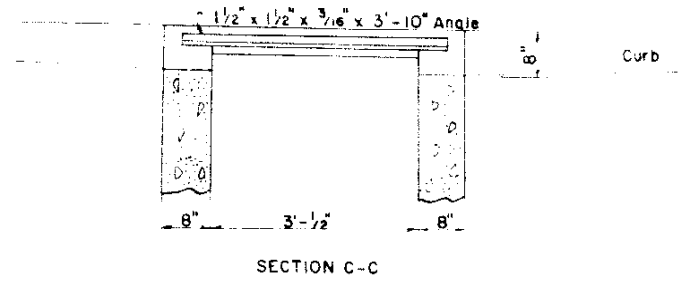
STANDARD INLET TYPE - 3



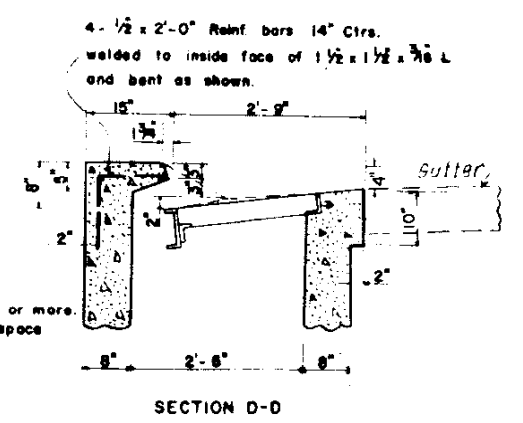
SECTION A-A NO. 13 GRATE



SECTION A-A NO. 13 FRAME

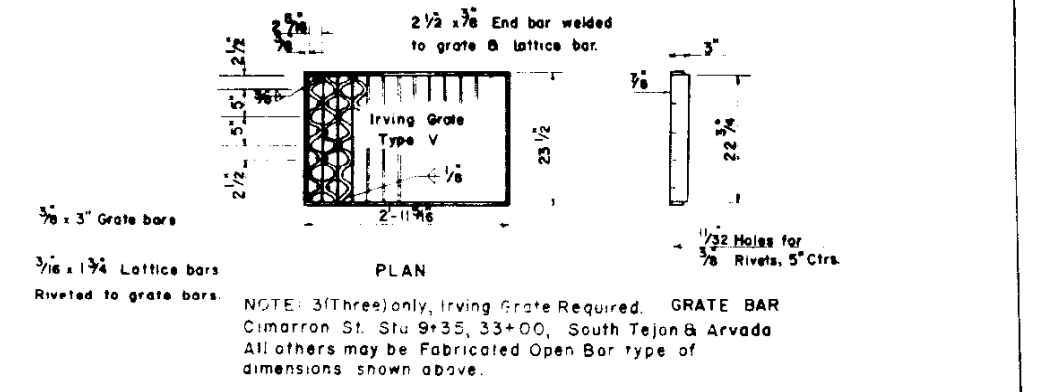


SECTION C-C

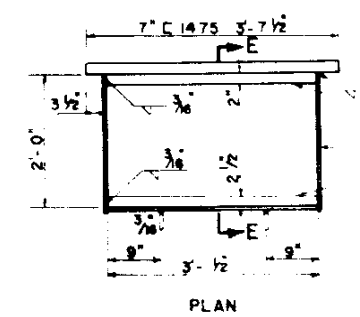


SECTION D-D

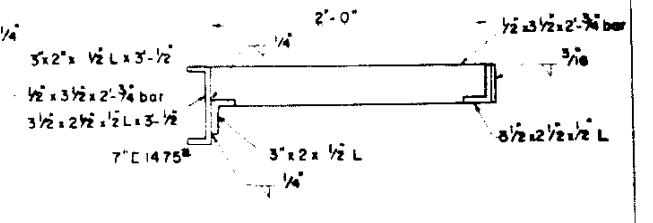
General Notes:
1. Use steps for inlets with H = 3'-6" or more. Start 2'-0" below gutter line and space equally thereafter 18" Max.



PLAN



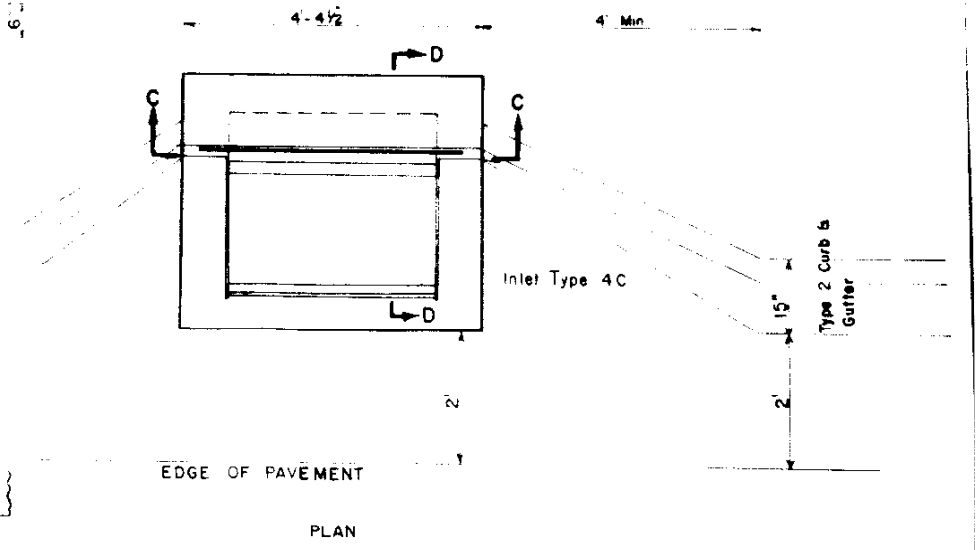
PLAN



SECTION E-E SCALE 1/2" = 1'-0"

NO. 4 FRAME

NOTE: NO. 4 GRATE AND FRAME TO BE USED WITH TYPE 4-B AND 4-C INLET.



PLAN

NOTE: Sta. 9+35 on Cimarron the throat of the inlet will be flush with the Median Curb

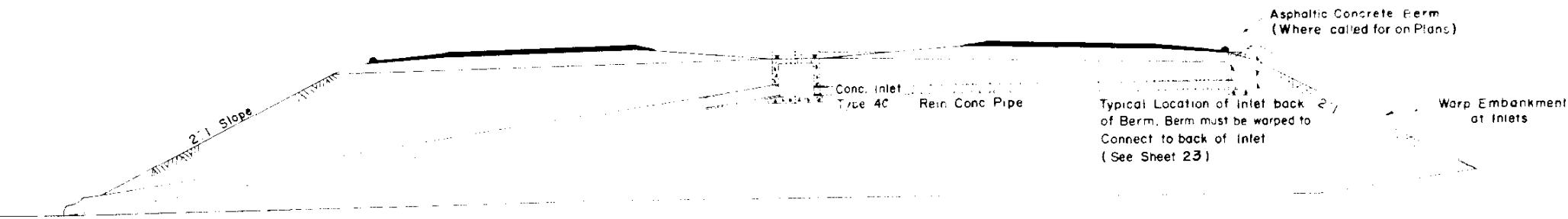
INLET TYPE 4-C

SCALE 3/4" = 1'-0" Unless otherwise noted

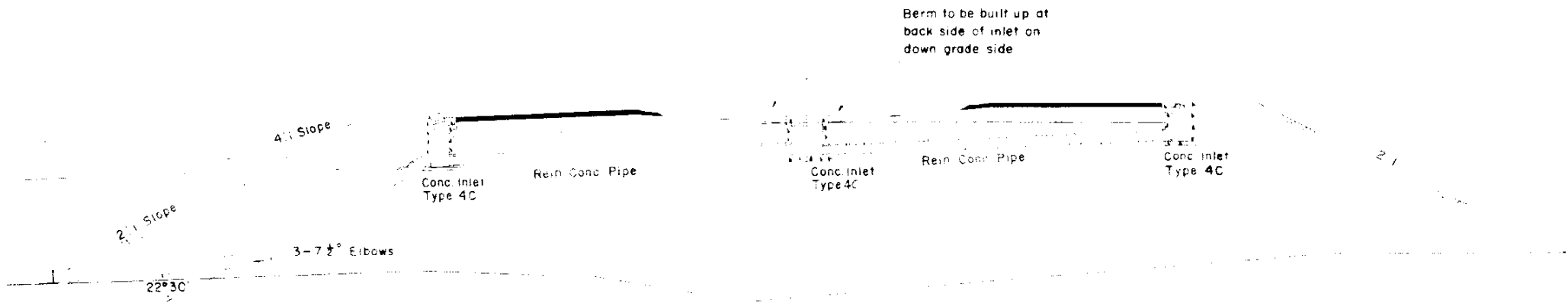
COLORADO DEPARTMENT OF HIGHWAYS
STANDARD INLET NO 3
NO 13 INLET GRATING & FRAME
INLETS NO 4B & 4C
NO 4 INLET GRATING & FRAME

Designed by: _____ Approved by: _____
Made by: _____ Date: _____
Checked by: _____

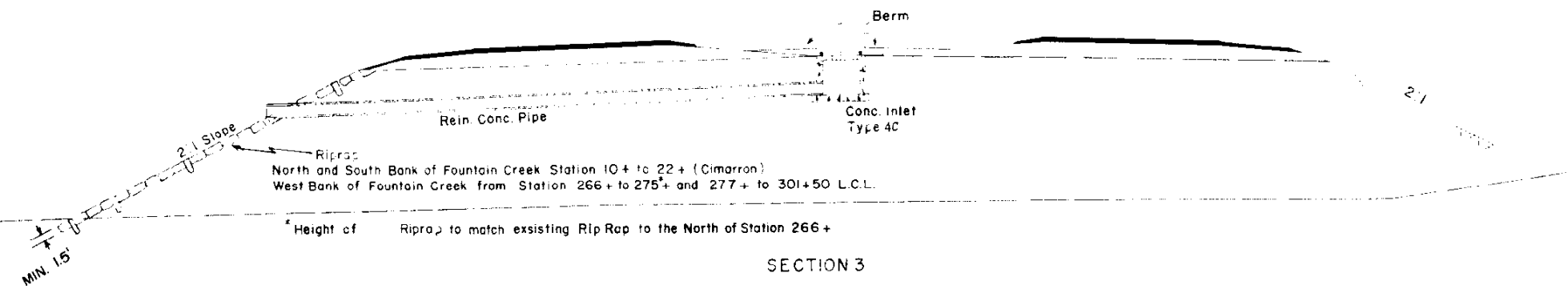
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	17	



SECTION 1



SECTION 2



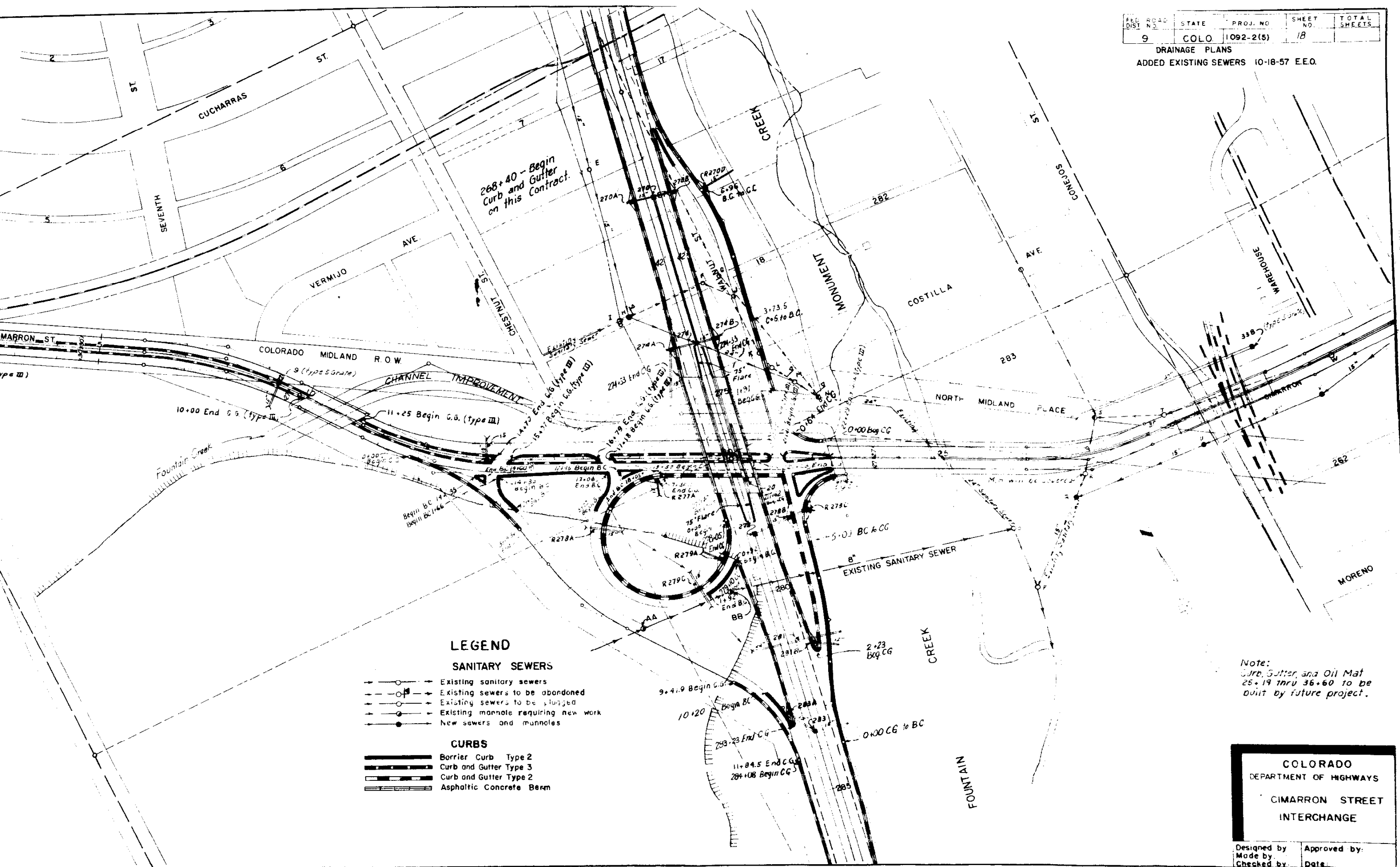
SECTION 3

COLORADO
DEPARTMENT OF HIGHWAYS
TYPICAL LAYOUT
OF DRAINAGE

Designed by:	Approved by:
Made by:	Date:
Checked by:	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	18	

DRAINAGE PLANS
 ADDED EXISTING SEWERS 10-18-57 E.E.O.



LEGEND

SANITARY SEWERS

- Existing sanitary sewers
- Existing sewers to be abandoned
- Existing sewers to be plugged
- Existing manhole requiring new work
- New sewers and manholes

CURBS

- Barrier Curb Type 2
- Curb and Gutter Type 3
- Curb and Gutter Type 2
- Asphaltic Concrete Berm

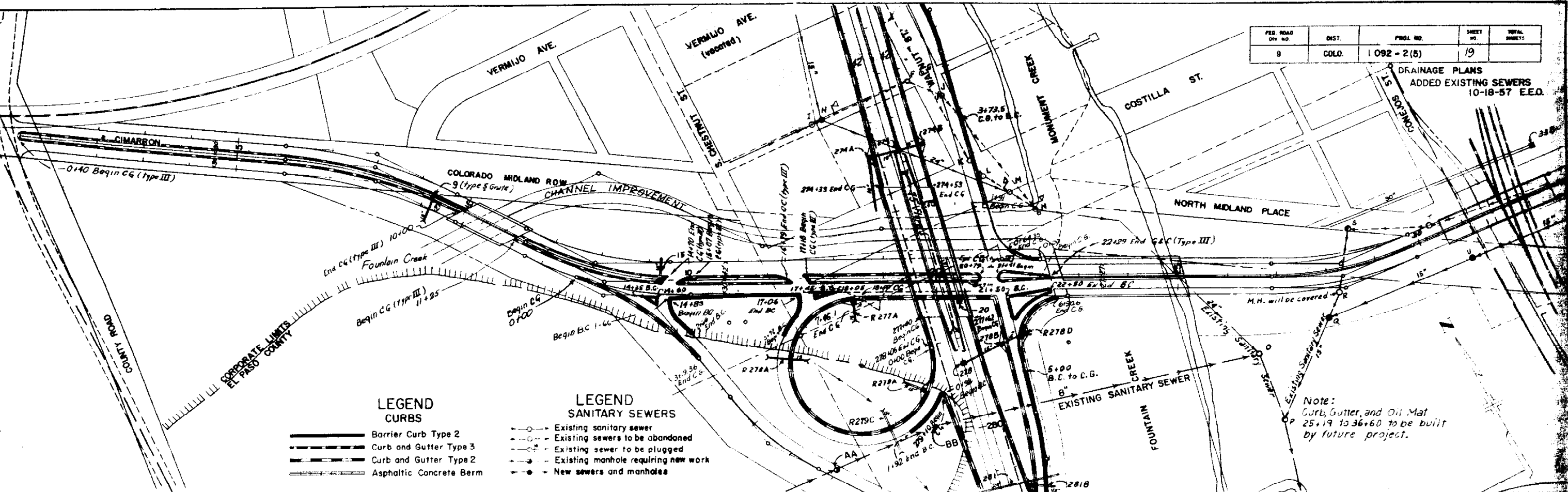
Note:
 Curb, Gutter, and Oil Mat
 25+19 thru 36+60 to be
 built by future project.

COLORADO
 DEPARTMENT OF HIGHWAYS
CIMARRON STREET
 INTERCHANGE

Designed by: _____
 Made by: _____
 Checked by: _____
 Approved by: _____
 Date: _____

FED. ROAD DIST.	CITY NO.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	19	

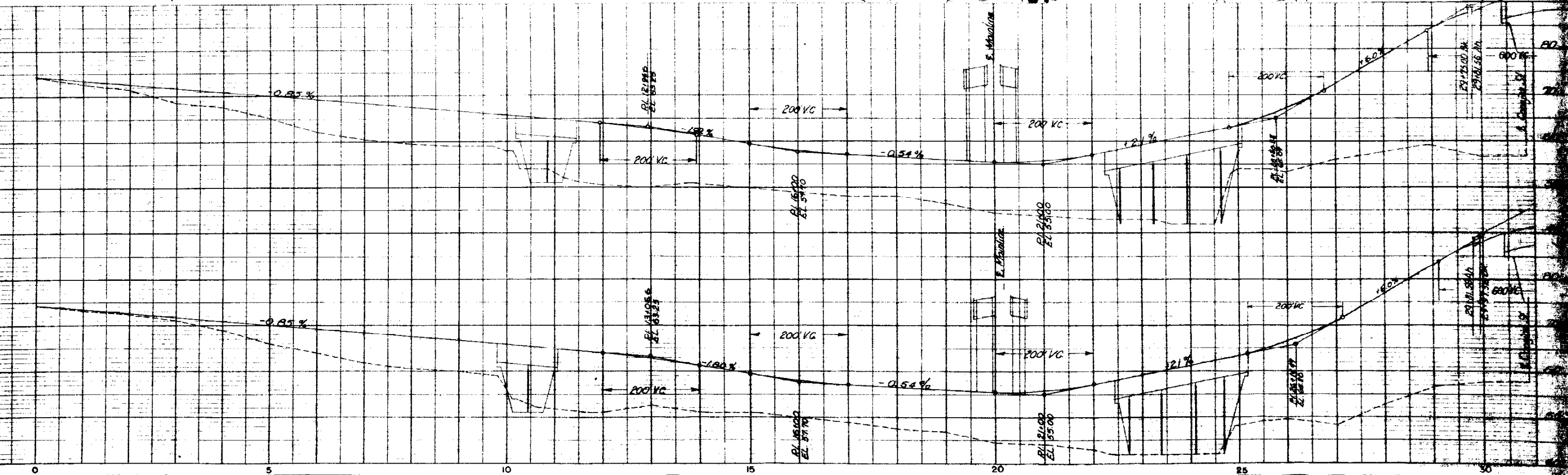
DRAINAGE PLANS
ADDED EXISTING SEWERS
10-18-57 E.E.O.



- LEGEND CURBS**
- Barrier Curb Type 2
 - Curb and Gutter Type 3
 - Curb and Gutter Type 2
 - Asphaltic Concrete Berm

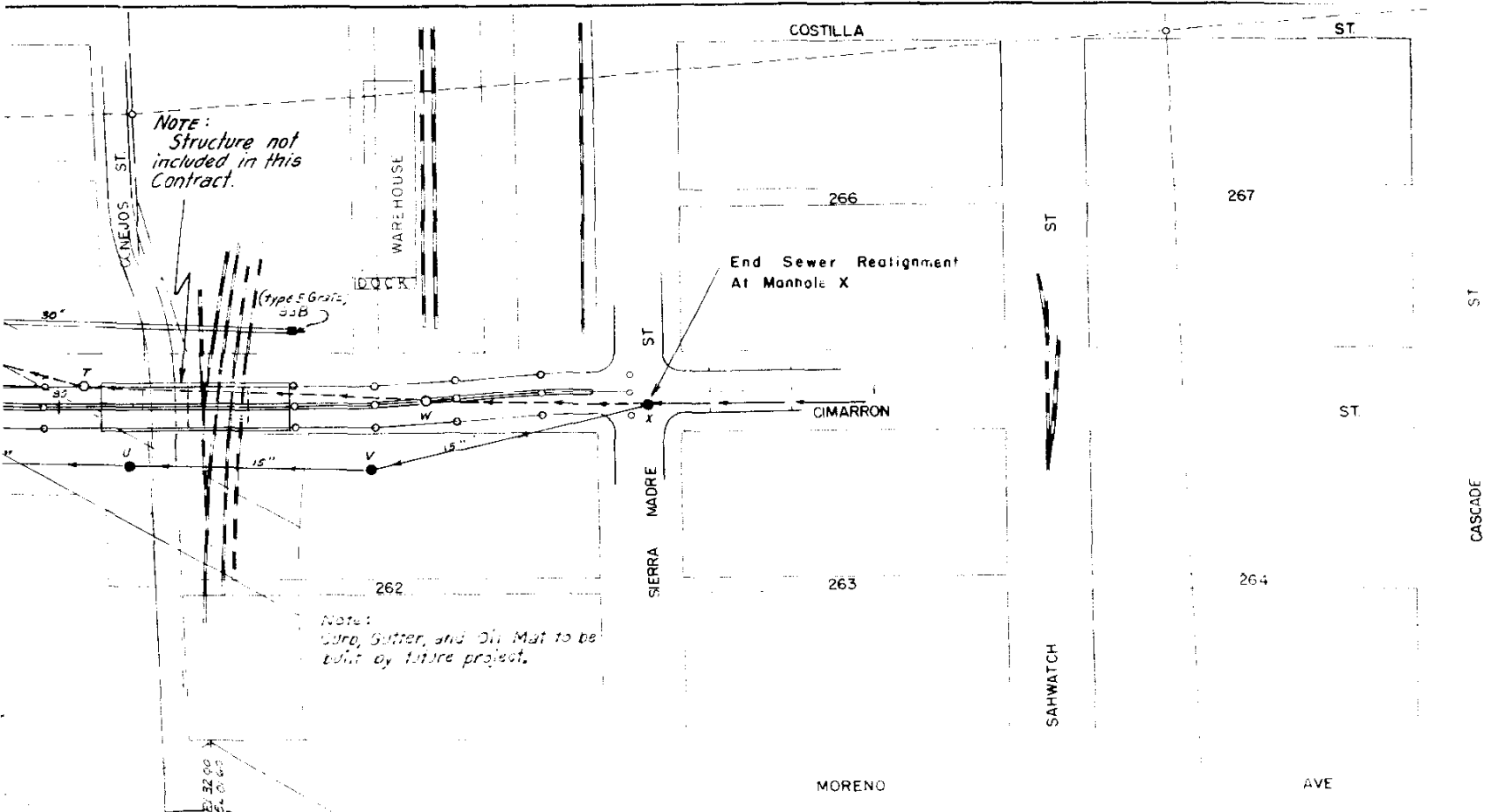
- LEGEND SANITARY SEWERS**
- Existing sanitary sewer
 - Existing sewers to be abandoned
 - Existing sewer to be plugged
 - Existing manhole requiring new work
 - New sewers and manholes

Note:
Curb, Gutter, and Oil Mat
25+19 to 36+60 to be built
by future project.



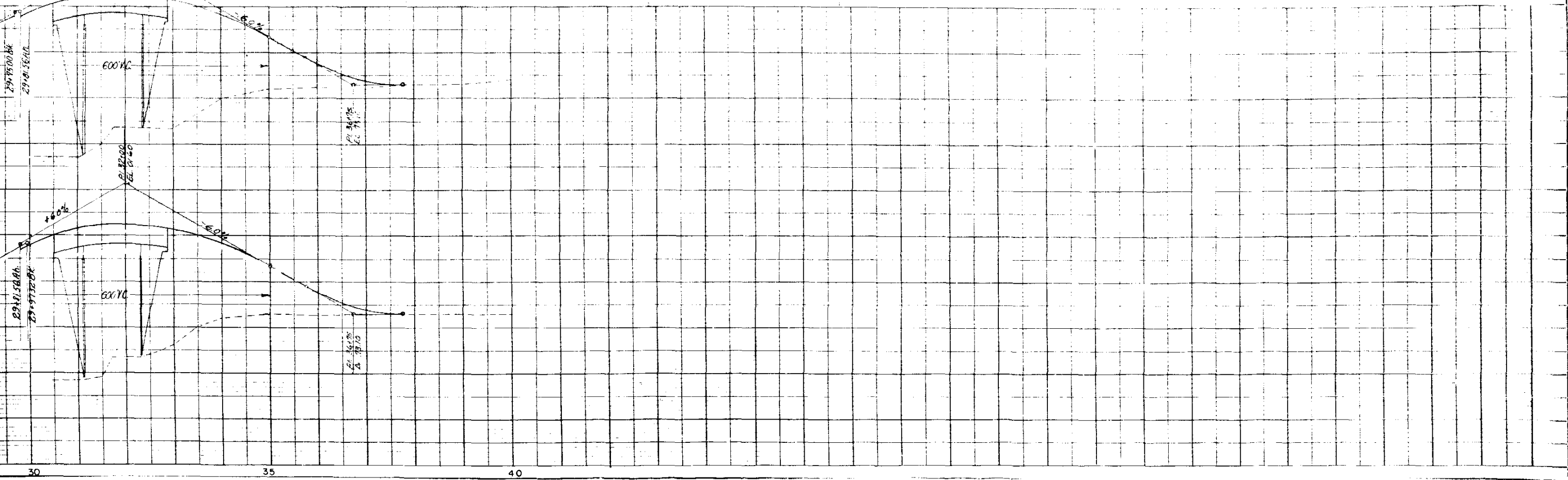
FED. ROAD DIST. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO	1 092-2(5)	20	

DRAINAGE PLANS

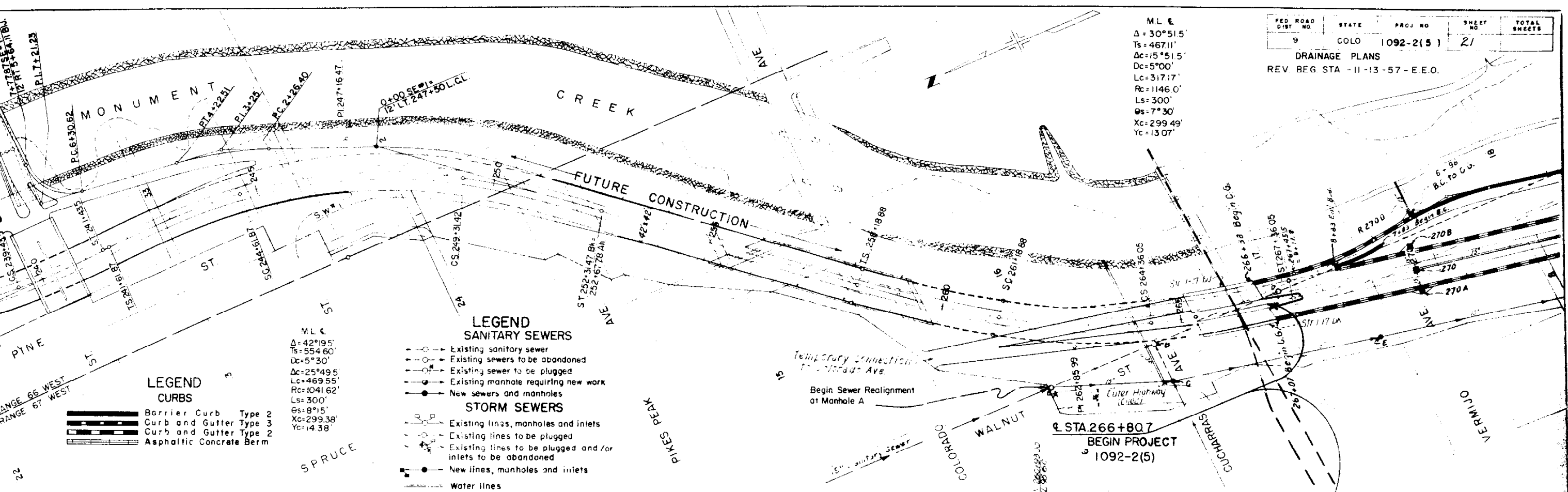


- LEGEND
SANITARY SEWERS**
- Existing sanitary sewer
 - - - Existing sewers to be abandoned
 - Existing sewer to be plugged
 - Existing manhole requiring new work
 - New sewers and manholes

- LEGEND
CURBS**
- Barrier Curb Type 2
 - - - Curb and Gutter Type 3
 - - - Curb and Gutter Type 2
 - Asphaltic Concrete Berm



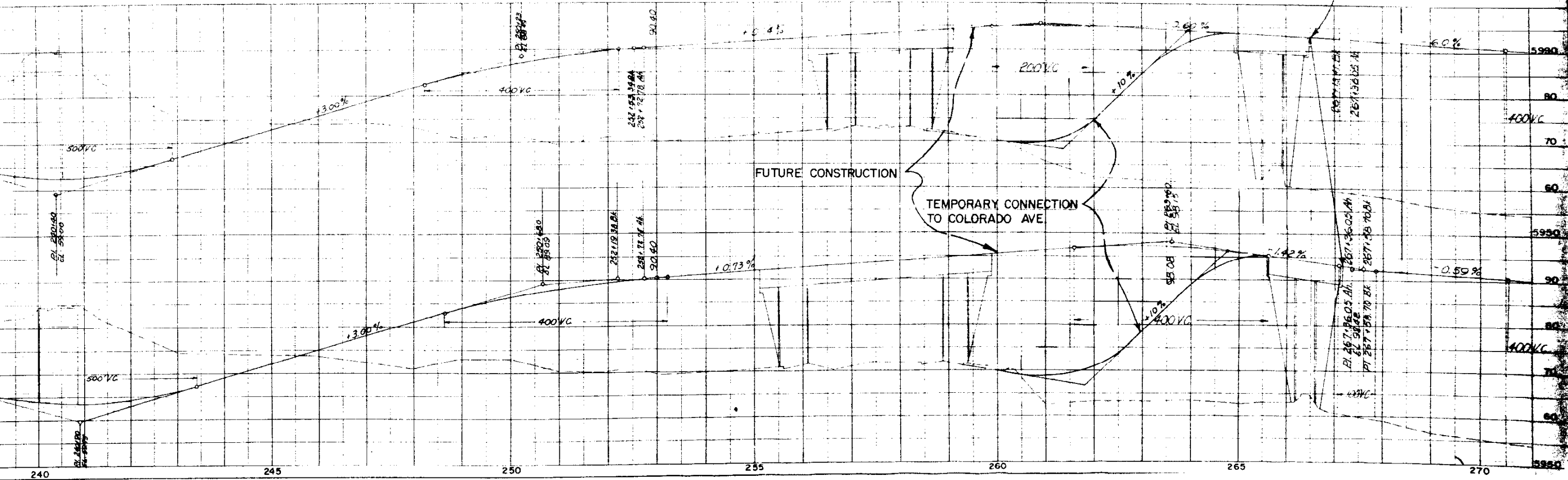
ML $\Delta = 30^\circ 51' 5"$
 Ts = 467.11'
 Dc = 15° 51' 5"
 Lc = 317.17'
 Rc = 1146.0'
 Ls = 300'
 Os = 7° 30'
 Xc = 299.49'
 Yc = 13.07'

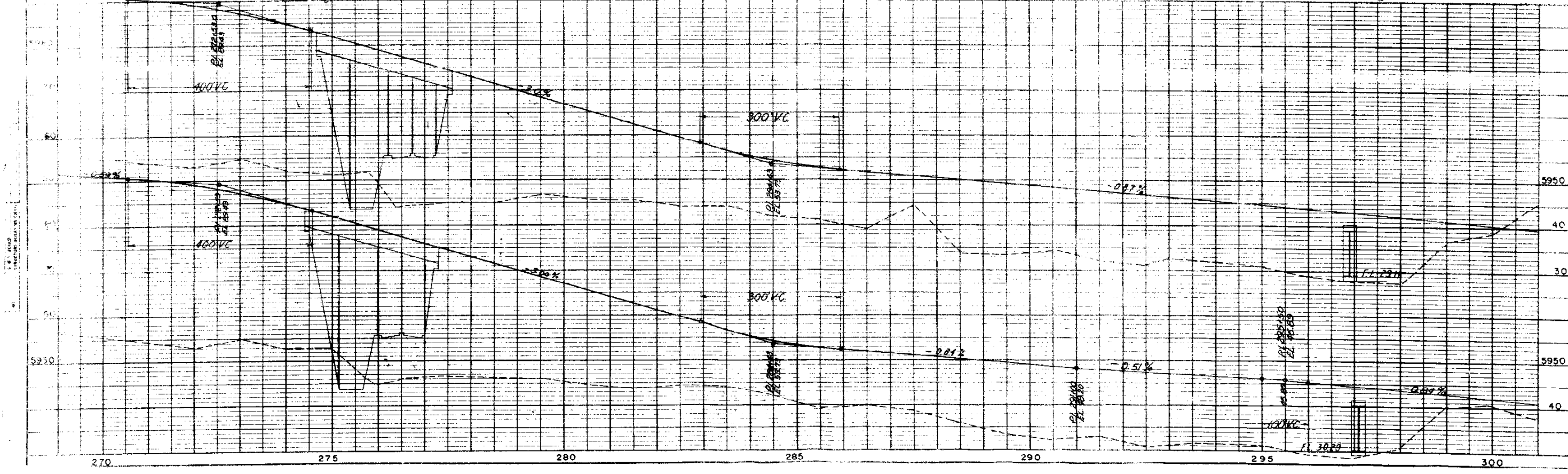
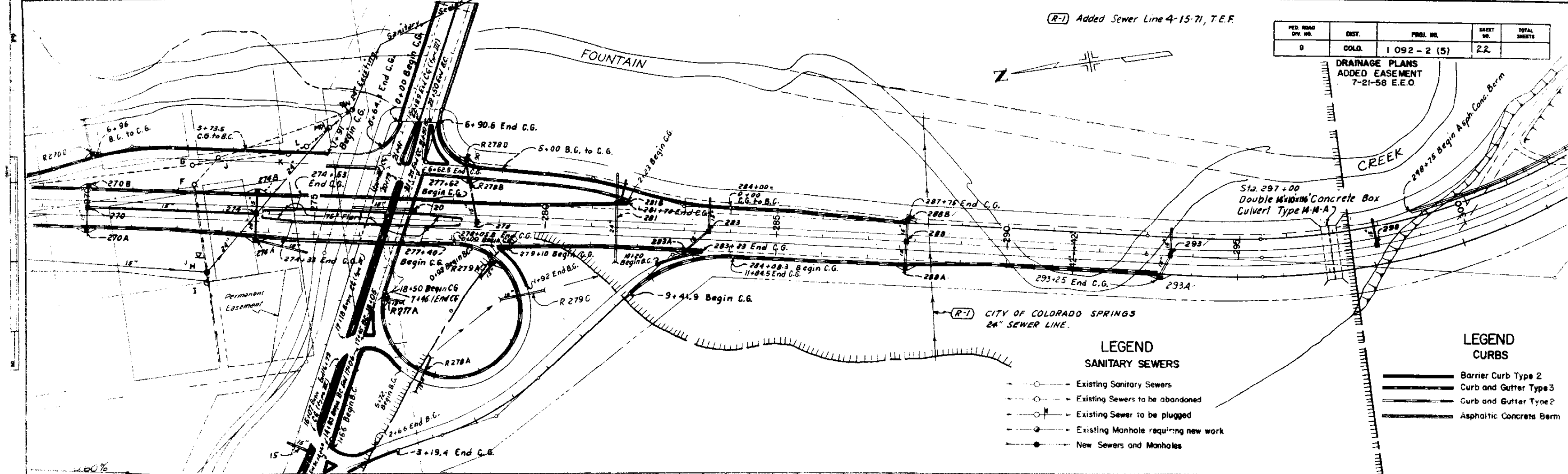


ML $\Delta = 42^\circ 19' 5"$
 Ts = 554.60'
 Dc = 5° 30'
 Lc = 25° 49' 5"
 Rc = 469.55'
 Ls = 1041.62'
 Os = 8° 15'
 Xc = 299.38'
 Yc = 14.38'

- LEGEND CURBS**
- Barrier Curb Type 2
 - Curb and Gutter Type 3
 - Curb and Gutter Type 2
 - Asphaltic Concrete Berm

- LEGEND SANITARY SEWERS**
- Existing sanitary sewer
 - Existing sewers to be abandoned
 - Existing sewer to be plugged
 - Existing manhole requiring new work
 - New sewers and manholes
- STORM SEWERS**
- Existing lines, manholes and inlets
 - Existing lines to be plugged
 - Existing lines to be plugged and/or inlets to be abandoned
 - New lines, manholes and inlets
 - Water lines

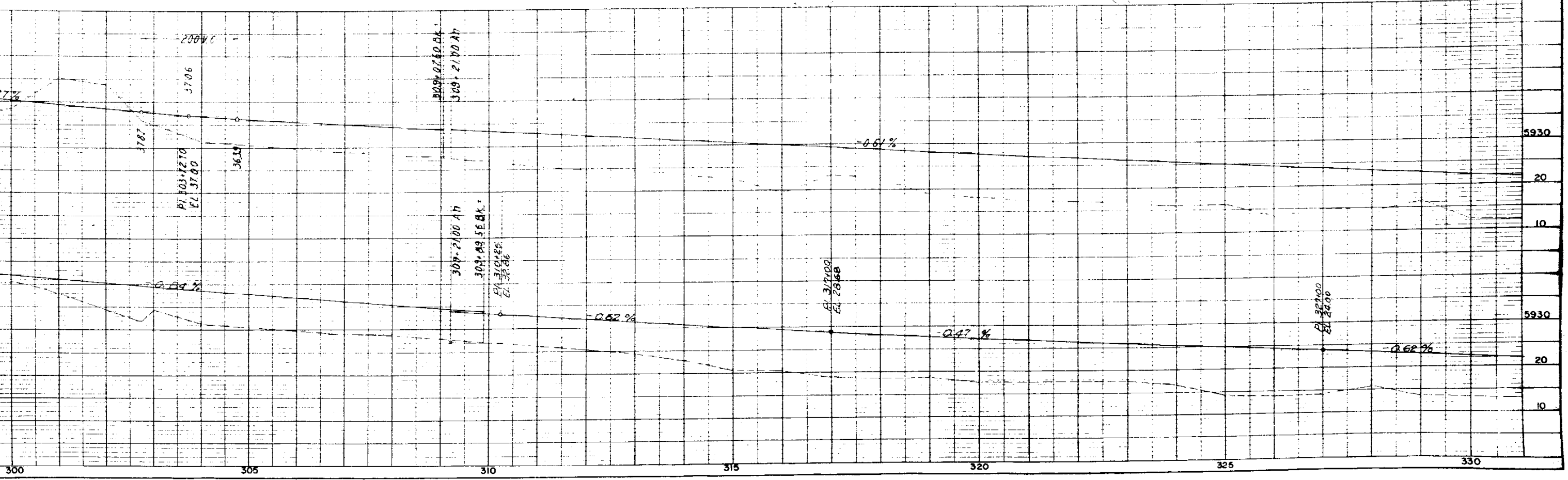
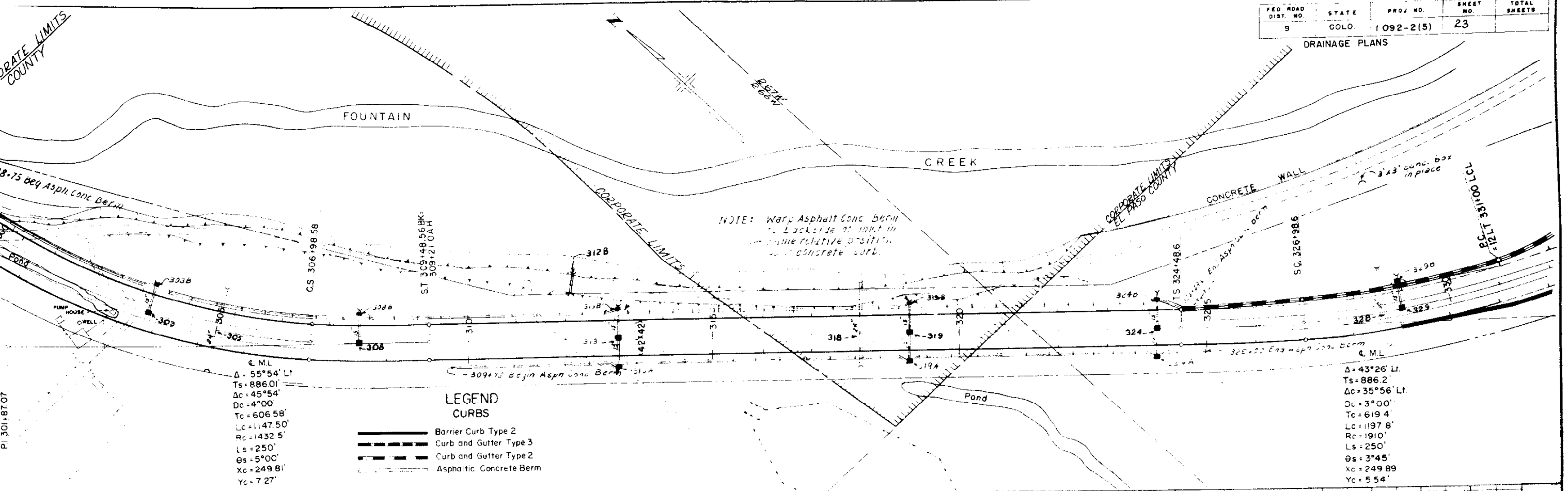




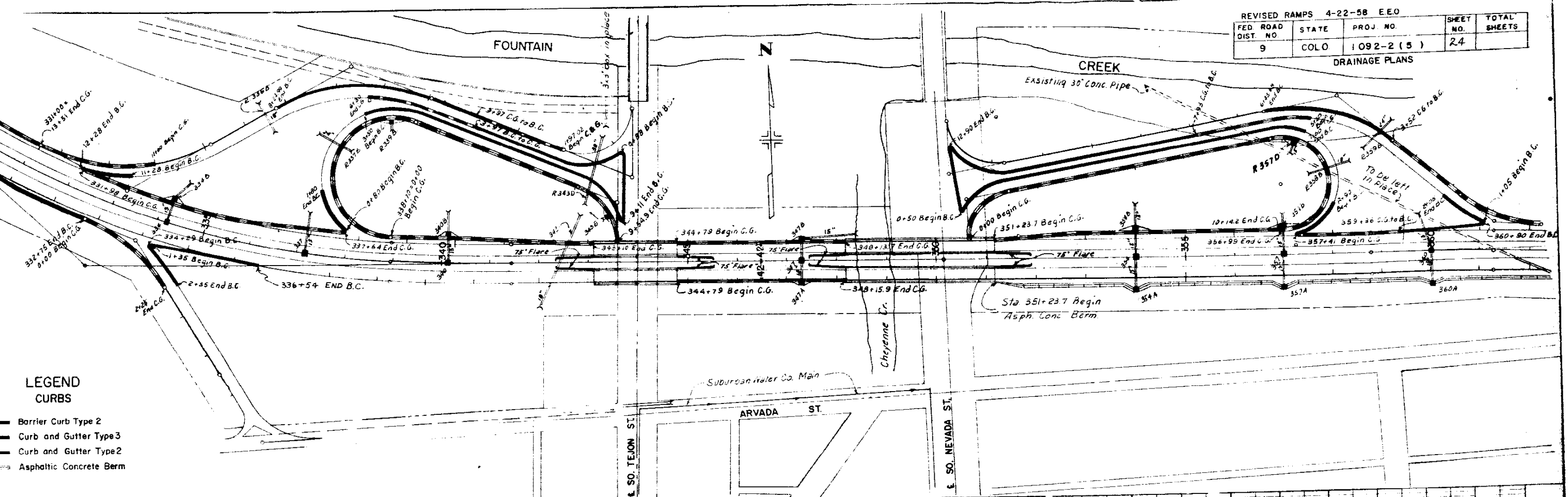
COLO. COUNTY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	23	

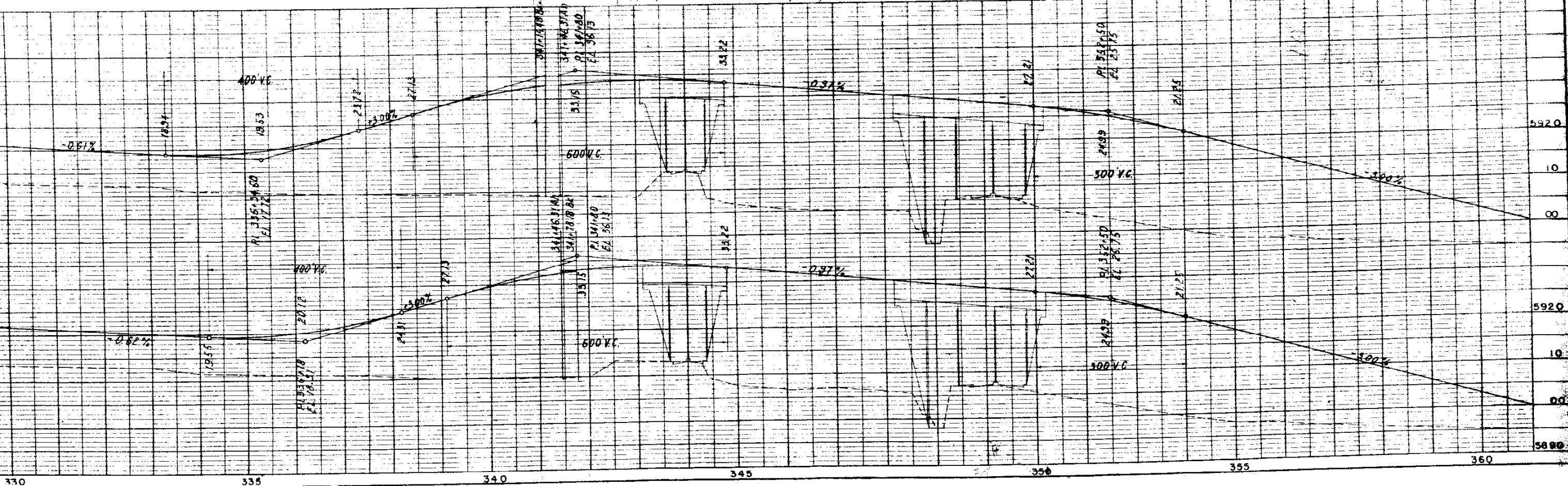
DRAINAGE PLANS



REVISED RAMPS 4-22-58 EEO			
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
9	COLO	1092-2 (5)	24
DRAINAGE PLANS			

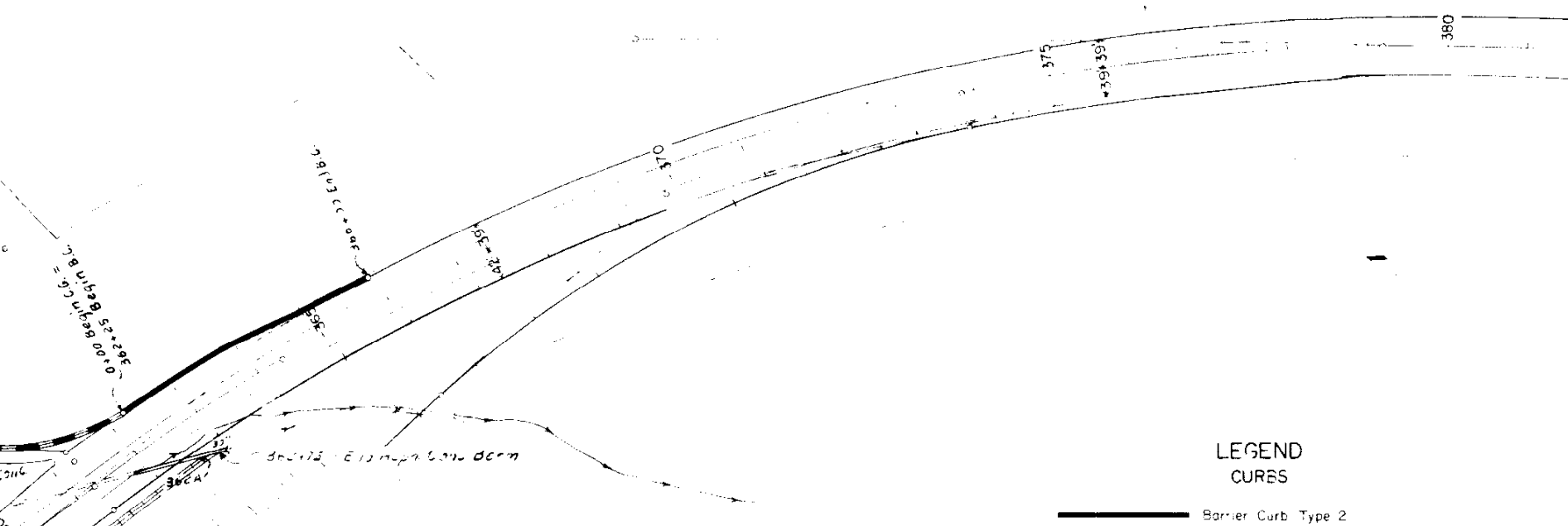


- LEGEND**
- CURBS**
- Barrier Curb Type 2
 - Curb and Gutter Type 3
 - Curb and Gutter Type 2
 - Asphaltic Concrete Berm



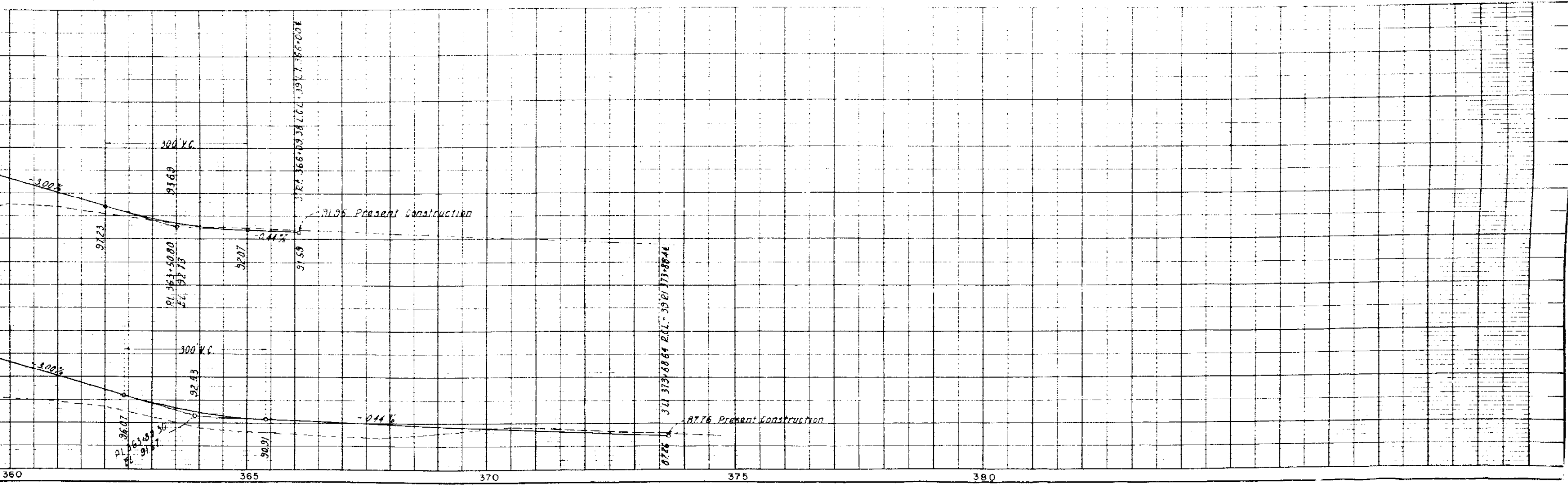
FED. ROAD DIV. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	25	

DRAINAGE PLANS

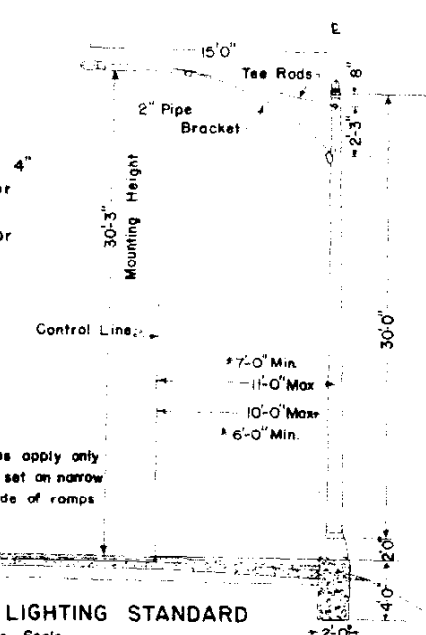


LEGEND
CURBS

Barrier Curb Type 2
 Curb and Gutter Type 3
 Curb and Gutter Type 2
 Asphaltic Concrete Berm



All extruded aluminum lighting standards, round 8" x 4" transformer base with door, 1" x 40" galv. steel anchor, 15" bolt circle at base of transformer base. Top circle of transformer base and base flange slotted for diameter bolt circle.



TYPICAL VIEW LIGHTING STANDARD
 No Scale

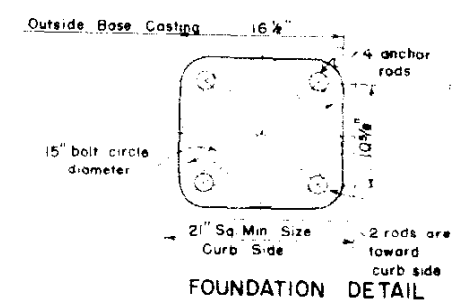
LEGEND ON PLAN SHEETS

●	15,000 L	Merc. Vapor
⊠	4,000 L	Incandescent

SUMMARY OF LIGHTING REQUIREMENTS #
 PROJECT 1 092-2(5)

SHEET NUMBER	15,000 L MERC VAP	4,000 L INCAND	30' POLES
28	7	0	7
29	6	0	6
30	56	8	56
31	21	0	21
32	66	10	66
33	14	0	14
TOTAL	170	24	170

To be done by others



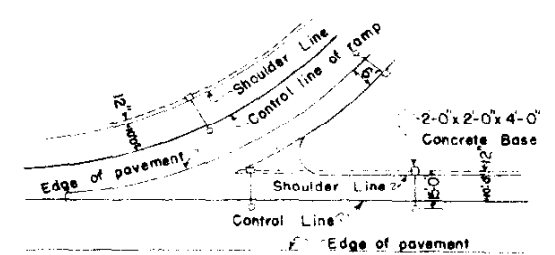
FOUNDATION DETAIL

FENCING REQUIREMENTS PROJECT

LEGEND

Chain Link Wire Mesh (School Fence)	—//—//—
Combination Wire Fence (Barrier)	—x—x—
Metal Plate Guard Fence	—•••••—

Note: Chain link wire mesh fence to be used near Right of Way lines as shown on plans. See Std M-26-C. Barrier fence with Metal Posts, to be used in median, See Sheet No. 86.



TYPICAL LIGHTING LAYOUT
 Spacing varies as shown on Plan Sheets

SUMMARY OF FENCING PROJECT 1 092-2(5)

SHEET NO.	CHAIN LINK WIRE FENCE	COMBINATION WIRE FENCE (BARRIER)	REM. & REB. GUARD FENCE	METAL PLATE GUARD FENCE
29	2,280	—	—	—
30	375	250	—	600
31	2,210	2,550	—	1,225
32	3,000	3,000	—	—
33	2,600	2,200	120	650
34	—	1,500	—	—
Sub.Total	10,465	9,500	120	2,475
PROJECT				
29	1,620	—	—	—
Sub.Total	1,620	—	—	—
COMB. TOTAL	12,085	9,500	120	2,475

TIMBER GUARD POSTS

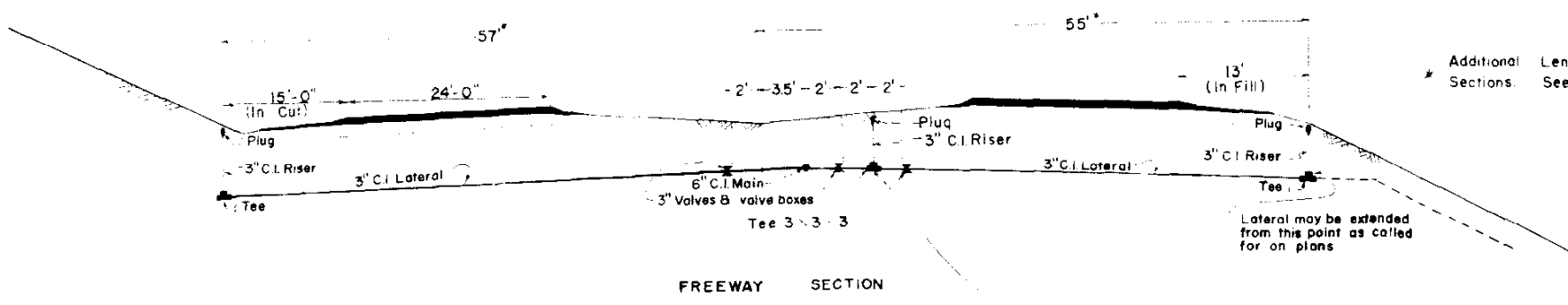
An estimated 370 timber guard posts will be required on this project. Locations will be staked by the engineer at time of construction.

COLORADO
 DEPARTMENT OF HIGHWAYS
 DETAILS OF
 LIGHTING & FENCING

Designed by _____
 Made by _____
 Checked by _____

Approved by _____
 Date _____

FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092-2(5)	27	30



One median 3" C.I. Riser with 3" valve and Valve Box to alternate from right to left of roadway centerline per 3" lateral

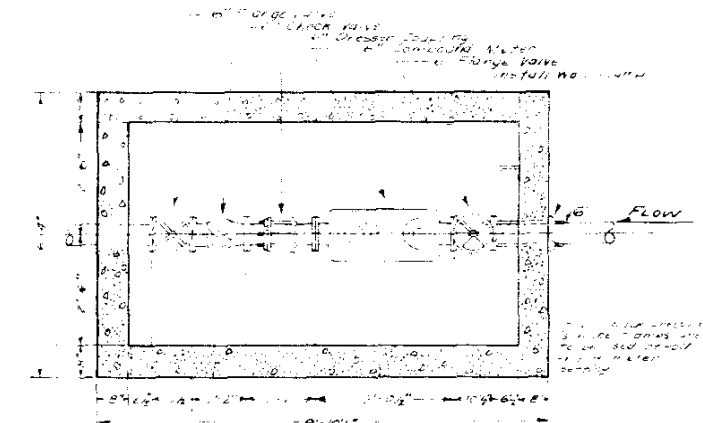
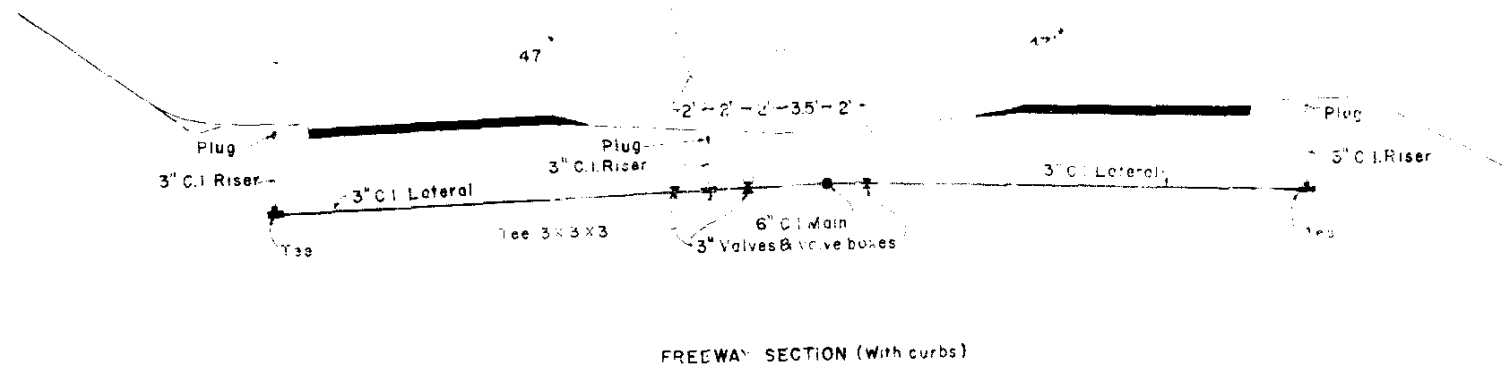
* Additional Length for widened Sections. See Plans.

Note: No sprinklers to be installed beyond No. 7.

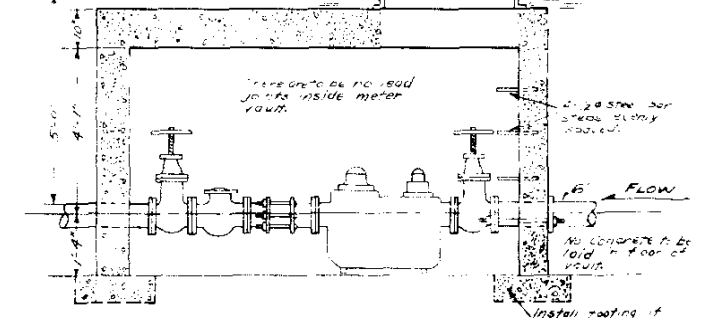
SUMMARY OF MAINS AND PRIMARY LATERALS							
PROJECT 1 092-2(5)							
SHEET NUMBER	6" C.I. MAIN	3" C.I. LATERAL	3" C.I. RISER	3" GATE VALVE	6" GATE VALVE	MANUAL DRAIN	6" METER BOX COMP.
30	170	108	9	7	1	2	1
31	2,060	1,065	72	13	0	12	1
32	3,000	1,100	90	30	0	20	
33	3,700	2,240	129	30	1	20	
TOTAL	2,230	1,171	81	21	1*	14	2

* 6" GATE VALVE to be installed on 6" cast iron main for testing purposes as shown on plans or as directed by Engineer at time of construction.

• Force Account



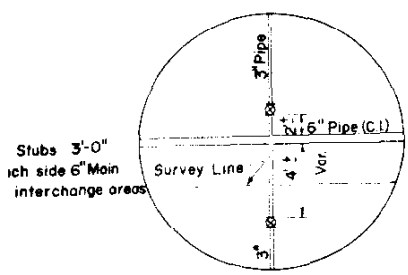
NOTE: Pipe of vault to be properly reinforced and not less than 10" thick if vault is in street.



NOTE: If street is not to official grade at time of installation of meter, owner must raise or lower meter pit when street is graded.

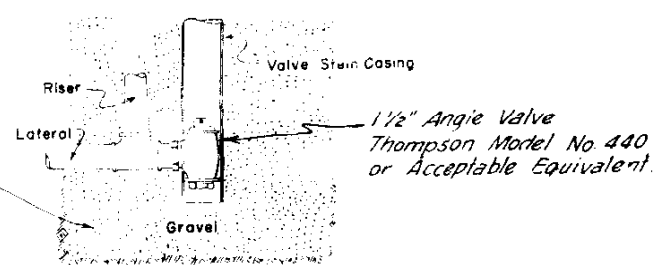
STANDARD SETTING FOR 6" METER

All settings must be inspected by Meter Dept. before backfilling. Location of meter to be established by Meter Dept.



DETAIL A TYPICAL PIPE DETAIL OF LATERALS

NOTE: Cost of furnishing and placing Gravel backfill around drain valve shall be included in the original contract unit price for item 113xb Cast iron water pipe

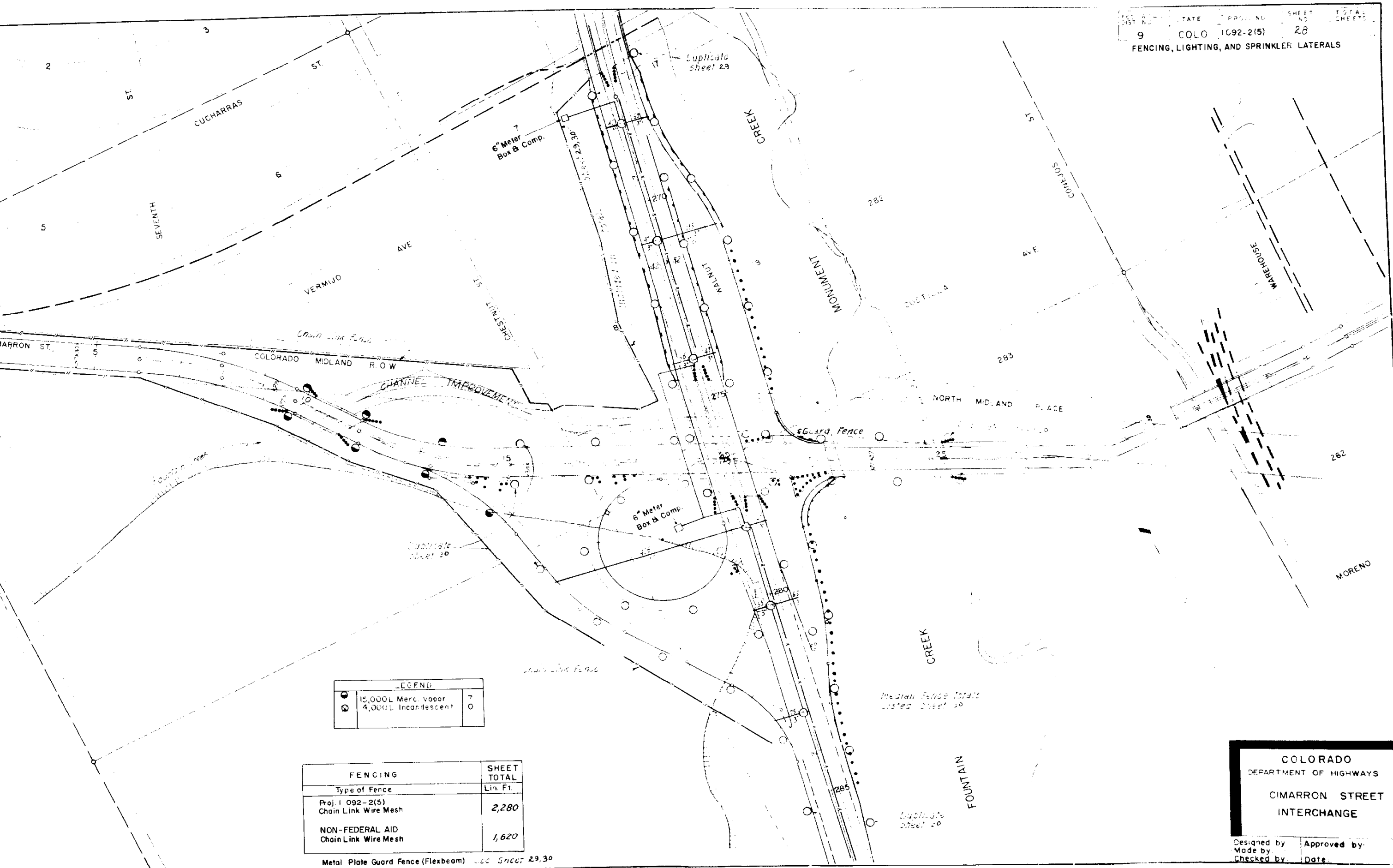


DETAIL B DRAIN VALVE AT RISER

COLORADO
DEPARTMENT OF HIGHWAYS
DETAILS OF
SPRINKLER MAINS
AND LATERALS

Designed by: _____
Made by: _____
Checked by: _____

Approved by: _____
Date: _____



LEGEND		
●	15,000L Merc. Vapor	7
○	4,000L Incandescent	0

FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Proj. 1 092-2(5) Chain Link Wire Mesh	2,280
NON-FEDERAL AID Chain Link Wire Mesh	1,620

Metal Plate Guard Fence (Flexbeam) See Sheet 29.30

COLORADO
 DEPARTMENT OF HIGHWAYS
CIMARRON STREET INTERCHANGE

Designed by	Approved by
Made by	Date
Checked by	

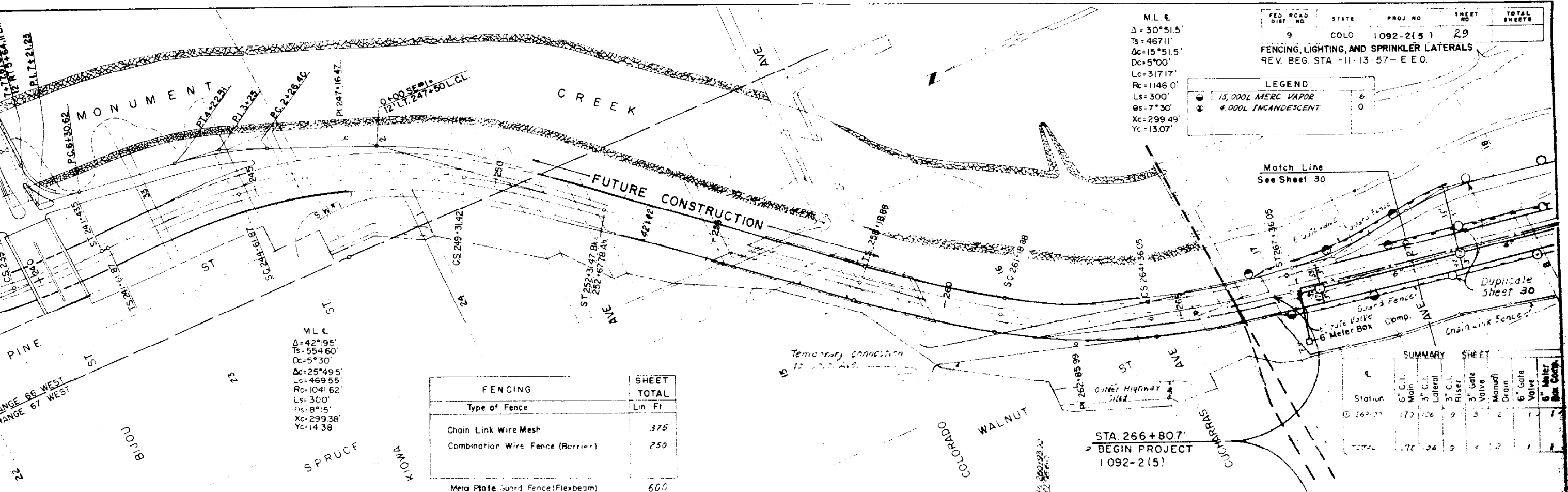
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	29	

FENCING, LIGHTING, AND SPRINKLER LATERALS
REV. BEG. STA. -11-13-57- E.E.O.

M.L. E
 $\Delta = 30^\circ 51.5'$
 $Ts = 467.11'$
 $\Delta c = 15^\circ 51.5'$
 $Dc = 5^\circ 00'$
 $Lc = 317.17'$
 $Rc = 1146.0'$
 $Ls = 300'$
 $Qs = 7^\circ 30'$
 $Xc = 299.49'$
 $Yc = 13.07'$

LEGEND

○	15,000L MERC. VAPOR	6
●	4,000L INCANDESCENT	0



M.L. E
 $\Delta = 42^\circ 19.5'$
 $Ts = 554.60'$
 $Dc = 5^\circ 30'$
 $\Delta c = 25^\circ 49.5'$
 $Lc = 469.55'$
 $Rc = 1041.62'$
 $Ls = 300'$
 $Qs = 8^\circ 15'$
 $Xc = 299.38'$
 $Yc = 14.38'$

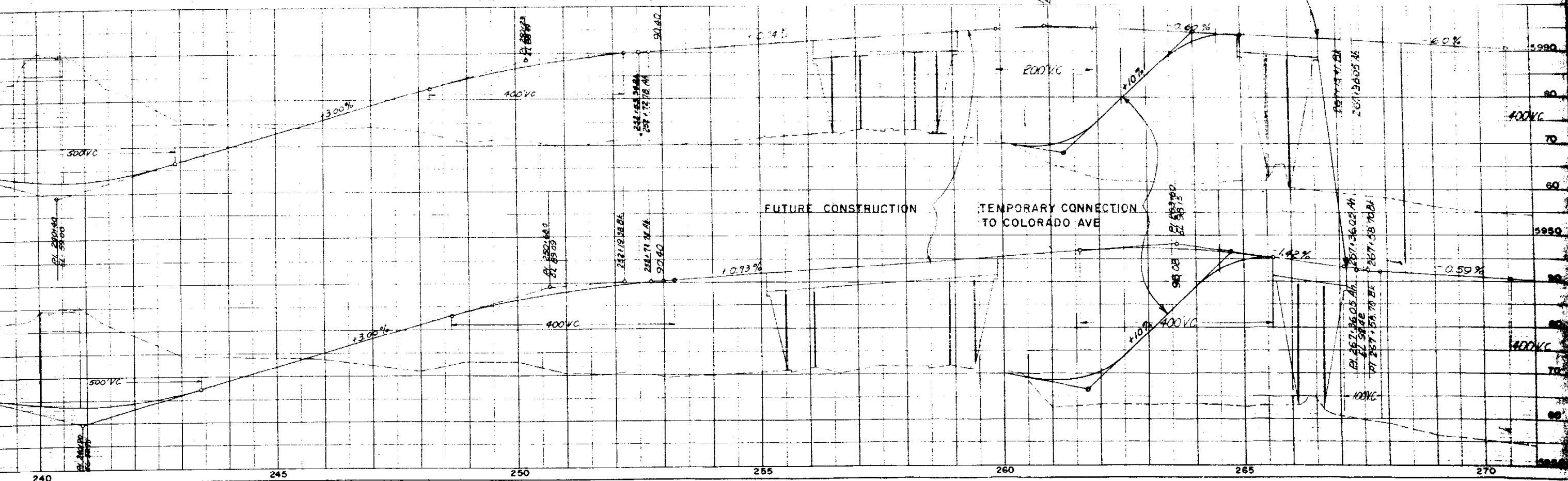
FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Chain Link Wire Mesh	375
Combination Wire Fence (Barrier)	250
Metal Plate Guard Fence (Flexbeam)	600

Match Line
See Sheet 30

SUMMARY SHEET

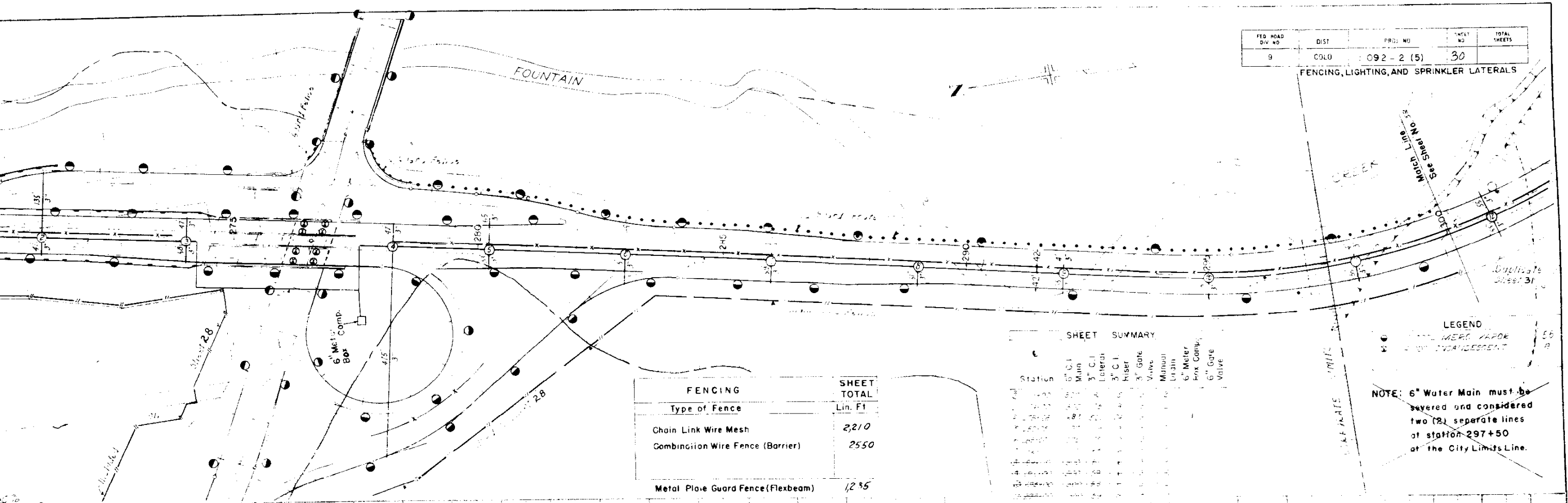
Station	6" C.I. Main	3" C.I. Lateral	3" C.I. Riser	3" Gate Valve	Manual Valve	Drain	6" Gate Valve	6" Water Bar Comp.
266+00	17	106	9	3	2		1	1
267+00	17	106	9	3	2		1	1

STA 266+80.7'
 BEGIN PROJECT
 1092-2(5)



FED. ROAD DIV. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	092-2 (5)	30	

FENCING, LIGHTING, AND SPRINKLER LATERALS

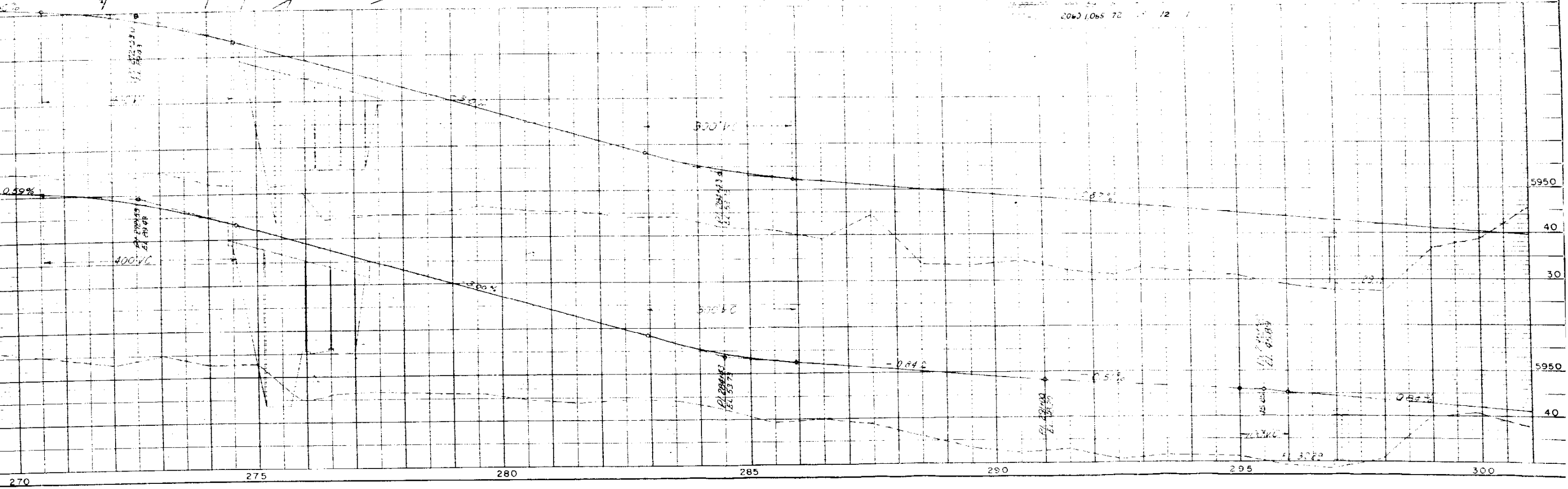


FENCING		SHEET TOTAL
Type of Fence		Lin. Ft.
Chain Link Wire Mesh		2210
Combination Wire Fence (Barrier)		2550
Metal Pipe Guard Fence (Flexbeam)		1235

SHEET SUMMARY	
Station	6" C.I. Main 3" C.I. Lateral 3" C.I. Riser 3" Gate Valve Mainline Valve 6" Meter Box Comp. 6" Gate Valve
275+00	
275+50	
276+00	
276+50	
277+00	
277+50	
278+00	
278+50	
279+00	
279+50	
280+00	
280+50	
281+00	
281+50	
282+00	
282+50	
283+00	
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292+00	
292+50	
293+00	
293+50	
294+00	
294+50	
295+00	
295+50	
296+00	
296+50	
297+00	
297+50	
298+00	
298+50	
299+00	
299+50	
300+00	
TOTAL	1065

LEGEND
 ● METER VALVE
 ○ SPRINKLER
 (Symbol) VALVE

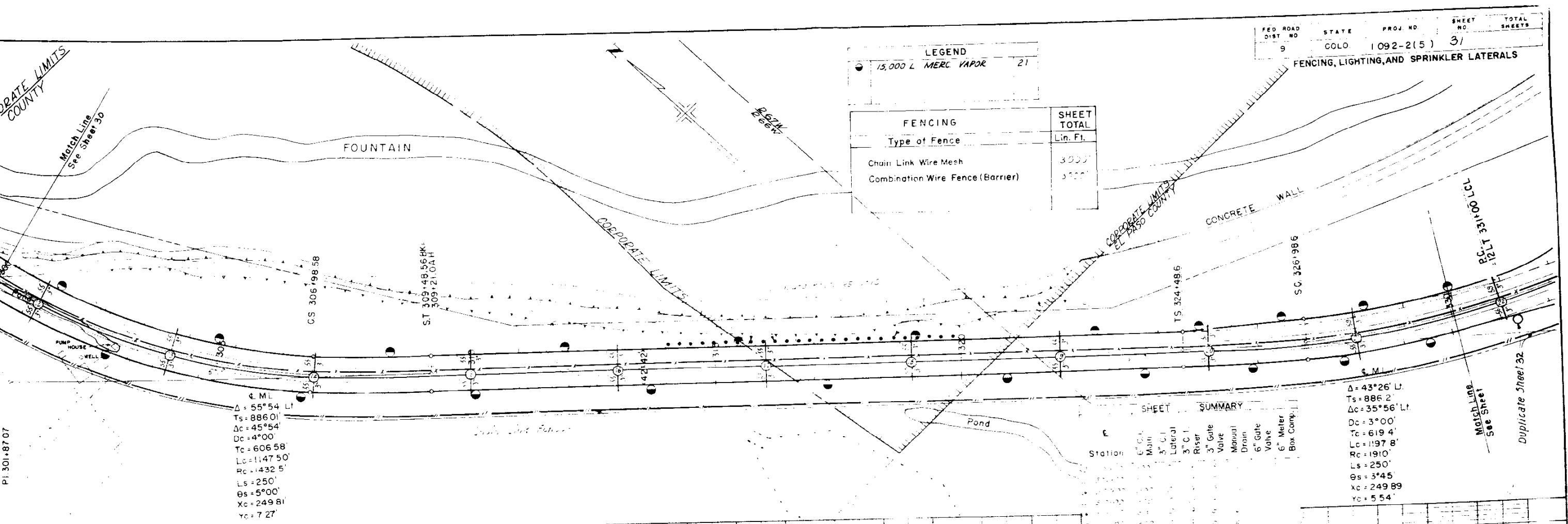
NOTE: 6" Water Main must be severed and considered two (2) separate lines at station 297+50 at the City Limits Line.



LEGEND
 15,000 L. MERC. VAPOR 21

FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Chain Link Wire Mesh	3099
Combination Wire Fence (Barrier)	3700

FENCING, LIGHTING, AND SPRINKLER LATERALS

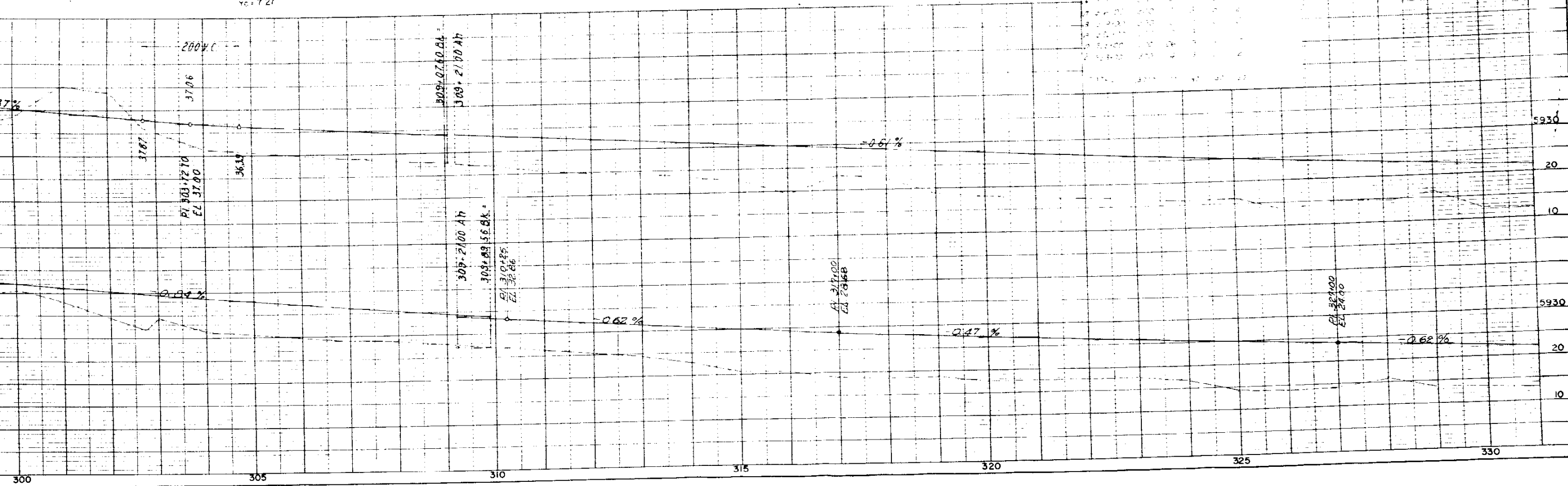


Δ = 55°54' Lt
 Ts = 886.01
 Δc = 45°54'
 Dc = 4°00'
 Tc = 606.58
 Lc = 1147.50'
 Rc = 1432.5'
 Ls = 250'
 θs = 5°00'
 Xc = 249.81
 Yc = 7.27

SHEET SUMMARY

Station	6" C.I. Main	3" C.I. Lateral	3" C.I. Riser	3" Gate Valve	Manual Drain	6" Gate Valve	6" Meter	Box Comp.
300+00	1	1	1	1	1	1	1	1
300+50	1	1	1	1	1	1	1	1
301+00	1	1	1	1	1	1	1	1
301+50	1	1	1	1	1	1	1	1
302+00	1	1	1	1	1	1	1	1
302+50	1	1	1	1	1	1	1	1
303+00	1	1	1	1	1	1	1	1
303+50	1	1	1	1	1	1	1	1
304+00	1	1	1	1	1	1	1	1
304+50	1	1	1	1	1	1	1	1
305+00	1	1	1	1	1	1	1	1
305+50	1	1	1	1	1	1	1	1
306+00	1	1	1	1	1	1	1	1
306+50	1	1	1	1	1	1	1	1
307+00	1	1	1	1	1	1	1	1
307+50	1	1	1	1	1	1	1	1
308+00	1	1	1	1	1	1	1	1
308+50	1	1	1	1	1	1	1	1
309+00	1	1	1	1	1	1	1	1
309+50	1	1	1	1	1	1	1	1
310+00	1	1	1	1	1	1	1	1
310+50	1	1	1	1	1	1	1	1
311+00	1	1	1	1	1	1	1	1
311+50	1	1	1	1	1	1	1	1
312+00	1	1	1	1	1	1	1	1
312+50	1	1	1	1	1	1	1	1
313+00	1	1	1	1	1	1	1	1
313+50	1	1	1	1	1	1	1	1
314+00	1	1	1	1	1	1	1	1
314+50	1	1	1	1	1	1	1	1
315+00	1	1	1	1	1	1	1	1
315+50	1	1	1	1	1	1	1	1
316+00	1	1	1	1	1	1	1	1
316+50	1	1	1	1	1	1	1	1
317+00	1	1	1	1	1	1	1	1
317+50	1	1	1	1	1	1	1	1
318+00	1	1	1	1	1	1	1	1
318+50	1	1	1	1	1	1	1	1
319+00	1	1	1	1	1	1	1	1
319+50	1	1	1	1	1	1	1	1
320+00	1	1	1	1	1	1	1	1
320+50	1	1	1	1	1	1	1	1
321+00	1	1	1	1	1	1	1	1
321+50	1	1	1	1	1	1	1	1
322+00	1	1	1	1	1	1	1	1
322+50	1	1	1	1	1	1	1	1
323+00	1	1	1	1	1	1	1	1
323+50	1	1	1	1	1	1	1	1
324+00	1	1	1	1	1	1	1	1
324+50	1	1	1	1	1	1	1	1
325+00	1	1	1	1	1	1	1	1
325+50	1	1	1	1	1	1	1	1
326+00	1	1	1	1	1	1	1	1
326+50	1	1	1	1	1	1	1	1
327+00	1	1	1	1	1	1	1	1
327+50	1	1	1	1	1	1	1	1
328+00	1	1	1	1	1	1	1	1
328+50	1	1	1	1	1	1	1	1
329+00	1	1	1	1	1	1	1	1
329+50	1	1	1	1	1	1	1	1
330+00	1	1	1	1	1	1	1	1
330+50	1	1	1	1	1	1	1	1

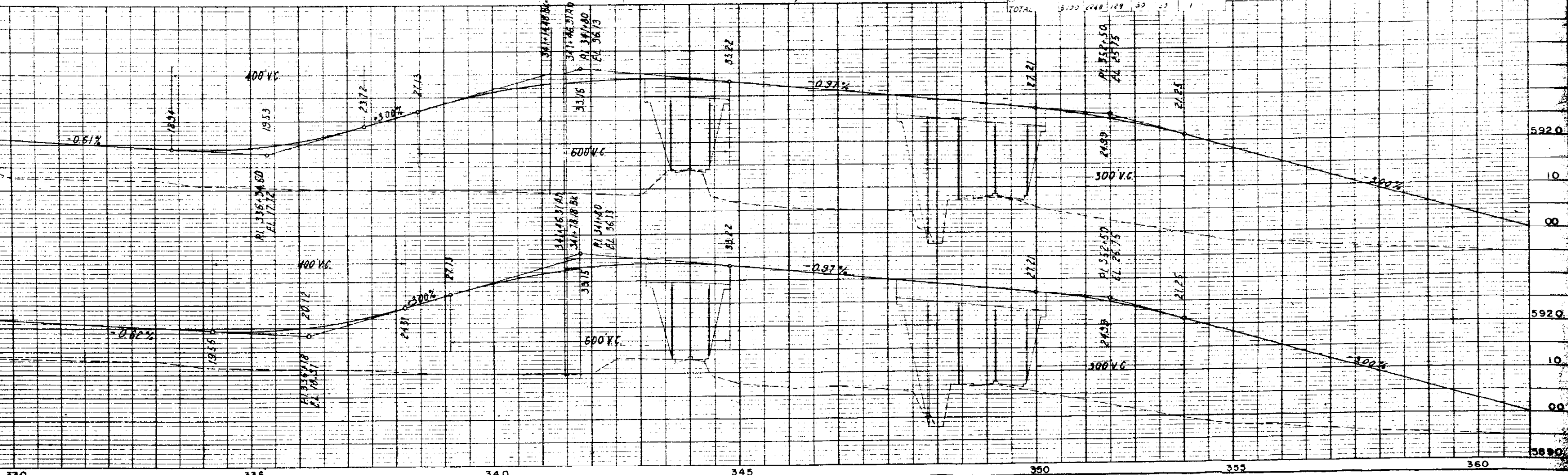
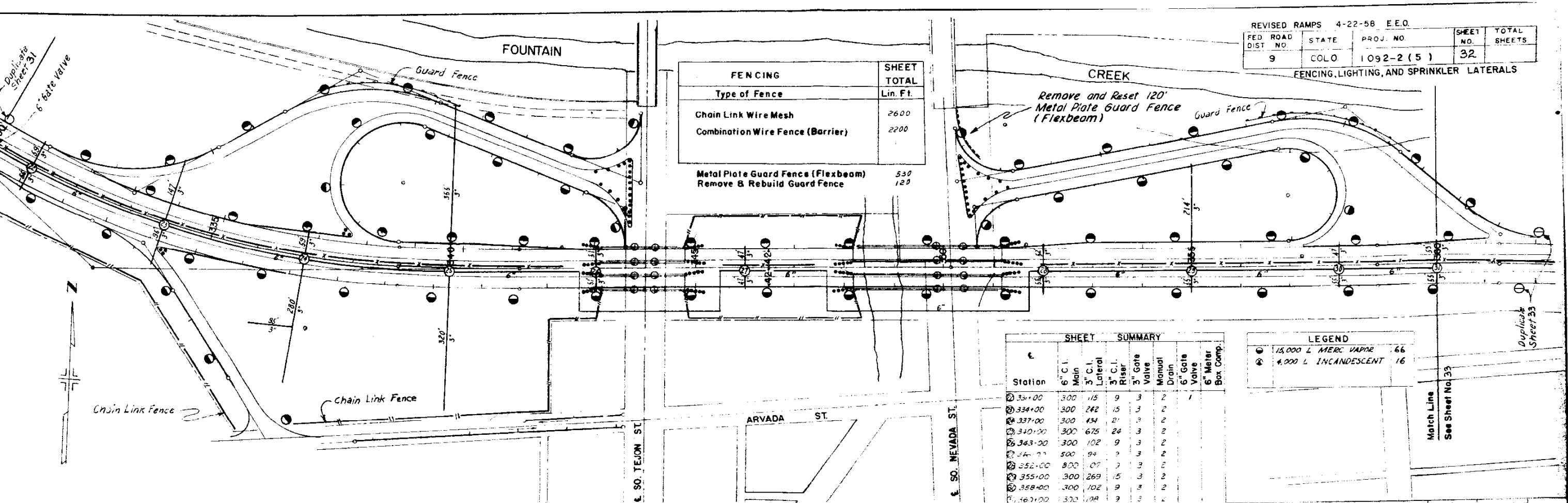
Δ = 43°26' Lt
 Ts = 886.2'
 Δc = 35°56' Lt
 Dc = 3°00'
 Tc = 619.4'
 Lc = 1197.8'
 Rc = 1910'
 Ls = 250'
 θs = 3°45'
 Xc = 249.89
 Yc = 5.54'



FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Chain Link Wire Mesh	2600
Combination Wire Fence (Barrier)	2200
Metal Plate Guard Fence (Flexbeam)	530
Remove & Rebuild Guard Fence	120

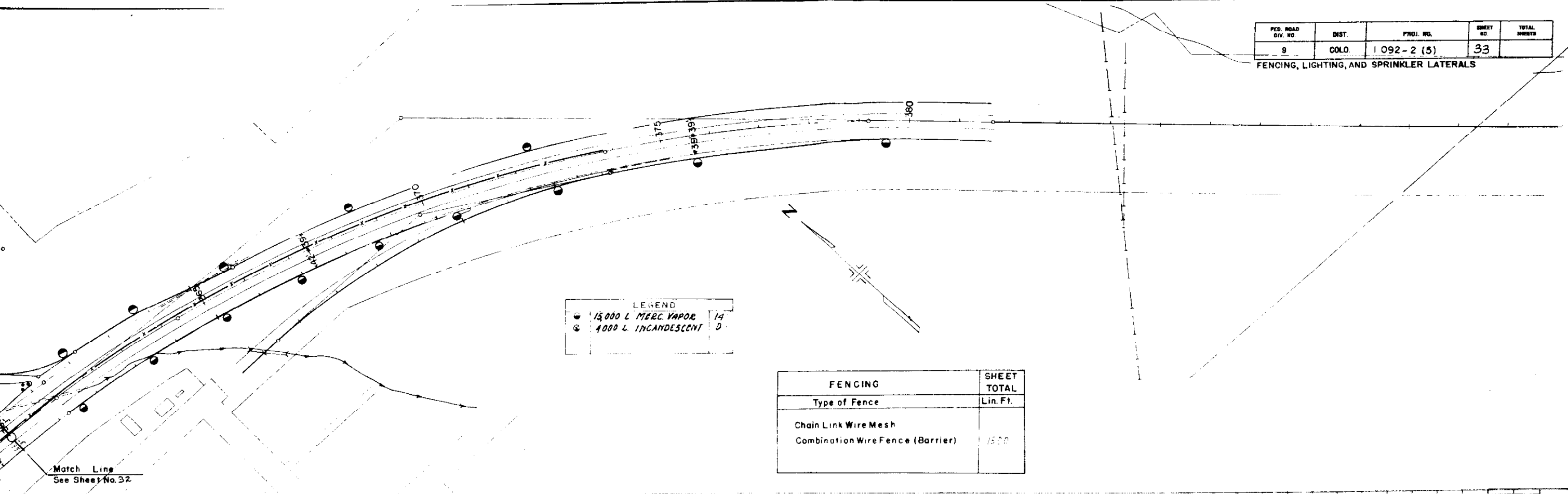
SHEET SUMMARY						
Station	6" C.I. Main	3" C.I. Lateral	3" C.I. Riser	3" Gate Valve	Manual Drain	6" Gate Valve
331+00	300	15	9	3	2	1
334+00	300	242	15	3	2	2
337+00	300	134	21	3	2	2
340+00	300	675	24	3	2	2
343+00	300	102	9	3	2	2
344+00	500	94	3	3	2	2
352+00	800	07	3	3	2	2
355+00	300	269	15	3	2	2
358+00	300	102	9	3	2	2
367+00	300	08	9	3	2	2
TOTAL	3,330	2,248	129	33	23	1

LEGEND	
●	15,000 L. MERC. VAPOR 66
○	4,000 L. INCANDESCENT 16



FED. ROAD DIV. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2 (5)	33	

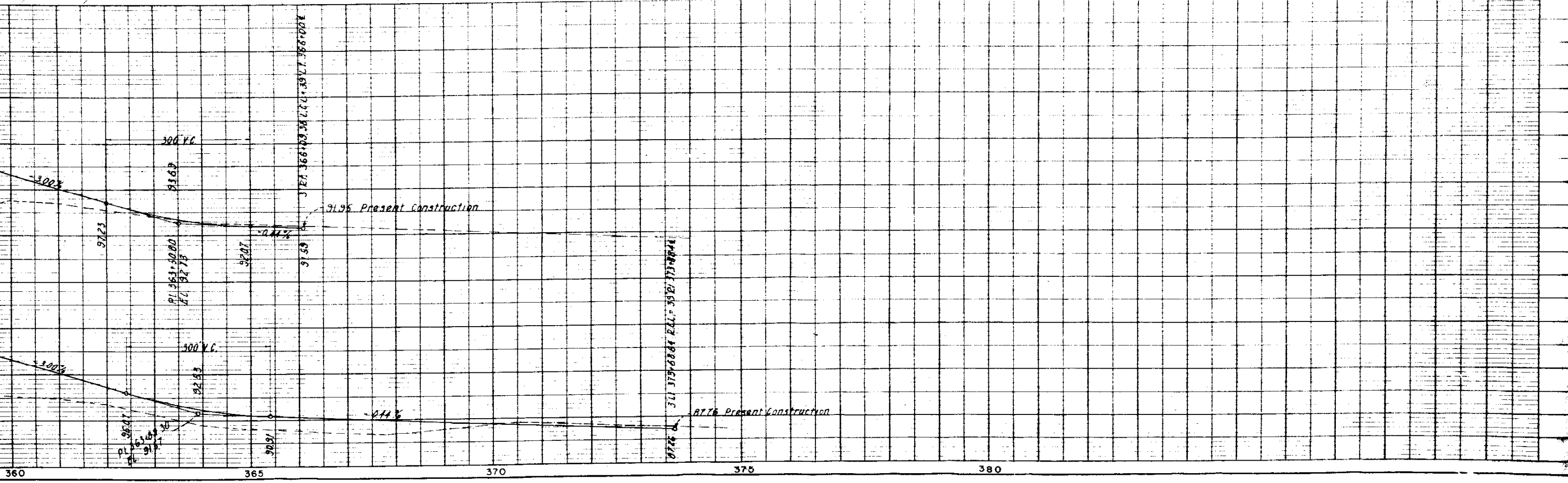
FENCING, LIGHTING, AND SPRINKLER LATERALS



LEGEND	
●	15000 L. MERC. VAPOR 14"
○	4000 L. INCANDESCENT 14"

FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Chain Link Wire Mesh	
Combination Wire Fence (Barrier)	1500

Match Line
See Sheet No. 32



360 365 370 375 380

DATA REQUIRED TO ACCOMPANY SITUATION PLAN.

GENERAL REMARKS.
 Fill out all blanks with care, giving information on all points listed, and supplementary remarks on features not listed. High water and foundation conditions are especially important and should be thoroughly investigated.

PROFILE.
 Plot profile of centerline of roadway. Use natural scale, preferably 1"=10', or multiple of 10'. At proper locations show section of test pits, noting material encountered, if available at time of survey.

Show present, and if possible, proposed finished grade noting elevations and gradients.

MAP.
 Show present and proposed alignment of bridge and all approaches, as far as affected. Extend cross sections at least 100-ft. each side of C. L., giving location and elevation of points so that at least 2-foot contours may be accurately plotted. Show edge of water, islands, shoals, other obstructions, and direction of current at high water and at low water. Plot location of test pits, position and pointing of camera for each photo, all buildings, fences, and other features affected. Establish bench marks and give location of same. Reference C. L. and show North point. Give a C. L. profile of stream-bed for 500 feet up-stream and 500 feet down-stream from center line of survey. Plot proposed structure in soft pencil only. Do not ink.

REPORT OF EXAMINATION OF BRIDGE-SITE.

Div. _____ County _____ Route _____ Sec. _____ Sta. _____

Date of survey _____ To be built by _____

1. Bridge Site.

Location _____
 Sec. _____ Twp. _____ Range _____ Local name _____
 Over _____ River _____ Creek _____
 Distance from nearest shipping point _____

2. Source of materials.

Material	Length of haul to site	miles
Sand	" " " "	" "
Gravel	" " " "	" "
Stone	" " " "	" "
Falsework Timber	" " " "	" "
Piling	" " " "	" "

3. Cost Data.

Material	Per Bbl.	" Cu. Yd.	" Ft. B. M.	" Lin. Ft.
Portland Cement				
Sand, coarse and clean				
Gravel				
Stone				
Falsework Timber				
Piling				

Cost per ton-mile for hauling _____

4. Waterway.

Drainage area in Sq. Miles (approximate) _____
 Character of watershed _____
 Elevation of Highest water _____ Date _____
 Source of information on water elevation _____
 Elevation of ordinary high water _____
 Elevation of low water _____
 Elevation of permanent ground-water _____
 Is stream ever dry? _____ During what months? _____
 Will all flood water pass through recommended structure? _____
 Can channel be cleaned to afford more waterway? _____
 Is stream-bed cutting or silting up? _____
 Is stream stable in its banks? _____ Depth of scour? _____
 Does stream carry light, medium, or heavy drift? _____
 What clearance above high water should be allowed? _____
 Is channel change necessary? _____
 If channel change is necessary, illustrate location on sketch map.

5. Foundation Data.

Character of material _____
 Distance from stream-bed to solid foundation _____
 Recommended depth of footings _____
 Should piles be used? _____ What length? _____ Pile Shoes? _____

6. Old Bridge.

If there is no bridge at the present location include here data on nearest bridge over same stream. If possible show location of such bridge or bridges on the map. Photographs if available.
 Type _____ Roadway Width _____ Number and length of spans _____
 Area of waterway provided under old structure _____ Sq. Ft., Elev. of Underclearance _____
 Has this area proved sufficient at flood times? _____ Skew Angle _____
 Is it too large? _____ Disposition of Existing Structure _____

7. Give foundation data on bridges in vicinity. When possible, get pile driving data, logs of borings, etc., for adjoining structures, and where considered advantageous procure plans.

Sketch profile of Rail Road Crossing if within 1000 ft. of Highway. (Show X-section of entire waterway.)
 Elevation of base of Rail _____ Elevation of Rail Road Underclearance _____
 Remarks _____

8. Recommendations for New Structure.

Type _____ Width curb _____ Number and length of spans _____
 What is the least clear span permissible? _____
 Are sidewalks desired? _____ Lighting conduit? _____ Light standards? _____
 Angle of Skew recommended _____
 Will approaches be desired, or will same be filled? _____
 Approximate cost per Cu. Yd. of approach-filling at bridge site? _____
 Is it necessary to maintain traffic alongside old structure? _____
 If so, how shall it be done? _____

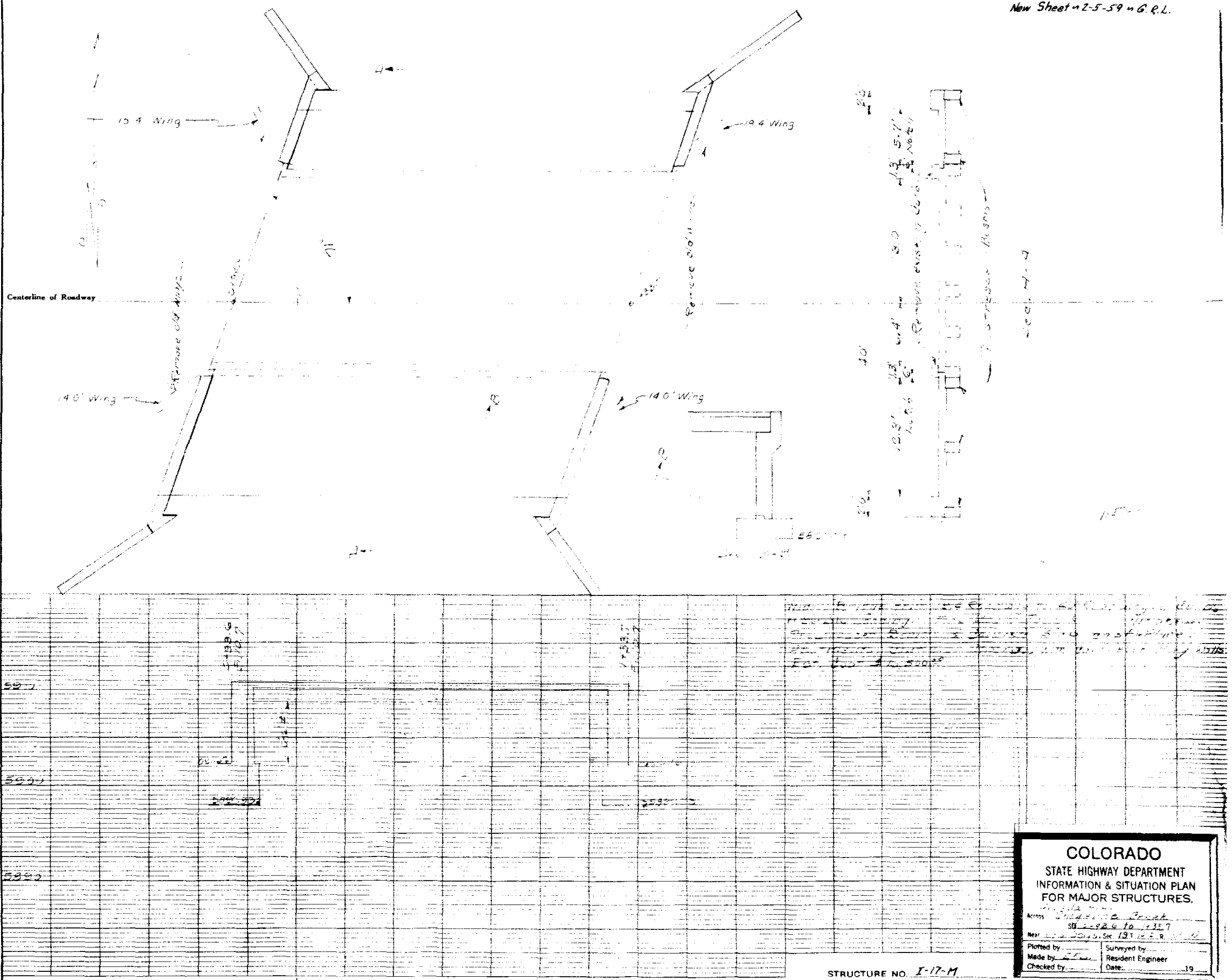
R. R. Siding _____ Haul to Bridge Site _____ Mi. _____
 Remarks _____ Submitted by _____ Engineer _____

NOTE. When bridge is recommended to be left in place, complete structural details shall be procured from the bridge itself or from existing plans of the structure. When possible these plans shall be forwarded with the plans of the project.

WORK ORDER NO. 14123

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	I 092-215	33A	

New Sheet 2-5-59 on G. R. L.



COLORADO
 STATE HIGHWAY DEPARTMENT
 INFORMATION & SITUATION PLAN
 FOR MAJOR STRUCTURES.

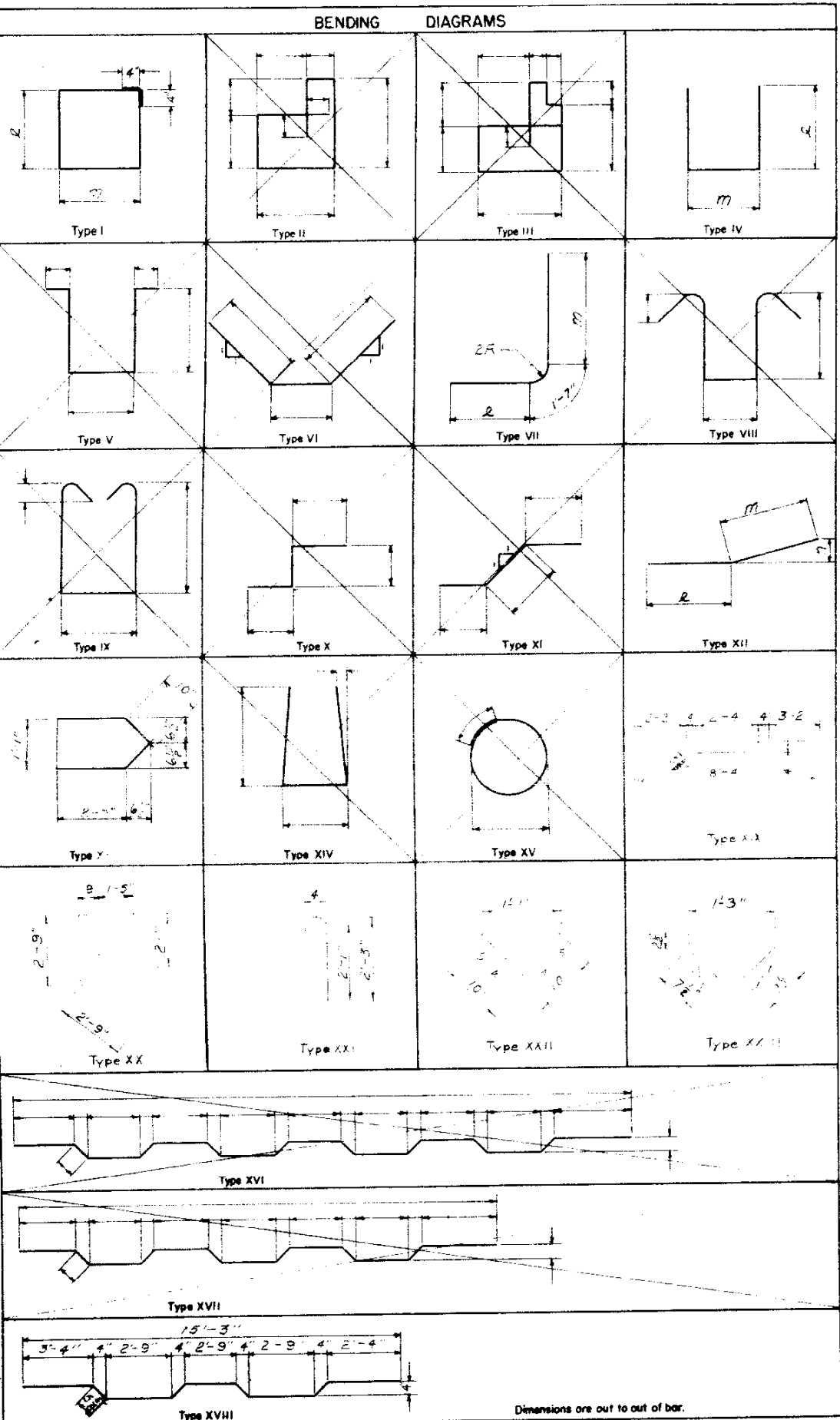
Across _____
 SB 2424 10 1227
 Near _____ Sec. 19 T. 5 R. 12

Plotted by _____
 Made by _____
 Checked by _____

Surveyed by _____
 Resident Engineer _____
 Date _____

STRUCTURE NO. I-17-M

New Sheet 2-5-59 G.R.L.



BAR LIST ABUTMENT No 2 (North East Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
401	1/2"	44	39'-8"	Str	2' 11"
402	1/2"	28	3'-10"	I	6' 1-1/2"
403	1/2"	82	3'-8"	I	1'-0" 1'-8"
404	1/2"	30	5'-0"	I	5' 1'-9"
501	5/8"	64	15'-3"	Str	
502	5/8"	64	8'-4"	Str	
503	5/8"	32	15'-9"	XVIII	
504	5/8"	32	8'-7 1/2"	XX	

BAR SUMMARY

2303 Lin Ft 1/2" @ 0.668#/Lin Ft = 1538 Lb
 2290 Lin Ft 5/8" @ 1.043#/Lin Ft = 2388 Lb
 Plus 1% for Overrun = 39 Lb
 Total = 3965 Lb

BAR LIST ABUTMENT No 2 (South West Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
405	1/2"	7	5'-0"	Str	13'-8" 1'-4" 1'-1"
510	5/8"	20	3'-8"	Str	
601	3/4"	21	12'-3"	VII	2'-2" 8'-6"

BAR LIST ABUTMENT No 2 (North West Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
406	1/2"	18	14'-0"	Str	
407	1/2"	14	9'-8"	XX	
408	1/2"	7	15'-8"	III	13'-8" 2'-7" 1'-2"
510	5/8"	20	3'-8"	Str	
601	3/4"	21	12'-3"	VII	2'-2" 8'-6"

BAR LIST FOR WING WALL (North West or South East Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
440	1/2"	6	10'-0"	Str	
441	1/2"	7	8'-6"		
442	1/2"	1	7'-9"		
443	1/2"	1	5'-3"		
444	1/2"	1	2'-9"	Str	
445	1/2"	1	4'-10"	VII	0'-9" 2'-0"
446	1/2"	1	0'-8"		1'-4" 7'-9"
447	1/2"	1	10'-11"		1'-4" 8'-0"
448	1/2"	1	11'-4"	III	1'-4" 8'-5"
449	1/2"	5	3'-0"	Str	
525	5/8"	4	5'-7"	III	1'-0" 3'-0"
526	5/8"	1	11'-11"		1'-7" 8'-9"
527	5/8"	1	12'-4"		1'-7" 9'-2"
528	5/8"	1	12'-9"		1'-7" 9'-7"
529	5/8"	1	15'-2"	VII	1'-7" 6'-0"
530	5/8"	4	3'-6"	Str	
610	1/2"	3	6'-1"	VII	1'-2" 3'-4"
611	1/2"	1	13'-9"	I	1'-10" 10'-4"
612	1/2"	1	14'-2"	I	1'-10" 10'-9"
613	1/2"	1	14'-7"	III	1'-10" 11'-2"

BAR LIST ABUTMENT No 1 (North East Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
406	1/2"	18	14'-0"	Str	
407	1/2"	14	9'-8"	XX	
408	1/2"	7	15'-8"	III	13'-8" 2'-7" 1'-2"
510	5/8"	20	3'-8"	Str	
601	3/4"	21	12'-3"	VII	2'-2" 8'-6"

BAR LIST ABUTMENT No 1 (North West Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
407	1/2"	14	9'-8"	XX	
408	1/2"	7	15'-8"	III	13'-8" 2'-7" 1'-2"
510	5/8"	20	3'-8"	Str	
601	3/4"	21	12'-3"	VII	2'-2" 8'-6"

BAR SUMMARY ABUTMENT No 1

125 Lin Ft 1/2" @ 0.668#/Lin Ft = 84 Lb
 396 Lin Ft 5/8" @ 1.043#/Lin Ft = 413 Lb
 Plus 1% for Overrun = 5 Lb
 Total = 500 Lb

BAR LIST FOR WING WALL (North East or South West Corner)

MARK	SIZE	No Reqd	Length	Type	Dimensions
420	1/2"	1	14'-0"		
421	1/2"	1	2'-7"		
422	1/2"	1	7'-0"		
423	1/2"	1	7'-6"		
424	1/2"	1	4'-0"		
425	1/2"	1	1'-3"		
426	1/2"	3	10'-3"	VII	0'-0" 6"
427	1/2"	1	10'-10"		4' 4'-8"
428	1/2"	1	11'-2"		4' 8'-1"
429	1/2"	1	11'-5"	VII	4' 3'-6"
515	5/8"	2	5'-7"		3'-0"
516	5/8"	1	11'-11"		8'-9"
517	5/8"	1	12'-3"		9'-0"
518	5/8"	1	13'-6"		9'-4"
519	5/8"	1	2'-9"		9'-7"
520	5/8"	6	3'-0"	Str	
602	1/2"	5	6'-7"	III	1'-2" 3'-4"
603	1/2"	1	13'-5"		10'-0"
607	1/2"	1	14'-5"	VII	1'-10" 11'-0"

BAR LIST EACH PRESTRESSED BEAM

MARK	SIZE	No Reqd	Length	Type	Dimensions
455	5/8"	2	38'-0"	Str	
456	5/8"	6	6'-0"	Str	
535	5/8"	32	4'-8"	XX	
536	5/8"	32	2'-9"	XX	
537	5/8"	32	2'-11"	XX	
538	5/8"	6	6'-3"	XX	7'-8" 1'-1"

BAR SUMMARY ONE PRESTRESSED BEAM

125 Lin Ft 1/2" @ 0.668#/Lin Ft = 84 Lb
 396 Lin Ft 5/8" @ 1.043#/Lin Ft = 413 Lb
 Plus 1% for Overrun = 5 Lb
 Total = 500 Lb

▲ Not Included in Bar Summary or Summary of Quantities

COLORADO
DEPARTMENT OF HIGHWAYS

BENDING DIAGRAMS & BAR LIST

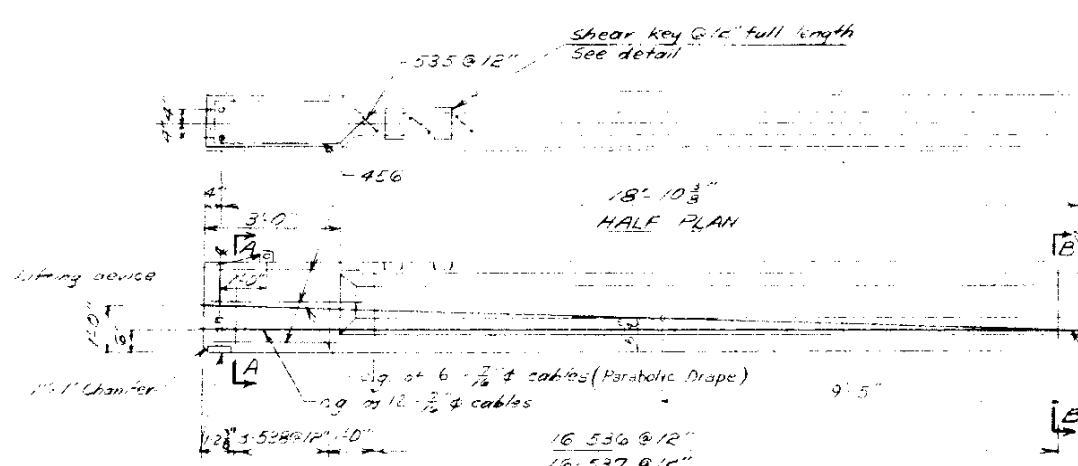
Across Cheyenne Creek
Sta. 0+95.6 to +35.7
Near Julesburg, Sec. 19, T. 45, R. 66W

Designed by: Approved by:
 Made by: J.B. Checked by:
 Checked by: Date:
19

WORK ORDER NO. 14123

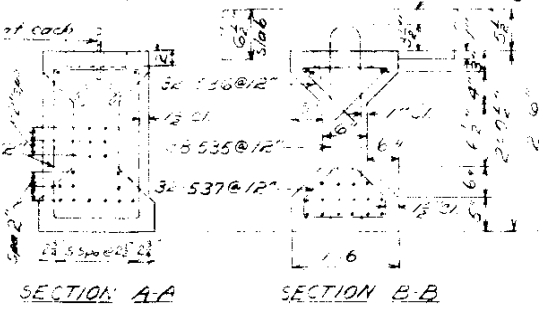
NO. ROAD PLAN NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	330	

New Sheet - 2-5-59-6 R.L.

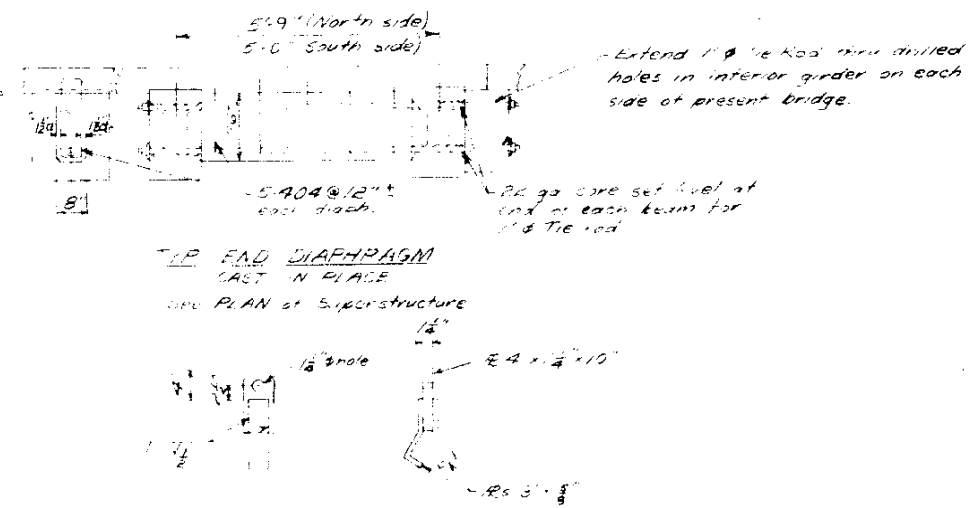


HALF PLAN

SHEAR KEY DETAIL



SECTION A-A SECTION B-B



ELEVATION PRESTRESSED BEAM

GENERAL NOTES

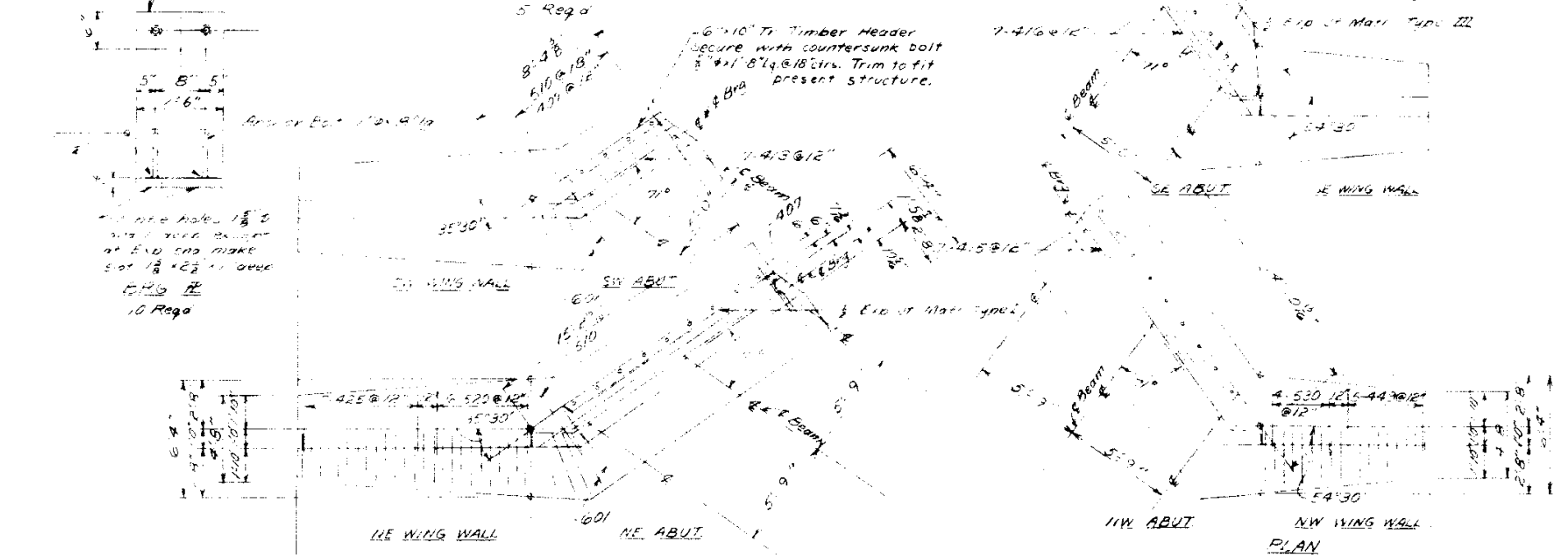
Concrete for the present girders shall have a cylinder strength of 5000 psi at 28 days. At time of release of prestress the concrete shall have a minimum strength of 4000 psi. Taps of beams to be rough coated. Remove formwork at time of initial set.

Cast in place concrete shall have a minimum strength of 3000 psi.

Galvanized wire strands for prestressing steel shall have a minimum tensile strength of 150,000 psi and an elongation at rupture of not less than 3 percent in 10 inches. Prestressing steel to be 1/4" dia wire strands. At 136 sq in and an initial prestress force of 19,900 pounds per strand.

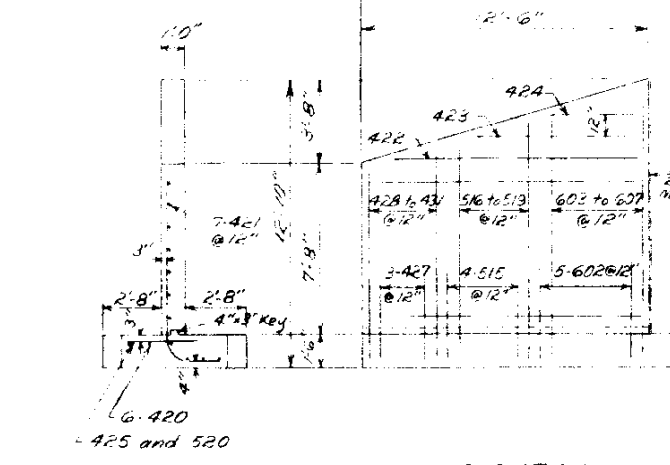
After girders are removed from the forms they must be maintained in an upright position at all times and must be braced up by using the lifting devices at ends of girder.

All work shall be done in accordance with the standard specifications of the Colorado Dept. of Highways applicable to the project. For remainder of Gen'l Notes see sheet 59 of this project.

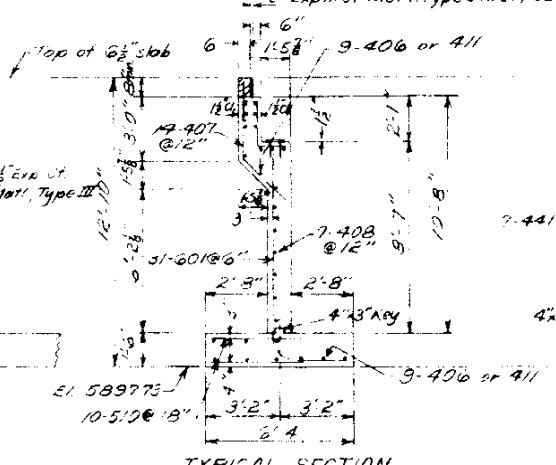


PLAN

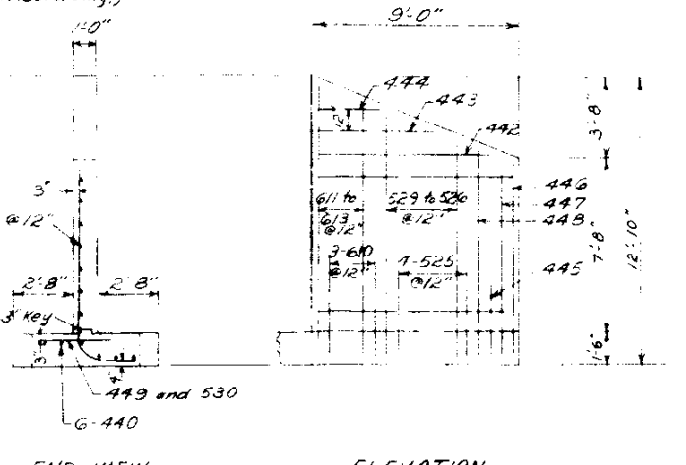
PLAN



END VIEW

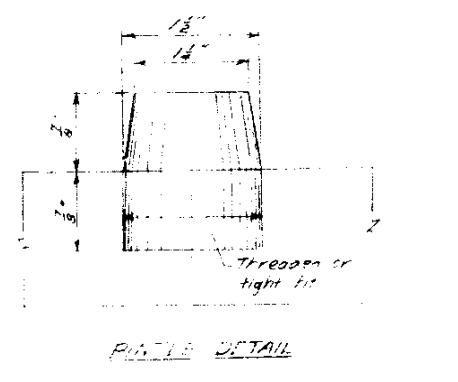


TYPICAL SECTION NE ABUT



ELEVATION

DETAIL OF BRG R AND BRG SEAT



PIN DETAIL

SUMMARY OF QUANTITIES FOR ONE PRESTRESSED GIRDER

Description	Unit	Total
Class P Concrete	Cu Yd	3.0
Reinforcing Steel (inc 1% Overrun)	Lb	500
Structural Steel (inc 3% for Paint)	Lb	135

NOTE: These quantities not included in Summary of Quantities for Bridge.

COLORADO DEPARTMENT OF HIGHWAYS

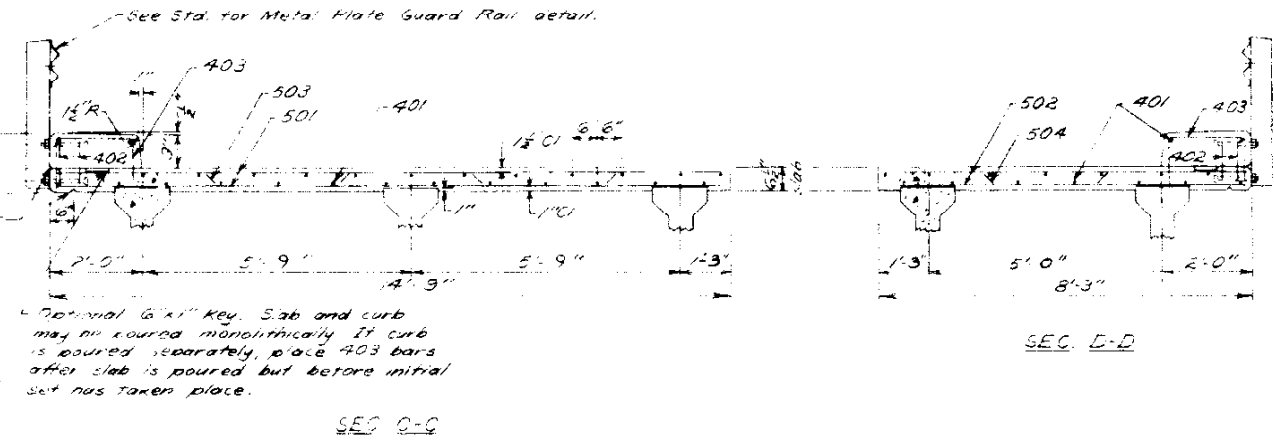
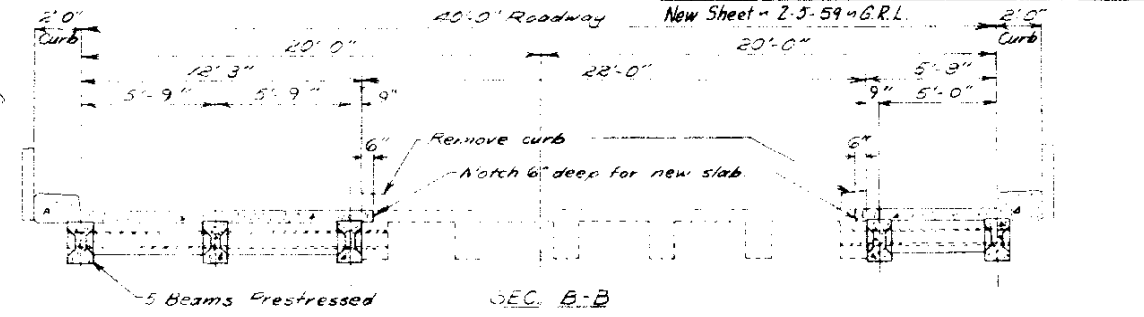
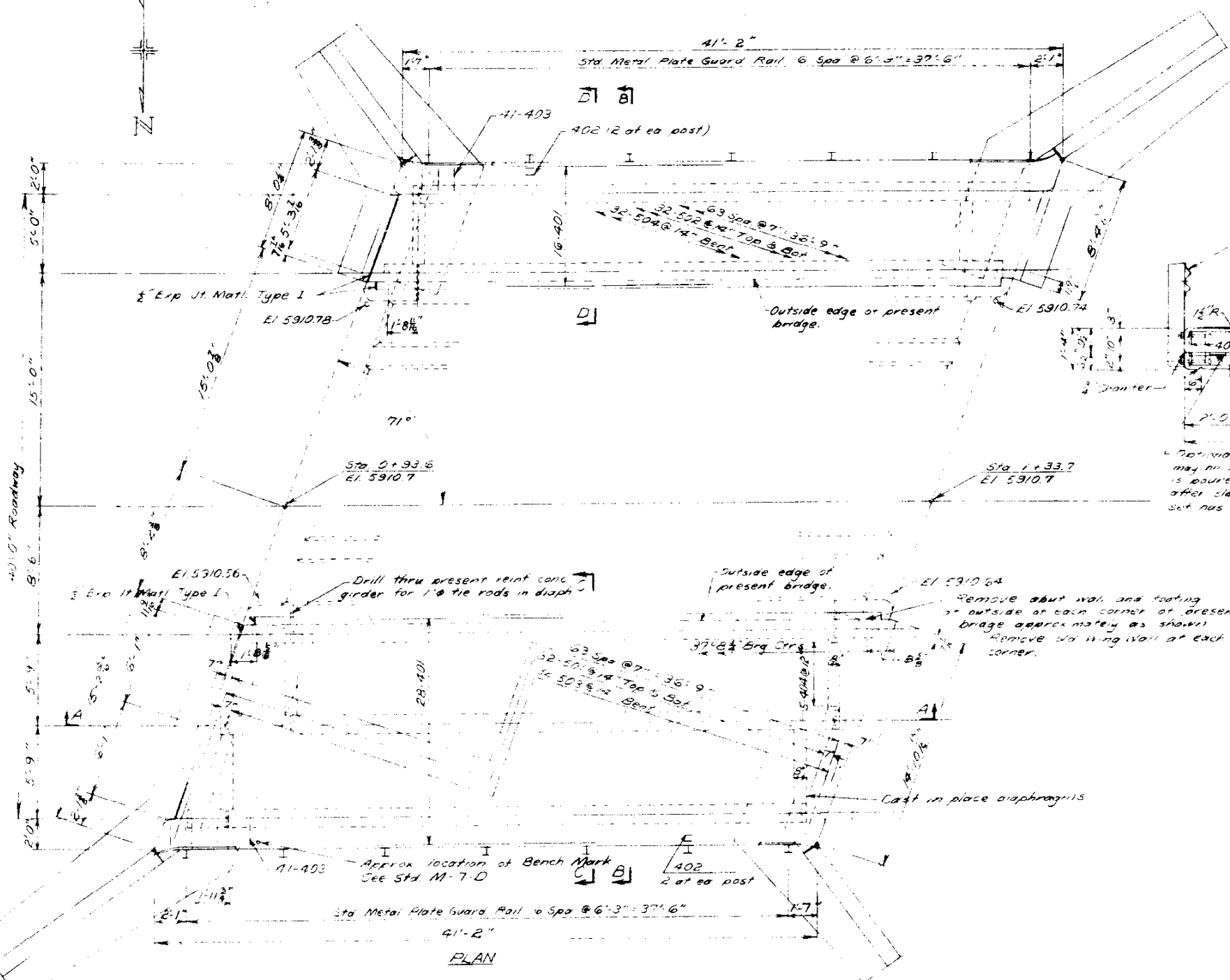
Across Cheyenne Creek
 Sta. 0+33.6 to 1+33.7
 Near Colo. Bridge, Sec. 19 T. 45 R. 60 W.
 Designed by WWD Approved by
 Made by JCB Bridge Engineer
 Checked by Date 19

STRUCTURE NO. 1-17-1A

SW, NW, & SE ABUT. SIMILAR
 Ftg. Pressure = 2900 lbs/sq. ft

WORK ORDER NO. 14123

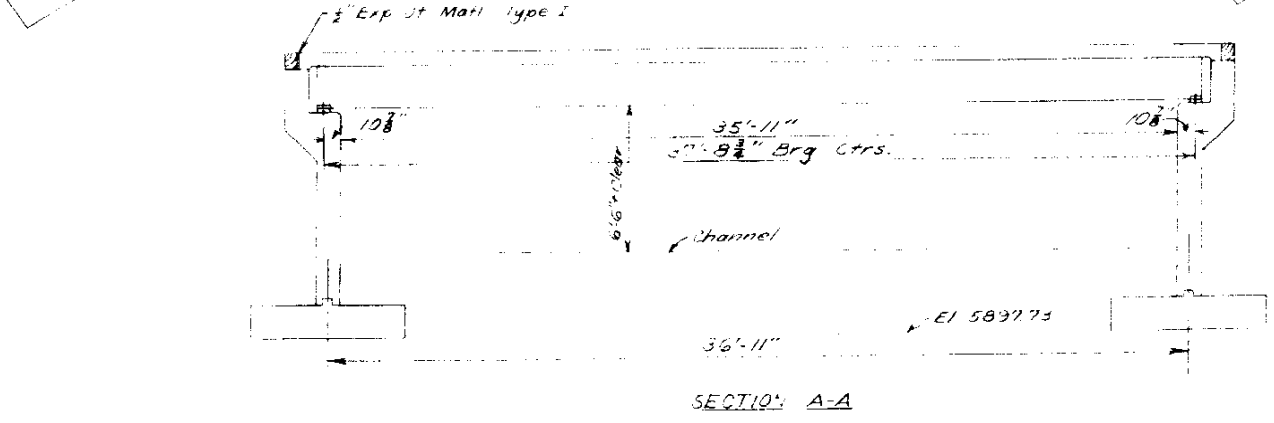
FILE NO. & SHEET NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COND.	1092-2151	33D	



SUMMARY OF QUANTITIES

Item	Description	Unit	Super-Structure No. 1	Abut. No. 2	Total
11	Removal of Portions of Bridge	Lump Sum			Lump Sum
4	Unclassified Struct. Excav. Bridges	Cu. Yd.	97	97	94
16	Structure Backfill (Class 3)	Cu. Yd.	70	74	144
18	Station Yard Overhaul	Sta. Yd.			
19	Yard Mile Overhaul	Yd. Mi.			
45	Tx. Bridge Timber	Mt. Dm.	0.096	0.096	0.192
46	Class A Concrete	Cu. Yd.	238	348	93.5
47	Reinforcing Steel (inc. 1% Overrun)	Lb.	3965	2255	8475
48	Structural Steel (inc. 1/2% for Paint)	Lb.	1345	260	1865
46	Prestressed Conc. Girder - 37'-8 1/2"	Each	5	260	5
75	Metal Plate Guard Rail (Beam Type)	Lin. Ft.	75		75
D	Expn. Jt. Mat'l Type I	Sq. Ft.	15		15
C	Expn. Jt. Mat'l Type III	Sq. Ft.	26	26	52

① Expn. Jt. Mat'l shall be in accordance to AASHTO specification M-153-54 and of the type shown and shall be included in the Bid Price for Item 46.
 ② Estimated

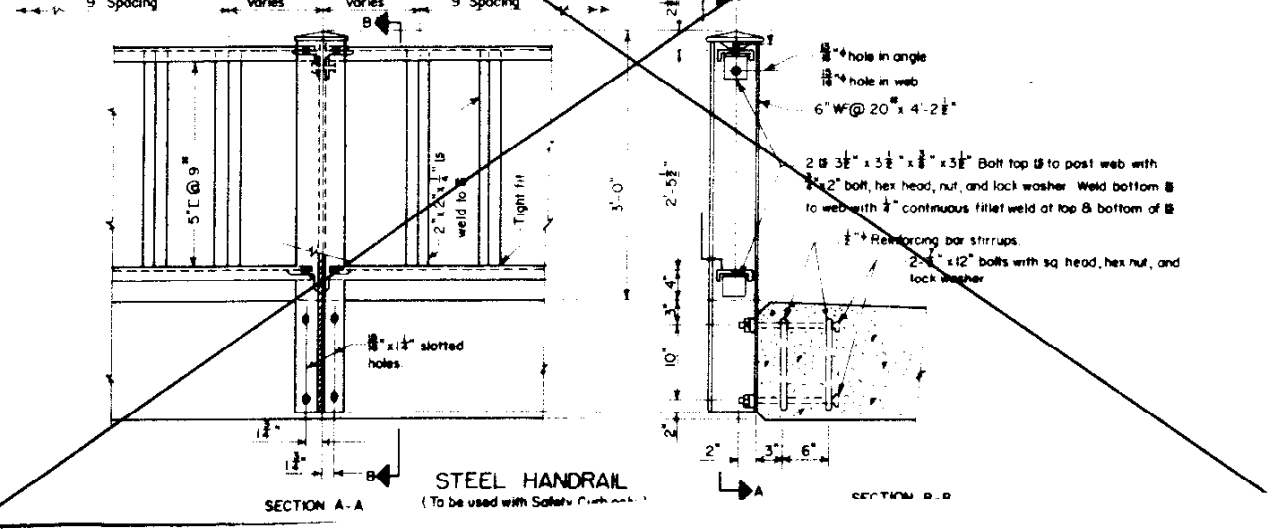
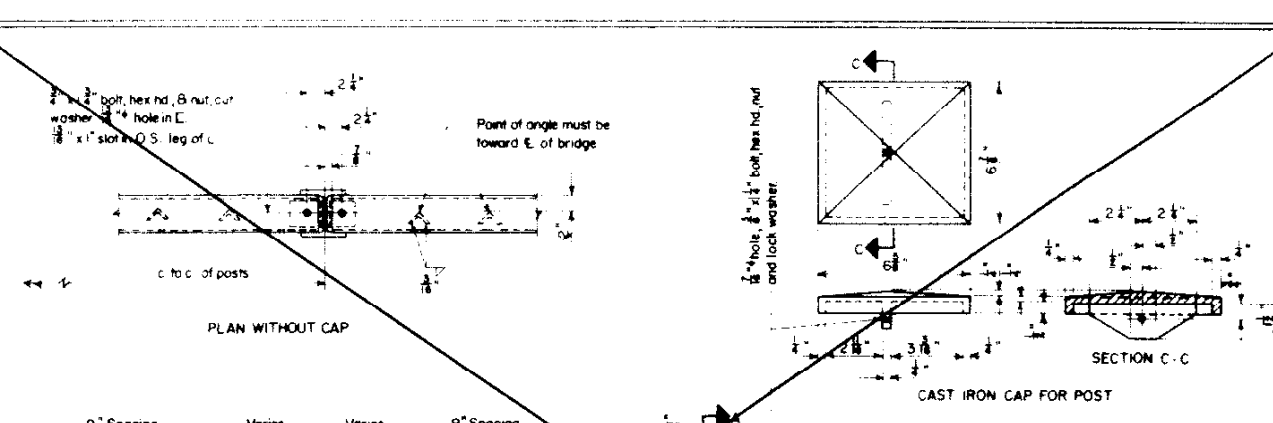
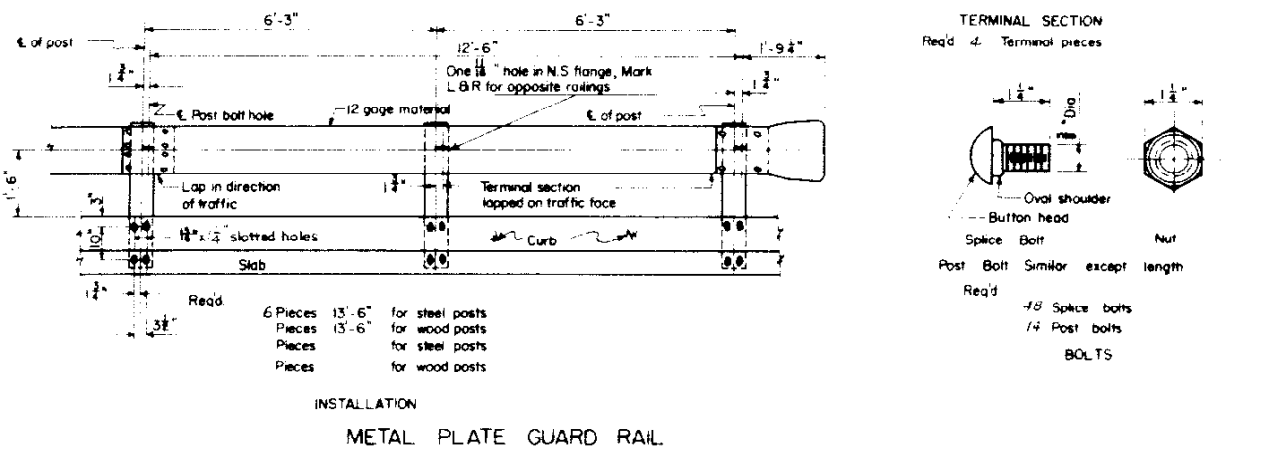
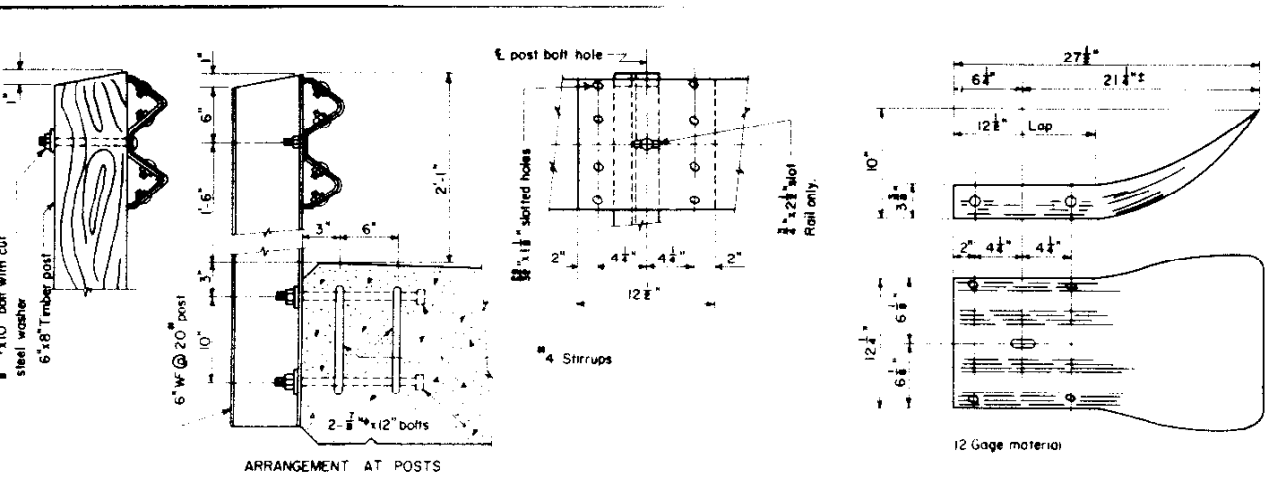


COLORADO DEPARTMENT OF HIGHWAYS
 BRIDGE DIVISION

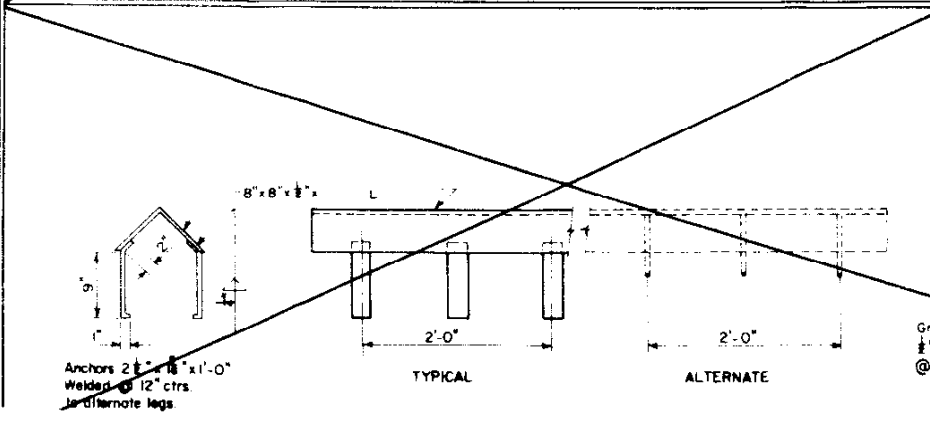
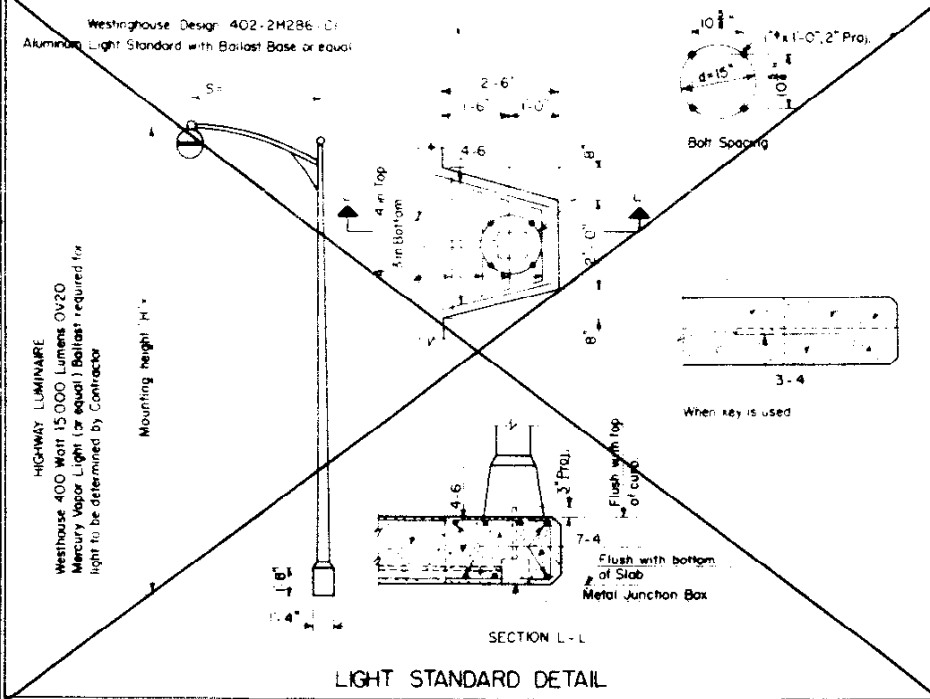
Area: Cheyenne Creek
 Sta. 0+93.6 to 1+33.7
 Near Colo. Springs Sec. 19 T. 14S. R. 66W

Designed by WWD
 Made by J.L.B.
 Checked by

Approved by
 Bridge Engineer
 Date: 19

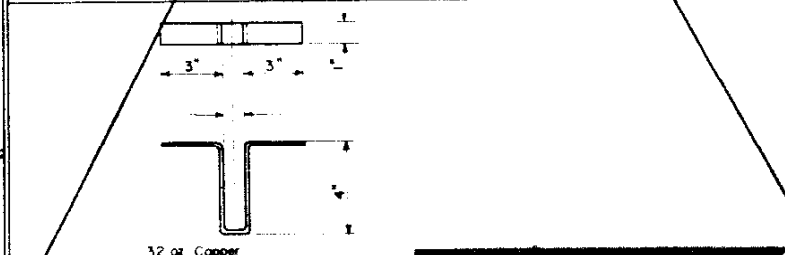
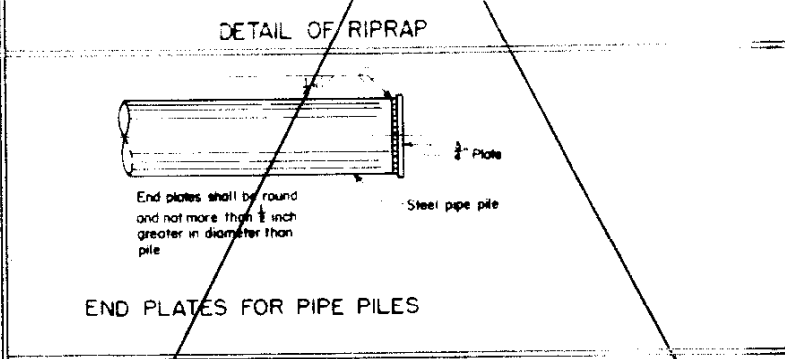
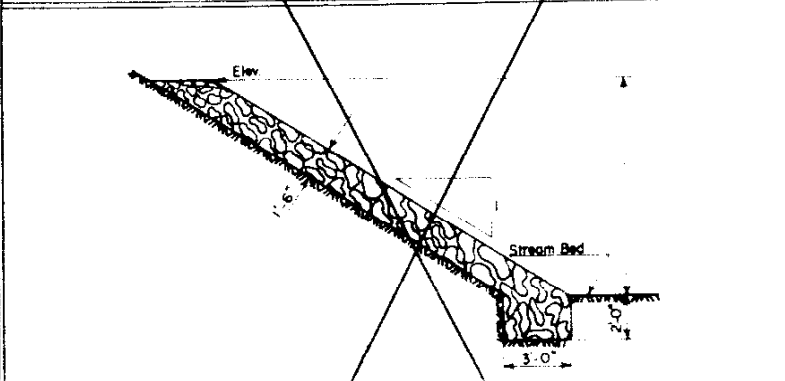
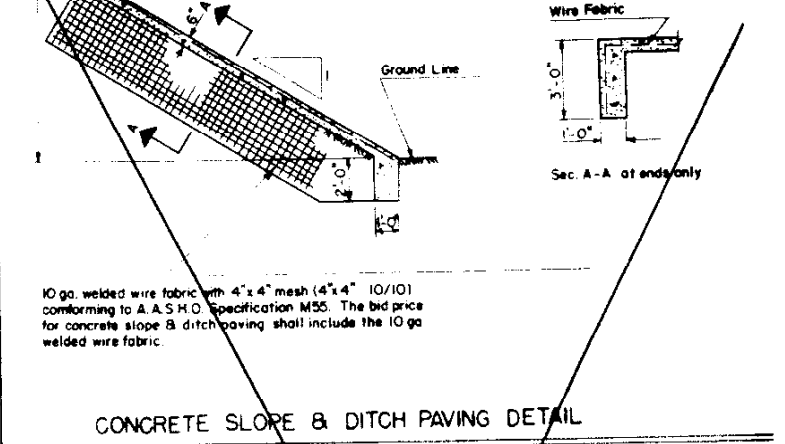


WORK ORDER NO. 14123



FED. ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	I 092-2(5)	33 E	

New Sheet-2-5-59-G.R.L.



COLORADO
DEPARTMENT OF HIGHWAYS

MISCELLANEOUS BRIDGE DETAILS

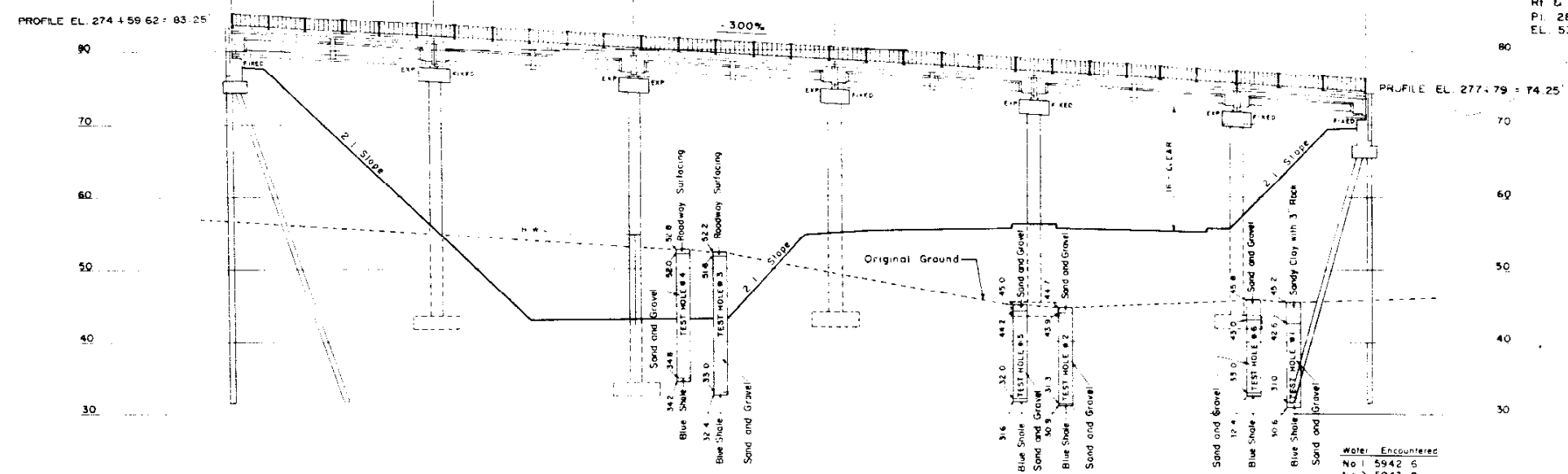
Across *Cheyenne Creek*
Sta. *0+93.6 to 1+337*
Near *Co. Segs* Sec. *15 T. 45 R. 06N*

Designed by *D. J. S.* Approved by *Bridge Engineer*
Checked by *D. J. S.* Date: *19*

Granular flux filled concrete anchors
shall automatically and welded spaced
@ 12" ctrs. may be used as an alternate

Rt. & Lt. C.L.
P.I. 272 + 53
EL. 89.43

FED. ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-215	34	



SECTION A-A
TOTAL SPAN — 300'-2"
ANGLE OF SKEW — 15°

Rt. & Lt. C.L.
P.I. 284 + 43
EL. 53.75'

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways as adopted June 1, 1952. The soundings and pile data are shown according to the best information available to the Colorado Department of Highways if essentially different conditions are encountered, the Bridge Engineer will inspect and determine if redesign is necessary. All piles shall be driven to the penetration shown unless in the opinion of the Engineer such penetration cannot be secured without injury to the piles. All piles shall be driven to minimum computed bearing value of 37 tons.

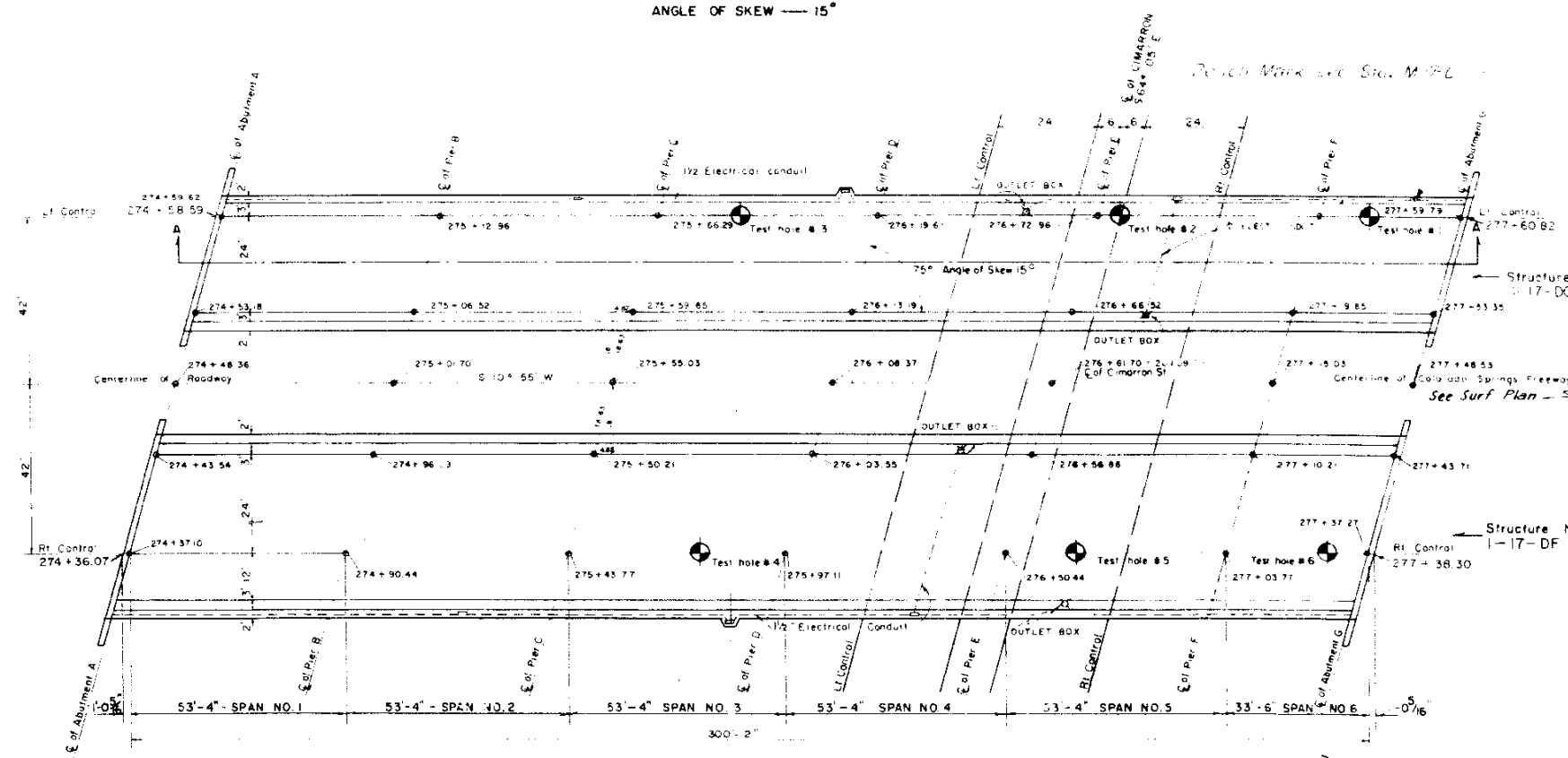
All concrete surfaces exposed to normal view by highway traffic shall receive Class I Surface Finish.

All reinforcing steel shall be intermediate grade deformed bars conforming to A.A.S.H.O. Specifications M31 and M137 (A.S.T.M. designations A15 and A305). All hooks and bends in bars shall conform to A.C.I. Standard 315.51. All reinforcing bars shall be tagged with structure number and mark. All steel railings shall receive one shop coat of zinc chromate and a field coat of tinted aluminum paint followed by a coat of aluminum paint. Expansion Joint Material shall conform to A.A.S.H.O. specification M-153-54 and of the type shown.

DESIGN SPECIFICATIONS

A.A.S.H.O. Series of 1953 and Bureau of Public Roads, "Design Criteria for Prestressed Concrete Bridges," 1954
Design loading: H20-S16-44
Unit Stresses:

- Class A Concrete, $f_c = 3000$ psi, $f_c = 1200$ psi
- Reinforcing Steel, $f_s = 20,000$ psi
- Concrete in pretensioned girders:
 - Minimum 28 day cylinder strength — 5000 psi
 - Minimum cylinder strength at time of release of prestress — 4600 psi
- Prestressing Steel:
 - 7/16" diameter (A_s = 1089 sq. ins.) wire, stress relieved strand
 - Minimum tensile strength — 250,000 psi
 - Maximum initial tension of strand — 175,000 psi
- Pile Load: 37 tons per pile (12 3/4" diameter steel pile)



PLAN
SCALE 1" = 25'

Item	Description of Item	Unit	STRUCTURE 17-DG						STRUCTURE 1-17-DG						Total				
			Super	Abut	Pier	Pier	Pier	Abut	Super	Abut	Pier	Pier	Abut						
1-4	Rock excavation (struct)	Cuyd																	
1-4a	Common excavation (struct)	Cuyd																	
1-6a	Structural backfill	Cuyd		50	103	91	35	58		437		113	77	68	27	44		329	
1-6c	Mechanical tamping	Lrs		10	14	9	8	31	5	10	59		100	66	58	19	35		278
3-4	Plant mix asphalt surfacing	Tons	140								140	106							457
4-2b	Treated timber header	Mbf		0189						0189	0378		0141						106
4-6a	Class A Concrete	Cuyd	289	37	4	60	39	37	37	577	223	28	30	44	29	27	28	0141	2282
4-6b	Prestress Beam - 53'-4" span	Each	40							40	30								437
4-6c	Prestress Beam - 33'-6" span	Each	8							8	6								30
4-7	Reinforcing Steel (1%)	Lbs	6428	4,530	8,165	4,035	7,805	7,451	7,451	4,530	5,595	4,257	3,452	5,337	1,084	370	5,304	3,452	24,260
6-1a	Steel pipe piling (27 1/2" dia. x 12' long)	Linft		546						546	996		368					300	668
4-8	Structural Steel (1/2" dia. x 12' long)	Lbs		42	85	108	85	85	85	42	300	2,735	310	615	625	615	615	310	3064
8-0c	Sheet copper - 32 oz./sq. ft.	Lbs	31							31	21								21
9-0b	1/2" Elect. cond. & Junc. boxes	Linft	345							345	333								333
*	5/8" expan. joint mat. type III	Isqft	21							21	16								16

INDEX OF SHEETS

- SHEET NO. 1 - GENERAL PLAN AND ELEVATION
- SHEET NO. 2 - PLAN DETAIL OF CONCRETE DECK SLAB, BEAMS AND CURBING
- SHEET NO. 3 - SECTION DETAILS OF CONCRETE DECK SLAB & DIAPHRAGM FOR BEAMS
- SHEET NO. 4 - DETAIL AND SECTIONS OF BEAMS
- SHEET NO. 5 - DETAIL AND SECTIONS OF COLUMN CAP, COLUMNS & TYPICAL FOOTING
- SHEET NO. 6 - DETAIL OF ABUTMENTS
- SHEET NO. 7 - COLUMN SCHEDULE
- SHEET NO. 8 - BRIDGE DETAILS

COLORADO STATE HIGHWAY DEPARTMENT
COLORADO SPRINGS FREEWAY
CIMARRON STREET
BRIDGE No's 1-17 DG and DF

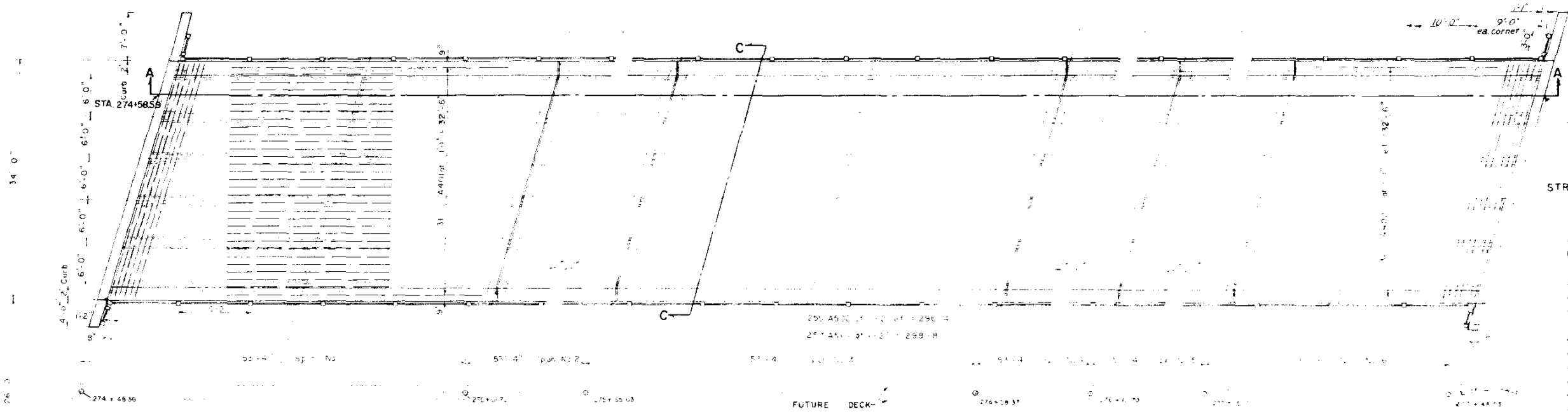
GENERAL PLAN and ELEVATION

DATE: JUNE, 1957
DRAWING NO. 1
OF 8

McKee and Co. ENGINEERS DENVER, COLORADO

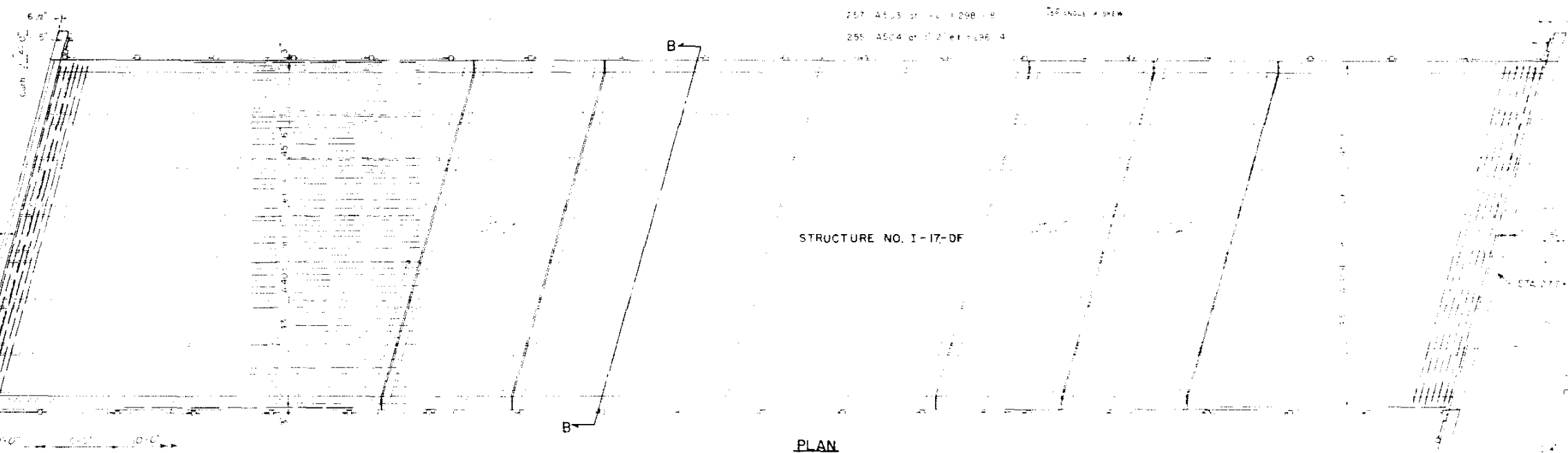
FED ROAD REGION NO.	DIVISION
9	COLO.

PROJ NO.	SHEET NO.	TOTAL SHEETS
1-092-0107	35	



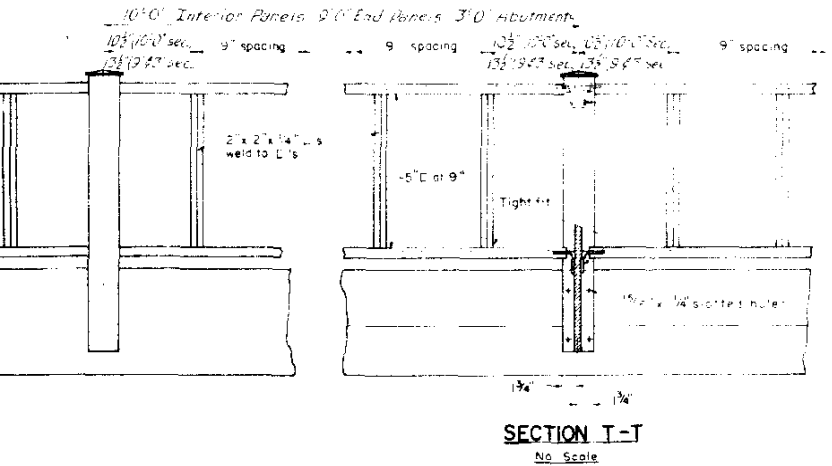
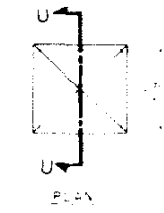
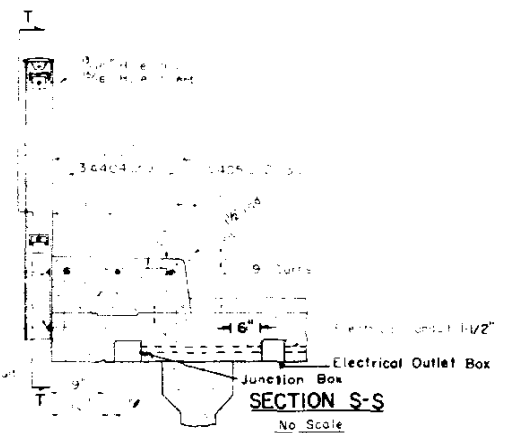
STRUCTURE NO. 1-17-DG

BAR LIST FOR BOTH DECKS			
STRUCT. NO.	MARK	SHAPE	LENGTH No Reqd
1-17-DG	A 402	35-10 1/2"	257
	DF A 502	34-8"	510
	DG A 501	48-9 1/2"	257
	DF A 504	47-1"	510
	DF A 411	27-3"	620
	DF A 402	33-0"	62
	DG A 413	27-3"	860
	DG A 404	33-0"	86
	DG A 415	3-7"	602
	DF A 405	3-7"	602



QUANTITIES FOR BOTH DECKS		BAR SUMMARY FOR BOTH DECKS	
402	257	402	33082
405	602	405	166185
411	620	411	993
413	860	TOTAL	202600

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

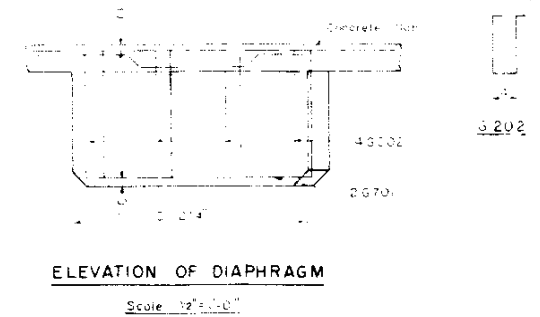
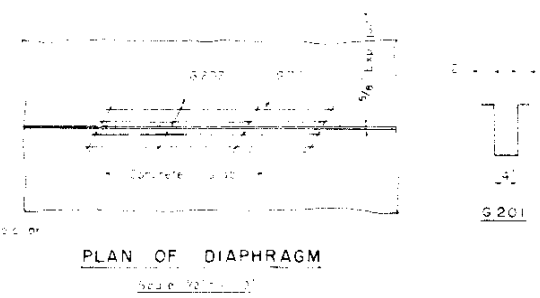
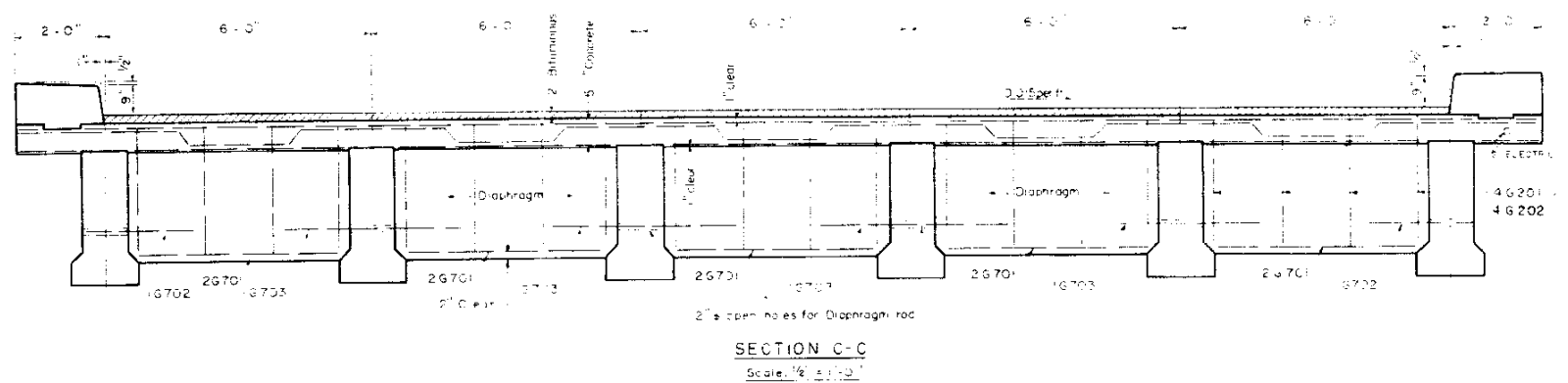
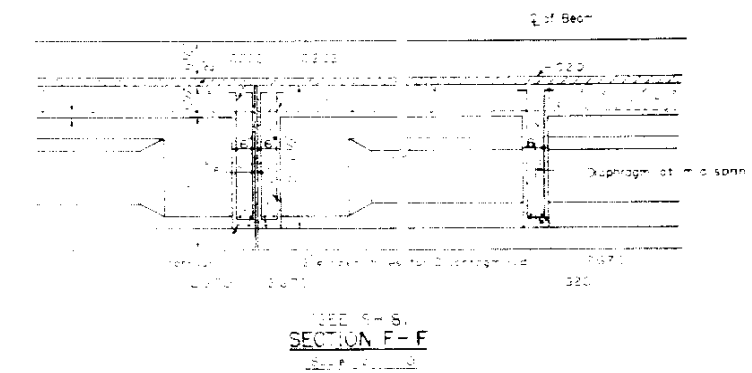
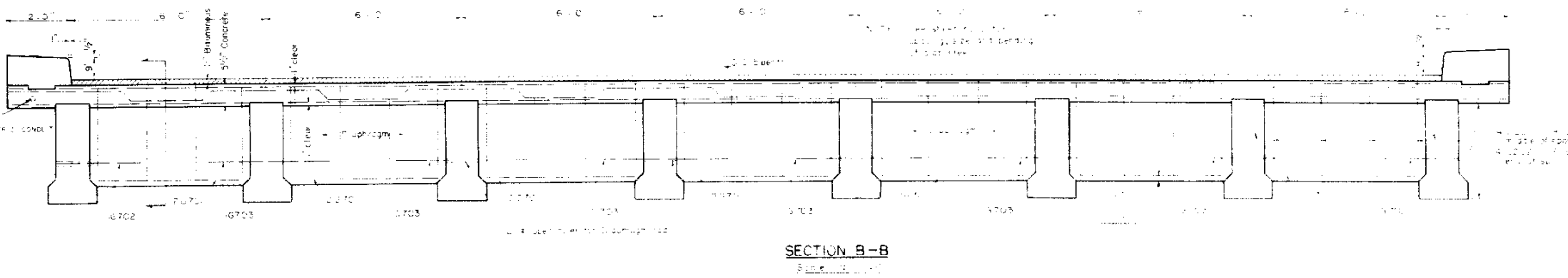
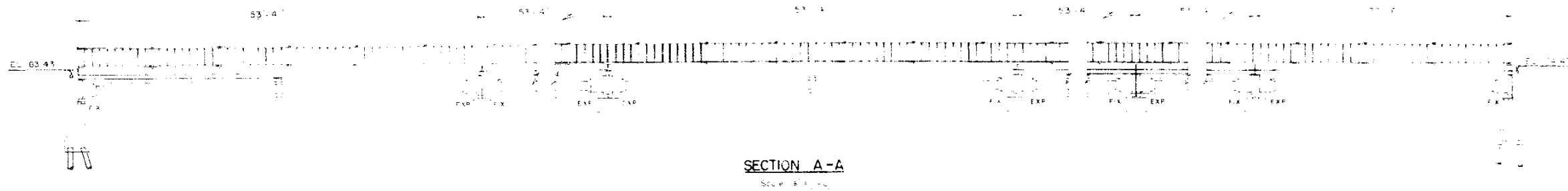


COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 CIMARRON STREET
 BRIDGE No's 1-17-DG and DF

PLAN DETAIL OF
 CONCRETE DECK SLAB,
 BEAMS and CURBING

DATE _____
 McKEE and CO ENGINEERS
 DENVER, COLORADO
 DRAWING NO 2
 OF 8

FED. ROAD DISTRICT NO.	SECTION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092 2151	36	



BAR LIST FOR DIAPHRAGMS

MARK	SHAPE	LEN	No	Req. DF	No	Req. DG
46201	U	5'-0"	170			238
46202	U	5'-0"	34			34
46203	U	4'-0"	68			92
46204	U	5'-0"	140			140
46205	U	5'-0"	240			336

BAR SUMMARY FOR DIAPHRAGMS

STRUCTURE NO. 1-17-DF		STRUCTURE NO. 1-17-DG	
1,966 Lm ² = 2 # of 0.67	332 lbs.	2,780 Lm ² = 2 # of 0.67	464 lbs.
1,151 Lm ² = 7 # of 2.044	2,353 lbs.	1,604 Lm ² = 7 # of 2.044	3,279 lbs.
1/2" Overlap	27 lbs.		37 lbs.
	2,710 lbs.		3,780 lbs.
CLASS A CONCRETE	197 lbs.	CLASS A CONCRETE	26.5 cu yds

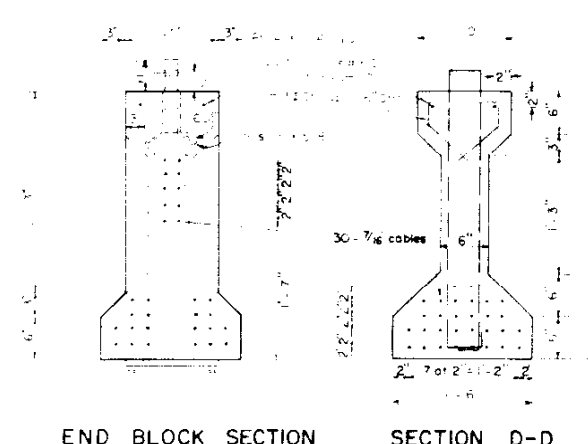
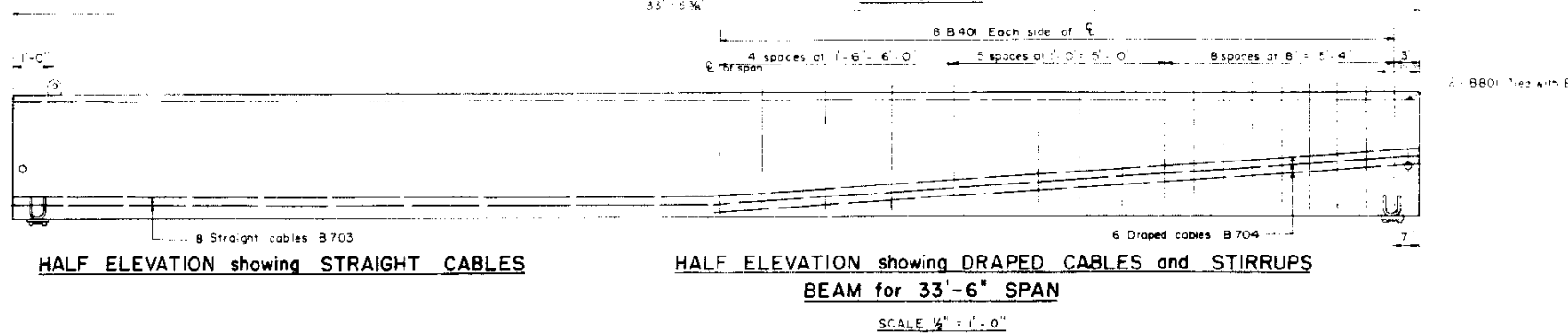
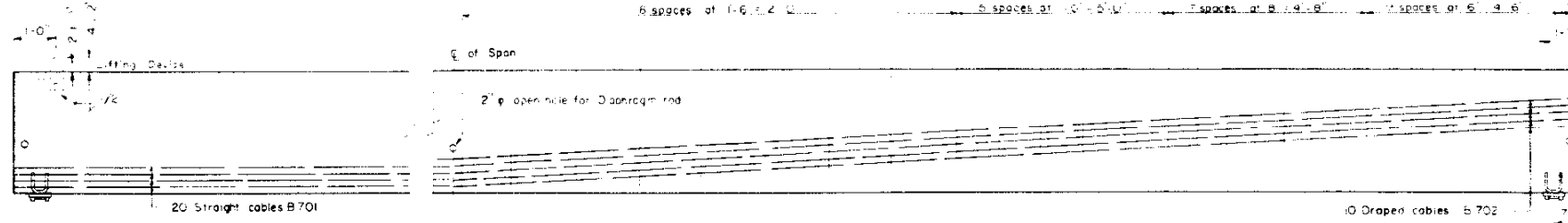
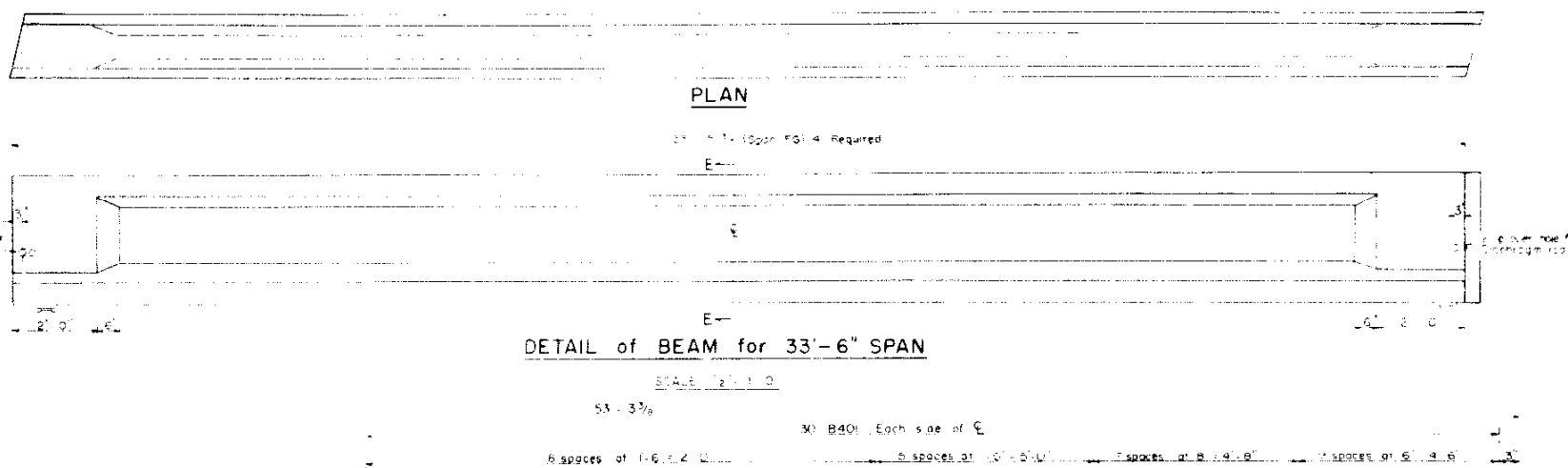
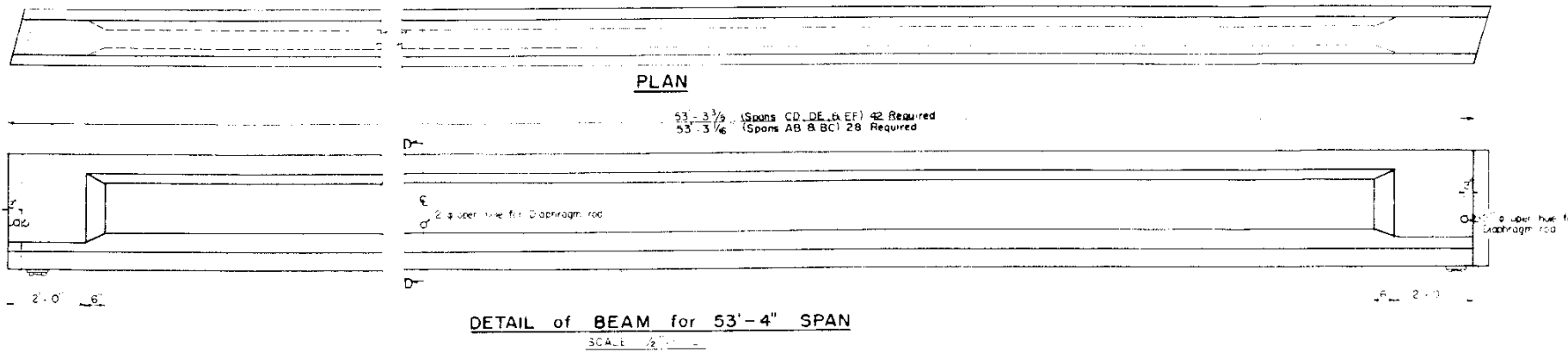
COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 CIMARRON STREET
 BRIDGE No s 1-17 DG and DF

SECTION DETAILS OF
 CONCRETE DECK SLAB,
 and DIAPHRAGMS for BEAMS

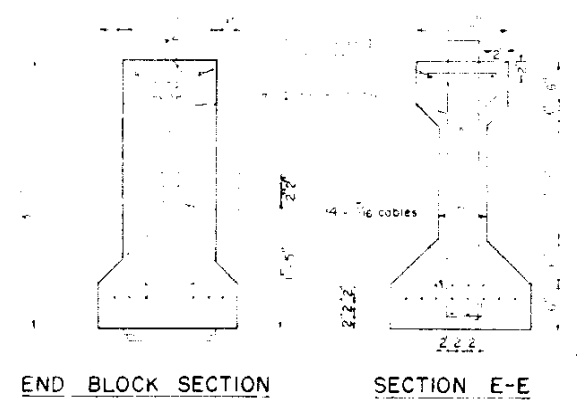
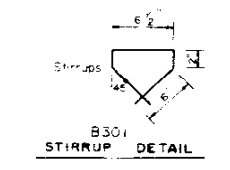
McKEE and CO ENGINEERS DENVER, COLORADO	DATE DRAWING NO. 3 OF 8
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FED. ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092 - 215	37	

NOTE: TOPS OF ALL BEAMS IN CONTACT WITH THE DECK SLAB SHALL BE LEFT ROUGH. CAMBERS AND CORNERS - ALL EXPOSED CORNERS SHALL BE CAMBERED 3/4" OR ROUNDED TO 3/4" RADIUS.



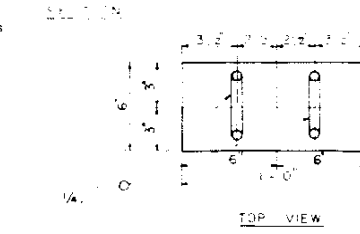
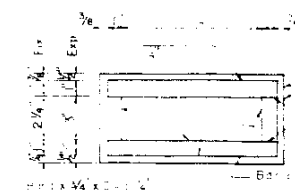
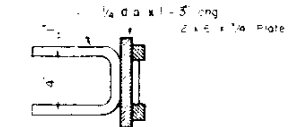
NIT 4. PRESTRESS FORCE EQUALS 537,000 lbs.



NIT 5. PRESTRESS FORCE EQUALS 230,000 lbs.

SUMMARY of QUANTITIES (per BEAM)				
33'-6" SPAN				
Item	Length	No. Req.	Total In.	Total Wt.
B301	10.5'	35	66 ft	25 lbs.
B401	7'-4"	60	440 ft	288 lbs.
B601	53'-4"	2	107 ft	286 lbs.
B701	53'-4"	20	1,069 ft	366 lbs.
B702	53'-6"	10	535 ft	183 lbs.
4.7' Total Rein Steel per Beam = 599 lbs.				
7/16" Cable - 1,604 in ft at 0.342" = 549 lbs.				
Structural Steel = 91 lbs.				
Concrete (5000 psi) = 3.0 cu yd.				

53'-4" SPAN				
Item	Length	No. Req.	Total In.	Total Wt.
B301	10.5'	35	66 ft	25 lbs.
B401	7'-4"	60	440 ft	288 lbs.
B601	53'-4"	2	107 ft	286 lbs.
B701	53'-4"	20	1,069 ft	366 lbs.
B702	53'-6"	10	535 ft	183 lbs.
4.7' Total Rein Steel per Beam = 599 lbs.				
7/16" Cable - 1,604 in ft at 0.342" = 549 lbs.				
Structural Steel = 91 lbs.				
Concrete (5000 psi) = 5.2 cu yd.				



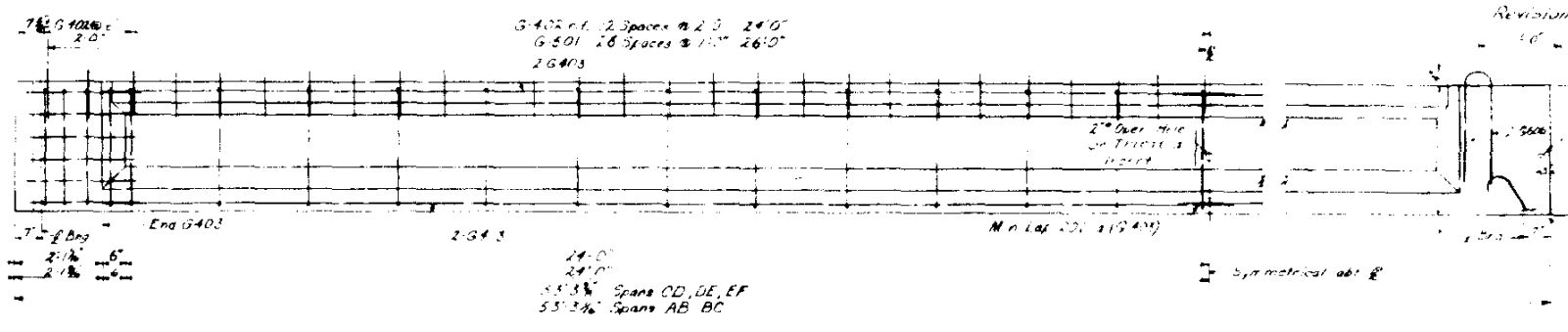
COLORADO STATE HIGHWAY DEPARTMENT
COLORADO SPRINGS FREEWAY
CIMARRON STREET
BRIDGE No's 1-17 DG and DF

DETAIL and SECTIONS of BEAMS

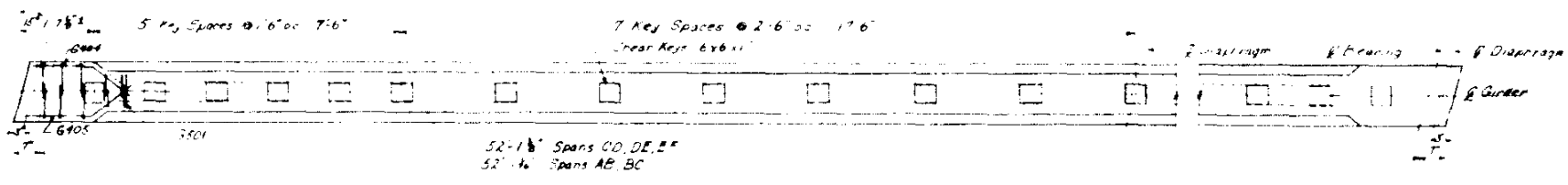
McKEE and CO ENGINEERS DENVER, COLORADO	DATE: DRAWING NO. 4 OF 8
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Revised 2-21-58 New Steel - McKee

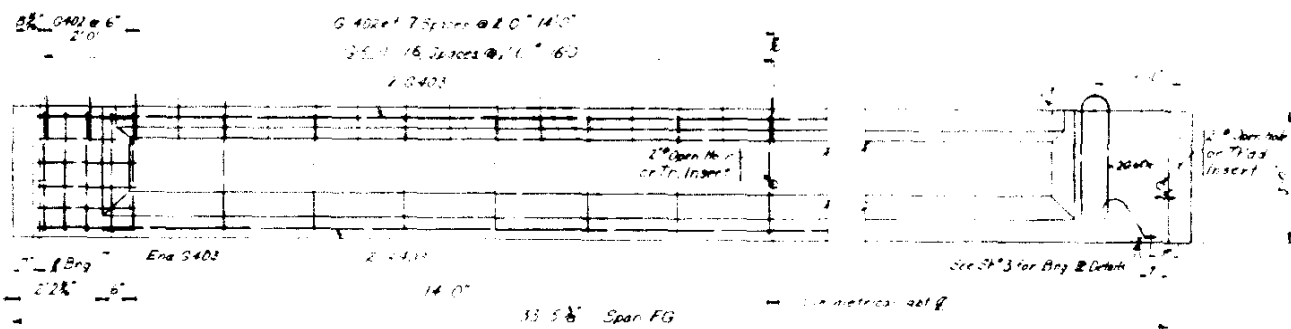
BAR LIST FOR PRESTRESSING STEELS					
53'4" SPAN (TO BE BUILT)					
Mark	Type	Length	No. of Pieces	Total Length	Weight
G501	Bar	16'	53	848'	15
G402	Bar	41'	20	820'	14
G403	Bar	10'	4	40'	4
G404	Bar	29'	4	116'	4
G405	Bar	12'	12	144'	4
G606	Bar	5'	4	20'	6
33'6" SPAN (TO BE BUILT)					
G501	Bar	16'	53	848'	15
G402	Bar	41'	4	164'	4
G403	Bar	29'	4	116'	4
G404	Bar	29'	12	348'	4
G405	Bar	12'	12	144'	4
G606	Bar	5'	4	20'	6



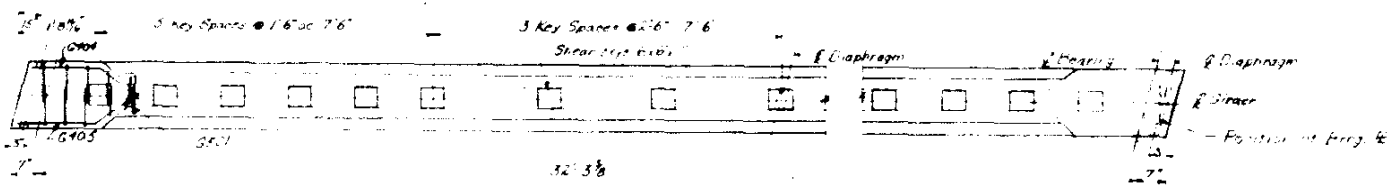
ELEVATION: 53'4" SPAN
Scale: 3/8" = 1'-0"



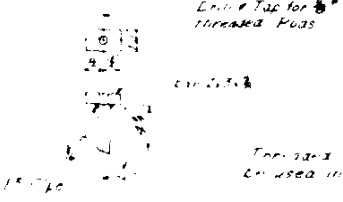
PLAN: 53'4" SPAN
Scale: 3/8" = 1'-0"



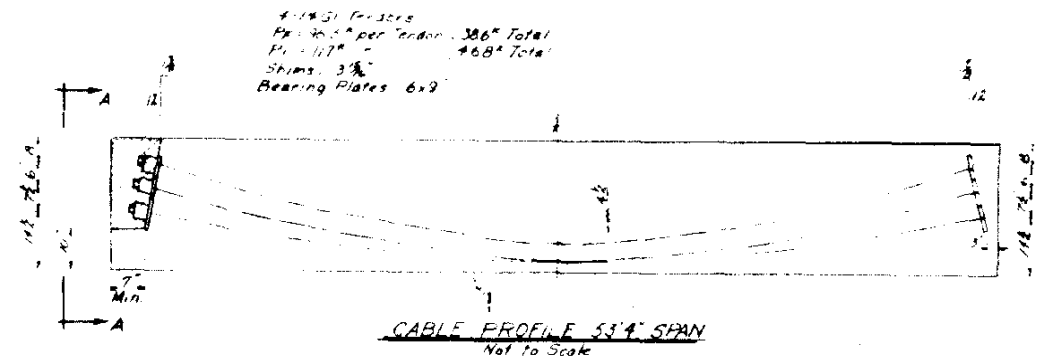
ELEVATION: 33'6" SPAN
Scale: 3/8" = 1'-0"



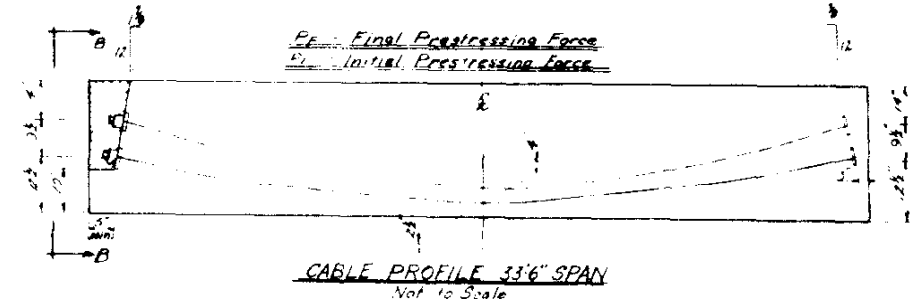
PLAN: 33'6" SPAN
Scale: 3/8" = 1'-0"



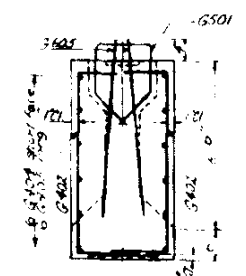
TYPE A
THREADED INSERT
Scale: 1/2" = 1'-0"



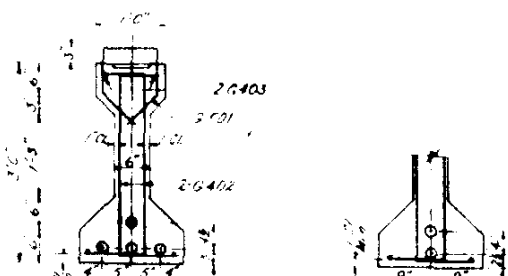
CABLE PROFILE 53'4" SPAN
Not to Scale



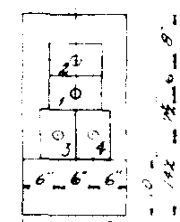
CABLE PROFILE 33'6" SPAN
Not to Scale



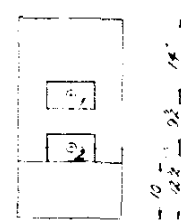
END BLOCK SECTION
Scale: 3/8" = 1'-0"



C SECTION
Tendon Spacing (33'4" Girder)
Tendon Spa (33'6" Girder)



VIEW A-A
Scale: 3/8" = 1'-0"



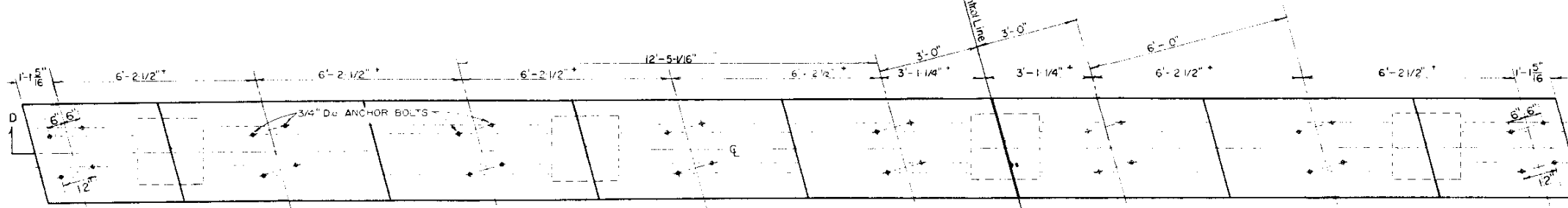
VIEW B-B
Scale: 3/8" = 1'-0"

2 2G1 Tendons
 Per 25' per Tendon = 176' Total
 Per 10' = 208' Total
 Shims: 22
 Bearing Plates: 5 1/2" x 22"

AS HORNER CONSTRUCTION CO. DENVER, COLORADO	
STANDARD GIRDERS	
PROJ. NO. 1092-2(5) COLORADO SPRINGS	
STRUCTURE NOS. 1-17-DG & DF	
CUSTOMER: C.L. HUBNER CONST. CO.	
ENGINEERS: MCKEE & CO.	
DESIGNED BY: [Signature]	SCALE: as shown
DRAWN BY: [Signature]	SHEET NO. 57a
CHECKED BY: [Signature]	DATE: 2-25-58

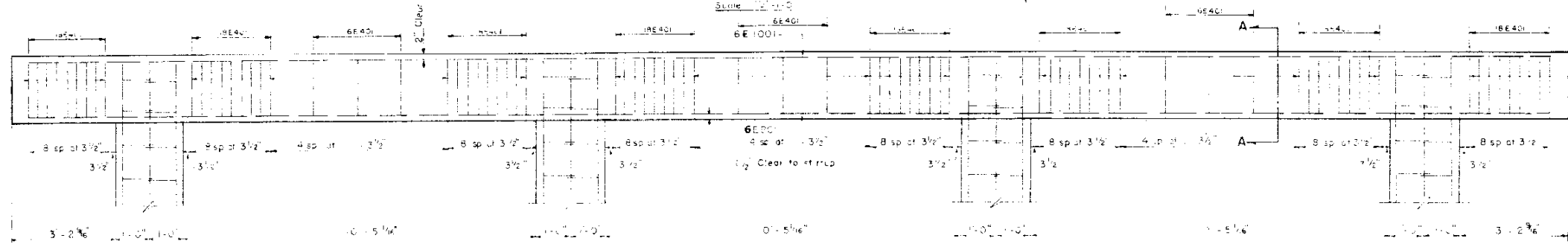
Revised 7-27-58. Added Note (1) P. 2A

FED. ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2151	38	

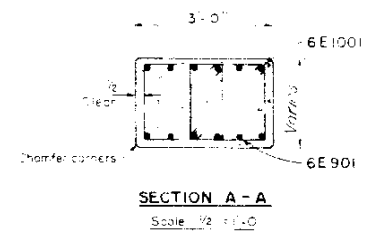


PLAN OF COLUMN CAP

See NOTE(1) For Dimensions A & B (This Sheet)



SECTION D-D OF COLUMN CAP



SECTION A-A

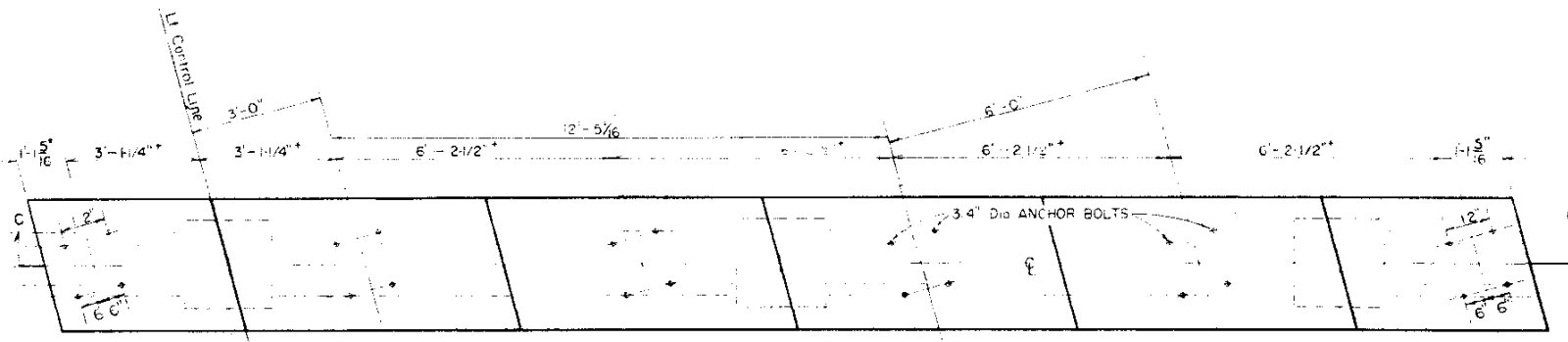
STRUCTURE NO.	MARK	SHAPE	LENGTH	No REQD (PIER)	TOTAL REQD
1-17-DG	E 401		7'-8"	162	610
1-17-DG	E 901		44'-1"	6	30
1-17-DF	E 902		44'-6"	4	20
1-17-DG	E 1001		44'-5"	6	30
1-17-DF	E 1002		44'-5"	6	30
1-17-DF	E 901		12'-5"	20	600

4E901	4	668	2672 lbs
6E1001	9	340	1658 lbs
6E1002	4	303	1515 lbs
6E901	20	221	1085 lbs
6E902	4	276	1368 lbs
TOTALS			27,677 lbs

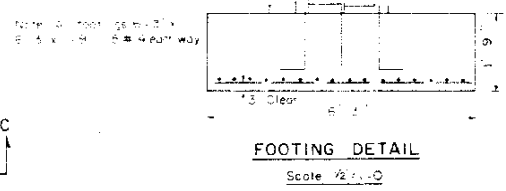
CLASS A CONCRETE - 87.74 yds
SWEDGED BOLTS - 336 units

NOTE (1)

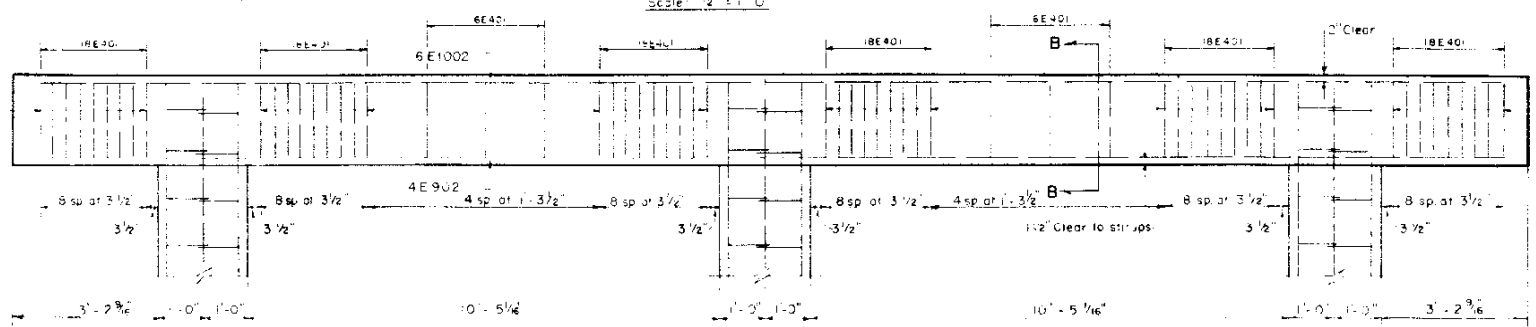
DIMENSION	ABOUT	PIER
A = 0'-5 1/2"	B, D,	E, F,
B = 0'-8 5/8"	A, G,	C,
A = 0'-5 13/16"	A, G,	C,
B = 0'-8 5/16"	A, G,	C,



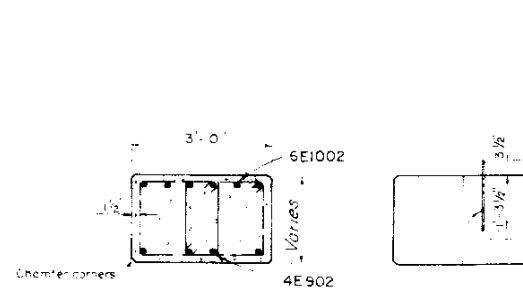
PLAN OF COLUMN CAP



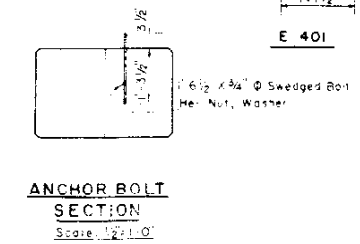
FOOTING DETAIL



SECTION C-C OF COLUMN CAP



SECTION B-B



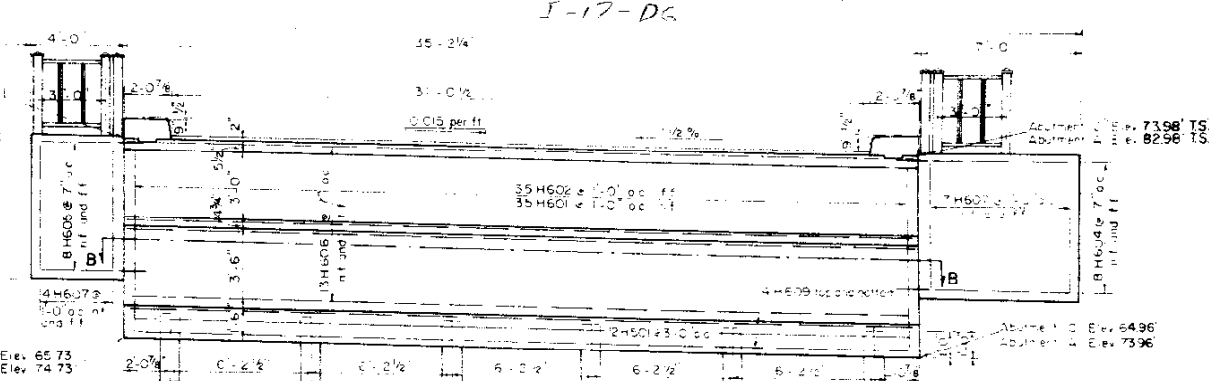
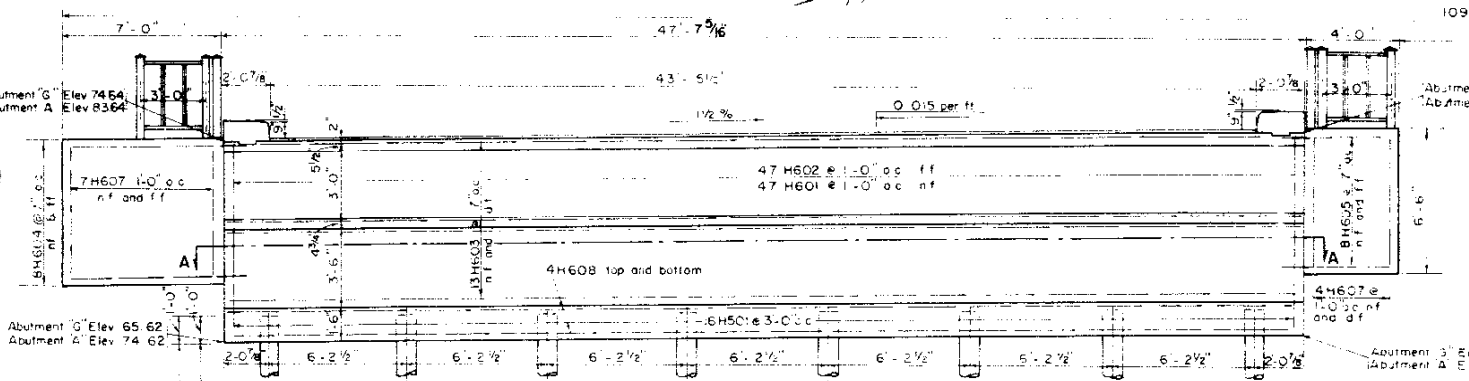
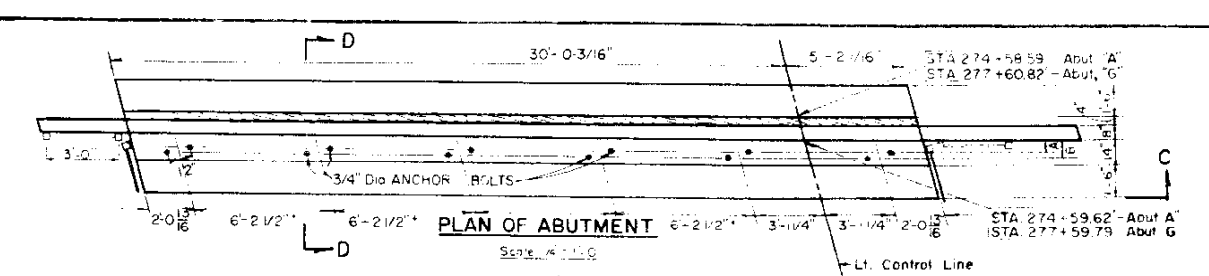
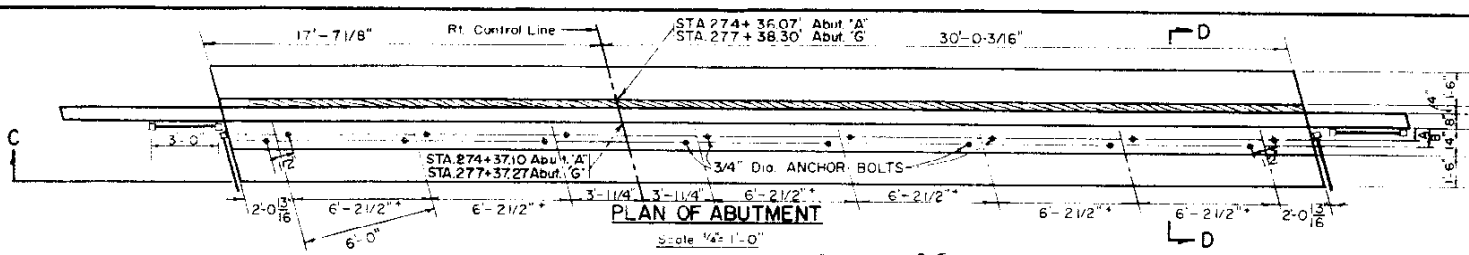
ANCHOR BOLT SECTION

COLORADO STATE HIGHWAY DEPARTMENT
COLORADO SPRINGS FREEWAY
CIMARRON STREET
BRIDGE No's 1-17 DG and DF

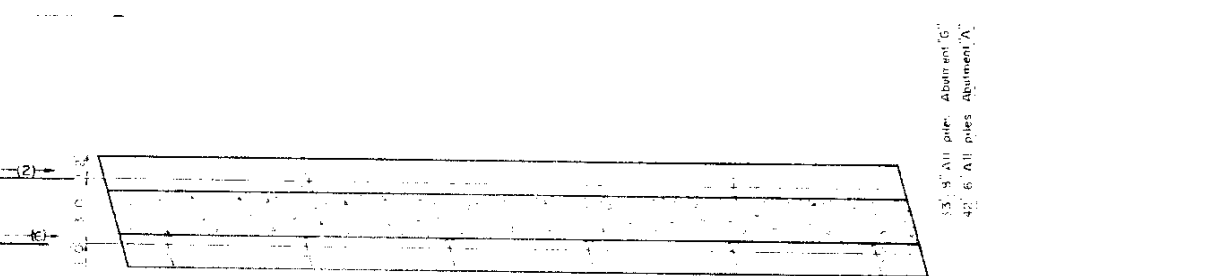
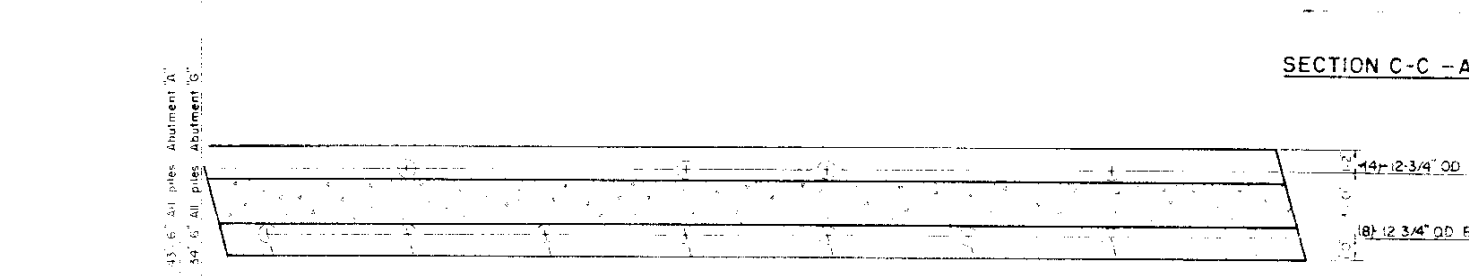
DETAIL and SECTIONS of
COLUMN CAP, COLUMNS
and TYPICAL FOOTING

McKEE and CO
ENGINEERS
DENVER, COLORADO

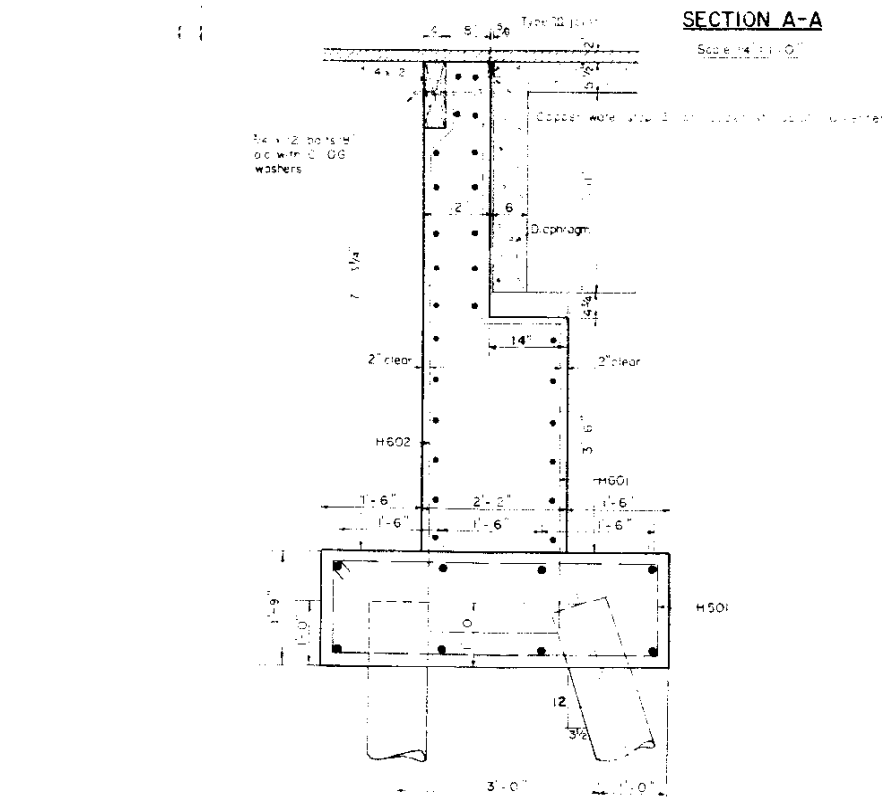
DATE
DRAWING NO. 5
OF 8



SECTION C-C - ABUTMENT DETAIL A & G
Scale 1/4" = 1'-0"

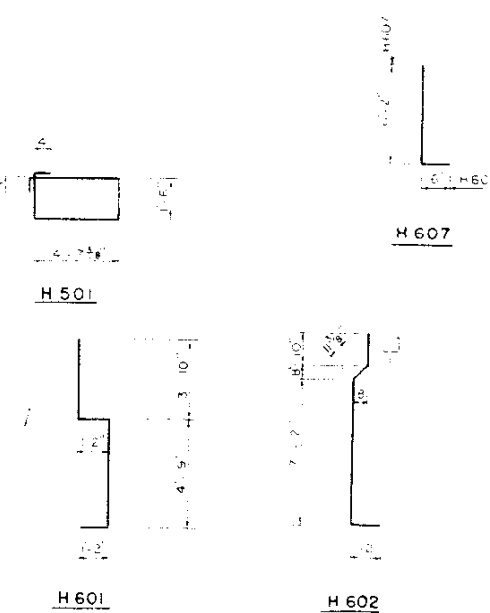


SECTION B-B
Scale 1/4" = 1'-0"



BAR SUMMARY (2 ABUTMENTS)			
723 Lin ft #5	1043	754	Lb
9942 Lin ft #6	502	14,933	Lb
			10% Overrun
			15.7 Lb
			5,964 Lb
CLASS A CONCRETE			1301 cu yd
12 3/4" OD. PIPE PILE			1664 Lin ft

BAR LIST (1 ABUTMENT - BOTH IDENTICAL)					
BAR	SHAPE	LENGTH	NO REQ'D	NO REQ'D - DS	TOTAL
#5		31'-0 3/4"	15	2	28
#601		47'	31	1	82
#602		47'-6"	47	35	82
#603		47'-6"	26	1	26
#604		47'-6"	16	6	32
#605		47'-6"	16	6	32
#606		34'-8"	2	2	26
#607		6'-8"	22	22	44
#608		4'-6"	1	1	6
#609		4'-6"	8	8	8



COLORADO STATE HIGHWAY DEPARTMENT
COLORADO SPRINGS FREEWAY
CIMARRON STREET
BRIDGE No's I-17 DG and DF

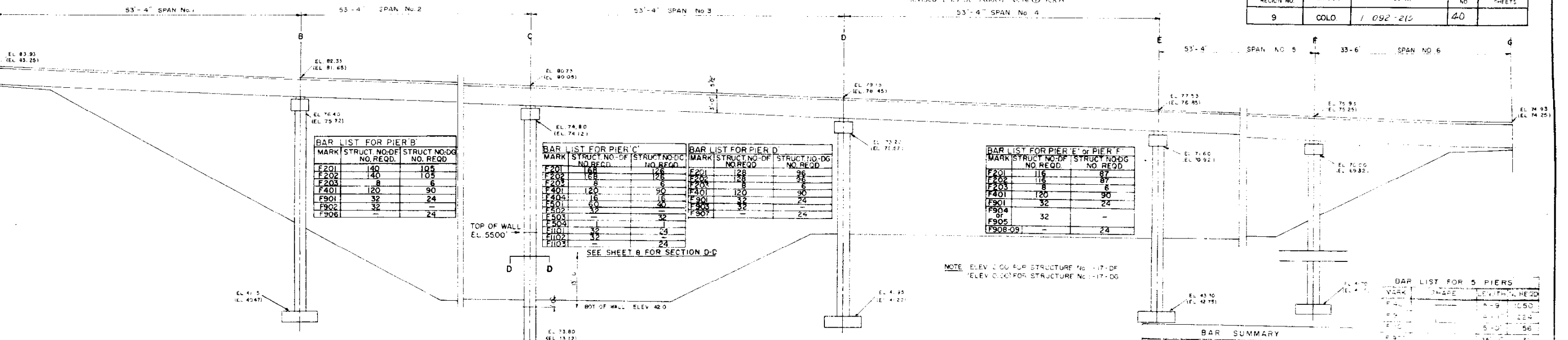
DETAIL of ABUTMENTS

DESIGNED BY	DATE
CHECKED BY	DRAWING NO 6
APPROVED BY	OF 8

REGION NO	DIVISION	PROJECT NO	SHEET NO	TOTAL SHEETS
9	COLO	1000 20	39	

Revision: changed per caps from slope to steps 10/18/57 RPA.
 Revised 2/27/58 Added Note (1) RRA

FED. ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092-215	40	



BAR LIST FOR PIER B

MARK	STRUCT. NO.-DF	STRUCT. NO.-DG
F201	140	105
F202	140	105
F203	9	6
F401	120	90
F901	32	24
F902	32	24
F906	-	24

BAR LIST FOR PIER C

MARK	STRUCT. NO.-DF	STRUCT. NO.-DG
F201	128	96
F202	128	96
F203	6	6
F401	120	90
F404	16	16
F901	60	40
F902	32	24
F903	-	24
F904	32	24
F905	32	24
F906	-	24

BAR LIST FOR PIER D

MARK	STRUCT. NO.-DF	STRUCT. NO.-DG
F201	128	96
F202	128	96
F203	6	6
F401	120	90
F404	16	16
F901	60	40
F902	32	24
F903	-	24
F904	32	24
F905	32	24
F906	-	24

BAR LIST FOR PIER E or PIER F

MARK	STRUCT. NO.-DF	STRUCT. NO.-DG
F201	116	87
F202	116	87
F203	8	6
F401	120	90
F901	32	24
F904	32	24
F905	32	24
F906-09	-	24

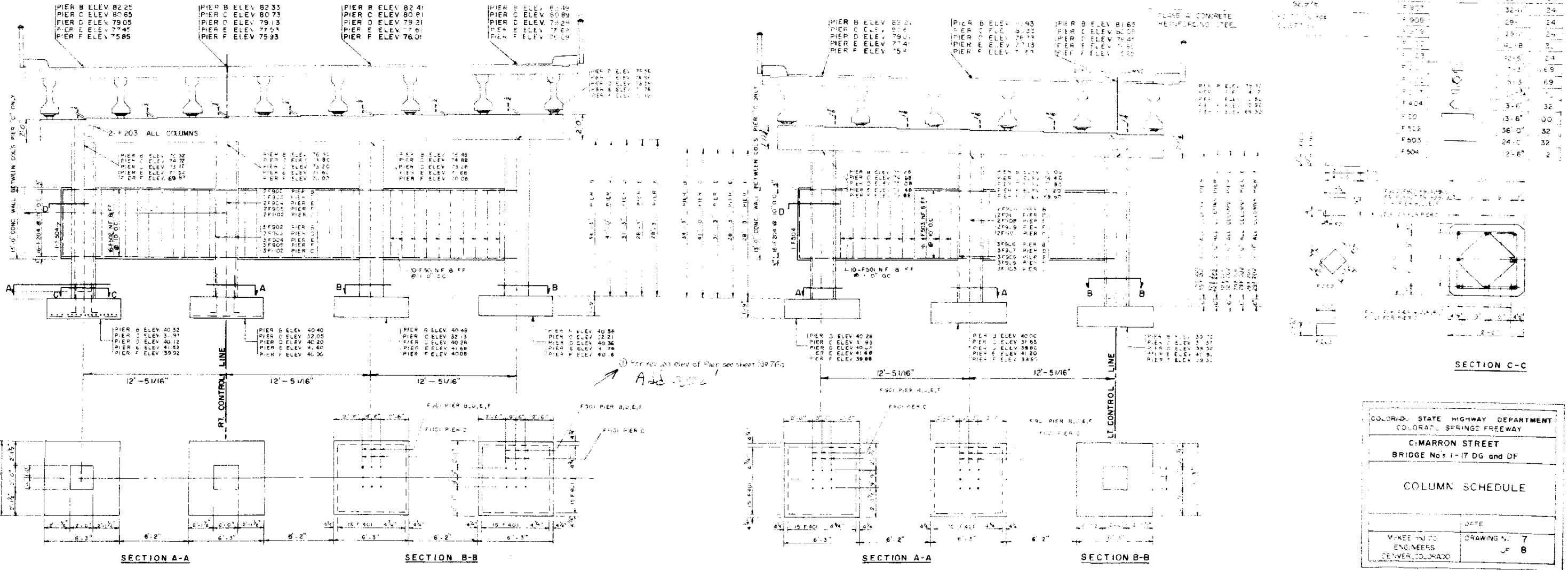
BAR LIST FOR 5 PIERS

MARK	SHAPE	LENGTH	HEAD
F201	4-9	10.50	
F202	4-9	10.50	
F203	5-0	5.8	
F204	3-5	3.4	
F205	3-5	3.4	
F206	3-5	3.4	
F207	3-5	3.4	
F208	3-5	3.4	
F209	3-5	3.4	
F210	3-5	3.4	
F211	3-5	3.4	
F212	3-5	3.4	
F213	3-5	3.4	
F214	3-5	3.4	
F215	3-5	3.4	
F216	3-5	3.4	
F217	3-5	3.4	
F218	3-5	3.4	
F219	3-5	3.4	
F220	3-5	3.4	
F221	3-5	3.4	
F222	3-5	3.4	
F223	3-5	3.4	
F224	3-5	3.4	
F225	3-5	3.4	
F226	3-5	3.4	
F227	3-5	3.4	
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F229	3-5	3.4	
F230	3-5	3.4	
F231	3-5	3.4	
F232	3-5	3.4	
F233	3-5	3.4	
F234	3-5	3.4	
F235	3-5	3.4	
F236	3-5	3.4	
F237	3-5	3.4	
F238	3-5	3.4	
F239	3-5	3.4	
F240	3-5	3.4	
F241	3-5	3.4	
F242	3-5	3.4	
F243	3-5	3.4	
F244	3-5	3.4	
F245	3-5	3.4	
F246	3-5	3.4	
F247	3-5	3.4	
F248	3-5	3.4	
F249	3-5	3.4	
F250	3-5	3.4	
F251	3-5	3.4	
F252	3-5	3.4	
F253	3-5	3.4	
F254	3-5	3.4	
F255	3-5	3.4	
F256	3-5	3.4	
F257	3-5	3.4	
F258	3-5	3.4	
F259	3-5	3.4	
F260	3-5	3.4	
F261	3-5	3.4	
F262	3-5	3.4	
F263	3-5	3.4	
F264	3-5	3.4	
F265	3-5	3.4	
F266	3-5	3.4	
F267	3-5	3.4	
F268	3-5	3.4	
F269	3-5	3.4	
F270	3-5	3.4	

BAR SUMMARY

2-201	116	87	1.483
2-202	116	87	1.483
2-203	8	6	0.083
2-204	120	90	0.903
2-205	32	24	0.387
2-206	32	24	0.387
2-207	-	24	0.387
2-208	32	24	0.387
2-209	32	24	0.387
2-210	-	24	0.387
2-211	32	24	0.387
2-212	32	24	0.387
2-213	32	24	0.387
2-214	32	24	0.387
2-215	32	24	0.387
2-216	32	24	0.387
2-217	32	24	0.387
2-218	32	24	0.387
2-219	32	24	0.387
2-220	32	24	0.387
2-221	32	24	0.387
2-222	32	24	0.387
2-223	32	24	0.387
2-224	32	24	0.387
2-225	32	24	0.387
2-226	32	24	0.387
2-227	32	24	0.387
2-228	32	24	0.387
2-229	32	24	0.387
2-230	32	24	0.387
2-231	32	24	0.387
2-232	32	24	0.387
2-233	32	24	0.387
2-234	32	24	0.387
2-235	32	24	0.387
2-236	32	24	0.387
2-237	32	24	0.387
2-238	32	24	0.387
2-239	32	24	0.387
2-240	32	24	0.387
2-241	32	24	0.387
2-242	32	24	0.387
2-243	32	24	0.387
2-244	32	24	0.387
2-245	32	24	0.387
2-246	32	24	0.387
2-247	32	24	0.387
2-248	32	24	0.387
2-249	32	24	0.387
2-250	32	24	0.387

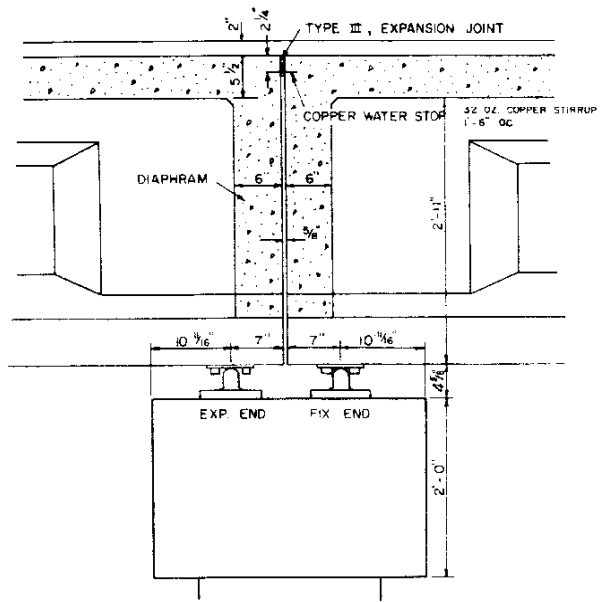
ELEVATION
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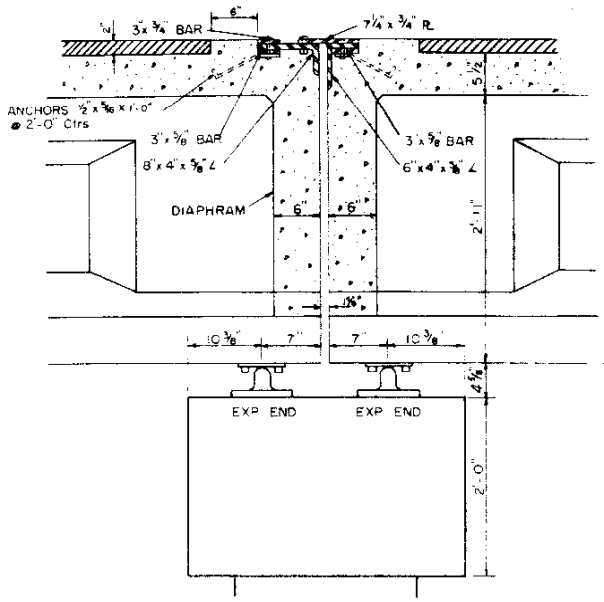
COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 O'MARRON STREET
 BRIDGE No's 1-17 DG and DF

COLUMN SCHEDULE

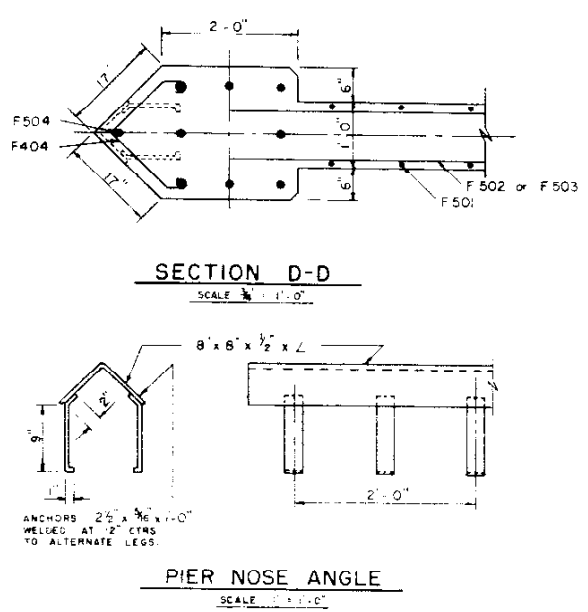
DATE	
ENGINEERS	DRAWING NO. 7
PEWEE, COLARACO	OF 8



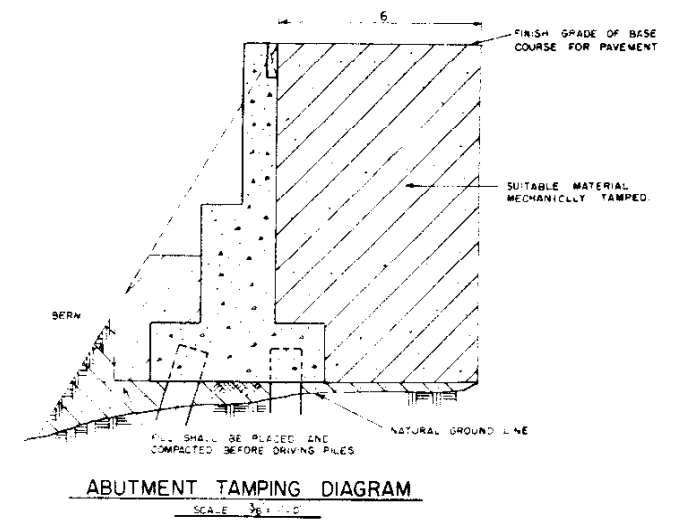
EXPANSION JOINT DETAIL
FOR PIERS WITH ONE FIXED END & ONE FREE END
SCALE: 1/2" = 1'-0"



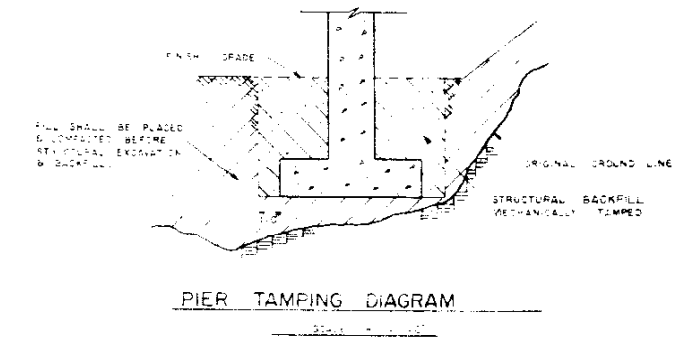
EXPANSION JOINT DETAIL
FOR PIERS WITH ENDS FREE
SCALE: 1/2" = 1'-0"



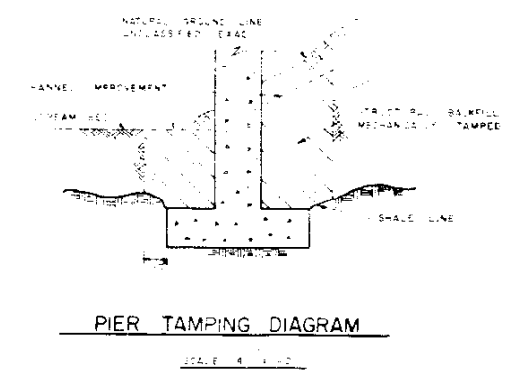
PIER NOSE ANGLE
SCALE: 1/2" = 1'-0"



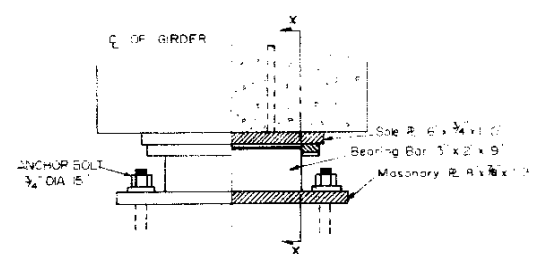
ABUTMENT TAMPING DIAGRAM
SCALE: 3/8" = 1'-0"



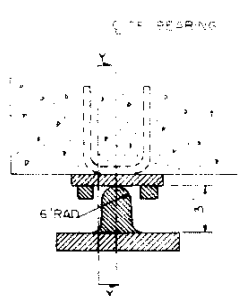
PIER TAMPING DIAGRAM
SCALE: 1/2" = 1'-0"



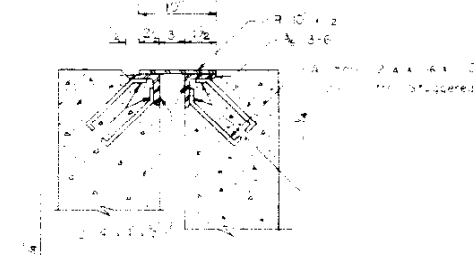
PIER TAMPING DIAGRAM
SCALE: 1/2" = 1'-0"



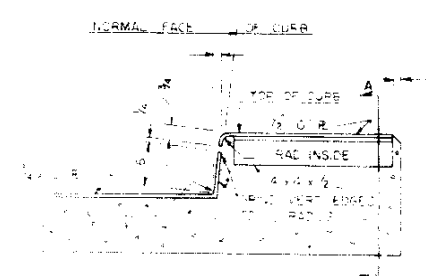
HALF END ELEV HALF-SECTION Y-Y



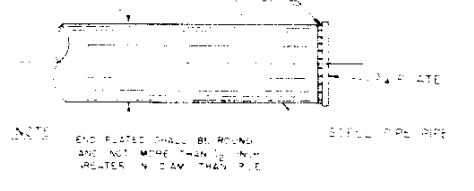
SECTION X-X



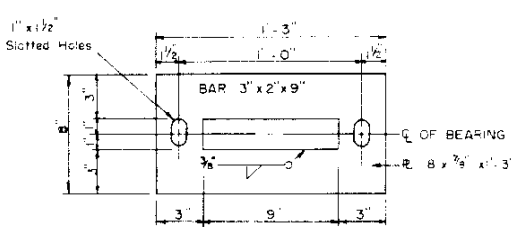
EXPAN DEVICE - CURBS
SECTION A-A



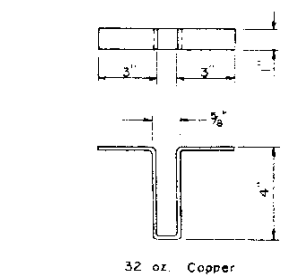
EXPAN DEVICE AT CURB



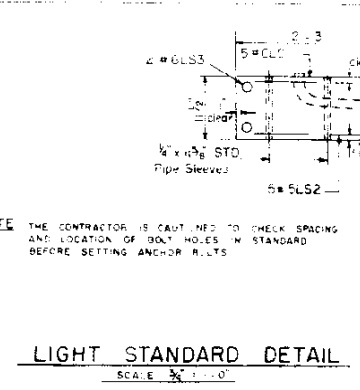
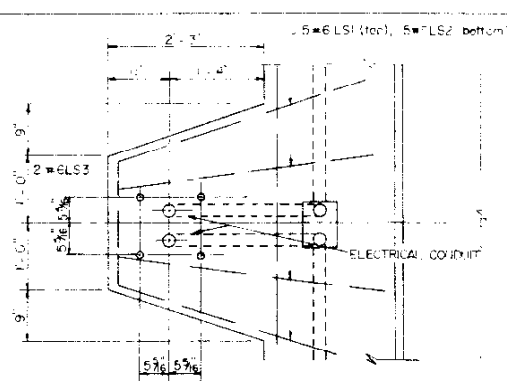
END PLATES FOR PIPE PILES



DETAILS OF BEARING



COPPER STIRRUP DETAIL



LIGHT STANDARD DETAIL
SCALE: 3/8" = 1'-0"

NOTE: THE CONTRACTOR IS CAUTIONED TO CHECK SPACING AND LOCATION OF BOLT HOLES IN STANDARD BEFORE SETTING ANCHOR BOLTS.

REVISED FROM SET 2, BRIDGE No. 17 DG and DF, EXPAN JOINT DETAIL, 10/27/64	DATE
PROJ. ROAD DISTRICT NO.	9
DIVISION	COLG
PROJ. NO.	109-10-1
SHEET NO.	4-1
TOTAL SHEETS	

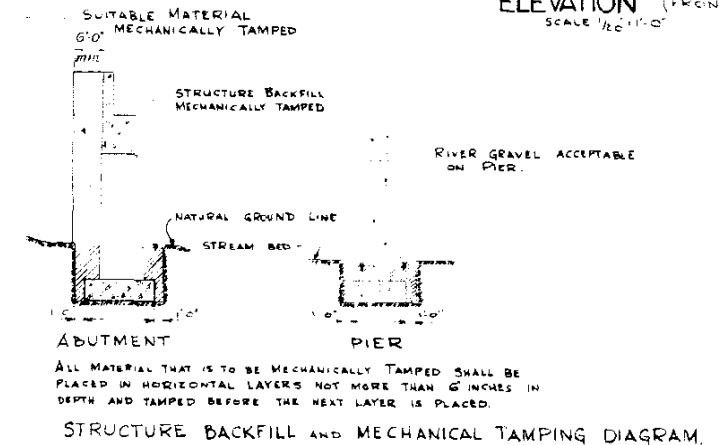
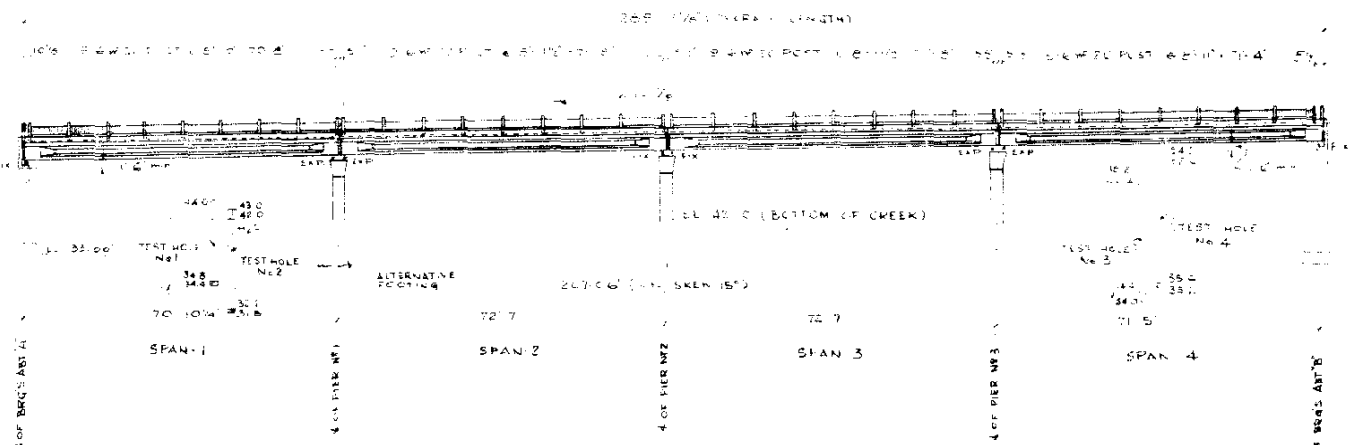
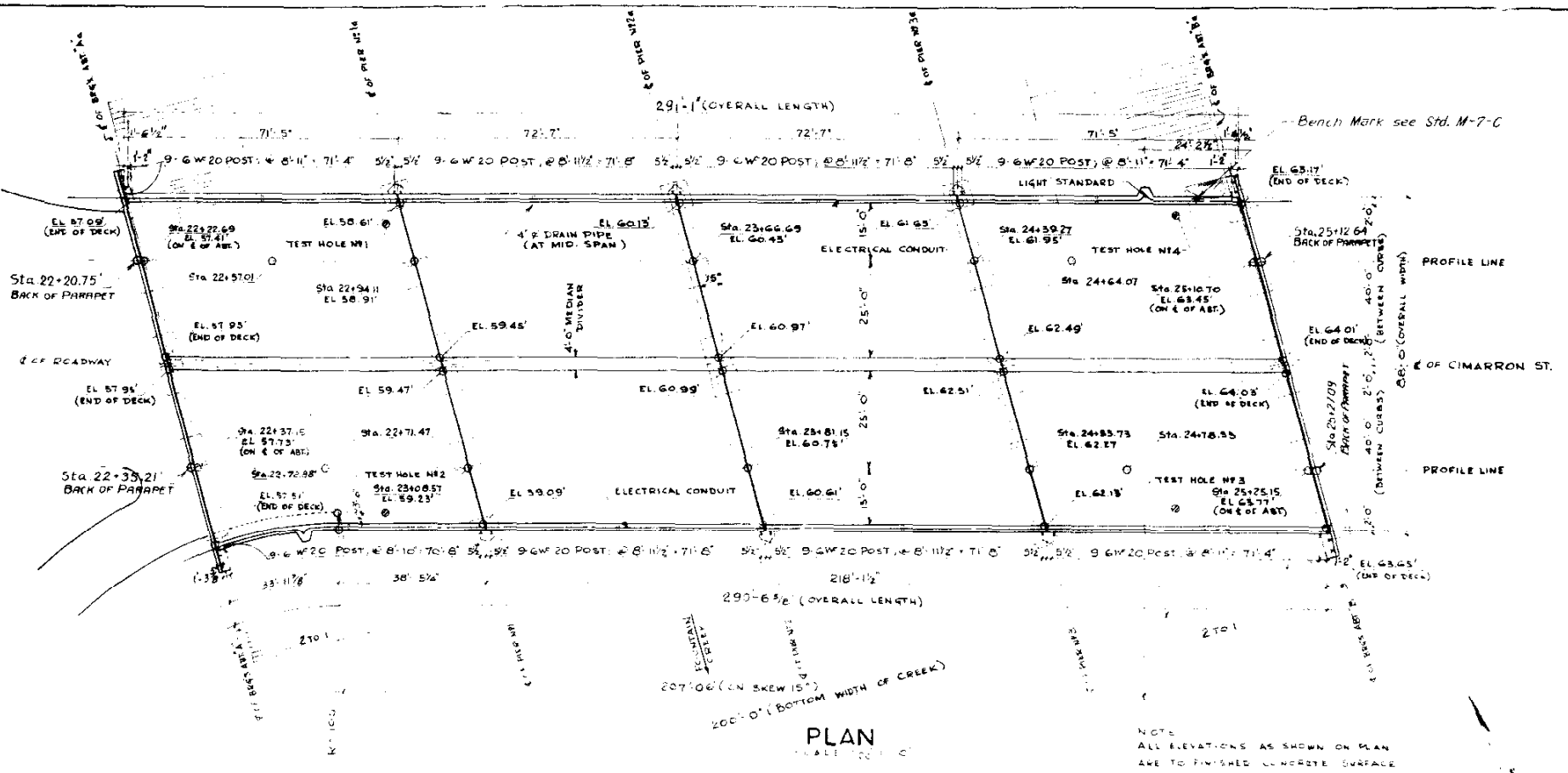
COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 CIMARRON STREET
 BRIDGE Nos 17 DG and DF

DETAILS

MCKEE and CO ENGINEERS DENVER, COLORADO	DRAWING NO. B OF 8
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Revision 10-18-57 (Changed Sta. on Plan. L.B. Summary of Quants)

FEDERAL DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.
9	COLD	1092-2(5)	42



DESIGN SPECIFICATIONS
1953 A.A.S.H.O. WITH 1953 AND 1954 AMENDMENTS
LIVE LOAD H20-SIG-44
F_c = 20000 P.S.I.
WEIGHT OF EARTH 120 LBS PER CU FT
EQUIVALENT FLUID PRESSURE 30 LBS PER CU FT.
MAX ALLOWABLE SOIL PRESSURE 10 TONS PER SQ FT.

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	UNIT	SUPER-STR.	4-ABTS	6-PIERS	TOTAL
14f	ROCK EXCAVATION (STR)	CU YD		48	30	78
14g	COMMON EXCAVATION (STR)	CU YD		668	300	968
16a	STRUCTURE BACKFILL (CLASS 1)	CU YD		553	195	748
16c	MECHANICAL TAMPING	HR		80	30	110
40c	PLAIN MIXED A CONCRETE	CU YD	623	2304	363	12164
47	REINFORCING STEEL (41% OVERRUN)	LBS	144,700	40,045	37,600	222,345
48	STRUCTURAL STEEL (10% FOR PAINT)	LBS	32,915	4,427	11,010	48,252
80c	SHEET COPPER (32 LB PER SQ FT)	RS	16			16
90b	ELECTRICAL CONDUIT WITH JUNCTION BOXES (1/2")	LN FT	600			600
89a	Gr. n Pipe (conc. floor) (4" x 2'-3")	Each	8			8
42L	TREATED BRIDGE TIMBER	MT		0.02		0.02

SUMMARY OF QUANTITIES - REFERENCE NOTES

- 2- STONE BACKFILL INCLUDED
- 3- PRESTRESSING STEEL WITH ANCHORS AND REINFORCING STEEL INCLUDED WITH BID PRICE FOR GIRDERS.
- 4- INCLUDES STEEL RAILING, PLATES, ANCHOR BOLTS, ANCHOR BARS AND BEARINGS.
- 5- INCLUDED WITH BID PRICE FOR CLASS 'A' CONCRETE.
- NOTE ITEM 47 DOES NOT INCLUDE PRESTRESSING STEEL, AND REINFORCING STEEL FOR GIRDERS.

GENERAL NOTES

- 1- ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS, ADOPTED JUNE, 1952.
- 2- FOUNDINGS AND DEPTH OF FOOTINGS SHALL ACCORDING TO THE BEST AVAILABLE DATA. IF ESSENTIALLY DIFFERENT CONDITIONS ARE ENCOUNTERED THE BRIDGE ENGINEER WILL INSPECT AND DETERMINE IF REDESIGN IS NECESSARY.
- 3- ALL CONCRETE SHALL BE CLASS 'A' AND AIR ENTRAINED AS SPECIFIED, EXCEPT OTHERWISE NOTED FOR PRESTRESSED GIRDERS.
- 4- CHAMFER ALL EXPOSED CORNERS 3/4", EXCEPT AS NOTED.
- 5- ALL REINFORCING STEEL SHALL BE INTERMEDIATE GRADE DEFORMED BARS CONFORMING TO A.A.S.H.O. SPECIFICATIONS M31 AND M37 (A.S.T.M. DESIGNATIONS A15 AND A305).
- 6- ALL REINFORCING BARS SHALL BE TIED WITH THE STRUCTURE NUMBER AND MARK.
- 7- ALL DIMENSIONS ON BAR DETAILS ARE OUT TO OUT.
- 8- ALL HOOKS AND BENDS IN BARS SHALL CONFORM TO A.C.I. STANDARD 315-51. 2" MINIMUM CLEAR TO STEEL, EXCEPT AS NOTED.
- 9- ALL STRUCTURAL STEEL SHALL RECEIVE ONE SHOP COAT OF ZINC CHROMATE AND TWO FIELD COATS OF ALUMINUM PAINT.
- 10- WHEN EXCAVATING FOR FOOTINGS THE FINAL ONE FOOT IN DEPTH SHALL BE DONE BY HAND LABOR METHODS.
- 11- CURB AND MEDIAN DIVIDER ROUNDED 10' RADIUS AT THE END.
- 12- ALL CONCRETE SURFACES EXPOSED TO NORMAL VIEW BY HIGHWAY TRAFFIC SHALL RECEIVE CLASS '1' SURFACE FINISH.
- 13- EXPANSION JOINT MATERIAL SHALL BE ACCORDING TO A.A.S.H.O. SPECIFICATION M-153-54 AND TYPE SHOWN.

INDEX OF SHEETS

- 1 GENERAL PLAN AND ELEVATION
- 2 ABUTMENTS 'A' AND 'B'
- 3 ABUTMENTS 'A' AND 'B'
- 4 PIERS
- 5 GIRDERS AND RAILING
- 6 DECK

COLORADO DEPARTMENT OF HIGHWAYS
COLORADO SPRINGS FREEWAY

CIMARRON INTERCHANGE
FOUNTAIN CREEK
STRUCTURE 1-17-D1

GENERAL PLAN AND ELEVATION

L. BODUROFF & ASSOCIATE
CONSULTING ENGINEER
DENVER - COLORADO 4-15-1954

DESIGNED J.N. SCALE AS NOTED SHEET NO. 1
DRAWN J.N.
CHECKED J.N. DATE 4-5-57 NO. OF SHEETS 6

BAR LIST FOR ABTS 'Aa' AND 'B'

MARK	TYPE	LENGTH	W. R. N. H. SIZE
A801	STR	7'-6"	114 #8
A502	BENT	7'-0"	42 #5
A503	STR	23'-6"	21 #5
A504	"	16'-11"	21 #5
A405	"	6'-0"	16 #4
A1006	"	45'-0"	26 #10
A1007	"	19'-0"	16 #10
A908	"	16'-11"	18 #9
A409	BENT	8'-5"	52 #4
A410	STR	24'-6"	16
A411	BENT	10'-9"	92
A412	STR	27'-6"	16
A413	BENT	7'-6"	2
A414	"	6'-4" 13'-0"	2
A415	"	5'-8" 11'-8"	2
A416	"	5'-6" 10'-4"	2
A417	"	4'-5" 9'-0"	2
A418	"	3'-8" 7'-8"	2
A419	STR	5'-6"	8
A420	BENT	8'-1"	6
A421	"	2'-7" 8'-4"	6
A422	"	2'-9" 8'-7"	6
A423	"	2'-10" 8'-10"	6
A424	"	3'-0" 9'-4"	6
A425	"	3'-4" 9'-8"	6
A426	"	3'-3" 9'-7"	6
A427	"	3'-4" 9'-8"	6
A428	"	3'-6" 10'-1"	6
A429	"	3'-7" 10'-2"	6
A430	"	3'-9" 10'-7"	3
A431	"	3'-4" 10'-10"	3
A432	"	3'-0" 11'-1"	3
A433	"	4'-1" 11'-4"	3
A434	"	5'-0"	68
A435	STR	33'-6"	4 #2
A436	STR	7'-0"	60 #6
A437	STR	9'-0"	48 #6
A438	STR	9'-0"	40 #8
A439	BENT	7'-0"	30 #9
A440	STR	23'-6"	18 #9

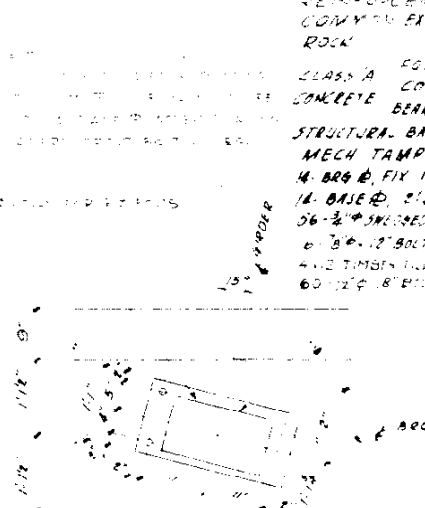
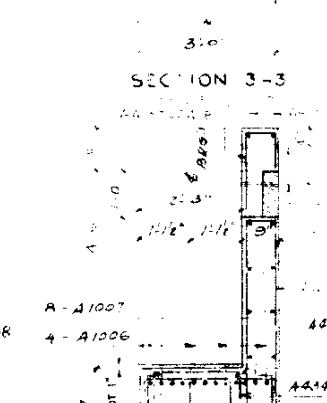
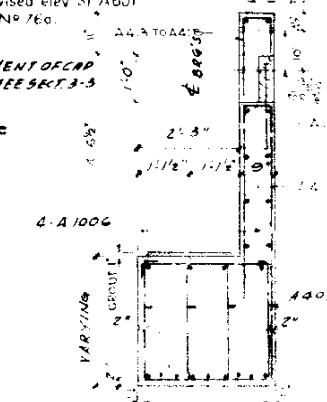
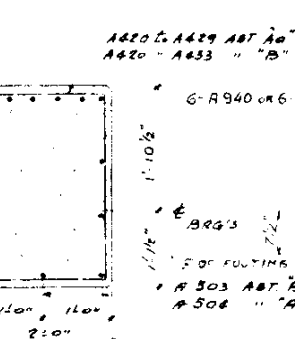
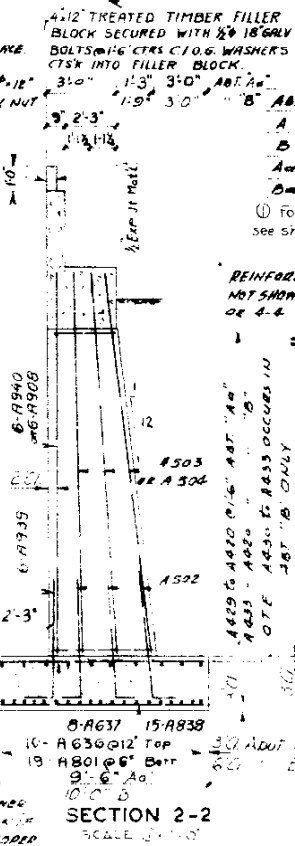
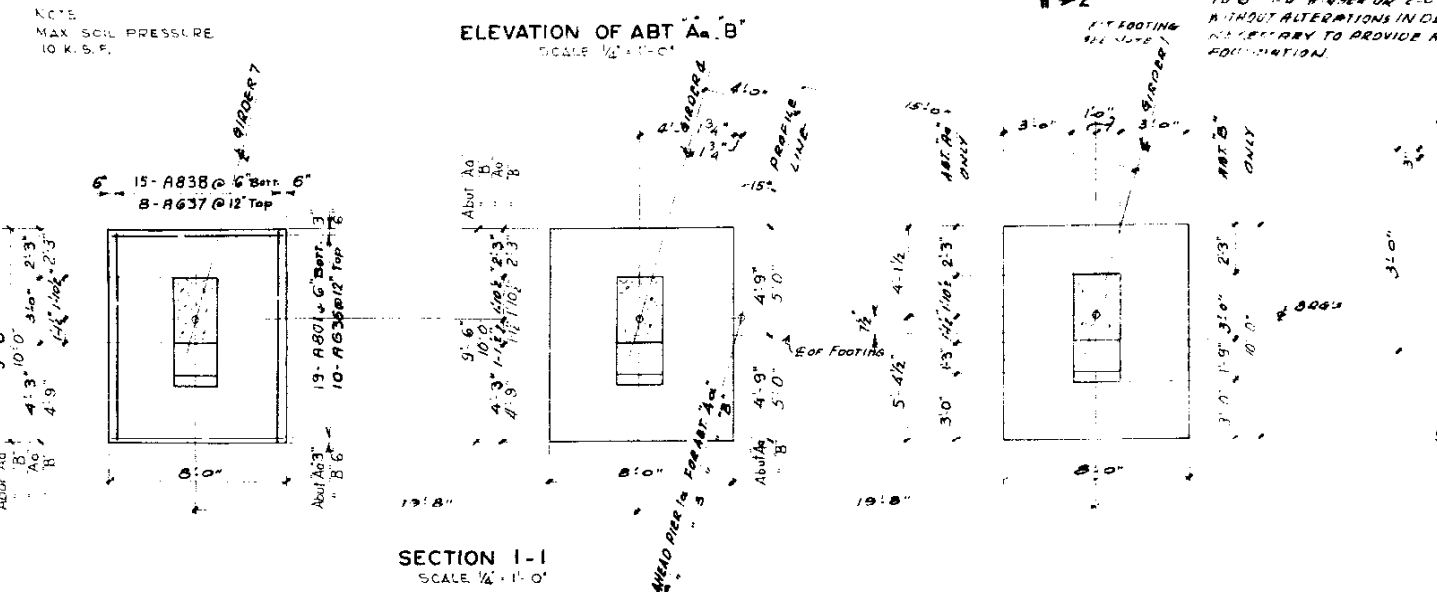
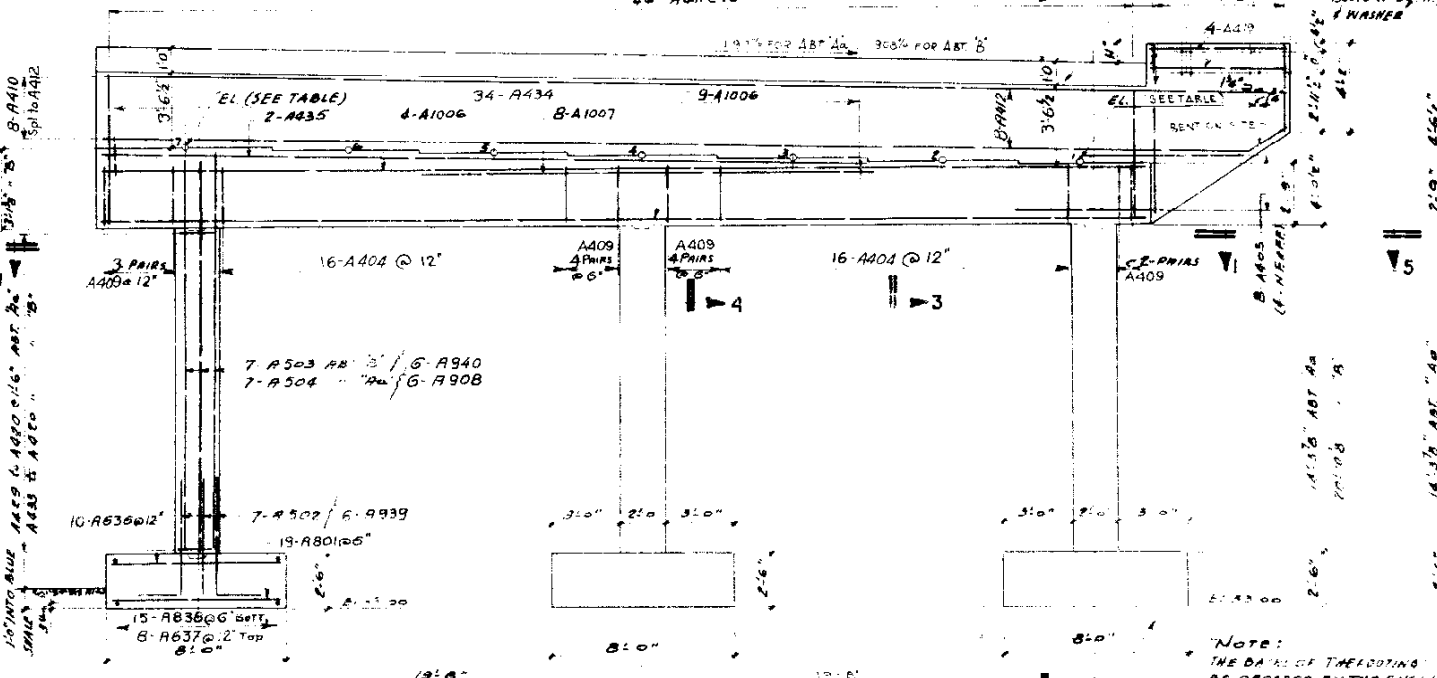
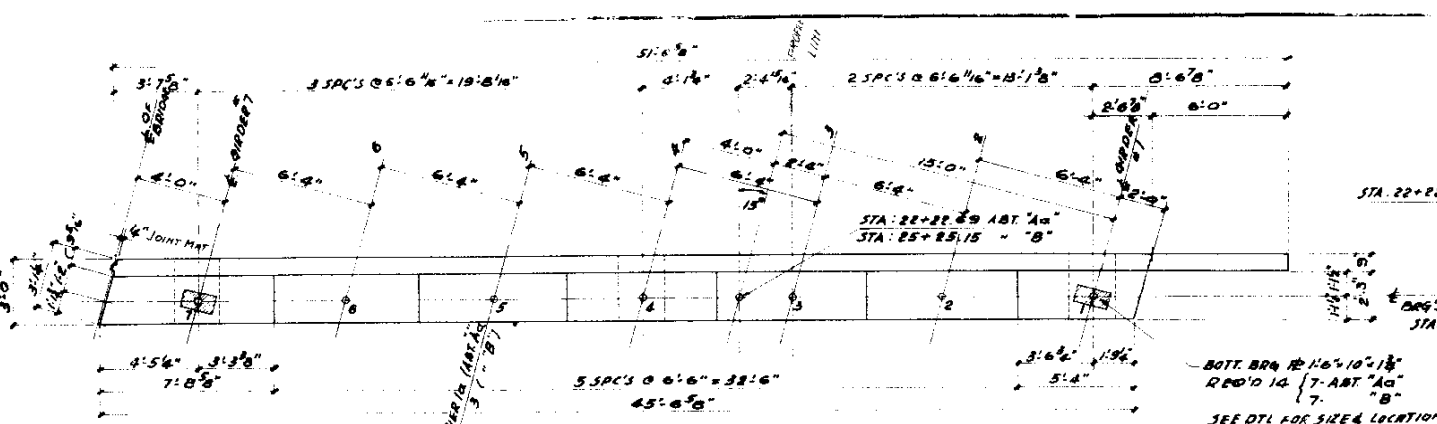
ABUTMENTS ELEVATIONS (BOTT OF GROUT)

POINT	1	2	3	4	5	6	7
A	53.05	53.11	53.17	53.23	53.29	53.35	53.41
B	52.09	52.15	52.21	52.27	52.33	52.39	52.45
Aa	52.57	52.70	52.83	52.96	53.09	53.22	53.35
Ba	52.61	52.74	52.87	53.00	53.13	53.26	53.39

① For revised elev. of Abut see sheet NP 760.

BAR SUMMARY ABTS 'Aa' AND 'B'

ITEM	QUANTITIES	TOTAL	UNIT
REINFORCEMENT	9555	19200	lbs
COMMON EXCAVATION (STR)	115	193	cu yd
ROCK	12	12	"
CLASS 'A' FOOTINGS	210	210	420 "
COLUMNS	14	18.0	294 "
CONCRETE BEAMA BACK WALL	220	210	430 "
STRUCTURAL BACKFILL CLAS	520	1040	2560 "
MECH TAMPING	130	240	370 #10
1/4" BRG B. FIX 1/6" x 10" x 1/4"	625	625	1,250 lbs
1/4" BASE B. 2 1/2" x 1 1/2" x 1/4"	335	335	670 "
3/8" x 3/8" SMOOVED ANK B 1/2" x 1/2"	72	72	144 "
6" B x 1/2" BOLTS, ATINGS FOR HR. 28	28	28	56 "
4" x 2" TIMBER FILLER	455	455	91 LBS
60" x 1/2" B BOLTS	400	400	80 lbs



FOR GENERAL NOTES, SEE SHEET No. 1.

COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY

CIMARRON INTERCHANGE
 FOUNTAIN CREEK
 STRUCTURE I-17-D1
 ABUTMENT 'Aa, B'

L. B. BROWN & ASSOCIATE
 CONSULTING ENGINEER

DESIGNED BY: DATE: 1-5-57 SHEET No. 2
 DRAWN BY: DATE: 1-5-57 NO. OF SHEETS: 6

BAR LIST FOR ABT 'A', 'Ba'

MARK	TYPE	X	LENGTH	NO	SIZE
A801	STR	-	7'-6"	114	#8
A502	BENT	-	7'-0"	42	#5
A503	STR	-	23'-0"	21	#5
A504	STR	-	17'-5"	21	#5
A1005	STR	-	45'-0"	26	#10
A906	STR	-	23'-0"	18	#9
A1007	STR	-	11'-0"	8	#10
A1008	STR	-	19'-0"	16	#10
A409	STR	-	6'-0"	16	#4
A410	STR	-	7'-8"	8	#8
A411	BENT	-	10'-9"	32	#4
A412	STR	-	23'-9"	16	#8
A413	STR	-	38'-7"	8	#8
A414	BENT	-	5'-0"	60	#8
A415	STR	-	33'-6"	4	#8
A416	BENT	-	0'-5"	26	#8
A417	STR	-	7'-0"	14	#2
A418	STR	-	6'-4"	13	#2
A419	STR	-	5'-0"	11	#2
A420	STR	-	5'-0"	10	#2
A421	STR	-	4'-4"	9	#2
A422	BENT	-	3'-8"	7	#2
A423	STR	-	5'-6"	8	#2
A424	BENT	-	2'-6"	8	#2
A425	STR	-	2'-7	8	#2
A426	STR	-	2'-9	8	#2
A427	STR	-	2'-10	8	#2
A428	STR	-	3'-0"	9	#2
A429	STR	-	3'-1	9	#2
A430	STR	-	3'-3	9	#2
A431	STR	-	3'-4	9	#2
A432	STR	-	3'-6	10	#2
A433	STR	-	3'-7	10	#2
A434	STR	-	3'-9	10	#2
A435	STR	-	3'-10	10	#2
A436	STR	-	4'-0	11	#2
A437	STR	-	4'-1/2	11	#2
A438	BENT	-	4'-3	11	#2
A439	STR	-	3'-0	30	#8
A440	STR	-	3'-0	48	#8
A441	STR	-	3'-0	80	#8
A442	BENT	-	7'-0	36	#9
A443	STR	-	17'-5	18	#9
A444	BENT	-	10'-8	32	#4

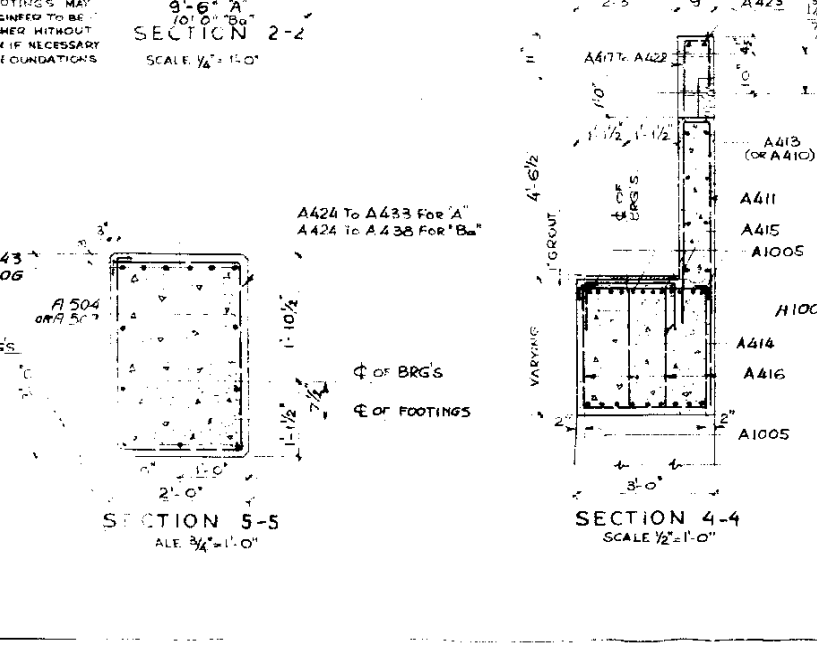
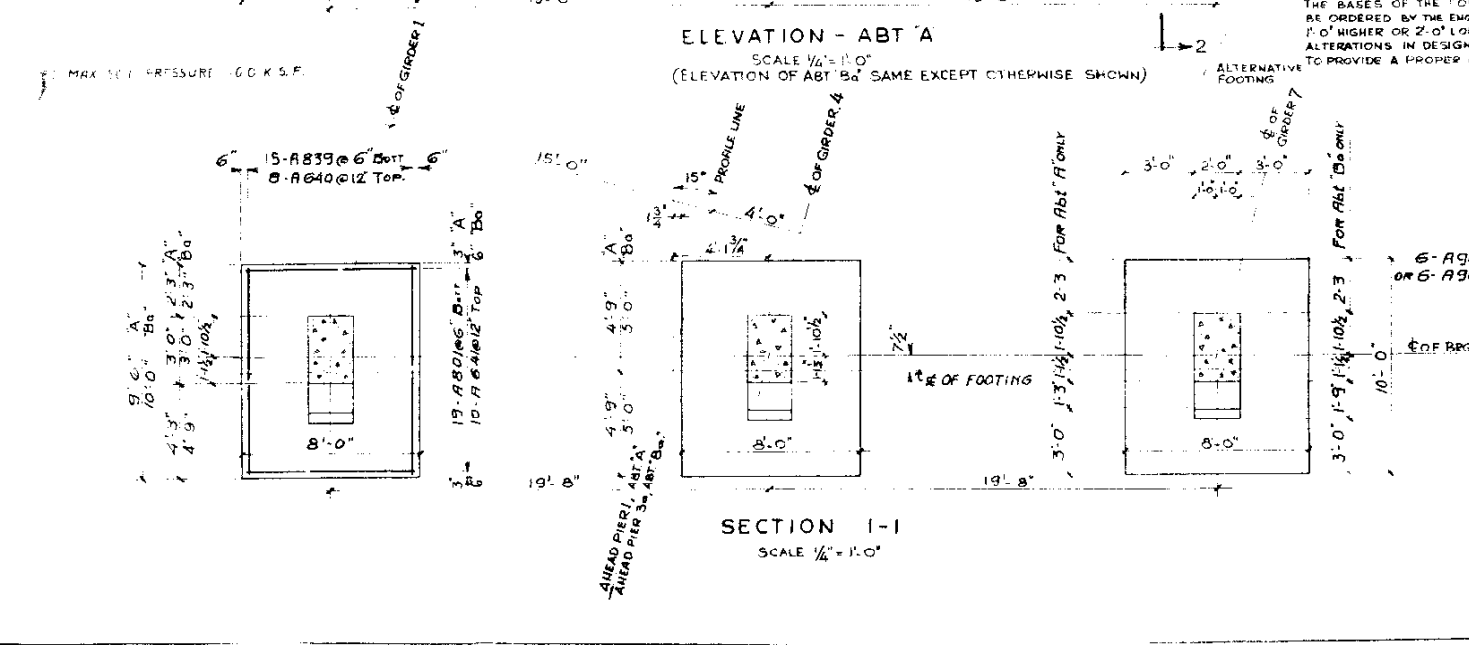
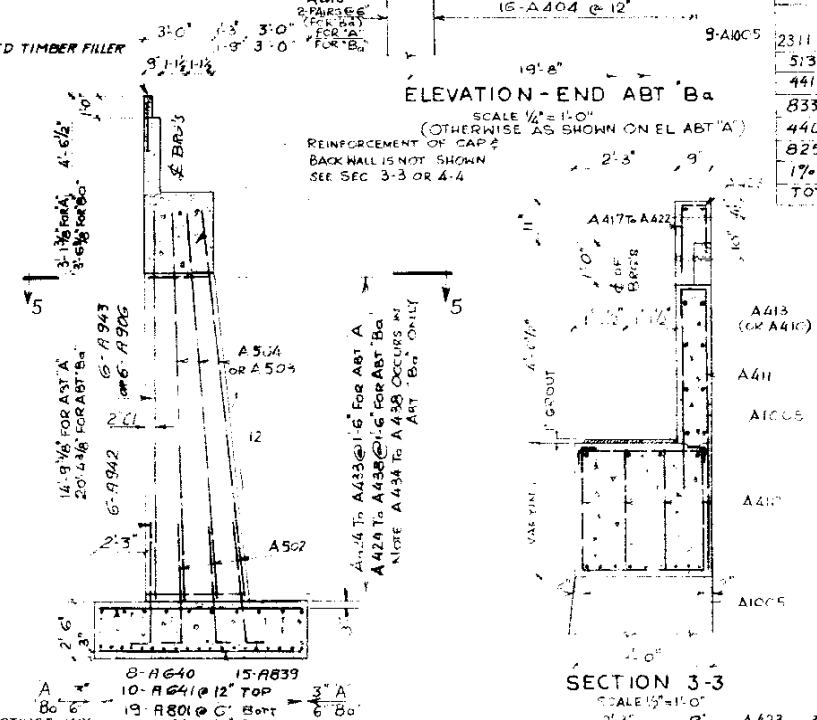
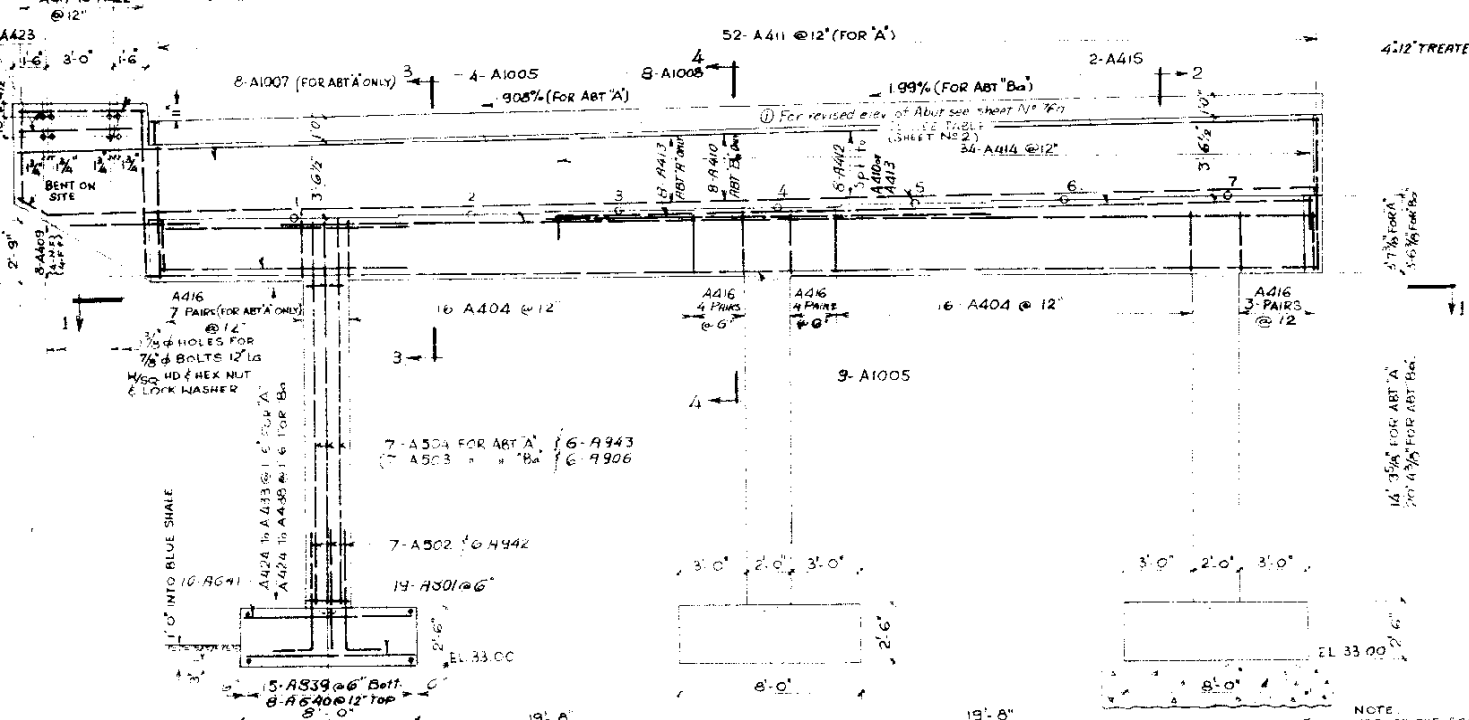
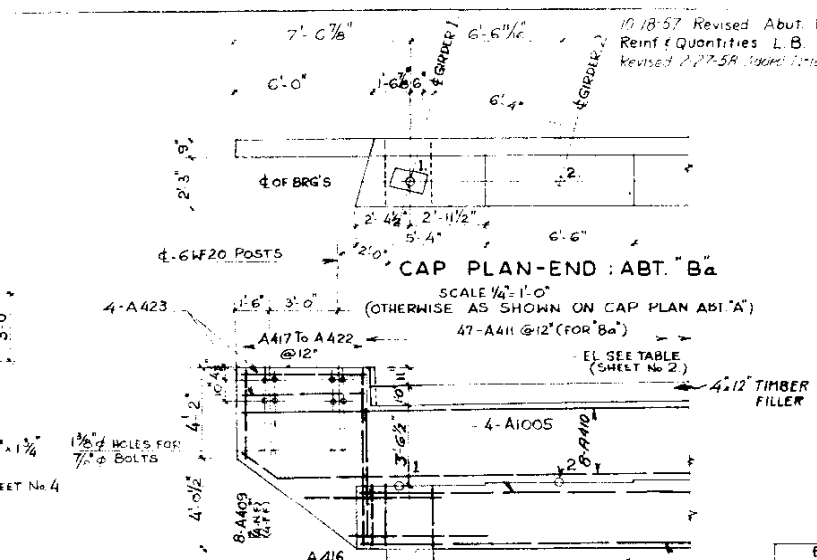
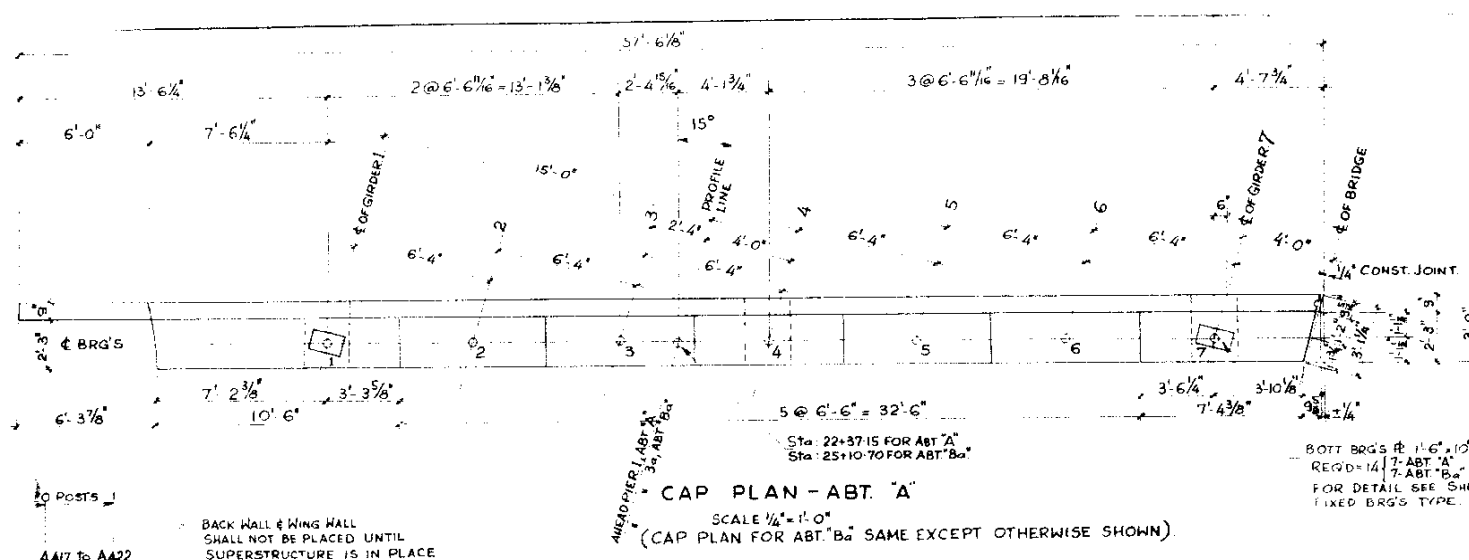
BAR SUMMARY ABT 'A' AND 'Ba'

ITEM	ABT 'A'	ABT 'Ba'	TOTAL
2311 (11) 2292 (Ba) Lin Ft	4000	1544	5544
513 - 630	1192	657	1849
441 - 441	1324	662	1986
833 - 833	4448	2224	6672
440 - 540	3332	1836	5168
825 - 737	3722	3172	6894
17% OVERRUN	198	99	297
TOTAL	20290	10180	30470

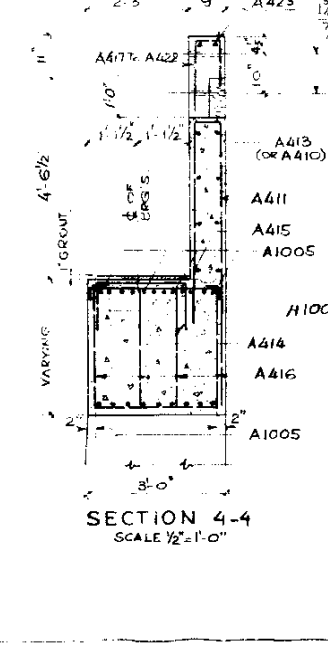
QUANTITIES FOR ABT 'A' AND 'Ba'

ITEM	ABT 'A'	ABT 'Ba'	TOTAL	UNIT
REINFORCEMENT	1010	10180	20290	LBs
COMMON EXCAVATION (STR)	1150	2450	3600	CU Yd
ROCK EXCAVATION (STR)	120	120	240	CU Yd
CLASS 'A' FOOTINGS	210	210	420	"
CONCRETE COLUMNS	11.6	17.6	29.2	"
BEAM & BACK WALL	230	216	446	"
STRUCTURAL BACK FILL CLASS I	890	2080	2970	"
MECK TAMPING	130	300	430	HR
14 BEARING PL FIXED (1'-6" x 10'-1/2")	625	625	1250	LBs
14-BASE PL (2'-2" x 10'-1/2")	335	335	670	"
56-3/4" SWELDED ANCHOR BOLTS (1/2" Dia)	72	72	144	"
16-7/8" 12" BOLTS (AT WINGS)	28	28	56	"
4'-1/2" TIMBER FILLER	515	455	970	Lin Ft
65-5/8" 18" BOLTS	470	400	870	Ins

NOTE: FOR LOCATION OF ABT 'A' & 'Ba' SEE SHEET No. 2
 FOR GENERAL NOTES, SEE SHEET No. 1
COLORADO DEPARTMENT OF HIGHWAY
COLORADO SPRINGS FREEWAY
CIMARRON INTERCHANGE
FOUNTAIN CREEK
STRUCTURE 1-17-D1
ABUTMENT 'A', 'Ba'
 L. BODURFF & ASSOCIATE
 CONSULTING ENGINEER
 DESIGNED BY: SCALE AS NOTED SHEET No. 3
 DRAWN BY: DATE 4-5-57 CHECKED BY: S.E.E.
 CHECKED BY: M.H.



SECTION 3-3



BAR LIST FOR 6 PIERS

MARK	TYPE	LENGTH	REQD.	SIZE
D601	STR	5'-6"	432	#6
P402		13'-6"	408	#4
P403		13'-0"	288	#4
P404		18'-3"	150	#8
P405	CHT	9'-6"	190	#2
D606		6'-4"	78	#4
D607		10'-5"	144	#8
P408	STR	20'-6"	72	#8
P409	BENT	3'-9"	276	#4
D610	STR	22'-6"	42	#8
P411	BENT	14'-3"	342	#4
P412		6'-9"	186	#4
P413	STR	31'-0"	12	#4

PIER ELEVATIONS (TOP OF CONCRETE)

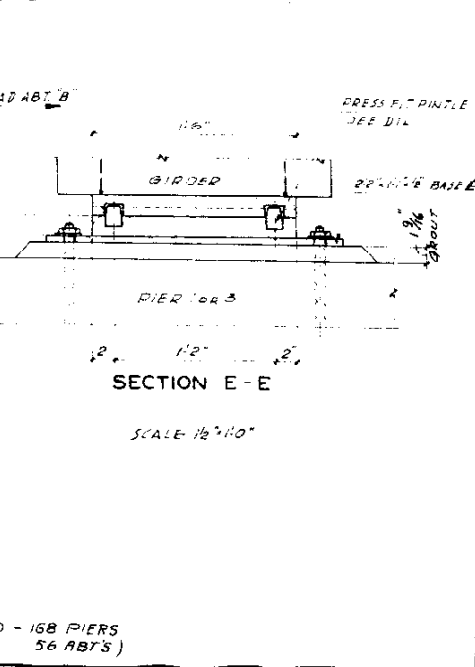
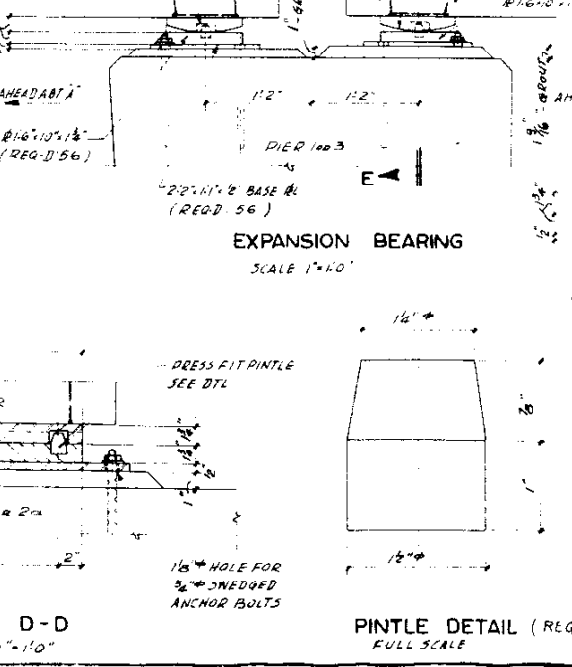
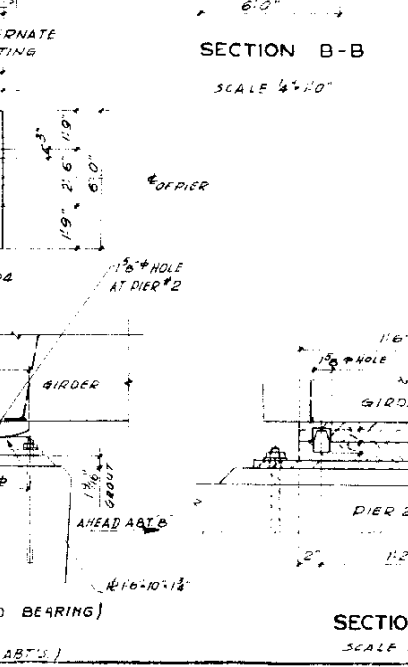
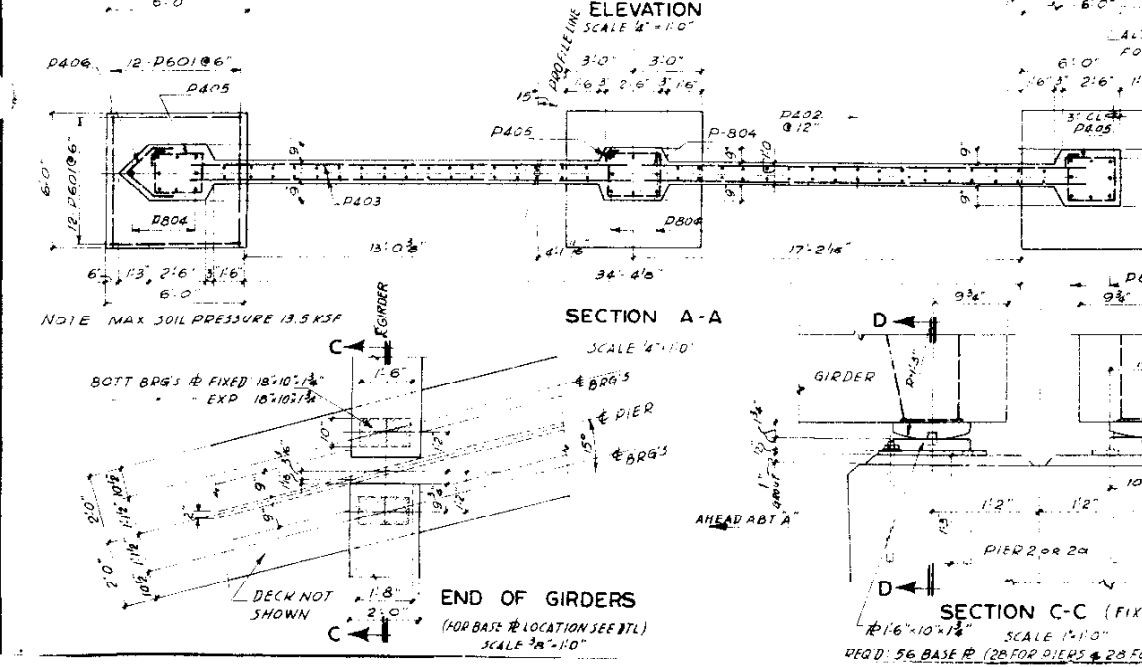
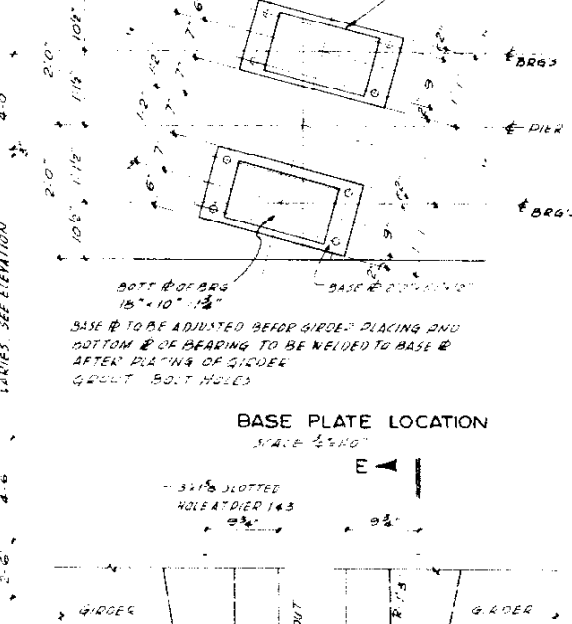
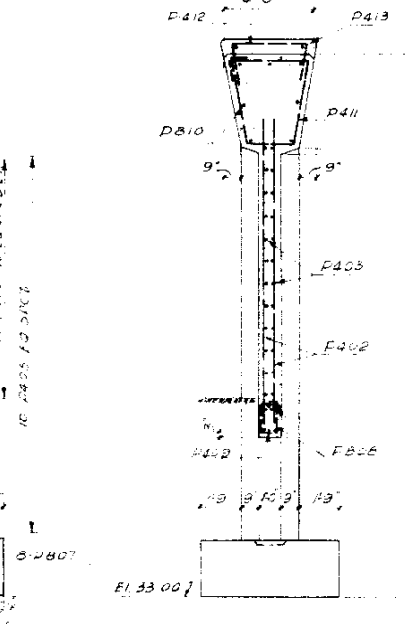
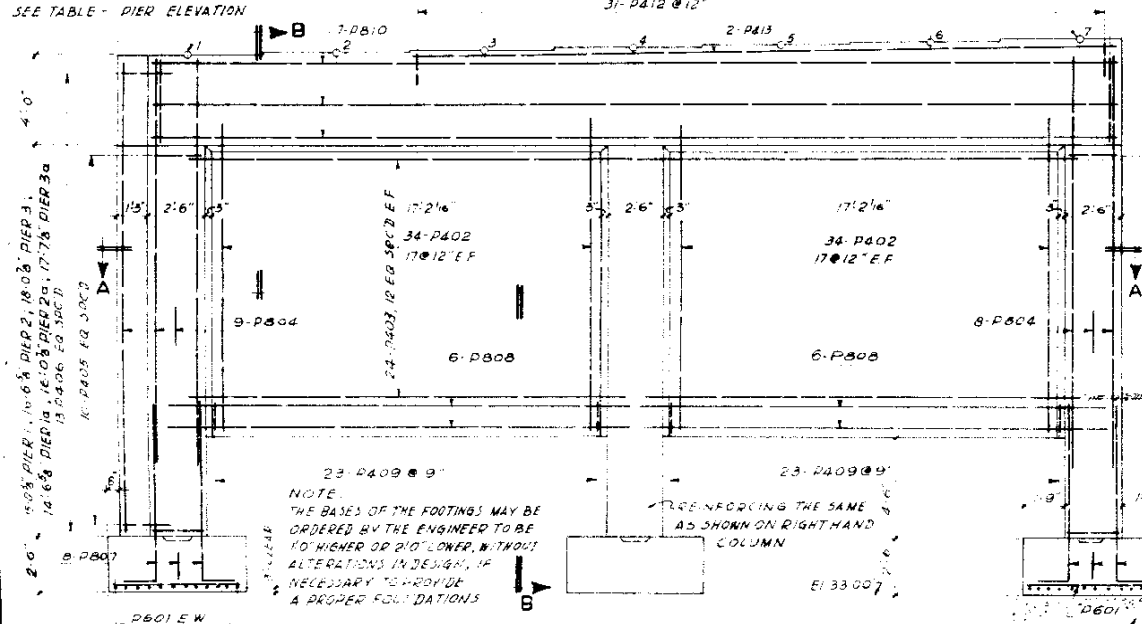
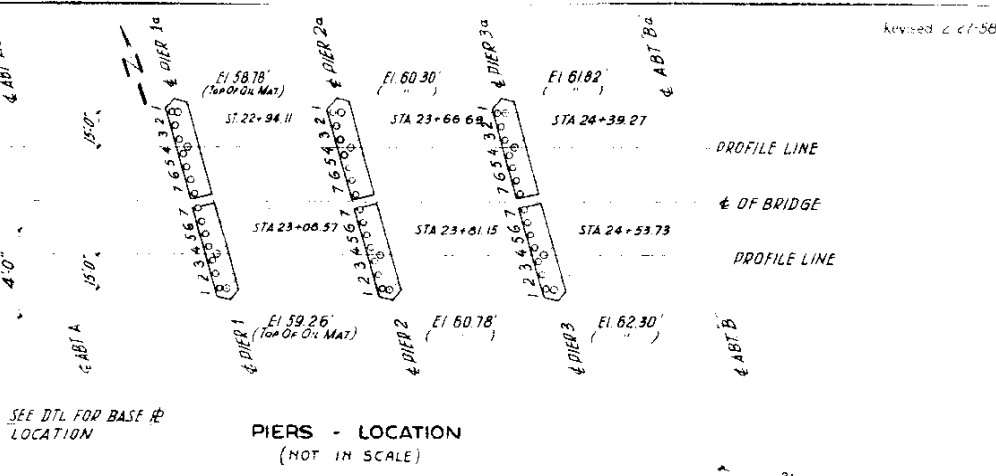
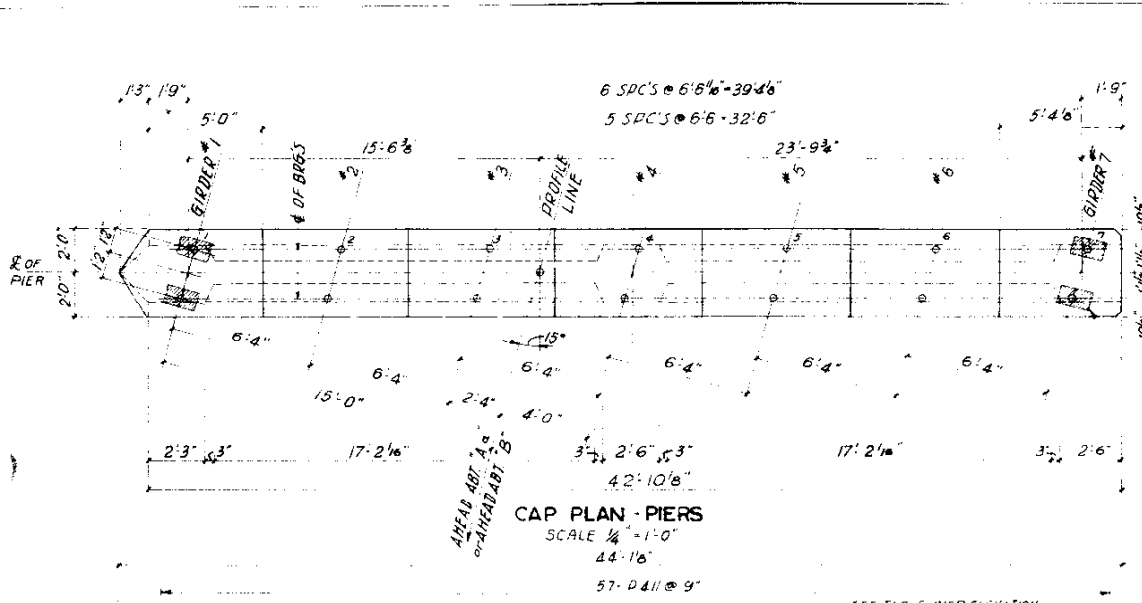
PIER POINT	1	2	3	4	5	6	7
1	54.53	54.59	54.65	54.71	54.77	54.83	54.89
2	56.05	56.11	56.17	56.23	56.29	56.35	56.41
3	57.57	57.63	57.69	57.75	57.81	57.87	57.93
1a	54.05	54.18	54.31	54.44	54.57	54.70	54.83
2a	55.57	55.70	55.83	55.96	56.09	56.22	56.35
3a	57.23	57.32	57.35	57.48	57.61	57.74	57.87

BAR SUMMARY FOR 6 PIERS

26,125 LIN. FT. #4 & #6	13,840 LIN.
2376 #8	201,502 #3
7,499 #8	20,261 #20
17,000 #8	370 #1
TOTAL 6 PIERS	37,800
	6,300

QUANTITIES FOR 6 PIERS

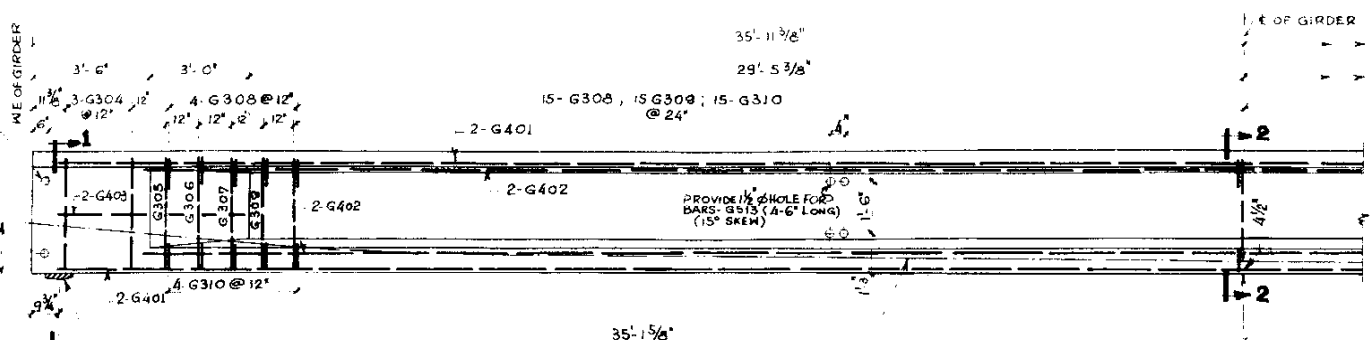
ITEM	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	TOTAL	UNIT
REINFORCING BARS	285	400	410	420	430	440	2,385	LB
COMMON EXCAVATION	150	150	150	150	150	150	900	CU YD
ROCK	5	5	5	5	5	5	30	CU YD
GLASS FOOTINGS	10	10	10	10	10	10	60	CU YD
CON. BEAM	27.5	27.5	27.5	27.5	27.5	27.5	165	CU YD
STRUCTURAL BALANCE	32.5	32.5	32.5	32.5	32.5	32.5	195	CU YD
MECH. TAMPING	5	5	5	5	5	5	30	HR
28 BENT	1850	1850	1850	1850	1850	1850	11,100	LB
28-BASE	670	670	670	670	670	670	4,020	LB
56-BEG	89.2	89.2	89.2	89.2	89.2	89.2	535.2	LB
330-2" PINTLES	143	143	143	143	143	143	858	PCS



FOR GENERAL NOTES, SEE SHEET NO. 1
 COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY
 CIMARRON INTERCHANGE
 FOUNTAIN CREEK
 STRUCTURE I-17-DI
 PIERS
 L. HODUROFF & ASSOCIATE
 CONSULTING ENGINEER
 DESIGNED: J.N. SCALE: AS NOTED SHEET NO. 4
 DRAWN: N.M.D. DATE: 4-5-57 N. OF SHEETS 6
 CHECKED: N.N.

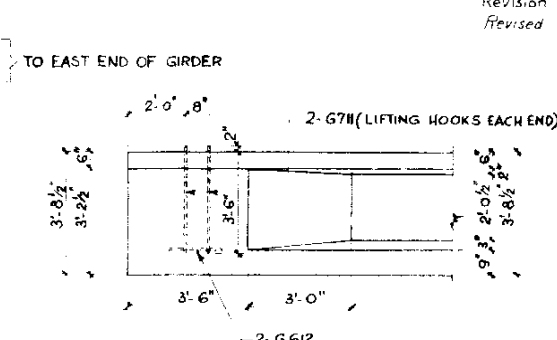
Revision 10-18-57 Prestressing Forces L.B.
 Revised 2-27-58 Added Note @ F.C.

FED ROAD Div. No.	DISTRICT	PROJECT No.	SHEET No.
9	COLO	1 092-2(5)	46



**INTERIOR AND EXTERIOR GIRDERS
ELEVATION**
SCALE 3/8"=1'-0"

C.G. OF TENDONS (PARABOLIC CURVE)
 FINAL PRESTRESSING FORCE $P_2 = 596$ KIPS
 MAX INITIAL $P_1 = 732$ "
 $f_c = 4300$ psi at time of tensioning



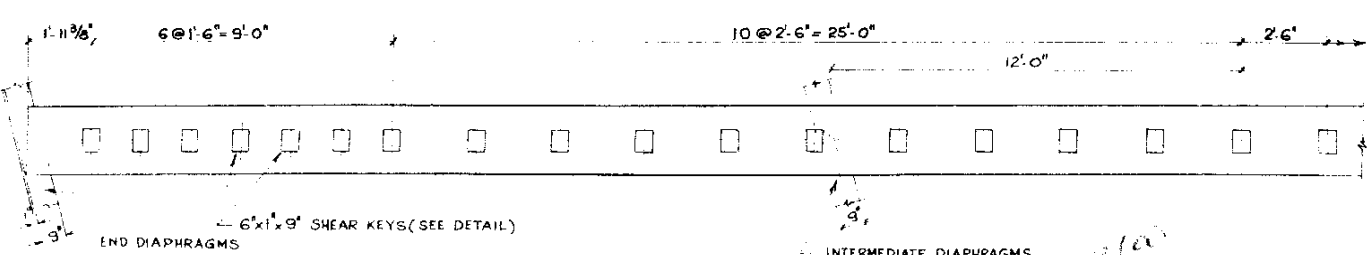
DETAIL-END OF GIRDER-ELEVATION
SCALE 3/8"=1'-0"

BAR LIST FOR PRESTRESSED GIRDERS (ALL DIMENSIONS CUT TO CUT)

MARK	TYPE	LENGTH	No. REQ'D	SIZE
G401	STR.	73'-9"	224	#4
G402	"	68'-0"	224	#4
G403	BENT	7'-0"	224	#4
G304	"	10'-1"	336	#3
G305	"	10'-1"	112	#3
G306	"	9'-8"	112	#3
G307	"	9'-3"	112	#3
G308	"	4'-6"	2072	#3
G309	"	7'-0"	1624	#3
G310	"	4'-3"	2072	#3
G711	"	8'-6"	224	#7
G612	STR.	2'-0"	224	#6
G513	"	4'-6"	672	#5

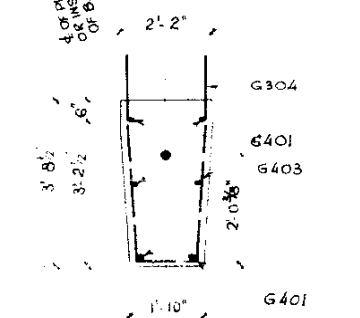
BAR SUMMARY FOR 56 GIRDERS

36,136 LIN FT #3 @ 376" LIN FT	= 13,587 LBS
33,320 " #4 @ 668 "	= 22,258 "
3,024 " #5 @ 1,043 "	= 3,154 "
448 " #6 @ 1,502 "	= 673 "
1,904 " #7 @ 2,044 "	= 3,892 "
1% OVERRUN	= 436 "
TOTAL	= 44,000 "

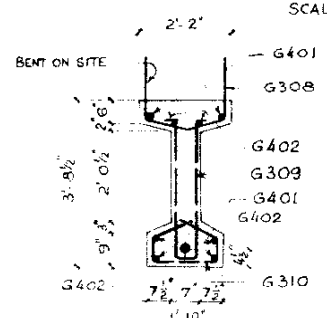


**INTERIOR AND EXTERIOR GIRDERS
PLAN**
SCALE 3/8"=1'-0"

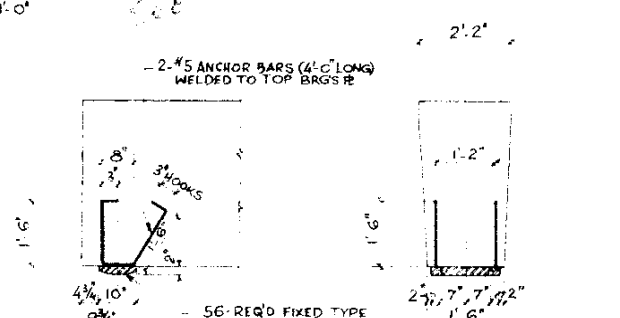
NOTE: FOR DETAIL OF STD GIRDER SEE SHEET No. 63a.



SECTION 1-1
SCALE 1/2"=1'-0"



SECTION 2-2
SCALE 1/2"=1'-0"



ELEVATION END OF GIRDER
SCALE 1/2"=1'-0"

SIDE ELEVATION
SCALE 1/2"=1'-0"

LOCATION OF TOP BEARING PLATES	GIRDER SPAN								TOTAL
	1	2	3	4	5	6	7	8	
No. REQ'D FIXED	14	14	14	14	14	14	14	14	56
No. REQ'D-EXP.	14	14	-	-	14	14	-	-	56

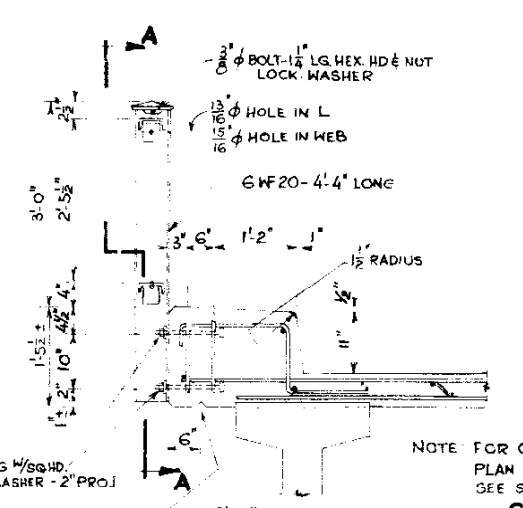
W.E. DENOTES WEST END OF GIRDER
 E.E. " EAST END "

QUANTITIES FOR 56 GIRDERS

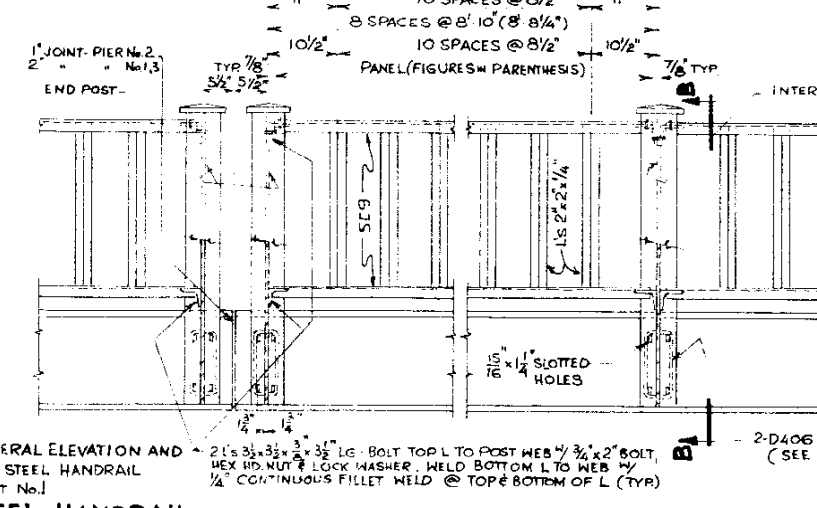
ITEM	QUANTITIES	UNIT
CONCRETE CLASS "P"	690	CU YD
REINFORCING STEEL + 1% OVERRUN	44,000	LBS
56 TOP BEARING #4 FIXED	5026	"
56 " " " " EXP.	5026	"
3" ANCHOR BARS	467	"

- NOTES
- CONCRETE FOR THE PRECAST GIRDERS TO BE 5,000 PSI CYLINDER STRENGTH AT 28 DAYS. $f_c = 4300$ PSI AT TIME OF TENSION
 - HIGH TENSILE STEEL FOR PRESTRESSING UNITS TO HAVE MIN ULTIMATE STRENGTH OF 220,000 PSI AND MIN. ELONGATION AT BREAKING POINT OF 4% ON 10" LONG TESTING WIRE
 - THE WATER-CEMENT RATIO OF THE CONCRETE FOR GIRDERS TO BE MAX. 0.5 AND SLUMP NOT MORE THAN 3"
 - ALL EXPOSED SURFACES OF BEARING PLATES, ALUMINUM SPRAYED

NOTE:
 DETAILS FOR EXTERIOR GIRDERS AND INTERIOR GIRDERS ARE ALIKE EXCEPT FOR SPECIAL TREATMENT REQUIRED ON THE OUTSIDE FACE OF EXTERIOR GIRDERS HOLES FOR G513 BARS SHOULD BE GROUTED AFTER PLACING OF BARS



SECTION B-B
SCALE 3/4"=1'-0"



SECTION A-A
SCALE 3/4"=1'-0"

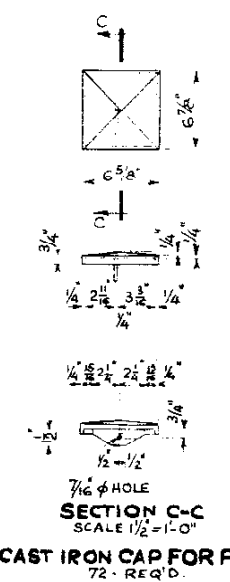
NOTE: FOR GENERAL ELEVATION AND PLAN OF STEEL HANDRAIL SEE SHEET No. 1

2" x 3/4" x 3/4" LG. BOLT TOP L TO POST WEB w/ 3/4" x 2" BOLT, HEX HD. NUT & LOCK WASHER. WELD BOTTOM L TO WEB w/ 1/2" CONTINUOUS FILLET WELD @ TOP & BOTTOM OF L (TYR)

2-D406 STIRRUPS EACH BOLT SET (SEE SHEET No. 6)

QUANTITIES FOR STEEL RAILING

ITEM	QUANTITIES	UNIT
30-6WF20 PILES, 3'-4" LONG	6950	LBS
64-5C9, 8'-9 3/4" LONG	5075	"
48-5C9, 8'-9 3/4" LONG	3775	"
16-5C9, 8'-8 1/4" LONG	1252	"
716-L2 x 2 x 1/4", 2'-5" LONG	5710	"
272-L 3/2 x 3/2 x 3/8, 3/2" LONG	674	"
30-CAST IRON CAPS	422	"
8-5C9, 2'-10 1/2"	206	"
PLUS 1/2% PAINT	120	"
TOTAL	23984	"



SECTION C-C
SCALE 1/2"=1'-0"

CAST IRON CAP FOR POST
72" REQ'D.

FOR GENERAL NOTES, SEE SHEET No. 1

COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY

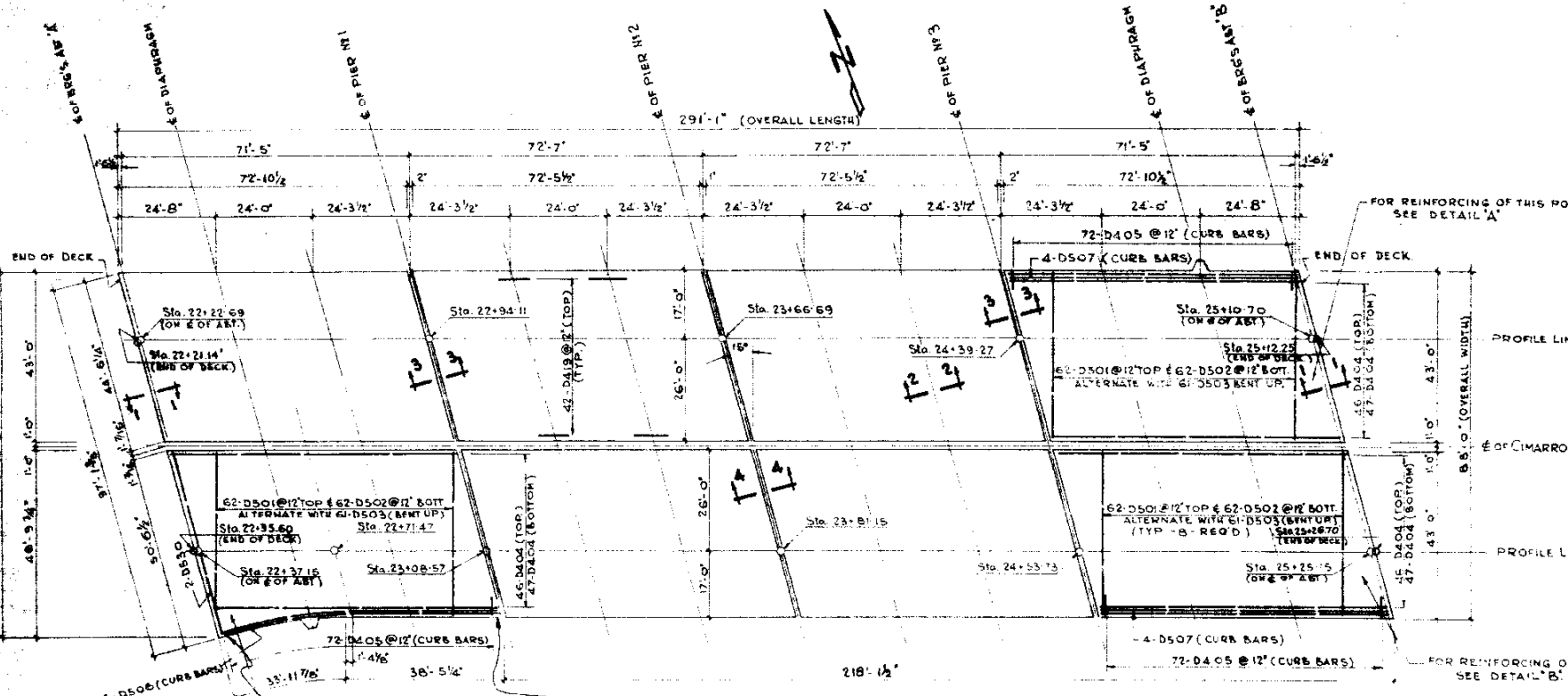
CIMARRON INTERCHANGE
 FOUNTAIN CREEK
 STRUCTURE 1-17-DI
GIRDERS AND HANDRAIL.

L. BODUROFF & ASSOCIATE
 CONSULTING ENGINEER

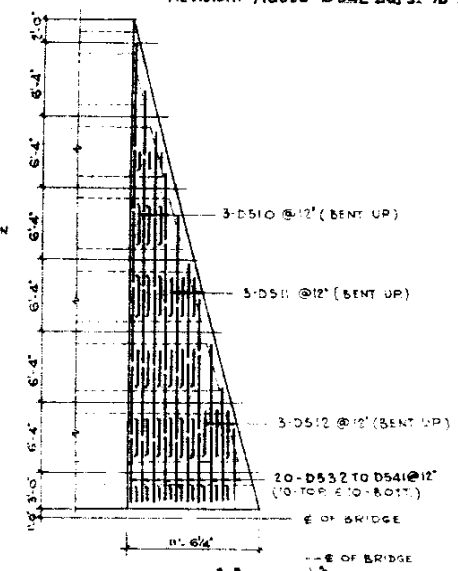
DESIGNED: J.N.	SCALE AS NOTED	SHEET No. 5
DRAWN: J.N.	DATE: 4-5-57	No. OF SHEETS: 6
CHECKED: N.W.		

Revision: Added D542 bars. 10-18-57 L.B.

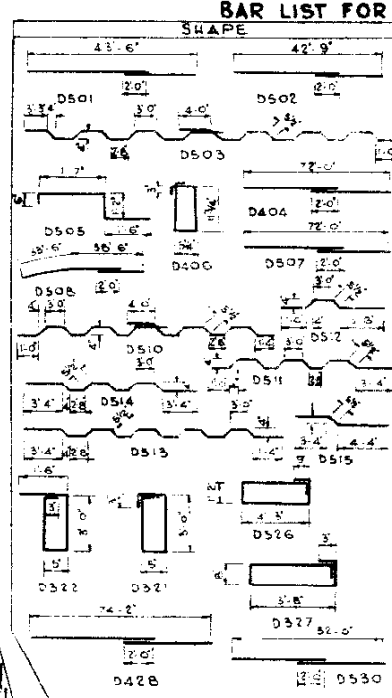
FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.
9	COLO.	1092-2(5)	47



PLAN OF DECK SCALE 1/8" = 1'-0"



DETAIL 'A' SCALE 1/2" = 1'-0" (6-REED)

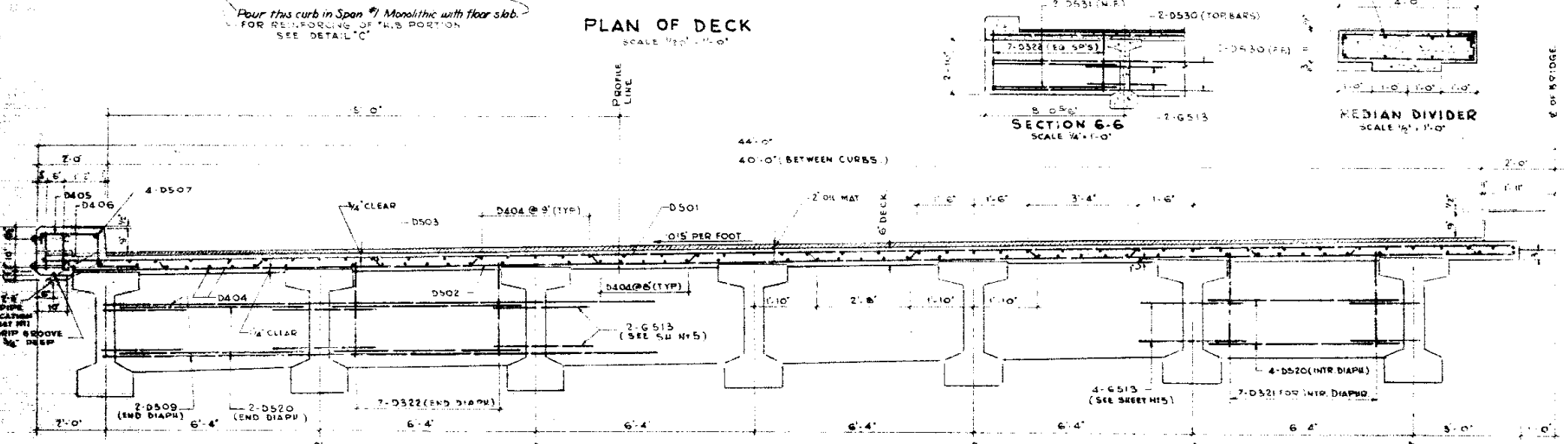


BAR SUMMARY

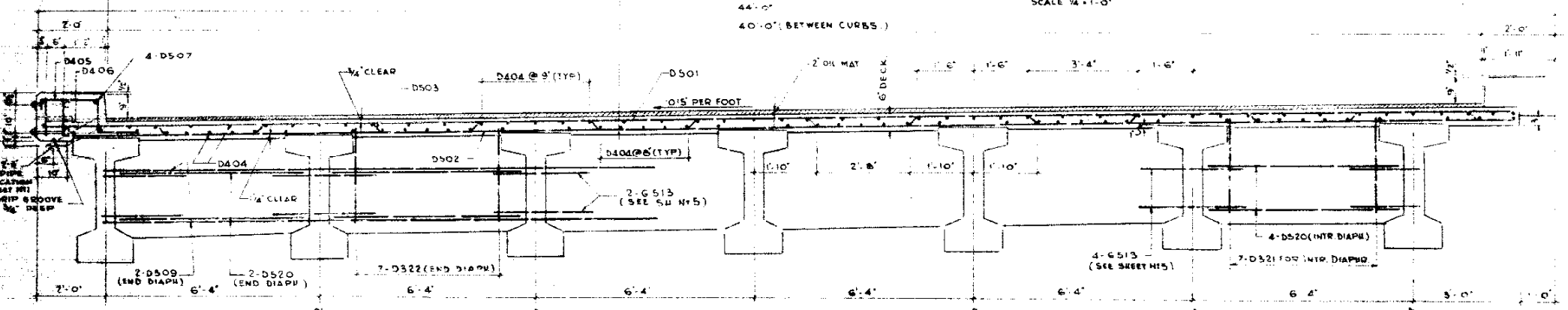
13,443 LBS.	5,050 LBS.
61,422	41,030
92,859	96,852
100	340
1% OVERRUN	1,428
TOTAL	144,700

QUANTITIES FOR DECK

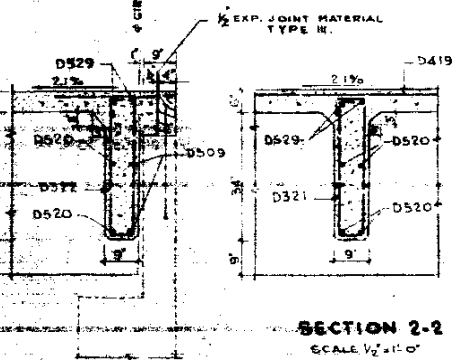
ITEM	QUANTITY	UNIT
CLASS II CONCRETE, INCLUDING CURB	144,700	LBS.
REINFORCING STEEL (NO OVERRUN)	144,700	LBS.
1/2" DIA. BOLTS	772	EA.
1/2" X 4 ANCHOR BOLTS, P.P. LOWE	772	EA.
2" X 6" X 1/2" ANGLE	24	EA.
4" X 6" X 1/2" ANGLE	8	EA.
4" X 8" X 1/2" ANGLE	8	EA.
4" X 10" X 1/2" ANGLE	8	EA.
1/2" X 6" X 2" G-10 (MEDIAN DIVIDER)	192	EA.
1/2" X 6" X 2" G-10	212	EA.
1/2" X 6" X 2" G-10	16	EA.
1/2" X 6" X 2" G-10	160	EA.
2" X 6" X 1/2" ANGLE	772	EA.
SHEET COPPER (30 GA. PER SQ. FT.)	144	SQ. FT.
ELECTRICAL CONDUIT (1/2" DIA.)	200	FT.
200 # 1/2" X 1/4" STAINLESS STEEL	200	EA.
8" X 2" X 1/4" DRAIN PIPE	144	EA.



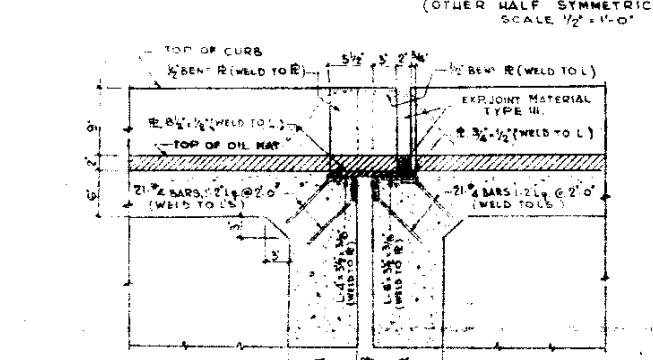
SECTION 6-6 SCALE 1/4" = 1'-0"



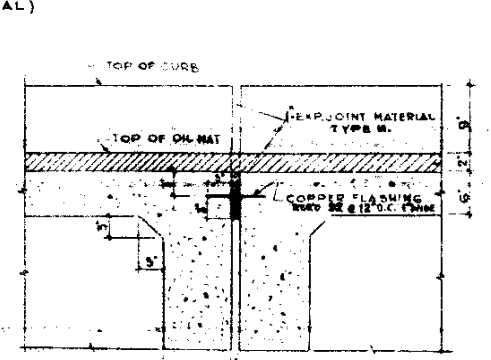
HALF CROSS SECTION (TYP.) (OTHER HALF SYMMETRICAL) SCALE 1/2" = 1'-0"



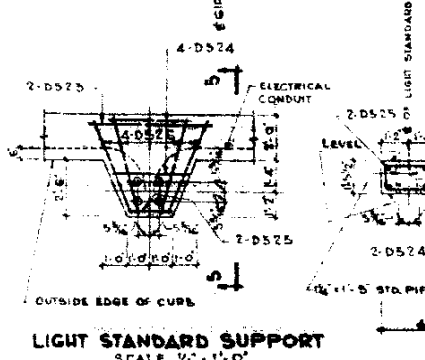
SECTION 2-2 SCALE 1/2" = 1'-0"



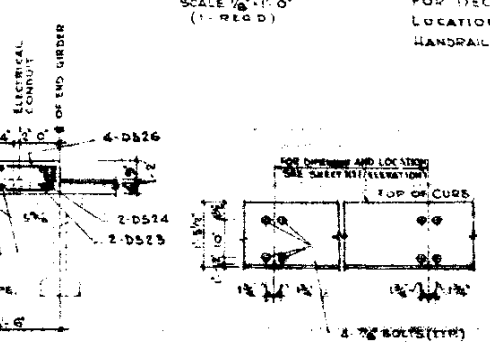
SECTION 3-3 (EXP. JOINT) SCALE 1/2" = 1'-0"



SECTION 4-4 SCALE 1/2" = 1'-0"



LIGHT STANDARD SUPPORT SCALE 1/2" = 1'-0"



SECTION 5-5 SCALE 1/2" = 1'-0"

NOTE: FOR DECK ELEVATIONS & LOCATION OF BOLTS FOR HANDRAIL POSTS, SEE SHEET N1.

FOR GENERAL NOTES, SEE SHEET N1

COLORADO DEPARTMENT OF TRANSPORTATION

COLORADO SPRINGS, CO.

CIMARRON INTERMOUNTAIN FOUNTAIN CROSS STRUCTURE I

DECK PLAN

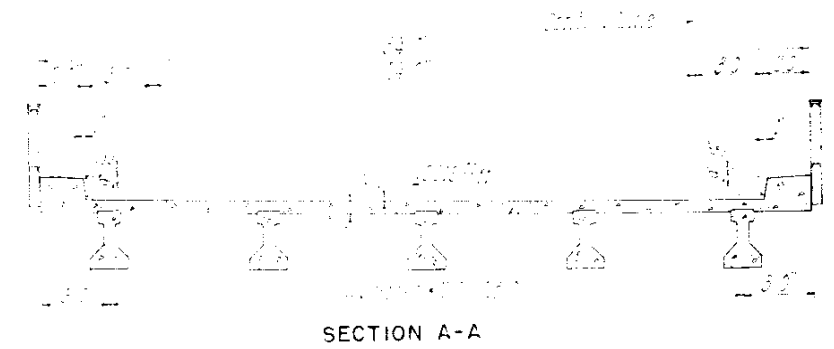
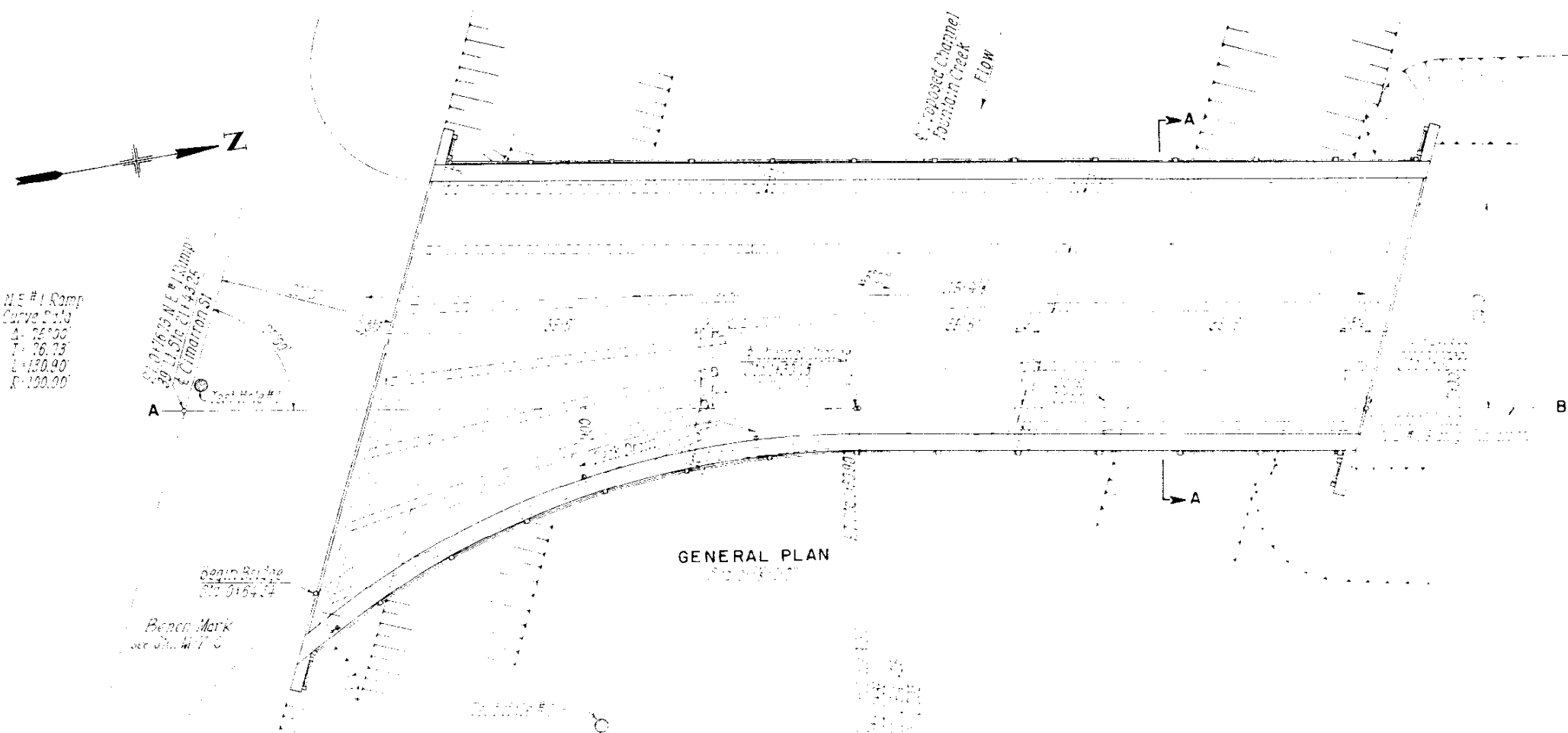
L. BOUDREAU, INC.

CONSTRUCTORS

REVISION: 10-18-57 L.B.

DRAWN: J.L.

CHECKED: M.M.

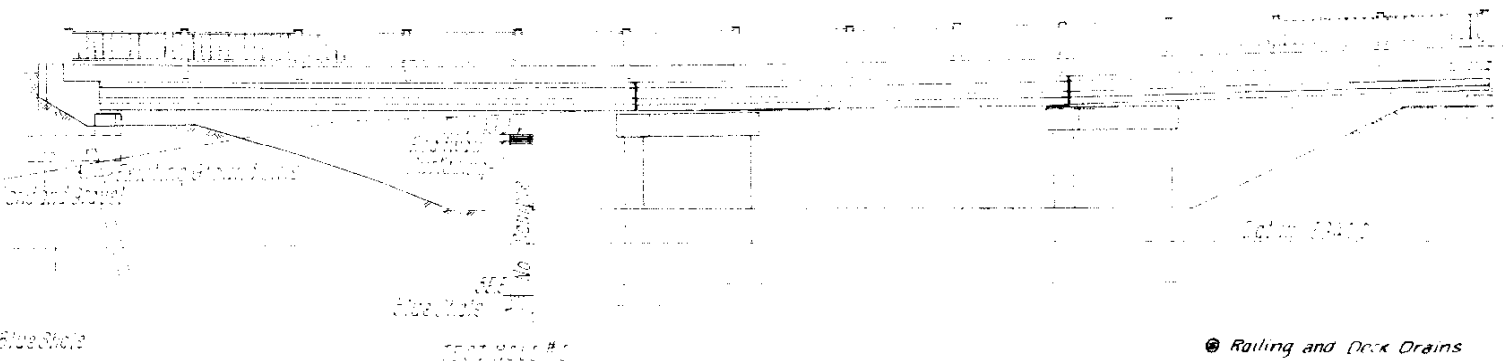


N.E. #1 Ramp
Curve 2+13
Δ = 75°00'
T = 26.23'
L = 130.90'
R = 130.90'

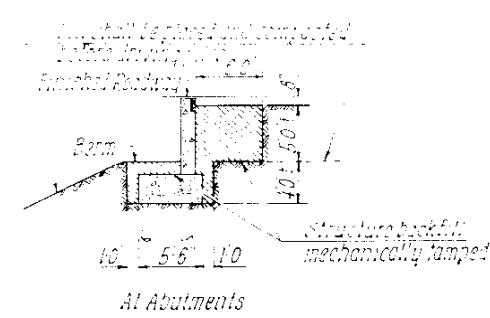
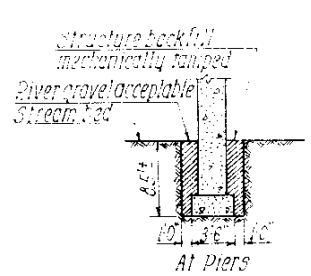
20' 11 1/2" N.E. #1 Ramp
E. Cimarron St.
20' 11 1/2" N.E. #1 Ramp
E. Cimarron St.

GENERAL PLAN

SECTION A-A



ELEVATION



EXCAVATION AND BACKFILL DIAGRAMS

● Rating and Deck Drains

● Groups 4-11 for Paint

GROUP	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
46pb	31' 2" Beam	2	Beam	10.80	21.60
46pb	35' 10" to 36' 6" Beam	4	Beam	10.80	43.20
46pb	37' 4" and 39' 4" Beam	2	Beam	10.80	21.60
46pc	41' 8" and 44' 4" Beam	2	Beam	10.80	21.60
47a	Deck Drains	2	Each	10.80	21.60

* 10% O.P. on wall thickness. Fill with concrete after driving. 10 B.P. 42 may be used as an alternate.

Notes:

1. See General Notes for details of bridge structure.
2. The bridge shall be constructed in accordance with the specifications for steel bridges.
3. The bridge deck shall be finished with a smooth surface.
4. The bridge shall be painted in accordance with the specifications for painting.
5. The bridge shall be equipped with deck drains.
6. The bridge shall be equipped with expansion joints.
7. The bridge shall be equipped with bearings.
8. The bridge shall be equipped with fenders.
9. The bridge shall be equipped with pile caps.
10. The bridge shall be equipped with pile foundations.

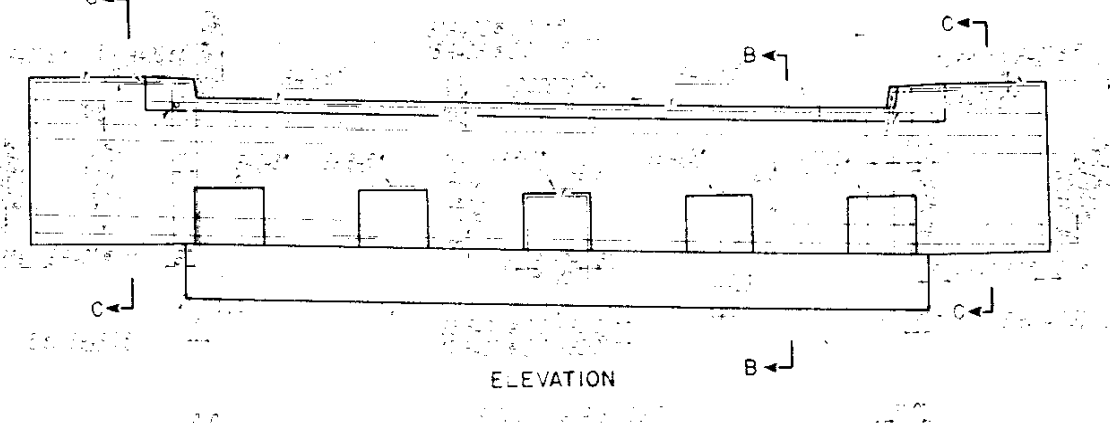
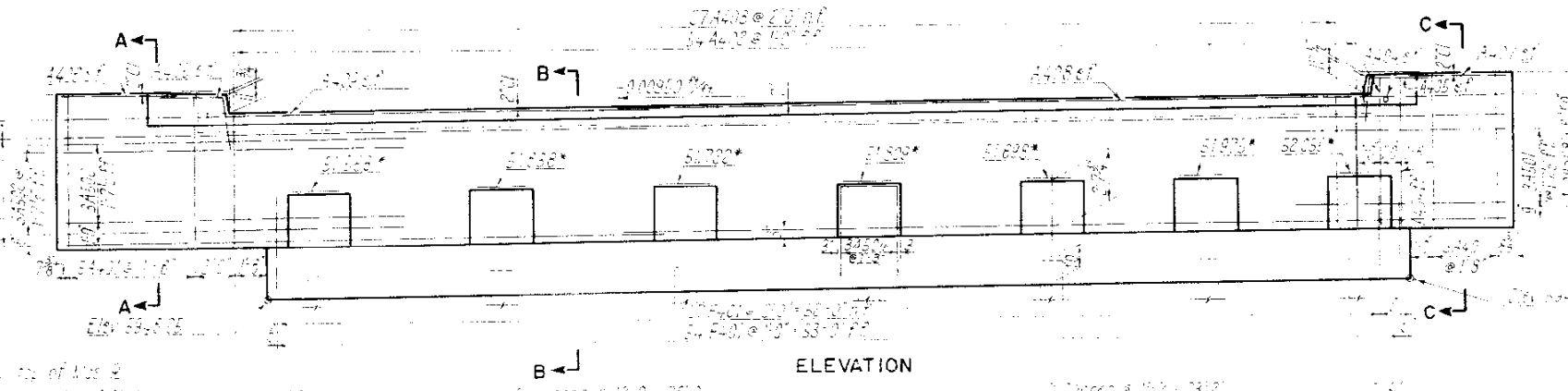
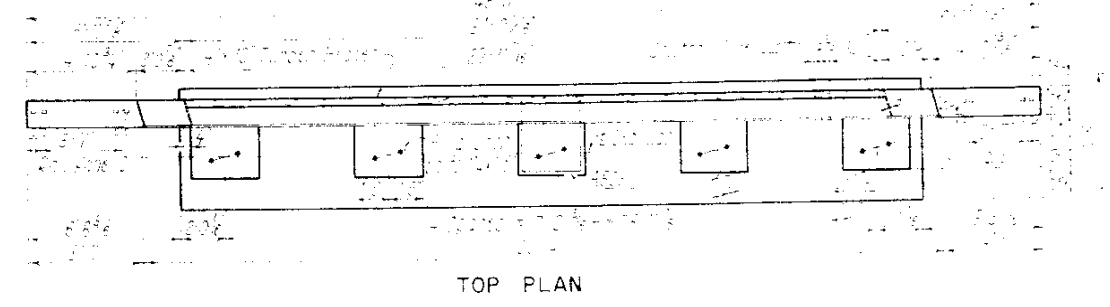
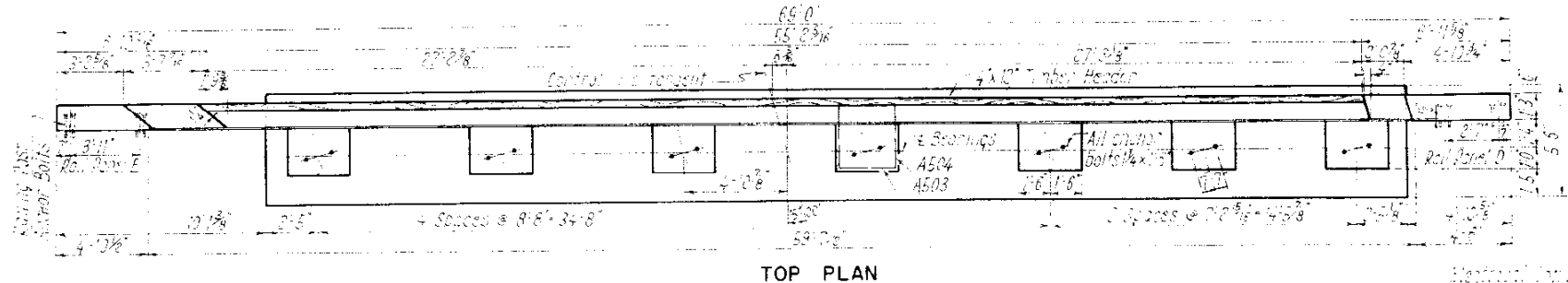
COLORADO DEPARTMENT OF HIGHWAYS
COLORADO SPRINGS FREEWAY

FOUNTAIN CREEK N.E. No. 1 RAMP

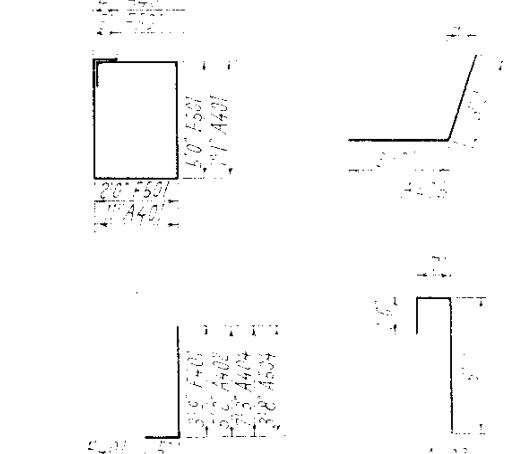
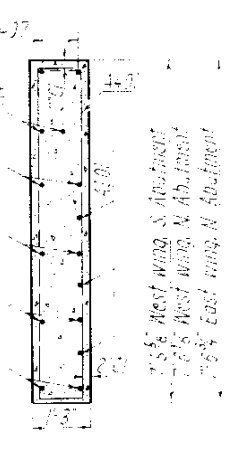
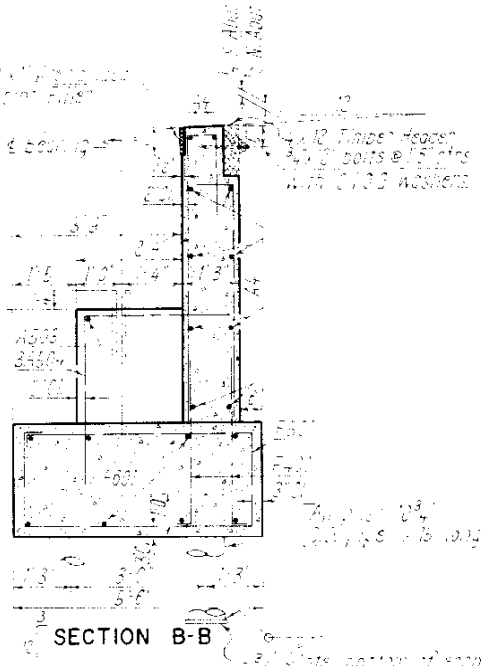
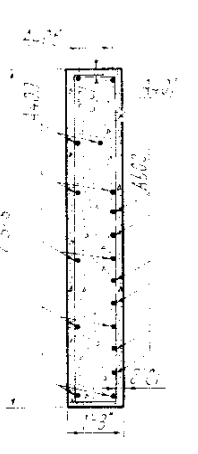
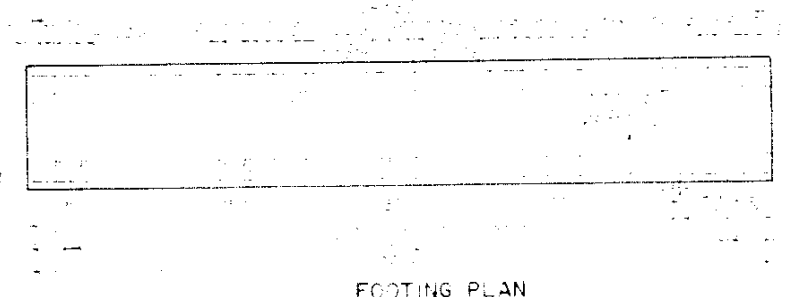
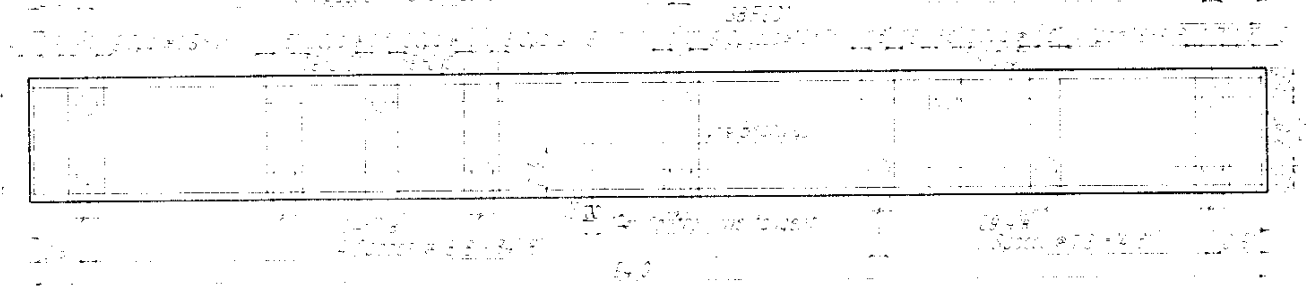
GENERAL PLAN
AND ELEVATION

Leo M. Heller

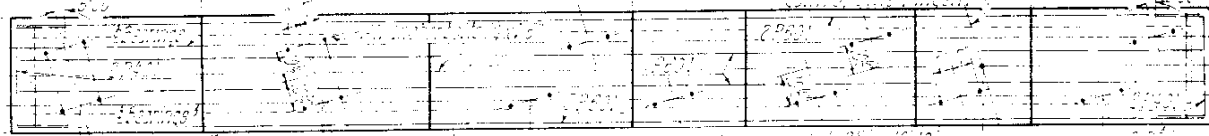
CLIFFORD JOHNSON & ASSOCIATES
CONSULTING ENGINEERS
DENVER, COLORADO



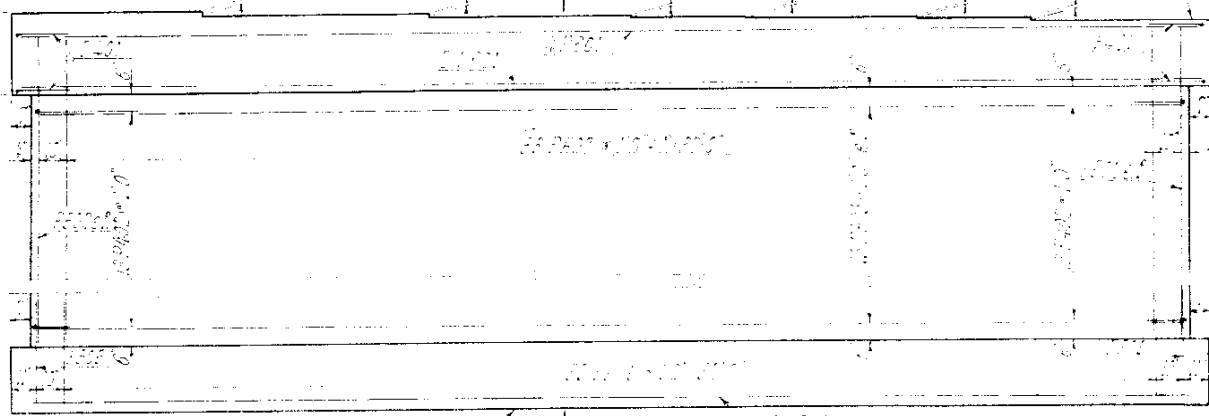
* See also of Use @
 @ For revised elev of Abut see sheet N-76a.



COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY
 FOUNTAIN CREEK N.E. #1 RAMP
 ABUTMENTS
 CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS



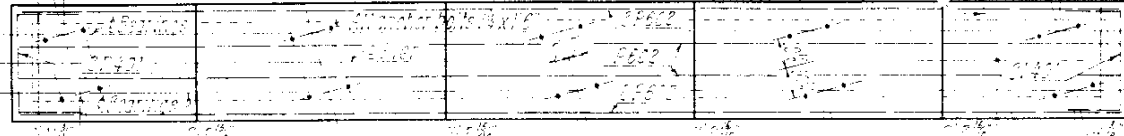
PLAN



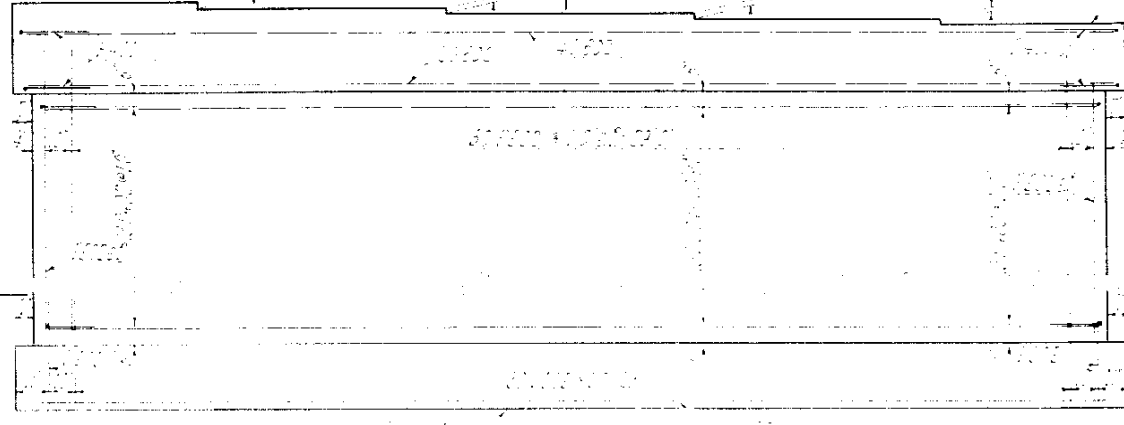
ELEVATION



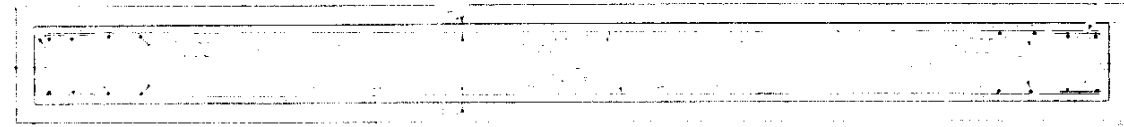
SECTION C-C



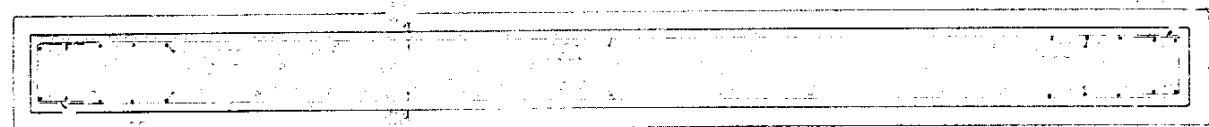
PLAN



ELEVATION

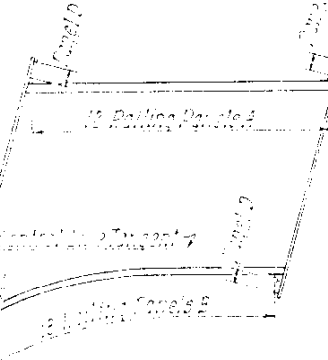


SECTION B-B
NORTH PIER

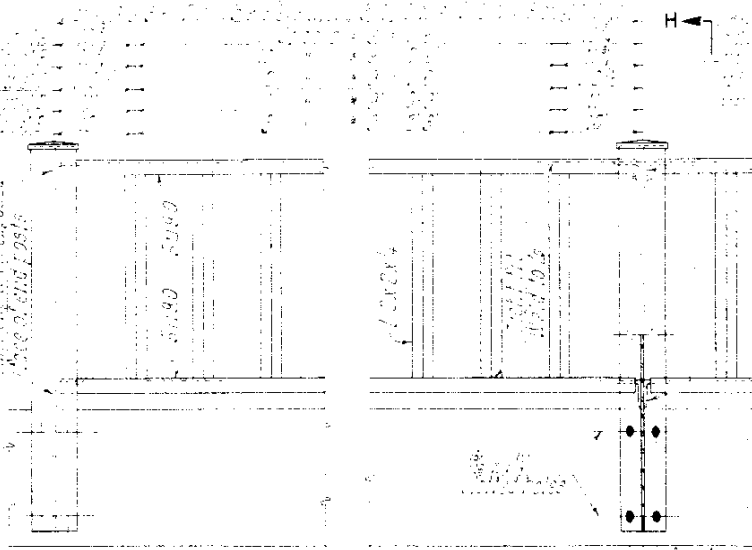


SECTION A-A
SOUTH PIER

PLAN WITHOUT CAP

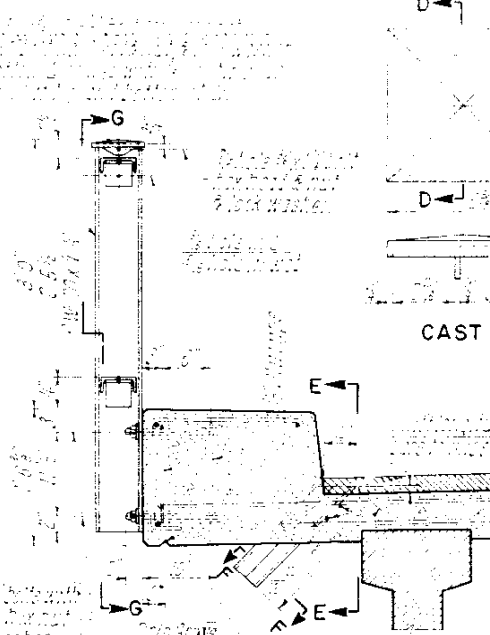


RAILING LOCATION PLAN

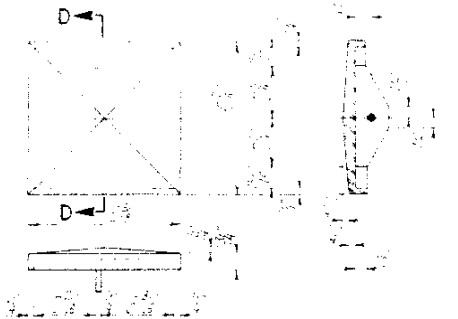


ELEVATION

SECTION G-G

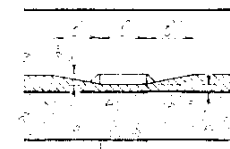


SECTION H-H
RAILING AND DECK DRAINS



SECTION D-D

CAST IRON CAP FOR POST



SECTION E-E

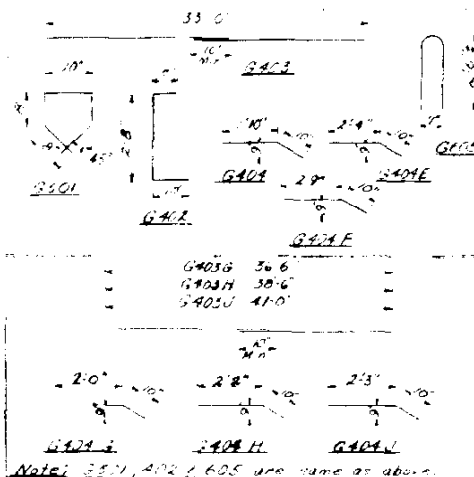
SECTION F-F

QUANTITIES FOR RAILING & DRAINS

Structural Steel (incl. Insp)	15	10.000	Pans, 10
Drains	500	5	Pans, 5

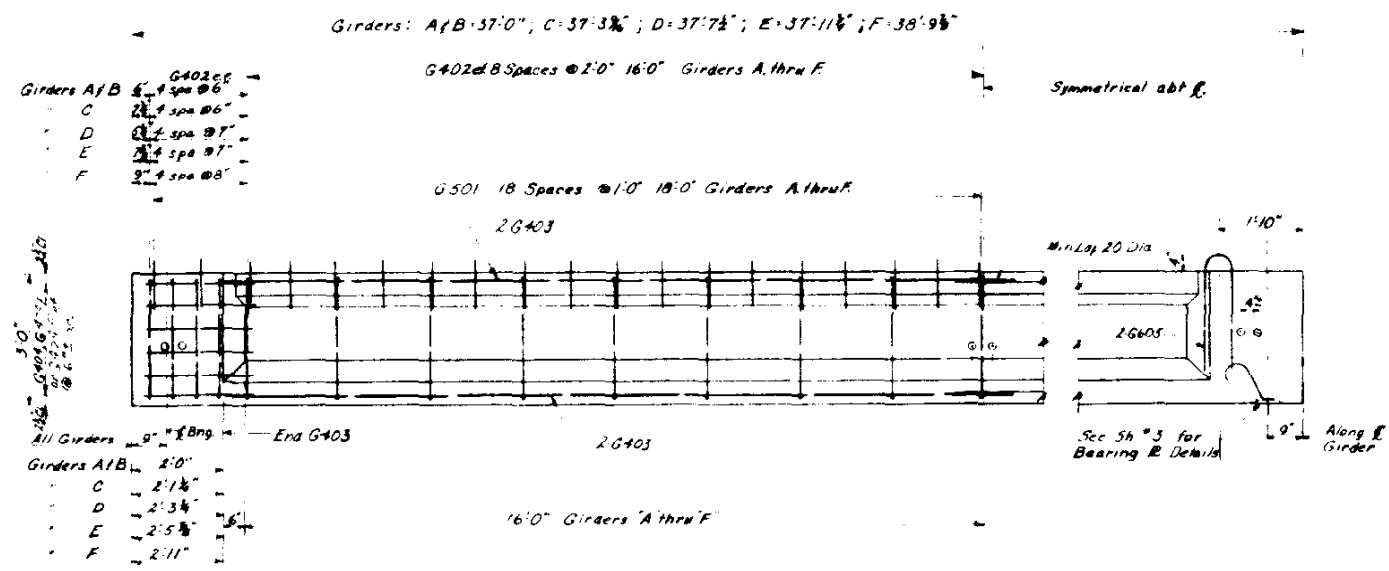
COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY
 FOUNTAIN CREEK, N.E. No. 1 RAMP
**PIERS
 RAILINGS**
 CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS

Revision: 2-27-58 New Sheet - MER



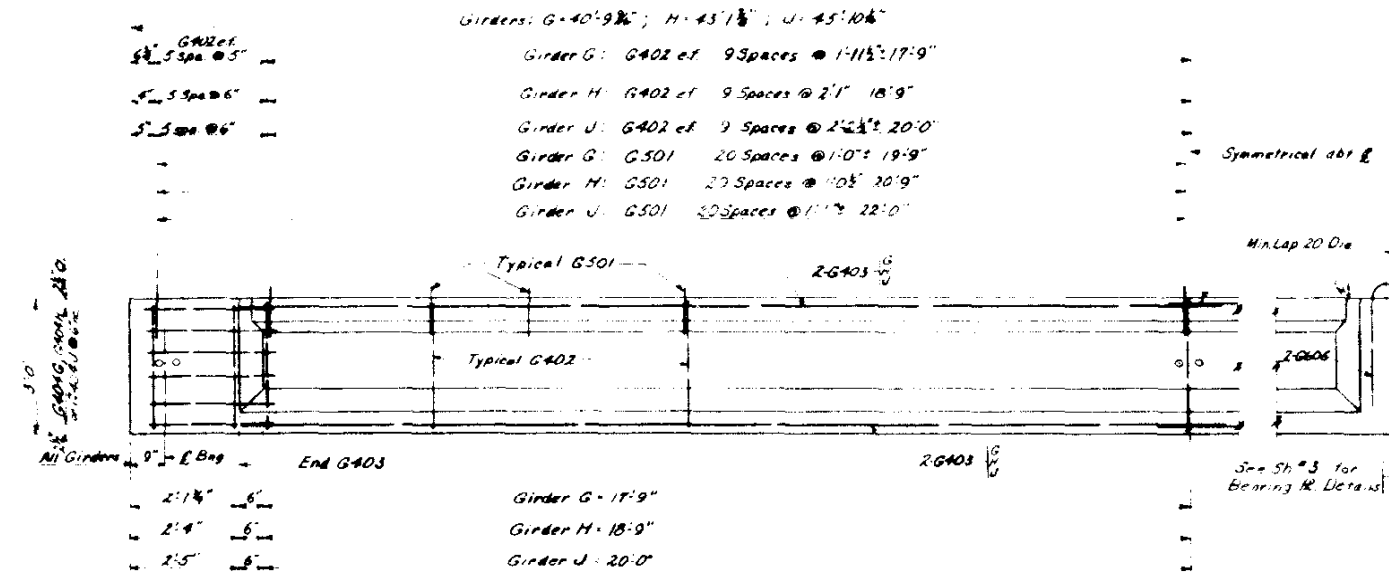
BAR LIST FOR PRESTRESSED GIRDER

Mark	Type	Length	No. Bars	Size
GROUP I				
G401	Bar	3'6"	37	5/8"
G402	Str	4'7"	50	7/8"
G403	Str	3'4"	4	5/8"
G404	Bar	2'8"	24	2/8"
G405	Str	3'2"	24	2/8"
G406	Str	3'7"	24	2/8"
G407	Str	5'0"	4	5/8"
GROUP II				
G501	Bar	3'6"	41	1/2"
G402	Str	4'7"	58	7/8"
G403	Str	3'6"	4	5/8"
G404	Str	3'0"	4	5/8"
G405	Bar	2'10"	24	2/8"
G406	Str	3'0"	24	2/8"
G407	Str	3'1"	24	2/8"
G408	Str	3'7"	4	5/8"

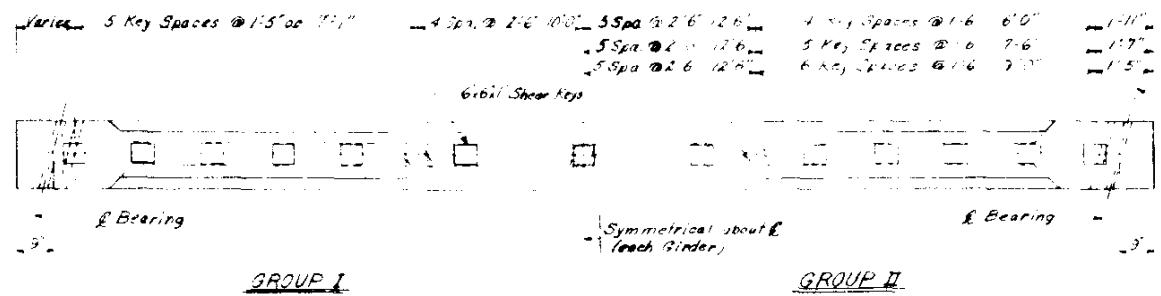
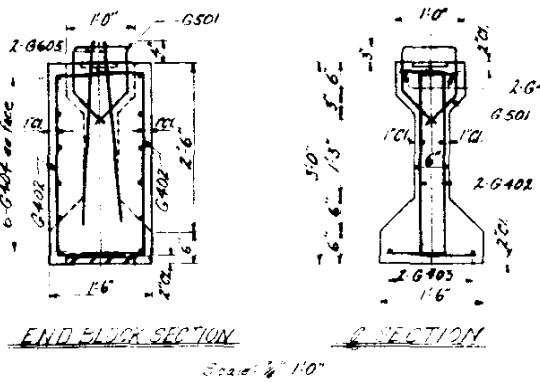
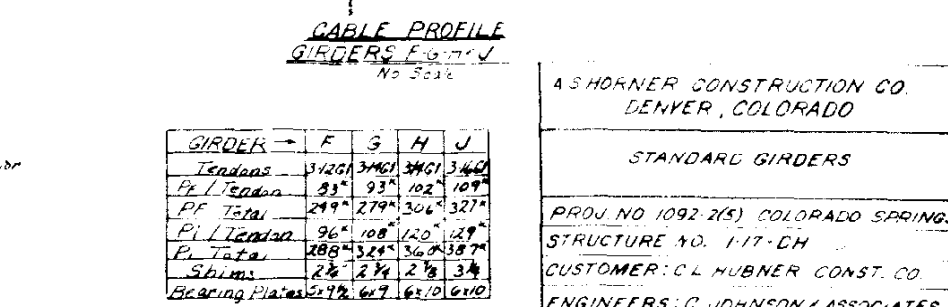
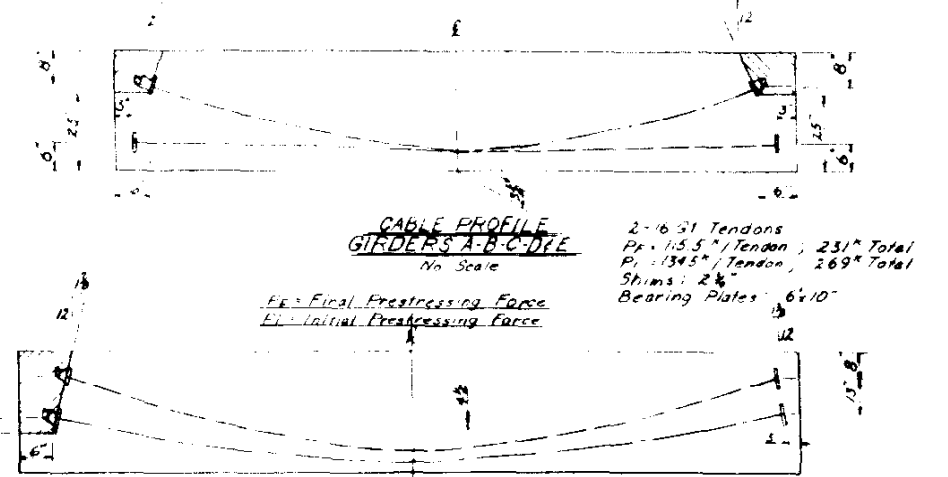
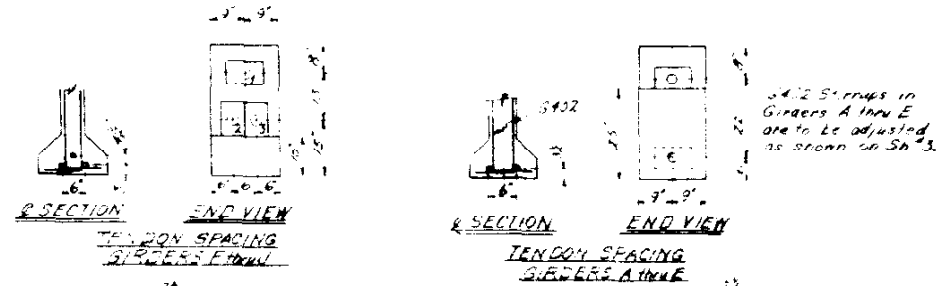
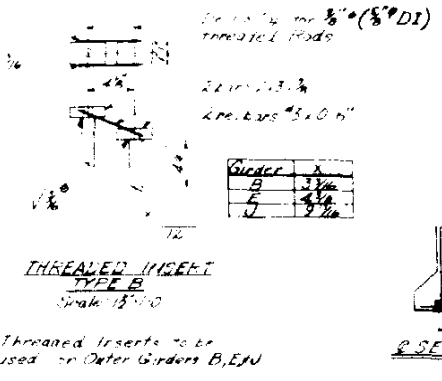


GROUP I	
GIRDER	NO. REQ'D
A	5
B	4
C	2
D	1
E	1
F	1
GROUP II	
G	7
H	1
J	1

GROUP I
ELEVATION - GIRDERS A thru F
Scale: 1/4" = 1'-0"



GROUP II
ELEVATION - GIRDERS G, H, J
Scale: 1/4" = 1'-0"



A. S. HORNER CONSTRUCTION CO.
DENVER, COLORADO

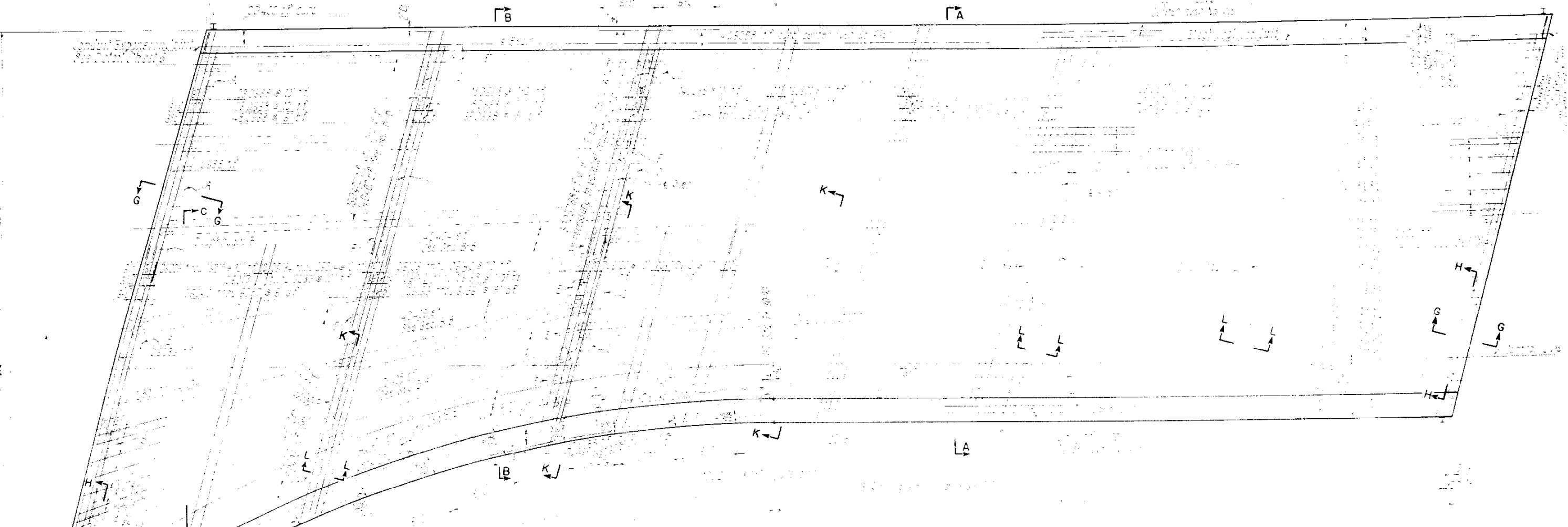
STANDARD GIRDERS

PROJ. NO. 1092-2(5) COLORADO SPRINGS
STRUCTURE NO. 1-17-DH
CUSTOMER: C. L. HUBNER CONST. CO.
ENGINEERS: C. JOHNSON & ASSOCIATES
DESIGNED: L. B. SCALE AS SHOWN SHEET NO. 512
DRAWN: L. M.
CHECKED: N. M. DATE: 1-7-58 NO. OF SH.:

Revision: Added End Blocks to Bins. M.E.P. 5-16-1957

NO.	DATE	BY	CHKD.	APPROVED
10922(5)				52

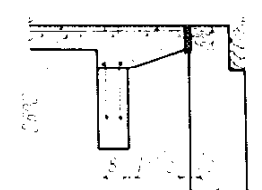
12' 9" End to End of Slab
 12 Rows Panels A @ 3' 3 1/2"
 13 B411 @ 10" (cont. 537)



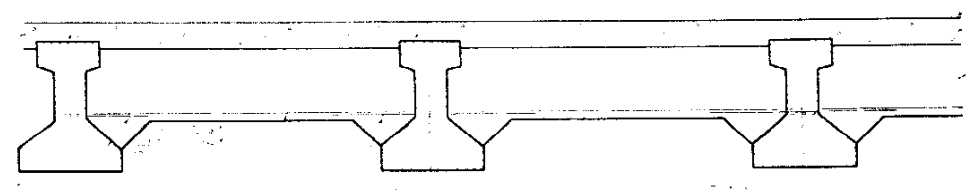
PLAN



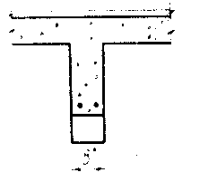
SECTION H-H



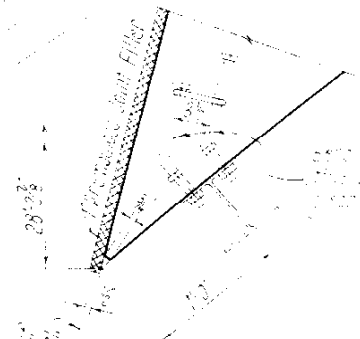
SECTION G-G



SECTION K-K



SECTION L-L



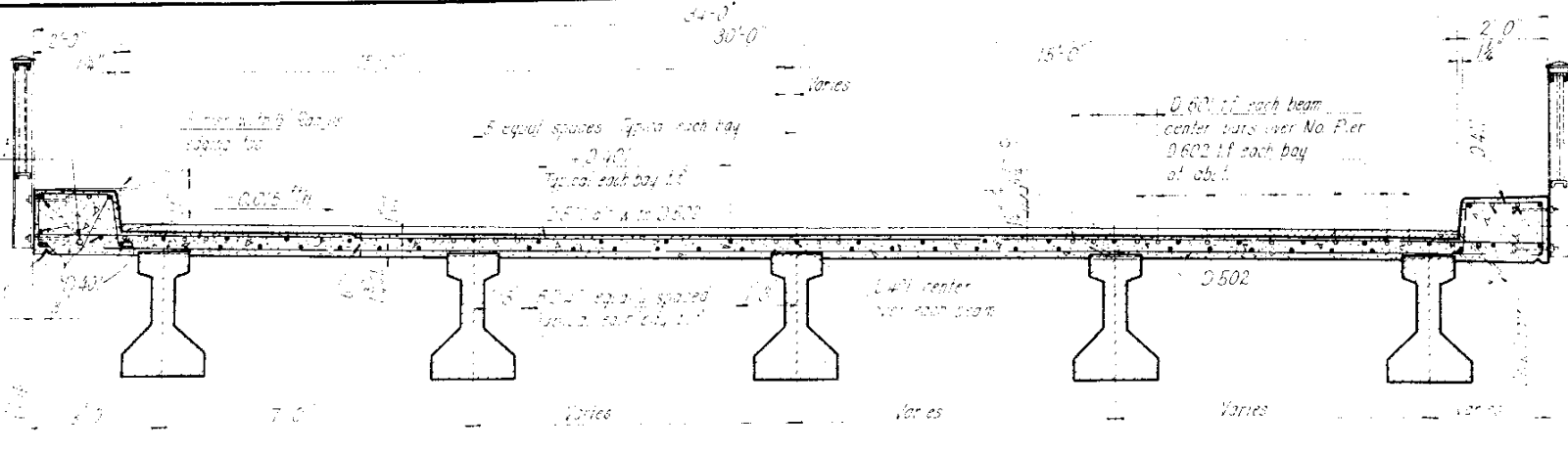
DETAIL A
Scale 1/2"=1'-0"

COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY
 FOUNTAIN CREEK NE No. 1 RAMP

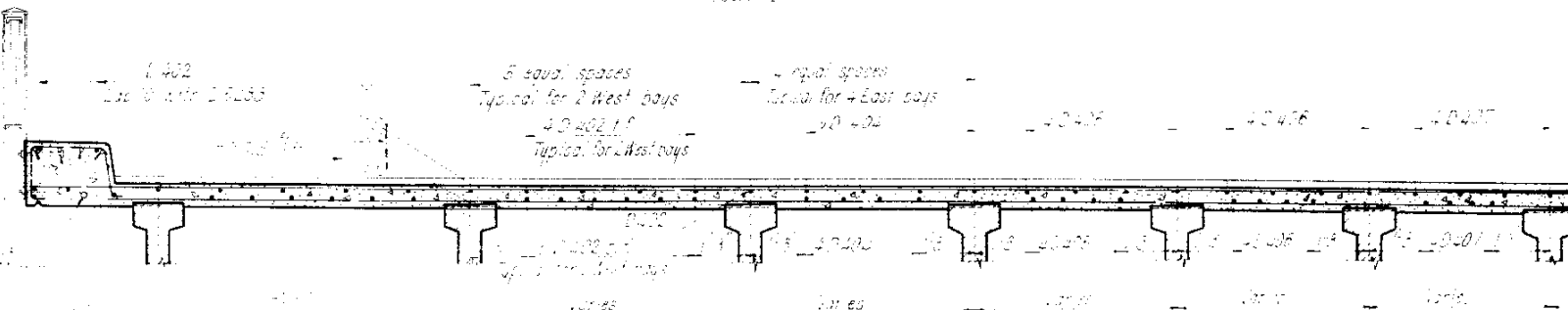
DECK PLAN
 AND DIAPHRAGMS

CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS
 DENVER, COLORADO

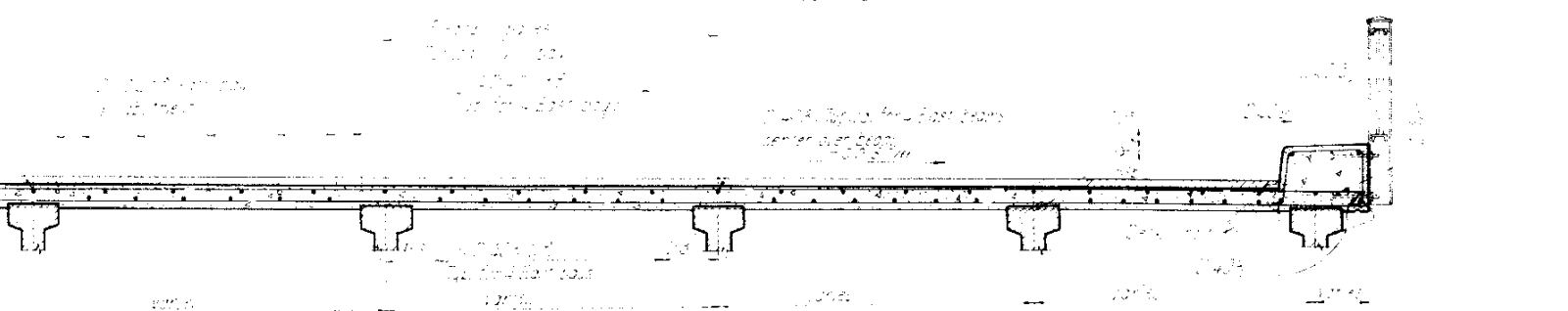
Revision: Added End Blocks to Girders M.E.D. 4-1-67



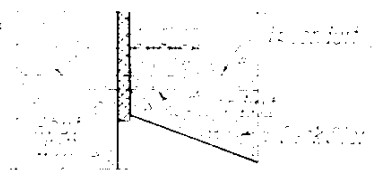
SECTION A-A (North End of Deck)



SECTION B-B



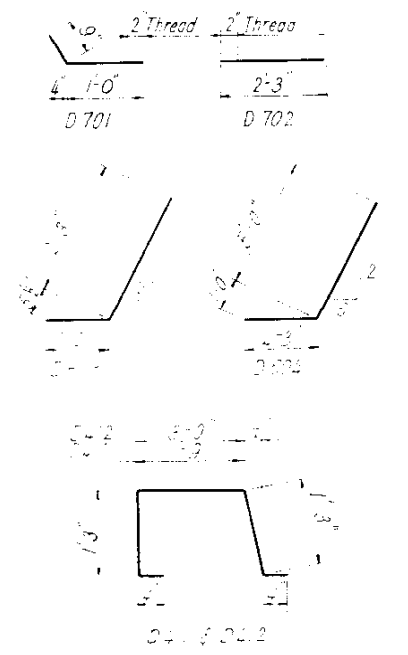
SECTION C-C



CONDUIT EXPANSION JOINT

MARK	SHAPE	LENGTH	NO. REQD
0401		35'-0"	174
0402		33'-0"	29
0403		25'-0"	47
0404		17'-0"	8
0405		13'-0"	9
0406		16'-6"	8
0407		18'-0"	7
0408		23'-0"	2
0409		28'-0"	2
0410		1'-0"	1
0411		4'-8"	236
0412		5'-0"	1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	CO.	092-25		53	



BAR DETAILS

MARK	SHAPE	LENGTH	NO. REQD
050		3'-0"	66
051		3'-0"	28
052		3'-0"	28
053		3'-0"	28
054		3'-0"	28
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MARK	SHAPE	LENGTH	NO. REQD
050		3'-0"	66
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1. Vary this dimension if and as necessary to compensate for beam camber and for least load deflection.

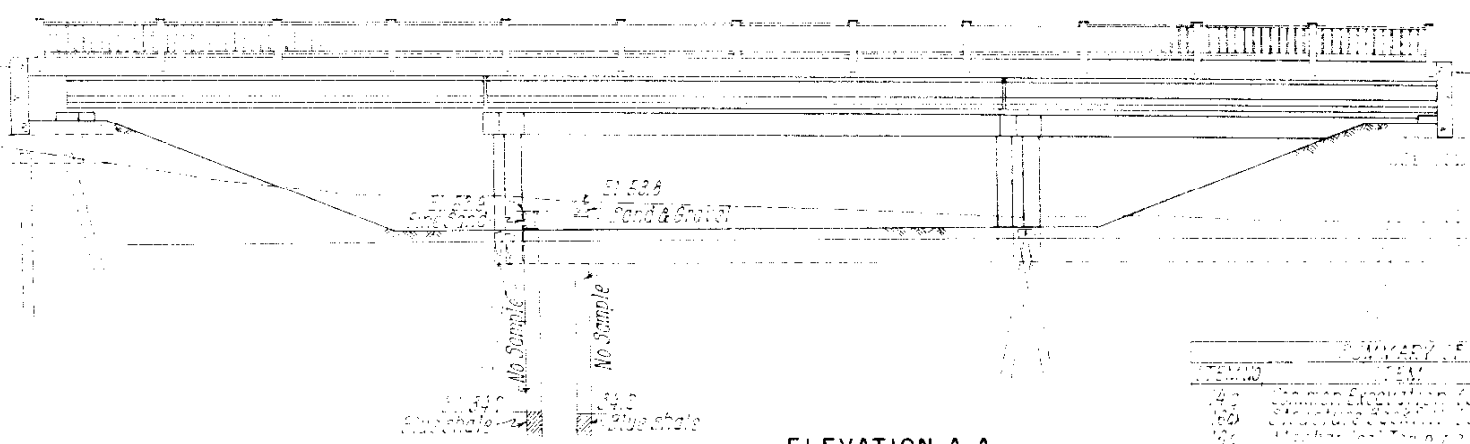
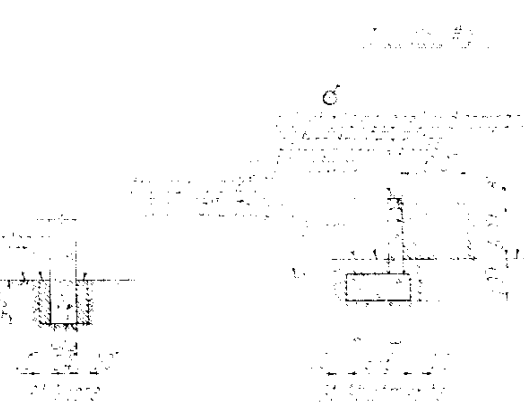
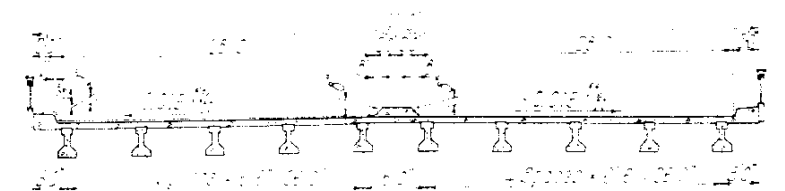
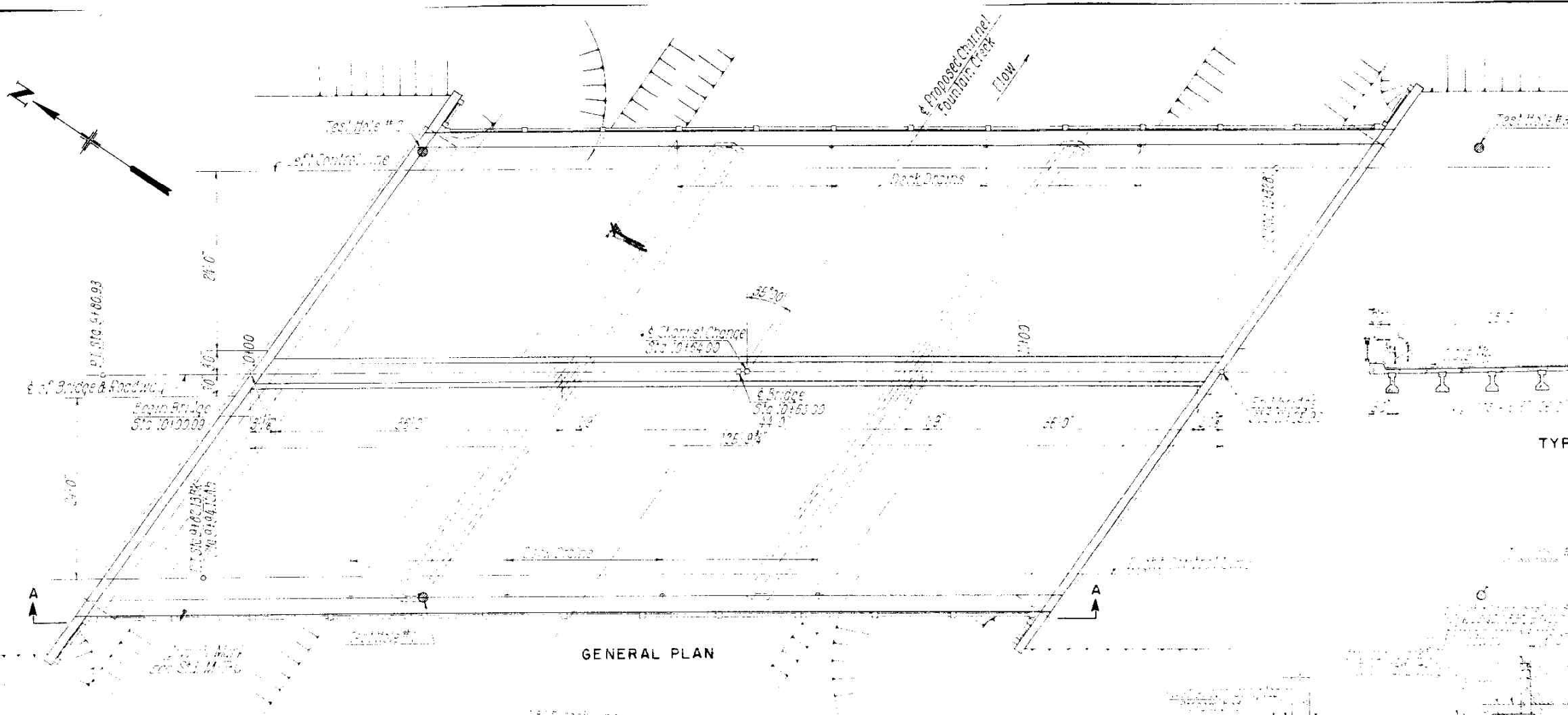
THEORETICAL CENTER OF BEAM WHEN SUPPORTED ON THE BEARINGS	THEORETICAL CENTER OF SLAB WHEN SUPPORTED ON THE BEARINGS	THEORETICAL CENTER OF SLAB IN RELATION TO BEAM
0.00	+0.21	+0.21
10.00	+0.21	+0.21
20.00	+0.21	+0.21
30.00	+0.21	+0.21
40.00	+0.21	+0.21
50.00	+0.21	+0.21
60.00	+0.21	+0.21
70.00	+0.21	+0.21
80.00	+0.21	+0.21
90.00	+0.21	+0.21
100.00	+0.21	+0.21

* These bars may be made from plain mild steel rods. Tread one end 2". See Bar Details.

COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY
 FOUNTAIN CREEK, NE NO. 1 RAMP

DECK SECTIONS

CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS
 DENVER, COLORADO



ITEM	DESCRIPTION	QUANTITY	UNIT
4-5	Excavation (Per)	160	cu yd
4-6	Backfill (Per)	250	cu yd
10a	Reinforcing Steel (Per)	50	tons
4-7	Concrete (Per)	3,605	cu yd
4-8	Formwork (Per)	24.3	sq ft
4-9	Steel Decking (Per)	55,259	sq ft
4-10	Reinforcing Steel (Per)	366	tons
4-11	Excavation (Per)		
4-12	Backfill (Per)		
4-13	Reinforcing Steel (Per)		
4-14	Concrete (Per)		
4-15	Formwork (Per)		
4-16	Steel Decking (Per)		
4-17	Reinforcing Steel (Per)		
4-18	Concrete (Per)		
4-19	Formwork (Per)		
4-20	Steel Decking (Per)		
4-21	Reinforcing Steel (Per)		
4-22	Concrete (Per)		
4-23	Formwork (Per)		
4-24	Steel Decking (Per)		
4-25	Reinforcing Steel (Per)		
4-26	Concrete (Per)		
4-27	Formwork (Per)		
4-28	Steel Decking (Per)		
4-29	Reinforcing Steel (Per)		
4-30	Concrete (Per)		
4-31	Formwork (Per)		
4-32	Steel Decking (Per)		
4-33	Reinforcing Steel (Per)		
4-34	Concrete (Per)		
4-35	Formwork (Per)		
4-36	Steel Decking (Per)		
4-37	Reinforcing Steel (Per)		
4-38	Concrete (Per)		
4-39	Formwork (Per)		
4-40	Steel Decking (Per)		
4-41	Reinforcing Steel (Per)		
4-42	Concrete (Per)		
4-43	Formwork (Per)		
4-44	Steel Decking (Per)		
4-45	Reinforcing Steel (Per)		
4-46	Concrete (Per)		
4-47	Formwork (Per)		
4-48	Steel Decking (Per)		
4-49	Reinforcing Steel (Per)		
4-50	Concrete (Per)		
4-51	Formwork (Per)		
4-52	Steel Decking (Per)		
4-53	Reinforcing Steel (Per)		
4-54	Concrete (Per)		
4-55	Formwork (Per)		
4-56	Steel Decking (Per)		
4-57	Reinforcing Steel (Per)		
4-58	Concrete (Per)		
4-59	Formwork (Per)		
4-60	Steel Decking (Per)		
4-61	Reinforcing Steel (Per)		
4-62	Concrete (Per)		
4-63	Formwork (Per)		
4-64	Steel Decking (Per)		
4-65	Reinforcing Steel (Per)		
4-66	Concrete (Per)		
4-67	Formwork (Per)		
4-68	Steel Decking (Per)		
4-69	Reinforcing Steel (Per)		
4-70	Concrete (Per)		
4-71	Formwork (Per)		
4-72	Steel Decking (Per)		
4-73	Reinforcing Steel (Per)		
4-74	Concrete (Per)		
4-75	Formwork (Per)		
4-76	Steel Decking (Per)		
4-77	Reinforcing Steel (Per)		
4-78	Concrete (Per)		
4-79	Formwork (Per)		
4-80	Steel Decking (Per)		
4-81	Reinforcing Steel (Per)		
4-82	Concrete (Per)		
4-83	Formwork (Per)		
4-84	Steel Decking (Per)		
4-85	Reinforcing Steel (Per)		
4-86	Concrete (Per)		
4-87	Formwork (Per)		
4-88	Steel Decking (Per)		
4-89	Reinforcing Steel (Per)		
4-90	Concrete (Per)		
4-91	Formwork (Per)		
4-92	Steel Decking (Per)		
4-93	Reinforcing Steel (Per)		
4-94	Concrete (Per)		
4-95	Formwork (Per)		
4-96	Steel Decking (Per)		
4-97	Reinforcing Steel (Per)		
4-98	Concrete (Per)		
4-99	Formwork (Per)		
4-100	Steel Decking (Per)		

GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways, adopted June 1, 1952. See Special Provisions for prestressed concrete beams.

Soundness and depth of footings shall conform to the specifications and data. If essentially different conditions are encountered, the Bridge Engineer will inspect and determine if redesign is necessary.

All concrete, except in the prestressed concrete beams, shall be Class A and air entrained as specified.

Chamfer all exposed corners 1/4" except as noted.

All concrete surfaces exposed to normal view by highway traffic shall receive Class 1 surface finish.

Holes for piers shall not be drilled until definitely determined by the Engineer that the piers cannot be driven without them.

All reinforcing shall be in the form of deformed bars conforming to A.C.I. Code, Sections 1131 and 1132, with the exception of 1/2" and 3/4" bars which shall be tagged with the structure number and mark.

All dimensions on bar details are cut to cut.

All hooks and bends in bars shall conform to A.C.I. Standard S16-50.

Main bars shall not be placed on cantilever beams or at the ends of the bridge.

Reinforcing bars shall be placed in accordance with the specifications and data.

All steel railings and deck drains shall receive one shop coat of zinc chromate and two field coats of aluminum paint.

* 10" O.D. 10" Wall thickness. Fill with concrete after driving. 10 BP 42 may be used as an alternate.

◆ Includes 1/2% ± for Paint.

⊙ Railing and Deck Drains

COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY

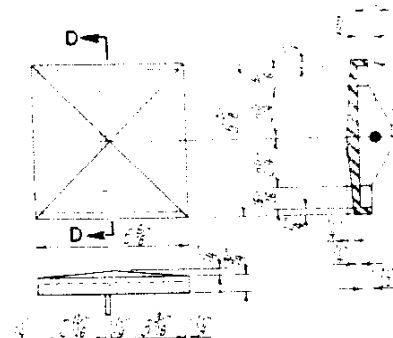
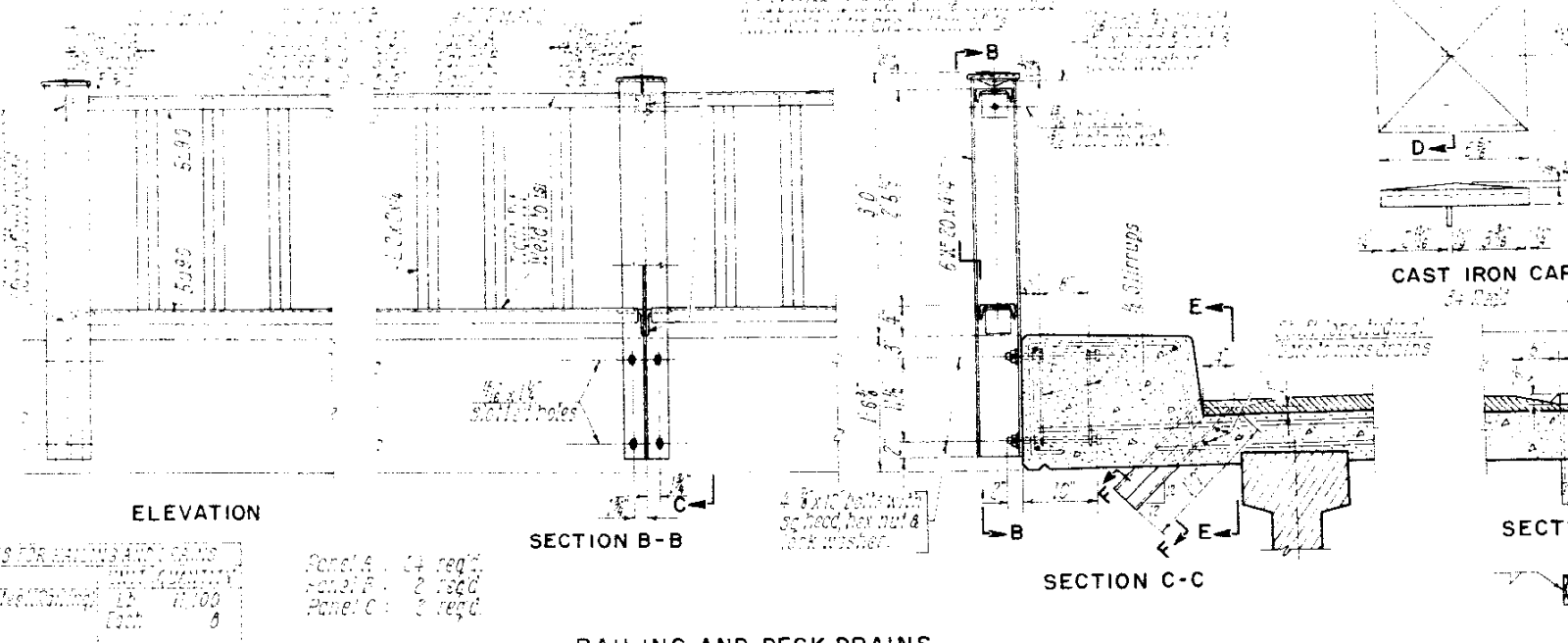
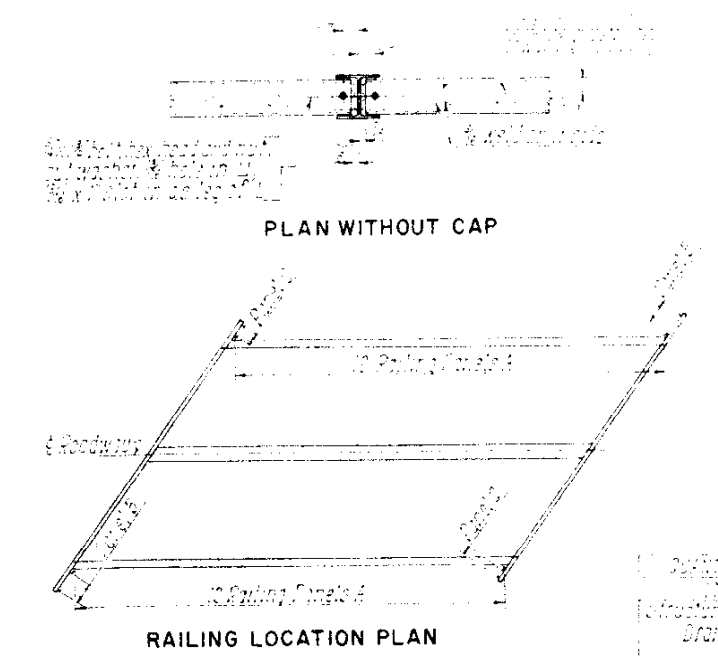
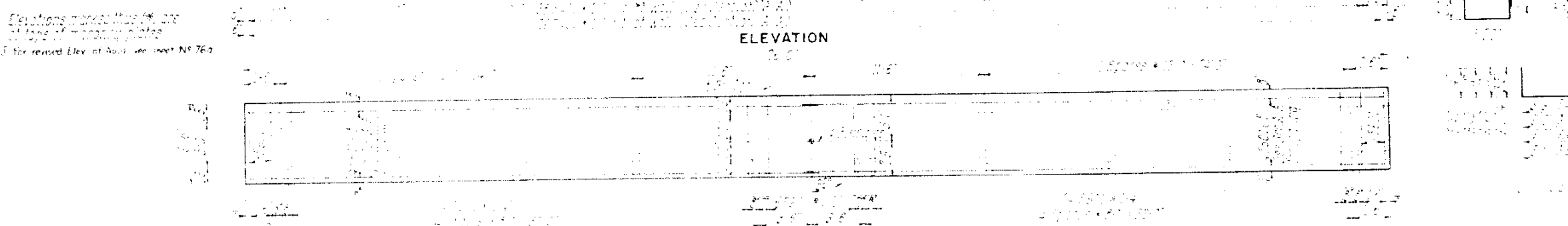
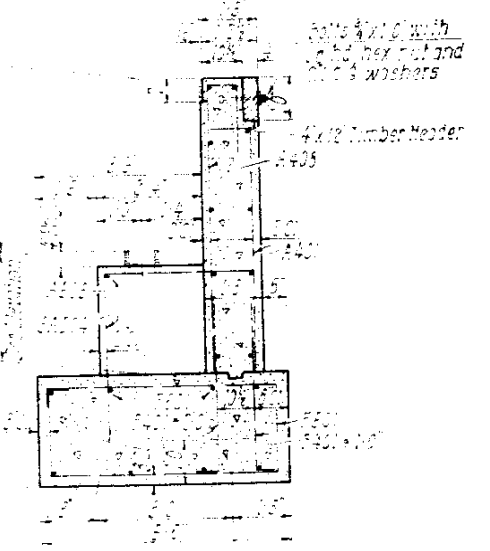
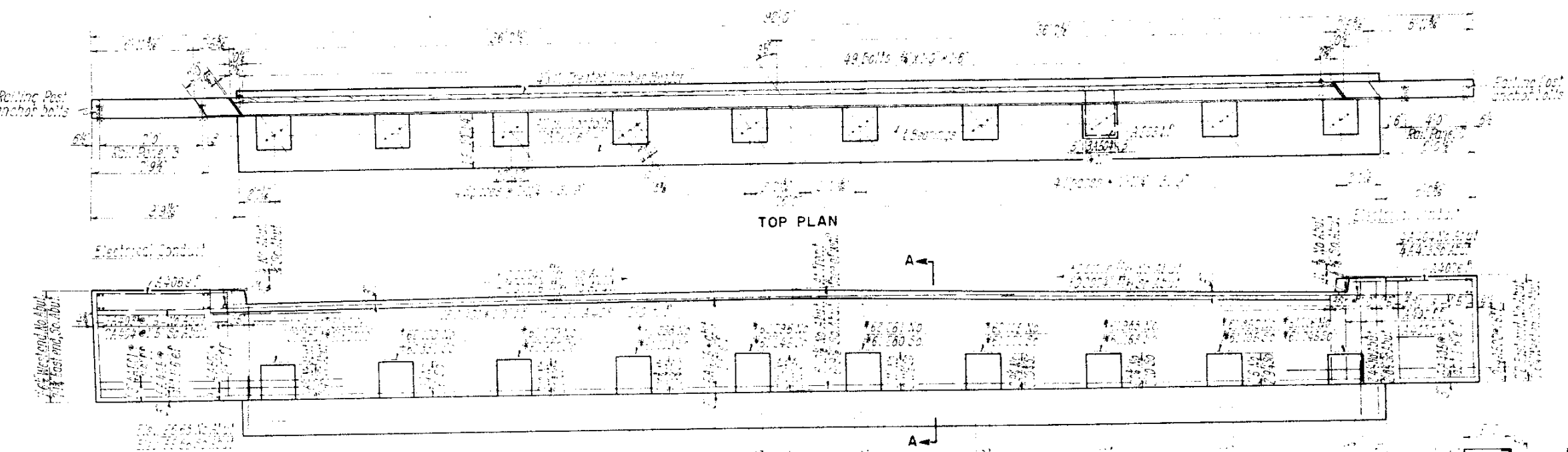
CIMARRON STREET BRIDGE
 OVER FOUNTAIN CREEK

GENERAL PLAN
 AND ELEVATION

Leo M. Keller

CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS
 DENVER, COLORADO

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
0	CO	092-25		55	



1	2	3	4	5	6	7	8	9	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
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

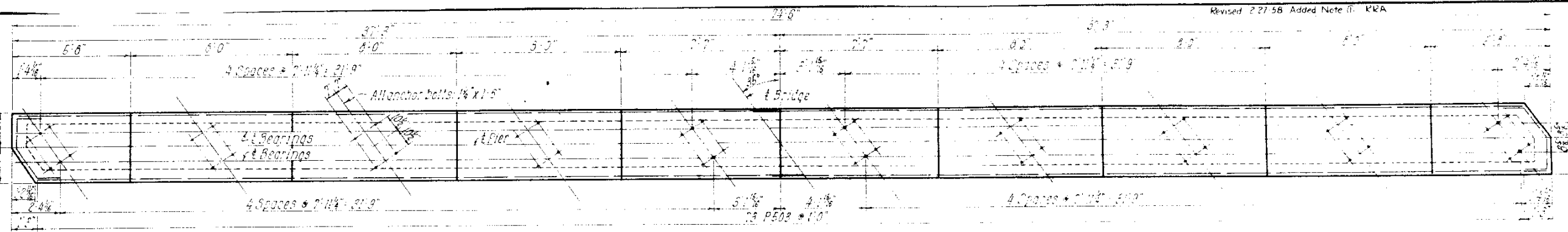
COLORADO DEPARTMENT OF HIGHWAYS
COLORADO SPRINGS FREEWAY
CIMARRON STREET BRIDGE
OVER FOUNTAIN CREEK

ABUTMENTS
RAILING
DECK DRAINS

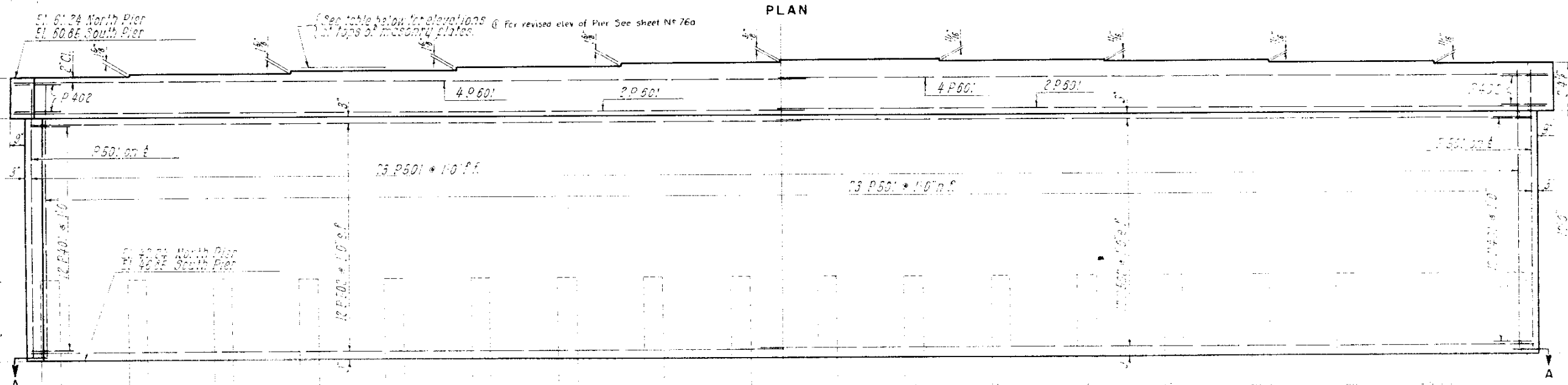
CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS
 DENVER, COLORADO

Revised 2-27-58 Added Note (I) R2A

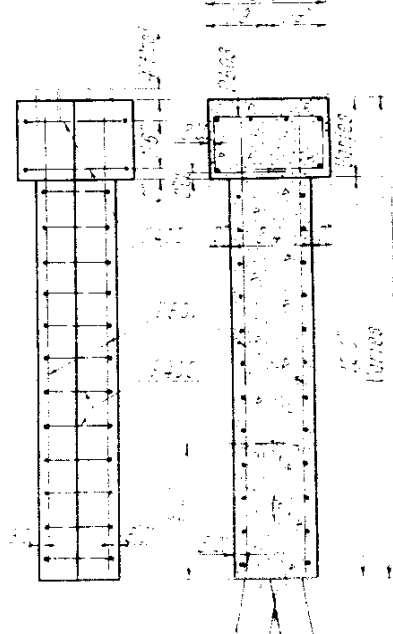
FILE NO.	DATE	BY	NO.	SHEET	TOTAL SHEETS
1092-25				56	



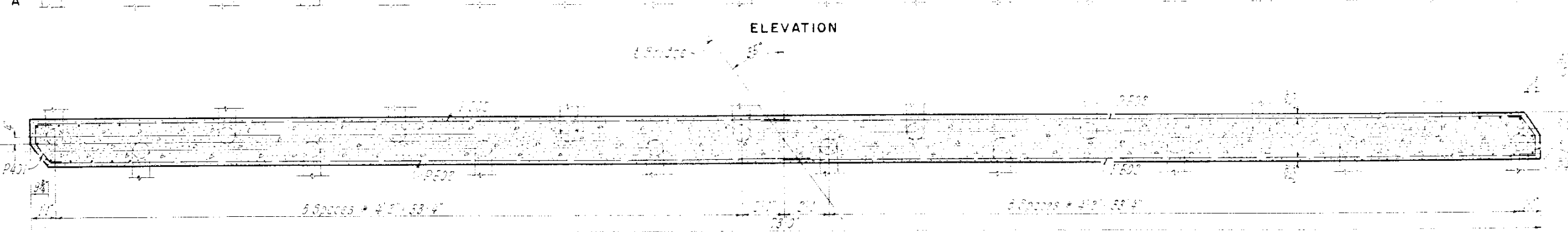
PLAN



ELEVATION

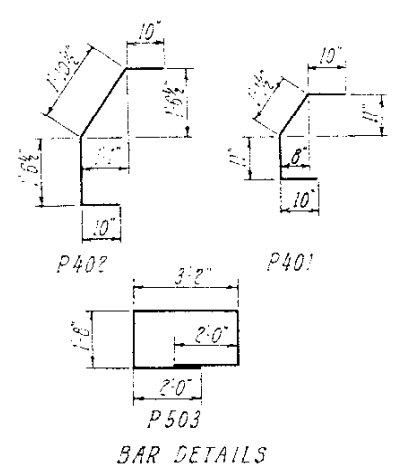


SIDE VIEW



SECTION A-A

TYP. SECTION



ELEVATIONS AT TOP OF MASONRY PLATES

LOCATION	BEAM	West	2	3	4	5	6	7	8	9	10 (End)
North Pier	North Pier	61.756	61.814	61.873	61.932	61.990	62.048	62.107	62.165	62.224	62.282
South Pier	North Pier	61.740	61.799	61.858	61.917	61.975	62.034	62.093	62.152	62.211	62.270
North Pier	South Pier	61.356	61.415	61.474	61.533	61.592	61.651	61.710	61.769	61.828	61.887
South Pier	South Pier	61.351	61.410	61.469	61.528	61.587	61.646	61.705	61.764	61.823	61.882

QUANTITIES - P IERS

ITEM	QUANTITY	UNIT
Formwork	107	Sq. Ft.
Reinforcing Steel	50	Lbs.
Mechanical Fastenings	10	Each
Class. Concrete	186	Cu. Ft.
Reinforcing Steel	10,436	Lbs.
Steel Pipe * Piling	780	Lin. Ft.

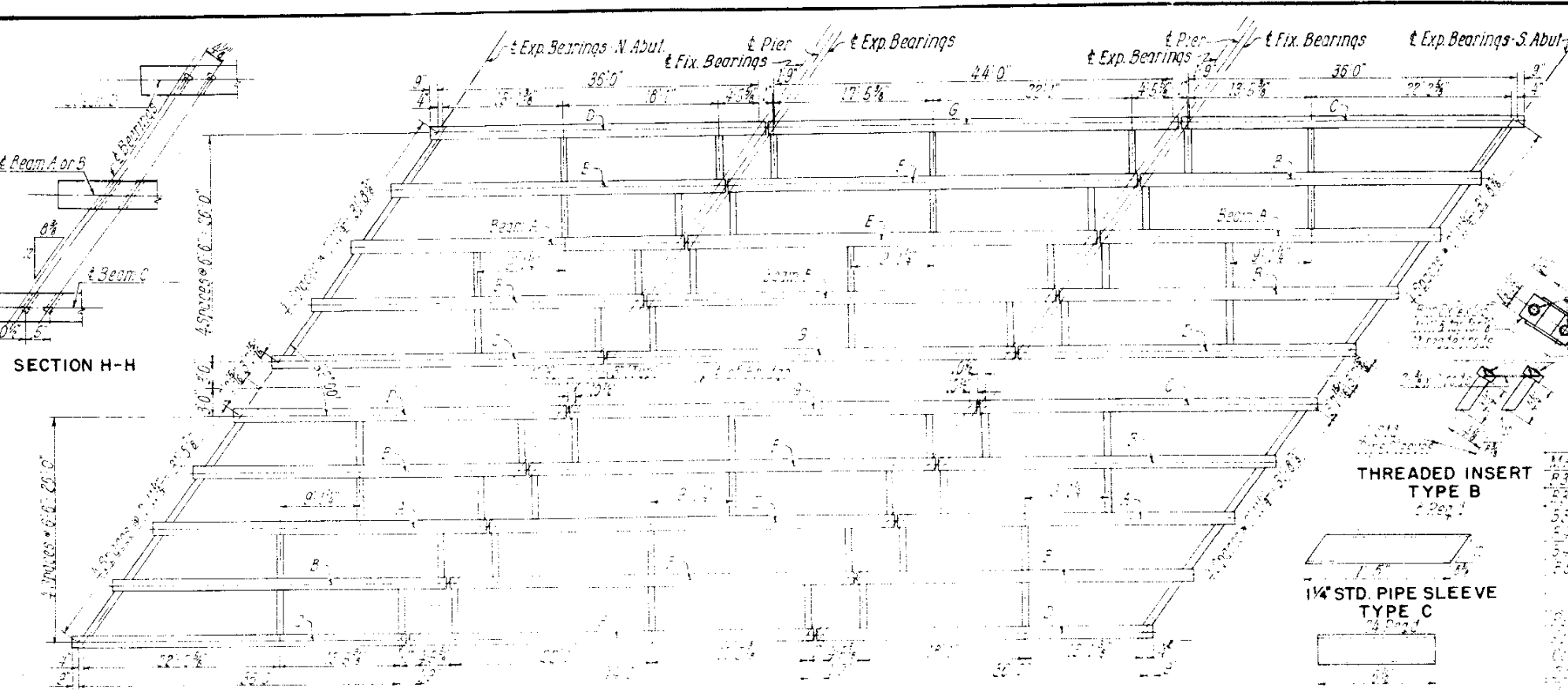
LIST OF P IERS

NO.	DESCRIPTION	DATE
1
2
3
4
5
6
7
8
9
10

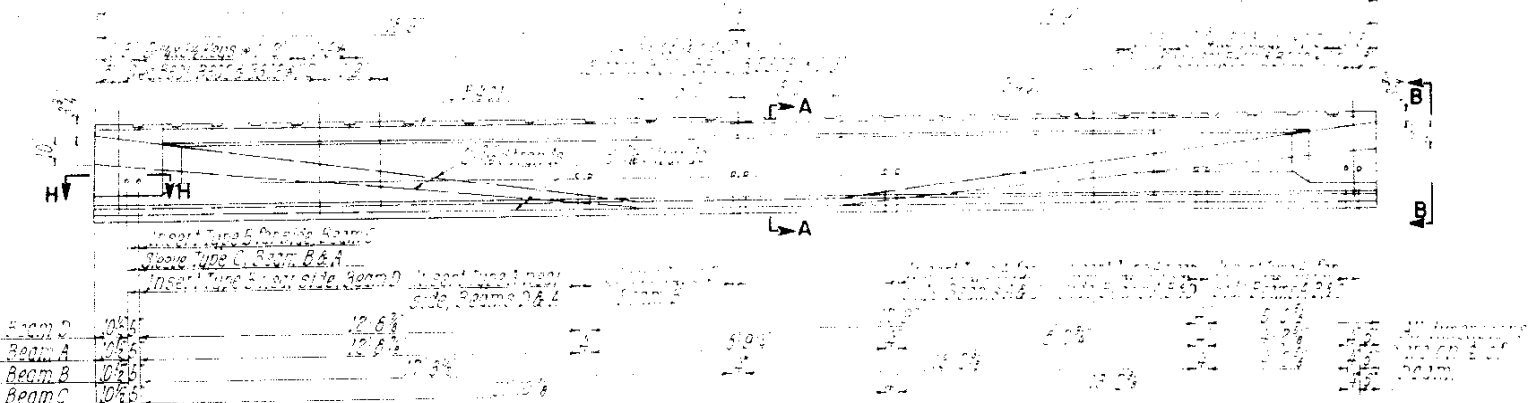
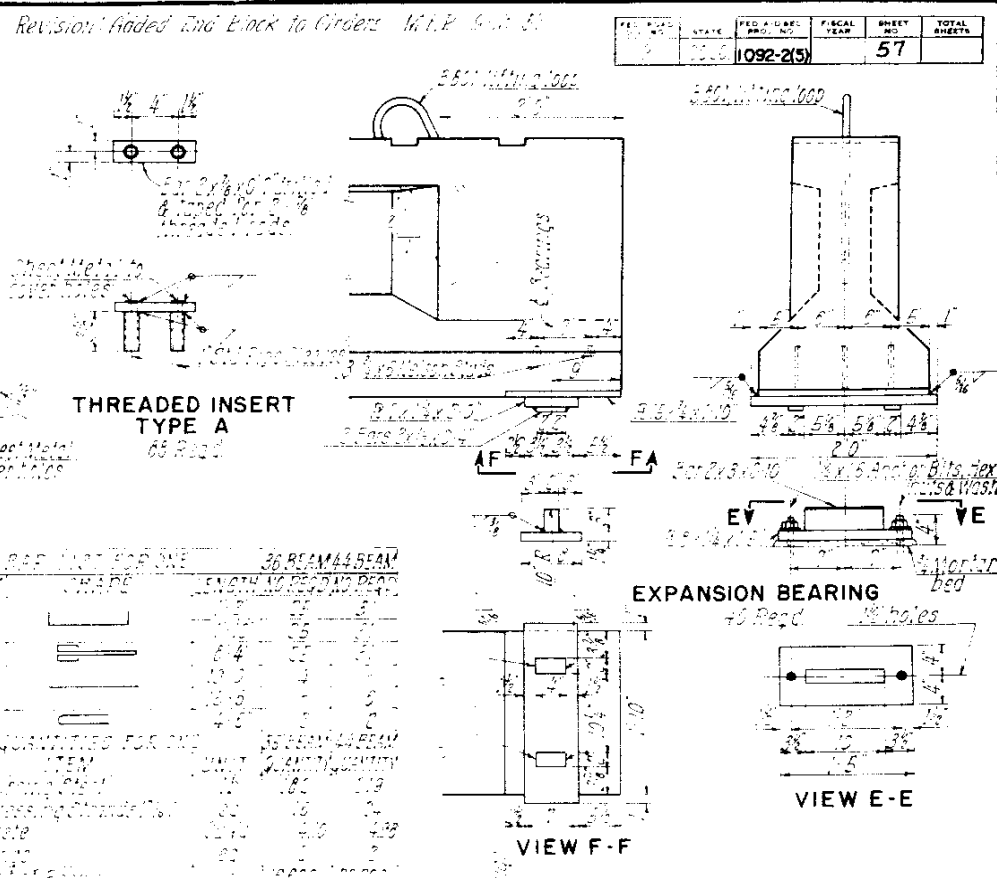
COLORADO DEPARTMENT OF HIGHWAYS
 COLORADO SPRINGS FREEWAY
 CIMARRON STREET BRIDGE
 OVER FOUNTAIN CREEK

PIERS

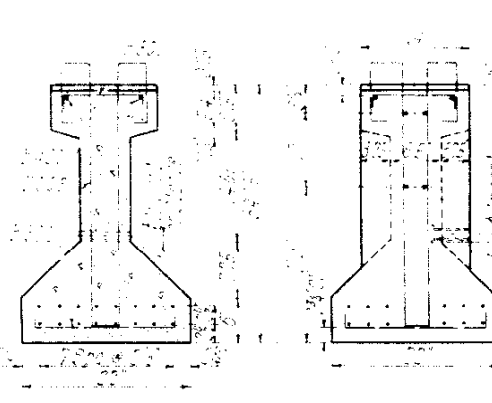
CLIFFORD JOHNSON & ASSOCIATES
 CONSULTING ENGINEERS
 DENVER, COLORADO



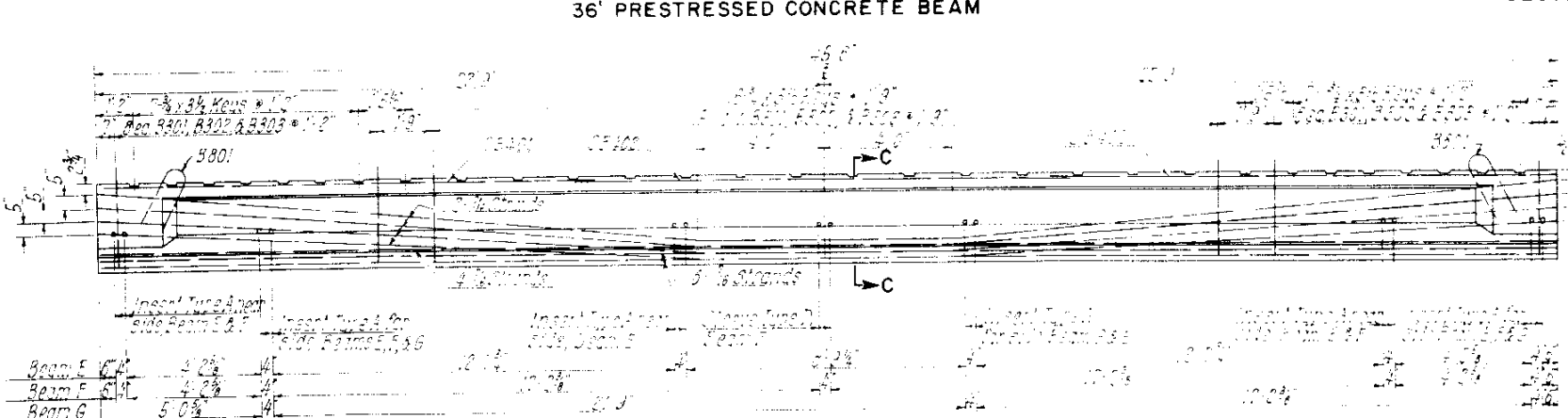
FRAMING PLAN



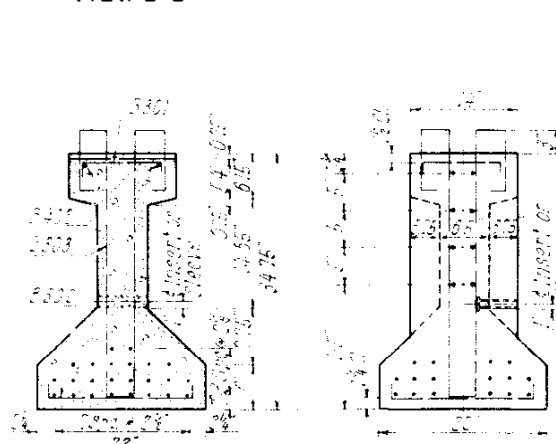
36" PRESTRESSED CONCRETE BEAM



SECTION A-A VIEW B-B

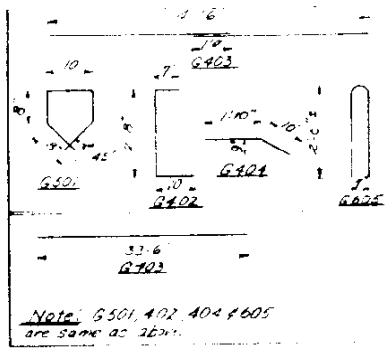


44" PRESTRESSED CONCRETE BEAM



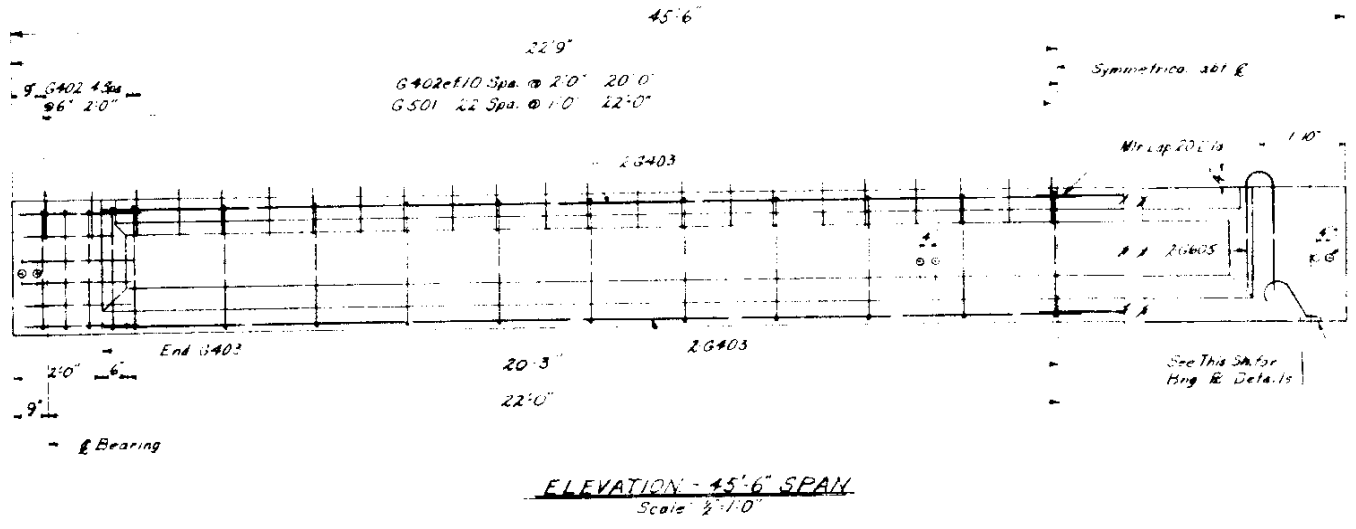
SECTION C-C END VIEW D-D

Minimum ultimate compressive strength:
 4000 p.s.i.
 When extension in strand is released:
 4500 p.s.i.
 Minimum ultimate strength 350,000 p.s.i.
 Minimum ultimate strength 305,000 p.s.i.
 Beams A, B, C & D:
 16 # strands --- 305,000 lbs.
 Beams E & G:
 24 # strands --- 450,000 lbs.
 The Central Force per Prestressed Concrete Beam shall include all strands, sleeve inserts, bearings, and their anchor bolts.

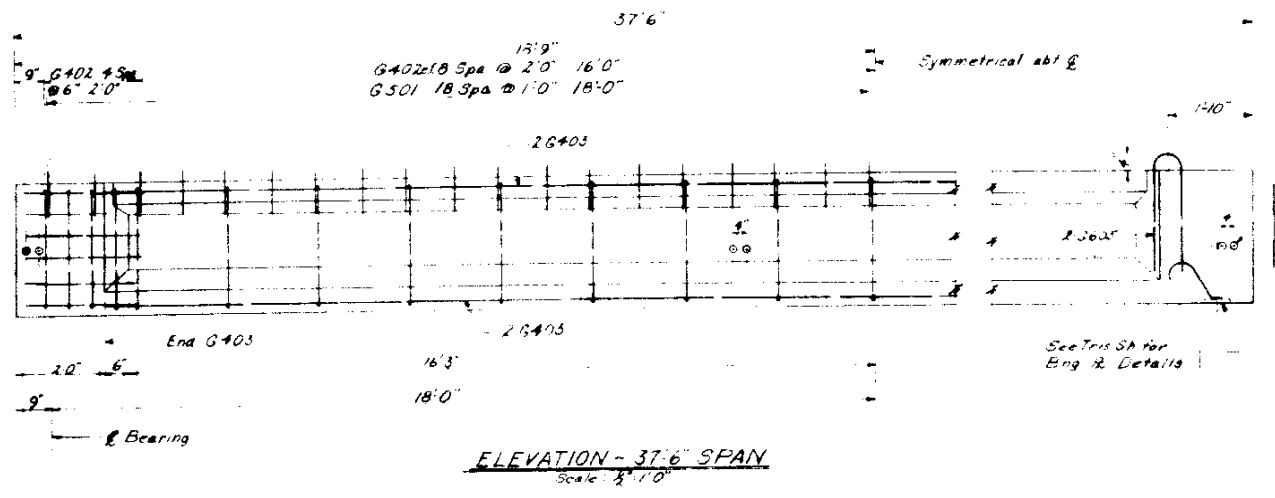
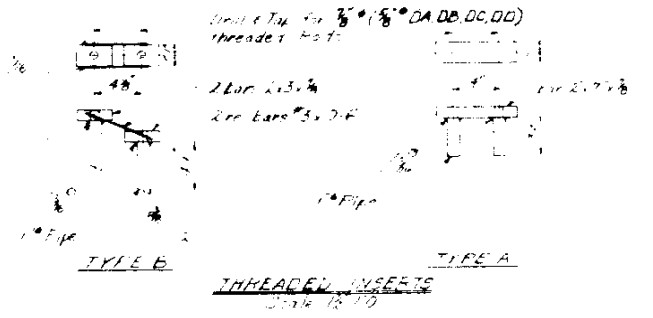


BAR LIST FOR PRESTRESSED GIRDERS					
45'-6" SPAN (10 REQ'D)					
Mark	Type	Length	No. Required	Total	Size
G501	Bent	3'-6"	45	450	#5
G402	Bent	4'-7"	38	380	#4
G403	Str	42'-6"	4	40	#4
G404	Bent	2'-8"	24	240	#4
G605	Bent	5'-0"	4	40	#6

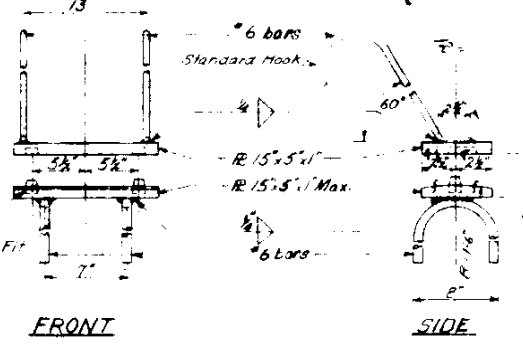
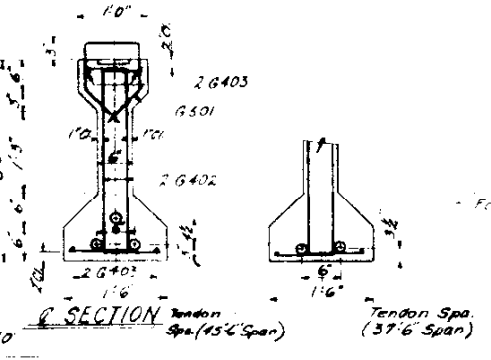
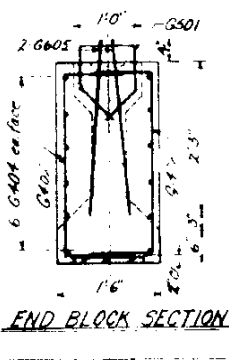
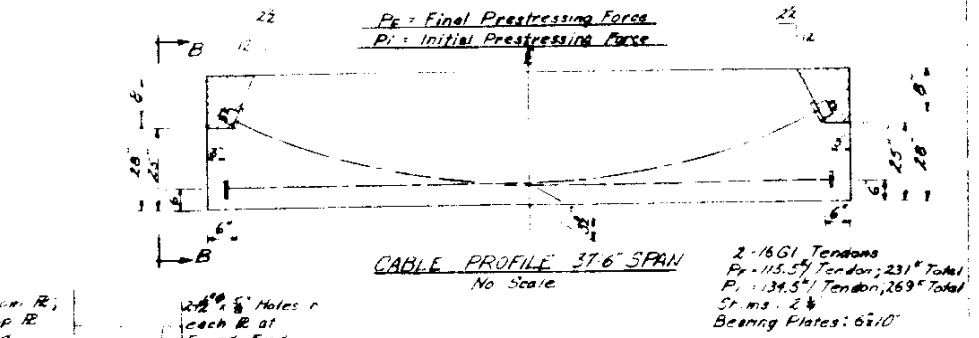
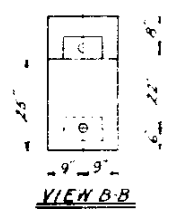
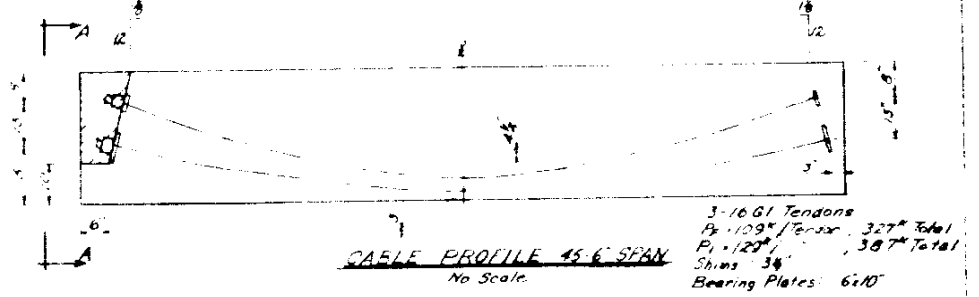
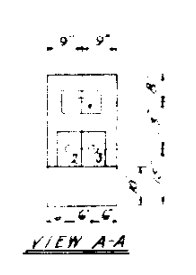
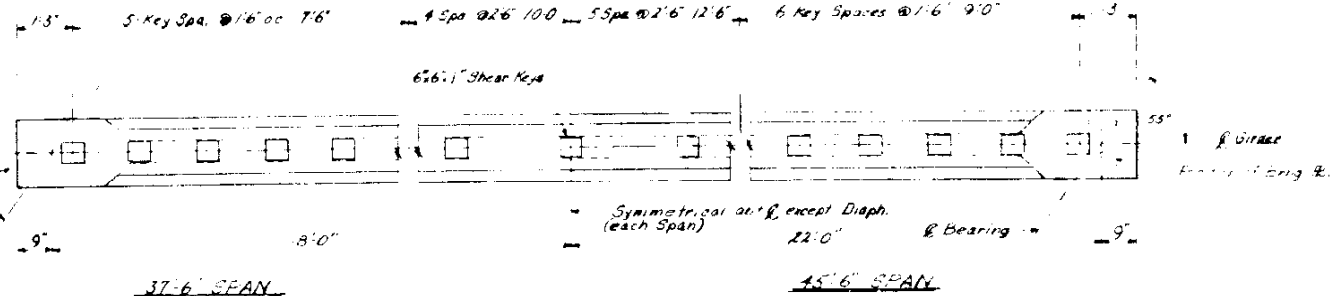
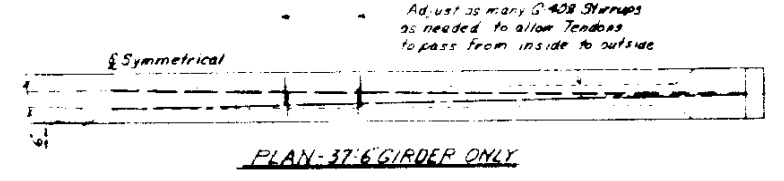
37'-6" SPAN (20 REQ'D)					
Mark	Type	Length	No. Required	Total	Size
G501	Bent	5'-6"	37	740	#5
G402	Bent	4'-7"	30	1000	#4
G403	Str	33'-6"	4	80	#4
G404	Bent	2'-8"	24	480	#4
G605	Bent	5'-0"	4	80	#6



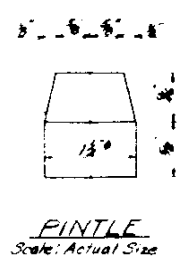
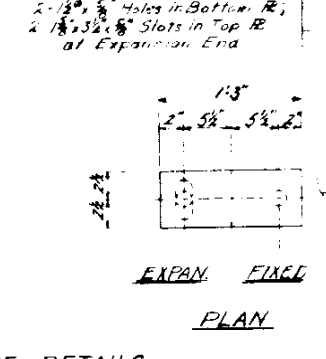
See Original Drawg for location of 2" Holes or Trenched Inserts for Wash Pods



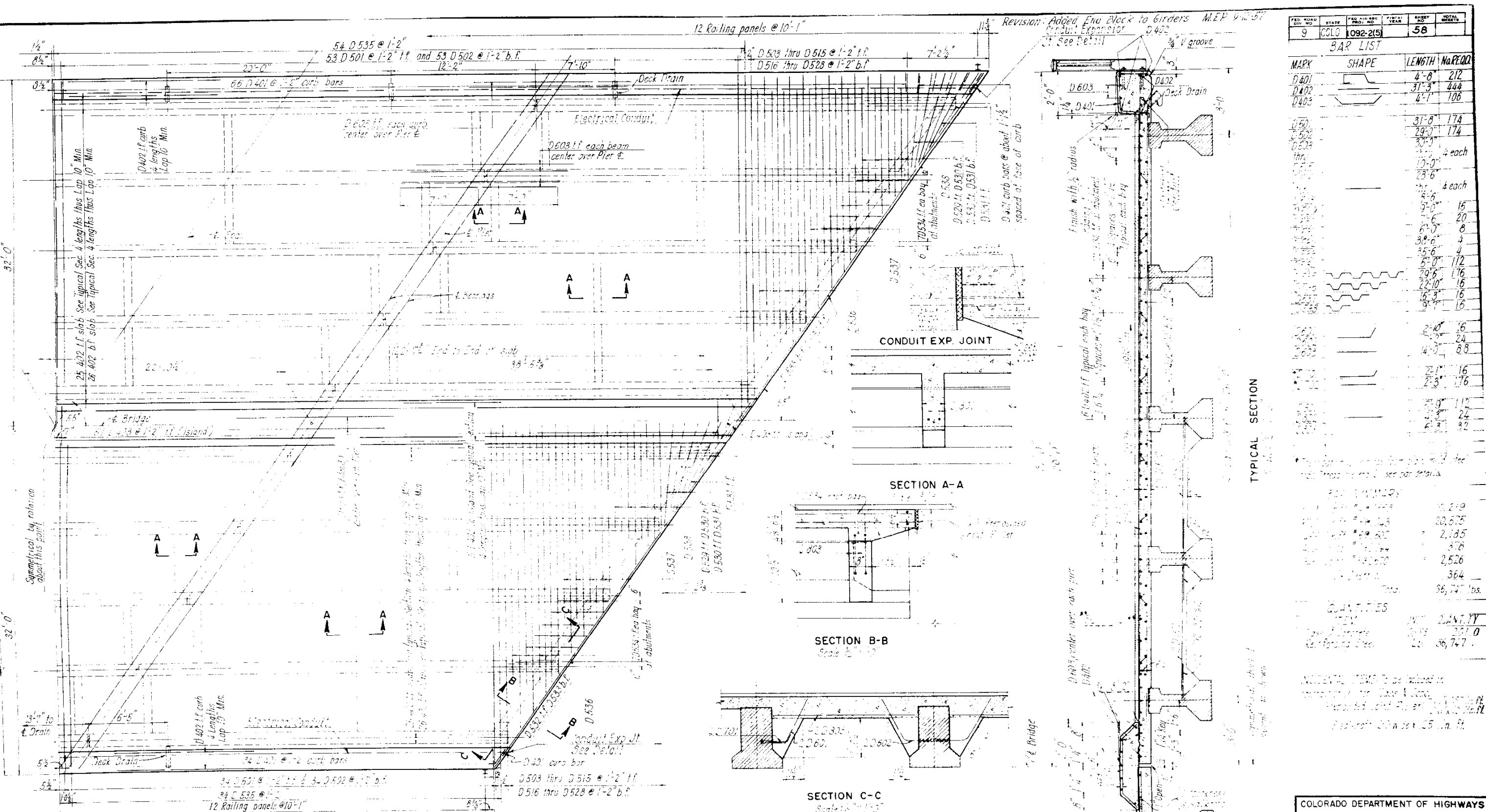
See Original Drawg for location of 2" Holes or Trenched Inserts for Wash Pods



Included in Unit Price for Prestressed Girders



A.S. HORNER CONSTRUCTION CO.
 DENVER, COLORADO
 STANDARD GIRDERS
 STANDARD BEARING PLATES
 PLAN NO. 1092 (215) CO. BRADDO SPRINGS
 STRUCTURE NO. 1-17-58
 CUSTOMER: C.L. HUBNER CONST. CO.
 ENGINEERS: O. JOHNSON & ASSOCIATES
 DESIGNED: L.B. SCALE as shown SHEET NO. 57a
 DRAWN: L.M.
 CHECKED: H.W. DATE 1-27-58 NO. OF SHEETS



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	COLO	1092-2(5)		58	

BAR LIST

MARK	SHAPE	LENGTH	NO REQD
D401		4'-8"	212
D402		31'-3"	444
D403		4'-1"	106
D501		31'-8"	174
D502		29'-0"	174
D503		33'-0"	4 each
D515		12'-0"	4 each
D516		23'-6"	4 each
D528		8'-6"	16
D535		9'-0"	20
D536		6'-0"	8
D537		30'-6"	4
D538		5'-0"	172
D539		29'-6"	176
D540		22'-10"	16
D541		16'-3"	16
D542		9'-7"	16
D543		2'-10"	16
D544		4'-0"	80
D545		2'-1"	16
D546		2'-3"	176
D547		2'-0"	112
D548		2'-3"	24
D549		2'-3"	32

TOTAL QUANTITIES

ITEM	QTY	UNIT	QTY
Concrete	20,575	cu yd	2,185
Reinforcing Steel	36,747	lbs	364
Total	36,747	lbs	

NOTES: 1. All dimensions shall be as shown on drawings unless otherwise specified.
 2. All reinforcement shall be as shown on drawings unless otherwise specified.
 3. All reinforcement shall be lap welded unless otherwise specified.
 4. All reinforcement shall be lap welded unless otherwise specified.

COLORADO DEPARTMENT OF HIGHWAYS
COLORADO SPRINGS FREEWAY
CIMARRON STREET BRIDGE
OVER FOUNTAIN CREEK

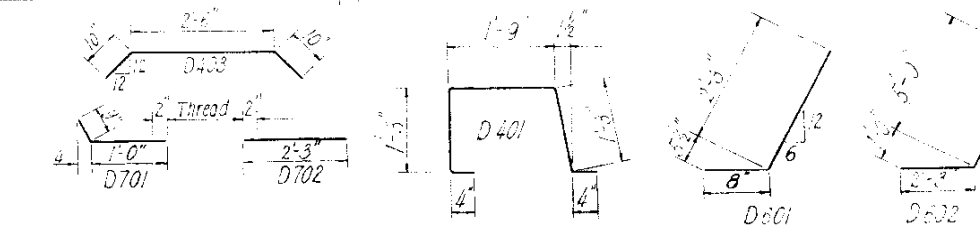
DECK

CLIFFORD JOHNSON & ASSOCIATES
 CIVIL ENGINEERS

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

BAR DETAILS

Bar No.	Dimensions
D401	4" x 4"
D402	4" x 4"
D403	4" x 4"
D501	4" x 4"
D502	4" x 4"
D503	4" x 4"
D515	4" x 4"
D516	4" x 4"
D528	4" x 4"
D535	4" x 4"
D536	4" x 4"
D537	4" x 4"
D538	4" x 4"
D539	4" x 4"
D540	4" x 4"
D541	4" x 4"
D542	4" x 4"
D543	4" x 4"
D544	4" x 4"
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D546	4" x 4"
D547	4" x 4"
D548	4" x 4"
D549	4" x 4"



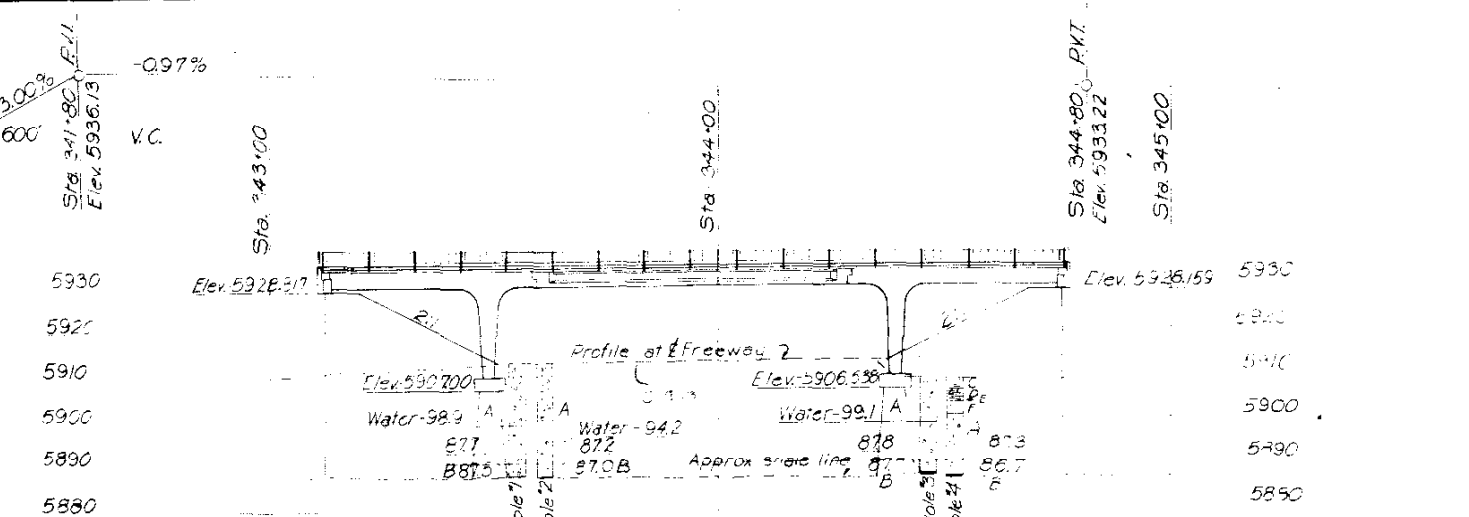
SECTION A-A
Scale: 1/4" = 1'-0"

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

SECTION C-C
Scale: 1/4" = 1'-0"

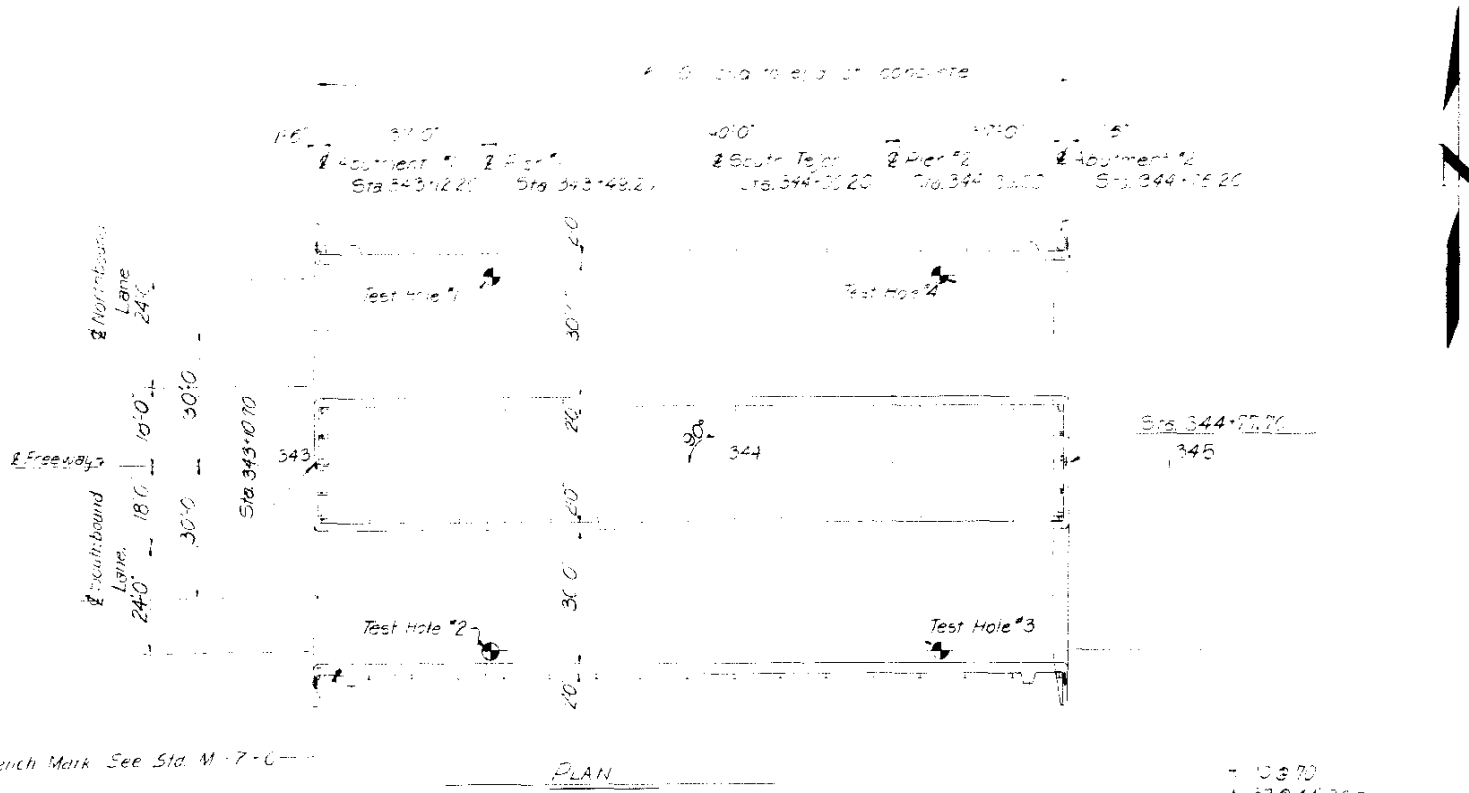
TYPICAL SECTION

Notes: 1. All dimensions shall be as shown on drawings unless otherwise specified.
 2. All reinforcement shall be as shown on drawings unless otherwise specified.
 3. All reinforcement shall be lap welded unless otherwise specified.
 4. All reinforcement shall be lap welded unless otherwise specified.



ELEVATION
 Beams 37'-0" x 30'-0" & 37'-0" x 30'-0" prestressed
 Beams 17'-0" with cast in place spalls both ends, Pedestal Type Piers, Pile bent type abutments

KEY TO SOUNDINGS
 A - Sand & Gravel
 B - Blue Shale
 C - Sandy Clay & Gravel
 D - Silty Clay
 E - Sandy Clay
 F - Fine Sand & Silty Sand



PLAN
 Bench Mark See Std. M-7-C
 + 32 9 20
 + 32 9 44 20 @ L
 + 32 9 19

GENERAL NOTES:
 All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways as adopted June 1952.
 The soundings and pile data are shown according to the best information available to the Colorado Department of Highways. If essentially different conditions are encountered, the Bridge Engineer will inspect and determine if revision is necessary. All piles shall be driven to the penetration shown unless in the opinion of the Engineer such penetration cannot be secured without injury to the piles. All piles shall be driven to minimum computed bearing value of 37 tons.
 Concrete shall be air-entrained and shall conform to the unit stresses indicated as required on each sheet.
 All concrete surfaces exposed to view shall receive Class 'I' surface finish except the underside of foot walls and abutment faces between outside girders.
 All reinforcing steel shall be intermediate grade deformed bars conforming to A.A.S.H.O. Specifications M3 and A137 (A.S.T.M. designations A15 and A305). All bars and bends in bars shall conform to A.C.I. Standard 318-5.
 All reinforcing bars shall be tagged with structure number and mark.
 All steel castings shall receive one shop coat of zinc chromate and a field coat of zinc aluminum paint followed by a coat of aluminum paint.
 Holes for piles shall not be drilled until definitely determined by the Engineer that the piles cannot be driven without them.
 All concrete surfaces exposed to normal view by highway traffic shall receive Class 'I' Surface Finish.
 Design Specifications:
 A.S.-O. Series of 953 and Bureau of Public Roads, Tentative Design Criteria for Prestressed Concrete, 1954
 Design Loading: HS-20-S15-4
 Unit Stresses:
 For 2000 psi Class A
 For 2000 psi Prestressed Concrete
 For 20000 psi Reinforcing
 For 18000 psi Structures
 For 20000 psi Prestressed Girders
 For 10000 psi Concrete in Slabs

INDEX OF SHEETS
 Sheet No. 1 General Plan and Elevation
 Sheet No. 2 Abutment Details
 Sheet No. 3 Pier Details
 Sheet No. 4 Cast in Place Girders
 Sheet No. 5 Deck Layout and Details
 Sheet No. 6 Superstructure Details
 Sheet No. 7 Abutment and Bearing Details
 Sheet No. 8 Lighting and Slope Fixing Details

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	UNIT	Abut #1	Pier #2	Abut #2	SUPER	TOTAL
10	Excavation	Cu Yds		350			350
10a	Structural Backfill (Class 1)	Cu Yds	123		123		246
10c	Mechanical Compaction	Sq Yds	12.5	24	12.5		49
22a	Plant for Asphalt	Tons				125	125
22b	Plant for Stone	Tons	6,444		6,444		12,888
46a	Class A Concrete	Cu Yds	52.2	132.7	52.2	522.2	8213
46b	Prestressed Concrete Girders	Lf				10	* 10
47	Reinforcing Steel (Hot Rolled)	Lbs	3,368	4,008	3,368	80,039	133,783
48	Structural Steel (Structural Steel for Pier)	Lbs	1,245		1,245	26,210	28,700
62	1/2" Steel Pipe Piles (3" Thick)	Units	704	1,760	704		13,108
63	Drilled Holes for Piles	Units	304		304		1,608
65m	Concrete Bridge Piers	Cu Yds	61		61		122
80c	Sheet Piling (24" x 48" per 10' ft)	Lbs				190.2	190.2
90b	Electrical Conduit & Junction Boxes	Units				672	672

GENERAL PLAN AND ELEVATION

COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY

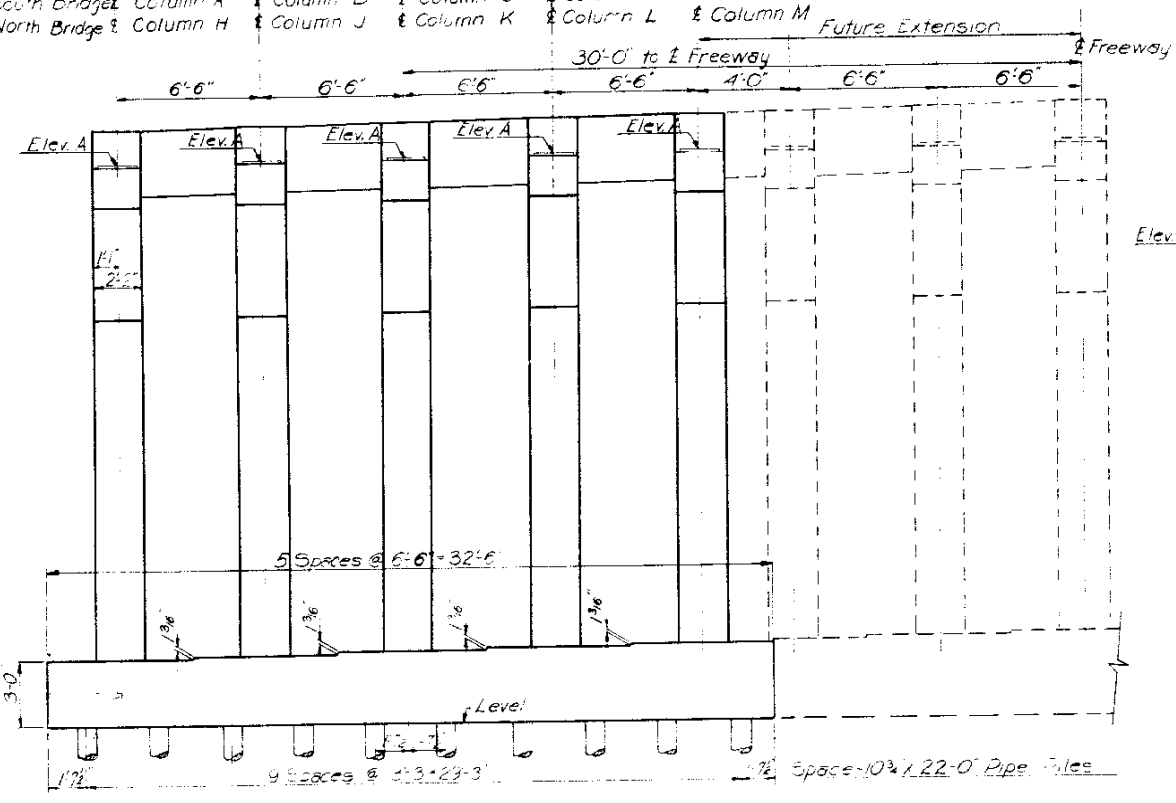
SOUTH TEJON STREET
 BRIDGE NOS 1-17-DA & DB

GENERAL PLAN AND ELEVATION

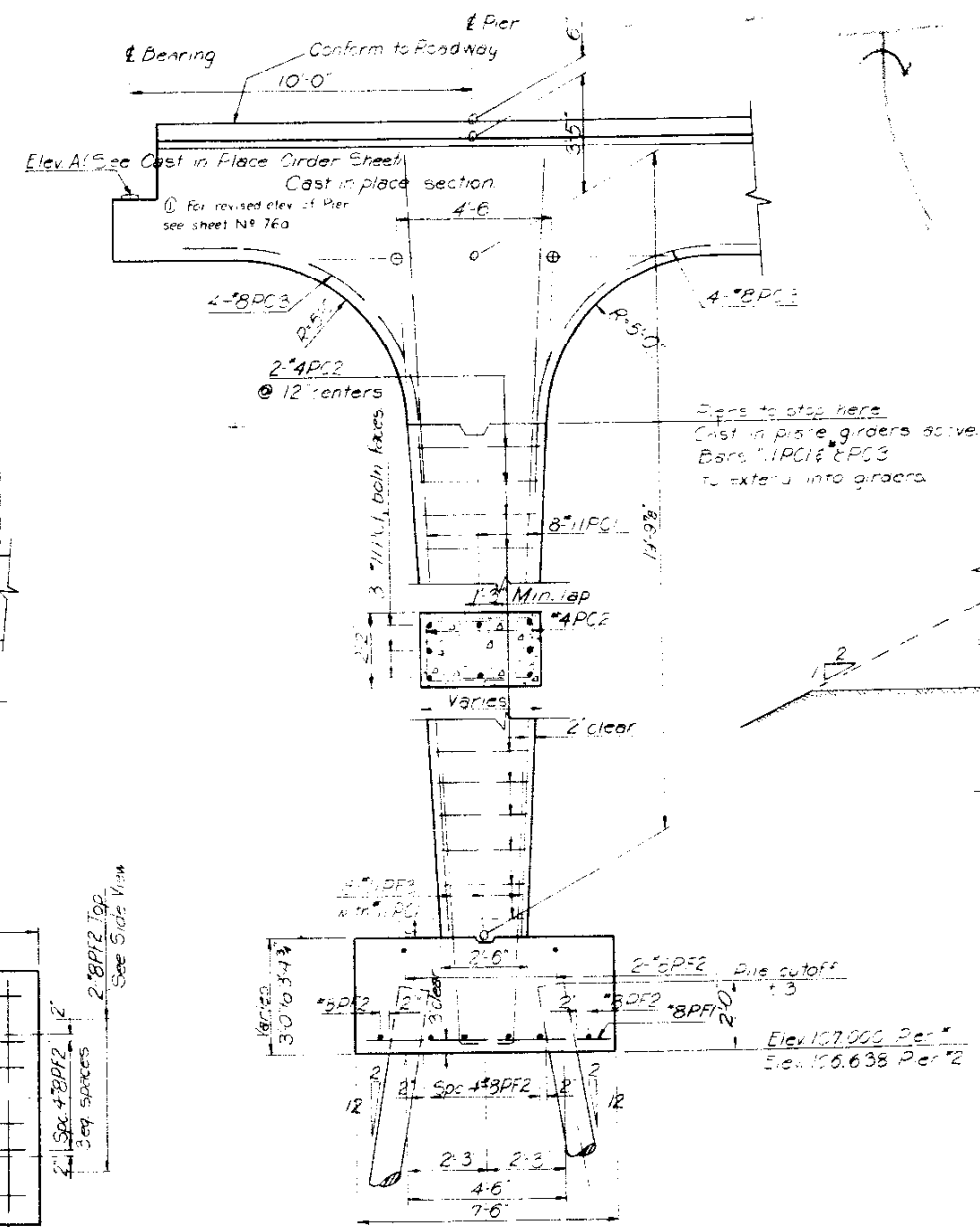
Robert L. Koons
 ROBERT L. KOONS
 CONSULTING ENGINEERS
 COLORADO SPRINGS, COLO.

DATE: April, 1957
 DRAWING NO.
 15 B 1

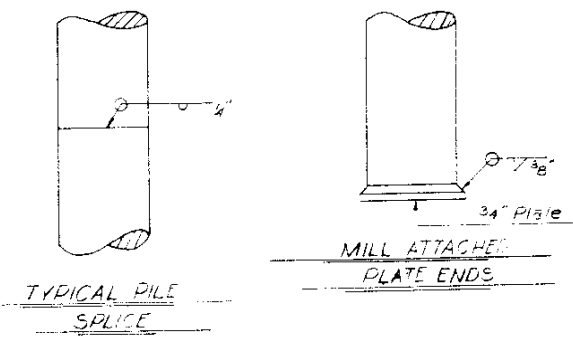
South Bridge Column A | Column B | Column C | Column D | Column E
 North Bridge Column H | Column J | Column K | Column L | Column M



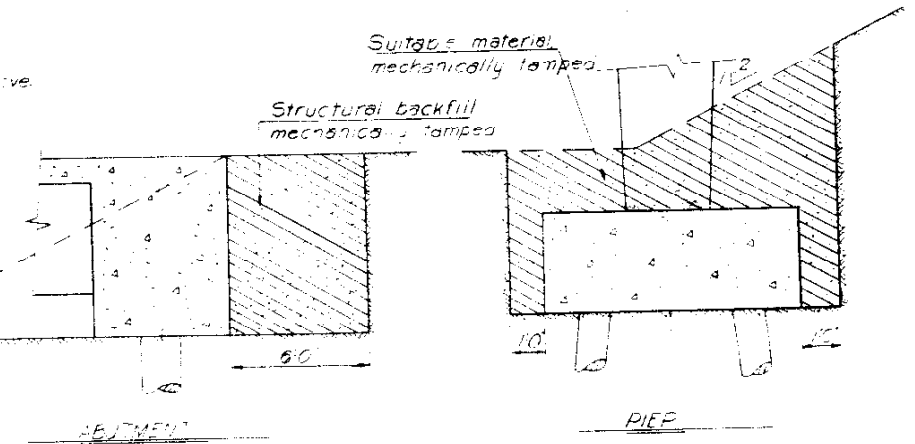
PIER ELEVATION



SIDE VIEW OF PIER SHOWING REINFORCING



PIPE PILE DETAILS



STRUCTURAL BACKFILL & MECHANICAL TAMPING DIAGRAM

Note: All material that is to be mechanically tamped shall be placed in horizontal layers, not more than 6 inches in depth and tamped before the next layer is placed.

NOTES:

- 1. Concrete to be Class A.
- 2. All dimensions for reinforcing steel are to E of bars unless otherwise noted. All dimensions shown in bending diagrams are cut to out of bars.
- 3. Have all exposed edges and corners of concrete with a 1/4" triangular molding unless otherwise noted.
- 4. Piles are to be pipe, 10 1/2" nominal diameter, minimum wall thickness of 0.188 inches and shall be filled with Class A concrete after driving piles may be filled at the same time the pier footing is poured at the option of the contractor. Cost of pile shall include furnishing, driving, splicing, cutoff and concrete filling.

Design loading H20-5.644 AASHTO Specifications, 1958
 Pile loading - 37 tons per pile
 Unit stresses

$f_s = 20,000$ psi
 $f_c = 1200$ psi

#60 Piles - 22' Long

SUMMARY PIER QUANTITIES

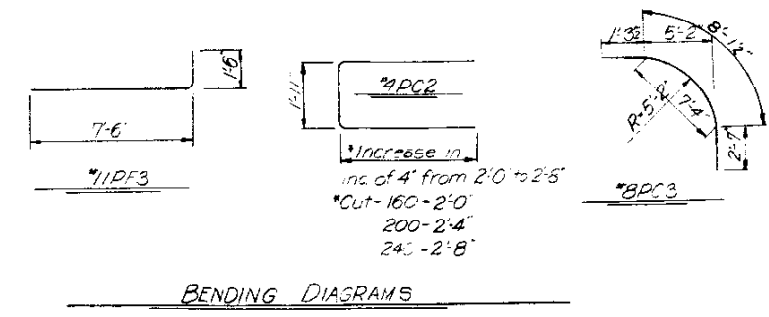
Structural Excavation	350 yd ³
Mechanical Tamping	24 hr
Class A Concrete	192.7 yd ³
Reinforcing Steel	41008'
10 1/2" Pipe Piles	1760 lin. ft.

COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY

SOUTH TEJON STREET
 BRIDGE NO'S I-17-DA & DB

PIER DETAILS

SCALE:	DATE: April, 1957
ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO.	DRAWING NO. 15 B 3



BENDING DIAGRAMS

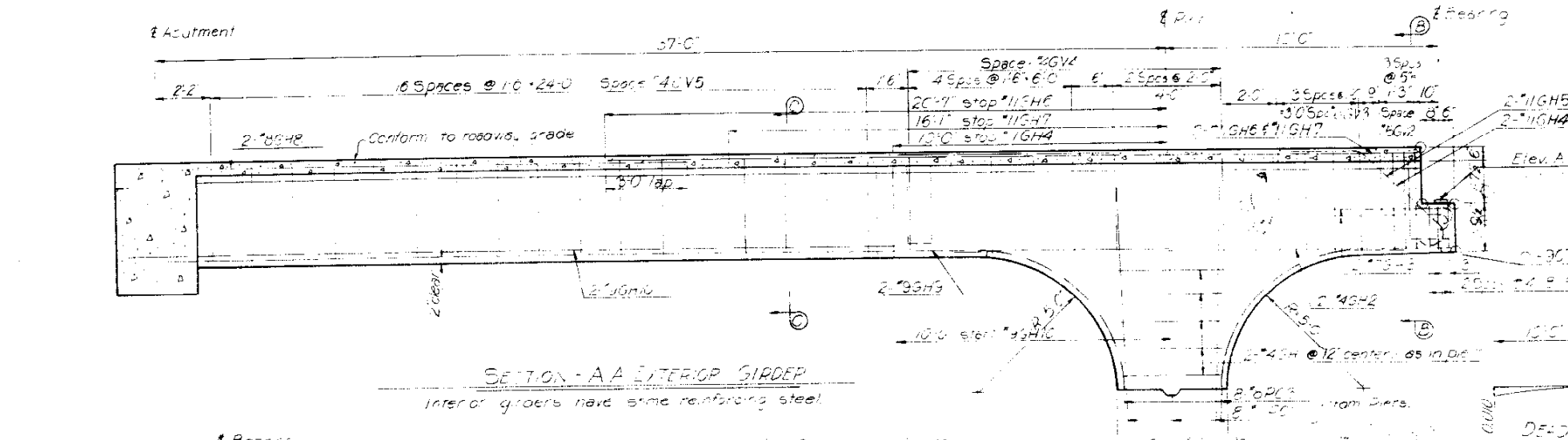
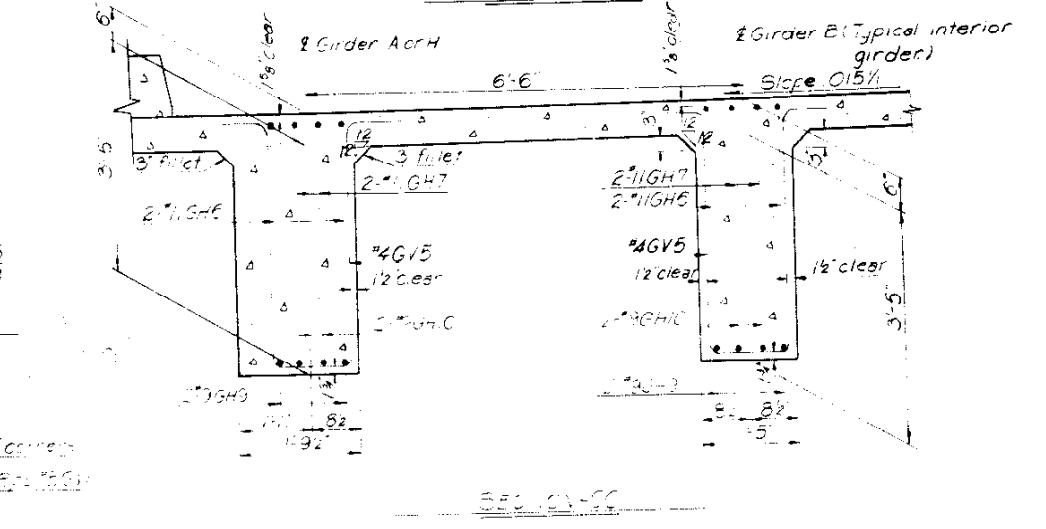
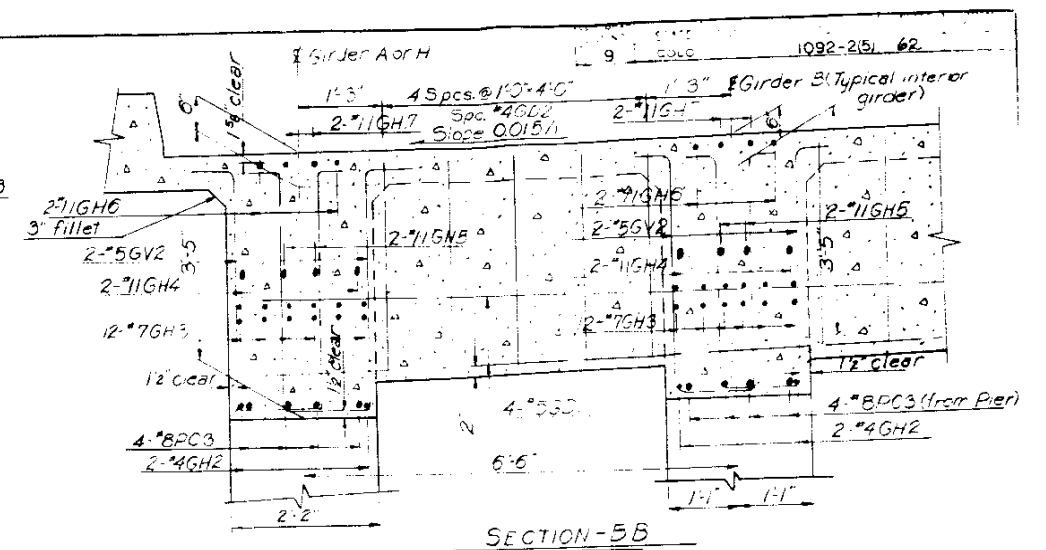
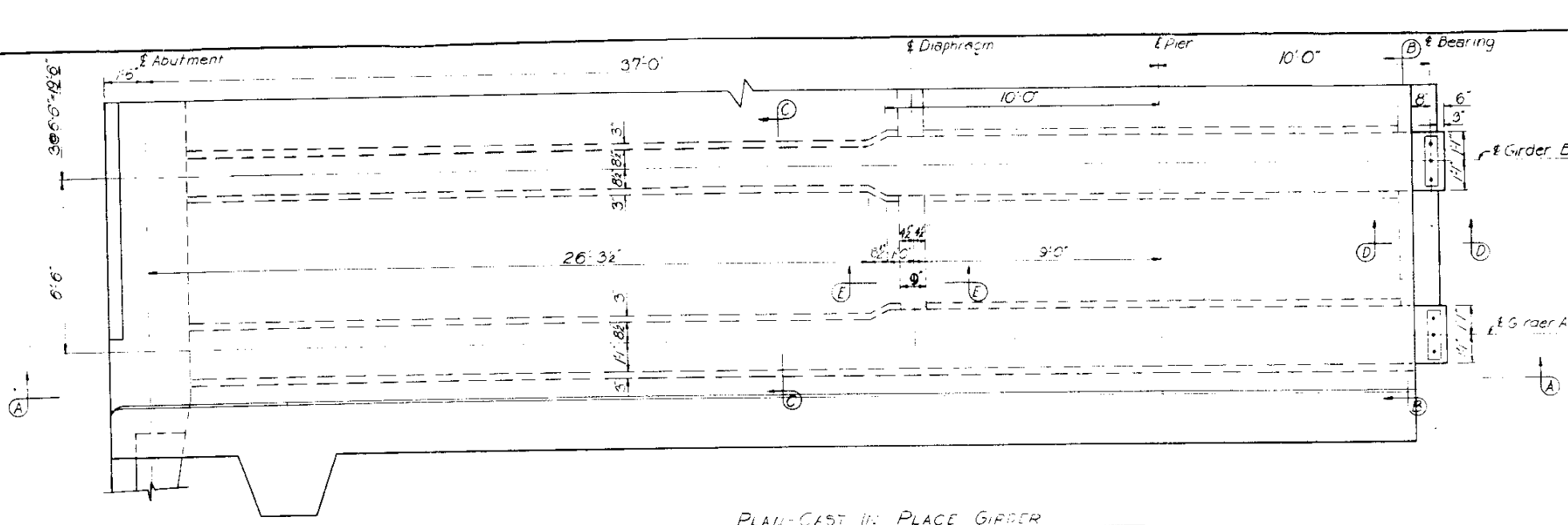
Both Bridges
 # BAR WEIGHT SUMMARY

#11 - 5040 lin. ft @ 5.313 lb/ft = 26,775
#8 - 4176 lin. ft @ 2.67 lb/ft = 11,150
#4 - 4003 lin. ft @ 0.568 lb/ft = 2274
1% Overrun = 406
Total = 41,008'

PIER REINFORCING SCHEDULE

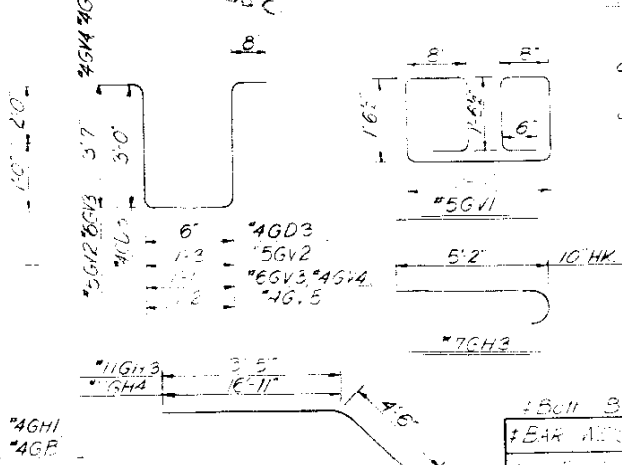
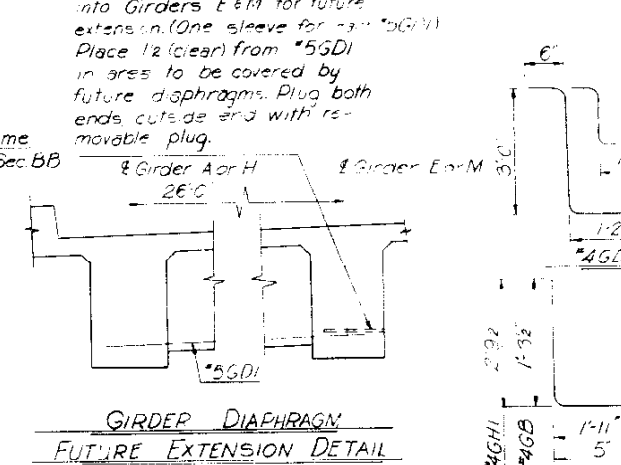
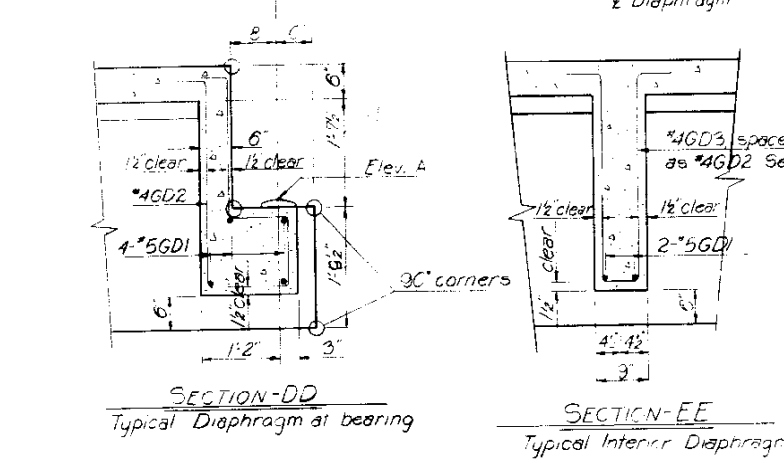
Bar	PC1	PC2	PC3	PF1	PF2	PF3
No. Req'd	160	600	160	176	32	160
Size	#11	#4	#8	#8	#8	#11
Length	22'-6"	*	12'-0"	7'-0"	32'-0"	9'-0"
Shape	—	□	—	—	—	—

* See bending diagram



Span	1st	2nd	3rd	4th
Deflection	3.145	3.02	3.11	3.815

NOTES:
 All corners to be 90°.
 All dimensions for reinforcing steel are to center unless noted. All dimensions for main members are to outside of bars.
 Beams to be cast in place and supported with 4" x 4" x 1/2" galvanized mounting unless otherwise noted.
 See Bearing Device sheet.
 See Pier Sheet for pier details.
 See Superstructure Sheet for roadway, steel and camber notes.
 Camber girders to be cast in place with the dead load deflection diagram.



CAST IN PLACE GIRDER REINFORCING SCHEDULE

Bar	GD1	GD2	GD3	GH1	GH2	GH3	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GV1	GV2	GV3	GV4	GV5	4GB
No. Reqd	24	80	80	200	40	240	40	40	40	40	40	40	40	60	160	80	160	310	80
Size	#5	#4	#4	#4	#4	#5	#11	#11	#11	#11	#8	#9	#9	#5	#5	#6	#2	#4	#4
Length	27'-0"	9'-0"	7'-9"	7'-6"	11'-0"	6'-0"	23'-0"	3'-6"	29'-9"	25'-3"	19'-6"	37'-0"	28'-3"	10'-6"	9'-9"	10'-3"	10'-3"	9'-6"	3'-0"
Shape		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

1.5 Bolt Bridges

BAR	NO.	SUMMARY
#5	24	24 x 5.313 = 127.512
#3	2610	2610 x 3.40 = 8893.4
#8	750	750 x 2.67 = 2002.5
#7	1440	1440 x 2.044 = 2943.36
#6	820	820 x 1.502 = 1231.64
#5	2838	2838 x 1.043 = 2960.034
#4	8150	8150 x 0.005 = 5444.5

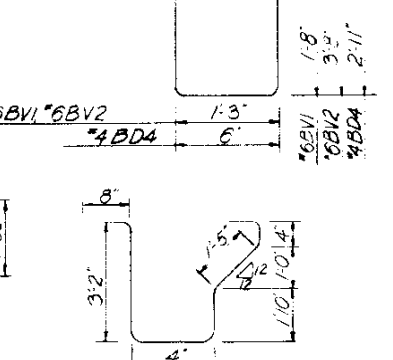
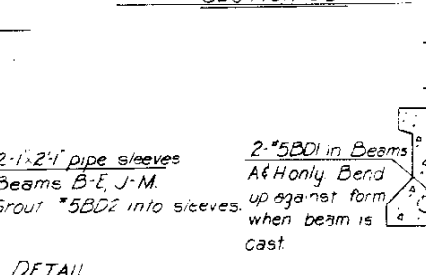
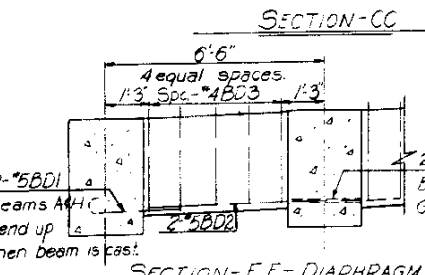
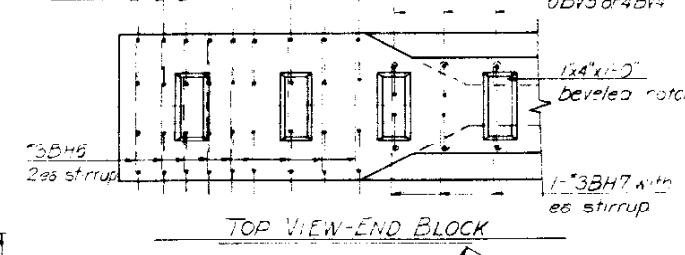
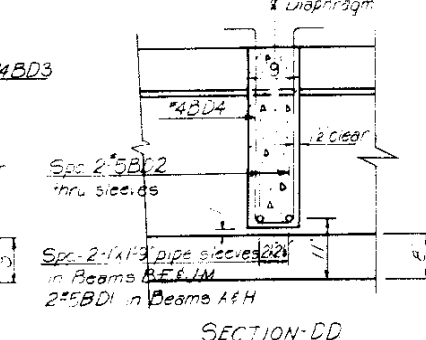
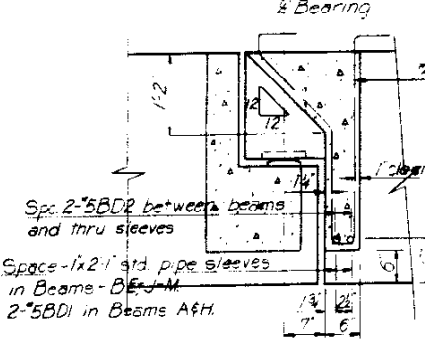
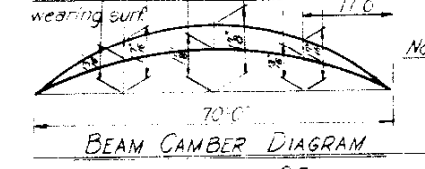
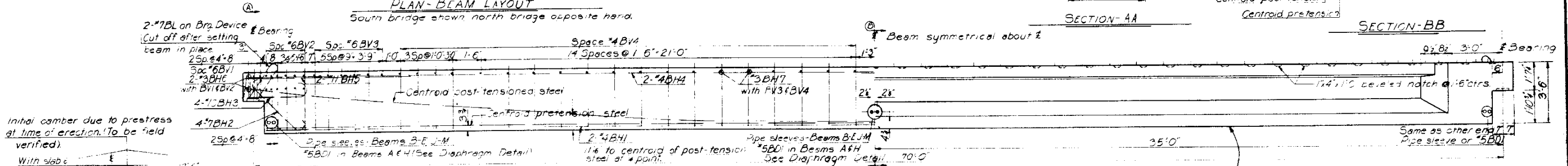
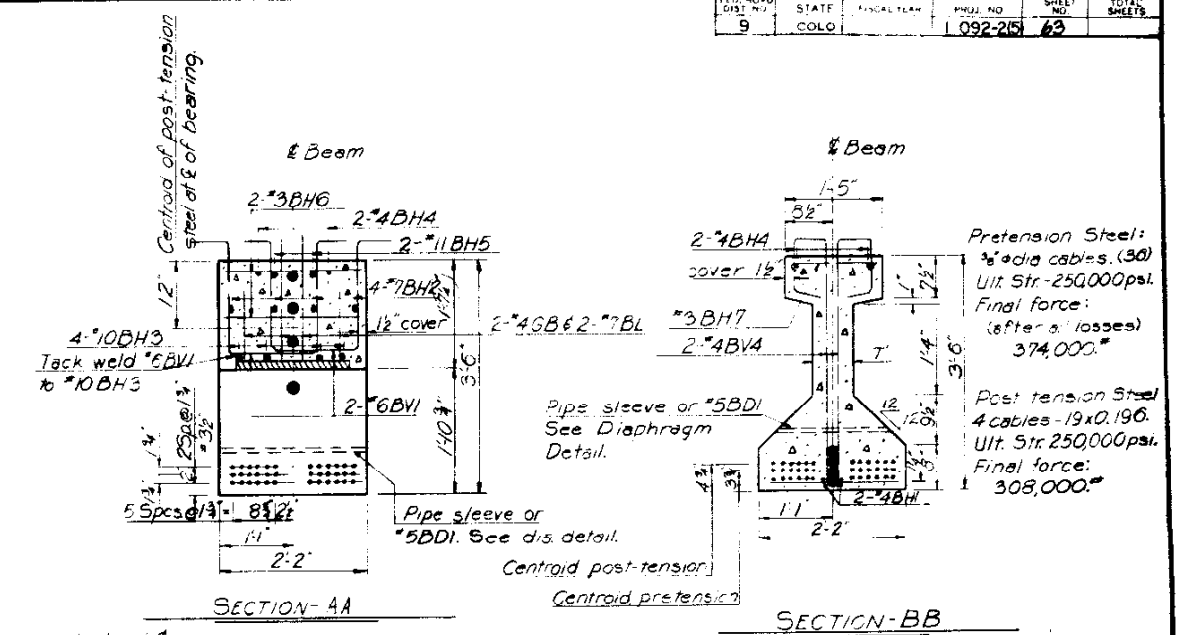
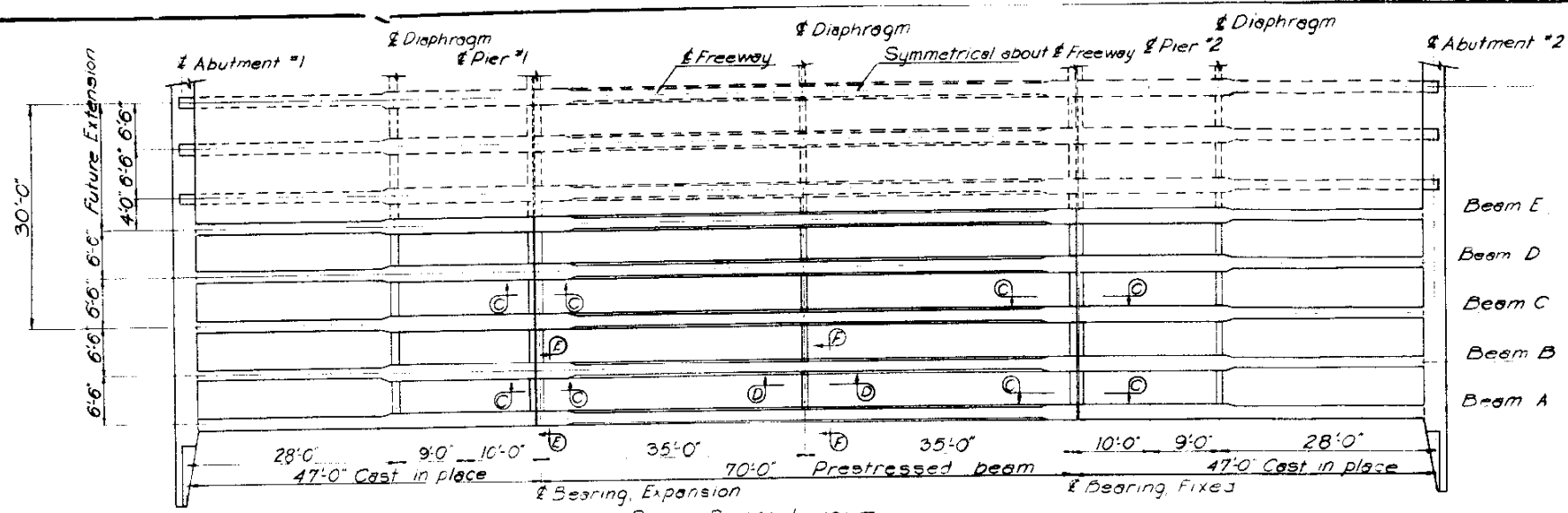
COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 SOUTH TEJON STREET
 BRIDGE NO'S 1-17-DA & DB

CAST IN PLACE BEAM DETAILS

SCALE: 3/4" = 1'-0"
 DATE: April, 1957

ROBERT L. KOONS
 CONSULTING ENGINEERS
 COLORADO SPRINGS, COLO.

DRAWING NO.
 15 B 4



*Does not include 5BD1

SUMMARY PRESTRESSED BEAM	
Reinforcing Steel (ea. beam)	
#1-36 lin. ft. @ 5.313	191.3
#10-36 lin. ft. @ 4.313	154.9
#7-63 @ 2.044	126.8
#6-46.2 @ 1.502	693.9
#4-77 @ 0.668	5.50
#3-199 @ 0.376	74.8
1/2 Overrun	7.6
Total	1136.3
Concrete (to 2000 psi)	1193 yd ³
Structural Steel (Bearing Plates)	1078

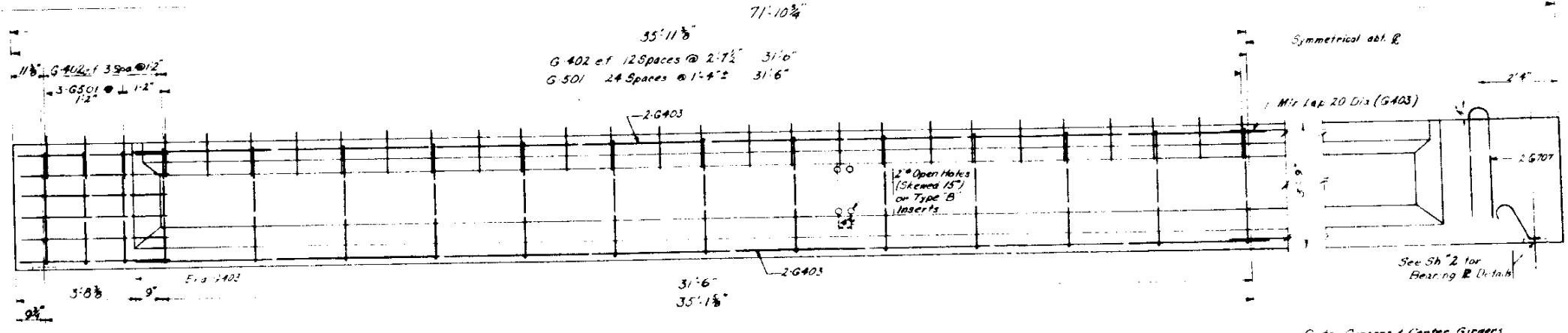
NOTES:
 Design Specifications - AASHTO, 1953 Series and Bureau of Public Roads, Tentative Design Criteria for Prestressed Bridges, 1954.
 Concrete in beams to be 5000 psi at 28 days, 4500 psi at time of transfer. Max. size aggregate to be 3/4". All other concrete to be Class A.
 Prestressing steel to be high tensile wire strands with a modulus of elasticity of 25,000,000 psi and ultimate strength of 250,000 psi.
 The anchorage of post-tensioned cables is assumed to be 100% efficient in the above design.
 All post-tensioned cables to be draped in a parabolic shape. All post-tensioned cables to be grouted as soon as practicable. Provide 3/8" grout tubes with suitable valves and shut-off cocks into each enclosure near the ends. Grout to be pumped into enclosure from one end only under 100 psi pressure until the entire enclosure around the cables is filled and grout flows freely from the exhaust end. Exhaust valve then to be closed and pumping continued until no more grout can be introduced.
 Prestressed beams to be supported at the ends only or handled by lifting hooks provided.
 Unit price for beams shall include all concrete reinforcing steel, high-strength steel, bearing devices, pipe sleeves etc. included within the beams.
 All dimensions for reinforcing steel are to center of bars unless otherwise noted. All dimensions shown on bending diagrams are cut to cut of bars.
 See Bearing Device details.
 Design Loading - H20-S16-44.

PRESTRESSED BEAM REINFORCING SCHEDULE										BEAM DIAPHRAGM REINFORCING				
Bar	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BL	GB	BD1	BD2	BD3	BD4	
No. Req'd	40	80	80	40	40	360	500	40	40	12	12	80	40	
Size	#4	#7	#10	#4	#11	#3	#3	#7	#4	#5	#5	#4	#4	
Length	35'-0"	5'-6"	4'-6"	36'-0"	9'-0"	2'-9"	2'-0"	1'-9"	3'-0"	4'-0"	24'-9"	8'-3"	7'-9"	
Shape														

COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 SOUTH TEJON STREET
 BRIDGE NO'S I-17-DA & DB
PRESTRESSED BEAM LAYOUT AND DETAILS
 SCALE: _____ DATE: April, 1957
 ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO. DRAWING NO. 15 B 5

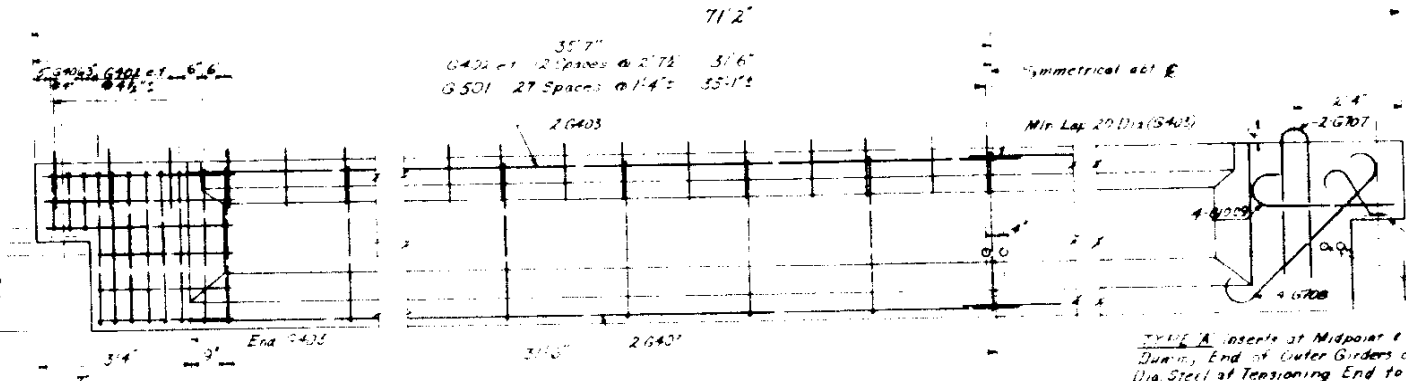
BAR LIST FOR PRESTRESSED GIRDERS

STRUCTURE DI (56 REQ'D)					
Mark	Type	Length	No. Required	Size	
G501	Bent	4' 6"	55	3080	#5
G402	Bent	5' 2"	62	3472	#4
G403	Str	4' 6"	4	224	#4
G404	Bent	5' 0"	24	1344	#4
G207	Bent	6' 0"	4	254	#7



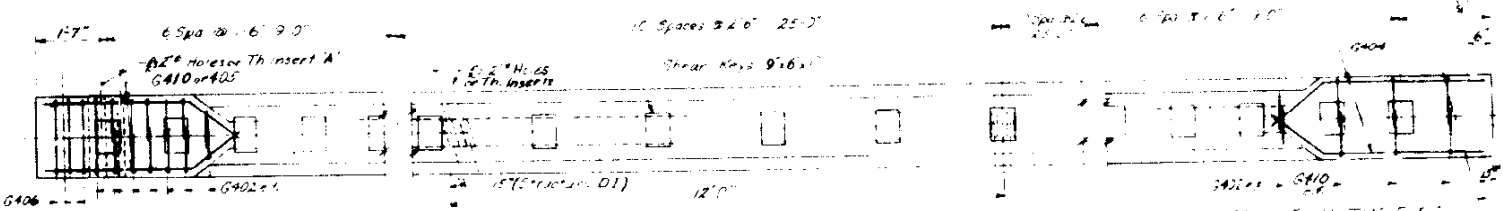
ELEVATION - STRUCTURE DI
Scale 1/4" = 1'-0"

Center Girders & Center Girders. Structure DI have TYPE 'B' Threaded Inserts at 3 Points as shown above. Diaphragm steel at ends is placed before End Block is poured (after tensioning). See Sheet #5 for TYPE 'B' Insert. Angle of Skew = 75°



ELEVATION - STRUCTURES DA/DB
Scale 1/4" = 1'-0"

TYPE A Inserts at Midpoint & During End of Outer Girders only. Dia Steel at Tensioning End to be placed before End Block is poured.



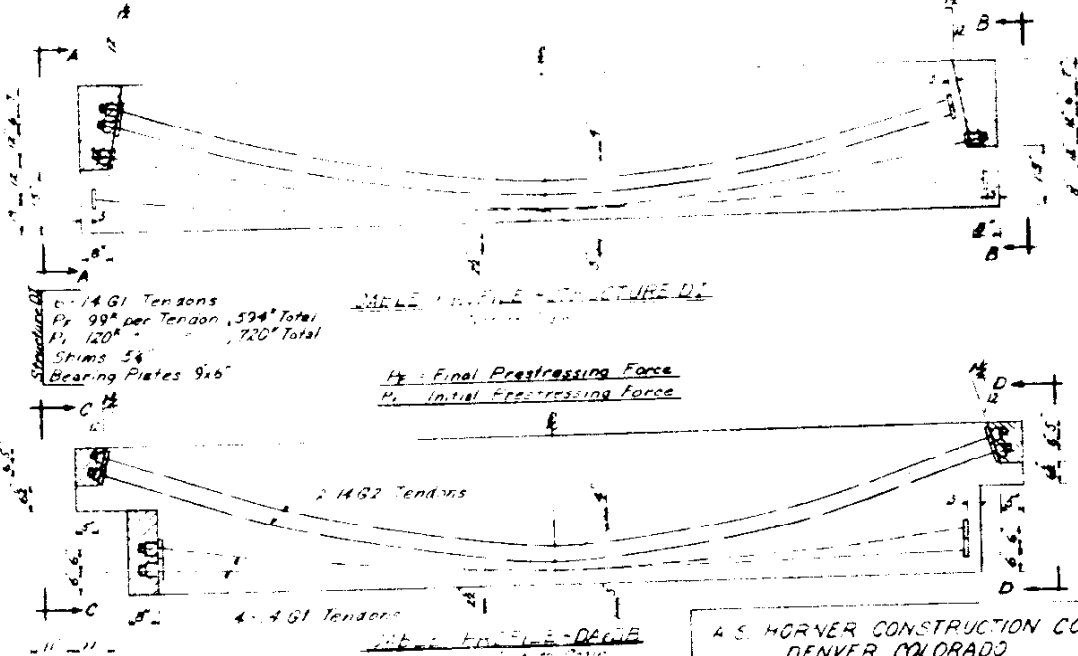
PLAN - STRUCTURES DA/DB

PLAN - STRUCTURES DA/DB
Scale 1/4" = 1'-0"

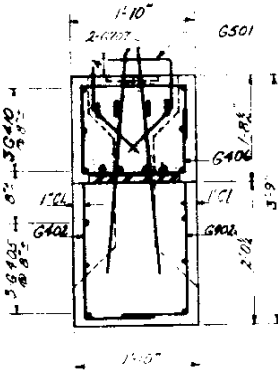
PLAN - STRUCTURE DI

GENERAL NOTES (All Sheets)
Ultimate Stress of Wires to be a minimum of 1.4 times the Initial Stress.

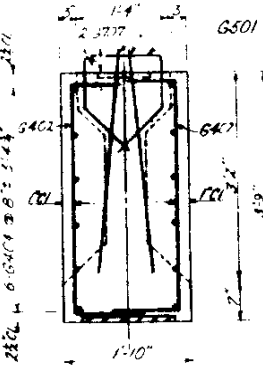
Prestress Tendons (No. 6 AG1) are identical:
6 - Number of Tendons
14 - Number of 4/8 wires per Tendon
6 - Wires enclosed in metal conduit for Grouting.
1 - Stressed from one end & 2 - both ends
Shims have been added to the depth of the Shims to provide for the seating of the Butt-Straps.



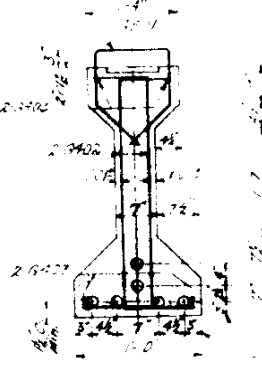
H₁ - Final Prestressing Force
H₂ - Initial Prestressing Force



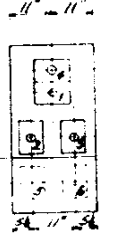
END BLOCK SECTION STRUCTURES DA/DB



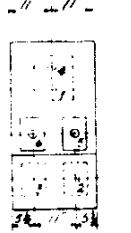
END BLOCK SECTION STRUCTURE DI
Scale 1/4" = 1'-0"



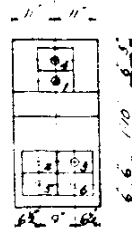
2 SECTION STRUCTURES DA/DB



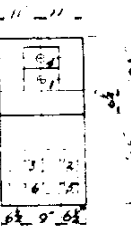
VIEW A-A



VIEW B-B



VIEW C-C



VIEW D-D

STRUCTURE DI
Scale 1/4" = 1'-0"

STRUCTURES DA/DB
Scale 1/4" = 1'-0"

A. S. HORNER CONSTRUCTION CO.
DENVER, COLORADO

STANDARD GIRDERS

PROJ. NO. 1092 (15) COLORADO SPRINGS

STRUCTURE NOS. 1-17 DA/DB, DI

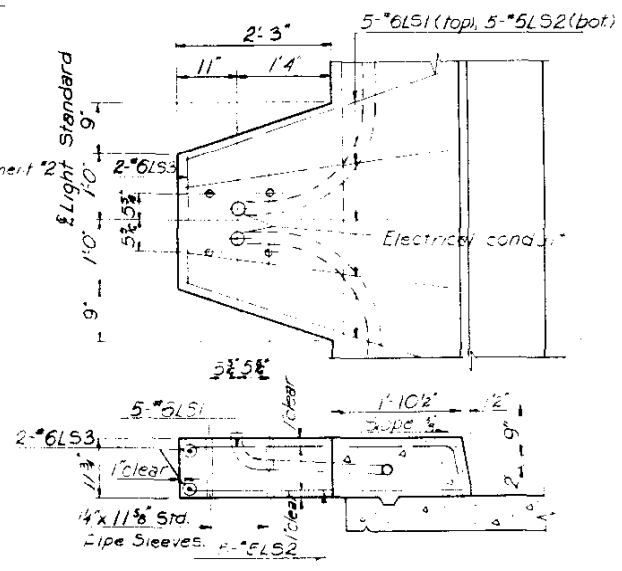
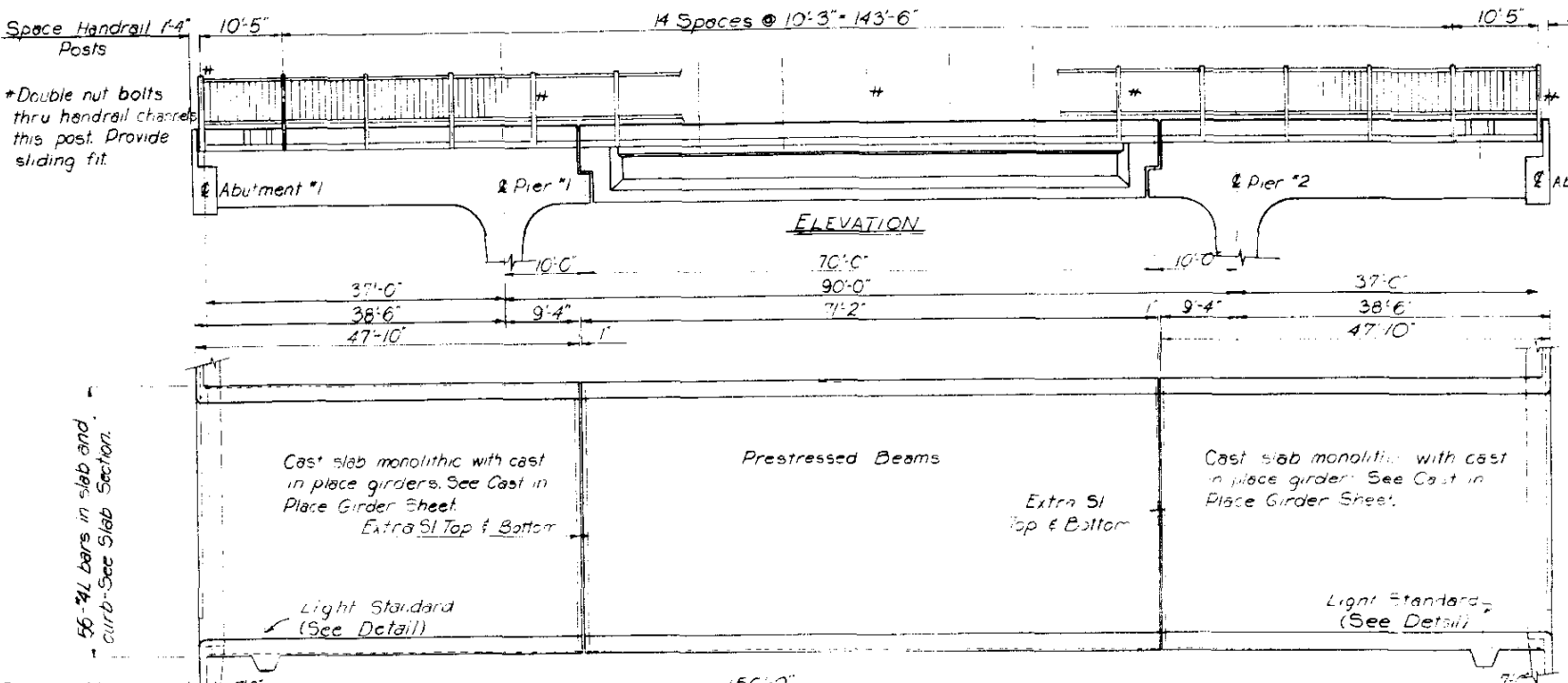
CUSTOMER: CL HUENNER CONST. CO.

ENGINEERS: R. L. KOONS & L. BODUROFF

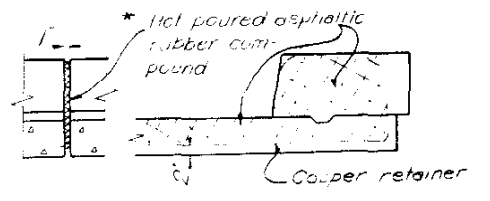
DESIGNED L. B. S.A. E. S. A. SHEET NO. 63

DRAWN L.M.

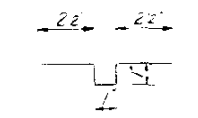
CHECKED L.M. DATE 2-27-58 NO. OF SHEETS



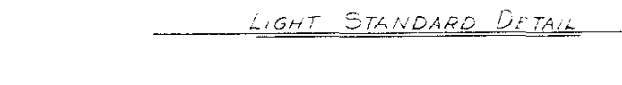
* Shall conform to Federal Specification SS-5-164



TYPICAL DETAIL-ALL SLAB JOINTS

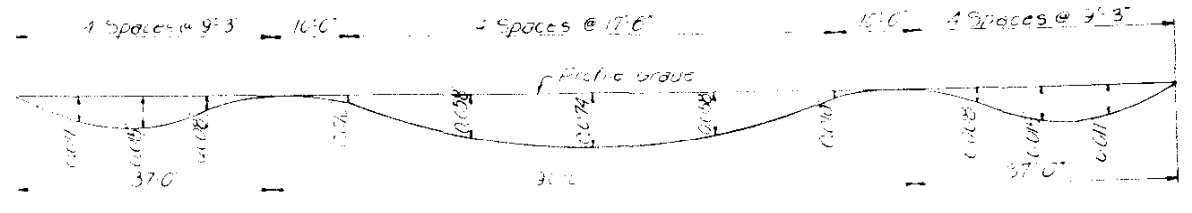


COPPER RETAINER DETAIL
32 oz. per sq. ft.

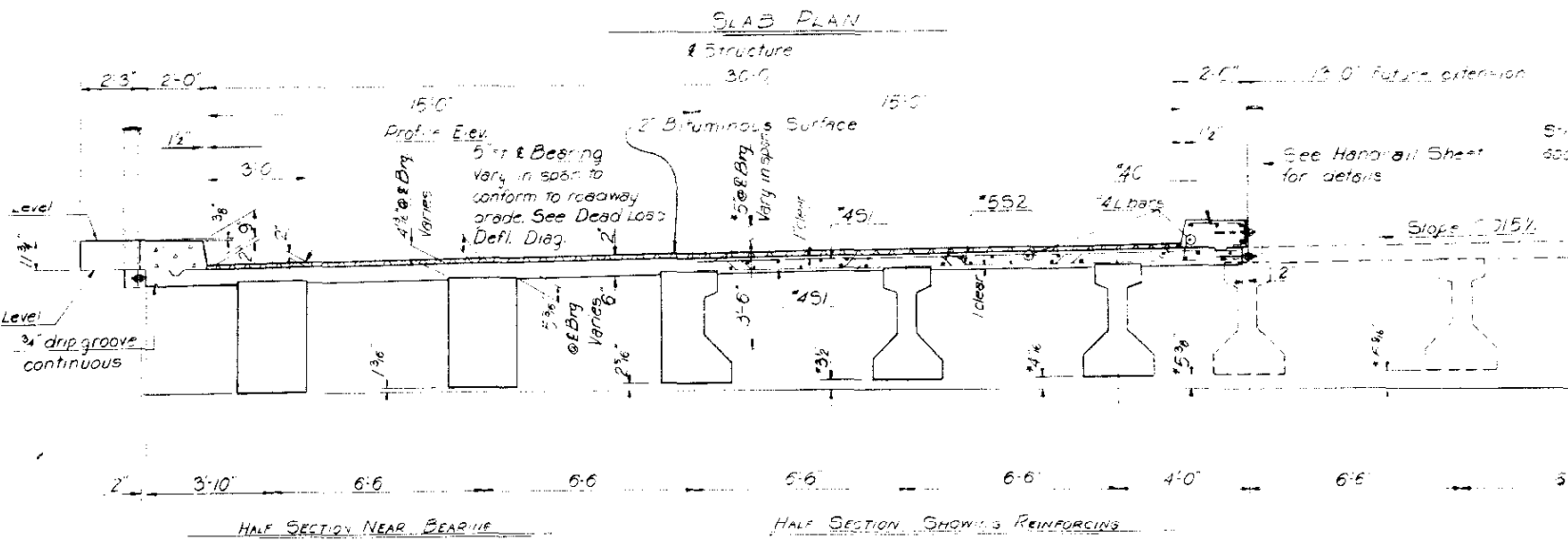


LIGHT STANDARD DETAIL

Space light standards	7'-0"	15'-0"	7'-0"
#4 longitudinal bars in slab & curb	L1 (36'-3")	L2 (12'-9")	L1
Space #4S1 (bot) 2'-6"	45 Spcs @ 1'-0" = 45'-0"	1'-0"	45 Spcs @ 1'-0" = 45'-0"
Space #5S2 (top) 3'-0"	44 Spcs @ 1'-0" = 44'-0"	2'-0"	44 Spcs @ 1'-0" = 44'-0"
alternate ends	2'-6"	Space 167'-40" with #4S1 in each curb	2'-6"
	2'-6"	140 Spcs @ 3" = 70'-0"	90 Spcs @ 6" = 45'-0"



DEAD LOAD DEFLECTION DIAGRAM
in 1/4" increments



SLAB SECTION
*At Bearing only - See dead load camber diagrams

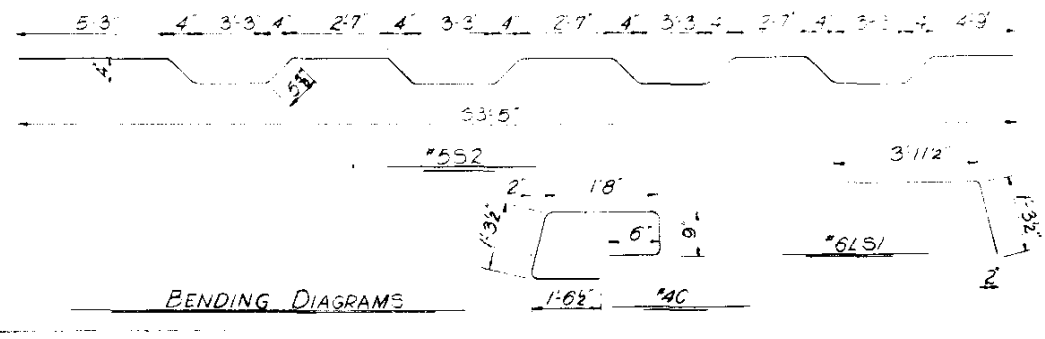
REINFORCING SUMMARY	
Area of concrete	14,477 cu ft
Volume of steel	4,467 cu ft
Weight of steel	21,687 lbs
Weight of concrete	36,120 lbs
Volume of asphalt	62 cu ft
Weight of asphalt	125 tons

NOTES:
 1. All concrete shall be Class A.
 2. Dimensions for reinforcing steel are to top bars unless otherwise shown. The bending directions are out to out of page.
 3. Beams at closed edges with a 3" triangular loading unless otherwise indicated.
 4. The finished floor slabs be constructed to the maximum grade by increasing or decreasing the slab thickness over the beams by the amounts shown on the dead load deflection diagram and the amount required to maintain the roadway profile as curved.

See Lighting Sheet for conduit details.
 See Signage Sheet for details.

Design Loads: HS20-50, 44, 44B, H20, S16, 1953 Ed.
 Soil Stresses: fs = 20,000 psi
 fc = 200 psi

Bar	C	L1	L2	L3	L4	L5	S1	S2
No. Req'd	668	448	224	20	20	8	668	320
Size	#4	#4	#4	#6	#5	#6	#4	#5
Length	5'-9"	36'-3"	12'-9"	5'-3"	4'-0"	1'-0"	33'-6"	34'-6"
Shape	□							

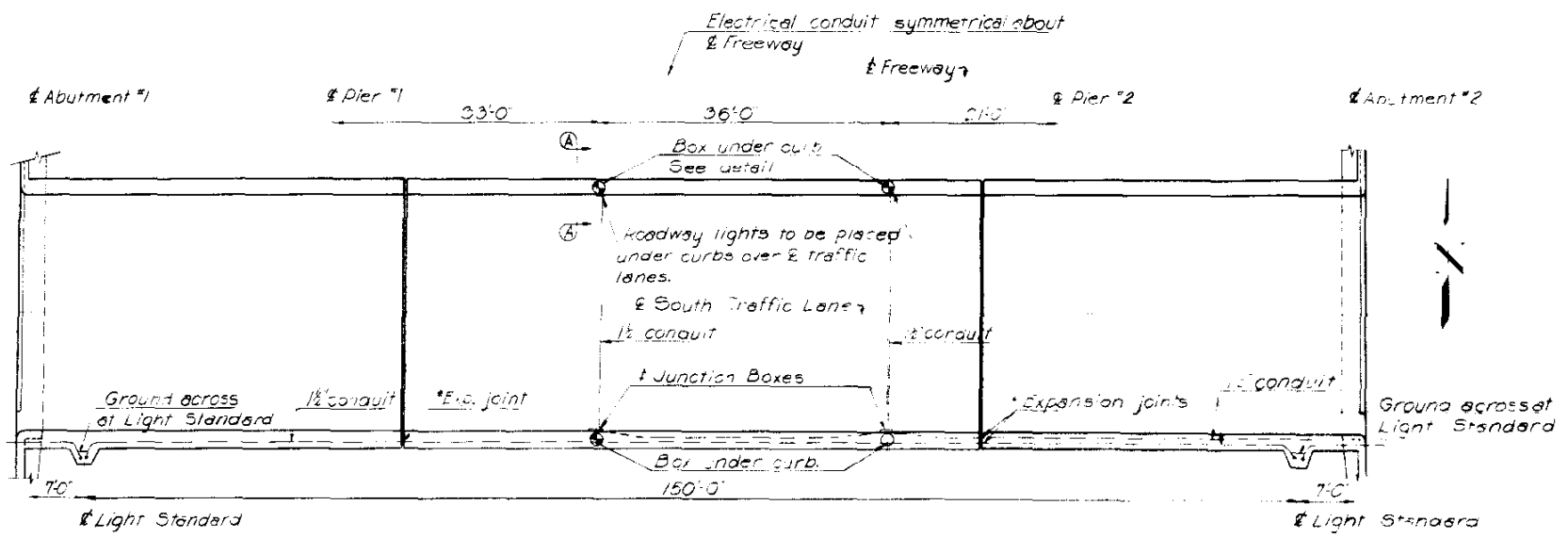


BENDING DIAGRAMS

COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 SOUTH TEJON STREET
 BRIDGE NOS 1-17-DA & DB

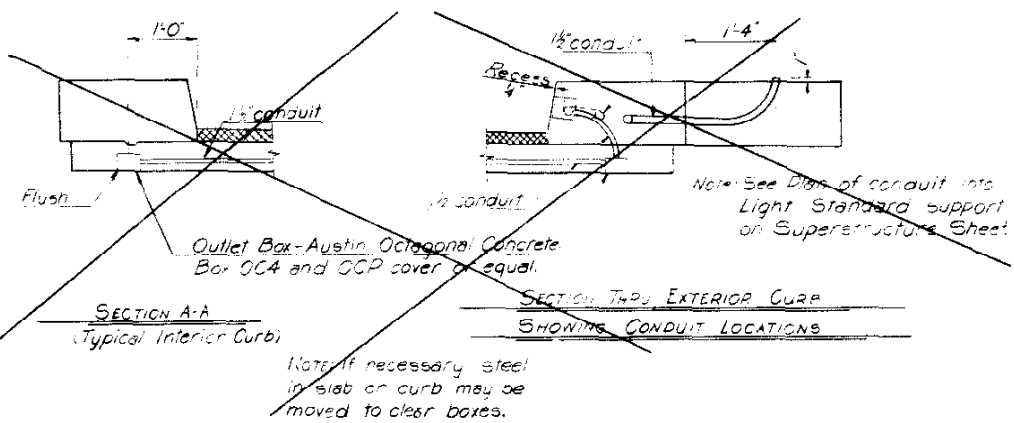
SUPERSTRUCTURE DETAILS

SCALE: _____ DATE: April, 1957
 ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO. DRAWING NO. 15 B 6

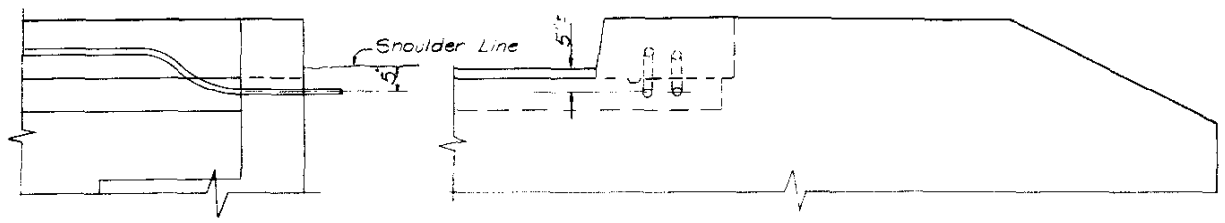


LIGHTING PLAN FOR SOUTH BRIDGE

*Expansion joints in conduit to be Crouse-Hinds Catalog No. XJ44 or equal.
~~Junction boxes to be Crouse-Hinds Watertight Series WJCA Junction Conduits or equal.~~

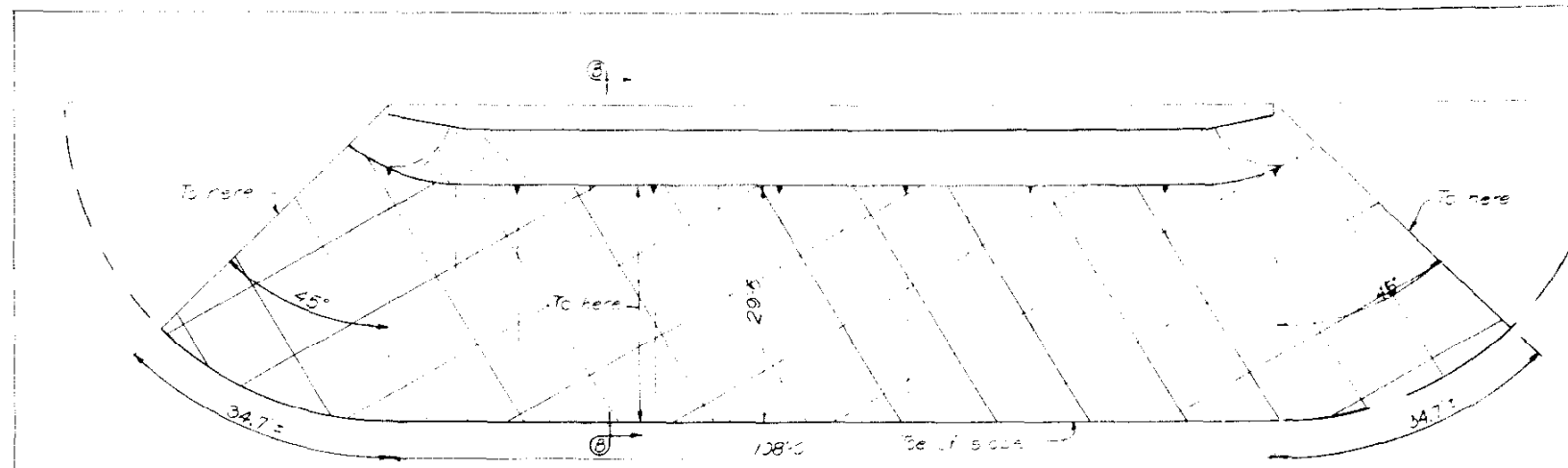


Note: If necessary steel in slab or curb may be moved to clear boxes.

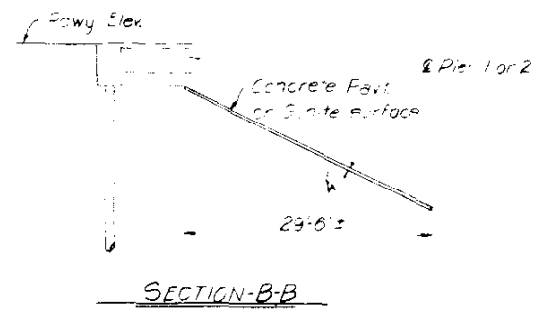


DETAIL AT ABUTMENT - (TYPICAL AT ABUTMENT #2)
 Abutment #1 same except only one conduit.

LIGHTING CONDUIT DETAILS



Cover slope surface indicated with 4" concrete slab using 5x5" #10 mesh and precasted joints into 10'-0" squares. Granite may be used at the contractors option.

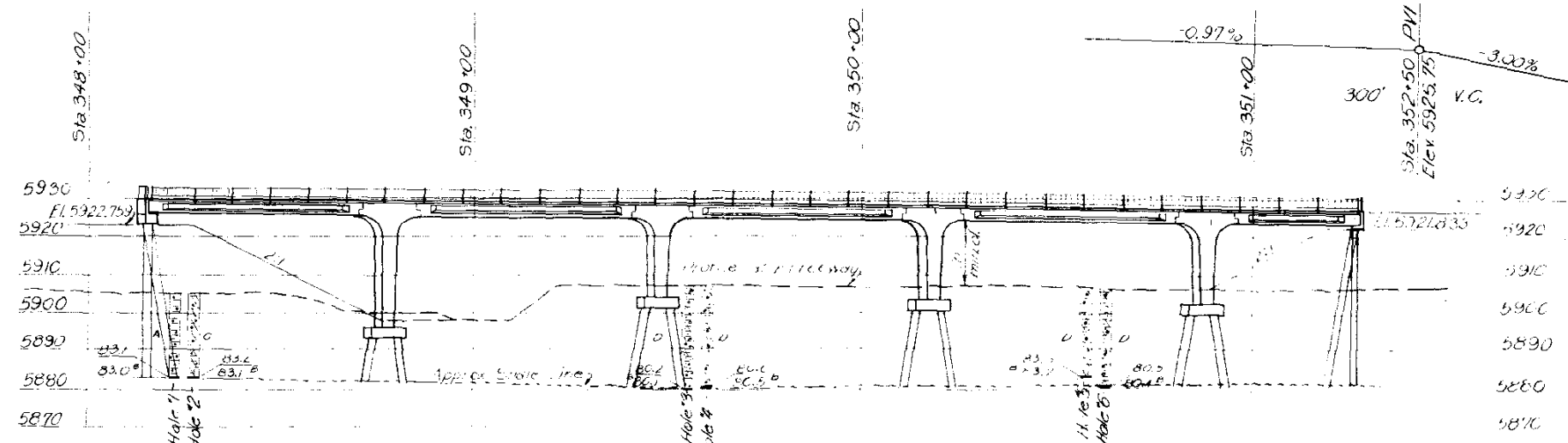


SECTION-B-B

SLOPE PAVING DETAILS
 ABUTMENTS #1 & 2

SUMMARY OF SLOPE PAVING QUANTITIES
 Concrete Paving - 22,300 sq. ft.
 Reinforcing Steel - 2076' (Reinforcing Steel Included in cost of Conc. Slope and Ditch Paving.)

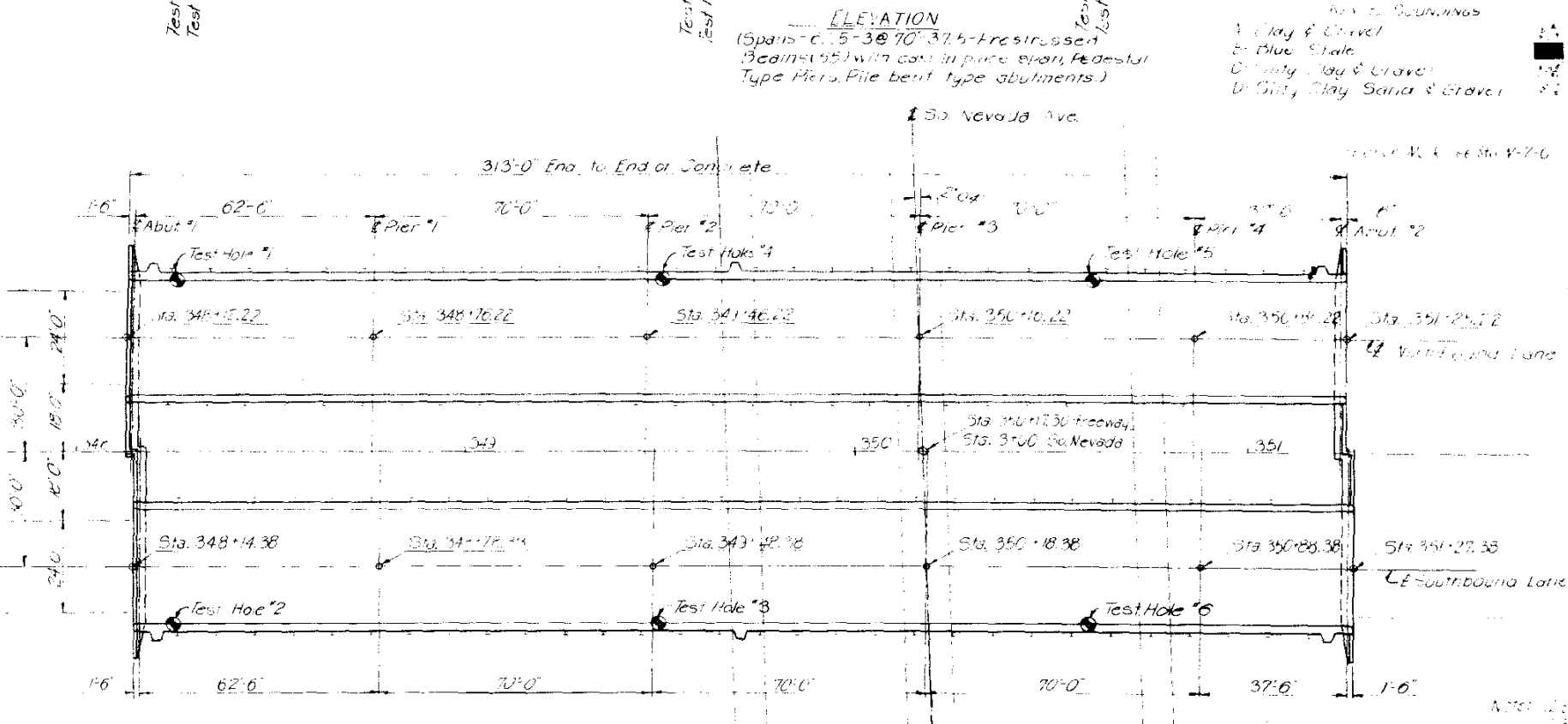
COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY	
SOUTH TEJON STREET BRIDGE NO'S 1-17-DA & DB	
LIGHTING AND SLOPE PAVEMENT DETAILS	
SCALE	DATE: April, 1957
ROBERT L. KOONS CONSULTING ENGINEER & COLORADO SPRINGS, COLO.	DRAWING NO. 1588



GENERAL NOTES:
 All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways as adopted June 1, 1952.
 The soundings and pile data are shown according to the best information available to the Colorado Department of Highways. If essentially different conditions are encountered the Bridge Engineer will inspect and determine if redesign is necessary. All piles shall be driven to the penetration shown unless in the opinion of the Engineer such penetration cannot be secured without injury to the piles. All piles shall be driven to a minimum computed bearing value of 47 tons for 12" diameter and 37 tons for 10" diameter.
 All concrete shall be air entrained and conform to the unit stresses indicated or required on each sheet.
 All concrete surfaces exposed to normal view by highway traffic shall receive Class "I" surface finish.

All rebar and steel shall be intermediate grade deformed bars conforming to A.A.S.H.C. Specifications M31 and M137 (A.S.T.M. designations A15 and A105). All hooks and bends in bars shall conform to A.C.I. Standard 315-51.
 All reinforcing bars shall be tagged with structure number and mark.
 All steel railings shall receive one shop coat of zinc chromate and a field coat of tinted aluminum paint followed by a coat of aluminum paint.

DESIGN SPECIFICATION:
 AASHTO Series of 1953 and Bureau of Public Roads, Tentative Design Criteria for Prestressed Bridges, 1954.
 Design Loading H-20 SIC-44.
 Unit Stresses:
 2-1200 psi Class A
 1-2000 psi Prestressed beams to 5000 psi
 15-20000 psi Reinforcing
 4-30000 psi Structural
 15-20000 psi Prestressed cables



PLAN

SUMMARY OF BRIDGE QUANTITIES

Item No.	Description	Unit	Abut #1					Piers				Abut #2	Super	Total	Item No.	Description	Unit	Abut #1				Abut #2	Super	Total
			1	2	3	4	1	2	3	4	1							2	3	4				
14g	Common Excavation (str.)	Cu.Yds.	141	176	188	180						679	Claw	12" Steel Pipe Piles	Lin.ft	677	500	320	820	704			3696	
16a	Structural Backfill (Claw)	Cu.Yds.	177	77						123		377	Claw	10" Steel Pipe Piles	Lin.ft							880		880
16c	Mechanical Tamping	Hrs.	18	7	10	12	12	12			71		60x	Drilling Holes * to facilitate Pile Driving	Lin.ft	272					304			576
32a	Plant Mix Asphalt Surfacing	Tons									234		15m	Concrete Slope & Drain Falls	Cu.Yds.						56			56
12b	Treated Bridge Timber	M.Cm	0.444					0.444			0.888		80c	Sheet Copper (32 oz. Per Sq. Ft.)	Lbs.							760		760
46a	Class A Concrete	Cu.Yds.	540	214.0	187.8	138.4	114.4	52.2	620.2	1441.3			30b	Electrical Conduit & Junction Boxes	Lin.ft							1038		1038
46b	Prestressed Concrete Beams	Ea							40	40														
47	Reinforcing Steel (1.7% Overrun)	Lbs.	4517	58,480	50,113	47,551	21,211	3,453	105,286	290,611			1	Premeaded Joint Material	Sq.ft.							160		160
48	Structural Steel (Includes 1/2" ± for Paint)	Lbs.	1,755	1,075	1,075	16,735		1,220	50,345	72,205														

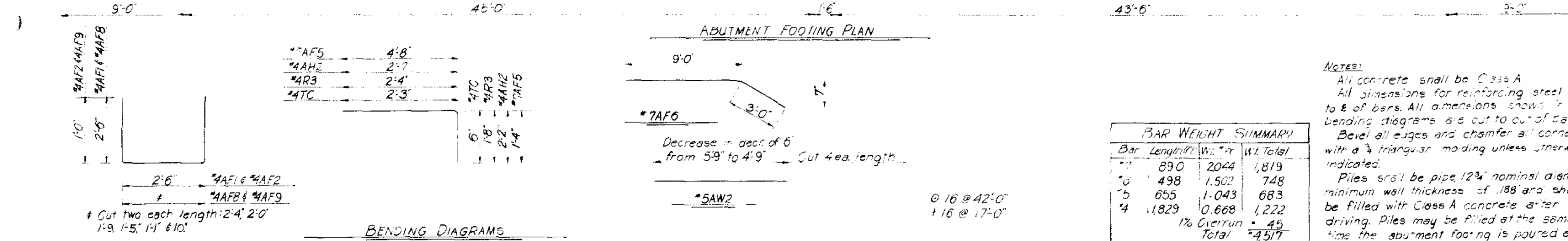
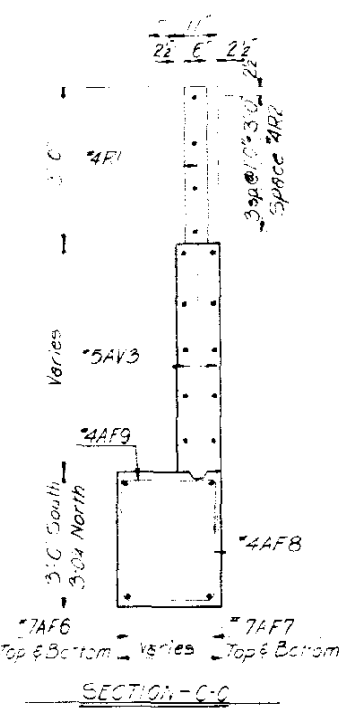
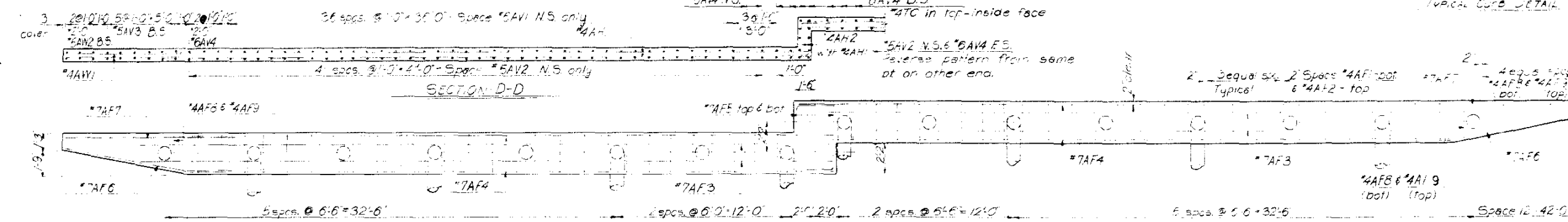
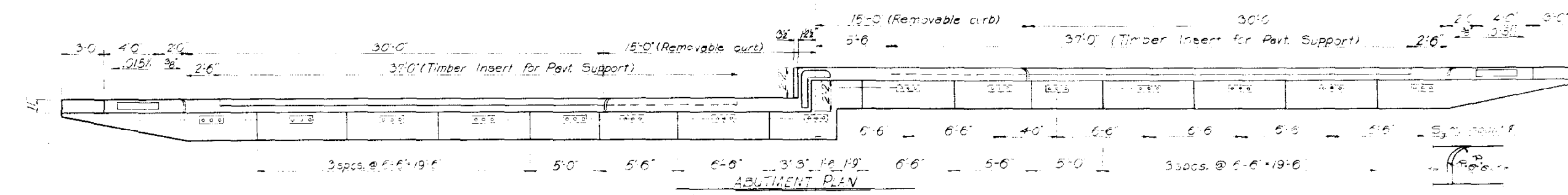
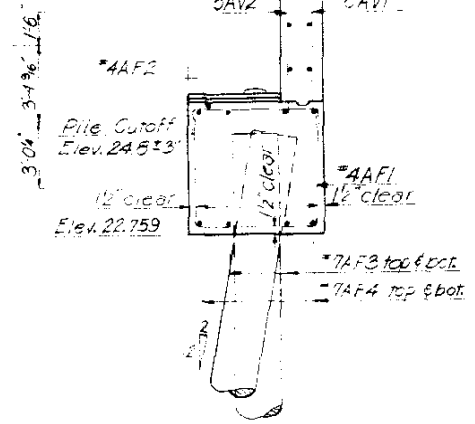
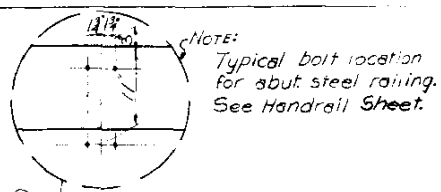
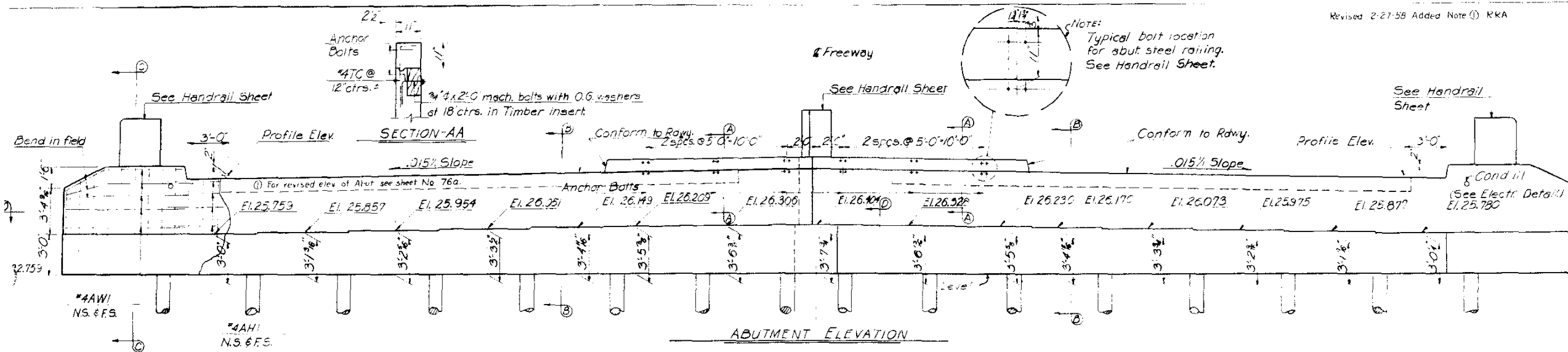
c/c @ 22'
 8'40" @ 14', 40" @ 25', 40" @ 2', 16" @ 12', 16" @ 44'
 † Subsidiary to Class A Concrete
 * 16 @ 19' Abut. #2
 6 @ 17' Abut. #1
 † 40 @ 55'

COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 SOUTH NEVADA AVENUE
 BRIDGE NO'S 1-17-DC & DD

GENERAL PLAN AND ELEVATION

Robert L. Koons
 ROBERT L. KOONS
 CONSULTING ENGINEERS
 COLORADO SPRINGS, COLO.

DATE: April, 1957.
 DRAWING NO.
 15 A 1



NOTES:
 All concrete shall be Class A
 All dimensions for reinforcing steel are to & of bars. All dimensions shown in the bending diagrams are cut to cut of bars.
 Bevel all edges and chamfer all corners with a 3/4" triangular mounding unless otherwise indicated.
 Piles shall be pipe 12 3/4" nominal diameter minimum wall thickness of .188" and shall be filled with Class A concrete after driving. Piles may be filled at the same time the abutment footing is poured at the contractor's option.

Bar	Length	Wt. Per	Wt. Total
#1	890	2.044	1,819
#2	498	1.502	748
#3	655	1.043	683
#4	1,829	0.668	1,222
1% Overrun			45
Total			4,517

Struct. Backfill	177 CY
Mechanical Tamp	18 Hrs.
Class A Concrete	540 CY
Reinforcing Steel	4,517 Lbs.
Structural Steel	1,820 Lbs.
Steel Pipe Piles	672 L.F.
Drilling Holes	272 L.F.
To Timber Header (M)	.444 f.b.m.

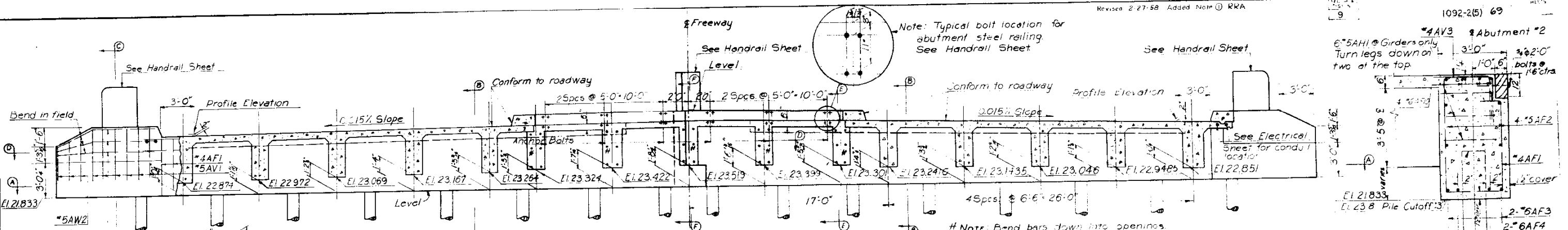
Bar	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AH1	AH2	R1	R2	R3	TC	AV1	AV2	AV3	AV4	AW1	AW2
No. Reqd	54	54	8	8	4	4	4	2	12	14	8	13	8	4	16	74	84	20	30	20	12
Size	#4	#4	#7	#7	#7	#7	#7	#4	#4	#4	#4	#4	#4	#4	#4	#6	#5	#5	#5	#4	#5
Length	7'-6"	4'-6"	50'-0"	46'-3"	6'-0"	12'-0"	12'-0"	*	*	46'-3"	4'-9"	4'-9"	2'-3"	4'-0"	2'-9"	4'-6"	5'-6"	6'-6"	5'-6"	8'-9"	*
Shape	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□

* See Bending Diagram

COLORADO STATE HIGHWAY DEPARTMENT
 COLORADO SPRINGS FREEWAY
 SOUTH NEVADA AVENUE
 BRIDGE NO'S 1-17-DC & DD

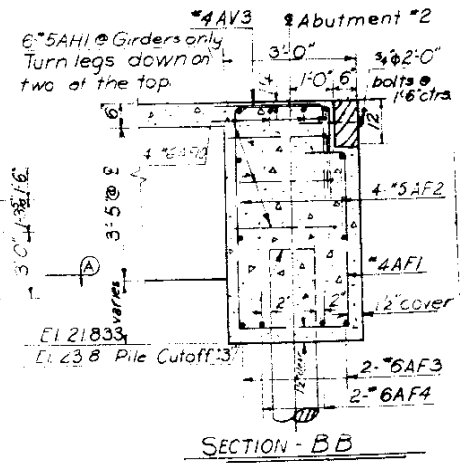
ABUTMENT NO. 1 DETAILS

SCALE 1/4" = 1'-0" 2'-10"
 DATE April 1957
 ROBERT L. KOONS
 CONSULTING ENGINEERS
 COLORADO SPRINGS, COLO.
 DRAWING NO
 15 A 2

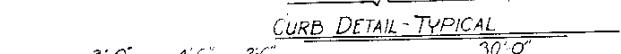


ABUTMENT ELEVATION
Elevations on bottom of girders are at face of abutment.
① For revised elev. of Abut. see sheet N° 760.

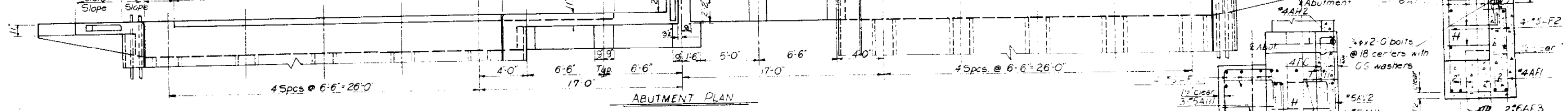
Note: Bend bars down into openings. Then brick up openings with common brick and plaster. This work to be included in the unit price of Class A concrete bid item.



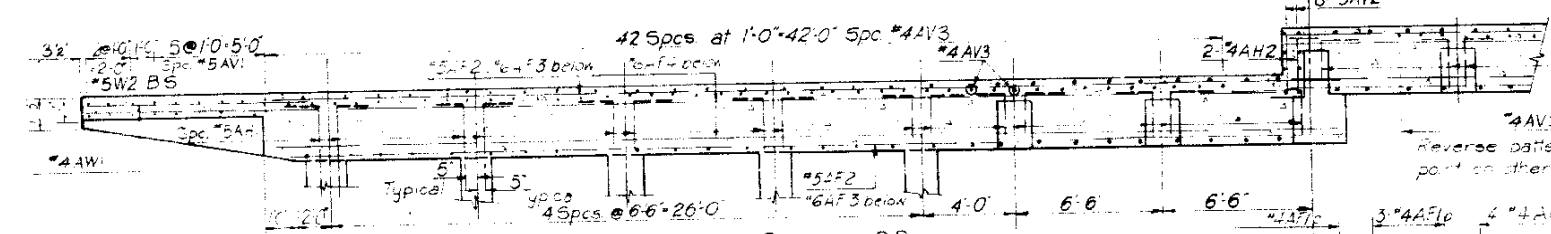
SECTION-BB



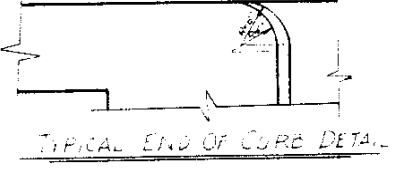
CURB DETAIL-TYPICAL



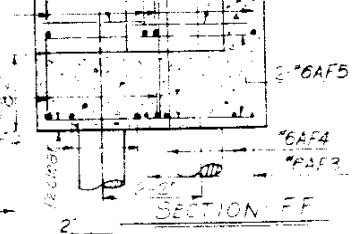
ABUTMENT PLAN



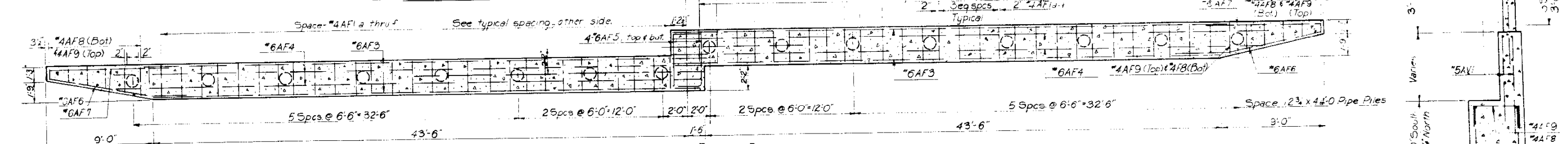
SECTION-DD



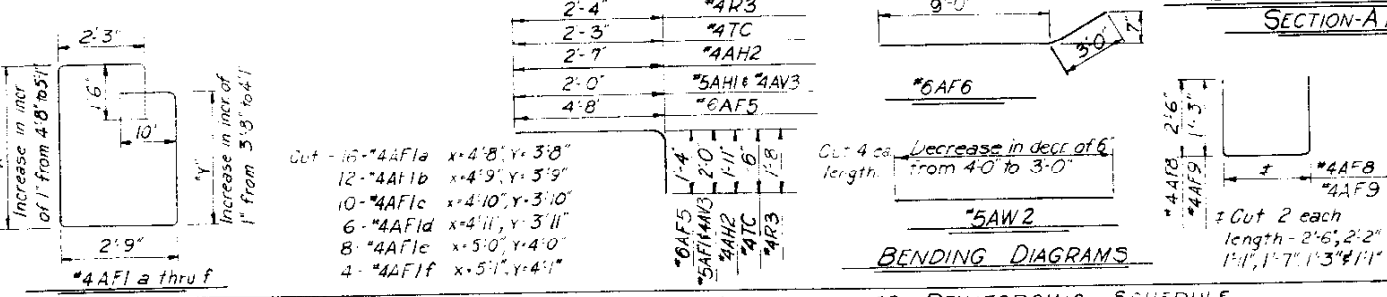
TYPICAL END OF CURB DETAIL



SECTION-EE



ABUTMENT FOOTING PLAN
SECTION-AA



BENDING DIAGRAMS

BAR WEIGHT SUMMARY		ABUTMENT #2 QUANTITIES	
*6 - 89.0 lin ft @ 1.502 %	1,338 lbs	Structural Backfill	23 yds
*5 - 92.20 lin ft @ 1.043 %	962 lbs	Mechanical Tamping	12 hrs
*4 - 1,675.6 lin ft @ 0.668 %	1,119 lbs	Class A Concrete	52 yds
1% Overrun	34 lbs	Reinforcing Steel	3,453 lbs
		Structural Steel	1,285 lbs
		12 3/4" Steel Pipe Piles	104 lin ft
		Drilling Holes	304 lin ft
		Treated Timber Header	0.444 MFB
	Total 3,453 lbs		

NOTES:
All concrete to be Class A.
All dimensions for reinforcing steel are to E of bars. All dimensions shown in bending diagrams are out to out of bars.
Bevel all edges and miter all corners with a 3/4" triangular mousing unless otherwise noted.
Piles shall be pipe, 12 3/4" nominal diameter, minimum wall thickness of .188" and shall be filled with Class A concrete (subsidiary item) after driving. Piles may be filled at the same time the abutment is poured at the contractor's option.
See Handrail Sheet for details.
See cast in place girder sheet for details of girders to be cast with abutment.
See Electrical Sheet for conduit location and size.

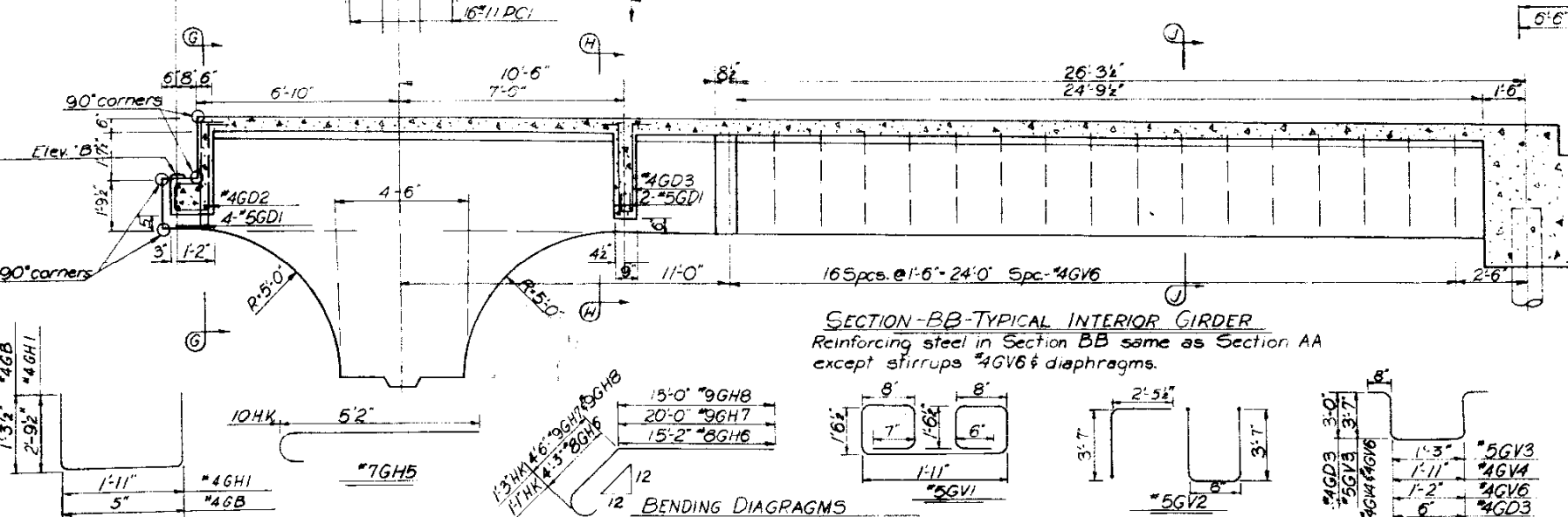
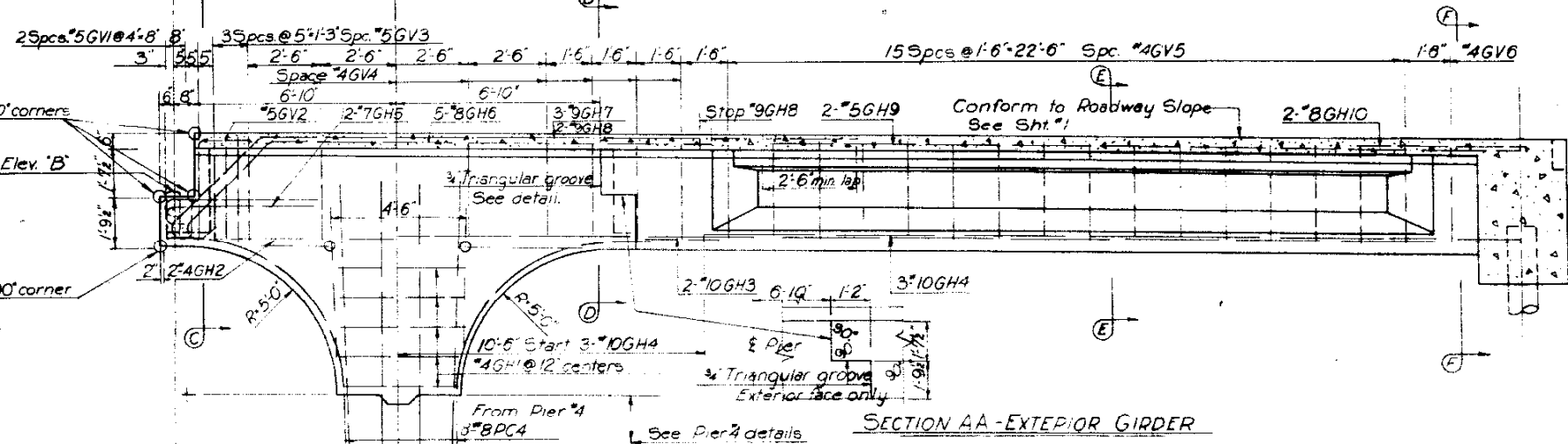
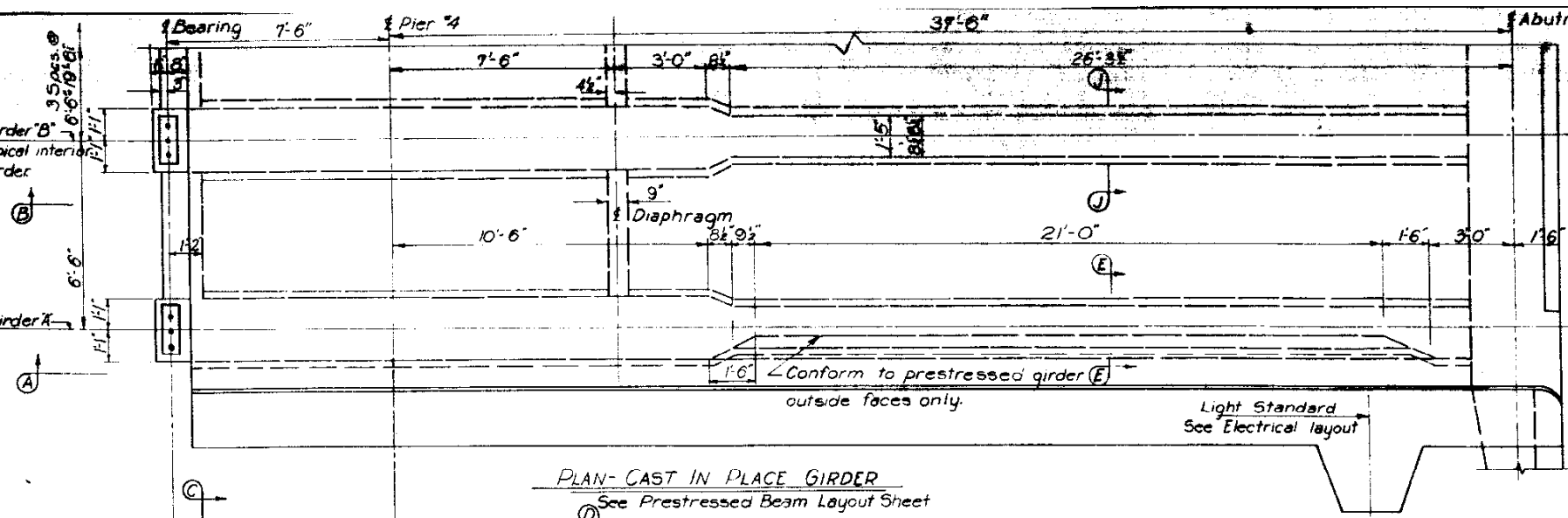
COLORADO STATE HIGHWAY DEPARTMENT
COLORADO SPRINGS FREeway
SOUTH NEVADA AVENUE
BRIDGE NO'S 1-17-DC & DD

ABUTMENT NO.2 DETAILS

SCALE: 1/4" = 1'-0" DATE: April 1957
ROBERT L. MOON CONSULTING ENGINEERS COLORADO SPRINGS, COLO. DRAWING NO. 15 A 3

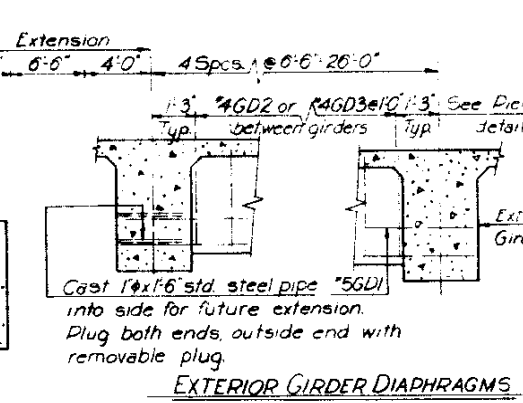
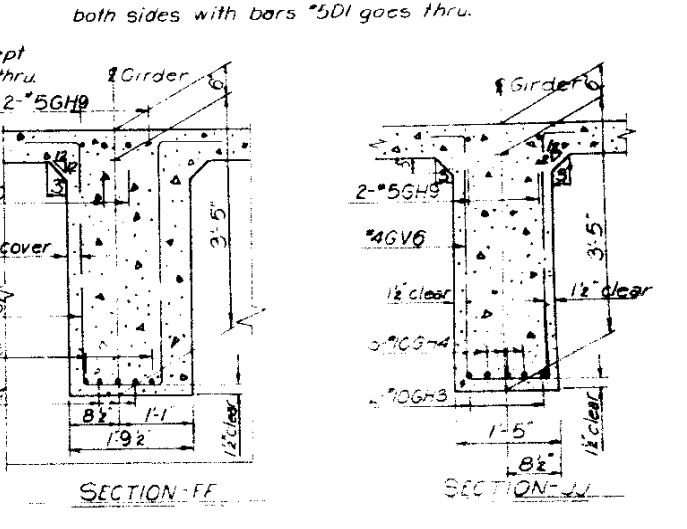
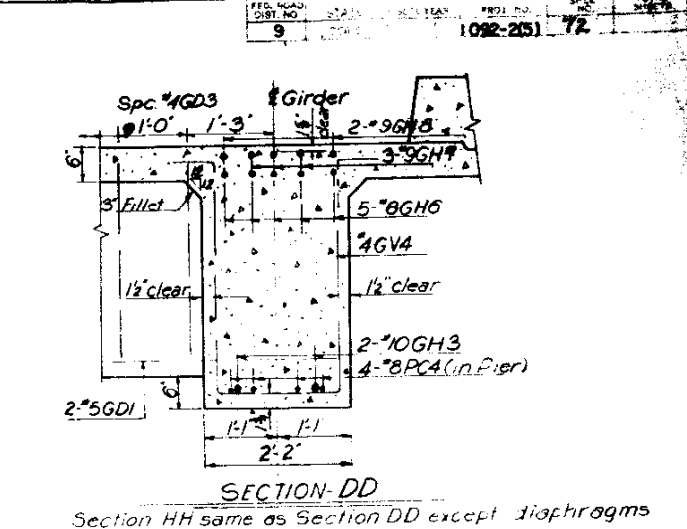
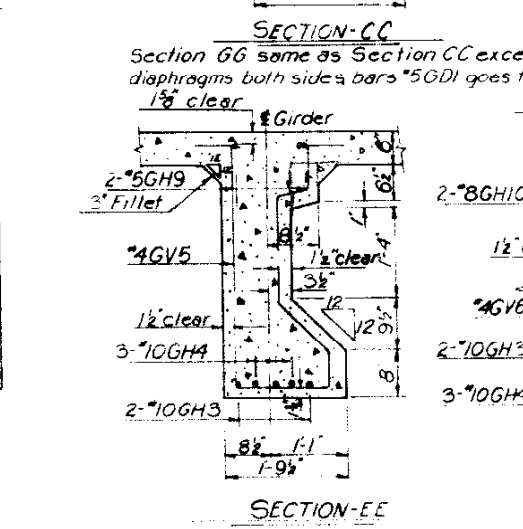
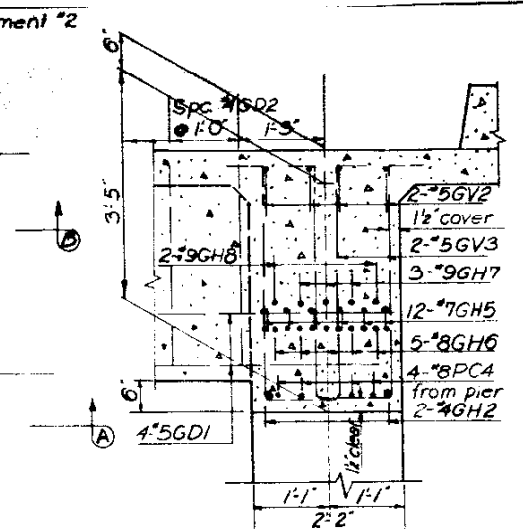
ABUTMENT #2 REINFORCING SCHEDULE																				
Bar	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AV1	AV2	AV3	AW1	AW2	TC	R1	R2	R3
No. Req'd	56	8	4	4	4	4	4	12	12	8	8	24	8	80	12	12	30	13	8	4
Size	#4	#5	#6	#6	#6	#6	#6	#4	#4	#6	#6	#5	#5	#4	#4	#5	#4	#4	#4	#4
Length	*	46'-6"	46'-3"	50'-0"	6'-0"	12'-0"	12'-0"	*	*	31'-9"	16'-6"	4'-0"	4'-6"	4'-6"	5'-0"	4'-0"	9'-6"	4'-9"	2'-9"	4'-0"
Shape	□																			

* See Bending Diagrams.

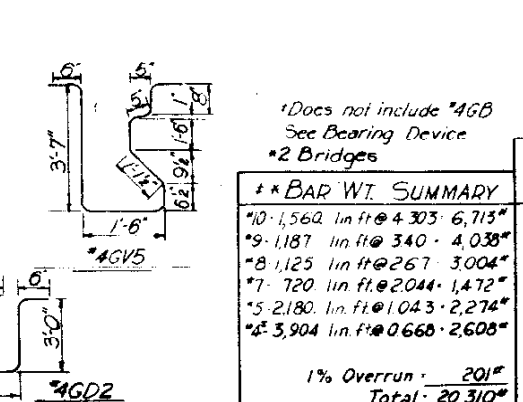


CAST IN PLACE GIRDER REINFORCING SCHEDULE (One Bridge Only)

Bar	GD1	GD2	GD3	GH1	GH2	GH3	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GV1	GV2	GV3	GV4	GV5	GV6	GB
Req'd	6	20	20	50	10	10	15	60	25	15	10	10	10	15	10	40	35	16	69	40
Wt	25	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Length	27'-6"	9'-0"	7'-9"	7'-6"	6'-0"	37'-6"	27'-0"	6'-0"	20'-6"	25'-9"	20'-9"	25'-0"	5'-0"	10'-6"	12'-9"	9'-9"	10'-3"	10'-6"	9'-6"	3'-0"
Shape	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

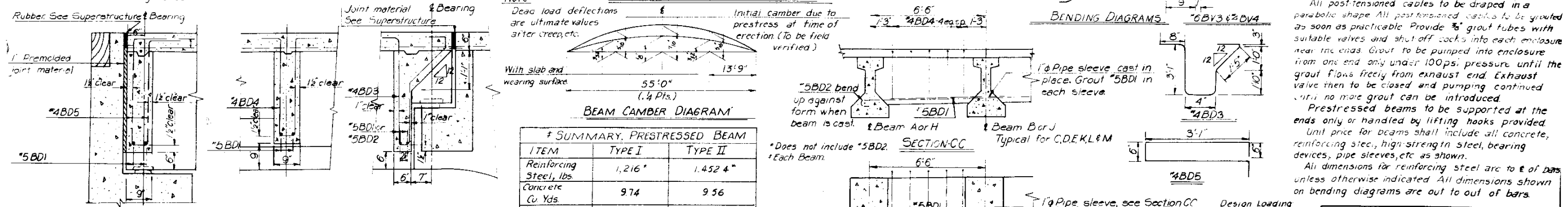
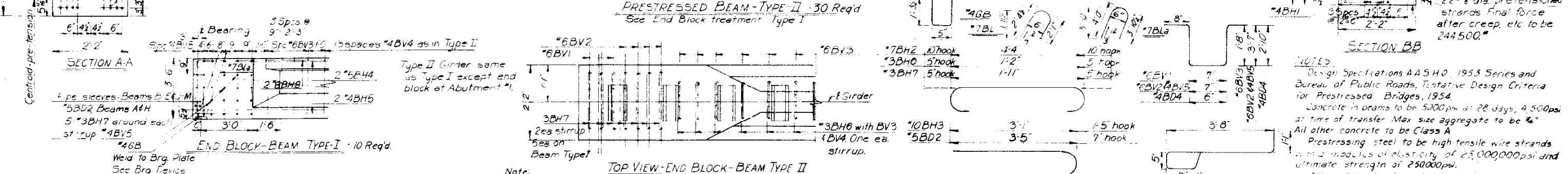
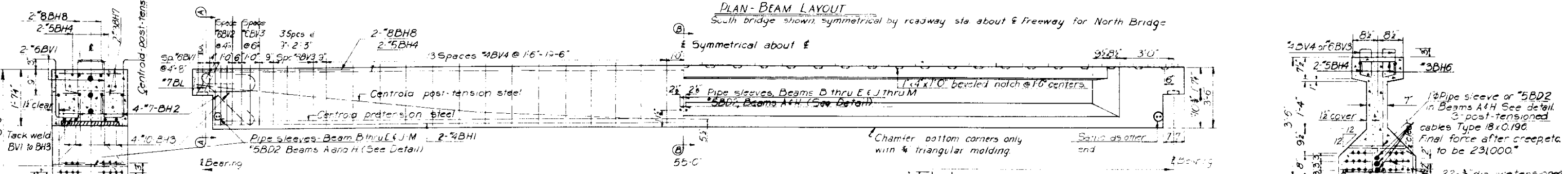
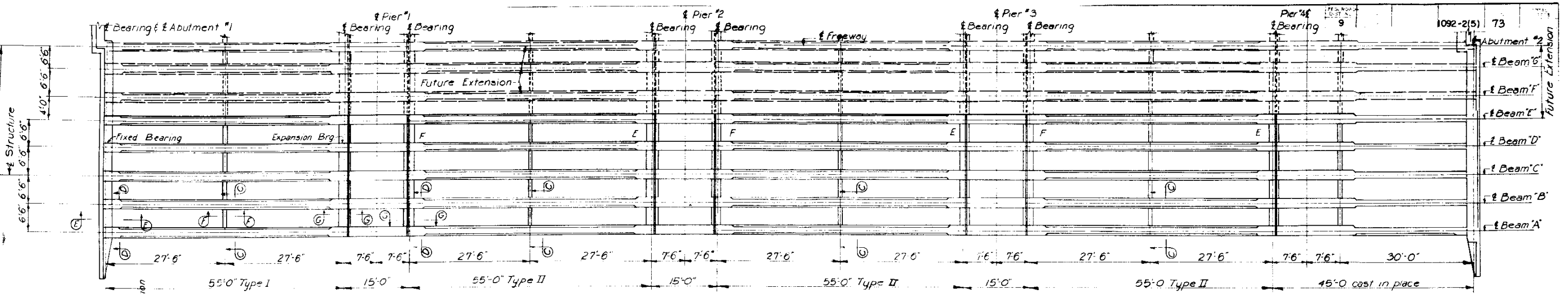


NOTES:
 All concrete to be Class A
 All dimensions for reinforcing steel are to center of bars unless otherwise noted. All dimensions shown in the bending diagrams are out to out of bars.
 Bevel all exposed edges and miter all corners with a 1/4" triangular groove unless otherwise noted.
 Girders and slab to be poured monolithically as shown.
 See Bearing Device details
 See Pier Sheet for Elevation B and pier details.
 See Superstructure Sheet for roadway steel and camber note.
 Camber girders in accordance with dead load deflection diagram on Lighting and Slope Paving Sheet.



Design Loading: 120 S16-44 A.A.S.H.O. Spec. 1953 Edition.
 Unit Stresses:
 fs = 20,000 ps. Reinforcing Steel
 fc = 12,000 ps.

BAR WT. SUMMARY	CAST IN PLACE GIRDER QUANTITIES	COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY
10-1,560 lin ft @ 4.303 = 6,715	Class A Concrete -	SOUTH NEVADA AVENUE
9-1,187 lin ft @ 3.40 = 4,038	Cu Yds 126.7	BRIDGE NO'S I-17-DC & DB
8-1,125 lin ft @ 2.67 = 3,004	Reinforcing Steel -	CAST IN PLACE BEAM DETAILS
7-720 lin ft @ 2.04 = 1,472	Lbs. 20,310	SCALE: 3/4" = 1'-0" DATE: April, 1952
5-2,180 lin ft @ 1.043 = 2,274	Structural Steel -	ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO.
2-3,904 lin ft @ 0.668 = 2,608	Lbs. 535	DRAWING NO. 15 A 6
1% Overrun = 201*	Total = 20,310*	



SUMMARY, PRESTRESSED BEAM

ITEM	TYPE I	TYPE II
Reinforcing Steel, lbs	1,216*	1,452.4*
Concrete Cu Yds	9.74	9.56
Structural Steel, lbs	107.19	107.79

* Does not include 5BD2
 * Each Beam

PRECAST BEAM REINFORCING SCHEDULE

Req'd	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BV1	BV2	BV3	BV4	BV5	GB	BL	BLA	BD1	BD2	BD3	BD4	BD5
60	280	280	80	20	1650	1280	160	420	360	1000	2240	120	160	140	20	46	48	280	160	40	
4	7	10	5	4	3	3	8	5	6	6	4	4	4	7	7	5	5	4	4	4	
53'6"	6'0"	4'6"	56'0"	54'6"	2'0"	2'9"	9'0"	3'3"	9'0"	6'3"	6'3"	9'0"	3'0"	4'9"	8'2"	24'9"	4'0"	8'3"	7'6"	7'6"	

BEAM DIAPHRAGM REINFORCING

Req'd	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BV1	BV2	BV3	BV4	BV5	GB	BL	BLA	BD1	BD2	BD3	BD4	BD5
60	280	280	80	20	1650	1280	160	420	360	1000	2240	120	160	140	20	46	48	280	160	40	
4	7	10	5	4	3	3	8	5	6	6	4	4	4	7	7	5	5	4	4	4	
53'6"	6'0"	4'6"	56'0"	54'6"	2'0"	2'9"	9'0"	3'3"	9'0"	6'3"	6'3"	9'0"	3'0"	4'9"	8'2"	24'9"	4'0"	8'3"	7'6"	7'6"	

BEAM DIAPH QUANTITIES

Bar	Length	Wt %	Wt. Total
5	1380	1.043	1,439.4
4	3810	0.668	2,545.8
1% Overrun			40"
Total			4,024"

Class A Concrete 34.0 cu yd
 Reinforcing Steel 4,024 lbs.

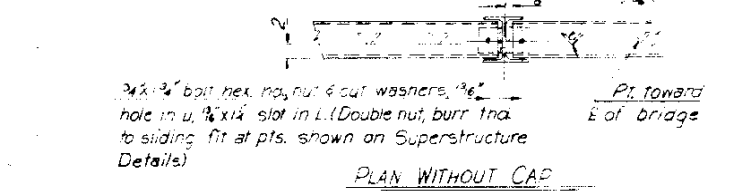
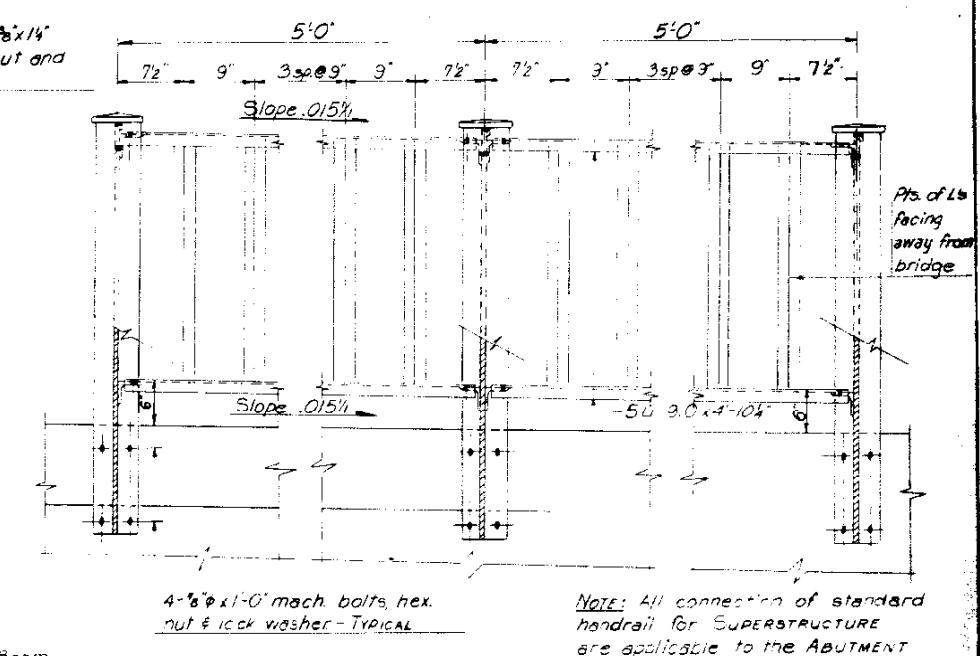
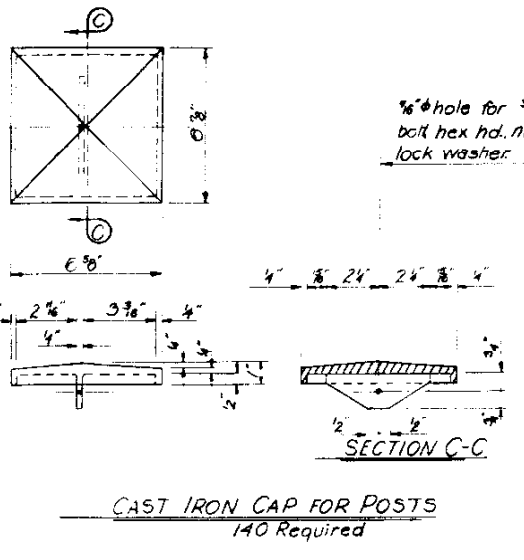
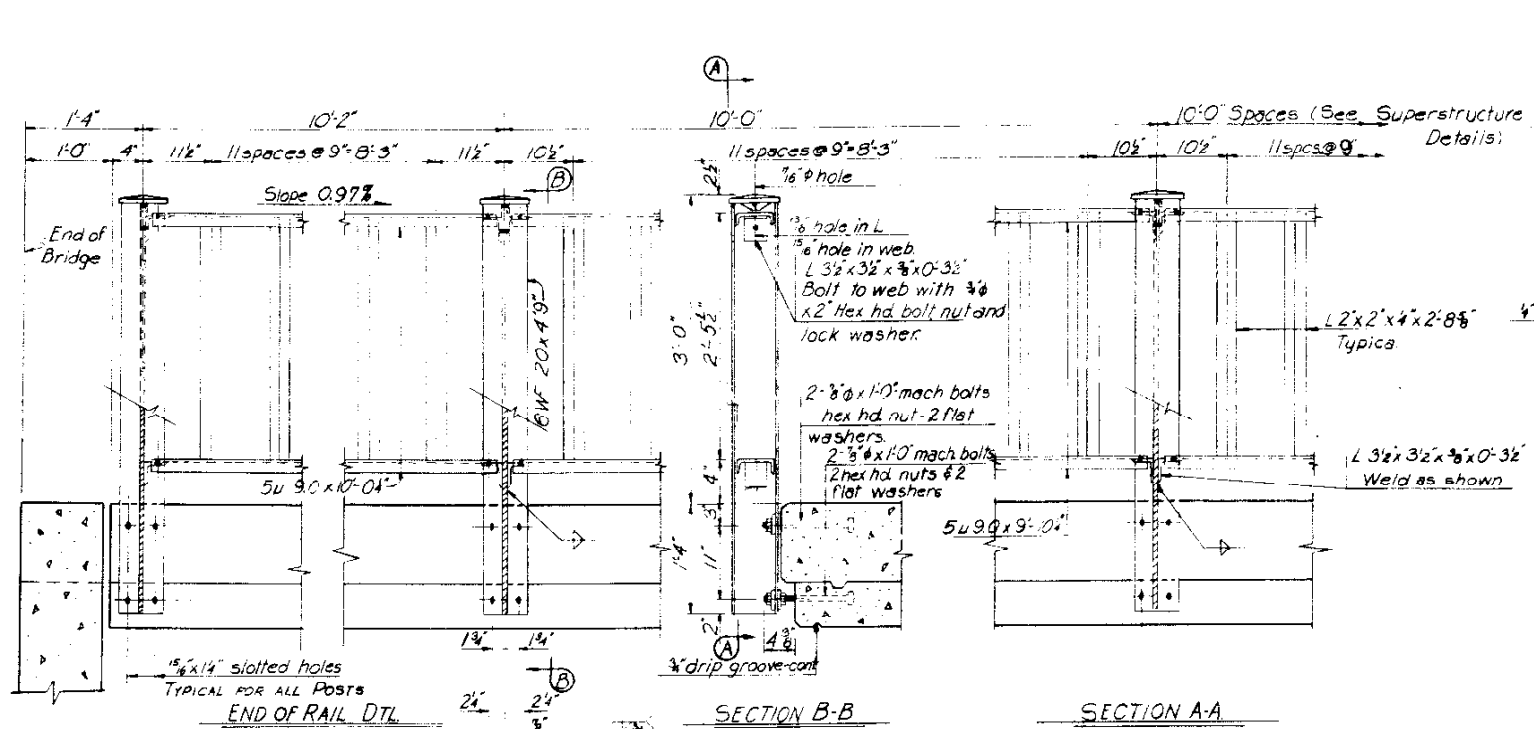
DIAPHRAGM BAR WT. SUMM

Bar	Length	Wt %	Wt. Total
5	1380	1.043	1,439.4
4	3810	0.668	2,545.8
1% Overrun			40"
Total			4,024"

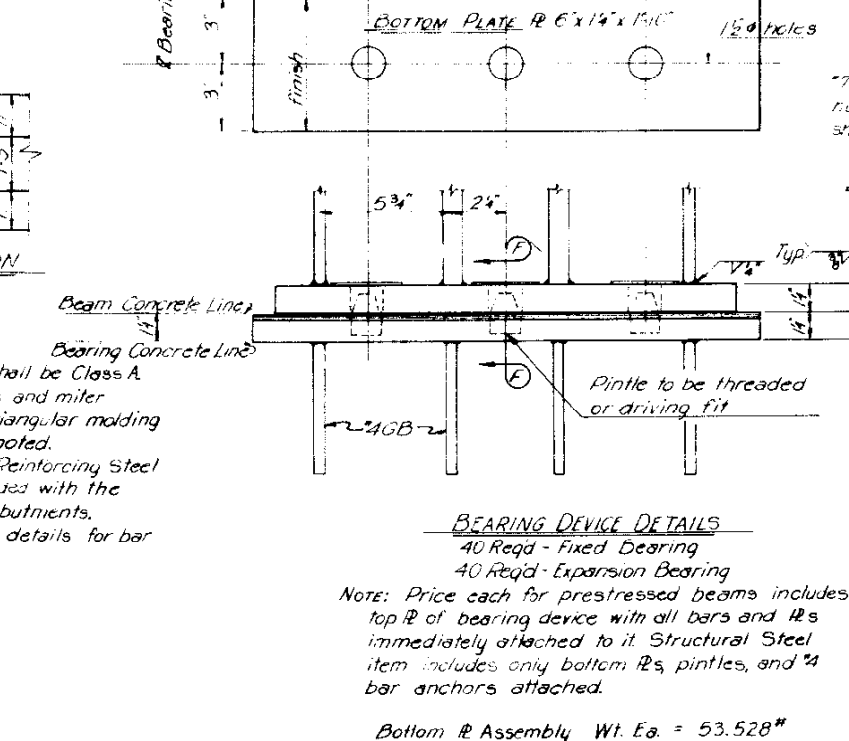
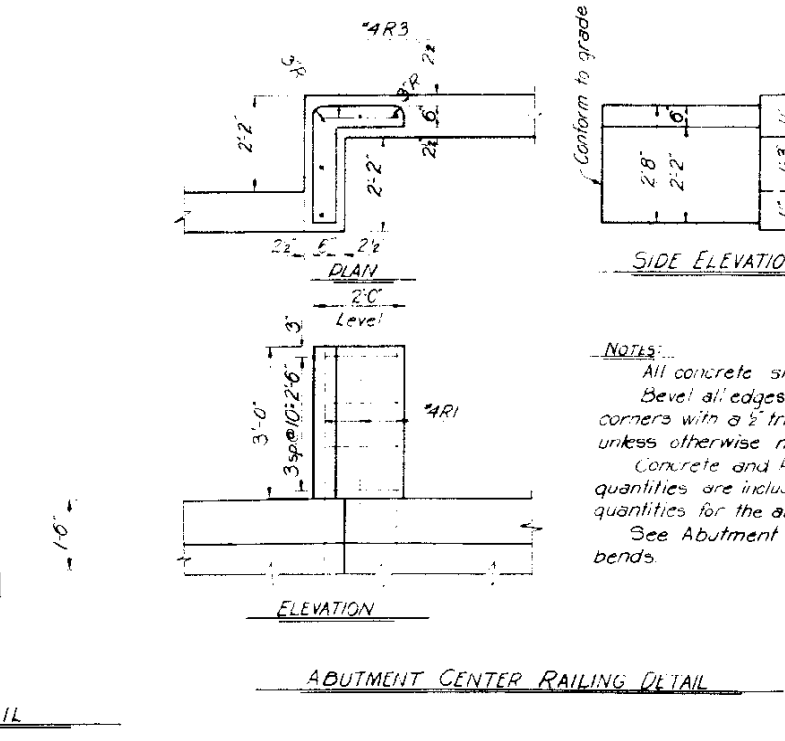
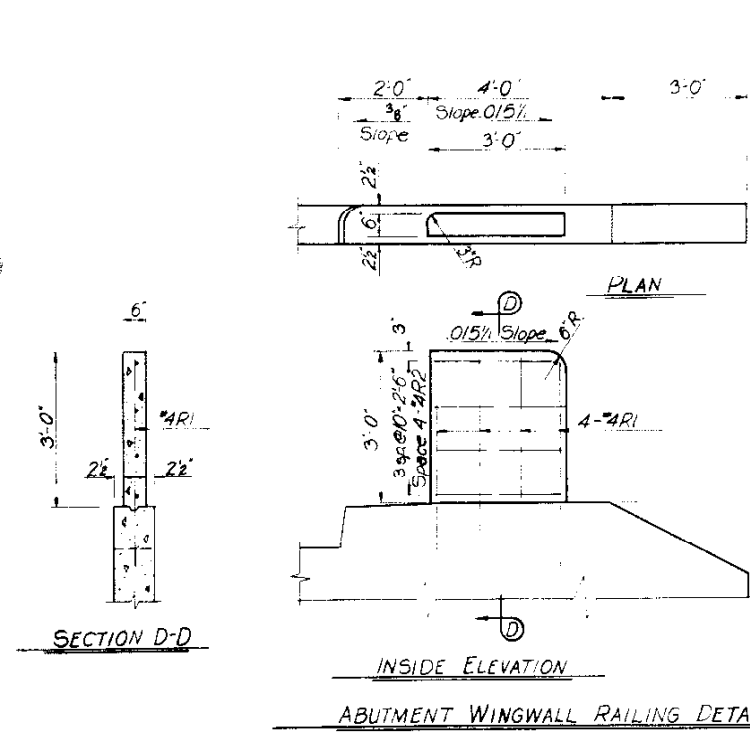
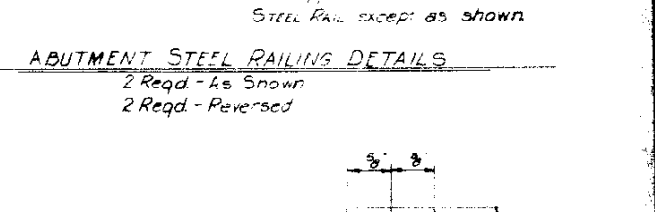
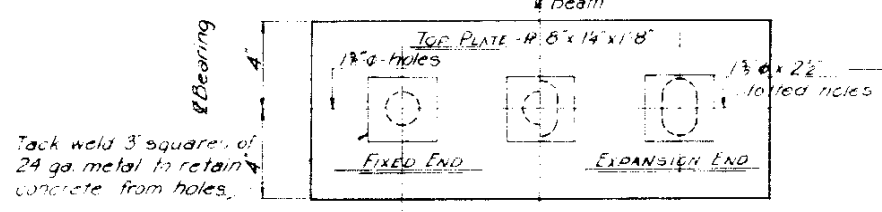
COLORADO STATE HIGHWAY DEPARTMENT
COLORADO SPRINGS FREEWAY
 SOUTH NEVADA AVENUE
 BRIDGE NOS 1-17-DC & DD
PRESTRESSED BEAM
LAYOUT AND DETAILS

SCALE: _____ DATE: April, 1957.
 ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO. DRAWING NO. 15 A 7

NOTES
 Design Specifications AASHTO 1953 Series and Bureau of Public Roads, Tentative Design Criteria for Prestressed Bridges, 1954.
 Concrete in beams to be 5000 psi at 28 days, 4500 psi at time of transfer. Max size aggregate to be 3/4". All other concrete to be Class A.
 Prestressing steel to be high tensile wire strands with a modulus of elasticity of 25,000,000 psi and ultimate strength of 250,000 psi.
 All post-tensioned cables to be draped in a parabolic shape. All post-tensioned cables to be grouted as soon as practicable. Provide 3/8" grout tubes with suitable valves and shut-off cocks into each enclosure near the ends. Grout to be pumped into enclosure from one end only under 100 psi pressure until the grout flows freely from exhaust end. Exhaust valve then to be closed and pumping continued until no more grout can be introduced.
 Prestressed beams to be supported at the ends only or handled by lifting hooks provided. Unit price for beams shall include all concrete, reinforcing steel, high strength steel, bearing devices, pipe sleeves, etc as shown.
 All dimensions for reinforcing steel are to e of bars unless otherwise indicated. All dimensions shown on bending diagrams are out to out of bars.



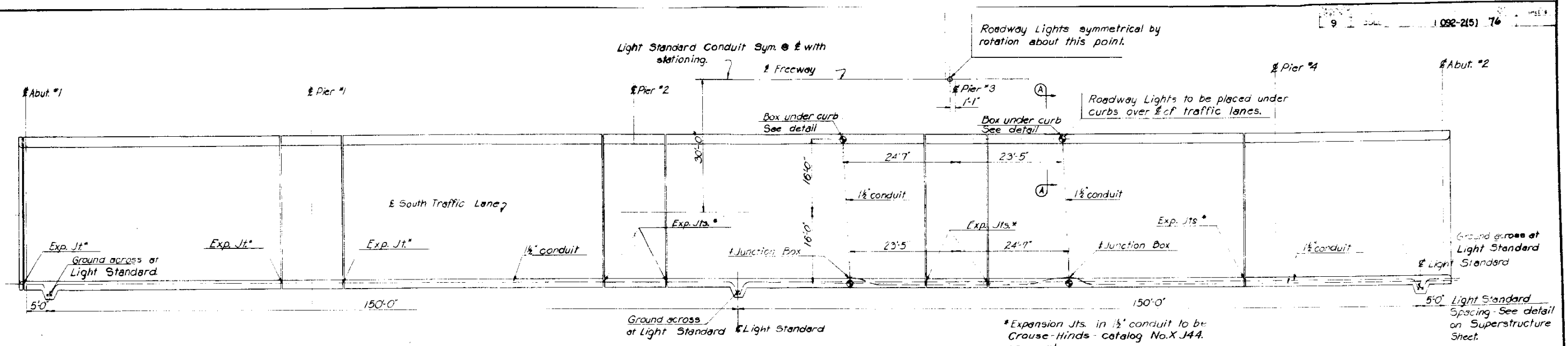
STEEL HANDRAIL DETAILS - SUPERSTRUCTURE Scale: 1/4" = 1'-0"



NOTES:
 All concrete shall be Class A.
 Bevel all edges and miter corners with a 1/2" triangular molding unless otherwise noted.
 Concrete and Reinforcing Steel quantities are included with the quantities for the abutments.
 See Abutment details for bar bends.

Note: Price each for prestressed beams includes top R of bearing device with all bars and R's immediately attached to it. Structural Steel item includes only bottom R's, pintles, and 24 bar anchors attached.
 Bottom R Assembly Wt. Ea. = 53.528#

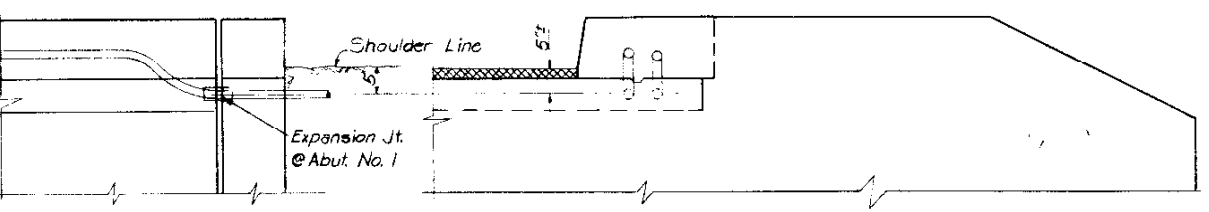
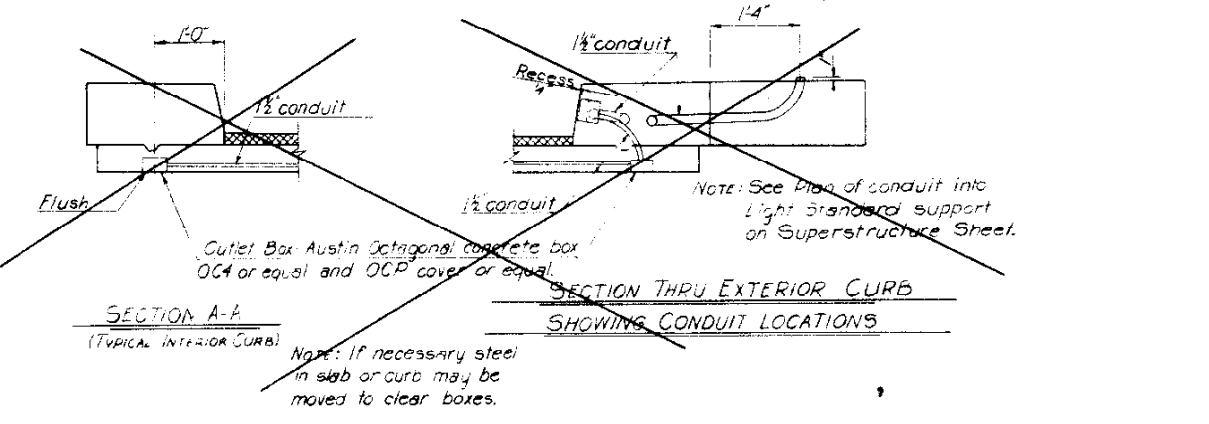
COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY SOUTH NEVADA AVENUE BRIDGE NO'S 1-17-DC & DD	
HANDRAIL AND BEARING DEVICE DETAILS	
SCALE:	DATE April, 1957
ROBERT L. ROONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO.	DRAWING NO. 15 A 9



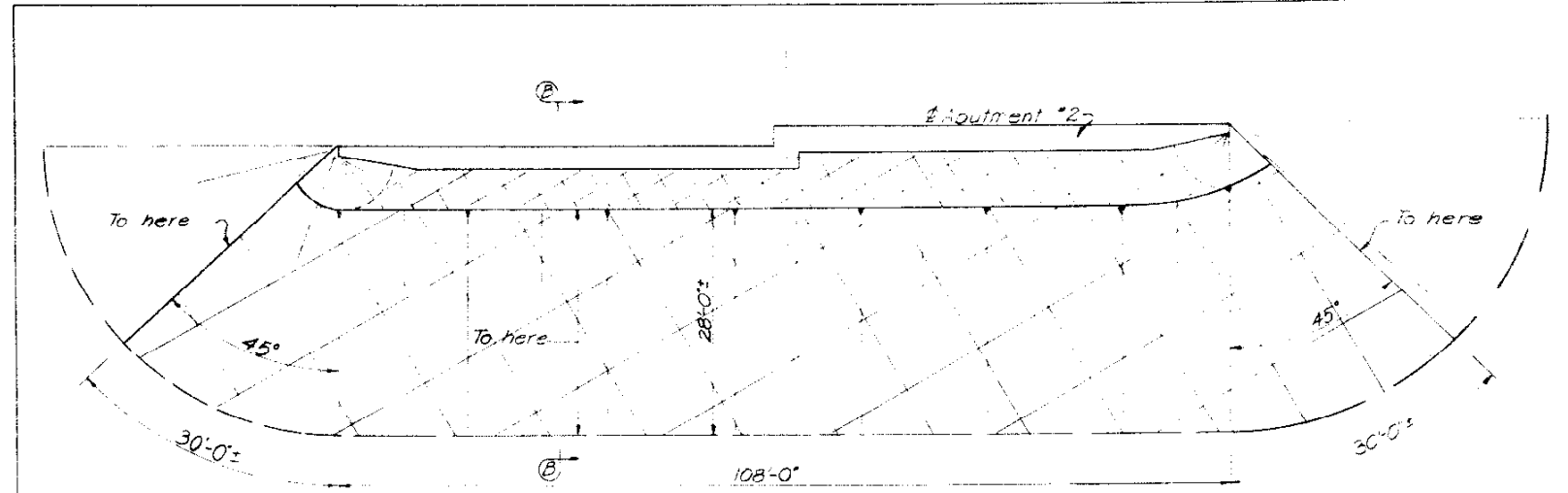
LIGHTING PLAN FOR SOUTH BRIDGE
(North Bridge as noted)

* Expansion Jts. in 1 1/2" conduit to be Grouse-Hinds catalog No. XJ44 or equal.

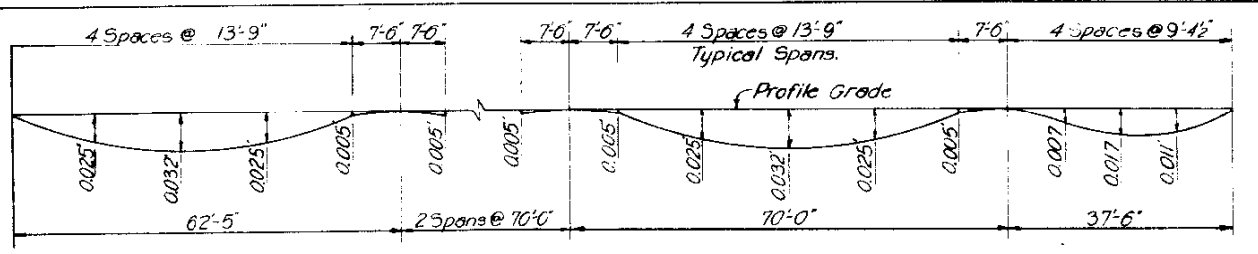
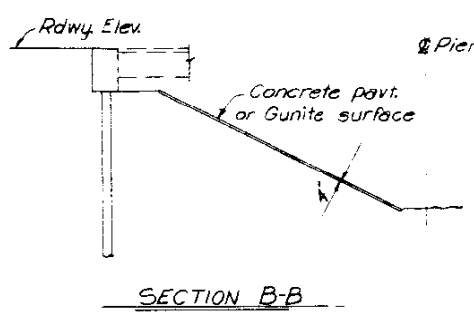
† Junction Boxes to be Grouse-Hinds Watertight Series PKCA-1 1/2" Junction Condulets or equal.



LIGHTING CONDUIT DETAILS

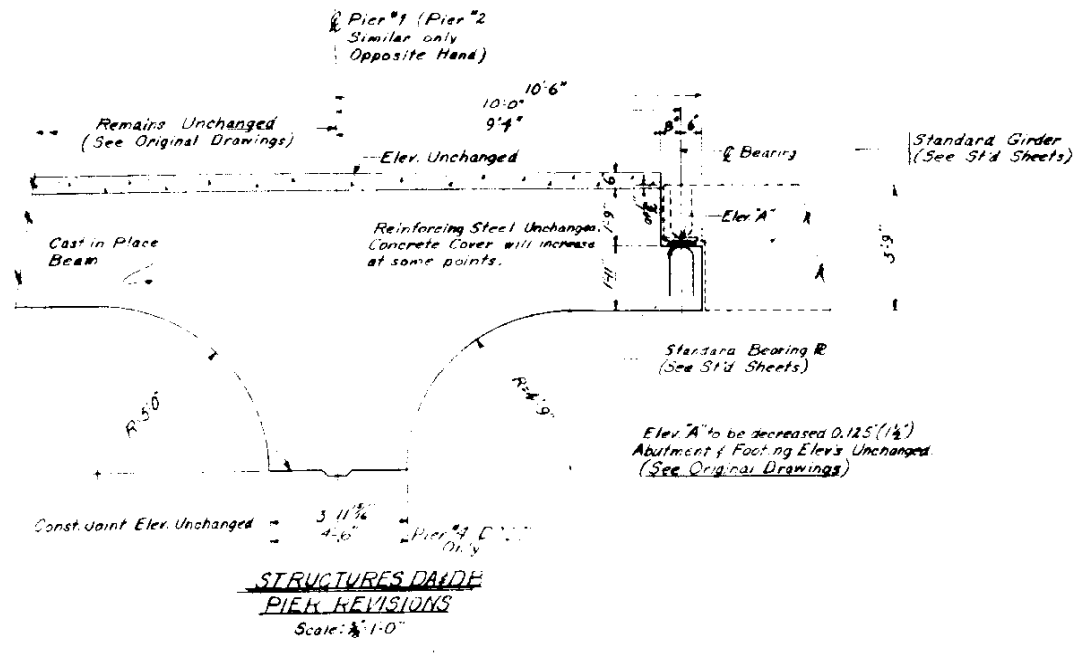


SLOPE PAVEMENT DETAILS
ABUTMENT NO. 2 ONLY

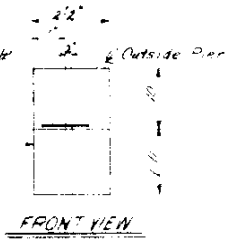
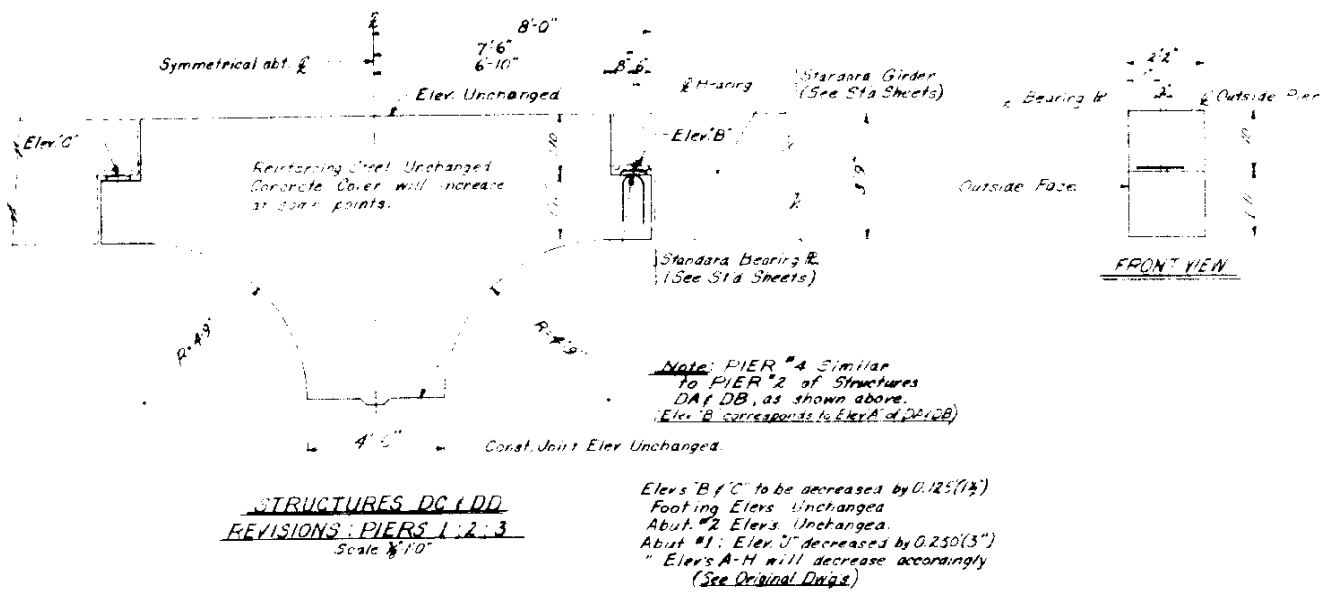


DEAD LOAD DEFLECTION DIAGRAM
In Decimals of Feet

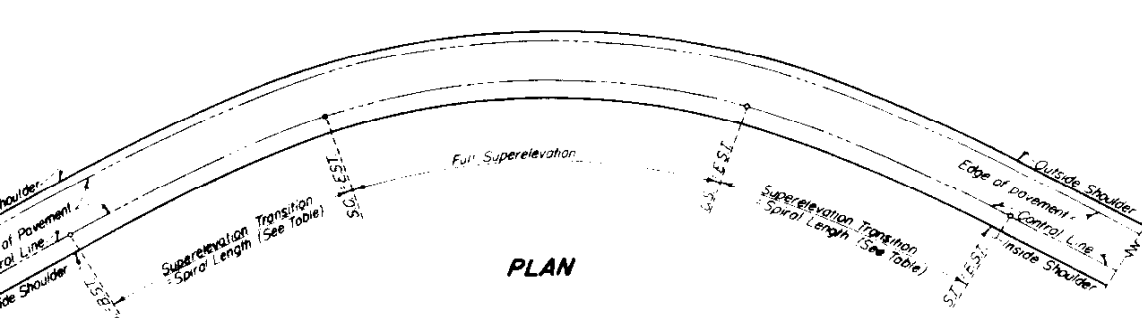
SUMMARY OF SLOPE PAVING QUANTITIES	COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY	
	SOUTH NEVADA AVENUE BRIDGE NO'S I-17-DC & DD	
Concrete Paving - 56 cu yds Reinforcing Steel - 953' (Reinforcing Steel Included in cost of Conc. Slope and Ditch Paving)	SCALE:	DATE: April, 1957
	ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO.	DRAWING NO. 15 A 10



ADJUST ELEVATIONS OF TOP OF PIERS & ABUTMENTS BY AMOUNTS SHOWN BELOW	
STRUCTURE NO.	
GG, DF	Plus 0.302 (3/8")
DI	Plus 0.290 (3/8")
DH	Plus 0.333 (4")
DE	Plus 0.333 (4")
DA, DB	See Details this sheet
DC, DD	See Details this sheet

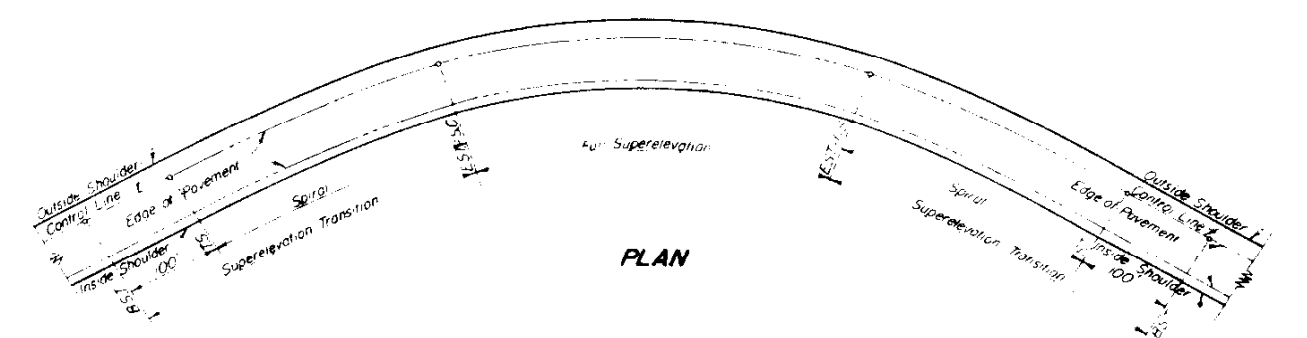


A. B. HORNES CONSTRUCTION CO.
 DENVER, COLORADO
 ELEVATION REVISIONS
 PROJECT: 092-215, COLORADO SPRINGS
 STRUCTURE NOS. DA-DA, DB, DI
 CUSTOMER: O. L. HORNES CONST. CO.
 ENGINEERS: SEE SHEET 7611.5
 DESIGNED BY: [Signature] SCALE: AS SHOWN SHEET NO. 7611
 DRAWN BY: [Signature]
 CHECKED BY: [Signature] DATE: 2-27-58 NO. 37,585



PLAN

NOTE CASE I
 The normal roadway slope is approximately equal to the superlevation for a 1° curve. Therefore no super-elevation is required for a 1° curve.
 For curves of over 1° the factors shown in the table for Case I include the normal roadway slope of 0.01 Ft per Ft, thereby giving values of actual superlevation at any point on the transition.

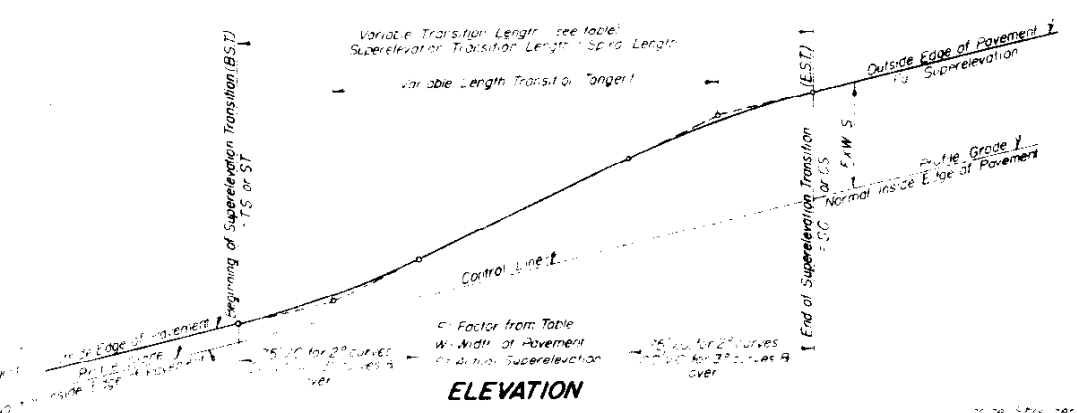


PLAN

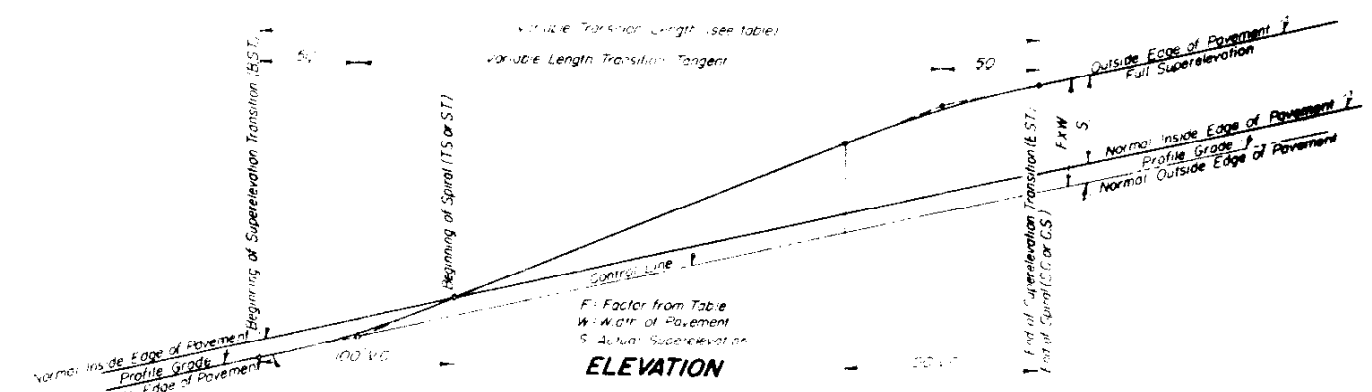
NOTE CASE II
 In order that the opposing slope of the normal roadway be eliminated before entering the horizontal curve, Case II, superlevation transitions shall begin on the tangent one hundred feet (100') from the TS and/or ST of the spiral. Case II superlevation, calculated as indicated in the table, is to be added to the normal low edge of pavement.

NOTE CASE I & II
 On curves where no spirals are used the superlevation transition shall be on the tangent approaching each end of the curve. Full superlevation to coincide with the PC or PT of such curve.

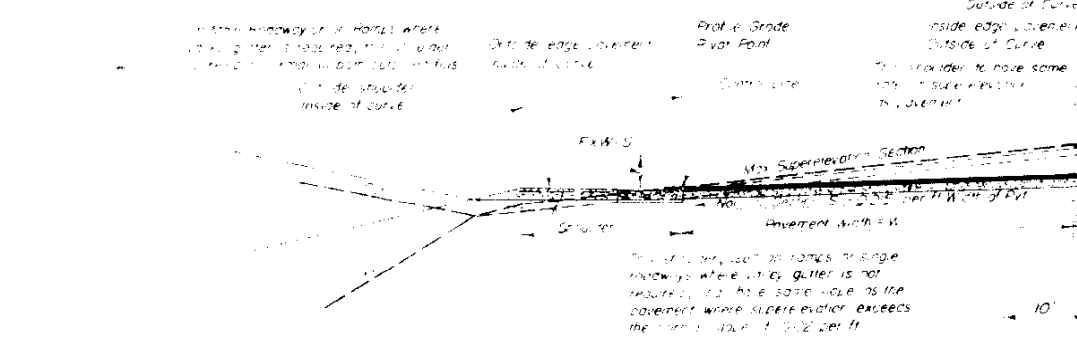
* Shoulders having slopes adverse to or greater than normal pavement slope shall be raised to coincide with the pavement slope at beginning of transition. Raising of shoulder to take place gradually over a distance of not less than 50 ft.



ELEVATION

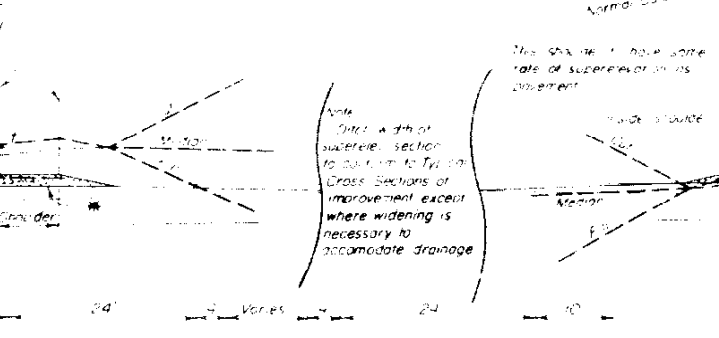


ELEVATION



SECTION CASE I

SUPERELEVATION TRANSITION
 CURVES HAVING SUPERELEVATION IN SAME DIRECTION AS NORMAL ROADWAY SLOPE



SECTION CASE II

SUPERELEVATION TRANSITION
 CURVES HAVING SUPERELEVATION IN OPPOSITE DIRECTION TO NORMAL ROADWAY SLOPE

SUPERELEVATION TABLE

DEG OF CURVE	CASE	PROPORTIONAL DISTANCE FROM BEGINNING OF TRANSITION										
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	Max 1.0	
1°	I	0.0060	0.0240	0.0540	0.0960	0.1500	0.2040	0.2460	0.2760	0.2940	0.3000	
	II	0.1512	0.1548	0.1608	0.1692	0.1800	0.1909	0.1992	0.2052	0.2088	0.2100	
	2°	I	0.0073	0.0290	0.0653	0.1162	0.1800	0.2438	0.2947	0.3310	0.3527	0.3600
		II	0.1533	0.1632	0.1797	0.2028	0.2325	0.2622	0.2853	0.3018	0.3117	0.3150
	3°	I	0.0097	0.0390	0.0876	0.1558	0.2325	0.3092	0.3774	0.4260	0.4553	0.4650
		II	0.1554	0.1716	0.1986	0.2364	0.2850	0.3336	0.3714	0.3984	0.4146	0.4200
	4°	I	0.0127	0.0506	0.1140	0.1984	0.2850	0.3716	0.4560	0.5194	0.5573	0.5700
II		0.1575	0.1800	0.2175	0.2700	0.3375	0.4050	0.4575	0.4950	0.5175	0.5250	
5°	I	0.0160	0.0640	0.1440	0.2408	0.3375	0.4343	0.5310	0.6110	0.6590	0.6750	
	II	0.1618	0.1970	0.2556	0.3228	0.3900	0.4572	0.5244	0.5830	0.6182	0.6300	
6°	I	0.0194	0.0776	0.1740	0.2820	0.3900	0.4980	0.6060	0.7022	0.7606	0.7800	
	II	0.1643	0.2073	0.2787	0.3606	0.4425	0.5244	0.6063	0.6777	0.7207	0.7350	
7°	I	0.0205	0.0928	0.2054	0.3240	0.4425	0.5610	0.6795	0.7922	0.8645	0.8850	
	II											

FACTORS SHOWN IN ABOVE TABLE ARE BASED ON TRANSITION LENGTHS SHOWN AT RIGHT

FACTORS SHOWN IN TABLE AT LEFT ARE BASED ON THE FOLLOWING TRANSITION LENGTHS

DEG OF CURVE	LENGTH OF SPIRAL	LENGTH OF SUPERELEVATION TRANSITION	
		CASE I	CASE II
1 Degree	None	None	200'
2 Degrees	150'	150'	250'
3 Degrees	200'	200'	300'
4 Degrees	250'	250'	350'
5 Degrees	300'	300'	400'
6 Degrees	350'	350'	450'
7 Degrees	350'	350'	450'

Factors from table x W (Width of pavement in ft) = Value of Superelev. in ft. to be added to normal low elev. of edge of pavement
 See notes on sections above for superlevation of shoulders.

COLORADO
 DEPARTMENT OF HIGHWAYS

METHODS FOR SUPERELEVATION OF CURVES

Designed by: _____ Approved by: _____
 Made by: _____ Checked by: _____
 Date: _____

CASE II SUPERELEVATION

CASE I SUPERELEVATION

FED. ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
	COLO.	1092-2(5)	78	

1° CURVE	Proportional distance from beginning of transition (TRANS.-200')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.00000	.00060	.00240	.00540	.00960	.01500	.02040	.02460	.02760	.02940	.03000
.01	.00001	.00073	.00265	.00577	.01009	.01559	.02087	.02495	.02783	.02951	
.02	.00002	.00086	.00290	.00644	.01058	.01618	.02134	.02530	.02806	.02962	
.03	.00005	.00101	.00317	.00653	.01109	.01685	.02179	.02563	.02827	.02971	
.04	.00010	.00118	.00346	.00694	.01162	.01750	.02222	.02594	.02846	.02978	
.05	.00015	.00135	.00375	.00735	.01215	.01785	.02265	.02625	.02865	.02985	
.06	.00022	.00154	.00406	.00778	.01270	.01838	.02306	.02654	.02882	.02990	
.07	.00029	.00173	.00437	.00821	.01325	.01891	.02347	.02683	.02899	.02995	
.08	.00038	.00194	.00470	.00866	.01382	.01942	.02386	.02710	.02914	.02998	
.09	.00049	.00217	.00505	.00913	.01441	.01991	.02423	.02735	.02927	.02999	

2° CURVE	Proportional distance from beginning of transition (TRANS.-150')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.01500	.01512	.01548	.01608	.01692	.01800	.01909	.01992	.02052	.02088	.02100
.01	.01500	.01515	.01553	.01615	.01702	.01812	.01918	.01999	.02057	.02090	
.02	.01501	.01517	.01558	.01623	.01712	.01824	.01927	.02006	.02061	.02092	
.03	.01501	.01520	.01564	.01631	.01722	.01835	.01936	.02013	.02065	.02094	
.04	.01502	.01524	.01569	.01639	.01732	.01846	.01945	.02019	.02069	.02096	
.05	.01503	.01527	.01575	.01647	.01743	.01857	.01953	.02025	.02073	.02097	
.06	.01504	.01531	.01581	.01656	.01754	.01868	.01961	.02031	.02077	.02098	
.07	.01506	.01535	.01587	.01664	.01765	.01878	.01969	.02037	.02080	.02099	
.08	.01508	.01539	.01594	.01673	.01777	.01888	.01977	.02042	.02083	.02099	
.09	.01510	.01543	.01601	.01683	.01788	.01902	.01985	.02047	.02086	.02100	

2° CURVE	Proportional distance from beginning of transition (TRANS.-250')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.00000	.00073	.00290	.00653	.01162	.01800	.02438	.02947	.03310	.03527	.03600
.01	.00001	.00088	.00340	.00698	.01220	.01866	.02496	.02989	.03338	.03541	
.02	.00003	.00105	.00351	.00743	.01281	.01932	.02552	.03038	.03365	.03551	
.03	.00007	.00123	.00384	.00791	.01342	.01998	.02606	.03059	.03390	.03564	
.04	.00012	.00142	.00418	.00839	.01406	.02064	.02659	.03109	.03414	.03574	
.05	.00018	.00163	.00454	.00889	.01470	.02130	.02711	.03146	.03437	.03582	
.06	.00026	.00186	.00491	.00941	.01536	.02194	.02761	.03182	.03458	.03588	
.07	.00036	.00210	.00529	.00994	.01602	.02257	.02809	.03216	.03477	.03593	
.08	.00046	.00235	.00569	.01048	.01668	.02319	.02857	.03249	.03495	.03597	
.09	.00059	.00262	.00611	.01104	.01734	.02380	.02902	.03280	.03512	.03599	

3° CURVE	Proportional distance from beginning of transition (TRANS.-200')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.01500	.01533	.01632	.01797	.02028	.02325	.02622	.02853	.03018	.03117	.03150
.01	.01500	.01540	.01646	.01818	.02055	.02358	.02648	.02872	.03031	.03123	
.02	.01501	.01548	.01660	.01838	.02082	.02390	.02674	.02891	.03043	.03129	
.03	.01503	.01556	.01675	.01859	.02110	.02421	.02698	.02909	.03055	.03134	
.04	.01505	.01565	.01690	.01883	.02135	.02452	.02722	.02927	.03064	.03138	
.05	.01508	.01574	.01706	.01904	.02168	.02482	.02746	.02944	.03076	.03142	
.06	.01512	.01586	.01723	.01928	.02198	.02511	.02767	.02960	.03085	.03145	
.07	.01516	.01595	.01741	.01952	.02229	.02540	.02791	.02975	.03094	.03147	
.08	.01521	.01607	.01759	.01977	.02260	.02568	.02812	.02990	.03103	.03149	
.09	.01527	.01619	.01778	.02002	.02292	.02595	.02833	.03004	.03110	.03150	

3° CURVE	Proportional distance from beginning of transition (TRANS.-300')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.00000	.00097	.00390	.00876	.01558	.02325	.03092	.03774	.04260	.04553	.04650
.01	.00001	.00118	.00429	.00936	.01634	.02402	.03167	.03831	.04298	.04571	
.02	.00004	.00140	.00471	.00997	.01711	.02493	.03244	.03837	.04334	.04588	
.03	.00009	.00165	.00515	.01061	.01788	.02555	.03317	.03940	.04369	.04602	
.04	.00016	.00191	.00561	.01126	.01865	.02632	.03388	.03945	.04401	.04615	
.05	.00024	.00219	.00609	.01193	.01941	.02709	.03457	.04041	.04431	.04626	
.06	.00035	.00249	.00658	.01262	.02018	.02785	.03524	.04089	.04459	.04634	
.07	.00048	.00281	.00710	.01333	.02095	.02862	.03590	.04135	.04485	.04641	
.08	.00062	.00316	.00763	.01406	.02172	.02939	.03653	.04179	.04510	.04646	
.09	.00079	.00352	.00819	.01481	.02248	.03016	.03714	.04221	.04532	.04649	

4° CURVE	Proportional distance from beginning of transition (TRANS.-250')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.01500	.01556	.01725	.02006	.02400	.02850	.03300	.03694	.03975	.04144	.04200
.01	.01500	.01568	.01748	.02041	.02445	.02895	.03345	.03727	.03997	.04155	
.02	.01502	.01581	.01772	.02076	.02490	.02940	.03388	.03759	.04018	.04164	
.03	.01505	.01595	.01798	.02113	.02535	.02985	.03430	.03790	.04038	.04173	
.04	.01509	.01610	.01824	.02150	.02580	.03030	.03471	.03820	.04056	.04180	
.05	.01514	.01627	.01852	.02189	.02625	.03075	.03511	.03849	.04074	.04186	
.06	.01520	.01644	.01880	.02229	.02670	.03120	.03550	.03876	.04090	.04191	
.07	.01528	.01663	.01910	.02270	.02715	.03165	.03588	.03903	.04105	.04195	
.08	.01536	.01682	.01941	.02312	.02760	.03210	.03624	.03928	.04119	.04198	
.09	.01546	.01703	.01973	.02355	.02805	.03255	.03660	.03952	.04132	.04200	

4° CURVE	Proportional distance from beginning of transition (TRANS.-350')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.00000	.00127	.00506	.01140	.01984	.02850	.03716	.04560	.05194	.05573	.05700
.01	.00001	.00153	.00558	.01217	.02070	.02937	.03803	.04635	.05243	.05597	
.02	.00005	.00182	.00613	.01297	.02157	.03023	.03890	.04707	.05290	.05619	
.03	.00011	.00214	.00670	.01379	.02244	.03110	.03976	.04777	.05334	.05638	
.04	.00020	.00248	.00729	.01464	.02330	.03197	.04063	.04844	.05376	.05654	
.05	.00032	.00285	.00791	.01550	.02417	.03283	.04150	.04909	.05415	.05668	
.06	.00046	.00324	.00856	.01637	.02503	.03370	.04236	.04971	.05432	.05680	
.07	.00062	.00366	.00923	.01724	.02590	.03457	.04321	.05030	.05486	.05689	
.08	.00081	.00410	.00993	.01810	.02677	.03543	.04403	.05087	.05518	.05695	
.09	.00103	.00457	.01065	.01897	.02763	.03630	.04483	.05142	.05547	.05699	

5° CURVE	Proportional distance from beginning of transition (TRANS.-300')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.01500	.01584	.01837	.02259	.02812	.03374	.03937	.04490	.04912	.05165	.05249
.01	.01501	.01602	.01872	.02310	.02868	.03431	.03993	.04540	.04945	.05181	
.02	.01503	.01621	.01908	.02364	.02975	.03547	.04109	.04588	.04976	.05195	
.03	.01507	.01642	.01946	.02418	.02981	.03543	.04106	.04634	.05005	.05208	
.04	.01513	.01665	.01986	.02475	.03037	.03599	.04162	.04679	.05033	.05219	
.05	.01521	.01690	.02030	.02531	.03093	.03656	.04218	.04719	.05059	.05228	
.06	.01530	.01716	.02070	.02587	.03149	.03712	.04274	.04763	.05084	.05236	
.07	.01541	.01744	.02115	.02643	.03206	.03768	.04330	.04803	.05107	.05242	
.08	.01554	.01773	.02161	.02700	.03262	.03824	.04385	.04841	.05128	.05246	
.09	.01568	.01804	.02209	.02756	.03318	.03881	.04438	.04877	.05147	.05248	

5° CURVE	Proportional distance from beginning of transition (TRANS.-400')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
	Rate of superelevation	per ft. width of roadway									
.00	.00000	.00160	.00640	.01440	.02408	.03375	.04343	.05310	.06110	.06590	.06750
.01	.00002	.00194	.00706	.01537	.02504	.03472	.04439	.05404	.06172	.06620	
.02	.00006	.00230	.00774	.01634	.02601	.03569	.04536	.05496	.06232	.06648	
.03	.00014	.00270	.00846	.01730	.02697	.03665	.04633	.05584	.06288	.06672	
.04	.00026	.00314	.00922	.01827	.02795	.03762	.04730	.05668	.06340	.06692	
.05	.00040	.00360	.01000	.01924	.						

CASE II SUPERELEVATION

CASE I SUPERELEVATION

FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	1092-2(5)	79	

6° CURVE											6° CURVE													
(TRANS - 450')											(TRANS - 350')													
Proportional distance from beginning of transition	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	Proportional distance from beginning of transition	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	
Rate of superelevation (in feet) per ft. width of roadway												Rate of superelevation (in feet) per ft. width of roadway												
00000	.00194	.00778	.01740	.02820	.03900	.04980	.06060	.07022	.07606	.07800	.00	01500	.01618	.01970	.02556	.03228	.03900	.04572	.05244	.05830	.06182	.06300		
00002	.00235	.00857	.01848	.02928	.04008	.05088	.06168	.07098	.07643		.01	01501	.01642	.02019	.02623	.03295	.03967	.04639	.05311	.05875	.06205			
00008	.00280	.00941	.01956	.03036	.04116	.05196	.06276	.07170	.07676		.02	01505	.01669	.02069	.02690	.03362	.04034	.04706	.05378	.05919	.06225			
00018	.00329	.01028	.02064	.03144	.04224	.05304	.06382	.07238	.07705		.03	01511	.01699	.02122	.02758	.03430	.04102	.04774	.05443	.05960	.06242			
00031	.00382	.01120	.02172	.03252	.04332	.05412	.06486	.07302	.07730		.04	01519	.01731	.02177	.02825	.03497	.04169	.04841	.05505	.05999	.06258			
00049	.00437	.01215	.02280	.03360	.04440	.05520	.06585	.07363	.07751		.05	01529	.01765	.02235	.02892	.03564	.04236	.04908	.05565	.06035	.06271			
00070	.00498	.01314	.02388	.03468	.04548	.05628	.06680	.07418	.07770		.06	01542	.01801	.02295	.02959	.03631	.04303	.04975	.05623	.06070	.06281			
00095	.00562	.01417	.02496	.03576	.04656	.05736	.06772	.07471	.07780		.07	01558	.01840	.02357	.03026	.03698	.04370	.05042	.05678	.06101	.06289			
00124	.00630	.01524	.02604	.03684	.04764	.05844	.06859	.07520	.07792		.08	01575	.01881	.02422	.03094	.03766	.04438	.05110	.05731	.06131	.06295			
00157	.00702	.01632	.02712	.03792	.04872	.05952	.06943	.07565	.07798		.09	01595	.01925	.02489	.03161	.03833	.04505	.05177	.05774	.06158	.06299			

7° CURVE											7° CURVE													
(TRANS - 450')											(TRANS - 350')													
Proportional distance from beginning of transition	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	Proportional distance from beginning of transition	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	
Rate of superelevation (in feet) per ft. width of roadway												Rate of superelevation (in feet) per ft. width of roadway												
00000	.00205	.00928	.02054	.03240	.04425	.05610	.06795	.07922	.08645	.08850	.00	01500	.01643	.02073	.02787	.03506	.04425	.05244	.06063	.06777	.07207	.07350		
00002	.00248	.01026	.02173	.03358	.04543	.05728	.06914	.08017	.08684		.01	01501	.01673	.02132	.02869	.03688	.04507	.05326	.06145	.06833	.07233			
00008	.00295	.01129	.02291	.03477	.04662	.05847	.07032	.08107	.08719		.02	01506	.01706	.02194	.02951	.03770	.04589	.05408	.06226	.06886	.07258			
00018	.00352	.01236	.02410	.03595	.04780	.05965	.07151	.08193	.08749		.03	01513	.01742	.02258	.03033	.03852	.04671	.05490	.06305	.06936	.07280			
00033	.00422	.01347	.02528	.03714	.04898	.06084	.07269	.08276	.08776		.04	01523	.01781	.02326	.03115	.03934	.04753	.05572	.06381	.06983	.07298			
00051	.00496	.01462	.02647	.03832	.05017	.06203	.07387	.08354	.08799		.05	01536	.01823	.02395	.03197	.04016	.04835	.05654	.06455	.07028	.07314			
00074	.00574	.01580	.02765	.03951	.05136	.06321	.07503	.08428	.08817		.06	01552	.01867	.02469	.03278	.04097	.04916	.05735	.06524	.07069	.07327			
00101	.00656	.01699	.02884	.04069	.05254	.06440	.07614	.08497	.08832		.07	01570	.01914	.02545	.03360	.04179	.04998	.05817	.06591	.07108	.07337			
00131	.00742	.01817	.03002	.04188	.05373	.06558	.07720	.08555	.08842		.08	01592	.01964	.02624	.03442	.04261	.05080	.05899	.06656	.07144	.07344			
00166	.00833	.01936	.03121	.04306	.05491	.06677	.07823	.08602	.08848		.09	01616	.02017	.02705	.03524	.04343	.05162	.05981	.06718	.07177	.07349			

COLORADO
DEPARTMENT OF HIGHWAYS

TABLES FOR
SUPERELEVATION
OF CURVES

Designed by: _____ Approved by: _____
 Made by: _____ Checked by: _____
 Date: _____

STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES AND AT CREST OF GRADES

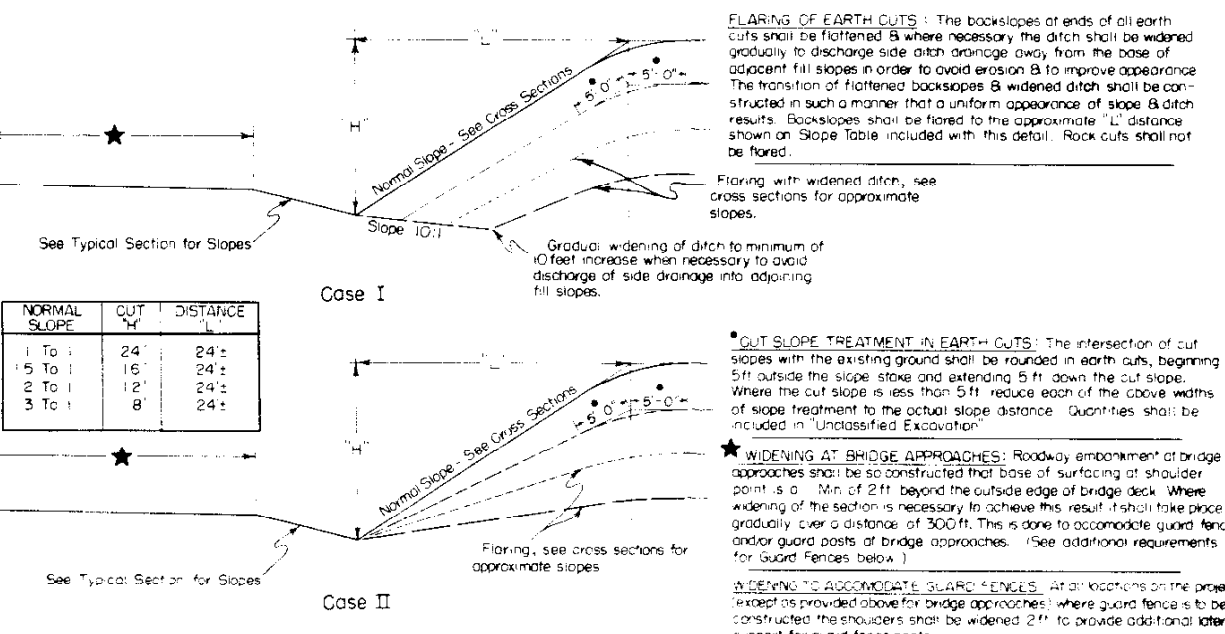
STANDARD M-2-EM

FED. ROAD DIV. NO. 8 DISTRICT 9 COLO. 1092 215 80 SHEET NO. TOTAL SHEETS
 Rev. 12-9-53, Details of Road Approaches, J.C.R.
 Rev. 10-28-55, Widening at Bridge Approaches Note, S.J.M.

GENERAL DETAILS FOR FLARING OF EARTH CUTS, CUT SLOPE TREATMENT & WIDENING AT BRIDGES

TYPICAL PLANS FOR SIDE APPROACH ROADS

SIDE DRAINS: To be placed at greatest feasible distance from the roadway shoulder consistent with good practice. A minimum of 20 ft. from shoulder should be adhered to wherever possible.
 30' Radii to be used on all intersecting roads except private approaches. Radii may be varied to suit field conditions.
 20' Radii to be used on private road approaches.



FLARING OF EARTH CUTS: The backslopes of ends of all earth cuts shall be flattened & where necessary the ditch shall be widened gradually to discharge side ditch drainage away from the base of adjacent fill slopes in order to avoid erosion & to improve appearance. The transition of flattened backslopes & widened ditch shall be constructed in such a manner that a uniform appearance of slope & ditch results. Backslopes shall be flared to the approximate "L" distance shown on Slope Table included with this detail. Rock cuts shall not be flared.

Flaring with widened ditch, see cross sections for approximate slopes.

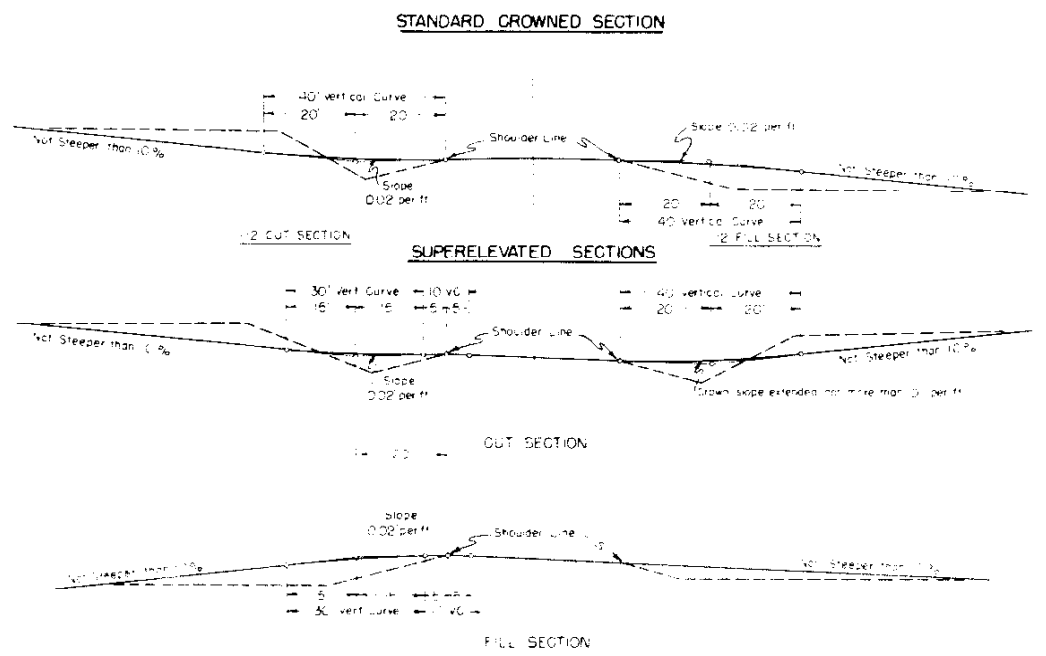
Gradual widening of ditch to minimum of 10 feet increase when necessary to avoid discharge of side drainage into adjoining fill slopes.

CUT SLOPE TREATMENT IN EARTH CUTS: The intersection of cut slopes with the existing ground shall be rounded in earth cuts, beginning 5 ft. outside the slope stake and extending 5 ft. down the cut slope. Where the cut slope is less than 5 ft. reduce each of the above widths of slope treatment to the actual slope distance. Quantities shall be included in "Unclassified Excavation".

WIDENING AT BRIDGE APPROACHES: Roadway embankment at bridge approaches shall be so constructed that base of surfacing at shoulder point is a Min. of 2 ft. beyond the outside edge of bridge deck. Where widening of the section is necessary to achieve this result, it shall take place gradually over a distance of 300 ft. This is done to accommodate guard fence and/or guard posts at bridge approaches. (See additional requirements for Guard Fences below.)

WIDENING TO ACCOMMODATE GUARD FENCES: At all locations on the project (except as provided above for bridge approaches) where guard fence is to be constructed, the shoulders shall be widened 2 ft. to provide additional lateral support for guard fence posts.

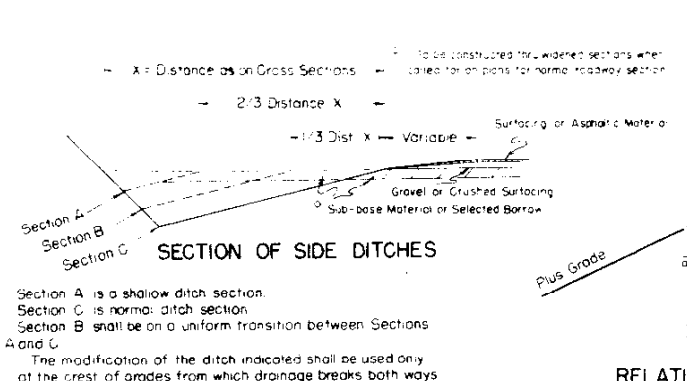
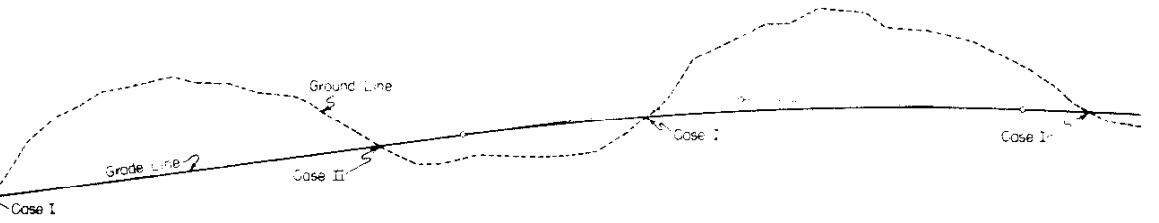
PLAN OF FLARING IN EARTH CUTS



NOTE: ROAD CROSS SECTIONS: Therefore, from a plan view, unless otherwise indicated, the width of the crowned section shall be the same as the width of the existing approach road and shoulder and the new construction be less than sixteen (16) feet in width.

DETAILS FOR DITCH & WIDENED SHOULDERS AT CREST OF GRADES

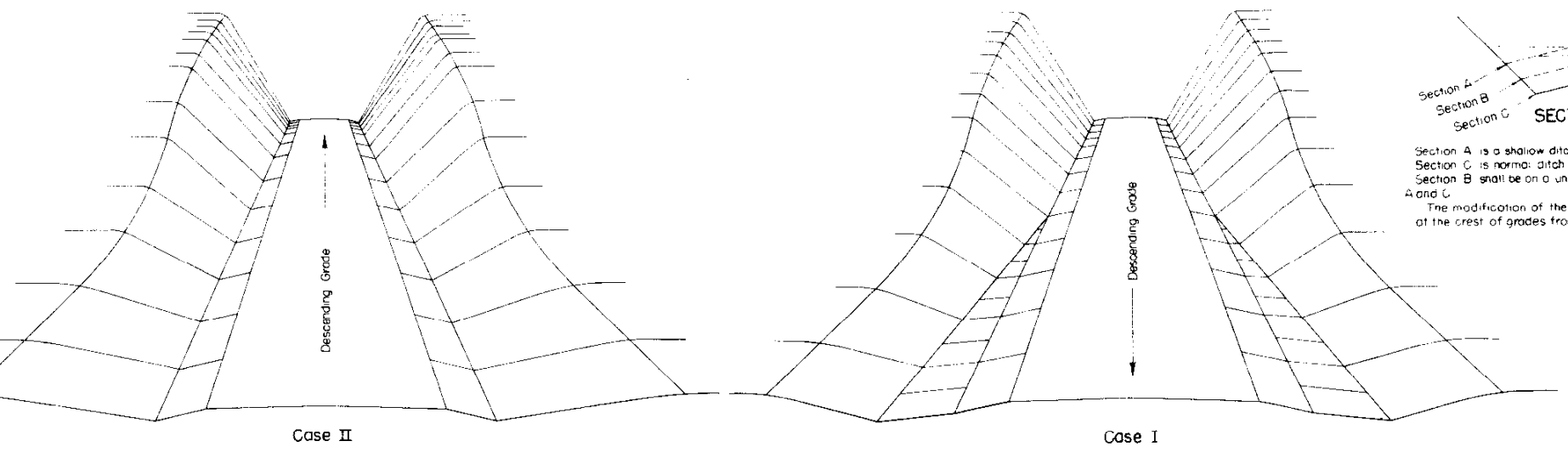
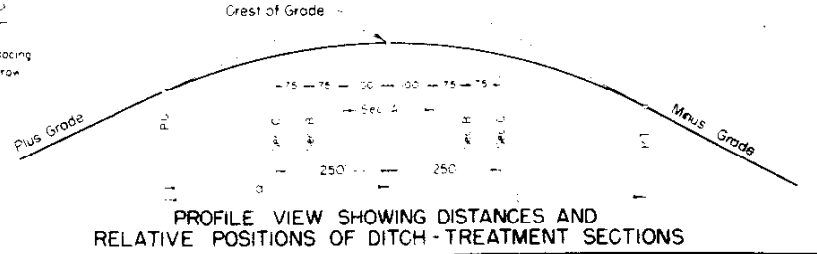
TO BE USED ONLY WHERE SIGHT DISTANCE AT CREST OF GRADE IS 600 FT. OR LESS.



Formula for finding the Crest of Grade:

$$Crest\ of\ Grade = \frac{Plus\ Grade + Minus\ Grade}{Algebraic\ Diff.} \times X$$

NOTE: Where sections in embankment at crest of grades are used, they shall be widened an amount equivalent to that used on sections, thus providing a symmetrical section of all crests.



GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the Project.

All side approach roads to the Project shall be Gravel Surfaced with a four (4) inch thickness of "Gravel or Crushed Rock Surfacing" extending approximately to the Right of Way Line. Estimated tonnage & type of material required for this operation are shown in the Surfacing Plan.

The maximum grades shown are to be the limiting grades for all road approaches. Modifications of grades will be permitted where adherence to the grades as shown would cause damage to property or create other unsatisfactory conditions. Grades less than the maximum shown are to be used wherever feasible.

COLORADO DEPARTMENT OF HIGHWAYS

STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT, AND WIDENING AT BRIDGES AND AT CREST OF GRADES

Designed by S.J.M.
 Made by S.J.M. & J.C.R.
 Checked by C.R.S.

Approved by A. Julian
 Date: November 1, 1953

PROJECT MARKER POST

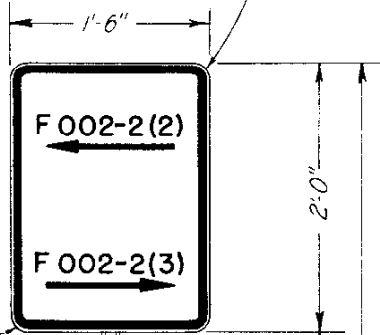
RIGHT OF WAY MARKER POST

STANDARD M-7-C

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	Logan 215	81	

Rev 4-4-56, Added Bridge Bench Mark, J.C.R.

Metal Sign Conforming to A.A.S.H.O. Manual on Uniform Traffic Control Devices. White Background, Black Letters & Symbols



NOTES FOR PROJECT MARKER POSTS

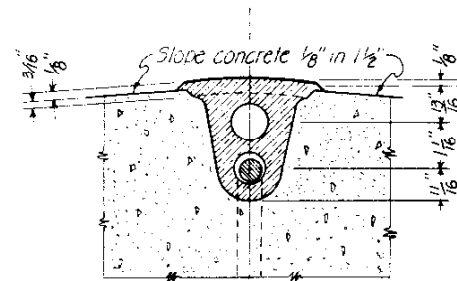
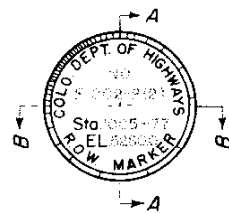
All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to this project

Numbers and arrows shall show the proper numbers and directions of the projects each way from where the post is placed. Post is to be set with sign facing the road at the end of the project, two feet inside the R.O.W. line or at a point amply protected from traffic in such a position that the sign will indicate properly the projects to which it refers.

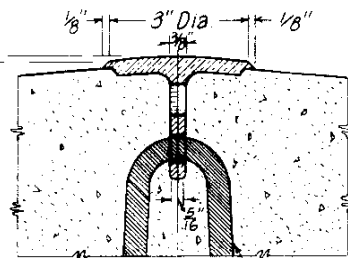
NOTES FOR R.O.W. MARKER POSTS

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project. Posts shall be made of Class A Concrete. The upper 12 inches of marker posts shall be rubbed free of form marks, and the top surface of the post must be constructed to drain thoroughly.

All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in field by the engineering party after post is placed. 3/16 inch letters and figures to be used. Project designations on tablets shall be properly shown (i.e., I for Fed Aid Interstate, F for Fed Aid Primary, S for Fed Aid Secondary, etc. & C for State Projects, see detail below.)



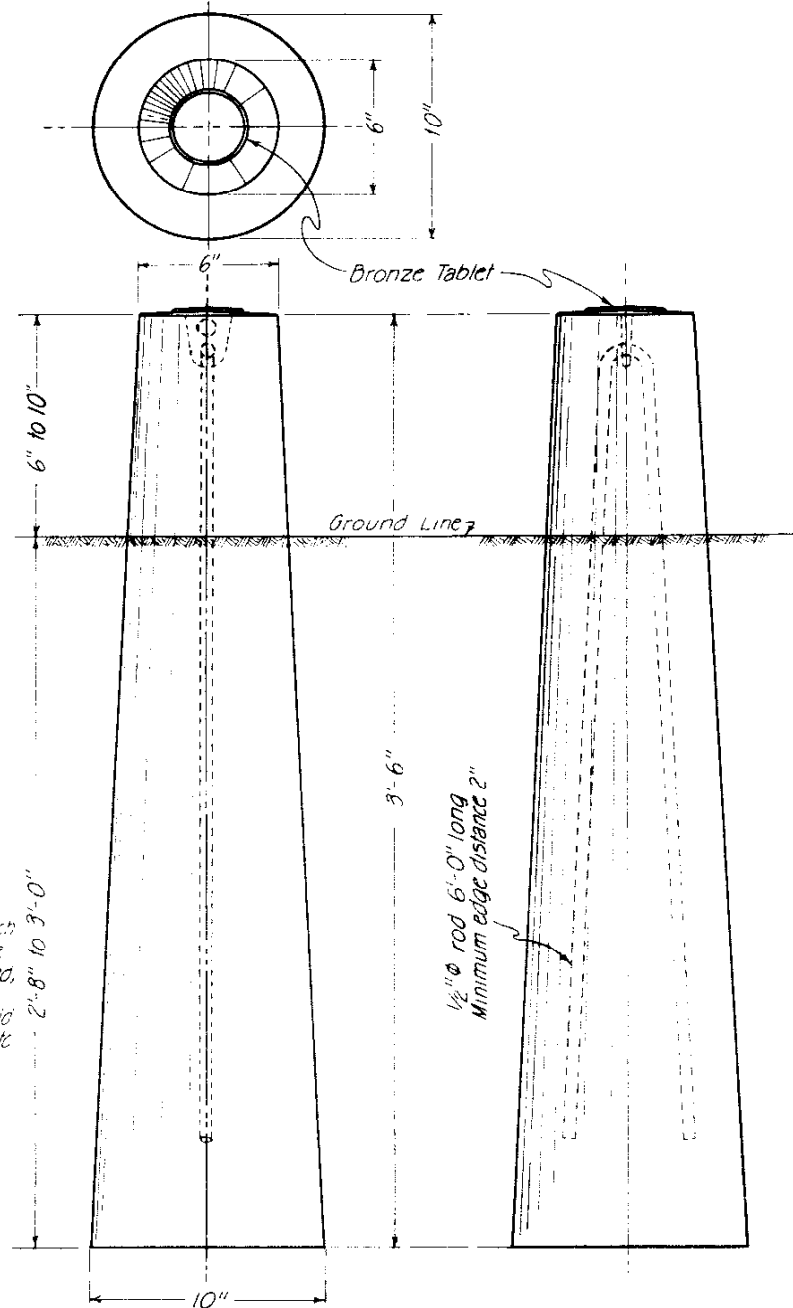
SECTION B-B



SECTION A-A

Omit and use 12" x 1/2" bar for Bench Mark Tablet

DETAIL OF BRONZE TABLET FOR RIGHT OF WAY MARKER POST AND BENCH MARK



BENCH MARK

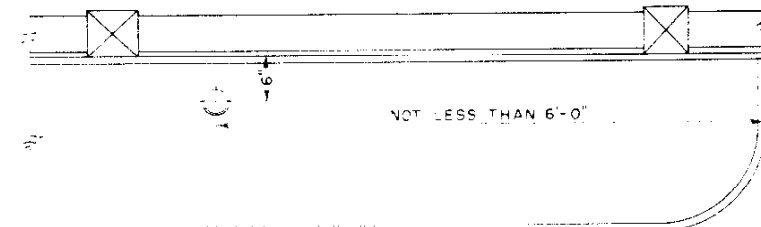
All work shall be done in accordance with Standard Specifications of the Colorado Department of Highways applicable to the project

All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in field by the engineering party after marker is placed. 3/16 inch letters and figures to be used. Project designation on tablets shall be properly shown (i.e., I for Fed Aid Interstate, F for Fed Aid Primary, S for Fed Aid Secondary, etc. & C for State Projects. See details below.)

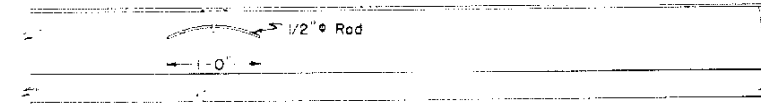
Bronze Bench Mark Tablets will be furnished by the Department at no expense to the Contractor

Installation of Bronze Bench Mark Tablets will not be paid for directly, but shall be included in the price bid for Concrete

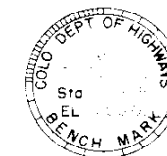
Note: Where 2'-0" safety curbs are not used place marker in center of curb



PLAN



ELEVATION



One marker to be placed on Bridges as shown. The station shown on marker shall be the center-line stationing directly opposite the marker

COLORADO DEPARTMENT OF HIGHWAYS STANDARD MARKER POSTS AND BENCH MARKS

Designed by R.E.L. Approved by E.E.O.
Made by E.E.O. Checked by R.E.L. Date: Nov. 12, 1953

Rev 12-13-47 J.P.K.
 Rev 1-1-49 J.K.E.
 Rev 9-14-50 J.E.R.
 Rev 7-10-52 T.M.C.
 Rev 10-24-55 W.F.S.

STANDARD M-10-B.

FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	092-2167 82	

1 2 3 4 5 6 7 8 9 0 .

A B C D E F G H I J K L

M N O P Q R S T U V W

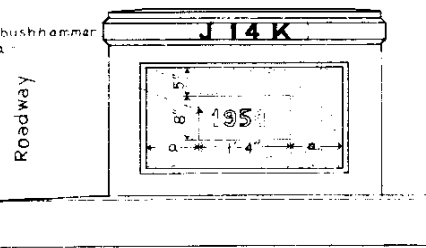
a f g l J 1 4 K 1 9 5 0

Scale in Inches
 0 1 2 3

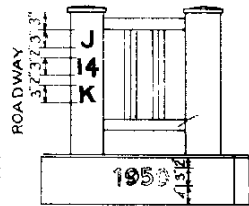
abcdefghijklmnopqrstuvwxyz

White Background

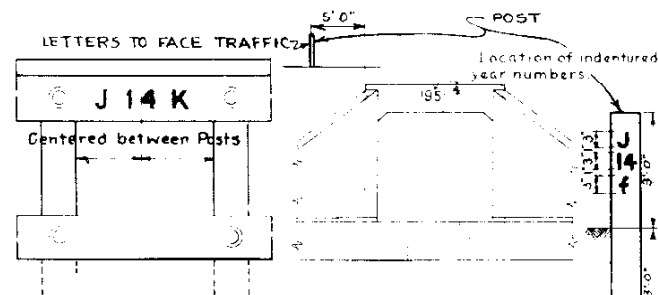
Do not bushhammer this area.



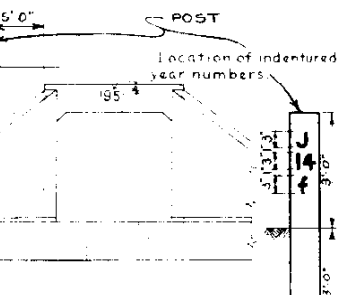
TYPICAL FOR CONCRETE ENDPOST



TYPICAL FOR STEEL HANDRAIL END POST



TYPICAL FOR TIMBER WING HANDRAIL



TYPICAL FOR LARGE BOX GULLIES

SAMPLE BRIDGE NUMBER

GENERAL NOTES

SAMPLE YEAR NUMBER

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS APPLICABLE TO THE PROJECT. COMPENSATION FOR THIS WORK SHALL BE INCLUDED IN THE ORIGINAL CONTRACT ITEMS AND WILL NOT BE PAID FOR AS A SEPARATE ITEM. THE SIZE, SHAPE AND SPACING OF THE LETTERS AND FIGURES SHALL BE IN ACCORDANCE WITH THE FULL SIZE SHOWN ON THIS SHEET. ADDITIONAL COPIES OF THIS FULL SIZE SHEET CAN BE OBTAINED FROM THE DEPARTMENT WITHOUT CHARGE. THE YEAR NUMBERS ARE RECESSED IN CONCRETE 3/8" MINIMUM AS SHOWN INTO THE PANEL OF THE ENDPOST ON THE RIGHT HAND SIDE OF EACH BRIDGE END AND INTO THE FACE OF THE DOWNSTREAM HEADWALL OF CULVERTS AS SHOWN ON PLAN DETAILS. NUMBERS TO BE MADE OF WOOD, METAL OR OTHER SUITABLE MATERIAL AND ATTACHED TO THE FORMS BEFORE CONCRETE IS POURED. THE YEAR NUMBER OF EACH STRUCTURE SHALL CORRESPOND WITH THE YEAR IN WHICH THE CONCRETE IS POURED.

THE STRUCTURE NUMBER SHALL BE STENCILED ON THE RIGHT HAND SIDE OF EACH BRIDGE END AS SHOWN IN THIS STANDARD AND AS SPECIFIED FOR MAJOR STRUCTURES OVER 20'-0" CLEAR SPAN. THE CORRECT NUMBER FOR EACH BRIDGE IS SHOWN IN THE LOWER RIGHT HAND CORNER OF THE DETAIL SHEETS FOR THAT BRIDGE. A PROPER WHITE BACKGROUND RECTANGULAR IN SHAPE AND EXTENDING THREE INCHES BEYOND THE LIMITS OF THE NUMBER SHALL BE PAINTED WITH TWO COATS OF ACCEPTABLE WHITE PAINT UNLESS AN APPROVED WHITE CONCRETE PAINT IS USED. BEFORE PAINTING THE SURFACE MUST BE THOROUGHLY DRIED, CLEANED AND PROPERLY SIZED. ON TIMBER HANDRAILS THE WHITE PAINT USED ON THE BRIDGE WILL BE SATISFACTORY. AFTER THE WHITE BACKGROUND HAS DRIED SUFFICIENTLY THE CORRECT STRUCTURE NUMBER SHALL BE CAREFULLY STENCILED ON IT WITH TWO COATS OF SECOND FIELD COAT-DARK OR EXTERIOR BLACK PAINT (W-18) AS SPECIFIED UNDER ITEM 38 PAINTS AND PAINTING THE BRACES OF THE STENCILED LETTERS AND FIGURES SHALL BE CAREFULLY FILLED IN BY HAND TO MAKE SOLID FIGURES. SUFFICIENT TIME BETWEEN SUCCESSIVE COATS SHALL BE ALLOWED TO PERMIT THOROUGH DRYING. MINOR STRUCTURES WITH CLEAR SPANS 12 TO 20 FEET INCLUSIVE SHALL BE STENCILED WITH STRUCTURE NUMBER THUS W-18-S ON 4"x4"x6" TIMBER POST TO BE FURNISHED AND PLACED BY THE CONTRACTOR. POST SHALL BE PLACED 4 FT ± OUTSIDE THE ROADWAY SHOULDER. THIS SHALL BE CONSIDERED SUBSIDIARY WORK AND WILL NOT BE PAID FOR AS A SEPARATE ITEM.

SECTION

COLORADO
 DEPARTMENT OF HIGHWAYS
 STANDARD
 LETTERS AND FIGURES
 FOR
 YEAR NUMBERS AND
 STRUCTURE NUMBERS

Designed by GHD Approved by *P. H. Bailey*
 Made by WPM Bridge Engineer
 Checked by Date: June 1, 1948

STRUCTURE NO

STANDARD TIMBER GUARD POSTS

STANDARD M-19-D SPECIFICATIONS

FED. ROAD DIVISION NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLO. 2(5)	33	

Rev. 5-13-53, Specifications, J.C.R.
 Rev. 12-4-53, Date Nails Deleted, D.L.V.
 Rev. 2-1-54, Delineation by State Forces, J.C.R.

POSTS - Lodgepole Pine, Southern Yellow Pine or West Coast Douglas Fir, not less than six (6) inches in diameter. All posts shall be pressure treated with Pentachlorophenol as provided under paragraph 42.2.20 of the specifications, after being peeled and shaved in accordance with specifications.

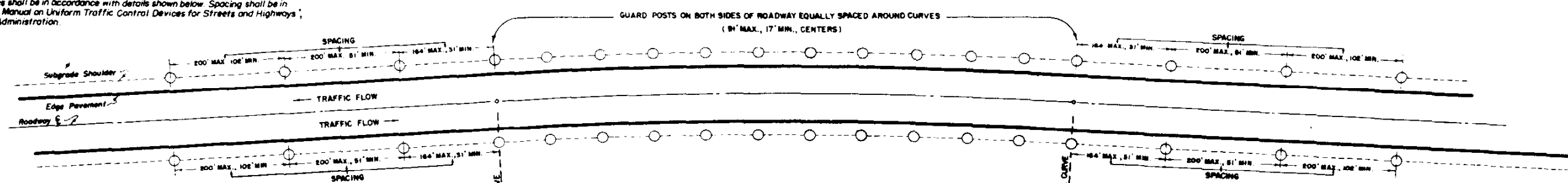
PAINTING - Posts shall be painted with aluminum paint and a black band placed around each post as per details on this sheet. Number of coats and type of paint applied shall be in accordance with specifications.

(Work By State Forces)

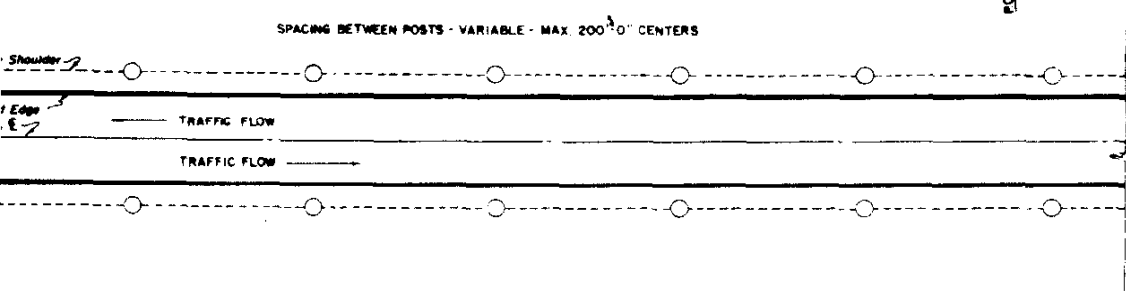
REFLECTIVE SHEETING - In accordance with the details hereon, State Forces will furnish and place the required 2" x 6" smooth surfaced reflective delineators fabricated from 3s - H14 aluminum alloy, minimum thickness 0.025", reflectorized with reflective sheeting strips or other approved reflective materials. Strips shall be suitable for placement around a curved surface.

Typical Installation on Curves

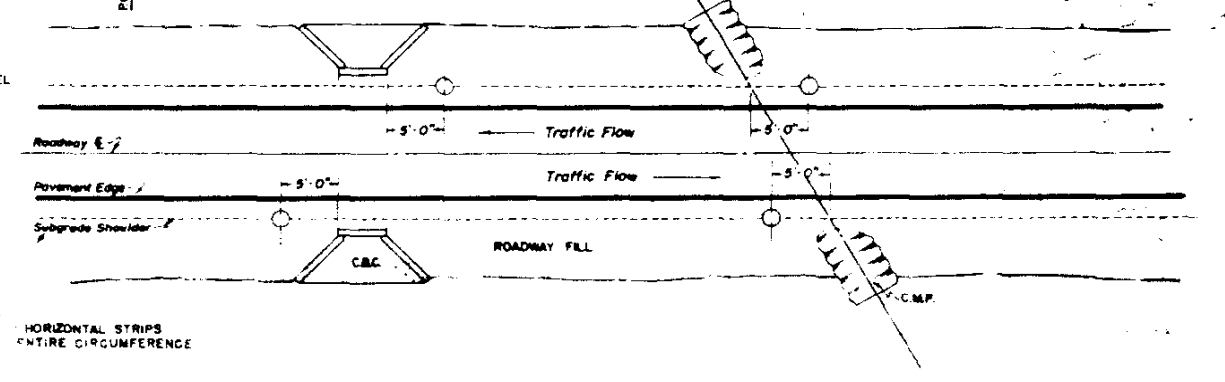
Placement of guard posts on curves shall be in accordance with details shown below. Spacing shall be in accordance with Section 157, Table 1 of Manual on Uniform Traffic Control Devices for Streets and Highways, 1948 by the Public Roads Administration.



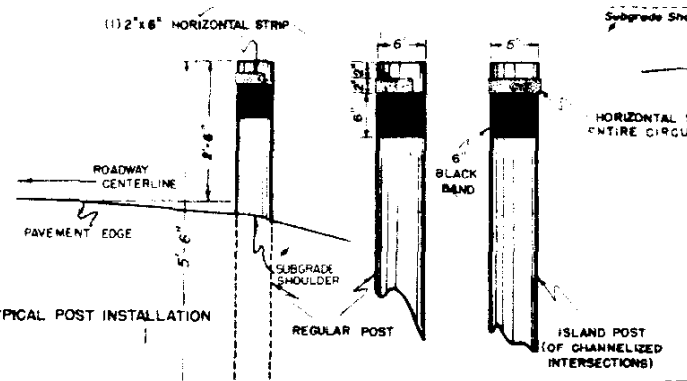
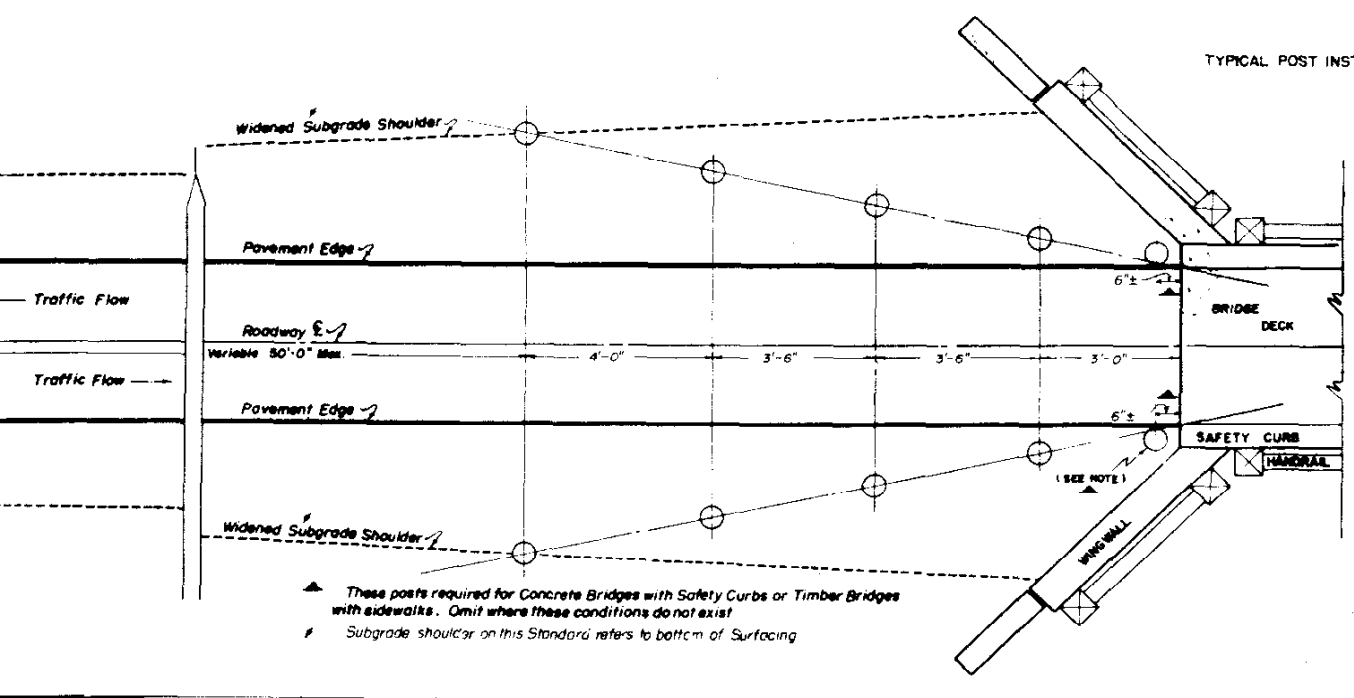
Method of Placement on Tangents



Plan View Showing Placement at Isolated Minor Structures



Typical Installation at Bridge Approaches



(Work By State Forces)
 INSTALLATION DETAILS OF REFLECTORIZED STRIPS

GENERAL NOTES

(Work By Contractor)
 All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project.

All posts shall be set and tamped in, plumb and firm, to the line and grades established by the Engineer.

INSTALLATION of Timber Guard Posts on Tangents, Curves and at Bridge Approaches shall be in conformity with details on this sheet. The number, location and spacing of Timber Guard Posts is shown on plans.

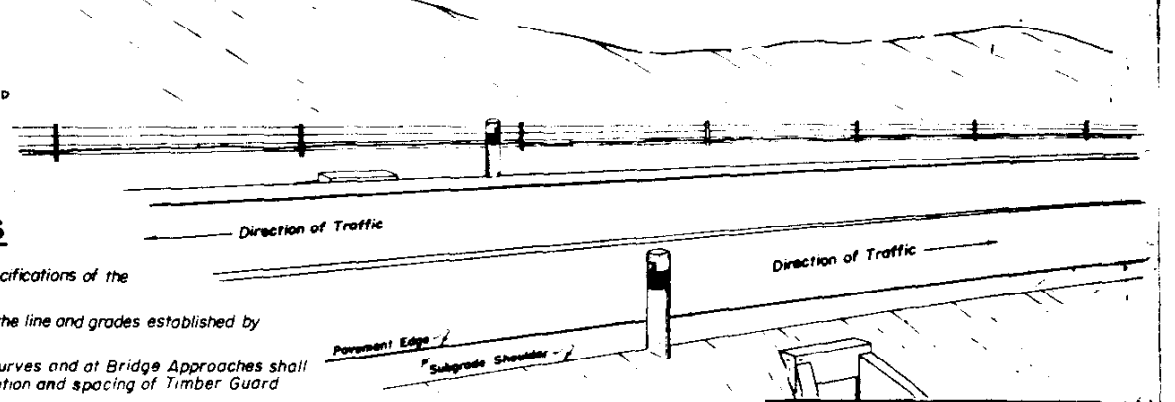
(Work By State Forces)
 Reflective delineators shall be furnished and installed by State Forces after the Contractor has finished his operations.

Installation of reflective delineators shall be in accordance with the following: Wrap Around Reflective Sheeting Strips shall be installed horizontally one (1) sheet on all posts. Island posts shall have Wrap Around Reflective Sheeting Strips placed horizontally to cover entire circumference of Post.

On Divided Highways and Islands, Reflective Sheeting Strips shall be placed in a manner to obtain maximum visibility for the primary direction of travel. In all instances tests shall be made to insure the maximum effectiveness of reflective delineators.

All Traffic Islands shall be marked with island Posts as indicated hereon.

Pictorial View Showing Location at Isolated Minor Structures



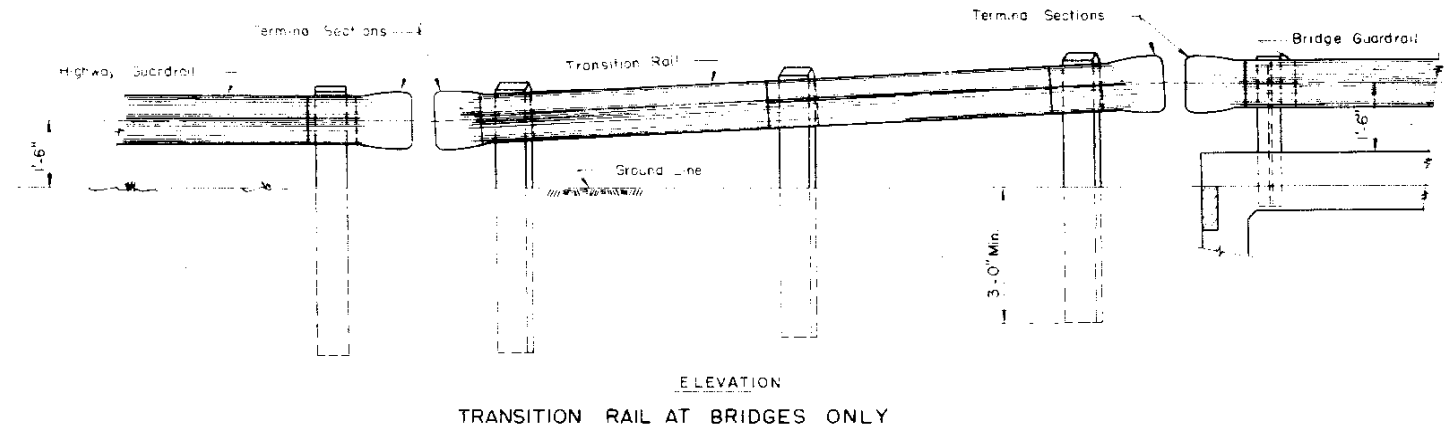
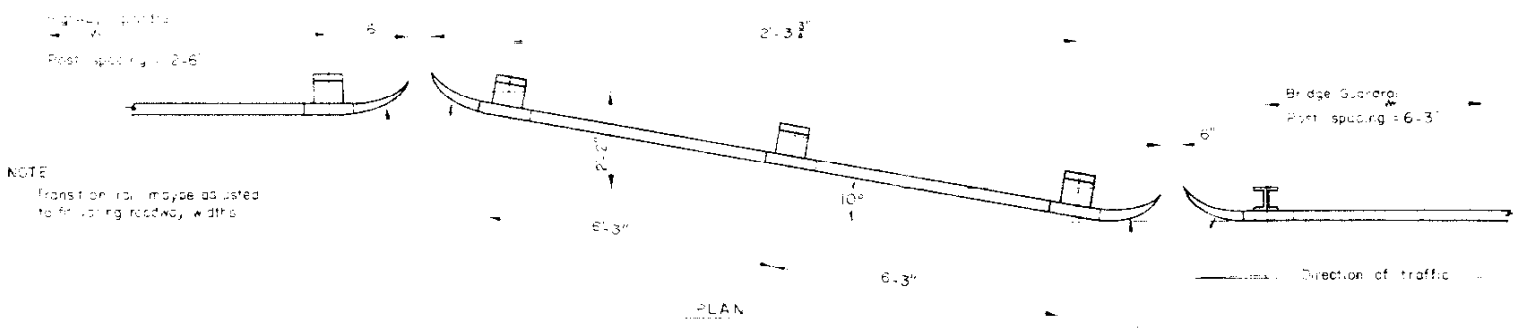
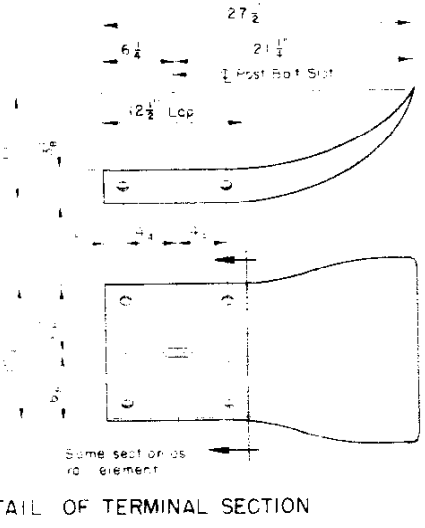
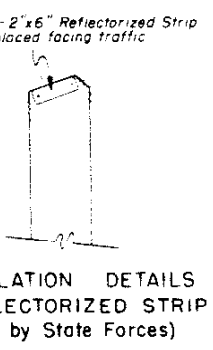
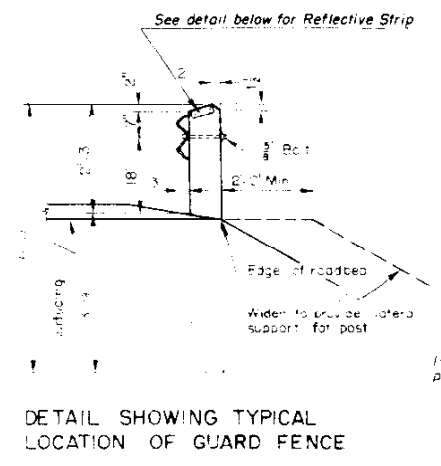
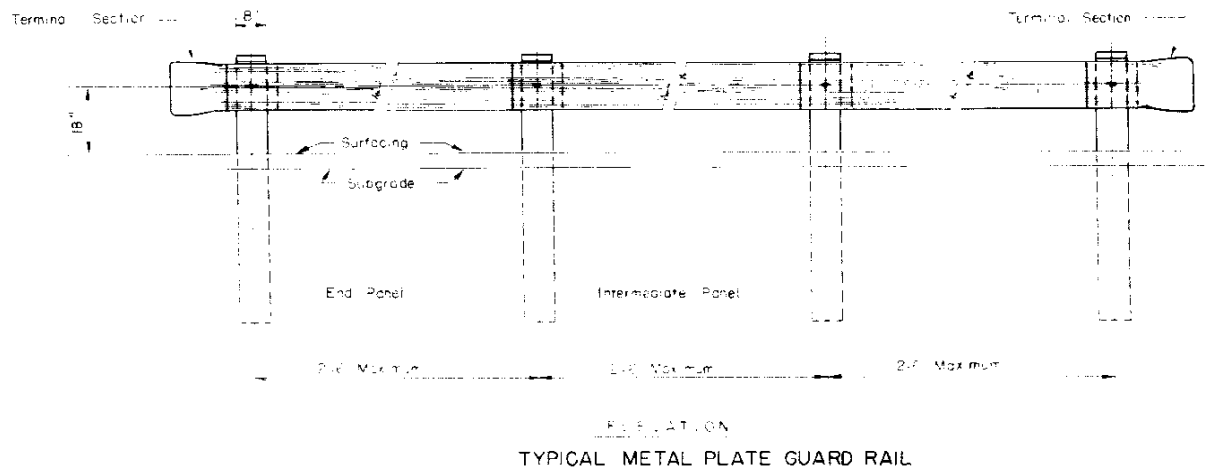
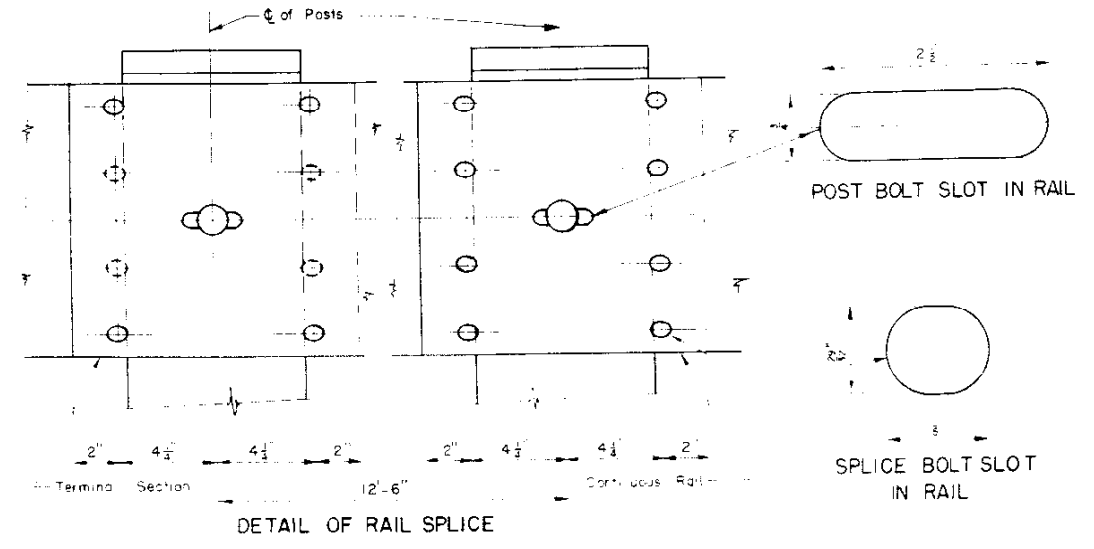
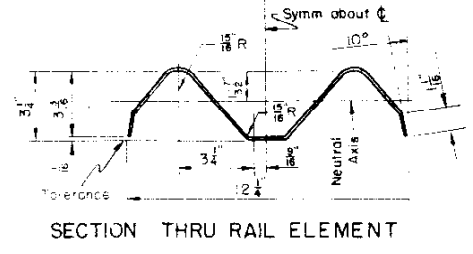
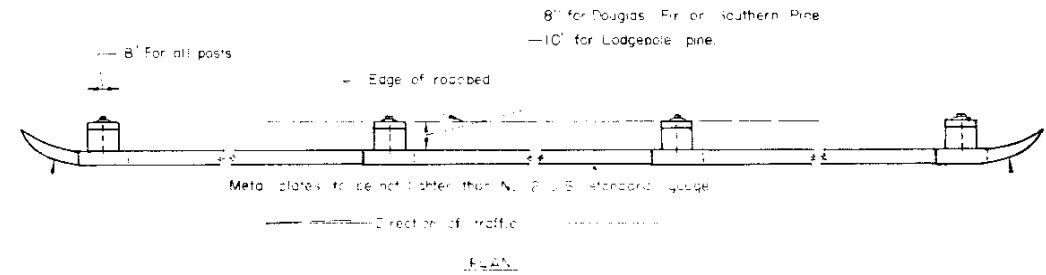
COLORADO DEPARTMENT OF HIGHWAYS

STANDARD TIMBER GUARD POSTS

Designed by	Approved by
Made by	Engineer, Bureau of Highways
Checked by	Date: March 25, 1953

STANDARD M-21-C

E-92-26 84



GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways applicable to the project.

All wood posts shall be close grained Douglas Fir of the Coast Region, Dense Long Leaf or Short Leaf Southern Pine or Lodgepole Pine.

All wood posts shall be square edged, full sawn, with tops beveled as shown. All bolt holes are to be drilled 1/8 inch larger than diameter of bolt before treatment is applied. All wood posts shall be pressure treated for the full length of the posts as provided for in the specifications.

Timber posts fabricated from Douglas Fir or Southern Pine shall be 8"x8" square. Timber posts fabricated from Lodgepole Pine shall be 8"x10" and shall be installed with the 8" face parallel to the center line of the roadway.

All wood posts shall be set and tamped in place and firm to the lines and grades as directed by the engineer. Metal plates shall not be galvanized, but shall be painted as provided for in the specifications. Metal plates shall not be lighter than No. 2 U.S. standard gauge.

Standard galvanized cast iron or galvanized iron lock washers shall be used under all bolt heads and nuts coming in contact with wood posts.

Where side walks are constructed adjacent to the lane for traffic, guard fence shall be placed in such a manner that the fence lies on the line between the sidewalk area and the normal roadway shoulder.

Where guard fences are constructed on the approaches to the spans with sidewalks, the fence on bridge shall be placed in line with the face of the curb on the bridge.

(Work by State Forces)

Reflective delineators shall be furnished and installed by State Forces after the Contractor has finished his operations.

COLORADO
DEPARTMENT OF HIGHWAYS
STANDARD
METAL PLATE GUARD FENCE
(BEAM TYPE)

By _____
Date: May 15, 1956

STANDARD M-26-C

FED. ROAD DIV. NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLO.	226/85	

Rev 2-15-57 E.L.H. Gate Dimension Shown

TOP RAIL To be constructed of 1 5/8" O.D. Std. Steel Pipe weighing 2.27 lbs. per lineal foot.

GATE POSTS To be constructed of 3" O.D. std. steel pipe weighing 5.79 lbs. per lineal foot.

LINE POSTS To be constructed of 2 1/2" by 1 9/16" H-Beam weighing 4.1 lbs. per lin ft.

BRACES To be constructed of 3 1/2" Std. Steel Pipe weighing 2.27 lbs. per lineal foot.

END POST: To be constructed of 3" O.D. Std. Steel Pipe weighing 5.79 lbs. per lineal foot.

GATES: Fabric to match fence. Gate frames to be braced and constructed of 2" O.D. std. steel pipe weighing 2.72 lbs. per lineal foot, all joints to be securely welded and painted.

CONCRETE FOOTINGS: All Posts To be constructed of Class A Concrete with Crowned Tops.

TYPICAL GATE & GATE POSTS

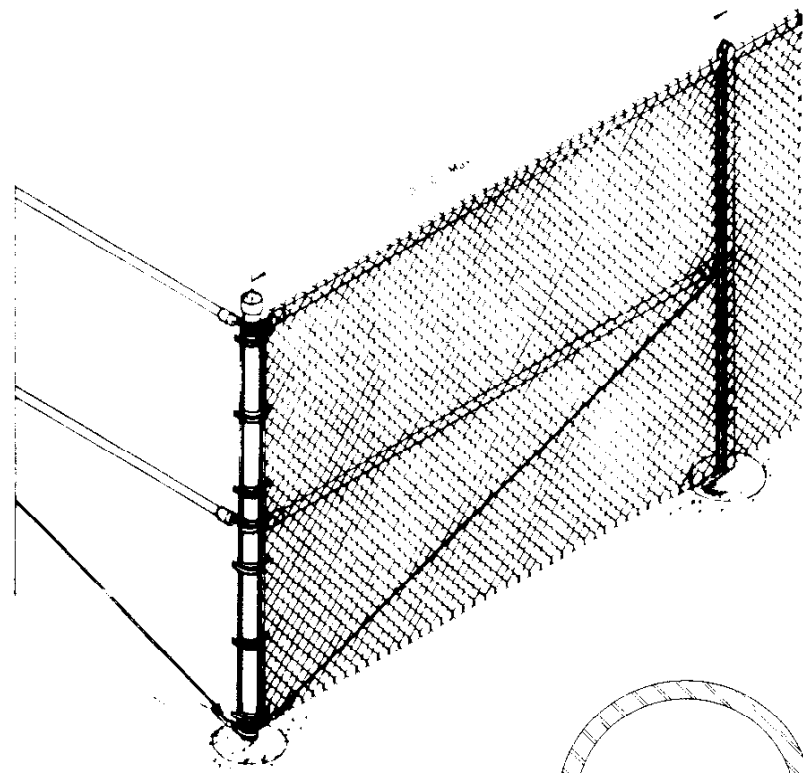
TYPICAL BRACE PANEL

TYPICAL LINE POST
(See alternate below)

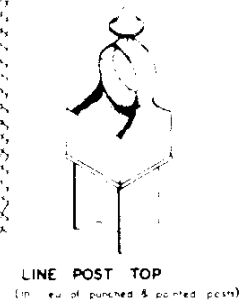
TYPICAL END POST

End Posts with Braces, Stretcher Bars and Fittings, corresponding to details shown hereon for Typical Corner Section with End Posts and Braces, are to be used in fence at intervals of not more than four hundred (400) feet.

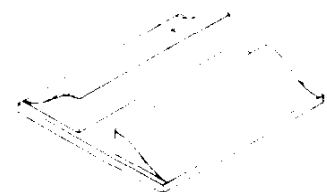
ITEM NO.	SPECIFICATION NUMBERS	UNIT
78a	Chain Link Wire Mesh Fence	Lin. Ft.
78b	Double Driveway Gates	Each



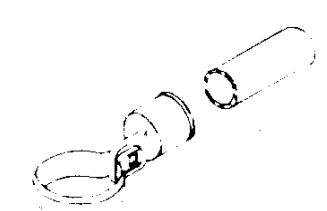
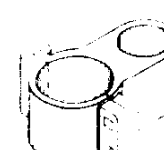
TYPICAL CORNER SECTION WITH POST & BRACES



LINE POST TOP
(In line with punched & pointed posts)



CENTER REST

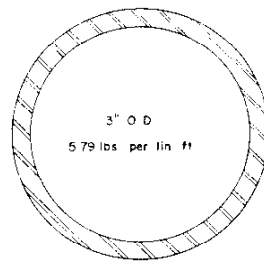


BRACE BAND & RAIL END

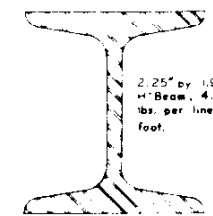
TENSION BAND

GENERAL NOTES

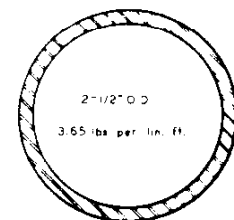
- All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department applicable to the project.
- Weights of Pipe as shown are the maximum allowed for the nominal diameters designated.
- Alternate Equivalent Standard Fittings, Gates, Posts, and Rails of other than sections shown will be acceptable subject to the Engineer's approval.
- See plan sheets for location and number of gates and length of fence required.
- Wire Mesh Fabric shall be securely fastened to all Line Posts, Rails and Braces with No. 7 (B&S) Gauge Aluminum and/or No. 12 1/2 (W&M) Gauge Galvanized Steel Wire and spaced at a minimum of 6 per 10 feet horizontally & 1 per foot vertically. Sulfate Attachment Bands shall be used on all Gate Posts, End Posts, Braces and Stretcher Bars.



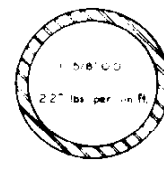
TERMINAL POSTS



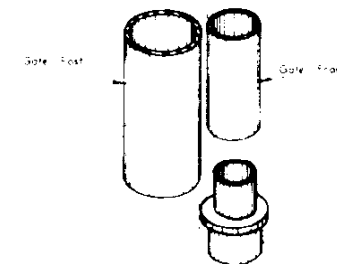
H-BEAM LINE POST



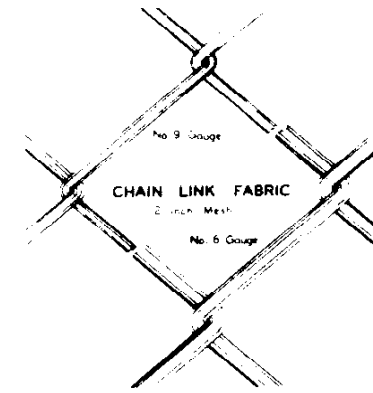
ALTERNATE LINE POST



BRACE RAIL & TOP RAIL



HINGE ASSEMBLY



CHAIN LINK FABRIC
2 inch Mesh

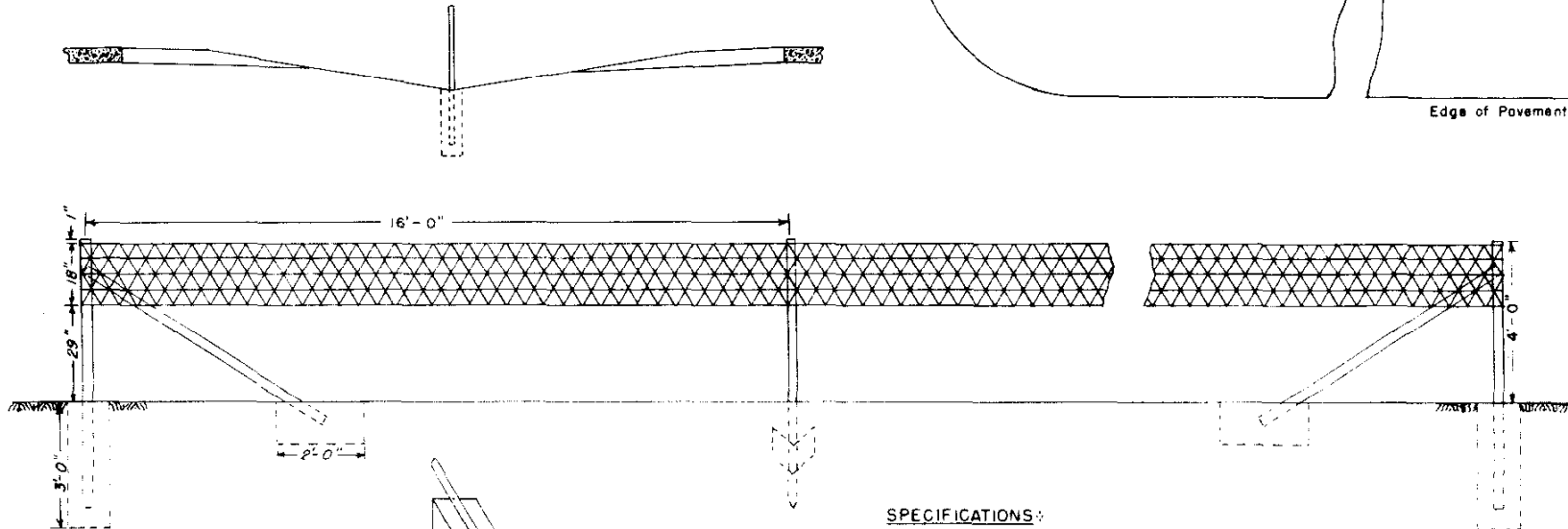
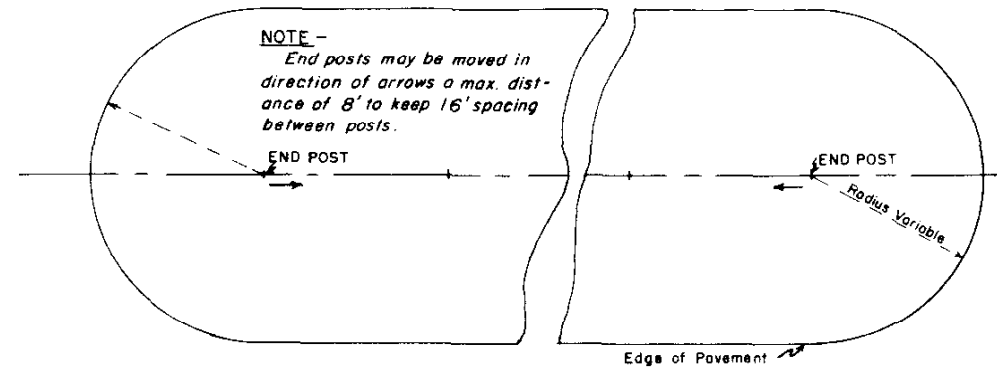
All Fabric shall be No. 9 Gauge with a barbed finish on the top and bottom salvage unless otherwise specified.

COLORADO DEPARTMENT OF HIGHWAYS

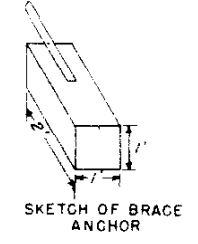
CHAIN LINK WIRE MESH (SCHOOL) FENCE

Designed by: V.L.A. Approved by: *William*
 Made by: E.L.H. Design Engineer
 Checked by: _____ Date: 9-1-56

FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	86	



NOTE -
All footings for end posts shall be of Class "A" Concrete and shall have crowned tops. The cost involved shall be included in the bid price for the fence.



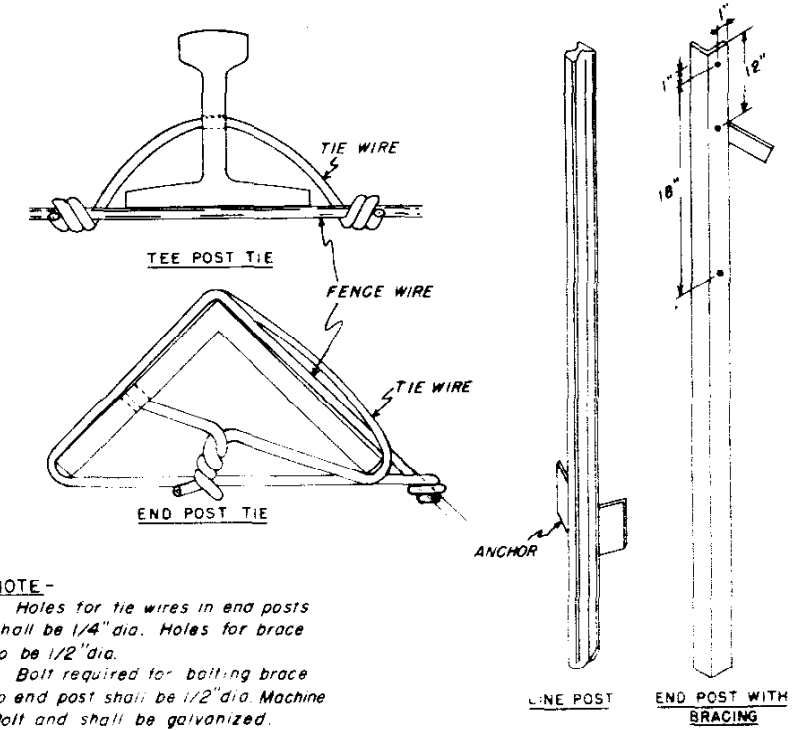
SPECIFICATIONS:
END POSTS -
TYPE - 2-1/2" x 2-1/2" x 1/4" Structural Steel Angles
WGT. - 4.1 lbs. per lin. ft.
LENGTH - 6'-6" Min.
NO. OF BRACES - 1

LINE POSTS -
TYPE - Structural Steel "Tees"
WGT. - 1.4 lbs. per lin. ft., Min.
LENGTH - 6'-6" Min.
ANCHOR - Securely fastened, with bearing surface sufficient to resist movement of post.

BRACES -
TYPE - 2"x2"x1/4" Structural Steel Angles
WGT. - 3.19 lbs. per lin. ft.
LENGTH - Same as end post used

4"x4" WIRE MESH FENCE -
WIDTH - 18 inches
WGT. - 0.41 lbs. per lin. ft. minimum
HORIZONTAL WIRES - 2 strands No. 12-1/2 Ga.
CROSS WIRES - 1 strand No. 14 Ga.
CONSTRUCTION - Cross wires to be woven with horizontal wires making a one piece fabric.

TIES -
Min. No. 12-1/2 Ga Galvanized Wire or acceptable equivalent.
END POSTS - Each horizontal wire of mesh to be wrapped around post and fastened in addition to two (2) tie wires.
LINE POSTS - Min. three (3) ties per post for mesh.

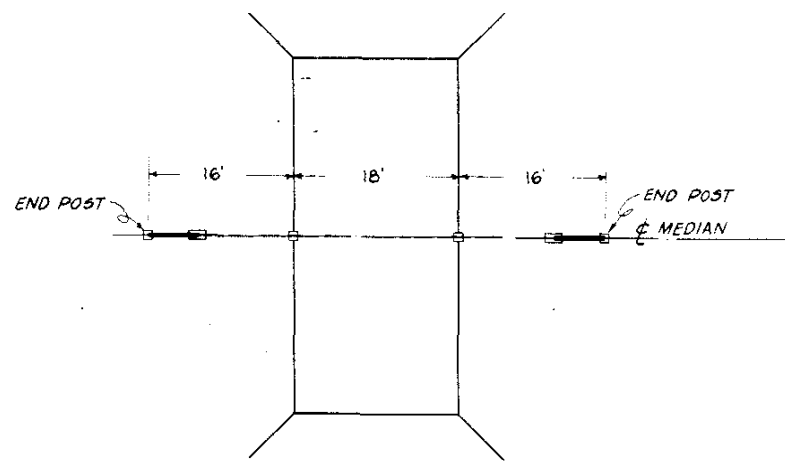


NOTE -
Holes for tie wires in end posts shall be 1/4" dia. Holes for brace to be 1/2" dia.
Bolt required for bolting brace to end post shall be 1/2" dia. Machine Bolt and shall be galvanized.

General Notes

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project.
All posts and braces shall be of the types and weights as shown on this sheet or acceptable equivalents. Posts and braces to be of structural steel hot dip galvanized or painted with an approved waterproof asphalt or mineral paint. Holes to be provided in end posts as detailed hereon.
Wire mesh used as shown shall be galvanized.
On curves, fence wire shall be placed on side of post which would prevent tension on fence ties.

LOCATION of BARRIER FENCE AT BOX CULVERTS with NO FILL



COLORADO
DEPARTMENT OF HIGHWAYS

Standard Barrier Fence

Designed by E.E.O.	Approved by <i>A. Julian</i>
Made by E.E.O.	Engineer, Survey & Plans
Checked by	Date 3/27/57

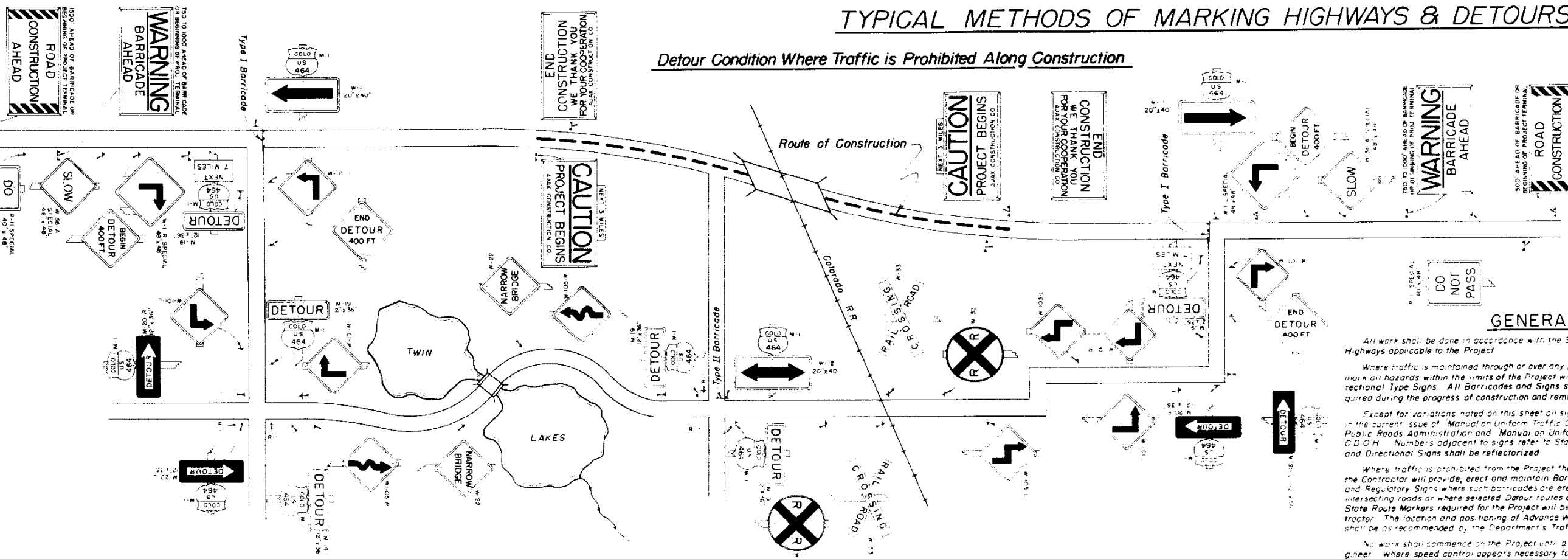
STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-29-B
(SHEET 1 OF 2 SHEETS)

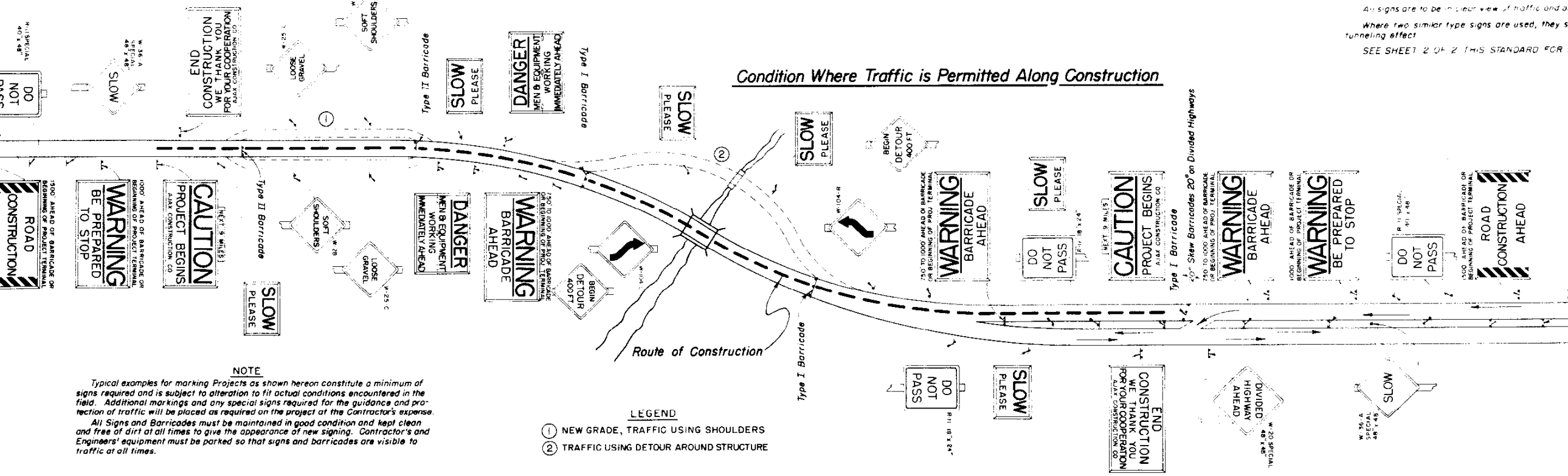
FED. ROAD DISTRICT SHEET NO. TOTAL NO. COLO. 1072-26 87

TYPICAL METHODS OF MARKING HIGHWAYS & DETOURS

Detour Condition Where Traffic is Prohibited Along Construction



Condition Where Traffic is Permitted Along Construction



GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the Project.

Where traffic is maintained through or over any part of the Project, the Contractor will be required to mark all hazards within the limits of the Project with well maintained Barricades, Warning Signs and Directional Type Signs. All Barricades and Signs shall be moved, added to, changed or removed as required during the progress of construction and removed entirely when project is completed.

Except for variations noted on this sheet all signs will be in conformity with the specification outlined in the current issue of "Manual on Uniform Traffic Control Devices for Streets & Highways" by the U.S. Public Roads Administration and "Manual on Uniform Traffic Control Devices for Streets and Highways, C.O.D.H. Numbers adjacent to signs" refer to Standards in the manual. Standard Warning, Regulatory and Directional Signs shall be reflectorized.

Where traffic is prohibited from the Project the Detour will be marked by the Department except that the Contractor will provide, erect and maintain Barricades complete with approved Directional Arrows and Regulatory Signs where such barricades are erected and maintained at the ends of the Project and intersecting roads or where selected Detour routes are in advance of the actual project terminal. U.S. or State Route Markers required for the Project will be furnished by the Department and installed by the Contractor. The location and positioning of Advance Warning Signs, Barricades and Speed Control Signs shall be as recommended by the Department's Traffic Operations Section.

No work shall commence on the Project until all Warning Signs are in place and approved by the Engineer. Where speed control appears necessary for protection of the traveling public, such speed control shall be requested from the Project Engineer by the Contractor.

All signs are to be in clear view of traffic and are not to be obstructed by equipment, weeds or otherwise.

Where two similar type signs are used, they shall be placed approximately 75 feet apart to avoid a tunneling effect.

SEE SHEET 2 OF 2 THIS STANDARD FOR ADDITIONAL NOTES AND DETAILS.

NOTE
Typical examples for marking Projects as shown hereon constitute a minimum of signs required and is subject to alteration to fit actual conditions encountered in the field. Additional markings and any special signs required for the guidance and protection of traffic will be placed as required on the project at the Contractor's expense.
All Signs and Barricades must be maintained in good condition and kept clean and free of dirt at all times to give the appearance of new signing. Contractor's and Engineers' equipment must be parked so that signs and barricades are visible to traffic at all times.

- LEGEND**
- (1) NEW GRADE, TRAFFIC USING SHOULDERS
 - (2) TRAFFIC USING DETOUR AROUND STRUCTURE

COLORADO
DEPARTMENT OF HIGHWAYS

Standard Roadway
Construction Traffic Signs

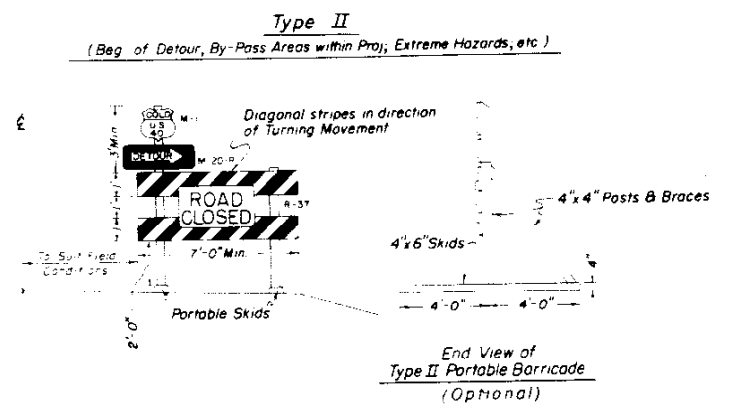
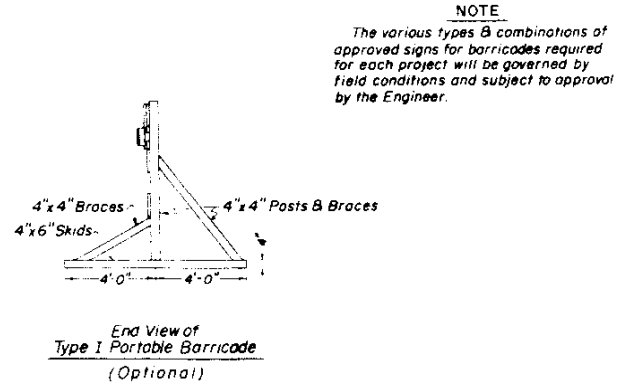
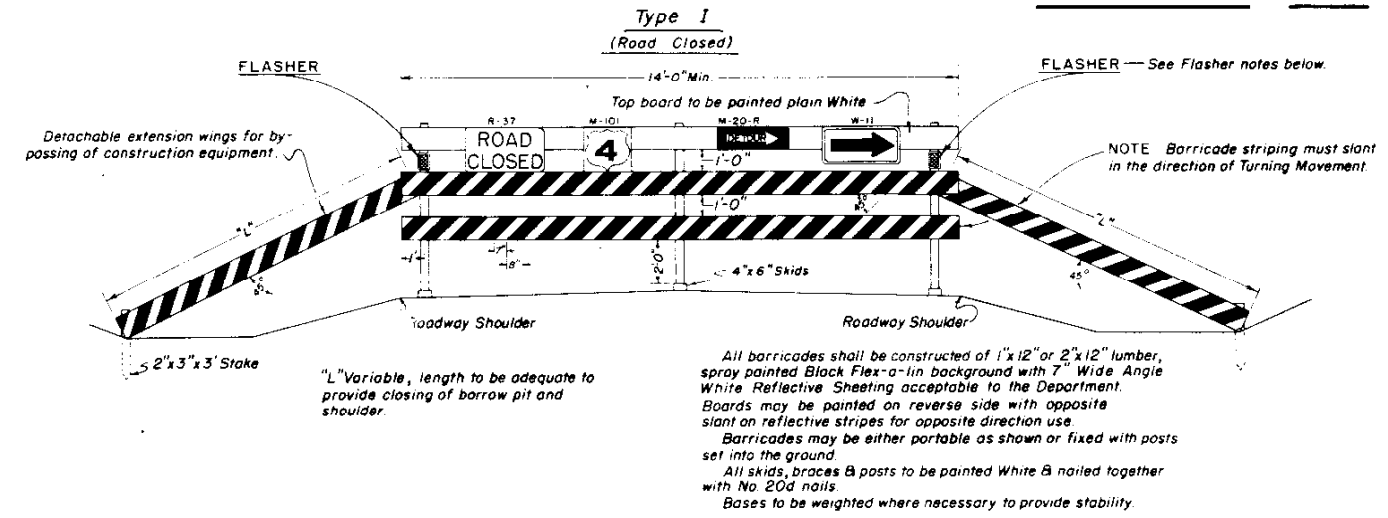
Designed by JCR Approved by *A. J. Johnson*
Made by JCR Engineer, Surveys & Plans
Checked by _____ Date: July 22, 1955

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-29-B
(SHEET 2 OF 2 SHEETS)

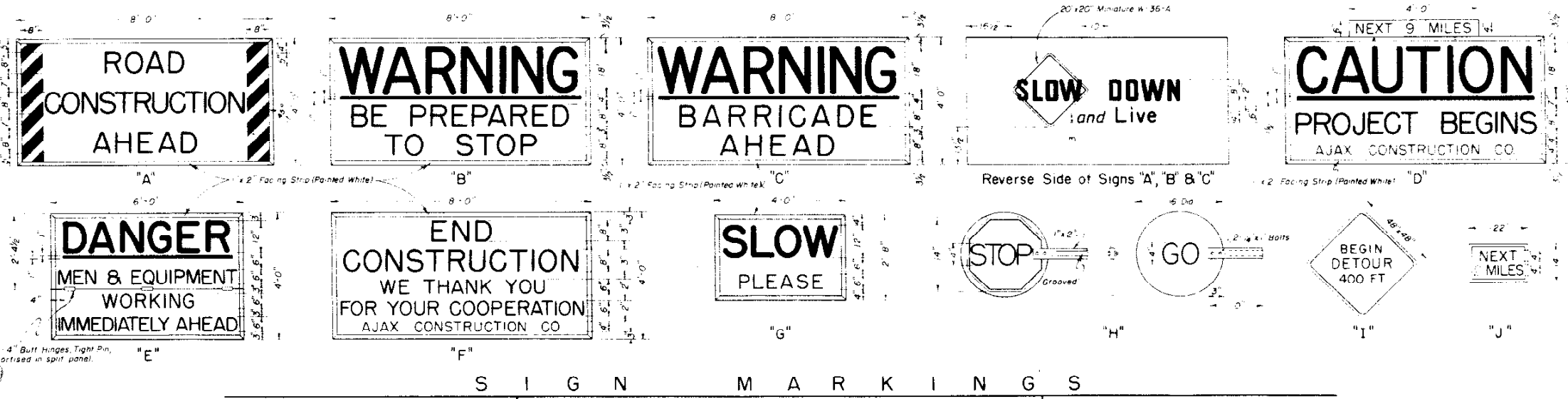
FED. ROAD DIV. NO. DISTRICT NO. SHEET NO. TOTAL SHEETS
8 88
092-26
Rev 7-10-56, Reflective Materials, L.N.P.

DETAILS OF BARRICADES

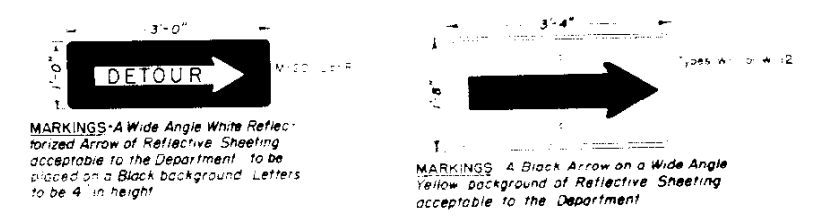


NOTE: Alternate materials or other reflecting elements on Construction Traffic Signs and Barricades will be permitted only after approval of such material by the Department.

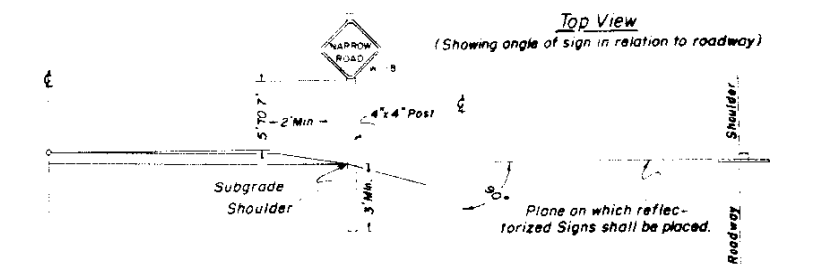
DETAILS OF CONSTRUCTION SIGNS



Details of Reflectorized Arrows



Position of Signs Relative to Roadbed & Hazards



Construction Signs "A" through and including "G" shall be made of 3/8" Plywood or other material after approval by the Department, and as per details above. Signs shall be reflectorized with reflective sheeting or other reflective materials of types approved by the Department.

CONSTRUCTION SIGN "A" - Wide Angle White background with painted Black lettering. Barricade stripes of 4" Wide Angle White placed over Black painted vertical stripes spaced as shown above. This sign is the First advance warning sign and shall be placed 1500 feet ahead of barricade or beginning of project terminal and on both sides of the travelled way in all cases.

CONSTRUCTION SIGN "B" - The word "WARNING" and 1" underline shall be painted White on a 23" strip of Wide Angle Flat Top Red. Balance of lettering painted Black on a 22" strip of Wide Angle White. This sign is the Second advance warning sign and shall be placed 1000 feet ahead of barricade or beginning of project terminal and on both sides of the travelled way on divided highways and singly on two-lane highways.

CONSTRUCTION SIGN "C" - The word "WARNING" and 1" underline shall be painted White on a 23" strip of Wide Angle Flat Top Red. Balance of lettering painted Black on a 22" strip of Wide Angle White. This sign is the Third advance warning sign in cases where barricades are used and shall be placed 750 to 1000 feet ahead of barricade or beginning of project terminal and on both sides of the travelled way on divided highways and singly on two-lane highways.

REVERSE SIDES OF SIGNS "A", "B" and "C" - The word "SLOW" shall be painted Black and superimposed over a Yellow miniature W-36-A background panel. Balance of lettering shall be painted Black on a White background.

CONSTRUCTION SIGN "D" - The word "CAUTION" and 1 1/2" underline shall be painted White on a 24 1/2" strip of Wide Angle Flat Top Red. Balance of lettering painted Black on a 20 1/2" strip of Wide Angle White. This sign will be provided with a detachable 1" material board mounted on back of sign with 2-1/2" x 2" bolts. This board shall be painted White with Black lettering. (Indicate to the nearest Mile). This sign shall be placed to mark the beginning of the Project. To be placed singly and may be placed opposite barricade if desirable.

CONSTRUCTION SIGN "E" - The word "DANGER" and 1" underline shall be painted White on a 17 1/2" strip of Wide Angle Flat Top Red. Balance of lettering painted Black on a

27 1/2" strip of Wide Angle White. The sign is of the hinged and fold type to facilitate the closing down of sign when the need is not prevalent. This sign shall be placed 500 feet ahead of the situation on hand.

CONSTRUCTION SIGN "F" - The words "END CONSTRUCTION" and "CONTRACTORS NAME" shall be painted Black on strips 22" and 6 1/2" respectively of Wide Angle White. Balance of lettering shall be painted White on a 16 1/2" strip of Wide Angle Flat Top Red. This sign shall be placed to mark the Ending of the Project. To be placed singly and may be placed opposite barricade if desirable.

CONSTRUCTION SIGN "G" - The words "SLOW" and "PLEASE" shall be painted Black on a background of Wide Angle Yellow. This sign shall be used frequently within the limits of the Project.

All of the preceding signs shall be fastened to 2-4" x 4" posts set 4 feet in the ground with a minimum of 3-1" x 4" nailing strips on the back. Bottom of sign to be not less than 36" above ground.

FLAGMAN WARNING SIGN "H" - This sign shall be made of Plastic or other light-weight material, painted Red background with White lettering on the "STOP" side and painted Green background with White lettering on the "GO" side. Handle to be grooved on one side to indicate reading of sign to flagman. This sign will be used whenever flagmen are necessary. Sign to be reflectorized if used to stop traffic at night.

DETOUR WARNING SIGN "I" - To be of 3/8" (Minimum) plywood or No. 16 (Minimum) gauge metal with Black painted letters on a Wide Angle Yellow background.

CONSTRUCTION SIGN "J" - 3/4" x 9" metal slides to be placed between "NEXT" MILES, spaced so as to accommodate appropriate size numerals. Required numerals to be furnished by the Department and to be installed by the Contractor. Numerals calculated to the nearest Mile.

All material shall be sound and durable. Barricades, signs, symbols and lettering conforming to styles noted herein will be of good workmanship and well maintained. Uneven lettering will not be accepted. Flares and Torches shall be of the oil burning type approved by the Department and

shall be placed 3 feet to 5 feet ahead of the object to be illuminated. Particular care shall be taken to protect all signs and barricades from smoke and smudge arising from the use thereof.

Flashers used on Type I Barricade shall be of the Battery or Electrical Type. The illuminating element in a flashing amber beacon or signal shall be flashed continuously at a rate between 50 or 60 flashes per minute which will be clearly distinguishable to traffic. The duration in which Flashers will be left in operation will be governed by field conditions and subject to approval by the Engineer.

Alternate methods of processing signs or the substitution of pressure sensitive symbols or other reflecting elements for painted symbols will be permitted only after approval of such methods or materials by the Department.

The Department shall furnish and install the following as required outside the limits of the Project:

1. "ROAD CONSTRUCTION AHEAD" Minimum 4
2. "WARNING BE PREPARED TO STOP" Minimum 2
3. "WARNING BARRICADE AHEAD" As Required
4. Standard Warning & Directional Signs As Required

The Contractor shall furnish and install the following as required within the limits of the Project:

1. All Barricades As Required
2. "CAUTION PROJECT BEGINS" Minimum 2
3. "DANGER MEN & EQUIPMENT WORKING IMMEDIATELY AHEAD" As Required
4. "END CONSTRUCTION WE THANK YOU FOR YOUR COOPERATION" Minimum 2
5. "SLOW PLEASE" As Required
6. Standard Warning & Directional Signs As Required
7. Approved Directional Arrows & Regulatory Signs for Barricades As Required
8. Torches and Flares as follows: Type I Barricade Minimum 3; Type II Barricade Minimum 1
9. Flashers - Type I Barricade 2 Required

COLORADO DEPARTMENT OF HIGHWAYS

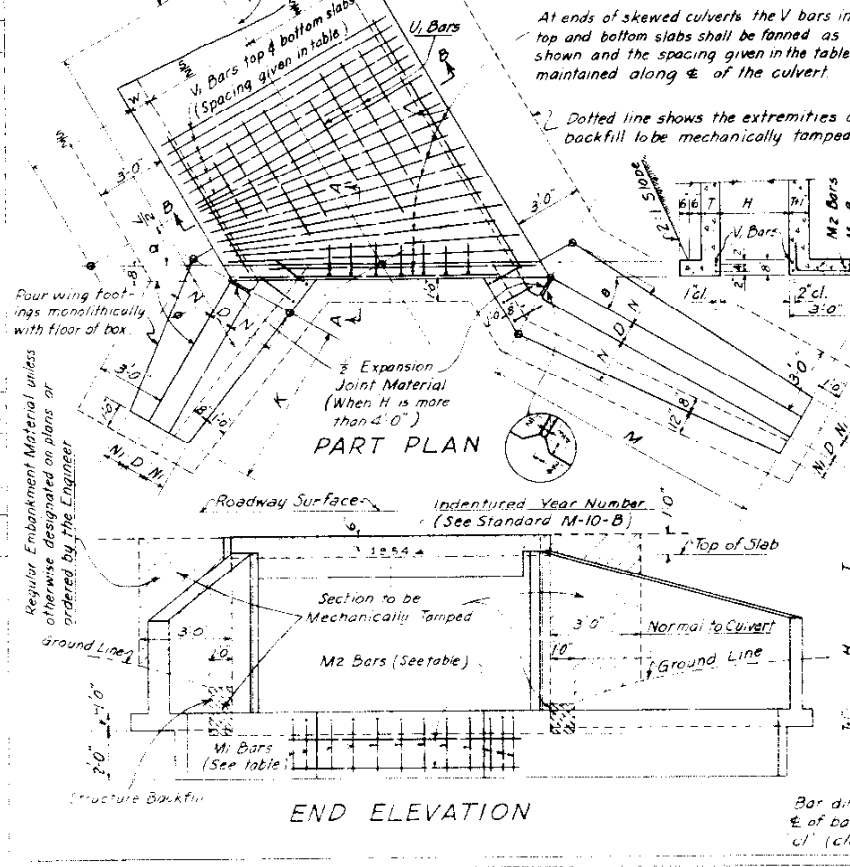
Standard Roadway Construction Traffic Signs

Designed by J.C.R. Approved by J. Williams
Made by J.C.R. Engineer, Surveys & Plans
Checked by Date: July 22, 1955

Dimensions & Quantities (see Standard M-50-AW for Wings)

Height of Fill Allowed	Type	Span S	Height H	Slab T	Wall W	Bar Size & Spacing		No. Bars Required	Quantities for One Lin. Ft. of Box		Quantities for Two Headwalls	
						V ₁	V ₂		Concrete Cu Yds	Steel Lbs	Concrete Cu Yds	Steel Lbs
35'-0"	2A	2'-0"	2'-0"	6"	8"	3/4"	12"	8	0.232	17.5	3.0	81
30'-0"	3A	3'-0"	3'-0"	7"	8"	3/4"	12"	10	0.299	26.3	1.50	119
20'-0"	4A	4'-0"	3'-0"	7 1/2"	8"	3/4"	12"	12	0.362	31.8	1.75	150
16'-0"	5A	5'-0"	4'-0"	8"	8"	3/4"	12"	16	0.412	34.6	1.90	154
20'-0"	5B	5'-0"	5'-0"	8 1/2"	8"	3/4"	12"	16	0.441	37.9	2.10	158
14'-0"	6A	6'-0"	6'-0"	8 1/2"	8"	3/4"	12"	16	0.481	45.3	2.20	153
20'-0"	6B	6'-0"	6'-0"	10"	8"	3/4"	12"	20	0.530	48.7	2.40	157
12'-0"	7A	7'-0"	7'-0"	9"	9"	3/4"	12"	24	0.579	52.0	2.60	161
15'-0"	7B	7'-0"	10"	9"	9"	3/4"	12"	24	0.627	55.5	2.80	165
20'-0"	7C	7'-0"	11"	9"	9"	3/4"	12"	24	0.675	59.0	3.00	169
10'-0"	8A	8'-0"	8'-0"	9 1/2"	10"	3/4"	12"	28	0.720	62.4	3.20	173
16'-0"	8B	8'-0"	11 1/2"	10"	10"	3/4"	12"	28	0.768	65.8	3.40	177
20'-0"	8C	8'-0"	12 1/2"	10"	10"	3/4"	12"	28	0.816	69.2	3.60	181
7'-0"	9A	9'-0"	10"	11"	11"	3/4"	12"	32	0.864	72.6	3.80	185
4'-0"	9B	9'-0"	11"	11"	11"	3/4"	12"	32	0.912	76.0	4.00	189
20'-0"	9C	9'-0"	14"	11"	11"	3/4"	12"	32	0.960	79.4	4.20	193
5'-0"	10A	10'-0"	10 1/2"	12"	12"	3/4"	12"	36	1.008	82.8	4.40	197
10'-0"	10B	10'-0"	12"	12"	12"	3/4"	12"	36	1.056	86.2	4.60	201
16'-0"	10C	10'-0"	14"	12"	12"	3/4"	12"	36	1.104	89.6	4.80	205
5'-0"	11A	11'-0"	11"	12 1/2"	12 1/2"	3/4"	12"	36	1.152	93.0	5.00	209
9'-0"	11B	11'-0"	12 1/2"	12 1/2"	12 1/2"	3/4"	12"	36	1.200	96.4	5.20	213
13'-0"	11C	11'-0"	14"	12 1/2"	12 1/2"	3/4"	12"	36	1.248	99.8	5.40	217
5'-0"	12A	12'-0"	12"	12 1/2"	12 1/2"	3/4"	12"	40	1.296	103.2	5.60	221
10'-0"	12B	12'-0"	14"	12 1/2"	12 1/2"	3/4"	12"	40	1.344	106.6	5.80	225
4'-0"	13A	13'-0"	12 1/2"	12 1/2"	12 1/2"	3/4"	12"	44	1.392	110.0	6.00	229
8'-0"	13B	13'-0"	14"	12 1/2"	12 1/2"	3/4"	12"	44	1.440	113.4	6.20	233
4'-0"	14A	14'-0"	13 1/2"	12 1/2"	12 1/2"	3/4"	12"	48	1.488	116.8	6.40	237
8'-0"	14B	14'-0"	15"	12 1/2"	12 1/2"	3/4"	12"	48	1.536	120.2	6.60	241

SINGLE CONCRETE BOX CULVERT



Bar List for Culvert & Headwalls (See Standard M-50-AW for Wings)

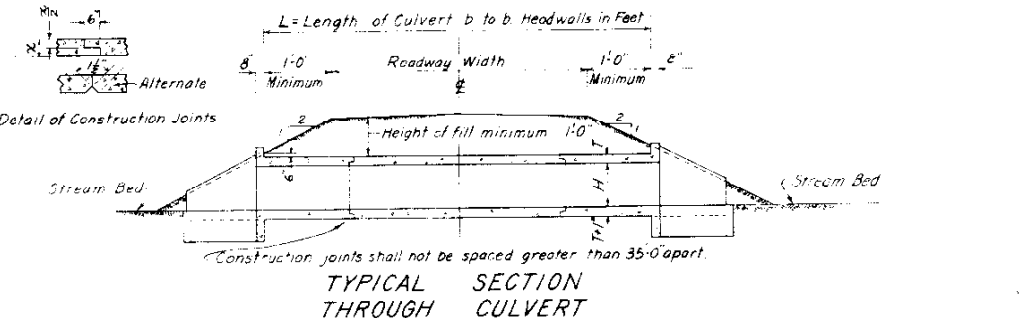
Mark	Size	No. Req'd	Type	Length
V ₁	See table	10 + 24L/Spa	I	S + 2W + 6"
V ₂	See table	6 + 24L/Spa	I	H + 2T - 5"
U ₁	3/4"	See table	I	L + 1'0"
M ₁	3/4"	See table	II	3'6"
M ₂	3/4"	4	I	S + 2W + 6"

Possible Combinations (Span & Height)

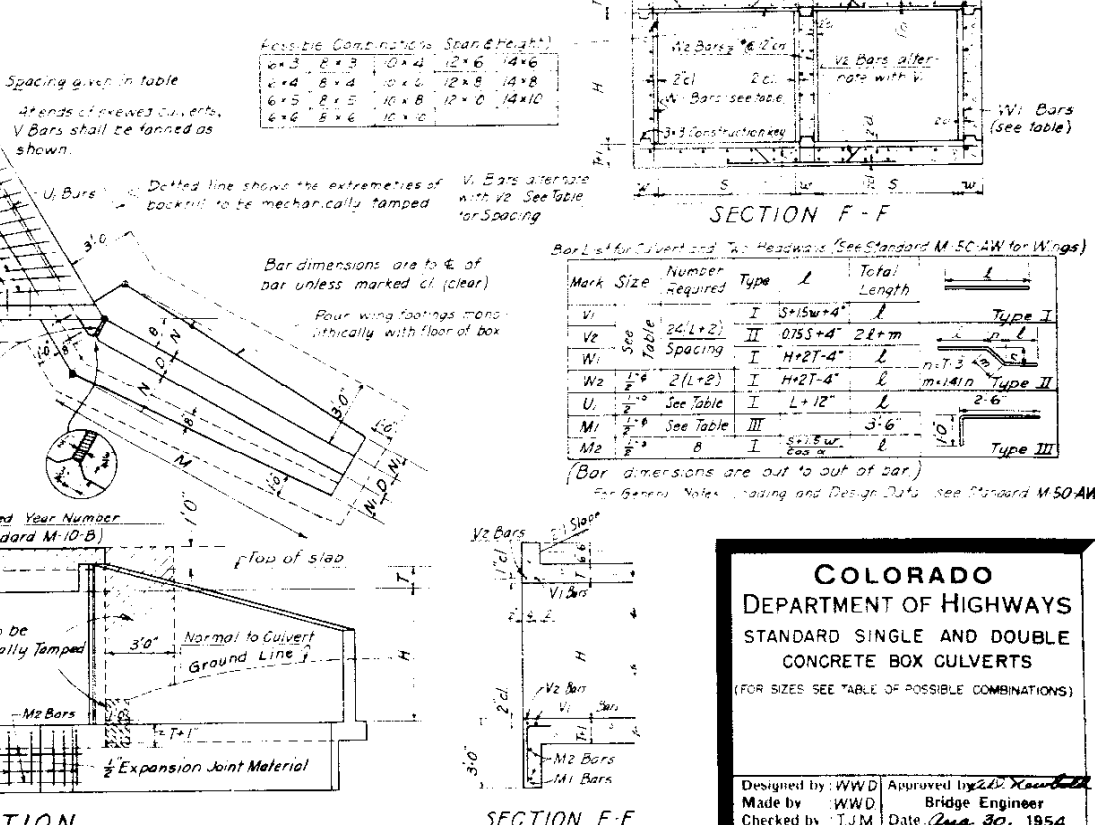
2' x 2'	5' x 5'	9' x 5'	10' x 7'	11' x 8'	11' x 10'
3' x 2'	7' x 4'	8' x 6'	9' x 8'	10' x 9'	14' x 8'
4' x 2'	6' x 5'	7' x 7'	12' x 6'	13' x 7'	13' x 9'
3' x 3'	8' x 4'	9' x 6'	11' x 7'	12' x 8'	12' x 10'
4' x 3'	7' x 5'	8' x 7'	13' x 6'	14' x 7'	14' x 9'
5' x 3'	6' x 6'	10' x 6'	10' x 8'	11' x 9'	13' x 10'
4' x 4'	8' x 5'	9' x 7'	9' x 9'	10' x 10'	14' x 10'
5' x 4'	6' x 7'	8' x 8'	12' x 7'	13' x 8'	
6' x 4'	7' x 6'	11' x 6'	14' x 6'	12' x 9'	

STANDARD M-50-A

Use in conjunction with Standard M-50-AW



DOUBLE CONCRETE BOX CULVERT



Possible Combinations (Span & Height)

6' x 3'	8' x 3'	10' x 4'	12' x 6'	14' x 6'
6' x 4'	8' x 4'	10' x 6'	12' x 8'	14' x 8'
6' x 5'	8' x 5'	10' x 8'	12' x 10'	14' x 10'
6' x 6'	8' x 6'	10' x 10'	12' x 12'	14' x 12'

Bar List for Culvert and Two Headwalls (See Standard M-50-AW for Wings)

Mark	Size	Number Required	Type	L	Total Length
V ₁	See table	2(L+2)	I	S + 15W + 4"	
V ₂	See table	Spacing	II	0.75S + 4"	2L + m
U ₁	3/4"	See table	I	H + 2T - 4"	L
M ₁	3/4"	See table	I	H + 2T - 4"	L
M ₂	3/4"	8	I	L + 12"	L

Quantities for one culvert shall be (quantity for one lin. ft. of box times L) plus (quantity for two head walls) plus (quantities for four wings).

Quantities for one culvert shall be (quantity for one lin. ft. of box times L) plus (quantity for two head walls) plus (quantities for four wings).

Quantities for one culvert shall be (quantity for one lin. ft. of box times L) plus (quantity for two head walls) plus (quantities for four wings).

Quantities for one culvert shall be (quantity for one lin. ft. of box times L) plus (quantity for two head walls) plus (quantities for four wings).

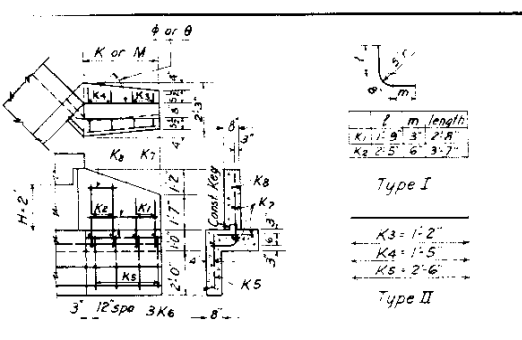
COLORADO
DEPARTMENT OF HIGHWAYS
STANDARD SINGLE AND DOUBLE
CONCRETE BOX CULVERTS
(FOR SIZES SEE TABLE OF POSSIBLE COMBINATIONS)

Designed by: WWD Approved by: Z.L. Koontz
Made by: WWD Bridge Engineer
Checked by: T.J.M. Date: Aug. 30, 1954

TABLE SHOWING VALUES OF K AND M WHEN β AND θ ARE GIVEN

β	θ	H=2'0"	H=3'0"	H=4'0"	H=5'0"	H=6'0"	H=7'0"	H=8'0"	H=9'0"	H=10'0"
45°	45°	67.30	22.30	2.4	6.2	3.7	8.7	4.10	11.7	5.11
60°	30°	2.9	4.9	3.0	6.7	5.2	8.10	6.3	10.10	7.3
75°	15°	52.30	27.30	3.0	3.7	4.2	5.5	5.7	7.3	6.10
90°	0°	45	45	3.4	3.4	4.8	4.8	6.3	6.3	7.8
105°	15°	37.30	32.30	3.1	3.0	5.5	4.2	3.7	5.1	5.10
120°	30°	22.30	27.30	4.9	2.9	6.7	3.0	8.10	5.2	10.10
135°	45°	30	30	6.2	2.4	8.7	3.7	11.7	4.10	14.2

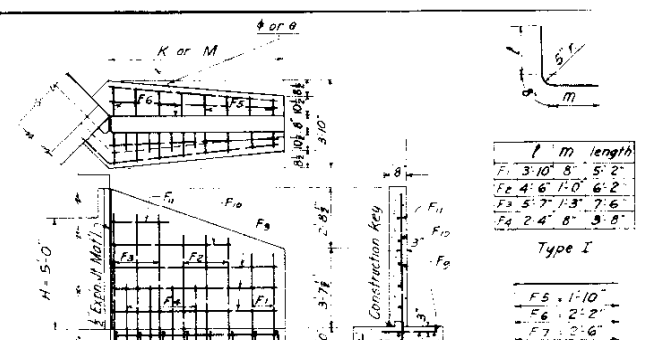
3. ALL CURVE ANGLES BETWEEN THE CENTERLINE AND THE LINE PARALLEL TO THE CENTERLINE OF ROADWAY SHALL BE ANGLES BETWEEN THE CENTERLINE OF ROADWAY AND A LINE PARALLEL WITH THE CENTERLINE OF ROADWAY.
 4. ALL CURVE ANGLES BETWEEN THE CENTERLINE AND A LINE PARALLEL WITH THE CENTERLINE OF ROADWAY SHALL BE ANGLES BETWEEN THE CENTERLINE OF ROADWAY AND A LINE PARALLEL WITH THE CENTERLINE OF ROADWAY.
 5. ALL CURVE ANGLES BETWEEN THE CENTERLINE AND A LINE PARALLEL WITH THE CENTERLINE OF ROADWAY SHALL BE ANGLES BETWEEN THE CENTERLINE OF ROADWAY AND A LINE PARALLEL WITH THE CENTERLINE OF ROADWAY.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=2'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	64
30"	3	2' 8"	47
37'30"	2	2' 2"	40
45°	2	2' 2"	36
52'30"	2	2' 2"	33
60°	2	2' 2"	28
67'30"	2	2' 2"	26

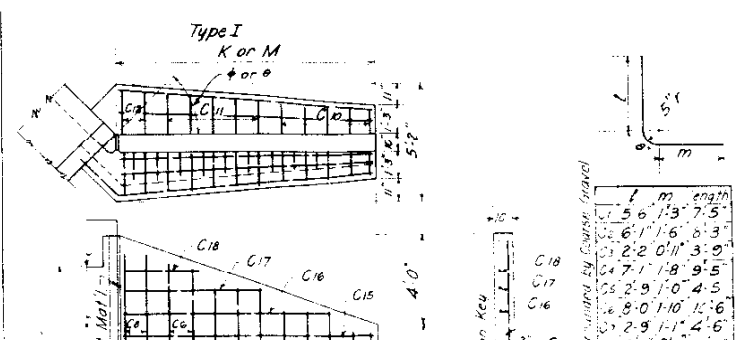
WING DETAIL WHEN H=2'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=5'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	5	3' 10"	180
30"	3	2' 8"	147
37'30"	2	2' 2"	130
45°	2	2' 2"	113
52'30"	2	2' 2"	109
60°	2	2' 2"	97
67'30"	2	2' 2"	97

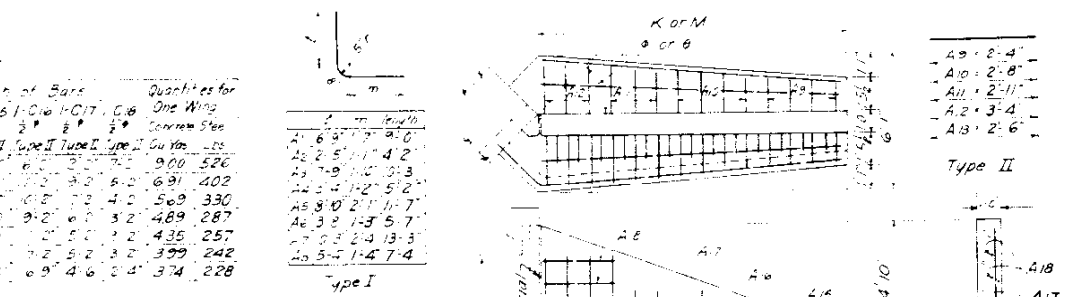
WING DETAIL WHEN H=5'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=8'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	526
30"	3	2' 8"	402
37'30"	2	2' 2"	330
45°	2	2' 2"	287
52'30"	2	2' 2"	257
60°	2	2' 2"	242
67'30"	2	2' 2"	228

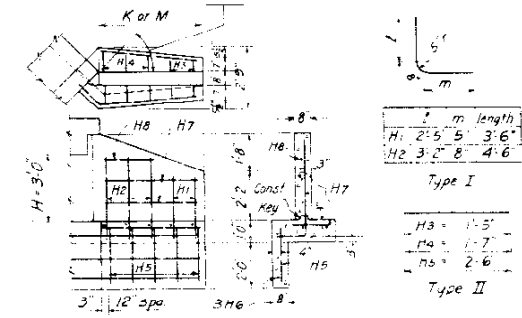
WING DETAIL WHEN H=8'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=9'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	5	3' 10"	666
30"	4	2' 8"	510
37'30"	3	2' 2"	427
45°	3	2' 2"	382
52'30"	3	2' 2"	322
60°	3	2' 2"	294
67'30"	3	2' 2"	278

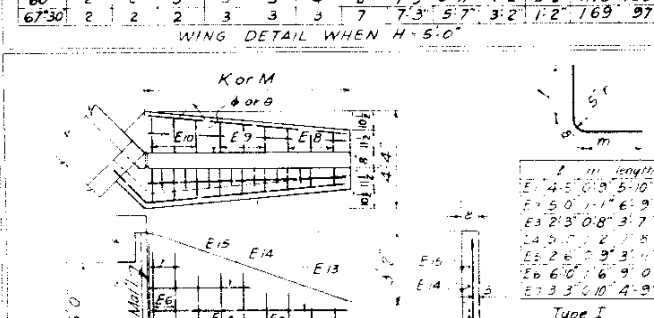
WING DETAIL WHEN H=9'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=3'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	99
30"	3	2' 8"	76
37'30"	2	2' 2"	63
45°	2	2' 2"	54
52'30"	2	2' 2"	52
60°	2	2' 2"	44
67'30"	2	2' 2"	43

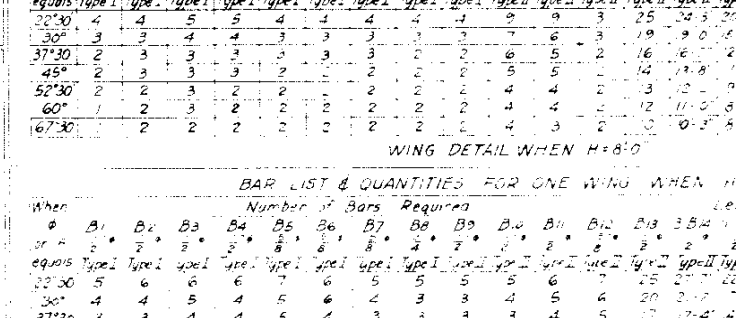
WING DETAIL WHEN H=3'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=6'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	317
30"	3	2' 8"	249
37'30"	2	2' 2"	203
45°	2	2' 2"	171
52'30"	2	2' 2"	156
60°	2	2' 2"	145
67'30"	2	2' 2"	134

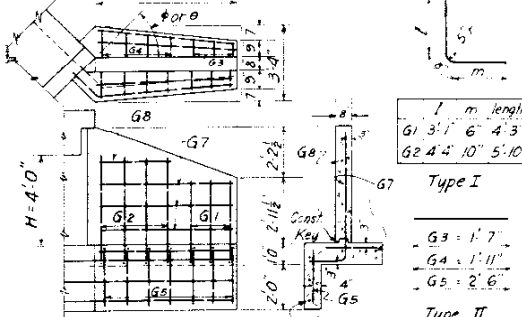
WING DETAIL WHEN H=6'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=7'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	436
30"	3	2' 8"	339
37'30"	2	2' 2"	267
45°	2	2' 2"	238
52'30"	2	2' 2"	212
60°	2	2' 2"	191
67'30"	2	2' 2"	184

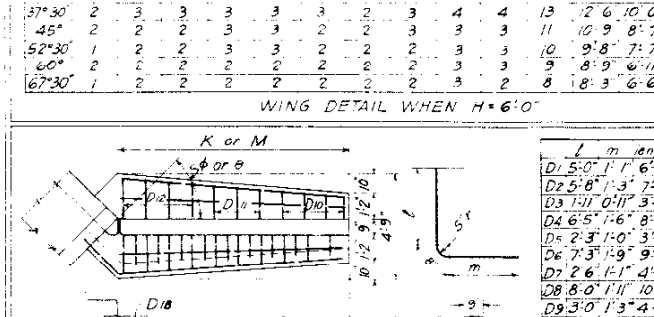
WING DETAIL WHEN H=7'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=4'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	164
30"	3	2' 8"	125
37'30"	2	2' 2"	101
45°	2	2' 2"	92
52'30"	2	2' 2"	79
60°	2	2' 2"	77
67'30"	2	2' 2"	69

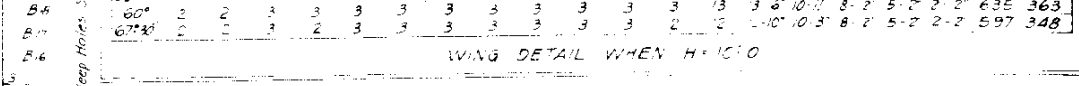
WING DETAIL WHEN H=4'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=7'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	4	3' 10"	436
30"	3	2' 8"	339
37'30"	2	2' 2"	267
45°	2	2' 2"	238
52'30"	2	2' 2"	212
60°	2	2' 2"	191
67'30"	2	2' 2"	184

WING DETAIL WHEN H=7'0"



BAR LIST & QUANTITIES FOR ONE WING WHEN H=10'0"

When β or θ	Number of Bars Required	Length of Bars	Quantities for One Wing
22'30"	5	3' 10"	630
30"	4	2' 8"	480
37'30"	3	2' 2"	400
45°	3	2' 2"	360
52'30"	3	2' 2"	320
60°	3	2' 2"	300
67'30"	3	2' 2"	280

WING DETAIL WHEN H=10'0"

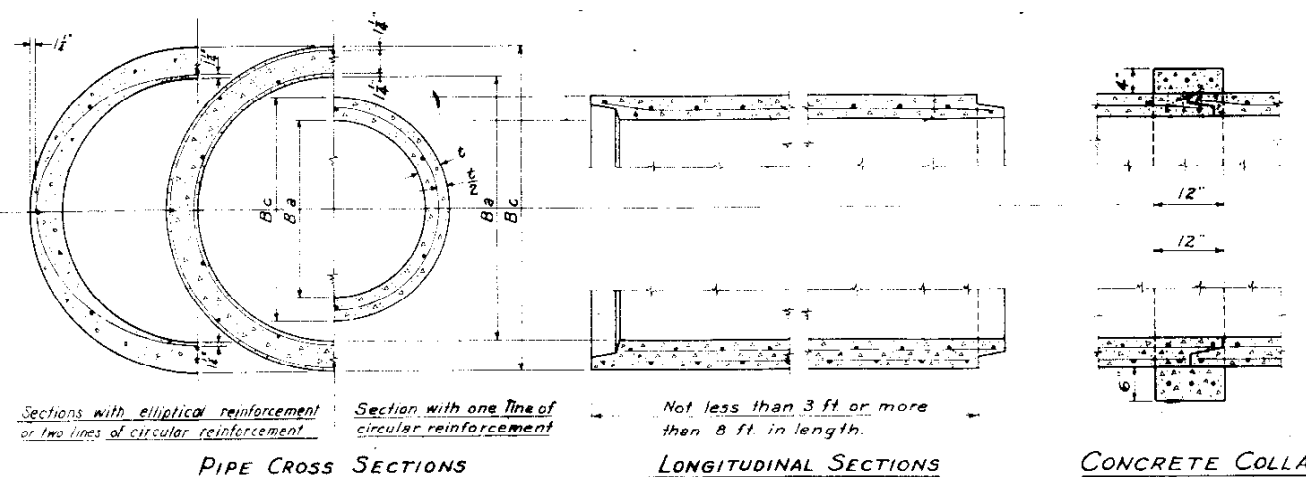
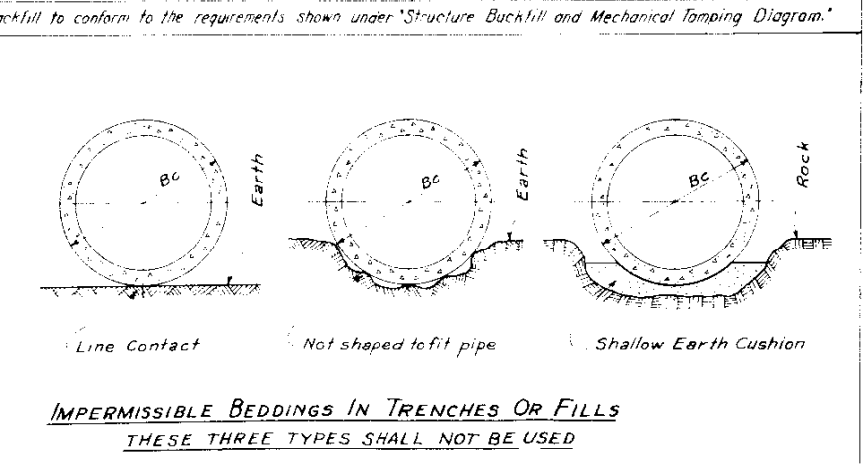
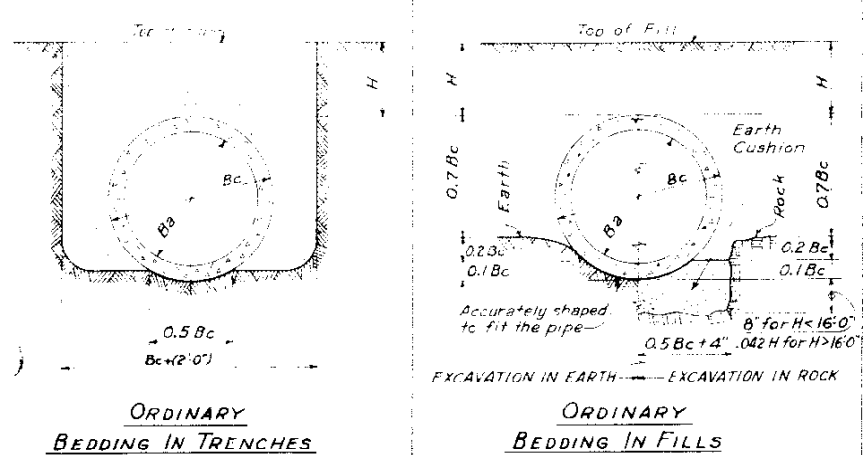
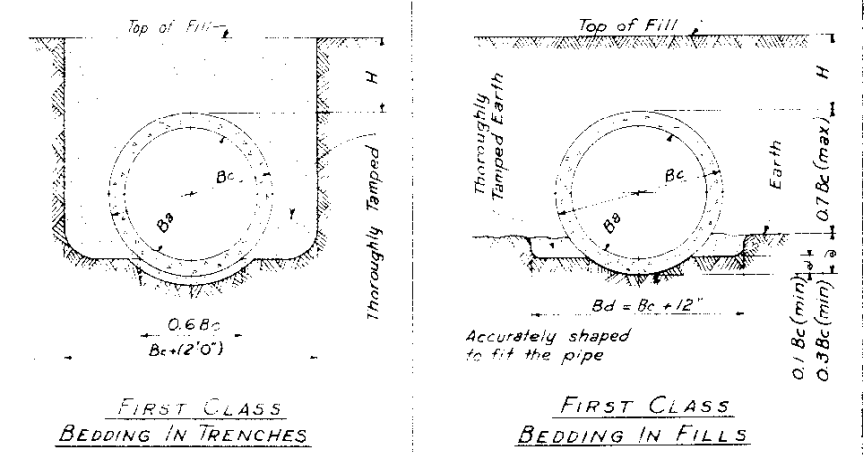
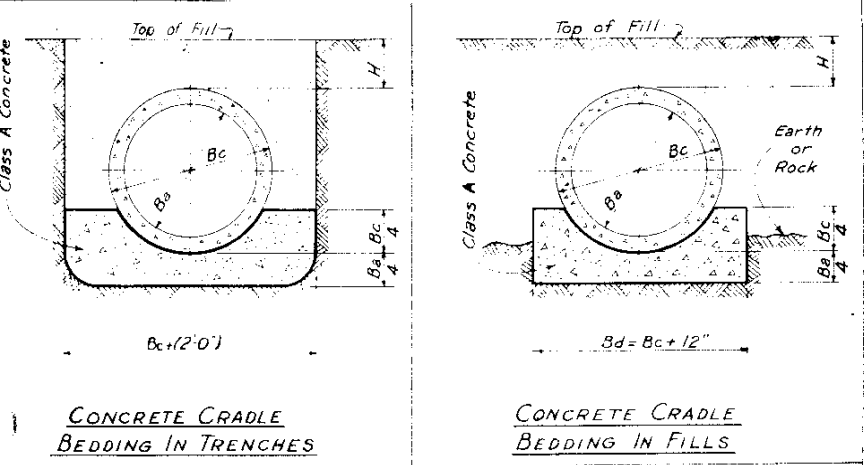
GENERAL NOTES
 ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE CONTRACTOR.
 ALL CONCRETE SHALL BE CLASS A AND BE ENTRAINED AS SPECIFIED.
 ALL REINFORCING SHALL BE PLACED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
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COLORADO DEPARTMENT OF HIGHWAYS
WINGWALLS FOR VARIOUS TYPES OF CONCRETE BOX CULVERTS
 Designed by W.W.D. Approved by J.A. Koober
 Made by W.W.D. Bridge Engineer
 Checked by T.J.M. Date July 30, 1954

STANDARD M-112-E

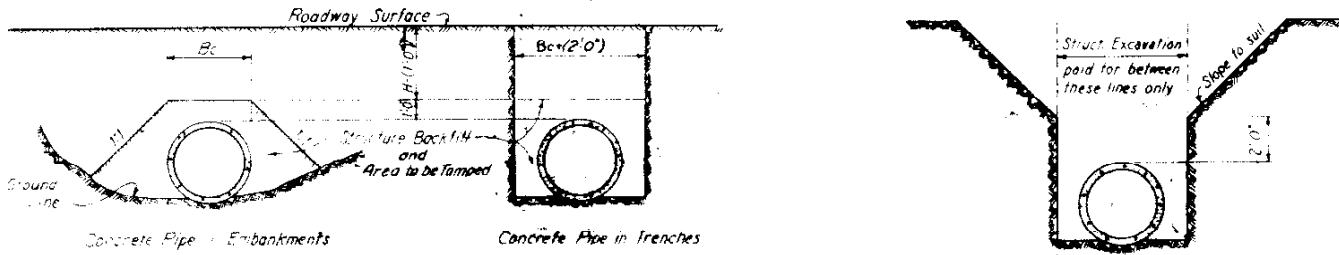
FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	2072-26	9	

Rev by PC 7-1-52 Added 84" Pipe
 Rev by RT 5-6-56 Backfill & Excavation
 Rev by GRL 6-25-57 Minimum Fill



Where two lines of steel are contemplated a single line placed elliptically may be used, and the area of this shall be at least 50% of the total steel area required for two lines of reinforcement. Pipe with elliptical reinforcing shall have the word "Top" or "Bottom" clearly stenciled on the inside of the side of the correct piece to indicate the proper position when laid.

If machine made pipe is used a modified bell will be acceptable to the department.



All material that is to be mechanically tamped shall be placed in horizontal layers not more than 6 inches in depth and tamped before the next layer is placed. Backfill for all types of bedding shall be brought up uniformly on each side of the pipe to maintain equal lateral pressures against the pipe. All Structure Backfill shall conform to the specifications for Class 1 Backfill.

Where a firm foundation is not encountered, due to soft spongy or other unsuitable material all such unsuitable material under the pipe for a width of $(2B_a + B_c)$ shall be removed and the area backfilled with suitable material approved by the Engineer, and compacted at optimum moisture to a relative density not less than 90% to provide additional support for the pipe. Where suitable material is encountered in place in the foundation but the relative compaction does not meet the minimum requirements this material shall be removed and recompactd at optimum moisture and to at least 90% relative density.

GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado State Highway Department applicable to the project.

Reinforced Concrete Culvert Pipe shall conform to A.A.S.H.O. M41-49.

Reinforced Concrete Sewer Pipe shall conform to A.A.S.H.O. M87-49.

Unreinforced Concrete Sewer Pipe shall conform to A.A.S.H.O. M86-49.

The type of Pipe joint used and the field construction there-of to make the joint reasonably water-tight shall be submitted to the Department for approval.

Unless otherwise noted the type of bedding shall be Ordinary Bedding. When the maximum fill height as noted hereon, for this type of bedding, is exceeded then that type of bedding which is indicated by the allowable fill height shall be used.

All culverts shall have headwalls or flared end sections if and as shown on the plans in accordance with Department Standards.

For size, type and location of pipe see plan sheets for project.

Supporting soils shall be composed of firm and uniform material throughout the entire length of Culvert. The soil shall be accurately shaped to fit the Pipe in accordance with the bedding conditions shown. The Pipe shall be laid with the Bell or Groove end placed upstream.

If the desired fill height for pipe in a fill exceeds that given in the table, new embankment may be constructed to an elevation of two feet above the top of the pipe; a trench may then be excavated in the embankment and the pipe installed in accordance with a pipe in a trench. This work shall conform to the requirements for "Embankments" as shown in the specifications.

Inch	Dia	Bc	Three Edge Bearing Method		Max depth of fill "H" in ft. for 3 types of bedding					
			Crack Point (Inches)	Ultimate Load (Pounds)	Pipe in Trench	Concrete Cradle	First Class	Ordinary	Extra Strength	Unreinforced
12	16	2250	3500							
15	19	2625	4065							
18	23	3000	4500							
24	30	3000	5000							
30	37	3375	5750							
36	44	4050	6600							
42	51	4725	7350							
48	58	5400	8000							
54	65	5850	9000							
60	72	6000	10000							
66	79	6300	11000							
72	86	6600	12000							
84	100									

* Note: External diameter of pipe shown in the table is approximate only having been determined by using 3000 lbs per sq. in. concrete. If greater strength concrete is used this diameter may be decreased accordingly.

Minimum Depth of Fill over Concrete Pipe
 Main Roadways: 2 Foot
 Approach Roadways: 1 Foot

COLORADO STATE HIGHWAY DEPARTMENT

REINFORCED CONCRETE CULVERT PIPE
 STD STRENGTH 12, 15, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 84"

EXTRA STR 24, 30, 36, 42, 48, 54, 60, 66, 72, 84"

CONCRETE SEWER PIPE
 REINF. 12, 15, 18, 21, 24, 27, 30, 33, 36, 42, 48, 54, 60, 66, 72"

UNREINF. 4, 6, 8, 10, 12, 15, 18, 21, 24"

Designed by W.W.D. Approved by *[Signature]*
 Made by W.W.D. Bridge Engineer
 Checked by P.C. Date: *Mar 27, 1958*

STANDARD M-118-A

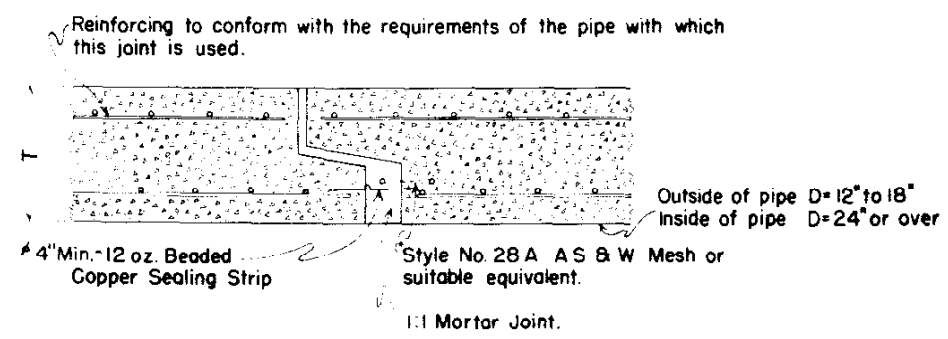
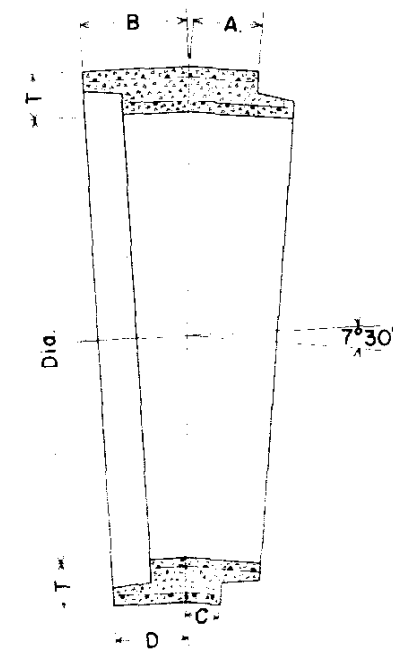
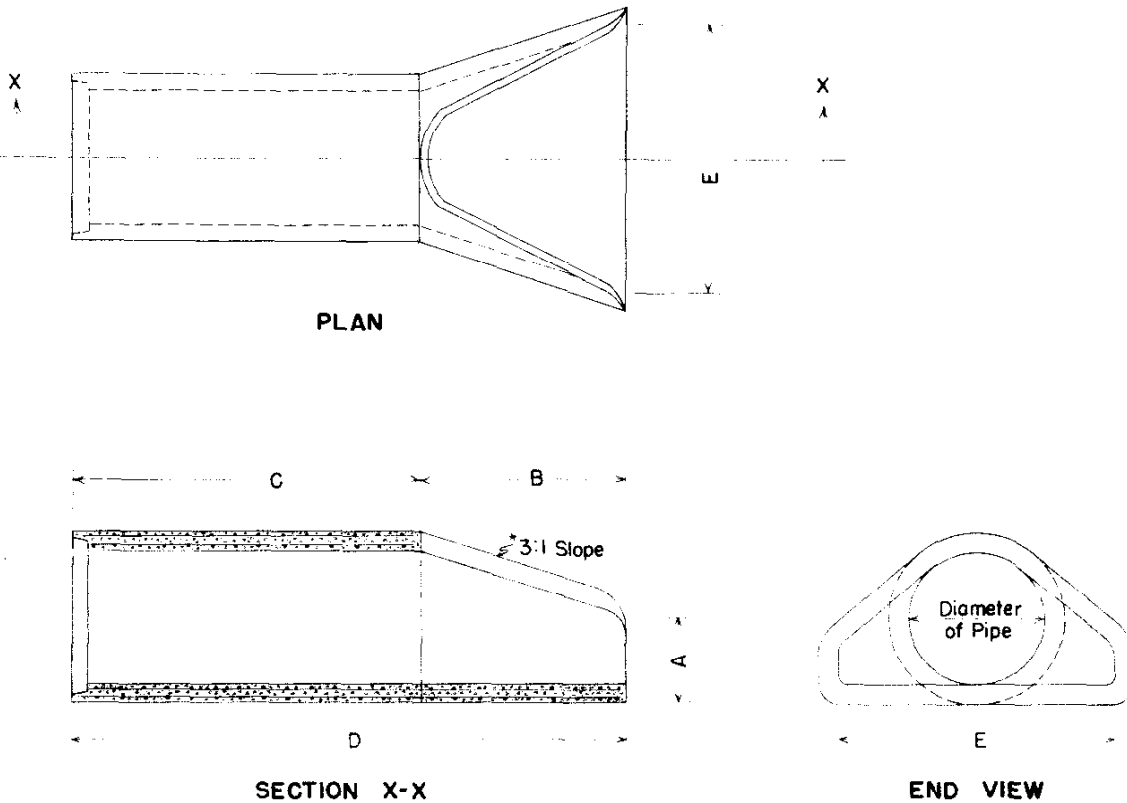
FED. ROAD DIV. NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLO. 1092-2(5)	72	

Rev. Dimensions of End Sec. = 10/18/49 = E. E. O.
 Rev. Dim. Line of End Sec. 12/15/49 C.J.W.
 Rev. Dim. of Seal B added Note - 1/17/50 - E. E. O.

FLARED END SECTION FOR CONCRETE PIPE

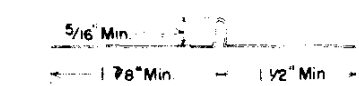
7°30' ANGLE SECTION FOR CONCRETE PIPE

COPPER EXPANSION JOINT FOR CONCRETE PIPE (WHEN REQUIRED ON PLANS)



*When Welded Rectangular Mesh is used for the reinforcing steel in the pipe the inner line of Mesh may be extended into the joint space instead of using a separate strip of Triangular Mesh.

° COPPER SEALING STRIP



° Copper Sealing Strips shall be made from sheet copper, 4\"/>

DIMENSIONS FOR FLARED END SECTIONS

DIAMETER	A	B	C	D	E
12"	4"	2'-0"	4'-0 ⁷ / ₈ "	6'-0 ⁷ / ₈ "	2'-0"
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"
18"	9"	2'-3"	3'-10"	6'-1"	3'-0"
24"	9 ¹ / ₂ "	3'-7 ¹ / ₂ "	4'-6"	8'-1 ¹ / ₂ "	4'-0"
30"	1'-0"	4'-6"	3'-7 ³ / ₄ "	8'-1 ³ / ₄ "	5'-0"
36"	1'-3"	5'-3"	2'-10 ³ / ₄ "	8'-1 ³ / ₄ "	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-6"	6'-0"	2'-3"	8'-3"	7'-6"
*60"	2'-6"	5'-0"	3'-3"	8'-3"	8'-0"

*60" end section is based on a slope of 2:1

DIMENSIONS FOR 7°30' ANGLE SECTIONS

DIAMETER OF PIPE	LENGTH ON OUTSIDE OF PIPE				AVERAGE LAYING LENGTH ON C.
	A	B	C	D	
12"	4 ¹ / ₂ "	4 ¹ / ₂ "	3 ¹ / ₂ "	3 ¹ / ₂ "	8"
15"	5 ¹ / ₂ "	5 ¹ / ₈ "	4 ¹ / ₄ "	3 ⁷ / ₈ "	9 ³ / ₈ "
18"	3 ¹ / ₂ "	6 ¹ / ₂ "	2"	5"	8 ¹ / ₂ "
24"	4"	6 ¹ / ₂ "	2"	4 ⁹ / ₁₆ "	8 ¹ / ₂ "
30"	4 ¹ / ₂ "	7"	2"	4 ¹ / ₂ "	9"
36"	4 ⁷ / ₈ "	8 ⁷ / ₁₆ "	2"	5 ⁹ / ₁₆ "	10 ⁷ / ₁₆ "
42"	6"	9 ¹ / ₂ "	2 ⁹ / ₈ "	6 ¹ / ₈ "	12 ¹ / ₈ "
48"	7"	11"	3 ⁹ / ₁₆ "	7 ³ / ₁₆ "	14 ³ / ₁₆ "
54"	8 ¹ / ₈ "	12 ¹ / ₈ "	4"	8"	16 ¹ / ₈ "
60"	9 ¹ / ₈ "	14"	4 ³ / ₈ "	9 ¹ / ₄ "	18 ³ / ₈ "

A, B, C and D apply to Tongue and Groove type of Joint only and can be varied for other types of Joints.

GENERAL NOTES

Joints other than Tongue and Groove may be used for Flared End Sections, 7°30' Angle and for the Copper Expansion Joint but all Joints for any one pipe structure must be uniform.

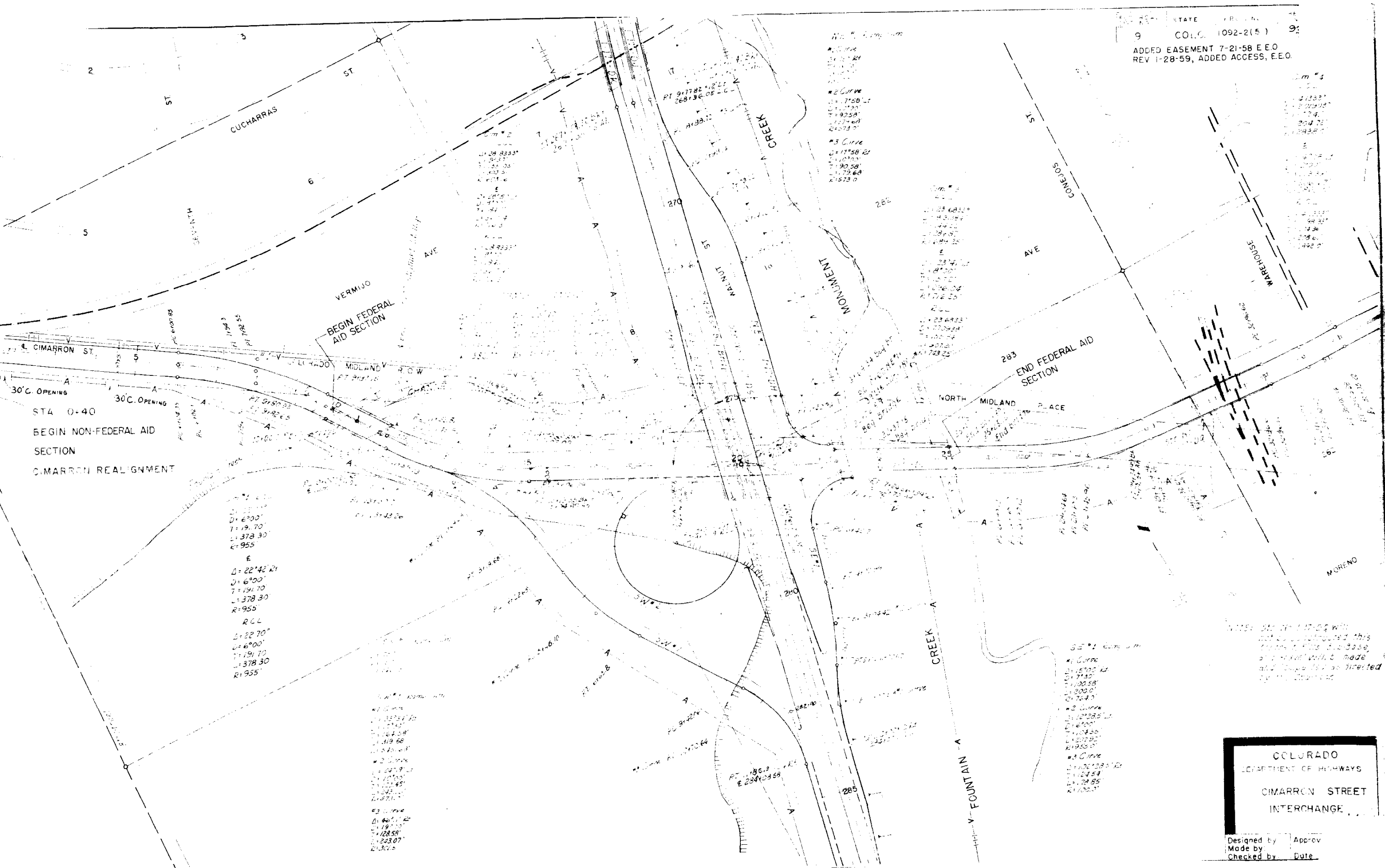
Concrete, wall thickness and reinforcing steel in Flared End Sections and 7°30' Angle Sections must conform with the requirements of the pipe with which they are used.

Alternate types of expansion joints may be substituted for the expansion joint shown on this sheet after approval by the Department.

Flared end sections are to be furnished with tongue or groove, and/or bell or spigot as required, in order that joints may be laid with the bell or groove end upstream.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD
 FLARED END SECTION
 7°30' ANGLE SECTION
 AND
 COPPER EXPANSION JOINT
 FOR
 CONCRETE PIPE STRUCTURES

Designed by R.S.M. Approved by J.M.K. *John Marshall*
 Made by J.M.K.
 Checked by R.S.M. Date January 14, 1949



COLORADO
 DEPARTMENT OF HIGHWAYS
 CIMARRON STREET
 INTERCHANGE

Designed by _____
 Made by _____
 Checked by _____
 Approved _____
 Date _____

NOTED: STA 0+17.00 with
 not be constructed this
 from file 20-355,
 and shall be made
 and shall be directed
 by the Engineer

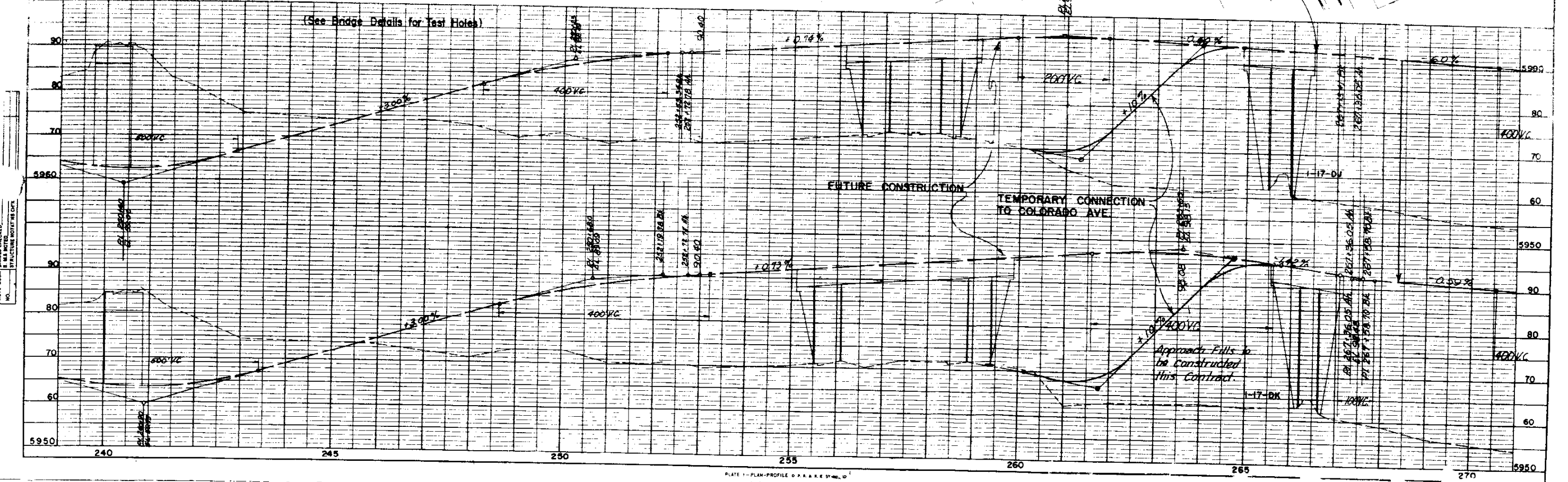
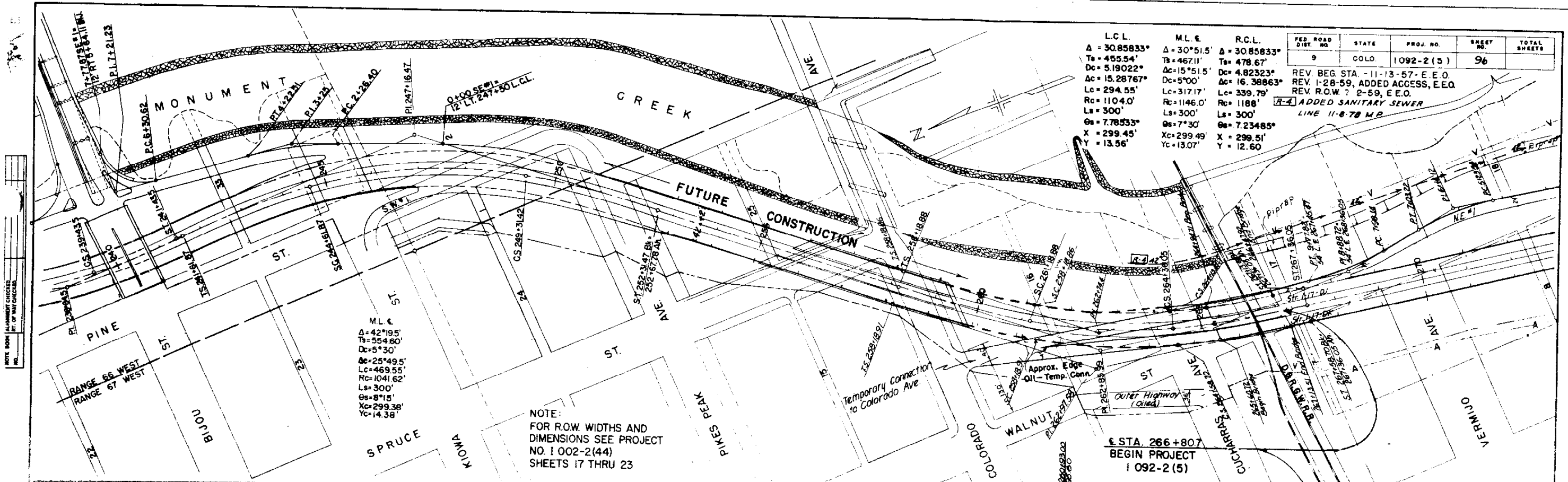
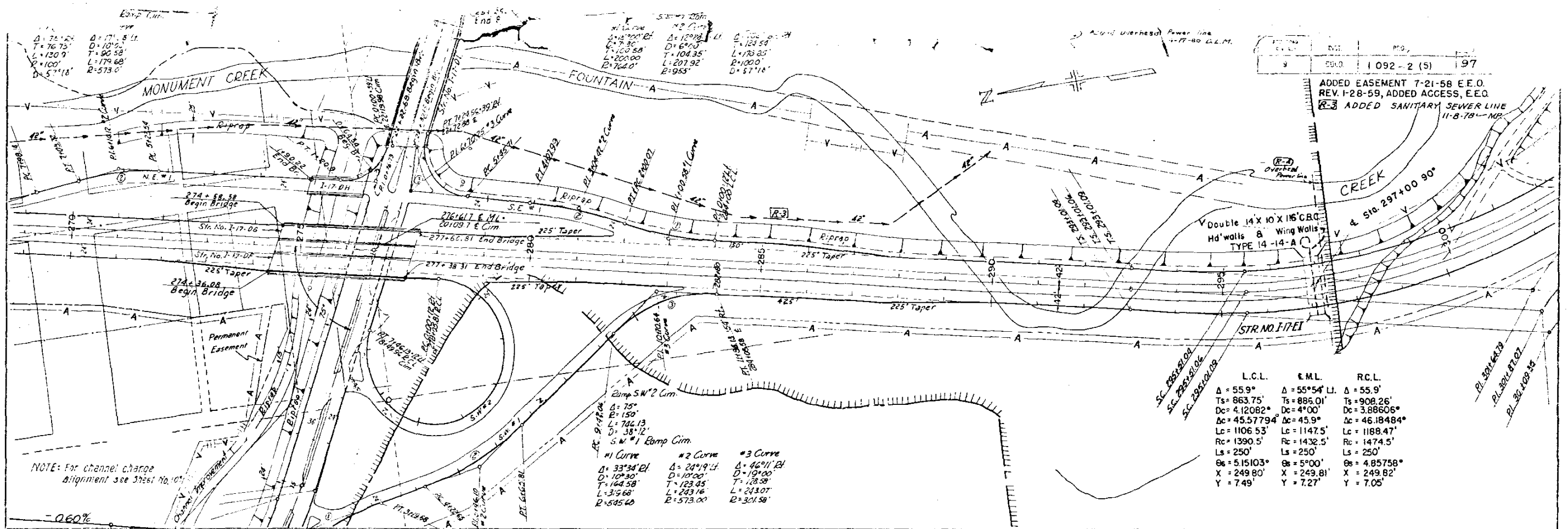


PLATE 1 - PLAN-PROFILE OF A.A.R.E. ST. 400.0'

PLAN
 SURVEILOR
 NOTE BOOK
 NO. 10

PROFILE
 SURVEILOR
 NOTE BOOK
 NO. 10



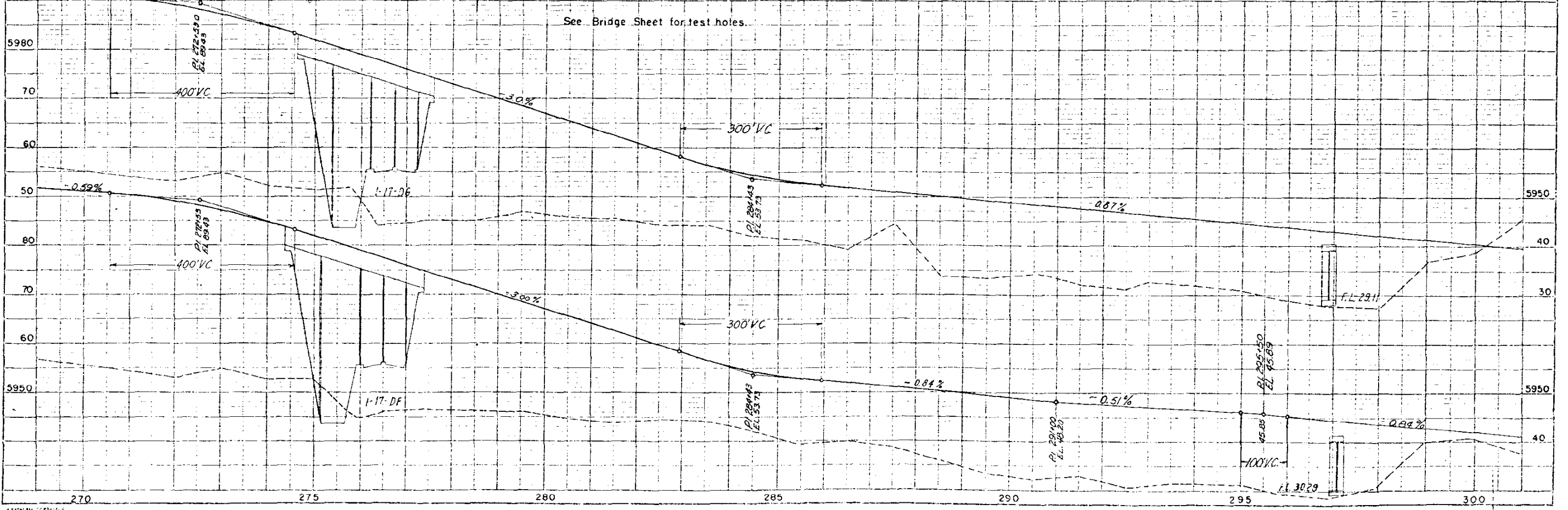
DATE	NO.	REV.	BY
5-10-50	1		
1-28-59	2	(5)	
11-8-78	3		

ADDED EASEMENT 7-21-58 E.E.O.
 REV. 1-28-59, ADDED ACCESS, E.E.O.
 ADDED SANITARY SEWER LINE 11-8-78 - NP

Curve	Δ	D	T	L	R
#1 Curve	33°34'21"	10°30'	164.58'	319.68'	545.60'
#2 Curve	24°19'14"	10°00'	123.05'	243.16'	573.00'
#3 Curve	46°09'11"	19°00'	178.58'	353.07'	301.58'

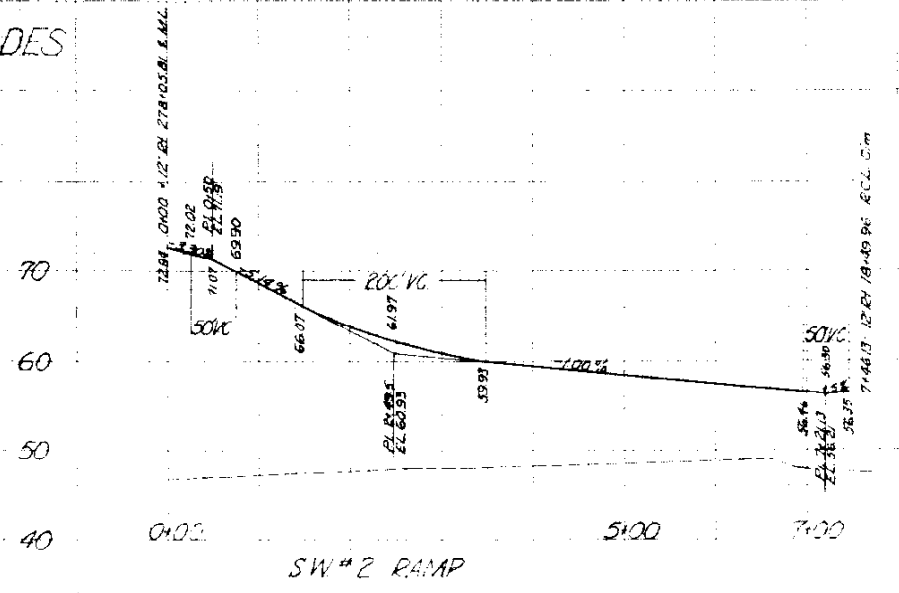
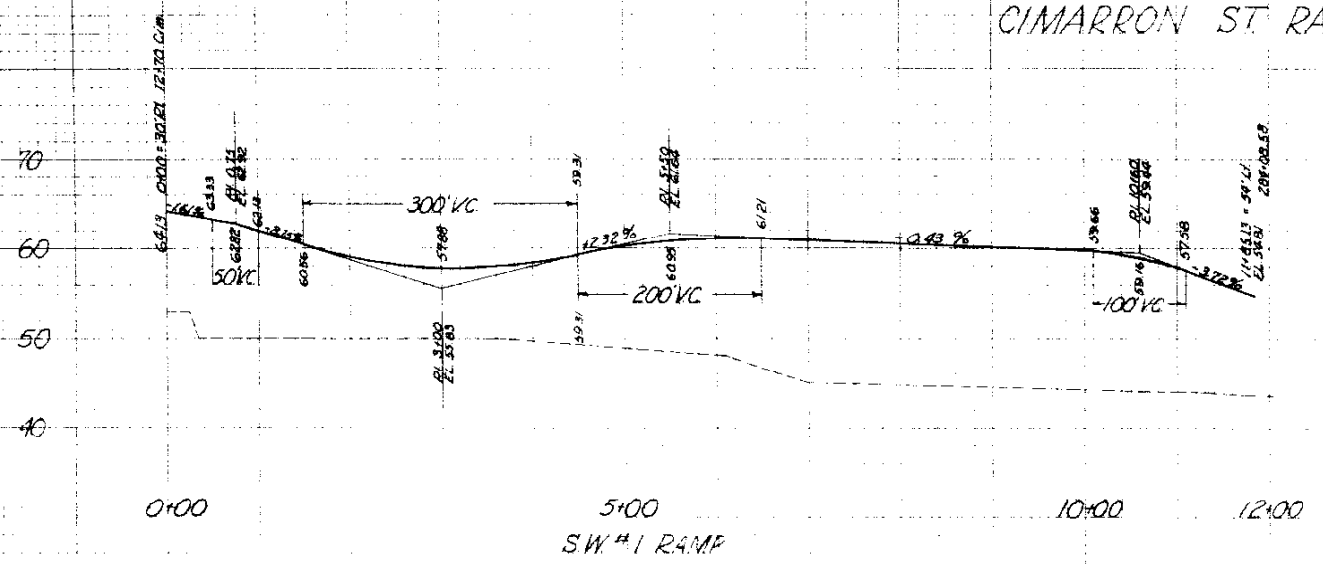
L.C.L.	E.M.L.	R.C.L.
Δ = 55.9°	Δ = 55°54' LI	Δ = 55.9°
Ts = 863.75'	Ts = 886.01'	Ts = 908.26'
Dc = 4.12082°	Dc = 4°00'	Dc = 3.88606°
Δc = 45.57794°	Δc = 45.9°	Δc = 46.18484°
Lc = 1106.53'	Lc = 1147.5'	Lc = 1188.47'
Rc = 1390.5'	Rc = 1432.5'	Rc = 1474.5'
Ls = 250'	Ls = 250'	Ls = 250'
Es = 5.15103°	Es = 5°00'	Es = 4.85758°
X = 249.80'	X = 249.81'	X = 249.82'
Y = 7.49'	Y = 7.27'	Y = 7.05'

NOTE: For channel change
 Alignment see Sheet No. 10

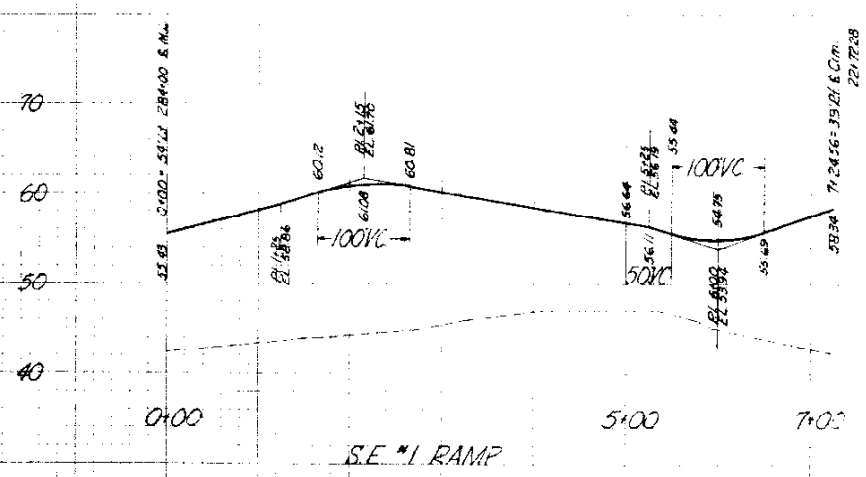


FED. DIS	STATE	PROJECT NO.	
9	COLO.	1 092-2(5)	98

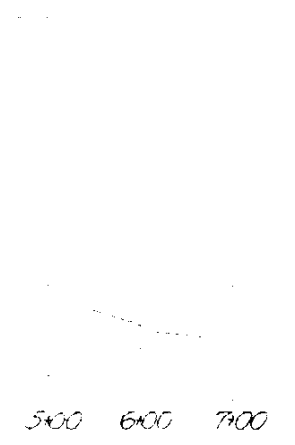
CIMARRON ST RAMP GRADES



CIMARRON ST RAMP GRADES (CONT.)



Grade on Tangent from PC to Cimarron Street



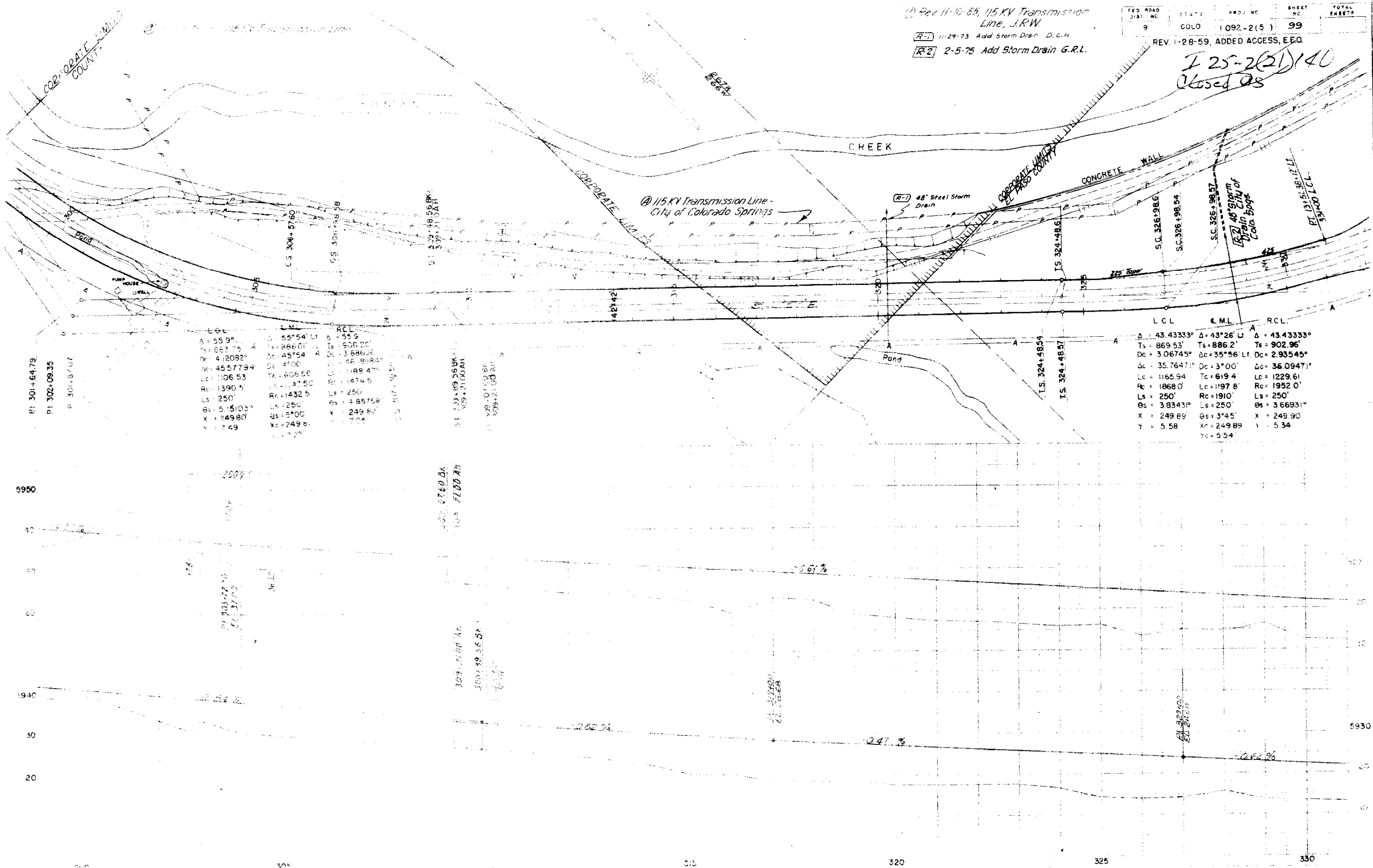
Scale 1 inch = 100 FT. H.E.
Scale 1 inch = 10 FT. V.E.

Rev 11-10-55, 115 KV Transmission Line, J.R.W.
 R-1 11-29-73 Add Storm Drain D.C.H.
 R-2 2-5-75 Add Storm Drain G.R.L.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO	(092-2(5))	99	

REV. 1-28-59, ADDED ACCESS, E.E.Q.

I 25-2(2) 140
 Closed OS



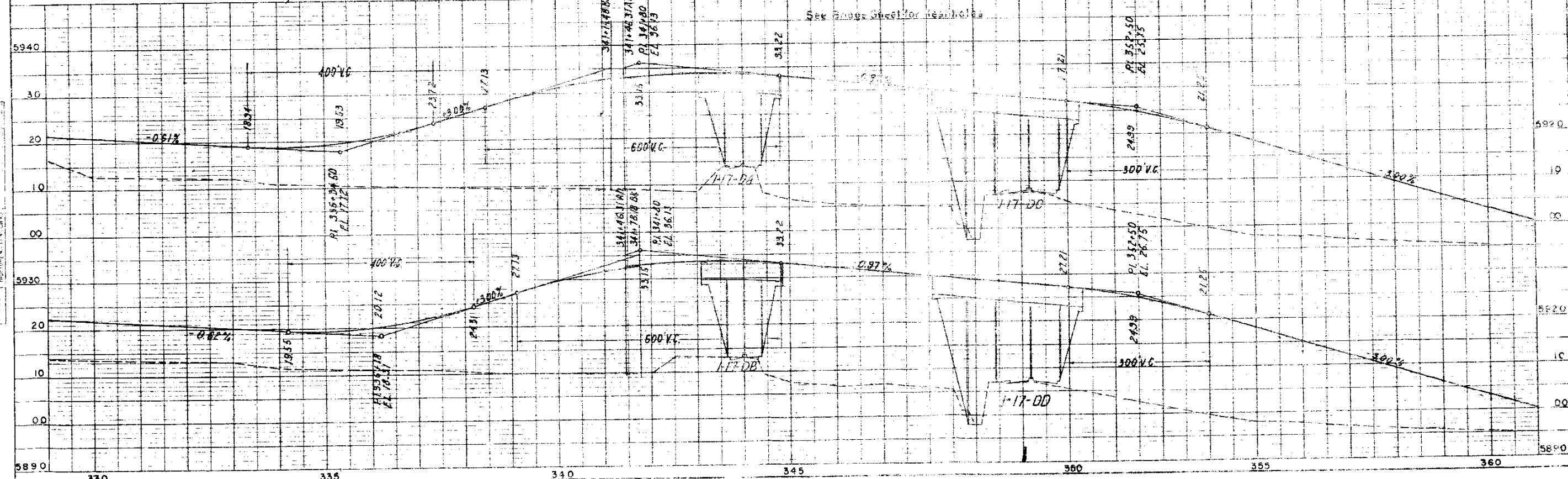
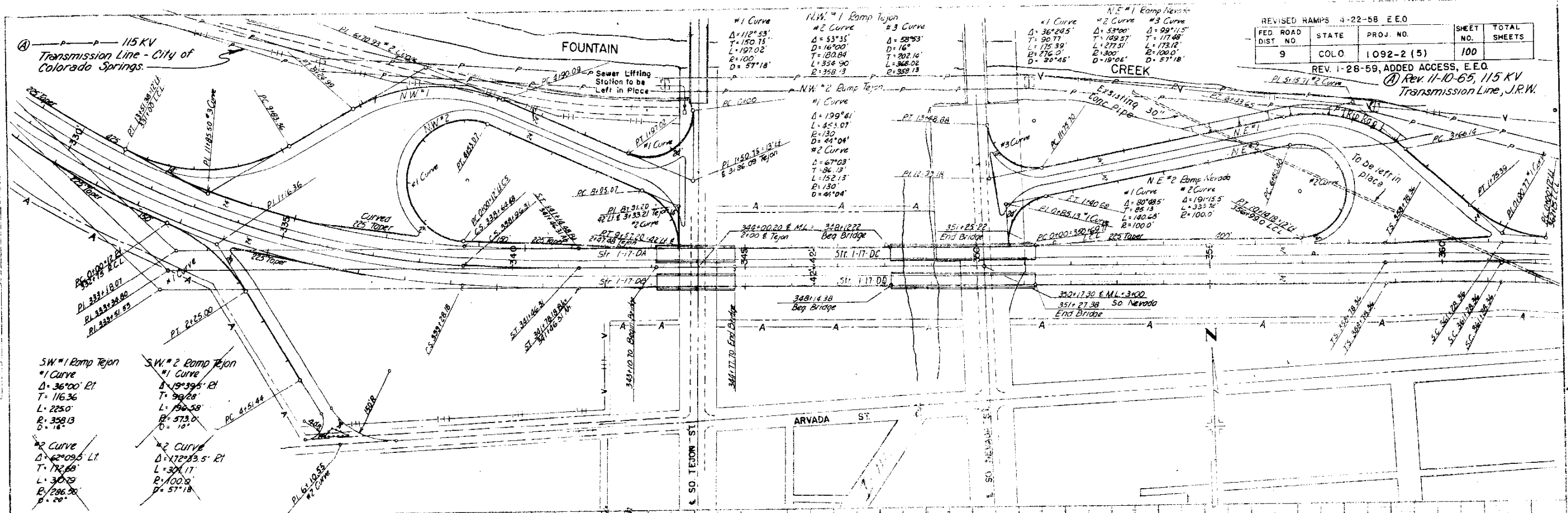
L.C.L.	C.M.I.	R.C.L.
A = 55.9'	Δ = 55°54'	L = 55.9'
Ts = 869.53'	Δc = 43°26'	Lc = 869.53'
Dc = 3.06745'	Δ = 43°26'	Lc = 869.53'
Δc = 35.7647'	Δc = 35°56'	Lc = 869.53'
Lc = 1165.94'	Δc = 3°00'	Lc = 869.53'
Rc = 1868.0'	Δc = 36.0947'	Lc = 869.53'
Ls = 250'	Lc = 619.4'	Lc = 869.53'
Os = 3.83431°	Lc = 1197.8'	Lc = 869.53'
X = 249.69'	Rc = 1952.0'	Lc = 869.53'
Y = 5.58	Ls = 250'	Lc = 869.53'
	Os = 3°45'	Lc = 869.53'
	X = 249.89'	Lc = 869.53'
	Y = 5.34	Lc = 869.53'
	Yc = 5.54	Lc = 869.53'

L.C.L.	C.M.I.	R.C.L.
A = 43.43333°	Δ = 43°26'	A = 43.43333°
Ts = 869.53'	Δc = 35°56'	Ts = 902.96'
Dc = 3.06745'	Δ = 43°26'	Dc = 2.93545'
Δc = 35.7647'	Δc = 3°00'	Δc = 36.0947'
Lc = 1165.94'	Lc = 619.4'	Lc = 1229.61'
Rc = 1868.0'	Lc = 1197.8'	Rc = 1952.0'
Ls = 250'	Rc = 1910'	Ls = 250'
Os = 3.83431°	Ls = 250'	Os = 3.66931°
X = 249.69'	Os = 3°45'	X = 249.90'
Y = 5.58	X = 249.89'	Y = 5.34
	Yc = 5.54	

115 KV TRANSMISSION LINE
 CITY OF COLORADO SPRINGS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2 (5)	100	

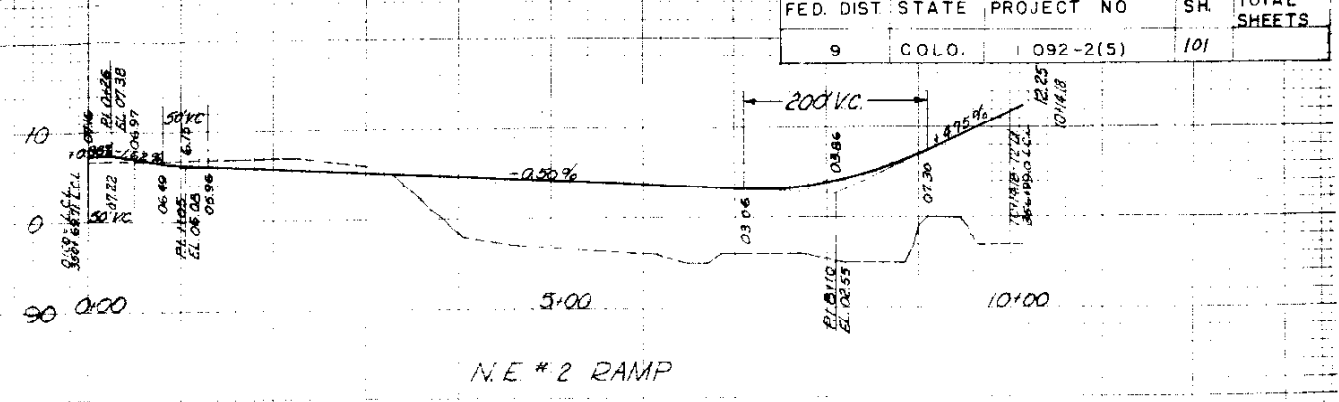
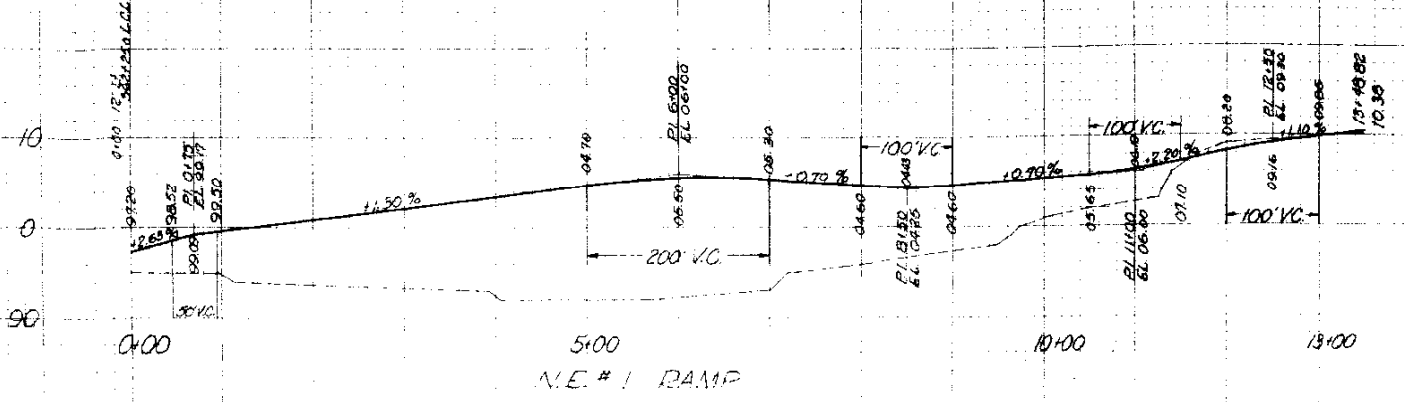
REVISED RAMP 4-22-58 E.E.O.
 REV. 1-28-59, ADDED ACCESS, E.E.O.
 Rev. 11-10-65, 115 KV Transmission Line, J.R.W.



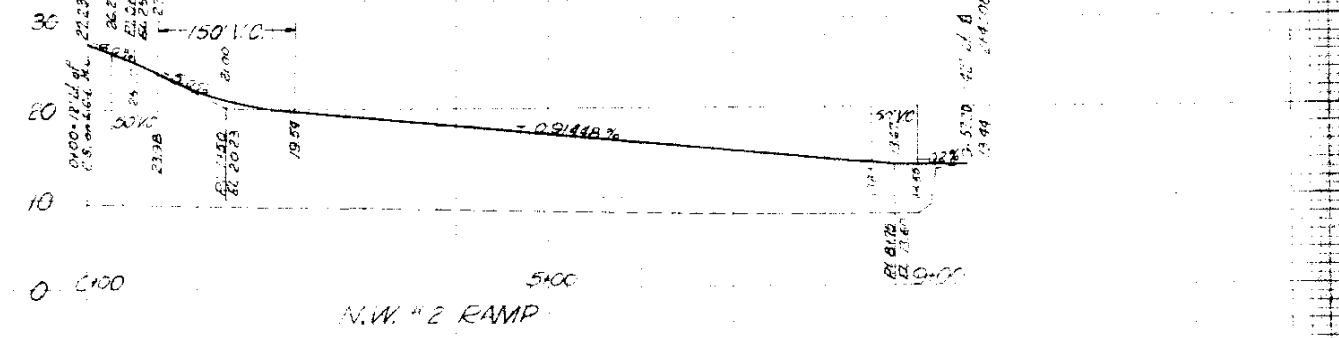
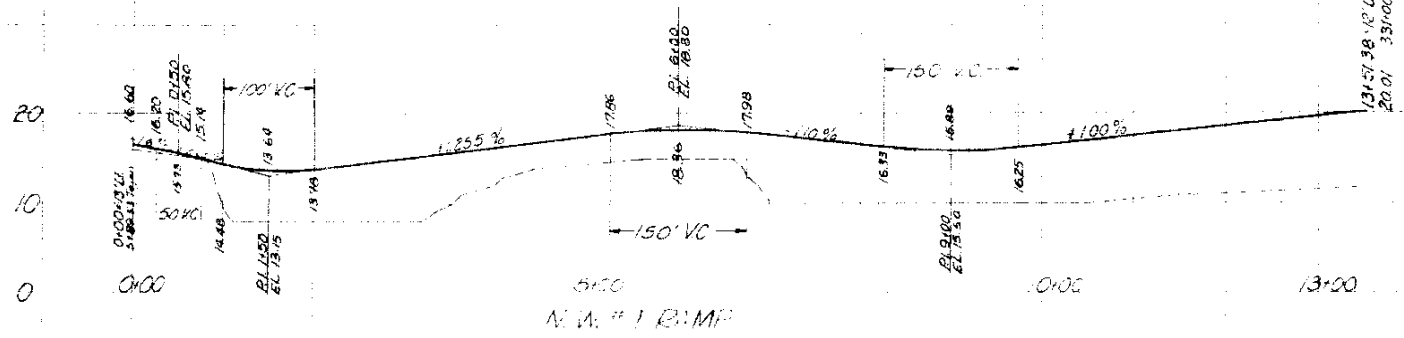
CRIN 2-1-65
 NOTE: ELEVATIONS ARE IN FEET
 PROPOSED 115 KV TRANSMISSION LINE

FED. DIST	STATE	PROJECT NO	SH.	TOTAL SHEETS
9	COLO.	092-2(5)	101	

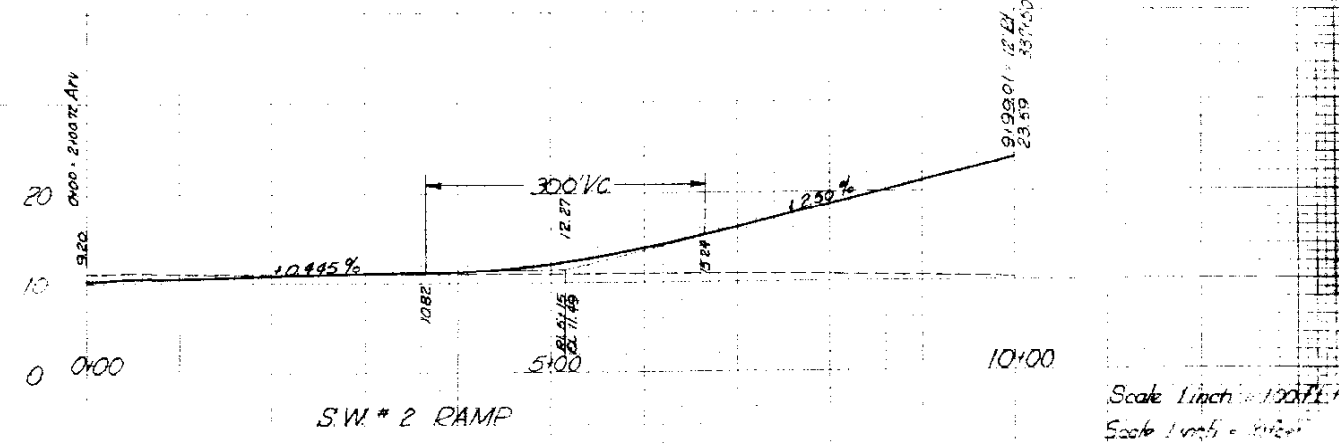
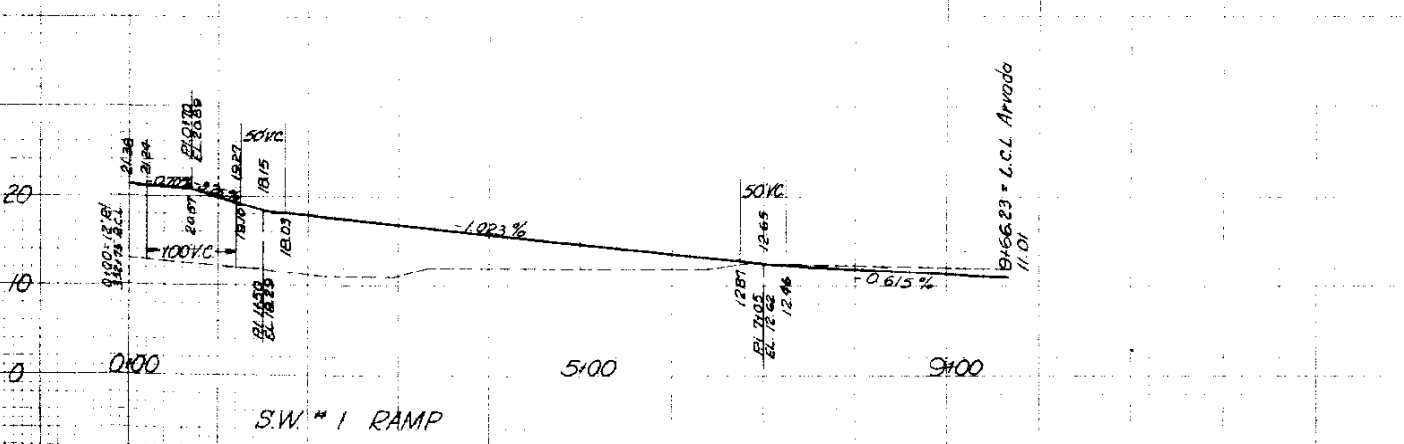
NEVADA AVE. RAMP GRADES



TEJON ST. RAMP GRADES



TEJON ST. RAMP GRADES (CONT.)



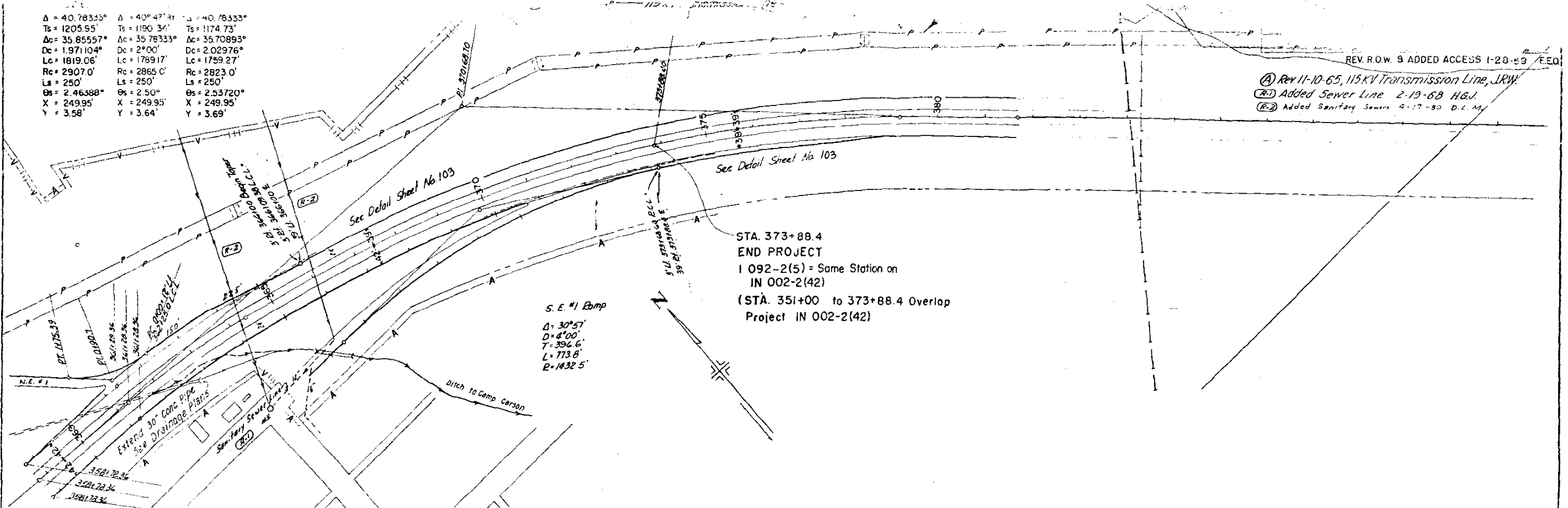
Scale 1 inch = 100 feet
Scale 1 inch = 50 feet

$\Delta = 40.78333^\circ$ $\Delta = 40^\circ 47' 21''$ $\Delta = 40.78333^\circ$
 $Ts = 1205.95'$ $Ts = 1190.34'$ $Ts = 1174.73'$
 $Dc = 35.85557'$ $Dc = 35.78333'$ $Dc = 35.70893'$
 $Lc = 1.971104'$ $Lc = 2^\circ 00'$ $Dc = 2.02976'$
 $Rc = 1819.06'$ $Rc = 1789.17'$ $Rc = 1759.27'$
 $Ls = 2907.0'$ $Ls = 2865.0'$ $Ls = 2823.0'$
 $Os = 250'$ $Os = 250'$ $Os = 250'$
 $\Theta = 2.46388^\circ$ $\Theta = 2.50^\circ$ $\Theta = 2.53720^\circ$
 $X = 249.95$ $X = 249.95$ $X = 249.95$
 $Y = 3.58$ $Y = 3.64$ $Y = 3.69$

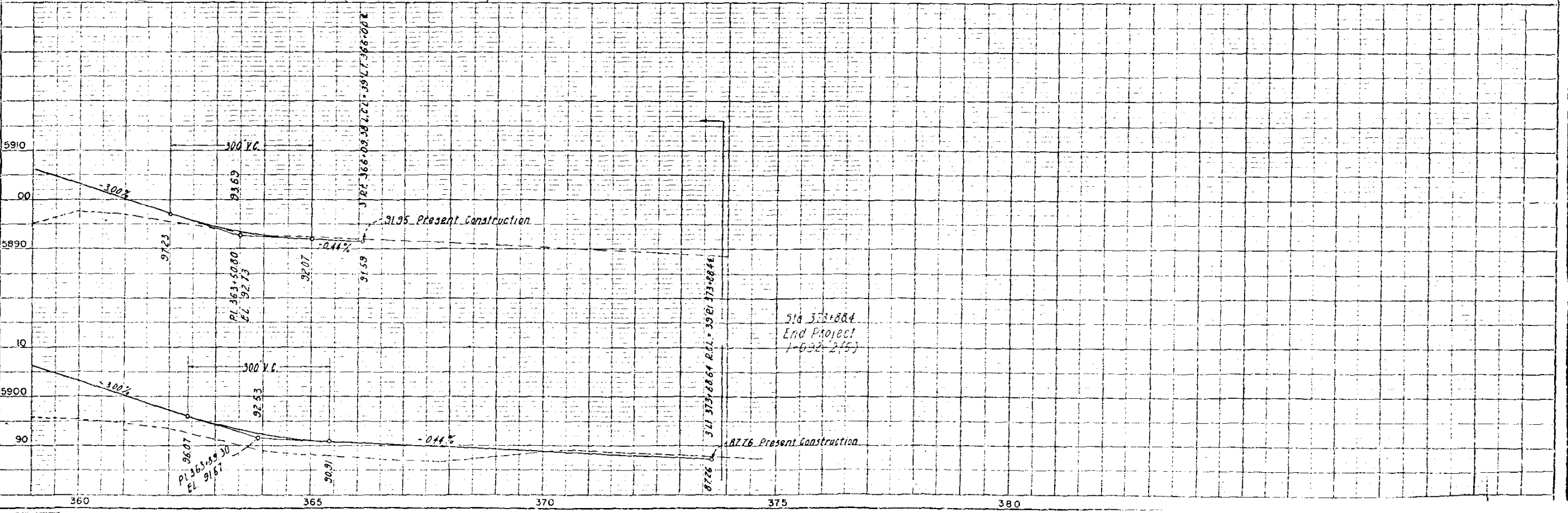
REV. R.O.W. & ADDED ACCESS 1-23-89 E.E.O.

- (A) Rev 11-10-65, 115KV Transmission Line, JRW.
- (R1) Added Sewer Line 2-19-68 H&J.
- (R2) Added Sanitary Sewers 4-17-80 D.L.M.

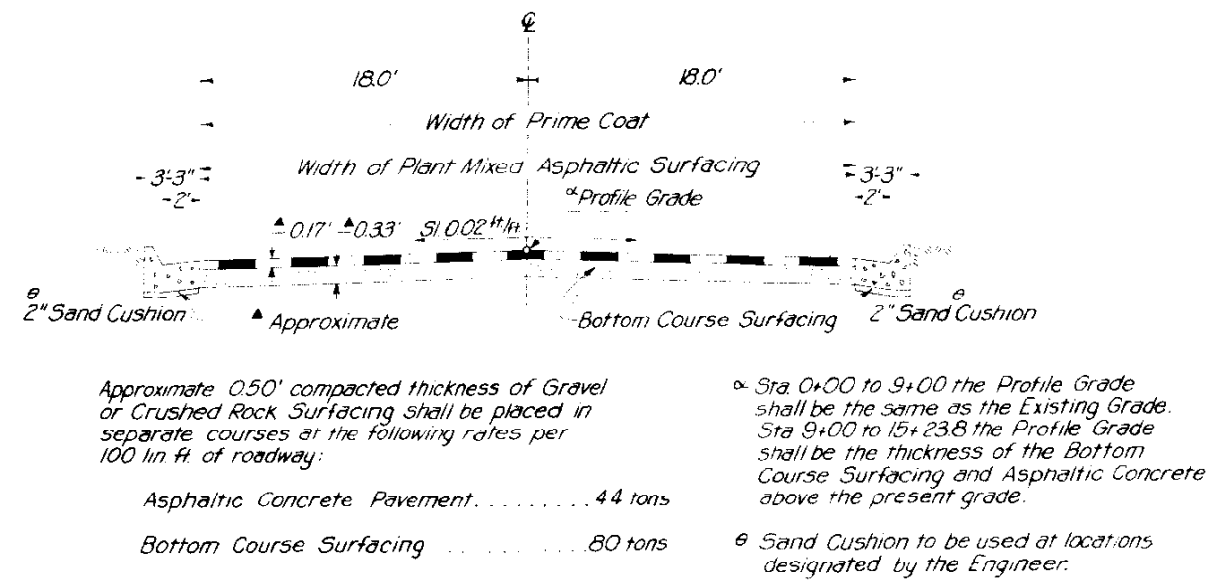
DATE	BY	DESCRIPTION



DATE	BY	DESCRIPTION



TYPICAL SECTION



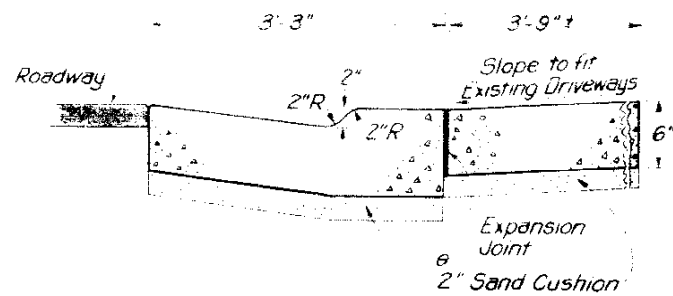
SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION	
From Cross Sections	767
Est for Subsidence	77
TOTAL	844
EXCAVATION	
From Cross Sections	767
Excess	110
TOTAL	657
EMBANKMENT	
From Cross Sections	548
EMBANKMENT x FACTOR	657
STATION YARD OVERHAUL	
From Mass Diagram	297
Est for Subsidence	30
TOTAL	327
COMPACTION	
From Unclassified Excavation-Less Excess	734
Base of Cuts and Fills	2198
TOTAL	2932

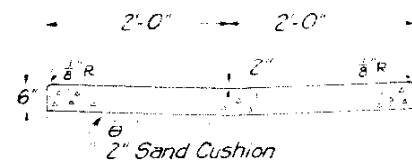
TABULATION OF CURB & GUTTER

STATION TO STATION	SIDE	CURB & GUTTER LIN. FT.	CONCRETE GUTTER(4) LIN. FT.
0+00 to 0+87	Rt.	87	
1+27 to 5+54	Rt.	433	
6+07 to 13+00	Rt.	710	
0+00 to 0+98	Lt.	98	
1+39 to 3+79	Lt.	246	
3+95 to 5+56	Lt.	176	
6+07 to 7+71	Lt.	179	
7+89 to 14+30	Lt.	647	
5+56 to 6+05	Rt.		49
3+81 to 3+93	Lt.		12
7+73 to 7+87	Rt.		14
0+00 to 0+37	Rt.		
1+48 to 1+85	Rt.		
4+41 to 4+92	Rt.		
6+11 to 6+36	Rt.		
6+56 to 6+86	Rt.		
7+09 to 7+39	Rt.		
7+49 to 7+69	Rt.		
0+00 to 0+32	Lt.		
0+75 to 0+98	Lt.		
1+75 to 2+00	Lt.		
2+67 to 2+79	Lt.		
2+84 to 2+96	Lt.		
3+30 to 3+42	Lt.		
4+25 to 4+39	Lt.		
4+62 to 5+35	Lt.		
6+22 to 6+39	Lt.		
7+23 to 7+35	Lt.		
8+91 to 10+07	Lt.		
TOTALS		2576	75

CONCRETE PAVEMENT (DRIVEWAYS)



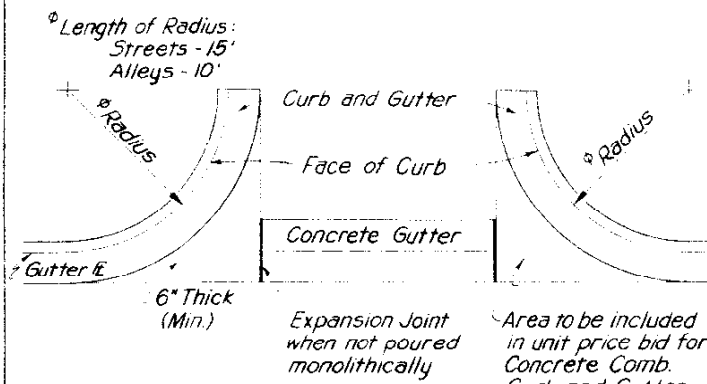
CONCRETE GUTTER



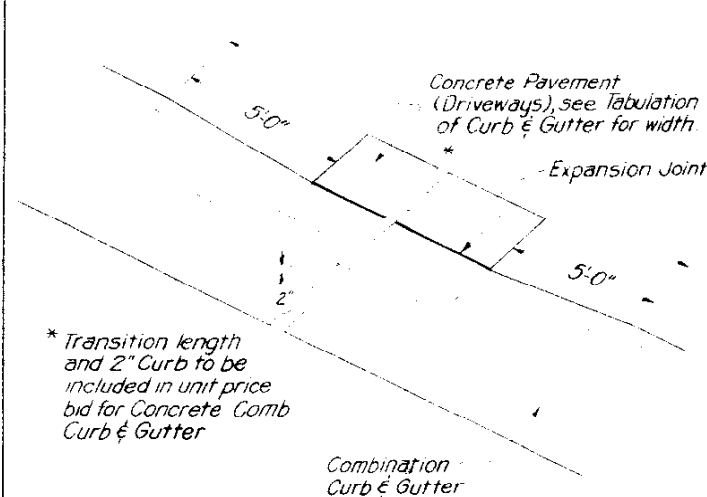
SURFACING PLAN

STATION TO STATION	ASPHALTIC CONCRETE TONS	BOTTOM COURSE TONS
0+00 to 15+23.8	670	
TOTAL	670	
0+00 to 0+93.6		75
BRIDGE		1112
1+33.7 to 15+23.8		
Correcting Irregularities in Sub Grade		119
TOTAL		1306

CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTIONS



DETAIL OF CURB CUT FOR DRIVEWAYS

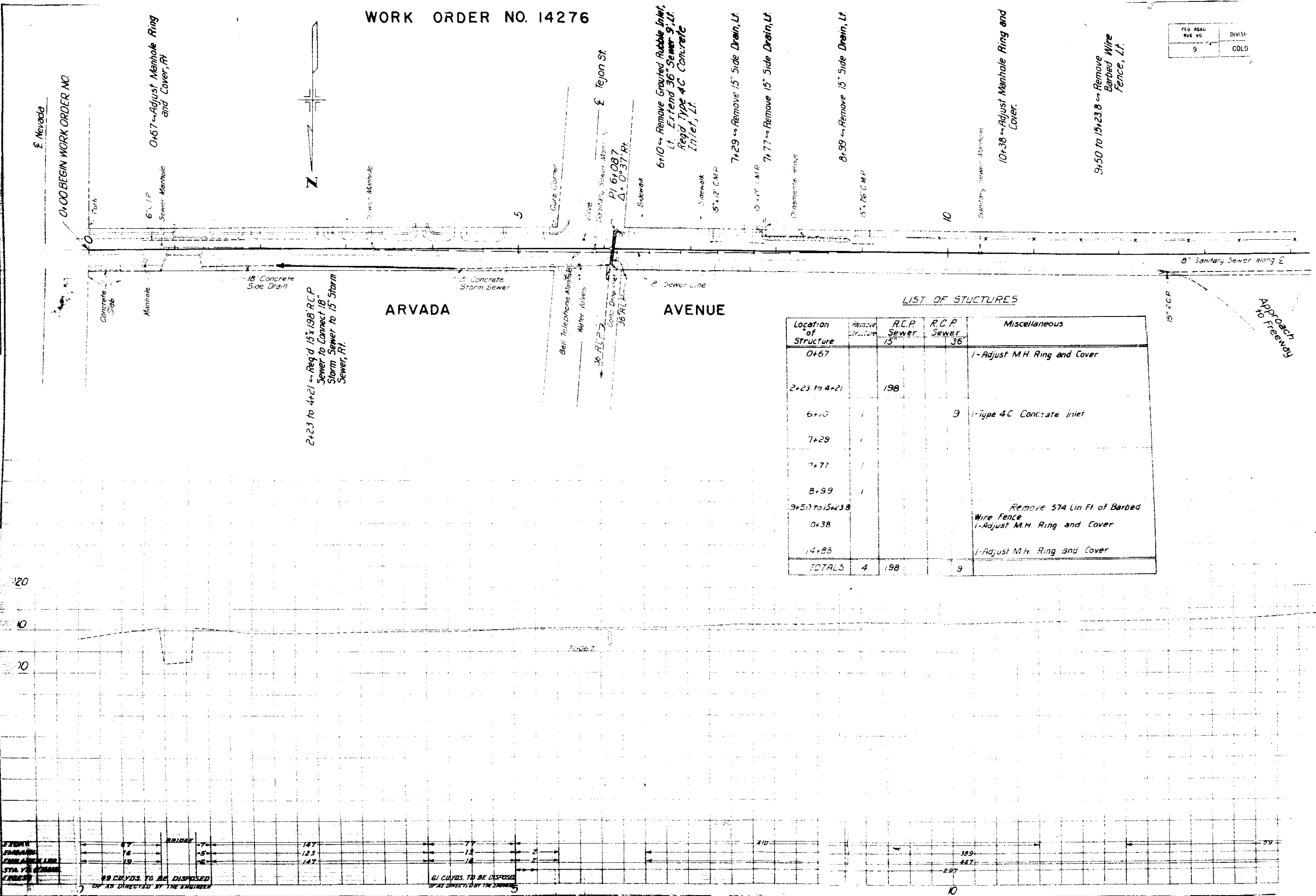


WORK ORDER NO. 14276

FED. ROAD REG. NO.	DIVISION
9	COLO

PLAN
NOTE BOOK
NO.

PROFILE
NOTE BOOK
NO.



LIST OF STRUCTURES

Location of Structure	Remove Structure	R.C.P. Sewer		Miscellaneous
		15"	36"	
0+67				1-Adjust M.H. Ring and Cover
2+23 to 4+21		198		
6+10	1		9	1-Type 4C Concrete Inlet
7+29	1			
7+77	1			
8+99	1			
9+50 to 15+23.8				Remove 574 Lin Ft. of Barbed Wire Fence
0+38				1-Adjust M.H. Ring and Cover
14+88				1-Adjust M.H. Ring and Cover
TOTALS	4	198	9	

