

INDEX OF SHEETS

- SKETCH MAP AND TITLE PAGE
- TYPICAL SECTIONS, CURB AND GUTTER DETAILS AND DETAILS OF SHOULDER ROLL
- TYPICAL RAMP DETAILS
- TABULATION OF LENGTH AND DESIGN DATA, GENERAL NOTES AND TURNING MOVEMENT AT CIMARRON, TEJON AND NEVADA.
- SUMMARY OF APPROXIMATE QUANTITIES
- TABULATION OF SURFACING.
- TABULATION OF CURBS AND GUTTERS.
- TABULATION OF STORM SEWERS.
- TABULATION OF SANITARY SEWERS AND SUMMARY OF EARTH-WORK QUANTITIES.
- MANHOLE AND DROP INLET DETAILS
- TYPICAL DRAINAGE LAYOUT
- DRAINAGE PLAN.
- FENCING, LIGHTING AND SPRINKLER DETAILS.
- DETAILS OF STR. NOS. 1-17-DG AND 1-17-DF.
- DETAILS OF STR. NO. 1-17-DI.
- DETAILS OF STR. NO. 1-17-DH.
- DETAILS OF STR. NO. 1-17-DE
- DETAILS OF STR. NOS. 1-17-DA AND 1-17-DB
- DETAILS OF STR. NOS. 1-17-DC AND 1-17-DD.
- METHODS AND TABLES FOR SUPERELEVATION OF CURVES.
- STANDARD SIDE APPROACH ROADS, FLARING, CUT
- SLOPE TREATMENT & WIDENING AT BRIDGES & AT CREST OF GRADES.
- M-2-EM
- M-7-C
- M-10-B
- M-19-D
- M-21-C
- M-26-C
- M-28-A
- M-29-B
- M-50-A
- M-50-AW
- M-112-E
- M-118-A
- STANDARD MARKER POSTS AND BENCH MARKS.
- STANDARD LETTERS & FIGURES FOR YEAR NUMBERS & STRUCTURE NUMBERS.
- STANDARD TIMBER GUARD POSTS
- STANDARD METAL PLATE GUARD FENCE (BEAM TYPE).
- CHAIN LINK WIRE MESH (SCHOOL) FENCE.
- STANDARD BARRIER FENCE.
- STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS.
- STANDARD SINGLE & DOUBLE CONCRETE BOX CULVERTS.
- STANDARD WINGWALLS FOR VARIOUS TYPES OF CONCRETE BOX CULVERTS.
- REINFORCED CONCRETE CULVERT PIPE AND CONCRETE SEWER PIPE
- STANDARD END & ANGLE SECTIONS, & EXPANSION JOINTS FOR CONCRETE PIPE
- ALIGNMENT PLAN AND PROFILE
- GRADING PLAN AND PIT LOCATION
- CROSS SECTIONS.

# COLORADO

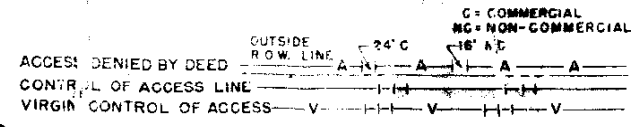
## DEPARTMENT OF HIGHWAYS

### PLAN AND PROFILE OF PROPOSED

### FEDERAL AID PROJECT NO. 1092-2(5)

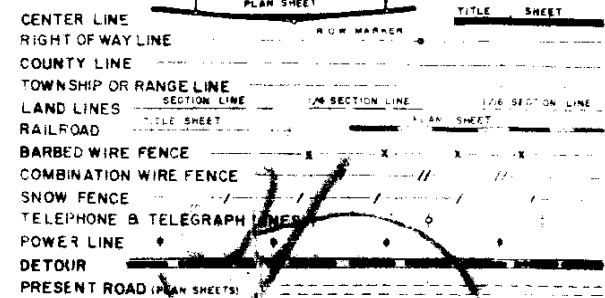
### STATE HIGHWAY NO. 1

### 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)

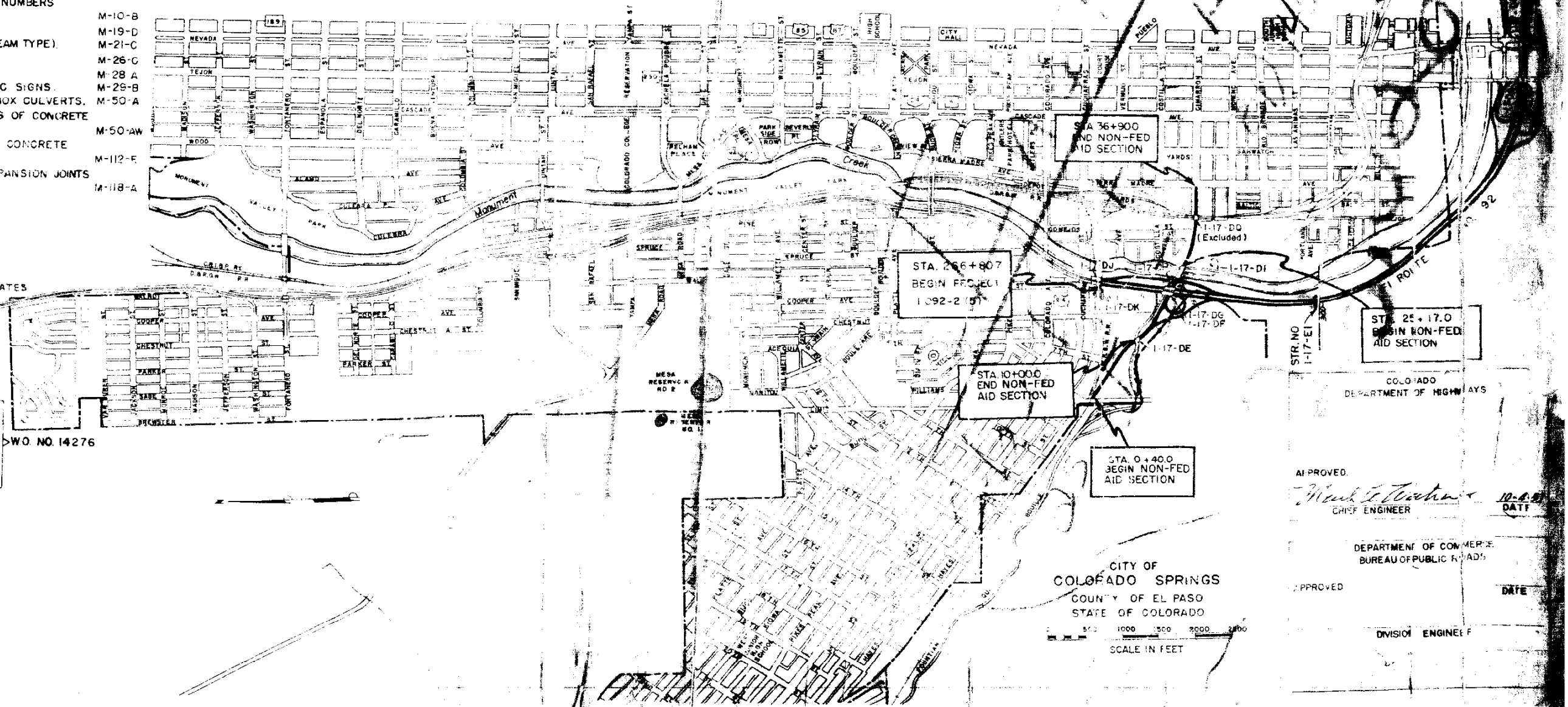
ADDED SHEETS (2-28-58)

- STANDARD GIRDERS
- STANDARD GIRDERS - STANDARD BEARING PLATES
- ELEVATION REVISIONS

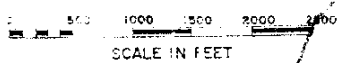
ADDED SHEETS (2-5-59)

- 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.

W.O. NO. 14276



CITY OF COLORADO SPRINGS  
 COUNTY OF EL PASO  
 STATE OF COLORADO



APPROVED: *Mark E. ...*  
 CHIEF ENGINEER

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

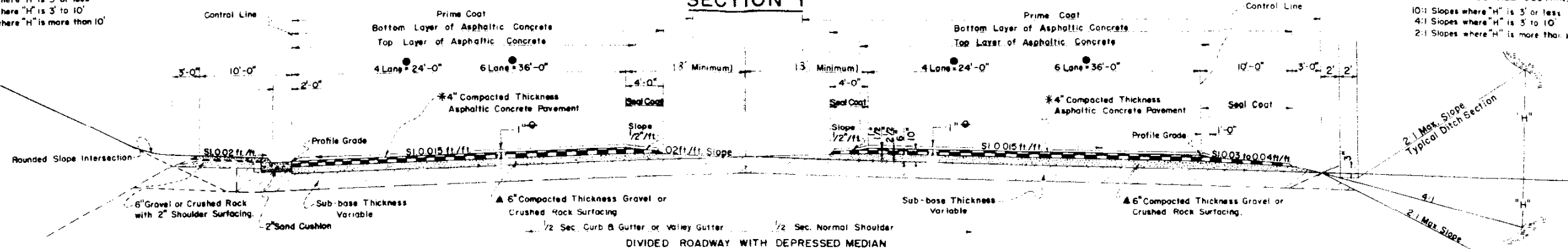
### FILL SLOPES ALL SECTIONS

- 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'

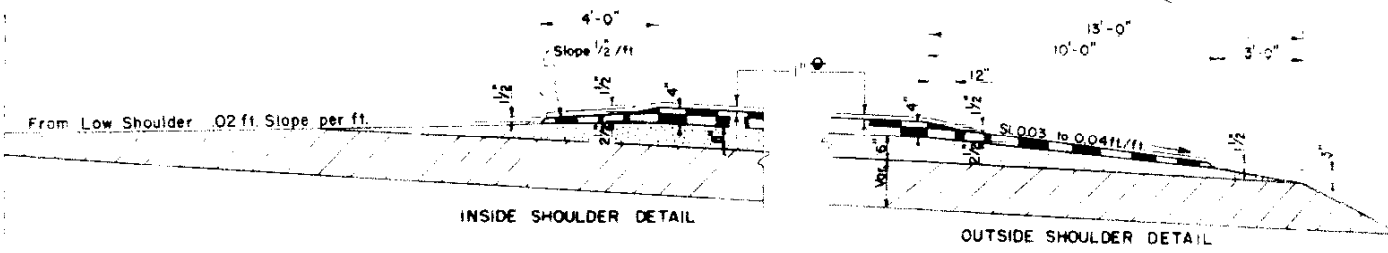
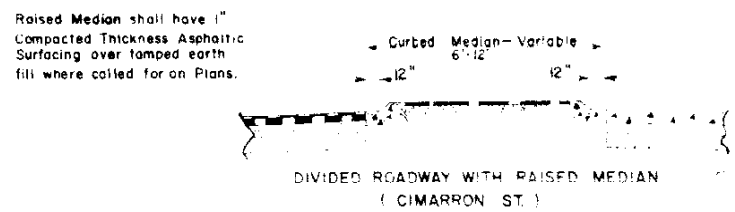
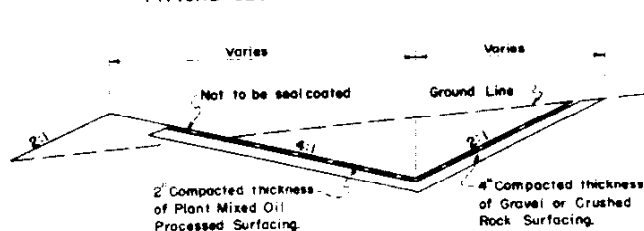
### CUT SLOPES ALL SECTIONS

- 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'

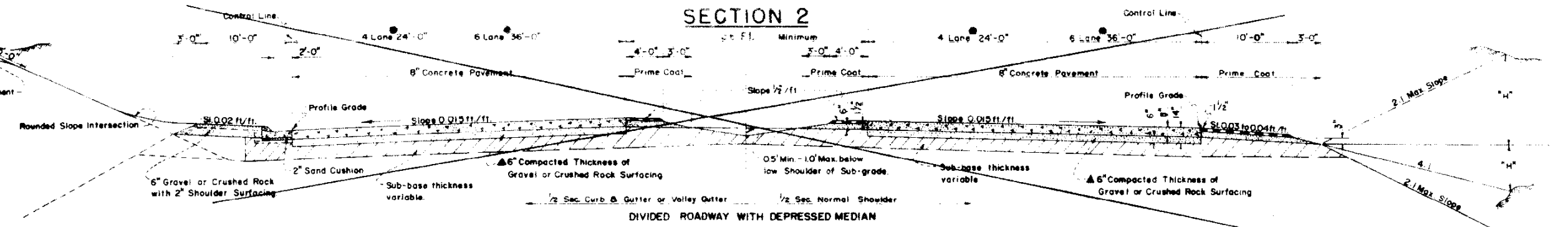
## SECTION 1



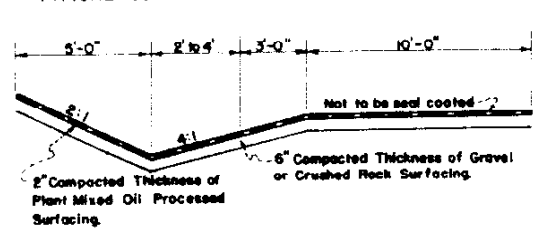
### TYPICAL SECTION - INTERCEPTING DITCHES



## SECTION 2



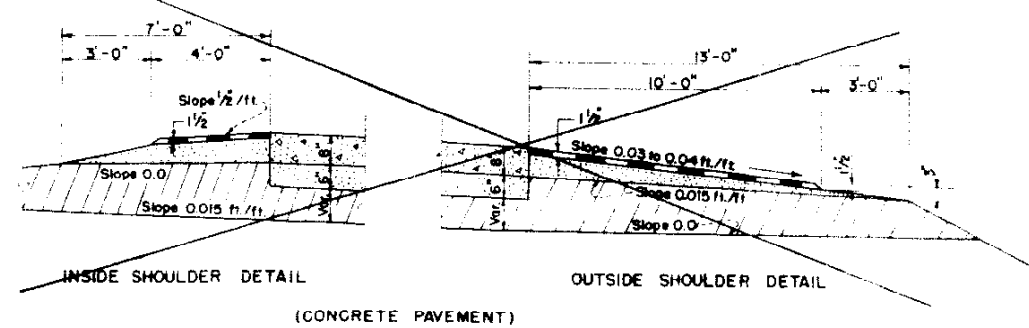
### TYPICAL SECTION FOR ROADWAY DITCH PAVING



NOTE: Ditches to be tiled 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.
- ▲ 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"

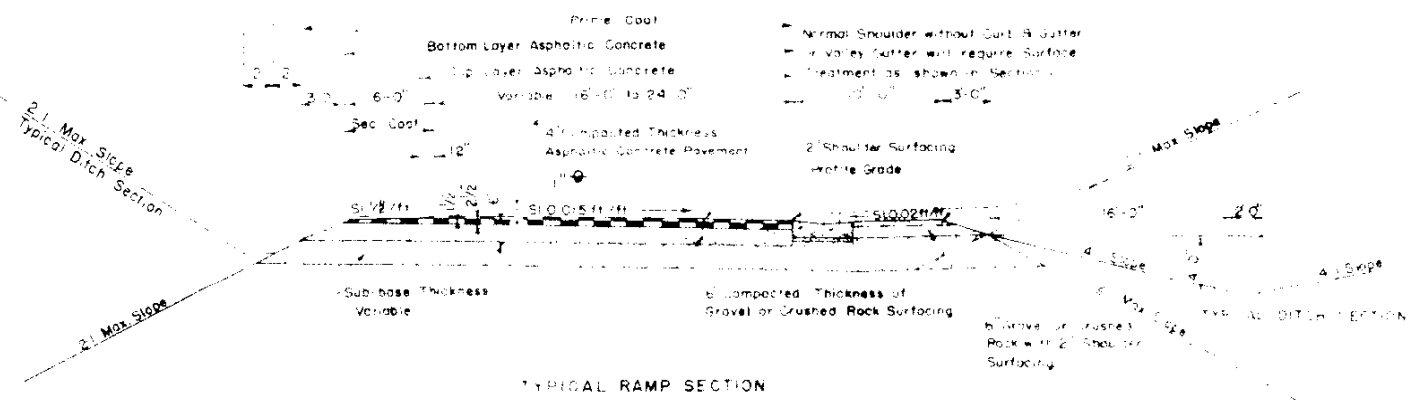


(CONCRETE PAVEMENT)

# TYPICAL SECTIONS

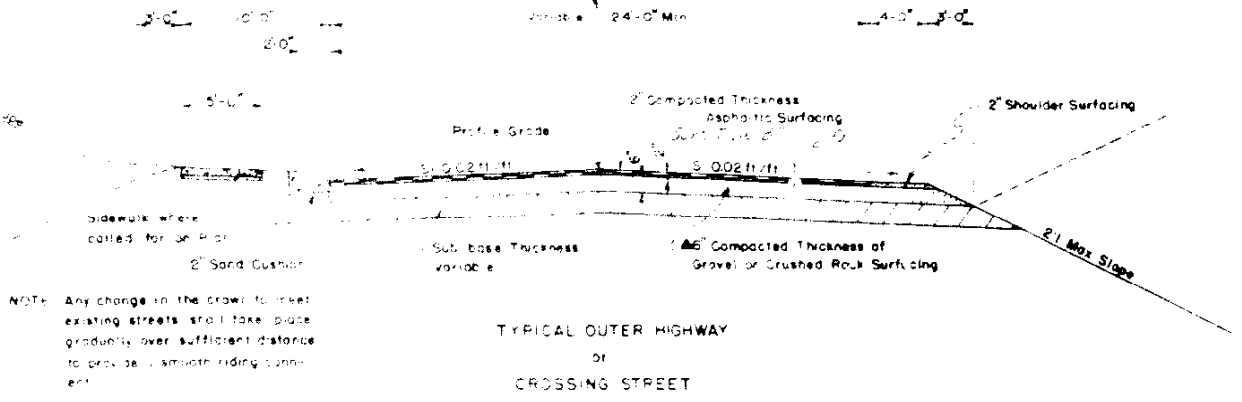
FED. ROAD DIST. NO. STATE PROJ. NO. SHEET NO. TOTAL SHEETS  
 9 0000 092 3 5  
 REV. SENT TO SHOW FUTURE OVERLAY, E.F.C. 4-8-61

## SECTION 3



TYPICAL RAMP SECTION

## SECTION 4

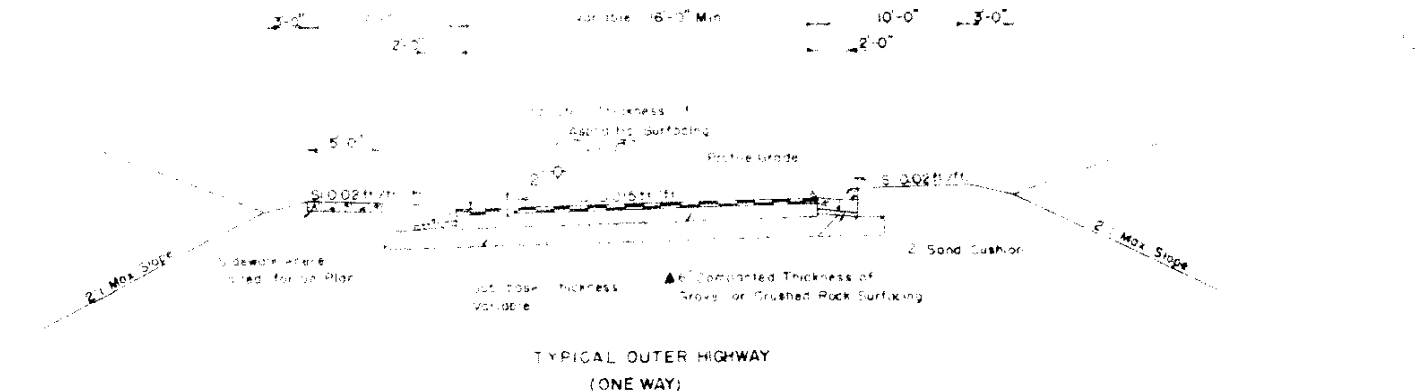


TYPICAL OUTER HIGHWAY OR CROSSING STREET

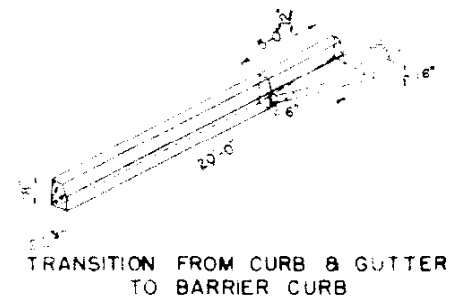
## DETAILS OF SHOULDER ROLL



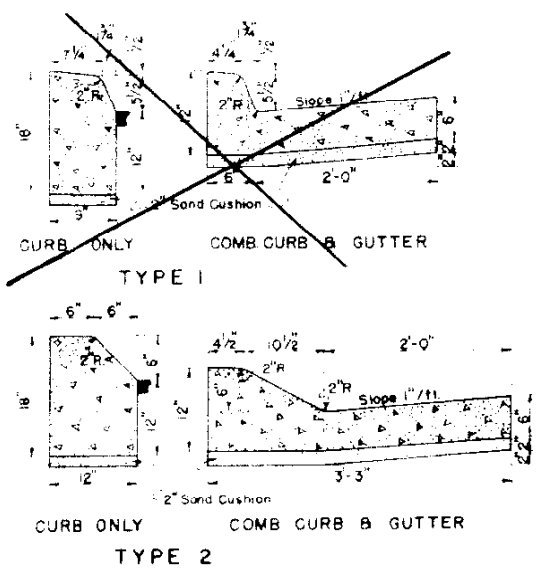
## SECTION 5



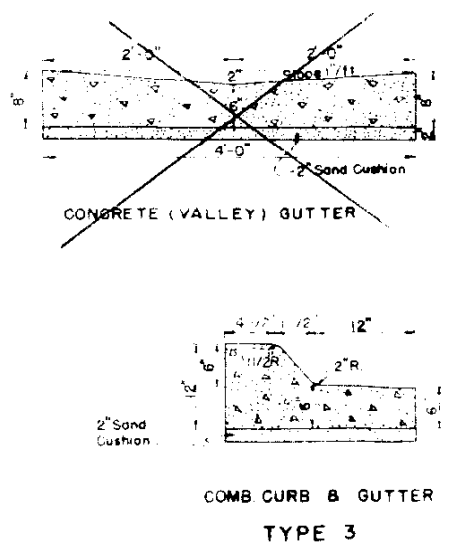
TYPICAL OUTER HIGHWAY (ONE WAY)



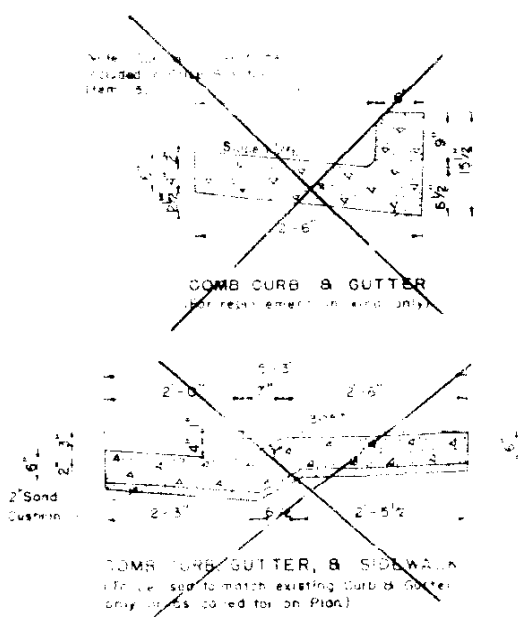
TRANSITION FROM CURB & GUTTER TO BARRIER CURB



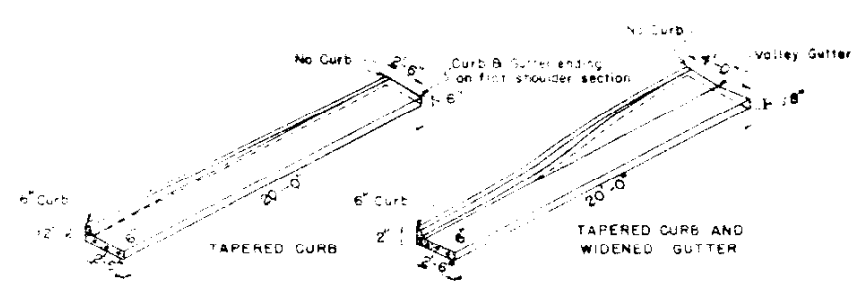
TYPE 1



TYPE 2



TYPE 3



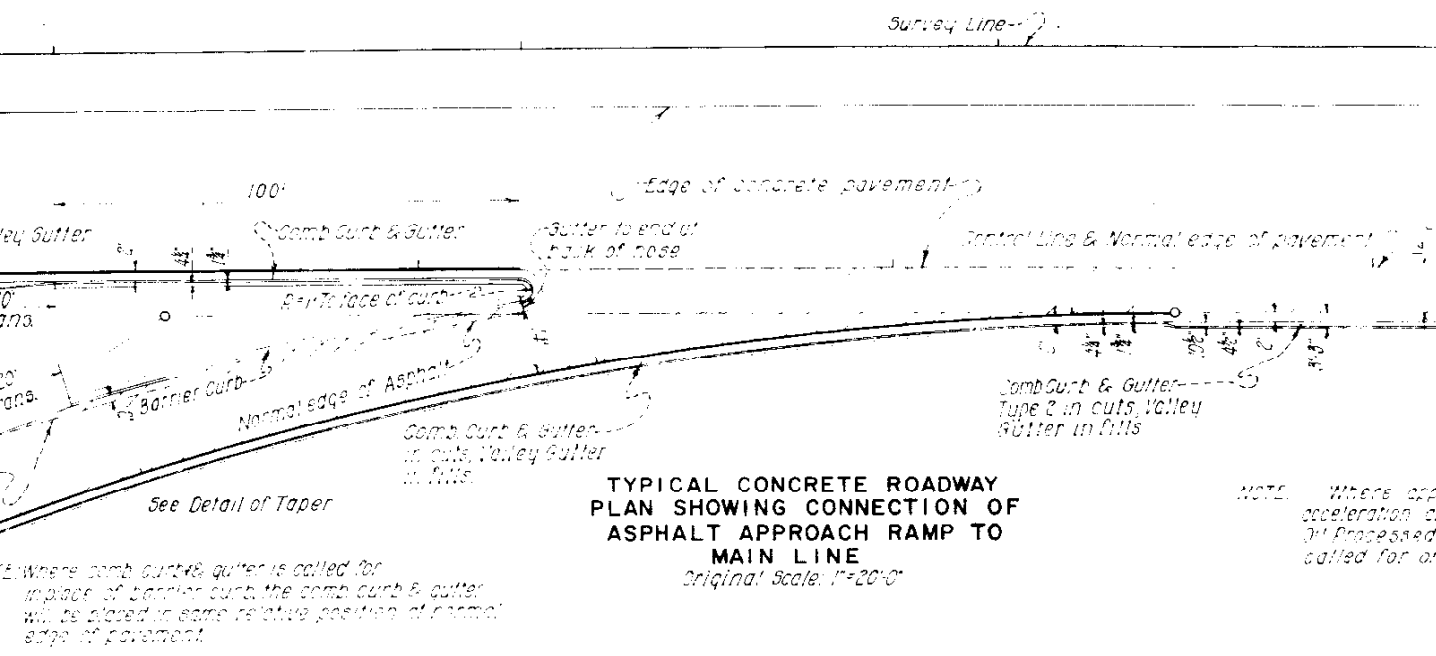
CURB TRANSITION DETAIL

1. Curb and gutter shall be tapered to zero height over a distance of 20.0' as shown above.  
 2. On the side of a curve where the gutter shall have the same slope as the pavement.  
 3. Transition detail to be installed and paid for as Concrete Combination Curb and Gutter.

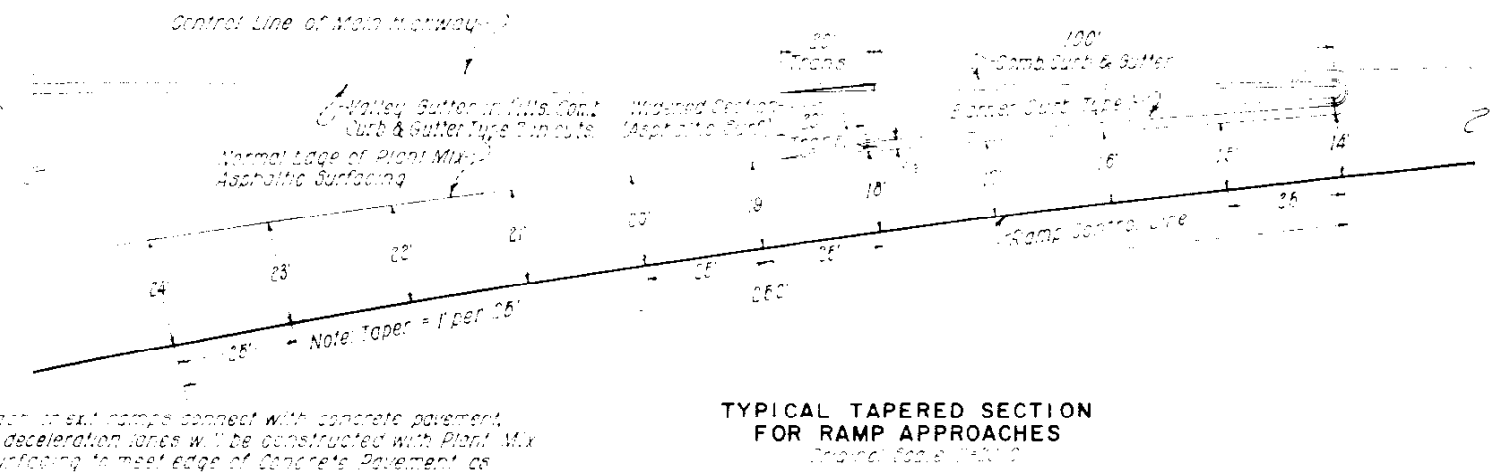
# TYPICAL RAMP DETAILS

## SHOWING CURB & GUTTER DETAIL

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

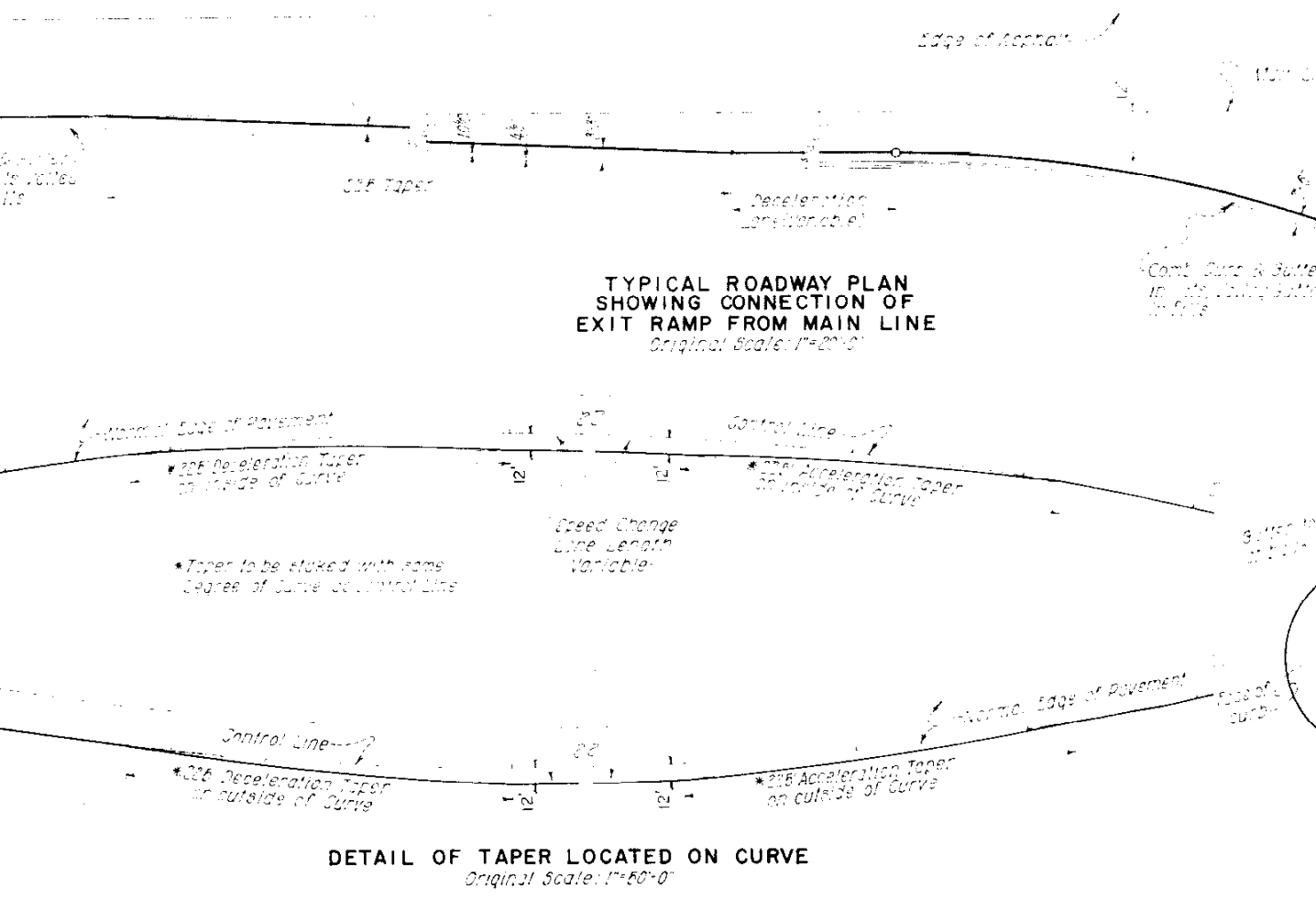


**TYPICAL CONCRETE ROADWAY PLAN SHOWING CONNECTION OF ASPHALT APPROACH RAMP TO MAIN LINE**  
Original Scale: 1"=20'-0"

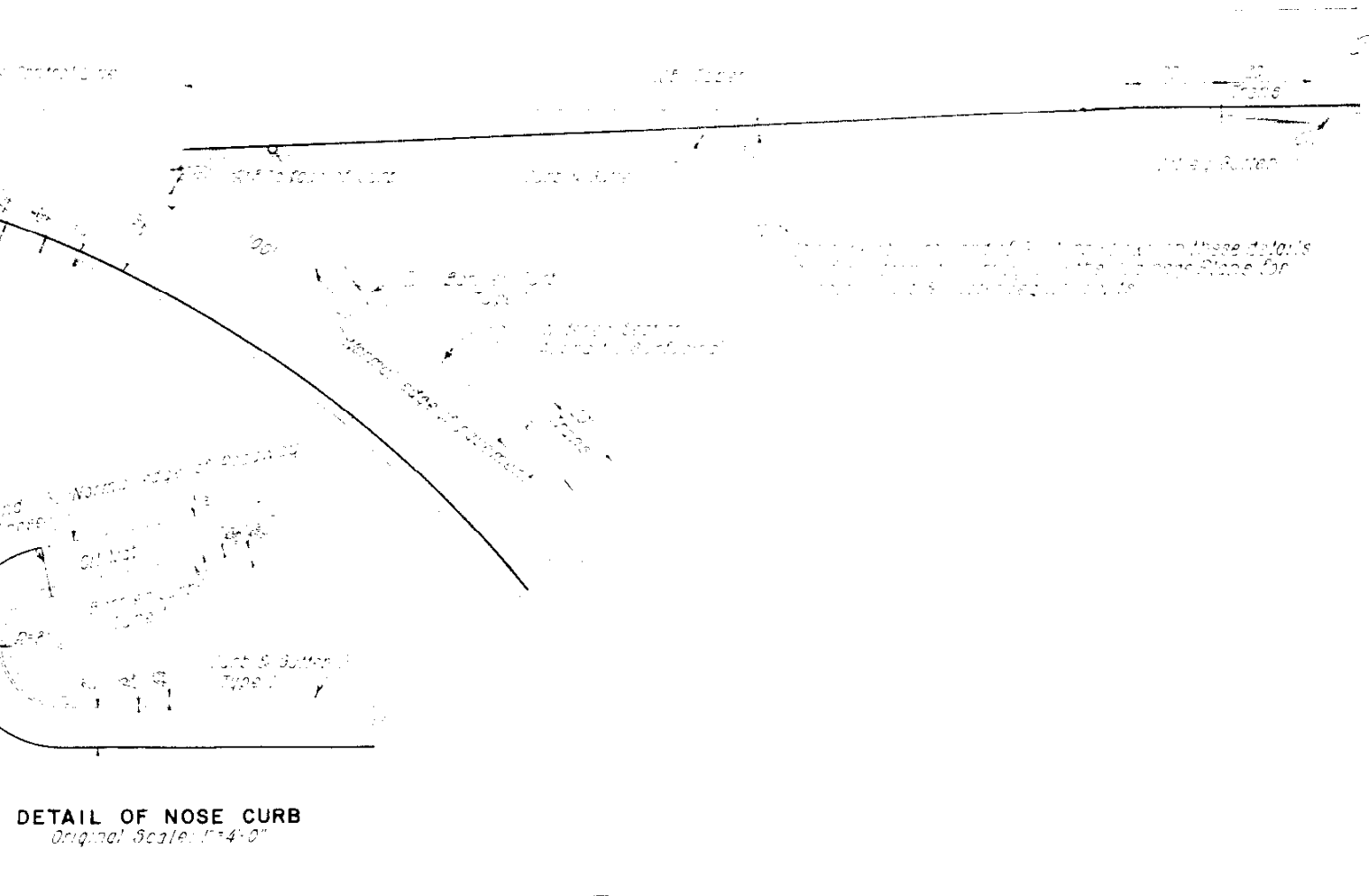


**TYPICAL TAPERED SECTION FOR RAMP APPROACHES**  
Original Scale: 1"=20'-0"

NOTE: Where approach or exit ramps connect with concrete pavement, acceleration and deceleration lanes will be constructed with Plant Mix Oil Processed Surfacing to meet edge of concrete pavement as called for on plans.



**TYPICAL ROADWAY PLAN SHOWING CONNECTION OF EXIT RAMP FROM MAIN LINE**  
Original Scale: 1"=20'-0"



**DETAIL OF NOSE CURB**  
Original Scale: 1"=4'-0"

**DETAIL OF TAPER LOCATED ON CURVE**  
Original Scale: 1"=50'-0"

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	1,232.6		31.0	
309+48.6 Bk = 309+21.0 An. 343+10.7	3,389.7		167.0	
I-17-DA & DB 344+77.7 348+13.3	335.6		286.7	
351+00 Begin IN 002-2(42) 351+26.3			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	
<b>SUMMARY</b>		LIN. FT.	MILES	
Roadway		9,922.0	1.879	
Bridges		813.3	0.154	
<b>Total Length</b>		10,735.3	2.033	
<b>DESIGN DATA</b>				
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	2500 lbs. per sq. yd.

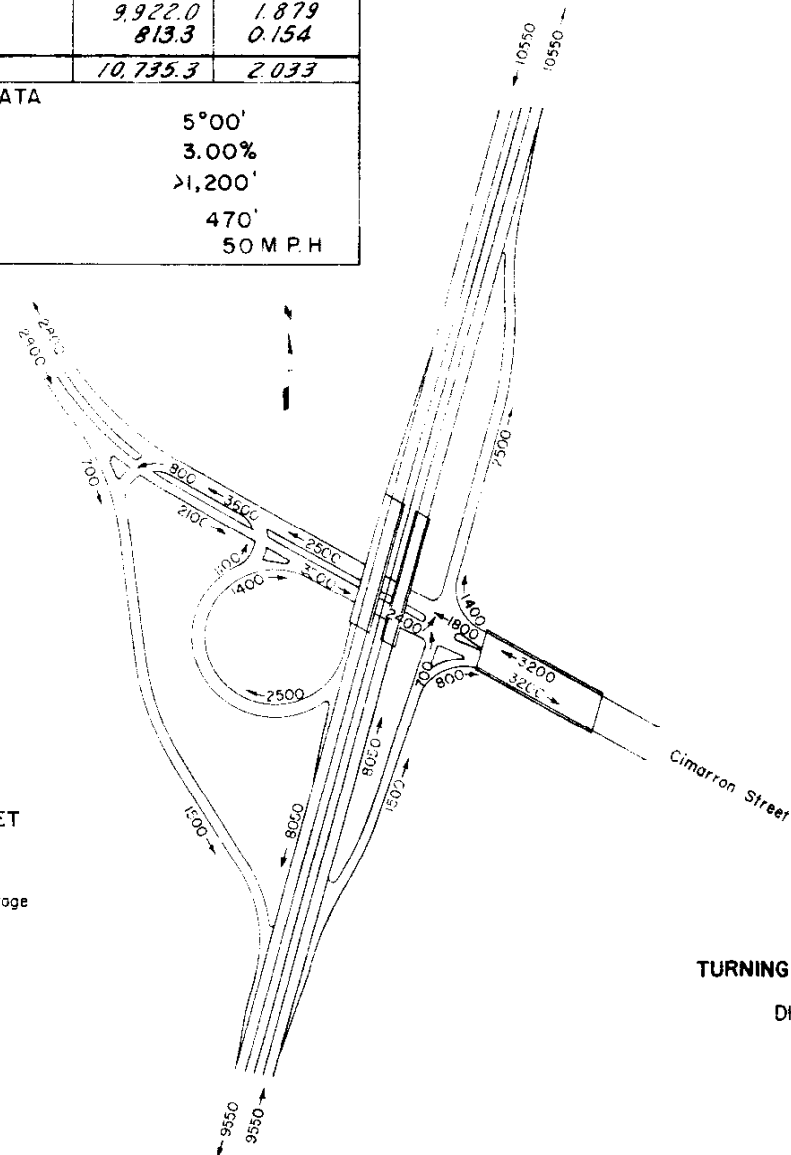
Rate of application and grade of oil shall be as determined by the engineer at the time of application.

Rolling Quantities estimated as follows:

Rolling with Flat Wheeled Roller (Oil Mat)	50 tons per hour per unit
<del>Rolling with Flat Wheeled Roller (Top Embankment)</del>	<del>2350 sq. yds. per hour per unit</del>
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



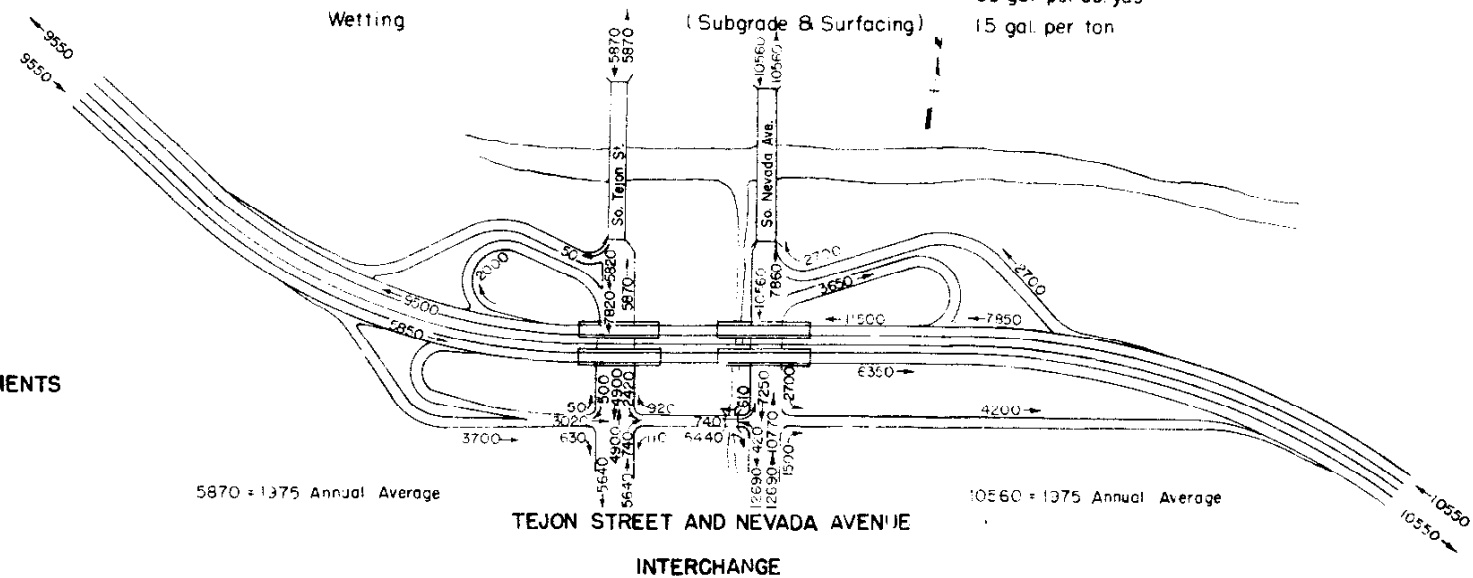
TURNING MOVEMENTS

DHV 1975

TEJON STREET AND NEVADA AVENUE INTERCHANGE

5870 = 1975 Annual Average

10560 = 1975 Annual Average



## 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	STRUCT. 1-17-M W/O N° 423 Non Fed Aid	STRUCTURES 1-17-DA 1-17-DB	STRUCTURES 1-17-DC 1-17-DD	ARVADA STREET W/O N° 476 Non Fed Aid	ROADWAY NON-FEDERAL AID	PROJECT TOTAL	PROJECT TOTAL INCLUDING WORK ORDERS
10a	Clearing and Grubbing Entire Project	Lump Sum	.											.	.
11	Removal of Portions of Bridge	Lump Sum	.						.					.	.
11a	Removal of Obstructions	Lump Sum	.						.					.	.
11b	Adjust Manhole Ring and Cover	Each	2											2	2
*11c	Removal of 4 Structures	Lump Sum										3	1	3	6
12bx	Removing & Rebuilding Guard Fence	Lin. Ft.	120											120	120
12	Removing Fence	Lin. Ft.													600
13c	Unclassified Excavation	Cu. Yd.	1,254,200									600 1000	119,800	1,374,000	1,375,000
14e	Unclassified Structural Excavation	Cu. Yd.						170						170	170
14f	Rock Excavation (Str.)	Cu. Yd.			80									80	80
14g	Common Excavation (Str.)	Cu. Yd.		766	970	230	280		194	350	679			3,275	3,469
16ax	Structure Backfill (Class 1)	Cu. Yd.		650	750	130	250	15	144	250	380			2,425	2,569
16c	Mechanical Tamping	Hour		105	110	25	50	75		50	80			495	495
17c	Rolling with Flat Wheeled Roller Tandem	Hour	490										20	520	540
17d	Rolling with Flat Wheeled Roller (Three(3) Wheel)	Hour	70										10	80	80
17e	Rolling with Rubber Tired Roller (One (1) Unit)	Hour	340										30	380	410
17ex	Rolling with Rubber Tired Roller (Two(2) Unit)	Hour	70											80	80
17h	Furnishing Flat Wheeled Roller (Tandem)	Each	1.5											2	2
17i	Furnishing Flat Wheeled Roller (Three(3) Wheel)	Each	0.9											1	1
17j	Furnishing Rubber Tired Roller (One (1) Unit)	Each	0.9											1	1
17jx	Furnishing Rubber Tired Roller (Two(2) Unit)	Each	0.9											1	1
17k	Wetting	M Gal.	42,060											42,060	46,320
17v	Compaction	Cu. Yd.	1,329,000									140	4,120	1,333,120	1,333,120
18a	Station Yard Overhaul	Sta. Yd.	13,578,500									3000	129,000	14,877,500	14,877,500
18b	Yard Mile Overhaul	Yd. Mi.	659,550									400	1,295,500	1,955,050	1,955,050
23ax	Sub-Base Material (Class 1)	Ton	102,310											102,310	102,310
26cx	Gravel or Crushed Rock Surfacing (Grading C)	Ton	44,850											44,850	44,850
30x	Asphaltic Road Material MC (Prime)	Gal.	63,900											63,900	63,900
30y	Asphaltic Road Material MC	Gal.	6,900	250	260	45	80			115	210			8,310	8,310
31c	Stone Screenings (Type 1)	Ton	345											345	345
32x	Plant Mixed Asphaltic Processed Shoulder Roll	Lin. Ft.	5,250											5,250	5,250
37ax	Concrete Pavement (Driveway)	Sq. Yd.												5,250	5,250
34bx	Asphaltic Concrete Pavement (Leveling Course)	Ton	15,120										210	15,330	15,330
34dx	Asphaltic Concrete Pavement (Surface Type B)	Ton	9,070	270	285	50	90			125	230	680	850	10,630	11,310
37c	Sand Cushion	Cu. Yd.	330										30	360	360
42b	Treated Bridge Timber	M. Ft. bm		07	07	04	06							42	42
46a	Class "A" Concrete	Cu. Yd.		1,014	1,217	308	542	517	94	825	1,441			5,964	5,964
46pa	Prestressed Concrete Beams (30' to 34'-11")	Each		14										14	14
46pb	Prestressed Concrete Beams (35' to 39'-11")	Each				15	20		5					35	40
46pc	Prestressed Concrete Beams (40' to 44'-11")	Each				1	10							11	11
46pd	Prestressed Concrete Beams (45' to 49'-11")	Each				1								1	1
46pe	Prestressed Concrete Beams (50' to 54'-11")	Each		70										70	70
46pf	Prestressed Concrete Beams (55' to 59'-11")	Each												40	40
46pi	Prestressed Concrete Beams (70' to 74'-11")	Each			56					10				66	66
47	Reinforcing Steel	Lb.		199,700	222,600	38,950	55,300	48,400	8,475	133,800	290,700			989,450	997,925
48	Structural Steel	Lb.		63,950	48,300	10,850	11,400		1,765	28,750	72,250			235,500	237,265
60x	Drilling Holes to Facilitate Pile Driving	Lin. Ft.					80			608	576			1,264	1,264
61av	Steel Piling (10" BP 42) or Steel Pipe Piling (10 3/4" O.D. x 0.179" Th)	Lin. Ft.				315	1,570			3,168	880			5,933	5,933
61aw	Steel Piling (12" BP 53) or Steel Pipe Piling (12 3/4" O.D. x 0.179" Th)	Lin. Ft.		1,664							3,696			5,360	5,360
65m	Concrete Slope and Ditch Paving (Wire Mesh)	Cu. Yd.								122				122	122
67a	Riprap	Cu. Yd.	8,700								56			8,756	8,756
75c	Metal Plate Guard Fence (Beam Type)	Lin. Ft.	2,475											2,475	2,475
76x	Barrier Fence with Metal Posts	Lin. Ft.	9,500						75					9,575	9,575
78a	Chain Link Wire Mesh Fence	Lin. Ft.	10,465											10,465	10,465
80c	Sheet Copper (32oz.)	Lb.		52	16						191		600	1,620	1,620
84a	Concrete Curb (Type II)	Lin. Ft.	8,516											8,516	8,516
84cx	Concrete Combination Curb and Gutter (Type III)	Lin. Ft.	2,009											2,009	2,009
84dx	Concrete Combination Curb and Gutter (Type II)	Lin. Ft.	14,226											14,226	14,226
84b	Concrete Gutter (4')	Lin. Ft.										2,577	1,940	4,517	4,517
												76		76	76

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(1)	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+14.48	341+14.48 BK.	100.00	5,353.33	360.00	2,387.50	161.16	1,072.91	76.59	533.33	213.33	44.44	11.11	0.6	50.00	1.85	
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+54.00	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	342.01	81.45	20.36	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	1.36	
FLARE RAMP TAPER	351+25.22	352+00.22	75.00	3,062.50	202.72	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	185.13	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	46.78	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	14.76	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	178.89	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	60.67	16.47	4.17	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	32,702.32		13,799.36	7,249.73		20,362.60	2,176.10		109.1		79.29		
CIMARRON ST. NE #1 RAMP	0+00	3+77.82	937.17	VARIABLE	1,921.21	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	1,718.68	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	1,400.43	VARIABLE	721.90	VARIABLE	1,887.50	VARIABLE	327.36	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	818.63	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	3,291.48	VARIABLE	1,603.48	VARIABLE	803.48	VARIABLE	1,772.48	VARIABLE	185	1.0	VARIABLE	2.06	
NEVADA ST. NE #1 RAMP	0+00	13+44.88	1,344.88	VARIABLE	3,395.69	VARIABLE	1,689.85	VARIABLE	840.55	VARIABLE	2,169.05	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	10+00	25+11	1,520.66	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	10+00	25+11	1,054.47	VARIABLE	3,778.53	VARIABLE	1,797.02	VARIABLE	1,173.12	VARIABLE	2,271.82	VARIABLE	168.00	8.4	VARIABLE	17.17	
TEJON ST.			295	VARIABLE	40.5	VARIABLE	20.30	VARIABLE	20.30	VARIABLE	343.90	VARIABLE	--	--	VARIABLE	93	
NEVADA ST.			260	VARIABLE	89.1	VARIABLE	44.60	VARIABLE	317.53	VARIABLE	388.50	VARIABLE	--	--	VARIABLE	63	
OUTER HIGHWAY (WALNUT ST.)	261+	268+	270	VARIABLE	947.70	VARIABLE	6,345.00	VARIABLE	428.29	VARIABLE	1,320.00	VARIABLE	528.00	--	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	0+00	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	0+00	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-DF)	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+27.36	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-DE)	0+64.34	1+90.22	112	--	--	--	--	--	47.00	423.11	42.31*	--	--	--	--	--	
CIMARRON ST. (STR. NO. 1-17-DE)	10+00.09	11+25.90	125	--	--	--	--	--	86.00	778.78	77.78*	--	--	--	--	--	
CIMARRON ST. (STR. NO. 1-17-DI)	22+37.15	25+25.15	288	--	--	--	--	--	282.00	2,560.00	256.00*	--	--	--	--	--	

● THICKNESS OF SUB-BASE 13" BASED ON DESIGN CURVE "E"  
 \* USE RC (PRIME) ON BRIDGE DECKS.

TABULATION OF CURBS AND GUTTERS

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.	LIN. FT.				LIN. FT.	LIN. FT.			LIN. FT.
MAIN LINE, Left Control Line	268+44	274+53	609									
	277+62	281+70	408									
	284+00	287+75	375			2,574						
	298+75	328+48										
	324+48	331+00	651									
	331+48	337+64	556									
	338+70	343+10	440									
	344+79	348+14	335									
	351+24	356+99	575									
	357+41	359+36	150	154								
	359+36	360+90		375								
	362+25	366+00										
	Right Control Line	268+40	274+33	593								
		277+40	278+06	66								
		279+10	283+23	413								
	284+08	293+25	917			1,529						
	329+00	332+75										
	334+29	336+54			225							
	341+80	343+80	160									
	344+79	348+16	337			1,151						
	351+24	362+75										
CIMARRON STREET RAMP	0+00	0+64	64									
	1+91	3+74	183									
	3+74	6+96	322									
	6+96	8+83	187									
	7+83	8+83										
	0+00	5+00										
	5+00	6+91	191									
	6+91	6+63	440									
	0+00	3+19	319									
	3+19	11+85	242									
	11+85	2+66	100									
	11+20	11+20	100									
	0+00	7+46	746									
	0+00	1+92										
	5+72	6+72										
TEJON STREET RAMP	1+07	3+97	290									
	3+97	8+25	428									
	11+00	13+51	151									
	0+88	3+97	309									
	11+28	6+30	233									
	11+28	12+28	100									
	0+00	9+55	955									
	1+80	1+80	100									
	3+50	9+11	561									
	0+00	2+25	225									
	2+25	13+46	1121									
	1+35	2+35	100									
	0+00	9+66	966									
	0+00	9+88	988									
	5+48	5+48	548									
0+00	5+62	562										
NEVADA AVE. RAMP	0+00	3+57	357									
	3+52	6+111	259									
	1+05	2+05	100									
	5+50	7+93	243									
	7+93	12+90	497									
	0+00	10+14	1,014									
	0+50	7+50	700									
	8+90	9+90	100									
	11+25	14+70										
	15+07	16+79										
	17+18	20+79										
	21+41	22+29										
	14+35	14+60	75									
	14+83	17+06	323									
	17+45	18+05	145									
18+50	21+23	773										
21+50	22+50	750										
TEJON STREET, West Side												
TEJON STREET, East Side												
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										
FROM CURB RETURN COLUMN			10		126				80			
TOTALS			12,514	7,753	2,009	5,290						
NON-FEDERAL AID												
CIMARRON STREET, Median	0+40	10+00										
FROM CURB RETURN COLUMN					1,020					20		
TOTAL (NON-FEDERAL AID)					1,040							

● 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	F.L. ELEVATION		FLAP END SECTION	LINE			
		I-A	I-B		RIM	INVERT					IN	OUT	FROM	TO
A	STA. 262+30	100' RT. OF R.C.L.L.					250							MANHOLE IN PLACE PLUG MANHOLE
B	264+00	10' RT. OF R.C.L.L.					400							PLUG MANHOLE
C	264+70	90' RT. OF R.C.L.L.					570							PLUG MANHOLE
D	267+10	15' LT. OF R.C.L.L.		8.1 APPROX.										MANHOLE IN PLACE
E	269+00	85' RT. OF R.C.L.L.		5.10	43.90									PLUG MANHOLE
F	271+60	5' LT. OF L.C.L.L.		7.70	46.56									PLUG MANHOLE
G	271+65	50' LT. OF L.C.L.L.												MANHOLE IN PLACE
H	272+65	90' RT. OF R.C.L.L.		8.40	45.00			45.00						PLUG MANHOLE
I	272+70	130' RT. OF R.C.L.L.		6.70	45.20									PLUG MANHOLE
J	272+80	75' LT. OF L.C.L.L.		9.48	43.30									PLUG MANHOLE
K	274+35	90' LT. OF L.C.L.L.		7.52	41.75									MANHOLE IN PLACE
L	274+75	110' LT. OF L.C.L.L.			45.00									MANHOLE IN PLACE
M	275+25	150' LT. OF L.C.L.L.			42.50			42.50						PLUG MANHOLE
N	275+70	200' LT. OF L.C.L.L.			37.51			37.51						MANHOLE IN PLACE
TOTALS														
NON-FEDERAL AID														
D	STA. 26+40	100' RT. R.C.L.L.			36.57									MANHOLE IN PLACE
F	27+10	285' RT. R.C.L.L.			36.53									MANHOLE IN PLACE
Q	28+10	70' RT. R.C.L.L.		10.10	41.16									MANHOLE WILL BE COVERED BY FILL
R	28+40	70' RT. R.C.L.L.			41.57									MANHOLE IN PLACE
T	30+30	R.C.L.L.			49.70									MANHOLE IN PLACE
U	30+90	50' RT. R.C.L.L.		10.45	49.07			49.07						MANHOLE IN PLACE
V	33+55	50' RT. R.C.L.L.		14.07	57.17			57.17						MANHOLE IN PLACE
W	34+50	"			51.70									MANHOLE IN PLACE
X	37+25	"		9.00	63.97			63.97						MANHOLE IN PLACE
TOTALS, NON-FEDERAL AID														
MANHOLE ADJUSTMENT														
S	STA. 28+75	55' LT. L.C.L.L.			44.77									RAISE RING & COVER 9.5'
AA	STA. 7+00	50' LT. OF C.L.L.			43.4									RAISE RING & COVER
BB	50+7	55' LT. OF 14" E			42.3									RAISE RING & COVER

\* NON-FEDERAL AID

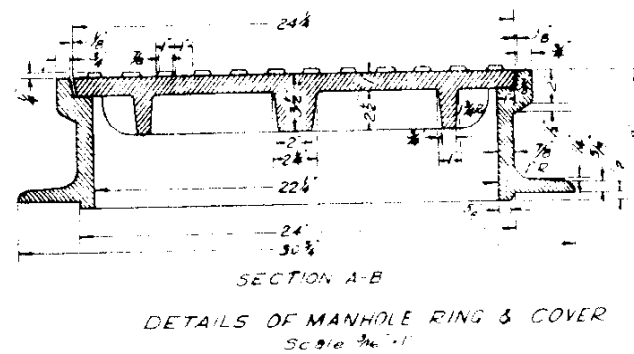
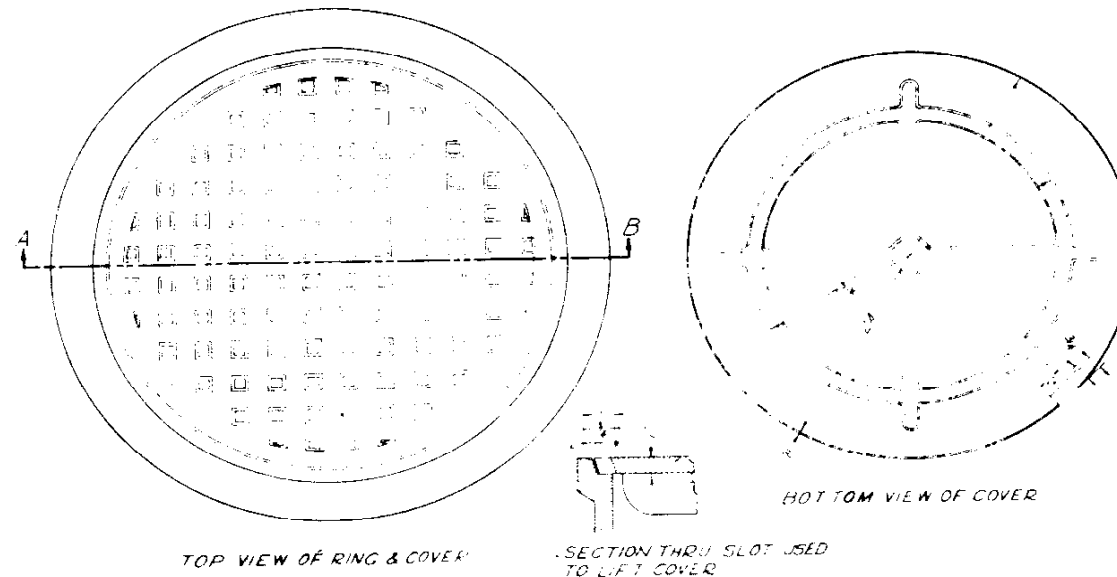
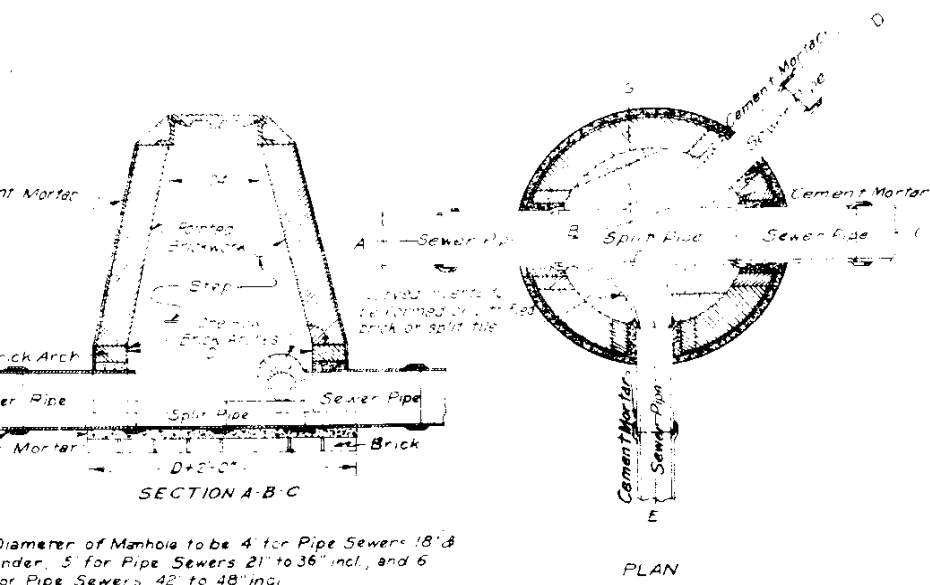
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.
9	COLORADO	1 C92-2(5)	12

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.	7,345	1,478	10,823
Cimarron Ramps	(	(	(
Tejon Ramps	2,174	(	2,174
Nevada Ramps	1,598	(	1,598
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	1,170,075	108,905	1,278,980
ESTIMATED FOR SUBSIDENCE	119,100	(	119,100
TOTALS	1,289,175	110,796	1,400,000
EQUIPMENT x FACTOR (1.20 Factor Used)			
Mainline	634,689	(	634,689
Cimarron St.	81,274	108,740	180,014
Cimarron Ramps	67,346	(	67,346
Tejon Ramps	45,810	(	45,810
Nevada Ramps	34,980	(	34,980
TOTALS	1,190,089	108,740	1,298,829
STATION YARD OVERHAUL FROM MASS DIAGRAM EST. FOR SUBSIDENCE			
	17,243,025	1,177,330	18,420,355
TOTALS	13,578,316	1,177,333	14,755,649
YARD MILE OVERHAUL FROM MASS DIAGRAM EST. FOR SUBSIDENCE			
	599,568	55,734	655,302
TOTALS	659,525	61,309	720,834

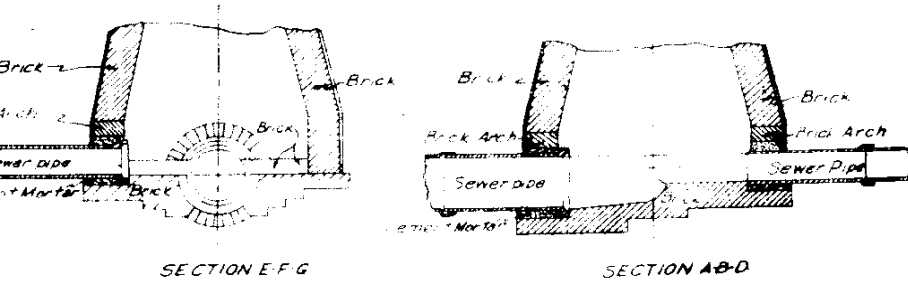
FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	13	



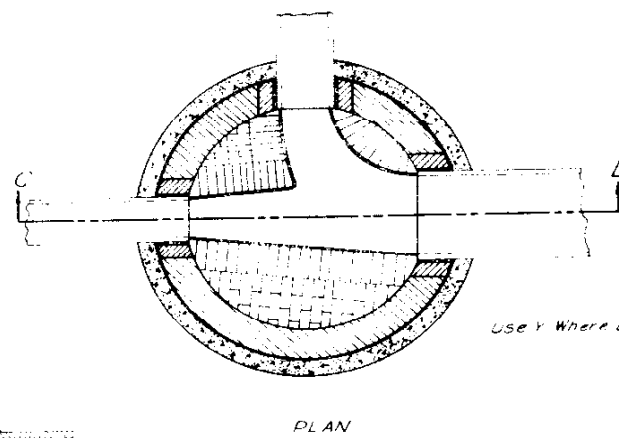
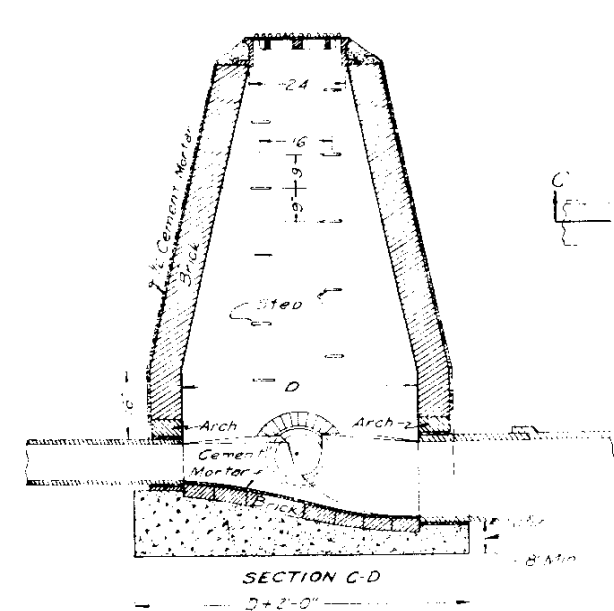
Weight - Frame Approx 224"  
 Cover Approx 176"  
 40"  
 Dipped or Painted with Asphalt  
 or Coal Tar & Oil

GENERAL NOTES

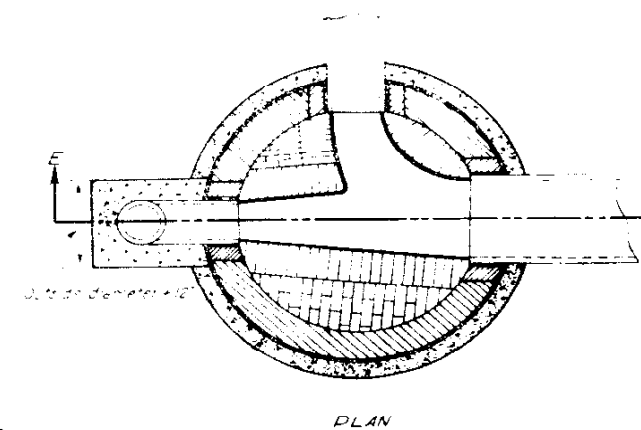
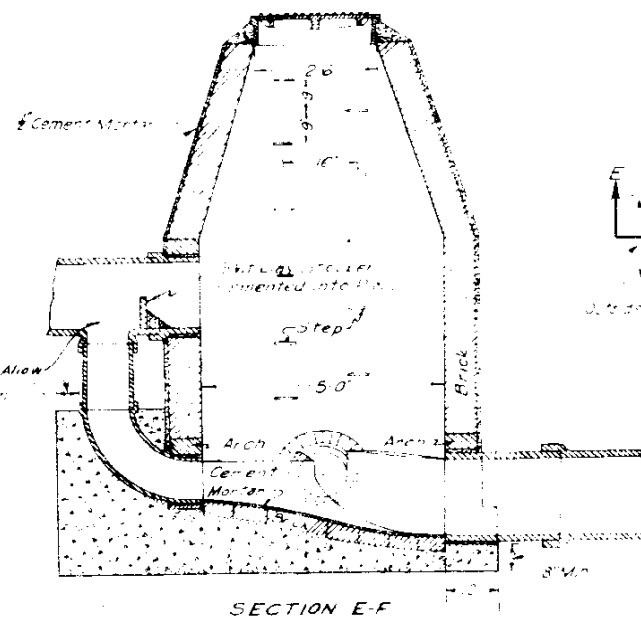
1. All dimensions are in feet and inches, unless otherwise specified.  
 2. Manhole bottoms may be cast in brick or concrete. If the latter, a thickness of 2\"/>



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



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



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

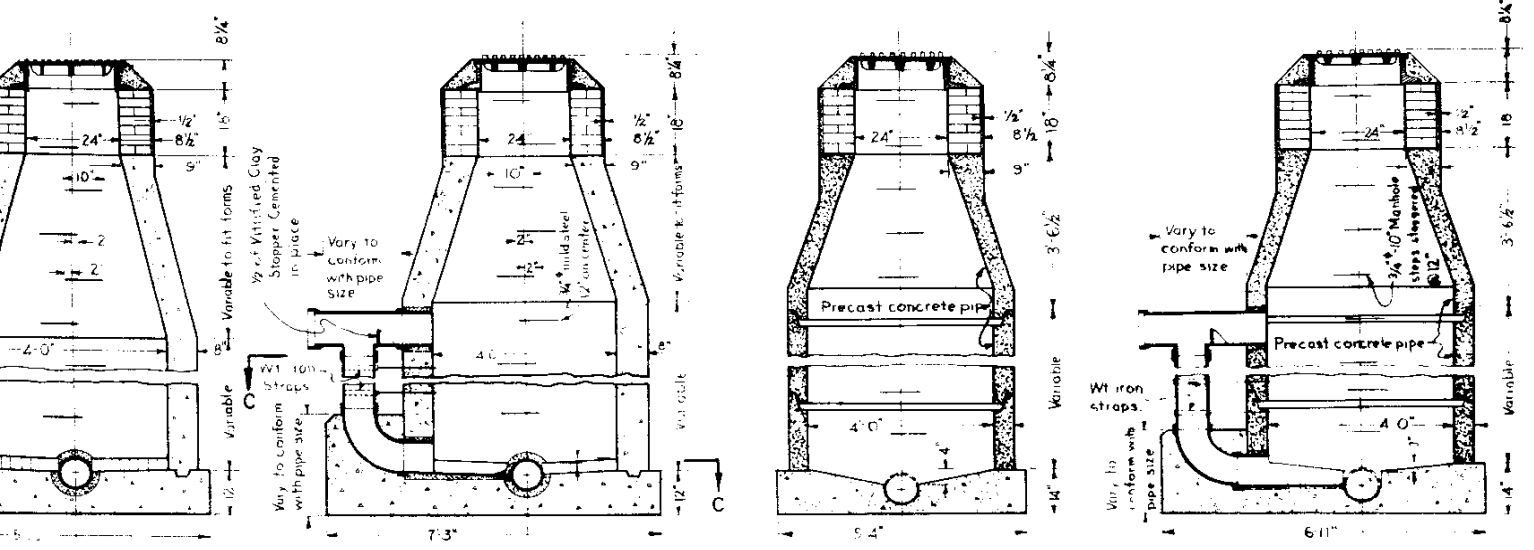
**COLORADO**  
 DEPARTMENT OF HIGHWAYS

MANHOLE DETAILS  
 TYPE I, IA, 2

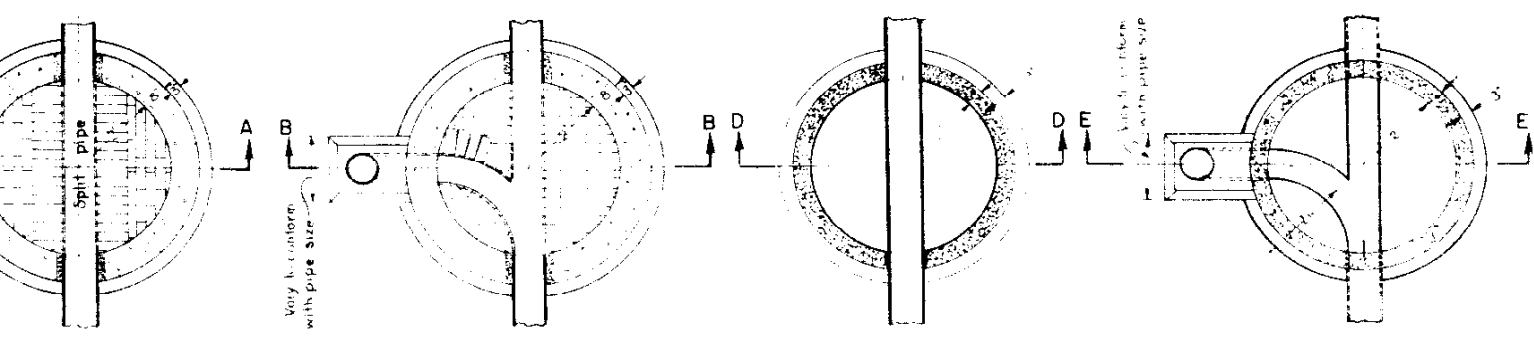
Designed by: \_\_\_\_\_  
 Made by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_

Approved by: \_\_\_\_\_  
 Date: \_\_\_\_\_

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

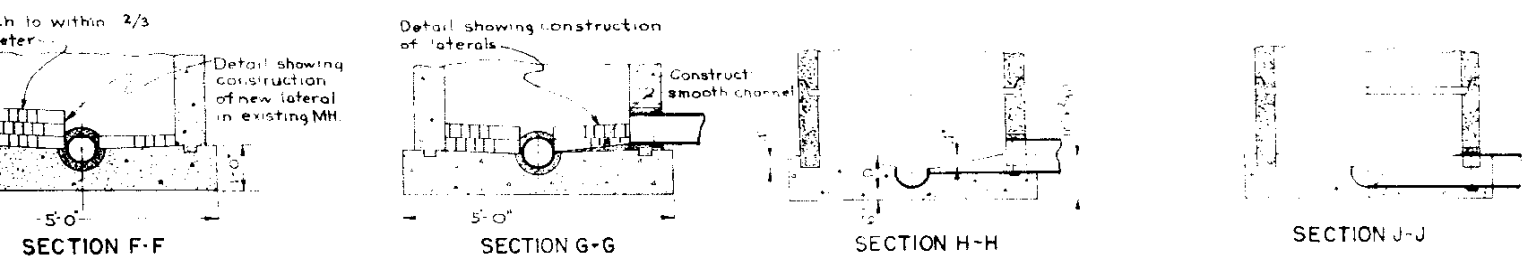


SECTION A-A      SECTION B-B      SECTION D-D      SECTION E-E

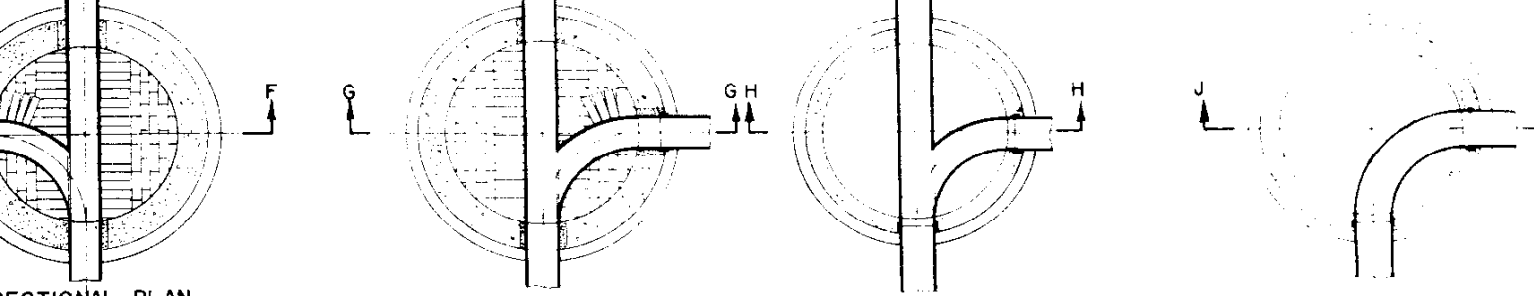


SECTIONAL PLAN      SECTION C-C      SECTIONAL PLAN      SECTIONAL PLAN

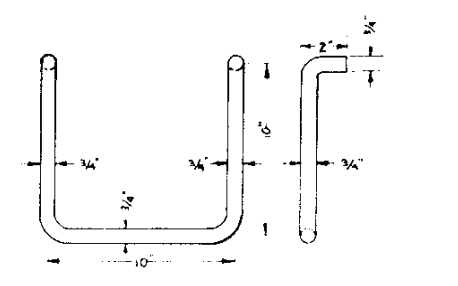
TYPE 3      TYPE 3A      TYPE 4      TYPE 4A



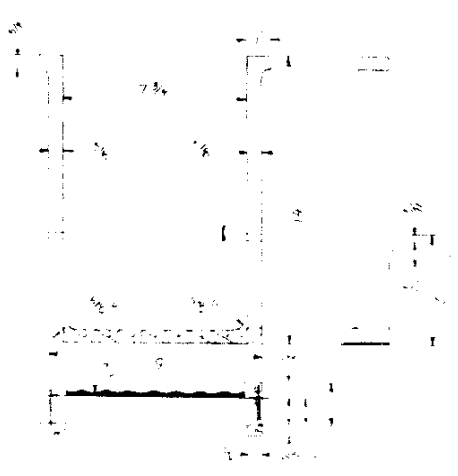
SECTION F-F      SECTION G-G      SECTION H-H      SECTION J-J



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

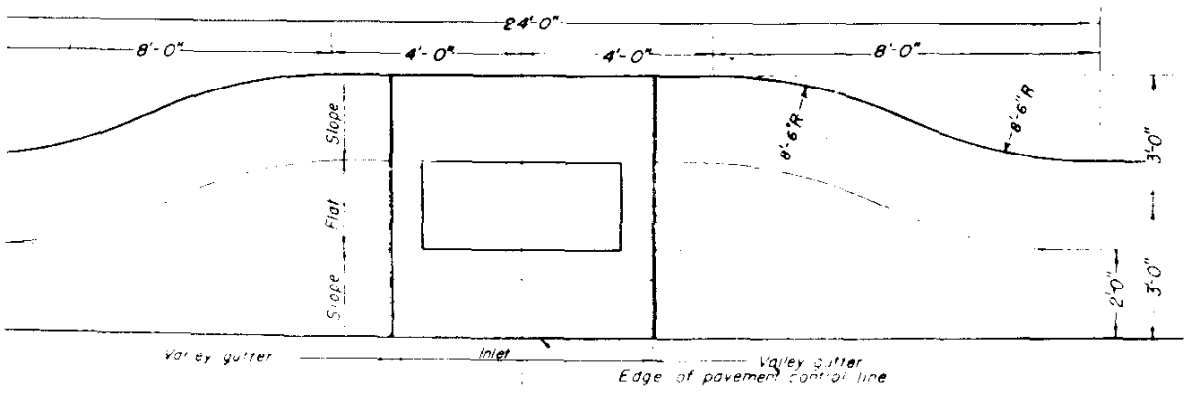
**COLORADO**  
DEPARTMENT OF HIGHWAYS

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

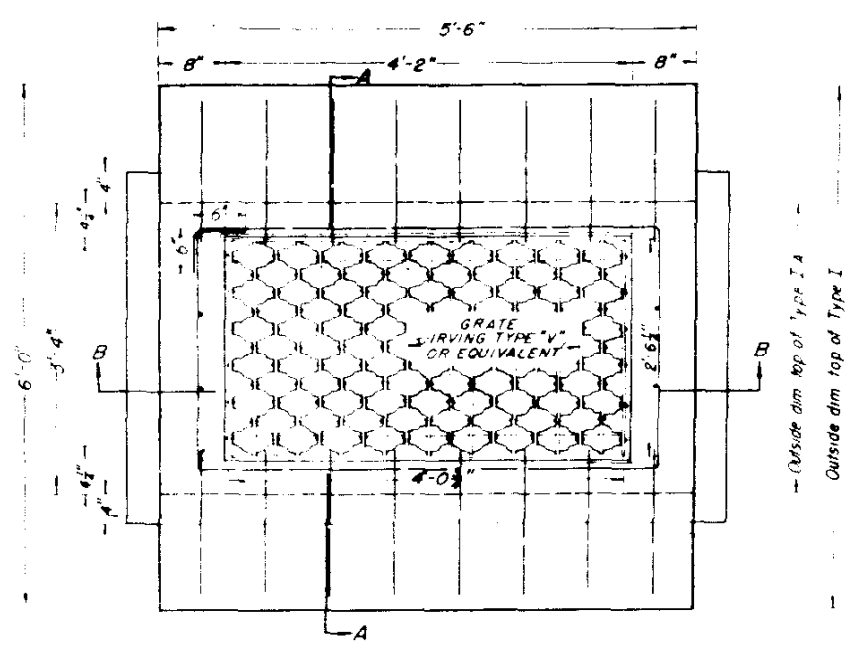
Designed by:	Approved by:
Made by:	
Checked by:	Date:

Rev 3-26-52 ELP-100 & Sub

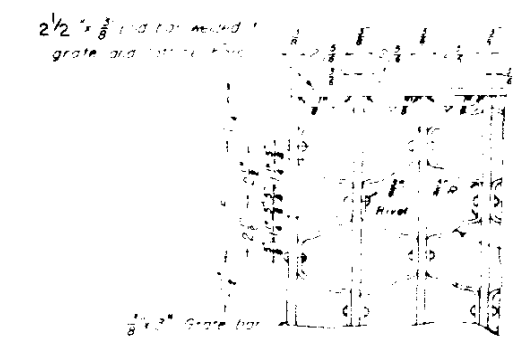
FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1 092-2(5)	15	



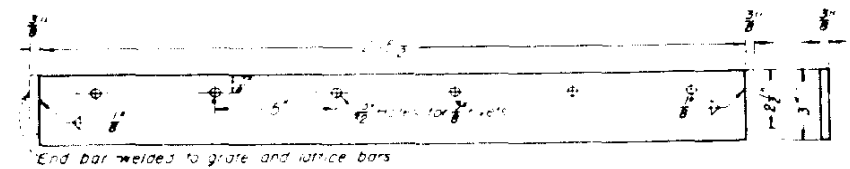
PLAN OF WIDENING OF VALLEY GUTTER AT INLETS  
Scale 1/4" = 1'-0"



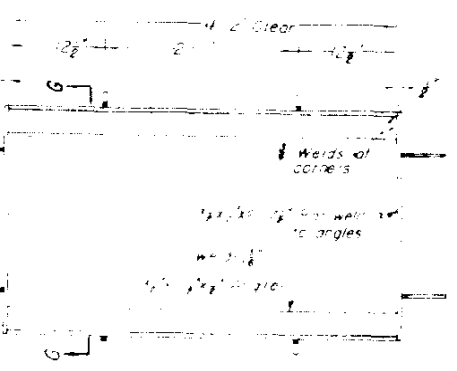
PLAN DROP INLET TYPE I  
Scale 1/4" = 1'-0"



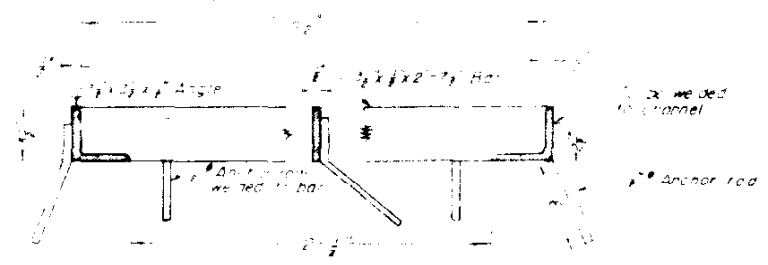
ENLARGED PLAN CORNER OF GRATE  
Scale 3/8" = 1'-0"



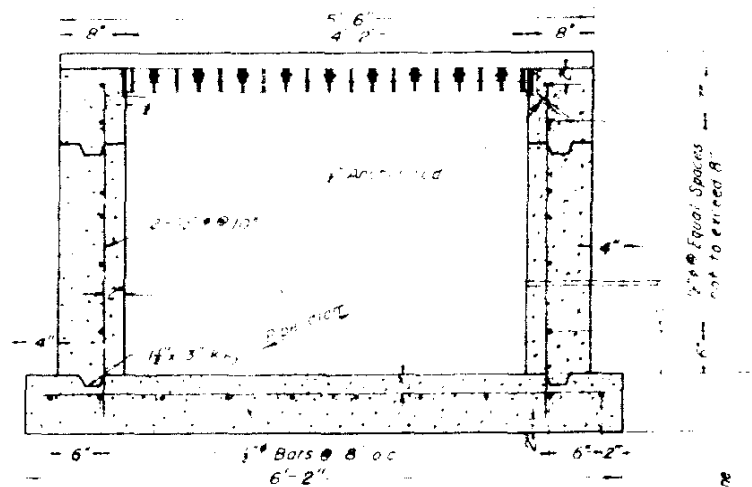
DETAIL GRATE BAR  
Scale 3/8" = 1'-0"



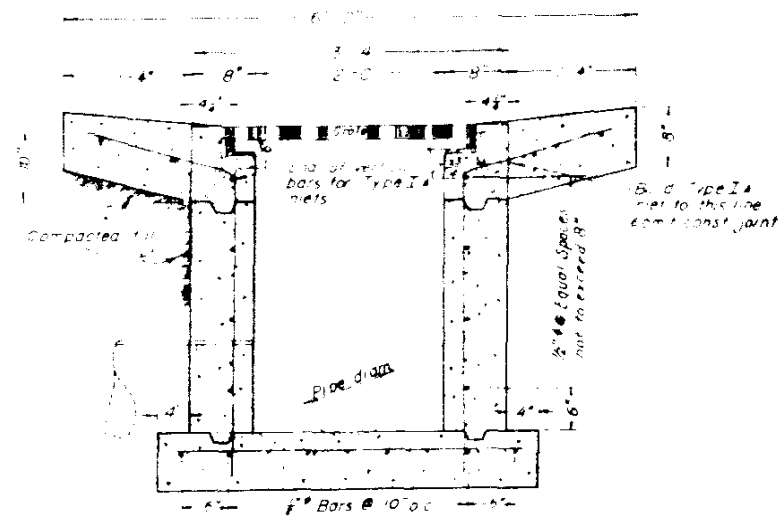
PLAN OF FRAME  
Scale 1/4" = 1'-0"



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

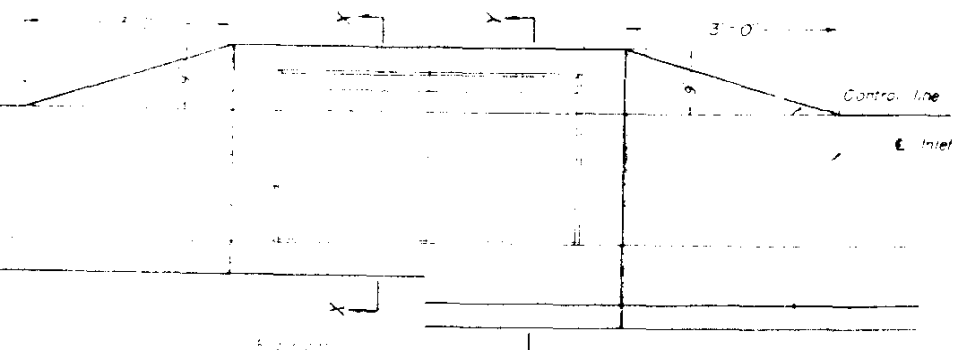


SECTION B-B  
Scale 1/4" = 1'-0"

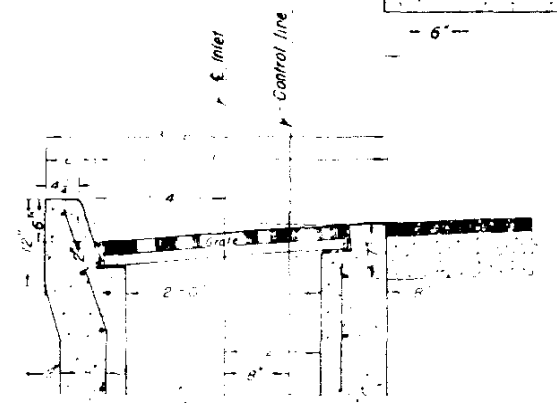


SECTION A-A  
Scale 1/4" = 1'-0"

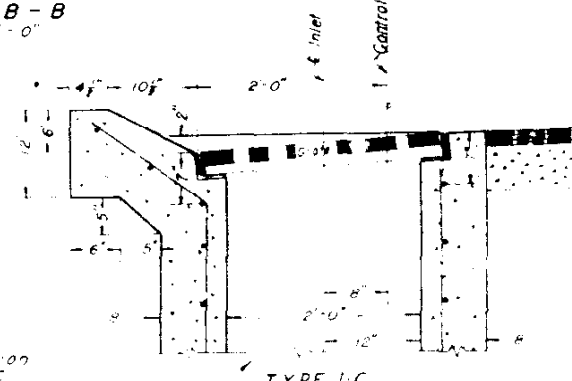
Note: DROP INLET TYPE IA IN MEDIAN STA. 334+ SHOULD BE FABRICATED OPEN BAR TYPE OF DIMENSIONS SHOWN ABOVE



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



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

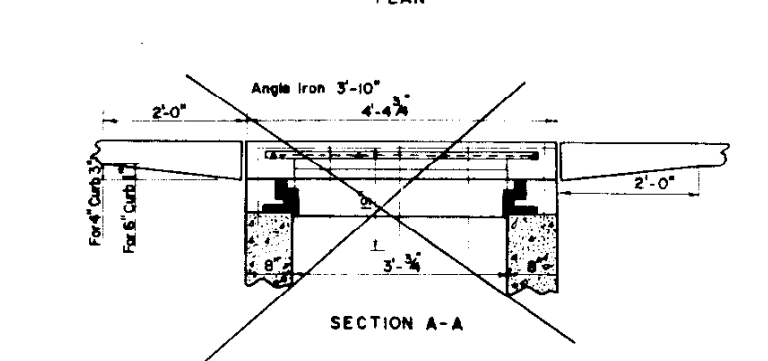
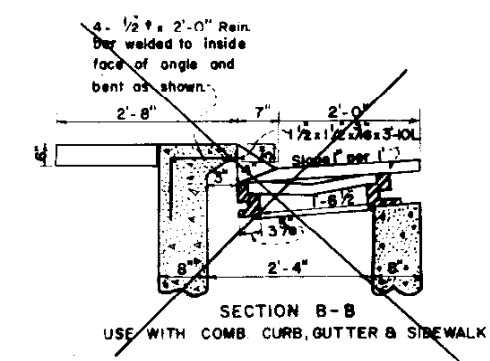
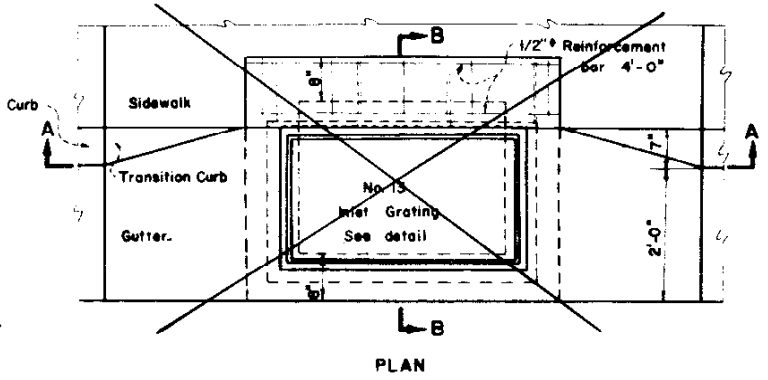
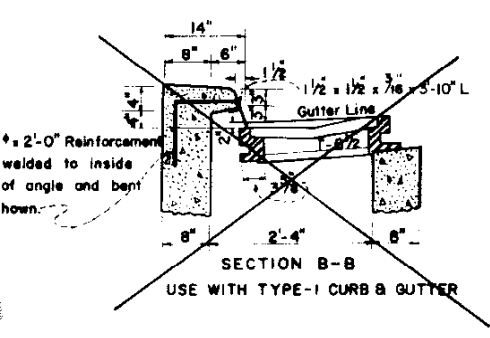


TYPE I-C SECTION Y-Y  
Scale 1/4" = 1'-0"

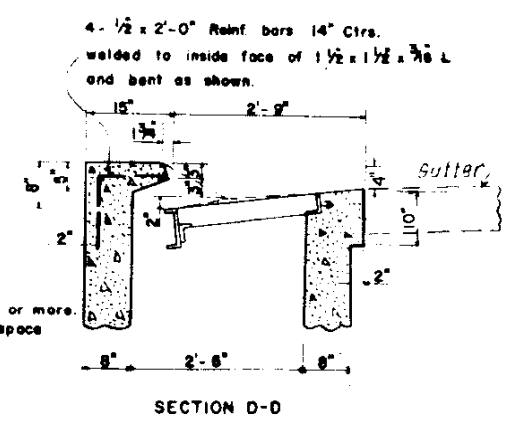
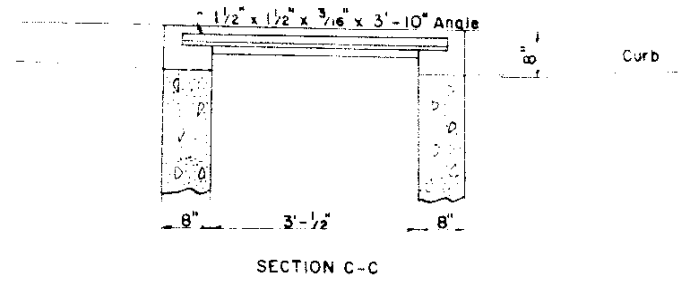
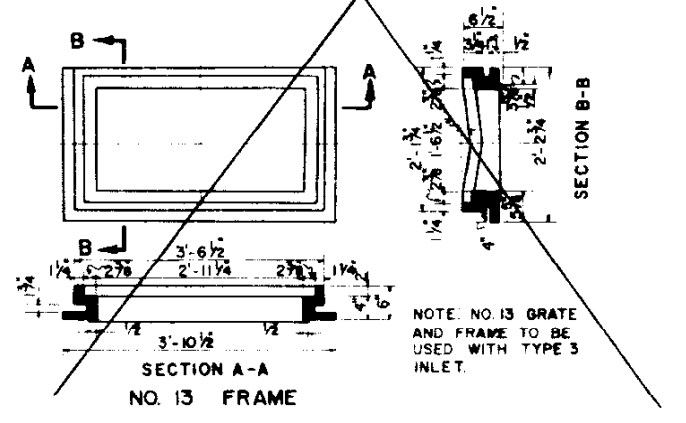
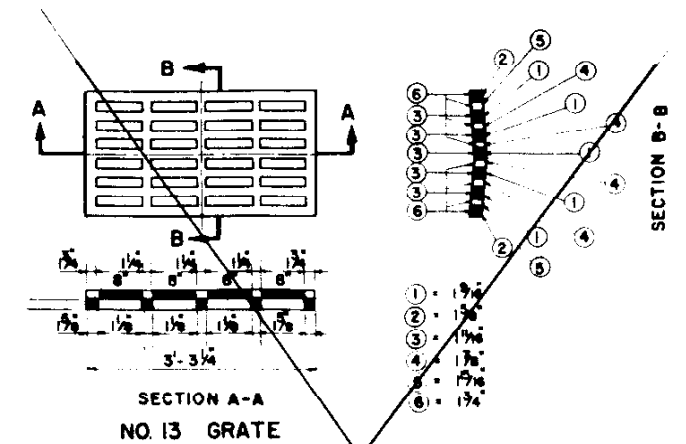
**COLORADO**  
DEPARTMENT OF HIGHWAYS

**DROP INLET DETAILS**

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

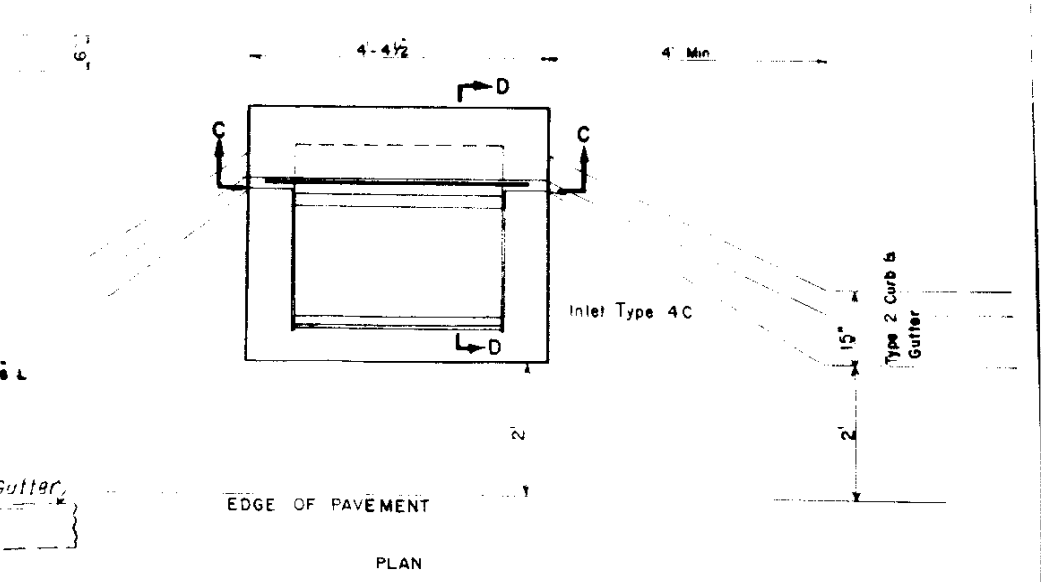
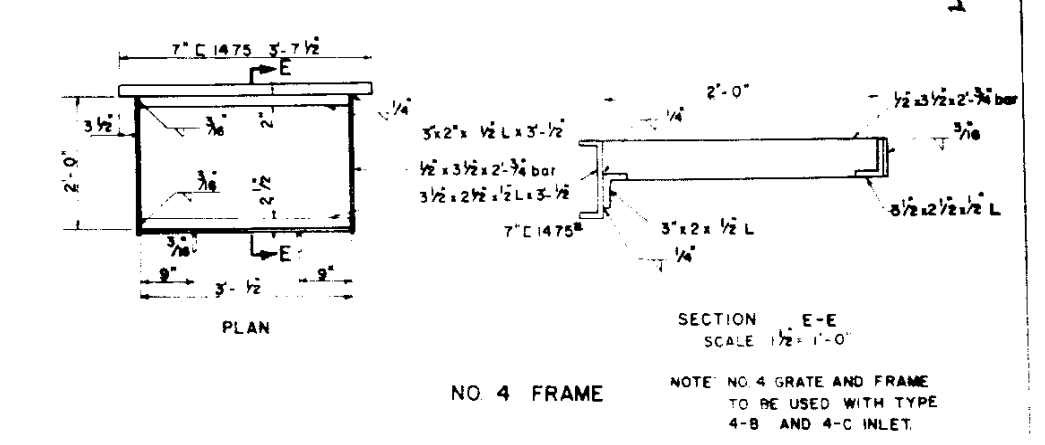
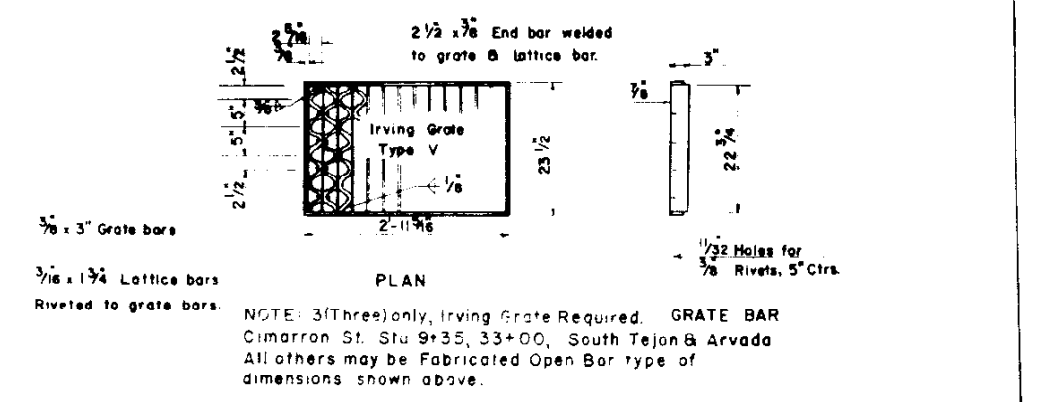


STANDARD INLET TYPE - 3



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.

INLET TYPE 4-C



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

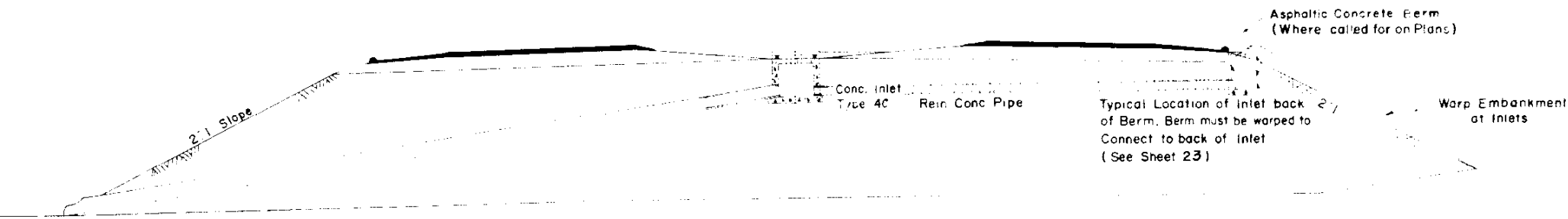
SCALE 3/4" = 1'-0" Unless otherwise noted

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

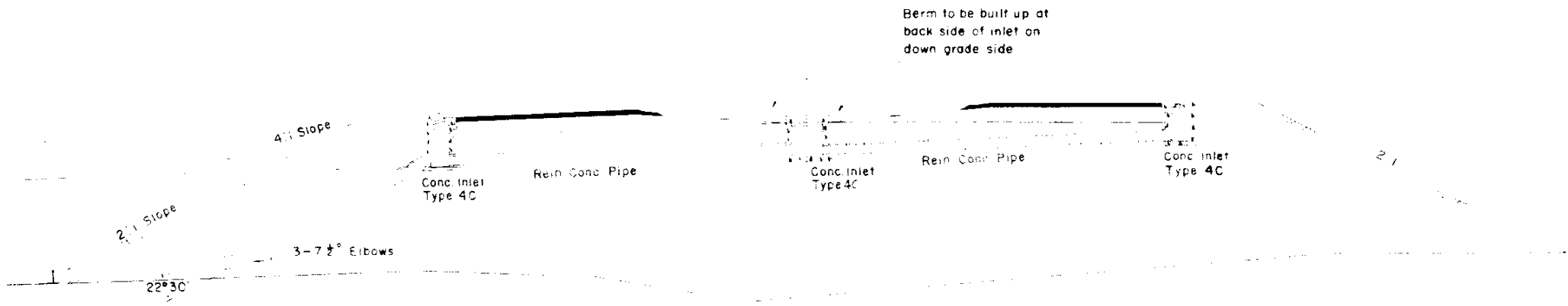
Designed by: \_\_\_\_\_ Approved by: \_\_\_\_\_  
Made by: \_\_\_\_\_ Date: \_\_\_\_\_  
Checked by: \_\_\_\_\_



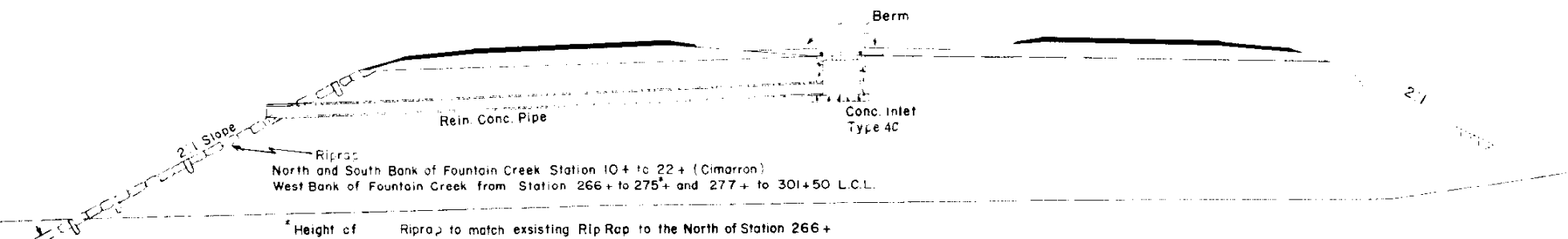
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	17	



SECTION 1



SECTION 2



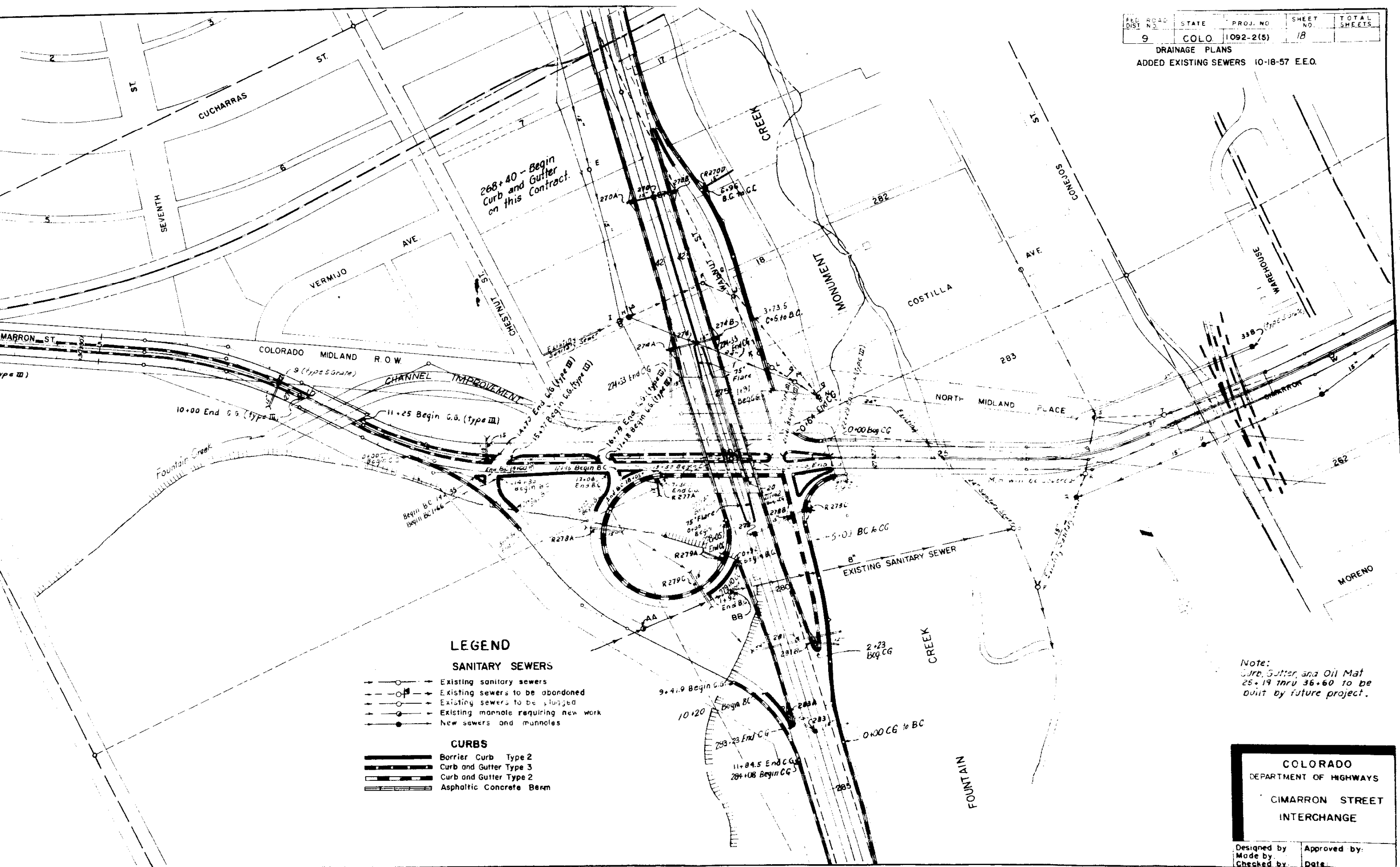
SECTION 3

**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

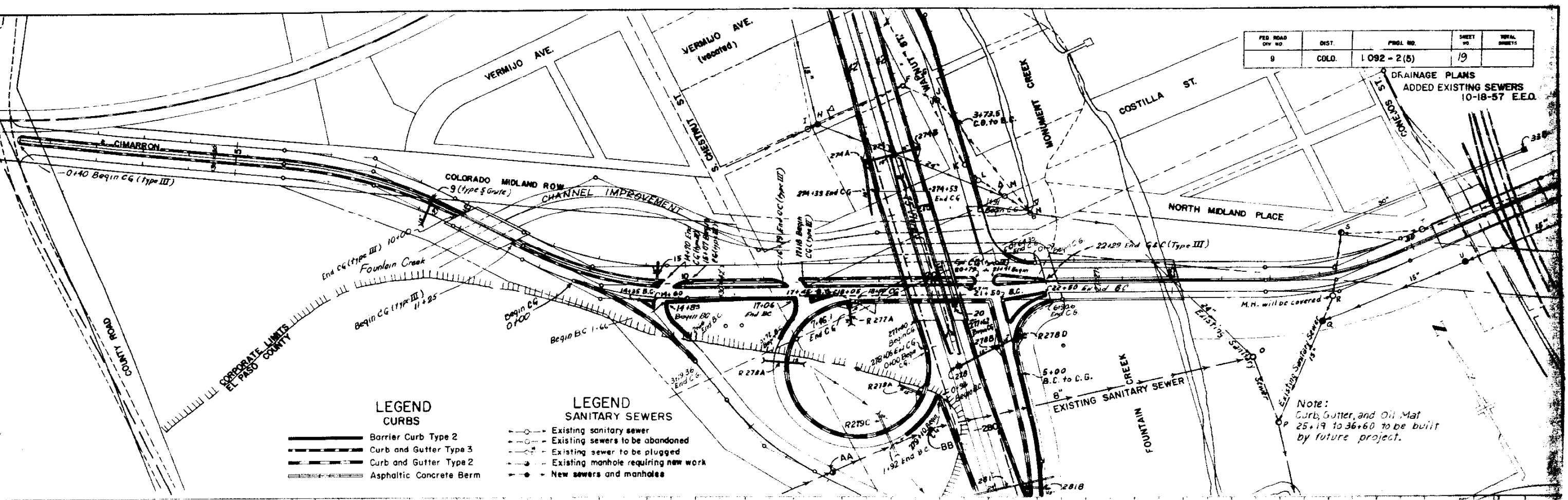
Note:  
 Curb, Gutter, and Oil Mat  
 25+19 thru 36+60 to be  
 built by future project.

**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.

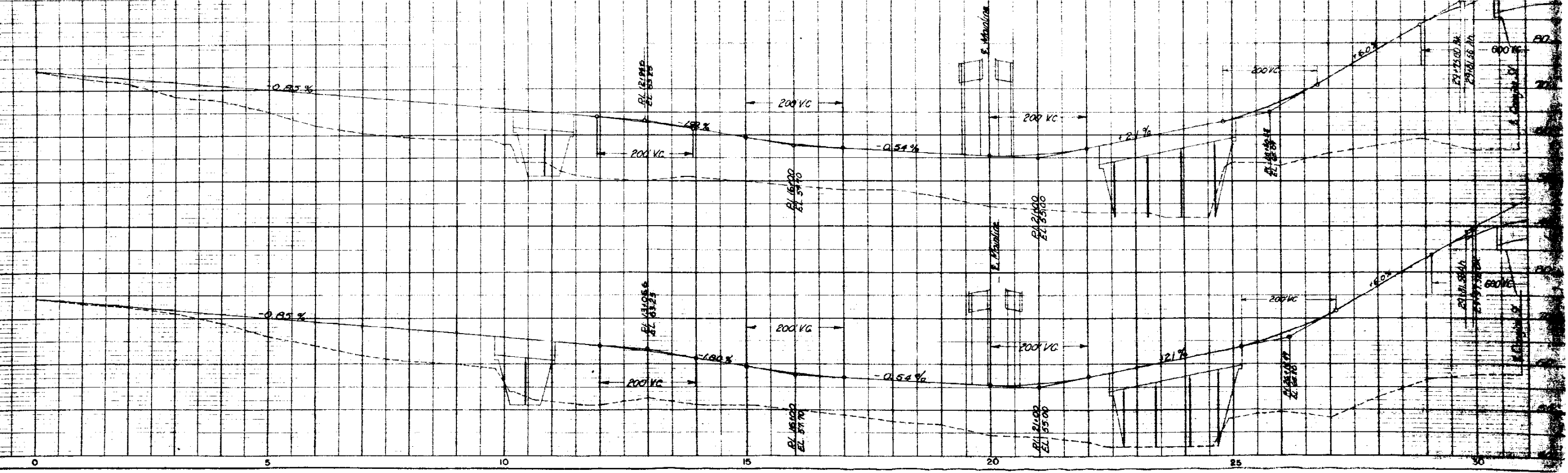


LEGEND  
CURBS

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

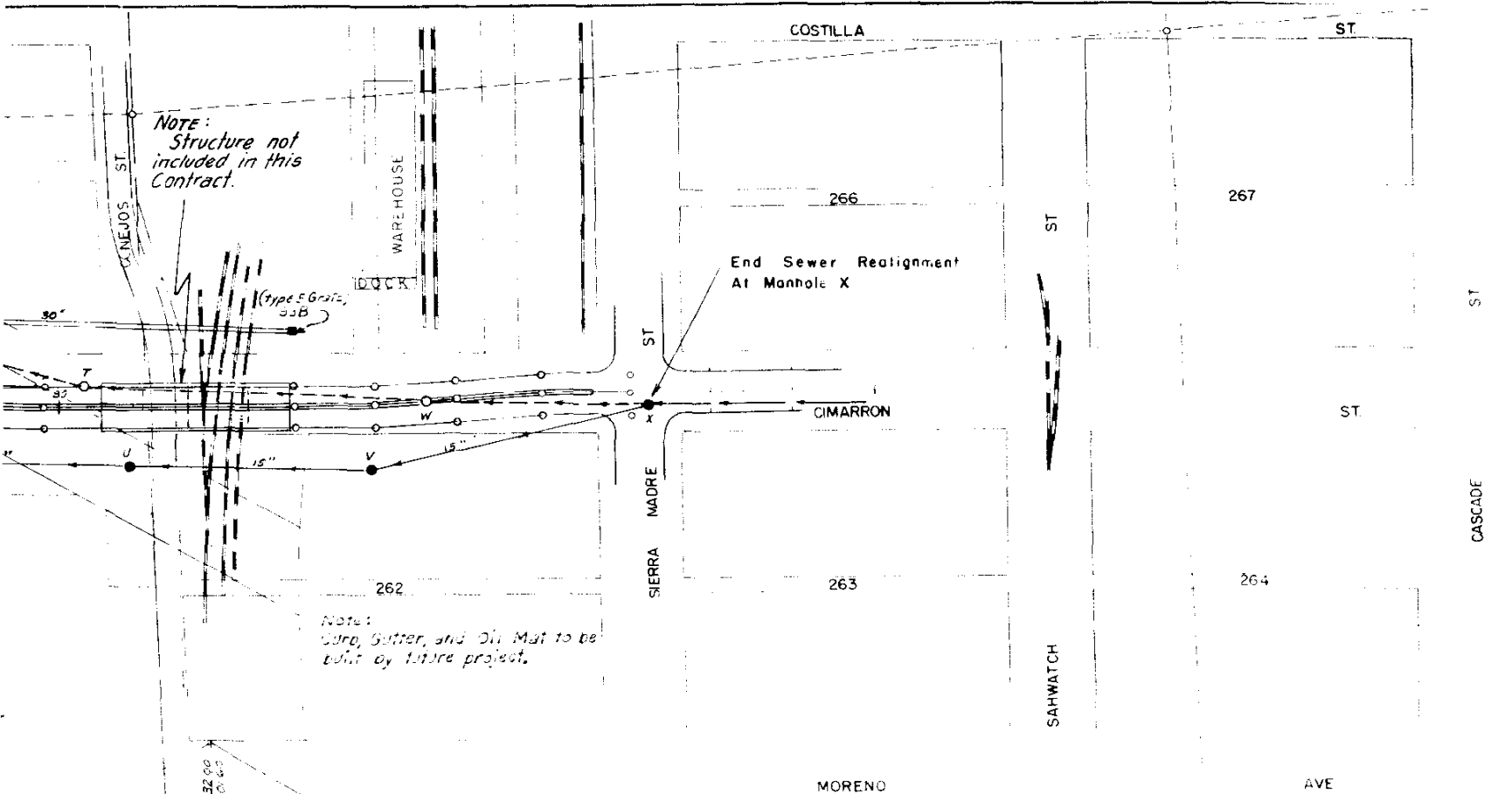
LEGEND  
SANITARY SEWERS

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



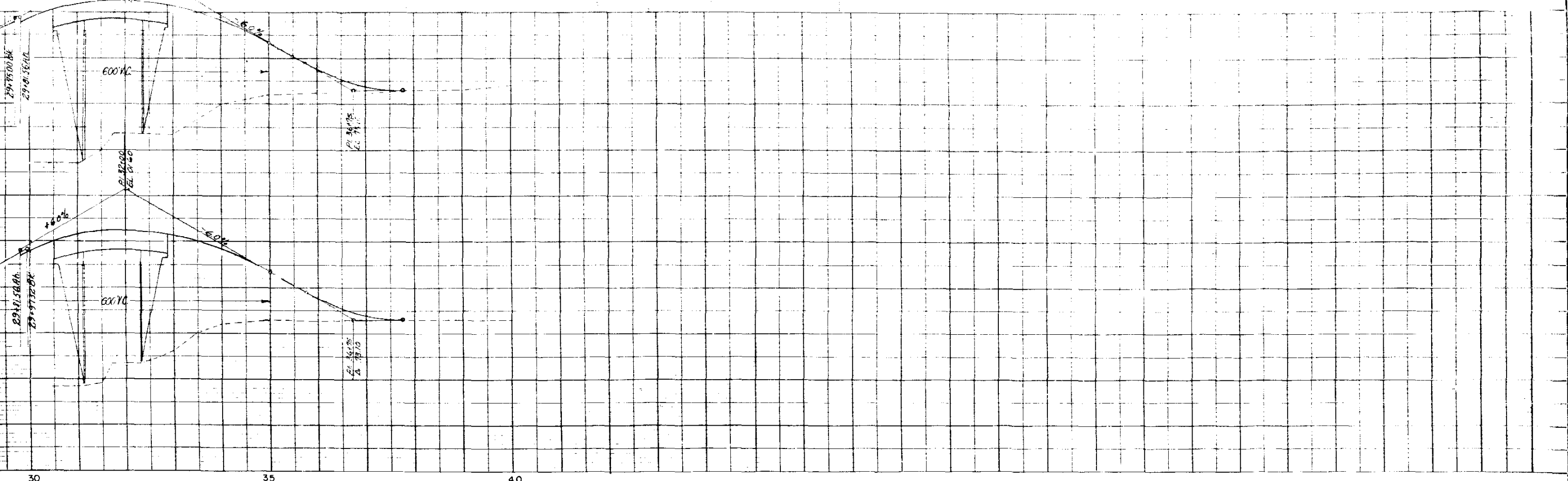
FED. ROAD DIST. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO	1 092-2(5)	20	

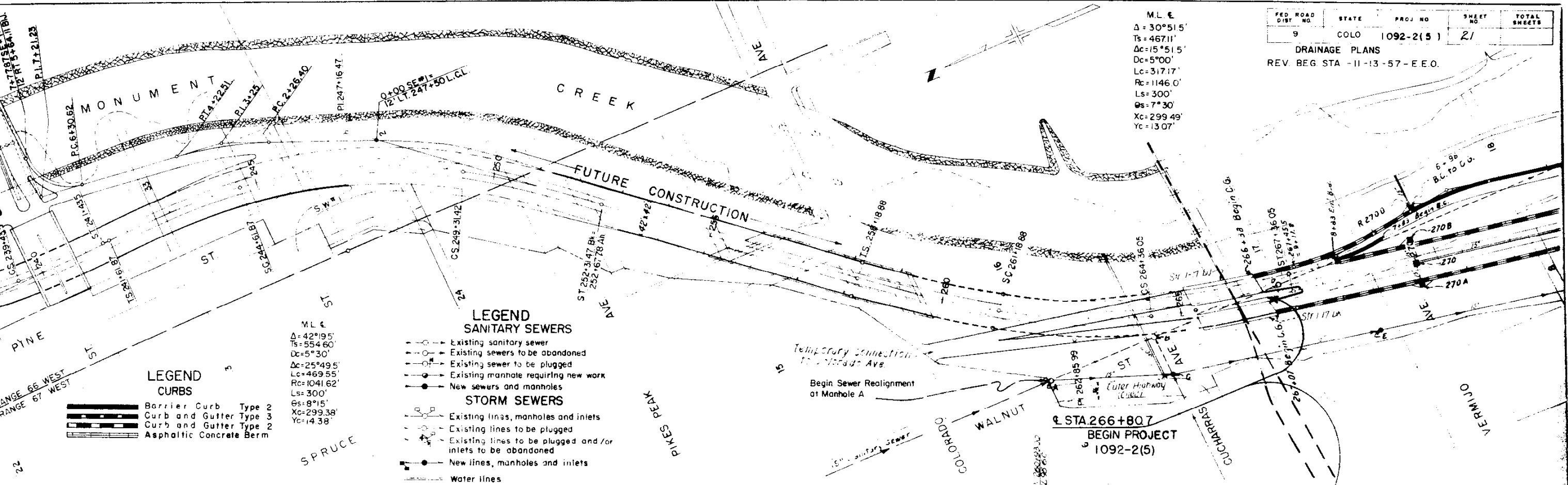
DRAINAGE PLANS



- 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





FED ROAD DIST NO.	STATE	PROJ NO.	SHEET NO.	TOTAL SHEETS
9	COLO	1092-2(5)	21	

**DRAINAGE PLANS**  
REV. BEG STA - 11-13-57-E.E.O.

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

ML  $\epsilon$

$\Delta = 42^\circ 19' 5''$

$Ts = 554.60'$

$Dc = 5^\circ 30'$

$\Delta c = 25^\circ 49' 5''$

$Lc = 469.55'$

$Rc = 1041.62'$

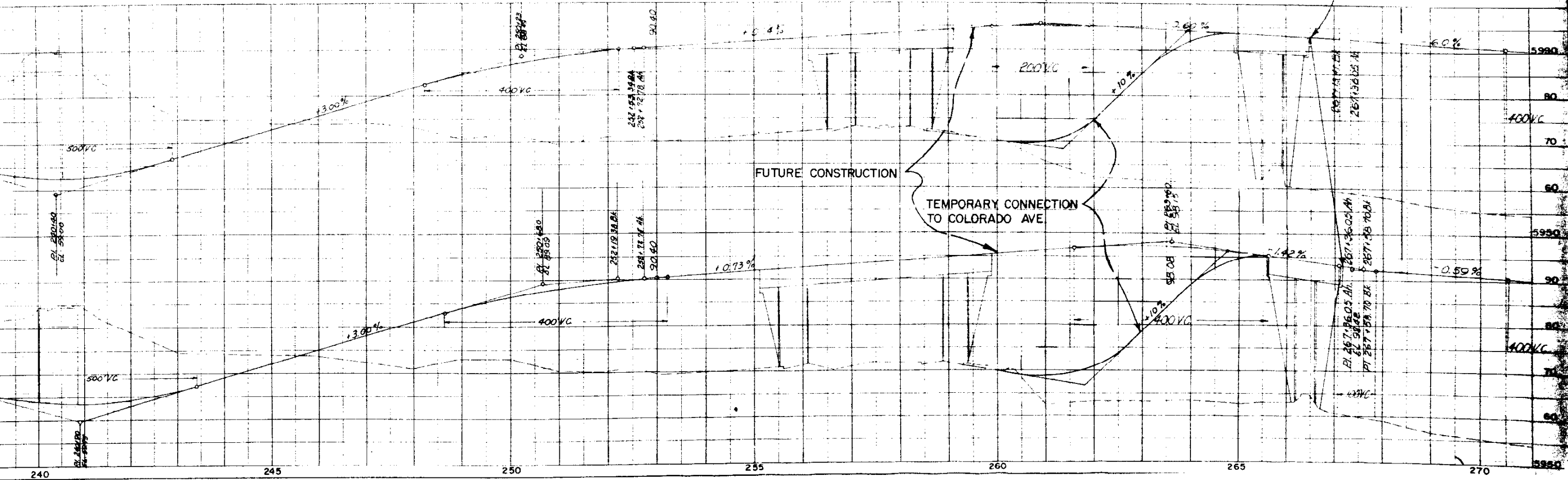
$Ls = 300'$

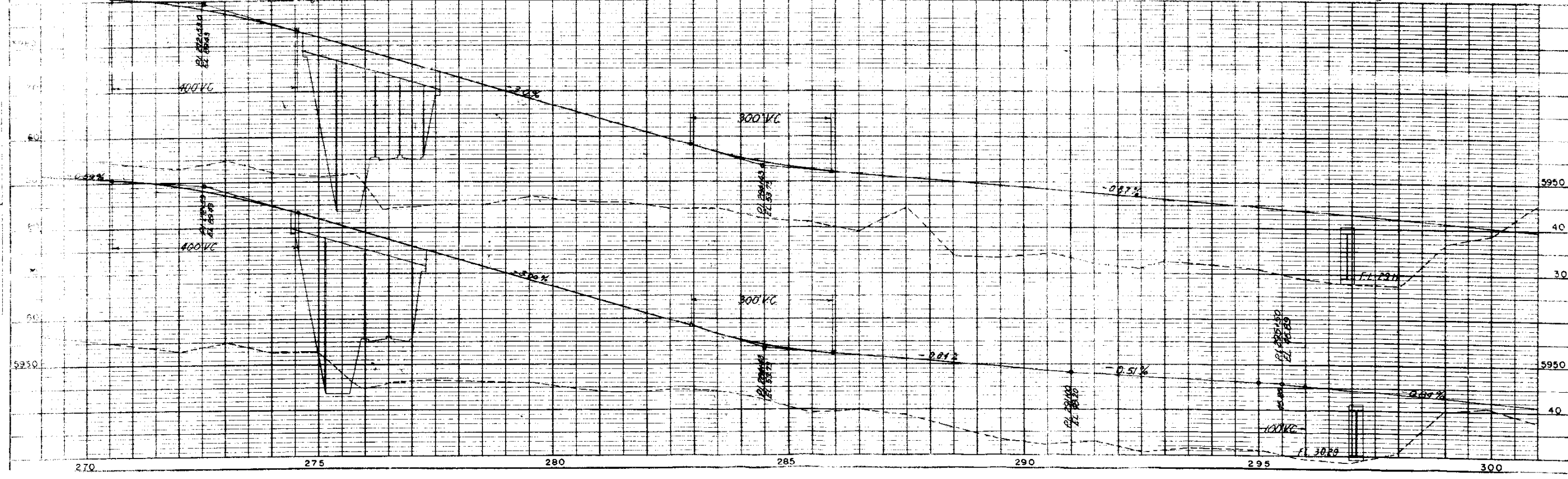
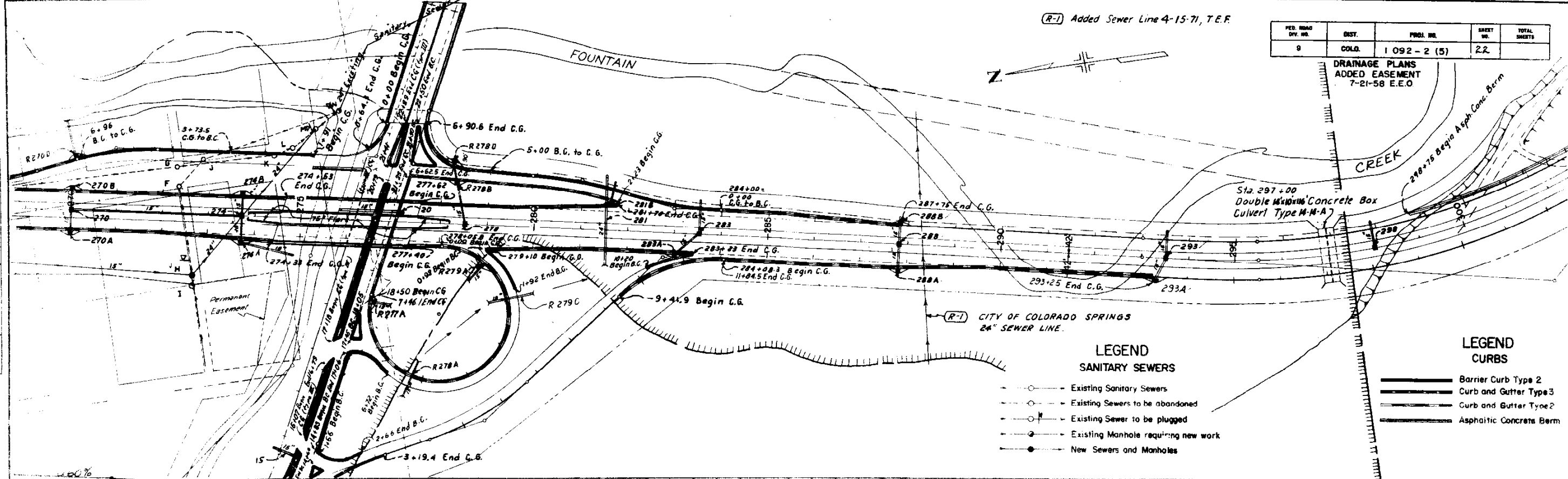
$\theta s = 8^\circ 15'$

$Xc = 299.38'$

$Yc = 14.38'$

- 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 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

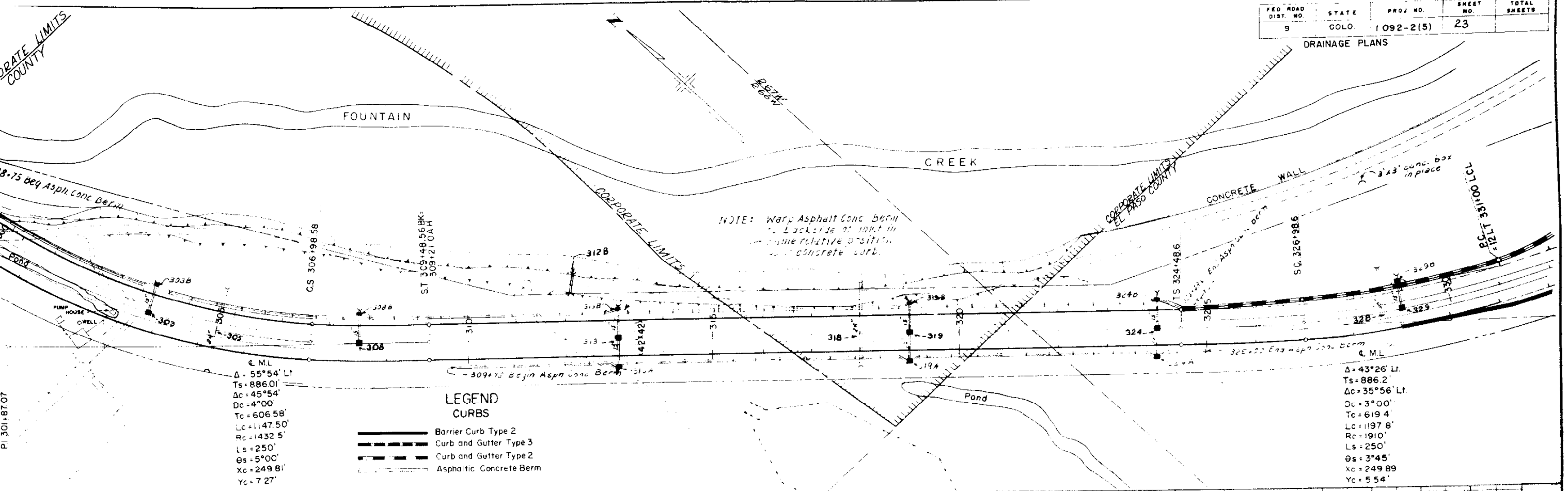




COLO. COUNTY

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

DRAINAGE PLANS

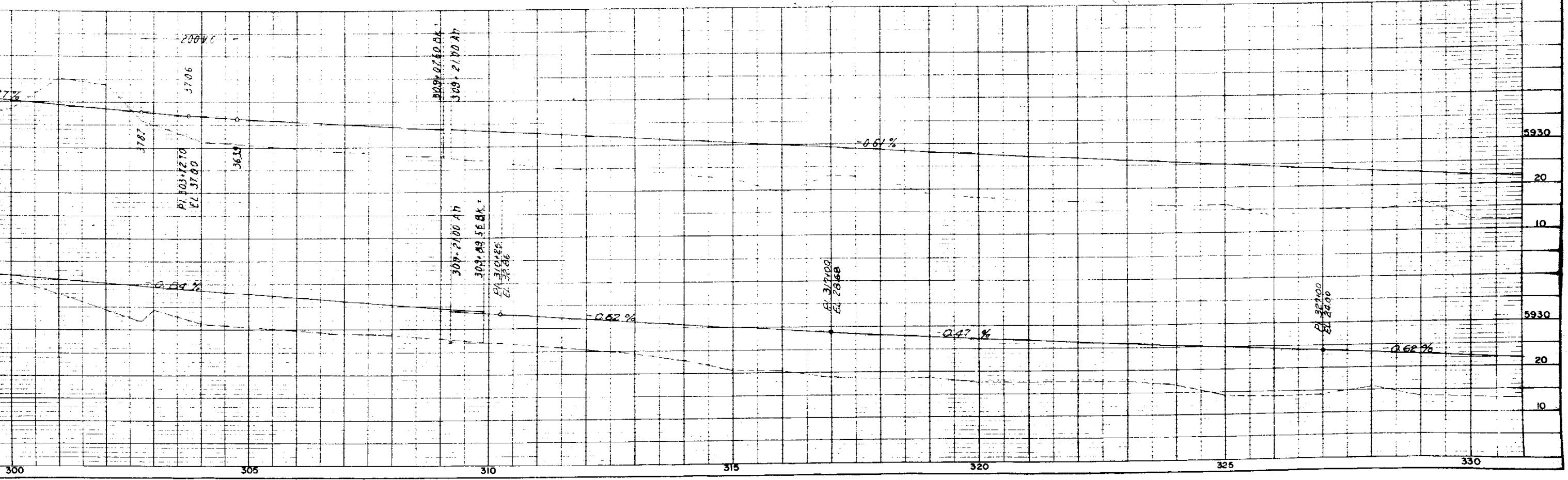


$\Delta = 55^{\circ}54' LT$   
 $Ts = 886.01'$   
 $\Delta c = 45^{\circ}54'$   
 $Dc = 4^{\circ}00'$   
 $Tc = 606.58'$   
 $Lc = 1147.50'$   
 $Rc = 1432.5'$   
 $Ls = 250'$   
 $Os = 5^{\circ}00'$   
 $Xc = 249.81'$   
 $Yc = 7.27'$

**LEGEND**  
**CURBS**  

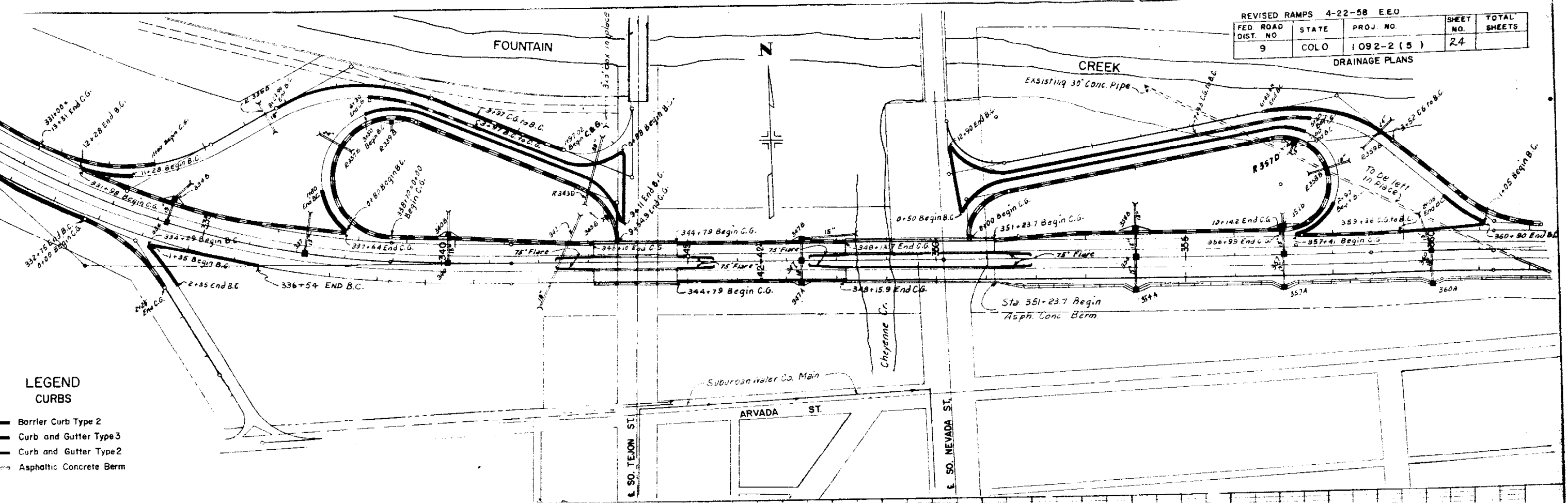
- Barrier Curb Type 2
- Curb and Gutter Type 3
- Curb and Gutter Type 2
- Asphaltic Concrete Berm

$\Delta = 43^{\circ}26' LT$   
 $Ts = 886.2'$   
 $\Delta c = 35^{\circ}56' LT$   
 $Dc = 3^{\circ}00'$   
 $Tc = 619.4'$   
 $Lc = 1197.8'$   
 $Rc = 1910'$   
 $Ls = 250'$   
 $Os = 3^{\circ}45'$   
 $Xc = 249.89'$   
 $Yc = 5.54'$

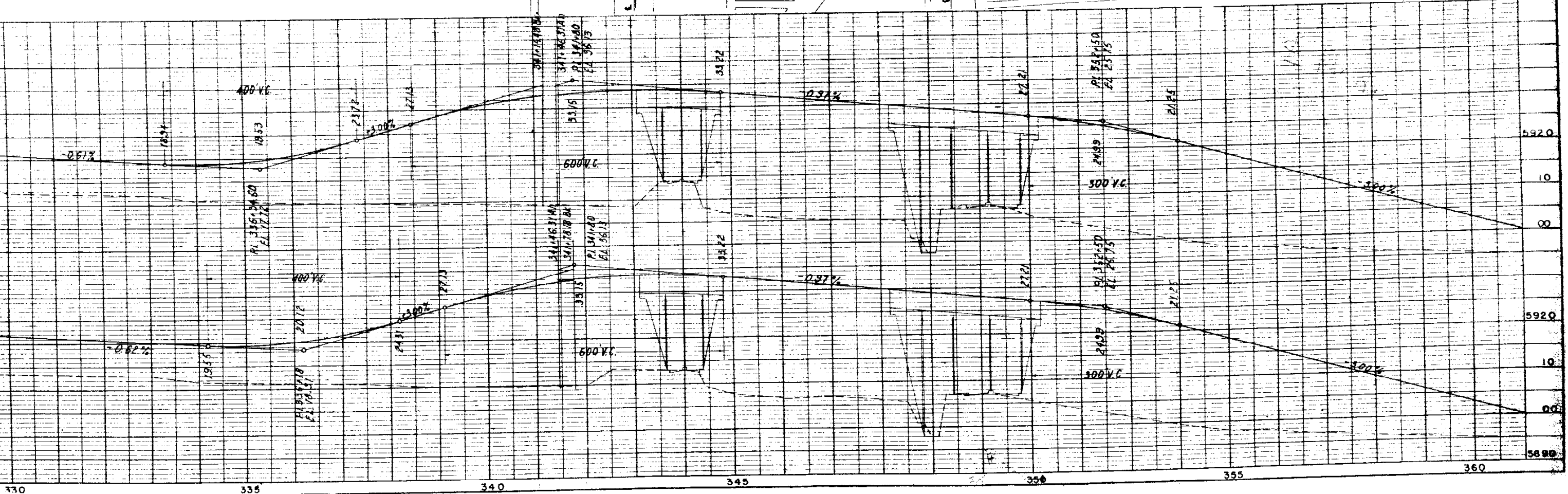


REVISED RAMPS 4-22-58 EEO			
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
9	COLO.	1092-2 (5)	24

DRAINAGE PLANS



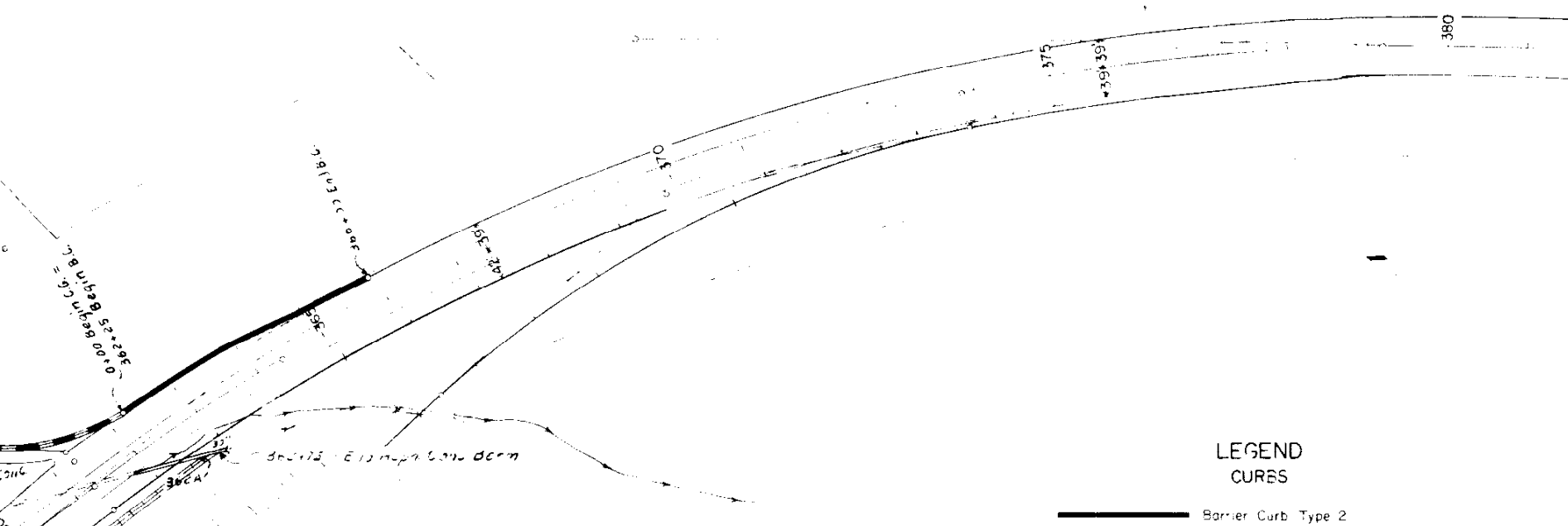
- LEGEND**
- CURBS**
- Barrier Curb Type 2
  - Curb and Gutter Type 3
  - Curb and Gutter Type 2
  - Asphaltic Concrete Berm





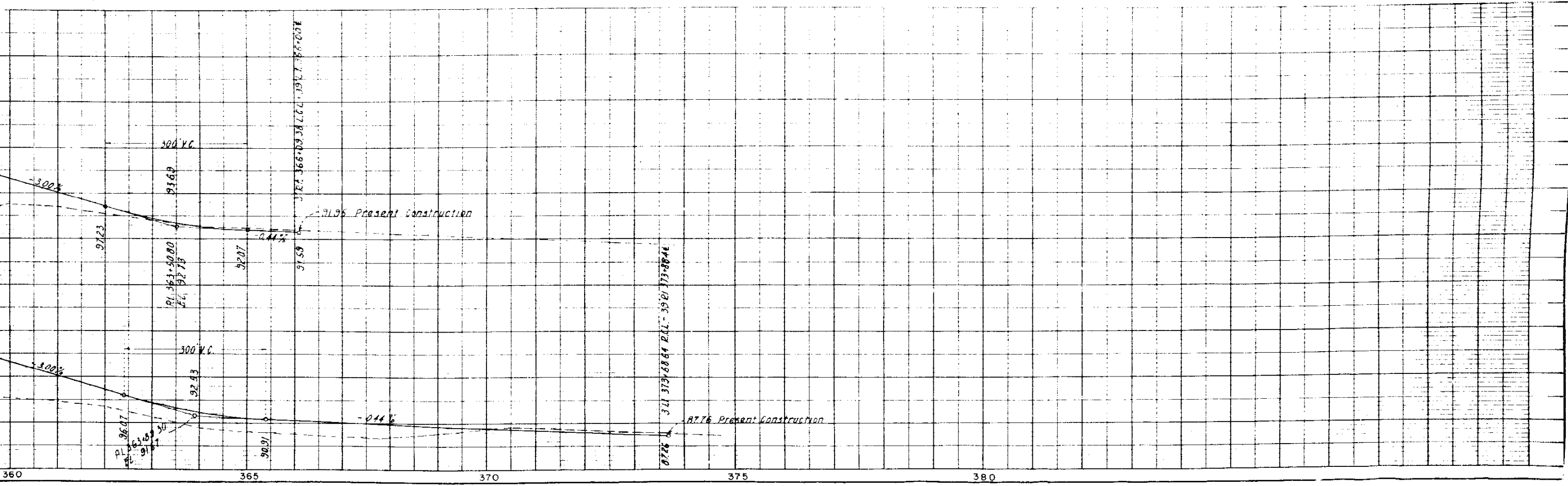
FED. ROAD DIV. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	25	

DRAINAGE PLANS

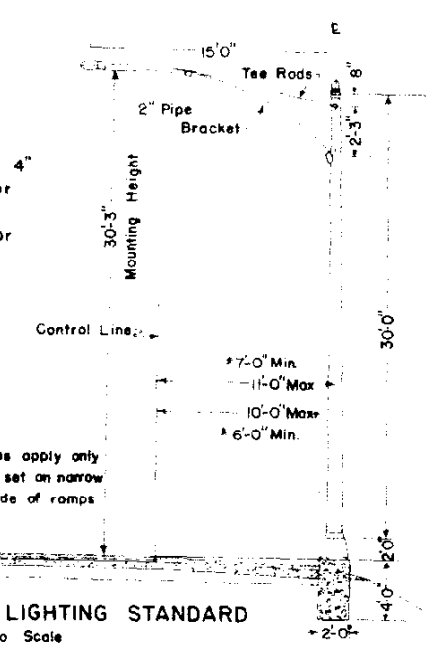


**LEGEND**  
**CURBS**

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.

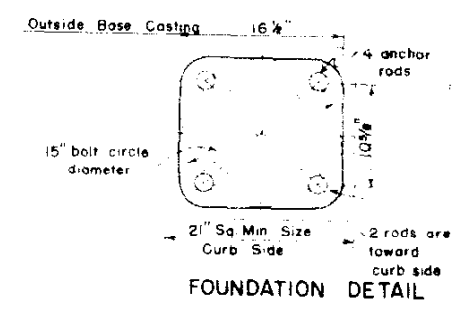


TYPICAL VIEW LIGHTING STANDARD  
No Scale

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

SHEET NUMBER	PROJECT 1 092-2(5)		30' POLES
	15,000 L MERC VAP	4,000 L INCAND	
28	7	0	7
29	6	0	6
30	56	8	56
31	21	0	21
32	66	0	66
33	14	0	14
TOTAL	170	24	170

# To be done by others

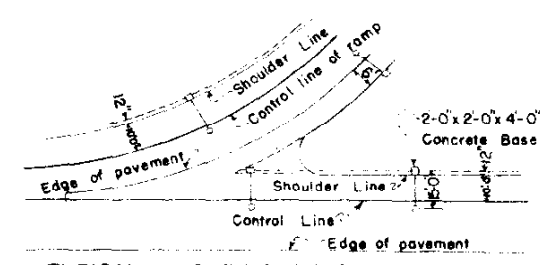


FOUNDATION DETAIL

FENCING REQUIREMENTS PROJECT

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)

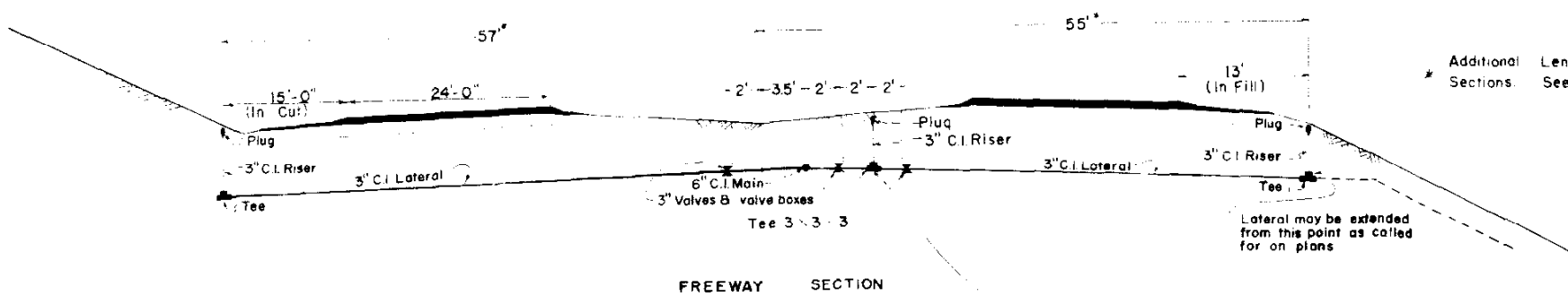
SHEET NO.	CHAIN LINK WIRE FENCE	COMBINATION WIRE FENCE (BARRIER)	REM. & REB. GUARD FENCE	METAL PLATE GUARD FENCE
29	2,280	—	—	—
30	375	250	—	600
31	2,210	2,550	—	1,225
32	3,000	3,000	—	—
33	2,600	2,200	120	650
34	—	1,500	—	—
Sub.Total	10,465	9,500	120	2,475
PROJECT				
29	1,620	—	—	—
Sub.Total	1,620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

<b>COLORADO</b>	
DEPARTMENT OF HIGHWAYS	
DETAILS OF	
LIGHTING & FENCING	
Designed by	Approved by
Made by	Date
Checked by	

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



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

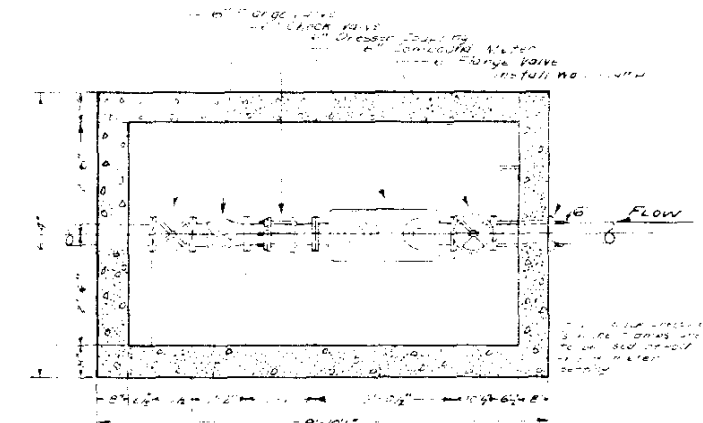
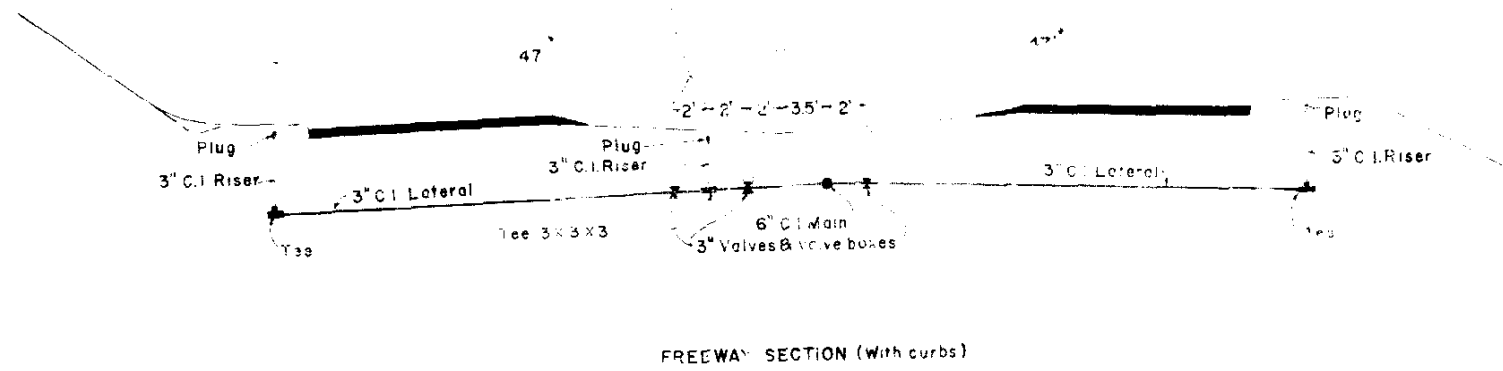
\* Additional Length for widened Sections. See Plans.

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

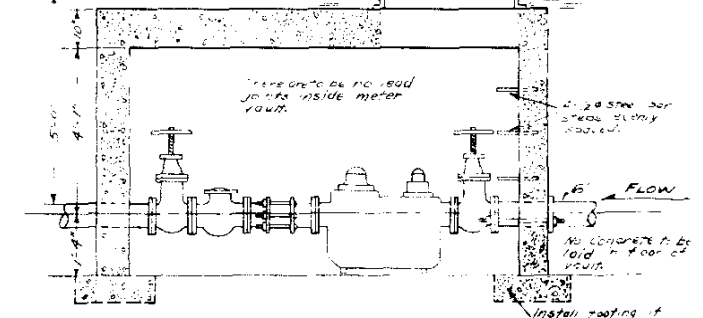
SUMMARY OF MAINS AND PRIMARY LATERALS							
PROJECT 1 092-2(5)							
SHEET NUMBER	6" C.I. MAIN	3" C.I. LATERAL	3" C.I. RISER	3" GATE VALVE	6" GATE VALVE	MANUAL DRAIN	6" METER BOX COMP.
30	170	108	9	7	1	2	1
31	2,060	1,065	72	13	0	12	1
32	3,000	1,100	90	30	0	20	
33	3,700	2,240	129	30	1	20	
<b>TOTAL</b>	<b>2,230</b>	<b>1,171</b>	<b>51</b>	<b>21</b>	<b>1*</b>	<b>14</b>	<b>6 2</b>

\* 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



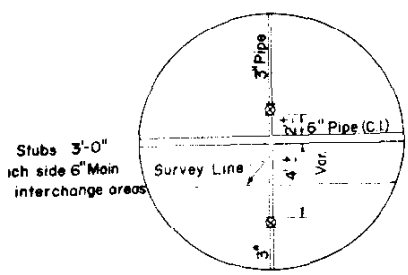
NOTE: Pipe of vault to be properly reinforced and not less than 10" thick if vault is in street.



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.

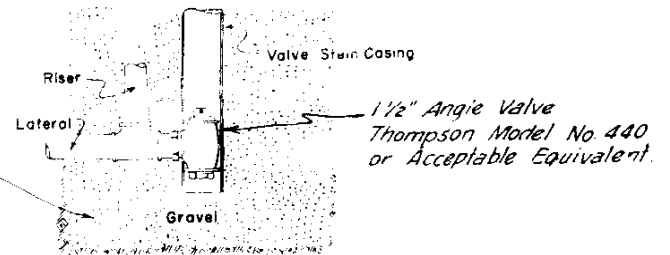
STANDARD SETTING FOR 6" METER

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

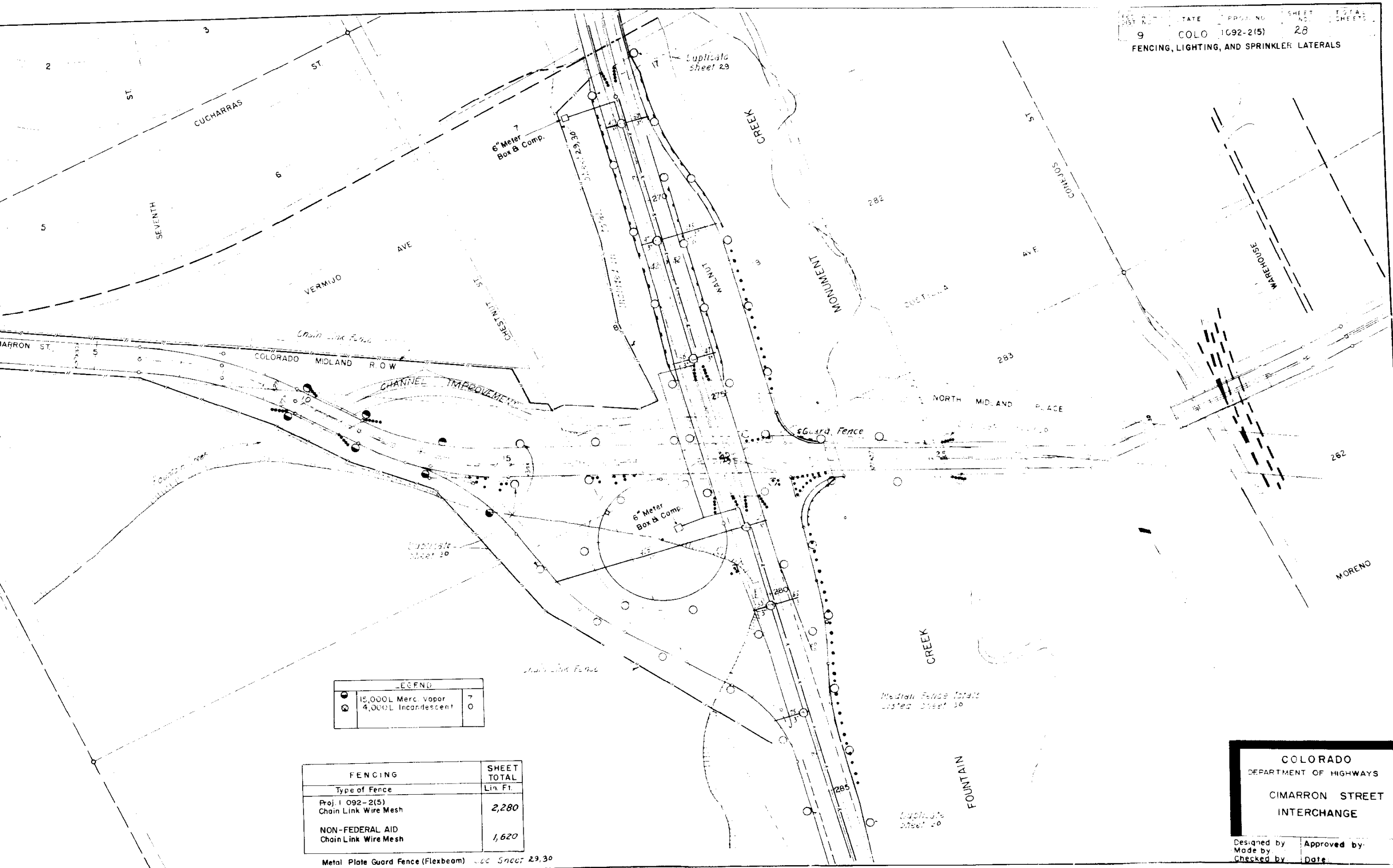


DETAIL B DRAIN VALVE AT RISER

**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. 1092-2(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	

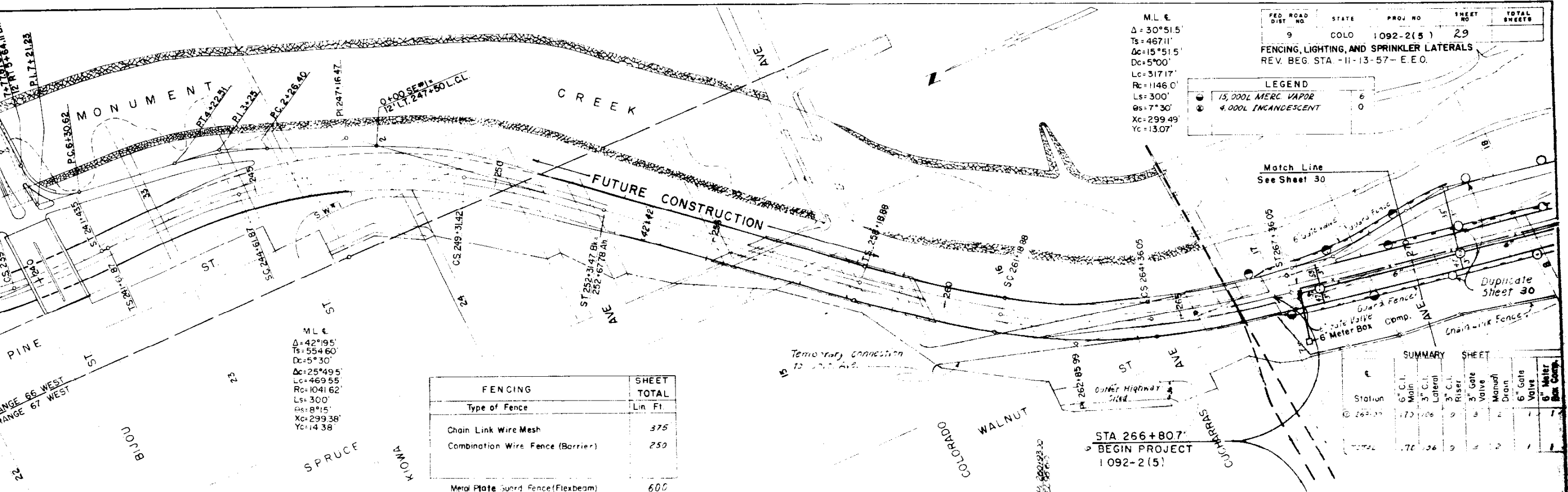
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	29	

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

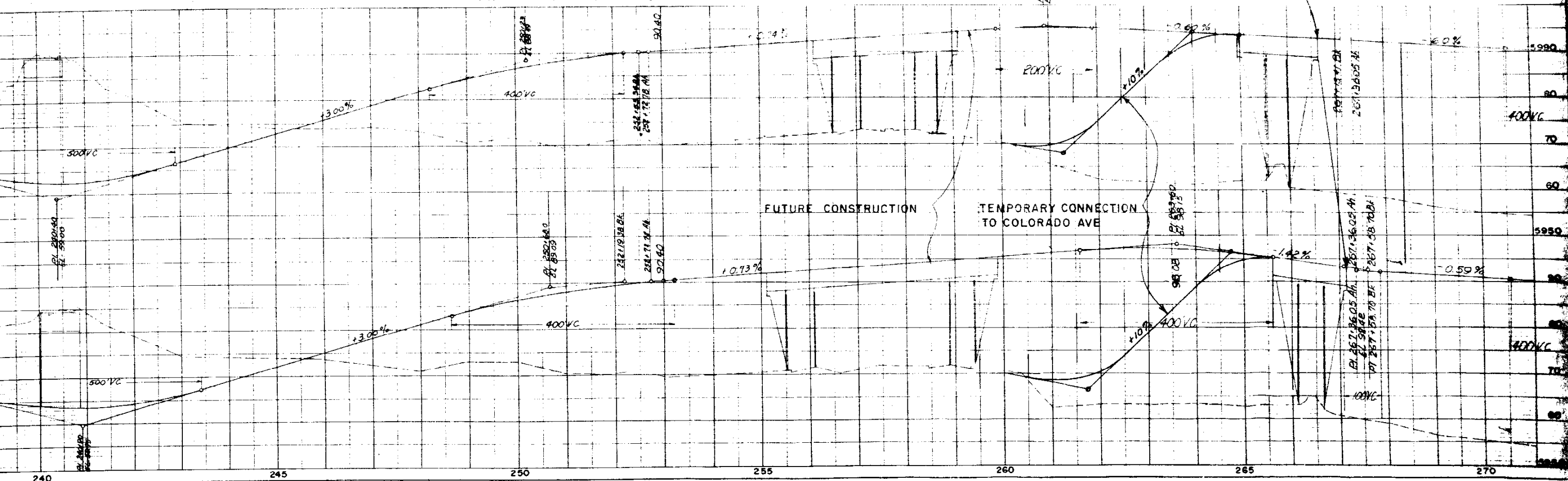
FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Chain Link Wire Mesh	375
Combination Wire Fence (Barrier)	250
Metal Plate Guard Fence (Flexbeam)	600

Match Line  
See Sheet 30

SUMMARY SHEET

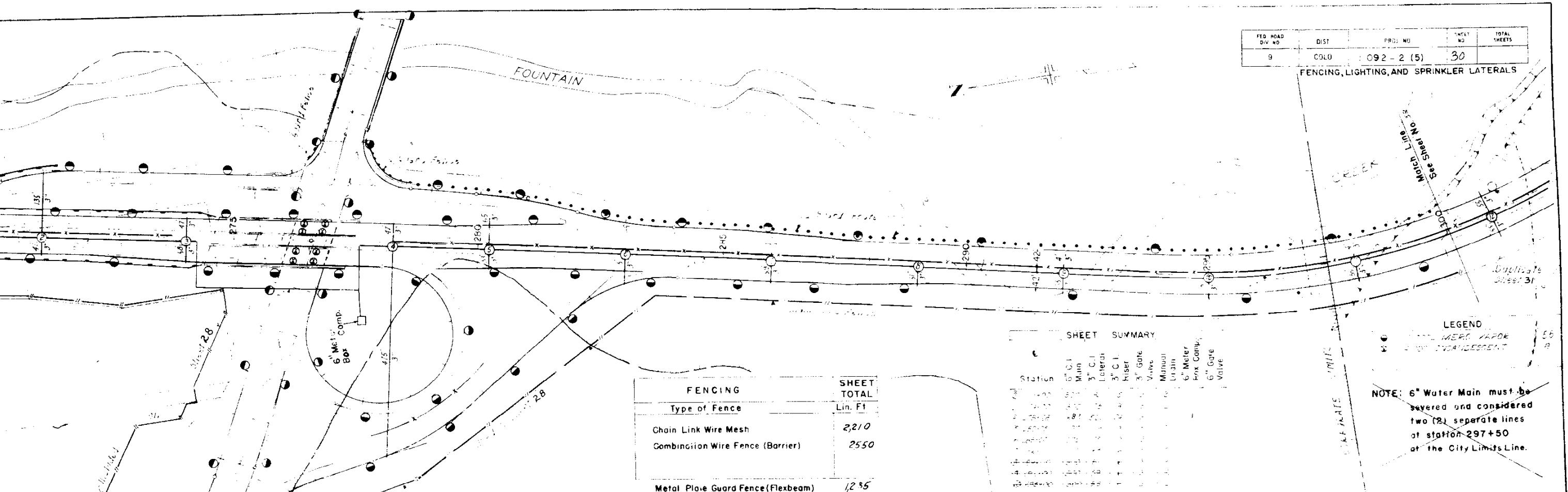
Station	6" C.I. Main	3" C.I. Lateral	3" C.I. Riser	3" Gate Valve	Manual Valve	Drain	6" Gate Valve	6" Meter Box
266+00	10	100	0	3	2	1	1	
267+00	10	100	0	3	2	1	1	

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

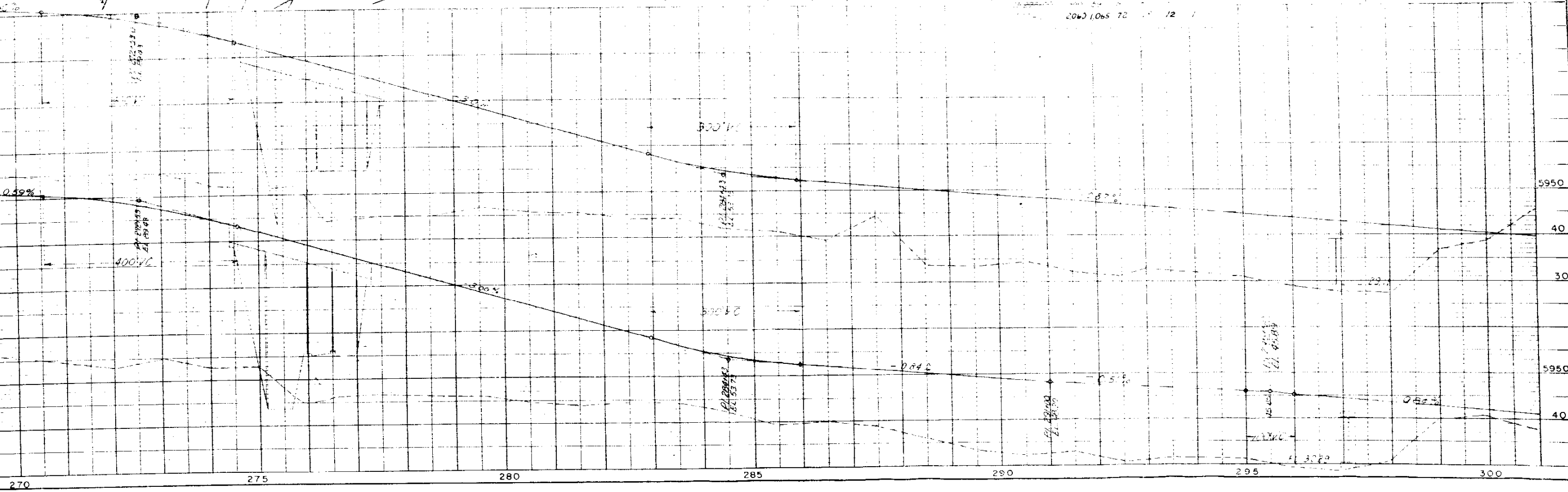


FENCING	SHEET TOTAL
Type of Fence	Lin. Ft.
Chain Link Wire Mesh	2210
Combination Wire Fence (Barrier)	2550
Metal Pile Guard Fence (Flexbeam)	1235

SHEET SUMMARY	
Station	6" C.I. Main 6" C.I. Lateral 3" C.I. Riser 3" Gate Valve Main Valve Main 6" Meter 6" Gate Valve
275+00	1
275+50	1
276+00	1
276+50	1
277+00	1
277+50	1
278+00	1
278+50	1
279+00	1
279+50	1
280+00	1
280+50	1
281+00	1
281+50	1
282+00	1
282+50	1
283+00	1
283+50	1
284+00	1
284+50	1
285+00	1
285+50	1
286+00	1
286+50	1
287+00	1
287+50	1
288+00	1
288+50	1
289+00	1
289+50	1
290+00	1
290+50	1
291+00	1
291+50	1
292+00	1
292+50	1
293+00	1
293+50	1
294+00	1
294+50	1
295+00	1
295+50	1
296+00	1
296+50	1
297+00	1
297+50	1
298+00	1
298+50	1
299+00	1
299+50	1
300+00	1
<b>Total</b>	<b>72</b>

**LEGEND**  
 ● MET. PILE GUARD FENCE  
 ○ 6" WATER MAIN  
 ○ 6" WATER MAIN VALVE

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



CRATE LIMITS  
COUNTY

Match Line  
See Sheet 30

FENCING, LIGHTING, AND SPRINKLER LATERALS

LEGEND

15,000 L MERC VAPOR 21

FENCING Type of Fence	SHEET TOTAL Lin. Ft.
Chain Link Wire Mesh	3000'
Combination Wire Fence (Barrier)	3000'

FOUNTAIN

1827K  
Elev

CONCRETE LIMITS

CONCRETE LIMITS  
EL PASO COUNTY

CONCRETE WALL

128  
T-31100 L.C.L.

C.S. 306+98.58

S.T. 309+48.56 BK.  
309+21.04 H.

T.S. 324+48.6

S.C. 326+98.6

128  
T-31100 L.C.L.

PUMP HOUSE  
WELL

Pond

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

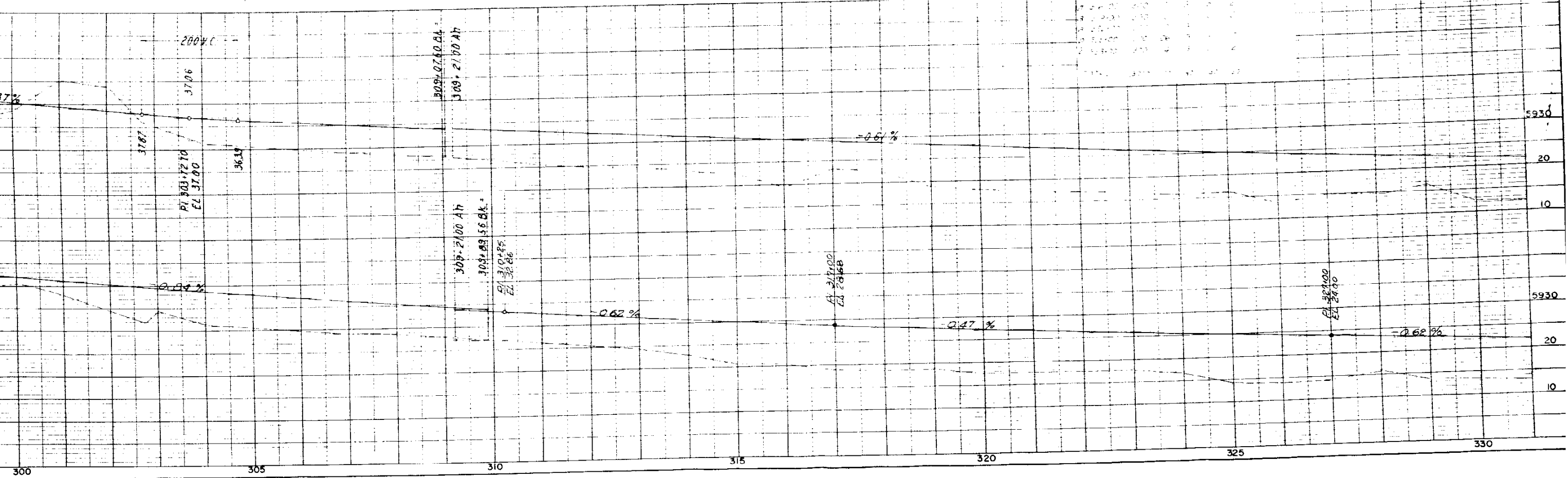
Station	6" C.L. Main	3" L.L. Lateral	3" C.I. Riser	3" Gate Valve	Manual Drain	6" Gate Valve	6" Meter	Box Comp.
300+00	1	1						
305+00	1	1						
310+00	1	1						
315+00	1	1						
320+00	1	1						
325+00	1	1						
330+00	1	1						

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'

Match Line  
See Sheet

Duplicate Sheet 32

PI 301+87.07



200%

PI 303+72.10  
EL 37.00

36.19

309+07.60 A.H.  
309+21.00 A.H.

309+21.00 A.H.  
309+09.55 BK.  
EL 37.00  
EL 36.19

EL 37.47 BK.  
EL 36.46

EL 37.100 BK.  
EL 24.00

5930

20

10

5930

20

10

300

305

310

315

320

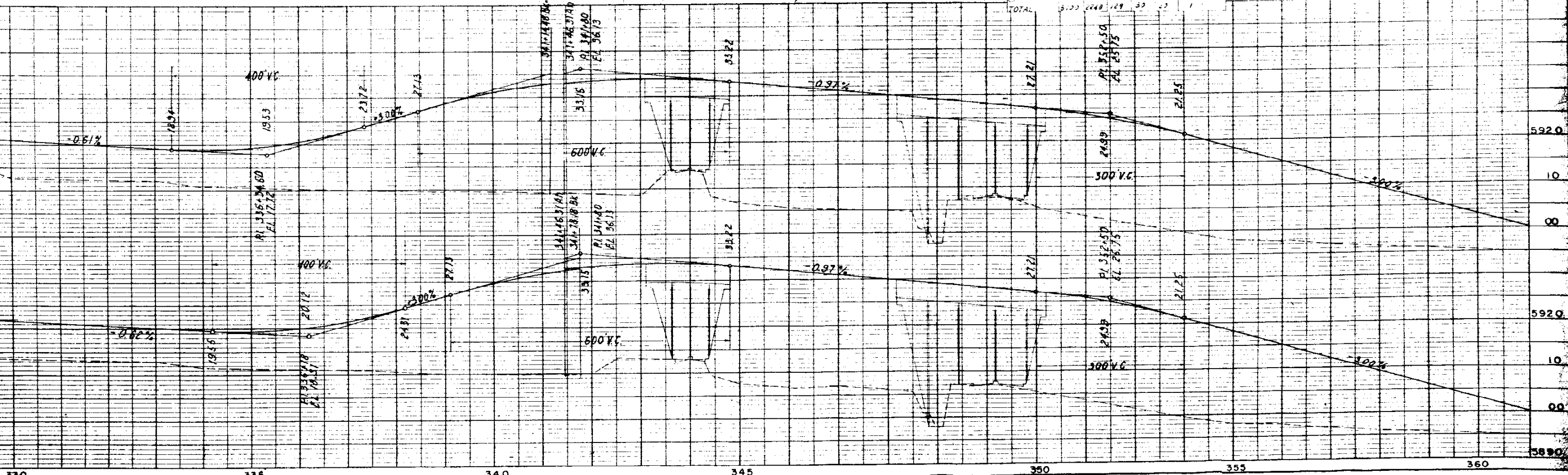
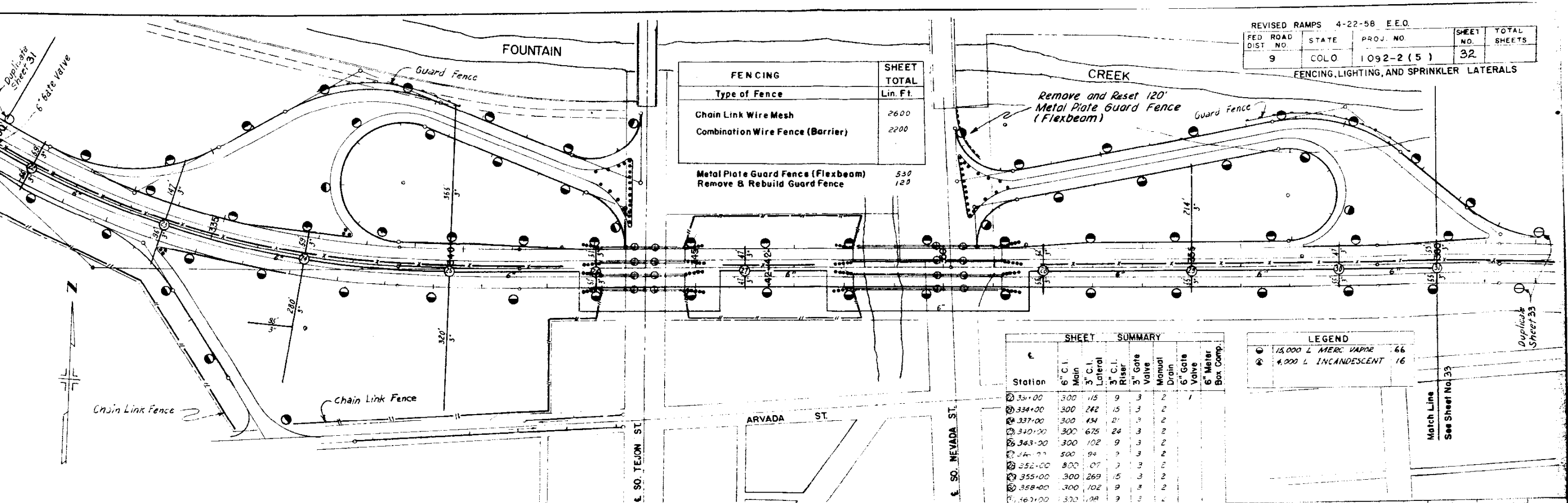
325

330

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

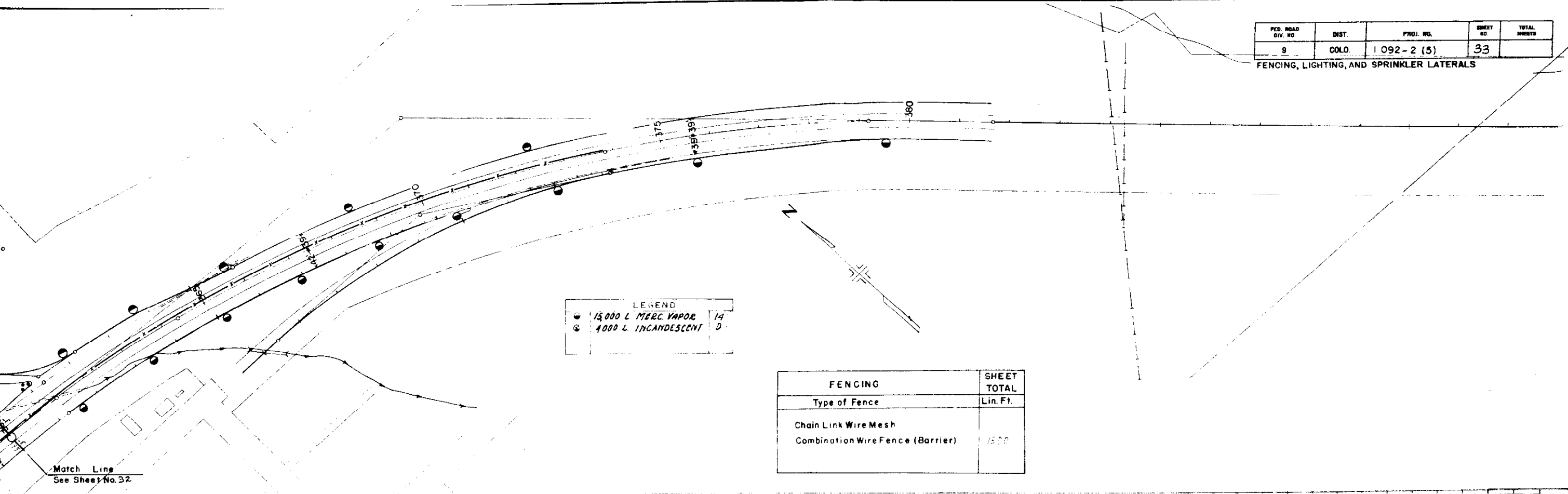
LEGEND	
●	15,000 L. MERC. VAPOR 66
○	4,000 L. INCANDESCENT 16





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

FENCING, LIGHTING, AND SPRINKLER LATERALS

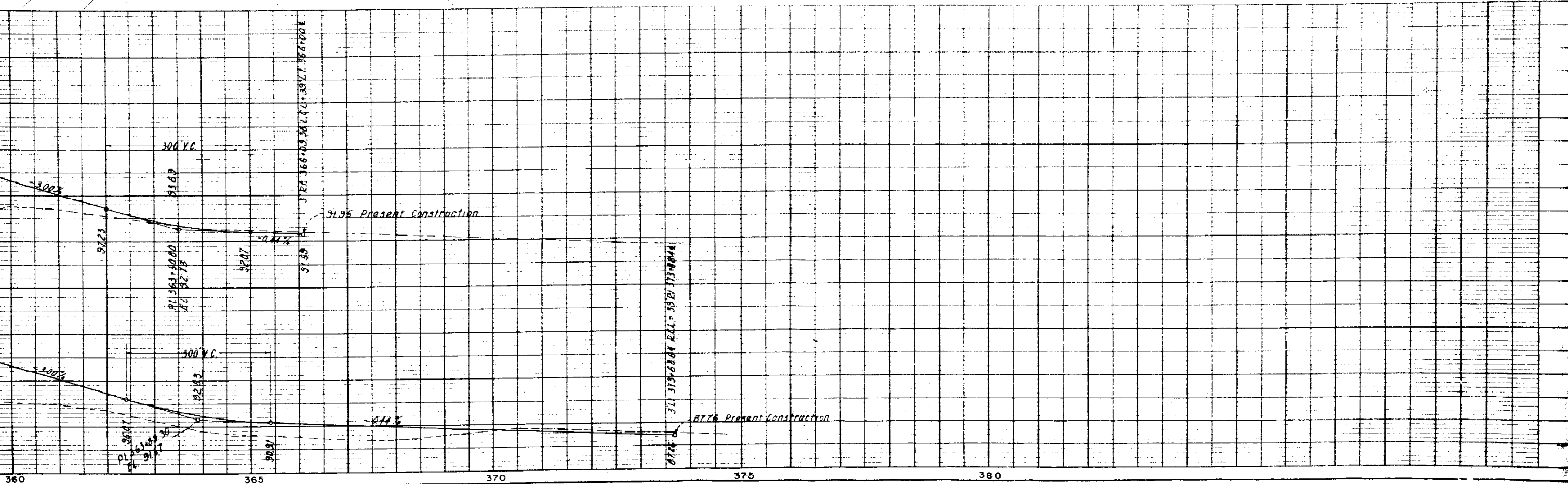


LEGEND

●	15000 L. MERC. VAPOR	14'
○	4000 L. INCANDESCENT	10'

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 to 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. \_\_\_\_\_

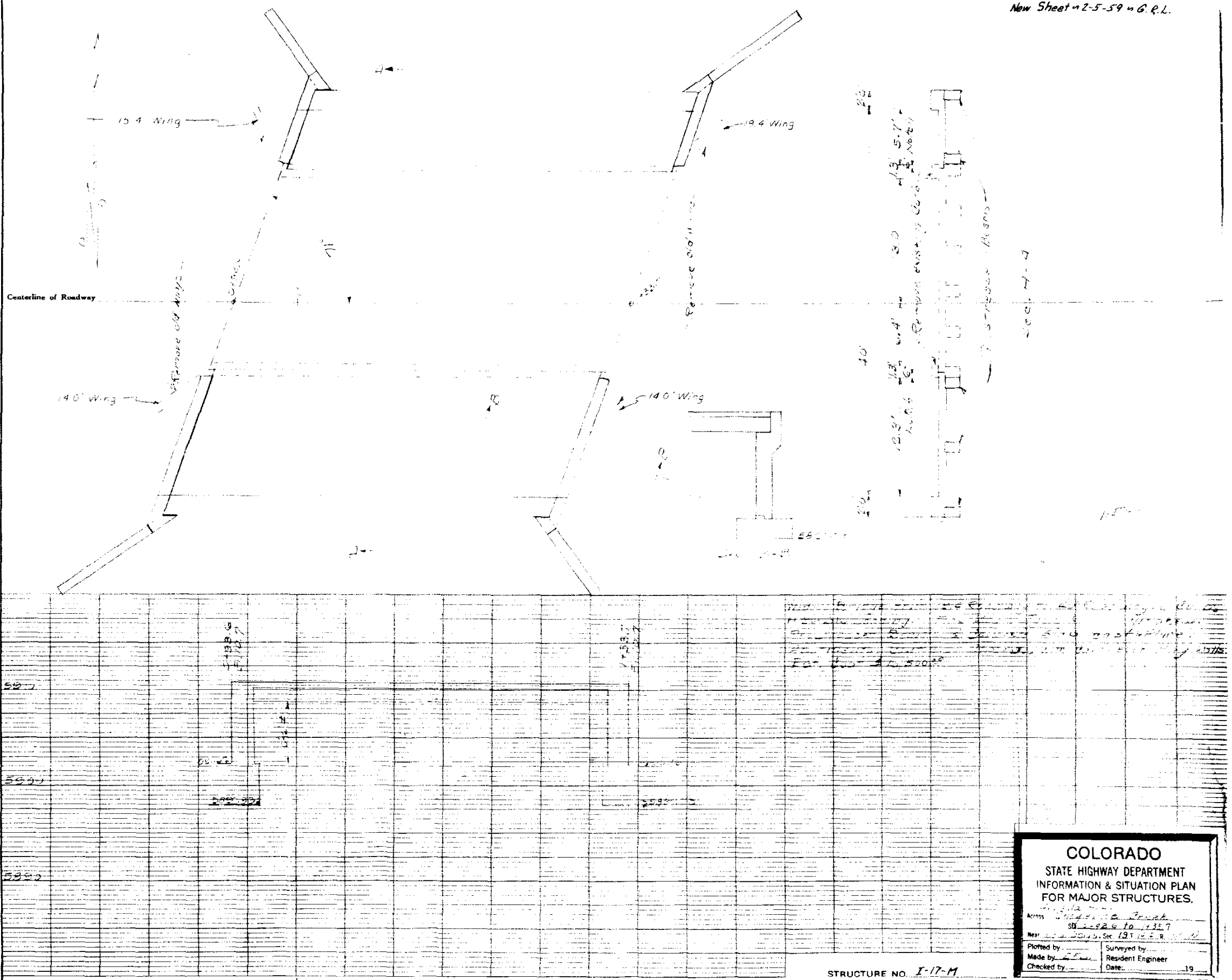
Remarks \_\_\_\_\_  
 Submitted by \_\_\_\_\_ Engineer \_\_\_\_\_

**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.

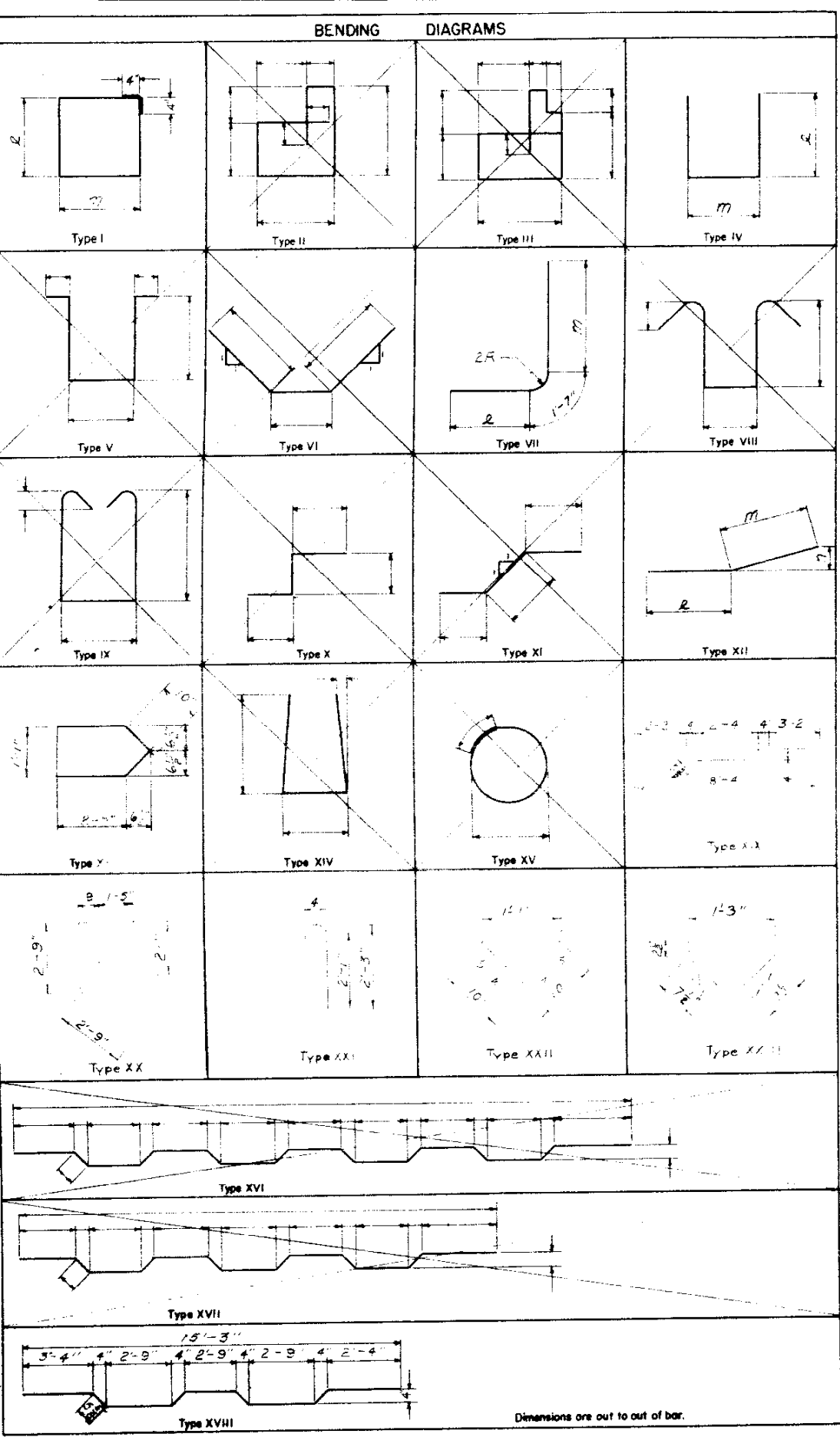
Across \_\_\_\_\_  
 SB 2424 to 2427  
 Near \_\_\_\_\_ Sec. 19 T. 5 R. 1 W.

Plotted by \_\_\_\_\_  
 Made by \_\_\_\_\_  
 Checked by \_\_\_\_\_

Surveyed by \_\_\_\_\_  
 Resident Engineer \_\_\_\_\_  
 Date \_\_\_\_\_

STRUCTURE NO. I-17-M

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



#### BAR LIST ABUTMENT No 1

MARK	SIZE	No Reqd	Length	Type	Dimensions
401	1/2"	44	39'-8"	Str.	2' 11"
402	1/2"	28	3'-10"	I	6' 11"
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"	XX	

#### BAR SUMMARY

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

#### BAR LIST ABUTMENT No 2

(North West or South East Corner)

Mark	Size	No Reqd	Length	Type	Dimensions
405	1/2"	12	14'-0"	Str.	
406	1/2"	14	9'-8"	XX	
407	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" 4'-6"

#### BAR LIST ABUTMENT No 2

(South 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" 4'-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"	14	9'-8"	XX	
407	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" 4'-6"

#### BAR SUMMARY

125 Lin Ft  $\frac{1}{2}$ " @ 0.668#/Lin Ft = 84 Lb  
 396 Lin Ft  $\frac{5}{8}$ " @ 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"	Str.	
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	4' 4'-8"
427	1/2"	1	10'-10"		4' 4'-8"
428	1/2"	1	11'-2"		4' 4'-8"
429	1/2"	1	11'-5"	VII	4' 4'-8"
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	12'-9"		9'-7"
520	5/8"	6	3'-0"	Str.	
602	3/4"	5	6'-7"	III	1'-2" 3'-4"
603	3/4"	1	13'-5"		10'-0"
607	3/4"	1	14'-5"	VII	1'-10" 11'-0"

#### BAR LIST EACH PRESTRESSED BEAM

Mark	Size	No Reqd	Length	Type	Dimensions
455	1/2"	2	38'-0"	Str.	
456	1/2"	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"	Str.	7'-8" 11"

#### BAR SUMMARY ONE PRESTRESSED BEAM

125 Lin Ft  $\frac{1}{2}$ " @ 0.668#/Lin Ft = 84 Lb  
 396 Lin Ft  $\frac{5}{8}$ " @ 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 Tolo Springs, Sec. 19, T. 45, R. 66W

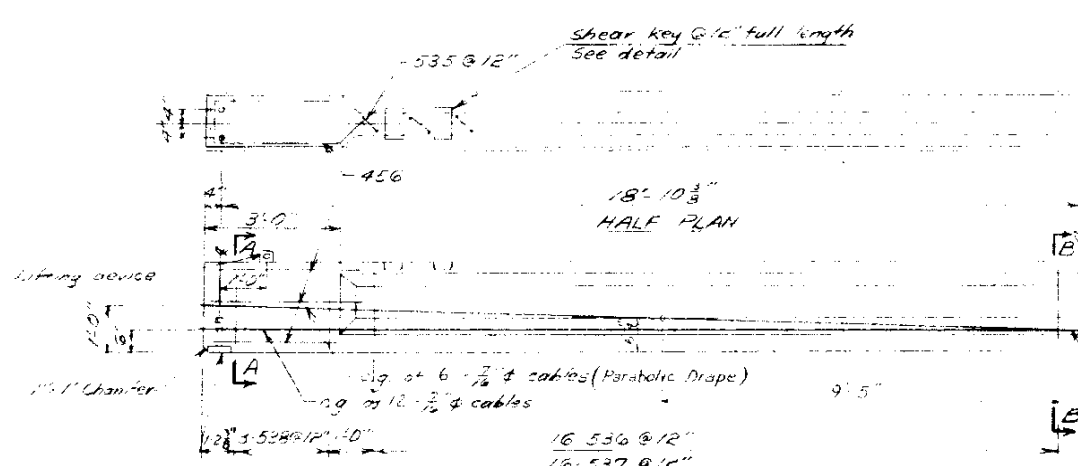
Designed by  
 Made by J.B.  
 Checked by

Approved by  
 Bridge Engineer  
 Date: 19

WORK ORDER NO. 14123

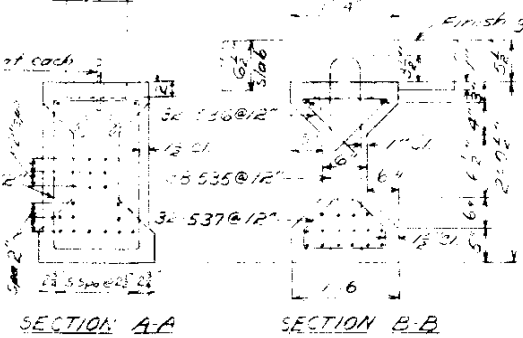
NO. ROAD PLAN NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	330	

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

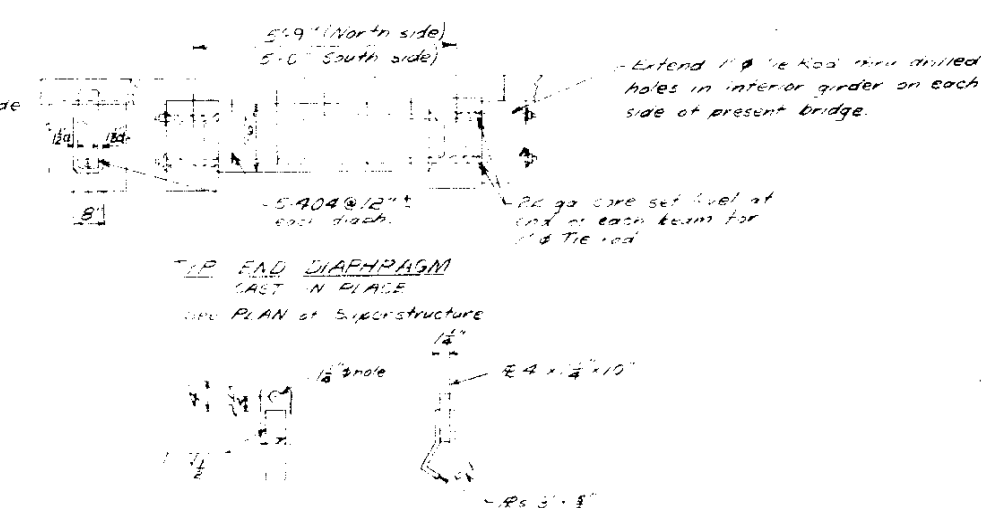


HALF PLAN

SHEAR KEY DETAIL



SECTION A-A SECTION B-B



TOP END DIAPHRAGM CAST IN PLACE

LIFTING DEVICE

GENERAL NOTES

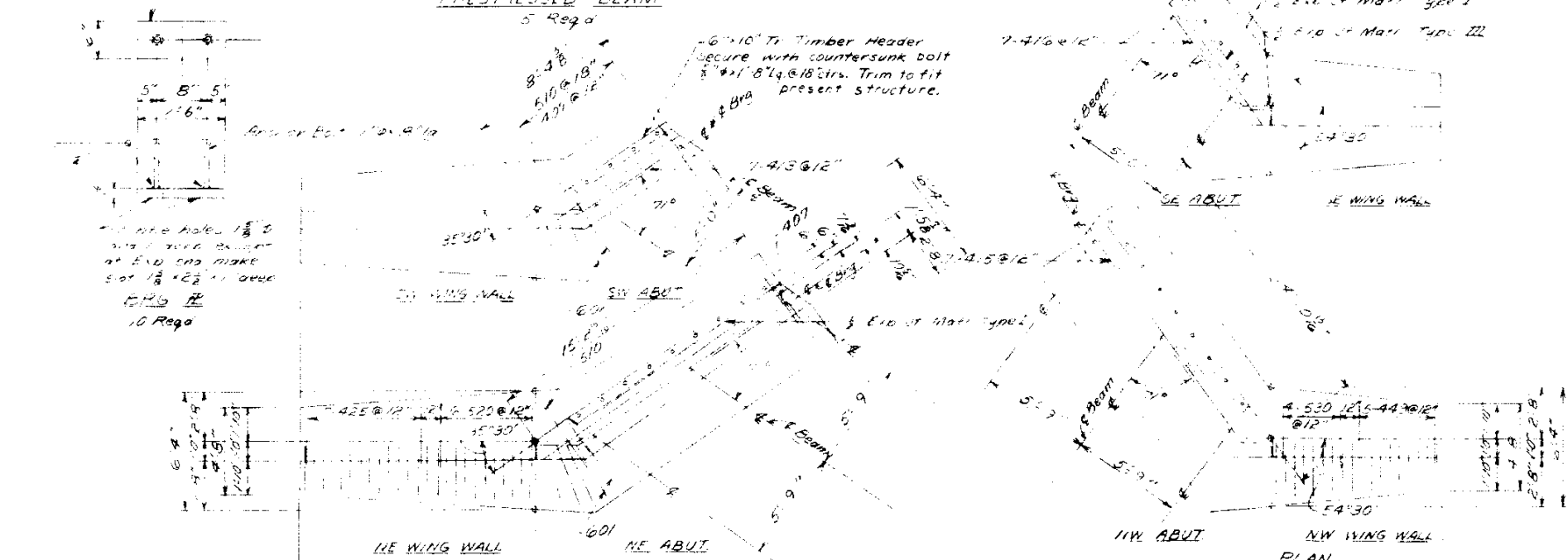
Concrete for the abutment girders shall have a cylinder strength of 5000 psi at 28 days. At time of release of prestress the concrete shall have a minimum strength of 4000 psi. Taps of beams to be rough coated. Remove laitance at time of initial set.

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

Pre-tensioning wire strands for prestressing steel shall have a minimum ultimate strength of 150,000 psi and an elongation at rupture of not less than 3 percent in 10 inches. Prestressing steel to be 1/2" diameter strands. At 136 sq. in. and an initial prestress force of 19,900 pounds per strand.

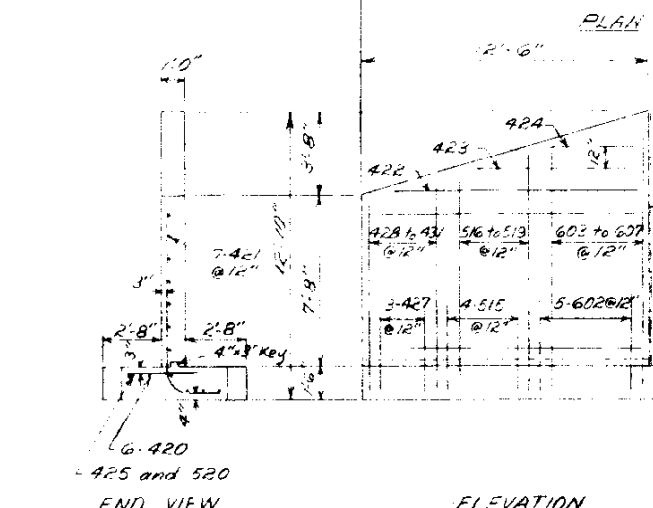
After girders are removed from the forms they must be maintained in an upright position at all times and must be braced up by using the lifting devices at ends of girder.

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.



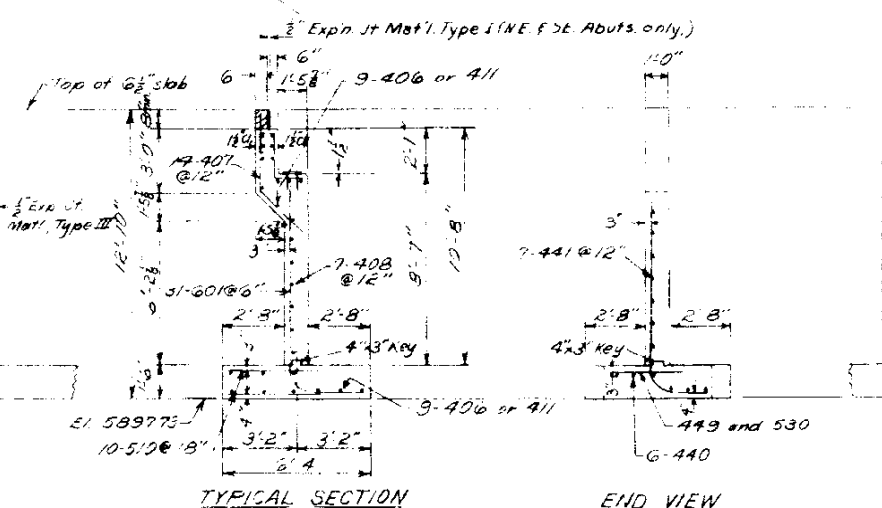
PLAN

PLAN



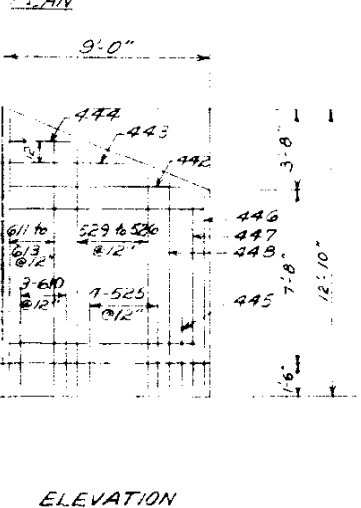
END VIEW

ELEVATION



TYPICAL SECTION NE ABUT

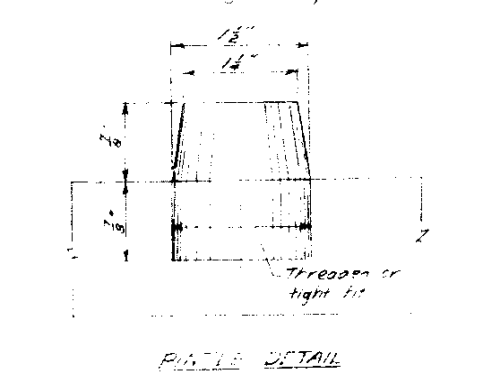
SW, NW, & SE ABUT. SIMILAR  
Ftg. Pressure = 2900 lbs/sq. ft



END VIEW

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**

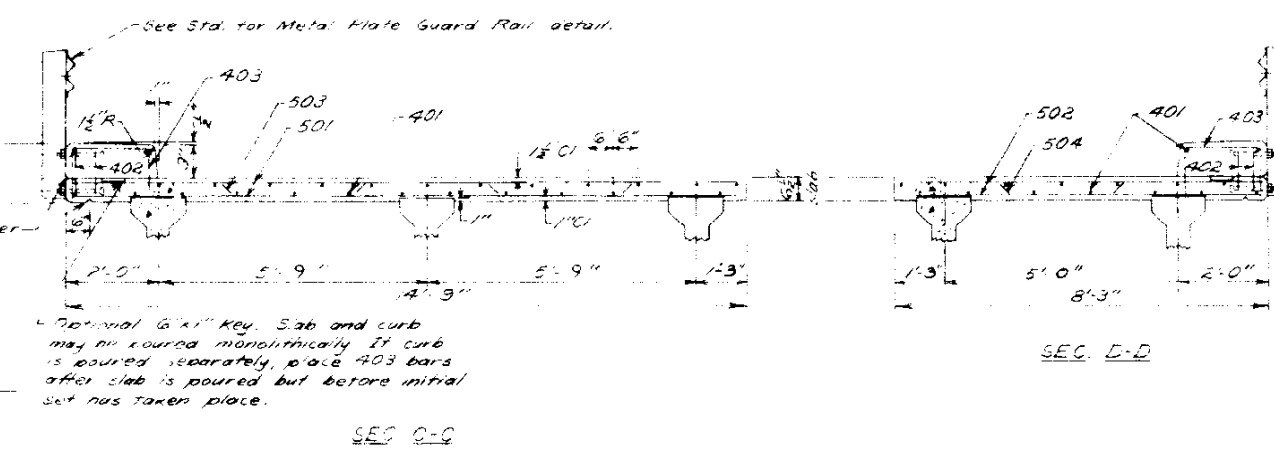
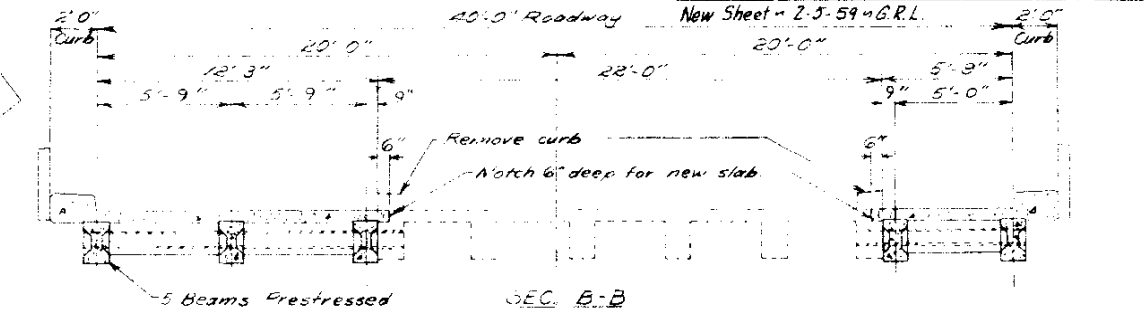
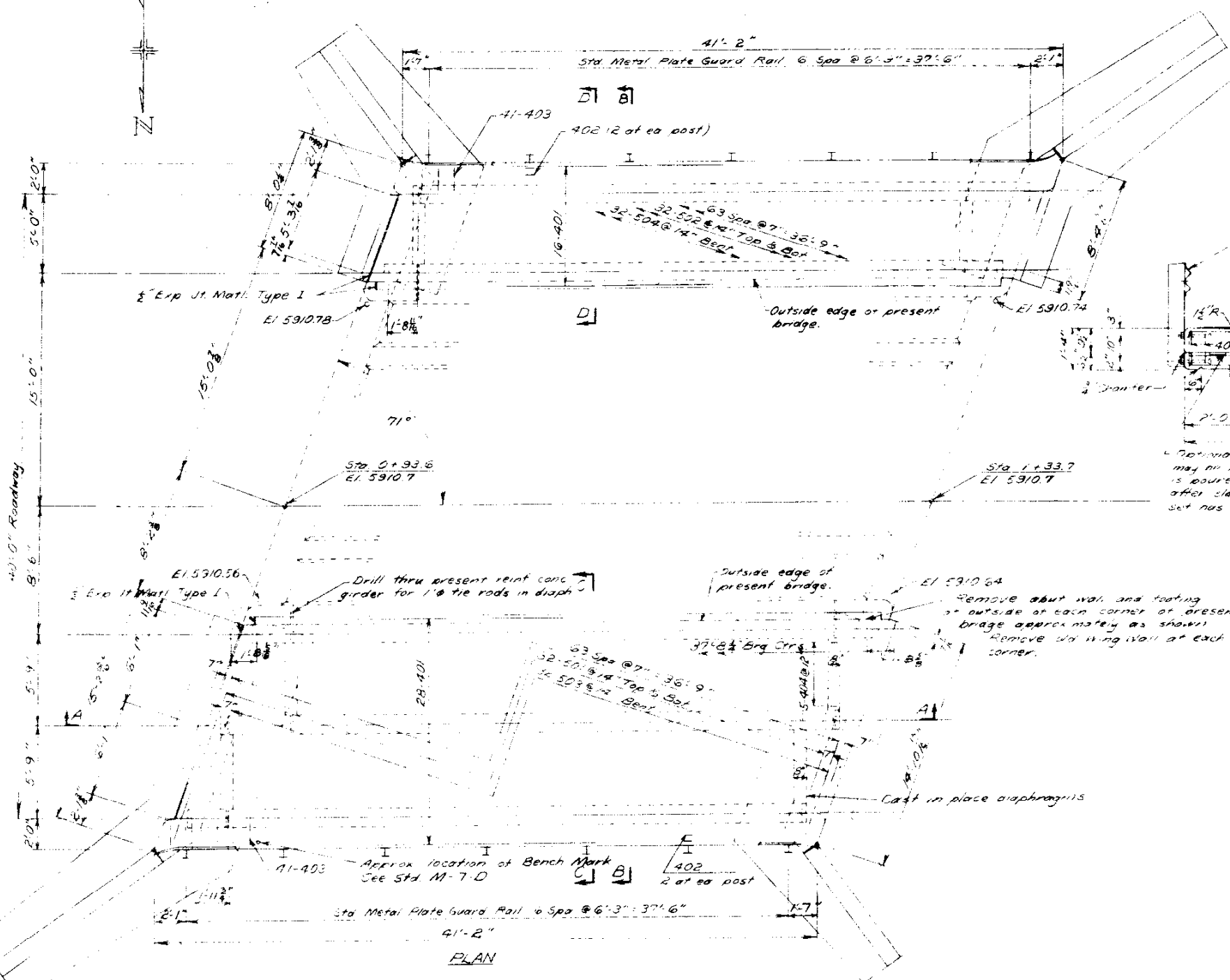
Across Cheyenne Creek  
Sta. 0+33.6 to 1+33.7  
Near Colo. Springs, Sec. 19 T. 45 R. 60 W.

Designed by WWD  
Made by JCB  
Checked by

Approved by  
Bridge Engineer  
Date

WORK ORDER NO. 14123

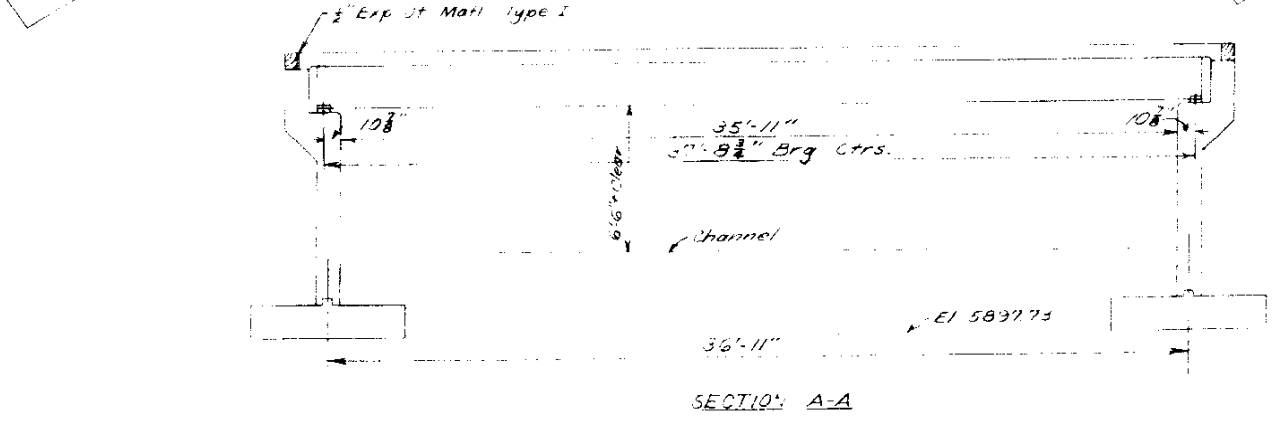
FILE NO. AND SHEET NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COND.	1092-2151	33D	



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	3/8" Expn Jt. Mat'l. Type I	Sq. Ft.		15	15
E	3/8" Expn Jt. Mat'l. Type III	Sq. Ft.		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

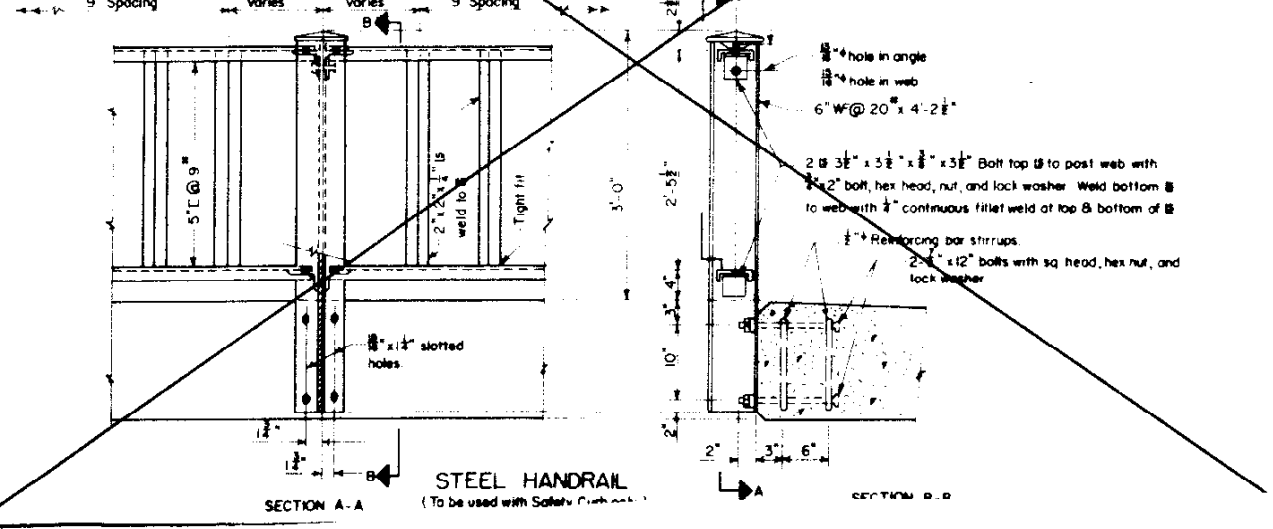
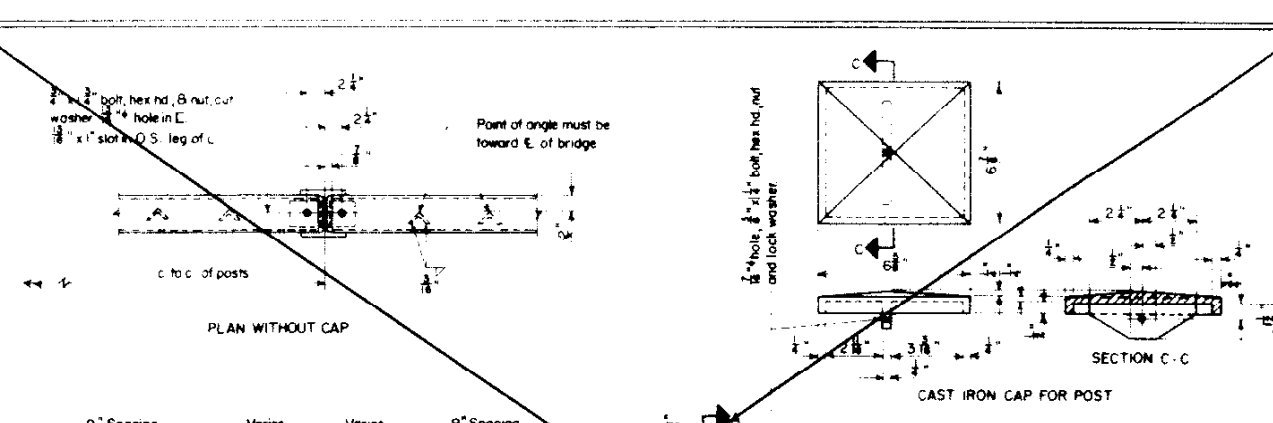
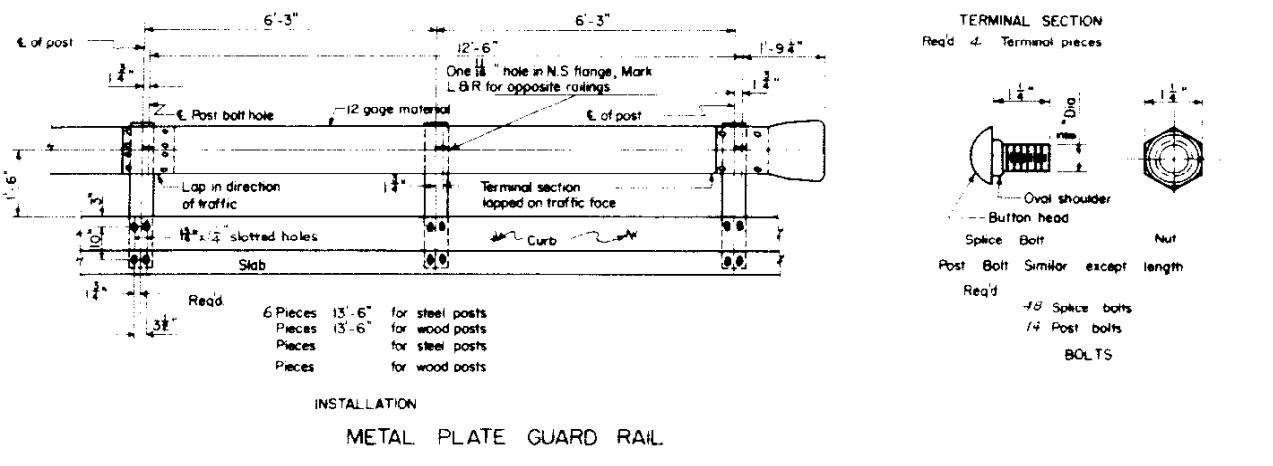
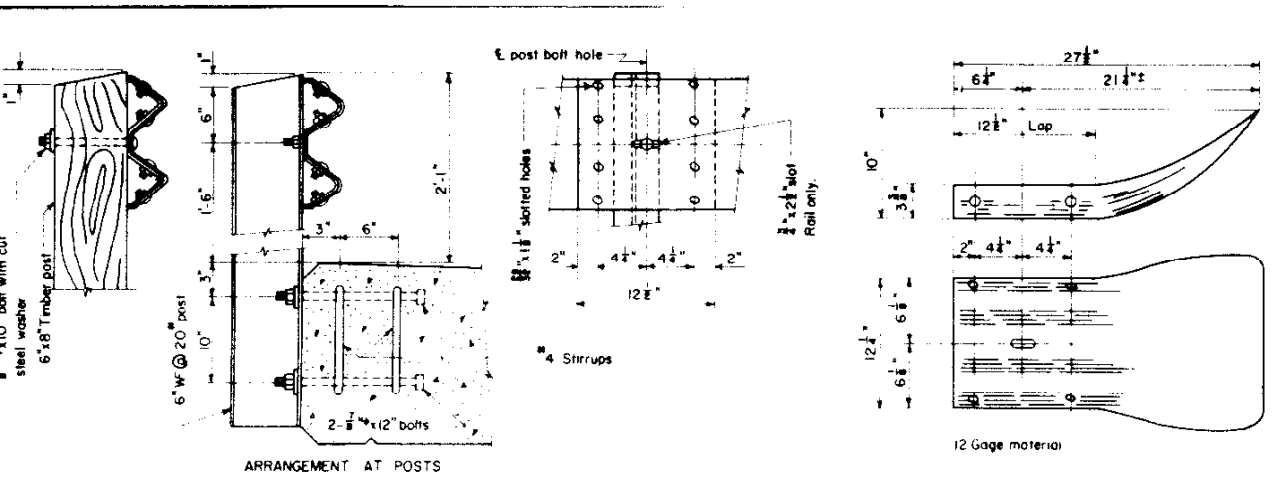


**COLORADO DEPARTMENT OF HIGHWAYS**  
 BRIDGE DIVISION

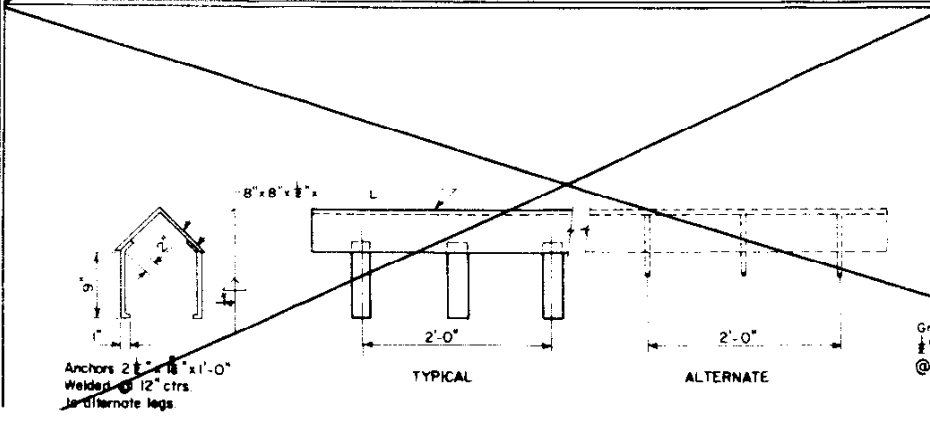
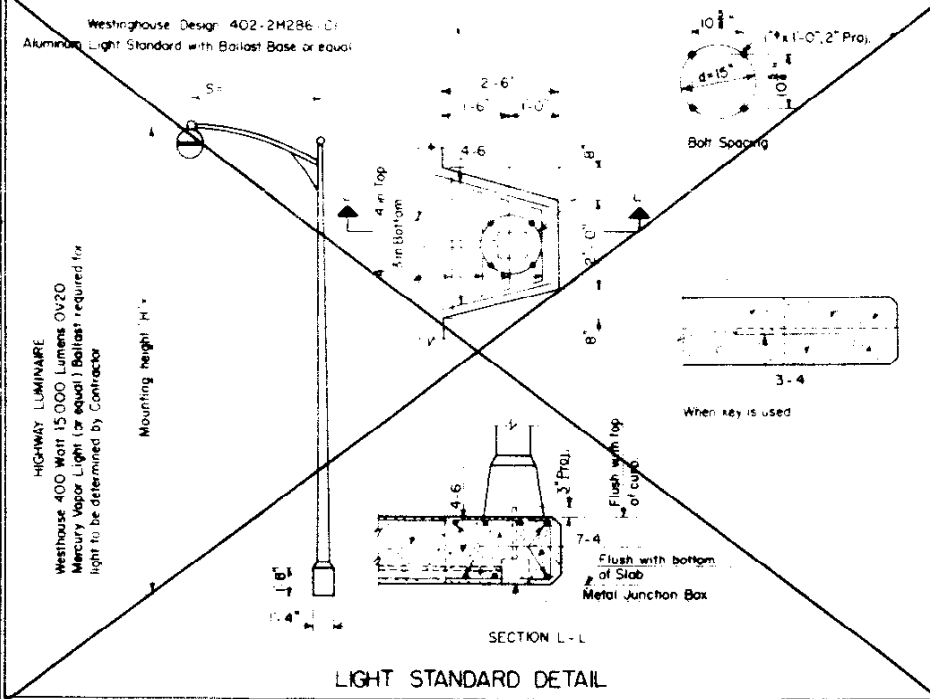
Area: Cheyenne Creek  
 Sta. 0+93.6 to 1+33.7  
 Near Colo. Springs Sec. 19 T. 14S R. 66W

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

Approved by  
 Bridge Engineer  
 Date: 19

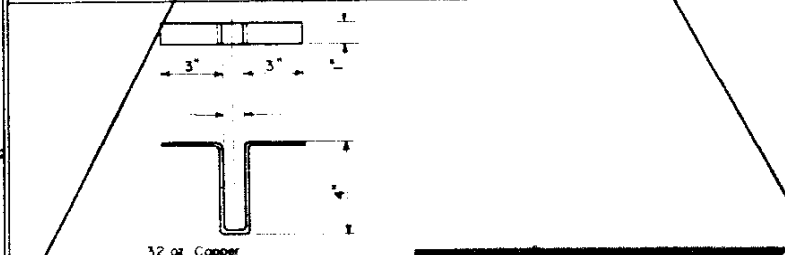
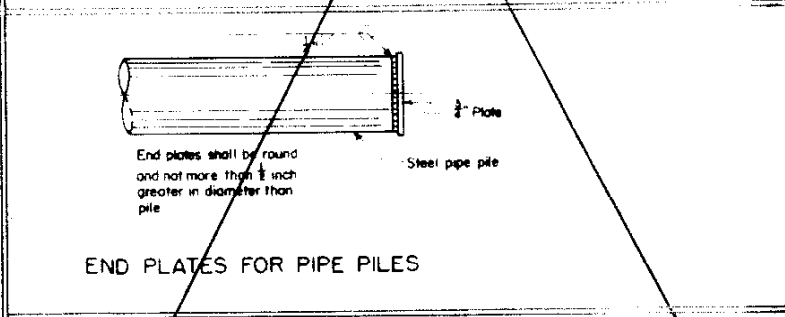
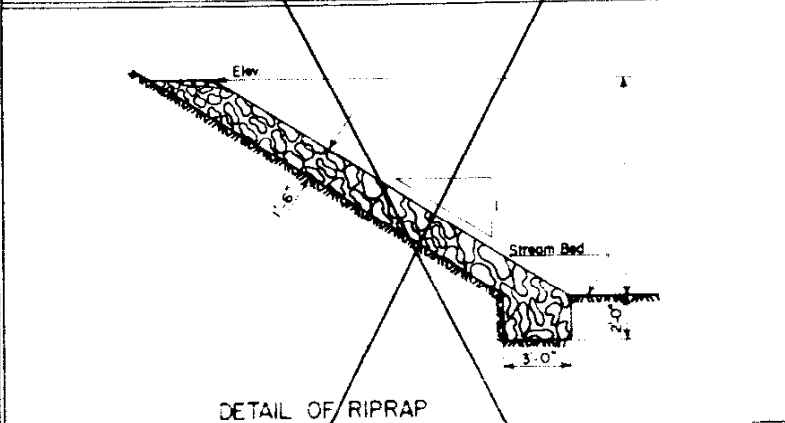
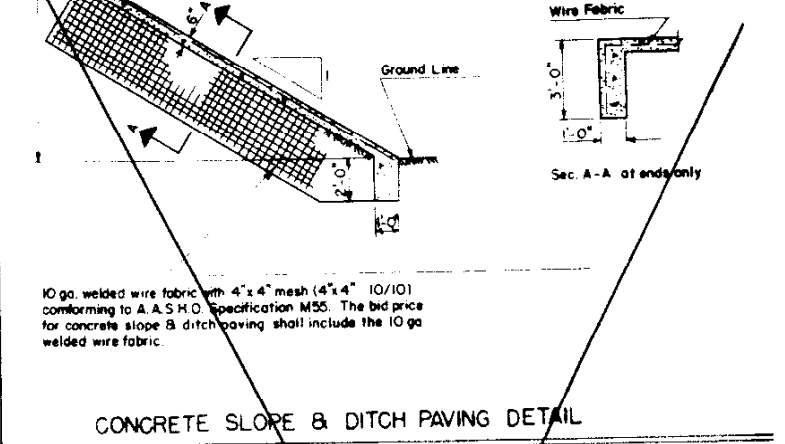


WORK ORDER NO. 14123



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

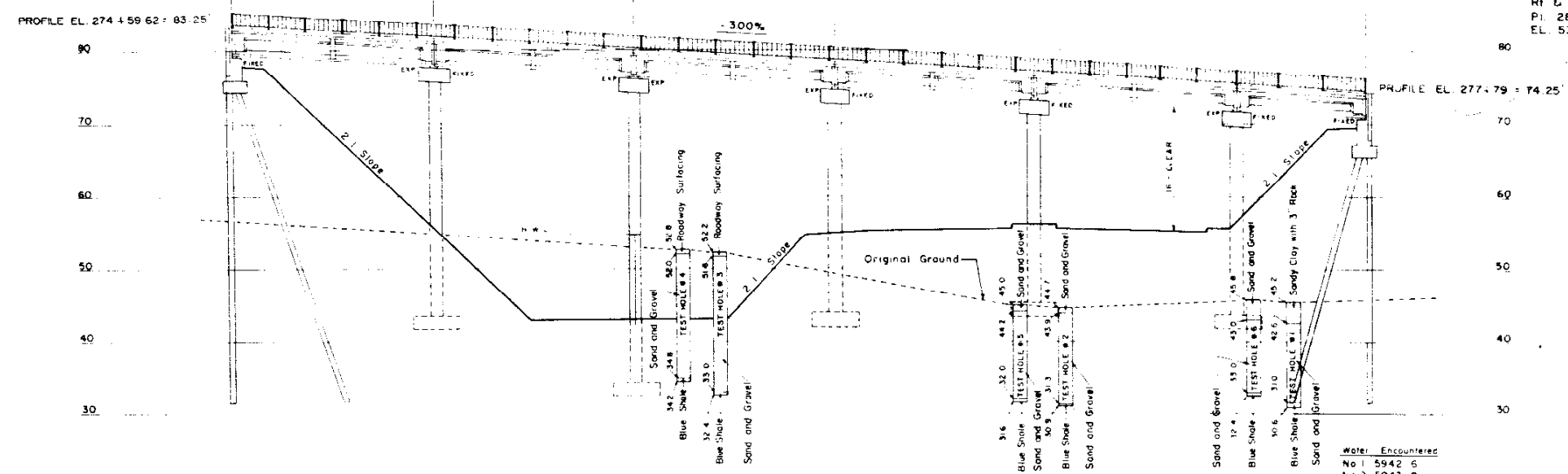
Across *Cheyenne Creek*  
Sta. *0+93.6 to 1+33.7*  
Near *Co. Segs* Sec. *15 T. 45 R. 06N*

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

Granular fill in 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	



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

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

Water Encountered  
No. 1 5942 6  
No. 2 5943 8  
No. 3 5944 2  
Foundation Pressure used for design  
5,600 lbs per sq ft

**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.

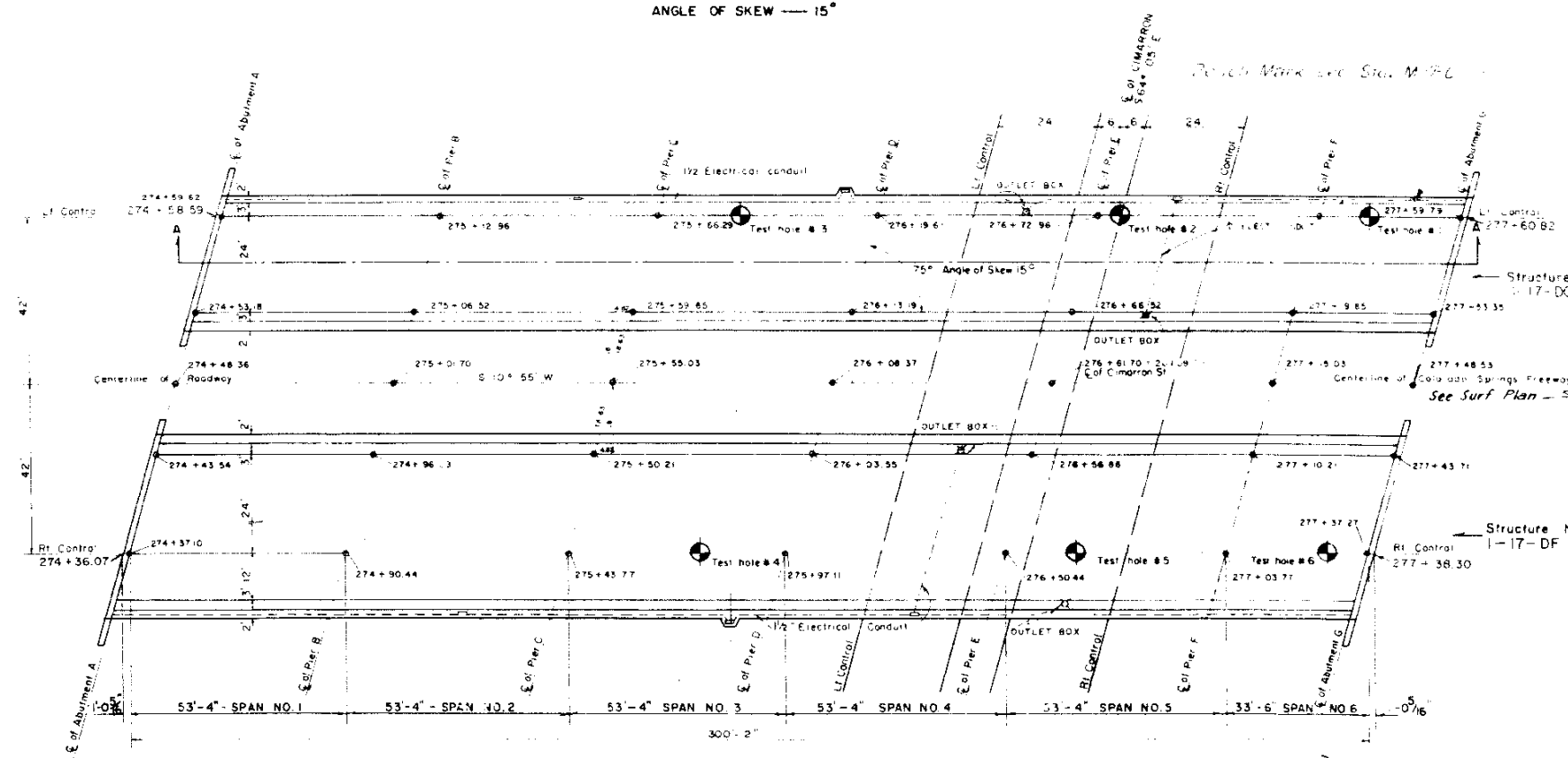
All concrete surfaces exposed to normal view by highway traffic shall receive Class I Surface Finish.

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<sub>s</sub> = 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 topping	Sq ft		133	88	77	24	46		368		100	66	58	19	35		278					
3-4	Plant mix asphalt surfacing	Tons		10	14	9	8	31	5	10	59		8	10	7	6	2	4	8	45			
4-2b	Treated timber header	Mbf																		108			
4-6a	Class A Concrete	Cuyd	289	37	4	60	39	37	37	577	223	0141	28	30	44	29	27	28	0141	Q282			
4-6b	Prestress Beam - 53'-4" span	Each	40																	437			
4-6c	Prestress Beam - 33'-6" span	Each	8							40	30									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	5,637	1,084	370	5,304	5,304	3,452	84,260			
6-1a	Steel pipe piling (27 1/2" dia. x 12' long)	Lin ft		546						44	996		368							300	668		
4-8	Structural Steel (1/2" dia. x 12' long)	Lbs																			300	668	
8-0c	Sheet copper - 32 oz./sq. ft.	Sq ft	31							31	21										21	333	
9-0b	1/2" Elect. cond. & Junc. boxes	Lin ft	345							345	333											21	333
	* 5/8" expan. joint mat. type III	Sq ft	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

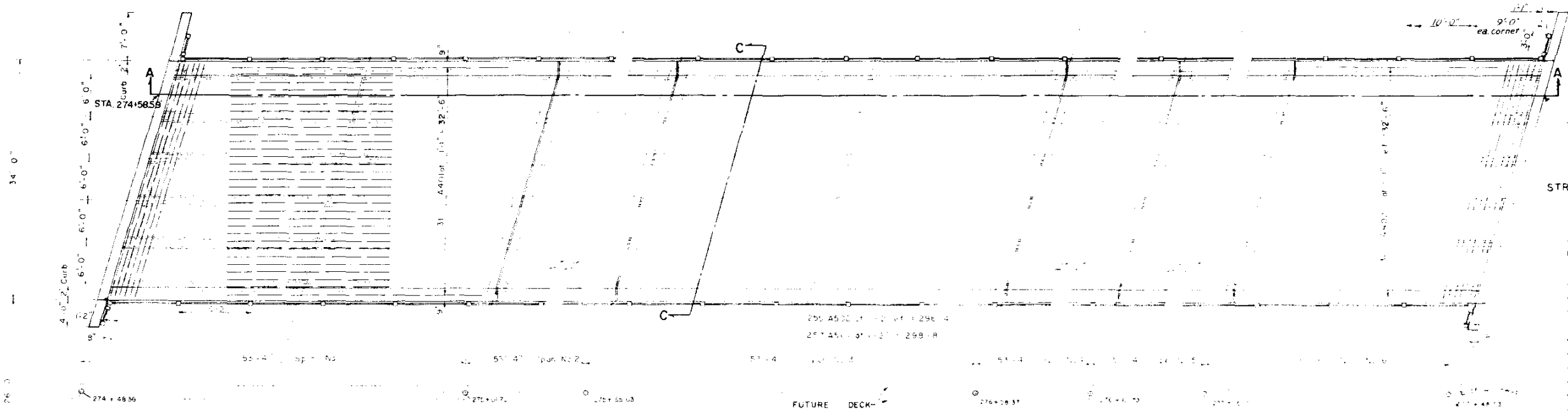
**GENERAL PLAN and ELEVATION**

DATE: JUNE, 1957  
DRAWING NO. 1  
OF 8

McKee and Co. ENGINEERS DENVER, COLORADO

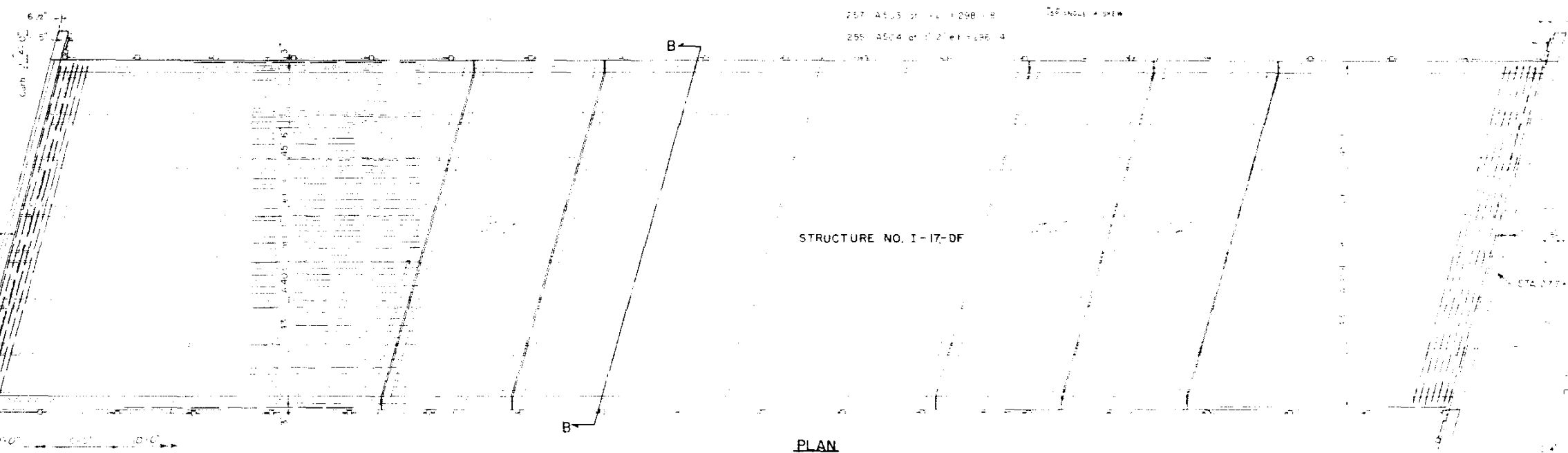
FED ROAD REGION NO.	DIVISION
9	COLO.

PROJ NO.	SHEET NO.	TOTAL SHEETS
1092-010	35	



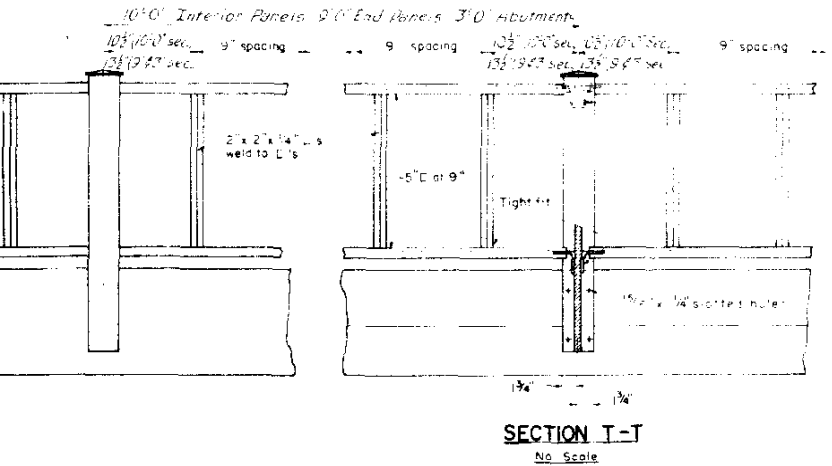
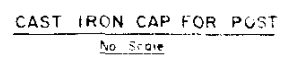
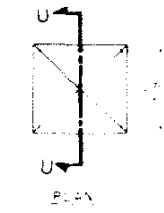
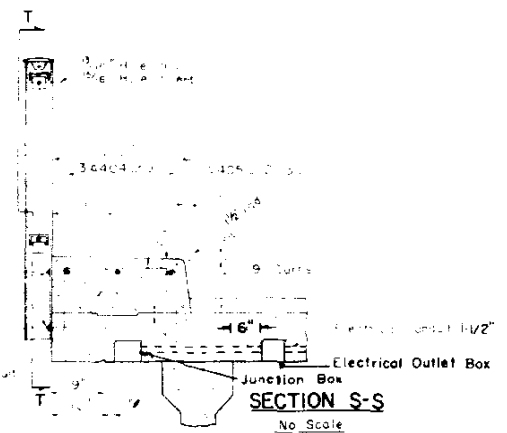
STRUCTURE NO. 1-17-DG

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 404	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"



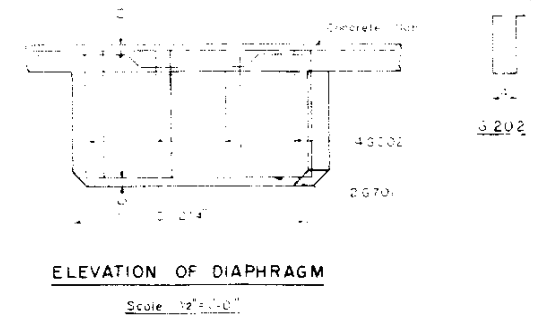
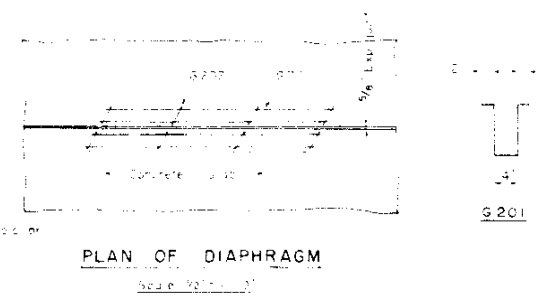
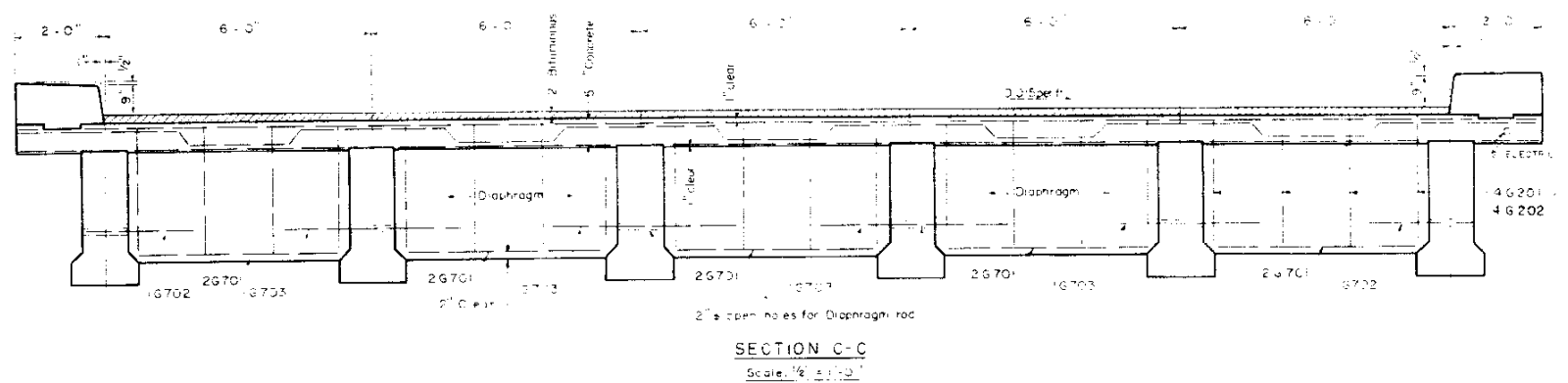
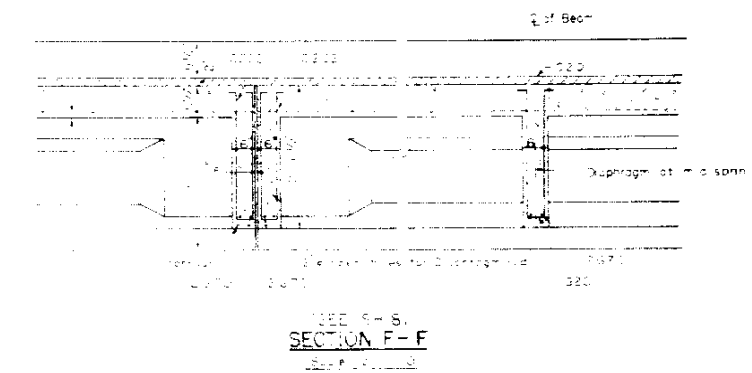
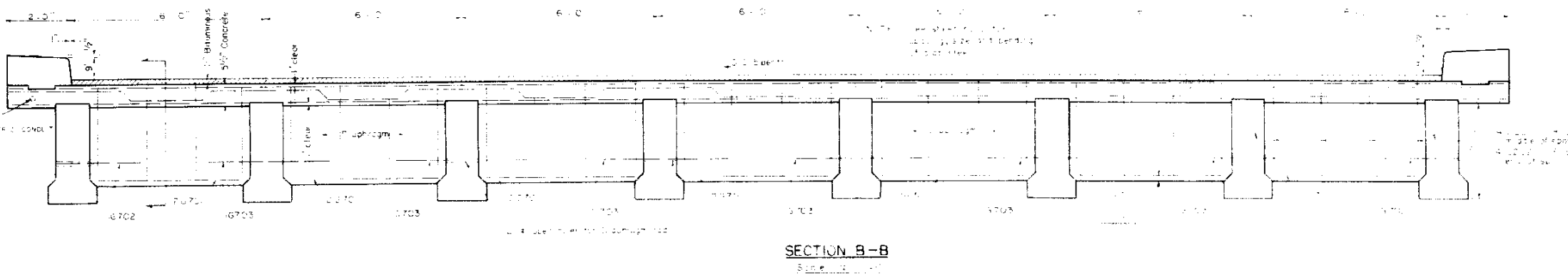
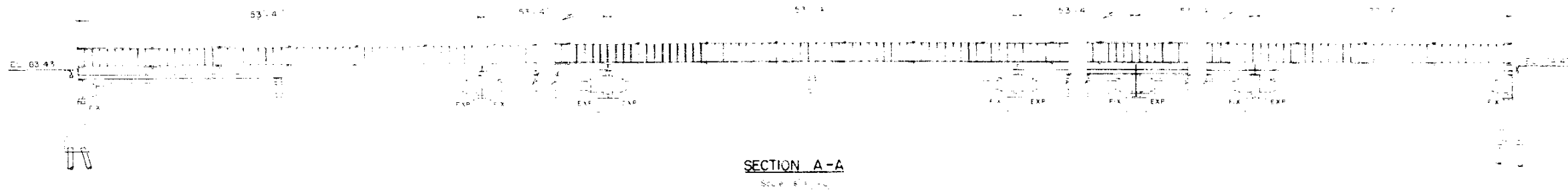
COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 CIMARRON STREET  
 BRIDGE No's 1-17-DG and DF

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.	1 092 215	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"	90	140
46205	U	5'-0"	240	336

**BAR SUMMARY FOR DIAPHRAGMS**

STRUCTURE NO. 1-17-DF		STRUCTURE NO. 1-17-DG	
1,966 Lmt # 2 @ 0.67'	332 lbs	2,780 Lmt # 2 @ 0.67'	464 lbs
1,511 Lmt # 7 @ 2.044'	2,353 lbs	1,604 Lmt # 7 @ 2.044'	3,279 lbs
1/2" Overlap	27 lbs	1/2" Overlap	37 lbs
	2,710 lbs		3,780 lbs
CLASS A CONCRETE	197 cu yds	CLASS A CONCRETE	26.5 cu yds

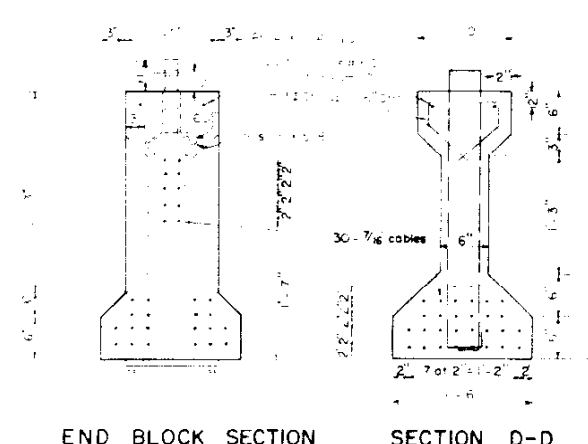
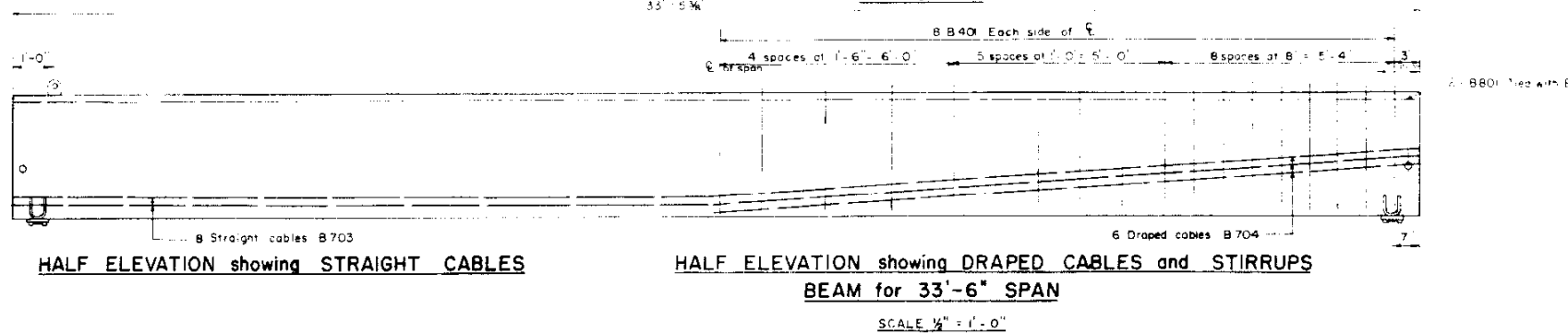
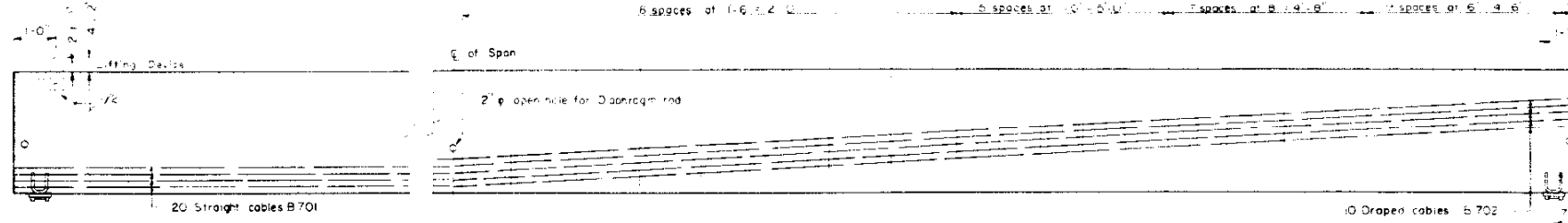
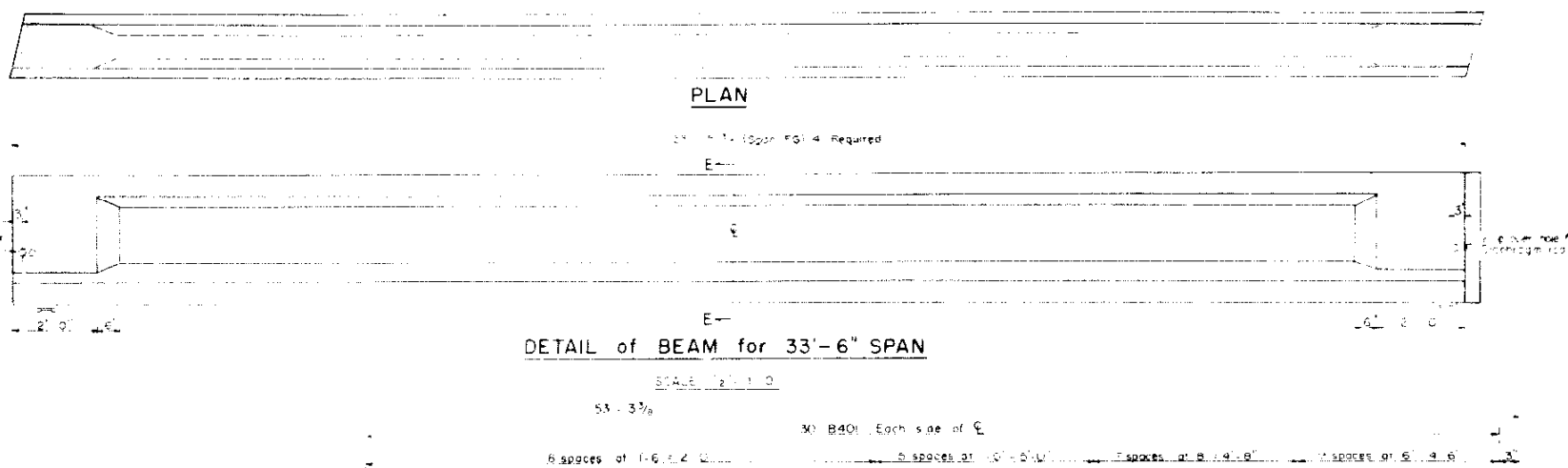
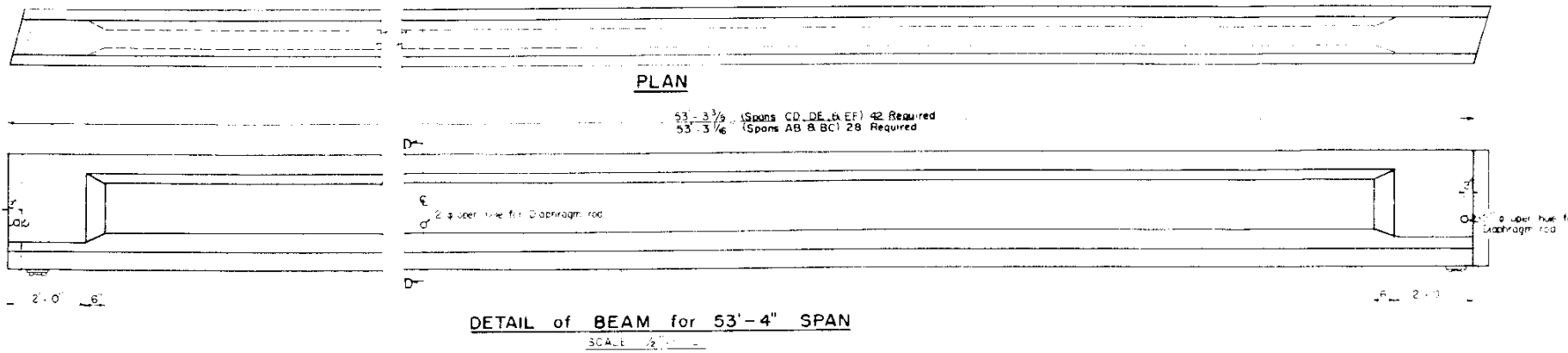
COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 CIMARRON STREET  
 BRIDGE No s 1-17 DG and DF

**SECTION DETAILS OF  
 CONCRETE DECK SLAB,  
 and DIAPHRAGMS for BEAMS**

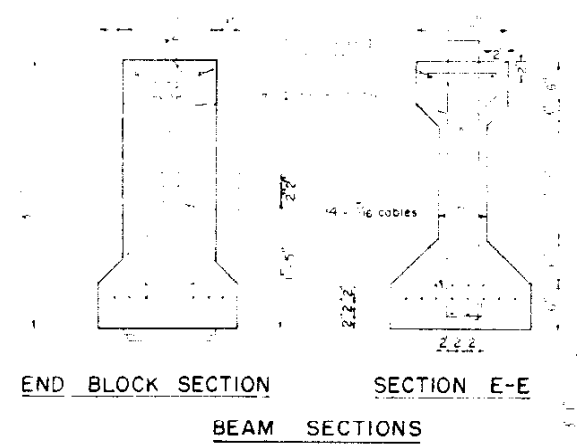
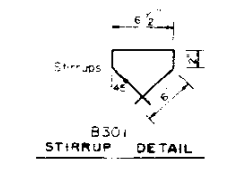
McKEE and CO ENGINEERS DENVER, COLORADO	DATE DRAWING NO. <b>3</b> OF <b>8</b>
---	---

FED. ROAD REG. 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.

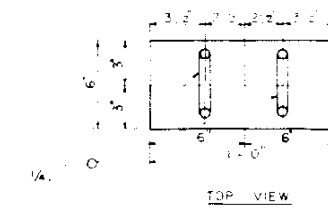
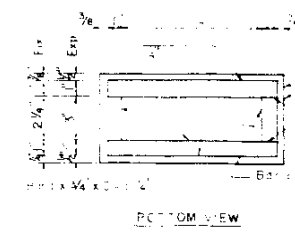
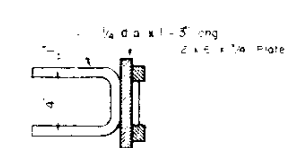


NIT 5. PRESTRESS FORCE EQUALS 230,000 lbs.

SUMMARY of QUANTITIES (per BEAM)				
33'-6" SPAN				
Item	Length	No. Req.	Total In.	Total Wt.
B301	10.5'	21	39 ft	15 lbs.
B401	7'-4"	36	249 ft	167 lbs.
B601	53'-4"	2	67 ft	179 lbs.
B703	33'-6"	8	268 ft	92 lbs.
B704	33'-6"	6	201	69 lbs.
4.7" Total Rein Steel per Beam =				351 lbs.
7/16" Cable - 469 in ft at 0.342" =				161 lbs.
Structural Steel				91 lbs.
Concrete (5000 psi)				3.3 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.



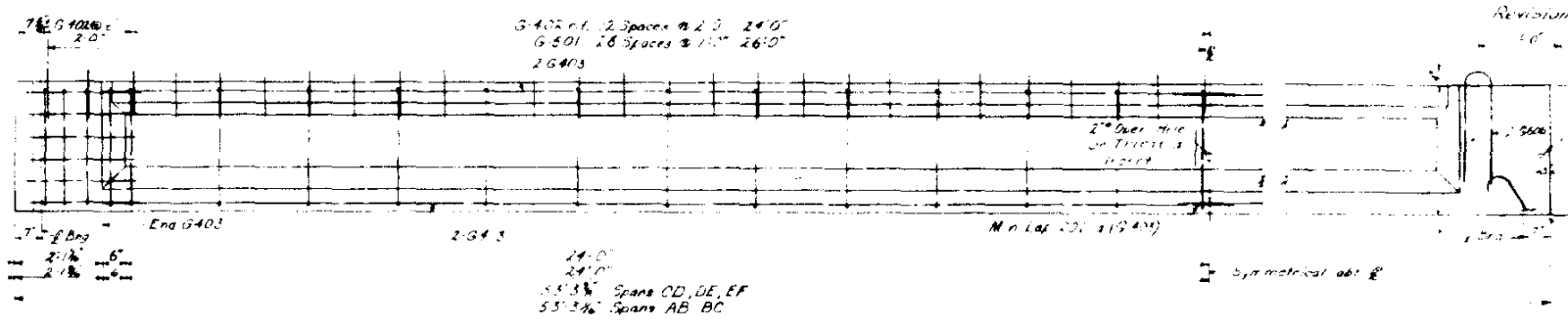
COLORADO STATE HIGHWAY DEPARTMENT  
COLORADO SPRINGS FREEWAY  
CIMARRON STREET  
BRIDGE No's 1-17 DG and DF

DETAIL and SECTIONS of BEAMS

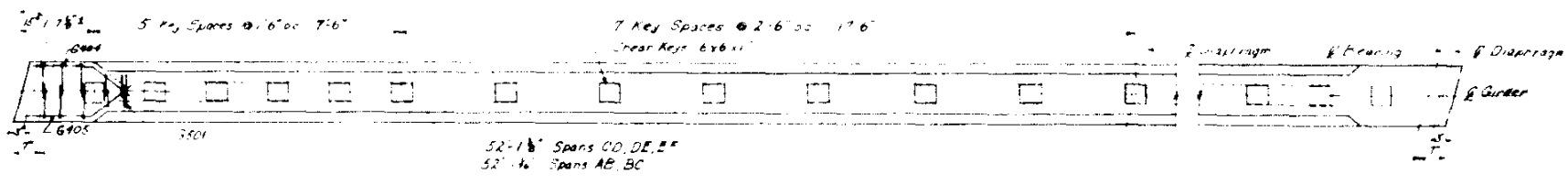
McKEE and CO ENGINEERS DENVER, COLORADO	DATE: DRAWING NO. 4 OF 8
---	--------------------------------

Revised 2-21-58 New Steel - McKee

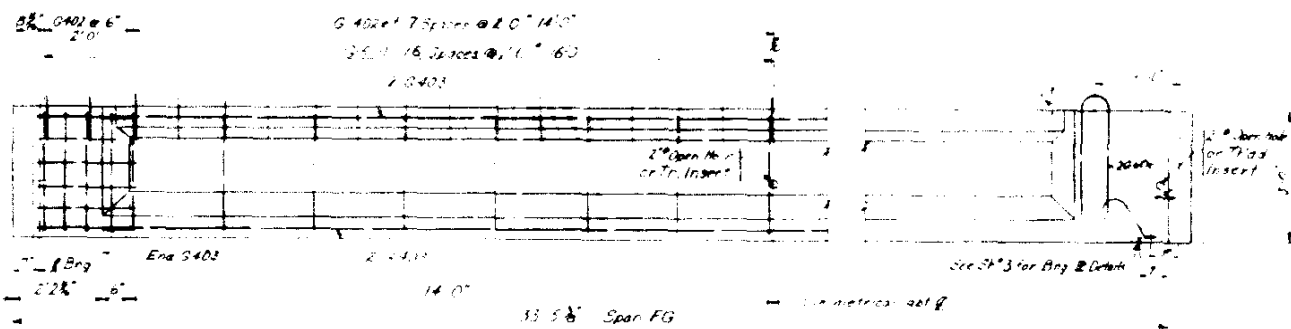
BAR LIST FOR PRESTRESSING STEELS					
33' 4" SPAN (TO BE QU)					
Mark	Typ	Length	No. of Pieces	Total Length	Weight
G501	Bar	1.6'	53	84.8	1.5
G402	Bar	4.1'	20	82.0	1.4
G403	Bar	10.0'	4	100.0	1.4
G404	Bar	2.9'	12	82.8	1.4
G405	Bar	1.5'	12	18.0	1.4
G606	Bar	5.0'	4	20.0	1.6
33' 6" SPAN (1A PER QD)					
G501	Bar	1.6'	53	84.8	1.5
G402	Bar	4.1'	20	82.0	1.4
G403	Bar	10.0'	4	100.0	1.4
G404	Bar	2.9'	12	82.8	1.4
G405	Bar	1.5'	12	18.0	1.4
G606	Bar	5.0'	4	20.0	1.6



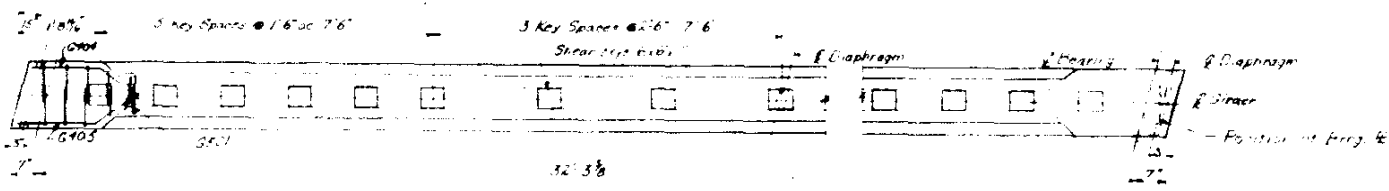
ELEVATION: 33' 4" SPAN  
Scale: 1/2" = 1'-0"



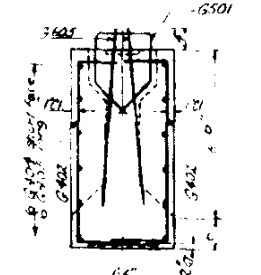
PLAN: 33' 4" SPAN  
Scale: 1/2" = 1'-0"



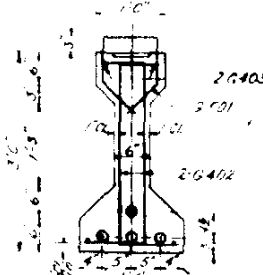
ELEVATION: 33' 6" SPAN  
Scale: 1/2" = 1'-0"



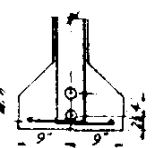
PLAN: 33' 6" SPAN  
Scale: 1/2" = 1'-0"



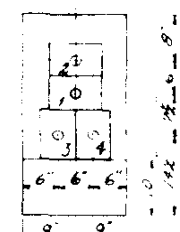
END BLOCK SECTION  
Scale: 1/2" = 1'-0"



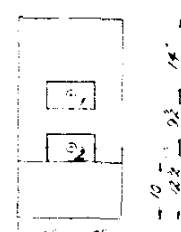
C SECTION  
Scale: 1/2" = 1'-0"



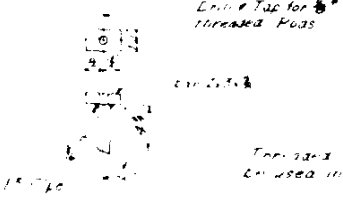
Tendon Spacing (33' 4" Girder)  
Tendon Spa (33' 6" Girder)



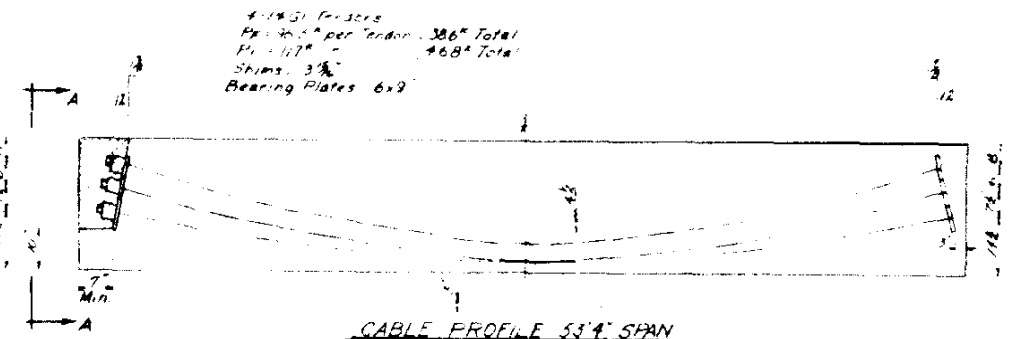
VIEW A-A  
Scale: 1/2" = 1'-0"



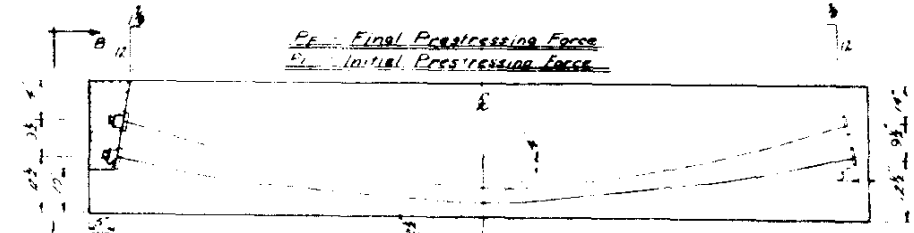
VIEW B-B  
Scale: 1/2" = 1'-0"



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



CABLE PROFILE 33' 4" SPAN  
Not to Scale



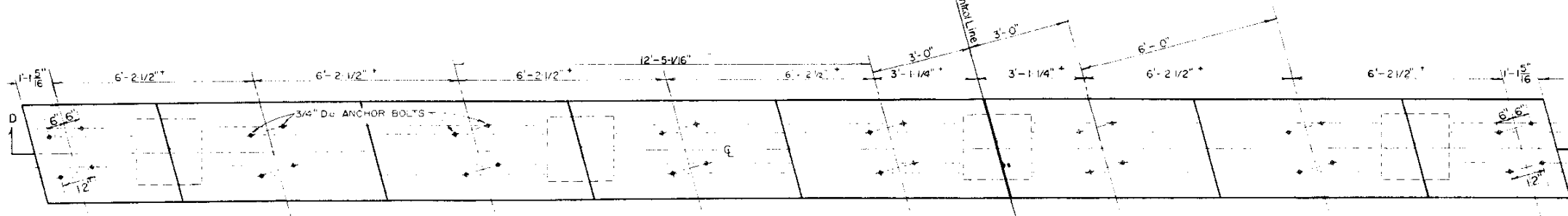
CABLE PROFILE 33' 6" SPAN  
Not to Scale

2 - 2 G1 Tendons  
 Per 10' per Tendon - 176' Total  
 Per 10' - 208' Total  
 Shims: 22  
 Bearing Plates: 5 1/2" x 12"

AS HORNER CONSTRUCTION CO. DENVER, COLORADO	
STANDARD GIRDERS	
PROJ. NO. 1092-2151 COLORADO SPRINGS	
STRUCTURE NOS. 1-17-DG & DF	
CUSTOMER: C.L. HUBNER CONST. CO.	
ENGINEERS: MCKEE & CO.	
DESIGNED BY	SCALE as shown SHEET NO. 574
DRAWN	DATE 1-2-58 NO. 17 WS
CHECKED	

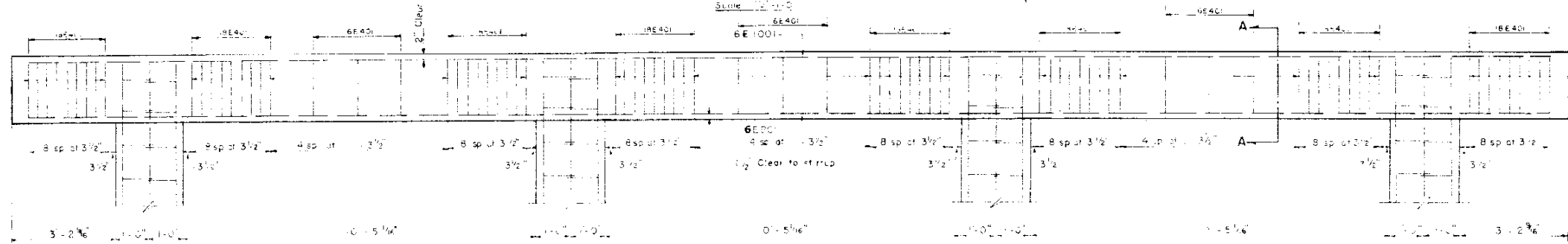
Revised 7-27-58. Added Note (1) P. 2A

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

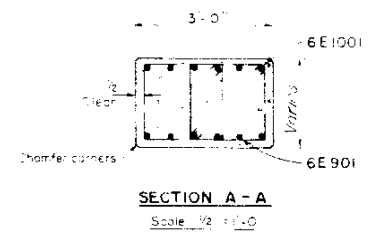


PLAN OF COLUMN CAP  
Scale: 1/2" = 1'-0"

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



SECTION D-D OF COLUMN CAP  
Scale: 1/2" = 1'-0"



SECTION A-A  
Scale: 1/2" = 1'-0"

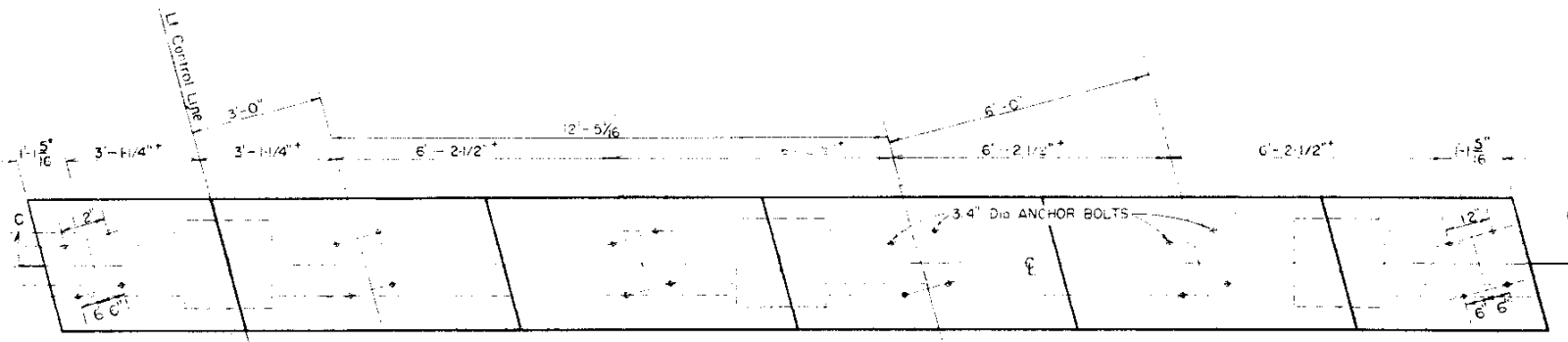
STRUCTURE NO.	MARK	SHAPE	LENGTH	No REQD (PIER)	TOTAL REQD
1-17-DG	E 401		7'-8"	162	610
1-17-DG	E 901		44'-1"	6	30
1-17-DF	E 902		44'-6"	4	20
1-17-DG	E 1001		44'-5"	6	30
1-17-DF	E 1002		44'-5"	6	30
1-17-DF	E 901		12'-5"	20	600

BAR SUMMARY FOR COLUMN CAPS

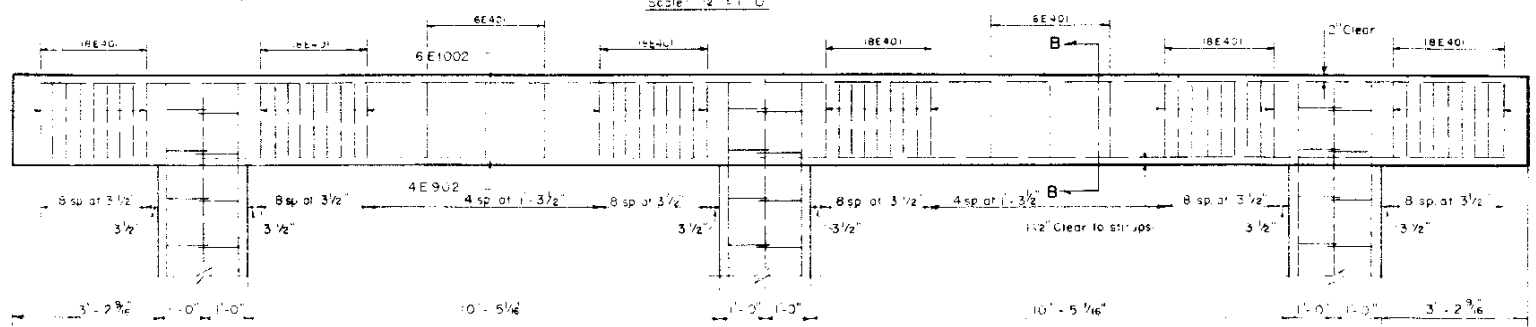
4E901 Unit # 4 668 lbs 308 ft  
 6E1001 Unit # 9 340 lbs 680 ft  
 6E902 Unit # 4 303 lbs 606 ft  
 6E1002 Unit # 6 221 lbs 442 ft  
 6E901 Unit # 20 27,672 lbs  
 CLASS A CONCRETE - 87.74 yds  
 SWEDGED BOLTS - 336 units

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"		
B = 0'-8 5/16"		

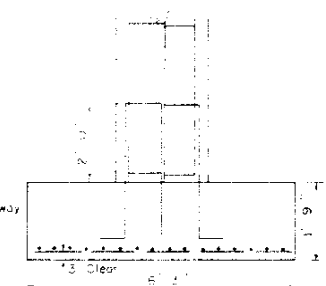


PLAN OF COLUMN CAP  
Scale: 1/2" = 1'-0"

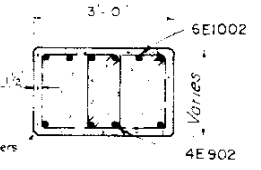


SECTION C-C OF COLUMN CAP  
Scale: 1/2" = 1'-0"

For uses only of Pier on sheet 118-76a



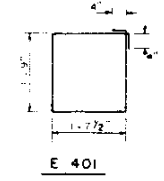
FOOTING DETAIL  
Scale: 1/2" = 1'-0"



SECTION B-B  
Scale: 1/2" = 1'-0"



ANCHOR BOLT SECTION  
Scale: 1/2" = 1'-0"



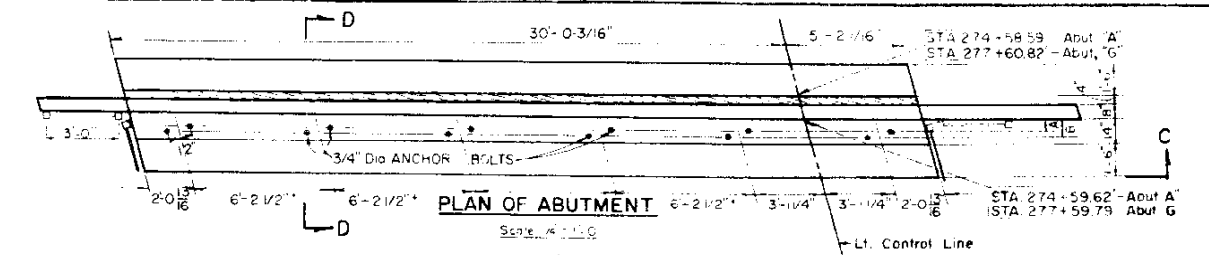
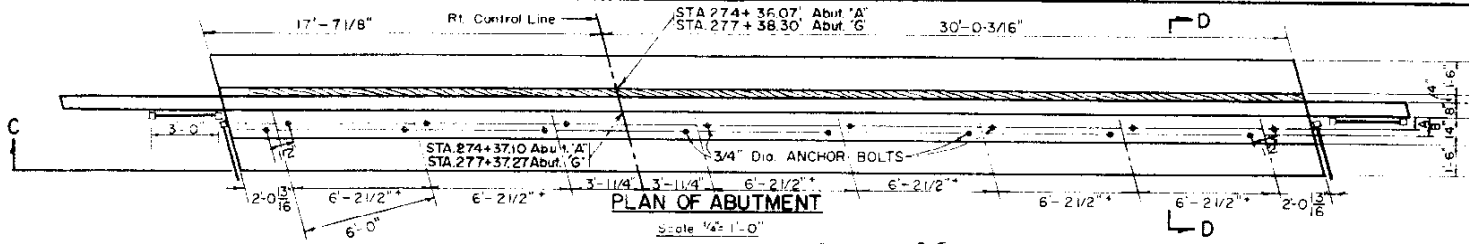
E 401

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

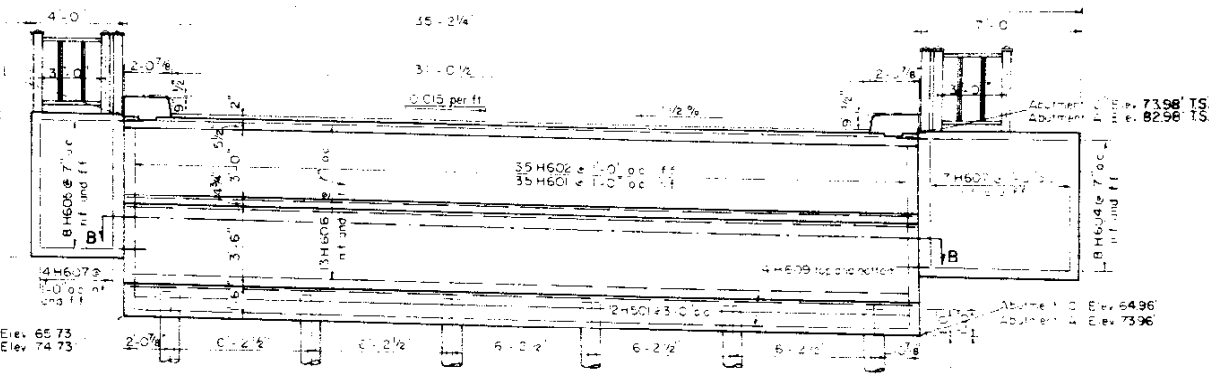
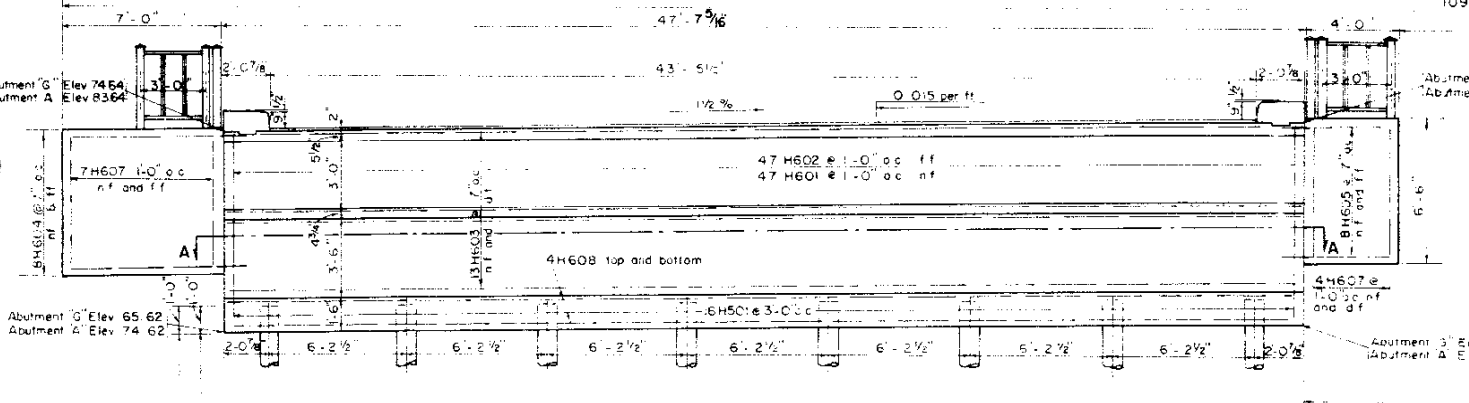
DETAIL and SECTIONS of  
 COLUMN CAP, COLUMNS  
 and TYPICAL FOOTING

McKEE and CO  
 ENGINEERS  
 DENVER, COLORADO

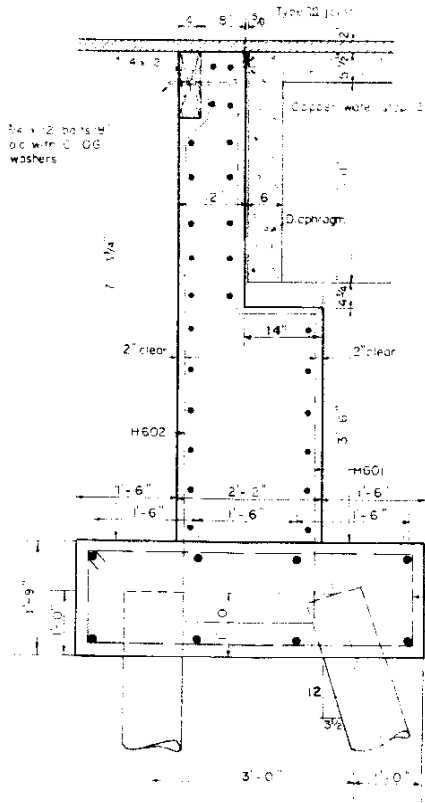
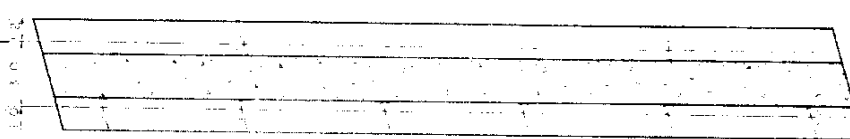
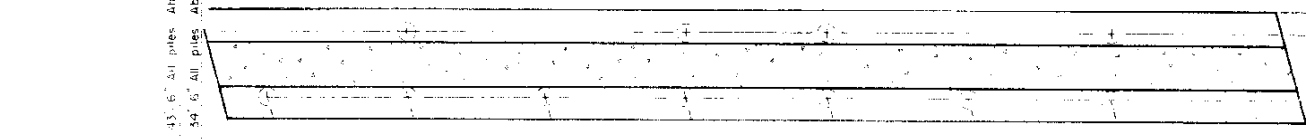
DATE  
 DRAWING NO. 5  
 OF 8



See NOTE (I), Sheet 5 for Dimension A & B

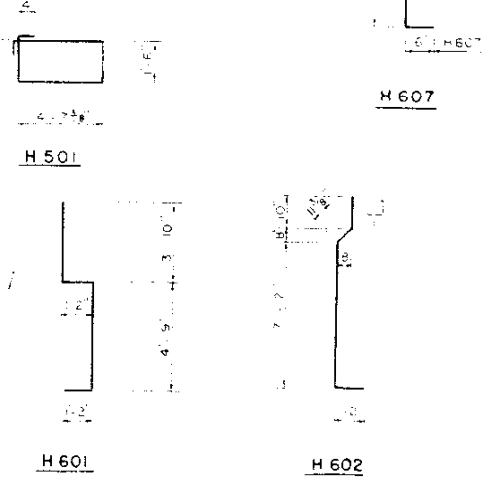


(I) For reinforcement details see sheet No. 769.



723 Lin ft #5	343	754	Lb
9942 Lin ft #6	302	14,933	Lb
		1.57	Lb
		5.964	Lb
CLASS A CONCRETE	130	1	cuyd
12 3/4" OD. PIPE PILE	1664		Lin ft

BAR	SHAPE	LENGTH	NO REQ'D	NO REQ'D	TOTAL
H501		21-0 3/4"	15	15	28
H601		30'-0"	47	31	82
H602		30'-0"	47	35	82
H603		47'-0"	26		26
H604		30'-0"	16	6	32
H605		47'-0"	16	5	32
H606		34'-8"	2	2	26
H607		6'-8"	22	22	44
H608		4'-0"	1	1	8
H609		34'-8"	8	8	8



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

DETAIL of ABUTMENTS

DATE: \_\_\_\_\_

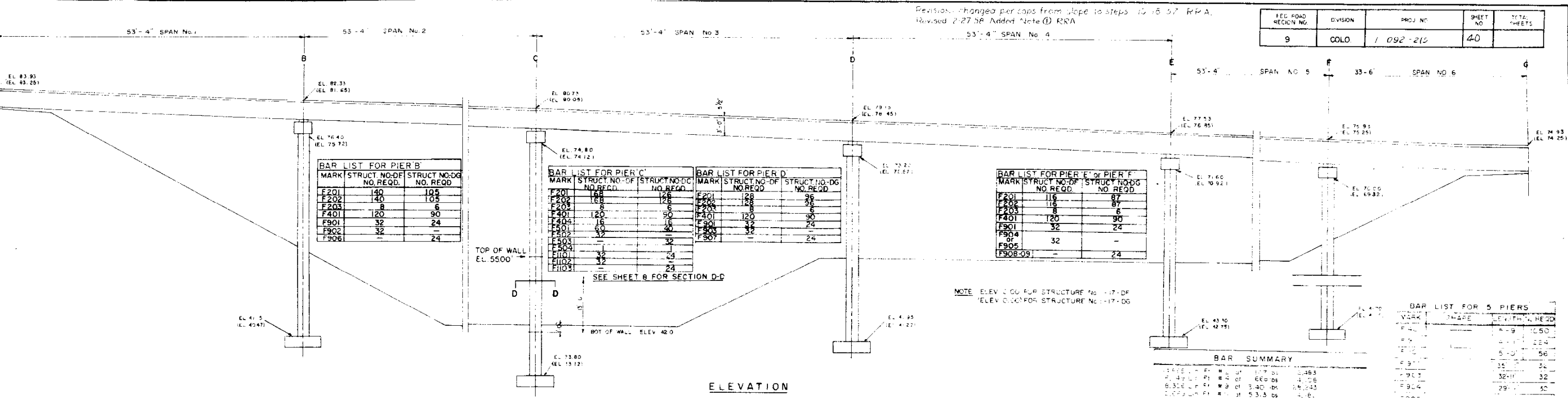
MADE BY: C.C. ENGINEERS  
DENVER, COLORADO

DRAWING NO. 6  
OF 8

REGION NO	DIVISION	PROJECT	SHEET NO	TOTAL SHEETS
9	C&O		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	8	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	8	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	-	24
F906-09	-	24

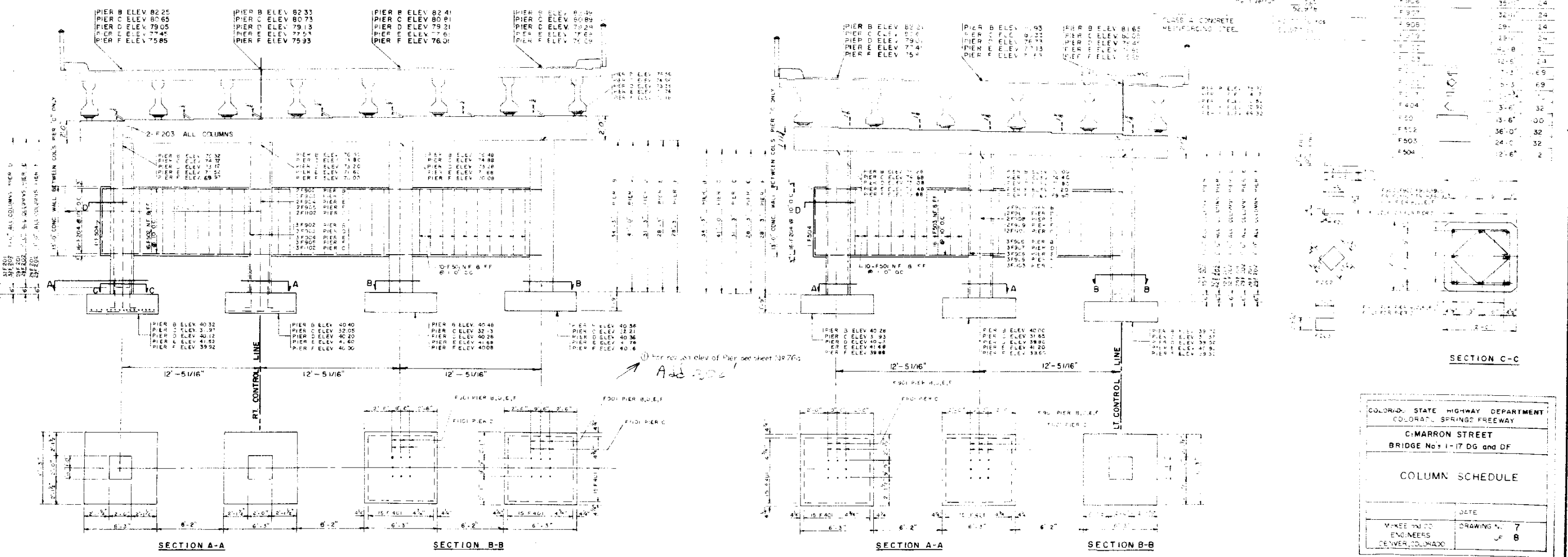
**BAR LIST FOR 5 PIERS**

MARK	SHAPE	LENGTH	HEAD
F201	A-9	10.50	
F202	A-9	22.4	
F203	5-0	5.6	
F401	35	34	
F404	32-11	32	
F901	29-11	30	
F902	29-11	32	
F903	35	34	
F904	29-11	24	
F905	29-11	24	
F906	32-11	24	
F907	29-11	24	
F908	29-11	24	
F909	29-11	24	
F910	42-8	32	
F911	42-8	24	
F912	13-6	30	
F913	13-6	32	
F914	13-6	30	
F915	13-6	32	
F916	12-6	2	

**BAR SUMMARY**

MARK	SHAPE	LENGTH	HEAD
F201	A-9	10.50	
F202	A-9	22.4	
F203	5-0	5.6	
F401	35	34	
F404	32-11	32	
F901	29-11	30	
F902	29-11	32	
F903	35	34	
F904	29-11	24	
F905	29-11	24	
F906	32-11	24	
F907	29-11	24	
F908	29-11	24	
F909	29-11	24	
F910	42-8	32	
F911	42-8	24	
F912	13-6	30	
F913	13-6	32	
F914	13-6	30	
F915	13-6	32	
F916	12-6	2	

**ELEVATION**  
 SCALE: 1/4" = 1'-0"

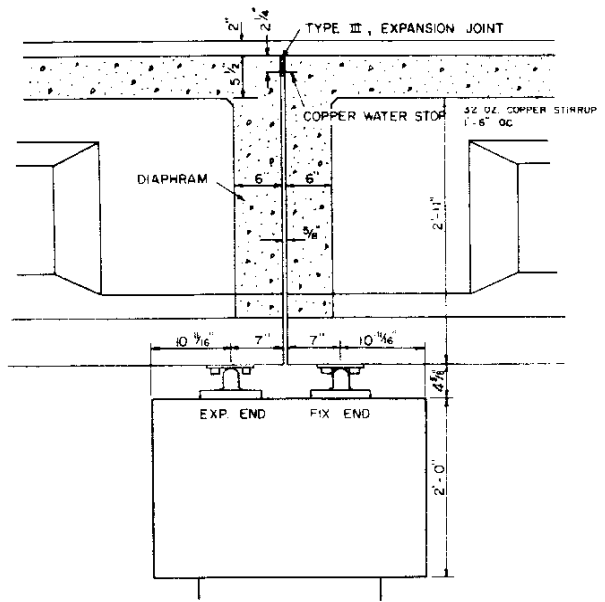


COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 C. MARRON STREET  
 BRIDGE No's 1-17 DG and DF

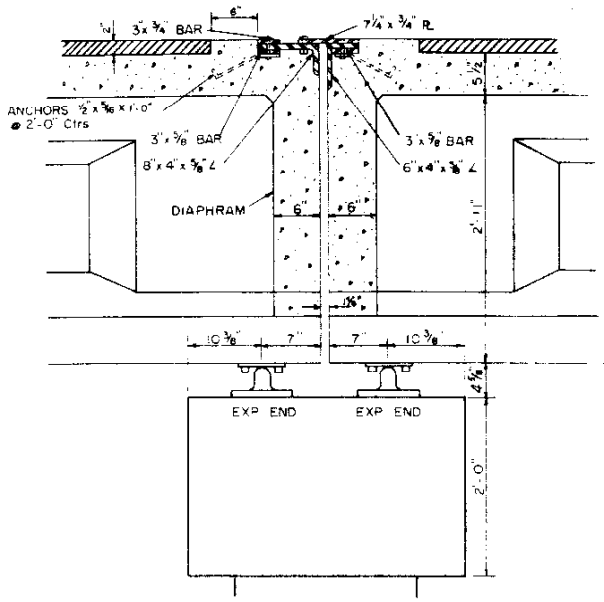
**COLUMN SCHEDULE**

DATE: \_\_\_\_\_  
 DRAWING No. 7  
 OF 8

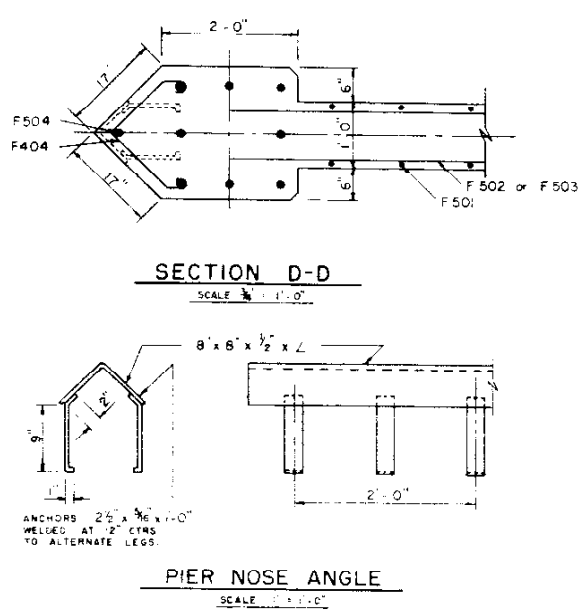
MAKKE AND CO.  
 ENGINEERS  
 DENVER, COLORADO



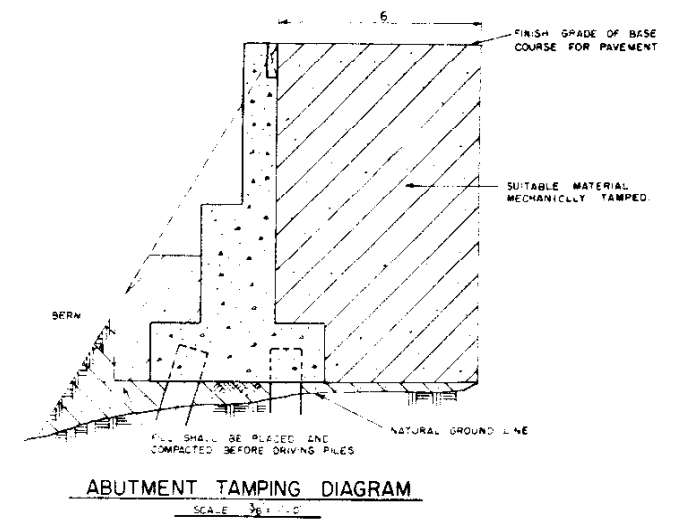
**EXPANSION JOINT DETAIL**  
FOR PIERS WITH ONE FIXED END & ONE FREE END  
SCALE: 1/2" = 1'-0"



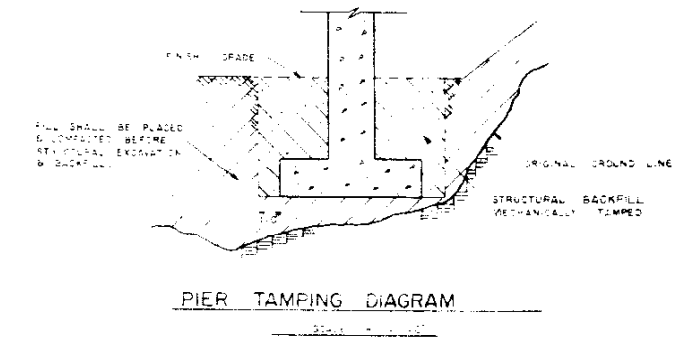
**EXPANSION JOINT DETAIL**  
FOR PIERS WITH ENDS FREE  
SCALE: 1/2" = 1'-0"



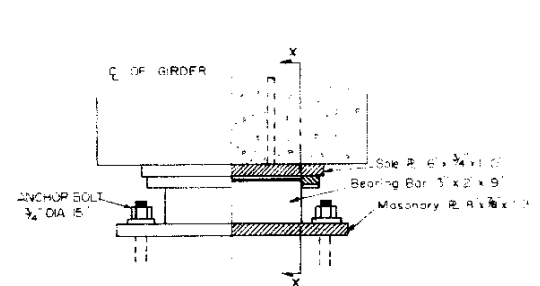
**PIER NOSE ANGLE**  
SCALE: 1/2" = 1'-0"



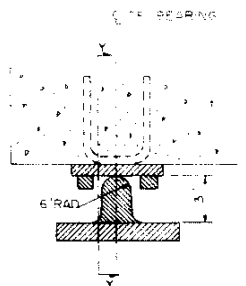
**ABUTMENT TAMPING DIAGRAM**  
SCALE: 3/8" = 1'-0"



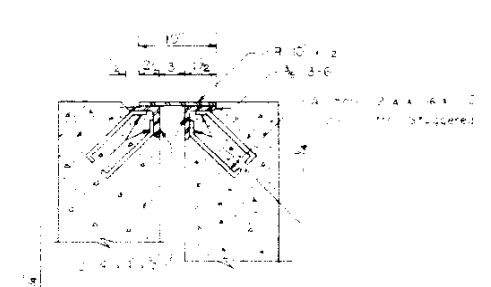
**PIER TAMPING DIAGRAM**  
SCALE: 3/8" = 1'-0"



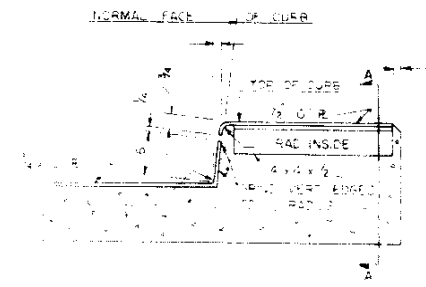
**HALF END ELEV HALF-SECTION Y-Y**



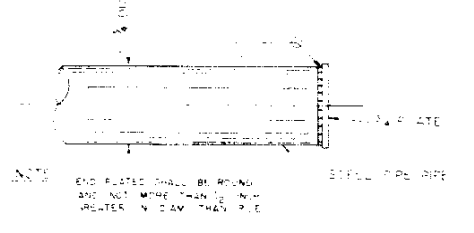
**SECTION X-X**



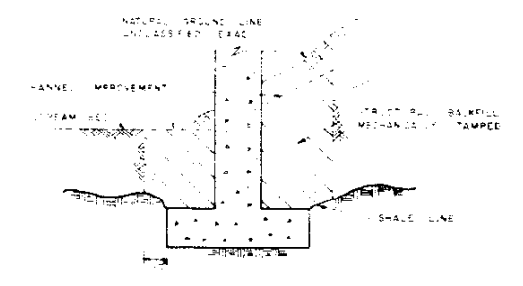
**EXPAN DEVICE - CURBS**  
SECTION A-A



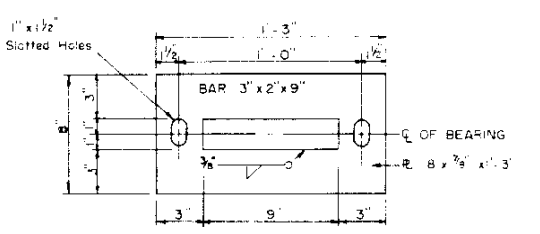
**EXPAN DEVICE AT CURB**



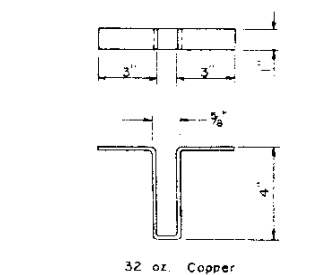
**END PLATES FOR PIPE PILES**



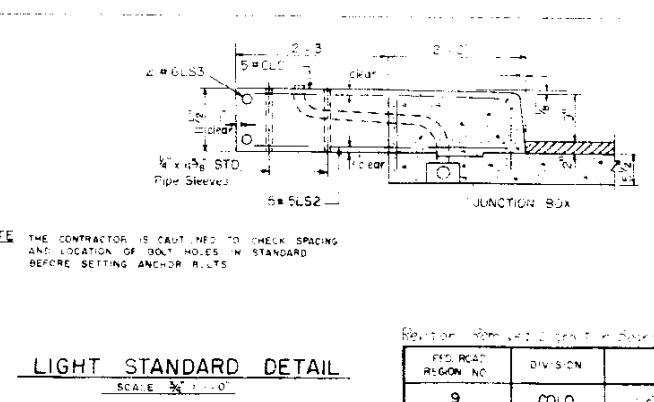
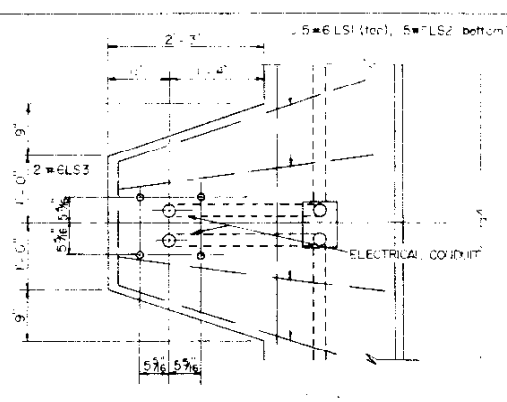
**PIER TAMPING DIAGRAM**  
SCALE: 3/8" = 1'-0"



**DETAILS OF BEARING**



**COPPER STIRRUP DETAIL**



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

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

PROJ. NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLG	109-10-1	4-1	

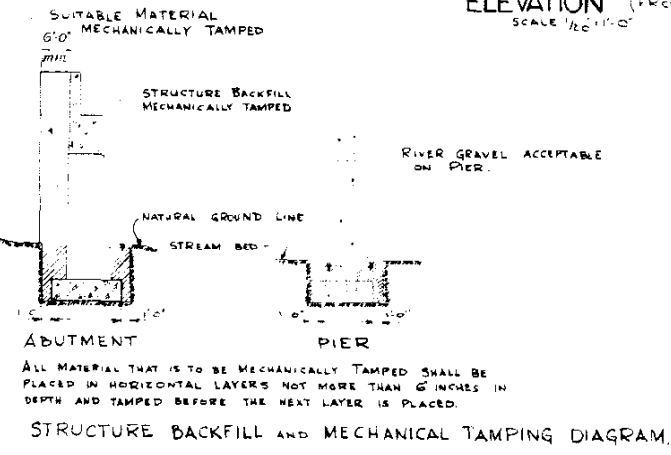
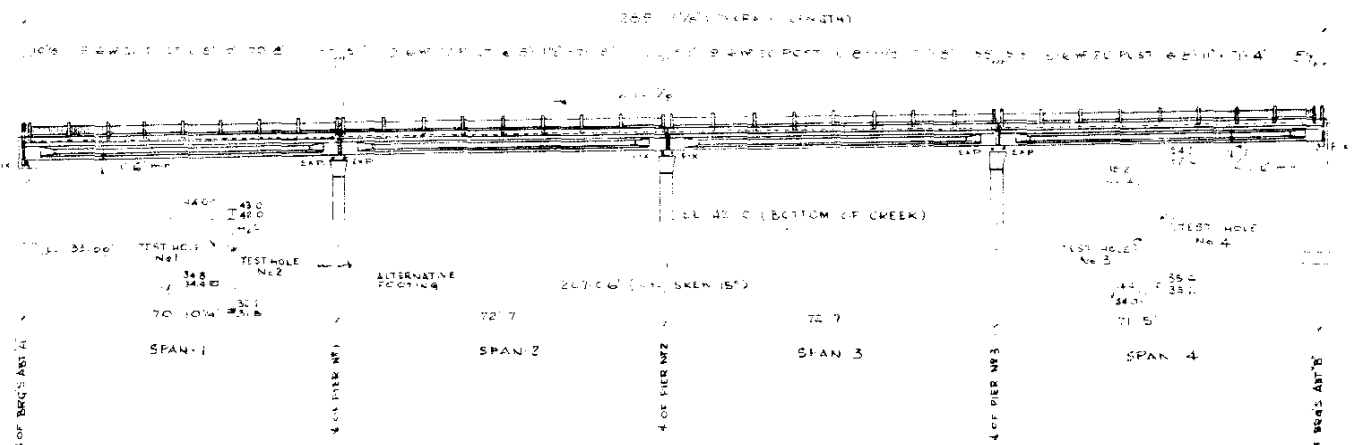
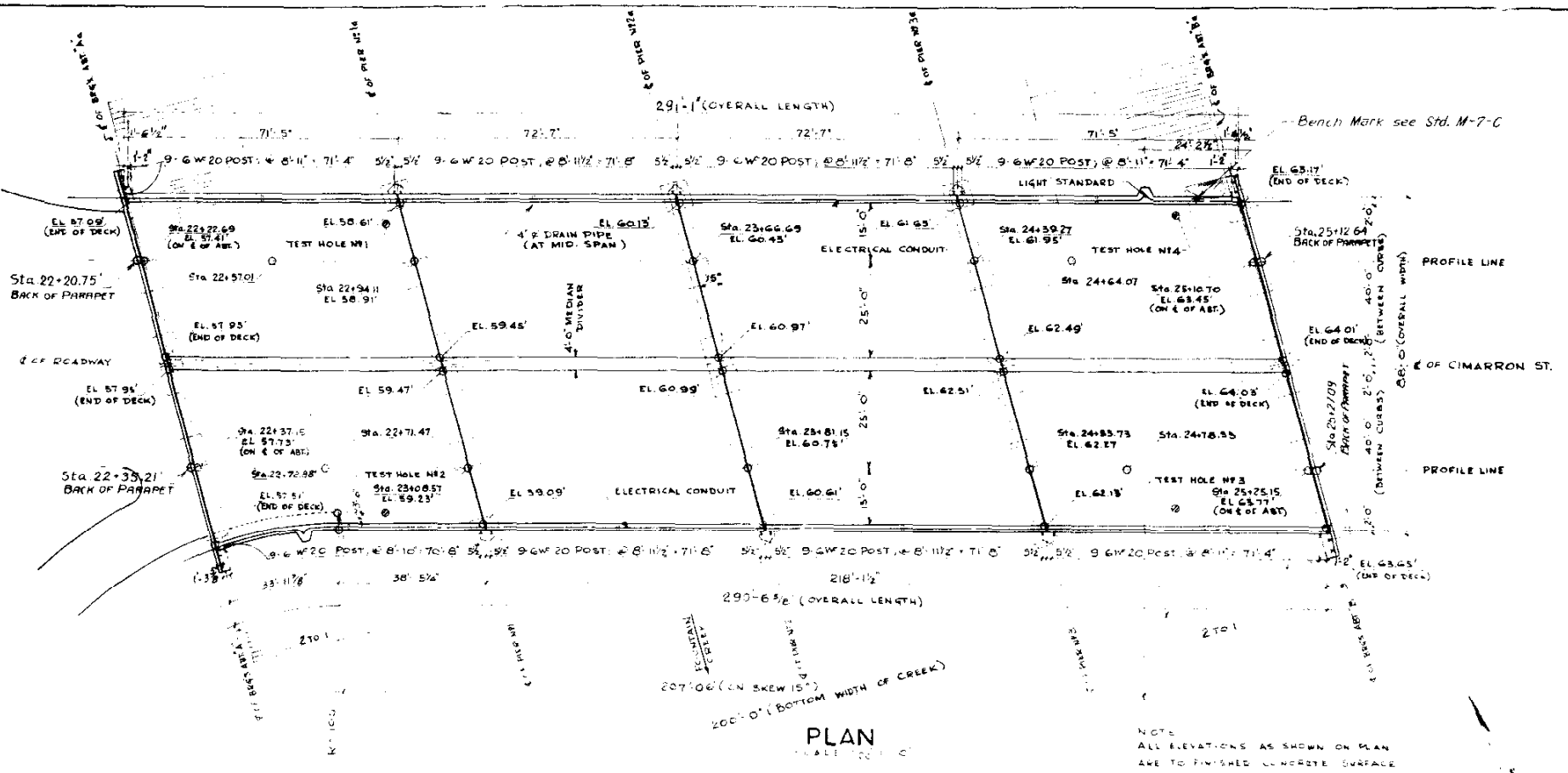
COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 CIMARRON STREET  
 BRIDGE Nos 1-17 DG and DF

**DETAILS**

DATE	
MCKEE and CO ENGINEERS DENVER, COLORADO	DRAWING NO. B OF 8

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<sub>c</sub> = 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.

**INDEX OF SHEETS**  
SHEET NO. 1 GENERAL PLAN AND ELEVATION  
2 ABUTMENTS 'A' AND 'B'  
3 ABUTMENTS 'A' AND 'B'  
4 PIERS  
5 GIRDERS AND RAILING  
6 DECK

**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
91	1/2" EXP. J. MATL. TYPE III, (1" EXP. J. MATL. TYPE III)	LN FT	93	191		284
99a	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 SHOWN 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 M32 (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.

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 4-15-54

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 ABT'S 'Aa' AND 'B'**

MARK	TYPE	LENGTH	W.R.#	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	#8
A411	BENT	10'-9"	92	#4
A412	STR	27'-6"	16	#8
A413	BENT	7'-0"	16	#4
A414	"	6'-0"	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	#2
A420	BENT	2'-6"	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'-1"	9-8	6
A426	"	3'-3"	9-7	6
A427	"	3'-4"	9-10	6
A428	"	3'-6"	10-1	6
A429	"	3'-7"	10-4	6
A430	"	3'-9"	10-7	3
A431	"	3-10	10-10	3
A432	"	3-11	11-1	3
A433	"	4-1	11-4	3
A434	"	5'-0"	12-0	6
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

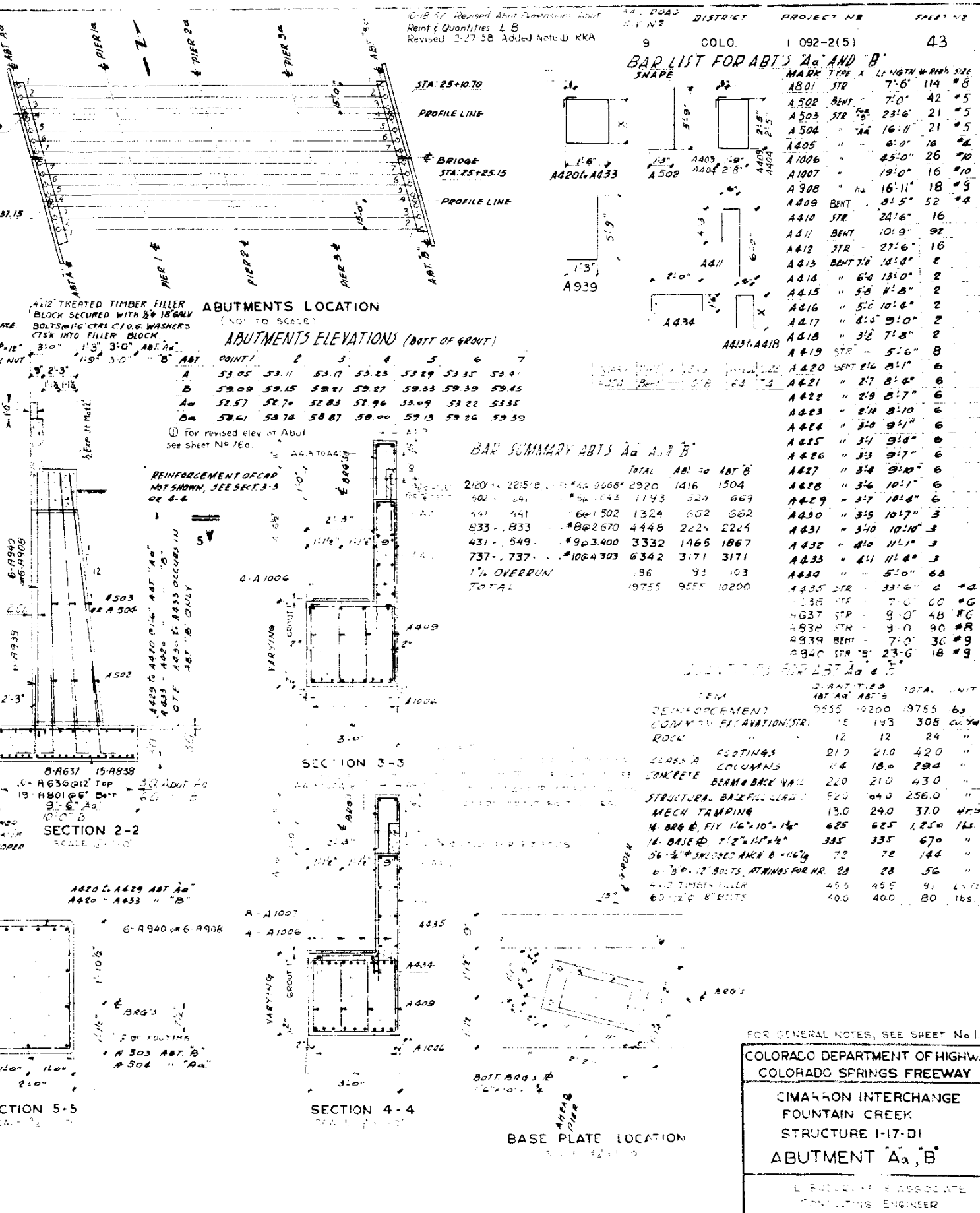
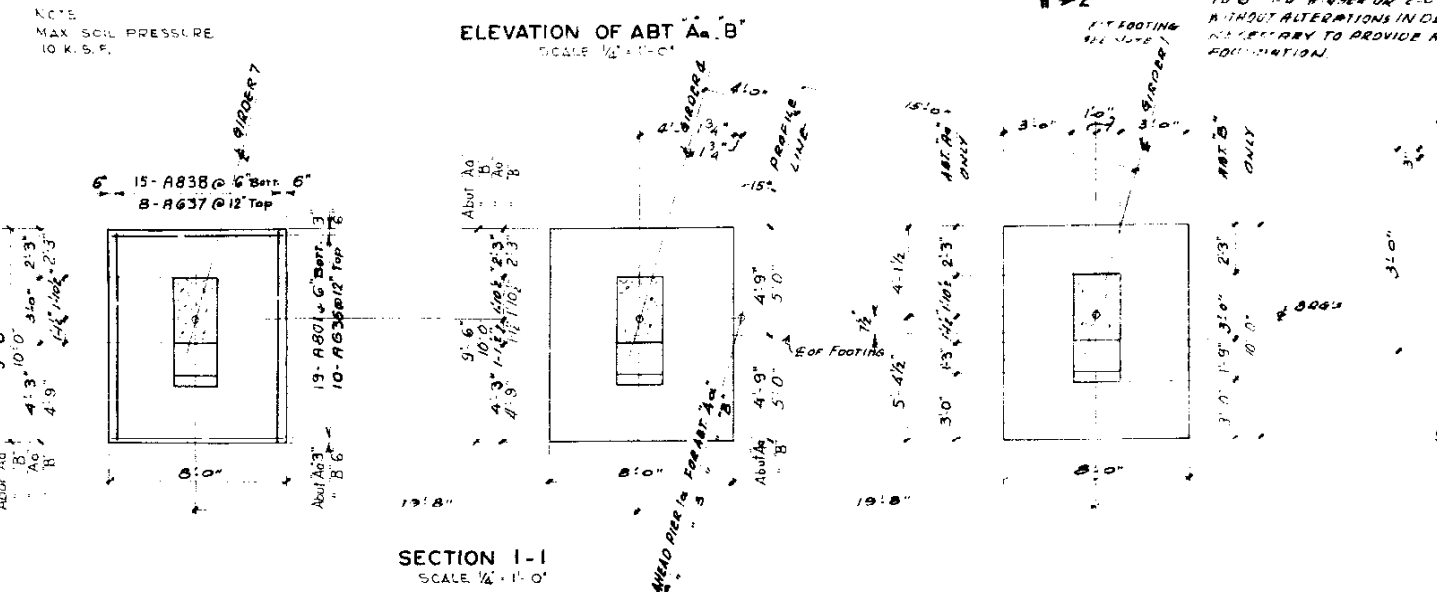
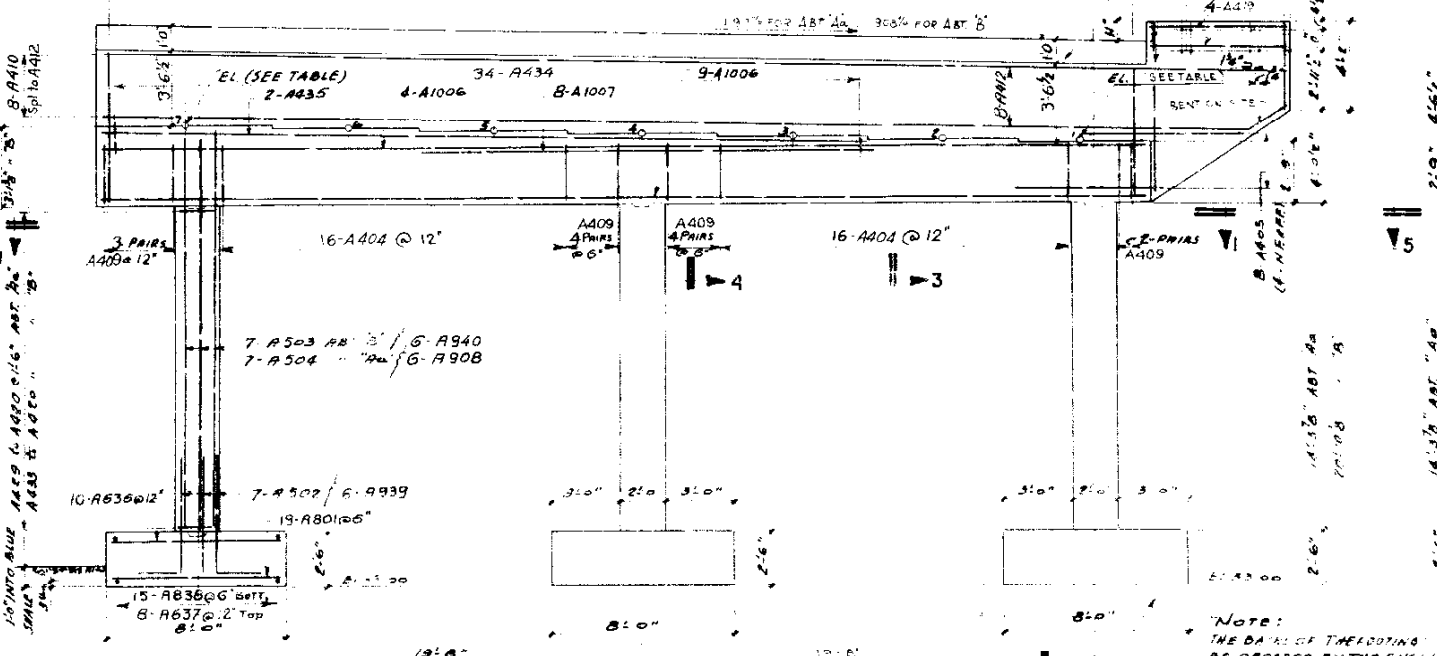
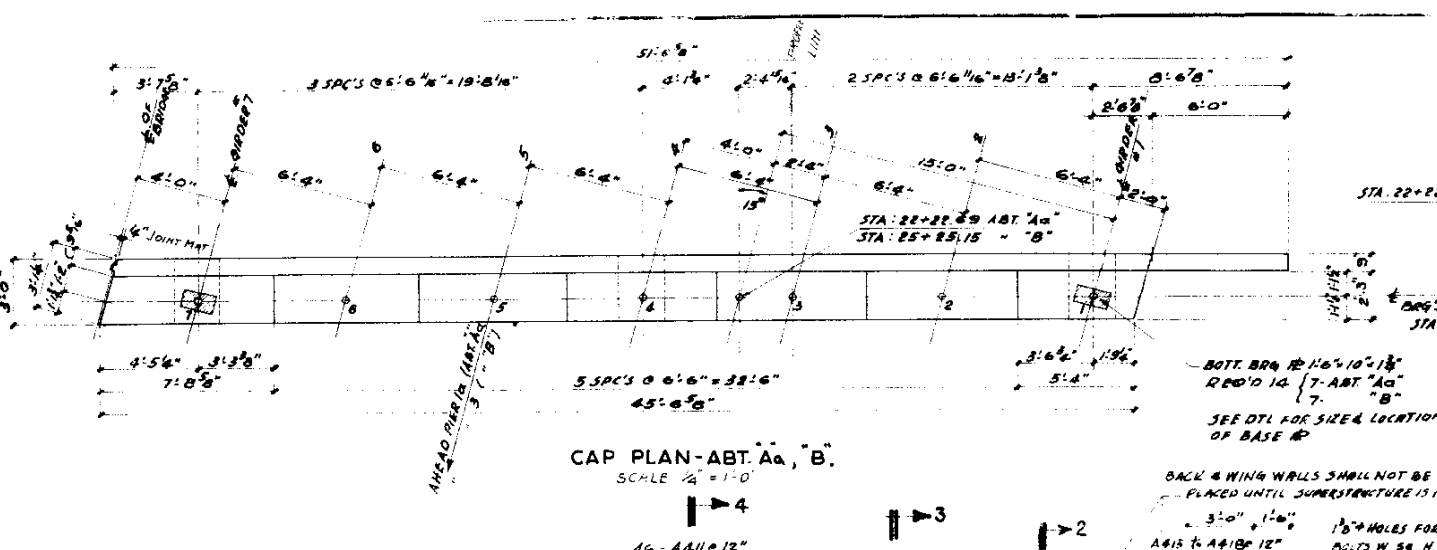
**ABUTMENTS ELEVATIONS (BOTT OF GROUT)**

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

For revised elev. of Abut see sheet NP 760.

**BAR SUMMARY ABTS 'Aa' AND 'B'**

ITEM	QUANTITIES	TOTAL	UNIT
REINFORCEMENT	9555	19200	19755 lbs
COMMON EXCAVATION (STR)	115	193	308 cu yd
ROCK	12	12	24 "
CLASS 'A' FOOTINGS	210	210	420 "
COLUMNS	14	18	294 "
CONCRETE BEAM BACK WALL	220	210	430 "
STRUCTURAL BACKFILL CURB	520	1040	2560 "
MECH TAMPING	130	240	370 cu yd
18-808 B. FIX 16"x10"x14"	625	625	1,250 lbs
18-BASE ID 212"x14"x4"	335	335	670 "
36-3/8" SMOOVED ANK B 116"x4"	72	72	144 "
6-8"x12" BOLTS, ATINGS FOR HR. 28	28	28	56 "
4"x2" TIMBER FILLER	455	455	91 LBS
60"x12"x8" 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: 1-1-58  
 DRAWN BY: DATE: 1-1-58  
 SHEET No. 2  
 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	#4
A411	BENT	-	10'-9"	32	#4
A412	STR	-	23'-9"	16	#4
A413	STR	-	38'-7"	8	#4
A414	BENT	-	5'-0"	60	#4
A415	STR	-	33'-6"	4	#4
A416	BENT	-	0'-5"	26	#4
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	-	9'-0"	48	#8
A441	STR	-	7'-6"	80	#8
A442	BENT	-	7'-0"	36	#9
A443	STR	-	17'-5"	18	#9
A444	BENT	-	10'-8"	32	#4

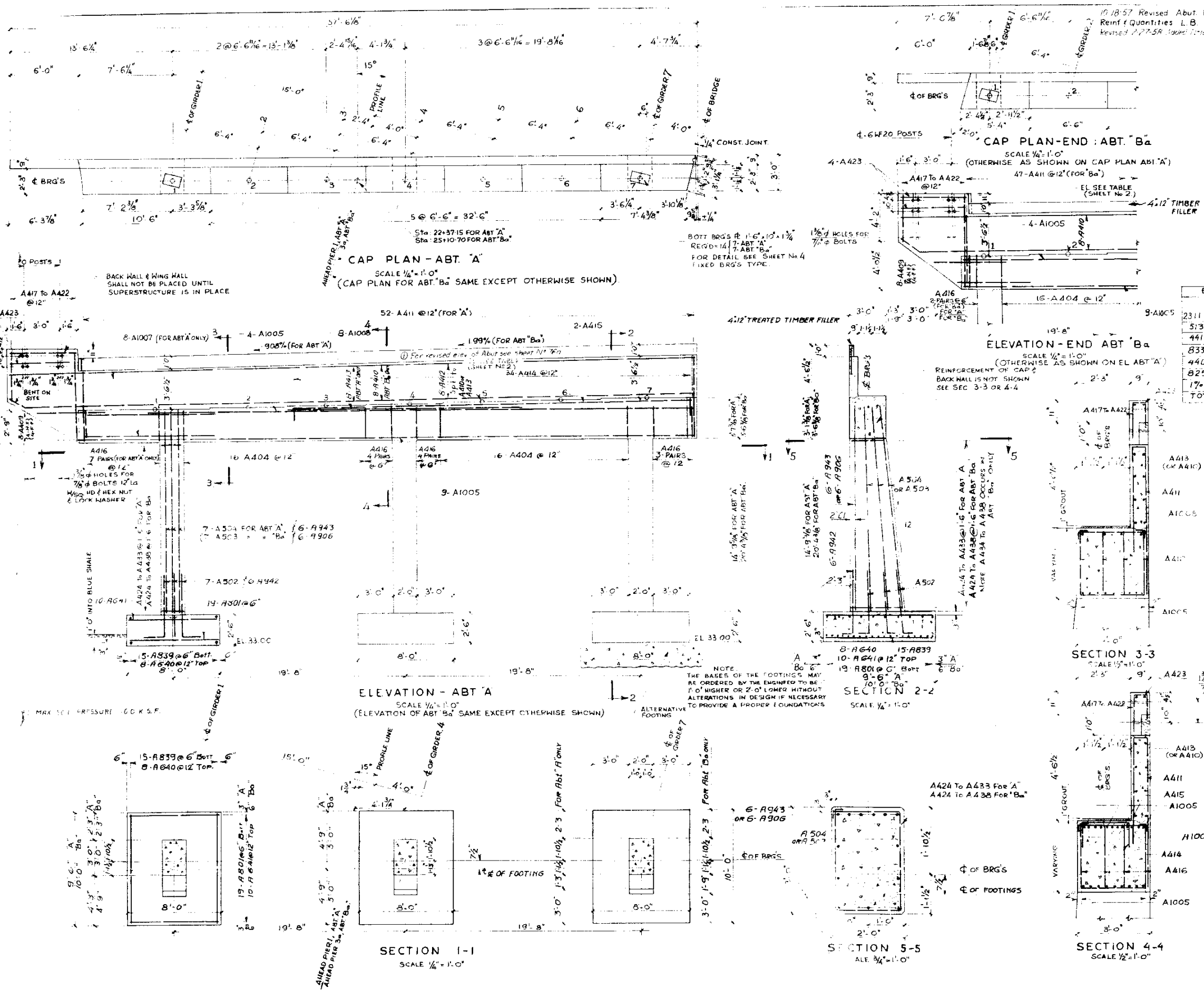
BAR SUMMARY ABT 'A' AND 'Ba'

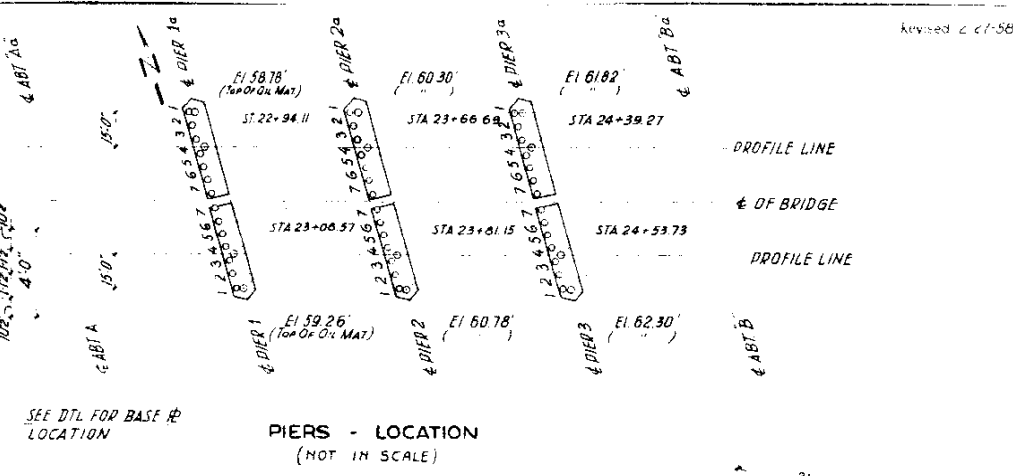
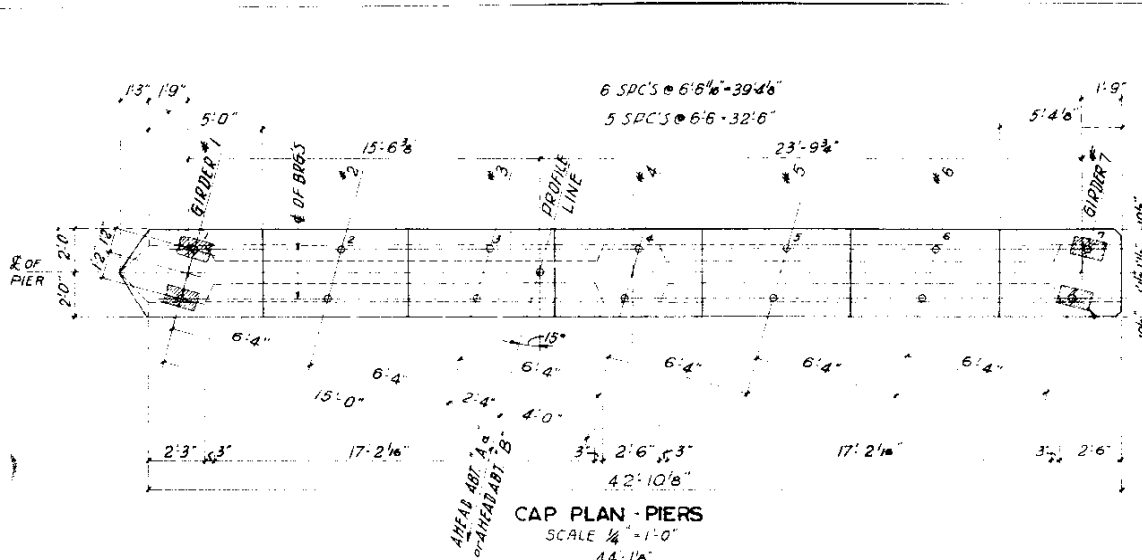
ITEM	ABT 'A'	ABT 'Ba'	TOTAL
2311 (11) 2292 (Ba) Lin Ft	4000	1544	5544
513 - 630	1192	657	1849
441 - 441	1324	662	1986
833 - 833	4448	2224	6672
440 - 540	3332	1836	5168
825 - 737	6722	3172	9894
17% OVERRUN	198	99	297
TOTAL	20290	10180	30470

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'-1/4")	625	625	1250	LBs
14-BASE PL (2'-2" x 11'-1/2")	335	335	670	"
56-3/4" SWELDED ANCHOR BOLTS (1/2" dia)	72	72	144	"
16-7/8" x 12" BOLTS (AT WINGS)	28	28	56	"
4'-1/2" TIMBER FILLER	515	455	970	Lin Ft
65-3/4" x 18" BOLTS	470	400	870	Ins

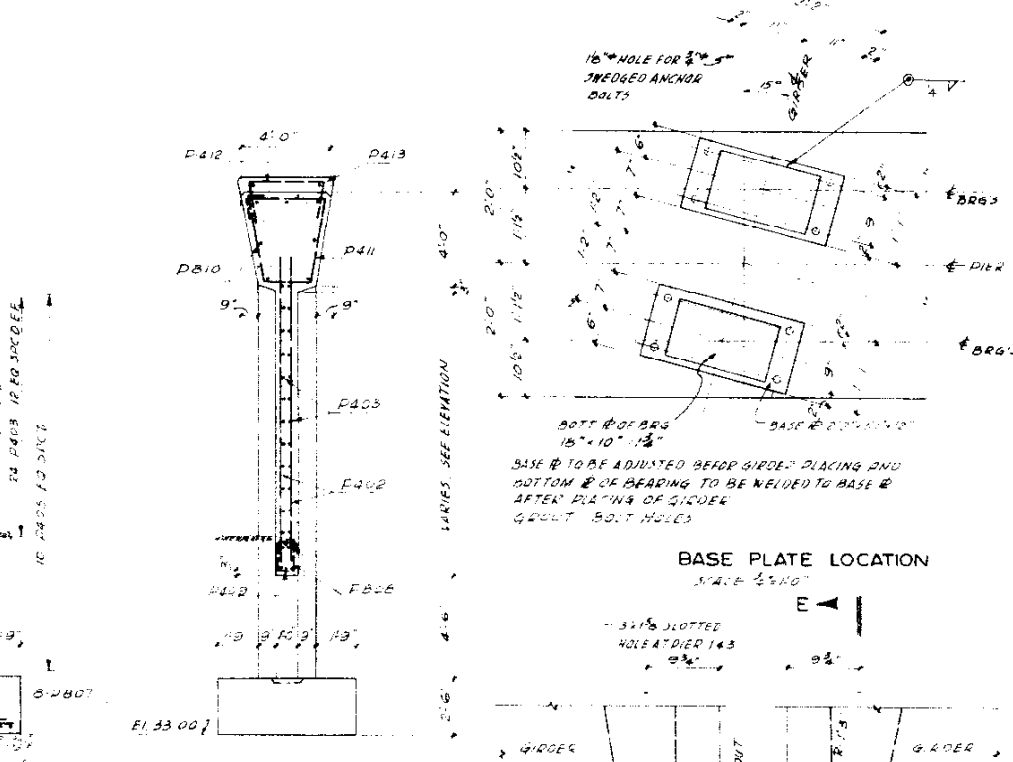
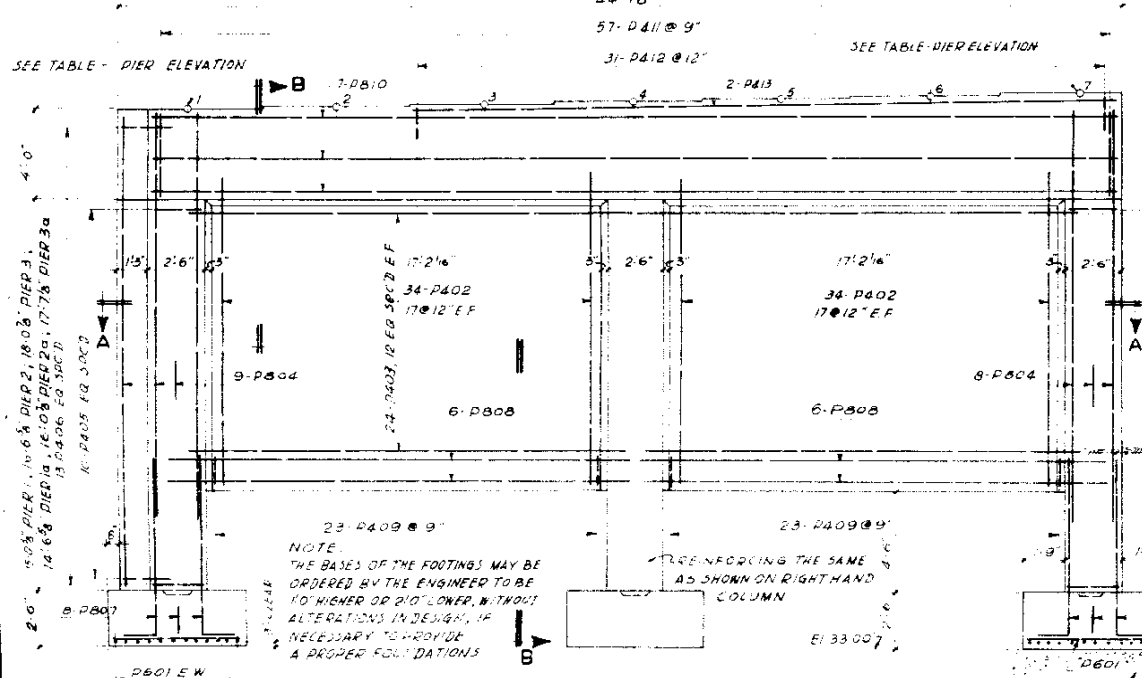
NOTE: FOR LOCATION OF ABT 'A' & 'Ba' AND BASE PLAT SEE SHEET No. 2  
 FOR GENERAL NOTES, SEE SHEET No. 1  
**COLORADO DEPARTMENT OF HIGHWAY**  
**COLORADO SPRINGS FREEWAY**  
**CIMARRON INTERCHANGE**  
**FOUNTAIN CREEK**  
**STRUCTURE 1-17-D1**  
**ABUTMENT 'A', 'Ba'**  
 L. BODURFF & ASSOCIATE  
 CONSULTING ENGINEER  
 DESIGNER'S SCALE: AS NOTED SHEET No. 3  
 CHECKER'S NAME: DATE: 4-5-57 W.D.F.SNEE'S 6





BAR LIST FOR 6 PIERS

MARK	TYPE	LENGTH	REQ.	SIZE
D601	STR	5'-6"	432	#6
P402		13'-6"	408	#4
P403		13'-0"	288	#4
D804		18'-3"	150	#8
P405	CRNT	9'-6"	190	#2
D806		6'-4"	78	#4
D807		10'-5"	144	#8
P408	STR	20'-6"	72	#8
P409	BENT	3'-9"	276	#4
D810	STR	22'-6"	42	#8
P411	BENT	14'-3"	342	#4
P412		6'-9"	186	#4
P413	STR	31'-0"	12	#4



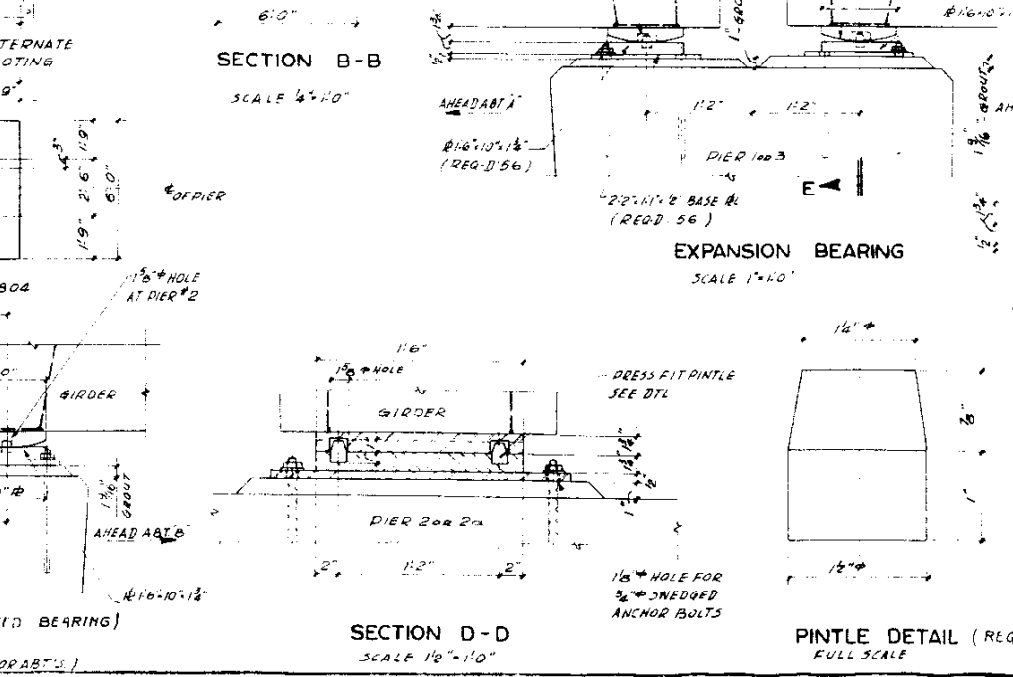
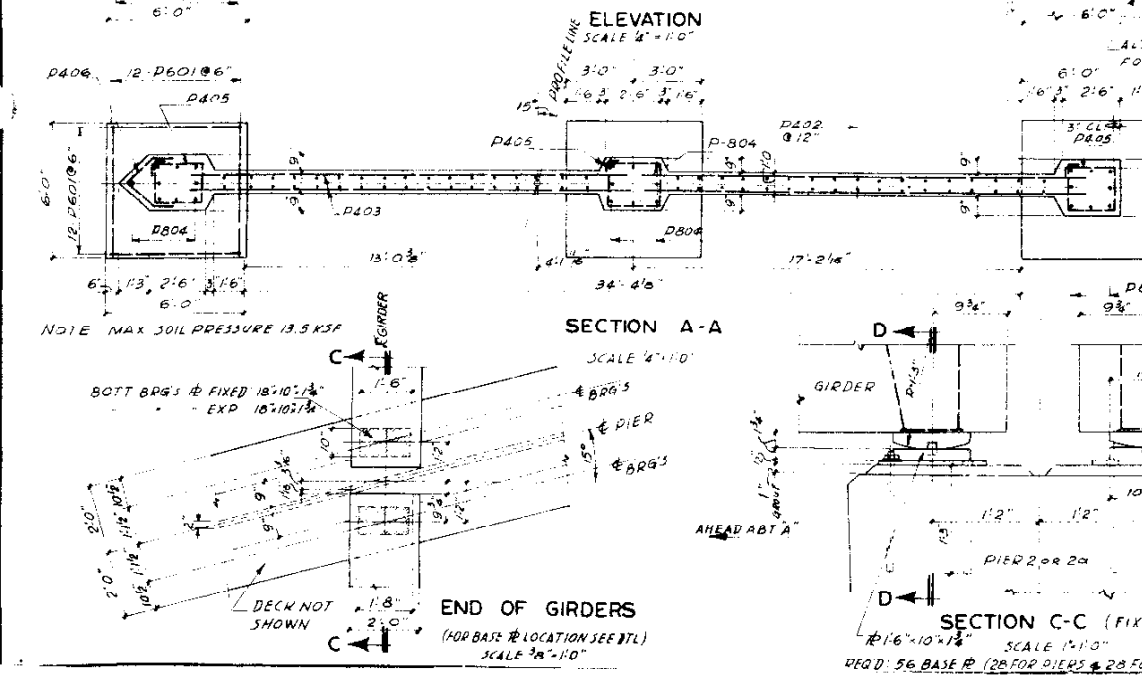
PIER ELEVATIONS (TOP OF CONCRETE)

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	57.09	57.22	57.35	57.48	57.61	57.74	57.87

FOR DETAILS OF PIER SEE SHEET N17Ea

QUANTITIES FOR 6 PIERS

ITEM	PIER 1	PIER 2	PIER 3	1a	2a	3a	TOTAL	UNIT	
REINFORCING BARS	285	400	410	430	430	430	2385	LS	
COMMON EXCAVATION (12" MAX)	50	50	50	50	50	50	300	CU YD	
ROCK	5	5	5	5	5	5	30	CU YD	
GLASS FOOTINGS	10	10	10	10	10	10	60	EA	
2" ANCHOR BOLTS	25	25	25	25	25	25	150	EA	
CONCRETE BEAM	27.0	27.0	27.0	27.5	27.5	27.5	163.5	CU YD	
STRUCTURAL BALANCE	32.5	32.5	32.5	32.5	32.5	32.5	195	EA	
MECH. TAMPING	5	5	5	5	5	5	30	HR	
2" BENT #4 REINFORCING	-	-	-	-	-	18.50	-	18.50	100
GR-BASE #4 REINFORCING	47.0	47.0	47.0	47.0	47.0	47.0	284	CU YD	
50' BAG #4 REINFORCING	89.2	89.2	89.2	89.2	89.2	89.2	535.6	EA	
330' #4 REINFORCING ENCEDED A B	14.3	14.3	14.3	14.3	14.3	14.3	85.8	EA	



FOR GENERAL NOTES, SEE SHEET N17E

COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY

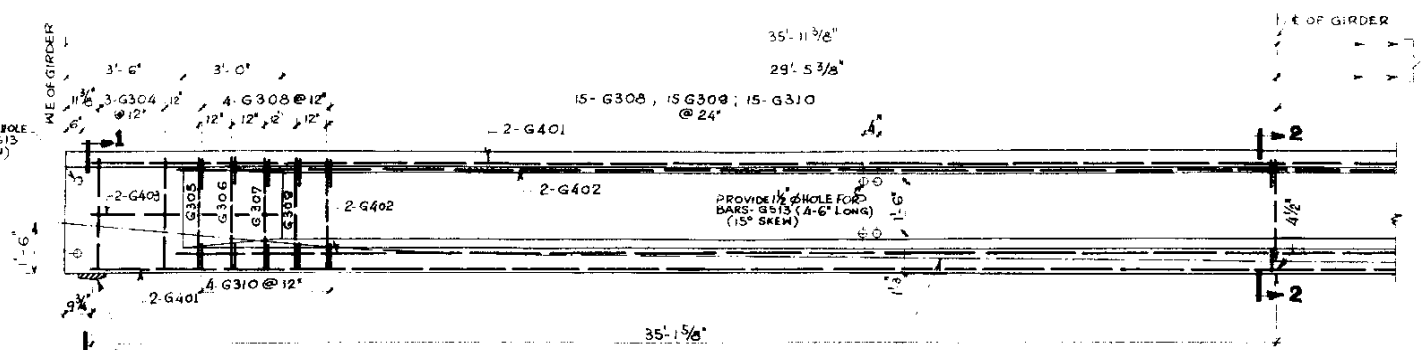
CIMARRON INTERCHANGE  
 FOUNTAIN CREEK  
 STRUCTURE I-17-DI  
 PIERS

L. HODUROFF & ASSOCIATE  
 CONSULTING ENGINEER

DESIGNED: J.N. SCALE: AS NOTED SHEET N17E  
 DRAWN: N.M.D. DATE: 4-5-57 N OF SHEETS 6  
 CHECKED: N.N.

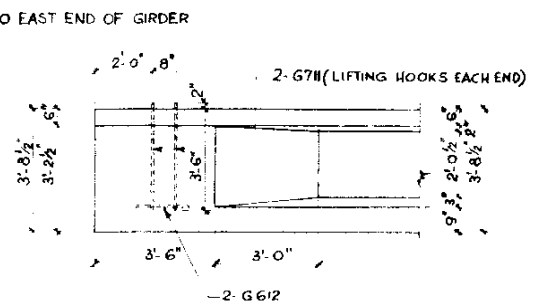
Revision 10-18-57 Prestressing Forces L.B.  
 Revised 2-27-58 Added Note @ F.C.

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



**INTERIOR AND EXTERIOR GIRDERS ELEVATION**  
 SCALE 3/16"=1'-0"

G.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



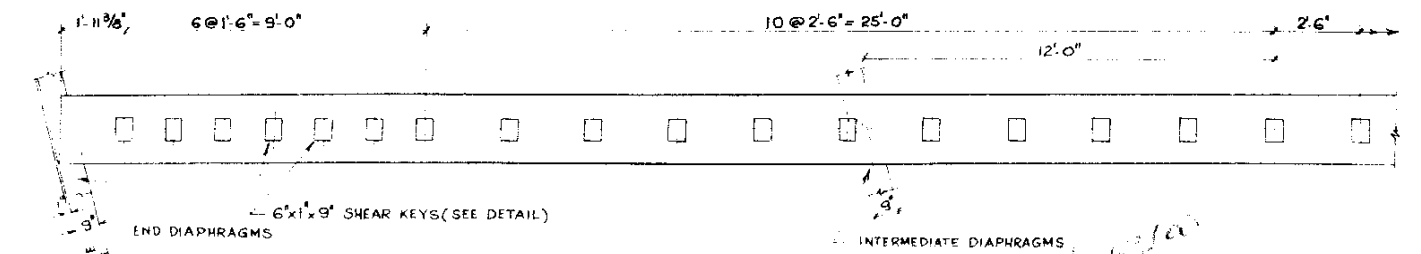
**DETAIL-END OF GIRDER-ELEVATION**  
 SCALE 3/16"=1'-0"

**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

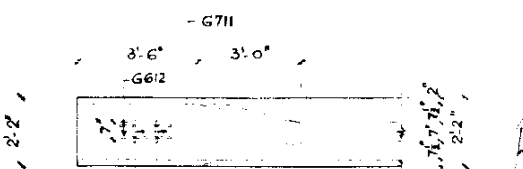
**BAR SUMMARY FOR 56 GIRDERS**

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 "
<b>TOTAL</b>	<b>= 44,000 "</b>



**INTERIOR AND EXTERIOR GIRDERS PLAN**  
 SCALE 3/16"=1'-0"

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



**PLAN-END OF GIRDER**  
 SCALE 3/16"=1'-0"

LOCATION OF TOP BEARING PLATES	GIRDER SPAN								TOTAL
	W E	E E	W E	E E	W E	E E	W E	E E	
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**

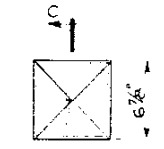
ITEM	QUANTITIES	UNIT
CONCRETE CLASS "P"	690	CUYD
REINFORCING STEEL + 1% OVERRUN	44000	LBS
56 TOP BEARING PLATE FIXED	5026	"
56 " " " " - EXP.	5026	"
3" ANCHOR BARS	467	"

**NOTES**

- CONCRETE FOR THE PRECAST GIRDERS TO BE 5000 psi CYLINDER STRENGTH AT 28 DAYS.  $f_c = 4300$  psi AT TIME OF TENSIONING
- 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

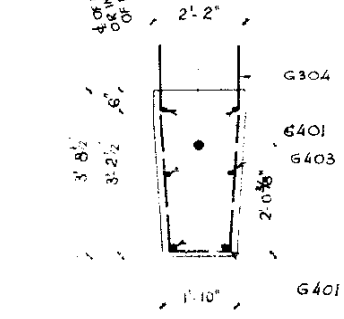


**SECTION C-C**  
 SCALE 1/2"=1'-0"

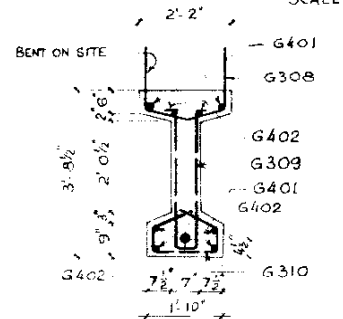
CAST IRON CAP FOR POST  
 72" REQ'D.

**QUANTITIES FOR STEEL RAILING**

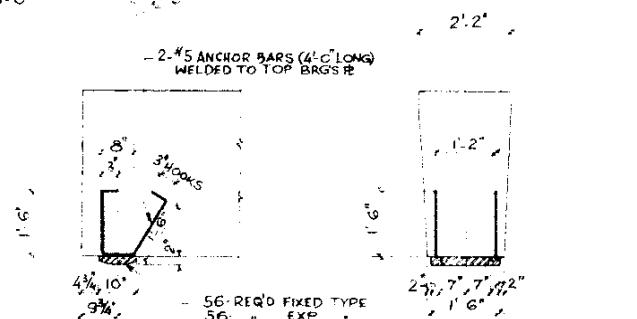
ITEM	QUANTITIES	UNIT
30" 6WF20 POSTS, 4' 4" LONG	6950	LBS
64" 5C9, 8'-9 3/4" LONG	5075	"
48" 5C9, 8'-9 3/4" LONG	3775	"
16" 5C9, 8'-8 1/4" LONG	1252	"
716" L2 x 2 x 1/4", 2'-5" LONG	5710	"
272" L 3/2 x 3/2 x 3/8, 3 1/2" LONG	674	"
30" CAST IRON CAPS	422	"
8" 5C9, 2'-10 1/4"	206	"
PLUS 1/2% PAINT	120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



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

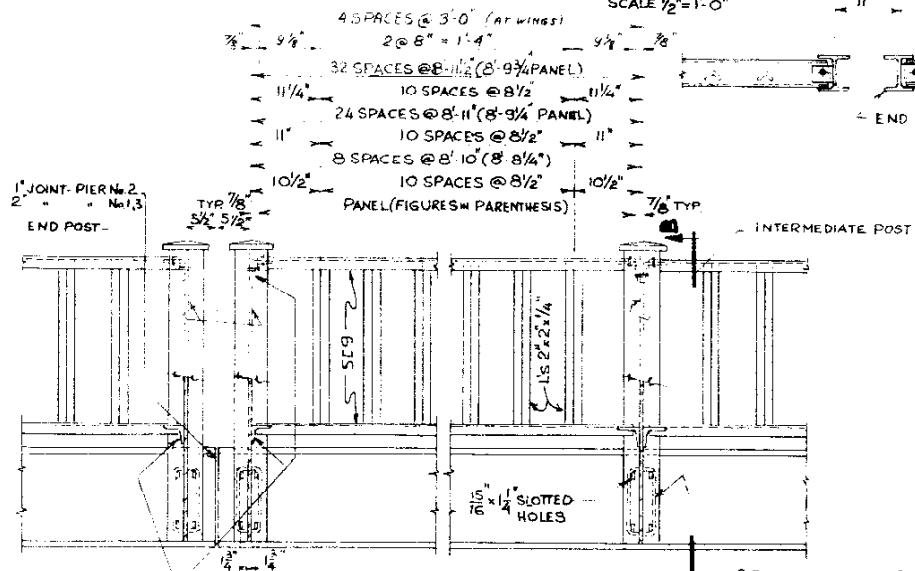


**SECTION 2-2**  
 SCALE 1/2"=1'-0"



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

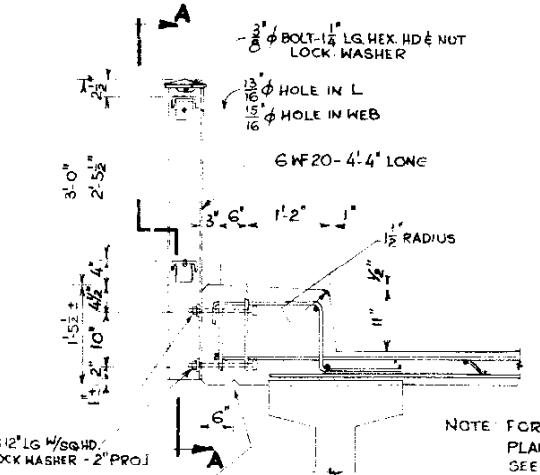
**SIDE ELEVATION**  
 SCALE 1/2"=1'-0"



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

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

**STEEL HANDRAIL**



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

DRIP GROOVE 3/4" DEEP

FOR GENERAL NOTES, SEE SHEET No. 1

COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY

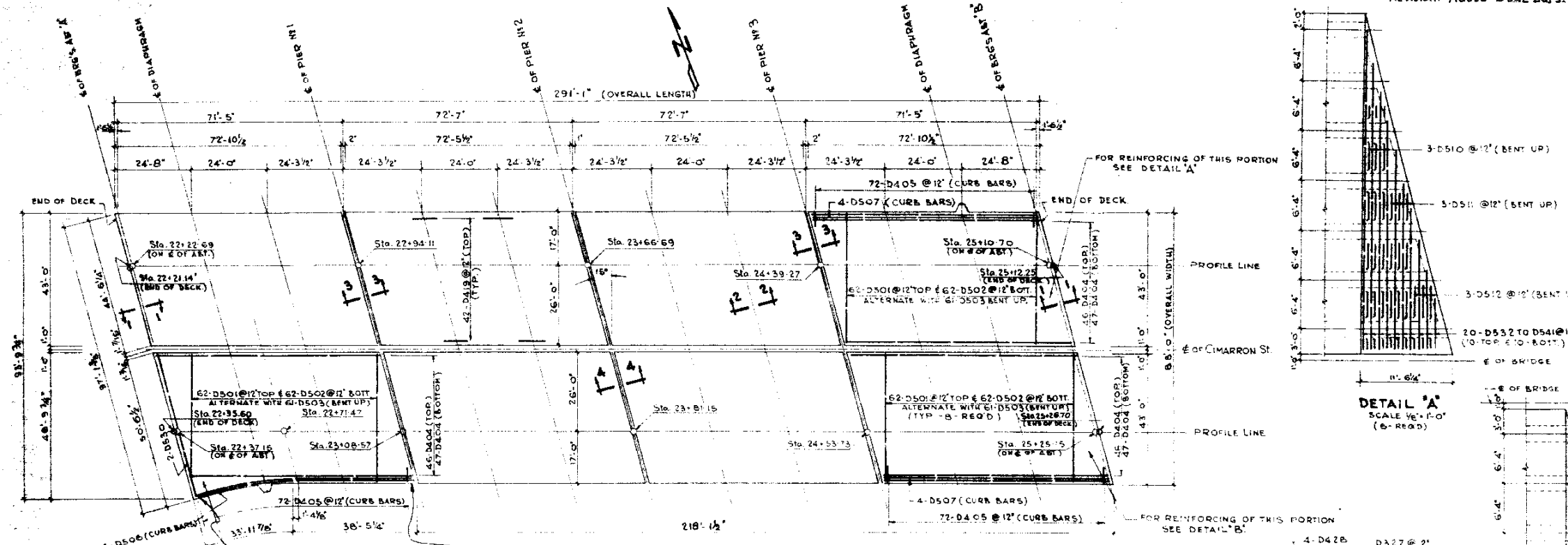
CIMARRON INTERCHANGE  
 FOUNTAIN CREEK  
 STRUCTURE 1-17-DI  
**GIRDERS AND HANDRAIL**

L. BODUROFF & ASSOCIATE  
 CONSULTING ENGINEER

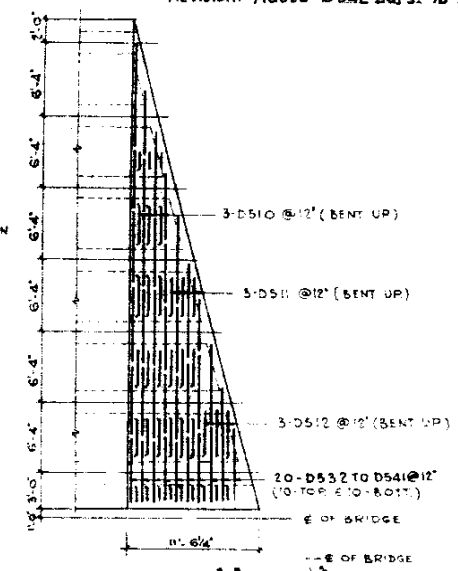
DESIGNED: J.N.	SCALE AS NOTED	SHEET No. 5
DRAWN: J.N.	DATE: 4-5-57	No. OF SHEETS: 6
CHECKED: N.W.		

Revision: Added D942 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 1/8" = 1'-0"  
(8-REED)

**BAR LIST FOR DECK**

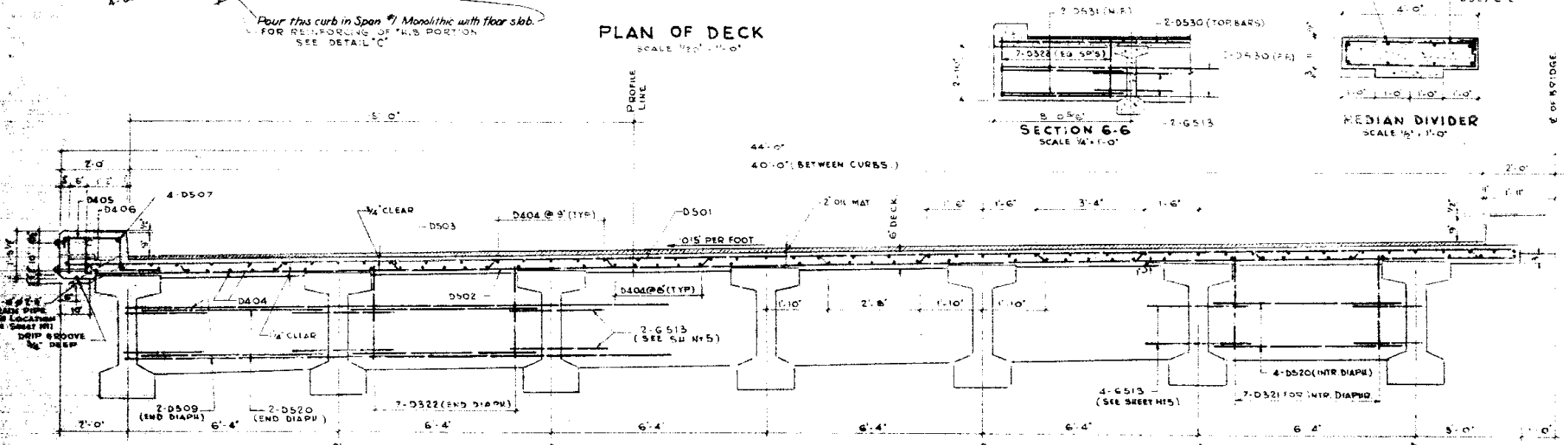
SHAPE	MARK	TYPE	LENGTH	QUANTITY	SIZE
D501	STR.	45'-6"	496	#3	
D502	STR.	42'-9"	496	#3	
D503	BENT	48'-0"	468	#3	
D404	STR.	74'-0"	744	#3	
D505	BENT	2'-6"	576	#3	
D406	STR.	3'-0"	144	#3	
D507	STR.	74'-0"	28	#3	
D508	BENT	74'-0"	4	#3	
D509	STR.	42'-6"	30	#3	
D510	BENT	57'-7"	24	#3	
D511	STR.	21'-5"	24	#3	
D512	STR.	8'-7"	24	#3	
D513	STR.	31'-5 1/2"	24	#3	
D514	STR.	20'-3 1/2"	24	#3	
D515	STR.	8'-10"	24	#3	
D516	STR.	9'-0"	96	#3	
D417	STR.	24'-0"	6	#4	
D418	STR.	14'-0"	4	#4	
D419	STR.	5'-0"	672	#3	
D520	STR.	5'-6"	768	#3	
D321	BENT	7'-0"	672	#3	
D322	STR.	9'-0"	679	#3	
D523	STR.	5'-6"	4	#5	
D524	STR.	3'-6"	8	#5	
D525	STR.	2'-0"	4	#5	
D526	BENT	11'-0"	8	#5	
D527	STR.	9'-0"	292	#3	
D428	STR.	74'-2"	32	#4	
D529	STR.	44'-0"	62	#3	
D530	STR.	52'-0"	4	#3	
D531	STR.	7'-6"	2	#3	
D532	STR.	40'-6 1/2"	32	#3	
D533	STR.	36'-9"	32	#3	
D534	STR.	32'-0"	32	#3	
D535	STR.	28'-2 1/2"	32	#3	
D536	STR.	25'-5 1/2"	32	#3	
D537	STR.	21'-8"	52	#3	
D538	STR.	17'-10"	32	#3	
D539	STR.	14'-1 1/2"	32	#3	
D540	STR.	10'-3 1/2"	32	#3	
D541	STR.	6'-6"	32	#3	
D542	STR.	20'-0"	2	#5	

**BAR SUMMARY**

13,443 LBS. #3 @ 376	5,050 LBS.
61,422 " #4 @ 668	41,030 "
92,859 " #5 @ 1,043	96,852 "
100 " #4 @ 3,400	340 "
<b>1% OVERRUN</b>	
<b>TOTAL</b>	
<b>3-D513 @ 12' (BENT UP)</b>	<b>14,428</b>
<b>3-D514 @ 12' (BENT UP)</b>	
<b>1-D515 @ 12' (BENT UP)</b>	
<b>20-D532 TO D541 @ 12' (10' TOP 6 10' BOTTOM)</b>	
<b>4-D428</b>	<b>D327 @ 2'</b>
<b>4-D507</b>	<b>4-D530</b>
<b>2-D531 (N.F.)</b>	<b>2-D530 (T.O.R.B.A.R.S.)</b>
<b>7-D532 (E.O.S.P.S.)</b>	<b>7-D530 (E.)</b>
<b>2-D533</b>	<b>7-G513</b>
<b>7-G513</b>	

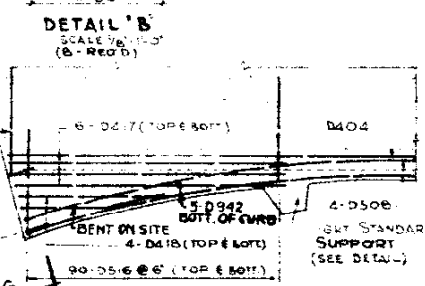
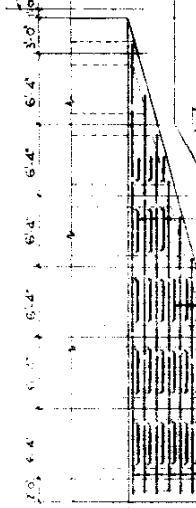
**QUANTITIES FOR DECK**

ITEM	QUANTITY	REMARKS
CLASS B CONCRETE, INCLUDING CURB		
REINFORCING STEEL (NO OVERRUN)		
1.5" DIA. BOLTS	779	
3/4" x 4 ANCHOR B.S.A.S. P.P. LANGE	372	
4 x 8 ANCHOR B.S.A.S. P.P. LANGE	12	
4 x 10 ANCHOR B.S.A.S. P.P. LANGE	8	
4 x 12 ANCHOR B.S.A.S. P.P. LANGE	4	
4 x 14 ANCHOR B.S.A.S. P.P. LANGE	2	
10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	192	
10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	32	
10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	16	
10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	4	
10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	4	
2 x 10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	168	
2 x 10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	32	
2 x 10 1/2" x 2.5" x 2.5" (MEDIAN DIVIDER)	16	
SHEET COPPER (36 GA. PER SQ. FT. FOR PROTECTION OF STEEL)		
ELECTRICAL CONDUIT (2" DIA.)	620	
2 1/2" DIA. x 3" STAINLESS STEEL	8	
8-4 x 2.5" DRAIN PIPE		



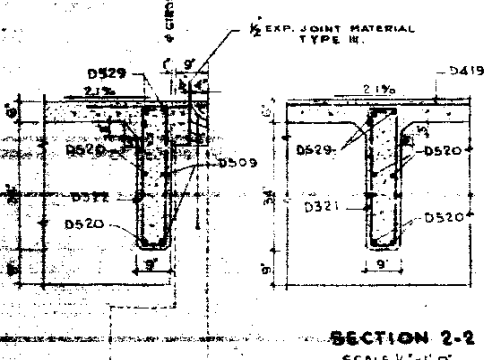
SECTION 6-6  
SCALE 1/4" = 1'-0"

MEDIAN DIVIDER  
SCALE 1/8" = 1'-0"

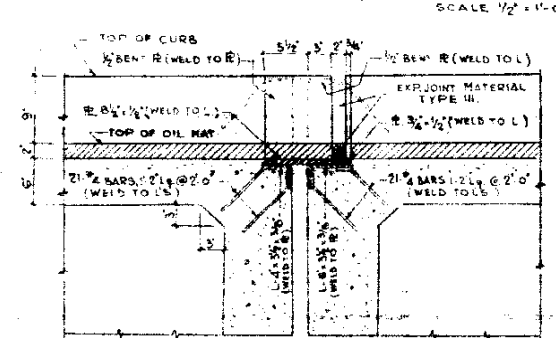


DETAIL 'C'  
SCALE 1/8" = 1'-0"  
(1-REED)

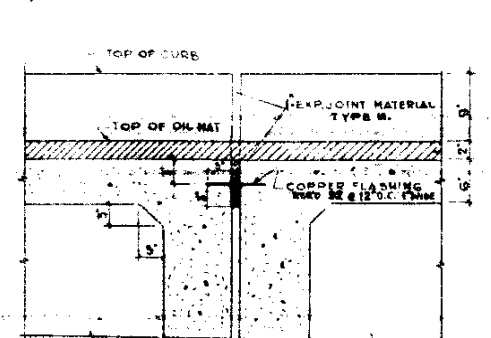
NOTE:  
FOR DECK ELEVATIONS &  
LOCATION OF BOLTS FOR  
HANDRAIL POSTS, SEE SHEET N-1.



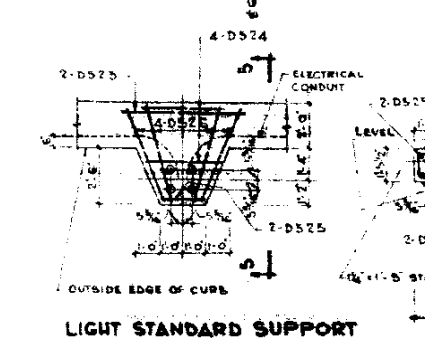
SECTION 2-2  
SCALE 1/4" = 1'-0"



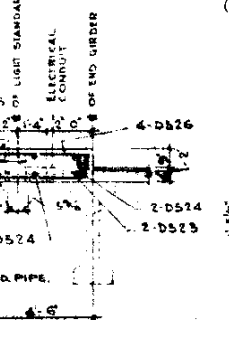
SECTION 3-3 (EXP. JOINT)  
SCALE 1/4" = 1'-0"



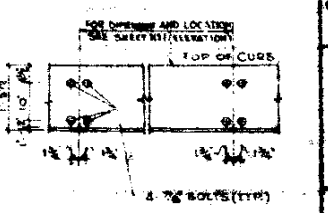
SECTION 4-4  
SCALE 1/4" = 1'-0"



LIGHT STANDARD SUPPORT  
SCALE 1/4" = 1'-0"



SECTION 5-5  
SCALE 1/4" = 1'-0"



BOLTS LOCATION FOR 6\"/>

FOR GENERAL NOTES, SEE SHEET N-1

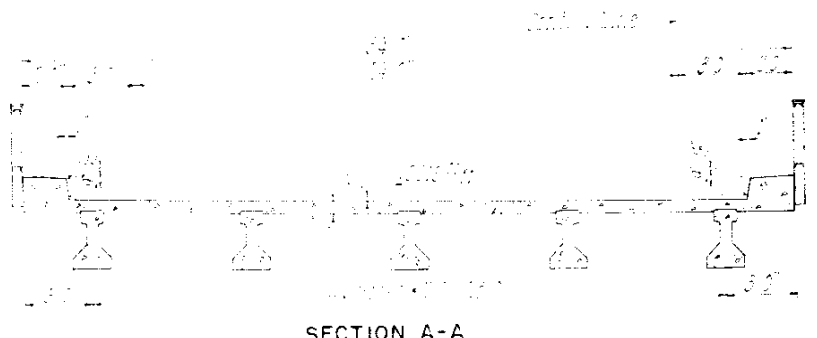
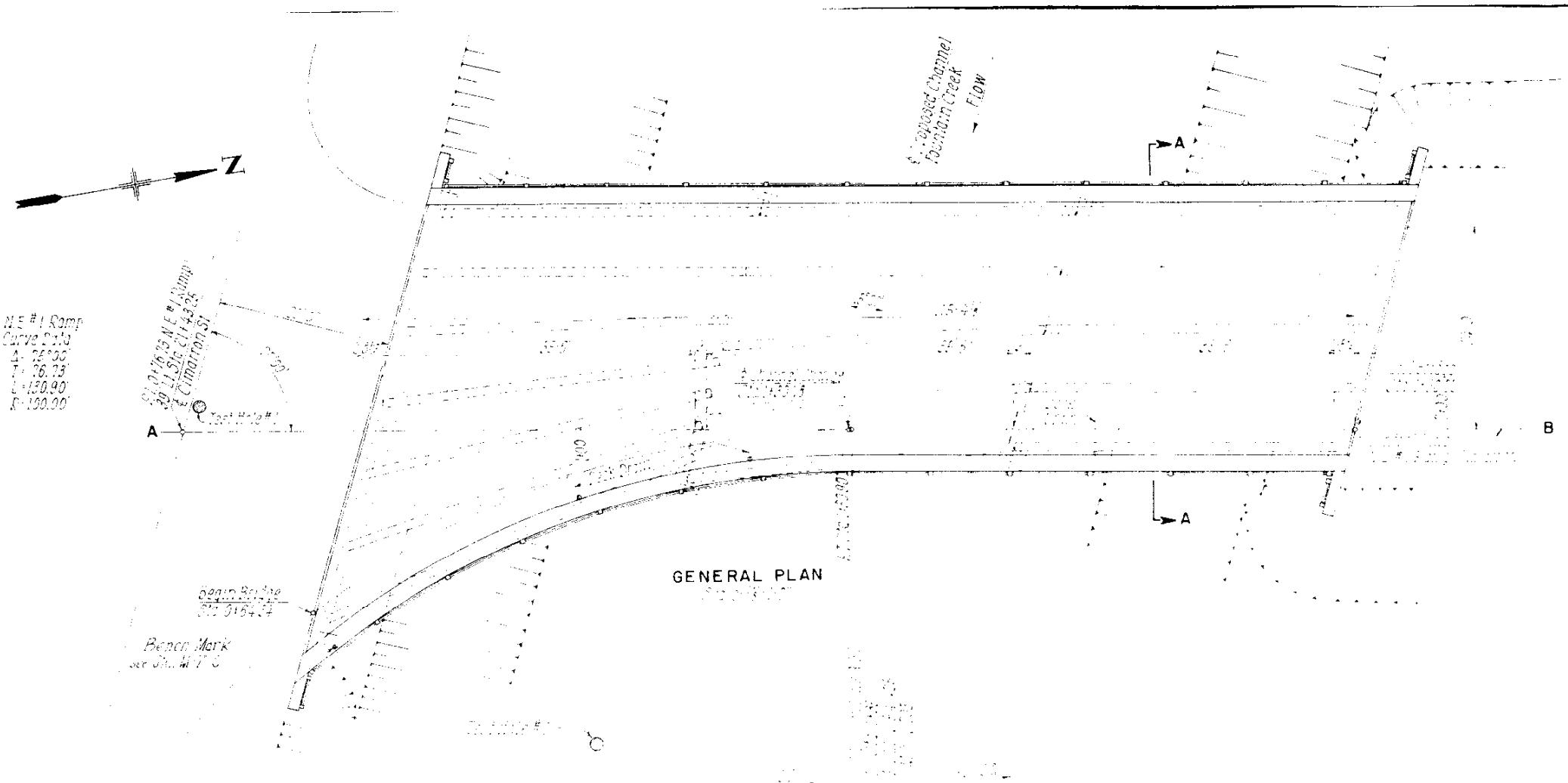
COLORADO DEPARTMENT OF HIGHWAYS  
COLORADO SPRINGS, CO.

**CIMARRON INTERMEDIATE FONTAIN CREEK STRUCTURE I**

**DECK PLAN**

L. BOUQUET  
CONSULTING ENGINEER

REVISION: 10-18-57 L.B.  
DRAWN BY: J.L. COOPER  
CHECKED BY: J.L. COOPER



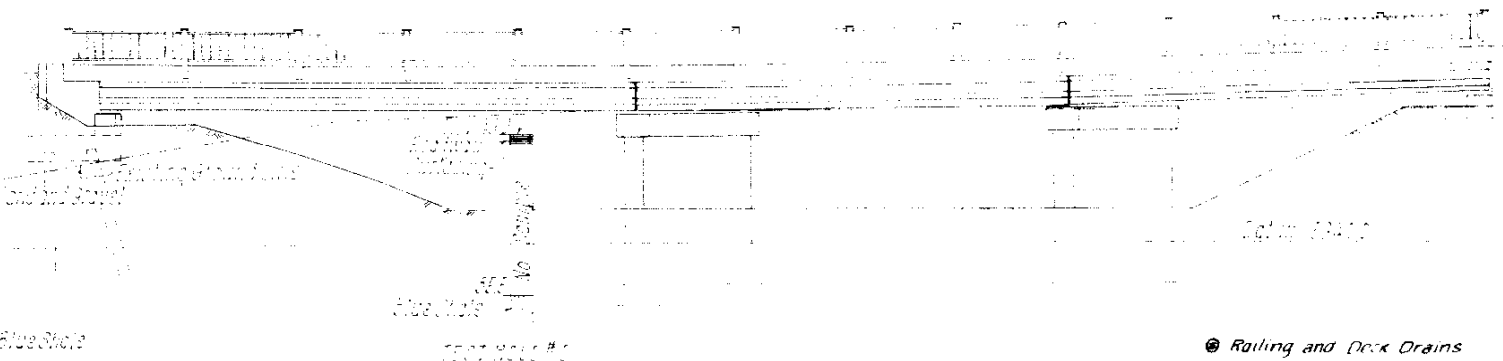
N.E. #1 Ramp  
Curve 2+73  
Δ = 75°00'  
T = 26.73'  
L = 130.00'  
R = 130.00'

Begin Station 3116+00  
Begin Station 3116+50  
Begin Station 3117+00

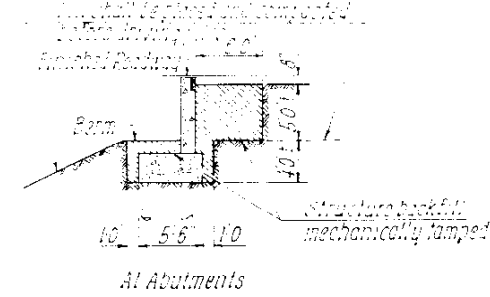
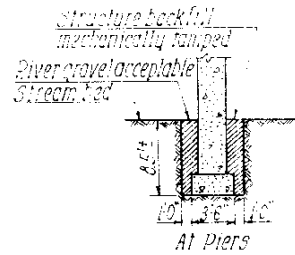
GENERAL PLAN

SECTION A-A

R.C. D. 140 N.E. #1 Ramp  
70-11-20-1-1999  
E. Cimarron St.



ELEVATION



EXCAVATION AND BACKFILL DIAGRAMS

• Ratling and Deck Drains

• Groups 4-11 for Paint

GROUP	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
46pb	31'-0" Beam	2	Beam	10.800	21.600
46pb	35'-10" to 36'-6" Beam	4	Beam	10.800	43.200
46pb	37'-4" and 39'-4" Beam	2	Beam	10.800	21.600
46pc	41'-8" and 44'-4" Beam	2	Beam	10.800	21.600
47a	Deck Drains	1	Each	10.800	10.800

\* 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 construction.

2. All dimensions are in feet and inches.

3. The structure shall be constructed in accordance with the specifications for concrete and steel.

4. The abutments shall be constructed on a firm foundation.

5. The deck shall be finished with a smooth surface.

6. The structure shall be painted in accordance with the specifications.

7. The structure shall be tested for deflection under load.

8. The structure shall be tested for vibration under load.

9. The structure shall be tested for wind resistance.

10. The structure shall be tested for seismic resistance.

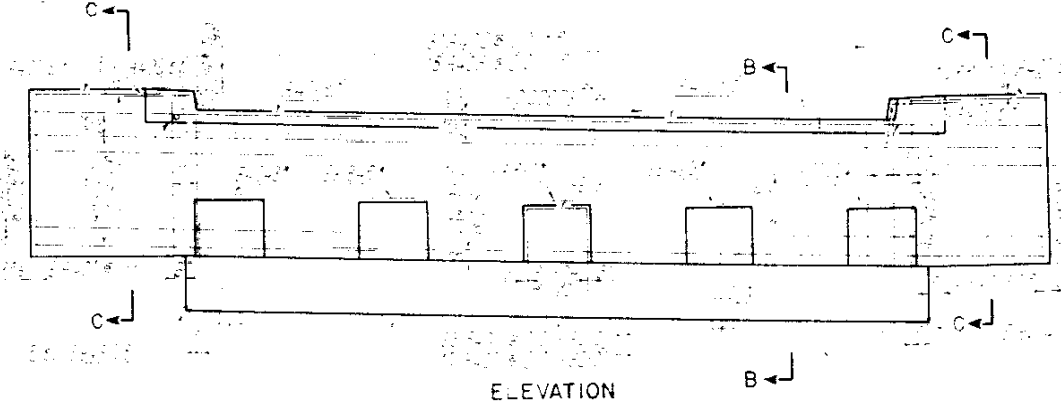
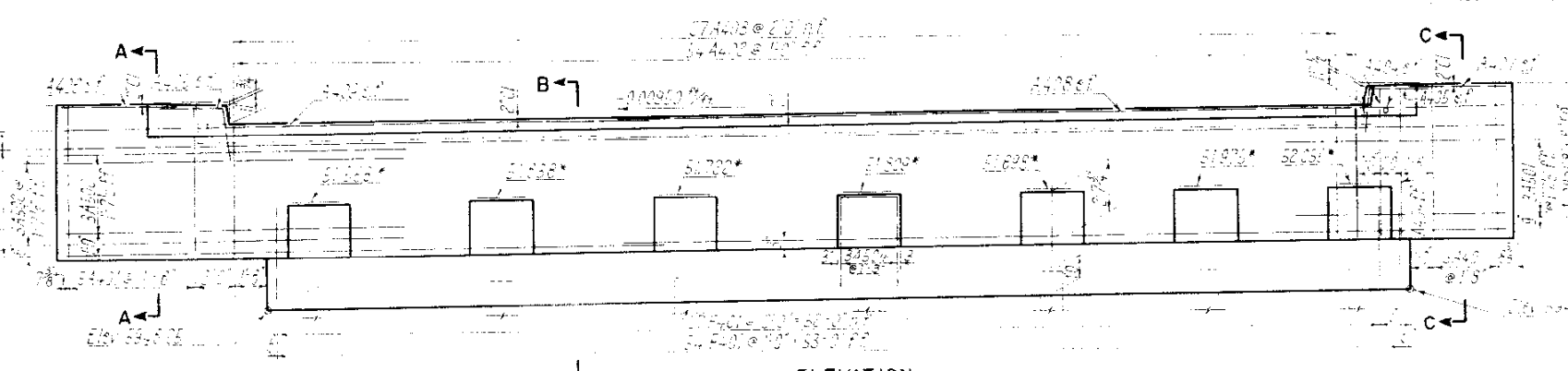
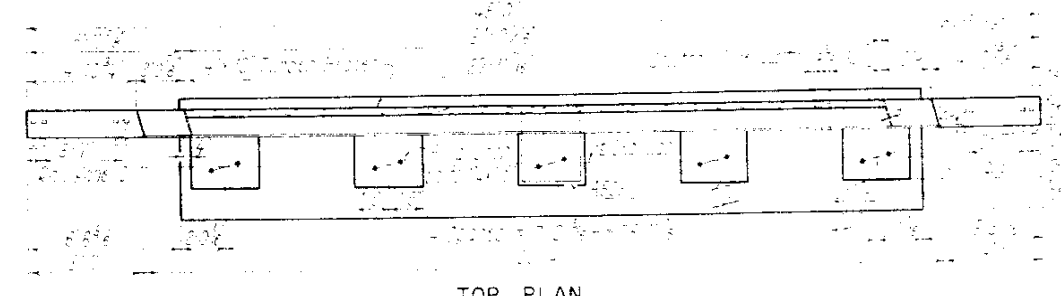
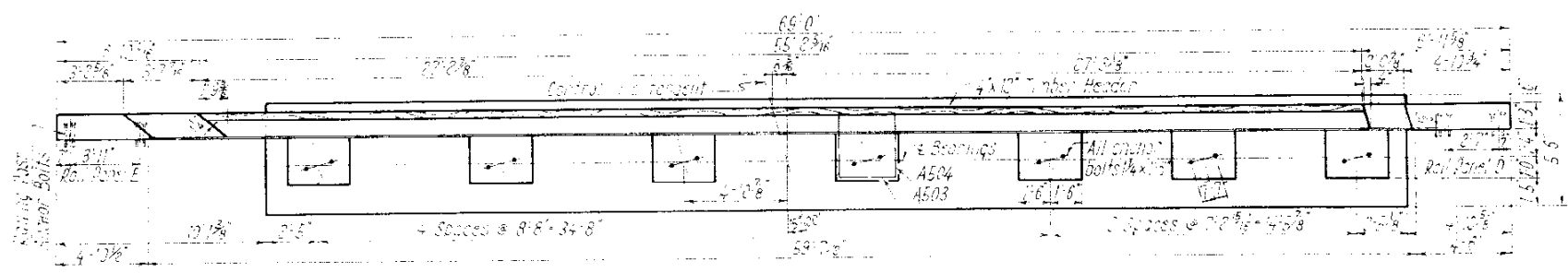
COLORADO DEPARTMENT OF HIGHWAYS  
COLORADO SPRINGS FREEWAY

FOUNTAIN CREEK N.E. No. 1 RAMP

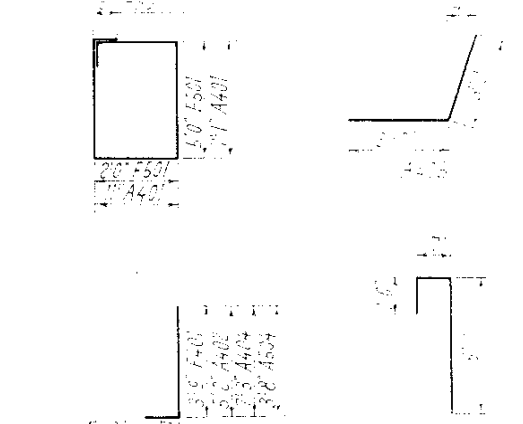
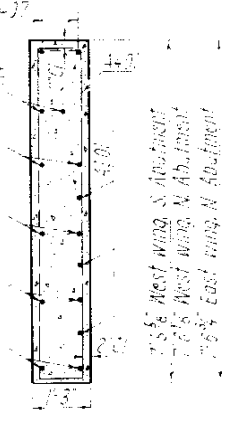
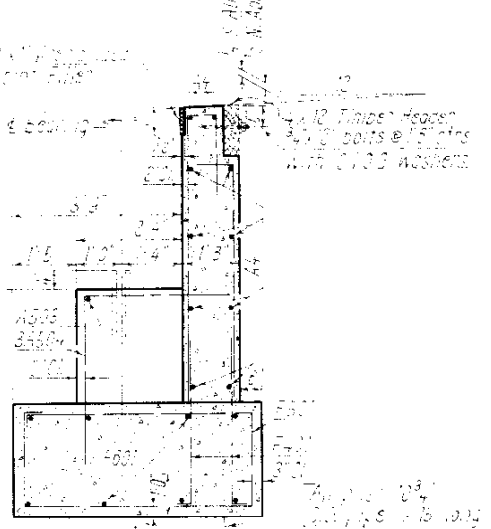
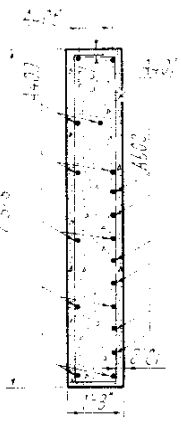
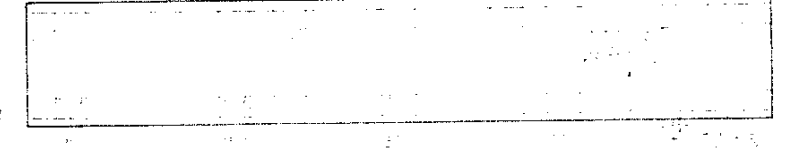
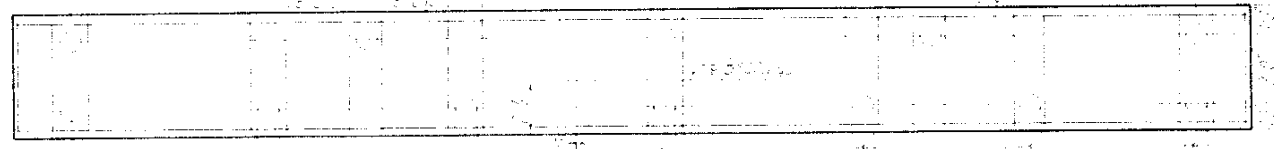
GENERAL PLAN  
AND ELEVATION

*Leo M. Heller*

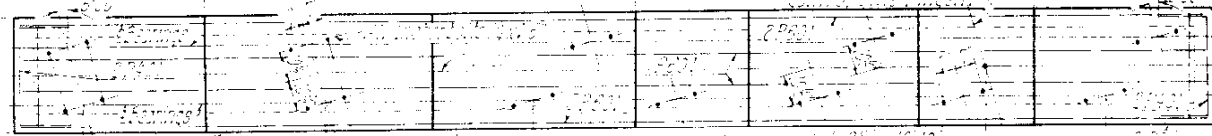
CLIFFORD JOHNSON & ASSOCIATES  
CONSULTING ENGINEERS  
DENVER, COLORADO



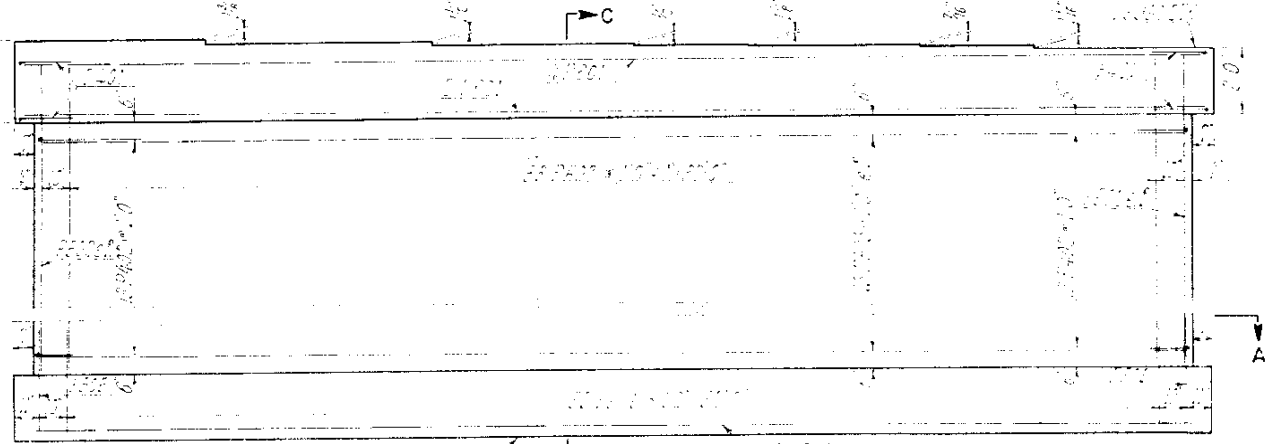
\* See Note of Use @  
 @ For revised elev of Abut see  
 sheet N-76a.



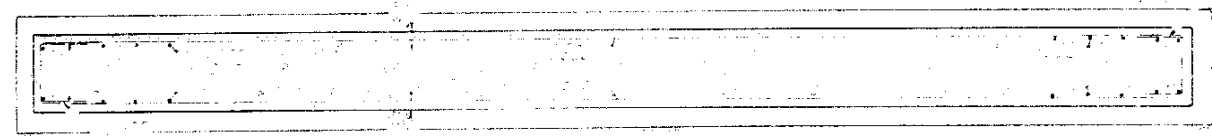
COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY  
 FOUNTAIN CREEK N.E. \*1 RAMP  
 ABUTMENTS  
 CLIFFORD JOHNSON & ASSOCIATES  
 CONSULTING ENGINEERS



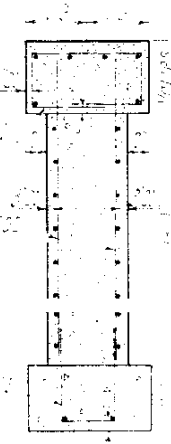
PLAN



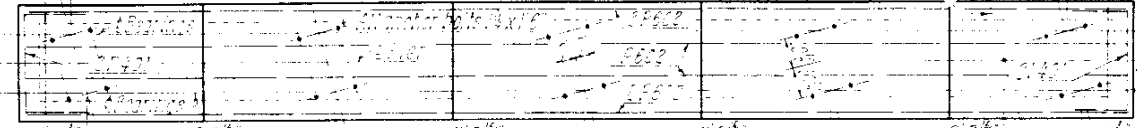
ELEVATION



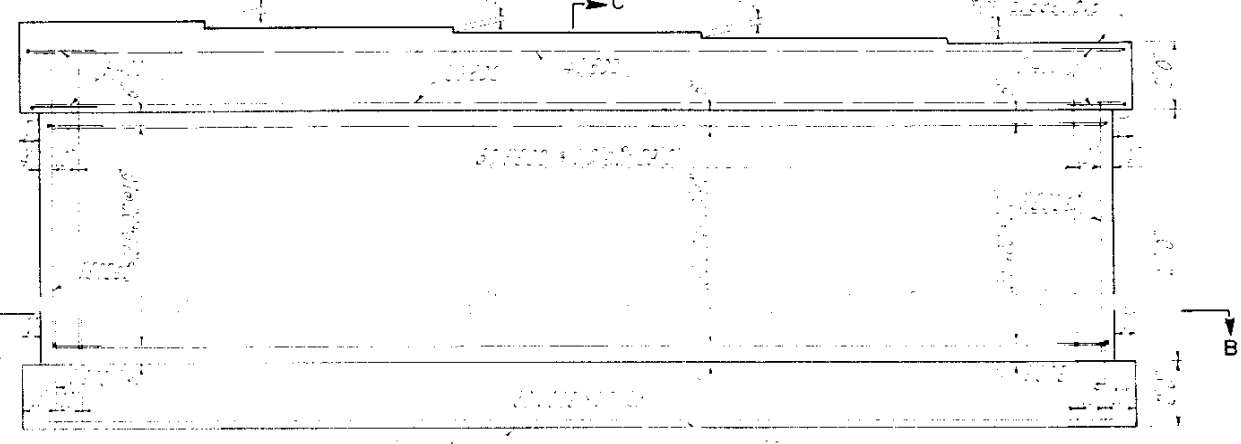
SECTION A-A  
SOUTH PIER



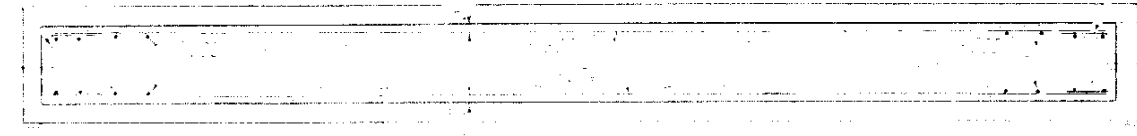
SECTION C-C



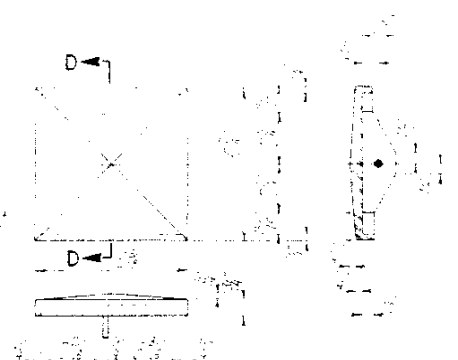
PLAN



ELEVATION



SECTION B-B  
NORTH PIER



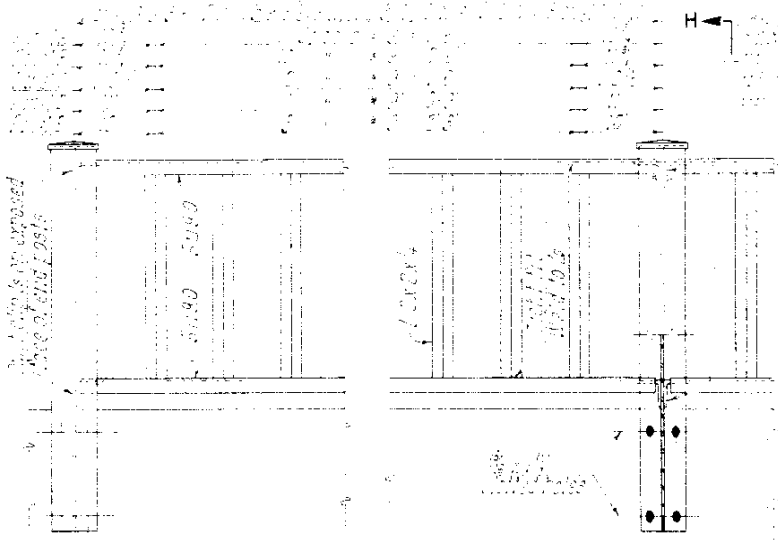
SECTION D-D

CAST IRON CAP FOR POST

PLAN WITHOUT CAP

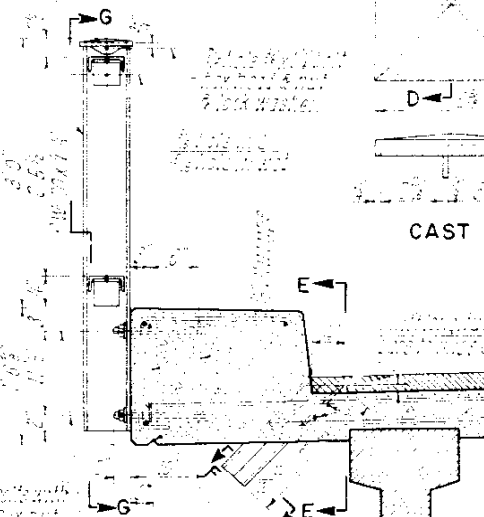


RAILING LOCATION PLAN

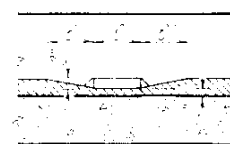


ELEVATION

SECTION G-G



SECTION H-H  
RAILING AND DECK DRAINS



SECTION E-E

SECTION F-F

QUANTITIES FOR RAILING & DRAINS

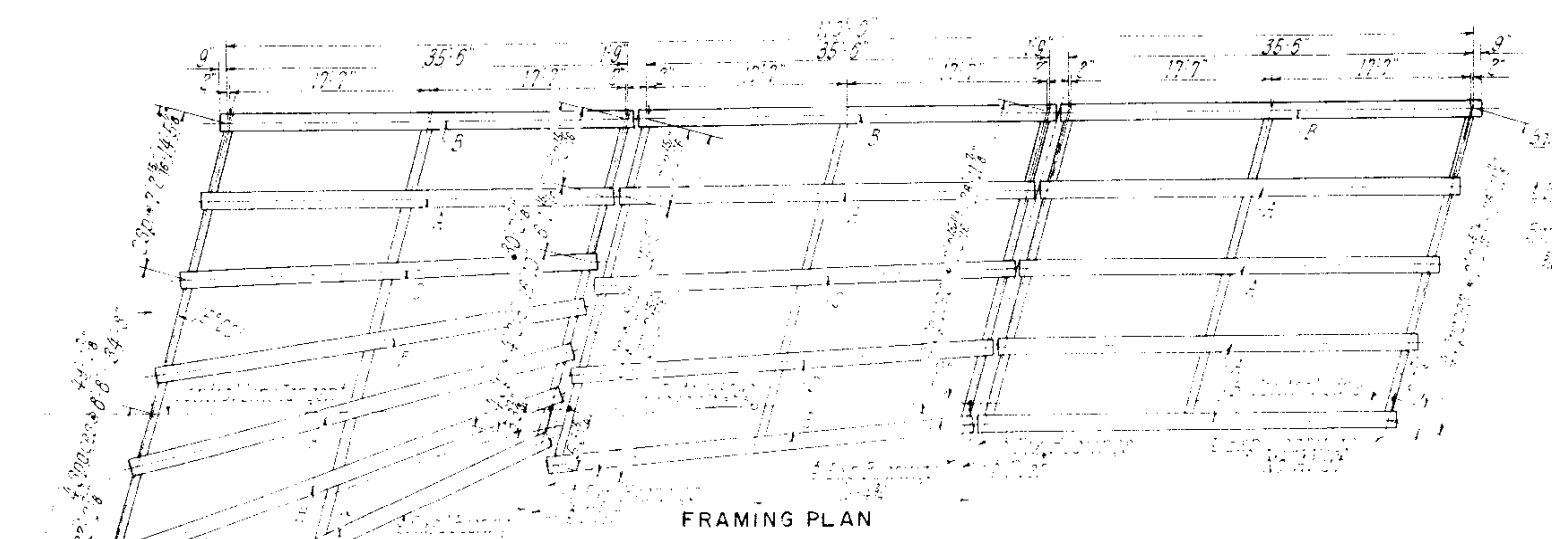
Structural Steel (incl. Inp)	15	10	200
Drains	500	5	

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

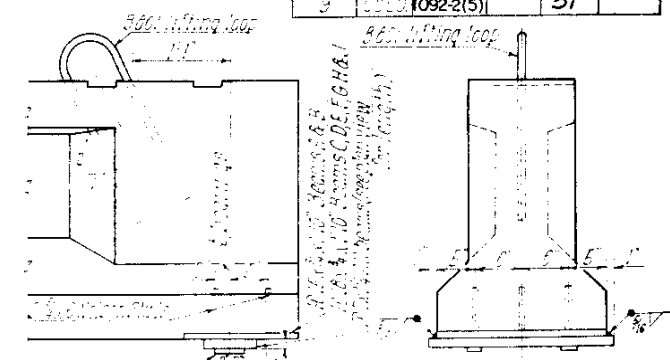


Revision Added End Block to Girders M.E.P. 9-12-57

FED. ROAD DIST. NO.	STATE	FED. AID REC. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	COLORADO	1092-2(5)		51	

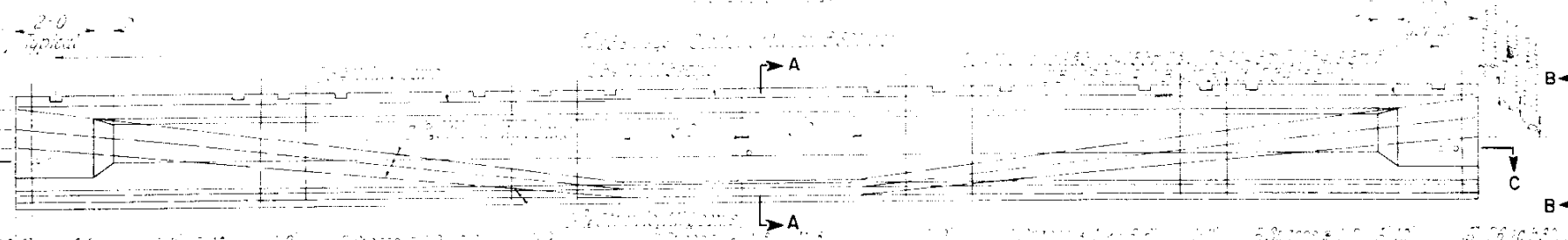
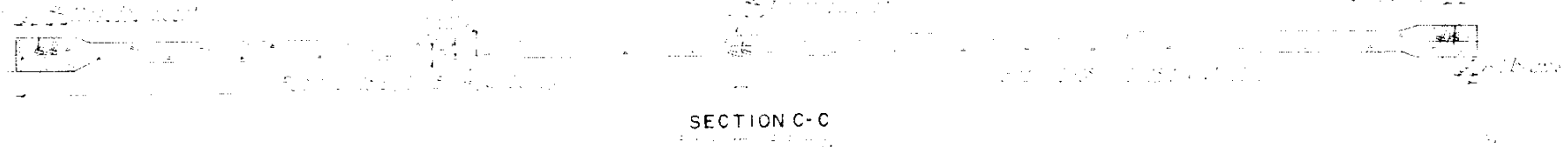
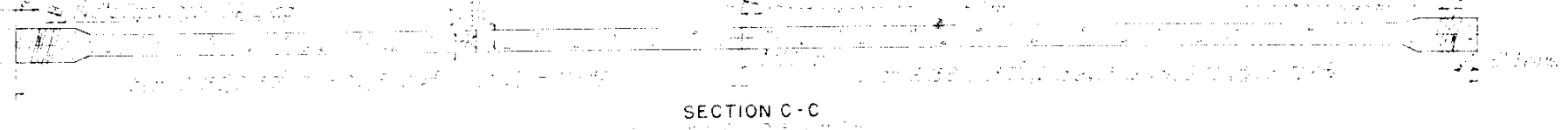


SOLE R FOR FIXED BEARINGS



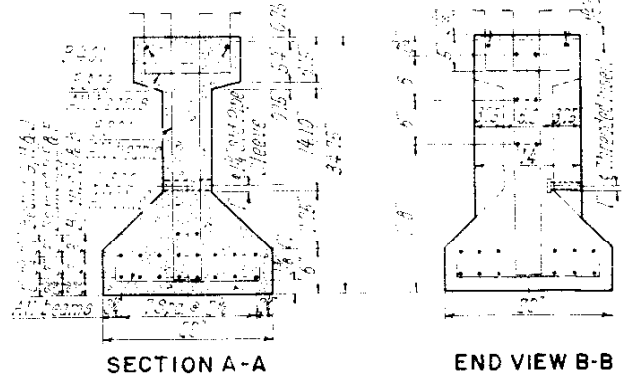
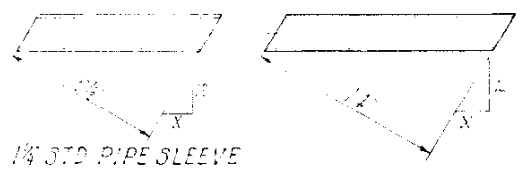
VIEW C-C

EXPANSION BEARING



Beam	Span	Support	Notes
Beam A	17.7'	1	
Beam B	35.5'	1, 2	
Beam C	17.7'	2	
Beam D	35.5'	2, 3	
Beam E	17.7'	3	
Beam F	35.5'	3, 4	
Beam G	17.7'	4	
Beam H	35.5'	4, 5	

PRESTRESSED CONCRETE BEAM



Concrete Compressive Strength: 4,000 p.s.i.  
 Steel Tensile Strength: 4,000 p.s.i.  
 Prestressing Steel: 250,000 p.s.i.  
 Allowable Stress: 175,000 p.s.i.  
 Prestress per beam: 343,000 lbs.

COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY

FOUNTAIN CREEK, N.E. No. 1 RAMP

FRAMING PLAN  
 PRESTRESSED CONCRETE BEAMS  
 BEARINGS

CLIFFORD JOHNSON & ASSOCIATES  
 CONSULTING ENGINEERS  
 DENVER, COLORADO

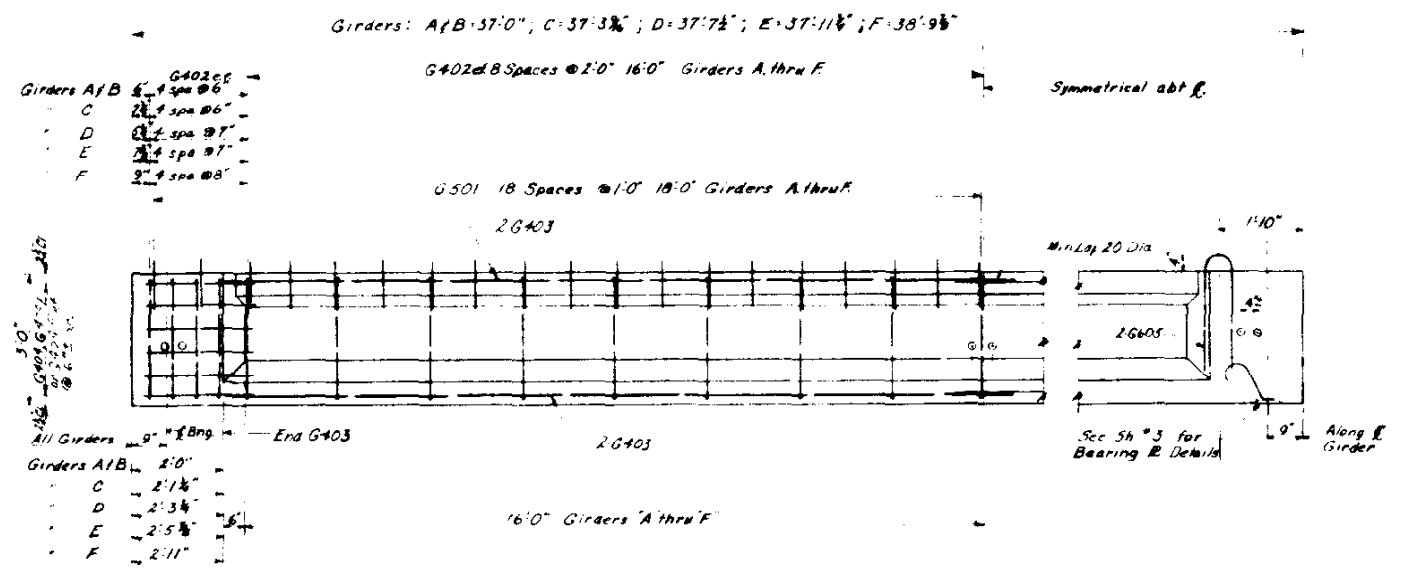
FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-215	510	

Revision: 2-27-58 New Sheet - MER

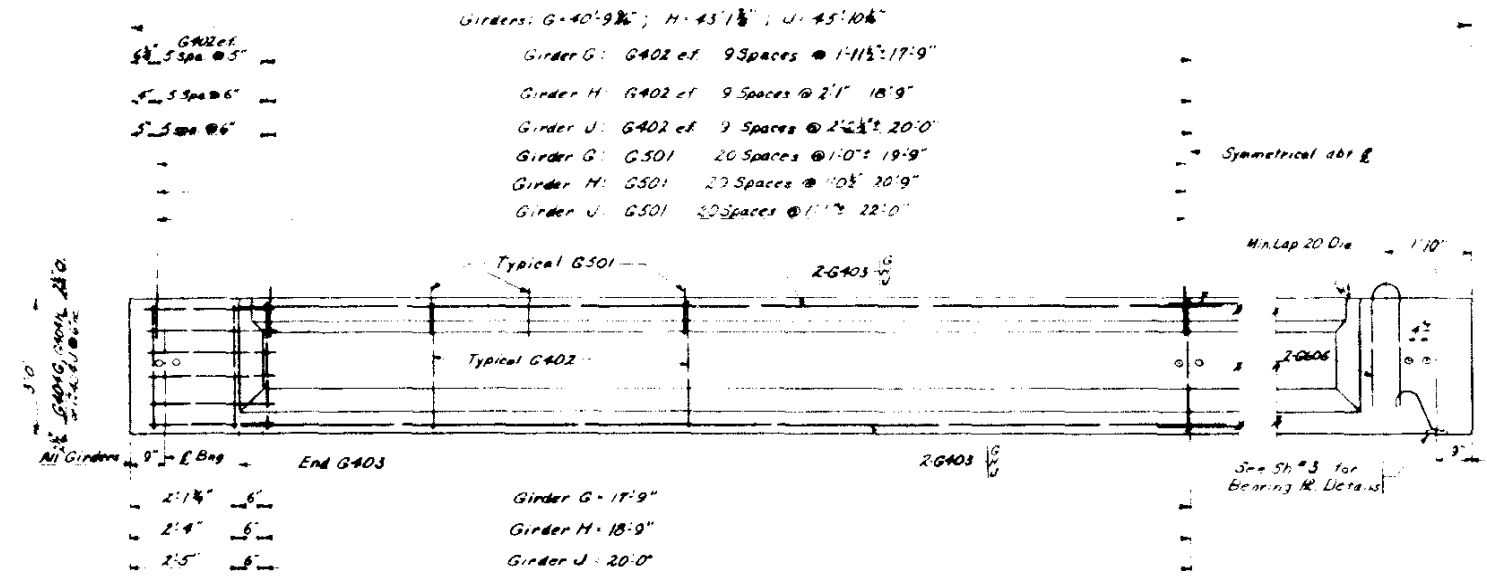
BAR LIST FOR PRESTRESSED GIRDERS

Mark	Type	Length	Quantity	Size
<b>GROUP I</b>				
G401	Beat	3'6"	37	5/8"
G402	Str	4'7"	50	7/8"
G403	Str	3'4"	4	5/8"
G404	Beat	2'8"	24	28#
G405	"	3'2"	24	21#
G406	"	3'7"	24	21#
G605	"	5'0"	4	5/8"
<b>GROUP II</b>				
G501	Beat	3'6"	41	1/2"
G402	Str	4'7"	58	1/2"
G403	Str	3'6"	4	5/8"
G404	"	3'6"	4	5/8"
G405	Beat	2'10"	24	24#
G406	"	3'0"	24	24#
G407	"	3'11"	24	24#
G605	"	5'0"	4	1/2"

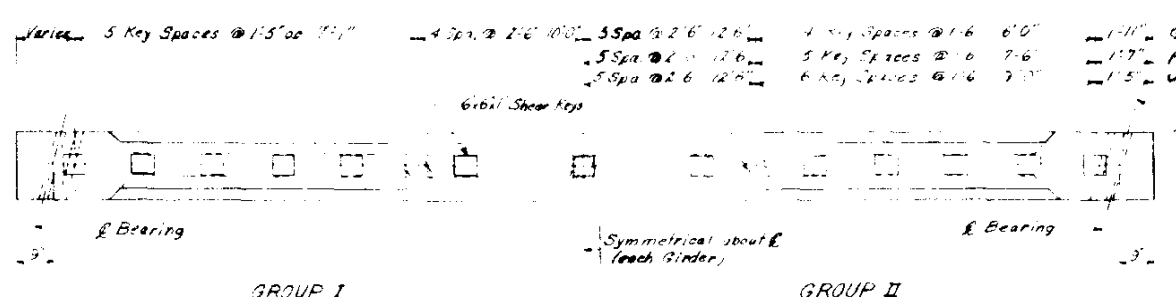
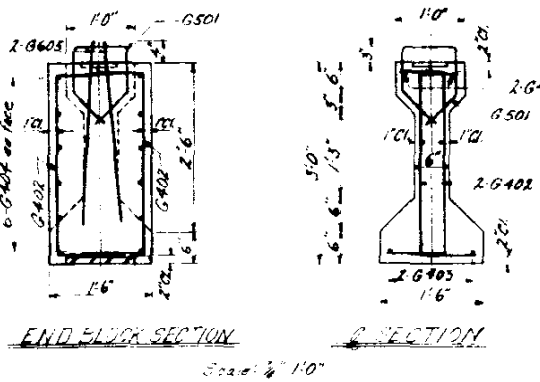
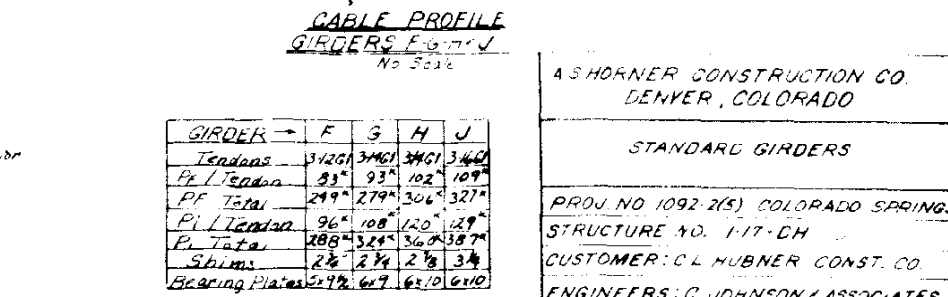
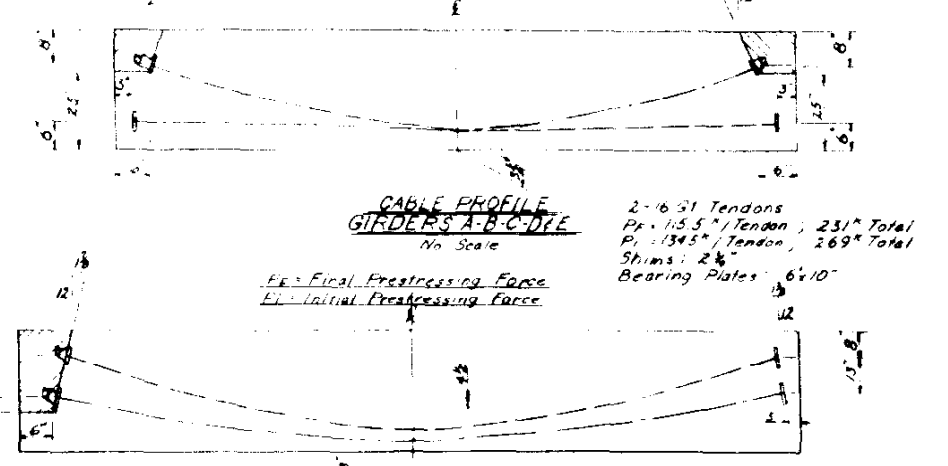
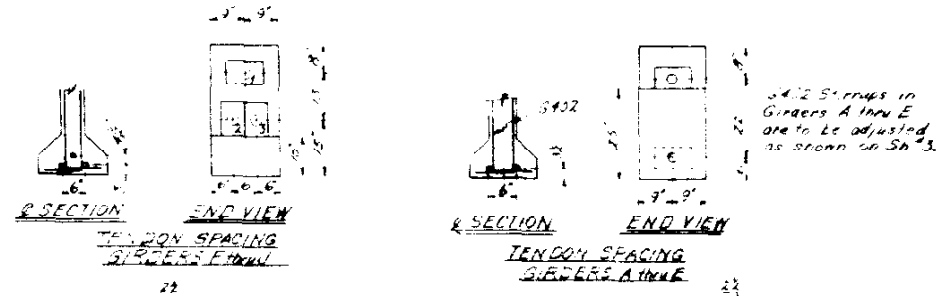
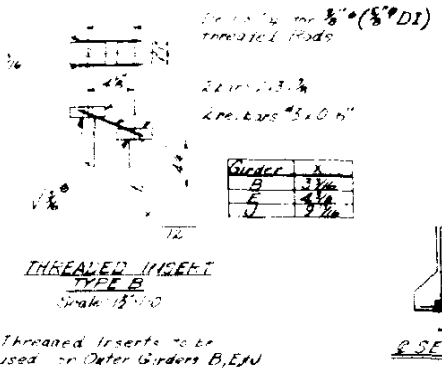
Note: G501, G402, G605 use same as above.



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



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



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

A S HORNER CONSTRUCTION CO.  
DENVER, COLORADO

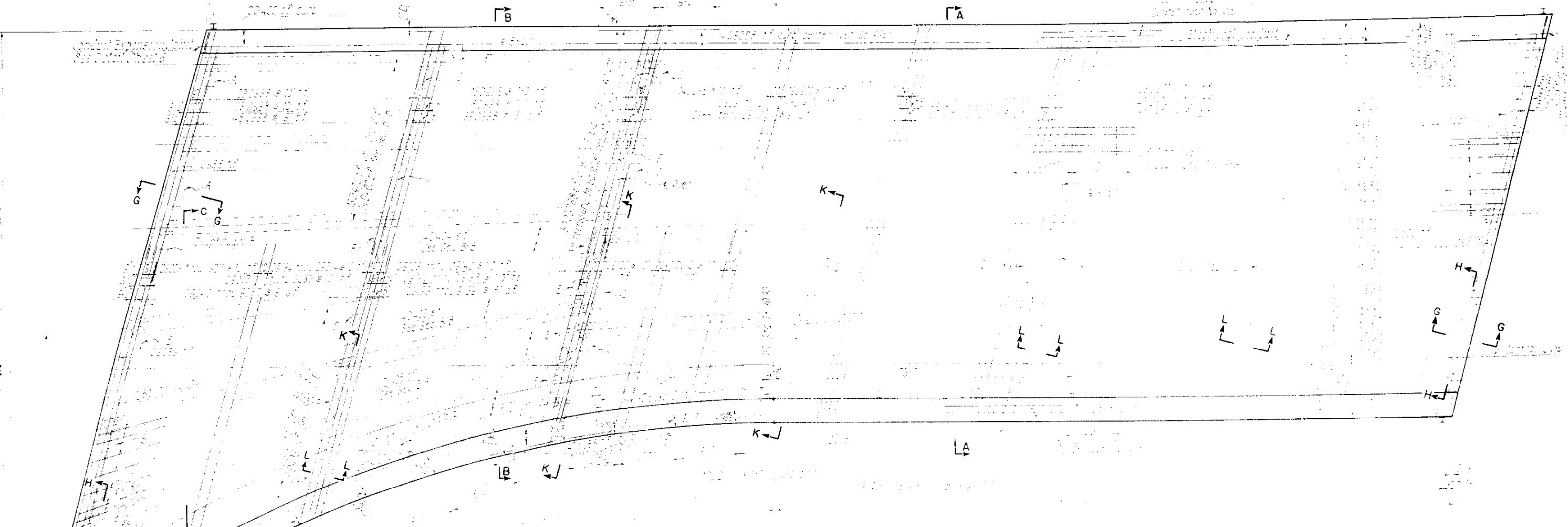
STANDARD GIRDERS

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.W. DATE 1-7-58 NO. OF SH'S.

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

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

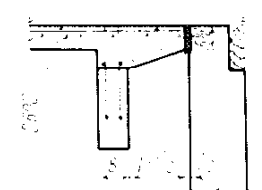
12' 9" End to End of Slab  
 12 Rows Panels A @ 3' 3 1/2"  
 13 B411 @ 10" (cont. 537)



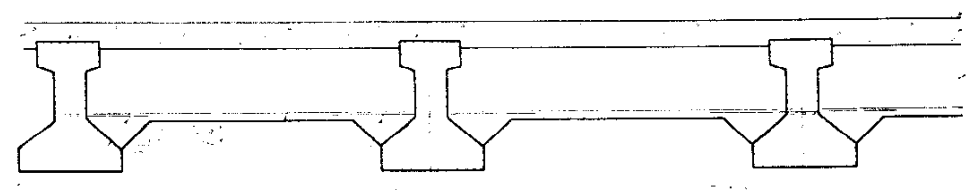
PLAN



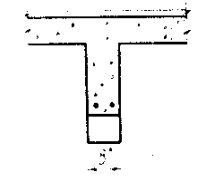
SECTION H-H  
Scale 1/4"=1'-0"



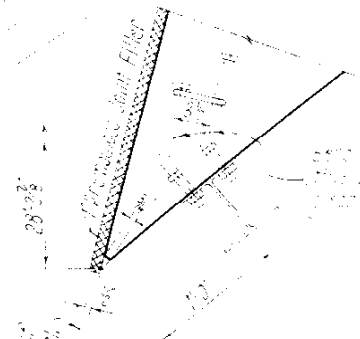
SECTION G-G  
Scale 1/4"=1'-0"



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



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



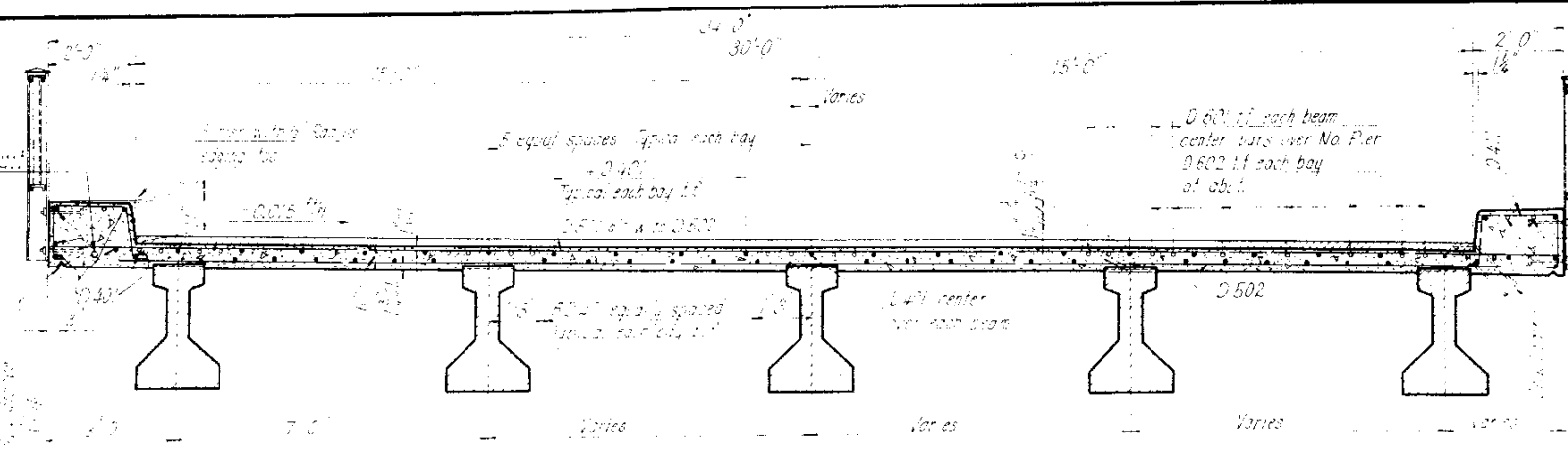
DETAIL A  
Scale 1/2"=1'-0"

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

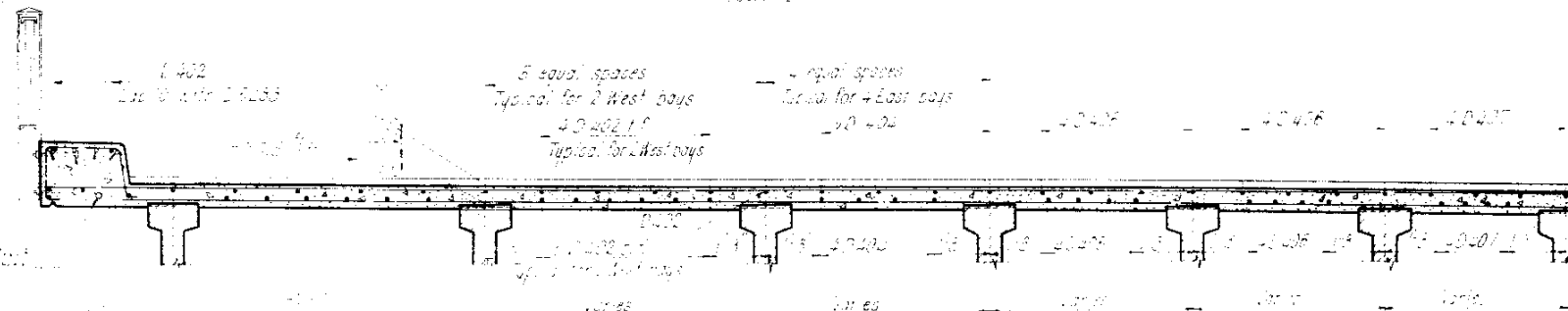
DECK PLAN  
 AND DIAPHRAGMS

CLIFFORD JOHNSON & ASSOCIATES  
 CONSULTING ENGINEERS  
 DENVER, COLORADO

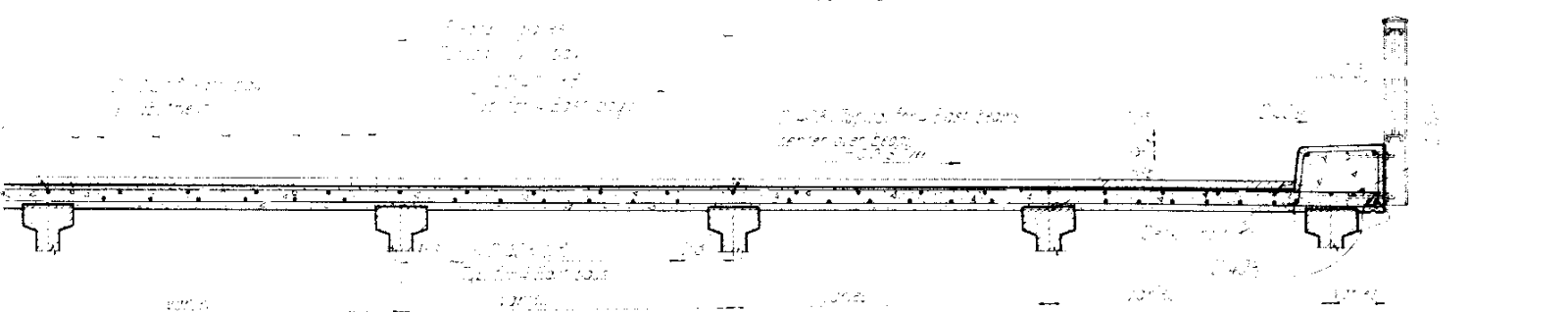
Revision: Added End Blocks to Girders M.E.D. 4-1-57



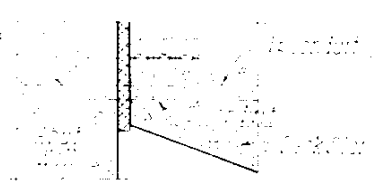
SECTION A-A (North End of Deck)



SECTION B-B



SECTION C-C



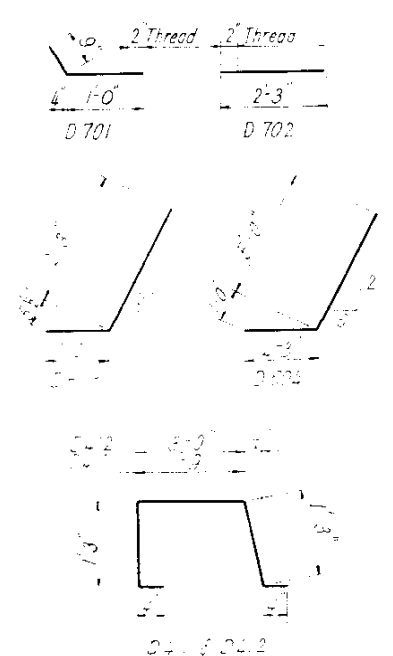
CONDUIT EXPANSION JOINT

MARK	SHAPE	LENGTH	NO. REQ'D
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

MARK	SHAPE	LENGTH	NO. REQ'D
0501		3'-0"	64
0502		3'-0"	28
0503		3'-0"	1
0504		3'-0"	1
0505		3'-0"	1
0506		3'-0"	1
0507		3'-0"	1
0508		3'-0"	1
0509		3'-0"	1
0510		3'-0"	1
0511		3'-0"	1
0512		3'-0"	1
0513		3'-0"	1
0514		3'-0"	1
0515		3'-0"	1
0516		3'-0"	1
0517		3'-0"	1
0518		3'-0"	1
0519		3'-0"	1
0520		3'-0"	1
0521		3'-0"	1
0522		3'-0"	1
0523		3'-0"	1
0524		3'-0"	1
0525		3'-0"	1
0526		3'-0"	1
0527		3'-0"	1
0528		3'-0"	1
0529		3'-0"	1
0530		3'-0"	1
0531		3'-0"	1
0532		3'-0"	1
0533		3'-0"	1
0534		3'-0"	1
0535		3'-0"	1
0536		3'-0"	1
0537		3'-0"	1
0538		3'-0"	1
0539		3'-0"	1
0540		3'-0"	1
0541		3'-0"	1
0542		3'-0"	1
0543		3'-0"	1
0544		3'-0"	1
0545		3'-0"	1
0546		3'-0"	1
0547		3'-0"	1
0548		3'-0"	1
0549		3'-0"	1
0550		3'-0"	1
0551		3'-0"	1
0552		3'-0"	1
0553		3'-0"	1
0554		3'-0"	1
0555		3'-0"	1
0556		3'-0"	1
0557		3'-0"	1
0558		3'-0"	1
0559		3'-0"	1
0560		3'-0"	1
0561		3'-0"	1
0562		3'-0"	1
0563		3'-0"	1
0564		3'-0"	1
0565		3'-0"	1
0566		3'-0"	1
0567		3'-0"	1
0568		3'-0"	1
0569		3'-0"	1
0570		3'-0"	1
0571		3'-0"	1
0572		3'-0"	1
0573		3'-0"	1
0574		3'-0"	1
0575		3'-0"	1
0576		3'-0"	1
0577		3'-0"	1
0578		3'-0"	1
0579		3'-0"	1
0580		3'-0"	1
0581		3'-0"	1
0582		3'-0"	1
0583		3'-0"	1
0584		3'-0"	1
0585		3'-0"	1
0586		3'-0"	1
0587		3'-0"	1
0588		3'-0"	1
0589		3'-0"	1
0590		3'-0"	1
0591		3'-0"	1
0592		3'-0"	1
0593		3'-0"	1
0594		3'-0"	1
0595		3'-0"	1
0596		3'-0"	1
0597		3'-0"	1
0598		3'-0"	1
0599		3'-0"	1
0600		3'-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. REQ'D
0601		6'-0"	12
0602		7'-0"	8
0603		6'-4"	40
0604		7'-6"	6
0605		7'-0"	44
0606		5'-4"	10

Quantity	Weight	Total Weight
12	120	1440
8	160	1280
40	1600	64000
6	180	1080
44	1760	77440
10	100	1000
Overrun		282
<b>Total</b>		<b>80480</b>

9 Vary this dimension if and as necessary to compensate for beam camber and for least load deflection.

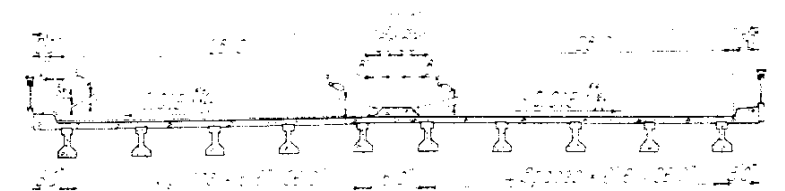
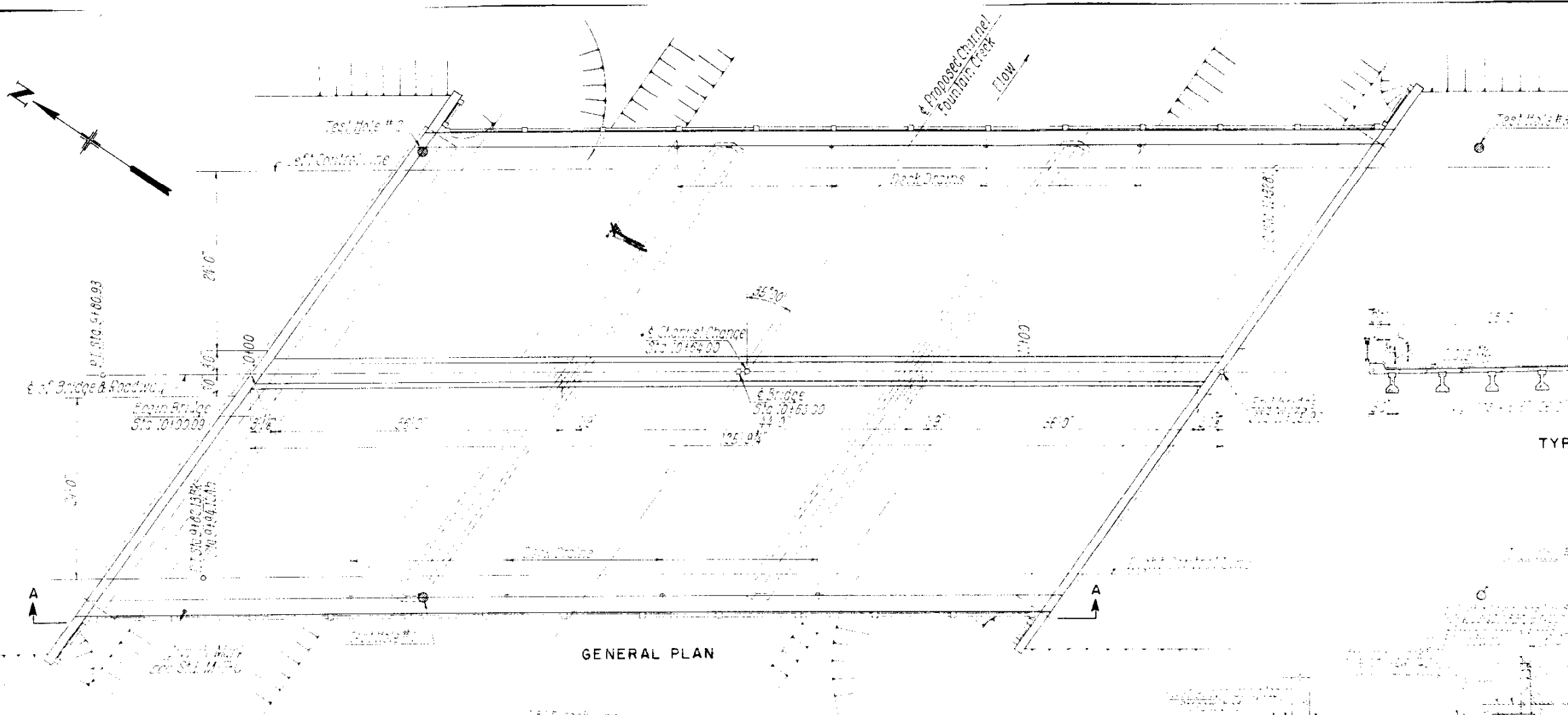
Location	0+00	0+25	0+50	0+75	0+100	0+125
Theoretical camber of beam when supported on its bearings	-0.00	+0.21	+0.30	+0.36	+0.43	+0.48
Theoretical camber of slab above beams	-0.00	+0.09	+0.14	+0.21	+0.28	+0.35
Theoretical net camber of slab in relation to beams		+0.12	+0.16	+0.15	+0.15	+0.13

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

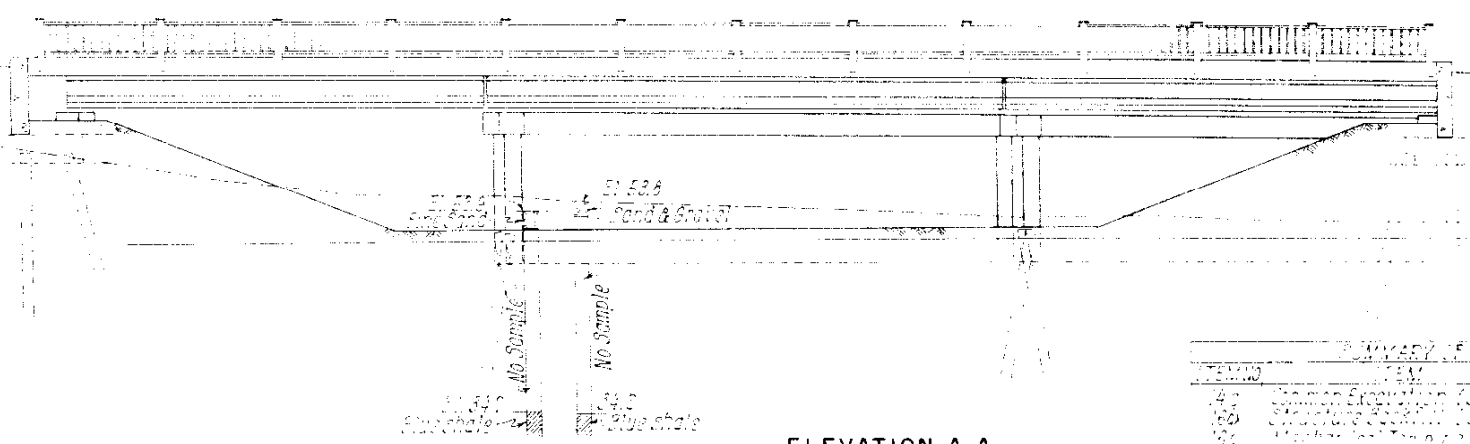
COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY  
 FOUNTAIN CREEK, NE NO. 1 RAMP

**DECK SECTIONS**

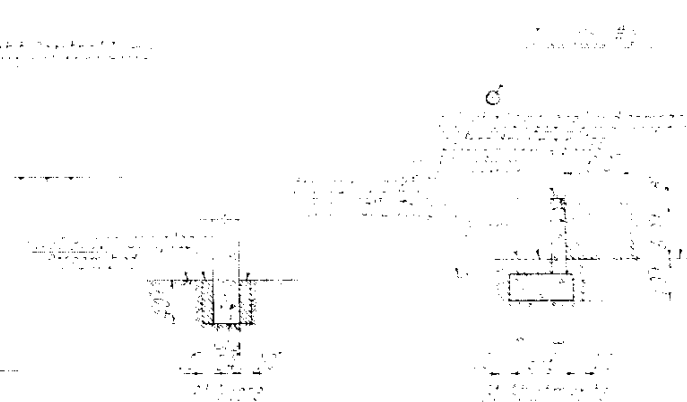
CLIFFORD JOHNSON & ASSOCIATES  
 CONSULTING ENGINEERS  
 DENVER, COLORADO



TYPICAL SECTION



ELEVATION A-A



EXCAVATION AND BACKFILL DIAGRAMS

ITEM	DESCRIPTION	QUANTITY	UNIT
4-5	Common Excavation (exc)	160	cu yd
4-6	Structural Excavation (exc)	250	cu yd
10a	Machine Cut Gravel	50	cu yd
4-7	Machine Cut Sand	3600	cu yd
4-8	Machine Cut Gravel	2400	cu yd
4-9	Machine Cut Sand	55259	cu yd
4-10	Machine Cut Gravel	11366	cu yd
60x	Reinforcing Steel (1/2" diam)		lin ft
61av	Steel Pipe (6" diam)	1500	lin ft
46pb	Prestressed Conc Beam 36" dia	20	Each
46pc	Prestressed Conc Beam 44" dia	10	Each
47a	Deck Drains	6	Each
48	Elec Conduit w/ Junction Boxes (2")	265	lin ft

\* 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

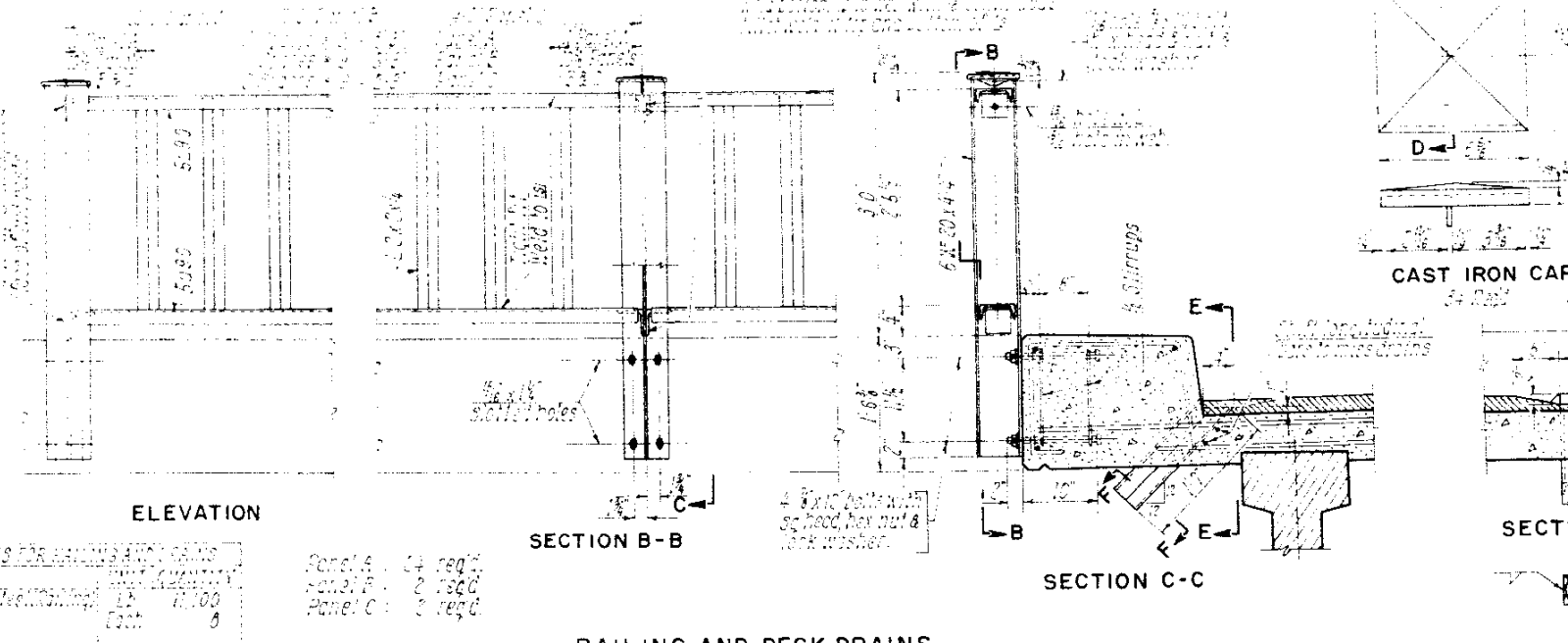
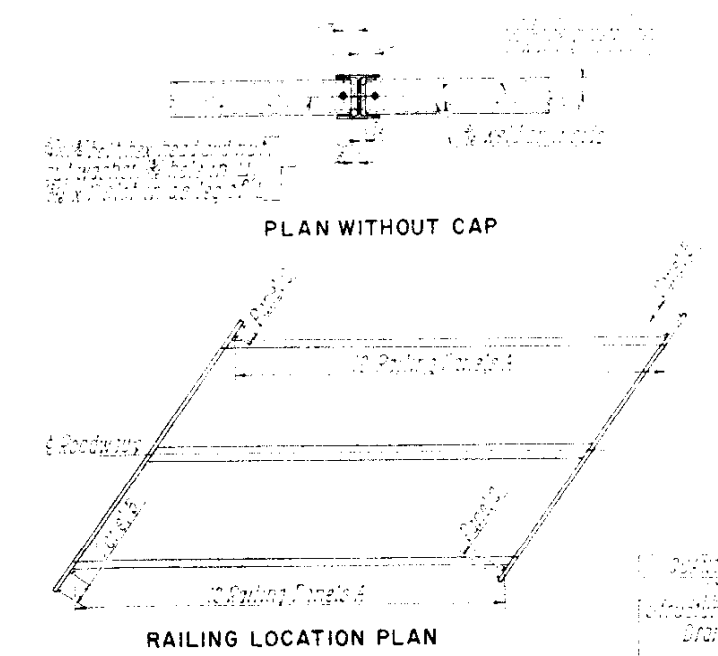
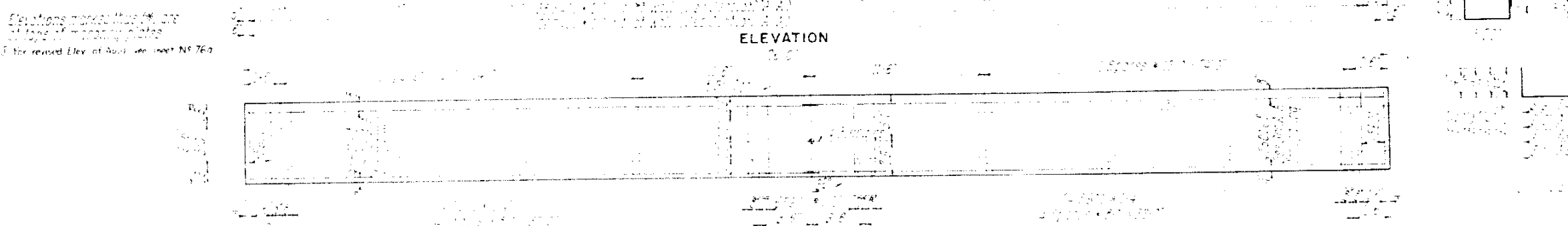
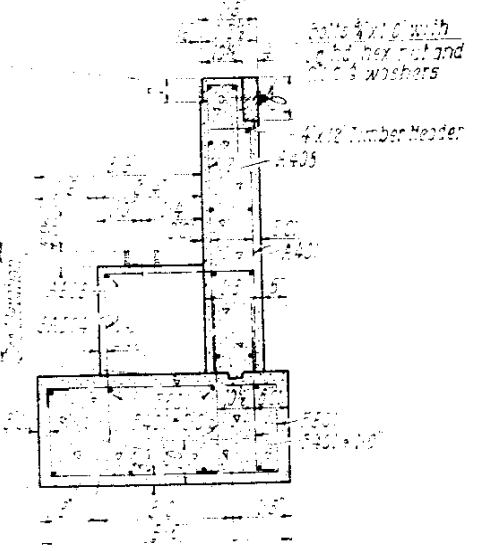
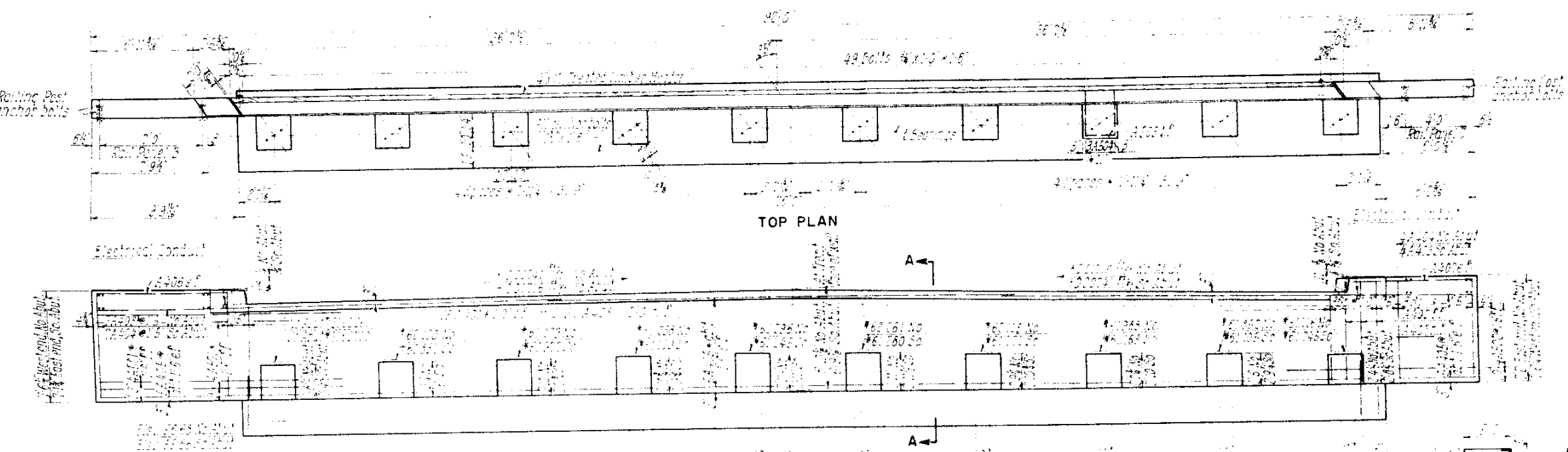
**GENERAL NOTES**  
 All work shall be done according to the Standard Specifications of the Colorado Department of Highways, adopted June 1, 1952. See Special Provisions for prestressed concrete beams.  
 Soundness and depth of footings shall conform to the specifications and data. If essentially different 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 piles shall not be drilled until definitely determined by the Engineer that the piles 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. All lap splices shall be staggered and all lap splices shall be tagged with the structure number and mark.  
 All dimensions on bar details are out to out.  
 All hooks and bends in bars shall conform to A.C.I. Standard S16-51.  
 Main bars shall not be placed on cantilever beams or at the flange ends of the bridge from surface to reinforcing bars. 3" in. 10" dia. & 2" in. 8" dia. shafts, 2" in. walls & caps, 1" in. deck slabs & curbs unless otherwise noted.  
 All steel railings and deck drains shall receive one shop coat of zinc chromate and two field coats of aluminum paint.

THIS SHEET IS TO BE USED IN CONNECTION WITH SHEETS 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

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
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

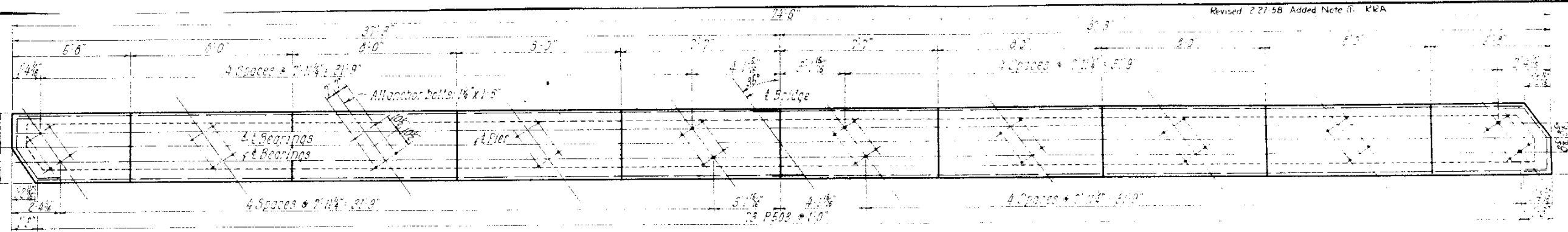
COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY  
 CIMARRON STREET BRIDGE  
 OVER FOUNTAIN CREEK

ABUTMENTS  
 RAILING  
 DECK DRAINS

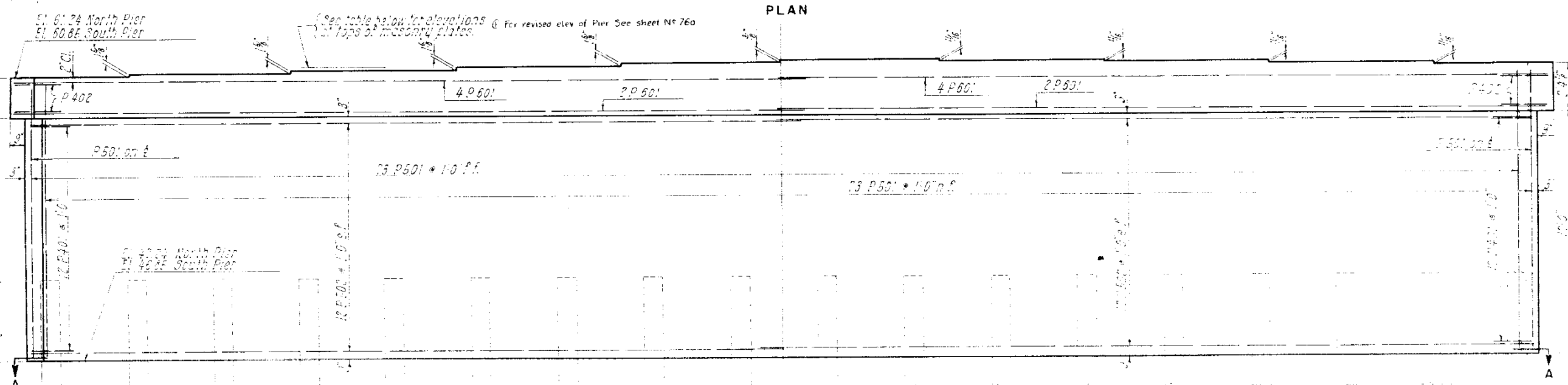
CLIFFORD JOHNSON & ASSOCIATES  
 CONSULTING ENGINEERS  
 DENVER, COLORADO

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

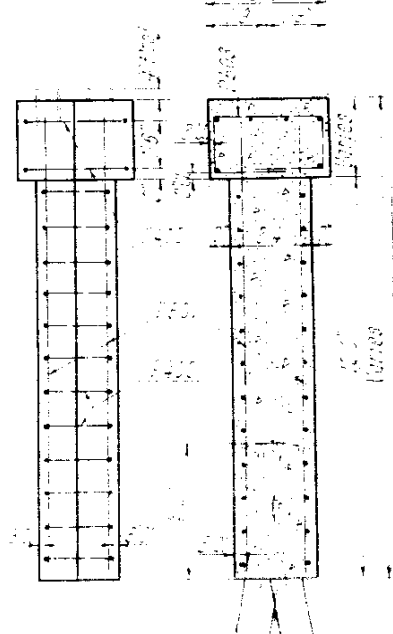
FILE NO.	PROJECT	SHEET NO.	TOTAL SHEETS
1092-25		56	



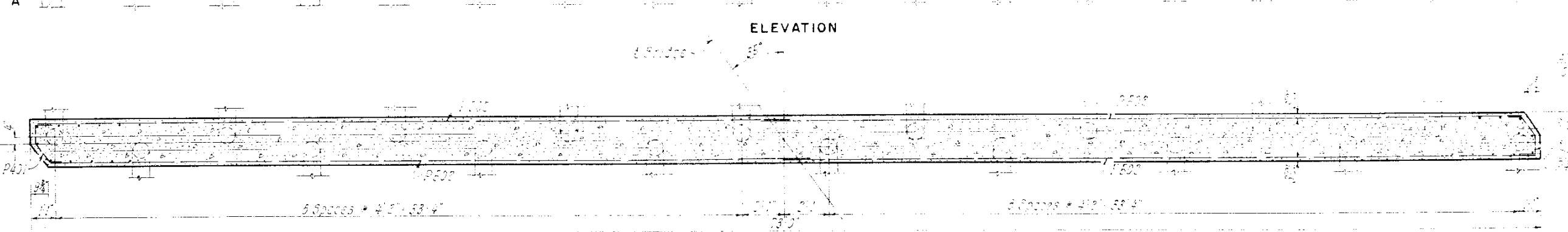
PLAN



ELEVATION

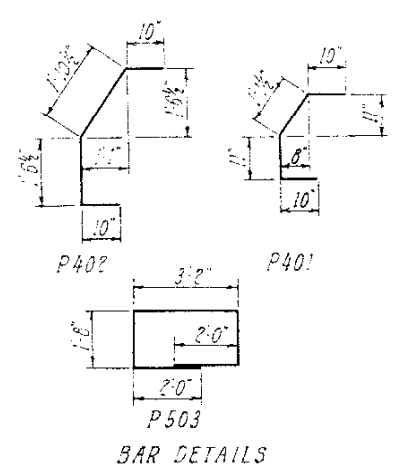


SIDE VIEW



SECTION A-A

TYP. SECTION



ELEVATIONS AT TOP OF MASONRY PLATES

LOCATION	BEAM	West	2	3	4	5	6	7	8	9	10 (Top)
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 Anchoring	10	Lbs.
Class. Concrete	186	Cu. Ft.
Reinforcing Steel	10,436	Lbs.
Steel Pipe * Piling	780	Lin. Ft.

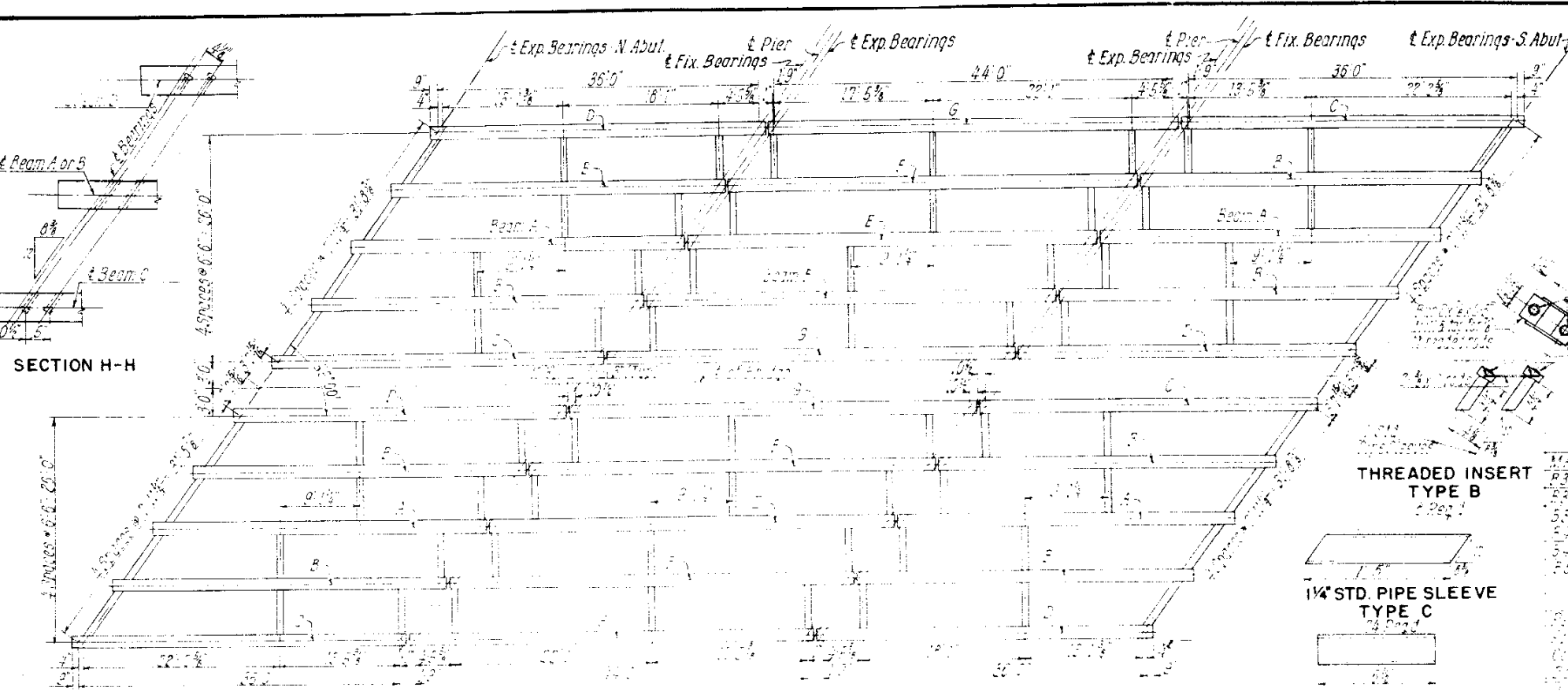
LIST OF P IERS

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

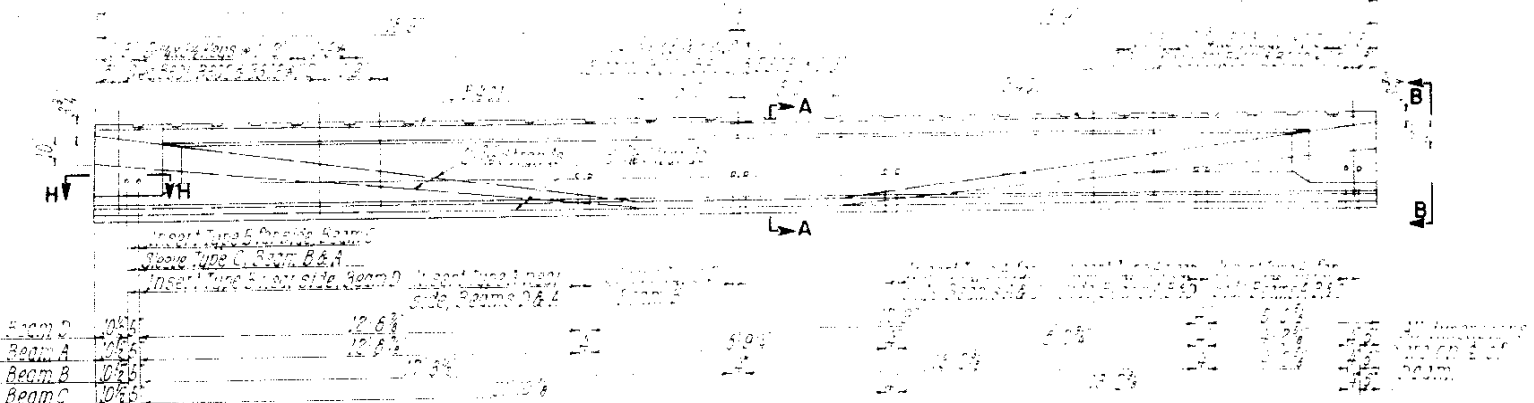
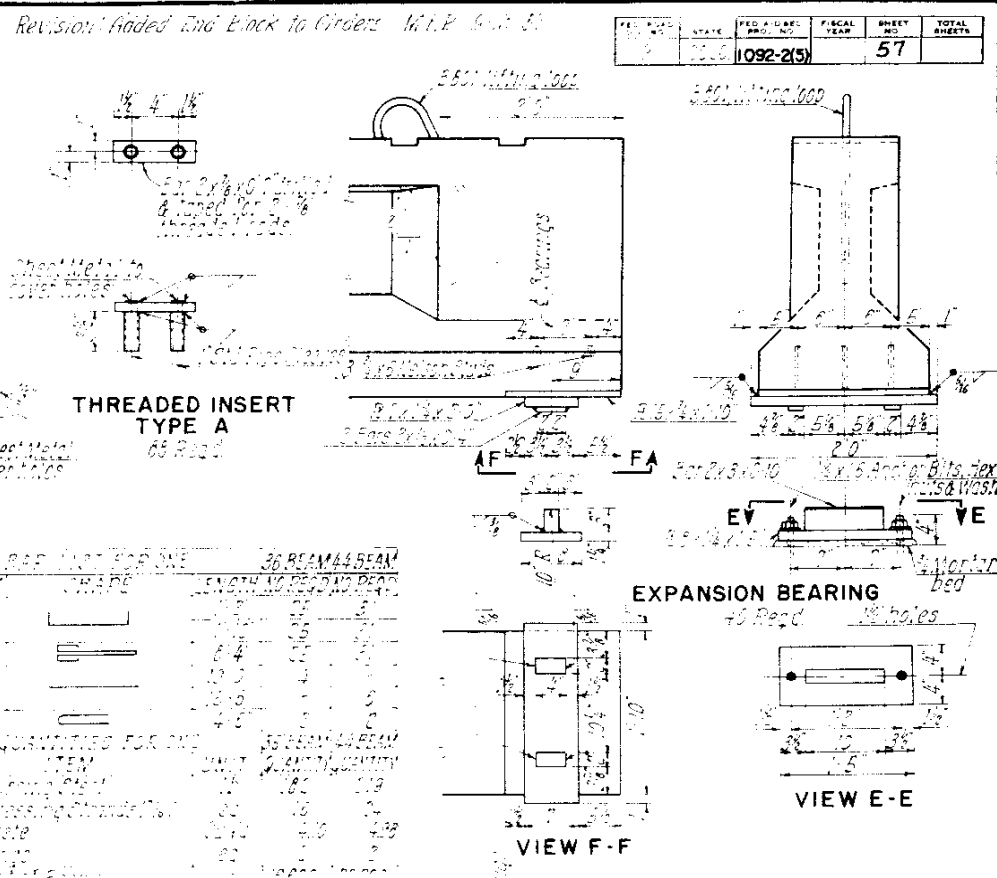
COLORADO DEPARTMENT OF HIGHWAYS  
 COLORADO SPRINGS FREEWAY  
 CIMARRON STREET BRIDGE  
 OVER FOUNTAIN CREEK

PIERS

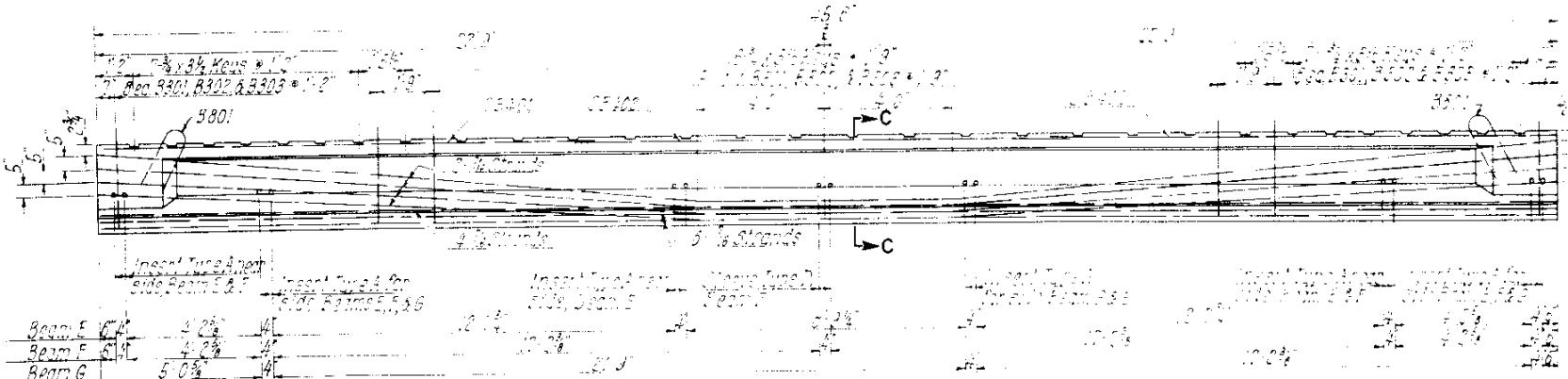
CLIFFORD JOHNSON & ASSOCIATES  
 CONSULTING ENGINEERS  
 DENVER, COLORADO



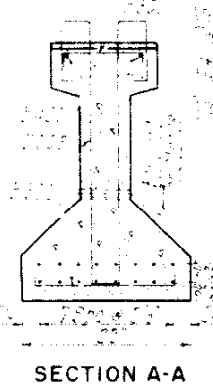
FRAMING PLAN



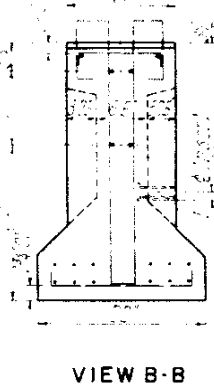
36" PRESTRESSED CONCRETE BEAM



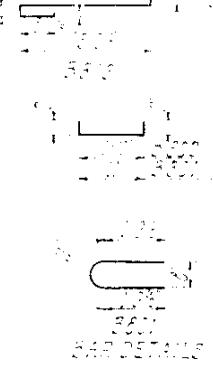
44" PRESTRESSED CONCRETE BEAM



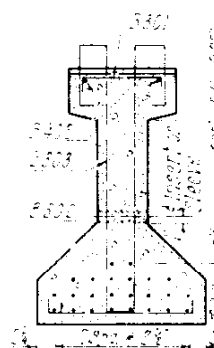
SECTION A-A



VIEW B-B



VIEW C-C



SECTION C-C



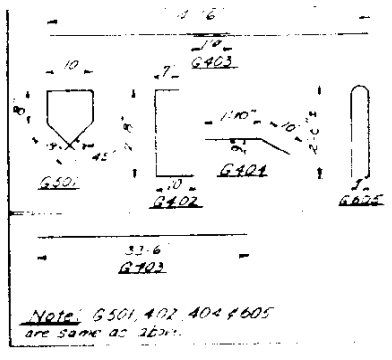
END VIEW D-D

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:  
 300,000 p.s.i.  
 Beams A, B, C & D:  
 16 # strands --- 305,000 lbs.  
 Beams E, F & G:  
 24 # strands --- 450,000 lbs.  
 The Central Force per Prestressed Concrete Beam shall include all strands, reinforcement bars, sleeve inserts, bearings, and their anchor bolts.



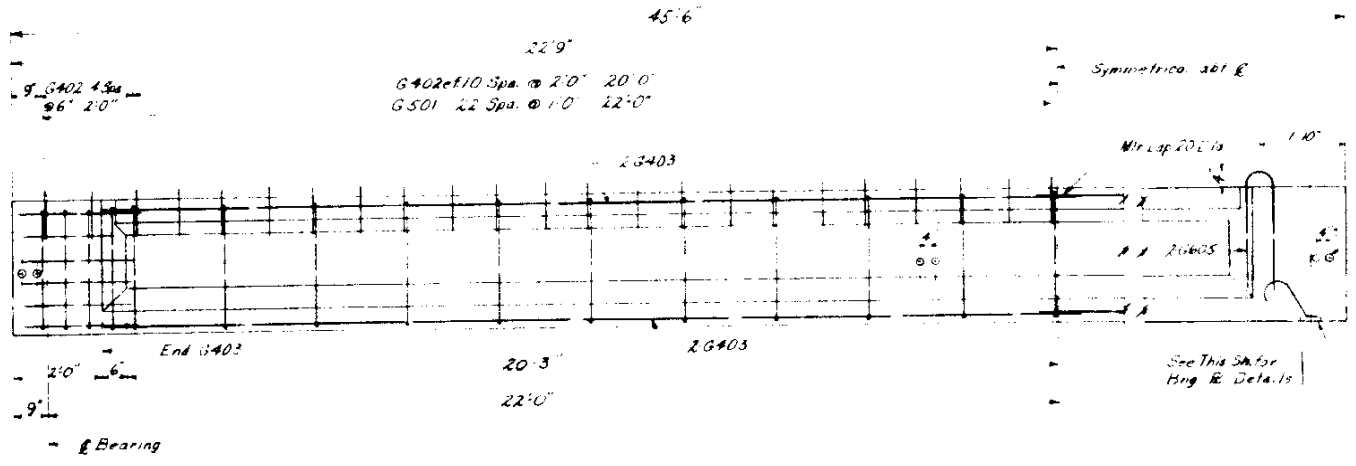
PERMANENT NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
	COLO.	1002-2151	57a	

Revision: 2-27-58 New Sheet - M.E.R

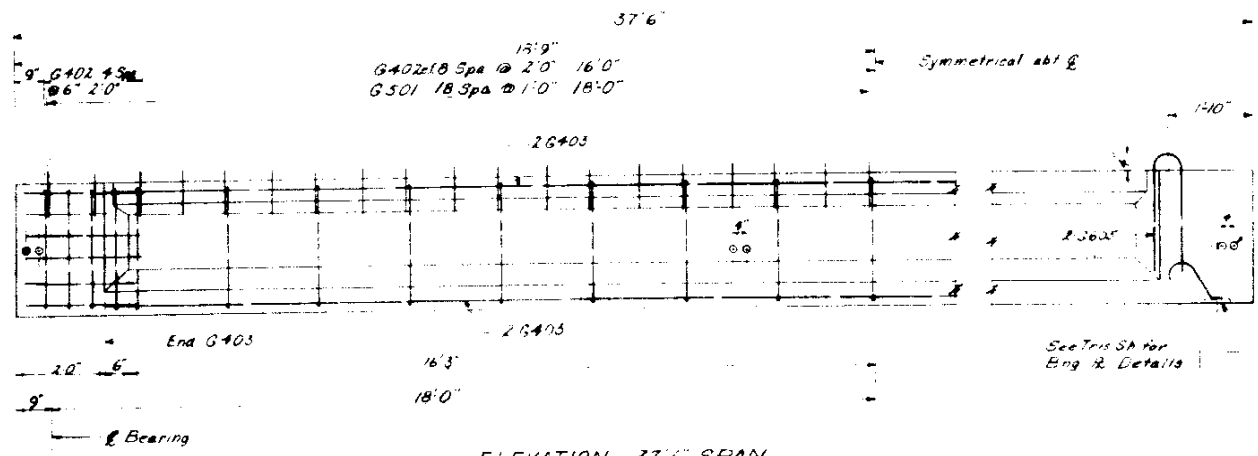


Mark	Type	45'6" SPAN (10 REQ'D)		37'6" SPAN (12 REQ'D)	
		Per Girder	Total	Per Girder	Total
G401	Bent	45	450	50	600
G402	Bent	38	380	44	528
G403	Str	4	40	4	48
G404	Bent	24	240	24	288
G605	Bent	4	40	4	48
G501	Bent	37	740	37	882
G402	Bent	50	1000	50	1200
G403	Str	4	80	4	96
G404	Bent	24	480	24	576
G605	Bent	4	80	4	96

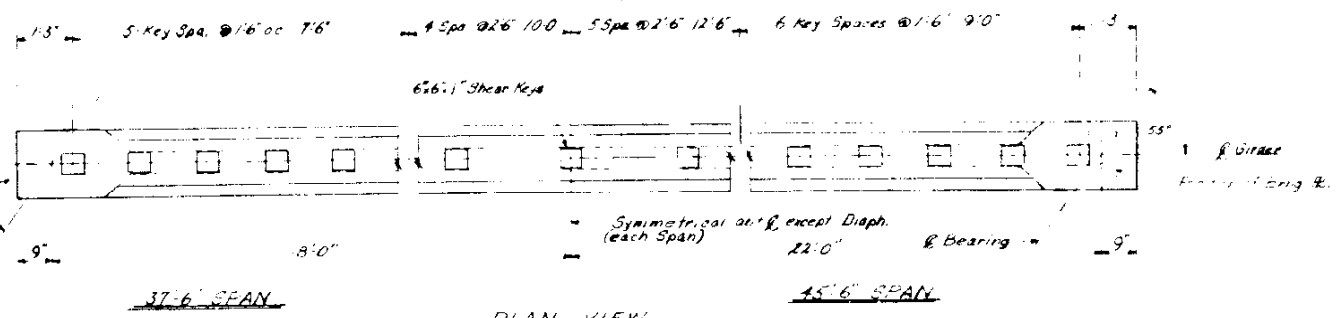
Note: G501, G402, G404 & G605 are same as 120'.



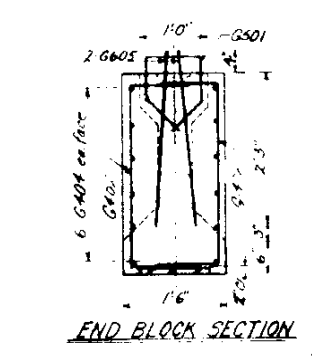
**ELEVATION - 45'6" SPAN**  
Scale: 3/4" = 1'-0"



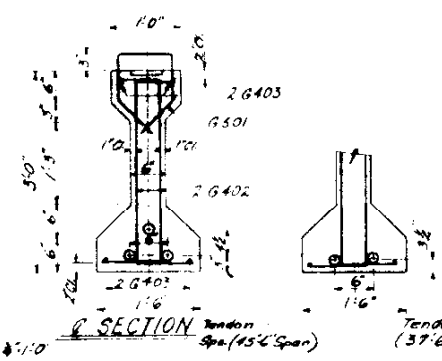
**ELEVATION - 37'6" SPAN**  
Scale: 3/4" = 1'-0"



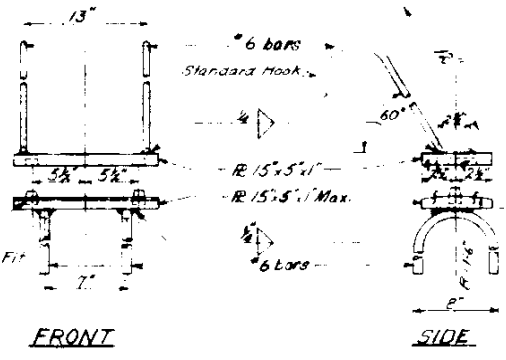
**PLAN VIEW**  
Scale: 3/4" = 1'-0"



**END BLOCK SECTION**  
Scale: 3/4" = 1'-0"



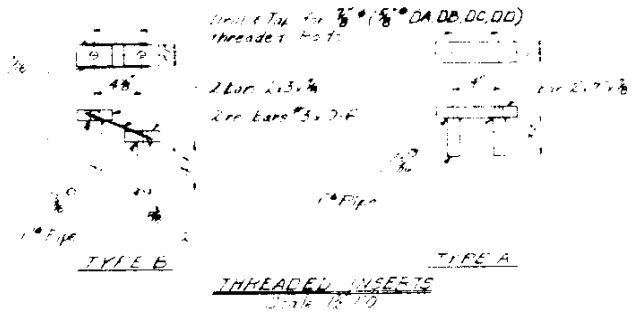
**GIRDER SECTION**  
Scale: 3/4" = 1'-0"



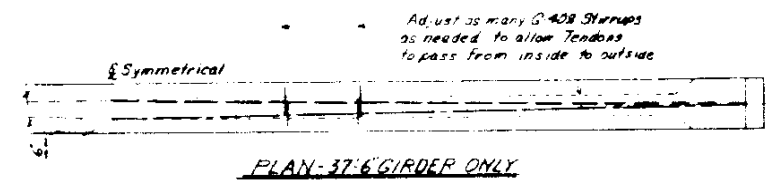
**FRONT SIDE**

Top of Pier or Abutment  
Included in Unit Price for Prestressed Girders

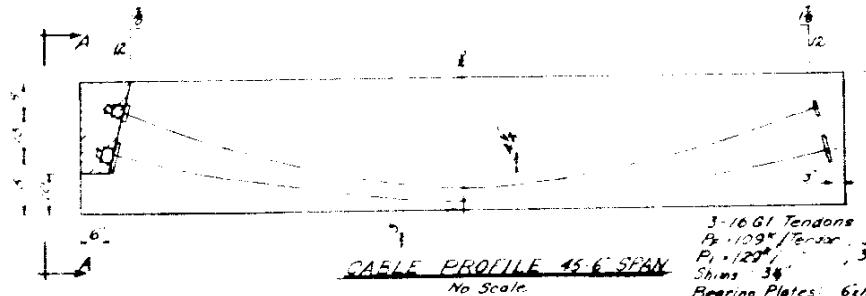
**BEARING PLATE DETAILS**  
Scale: 1 1/2" = 1'-0"



**THREADED INSERTS**  
Scale: 1 1/2" = 1'-0"

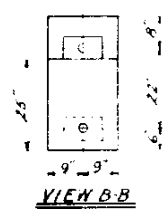


**PLAN - 37'6" GIRDER ONLY**

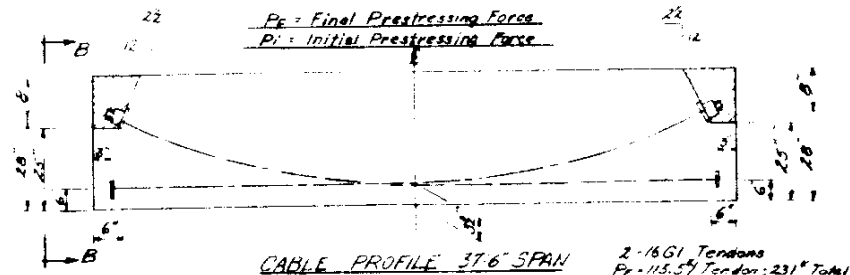


**CABLE PROFILE 45'6" SPAN**  
No Scale

3-16G1 Tendons  
P<sub>i</sub> = 109" / Tendon; 327" Total  
P<sub>f</sub> = 120" / Tendon; 360" Total  
Shims - 3"  
Bearing Plates - 6x10"

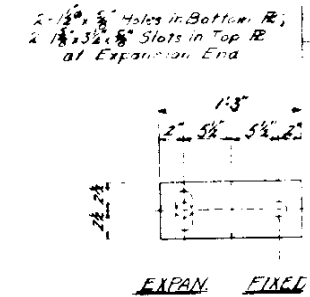


**VIEW A-A**



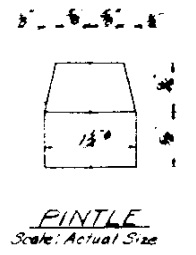
**CABLE PROFILE 37'6" SPAN**  
No Scale

2-16G1 Tendons  
P<sub>i</sub> = 115.5" / Tendon; 231" Total  
P<sub>f</sub> = 134.5" / Tendon; 269" Total  
Shims - 2"  
Bearing Plates - 6x10"



**EXPAN. FIXED**

**PLAN**

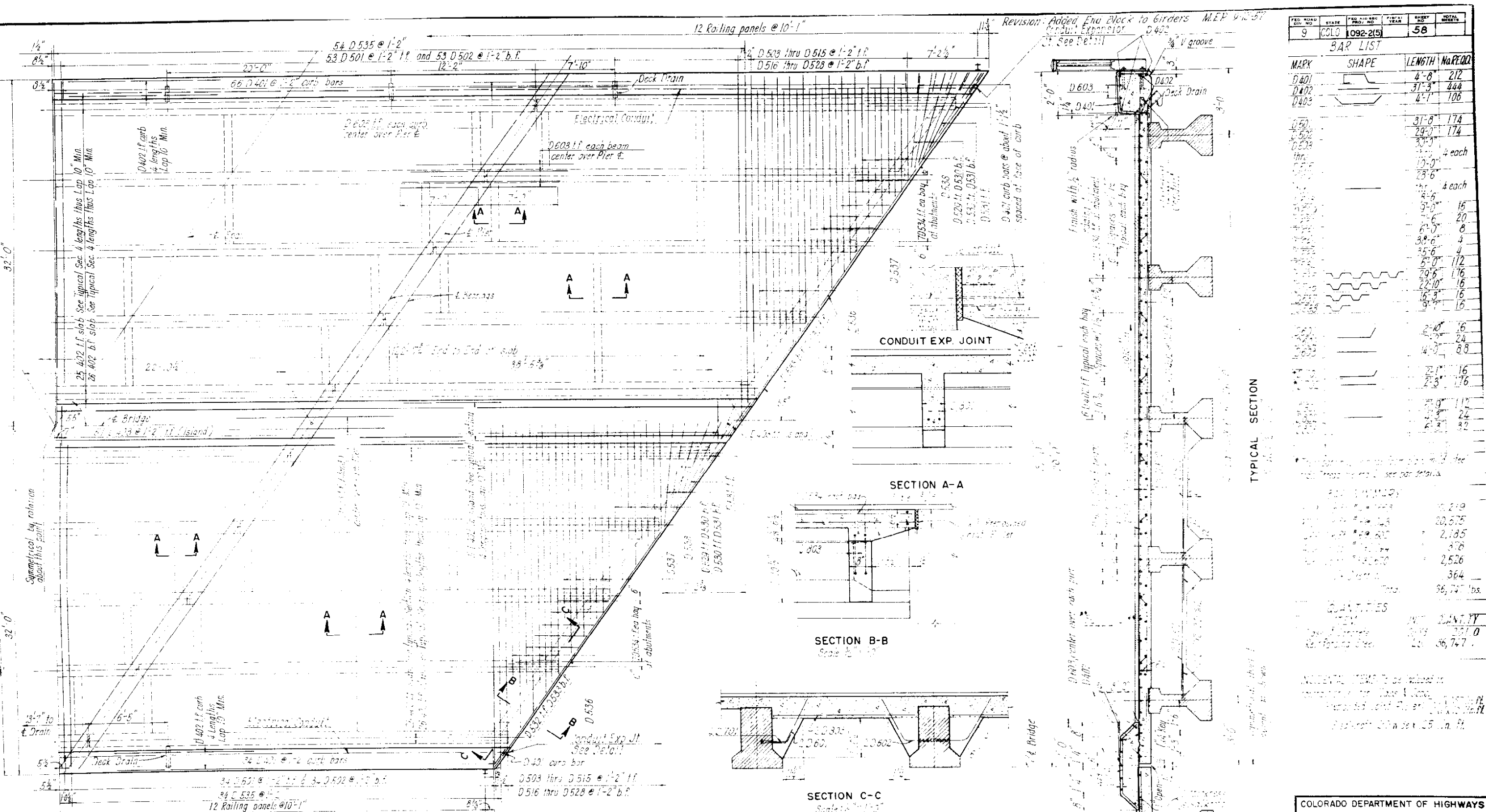


**FINTLE**  
Scale: Actual Size

**A.S. HORNER CONSTRUCTION CO.**  
DENVER, COLORADO

STANDARD GIRDERS  
STANDARD BEARING PLATES

PLAN NO. 1092 (215) CO. BRADDO SPRINGS  
STRUCTURE NO. 1-11-58  
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 2-7-58 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'-6"	20
D536		6'-0"	8
D537		38'-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

**TYPICAL SECTION**

ITEM	QTY	UNIT	QUANTITY
CONCRETE	30,219	cu yd	30,219
STEEL	20,575	lbs	20,575
FORMWORK	2,185	sq ft	2,185
REINFORCING STEEL	378	lbs	378
CONCRETE	2,526	cu yd	2,526
STEEL	364	lbs	364
<b>Total</b>	<b>36,747</b>	<b>lbs</b>	<b>36,747</b>

NOTE: ITEMS TO be included in contract for Deck & Railing. Estimated total quantity of items to be included in contract is shown on sheet 58 of this set.

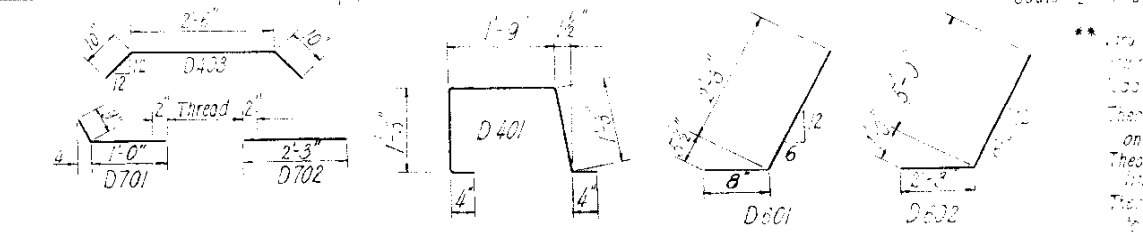
**COLORADO DEPARTMENT OF HIGHWAYS**  
**COLORADO SPRINGS FREEWAY**  
**CIMARRON STREET BRIDGE**  
**OVER FOUNTAIN CREEK**

**DECK**

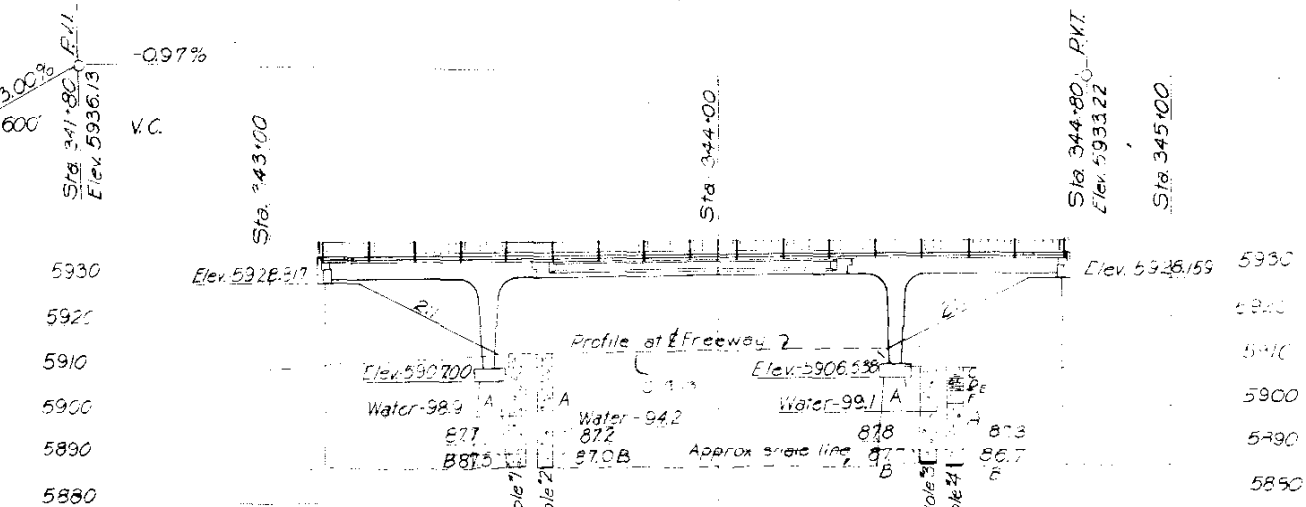
**CLIFFORD JOHNSON & ASSOCIATES**  
 CIVIL ENGINEERS

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

NO.	1	2	3	4	5	6	7	8	9	10	11	12
535	3'-2"	2'-7"	3'-3"	3'-5"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"
536	3'-4"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"
537	3'-4"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"
538	3'-4"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"	3'-3"	2'-7"	3'-3"

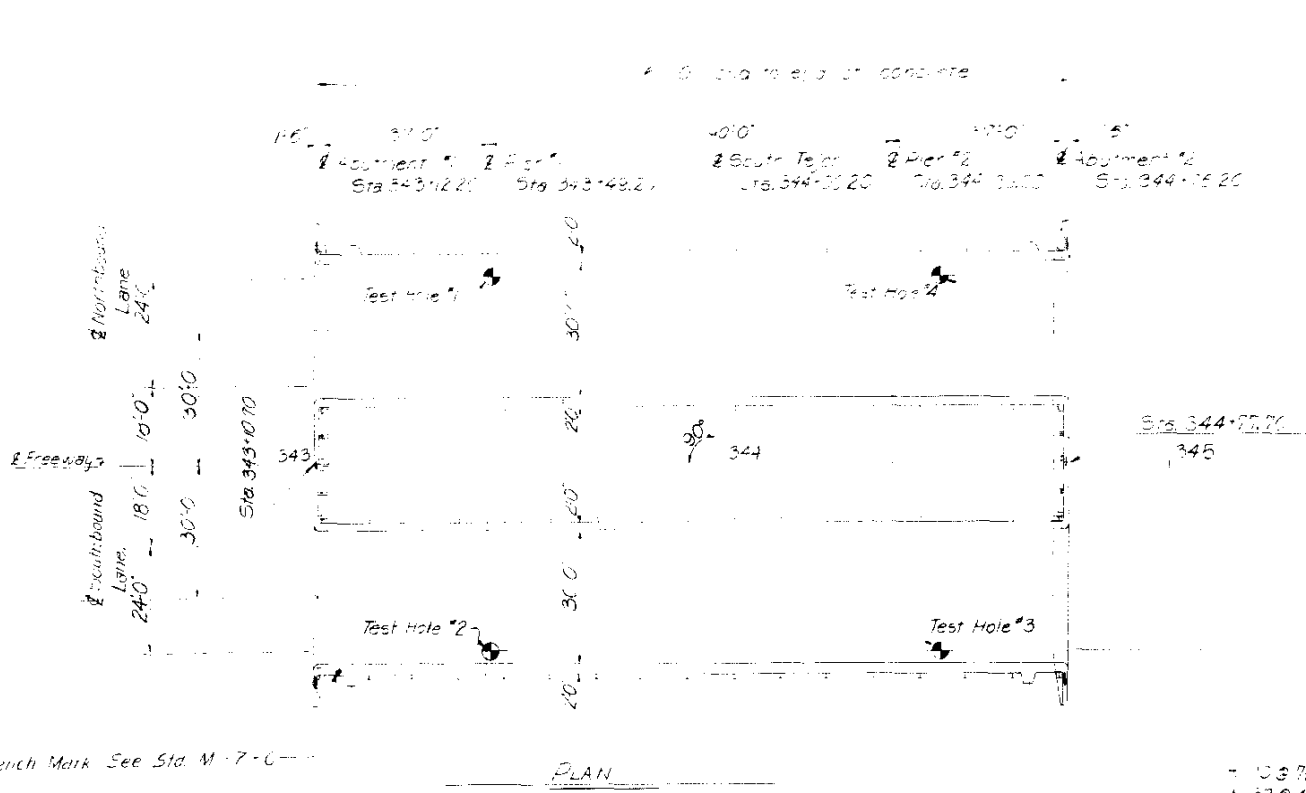


Any dimensions found as necessary to be included for beam spacing and for slab lap lengths. Theoretical number of beam when supported on the bearings. Theoretical number of slab panels straight line distribution are found in relation to the theoretical net number of slab in relation to beam.



**ELEVATION**  
 Beams 37'-0" x 30'-0" & 37'-0" x 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 footings 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  
 For 10000 psi Prestressed Concrete

**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 #1	Abut #2	SUPER	TOTAL
100	Excavation	Cu Yds		350			350
100a	Structural Backfill (Class 1)	Cu Yds	123		123		246
100c	Mechanical Compaction	Sq Yds	12.5	24	12.5		49
220a	Plant for Asphalt	Tons				125	125
220b	Plant for Stone	Tons	6,444		6,444		12,888
400a	Class A Concrete	Cu Yds	52.2	1,327	52.2	522.2	8213
400b	Prestressed Concrete	Lbs				10	*10
40	Reinforcing Steel (Hot Rolled)	Lbs	3,368	4,008	3,368	80,039	133,783
40c	Structural Steel (Structural Steel)	Lbs	1,245		1,245	26,210	28,700
60	1/2" Steel Pipe Piles (2 1/2" Thick)	Units	704	1,760	704		13,168
60a	Drilled Holes for Piles	Units	304		304		1,608
65m	Concrete Bridge Piers	Cu Yds	61		61		122
800	Sheet Copper (1/2" x 24" x 10')	Lbs				190.2	190.2
900	Electrical Conduit & Junction Boxes	Units				672	672

**GENERAL PLAN AND ELEVATION**

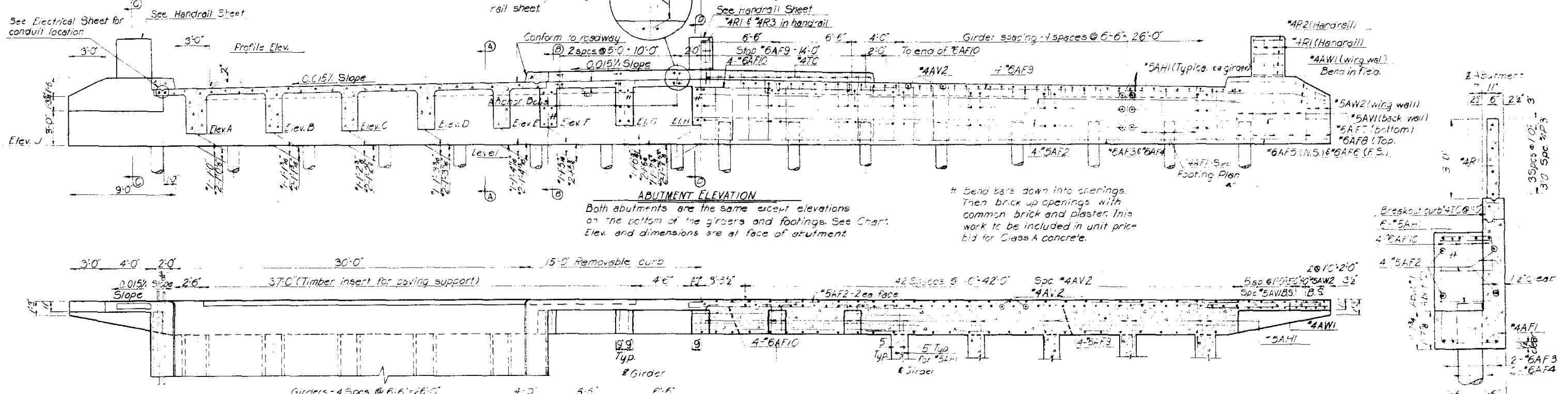
COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 SOUTH TEJON STREET  
 BRIDGE NOS 1-17-DA & DB

**GENERAL PLAN AND ELEVATION**

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

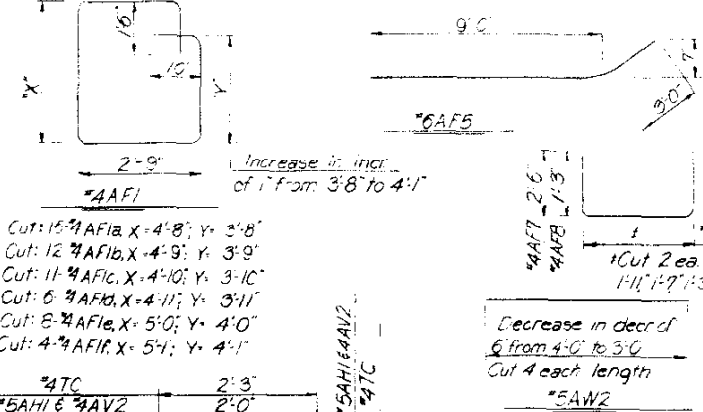
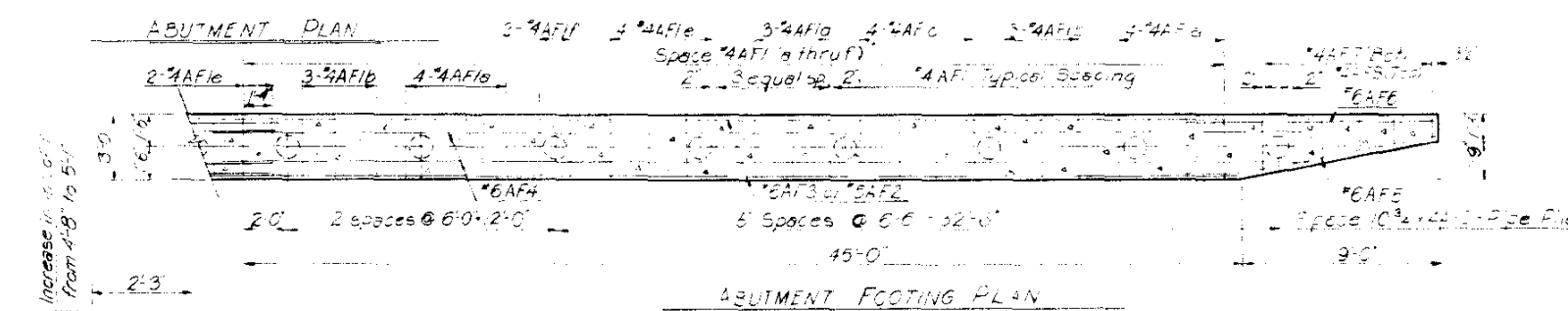
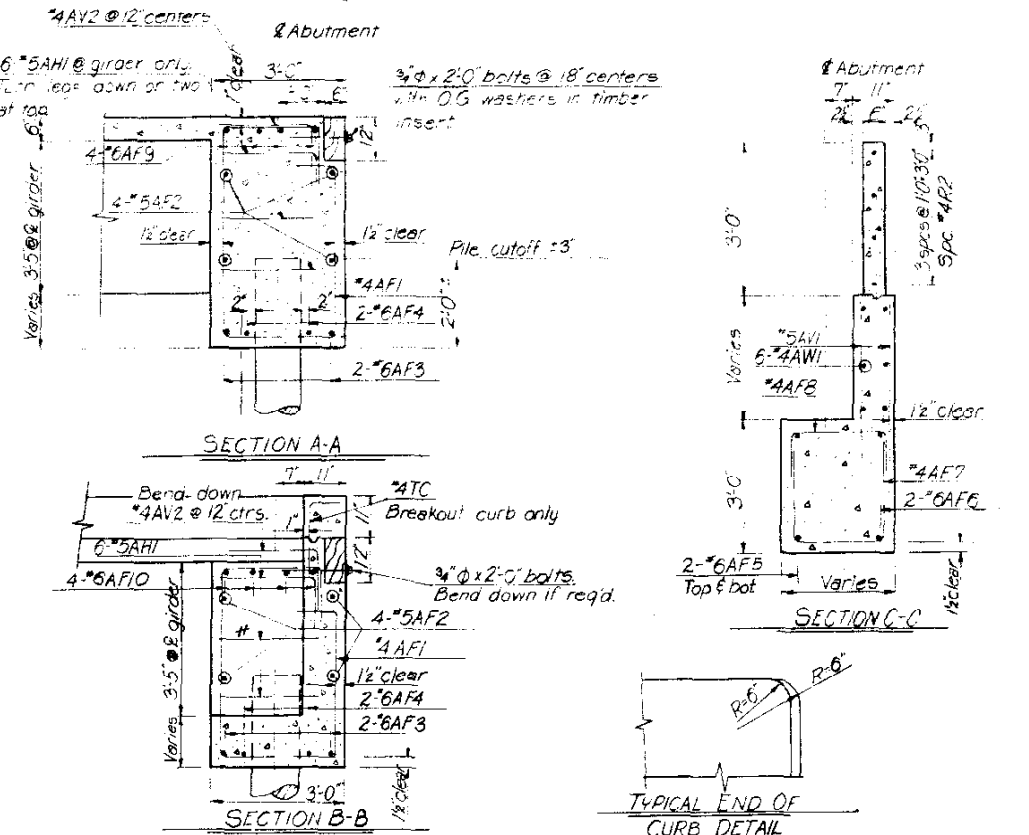
DATE: April, 1957  
 DRAWING NO.  
 15 B 1

Note: Typical bolt location for abutment steel railing. See Handrail sheet.



**ABUTMENT ELEVATION**  
Both abutments are the same except elevations on the bottom of the girders and footings. See Chart. Elev. and dimensions are at face of abutment.

\* Bend bars down into openings. Then brick up openings with common brick and plaster. This work to be included in unit price bid for Class A concrete.



Elevation	Area	Area * 2
A	29.819	29.71
B	29.916	29.268
C	30.014	29.366
D	30.112	29.464
E	30.209	29.561
F	30.259	29.621
G	30.368	29.718
H	30.464	29.816
J	28.617	28.159

**NOTES:**

- All concrete to be Class A
- Dimensions for reinforcing steel are to face of bars unless otherwise indicated. All dimensions shown in bending diagrams are cut to out of bars.
- Level a cases and note all corners with a 3/4" radius unless otherwise indicated.
- Piles shall be pipe 10 1/2" nominal diameter, minimum wall thickness of 0.79" and shall be filled with Class A concrete after driving. Piles may be filled at the same time the abutment is poured at the contractor's option. See note on Pier Sheet.
- Abutments 1 and 2 are the same except as noted. See Handrail Sheet for details.
- See Cast in place Girder Sheet for details of beams to be cast with abutment.
- See Electrical Sheet for conduit location and size.

32 Piles x 44'-0"  
32 Holes x 19'-0"

**BAR WT. SUMMARY (2 Abut.)**

*6-1724 in. ft. @ 1502-2583*
*3-1764 in. ft. @ 1433-1815*
*4-3527 in. ft. @ 668-2240*
1% Overrun = .67
<b>Total = 6736*</b>

**(2) ABUTMENT QUANTITIES**

Structural Backfill - 245 yd. <sup>3</sup>
Mechanics Tamping - 25 h.
Class A Concrete - 64 yd. <sup>3</sup>
Reinforcing Steel - 6736*
Drilling Holes - 608 in. ft.
CM Steel Pipe Piles - 1400 in. ft.
Structural Steel - 2568*
Timber Header - 0.888 M-ft. bm.

**COLORADO STATE HIGHWAY DEPARTMENT**

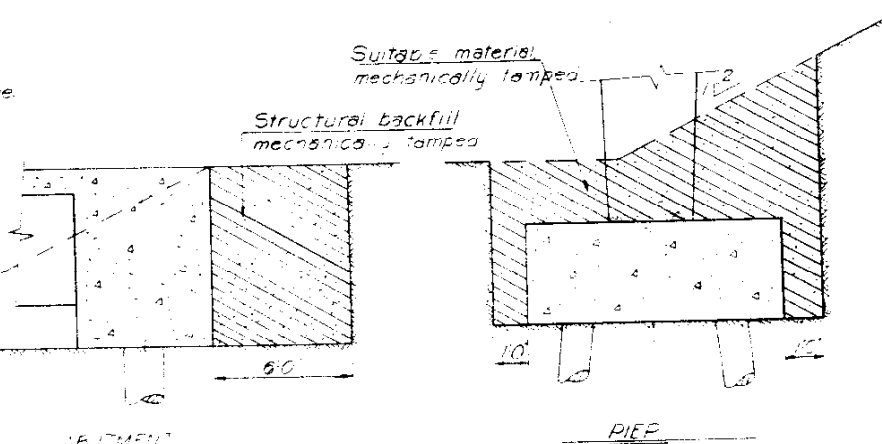
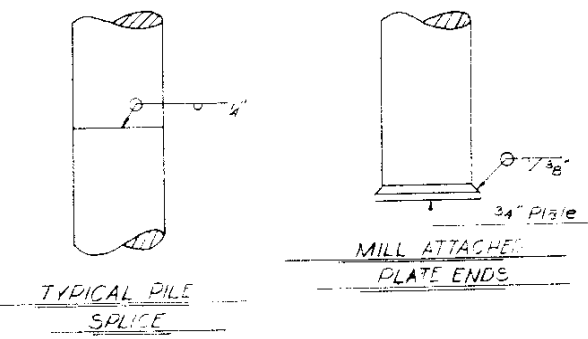
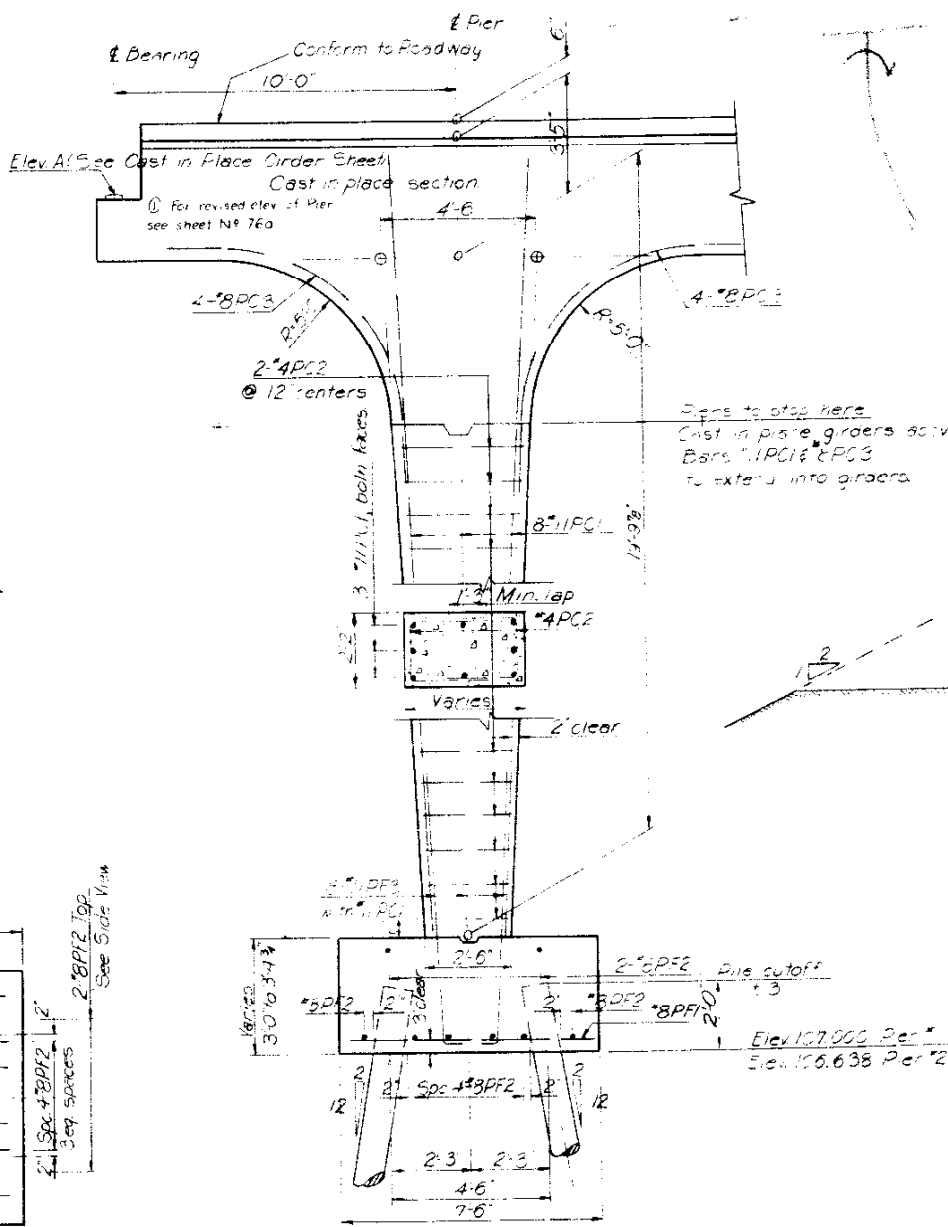
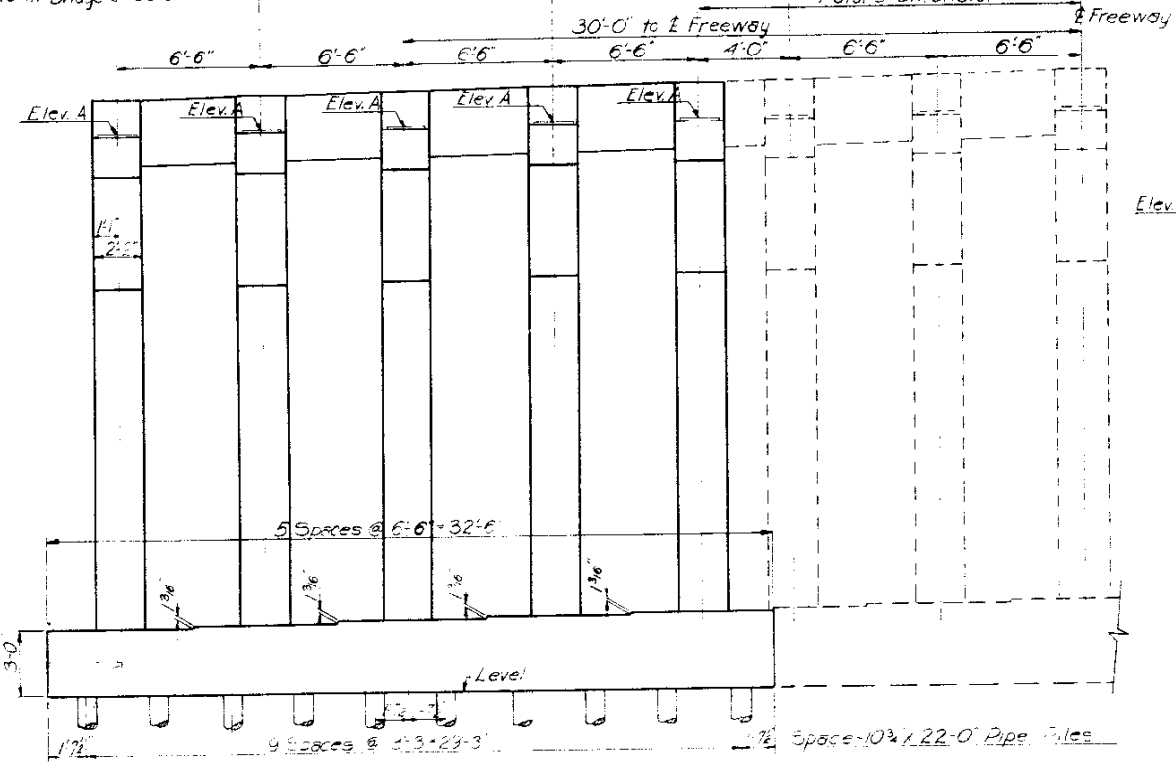
**COLORADO SPRINGS FREEWAY**  
SOUTH TEJON STREET  
BRIDGE NOS 1-17-DA & DB  
**ABUTMENT DETAILS**  
SCALE: 1/8" = 1'-0" DATE: April 1957  
ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO. DRAWING NO 15 B 2

**ABUTMENT REINFORCING SCHEDULE (One Abutment Only)**

Bar	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AW1	AW2	TC	RI	R2	R3
No. Reqd	57	5	4	4	4	4	12	12	8	8	90	24	86	12	12	4
Size	#4	#5	#6	#6	#6	#6	#4	#4	#6	#6	#5	#5	#4	#4	#4	#4
Length	*	46'-6"	46'-0"	43'-0"	12'-0"	12'-0"	*	*	31'-9"	16'-6"	4'-0"	4'-6"	4'-0"	9'-6"	4'-9"	2'-9"
Shape	□															

\* See Bending Diagram.

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



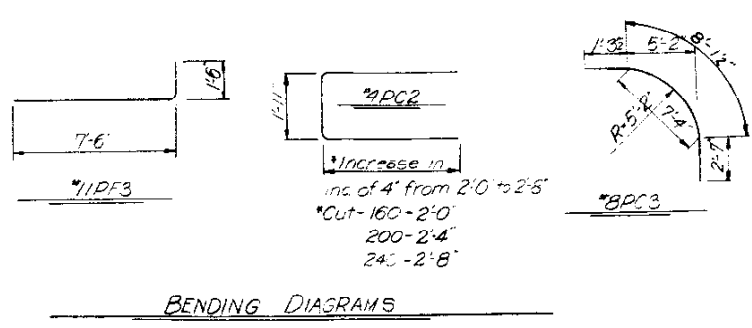
Note: All material that is to be mechanically tamped shall be placed in horizontal layers not more than 6 inches in depth and tamped before the next layer is placed.

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.

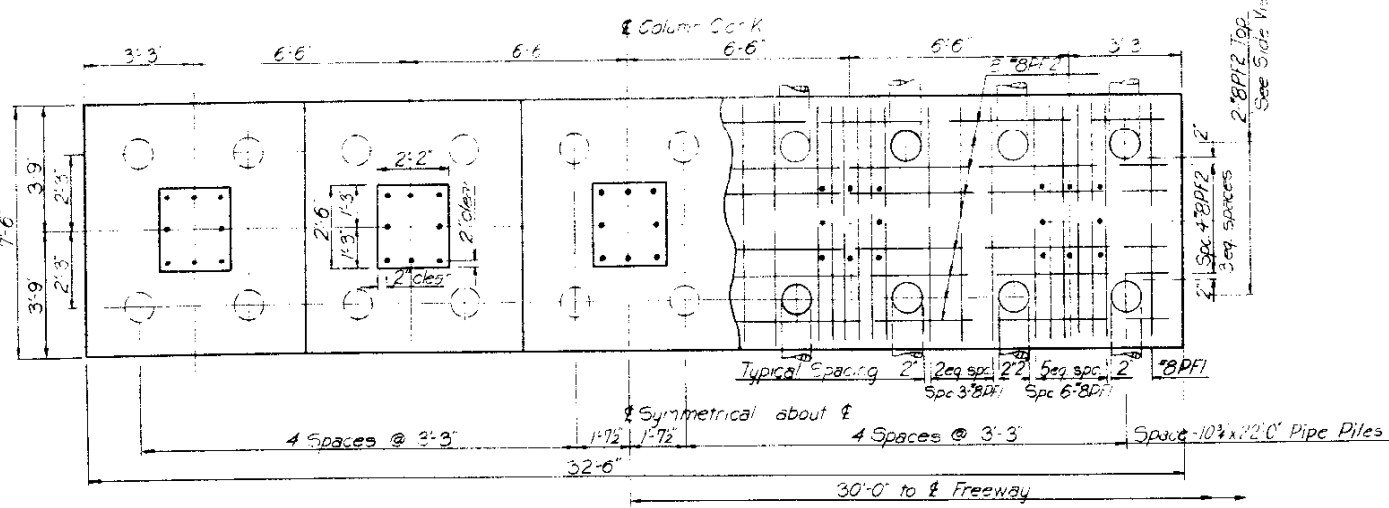
Design loading H20-5.644 AASHTO Specifications, 1958  
 Pile loading - 37 tons per pile  
 Unit stresses  
 fs = 20,000 psi  
 fc = 1200 psi

# SUMMARY PIER QUANTITIES		COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY	
Structural Excavation	350 yd <sup>3</sup>	SOUTH TEJON STREET BRIDGE NO'S I-17-DA & DB	
Mechanical Tamping	24 hr		
Class A Concrete	192.7 yd <sup>3</sup>		
Reinforcing Steel	41008'	PIER DETAILS	
10 1/2" Pipe Piles	1760 lin. ft.		
SCALE: _____		DATE: April, 1957	
ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO.		DRAWING NO. 15 B 3	



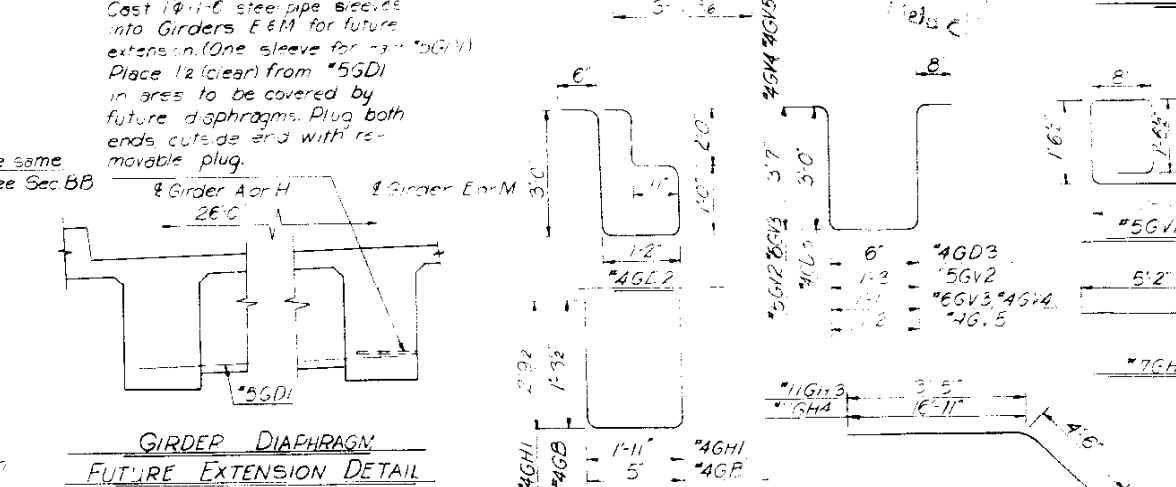
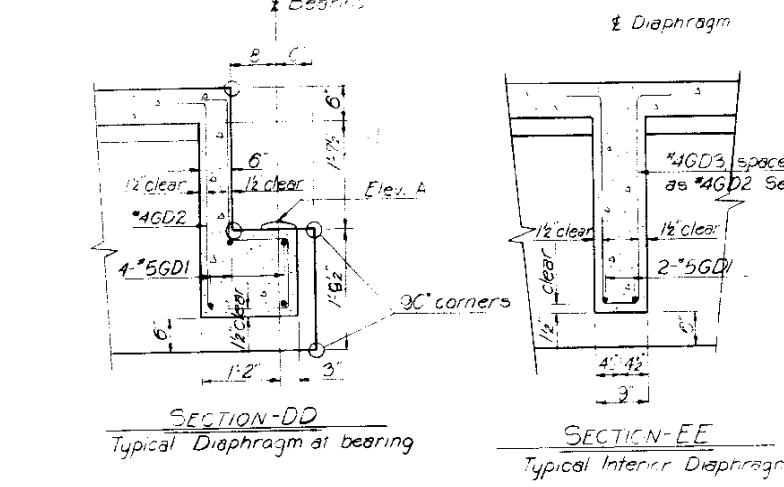
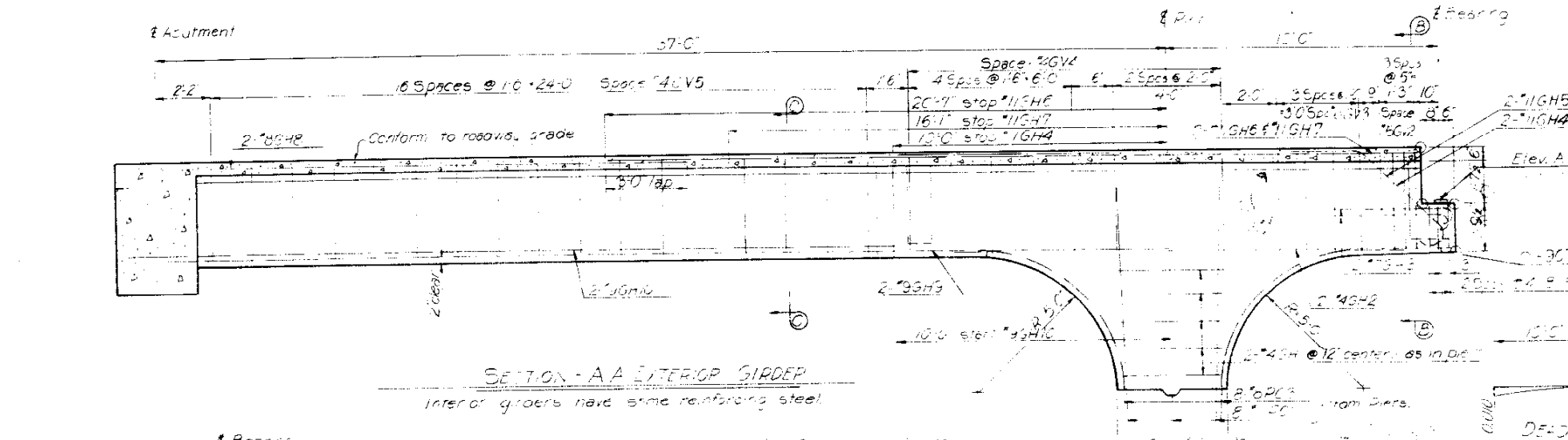
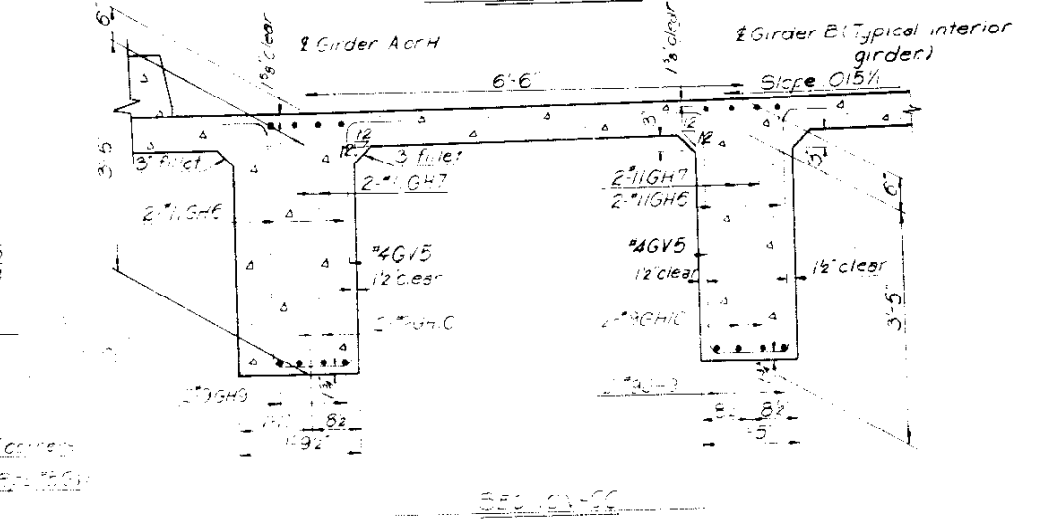
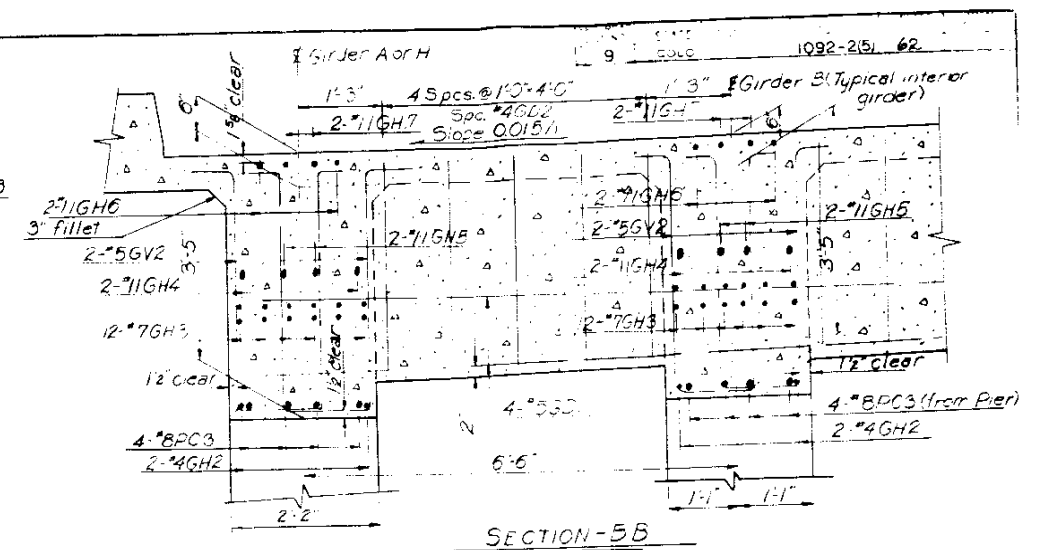
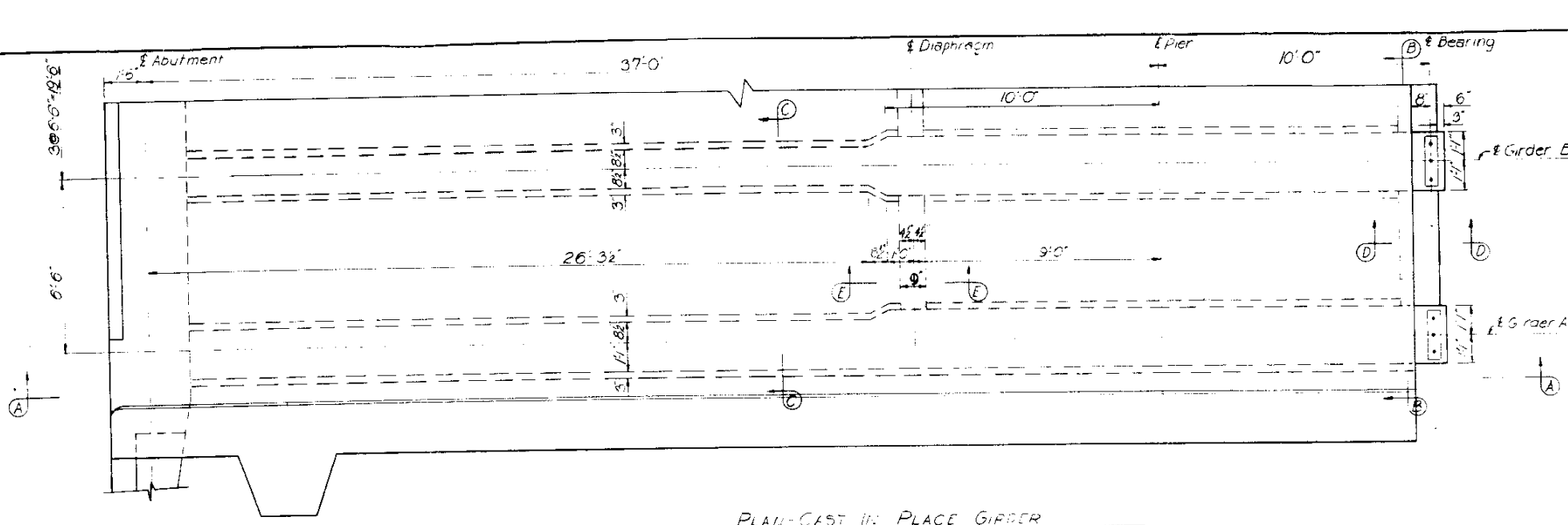
# Both Bridges.

# 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	= 2,274	
1% Overrun = 406		
Total = 41,008'		



# PIER REINFORCING SCHEDULE							
Bar	PC1	PC2	PC3			PF1	PF3
No. Reqd	160	600	160			176	160
Size	#11	#4	#8			#8	#11
Length	22'-6"	*	12'-0"			7'-0"	32'-0"
Shape	—	□	—			—	—

\* See bending diagram



NOTES:

- All corners to be 90°
- All dimensions for reinforcing steel are to Edgers unless noted. All dimensions for main chords and bars are out to out of bars.
- Beams to be cast in place and supported with a 4" x 4" x 1/2" galvanized mounting unless otherwise noted.
- See Bearing Device for details.
- 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.

Design Loading: AASHTO HS20-44, AASHTO Spec 953 Edition.

Unit weights:

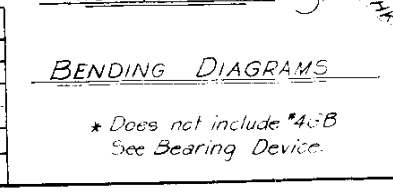
- 15000 psf Reinforcing Steel
- 15000 psf Structural Steel
- 150 psf

1.50 ft Bridges

BAR	NO.	SUMMARY
11GH3	1	10' x 10' x 10' x 10'
11GH4	2	10' x 10' x 10' x 10'
11GH5	2	10' x 10' x 10' x 10'
5GV1	1	10' x 10' x 10' x 10'
5GV2	1	10' x 10' x 10' x 10'
5GV3	1	10' x 10' x 10' x 10'
5GV4	1	10' x 10' x 10' x 10'
5GV5	1	10' x 10' x 10' x 10'
4GB	1	10' x 10' x 10' x 10'

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	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U



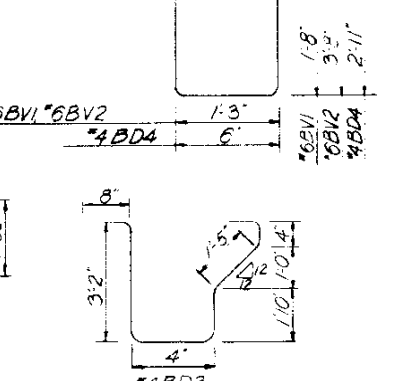
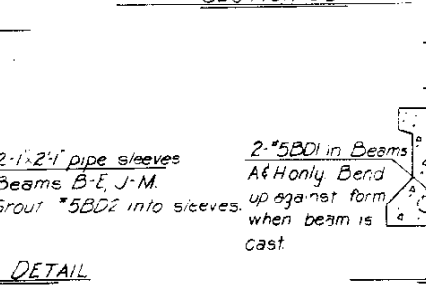
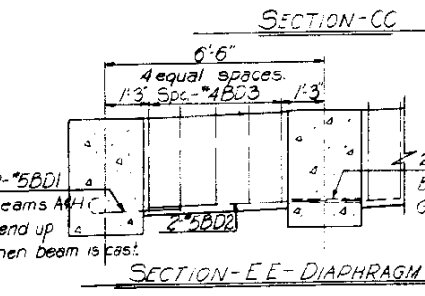
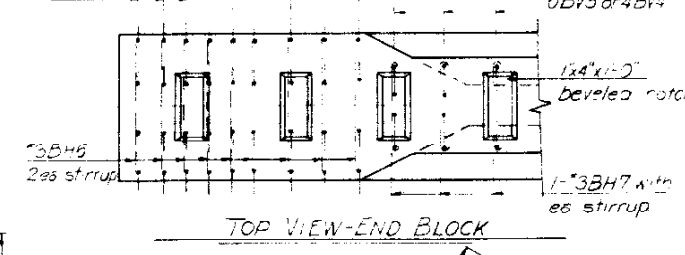
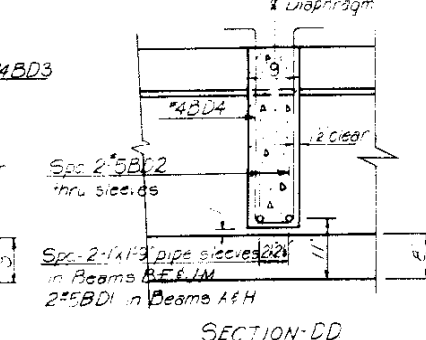
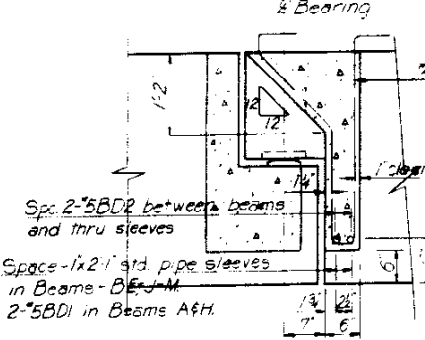
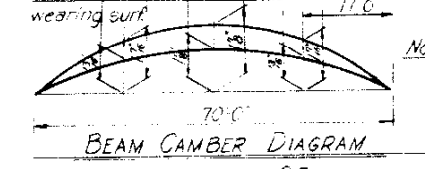
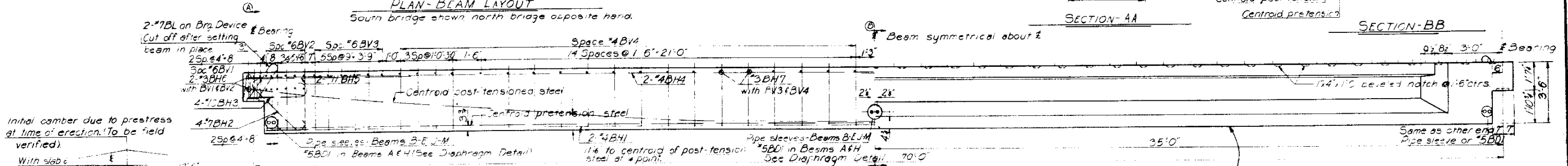
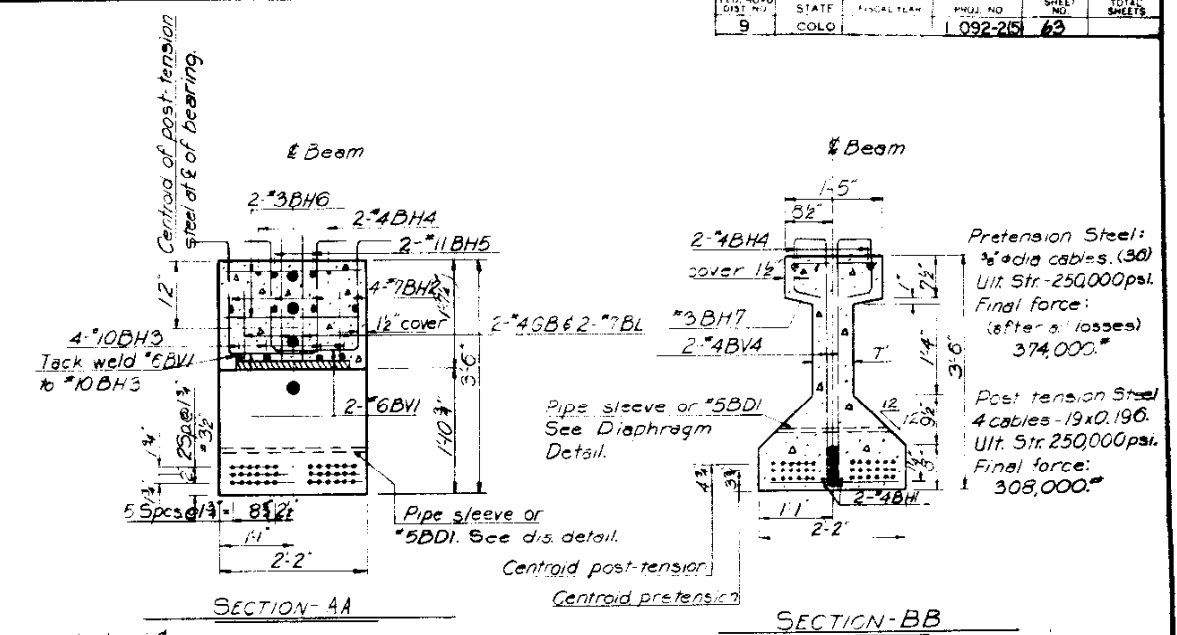
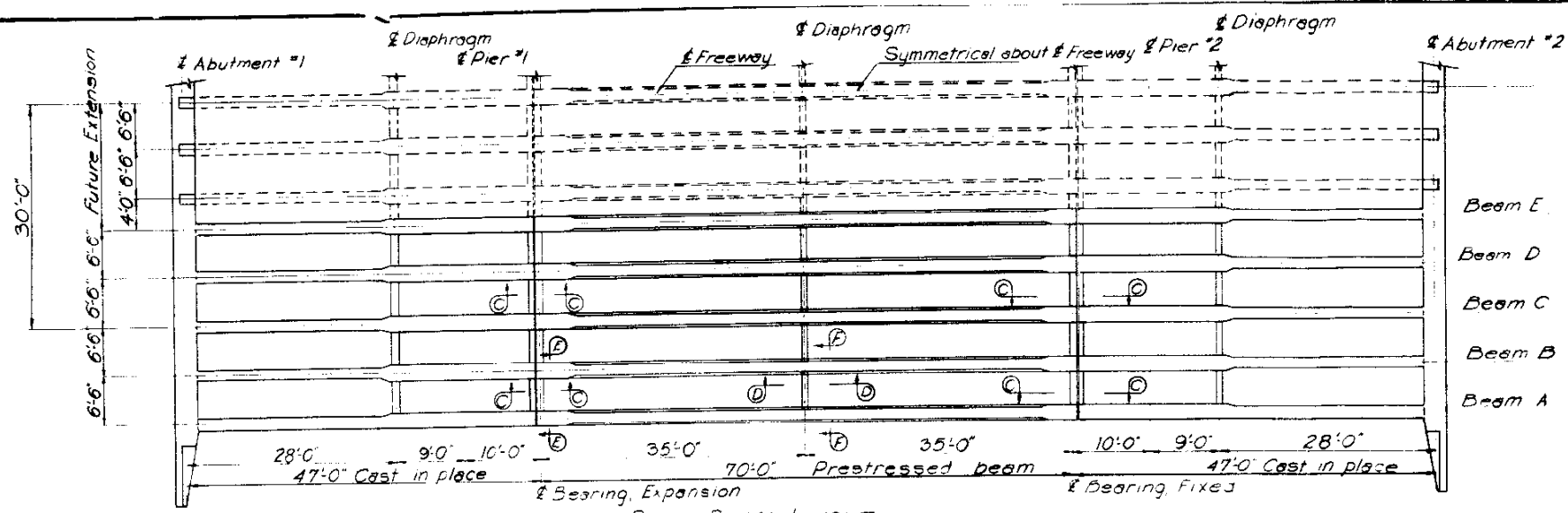
COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 SOUTH TEJON STREET  
 BRIDGE NO'S 1-17-DA & DB

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

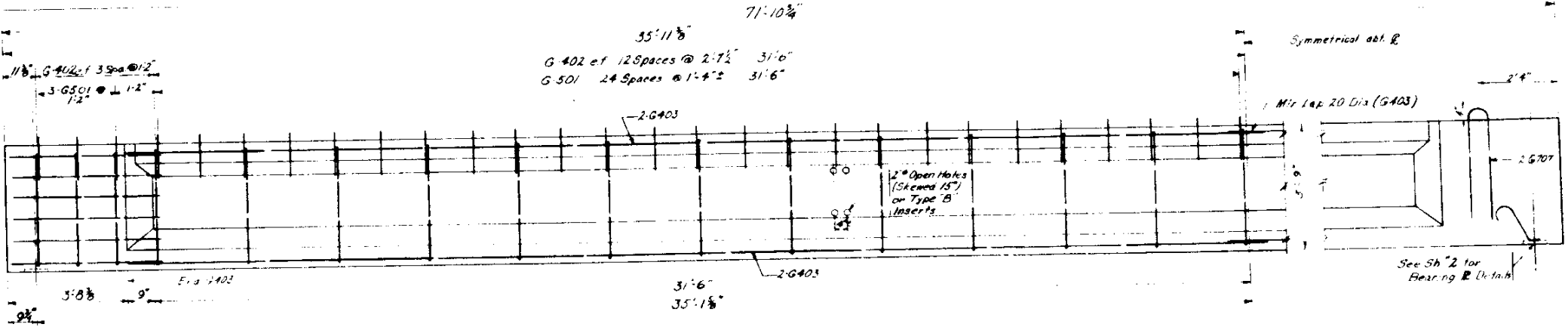
SUMMARY PRESTRESSED BEAM	
Reinforcing Steel (ea. beam)	
#1-36 lin. ft. @ 5.313	191.3
#10-36 lin. ft. @ 4.313	154.9
#7-63 @ 2.044	126.8
#6-46.2 @ 1.502	693.9
#4-77 @ 0.668	5.50
#3-199 @ 0.376	74.8
1/2 Overrun	7.6
Total	1136.3
Concrete (10'2000psi)	1193 yd <sup>3</sup>
Structural Steel (Bearing Plates)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

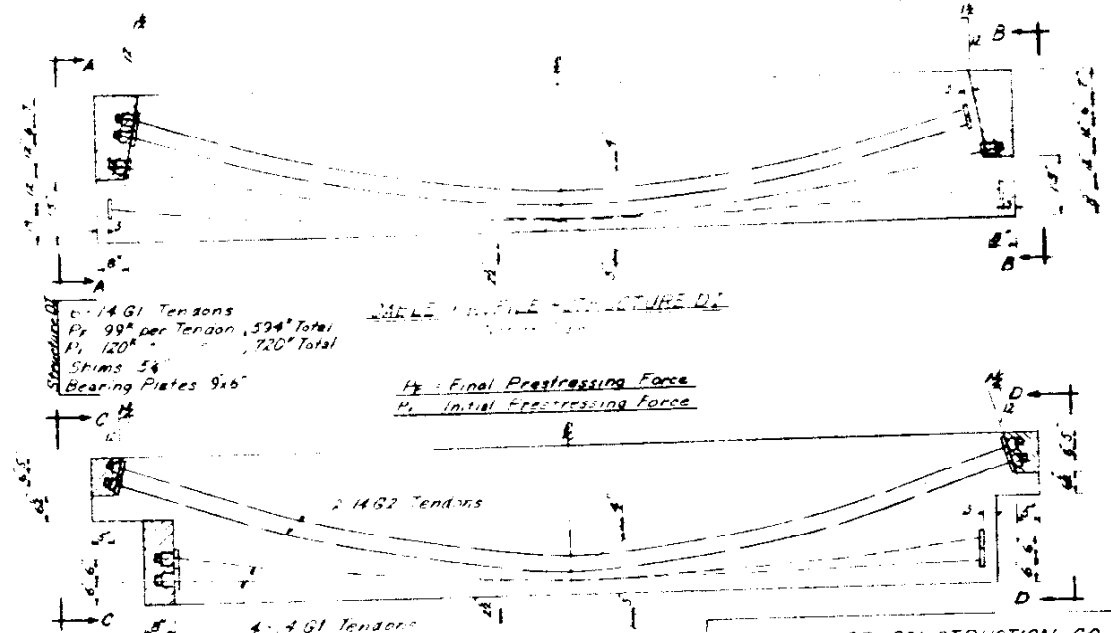
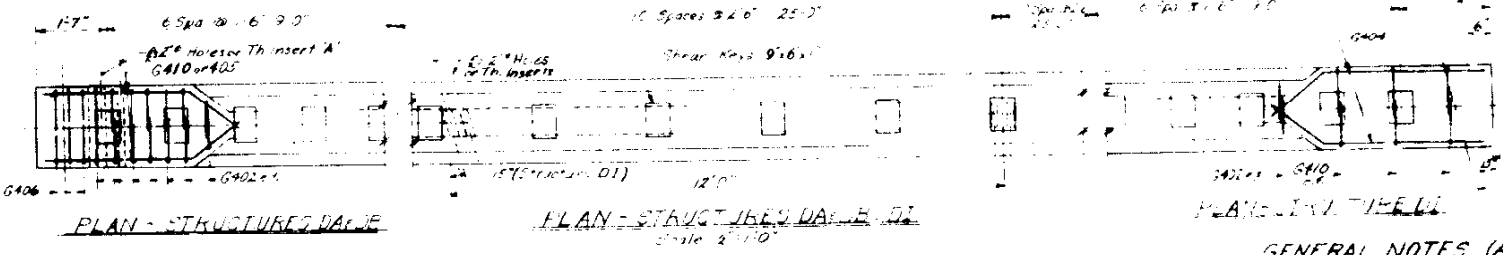
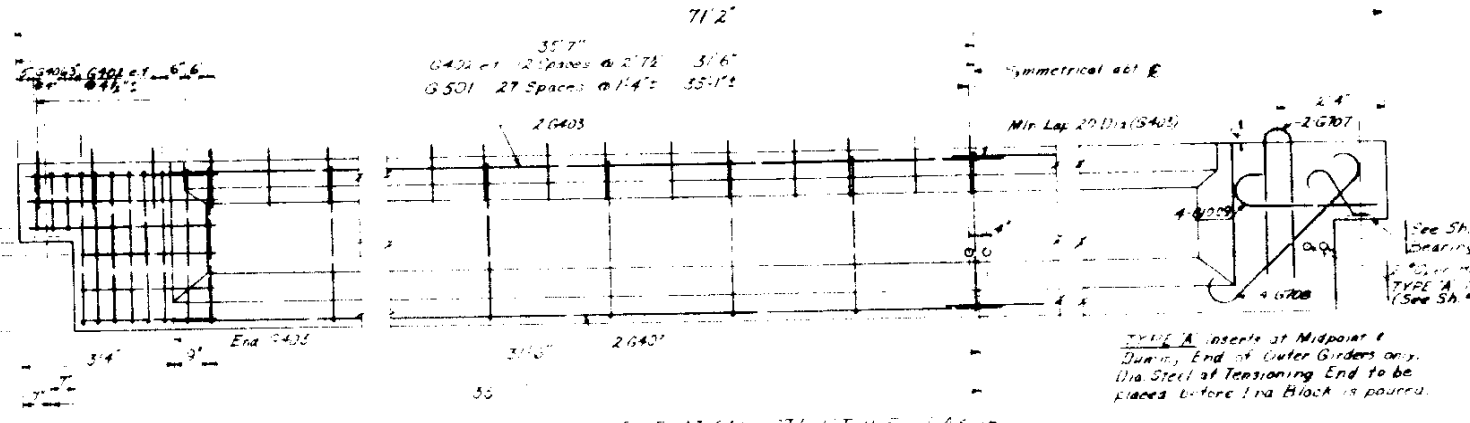
PRESTRESSED BEAM REINFORCING SCHEDULE										BEAM DIAPHRAGM REINFORCING				
Bar	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BL	GB	BD1	BD2	BD3	BD4	
No. Req'd	40	80	80	40	40	360	500	40	40	12	12	80	40	
Size	#4	#7	#10	#4	#11	#3	#3	#7	#4	#5	#5	#4	#4	
Length	35'-0"	5'-6"	4'-6"	36'-0"	9'-0"	2'-9"	2'-0"	1'-9"	3'-0"	4'-0"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

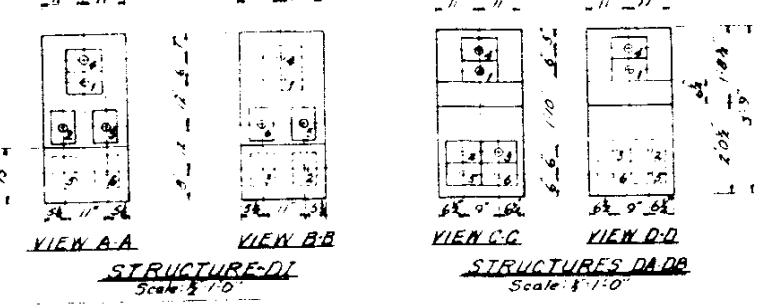
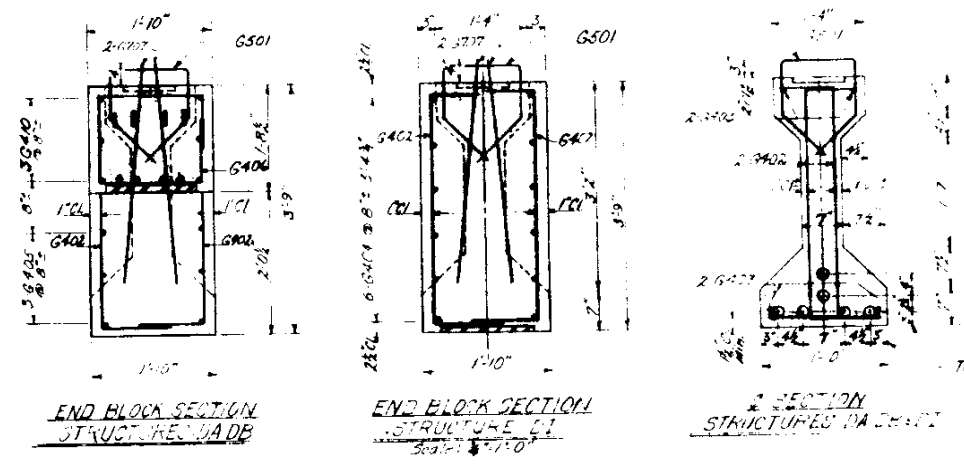
BAR LIST FOR PRESTRESSED GIRDERS									
STRUCTURE DI (56 REQ'D)									
Mark	Type	Length	No. Required	Total	Size				
G501	Bent	4' 0"	55	5080	#5				
G402	Bent	5' 2"	62	3472	#4				
G403	Str	4' 6"	4	224	#4				
G404	Bent	5' 0"	24	1344	#4				
G207	Bent	6' 0"	4	254	#7				
STRUCTURES DA, DB (10 REQ'D)									
G401	Bent	4' 6"	55	550	#5				
G402	Bent	5' 2"	78	780	#4				
G403	Str	6' 5"	4	40	#2				
G410	Bent	4' 8"	12	120	#4				
G404	Bent	5' 6"	12	120	#4				
G406	Bent	6' 6"	6	60	#4				
G207	Bent	6' 0"	4	40	#7				
G208	Bent	5' 11"	4	40	#7				
G209	Bent	4' 8"	4	40	#7				
Note: SSC 402, 403, 409 are same as for Structure DI.									



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°.



**GENERAL NOTES (All Sheets)**  
Ultimate Stress of Wires to be a minimum of 1.25 times the Initial Stress.  
Prestressing Tendons (No. 14 G1) are identical:  
6- Number of Tendons  
14- Number of 1/4" wires per Tendon  
G- Wires enclosed in metal conduit for Grouting.  
1- Stressed from one end or 2- both ends  
Shims have been added to the depth of the Shims to provide for the seating of the Button Truss.  
"11" - 11"

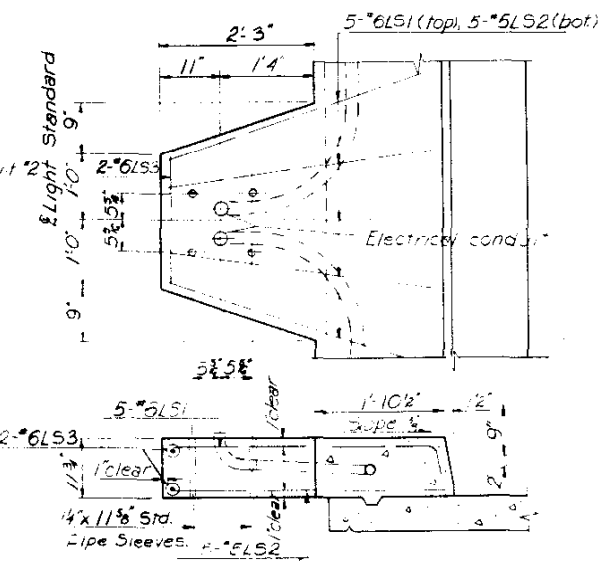
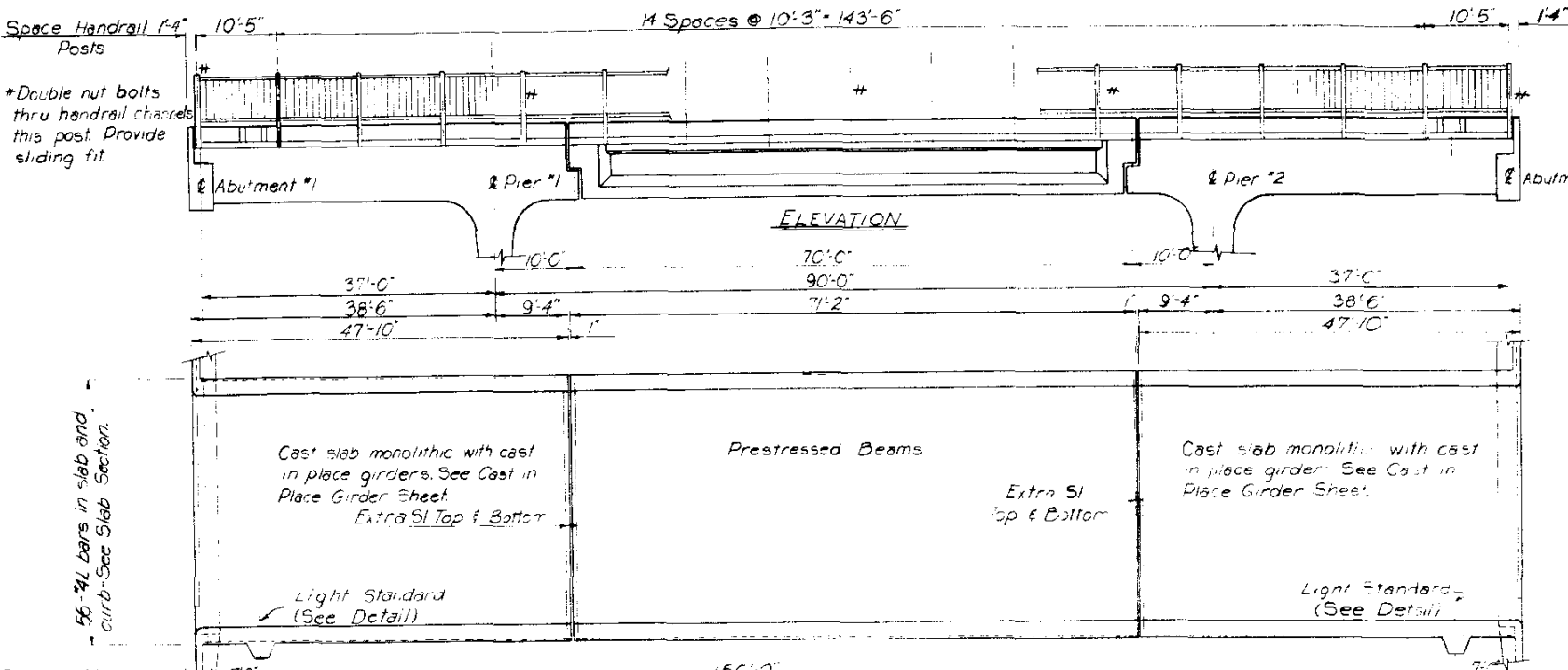


**A. S. HORNER CONSTRUCTION CO. DENVER, COLORADO**

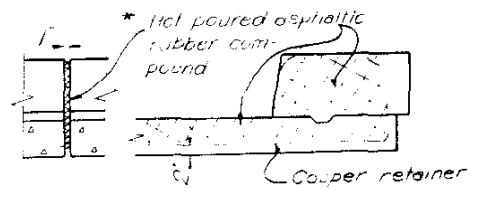
STANDARD GIRDERS

PROJ. NO. 1092 (215) COLORADO SPRINGS  
STRUCTURE NOS. 1-17-DA, DB, DI  
CUSTOMER: CL HUENER CONST. CO.  
ENGINEERS: R. L. KOONS & L. BODUROFF  
DESIGNED: L. B. SCA. E.A.S. [unclear] SHEET NO. 63  
DRAWN: L.M. [unclear]  
CHECKED: [unclear] DATE: 2-27-58 NO. OF SHEETS: [unclear]



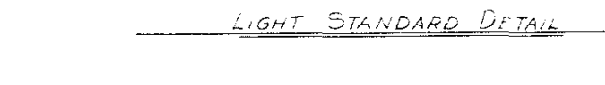


\* Shall conform to Federal Specification SS-5-164



TYPICAL DETAIL-ALL SLAB JOINTS

COPPER RETAINER DETAIL  
32 oz. per sq. ft.



LIGHT STANDARD DETAIL

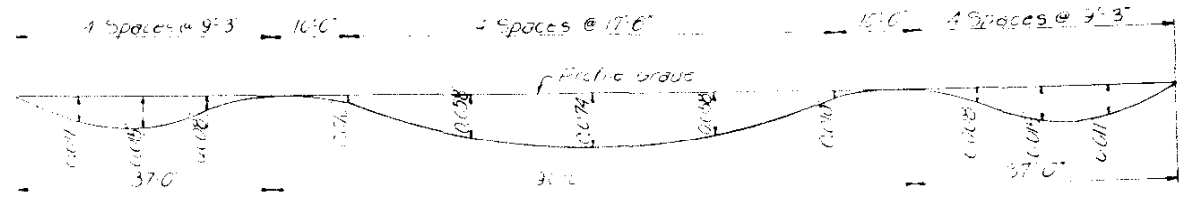
Space light standards 7'-0" L1 (36'-3") L2 (12'-9") L1 L2 L1

\* 4 longitudinal bars in slab & curb

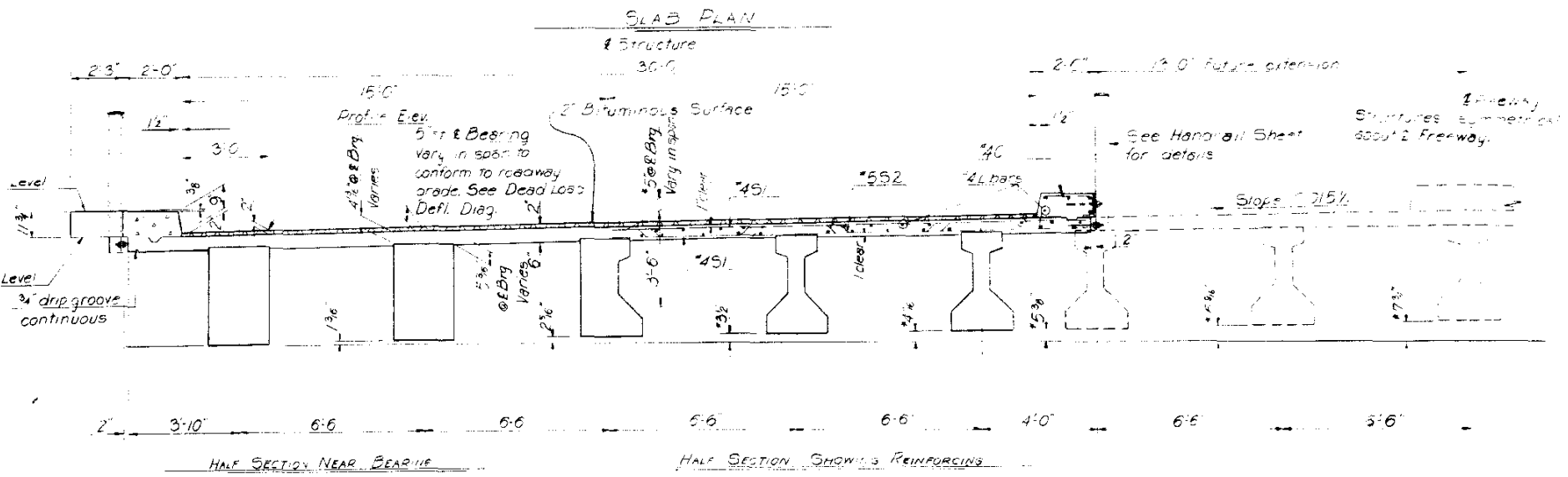
Space #4S1 (bot) 2'-6" 45 Spcs @ 1'-0" = 45'-0" 1'-0" 70 Spcs @ 1'-0" = 70'-0" 1'-0" 45 Spcs @ 1'-0" = 45'-0" 2'-6"

Space #5S2 (top) 3'-0" 44 Spcs @ 1'-0" = 44'-0" 2'-0" 69 Spcs @ 1'-0" = 69'-0" 2'-0" 44 Spcs @ 1'-0" = 44'-0" 3'-0"

alternate ends. 2'-6" Space #6S1 90 Spcs @ 6" = 45'-0" 1'-0" Space #6S2 140 Spcs @ 6" = 70'-0" 1'-0" 90 Spcs @ 6" = 45'-0" 2'-6"



DEAD LOAD DEFLECTION DIAGRAM



SLAB SECTION

\* At Bearing only - See dead load camber diagrams

Item	Quantity	Unit
Concrete	4,467	cu yd
Reinforcing steel	21,687	lbs
Asphalt	62	tons
Paint	125	gal

TOTAL WEIGHT SUMMARY	
Concrete	44,670
Reinforcing steel	21,687
Asphalt	62
Paint	125
<b>Total</b>	<b>44,444</b>

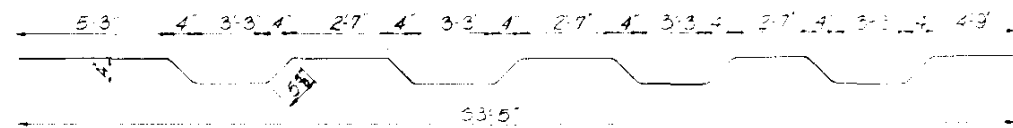
NOTES:  
 1. All concrete shall be Class A.  
 2. Dimensions for reinforcing steel are to top bars unless otherwise shown. The bending dimensions are cut to cut of bars.  
 3. Beams shall be closed edges with a 3" triangular bearing unless otherwise indicated.  
 4. The finished floor slabs be constructed 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.

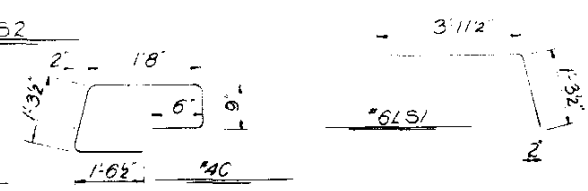
Design Loads: HS20-44, AASHTO Spec, 1953 Ed.  
 Soil Stresses: fs=20,000 psi  
 fc=2000 psi

SLAB REINFORCING SCHEDULE (Both Bridges)

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'-10"	33'-6"	34'-6"
Shape	□							



BENDING DIAGRAM

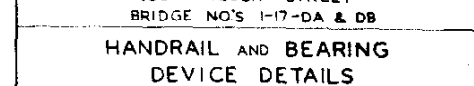
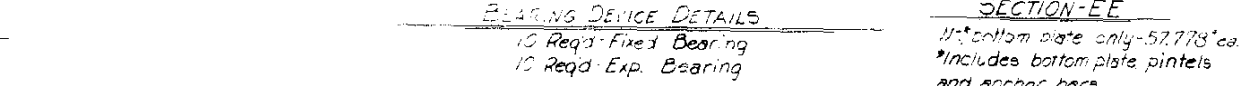
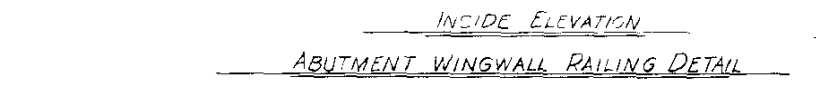
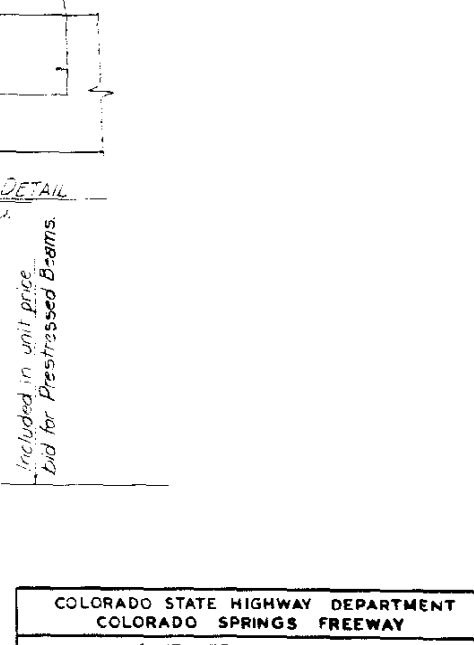
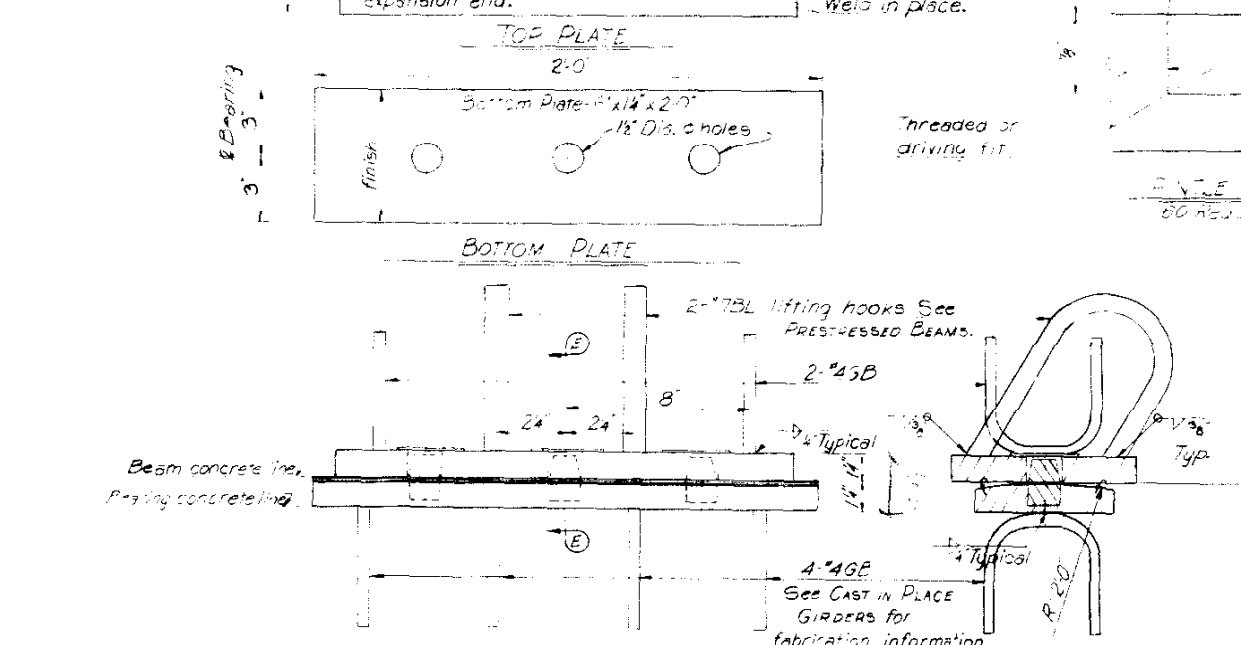
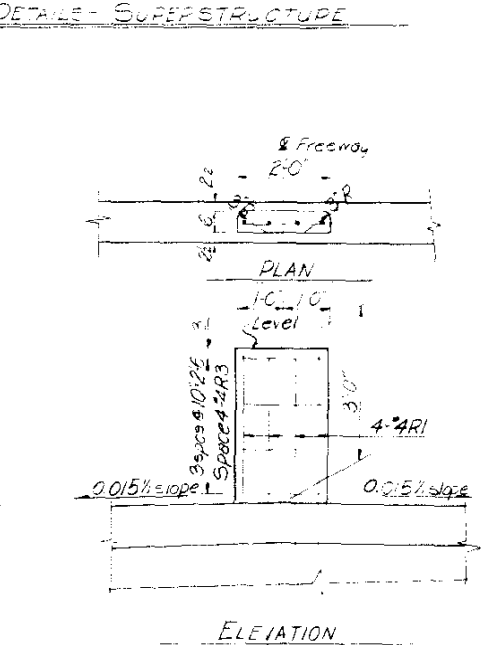
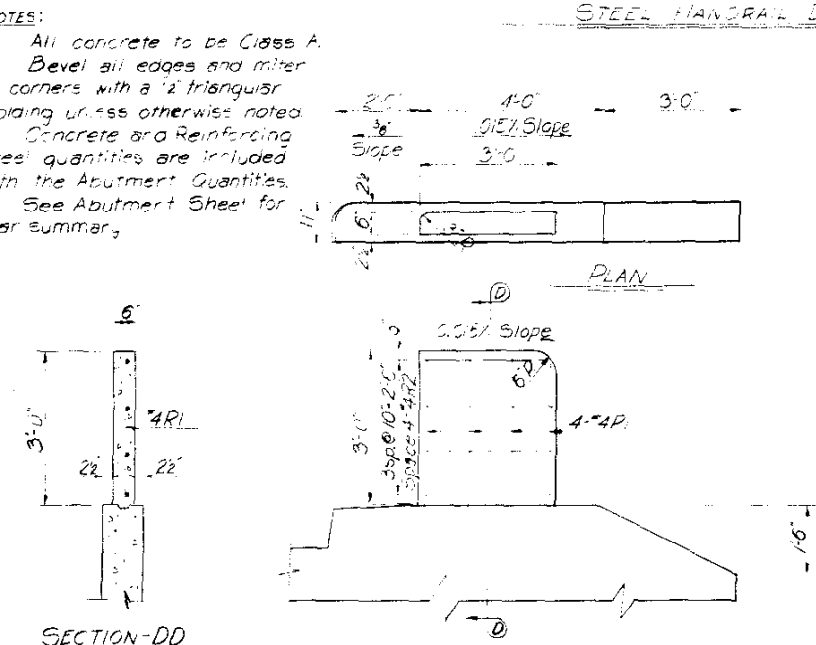
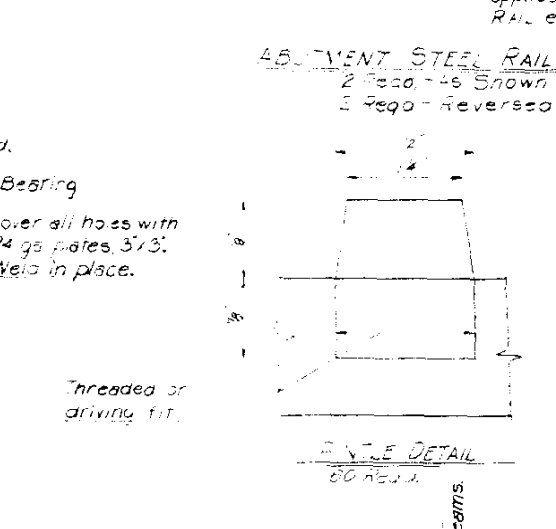
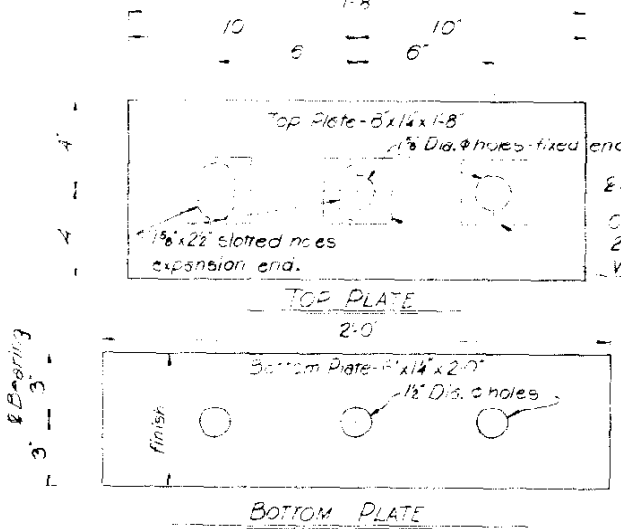
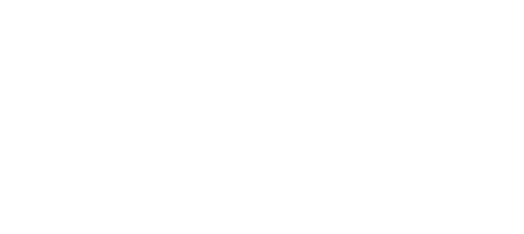
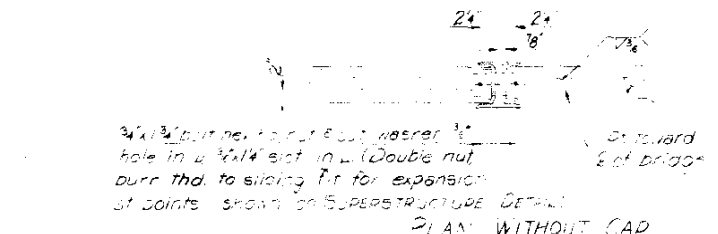
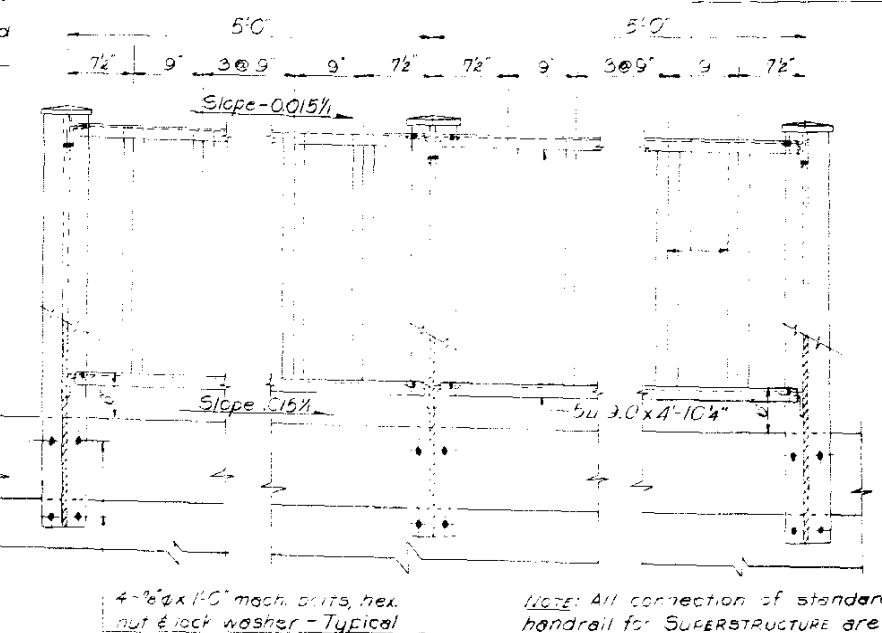
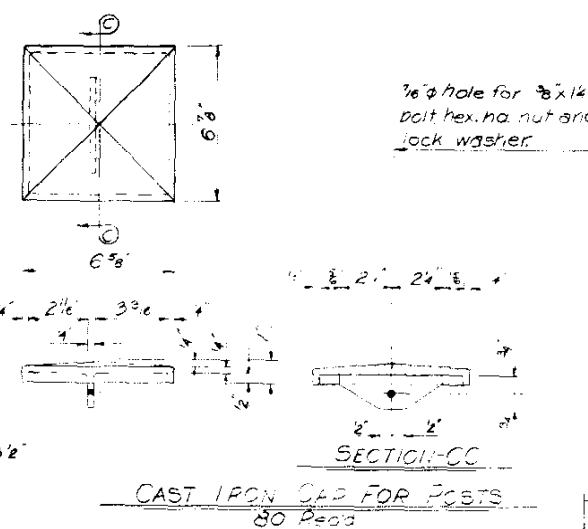
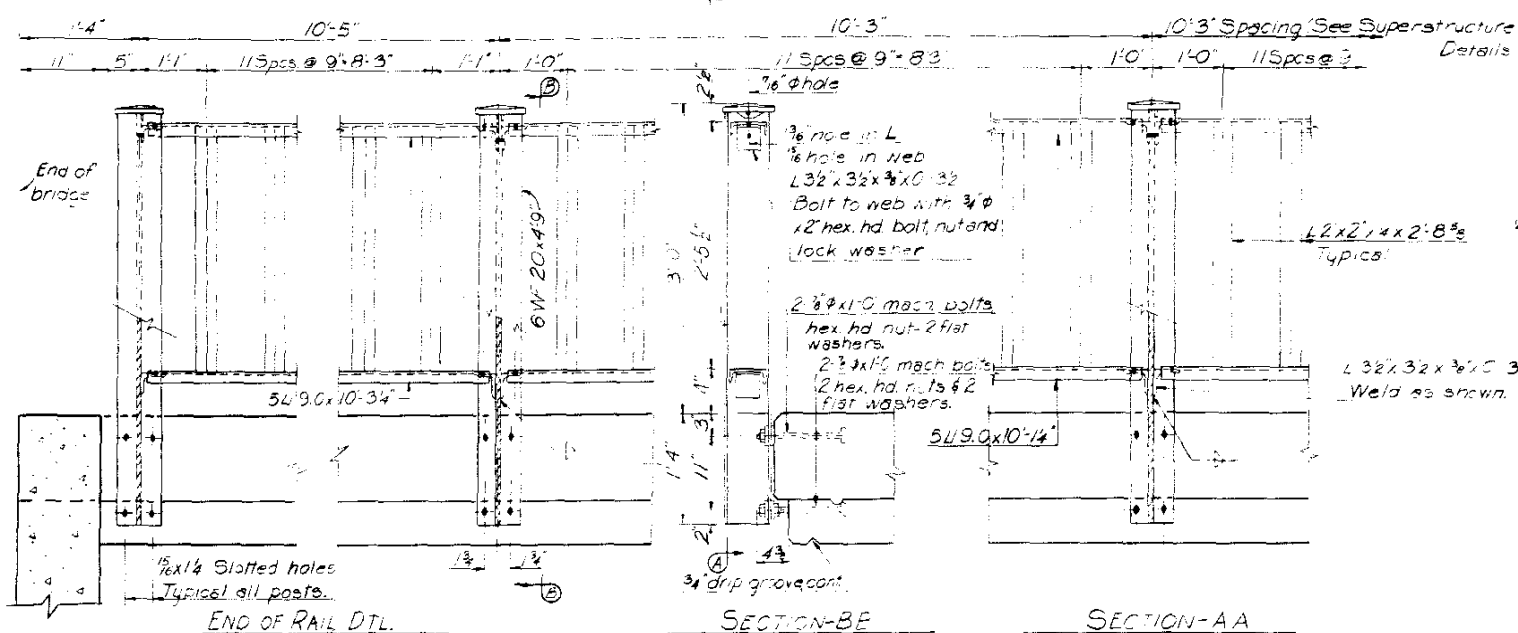


COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 SOUTH TEJON STREET  
 BRIDGE NOS 1-17-DA & DB

**SUPERSTRUCTURE DETAILS**

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

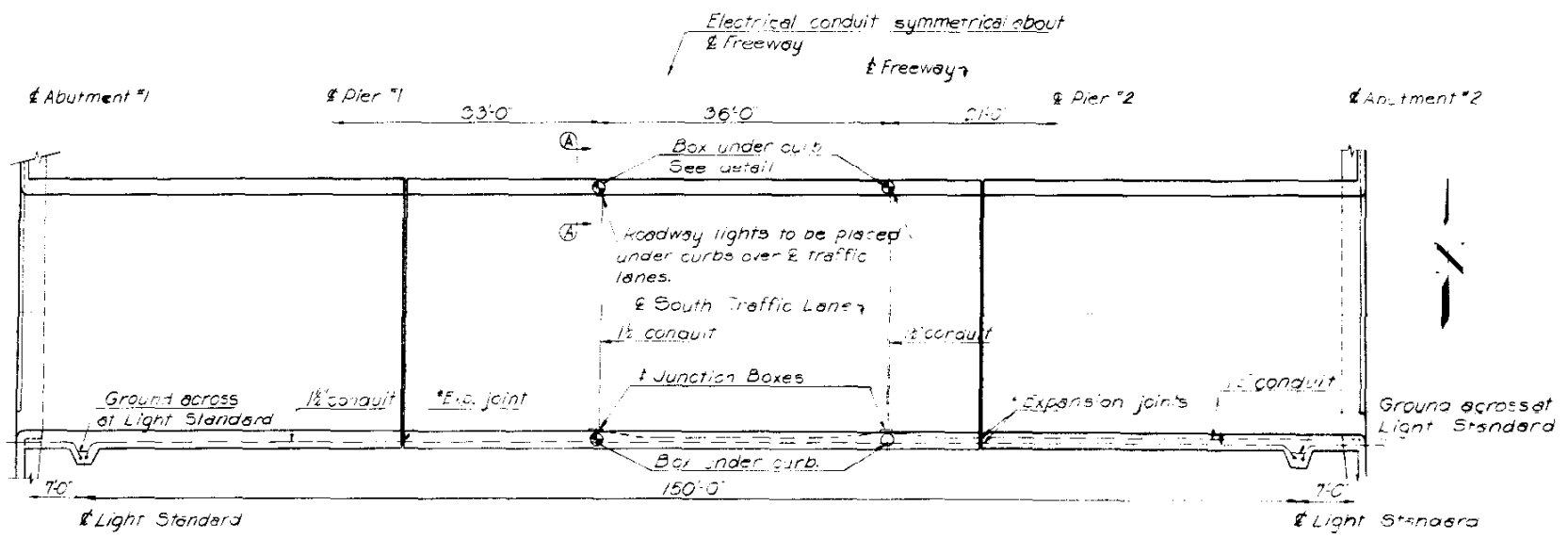
Point of Ls face away from bridge.



Notes: All concrete to be Class A. Bevel all edges and miter corners with a 1/2" triangular chisel unless otherwise noted. Concrete and Reinforcing steel quantities are included in the Abutment Quantities. See Abutment Sheet for summary.

Sec Prestressed Beams and Cast in Place Girders for location of Bearing Devices and anchor bars. Top plates with lifting hooks, etc. included in price each for beams.

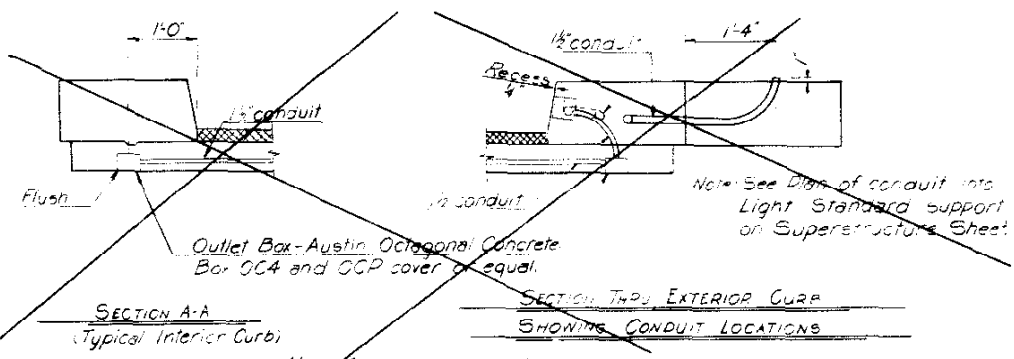
COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY	
SOUTH TEJON STREET BRIDGE NO'S 1-17-DA & DB	
<b>HANDRAIL AND BEARING                  DEVICE DETAILS</b>	
SCALE: _____	DATE: April, 1957
ROBERT L. KOONS CONSULTING ENGINEER S. COLORADO SPRINGS, COLO.	DRAWING NO. 15 B 7



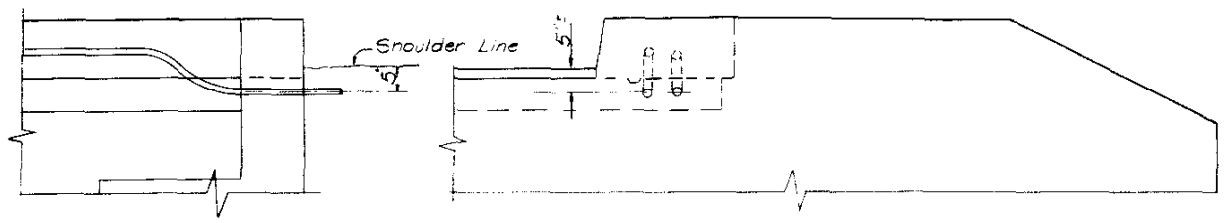
LIGHTING PLAN FOR SOUTH BRIDGE

\*Expansion joints in 1/2" conduit to be Crouse-Hinds Catalog No. XJ44 or equal.

~~Junction boxes to be Crouse-Hinds Watertight Series WCA Junction Conduits or equal.~~

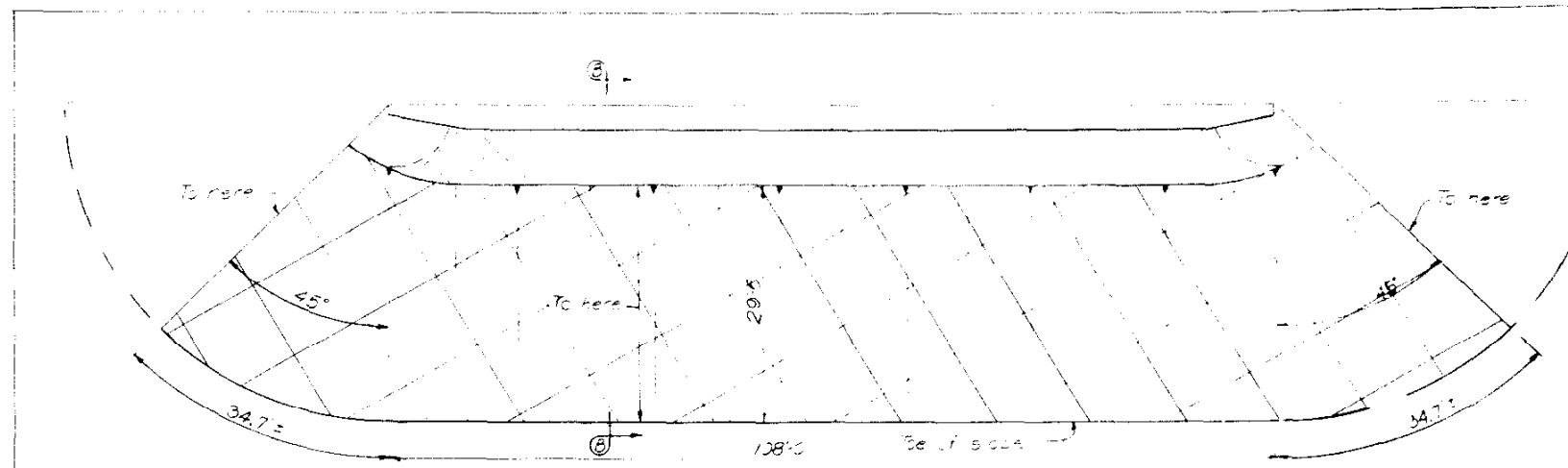


Note: If necessary steel in slab or curb may be moved to clear boxes.

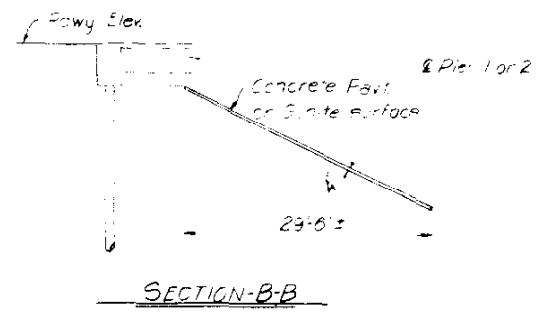


DETAIL AT ABUTMENT - (TYPICAL AT ABUTMENT #2) Abutment #1 same except only one conduit.

LIGHTING CONDUIT DETAILS



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



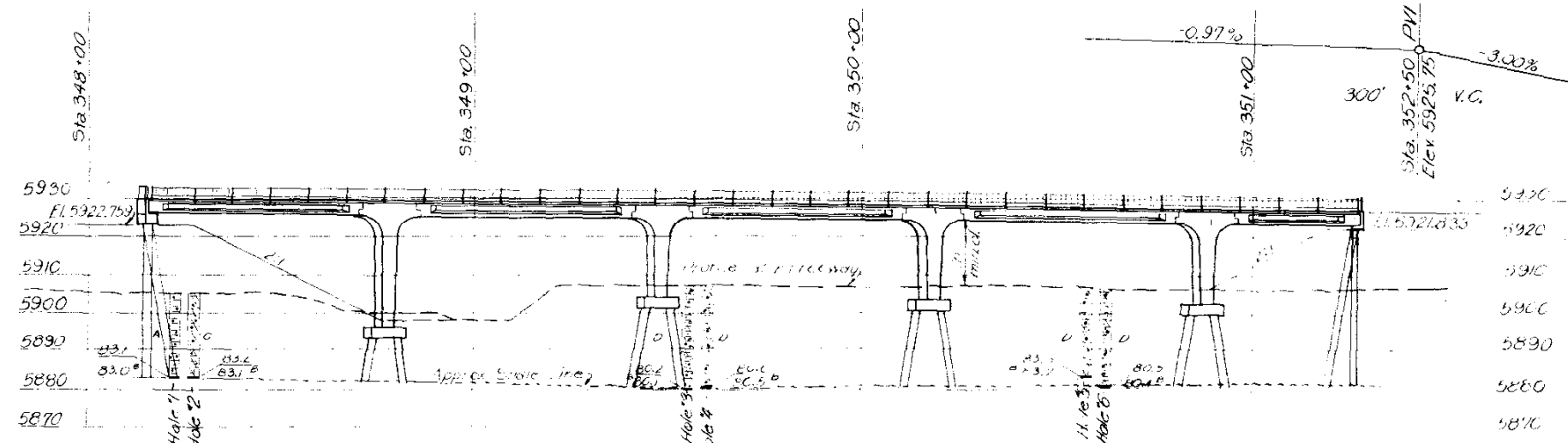
SLOPE PAVING DETAILS ABUTMENTS 1&2

SUMMARY OF SLOPE PAVING QUANTITIES

Concrete Paving - 22,000 sq. ft.

Reinforcing Steel - 2076' (Reinforcing Steel Included in cost of Conc. Slope and Ditch Paving.)

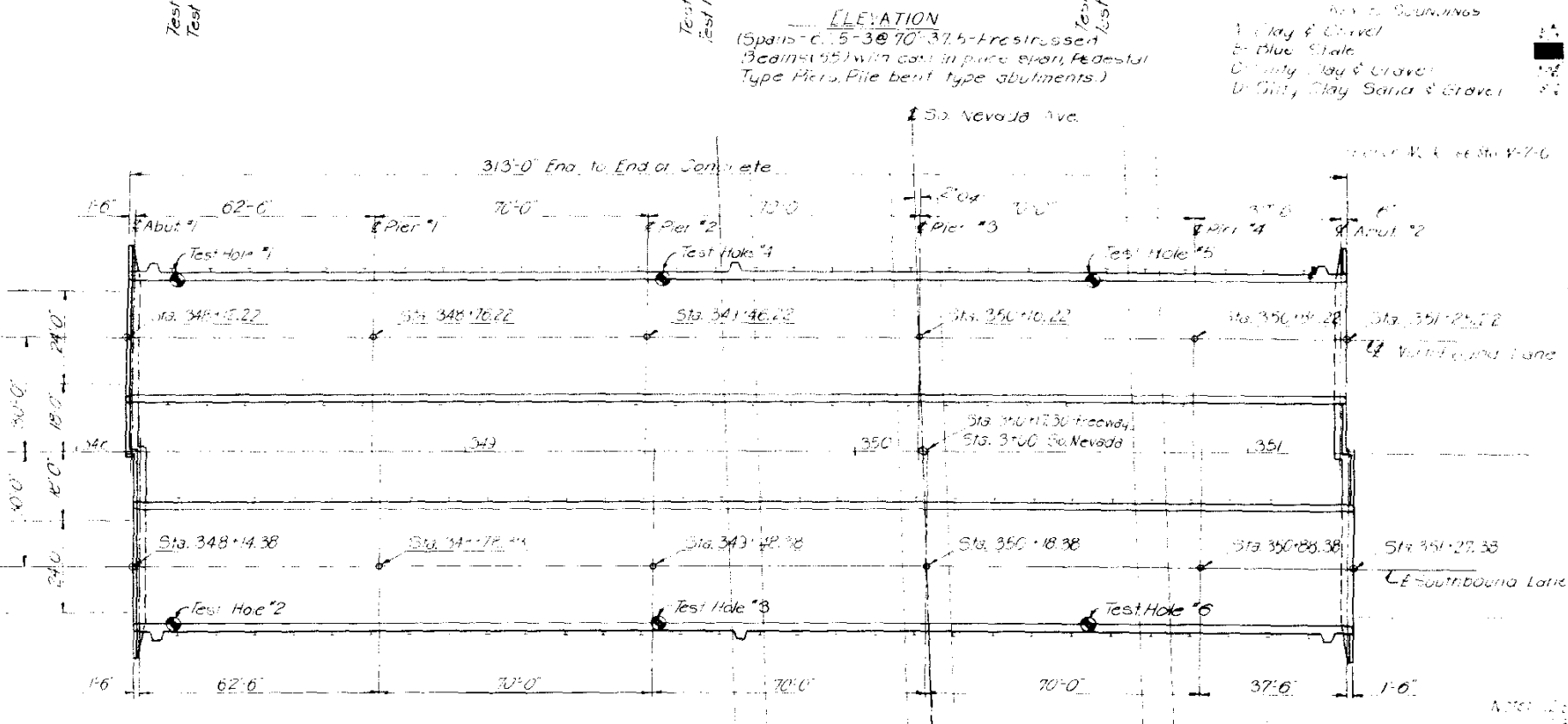
COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY	
SOUTH TEJON STREET BRIDGE NO'S 1-17-DA & DB LIGHTING AND SLOPE PAVEMENT DETAILS	
SCALE	DATE: April, 1957
ROBERT L. KOONS CONSULTING ENGINEER & COLORADO SPRINGS, COLO.	DRAWING NO. 1588



**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	5	1	2	3	4							1	2	3	4				
14g	Common Excavation (str.)	Cu.Yds.	141	176	188	180					679	679	Claw	12" Steel Pipe Piles	Lin.ft.	677	500	320	820					3696	
16a	Structural Backfill (Claw)	Cu.Yds.	177	77						123	377	377	Claw	10" Steel Pipe Piles	Lin.ft.									880	
16c	Mechanical Tamping	Hrs.	18	7	10	12	12			71	71	60x	Drilling Holes * to facilitate Pile Driving	Lin.ft.	272								304	576	
32a	Plant Mix Asphalt Surfacing	Tons								234	234	15m	Concrete Slope & Drain Funnels	Cu.Yds.								56		56	
12b	Treated Bridge Timber	M.Cm	0.444						0.444	0.888	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	1441.0	1441.0	30b	Electrical Conduit & Junction Boxes	Lin.ft.									1038	1038	
46c	Prestressed Concrete Beams	Ea							40	40	40	1	Premeared Joint Material	Sq.ft.									160	160	
47	Reinforcing Steel (1.7% Overrun)	Lbs.	4517	58,480	50,113	47,551	21,211	3,453	105,286	290,611	290,611														
48	Structural Steel (Includes 1/2" ± for Paint)	Lbs.	1,755	1,075	1,075	16,735		1,220	50,345	72,205	72,205														

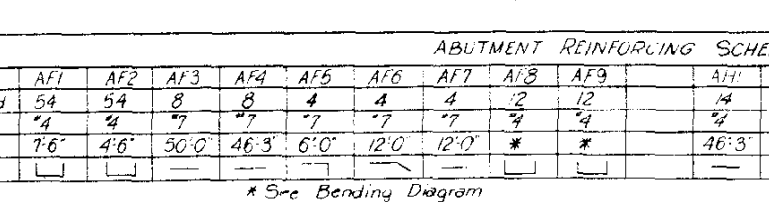
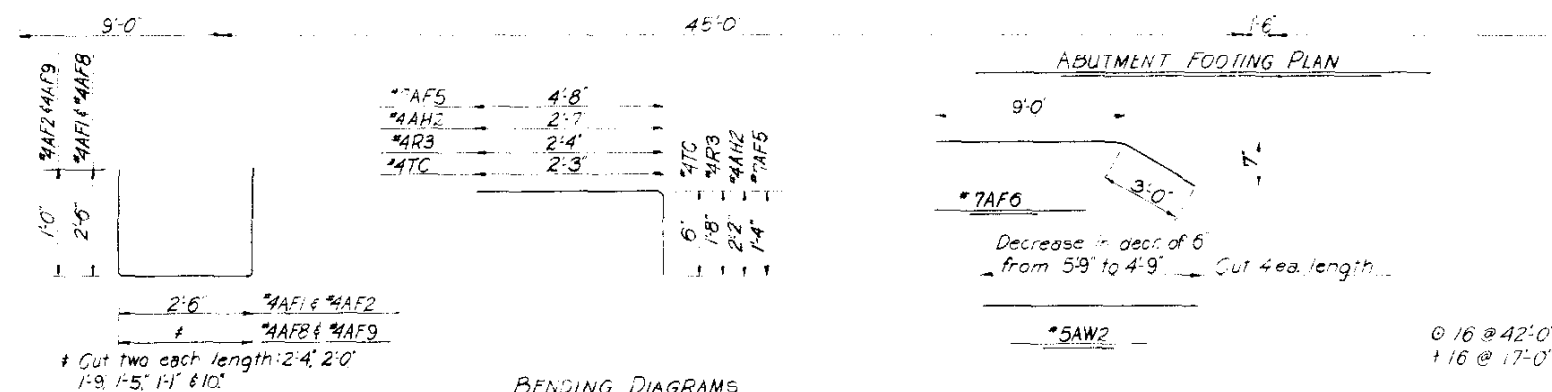
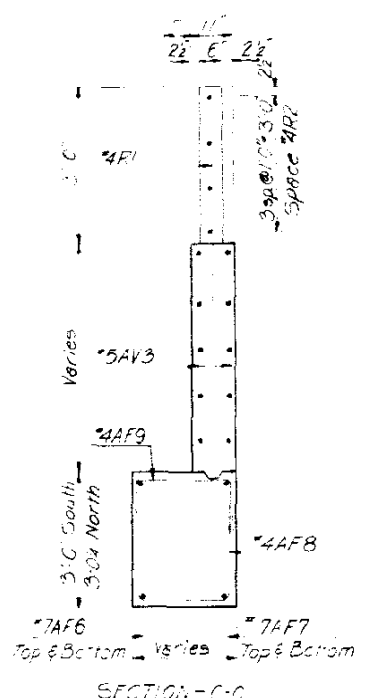
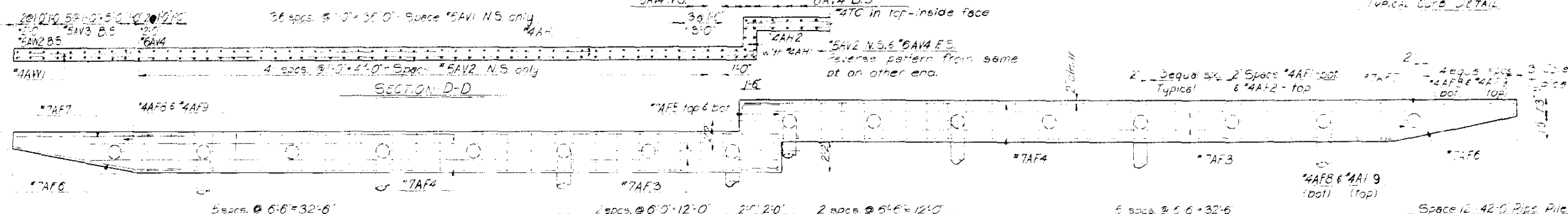
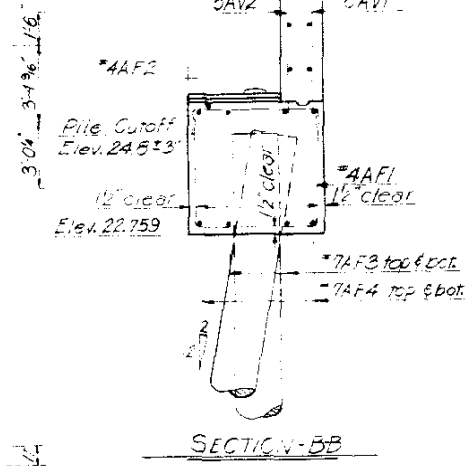
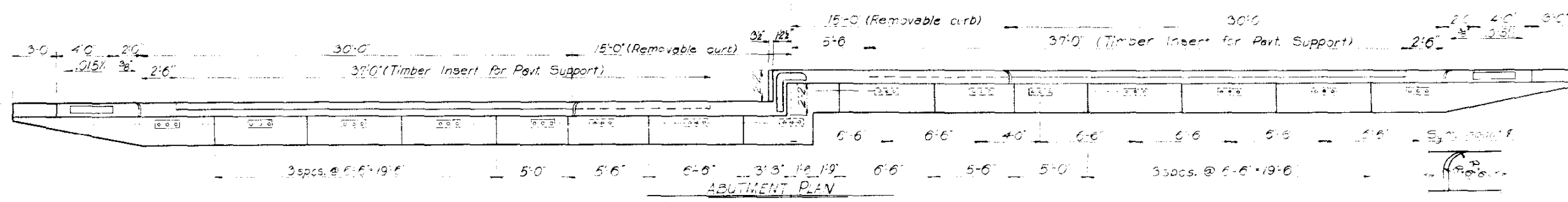
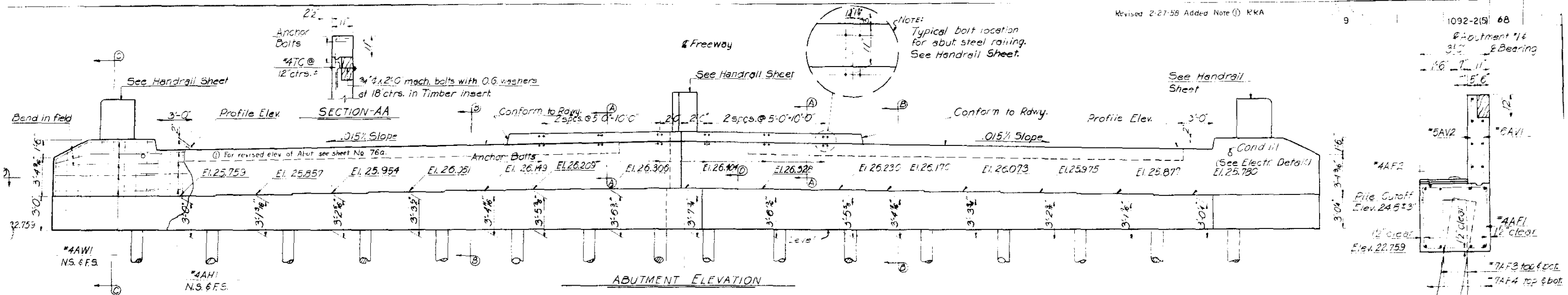
c-10 @ 22'  
 8-40 @ 14', 40 @ 25', 40 @ 27', 16 @ 42', 16 @ 44'  
 † Subsidiary to Class A Concrete  
 \* 16 @ 19' Abut. #2  
 6 @ 17' Abut. #1  
 † 40 @ 55'

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



**ABUTMENT REINFORCING SCHEDULE**

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	#7	#7	#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	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]	[Diagram]

\* See Bending Diagram

**BAR WEIGHT SUMMARY**

Bar	Length	Wt. Per	Wt. Total
#4	890	2.044	1,819
#5	498	1.502	748
#6	655	1.043	683
#7	1,829	0.668	1,222
1% Overrun		45	
Total			4,517

**ABUTMENT QUANTITIES**

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

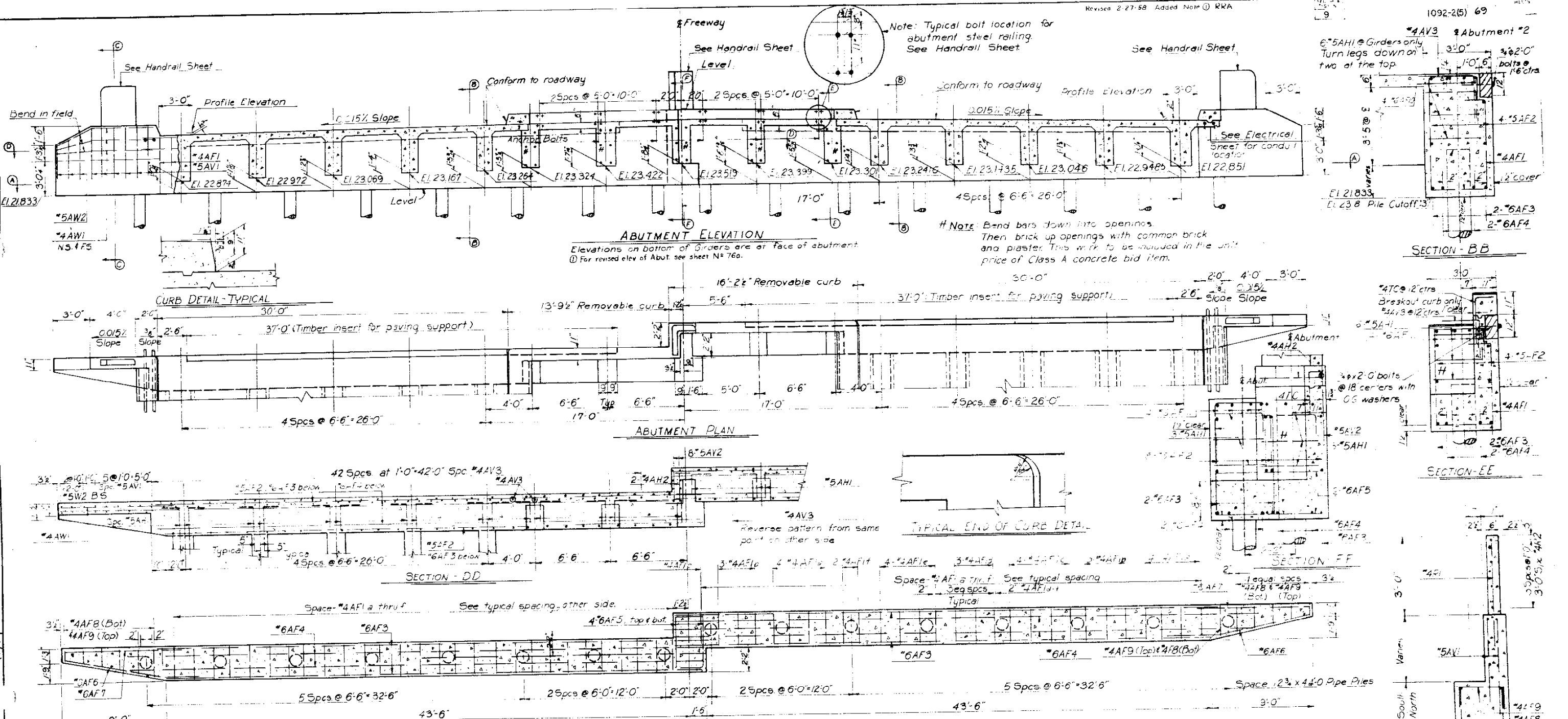
**NOTES:**  
 All concrete shall be Class A  
 All dimensions for reinforcing steel are to & of bars. All dimensions shown in the bending diagrams are cut to cut of bars.  
 Bevel all edges and chamfer all corners with a 3/4" triangular mounding unless otherwise indicated.  
 Piles shall be pipe 12 1/2" 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.

See Handrail sheet for details.  
 See Bearing Device details for location and treatment.

**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



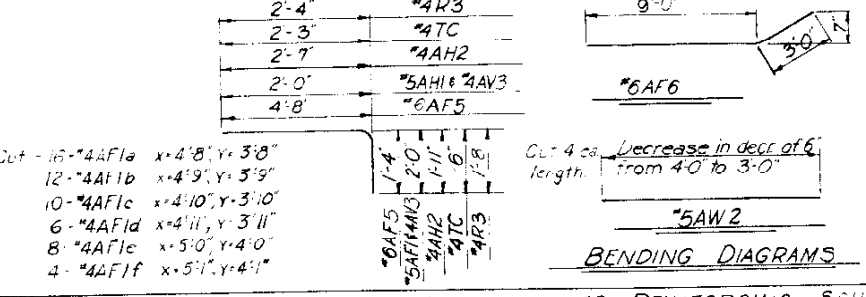
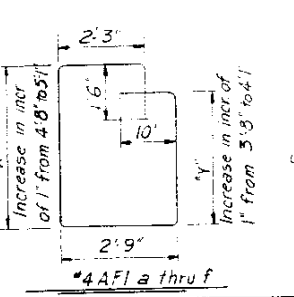
**ABUTMENT ELEVATION**  
Elevations on bottom of Girders are at face of abutment.  
① For revised elev. of Abut. see sheet N# 760.

# 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.

Reverse pattern from same point on other side

TYPICAL END OF CURB DETAIL

Space: #4AF1 thru #4AF11 See typical spacing other side. Typical



**BAR WEIGHT SUMMARY**

*6 - 89.0 lin ft @ 1.502 %	1,338 lbs
*5 - 92.20 lin ft @ 1.043 %	962 lbs
*4 - 1,675.6 lin ft @ 0.668 %	1,119 lbs
1% Overrun	34 lbs
<b>Total</b>	<b>3,453 lbs</b>

**ABUTMENT #2 QUANTITIES**

Structural Backfill	23 yds
Mechanical Tamping	12 hrs
Class A Concrete	52 yds
Reinforcing Steel	3,453 lbs
Structural Steel	1,285 lbs
12" Steel Pipe Piles	704 lin ft
Drilling Holes	304 lin ft
Treated Timber Header	0.444 MFB

**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" 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.

**ABUTMENT #2 REINFORCING SCHEDULE**

Bar	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AH1	AH2	AV1	AV2	AV3	AW1	AW2	TC	R1	R2	R3
No. Req'd	56	8	4	4	4	4	4	12	12	8	8	90	2	24	8	80	12	12	30	13	8	4
Size	#4	#5	#6	#6	#6	#6	#6	#4	#4	#6	#6	#5	#4	#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"	*	2'-9"	4'-9"	2'-9"	4'-0"
Shape	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□

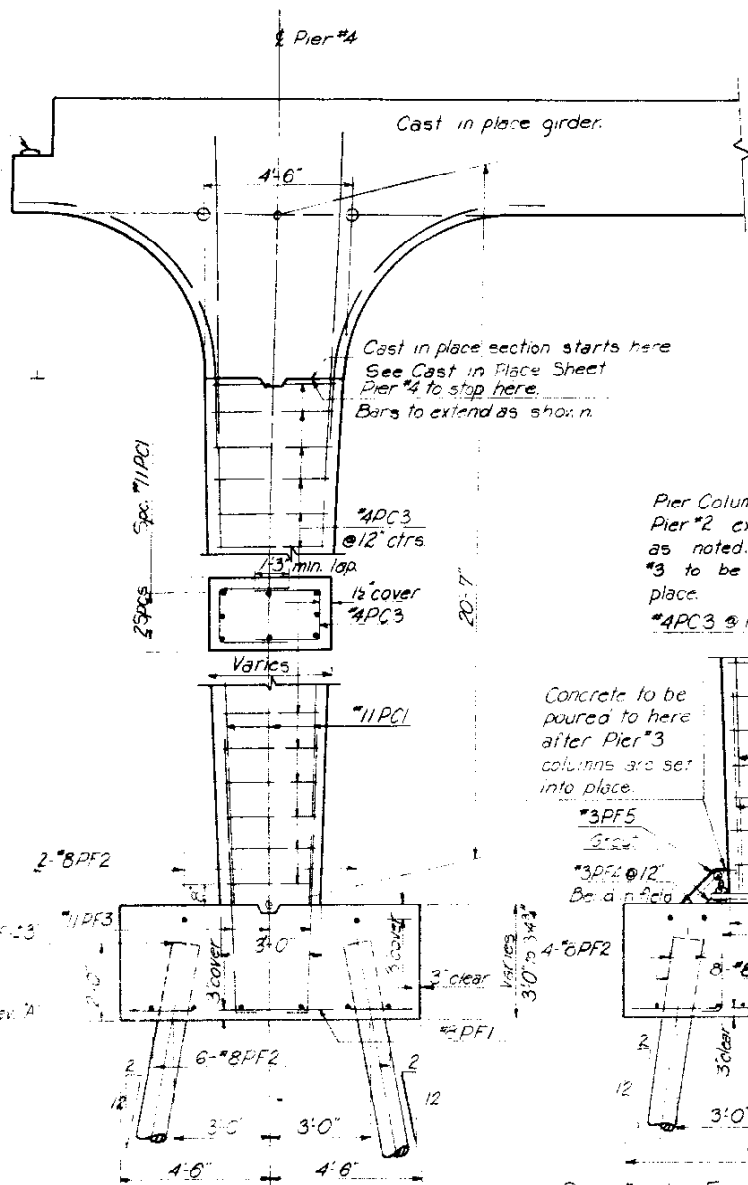
\* See Bending Diagrams.

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

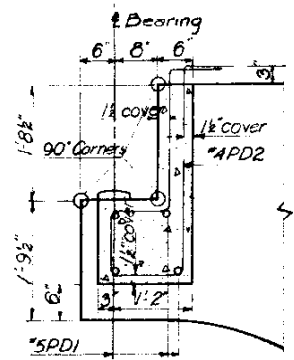
**ABUTMENT NO.2 DETAILS**

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

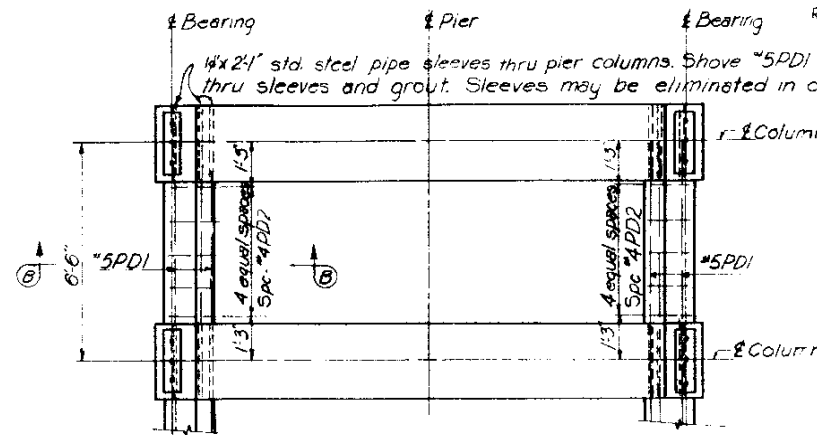
Elev 'B'  
① For revised elev of Pier see sheet N9760



SIDE VIEW-PIER #4

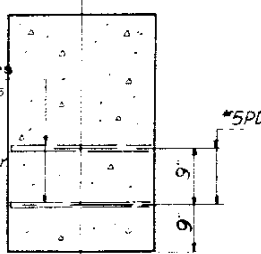


SECTION-BB



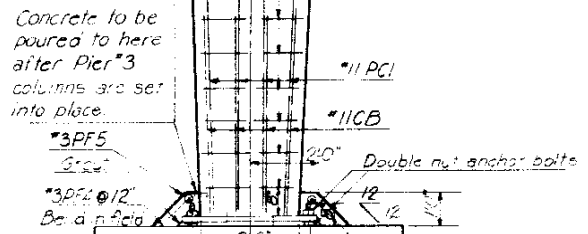
PLAN-TYPICAL PIER DIAPHRAGM

1/2 x 2-1/2" Pipe sleeve thru pier columns. Shove #5 PDI thru sleeves and grout. Sleeves may be eliminated in cast in place piers



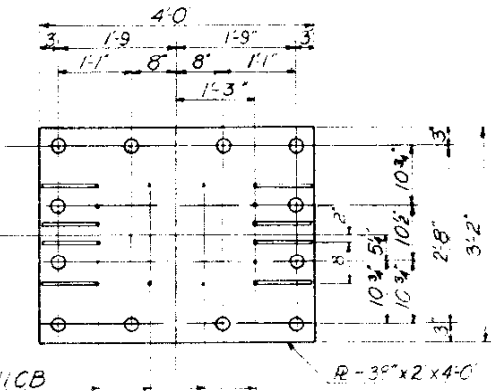
PIPE SLEEVE DETAIL

Pier Column on Pier #3 same as Pier #2 except footing connection as noted. Pier Columns of Pier #3 to be pre-cast and set in place.  
#4 PC3 @ 12" centers

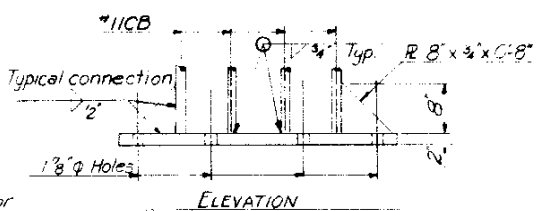


PIER #3 AT FOOTING CONNECTION

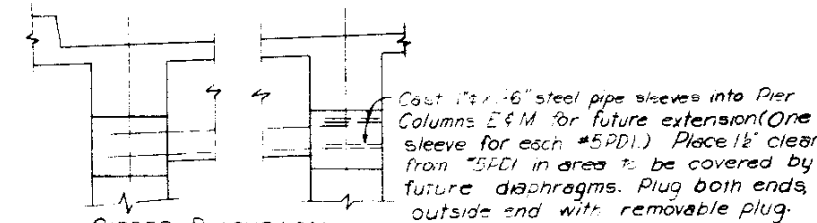
Note: Piers #2 & #4 may be precast and set in place in same manner at the option of the contractor



PLAN

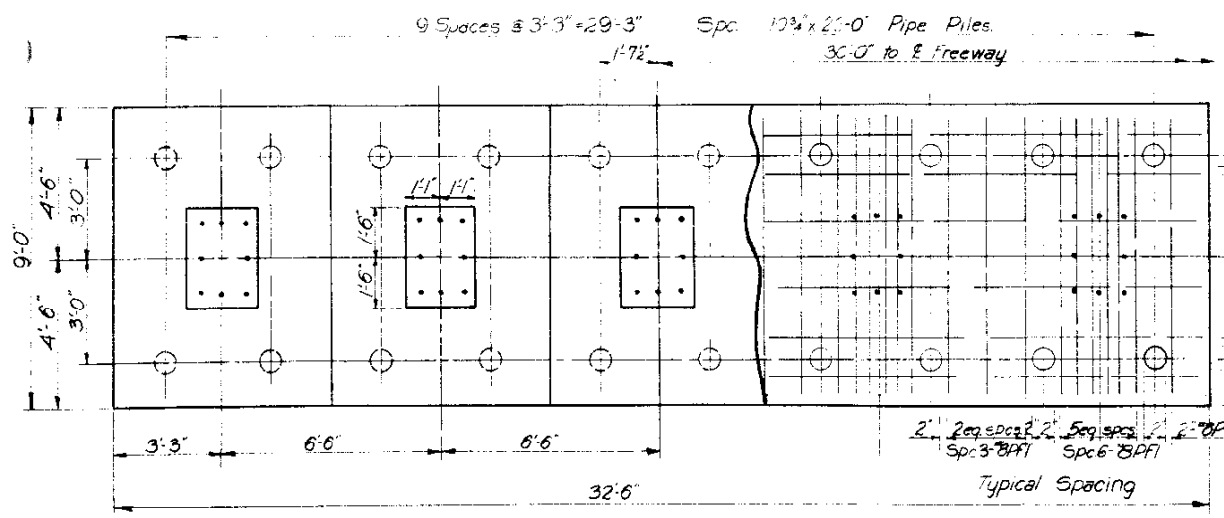


ELEVATION BASE PLATE DETAILS



GIRDER DIAPHRAGM FUTURE EXTENSION DETAIL

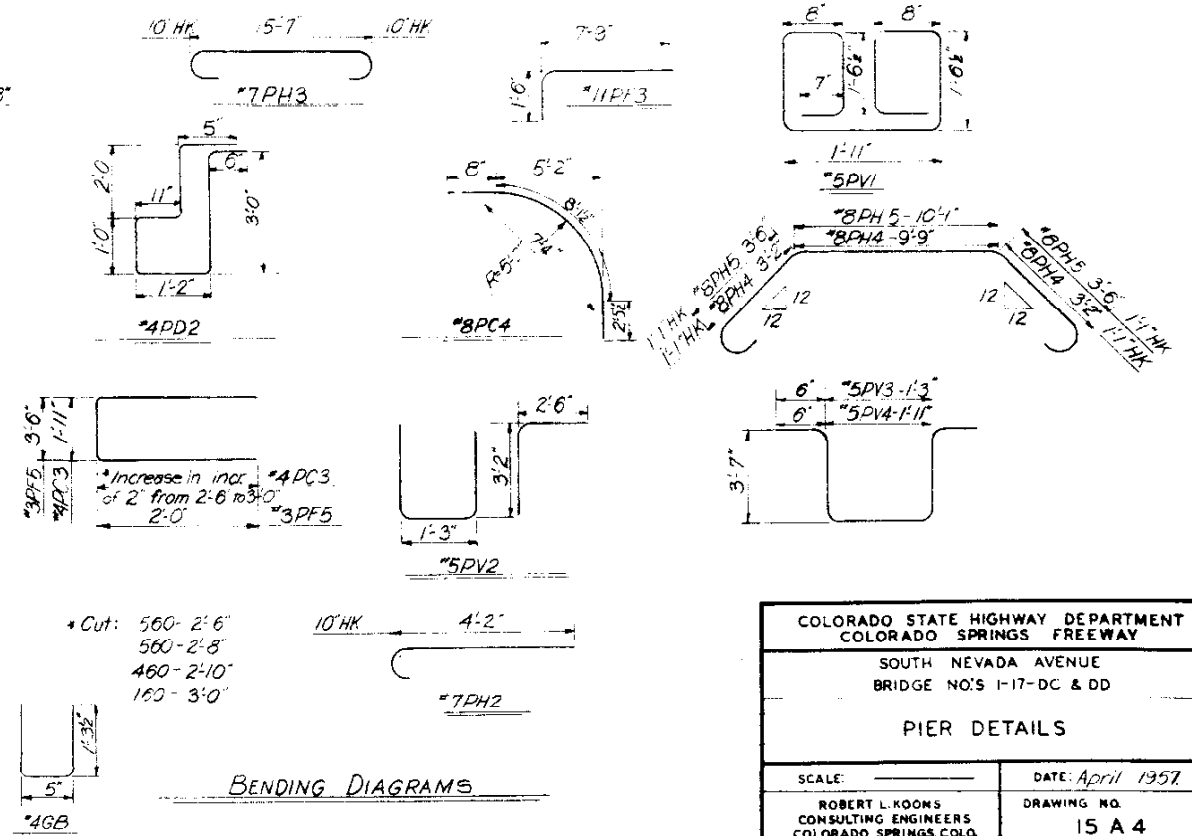
QUANTITIES - PIERS 3 & 4 (Both Bridges)					
ITEM	Structural	Mechanical	Class A Reinforcing	Structural	2 3/4" Steel
	Excavator	Tamping	Concrete	Steel	Steel Pipe Piles
Pier #3	188 cu yds	12 Hr	192.4 cu yds	47,551 lbs	16053 lbs
Pier #4	180 cu yds	12 Hr	147 cu yds	21,211 lbs	850 lin. ft.



FOOTING PLAN - PIER #4

BAR WEIGHT SUMMARY, PIER #3		
#11	4,640	lin. ft. @ 5.3137/n = 24,652*
#8	4,648	lin. ft. @ 2.677/n = 12,410*
#7	1,635	lin. ft. @ 2.044/n = 3,342*
#5	3,369	lin. ft. @ 1.043/n = 3,514*
#4	4,395	lin. ft. @ 0.668/n = 2,936*
#3	600	lin. ft. @ 0.376/n = 226*
		1% Overrun = 471*
		Total = 47,551*

BAR WEIGHT SUMMARY, PIER #4		
#11	2,580	lin. ft. @ 5.3137/n = 13,707*
#8	2,160	lin. ft. @ 2.677/n = 5,767*
#4	2,287	lin. ft. @ 0.668/n = 1,527*
		1% Overrun = 210*
		Total = 21,211*



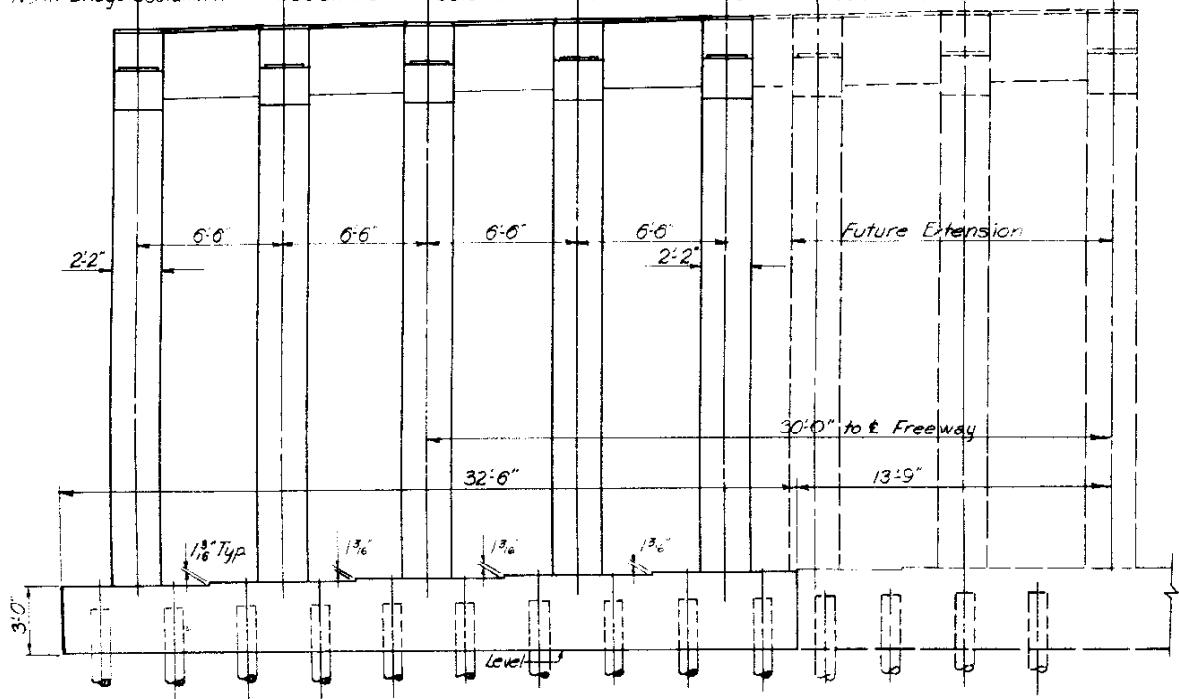
BENDING DIAGRAMS

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

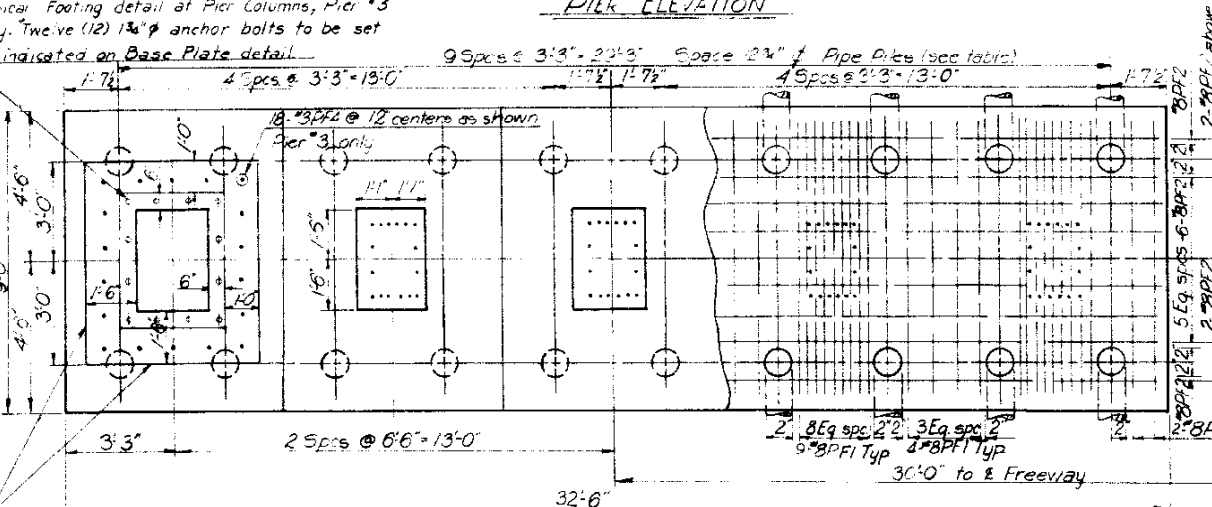
PIER DETAILS

SCALE: \_\_\_\_\_ DATE: April 1957  
 ROBERT L. KOONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO. DRAWING NO. 15 A 4

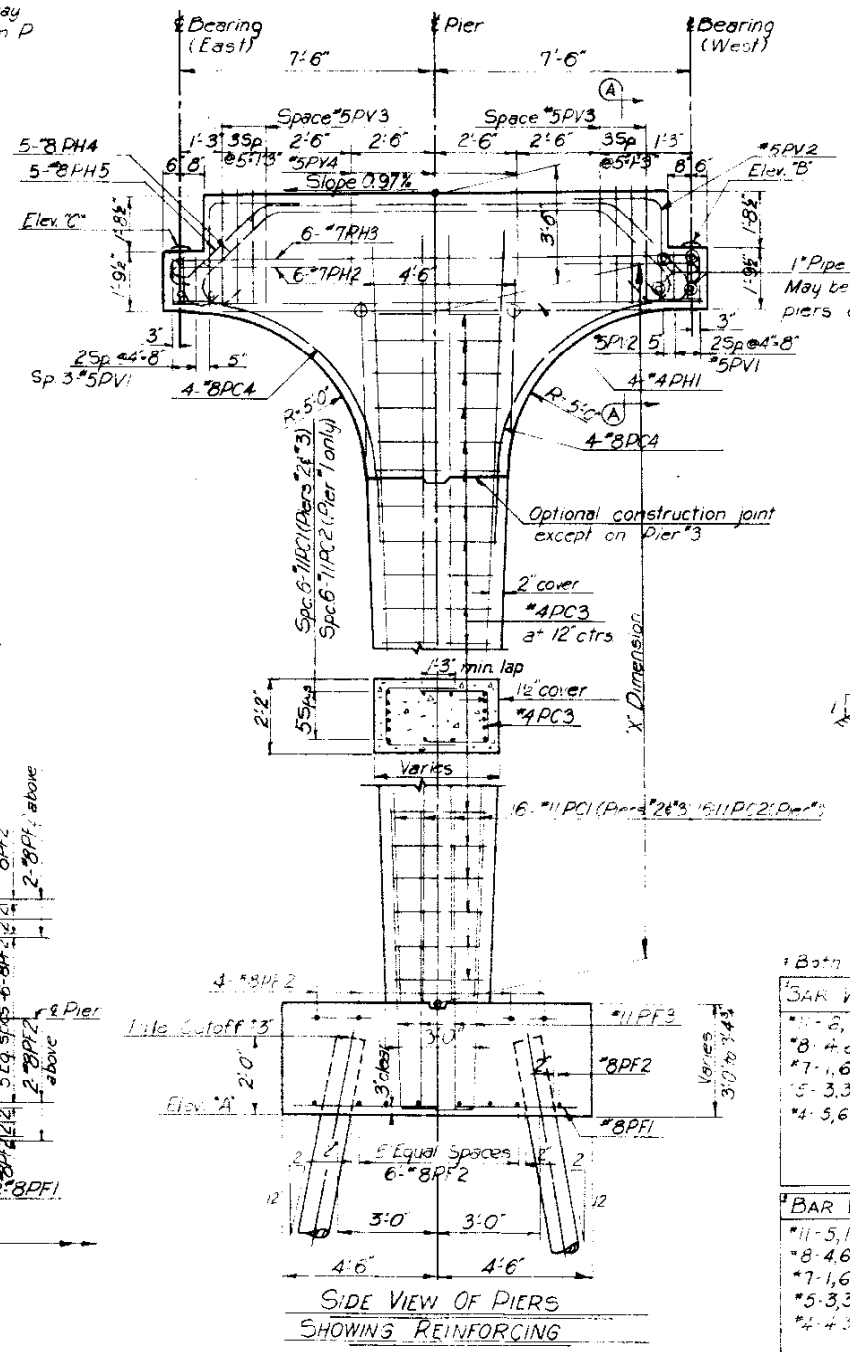
South Bridge Column A Column B Column C Column D Column E Column F Column G Freeway Column P  
North Bridge Column H Column J Column K Column L Column M Column N Column O



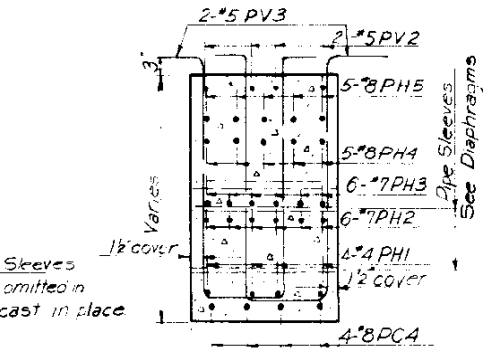
PIER ELEVATION



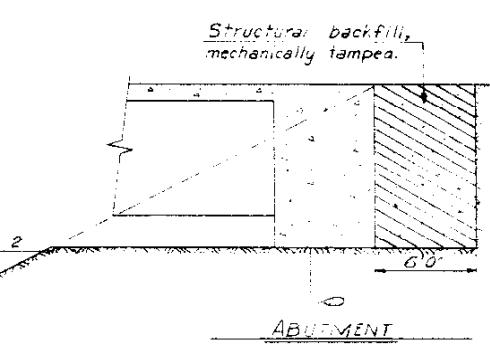
FOOTING PLAN - PIERS 1, 2 & 3



SIDE VIEW OF PIERS SHOWING REINFORCING



SECTION-AA



STRUCTURAL BACKFILL AND MECHANICAL TAMPING

Note All materials that is to be mechanically tamped shall be placed in horizontal layers not more than 6" in depth and tamped before the next layer is placed

Both bridges

BAR WEIGHT SUMMARY, PIER 1 table with columns for bar size, length, and weight.

BAR WEIGHT SUMMARY, PIER 2 table with columns for bar size, length, and weight.

NOTES

- All concrete to be Class A
All dimensions for reinforcing steel are to center of bars unless noted.
Bevel all exposed edges and chamfer all corners with a 3/4" triangular mousing unless otherwise noted.

PILE LENGTHS table showing lengths for Pier #1, Pier #2, and Pier #3.

QUANTITIES - PIERS 1 & 2 (Both Bridges) table listing items like concrete, steel, and pipe piles with quantities.

Pier data table with columns for Pier No., Dimension, Elev., and Column South Bridge/Column North Bridge.

PIER REINFORCING SCHEDULE (All Piers - Both Bridges)

Large table listing reinforcing bar details including bar size, length, shape, and quantity for various pier columns.

\* See Bending Diagrams

Unit Stresses:
f'c = 20,000 psi Reinforcing
f'c = 18,000 psi Structural
f'c = 1,200 psi

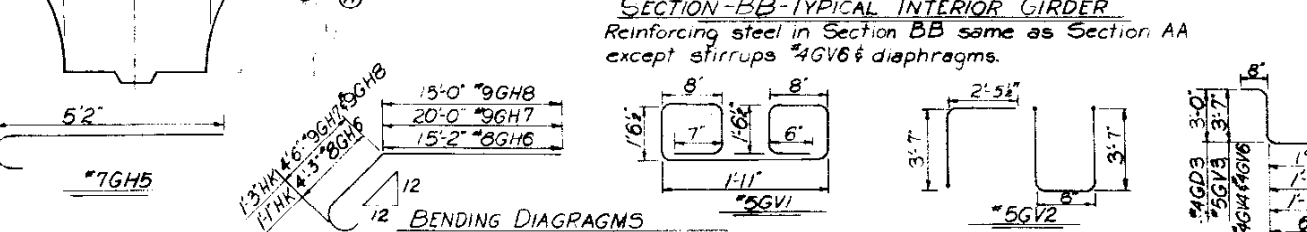
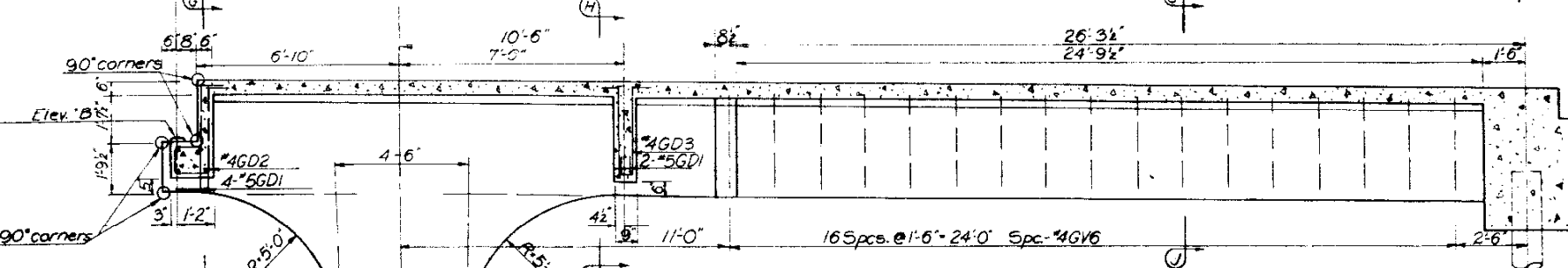
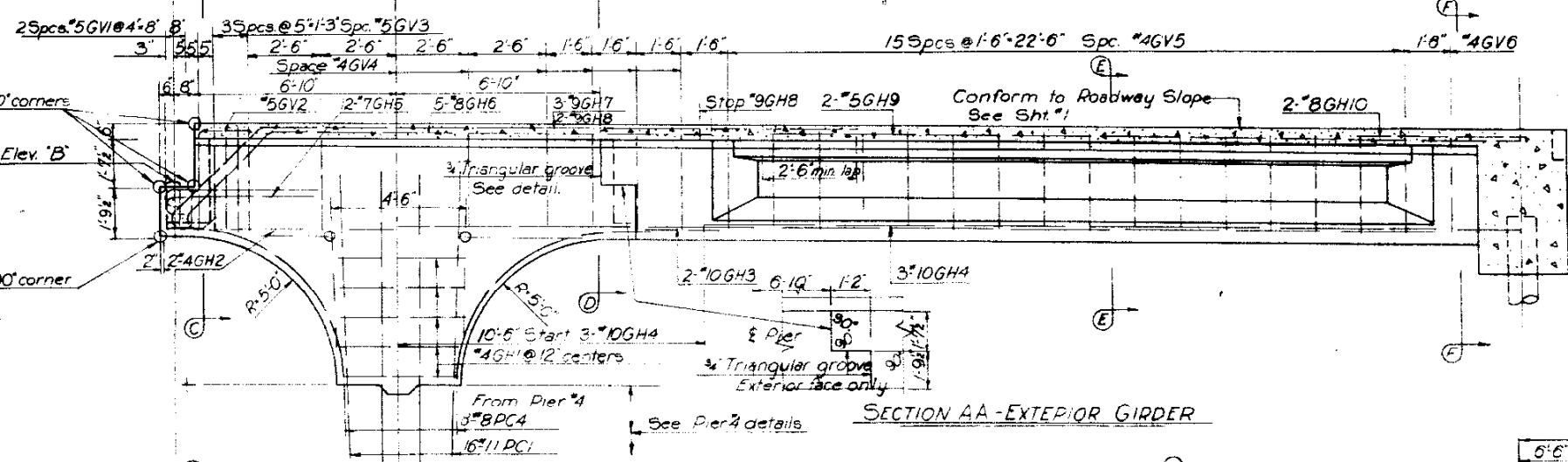
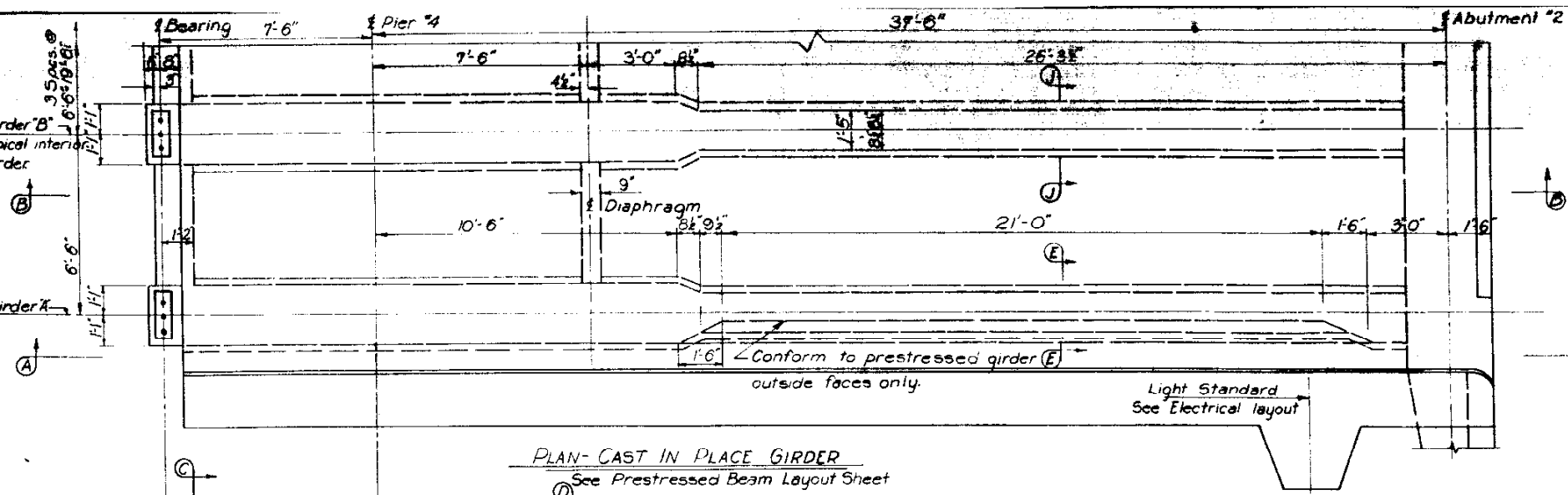
COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY

SOUTH NEVADA AVENUE BRIDGE NO'S 1-17-DC & DD

PIER DETAILS

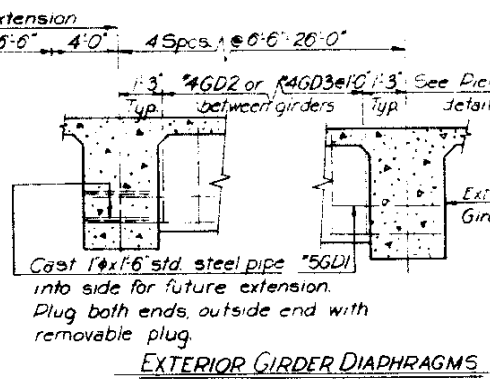
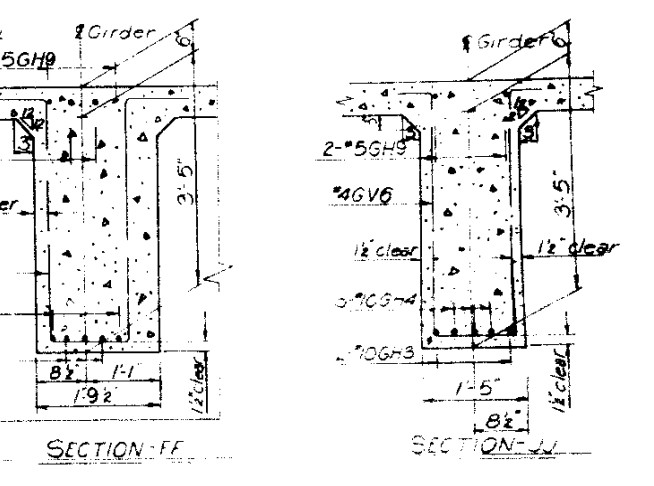
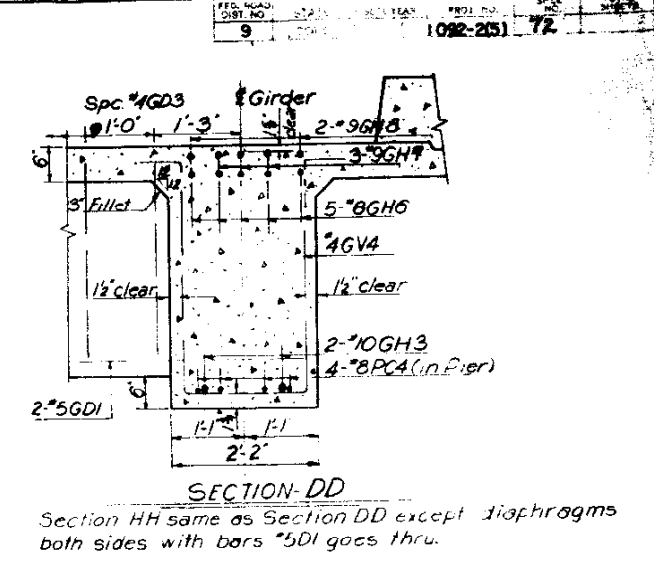
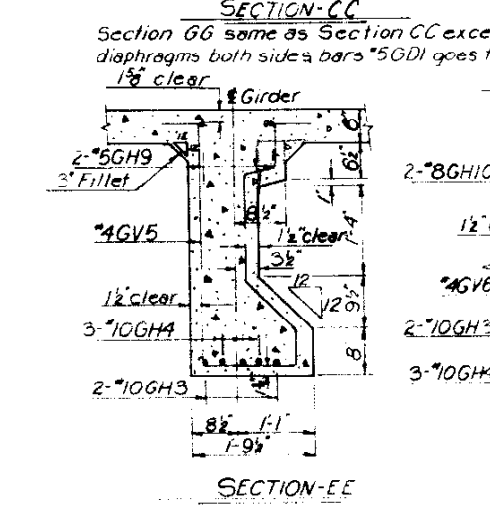
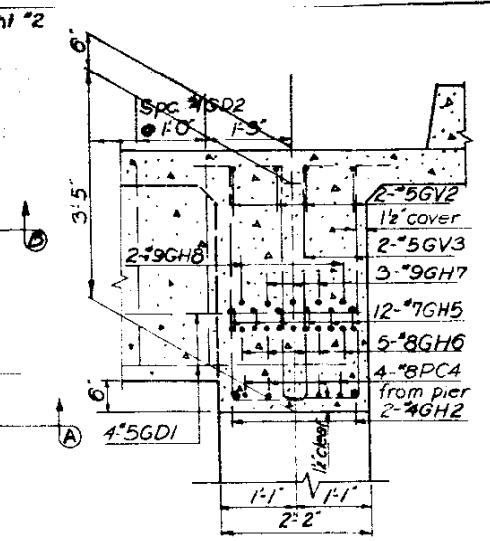
SCALE: DATE: April 1957
DRAWING NO: 15 A 5





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

#10-1,560 lin ft @ 4.303 = 6,715
#9-1,187 lin ft @ 3.40 = 4,038
#8-1,125 lin ft @ 2.67 = 3,004
#7-720 lin ft @ 2.04 = 1,472
#5-2,180 lin ft @ 1.043 = 2,274
#2-3,904 lin ft @ 0.668 = 2,608
1% Overrun = 201
Total = 20,310

CAST IN PLACE GIRDER QUANTITIES

Class A Concrete - Cu Yds 126.7
Reinforcing Steel - Lbs. 20,310
Structural Steel - Lbs. 535

COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY

SOUTH NEVADA AVENUE  
 BRIDGE NO'S 1-17-DC & DB

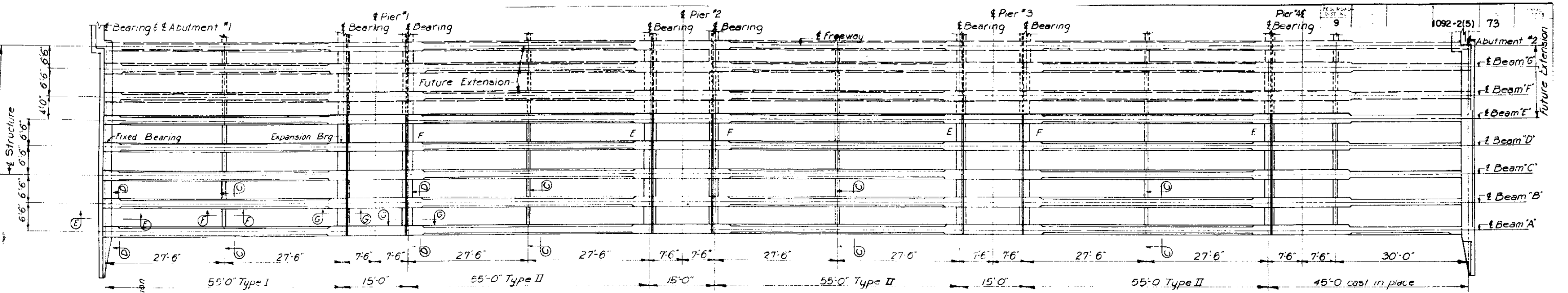
CAST IN PLACE BEAM DETAILS

SCALE: 3/4" = 1'-0" 3/4" = 1'-0"

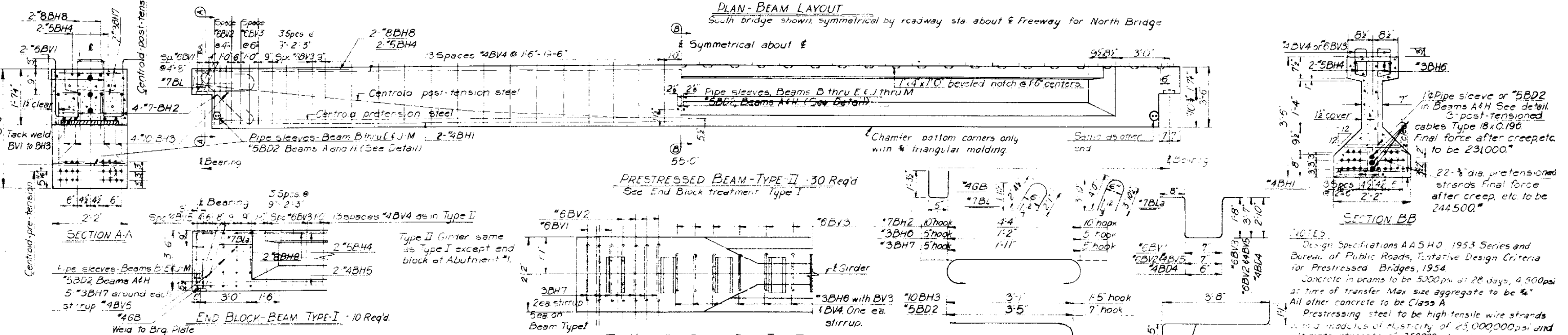
DATE: April, 1952

ROBERT L. KOONS  
 CONSULTING ENGINEERS  
 COLORADO SPRINGS, COLO.

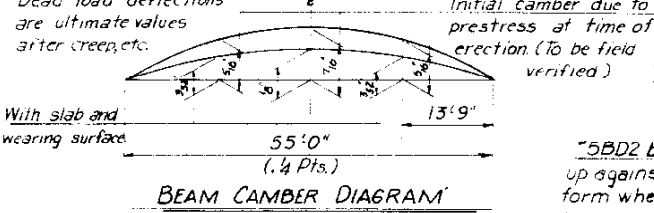
DRAWING NO.  
 15 A 6



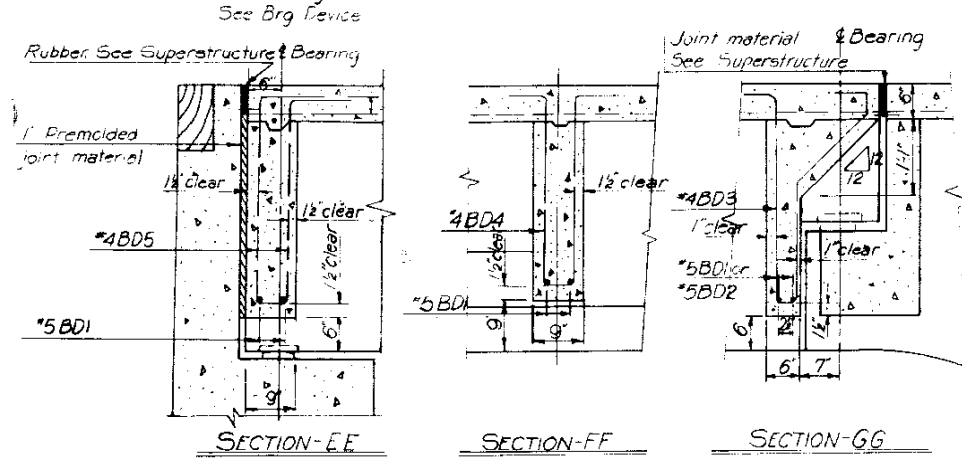
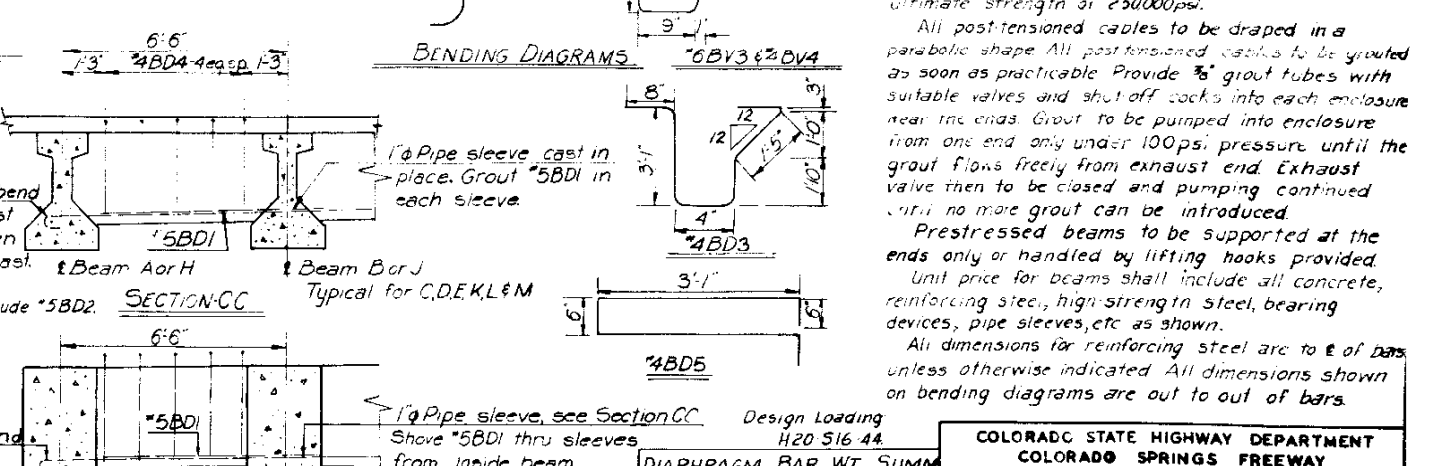
PLAN-BEAM LAYOUT  
South bridge shown, symmetrical by roadway sta about Freeway for North Bridge



TOP VIEW-END BLOCK-BEAM TYPE II



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							



NOTES:  
Design Specifications AASHO, 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.

PRECAST BEAM REINFORCING SCHEDULE

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

BEAM DIAPHRAGM REINFORCING

Bar	BD1	BD2	BD3	BD4	BD5
Req'd	46	48	280	160	40
Sp	*5	*5	*4	*4	*4
Length	4'0"	8'3"	7'6"	7'6"	7'6"
Sp					

BEAM DIAPH QUANTITIES

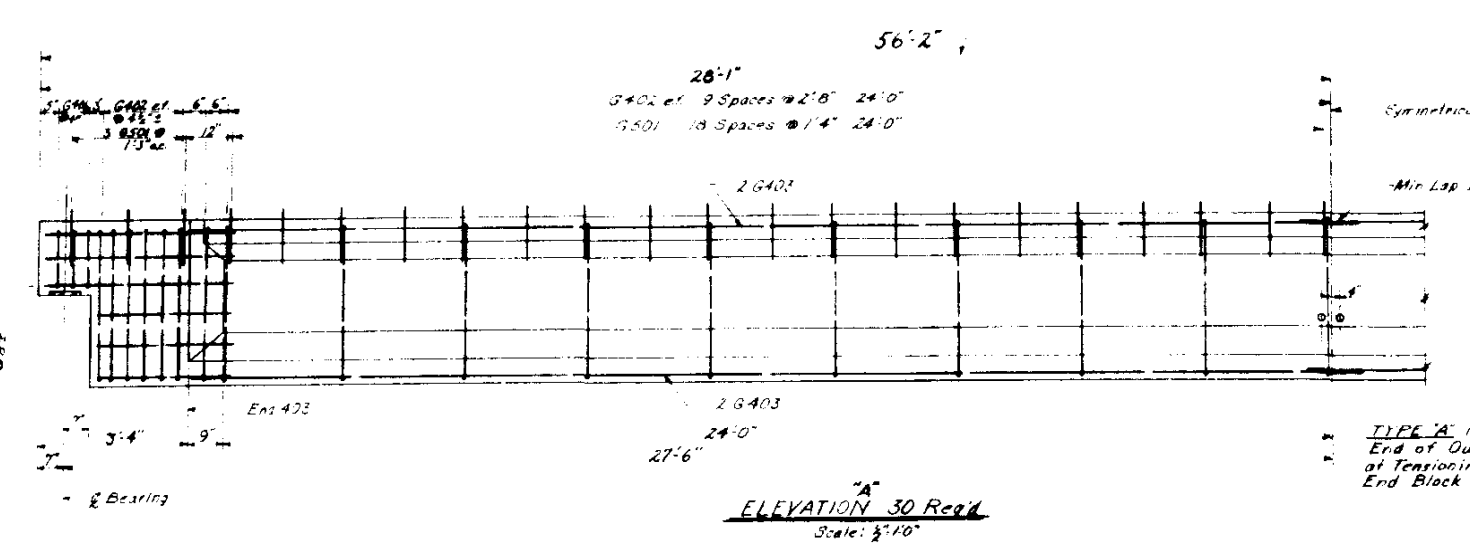
Bar	Length	Wt %	Wt. Total
*5	1380	1.043	1,439
*4	3810	0.668	2,545
1% Overrun			40
Total			4,024

DIAPHRAGM BAR WT. SUMM

Bar	Length	Wt %	Wt. Total
*5	1380	1.043	1,439
*4	3810	0.668	2,545
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

Revision: 2-27-58 New Sheet M.E.R.



Symmetrical abt. &

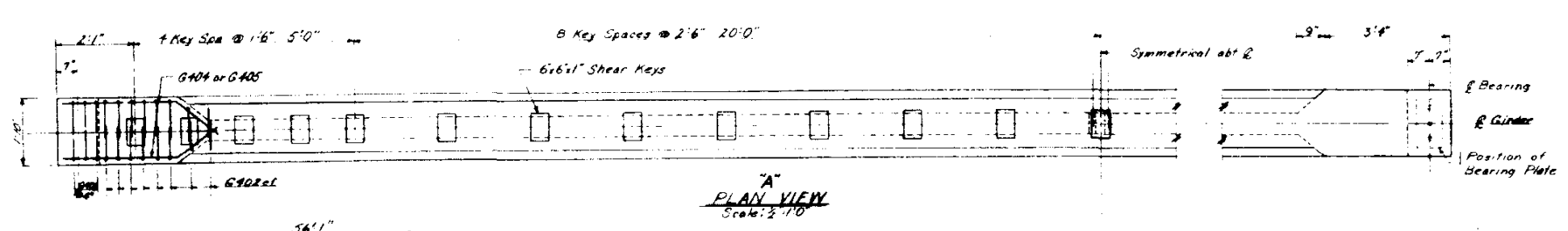
Min. Lap 20 Dia (G403)

TYPE 'A' inserts at Midpoint of Dummy End of Outer Girders only. Diaph. steel at Tensioning End to be placed before End Block is poured.

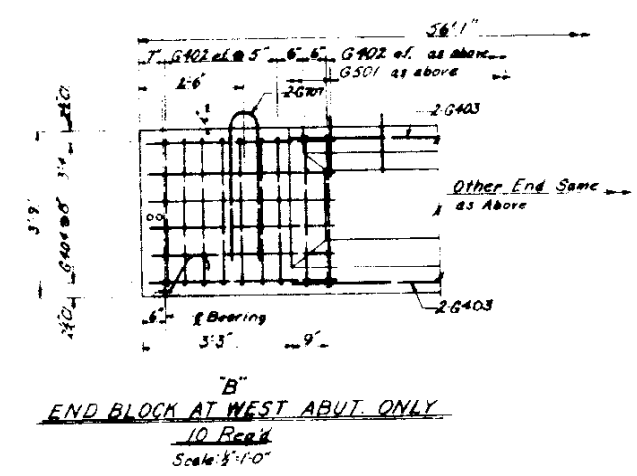
See This for Bearing & Details  
 2" Over Holes or TYPE 'A' Insert (See Sh. 3.)

BAR LIST FOR PRESTRESSED GIRDERS					
"A" GIRDER (30 Req'd)					
Mark	Type	Length	Qty	Weight	Size
G501	Bent	4'-6"	43	1290	#5
G402	"	5'-2"	68	1980	#4
G403	Str	50'-6"	4	120	"
G404	Bent	4'-8"	12	360	"
G405	"	3'-6"	12	360	"
G406	"	6'-6"	6	180	"
G707	"	6'-0"	4	120	#7
G708	"	5'-11"	4	140	#7
G1009	"	4'-8"	4	240	#10
"B" GIRDER (10 Req'd)					
G501	Bent	4'-6"	43	430	#5
G402	"	5'-2"	68	600	#4
G403	Str	50'-6"	4	40	"
G404	Bent	4'-8"	12	180	"
G405	"	3'-6"	6	60	"
G406	"	6'-6"	3	30	"
G707	"	6'-0"	4	40	#7
G708	"	5'-11"	4	40	#7
G1009	"	4'-8"	4	40	#10

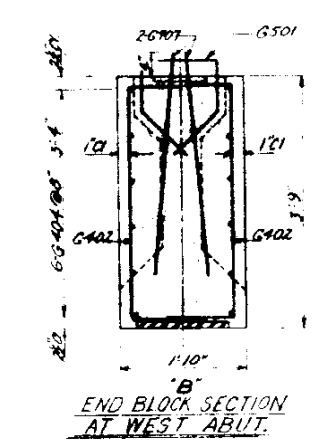
"A" ELEVATION 30 Req'd  
 Scale: 3/8"=1'-0"



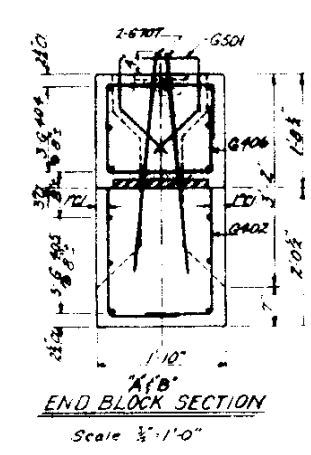
"A" PLAN VIEW  
 Scale: 3/8"=1'-0"



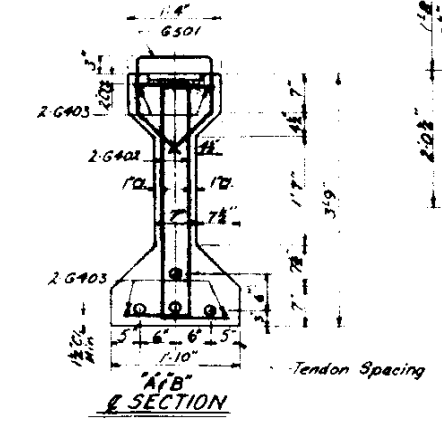
"B" END BLOCK AT WEST ABUT. ONLY  
 10 Req'd  
 Scale: 3/8"=1'-0"



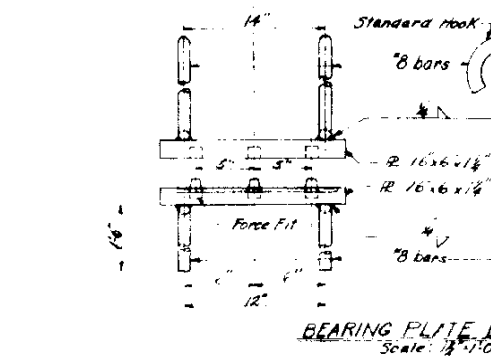
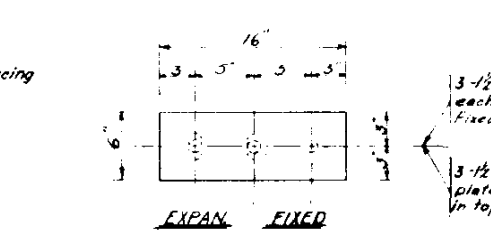
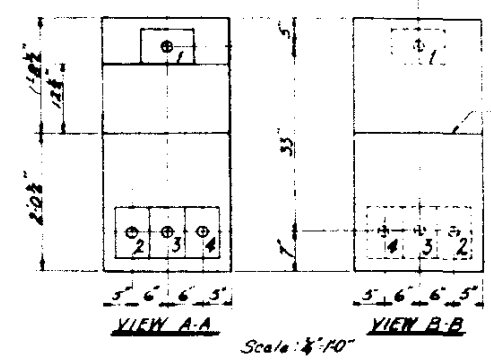
"B" END BLOCK SECTION AT WEST ABUT.  
 Scale: 3/8"=1'-0"



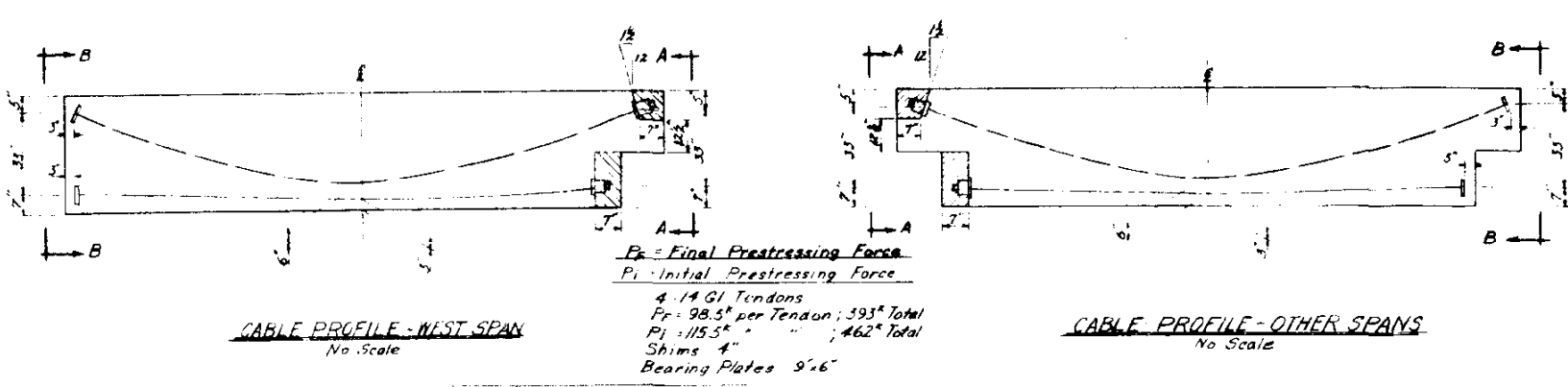
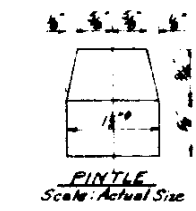
"X/B" SECTION  
 Scale: 3/8"=1'-0"



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



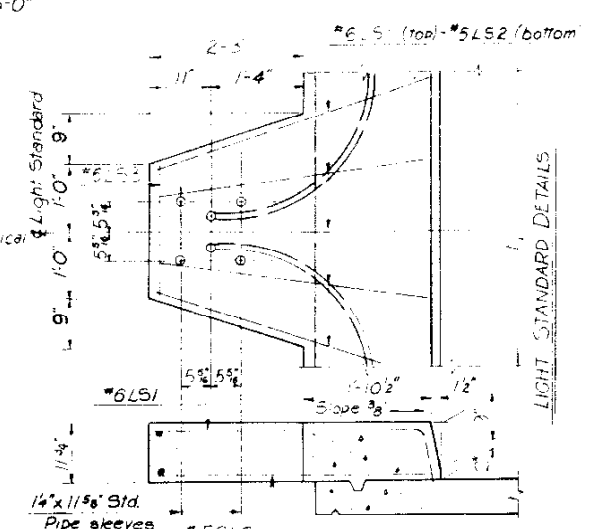
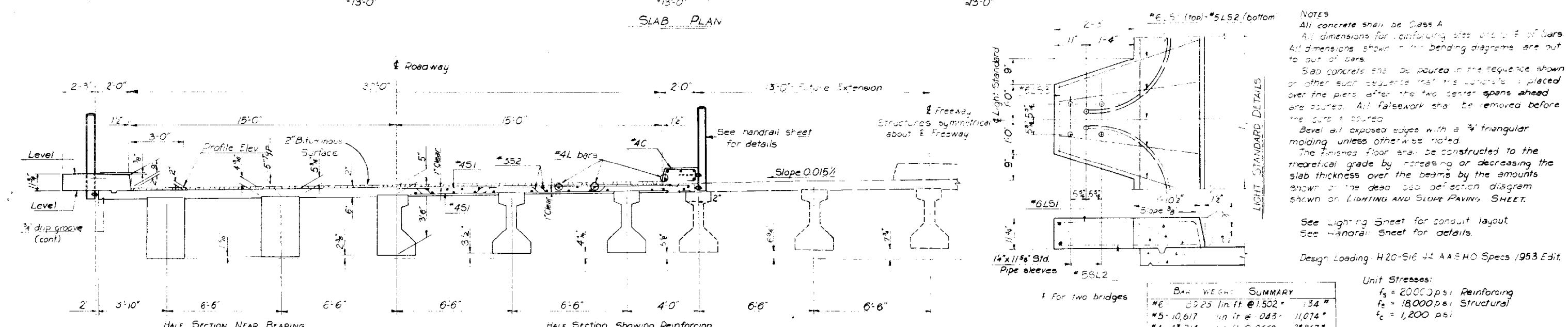
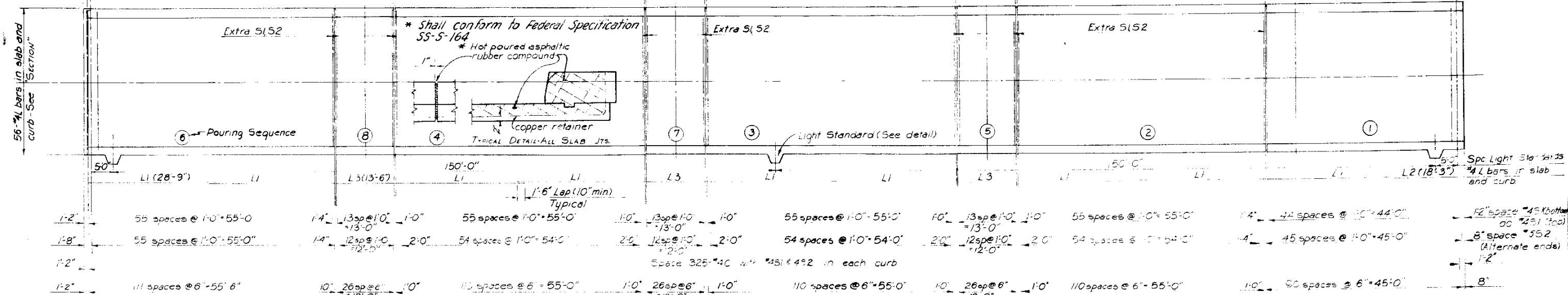
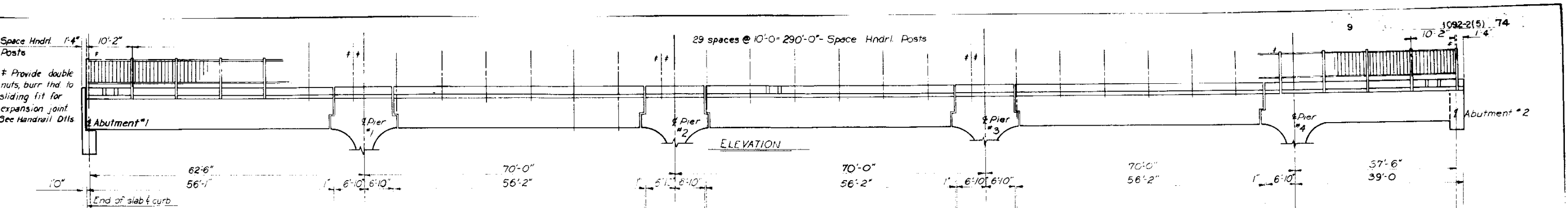
Does not occur on B Girder



$P_f$  = Final Prestressing Force  
 $P_i$  = Initial Prestressing Force  
 4 - 14 GI Tendons  
 $F_p$  = 98.5' per Tendon; 393' Total  
 $P_i$  = 115.5' " " " 462' Total  
 Shims 4"  
 Bearing Plates 9'-6"

Underside of Girder  
 Included in Unit Price and for Prestressed Girders  
 Top of Pier or Abutment

A. S. HORNER CONSTRUCTION CO. DENVER, COLORADO	
STANDARD GIRDERS STANDARD BEARING PLATES	
PROJ. NO. 1092-2(5) COLORADO SPRINGS	
STRUCTURE NOS. 1-7-DCF DD	
CUSTOMER: CL HUBNER CONST. CO.	
ENGINEERS: R. L. KOONS	
DESIGNED L.B.	SCALE as shown SHEET NO. 73a
DRAWN J.M.	CHECKED B.M. DATE 1-7-58 NO. OF SHS



**NOTES**  
 All concrete shall be Class A.  
 All dimensions for reinforcing steel are to center of bars.  
 All dimensions shown in the bending diagrams are to out of bars.  
 Slab concrete shall be poured in the sequence shown or other such sequence that the concrete is placed over the piers after the two center spans ahead are poured. All falsework shall be removed before the curb is poured.  
 Bevel all exposed edges with a 3/4\"/>

See Lighting Sheet for conduit layout.  
 See Handrail Sheet for details.

Design Loading: H20-S16 44 AASHTO Specs 1953 Edit.

**BAR WEIGHT SUMMARY**

#6	39,25	lin ft @ 7.502	= 294.0
#5	10,617	lin ft @ 0.43	= 4,567.2
#4	43,214	lin ft @ 0.668	= 28,867.0
<b>1% Overrun</b>			<b>401</b>
<b>One Bridge Total</b>			<b>34,038.2</b>

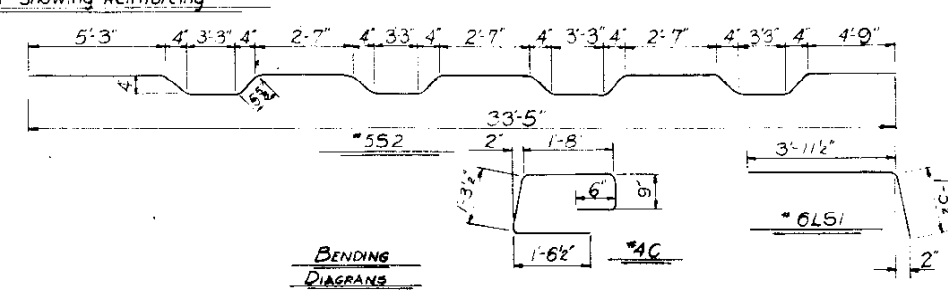
**SUPERSTRUCTURE QUANTITIES - TOTAL**

Class A Concrete	4,595 Cu. Yds
Reinforcing Steel	80,952 Lbs.
Structural Steel	50,956 Lbs.
Copper Retainer	760 Lbs.
Plant Mix Asphalt	234 Tons
Electrical Conduit	1,038 Lin. Ft.

**Unit Stresses:**  
 $f_s = 20,000$  psi Reinforcing  
 $f_c = 18,000$  psi Structural  
 $f_c = 1,200$  psi

**SLAB REINFORCING SCHEDULE - ONE BRIDGE ONLY**

Bar	C	L1	L2	L3	LS1	LS2	LS3	S1	S2
No. Reqd.	648	504	56	168	15	15	6	648	306
Size	#4	#4	#4	#4	#6	#5	#6	#4	#5
Length	5'-9"	28'-9"	18'-3"	13'-6"	5'-3"	4'-0"	1'-9"	33'-6"	34'-6"
Shape	□								



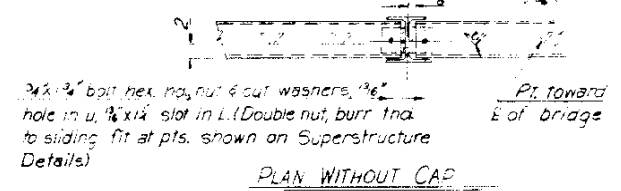
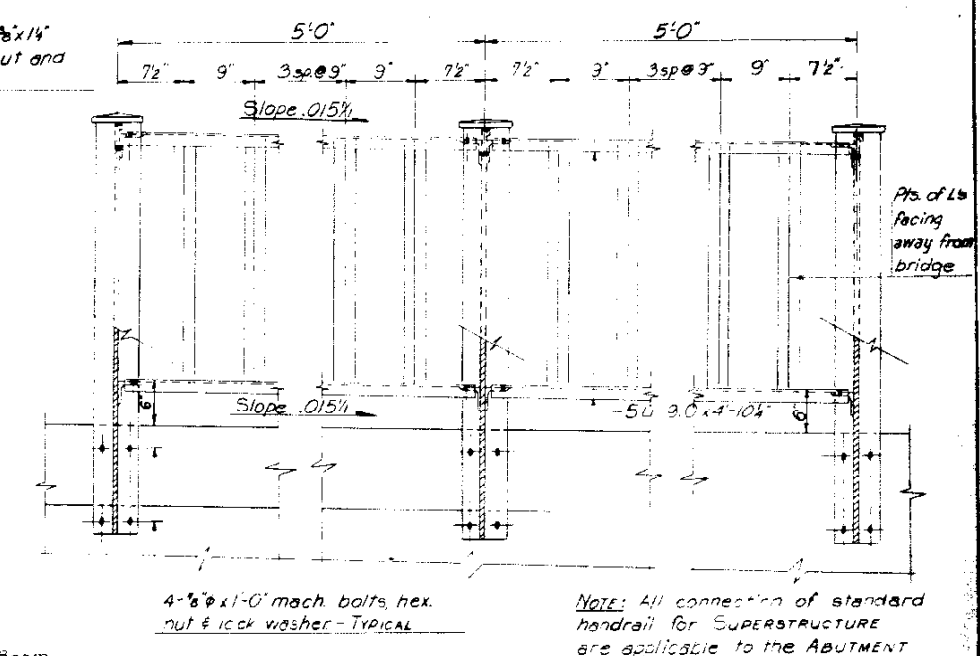
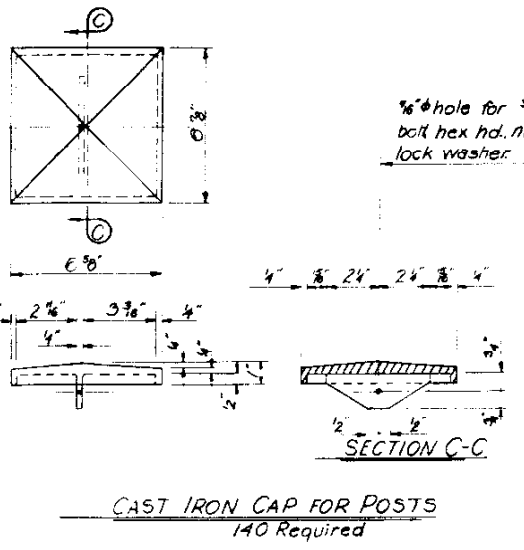
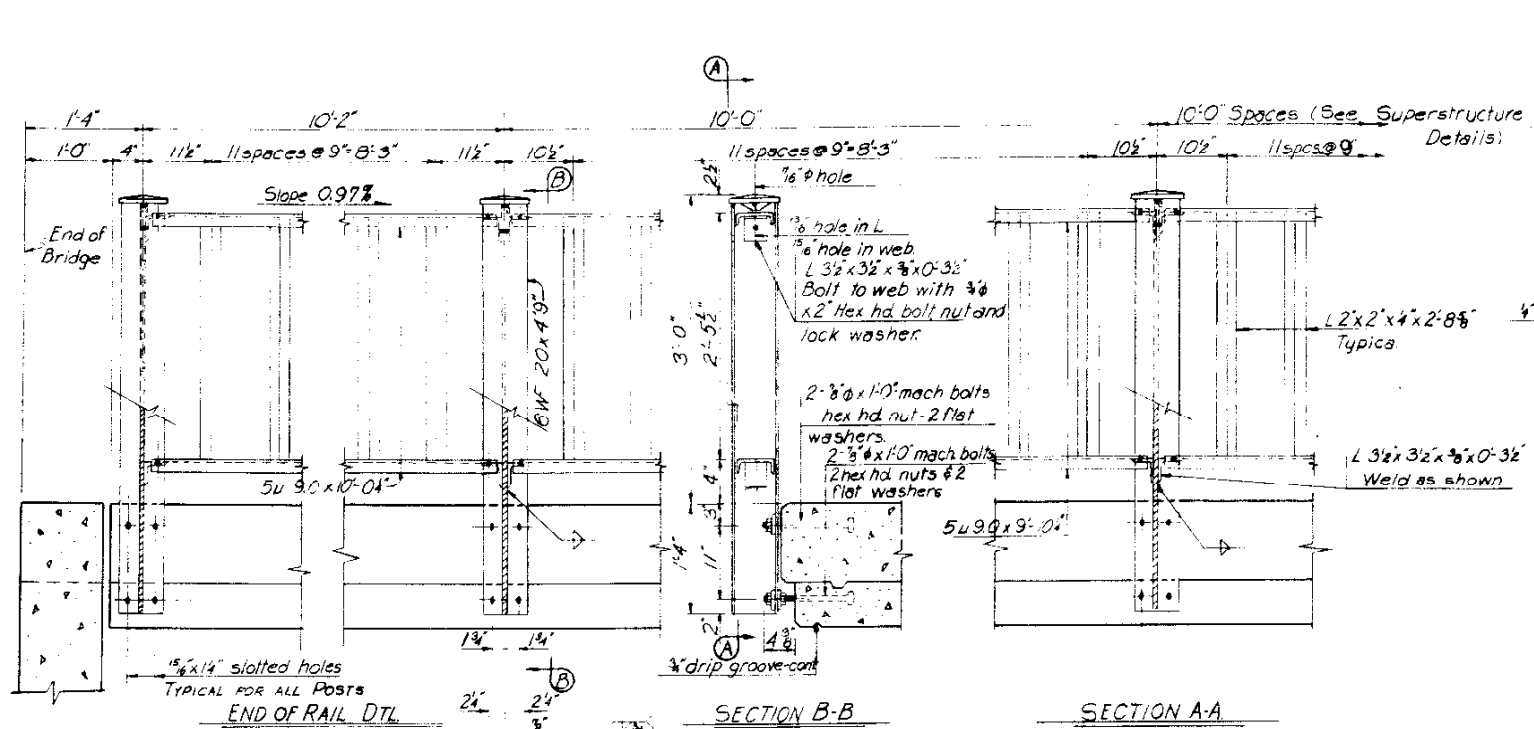
**COLORADO STATE HIGHWAY DEPARTMENT  
 COLORADO SPRINGS FREEWAY  
 SOUTH NEVADA AVENUE  
 BRIDGE NO'S I-17-DC & DD**

**SUPERSTRUCTURE DETAILS**

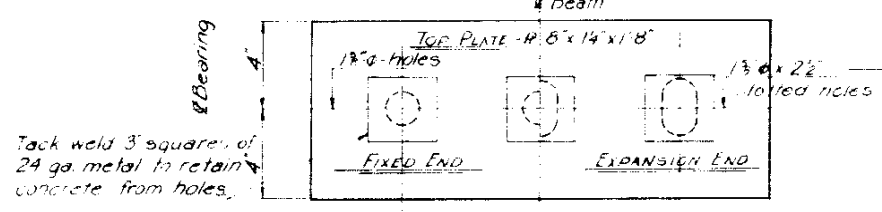
SCALE: \_\_\_\_\_ DATE: April, 1957.

ROBERT L. KOONS  
 CONSULTING ENGINEERS  
 COLORADO SPRINGS, COLO.

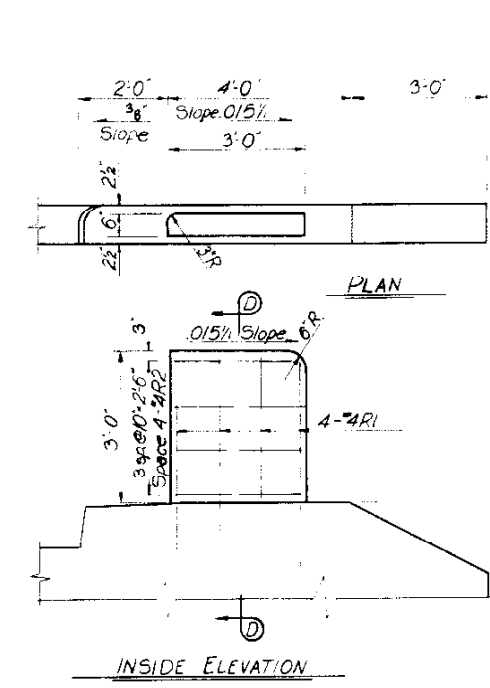
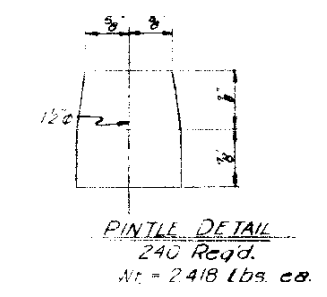
DRAWING NO.  
**15A8**



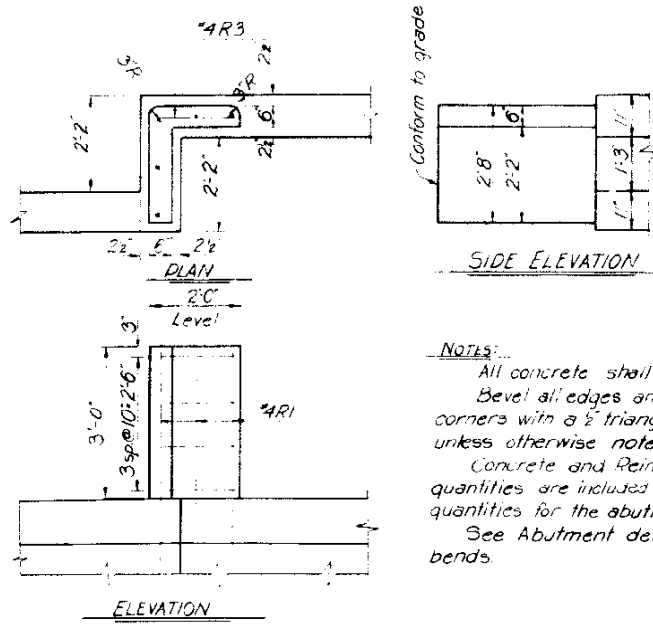
STEEL HANDRAIL DETAILS - SUPERSTRUCTURE Scale: 1/4" = 1'-0"



ABUTMENT STEEL RAILING DETAILS 2 Req'd - As Shown 2 Req'd - Reversed

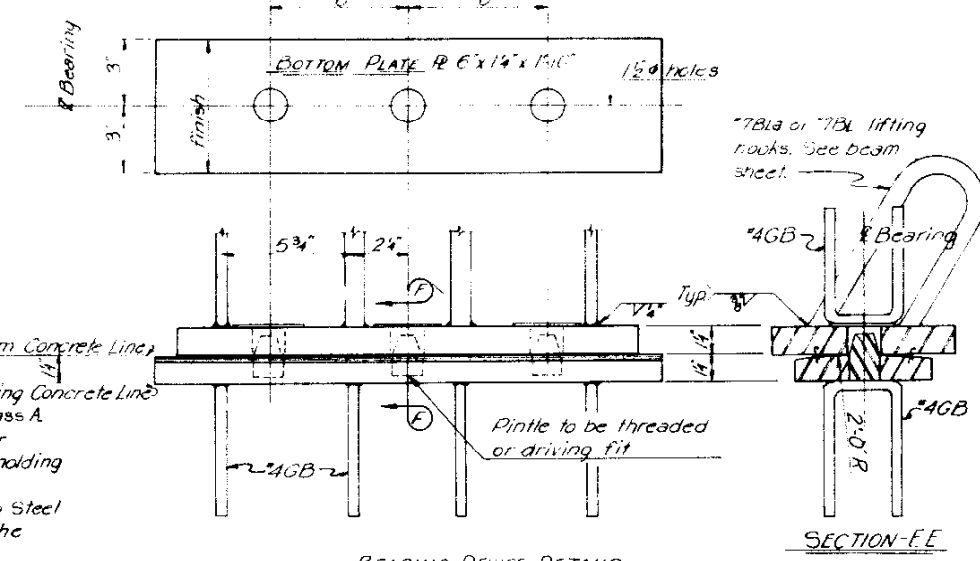


ABUTMENT WINGWALL RAILING DETAIL



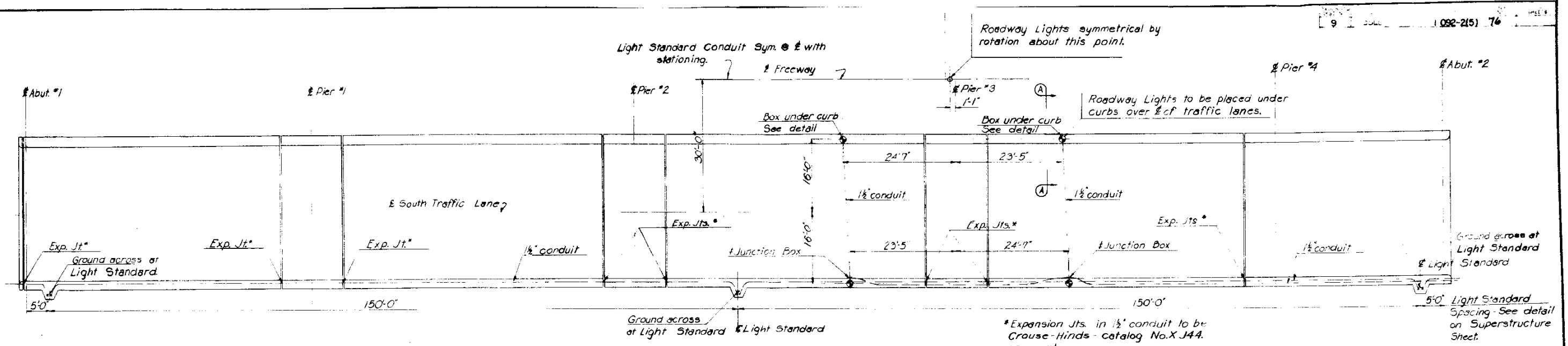
ABUTMENT CENTER RAILING DETAIL

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.



BEARING DEVICE DETAILS  
 40 Req'd - Fixed Bearing  
 40 Req'd - Expansion Bearing  
 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#

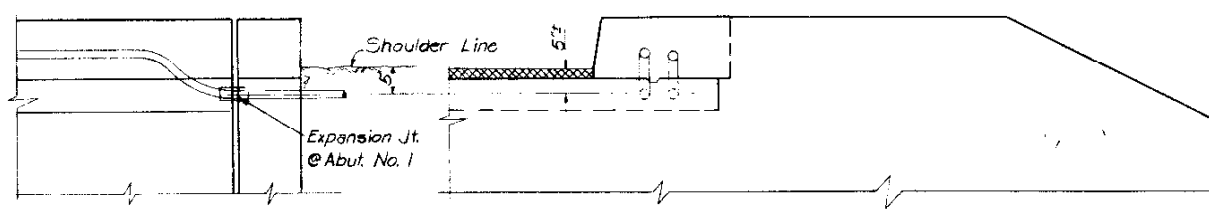
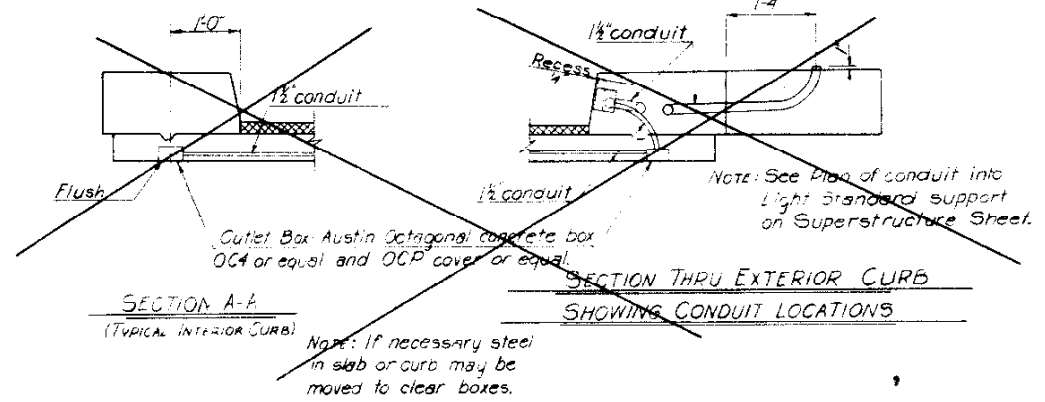
COLORADO STATE HIGHWAY DEPARTMENT COLORADO SPRINGS FREEWAY SOUTH NEVADA AVENUE BRIDGE NO'S 1-17-DC & DD	
HANDRAIL AND BEARING DEVICE DETAILS	
SCALE:	DATE April, 1957
ROBERT L. ROONS CONSULTING ENGINEERS COLORADO SPRINGS, COLO.	DRAWING NO. 15 A 9



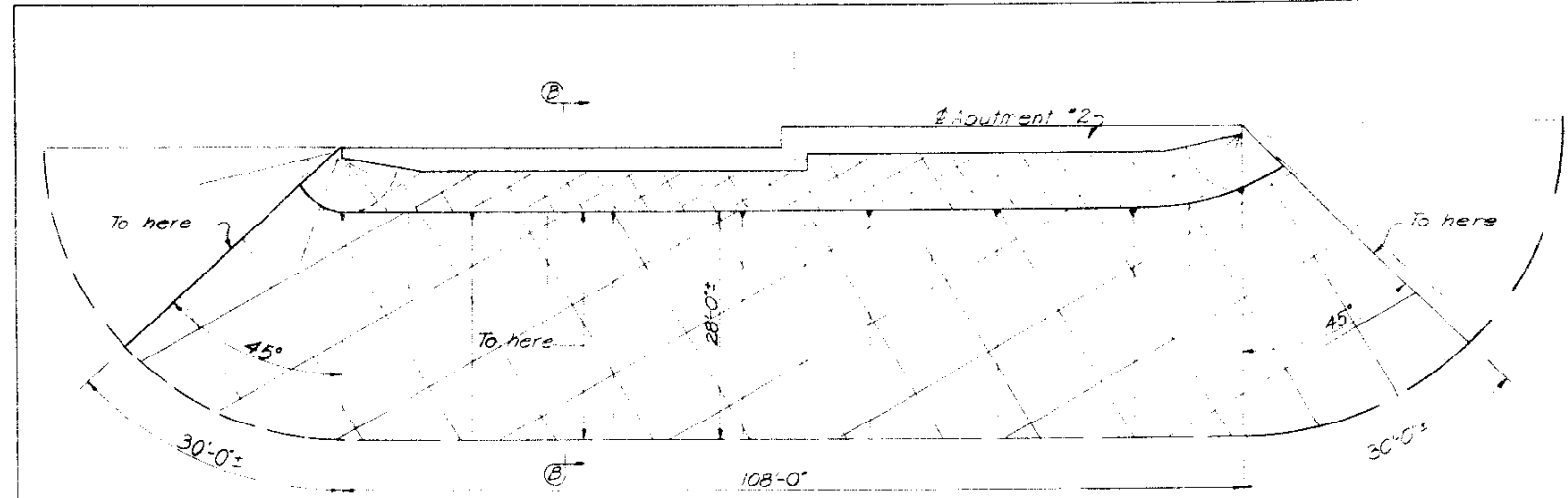
LIGHTING PLAN FOR SOUTH BRIDGE  
(North Bridge as noted)

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

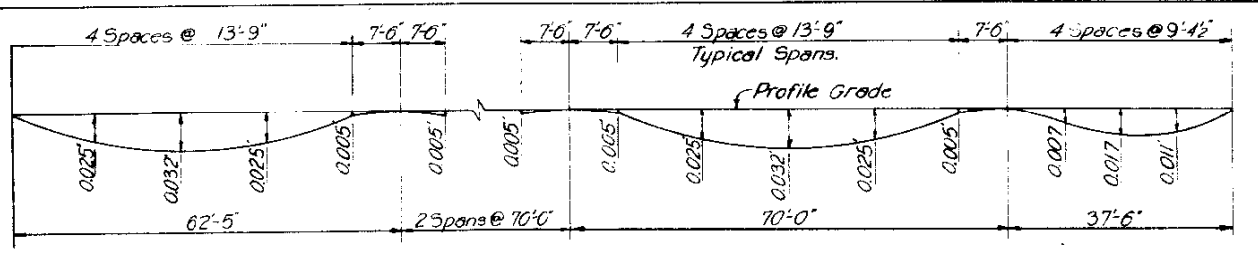
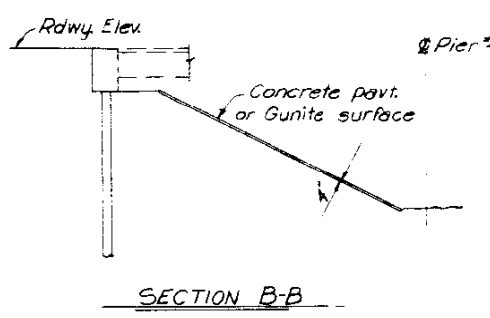
† Junction Boxes to be Grouse-Hinds Watertight Series PKCA-1 1/2" Junction Condulets or equal.



LIGHTING CONDUIT DETAILS

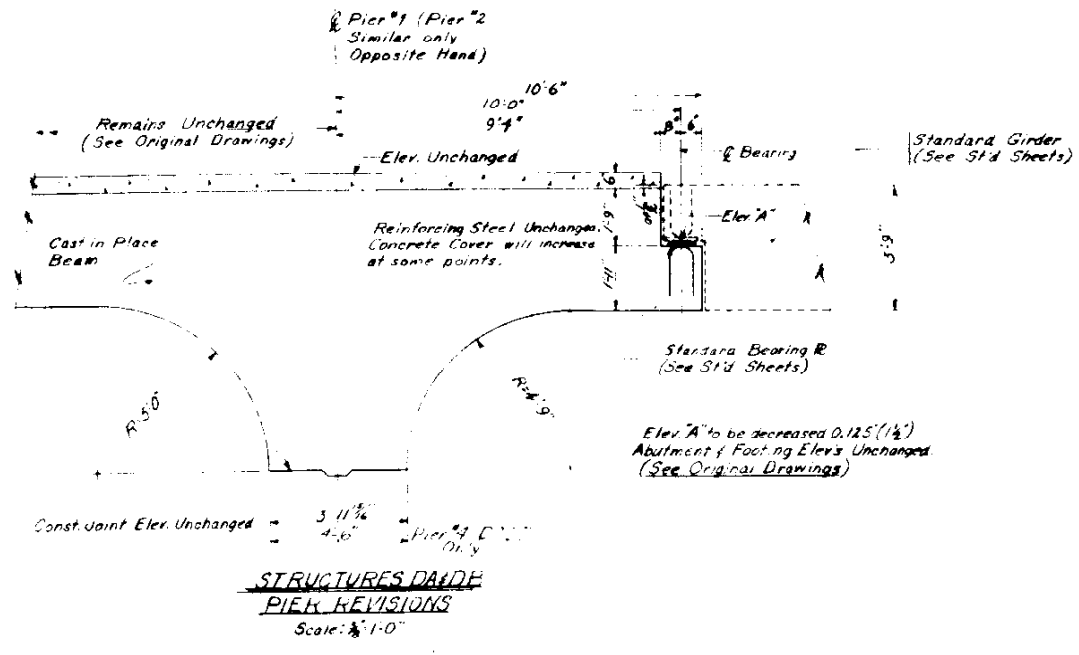


SLOPE PAVEMENT DETAILS  
ABUTMENT NO. 2 ONLY



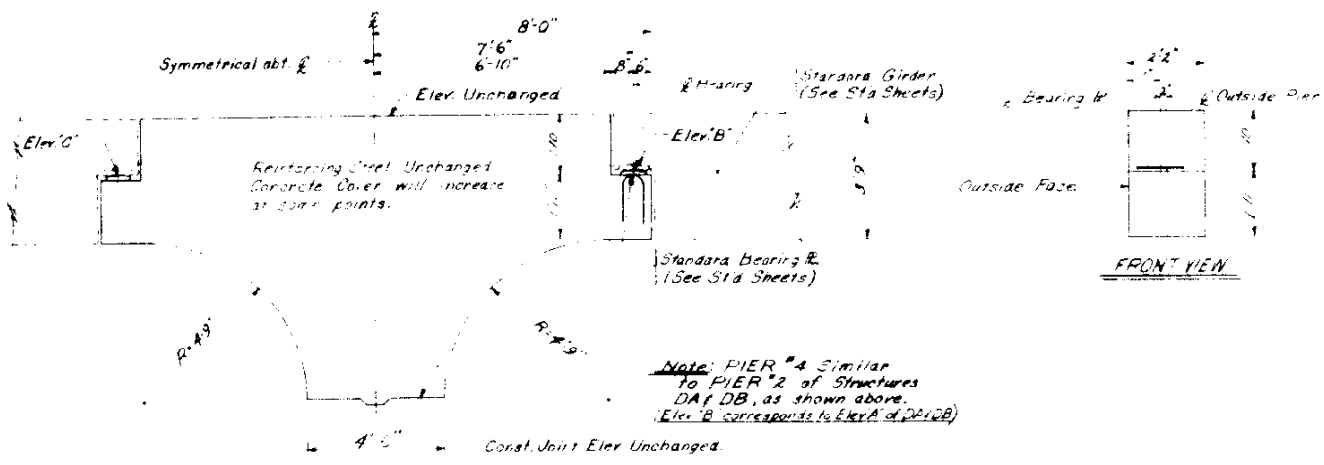
DEAD LOAD DEFLECTION DIAGRAM  
In Decimals of Feet

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 ELEV. OF TOP OF PIERS & ABUTMENTS BY AMOUNTS SHOWN BELOW	
STRUCTURE NO.	
GG, DF	Plus 0.302 (3/8)
DT	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

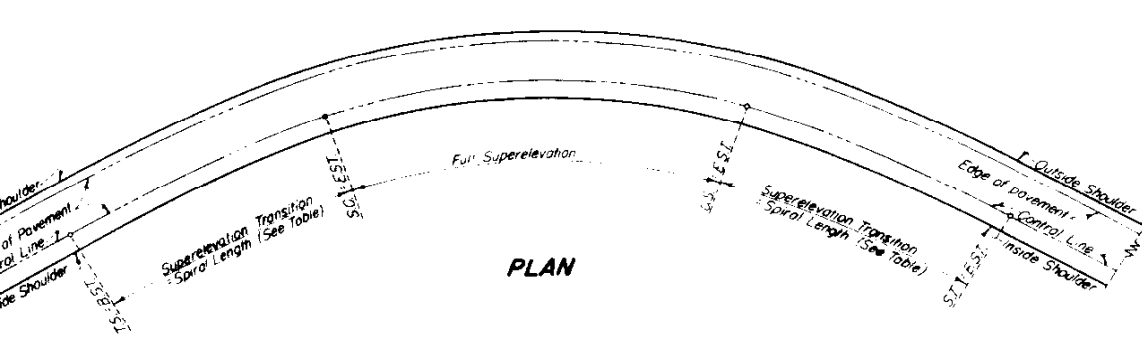
**STRUCTURES DA, DB**  
**PIER REVISIONS**  
Scale: 3/8" = 1'-0"



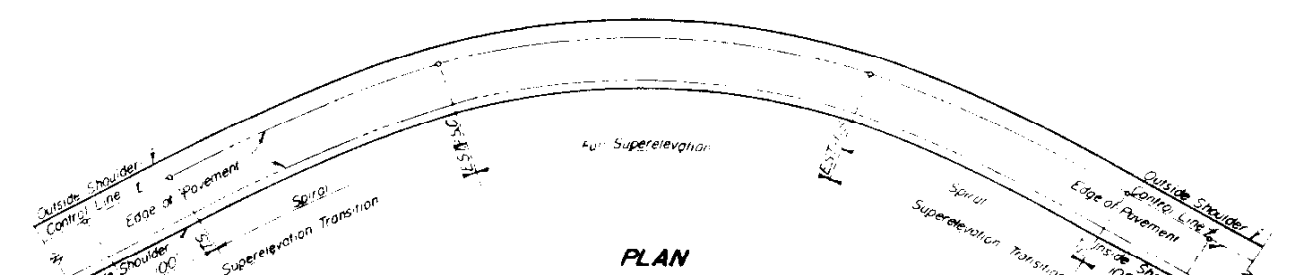
Note: PIER #4 Similar to PIER #2 of Structures DA, DB, as shown above. Elev. B corresponds to Elev. A of DA, DB.  
 Elev. B of C to be decreased by 0.125 (1/8)  
 Footing Elev. Unchanged  
 Abut. #2 Elev. Unchanged.  
 Abut. #1: Elev. D decreased by 0.250 (1/4)  
 Elev. A-H will decrease accordingly (See Original Drawg.)

**STRUCTURES DC, DD**  
**REVISIONS: PIERS 1, 2, 3**  
Scale: 3/8" = 1'-0"

A. B. HOPNER CONSTRUCTION CO.  
 DENVER, COLORADO  
 ELEVATION REVISIONS  
 PROJECT: 092-215, COLORADO SPRINGS  
 STRUCTURE NOS. DA, DB, DC, DD  
 CUSTOMER: O. L. HOPNER 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, 385



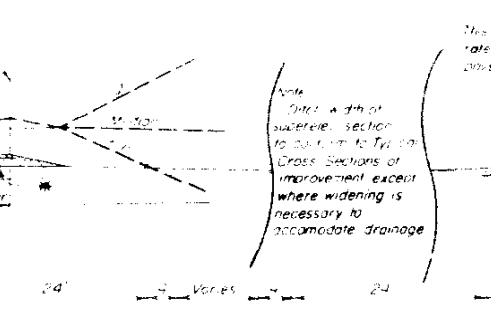
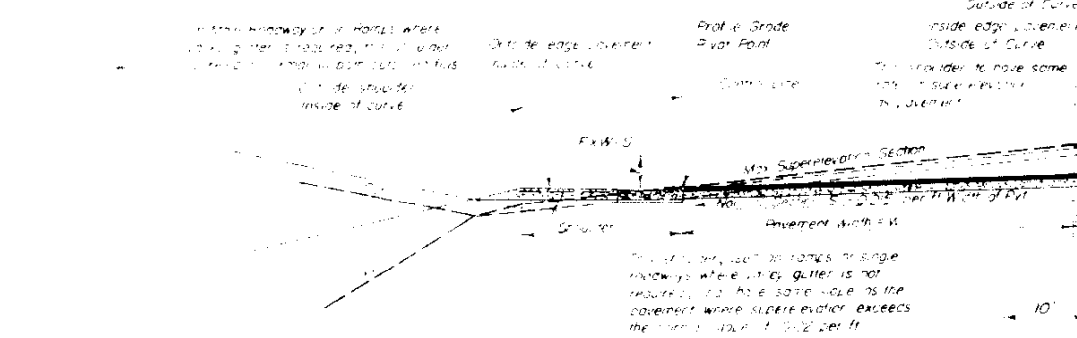
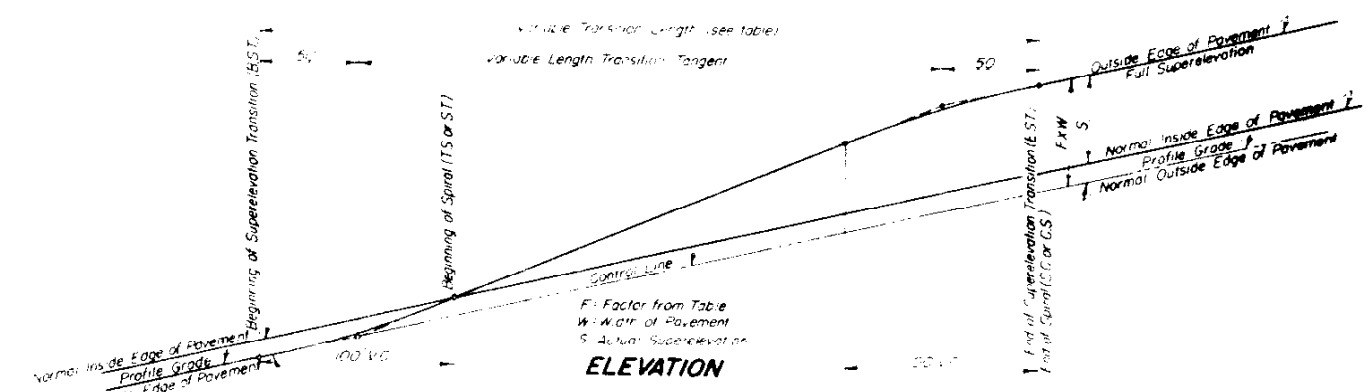
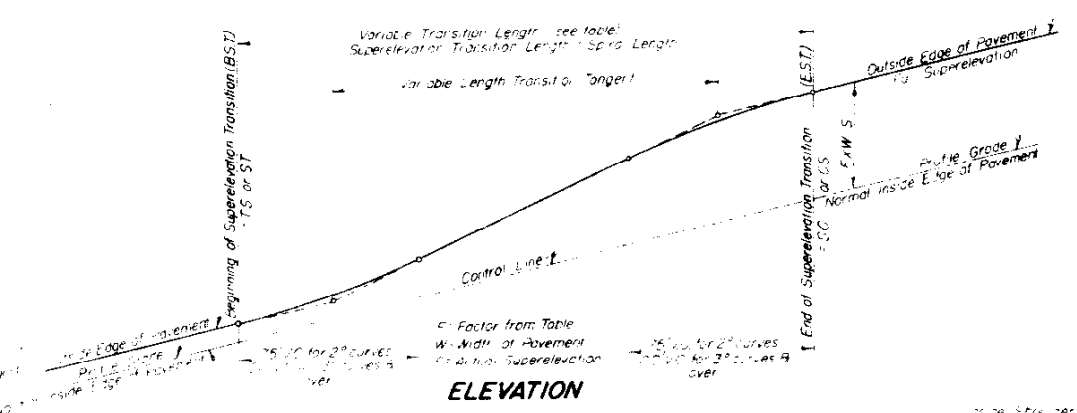
**NOTE CASE I**  
 The normal roadway slope is approximately equal to the superlevation for a 1° curve. Therefore no super-elevation is required for a 1° curve.  
 For curves of over 1° the factors shown in the table for Case I include the normal roadway slope of 0.01 Ft per Ft, thereby giving values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



**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.



**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 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

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 superlevation	per ft. width of roadway									
.00	.0000	.0060	.0240	.0540	.0960	.1500	.2040	.2460	.2760	.2940	.3000
.01	.0001	.0073	.0265	.0577	.1009	.1559	.2087	.2495	.2783	.2951	
.02	.0002	.0086	.0290	.0644	.1109	.1685	.2234	.2530	.2806	.2962	
.03	.0005	.0101	.0317	.0653	.1162	.1750	.2222	.2563	.2827	.2971	
.04	.0010	.0118	.0346	.0694	.1215	.1815	.2265	.2594	.2846	.2978	
.05	.0015	.0135	.0375	.0735	.1270	.1885	.2306	.2625	.2865	.2985	
.06	.0022	.0154	.0406	.0778	.1325	.1949	.2347	.2654	.2882	.2990	
.07	.0029	.0173	.0437	.0821	.1382	.2017	.2386	.2683	.2899	.2995	
.08	.0038	.0194	.0470	.0866	.1441	.2119	.2423	.2710	.2894	.2998	
.09	.0049	.0217	.0505	.0913	.1509	.2191	.2443	.2735	.2897	.2999	

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 superlevation	per ft. width of roadway									
.00	.0000	.0073	.0290	.0653	.1162	.1800	.2438	.2947	.3310	.3527	.3600
.01	.0001	.0088	.0340	.0698	.1220	.1866	.2496	.2989	.3338	.3541	
.02	.0003	.0105	.0351	.0743	.1281	.1932	.2552	.3038	.3365	.3551	
.03	.0007	.0123	.0384	.0791	.1342	.1998	.2606	.3059	.3390	.3564	
.04	.0012	.0142	.0418	.0839	.1406	.2064	.2659	.3109	.3414	.3574	
.05	.0018	.0163	.0454	.0889	.1470	.2130	.2711	.3146	.3437	.3582	
.06	.0026	.0186	.0491	.0941	.1536	.2194	.2761	.3182	.3458	.3588	
.07	.0036	.0210	.0529	.0994	.1602	.2257	.2809	.3216	.3477	.3593	
.08	.0046	.0235	.0569	.1048	.1668	.2319	.2857	.3249	.3495	.3597	
.09	.0059	.0262	.0611	.1104	.1734	.2380	.2902	.3280	.3512	.3599	

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 superlevation	per ft. width of roadway									
.00	.0000	.0097	.0390	.0876	.1558	.2325	.3092	.3774	.4260	.4553	.4650
.01	.0001	.0118	.0429	.0936	.1634	.2402	.3167	.3831	.4298	.4571	
.02	.0004	.0140	.0471	.0997	.1711	.2493	.3244	.3837	.4334	.4588	
.03	.0009	.0165	.0515	.1061	.1788	.2555	.3317	.3940	.4369	.4602	
.04	.0016	.0191	.0561	.1126	.1865	.2632	.3388	.3945	.4401	.4615	
.05	.0024	.0219	.0609	.1193	.1941	.2709	.3457	.4041	.4431	.4626	
.06	.0035	.0249	.0658	.1262	.2018	.2785	.3524	.4089	.4459	.4634	
.07	.0048	.0281	.0710	.1333	.2095	.2862	.3590	.4135	.4485	.4641	
.08	.0062	.0316	.0763	.1406	.2172	.2939	.3653	.4179	.4510	.4646	
.09	.0079	.0352	.0819	.1481	.2248	.3016	.3714	.4221	.4532	.4649	

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 superlevation	per ft. width of roadway									
.00	.0000	.0127	.0506	.1140	.1984	.2850	.3716	.4460	.5194	.5573	.5700
.01	.0001	.0153	.0558	.1217	.2070	.2937	.3803	.4535	.5243	.5597	
.02	.0005	.0182	.0613	.1297	.2157	.3023	.3890	.4607	.5290	.5619	
.03	.0011	.0214	.0670	.1379	.2244	.3110	.3976	.4677	.5334	.5638	
.04	.0020	.0248	.0729	.1464	.2330	.3197	.4063	.4744	.5376	.5654	
.05	.0032	.0285	.0791	.1550	.2417	.3283	.4150	.4809	.5415	.5668	
.06	.0046	.0324	.0856	.1637	.2503	.3370	.4236	.4871	.5432	.5680	
.07	.0062	.0366	.0923	.1724	.2590	.3457	.4321	.4930	.5486	.5689	
.08	.0081	.0410	.0993	.1810	.2677	.3543	.4403	.5007	.5518	.5695	
.09	.0103	.0457	.0165	.1897	.2763	.3630	.4483	.5042	.5547	.5699	

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 superlevation	per ft. width of roadway									
.00	.0000	.0160	.0640	.1440	.2408	.3375	.4343	.5310	.6110	.6590	.6750
.01	.0002	.0194	.0706	.1537	.2504	.3472	.4439	.5404	.6172	.6620	
.02	.0006	.0230	.0774	.1634	.2601	.3569	.4536	.5496	.6232	.6648	
.03	.0014	.0270	.0846	.1730	.2697	.3665	.4633	.5584	.6288	.6672	
.04	.0026	.0314	.0922	.1827	.2795	.3762	.4730	.5668	.6340	.6692	
.05	.0040	.0360	.1000	.1924	.2891	.3859	.4826	.5750	.6390	.6710	
.06	.0058	.0410	.1082	.2021	.2988	.3956	.4923	.5828	.6436	.6724	
.07	.0078	.0462	.1166	.2117	.3085	.4052	.5020	.5904	.6480	.6736	
.08	.0102	.0518	.1254	.2214	.3182	.4149	.5117	.5976	.6520	.6744	
.09	.0130	.0578	.1346	.2211	.3278	.4246	.5213	.6044	.6556	.6748	

## CASE I SUPERELEVATION

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

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 superlevation	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	.01892	.01985	.02047	.02086	.02100	

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 superlevation	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	

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 superlevation	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	

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 superlevation	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	.04099	.04588	.04976	.05195	
.03	.01507	.01642	.01946	.02418	.02981	.03543	.04106	.04534	.04905	.05208	
.04	.01513	.01665	.01986	.02475	.03037	.03599	.04162	.04579	.04933	.05219	
.05	.01521	.01690	.02030	.02531	.03093	.03656	.04218	.04579	.04929	.05228	
.06	.01530	.01716	.02070	.02587	.03149	.03712	.04274	.04634	.04979	.05236	
.07	.01541	.01744	.02115	.02643	.03206	.03768	.04330	.04683	.04917	.05242	
.08	.01554	.01773	.02161	.02700	.03262	.03824	.04385	.04737	.04961	.05246	
.09	.01568	.01804	.02209	.02756	.03318	.03881	.04438	.04789	.04914	.05248	</

CASE II SUPERELEVATION

CASE I SUPERELEVATION

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

Proportional distance from beginning of transition (TRANS - 450')											6° 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		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	

Proportional distance from beginning of transition (TRANS - 450')											7° 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		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: \_\_\_\_\_

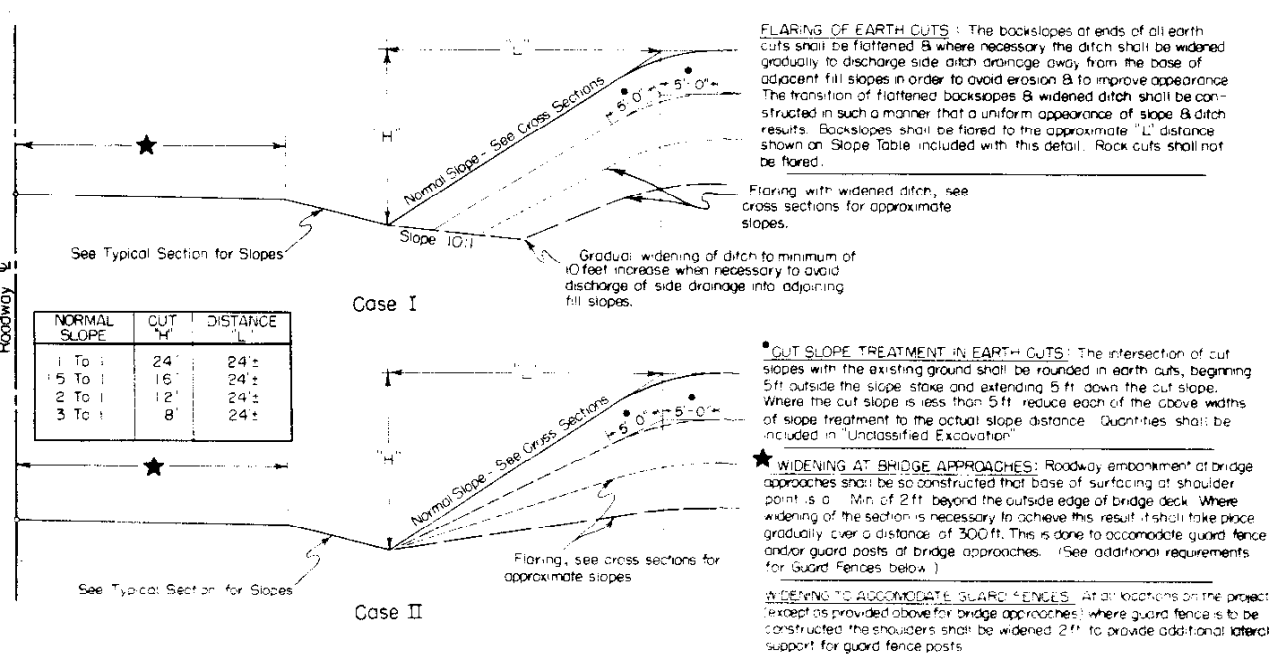
# STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES AND AT CREST OF GRADES

# STANDARD M-2-EM

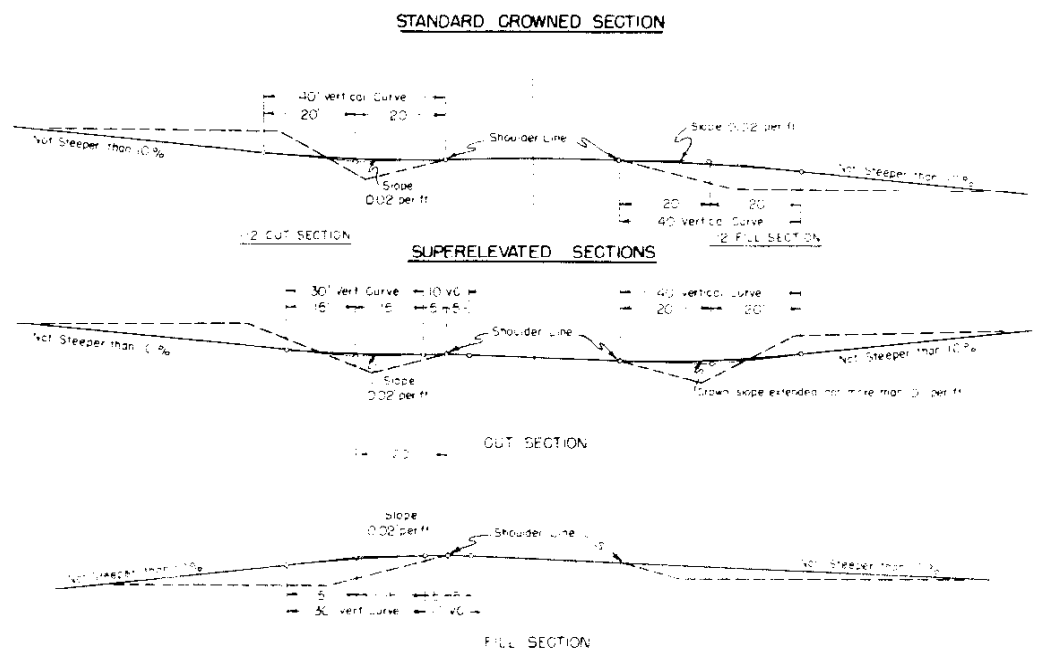
FED. ROAD DIV. NO. 8 DISTRICT 8 COLO. 1092 215 80 SHEET NO. TOTAL SHEETS 80  
 Rev. 12-9-53, Details of Road Approaches, J.C.R.  
 Rev. 10-28-55, Widening at Bridge Approaches Note, S.J.M.

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

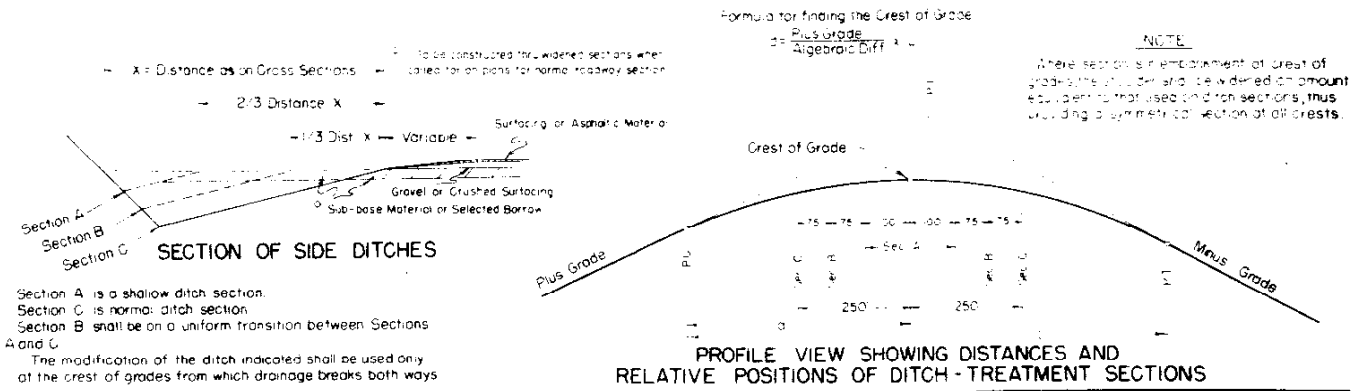
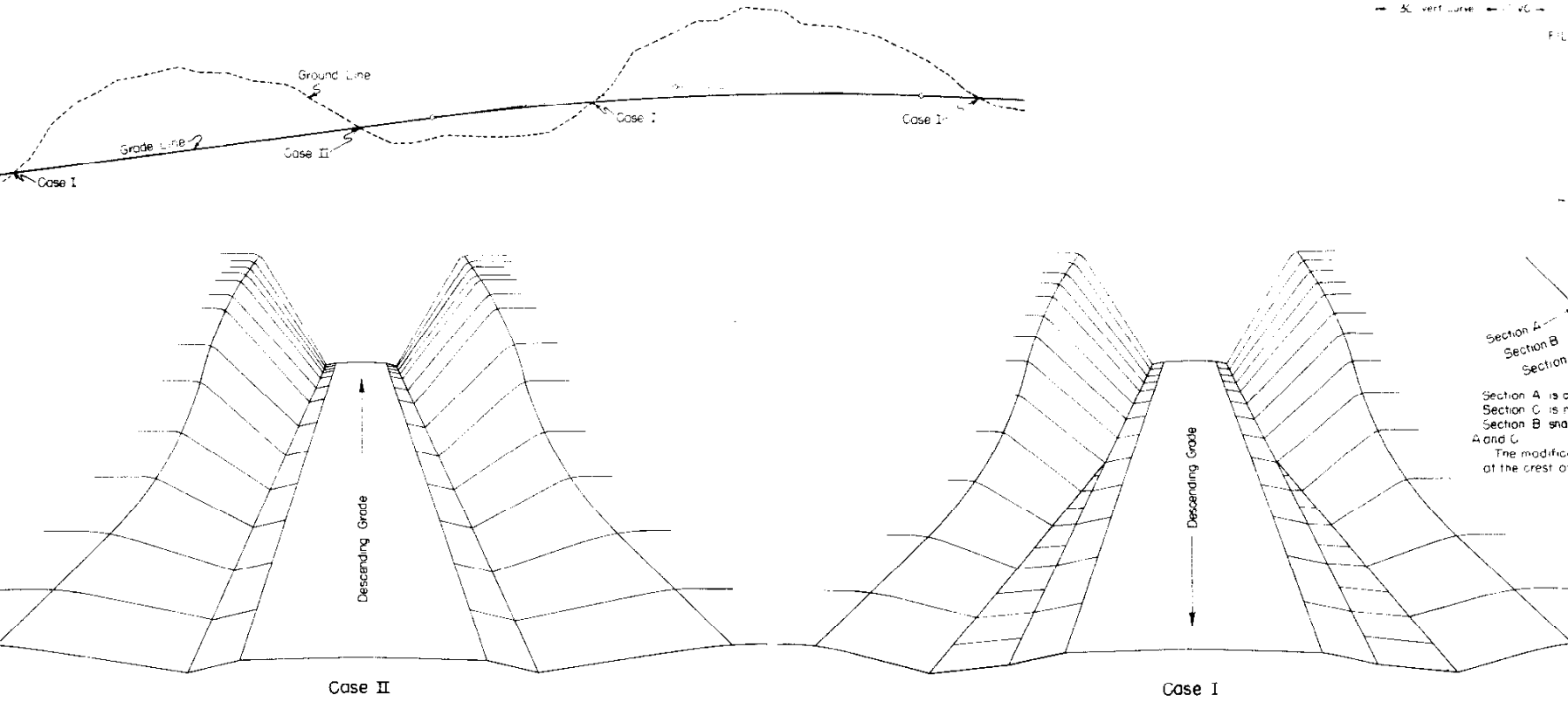
## TYPICAL PLANS FOR SIDE APPROACH ROADS



PLAN OF FLARING IN EARTH CUTS



## DETAILS FOR DITCH & WIDENED SHOULDERS AT CREST OF GRADES



## 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**

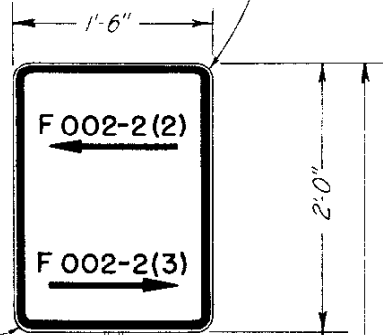
**RIGHT OF WAY MARKER POST**

**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**

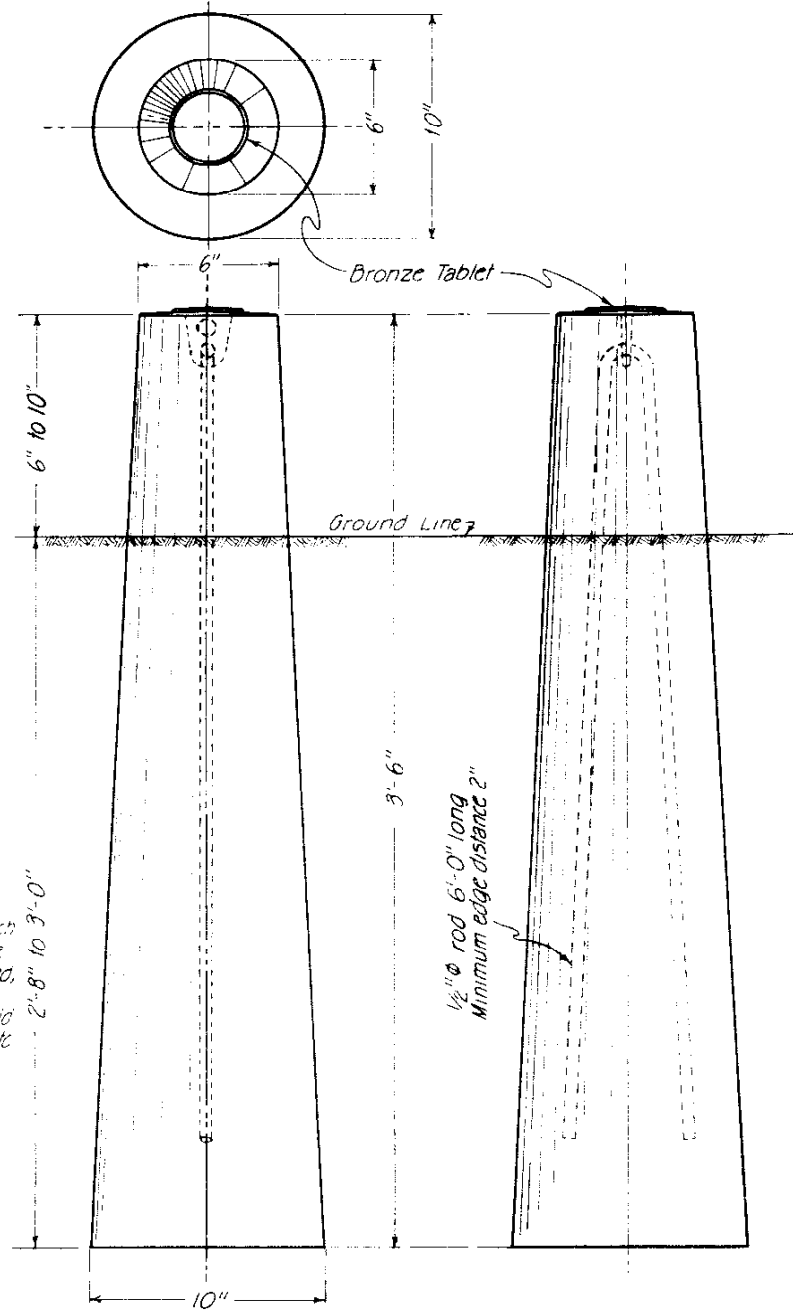
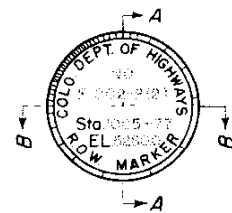
All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to this project

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.)



**BENCH MARK**

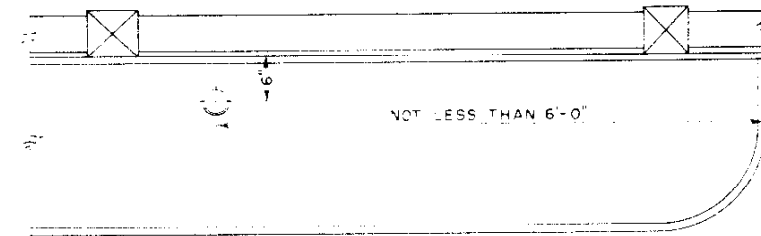
All work shall be done in accordance with Standard Specifications of the Colorado Department of Highways applicable to the project

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.)

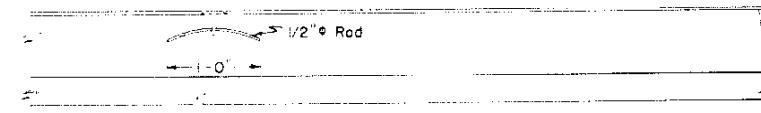
Bronze Bench Mark Tablets will be furnished by the Department at no expense to the Contractor

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

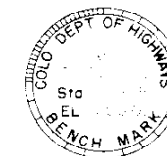
Note: Where 2'-0" safety curbs are not used place marker in center of curb



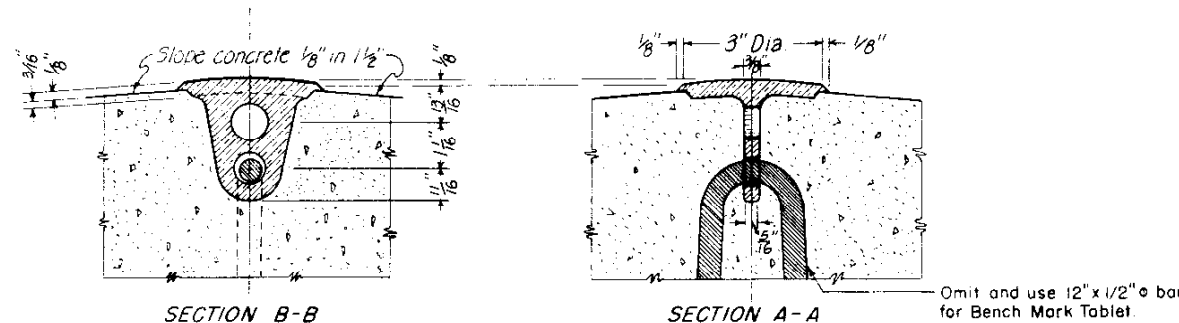
PLAN



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



SECTION B-B

SECTION A-A

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

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

**COLORADO DEPARTMENT OF HIGHWAYS STANDARD MARKER POSTS AND BENCH MARKS**

Designed by R.E.L. Approved by J. J. Julian  
 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.

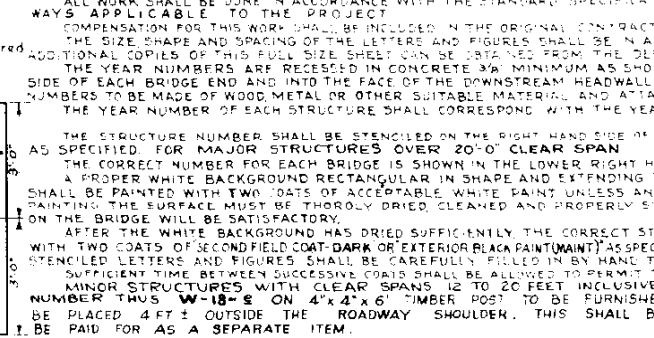
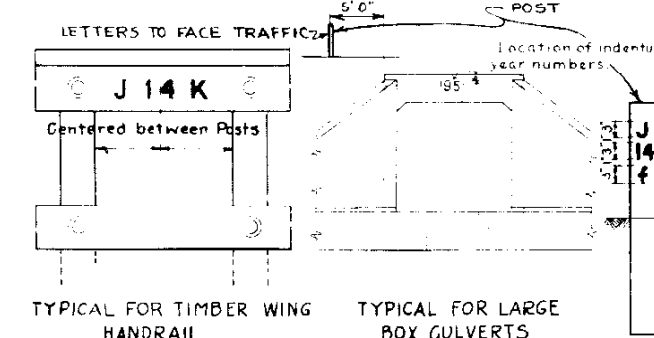
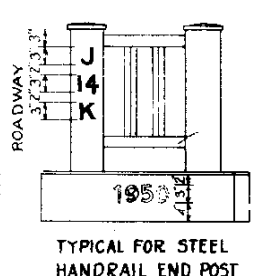
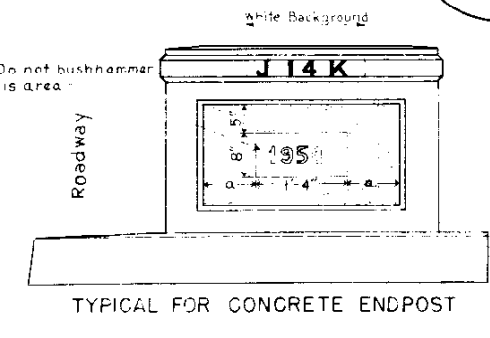
A B C D E F G H I J K L

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



GENERAL NOTES  
 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.

SAMPLE YEAR NUMBER

SECTION

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

Designed by GHD  
 Made by WPM  
 Checked by

Approved by *P. H. Bailey*  
 Bridge Engineer  
 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 shored in accordance with specifications.

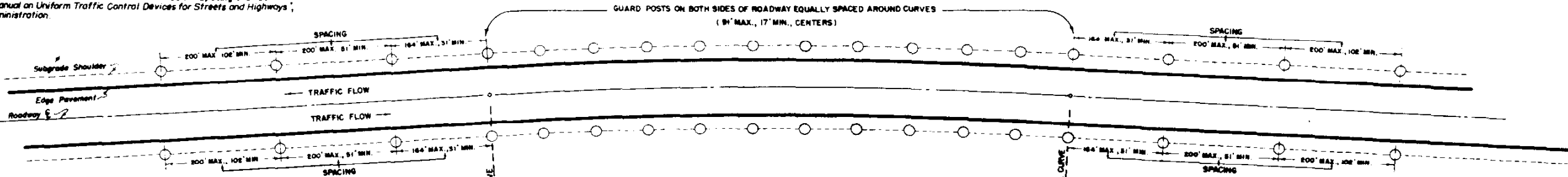
**PAINTING** - Posts shall be painted with aluminum paint and a black band placed around each post as per details on this sheet. Number of coats and type of paint applied shall be in accordance with specifications.

(Work By State Forces)

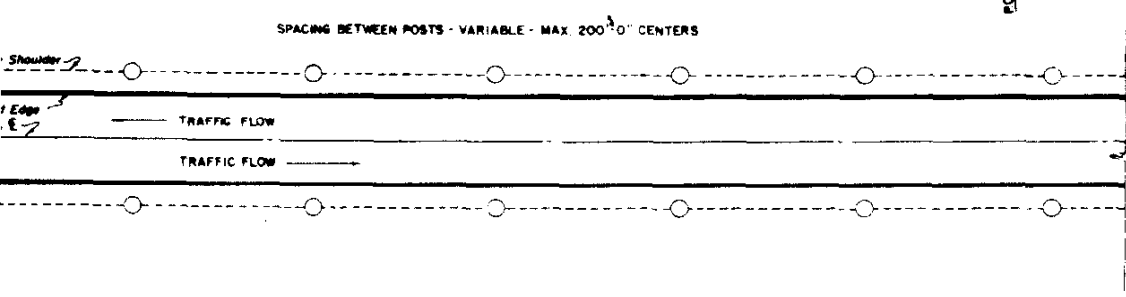
**REFLECTIVE SHEETING** - In accordance with the details hereon, State Forces will furnish and place the required 2" x 6" smooth surfaced reflective delineators fabricated from 3s - H14 aluminum alloy, minimum thickness 0.025", reflectorized with reflective sheeting strips or other approved reflective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

## Typical Installation on Curves

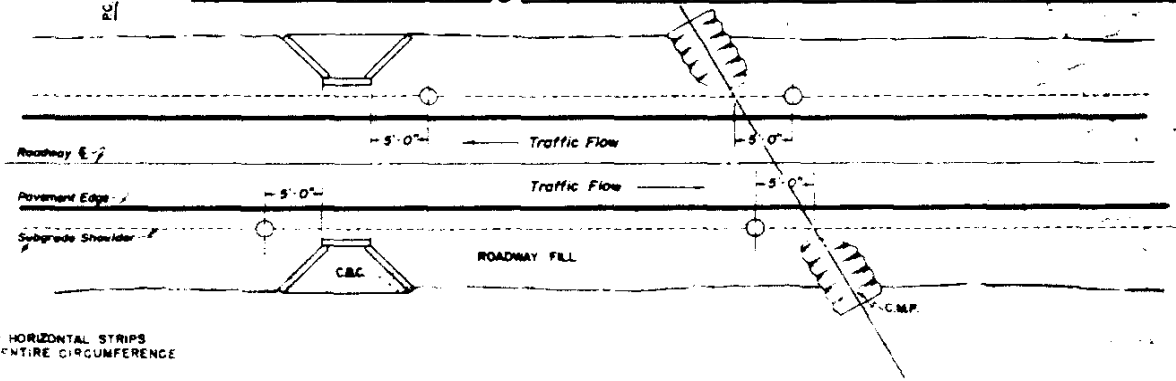
Placement of guard posts on curves shall be in accordance with details shown below. Spacing shall be in accordance with Section 157, Table 1 of Manual on Uniform Traffic Control Devices for Streets and Highways, 1948 by the Public Roads Administration.



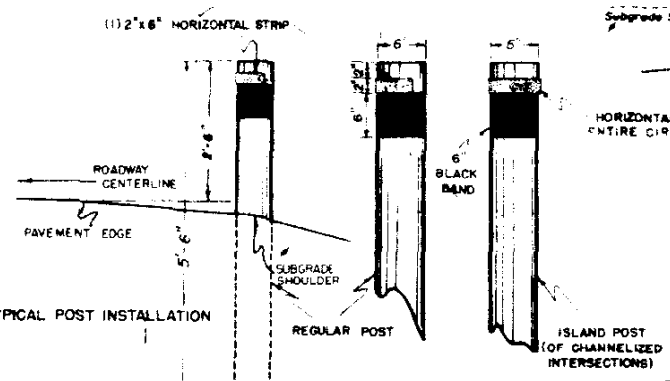
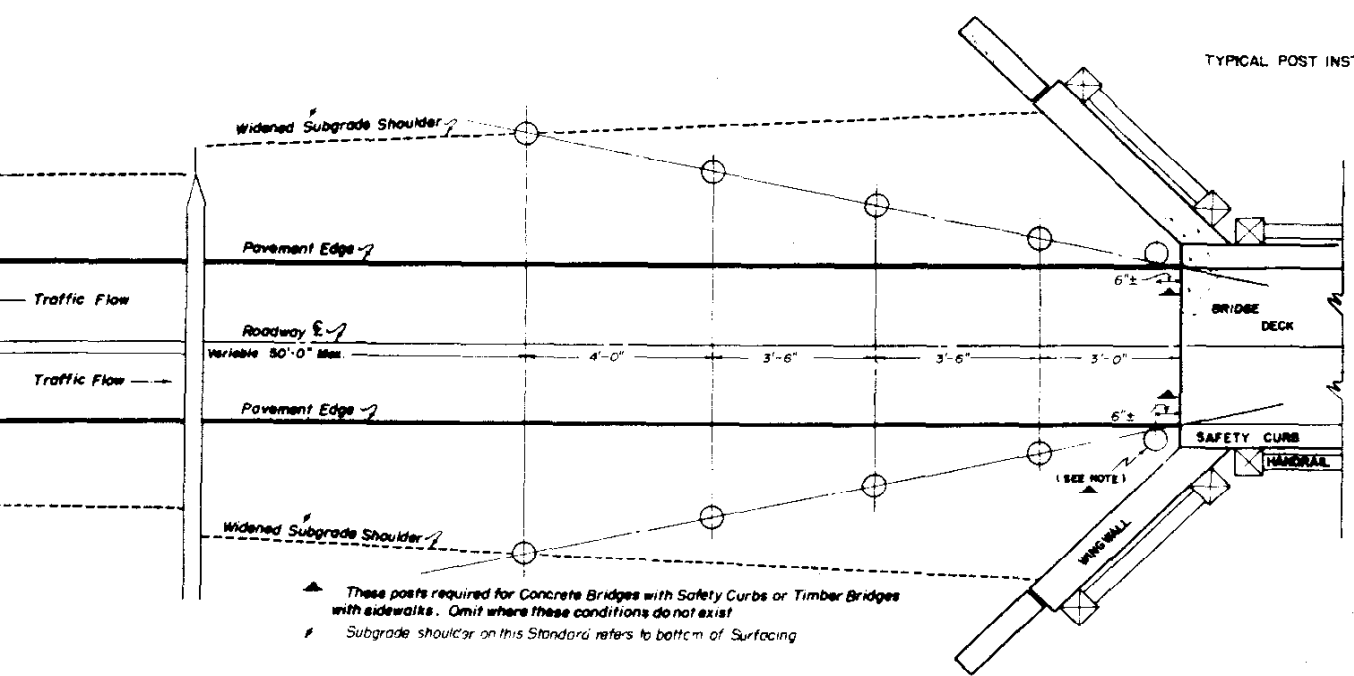
## Method of Placement on Tangents



## 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.**

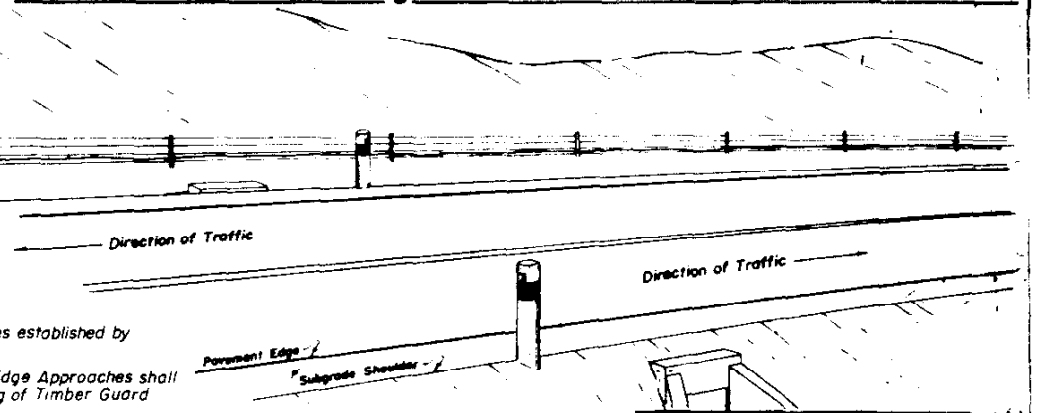
(Work By State Forces)  
 Reflective delineators shall be furnished and installed by State Forces after the Contractor has finished his operations.

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



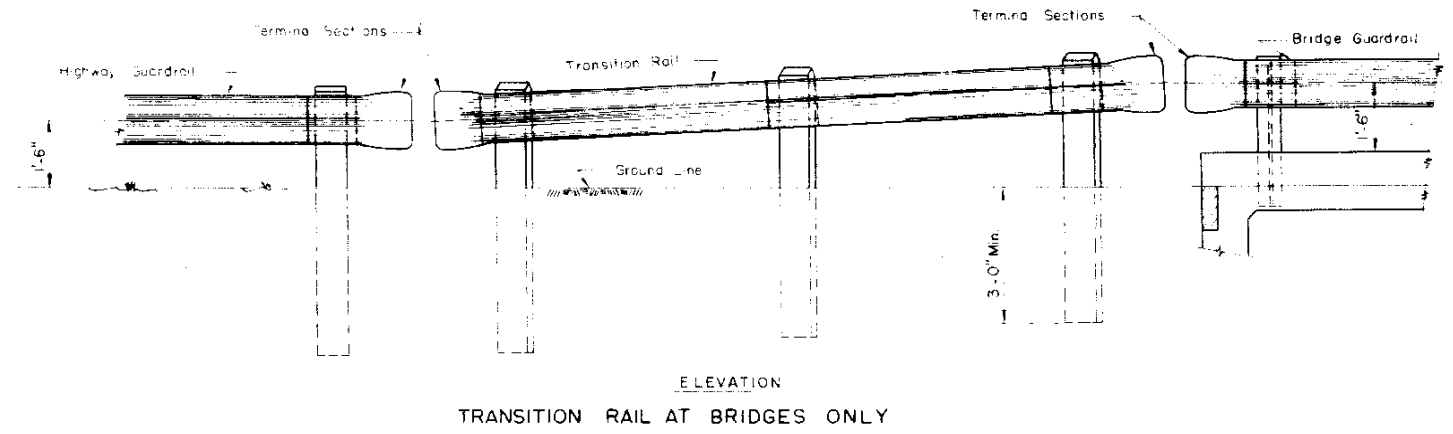
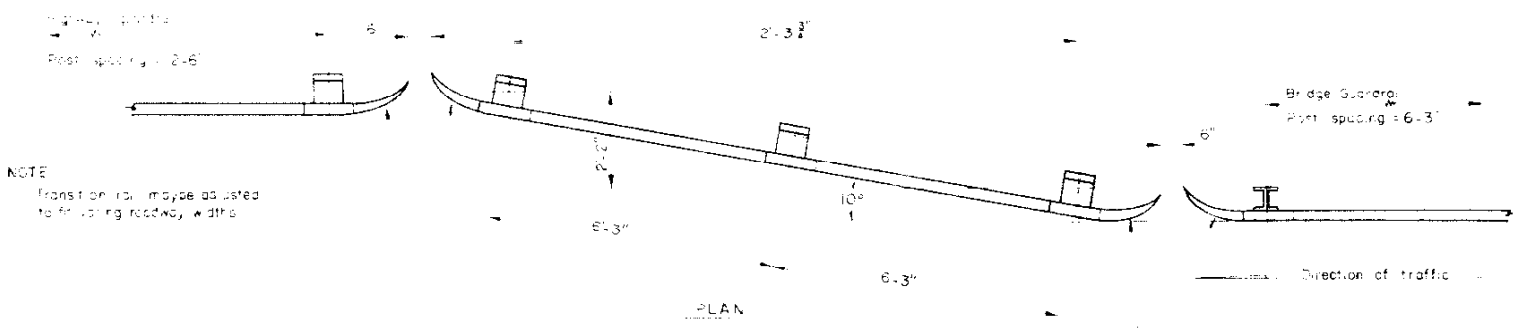
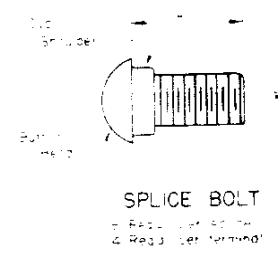
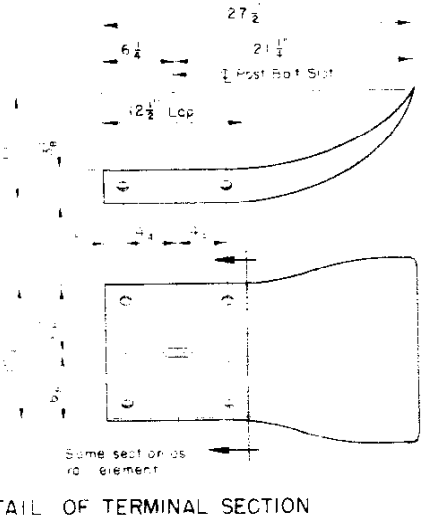
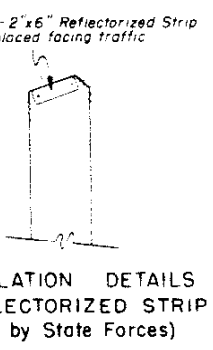
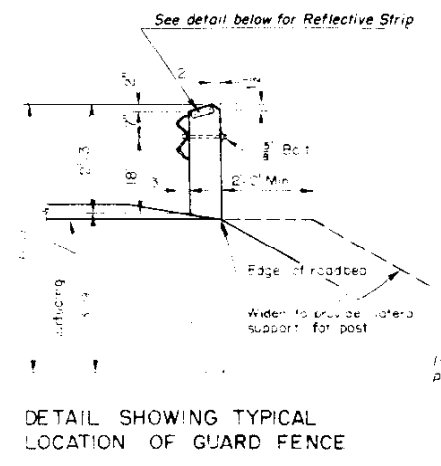
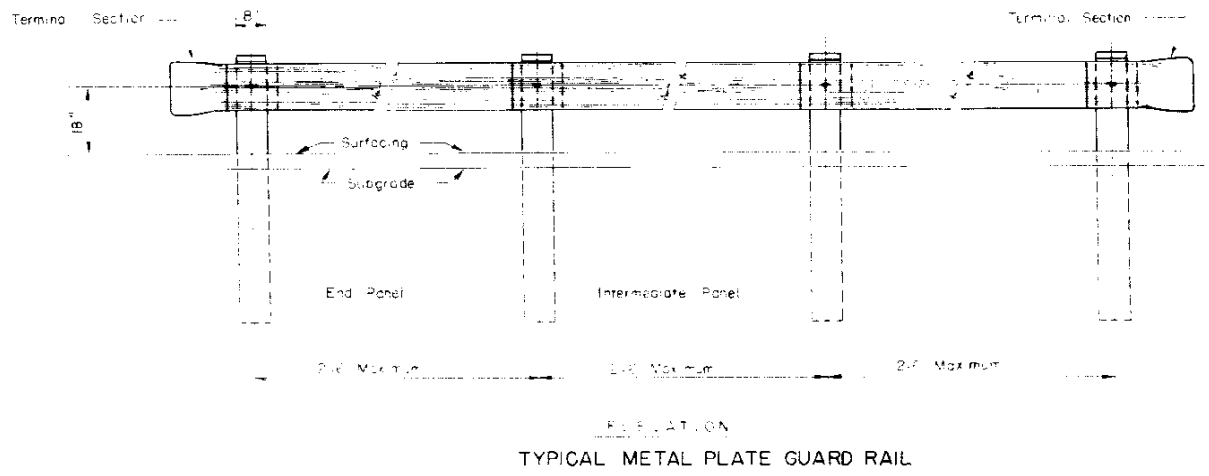
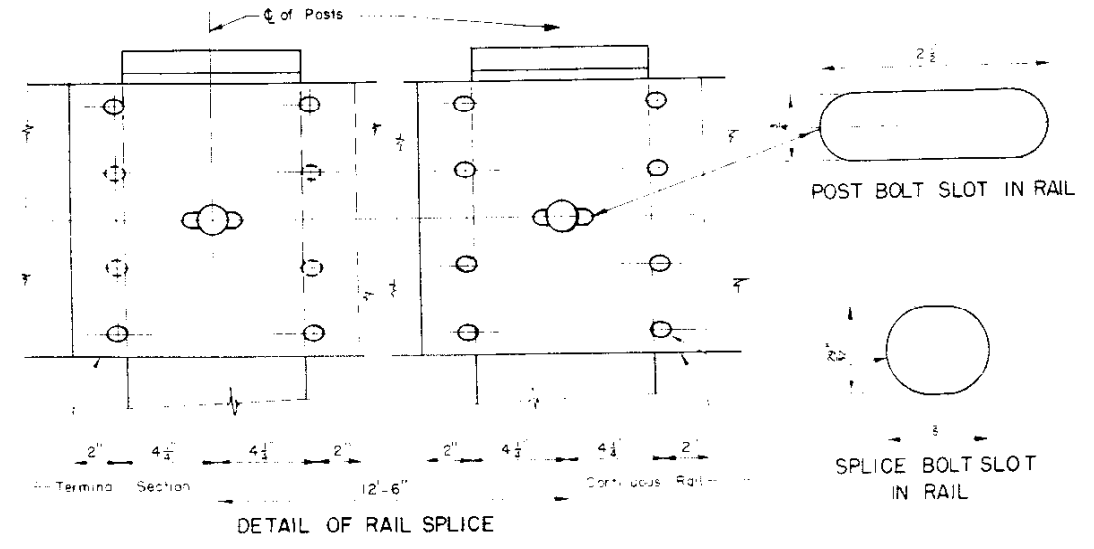
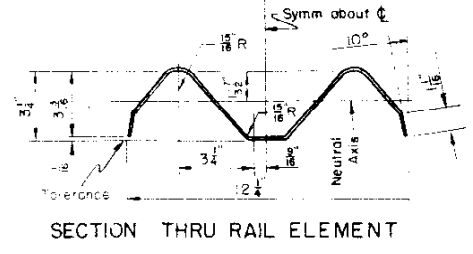
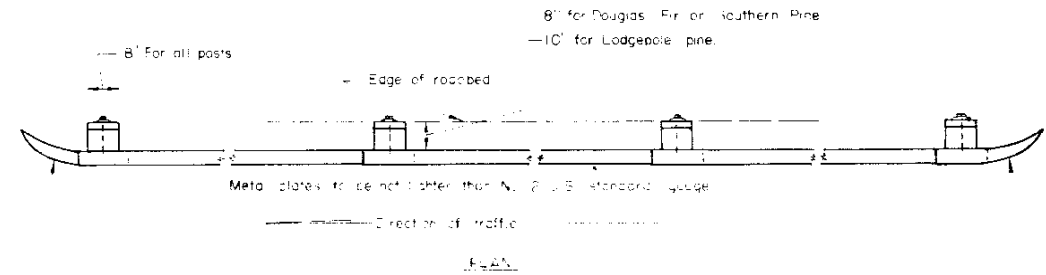
**COLORADO DEPARTMENT OF HIGHWAYS**

**STANDARD TIMBER GUARD POSTS**

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

STANDARD M-21-C

6092-26 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 scale nut 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

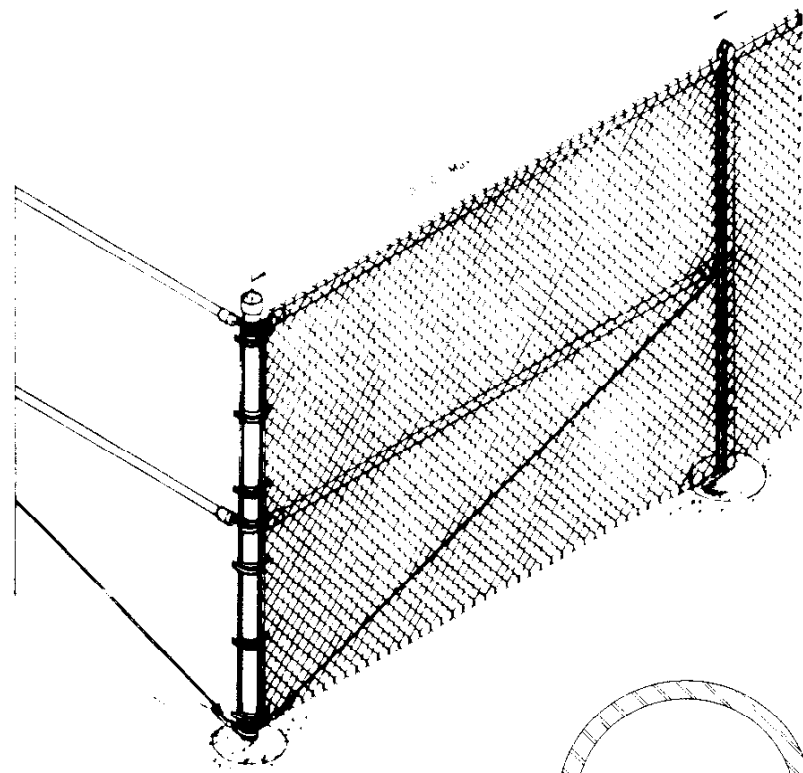
TYPICAL BRACE PANEL

TYPICAL LINE POST  
(See alternate below)

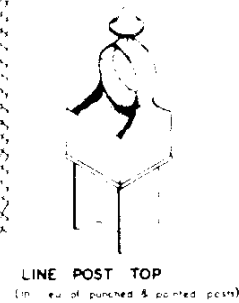
TYPICAL END POST

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.

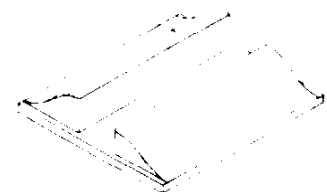
ITEM NO.	SPECIFICATION NUMBERS	UNIT
78a	Chain Link Wire Mesh Fence	Lin. Ft.
78b	Double Driveway Gates	Each



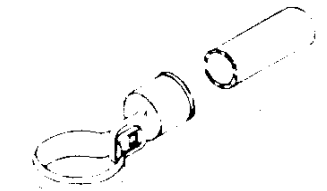
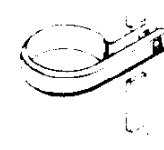
TYPICAL CORNER SECTION WITH POST & BRACES



LINE POST TOP  
(12" dia. of punched & pointed posts)



CENTER REST



BRACE BAND & RAIL END

TENSION BAND

**GENERAL NOTES**

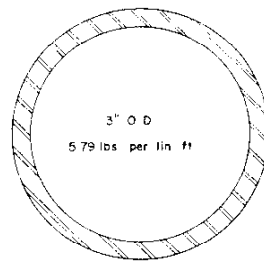
All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department applicable to the project.

Weights of Pipe as shown are the maximum allowed for the nominal diameters designated.

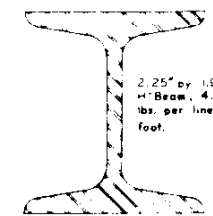
Alternate Equivalent Standard Fittings, Gates, Posts, and Rails of other than sections shown will be acceptable subject to the Engineer's approval.

See plan sheets for location and number of gates and length of fence required.

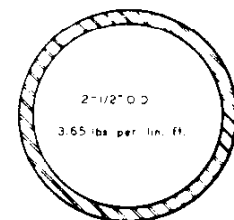
Wire Mesh Fabric shall be securely fastened to all Line Posts, Rails and Braces with No. 7 (B&S) Gauge Aluminum and/or No. 12 1/2 (W&M) Gauge Galvanized Steel Wire and spaced at a minimum of 6 per 10 feet horizontally & 1 per foot vertically. Sulfate Attachment Bands shall be used on all Gate Posts, End Posts, Braces and Stretcher Bars.



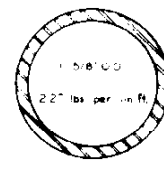
TERMINAL POSTS



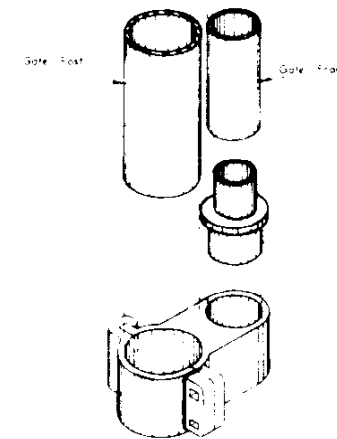
H-BEAM LINE POST



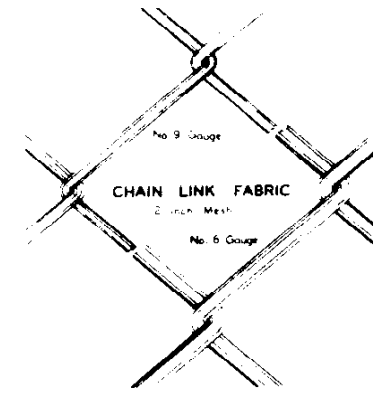
ALTERNATE LINE POST



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.

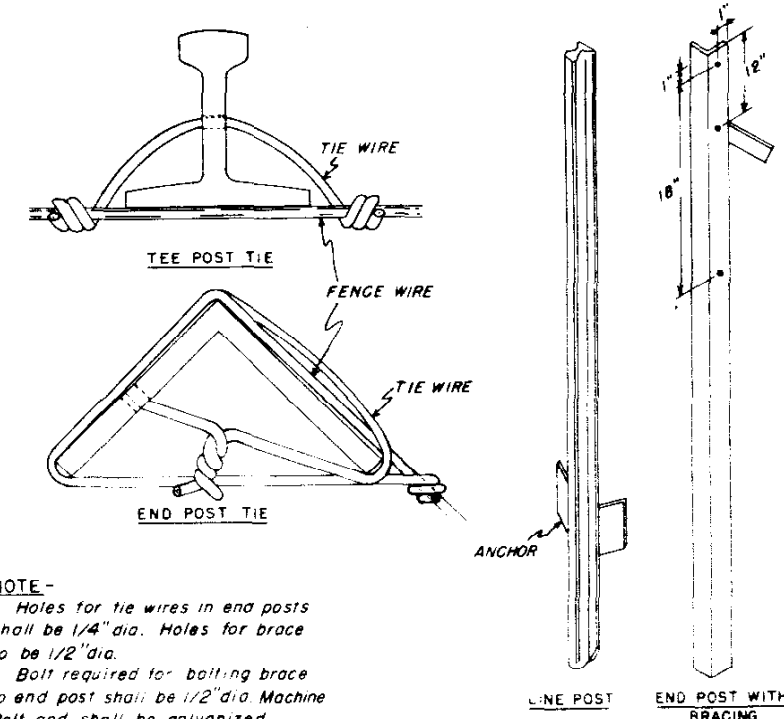
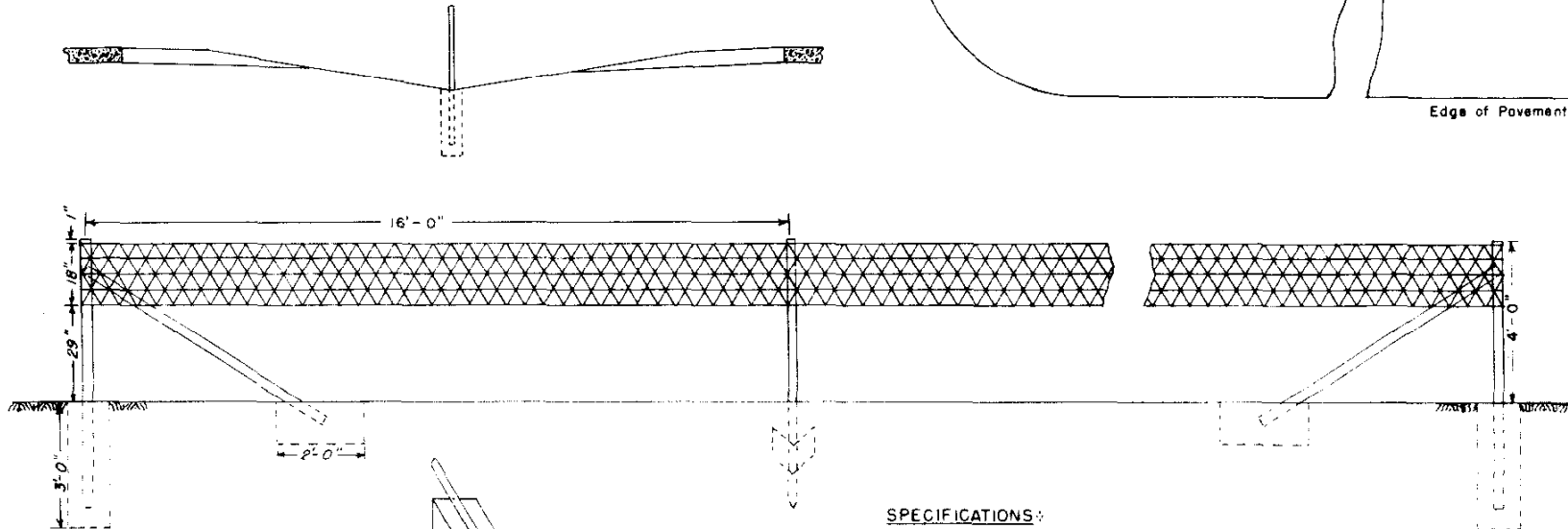
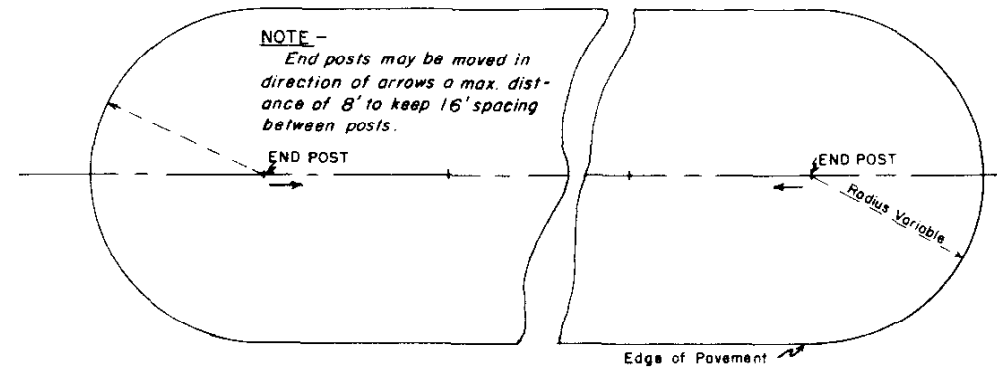
**COLORADO DEPARTMENT OF HIGHWAYS**

**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

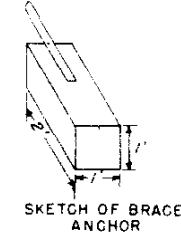


FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	1092-2(5)	86	



NOTE -  
 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.

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.

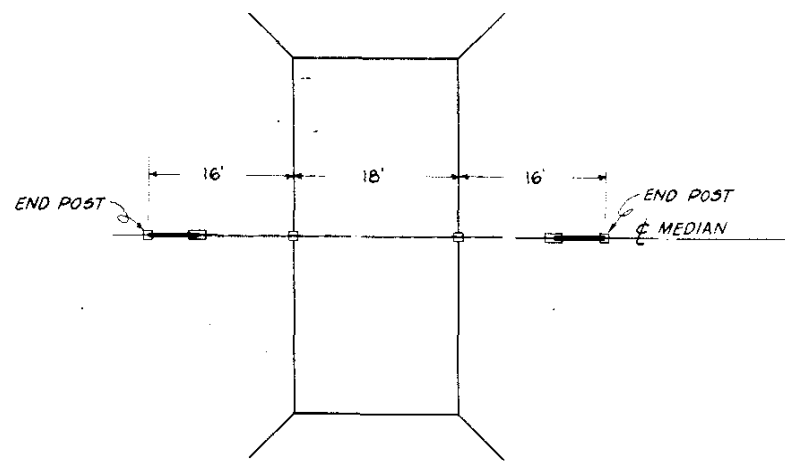


- SPECIFICATIONS:**
- END POSTS -**  
 TYPE - 2-1/2" x 2-1/2" x 1/4" Structural Steel Angles  
 WGT. - 4.1 lbs. per lin. ft.  
 LENGTH - 6'-6" Min.  
 NO. OF BRACES - 1
  - LINE POSTS -**  
 TYPE - Structural Steel "Tees"  
 WGT. - 1.4 lbs. per lin. ft., Min.  
 LENGTH - 6'-6" Min.  
 ANCHOR - Securely 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.

**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



- 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.

**COLORADO  
 DEPARTMENT OF HIGHWAYS**

**Standard Barrier  
 Fence**

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

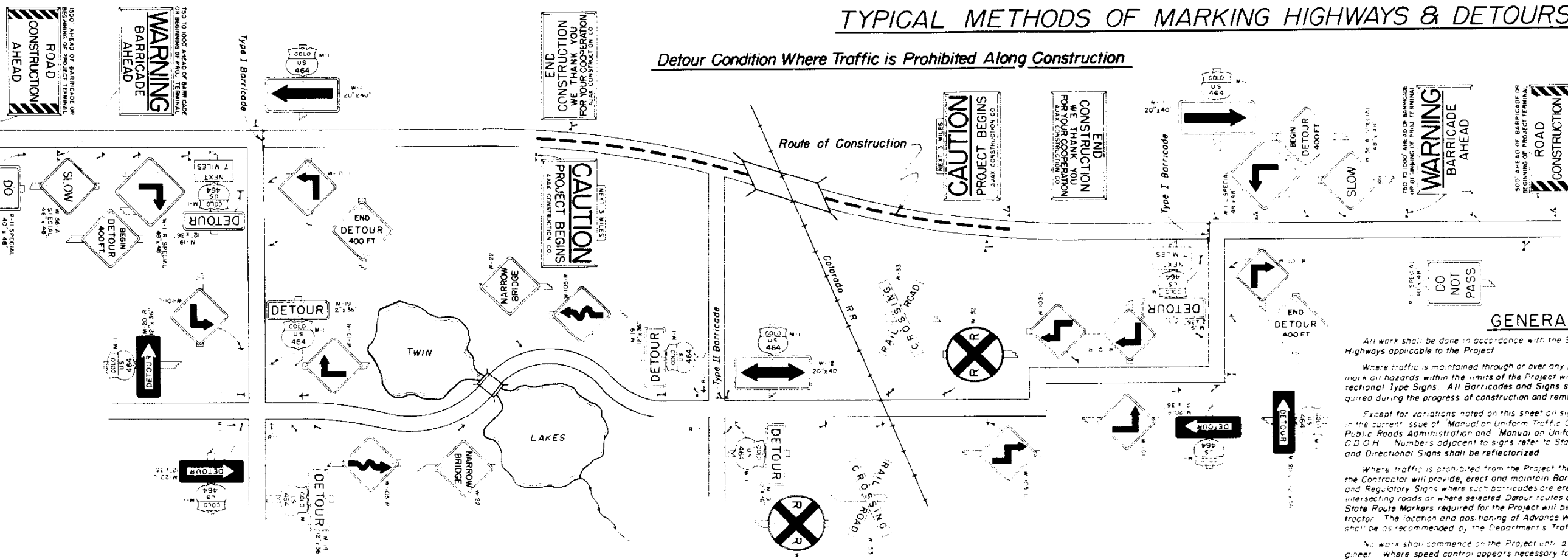
# STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

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

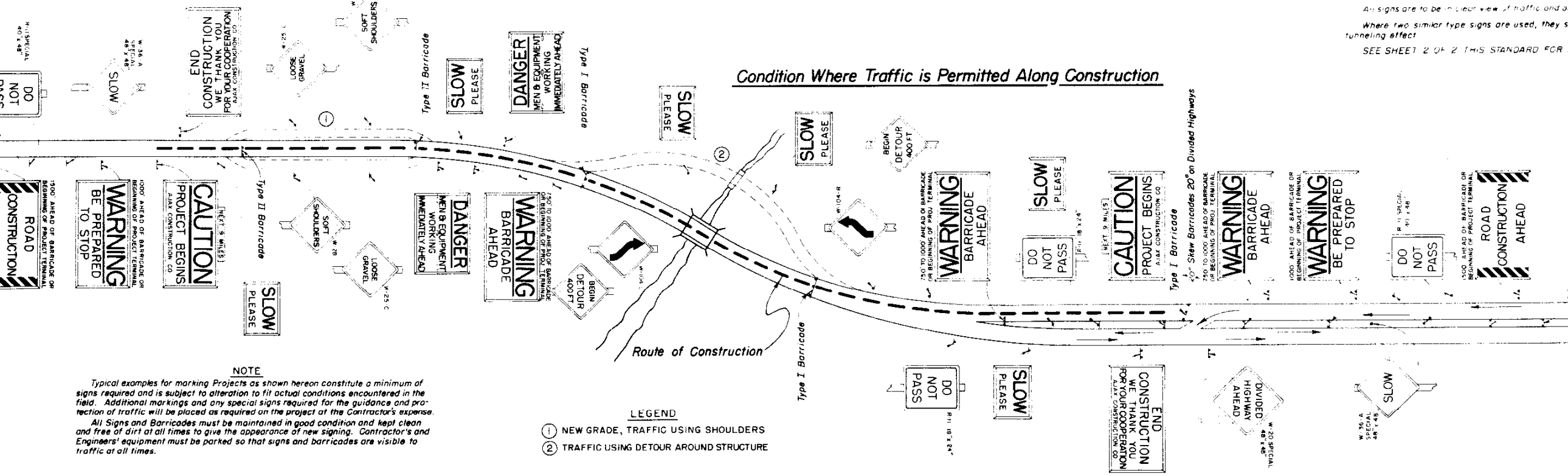
FED. ROAD DISTRICT SHEET NO. TOTAL NO. COLO. 1072-26 87

## 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

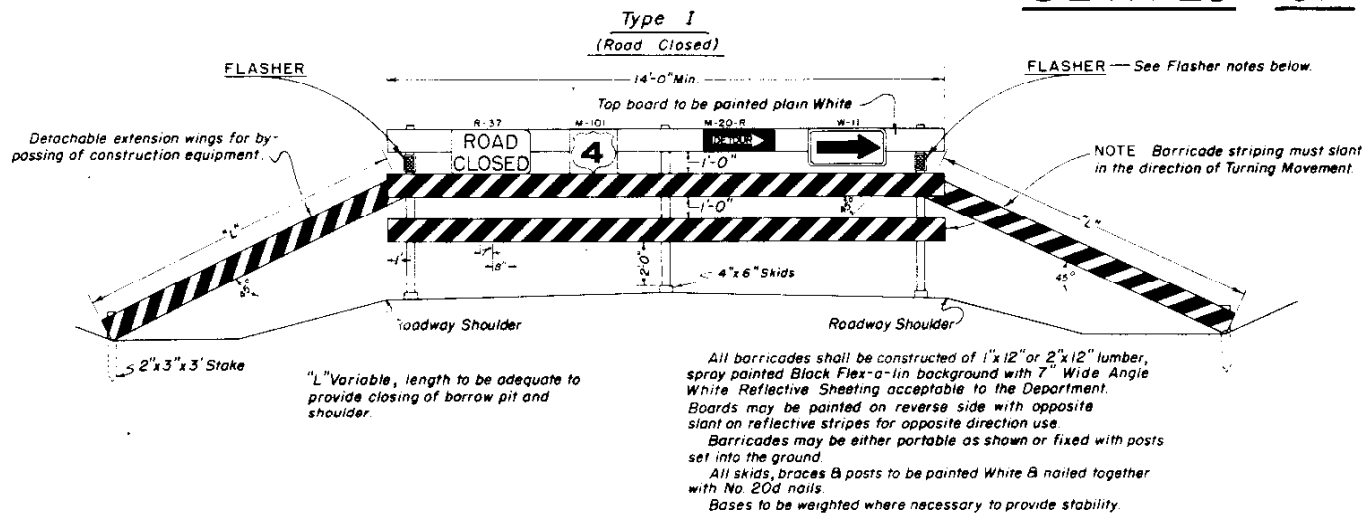
Designed by JCR    Approved by *A. J. Johnson*  
Made by JCR        Engineer, Surveys & Plans  
Checked by \_\_\_\_\_    Date: July 22, 1955

# STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

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

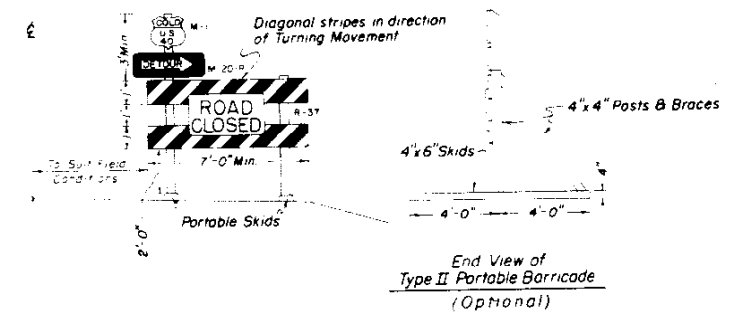
FED. ROAD DIV. NO. DISTRICT NO. SHEET NO. TOTAL SHEETS  
8 88  
COLO. 092-26  
Rev 7-10-56, Reflective Materials, L.N.P.

## DETAILS OF BARRICADES



**NOTE**  
The various types & combinations of approved signs for barricades required for each project will be governed by field conditions and subject to approval by the Engineer.

## Type II (Bag of Detour, By-Pass Areas within Proj, Extreme Hazards, etc.)

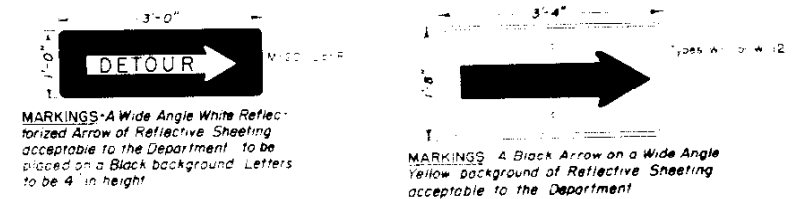


NOTE: Alternate materials or other reflecting elements on Construction Traffic Signs and Barricades will be permitted only after approval of such material by the Department.

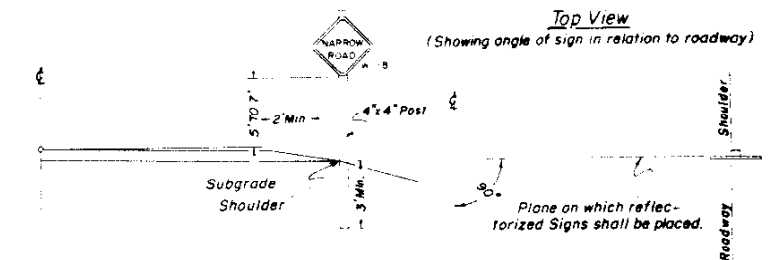
## DETAILS OF CONSTRUCTION SIGNS



## Details of Reflectorized Arrows



## Position of Signs Relative to Roadbed & Hazards



**NOTE:**  
Warning Signs to be made of 3/8" (Min) plywood or No. 16 Gauge (Min.) metal and shall be reflectorized. Location to be governed by field conditions. Exact location to be staked by the Engineer. In all cases warning signs are to be placed well in advance of hazard, the distance depending on topography, and existing approach speeds.

**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

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:

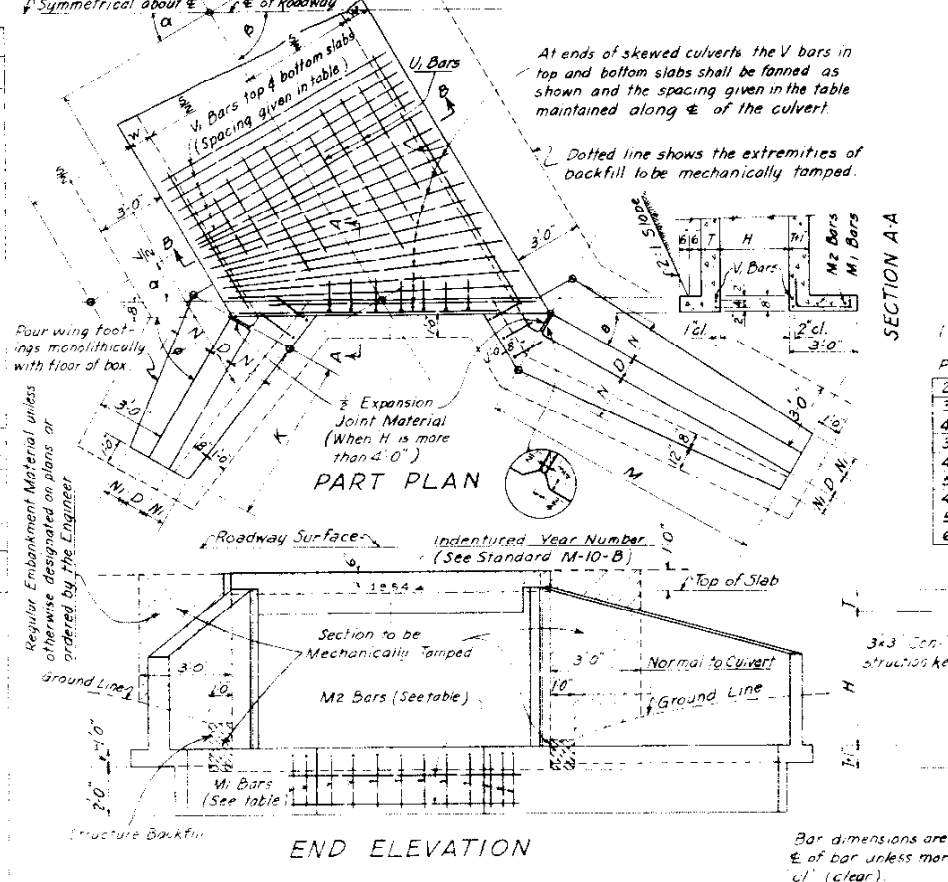
1. "ROAD CONSTRUCTION AHEAD" Minimum 4
2. "WARNING BE PREPARED TO STOP" Minimum 2
3. "WARNING BARRICADE AHEAD" As Required
4. Standard Warning & Directional Signs As Required

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

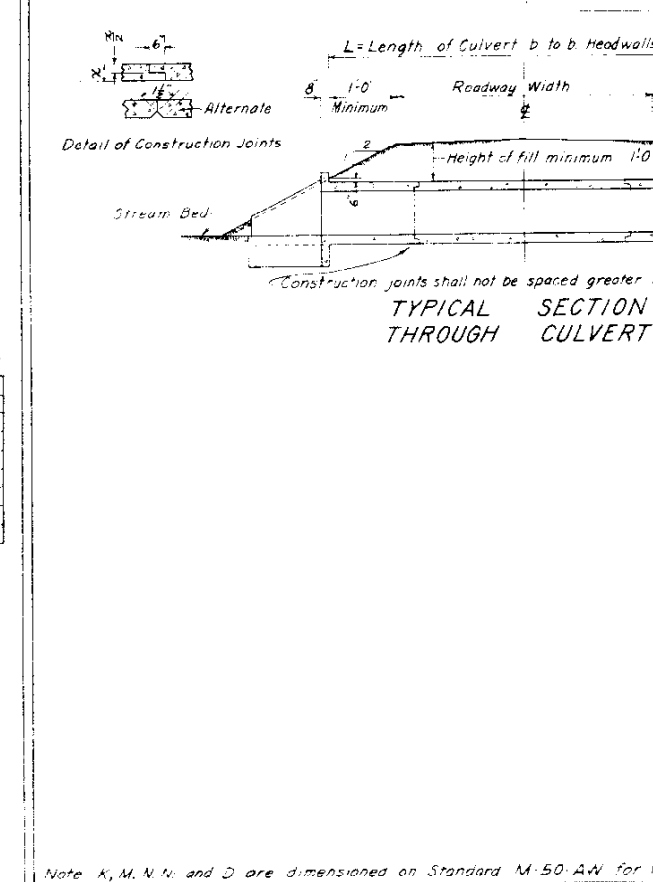
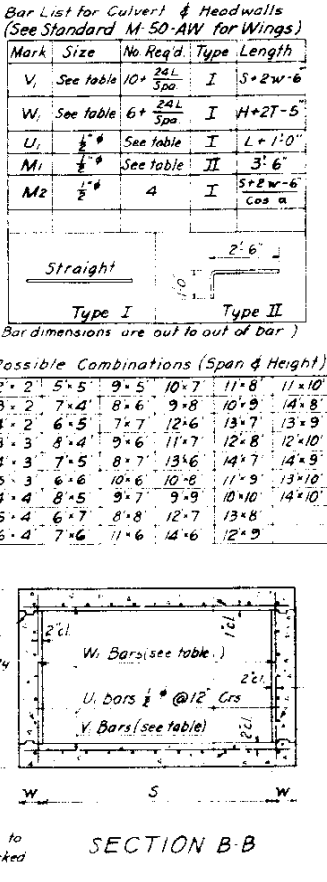
Dimensions & Quantities (see Standard M-50-AW for Wings)

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 <sub>1</sub>	V <sub>2</sub>		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"	12	0.299	26.3	1.50	119
20'-0"	4A	4'-0"	3'-0"	7 1/2"	8"	3/4"	12"	12	0.262	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	0.446	37.9	2.10	158
14'-0"	6A	6'-0"	6'-0"	8 1/2"	8"	3/4"	12"	20	0.530	45.3	2.20	157
20'-0"	6B	6'-0"	6'-0"	10"	8"	3/4"	12"	24	0.579	52.0	2.60	161
12'-0"	7A	7'-0"	7'-0"	9"	9"	3/4"	12"	24	0.500	45.5	2.20	157
15'-0"	7B	7'-0"	10'-0"	9"	9"	3/4"	12"	24	0.549	48.8	2.40	157
20'-0"	7C	7'-0"	11'-0"	9"	9"	3/4"	12"	24	0.605	54.7	2.65	180
10'-0"	8A	8'-0"	8'-0"	9 1/2"	10"	3/4"	12"	28	0.704	61.4	3.00	188
16'-0"	8B	8'-0"	11'-0"	10"	10"	3/4"	12"	32	0.753	64.9	3.30	192
20'-0"	8C	8'-0"	12'-0"	10"	10"	3/4"	12"	32	0.824	72.4	2.70	223
7'-0"	9A	9'-0"	10'-0"	11"	11"	3/4"	12"	32	0.772	61.0	3.05	227
4'-0"	9B	9'-0"	10'-0"	11"	11"	3/4"	12"	32	0.881	79.2	3.70	227
20'-0"	9C	9'-0"	14'-0"	11"	11"	3/4"	12"	32	0.937	85.5	3.25	267
5'-0"	10A	10'-0"	10'-0"	12"	12"	3/4"	12"	36	0.883	90.0	3.45	267
10'-0"	10B	10'-0"	10'-0"	12"	12"	3/4"	12"	36	0.938	94.5	3.75	273
16'-0"	10C	10'-0"	13'-0"	12"	12"	3/4"	12"	36	1.026	105.3	3.70	297
5'-0"	11A	11'-0"	11'-0"	12 1/2"	12 1/2"	3/4"	12"	36	0.881	96.0	3.30	263
9'-0"	11B	11'-0"	12'-0"	12 1/2"	12 1/2"	3/4"	12"	36	0.937	101.0	3.50	263
13'-0"	11C	11'-0"	14'-0"	12 1/2"	12 1/2"	3/4"	12"	36	1.044	112.8	3.55	292
5'-0"	12A	12'-0"	12'-0"	12 3/4"	12 3/4"	3/4"	12"	40	0.824	75.5	3.40	216
10'-0"	12B	12'-0"	14'-0"	12 3/4"	12 3/4"	3/4"	12"	40	0.887	81.0	3.65	227
4'-0"	13A	13'-0"	13'-0"	13 1/2"	13 1/2"	3/4"	12"	44	0.881	81.0	3.65	227
8'-0"	13B	13'-0"	14'-0"	14"	14"	3/4"	12"	44	0.937	85.5	3.25	267
4'-0"	14A	14'-0"	14'-0"	14 1/2"	14 1/2"	3/4"	12"	48	0.881	81.0	3.65	227
8'-0"	14B	14'-0"	15'-0"	14 1/2"	14 1/2"	3/4"	12"	48	0.937	85.5	3.25	267

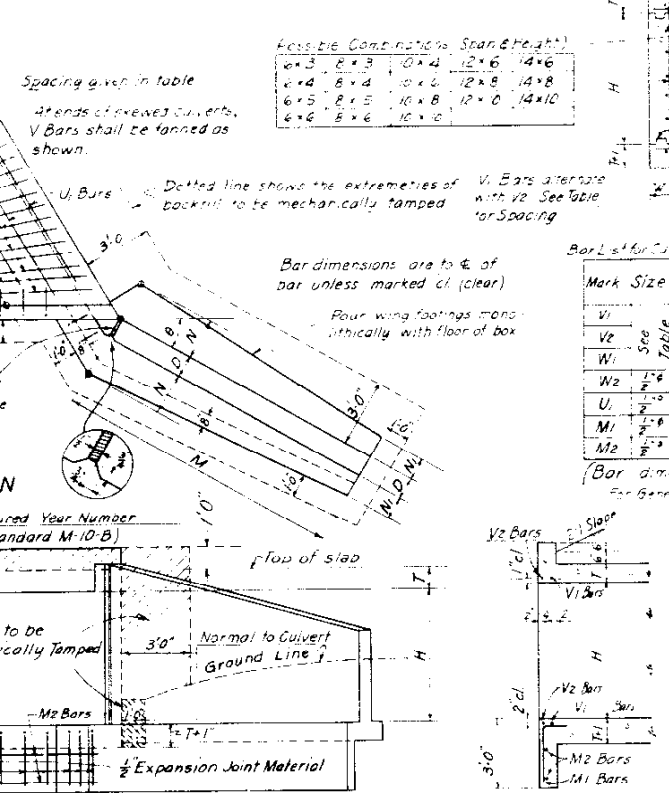


Dimensions & Quantities (see Standard M-50-AW for Wings)

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 <sub>1</sub>	V <sub>2</sub>		Concrete Cu Yds	Steel Lbs	Concrete Cu Yds	Steel Lbs
10'-0"	6-6-A	6'-0"	6'-0"	4'-0"	8"	5/8"	12"	12	0.200	12.3	3.85	32.7
5'-0"	6-6-B	6'-0"	6'-0"	4'-0"	8"	5/8"	12"	12	0.223	17.7	4.60	33.5
20'-0"	6-6-C	6'-0"	6'-0"	4'-0"	8"	5/8"	12"	12	0.247	20.3	4.85	34.9
10'-0"	8-8-A	8'-0"	8'-0"	5'-0"	10"	5/8"	12"	16	0.286	28.8	5.05	35.1
14'-0"	8-8-B	8'-0"	10'-0"	5'-0"	10"	5/8"	12"	16	0.319	32.1	5.30	37.7
20'-0"	8-8-C	8'-0"	12'-0"	5'-0"	10"	5/8"	12"	16	0.352	35.4	5.55	39.3
5'-0"	10-10-A	10'-0"	10'-0"	6'-0"	12"	5/8"	12"	20	0.391	41.2	5.10	35.3
10'-0"	10-10-B	10'-0"	12'-0"	6'-0"	12"	5/8"	12"	20	0.424	44.5	5.35	36.9
15'-0"	10-10-C	10'-0"	14'-0"	6'-0"	12"	5/8"	12"	20	0.457	47.8	5.60	38.5
5'-0"	12-12-A	12'-0"	12'-0"	8'-0"	12"	5/8"	12"	24	0.432	42.5	4.95	34.7
10'-0"	12-12-B	12'-0"	14'-0"	8'-0"	12"	5/8"	12"	24	0.465	45.8	5.20	36.3
15'-0"	12-12-C	12'-0"	16'-0"	8'-0"	12"	5/8"	12"	24	0.498	49.1	5.45	37.9
5'-0"	14-14-A	14'-0"	14'-0"	10'-0"	15"	5/8"	12"	28	0.473	46.5	5.10	35.3
10'-0"	14-14-B	14'-0"	16'-0"	10'-0"	15"	5/8"	12"	28	0.506	49.8	5.35	36.9

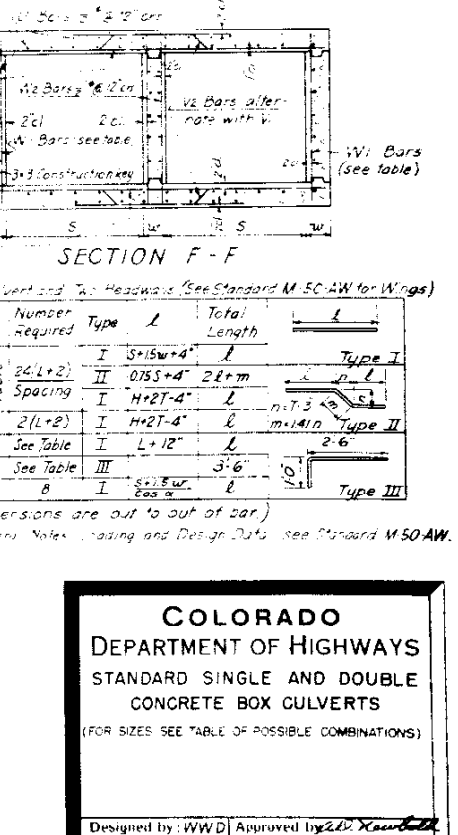


DOUBLE CONCRETE BOX CULVERT



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 <sub>1</sub>	V <sub>2</sub>		Concrete Cu Yds	Steel Lbs	Concrete Cu Yds	Steel Lbs
10'-0"	6-6-A	6'-0"	6'-0"	4'-0"	8"	5/8"	12"	12	0.200	12.3	3.85	32.7
5'-0"	6-6-B	6'-0"	6'-0"	4'-0"	8"	5/8"	12"	12	0.223	17.7	4.60	33.5
20'-0"	6-6-C	6'-0"	6'-0"	4'-0"	8"	5/8"	12"	12	0.247	20.3	4.85	34.9
10'-0"	8-8-A	8'-0"	8'-0"	5'-0"	10"	5/8"	12"	16	0.286	28.8	5.05	35.1
14'-0"	8-8-B	8'-0"	10'-0"	5'-0"	10"	5/8"	12"	16	0.319	32.1	5.30	37.7
20'-0"	8-8-C	8'-0"	12'-0"	5'-0"	10"	5/8"	12"	16	0.352	35.4	5.55	39.3
5'-0"	10-10-A	10'-0"	10'-0"	6'-0"	12"	5/8"	12"	20	0.391	41.2	5.10	35.3
10'-0"	10-10-B	10'-0"	12'-0"	6'-0"	12"	5/8"	12"	20	0.424	44.5	5.35	36.9
15'-0"	10-10-C	10'-0"	14'-0"	6'-0"	12"	5/8"	12"	20	0.457	47.8	5.60	38.5
5'-0"	12-12-A	12'-0"	12'-0"	8'-0"	12"	5/8"	12"	24	0.432	42.5	4.95	34.7
10'-0"	12-12-B	12'-0"	14'-0"	8'-0"	12"	5/8"	12"	24	0.465	45.8	5.20	36.3
15'-0"	12-12-C	12'-0"	16'-0"	8'-0"	12"	5/8"	12"	24	0.498	49.1	5.45	37.9
5'-0"	14-14-A	14'-0"	14'-0"	10'-0"	15"	5/8"	12"	28	0.473	46.5	5.10	35.3
10'-0"	14-14-B	14'-0"	16'-0"	10'-0"	15"	5/8"	12"	28	0.506	49.8	5.35	36.9



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).  
 Note: This design not to be used when height of fill exceeds the allowed amount tabulated.

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).  
 Note: This design not to be used when height of fill exceeds the allowed amount tabulated.

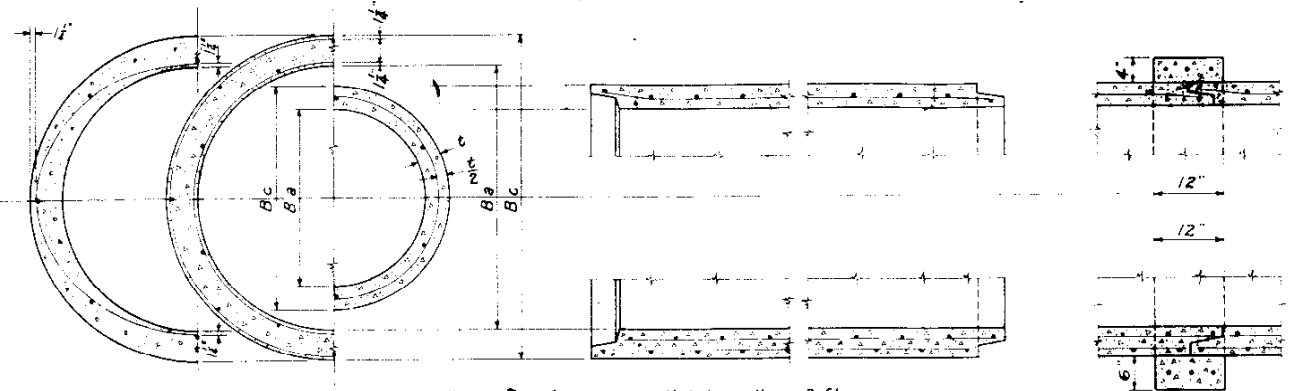
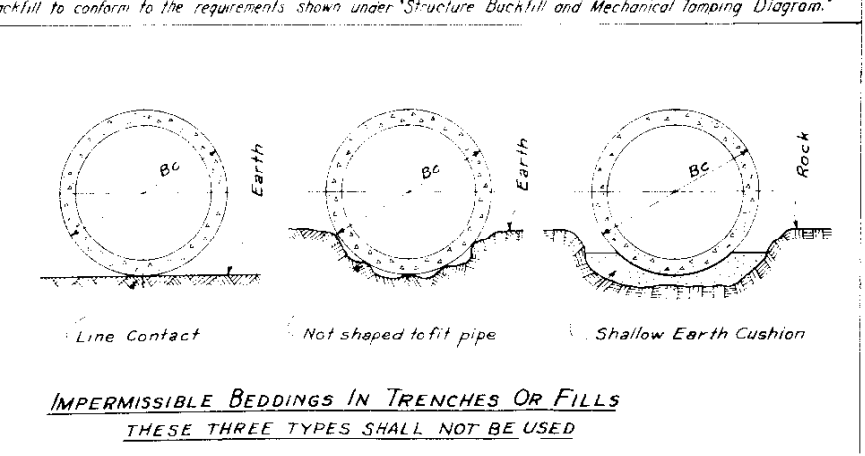
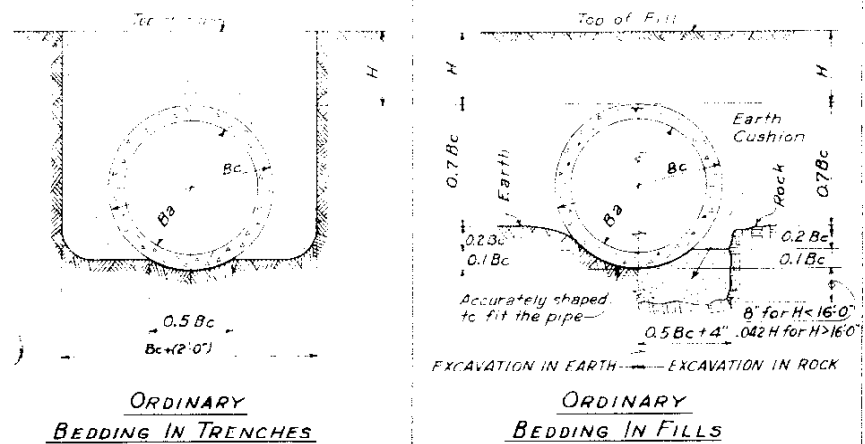
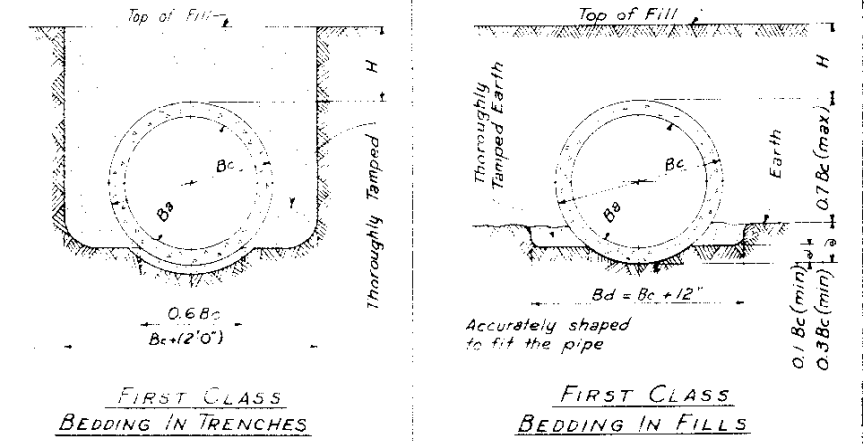
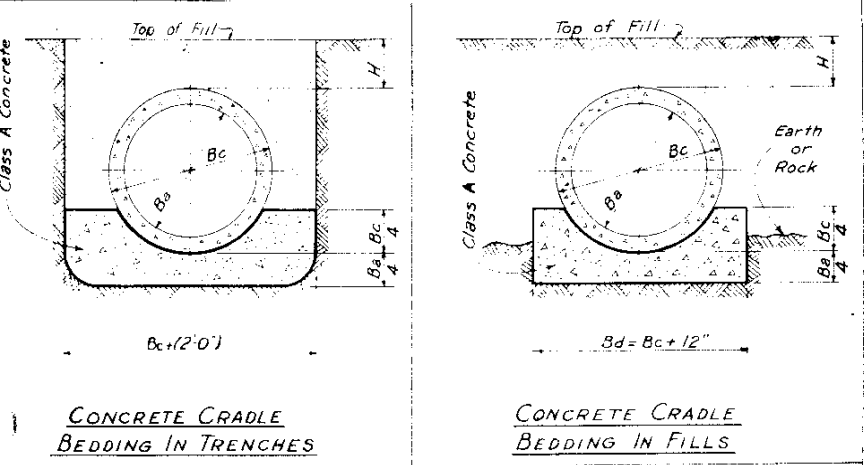
Quantities for one culvert shall be (quantity for one lin. ft. of box times L) plus (quantity for two head walls) plus (quantities for four wings).  
 Note: This design not to be used when height of fill exceeds the allowed amount tabulated.



# 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

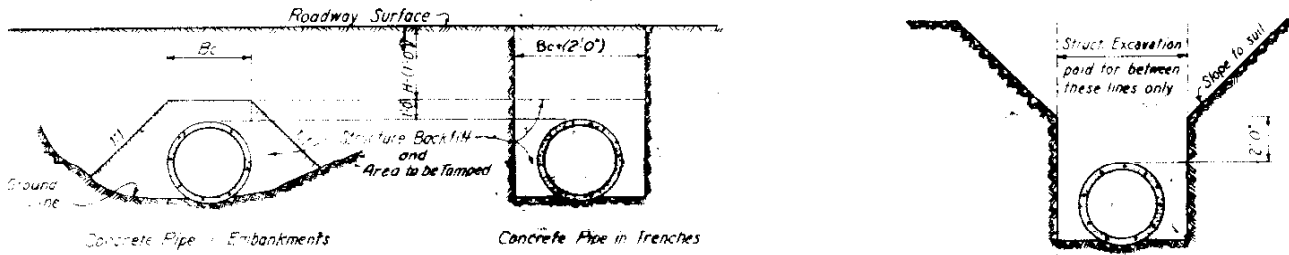


Sections with elliptical reinforcement or two lines of circular reinforcement. Section with one line of circular reinforcement. Not less than 3 ft or more than 8 ft in length.

**PIPE CROSS SECTIONS**  
 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.

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

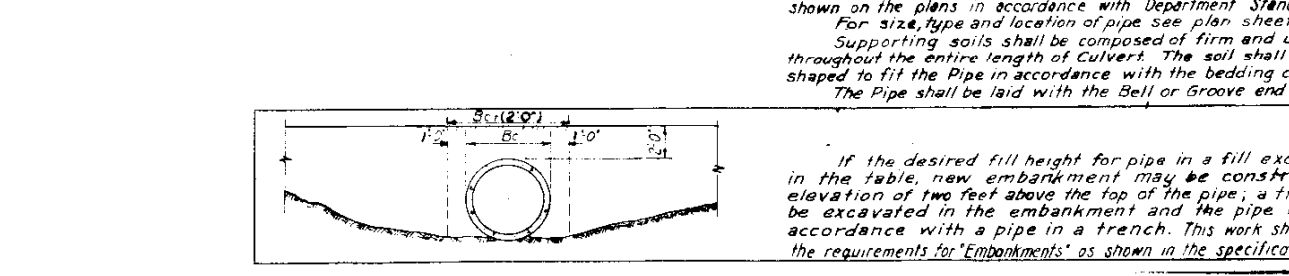
**CONCRETE COLLAR**  
 Where the flow line grade of the pipe is 10% or greater, all pipe shall be the bell and spigot type or shall be tongue and groove pipe with concrete collars as detailed above or a type approved in writing by the Engineer.



**STRUCTURE BACKFILL AND MECHANICAL TAMPING DIAGRAM**  
 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 (2Ba+Bc) 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 recompacted at optimum moisture and to at least 90% relative density.



Inft	Exft	Crack Diameter (Inches)	Three Edge Bearing Point (Pounds)	Ultimate Load (Pounds)	Max depth of fill "H" in ft. for 3 types of bedding										
					Concrete Cradle	First Class	Ordinary	Concrete Cradle	First Class	Ordinary					
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														
24	30	4000	6000		29	No Limit	18	No Limit	15						
30	37	5000	7500		30	No Limit	19	No Limit	16						
36	44	6000	9000		30	No Limit	20	No Limit	17						
42	51	7000	10500		31	No Limit	20	No Limit	17						
48	58	8000	12000		31	No Limit	20	No Limit	17						
54	65	9000	13500		32	No Limit	20	No Limit	17						
60	72	9000	15000		29	No Limit	19	No Limit	16						
66	79	9500	16500		28	No Limit	19	No Limit	16						
72	86	9900	18000		28	No Limit	18	No Limit	15						
84	100				26	No Limit	16	No Limit	13						
12	16	500	700		24	No Limit	15	No Limit	13						
15	19	2000	3000		22	No Limit	14	No Limit	12						
18	23	2200	3300		21	No Limit	13	No Limit	11						
21	26	2400	3600		20	No Limit	13	No Limit	11						
24	30	2400	3600		18	No Limit	12	No Limit	10						
27	33	2550	3800		18	No Limit	11	No Limit	10						
30	37	2700	4050		17	No Limit	11	No Limit	9						
33	40	2850	4300		17	No Limit	11	No Limit	9						
36	44	3000	4500		16	No Limit	11	No Limit	9						
42	51	3200	4800		16	No Limit	10	No Limit	8						
48	58	3400	5100		15	No Limit	10	No Limit	8						
54	65	3700	5550		15	No Limit	10	No Limit	8						
60	72	4000	6000		15	No Limit	10	No Limit	8						
66	79	4250	6350		15	No Limit	10	No Limit	8						
72	86	4500	6750		15	No Limit	10	No Limit	8						
4	5	1000			35	No Limit	24	No Limit	20						
6	7	1100			31	No Limit	20	No Limit	17						
8	9	1300			28	No Limit	18	No Limit	15						
10	11	1400			25	No Limit	16	No Limit	13						
12	14	1500			23	No Limit	14	No Limit	12						
15	17	1750			21	No Limit	13	No Limit	11						
18	21	2000			21	No Limit	13	No Limit	11						
21	24	2200			20	No Limit	12	No Limit	11						
24	28	2400			19	No Limit	12	No Limit	10						

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

### 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.

**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

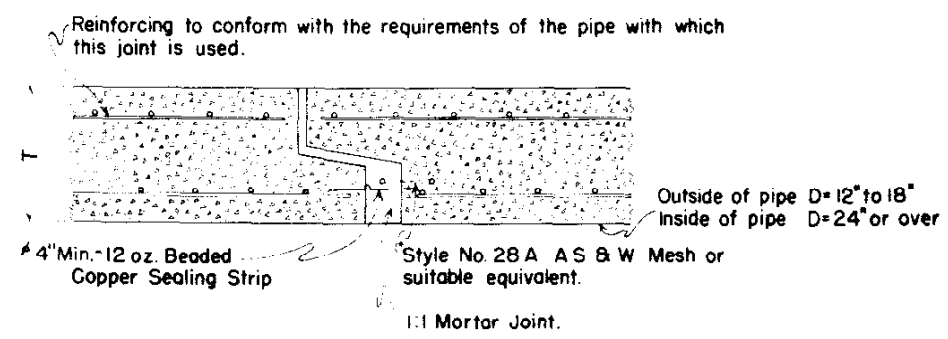
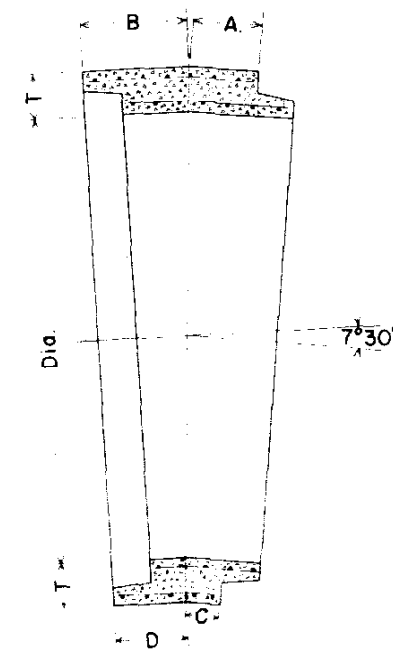
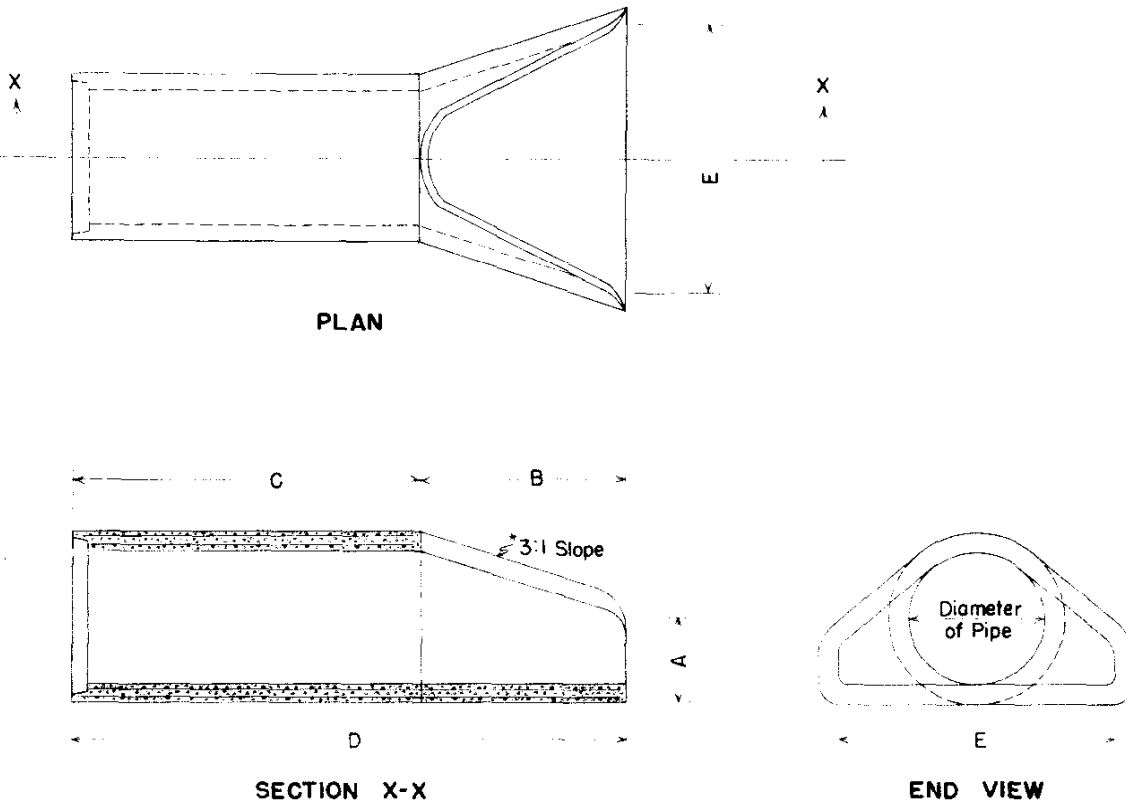
FED. ROAD DIV. NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLO. 1092-2(5)	72	

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

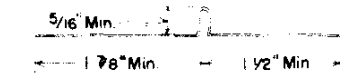
## 7°30' ANGLE SECTION FOR CONCRETE PIPE

## 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" min width, bent as shown and weighing 12 oz per sq ft. Both legs of strip shall be perforated in a satisfactory manner to secure bond. Each sealing strip shall be continuous around each pipe joint with a 1/4" end lap.

### 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 7/8"	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.

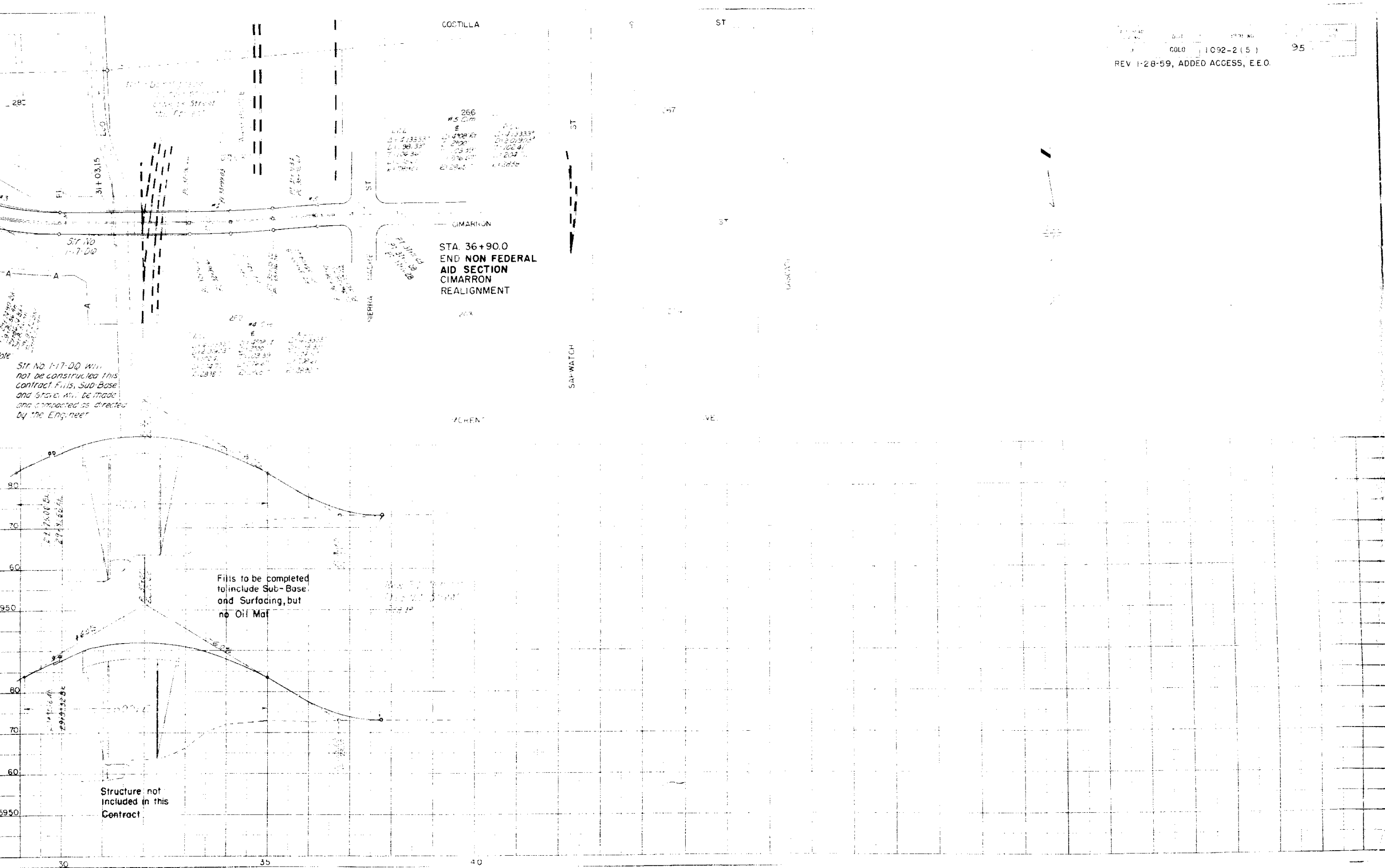
Concrete, wall thickness and reinforcing steel in Flared End Sections and 7°30' Angle Sections must conform with the requirements of the pipe with which they are used.

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



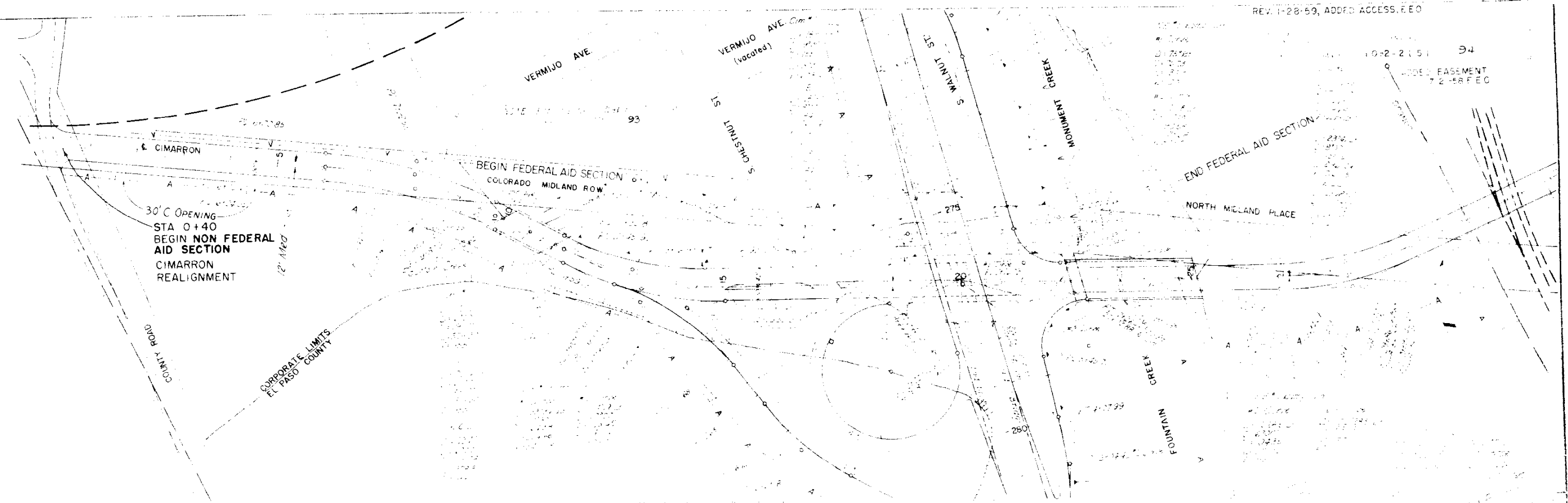
Note  
 Str No 1-17-00 will not be constructed this contract. Fills, Sub-Base and Gravel will be made and compacted as directed by the Engineer.

Fills to be completed to include Sub-Base and Surfacing, but no Oil Mat

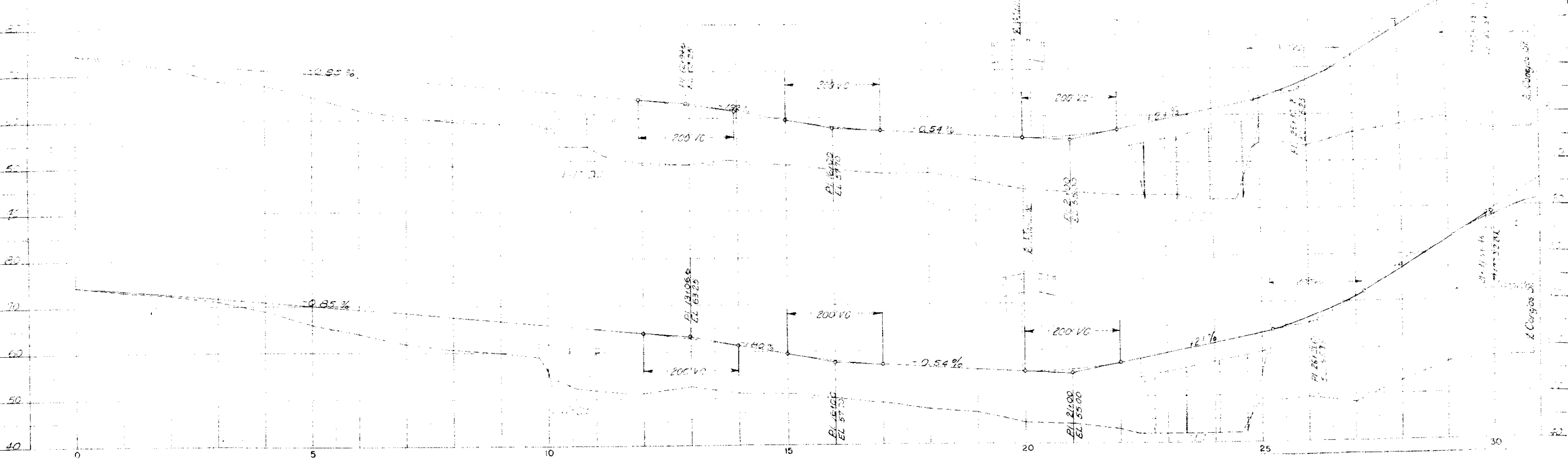
Structure not included in this Contract

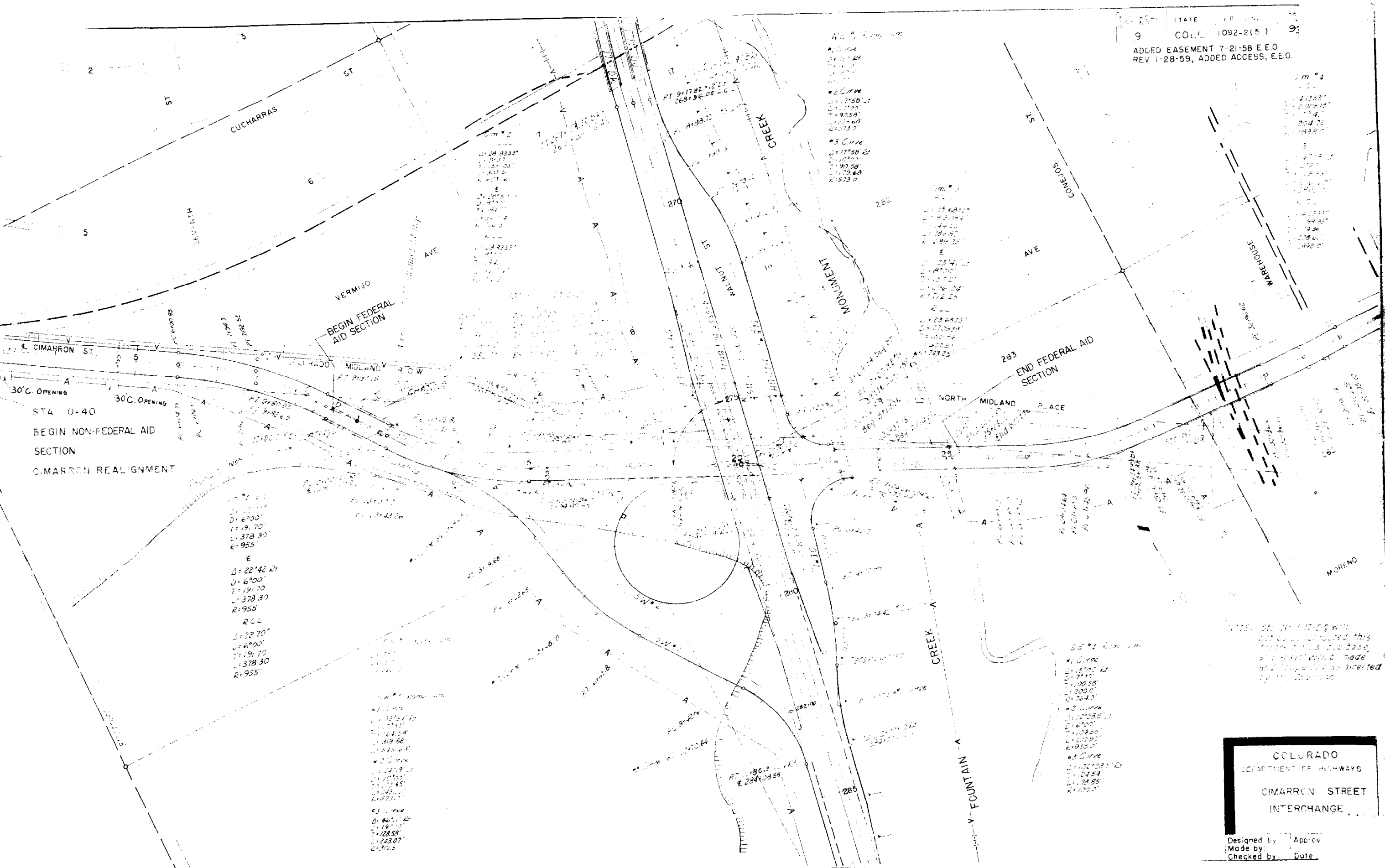


10-2-2151 34  
ADDED EASEMENT  
7-2-58 F.E.C



See Bridge Sheet for Test Holes





$\Delta = 22^\circ 42' 21''$   
 $D = 6900'$   
 $T = 191.70'$   
 $L = 378.30'$   
 $R = 955'$   
 R.C.L.  
 $\Delta = 22^\circ 70'$   
 $D = 6900'$   
 $T = 191.70'$   
 $L = 378.30'$   
 $R = 955'$

#1 Curve  
 $\Delta = 33^\circ 34' 10''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$   
 #2 Curve  
 $\Delta = 20^\circ 19' 12''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$   
 #3 Curve  
 $\Delta = 46^\circ 11' 42''$   
 $D = 19100'$   
 $T = 128.58'$   
 $L = 223.07'$   
 $R = 3075'$

#1 Curve  
 $\Delta = 17^\circ 58' 21''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$   
 #2 Curve  
 $\Delta = 17^\circ 58' 21''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$   
 #3 Curve  
 $\Delta = 17^\circ 58' 21''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$

#1 Curve  
 $\Delta = 17^\circ 58' 21''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$   
 #2 Curve  
 $\Delta = 17^\circ 58' 21''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$   
 #3 Curve  
 $\Delta = 17^\circ 58' 21''$   
 $D = 10200'$   
 $T = 1624.08'$   
 $L = 419.68'$   
 $R = 10200'$

10/15/59 STA 0+17.00 with  
 not be constructed this  
 from file 100-3558,  
 and shall be made  
 and shall be directed  
 by the Engineer

COLORADO  
 DEPARTMENT OF HIGHWAYS  
 CIMARRON STREET  
 INTERCHANGE

Designed by \_\_\_\_\_  
 Made by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Approved \_\_\_\_\_  
 Date \_\_\_\_\_

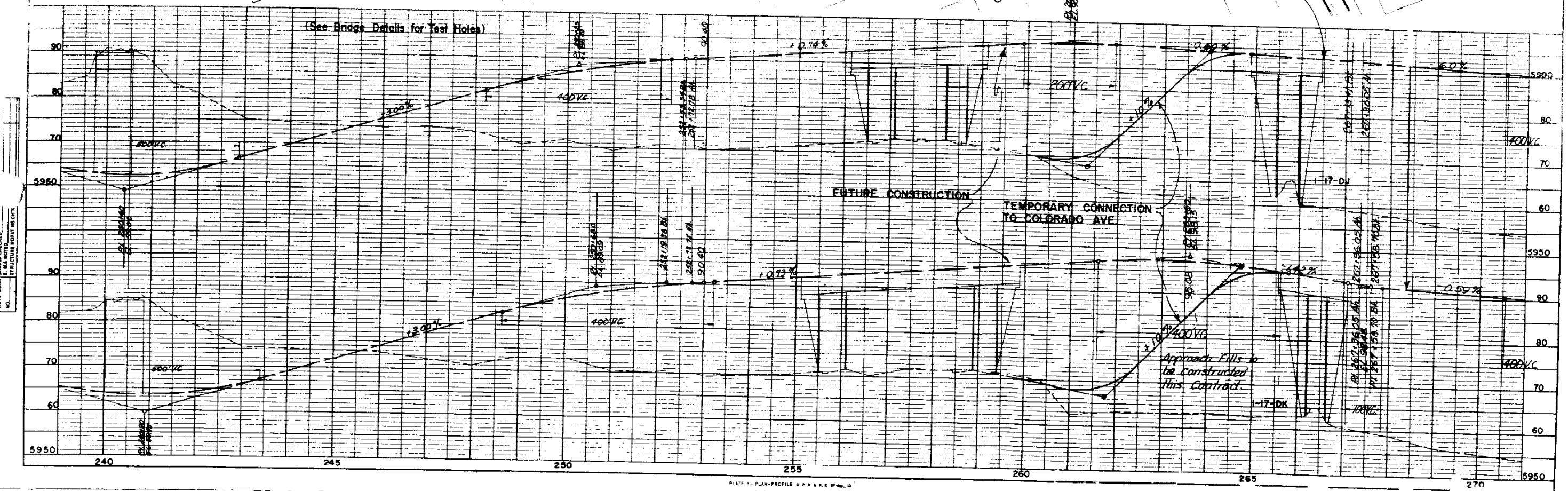
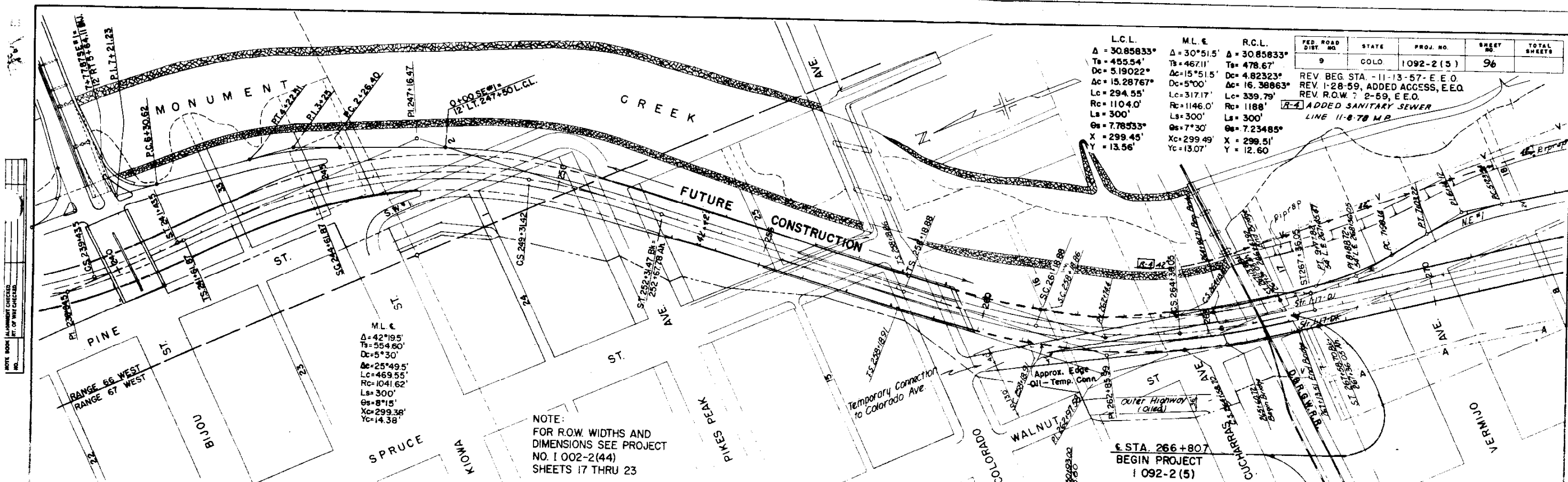
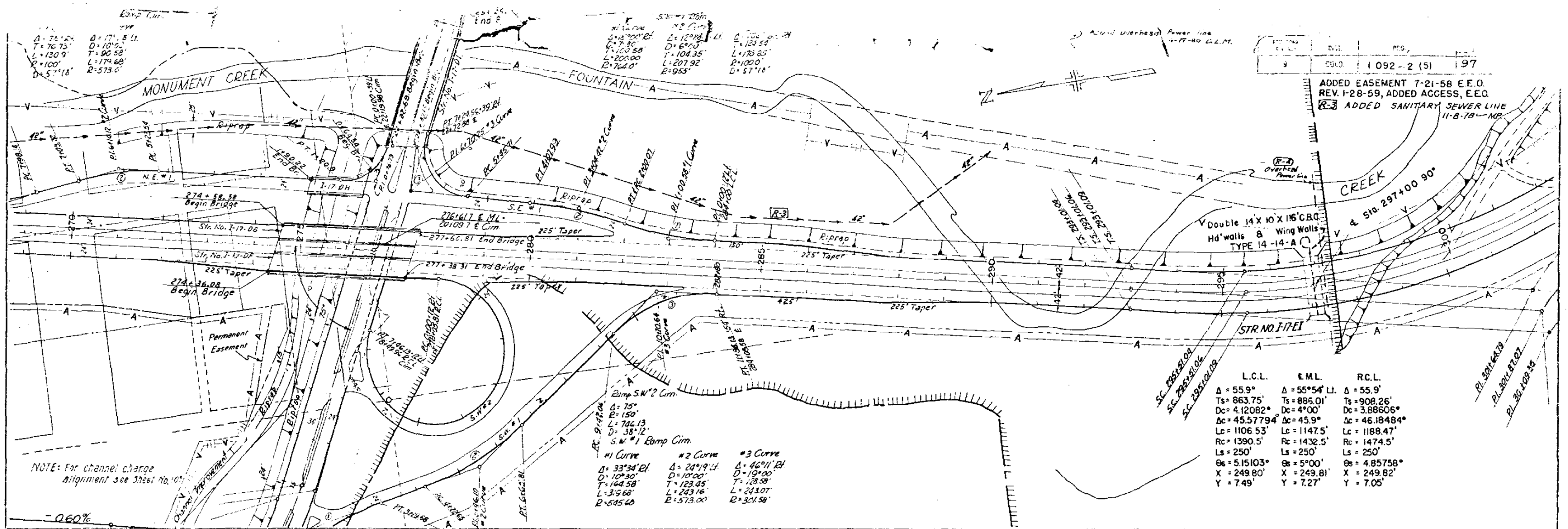


PLATE 1 - PLAN-PROFILE OF A.A.R.E. ST. 44.0'

PLAN  
 SURVEYED  
 ALIGNED  
 RT. OF WAY CHECKED  
 10

PROFILE  
 PROFILE  
 CHECKED  
 10



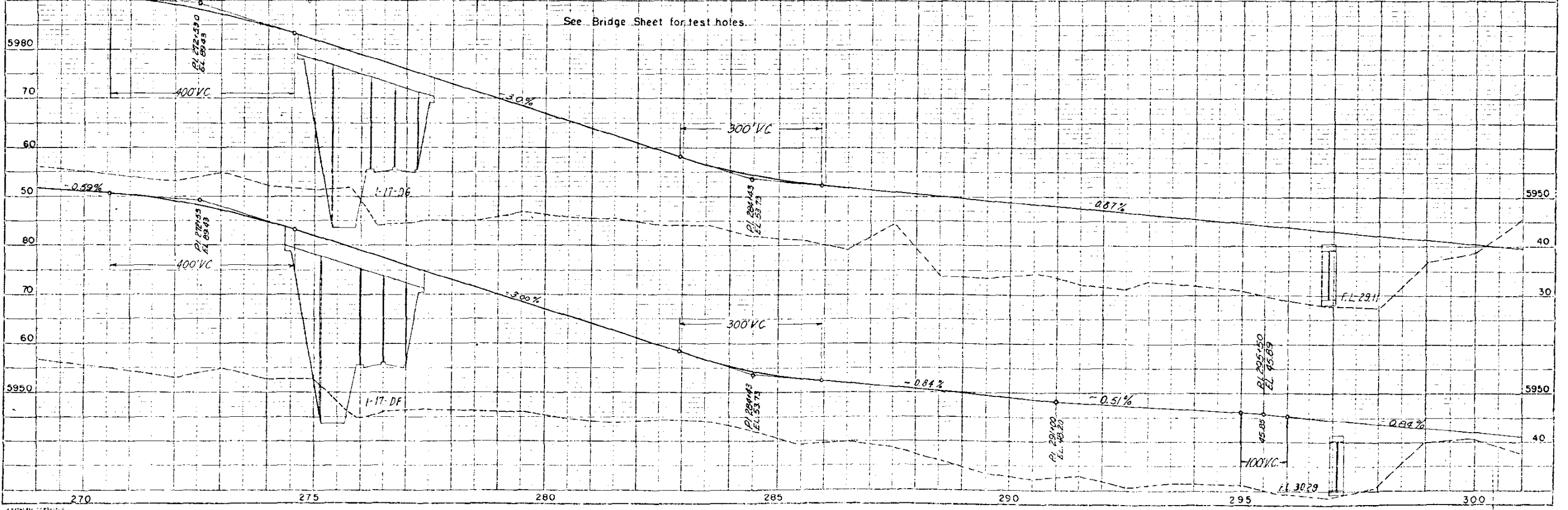
DATE	NO.	REV.	BY
5-10-50	1		
1-28-59	2	(5)	
11-8-78	3		

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'	243.07'	301.58'

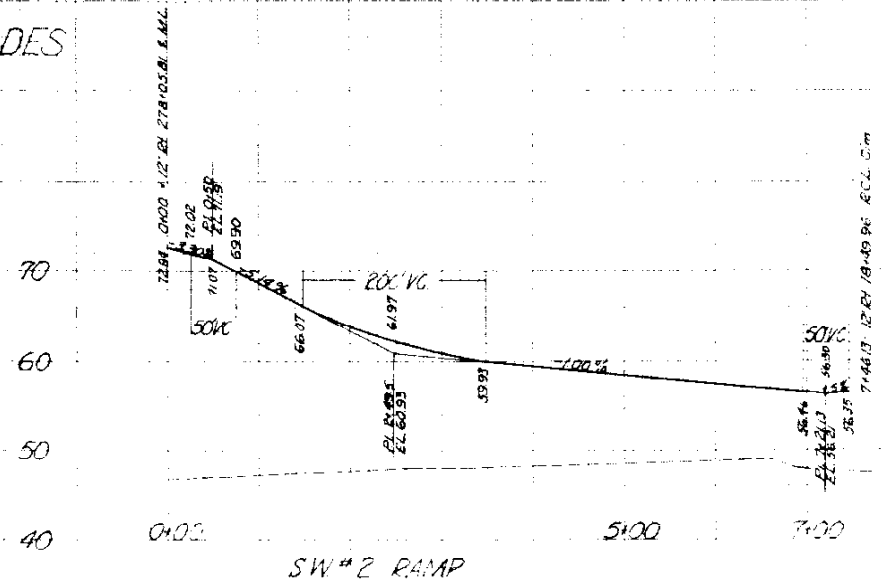
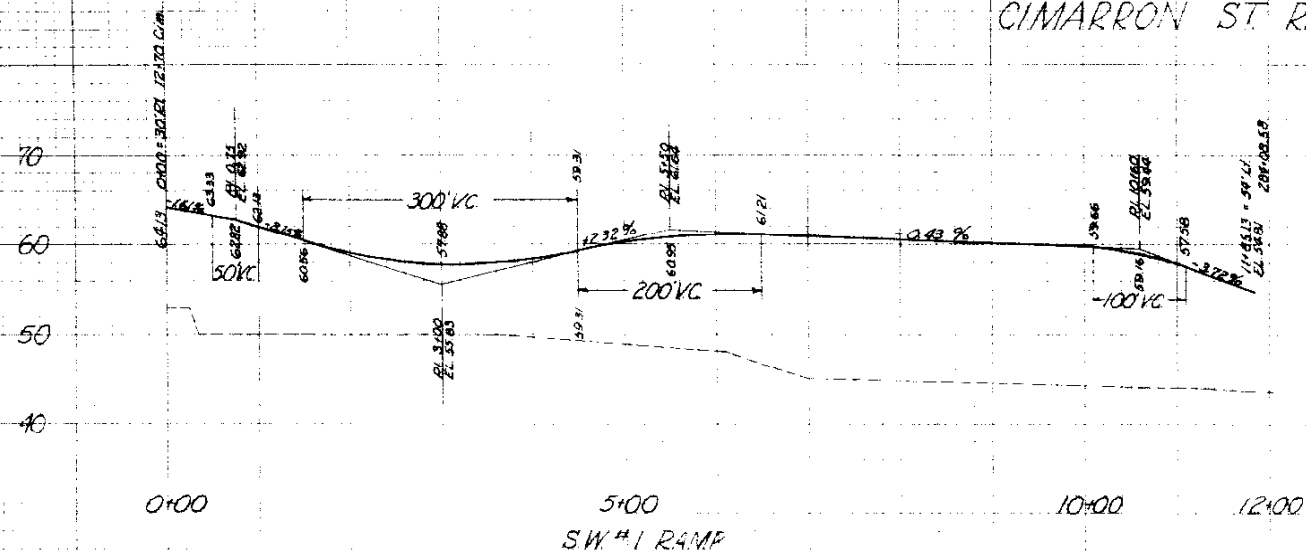
L.C.L.	E.M.L.	R.C.L.
Δ = 55.9°	Δ = 55°54' LI	Δ = 55.9°
Ts = 863.75'	Ts = 886.01'	Ts = 908.26'
Dc = 4.12082°	Dc = 4°00'	Dc = 3.88606°
Lc = 45.57794'	Lc = 45.9'	Lc = 46.18484'
Rc = 1106.53'	Rc = 1147.5'	Rc = 1188.47'
Ls = 1390.5'	Ls = 1432.5'	Ls = 1474.5'
Os = 250'	Os = 250'	Os = 250'
X = 5.15103'	X =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

NOTE: For channel change  
 Alignment see Sheet No. 10

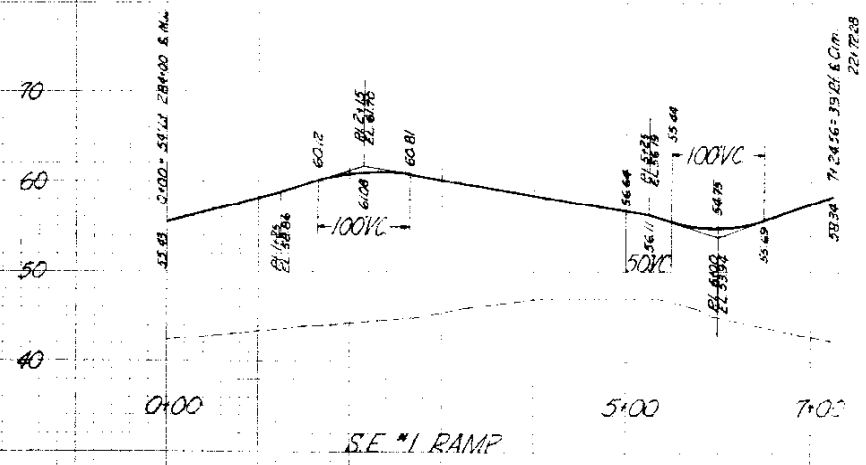


FED. DIS	STATE	PROJECT NO.	
9	COLO.	1 092-2(5)	98

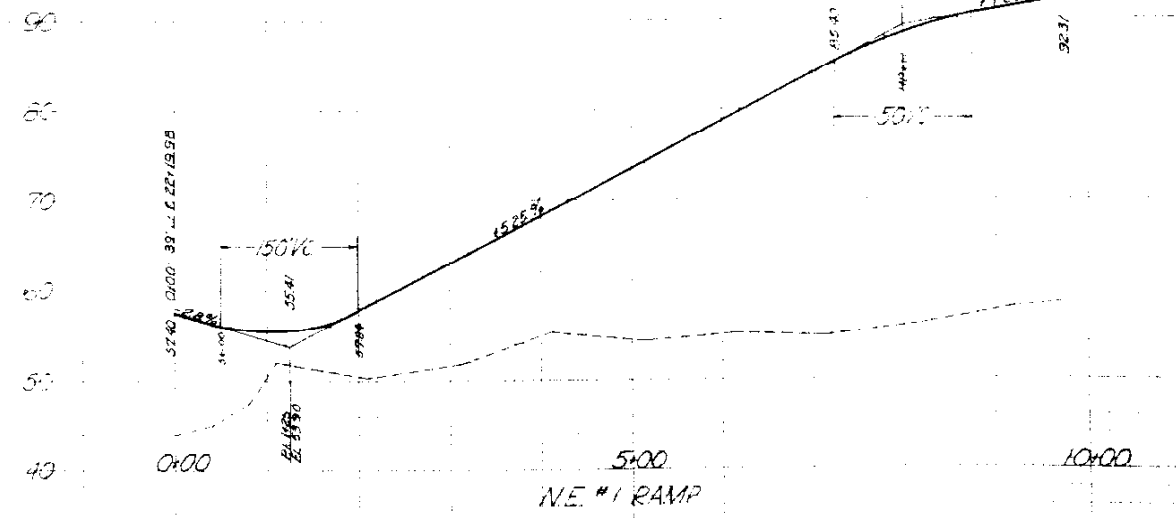
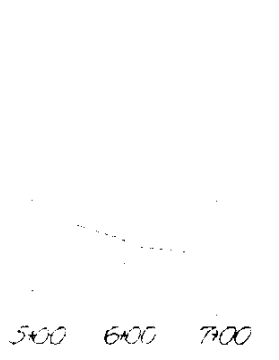
CIMARRON ST RAMP GRADES



CIMARRON ST RAMP GRADES (CONT.)



Grade on Tangent  
from PC to  
Cimarron Street



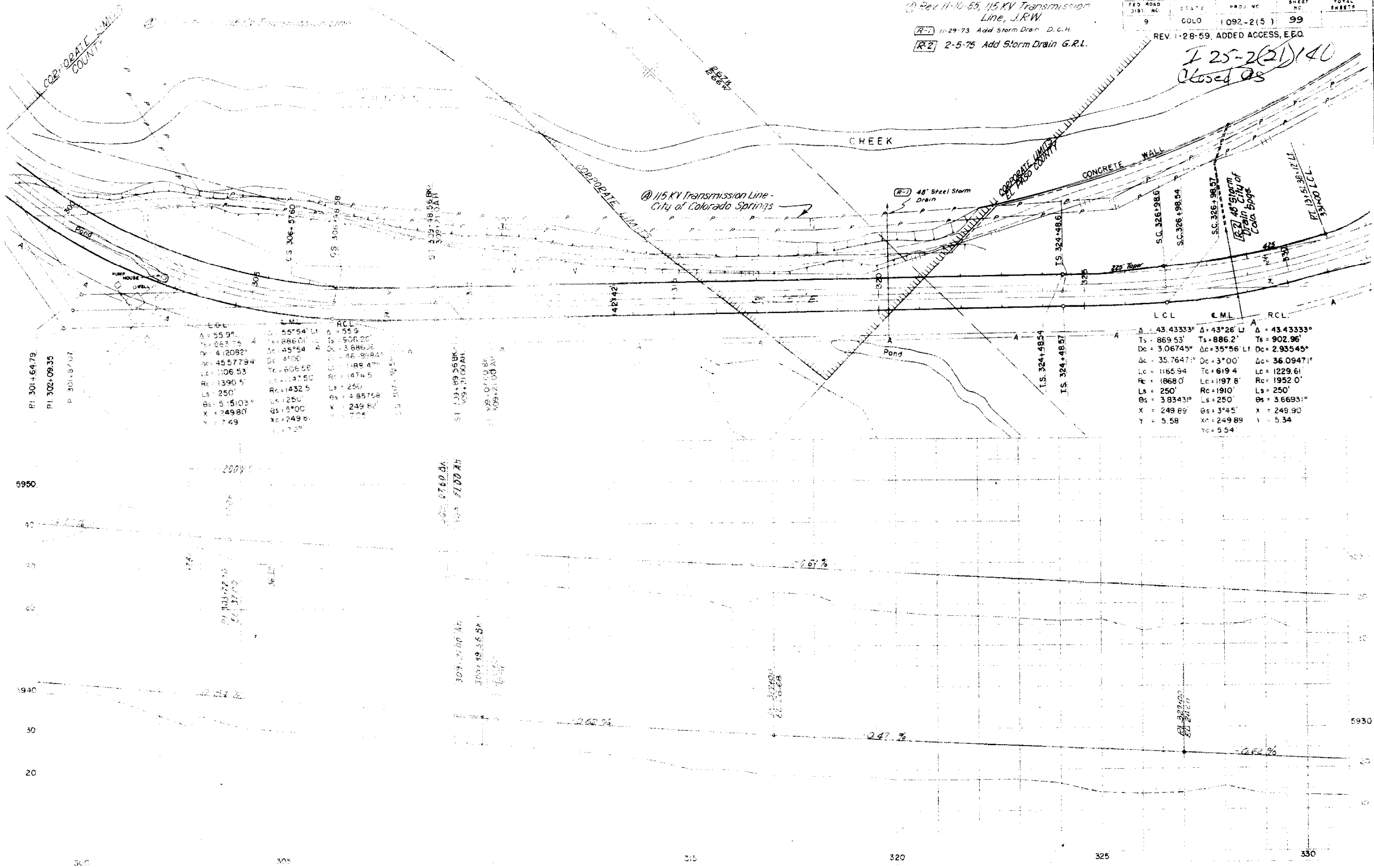
Scale 1 inch = 100 FT. H.E.  
Scale 1 inch = 10 FT. V.E.

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.O.

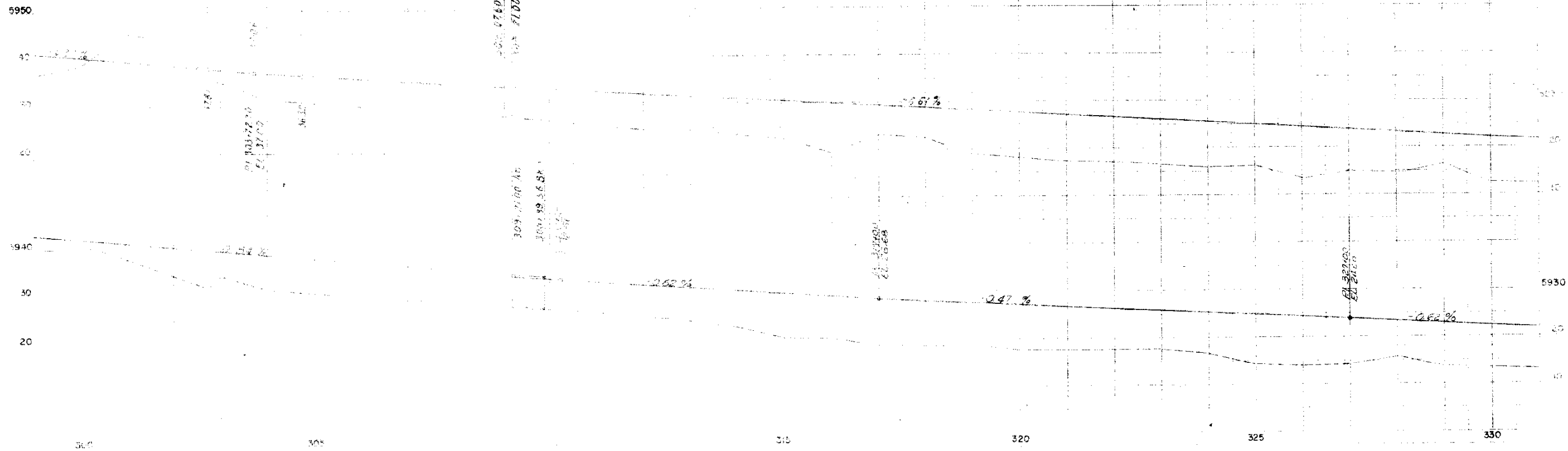
*I 25-2(2) 140  
Closed OS*



L.C.L.	E.M.I.	R.C.L.
A = 55.9'	Δ = 55°54'	L = 55.9'
Ts = 869.53'	Δc = 35°56'	Ts = 869.53'
Dc = 3.06745'	Δc = 3°00'	Dc = 3.06745'
Lc = 1165.94'	Ls = 250'	Lc = 1165.94'
Rc = 1868.0'	Os = 3.83431°	Rc = 1868.0'
X = 249.89'	Xc = 249.89'	X = 249.89'
Y = 5.58'	Yc = 5.54'	Y = 5.58'

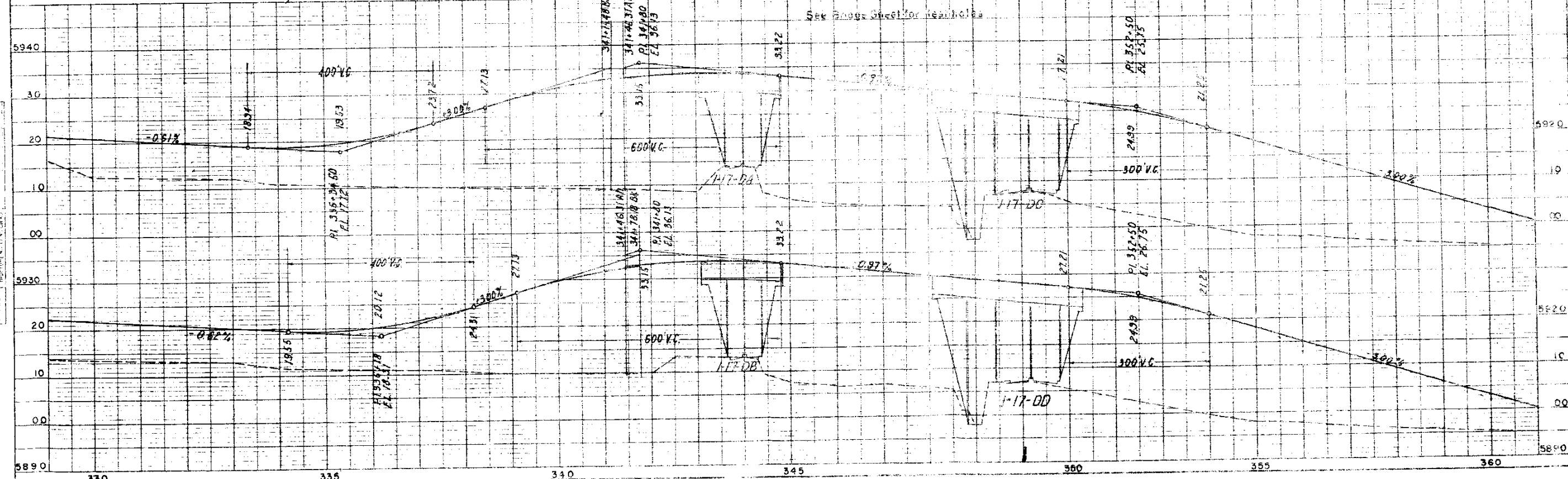
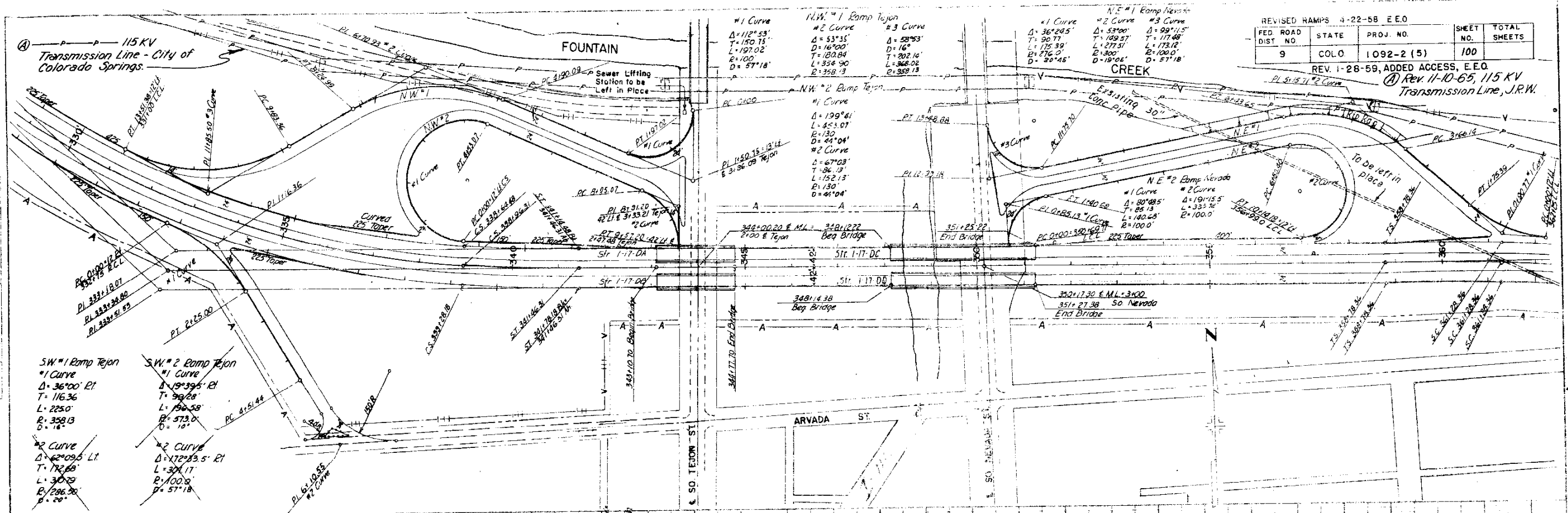
L.C.L.	E.M.I.	R.C.L.
A = 43.43333°	Δ = 43°26'	A = 43.43333°
Ts = 869.53'	Δc = 35°56'	Ts = 902.96'
Dc = 3.06745'	Δc = 3°00'	Dc = 2.93545'
Lc = 1165.94'	Ls = 250'	Lc = 1229.61'
Rc = 1868.0'	Os = 3.83431°	Rc = 1952.0'
X = 249.89'	Xc = 249.89'	X = 249.89'
Y = 5.58'	Yc = 5.54'	Y = 5.58'

115 KV TRANSMISSION LINE



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

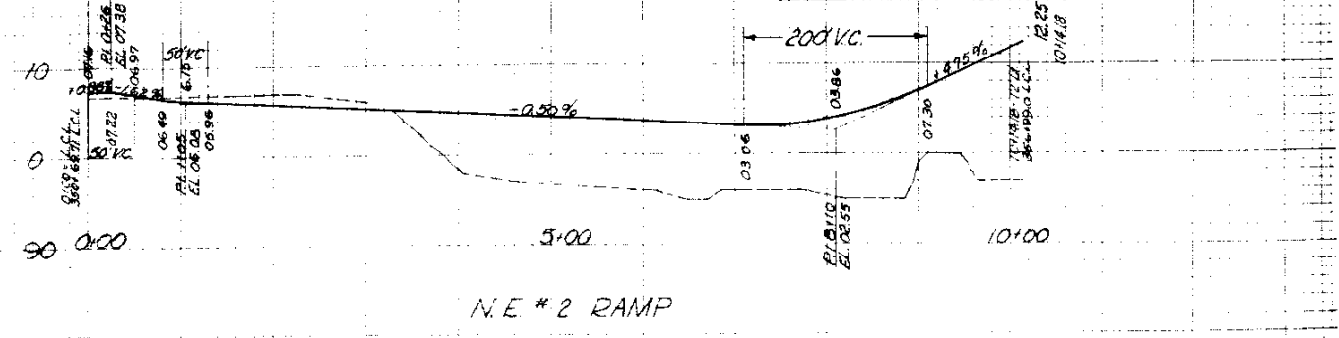
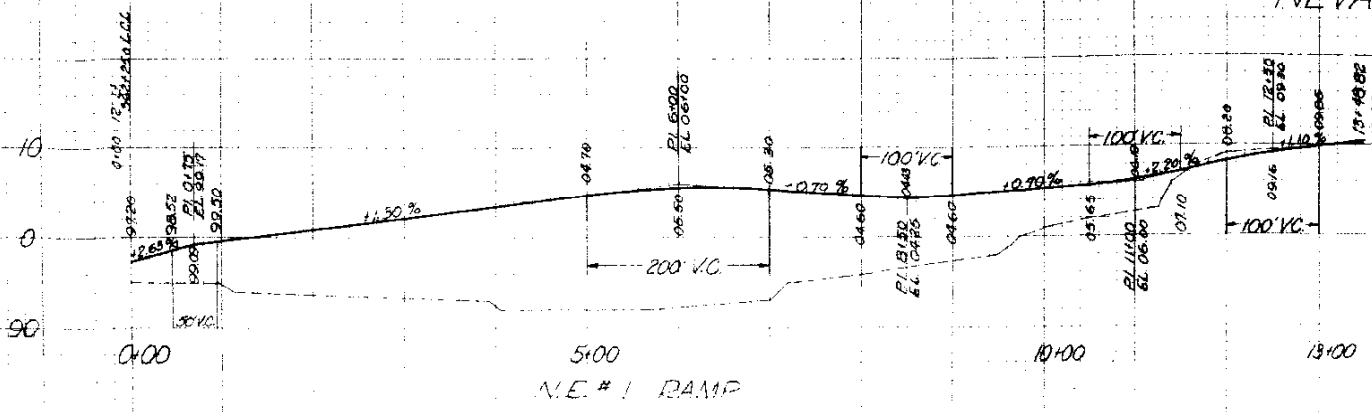
REVISED RAMP 4-22-58 E.E.O.  
 REV. 1-28-59, ADDED ACCESS, E.E.O.  
 Rev. 11-10-65, 115 KV Transmission Line, J.R.W.



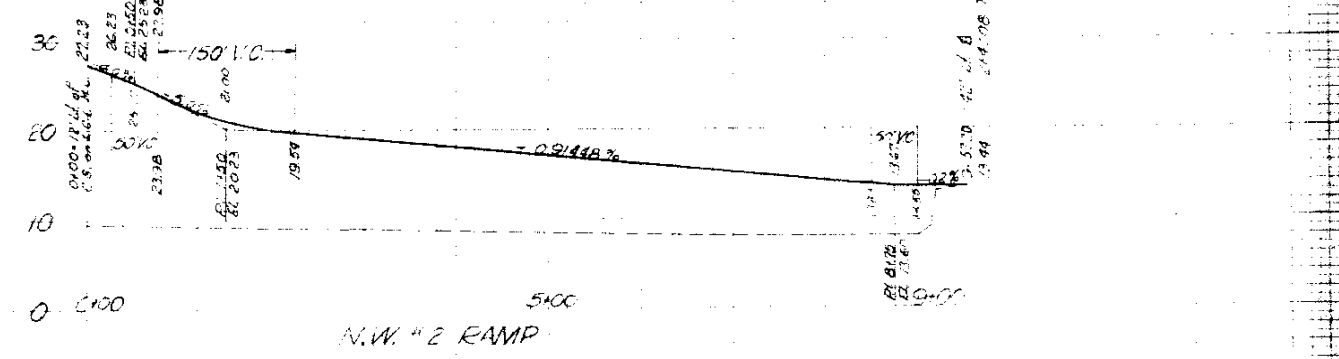
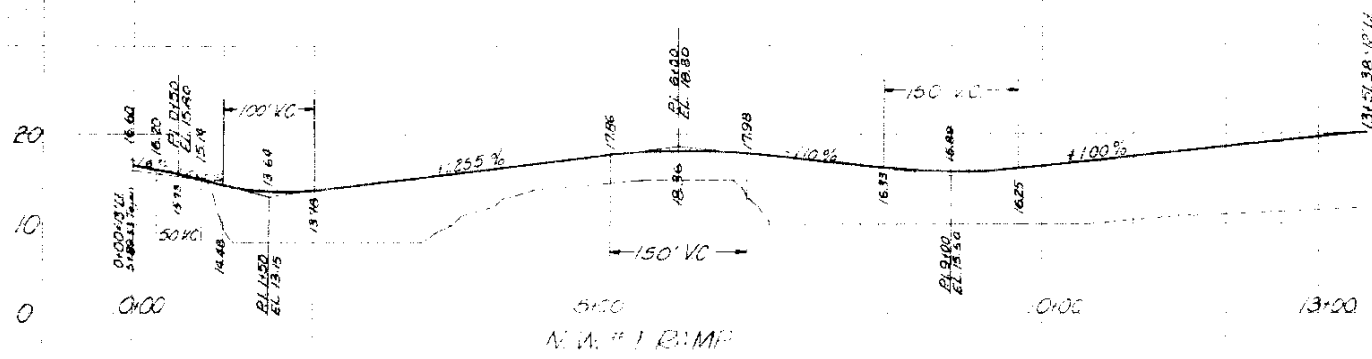
CRIN  
 NOTE: SEE SHEET 100 FOR  
 PROVISIONS FOR 115 KV LINE

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

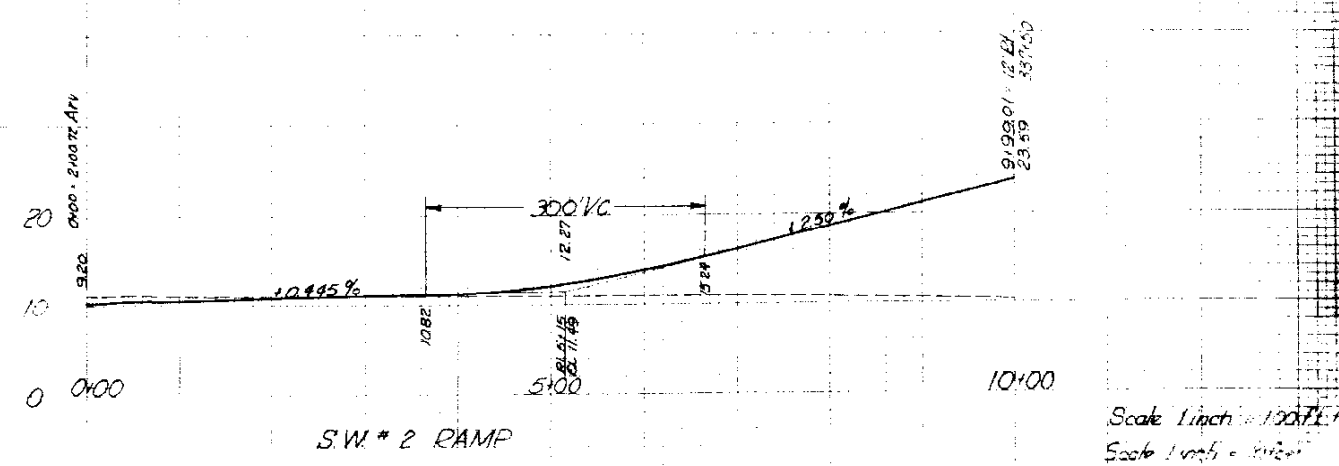
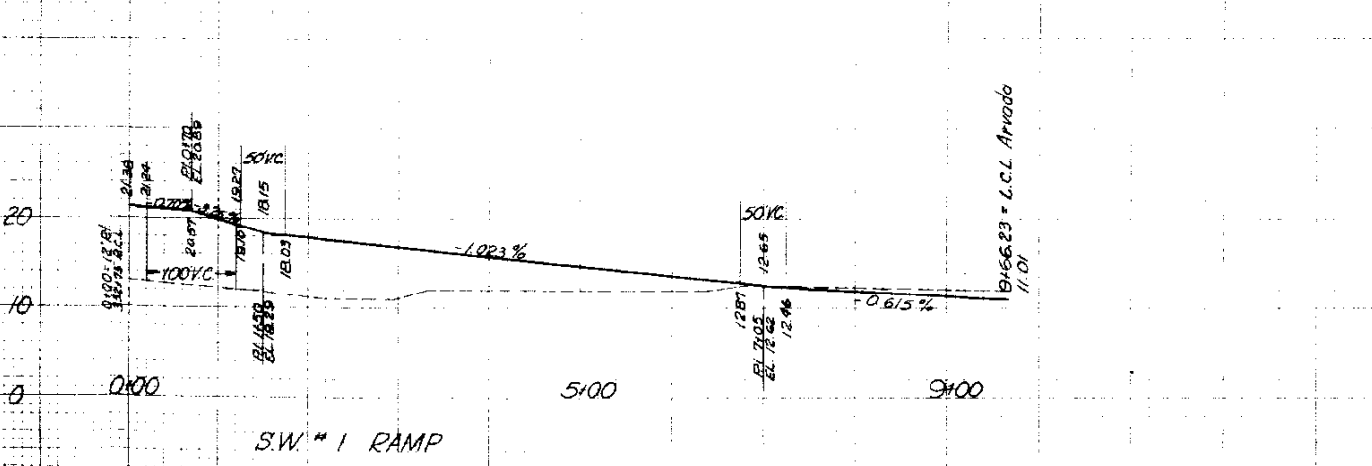
NEVADA AVE. RAMP GRADES



TEJON ST. RAMP GRADES



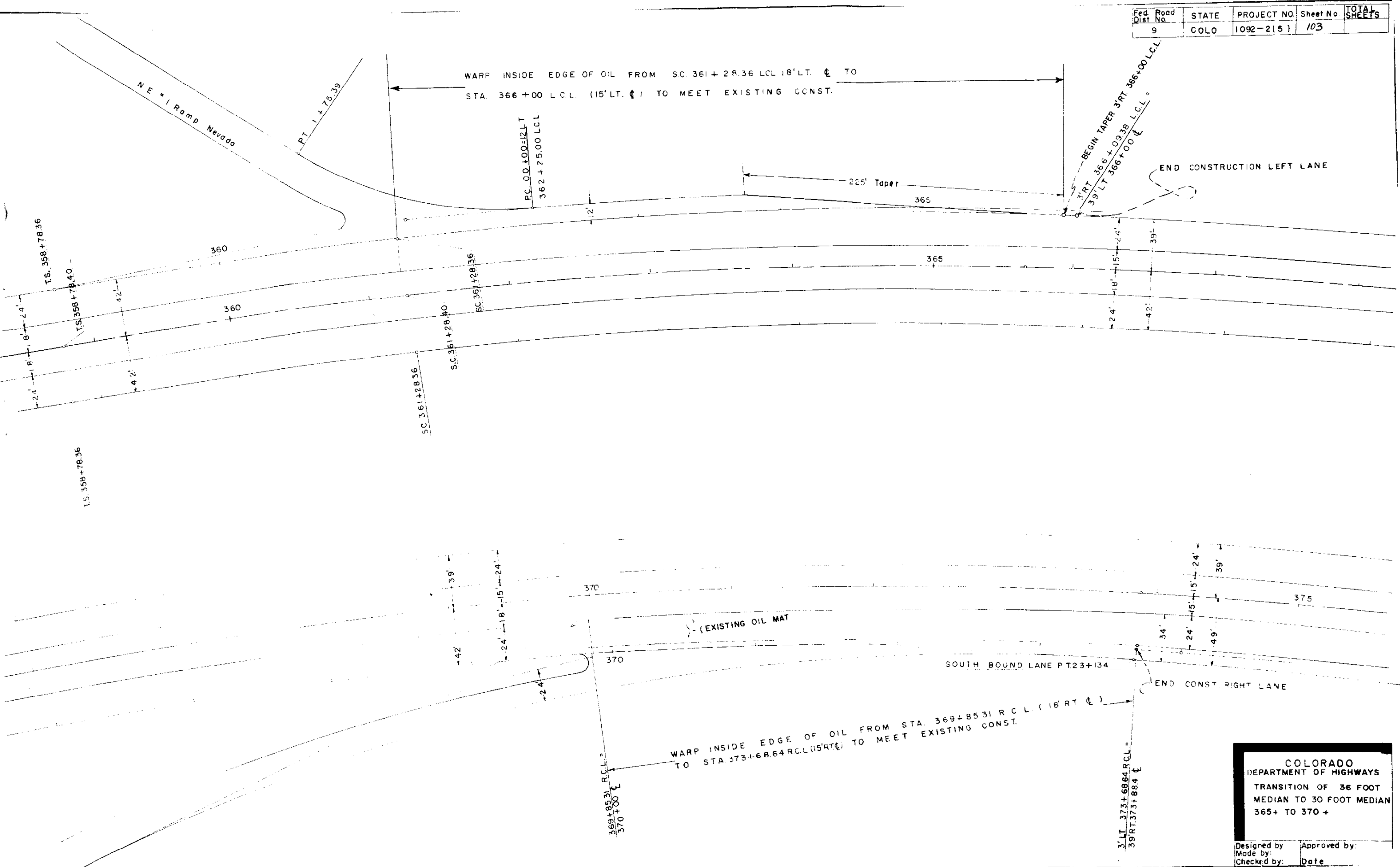
TEJON ST. RAMP GRADES (CONT.)



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



Fed. Road Dist No.	STATE	PROJECT NO.	Sheet No.	TOTAL SHEETS
9	COLO.	1092-2(5)	103	



**COLORADO**  
 DEPARTMENT OF HIGHWAYS  
 TRANSITION OF 36 FOOT  
 MEDIAN TO 30 FOOT MEDIAN  
 365+ TO 370+

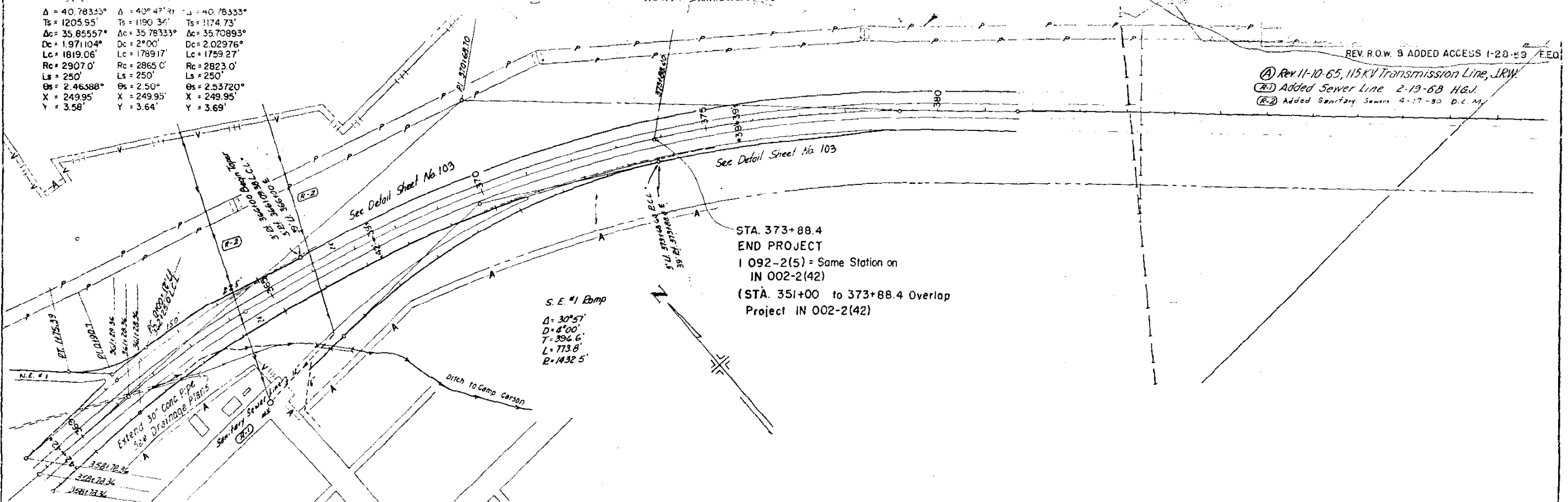
Designed by:	Approved by:
Made by:	Date:
Checked by:	

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

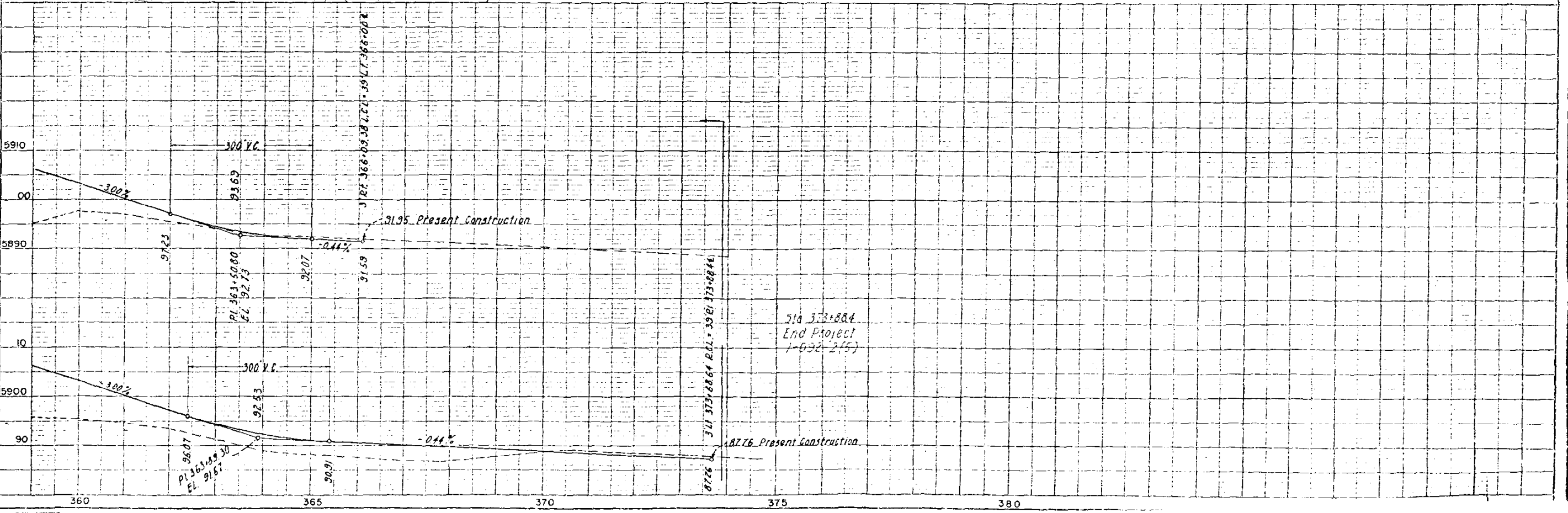
REV. R.O.W. & ADDED ACCESS 1-23-89 / E.E.O.

- (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.

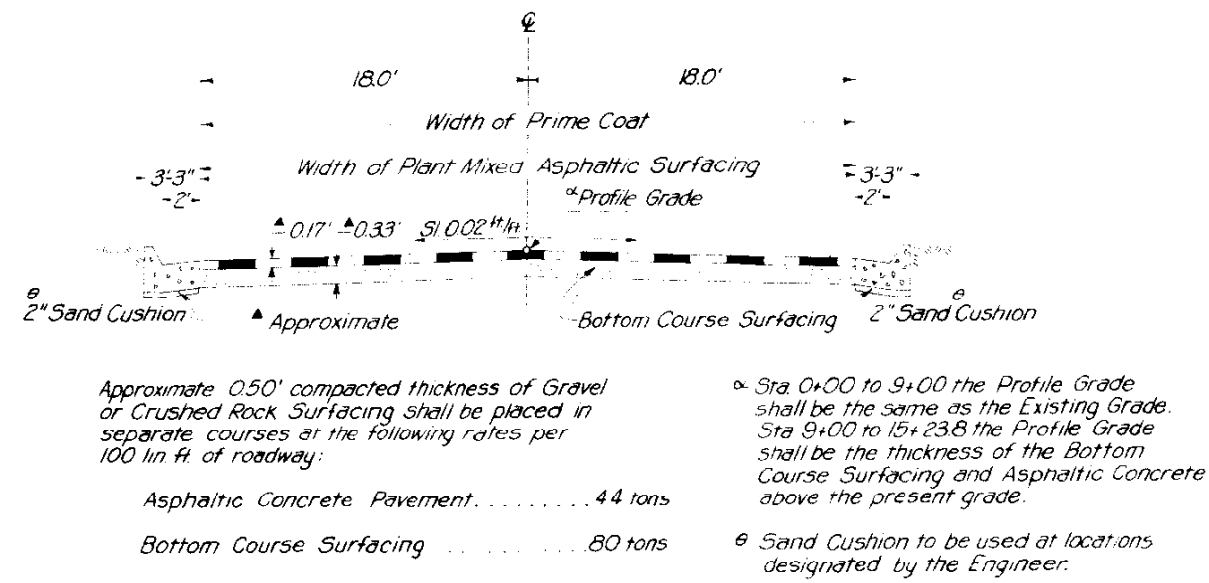
DATE	BY	DESCRIPTION



DATE	BY	DESCRIPTION



TYPICAL SECTION



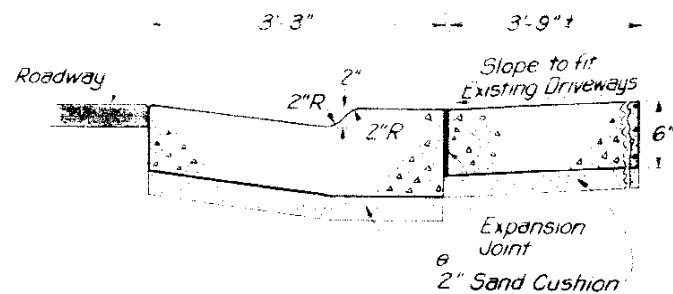
SUMMARY OF EARTHWORK QUANTITIES

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

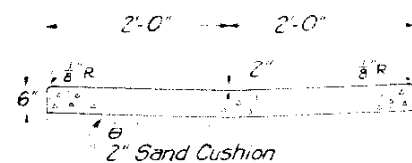
TABULATION OF CURB & GUTTER

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	Lt.		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)



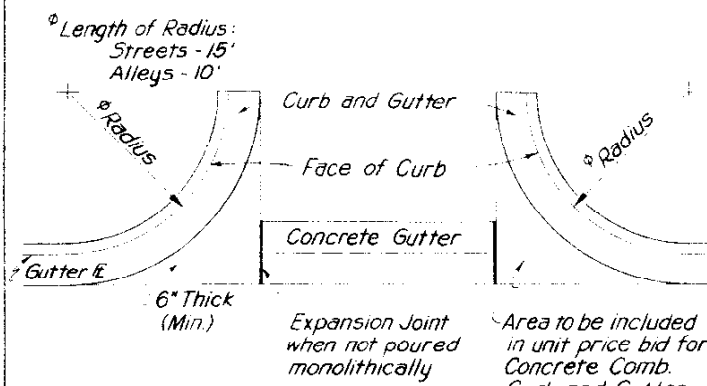
CONCRETE GUTTER



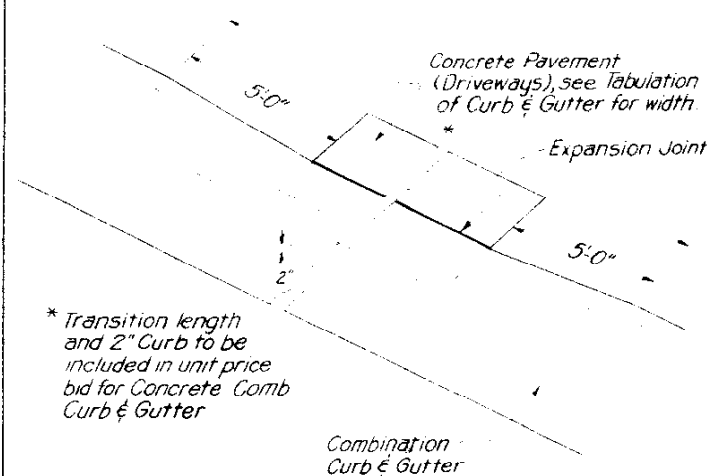
SURFACING PLAN

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

CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTIONS



DETAIL OF CURB CUT FOR DRIVEWAYS

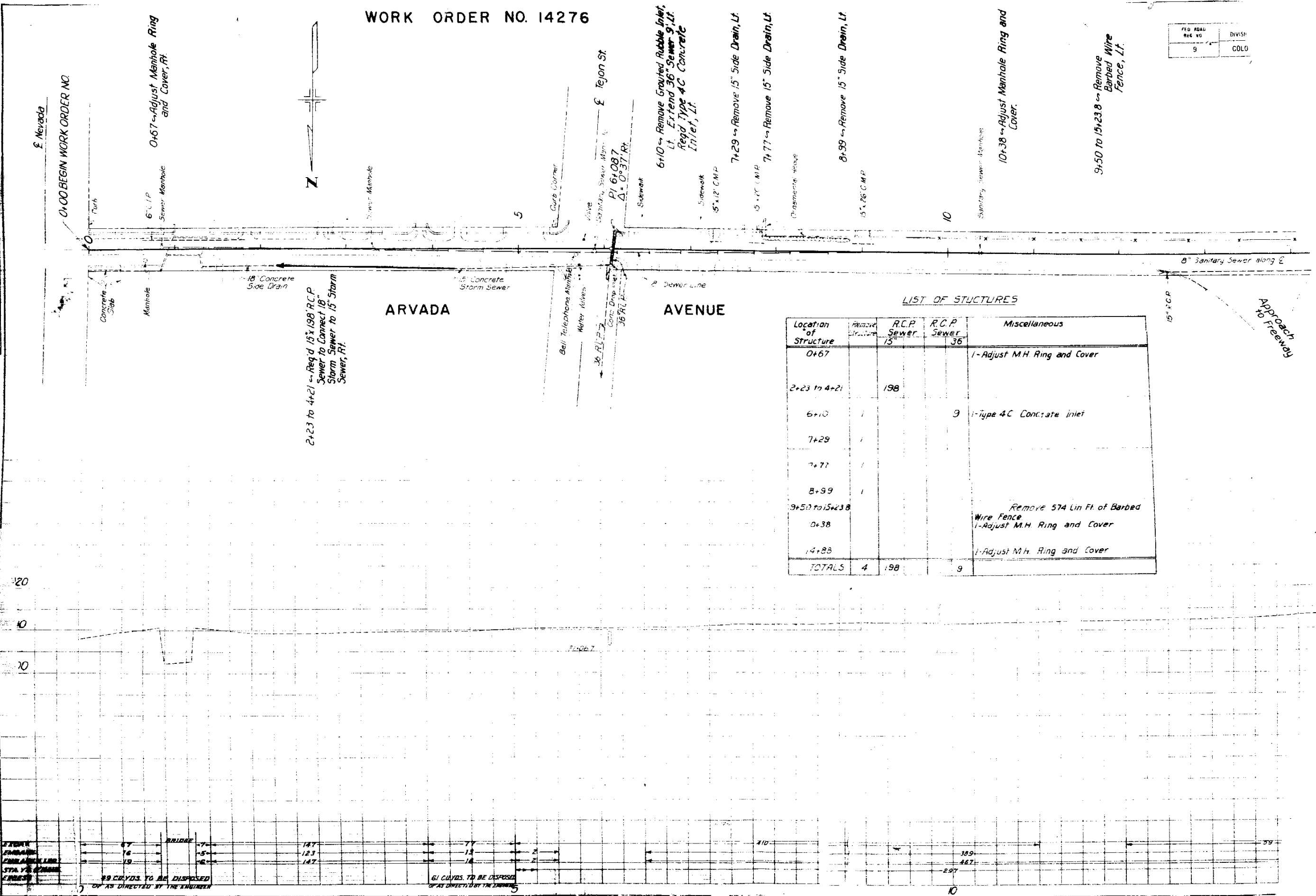


WORK ORDER NO. 14276

FED. ROAD REG. NO.	DIVISION
9	COLO

PLAN  
NOTED  
NOT CHECKED  
BY OF DAY CHECKED

PROFILE  
NOTED  
NOT CHECKED  
BY OF DAY CHECKED



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
10+38				1-Adjust M.H. Ring and Cover
14+88				1-Adjust M.H. Ring and Cover
TOTALS	4	198	9	

