

INDEX OF SHEETS

- SHEET NO. 1 SKETCH MAP AND TITLE PAGE.
- 2-3 TYPICAL SECTIONS.
- 4 TYPICAL CHANNEL CHANGE SECTION.
- 5 TABULATION OF LENGTH AND DESIGN DATA, GENERAL NOTES, TABULATION OF SECTIONS, TIMBER GUARD POSTS, CONCRETE RETAINING WALL AND SUMMARY OF EARTHWORK.
- 6-7 SUMMARY OF APPROXIMATE QUANTITIES.
- 8-11 TABULATION OF SURFACING.
- 12 TABULATION OF CURBS AND GUTTERS.
- 13-14 STORM SEWERS AND MANHOLE ADJUSTMENTS.
- 15 LIST OF STRUCTURES.
- 16 SUMMARY OF LIGHTING AND FENCING REQUIREMENTS.
- 17 DETAIL OF WROUGHT IRON FENCE AND POST.
- 18 TYPICAL RAMP DETAILS.
- 19 DETAILS OF SPECIAL MANHOLE NO. 3.
- 20-28 DETAILS OF BRIDGES STA 270+ (BEAR CREEK).
- 29-36 DETAILS OF BRIDGES STA 272+ (SHERIDAN).
- 37-38 DETAILS OF BRIDGES STA 283+ (BEAR CREEK).
- 39-60 DETAILS OF BRIDGES STA 333+ (FEDERAL).
- 61 DETAILS SHOWING PORTIONS OF STRUCTURE TO RECEIVE CLASS "1" SURFACE FINISH.
- 62 METHODS FOR SUPERELEVATION OF CURVES.
- 63 TABLES FOR SUPERELEVATION OF CURVES.
- 64 CONCRETE INLETS, GRATES AND FRAMES NO. 13, NO. 4, NO. 5 AND 5A.
- 65 CONCRETE INLET TYPE 1 AND 1A.
- 66 CONCRETE INLET TYPE 2, 2C AND 2D.
- 67 CONCRETE INLETS NO. 3, NO. 4B, AND 4C.
- 68 MANHOLE DETAILS TYPE 3, 3A, 3B, 3C, 4, 4A, 4B AND 4C.
- 69 MANHOLE DETAILS TYPE 1, 1A AND 2.
- 70 STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT AND WIDENING AT BRIDGES AND AT CREST OF GRADES.
- 71 STANDARD MARKER POSTS AND BENCH MARKS.
- 72 STANDARD LETTERS AND FIGURES FOR YEAR NUMBERS AND STRUCTURE NUMBERS.
- 73 STANDARD TIMBER GUARD POSTS.
- 74 STANDARD METAL PLATE GUARD FENCE (BEAM TYPE).
- 75 CHAIN LINK WIRE MESH (SCHOOL) FENCE.
- 76 STANDARD WIRE FENCE WITH METAL POSTS.
- 77 STANDARD BARRIER FENCE.
- 78-79 STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS.
- 80 STANDARD CURBS AND GUTTERS.
- 81 STANDARD CONCRETE INLET FOR MEDIAN DITCH.
- 82 STANDARD SINGLE AND DOUBLE CONCRETE BOX CULVERTS.
- 83 STANDARD MANHOLE DETAILS FOR VARIOUS TYPES OF CONCRETE BOX CULVERTS.
- 84 STANDARD METHODS OF BACKFILL AROUND STRUCTURES.
- 85 STANDARD HESLOWALLS AND APRONS FOR C.M.P. CULVERTS.
- 86 STANDARD TYPES OF DITCHES AND CONSTRUCTION METHODS.
- 87 REINFORCED CONCRETE CULVERT PIPE AND CONCRETE SEWER PIPE.
- 88 STANDARD END AND ANGLE SECTIONS, AND EXPANSION JOINTS FOR CONCRETE PIPE.
- 89-111 ALIGNMENT, PLAN AND PROFILE CROSS SECTIONS.
- 112-281

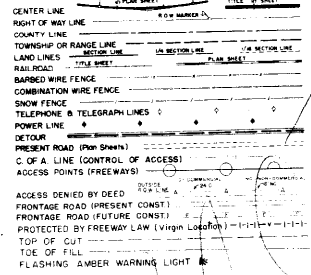
# COLORADO DEPARTMENT OF HIGHWAYS

## PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. U 016-1(17) STATE HIGHWAY NO. 70 DENVER, JEFFERSON, AND ARAPAHOE COUNTIES

R.O.W. for this Project purchased under Project Nos. P 016-1(10), BU 016-1(15) and U 016-1(13)

PROJECT NO.	DIVISION	PROJECT NO.	TOTAL SHEETS
U 016-1(17)	COLORADO	U 016-1(17)	

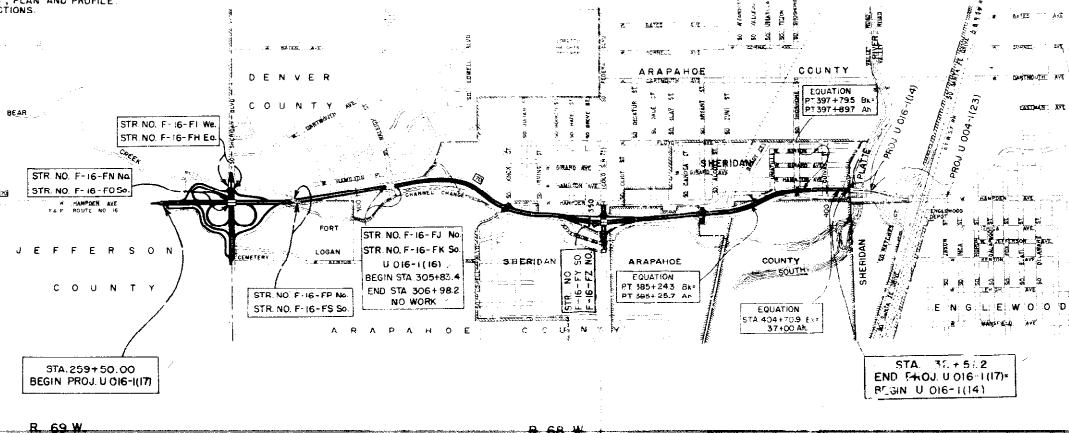
CONVENTIONAL SIGNS



SCALES OF ORIGINAL DRAWINGS

ON PLAN 1 IN = 100 FT  
ON PROFILE 1 IN = 10 FT VERTICAL  
GRADE LINE ON PROFILE IS SHOWN AT GRADE OF FINISHED ROAD  
GROSS LENGTH OF PROJECT 14,860 FT = 2.77 MI  
NET LENGTH OF PROJECT 14,746 FT = 2.755 MI

- M-2-E-D
- M-7-D
- M-10-D
- M-19-E
- M-21-D
- M-26-D
- M-27-D
- M-28-B
- M-29-C
- M-45-A
- M-46-B
- M-50-B
- M-50-BW
- M-60-B
- M-62-J
- M-107-D
- M-112-G
- M-118-B



SCALE 1" = 400'

SEE SPECIAL PROVISIONS FOR NOTICE TO BIDDERS

APPROVED: *[Signature]* 10-14-50  
CHIEF ENGINEER

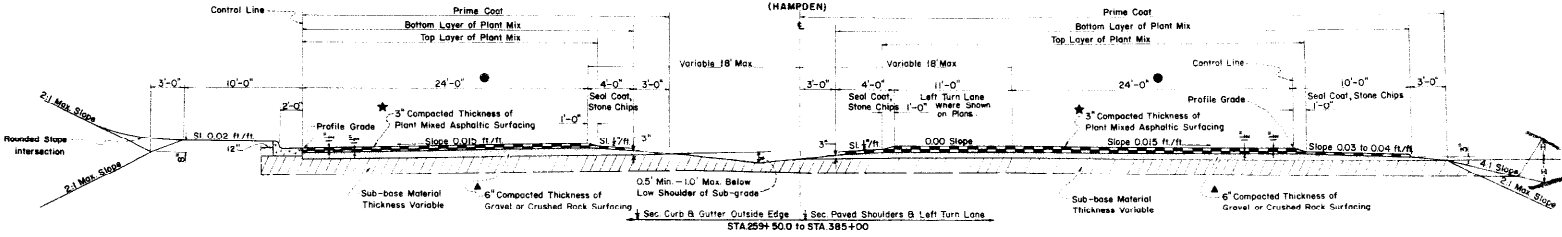
DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC WORKS

APPROVED: \_\_\_\_\_  
DIVISION ENGINEER

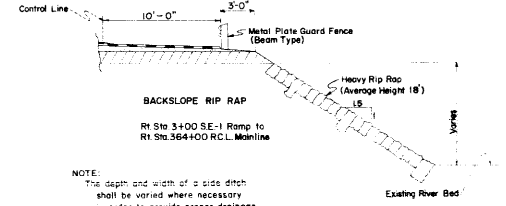
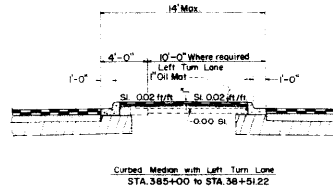
# TYPICAL SECTIONS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	CONTRACT NO.	SHEET NO.
257	MASS.	104-1171	2	2

## SECTION 1 (HAMPDEN)



## SECTION 2 (HAMPDEN)



NOTE:  
Slope 4:1 where H is less than 5'  
Slope 2:1 where H is more than 5'  
Slopes to be altered where necessary  
as directed by the engineer.

▲ 6" Compacted Thickness of Gravel or Crushed Rock Surfacing to be placed in two (2) 3" courses.

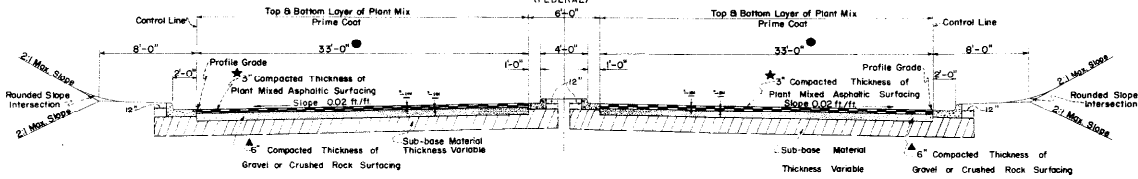
★ All 3" Plant Mixed Asphaltic Surfacing to be placed in two (2) 1 1/2" courses.

● 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.

NOTE:  
The depth and width of a side ditch shall be varied where necessary in order to provide proper drainage and for entrance to drainage structures.

NOTE:  
All thicknesses shown for Sub-Base, Base Course and Plant Mix are Approximate Only.

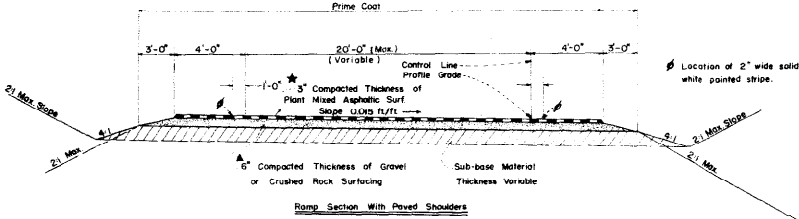
## SECTION 3 (FEDERAL)



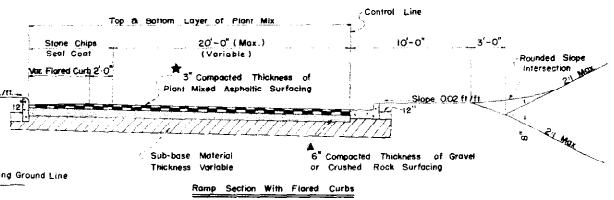
# TYPICAL SECTIONS

FED. ROAD DISTRICT	PROJ. NO.	SHEET NO.
9	U 016-1(27)	3

## SECTION 4 (RAMP)

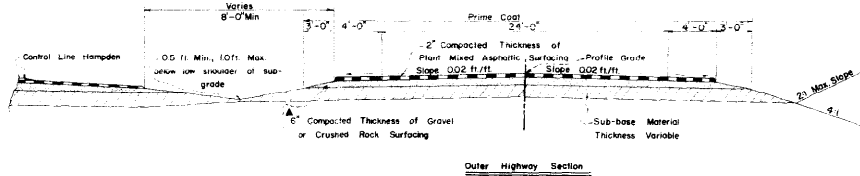


## SECTION 5 (RAMP)



Ditch Section for Ramp SW1 (FEDERAL BLVD) only STA 0+00 TO STA 9+90.60

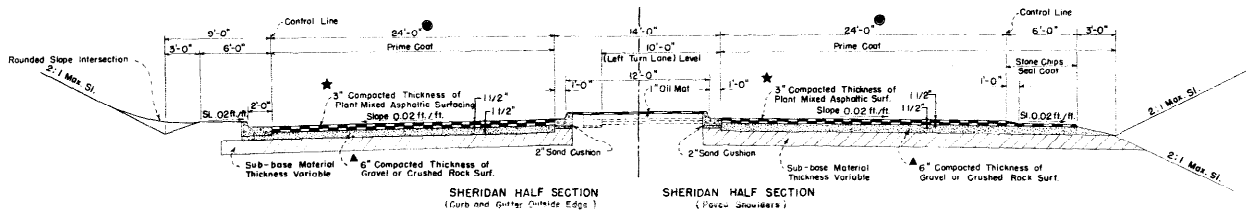
## SECTION 6 (OUTER HIGHWAY)



- ★ See Note - Sheet 2
- ▲ See Note - Sheet 2
- See Note - Sheet 2

NOTE: All thicknesses shown for Sub-Base Base Course and Plant Mix are Approximate Only.

## SECTION 7 (SHERIDAN BOULEVARD)



# TYPICAL SECTIONS

CONSTRUCTION POINT

## TYPICAL CHANNEL CHANGE SECTION

**SECTION 4**  
TYPICAL RAMP SECTION

**SECTION 5**  
RAMP SECTION WITH FLARED CURBS

## SECTION ON Q PROFILE

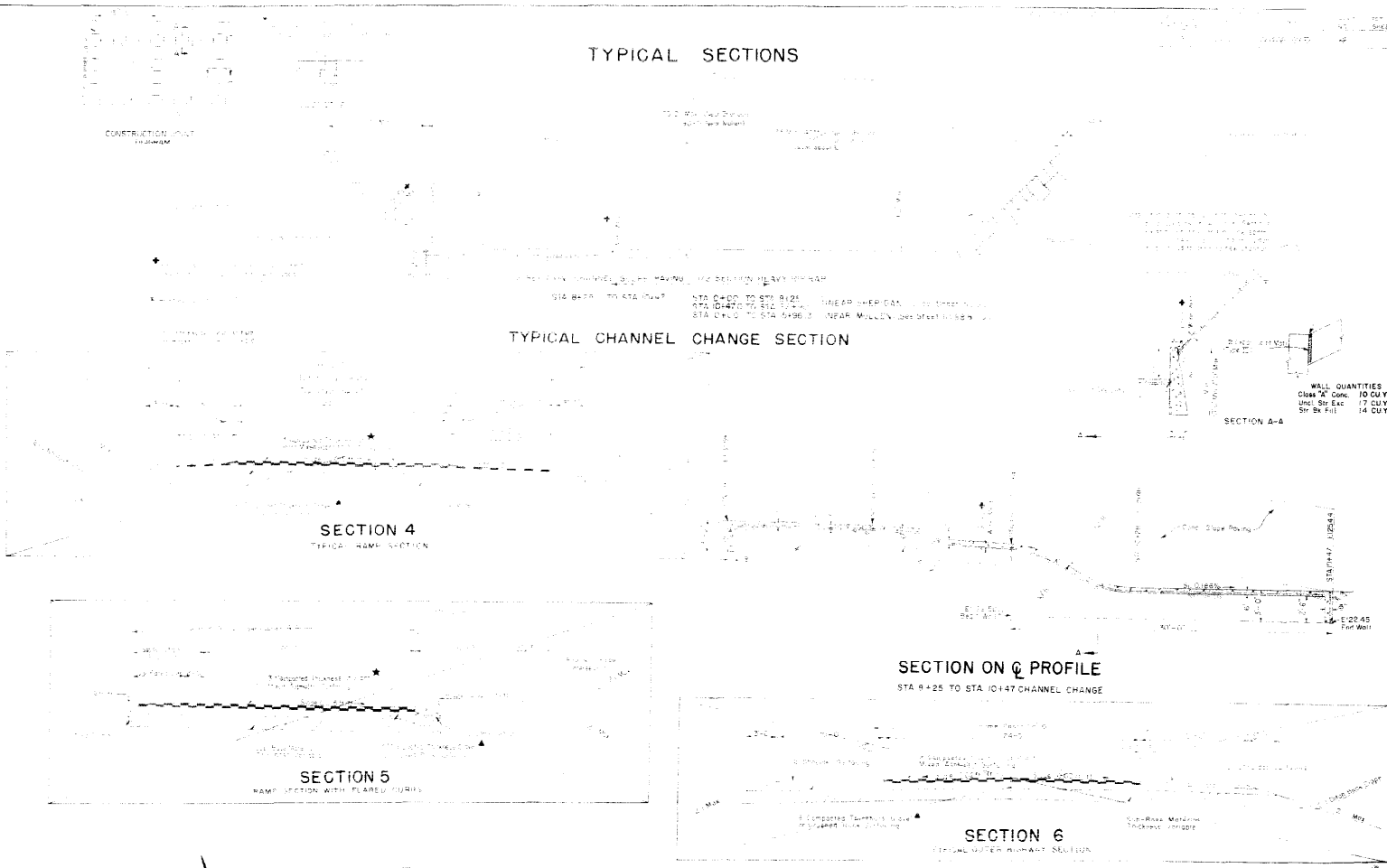
STA 9+25 TO STA 10+47 CHANNEL CHANGE

**SECTION 6**  
TYPICAL UPPER RAMP SECTION

WALL QUANTITIES

Class "A" Conc.	10 CU YDS
Struct. Str. Exc.	17 CU YDS
Str. Br. Fill	14 CU YDS

SECTION A-A



**TABULATION OF LENGTH AND DESIGN DATA**

**GENERAL NOTES**

This project is to be constructed in conformity with Standard Specifications for Road and Bridge Construction of the State of Michigan, 1980 Edition.

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

It is recommended that quantities be checked by the contractor before starting work. The quantities shown on these plans are for information only.

PRIME COAT 1/2  
 PLANT MIXED ASPHALT 2 1/2" (100 lbs per sq yd)  
 SEAL COAT PC @ 25 lbs per sq yd  
 STONE SCREENINGS (TYPE 1) @ 25 lbs per sq yd

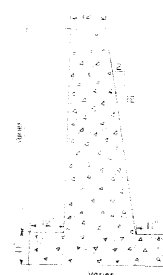
Rate of application and grade of oil shall be as determined by the engineer at the time of application.

For wetting, the following rate of application was used:  
 Timberment (Standard Composition) 100 lbs per sq yd  
 Sun Wash and Surfacing 180 lbs per sq yd

Application Methods for liquid asphaltic road material when used in the construction of concrete pavement, curbs or gutters will not be permitted.

Contractor may be required to apply a "Tack Coat" of 85-100 penetration asphalt at the approximate rate of 0.1 gal. per sq yd to the bottom layer before placing the top layer of asphaltic mat.

Thickness of Sub-Base, Surfacing and Asphaltic Pavement materials as shown on plans is approximate only. These materials are to be placed on the basis of tonnages shown on plans.



**TABULATION OF SECTIONS**

TYPICAL SECTION NUMBER	LOCATION	STA TO STA	PVMT W-DTH	REMARKS
1	Hopwood Ave	259+00 - 385+00	2-24 FT	36 Median
2	Hopwood Ave	385+00 - 48+41.22	1-24 FT	
1	Spartan Sheridan	266+00 - 286+24.00	2-24 FT	12 Median
4.5	Ramp NE-1 Sheridan Interchange	0+00 - 9+03.20	20'-10"	Width Variable
4.5	NW-1	0+00 - 13+16.64	20'-10"	
4.5	NW-2	0+00 - 11+81.15	20'-10"	
4.5	NW-3	0+00 - 11+70.10	20'-10"	
4.5	EW-1	0+00 - 10+20.20	20'-10"	
4.5	SE-1	0+00 - 11+45.28	20'-10"	
4.5	SE-2	0+00 - 10+32.75	20'-10"	
6	Outer Highway	0+00 - 19+34.89	24'	
3	Federal Blvd	2+65 - 7+00	2-36'	Width Variable
4.5	Ramp NW-1 Federal Interchange	0+32 - 9+55.25	20'-10"	Width Variable
4.5	NW-1	0+00 - 9+50.60	20'-10"	
4.5	NW-2	0+00 - 7+80.30	20'-10"	
4.5	SE-1	0+00 - 7+85.43	20'-10"	

**TIMBER GUARD POSTS**

An estimated 248 timber guard posts will be required on this project. Locations will be checked by Engineer at the time of Construction.

**SUMMARY OF EARTHWORK**

<b>EXCAVATION</b>		
From Cross Sections		510,818
Estimated For Subsidence		51,082
<b>EXCAVATION</b>	<b>TOTAL</b>	<b>561,900 CU. YDS.</b>
<b>EXCAVATION</b>		
From Cross Sections		510,818
Minus Excess Excavation		70,188
<b>EMBANKMENT</b>	<b>TOTAL</b>	<b>440,630 CU. YDS.</b>
From Cross Sections		35,501 CU. YDS.
<b>EMBANKMENT X FACTOR</b>		<b>440,630 CU. YDS.</b>
<b>STATION YARD OVERHAUL</b>		
From Mass Diagram		1,086,600
Estimated For Subsidence		108,660
<b>YARD MILE OVERHAUL</b>	<b>TOTAL</b>	<b>1,195,260 STA * YDS.</b>
From Mass Diagram		230,488
Estimated For Subsidence		2,305
<b>COMPACTION</b>	<b>TOTAL</b>	<b>25,353 CU. YD.</b>
Total Unclassified Excavation		561,900
Area of Cut 0.000		108,660
<b>TOTAL</b>		<b>673,900 CU. YDS.</b>

STATION	ROADWAY		BRIDGE	
	LIN. FT.	MILES	LIN. FT.	MILES
259+50.0 Begin 1/2" (1.57')				
271+36.0 Begin Sheridan Overpass Sta. Nos. F-16-F1, F-16-F2	1,241		271	
273+88.2 End Sheridan Overpass				
283+99.9 Begin Bear Creek Bridge Sta. Nos. F-16-F1, F-16-F2	1,027.5		210.2	
285+70.1 End Bear Creek Bridge				
288+17.8 Bk. = 208+12.58 Ah	287.7			
305+83.4 Begin Raleigh Overpass 0.08 mi Sta. Nos. F-16-F1, F-16-F2	1,765.9			
306+98.2 End Raleigh Overpass 0.08 mi				
352+60.3 Begin Keweenaw Blvd. Bridge Sta. Nos. F-16-F1, F-16-F2	4,562.1		149.0	
354+08.9 End Keweenaw Blvd. Bridge				
385+24.3 Bk. = 385+25.7 Ah	3,718.0			
397+78.5 Bk. = 397+89.7 Ah	1,253.8			
401+70.9 Bk. = 37+00.0 Ah	681.2			
431+51.2 End 1/2" (1.57') Begin 1/2" (1.57')	151.2			
<b>TOTALS</b>	<b>14,032.4</b>	<b>513.6</b>	<b>714.8</b>	
<b>SUMMARY</b>	<b>LIN. FT.</b>	<b>MILES</b>		
Roadway	14,032.4	2,623		
Bridge	513.6	0.097		
<b>NET LENGTH</b>	<b>14,546.0</b>	<b>2,725</b>		
No Work	114.8	0.022		
<b>GROSS LENGTH</b>	<b>14,660.8</b>	<b>2,747</b>		
STATION	ROADWAY	BRIDGE		
	LIN. FT.	LIN. FT.		
266+00 Begin Sheridan Blvd.	363.26			
269+14.26 Begin Bear Creek Bridge Sta. Nos. F-16-F1, F-16-F2		107.34		
270+70.61 End Bear Creek Bridge	1,553.40			
286+24.24 End Sheridan Blvd.		107.34		
<b>TOTALS</b>	<b>1,916.66</b>	<b>107.34</b>		
<b>SUMMARY</b>	<b>LIN. FT.</b>	<b>MILES</b>		
Roadway	1,916.66	0.363		
Bridge	107.34	0.020		
<b>NET LENGTH</b>	<b>2,024.0</b>	<b>0.383</b>		
<b>DESIGN DATA</b>				
Minimum Degree of Curve	3° 08'			
Maximum Grade	4.36%			
Minimum N.P.S.D. - horizontal	1,300'			
Minimum N.P.S.D. - vertical	350'			
Maximum Design Speed	50 M.P.H.			

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	ROADWAY	STRUCTURE NOS. F-10 - F-12	STRUCTURE NOS. F-13 - F-15	STRUCTURE NOS. F-16 - F-18	STRUCTURE NOS. F-19 - F-21	PROJECT TOTALS
10	Clearing and Grubbing Entire Project	Lump Sum						
11	Removal of Obstructions	Lump Sum						
11	Adjust Lamphole Ring and Cover	Each	12					12
11	Removal of Bridge, Sta. 270+ (Sheridan)	Lump Sum						
12	Removing Fence	Lin. Ft.	7,300					7,300
12	Removing and Rebuilding Fence	Lin. Ft.	* 1,300					* 1,300
13	Unclassified Excavation	Cu Yd	562,000					562,000
13	Unclassified Ditch Excavation	Cu Yd	300					300
14	Unclassified Structural Excavation - Miscellaneous	Cu Yd	1,570					1,570
15	Unclassified Structural Excavation - Bridges	Cu Yd		620	56	240		1,186
16	Structure Backfill (Class 1)	Cu Yd	440	510	30	200		1,280
17	Compaction (Standard)	Cu Yd	674,000					674,000
17	Waiting	M. Gal	24,670					24,670
18	Station yard Overhaul	Sq. Yd.	1,207,000					1,207,000
18	Yard Mile Overhaul	Yd. Mi.	25,400					25,400
19	Placing Topsoil	Cu Yd	300					300
23	Sub-base Material (Class 1)	Ton	116,000					116,000
26	Gravel or Crushed Rock Surfacing (Grading C)	Ton	64,800					64,800
29	Asphalt (85-100 Penetration) (Jack Coat)	Ton	70					70
30	Asphaltic Road Material, MC (Prime)	Gal.	93,100					93,100
30	Asphaltic Road Material, MC (Seal)	Gal.	15,500					15,500
31	Stone Screenings (Type 1)	Ton	780					780
31	Plant Mixed Asphaltic Surfacing	Ton	29,970					29,970
32	Plant Mixed Asphaltic Shoulder Roll	Ton	25					25
37	Concrete Sawmest 16" Thick	Sq. Yd.	100					100
42	Treated Bridge Timber	M. Lin.						32
46	Class 4 Concrete	Cu Yd		606		800		1,406
46	Prestressed Concrete Beams (40 to 44")	Each						33-4
46	Prestressed Concrete Beams (55 to 59")	Each						11
47	Reinforcing Steel	Lb.	3,000					3,000
48	Structural Steel	Lb.						70,500
53	36" Corrugated Metal Culvert Pipe	Lin. Ft.	80					80
61	Steel Piling (10 BP 42)	Lin. Ft.		768				768
61	Steel Piling (12 BP 53)	Lin. Ft.				460		460
65	Concrete Slope and Ditch Paving (Wire Mesh)	Cu Yd	420	160				580
67	Heavy Riprap	Cu Yd	7,310			125		7,435
71	8" Perforated Corrugated Metal Pipe Underdrain	Lin. Ft.	3,240					3,240
75	Metal Plate Guard Fence (Beam Type)	Lin. Ft.	6,250					6,250
76	Barrier Fence with Metal Posts	Lin. Ft.	9,850					9,850
76	Barbed Wire Fence with Metal Posts	Lin. Ft.	2,000					2,000
78	Chain Link Wire Mesh Fence	Lin. Ft.	22,000					22,000
80	Sheet Copper	Lb.				48		48
84	Concrete Curb (Type II)	Lin. Ft.	1,590					1,590
84	Concrete Combination Curb and Gutter (Type II)	Lin. Ft.	6,217					6,217
84	Concrete Combination Curb and Gutter (Type I)	Lin. Ft.	8,925					8,925
89	Drain Pipe	Each						26
90	1/2" Electrical Conduit with Junction Boxes	Lin. Ft.		380				380
90	1/4" Electrical Conduit with Junction Boxes	Lin. Ft.	7,100					7,100
92	Timber Guard Posts	Each	248					248
98	Light Standards (1 Arm)	Each	31					31

### SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	ROADWAY	STRUCTURE NOS.		STRUCTURE NOS.		STRUCTURE NOS.		STRUCTURE NOS.		PROJECT TOTALS
				F-16-FY F-16-FZ		F-16-FH F-16-FI		F-16-FN F-16-FO		F-16-FP F-16-FS		
130	Drop Inlets (Type A) (4 Foot)	Each	5									5
130	Drop Inlets (Type A) (5 Foot)	Each	2									2
130	Drop Inlets (Type A) (8 Foot)	Each	1									1
130	Drop Inlets (Type A) (9 Foot)	Each	1									1
130	Drop Inlets (Type 4B) (2 Foot)	Each	1									1
130	Drop Inlets (Type 4B) (3 Foot)	Each	3									3
130	Drop Inlets (Type 4B) (5 Foot)	Each	1									1
130	Drop Inlets (Type 4B) (6 Foot)	Each	1									1
130	Drop Inlets (Type 1A) (2 Foot)	Each	3									3
130	Drop Inlets (Type 1A) (3 Foot)	Each	3									3
130	Drop Inlets (Type 1A) (4 Foot)	Each	1									1
130	Drop Inlets (Type 1A) (5 Foot)	Each	1									1
130	Drop Inlets (Type 2A) (2 Foot)	Each	1									1
130	Drop Inlets (Type 2A) (3 Foot)	Each	2									2
130	Drop Inlets (Type 2A) (9 Foot)	Each	1									1
132	48" Reinforced Concrete Pipe Sewer (Class III)	Lin. Ft.	190									190
132	48" Reinforced Concrete Pipe Sewer (Class III)	Each	160									160
130	Drop Inlets (Type 3) (3 Foot)	Each	1									1
132	30" Reinforced Concrete Pipe Sewer (Class III)	Lin. Ft.	126									126
132	30" Reinforced Concrete Pipe Sewer (Class III)	Lin. Ft.	418									418
132	15" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	418									418
132	18" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	736									736
132	24" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	174									174
132	30" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	24									24
132	36" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	538									538
132	24" Reinforced Concrete Pipe Sewer (Class III)	Lin. Ft.	130									130
132	48" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	726									726
132	54" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	176									176
132	60" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	330									330
132	60" Reinforced Concrete Pipe Sewer (Class III)	Lin. Ft.	270									270
132	Manholes (Type 1A) (6 Foot)	Each	1									1
132	24" Reinforced Concrete Pipe Sewer (Class IX)	Lin. Ft.	156									156
132	Manholes (Type 1A) (16 Foot)	Each	1									1
132	Manholes (Special) (18 Foot)	Each	1									1
132	Manholes (Special) (10 Foot)	Each	1									1
132	15" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	5									5
132	18" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	10									10
132	30" Reinforced Concrete Pipe Sewer (Class III)	Lin. Ft.	136									136
132	24" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	4									4
132	30" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	4									4
132	36" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	7									7
132	48" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	2									2
132	60" Flared End Sections for Reinforced Concrete Culvert Pipe	Each	1									1
132	36" Reinforced Concrete Pipe Sewer (Class II)	Lin. Ft.	214									214
	STATE FORCES											
	A Signing and Striping Entire Project	Lump Sum	•									•
	B Flashing Amber Warning Lights	Each	5									5
	FORCE ACCOUNT											
	Furnish and Install Wiring and Luminaires (Work by Colo. Central Power Co. Forces)	Lump Sum	•									•
	Remove and Install Railroad Spur (Work by C.&S. R.R. Co. Forces)	Lump Sum	•									•
	Relocate Water Line (Work by City of Denver Water Board Forces)	Lump Sum	•									•
	STATE FURNISHED MATERIALS											
17	Compaction (Standard)	Cu Yd.	289,300									289,300
17	Wetfill	M. Cu.	10,360									10,360
18	Station Yard Overhaul	Sta. Yd.	3,051,000									3,051,000
18	Yard Mile Overhaul	Yd. Mi.	225,700									225,700

Δ Non Federal Aid  
 • includes 236 Lin. Ft. of Ornamental Iron Fence

# TABULATION OF SURFACING

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	CALIF.	UD-6-107	8	

LOCATION	STATION	STATION	LENGTH	THICKNESS	SUB-BASE MATERIAL		BASE COURSE GRAVEL SURF		PLANT MIXED ASPHALTIC SURF MEDIAN+1'		PLANT MIXED ASPHALTIC SURF		PLANT MIXED ASPHALTIC SURF		2" GRAVEL SHOULDER SURF		PRIME COAT M C		SEAL COAT R C		STONE SCREENINGS		2" SAND CUSHION		REMARKS			
					AREA	TONS	AREA	TONS	WIDTH	SQ. YDS.	SQ. YDS.	TONS	SQ. YDS.	TONS	WIDTH	TONS	SQ. YDS.	GALS.	SQ. YDS.	GALS.	SQ. YDS.	TONS	WIDTH	CU. YDS.				
West Hampden Avenue Right Lane	257+50	259+50	200.00	12"	Varies	607.5	Varies	189.0			240.7	19.9	566.7	93.5			961.1	384.4	382.2	95.6	382.2	4.8						
	259+50	260+53	103.00	12"	Varies	293.0	Varies	137.7			12.2	1.0	439.0	72.4			473.6	189.4	18.4	4.6	18.4	0.2						
	260+53	267+85	732.00	12"	39.25	1939.3	13.88	685.8			244.0	20.1	1992.7	328.7			2521.2	1008.5	325.3	81.3	325.3	4.1						
	267+85	268+91	206.00	12"	Varies	704.7	Varies	238.3			214.4	18.0	598.9	97.2			919.6	367.8	237.1	69.3	237.1	3.0						
	268+91	271+90.92	199.92	12"	39.25	529.7	13.88	187.3			66.6	5.5	544.2	89.8			688.6	275.4	88.9	22.2	88.9	1.1						
	271+90.92	273+61	170.08	12"																								
	273+61	278+22	481.00	12"	39.25	1221.4	13.88	431.9			153.7	12.7	1254.9	207.0			1587.9	635.2	204.9	51.2	204.9	2.6						
	278+22	281+20	298.00	6"	Varies	475	Varies	319.7			315.2	26.0	775.0	127.9			2247.2	498.9	341.3	85.3	341.3	4.3						
	281+20	284+42	340.00	6"	39.25	450	13.88	318.5			113.3	9.3	925.6	152.7			1171.1	468.4	151.1	37.8	151.1	1.9						
	284+42	286+48	206.00	6"																								
	286+48	288+23.92	175.92	6"	39.25	233	13.88	164.8			58.6	4.8	478.9	79.0			605.9	242.4	78.2	19.6	78.2	1.0						
	288+23.92	288+76	57.50	6"	39.25	76	13.88	53.9			19.2	1.6	156.0	23.8			198.1	79.2	25.6	6.4	25.6	0.3						
	288+76	301+42	1267.00	6"	34.25	2320	18.00	1539.4			1830.1	151.0	3519.4	580.7			6194.2	2477.7	1970.9	492.7	1970.9	24.6						
	301+42	301+77.34	35.34	6"	34.25	65	18.00	42.9			51.0	4.2	98.2	16.2			172.8	69.1	55.0	13.8	55.0	0.7						
	301+77.34	302+56.34	79.00	6"	33.25	142	18.00	96.0			114.1	9.4	219.4	36.2			356.2	154.5	122.9	30.7	122.9	1.5						
302+56.34	304+02.34	146.00	6"	33.25	262	18.00	177.4			210.9	17.4	405.6	66.9			713.8	285.5	227.1	56.8	227.1	2.8							
304+02.34	305+74.00	171.66	6"	33.25	309	18.00	208.6			252.8	20.9	476.8	78.7			839.2	335.7	272.2	68.8	272.2	3.4							
305+74.00	307+09.00	135.00	6"	33.25	225	18.00	153.6			628.8	51.9	1226.9	202.4			2159.3	863.7	677.2	169.3	677.2	8.5							
307+09.00	311+50.68	441.68	6"	33.25	794	18.00	432.1			513.7	42.4	987.9	163.0			1738.7	695.5	553.2	138.5	553.2	6.9							
311+50.68	315+06.34	445.66	6"	33.25	804	18.00	427.4			325.0	26.8	625.0	103.1			1100.0	440.0	350.0	87.5	350.0	4.4							
315+06.34	317+31.34	245.00	6"	33.25	348	18.00	211.0			1083.1	89.4	2082.8	343.7			3665.8	1466.3	116.3	291.6	116.3	14.6							
317+31.34	324+181.68	789.82	6"	48.38	785	18.00	584.2			694.6	57.3	1335.7	220.4			2350.8	940.3	748.0	187.0	748.0	9.3							
324+181.68	325+07.93	329+88.78	480.85	6"	13.88		7528.5					589.6	3.085.3			1617.9		1999.8		100.0								
Total Main Line Right Lane																												
West Hampden Avenue Left Lane	257+50	259+50	200.00	12"	Varies	607.5	Varies	189.0			246.7	20.4	566.7	93.5			961.1	384.5	288.9	72.2	288.9	3.6						
	259+50	260+53	103.00	12"	Varies	289.8	Varies	141.3			16.2	1.3	444.8	73.4			463.9	185.6	20.0	5.0	20.0	0.3						
	260+53	264+03	350.00	12"	Varies	1059.4	Varies	465.4			186.7	16.4	1361.1	224.6			1595.6	579.2	233.3	59.5	233.3	2.9						
	264+03	265+13	110.00	12"	Varies	300.7	Varies	121.5			36.7	3.0	360.6	59.5			440.0	176.0	48.9	12.2	48.9	0.6						
	265+13	267+67.34	254.34	12"	39.25	673.8	13.88	238.3			84.8	7.0	984.3	162.4			876.0	350.4	11.3	2.8	11.3	0.1						
	267+67.34	269+85	217.66	12"	39.25	576.6	13.88	203.9			75.5	6.0	592.5	97.8			749.7	299.9	96.7	24.2	96.7	1.2						
	269+85	271+90.92	205.92	12"	34.25	754.1	18.00	250.2			297.4	24.5	572.0	94.4			1006.7	402.7	320.3	80.0	320.3	4.0						
	271+90.92	273+61	170.08	12"																								
	273+61	276+25	264.00	12"	39.25	948.9	18.00	320.8			352.0	29.0	733.3	121.0			1290.7	516.3	410.7	102.7	410.7	5.1						
	276+25	282+74	649.00	6"	39.25	860	13.88	608.0			216.3	17.8	1766.7	291.5			2235.4	894.2	288.4	72.1	288.4	3.6						
	282+74	284+92	218.00	6"																								
	284+92	288+116.61	319.61	6"	33.25	574	18.00	388.3			426.1	35.2	887.8	146.5			1562.5	625.0	497.2	124.3	497.2	6.2						
	288+116.61	293+96.73	579.23	6"	34.25	1050	18.00	703.9			772.3	63.7	1609.0	265.5			2831.8	1138.7	901.0	225.2	901.0	11.3						
	293+96.73	297+70	373.27	6"	34.25	683	18.00	453.5			539.2	44.5	1036.9	171.1			1824.9	730.0	580.6	145.2	580.6	7.2						
	297+70	299+95	225.00	6"	33.25	404	18.00	273.4			325.0	26.8	625.0	103.1			1100.0	440.0	350.0	87.5	350.0	4.4						
299+95	301+42	147.00	6"	33.25	264	18.00	178.6			212.3	17.5	408.3	67.4			718.7	287.5	228.7	57.2	228.7	2.9							
301+42	305+77	435.00	6"	33.25	782	18.00	528.5			628.8	51.9	1208.3	199.4			2126.7	850.7	677.2	169.3	677.2	8.5							
305+77	307+05	128.00	6"																									
307+05	308+90.34	185.34	6"	33.25	333	18.00	225.2			267.7	22.1	514.8	84.9			906.1	362.4	288.3	72.1	288.3	3.6							
308+90.34	310+36.34	146.00	6"	33.25	262	18.00	177.4			210.9	17.4	405.5	66.9			715.8	285.5	227.1	56.8	227.1	2.8							
310+36.34	311+15.34	79.00	6"	33.25	142	18.00	96.0			114.1	9.4	219.4	36.2			388.2	154.5	122.9	30.7	122.9	1.5							
311+15.34	311+50.68	35.34	6"	33.25	64	18.00	42.9			51.0	4.2	98.2	16.2			172.8	69.1	55.0	13.8	55.0	0.7							
311+50.68	325+35.30	156.67	6"	33.25	249	18.00	168.2			2000.0	165.0	3846.3	634.6			6769.5	2707.8	2153.9	538.5	2153.9	26.9							
325+35.30	329+54.43	445.52	6"	48.38	729	18.00	542.5			644.9	53.2	1240.3	204.6			2183.0	873.2	694.6	173.7	694.6	8.7							
329+54.43	332+14.43	260.00	6"	33.25	441	18.00	294.1			548.9	45.3	1415.5	233.6			2109.0	843.6	577.8	144.5	577.8	7.2							
332+14.43	Transition	360.57																										



# TABULATION OF SURFACING

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	0 016-1179	10	10

LOCATION	STATION	STATION	LENGTH	THICKNESS	SUB-BASE (1)		BASE COURSE GRAVEL SURF		PLANT MIXED ASPHALTIC SURF MEDIAN ±		PLANT MIXED ASPHALTIC SURF 1/2		PLANT MIXED ASPHALTIC SURF		PRIME COAT M/C		SEAL COAT R/C		STONE SCREENINGS		2" SAND CUSHION		REMARKS		
					AREA	TONS	AREA	TONS	WIDTH	SQ. YDS.	SQ. YDS.	TONS	SQ. YDS.	TONS	SQ. YDS.	GALS.	SQ. YDS.	GALS.	SQ. YDS.	TONS	WIDTH	CU. YDS.			
Ramp N.W. 1	0+00	13+16.64	1316.64	6	Varies	2,277.9	Varies	1711.3					3630.9	786.2		6935.4	2774.2	2473.4	618.3	2473.4	30.9				
Ramp N.W. 2	0+00	11+81.15	1181.15	6	Varies	2,015.9	Varies	1515.6					3312.3	704.4		6120.0	2451.0	2171.2	642.8	2171.2	27.1				
Ramp S.W. 1	0+00	11+70.10	1170.10	6	Varies	2,248.0	Varies	1576.3					3418.1	766.8		6770.0	2708.0	2635.3	658.8	2635.3	33.0				
Ramp S.W. 2	0+00	10+20.20	1020.20	6	Varies	1,669.4	Varies	1239.3					2789.1	588.9		4945.7	1978.3	1664.9	416.2	1664.9	20.6				
Ramp N.E. 1	0+00	9+03.20	903.20	6	Varies	1,498.0	Varies	1184.4					2599.3	547.4		4707.0	1882.8	1510.3	377.5	1510.3	19.0				
Ramp S.E. 1	0+00	11+45.26	1145.26	6	Varies	2,262.8	Varies	1635.5					3242.1	746.3		6739.9	2696.0	2717.3	679.3	2717.3	34.0				
Ramp S.E. 2	0+00	10+02.75	1002.75	6	Varies	1,605.6	Varies	1199.0					2629.3	566.8		4830.6	1932.2	1717.8	429.5	1717.8	21.5				
<b>Total Ramp Surfacing</b>						<b>15,577.6</b>		<b>10,061.4</b>						<b>4708.6</b>			<b>16231</b>		<b>37224</b>		<b>186.3</b>				
South Sheridan Blvd & Stationing Bridge	266+00	269+00	300.00	6	Varies	648.0	Varies	536.6					222.9	18.3	1666.7	275.0									
	269+00	269+65	65.00	6	51.25	112.4	24.00	105.3	11	4.4			346.7		346.7	57.2			2044.4	817.8	266.7	66.7	266.7	3.3	
	269+65	270+73	108.00	6	51.25	112.4	24.00	105.3	11	4.4			346.7		346.7	57.2			346.7	138.7	79.4	19.8	79.4	1.0	
	270+73	271+14	41.00	6	51.25	70.9	24.00	66.4	11	2.8			218.7		218.7	36.1			218.7	87.5	50.1	12.5	50.1	0.6	
	271+14	271+28	14.00	6	51.25	25.5	24.00	22.7	11	0.9			74.7		74.7	12.3			74.7	29.4	17.1	4.3	17.1	0.2	
	271+28	271+88	60.00	6	64.70	131.0	31.00	125.6					413.3		413.3	68.2			413.3	165.3					
	271+88	272+21.40	33.40	6	63.94	72.1	29.00	65.4	1	0.2			215.2		215.2	35.5			215.2	84.1	3.7	0.9	3.7	0.0	
	272+21.40	273+30.40	109.00	6	58.96	216.9	26.50	195.0	6	4.0			641.9		641.9	105.9			641.9	256.8	72.7	18.2	72.7	0.9	
	273+30.40	274+47	116.60	6	53.95	212.3	24.00	188.9	14	0.0			621.8		621.8	102.6			621.8	248.8					
	274+47	276+89	242.00	6	61.24	416.6	24.00	392.0	11	6.2			1290.7		1290.7	213.0			1290.7	516.3					
	276+89	277+54	75.00	6	56.44	142.9	24.94	126.3	11	5.0	16.7	1.4	404.2		404.2	66.7			420.8	168.3	20.8	5.2	20.8	0.3	
	277+54	278+53	99.00	6	62.24	186.5	26.88	161.5	11	6.0	54.4	4.5	479.6		479.6	79.1			553.7	225.5	59.3	14.8	59.3	0.7	
	278+53	278+96	43.00	6	51.25	74.4	24.00	69.7	11	2.9			229.3		229.3	37.8			229.3	91.7					
	278+96	279+93	97.00	6	62.24	203.8	26.88	176.0	11	6.5	59.3	4.9	522.7		522.7	86.2			614.3	245.7	64.7	16.2	64.7	0.8	
	279+93	280+68	75.00	6	56.44	142.9	24.94	126.3	11	5.0	16.7	1.4	404.2		404.2	66.7			420.8	168.3	20.8	5.2	20.8	0.3	
	280+68	282+89	221.00	6	51.25	382.3	24.00	358.0	11	16.8			1178.7		1178.7	194.5			1333.3	533.3					
	282+89	285+90	101.00	6	73.24	243.7	29.26	199.5	11	6.8	123.4	10.2	549.9		549.9	90.7			740.7	296.3	134.7	33.7	134.7	1.7	
285+90	284+74	84.00	6	73.00	207.0	33.63	190.7			51.3	4.2	583.3		583.3	96.2			662.7	265.1	56.0	14.0	56.0	0.7		
284+74		150.00	6	63.00	319.0	25.76	260.8			183.3	15.1	700.0		700.0	115.5			983.3	393.3	200.0	50.0	200.0	2.5		
<b>Total South Sheridan Surf</b>						<b>3,814.2</b>		<b>3,366.7</b>		<b>87.5</b>		<b>60.0</b>		<b>1,739.2</b>			<b>4,734.7</b>		<b>261.5</b>		<b>13.0</b>				
Outer Highway	0+00	0+25	Varies	12	Varies	186.2	Varies	84.8					193.2	1.1	193.2	21.2			220.4	88.2	14.4	3.6	14.4	0.2	
	0+25	19+09.89	894.89	12	53.00	6743.2	24.00	2989.9					5026.4		5026.4	552.9			5445.2	2178.1					
	19+09.89	19+34.89	25.00	12	Varies	114.3	Varies	53.1					96.5		96.5	10.6			105.0	42.0					
<b>Total Outer Highway Surf</b>						<b>7043.7</b>		<b>3127.8</b>					<b>1.1</b>		<b>584.7</b>			<b>2,308.3</b>		<b>3.6</b>		<b>0.2</b>			

(Accel. Lane Included)  
 \* 2" Plant Mixed Asphaltic Surfacing on Outer Highway.

Sub-base material depth used for estimate = 12" ±

# TABULATION OF SURFACING

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
7	COLR.	UG16-1171	11	11

LOCATION	STATION	STATION	LENGTH	THICKNESS INCHES	SUB-BASE ① MATERIAL		BASE COURSE GRAVEL SURF		3" PLANT MIXED ASPHALTIC SURF		2" PLANT MIXED ASPHALTIC SURF		1 1/2" PLANT MIXED ASPHALTIC SURF		1" PLANT MIXED ASPHALTIC SURF		PRIME COAT M.C.		SEAL COAT R.C.		STONE SCREENINGS		REMARKS	
					VOL.	TONS	VOL.	TONS	SQ. YDS.	TONS	SQ. YDS.	TONS	SQ. YDS.	TONS	SQ. YDS.	TONS	SQ. YDS.	GALS.	SQ. YDS.	GALS.	SQ. YDS.	TONS		
North Outer Highway																								
E Station	0+00	3+78	378.00	12	6,632	1206	7749	562			1,344	148			1092	436.8								
<b>SUB-TOTAL N OUTER HIGHWAY</b>						1206	562				1,344	148			1092	437								
Hampden Approach	0+00	1+50	150.00	12	13070	947	5287	383	767	1269			600	495		1427	570.8	577	1443	577	7.2			
<b>SUB-TOTAL HAMPDEN APPROACH</b>						947	383	767	127				50			571	144				7			
Ramps																								
N.W.-1	0+00	9+2525	925.25	6	52,020	1886	19,907	1443	2865	621					85	4.6	5321	2128.0	2026	5066	2026	25.3		
S.W.-1	0+00	9+9000	990.60	6	45,192	1530	17,054	1273	2622	538					172	95	4352	1740.8	1535	384.2	1535	19.2		
N.E.-1	0+00	7+8030	780.30	6	33,019	1197	12,911	936	2058	379					67	37	2954	1181.6	1084	270.9	1084	13.6		
S.E.-1	0+00	7+8543	785.43	6	44,819	1625	17,082	1238	2529	546					139	76	4619	1847.6	1800	450.0	1800	22.5		
<b>SUB-TOTAL RAMPS</b>						6258	4890	2084							25	6898	1612				81			
Federal Blvd																								
Lt of E	0+00	10+00	1000.00	12	31,332	2271	15,310	1110	3396	5603					70	39	3396	1358.4	70	175	70	0.9		
Rt of E	0+00	10+00	1000.00	12	32,229	2337	15,277	1108	3388	5591					70	39	3388	1355.4	70	175	70	0.9		
<b>SUB-TOTAL FEDERAL BLVD.</b>						4608	2218	1119							8	2714	35				2			
<b>PROJECT TOTAL</b>						115,919	64,735	26,593								370	32,281	15,809				177		

① Approximate Thickness to be based on Design Curve "E".

# TABULATION OF CURBS AND GUTTERS

CONTINUED FROM SHEET NO 91

LOCATION	STA.	STA.	TYPE I CURB & GUTTER		TYPE II CURB & GUTTER ONLY		CURB, GUTTER & SIDEWALK		4' VALLEY GUTTER		CURB RETURN	REMARKS
			LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.		
Main Line												
Left Control Line	345+20	345+95		78								
Left Control Line	357+57	358+57		109								
Left Control Line (Hempden Approach)	366+00	367+00		107		100						
Right Control Line	347+45	348+45		109								
Right Control Line	353+43	350+16		78								
Lower I Blvd. Road, Ct--Hempden Ave Intersection			275									
Bryant St. Hempden Ave Intersection			225									
Main Line												
Left Control Line	388+00	394+8078	2352									
Left Control Line	397+6078	389+122	1732									
Federal Blvd.												
Left Control Line	0+27	1+91.12		164							24	
Left Control Line	2+16	2+78		70								
Left Control Line	2+97	6+35		348								
Left Control Line	6+66	7+00		48								
Left Control Line	7+367	9+00		164								
Right Control Line	0+27	1+91.11		164								
Right Control Line	2+16	2+78		70								
Right Control Line	2+97	6+35		337								
Right Control Line	6+66	7+00		74								
Right Control Line	7+367	8+47		117								
Left Federal Blvd.	3+43	3+88	516									
Left Federal Blvd.	6+62	8+36	304									
Ramp, N.W.-I	0+00	1+46.80		150								
Ramp, N.W.-I	1+46.80	2+22.80		75		75						
N.W.-I We Island												
Ramp, S.W.-I	3+46	4+46		75								
Ramp, S.W.-I	8+49.0	9+24.0		100								
Ramp, S.W.-I	9+24.0	9+50.00		75								
S.W.-I We Island												
Ramp, N.E.-I	2+53	3+53		75								
Ramp, N.E.-I	6+46.89	7+41.89		100								
Ramp, N.E.-I	6+41.89	7+40.30		38								
N.E.-I We Island												
Ramp, S.E.-I	0+00	0+24.07		75								
Ramp, S.E.-I	6+45	7+20		75								
S.E.-I We Island												
From Sheet No. 91			2,922	2,439	1,140							
From Sub-TOTAL			6,925	5,369	1,550							
From Curb Return Column				48								
PROJECT TOTAL			8,325	6,417	1,550							

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U016-1171	72	

An Estimated 25 Tons of Plant Material Shoulder Roll may be required during construction in areas to be determined by the Engineer.



# STORM SEWERS

INLET OR MANHOLE		STORM SEWER PIPE										REMARKS
NO.	LOCATION	TYPE	H	ELEVATION	PIPE SIZE	LENGTH	FLOW LINE ELEVATIONS	FITTINGS	LINE	%		
				RIM	15" 18" 24" 30" 36" 48" 54" 60"	IN	DUT	7.50' FARE	FROM TO	GRADE		
132	332+00 E. Drop Inlet	A	5.0	0750	0350			0350	1-36"	Ditch	0.67	* To 36" RCP Crossman Inv.0283
	36" RC. Flared End 30' L332+40 LCL			0200	0200			0200	1-36"	Ditch		
	36" RC. Flared End 60' R333+00 RCL			0050	0050			0050	1-18"	Ditch		
	18" RC. Flared End 30' L34+00 LCL			9850	9759			9759	1-18"	Ditch		
345	344+5486 E. Drop Inlet	A	3.0	0159	9759			9759	1-18"	Ditch	1.99	
	18" RC. Flared End 40R. 0437 SW-1			9600	9600			9600	3/4"			* To 36" RCP Crossman Inv.9000
	Headed/1/36" RCP 109' L356+68 LCL			9250	9250			9250	1-15"			* To 36" RCP Crossman Inv.8850
365A	356+442 Drop Inlet 60R	A	4.0	9150	8950			8950	1-15"		7.50	* To Bear Creek Inv.9120
363	363+00 E. Drop Inlet	A	4.0	9920	9720			9720	1-18"	Ditch	4.03	
	15" RC. Flared End 36R R363+00 RCL			9120	9120			9120	1-18"	Ditch	2.54	
	18" RC. Flared End 24' L372+40 LCL			9000	8750			8750	3/2"			Inlet Inv.8720 Outlet Inv.8400
372	372+40 E. Drop Inlet	A	9.0	9550	8400			8400	1-15"	Ditch	0.63	
	372+65 100' RI RCL (Open Pipe)			8400	8400			8400	3/2"			
	4+00 E Bryant St (Crossman)			7750	7750			7750	1-18"	Ditch	1.06	
385	384+90 E. Drop Inlet	A	8.0	8450	7700			7700	1-18"	Ditch	1.13	
	15" RC. Flared End 45' R385+00 RCL			9828	9811			9811	3C	MH-3	1.31	Stub for Future Conn. (Plug) Special Manhole See Sheet 19
	2472 E Spokane St (Crossman)			9750	9750			9750	MH-3	MH-3	2.26	
	18" RC. Flared End 15' RI 14773 NW-1			9627	9627			9627	3/2"		1.60	
3C	14773 RI NW-1	A	4.0	0061	9811			9811	3/2"		6.64	
	3A 3425 75' RI E. Federal Blvd	A	4.0	0000	9750			9750	3A	MH-2	1.71	Special Manhole See Sheet 19
	Headed/1/60" RCP 54' RI 3495 SE-1			9247	9247			9247	3B	MH-3	1.83	
	18" RC. Flared End 25' R16+20 Fed RCL			8580	8580			8580	1-15"		6.4	
6A	6430 Federal RCL	4B	3.0	9606	9306			9306	Ditch	68	2.50	
6B	6430 Federal LCL	4B	5.0	9606	9126			9126	6A	78	2.86	
7B	017240 RI SE-1	4B	5.5	9487	8937			8937	6B	MH-7	4.58	
	Headed/1/24" RCP 80' RI 4.7+25 Federal Blvd.			9125	9125			9125	MH-7	MH-7	2.23	
MH-7	7+25 85' L1 E. Federal Blvd	MH-4	6.0	9363	8763			8763	Ditch	78	1.23	* To Bear Creek Inv.8606
	9+45 RI SW-1	4B	2.5	9496	9246			9246	1-15"	Ditch	6.05	
7A	1576C Flared End 20R19+45 SW-1			9125	9125			9125	TA			
SHEET TOTALS				25362	356	76		25362	4'-15"			
CLASS III				136	136			136	4'-15"			
CLASS III				120	120			120	4'-15"			

## MANHOLE ADJUSTMENTS

NO.	LOCATION	TYPE	H	ELEVATION	PIPE SIZE	LENGTH	FLOW LINE ELEVATIONS	FITTINGS	LINE	%	REMARKS
A	108L1 324+85 ML LCL MH Lower (F)	I									
B	2'L1 3+00 Fed LCL MH Lower (F)	I									
C	5'L1 3+00 Fed RCL MH Lower (F)	I									
D	1'L1 5+88 Fed RCL MH Rise 2(F)	I									
E	60L1 337+35 ML LCL MH Rise 4(F)	I									
F	10'R1 361+20 ML LCL MH Rise 4(F)	I									
G	10'L1 364+68 ML LCL MH Rise 4(F)	I									
H	10'L1 365+20 ML LCL MH Rise 4(F)	I									
I	2'R1 366+25 ML RCL MH Rise 1(F)	I									
J	2'R1 373+30 ML RCL MH Rise 7(F)	I									
K	2'R1 376+95 ML LCL MH Rise 2(F)	I									
L	10'R1 381+00 ML E MH Rise (F)	I									
PROJECT TOTALS											

DATE	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U 016-1073	14	

# LIST OF STRUCTURES

REV 11-24-00 J.C.K.

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	US 6-107	15	

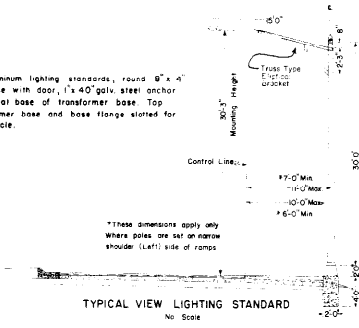
LOCATION	DESCRIPTION	NOTE NUMBER	REMOVALS	CONCRETE SLIPS AND DITCH PAVING CU YDS	UNCLASSIFIED DITCH EXCAVATION CUBIC YARDS	UNCL. STRUCT EXCAVATION MISCELLANEOUS CUBIC YARDS	STRUCTURE BACKFILL CLASS. CUBIC YARDS	HEAVY RIPRAP CU YDS	CONCRETE CLASS. CUBIC YDS	REINFORCING STEEL LBS	CORRUGATED PIPE FEET		METAL PIPE FEET		REMARKS	
											NEAR	FEET	NEAR	FEET		
LT 333+50 L.G.L.	Remove 42" X 3' X 18" Concrete Box Culvert	1	1													
65' Rt 333+00 R.C.L.	Unclassified Ditch Excavation	1A			190											
80' Rt 7+25 Federal E.	Headwall for 24" RCP	2				5	3		1.6	None						For Details See Std M-102-J
27' Rt 4+30 NE-1	Headwall for 36" RCP	3				2	3		3.0	None						Req'd 1-36" Trash Guard
LT 353+ To 365+	Concrete Pavement over Sanitary Sewer	3A														770 SQ YDS Concrete Pavement See Sheet No. 105
207' Lt 7+70 Federal E.	Headwall for 36" RCP	4				2	4		2.8	133						Req'd 1-60" Trash Guard
54' Rt 5+95 SE-1	Headwall for 60" RCP	5				6	12		6.7	267						For Details See Sheet No. 5
68' Lt 365+50 Hamp E.	150' Concrete Retaining Wall	6				212	82		7.0	None						For Details See Sheet No. 5
<del>68' Lt 365+50 Hamp E.</del>	<del>42" X 3' RCP Culvert</del>	<del>6A</del>														
68' Lt 369+50 Hamp E.	100' Concrete Retaining Wall	7				98	40		3.6	None						
<del>68' Lt 369+50 Hamp E.</del>	<del>42" X 3' RCP Culvert</del>	<del>7A</del>														
100' Rt 372+50 R.C.L.	Unclassified Ditch Excavation	7A			74											
L 385+25	136' X 2' X 2' Concrete Box Culvert w/2 Headwalls	8				50	145		34.5	261						For Details See Std M-50-B
Rt L 390+00	Remove Concrete Well	9	1													
L 390+00	Remove 42" X 2' X 2' Concrete Box Culvert	10	1													
L 390+35	Outlet Slitch	10A			20											
L 391+50	Remove 24" X 12" CMP	11	1													
Rt L Sta 397+00	Remove 30" X 12" CMP	12	1													
42' Lt 38+50 L.G.L.	180' X 24" CMP	13				31	21				80					
<del>70' Lt 38+10 R.C.L.</del>	<del>110' X 18" CMP</del>	<del>14</del>				35	28				110					
Channel Summary	Sheet No. 98							3,100								
Channel Summary	Sheet No. 99			420	120	90	2,713									
Wall	Sheet No. 4				17	14		10								
Channel	Sheet No. 105				90	10		184								
Bases For Light Standards						1,000										
For Underdrains																
<b>PROJECT TOTALS</b>				95	420	284	1,563	424	7,298	1830	3,011	80				

Ⓢ This List of Removals is Not a Complete List of Items to be Included in Removal of Obstructions and is included for information Only.

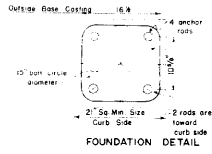
How Sheet Summary Sheet No. 98  
How Sheet Summary Sheet No. 99  
How Sheet Summary Sheet No. 105

# SUMMARY OF LIGHTING AND FENCING REQUIREMENTS

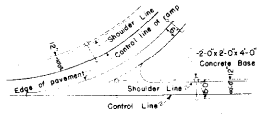
Note: All extruded aluminum lighting standards, round 8" x 4" taper, transformer base with door, 1 1/2" x 4" galv. steel anchor bolts, 1/2" bolt circle at base of transformer base. Top bolt circle of transformer base and base flange slotted for 1 1/8" diameter bolt circle.



TYPICAL VIEW LIGHTING STANDARD  
No Scale



FOUNDATION DETAIL



TYPICAL LIGHTING LAYOUT  
Spacing varies as shown on Plan Sheets

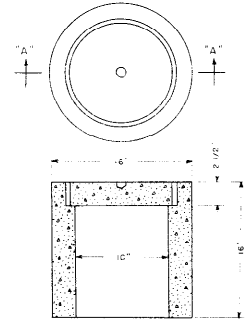
LEGEND		ON	PLAN	SHEETS
●	20,000	L	Merc	Vapor
●	25,000	L	Merc	Vapor
●	4,000	L	Merc	Vapor
●				Pull Box

SUMMARY OF LIGHTING REQUIREMENTS			
PROJECT U 016-1 (17)			
SHEET NUMBER	20,000 L	25,000 L	4,000 L
92	10	4	11
102	10	4	10
104	6	0	4
109	1	0	1
TOTAL	31	8	31

REMOVAL OF EXISTING FENCE	
SHEET NO.	LIN. FT.
102	2,281'
105	3,175'
109	1,790'
PROJECT TOTAL 7,250'	

Note: Conduit Shall Be Placed A Minimum Of One Foot Below Ground Surface Except Under Roadway Where It Shall Be Placed A Minimum of Two Feet Deep.

DETAILS OF PULL BOX (JUNCTION BOX)



SECTION 'A-A'

## FENCING REQUIREMENTS PROJECT

LEGEND		
Chain Link Wire Mesh (School Fence)	— — — — —	
Combination Wire Fence (Barrier)	— — — — —	
Metal Plate Guard Fence	— — — — —	

## SUMMARY OF FENCING PROJECT U 016-1 (17)

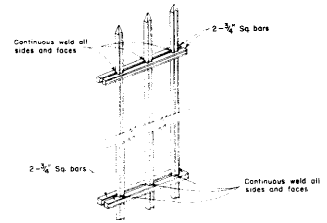
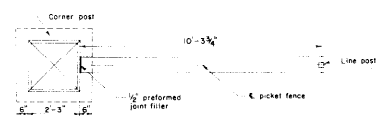
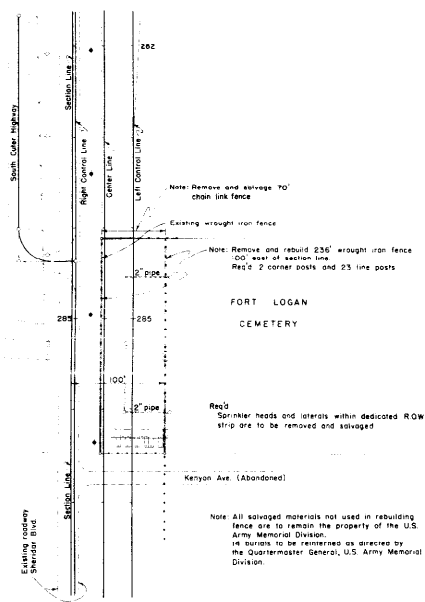
SHEET NO.	CHAIN LINK WIRE FENCE	BARRIER FENCE	BARBED WIRE FENCE	METAL PLATE GUARD FENCE
92	2,790	2,100	1,920	2,700
98	3,850	2,750		1,650
99	1,800	800		500
102	4,150	1,900		900
105	5,400	2,300		700
109	3,945			
TOTAL	21,935	9,850	1,920	6,450

**COLORADO**  
DEPARTMENT OF HIGHWAYS

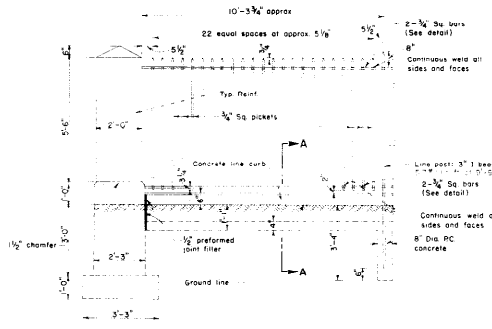
DETAILS OF  
LIGHTING & FENCING

Designed by	Approved by
Checked by	Date

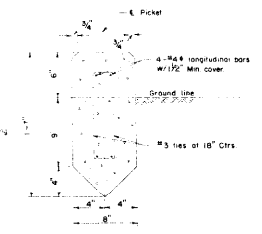
FED. ROAD DIVISION NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U014-1173	17	



**DETAIL OF METAL PICKETS AND RAILS ASSEMBLY**  
NO SCALE



**DETAIL OF WROUGHT IRON FENCE AND POST**  
NO SCALE



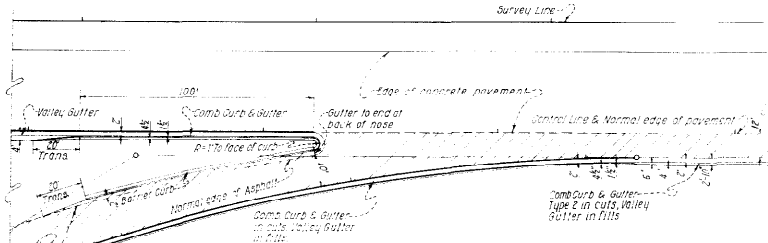
**SECTION A-A CONCRETE LINE CURB**  
NO SCALE

**SUMMARY (THIS CONTRACT)**

REMOVE 70' CHAIN LINK FENCE  
REMOVE AND REBUILD 236' WROUGHT IRON FENCE COMPLETE W/POSTS.

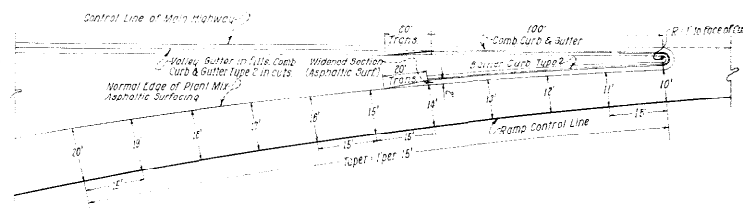
# TYPICAL RAMP DETAILS SHOWING CURB & GUTTER DETAIL

FED. ROAD DISTRICT NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U 016-1 (97)	1/8	



**TYPICAL CONCRETE ROADWAY PLAN SHOWING SINGLE-LANE ENTRANCE WITH ACCELERATION LANE**  
Original Scale: 1"=20'

NOTE: Where comb curb & gutter is called for in place of barrier curb, the comb curb & gutter will be placed in same relative position of normal edge of pavement.



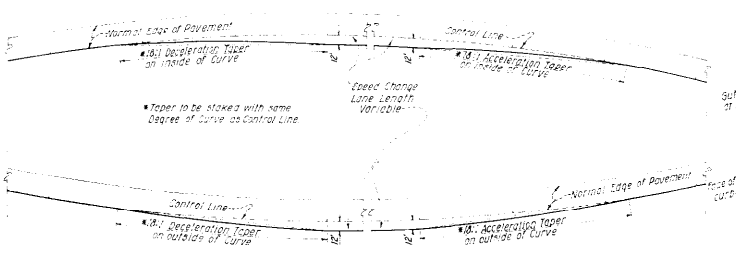
**TYPICAL TAPERED SECTION FOR SINGLE-LANE ENTRANCE WITH ACCELERATION LANE**  
10 Scale

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

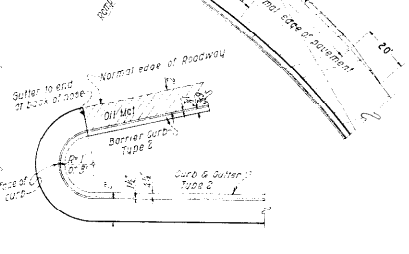


**TYPICAL ROADWAY PLAN SHOWING SINGLE-LANE EXIT WITH DECELERATION LANE**  
Original Scale: 1"=20'

Note: The type of Curb and Gutter shown on these details are for information only. Use the appropriate plans for specific Curb & Gutter Requirements.



**DETAIL OF TAPER LOCATED ON CURVE**  
Original Scale: 1"=20'



**DETAIL OF NOSE CURB**  
Original Scale: 1"=20'

**REINFORCEMENT BAR LIST**  
ALL DIMENSIONS ARE OUT TO OUT OF BAR

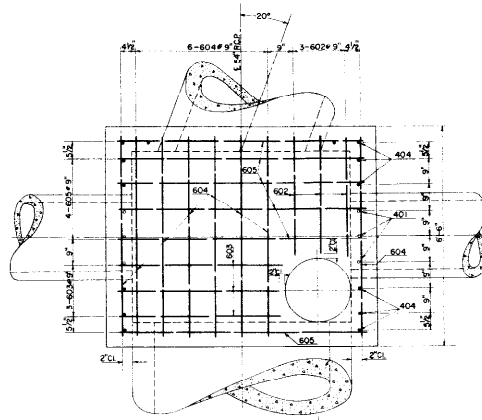
MARK	SIZE	NO. REQUIRED		LENGTH	TYPE
		M.H. 2	M.H. 3		
401	1/2"	0	6	3'-6"	Str
402	1/2"	0	4	4'-3"	Field Band
403	1/2"	8	4	4'-6"	Field Band
404	1/2"	18	12	6'-4"	Str
601	3/4"	0	15	1'-3"	Str
602	3/4"	3	3	3'-2"	Str
603	3/4"	3	3	4'-2"	Str
604	3/4"	37	29	5'-4"	Str
605	3/4"	15	15	6'-4"	Str

**SUMMARY OF QUANTITIES**  
FOR INFORMATION ONLY

MANHOLE NO.	STATION	H	MANHOLE DIAMETER	QUANTITIES FOR ONE MANHOLE	
				CONCRETE & REINFORCING STEEL	
				CU YDS	LBS
2	1+86.234 E. Fed Blvd.	9.5	6'-0"	546	579
3	3+28.001 E. Fed Blvd.	7.5	6'-0"	504	518

A Quantities of Concrete have been deducted from Side Walls and Top for Drain Pipes from Drop Inlets and Manhole opening.

Reinforcing Steel includes 1% for overrun

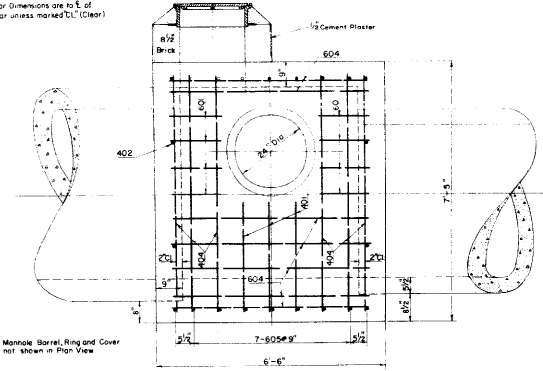
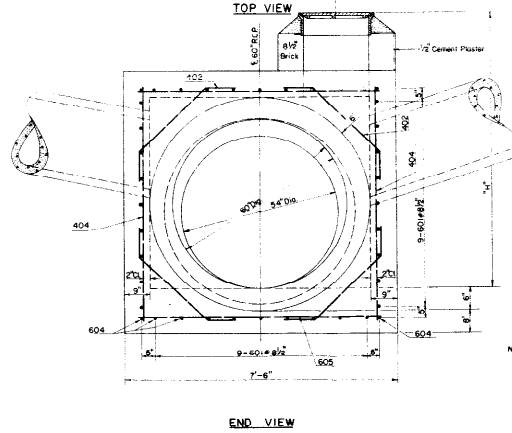


**DETAIL OF SPECIAL MANHOLE NO. 3**

NOTE: Manhole # 2 Similar except to handle 54" Pipe in and out. In pipe to be plugged.

Note  
Thickness of Walls and Roof 9"  
Thickness of Floor 8" over of Pipe

Bar Dimensions are to E of Bar unless marked "L" (Clear)



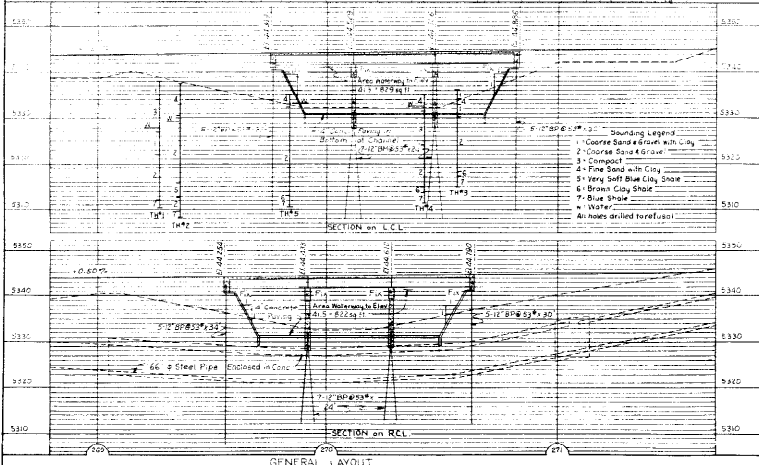
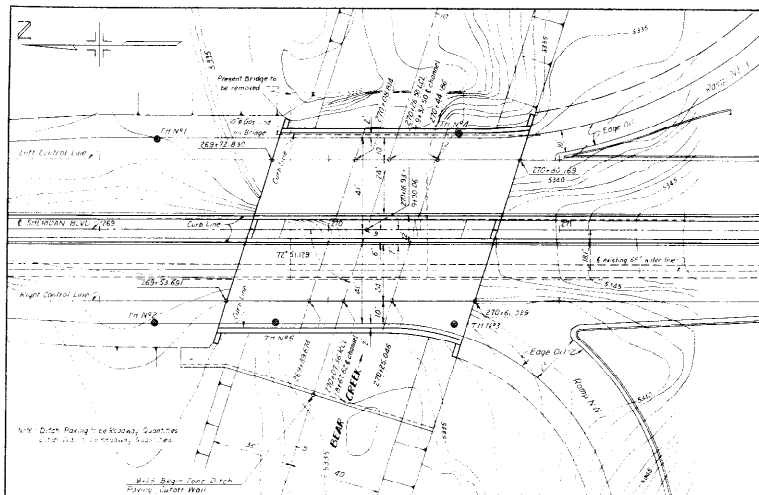
Note Manhole Barrel, Ring and Cover not shown in Plan View

For Dimensions of Manhole Ring Cover See Sheet No. 69

For Dimensions of Manhole Deck See Sheet No. 69

END VIEW

SIDE VIEW



**SUMMARY OF QUANTITIES -- F1617H**

Item	Description	Unit	Super-structure	Abut.	Pier N12	Pier N13	Abut. N14	Total
1	Removal of Bridge	C.Y.						Lump Sum
2	Concrete for Structural Excavation (Bridge)	C.Y.						16
3	Structure Backfill (Class I)	C.Y.						16
32	Reinforcing Steel (Includes 18" for Curbs)	Lbs	172.7	1,130	323	323		2,950
46	Class "A" Concrete	C.Y.	172.7	1,130	323	323		2,950
47	Reinforcing Steel (Includes 18" for Curbs)	Lbs	50,765	230	2745	2745		56,745
48	Structure Steel (Includes 18" for Curbs)	Lbs	60	160	160	160		580
51	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640
52	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640
53	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640
54	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640

**SUMMARY OF QUANTITIES -- F1617H**

Item	Description	Unit	Super-structure	Abut.	Pier N12	Pier N13	Abut. N14	Total
4	Concrete for Structural Excavation (Bridge)	C.Y.						16
5	Structure Backfill (Class I)	C.Y.						16
32	Reinforcing Steel (Includes 18" for Curbs)	Lbs	172.7	1,130	323	323		2,950
46	Class "A" Concrete	C.Y.	172.7	1,130	323	323		2,950
47	Reinforcing Steel (Includes 18" for Curbs)	Lbs	50,765	230	2745	2745		56,745
48	Structure Steel (Includes 18" for Curbs)	Lbs	60	160	160	160		580
51	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640
52	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640
53	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640
54	Steel Piling (12" x 12" x 133)	Lbs	60	160	160	160		640

Expansion Joint Material and Seal in accordance with AASHTO Specification M-33-94 and of the type shown and shall be included in the bid price for Item 10.

Note: Contractor is advised to determine whether existing underground gas or water lines exist in the area before starting construction.

**GENERAL NOTES**

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR THE PROTECTION OF ALL UTILITIES AND EXISTING STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND EXISTING STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND EXISTING STRUCTURES.

**LOADING DATA**

SEE PLAN SHEET F1617H-1 FOR TRUCK AND TRAILER LOADS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND EXISTING STRUCTURES.

**COLORADO DEPARTMENT OF HIGHWAYS**

ST. RUDY & CURTIS ENGINEERS

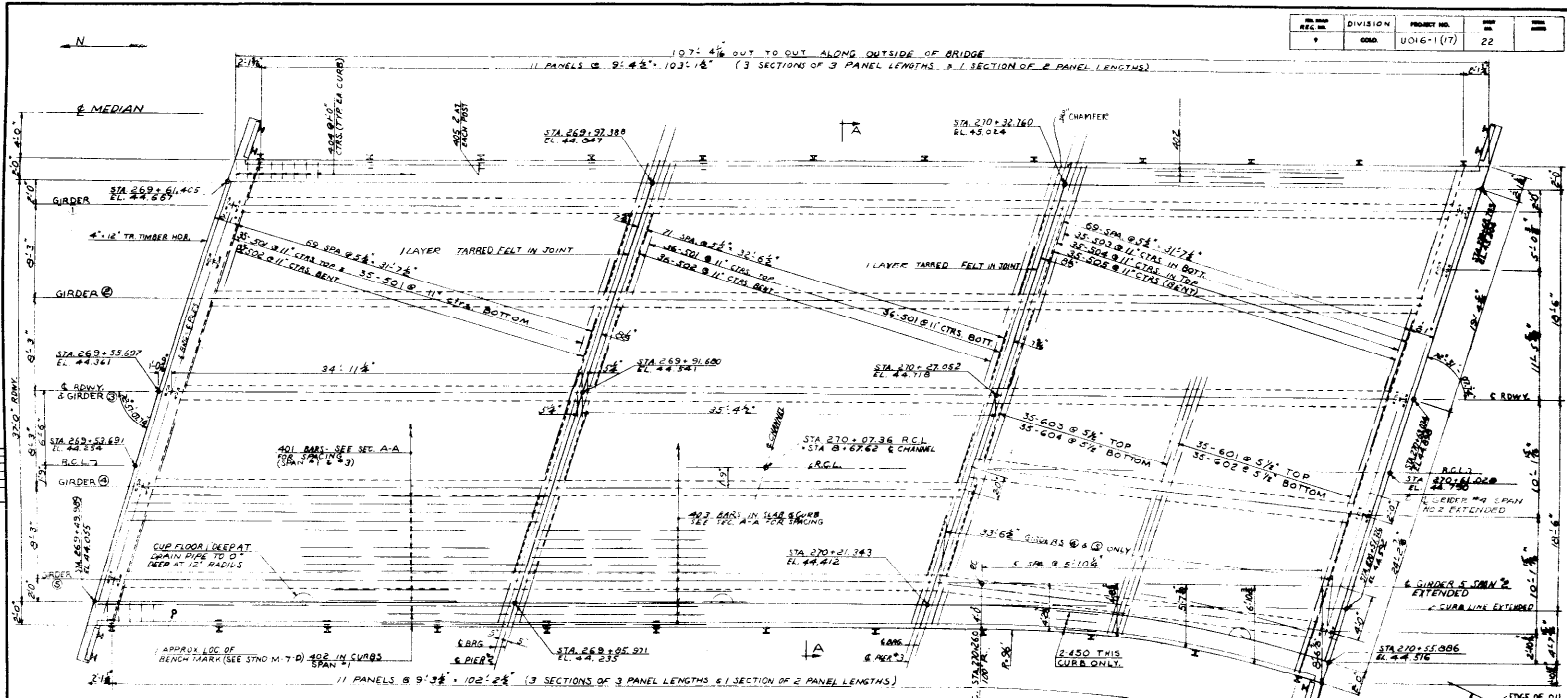
General City of Denver, Colorado  
 1500 Broadway, Denver, Colorado  
 Phone: 333-1111

Designed by: [Signature]  
 Checked by: [Signature]

STRUCTURE NO. F1617H-1

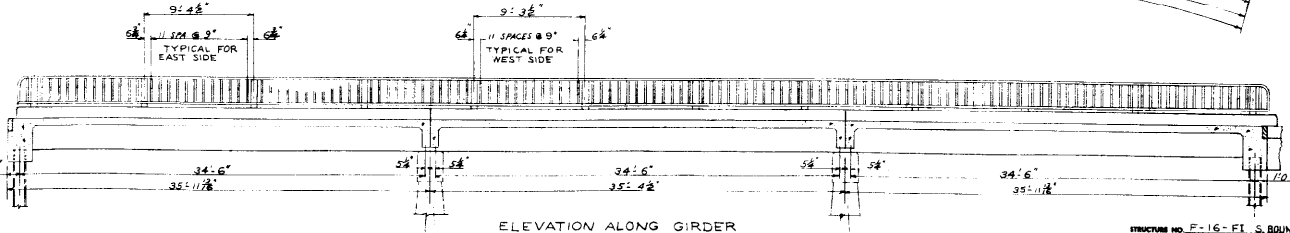


DESIGN REC'D	DIVISION	PROJECT NO.	SHEET NO.
600	600	0016-1(17)	22



106: 16' OUT TO OUT ALONG OUTSIDE OF BRIDGE  
 11 PANELS @ 9' 3 3/8" + 102' 2 1/8" (3 SECTIONS OF 3 PANEL LENGTHS & 1 SECTION OF 2 PANEL LENGTHS)

PLAN OF SUPERSTRUCTURE

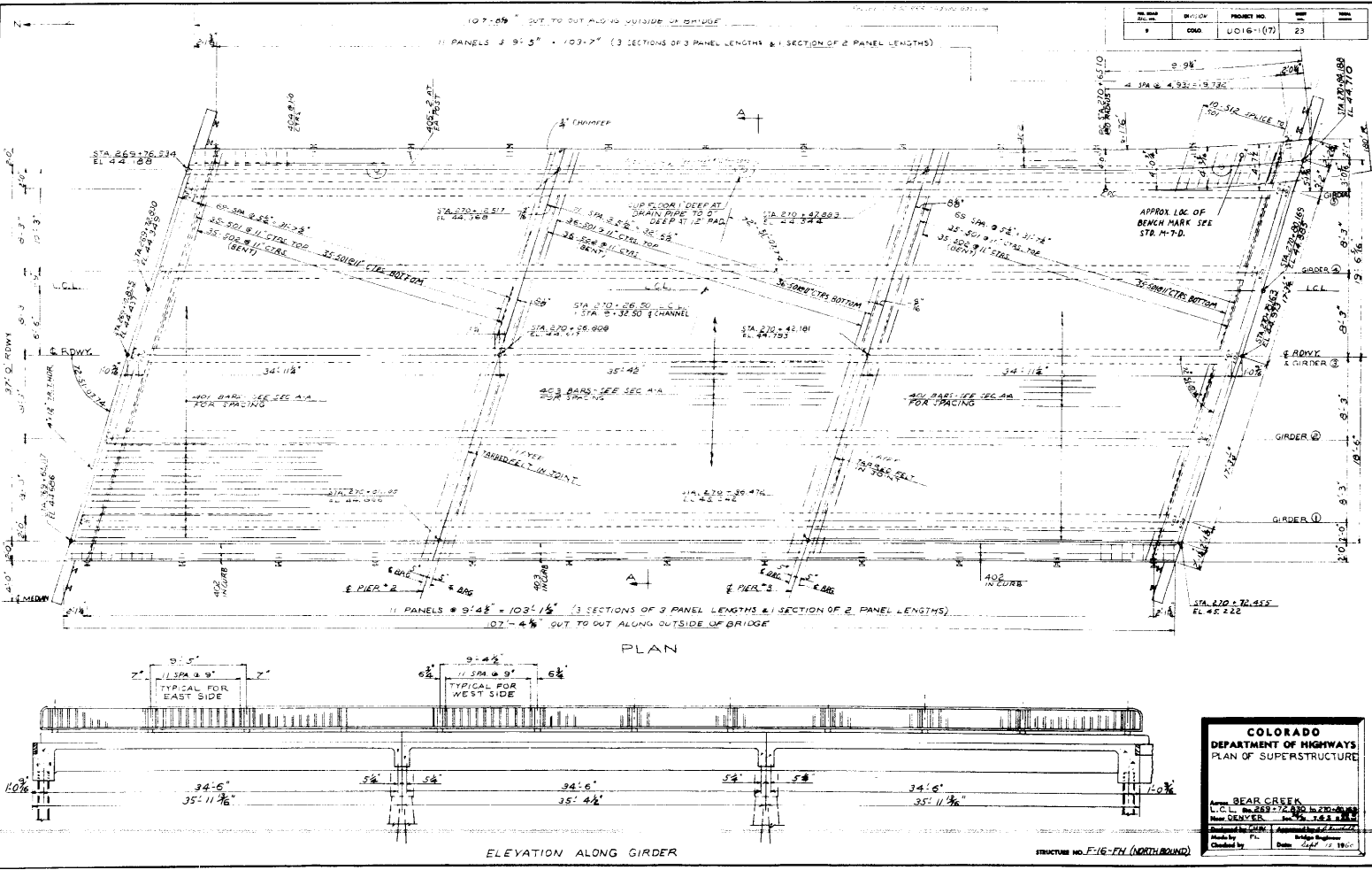


ELEVATION ALONG GIRDER

**COLORADO**  
**DEPARTMENT OF HIGHWAYS**  
**PLAN OF SUPERSTRUCTURE**

Area: BEAR CREEK  
 P.C.L. No. 682-583N 1007-863N  
 Name: DRIVER, Inc. 77, 14 S. 10th St.  
 Designed by: G.W.H. Approved by: J.P. 2-22-50  
 Checked by: P.L. Bridge Engineer  
 Date: 2-22-50

STRUCTURE NO. F-16-FT. S. BOUND

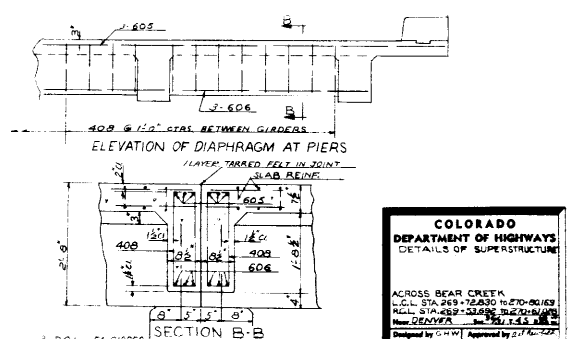
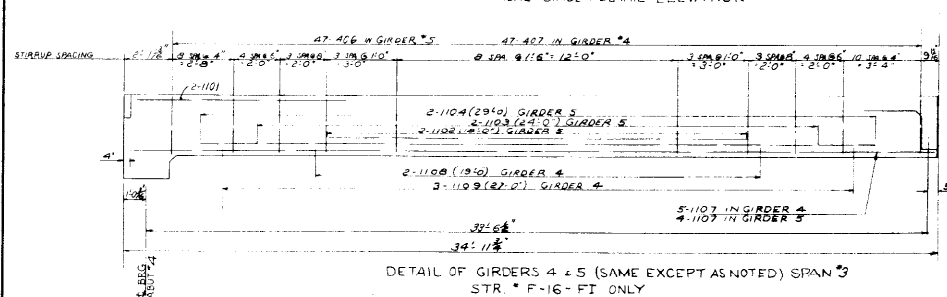
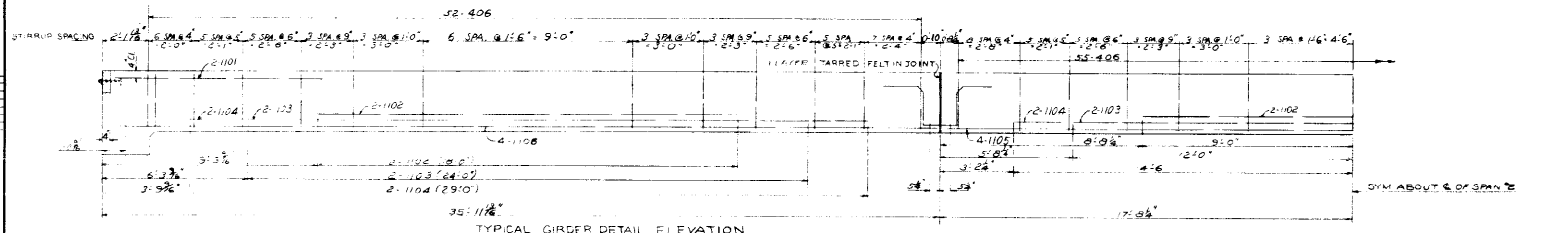
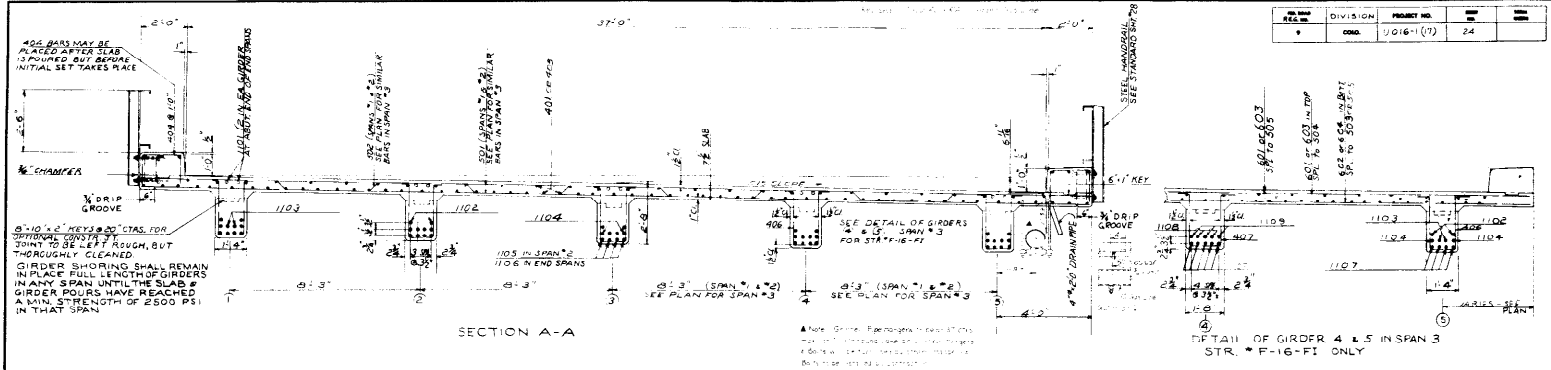


NO.	DATE	BY	CHK'D BY	PROJECT NO.	SHEET NO.
1				U016-(7)	23

**COLORADO**  
DEPARTMENT OF HIGHWAYS  
PLAN OF SUPERSTRUCTURE

Approx. BEAR CREEK  
L.C.L. No. 283-72-830 IN 201-00-00  
Plan CENTER. In 201-00-00  
Drawn by J.M.H. Approved by J.M.H.  
Made by P. Bridge Engineer  
Checked by Date 12/15/19

PROJECT NO.	DIVISION	DATE
1016-1(7)		24



**COLORADO DEPARTMENT OF HIGHWAYS**  
**DETAILS OF SUPERSTRUCTURE**

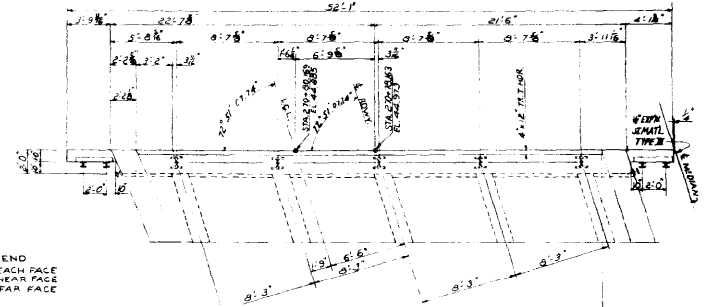
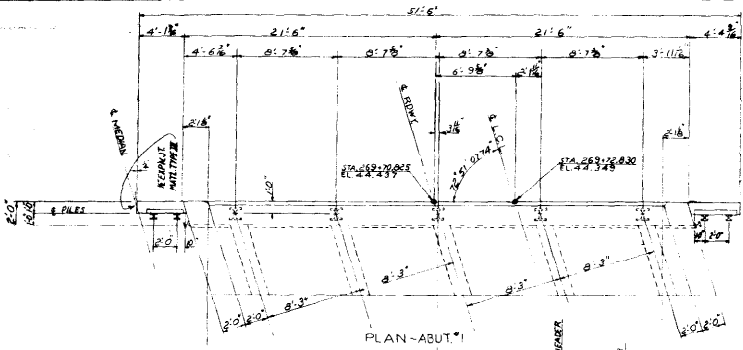
ACROSS BEAR CREEK  
 N.H.L. STA. 49+72.00 TO 49+80.00  
 S.H.L. STA. 49+72.00 TO 49+80.00  
 MAIN GIRDERS 40# 6 #10

Designed by: C.H.W. Approved by: J.F. 1950  
 Checked by: F. Date: 1/17/50

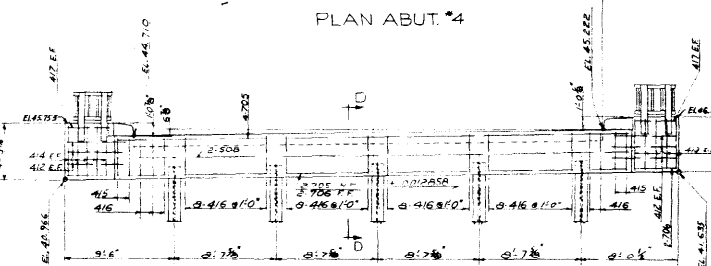
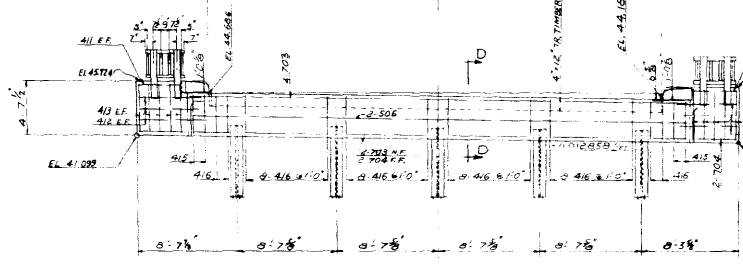
STRUCTURE NO. F-16-F1 NORTHBOUND L.C.L.  
 STRUCTURE NO. F-16-F1 SOUTHBOUND R.C.L.



NO.	DATE	BY	CHKD.	REVISION
1		CONC.	U 016-1(17)	25

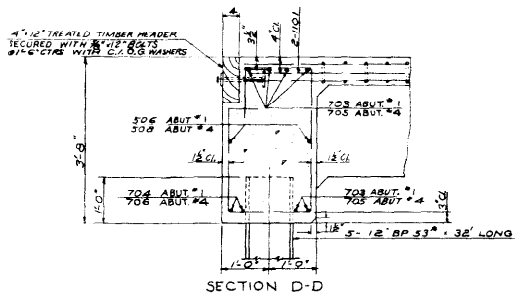


LEGEND  
 E.F. EACH FACE  
 N.F. NEAR FACE  
 F.F. FAR FACE



ELEVATION ABUT.#1  
 MAX. PILE LOAD - 30 TONS

ELEVATION ABUT.#4  
 MAX. PILE LOAD - 30 TONS



SECTION D-D

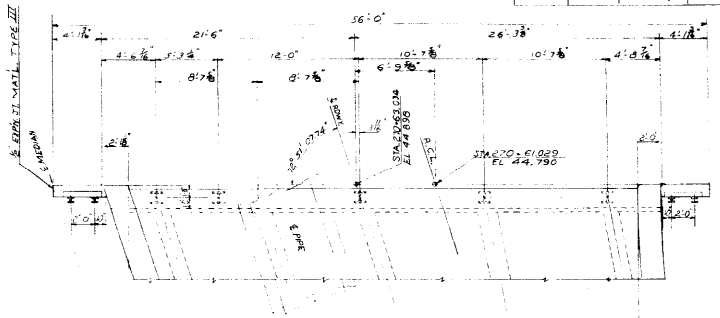
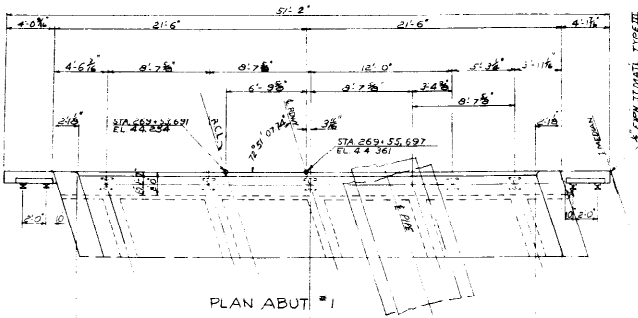
**COLORADO DEPARTMENT OF HIGHWAYS**  
 DETAILS OF ABUTMENTS

DESIGNED BY: BEAS BERRY  
 L.C.L. ENGINEERS & ARCHITECTS  
 DENVER, COLORADO

Checked by: J.C. [Signature] Approved by: J.C. [Signature]  
 Date: 1/27/50

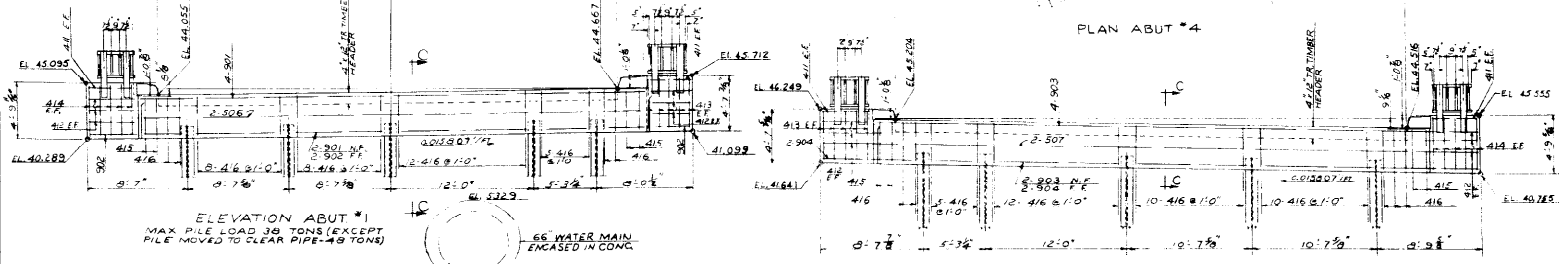
STRUCTURE NO. F-16-EH (NORTHBOUND)

NO.	DATE	DIVISION	PROJECT NO.	BY	CHKD.
1		COND.	UD-6-1(7)	26	



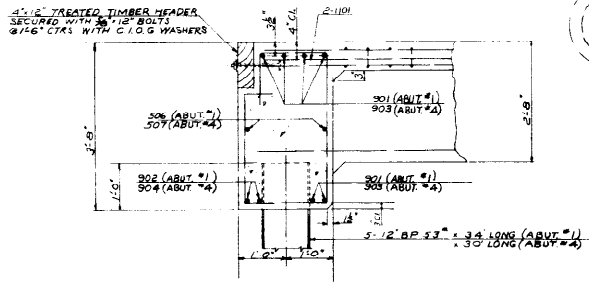
PLAN ABUT #1

PLAN ABUT #4



ELEVATION ABUT #1  
MAX PILE LOAD 30 TONS (EXCEPT  
PILE MOVED TO CLEAR PIPE - 40 TONS)

ELEVATION ABUT #4  
MAX PILE LOAD 30 TONS (EXCEPT  
PILE MOVED TO CLEAR PIPE - 40 TONS)



SECTION C-C

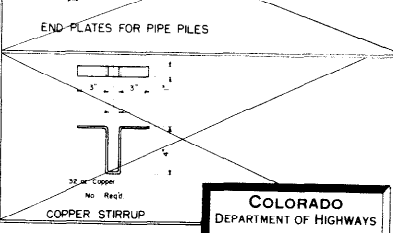
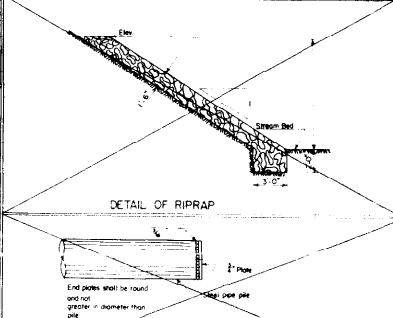
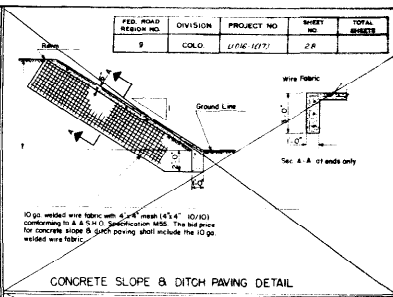
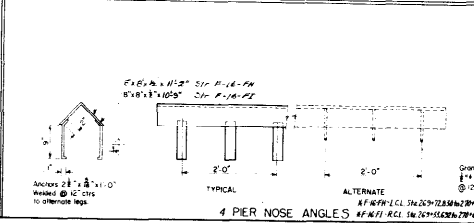
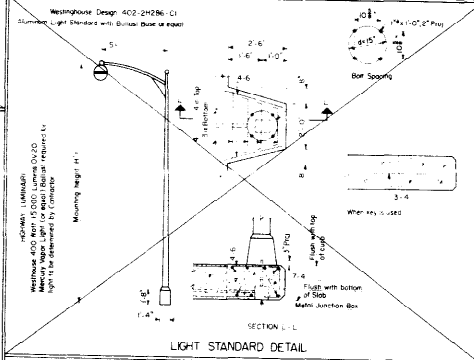
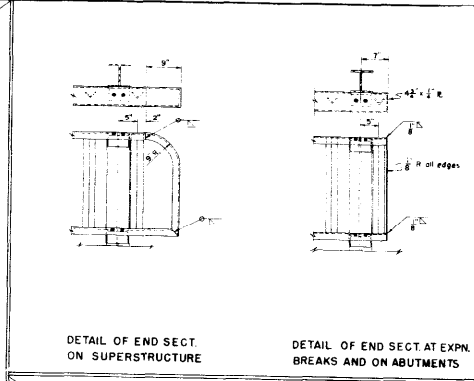
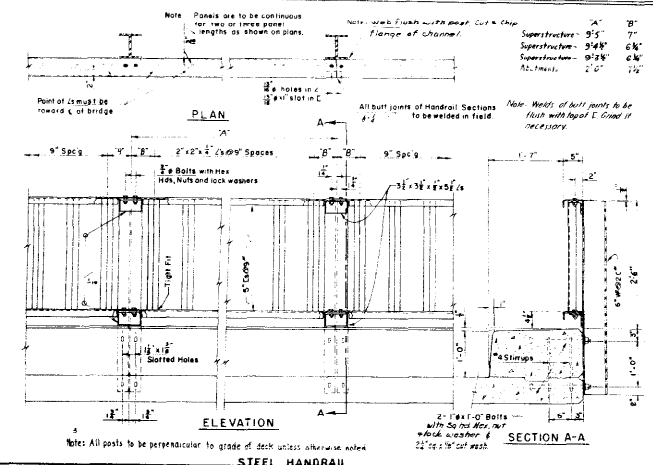
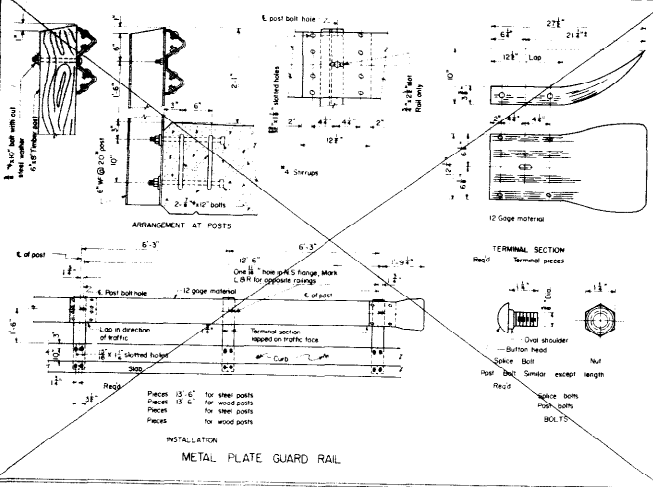
**COLORADO**  
DEPARTMENT OF HIGHWAYS  
DETAIL OF ABUTMENTS

Project: BEAR CREEK  
R.F. No. 228-55 (SHEET 22 OF 24)  
Dist. DENVER  
Designed by: J.H.M. Approved by: J.P. [Signature]  
Made by: J.C. Checked by: [Signature]  
Date: Sep. 1, 1960

STRUCTURE NO. P-1E-12 (SOUTHBOUND)



REV. NO.	DESCRIPTION	DATE
1	As Shown	



**COLORADO DEPARTMENT OF HIGHWAYS**

MISCELLANEOUS BRIDGE DETAILS

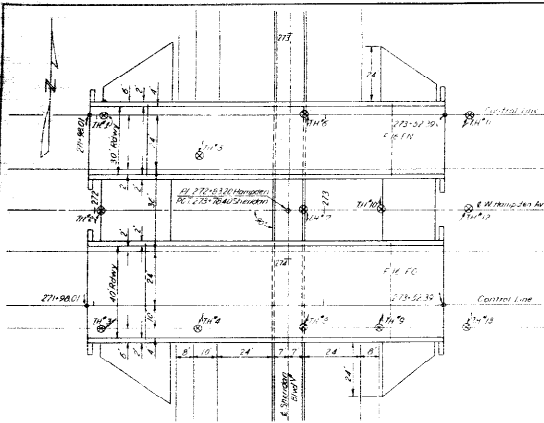
Across Bear Creek

Sta. 14+00

Designed by: [Signature]

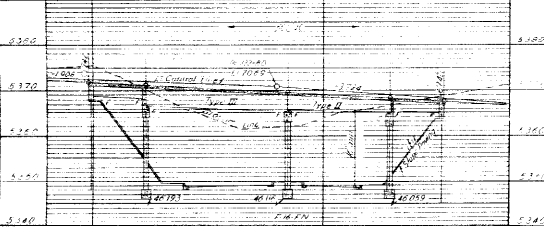
Checked by: [Signature]

Date: 1/15/20

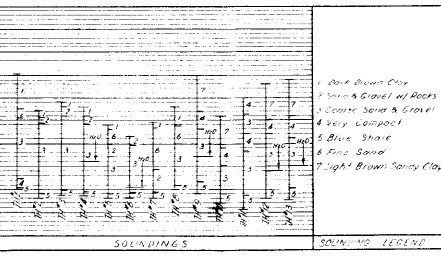
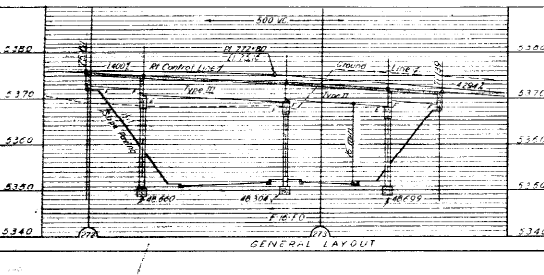


SUMMARY OF QUANTITIES STR No F-16-FO. Table with columns for ITEM, DESCRIPTION, UNIT, SUPER, ABUT, PIER, and TOTALS. Includes items like Unclassified Structural Excavation, Treated Bridge Timber, and Prestressed Conc. Girders.

Quantities for One Prestressed Girder. Table listing materials like Class 'B' Concrete, Reinforcing Steel, and Elastomeric Bearing Pads with their respective quantities.

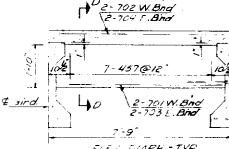
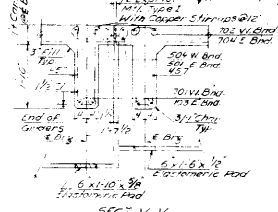
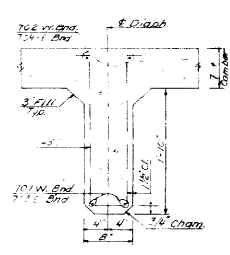
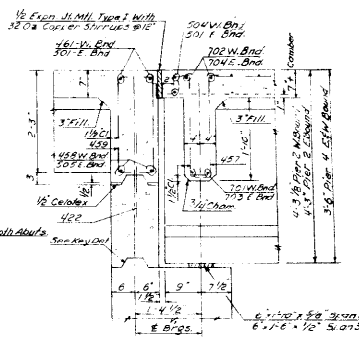
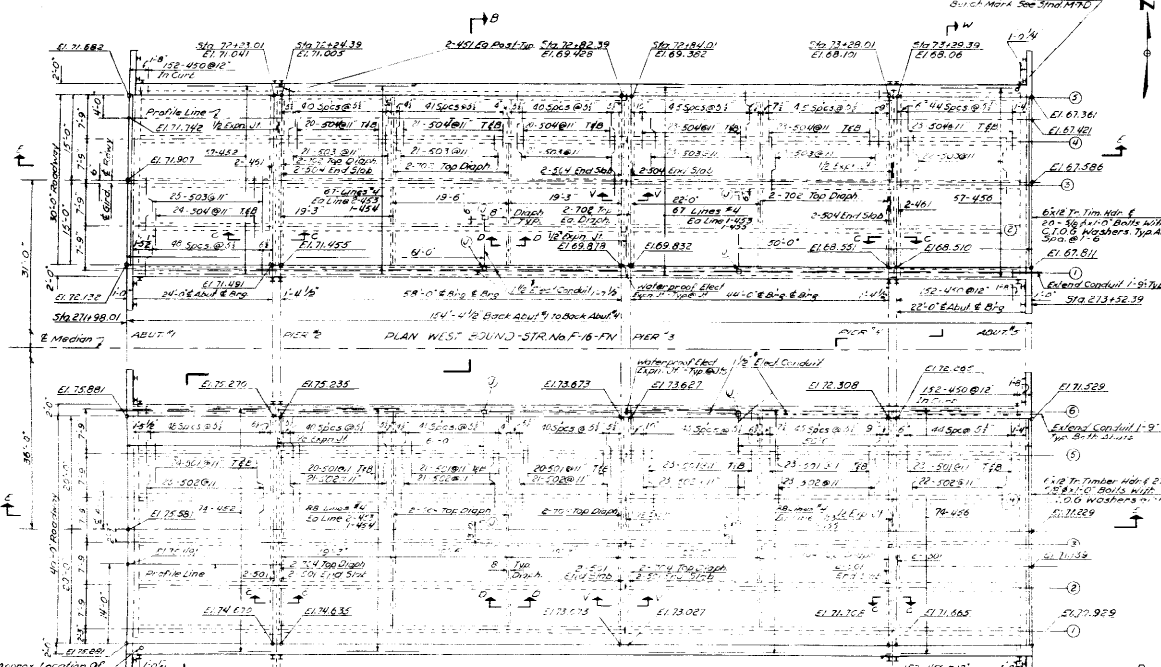


SUMMARY OF QUANTITIES STR No F-16-FN. Table with columns for ITEM, DESCRIPTION, UNIT, SUPER, ABUT, PIER, and TOTALS. Includes items like Unclassified Structural Excavation, Treated Brown Timber, and Prestressed Conc. Girders.



GENERAL NOTES: 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CAREFUL VERIFICATION OF THE COLORADO ROADWAY AND BRIDGE SPECIFICATIONS... COLORADO DEPARTMENT OF HIGHWAYS. Includes a legend for soil types and project information.





- SPECIFICATIONS - PRESTRESSED GIRDER**
- Concrete Minimum Compressive Strength 5000 PSI at 28 Days - Concrete Cylinders at 1000 PSI.
  - 7 Wire Strand Cable Minimum Ultimate Strength 350,000 PSI.
  - Prestressed Cables 1/2" Stress @ 10,000 PSI.
  - For Final R/c stress See Notes On Detail.
  - Cast In Place Concrete (Slab & Diaphragms) Must Be 3000 PSI at 28 Days.
  - All Exposed Corners Shall Be Chamfered 3/4" Or Rounded 1/4" In Radii. Any of Corners Shall Be Chamfered With 1/4" Radiuses Shall Be Rounded To Not Less Than 3/4" Radii. Top Of Prestressed Girders Shall Be Left Rough At The Time Of Casting And All Concrete Should Be Removed With A Course Wire Brush.

**COLORADO DEPARTMENT OF HIGHWAYS**

**SUPERSTRUCTURE PLAN**

**DIAPHRAGM GIRDER DETAILS**

**NO. 0 ROADWAY - E BOUND**

**BRIDGE AT HANCOCK AVE**

Sta. 271+88.01 to 272+52.39

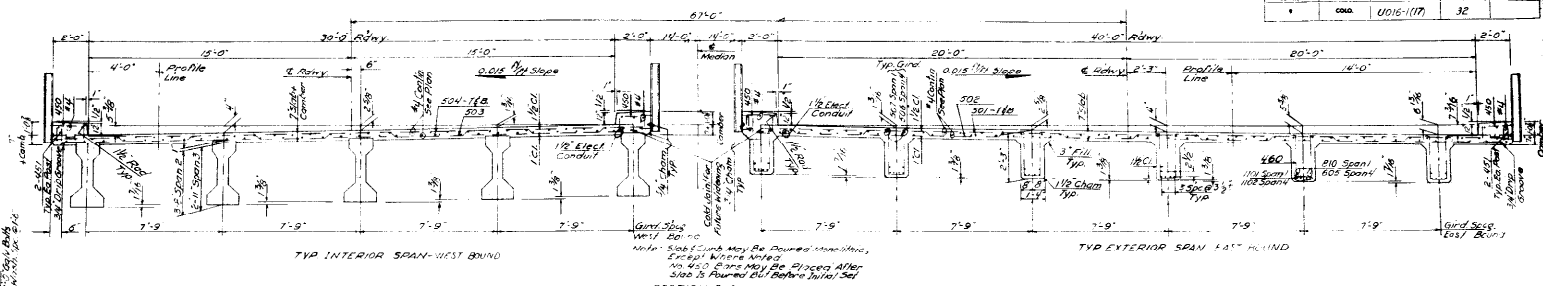
Scale: 1" = 1'-0" (Horizontal) / 1" = 1'-0" (Vertical)

Designed by: J.C.C. / Approved by: J.C.C.

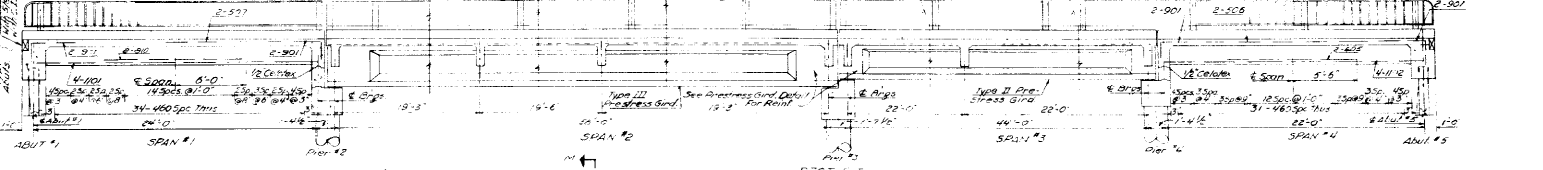
Made by: L.V.C. / Checked by: L.V.C.

Date: Sept. 16, 1968

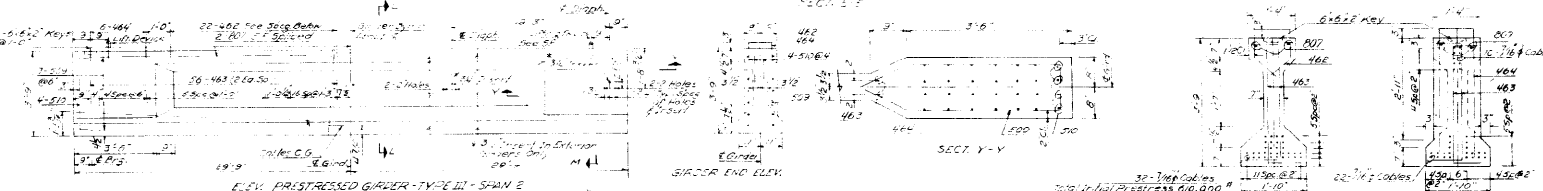
STRUCTURE NO. F-16-FD (197) SHEET 31



TYP INTERIOR SPAN - WEST BOUND  
 TYP EXTERIOR SPAN - EAST BOUND  
 SECTION B-B



ELEV. PRESTRESSED GIRDER - TYPE III - SPAN 2



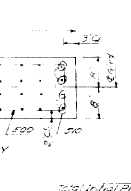
ELEV. PRESTRESSED GIRDER - TYPE II - SPAN 3



GIRDER END ELEV.



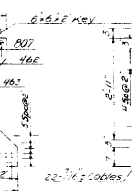
SECT. X-X



SECT. Y-Y



SECT. L-L



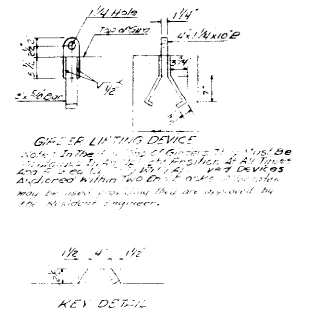
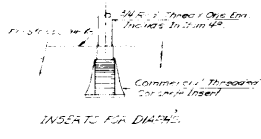
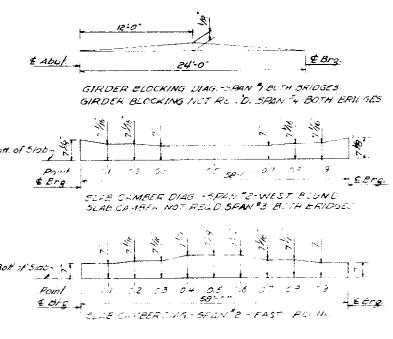
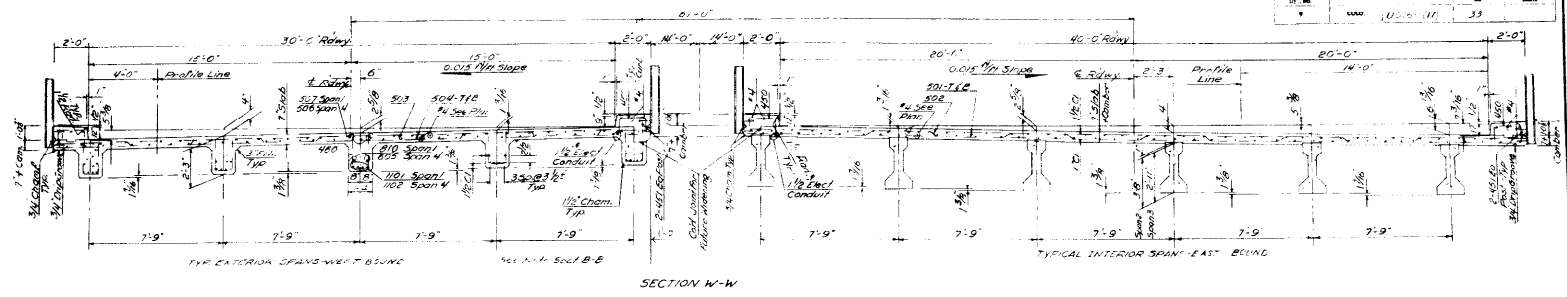
SECT. M-M

**COLORADO DEPARTMENT OF HIGHWAYS**  
 SECTION 161 - TYP. U. SUPERSTR. GIRDER DETAILS

Approved by: [Signature]  
 Date: [Date]

Checked by: [Signature]

STRUCTURE NO. F-16-FG-1-25 BOUND

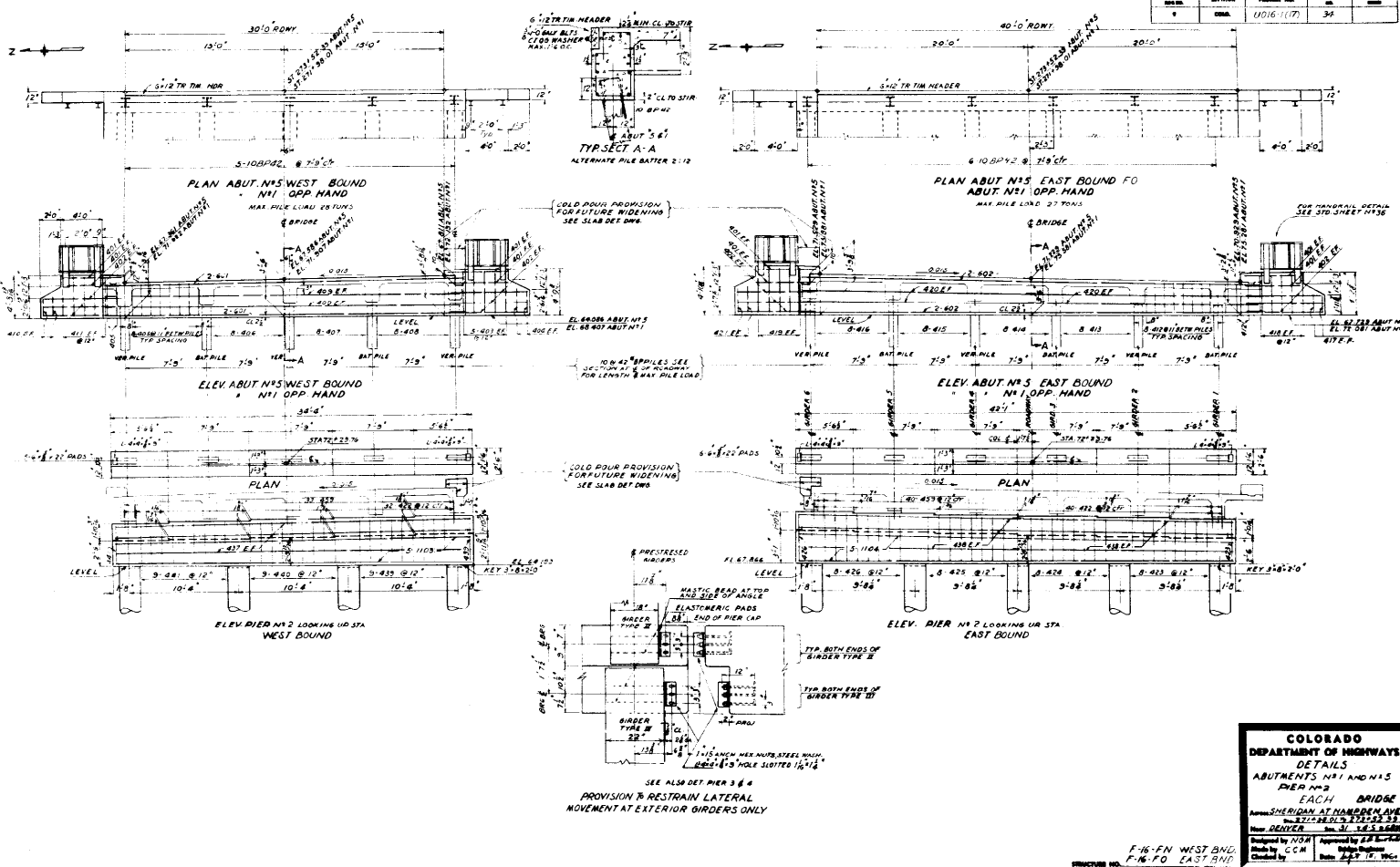


**COLORADO**  
**DEPARTMENT OF HIGHWAYS**  
 TRANSVERSE SECTION  
 MISCELL. DETAILS

Designed by	Checked by
Drawn by	Approved by
Scale	Date

STRUCTURE NO. 718 75' 11' 8\"/>

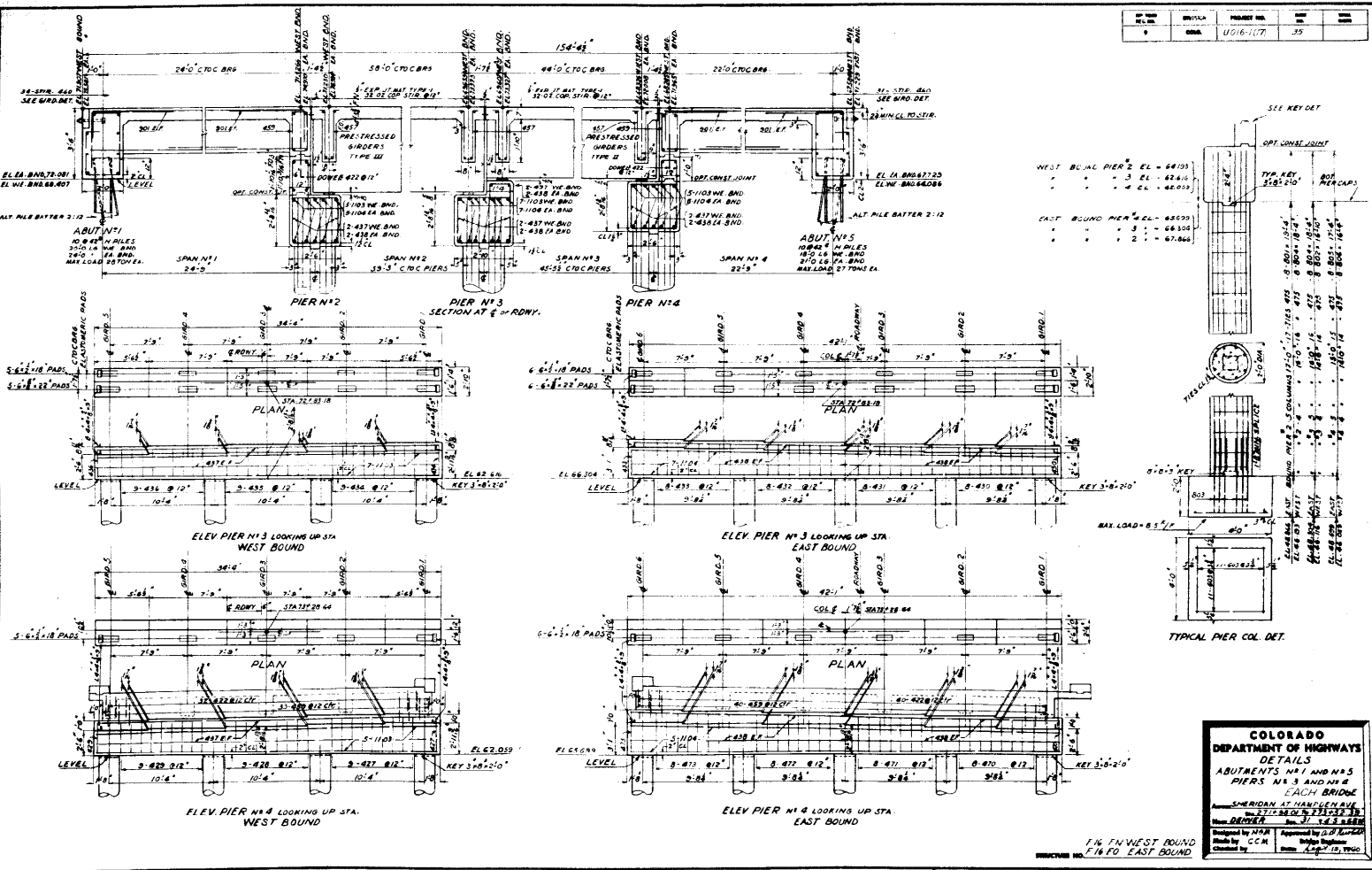
ALL SHEETS	DIVISION	PROJECT NO.	NO.	TOTAL
8	CENL	U016 (17)	34	



**COLORADO**  
**DEPARTMENT OF HIGHWAYS**  
**DETAILS**  
**ABUTMENTS, PIERS AND BRIDGE**  
**PIERS AND BRIDGE**  
 EACH BRIDGE  
 APPROX. SHERIDAN AT HANDEEN AVE.  
 WEST SIDE, DIST. 12.53  
 Near DENVER, CO., U.S. 66  
 Designed by NCR  
 Checked by CCM  
 Approved by J.P. [Signature]  
 Date 10-2-50

F-16-FN WEST BND.  
 F-16-FG EAST BND.  
 STRUCTURE NO.

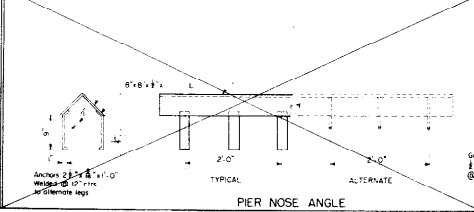
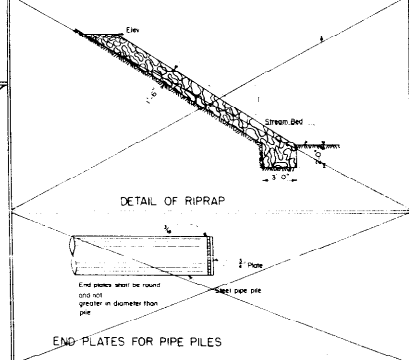
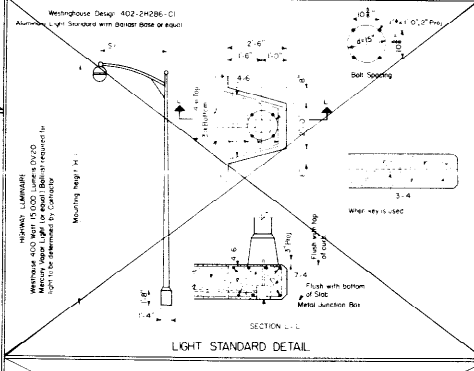
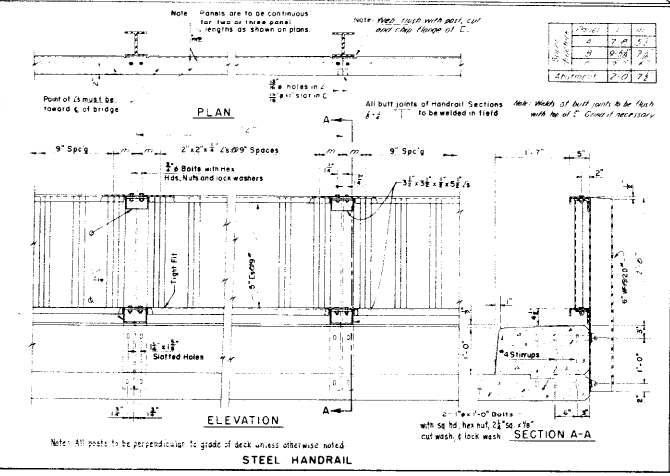
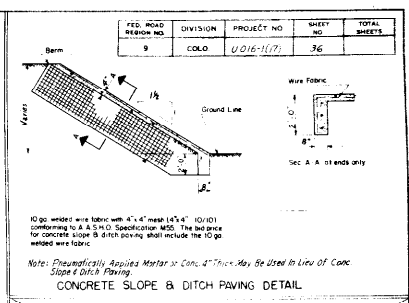
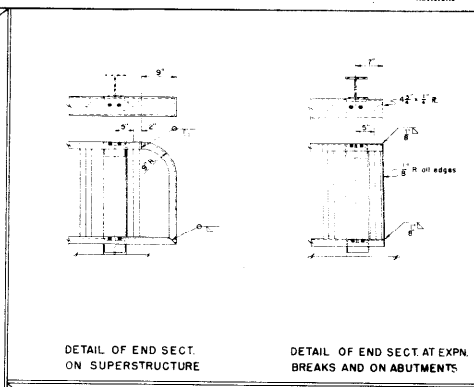
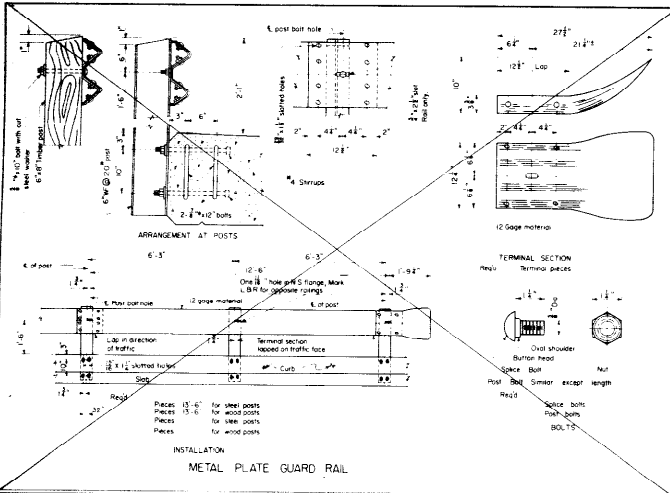
NO.	REVISED	PROJECT NO.	DATE
1		U016-1171	35



**COLORADO**  
**DEPARTMENT OF HIGHWAYS**  
**DETAILS**  
**ABUTMENTS NO. 1 AND NO. 5**  
**PIERS NO. 3 AND NO. 4**  
**EACH BRIDGE**  
**SHERIDAN AT HANDEEN AVENUE**  
**PIERS NO. 3 AND NO. 4**  
**DESIGNED BY: D. P. ...**  
**Checked by: CCM**  
**Date: Aug 12, 1950**

1/4 IN WEST BOUND  
 1/4 IN EAST BOUND

REV.	NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9		COLO.	UO16-11(7)	36	



**COPPER STIRRUP**

3/2 of Code  
No. Req'd

**COLORADO DEPARTMENT OF HIGHWAYS**

MISCELLANEOUS BRIDGE DETAILS

Address: Sheridan at Hampden Ave.  
 City: Denver, Colorado 80202

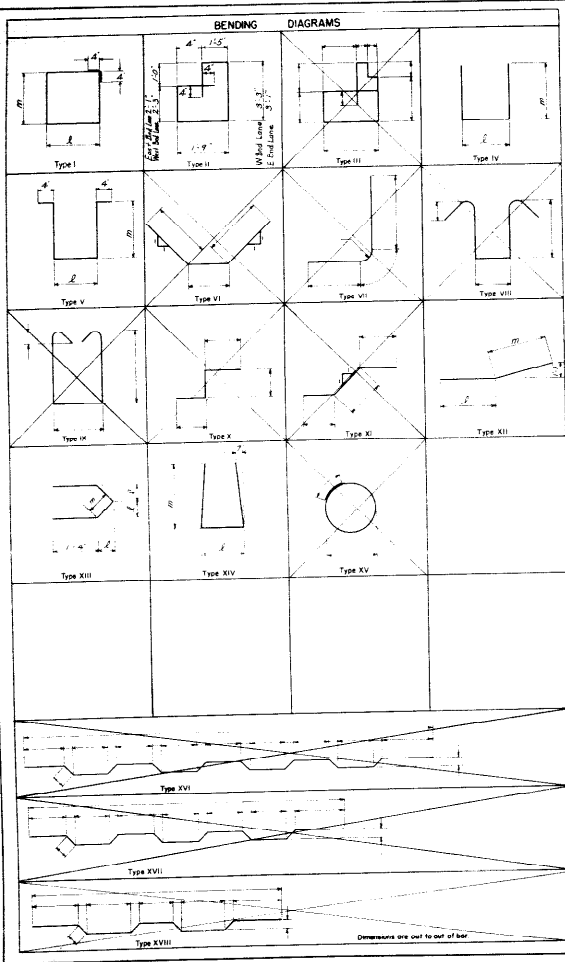
Designed by: *[Signature]*  
 Made by: *[Signature]*  
 Checked by: *[Signature]*

Approved by: *[Signature]*  
 Date: 10/27/1960

STRUCTURE NO. *[Blank]* **F-16-FD East Bound**







SUPERSTRUCTURE			
Mark	Size	No.	Length
401	2 1/2	428	4'-4"
402	2	428	4'-4"
403	3/4	428	4'-4"
404	3/4	428	4'-4"
405	1/2	428	4'-4"
406	3/8	428	4'-4"
407	3/8	428	4'-4"
408	3/8	428	4'-4"
409	3/8	428	4'-4"
410	3/8	428	4'-4"
411	3/8	428	4'-4"
412	3/8	428	4'-4"
413	3/8	428	4'-4"
414	3/8	428	4'-4"
415	3/8	428	4'-4"
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418	3/8	428	4'-4"
419	3/8	428	4'-4"
420	3/8	428	4'-4"
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423	3/8	428	4'-4"
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489	3/8	428	4'-4"
490	3/8	428	4'-4"
491	3/8	428	4'-4"
492	3/8	428	4'-4"
493	3/8	428	4'-4"
494	3/8	428	4'-4"
495	3/8	428	4'-4"
496	3/8	428	4'-4"
497	3/8	428	4'-4"
498	3/8	428	4'-4"
499	3/8	428	4'-4"
500	3/8	428	4'-4"

ABUT No 1			
Mark	Size	No.	Length
420	3/8	63	10'-8"
421	3/8	24	4'-4"
422	3/8	2	3'-4"
423	3/8	2	4'-7"
501	3/8	2	6'-0"
502	3/8	2	7'-6"
503	3/8	1	3'-0"
504	3/8	1	10'-0"
1100	3/8	1	6'-0"
1101	3/8	5	7'-8"
1102	3/8	4	14'-0"
1103	3/8	1	3'-0"

**SUMMARY**

864 Lin ft 1/8" #6 @ 20" On Center - 500 LB  
 325 Lin ft 1/8" #6 @ 20" On Center - 330 LB  
 769 Lin ft 1/8" #6 @ 20" On Center - 408 LB  
 Plus 1/2" for overrun - 50 LB  
**Total - 1568 LB**

ABUT No 6			
Mark	Size	No.	Length
430	3/8	59	10'-8"
431	3/8	24	4'-4"
432	3/8	2	3'-7"
433	3/8	2	4'-4"
580	3/8	2	6'-0"
581	3/8	2	11'-0"
582	3/8	1	2'-0"
583	3/8	1	10'-0"
584	3/8	1	8'-0"
1112	3/8	1	6'-0"
1113	3/8	4	7'-8"
1114	3/8	4	12'-0"
1115	3/8	1	2'-0"

**SUMMARY**

633 Lin ft 1/8" #6 @ 20" On Center - 550 LB  
 126 Lin ft 1/8" #6 @ 20" On Center - 330 LB  
 761 Lin ft 1/8" #6 @ 20" On Center - 393 LB  
 Plus 1/2" for overrun - 42 LB  
**Total - 1275 LB**

PIER No 2			
Mark	Size	No.	Length
440	3/8	2	4'-0"
441	3/8	2	2'-0"
442	3/8	5	7'-0"
443	3/8	9	4'-0"
444	3/8	5	7'-8"
445	3/8	2	4'-0"
446	3/8	2	4'-0"
580	3/8	4	6'-0"
581	3/8	4	6'-8"
582	3/8	2	14'-3"
701	3/8	2	5'-4"
702	3/8	2	6'-0"
703	3/8	2	6'-8"
801	3/8	2	4'-0"
1001	3/8	4	18'-0"
1002	3/8	4	18'-6"
1003	3/8	4	24'-0"

**SUMMARY**

219 Lin ft 1/8" #6 @ 20" On Center - 1400 LB  
 740 Lin ft 1/8" #6 @ 20" On Center - 1600 LB  
 235 Lin ft 1/8" #6 @ 20" On Center - 482 LB  
 64 Lin ft 1/8" #6 @ 20" On Center - 17 LB  
 182 Lin ft 1/8" #6 @ 20" On Center - 900 LB  
 Plus 1/2" for overrun - 42 LB  
**Total - 3322 LB**

SUMMARY PIER No 2			
Mark	Size	No.	Length
235	3/8	2	4'-0"
236	3/8	2	4'-0"
237	3/8	2	4'-0"
238	3/8	2	4'-0"
239	3/8	2	4'-0"
240	3/8	2	4'-0"
241	3/8	2	4'-0"
242	3/8	2	4'-0"
243	3/8	2	4'-0"
244	3/8	2	4'-0"
245	3/8	2	4'-0"
246	3/8	2	4'-0"
247	3/8	2	4'-0"
248	3/8	2	4'-0"
249	3/8	2	4'-0"
250	3/8	2	4'-0"
251	3/8	2	4'-0"
252	3/8	2	4'-0"
253	3/8	2	4'-0"
254	3/8	2	4'-0"
255	3/8	2	4'-0"
256	3/8	2	4'-0"
257	3/8	2	4'-0"
258	3/8	2	4'-0"
259	3/8	2	4'-0"
260	3/8	2	4'-0"
261	3/8	2	4'-0"
262	3/8	2	4'-0"
263	3/8	2	4'-0"
264	3/8	2	4'-0"
265	3/8	2	4'-0"
266	3/8	2	4'-0"
267	3/8	2	4'-0"
268	3/8	2	4'-0"
269	3/8	2	4'-0"
270	3/8	2	4'-0"
271	3/8	2	4'-0"
272	3/8	2	4'-0"
273	3/8	2	4'-0"
274	3/8	2	4'-0"
275	3/8	2	4'-0"
276	3/8	2	4'-0"
277	3/8	2	4'-0"
278	3/8	2	4'-0"
279	3/8	2	4'-0"
280	3/8	2	4'-0"
281	3/8	2	4'-0"
282	3/8	2	4'-0"
283	3/8	2	4'-0"
284	3/8	2	4'-0"
285	3/8	2	4'-0"
286	3/8	2	4'-0"
287	3/8	2	4'-0"
288	3/8	2	4'-0"
289	3/8	2	4'-0"
290	3/8	2	4'-0"
291	3/8	2	4'-0"
292	3/8	2	4'-0"
293	3/8	2	4'-0"
294	3/8	2	4'-0"
295	3/8	2	4'-0"
296	3/8	2	4'-0"
297	3/8	2	4'-0"
298	3/8	2	4'-0"
299	3/8	2	4'-0"
300	3/8	2	4'-0"

**SUMMARY**

2078 Lin ft 1/8" #6 @ 20" On Center - 1388 LB  
 1740 Lin ft 1/8" #6 @ 20" On Center - 800 LB  
 130 Lin ft 1/8" #6 @ 20" On Center - 882 LB  
 240 Lin ft 1/8" #6 @ 20" On Center - 100 LB  
 222 Lin ft 1/8" #6 @ 20" On Center - 850 LB  
 Plus 1/2" for overrun - 42 LB  
**Total - 3652 LB**

PIER No 3			
Mark	Size	No.	Length
440	3/8	2	4'-0"
441	3/8	2	2'-0"
442	3/8	5	7'-0"
443	3/8	9	4'-0"
444	3/8	5	7'-8"
445	3/8	2	4'-0"
446	3/8	2	4'-0"
580	3/8	4	6'-0"
581	3/8	4	6'-8"
582	3/8	2	14'-3"
701	3/8	2	5'-4"
702	3/8	2	6'-0"
703	3/8	2	6'-8"
801	3/8	2	4'-0"
1001	3/8	4	18'-0"
1002	3/8	4	18'-6"
1003	3/8	4	24'-0"

**SUMMARY**

219 Lin ft 1/8" #6 @ 20" On Center - 1400 LB  
 740 Lin ft 1/8" #6 @ 20" On Center - 1600 LB  
 235 Lin ft 1/8" #6 @ 20" On Center - 482 LB  
 64 Lin ft 1/8" #6 @ 20" On Center - 17 LB  
 182 Lin ft 1/8" #6 @ 20" On Center - 900 LB  
 Plus 1/2" for overrun - 42 LB  
**Total - 3322 LB**

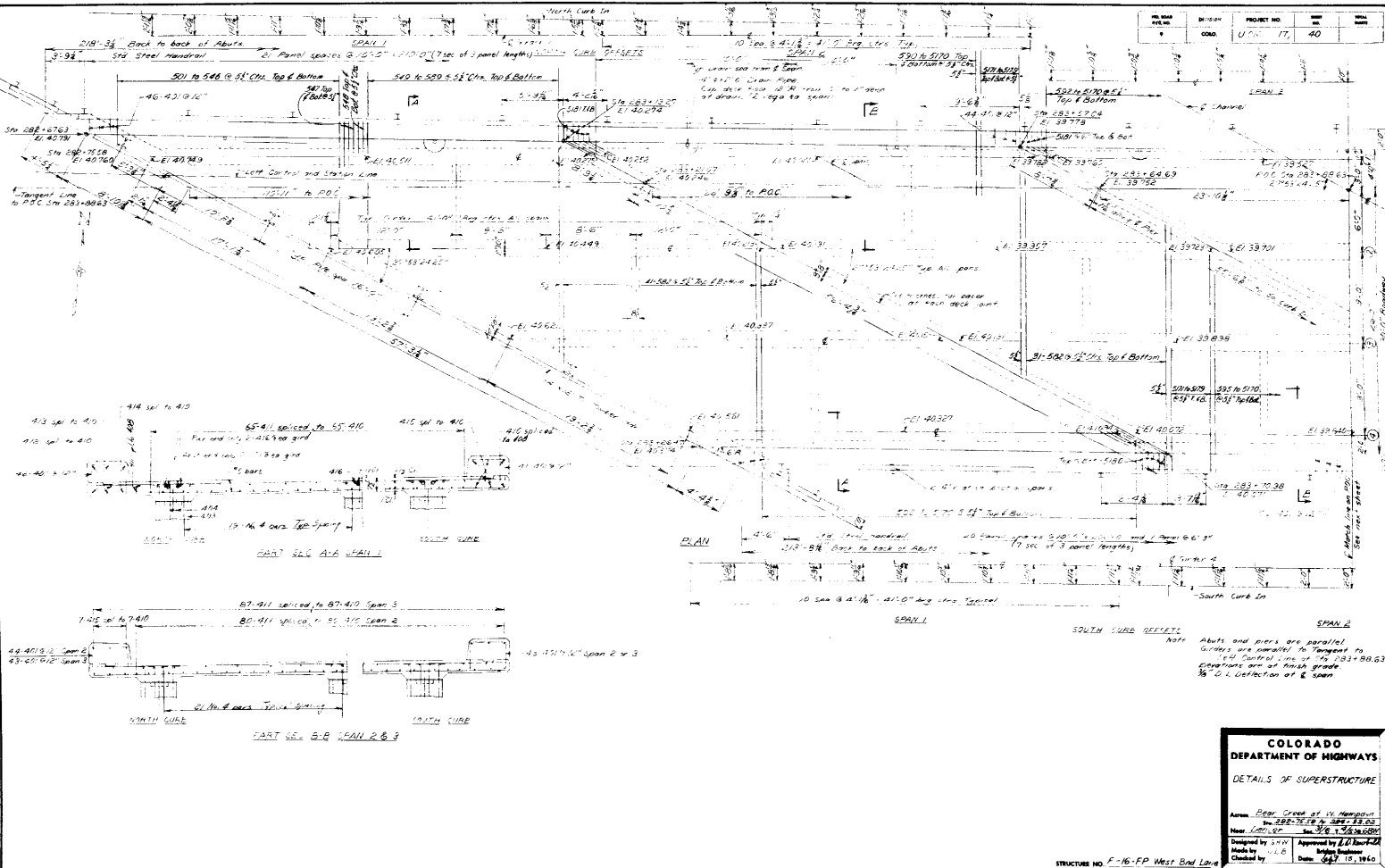
PIER No 4			
Mark	Size	No.	Length
440	3/8	2	4'-0"
441	3/8	2	2'-0"
442	3/8	5	7'-0"
443	3/8	9	4'-0"
444	3/8	5	7'-8"
445	3/8	2	4'-0"
446	3/8	2	4'-0"
580	3/8	4	6'-0"
581	3/8	4	6'-8"
582	3/8	2	14'-3"
701	3/8	2	5'-4"
702	3/8	2	6'-0"
703	3/8	2	6'-8"
801	3/8	2	4'-0"
1001	3/8	4	18'-0"
1002	3/8	4	18'-6"
1003	3/8	4	24'-0"

**SUMMARY**

219 Lin ft 1/8" #6 @ 20" On Center - 1400 LB  
 740 Lin ft 1/8" #6 @ 20" On Center - 1600 LB  
 235 Lin ft 1/8" #6 @ 20" On Center - 482 LB  
 64 Lin ft 1/8" #6 @ 20" On Center - 17 LB  
 182 Lin ft 1/8" #6 @ 20" On Center - 900 LB  
 Plus 1/2" for overrun - 42 LB  
**Total - 3322 LB**

SUMMARY PIER No 5			
Mark	Size	No.	Length
440	3/8	2	4'-0"
441	3/8	2	2'-0"
442	3/8	5	7'-0"
443	3/8	9	4'-0"
444	3/8	5</	

NO. OF SHEETS	PROJECT NO.	DATE	SCALE
17	UTR 17, 40		



**COLORADO DEPARTMENT OF HIGHWAYS**  
**DETAILS OF SUPERSTRUCTURE**

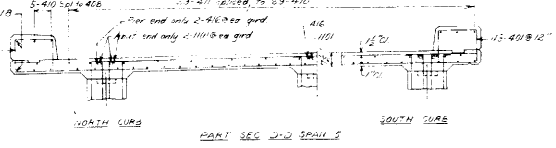
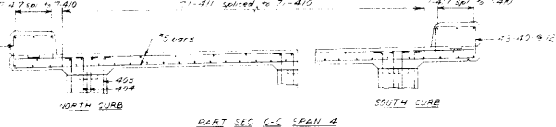
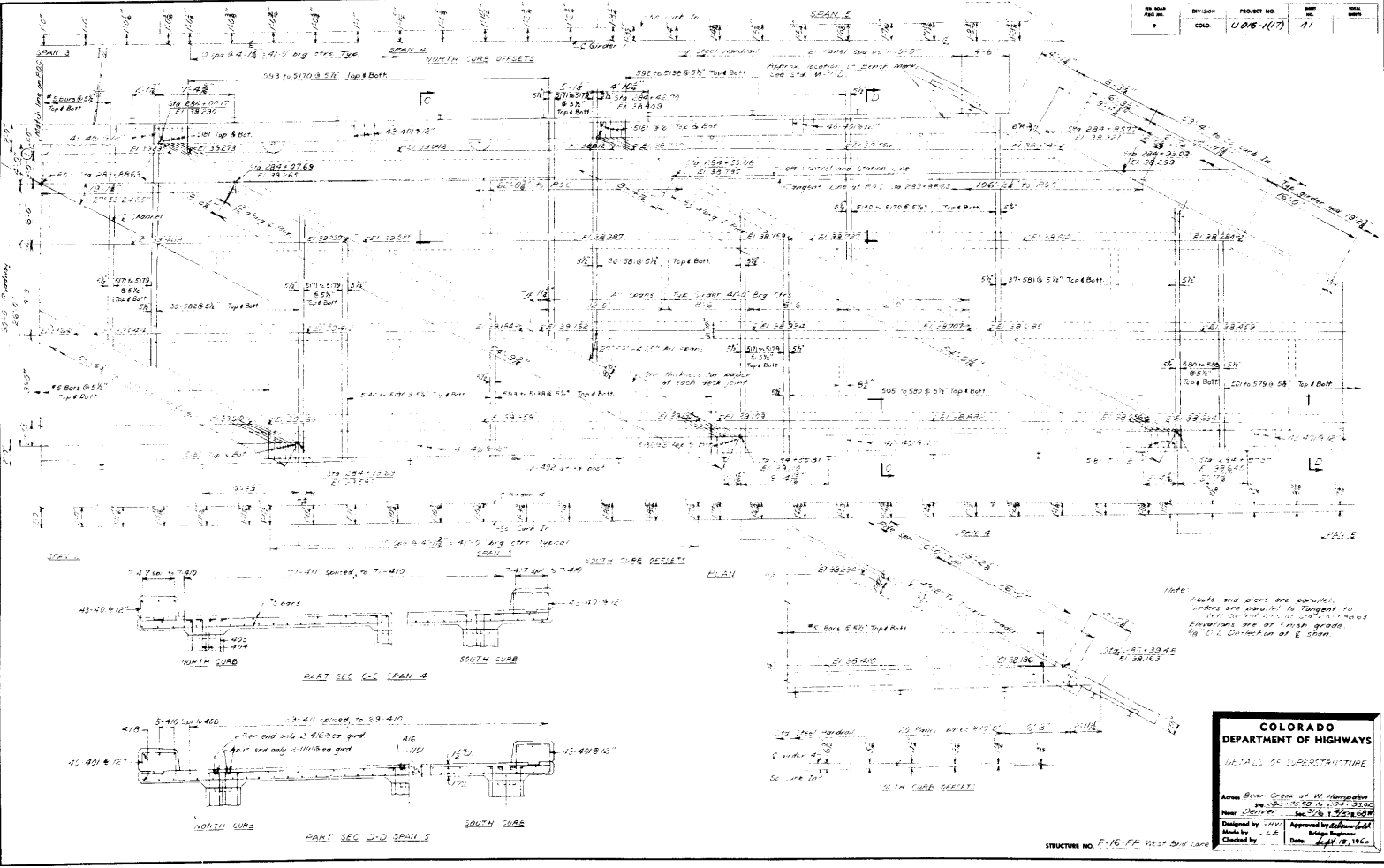
Area: Bear Creek at W. Highway  
 No. 282-302 to 282-333  
 Near Colo. 27 - Sta. 1+32.50 to 1+38.50

Designed by: S.W. [Signature]  
 Made by: [Signature]  
 Checked by: [Signature]

Approved by: L.D. [Signature]  
 Bridge Engineer  
 Date: May 15, 1960

STRUCTURE NO. F-16-FP West End Lane

NO. SHEET	REV. DATE	PROJECT NO.	SHEET NO.
9	0000	008-1(17)	41



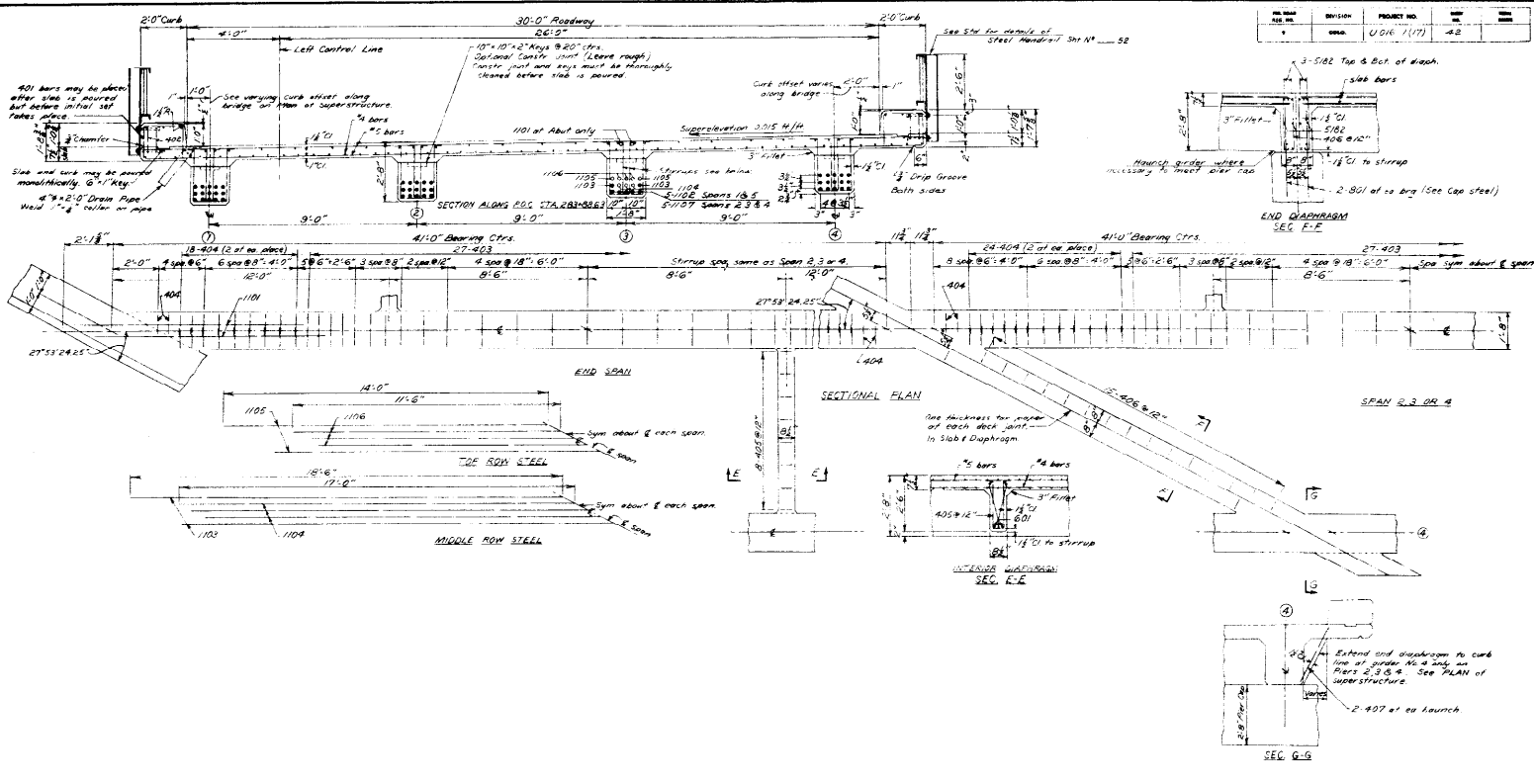
STRUCTURE NO. F-16-FF West Side Lane

**COLORADO DEPARTMENT OF HIGHWAYS**  
 DETAILS OF SUPERSTRUCTURE

Across River Creek at W. Hargrave  
 No. 008-1(17) of 008-1(17)  
 Date: 10/15/50

Designed by J.H.C. Approved by E.H.W.  
 Made by J.L.E. Bridge Engineer  
 Checked by Date: 10/15/50

NO.	DATE	BY	REVISION
1	06/17/77	WJG	AS



**COLORADO DEPARTMENT OF HIGHWAYS**  
 DETAILS OF SUPERSTRUCTURE

Area: Span 2, 3 or 4 of H. Interchange  
 Sta. 203+56.3 to 204+58.0

Name: USTC  
 Date: 7/6/78

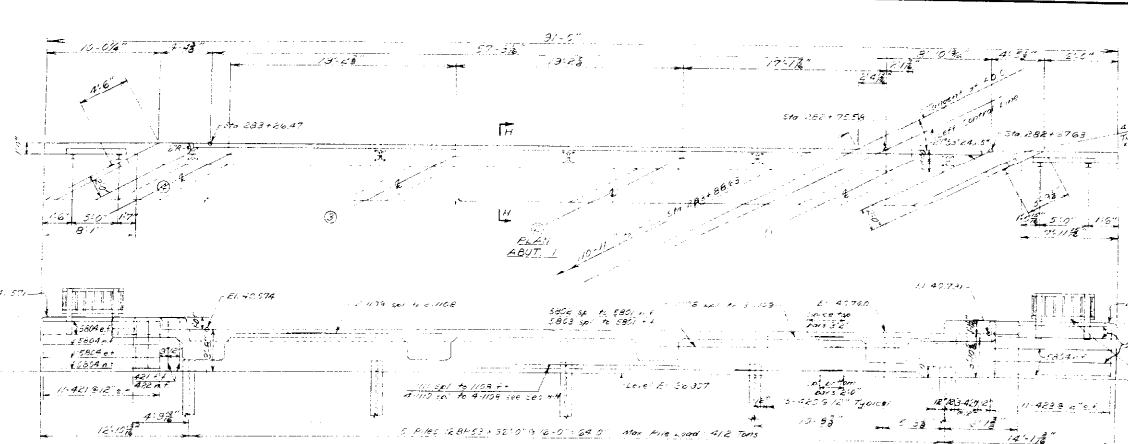
Designed by: WJG  
 Bridge Engineer

Approved by: [Signature]  
 Bridge Engineer

Checked by: [Signature]  
 Date: 8/15/78

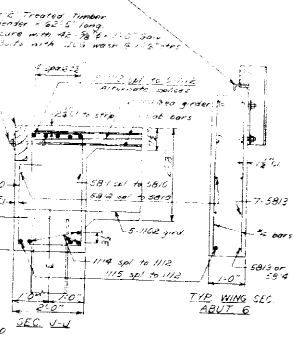
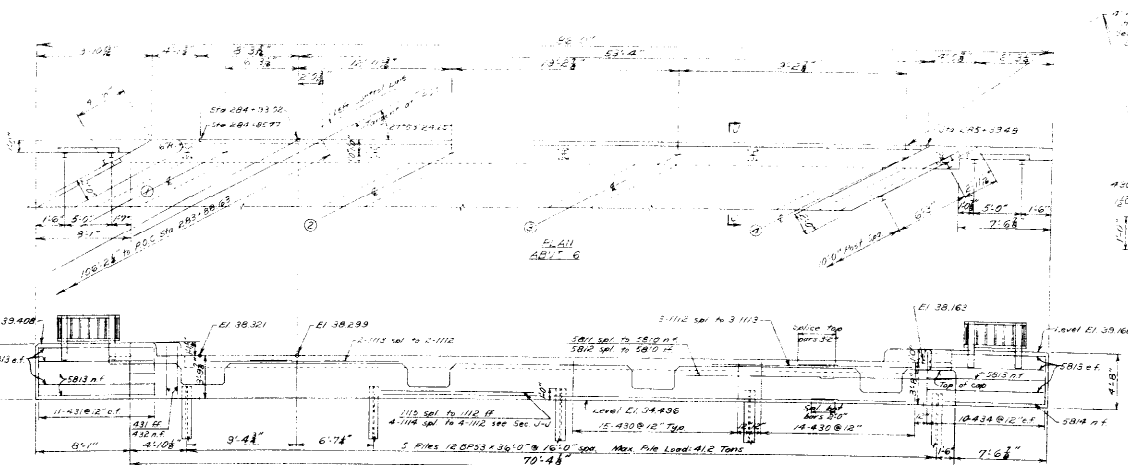
STRUCTURE NO. C-15-EP WEST END LANE

PROJECT NO.	DATE	BY	CHKD.
U.S. 171	11/71	JLB	JLB



NOTE: Windows are indicated by thin lines. No. 1 bars face of structure. No. 4 bars face of structure.

See STD for details of steel reinforcement. SEC. 52



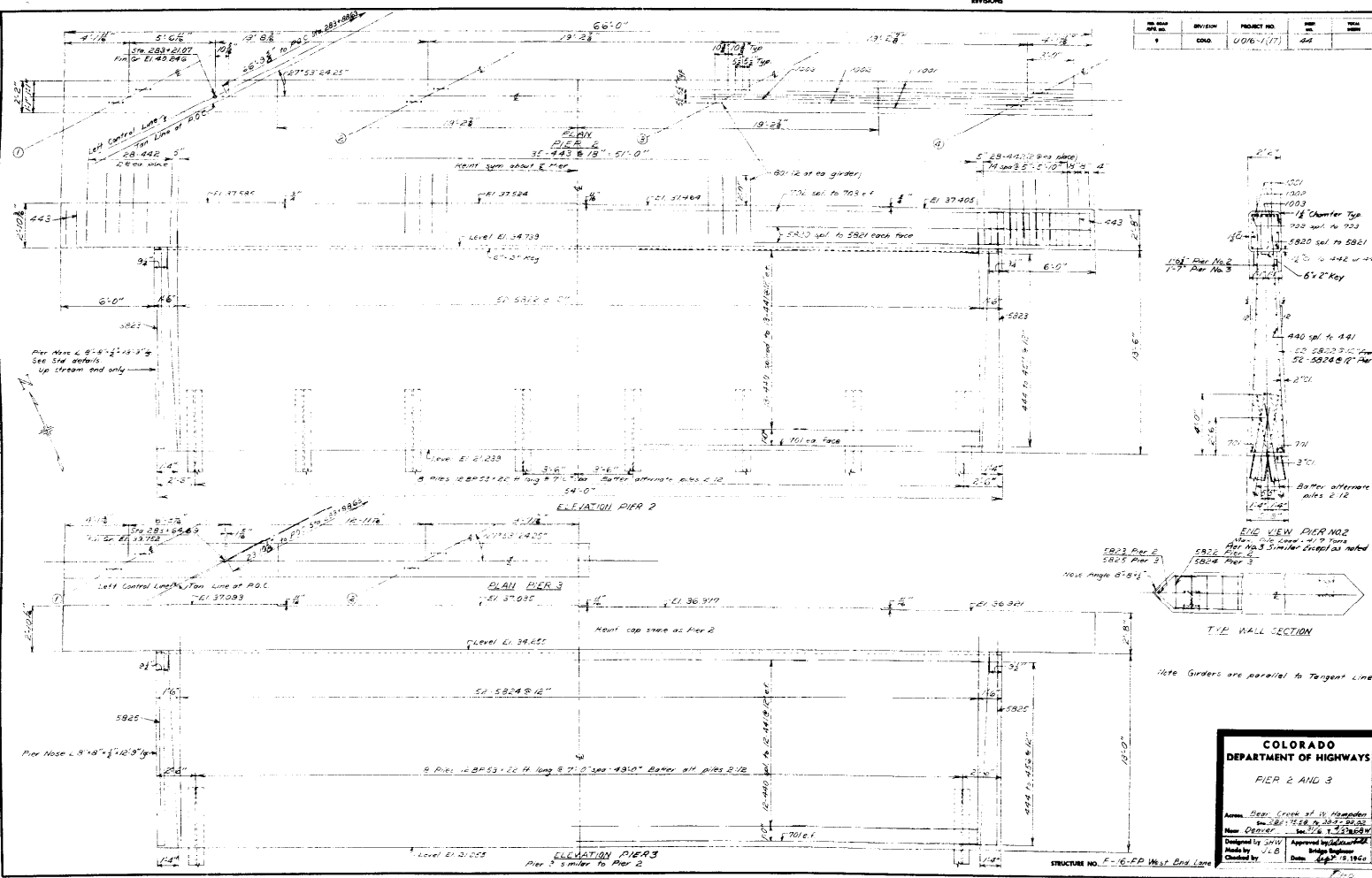
**COLORADO DEPARTMENT OF HIGHWAYS**

ABUT. 1 & 6

Approved by: *[Signature]* Date: 11/15/71  
 Checked by: JLB

STRUCTURE NO. F-16-FP West End Lane

NO.	DATE	REVISION	PROJECT NO.	APP.	YEAR
1		COLO.	0076-1(1)	SA	



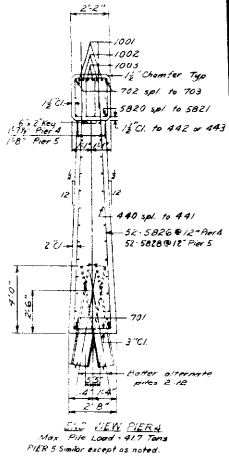
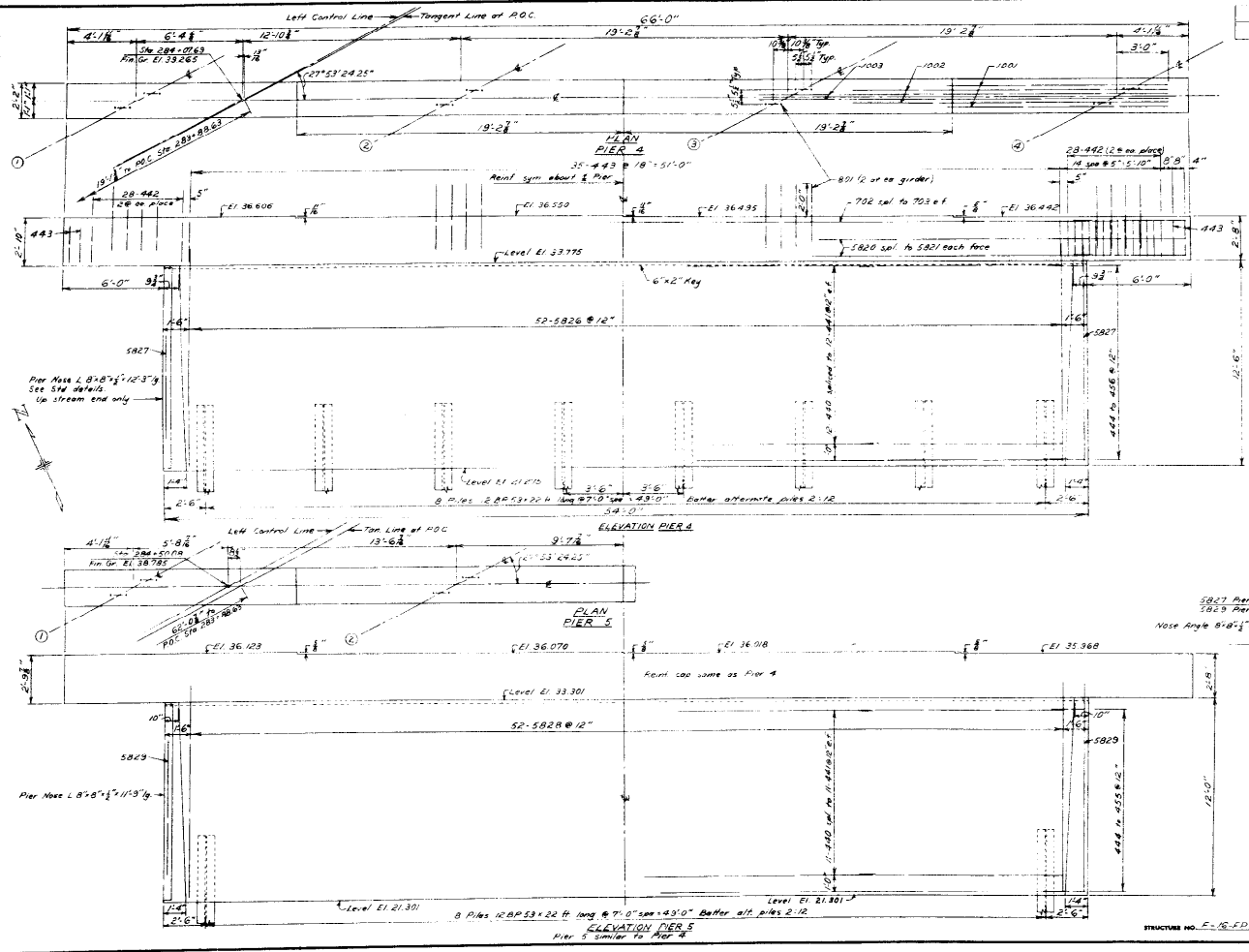
**COLORADO DEPARTMENT OF HIGHWAYS**

**PIER 2 AND 3**

Area: Dep. Crest of 14' Hight  
 Date: 1918  
 New Denver: 1918  
 Designed by: J.C.B.  
 Made by: J.C.B.  
 Checked by: J.C.B.  
 Date: 1918

NO.	DATE	REVISION
1		

DATE	BY	PROJECT NO.	NO.	SCALE
COND.	U.016-1171	-4		



**COLORADO DEPARTMENT OF HIGHWAYS**

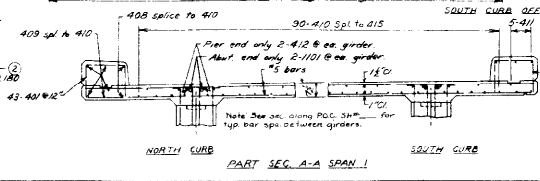
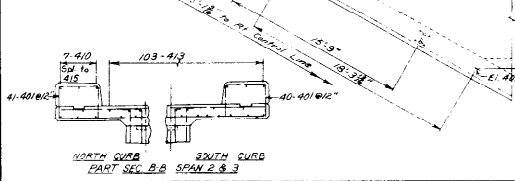
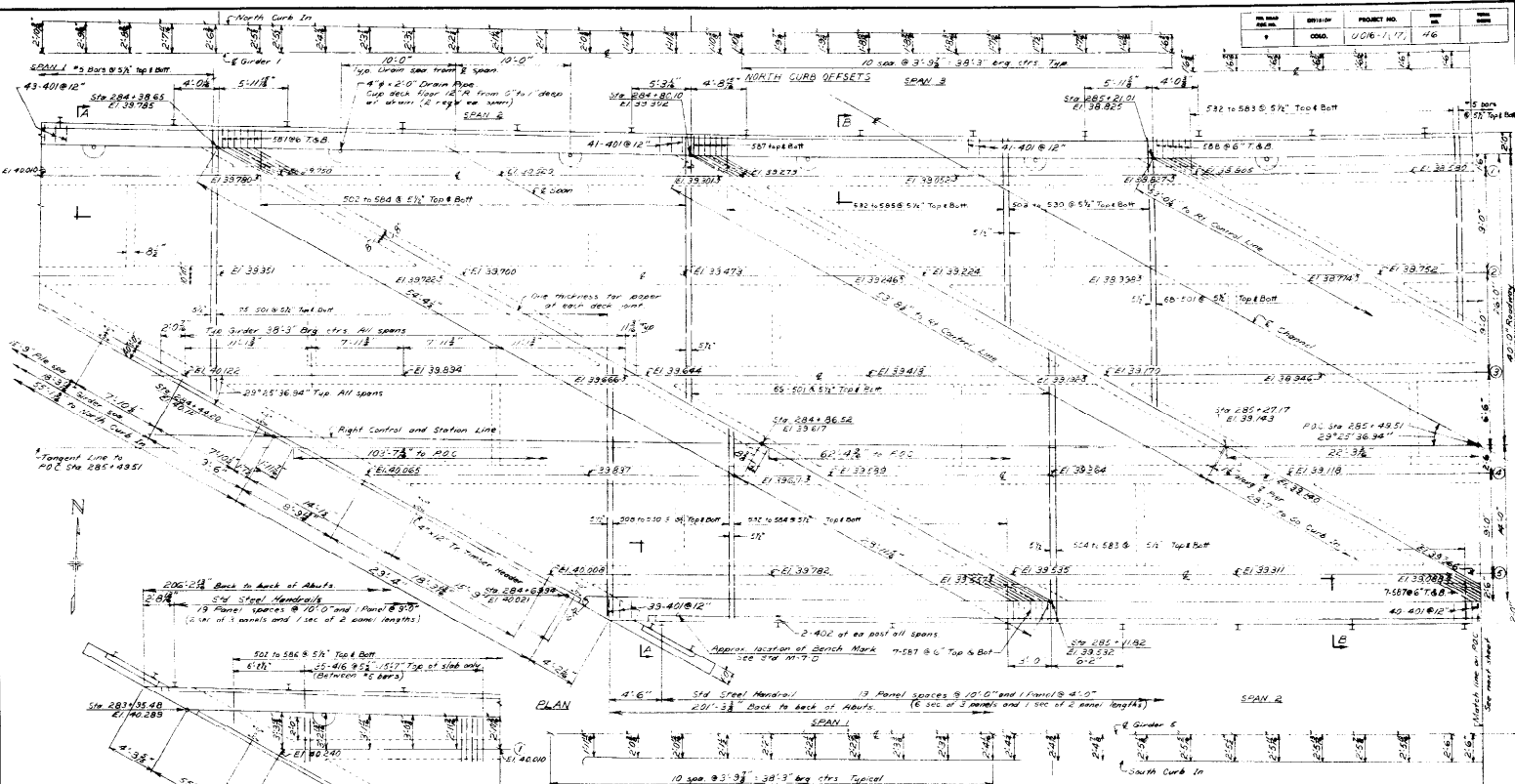
PIER 4 AND 5

Drawn: Bear Creek of W. Hamilton  
 Scale: 1/8" = 1'-0"  
 Made by: G.W.V.  
 Checked by: J.L.O.

Approved by: [Signature]  
 Date: April 15, 1961

STRUCTURE NO. F-15-ED West Bend Lane

NO. ROAD DIST. NO.	DATE	PROJECT NO.	SCALE
100	11/17	46	



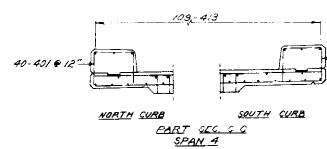
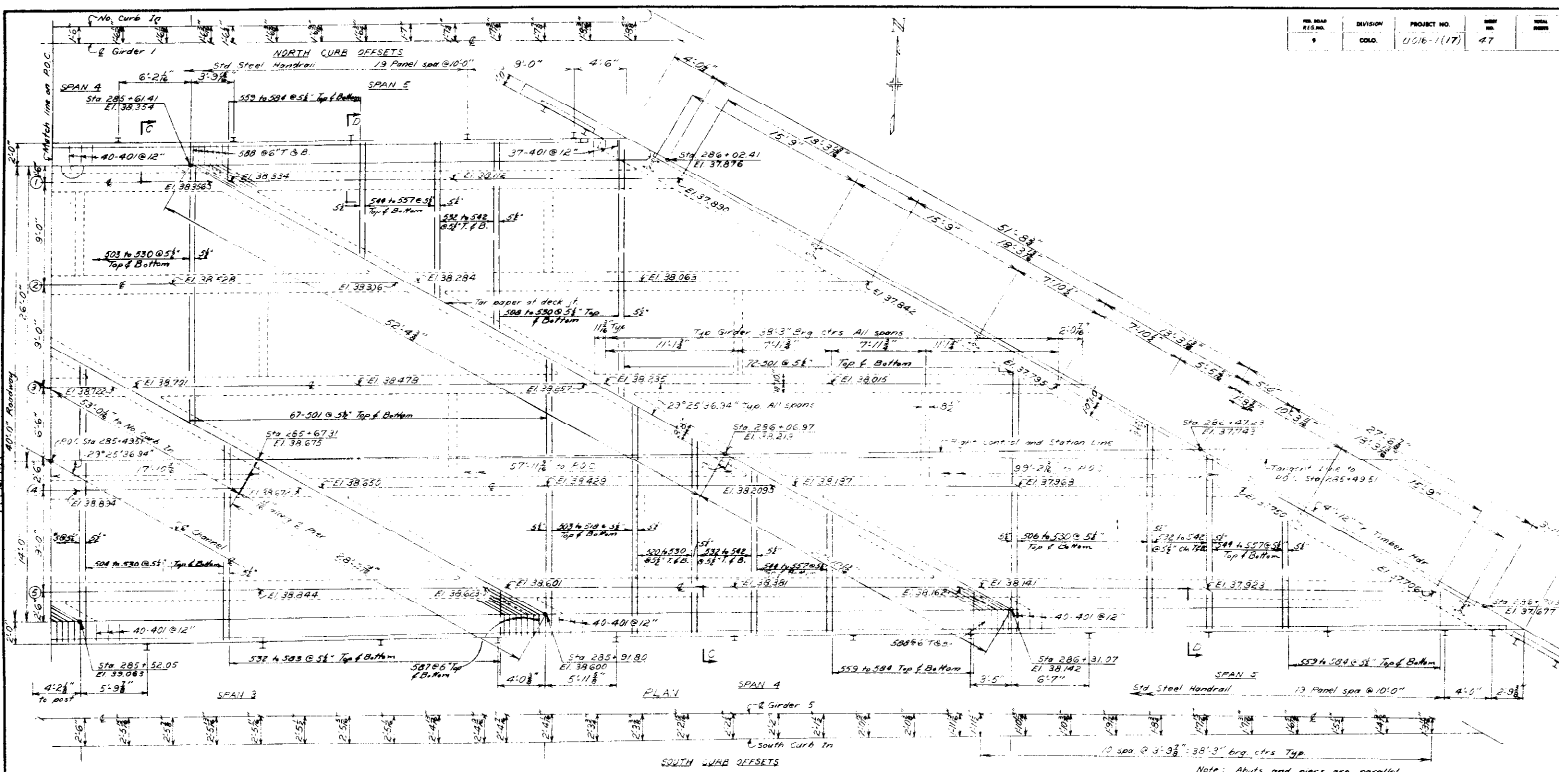
**COLORADO DEPARTMENT OF HIGHWAYS**

**DETAILS OF SUPERSTRUCTURE**

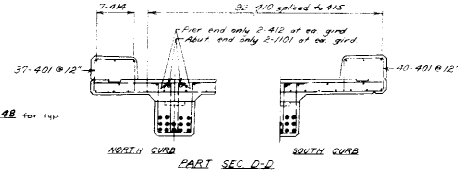
Approved: *[Signature]*  
 Design: *[Signature]*  
 Checked: *[Signature]*

STRUCTURE NO. F-16-FS East Bend Lane

NO. DRAW	DIVISION	PROJECT NO.	DATE
1000	CONC.	1016-1(17)	47



Note: One sec. along P.O.C. 31'-0" for 1/4" spacing between girders.



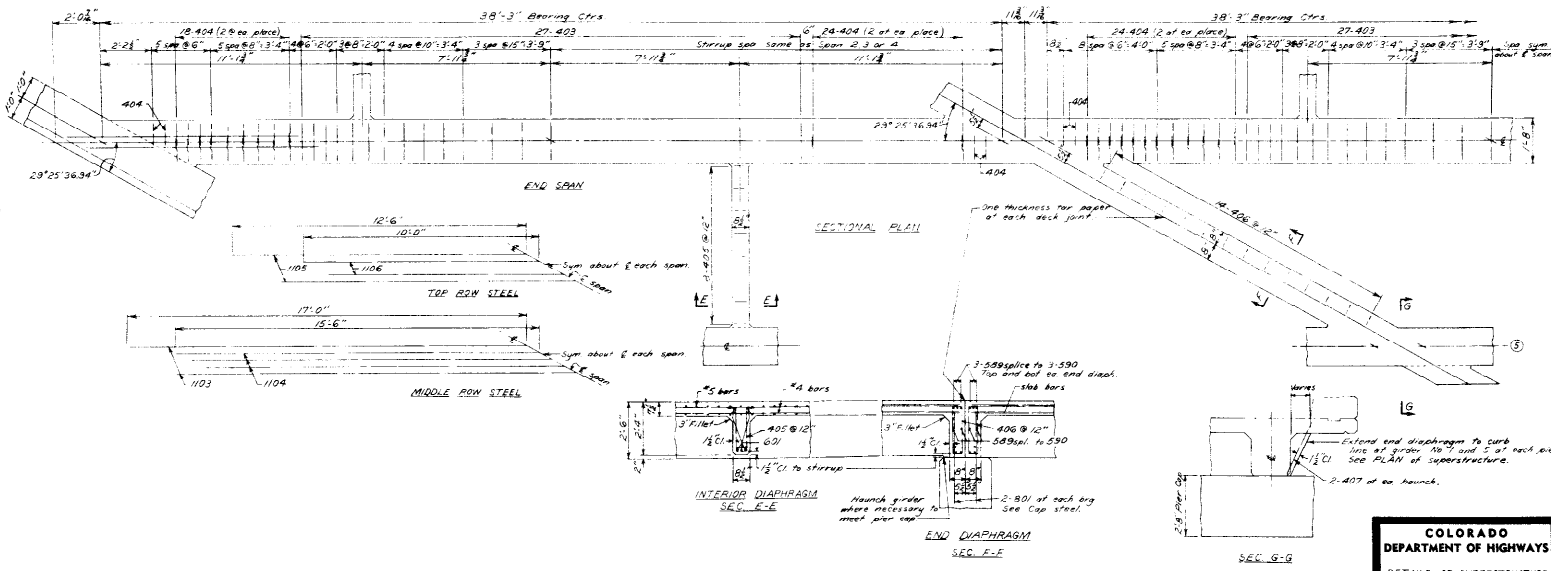
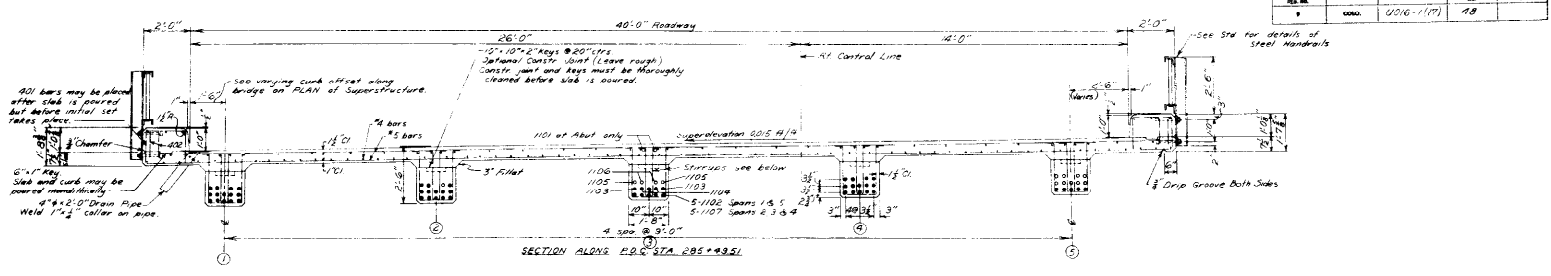
Note: Abuts and piers are parallel. Girders are parallel to tangent to Right Control Line at Sta. 285+43.51. Elevations are at finish grade. 1/8" D.L. Deflection at 2' span.

**COLORADO**  
**DEPARTMENT OF HIGHWAYS**  
DETAILS OF SUPERSTRUCTURE

Area: Bear Creek at W. Hampton  
No. 1016-1(17)  
New: Denver  
Designed by: J.L.B.  
Checked by: J.L.B.  
Approved by: [Signature]  
Date: Sept. 16, 1950

STRUCTURE No. E-16-15 East End Lane

NO.	DATE	BY	REVISION
1			
2			



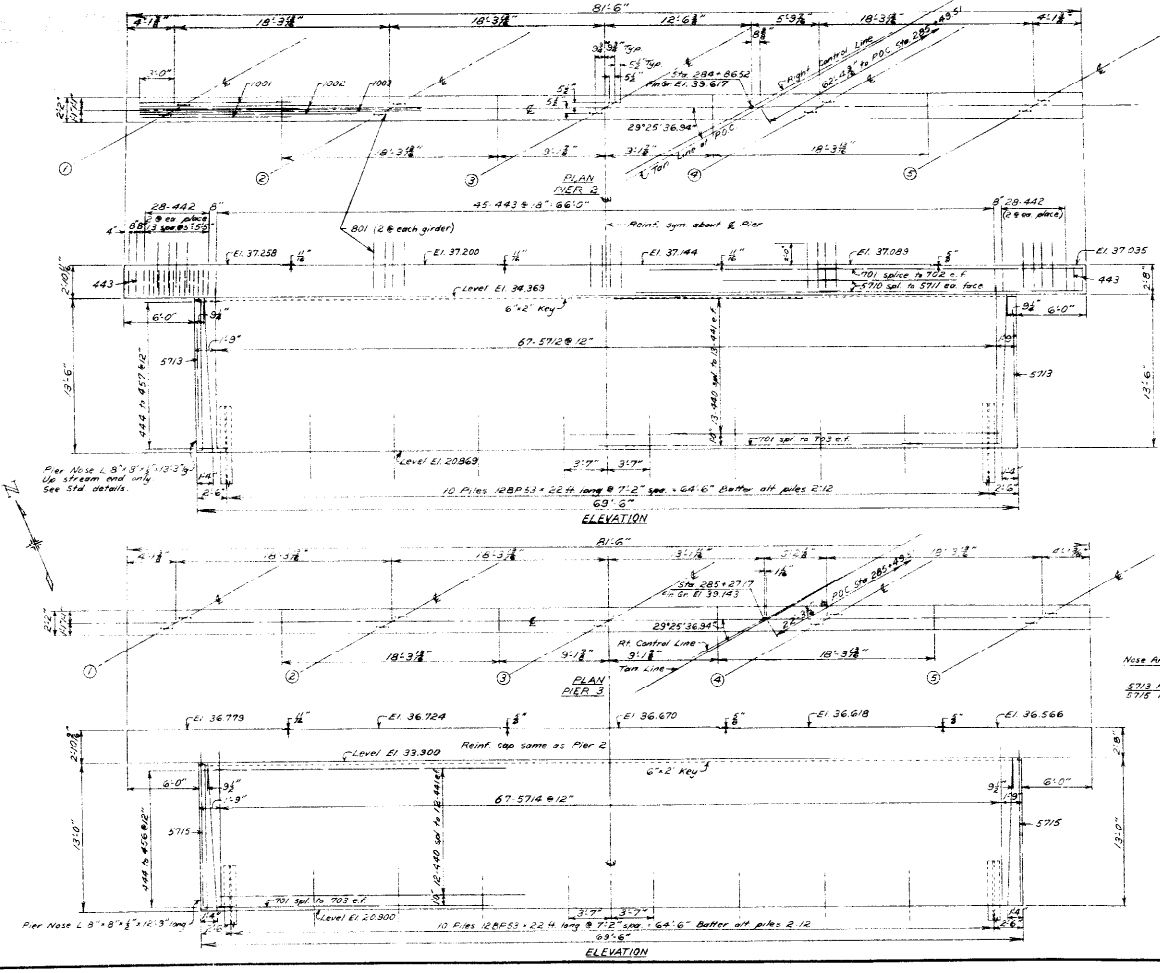
**COLORADO DEPARTMENT OF HIGHWAYS**  
**DETAILS OF SUPERSTRUCTURE**

Address: Bear Creek at N. Hampden  
 No. 2847-2850 & 2861-2723  
 Year: Denver No. 76 1-23-60  
 Designed by: C.W. Approved by: J.C. [Signature]  
 Checked by: J.C. Bridge Engineer Date: Aug 15, 1921

STRUCTURE NO. F-16 FS Est. And. Lane



NO. 100	BYBONS	PROJECT NO.	DATE
1	CDMA	U016-1(17)	30



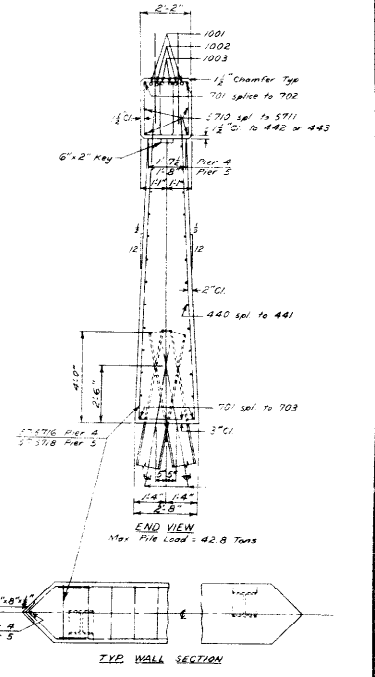
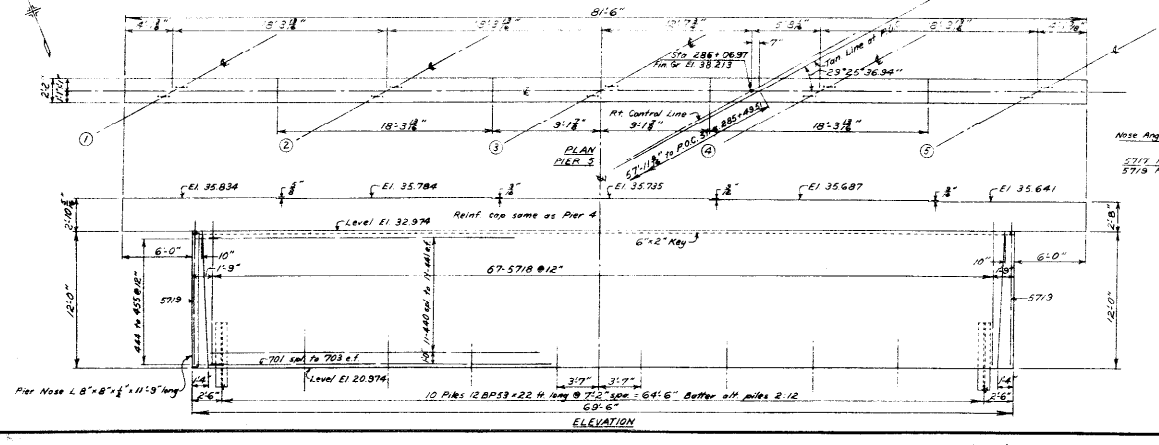
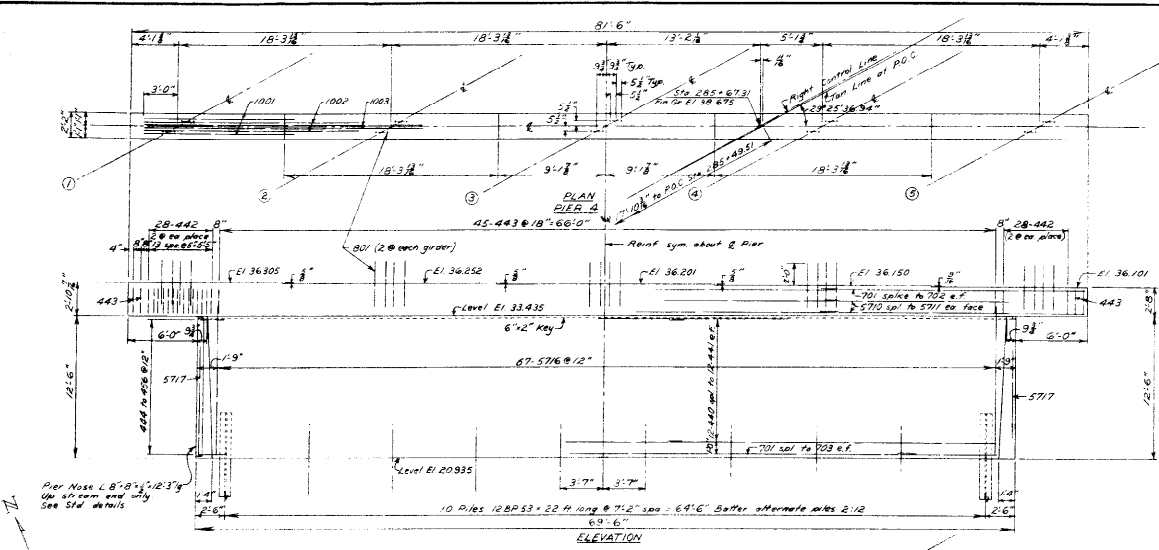
**COLORADO DEPARTMENT OF HIGHWAYS**

**PIER 2 AND 3**

Approved: *[Signature]* Date: 1/13/1917  
 Checked by: *[Signature]* Date: 1/13/1917

STRUCTURE NO. F-16-FS East End Lane

Sheet No.	SP-1000	Project No.	SP-1000
248	COG	0.016-1117	51

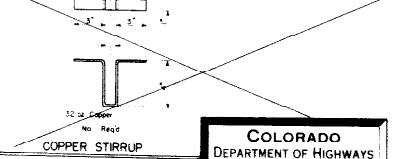
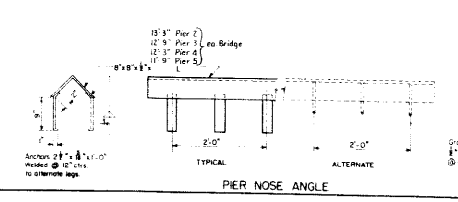
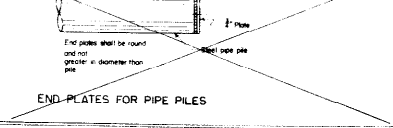
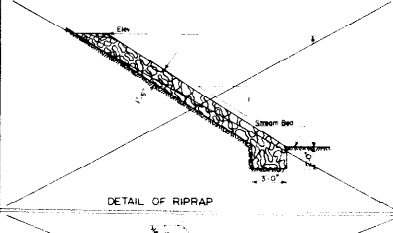
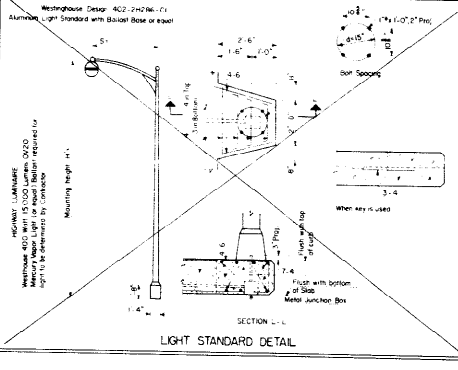
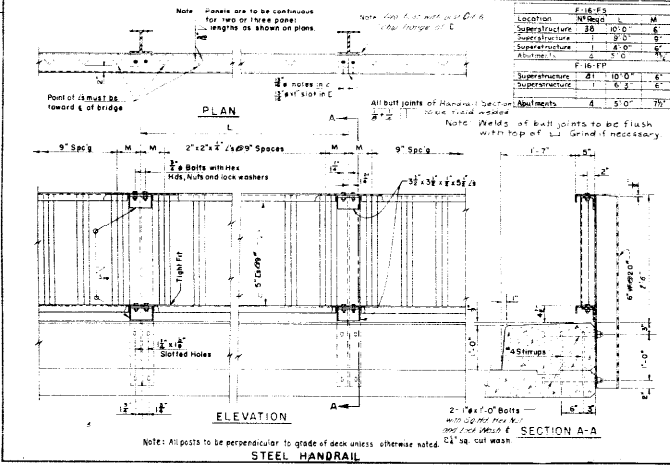
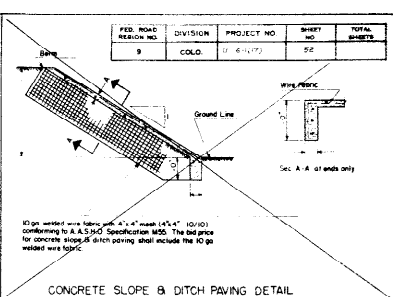
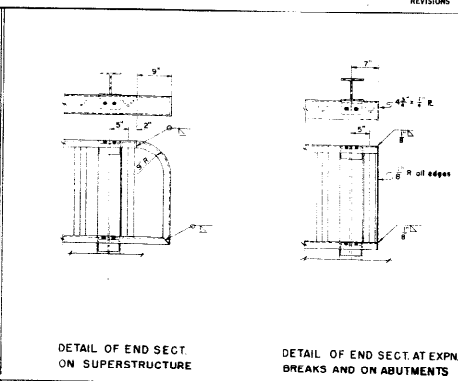
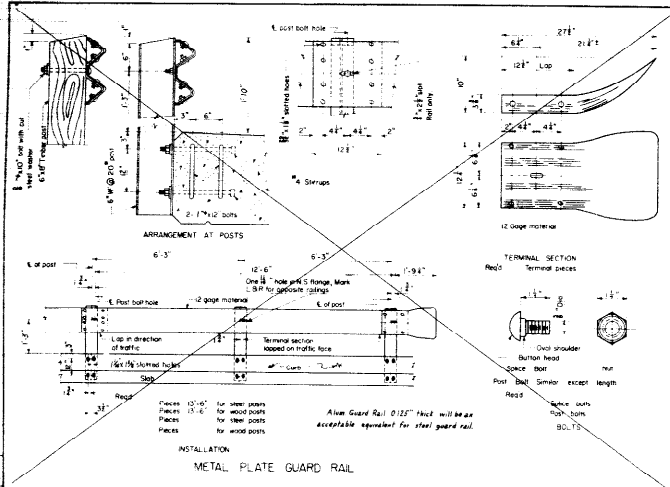


**COLORADO DEPARTMENT OF HIGHWAYS**

PIER 4 AND 5

Drawn by: [Signature]  
Checked by: [Signature]  
Designed by: [Signature]  
Approved by: [Signature]

STRUCTURE NO. E-16-FS East End Lane



**COLORADO DEPARTMENT OF HIGHWAYS**

MISCELLANEOUS BRIDGE DETAILS

Location: Four Creeks at West Hampden

File No.: 102-75-08-10-104-100-00

Project No.: 104-25-27-104-07-10

Near Denver: Sec 7/6, T 63S, R 65W

Designed by: [Signature]

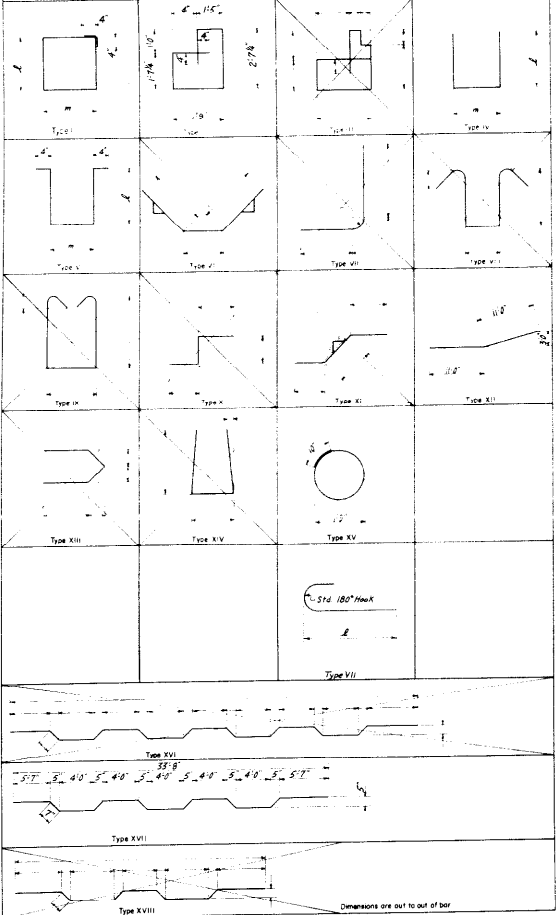
Checked by: [Signature]

Date: 10/17/64



TRACING PLAN

BENDING DIAGRAMS



BAR LIST SUPERSTRUCTURE

Mark	Size	No.	Length	Type	Remarks
427	1/2"	356	37.9'	Str	
428	1"	500	42.2'	Str	
429	1"	500	42.2'	Str	
430	1"	500	42.2'	Str	
431	1"	500	42.2'	Str	
432	1"	500	42.2'	Str	
433	1"	500	42.2'	Str	
434	1"	500	42.2'	Str	
435	1"	500	42.2'	Str	
436	1"	500	42.2'	Str	
437	1"	500	42.2'	Str	
438	1"	500	42.2'	Str	
439	1"	500	42.2'	Str	
440	1"	500	42.2'	Str	
441	1"	500	42.2'	Str	
442	1"	500	42.2'	Str	
443	1"	500	42.2'	Str	
444	1"	500	42.2'	Str	
445	1"	500	42.2'	Str	
446	1"	500	42.2'	Str	
447	1"	500	42.2'	Str	
448	1"	500	42.2'	Str	
449	1"	500	42.2'	Str	
450	1"	500	42.2'	Str	
451	1"	500	42.2'	Str	
452	1"	500	42.2'	Str	
453	1"	500	42.2'	Str	
454	1"	500	42.2'	Str	
455	1"	500	42.2'	Str	
456	1"	500	42.2'	Str	
457	1"	500	42.2'	Str	
458	1"	500	42.2'	Str	
459	1"	500	42.2'	Str	
460	1"	500	42.2'	Str	
461	1"	500	42.2'	Str	
462	1"	500	42.2'	Str	
463	1"	500	42.2'	Str	
464	1"	500	42.2'	Str	
465	1"	500	42.2'	Str	
466	1"	500	42.2'	Str	
467	1"	500	42.2'	Str	
468	1"	500	42.2'	Str	
469	1"	500	42.2'	Str	
470	1"	500	42.2'	Str	
471	1"	500	42.2'	Str	
472	1"	500	42.2'	Str	
473	1"	500	42.2'	Str	
474	1"	500	42.2'	Str	
475	1"	500	42.2'	Str	
476	1"	500	42.2'	Str	
477	1"	500	42.2'	Str	
478	1"	500	42.2'	Str	
479	1"	500	42.2'	Str	
480	1"	500	42.2'	Str	
481	1"	500	42.2'	Str	
482	1"	500	42.2'	Str	
483	1"	500	42.2'	Str	
484	1"	500	42.2'	Str	
485	1"	500	42.2'	Str	
486	1"	500	42.2'	Str	
487	1"	500	42.2'	Str	
488	1"	500	42.2'	Str	
489	1"	500	42.2'	Str	
490	1"	500	42.2'	Str	
491	1"	500	42.2'	Str	
492	1"	500	42.2'	Str	
493	1"	500	42.2'	Str	
494	1"	500	42.2'	Str	
495	1"	500	42.2'	Str	
496	1"	500	42.2'	Str	
497	1"	500	42.2'	Str	
498	1"	500	42.2'	Str	
499	1"	500	42.2'	Str	
500	1"	500	42.2'	Str	

BAR SUMMARY SUPERSTRUCTURE

Mark	Size	No.	Length	Type	Remarks
427	1/2"	356	37.9'	Str	
428	1"	500	42.2'	Str	
429	1"	500	42.2'	Str	
430	1"	500	42.2'	Str	
431	1"	500	42.2'	Str	
432	1"	500	42.2'	Str	
433	1"	500	42.2'	Str	
434	1"	500	42.2'	Str	
435	1"	500	42.2'	Str	
436	1"	500	42.2'	Str	
437	1"	500	42.2'	Str	
438	1"	500	42.2'	Str	
439	1"	500	42.2'	Str	
440	1"	500	42.2'	Str	
441	1"	500	42.2'	Str	
442	1"	500	42.2'	Str	
443	1"	500	42.2'	Str	
444	1"	500	42.2'	Str	
445	1"	500	42.2'	Str	
446	1"	500	42.2'	Str	
447	1"	500	42.2'	Str	
448	1"	500	42.2'	Str	
449	1"	500	42.2'	Str	
450	1"	500	42.2'	Str	
451	1"	500	42.2'	Str	
452	1"	500	42.2'	Str	
453	1"	500	42.2'	Str	
454	1"	500	42.2'	Str	
455	1"	500	42.2'	Str	
456	1"	500	42.2'	Str	
457	1"	500	42.2'	Str	
458	1"	500	42.2'	Str	
459	1"	500	42.2'	Str	
460	1"	500	42.2'	Str	
461	1"	500	42.2'	Str	
462	1"	500	42.2'	Str	
463	1"	500	42.2'	Str	
464	1"	500	42.2'	Str	
465	1"	500	42.2'	Str	
466	1"	500	42.2'	Str	
467	1"	500	42.2'	Str	
468	1"	500	42.2'	Str	
469	1"	500	42.2'	Str	
470	1"	500	42.2'	Str	
471	1"	500	42.2'	Str	
472	1"	500	42.2'	Str	
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474	1"	500	42.2'	Str	
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476	1"	500	42.2'	Str	
477	1"	500	42.2'	Str	
478	1"	500	42.2'	Str	
479	1"	500	42.2'	Str	
480	1"	500	42.2'	Str	
481	1"	500	42.2'	Str	
482	1"	500	42.2'	Str	
483	1"	500	42.2'	Str	
484	1"	500	42.2'	Str	
485	1"	500	42.2'	Str	
486	1"	500	42.2'	Str	
487	1"	500	42.2'	Str	
488	1"	500	42.2'	Str	
489	1"	500	42.2'	Str	
490	1"	500	42.2'	Str	
491	1"	500	42.2'	Str	
492	1"	500	42.2'	Str	
493	1"	500	42.2'	Str	
494	1"	500	42.2'	Str	
495	1"	500	42.2'	Str	
496	1"	500	42.2'	Str	
497	1"	500	42.2'	Str	
498	1"	500	42.2'	Str	
499	1"	500	42.2'	Str	
500	1"	500	42.2'	Str	

BAR LIST ABUTMENT No. 1

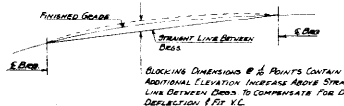
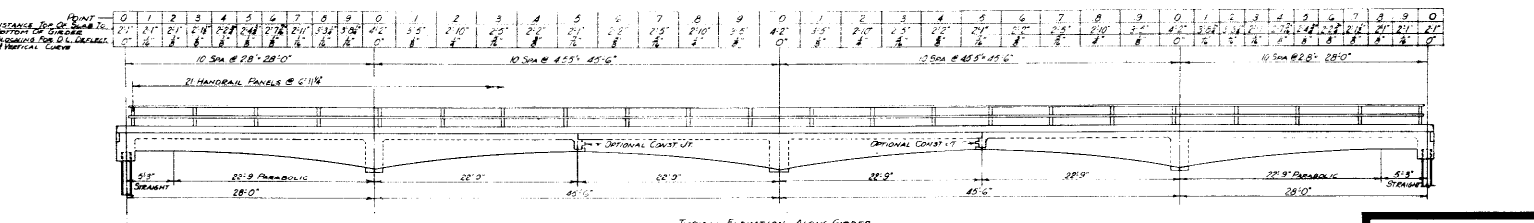
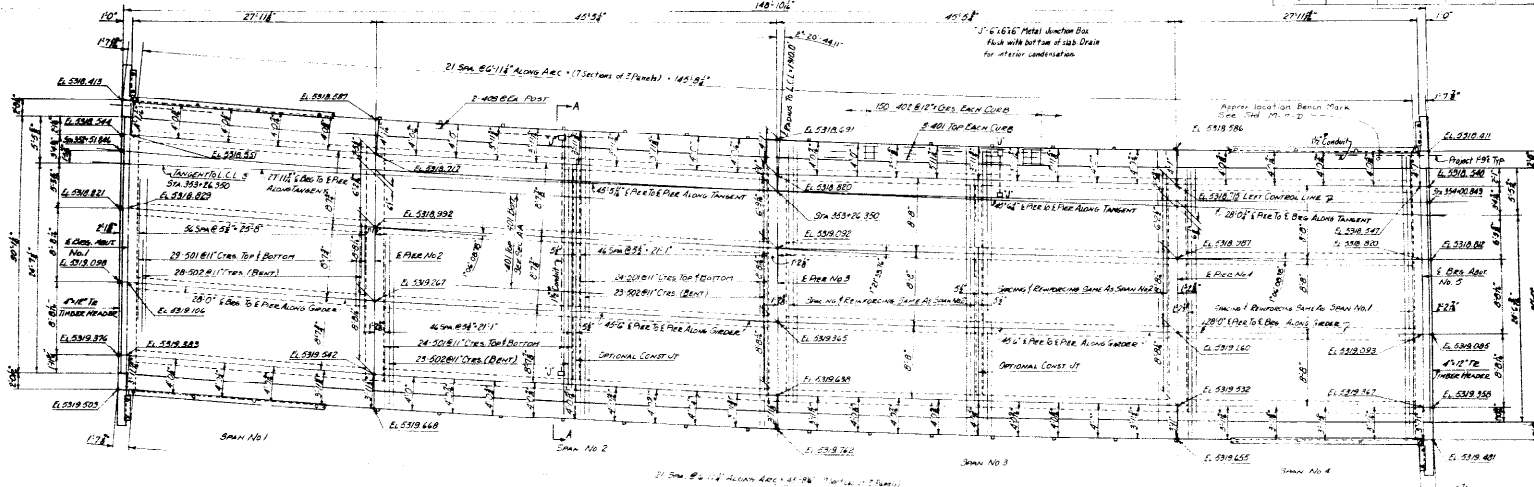
Mark	Size	No.	Length	Type	Remarks
486	1"	32	3.42'	Str	
487	1"	8	3.0'	Str	
488	1"	8	4.0'	Str	
489	1"	8	2.0'	Str	
490	1"	8	2.0'	Str	
491	1"	8	2.0'	Str	
492	1"	8	2.0'	Str	
493	1"	8	2.0'	Str	
494	1"	8	2.0'	Str	
495	1"	8	2.0'	Str	
496	1"	8	2.0'	Str	
497	1"	8	2.0'	Str	
498	1"	8	2.0'	Str	
499	1"	8	2.0'	Str	
500	1"	8	2.0'	Str	

BAR SUMMARY

Mark	Size	No.	Length	Type	Remarks
486	1"	32	3.42'	Str	
487	1"	8	3.0'	Str	
488	1"	8	4.0'	Str	
489	1"	8	2.0'	Str	
490	1"	8	2.0'	Str	
491	1"	8	2.0'	Str	
492	1"	8	2.0'	Str	
493	1"	8	2.0'	Str	
494	1"	8	2.0'	Str	
495	1"	8	2.0'	Str	
496	1"	8	2.0'	Str	
497	1"	8	2.0'	Str	
498	1"	8	2.0'	Str	
499	1"	8	2.0'	Str	
500	1"	8	2.0'	Str	

BAR LIST PIER No. 2

Mark	Size	No.	Length	Type	Remarks
442	1"	96	6.4'	Str	
443	1"	36	5.6'	Str	
444	1"	8	2.0'	Str	
445	1"	8	2.0'	Str	
446	1"	8	2.0'	Str	
447	1"	8	2.0'	Str	
448	1"	8	2.0'	Str	
449	1"	8	2.0'	Str	
450	1"	8	2.0'	Str	
451	1"	8	2.0'	Str	
452	1"	8	2.0'	Str	
453	1"	8	2.0'	Str	
454	1"	8	2.0'	Str	
455	1"	8	2.0'	Str	
456	1"	8	2.0'	Str	
457	1"	8	2.0'	Str	
458	1"	8	2.0'	Str	
459	1"	8	2.0'	Str	
460	1"	8	2.0'	Str	
461	1"	8	2.0'	Str	
462	1"	8	2.0'	Str	
463	1"	8	2.0'	Str	
464	1"	8	2.0'	Str	
465	1"	8	2.0'	Str	
466	1"	8	2.0'	Str	
467	1"	8	2.0'	Str	
468	1"	8	2.0'	Str	
469	1"	8	2.0'	Str	
470	1"	8	2.0'	Str	
471	1"	8	2.0'	Str	
472	1"	8	2.0'	Str	
473	1"	8	2.0'	Str	
474	1"	8	2.0'	Str	
475	1"	8	2.0'	Str	
476	1"	8	2.0'	Str	
477	1"	8	2.0'	Str	
478	1"	8	2.0'	Str	
479	1"	8			



BUILDING DIMENSIONS @ 1/8 POINTS CONTAIN ADDITIONAL ELEVATION INCREASE ABOVE STRAIGHT LINE BETWEEN DECK TO COMPENSATE FOR DE. DEFLECTION  $\delta$  FOR V.C.

**COLORADO DEPARTMENT OF HIGHWAYS SUPERSTRUCTURE DETAIL**

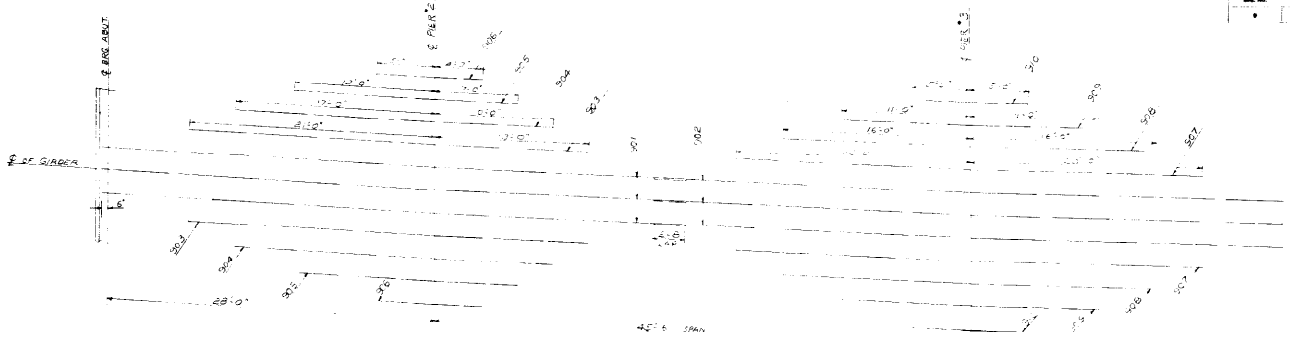
1. HANSEN, OTHO FREDERICK, JR.  
2. HANSEN, OTHO FREDERICK, JR.  
3. HANSEN, OTHO FREDERICK, JR.

Checked by: J. W. [Signature]  
Date: [Date]

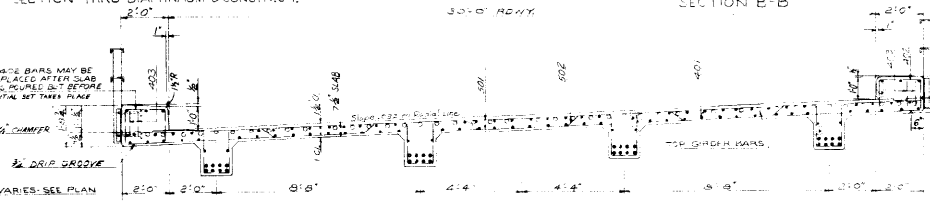
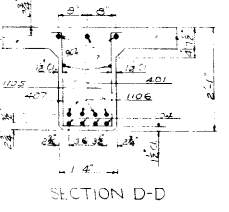
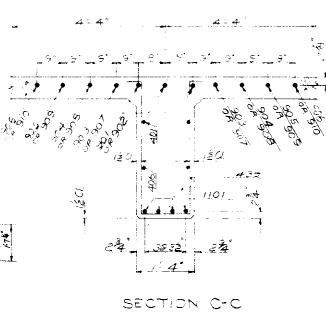
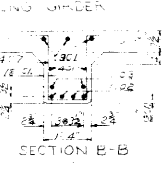
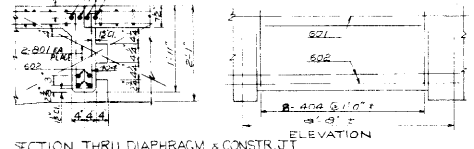
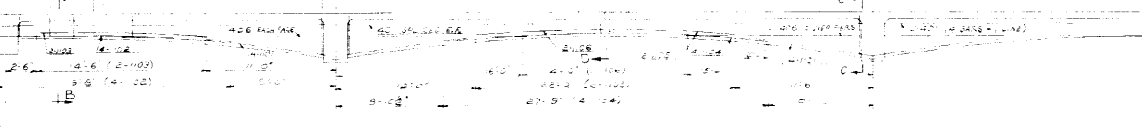
STRUCTURE NO. F-16-FY (NEXT BOUND)



NO.	DATE	BY	REASON
1	10-1-57	...	...



1/8" DIA. 4 # 2 @ 30" O.C. 20" DIA. 3 # 7" 22" DIA. 3 # 7" 13" DIA. 3 # 10" 24" DIA. 3 # 7" REINFC STEEL SYMMETRICAL ABOUT C PIER #3

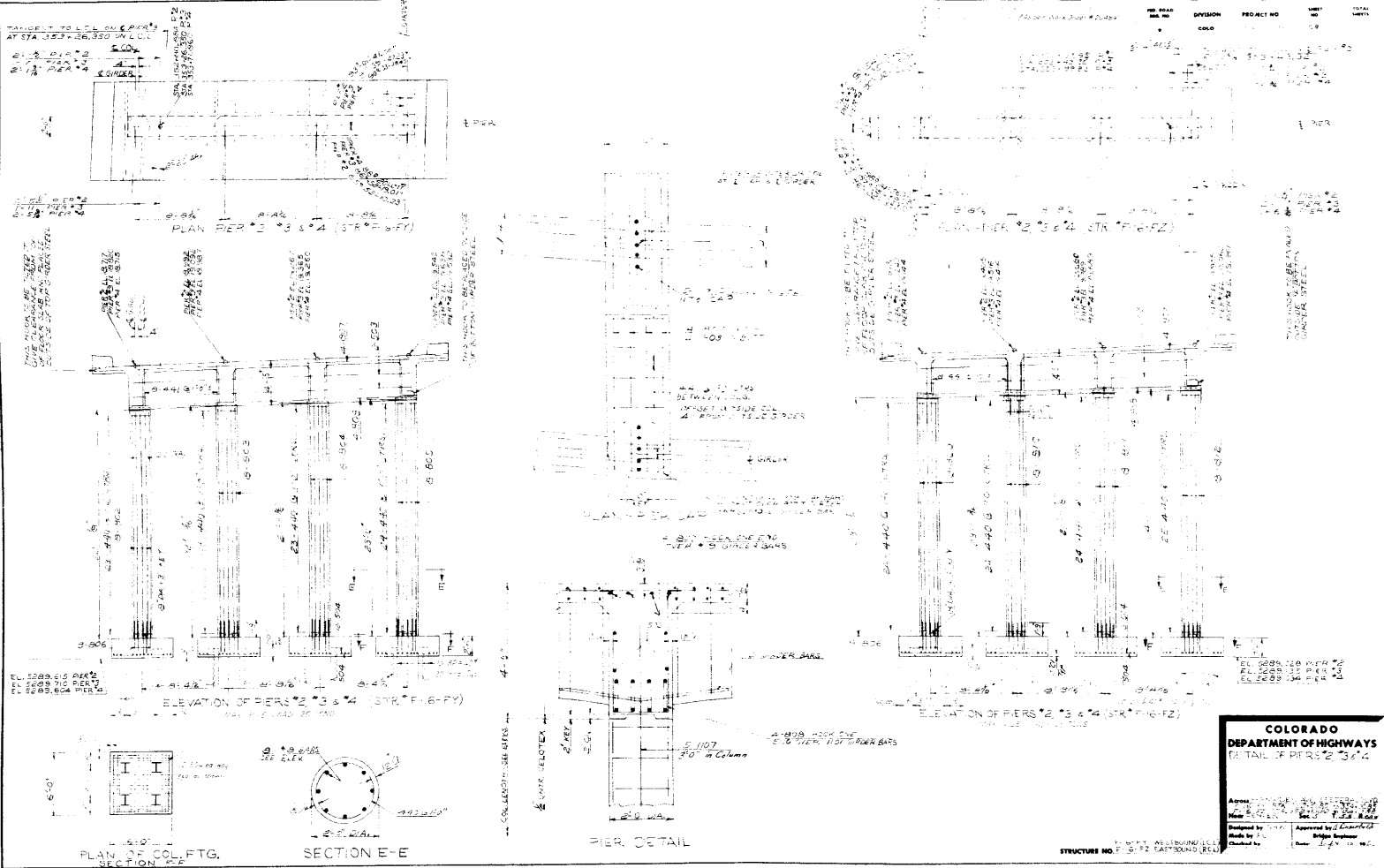


SECTION A-A

**COLORADO**  
DEPARTMENT OF HIGHWAYS  
DETAILS OF SUPERSTRUCTURE

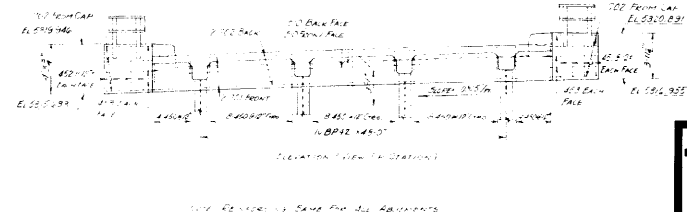
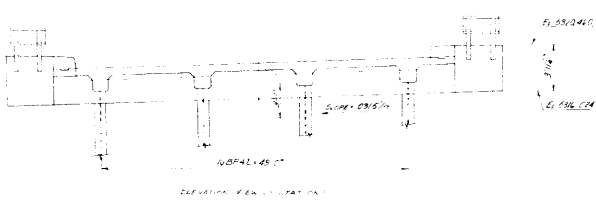
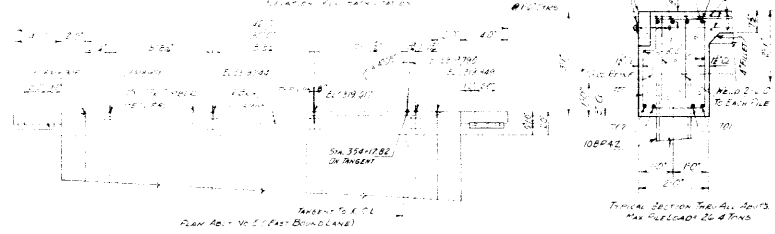
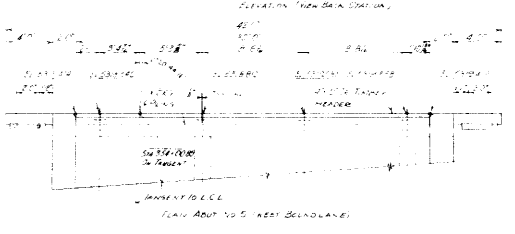
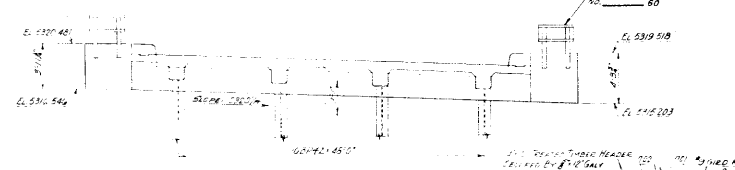
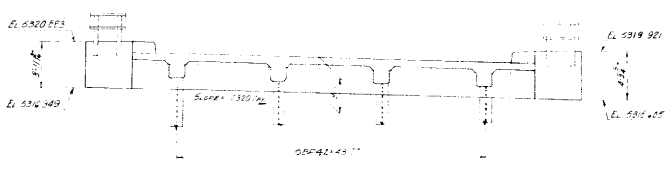
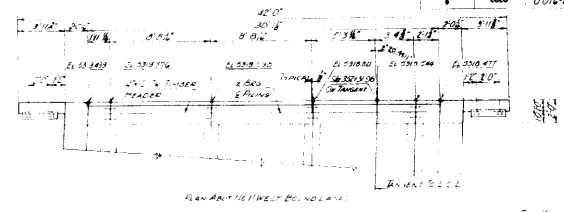
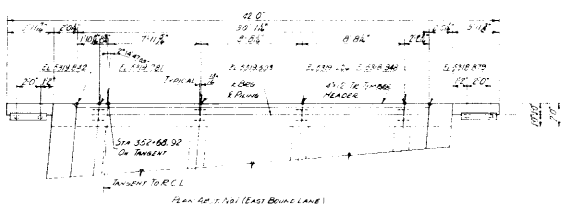
Approved by *[Signature]* FEDERAL  
Checked by *[Signature]* STATE  
Designed by *[Signature]* No. S-1-31-B-106  
Made by *[Signature]* Bridge Section  
Checked by *[Signature]* Date: 10-15-56

STRUCTURE NO. 216-12 EASTBOUND



**COLORADO**  
**DEPARTMENT OF HIGHWAYS**  
 (DETAIL OF PIERS #2 #3 & 4)

Approved by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_

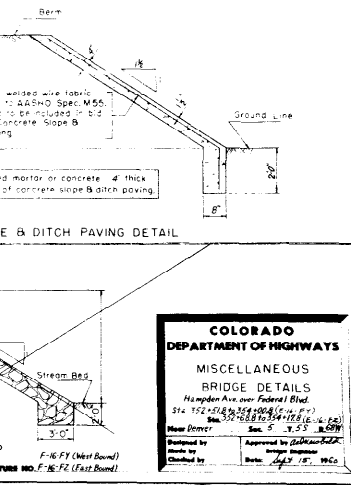
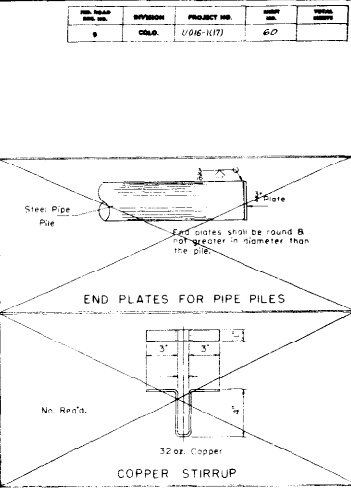
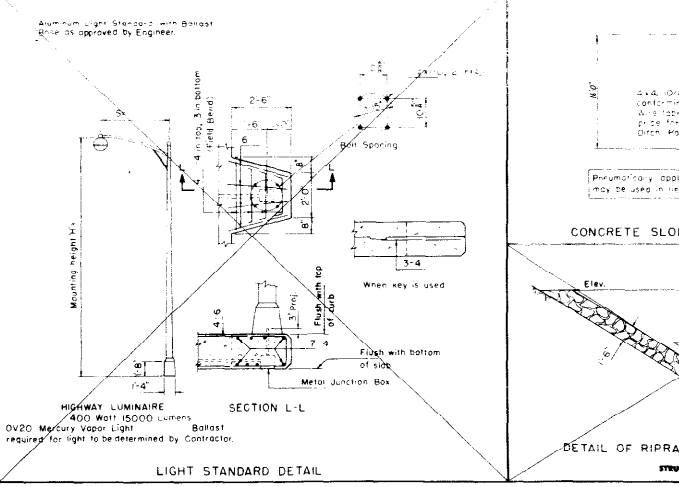
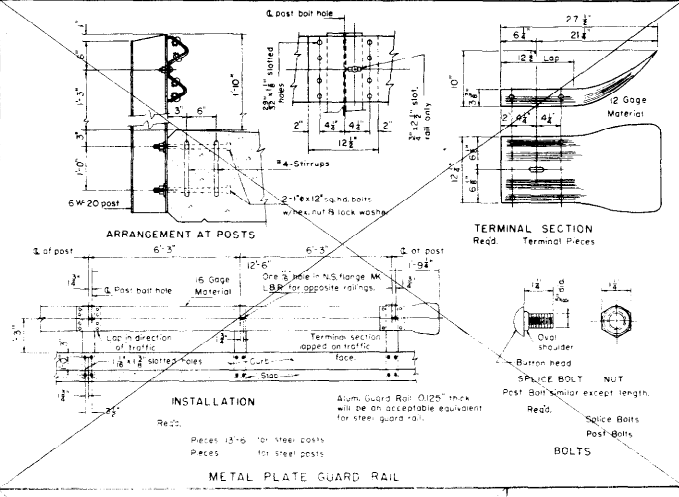
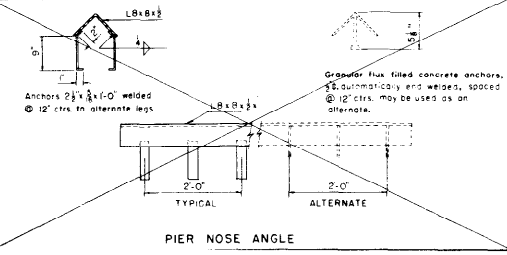
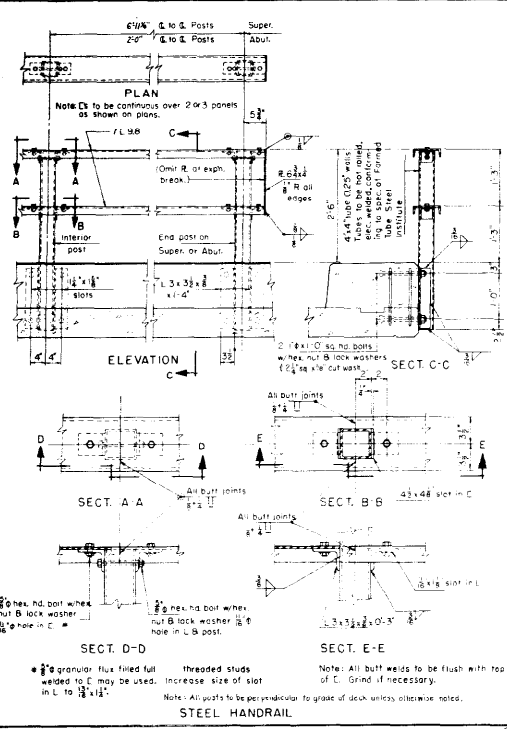


**COLORADO**  
DEPARTMENT OF HIGHWAYS  
DETAILS OF AGREEMENTS

MAINTAINED UNDER FEDERAL AID  
FED. AID PROJ. NO. 5-35-275-B  
STATE CONTRACT NO. 1-1-5-B-104  
Designed by S.M. Approved by S.M.  
Checked by J.R. Bridge Engineer  
Date July 15, 1961

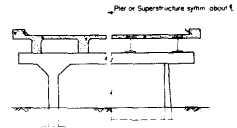
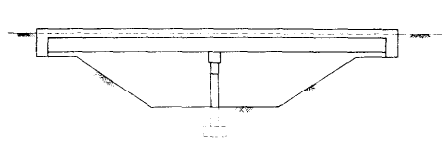
FIG. 17 (EAST BOUND)  
STRUCTURE NO. FIG. 12 (EAST BOUND)

NO.	DATE	DIVISION	PROJECT NO.	REV.	BY
1		CDL	016-117	60	



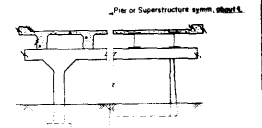
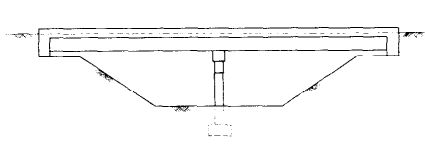
**COLORADO DEPARTMENT OF HIGHWAYS**  
MISCELLANEOUS BRIDGE DETAILS  
1450 Glen Ave. over Federal Blvd.  
Sta. 152+50 to 152+90 (E.W. 1st)  
Sta. 37+00 to 37+125 (E.W. 1st)  
Drawn by: S. J. S. 8-50  
Checked by: [Signature]  
Approved by: [Signature]

FED. ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U/D/6-1(1)	67	



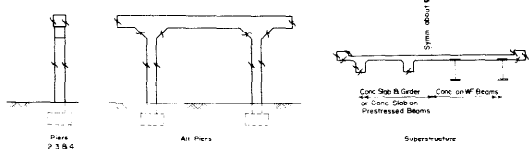
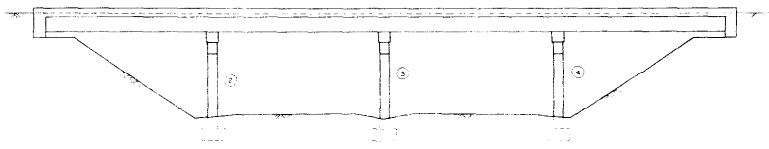
PIER AND SUPERSTRUCTURE

RURAL STREAM CROSSING



PIER AND SUPERSTRUCTURE

URBAN STREAM CROSSING OR NEAR URBAN AREA

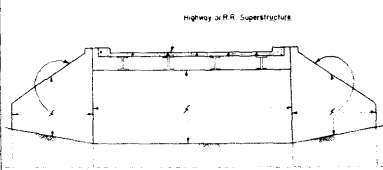


In case of round columns the entire column shall receive Class "C" Finish on all Piers

UNDERPASS



STUB ABUTMENTS  
(Underpass Only)



CANTILEVER ABUTMENTS  
(Highway or RR)

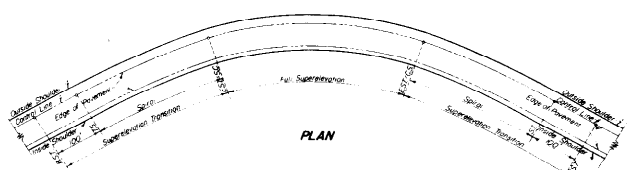
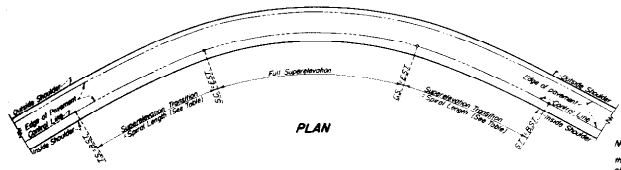
**COLORADO**  
 DEPARTMENT OF HIGHWAYS

DETAILS SHOWING PORTIONS OF  
 STRUCTURE TO RECEIVE CLASS  
 "C" SURFACE FINISH

Across Various Locations

Near Denver      Sta.      Sec.      T.      R.  
 Designed by D.N.      Approved by G.H.      6-12  
 Made by R.P.      Bridge Engineer  
 Checked by      Date: 2-28-15 1960

STRUCTURE NO. 107105

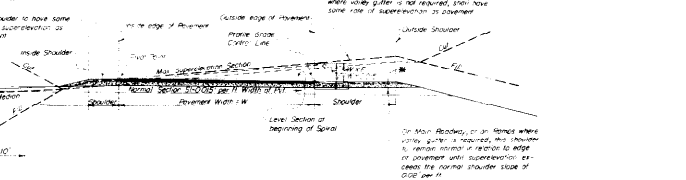
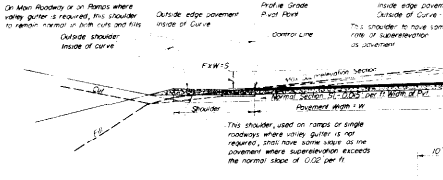
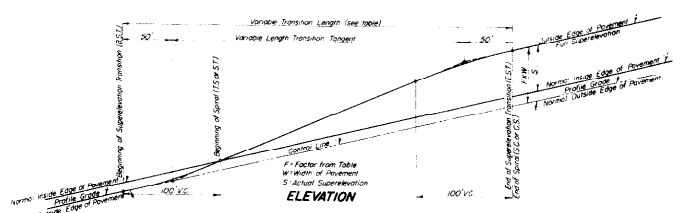
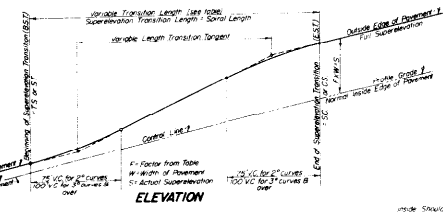


**NOTE CASE I**  
The normal roadway slope is approximately equal to the super-elevation for a 1° curve. Therefore no super-elevation is required for 1° curves.  
For curves of over 1° the factors shown in the table for Case I include the normal roadway slope of 0.0171 per ft., thereby giving values of actual super-elevation at any point on the transition.

**NOTE CASE II**  
In order that the opposing slope of the normal roadway may be eliminated before entering the horizontal curve, Case II super-elevation transitions shall begin on the tangent one hundred feet (100') from the TS and/or ST of the spiral. Case II super-elevation, 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 super-elevation transition shall be on the tangent approaching each end of the curve. Full super-elevation 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**

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

DEG. OF CURVE	CASE	HORIZONTAL DISTANCE FROM BEGINNING OF TRANSITION									
		0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	Max. 10
2°	I	0.0060	0.0240	0.0540	0.0960	0.1500	0.2040	0.2460	0.2760	0.2940	0.3000
		0.1512	0.1808	0.2092	0.2360	0.2608	0.2832	0.3024	0.3180	0.3288	0.3330
		0.0073	0.0288	0.0648	0.1128	0.1728	0.2328	0.2828	0.3228	0.3528	0.3720
3°	I	0.0083	0.0332	0.0732	0.1272	0.1952	0.2672	0.3312	0.3852	0.4288	0.4620
		0.0099	0.0396	0.0876	0.1464	0.2160	0.2864	0.3568	0.4168	0.4656	0.5040
		0.0114	0.0444	0.0984	0.1632	0.2328	0.3024	0.3720	0.4416	0.5112	0.5760
4°	I	0.0134	0.0516	0.1116	0.1824	0.2640	0.3564	0.4500	0.5436	0.6372	0.7308
		0.0154	0.0588	0.1248	0.2064	0.2988	0.4008	0.5024	0.6040	0.7056	0.8072
		0.0174	0.0660	0.1380	0.2292	0.3300	0.4308	0.5316	0.6324	0.7332	0.8340
5°	I	0.0200	0.0744	0.1584	0.2568	0.3672	0.4800	0.5928	0.7056	0.8184	0.9312
		0.0220	0.0816	0.1716	0.2712	0.3816	0.4944	0.6072	0.7200	0.8328	0.9456
		0.0240	0.0888	0.1872	0.2880	0.3984	0.5112	0.6240	0.7368	0.8496	0.9624
6°	I	0.0266	0.0972	0.2016	0.3096	0.4272	0.5448	0.6624	0.7800	0.8976	1.0152
		0.0286	0.1044	0.2184	0.3264	0.4440	0.5616	0.6792	0.7968	0.9144	1.0320
		0.0306	0.1116	0.2352	0.3432	0.4608	0.5784	0.6960	0.8136	0.9312	1.0488
7°	I	0.0332	0.1200	0.2496	0.3576	0.4752	0.5928	0.7104	0.8280	0.9456	1.0632
		0.0352	0.1272	0.2664	0.3744	0.4920	0.6096	0.7272	0.8448	0.9624	1.0800
		0.0372	0.1344	0.2832	0.3912	0.5088	0.6264	0.7440	0.8616	0.9792	1.0968

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	400'	400'	500'

Factors from table x W (width of pavement in ft.) = value of Super-elevation to be added to normal low side of edge of pavement. See notes on sections above for super-elevation of shoulders.

**COLORADO**  
DEPARTMENT OF HIGHWAYS

**METHODS FOR SUPERELEVATION OF CURVES**

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

CASE II SUPERELEVATION

CASE I SUPERELEVATION

PER ROAD DIVISION NO.	DISTRICT	PROJ. NO.	DATE
9	004	U 06-107	6-2

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
00	0.0000	0.0060	0.0240	0.0540	0.0960	0.1500	0.2040	0.2460	0.2760	0.2940	0.3000
01	0.0001	0.0073	0.0265	0.0574	0.1009	0.1559	0.2097	0.2515	0.2783	0.2921	
02	0.0002	0.0086	0.0290	0.0644	0.1098	0.1654	0.2190	0.2595	0.2832	0.2952	
03	0.0005	0.010	0.0317	0.0653	0.1109	0.1685	0.2179	0.2563	0.2787	0.2911	
04	0.0010	0.0118	0.0346	0.0694	0.1162	0.1750	0.2222	0.2594	0.2816	0.2928	
05	0.0015	0.0135	0.0375	0.0735	0.1215	0.1815	0.2265	0.2625	0.2825	0.2915	
06	0.0022	0.0154	0.0406	0.0778	0.1270	0.1878	0.2306	0.2654	0.2822	0.2900	
07	0.0025	0.0173	0.0437	0.0821	0.1323	0.1931	0.2347	0.2683	0.2829	0.2895	
08	0.0038	0.0194	0.0470	0.0866	0.1382	0.1994	0.2396	0.2710	0.2814	0.2898	
09	0.0049	0.0217	0.0505	0.0913	0.1441	0.1991	0.2423	0.2735	0.2827	0.2909	

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
00	0.1500	0.1512	0.1548	0.1608	0.1692	0.1800	0.1920	0.1992	0.2008	0.2010	0.2010
01	0.1501	0.1515	0.1553	0.1615	0.1702	0.1812	0.1932	0.2002	0.2018	0.2020	0.2020
02	0.1501	0.1517	0.1558	0.1623	0.1712	0.1824	0.1927	0.2006	0.2021	0.2022	0.2022
03	0.1501	0.1520	0.1564	0.1631	0.1722	0.1835	0.1936	0.2013	0.2026	0.2026	0.2026
04	0.1502	0.1524	0.1569	0.1639	0.1732	0.1846	0.1945	0.2019	0.2030	0.2030	0.2030
05	0.1503	0.1527	0.1575	0.1647	0.1743	0.1857	0.1953	0.2025	0.2034	0.2034	0.2034
06	0.1504	0.1531	0.1581	0.1656	0.1754	0.1868	0.1961	0.2031	0.2040	0.2040	0.2040
07	0.1506	0.1535	0.1587	0.1664	0.1763	0.1878	0.1969	0.2037	0.2044	0.2044	0.2044
08	0.1508	0.1539	0.1594	0.1673	0.1777	0.1888	0.1977	0.2042	0.2048	0.2048	0.2048
09	0.1510	0.1543	0.1601	0.1683	0.1788	0.1902	0.1985	0.2047	0.2050	0.2050	0.2050

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
00	0.0000	0.0073	0.0290	0.0653	0.1162	0.1800	0.2438	0.2947	0.3310	0.3527	0.3600
01	0.0001	0.0088	0.0340	0.0698	0.1220	0.1866	0.2496	0.2989	0.3338	0.3541	
02	0.0003	0.0103	0.0351	0.0743	0.1281	0.1932	0.2552	0.3038	0.3365	0.3551	
03	0.0007	0.0123	0.0384	0.0791	0.1342	0.1998	0.2606	0.3089	0.3390	0.3564	
04	0.0012	0.0142	0.0418	0.0839	0.1406	0.2064	0.2659	0.3139	0.3414	0.3574	
05	0.0018	0.0163	0.0454	0.0889	0.1470	0.2130	0.2711	0.3186	0.3437	0.3582	
06	0.0026	0.0186	0.0491	0.0941	0.1536	0.2194	0.2761	0.3232	0.3458	0.3588	
07	0.0036	0.0210	0.0529	0.0994	0.1602	0.2257	0.2809	0.3261	0.3477	0.3593	
08	0.0046	0.0235	0.0569	0.1048	0.1668	0.2319	0.2857	0.3299	0.3495	0.3597	
09	0.0059	0.0262	0.0611	0.1104	0.1734	0.2380	0.2902	0.3320	0.3512	0.3599	

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
00	0.5000	0.5133	0.532	0.557	0.582	0.607	0.622	0.628	0.628	0.628	0.628
01	0.5000	0.5140	0.5346	0.560	0.585	0.610	0.635	0.650	0.650	0.650	0.650
02	0.5001	0.5148	0.5356	0.561	0.586	0.611	0.636	0.651	0.651	0.651	0.651
03	0.5003	0.5156	0.5366	0.562	0.587	0.612	0.637	0.652	0.652	0.652	0.652
04	0.5005	0.5165	0.5376	0.563	0.588	0.613	0.638	0.653	0.653	0.653	0.653
05	0.5008	0.5174	0.5387	0.564	0.589	0.614	0.639	0.654	0.654	0.654	0.654
06	0.5012	0.5184	0.5400	0.565	0.590	0.615	0.640	0.655	0.655	0.655	0.655
07	0.5016	0.5195	0.5411	0.566	0.591	0.616	0.641	0.656	0.656	0.656	0.656
08	0.5021	0.5207	0.5423	0.567	0.592	0.617	0.642	0.657	0.657	0.657	0.657
09	0.5027	0.5219	0.5436	0.568	0.593	0.618	0.643	0.658	0.658	0.658	0.658

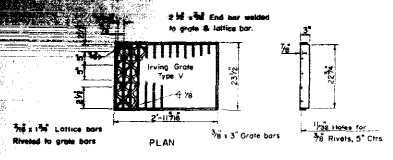
CURVE	Proportional distance from beginning of transition (TRANS-300')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
00	0.0000	0.0097	0.0390	0.0876	0.1558	0.2395	0.3392	0.3774	0.4260	0.4553	0.4650
01	0.0001	0.0118	0.0429	0.0936	0.1634	0.2402	0.3167	0.3831	0.4298	0.4571	
02	0.0004	0.0140	0.0471	0.0997	0.1711	0.2493	0.3244	0.3834	0.4334	0.4588	
03	0.0009	0.0165	0.0515	0.1061	0.1788	0.2555	0.3317	0.3940	0.4369	0.4602	
04	0.0016	0.0191	0.0561	0.1126	0.1865	0.2632	0.3388	0.3945	0.4401	0.4615	
05	0.0024	0.0219	0.0628	0.1193	0.1941	0.2709	0.3457	0.4041	0.4433	0.4626	
06	0.0035	0.0249	0.0684	0.1262	0.2018	0.2785	0.3524	0.4089	0.4459	0.4634	
07	0.0048	0.0281	0.0740	0.1333	0.2095	0.2862	0.3590	0.4135	0.4485	0.4641	
08	0.0062	0.0316	0.0783	0.1406	0.2172	0.2939	0.3653	0.4179	0.4510	0.4646	
09	0.0079	0.0352	0.0819	0.1481	0.2248	0.3016	0.3714	0.4221	0.4532	0.4649	

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
00	0.1500	0.1556	0.1725	0.2006	0.2400	0.2850	0.3300	0.3694	0.3975	0.4144	0.4200
01	0.1500	0.1568	0.1746	0.2041	0.2445	0.2895	0.3345	0.3727	0.3997	0.4155	
02	0.1502	0.1581	0.1772	0.2076	0.2490	0.2940	0.3388	0.3759	0.4018	0.4164	
03	0.1505	0.1595	0.1798	0.2113	0.2535	0.2985	0.3430	0.3790	0.4038	0.4173	
04	0.1509	0.1610	0.1824	0.2139	0.2560	0.3010	0.3451	0.3820	0.4056	0.4180	
05	0.1514	0.1627	0.1852	0.2169	0.2595	0.3045	0.3481	0.3849	0.4074	0.4196	
06	0.1520	0.1644	0.1880	0.2199	0.2620	0.3070	0.3505	0.3876	0.4090	0.4211	
07	0.1528	0.1663	0.1910	0.2220	0.2645	0.3095	0.3528	0.3899	0.4105	0.4225	
08	0.1536	0.1682	0.1941	0.2232	0.2670	0.3120	0.3550	0.3921	0.4119	0.4236	
09	0.1546	0.1703	0.1973	0.2245	0.2695	0.3145	0.3570	0.3932	0.4132	0.4240	

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
00	0.0000	0.0127	0.0506	0.1140	0.1984	0.2850	0.3716	0.4560	0.5194	0.5573	0.5700
01	0.0001	0.0153	0.0539	0.1211	0.2070	0.2937	0.3803	0.4633	0.5243	0.5597	
02	0.0005	0.0182	0.0613	0.1297	0.2157	0.3023	0.3859	0.4707	0.5290	0.5619	
03	0.0011	0.0214	0.0670	0.1379	0.2244	0.3110	0.3976	0.4777	0.5334	0.5638	
04	0.0020	0.0248	0.0729	0.1464	0.2330	0.3197	0.4063	0.4844	0.5376	0.5654	
05	0.0032	0.0285	0.0791	0.1550	0.2417	0.3283	0.4150	0.4909	0.5415	0.5658	
06	0.0046	0.0324	0.0866	0.1637	0.2503	0.3370	0.4236	0.4971	0.5452	0.5680	
07	0.0062	0.0366	0.0923	0.1724	0.2590	0.3457	0.4321	0.5030	0.5496	0.5689	
08	0.0081	0.0410	0.0993	0.1810	0.2677	0.3543	0.4403	0.5087	0.5518	0.5695	
09	0.0103	0.0457	0.1065	0.1897	0.2763	0.3630	0.4483	0.5142	0.5547	0.5699	

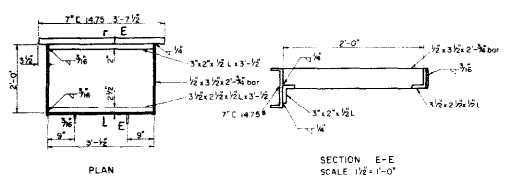
CURVE	Proportional distance from beginning of transition (TRANS-300')										
	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
00	0.1500	0.1564	0.1837	0.2259	0.2812	0.3374	0.3937	0.4490	0.4912	0.5165	0.5249
01	0.1501	0.1602	0.1872	0.2310	0.2868	0.3431	0.3993	0.4540	0.4945	0.5181	
02	0.1503	0.1621	0.1908	0.2364	0.2926	0.3487	0.4049	0.4588	0.4976	0.5195	
03	0.1507	0.1642	0.1946	0.2418	0.2981	0.3543	0.4106	0.4634	0.5006	0.5208	
04	0.1513	0.1665	0.1986	0.2475	0.3037	0.3599	0.4162	0.4679	0.5035	0.5228	
05	0.1521	0.1690	0.2020	0.2531	0.3093	0.3656	0.4218	0.4719	0.5059	0.5228	
06	0.1530	0.1716	0.2070	0.2587	0.3149	0.3712	0.4274	0.4763	0.5084	0.5236	
07	0.1541	0.1744	0.2115	0.2643	0.3206	0.3768	0.4330	0.4803	0.5107	0.5242	
08	0.1554	0.1773	0.2141	0.2700	0.3262	0.3824	0.4385	0.4841	0.5128	0.5246	
09	0.1568	0.1804	0.2209	0.2756	0.3318	0.3881	0.4438	0.4877	0.5147	0.5248	

CURVE	Proportional distance from beginning of transition (TRANS-400')									
	0.00	0.10	0.20	0.30	0.40					

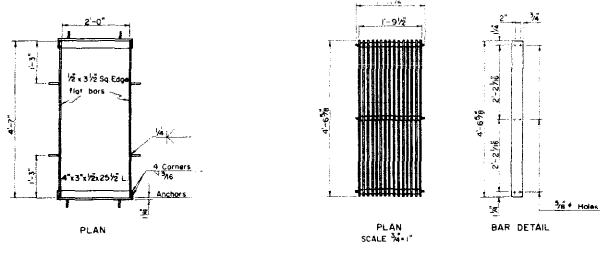


**NO. 4 GRATE**

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



**NO. 4 FRAME**

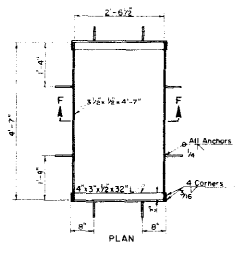


**NO. 5 FRAME**

**NO. 5 GRATE**

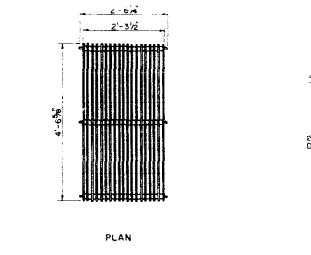
NOTE: NO. 5 GRATE & FRAME MAY BE USED WITH INLET TYPE 1.

NOTE: NO. 5 GRATE AND FRAME TO BE USED WITH TYPE 4-B AND 4-U INLET.



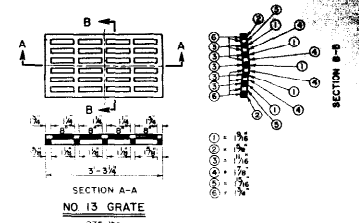
**NO. 5A FRAME**

NOTE: NO. 5A GRATE AND FRAME MAY BE USED WITH INLET TYPE 2.

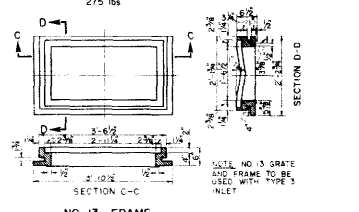


**NO. 5A GRATE**

NOTE: NO. 5A GRATE AND FRAME TO BE USED WITH TYPE 1.



**NO. 13 GRATE**



**NO. 13 FRAME**

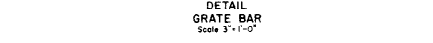
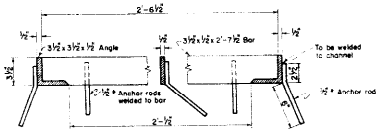
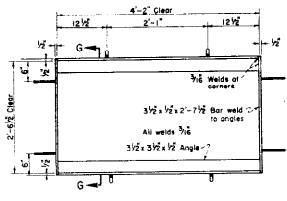
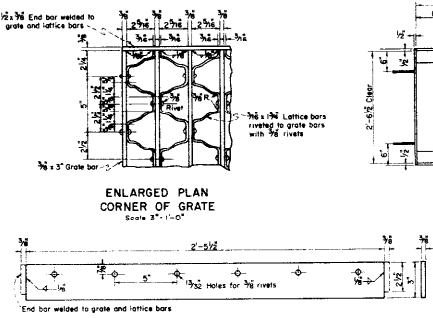
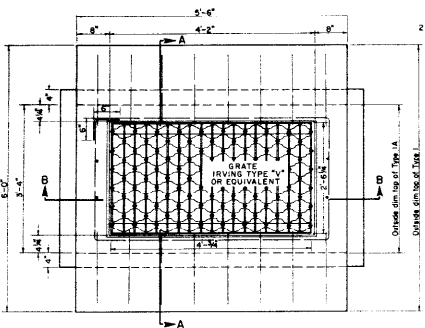
Cast Iron (SPREADER)  
SCALE 1/4" = 1'-0"  
1,321 lbs. 60  
USE ABOVE SPREADER IN GRATE NO. 5 & NO. 5A

**COLORADO**  
DEPARTMENT OF HIGHWAYS

CONCRETE INLETS  
GRATES & FRAMES  
NO. 13, NO. 4, NO. 5 & 5A

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

FED. ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U. 107-1071	65	

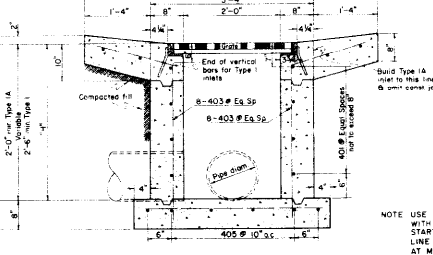
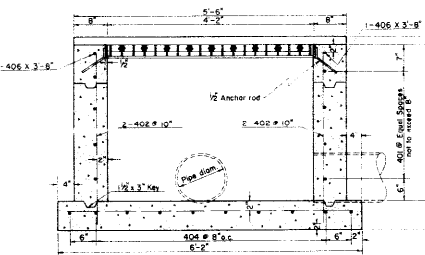


QUANTITIES - TYPE IA

H	CLASS "A" CONCRETE		REINFORCING STEEL
	CU. YDS	LBS.	LBS.
2'-0"	1.55	90	120
2'-6"	1.64	102	132
3'-0"	1.78	114	144
3'-6"	1.82	126	156
4'-0"	1.91	138	168
4'-6"	2.00	145	175
5'-0"	2.09	157	187
5'-6"	2.18	169	199
6'-0"	2.27	181	206
6'-6"	2.36	188	218
7'-0"	2.45	200	230
7'-6"	2.54	212	242
8'-0"	2.63	224	254
8'-6"	2.72	231	261
9'-0"	2.81	243	273
9'-6"	2.90	255	285
10'-0"	2.99	267	292

QUANTITIES - TYPE I

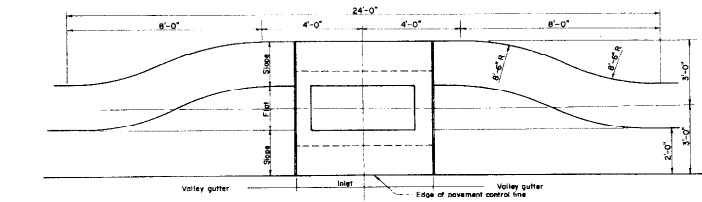
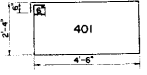
H	CLASS "A" CONCRETE		REINFORCING STEEL
	CU. YDS	LBS.	LBS.
2'-6"	2.05	120	
3'-0"	2.14	132	
3'-6"	2.23	144	
4'-0"	2.32	156	
4'-6"	2.41	168	
5'-0"	2.50	175	
5'-6"	2.59	187	
6'-0"	2.68	199	
6'-6"	2.77	206	
7'-0"	2.86	218	
7'-6"	2.95	230	
8'-0"	3.04	242	
8'-6"	3.13	249	
9'-0"	3.22	261	
9'-6"	3.31	273	
10'-0"	3.40	285	
10'-6"	3.49	292	



NOTE USE STEPS FOR ALL INLETS WITH H = 3'-6" OR MORE START 2'-0" BELOW GUTTER LINE AND SPACE EQUALLY AT MINIMUM OF 18"

VOLUMES OF CONCRETE OCCUPIED BY INLET OR OUTLET PIPES TO BE DEDUCTED FROM PAY QUANTITIES OF CONCRETE

GENERAL NOTES

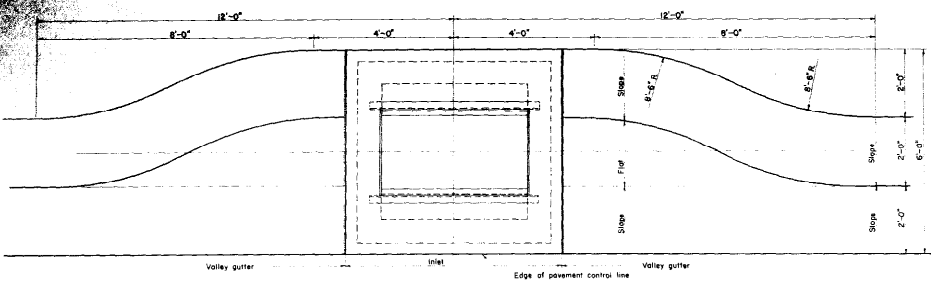


**COLORADO DEPARTMENT OF HIGHWAYS**

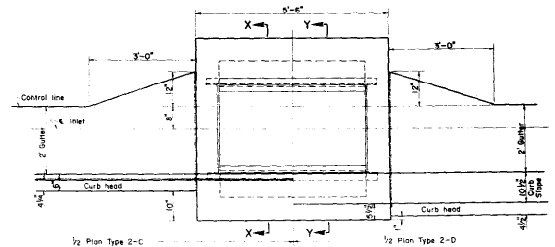
**CONCRETE INLET TYPE I AND IA**

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

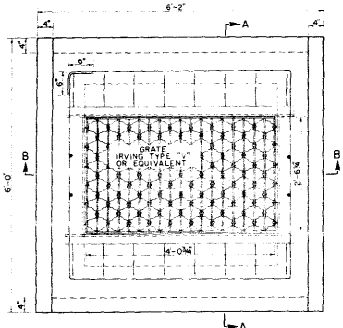
FED. ROAD DIVISION NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U 066-107	66	



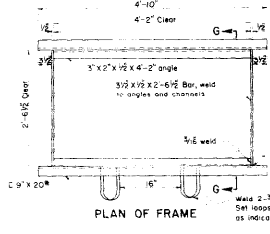
PLAN OF WIDENING OF VALLEY GUTTER AT INLETS  
Scale 1/4" = 1'-0"



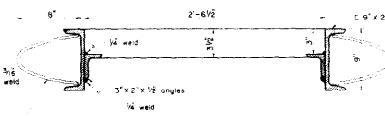
DROP INLETS IN CURB & GUTTER



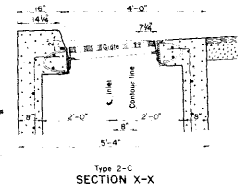
PLAN DROP INLET TYPE 2



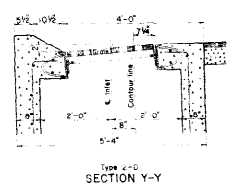
PLAN OF FRAME



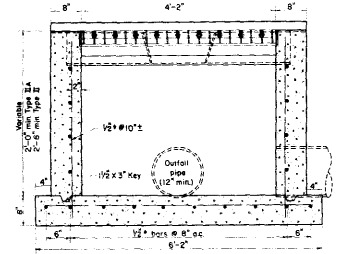
SECTION G-G



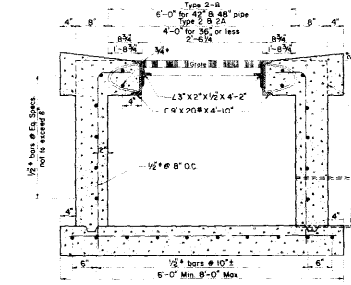
SECTION X-X



SECTION Y-Y



SECTION B-B



SECTION A-A

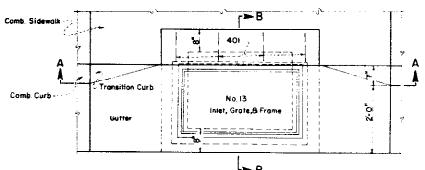
NOTE WHEN DEPTH OF INLET IS OVER 4 STEPS MUST BE PROVIDED

Type 2-A & 2-B Inlets to be built to this line

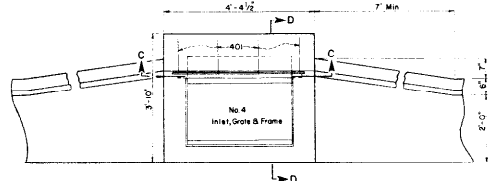
**COLORADO**  
DEPARTMENT OF HIGHWAYS

**CONCRETE INLET**  
TYPE 2, 2C AND 2D

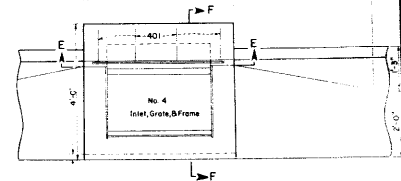
Designed by: \_\_\_\_\_  
Made by: \_\_\_\_\_  
Checked by: \_\_\_\_\_  
Approved by: \_\_\_\_\_  
Date: \_\_\_\_\_



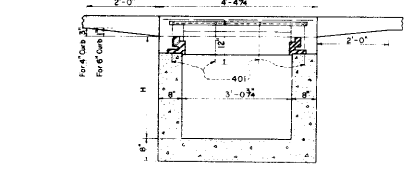
PLAN (For Comb Curb, Gutter, & Sidewalk or Type 2 Curb & Gutter)



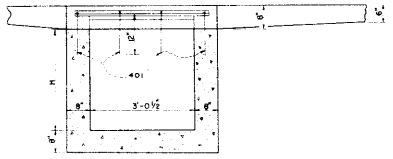
PLAN (For Type 2 Curb & Gutter)



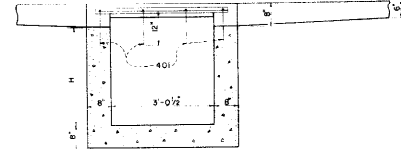
PLAN (For Type Curb & Gutter)



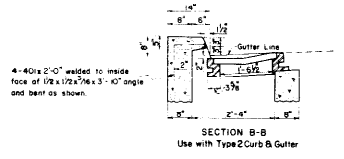
SECTION A-A (For Comb Curb, Gutter, & Sidewalk or Type 2 Curb & Gutter)



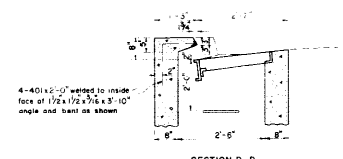
SECTION C-C (For Type 2 Curb & Gutter)



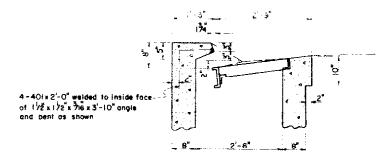
SECTION E-E (For Type Curb & Gutter)



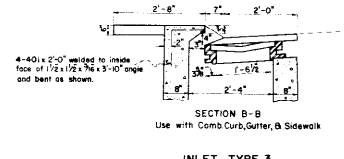
SECTION B-B Use with Type 2 Curb & Gutter



SECTION D-D Use with Type 2 Curb & Gutter



SECTION F-F Use with Type Curb & Gutter



SECTION B-B Use with Comb Curb, Gutter, & Sidewalk

**INLET TYPE 3**

No. 13 Grot and Frame to be used with Type 3 Inlet

**INLET TYPE 4-B**

No. 4 Grot and Frame to be used with Type 4B & 4C Inlets

**INLET TYPE 4-C**

**GENERAL NOTES**  
 All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project.  
 All concrete shall be class "A" and air entrained as specified.  
 All concrete walls shall be formed on both sides.  
 All exposed concrete corners shall be beveled to a 1" face.  
 All reinforcing bars shall be deformed, of intermediate grade, and conform to A.S.T.M. Spec. A-305-507 or latest revision.  
 All castings shall be painted with two coats of asphalt or coal tar and oil.

**NOTE:** Use steps for all inlets with H=3'-6" or more. Start 2'-0" below gutter line and space equally at Minimum of 18" (See Section D-D)

§ Volumes of concrete occupied by inlet or outlet pipes to be deducted from pay quantities of Concrete.

**QUANTITIES-TYPE 3, 4-B & 4-C INLETS**

H	CLASS A REINFORCING	
	CONCRETE	STEEL
	CU YDS.	LBS.
3'-0"	1.37	5.4
3'-6"	1.54	5.4
4'-0"	1.71	5.4
4'-6"	1.88	5.4
5'-0"	2.05	5.4
5'-6"	2.22	5.4
6'-0"	2.39	5.4
6'-6"	2.56	5.4
7'-0"	2.73	5.4
7'-6"	2.90	5.4
8'-0"	3.07	5.4

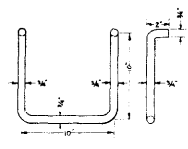
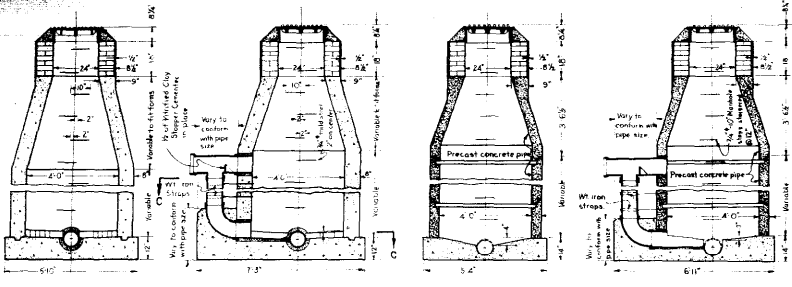
**COLORADO**  
 DEPARTMENT OF HIGHWAYS

**CONCRETE INLETS**

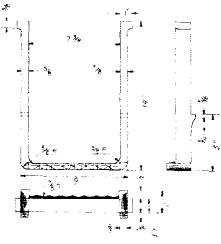
No. 3, No. 4-B, & No. 4-C

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

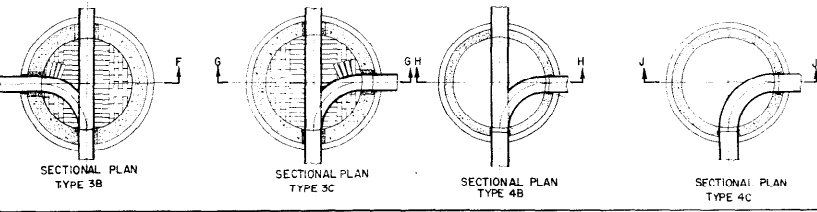
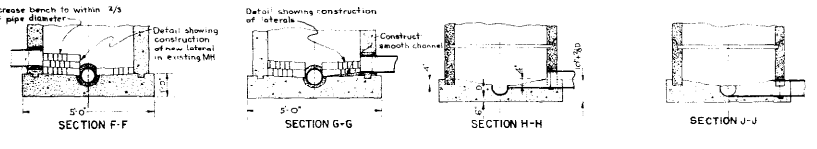
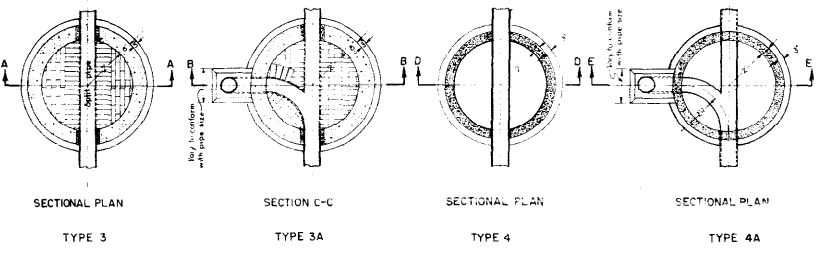
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLA.	UO16-107	66	100



MILD STEEL STEPS  
For Concrete Manholes

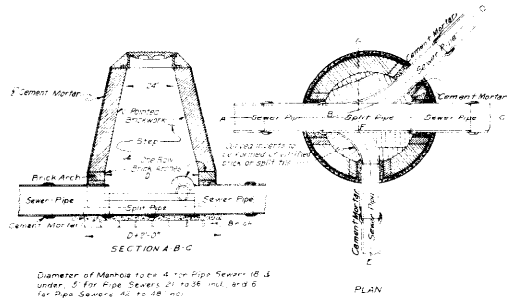


CAST IRON STEPS  
For Concrete Manholes



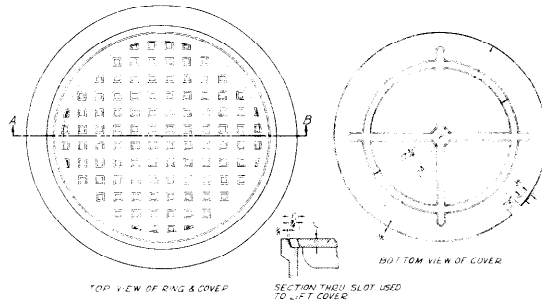
COLORADO  
DEPARTMENT OF HIGHWAYS  
MANHOLE DETAILS  
TYPE 3, 3A, 3B, 3C, 4, 4A, 4B, 4C  
Designed by \_\_\_\_\_ Approved by \_\_\_\_\_  
Made by \_\_\_\_\_ Date \_\_\_\_\_  
Checked by \_\_\_\_\_

FED. ROAD DIST. NO.	STATE	REG. NO.	SHEET NO.	TOTAL SHEETS
2	IND.	U 016-1137	25	

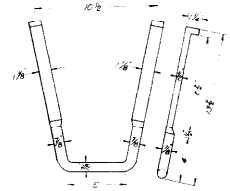


Diameter of Manhole top 4' for Pipe Sewers 18" & under, 5' for Pipe Sewers 24" to 36" incl. and 6' for Pipe Sewers 42" to 48" incl.

PLAN



**SECTION TABU. SLOT USED TO LIFT COVER**

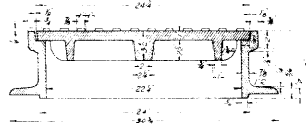


Scale 3/4" = 1'-0"

This Step to be Used for All Types Manholes

Weight Frame Approx. 224 lbs.  
Cover Approx. 125 lbs.  
400 lbs.

Clipped or Sawed 4" to Asphalt or Lay 1" to 2"



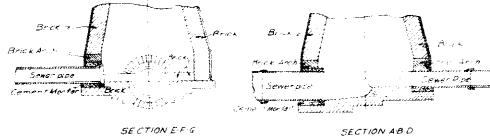
**DETAILS OF MANHOLE RING & COVER**

Scale 3/4" = 1'-0"

**GENERAL NOTES:**

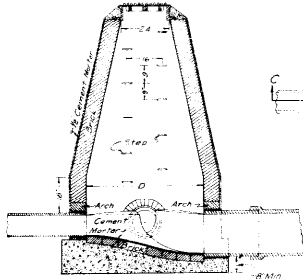
1. This detail is to conform to requirements of Specification for Highway Structures, Section 10.4. Manhole bottoms may be clipped or sawed to concrete. Manhole openings shall be of size as shown.

2. Alternative design for Manholes using Precast Concrete Blocks, see separate sheets of Precast Concrete Manholes will be permitted after approval of Details by the Department.



**TYPE 1 MANHOLE (STORM & SANITARY)**

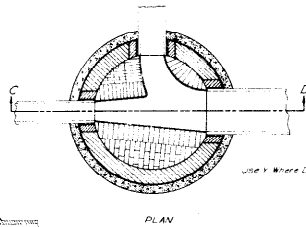
Scale 3/4" = 1'-0"



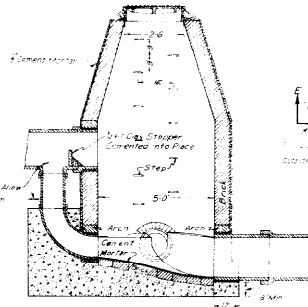
**TYPE 1-A MANHOLE**

Scale 3/4" = 1'-0"

**SANITARY & STORM SEWERS**



Diameter of Manhole top 5' for Pipe Sewers 36" and Under, and 6' for Pipe Sewers 42" to 48"



**PLAN**

**TYPE 2 MANHOLE (SANITARY ONLY)**

Scale 3/4" = 1'-0"

**COLORADO**  
DEPARTMENT OF HIGHWAYS

**MANHOLE DETAILS**  
**TYPE 1, 1A AND 2**

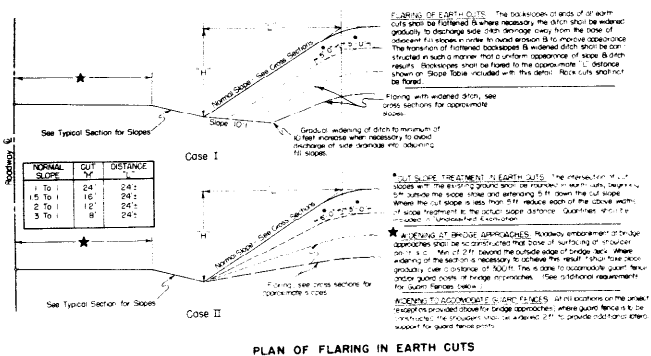
Designed by \_\_\_\_\_ Approved by \_\_\_\_\_  
Made by \_\_\_\_\_ Date \_\_\_\_\_  
Checked by \_\_\_\_\_

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

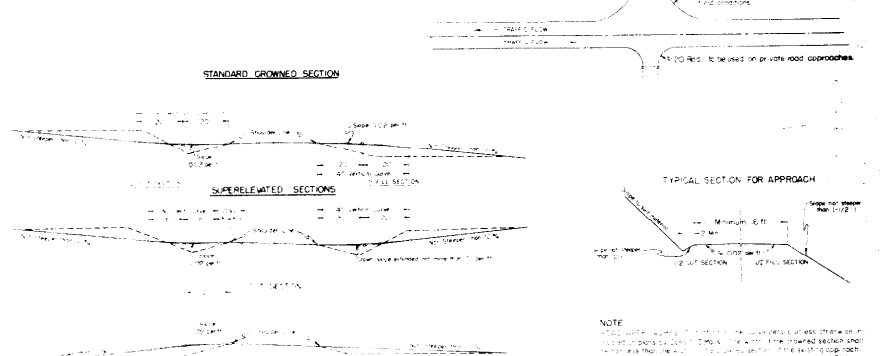
STANDARD M-2-EN

REV. NO.	DIVISION	PROJECT NO.	SHEET
1	COL.	2016-11770	70

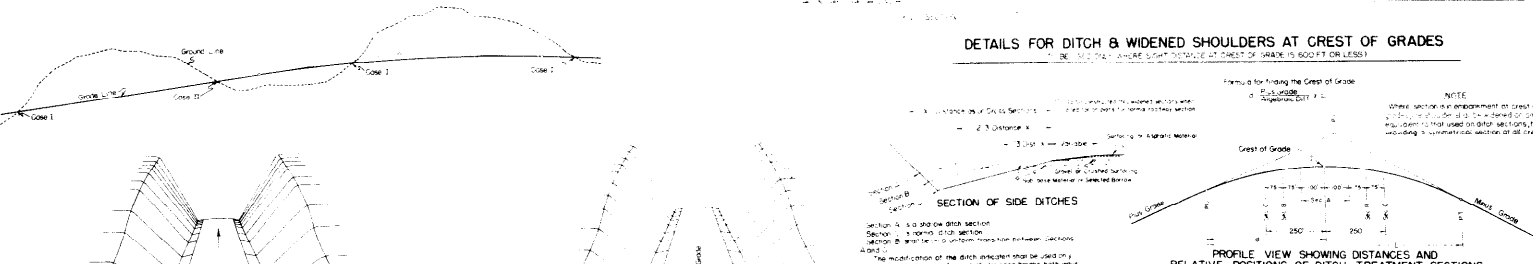
## GENERAL DETAILS FOR FLARING OF EARTH CUTS, CUT SLOPE TREATMENT & WIDENING AT BRIDGES



## TYPICAL PLANS FOR SIDE APPROACH ROADS



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



### GENERAL NOTES

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

2. Side approach roads to the project shall be Crowned. Surfaces shall be four (4) inch thickness of crushed rock surfacing, extending approximately to the right of way line. It shall be of the type of material required for the section one shown in the Surfacing Plan.

3. The minimum grades shown are to be the minimum grades for all road approaches. Road locations in preference be permitted where differences to the grades shown would cause damage to property or create unsafe or unsatisfactory conditions. Grades less than the minimum shown are to be used wherever feasible.

**NOTE:** Where section is dependent on crest of a bridge or on a crest of a grade, the section should be symmetrical on both sides of the crest, including symmetrical sections of all ditches.

Designed by: [Signature] Approved by: [Signature]  
 Made by: G. M. BASS Checked by: T. R. S. Date: November 1, 1953

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

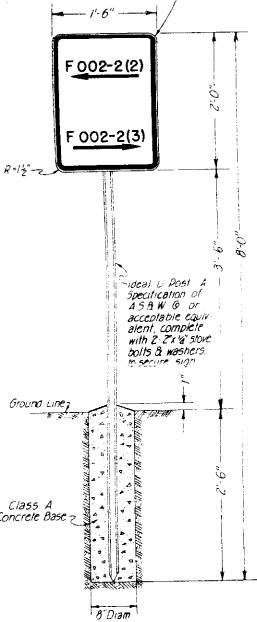
**PROJECT MARKER POST**

**RIGHT OF WAY MARKER POST**

**STANDARD M-7-D**

FORM NO.	DIVISION	PROJECT NO.	SHEET NO.
1	COLORADO	21016-1 (17)	71

Metal Sign conforming to A. 4. 5 H. O. Manual on Uniform Traffic Control Devices. White Background, Black Letters & Symbols

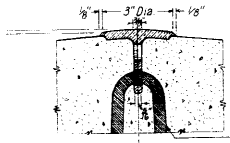
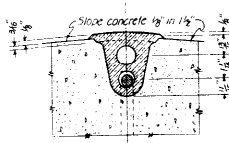
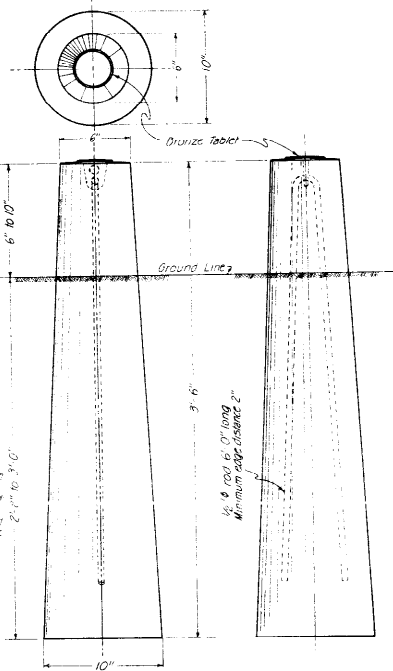


**NOTES FOR PROJECT MARKER POSTS**

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 ROW MARKER POSTS**

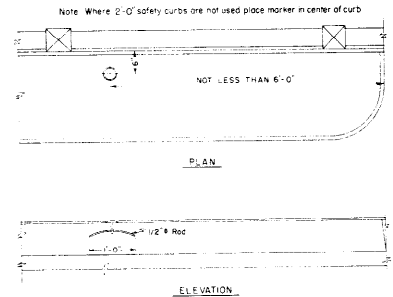
All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project. Posts shall be made of Class A Concrete. The upper 12 inches of marker posts shall be in lined free of form marks, and the top surface of the post must be constructed 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 relief on the engineering party after marker is placed. All letters and figures to be used. Project designations on tablets shall be properly shown (i.e., 1 for Fed Aid Interstate, 5 for Fed Aid Primary, 5 for Fed Aid Secondary, etc. 2, C for State Projects see detail below).



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

**BENCH MARK**

All work shall be done in accordance with Standard Specifications of the Colorado Department of Highways applicable to the project. All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in relief 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., 1 for Fed Aid Interstate, 5 for Fed Aid Primary, 5 for Fed Aid Secondary, etc. 2, 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.



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

**COLORADO DEPARTMENT OF HIGHWAYS**  
**STANDARD MARKER POSTS AND BENCH MARKS**  
 Checked by P.E. Date: \_\_\_\_\_  
 Approved by \_\_\_\_\_  
 Made by E.E.D. Date: \_\_\_\_\_

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 14 K 11 9 5 0

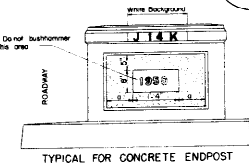
abcdefghijklmnopqrstuvwxyz

SAMPLE BRIDGE NUMBER

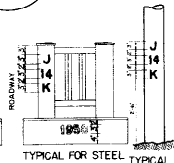
GENERAL NOTES

SAMPLE YEAR NUMBER

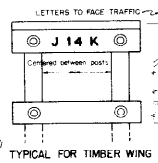
SECTION



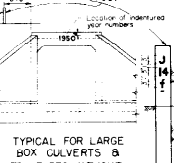
TYPICAL FOR CONCRETE ENDPOST



TYPICAL FOR STEEL HANDRAIL END POST



TYPICAL FOR TIMBER WING HANDRAIL



TYPICAL FOR LARGE BOX CULVERTS & STRUCTURES WITHOUT END POSTS

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS APPLICABLE TO THE PROJECT... GENERAL NOTES

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

# STANDARD TIMBER GUARD POSTS

# STANDARD M-19-E SPECIFICATIONS

FILE NO. AND DATE	DIVISION	PROJECT NO.	SHEET NO.
9.	COLD	2016-1(17)	73

**POSTS:** Lodgepole Pine, Southern Yellow Pine or West Coast Douglas Fir, not less than 60 inches in diameter. All posts shall be pressure treated with Pentachlorophenol as provided under paragraph 42.20 of the specifications, after being peeled and shored in accordance with specifications.

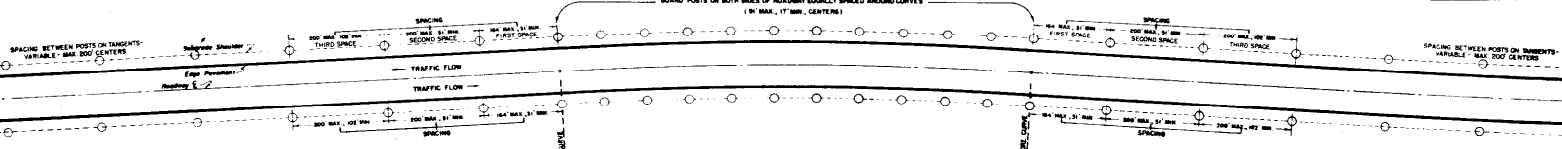
**FASTENERS:** Posts shall be pointed with aluminum point and a brass band placed around each post as per details on this sheet. Number of coats and type of paint applied shall be in accordance with specifications.

**REFLECTIVE SHEETING:** In accordance with the details herein. State Forces will furnish and place the required 3' x 6' smooth surfaced reflective delineators fabricated from 1/4" thick aluminum alloy, minimum thickness 0.025", reflectorized with reflective sheeting strips or other approved reflective material. Strips shall be suitable for placement around a curved surface.

REVISION	DATE	BY	CHK
1	7-20	Adrian Spinning Table	CC

## Typical Installation on Curves & Tangents

INSTALLATION of guard posts on curves shall be in accordance with details shown below. Spacing shall be in conformity with table shown below.

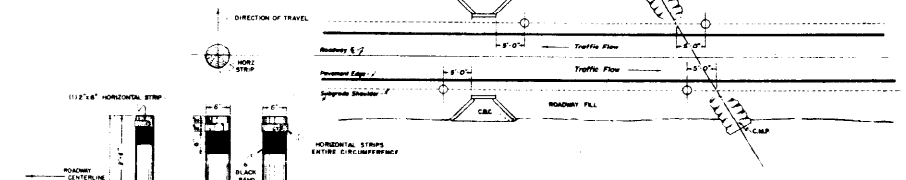


### SPACING FOR DELINEATORS ON HORIZONTAL CURVES

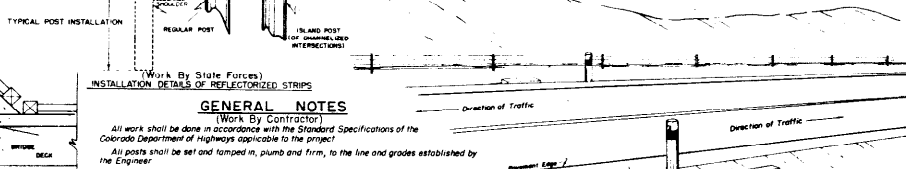
DEGREE OF CURVE	RADIUS	SPACING ON CURVE			DEGREE OF CURVE	RADIUS	SPACING IN ADVANCE OF AND BEYOND CURVE		
		FIRST SPACE	SECOND SPACE	THIRD SPACE			FIRST SPACE	SECOND SPACE	THIRD SPACE
0°30'	11440.0	129	300	300	0°30'	716.3	33	99	99
1°00'	3730.0	91	164	200	1°00'	234.1	32	58	96
1°30'	3480.0	74	133	200	1°30'	636.7	31	56	93
2°00'	2865.0	64	118	192	2°00'	505.0	30	54	90
2°30'	2532.0	58	104	174	2°30'	473.0	29	52	87
3°00'	1910.0	53	95	159	3°00'	343.7	28	50	84
3°30'	1837.1	49	88	147	3°30'	320.5	28	50	84
4°00'	1432.5	46	83	138	4°00'	498.5	27	49	81
4°30'	1273.3	43	77	128	4°30'	477.5	27	49	81
5°00'	1148.0	41	75	123	5°00'	382.0	24	43	72
5°30'	1041.6	39	70	117	5°30'	318.5	22	40	66
6°00'	955.0	37	67	111	6°00'	272.9	20	36	60
6°30'	881.5	36	65	108	6°30'	233.2	19	34	57
7°00'	818.6	35	63	105	7°00'	191.0	17	31	51
7°30'	764.0	34	61	102					

1° - 12' R = 18'    1-1/2° - 186' R = 186'    2° - NO. SPACE = 99'    3° - R.D. SPACE = 66'  
NO SPACES TO EXCEED 200 FT.

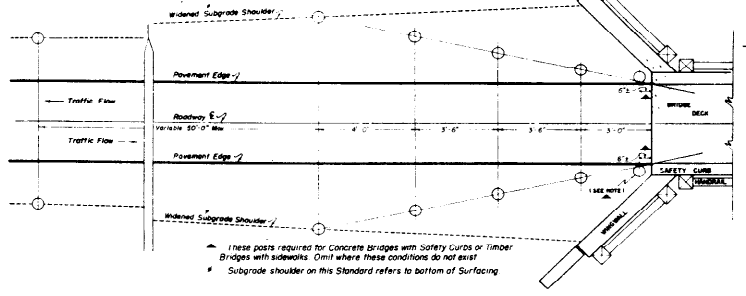
## Plan View Showing Placement at Isolated Minor Structures



## Pictorial View Showing Location at Isolated Minor Structures



## Typical Installation At Bridge Approaches



### 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 herein.

**COLORADO DEPARTMENT OF HIGHWAYS**

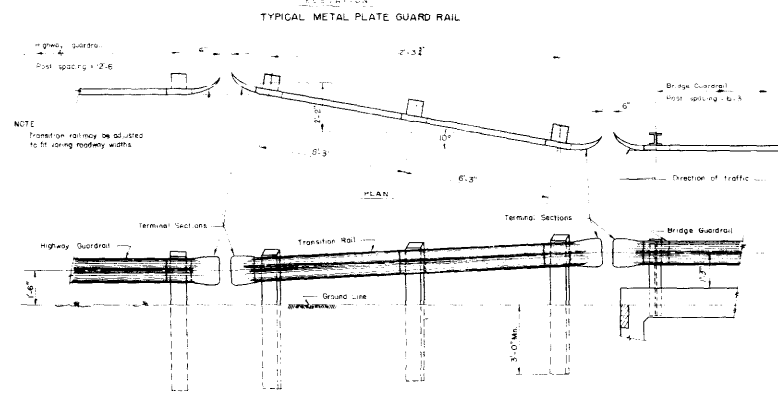
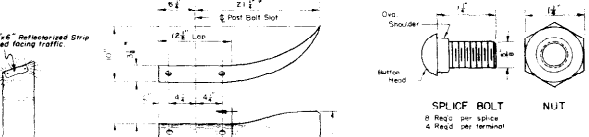
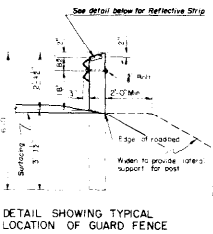
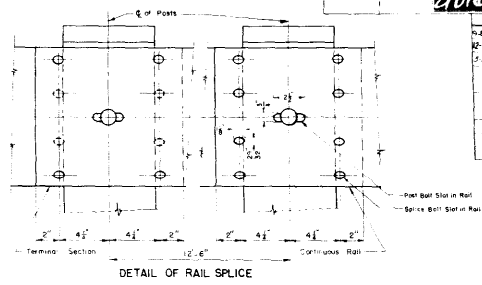
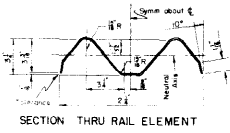
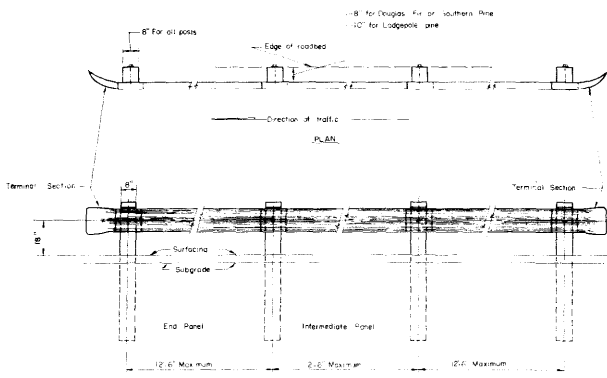
**STANDARD TIMBER GUARD POSTS**

Des. and Drawn by: [Signature]

Checked by: [Signature]

Approved by: [Signature]

DATE: [Date]



**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, Denver or Spruce and Southern Pine or Lodgepole Pine.  
 All wood posts shall be square edged, full size, with top beveled as shown. All bolt heads 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, on and including the top specifications.  
 Timber posts fabricated from Douglas Fir or Southern Pine shall be of 4\"/>

**METAL PLATE GUARD FENCE (STEEL) SPECIFICATIONS**  
 Metal plate guard rail shall be painted in accordance with standard specifications.  
 Metal plate guard rail galvanneal in accordance with Table I of ASTM A-93 may be furnished in lieu of painting requirements.  
 Metal plates shall not be lighter than No. 12 U.S. standard gauge.  
 Standard galvanized wrought steel washers shall be used under all bolt heads and nuts coming in contact with wood posts.

**METAL PLATE GUARD FENCE (ALUMINUM) SPECIFICATIONS**  
 Aluminum plates shall have a nominal thickness of not less than 0.125 inches.  
 No painting of the aluminum guard rail elements and sections or fasteners will be required.

**MATERIAL SPECIFICATIONS** The following members shall be of the alloy and temper specified, and shall conform to the ASTM specification listed below.

Member	Alloy	ASTM Specification
Rail elements	2024-T3 Alclad	B 209
Terminal sections	2024-T3 Alclad	B 209
Posts	2024-T4 204 Aluminum finish	B 211
Nuts	6061-T6	B 211
Washers	2024-T4 Alclad	B 211

Dimensions marked by (\*) may vary by no more than 1/32 inch.

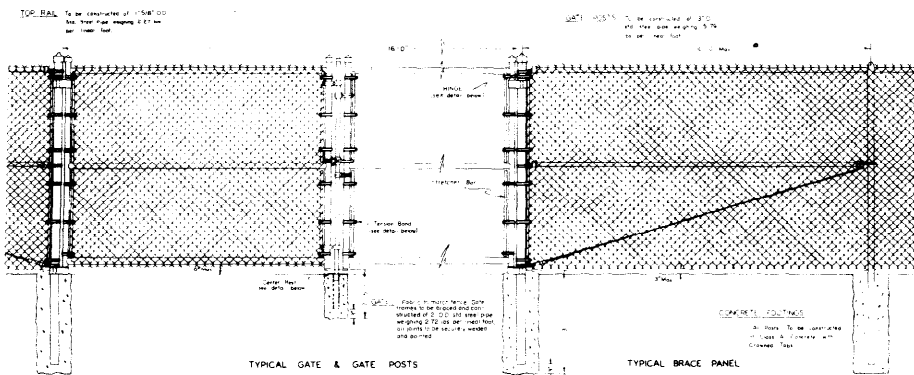
**COLORADO**  
 DEPARTMENT OF HIGHWAYS  
 STANDARD  
 METAL PLATE GUARD FENCE  
 (BEAM TYPE)

Designed by: *[Signature]*  
 Made by: *[Signature]*  
 Checked by: *[Signature]*  
 Date: January 10, 1959

STANDARD M-26-D

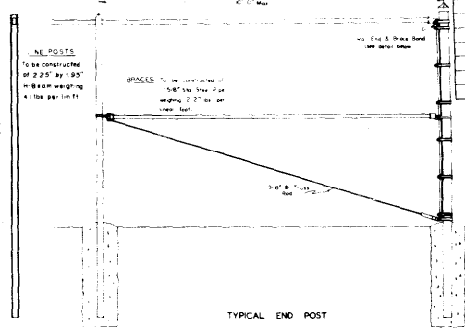
REV. NO.	DIVISION	PROJECT NO.	SHEET
9	2016	21016-1(17)	75

REVISIONS		DATE	BY



TYPICAL GATE & GATE POSTS

TYPICAL BRACE PANEL

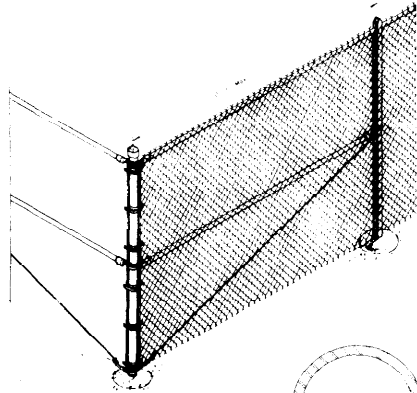


TYPICAL END POST

End Posts with Braces, Spigot Bars and Filings, corresponding to details shown hereon for Typical Corner Section with End Posts and Braces. One to be used in place of alternate of not more than four hundred (400) feet.

ITEM NO.	SPECIFICATION NUMBERS	UNIT
75	21016 Chain Link Mesh Fence	L. FT.
76	21016 Gate Posts	EACH

TYPICAL LINE POST  
(See alternate below)



TYPICAL CORNER SECTION WITH POST & BRACES



LINE POST TOP  
(See alternate below)



CENTER REST



HINGE ASSEMBLY



TENSION BAND



BRACE BAND & RAIL END

GENERAL NOTES

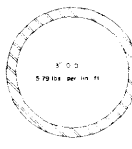
1. All work shall be done in accordance with the Standard Specifications for the Construction of the Colorado State Highway Department applicable to this project.

2. Weights of materials shown are the minimum allowed for the material specified.

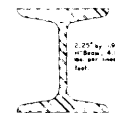
3. Alternate Equipment Standard of Fringe, Chain Posts and Rails of other than material shown and not acceptable subject to the Engineer's approval.

4. See the drawings for location and number of posts and length of fence required.

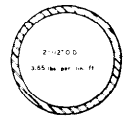
5. All Chain Links shall be securely fastened to all Line Posts, Rail Posts and Braces with 1/2" (1/2") Chain Links and not No. 12 (12) Chain Links. Chain Links shall be used with the exception of Chain Links 1/2" (1/2") Chain Links. Do not use alternate materials used on all line posts, the Frame Braces and Chain Links.



TERMINAL POSTS



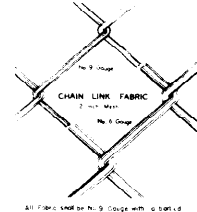
H-BEAM LINE POST



ALTERNATE LINE POST



BRACE RAIL & TOP RAIL



CHAIN LINK FABRIC

All Posts and Rails shall be galvanized with a minimum of 1.5 oz. of zinc per sq. ft. of the top and bottom surfaces unless otherwise specified.

**COLORADO DEPARTMENT OF HIGHWAYS**

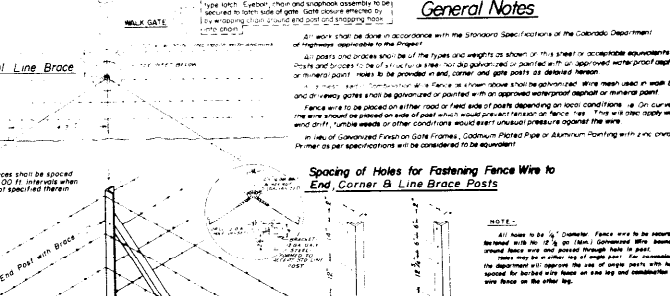
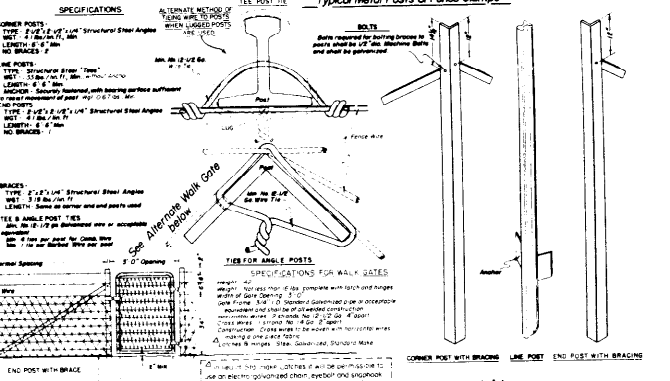
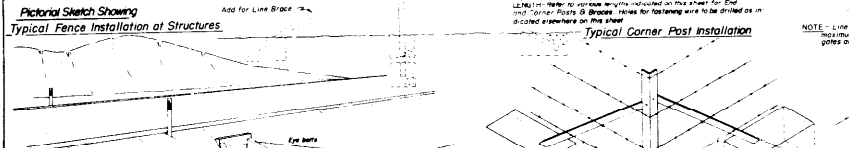
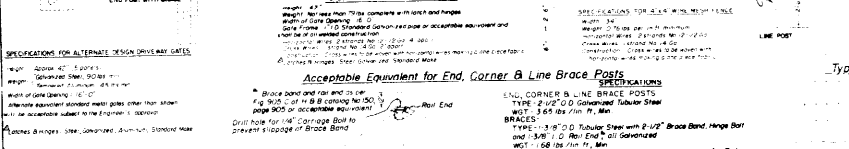
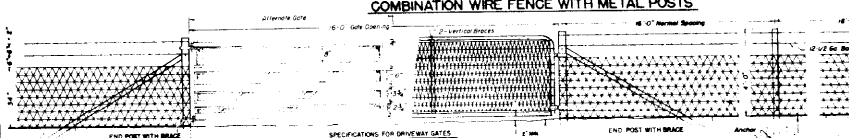
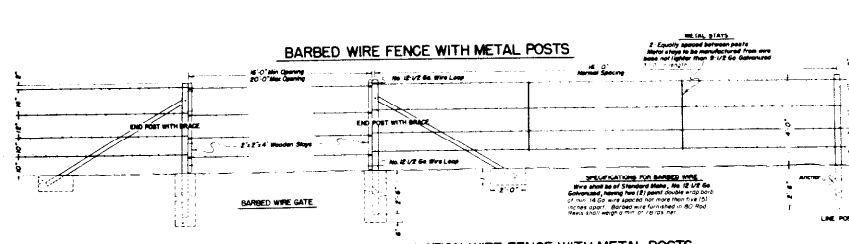
**CHAIN LINK WIRE MESH (SCHOOL) FENCE**

Designed by V.E.K. [Signature]  
 Drawn by C.L.M. [Signature]  
 Checked by [Signature] Date 5/1/56

# Standard Wire Fence With Metal Posts

## STANDARD M-27-D

REV. NO.	DIVISION	PROJECT NO.	DATE
9	CLD 10	107-100-107	11-1-58
Rev. 10-27-58, Standard with Corner & Line Posts - J.C.R. Rev. 5-19-59, Alternate Tee Post - J.C.R. Rev. 8-20-59, Line Brace Note - J.C.R.			



### General Notes

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

2. All posts and braces shall be of the types and weights as shown on this sheet to acceptable equivalents.

3. Posts and braces shall be galvanized or painted with an approved non-toxic paint.

4. All metal joints shall be provided in end, corner and gate posts as detailed herein.

5. Posts and braces shall be spaced as shown on this sheet to acceptable equivalents.

6. Posts and braces shall be spaced as shown on this sheet to acceptable equivalents.

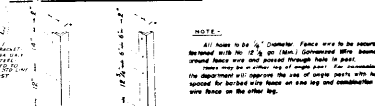
7. Posts and braces shall be spaced as shown on this sheet to acceptable equivalents.

8. Posts and braces shall be spaced as shown on this sheet to acceptable equivalents.

9. Posts and braces shall be spaced as shown on this sheet to acceptable equivalents.

10. Posts and braces shall be spaced as shown on this sheet to acceptable equivalents.

### Spacing of Holes for Fastening Fence Wire to End, Corner & Line Brace Posts

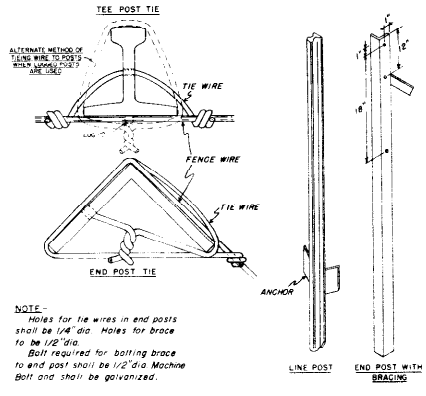
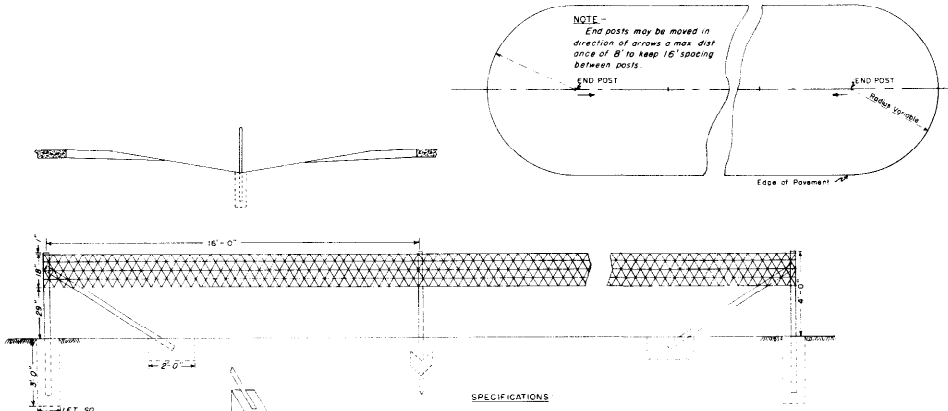


**COLORADO**  
 DEPARTMENT OF HIGHWAYS  
 Standard Wire Fence With Metal Posts

Designed by GCM  
 Checked by GCM  
 Approved by J.C.R.  
 Date: March 1, 1960

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLO.	21016-1(17)	77

Rev. 5-19-59, Alternate Tee Post Tie - J.C.R.



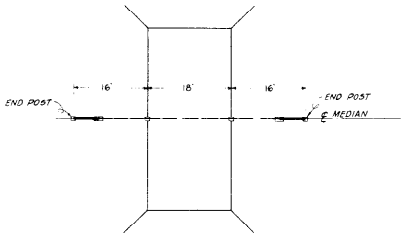
**NOTE**  
Holes for tie wires in end posts shall be 1/4" dia. Holes for brace to be 1/2" dia.  
Bolt required for bolting brace to end post shall be 1/2" dia Machine Bolt and shall be galvanized.

**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 - 5' 6" Min.  
NO. OF BRACES - 1
- LINE POSTS**-  
TYPE - Structural Steel Tees  
WGT - 1.33 lbs per lin ft., Min., without Anchor  
LENGTH - 5' 6" Min.  
ANCHOR - Securely fastened, with bearing surface sufficient to resist movement of post. WGT 0.67 lbs./lin ft.
- BRACES**-  
TYPE - 2" x 2" x 1/4" Structural Steel Angles  
WGT - 3.19 lbs per lin ft.  
LENGTH - Same as end post used
- 4" x 4" WIRE MESH FENCE**-  
WIDTH - 18 inches  
WGT - 0.81 lbs per lin ft. minimum  
HORIZONTAL WIRES - 2 strands No 12-1/2 Ga.  
CROSS WIRES - 1 strand No. 14 Ga.  
CONSTRUCTION - Cross wires to be woven with horizontal wires making a one piece fabric.
- TIES**-  
Min No 12-1/2 Ga Galvanized Wire or acceptable equivalent.  
END POSTS - Each horizontal wire of mesh to be wrapped around post and fastened in addition to two (2) tie wires.  
LINE POSTS - Min three (3) ties per post for mesh.

LOCATION OF BARRIER FENCE AT BOX CULVERTS with NO FILL



**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 herein.  
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.

**COLORADO**  
DEPARTMENT OF HIGHWAYS

**Standard Barrier Fence**

Designed by E.S.D. Approved by C. J. ...  
Made by E.E.U. Engineer, Survey & Plans  
Checked by Date: 2/17/27

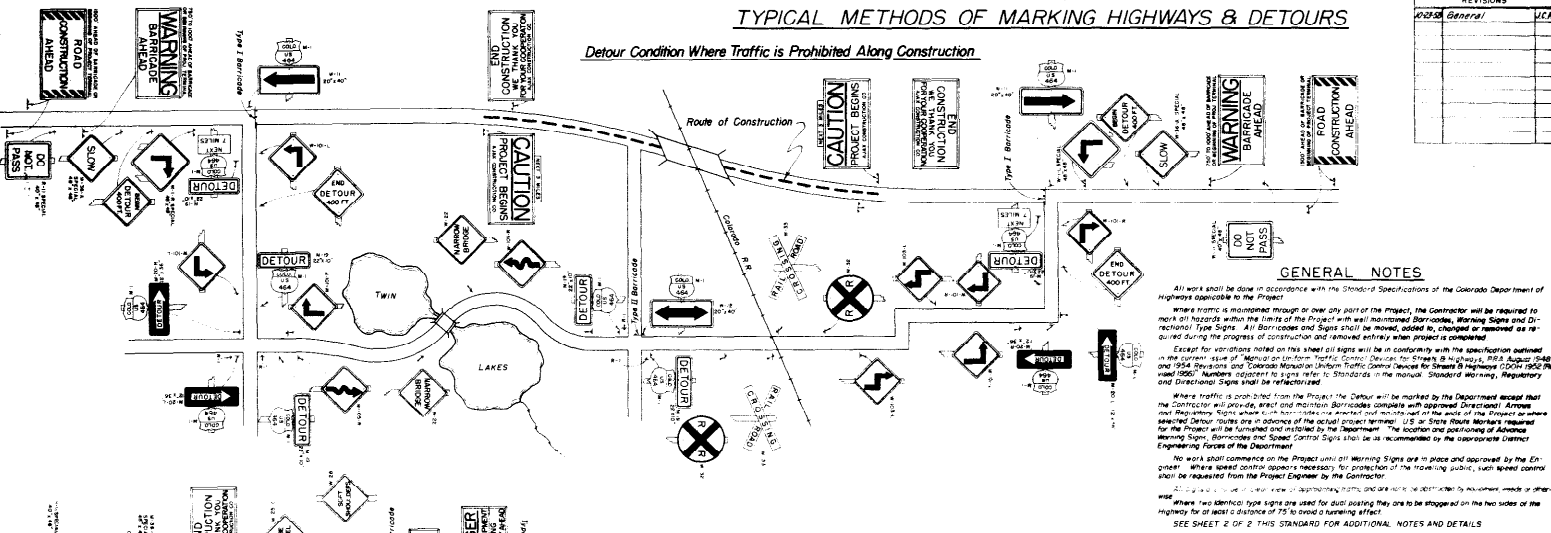
# STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

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

DIVISION ROAD PROJECT NO. 21016-1(17) 78 SHEET NO. 78

## TYPICAL METHODS OF MARKING HIGHWAYS & DETOURS

Detour Condition Where Traffic is Prohibited 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.

When a warning is encountered 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 contained in the current issue of "Manual on Uniform Traffic Control Devices for Streets & Highways, 1954 Edition" and 1954 Division and Colorado Manual on Uniform Traffic Control Devices for Streets & Highways (COM 1952 Revised 1955). Numbers opposite to signs refer to Standards in the manual. Standard warning, Regulatory and Directional Signs shall be retrofitted.

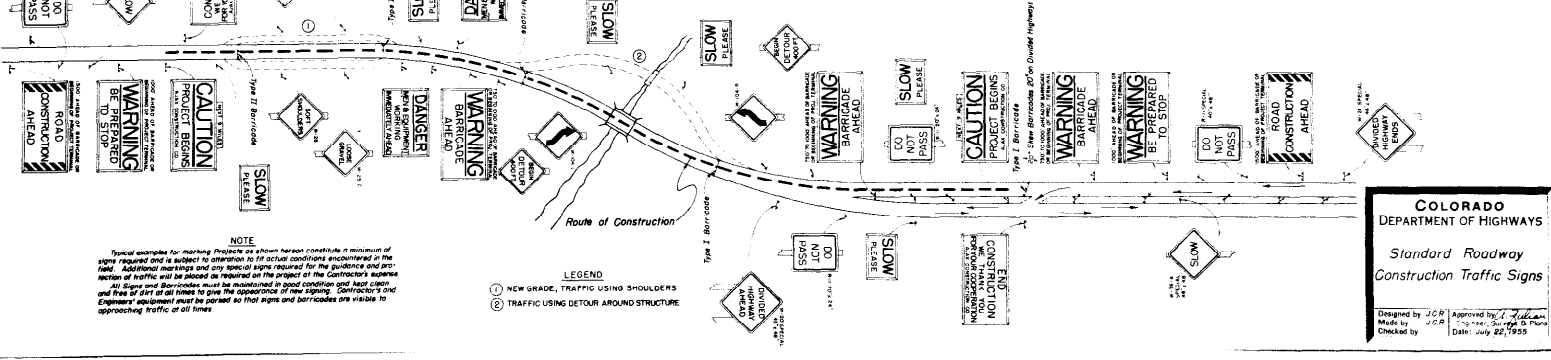
When traffic is prohibited from the Project the Detour will be marked by the Department except that the Contractor will provide, erect and maintain Barricades conforming with approved Directional Arrow and Regulatory Signs where a detour is indicated and maintained at the side of the Project or where selected Detour Signs are in absence of the actual project opening. Use of these Road Markers required for the Project will be furnished and installed by the Department. The location and positioning of Advance Warning Signs, Barricades and Speed Control Signs shall be as recommended by the appropriate District Engineering Forces of the Department.

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

Where two identical type signs are used for dual posting they are to be staggered on the two sides of the highway for a distance of 75 to avoid a flashing effect.

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

Condition Where Traffic is Permitted Along Construction



### NOTE

Special examples for marking Projects as shown herein 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 Equipment equipment must be so placed so that signs and barricades are visible to approaching 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*

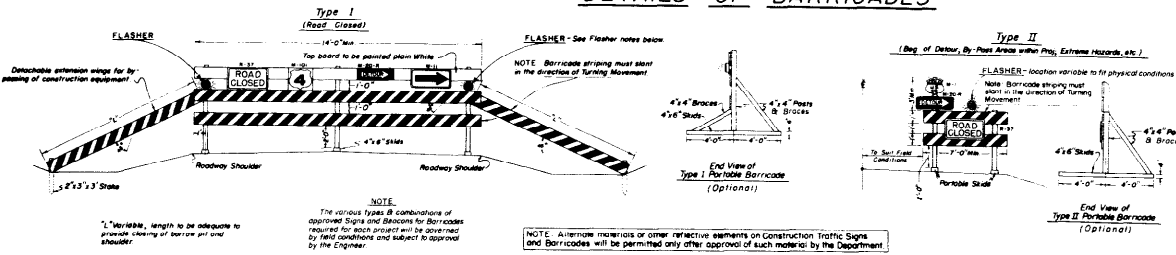
Designed by J.C.B. Approved by J. Williams  
 Made by J.C.B. Date: July 22, 1955  
 Checked by \_\_\_\_\_

# STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

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

PROJECT NO.	2016-1(17)
DIVISION	COLORADO
DATE	Rev. 10-23-96 - JCR

## DETAILS OF BARRICADES



**SPECIFICATIONS**

PAINT - All paint and methods of painting shall be in conformity with the Standard Specifications of the Colorado Department of Highways for painting of Timber Structures.

STRIPING - Planning and striping shall be completed with Maintenance Flat Black on both sides before adding any one of the following acceptable reflective strips:

- (1) Wide Angle White, 2" strip, spaced 8" apart
- (2) Flat Top Silver, 3" strip, spaced 7" apart
- (3) Direct Reverse of Close Spaced on Point, 3" strip, spaced 7" apart

Stripes shall be placed on both front and back of barricades for opposite direction use. Direction of traffic will be accomplished as follows:

- Stripes for barricades diverting traffic to the left shall start on the right hand side of the lower plate and progress up to the traffic arrow on the top of the plate.
- Stripes on barricades diverting traffic in both directions shall begin at the center of the lower plate and progress to both directions.

TIMBER - All timbers used shall conform to the Standard Specifications for Miscellaneous Unseasoned Timber:

Flashing	2" x 6" or 2" x 8" S&S
Posts (Barricade)	6" x 6" S&S
Posts (Signs)	4" x 4" S&S

The reflectorized signs on blocking B signs of barricades shall be reflectorized with White or Silver Reflective Material of a type acceptable to the Department.

Barricades may be either portable as shown or fixed with posts set into the ground.

All studs, braces and posts to be painted white and nailed together with No. 20d nail.

Reveal to be required where necessary to provide stability.

When this method is used as described above or when white binder and beads are applied to painting and striping, alternate back stripes using Maintenance Flat Black paint shall be placed over the reflective material in the project lead direction. All measurements for striping are to be made along the horizontal axis of the board.

## DETAILS OF CONSTRUCTION SIGNS



**Details of Reflectorized Arrows**

1. **WARNING** - Wide Angle White Reflectorized Arrow of Reflective Material acceptable to the Department. Letters on a Black Background. Letters to be 4" in height.

2. **WARNING** - A Black Arrow on a Wide Angle White Background of Reflective Material acceptable to the Department.

## DETAILS OF SIGN AND BEACON FABRICATION AND USAGE

Construction Signs "A" through and including "G" shall be made of 1/2" plywood or other material approved by the Department, and as set forth 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 pointed Black lettering. Barricade string of 14" wide angle white background with pointed Black lettering. Barricade string shall be placed on both front and back of barricades for opposite direction use. Direction of traffic will be accomplished as follows:

**CONSTRUCTION SIGN "B"** - Aply top 23" strip of Flat Top Silver, reverse screened or sprayed with Transparent Red Paint showing the words "CAUTION" and 1 1/2" inch Underline to remain as Flat Top Silver. Balance of lettering pointed 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 traveled way on divided highways and singly on two lane highways.

**CONSTRUCTION SIGN "C"** - Aply top 23" strip of Flat Top Silver, reverse screened or sprayed with Transparent Red Paint showing the words "WARNING" and 1 1/2" inch Underline to remain as Flat Top Silver. Balance of lettering pointed Black on a 22" strip of wide angle white. This sign is the third advance warning sign in cases where road closures are used and shall be placed 750 to 1000 feet ahead of barricade or beginning of project terminal and on both sides of the traveled way on divided highways and singly on two lane highways.

**REVERSE SIDES OF SIGNS "A", "B" AND "C"** - The word "SLOW" shall be pointed Black and superimposed over a White background of 1/2" x 1/2" background panel. Balance of lettering shall be pointed Black on a white background.

**CONSTRUCTION SIGN "D"** - Aply top 24 1/2" strip of Flat Top Silver, reverse screened or sprayed with Transparent Red Paint showing the words "DANGER" and 1 1/2" inch Underline to remain as Flat Top Silver. Balance of lettering pointed Black on a 23 1/2" strip of wide angle white. This sign is to be placed to mark the beginning of the Project. To be placed singly and may be placed adjacent barricade if desired.

**CONSTRUCTION SIGN "E"** - Aply top 17 1/2" strip of Flat Top Silver, reverse screened or sprayed with Transparent Red Paint showing the words "DANGER" and 1 1/2" inch Underline to remain as Flat Top Silver. Balance of lettering pointed Black on a 27 1/2" strip of wide angle white. The sign is of theinged and fold type to facilitate the closing down of sign when the need is not present. 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 pointed Black on strips 22" and 6 1/2" respectively of wide angle white. For balance of lettering, ready edge strip of Flat Top Silver, reverse screened or sprayed with Transparent Red Paint showing "WE THANK YOU FOR YOUR COOPERATION" remaining in Flat Top Silver. This sign shall be placed to mark the ending of the Project. To be placed singly and may be placed adjacent barricade if desired.

**CONSTRUCTION SIGN "G"** - The words "SLOW" and "PLEASE" shall be pointed Black on a background of wide angle white. This sign shall be used (usually) within the limits of the Project. All of the preceding signs shall be fastened to 2" x 4" posts set 4 feet in the ground with a minimum of 3-1/4" nailing strips on the back. Balance of sign to be not less than 36" above the ground.

**FLASHER WARNING SIGN "H"** - This sign shall be made of Plastic or other lightweight material, pointed Red background with White lettering as the "STOP" side and pointed Green background with white lettering on the "GO" side. Panels to be grounded on one side to indicate need of sign to flash. This sign will be used whenever flap-over necessary. Sign to be reflectorized if used to stop traffic of night.

**BEACON WARNING SIGN "I"** - To be 8" (Min) plywood or 1/2" (Min) gauge metal with Black pointed lettering on a Wide Angle White Background.

**CONSTRUCTION SIGN "J"** - 4" x 9" metal plates to be placed between "NEXT 9 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. Unseen lettering will not be accepted.

**FLASHERS AND TORCHES** shall be either of the oil burning or electrical type approved by the Department and shall be placed 15 feet to 25 feet ahead of the object to be illuminated. Barricade cone shall be taken to protect cut signs and barricades from smoke and smoke arising from the use thereof.

**FLASHERS** used on Type I or II Barricade shall be of the Battery or Electrical Type and shall have no less than 12,566 sq. inches of light area 14" dia. lens. The illuminating element in a flashing beacon or signal shall be flashed continuously at a rate between 55 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 symbols or other reflecting elements for pointed symbols will be permitted only after approval of such methods or materials by the Department.

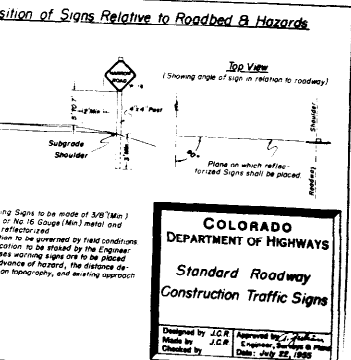
The Department shall furnish and install the following as required **OUTSIDE THE LIMITS** of the Project:

1. ROAD CONSTRUCTION AHEAD Minimum 4
2. WARNING BE PREPARED TO STOP Minimum 2
3. WARNING BARRICADE AHEAD As Required
4. Standard Warning B. 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 9
5. SLOW PLEASE As Required
6. Standard Warning B. Directional Signs As Required
7. Approved Directional Arrows & Regulatory Signs for Barricades Minimum 3
8. Torches and Flares as follows: Type I Barricade Minimum 1; Type II Barricade 2; Required
9. Flashers: Type I Barricade Minimum 1; Type II Barricade 2; Required

Including Type II Barricade located immediately inside of Project terminal points.

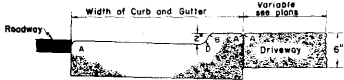


# STANDARD CURBS AND GUTTERS

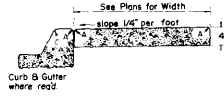
STANDARD M-45-A

FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SP. 1
9	COLO.	21016-1(17)	30
REVISIONS			
12-3-56	Corb Dimension	CLS	
3-28-58	Corb Dimension	MSB	
8-23-58	General Alteration	LEG	

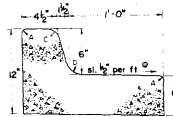
## CONCRETE PAVEMENT (DRIVEWAYS)



## CONCRETE SIDEWALKS

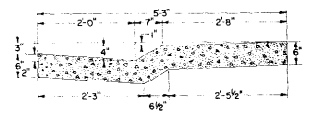


## CONCRETE COMBINATION CURB AND GUTTER (6" Barrier-1" Gutter) (Type I)

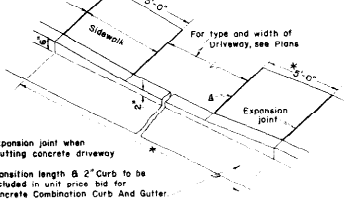


LEGEND FOR RADII	
A	1'-0"
B	1'-1"
C	1'-1/2"
D	1'-10"

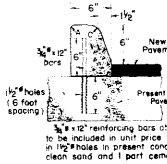
## CONCRETE COMBINATION CURB, GUTTER AND SIDEWALK (TYPE II-M)



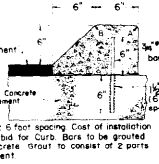
## DETAIL OF CURB CUT FOR DRIVEWAYS



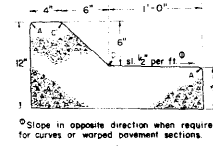
## CONCRETE CURB (6" Barrier-Doweled) (Type I)



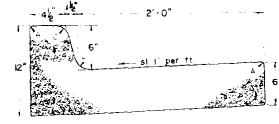
## CONCRETE CURB (6" Mountable-Doweled) (Type I-M)



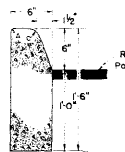
## CONCRETE COMBINATION CURB AND GUTTER (6" Mountable-1" Gutter) (Type I-M)



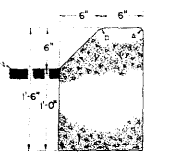
## CONCRETE COMBINATION CURB AND GUTTER (6" Barrier-2" Gutter) (Type II)



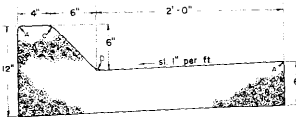
## CONCRETE CURB (6" Barrier) (Type II)



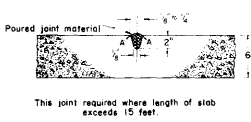
## CONCRETE CURB (6" Mountable) (Type II-M)



## CONCRETE COMBINATION CURB AND GUTTER (6" Mountable-2" Gutter) (Type II-M)

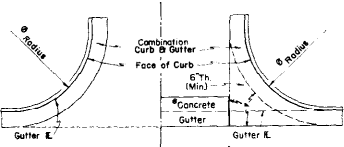


## TRANSVERSE WEAKENED PLANE JOINT FOR CONCRETE PAVEMENT (DRIVEWAYS)



This joint required where length of slab exceeds 15 feet.

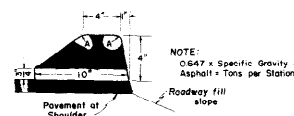
## CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTIONS



This section to be built when Concrete Gutter is not required.

This section to be built when Concrete Gutter is required.

## ASPHALTIC SHOULDER ROLL



**GENERAL NOTES**  
All work shall be done in accordance with the Specifications of the Colorado Department of Highways.

On Curves 3 degrees and sharper, Curbs and/or Gutters are to be placed on the Arc of the Curve unless otherwise noted on plans. A maximum chord length of 10 feet may be used when the degree of curve is less than 3 degrees.

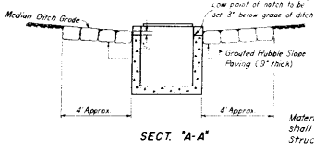
**COLORADO**  
DEPARTMENT OF HIGHWAYS

**STANDARD**  
CURBS AND GUTTERS

Designed by: *CLS*      Approved by: *CLS*  
 Made by: *MSB*              Date: *8-19-58*  
 Checked by: *CLS*

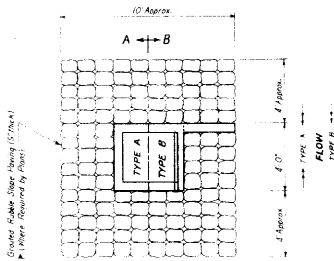
**TYPE A**

FOR USE AT BOTTOM OF VERTICAL CURVE

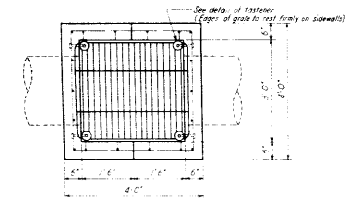


SECT. "A-A"

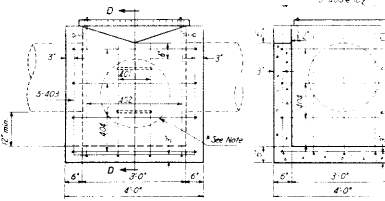
Materials used in the construction of inlet gratings shall meet with the requirements of Item 48, Structural Steel, in the Standard Specifications.



LAYOUT OF INLET IN MEDIAN DITCH



PLAN



FRONT ELEV.

\* Note for Longitudinal Pipe: 0" minimum between bottom of Inlet Opening and top of Longitudinal Pipe.

SECT. "D-D"

BAR LIST FOR 11'-4" O"

MARK	NO.	REQD.	TYPE A			TYPE B			
			M	N	O	M	N	O	
401	2	1	3'-6"	3'-3"	3'-3"	3'-0"	3'-3"	4'-5"	11'-0"
402	2	1	3'-3"	3'-0"	3'-0"	3'-0"	3'-0"	4'-5"	11'-0"
403	5	1	3'-6"	3'-3"	3'-3"	3'-0"	3'-3"	4'-5"	11'-4"
404	4	1	3'-3"	3'-0"	3'-0"	3'-0"	3'-0"	3'-6"	15'-4"
405	1	1	3'-6"	3'-3"	3'-3"	3'-0"	3'-3"	4'-5"	10'-0"
407	2	2	3'-6"	3'-3"	3'-3"	3'-0"	3'-3"	4'-5"	6'-3"
408	2	2	3'-6"	3'-3"	3'-3"	3'-0"	3'-3"	4'-5"	11'-4"
409	1	1	1'-0"	0'-10"	0'-10"	2'-6"	1'-0"	0'-10"	2'-6"

All reinforcing bars to be 1/2" #.

SECT. "C-C"

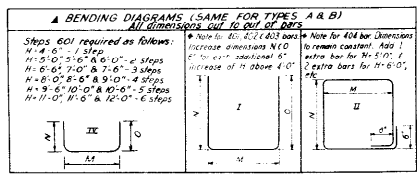
DETAIL OF GRATING

MATERIAL LIST FOR GRATING AND FASTENERS  
 Strap Iron Frame 1 pc. 2x4x1/2" # 30.0 lb.  
 Strap Iron Gratings 16 pcs. 2x4x1/2" # 212.0 lb.  
 Strap Iron Pipe Spacers 14 pcs. 1/2" x 1/2" # 5.2 lb.  
 Tie Rods 2 pcs. 1/2" x 3' # 4.0 lb.  
 Bolts 4 pcs. 1/2" x 1/2" # 4.0 lb.  
 Washers 4 pcs. # 0.33 lb.

\* Note: Acceptable equivalent Gratings might substitute after approval by the Engineer.

DETAIL OF FASTENER

4 REQD. FOR EACH INLET



BENDING DIAGRAMS (SAME FOR TYPES A & B)

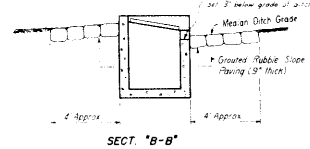
\* Note: All dimensions are 10' OUT OF BARS

Steps 601 required as follows:  
 H=4'-6" - 1 step  
 H=5'-0" - 2 steps  
 H=6'-0" - 3 steps  
 H=6'-6" - 4 steps  
 H=7'-0" - 4 steps  
 H=7'-6" - 5 steps  
 H=8'-0" - 5 steps  
 H=8'-6" - 6 steps  
 H=9'-0" - 6 steps  
 H=9'-6" - 7 steps  
 H=10'-0" - 7 steps  
 H=10'-6" - 8 steps  
 H=11'-0" - 8 steps  
 H=11'-6" - 9 steps  
 H=12'-0" - 9 steps

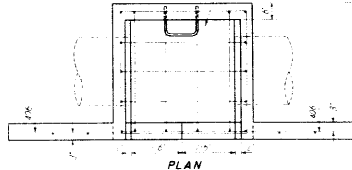
\* Note: Cut or bend bars to fit ground pipes as required

**TYPE B**

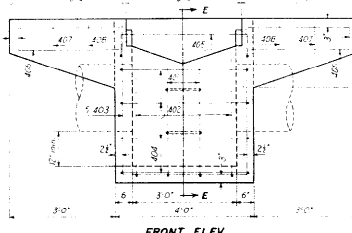
FLOW FROM THE DIRECTION



SECT. "B-B"



PLAN



FRONT ELEV.

QUANTITIES FOR ONE INLET

H	CLASS A CONCRETE		REINFORCING STEEL	
	TYPE A	TYPE B	TYPE A	TYPE B
3'-0"	2.05	1.36	9.0	12.7
3'-6"	2.18	1.49	10.4	13.3
4'-0"	2.31	1.62	11.5	14.9
4'-6"	2.44	1.75	12.5	16.3
5'-0"	2.56	1.88	14.1	16.9
5'-6"	2.69	2.01	15.0	18.5
6'-0"	2.82	2.12	16.0	19.5
6'-6"	2.95	2.26	17.4	21.2
7'-0"	3.08	2.39	19.0	21.0
7'-6"	3.21	2.52	21.1	23.0
8'-0"	3.34	2.65	21.7	24.4
8'-6"	3.47	2.78	23.3	26.1
9'-0"	3.60	2.91	24.3	27.0
10'-0"	3.73	3.04	25.9	28.7
10'-6"	3.86	3.17	26.5	29.3
11'-0"	3.99	3.30	28.6	31.3
11'-6"	4.12	3.43	29.2	32.0
12'-0"	4.25	3.56	30.0	32.6

\* Includes 11% for overrun

\* Volume occupied by pipes to be deducted from quantity of concrete

SIZE	CULVERT	CONCRETE PIPE
18"	0.03 Cu. Yd./lineal ft.	0.05 Cu. Yd./lineal ft.
24"	0.06	0.09
30"	0.09	0.13
36"	0.12	0.20

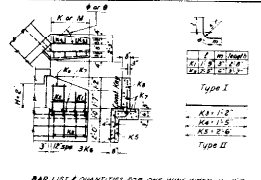
GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways applicable to the project.  
 All concrete shall be Class "A" and all extras as specified.  
 All walls shall have finish on both sides. Over 12" required corners to a 1" radius.  
 All reinforcing bars shall be delivered of intermediate grade, and shall be tagged with the stamp number and bar designation.  
 All reinforcing steel bars shall conform to ASTM specification A305 50T or steel equivalent thereof.  
 All edge fasteners not marked clear are to the E of the bar.  
 Inlet grating to be painted as per specifications for structural steel. One shop coat of Zinc Chromate primer and two field coats of Aluminum.

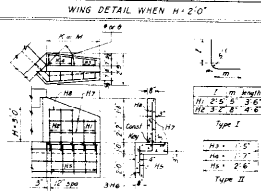
**COLORADO DEPARTMENT OF HIGHWAYS**  
**TYPES A & B**  
**CONCRETE INLETS**  
**FOR MEDIAN DITCH**  
 18", 24", 30" and 36" CULVERTS  
 Designed by W.C. Bridge Engineers, Inc.  
 Made by C.C. Bridge Engineers, Inc.  
 Checked by T.C.R. Date: 11-11-1952



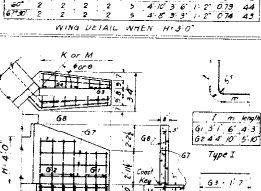
REINFORCING DATA



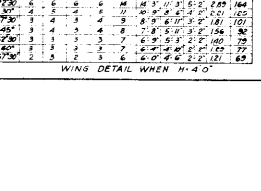
BAR LIST & QUANTITIES FOR ONE WING WHEN H=2'0" Table with columns for bar number, length, and quantity.



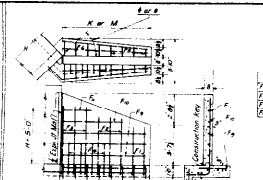
BAR LIST & QUANTITIES FOR ONE WING WHEN H=2'6" Table with columns for bar number, length, and quantity.



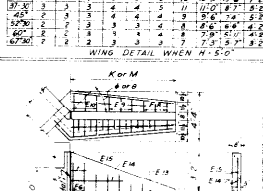
BAR LIST & QUANTITIES FOR ONE WING WHEN H=3'0" Table with columns for bar number, length, and quantity.



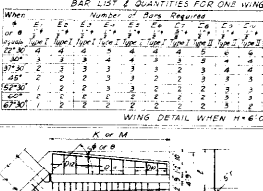
BAR LIST & QUANTITIES FOR ONE WING WHEN H=3'6" Table with columns for bar number, length, and quantity.



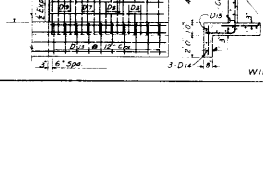
BAR LIST & QUANTITIES FOR ONE WING WHEN H=4'0" Table with columns for bar number, length, and quantity.



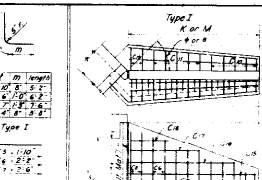
BAR LIST & QUANTITIES FOR ONE WING WHEN H=4'6" Table with columns for bar number, length, and quantity.



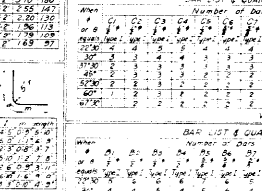
BAR LIST & QUANTITIES FOR ONE WING WHEN H=5'0" Table with columns for bar number, length, and quantity.



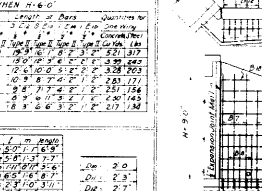
BAR LIST & QUANTITIES FOR ONE WING WHEN H=5'6" Table with columns for bar number, length, and quantity.



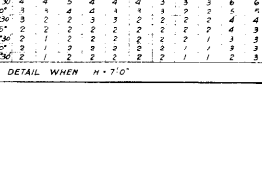
BAR LIST & QUANTITIES FOR ONE WING WHEN H=6'0" Table with columns for bar number, length, and quantity.



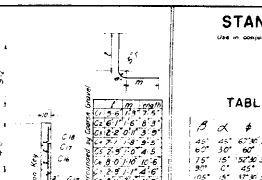
BAR LIST & QUANTITIES FOR ONE WING WHEN H=6'6" Table with columns for bar number, length, and quantity.



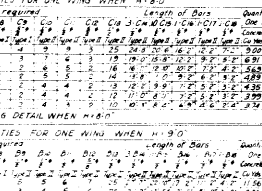
BAR LIST & QUANTITIES FOR ONE WING WHEN H=7'0" Table with columns for bar number, length, and quantity.



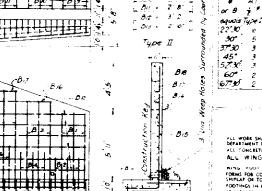
BAR LIST & QUANTITIES FOR ONE WING WHEN H=7'6" Table with columns for bar number, length, and quantity.



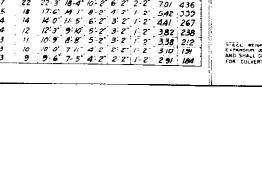
BAR LIST & QUANTITIES FOR ONE WING WHEN H=8'0" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=8'6" Table with columns for bar number, length, and quantity.

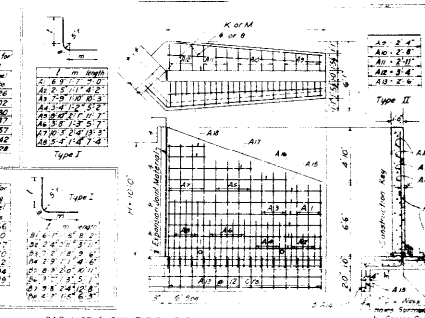


BAR LIST & QUANTITIES FOR ONE WING WHEN H=9'0" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=9'6" Table with columns for bar number, length, and quantity.

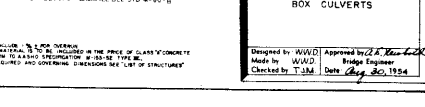
TABLE SHOWING VALUES OF K AND M WHEN B AND H ARE GIVEN. Large table with columns for H, B, K, and M values.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=10'0" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=10'6" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=11'0" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=11'6" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=12'0" Table with columns for bar number, length, and quantity.



BAR LIST & QUANTITIES FOR ONE WING WHEN H=12'6" Table with columns for bar number, length, and quantity.

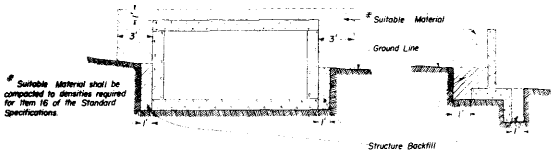


BAR LIST & QUANTITIES FOR ONE WING WHEN H=13'0" Table with columns for bar number, length, and quantity.

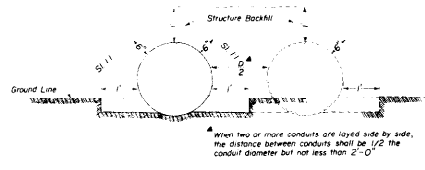
GENERAL NOTES section containing technical specifications and design requirements.

COLORADO DEPARTMENT OF HIGHWAYS logo and project information including designer and checker details.

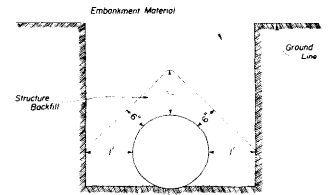
CONCRETE BOX CULVERTS & WINGWALLS



CIRCULAR CONDUIT

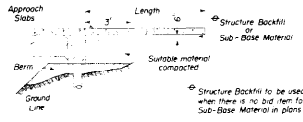


SIPHONS OR CONDUIT IN TRENCH



PIERS, ABUTMENTS, RETAINING WALLS ETC.

All material that is to be compacted shall be placed in horizontal layers not more than 6" inches in depth and compacted before the next layer is placed. For arches, Road Frames and Box Culverts the fill shall be brought up uniformly on both sides of the center of structure to avoid stresses in the structure caused by unsymmetrical loading.



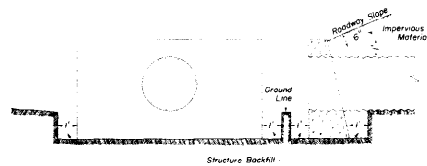
ELLIPTICAL OR ARCH CONDUIT



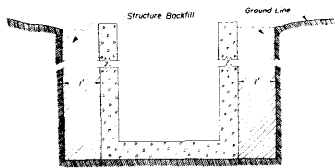
GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways applicable to the Project.  
 (1) In the opinion of the Engineer, the material beneath the structure is of such character as to cause unequal settlement along the length of the structure, the material shall be removed to such a depth ordered, and backfilled with gravel or other suitable material and compacted in accordance with Item 16 of the Standard Specifications.  
 Suitable Material shall be any 'Unclassified Excavation' material developed on the project except large rock boulders or other materials considered by the Engineer to be undesirable for backfill around culverts, bases, etc.

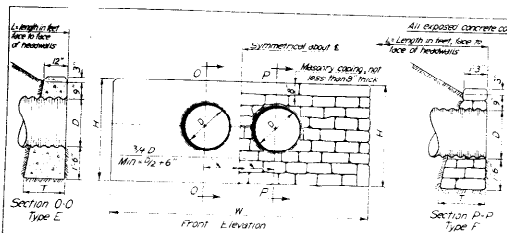
HEADWALLS AND END OF CULVERTS



DROP INLETS, DIVISION BOXES, INTERCEPTING HEADWALLS ETC.



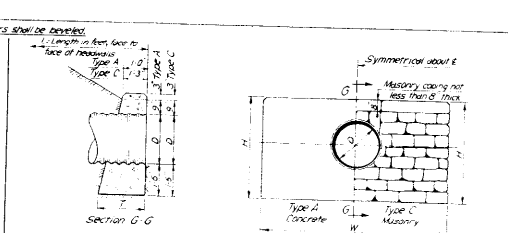
**COLORADO**  
 DEPARTMENT OF HIGHWAYS  
**STANDARD METHODS**  
**OF BACKFILL**  
**AROUND STRUCTURES**  
 Designed by H.E.P. Approved by J.P. K...  
 Made by D.M.E. Bridge Engineer  
 Checked by L.E.O. Date: Aug. 3, 1957



STANDARD HEADWALLS FOR DOUBLE CORRUGATED METAL PIPE CULVERTS

Table of Dimensions and Quantities

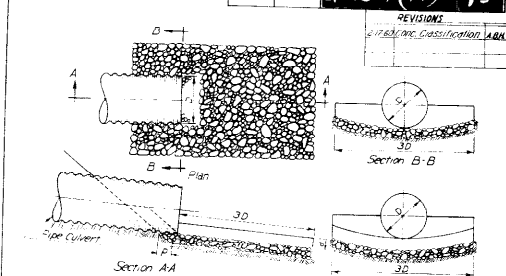
Diam.	Type E		Both Types		Type F		Diam.
	T	W	W	H	Corrugated Metal Pipe	Cement Rubble Masonry	
18	1.0	2.4	7.6	3.9	2.1	3.0	18
24	1.4	3.0	8.6	4.4	2.4	3.0	24
30	1.7	3.6	9.6	4.9	2.8	3.0	30
36	2.0	4.2	10.6	5.4	3.2	3.0	36
42	2.3	4.8	11.6	5.9	3.6	3.0	42
48	2.7	5.4	12.6	6.4	4.0	3.0	48



STANDARD HEADWALLS FOR SINGLE CORRUGATED METAL PIPE CULVERTS

Table of Dimensions and Quantities

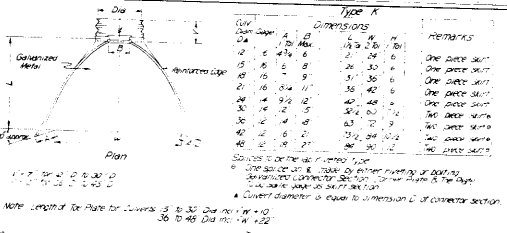
Diam.	Type A		Both Types		Type B		Diam.
	T	W	W	H	Corrugated Metal Pipe	Cement Rubble Masonry	
18	1.0	2.4	7.6	3.9	2.1	3.0	18
24	1.4	3.0	8.6	4.4	2.4	3.0	24
30	1.7	3.6	9.6	4.9	2.8	3.0	30
36	2.0	4.2	10.6	5.4	3.2	3.0	36
42	2.3	4.8	11.6	5.9	3.6	3.0	42
48	2.7	5.4	12.6	6.4	4.0	3.0	48



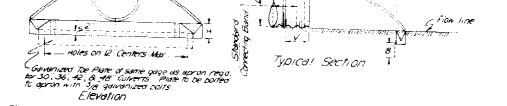
STANDARD GROUTED RUBBLE APRON FOR PIPE CULVERT

Table of Dimensions and Quantities

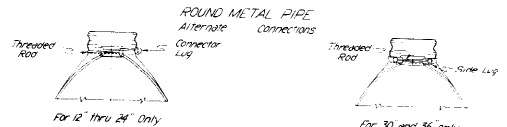
Diam.	Type A		Both Types		Type B		Diam.
	T	W	W	H	Corrugated Metal Pipe	Cement Rubble Masonry	
18	1.0	2.4	7.6	3.9	2.1	3.0	18
24	1.4	3.0	8.6	4.4	2.4	3.0	24
30	1.7	3.6	9.6	4.9	2.8	3.0	30
36	2.0	4.2	10.6	5.4	3.2	3.0	36
42	2.3	4.8	11.6	5.9	3.6	3.0	42
48	2.7	5.4	12.6	6.4	4.0	3.0	48



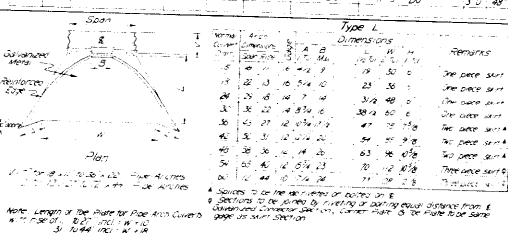
STANDARD METAL APRONS FOR CORRUGATED METAL PIPE CULVERTS TYPE K



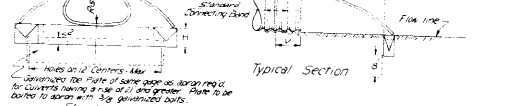
STANDARD METAL APRONS FOR CORRUGATED METAL PIPE ARCH CULVERTS TYPE L



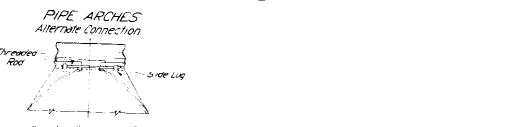
ROUND METAL PIPE Alternate Connections



STANDARD GROUTED RUBBLE APRON FOR PIPE CULVERT



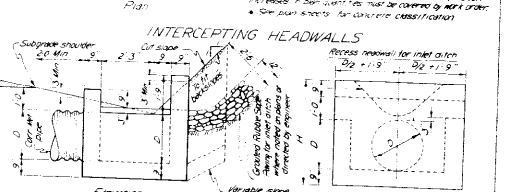
STANDARD METAL APRONS FOR CORRUGATED METAL PIPE ARCH CULVERTS TYPE L



PIPE ARCHES Alternate Connection

Quantities of Concrete or Cement Rubble Masonry

Span	Height	Width	Quantity
18	6	3	1.0
24	6	3	1.5
30	6	3	2.0
36	6	3	2.5
42	6	3	3.0
48	6	3	3.5



INTERCEPTING HEADWALLS

General Notes for All Structures  
 All work shall be done according to the standard specifications of the Colorado Department of Highways applicable to the project.  
 All construction joints shall be thoroughly cleaned before fresh concrete is placed.  
 All metal shall have forms on both sides.  
 The maximum fill over top of culverts shall be 1.0'.  
 When culverts are placed in rock, the rock shall be E of roadway.  
 Minimum slope of pipe shall be 1%.  
 On side and bottom of culverts, see plan sheets for project.  
 Footings in rock shall be poured out to rock face and bedrock.

COLORADO DEPARTMENT OF HIGHWAYS  
 STANDARD HEADWALLS  
 INTERCEPTING HEADWALLS  
 GALVANIZED METAL APRONS  
 GROUTED RUBBLE APRONS  
 FOR CORR METAL PIPE CULVERTS

Checked by M.W.M. Date: August, 1957

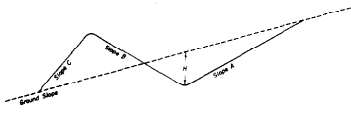
# STANDARD TYPES of DITCHES and CONSTRUCTION METHODS

STANDARD M-107-D

REV. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLD	1016-1 (17)	86

## DETAILS for CONTOUR INTERCEPTING DITCHES

### Typical Section for Contour Intercepting Ditches



**PURPOSE & USE OF THE TABLE**  
 The primary purpose of the information for Contour and Intercepting Ditches shown on this sheet is to serve as a guide in construction and to indicate drive or yardage of excavation involved. For most consideration in constructing these ditches is given first to the natural ground line slope controlling in construction, hence to the other values shown on the Typical Section.  
 By properly driving off the combination of values shown on the Typical Section and in the Table for a specific application, the number of cubic yards of excavation per 100 line feet of ditch may be read under the appropriate column for this item.

### Typical Construction Layouts

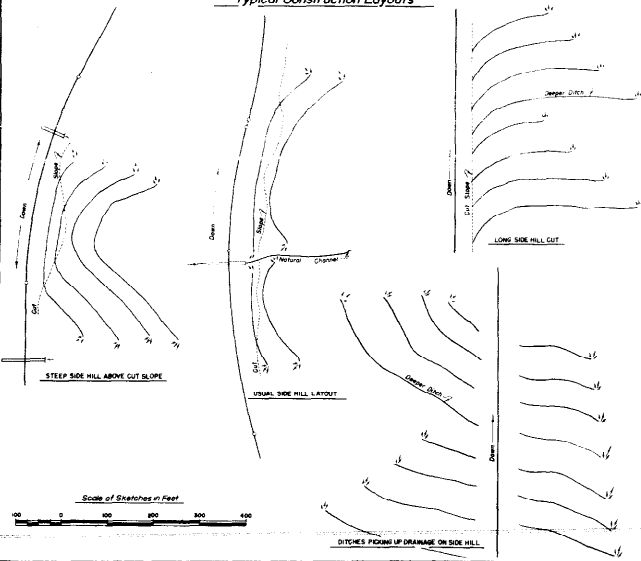
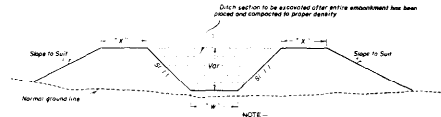


Table of Slopes and Yardages

Ground or Profile	SLOPES			H	Cubic Yards per 100 ft. of Ditch	
	A	B	C			
5:1	2:1	4:1	2:1	5'	16	
				10'	23	
	2:1	3:1	2:1	15'	32	
				20'	44	
	1:1/2:1	4:1	2:1	15'	30	
				20'	42	
	1:1/2:1	4:1	1:1/2:1	15'	13	
				20'	19	
		3:1	4:1	1:1/2:1	21'	25
					27'	32
2:1		4:1	1:1/2:1	18'	18	
				24'	25	
4:1		2:1	4:1	2:1	17	
				15'	10	
		3:1	4:1	2:1	21'	34
					27'	44
	2:1	4:1	2:1	10'	24	
				15'	32	
	1:1/2:1	4:1	1:1/2:1	15'	15	
				20'	21	
		3:1	4:1	1:1/2:1	21'	29
					27'	39
2:1		4:1	1:1/2:1	10'	18	
				15'	25	
3:1		2:1	3:1	2:1	23	
				15'	16	
		1:1/2:1	4:1	2:1	10'	14
					15'	22
	8:1	4:1	2:1	18'	31	
				24'	41	
	1:1/2:1	1:1/2:1	1:1/2:1	15'	20	
				20'	29	
		2:1	3:1	1:1/2:1	15'	13
					20'	19
1:1/2:1		4:1	1:1/2:1	15'	12	
				20'	17	
2:1		1:1/2:1	2:1	1:1/2:1	24	
				15'	17	
		1:1/2:1	2:1	1:1/2:1	15'	20
					20'	29
	1:1/2:1	4:1	1:1/2:1	15'	40	
				20'	50	
	1:1	2:1	1:1	15'	9	
				20'	17	
	1:1/2:1	4:1	1:1/2:1	15'	8	
				20'	12	
1:1/2:1	1:1	1:1/2:1	15'	16		
			20'	21		
1:1/2:1	1:1	1:1/2:1	15'	11		
			20'	16		

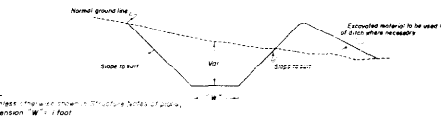
NOTE: Slopes are approximate and may be varied to suit conditions encountered during construction.

## TYPICAL SECTIONS for DRAINAGE, IRRIGATION DITCHES and CHANNEL CHANGES



### For Embankment Sections

(generally for use in irrigation ditches & channel changes)



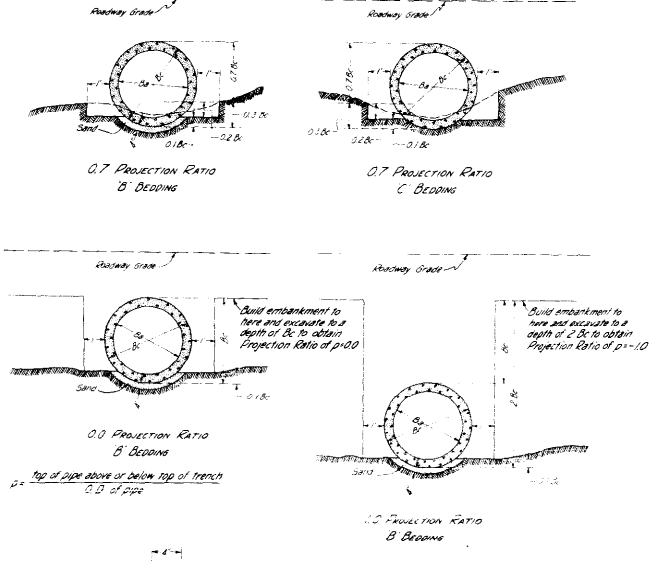
### For Cut Sections

**GENERAL NOTES**  
 All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department applicable to the Project.  
 All ditches are to be constructed to lines and grades as staked by the Engineer using the ditch section shown on plans or as ordered by the Engineer.  
**CONTOUR INTERCEPTING DITCHES:** Ditches are to be laid out along the ground contour on a grade of not over 1% if type of soil shall govern the grade.  
 Ends of ditches are to be lined up so that concentration of flow from a higher contour ditch into one of lower contour is, as far as possible avoided. The use of a deeper ditch is recommended where this condition is encountered.  
 The following horizontal spacing of ditches is recommended:  
 4% to 6% Approximately 70 Centers  
 6% to 10% Approximately 60 Centers  
 20% to 4% Slope Approximately 55 Centers  
 30% to 1:1/2:1 Slope Approximately 50 Centers  
 Where ditch checks are required the intervening ditch between one set of ditch checks shall not exceed a grade of 10%. Details of checks will be shown on plans when required.

**COLORADO DEPARTMENT OF HIGHWAYS**  
 Standard Types of Ditches and Construction Methods  
 Prepared by C.S.W. Approved by [Signature]  
 Checked by C.S.W. Date: Aug. 18, 1950

STANDARD M-112-G

FEE. ROAD DISTRICT PROJECT NO. SHEET NO.  
 9 COLO. 21016-1(17) 39



GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways applicable to the Project.  
 The Height of Fill for each culvert shall determine the bedding and class of concrete pipe to be used (See table herewith). Location, length and inside diameter of pipe, and class of pipe required shall be shown on plans.  
 Type B bedding is to be used in solid rock.  
 Details for placement of structure backfill materials are shown elsewhere in plans.  
 When projection ratios of 0.0 or -1.0 are used, backfilling above structure backfill material shall be made with materials excavated in order to produce the projection ratio. Cost of this backfilling is to be included in the contract unit price for Item 52.  
 If material does not stand with a vertical face when attempting to produce 0.0 or -1.0 projection ratios, this standard is not applicable.

CONCRETE OR MORTAR PIPE JOINT

Where the flow line grade of the pipe is 10% or greater, the 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.

APPROVED COMBINATIONS OF HEIGHT OF FILL - PROJECTION RATIO - BEDDING - CLASS

DO	HEIGHT OF FILL	PROJECTION RATIO	BEDDING	CLASS
12"	7'-10"	0.7	C	I
	8'-0"	0.7	C	II
	8'-2"	0.7	B	III
	8'-4"	0.0	B	III
	8'-6"	0.0	B	IV
14"	8'-8"	0.7	C	I
	8'-10"	0.7	C	II
	9'-0"	0.7	B	III
	9'-2"	0.0	B	III
	9'-4"	0.0	B	IV
16"	9'-6"	0.7	C	I
	9'-8"	0.7	C	II
	9'-10"	0.7	B	III
	10'-0"	0.0	B	III
	10'-2"	0.0	B	IV
18"	10'-4"	0.7	C	I
	10'-6"	0.7	C	II
	10'-8"	0.7	B	III
	10'-10"	0.0	B	III
	11'-0"	0.0	B	IV
20"	11'-2"	0.7	C	I
	11'-4"	0.7	C	II
	11'-6"	0.7	B	III
	11'-8"	0.0	B	III
	11'-10"	0.0	B	IV
22"	12'-0"	0.7	C	I
	12'-2"	0.7	C	II
	12'-4"	0.7	B	III
	12'-6"	0.0	B	III
	12'-8"	0.0	B	IV
24"	13'-0"	0.7	C	I
	13'-2"	0.7	C	II
	13'-4"	0.7	B	III
	13'-6"	0.0	B	III
	13'-8"	0.0	B	IV
26"	14'-0"	0.7	C	I
	14'-2"	0.7	C	II
	14'-4"	0.7	B	III
	14'-6"	0.0	B	III
	14'-8"	0.0	B	IV
28"	15'-0"	0.7	C	I
	15'-2"	0.7	C	II
	15'-4"	0.7	B	III
	15'-6"	0.0	B	III
	15'-8"	0.0	B	IV
30"	16'-0"	0.7	C	I
	16'-2"	0.7	C	II
	16'-4"	0.7	B	III
	16'-6"	0.0	B	III
	16'-8"	0.0	B	IV
32"	17'-0"	0.7	C	I
	17'-2"	0.7	C	II
	17'-4"	0.7	B	III
	17'-6"	0.0	B	III
	17'-8"	0.0	B	IV
34"	18'-0"	0.7	C	I
	18'-2"	0.7	C	II
	18'-4"	0.7	B	III
	18'-6"	0.0	B	III
	18'-8"	0.0	B	IV
36"	19'-0"	0.7	C	I
	19'-2"	0.7	C	II
	19'-4"	0.7	B	III
	19'-6"	0.0	B	III
	19'-8"	0.0	B	IV
38"	20'-0"	0.7	C	I
	20'-2"	0.7	C	II
	20'-4"	0.7	B	III
	20'-6"	0.0	B	III
	20'-8"	0.0	B	IV
40"	21'-0"	0.7	C	I
	21'-2"	0.7	C	II
	21'-4"	0.7	B	III
	21'-6"	0.0	B	III
	21'-8"	0.0	B	IV
42"	22'-0"	0.7	C	I
	22'-2"	0.7	C	II
	22'-4"	0.7	B	III
	22'-6"	0.0	B	III
	22'-8"	0.0	B	IV
44"	23'-0"	0.7	C	I
	23'-2"	0.7	C	II
	23'-4"	0.7	B	III
	23'-6"	0.0	B	III
	23'-8"	0.0	B	IV
46"	24'-0"	0.7	C	I
	24'-2"	0.7	C	II
	24'-4"	0.7	B	III
	24'-6"	0.0	B	III
	24'-8"	0.0	B	IV
48"	25'-0"	0.7	C	I
	25'-2"	0.7	C	II
	25'-4"	0.7	B	III
	25'-6"	0.0	B	III
	25'-8"	0.0	B	IV

DO	HEIGHT OF FILL	PROJECTION RATIO	BEDDING	CLASS
12"	8'-10"	0.7	C	II
	9'-0"	0.7	C	III
	9'-2"	0.7	B	III
	9'-4"	0.0	B	III
	9'-6"	0.0	B	IV
14"	9'-8"	0.7	C	I
	9'-10"	0.7	C	II
	10'-0"	0.7	B	III
	10'-2"	0.0	B	III
	10'-4"	0.0	B	IV
16"	10'-6"	0.7	C	I
	10'-8"	0.7	C	II
	10'-10"	0.7	B	III
	11'-0"	0.0	B	III
	11'-2"	0.0	B	IV
18"	11'-4"	0.7	C	I
	11'-6"	0.7	C	II
	11'-8"	0.7	B	III
	11'-10"	0.0	B	III
	12'-0"	0.0	B	IV
20"	12'-2"	0.7	C	I
	12'-4"	0.7	C	II
	12'-6"	0.7	B	III
	12'-8"	0.0	B	III
	12'-10"	0.0	B	IV
22"	13'-0"	0.7	C	I
	13'-2"	0.7	C	II
	13'-4"	0.7	B	III
	13'-6"	0.0	B	III
	13'-8"	0.0	B	IV
24"	14'-0"	0.7	C	I
	14'-2"	0.7	C	II
	14'-4"	0.7	B	III
	14'-6"	0.0	B	III
	14'-8"	0.0	B	IV
26"	15'-0"	0.7	C	I
	15'-2"	0.7	C	II
	15'-4"	0.7	B	III
	15'-6"	0.0	B	III
	15'-8"	0.0	B	IV
28"	16'-0"	0.7	C	I
	16'-2"	0.7	C	II
	16'-4"	0.7	B	III
	16'-6"	0.0	B	III
	16'-8"	0.0	B	IV
30"	17'-0"	0.7	C	I
	17'-2"	0.7	C	II
	17'-4"	0.7	B	III
	17'-6"	0.0	B	III
	17'-8"	0.0	B	IV
32"	18'-0"	0.7	C	I
	18'-2"	0.7	C	II
	18'-4"	0.7	B	III
	18'-6"	0.0	B	III
	18'-8"	0.0	B	IV
34"	19'-0"	0.7	C	I
	19'-2"	0.7	C	II
	19'-4"	0.7	B	III
	19'-6"	0.0	B	III
	19'-8"	0.0	B	IV
36"	20'-0"	0.7	C	I
	20'-2"	0.7	C	II
	20'-4"	0.7	B	III
	20'-6"	0.0	B	III
	20'-8"	0.0	B	IV
38"	21'-0"	0.7	C	I
	21'-2"	0.7	C	II
	21'-4"	0.7	B	III
	21'-6"	0.0	B	III
	21'-8"	0.0	B	IV
40"	22'-0"	0.7	C	I
	22'-2"	0.7	C	II
	22'-4"	0.7	B	III
	22'-6"	0.0	B	III
	22'-8"	0.0	B	IV
42"	23'-0"	0.7	C	I
	23'-2"	0.7	C	II
	23'-4"	0.7	B	III
	23'-6"	0.0	B	III
	23'-8"	0.0	B	IV
44"	24'-0"	0.7	C	I
	24'-2"	0.7	C	II
	24'-4"	0.7	B	III
	24'-6"	0.0	B	III
	24'-8"	0.0	B	IV
46"	25'-0"	0.7	C	I
	25'-2"	0.7	C	II
	25'-4"	0.7	B	III
	25'-6"	0.0	B	III
	25'-8"	0.0	B	IV

REVISIONS

NO.	DESCRIPTION	DATE
1	2:15-60 Ground Line & Notes	LEO

**COLORADO**  
 DEPARTMENT OF HIGHWAYS  
 REINFORCED CONCRETE PIPE

12" 18" 24" 30" 36" 42" 48" 54" 60" 66"  
 72" 78" 84" 90" 96" 102" 108"

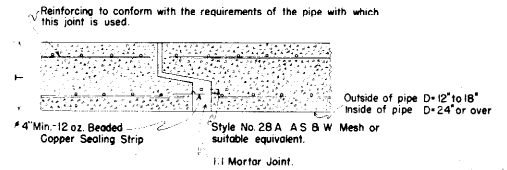
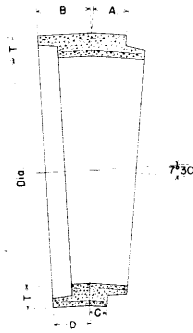
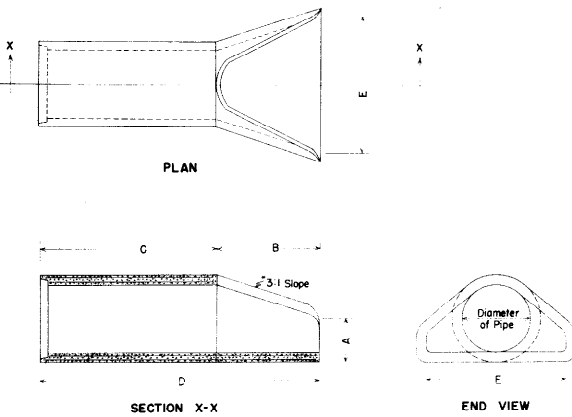
Designed by G.A.C. Checked by C.E.C. Date: 10/15/50  
 Approved by G.A.C. Checked by G.A.C. Date: 10/15/50

<sup>1</sup> Height above Top of Pipe  
<sup>2</sup> Minimum cover with concrete pavement shall be 1.25' and with asphalt or gravel 1.75'.  
 Minimum cover on Side Drains shall be 10'.

FLARED END SECTION FOR CONCRETE PIPE

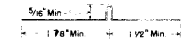
7°30' ANGLE SECTION FOR CONCRETE PIPE

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 OF PIPE	A	B	C	D	E
12"	4"	2'-0"	4'-0 1/2"	6'-0 1/2"	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'-11 1/2"	4'-0"
30"	1'-0"	4'-6"	3'-7 1/2"	8'-11 1/2"	5'-0"
36"	1'-3"	5'-3"	2'-10 1/2"	8'-11 1/2"	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"	9'-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 S
	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 3/4"	8 1/8"	2"	5 5/8"	10 7/8"
42"	6"	9 1/2"	2 5/8"	6 1/8"	12 1/8"
48"	7"	11"	3 3/8"	7 3/8"	14 3/8"
54"	8 1/2"	12 1/2"	4"	8 7/8"	16 1/8"
60"	9 1/2"	14"	4 3/4"	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  
DEPARTMENT OF HIGHWAYS  
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. 1-26-24  
Made by J. M. K. 1-26-24  
Checked by R. S. M. 1-26-24

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U OHS-1177	89	

PROPOSED REALIGNMENT OF 66" WATER MAIN AT SHERIDAN AND WINDMUSEN  
 (Rev. 8-3-05) - ADDED perm. Casement for 66" Pipe - J.L.C.

SCALE: VERT. 1" = 10'  
 HORIZ. 1" = 20'

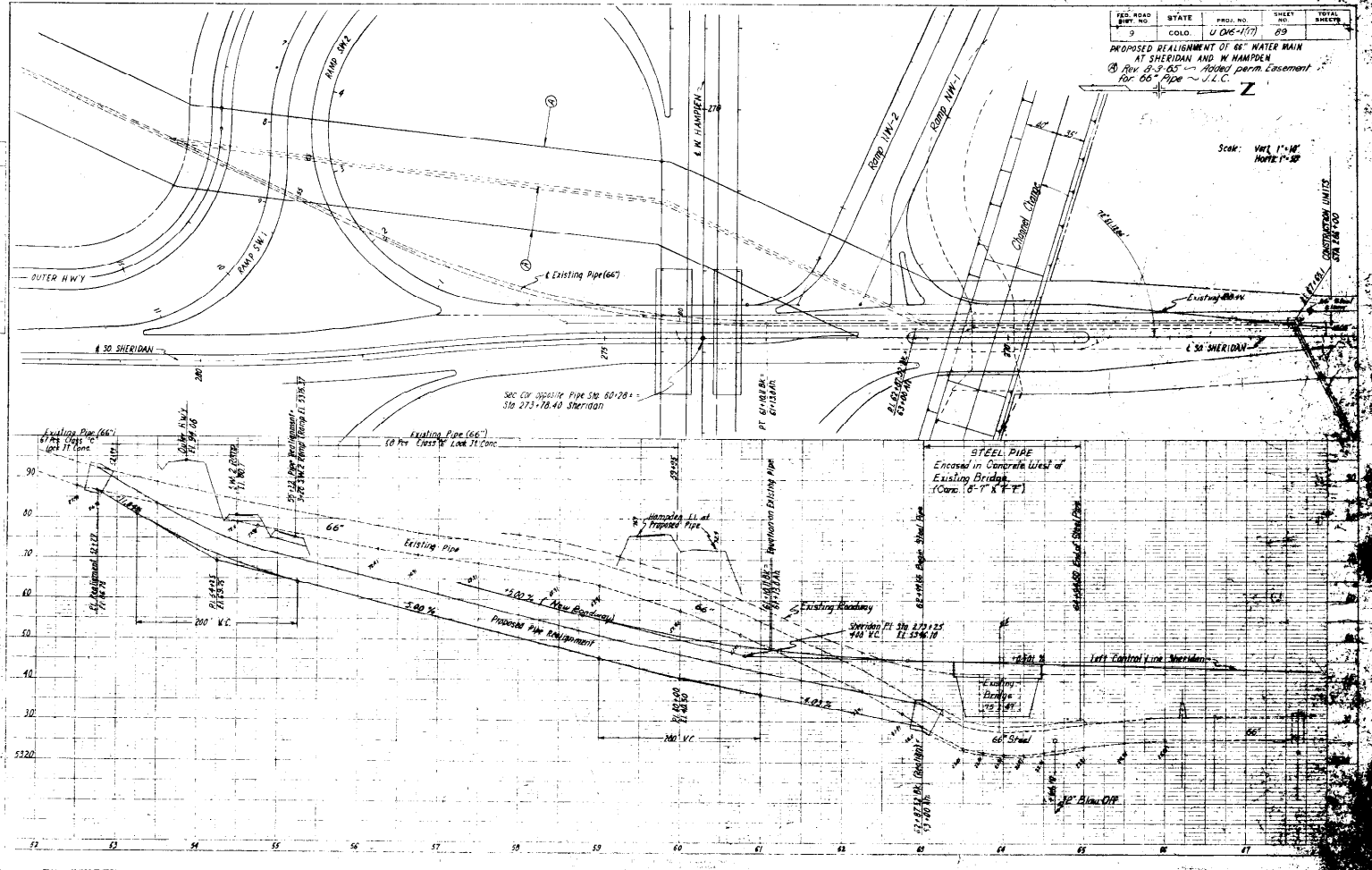


FIG. 11

FIG. 12

CONTINUATION UNITS  
 804, 805, 806

**CONSTR LIMITS  
STA 266+00**

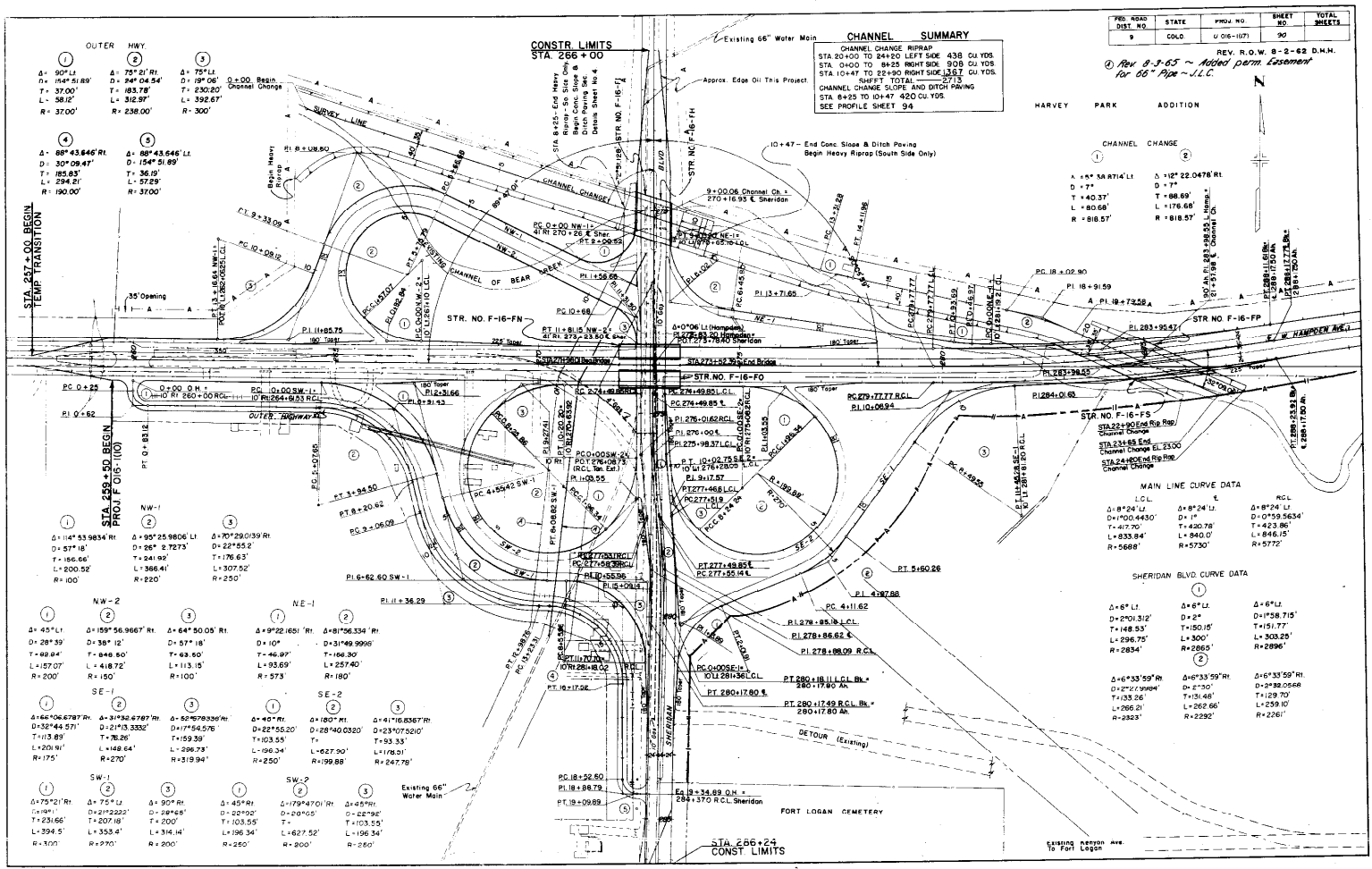
**CHANNEL SUMMARY**

CHANNEL CHANGE RIPRAP  
 STA 20+00 TO 24+20 LEFT SIDE 438 CU YDS  
 STA 0+00 TO 8+25 RIGHT SIDE 908 CU YDS  
 STA 10+47 TO 22+90 RIGHT SIDE 1,167 CU YDS  
 SHEET TOTAL 2,513

CHANNEL CHANGE SLOPE AND DITCH PAVING  
 STA 8+25 TO 10+47 420 CU YDS  
 SEE PROFILE SHEET 94

FILE NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U 016-1071	90	

REV. R.O.W. 8-5-62 D.M.H.  
 Rev 9-3-65 - Added perm. Easement for 66" Pipe - J.L.C.



**OUTER HWY**

1	2	3
$\Delta = 90^\circ L$	$\Delta = 75^\circ R$	$\Delta = 75^\circ L$
$D = 544' 61.89'$	$D = 249' 04.54'$	$D = 29' 06'$
$T = 37' 00'$	$T = 183.78'$	$T = 230.20'$
$L = 58.2'$	$L = 312.97'$	$L = 392.67'$
$R = 37' 00'$	$R = 238.00'$	$R = 300'$

4	5
$\Delta = 88^\circ 43.646' R$	$\Delta = 88^\circ 43.646' L$
$D = 307' 09.47'$	$D = 194' 51.89'$
$T = 185.83'$	$T = 36.19'$
$L = 234.21'$	$L = 57.23'$
$R = 190.00'$	$R = 37' 00'$

**STA 257+00 BEGIN TEMP TRANSITION**

1	2	3
$\Delta = 114^\circ 53' 98.94'' R$	$\Delta = 95^\circ 25' 98.06'' L$	$\Delta = 70^\circ 22' 03.91'' R$
$D = 57' 18''$	$D = 26' 2.7273''$	$D = 22' 55.2''$
$T = 186.66'$	$T = 241.92'$	$T = 176.65'$
$L = 200.52'$	$L = 198.44'$	$L = 107.52'$
$R = 100'$	$R = 220'$	$R = 250'$

**STA 255+30 BEGIN PROJ. F. DIS. (10')**

1	2	3
$\Delta = 114^\circ 53' 98.94'' R$	$\Delta = 95^\circ 25' 98.06'' L$	$\Delta = 70^\circ 22' 03.91'' R$
$D = 57' 18''$	$D = 26' 2.7273''$	$D = 22' 55.2''$
$T = 186.66'$	$T = 241.92'$	$T = 176.65'$
$L = 200.52'$	$L = 198.44'$	$L = 107.52'$
$R = 100'$	$R = 220'$	$R = 250'$

**NW-1**

1	2	3
$\Delta = 114^\circ 53' 98.94'' R$	$\Delta = 95^\circ 25' 98.06'' L$	$\Delta = 70^\circ 22' 03.91'' R$
$D = 57' 18''$	$D = 26' 2.7273''$	$D = 22' 55.2''$
$T = 186.66'$	$T = 241.92'$	$T = 176.65'$
$L = 200.52'$	$L = 198.44'$	$L = 107.52'$
$R = 100'$	$R = 220'$	$R = 250'$

**NW-2**

1	2	3
$\Delta = 45^\circ L$	$\Delta = 159^\circ 56' 96.67'' R$	$\Delta = 64^\circ 50' 05'' R$
$D = 28' 33''$	$D = 35' 12''$	$D = 57' 18''$
$T = 49.84'$	$T = 448.80'$	$T = 43.80'$
$L = 157.07'$	$L = 418.72'$	$L = 113.15'$
$R = 200'$	$R = 150'$	$R = 100'$

**NE-1**

1	2	3
$\Delta = 92^\circ 22' 16.01'' R$	$\Delta = 81^\circ 06' 33.94'' R$	$\Delta = 10^\circ R$
$D = 166.30'$	$D = 314.9996'$	$D = 166.30'$
$T = 46.99'$	$T = 166.30'$	$T = 166.30'$
$L = 93.69'$	$L = 257.40'$	$L = 257.40'$
$R = 573'$	$R = 180'$	$R = 180'$

**SE-1**

1	2	3
$\Delta = 65^\circ 06' 78.77'' R$	$\Delta = 31^\circ 32' 47.87'' R$	$\Delta = 52^\circ 16' 33.66'' R$
$D = 32' 44.571''$	$D = 21' 07.5332''$	$D = 11' 54.576''$
$T = 13.89'$	$T = 78.26'$	$T = 159.26'$
$L = 201.91'$	$L = 148.64'$	$L = 296.73'$
$R = 175'$	$R = 270'$	$R = 319.94'$

**SW-1**

1	2	3
$\Delta = 75^\circ 21'' R$	$\Delta = 75^\circ L$	$\Delta = 90^\circ R$
$D = 111.91'$	$D = 111.91'$	$D = 99.98'$
$T = 231.66'$	$T = 207.18'$	$T = 200'$
$L = 394.5'$	$L = 353.4'$	$L = 314.14'$
$R = 100'$	$R = 290'$	$R = 200'$

**NE-2**

1	2	3
$\Delta = 10^\circ R$	$\Delta = 31^\circ 49' 99.96'' R$	$\Delta = 81^\circ 06' 33.94'' R$
$D = 166.30'$	$D = 314.9996'$	$D = 166.30'$
$T = 166.30'$	$T = 166.30'$	$T = 166.30'$
$L = 257.40'$	$L = 257.40'$	$L = 257.40'$
$R = 180'$	$R = 180'$	$R = 180'$

**SE-2**

1	2	3
$\Delta = 40^\circ R$	$\Delta = 100^\circ R$	$\Delta = 1^\circ 16' 83.67'' R$
$D = 40.00'$	$D = 100.00'$	$D = 23' 07.5210''$
$T = 103.55'$	$T = 103.55'$	$T = 93.33'$
$L = 196.34'$	$L = 627.30'$	$L = 110.21'$
$R = 250'$	$R = 199.88'$	$R = 247.78'$

**SW-2**

1	2	3
$\Delta = 179^\circ 47' 01'' R$	$\Delta = 45^\circ R$	$\Delta = 45^\circ R$
$D = 179.4701'$	$D = 20.00'$	$D = 22' 58''$
$T = 103.55'$	$T = 103.55'$	$T = 103.55'$
$L = 196.34'$	$L = 627.30'$	$L = 196.34'$
$R = 250'$	$R = 199.88'$	$R = 250'$

**MAIN LINE CURVE DATA**

1	2	3
$\Delta = 8^\circ 24' L$	$\Delta = 8^\circ 24' L$	$\Delta = 8^\circ 24' L$
$D = 1700.4430'$	$D = 1700.4430'$	$D = 1700.4430'$
$T = 417.70'$	$T = 417.70'$	$T = 417.70'$
$L = 833.84'$	$L = 833.84'$	$L = 833.84'$
$R = 5688'$	$R = 5730'$	$R = 5772'$

**SHERIDAN BLVD CURVE DATA**

1	2	3
$\Delta = 6^\circ L$	$\Delta = 6^\circ L$	$\Delta = 6^\circ L$
$D = 2701.312'$	$D = 2701.312'$	$D = 2701.312'$
$T = 148.53'$	$T = 148.53'$	$T = 148.53'$
$L = 298.75'$	$L = 298.75'$	$L = 298.75'$
$R = 2834'$	$R = 2865'$	$R = 2896'$

1	2	3
$\Delta = 6^\circ 33' 59'' R$	$\Delta = 6^\circ 33' 59'' R$	$\Delta = 6^\circ 33' 59'' R$
$D = 2799.94'$	$D = 2799.94'$	$D = 2799.94'$
$T = 133.26'$	$T = 133.26'$	$T = 133.26'$
$L = 262.66'$	$L = 262.66'$	$L = 262.66'$
$R = 2323'$	$R = 2292'$	$R = 2261'$

Existing 66" Water Main  
 FORT LOGAN CEMETERY  
 STA 266+24  
 CONSTR LIMITS

STA 266+00  
CONST. LIMITS

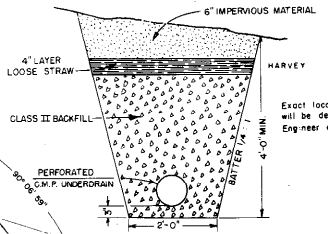
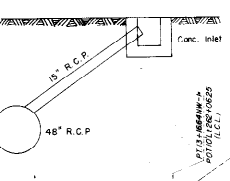
Existing 66" Water Main

TYPICAL SECTION OF TRENCH  
FOR C.M.P. UNDERDRAIN

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	U 016-1073	91	

DRAINAGE  
Also See Sheet 98 & 99 for Drainage  
Rev 8-3-65 - *Atkins* perm  
Estimate for 66" Pipe - J.L.C.  
REV. R.O.W. 8-2-62 D.H.H.

SKETCH SHOWING CONNECTION FROM INLET TO CROSS CULVERT STA 259+



CHANEL CHANGE  
CHANEL OF BEAR HOLE

STA 259+50  
BEGIN PROJECT F 016-1010

Note: 48" Storm Drain thru Bridge to be installed to Clear Pier Footing of Overpass

TABULATION OF CURBS AND GUTTERS

LOCATION	STA.	STA.	CURBS	LENGTH
Ramp NE-1	0+00	4+03.20	Curb & Gutter Type-2 Barrier Curb Type-2	118
Ramp SE-1	0+00	11+45.20	Curb & Gutter Type-2 Barrier Curb Type-2	175
Ramp SE-2	0+00	10+02.70	Curb & Gutter Type-2 Barrier Curb Type-2	291
Ramp SW-1	0+00	11+70.10	Curb & Gutter Type-2 Barrier Curb Type-2	175
Ramp SW-2	0+00	10+20.20	Curb & Gutter Type-2 Barrier Curb Type-2	343
Ramp NW-1	0+00	13+16.64	Curb & Gutter Type-2 Barrier Curb Type-2	140
Ramp NW-2	0+00	11+81.15	Curb & Gutter Type-2 Barrier Curb Type-2	223
Shelden			Curb & Gutter Type-2 Curb & Gutter Type-1	965
Valley			Curb & Gutter Type-2 Barrier Curb Type-2	2499
			Curb & Gutter Type-1	1140
			Curb & Gutter Type-1	2922

Lengths Shown include Curb Returns  
CONTINUED ON SHEET NO. 12

LEGEND

**SANITARY SEWERS**

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

**STORM SEWERS**

- Existing lines, manholes and inlets
- Existing lines to be plugged
- Existing lines to be plugged and/or inlets to be abandoned
- New lines, manholes and inlets

**CURBS**

- Barrier Curb (STypes)
- Curb and Gutter (STypes)
- Valley Gutter
- Comb Curb, Gutter, and Sidewalk
- Water lines

Existing 66" Water Main  
To Meet Existing Fence  
To Meet Existing Fence  
DETOUR (Existing)  
EXISTING KENNEDY AVE  
EXISTING LOGAN

EG 19+34.89 ON -  
294+370 RCL Observation  
STA 266+04  
CONST. LIMITS

CONSTR. LIMITS  
STA. 266+00

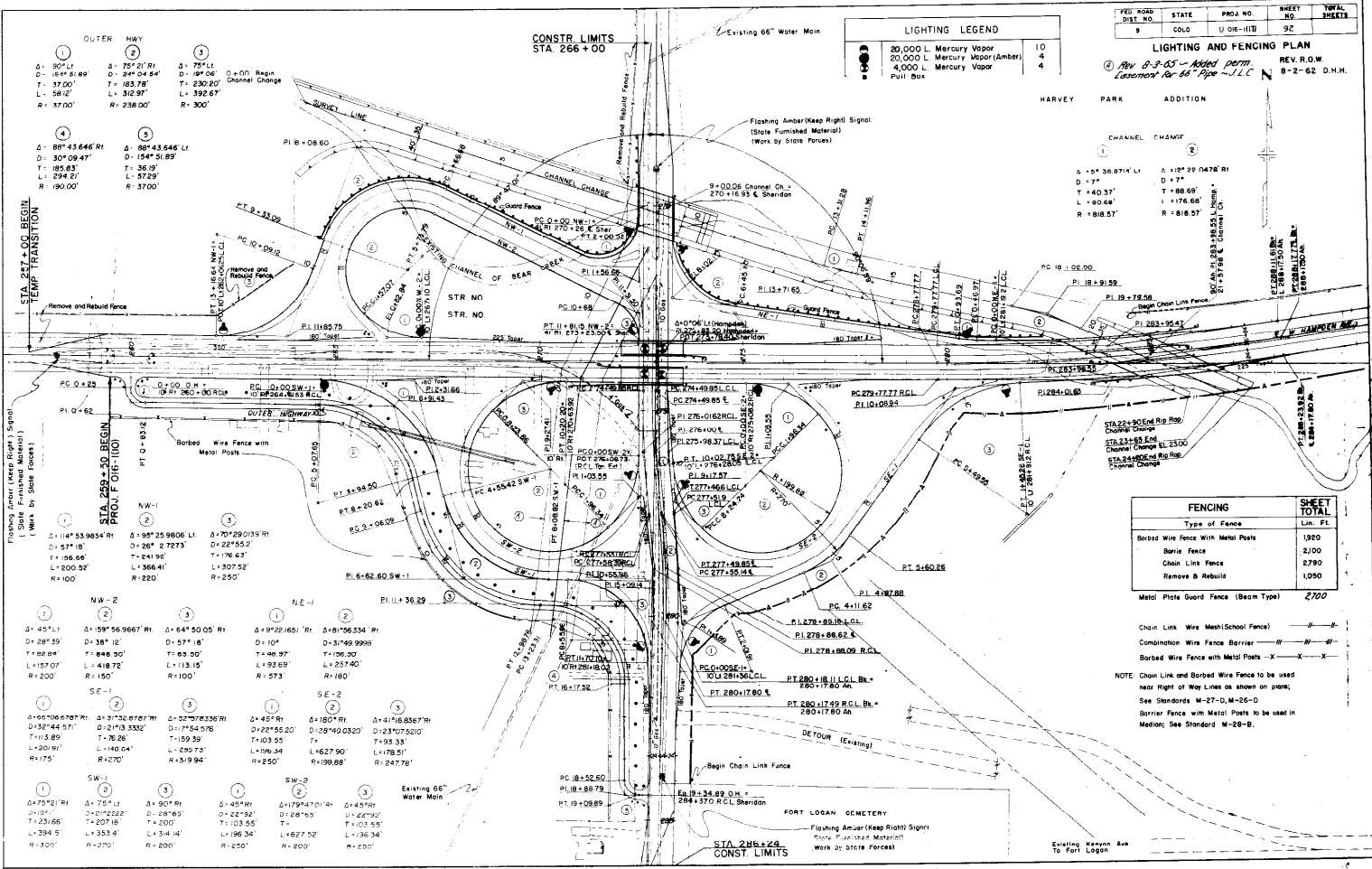
LIGHTING LEGEND	
20,000 L. Mercury Vapor	10
50,000 L. Mercury Vapor (Amber)	4
4,000 L. Mercury Vapor	4
Full Box	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U 06-1171	92	

LIGHTING AND FENCING PLAN  
REV. R.O.W.  
② Rev. 8-3-05 - Added Perim. Assessment for 66" Pipe - J.L.C.  
8-2-62 D.H.H.

HARVEY PARK ADDITION

CHANNEL CHANGE



FENCING		SHEET TOTAL
Type of Fence	Lin. Ft.	
Borbed Wire Fence with Metal Posts	1300	
Barbed Fence	2100	
Chain Link Fence	2780	
Remove & Rebuild	1050	
Metal Plate Guard Fence (Beam Type)	2700	

Chain Link Wire Mesh (School Fence) ————  
 Combination Wire Fence Barrier ————  
 Borbed Wire Fence with Metal Posts ————  
 Barbed Fence with Metal Posts ————  
 NOTE: Chain Link and Borbed Wire Fence to be used near Right of Way Lines as shown on plans; See Standards M-27-D, M-26-D.  
 Barrier Fence with Metal Posts to be used in Median; See Standard M-26-B.

① OUTER HWY  
 Δ: 90° L: 187' 51.89'  
 Δ: 187' 51.89' R: 300'  
 Δ: 75° 21' R: 187' 51.89'  
 Δ: 30° 09' 47' L: 187' 51.89'  
 Δ: 187' 51.89' R: 300'

②  
 Δ: 80° 43' 64.64' R: 187' 51.89'  
 Δ: 30° 09' 47' L: 187' 51.89'  
 Δ: 187' 51.89' R: 300'

③  
 Δ: 104° 53' 38.54' R: 187' 51.89'  
 Δ: 57° 18' L: 187' 51.89'  
 Δ: 104° 53' 38.54' R: 187' 51.89'

④  
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 Δ: 57° 18' L: 187' 51.89'  
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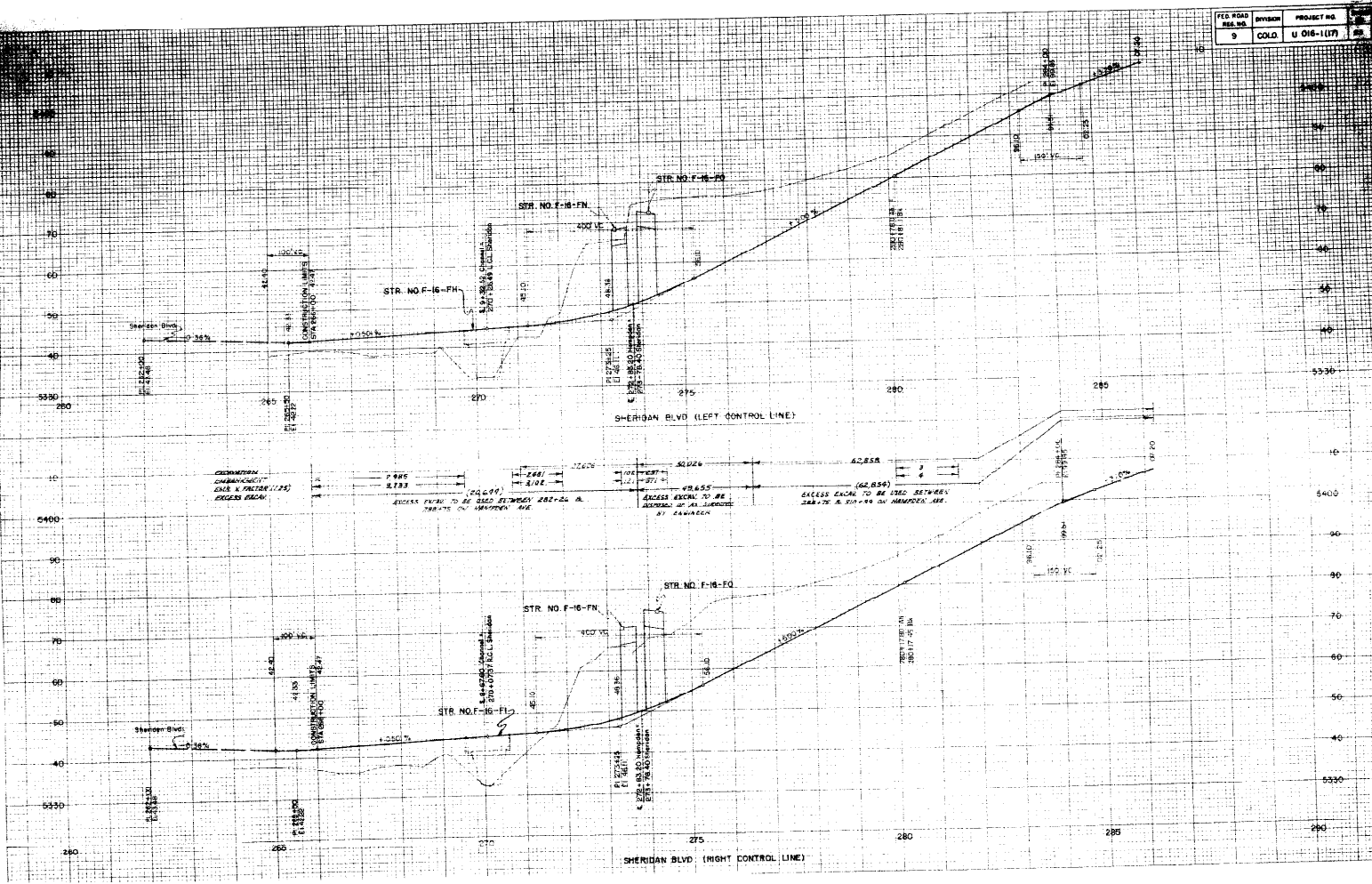
⑳  
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 Δ: 57° 18' L: 187' 51.89'  
 Δ: 104° 53' 38.54' R: 187' 51.89'

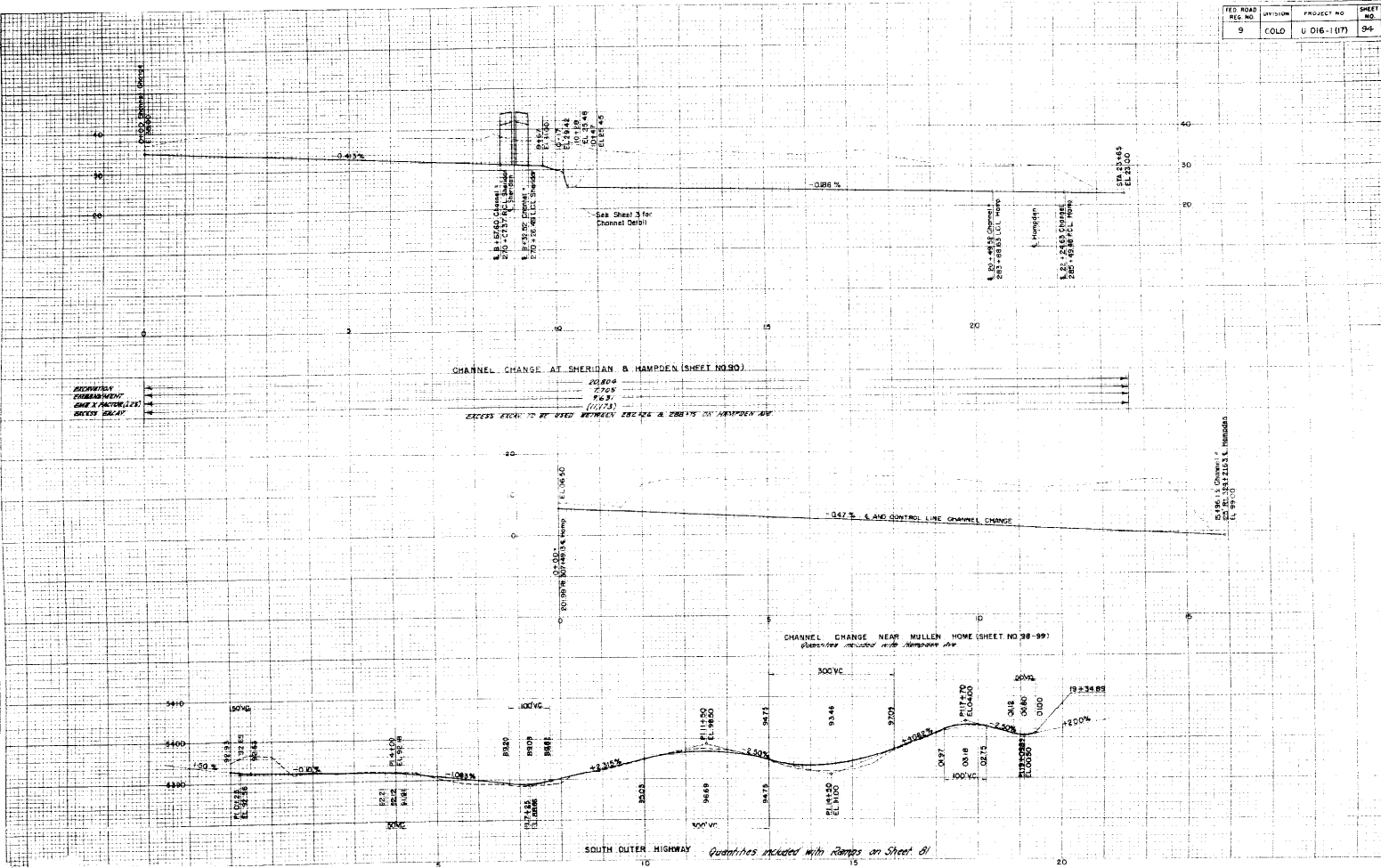
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 Δ: 57° 18' L: 187' 51.89'  
 Δ: 104° 53' 38.54' R: 187' 51.89'

㉒  
 Δ: 104° 53' 38.54' R: 187' 51.89'  
 Δ: 57° 18' L: 187' 51.89'  
 Δ: 104° 53' 38.54' R: 187' 51.89'

㉓  
 Δ: 104° 53' 38.54' R: 187' 51.89'  
 Δ: 57° 18' L: 187' 51.89'  
 Δ: 104° 53' 38.54' R: 187' 51.89'

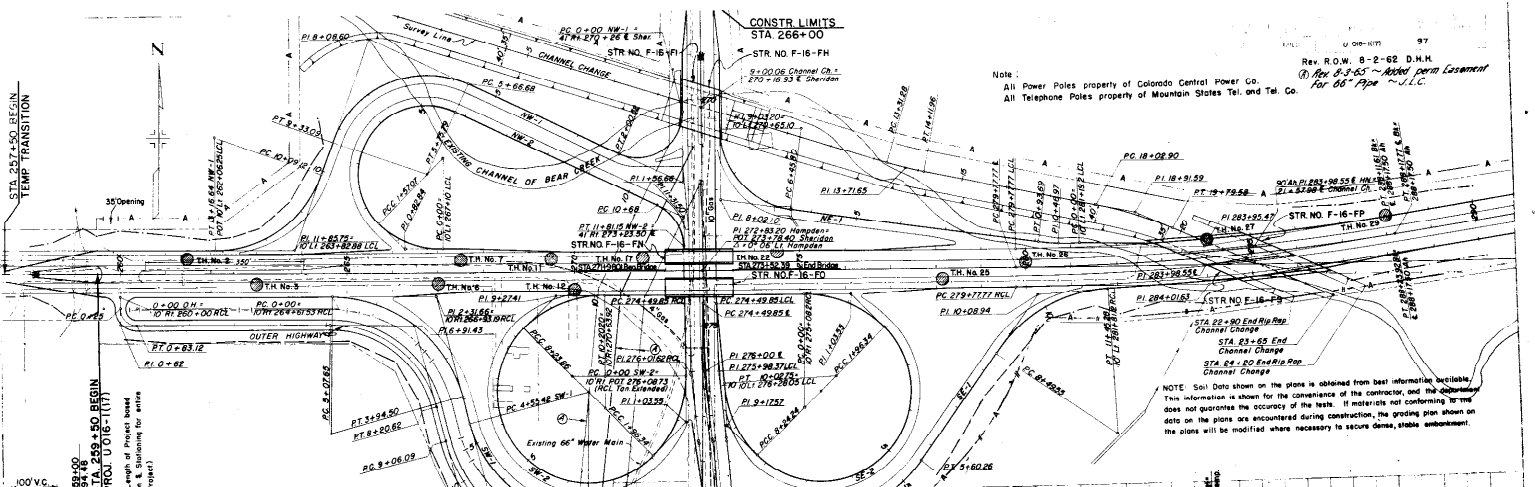
㉔  
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 Δ: 57° 18' L: 187' 51.89'  
 Δ: 104° 53' 38.54' R: 187' 51.89'







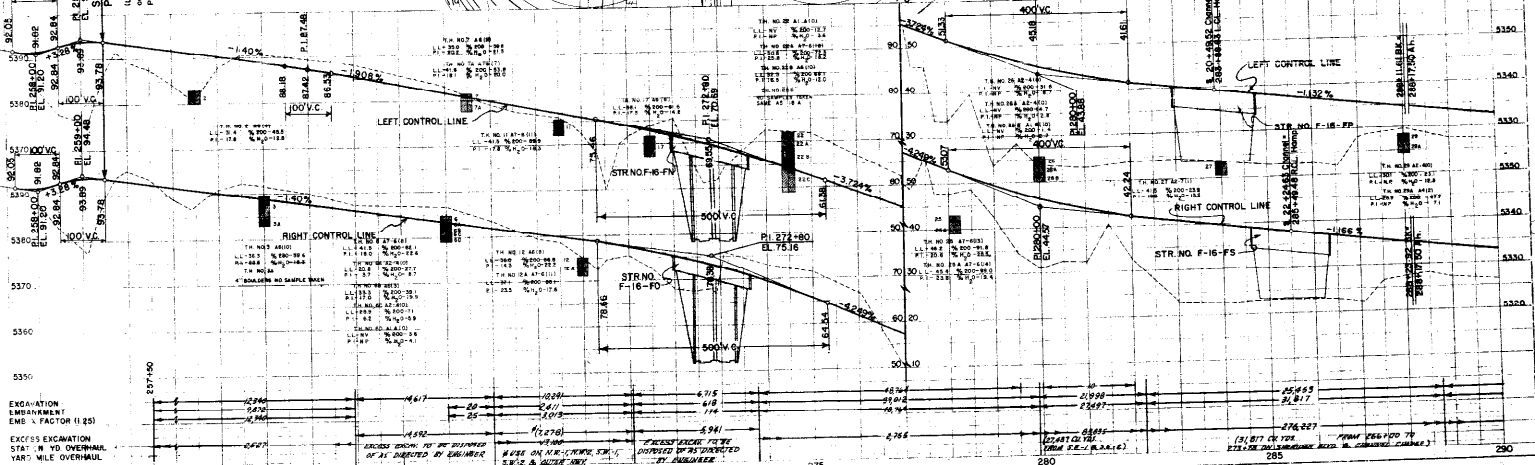




Note:  
 All Power Poles property of Colorado Central Power Co.  
 All Telephone Poles property of Mountain States Tel. and Tel. Co.

Rev. R.O.W. 8-2-62 D.H.M.  
 8-3-65 - Added perin easement  
 For 66' Pipe - J.L.C.

NOTE: Soil Data shown on the plans is obtained from best information available. The information is shown for the convenience of the contractor, and the engineer does not guarantee the accuracy of the tests. If materials not conforming to the data on the plans are encountered during construction, the grading plan shown on the plans will be modified where necessary to secure dense, stable embankment.



EXCAVATION  
 EMBANKMENT  
 EMB. FACTOR (1.25)

EXCESS EXCAVATION  
 STAT. IN YD OVERHALL  
 YARD MILE OVERHALL

260 275 280 285 290

HARVEY PARK ADDITION

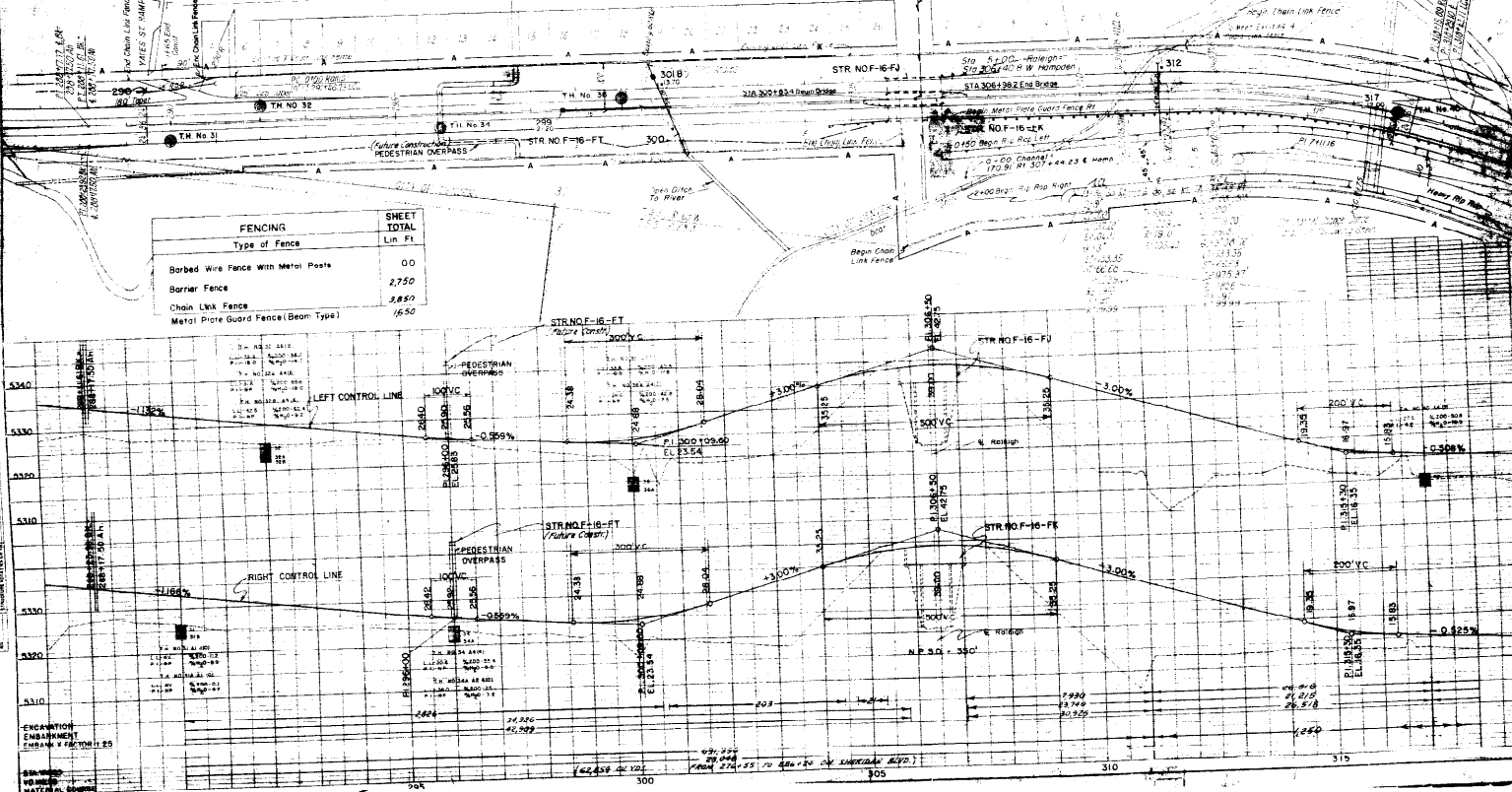
CHANNEL SUMMARY

CHANNEL CHANGE - HEAVY RIP RAP  
STA 8+50 TO 16+35  
CU YDS - 3,100  
See Sheet No 91 for Drainage, and  
Curb and Gutter Legend

JOB NO.	DIST.	FBI NO.	DATE
9	000	1106-1071	58

LINE	BEARING	DISTANCE	ANGLE
1-2	S 89° 21' 11" E	10.00	
2-3	S 89° 21' 11" E	10.00	
3-4	S 89° 21' 11" E	10.00	
4-5	S 89° 21' 11" E	10.00	
5-6	S 89° 21' 11" E	10.00	
6-7	S 89° 21' 11" E	10.00	
7-8	S 89° 21' 11" E	10.00	
8-9	S 89° 21' 11" E	10.00	
9-10	S 89° 21' 11" E	10.00	
10-11	S 89° 21' 11" E	10.00	
11-12	S 89° 21' 11" E	10.00	
12-13	S 89° 21' 11" E	10.00	
13-14	S 89° 21' 11" E	10.00	
14-15	S 89° 21' 11" E	10.00	
15-16	S 89° 21' 11" E	10.00	
16-17	S 89° 21' 11" E	10.00	
17-18	S 89° 21' 11" E	10.00	
18-19	S 89° 21' 11" E	10.00	
19-20	S 89° 21' 11" E	10.00	
20-21	S 89° 21' 11" E	10.00	
21-22	S 89° 21' 11" E	10.00	
22-23	S 89° 21' 11" E	10.00	
23-24	S 89° 21' 11" E	10.00	
24-25	S 89° 21' 11" E	10.00	
25-26	S 89° 21' 11" E	10.00	
26-27	S 89° 21' 11" E	10.00	
27-28	S 89° 21' 11" E	10.00	
28-29	S 89° 21' 11" E	10.00	
29-30	S 89° 21' 11" E	10.00	
30-31	S 89° 21' 11" E	10.00	
31-32	S 89° 21' 11" E	10.00	
32-33	S 89° 21' 11" E	10.00	
33-34	S 89° 21' 11" E	10.00	
34-35	S 89° 21' 11" E	10.00	
35-36	S 89° 21' 11" E	10.00	
36-37	S 89° 21' 11" E	10.00	
37-38	S 89° 21' 11" E	10.00	
38-39	S 89° 21' 11" E	10.00	
39-40	S 89° 21' 11" E	10.00	
40-41	S 89° 21' 11" E	10.00	
41-42	S 89° 21' 11" E	10.00	
42-43	S 89° 21' 11" E	10.00	
43-44	S 89° 21' 11" E	10.00	
44-45	S 89° 21' 11" E	10.00	
45-46	S 89° 21' 11" E	10.00	
46-47	S 89° 21' 11" E	10.00	
47-48	S 89° 21' 11" E	10.00	
48-49	S 89° 21' 11" E	10.00	
49-50	S 89° 21' 11" E	10.00	
50-51	S 89° 21' 11" E	10.00	
51-52	S 89° 21' 11" E	10.00	
52-53	S 89° 21' 11" E	10.00	
53-54	S 89° 21' 11" E	10.00	
54-55	S 89° 21' 11" E	10.00	
55-56	S 89° 21' 11" E	10.00	
56-57	S 89° 21' 11" E	10.00	
57-58	S 89° 21' 11" E	10.00	
58-59	S 89° 21' 11" E	10.00	
59-60	S 89° 21' 11" E	10.00	
60-61	S 89° 21' 11" E	10.00	
61-62	S 89° 21' 11" E	10.00	
62-63	S 89° 21' 11" E	10.00	
63-64	S 89° 21' 11" E	10.00	
64-65	S 89° 21' 11" E	10.00	
65-66	S 89° 21' 11" E	10.00	
66-67	S 89° 21' 11" E	10.00	
67-68	S 89° 21' 11" E	10.00	
68-69	S 89° 21' 11" E	10.00	
69-70	S 89° 21' 11" E	10.00	
70-71	S 89° 21' 11" E	10.00	
71-72	S 89° 21' 11" E	10.00	
72-73	S 89° 21' 11" E	10.00	
73-74	S 89° 21' 11" E	10.00	
74-75	S 89° 21' 11" E	10.00	
75-76	S 89° 21' 11" E	10.00	
76-77	S 89° 21' 11" E	10.00	
77-78	S 89° 21' 11" E	10.00	
78-79	S 89° 21' 11" E	10.00	
79-80	S 89° 21' 11" E	10.00	
80-81	S 89° 21' 11" E	10.00	
81-82	S 89° 21' 11" E	10.00	
82-83	S 89° 21' 11" E	10.00	
83-84	S 89° 21' 11" E	10.00	
84-85	S 89° 21' 11" E	10.00	
85-86	S 89° 21' 11" E	10.00	
86-87	S 89° 21' 11" E	10.00	
87-88	S 89° 21' 11" E	10.00	
88-89	S 89° 21' 11" E	10.00	
89-90	S 89° 21' 11" E	10.00	
90-91	S 89° 21' 11" E	10.00	
91-92	S 89° 21' 11" E	10.00	
92-93	S 89° 21' 11" E	10.00	
93-94	S 89° 21' 11" E	10.00	
94-95	S 89° 21' 11" E	10.00	
95-96	S 89° 21' 11" E	10.00	
96-97	S 89° 21' 11" E	10.00	
97-98	S 89° 21' 11" E	10.00	
98-99	S 89° 21' 11" E	10.00	
99-100	S 89° 21' 11" E	10.00	

FENCING	SHEET TOTAL
Type of Fence	Lin Ft
Barbed Wire Fence With Metal Posts	00
Barrier Fence	2,750
Chain Link Fence	3,850
Metal Plate Guard Fence (Beam Type)	1,650



ENCANTION  
EMBANKMENT  
EMBANK 1' HIGH TO 11.25

for Channel Profile  
See Profile Sheet 54

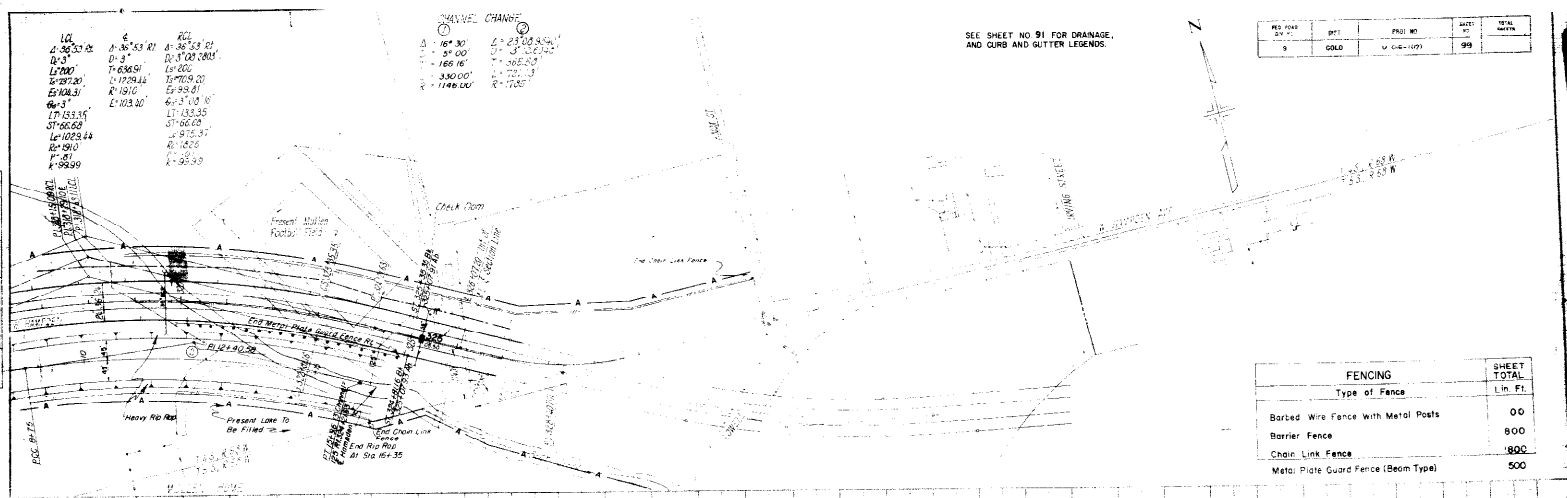
SEE SHEET NO 91 FOR DRAINAGE AND CURB AND GUTTER LEGENDS.

REV	DATE	BY	CHKD	PROJ NO	SHEET NO	TOTAL SHEETS
1				V. C. 4-1071	99	

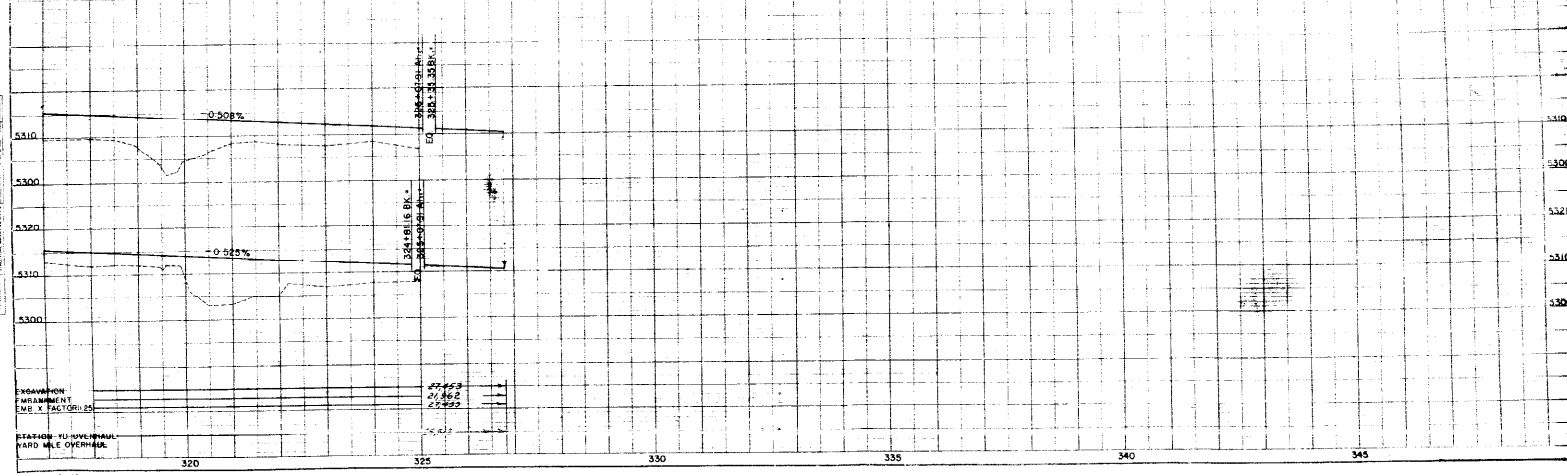
STA	PC	PVI	PT	EL
2+36.53	2+36.53	2+36.53	2+36.53	53.00
2+37	2+37	2+37	2+37	53.00
2+38	2+38	2+38	2+38	53.00
2+39	2+39	2+39	2+39	53.00
2+40	2+40	2+40	2+40	53.00
2+41	2+41	2+41	2+41	53.00
2+42	2+42	2+42	2+42	53.00
2+43	2+43	2+43	2+43	53.00
2+44	2+44	2+44	2+44	53.00
2+45	2+45	2+45	2+45	53.00
2+46	2+46	2+46	2+46	53.00
2+47	2+47	2+47	2+47	53.00
2+48	2+48	2+48	2+48	53.00
2+49	2+49	2+49	2+49	53.00
2+50	2+50	2+50	2+50	53.00
2+51	2+51	2+51	2+51	53.00
2+52	2+52	2+52	2+52	53.00
2+53	2+53	2+53	2+53	53.00
2+54	2+54	2+54	2+54	53.00
2+55	2+55	2+55	2+55	53.00
2+56	2+56	2+56	2+56	53.00
2+57	2+57	2+57	2+57	53.00
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2+59	2+59	2+59	2+59	53.00
2+60	2+60	2+60	2+60	53.00
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2+62	2+62	2+62	2+62	53.00
2+63	2+63	2+63	2+63	53.00
2+64	2+64	2+64	2+64	53.00
2+65	2+65	2+65	2+65	53.00
2+66	2+66	2+66	2+66	53.00
2+67	2+67	2+67	2+67	53.00
2+68	2+68	2+68	2+68	53.00
2+69	2+69	2+69	2+69	53.00
2+70	2+70	2+70	2+70	53.00
2+71	2+71	2+71	2+71	53.00
2+72	2+72	2+72	2+72	53.00
2+73	2+73	2+73	2+73	53.00
2+74	2+74	2+74	2+74	53.00
2+75	2+75	2+75	2+75	53.00
2+76	2+76	2+76	2+76	53.00
2+77	2+77	2+77	2+77	53.00
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2+95	2+95	2+95	2+95	53.00
2+96	2+96	2+96	2+96	53.00
2+97	2+97	2+97	2+97	53.00
2+98	2+98	2+98	2+98	53.00
2+99	2+99	2+99	2+99	53.00
2+100	2+100	2+100	2+100	53.00

VERTICAL CURVES

STA	PC	PVI	PT	EL
2+36.53	2+36.53	2+36.53	2+36.53	53.00
2+37	2+37	2+37	2+37	53.00
2+38	2+38	2+38	2+38	53.00
2+39	2+39	2+39	2+39	53.00
2+40	2+40	2+40	2+40	53.00
2+41	2+41	2+41	2+41	53.00
2+42	2+42	2+42	2+42	53.00
2+43	2+43	2+43	2+43	53.00
2+44	2+44	2+44	2+44	53.00
2+45	2+45	2+45	2+45	53.00
2+46	2+46	2+46	2+46	53.00
2+47	2+47	2+47	2+47	53.00
2+48	2+48	2+48	2+48	53.00
2+49	2+49	2+49	2+49	53.00
2+50	2+50	2+50	2+50	53.00
2+51	2+51	2+51	2+51	53.00
2+52	2+52	2+52	2+52	53.00
2+53	2+53	2+53	2+53	53.00
2+54	2+54	2+54	2+54	53.00
2+55	2+55	2+55	2+55	53.00
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2+57	2+57	2+57	2+57	53.00
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2+64	2+64	2+64	2+64	53.00
2+65	2+65	2+65	2+65	53.00
2+66	2+66	2+66	2+66	53.00
2+67	2+67	2+67	2+67	53.00
2+68	2+68	2+68	2+68	53.00
2+69	2+69	2+69	2+69	53.00
2+70	2+70	2+70	2+70	53.00
2+71	2+71	2+71	2+71	53.00
2+72	2+72	2+72	2+72	53.00
2+73	2+73	2+73	2+73	53.00
2+74	2+74	2+74	2+74	53.00
2+75	2+75	2+75	2+75	53.00
2+76	2+76	2+76	2+76	53.00
2+77	2+77	2+77	2+77	53.00
2+78	2+78	2+78	2+78	53.00
2+79	2+79	2+79	2+79	53.00
2+80	2+80	2+80	2+80	53.00
2+81	2+81	2+81	2+81	53.00
2+82	2+82	2+82	2+82	53.00
2+83	2+83	2+83	2+83	53.00
2+84	2+84	2+84	2+84	53.00
2+85	2+85	2+85	2+85	53.00
2+86	2+86	2+86	2+86	53.00
2+87	2+87	2+87	2+87	53.00
2+88	2+88	2+88	2+88	53.00
2+89	2+89	2+89	2+89	53.00
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2+91	2+91	2+91	2+91	53.00
2+92	2+92	2+92	2+92	53.00
2+93	2+93	2+93	2+93	53.00
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2+97	2+97	2+97	2+97	53.00
2+98	2+98	2+98	2+98	53.00
2+99	2+99	2+99	2+99	53.00
2+100	2+100	2+100	2+100	53.00



FENCING		SHEET TOTAL
Type of Fence		Lin. Ft.
Barbed Wire Fence with Metal Posts		00
Barrier Fence		800
Chain Link Fence		1800
Metal Plate Guard Fence (Beam Type)		500



NO.	DATE	BY	CHKD	PROJ NO	SHEET NO	TOTAL SHEETS
1				V. C. 4-1071	99	

NO.	DATE	BY	CHKD	PROJ NO	SHEET NO	TOTAL SHEETS
1				V. C. 4-1071	99	

EMPAVMENT  
 PARALLEL TO  
 EMB. X FACTOR: 25

ROAD WIDE OVERHEAD



**LEGEND**

**SANITARY SEWERS**

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

**STORM SEWERS**

- Existing lines, manholes and inlets
- Existing lines to be used
- Existing lines to be plugged and/or lines to be abandoned
- New lines, manholes and inlets

**UTILITY LINES**

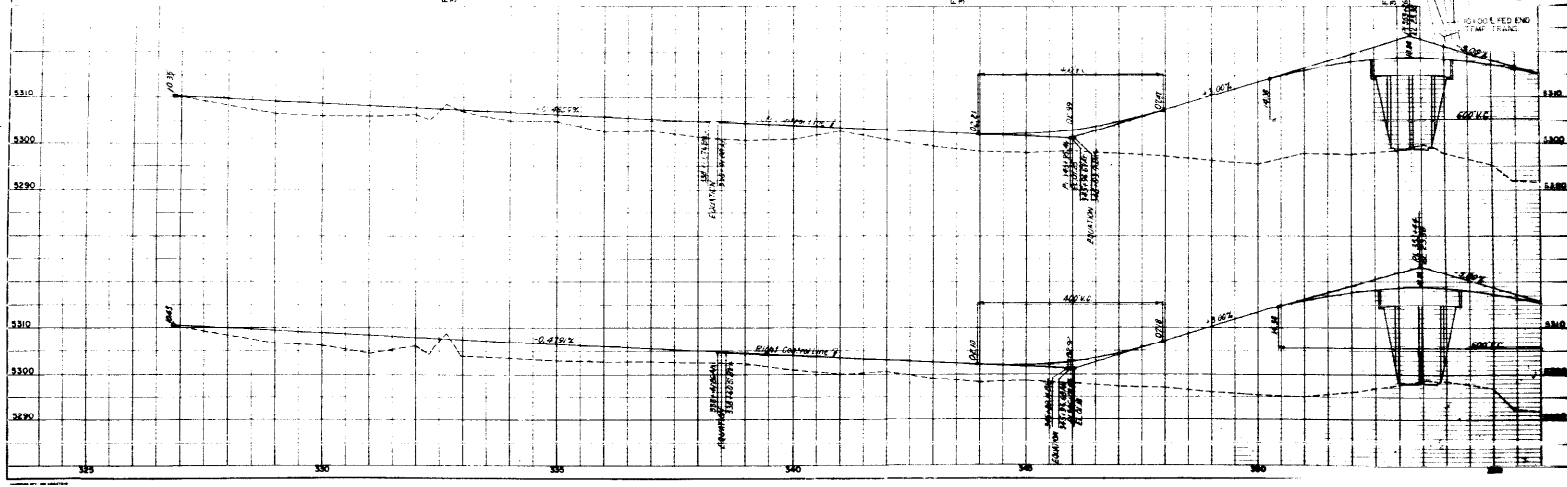
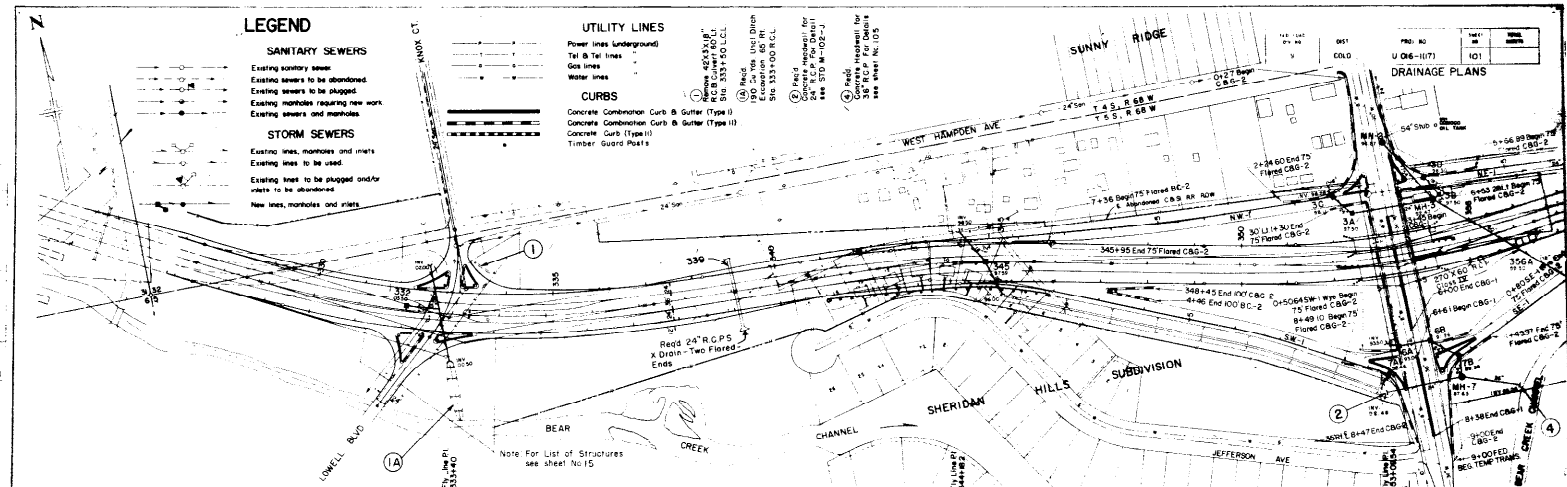
- Power lines (underground)
- Tel & Tel lines
- Gas lines
- Water lines

**CURBS**

- Concrete Combination Curb & Gutter (Type I)
- Concrete Combination Curb & Gutter (Type II)
- Concrete Curb (Type I)
- Timber Guard Posts

Notes: 1. See sheet 101 for details of existing sewer lines.  
 2. See sheet 101 for details of existing storm sewer lines.  
 3. See sheet 101 for details of existing utility lines.  
 4. See sheet 101 for details of existing curbs.  
 5. See sheet 101 for details of existing manholes and inlets.  
 6. See sheet 101 for details of existing structures.  
 7. See sheet 101 for details of existing drainage plans.  
 8. See sheet 101 for details of existing topography.  
 9. See sheet 101 for details of existing street names.  
 10. See sheet 101 for details of existing lot numbers.

**DRAINAGE PLANS**



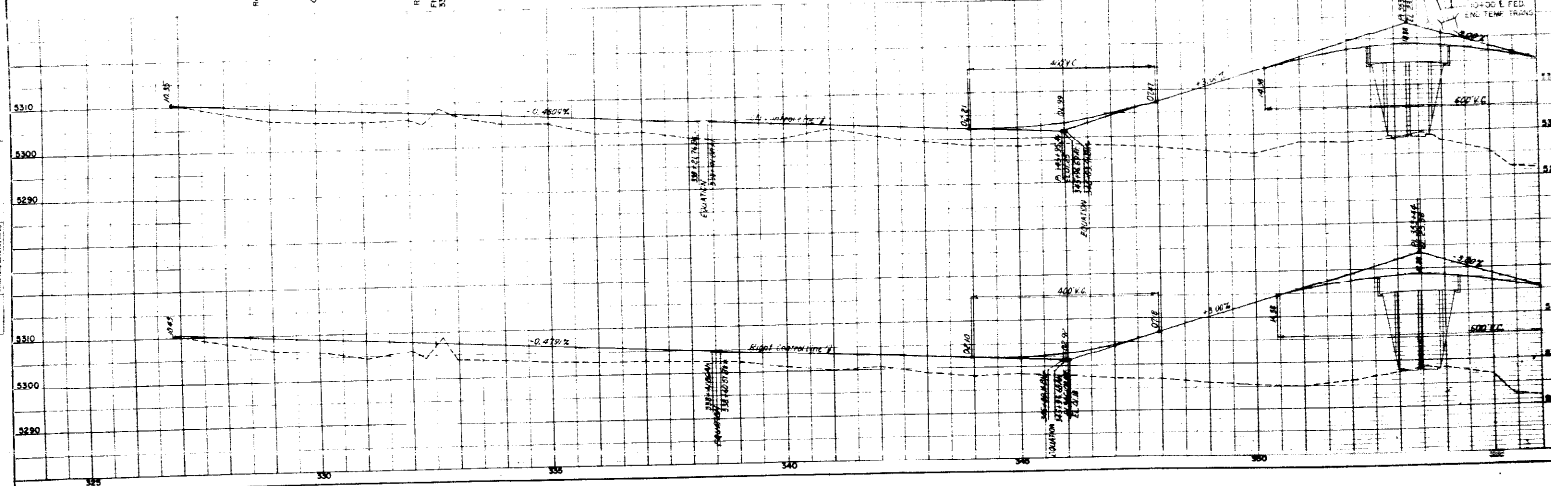
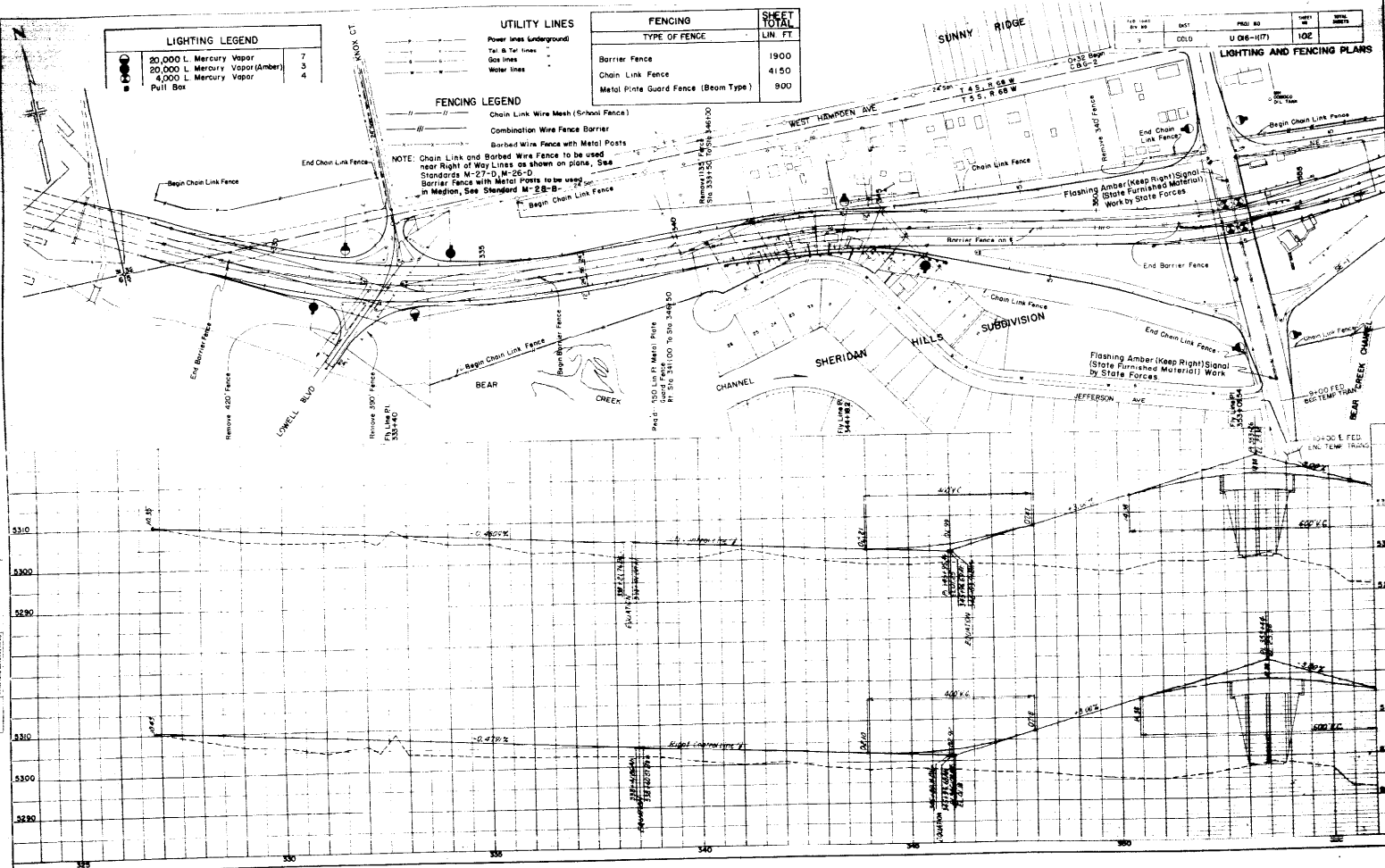
LIGHTING LEGEND	
	20,000 L Mercury Vapor
	20,000 L Mercury Vapor (Amber)
	4,000 L Mercury Vapor
	Pull Box

UTILITY LINES	
	Power lines Underground
	Gas lines
	Water lines

FENCING		SHEET TOTAL
TYPE OF FENCE		LIN. FT.
Barrier Fence		1900
Chain Link Fence		4150
Metal Plate Guard Fence (Beam Type)		900

NO. 80	NO. 102
U 06-117	102

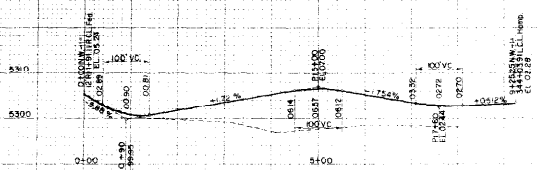
**FENCING LEGEND**  
 Chain Link Wire Mesh (School Fence)  
 Combination Wire Fence Barrier  
 Barbed Wire Fence with Metal Posts  
 NOTE: Chain Link and Barbed Wire Fence to be used near Right of Way Lines as shown on plans. See Standards M-27-D, M-28-D. Barrier Fence with Metal Posts to be used in Median, See Standard M-28-B.



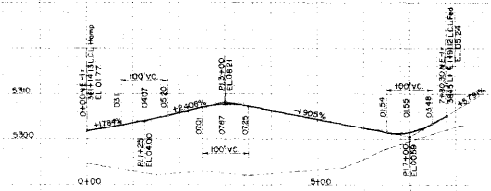
PLAN

PROFILE

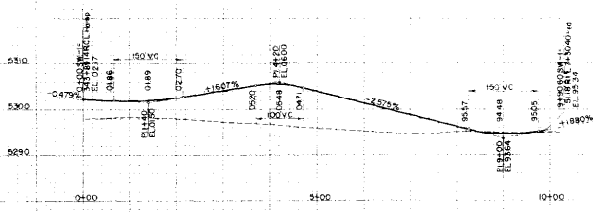
FEDERAL BLVD. INTERCHANGE  
CONTROL LINE GRADES



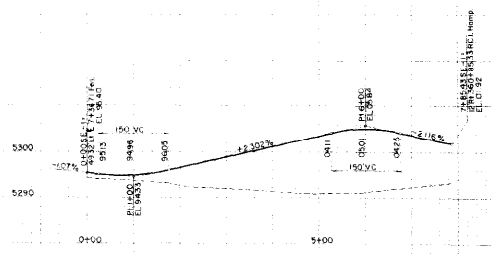
RAMP NW-1



RAMP NE-1

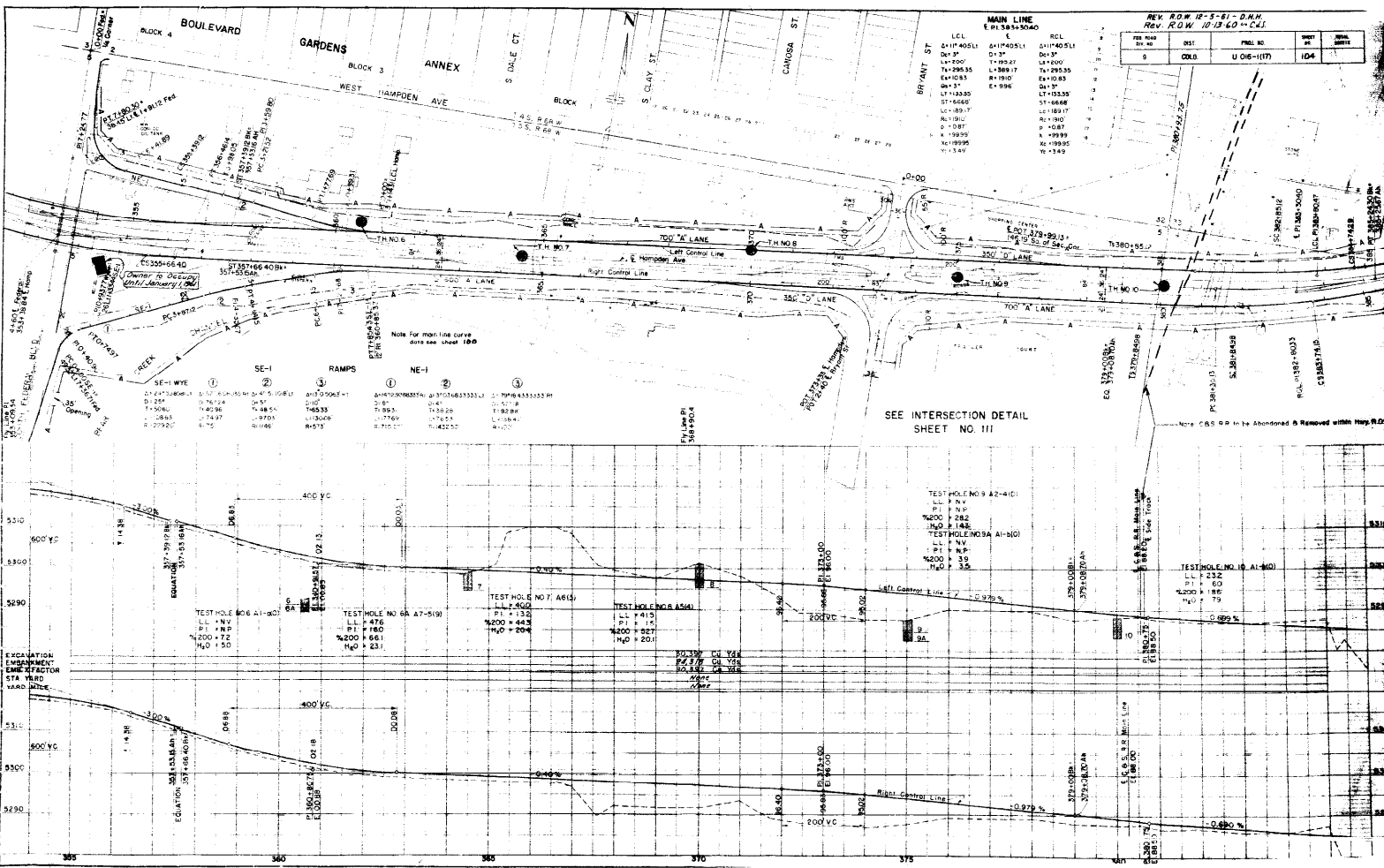


RAMP SW-1



RAMP SE-1

FEDERAL BLVD INTERCHANGE  
 CONTROL LINE GRADES  
 SHEET 103 OF 103



MAIN LINE  
E 13845040

STATION	DESCRIPTION	STATION	DESCRIPTION
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"

REV. ROW 12-5-61 - D.M.H.  
REV. ROW 10-13-60 - C.J.

REV. NO.	DATE	BY	CHKD.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

SE-I WYE

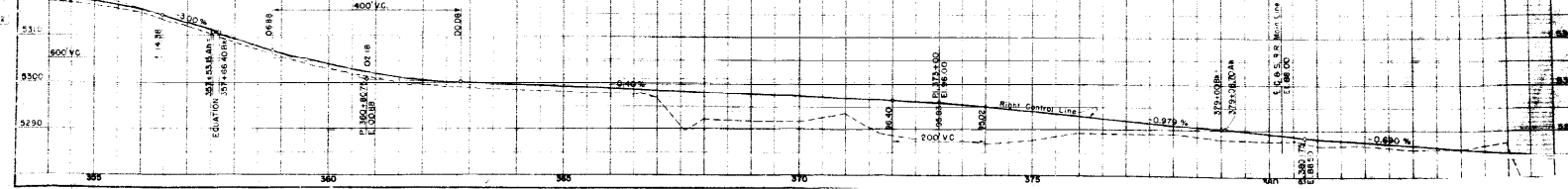
STATION	DESCRIPTION	STATION	DESCRIPTION
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"

SEE INTERSECTION DETAIL SHEET NO. III

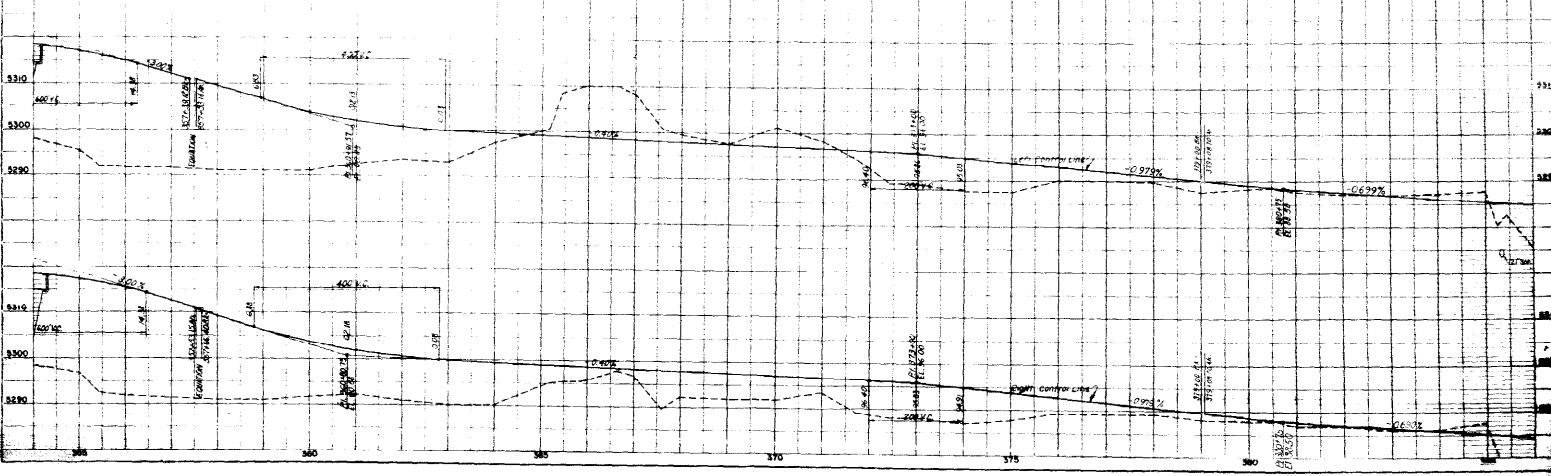
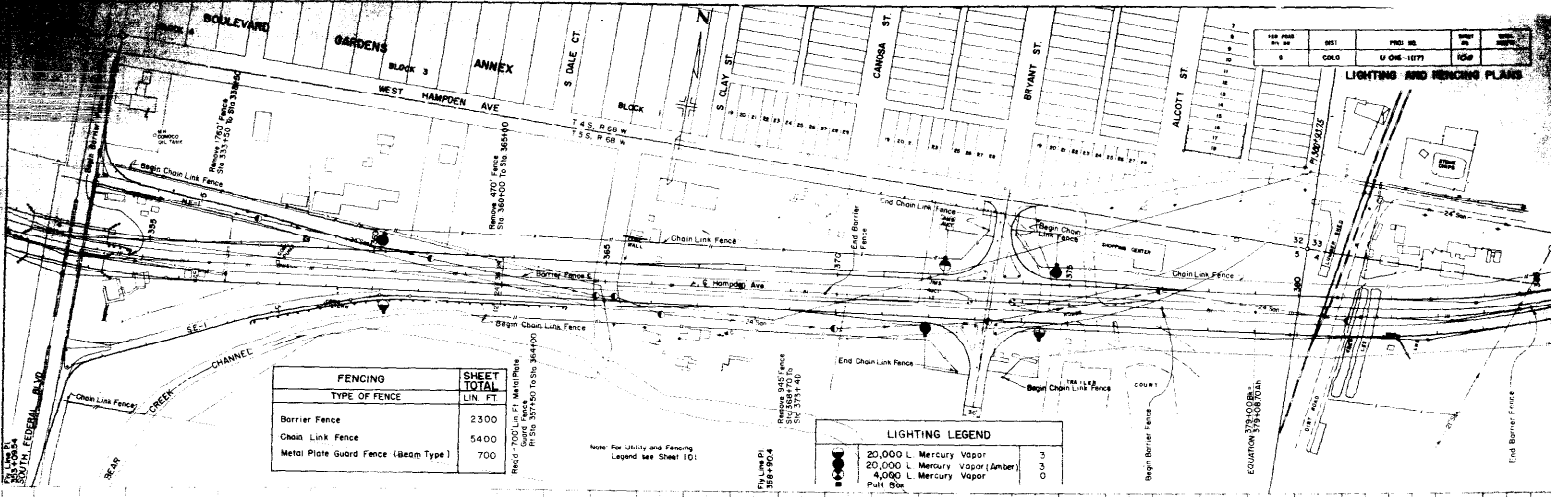
TEST HOLE NO. 9 A2-4101

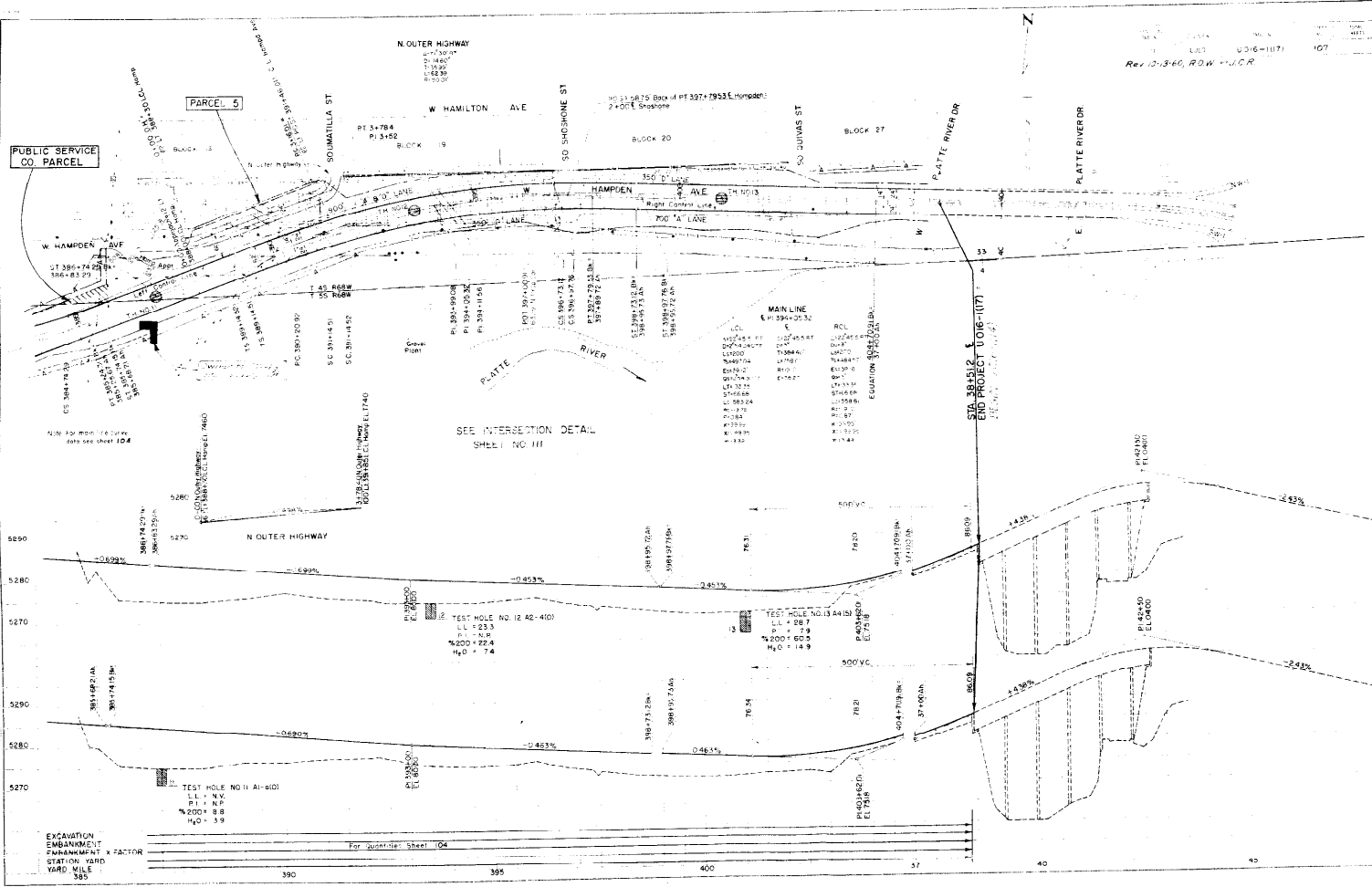
STATION	DESCRIPTION	STATION	DESCRIPTION
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"
4117405.1	D+3"	4117405.1	D+3"
4117405.1	L+3"	4117405.1	L+3"
4117405.1	E+3"	4117405.1	E+3"

EXCAVATION  
EMBRACEMENT  
EMBRACEMENT  
STA YARD  
YARD MILE

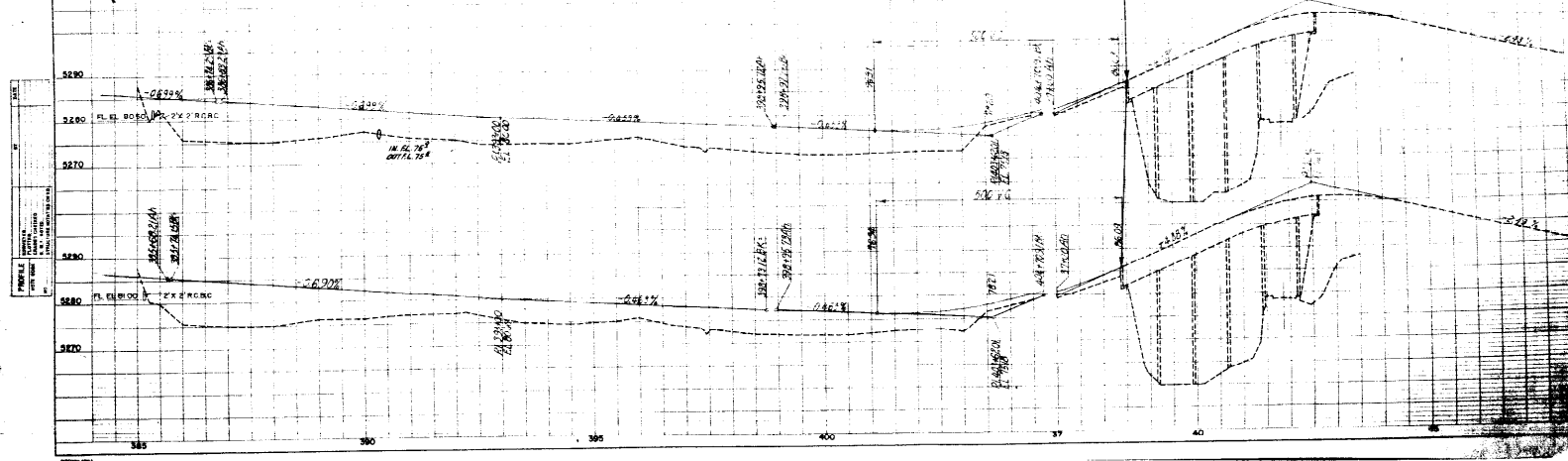
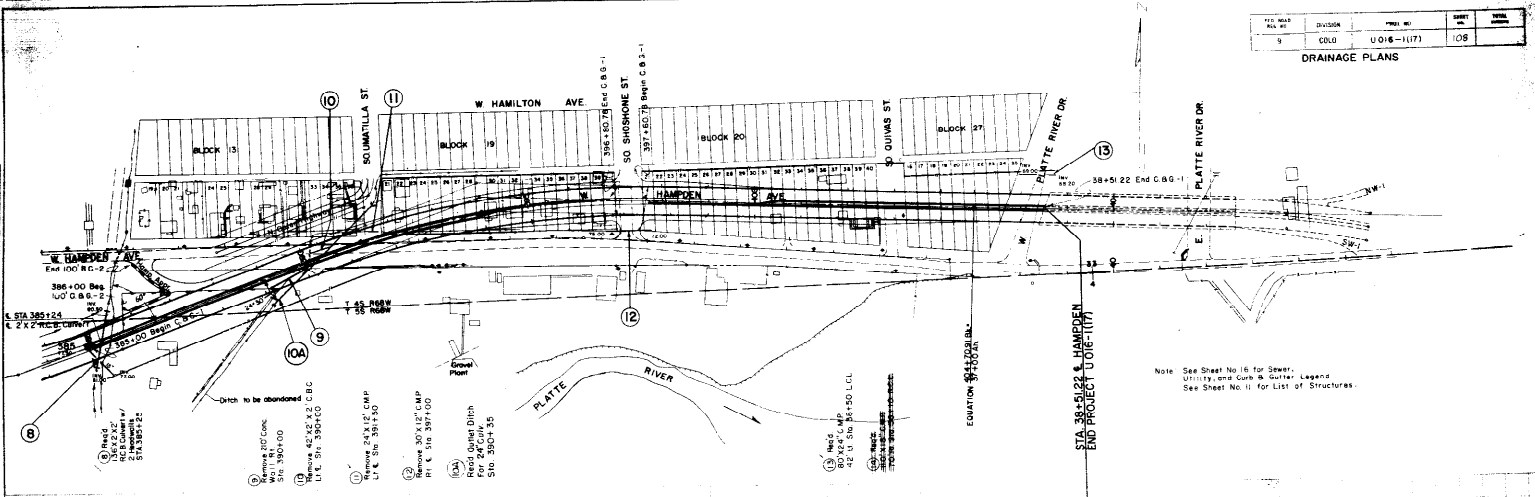








PLAN  
 SHEET NO. 108  
 PROJECT NO. UO18-11(7)



Note: See Sheet No. 107 for Sewer, Utility and Gate & Sizer Legend. See Sheet No. 11 for List of Structures.

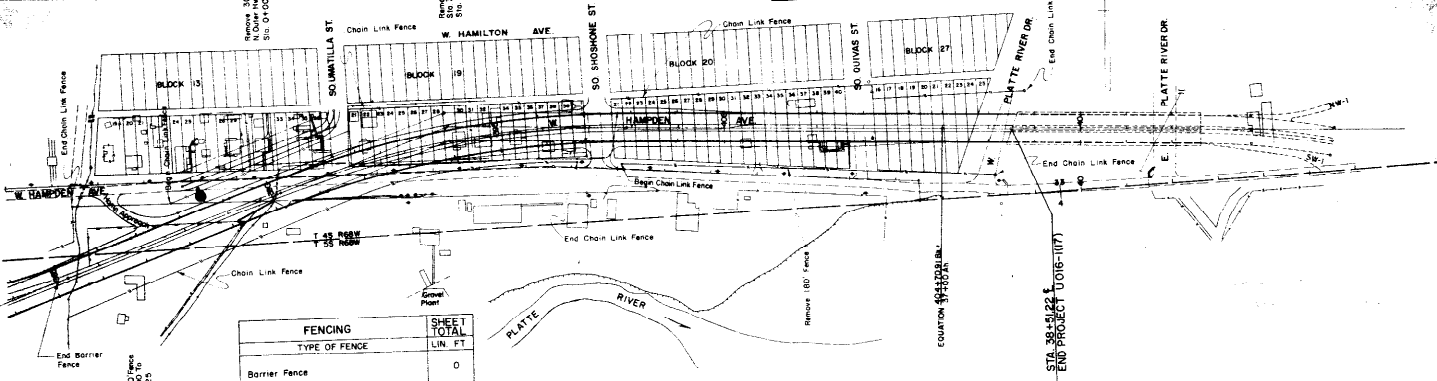
LIGHTING LEGEND	
●	20,000 L. Mercury Vapor (Lamp)
□	Pull Box

Proj. No.	System	Scale
9	C.O.D.	U 016-1177

LIGHTING AND FENCING PLAN

Remove 300' fence  
S.D. 01-0076 3-1-52

Remove 540' fence  
S.D. 01-0076 3-1-52

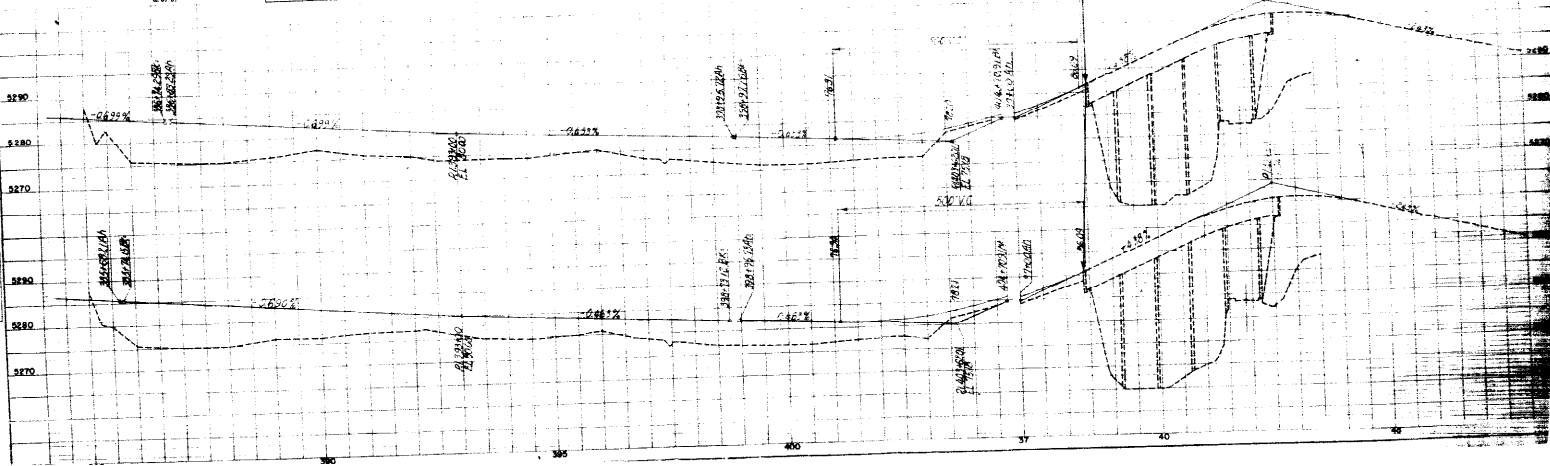


FENCING		SHEET TOTAL
TYPE OF FENCE	LIN. FT.	
Barrier Fence	0	
Chain Link Fence	3945	
Metal Plate Guard Fence (Beam Type)	0	

Note for Utility and Fencing Legend see Sheet 101

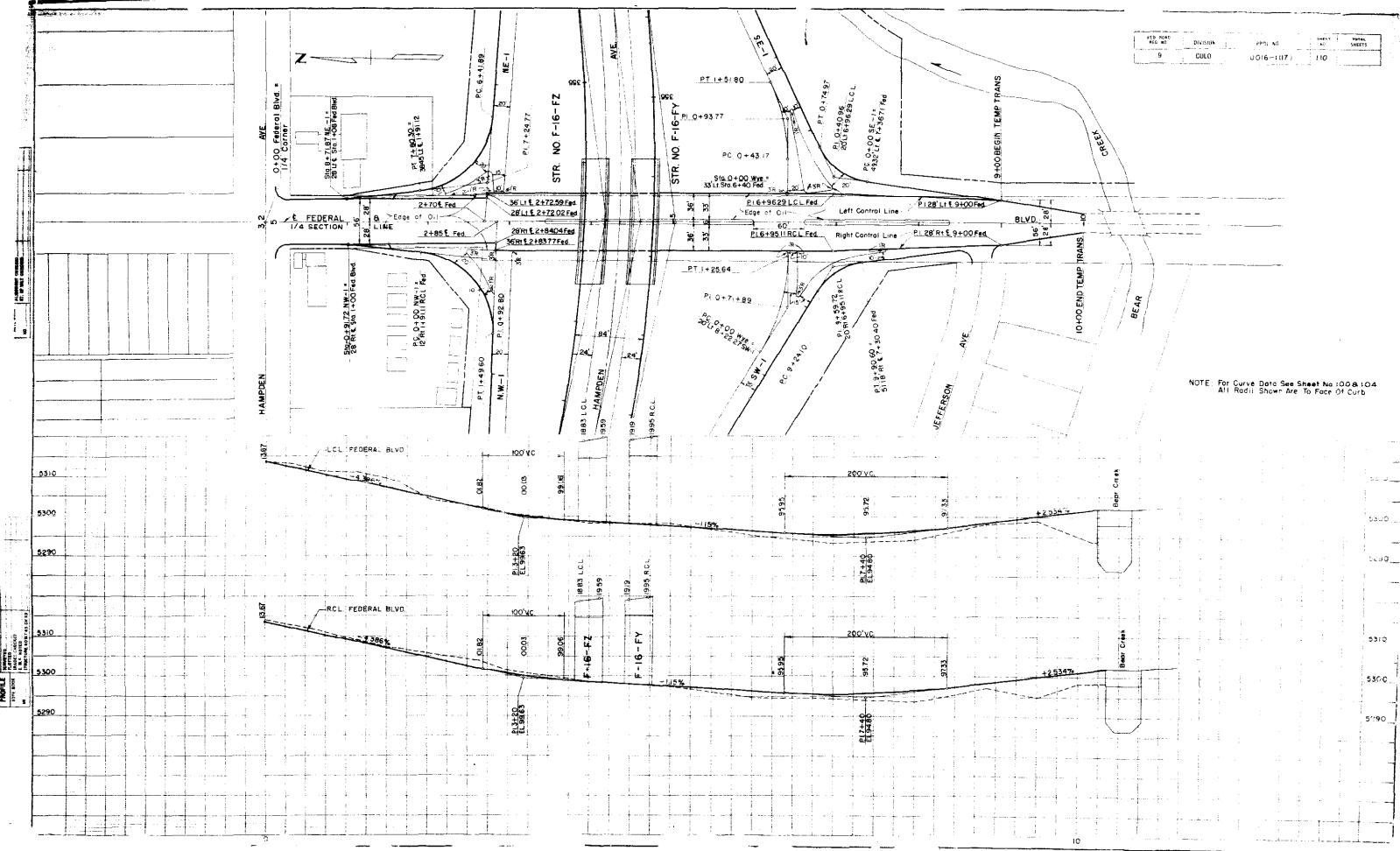
PLAN  
DATE  
BY

PROFILE  
DATE  
BY



STA. 38+51.25  
END PROJECT (016-1177)

DATE	DESCRIPTION	BY	CHKD
5	016-1177		



NOTE: For Curve Data See Sheet No 100@104  
 All Right Show Are To Face Of Curb

PROJECT: FEDERAL BLVD  
 SHEET: 100@104