COLO 360-D

COLORADO
STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED
FEDERAL AID SECONDARY PROJECT NO. 360-D
STATE HIGHWAY NO. 96
CUSTER AND PUEBLO COUNTIES

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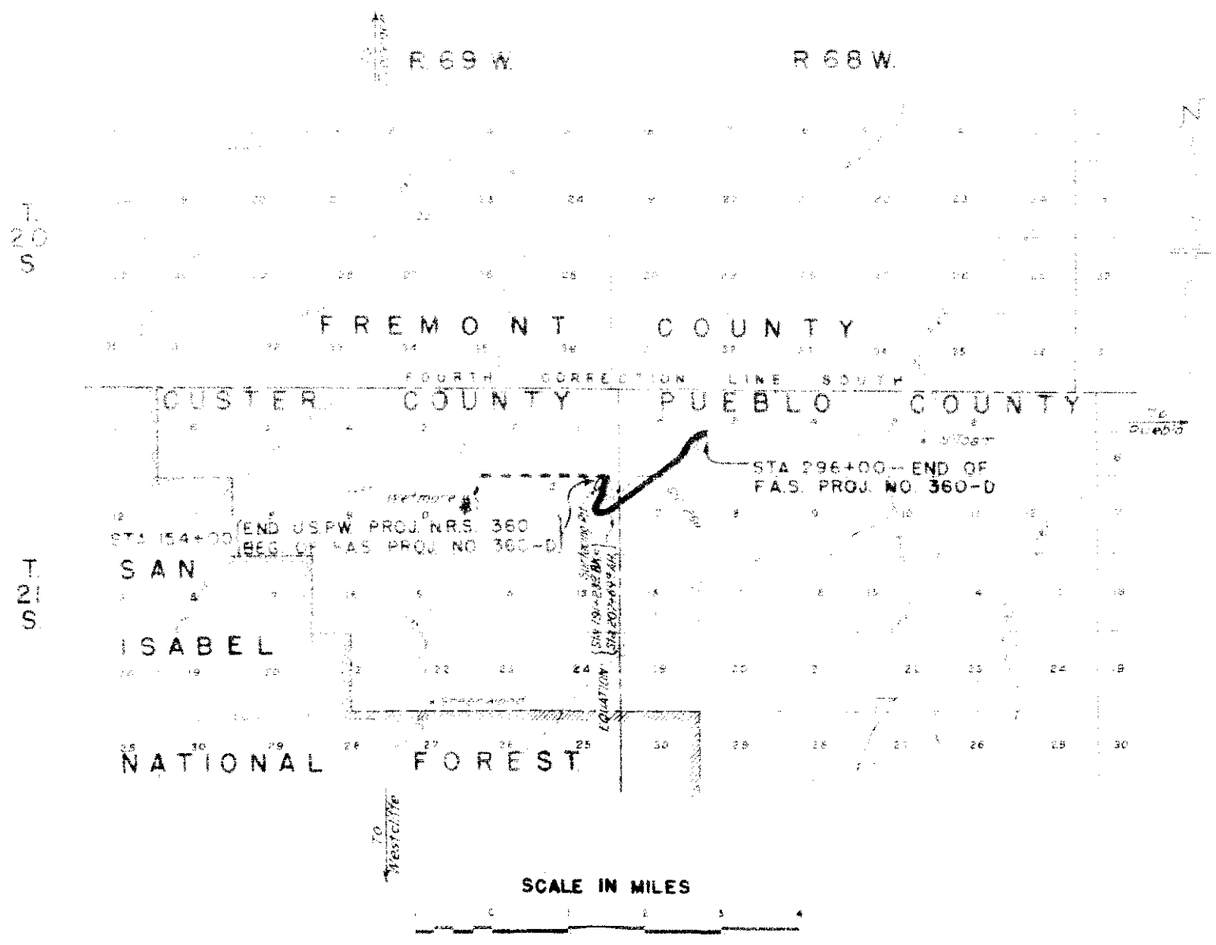
SCALES ON ORIGINAL TRACINGS

ON PLAN 1 IN. = 100 FT.
ON PROFILE 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
LENGTH OF PROJECT } 12,553.6 FT. = 2.377 MI.
NET LENGTH OF PROJECT }

CONVENTIONAL SIGNS

CENTER LINE OF SURVEY
RIGHT OF WAY LINES
TOWNSHIP OR RANGE LINES
SECTION LINES
ONE-QUARTER SECTION LINES
BARBED WIRE FENCE
GUARD FENCE
TIMBER GUARD POSTS
TELEPHONE LINES



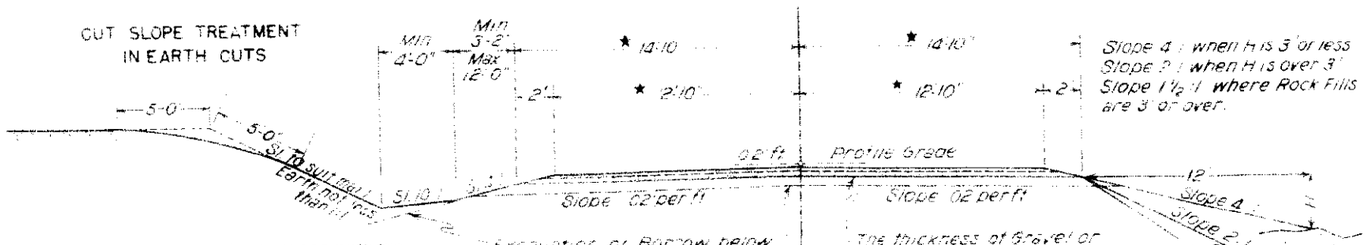
NOTE

The Department recommends that prospective bidders on this project go over the plan details with one of the following field representatives of this Department:

J.D. Ben — Div. Engineer — Pueblo, Colorado
R.S. Tillson — Res. " — " "

TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

TYPICAL SECTION



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

"Excavation or Borrow below 4:1 slope will not be permitted." This slope not to extend more than 12 ft from roadway shoulder.

In places where excavation and embankment are in rock which would result in a roadway unsuitable for traffic, the 6" underlying the subgrade as shown on the Typical Section is to be constructed of Selected Material, which shall be classified and paid for as "Unclassified Excavation."

The thickness of Gravel or Crushed Rock Surfacing is to be considered approximate only. Surfacing is to be placed in two courses as indicated below.

1" bottom course surfacing – 57 tons per 100 ft of roadway.

2" top course surfacing – 29 tons per 100 ft of roadway.

* Roadway embankments at bridge approaches shall be so constructed that the finished point of the gravel shoulder is 6' outside the curb line of the bridge. Where widening of the section is necessary to achieve this result, it shall take place uniformly over a distance of 300 feet. This is to accommodate guard fences and guard posts at bridge approaches.

½ CUT SECTION | ½ FILL SECTION

GENERAL NOTES

This project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Department adopted Jan. 1, 1957.

All quantities on preliminary plans shall be considered approximately only.

All roadway excavation required to construct the project is to be obtained as indicated on the plans. Quantities involved beyond the limits of the slope treatments on the typical sections, either noted as "Borrow" on the plans or as "Excavation" in the List of Structures, are to be classified and paid for as "Unclassified Excavation." These quantities are to be staked as part of the original excavation at locations indicated on the plans. Any slope stakes beyond the limits of the typical, or those are subject to change by the Engineer to fit embankment requirements actually encountered during construction.

All curves are to be superelevated as provided for by the Standard Superelevation Sheet unless otherwise noted on the plans.

The paving project is to be widened for variable widths which shall be held to the minimum required for the construction of the road, borrow pits, channel changes and widths required to accommodate visibility. Ordinarily the clearing shall not extend more than eight (8) feet beyond the toes of fills or tops of cut banks and the cost thereof included in the lump sum price bid for "Clearing and Grubbing, the Entire Project."

All approach roads to the project shall be gravel surfaced with a 4" thickness of "Gravel or Crushed Rock Surfacing" extending approximately 30 ft from the edge of the highway. Estimated tonnage of surfacing material required in this operation is shown in the List of Structures."

All corrugated metal pipe cross culverts are to be provided with one headwall on the inlet end, unless otherwise noted on the plans.

Except as otherwise noted on the plans, payment for overhaul will be based upon measurement along centerline of the project.

At all places on the project where the new work lies along the present traveled road, the Contractor shall, at his own expense, prosecute construction in such manner that traffic may readily pass over the road. Also the Contractor shall maintain in safe condition and at his own expense, all temporary approaches to and crossings of intersecting roads.

SURFACING PLAN

In performance that Gravel or Crushed Rock Surfacing for this project will be supplied from pits as shown on the plans, or from the Surfacing Pit designated in the "Table Below" is to be used by the Contractor. Pits "Sample" and "Pit" are working by the Department. Estimated quantities required in the operation are as follows:

MATERIAL TO BE PLACED	SOURCE	QUANTITY AVAILABLE TONS	QUANTITY USED TONS	OVERHAUL TON MILE
153+00 - 155+00			84	FREE
155+00 - 223+26	Surfacing Pit (Sample	42000	4351	FREE
223+26 - 266+00	#23536) 100 ft Right		3590	1453
266+53 - 296+00	of Road at Sta 155+00		2475	2720
	in the S½ NE¼ Section			
WIDENING FOR BRIDGE 266+	12 Township 21S R69W		56	45
* WIDENING FOR CURVE 174+ to 182+			94	FREE
APPS. TO PROJECT (End) 296+00			50	70
(Beg) 154+00			75	FREE
		TOTALS	10775	4288
ROAD APPS	Same Pit		100	40
	PROJECT TOTALS		10875	4328

SUMMARY OF APPROXIMATE QUANTITIES

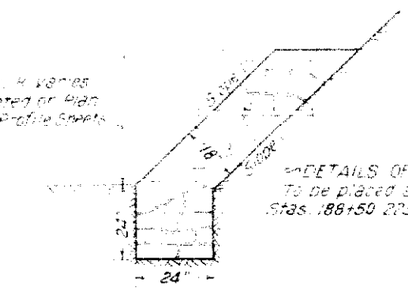
NO.	ITEM	UNIT	ROADWAY	BRIDGE STA. 266+	PROJECT TOTALS
10a	Clearing & Grubbing Entire Project	Lp Sum	•	•	•
11a	Removal of Bridge, Sta. 266+	Lp Sum			•
11b	Removal of Bridges, Sta. 239+ & 256+	Lp Sum	•		•
11c	Removal of Structure, Sta. 156+	Lp Sum	•		•
12a	Removing Fence	Lin ft	4600		4600
12b	Removing Guard Fence	Lin ft	170		170
13c	Unclassified Excavation	Cu Yd	121000		121000
14a	Dry Rock Excavation (Structural)		1770	200	1970
14b	Dry Common Excavation (Structural)		1170	10	1180
14c	Wet Rock Excavation (Structural)		130	10	140
14d	Wet Common Excavation (Structural)		120	10	130
16a	Station Yard Overhaul	Sta Yd	139000		139000
16b	Yard Mile Overhaul	Yd Mi	100		100
18b	Gravel or Crushed Rock Surfacing	Ton	10900		10900
26a	Bituminous Surfacing	Ton Mi	3200		3200
26c	Prime Coat of Surfacing	Mi Gal		0.3	0.3
32a	Untreated Bridge Timber	Cu Ft	377	2.15	379
40a	Class "A" Concrete		34		34
40b	Class "B" Concrete			6	6
46	Class "A" Concrete (Handrails)	Cu Yd	51900	51200	103000
47	Reinforcing Steel				2100
52	Pipe Railing Steel		38		38
60a	18" Corrugated Metal Culvert Pipe	Lin Ft	594		594
60b	24" Corrugated Metal Culvert Pipe	Lin Ft	252		252
60c	30" Corrugated Metal Culvert Pipe	Lin Ft	220		220
60d	36" Corrugated Metal Culvert Pipe	Lin Ft	215		215
60e	90" Multiple Plate Corr. Metal Culvert Pipe	Lin Ft	58		58
62a	Riprap (18" Thick)	Cu Yd	45		45
62b	Grout Rubble Slope & Gutter Paving (18" Thick)	Sq Yd	5		5
64	Dry Rubble Slope & Gutter Paving (18" Thick)	Sq Yd	116		116
65	Timber Guard Posts	Each	105		105
70a	Metal Plate Guard Fence	Lin Ft	1900		1900
75a	Metal Plate Guard Fence	Lin Ft	25100		25100
75b	Barb Wire Fence with Connection Wood Posts	Each	2		2
76a	Barbed Wire Gates	Each			
76b	Barbed Wire Gates	Each			
76h	Driveway Gates	Ea		20	20
80a	Sheet Copper				
81a	Project Markers	Each	31		31
81b	Right of Way Markers	Each	7		
82	Cattle Guards (15' Roadway)				
	FORCE ACCOUNT ITEMS				
	Obliterating Old Road	Lp Sum	•		•
	Moving Telephone Line	Lp Sum	•		•

LIST OF STRUCTURES

LOCATION	DESCRIPTION	REMOVE STRUCT. NO.	EXCAVATION CU. YDS. UNCL.	EXCAVATION CU. YDS. EMB.	STRUCTURAL EXCAVATION CU. YDS.	APPR. ROAD SURF. TONS	CONCRETE CU. YDS. CL. A	CONCRETE CU. YDS. CL. B	REINF. STEEL LBS.	CORRUGATED METAL CULVERT PIPE LIN. FT. 18"	24"	30"	36"	MULTIPLE PLATE CULV. PIPE LIN. FT. 90"	DRY RUB. SLOPE & DITCH PAV. (18" THICK) SQ. YDS.	RIPRAP 18" TH. CU. YDS.	MISCELLANEOUS
154+00	Approach to Project			75		75											
156+30 ~ 157+00	Remove Slide Guard on Right	1 Struct.															
158+00	C.M.P. Cross Culv. with Intercept. Hdwl. & Inlet		5		30			1.60			50						5.5 Sq Yds. Grouted Rub. Slope & Ditch Pav ~ 18" Thick
158+00 ~ 163+00	Intercepting Ditch on Right		30														
163+00	C.M.P. Cross Culv. with Intercept. Hdwl. & Inlet		15		40			1.60			58						
163+00 ~ 166+00	Intercepting Ditch on Right		30														
166+50 ~ 167+00	Drain Ditch on Right		10														
167+15 ~ 168+35	Remove Guard Fence																Remove 170 Lin. Ft. of Fence
168+00	C.M.P. Cross Culv. & Inlet		20		20			3.00					68				
169+00 ~ 172+36	Intercepting Ditch on Right		20														
172+36	C.M.P. Cross Culv. & Inlet		15		5			3.00					104				
172+36 ~ 174+25	Intercepting Ditch on Right		15														
176+25 ~ 176+00	[illegible]		10														
176+00	3x3x166' Conc. Box Culv. Dikp & Ditches		20		125		848		79.16								
176+00 ~ 177+00	Intercepting Ditch on Right		10														
177+75 ~ 178+50	Channel Change on Right		250														
178+50	[illegible]		420		485									215	18		
180+45	C.M.P. Cross Culv. & Inlet		5		5			1.65			108						
183+00	[illegible]		5		5			2.25				32					
188+50	[illegible]		40		200			2.20				116				10	
214+25	C.M.P. Cross Culv. with Intercept. Hdwl.			15	5			1.65			48						
219+00 ~ 223+00	Channel Change on Left		150														
223+30 ~ 229+00	Drain Ditch on Left		20														
223+50	[illegible]		225		350		100		10.15							70	
225+00	R.C. [illegible]			40		10											
229+80	R.C. Right [illegible] Slide Drain			30		20				20							
232+00	C.M.P. Cross Culv. & Inlet		30		20			1.65			48						
236+[illegible]	[illegible]		10		150		37.4		3.86								
238+80	[illegible]			20		10					28						
239+[illegible]	[illegible]			15		3											
239+[illegible]	[illegible] Bridge on Left																Remove Bridge
244+50	C.M.P. Cross Culv. & Inlet		5		5			1.65			48						
253+00 ~ 253+[illegible]	[illegible]		60														
256+00	[illegible]		100		50		340		26.0							5	
258+[illegible]	[illegible]																Remove Bridge
261+[illegible]	[illegible]		10		20			1.65			50						
[illegible]	[illegible]																
[illegible]	[illegible]						330										
276+[illegible]	[illegible]		5		5		165				50						
278+[illegible]	[illegible]		5		20		160				44						
279+[illegible]	[illegible]				20		165				44						
280+[illegible]	[illegible]			15		10											
281+[illegible]	[illegible]						225					10					
283+00	[illegible]		2		2		65				50						
286+[illegible]	[illegible]			10		10											Remove Bridge
TOTALS			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	50	696	252	224	215	18	90	

[illegible] Common Earth of which is estimated to be 90% Dry and 10% Wet

NOTE: H varies as noted on Plan and Profile Sheets



DETAILS OF RIPRAP
To be placed as per Diagram
Stas. 188+50 223+50 & 256+00

FENCING REQUIREMENTS

LOCATION	SIDE	REMOVE FENCE LIN. FT.	BUILD BARB WIRE FENCE LIN. FT.	GATES BARWIRE NO.	GATES D'WAY. NO.
163+30 ~ 164+80	Lt.	250			
163+50 ~ 166+30	Rt.	290			
168+45	X	230			
216+55	X	125			
229+57	X	155			
230+05	X	150			
241+30 ~ 243+50	Lt.	230			
244+50	X	170			
262+40 ~ 264+00	Lt.	170			
264+00 ~ 269+90	Rt.	560			
264+10 ~ 265+60	Lt.	150			
265+60 ~ 267+20	Rt.	100			
267+20 ~ 269+00	Lt.	185			
269+90 ~ 273+45	Lt.	360			
275+30 ~ 278+60	Lt.	335			
277+65 ~ 282+70	Lt.	260			
278+60 ~ 279+90	Rt.	135			
280+10 ~ 281+60	Rt.	170			
285+45	X	160			
290+00 ~ 295+00	Rt.	400			
[illegible]	[illegible]		[illegible]		
[illegible]	Rt.		2,860		
225+00	Lt.				
229+50	Lt. & Rt.			2	
232+[illegible]	Rt.				
286+[illegible]	Lt.				
TOTALS		[illegible]	25,082	4	

R.O.W. MARKERS

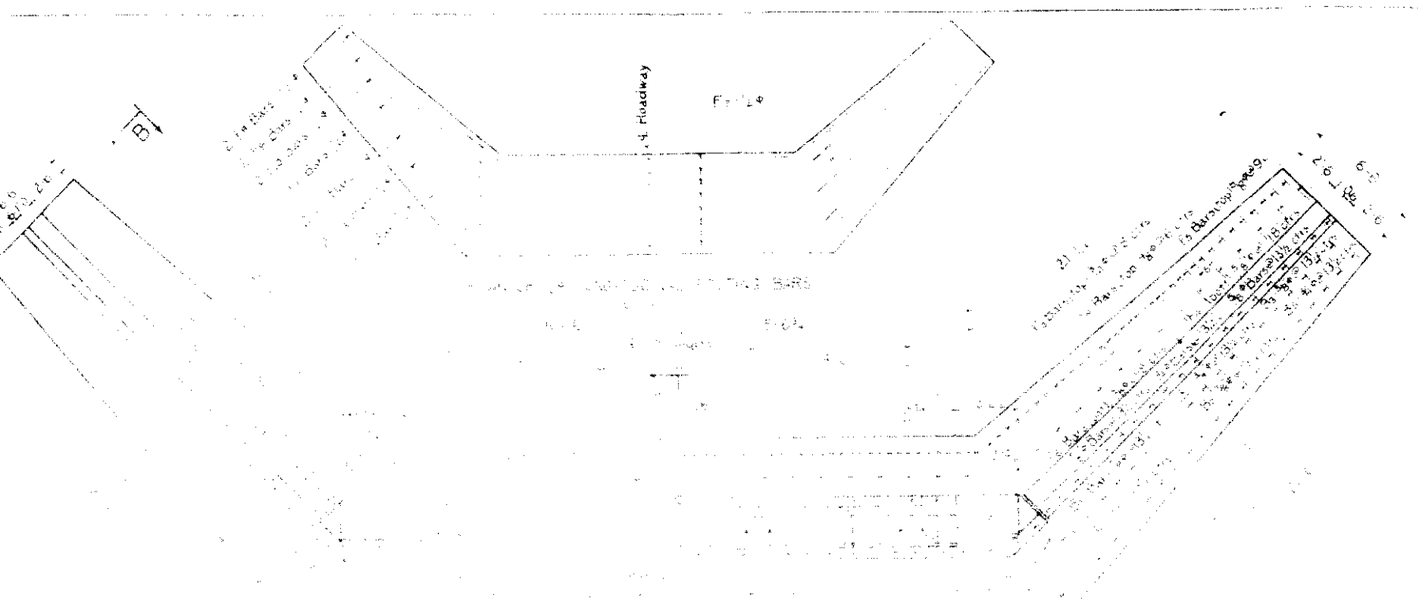
LOCATION	SIDE	NO.
[illegible]	Lt. & Rt.	2
[illegible]	Rt.	
[illegible]	Lt.	
[illegible]	Lt.	
62+[illegible]	Lt.	
168+[illegible]	Rt.	
49+00	Rt.	
[illegible]	Lt.	
[illegible]	Lt.	
79+[illegible]	Rt.	
[illegible]	Lt. & Rt.	
183+00	Rt.	
183+50	Lt.	
184+60	Rt.	
208+00	Lt. & Rt.	2
209+00	Lt. & Rt.	2
216+70	Lt. & Rt.	2
248+10	Rt.	
248+90	Lt.	
250+30	Rt.	
285+75	Lt. & Rt.	2
288+30	Lt. & Rt.	2
296+30	Lt. & Rt.	2
TOTAL		31

GUARD POSTS

LOCATION	SIDE	SPACING IN FT.	POSTS NUMBER
[illegible] ~ 67+00	Lt.	50	4
[illegible] ~ 70+25	Lt.	50	6
[illegible] ~ 84+50	Lt.	50	31
[illegible] ~ 93+50	Rt.	50	3
187+50 ~ 190+70	Lt.	40	3
[illegible] ~ 194+25	Lt.	50	3
[illegible] ~ 321+70	Rt.	50	2
[illegible] ~ 230+25	Rt.	50	2
[illegible] ~ 236+90	Lt.	50	2
[illegible]	Lt. & Rt.	C.B.C.	2
[illegible] ~ 267+[illegible]	Lt. & Rt.	Bridge	10
[illegible]	Lt. & Rt.	Bridge	[illegible]
[illegible] ~ 289+00	Lt.	50	21
TOTAL			105

GUARD FENCE

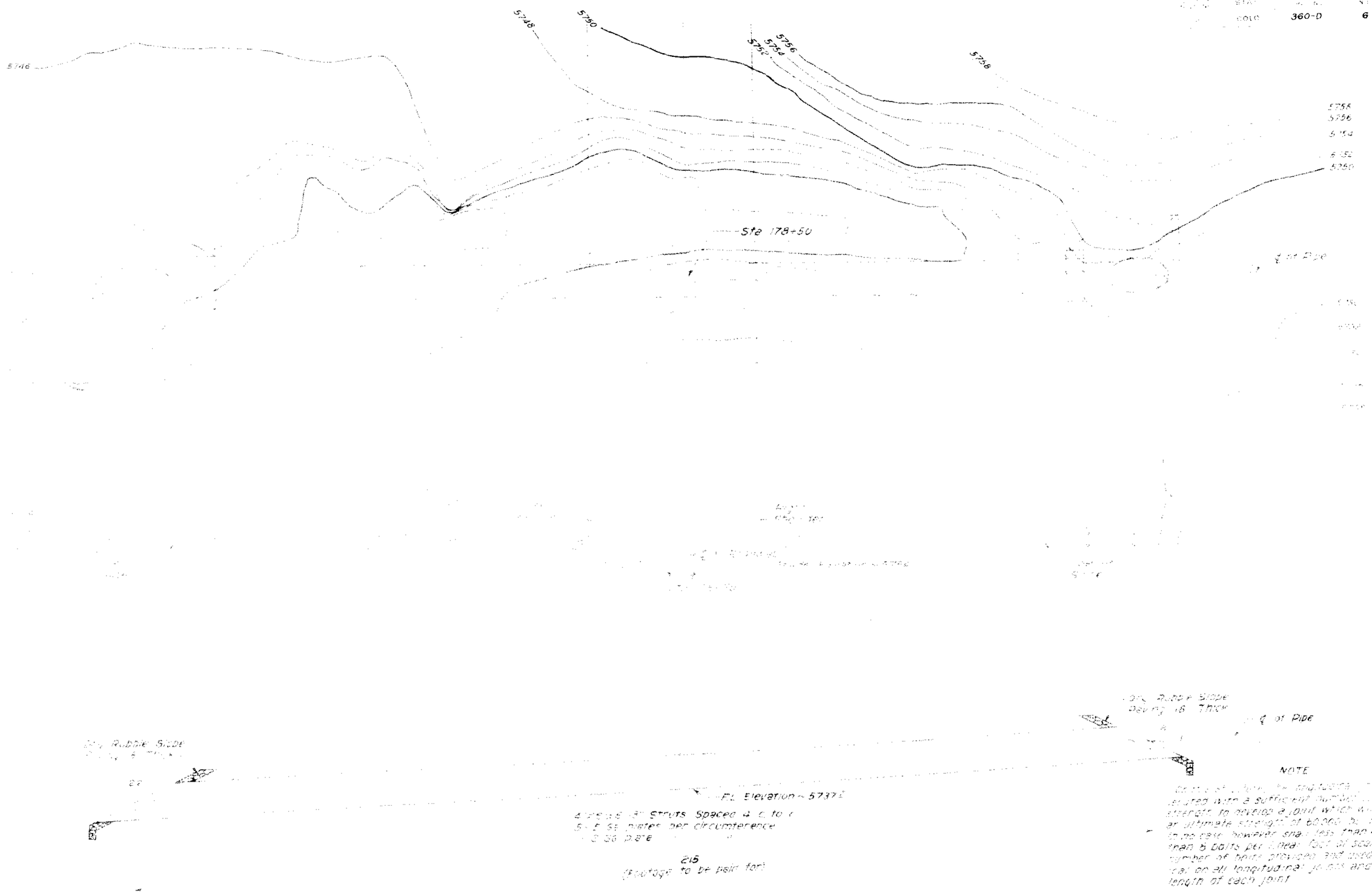
LOCATION	LINEAR FEET LEFT	LINEAR FEET RIGHT
150+20 ~ 160+75	675	
62+00 ~ 165+00	300	
[illegible] ~ 173+50	175	
176+00 ~ 181+00		500
187+50 ~ 190+00		250
TOTALS	1150	750
TOTAL	1900	



BAR LIST FOR ONE ABUTMENT — 2 REQ'D

Mark	Size	No Reqd	Length	Type
A1	1	33	16.9	I
A2	1	32	16.0	I
A3	1	32	3.0	I
A4	1	10	30.3	Str
A5	1	6	34.1	Str
A6	1	11	28.3	Str
A7	1	6	5.3	Str
A8	1	6	3.0	Str
A9	1	26	12.0	II
A10	1	6	8.9	II
B1	1	33	16.9	I
B2	1	32	16.0	I
B3	1	32	3.0	I
B4	1	10	30.3	Str
B5	1	6	34.1	Str
B6	1	11	28.3	Str
B7	1	6	5.3	Str
B8	1	6	3.0	Str
B9	1	26	12.0	II
B10	1	6	8.9	II
B11	1	2	2.9	Str

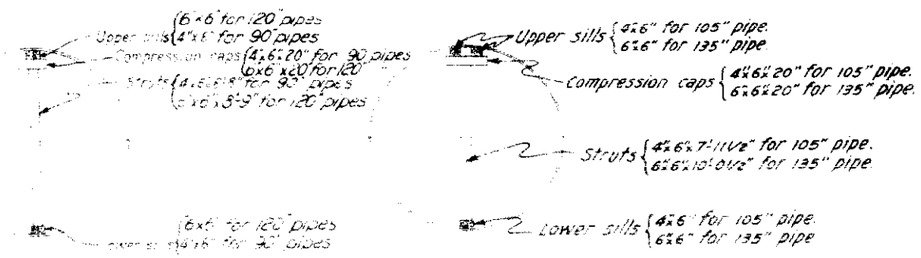
Mark	Size	No Reqd	Length	Type	S	T	T
F1	3/4	63	8.3	II	7.3	3	2½
F2	3/4	21	7.0	II	6.8	2½	2
F3	3/4	24	7.9	II	6.9	3	2½
F4	3/4	12	6.6	II	5.8	2½	2
F5	3/4	18	6.0	II	5.2	2½	2
F6	3/4	4	7.0	I	6.2	2½	2
F7	1	2	40.3	Str	Field Bend		
F8	1	2	24.3	Str			
F9	1	2	11.0	Str			
F10	3/4	2	21.0	II			
F11	1	2	24.3	Str			
F12	1	2	11.0	Str			
F13	1	2	24.3	Str			
F14	1	2	11.0	Str			
F15	1	2	24.3	Str			
F16	1	2	11.0	Str			



DETAILS AND LAYOUT OF 90" MULTIPLE PLATE CULVERT AT STA. 178 + 50

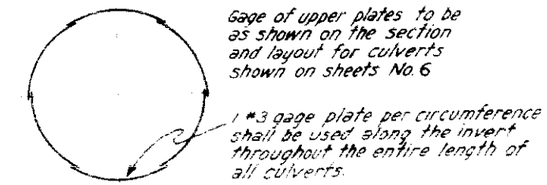
DETAILS FOR MULTIPLE PLATE CORRUGATED METAL CULVERT PIPE

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.
3	COLO.	360-D.	7

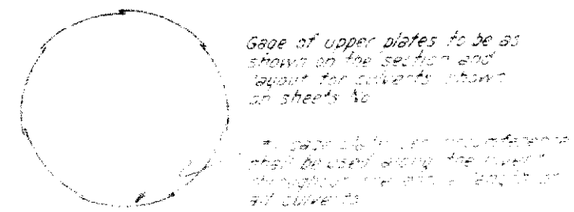


END ELEVATION (90" DIA.)

END ELEVATION (105" & 135" DIA.)

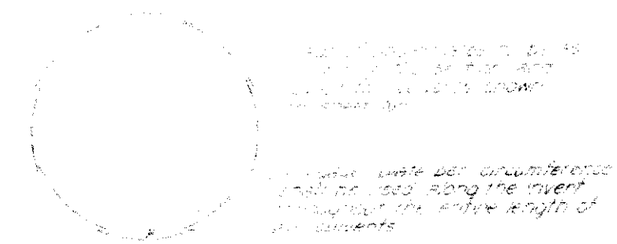


SECTION SHOWING ARRANGEMENT OF PLATES FOR 90" PIPES



SECTION SHOWING ARRANGEMENT OF PLATES FOR 105" PIPES

SECTION SHOWING ARRANGEMENT OF PLATES FOR 135" PIPES



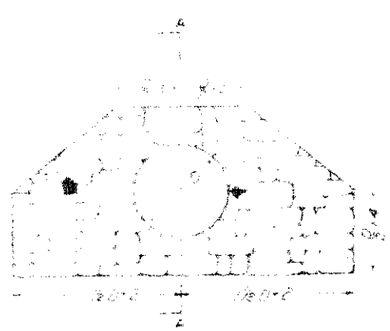
SECTION SHOWING ARRANGEMENT OF PLATES FOR 90" PIPES

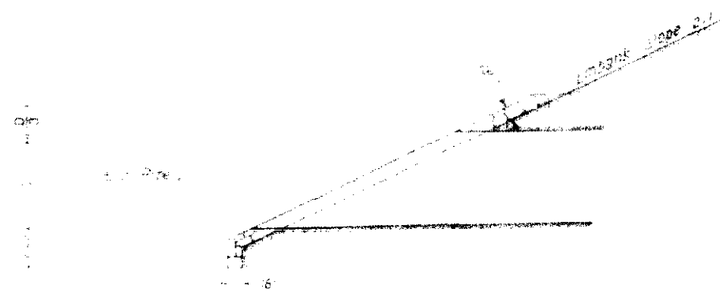
GENERAL NOTES

Pipes must be placed in conformity with the diagrams shown on this sheet.

[illegible]

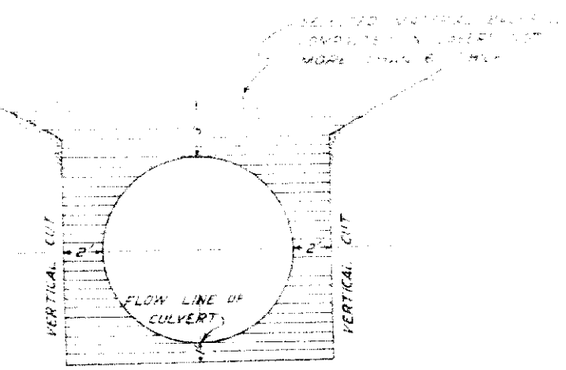
TYPICAL CROSS SECTION FOR STRUCTURAL EVALUATION OF MULTIPLE PLATE CORRUGATED METAL CULVERT PIPE





SECTION A-A

DETAIL OF DRY RUBBLE SLOPE PAVING FOR INLET AND OUTLET (18" THICK)



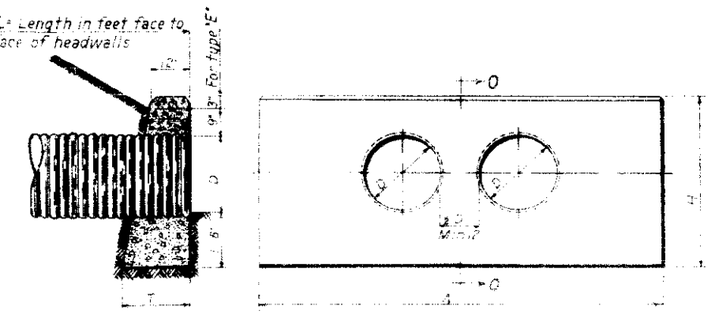
REVISIONS

STANDARD M-102-E

[redacted]

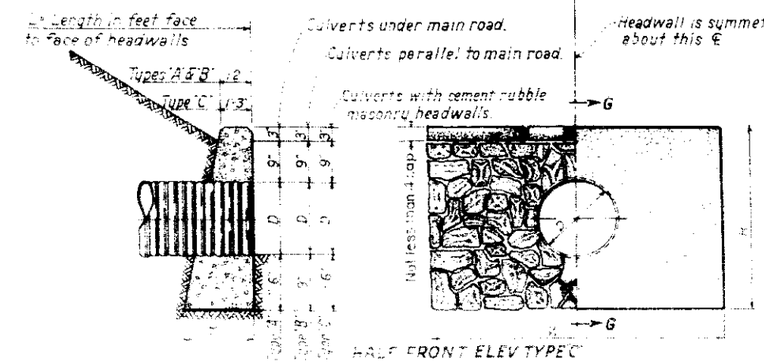
FED. ROAD DIST. NO	STATE	F.A.S.	SHEET NO	TOTAL SHEETS
3	COLO.	360D	8	

Revised to 1937 A.S.H.O. Changes to 1937 Specifications.
Revised 10-18-37 A.G.K. Added concrete or cement rubble masonry headwalls



SECTIONAL ELEV. O-O

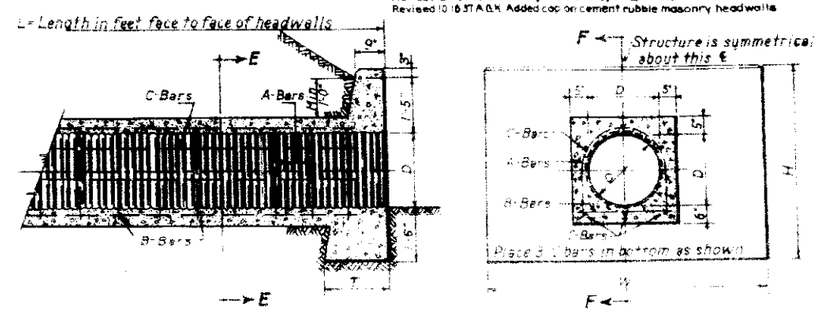
FRONT ELEVATION



SECTIONAL ELEV. G-G

HALF FRONT ELEV. TYPE "C"

HALF FRONT ELEV. TYPE "A" & "B"



LONGITUDINAL SECTION E-E

SECTIONAL ELEVATION E-E

TABLE OF DIMENSIONS & QUANTITIES FOR DOUBLE CORRUGATED METAL PIPE CULVERTS & HEADWALLS

TABLE OF DIMENSIONS & QUANTITIES FOR CORRUGATED METAL PIPE CULVERTS & HEADWALLS

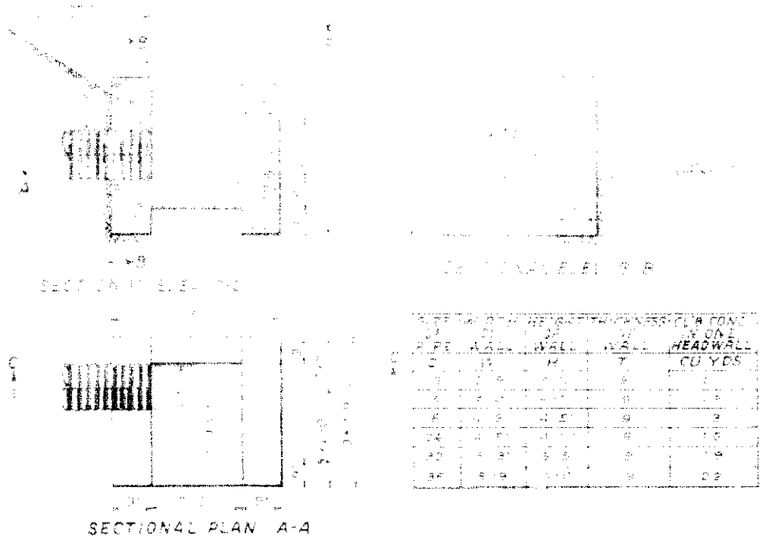
TABLE OF DIMENSIONS AND QUANTITIES FOR INCASED PIPE CULVERTS

BENDING DIAGRAM

A BARS

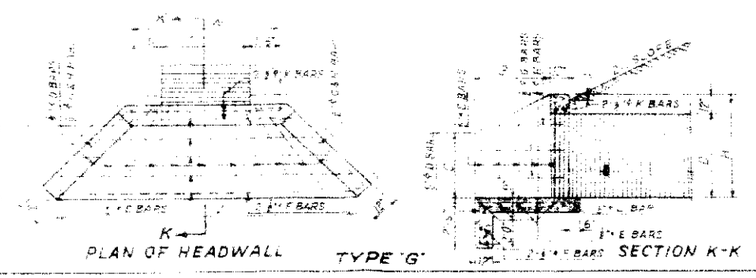
B BARS

C BARS

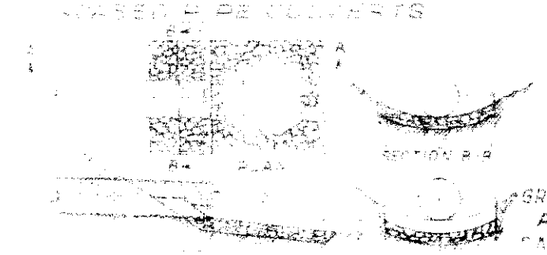


SECTIONAL PLAN A-A

INTERCEPTING HEADWALLS



STD. HEADWALLS FOR CORRUGATED METAL PIPE CULVERTS



STANDARD GROUTED RUBBLE APRON FOR C.M.P. CULVERTS

GENERAL NOTES FOR ALL STRUCTURES

COLORADO
STATE HIGHWAY DEPARTMENT

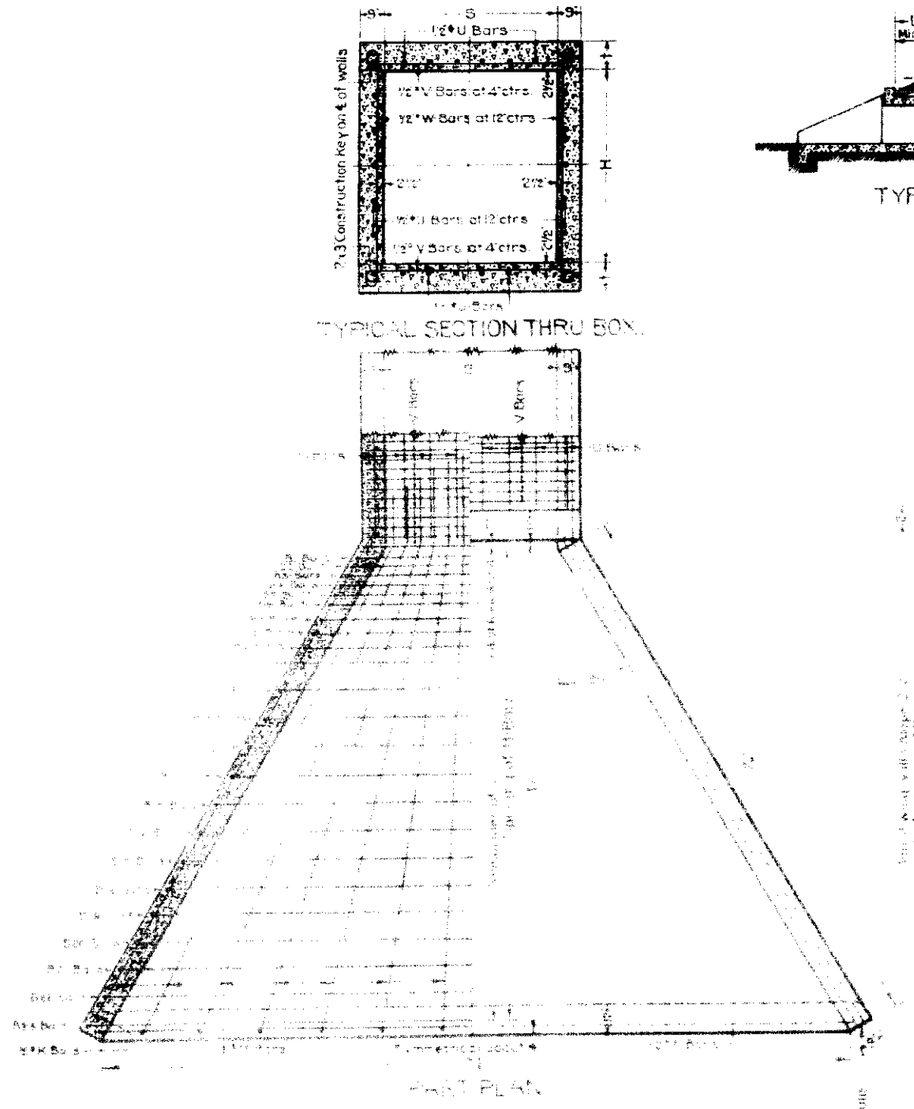
STANDARD HEADWALLS
INTERCEPTING HEADWALLS
INCASED METAL PIPE CULVERT
WITH HEADWALLS
FOR CORRUGATED
METAL PIPE CULVERTS

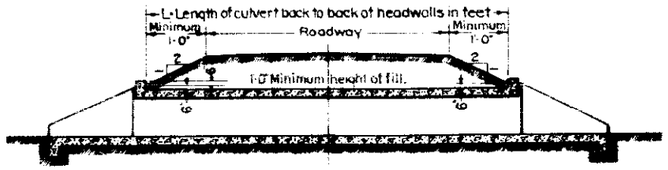
Designed under the direction of
Made by
Checked by
Approved by
Bridge Engineer
Date

REVISIONS

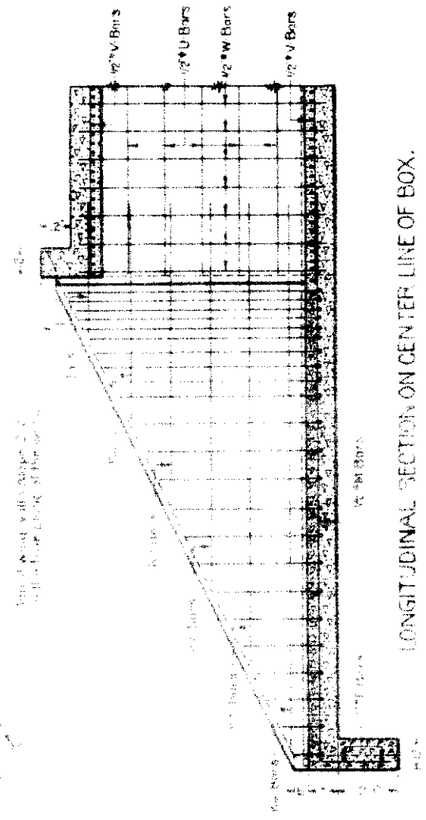
FED. ROAD DIST. NO	STATE	F.A.S.	SHEET NO	TOTAL SHEETS
3	COLO	360 D	9	

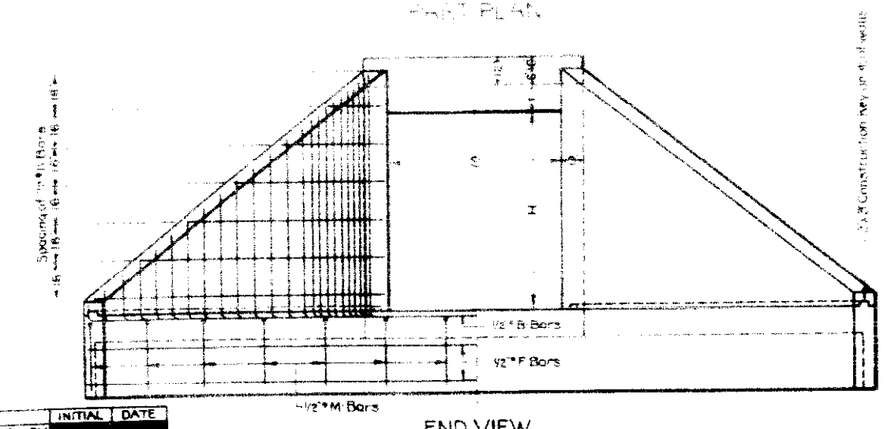
STANDARD M-103-D

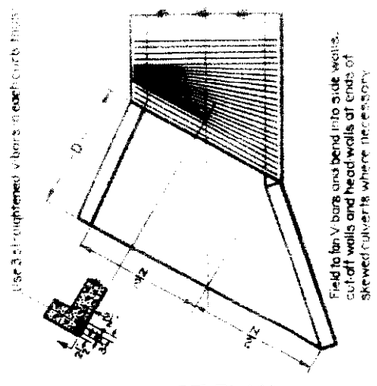




TYPICAL SECTION SHOWING RELATION OF CULVERT TO ROADWAY.



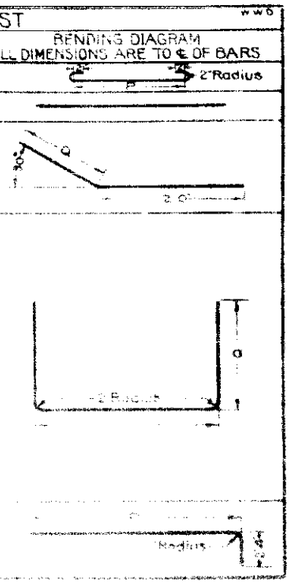




PART PLAN FOR SKEWED HEADWALLS.

REINFORCEMENT BAR LIST

USE BARS FOR	MARK	SIZE	NUMBER	DIMENSION P	DIMENSION Q	TOTAL LENGTH
All Sizes	V	1/2"	(2xL)+14	S + 10"		S + 2'-2"
" "	W	1/2"	(2xL)-6	H + 10"		H + 2'-2"
" "	F	1/2"	4			N + 0'-3"
" "	U	1/2"	*			L + 1'-8"
" "	K 1	1/2"	4		3'-4"	5'-4"
H=2'-0" or more	K 2	1/2"	4		6'-8"	8'-8"
H=3'-0" " "	K 3	1/2"	4		10'-0"	12'-0"
H=5'-0" " "	K 4	1/2"	4		13'-4"	15'-4"
H=6'-0" " "	K 5	1/2"	4		16'-8"	18'-8"
H=7'-0" " "	K 6	1/2"	4		20'-0"	22'-0"
All Sizes	B 1	1/2"	2	S + 6"	H + 1'-3"	
" "	B 2	1/2"	2	S + [illegible]	H + [illegible]	
" "	B 3	1/2"	2	S + 2'-5"	H + 0'-11"	
" "	B 4	1/2"	2	S + 2'-8"	H + 0'-9"	
" "	B 5	1/2"	2	S + 3'-0"	H + 0'-8"	
" "	B 6	1/2"	2	S + 3'-5"	H + 0'-6"	
" "	B 7	1/2"	2	S + 4'-0"	H + 0'-5"	
" "	B 8	1/2"	2	S + 4'-7"	H + 0'-0"	
" "	B 9	1/2"	2	S + 5'-3"	H + 0'-3"	
H=1'-6"	B [illegible]	1/2"	2	S + 5'-5"	H + 0'-3"	
H=2'-0" "	B [illegible]	1/2"	2	S + 6'-1"	H + 0'-[illegible]	
H=3'-0" "	B [illegible]	1/2"	2	S + 8'-[illegible]	H + 1'-4"	
H=3'-6" "	B [illegible]	1/2"	2	S + 9'-[illegible]	H + 1'-0"	
H=4'-0" "	B [illegible]	1/2"	2	S + 10'-[illegible]	H + 2'-[illegible]	
H=4'-6" "	B [illegible]	1/2"	2	S + 12'-[illegible]	H + 2'-[illegible]	
H=5'-0" "	B [illegible]	1/2"	2	S + 13'-[illegible]	H + 3'-[illegible]	
H=5'-6" "	B [illegible]	1/2"	2	S + 14'-[illegible]	H + 3'-[illegible]	
H=6'-0" "	B [illegible]	1/2"	2	S + 15'-[illegible]	H + 4'-[illegible]	
H=6'-6" "	B [illegible]	1/2"	2	S + 16'-[illegible]	H + 4'-[illegible]	
H=7'-0" "	B [illegible]	1/2"	2	S + 17'-[illegible]	H + 5'-[illegible]	
H=7'-6" "	B [illegible]	1/2"	2	S + 18'-[illegible]	H + 5'-[illegible]	
H=8'-0" "	B [illegible]	1/2"	2	S + 19'-[illegible]	H + 6'-[illegible]	
H=8'-6" "	B [illegible]	1/2"	2	S + 20'-[illegible]	H + 6'-[illegible]	
H=9'-0" "	B [illegible]	1/2"	2	S + 21'-[illegible]	H + 7'-[illegible]	
H=9'-6" "	B [illegible]	1/2"	2	S + 22'-[illegible]	H + 7'-[illegible]	
H=10'-0" "	B [illegible]	1/2"	2	S + 23'-[illegible]	H + 8'-[illegible]	
H=10'-6" "	B [illegible]	1/2"	2	S + 24'-[illegible]	H + 8'-[illegible]	
H=11'-0" "	B [illegible]	1/2"	2	S + 25'-[illegible]	H + 9'-[illegible]	
H=11'-6" "	B [illegible]	1/2"	2	S + 26'-[illegible]	H + 9'-[illegible]	
H=12'-0" "	B [illegible]	1/2"	2	S + 27'-[illegible]	H + 10'-[illegible]	
H=12'-6" "	B [illegible]	1/2"	2	S + 28'-[illegible]	H + 10'-[illegible]	
H=13'-0" "	B [illegible]	1/2"	2	S + 29'-[illegible]	H + 11'-[illegible]	
H=13'-6" "	B [illegible]	1/2"	2	S + 30'-[illegible]	H + 11'-[illegible]	
H=14'-0" "	B [illegible]	1/2"	2	S + 31'-[illegible]	H + 12'-[illegible]	
H=14'-6" "	B [illegible]	1/2"	2	S + 32'-[illegible]	H + 12'-[illegible]	
H=15'-0" "	B [illegible]	1/2"	2	S + 33'-[illegible]	H + 13'-[illegible]	
H=15'-6" "	B [illegible]	1/2"	2	S + 34'-[illegible]	H + 13'-[illegible]	
H=16'-0" "	B [illegible]	1/2"	2	S + 35'-[illegible]	H + 14'-[illegible]	
H=16'-6" "	B [illegible]	1/2"	2	S + 36'-[illegible]	H + 14'-[illegible]	
H=17'-0" "	B [illegible]	1/2"	2	S + 37'-[illegible]	H + 15'-[illegible]	
H=17'-6" "	B [illegible]	1/2"	2	S + 38'-[illegible]	H + 15'-[illegible]	
H=18'-0" "	B [illegible]	1/2"	2	S + 39'-[illegible]	H + 16'-[illegible]	
H=18'-6" "	B [illegible]	1/2"	2	S + 40'-[illegible]	H + 16'-[illegible]	
H=19'-0" "	B [illegible]	1/2"	2	S + 41'-[illegible]	H + 17'-[illegible]	
H=19'-6" "	B [illegible]	1/2"	2	S + 42'-[illegible]	H + 17'-[illegible]	
H=20'-0" "	B [illegible]	1/2"	2	S + 43'-[illegible]	H + 18'-[illegible]	
H=20'-6" "	B [illegible]	1/2"	2	S + 44'-[illegible]	H + 18'-[illegible]	
H=21'-0" "	B [illegible]	1/2"	2	S + 45'-[illegible]	H + 19'-[illegible]	
H=21'-6" "	B [illegible]	1/2"	2	S + 46'-[illegible]	H + 19'-[illegible]	
H=22'-0" "	B [illegible]	1/2"	2	S + 47'-[illegible]	H + 20'-[illegible]	
H=22'-6" "	B [illegible]	1/2"	2	S + 48'-[illegible]	H + 20'-[illegible]	
H=23'-0" "	B [illegible]	1/2"	2	S + 49'-[illegible]	H + 21'-[illegible]	
H=23'-6" "	B [illegible]	1/2"	2	S + 50'-[illegible]	H + 21'-[illegible]	
H=24'-0" "	B [illegible]	1/2"	2	S + 51'-[illegible]	H + 22'-[illegible]	



QUANTITIES PER LINEAL FT. OF BOX

| | | |

STANDARD M-104-D

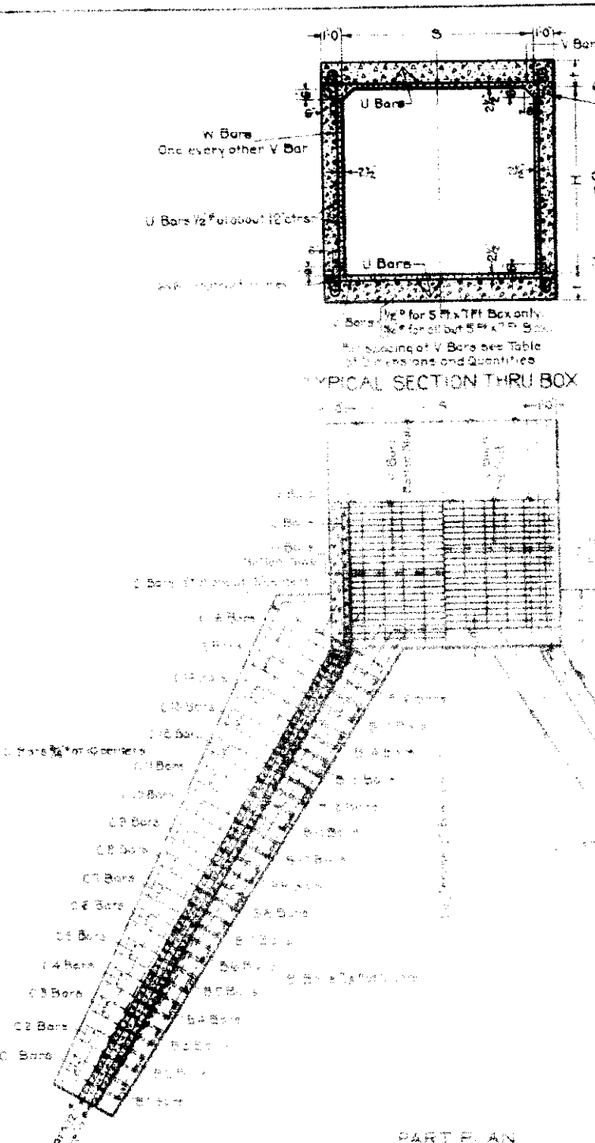
[redacted]

FED. ROAD DIST. No.	STATE	F.A.S. PROJ. No.	SHEET No.	TOTAL SHEETS
3	COLO	360D	10	

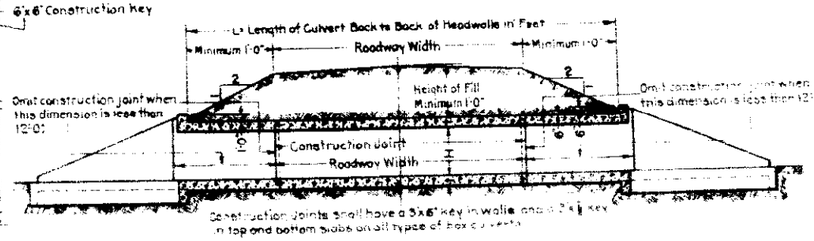
Revised 7-14-33 A.G.K. Changed Length of B and E Bars.

Revised 3-16-36 AGK 1935 Specifications
Revised 6-17-37 A.G.K. 1937 Specifications

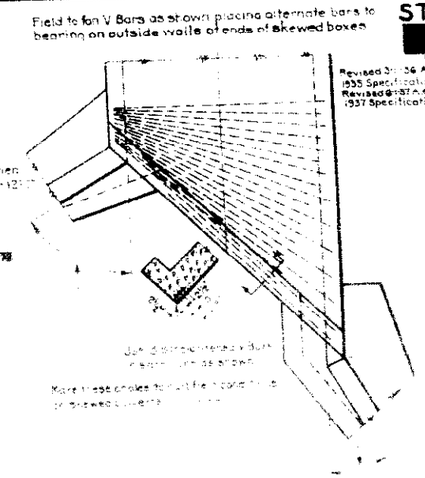
REVISED 3-16-38 MWD REPORTED BARS



TYPICAL SECTION THRU BOX

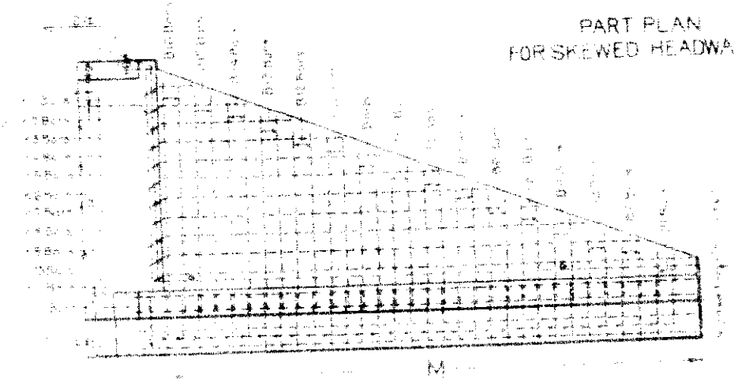


TYPICAL SECTION SHOWING RELATION OF CULVERT TO ROADWAY

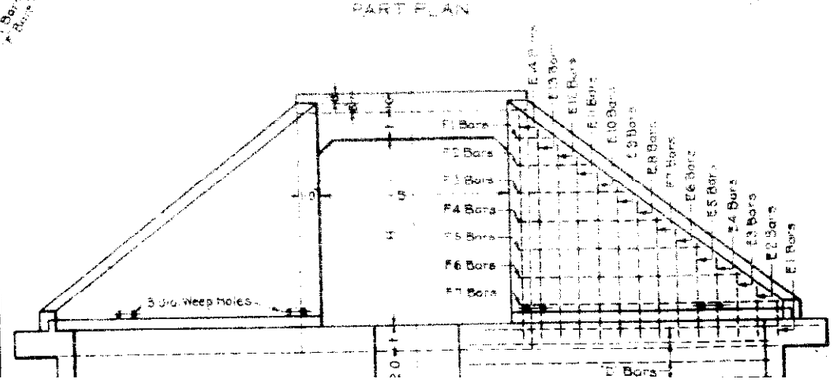


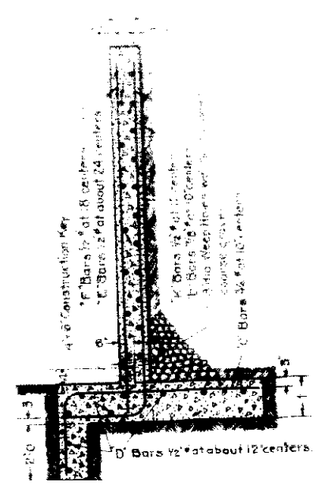
PART PLAN FOR SKEWED HEADWALLS

PART PLAN



TRUE SIDE ELEVATION OF WINGWALL





REINFORCEMENT BAR LIST

USE BARS FOR	MARK	SIZE	NUMBER	DIMENSION P	TOTAL LENGTH
All Boxes but 5'x7'	V	⅝" ø	2A(L+2) divided by Spacing of V Bars	S+14"	P=2'-0"
5'x7' Box Only	V	½" ø		S+14"	P=2'-0"
All Sizes	W	⅝		H+10"	P=2'-0"
All Sizes	U	½" ø	8		L+1'-4"
All Sizes	E1	½" ø	56		M+2'-0"
All Sizes	E2	½" ø	4		8'
All Sizes	E3	½" ø	4		8'
All Sizes	E4	½" ø	4		8'
All Sizes	E5	½" ø	4		8'
All Sizes	E6	½" ø	4		8'
All Sizes	E7	½" ø	4		8'
All Sizes	E8	½" ø	4		8'
All Sizes	E9	½" ø	4		8'
All Sizes	E10	½" ø	4		8'
H=5 Ft and over	E1	½" ø	4		8'-0"
H=6 Ft and over	E2	½" ø	4		9'-0"
H=7 Ft and over	E3	½" ø	4		10'-0"
H=8 Ft and over	E4	½" ø	4		11'-0"
H=9 Ft and over	E5	½" ø	4		12'-0"
H=9 Ft	E6	½" ø	4		13'-0"
H=10 Ft	E7	½" ø	4		14'-0"
All Sizes	E8	½" ø	4		15'-0"
All Sizes	E9	½" ø	4		16'-0"
All Sizes	E10	½" ø	4		17'-0"
H=5 Ft and over	F1	½" ø	4		8'-0"
H=6 Ft and over	F2	½" ø	4		9'-0"
H=7 Ft and over	F3	½" ø	4		10'-0"
H=8 Ft and over	F4	½" ø	4		11'-0"
H=9 Ft and over	F5	½" ø	4		12'-0"
H=9 Ft	F6	½" ø	4		13'-0"
H=10 Ft	F7	½" ø	4		14'-0"
All Sizes	D1	½" ø	2		4'-0"
All Sizes	D2	½" ø	2		5'-0"
All Sizes	D3	½" ø	2		6'-0"
All Sizes	D4	½" ø	2		7'-0"
All Sizes	D5	½" ø	2		8'-0"
All Sizes	D6	½" ø	2		9'-0"
All Sizes	D7	½" ø	2		10'-0"
H=5 Ft and over	B	½" ø	2		8'-0"
H=6 Ft and over	B	½" ø	2		9'-0"
H=7 Ft and over	B	½" ø	2		10'-0"
H=8 Ft and over	B	½" ø	2		11'-0"
H=9 Ft and over	B	½" ø	2		12'-0"
H=10 Ft	B	½" ø	2		13'-0"
All Sizes	E1	½" ø	2		4'-0"
All Sizes	E2	½" ø	2		5'-0"
All Sizes	E3	½" ø	2		6'-0"
All Sizes	E4	½" ø	2		7'-0"
All Sizes	E5	½" ø	2		8'-0"
All Sizes	E6	½" ø	2		9'-0"
All Sizes	E7	½" ø	2		10'-0"
All Sizes	E8	½" ø	2		11'-0"
All Sizes	E9	½" ø	2		12'-0"
All Sizes	E10	½" ø	2		13'-0"
H=5 Ft and over	E1	½" ø	2		8'-0"
H=6 Ft and over	E2	½" ø	2		9'-0"
H=7 Ft and over	E3	½" ø	2		10'-0"
H=8 Ft and over	E4	½" ø	2		11'-0"
H=9 Ft and over	E5	½" ø	2		12'-0"
H=9 Ft	E6	½" ø	2		13'-0"
H=10 Ft	E7	½" ø	2		14'-0"
All Sizes	E8	½" ø	2		15'-0"
All Sizes	E9	½" ø	2		16'-0"
All Sizes	E10	½" ø	2		17'-0"
H=5 Ft and over	F1	½" ø	2		8'-0"
H=6 Ft and over	F2	½" ø	2		9'-0"
H=7 Ft and over	F3	½" ø	2		10'-0"
H=8 Ft and over	F4	½" ø	2		11'-0"
H=9 Ft and over	F5	½" ø	2		12'-0"
H=9 Ft	F6	½" ø	2		13'-0"
H=10 Ft	F7	½" ø	2		14'-0"
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BENDING DIAGRAM
ALL DIMENSIONS ARE TO ℄ OF BARS

NOTE FOR "E" BARS ONLY
Where the 10" thick slabs use lengths as shown add 3" to

TABLE OF DIMENSIONS AND QUANTITIES

STEEL QUANTITIES GIVEN BELOW INCLUDE ALLOWANCE FOR LAPS AND WASTE
TOTAL QUANTITIES FOR ONE BOX EQUALS THE QUANTITY FOR TWO HEADWALLS

Height of Fill	Type	Span S	Height H	Slab	Spacing of Bars V	Size of Bars W	Number of Bars W per Box	Length of Wingwall	Overall Length	Quantities for one Box: Concrete Cu. Yds.	Reinforcement Lbs.	Total Lbs.
1'-0"	8 I	8'-0"	4'-0"	12"	5½"	½"	24	11'-6"		1.355	1,395	2,750
			5'-0"	12"	5½"	½"	24			1.562	1,395	2,957
			6'-0"	12"	5½"	½"	26			1.769	1,515	3,284
			7'-0"	12"	5½"	½"	26			1.976	1,515	3,491
			8'-0"	12"	5½"	½"	26			2.183	1,515	3,698
8'-6"	8 II	8'-0"	4'-0"	12"	5½"	½"	24	12'-6"		1.355	1,395	2,750
			5'-0"	12"	5½"	½"	26			1.562	1,515	3,077
			6'-0"	12"	5½"	½"	26			1.769	1,515	3,284
			7'-0"	12"	5½"	½"	26			1.976	1,515	3,491
			8'-0"	12"	5½"	½"	26			2.183	1,515	3,698
10'-6"	8 III	8'-0"	4'-0"	12"	4½"	½"	24	12'-6"		1.355	1,395	2,750
			5'-0"	12"	4½"	½"	26			1.562	1,515	3,077
			6'-0"	12"	4½"	½"	28			1.769	1,635	3,404
			7'-0"	12"	4½"	½"	32			1.976	1,870	3,846
			8'-0"	12"	4½"	½"	32			2.183	1,870	4,053
4'-0"	10 I	10'-0"	4'-0"	12"	5"	½"	28	12'-6"		1.355	1,635	2,990
			5'-0"	12"	5"	½"	32			1.562	1,870	3,432
			6'-0"	12"	5"	½"	36			1.769	2,105	3,874
			7'-0"	12"	5"	½"	40			1.976	2,340	4,316
			8'-0"	12"	5"	½"	40			2.183	2,340	4,523
			10'-0"	12"	5"	½"	40			2.597	2,340	4,937
6'-0"	10 II	10'-0"	4'-0"	12"	4½"	½"	28	12'-6"		1.355	1,635	2,990
			5'-0"	12"	4½"	½"	32			1.562	1,870	3,432
			6'-0"	12"	4½"	½"	36			1.769	2,105	3,874
			7'-0"	12"	4½"	½"	40			1.976	2,340	4,316
			8'-0"	12"	4½"	½"	40			2.183	2,340	4,523
			10'-0"	12"	4½"	½"	40			2.597	2,340	4,937
9'-0"	10 III	10'-0"	4'-0"	12"	4"	½"	28	12'-6"		1.355	1,635	2,990
			5'-0"	12"	4"	½"	32			1.562	1,870	3,432
			6'-0"	12"	4"	½"	36			1.769	2,105	3,874
			7'-0"	12"	4"	½"	40			1.976	2,340	4,316
			8'-0"	12"	4"	½"	40			2.183	2,340	4,523
			10'-0"	12"	4"	½"	40			2.597	2,340	4,937
12'-0"	10 IV	10'-0"	4'-0"	12"	3½"	½"	28	12'-6"		1.355	1,635	2,990
			5'-0"	12"	3½"	½"	32			1.562	1,870	3,432
			6'-0"	12"	3½"	½"	36			1.769	2,105	3,874
			7'-0"	12"	3½"	½"	40			1.976	2,340	4,316
			8'-0"	12"	3½"	½"	40			2.183	2,340	4,523
			10'-0"	12"	3½"	½"	40			2.597	2,340	4,937

LOADING DATA
(1) A.A.S.H.O. 1935 (CLASS A(H-5))

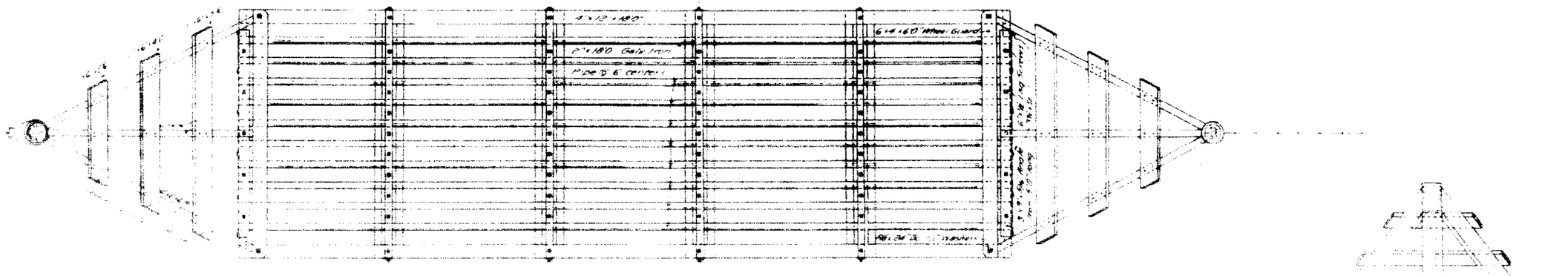
COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD
CONCRETE BOX CULVERT
8 FT. x 4 FT. 5 FT. x 7 FT. 10 FT. x 6 FT.
8 FT. x 5 FT. 5 FT. x 8 FT. 10 FT. x 8 FT.
8 FT. x 8 FT. 10 FT. x 4 FT. 10 FT. x 10 FT.

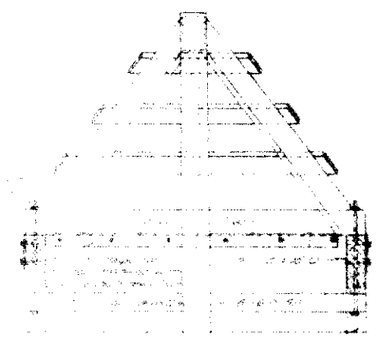
Designed by A.G.K.
Made by A.G.K.
Checked by A.L.C.
Approved by [signature]
Bridge Engineer
Date 7-20, 1932

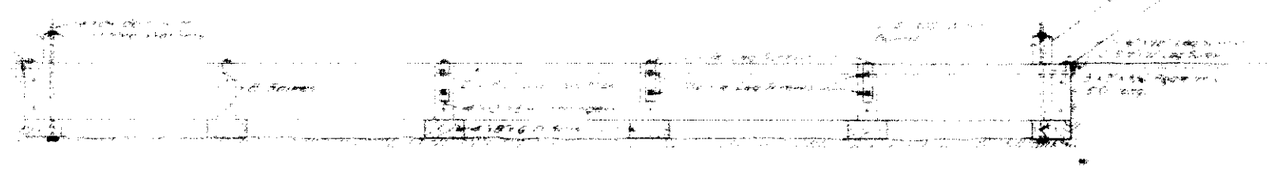
STANDARD M-16-A

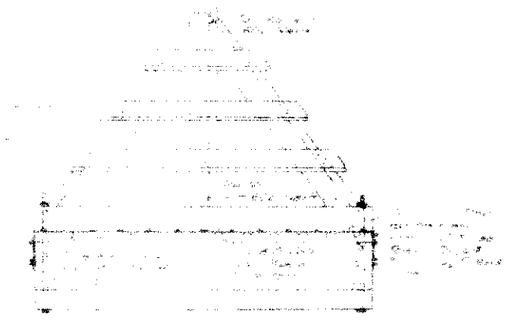
FED. ROAD DIST. No.	STATE	PROJ. No.	SHEET No.	TOTAL SHEETS
3	COLO.	360 D	11	

Revised 6-15-46 K (1937 Specifications)









Side Elevation

Sectional Elevation

Bill of Materials for One Complete Cattle Guard

2	Piece	[illegible]
2	"	[illegible]
5	"	[illegible]
5	"	[illegible]
5	"	[illegible]
2	"	[illegible]
4	"	[illegible]
6	"	[illegible]
2	"	[illegible]
2	"	6" diameter × 7'-0" Posts
2	"	[illegible] Angle Iron. See Detail for Punching
4	"	[illegible] Strap Iron. See Detail for Punching & Bending
54	"	5/8" × 12" Lag Screw (1/8 lbs)
28	"	3/8" × 3/8" (6 lbs)
8	"	5/8" × 24" Bolts (1/2 lbs)
8	"	Cast Steel Washers for Tie Rods
10	"	6" Galvanized Pipe 16'-0" long
2	Lbs.	20 D Nails
2	"	60 D "
2	"	8" Spikes

General Notes

All work shall be done in workmanlike manner in accordance with Standard Specifications of the COLORADO STATE HIGHWAY DEPARTMENT adopted [illegible] 1937.

All quantities are to be considered approximate only.

All timber shall fulfill the Specifications for Treated Timber Structures except Bridges, and shall be Treated.

All hardware to be galvanized except angle irons which shall be painted 2 coats. First coat dark as per Specifications Item 41.

Holes for lag screws shall be substituted to 3/8" diameter.

COLORADO
STATE HIGHWAY DEPARTMENT

STANDARD
CATTLE GUARD
16 Ft ROADWAY

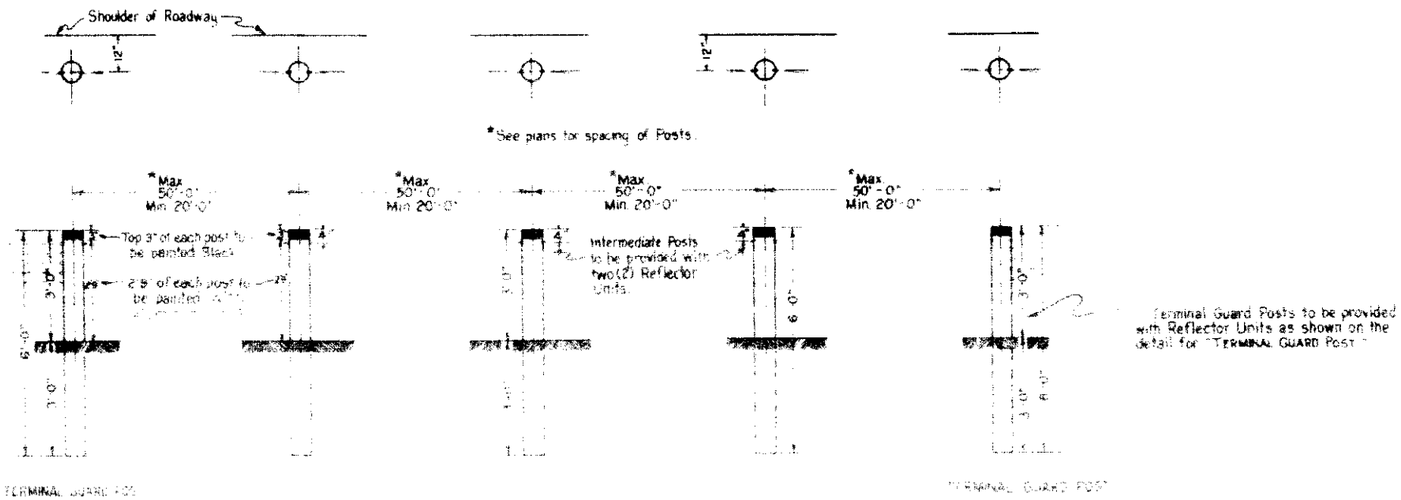
Designed by S.B.J.	Approved by
Made by S.B.J.	Bridge Engineer
Checked by	Date 193

REVISIONS

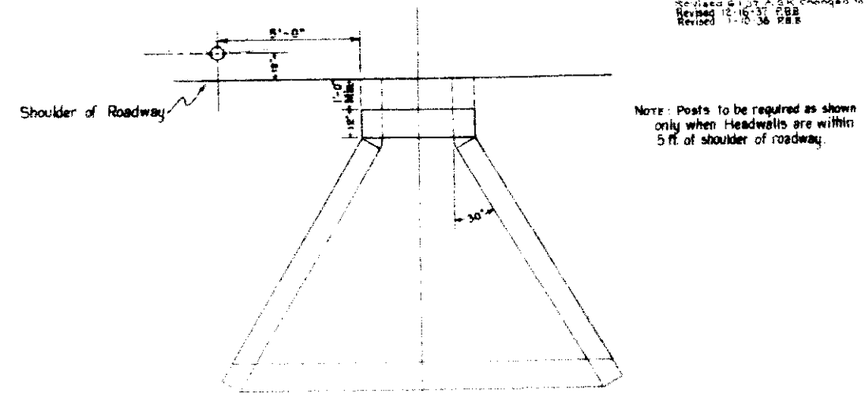
STANDARD M-19-A

FED. ROAD DIST. NO.	STATE	F.A.S.	SHEET NO.	TOTAL SHEETS
3	COLO.	3600	12	

Revised 3-26-37
Revised 6-1-37 F.B.N. Changed to 1937 Specifications
Revised 12-19-37 F.B.B.
Revised 1-15-38 P.B.B.

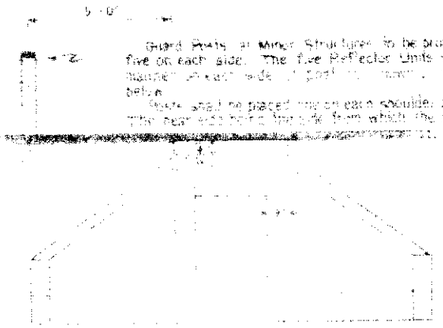


SHOWING PLACEMENT ON NORMAL ROADWAY FILLS



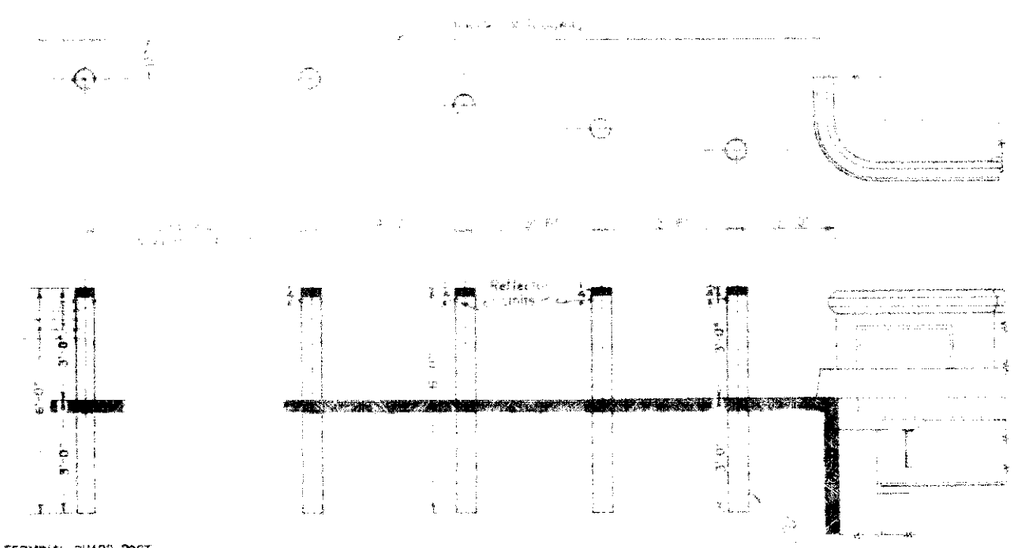
NOTE: Posts to be required as shown only when Headwalls are within 5 ft. of shoulder of roadway.

SHOWING PLACEMENT AT MINOR STRUCTURES



Guard Posts at Minor Structures to be provided with ten Reflector Units, five on each side. The five Reflector Units shall be placed in the same manner on each side of post as shown on the "Terminal Guard Post" detail below.

Posts shall be placed only on each shoulder at the near side of the structure the near side being that side from which the flow of traffic approaches.



SHOWING PLACEMENT AT BRIDGE APPROACHES

Intermediate Guard Posts at Bridges to be provided with Reflector Units as shown that is, one Unit each on the three Posts nearest the bridge-end and two Units on the fourth Post

GENERAL NOTES

All work shall be done in accordance with the "Standard Specifications of the Colorado State Highway Department" adopted on [illegible] 1937.

All wood posts shall be made from seasoned, straight, sound, Lodge Pole Pine, Southern Yellow Pine, or West Coast Douglas Fir.

No section of wood posts shall be less than 6" in diameter.

All wood posts shall be entirely peeled and shaved, thoroughly seasoned and dressed with square tops.

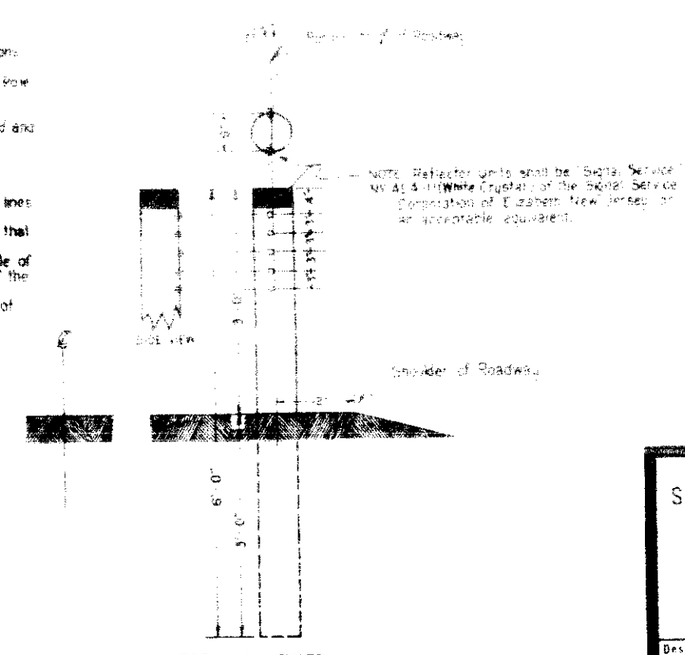
The bottom three and one-half (3½) feet of all wood posts shall be treated with a standard creosote treatment as provided for in the specifications.

All wood posts shall be set and tamped in plumb and firm, to the lines and grades as directed by the Engineer.

Reflector Units in all posts shall be placed in such position that the units will function at a distance of 500 feet.

On tangents the Reflector Units shall be placed at an angle of approximately five degrees to a line parallel to the center line of the highway.

In all instances a test shall be made to assure the position of the Reflector Units to be the most effective possible.



NOTE: Reflector units shall be "Signal Service" No. 4 or 5 "White Crystal" of the Signal Service Corporation of Elizabeth, New Jersey, or an acceptable equivalent.

TERMINAL GUARD POST

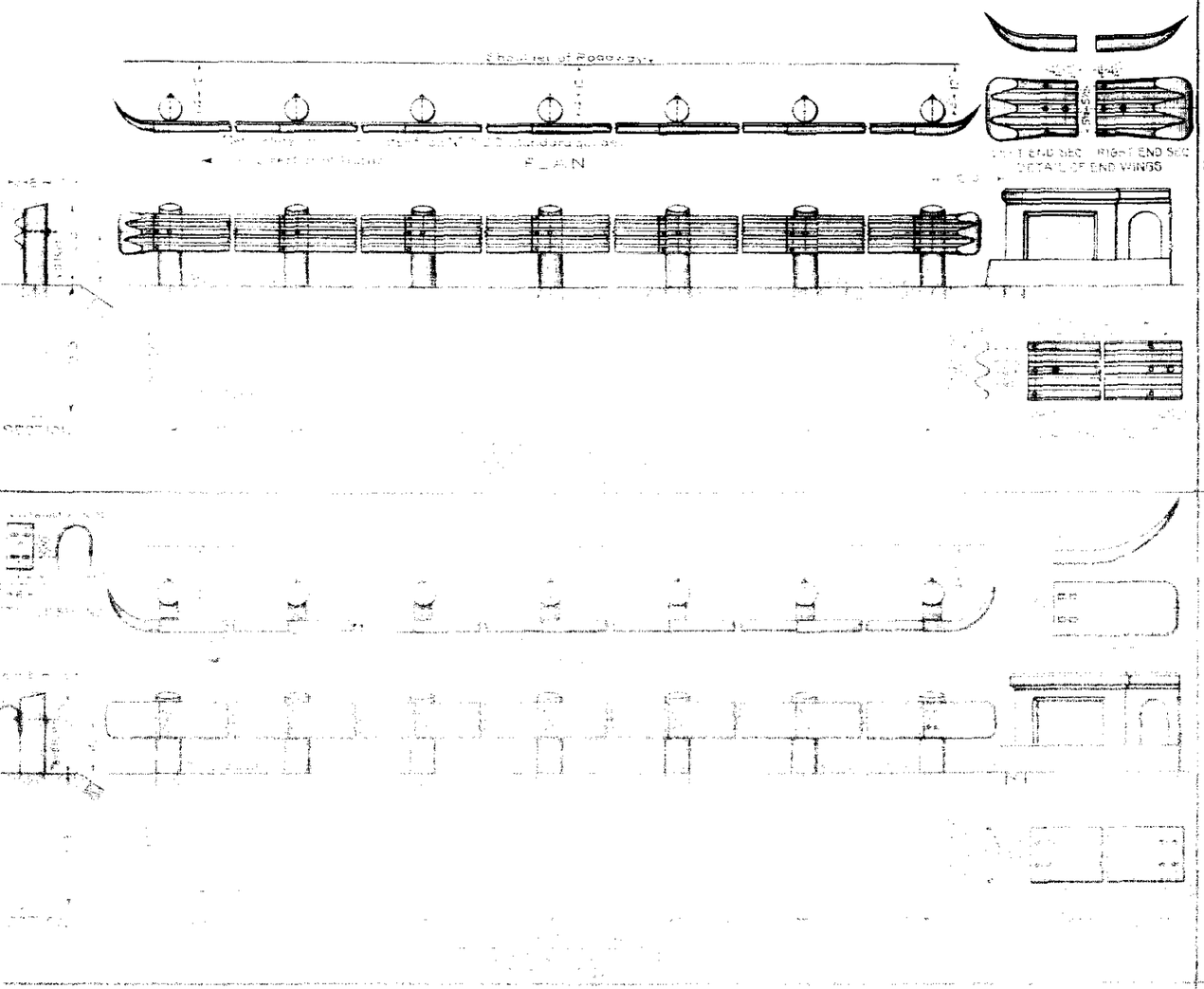
COLORADO
STATE HIGHWAY DEPARTMENT

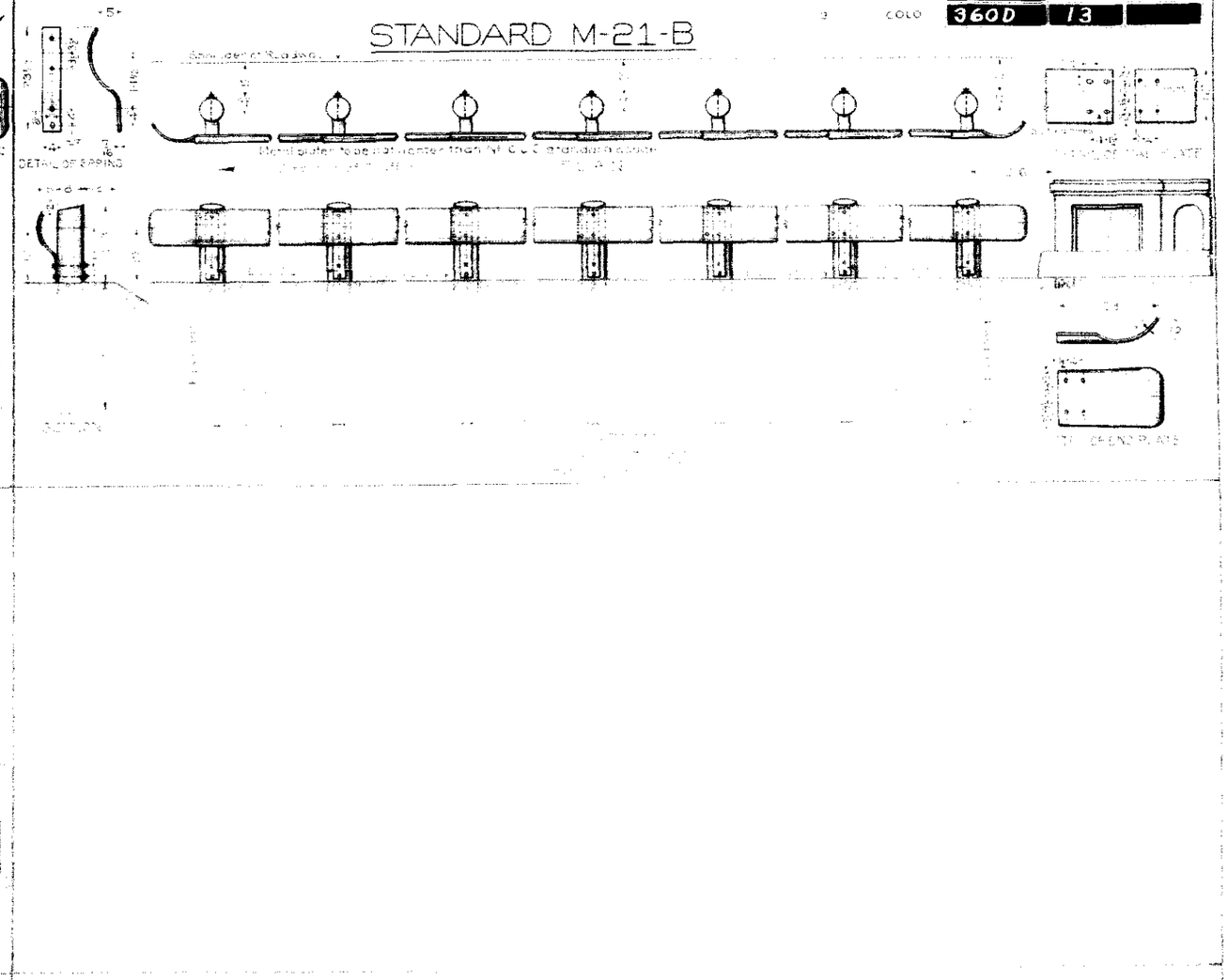
STANDARD
TIMBER GUARD POSTS

Designed
Made by P.B.B.
Checked by
Approved by
Date

F.A.S.
360D 13

STANDARD M-21-B

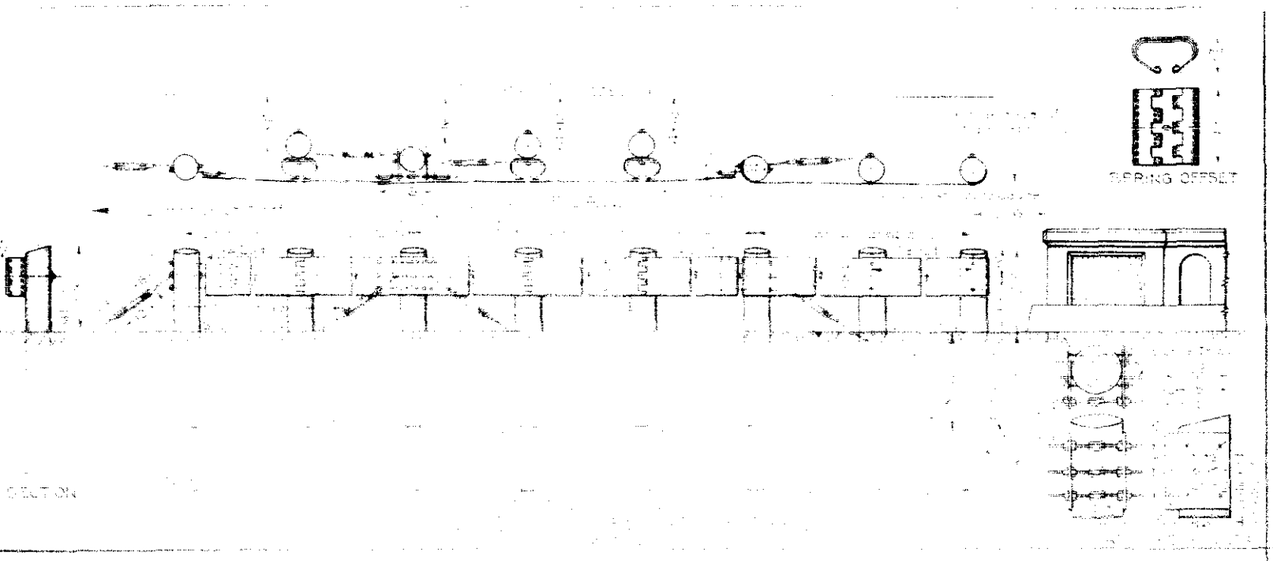




COLORADO
STATE HIGHWAY DEPARTMENT

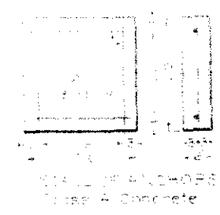
STANDARD
METAL BEAM GUARD FENCE
BEAM TYPES

Material Engineer
Chief Engineer
Date Jan. 25th 1938



STANDARD M-22-B

F.A.S.
360 D
14



COLORADO
STATE HIGHWAY DEPARTMENT

STANDARD
METAL FLOOR SUPPORTING
FLOATING & NON FLOATING
TYPES

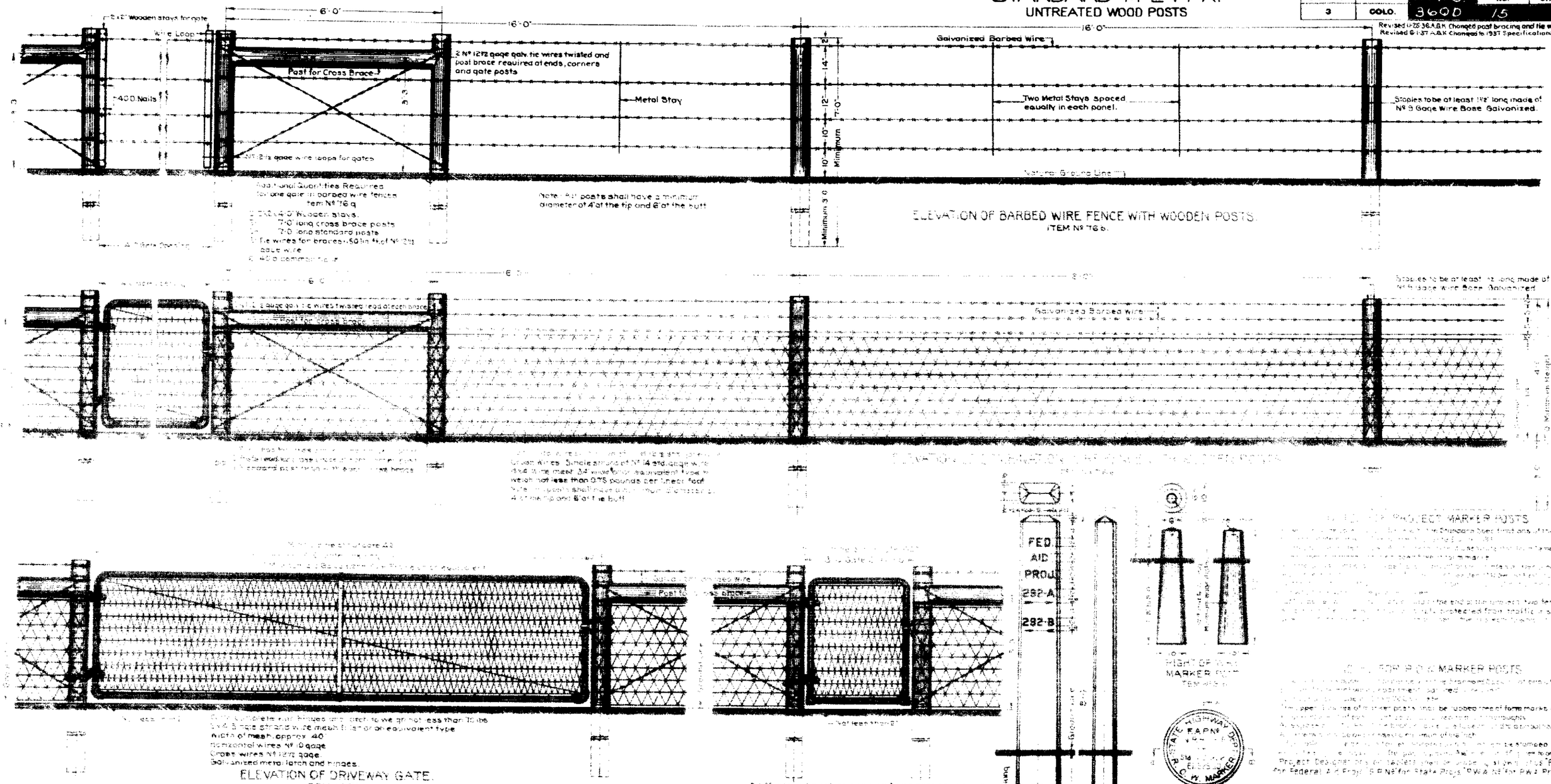
Date: Jan. 27th, 1936

STANDARD M-24-FX.

UNTREATED WOOD POSTS

FED. ROAD DIST. NO.	STATE	F.A.S.	SHEET NO.	TOTAL SHEETS
3	COLO.	360D	15	

Revised 6-25-36 A.B.K. Changed post bracing and tie wires.
Revised 6-1-37 A.B.K. Changed to 1937 Specifications.



ELEVATION OF BARBED WIRE FENCE WITH WOODEN POSTS.
ITEM Nº 76 b.

ELEVATION OF DRIVEWAY GATE.
ITEM Nº 76 h

GENERAL NOTES FOR WIRE FENCES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, Adopted June 1, 1937.

Barbed wire shall be of standard make, not lighter than Nº 12½ gage, galvanized, and with two point barbs spaced not more than five inches apart.

Wire mesh must be galvanized and not lighter than shown and noted on this plan. Wire mesh used in driveway gates shall be painted with an approved waterproof asphalt or mineral paint.

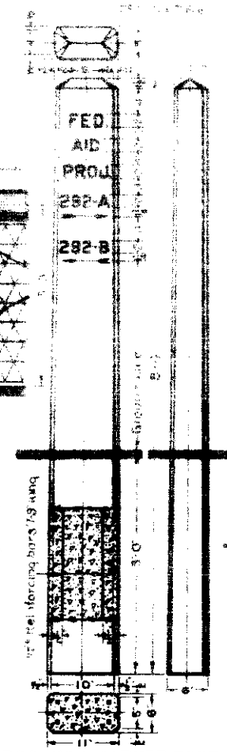
Staples shall be of least 1½" long, made of Nº 9 gage wire base galvanized, 8 staples per post for barbed wire fence and 14 staples per post for combination wire fence.

All wooden posts shall be made from seasoned, straight, sound Native Cedar, peeled. Cross braces, brace posts and tie wires are to be used at all places where intersecting fences are encountered.

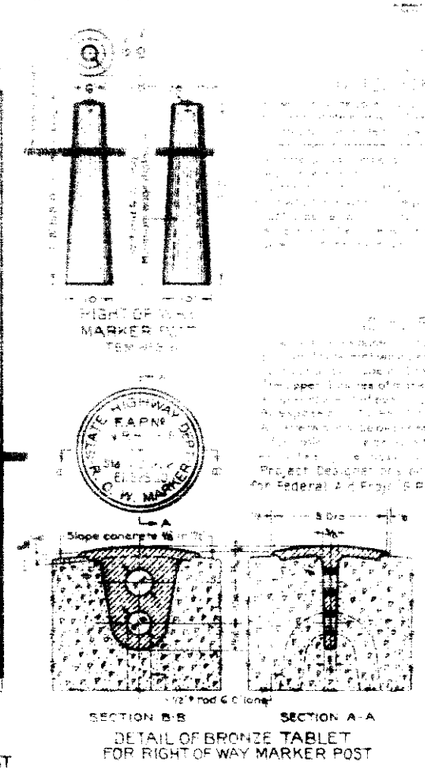
Four corner posts with brace and supplemental posts and four end posts shall be used at each structure over 4 ft. x 4 ft. in size and fence turned in and ended at wings.

Cross braces to be securely nailed with 4 - 40 d. nails at each post.

ELEVATION OF WALK GATE.
ITEM Nº 76 i.



PROJECT MARKER POST



DETAIL OF BRONZE TABLET FOR RIGHT OF WAY MARKER POST

PROJECT MARKER POSTS

Project Designation on tablet shall be stamped as follows: "F.A.P. Nº" for Federal Aid Project, "S.P. Nº" for State Project, "P.W.A. Nº" for P.W.A. Project, etc.

COLORADO
STATE HIGHWAY DEPARTMENT

STANDARD WIRE FENCES
UNTREATED WOOD POSTS
AND
MARKER POSTS

Designed by A.G.K.
Made by A.G.K.
Check Design
Check Detail P.D.W.

Approved by [signature]
Bridge Engineer
Date: April 22, 1938

	INITIAL	DATE
ORIGINAL BY		
CHECKED BY		
REVISED BY		
CHECKED BY		

0 1 2 3 4 5 6 7 8 9 10 11 12 INCHES

SCALE OF LETTERING

STANDARD M-10-A

[redacted]

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	360D	16	

Revised 3-11-1938 A.G.K. Changed to 1935 Specifications.
Revised 6-1-37 A.G.K. Changed to 1937 Specifications

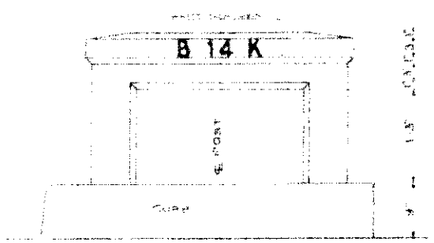
A B C D E F G H I J

K L M N O P Q R S T

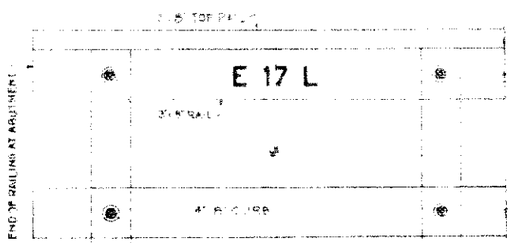
U V W X Y Z I 14 K

SAMPLE BRIDGE NUMBER

1 2 3 4 5 6 7 8 9 0 .



TYPICAL CONCRETE ENDPOST.



TYPICAL TIMBER WING

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT ADOPTED JUNE 1, 1937.

THE STRUCTURE NUMBER SHALL BE STENCILED ON THE RIGHT HAND SIDE OF EACH BRIDGE AND AS SHOWN ON THIS STANDARD AND AS SPECIFIED.

THE CORRECT NUMBER FOR EACH BRIDGE IS SHOWN IN THE LOWER RIGHT HAND CORNER OF THE DETAIL SHEETS FOR THAT PARTICULAR BRIDGE.

THE SIZE, SHAPE AND SPACING OF THE LETTERS AND FIGURES SHALL BE IDENTICAL WITH THE FULL SIZE SHOWN ON THIS SHEET. ADDITIONAL COPIES OF THIS FULL SIZE SHEET CAN BE OBTAINED FROM THE DEPARTMENT WITHOUT CHARGE.

BEFORE STENCILING THE NUMBER ON THE BRIDGE, THE SURFACE MUST BE THOROLY CLEANED. A PROPER WHITE BACKGROUND SHALL BE PAINTED ON CONCRETE SURFACES. ON TIMBER HANDRAILS THE WHITE PAINT USED ON THE BRIDGE WILL BE SATISFACTORY. ON CONCRETE ENDPOSTS, THE DRY CONCRETE SURFACE SHALL BE PROPERLY SIZED BEFORE PLACING THE WHITE RECTANGLE, UNLESS AN APPROVED WHITE CONCRETE PAINT IS USED.

TWO COATS OF ACCEPTABLE WHITE PAINT SHALL BE APPLIED TO THE CONCRETE IN A NEAT RECTANGULAR SHAPE AND EXTEND THREE INCHES BEYOND THE LIMITS OF THE STRUCTURE NUMBER.

AFTER THIS WHITE BACKGROUND HAS DRIED SUFFICIENTLY, THE CORRECT STRUCTURE NUMBER SHALL BE CAREFULLY STENCILED ON IT WITH TWO COATS OF STANDARD "C" SECOND FIELD COAT DARK" AS SPECIFIED UNDER ITEM 41 "STEEL BRIDGES". THE BRACES OF THE STENCILED LETTERS AND FIGURES SHALL BE CAREFULLY FILLED IN BY HAND TO MAKE SOLID FIGURES SUFFICIENT TIME BETWEEN SUCCESSIVE COATS SHALL BE ALLOWED TO PERMIT THE PRECEDING COAT TO DRY.

THIS WORK WILL NOT BE PAID FOR AS A SEPERATE ITEM. COMPENSATION SHALL BE INCLUDED IN THE ORIGINAL CONTRACT ITEMS.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD STRUCTURE NUMBER LETTERING

Across Sta.
Near Sec. T R

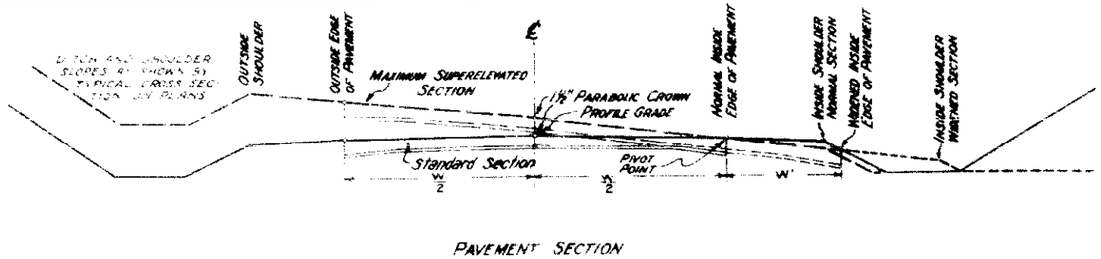
Designed by
Made by
Check Design
Check Detail

Approved by P. S. Bailey
Bridge Engineer
Date Feb 6th 1939

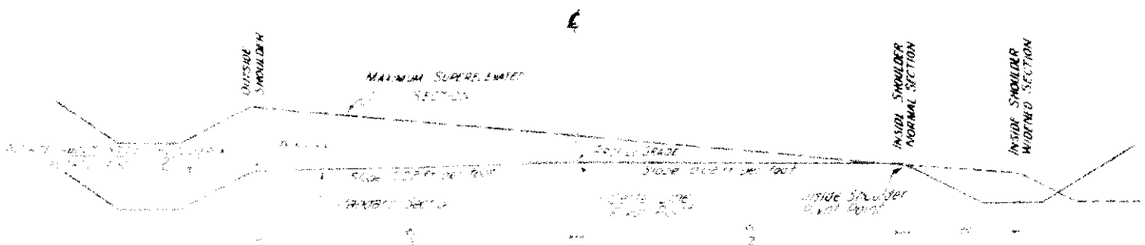
REVISED

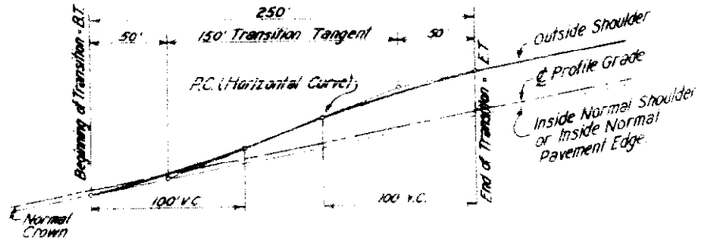
STANDARD M-1-B

FEDERAL AID PROJECT NO.	STATE	F.A.S.	SHEET NO.	TOTAL SHEETS
3	COLO.	360D	17	



PAVEMENT SECTION

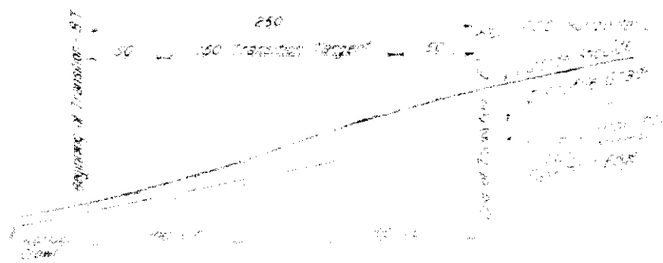




CASE I. SIMPLE CURVE WITH UNLIMITED TANGENT APPROACH

NOTE CASE I

The transition in this case, from crowned section to superelevated section, shall proceed uniformly by raising the outside shoulder over a distance of 250 ft as shown, beginning at a point on the tangent 150 ft from the end of the curve and acquiring full superelevation at a point 100 ft. inside the curve.



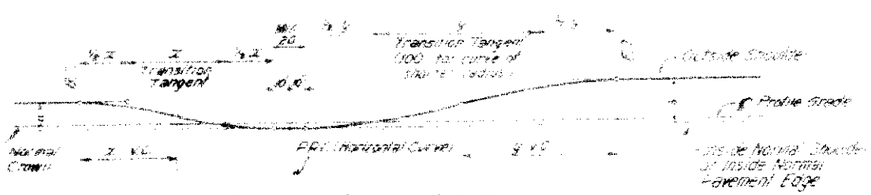
CASE II. COMPOUND CURVE

NOTE CASE II

Superelevation transitions of the outside edge of pavement [illegible] the [illegible] with rates given [illegible].

Wide variation occurring between the arcs of different radii shall be made as in CASE I except that the curve transition shall be within the limits of the curve of the longer radius.

In cases where curves in the same direction have a tangent distance of less than 300 ft between points of curve, the superelevated tangent shall be superelevated as brought down to the of the curve of greater radius and the transition shall be made as in the case of a true compound curve.



CASE III. REVERSE CURVES

NOTE CASE III

Transitions between true reverse curves shall be accomplished as shown on the above diagram.

Transition tangents shall be directly proportional to the amount of superelevation of the respective curves.

EXAMPLE: Let a represent the amount of superelevation on 1st curve,
" b " " " " " " 2nd " "
" x " " " " transition tangent on 1st " "
" y " " " " " " 2nd " "

then, a : b = x : y

The transition tangent of the curve having the shorter radius shall be set at 100 ft.

A normal crowned section 20 ft long, 10 ft on each side of the P.R.C. shall be used.

In cases where curves in opposite directions are in such proximity that a standard transition can not be had, the practice outlined for true reversing curves shall be used.

The total distance between the P.T. of the first curve and the P.C. of the succeeding curve shall be prorated into the transition distance of the respective curves until a maximum of 150 ft of transition tangent for each curve is achieved.

GENERAL NOTES

Curves on projects using the Sections shown are to be superelevated and widened as indicated in the accompanying drawings and tables.

The normal inside edge of the Pavement slab is to remain at the standard elevation of 0.125 ft below the profile grade, and the outside edge of the slab is to be superelevated at the rate per foot width of roadway given in the table. The Section is to be rotated about the normal inside edge of the Pavement with a ½" parabolic crown for curves of 10° and under, and a flat crown for widened Sections.

The normal inside edge of the Graded or Surfaced Section is to remain at the standard elevation of 0.02 ft per foot width of roadway below the profile grade or as shown on the Typical Section for the Project. Also, the center line pivot point is to be used until the superelevation equals 0.02 ft per foot width of roadway, but when this elevation is exceeded the normal inside shoulder pivot point is to be used.

When the degree of curvature exceeds 10° the inside edge of the Pavement slab or the inside shoulder of the Graded or Surfaced Section is to be widened from the normal inside edge or shoulder, respectively, as shown by the table and plan or by cross sections. Curves of 10° or less are not to be widened.

The slope of the shoulders and widened sections shall conform to the [illegible] per foot width of roadway [illegible] that the inside shoulder of [illegible] the Typical Section slope until this slope is [illegible] the required superelevation slope.

The [illegible] superelevated sections is to be modified, where [illegible] to provide drainage, otherwise this ditch shall conform to [illegible] shown for Project.

[illegible] width of roadway, to be accomplished as follows:

[illegible]

[illegible] ft per foot width of roadway

[illegible]

[illegible] ft per foot width of roadway

[illegible]

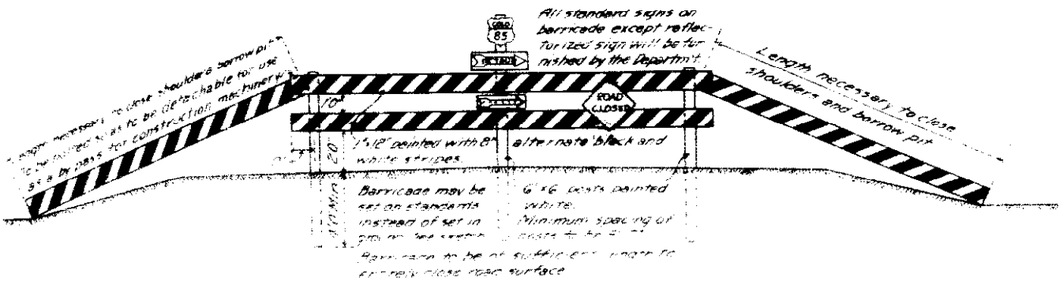
[illegible] ft per foot width of roadway

STANDARD M-2-B

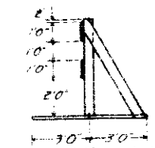
FED ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	360 D	18	

Revised 6-1-37 A.G.R. Changed to 1937 Specifications

DETAILS OF PERMANENT BARRICADE

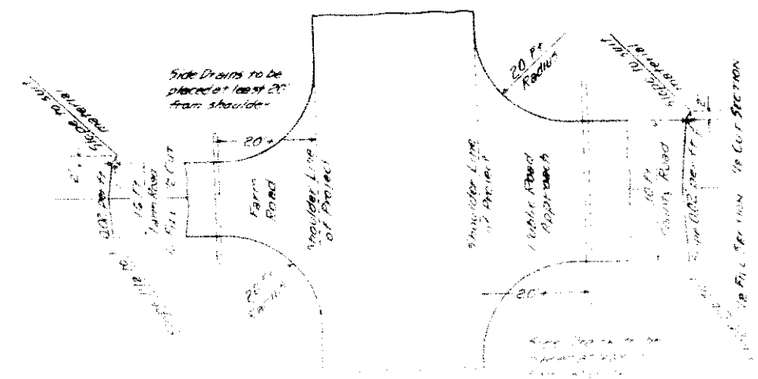


END VIEW OF PORTABLE BARRICADE



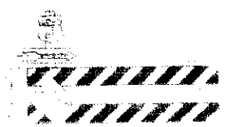
Posts to be 6"x6" painted white. Base and brace to be 2"x6" painted white and nailed with 10d nails. Base to be weighted if necessary for stability.

TYPICAL PLAN FOR SIDE APPROACH ROADS

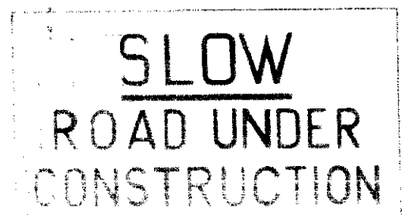


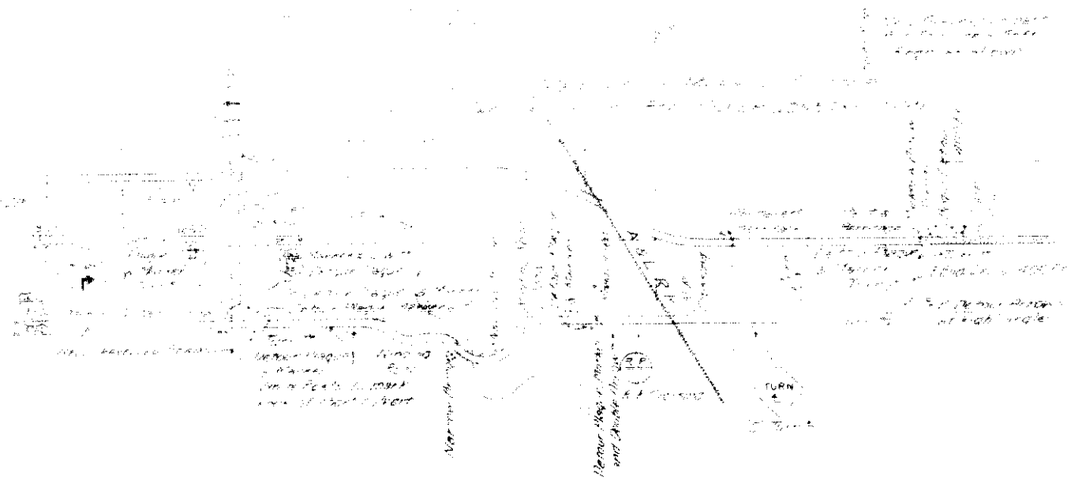
POSITION OF SIGN ON SIDE ROAD BED

BARRICADES TO BE PLACED ON BRIDGE



DETAILS OF ROAD UNDER CONSTRUCTION SIGN





ROAD UNDER CONSTRUCTION TRAFFIC SIGNS

1. Where traffic is permitted on road under construction:
   a) Place two "SLOW ROAD UNDER CONSTRUCTION" signs as required.
   b) At least three (3) flares or torches for each barricade, and other flares to illuminate such signs as are called for on these plans, or as the Department may direct.
   Flares or torches shall be placed between 3 and 5 feet ahead of the sign to appear to be illuminated and shall be kept burning from sunset to sunrise.
2. Any special signs the Department may deem necessary for the protection of traffic over the Project.

Costs of all of the foregoing materials and work by the Contractor shall be included in the original contract prices for the Project.

The Highway Department will furnish all standard signs not required to be furnished by the Contractor.

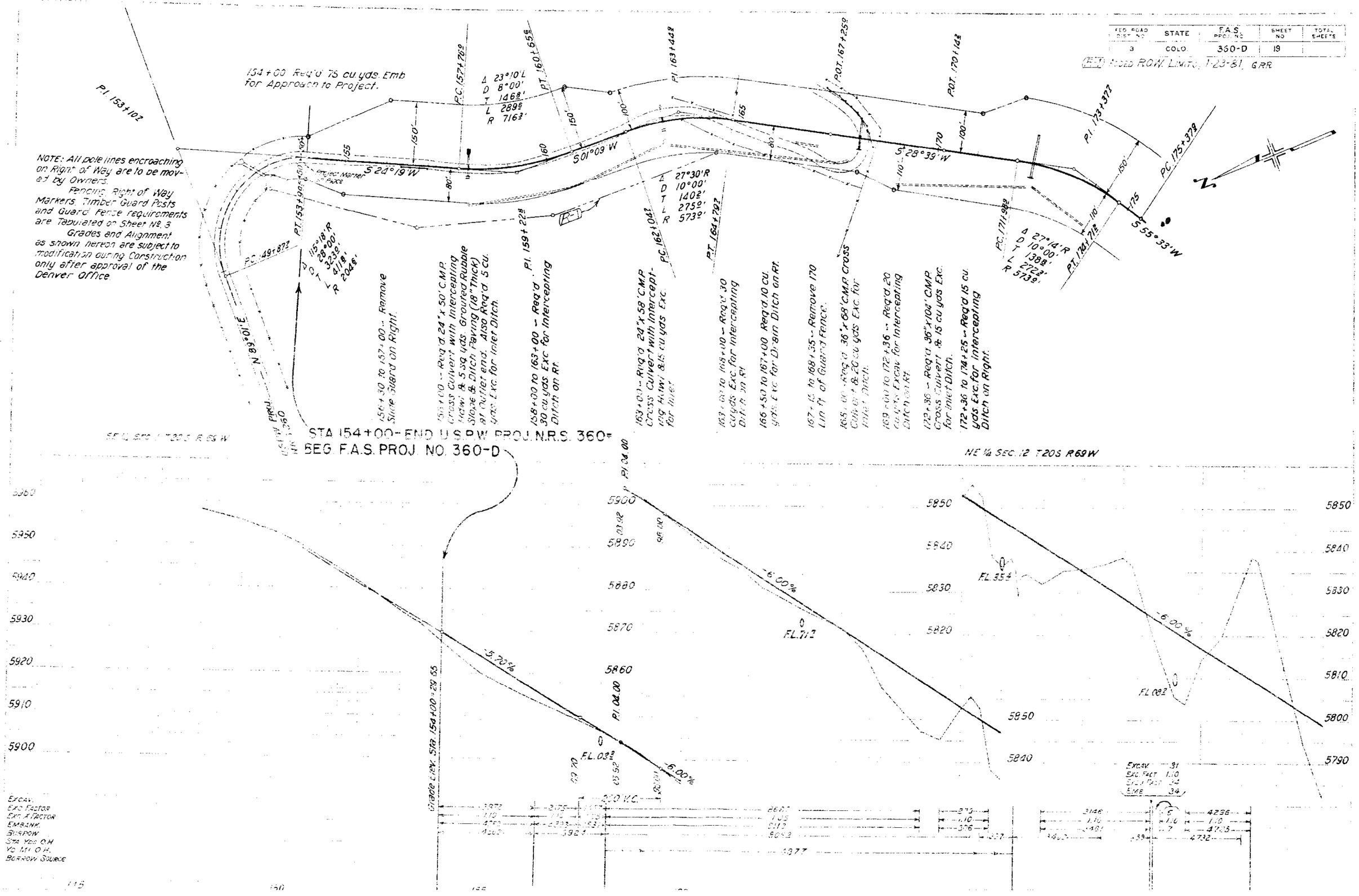
COLORADO
STATE HIGHWAY DEPARTMENT
TYPICAL
SIDE APPROACH ROADS
ROADWAY CONSTRUCTION
TRAFFIC SIGNS

Designed by J.R.W.
Made by A.G.
Checked C.E.M.
Checked F.A.V.

Approved by C.H. Marshall
Date Aug 20 1935

FED. ROAD DIST. NO	STATE	F.A.S. PROJ. NO	SHEET NO	TOTAL SHEETS
3	COLO.	360-D	19	

(EXT) Mod. ROW Limits, T-23-81, G.R.R.

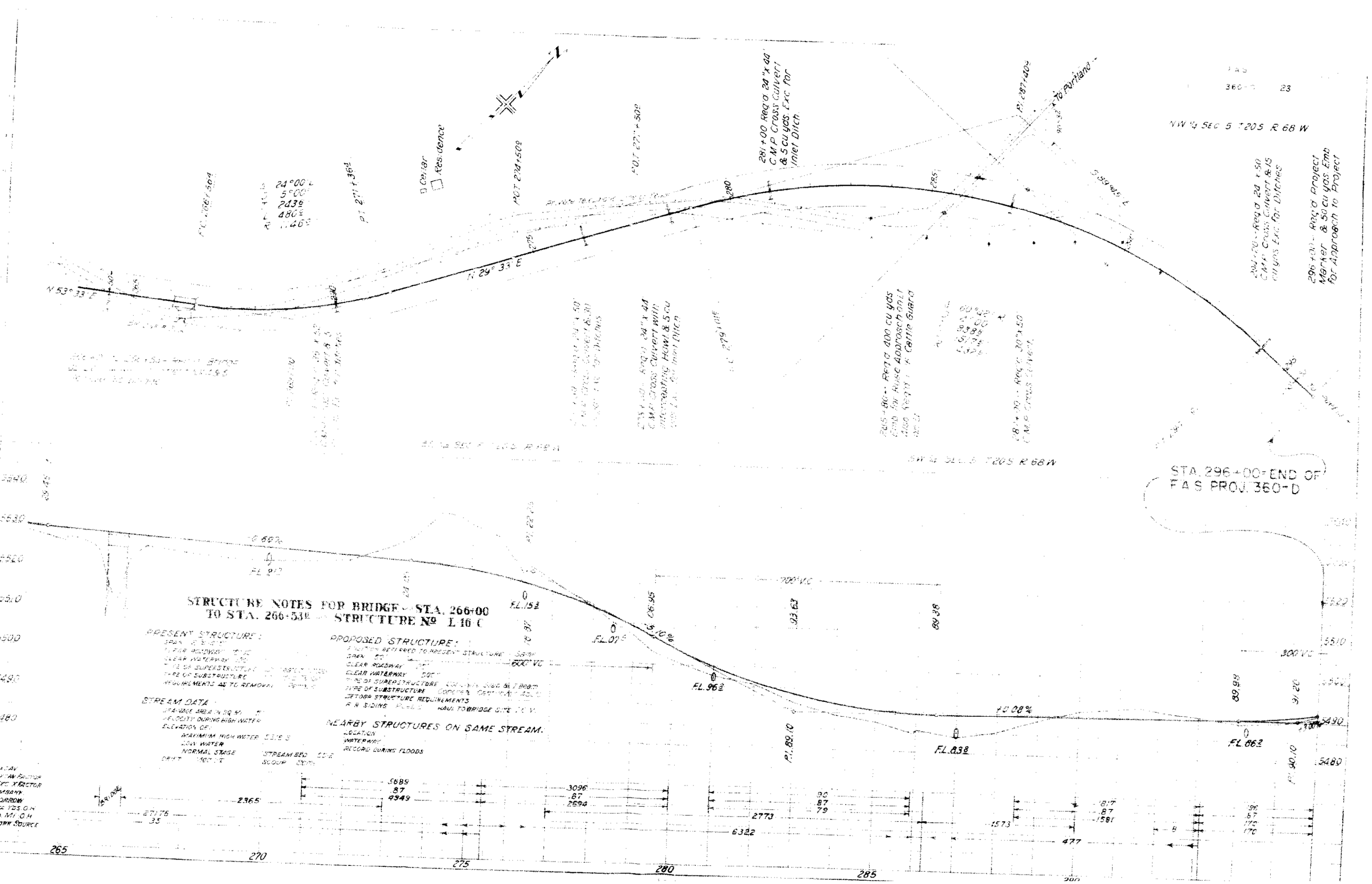


NW ¼ SEC. 12 T.20S. R.69W
NE ¼ SEC. 12 T.20S. R.69W
175+25 to 176+00 – Req'd. 10 cu yds. Exc. for Intercepting Ditch on Right.
176+00 – Req'd. 3'x3'x166' Concrete Box Culvert & 20 cu yds. Exc. for Inlet & Outlet Ditches. (15 cu yds. of Inlet Exc. to be used to build dike across Borrow Pit.)
176+00 to 177+00 – Req'd. 10 cu yds. Exc. for Intercepting Ditch on Right.
177+75 to 178+50 – Req'd. 250 cu yds. Exc. for Channel Change on Rt. (Material to be used to Fill Old Channel.)
S 55°53' W
S 28°39' W
PI 184+69.9
PI 174+71.2
PI 173+37.2
PI 175+37.9
PI 21.00
FL. 819
FL. 839
EQUATION
CLEARING AND GRUBBING

5258
1.10
5784
27066
27066
27200
6934
1.10
857
19924
13569
1.10
10924
7081
10130
1.10
11144
46586
27066/1.10 = 24605 Cu. Yds. Borrow To Be Obtained Within R.O.W. Between Sta. 169+00 And Sta. 175+80
6934/1.10 = 6304 Cu. Yds. Borrow To Be Obtained Within R.O.W. Between Sta. 179+50 And Sta. 181+50.
170
175
180
185
190
195

NE ¼ SEC. 12 T 20 S R 69 W
FAS 360-D 21
R 69 W
R 68 W
Residence
Poultry House
Cistern
Tool Shed
Barn
Garage
223+30 to 225+00 Req'd. 20 cu yds Exc. for Drain Ditch on Lt.
214+25 - Req'd. 24" x 46' C.M.P. Cross Culvert & 15 cu yds Emb. for Dike at Inlet End.
P.C. 187+609
Δ 28°58' L
D 8°00'
T 1859'
L 362'
R 716.3'
P.T. 191+239 BK.
207+69.9 AH.
N 53°33' E
-5.445%
-3.655%
FL. 685
FL. 145
FL. 935
55.47
18.06
14.25
10.15
200' V.C.
5670
5660
5650
5600
190
210
215
220
225
230
235

238+50 - Reqd 25 Cu Yds Embank for Road Approach on Right
Also Reqd. 18 x 28 C.M.P. Side Drain on Right
Waste
Dry
Bridge #23L
239+10 - Req'd 25 cu yds for Road Appr. on Left
Reservoir
Spillway
Bridge #22A
S18 249+71
FAS
3660-B
22
235
240
245
250
255
260
265
-4.25%
-4.30%
-4.60%
FL.68±
FL.29±
600 V.C.
42.20
13.39
29.40
Pl.30.95
Pl.40.4
Pl.50.0
Pl.75.2
Pl.92.8
Pl.110.4
5660
5650
5640
5630
5620
5570
5560
5550
5540
5530
5520
Factor
Factor
Embank
Borrow
To Yds O.H.
To Mi. O.H.
Borrow Source
2475
.87
.553
2153
.657
.87
.553
1441
.636
.87
.553
1808
.356
.87
.307
1083


STA. 296+00 = END OF F.A.S. PROJ. 360-D
STRUCTURE NOTES FOR BRIDGE — STA. 266+00 TO STA. 266+53 — STRUCTURE No. L 16 C
PRESENT STRUCTURE:
PROPOSED STRUCTURE:
STREAM DATA:
NEARBY STRUCTURES ON SAME STREAM.
N 53° 33' E
N 29° 33' E
To Portland
Residence
Cellar
281+00 Reqd 24" x 44' C.M.P. Cross Culvert & 5 cu yds. Exc. for Inlet Ditch
296+00 - Reqd 24" x 50' C.M.P. Cross Culvert & 15 cu yds. Exc. for Ditches
296+00 - Reqd Marker & 50 cu yds. Emb. for Approach to Project
FL 152
FL 962
FL 838
FL 862
FL 922
P.I. 89.10
P.I. 90.10
5.10%
2.08%
600' VC
300' VC
265
270
275
280
285
290
5490
5480