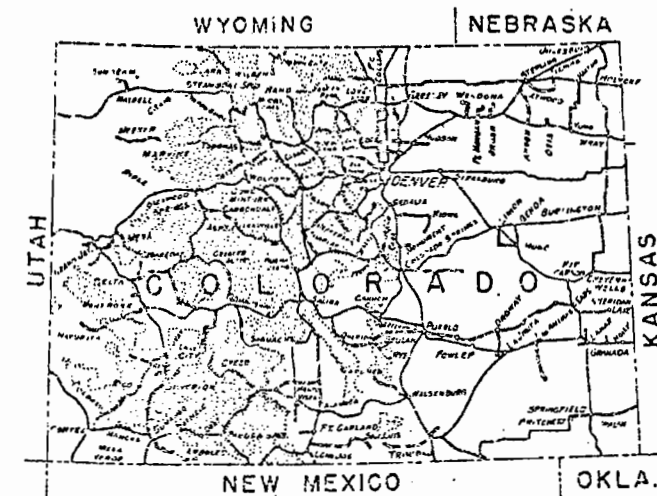




U.S. DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS

PLANS FOR PROPOSED COLORADO FOREST HIGHWAY PROJECT 7-1(I) SOUTH FORK - LAKE CITY LENGTH 7.038 MILES CLASS 3 GUNNISON NATIONAL FOREST HINSDALE COUNTY

REGION 9 STATE COLORADO
PROJECT 7-1(I) South Fork - Lake City
SHEET 1 OF 1 SHEETS

South Fork - Lake City		
INDEX TO SHEETS		
SHEET NO.	DESCRIPTION	STATION TO STATION
1	Title Sheet	
2	Typical Sections	
3	Summary (2 Sheets)	
4-16	Plan & Profile	0+00 to 7+03.84
Std. 118	Concrete & Metal End Sections	
Std. 119	Underdrain	
Std. 121	Rock Structures	
Std. 131	Maintenance Posts & Delimiters	
Std. 143	Project Identification Signs	

Plans prepared by: BPR
Date: Sept. 1963

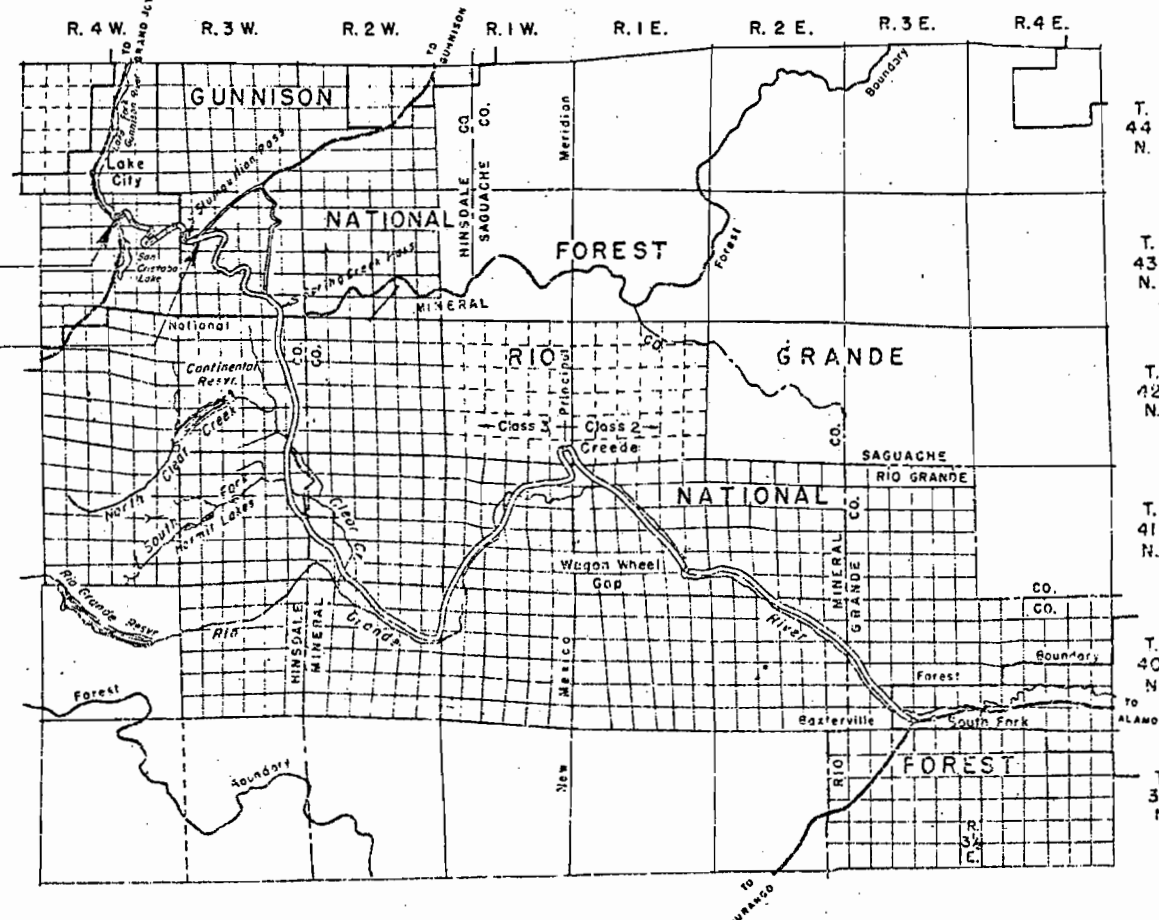
Description of Project:
Improvement: Grading
Roadbed Width: 28'
Type Code: C011

Traffic Volume
ADT (1960): 80
ADT (1980): 150
DHV: 40
D: 65%
T: 10%
V: 25



Begin Proj. 7-1(I)
Sta. 0+00

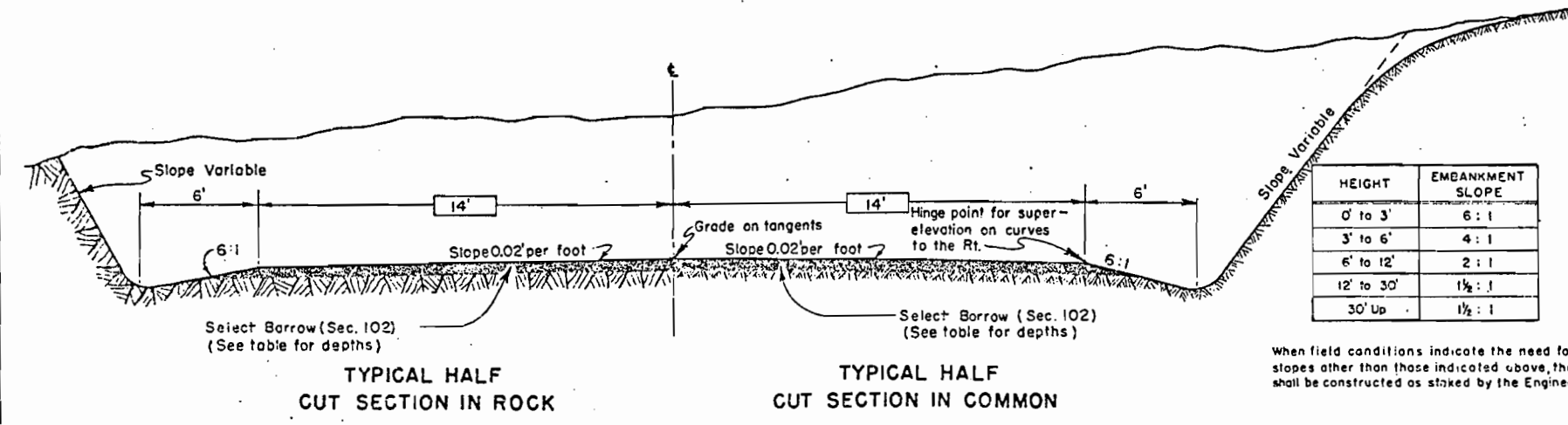
End Proj. 7-1(I)
Sta. 371+83.64



LEGEND					
EXISTING ROAD	UNIMPROVED GRADES	REINFORCED BASE	SURFACE	FLOR PLANT	CONCRETE
		SUBGRADE	SOURCE	TREATMENT	MIX BITUM.

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

APPROVED: CHAS. D. BEACH OCT 25 1963
REGIONAL ENGINEER



HEIGHT	EMBANKMENT SLOPE
0' to 3'	6:1
3' to 6'	4:1
6' to 12'	2:1
12' to 30'	1 1/2:1
30' Up	1 1/2:1

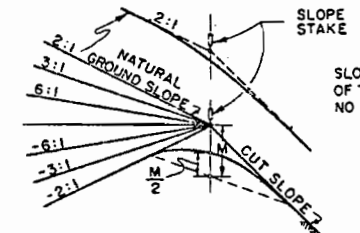
When field conditions indicate the need for slopes other than those indicated above, they shall be constructed as staked by the Engineer.

SLOPE ROUNDING FACTORS			ALTERNATE ROUNDING DIMENSIONS	
NATURAL GROUND SLOPE	CUT SLOPE		SEMI-TANGENTS ±	
	HEIGHT	RATIO	Back of Slope Stake "B"	Front of Slope Stake "F"
VARIABLE VARIABLE	0'-5'	3:1	5'	5'
	5'-10'	2:1		
RELATIVELY FLAT (6:1 AND FLATTER)	10'-15'	1 1/2:1	5'	8'
	15'-30'	1 1/4:1		
MODERATELY STEEP (6:1 TO 3:1)	OVER 30'	1:1	5'	8' **
	10'-15'	1 1/2:1		
STEEP (STEEPER THAN 3:1)	15'-30'	1 1/4:1	3'	5' *
	OVER 30'	1:1		

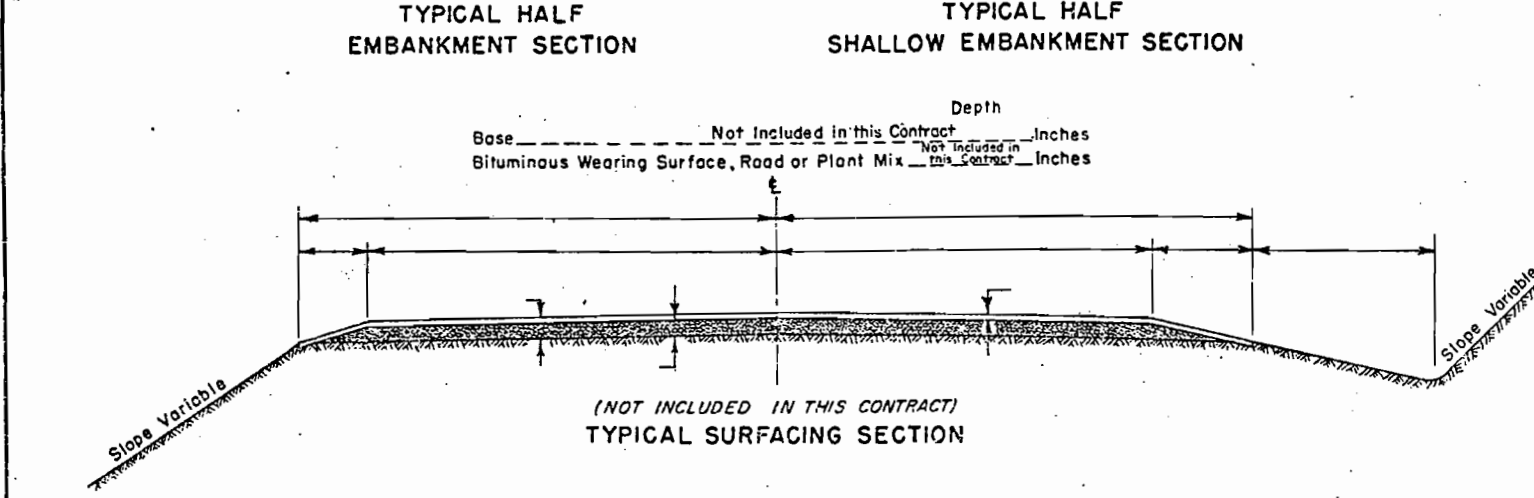
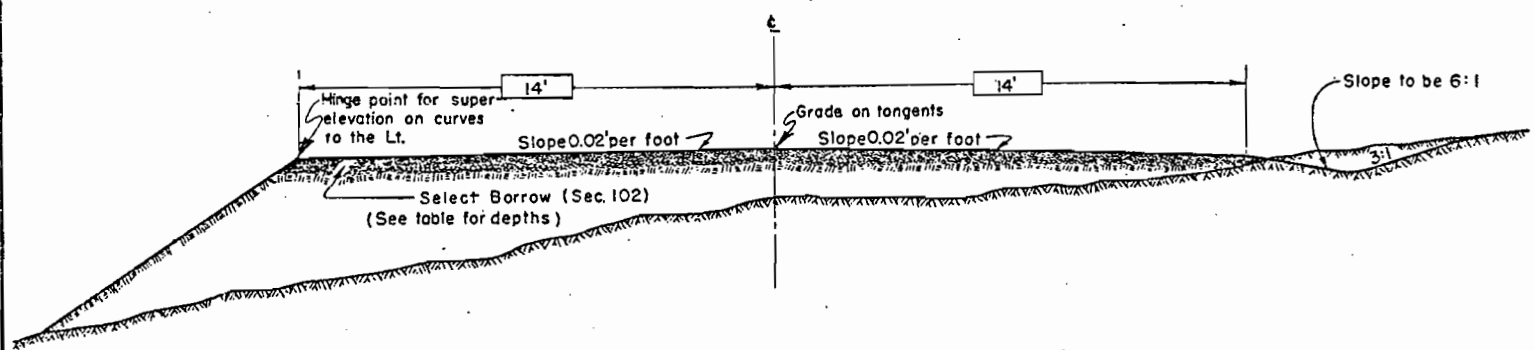
† Measured on slope surface.
 ** Desirable
 * Minimum (Wooded)
 * These ratios are desirable in steep terrain.

NOTE: In areas where existing conditions permit, use more liberal rounding with unequal semi-tangents. (Approximating a parabolic curve.)

ROUNDING, WARPING, AND FINISHING SLOPES, AS PROVIDED IN ART. 102-3.8, F.P.-61 SPECIFICATIONS.

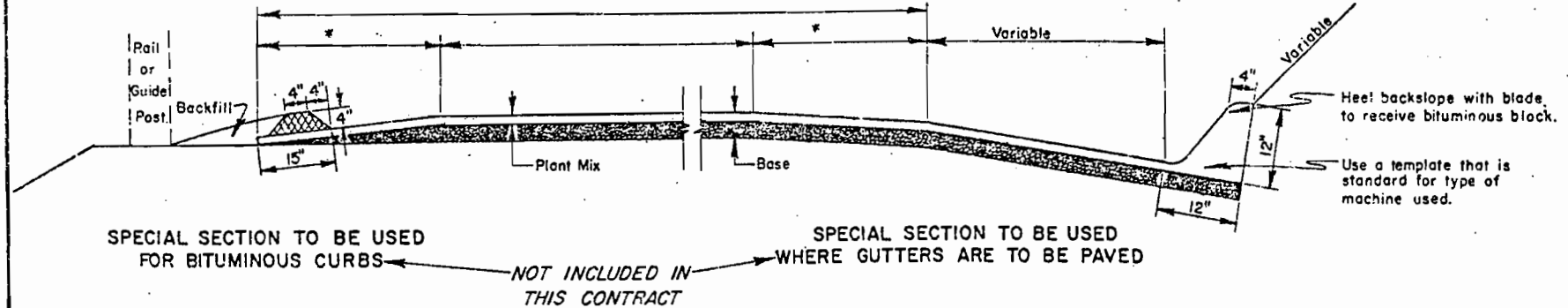


SLOPE ROUNDING TO BE CONSIDERED AS A SUBSIDIARY PART OF THE WORK REQUIRED IN DRESSING THE CUT SLOPES AND NO ALLOWANCE WILL BE MADE FOR MATERIALS MOVED.



SPECIAL STABILIZING MATERIAL

STATION TO STATION	SUBBASE (Item 104(2))	SELECTED BORROW (Item 102(6))
0 + 00 to 80 + 50		7"
80 + 50 to 106 + 50		9"
106 + 50 to 157 + 50		7"
157 + 50 to 165 + 00		10"
165 + 00 to 230 + 00		7"
230 + 00 to 288 + 00		9"
288 + 00 to 324 + 50		7"
324 + 50 to 371 + 83.64		9"



GENERAL NOTES

Where Borrow is specified in the contract and satisfactory material is found in the roadway excavation, the right is reserved to increase the amount of Unclassified Excavation and reduce the Borrow Excavation. When additional material is needed for completing embankments, stabilizing the subgrade, or for selected cushion or topping, it may be secured by uniformly widening thru or sidehill cuts or flattening cut slopes where satisfactory material is available. The slopes of the ends of all cuts shall be flattened and floored to improve appearance.

Furrow ditches shall be constructed on approximate one percent grades following the ground contour and when possible shall be so constructed that the direction of flow will be away from the roadway.

Topsoil shall be conserved and either placed in stockpiles or spread over cut and embankment slopes as directed and in accordance with the specifications.

Roadway ditches at the ends of cuts shall be constructed so as to carry the flow away from the adjacent embankment slopes.

Embankment slopes shall be uniformly warped between one rate of slope and another. The transition shall cover a distance of not less than fifty feet.

The grade line shown on the plan and profile sheets is centerline grade, not corrected for curvature.

Curves are super-elevated and widened in accordance with AASHTO standards.

SOILS DATA

Any materials soils data shown on these plans are based on tests of samples obtained from the locations and depths shown, and are only for informational purposes. They do not reflect classification of the excavation. No responsibility is assumed by the Government as to the extent of materials represented by these tests. Any assumption by the contractor as to the extent of the materials represented by these samples is strictly his responsibility. The contractor must satisfy himself as to the nature of materials to be encountered by personal inspection of the project on the ground. If materials not conforming to the data shown on these plans are encountered during construction, the grading plan will be modified where necessary to insure proper design.

U.S. DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS
 REGION NO. 9 DENVER, COLO.

**TYPICAL CROSS SECTIONS
 NATIONAL FOREST HIGHWAY**

REGION No. 9 STANDARD ROADBED: (GRADED 28' Shoulder to Shoulder)
 PROJECT 7-1111, South Fork - Lake City
 NATIONAL FOREST Gunnison
 COUNTY Hinsdale
 STATE Colorado

APPROVED *[Signature]* Date: 2/26/52
 Federal Highway Projects Engineer

The following is an approximate estimate of quantities and no responsibility for their accuracy is assumed. No allowance will be made for anticipated profit or loss incurred due to the increase, decrease or elimination of any of the quantities shown that may be found necessary during construction.

ITEM NO.	100(1)		106		102(1)				102(5)	107(2)	108(1)	109(1)																
	Clearing and Grubbing	Embankment Prism	Unclassified Excavation				Selected Borrow, Topping, Case 1	Yard Mile Overhaul	Watering	Rolling																		
STATION TO STATION			Prism	Benching for Embankments	Over-breaks and Slides	Subgrade	Channel Changes																					
	Acres	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Yd. Mi.	Unit	Hour																	
0+00 to 7+00	0.010	800	880					503	1.430																			
7+00 to 11+35	0.002	4,455	4,000					457	1,250																			
11+35 to 52+00	1.210	34,312	37,771	1,380				3,272	8,920																			
52+00 to 117+00	6.170	34,195	37,614	2,200				4,718	7,030																			
117+00 to 161+01	0.524	22,955	35,157	150				3,215	2,350																			
161+01 to 174+75	5.104	12,810	14,021	2,110				1,677																				
174+75 to 200+21	2.232	42,850	30,200	340				5,868	3,500																			
200+21 to 207+69	2.680	5,755	6,347					701	3,020																			
207+69 to 259+72	0.005	1,425	1,824					140																				
259+72 to 263+06	0.005	1,651	1,816			1,000		302																				
263+06 to 447+31	0.610	3,255	3,580				500	329	1,270																			
447+31 to 157+95	2.734	51,822	52,922					5,800	1,800																			
157+95 to 161+02	2.220	7,318	8,602					1,211	630																			
161+02 to 169+35	1.824	12,610	13,871	7,824				698	1,700																			
169+35 to 371+31.34	2.596	2,000	12,974					1,174	1,015																			
Approximate Roads																												
2+10 Lt.		20						45	130																			
1+00 Rt.		20	30					45	130																			
17+00 Lt.		30						45	150																			
50+00 Rt.		40	30					45	110																			
164+00 Lt.			1,200					70	35																			
160+00 Lt.		20	10					45	65																			
160+00 Rt.		20	10					45																				
199+00 Rt.		600	300					45																				
214+00 Rt.		1,500						45																				
229+75 Lt.			500					45																				
361+00 Lt.	0.530	10,800						500	500																			
Subtotal		267,160	285,234	14,304	15,000	1,000	500																					
Summary of Unclassified Excavation																												
Prism			285,234																									
Benching for embankments			14,304																									
Overbreaks and slides			15,000																									
Subgrade			1,000																									
Channel changes			500																									
Subtotal inlets and outlets			1,000																									

Bureau of Public Roads Region 9 Denver, Colo.

Type Code: 6211

Sheet 1 of 2 Sheets

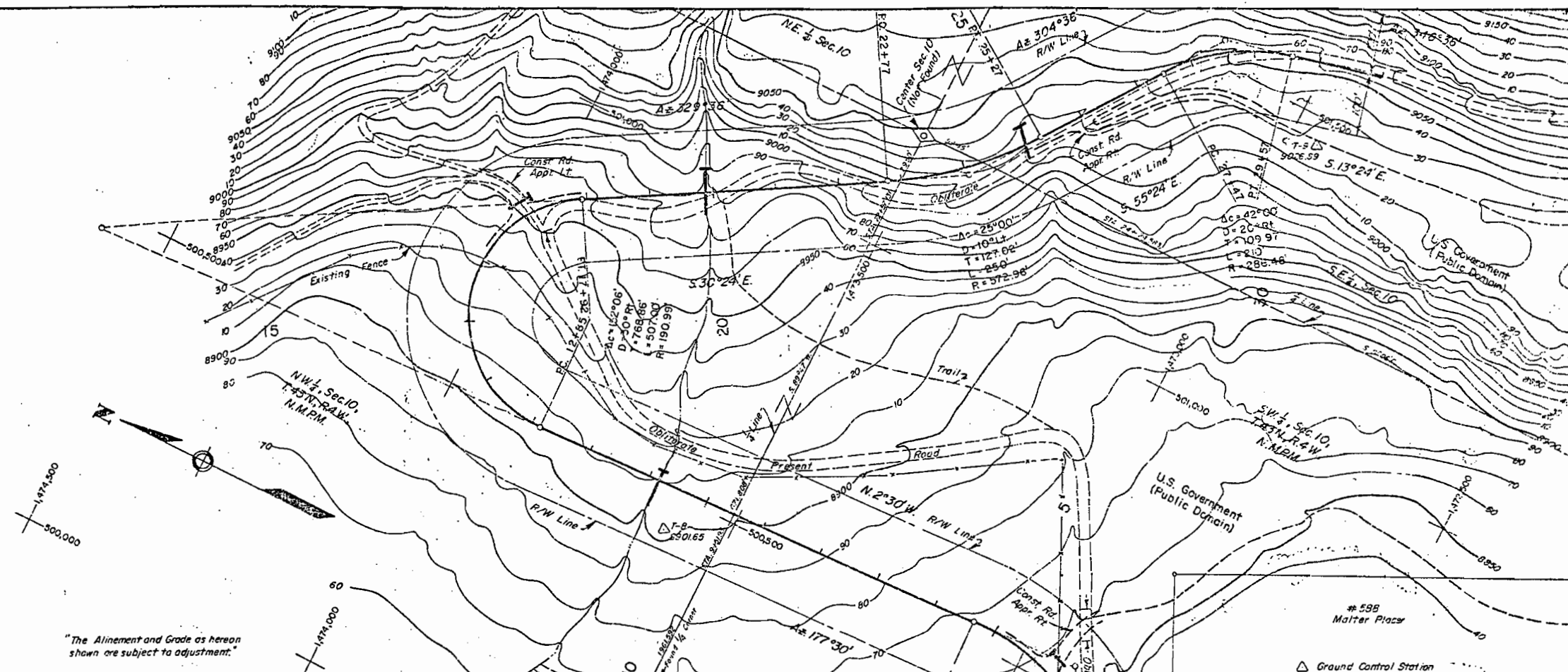
The following is an approximate estimate of quantities and no responsibility for their accuracy is assumed. No allowance will be made for anticipated profit or loss incurred due to the increase, decrease or elimination of any of the quantities shown that may be found necessary during construction.

ITEM NO.	STATION TO STATION														Station to Station	Derrick Placed Rock Embankment	Maintenance Marker Posts	Delin-entors
	Unclass. Excav. Culverts Inlets and Outlets	Excav. for Struct.	453(1) Galv. Corr. Metal Pipe		453(2) Asbestos-Bonded Corr. Metal Pipe		453(5) 60-inch 10-gage Asbestos Bonded Paved Invert C.M.P.	453(6) 24-inch C. M. P. Elbows	453(7) 24-inch Bituminous Coated C.M.P. Elbows	460(2) Metal End Sections for Pipe Culverts		460(4) Bituminous Coated Metal End Sections for 24-inch Pipe Culverts	460(5) 8-inch Coated Bituminous Back-Fill	460(7) Porous Material				
			A 24-inch 16-gage	B 36-inch 14-gage	A 24-inch 16-gage	B 36-inch 14-gage				A 24-inch	B 36-inch							
2+00 (Appr. Lt.)		5	16															
4+00 (Appr. Rt.)		5	16															
10+00 (Appr. Lt.)	30	30	58															
17+00	40	100	78															
17+07 (25° Skew)	10	55	54					1(30)										
20+50	10	45	80					1(45)										
24+10	5	70		106														
45+50	6	20	18					1(45)										
52+00	8	20	18					1(45)										
52+50	10	30	16					1(45)										
64+75	6	40	50					1(45)										
68+75	2	85	110															
72+00	0	30	46					1(45)										
77+00 (45° Skew)	20	90		80														
80+00 (40° Skew)	15	70	80					1(30)										
85+75 (50° Skew)	10	150			90													
90+00	2	6			80													
100+00	15	55			80													
107+00 (35° Skew)	15	10	90					1(225)										
111+00	15	150		80														
111+00 (20° Skew)	5	50	70															
120+00	10	10	45					1(45)										
125+00	10	20	40															
130+00	10	45	50					1(30)										
141+00	10	20	35					1(45)										
146+00	15	70		96														
149+15	5	10	90															
155+00	20	25	48					1(45)										
161+00	10	10	18					1(45)										
168+00	1	8																

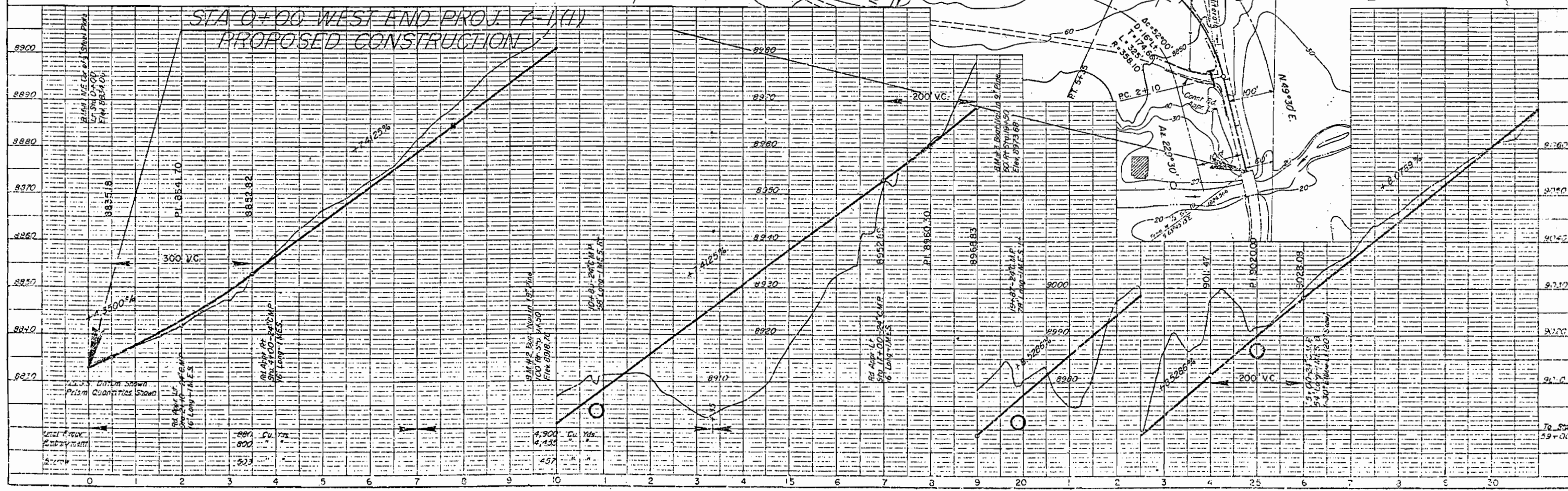
[illegible]

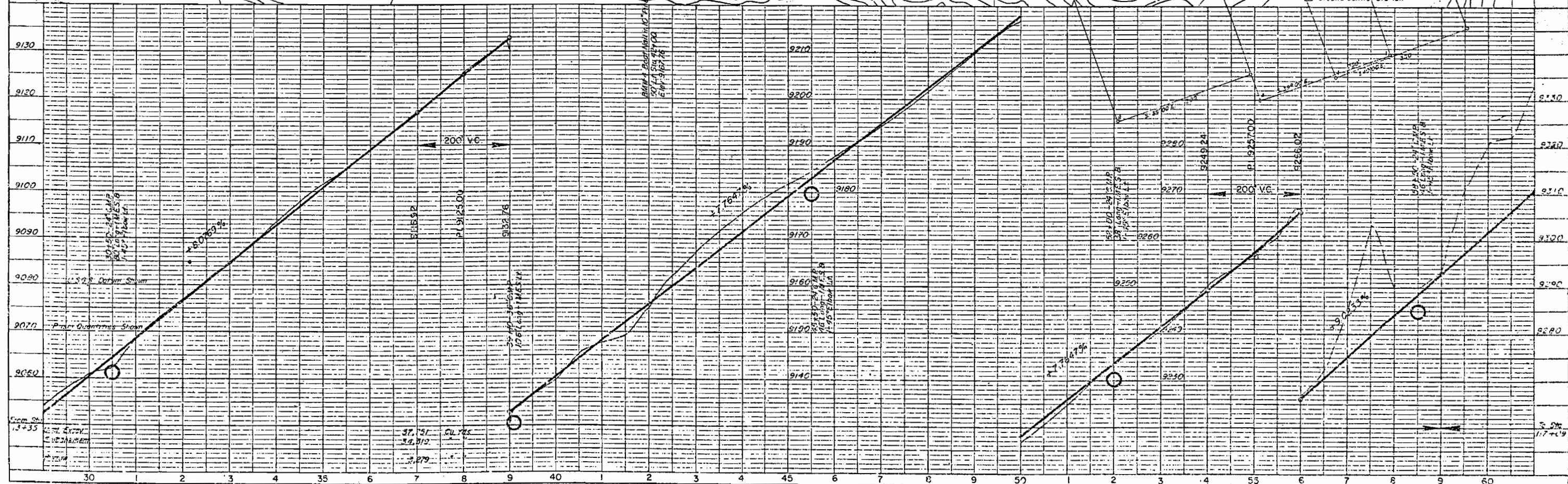
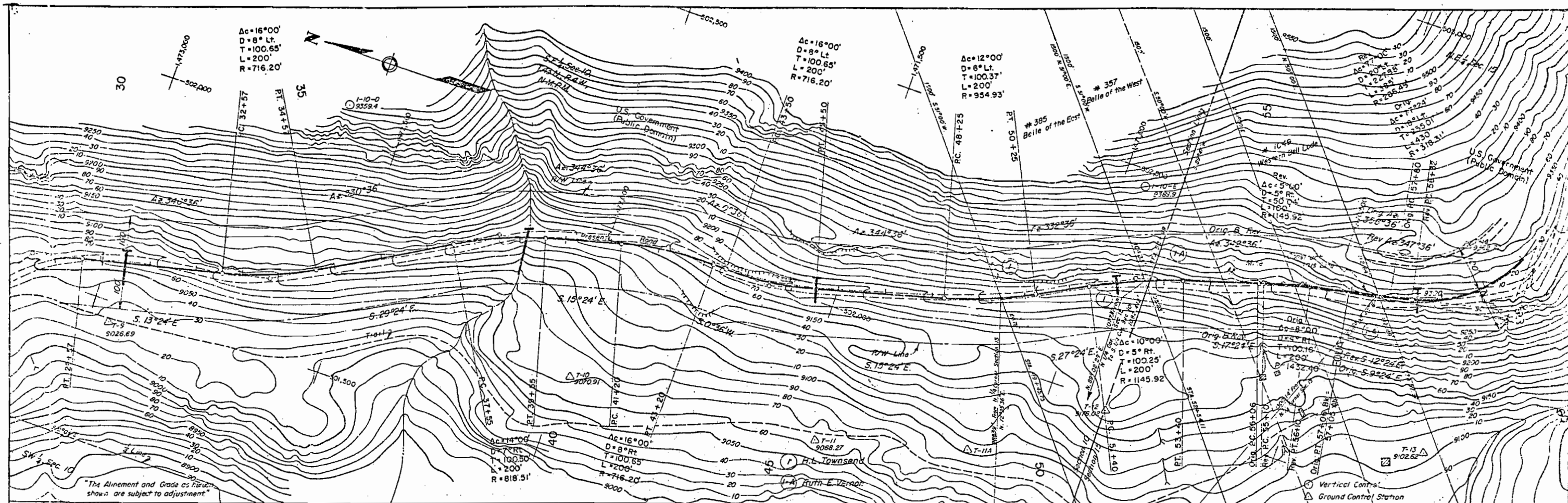
South Fork - Lake City ROUTE: 7
PROJECT: 7-1(1)
STATE: Colorado COUNTY: Hinsdale
NATIONAL: Forest: Cannon

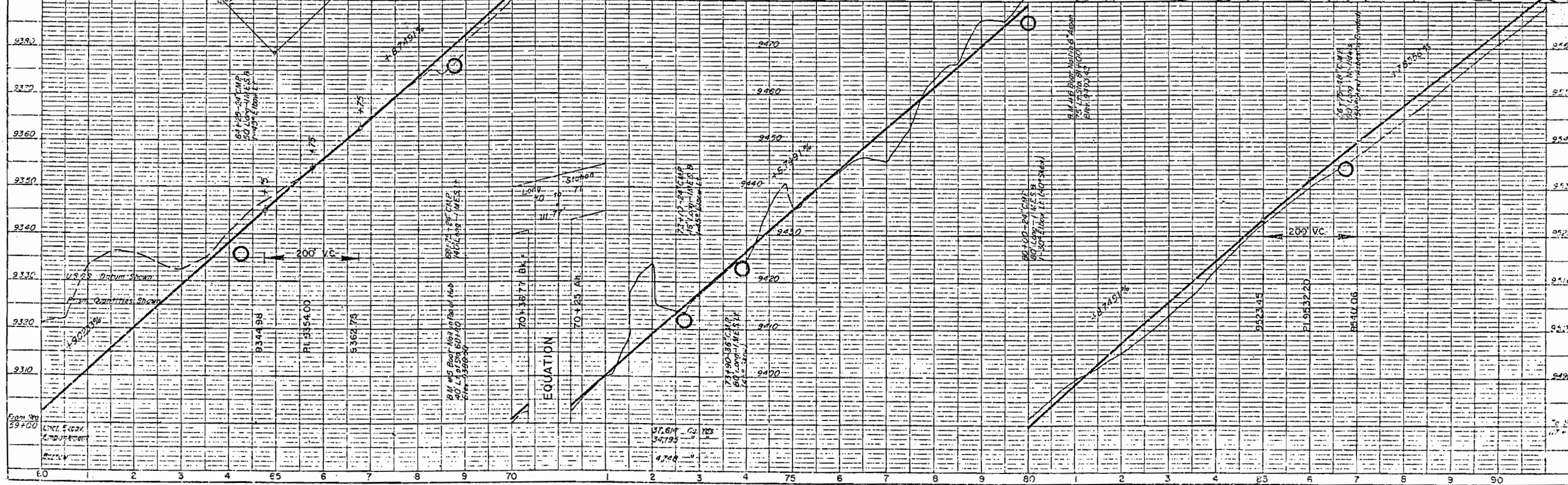
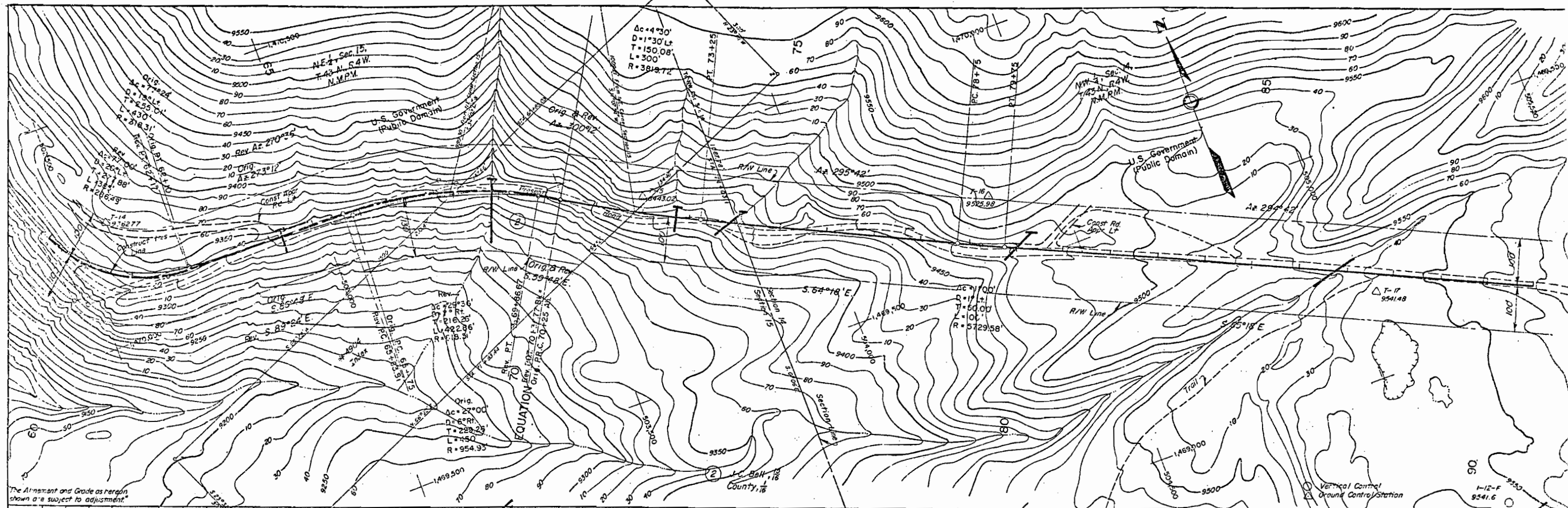
Sheet 2 of 2 Sheets

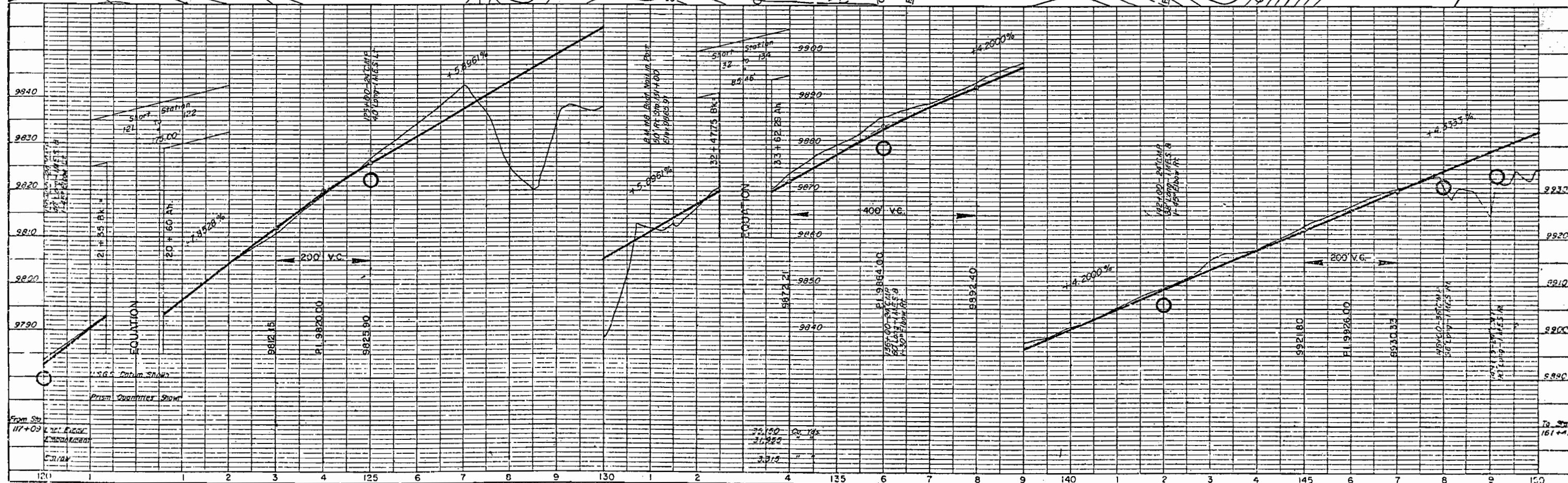
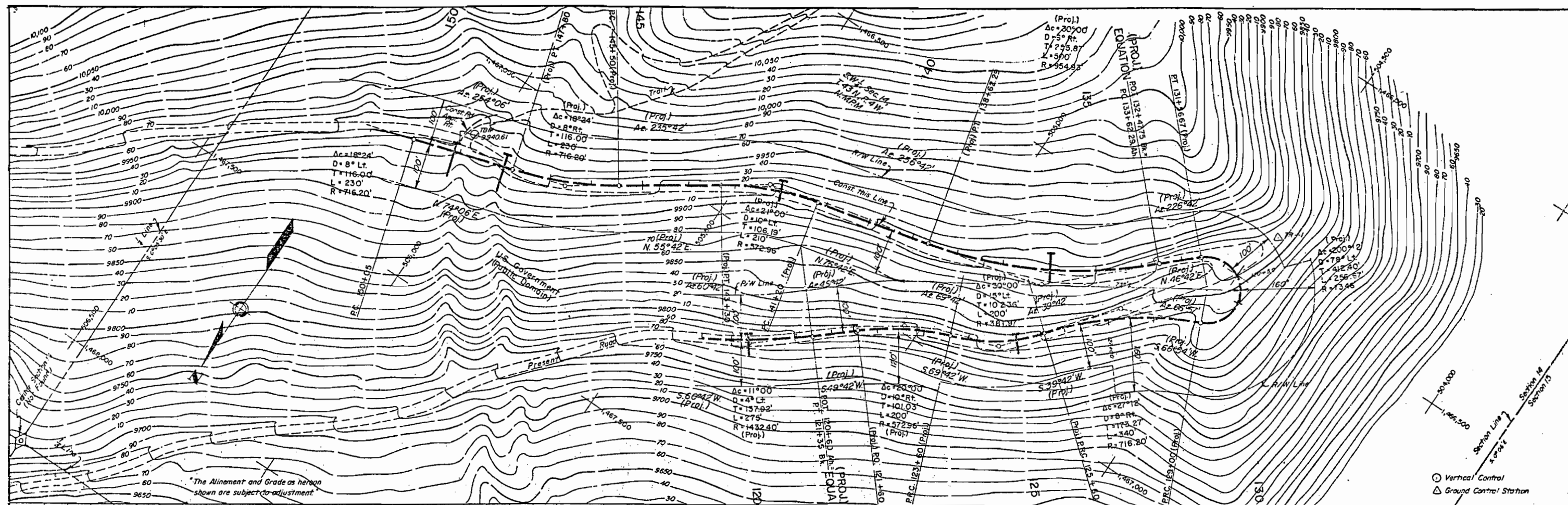


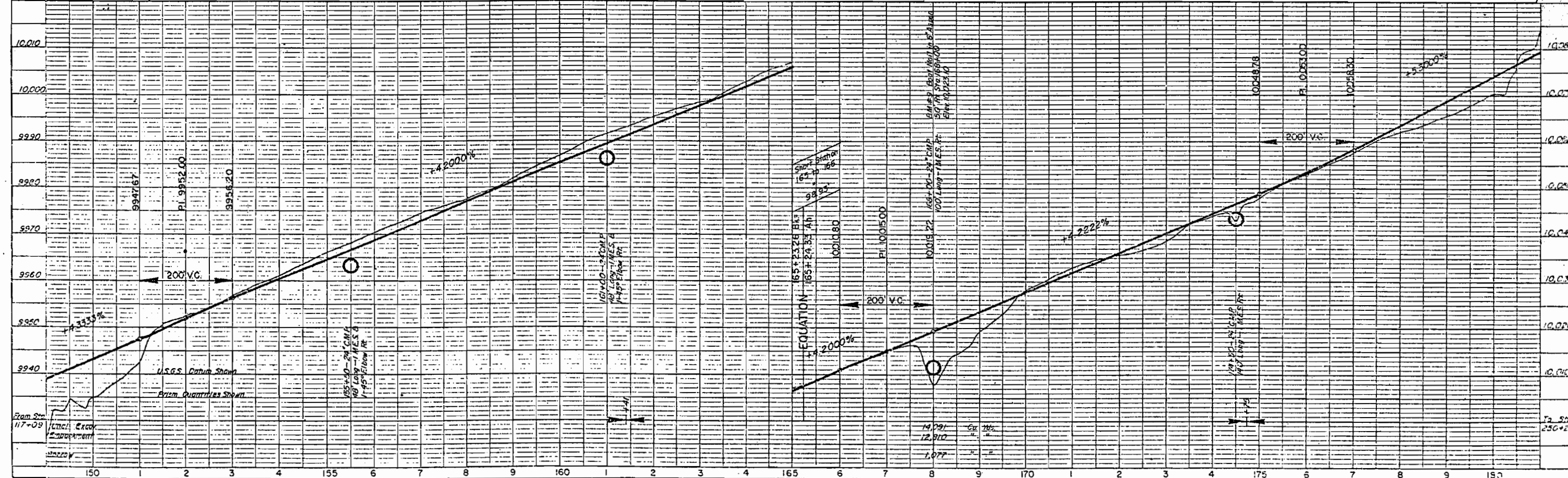
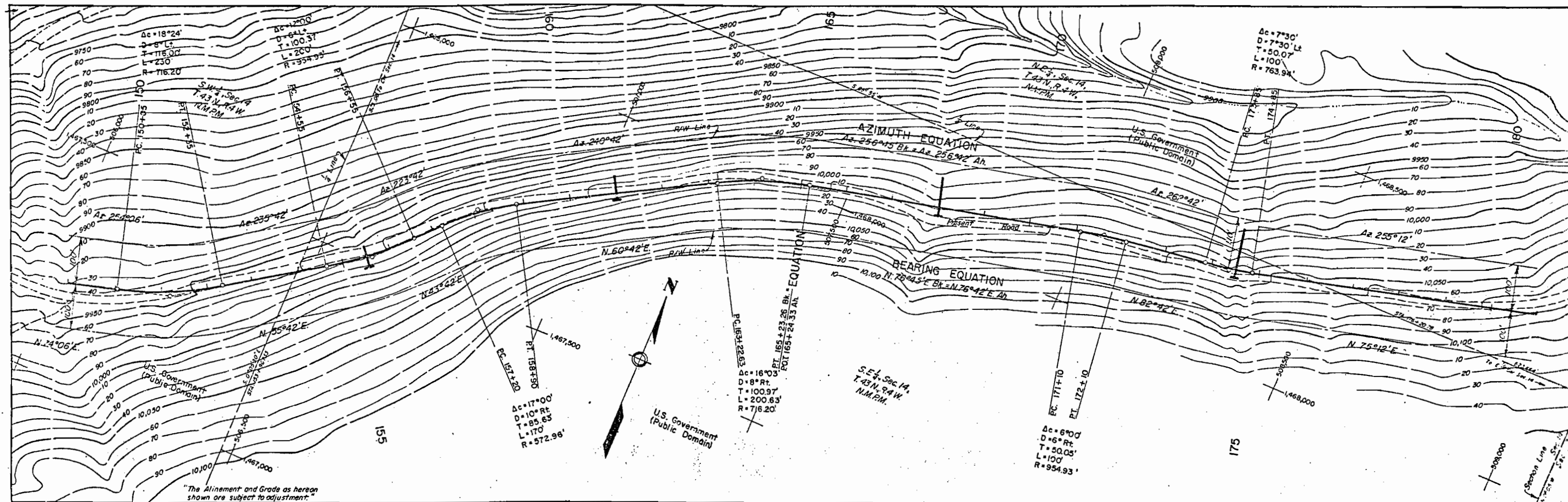
"The Alignment and Grade as hereon shown are subject to adjustment."

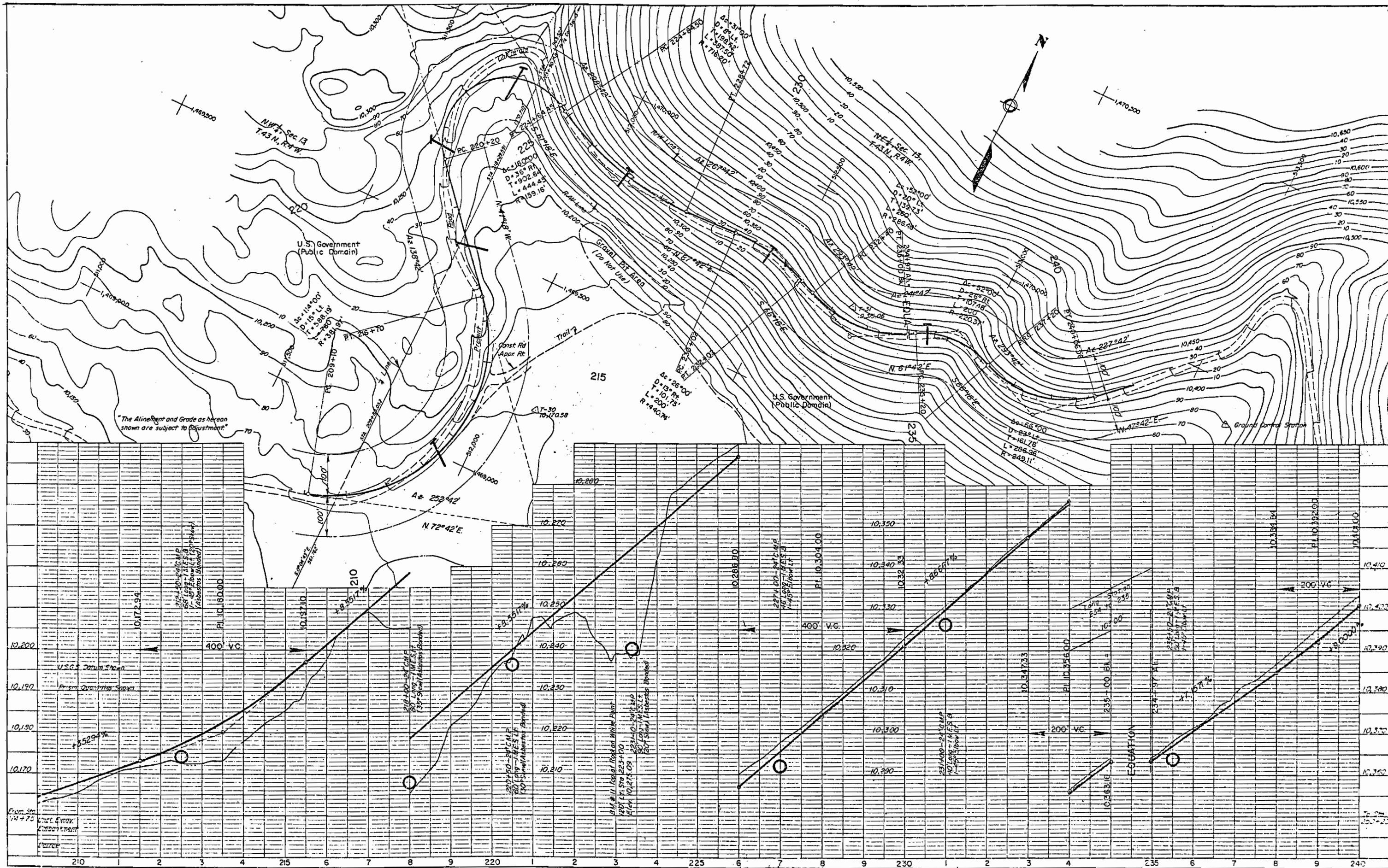


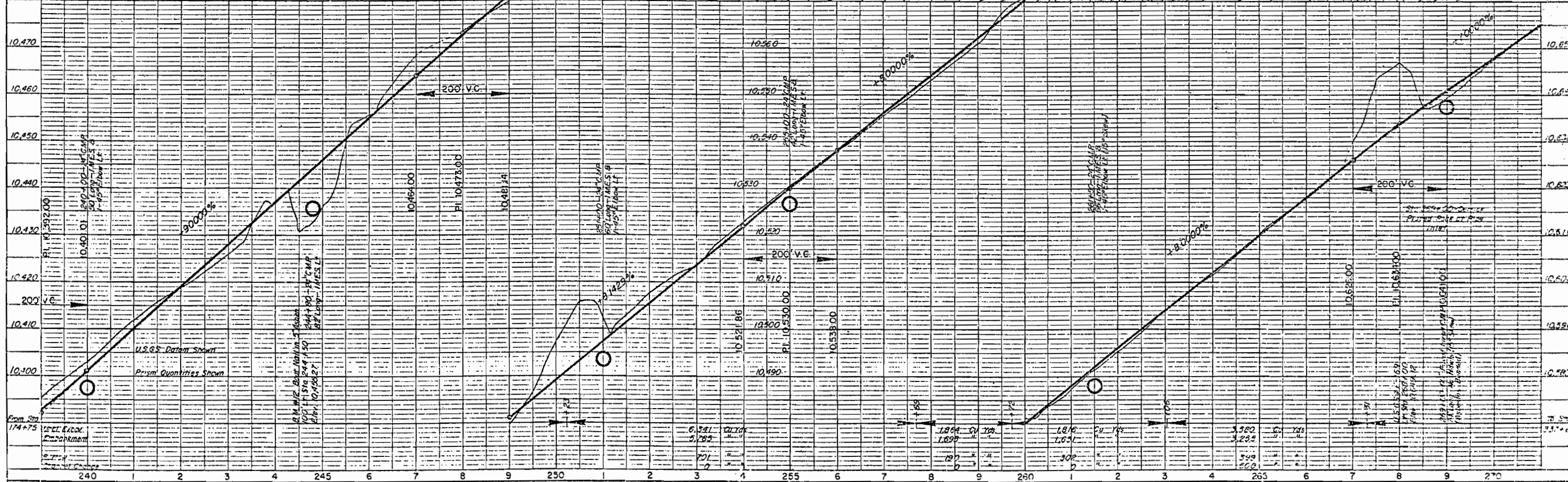
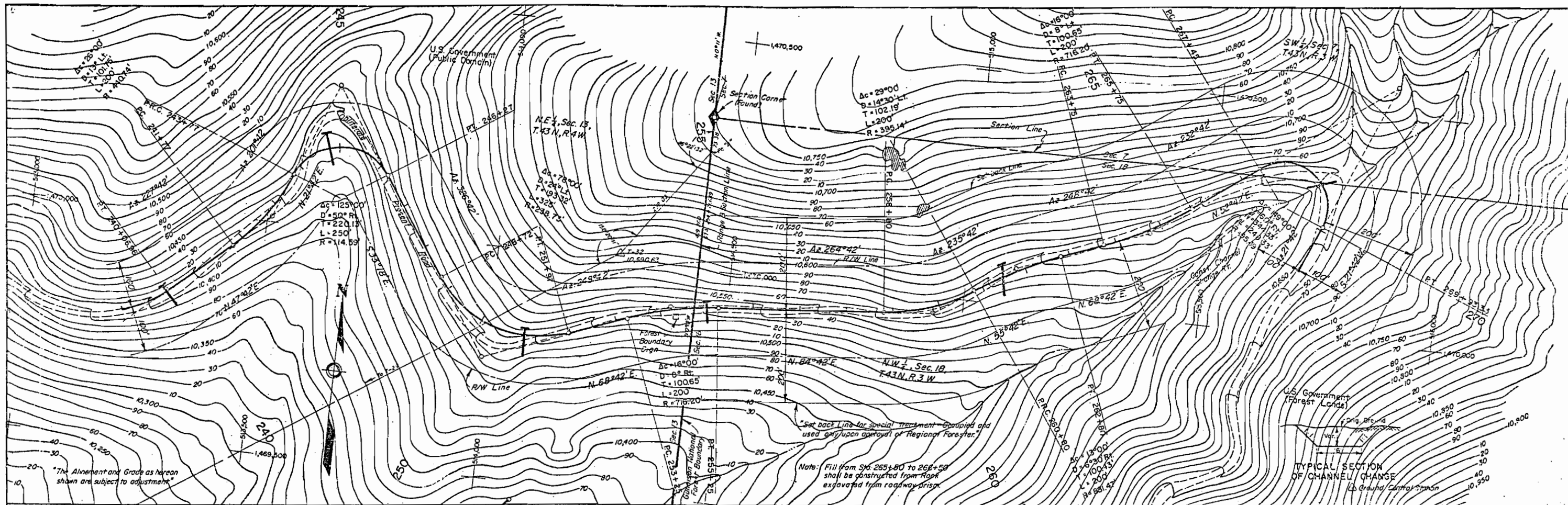


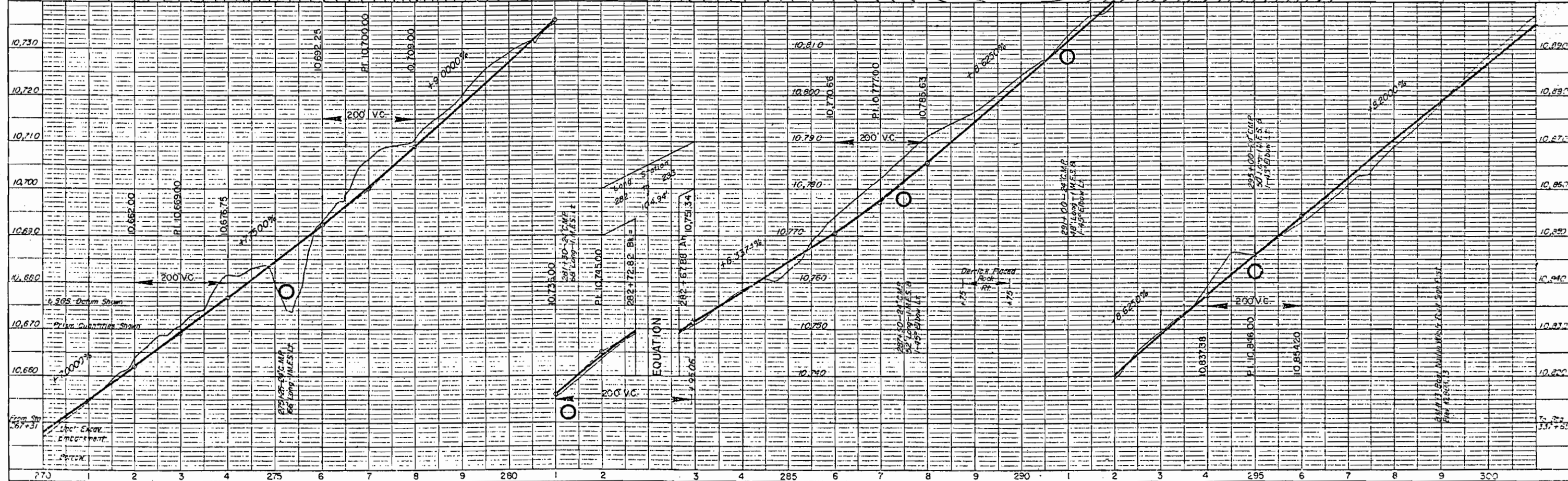
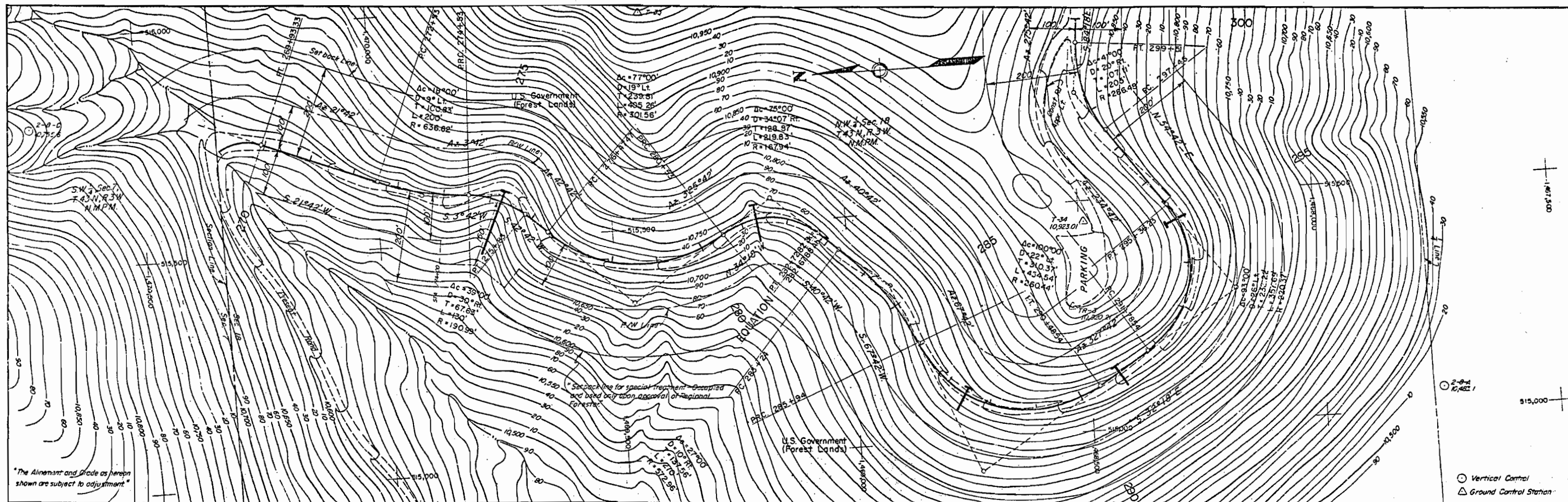


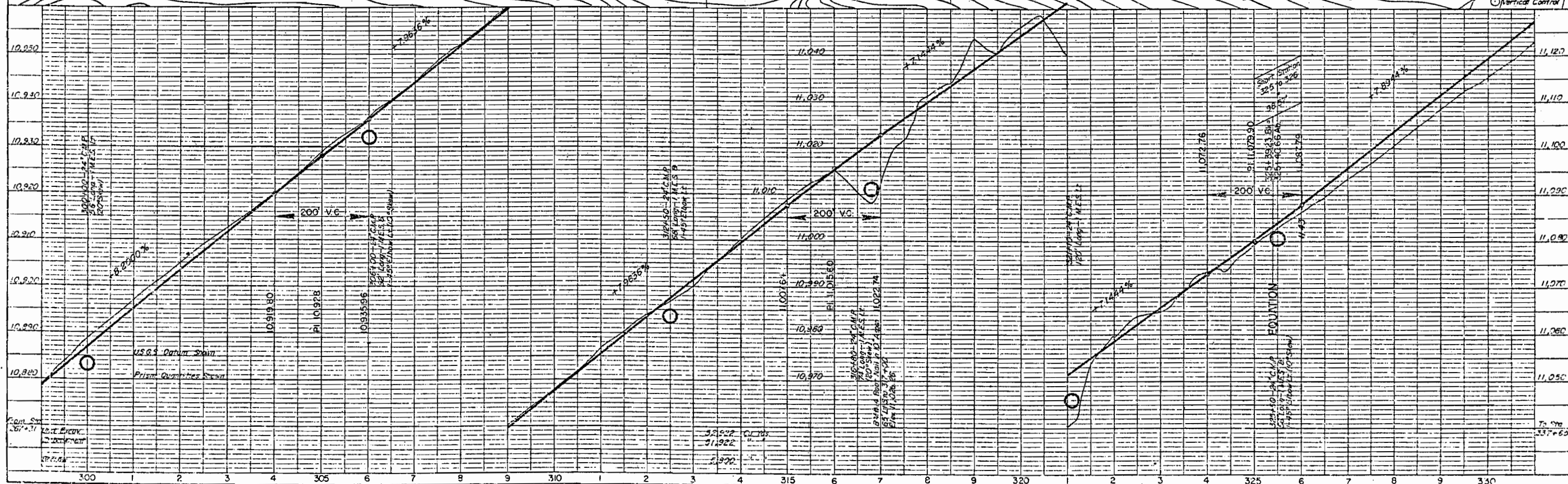
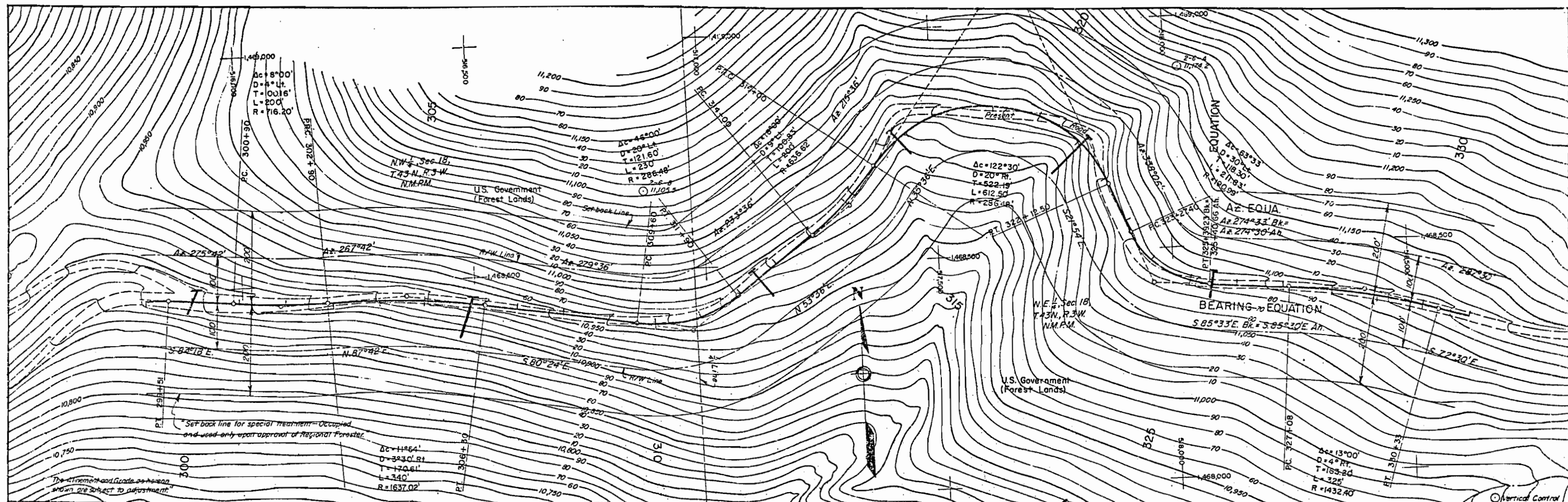




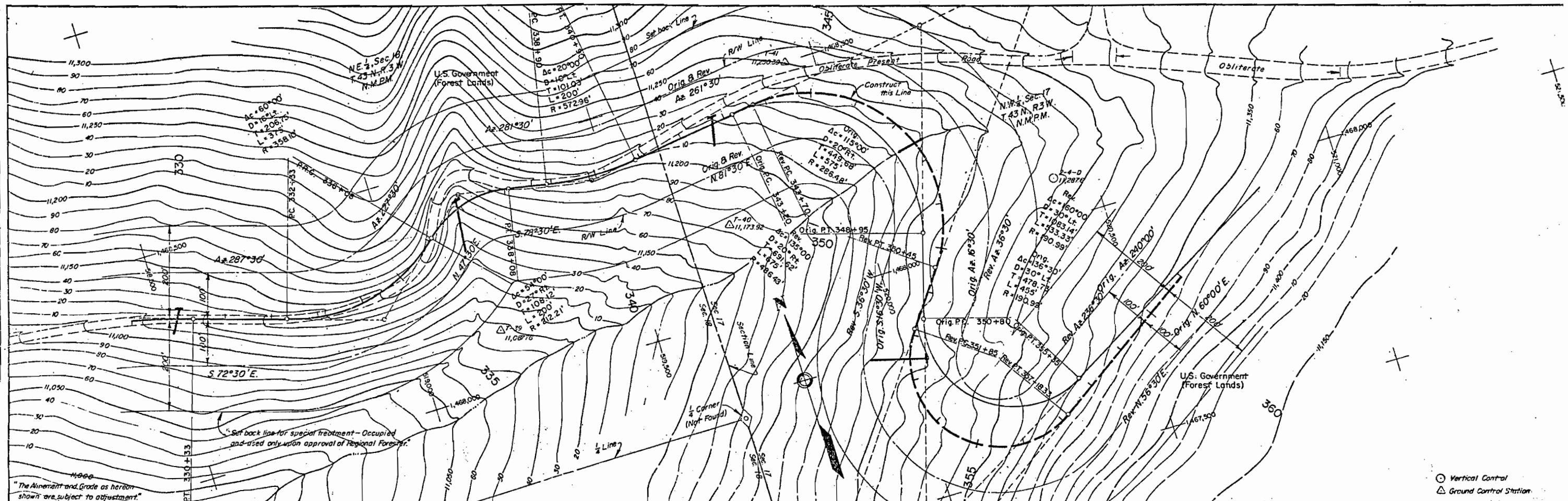




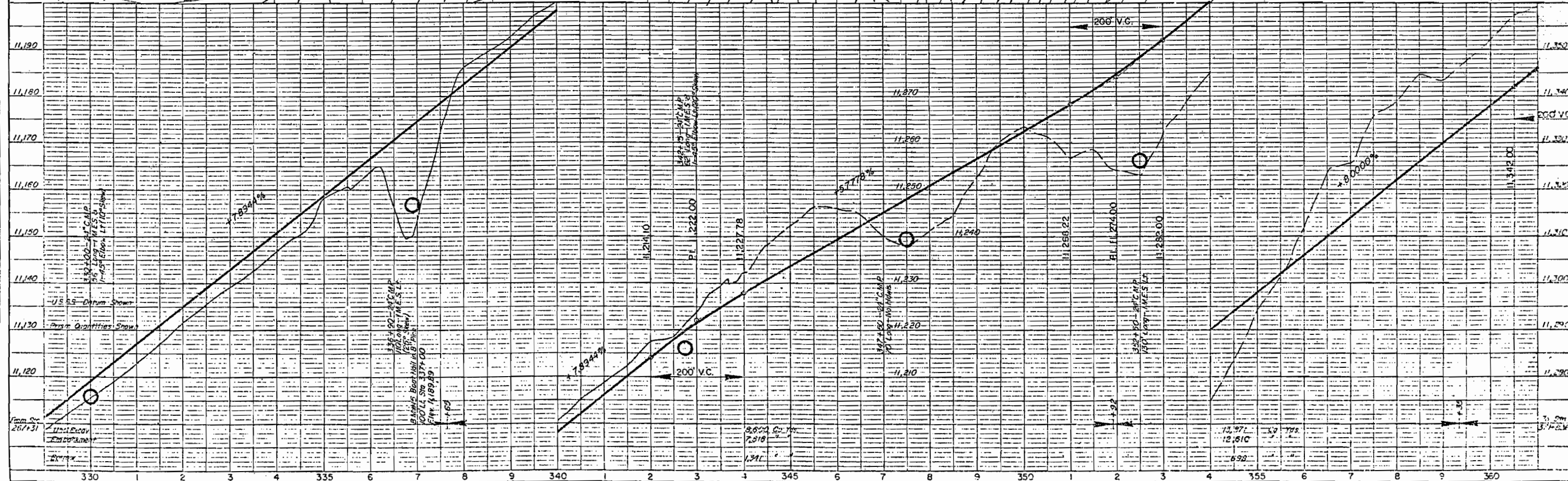


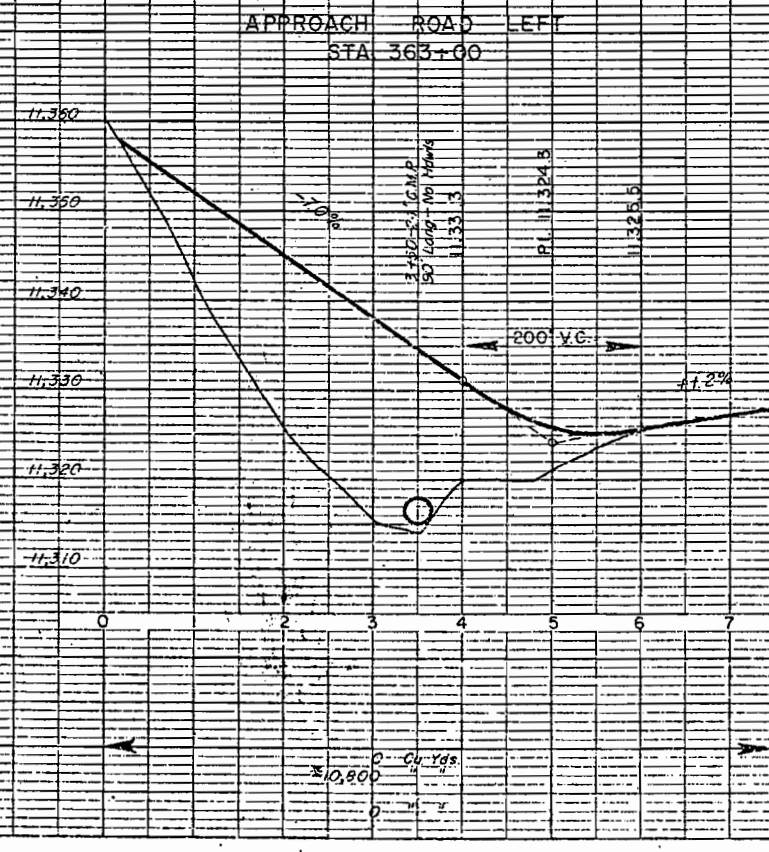
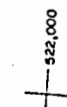
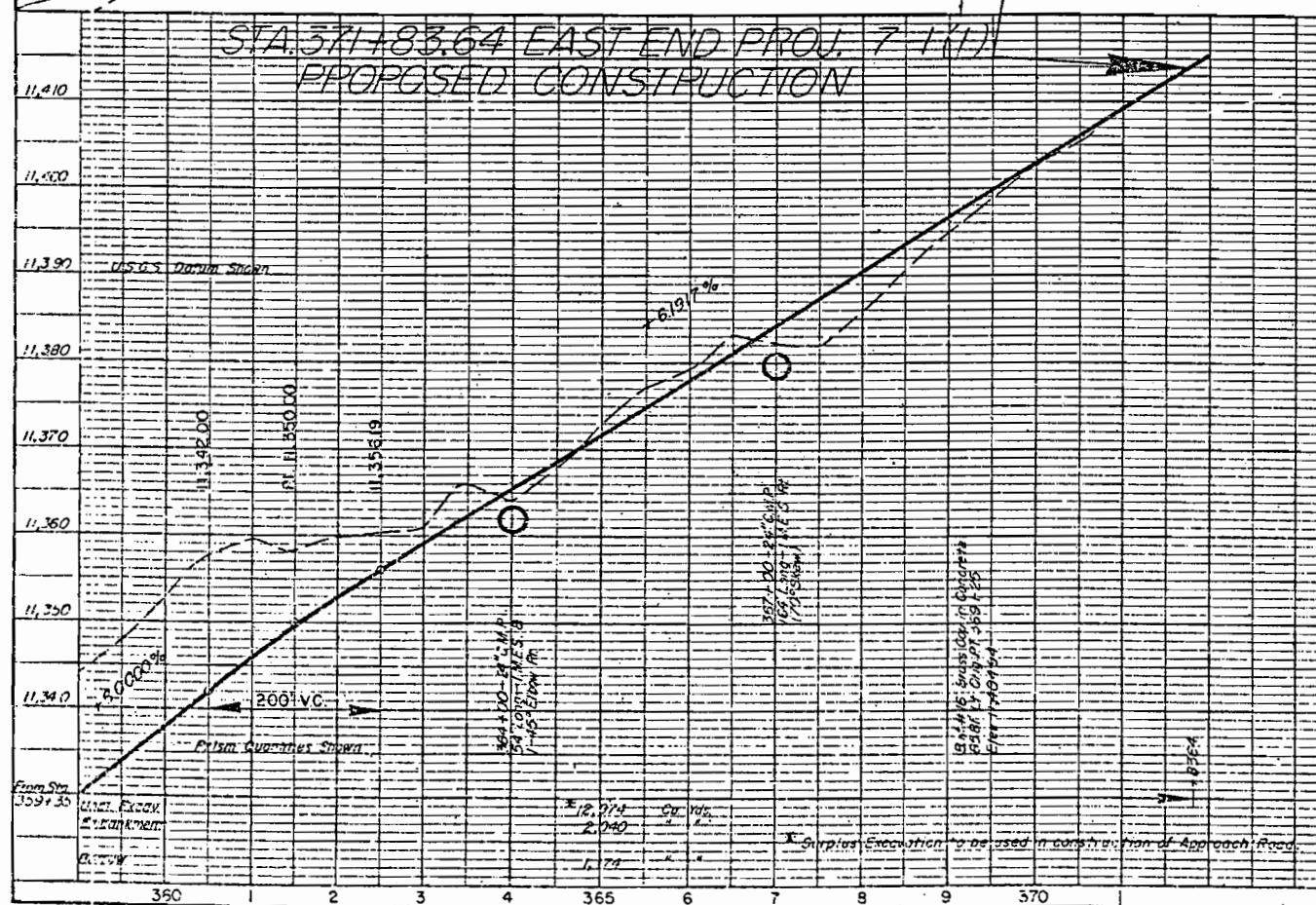


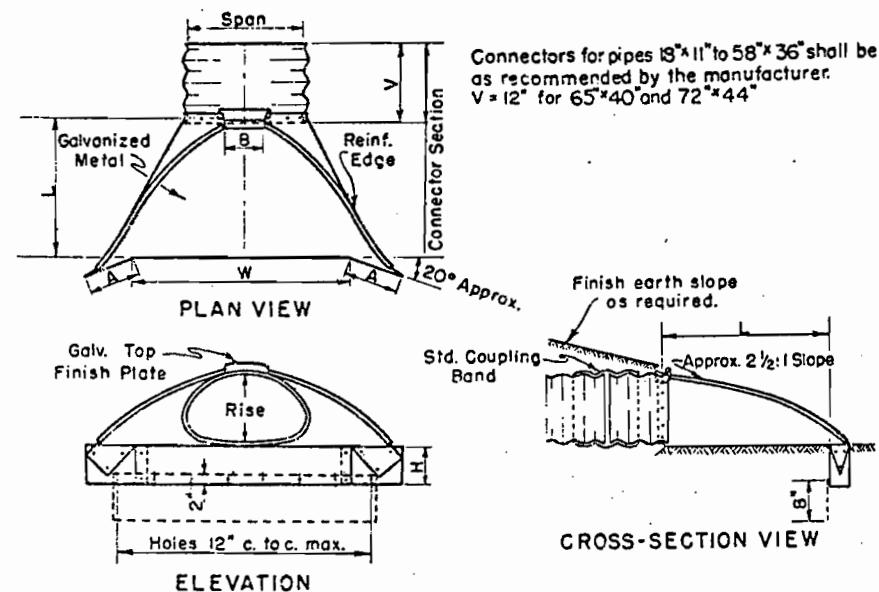
DATE	
BY	
PROJECT	
NOTE BOOK	
NO.	



DATE	
BY	
PROJECT	
NOTE BOOK	
NO.	







METAL END SECTION FOR PIPE ARCH CULVERTS

Norm. Culv. Dia.	Arch Dimen. Span	Rise	Gage	DIMENSIONS					
				A	B	H	L	W	
15"	18"	11"	16	4 1/2"	9"	6"	19"	30"	
18"	22"	13"	16	5 1/4"	10"	6"	23"	36"	
24"	29"	18"	14	7"	14"	6"	31 1/2"	48"	
30"	36"	22"	14	8 1/2"	16"	6"	38 1/2"	60"	
36"	43"	27"	12	10 1/2"	17 1/2"	7 1/8"	47"	75"	
42"	50"	31"	12	12 1/4"	20"	9 1/8"	54"	85"	
48"	58"	36"	12	14"	26"	10 3/8"	63"	96"	
54"	65"	40"	12	15 1/4"	23"	10 3/8"	70"	112"	
60"	72"	44"	10	17 1/4"	24"	12 1/8"	77"	128"	

GENERAL NOTES FOR M.E.S.

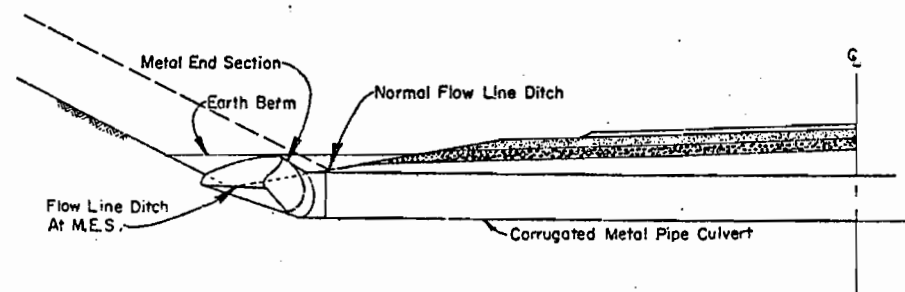
Toe plates shall be installed on end sections when directed by the Engineer. Toe plate shall be punched to match holes in skirt lip. 3/8" galv. bolts shall be furnished. Length of toe plate is W+10" for Pipe-Arches with Rise of 11" to 27" incl. and W+18" min. for Pipe-Arches with Rise of 31" to 44" incl.

Skirt Section for Pipe-Arches with Rise of 11" to 22" incl. shall be made in one piece.

Skirt Section for Pipe-Arches with Rise of 27" to 36" incl. may be made from two sheets joined by riveting or bolting on center line.

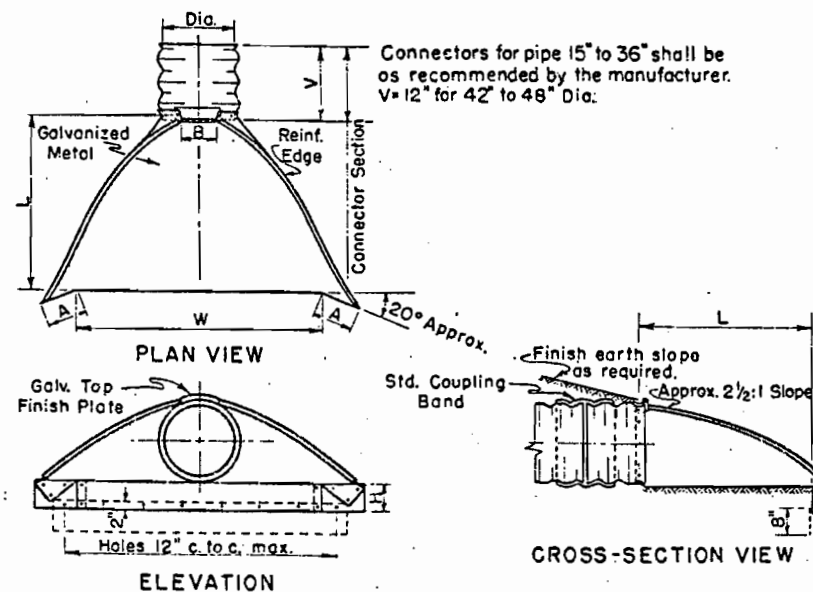
Skirt Section for Pipe-Arches with Rise of 40" to 44" incl. may be made from three sheets joined by riveting or bolting at equal distances from center line.

Connector Section, Corner Plate and Toe Plate shall be same gage as Skirt and shall be galvanized.



SECTION AA

TYPICAL METAL END SECTION INSTALLATION IN CUT SECTIONS
USE



METAL END SECTION FOR PIPE CULVERTS
USE

Pipe Diam.	Gage	DIMENSIONS					
		A	B	H	L	W	
12"	16	4 1/4"	6"	6"	21"	24"	
15"	16	6"	8"	6"	26"	30"	
18"	16	7"	9"	6"	31"	36"	
24"	14	9 1/2"	12"	6"	42"	48"	
30"	14	12"	15"	7 1/2"	52 1/2"	60"	
36"	12	14"	18"	9"	63"	72"	
42"	12	16"	21"	10 1/2"	73 1/2"	84"	
48"	12	18"	27"	12"	84"	90"	

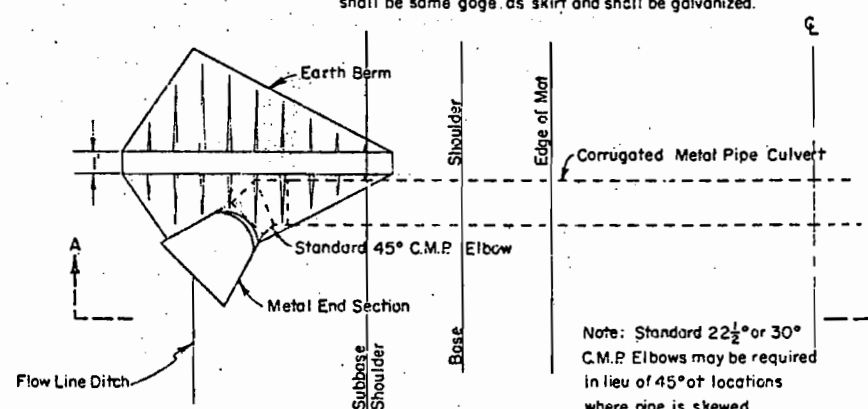
GENERAL NOTES FOR M.E.S.

Toe plates shall be installed on end sections when directed by the Engineer. Toe plate shall be punched to match holes in skirt lip. 3/8" galvanized bolts shall be furnished. Length of toe plate is W+10" for 12" to 30" dia. pipe incl. and W+22" for 36" to 48" dia. pipe incl.

Skirt Section for 12" to 24" dia. pipe incl. shall be made in one piece.

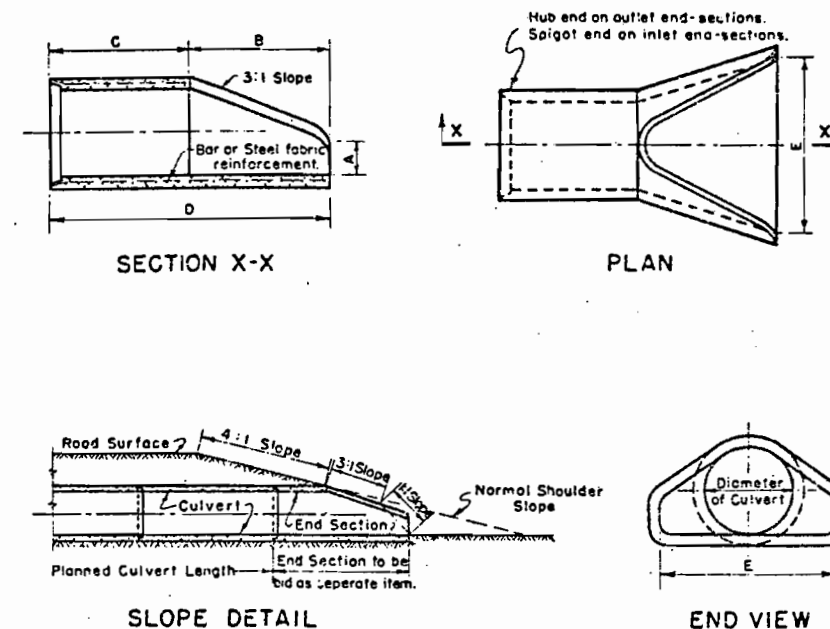
Skirt Section for 30" to 48" dia. pipe incl. may be made from two sheets joined by riveting or bolting on center line.

Connector Section, Corner Plate and Toe Plate shall be same gage as skirt and shall be galvanized.



PLAN

Note: Standard 22 1/2° or 30° C.M.P. Elbows may be required in lieu of 45° at locations where pipe is skewed.



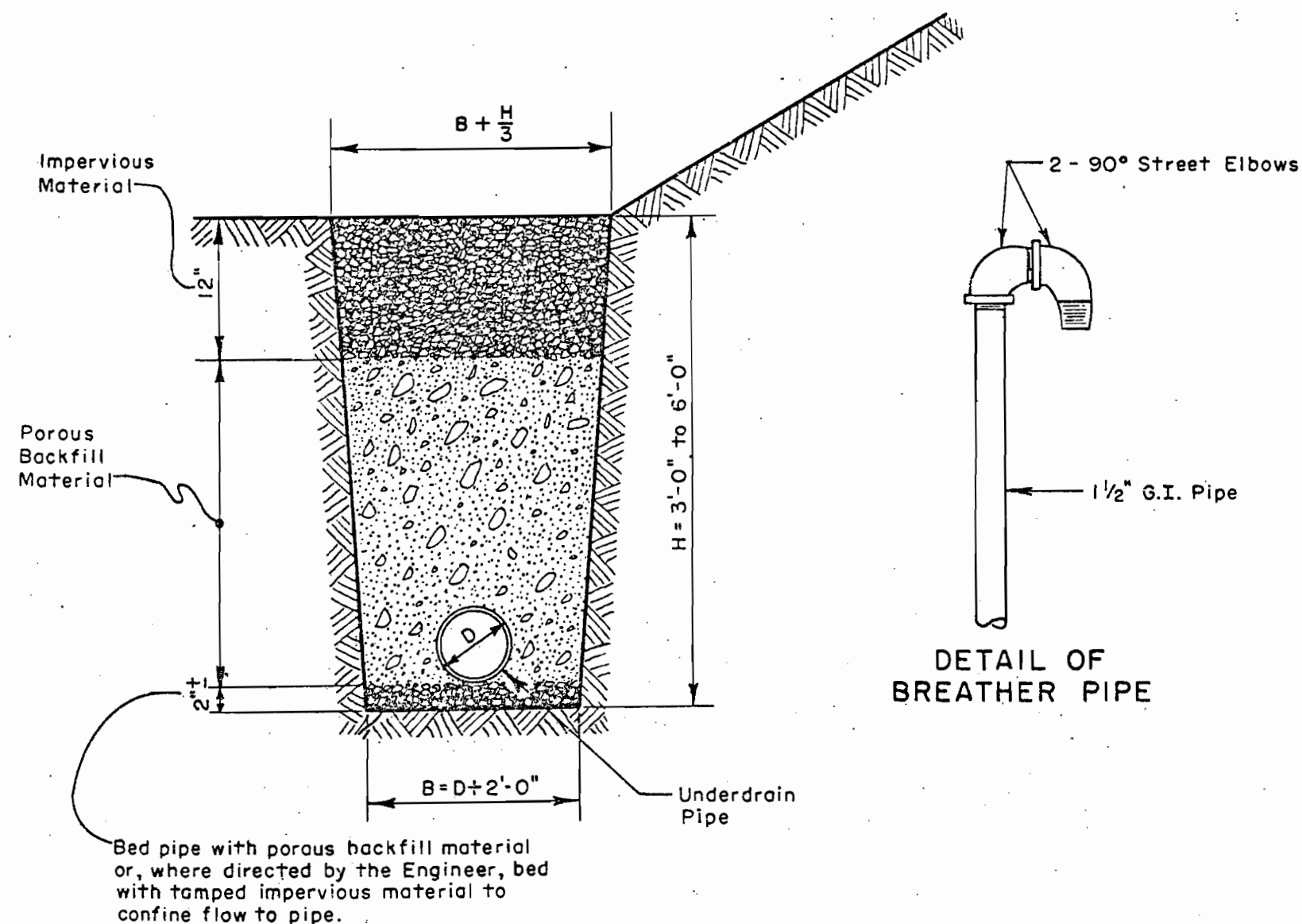
CONCRETE END SECTION
FOR PIPE CULVERTS

END-SECTION DIMENSIONS					
DIAM.	A	B	C	D	E
12"	4"	2'-0"	4'-0 1/2"	6'-0 1/8"	2'-0"
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"
18"	9"	2'-3"	3'-10"	6'-1"	3'-0"
24"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"
30"	1'-0"	4'-6"	1'-7 1/4"	6'-1 3/8"	5'-0"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 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"

Note: Design of end-section shall conform to Standard Reinforced Sectional Concrete Culvert Pipe.

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD
CONCRETE AND
METAL END SECTIONS
FOR PIPE CULVERTS



PIPE UNDERDRAIN

DETAIL OF
BREATHER PIPE

GENERAL NOTES

SPECIFICATIONS: Current B.P.R. Standard Specifications.

MATERIAL: Porous granular backfill shall be clean, coarse sand and shall conform to the following gradation requirements:

Passing 3" Sieve 100 %
Passing #4 Sieve 50 % Min.

All porous material passing the #4 sieve shall conform to the following:

Passing #50 Sieve 10 - 30 %
Passing #100 Sieve 0 - 10 %
Passing #200 Sieve 0 - 2 %

Impervious material shall contain sufficient granular material to be stable when wet and compacted in place.

CONSTRUCTION: When trench is under the roadbed, paved ditch, or other structure, the porous material shall completely fill the trench and the porous material shall be tamped into place. The material shall be dampened prior to placing if necessary to prevent segregation. If soft, mucky trench bottoms are encountered they shall be stabilized prior to placing bedding material by working granular material into the trench bottom.

The outfall end of underdrain pipe shall be covered with galvanized, No. 17 gage hardware cloth screen having approximately 1/2" x 1/2" mesh openings. The screen shall be held securely in place with standard coupling bands.

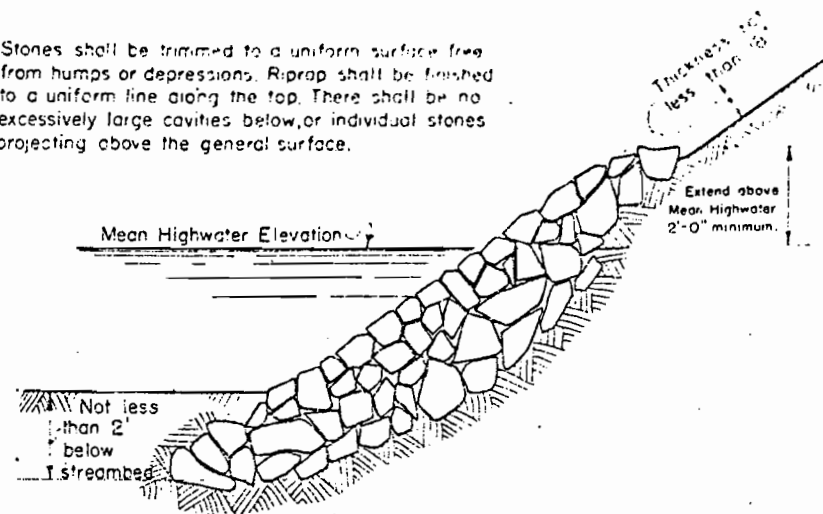
U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD
UNDERDRAIN

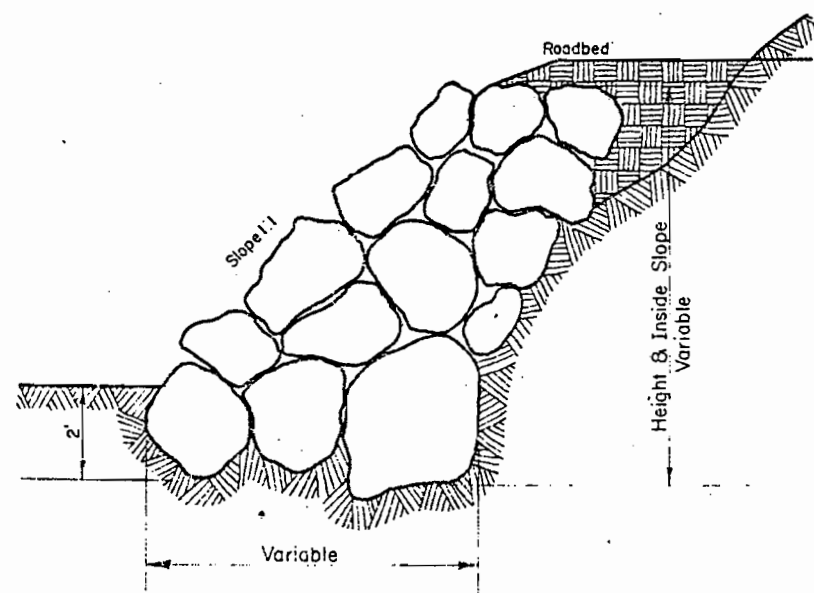
Revision 9/1963

STD. 119

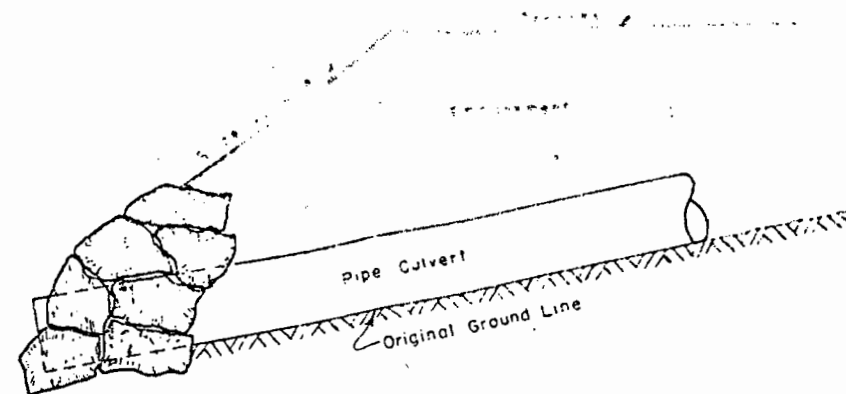
Stones shall be trimmed to a uniform surface free from humps or depressions. Riprap shall be finished to a uniform line along the top. There shall be no excessively large cavities below, or individual stones projecting above the general surface.



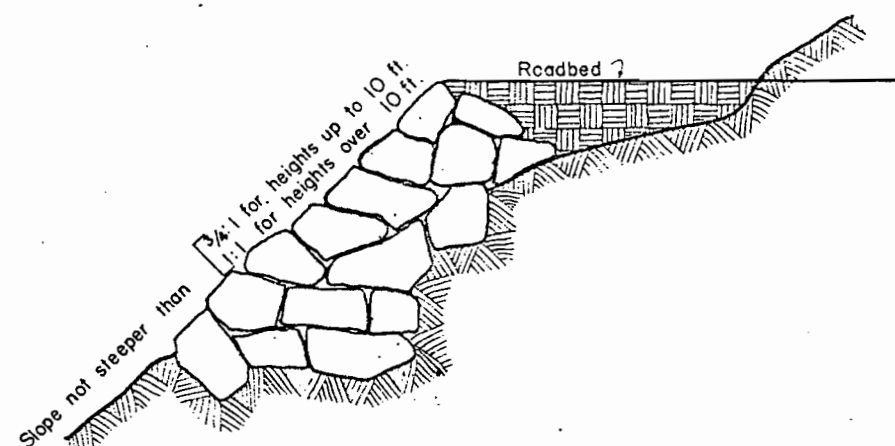
LOOSE RIPRAP



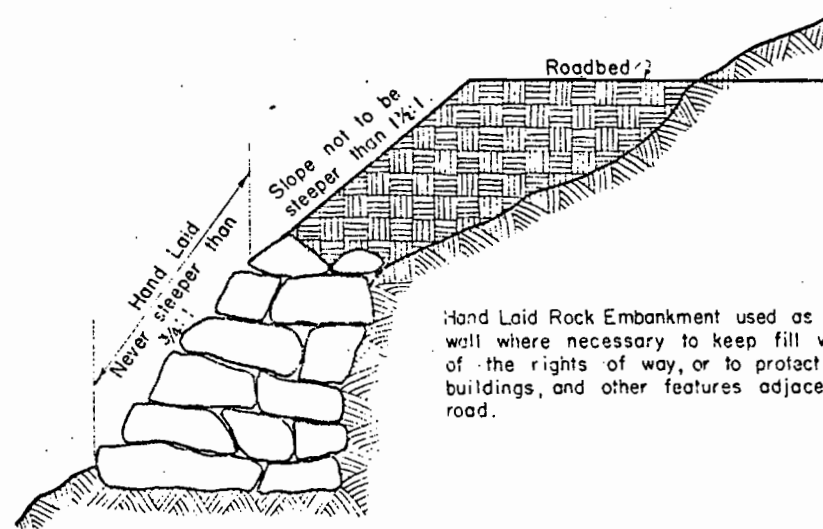
DERRICK PLACED ROCK
FULL HEIGHT
USE



TYPICAL SECTION AT END OF PIPE CULVERTS

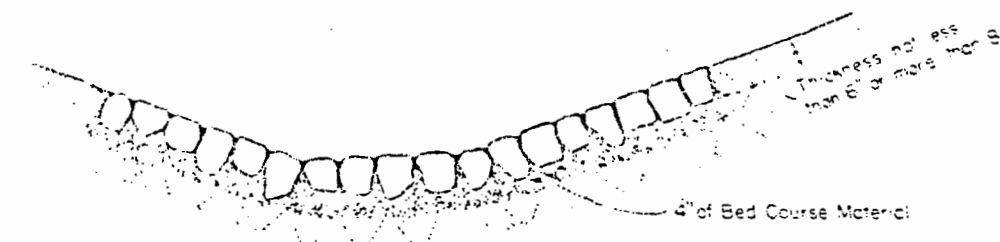


TYPICAL SECTION OF FULL HEIGHT CONSTRUCTION



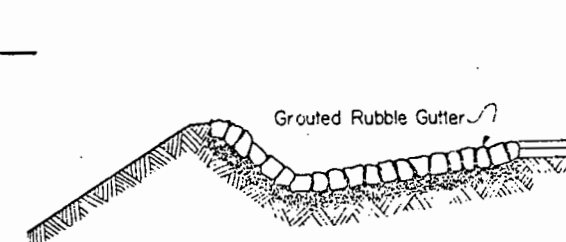
TYPICAL SECTION OF TOE WALL CONSTRUCTION

HAND LAID ROCK EMBANKMENT



All stones shall be rectangular in shape and shall extend entirely through the paving. Each stone shall be carried by the underlying material and not by the adjacent stones. The surface of the rocks shall not vary more than one inch from the required finished section.

TYPICAL SECTION THROUGH GROUTED RUBBLE GUTTER

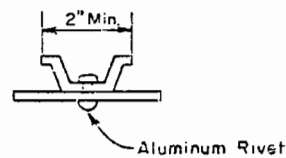


TYPICAL SECTIONS IN EMBANKMENTS AND CUTS

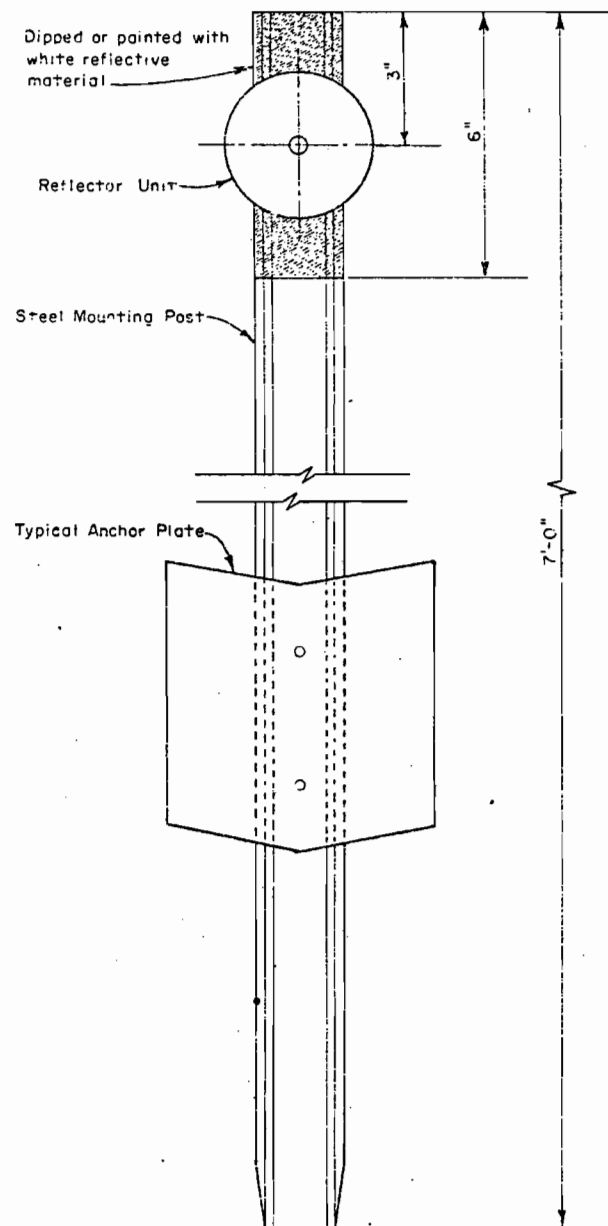
GROUTED RUBBLE GUTTER

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD ROCK STRUCTURES

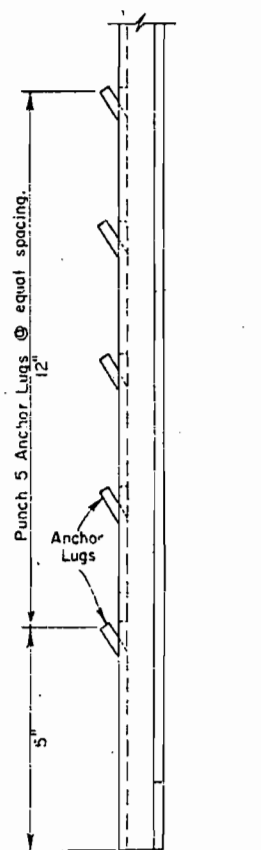


TOP VIEW

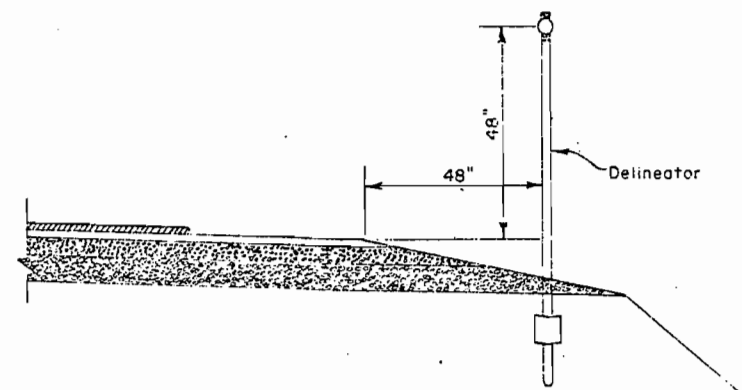


FRONT VIEW WITH ANCHOR PLATE

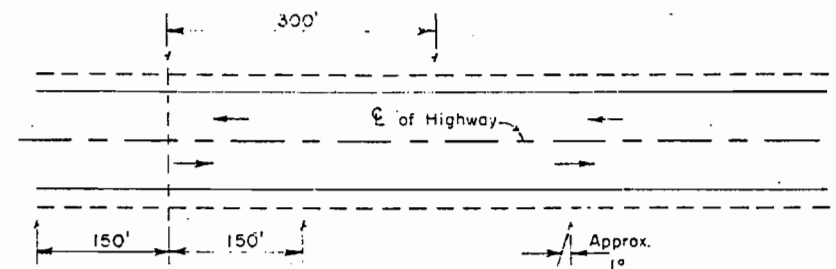
DELINEATOR USE



SIDE VIEW WITH ANCHOR LUGS



LOCATION OF DELINEATOR



DELINEATOR INTERVAL ON TANGENTS

DELINEATOR INTERVAL ON HORIZONTAL CURVES

DEGREE OF CURVE	SPACING ON CURVE FEET	SPACING ON EACH END OF CURVE		
		FIRST SPACE	SECOND SPACE	THIRD SPACE
1	152	200	200	200
2	106	191	200	200
3	86	155	200	200
4	74	133	200	200
5	66	119	198	200
7	55	99	165	200
9	48	86	144	200
12	41	74	123	200
15	36	65	106	200
18	33	59	99	198
21	30	54	90	180
25	28	50	84	168
30	24	43	72	144

GENERAL NOTES

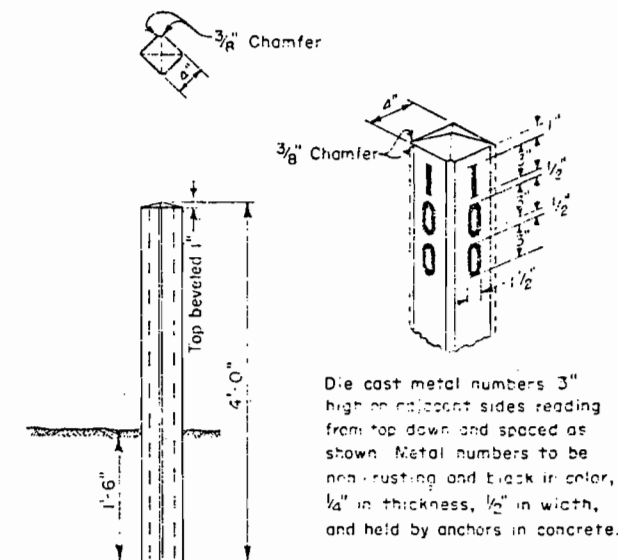
MATERIALS: The steel mounting post shall weigh at least one pound per foot. The mounting post shall be furnished with either type of finish shown and shall have a black baked enamel finish which is resistant to the shock of driving operations.

The top portion of the mounting post shall be either surfaced with white paint containing white reflective glass beads or painted with white paint and covered with white reflective glass beads while the paint is wet.

The delineator reflector unit shall be a sealed acrylic plastic prismatic reflex lens having a minimum of six and one-half square inches of smooth reflective area. The lens shall be housed in an aluminum frame and provided with a single grammatted mounting hole.

Mounting posts shall be driven to the depth shown and shall be vertical and in accurate alignment. They shall be driven by the use of a regular post driver or protected by a driving cap if any means other than a post driver is used.

The reflector unit shall be securely fastened to the steel mounting post with an approved type aluminum rivet.



Die cast metal numbers 3" high on adjacent sides reading from top down and spaced as shown. Metal numbers to be non-rusting and black in color, 1/4" in thickness, 1/2" in width, and held by anchors in concrete.

Concrete to be Class "V" S.P.R. Specifications except that an approved brand of white cement is to be used.

4 No 3 bars 3'-9" long tied with No. 12 soft annealed iron wire.

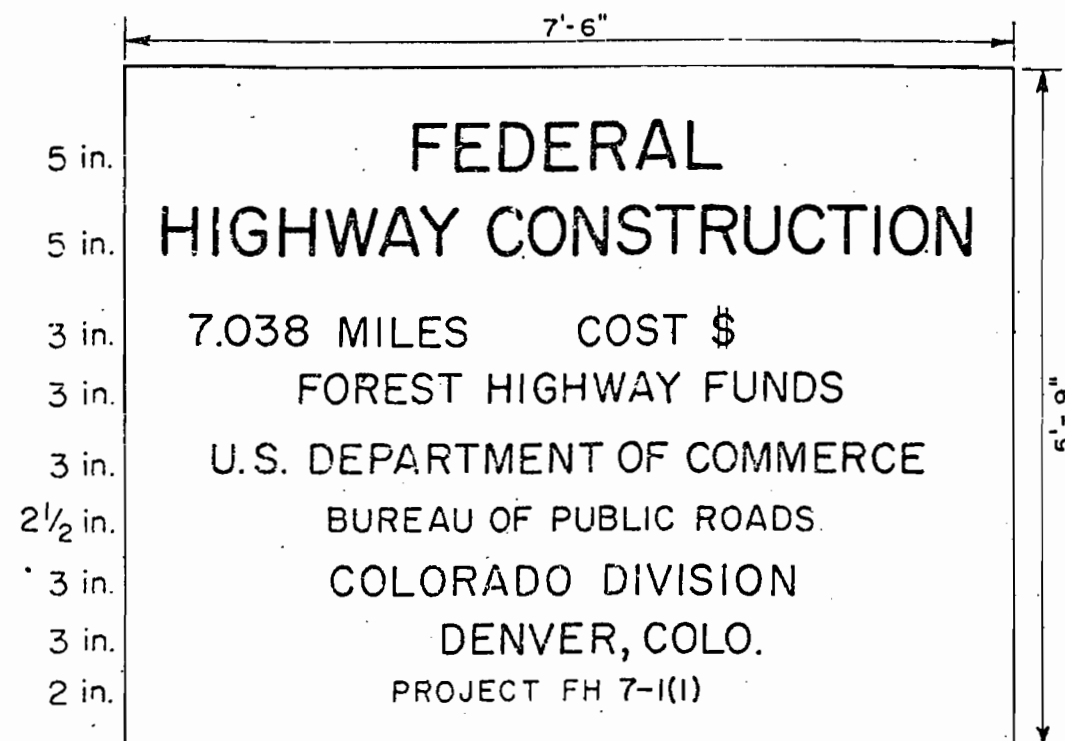
CONCRETE MAINTENANCE MARKER POST USE

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

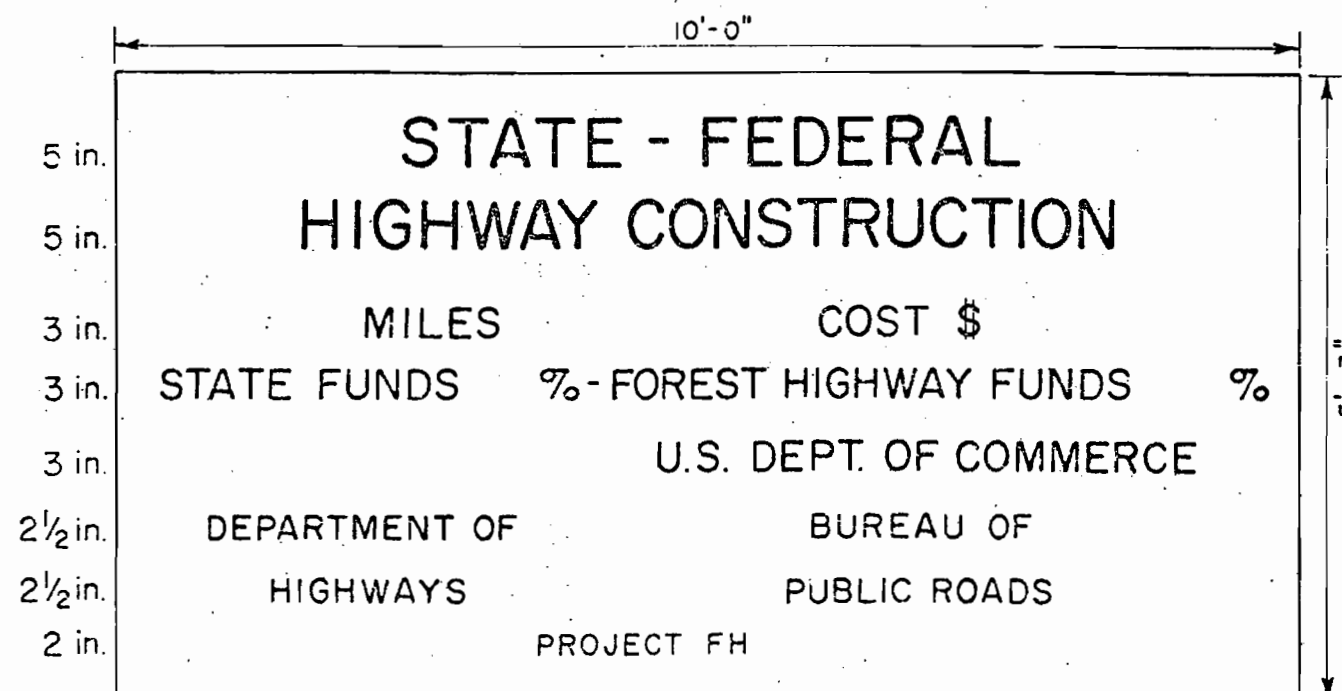
STANDARD MAINTENANCE POSTS AND DELINEATORS

STD. 131

Revision 8/1963



USE



GENERAL NOTES

1. Two signs, of the type designated by the word "USE" at the left, shall be furnished and installed by the contractor. One sign shall be placed at each end of the project, at locations determined by the engineer, consistent with the location of other construction signs.
2. The signs shall be erected immediately upon beginning construction operations, and shall remain in place until final acceptance of the project.
3. The sign material may be either wood or metal, at the option of the contractor, but shall have sufficient stability to last throughout the estimated period of use.
4. The signs shall be painted with black letters on a white background. Lettering shall be Series "C", as specified in the B.P.R. publication "Standard Alphabets for Highway Signs", in connection with the A.A.S.H.O. "Manual on Uniform Traffic Control Devices".
5. The amount for insertion in the "Cost" space will be determined by the engineer.

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

PROJECT
IDENTIFICATION
SIGNS

STD. 143

GPO 2-7-33