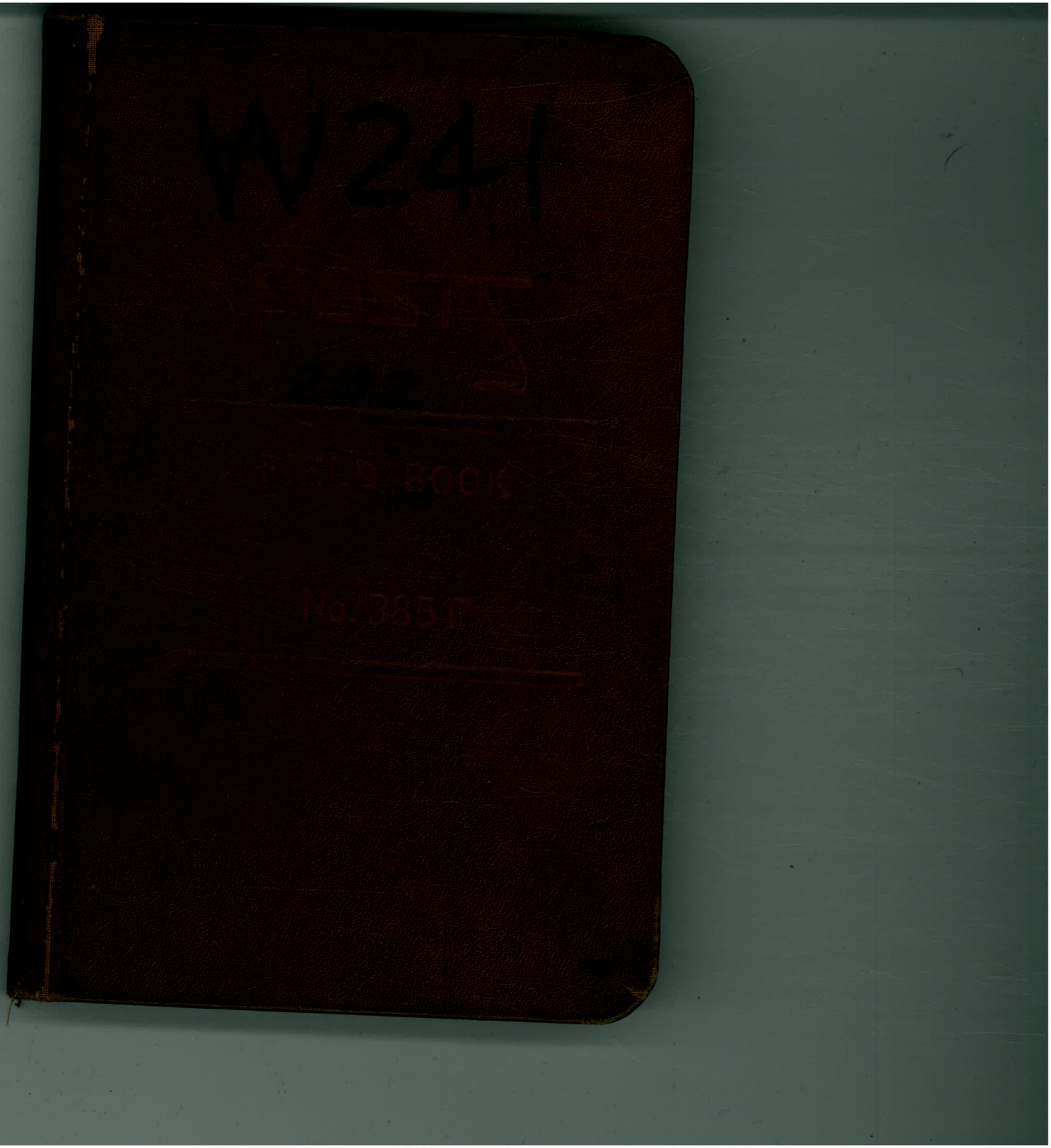

W241
No. 365F

#242

725
100
625 @ 11°35' = 600
65 @ 11°30 = 620

Our Leather Bound Engineers Note Books are carried in the following rulings:

No. 380 LEVEL BOOK. Left and Right Hand Page the same as Left Hand Page of this Book.

No. 382 FIELD BOOK. Left Hand Page as in this Book, Right Hand Page 4 x 4 to the inch, Center Line Red.

No. 384 MINING TRANSIT BOOK. Left Hand Page as in this Book, Right Hand Page 8x8 to the inch, Center Line Red.

No. 385 FIELD BOOK. Left Hand Page as in this Book, Right Hand Page 8 vertical and 4 horizontal lines to the inch, Center Line Red.

We also carry the Note Books listed above, bound in extra strong Fabri-Hide (otherwise the same quality of book), which can be furnished at a somewhat lower price.

In ordering Fabri-Hide covered books, add the letter *"F"* to catalog number.

THE FREDERICK POST CO.

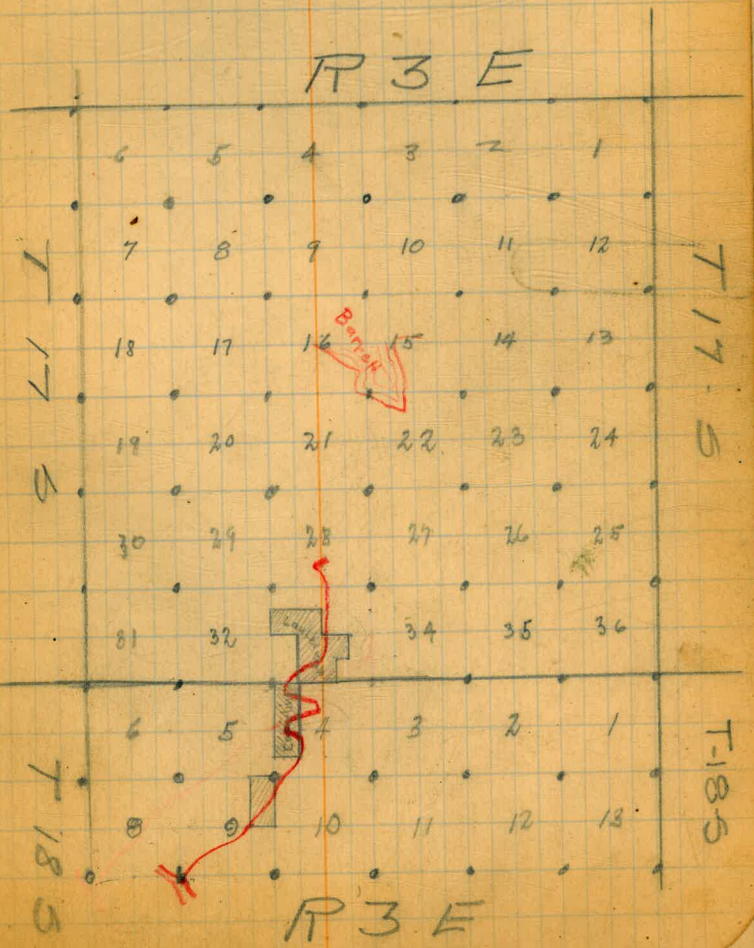
ENGINEERING and DRAFTING SUPPLIES

IRVING PARK STATION

CHICAGO, ILL.

476

Barrett Dam.
Road Location between
County Road at Cottonwood junction
and 1½ miles north on route
to Barrett Dam.



Hodges Reservoir County Road R.S No 476.
County Surveyor's Tie outs. Pg 70

Traverse of Barrett Trail Road 30-34 ✓
Incomplete

Dulzura Conduit - Road Survey Valve ✓
around Tunnel #1 R36-38

Traverse & Location Access Road Valve 39-41
To Flume #22

(2) Road Survey from Highway at Cottonwood
Towards Barrett Dam.

N 73° 44' 30" E

3+80.96 E.C.	19° 10'	
+75	18° 19'	
+50	14° 44'	
+25	11° 09'	
3+16.67 P.I.		Δ 38° 20' Rt
3+00	7° 34'	R 200
2+91.36 P.O.C.	6° 20'	L 133.81
+75	3° 59'	S.T. 69.52
+50	0° 24'	Ext. 11.7
2+47.15 B.C.	0° 00'	C. 131.33

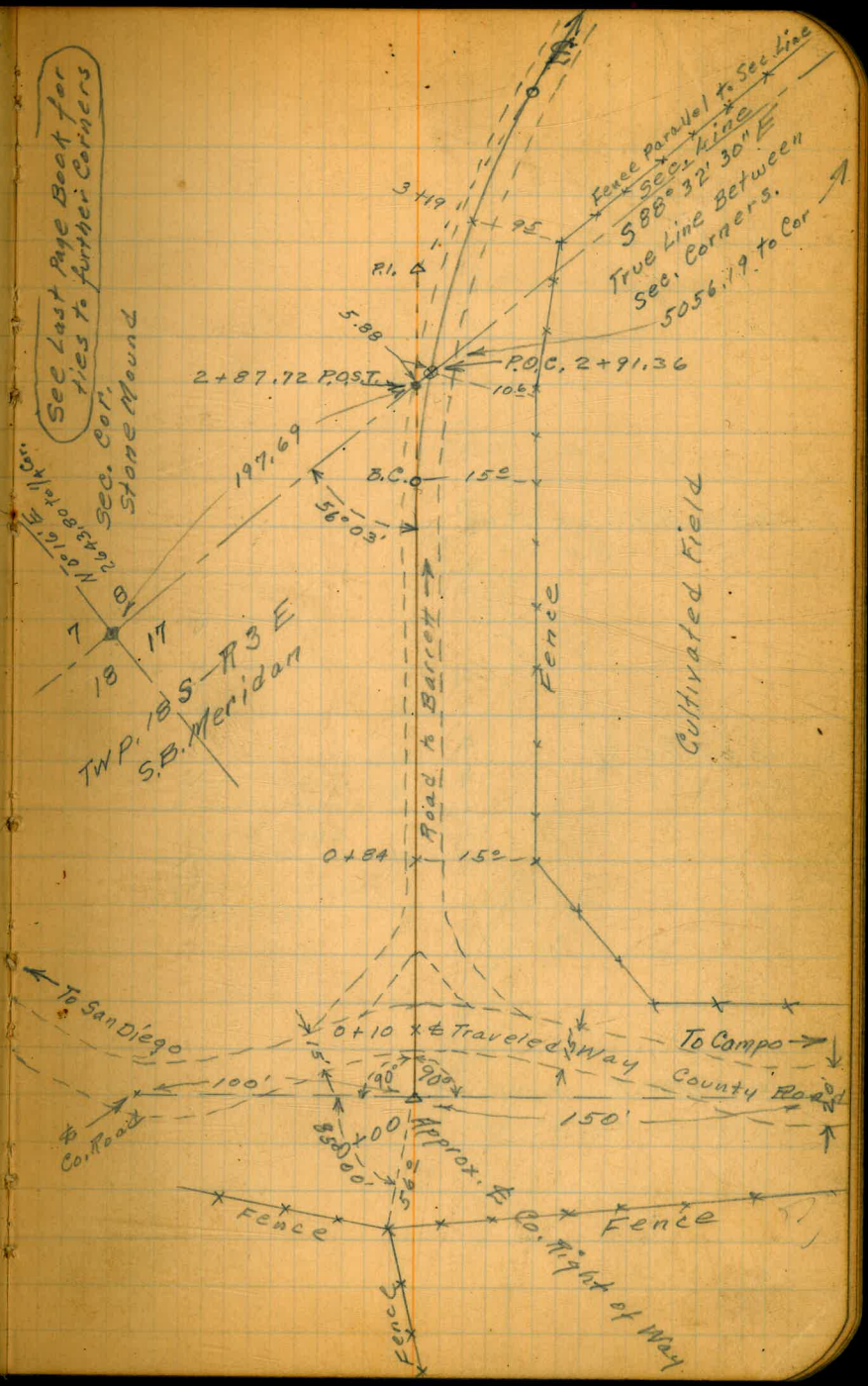
316.67 N 35° 24' 30" E

True Course by Solar Observation.

Constant Between Needle and True Course 15° 10' East.

0+00 — Approx. 90° to County Road

Jan. 12-1928
Ward - Chf.
Duermit - Cha.
McBain - "



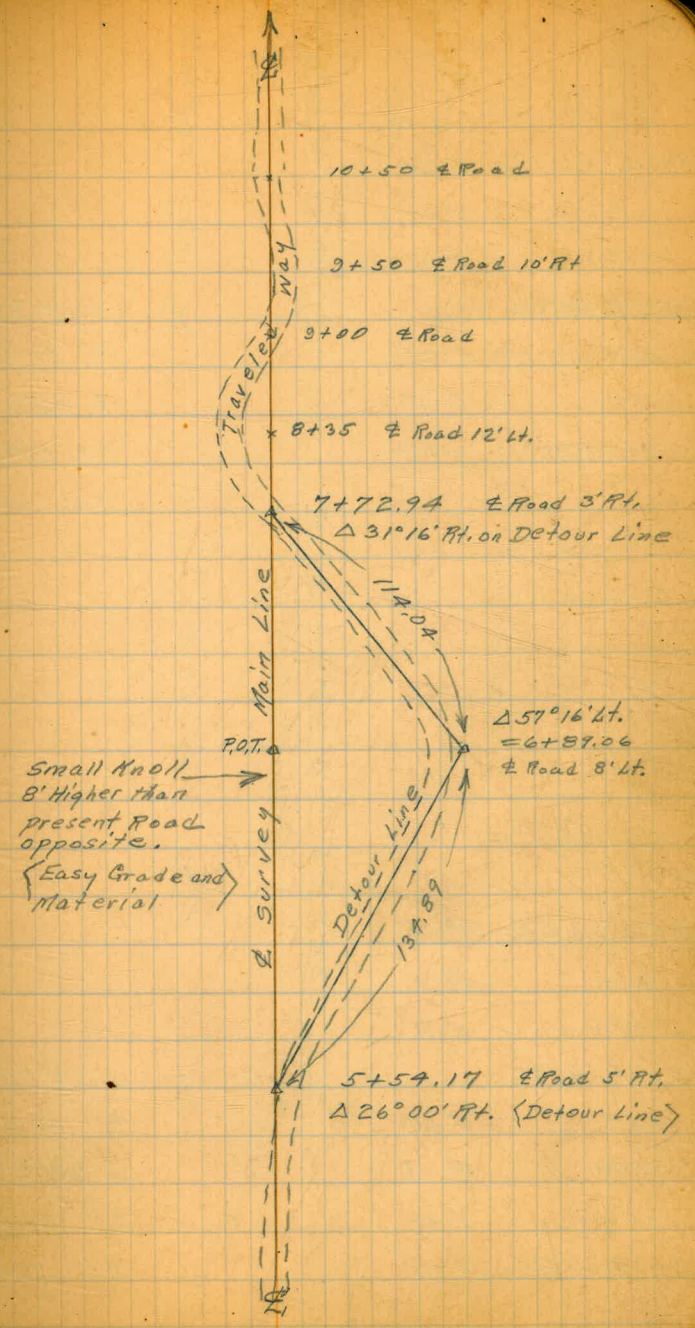
7+72.94 P.O.T.

1049.12 N 73°44'30" E

6+83.65 P.O.T.

May N 58°40' E

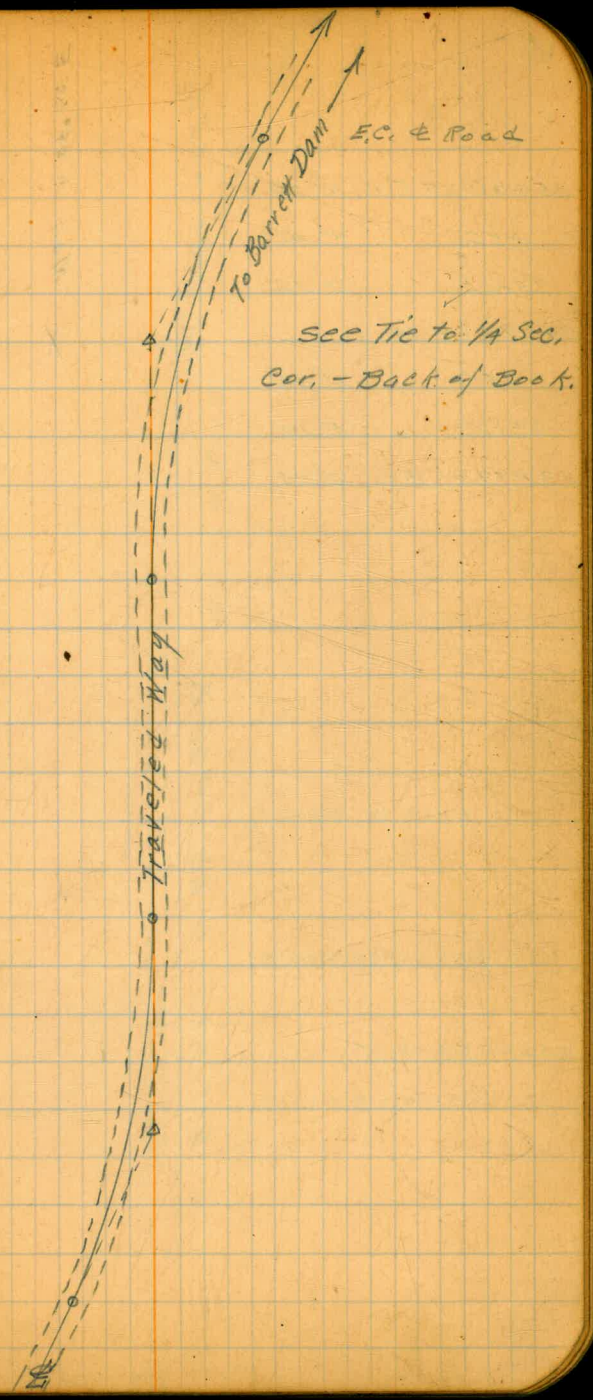
5+54.17 P.O.T.



④

17+78.14 E.C.	11° 45'	N 63° 14' 30" E	Mag. N 48° 30' E	
+50	10° 08'			
17+00	7° 16'			
16+77.06 P.I.		X	X	Δ 23° 30' Rt.
+50	4° 25'			R 500
16+00	1° 33'			L 205.08
15+73.06 B.C.	0° 00'			S.T. 104.00
				Ext. 10.7

		N 39° 44' 30" E	Mag. N 24° 50' E	
14+75.63 E.C.	17° 00'	323.72		
+50	15° 10'			
14+00	11° 35'			
13+60.56 P.I.		X	X	Δ 34° 00' Lt.
+50	8° 00'			R 400
13+00	4° 25'			L 237.36
+50	0° 50'			S.T. 122.29
12+38.27 B.C.	0° 00'			Ext. 18.3



See Tie to 1/4 Sec. Cor. – Back of Book.

25+80.27 E.C. 10° 30'
+50 8° 46'
25+00 5° 54'
24+89.68 P.I.
+50 3° 02'
24+00 0° 10'
23+97.01 B.C. 0° 00'

N 84° 14' 30" E

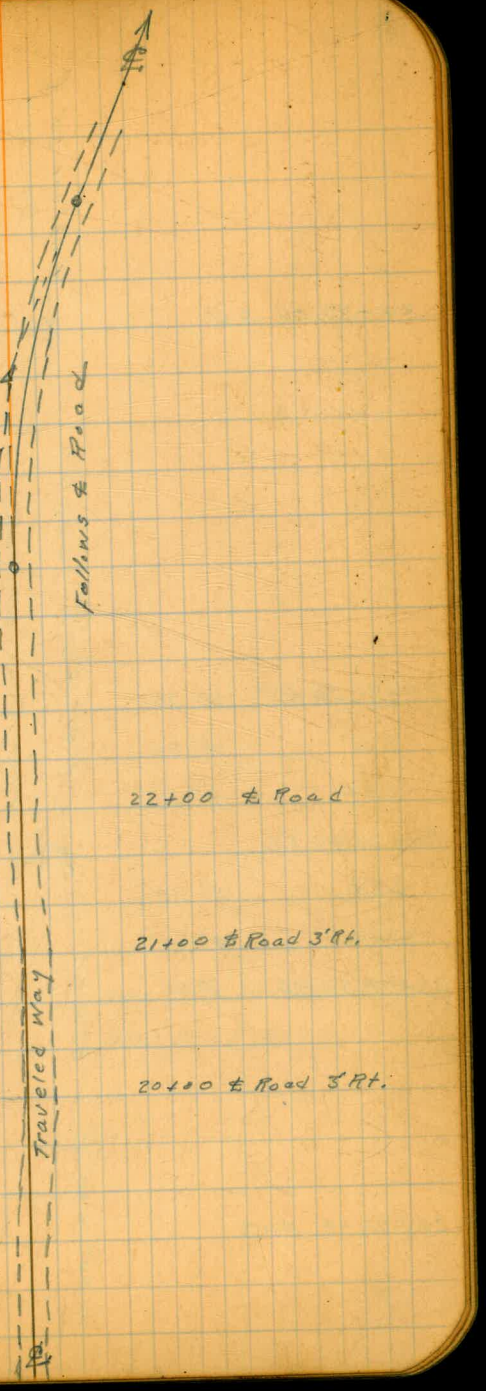
Map, N 84° 45' E

Δ 21° 00' Rt
R 500
L 183.26
S.T. 92.67
Ext. 8.5

N 63° 14' 30" E

815.54

20+21.52 P.O.T.



N 32° 44' 30" E
247.07
Mag. N 33° 10' E

34+35.26 Δ Lt.

Δ 8° 30' Lt.

N 41° 14' 30" E
603.27
Mag. N 42° 00' E

28+91.08 E.C. 21° 30'
+75 18° 26'
+50 13° 39'
28+37.60 P.I.
+25 8° 53'
28+00 4° 06'
27+78.51 B.C. 0° 00'

Δ 43° 00' Lt.
R 150
L 112.57
S.T. 59.09
Ext. 11.2

350.00

N 84° 14' 30" E

26+70.08 P.O.T.

℄

P.I. ℄ Road

33+00 – ℄ Rd. 3' Rt.

32+00 – ℄ Road

31+50 – ℄ Road 3' Lt.

30+00 – ℄ Road 4' Lt.

E.C. – ℄ Road 2' Rt.

28+50 – ℄ Road 3' Rt.

BC – ℄ Road

P.I.

Traveled Way

E.C.

BC

℄

see Tie to Sec. Cor.
Back of Book.

(7)

N 42°44'30" E 108.74

Mag. N 43°00' E

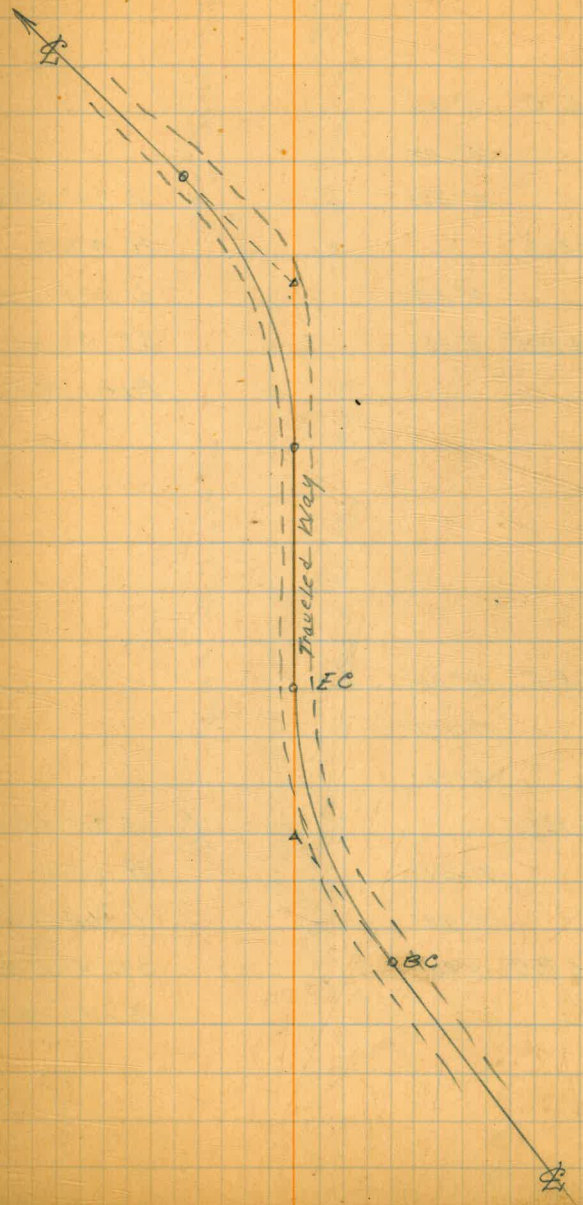
38+65.13 E.C.	11°15'	
+50	9°05'	
+25	5°30'	
38+26.37 P.I.		Δ 22°30' Lt.
38+00	1°55'	R 200
37+86.59 B.C.	0°00'	L 78.54
		S.T. 39.78
		Ext. 3.9

150.04

N 64°44'30" E

Mag. N 65°00' E

37+33.68 E.C.	16°00'	
+25	14°45'	
37+00	11°11'	
36+79.33 P.I.		Δ 32°00' Rt.
+75	7°36'	R 200
+50	4°01'	L 111.70
+25	0°26'	S.T. 57.35
36+21.98 B.C.	0°00'	Ext. 8=



(7) (8)

N 52° 44' 30" E
184.64

Mag. N 52° 50' E

3 41+86.71 E.C. 12° 45'
+50 10° 07'
41+00 6° 32'
38 40+99.20 P.I.
+50 2° 58'
37 40+08.69 B.C. 0° 00'

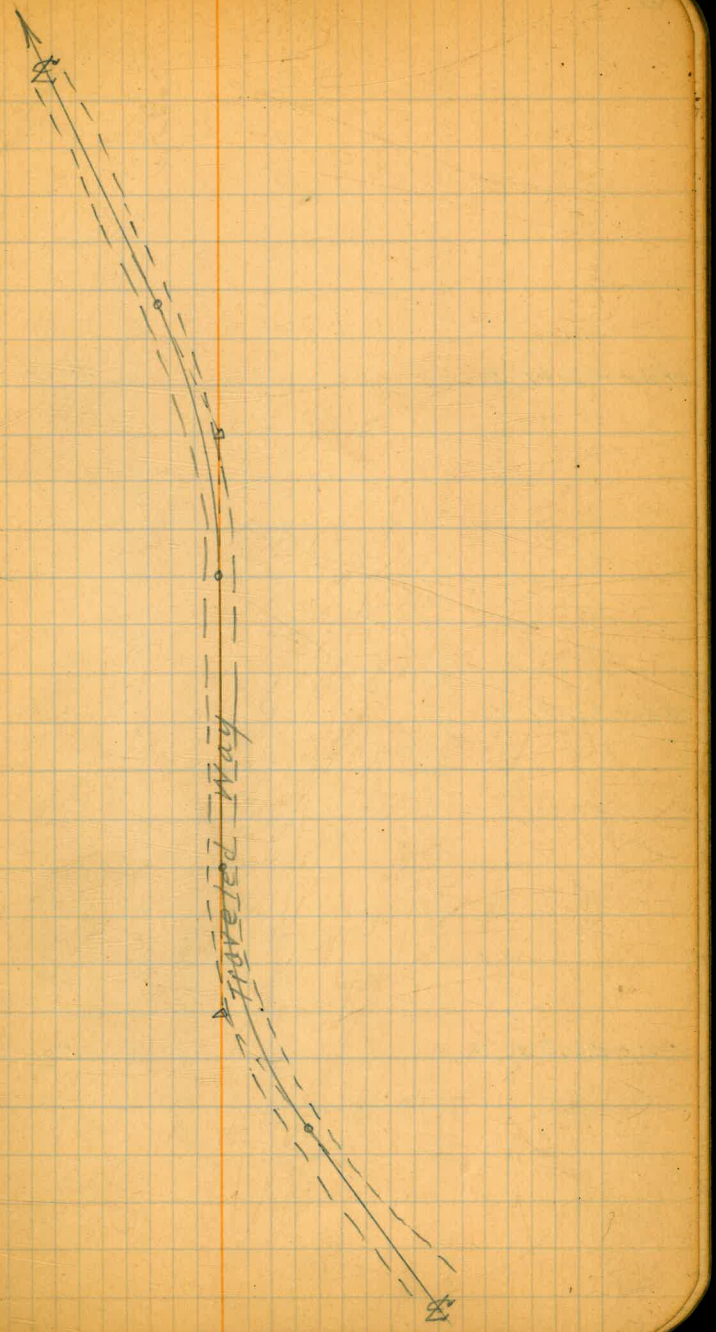
Δ 25° 30' Lt.
R 400
L 178.02
S.T. 90.51
Ext. 10.1

N 78° 14' 30" E 168.34

Mag. N 77° 10' E

37 39+79.60 E.C. 18° 00'
+75 17° 07'
+50 12° 21'
36 39+34.09 P.I.
+25 7° 34'
39+00 2° 48'
38+85.35 B.C. 0° 00'
36

Δ 36° 00' Rt.
R 150
L 74.25
S.T. 48.74
Ext. 7.7



N 16° 14' E
259.45

Mag. N 18° 30' E

46+42.61 △ △ 17° 00' Lt.

N 33° 14' E
210.70

Mag. N 35° 30' E

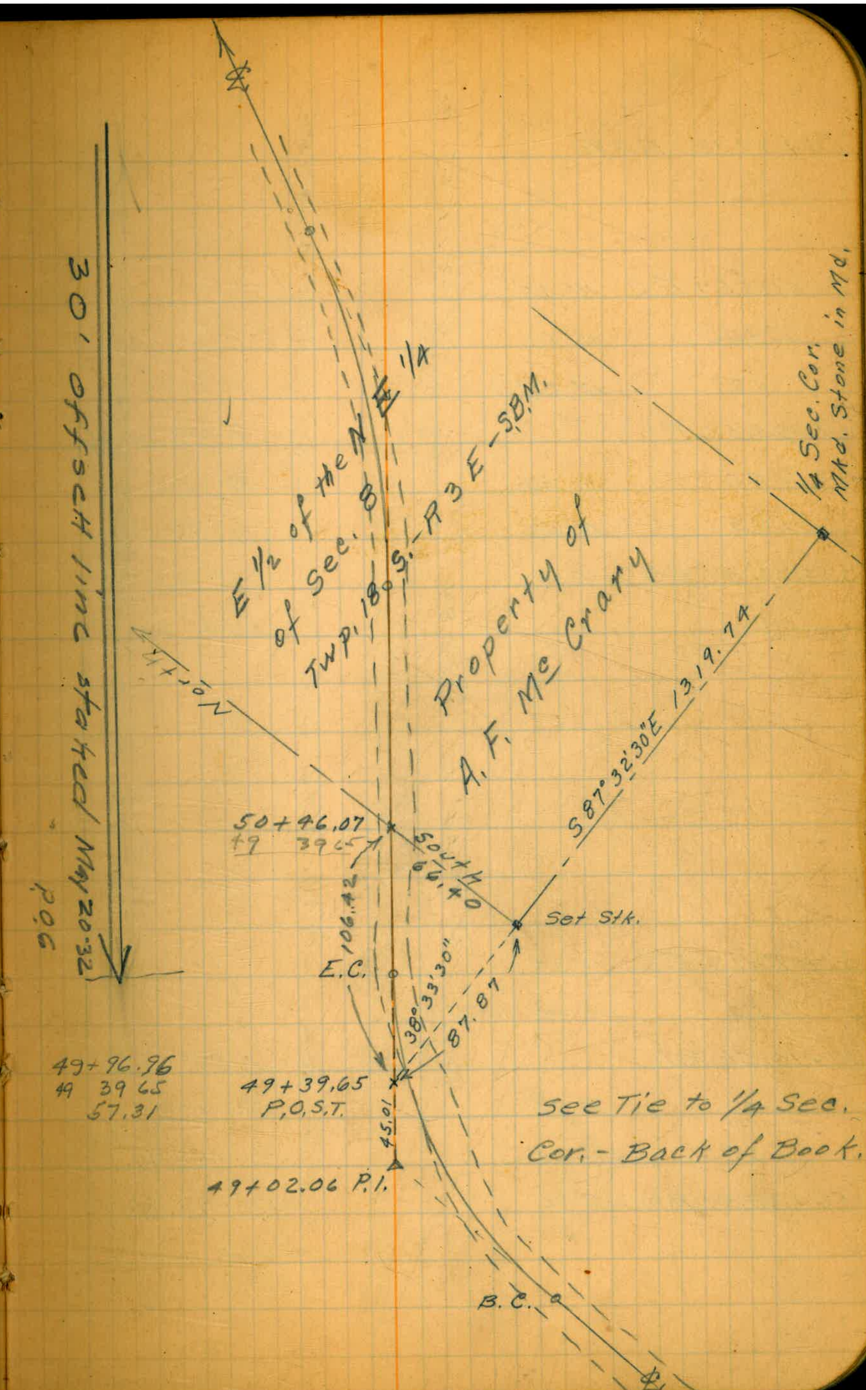
44+31.91 △ △ 8° 30' Lt.

N 41° 44' E
151.07

Mag. N 41° 45' E

42+80.84 △ △ 11° 00' 30" Lt.

Station	Defl.	Bearing	Mag. Bearing	Curve data
55+59.56 E.C.	7°30'	N 38°54' E 288.15	Mag. N 38°50' E	
+50	7°14'			
55+00	5°48'			
+50	4°22'			
54+29.41 P.I.		X	X	Δ 15°00' Lt
54+00	2°56'			R 1000
+50	1°30'			L 261.80
53+00	0°04'			S.T. 131.65
52+97.76 B.C.	0°00'			Ext. 8.6
49 96.96 3 00.80 1 ?2.		534.77 N 53°54' E	Mag. N 53°50' E	
49+96.96 E.C.	18°50'			
+75	16°44'			
+50	14°21'			
+25	11°58'			
49+02.06 P.I.		X	X	Δ 37°40' Rt.
49+00	9°34'			R 300
+75	7°11'			L 197.22
+50	4°48'			S.T. 102.32
48+25	2°25'			Ext. 17.0
47+99.74 B.C.	0°00'			102.32 45.01 57.31



60+99.18 P.O.T.

N 43°14' E 301.73

Mag. N. 44°20' E

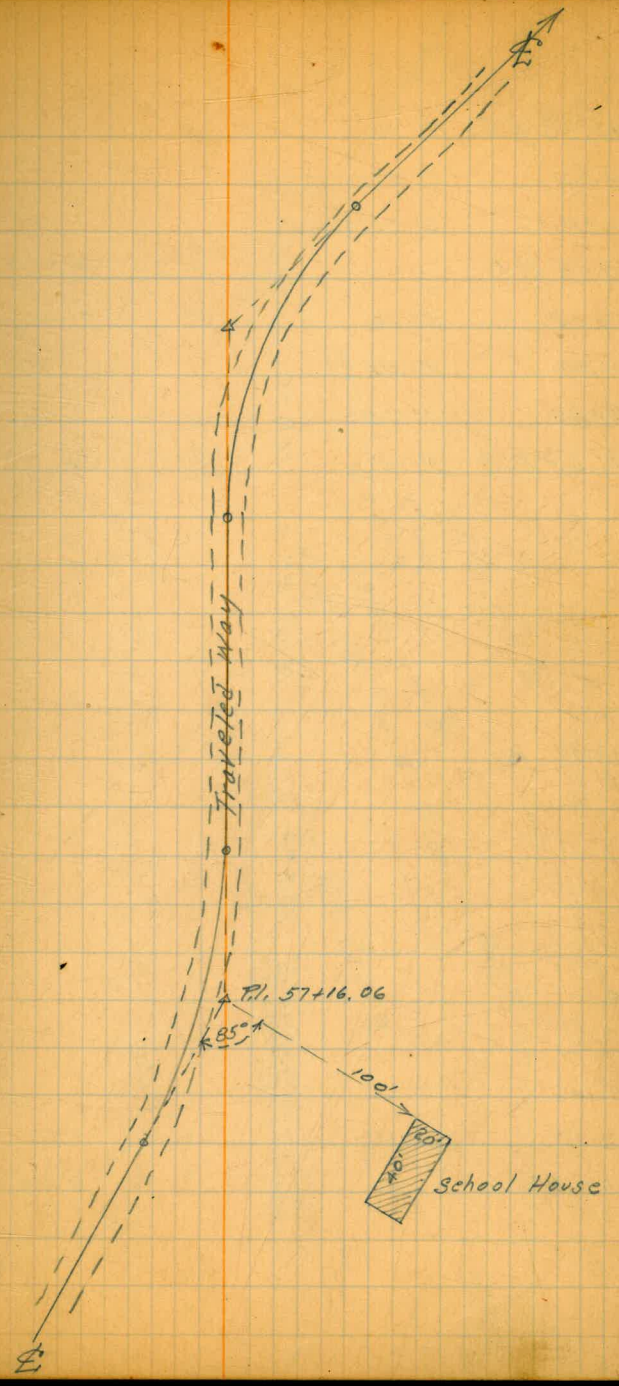
60+08.07 E.C. 16° 45'
60+00 15° 13'
+75 10° 26'
59+65.52 P.I. Δ 33° 30' Rt.
+50 5° 40' R 150
+25 0° 53' L 87.70
59+20.37 B.C. 0° 00' S.T. 45.15
Ext. 6.6

N 9° 44' E 252.84

Mag. N 12° 20' E

57+90.73 E.C. 14° 35'
+50 10° 42'
57+16.06 P.I. Δ 29° 10' Lt.
57+00 5° 55' R 300
+50 1° 09' L 152.72
56+38.01 B.C. 0° 00' S.T. 78.05
Ext. 10.0

30' offset line staked May 20-32 P.O.C.



71+42.98 E.C. 12° 00'
71+00 9° 57'
+50 7° 34'
70+19.19 P.I. Δ 24° 00' Rt.
70+00 5° 10' R 600
+50 2° 47' L 251.33
69+00 0° 24' S.T. 127.54
68+91.65 B.C. 0° 00' Ext. 13.4

N 43° 44' E 369.80

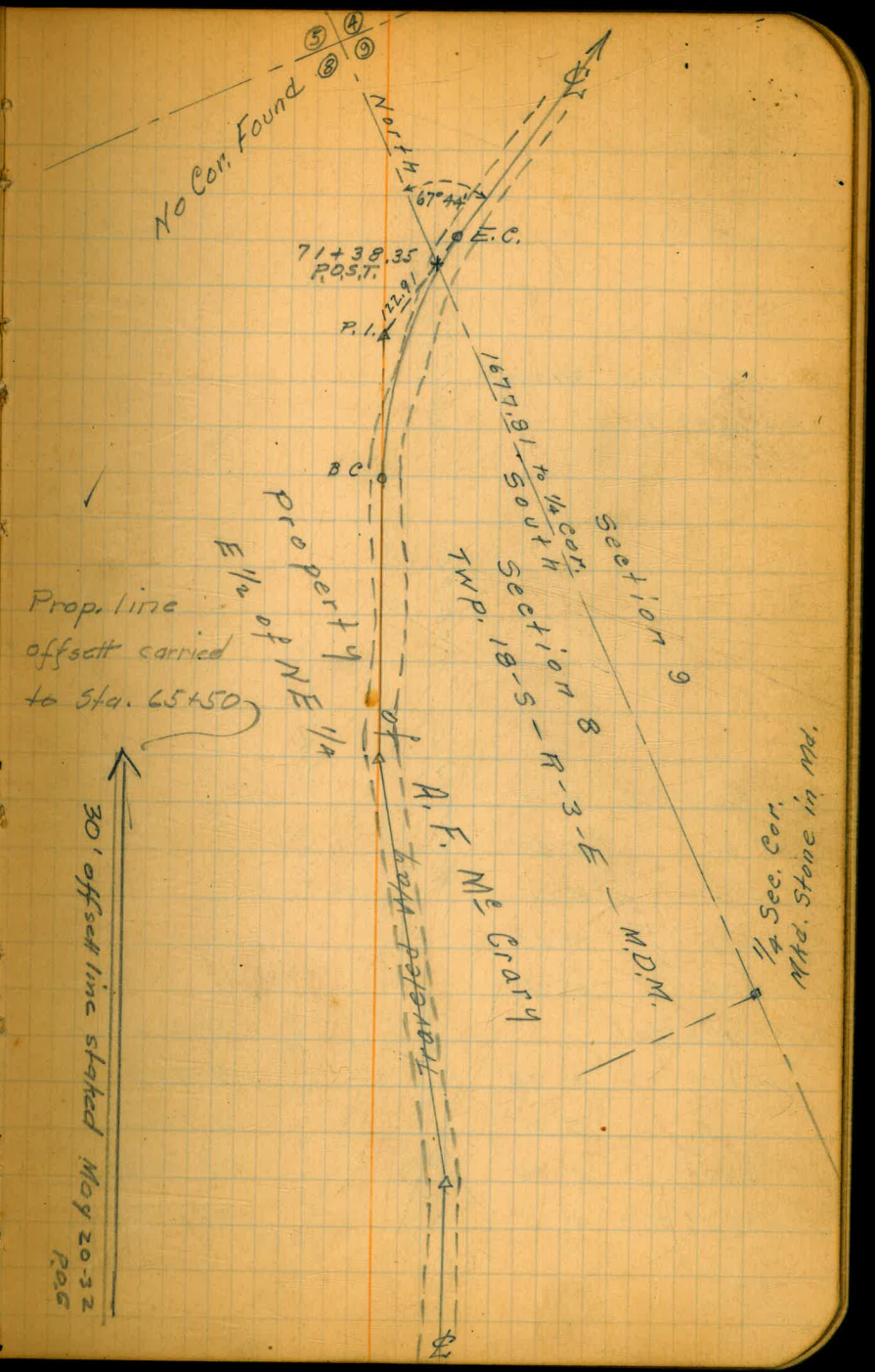
Mag. N 45° 00' E

66+49.39 Δ Δ 10° 30' Rt.
CZ CA C5
3.84.75

N 33° 14' E 384.74

Mag. N 35° 00' E

62+64.65 Δ Δ 10° 00' Lt.
CO 9.9.18
1.65.47



79+90.84 P.I.		Δ 7°09 Lt
End Line 3/14/28		
78+71.89 P.O.T.		
75+08.54 E.C.	12° 15'	
75+00	11° 38'	
+75	9° 51'	
+50	8° 03'	
+25	6° 16'	
74+24.35 P.I.		Δ 24° 30' Lt.
74+00	4° 28'	R 400
+75	2° 41'	L 171.04
+50	0° 54'	S.T. 86.85
73+37.50 B.C.	0° 00'	Ext. 9.3

118.95 N43·14E

N28-45E

N43° 14'E 450.20

Mag. N43° 50'E

N67° 44'E 408.91

Mag. N69° 00'E

P.O.G.
Leach
Simpson

11-4-28

ward line contin

P.O.G
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Simpson
11-4-28

90+49.04 P.I.

N 38-19-30 E
213.35'

N 23-35 E

88+35.69 P.I. — Δ 6-03 R±

N 32-16-30 E
363.41'

N 17-45 E

85+23.94 E.C.

84+73.28 P.I. — Δ 19-32-30 L±

R = 300
S.T. = 51.66
Arc = 102.32

84+21.62 B.C. L±

N 51-49 E
206.02

N 37-15 E

82+67.26 P.I. — Δ 6-35 R±

N 45-14 E
175.86

N 30-30 E

80+91.40 P.I. — Δ 9°09' R±

N 36-05 E
100.56

N 21-45 E

95+26 65 P.I.

N 8-52 W
159.94

N 24°15 W

93+98 00 E.C.

93+68 64 P.I. — Δ 34-45 Rt
R = 100
S.T. = 31.29
L.A. = 60.65

93+37 35 B.C.

92+47 92 E.C.

N 43-37 W
149.48

N 59- W

92+19 55 P.I. — Δ 16-22 Lt
R = 200.
S.T. = 28.76
L.A. = 57.13

91+90 79 B.C.

N 27-15 W
80.67

N 42-45 W

91+81 11 E.C.

91+43 38 P.I. — Δ 45-49 Lt
R = 100
S.T. = 42.23
LA = 79.96

91+01.15 B.C.

N 18-34 E
95.20

N 3°30 E

90+65 60 E.C.

90+49 04 P.I. — Δ 19-45-30 Lt

90+31 62 B.C.

N 38-19-30 E

R = 100
S.T. = 17.42
L.A. = 33.98

P.O.G.
Leach
Simpson
12-4-28

Traveled Road

103+58 44
103+89 79 P.I.

N 38-15 W
286.67
255.32

N 53-15 W

102+24 23 E.C.

101+07 69 P.I. △ 27-14 L±
R = 500
S.T. = 121.15
L.A. = 237.65

N 11-01 W
287.81

N 25-45 W

99+86 58 B.C.

98+19 88 P.I. △ 12-41 R±

N 23-42 W
103.57

N 39° W

97+52 03 E.C.

97+19 03 P.I. △ 39-19 L±
R = 100
S.T. = 35.72
L.A. = 68.72

96+83 31 B.C.

N 15-37 E
193.71
193.73

N 0-30 E

95+68 90 E.C.

95+26 6 P.I. △ 24-29 R±
R = 200
S.T. = 43.40
L.A. = 85.47

N 8-52 W

94+83 25 B.C.

P.O.G.
Leach
Simpson 12-4-28

Traveled Road

P.O.G'
Leach
Simpson

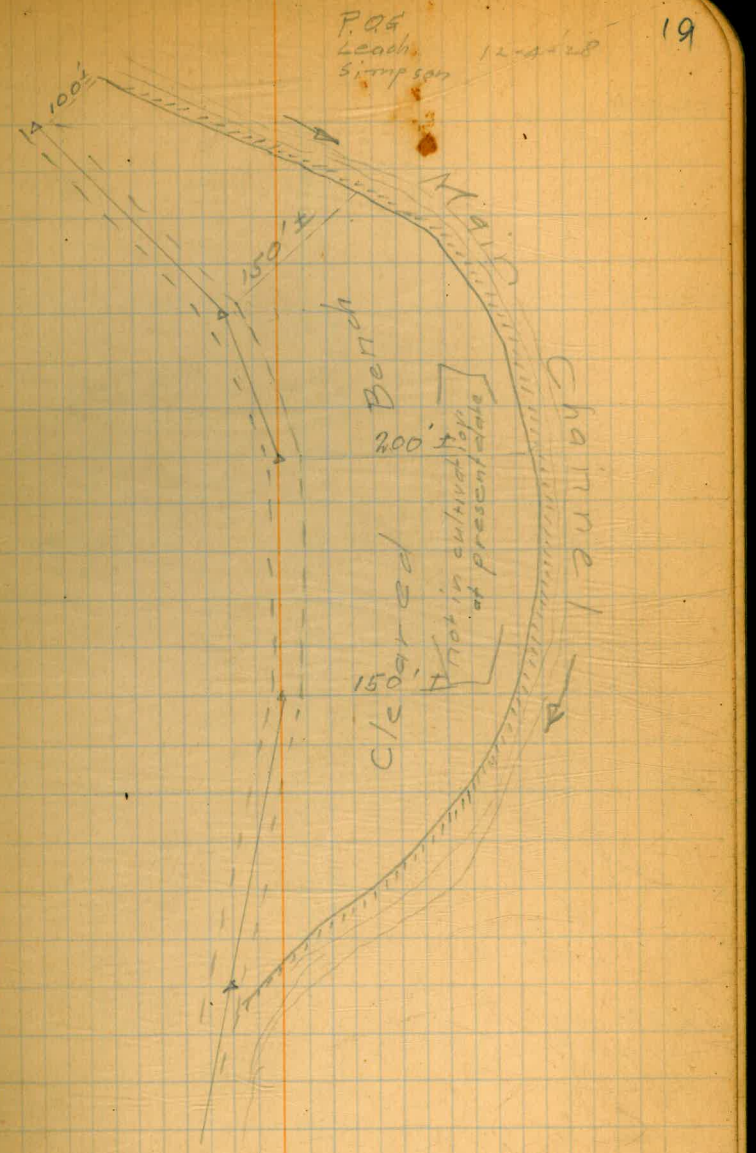
12-4-28

		N17-07W (170.77) 70.77	N32-30W	
109+48.08 ~~109+36.58~~	PI			Δ 11-22 Lt
		N5-45W 176.27 -38.50 137.77	N21-W	
108+10.31	P.I.			Δ 10-58-30 Rt
		N16-43-30W 234.11	N31-45 W	
106+68.13	E.C.			
105+81.65	P.I.			Δ 34-04-30 Rt
				R=300 ST=91.93 LA=178.41
104+89.72	B.C.			
		N50-48W 223.21	N66-00W	
103+58.44 ~~103+89.79~~	PI			Δ 12-33 Lt
		N38-15W	N53-15W	

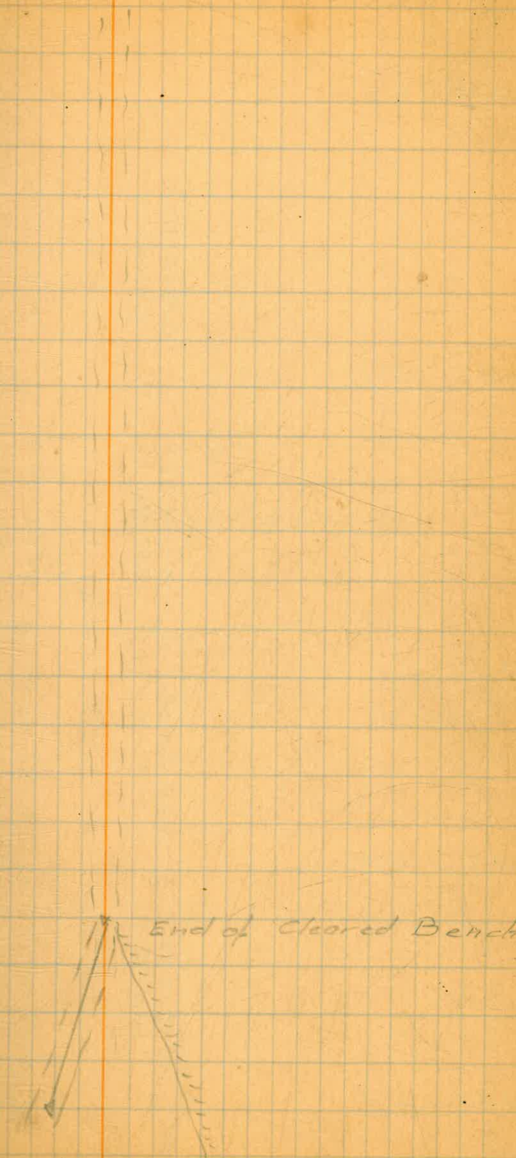
P.O.G
Leach
Simpson 12-4-35

Station	Point	Bearing / Distance	Bearing	Notes
115+3?.84	P.I.			
		N56-40 E 224.34	N41-30E	
113+65.50	P.I.			Δ 41-21-30 Rt 8 Ext.
		N15-18-30E 148.55	N0°30 E	
112+16.95	P I			Δ 17-22-30 Lt 1,5 Ext.
		N32-41E 114.62	N18-15 E	
111+20.07	E.C.			
111+02.70	P.I.			Δ 20-07 Rt R = 100 ST. = 17.74 LA. = 35.11
110+84.96	B.C.			
		N12-34E 85.04	N2-10W	
110+44.16	E.C.			
110+18.85	P I			Δ 29-41 Rt R = 100 ST. = 26.50 LA = 51.81
		N17-04W	N53-15W	
109+92.35	B.C.			

129+99.42	P.I.				
		N 28-42E 429.32'		N 14-15E	
125+10.10	P.I.				Δ 38-31-30 Lt 7' Ext.
		N 64-13-30E 85.05		N 52-45	
124+85.05	P I				Δ 28-53-30 Lt 4' Ext.
		S 88-53E 406.99		N 78-90E	
120+78.06	P.I.				Δ 5°25 Lt
		S 83-28E 202.57		N 82-10E	
118+75.49	P I				Δ 20-40 Rt 4 Ext.
		N 75-52E 286.65		N 60-45E	
115+89.09	P.I.				Δ 19-12 Rt 5 Ext.
		N 56-40E			



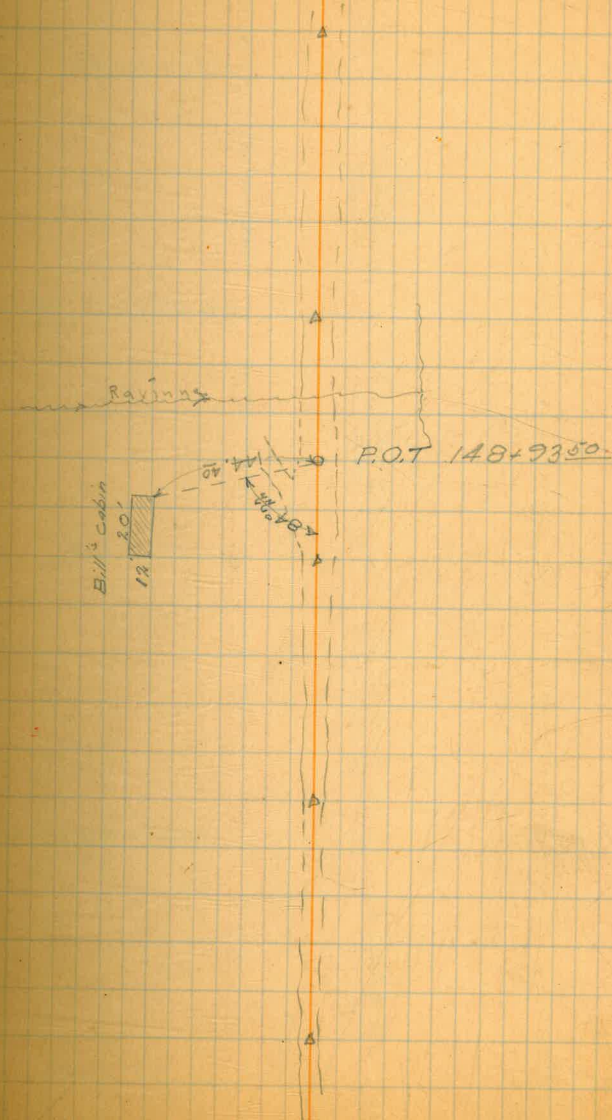
Station		Bearing / Distance	Bearing	Angle
144+41.41	P I			
		N76-50W 372.39	S88-41W	
140+65.02	P.I.			Δ 16-59-30 L± 5' Ext.
		N59-50-30W 451.31	N74-10 W	
136+13.71	P I			Δ 6°-00 L±
		N53-50-30W 200.40	N68-15 W	
134+13.31	P.I.			Δ 20-03-30 L± 6± Ext.
		N33-47N 284.59	N48-00 W	
131+28.72	P I			Δ 30-41-30 L± 10' Ext.
		N3-05-30W 129.30	N17-30W	
129+99.42	P I			Δ 31-47-30 L± 45 Ext.
		N28-42E	N14-15E	



151+94.75	P.I.			
		N 13-10-30 E 130.43	N 2-15 W	
150+64.33	P.I.			Δ 24-07-30 Rt Ext 3'
		N 10-57 W 287.26	N 25-45 W	
147+77.07	P.I.			Δ 25-06-30 Rt 4' Ext
		N 36-03-30 W 212.16	N 50-45 W	
145+64.91	P.I.			Δ 26-29-30 Rt 2' Ext
		N 62-33 W 123.50	N 77-10 W	
144+41.41	P.I.			Δ 14-17 Rt 2' Ext
		N 76-30 W		

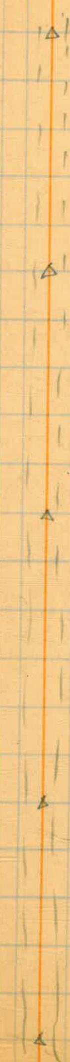
P.O.G
Leach
Simpson

12-13-4-28



P.O.G.
Leach
Simpson 13-4-28

		24 N74-54E 186.53	N60E	
163+65 48	P I			Δ 13-36 Rt
		60-48 N61-14E 242.69	N46-15E	
161+22 49	P I			Δ 57-30-30 Rt 9' Ext.
		17 N3-14-30E 168.15	N11-30W	
159+54 64	P I			Δ 4-45-30 Lt
		N8-03E E 3-35.25'	N6-45 EW	
156+19 39	P.I			Δ 20-20 Lt 2½ Ext.
		N28-23E 424.63	N12-45E	
151+94 76	P.I			Δ 15-12-30 Rt
		N13-10-30E		

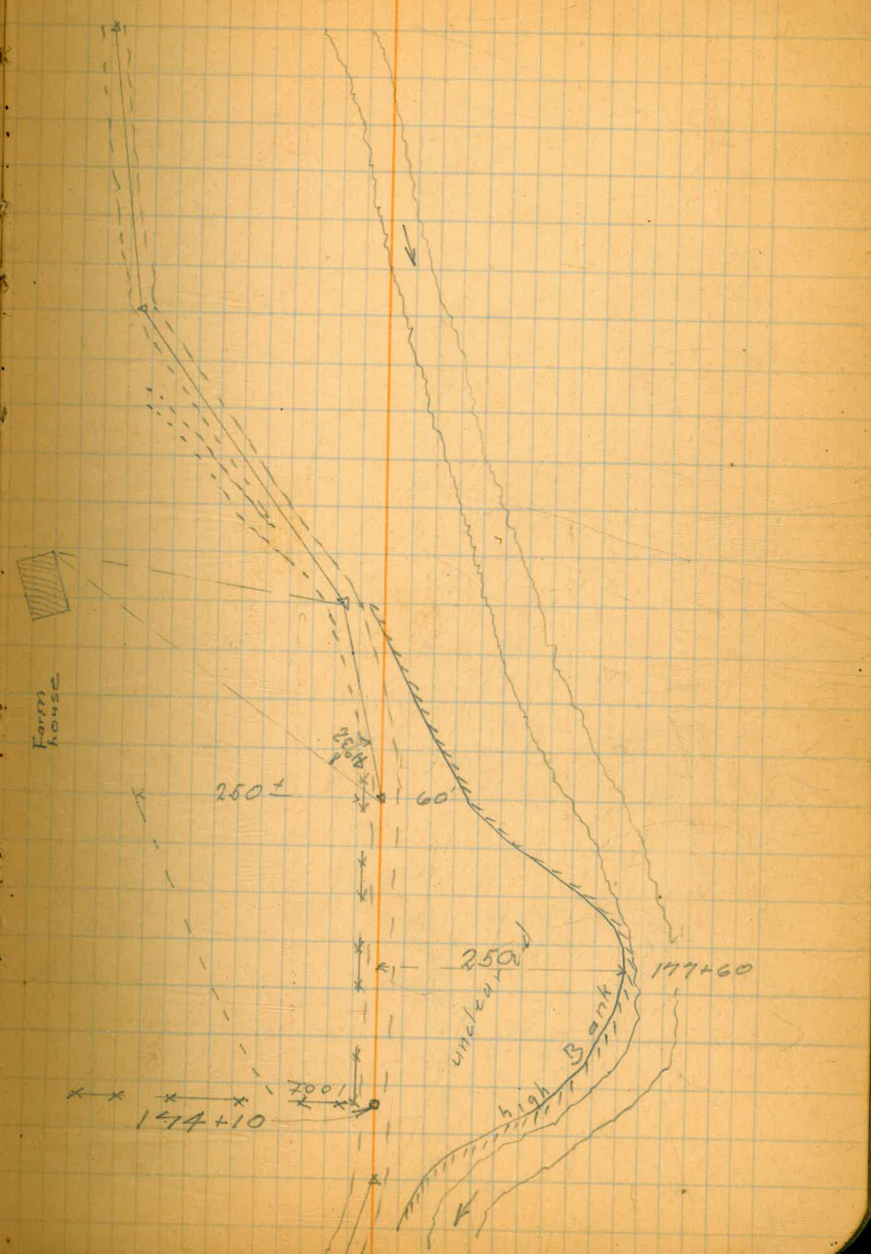


P.O.G.
Leach
Simpson 13-4-28

Station		Bearing / Distance	Bearing	Remarks
		~~N 54-09~~ 53-43 E	~~N 39-45 E~~ N 40-30 E	
173+01.30	PI			Δ 18-39-30 Lt 3' Ext.
		N 72-~~48~~ 22-30 E 290.34	N 58-30	
170+10.95	PI			Δ 6-02-30 Lt
		N 78-~~54~~ 25 E 174.66	N 65 E	
168+36.30	PI			Δ 14-55 Lt 3' Ext.
		S 86-~~44~~ 40 E 285.29	N 79-15	
165+51.01	PI			Δ 18-56 Rt 3' Ext.
		N 74-~~50~~ 24 E		

P.O.G.
Leach
Simpson 13-4-28

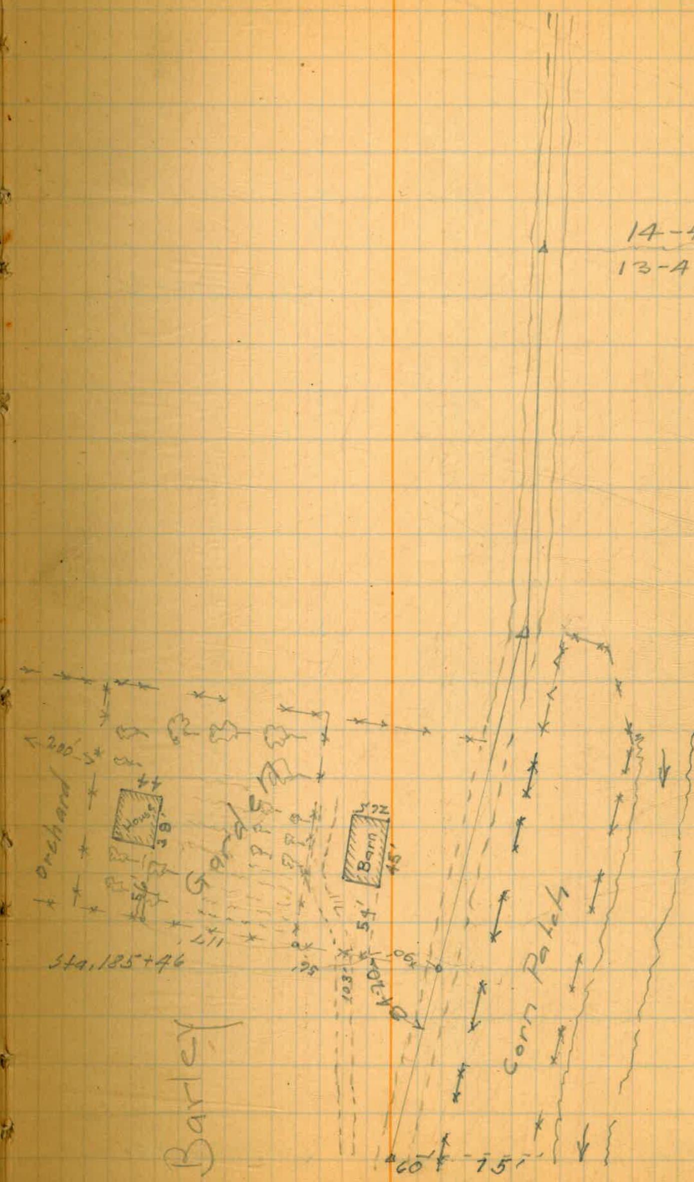
Station		Bearing / Distance	Notes
184+38.14	PI		
		N8-~~40~~ 14 E 171.06	N3-30W
182+67.05	PI		Δ10°00 Rt 3' Ext.
		N1-~~20~~ 46 J 316.90	N14W
179+50.18	PI		Δ34-15-30 Lt 6' Ext.
		N32-~~55-30~~ 29-30 E 89.04	N20-15E
178+61.74	PI		Δ21-13-30 Lt 15 Ext.
		N~~59-09~~ 53-43 E 559.84	N~~39-44~~E N40-20E
173+01.30	PI		



199+32.84	PI	N ~~12-03-30~~ E (11-37-30) 372.48	N 1-40 W	
195+60.36		N ~~9-02~~ E (8-36) 600.00'	N 4 W	Δ 3-01-30 Rt
189+60.36	PI	N 17-~~44~~ E (18) 522.22'	N 5-15 E	Δ 8-42 Lt
184+38.14	PI			Δ 9-04 Rt 2' Ext.

P.O.G.
Leach
Simpson

14-4-'28
13-4-'28

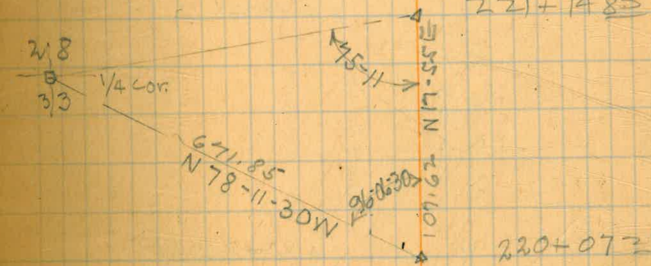


Station		Course / Distance	Bearing	Deflection
215+77^{84}	P I			
		N4-~~53~~ 27-30 E 374.80	N8-15W	
212+23^{04}	P I			Δ 6-03-30 Lt
		N10-~~37~~ 31 E 577.67	N1-45W	
206+45^{37}	P I			Δ 8-06 Lt
		N ~~20-3~~ 18-37 E 264.64	N6-15E	
203+80^{73}	P I			Δ 5-58-30 Lt
		N ~~25-01-30~~ 24-35-30 E 447.89	N12 E	
199+32^{84}	P.I	N12-23-30 E		Δ 12-58 Rt

Station		Bearing / Dist.		
224+18.43	P I			
		52-38-30 / N51-12-30W / 158.25	N65-30W	
223+20.18	P I	×	×	Δ16-07-30 Lt 2' Ext.
		36-31 / N36-05W / 205.35		
221+14.83	P I	×	×	Δ54-26 Lt 6' Ext.
		17-55 / N19-21E / 107.62	N5-20E	
220+07.21	P I	×	×	Δ50-49 Rt 5' Ext.
		32-54 / N31-28W / 189.09		
218+18.12		×	×	Δ26-03 Lt 6' Ext.
		51 / N6-25W / 220.28	N19-45W	
215+97.84	P I	×	×	Δ11-18-30 Lt
		N[illegible]E		

P.O.G
Leach
Simpson 14-4-28

tie to 1/4 cor 28/33



P.O.C.
Leach
Simpson 14-7-28

233+72.15 P I

17-11
N 18-37-E
183.67

N 4-E

231+88.28 P I

Δ 54-36 Rt 4' Exh.

37-24"
N 54-57 W
245.17

229+73.61 P I

Δ 8-24 Lt

29-01
N 27-24 W
156.33

N 42-15 W

228+17.28 P I

Δ 12-45-30 Rt

N 46-30
N 40-20-30 W
204.85

N 55-00 W

224+29.93 P I

Δ 22-50-30 Rt 3' Exh.

64+37
N 68-11 W
134.00

N 77-10 W

224+78.43 P I

Δ 11-58-30 Lt

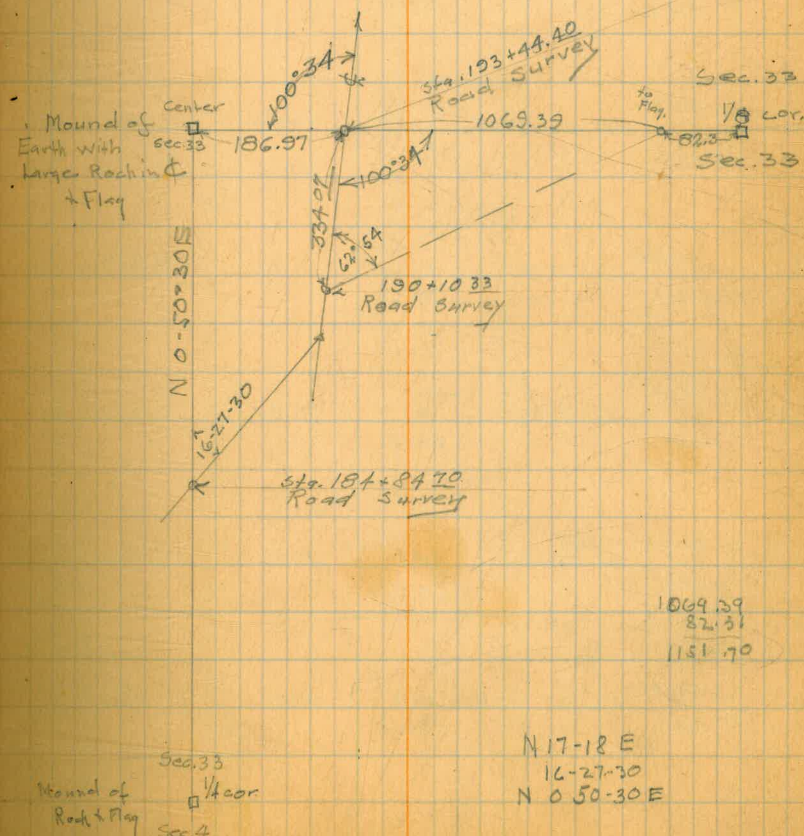
N 51-20-30 W

slope to 1/4 cor.

D = 208.68 = log. 2.319314 (166.4)
V = 26-22   cos = 9.952294
2.2717(44.4) = 186.97
(6.09 / 165.4 / 3.1 / 2.3)

16-28
32-55
16-17-30

184+38.14
46.56
184+84.70



1069.39
82.31
1151.70

N 17-18 E
16-27-30
N 0 50-30 E

Traverse Tying Trail Road to Tunnel to existing Proplines and County Road Survey

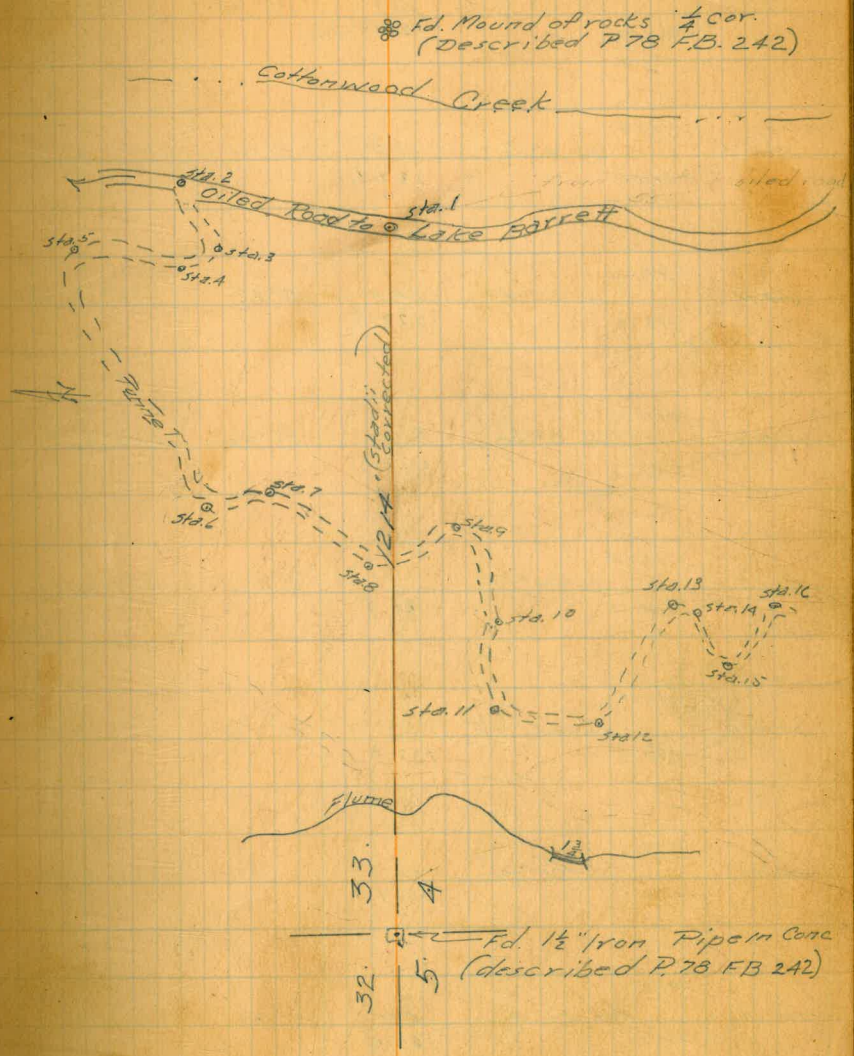
Sta. occ.		Def. Ang.	Slope Dist.	Vert. Angle	Mag. Bearing
Sta. 1	Sec. Cor. / Sta. 2	Lt. 65°02'	375. 374.9 w.H.	1°01'	
Sta. 2	Sta. 1 / Sta. 3	Lt. 133°05'30"	142' 138.8 W.H.	8°35'	
Sta. 3	Sta. 1 / Sta. 4	Rt. 67°00'00"	116' 112.9	9°22'	N53°00'W
Sta. 4	Sta. 3 / Sta. 5	Rt. 51°50'00"	156' 153.1	7°54'	N05°00'W
Sta. 5	Sta. 4 / Sta. 6	Lt. 130°55'	367' 361.3	7°08'	S47°00'W
Sta. 6	Sta. 5 / Sta. 7	Lt. 49°18'	83' 82.5	4°33'	S02°00'E
Sta. 7	Sta. 6 / Sta. 8	Rt. 12°50'	247' 243.2	7°04'	S11°00'W
Sta. 8	Sta. 7 / Sta. 9	Lt. 25°12'30"	134' 131.1	8°31	S15°00'E

Oct. 7, 1947

Rainey
King
Nielsen

30.

Instrument Used
K+E Madii corr. 1:100
F+C=00



Barrett Trail. Road Traverse cont.

Oct. 10, 1947 Rainey King Nielsen

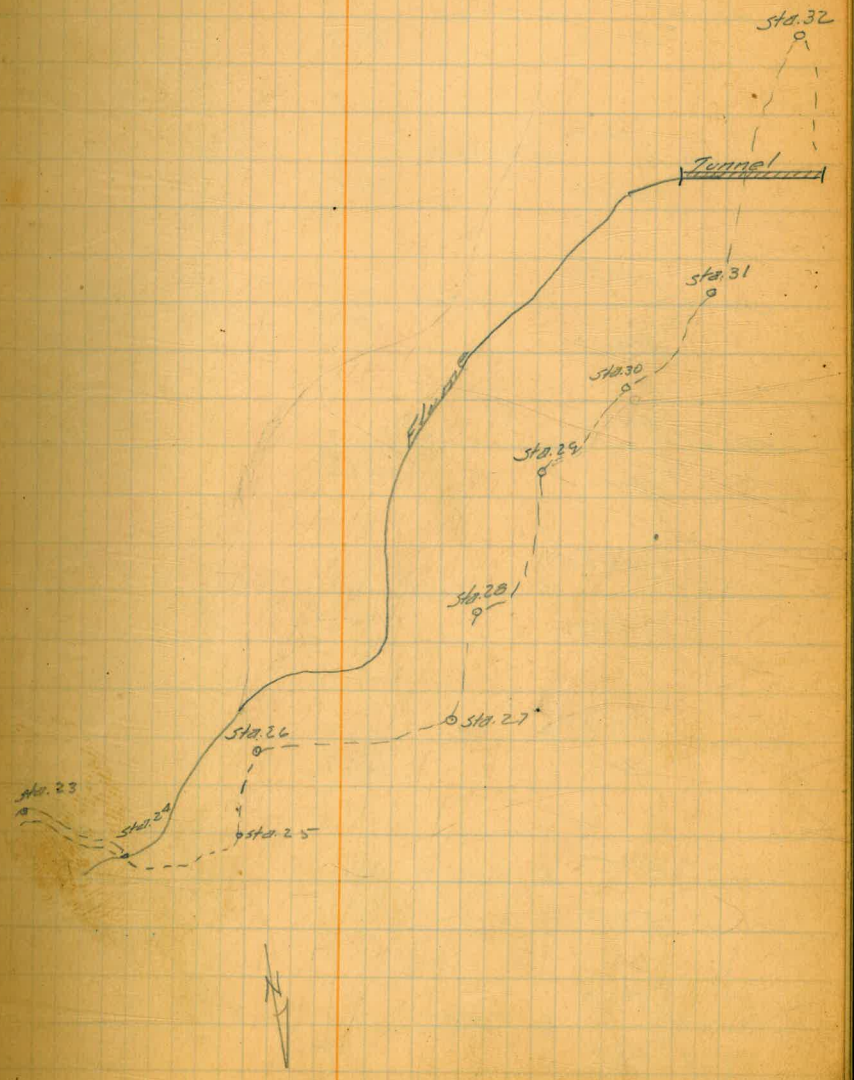
Sta. occ.			Def. Ang	Stadii Dist.	Vert. Ang	Mag. Bearing
Sta. 9	Sta. 8	Rt	63°38'30"	142' 138.8 H.M.	8°34'	S49°00'W
	Sta. 10					
Sta. 10	Sta. 9	Rt.	9°32'	227' 222.6	8°01'	S59°00'W
	Sta. 11					
Sta. 11	Sta. 10	Lt.	25°44'	285' 278.5	8°42'	S33°00'W
	Sta. 12					
Sta. 12	Sta. 11	Lt.	83°28	312' 305.3	8°26'	S49°30'E
	Sta. 13					
Sta. 13	Sta. 12	Rt.	44°16'	71' 69.5	8°25'	S06°00'E
	Sta. 14					
Sta. 14	Sta. 13	Rt	26°45'	135' 132.2	8°16'	S21°00'W
	Sta. 15					
Sta. 15	Sta. 14	Lt.	108°14'	117' 115.4	6°24'	S88°00'E
	Sta. 16					
Sta. 16	Sta. 15	Rt.	27°11'	167' 163.4	8°29'	S61°00'E
	Sta. 17					

Barnett Trail Road Traverse Cont.

Sta. Occ.		Def. Ang.	Stadia Dist.	Vert. Ang.	Mag. Bearing
Sta. 17	Sta. 16 / Sta. 18	Rt 32°27'30"	238' / 232.3	8°53'	S27°00'E
Sta. 18	Sta. 17 / Sta. 19	Rt 125°04'	181' / 178.5	6°47'	N78°00'W
Sta. 19	Sta. 18 / Sta. 20	Lt 50°28'	162' / 159.8	6°43'	S46°00'W
Sta. 20	Sta. 19 / Sta. 21	Rt 6°00'30"	348' / 342.7	7°03'	S52°00'W
Sta. 21	Sta. 20 / Sta. 22	Lt 39°14'30"	109' / 107.7	6°19'	S13°00'W
Sta 22	Sta. 21 / Sta. 23	Lt 64°58'30"	187' / 183.9	7°22'	S52°00'E

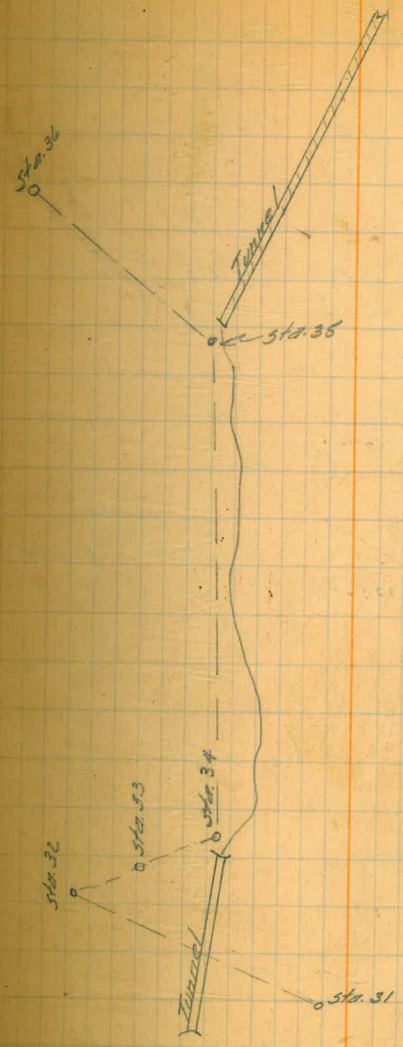
(Note! Sta. 24 ℄ of Flume + Road)

Sta. 23	Sta. 22 / Sta. 24	Rt 83°42'30"	214' / 211.2	6°37'	S32°00'W
Sta. 24	Sta. 23 / Sta. 25	Rt 04°02'	187' / 184.7	6°19'	S36°00'W



Barrett Trail Road Traverse Cont

Sta. occ.		Def. Ang.	Stadia Dist	Vert. Ang.	Mag. Bear.
Sta. 25	Sta. 24 / Sta. 26	Lt. 50°26'	85' / 84.3	5°12'	S14°00'E
Sta. 26	Sta. 25 / Sta. 27	Rt. 49°43'	350' / 349.2	2°40'	S36°00'W
Sta. 27	Sta. 26 / Sta. 28	Lt. 72°07'30"	132' / 130.6	5°50'	S37°00'E
Sta. 28	Sta. 27 / Sta. 29	Rt. 22°40'	104' / 103.7	3°03'	S15°00'E
Sta. 29	Sta. 28 / Sta. 30	Lt. 36°04'30"	167' / 166.0	4°25'	S51°08'E
Sta. 30	Sta. 29 / Sta. 31	Rt. 3°55'	162' / 161.9	1°18'	S47°00'E
Sta. 31	Sta. 30 / Sta. 32	Lt. 20°35'	313' / 312.5	2°15'	S67°00'E
Sta. 32	Sta. 31 / Sta. 33	Rt. 157°07'30"	188' / 186.7	4°42'	N.90°00'W

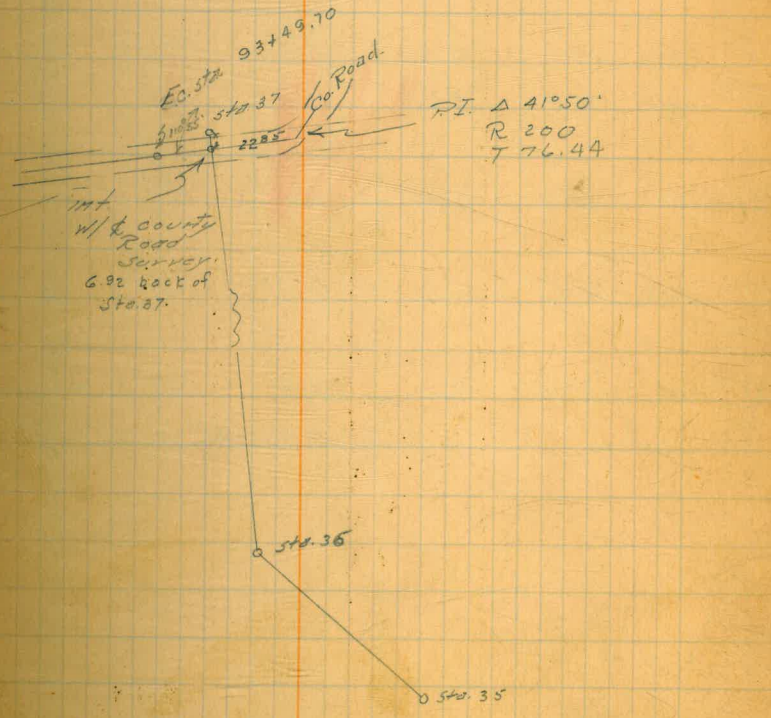


Sta. Occ.		Def. Ang.	Stadia Dist.	Vert. Ang.	Mag. Bearing
Sta. 33	Sta. 32 / Sta. 34	Lt. 8°19'	217' / 203.1	14°41	381°00' W
Sta. 34	Sta. 33 / Sta. 35	Lt. 106°09'30"	543'	0°29'	S25°00'E
Sta. 35	Sta. 34 / Sta. 36	Lt. 83°09'	510' / 509.5	1°46'	N71°00'E
Sta. 36	Sta. 35 / Sta. 37	Rt. 30°25	1744 / 1516.9	21°09'	S78°00'E
Int. w/ Co. Rd.	Eq. Sta. 93+49.70 / Sta. 36		110°55'		

Sta. 34 - 20' S of S Portal of Tunnel No.

Sta. 35 - 51' N of N Portal of Tunnel No

∠ 44°56' off Tan. from Sta. 34



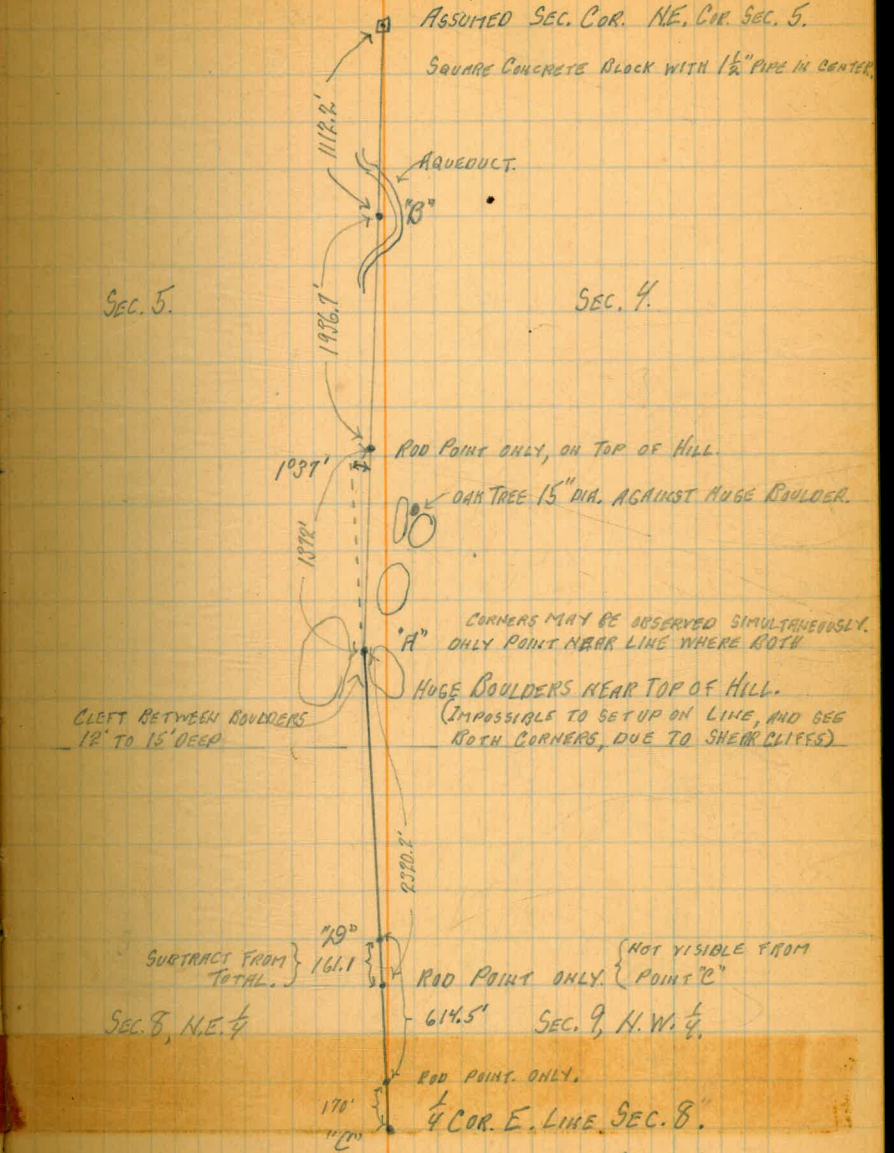
April 18, 1949. Leonard Payne Carver

Barrett Dam Road, T 18S, R 5E, S.B.M.

Stadia Distances Between Sec. Cor. at N.E. Cor. Sec. 5, and ¼ Cor. on E. Line of Sec. 8.

Transit Position:	Vert. Angle:	Stadia Interval:	Rod Reading:	Stadia Distance	Horizontal Distance:
"A" North	0° 30' 0° 37'	½ Int.	6.86'	1372	1372'
"A"					2320.2'
"B"	#1 Vert 0° 20' #2 " 0° 37'	½ Int. = 6.86 Dist 1372.			1936.7'
"B"					1112.2'
"C"	#3 Vert 15° 36' #4 Vert 15° 52'	½ Int. 12.52 Dist. 2504 = 2320'			170'
"D"	#5 Vert. 1° 19' #6 Vert. 1° 36'	½ Int. 9.69' Dist. 1938' = 1937'			614.5'
					7525.6
"D"	#7 Vert. 3° 19'	Full Int. 11.16' = 1112'			161.1
	#8 Vert. 0	Full Int. 1.70' = 170'			7364.5'
	#9 Vert. 15° 13'	Full 6.60' = 614.5			
	#10 Vert 12° 52'	Full 1.69' = 161.1			
	Subtract #10 from total	Total: 7364.5			

Field Notes:

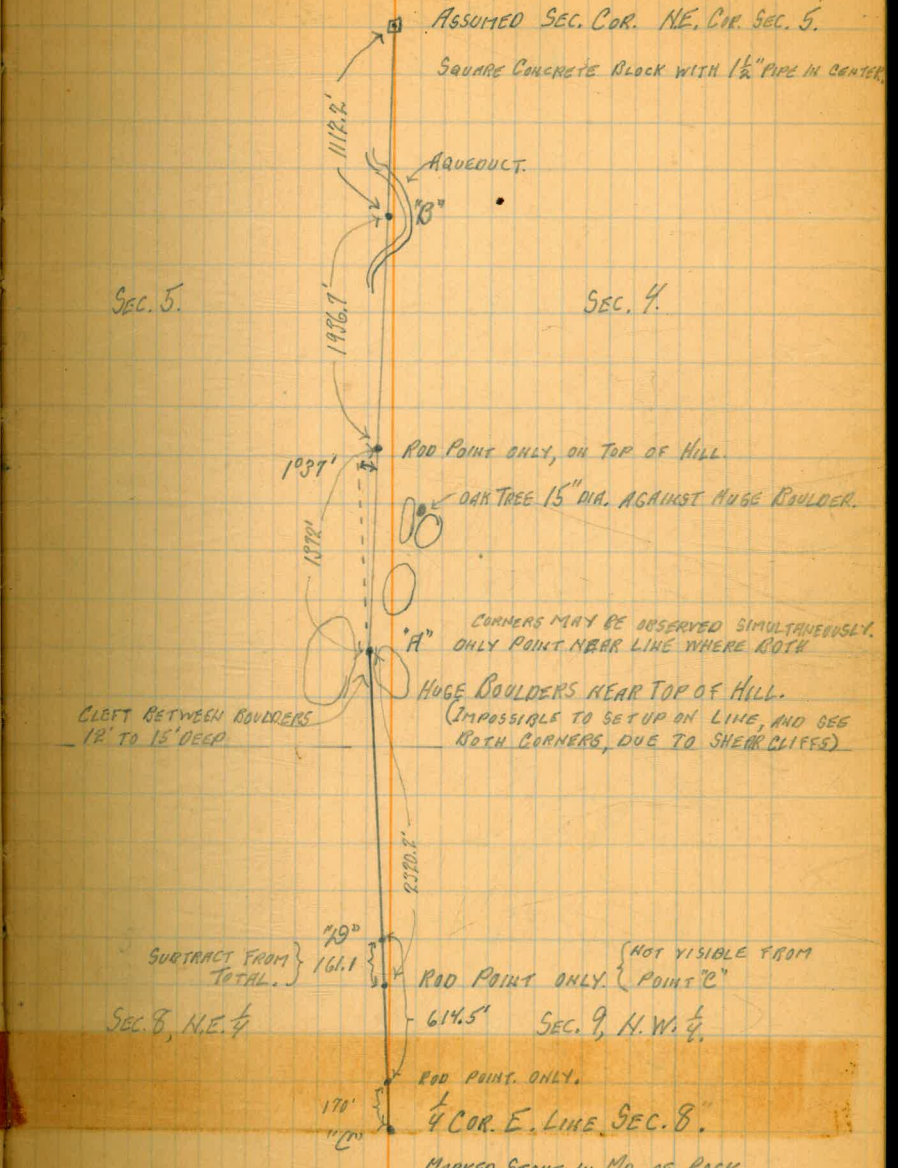


April 18, 1949. Leonard Payne Carver

Barrett Dam Road, T 18 S, R 3 E, S.B.M.

Stadia Distances Between Sec. Cor. at N.E. Cor. Sec. 5, and ¼ Cor. on E. Line of Sec. 8.

Transit Position:	Vert. Angle:	Stadia Interval:	Rod Reading:	Stadia Distance	Horizontal Distance:
"A" North	0° 00' 0° 37'	½ Int.	6.86'	1372	1372'
"A" South	15° 35' 15° 52'	½ Int.	12.52 12.52	2504	2520.2'
"B" South.	1° 19' 1° 36'	½ Int.	9.69' 9.69'	1938	1936.7'
"B" North	3° 19'	Full	11.16	1116	1112.2'
"C" North.	0° 0'	Full	1.70'	170'	170'
"D" South	15° 13'	Full	6.60'	660'	614.5'
					7525.6
"D" South	12° 32'	Full	1.69	169'	- 161.1
			Total Stadia Dist. Between Cors.:		7364.5'



All distances Stadia

Dulzura Conduit

Road Survey Around East Side Tunnel #1

	Dist.	Bearing	Hor. ∠	Vert. ∠
		S 18°30'		
6-7	308'		17°45' R.	0°
		S 1° E		
5-6	83'		20°31'30" R.	0°
		S 22°30' E		
4-5	43'		25° R	0°
		S 45°30' E		
Pt 3-4	112'		52°32'30" L.	0°
		S 6°30 W		
Pt 2-3	78'		12°02' R	0°
		S. 7° E		
Pt 1-2	79'		25°26' R.	0°
0-1	21	S 32° E		

4-7-32 cold-cloudy 36.

King - Notes
Work
Williams

Elev.

1498.2

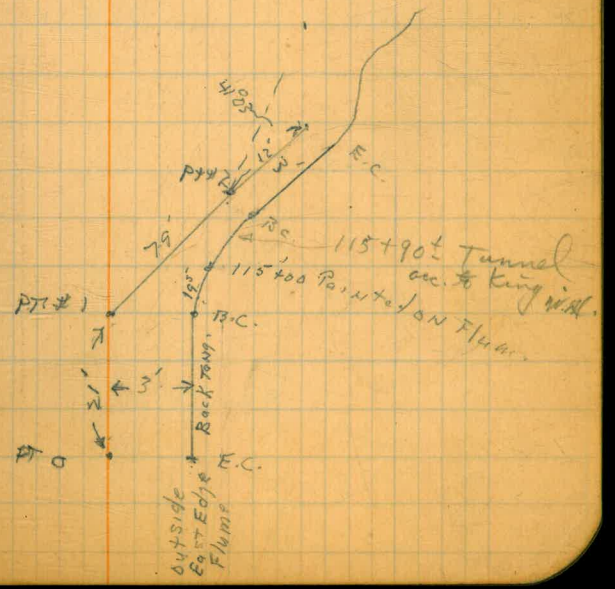
1498.2

1498.2

1498.2

1498.2

1498.2



Dutzuna Conduit
Stadia Road Survey Around Tunnel #1

King
West ⊼
Williams

4-7-52

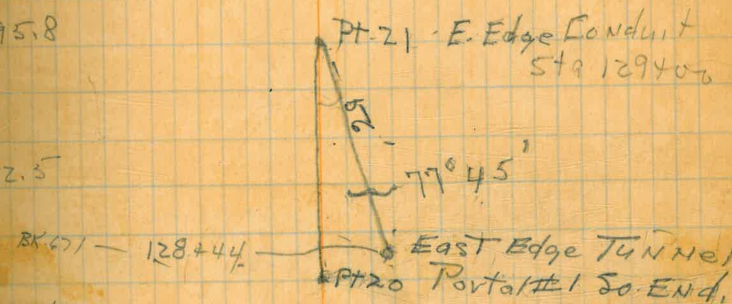
Pt. #	Dist.	Bearing	Hor. ∆	V. ∆	Rod	
		S 38° W				
14-15	50'		10°57'30"R		+1.0	1480.8
		S 27°15'W				
13-14	54'		21°30'30"R	0°	-0.3	1479.8
		S. 5° W				
12-13	59'		1°22'30"R	0°	-0.9.	1480.1
		S. 4° W				
11-12	350'		44°54'30"LT.	0°	-7.0	1481.0
		S. 45 W				
10-11	96'		32°32'R	0°	-1.7	1488.0
		S. 12°14'W				
9-10	64.0'		16°40'30"R	0°	-2.0	1489.7
		S. 5° E				
8-9	54.5		26°38'R	0°		1491.7
		S 30°15'E				
7-8	303'		47°06'Lt.	0°	-6.5'	1491.7

Dulzura Conduit
Stadia Road Survey Around Tunnel #1

4-7-52
King
West T
Williams

cold-cloudy

Pt. #	Dist.	Bearing	Hor. ∠	Vert. ∠	R.	
20-21	191'	N33W	7°30'R	+4°02'		1495.8
19-20	248'	N40°W	6°34'30"R	+1°10'		1482.5
18-19	331'	N46W	18°37'30"R	-1°4'		1477.4
17-18	543	N54 W	37°44'30"R	-0°15'		1483.5
16-17	44'	S 88°W	24°15'30"R		+0.7	1485.9
15-16	58'	S44°38'W	27°14' R	+2°38'	HI 4.5 5.5	1485.2

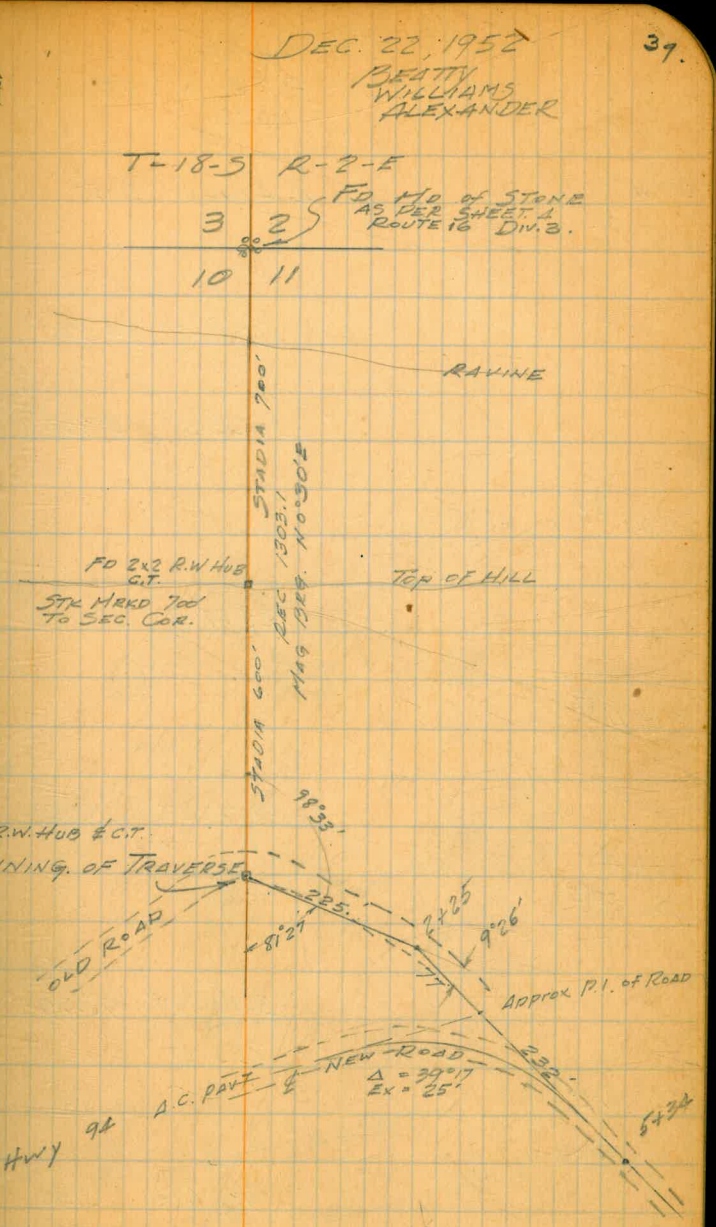


Traverse & Location of Access Road to Flume #22. Dulzura Conduit

Station	Δ Angle	Dist.	Mag. Brg.
5+34			
		232.00	S 70° 30' E
	9°26' Rt.	77.	To Approx P.I. of New Rd. Ex. = 25' Δ = 39°17'
2+25			
	81°27' Lt.	225.00	S 81' E
0+00			
Begin Traverse			

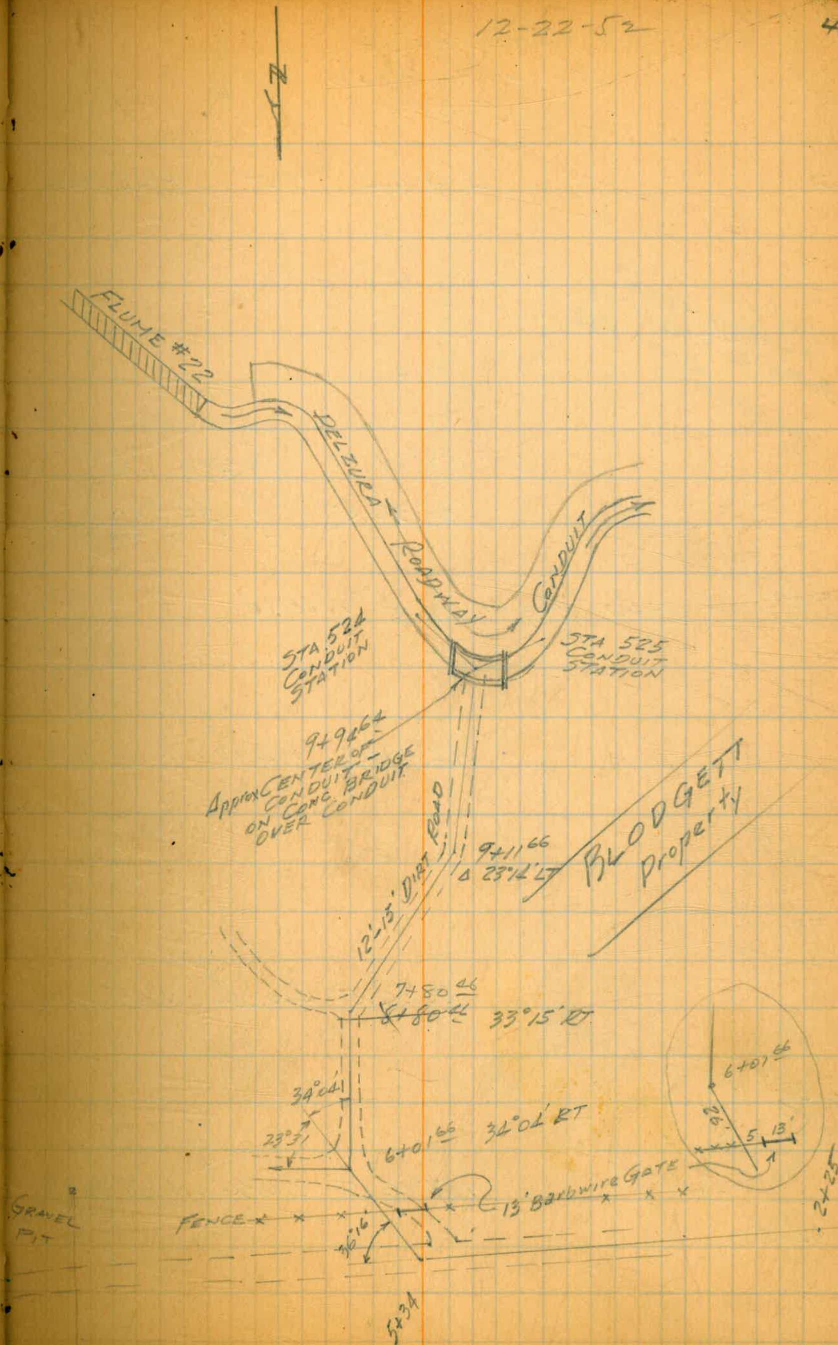
Dec. 22, 1952

Beatty
Williams
Alexander



TRAVERSE ACCESS ROAD (Cont'd.)

STA	Δ ANGLE	DIST	MAG. BRG
	51°48' RT	34.20	To STA. 525. Conduit STA
	50°55' LT	57.50	To STA 524 Conduit STA
9+94 64			
	23°14' LT	82.98	S 9°30' W
9+11 66			
	33°15' RT	131.21 (ok. w.H.)	S 33° W
7 w.H. ~~8+80 45~~			
	34°04' RT 23°31' LT	178.79 (ok. w.H.)	S 0°30' E
6+01 66			
	36°16' RT	67.66	S 34°30' E
5+34			



Traverse
Access Road
(Cont'd.)

Sta	Δ Angle	Dist.	Mag. Brg.

7 × 180 = 1260°
Sum of Δ = 1261°08
Error 1°08

99°09' RT To Sta 2+25
0°36' RT To be Jang at Pt. of Beginning

17+85.11 = 0+00 Beginning of Traverse

42°49' RT 174.17 N 0°30' W

16+10.94

20°00 RT 400.00 N 43°30' W

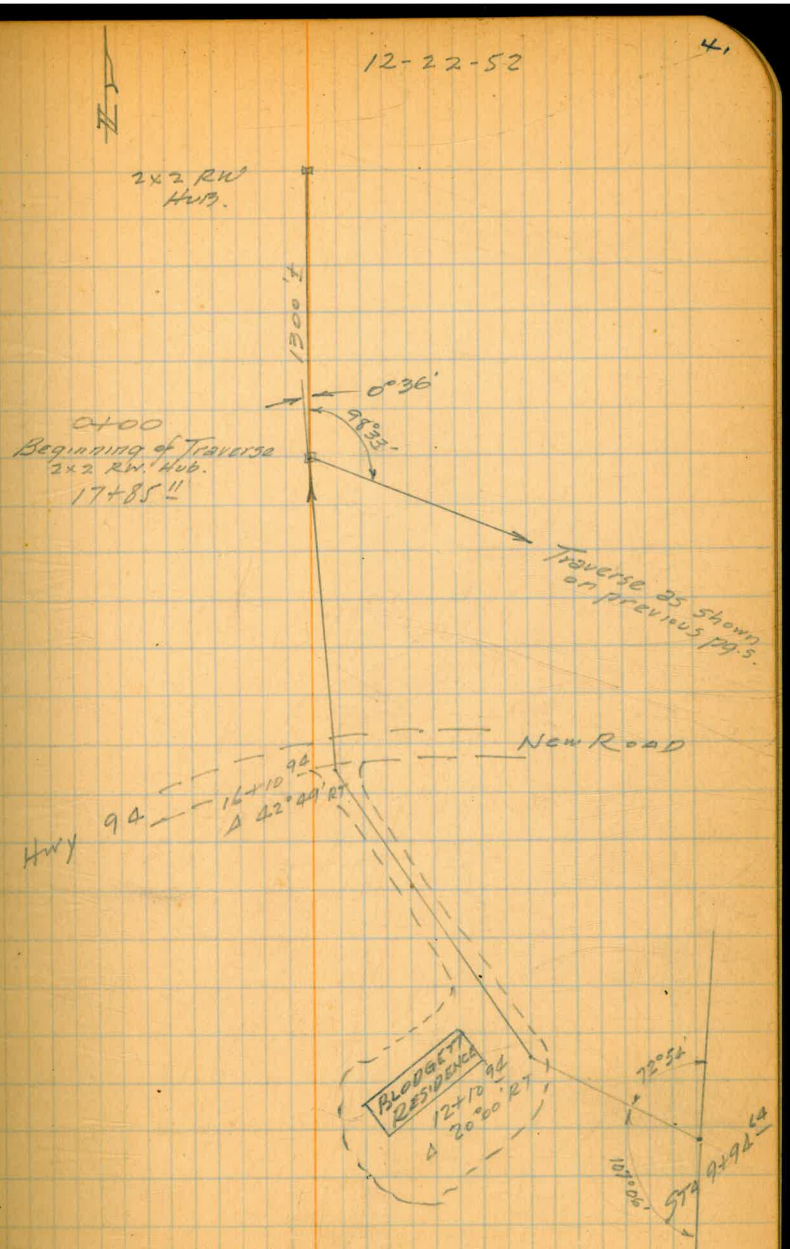
12+10.94

107°06' RT 216.30 N 68°30' W

9+92.64

12-22-52

41

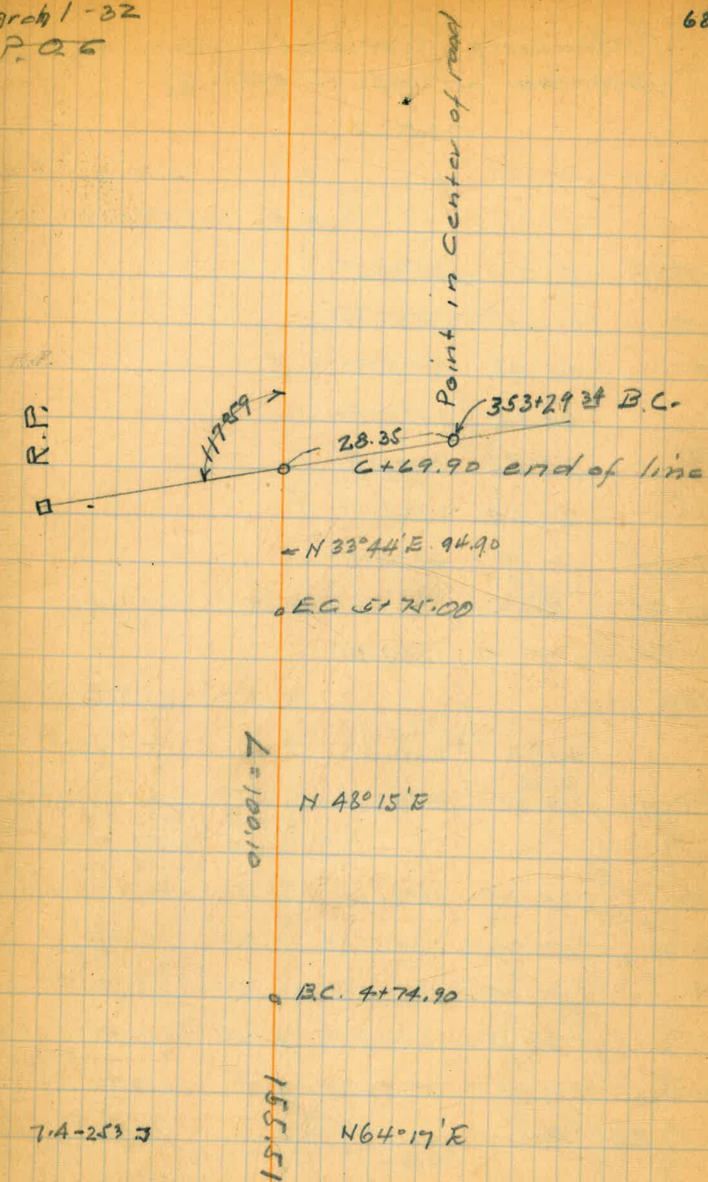


offset line contin.

Hodges Conduit affected by Road Change

		H.I.		El.		
		1.03 262.47		261.40	BM on R.P.	
bottom of conduit			9.42	253.05	at tie line	
Top of side wall			6.37	256.1	at tie line	
5+83 on offset line			6.43	256.0	T of S.W	
			7.55	254.9	offset	
6+69.90		x 117°59' Lt				
6+25		94.90	6.43	256.0	T. of W	
6+00			6.50	256.0	" "	
			7.19	255.3	bott. of conduit	
5+75.00	E.C.	x 14°31' Lt	6.50	256.0	T of W.	
	4.59	260.68	6.38	256.09		
6th	100.10	16°02' Lt				
5th	73.88	12°23' Lt				
4th	59.62	10°31' Lt				
3rd	44.25	8°10' Lt				
2nd	30.00	6°43' Lt				
1st defl.	14.80	4°18' Lt				
4+74.90	B.C.	x (100.10)				
		H.I. 260.68				
4+59.39	P.O.T		4.7	256.0	T. of S.W.	
			4.68	256.0	on offset	5' out 7.4-253.3
4+33.39	P.O.T		4.72	255.96	T. W	
			4.68	256.0	on offset	5' out 7.4 - 253.3
3+70.39	P.O.T		4.7	256.0	T. W	
			4.7	256.0	offset	5' out 8.4 252.3

March 1-32
P.Q.6



Cross-sections thru stations

	← cut in slope → D	V Δ +	Vert. Dist.	Horiz. Dist.
358+75	no change small draw			
359+00	28.0	17°50	8.6	26.7
359+25	31.0	31°24	16.2	26.4
359+50 ↓	33.0	37°34	20.1	26.10
359+75 ↓	D = 34.0	V Δ = 41°48	22.7	25.3
360+00 ↓	D = 35.0	V Δ 40°02	22.5	26.8
360+25	D = 50.00	V Δ = 39°34	31.8	38.5
360+50 ↓	D = 55.0	V Δ 39°12	34.8	42.5
360+57 68	D = 42.0	V Δ = 39°50	26.9	31.2
360+78 15	this is 175 west of Flume	50.78 to South inside edge of Conduit		

Feb. 29-32
P.O.C

℄

219.0 219.0
4.9 17.0 H.1.4.9

218.3 218.3 H.1.4.7
4.7 15.

217.7 219.7
4.7 10.0 2.4 21.0 3.9 24.5 H.1.4.7 4.7 35.0 old grade

217.1 217.1
4.9 10.0 H.1.4.9

216.6 216.6
4.8 7.0 1.8 31.0 H.1.4.8 5.2 38.0 old grade

216.1 216.1
4.8 6.0 H.1.4.8

215.5 215.5
4.9 6.0 H.1.4.9 4.2 23.0 new fill.

215.4 215.40
4.8 6.0 H.1.4.8

215.2
4.8 3.0 215.20 4.1 23.0 H.1.4.8 new fill = old grade

246.1
15.8

Cross-section thru Stations

		D	V.Δ.	Vertcle	Horiz
356+50	✓	21.0	14°52	5.4	20.3
356+75	✓	23.0	16°28	6.5	22.1
357+00	✓	31.0	13°40	7.3	30.1
357+50		40.0	26°24	17.8	35.8
357+75	✓	40.0	28°08	18.7	35.6
358+00	✓	40.0	29°14	19.5	34.9
358+25	✓	26.0	7°40	3.5	25.8

358+50 no change culvert

Feb. 29-32
P.O.G

℄ H.I.

232.0 232.0 5.0
5.0 5.0
16.0

230.0 230.0 4.8 ✓
4.8
17.0

228.1 228.1 5.0 ✓
5.0
23.0

224.6 224.6 224.6
5.0 4.0 10.6 5.0
26.0 18.0 28.0 old road grade

224.0 224.0 4.9
4.9 ✓
26.0

222.0 222.0
4.8 3.5 8.8 4.8
24.0 20.0 29.0 old grade

221.0 221.0
4.9 4.9
19.0

Cross-sections thru Stations

Feb. 29-32
P.O.C.

℄

1-1, 1

	D	V-Δ	Vert.	Horiz
355+34.96 E.C.				
355+50	19.0	6°25	2.1	18.9
355+75	20.0	11°35	4.0	19.6
356+00	19.0	3°58	1.3	19.0
356+25	17.0			

241.0 241.0
−2.8 5.0 5.0
15.0 13.0

240.0 240.0
4.8 4.8
13.0

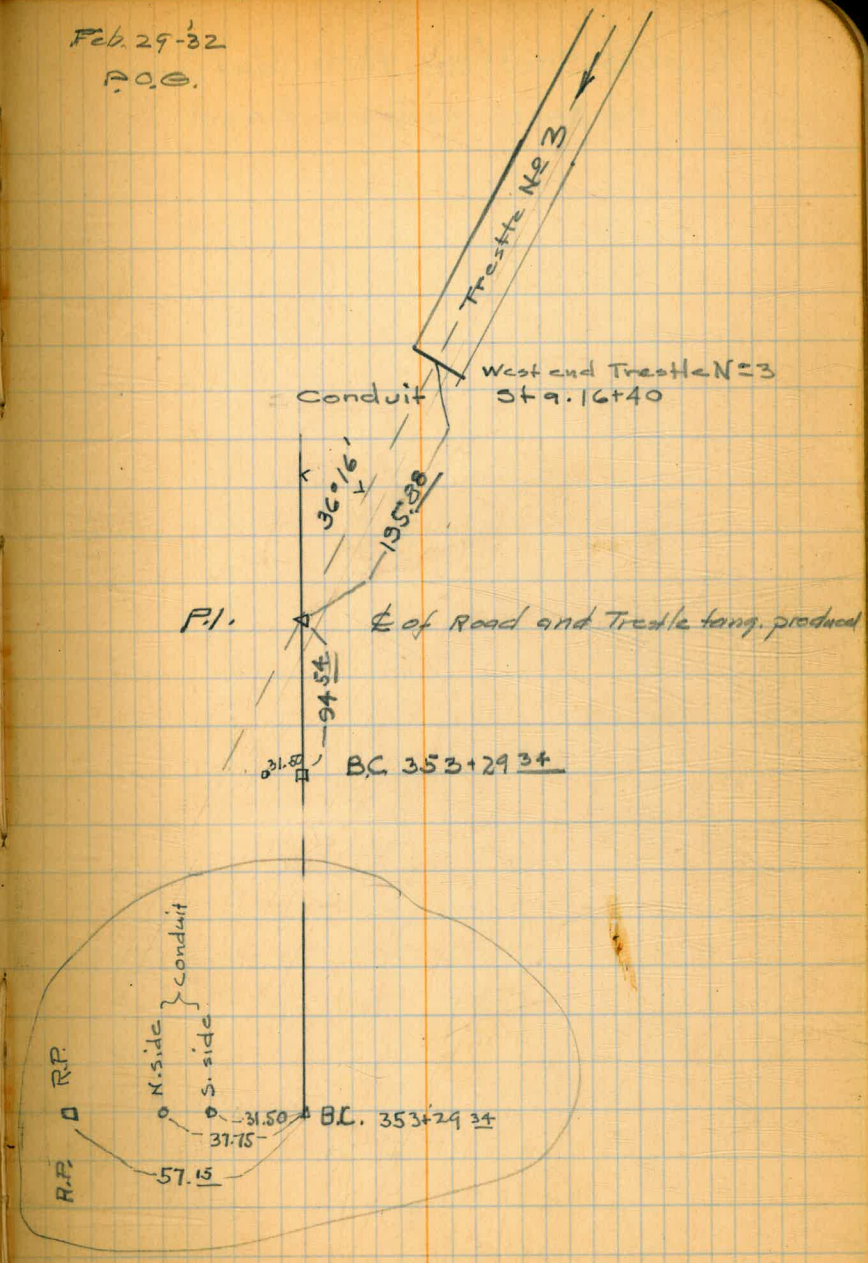
238.0 238.0
4.9 4.9
14.0

236.0 236.0
4.9 4.9
15.0

234.0 234.0
−0.5 4.9 4.9
17.0 14.0

Tie of Road alignment to
Conduit Stationing -

Feb. 29-32
P.O.C.



Cross-sections thru Stations
on Rebuilt Hodges Road

Traverse of Road Survey.

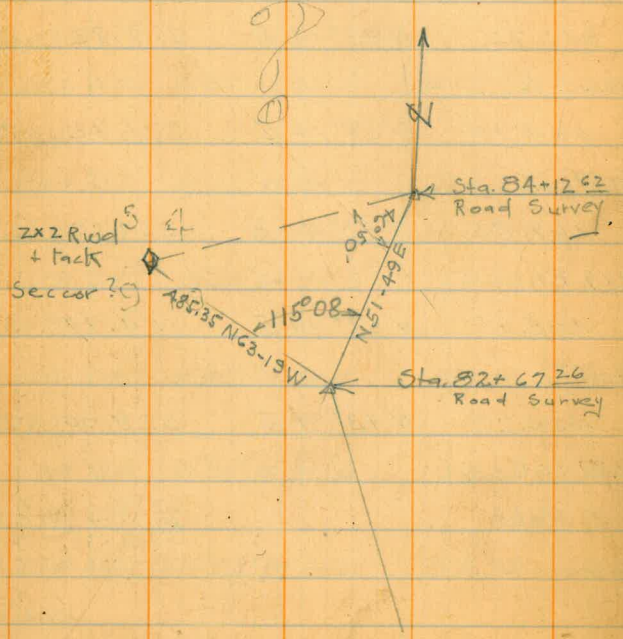
Calc. By R.E.W.

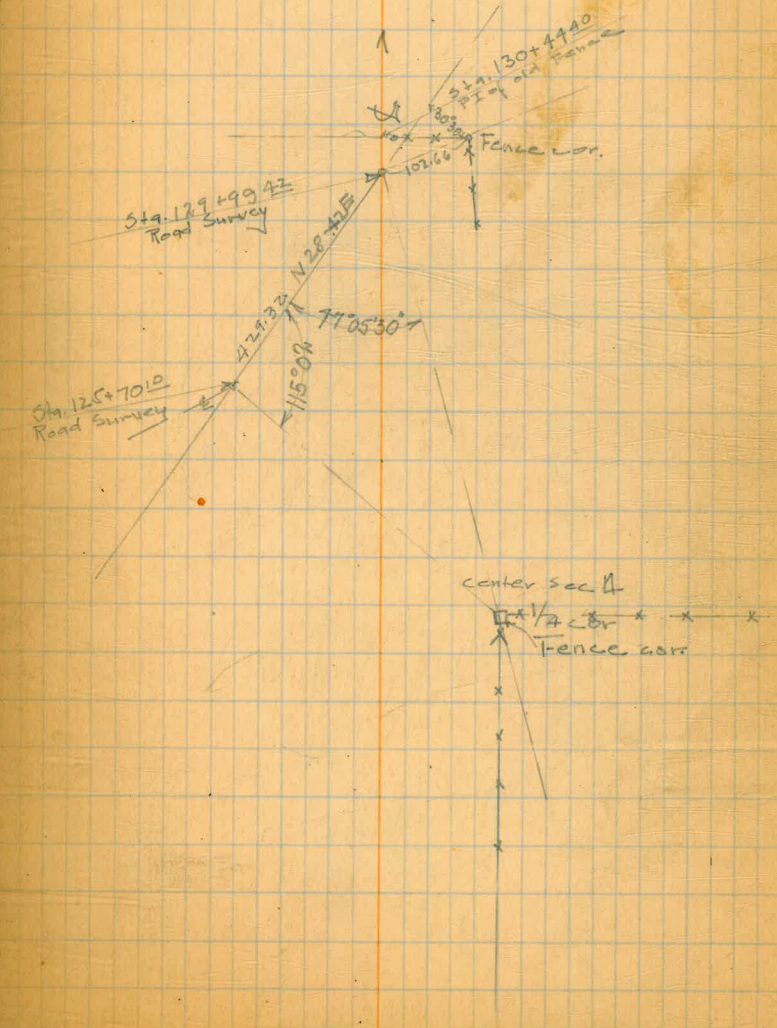
		North	East
0+00 Beg.			
316.67	N35°24'30"E	258.10	183.48
3+16.67 P.I.			
1049.12	N73°44'30"E	293.72	1007.16
13+60.56 P.I.			
323.72	N39°44'30"E	248.92	206.96
16+77.06 P.I.			
815.54	N63°14'30"E	367.18	728.21
24+89.68 P.I.			
350.00	N84°14'30"E	35.12	348.23
28+37.60 P.I.			
603.27	N41°14'30"E	453.62	397.70
34+35.26 Δ			
244.07	N32°44'30"E	205.29	132.01
36+79.33 P.I.			
150.04	N64°44'30"E	64.02	135.69
38+26.37 P.I.			
108.74	N42°14'30"E	80.50	73.10
39+34.09 P.I.			
168.34	N78°14'30"E	34.31	164.81
40+99.20 P.I.			
184.64	N52°44'30"E	111.78	146.96
42+80.84 Δ			
151.07	N41°44'E	112.74	100.56
44+31.91 Δ			
		2265.30	3674.87

		North	East
44+31.91 Δ			
210.70	N33°14'E	176.24	115.47
46+42.61 Δ			
259.45	N16°14'E	249.11	72.53
49+02.06 P.I.			
534.77	N53°54'E	315.08	432.09
54+29.41 P.I.			
288.15	N38°54'E	224.25	180.95
57+16.06 P.I.			
252.84	N9°44'E	249.20	42.75
59+65.52 P.I.			
301.73	N43°14'E	219.83	206.68
62+64.65 Δ			
384.74	N33°14'E	321.82	210.86
66+49.39 Δ			
369.80	N43°44'E	267.20	255.64
70+19.19 P.I.			
408.91	N67°44'E	154.94	378.42
74+24.35 P.I.			
450.20	N43°14'E	328.00	308.37
78+71.89 P.O.T.			
End 3/14/28		2505.67	2208.76
		2265.30	3624.87
		4770.97	5828.63

129+99.47
47
130+47.94

115-08
51-49
63-19



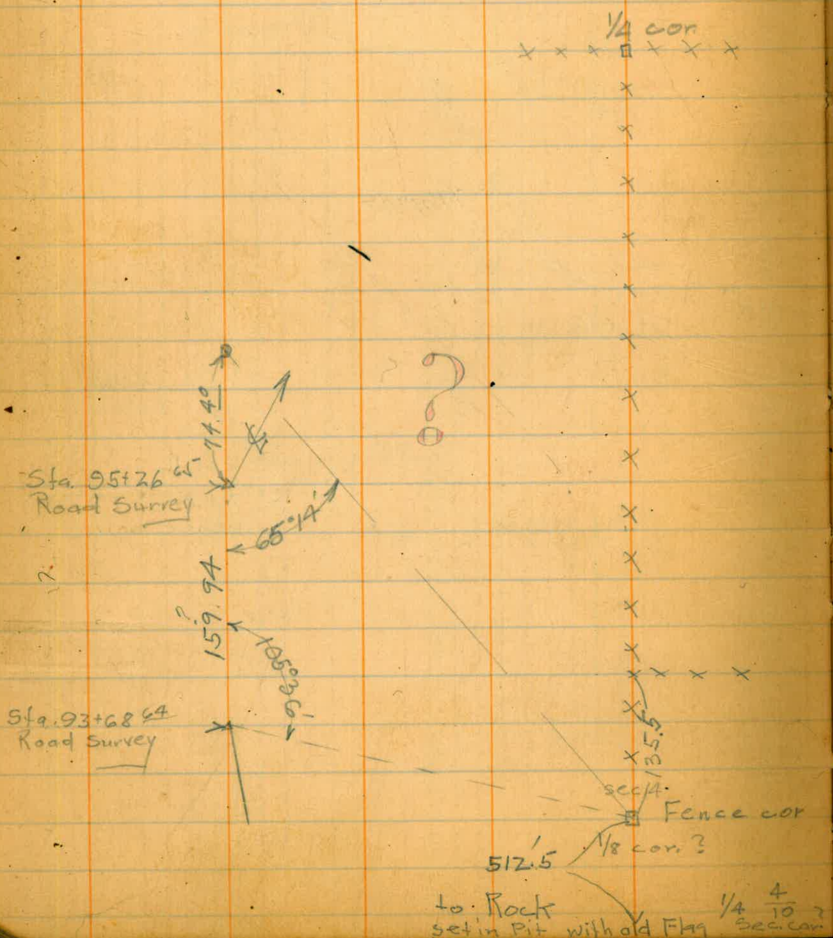


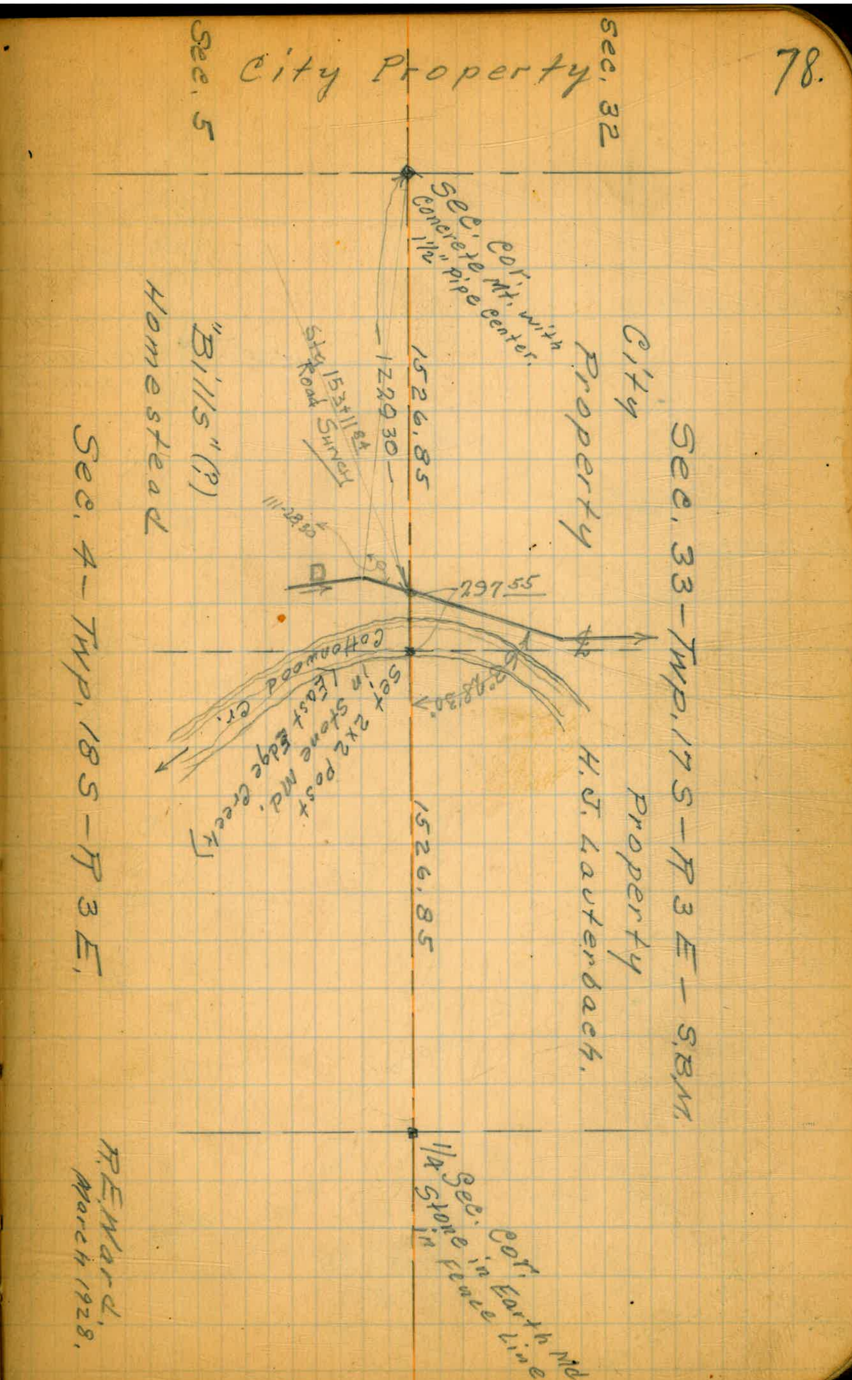
15194.76
117.08
153+11.84

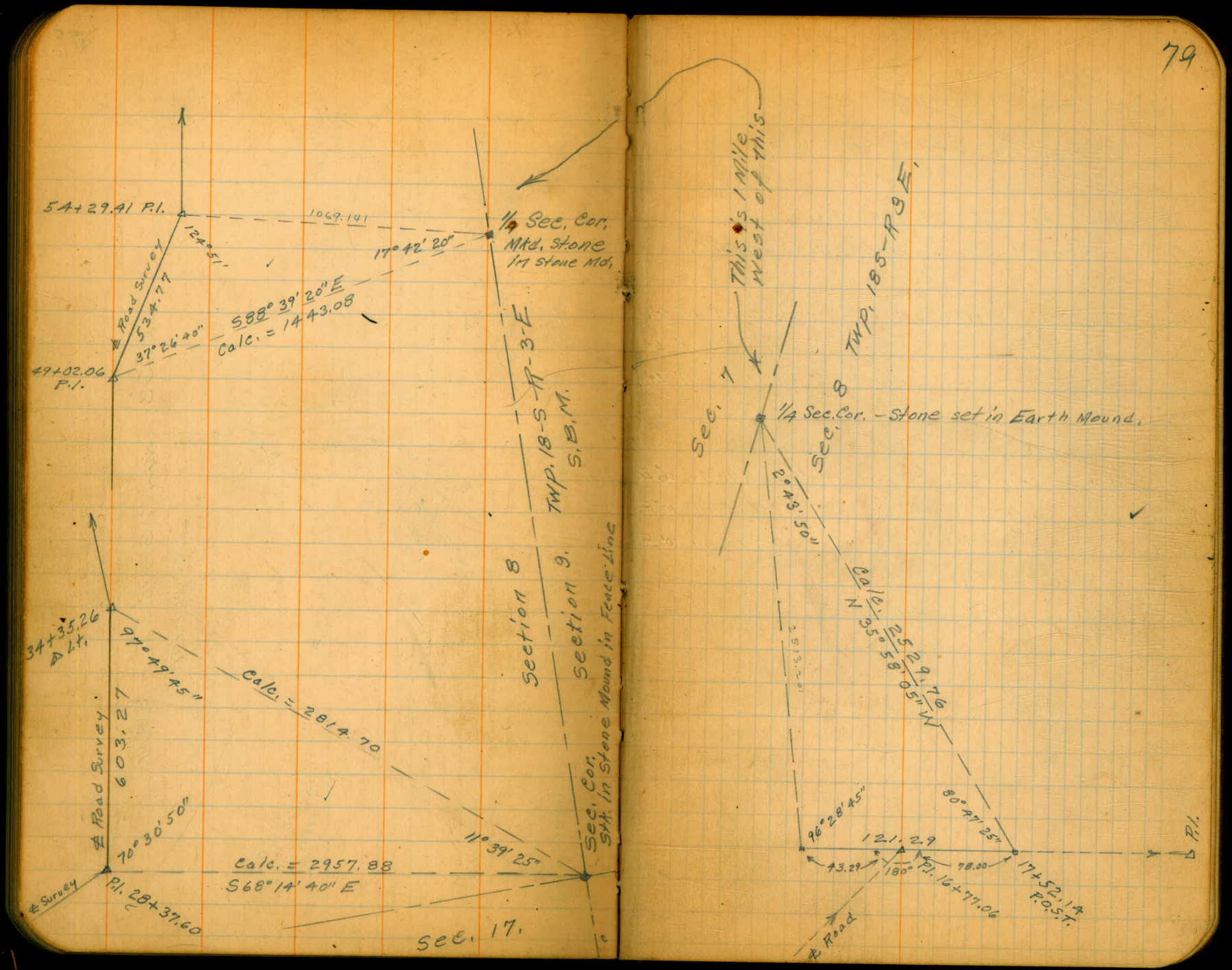
100.00
17.00
76.00
104.55
297.55

63-28
126-57
63-28-30

1526.85
297.55
1229.30






54+29.41 P.I.
1069.141
1/4 Sec. Cor. Mkd. Stone in Stone Md.
17°42'20"
℄ Road Survey
534.77
124°51'
37°26'40"
S88°39'20"E
Calc. = 1443.08
49+02.06 P.I.
Section 8 — TWP. 18-S — R-3-E — S.B.M.
Section 9.
Sec. Cor. Set in Stone Mound in Fence Line
34+35.26 ℄ Lt.
97°49'45"
Calc. = 2814.70
℄ Road Survey
603.27
70°30'50"
11°39'25"
Calc. = 2957.88
S68°14'40"E
℄ Survey
P.I. 28+37.60
Sec. 17.
This is 1 Mile West of this
Sec. 7
Sec. 8
TWP. 18S-R3E.
1/4 Sec. Cor. - Stone set in Earth Mound.
2°43'50"
Calc.
N 35°58'05"W
2513.20
2529.76
80°47'25"
96°28'45"
121.29
43.29
180°
78.30
P.I. 16+77.06
17+52.14 P.O.S.T.
P.I.
℄ Road

Solar Observation Jan. 12, 1928.
At Junction of County Road
and road to Barrett Dam.

Long. 116° 42' 30" W.
Lat. 32° 36' 30" N.

Instrument at Sta. 13+60.56 P.I.
Angle turned Lt. from back tangent.

1st 2:38 P.M. – Vert. ∠ 23°18' – Horiz. ∠ 32°42' Lt.
2nd 2:44 P.M. " 22°30' " 31°29' Lt.
3rd 2:49 P.M. " 21°47' " 30°29' Lt.

No 1 Sun = S 41°06' 36" W — Line N 73°46' 36" E.
No 2 " S 42° 15' 40" W — " N 73°44' 40" E
No 3 " S 43° 15' 20" W — " N 73°44' 20" E

Used Course N 73°-44' 30" E

IMPROVED TABLES
AND
INFORMATION

Needle = 15° 10' East. At Barrett.

126-87
23-28-30

1/4 Cor = N 2656.79
E 5255.55

P.I. 62+64 = N 3697.98
E 4675.34

580' E to Sec Line

179° 59' 60"
46° 54' 30"
133° 05' 30"

47	
48	72.0
49	73.5
50	75.0