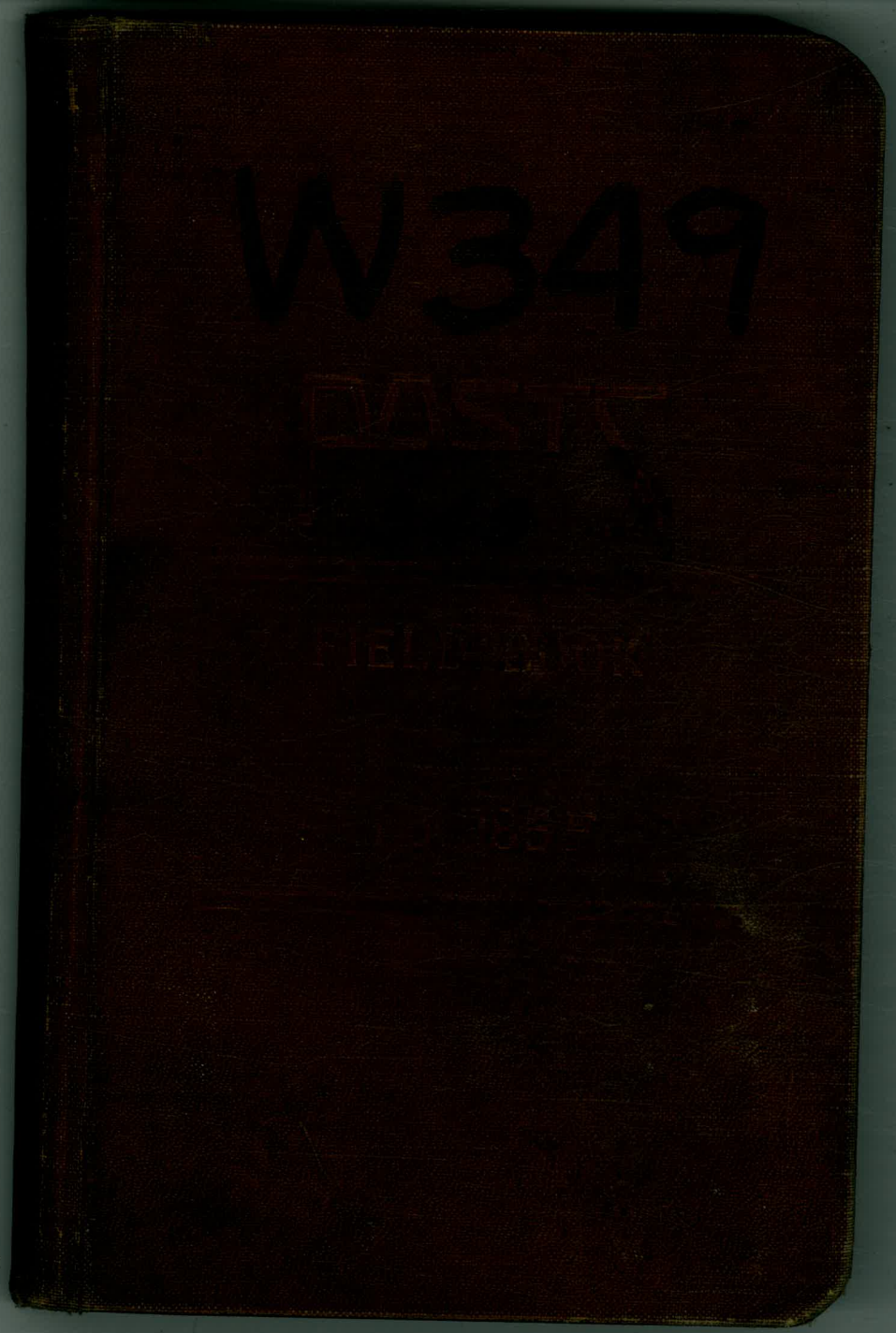
W349

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THE FREDERICK POST CO.

ENGINEERING and DRAFTING SUPPLIES

IRVING PARK STATION

CHICAGO, ILL.

Index.

Baseline for bridge x-sing

		M.B.	El.
0+00		S67°20E	770.0
0+43.71	P.O.T		
54.42			
0+98.13			
2+00	P.O.T		

Feb-25-32

2

on West bank of Chocolate creek
500' above cabin I

D=60' V=23° = 54.42

Profile of Base line

Feb. 25- 32

0+00				770.0
	6.00	756.0		750.0
0+39			0.0	756.0
0+48			2.6	753.4
	0.00	743.0	12.0	743.0
0+70			0.8	742.2
0+83			7.6	735.4
0+87			12.6	730.4
1+00			12.5	730.5
	2.8	734.4	11.4	731.6
1+15			3.4	731.0
1+22			5.3	729.1
1+30			5.0	729.4
1+36			7.7	726.7
1+45			8.5	725.9
1+56			9.0	725.4
1+62			8.3	726.1
1+73			4.6	729.8
	13.0	747.4	0.0	734.4
1+81			10.7	736.7
2+00			8.7	738.7
2+22			1.6	745.8
	13.0	760.4	0.0	747.4
2+33			10.9	749.5
2+50			4.3	756.1

Old 750 Contour Path.

Profile continued

		760.4.		
	13.0	773.4	0.0	760.4.
2+61			13.0	760.4.
2+80			4.0	769.4.
2+89			0.4	773.0.

Topography on East Side

Π at 2+00	AZ S 67°20 Lt			738.7.
	4.6	743.3 = H.I.		
toe of slope	94.0	87°20 Rt	0.6	742.7.
"	65	89°44 Rt	1.4	741.9.
"	40	104°10 Rt	3.1	740.2.
"	10	122°18 Rt	4.8	738.5.
"	29	60°15 Lt	5.8	737.5.
"	68	61°48 Lt	8.2	735.1.
"	93	64°40 Lt	10.2	733.1.
"	123	63°30 Lt	10.8	732.5.
Top of 1st bench				
"	77.0	71°34 Lt	10.5	732.8.
"	66.0	98°05 Lt	11.0	732.3.
"	44.0	146°30 Lt	9.4	733.9. joins channel bank
Toe of slope 1st bank				
	72	118°46 Lt	13.8	729.5.
	74.0	104°28 Lt	14.0	729.3.
	83.0	79°23 Lt	14.3	729.0.
	100.0	67°54 Lt	14.5	728.8.

Topog. continued

℄ at 2+00		743.3 = H.I.			
	140	63°16 Lt	15.8	727.5	
Top of creek bank	172	86°16 Lt	16.0	727.3	
"	128	94°40 Lt	13.9	729.4	
	120	112°56 Lt	13.4	729.9	
	108	124°22 Lt	13.9	729.4	
	84	138°23 Lt	10.3	733.0	
	44	149°44 Lt	9.5	733.8	
	18	150°50 Rt	6.8	737.3	
	58	117°04 Rt	5.3	−14.3 on rock 738.0; 7' out 729.0	
	82	109°48 Rt	5.3	738.0	
℄ at 2+80	4.5	773.9 = H.I.		769.4	AZ sight to 0+00 = N 67°20 W
	49	57°23 Lt	8.9	765.0	
	78	64°00 Lt	"	765.0	
2+71.5 on line		0°00	"	765.0	
	51	103°38 Rt	"	765.0	
	86	105°58 Rt	"	765.0	
℄ at 1+00	4.6	735.1 = H.I.		730.5	

West edge of Channel — AZ S 67°20 E

90	59°22 Rt	8.5	726.6
56	35°28 Rt	9.0	726.1
39	11°36 Lt	9.7	725.4
48	76°20 Lt	10.0	725.1
86	83°33 Lt	10.3	724.8
113	83°33 Lt	10.5	724.6

Feb 25-32

South bank & bottom

D	HA	- Rod	Channel		
192	86°16 Lt	20.7	10' W	722.6	
128	94°40 Lt	-18.2	bott.	725.1	
120	112°56 Lt	-18.4	"	724.9	
126	124°22 Lt	-18.3	"	725.0	
100	138°23 Lt	-17.2	"	726.1	
55	159°10 Lt	-17.2	"	726.1	
34	159°28 Rt	-17.0	"	726.3	
64	123°46 Rt	-16.7	"	726.6	
86	117°30 Rt	-16.2	"	727.1	

Π at	1+00	735.1 = H.I.	A Z 567°20E		
	132	82°40 Lt	10.5	724.6	on rock
	175	77°50 Lt	11.8	723.3	
Toe of slope West Bank					
	175	81°50 Lt	9.5	725.6	
	146	88°26 Lt	9.0	726.1	mouth of gulley
	116	88°26 Lt	8.4	726.7	
Top of	68	88°26 Lt	6.7	728.4 bench joins	toe of slope here
bank	30	83°28 Lt	5.0	730.1	
	15	00	4.1	731.0	
	29	60°10 Rt	3.3	731.8	
	51	62°46 Rt	2.7	732.4	
	68	70°08 Rt	2.8	732.3	
	95	77°51 Rt	2.6	732.5	
Toe of slope					
	96	103°10 Rt	3.6	731.5	
	62	105°00 Rt	4.0	731.1	
	36	116°12 Rt	4.2	730.9	
	13	130°31 Lt	4.6	730.5	
	27	108°26 Lt	4.7	730.4	
on West bank		746.1 = H.I.			
	31	121°56 Lt	5.8	740.3	
	60	103°03 Lt	5.1	741.0	
	105	93°10 Lt	3.5	742.6	
	127	93°38 Lt	4.3	741.8 on edge of gulley	
	31	143°43 Rt	4.3	741.8	

Topog. Contin.

Feb. 25-32

7

Mat 1+00		746.1 = H.I.	376°20E	Az
	63	12.2°00Rt	0.0	746.1
	80	115°27Rt	0.0	746.1
Mat 0+43.71		H.I. = 758.5	Az = 376°20E	
	88	88°00Lt	8.5	750
	63	77°16Lt	"	750
	16	42°58Lt	"	750
	0+56	00	"	740
	29	71°30Rt	"	750
	65	81°10Rt	"	750
	98	83°28Rt	"	750
	100	99°33Rt	+1.5	760
	58	108°50Rt	"	760
	15	0°00	"	760
	34	117°53Lt	"	760
	66	114°26Lt	"	760
Mat 0+00		5.1 = 775.1 = H.I.		770 Az 376°20E
	25	85°37Rt	5.1	770
	69	79°31Rt	5.1	770
	103	89°31Rt	"	770
	38	102°31Lt	"	770
	61	112°21Lt	"	770
	75	117°17Lt	"	770

Prelim. road survey from Highway #80

			El.
11+79.71	P.O.T		1196.9
		× 200.42	
9+79.29	P.O.T		1191.1
		× 349.29	
6+30.00		7°07 Lt N12°54W	1197.3
		× 230.00	
4+00	P.O.T		1206.4
		× 400.00	
0+00		38°49 Rt N5°47W	same P.I.

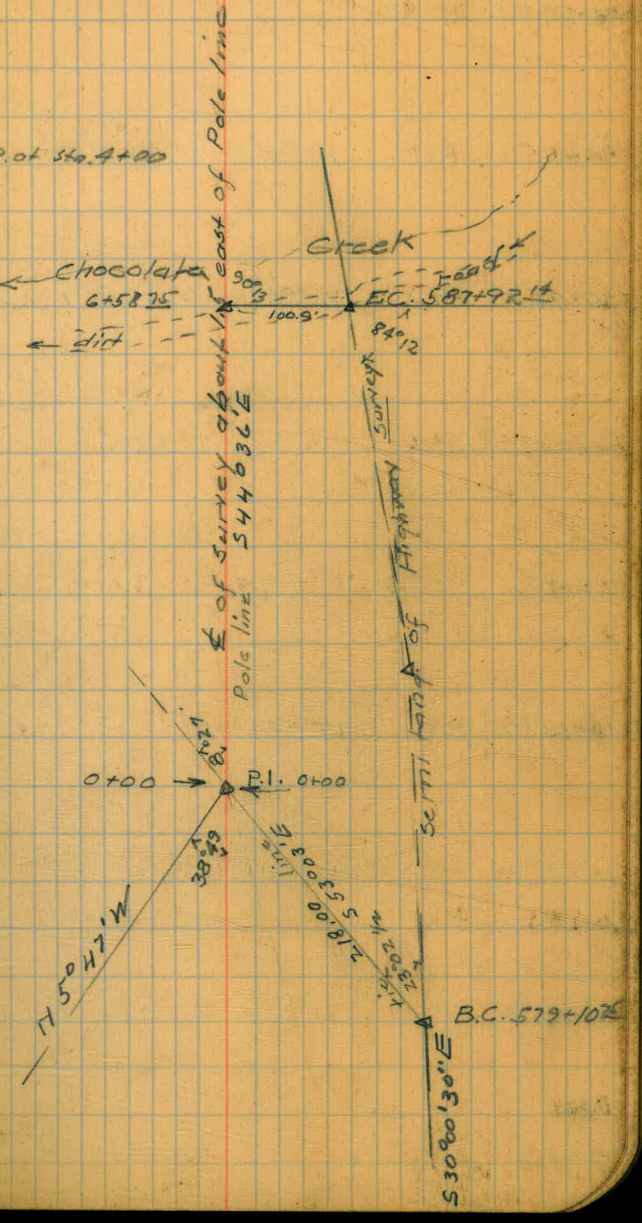
Tie to existing dirt road - southeasterly

7+59.65	P.I.	× 84°12 Rt	to point on S.T. of H.W. Survey
		× 100.90	
6+58.75	P.I.	× 90°13 Rt	to 587+92.14 point in road = E.C.
		× 658.25	
0+00		×	

Feb. 26-32
P.O.G.

8

1225.04	H.W. DM #52
4.13	
1229.17	
12.65	
1216.52	
0.96	
1217.48	
11.07	
1206.41	T.P. of Sta. 4+00
2.24	
1208.65	
11.32	
1197.33	
0.95	
1198.28	
7.13	
1191.15	
10.53	
1201.68	
4.77	
1196.91	
11.67	
1208.58	



Prelim. continued

			El.
40+00	P.O.T		
34+55	P.I.	14°00 Lt N39°59'E ✓	
30+92.79	P.I.	25°47 Rt N53°39'E ?	
25+62.00	P.I.	25°28 Lt N28°12'E ✓	
		D = 100 VΔ 15°13 = X 96.47	
22+00	P.O.T		
18+35.84	P.I.	17°08 Lt N53°40'E ✓	1173
15+80.43	P.I.	45°44 Rt N70°48'E ✓	
14+13.36	P.I.	37°58 Rt N25°04'E ✓	1203.9
11+79.2	P.O.T	✓	

March 2 - '32
P.O.C

9

1208.38
12.78 4.65 1203.93
1195.80
1.04
1196.84
12.37
1184.47
0.96
1185.43
12.07
1172.36
0.86
1173.22
13.05
1160.17
0.11
1160.27
12.78
1147.49
0.04
1147.53
12.67
1134.86
0.69
1135.55
12.76 1091.55
1122.79 0.93
0.96 1091.98
1123.75 12.64
12.63 1079.34
1111.12 0.99
1.50 1080.33
1112.62 12.87
8.73 1067.46
1104.29 1.09
0.31 1068.55
1104.60 12.67
13.05 1055.88
1091.55 1.87
1057.75
13.08
1044.67

Prelim. contin.

March 3 -32
P.O.C raining !

10

79+86.00 P.O.T 832.3

V Δ 4°15 = 27.3 to 7.00
N 64°09' E ✓

73+18.00 P.I. 64°21 Rt 4.5 rad = 966.6 862.1
3.68

V Δ = 4°04 = -52.00 to ground

65+86.50 P.O.T 910.15

V Δ = 2°20 = 22.2 to 7' above ground

✓
60+41.85 P.I. 6°54 Lt N 0°12' W 930.1
5.44.65 934.8

V Δ = 2°30 + 1.0
= 13.8 935.8
13.8

✓ 922.0
57+25.00 P.I. 50°38 Lt N 6°42' E 934.8
-7.7

D = 407.23
V Δ = 10°36 = 76.2
+ 0.5
76.7

53+17.11 P.O.T

✓
49+62.00 P.I. 61°29 Rt N 57°20' E

✓
46+00 P.I. 10° 07 Lt N 4°09' W

✓
41+60 P.I. 34°01 Lt N 5°58' E

1044.67
1.00
1045.67
12.87
1032.80
1.85
1034.65
13.05
1021.60
9.16
1029.78
12.70
1017.08
0.73
1023.81
12.53
1011.28
0.21
1011.49
12.91
998.58

930.1
7.0
937.1
2.2
914.9 14.1
8.75
910.14
52
8 C 21
45
8 E 6
34.3
832.3

Prelim. contin.

91+00.00 P.I. 27°37' Lt S43°38'E ✓

89+36.67 P.I. 120°52' Rt S16°01'E ✓

88+45.00 P.O.T

Use line 'A' from here.

86+76.16 P.I. 58°14' Lt N43°07'E ✓

V Δ = 21°55' × 100 = 92.77
V Δ 22°56' × 90 = 83.89

83+74.94 P.O.T

V Δ = 15°45'
= 43.2

83+58.94 P.O.T

82+21.75 P.I. 37°12' Rt S78°39'E ✓ 808.9

81+80.90 P.O.T 815.3

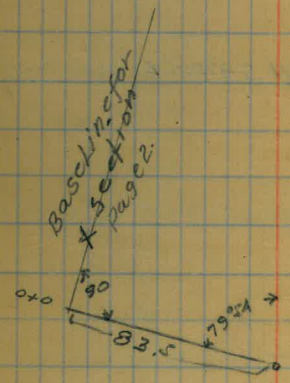
V Δ 4°12' + +2.0'
= 14.3

79+86.00 P.O.T
194.1

March 4-'32
P.O.C

11

832.3 P.O.T Tan 6°
+2
834.3
14.3
820.0 H.I.
4.7
815.3
808.9 808.9
4.4 C.
813.7 817.9
43.2
771.7 = 769.8 from 160 contour



= Bridge Tangent = X sing of Chocolate

Prelim. contin.

March 5-32
P.O.G

12

105+38.00 End of line on East side of Flume x-sing

102+17.48 P.I. 28°34' Lt S 46°02' E N 15°10' W

100+83.33 P.I. 13°51' Lt S 17°28' E N 28°24' E

99+44.35 P.I. 71°33' Rt S 32°37' E N 37°15' E

96+90.68 P.I. 69°34' Lt S 75°10' E N 34°18' W

95+58.53 P.I. 39°47' Lt N 35°16' E

94+64.08 P.I. 39°12' Lt N 75°03' E

92+90.33 P.I. 22°07' Lt S 65°45' E

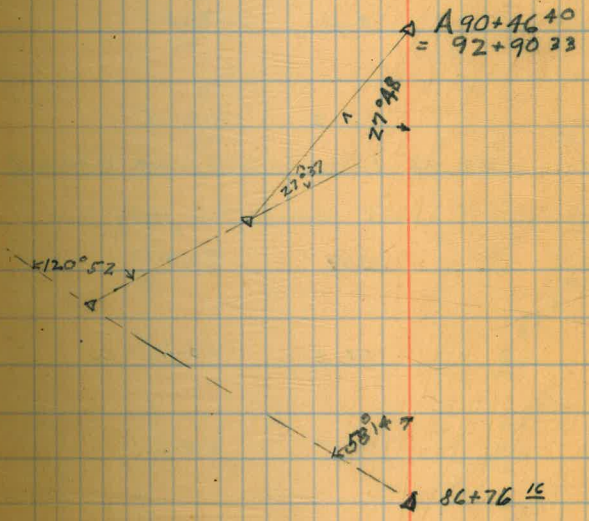
x-sing east branch of Chocolate Creek

A' line Chocolate x-sing tang. produced

March 5-32
P.O.C

13

A 90 +46 40 = 92+90 33



A 90 +46 40 P.I. see sketch
=92+90 33

V Δ 12°38 D=100.00

A 87+84 28 P.I T°10 R+ S 71°29'E = 97.58

A 86+76 16 P.O.T S 78°39'E
=86+76 16 P.I. Δ L°

Profile levels over Preliminary line

March 7-32

			1225.04	H.W.BM #1
	4.30	1229.34		
	1.27	1217.79	12.82	1216.52
			11.38	1206.71 T.P.
4+00			11.0	06.8
3+90			10.4	07.4
	0.74	1205.71	12.82	1204.97 TP
3+00			1.4	04.3
2+00			2.9	02.8
1+00			8.4	1197.3
0+00			12.2	1193.5
	0.26	1193.73	12.24	1193.47 BM nail in T. Pole near Sta 0+00

line to dirt road parallel to pole line

0-45	3.9	89.8	
-1+00	10.3	83.4	
-1+30	9.5	84.2	
-2+00	12.8	80.9	
	12.9.5	1180.78	

#52	Lt.	℄	Rt.

Sta 4+05

05.9
11.9
25

08.1
9.7
25 Rt

6.5
8.7

same slope

on top of stake at Sta 3+00

04.3
1.4
25

05.7
0.0
25

04.7
1.0
25

02.1
3.6
13

02.8
2.9
25

98.9
6.8
25

97.4
8.3
25

95.1
10.6
25

91.3
14.4
25

91.9
1.8
40

86.6
7.1
15

88.9
4.8
30

86.1
8.6
15

87.6
6.1
30

83.0
10.7
15

same slope

Profile levels
0+00 to road

	0.125	1180.905		1180.78	T.P.
-2+55			1.8	79.1	
-3+00			5.3	75.6	
-3+45			11.0	69.9	
-4+00			12.4	68.5	
	0.045	1168.360	12.59	1168.315	T.P.
-4+50			2.7	65.7	
-5+00			6.8	61.6	
	0.405	1157.085	11.68	1156.68	BM nail in T.P. -5+80
-6+00			4.1	53.0	
-6+35			9.5	1147.6	on N. side road
-6+58.75	Δ Rt		9.0	48.1	on S. side of road
587+92 = -7+65			4.3	52.8	

end of line

Lt.	℄	Rt.
80.7		82.1
0.2		+2.0
15		30
77.1		77.3
3.8		3.6
15		30
72.4		74.8
8.1		6.1
15		30
70.3		72.1
10.6		8.8
15		30
66.9	-3+90	67.8
15		0.6
15		30
62.5		63.4
5.8		5.0
15		30
+6° slope		
48.8		49.6
8.3		7.5
15		30
47.3		46.7
7.8		10.4
15		30

Profile

						Lt	Rt
	1.29	1207.70		1206.41	T.P.	Sta. 4+05	
4+25			4.8	02.9		+ 4p	-22° 30 / +15° 15 / + 10 4p
4+50			9.6	1198.1		+50% 4p / -45° 10	+10° 4p
4+65			20.7	87.0	in draw	+25 4p / 0° 15	- 5° 30 / +50% 10 / +15 4p
4+81			13.9	92.8		+ 6° 4p	- 18° 35 / 0° 40 / + 50° 50
5+00			8.7	99.0		+ 4° 4p	-10° 50
5+58			7.7	1205.0		+16° 4p	-22° 60
6+00			6.2	01.5		+16° 4p	-22° 60
6+30	Δ Lt		9.8	1197.9		+ 12°	-17°
	1.65	1199.005	10.345	1197.355	T.P. peg	Sta 6+33	
7+00			5.0	94.0		+12°	-12°
7+25			8.0	91.0		+12°	-20°
7+65			4.6	94.4		+10°	-10°
8+00			6.0	93.0		+10	- 7°

Profile

March 7 -32

17

			1199.005				℄	
						Lt		Rt
8+30			10.3	1188.7			+70	-15°
9+00			13.8	85.2			+13	-13°
9+06			10.2	88.8			+6°	-12°
9+45			7.2	91.8			+12°	-12°
9+79			7.8	91.2			+12	-12°
	6.77	1197.90	7.875	1191.130	T.P. pg	9+82		
10+00			9.6	1188.3			+10°	-10°
10+32			17.9	1180.0			+12°	-20°
10+65			39.1	1158.8	draw	S-E	+12°	-12°
10+80			28.1	69.4			75°	-5°
11+00			22.5	76.4			+6°	-10°
11+79.71			1.0	96.9			+10°	-10°
12+00			5.0	92.9			+14°	-14°

		1197.90						
12+75 ±			43.2	1154.7	draw	S-E	+25° up	+10° 30
13+25			10.6	87.3			-12°	-7°
	10.60	1208.39	0.11	1197.79				
14+00			8.0	1200.4			+6°	-10°
14+75			0.4	08.0			+10°	-+10°
15+00			2.0	06.4			+14	-14°
	0.40	1196.90	12.59	1196.80	T.P. peg	Sta. 15+57		
15+80.43	△ Rt		5.2	90.7			+20	-32°
16+00			20.8	75.1			+5°	-0°
16+25			28.0	67.9	draw	S-E	+15°	-25°
	0.42	1183.44	12.88	1183.02				
16+65			6.0	77.4			+14	+27° 20 -27°
17+00			14.6	68.8			+16°	-16°
17+06			17.8	65.6			+20°	-20°
17+40			10.3	73.1			+22	-22°
17+85			13.8	69.6			+20°	-20°

Profile contin

		1183.44					
18+00			11.4	1172.0		+ 20°	- 20°
18+35.84			7.9	75.5		+ 20°	- 20°
	0.22	1172.60	11.06	1172.38	T.P. peg	18+75	
19+00			5.0	67.6			
						+ 25°	+ 25°
19+22			13.2	59.4			
						+ 25°	- 25°
19+40			7.1	55.5		+ 27°	- 27°
20+00			10.8	61.8		+ 25°	- 25°
	0.22	1159.85	12.97	1159.63			
20+30			3.9	55.9		+ 17°	- 17°
20+60			14.9	44.9		+ 30°	- 30°
20+90			6.6	53.2		+ 25°	- 25°
21+00			7.0	52.8		+ 25°	- 25°
21+45			9.8	50.0		+ 25°	- 25°
	0.36	1147.88	12.33	1147.52	T.P. peg	21+60	
22+00			5.6	42.3		+ 22°	- 22°

Profile contin.

		1147.88			
22+45			7.6	1140.3	
	0.52	1135.64	12.76	1135.12	
22+70			10.0	26.6	
	7.98	1130.99	12.63	1123.01	
23+00			17.1	13.9	
23+08			19.4	11.6	
23+90			16.3	14.7	
24+00			17.0	14.0	
24+45			17.2	13.8	
24+75			22.1	08.9	
24+95			28.3	02.7	draws-E
25+18			9.3	21.7	
25+62	Δ Lt		1.5	29.5	
	0.36	1129.26	2.09	1128.90	
26+00			0.8	28.5	
26+45			5.8	23.5	

March 7-32

20

Lt	℄	Rt
+22°		-22°
+17°		-17°
+32°		-32°
+32°		-32°
+17°		-25°
+17°		-17°
+20°		-25°
+20°		-30°
+20°	0° 8	+45° 18 0° 38 -25° down
0°		-5°
+5°		-7°
+12°		-12°
+15°		-15°

Profile contin.

		1129.26			
	0.73	1117.17	12.82	1116.44	
27+00			1.8	15.4	
27+35			7.9	09.3	
27+55			18.3	1098.9	
27+75			11.0	1106.2	
28+00			9.0	08.2	
28+70			7.7	09.6	
	3.39	1109.16	11.40	1105.77	
28+90			10.0	1099.2	
29+00			5.8	1103.4	
30+00			4.4	04.8	
30+75			1.9	07.3	
31+00			5.7	03.5	
			4.81	1104.35	T.P. rock
31+35			19.6	1089.6	

March 7-32

P.96

21

	℄	
Lt		Rt
+15°		-15°
+15°		-15°
+25		-25°
+15°		-25
+17°		-23°
+20°		-30°
+25		-25°
+25°		-32°
+30°		-30°
+20°		-30°
+16°		-16°
	30+98	
+27°		-27°

Profile contin.

		1109.16			
31+70			9.7	1099.5	
32+00			10.5	98.7	
	0.27	1096.44	12.99	1096.17	
32+35			11.9	1084.5	
32+70			4.4	92.0	
33+00			5.0	91.4	
33+50			9.0	87.4	
33+80			7.8	88.6	
34+12			19.3	77.1	
34+55			12.8	83.6	
	0.67	1084.15	12.96	1083.48	
			4.76	1079.39	T.P. peg
35+00			6.7	77.4	
35+30			10.0	74.1	
	0.09	1072.06	12.18	1071.97	
	0.98	1060.57	12.47	1059.59	
35+70			2.6	58.0	

March 7-32
P.O.6

℄ 22

	Lt	Rt
	+22°	-22°
	+22°	-22°
	+30°	-30°
	+17°	-30°
	+17° +22° N	-22°
	+15°	-15°
	+12°	-12°
	+17°	-17°
	+12°	-12°
34+70	+15°	-15°
	00	-6° N -15°
	0°	0°

Profile contin.

		1060.57			
35+85			19.1	1041.5	drawn
36+35			9.0	51.6	
37+00			9.4	51.2	
37+30			19.8	40.8	
37+55			13.0	47.6	
38+00			9.3	51.3	
38+35			5.6	55.0	
39+00			5.2	55.4	
39+65			5.4	55.2	
40+00			9.6	51.0	
	0.80	10.48.64	12.73	1047.84	
			3.91	1044.73	T.P. pag
40+60			10.0	38.6	
	0.14	1035.81	12.94	1035.70	
41+00			1.5	34.3	

March 7-'32
P.O.G

23

	Lt	Rt
East	+15°	-15°
	+20°	-30°
	+15°	-20°
	+20°	-20°
	+17°	-17°
	+22°	-22°
	+22°	-22°
	+20°	-20°
	+25°	-25°
	+25°	-25°
40+20		
	+20°	-20°
	+20°	-20°

Profile contin.

		1035.81			
41+60	Δ Ht		5.9	1029.9	
42+00			11.8	24.0	
	0.91	1023.81	12.91	1022.90	
42+15			4.3	19.5	
			2.16	1021.65	TP peg
42+50			6.5	17.3	
	6.53	1017.55	12.79	1011.02	
42+80			12.8	04.7	
42+95			24.3	993.2	draw
43+25			16.1	1001.4	
44+00			12.1	05.4	
44+20			11.4	06.1	
44+55			15.7	01.8	
44+70			10.0	07.5	
45+10			19.6	997.9	draw
45+40			1.4	1016.1	

March 7-32
P.O.6

	Lt ℄	Rt
	+10°	-10°
	+7°	-7°
	+15°	-15°
42+10	+15°	-15°
	+12°	-12°
E	+25°	-25°
	+20°	-20°
	+22°	-22°
	+22°	-22°
	+30°	-30°
	+10°	-20°
S-E	+20°	-20°
	+8°	-8°

Profile contin.

		1017.55			
	8.97	1026.4	0.11	1017.44	
45+80			1.0	25.4	
46+00			1.1	25.3	
46+90			6.5	19.9	
47+00			4.8	21.6	
47+40			10.4	16.0	
			9.31	1017.10	T.P.
	1.52	1015.52 ×	12.41	1014.00 ×	
	H.L. 0.0	1002.5	13.0	1002.5	
+70	H.L.		16.4	986.1	
	H.L. 13.0	1015.52 ×	0.0	1002.5	D. E.
48+0.0			17.8	997.9	
+35			6.8	1009.7	
+55			4.7	10.8	
+90			5.1	10.4	

March 7-32
P.O.C.

Lt ∠	Rt
+17°	-17°
+17°	-17°
+15°	-15°
+15°	-20°
+14°	-15°
47+40	
+25°	-25°
+22°	-33°
+25°	-25°
+20°	-20°
+20°	-20°

			1013.52						
49 + 6				9.7	1005.8				
+62				+3.3	18.8	P.I.			
	H.L.	0.0	1002.5	13.00	1002.5				
+90				3.3	999.2				
		0.0	989.2	13.3	989.2				
		0.0	976.2	13.0	976.2				
50 +10				14.3	61.9	Dr.	S.E.		
		13.0	989.2	0.0	976.2				
		13.3	1002.5	0.0	989.2				
	H.L.	13.0	1016.52	0.0	1002.5				
51 +00				4.2	11.3				
+40				3.2	12.3				
+55				4.5	06.0	Dr.			
+80				5.6	09.9				
52 +00				6.1	09.4				

LT.			RT
+30°			−33°
+20°			−35°
+35°	0.0 40	00 10.0	−30°
+25°			−25°
+22°			−22°
+22°			−22°
+30°			−30°
+30°			−30°
+30°			−30°

		1016.62			
52+25			11.4	1004.1	
+60			12.0	03.5	
B.M.			4.20	1011.32	1011.28
53+00			6.5	09.0	
T.P.	0.04	1002.76	12.80	1002.72	
+60			11.0	991.8	
+80			10.6	92.2	
T.P.	0.12	990.03	12.85	989.91	
54+00			2.0	88.0	
+15			6.1	83.9	
T.P.	0.43	978.00	12.46	977.57	
+55			19.3	58.7	Dr.

Lt.	℄	Rt.
+25°		-25°
+25°		-25°
Rock. 52+90		
+25°		-25°
Peg. 53+30		
+35°		-35°
+25°		-25°
+10°	+25° 20	-25°
+5°		-20°
+25°	-15° 25	-30°

					LT.	∠	RT
		978.50					
54+88			11.5	66.5	+25°		-25°
55+00			13.3	64.7	+25°		-25°
T.P.	0.09	965.15	12.94	965.06			
+30			10.0	55.1	+15°		-20°
+65			10.4	54.7	+20°		-20°
T.P.	0.10	952.31	12.94	952.21			
56+00			6.0	46.3	+20°		-20°
+20			10.2	42.1	+20°		-25°
+50			11.0	41.3	+20°		-20°
T.P.	0.31	939.72	12.90	939.41			
57+00			3.0	36.7	+13°	-13° 15	-20°
+37			4.9	34.8	+7°		-7°

		939.72			
57 + 70			11.3	28.4	Dr.
58 + 00			14.0	26.7	
+ 20			13.8	25.9	
+ 55			17.8	21.9	
+ 85			30.2	09.5	Dr.
59 + 00			21.0	18.7	
+ 25			13.3	26.4	
+ 68			11.4	28.3	
60 + 00			2.7	37.0	
T.P.	6.39	945.92	0.19	939.53	
60+41.85	P.I. Lt.		1.1	44.8	
61 + 00			9.2	36.7	

	Lt.	℄	Rt.
S.E.	+25°		-25°
	+25°		-25°
	+25°		-25°
	+20°		-20°
	+15°		-15°
	+12°	-12° 30	-20°
	+20°		-20°
	+20°		-10°
	+15°	+5° 15 / -5° 15	-15°

Peg 60+07.

Long Curve.	+4°	+7° 20	-7° 25	-12°
	+5°		-5° 20	-12°

		943.92			
B.M.	0.82	933.78	12.46	933.46	
T.P.	0.03	921.54	12.27	921.51	
61 +75			9.4	12.1	
T.P.	1.32	910.39	12.47	909.07	
62 +00			10.0	900.4	
+50			24.0	886.4	Dr.
+90			8.2	902.2	
63 +40			27.5	882.9	Dr.
	0.10	933.52		933.46	
63 +90			24.7	08.9	
64 +00			19.5	14.1	
+50			11.5	22.1	
65 +00			9.5	24.1	
65+86			2.3	31.3	
66+00			4.0	29.6	

	Lt.	℄	Rt	
Peg. 61+10				Can go out on ridge. Can swing up the draw.
		0.0	0.0	
Peg. 61+85				
		0°	0°	
S.E.	+13°		−13° 30 − 45° 10	−25°
	+12° +20° 15			−20°
	+20°			−20°
T.P. Peg. 61+10				
	+12°			−12°
	+12°			−12°
	+15° +22° 20			−22°
	+17°			−17°
	+5°			−12°
	+5°			−15°

Prelim. Profile contin.

		933.56			
	0.165	920.885	12.84	920.72	
	0.155	908.800	12.44	908.445	
67+00			5.1	03.5	
67+45			15.4	93.2	
67+80			33.4	75.2	
	2.04	897.84	12.90	895.80	
68+00			7.2	890.5	
68+30			0.1	97.6	
69+00			10.4	87.3	
	0.08	884.89	12.83	884.81	T.P. pcg. 69+12
	5.60	878.80	12.49	872.50	
70+00			9.4	68.7	
70+40			18.3	59.8	draw E
70+85			5.0	93.1	
71+00			4.9	73.2	
71+50			7.1	71.0	

March 8-32
P.O.G.

	Lt.	℄	Rt.
67+00	+7°		-10°
67+45	-15° 50'	0° 14'	-25°
67+80	+15°	+25° 20	-15°
68+00	+15°		-20°
68+30	+12°		-12°
69+00	+8°		-8°
69+12	+8°	0° 10	0°
	+20°		-25°
70+40			
70+85	+15°		-22°
71+00	+15°		-22°
71+50	+12°		-17°

Profile contin.

		878.80			
72+00			19.9	858.2	
72+05			23.1	855.0	draw
72+10			20.6	57.5	
72+70			24.6	53.5	draw
73+00			7.4	70.7	
73+18	Δ Rt		+5.9	84.0	
73+40			+5.6	83.7	
74+00			8.1	70.0	
	0.40	865.50	12.00	865.80	
74+75			9.5	56.0	
	0.005	852.560	12.945	832.755	
		840.09			
	0.39	~~839.79~~	12.86	839.20	
75+00			2.1	38.0	
75+15			9.4	30.7	draw
75+40			3.2	37.9	

March 8 '32

32

	Lt.	℄	Rt.
	+10°		-10°
E	+10°		-10°
	+10°		-10°

to left is best location

E	+20°			-25°
	+15°			-15°
	+30°			-30°
	+10°	+22° 30		-22°
	-10°	+3° 15		-25°
	+25°	-20° 15	+20° 20	00
E	+20°			-20°
	0°	+7° N		-20°

Profile contin.

		840.09 ~~839.99~~			
75+75			18.5	821.6	
76+00			12.0	28.1	
76+10			11.2	28.9	
	6.42	833.89	12.52	827.57	
76+60			15.8	18.2	
77+00			10.0	24.0	
77+60			14.6	19.4	
77+80			3.5	30.5	
78+00			1.1	32.9	
78+55			9.5	24.5	
78+85			26.6	07.4	drain
79+05			17.5	16.5	
79+30			3.5	30.5	
79+68			1.4	32.6	

March 8-32

33

Lt.	℄	Rt
+12°		-12°
+24°		-24°
+25°		-25°
+10°		-10°
+17°		-17°
+20°		-20°
+20°		-20°
+20°		-20°
+20°		-20°
+20°	S.	-10°
+20°		-20°
+12°		-12°
+7°		-13°

Profile contin

		833.89			
80+00			6.6	27.4	
	0.42	821.78	12.56	821.34	
80+42.5			8.0	13.8	
81+25			26.5	795.3	
81+50			9.7	812.1	
81+62			6.2	15.6	
82+00			9.7	12.1	
	0.03	809.28	12.60	809.25	on stub 82+18
82+21.7N	△ Rt		1.4	07.8	
	0.09	796.81	12.46	796.72	
83+00			6.7	90.2	
	0.34	784.27	12.88	784.03 / ~~783.93~~	
83+94			8.6	75.7	
W-side chocolate Creek	13.05	784.81	12.81	771.76	
	4.70	788.77	0.44	784.07	T.P. peg
East side 86+76.16 = A86+76.16	△ Lt P.O.T		1.4	87.5	
87+00			2.6	86.3	
88+00			4.6	84.3	

March 8.32

34

Lt.	℄	Rt.
	0°	-5° 30 / -12°
+30°	-30° 28 / 0° 8	0°
+20°		-20°
+8°		-14°
+5°		-10°
+5	+100 20	-10°
on split of △ +5°		-6°
+3°		-3°
+10°		-10°

this equalls 0+00 on Base line for x sing = 770 by hand level from 160 cont.

Sta. 87+18	5' Lt	
	-12°	+12°
	-25°	+25°
	-17°	+17°

Profile cont'n.

		788.77		
	0.03	775.78	13.02	775.75
89+00			4.5	71.4
89+36	Δ Rt		10.0	65.9
	5.06	769.79	11.05	764.73
90+00			6.4	63.6
91+00	Δ Lt		1.3	68.7
91+40			4.1	65.9
92+00			12.5	57.5
92+90	Δ Lt		6.3	63.7
93+00			5.8	64.2
T.P.			3.42	766.37

Alternate line = Chocolate x sing tang produced

	12.81	799.88		784.07 TA
A 87+00			1.9	95.1
	11.89	808.86	0.21	796.87
A 87+65			0.8	807.9
A 88+00			6.2	02.5
	0.14	795.88	12.92	795.84

March 8-32

35

℄

Lt

-15° -10° 30

-35°

-35°

-35°

-20°

-10°

-7° -12° 20

Rt

+10° 20 0° 35 -15°

+35° 10 +20° 40

+35° 25 +20°

+35° 12 +15°

+25° 25 +15°

+10° 10 +25°

+15°

+20°

-12° +5°

-5° +5°

Profile contin.

		795.78			
	0.06	782.89	12.95	782.83	
A 89+00			2.4	80.6	
A 90+00			8.5	74.5	
	11.26	781.80	12.35	770.64	
A 90+30			15.7	64.7	
			14.94	766.86	= 766.47
A 90+46.4 = 92+90.33			16.7	63.7	
93+50			14.3	67.2	
94+00			5.2	76.2	
94+35			1.1	80.3	
94+64	Δ Lt		2.2	79.2	
95+00			15.6	65.8	
95+38	Δ Lt		20.4	61.0	
95+75			27.0	54.4 x 5 mg	chocolate east branch
95+80			34.2	47.2	

March 8-32

36

Lt	Rt
-7°	+7°
-35°	+15°
-35°	+35°
-10°	+20°
-25°	+25° 20 +15°
-25°	+25° 20 +15°
-35°	+35° 12 +25 32
-40°	+40° 15 +25° 35 +10°
-15°	+25°
-10°	+5°
-2°	+3°
-2°	+3°

		781.40		
95+95			34.2	47.2
96+00			28.7	52.7
96+30			19.4	62.0
	1.51	782.87	0.14	781.26
96+90 68	Δ Lt		4.7	78.1
97+00			4.8	78.0
97+45			8.0	74.8
97+75			15.6	67.2
98+00			8.8	74.0
98+25			6.9	75.9
99+00			7.2	75.6
99+46	Δ Rt		10.1	72.7
	3.03	775.75	9.95	772.72
100+00			1.0	74.8
100+83	Δ Lt		7.1	68.7

℄

Lt	Rt
-2°	+2°
0°	0°
-7°	+7°
-15°	+15°
-8°	+8°
-4°	+4°
-7°	+7°
-8°	+8°
-10°	+10°
-7°	+7°
-16°	+10°
-20°	+20°

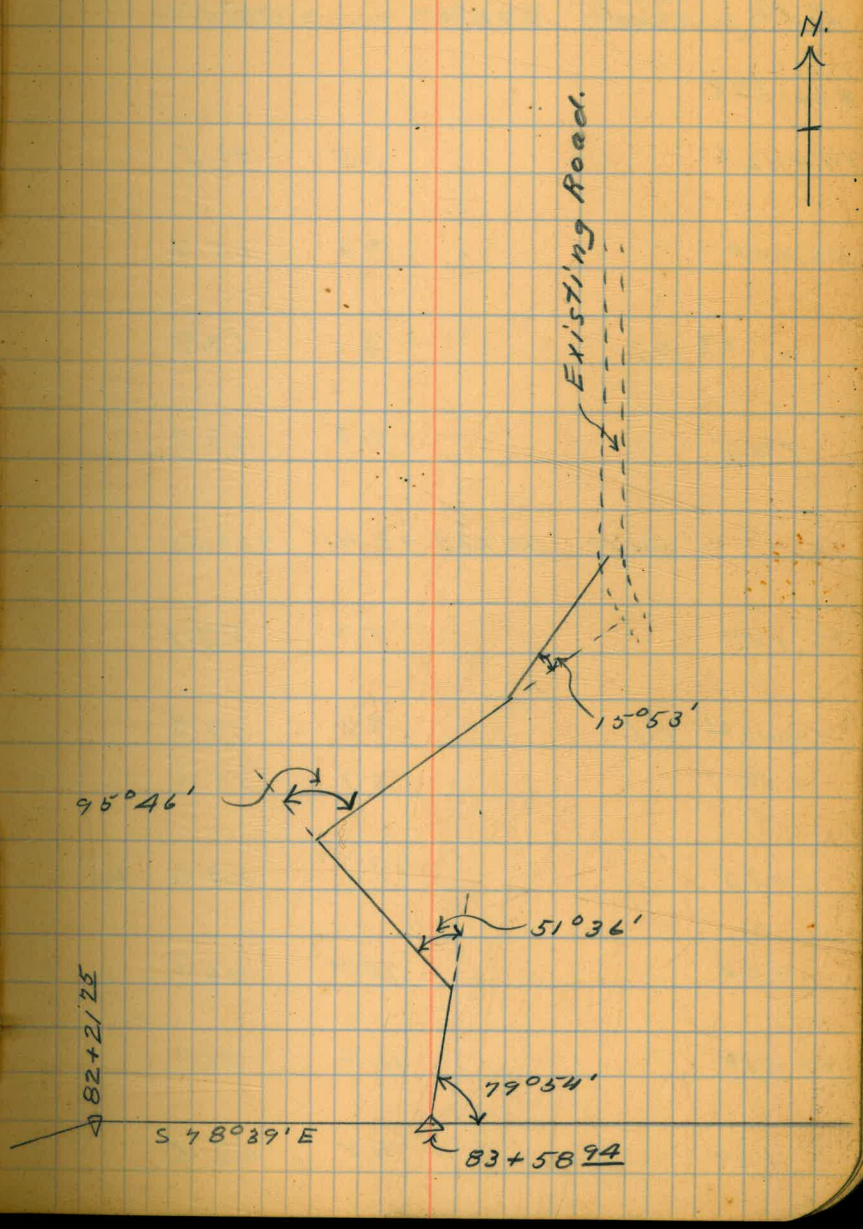
Profile contin.

March 8-32

			775.8/5				℄	
							Lt	Rt
101+10			14.1	761.7			-25°	+25°
101+70			42.5	33.3	draw	N-W	-25°	+20°
102+00			13.4	62.4			-25°	0°
102+17	△Lt		3.0	72.8			-25°	+12°
103+00			7.1	68.7			-35°	+35°
	5.46	770.42	9.79	765.06				
103+65			8.2	62.2			-25°	+25°
104+00			6.2	64.2			-20°	+20°
104+50			3.2	67.2			-20°	+20°
105+06			10.3	60.1			-20°	+30°
105+38 end of line on Flume grade							-20°	0 +55° +20°
on East side of creek			8.14	762.3/8			10	12 17

B' Line
Connection to Existing Road.

90+17.18	End.		
87+87.13	P.I. Lt.	15°53'	N 49°44' E
86+42.61	P.I. Rt.	95°46'	N 65°37' E
85+11.02	P.I. Lt.	51°36'	N 38°06' W
83+58.94	P.O.T. =		
83+58.94	P.I. Lt.	79°54'	N 21°27' E



'B' Line

B.M.	1.50	772.96		771.46	
83+58 94					
84+42 4			1.5	71.5	
85+00			7.3	65.7	
711 02	P.I.		9.1	63.9	
+45			9.3	63.7	
	6.70	767.25	12.41	760.55	
86+00			8.2	59.1	
+42 61	P.I.		7.7	59.6	
+54			8.7	58.6	
+75			13.7	53.6	DH
+90			20.7	46.6	
87+10			11.2	56.1	
+40			4.8	62.5	

B.M. at Baseline 0+00 Chocolate Creek Crossing.

		767.25		
87+87 13	△		2.4	764.9
88+0.0			2.4	64.9
89+0.0			5.3	62.0
90+0.0			5.3	62.0
+17 18			4.9	62.4

Existing Road.

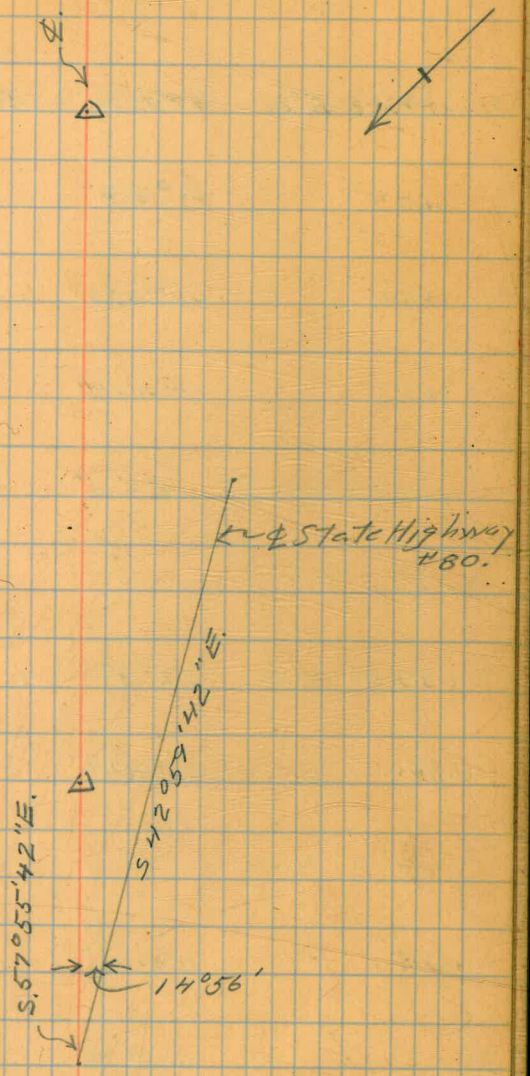
Survey
Trail Road down Chocolate Creek.

Sta.	Align.	Defl.	M.B.	T.B.
2 + 97.08	E.C.	90° 0' 0"	N 57° 55' 42" W	
+75		77° 21' 18"		
+50		63° 01' 48"		
			Δ = 180°	
+25		48° 42' 48"	R = 50'	
			L.C. = 157.08'	
2		34° 22' 48"		
+75		20° 03' 18"		
+50		5° 43' 48"		
+40	B.C. Lt	0° 0'		
1				
0 + 29.16	P.O.T.	Edge of Pavement.		
0 + 00 = ℄ State Highway #80			S 57° 55' 42" E S 42° 59' 42" E	

Alignment not used 0 + 00 = 4 + 75.87
See B. 329 P. 30 Note offsets from this Line.
W.M.T.B.
4-23-32

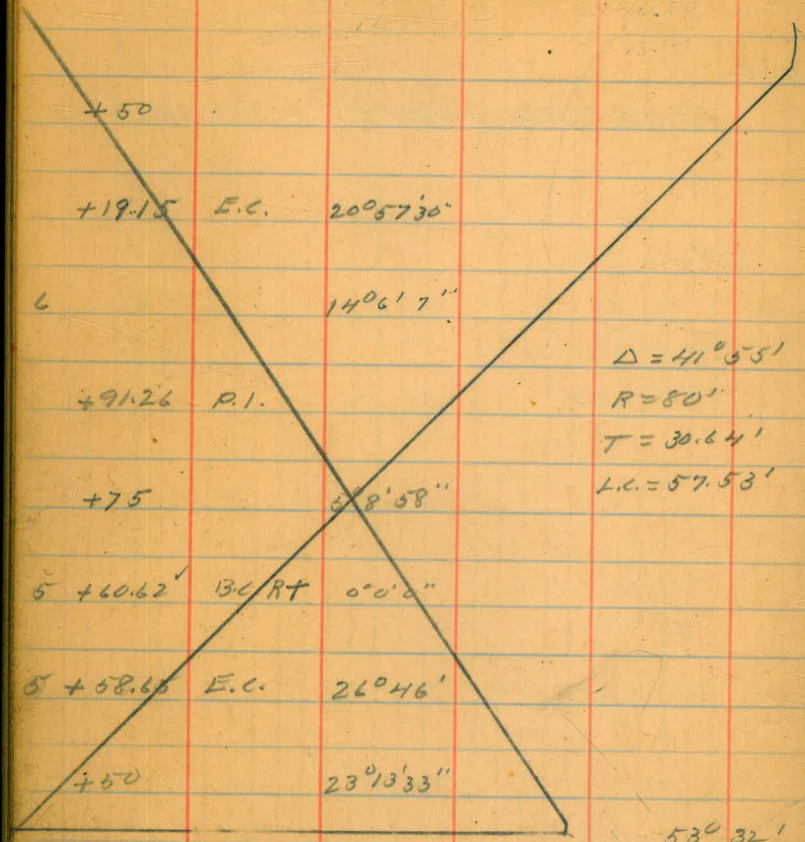
March 23, 1932
W.M. Bonham -
J.S.
H.M.

42



4 +76.82	E.C.	67°18'30"	S38° 0'42" E
+75		66°31'0"	
			Δ=134°37'
+50		42°38'53"	R=30' R.I. = 4+77.08
			T=71.75'
+25		18°42'47"	L.C.=70.49'
+05.83	B.C. Rt	0°0'0"	
4 +71.18	B.C.		
3 +53.25	E.C.	22°39'	N 12°37'42" W
+50.	E.C.	21°19'07"	
+27.12	R.I		Δ=43°0'18'
			T=29.21'
+25	R.I	11°05'13"	R=70.0'
			L.C.=55.34'
3 +20.	L.I.	0°51'19"	
2+97.91	B.C. Rt.	0.°0'	

Note
Use from sta. 4+75.82 - 6 +28.56.



+50

+19.15 E.C. 20°57'30"

6 14°6'7"

+91.26 P.I. Δ = 41°3'5"

R = 80'

T = 30.64'

+75 8'58" L.C. = 57.53'

5 +60.62' B.C. R+ 0°0'0"

5 +58.62 E.C. 26°46'

+50 23°13'33"

58° 32'

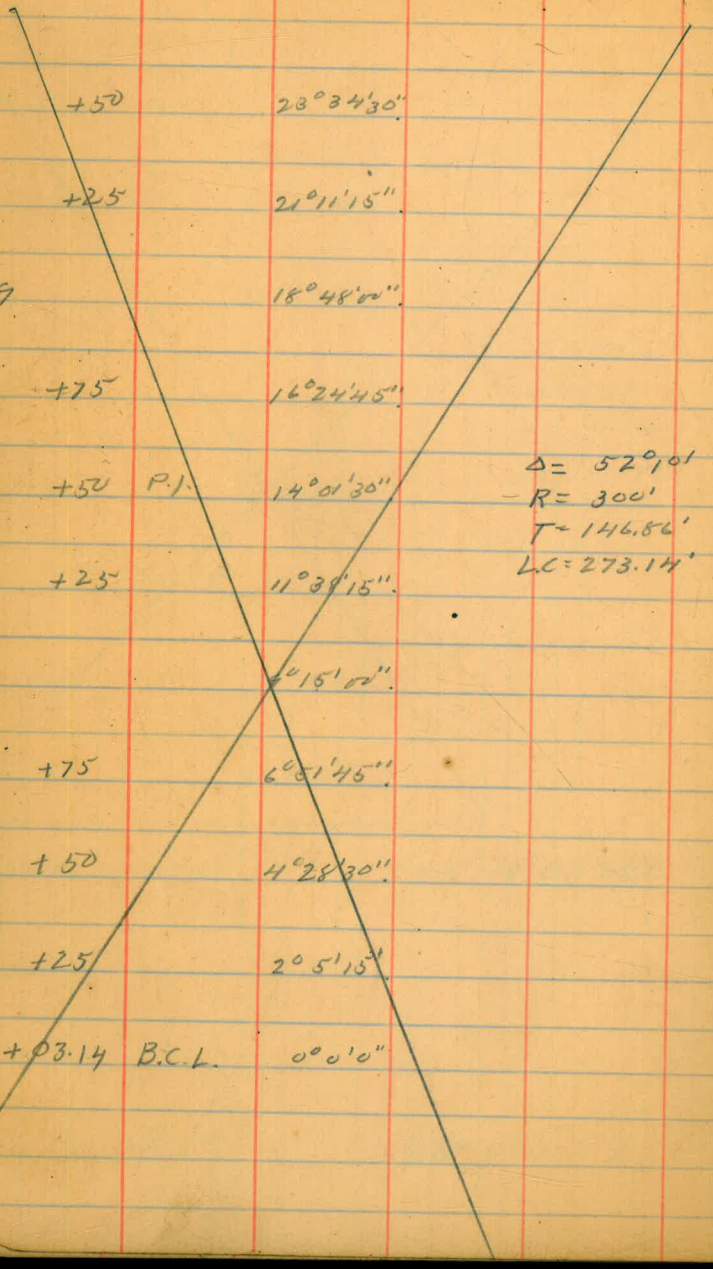
+28.56 Δ Lt. 4°17' S42°17'42"E

+25

5

+93.25 P.O.T. S38° 0'42" E

See Page 71



$\Delta = 52°01'$
$R = 300'$
$T = 146.86'$
$LC = 273.14'$

March 24, 1932
W. Bonham 46

12 47°4'0"

+75 35°7'45"

+50 23°11'30"

+25 11°15'15"

11 +01.43 P.R.C. 72°57'00" = 0°0'0"

11 71°56'30"

A10+91.43 S.T. = 11+61.44

+75 54°01'15"

+50 36°07'

+25 18°12'45"

10 0°18'30"

9 +99.57 B.C.L 0°0'0"

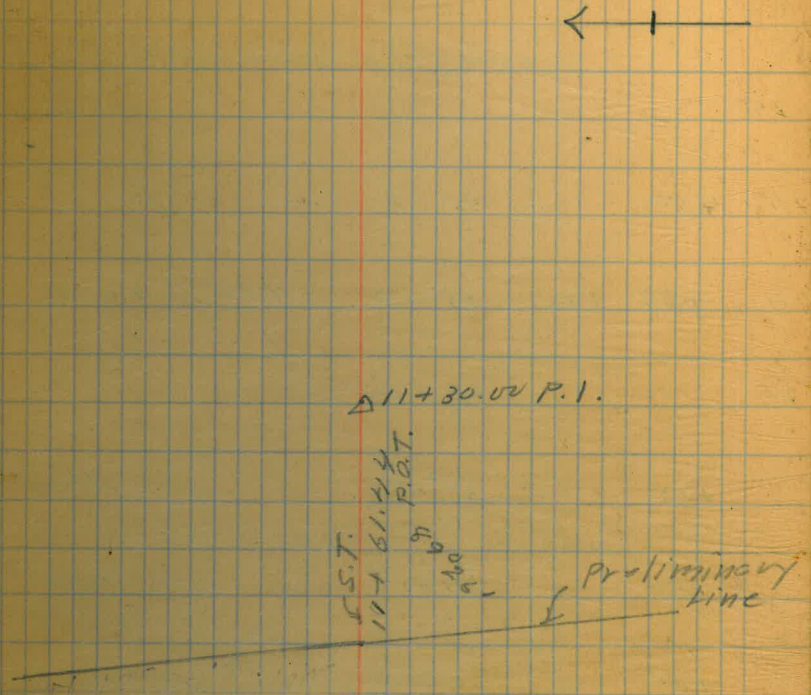
9 +71.28 E.C. 26°05'00"

9 +75 25°57'45"

Δ = 180°
R = 60'
L.C. = 188.50'

P.I. = 1430.0

Δ = 145°54'
R = 40'
T = 130.43'
L.C. = 101.86



See Page 31 Book 329.

15

+50

14 +25 E.C. 55°16'30". N 18°16'42" W

14 45°2'55".

+75 34°49'0". Δ = 110° 34'

R = 70'

+50 24°35'5". L.C. = 135.07'

Cord = 115.08

+25 14°21'10". Bearing Long Cord

N 37°0'18" E

13 4°7'15".

12 +89.93 | B.C.Lt. 90°0'0" = 0°0'0"

+75 82°52'45".

+50 70°56'30".

12 +25 59°0'15".

Point was set at 14+43.7' by Long Cord 124.67'

Δ = 123°52'

See Page 71.

19

5°24'48"

18 +75 Δ Lt. 34°42' N 74°06'48" E

+50

18

17 +50

17 S 85°53'12" E

St. = S 70°42'12" E

+75 E.C. 68°2'5" = Δ Lt 15°11'

+50 50°08'00"

Δ = 136°4'30" ✓

+25 32°18'45" R = 40'

L.C. = 195.00'

T

16 14°19'30"

15+80.0 B.C. Rt.

26°46'42"

15+40.33 Δ 28°30' Lt. N 18°16'42" W

See Detail for Change of Alignment offsets.

Point set at T 17+05.66. by long cord 80'

Δ 180°.

From Book 329 Page 81.

✓ S 83°46' 12" E

24 + 23 24 ΔRt. 58°10' ~~N 23°03' 48" E~~

24

+50

23

43°03'48" O.K

22 +75 Δ 10°42' Lt. ~~N 33°45' 48" E~~

N 43-03-48 E
38
N 5 -03-48 E

+50

22

+50

21

53°46'48"

+75 Δ Lt. 5°39' Lt. ~~N 39°24' 48" E.~~

+50

End of Change of Alignment.

20

19 + 50

March 25, 1932
Bonham
P.G.
J.S
A.M.

50

29

+50

+40 Δ LT. 36°35' ✓ N 32° 10' 48" E
N ~~48° 45' 48"~~ E

28

+50

27

+50

+32 60 Δ 27°28' LT. ✓ 68° 45' 48"
N ~~76° 13' 48"~~ E.

26

+50

25

24 +50

Road location

39+99.80	P.I.	Δ 21°37-30 Lt.	N 28°19'48" E. / N 29°57'48" E.
37+61.81	P.O.T.		
32 +25	E.C.	52°59'45"	N. 48°52'18" E = S.T. / 49°57'18" Δ Rt. 1°5' off of S.T. ✓
+95		35°02'71	Δ 105°59'30" ✓ R = 40'
+75		17°32'45'	L.C. = 74.5' C = 63.89' T = 53.08
31 +50.5	B.C. Rt.	0.0'0	S.T. = N 0 [illegible]
31			
30 +82.20	Δ Lt. 17°45' ✓		N 57° 7'12" / N 59°22'12" W.
+50			
30 +20	Δ Lt. 71°38'		✓ N 39°22'12" W / N 12°10'48" E
30			
29 +50			

Sta. 36+60 to Sta. 48+27.66 S-C
Detail for offset Changes. W.M.B.

Road location

continued from p. 63

55+00.00 — N 47°29'18" E

53+54.15 P.I. 44°53 Rt to 1/4 cor. 17/20

53+10.06 P.I. Δ 40°45' Lt N 88°14'18" E — 47°29'18"

51+13.42 P.I. Δ = 26°54 Rt N 61°20'18" E — 88°14'18"

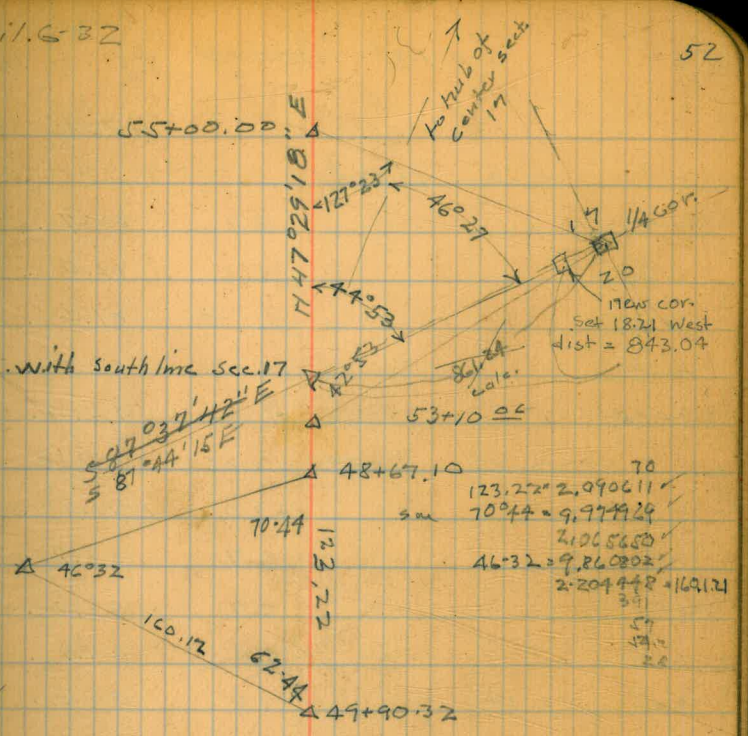
49+90.32 P.I. Δ = 117-16 Rt N 55°55'42" W — N 61°20'18" E

48+67.10 P.I. Δ 27°10' Lt N 28°45'42" W — 47°10'Lt 55°55'42"

48+27.60 P.I. Δ 56°50 Lt N 28°4'18" E — N 28°45'42" W

42+82.80 P.I. Δ 19°44'30 Rt N 8°19'48" E. — 48°4'18"

April 6-32 — 52



Δ = 117°16 R
R = 30.00
S.T. = 49.21
C.A. = 61.40

49+90.32 = P.I.
49.21
49+41.11 = B.C.
61.40
50+02.51 E.C.
30.70
49+71.81 tie to 1/4 cor. 17-20

70
123.22° 2.090611
sin 70°44 = 9.977929
2.106540
46°32 = 9.860202
2.204448 = 160.12
391
57
49.21
20

160.12
49.21
110.91
50+02.51
51+13.42

145.85 = 2.163906
sin 127°23 = 9.900438
2.064050
sin 7°44 = 9.128947
2.935.245 = 861.24

End of offset changes. W.M.B.

Continued on Page 63.

Level notes of A line

				1122.45
	0.10	1122.55		
21+00			3.9	18.7.
+08			6.6	16.0.
+35			21 ±	01.6.
+50			10.6	12.0.
22+00			9.8	12.8.
	0.25	1109.95	12.85	1109.70
+30			+1.0	1111.0.
+50			6.7	03.2.
+55			7.7	02.2.
+69			4.0	05.9.
+75	ΔL+		3.9	06.0.
23+00			7.8	02.1.
	0.19	1097.22	12.92	1097.03
+50			4.8	92.4.
+87			11.3	85.9.
24+00			10.4	86.8.
+23.74	ΔR+		3.5	93.7.
+50			9.8	87.4.
	7.12	1091.79	12.55	1084.67
+68			7.0	84.8.
+75			13.45	1078.2.
25+03			30.2	61.6
25+37			7.4	84.4.
+50			5.7	86.1.
	7.66		38.32	

March 28-32

P.O.G.

T.P. on rock 20+90

T.P. on rock 24+58

Draw

1122.45	38.32
1091.79	7.66
30.66	30.66

Level notes of A Imi

March 24-32
P.O.C

		1091.79		
26+00			1.4	1090.4
	5.57	1097.22	0.14	1091.65
+32.60	Δ Lt		1.9	95.3
+50			3.2	94.0
27+00			12.7	84.5
	0.50	1085.02	12.70	1084.52
	5.90	1080.56	10.36	1074.66
27+50			10.3	70.3
+70			2.7	77.9
28+00			2.1	78.5
+40	Δ Lt		3.8	76.8
+50			4.1	76.5
+90			3.6	77.0
29+00			4.9	75.7
+50			11.1	69.5
	5.33	1073.14	12.75	1067.81
30+00			6.3	66.8
+20	Δ Lt		7.6	65.5
+50			5.0	68.1
31+00	Δ Lt		9.1	64.0
	0.81	1061.80	12.15	1060.99
+50.50	Δ Lt		2.0	59.8
+75	Δ Rt		10.2	51.6
	2.49	1051.77	12.52	1049.28
+90			5.4	46.4
	20.60		60.62	

T.P. on rock 27+03

T.P. on rock 31+80

1091.79	60.62
1051.77	20.60
40.02	40.02

Level Notes of A line

March 25-32
R.O.C.

		1051.77	
31+95		8.6	1043.2
32+00		12.4	39.4
+13		3.7	48.1
+25		1.1	50.7
+50		0.5	51.3
+73		5.2	46.6
+85		12.8	39.3
33+00		11.5	40.3
+08		8.2	43.6
+50		8.7	43.1
+80		8.0	43.8
34+00		12.8	39.0
	7.76	1046.75	12.78 1038.99
+45			13.5 33.3
+50			15.5 31.3
+56			20.5 26.3
+73			11.0 35.8
35+00			4.8 42.0
+25	△ Rt		3.2 43.6
+30			4.1 42.7
+40			8.5 38.3
+55			16.3 30.5
+80			4.3 42.5
36+00			2.6 44.2
+15			4.9 41.9
	7.76		12.78

1051.77 − 12.78 = 1038.99
1046.75 − 7.76 = 1038.99
5.02 5.02

Level notes

March 25-32

P.O.G.

		1046.75		
36+45			16.4	1030.4
+65			5.9	40.9
+85			7.1	39.7
+94			10.8	36.0
37+00			8.7	41.1
	3.32	1049.63	0.44	1046.31
+14			3.3	1046.3
+35			1.1	48.5
+50			1.5	48.1
+70	Δ Lt		4.2	45.4
38+00			5.5	44.1
+10			5.8	43.8
+45			7.5	42.1
+50			10.1	39.5
	3.71	1040.49	12.85	1036.78
+75			9.7	30.8
39+00			4.9	35.6
+21 71	Δ Lt		3.0	37.5
+30			2.4	38.1
+50			6.1	34.4
+60			8.0	32.5
			11.02	1029.47

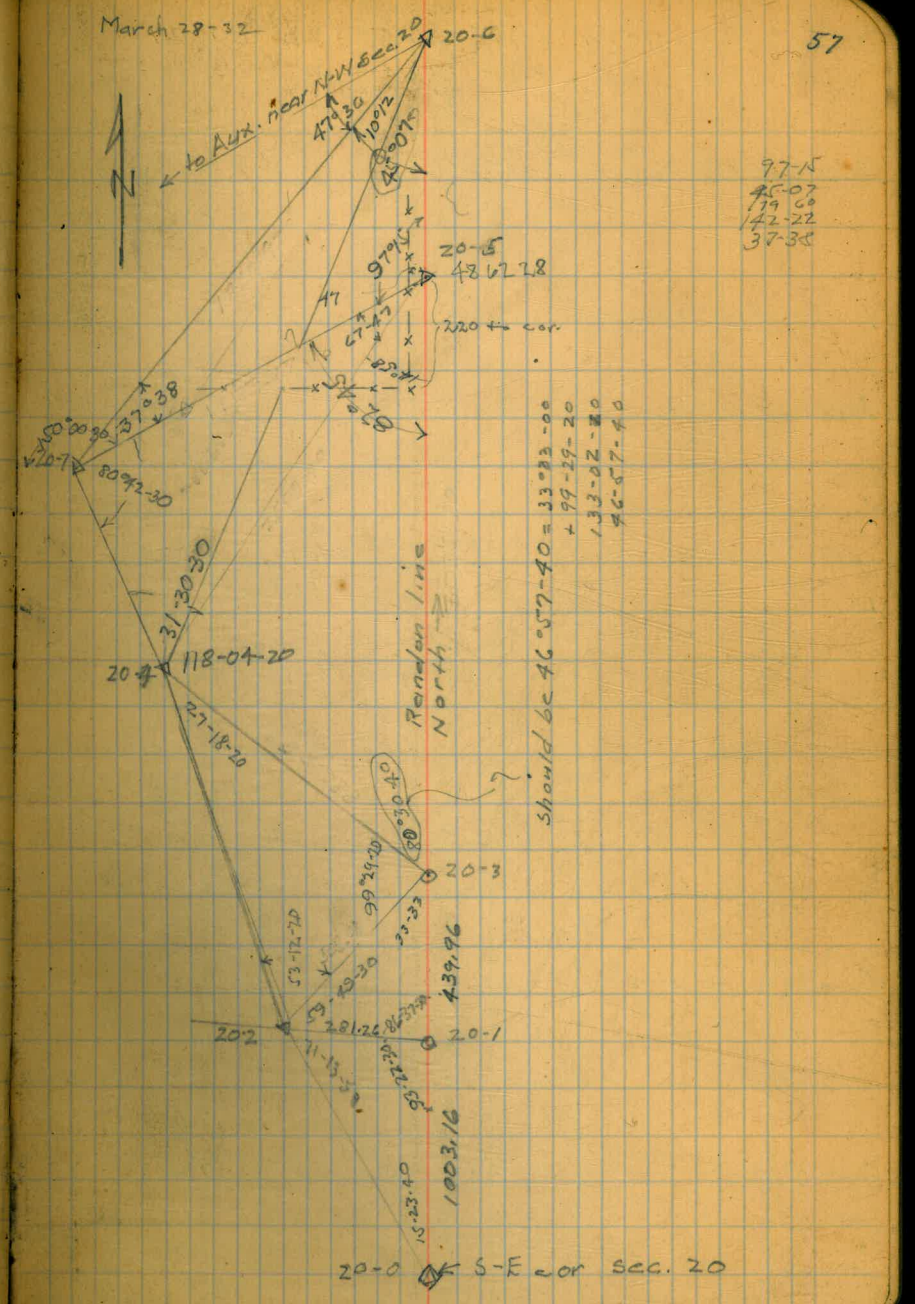
TP rock 39+64

Random line from SE cor Sec. 20
North Sec. 8-9 17/18 to locate sec. cor. 17/18 20/21

Sighting on 20-7 to Aux. at Sec. N-W		20
∡ at 20-6	47-30 95-00	47-30
∡ at 20-6 to 20-7	45-07 90-14	45-07
Sighting Aux near N:W cor Sec. 20		
∡ to 20-7 to 20-5	150-00 300-01-00	=150-00-30
∡ at 20-7 to 20-4	80-42 2) 161-25-30	80-42-30
∡ at 20-7 to 20-6	~~28-30~~ ~~56-7-8~~	28-19
20-7 to 20-8	~~139-38~~ 271-12-30	135-36-10
20-7 to 20-7		82°45
∡ at 20-5 to 20-4	14-58 29-56	14-58
∡ at 20-2 to 20-4	53-12 106-24-40	53-12-20
20-2 to 20-3	59-49 119-39	59-49-30
∡ at 20-2 to 20-0	71-14 142-27-30	-71-13-50
∡ at 20-1 to 20-2	93-22 186-45	=93-22-30

March 28-32

57

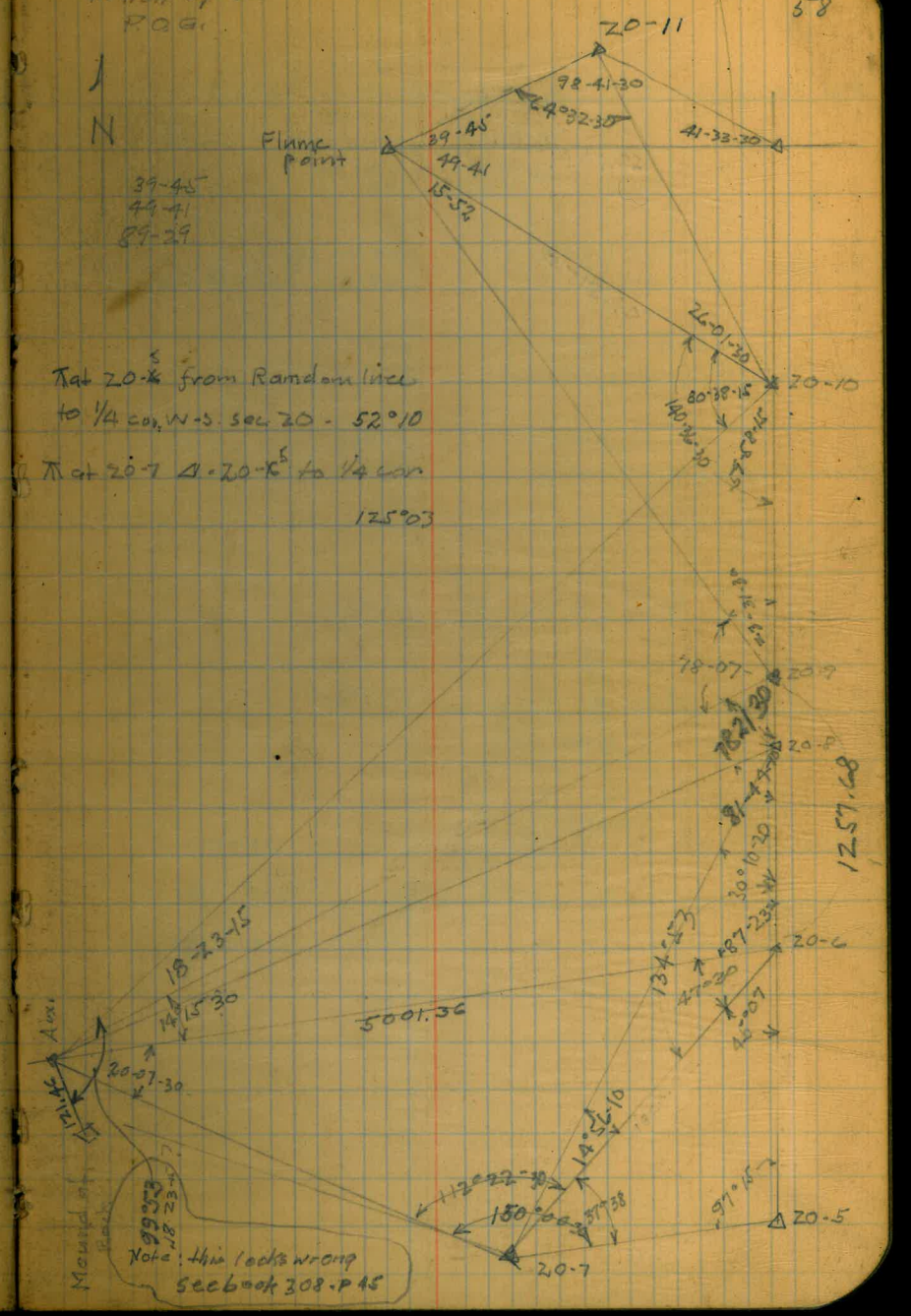


Random line between 20-7 to Sec. cor 17-18 ~~8-9~~ 8

	9°	
At Aux. 20-11	98-41	
	197 23 00	98-41-30
	39-45	
to Aux. 20-11	79-30	39-45
At Flume point	49-41	
to Sec. cor.	99-22	49-41
	15-52	
20-9 to 20-10	31° 44-40	15-52-20
	101-39	
At 20-9 to Aux.	203-18	101-39
	78-07	
At 20-9 - Flume point to Aux.	156-14-40	78-07-00
	23-31	
At 20-9 to Point on Flume grade and section line	47-03	23-31-30
	78-21	78-21-30
At 20-9 to Aux	156-43	78-21-30
	30-10-10	
	60-21-00	30-10-20
	81-44	
At 20-8	163-28-30	81-44-10

March 29-32
P.O.G.

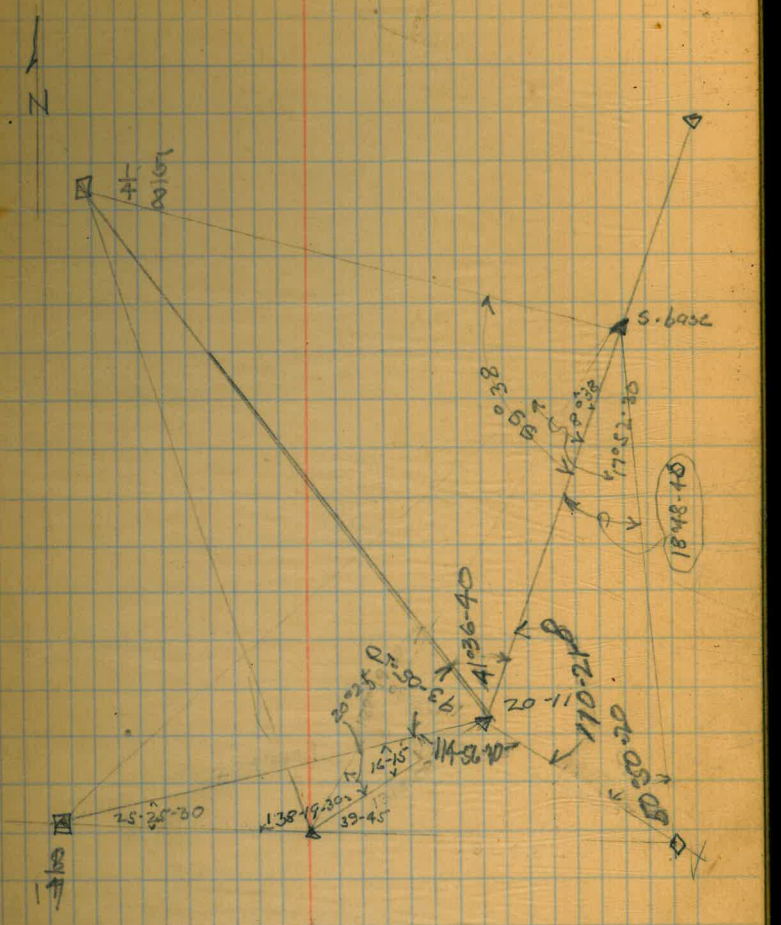
5-8



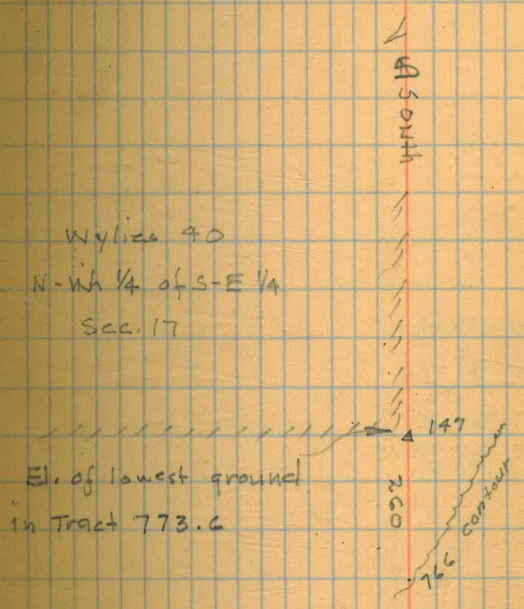
			8°38	
⊼at South base	20-11	to Flume point	17-16	8°38
"	20-11	to ¼ cor.	17°53 35-44-30	17 52 30
"	20-11	to ¼ cor. 5/8	99-38 99-16	99-38
	South base to		134-42-30	
20-11	¼ cor. 8/17		269-25	134 42 30
	South base to		150°57	
20-11	Flume point		301-54	150-57
	South base to		41-37	
⊼at 20-11	¼ cor 5/8		83-13-20	41°36-40
	20 to ¼ cor. 4/5		57°22	
Flume point	20-11 to South end of Base line		20°25	
⊼Flume point				
to 20-11	to ¼ cor. 8/17			138-19-30
to sec. cor	to ¼ cor.		114°56	
⊼at Aux. 20-11			229-53	114-56-30

March 30-32

5-9



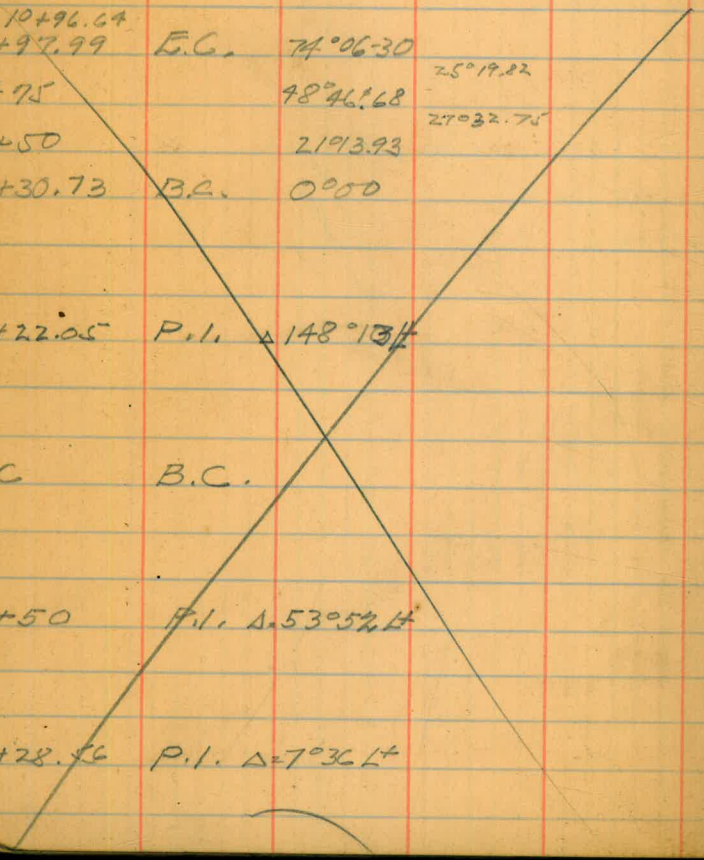
Wylie 40
N-Wh ¼ of S-E ¼
Sec. 17

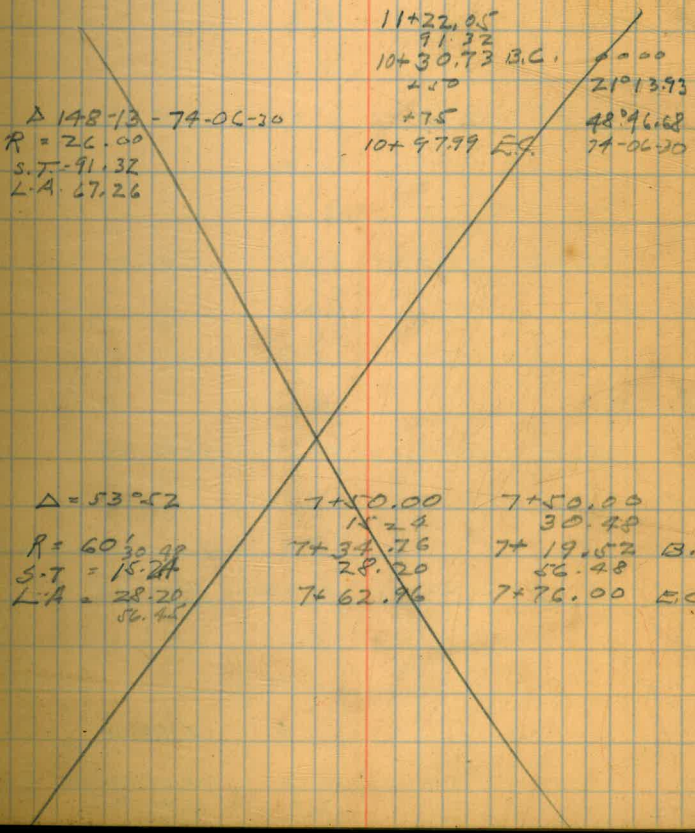


El. of lowest ground
in Tract 773.6

Re-location thru Wiley Place

March 31-32
P.O.C.





Profile of Re-location

March 31-32
P.96

				1212.15	T.P.
	0.76	1212.91			
~~10+97.99 = 10+96.~~			14.1		
A 11+01.43			19.2		
10+75			10.5		
10+50			6.8		
10+30.73	B.C.		5.2		
10+00			1.3		
	12.39	1224.54	0.76	1212.65	
9+53.63	P.O.T.		3.8		
9+00			0.0		
	11.85	1236.06	0.33	1224.21	
8+50			10.4		
8+00			2.2		
	12.20	1247.91	0.35	1235.71	
7+76.00	E.C.		10.0		
7+46			5.7		
7+19.38	B.C.		2.6		
	13.10	1260.64	0.37	1247.54	
7+00			11.7		
6+50			3.9		
	11.71	1272.08	0.27	1260.37	
6+00			10.0		
5+50			6.2		
5+00			2.9	1269.2	
5+28.56			5.3	1266.8	
4+93.25			2.1	1270.0 =	

7+75 30 Rt

in present road

Road location

59+94 45 Δ Rt. 6°28' N 71° 30' 18" E

N 65° 21' 18" E

58+85.52 Δ E.C. 49°00'0" Δ R.T. 29°37' off St.

+75 42°58'18"

Cord = N 13°54'42" W

+50 28°38'52" Δ = 98' E.C. set by

R = 50' Long Cord.

+25 14°19'26" E = 75.47

L.C. = 85.52

58 B.C. R. 0°0'0"

+50

57

56+86 29 P.I. Δ 37°03' Lt. N 62°54'42" W

+50

56+25 00 P.I. Δ 52°21 Lt N 25°31'42" W

55+00 00 P.I. Δ 21°00 Lt N 26°29"18" E

Continued from Page 52

+50

64+20 P.I. 18°46' Lt. N 0° 0' 42" W

64

+50

63

+50

62+25 Δ 52°45' Lt. N 18°45' 18" E

62

+50

61

+50

60

+17 50 △LT. 8°16' N17°40'18"E

69

+50

68+30 △LT. 84°26' N20°56'18"E

68

67 +75 △RT. 53°23' N55°22'18"E

+50

67

+50

66

+50

65 +00

+50

73 +16.20 Δ Lt. 27°17' N 40°7'18" E

73

+50

72

+50

71 +41.69 Δ Rt. 13°44' N 31°24'18" E

71

+50

70

69 +94.62 Δ P.O.T.

69 +50

78

77 + 96.95 Δ Lt. 12°07' N 3°26'42" W

+50

77

+50

76 + 66.92 Δ Rt. 4°33' N 8°40'18" E

+50

76

+50

75

+50

74

+50

83

+85.45 N.95 ℄ of Intch. Sec 17. = 82+70.16 Bk.

+50

82

81+94.12 Δ Rt. 42°02' N38°35'18"E

+50

81

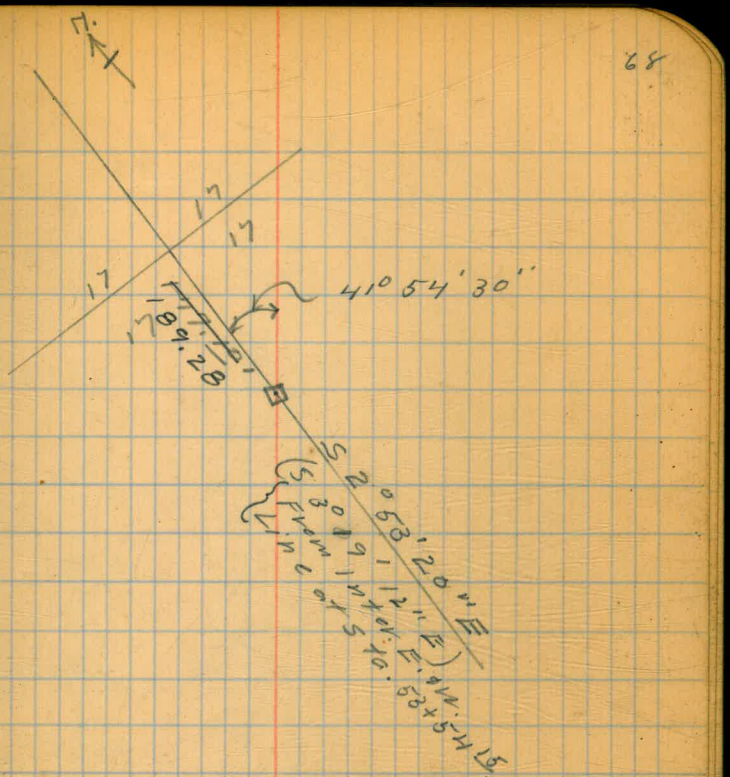
+50

80

+50

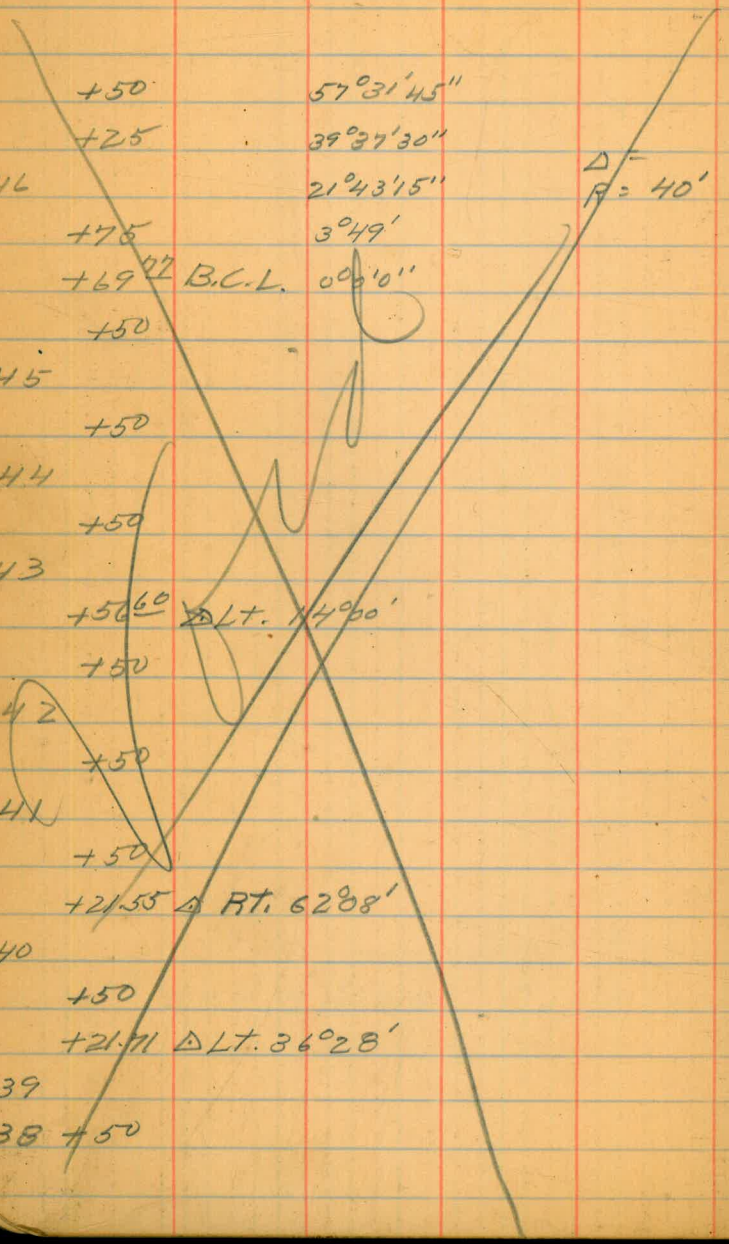
79

78+50



84+43.03 End of Line. On old Road.

84


+50
57°31'45"
+25
39°37'30"
46
21°43'15"
Δ =
R = 40'
+75
3°49'
+69.27 B.C.L.
0°0'0"
+50
45
+50
44
+50
43
+56.60 Δ Lt. 44°30'
+50
42
+50
41
+50
+21.55 Δ Rt. 62°8'
40
+50
+21.71 Δ Lt. 36°28'
39
38 +50

Relocation near Wily House.

"B" line

"B"
11+81.13 = 12+89.39 B.C. "A"

P.I. Δ 37°38 Lt. to long Cord. N 37°6'18" E

10+61.17 P.I. Δ 70°02 Rt N 74°38'18" E

8+93.91 P.I. Δ 37°00 Lt N 24°36'18" E ✓

7+71.81 P.I. Δ 38°30 Lt N 61°36'18" E ✓

7+11.14 P.I. Δ 37°30 Lt S 79°47'42" E ✓

5+28.56 P.I. Δ 4°17 Lt S 42°17'42" E ✓

April 11-32

71

See Page 47

Δ = 70°02 Rt
R = 40'
S.T. 28.03
L-A 48.89
E+ 8.84

P.I. 10+61.17
28.03
10+33.14
48.89
10+82.03

10+30

Motel See Book 329 Page 31.

See Page 44.

B line level

April 4-32

			1212.15		
	0.31	1212.46	824.01	60+30	peg. on line
9+75			1.7		
9+85			10.0		
10+00			18.4		
+15	drain		24.1		
+33 14	B.C.		15.6		
+57 6	P.O.C		5.5		
+82 03	E.C.		7.3		
11+00			10.7		
	0.00	1199.3	13.13	1199.33	
+25			6.6		
+50			7.5		
B 11+81 13 = A 12+89.93			10.3	1089.0	? hand level
	11.68	12 23.83		1212.15	
9+50			4.2		
	12.88	1236.27	0.14	1223.39	
9+40			13.8		
9+30			8.6		
9+00			4.0		
8+93 91	Pt ∠ Pt		3.4		
8+80			3.0		
8+50			5.2		
8+30			5.9		
8+00			1.8		
			0.57	1235.70	

Aime levels.

April 11-32

				829.01	T.P. 60+30
	9.06	833.07			
60+10			2.2		
60+00			0.9		
59+90			0.5		
59+70			9.6		
59+50			4.3		
59+40			1.9		
59+30			2.5		
59+00			10.8		
58+85	E.C.		5.4		
58+75			13.2		
58+65	P.O.C		35.5		
58+50	"		27.0		
58+35	"		24.0		
58+25	"		17.3		
58+00	B.C		8.3		
57+50			10.0		
57+00			3.3		
56+86.29	P.I.		2.4		
	11.52	844.15	0.44	832.63	
56+50			7.9		
56+25	P.I.		7.0		
56+00			2.5		
			0.13	844.02	

Blmc levels

April 11-32

Continued on Page 72

	11.52	1147.22		1235.70	
7+71 81	P.I. ⊿ Lt		8.7		
7+65			6.4		
7+50			4.8		
7+25			2.8		
	11.89	1159.08	003	1147.19	
7+11 14	P.I. ⊿ Lt		10.6		
7+00			8.7		
6+75			4.3		
6+50			2.3		
	12.22	1270.98	0.32	1258.76	
6+00			9.2		
5+50			5.5		
5+28 56	P.I.		4.15	1266.15	=1266.8
4+93.25			1.2	1269.8	=1269.9

Continued from Page 77

Trail Road
Profile Levels

3-23-32
W. Bonham
T. Joe S.
Rd. Art M.

76

B.M.	0.43	1338.44			1338.01	S.H.B.M. ℄50 Iron pin 4' Rt. P. Pole 3021 Lt. Sta. 560+04.
	0.22	1325.91	12.75		1325.69	
0+00				1.41	24.50	℄ Pavement
+29.1				2.60	23.31	Edge of Pavement.
+50				3.3	22.6	
+82				4.5	21.4	
1				6.6	19.3	
+40				12.0	13.9	B.C.V.
+50				12.8	13.1	
T.P.	0.41	1313.44	12.88		1313.03	Peg 1+53
+75				2.7	10.7	
2				5.1	08.3	
+25				7.9	05.5	
+50				10.3	03.1	
T.P.	0.06	1300.67	12.83		1300.61	Guard Stake 2+75
+75				0.6	00.1	
3				3.5	1297.2	
+18				5.9	94.8	
+25				2.6	98.1	
+25				6.5	94.2	Road
+32				7.5	93.2	
+50				9.4	91.3	
T.P.	0.58	1288.68	12.57		1288.10	
4				2.4	86.3	
+25				4.6	84.1	
	1.70		51.03			

1338.01 31.03
1288.68 1.70
49.33 49.33

		1288.68			
4+50			9.5	1279.2	
+50			12.4	76.3	Road
+55			10.8	77.9	
T.P.	0.19	1276.12	12.75	1276.93	Pcg. 20' Lt. Sta. 4+50
+57			2.0	74.1	
+75			3.5	72.6	
5			7.0	69.1	
+25			19.6	66.5	
T.P.	0.28	1263.26	18.14	1262.98	
+50			0.9	62.4	[Mtn. Sec pcg-e 74]
+75		Void	5.5	57.8	
6		W.M.B.	9.4	53.9	
+19 15			12.0	51.3	
T.P.	0.40	1250.57	13.09	1250.17	Rock 6' R. Sta. 6+25
+50			2.3	48.3	
+71			2.5	48.1	End of road.
+72			4.8	45.8	
7			8.2	42.4	
+26			11.3	39.3	
T.P.	0.04	1237.54	13.07	1237.50	Guard Sta. 7+50
+50			0.6	36.9	
+75			3.7	33.8	
8			6.8	30.7	
+25			11.0	26.5	
+50			13.0	24.5	
	0.91		52.05		

1288.68 − 1237.54 = 51.14 ; 52.05 − 0.91 = 51.14

		1237.54				
T.P.	0.09	1225.00	12.61		1224.93	Guard Stake 8+75
8+75				3.9	21.1	
9				8.5	16.5	
+25				9.5	15.5	
+38				8.4	16.6	
+50				11.9	13.1	
T.P.	0.41	1212.56	12.85		1222.15	Peg 3'L. Sta. 9+57
+76.28	E.C.			6.8	05.8	
9+99.57	B.C.			12.1	00.5	
	5.63	1205.51	12.68		1199.88	
10 +09				4.5	1201.0	
+25				3.5	02.0	
+50				0.7	04.8	
+75				4.3	01.2	
11 +01.43	E.C.			6.8	1198.7	
+25				8.5	97.0	
+40				11.3	94.2	
T.P.	2.66	1195.24	12.93		1192.58	Peg 11+42
+50				4.5	90.7	
+70				13.0	82.2	
+75				12.6	82.6	Draw
12				6.8	88.4	
+25				5.1	90.1	
+42				5.3	89.9	
+50				3.3	91.9	
	8.77		51.07			

1237.54 51.07
1195.24 8.77
42.30 42.30

		1195.24			
12 ~~+75~~				5.2	1190.0
~~+80~~				4.7	~~1185~~
13				7.7	87.5
+25				11.3	83.9
T.P.	0.28	1182.81	12.71		1182.63
+50				2.7	80.1
+75				6.6	76.2
+86				7.7	75.1
14				6.1	76.7
+25	E.C.			5.3	77.5
T.P.	4.89	1183.12	4.58		1178.23
+50				4.5	78.6
15				3.6	79.5
+20				2.4	80.7
+40.83	Δ L			5.6	77.5
+80	B.C.R.			4.3	78.8
16				10.7	72.4
+15				14.0	69.1
+25				10.2	72.9
+50				3.7	79.4
+63				0.0	83.1
+75	E.C.			+0.4	83.5
17				8.5	74.6
+23				19.3	63.8
+50				15.8	67.3
	5.17		17.29		

Peg. Sta. 13+35

Guard Stake 14 +25

Draw

1195.24 − 1183.12 = 12.12

17.29 − 5.17 = 12.12

		1183.12				
T.P.	0.38	1170.75	12.75		1170.37	
17+57				3.7	67.0	
T.P.	0.48	1158.43	12.80		1157.95	
18+				1.5	56.9	
+16				7.1	51.3	Draw
+20				4.8	53.6	
+40				3.3	55.1	
+50				4.8	53.6	
+75	△L			10.3	48.1	
T.P.	0.28	1147.95	10.76		1147.67	Peg Sta. 18+78
19+00				2.4	46.3	
+50				7.8	40.1	
+65				9.8	38.1	
P	0.19	1135.62	12.62		1135.33	Peg Sta. 19+75
20	<			14.2	21.3	Draw
+17				7.8	27.7	
+38				6.7	28.8	
+50				8.1	27.4	
T.P.			13.07		1122.45	Back 20+90
	1.33		62.00			

Continued on Page 53

1183.12 − 1122.45 = 60.67

62.00 − 1.33 = 60.67

IMPROVED TABLES

AND

INFORMATION

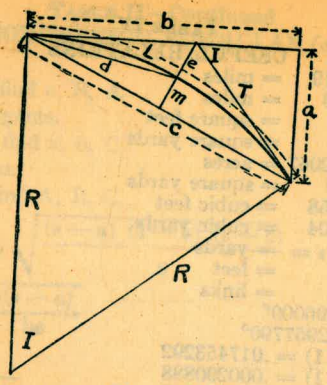


Table V

CURVE FORMULAE FOR SIMPLE CURVES

Compiled by J. Calvin Locke, C.E.

(1) $c = \sqrt{2Ra}$ (2) $c = \sqrt{a^2+b^2}$

(3) $c = \sqrt{2R\,(R-\sqrt{(R+b)\,(R-b)}} = \sqrt{2R(R-\sqrt{R^2-b^2})}$

(4) $c = 2\sqrt{m\,(2R-m)}$

(5) $c = 2R \sin \frac{1}{2} I$ (6) $c = 2T \cos \frac{1}{2} I$

(7) $e = R \operatorname{exsec} \frac{1}{2} I$

(8) $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$ (9) $e = T \tan \frac{1}{4} I$

(10) $b = \sqrt{a\,(2R-a)}$

(11) $b = \sqrt{\left(c+\frac{c^2}{2R}\right)\left(c-\frac{c^2}{2R}\right)} = \sqrt{c^2-\frac{c^4}{4R^2}}$

(12) $b = R \sin I$ (13) $b = a \cot \frac{1}{2} I$

(14) $R = \frac{a^2+b^2}{2a} = \frac{c^2}{2a}$ (15) $R = \frac{d^2}{2m} = \frac{c^2+4m^2}{8m}$

(16) $d = \sqrt{R\,(2R-\sqrt{(2R+c)\,(2R-c)}} = \sqrt{R(2R-\sqrt{4R^2-c^2})}$

(17) $d = \sqrt{2Rm}$ (18) $d = 2R \sin \frac{1}{4} I$ (19) $m = \frac{d^2}{2R}$

(20) $m = R \mp \sqrt{\left(R+\frac{c}{2}\right)\left(R-\frac{c}{2}\right)} = R \mp \sqrt{R^2-\frac{c^2}{4}}$

(21) $m = R \operatorname{vers} \frac{1}{2} I$ (22) $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$ (23) $m = \frac{1}{2} c \tan \frac{1}{4} I$

(24) $a = \frac{c^2}{2R}$ (25) $a = R - \sqrt{(R+b)\,(R-b)} = R - \sqrt{R^2-b^2}$

(26) $a = 2R (\sin^2 \frac{1}{2} I)^2$ (27) $a = R \operatorname{vers} I$ (28) $a = R \sin I \tan \frac{1}{2}$

(29) $a = b \tan \frac{1}{2} I$ (30) $a = T \sin I$ (31) $T = R \tan \frac{1}{2} I$

(32) $I = \frac{L}{R} \times 57.295780$ (33) $R = \frac{L}{I} \times 57.295780$

(34) $L = IR \times 0.01745329$ (35) $L = \frac{8d-c}{3}$

(36) Area Seg. $= \frac{LR - R^2 \sin I}{2} = \frac{LR - Rb}{2}$

Table VI

SINES, COSINES, TANGENTS, COTANGENTS

deg.	sin 0′	tan 0′	sin 10′	tan 10′	sin 20′	tan 20′	sin 30′	tan 30′	sin 40′	tan 40′	sin 50′	tan 50′	deg.
0	0000	0000	0029	0029	0058	0058	0087	0087	0116	0116	0145	0145	89
1	175	0175	0204	0204	0233	0233	0262	262	291	291	320	320	88
2	349	349	378	378	407	407	436	437	465	466	494	495	87
3	523	524	552	553	581	582	610	612	640	641	669	706	86
4	698	699	727	729	756	758	785	787	814	816	843	864	85
5	872	875	901	904	929	934	958	963	987	992	1016	1022	84
6	1045	1051	1074	1080	1103	1110	1132	1139	1161	1169	190	198	83
7	219	228	248	257	279	287	305	317	334	346	363	376	82
8	392	405	421	435	449	465	478	495	507	524	536	554	81
9	564	584	593	614	622	644	650	673	679	703	708	733	80
10	736	763	765	793	794	823	822	853	851	883	880	914	79
11	908	944	937	974	965	2004	994	2035	2022	2065	2051	2095	78
12	2079	2126	2108	2156	2136	186	2164	217	193	247	221	278	77
13	250	309	278	339	306	370	334	401	363	432	391	462	76
14	419	493	447	524	476	555	504	586	532	617	560	648	75
15	588	679	616	711	644	742	672	773	700	805	728	836	74
16	756	867	784	899	812	931	840	962	868	994	896	3026	73
17	924	3057	952	3089	939	3121	3007	3153	3035	3185	3062	217	72
18	3090	249	3118	281	3145	314	173	346	201	378	228	411	71
19	256	443	283	476	311	508	338	541	365	574	393	607	70
20	420	640	448	673	475	706	502	739	529	772	557	805	69
21	584	839	611	872	638	906	665	939	692	973	719	4006	68
22	746	4040	773	4074	800	4108	827	4142	854	4176	881	210	67
23	907	245	934	279	961	314	987	348	4014	383	4041	417	66
24	4067	452	4094	487	4120	522	4147	557	173	592	200	628	65
25	226	663	253	699	279	734	305	770	331	806	358	841	64
26	384	877	410	913	436	950	4462	986	488	5022	514	5059	63
27	540	5095	566	5132	592	5169	617	5206	643	243	669	280	62
28	695	317	720	354	746	392	772	430	797	467	823	505	61
29	848	543	874	581	899	619	924	658	950	696	975	735	60
30	5000	774	5025	5812	5050	851	5075	890	5100	930	5125	969	59
31	150	6009	175	6048	200	6088	225	6128	250	6168	275	6208	58
32	299	249	324	289	348	330	5373	371	398	412	422	453	57
33	446	494	471	536	495	577	519	619	544	661	568	703	56
34	592	745	616	787	640	830	664	873	688	916	712	959	55
35	736	7002	760	7046	783	7089	807	7133	831	7177	854	7221	54
36	878	265	901	310	925	355	948	400	972	445	995	490	53
37	6018	536	6041	581	6065	627	6088	673	6111	720	6134	766	52
38	157	813	180	860	202	907	225	954	248	8002	271	8050	51
39	293	8098	316	8146	338	8195	361	8243	383	292	406	342	50
40	428	391	450	441	472	491	494	541	517	591	539	642	49
41	561	693	583	744	604	796	626	847	648	899	670	952	48
42	691	9004	713	9057	734	9110	756	9163	777	9217	799	9271	47
43	820	325	841	380	862	435	884	490	905	545	926	601	46
44	947	657	967	713	988	770	7009	827	7030	884	7050	942	45
45	7071	1.0000	7092	1.0058	7112	1.0117	133	1.0176	153	1.0235	173	1.0295	44
deg.	60′ cos	60′ cot	50′ cos	50′ cot	40′ cos	40′ cot	30′ cos	30′ cot	20′ cos	20′ cot	10′ cos	10′ cot	deg.

Table X.

MIDDLE ORDINATES OF RAILS

Length of Rail (feet)

C ° ′	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch	C °	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch
0-20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0-40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
1-0	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
1-20	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
1-40	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.83	2.47	2.15	1.81	1.54	1.26
2-0	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
2-20	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.30	2.87	2.48	2.10	1.78	1.46
2-40	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
3-0	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
3-20	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
3-40	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
4-0	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
4-20	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
4-40	1228	1.10	.96	.83	.70	.59	.48	22	262.0	5.16	4.44	3.84	3.30	2.80	2.29
5	1146	1.18	1.03	.89	.75	.63	.52	24	240.5	5.64	4.92	4.20	3.59	3.04	2.50
6	955.3	1.41	1.23	1.06	.90	.76	.62	26	222.3	6.07	5.29	4.58	3.88	3.29	2.70
7	819.0	1.65	1.44	1.24	1.05	.89	.73								

Table XI.

SHORT RADIUS CURVES

Radius Feet	Chord Feet	Central Angle	Deflection Angle	Deflection for 1 Foot
35	10	16-26	8-13	49.3
45	10	12-46	6-23	38.3
50	15	17-16	8-38	34.5
60	15	14-22	7-11	28.8
75	15	11-30	5-45	23.0
100	20	11-30	5-45	17.3
120	20	9-34	4-47	14.3
150	20	7-39	3-49	11.5
190	25	7-32	3-46	9.15
200	25	7-10	3-35	8.6
225	25	6-25	3-12	7.7
240	25	5-58	2-59	7.2
250	25	5-44	2-52	6.9
275	25	5-12	2-36	6.2
288	50	9-58	4-59	6.0
300	50	9-32	4-46	5.7
350	50	8-12	4-06	4.9
376	50	7-40	3-50	4.6
400	50	7-10	3-35	4.3
410	50	7-00	3-30	4.2

To find length of curve divide angle from P. C. to P. T. by central angle of chord, and multiply by length of chord.

Table XII.

INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

Slope	Horizontal Distance	Correction	Rise Per Foot	Slope	Horizontal Distance	Correction	Rise Per Foot
0°00′	100.000	0.000	0.000	8°00′	99.027	0.973	0.139
15′	99.999	0.001	0.004	15′	98.965	1.035	0.143
30′	99.996	0.004	0.009	30′	98.902	1.098	0.148
45′	99.991	0.009	0.013	45′	98.836	1.164	0.152
1 00	99.985	0.015	0.017	9 00	98.769	1.231	0.156
15	99.976	0.024	0.022	15	98.700	1.300	0.161
30	99.966	0.034	0.026	30	98.629	1.371	0.165
45	99.953	0.047	0.031	45	98.556	1.444	0.169
2 00	99.939	0.061	0.035	10 00	98.481	1.519	0.174
15	99.923	0.077	0.039	15	98.404	1.596	0.178
30	99.905	0.095	0.044	30	98.325	1.675	0.182
45	99.885	0.115	0.048	45	98.245	1.755	0.187
3 00	99.863	0.137	0.052	11 00	98.163	1.837	0.191
15	99.839	0.161	0.057	15	98.079	1.921	0.195
30	99.813	0.187	0.061	30	97.992	2.008	0.199
45	99.786	0.214	0.065	45	97.905	2.095	0.204
4 00	99.756	0.244	0.070	12 00	97.815	2.185	0.208
15	99.725	0.275	0.074	15	97.723	2.277	0.212
30	99.692	0.308	0.078	30	97.630	2.370	0.216
45	99.657	0.343	0.083	45	97.534	2.466	0.221
5 00	99.619	0.381	0.087	13 00	97.437	2.563	0.225
15	99.580	0.420	0.092	15	97.338	2.662	0.229
30	99.540	0.460	0.096	30	97.237	2.763	0.233
45	99.497	0.503	0.100	45	97.134	2.866	0.238
6 00	99.452	0.548	0.105	14 00	97.030	2.970	0.242
15	99.406	0.594	0.109	15	96.923	3.077	0.246
30	99.357	0.643	0.113	30	96.815	3.185	0.250
45	99.307	0.693	0.118	45	96.705	3.295	0.255
7 00	99.255	0.745	0.122	15 00	96.593	3.407	0.259
15	99.200	0.800	0.126	15	96.479	3.521	0.263
30	99.144	0.856	0.131	30	96.363	3.637	0.267
45	99.087	0.913	0.135	45	96.246	3.754	0.271

Table XIII.

MINUTES IN DECIMALS OF A DEGREE.

0 30″	.00833	10′ 30″	.17500	20′ 30″	.34167	30′ 10″	.50833	40′ 30″	.67500	50′ 10″	.84167
1 00	.01667	11 00	.18333	21 00	.35000	31 00	.51667	41 00	.68333	51 00	.85000
30	.02500	30	.19167	30	.35833	30	.52500	30	.69167	30	.85833
2 00	.03333	12 00	.20000	22 00	.36667	32 00	.53333	42 00	.70000	52 00	.86667
30	.04167	30	.20833	30	.37500	30	.54167	30	.70833	30	.87500
3 00	.05000	13 00	.21667	23 00	.38333	33 00	.55000	43 00	.71667	53 00	.88333
30	.05833	30	.22500	30	.39167	30	.55833	30	.72500	30	.89167
4 00	.06667	14 00	.23333	24 00	.40000	34 00	.56667	44 00	.73333	54 00	.90000
30	.07500	30	.24167	30	.40833	30	.57500	30	.74167	30	.90833
5 00	.08333	15 00	.25000	25 00	.41667	35 00	.58333	45 00	.75000	55 00	.91667
30	.09167	30	.25833	30	.42500	30	.59167	30	.75833	30	.92500
6 00	.10000	16 00	.26667	26 00	.43333	36 00	.60000	46 00	.76667	56 00	.93333
30	.10833	30	.27500	30	.44167	30	.60833	30	.77500	30	.94167
7 00	.11667	17 00	.28333	27 00	.45000	37 00	.61667	47 00	.78333	57 00	.95000
30	.12500	30	.29167	30	.45833	30	.62500	30	.79167	30	.95833
8 00	.13333	18 00	.30000	28 00	.46667	38 00	.63333	48 00	.80000	58 00	.96667
30	.14167	30	.30833	30	.47500	30	.64167	30	.80833	30	.97500
9 00	.15000	19 00	.31667	29 00	.48333	39 00	.65000	49 00	.81667	59 00	.98333
30	.15833	30	.32500	30	.49167	30	.65833	30	.82500	30	.99167
10 00	.16667	20 00	.33333	30 00	.50000	40 00	.66667	50 00	.83333	60 00	1.00000

18.71
24
43 :11
3840
77-38
3800
77-40

.907
60
54.420

87°46
43

37°58
75-56

75 55 45°44
91-28

9647

S1-22-10E
180 00 30
S81-22-50W

N68-37-40W
8-36
N77-13-40W
81-58
159-11-40
20-48-20

N77-13-40E
99-42-45
176-56-25
N3-03-35E

177-

99
58
41
21
18
3
71 41 15
S68-37-40E
N 3-03-35E
99-42-45
103-46-20
S77-13-40E
SW 4-44-20EW
38
42-44

179 60
81-58
98-02
99-42-45
197 44-45
180
17
20
58
80
72

97-15
82-45
1-22-10
81-22-50

180 13
90 -27
15
30 -12

2547
1273.5
843
430

100.9
6.58 N
59.65

1201.7
4.8
1196.9

99-53
58-36-05
158-29-05
21-30-55

59 58 15
S1-22-10E
58-36-05