EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 6 feet wide. Side Slopes 1 on 1.
Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

The paper stock of this book is made of a **high grade 50% rag** paper having a **water resisting surface** and is sewed with Bing **Special Enamel Waterproof Thread.**

Made in U. S. A.

INDEX

PAGE	
1-23	ALIGN'MT SURVEY; ELMONTE to FILTER
23-30	
30-66	LEVELS STA 612+50 to 760+89 ~~F.P.~~ EL MONTE PIPE LINE.

Index Unit 8

1-23	Pipeline survey. Stn 577 - 760
23	Tie to L₂ Line
30-66	Levels, Stn 612+50 - 760+89

Cont. from #629 Page #76

Survey for Pipe Line El Monte to Filter Plant. Item 8. Cont'd from Book 629.

Pipe Line Alignment

Sta.		
576+26 32	+	5° Lt ✓
576+42 32	+	5° Lt ✓
576+58 32	+	5° Lt ✓
576+74 32	+	5° Lt ✓
576+90 32	+	End Special

BC. 577+30 60	Chord	Offset Ch.	Def.	PI=
+50	19.4	19.21	0°41 42	Δ= 9°42 Lt
579+00	50	49.50	2°29 27	R= 800
+50	50	49.50	4 16 52	T= 67 88
E.C. 578+66 03	16 03	15 87	4 51 00	L= 135 43

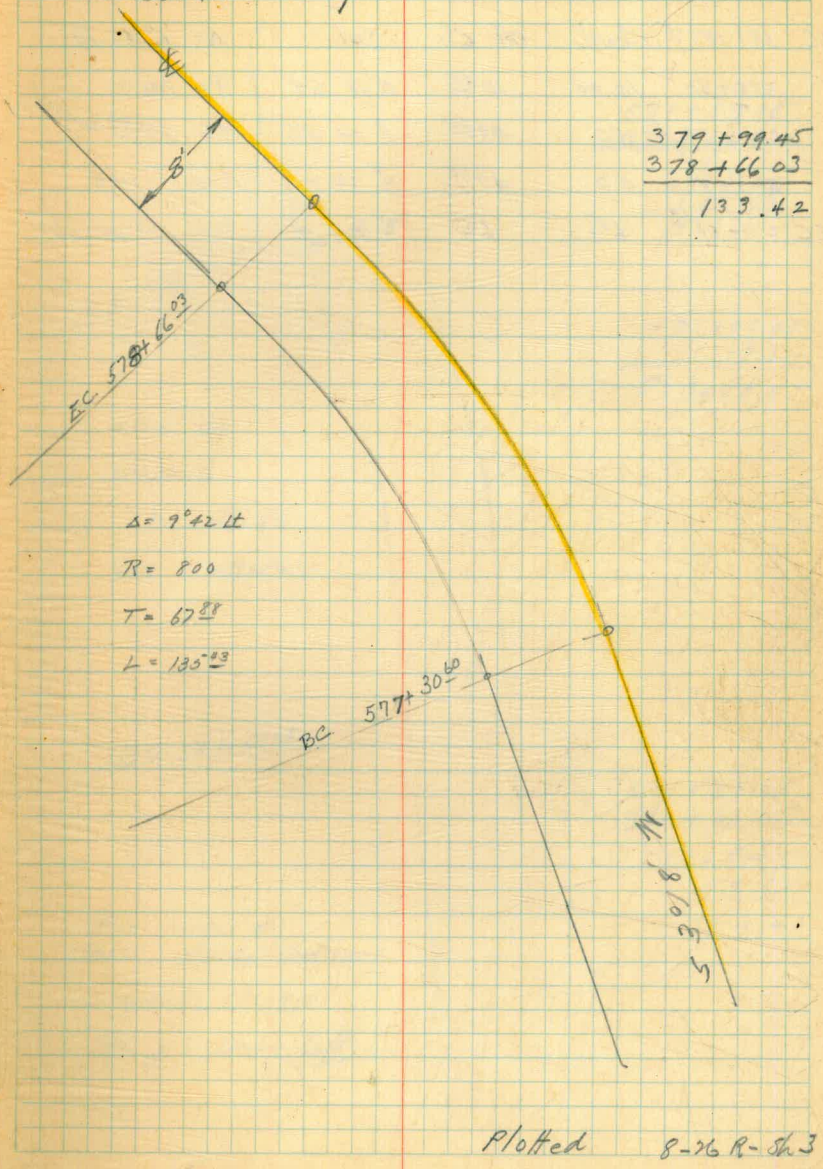
+

579+99 45	+	5° Rt ✓
580+15 45	+	5° Rt ✓
+31 45	+	5° Rt ✓
+47 45	+	5° Rt ✓
+63 40	+	4° Rt. ✓

1

Dec. 30, 1941

P.S. Barker + Party



379+99.45
378+66.03
133.42

Δ= 9°42 Lt

R= 800

T= 67 88

L= 135 43

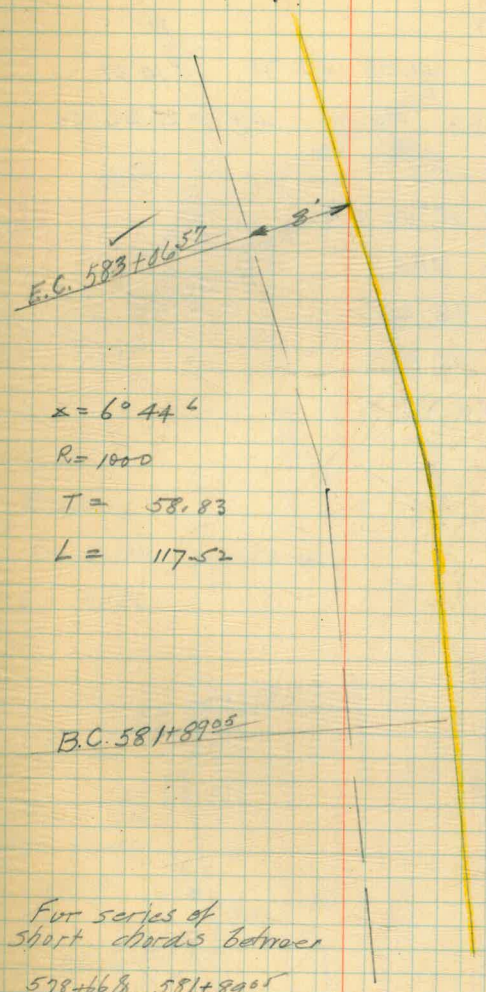
Plotted 8-26 R-Sh 3

PI = 583 + 47.88

BC. 581+89.05	Chord	Off. Ch.	Def.	Δ = 6° 44 Lt
582+00	10.95	10.85	0° 18' 54"	R = 1000
+50	50	49.60	1° 44' 50"	T = 58.83 ✓
583+00	50	49.60	3° 10' 46"	d/4 = 1.719
EC. +06.57	6.57	6.50	3° 22' 00"	d/50 = 1° 25' 56"

Dec. 31st 41

P.S. Barker + Party



581+89.05
578+16.03

3 | 23.02
58.83
381.85

581+89.05
1 17.52
583+06.57

x = 6° 44 L

R = 1000

T = 58.83

L = 117.52

581+89.05
580+63.45

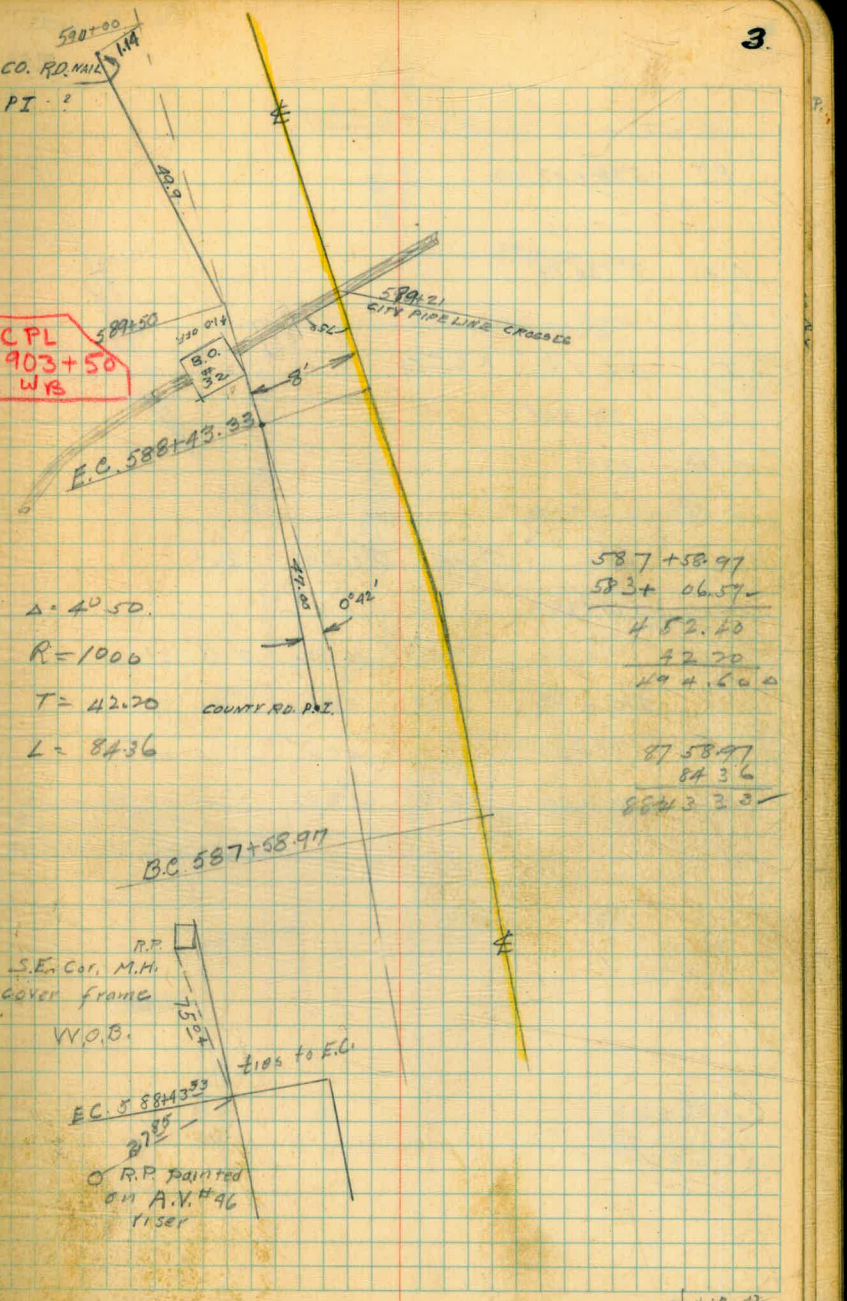
125.60
58.83
184.43

For series of short chords between 578+66.8 & 581+89.05 see p. 1, lower left.

P.I = 588+01.17

B.C	587+58.97			
	588+00	41.03	40.70	1°10'29"
E.C.	588+43.33	43.33	43.00	2°25'00"

Δ = 4°50' LT
R = 1000
T = 42.20 ✓
T_o = 41.86
L = 84.36 ✓



CHKD to HERE JAN 12 47

PI 595+03.74

Δ = 7° 30 Rt

R 1000

T 64.54 X 65.54

L 130.90 ✓

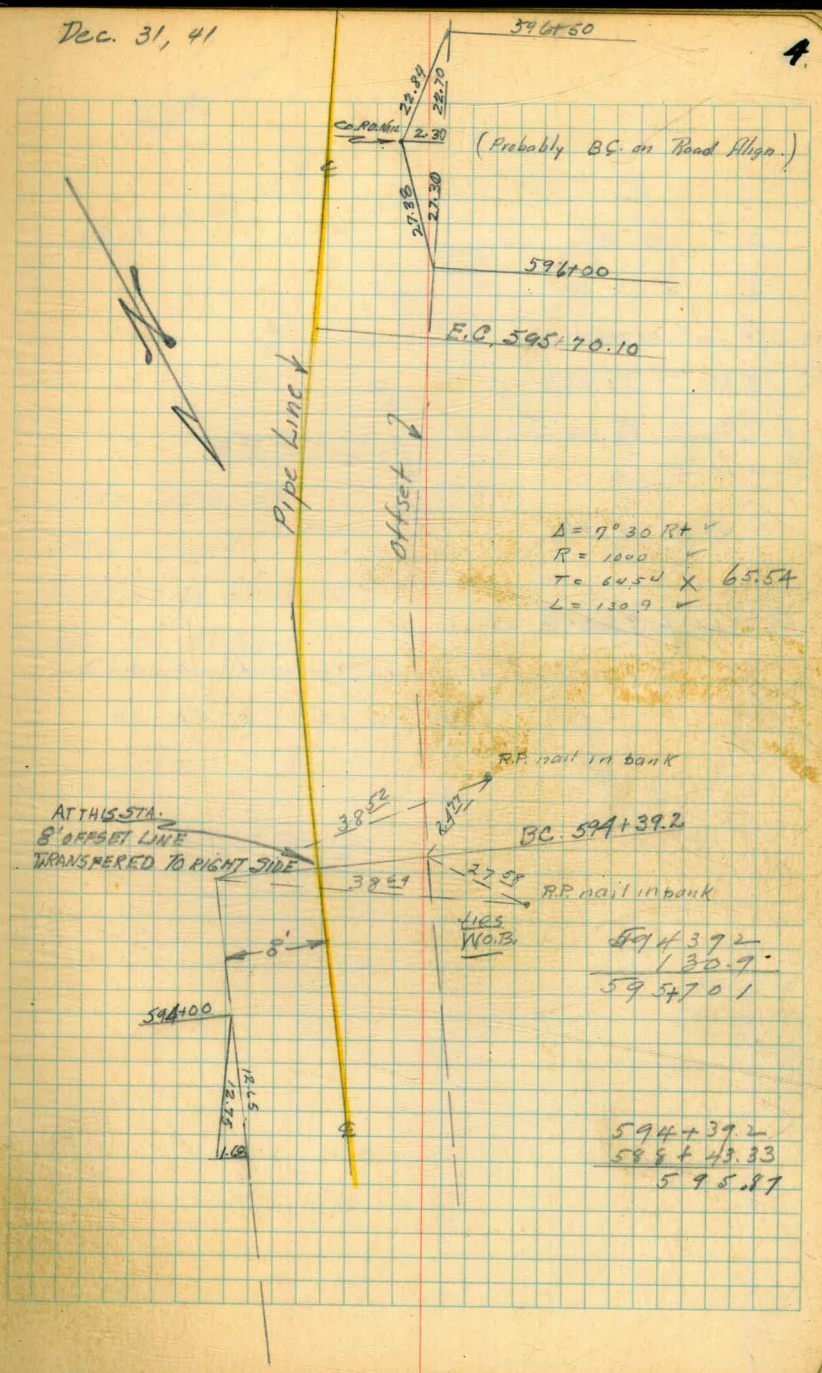
d/ft 1.719

d 50 1° 25' 56"

	Sta.	Chord	Off. Ch.	Def.
B.C.	594139 ±			
	+ 50	10.8	10.72	0° 18' 34
	595 + 00	50.0	49.6	1° 44 30
	+ 50	50.0	49.6	3° 10 26
E.C.	+ 70±	20.1	19.92	3° 45 00

Dec. 31, 41

4.

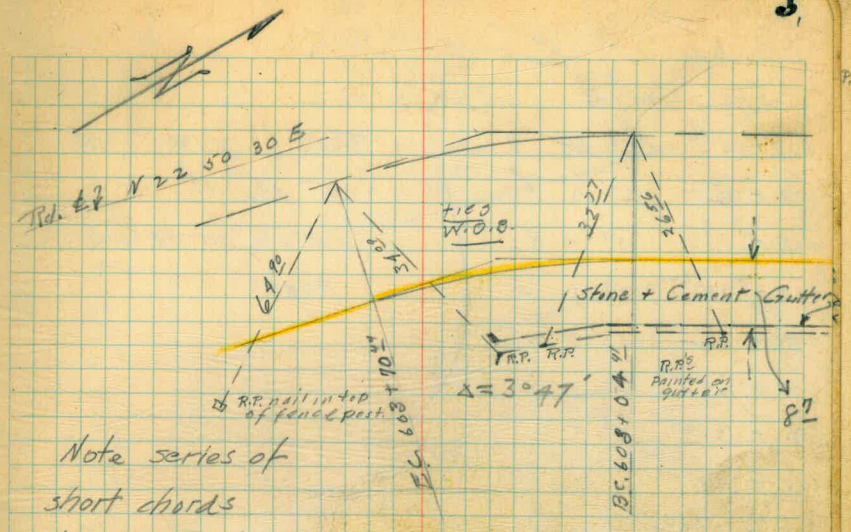


PI 603+37.44

Δ	3° 47' Lt
Δ/2	1°53'30"
R	1000.00
T	33.03
L	66.03
d/ft.	1.719
d 50	1°25'56"

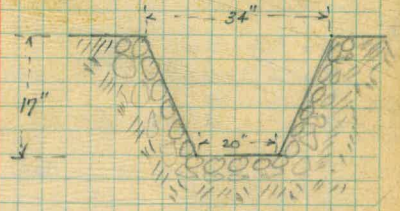
B.C. 603+04.41

604+00	45.59	45.96	1° 18'	25"
+70.44	20.44	20.62	1 53	30



Note series of short chords beginning 607+85.22 top p6, Rt hand

Cross Section of Gutter
Stas. 598+65 to 603+50



607 85.22
603 70.44
4 14.78

603+04.41
595+70.10
7 34.31

Curve Data

Sta.	Def ∠	
607+85.22	5° Rt	✓
608 + 35.22	5° "	✓
608 + 85.22	5° "	✓
609 + 33.22	5° "	✓
609 + 81.22	5° "	✓
610 + 29.22	5° "	
610 + 77.22	5° "	
611 + 26.22	5° "	
611 + 73.22	5° "	
612 + 21.22	3° "	

These curves are not shown on sketch on Rt hand pages.

48.00

PI = 613+78.23

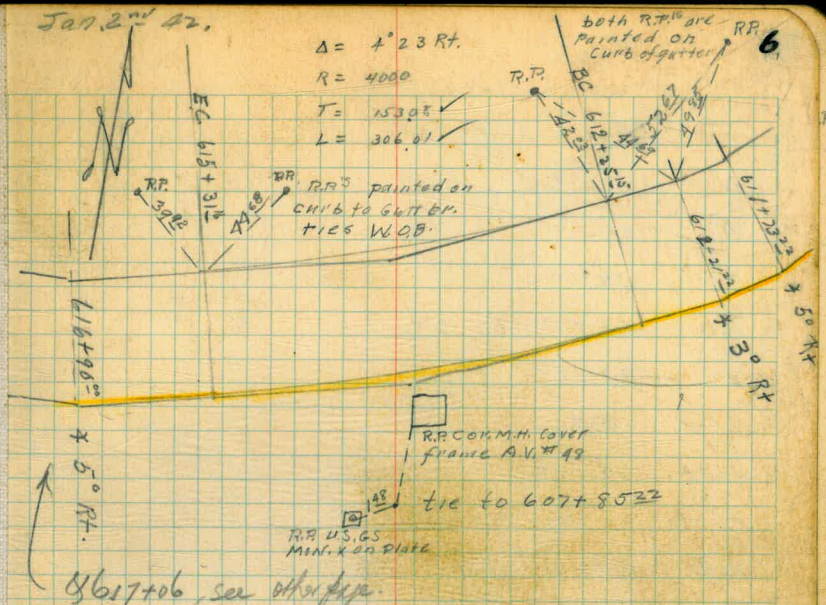
Δ	4°23 Rt				
Δ/2	2 11 30	B.C.	612+25.15		
R	4000		+50	24.85	24.80	0° 10' 45"
T	153.08		613+00	50	49.2	0° 32' 10
T_0	152.77		+50	50	"	0° 53' 40
L	306.01		614+00	50	"	1° 15' 10
Δ/17	0.430		+50	50	"	1° 36' 40
Δ 50	0° 21' 30"		615+00	50	"	1° 58' 10
		E.C.	+31.16	31.16	31.10	2° 11' 30

614+90° 5° Rt

617+06° 5° Rt

617+22° End Special.

Jan. 2nd 42.



6

& 617+06, see other page.

612+21.22
611+73.22
48.00

607+85.22
603+70. ##
+ 14.78

4°-23
2- 11' 30, tan .038 2705
R=4000
.076 5036

612+25.15
612+21.22
3.93

616+90
615+ 31.16
1 58.84

607+85.22

PI = 618+51.23

Δ	3° 26' L
T	2000
T	59.94
T_o	~~59.70~~ 60.24
L	119.85
d/2	.859
d/50	0° 42' 58"

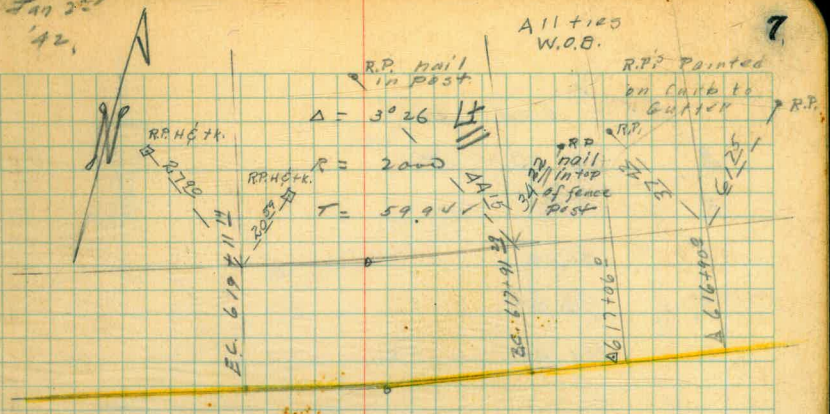
BC	617+91.29	Ch.	Off. Ch.	Def. Δ
	618+00	8.71	8.74 ~~8.45~~	0° 07' 30"
	+50	50.0	50.2 ~~49.80~~	0 50 28
	619+00	50.0	50.2 ~~49.80~~	1 33 26
	+11.14	11.14	11.14 10 ~~11~~	143 00

Note: An error was made here amounting to 0.60. Sta. 619+11.14 should be 619+10.54

Jan 3rd '42.

All ties W.O.B.

7



This curve is drawn wrong; (check W.O.B.) it should be Lt instead of Rt.

617+91.29
1 19 85
619+11.14

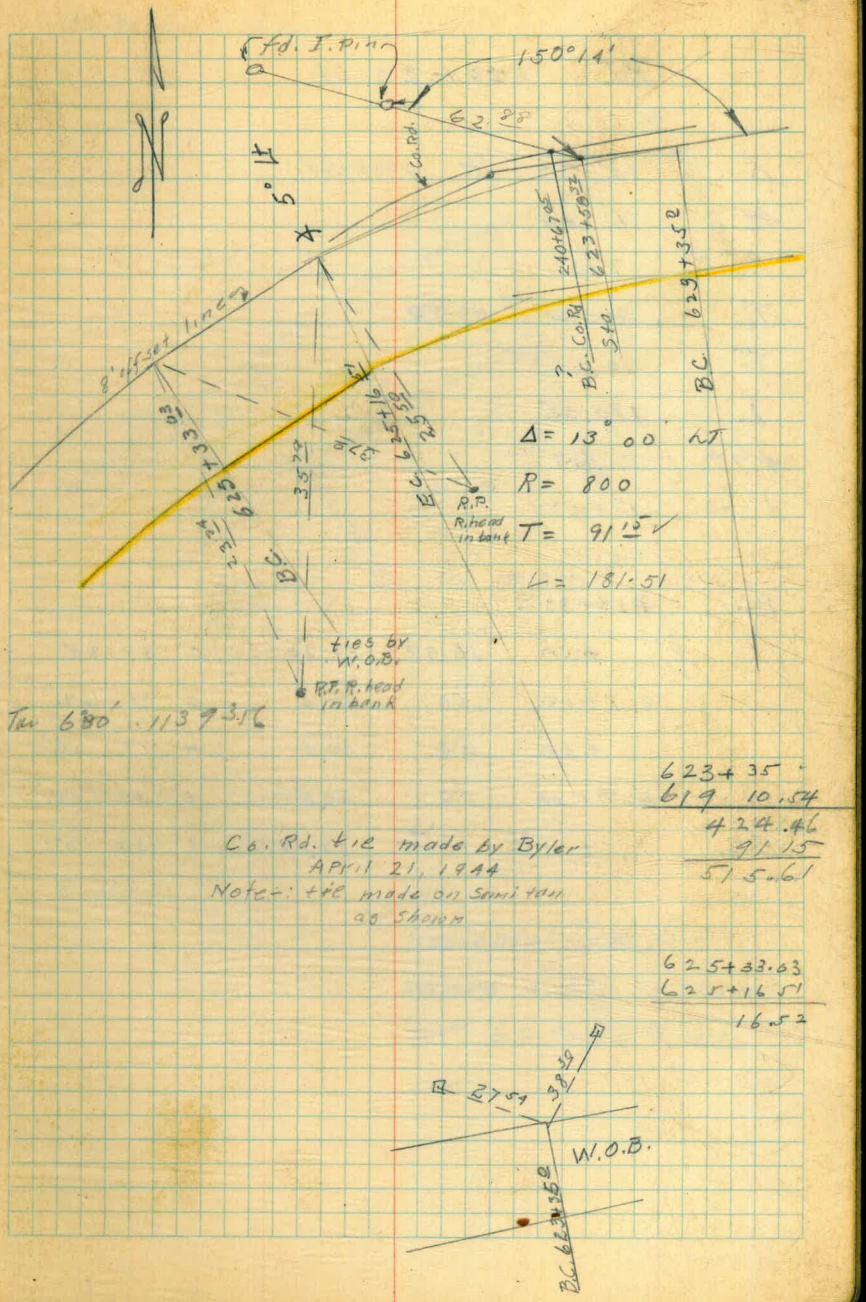
617+91.29
617+06
85.29
59.94
145.23

PI = 624 + 26.15

Δ	13° 00'	Lt
R	800	
T	91.15	
T_o	92.06	
L	181.51	

B.C.	623 + 35.00	Ch.	Off Ch.	Def.
	+50	15.00	15.15	0° 32' 15"
	624 + 00	50	50.50	2° 19' 41"
	+50	50	50.50	4° 07' 07"
	625 + 00	50	50.50	5° 54' 33"
E.C.	+16.51	16.51	16.65	6° 30' 27"

At E.C. 625 + 16.51 ∠ 5° Lt



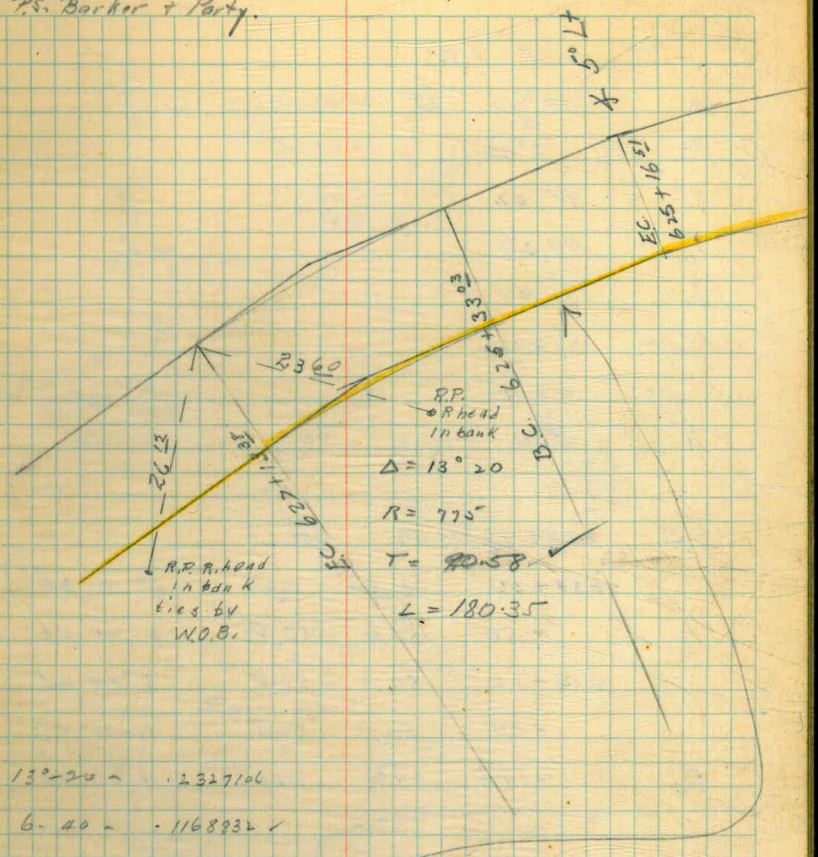
PI 626+23.61

Δ	13° 20	Lt	2368928
$\frac{\Delta}{2}$	6° 40		
R	775		
T.	~~91.52~~	93.50	
T	90.58 ✓		
L	180.35 ✓		
d/ft	2.218		
d	1° 50 54		

B.C.	626+33.03			
	+50	16.97	17.12	0° 37' 38"
	626+00	50	50.5	2° 28' 32"
	+50	50	50.5	4° 19' 26"
	627+00	50	50.5	6° 10' 10"
E.C.	+13.38	13.38	13.51	6° 39' 51"

Jan 2nd 42.

P.S. Barker + Party.



13°-20 - .2327106

6-40 - .1168932 ✓

R-775 -

See Level Notes p 33 where a 5°17 is shown at 625+32.45 rt

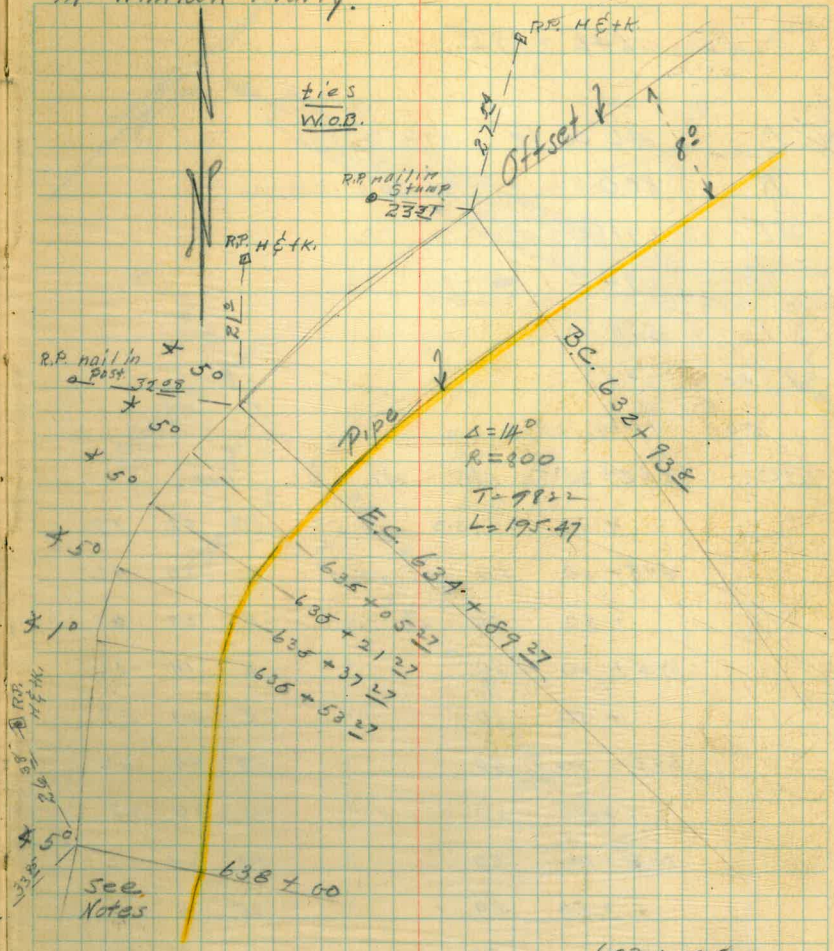
Jan 5th 1942.

Al Whitlock + Party.

PI	633+93 ±	
Δ	14°00	Lt .2443461
Δ/2	7°00	.1229846
T	98.22 ✓	
T_o	99.20	
L	195.47 ✓	
d/2	2.149	
d	1°47'25"	
R	800	

B.C.	632+93.8	Ch.	Off. Ch.	
	633+00	6.2	6.25	0°13'31"
	+50	50.0	50.5	2 00 56
	634+00	50.0	50.5	3 48 21
	+50	50.0	50.5	5 35 46
E.C.	+89.27	39.27	39.67	7 00 00

638+00	✗ 5°	Rt ✗	634+89.27	✗ 5° Lt ✓
+16	✗ 5°	Rt ✓	635+05.27	✗ 5° Lt ✓
+32	✗ 5°	Rt ✓	+21.27	✗ 5° Lt
639+00	✗ 5°	Rt ✗	+37.27	✗ 5° Lt
+48	✗ 5°	Rt ✓	+53.27	✗ 1° Lt
+80	✗ 5°	Rt ✗		
640+28	✗ 5°	Rt ✓		
641+28	✗ 5°	Lt ✓	Leave Road.	



632+93.8
627+13.38
5 8 0.4 2

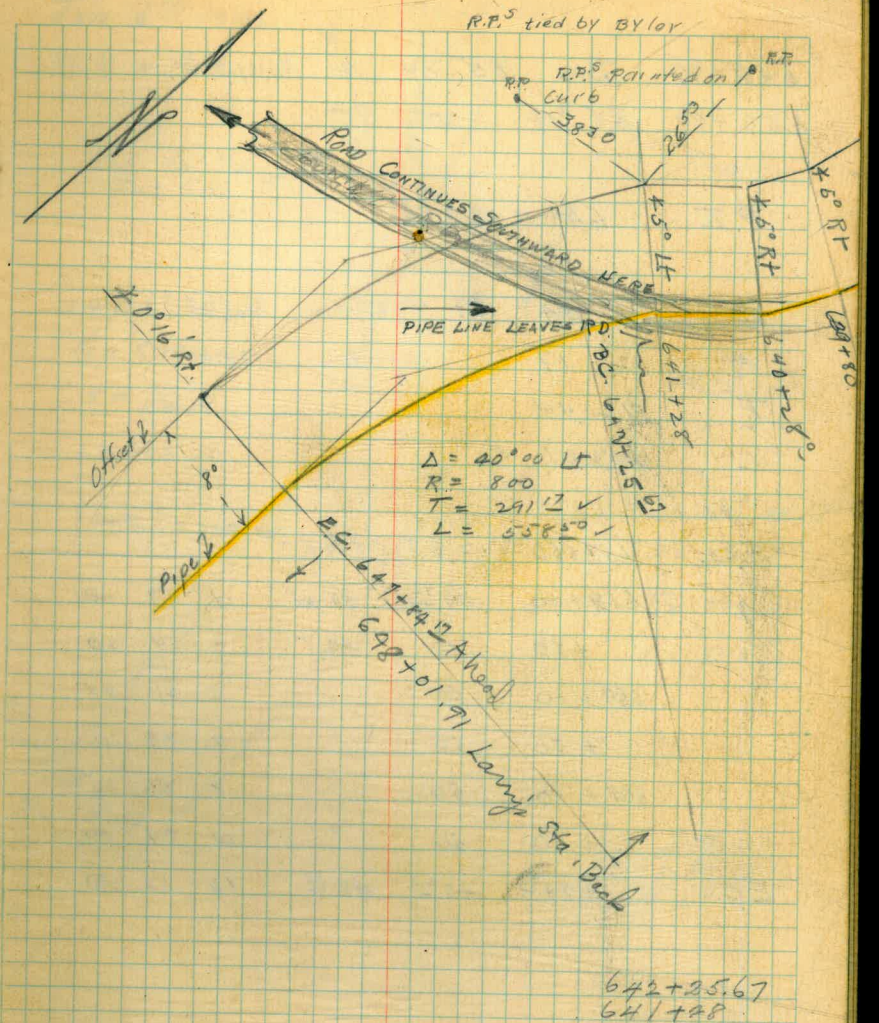
638+00
635+53.27
2 46.73

PI 645+19.75

Δ	40°00 Lt	.6981317
R	800	tan 20°0' .3639702
T	291.17	
T_o	294.08	
L	558.50 ✓	
d/4t	2.149	
50	1 47 25	

B.C.	642+25.67	ch.	off. Ch.	Def.	
	+50	24.33	24.58	0° 52	17
	643+00	50	50.5	2 39	42
	+50	50	"	4 27	07
	644+00	50	"	6 14	32
	+50	50	"	8 07	57
	645+00	50	"	9 49	22
	+50	50	"	11 36	47
	646+00	50	"	13 24	02
	+50	50	"	15 11	27
	647+00	50	"	16 58	52
	+50	50	"	18 46	17
E.C.	+84.17	34.17	34.40	20 00	00

Note: Due to line change we angle 0°16 Rt at E.C. Sta. 647+84.17



645+97 Box 18.5' Rt. No. Number.
656+59 A.V. #52 20' Rt.

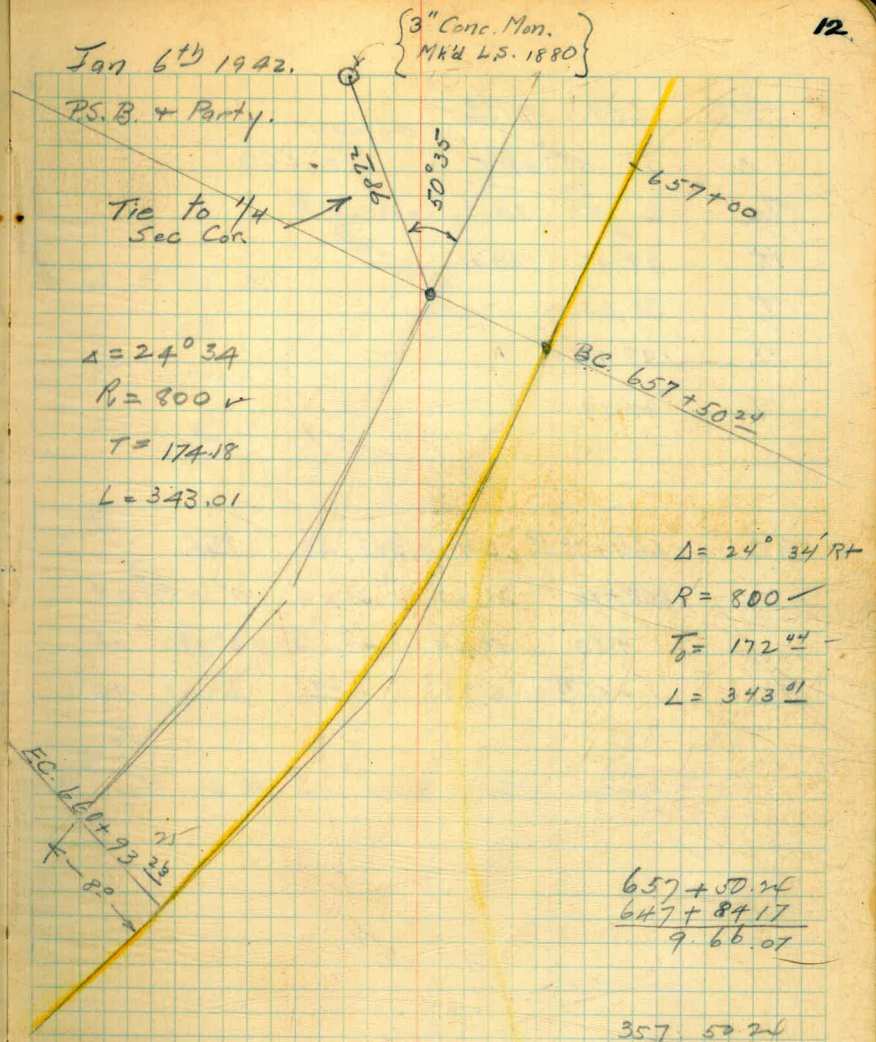
P.I. 659 + 22 68

Δ	24° 34	Rt.	.4287692	343.01
Δ/2	12 17		.2177306	174.18
T_o	172.44			
L	343.01 ✓			

B.C. 657+50 24 = 657+48 29 back (By Ker) ahead

658+00	49 76	49.21	1° 47	00
+50	50	49.5	3 34	20
659+00	50	"	5 21	45
+50	50	"	7 09	10
660+00	50	"	8 56	35
+50	50	"	10 44	00
E.C. +93 23	43 25	42 83	12 17	00

Jan 6th 1942.
P.S.B. & Party.



Δ = 24° 34' Rt
R = 800 ✓
T_o = 172 44 ✓
L = 343 01

657 + 50.24
647 + 84.17
9.66.07

357 59 24
3 43 01
360 - 9 3.25

PI 667+17 40

Δ 5° 35' Rt R = 800

D/2 2 47 30 .04876 24

T 39.02 ✓ 39.01

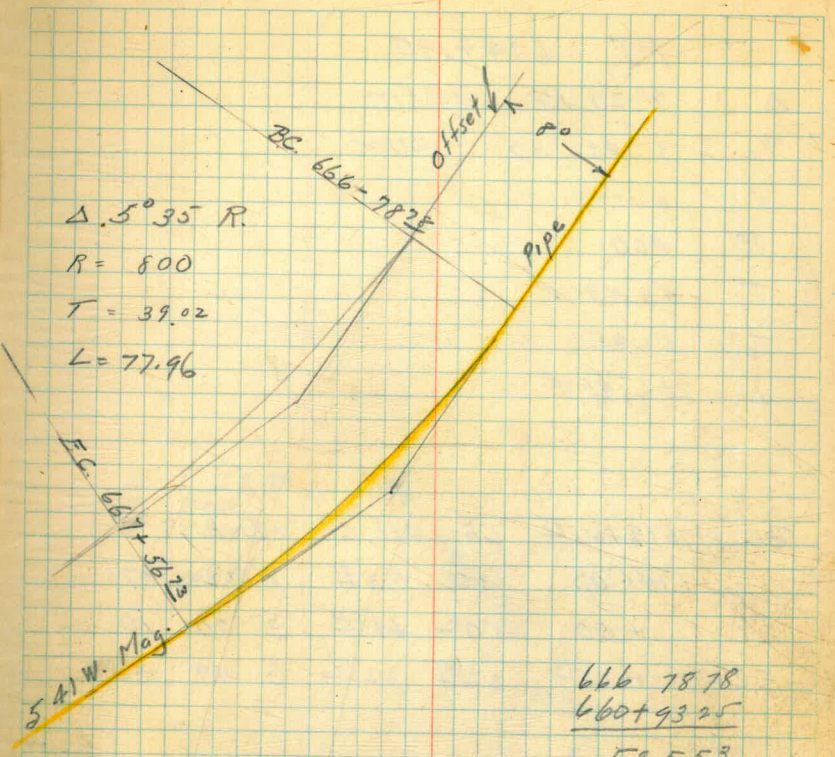
T_o 38.63

L 77.96 ✓

d 2.149

B.C.	666+78 78	Ch	off. Ch.	Def.
	667+00	21.22	21.00	0° 45' 34"
	+50	50.00	49.50	2° 33' 01"
E.C.	+56 73	6.73	6 66	2° 47' 30"

Forward Tan Bears S 41 W Mag.



666 78 78
660+93 25
5 85.53

PI 674+19.10

Δ 7° 39 Rt. ·1335177

Δ/2 3 49 30 ·066858 ✓

d 2.149

R 800

T 53.49 ✓

T_0 52.95

L 106.81 ✓

		Ch.	Off. Ch.	Def.	
B.C.	673+66.15				
	674+00	33.85	33.51	1°12	47
	+50	50.00	49.50	3 00	10
E.C.	+72.96	22.92	22.73	3 49	30

679+80 × 5° Lt ✓

680+27.3 × 5° Lt ✓

+43.3 × 5° Lt ✓

+59.3 × 5° Lt ✓

+75.3 × 5° Lt ✓

+91.3 × 5° Lt ✓

681+07.3 × 5° Lt ✓

+39.3 × 5° Lt ✓

+55.2 × 5° Lt

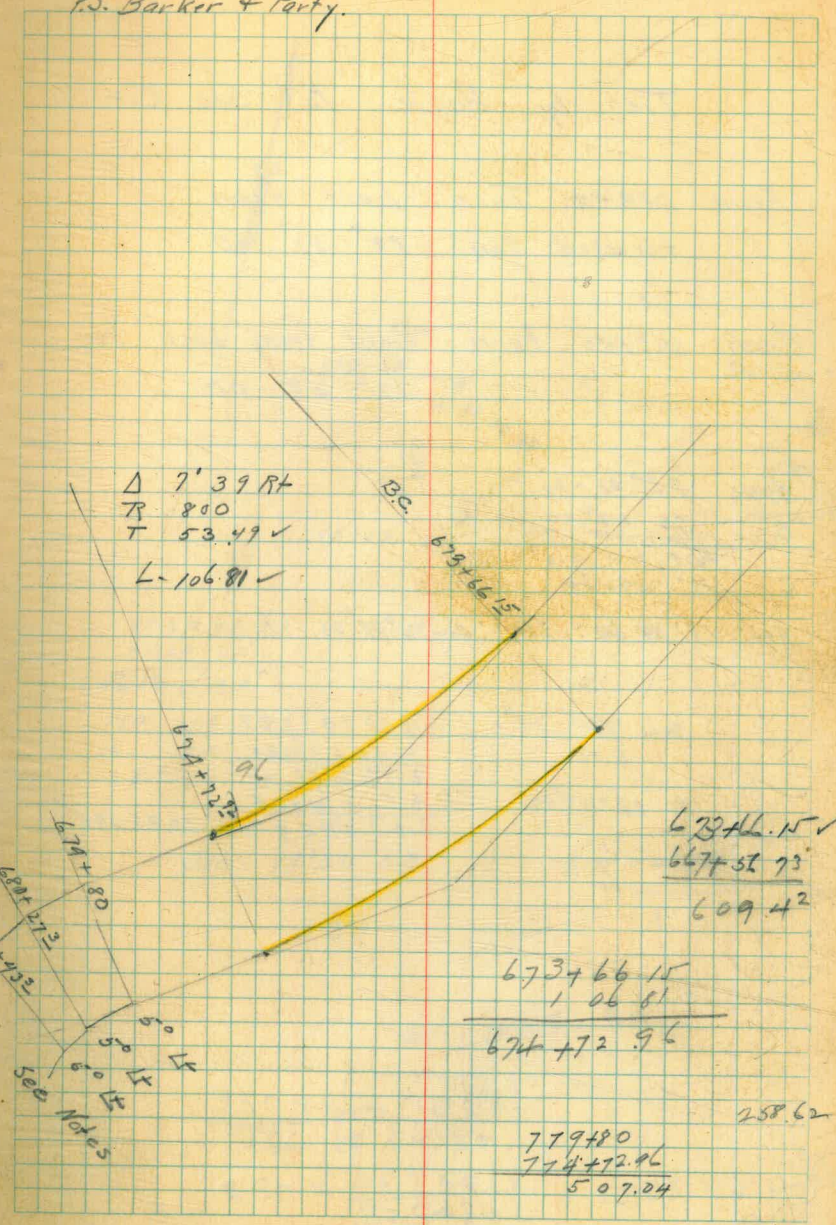
682+38.72 × 3° 57 Lt

Total = 48° 57 Lt

689+00 Cross deep canon

Jan. 7th 1942.

P.S. Barker + Party.



Tie by Angle to Sec. Cor.

From 688+00 Turn Left from forward tan 88° 32' 30"

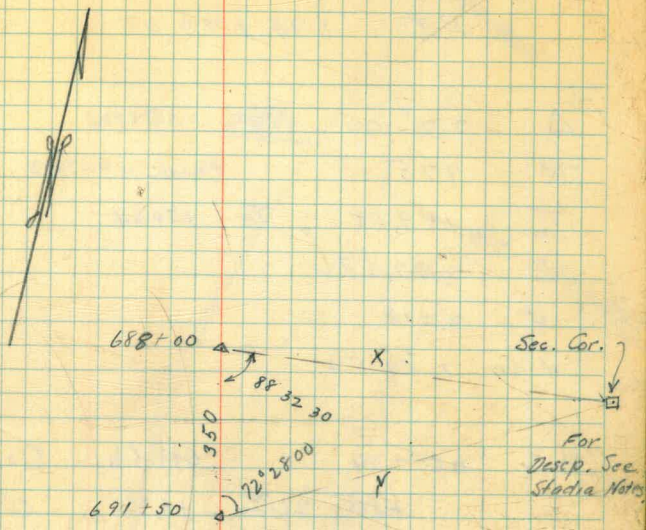
From 691+50 turn Right from back tan 72° 28' 00

A 88° 32'-30
B 72 28 00
161.00-30
C 18° 59-30

Sin 18°59'30": 350 :: Sin 72°28'00" : B.

Sin 72° 28-
350
Sin 18°59'30

9.9793398
2.5440680
2.5234078
9512 4584
3.0109494 = 1025.53 ✓



88 32 30
72 28 00
161°00'30"

179 59 60
161 00 30
18° 59' 30" ✓

SIN 18°59'30 . SIN 72° 28
350 X

= 1025.66

$$X = \frac{350 \times \sin 72°28}{\sin 18°59'30}$$

$$= 350 \times \frac{.9535418}{.3254306} = 1025.53 \checkmark$$

W.B

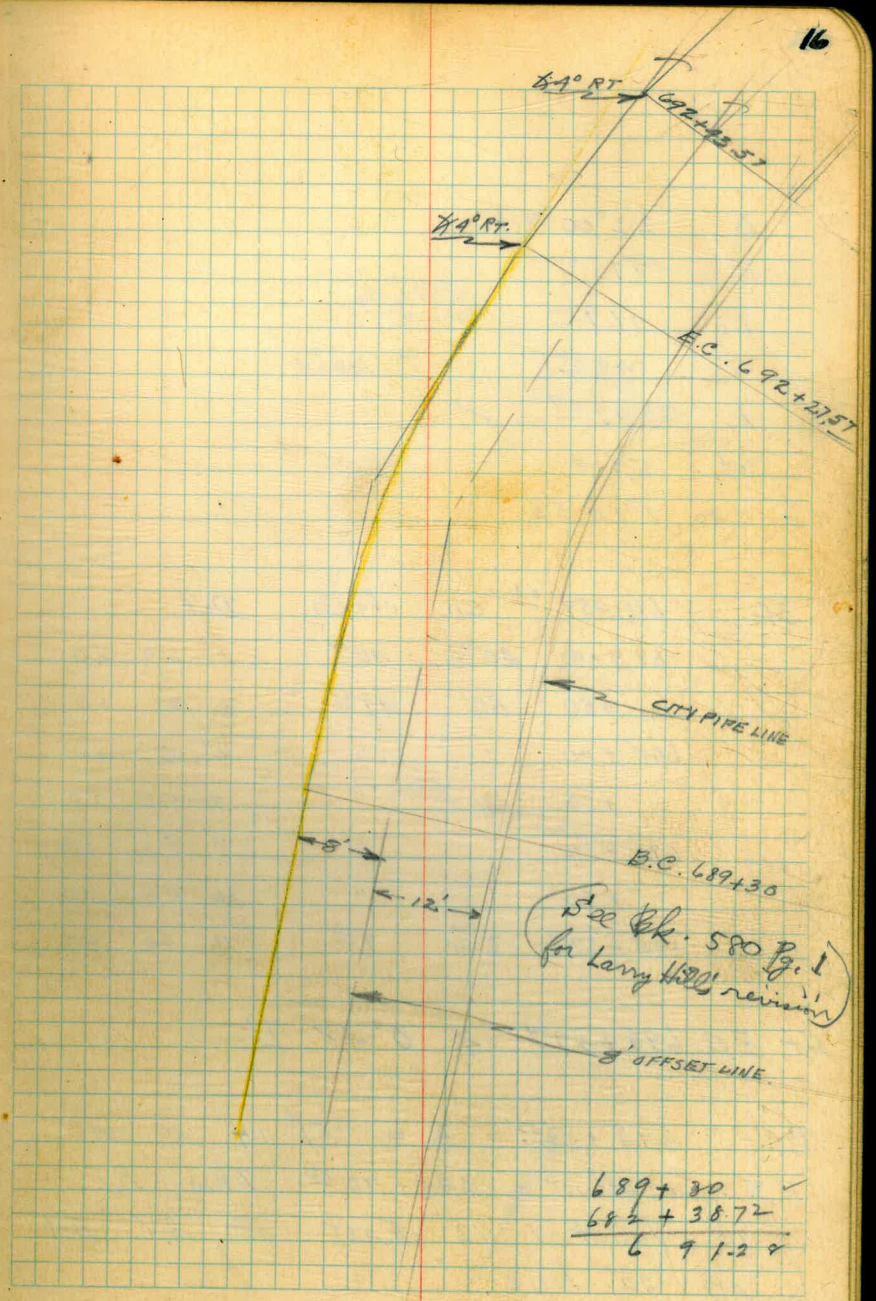
PI 690 + 79.08

Δ 22° 00' Rt .383972
R 775 tan/2 .1943803
T_0 149.08 , T= 150.64
L 297.57 ✓
d 2.218
d 50 1 50 5 3

		Ch.	Off. Ch.	Def.
B.C.	689+30			
	+50	20.00	19.80	0° 44 24
	690+00	50	49.48	2 35 18
	+50	"	49.48	4 26 12
	691+00	"	49.48	5 17 06
	+50	"	49.48	7 08 00
	692+00	50	49.48	9 58 54
EC.		+27.57 27.57	27.30	11 00 00

At EC. 692+27.57 ± 4° Rt ✓
At 692+43.57 ± 4° Rt ✓

BC. 692+59.57 Δ = 22° 00 Rt

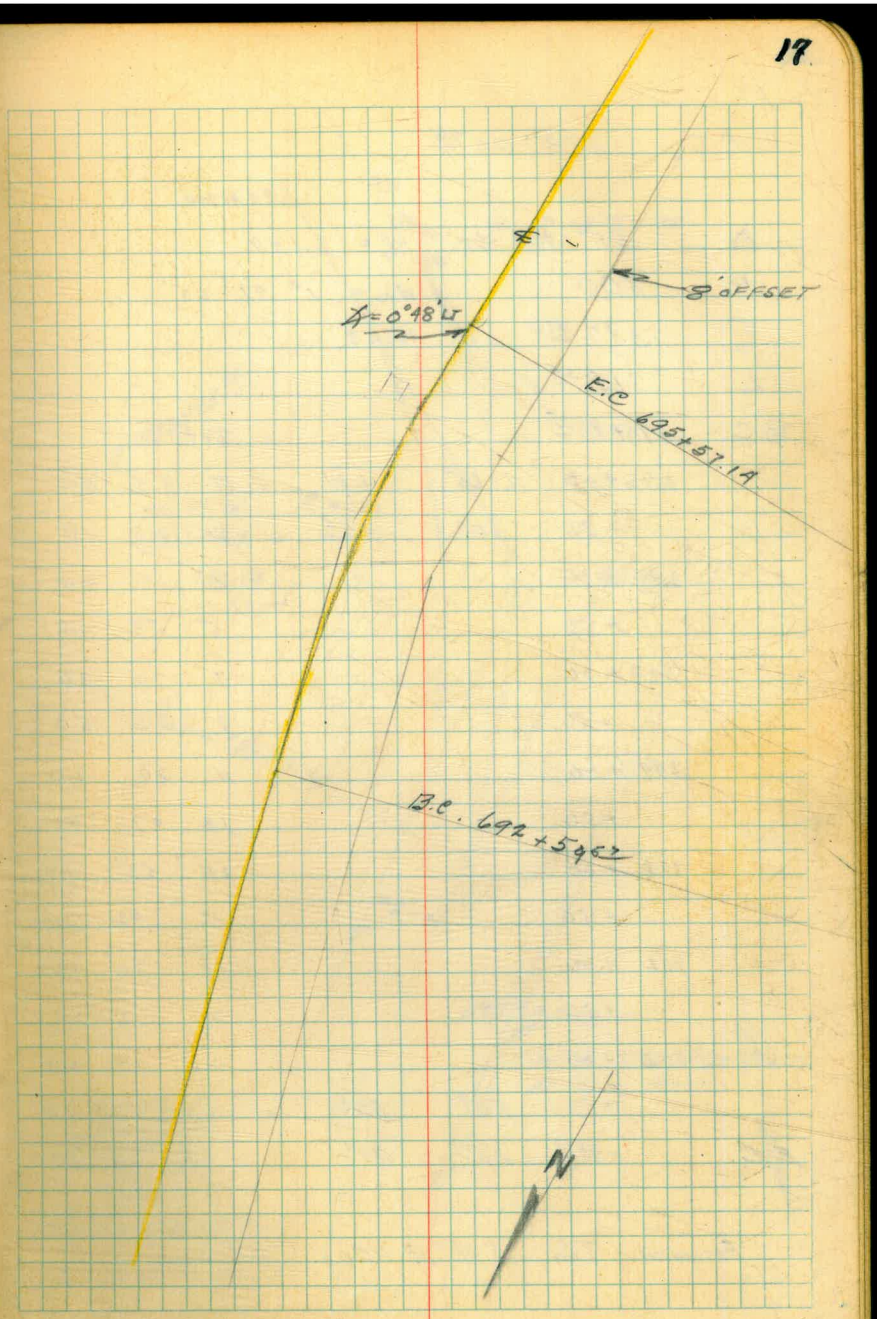


Δ	22°00 Rt	
R	775.00	
R_o	767.00	
T_o	149.08	T = 150.64
L	297.57 ✓	
d_1	2.218	
d_{50}	1°50'53	

B.C.	692+59.57	ch.	off. Ch.	Def.
	693+00	40.43	40.00	1 29 40
	+50	50	49.48	3 20 30
	694+00	"	"	5 11 30
	+50	"	"	7 02 20
	695+00	"	"	8 53 20
	+50	"	"	10 44 00
E.C.	695+57.14	7.14	7.06	11 00 00

At E.C. 695+57.14 ∡ 0°48 Lt.

B.C. 695+83.33 Δ = 51° 14' 00 Lt.
P.I. on Offset = 699+70.26 This P.I. is located 12' East of A.V. #54 on 30° line.



P.I. 699 + 70 76

.894 1904

Δ 51° 14 Lt. d_1 = 2.149

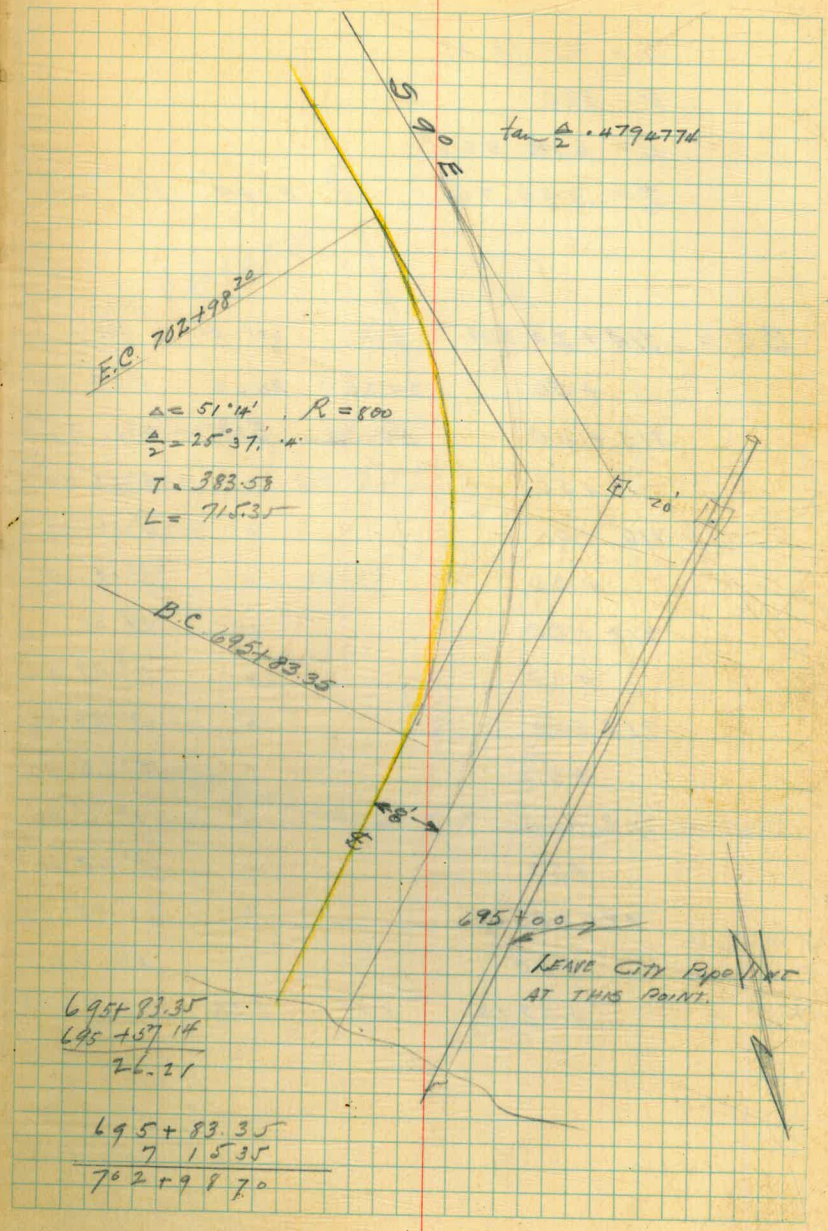
R 800 d_{50} = 1° 47' 25"

T_o 387 41 ✓ T = 383.58

L 715 35 ✓

				Def.
B.C.	695+83 35			
	696+00	16 65	16 81	0 35 50
	+50	50°	50 5	2 23 10
	697 +00	"	"	4 10 40
	+50			5 58 00
	698 +00			7 45 30
	+50			9 32 50
	699 +00			11 20 20
	+50			13 07 40
	700 +00			14 55 10
	+50			16 42 30
	701 +00			18 30 00
	+50			20 17 20
	702 +00			22 04 50
	+50	50°	50 5	23 52 10
E.C.	+98 70	48 7°	49 2	25 37 00

Forward Tan S 9° E Mag.



695+83.35
695+37.14
46.21

695+83.35
7 15 35
702+98 70

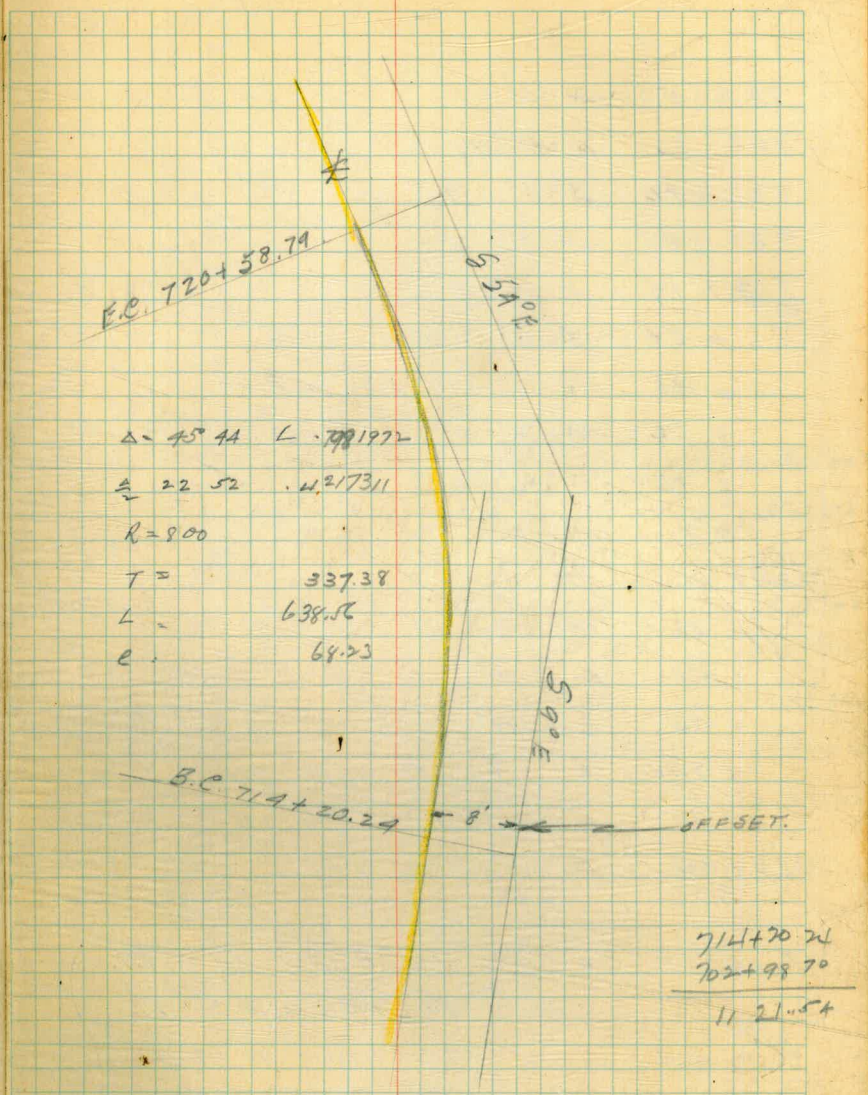
Δ = 45°44 LT.

R = 800

L = 638.56 ✓

T_o = 340.76 d 2.149 1°47'25"

B.C =	714+20.24	Ech.	OFF. Ch.	def
	+50	29.26	30.05	1°04'00"
	715+00	50	50.5	2°51'20"
	+50	"	"	4°38'50"
	716+00		"	6°26'10"
	+50		"	8°13'40"
	717+00		"	10°01'
	+50		"	11°48'30"
	718+00		"	13°36'00"
	+50		"	15°23'20"
	719+00		"	17°10'40"
	+50		"	18°58'10"
	720+00		"	20°45'30"
	+50		"	22 33
E.C =	+58.79	8.79	8.86	22 52 00



722+50 ✗ 4° RT. ✓
722+66 ✗ 4° RT. ✓
722+82 ✗ 4° RT. ✓
722+98 ✗ 4° " ✓
723+14 ✗ 4° RT. ✓
+30 ✗ 4° " ✓
+46 ✗ 4° " ✓
+62 ✗ 4° " ✓ TOTAL 65° RT.
+78 ✗ 4° " ✓
+94 ✗ 4° " ✓
724+10 ✗ 4° " ✓
+26 ✗ 4° " ✓
+42 ✗ 4° " ✓
+58 ✗ 4° " ✓
+74 ✗ 4° " ✓
+90 ✗ 4° " ✓
725+06 ✗ 1° RT. ✓

727+78
725+06
2 72.

TANGENT TO STA 727+78 ✓ ✗ 4° LT.
727+94 ✓ ✗ 4° LT
728+10 ✓ ✗ 4° LT
728+26 ✓ ✗ 4° LT
+42 ✓ ✗ 4° LT.
+58 ✗ 4° LT
+74 ✓ ✗ 4° LT.
+90 ✓ ✗ 4° LT
} 40°

Δ 28° 44' 44" RT.
R = 800
T = 202.97
L = 401.36 ✓
T = 205.00

P.C.C. = 737+50 ✓

℄

B.C. 733+48.62
734+00 61.38 = 50.87 1°50'27"
+50 49.5 3°31'52
+00 " 5°25'17"
+50 " 7°12'42
+00 " 9°00'07
+50 " 10°47'32
+00 " 12°34'52
P.C.C. 737 +00 " 14°22'22"

B.C. 733+48.62

733+48.62 ✓
728+90 ✓
458.62

722 50.0
720 58.79
191.21

$\Delta = 21° 29' \text{ LT.}$

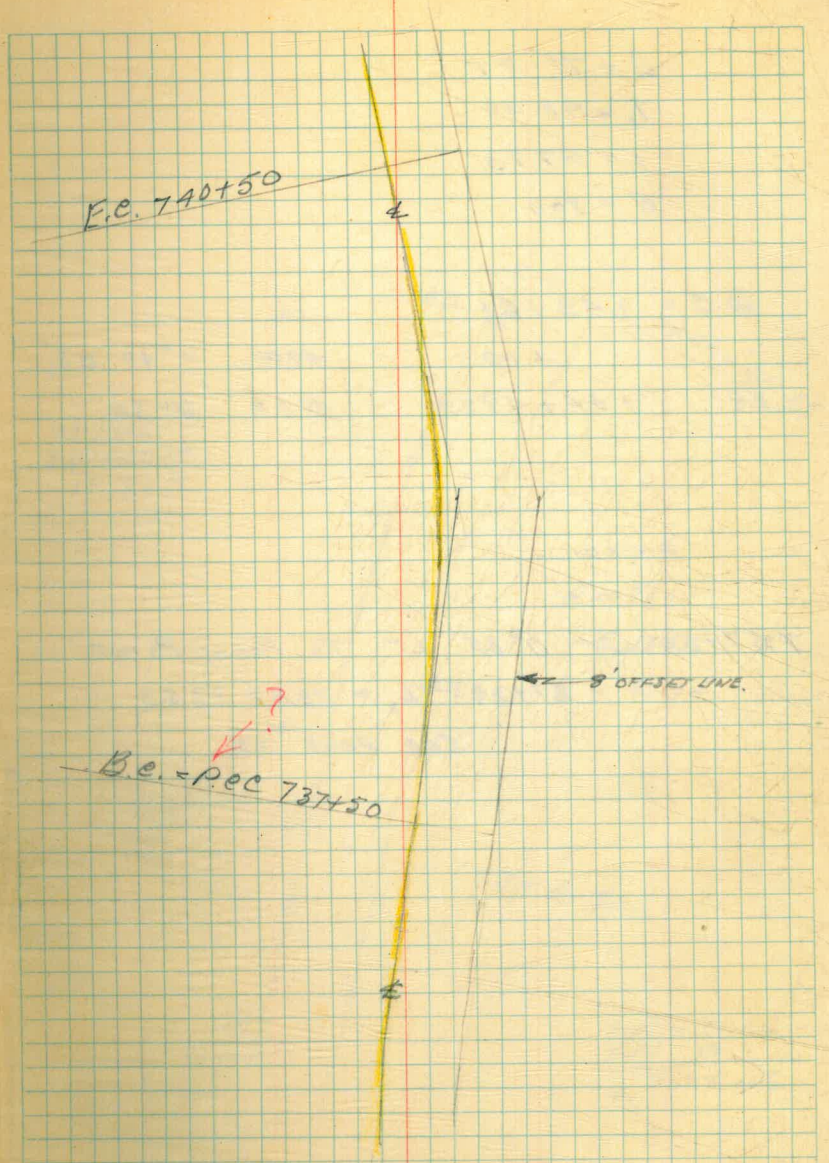
$R = 800$

$T_0 = 153.27$

$L = 300$ 299.96

$T = 151.76$

P.C.C.	737+50		
	738+00	50	1°47'25"
	+50		3°34 50
	739+00		5°22 15
	+50		7°09 40
	740+00		8°57 05
F.C.	+50		10°44 30



$\Delta = 7°$ RT.

$T_o = 48.44.$

$L = 97.73$

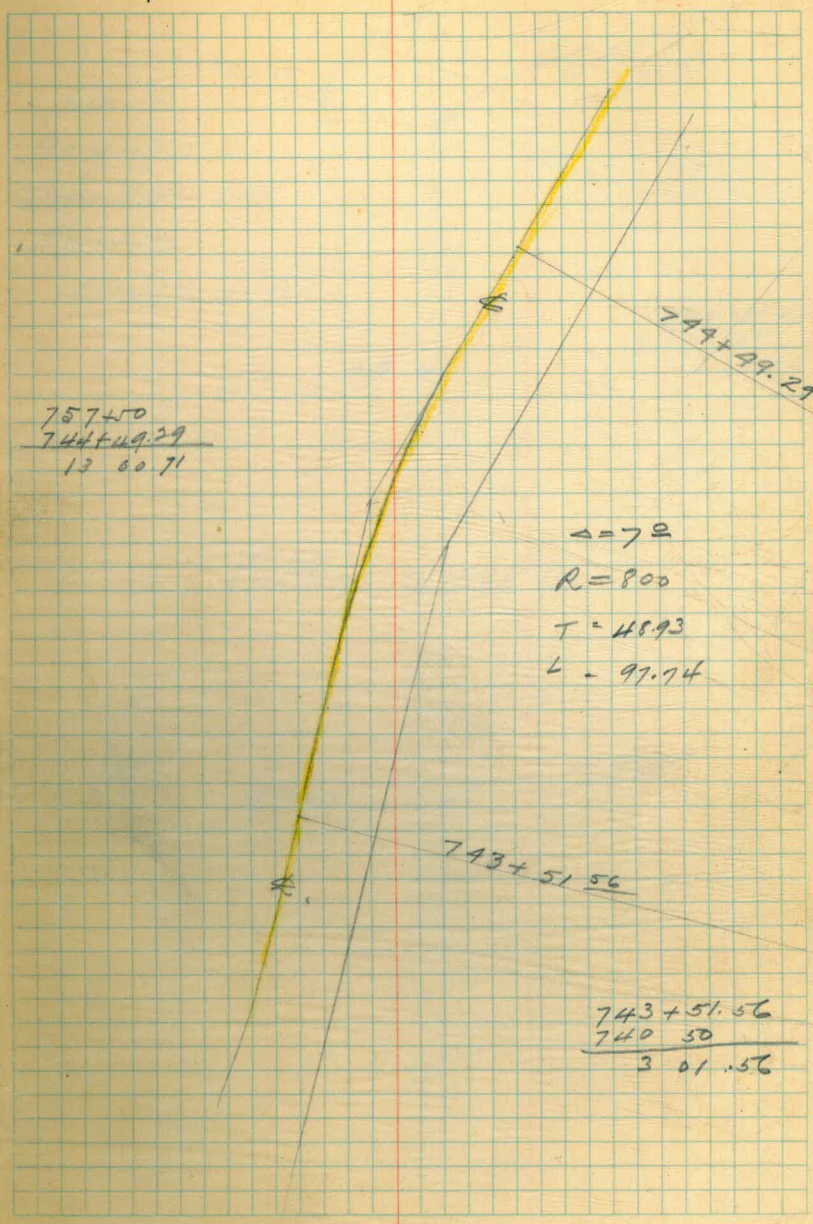
$R = 800$

B.C =	743 + 51.56	ch	
	+ 00	49.97	1°44'08"
E.C.	744 + 49.29	49.27	3°30'

757+50 Δ 0°25' LT TO FOCAL POINT

67+33.50 L_2 = 760 + 89.43

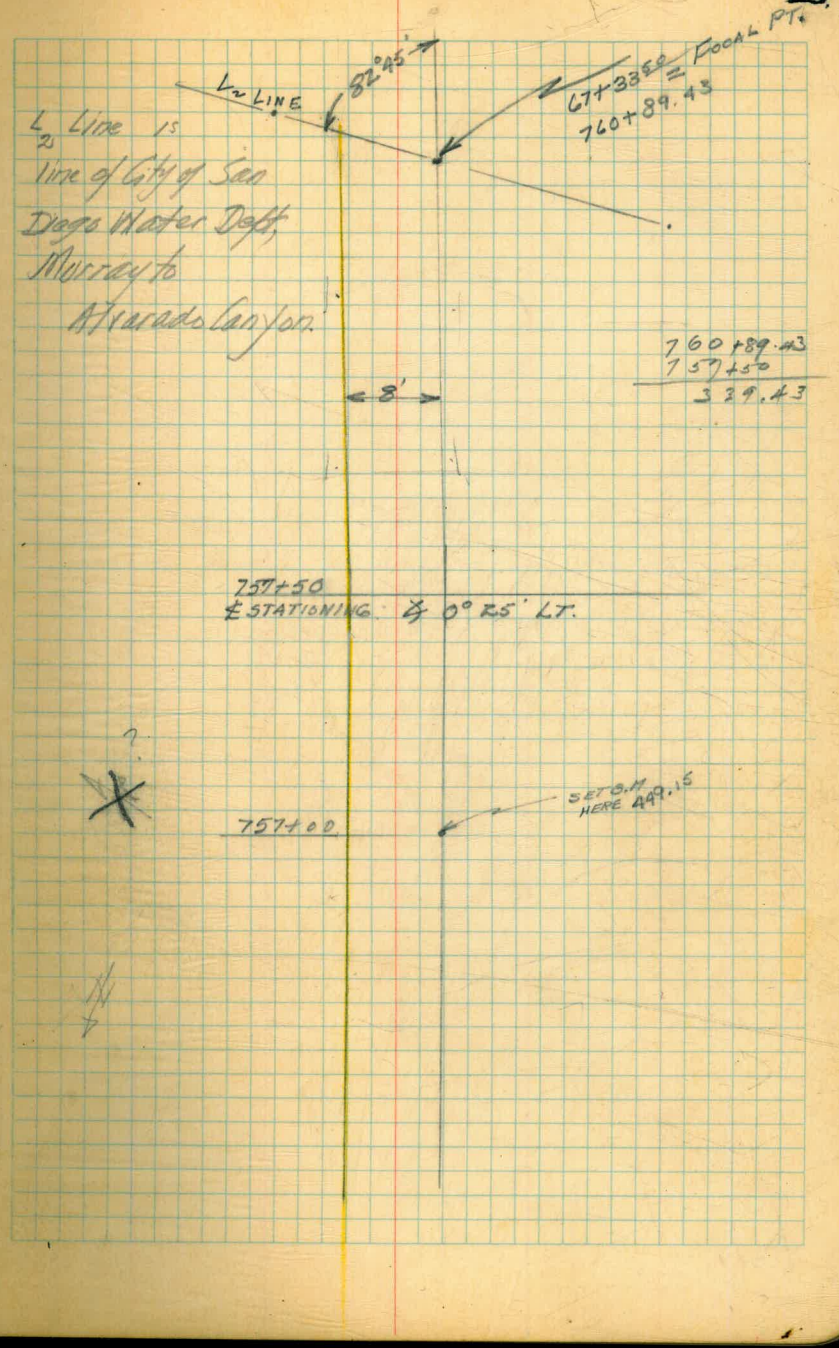
SEE PAGE 23



757+50
744+49.29
13 00.71

Δ = 7°
R = 800
T = 48.93
L = 97.74

743+51.56
740 50
3 01.56


L2 LINE
82°45'
67+33.59 = FOCAL PT.
760+89.43
L2 Line is line of City of San Diego Water Dept. Murray to Alvarado Canyon.
760+89.43
757+50
339.43
8'
757+50
℄ STATIONING. ∡ 0°25' LT.
757+00
SET B.M. HERE 449.15

LEVELS CONT. FROM F.B. #601 P.#80

STA.	+	H.I	−	ROD	ELEV.
T.P#99					310.57
T#95	2.55	313.12			
612+50 ℄				1.5	
℄				4.0	309.1
613+00 ℄				3.8	
℄				6.1	307.0
613+50 ℄				6.7	
℄				9.4	303.7
614+00 ℄				8.8	
℄				11.9	301.2
614+50 ℄				10.9	
℄				14.7	298.4
T.P. #95 613+00 ℄			12.69		300.43
T#96	0.69	301.12 ✓			
615+00 ℄				0.7	
℄				4.2	296.9
615+31.16 ℄ E.C.				2.0	
℄				5.2	295.9
615+50 ℄				2.6	
℄				6.1	295.0
616+00 ℄				4.3	
℄				6.6	294.5
616+50 ℄				6.1	
℄				7.2	293.9

3.24

JAN 15, 1902
MELHORN T
WHITLOCK - NOTES-ROD

310.57
3.31
313.88
12.69
301.12

JAN 15, '92

STA	+	H.I.	−	ROD	ELEV.
T# 96		301.12✓			
616+90 ⓑ ⅄5°RT				7.8	
℄				9.1	292.0
617+06 ⓑ ⅄5°RT				8.6	
℄				10.0	291.1
617+50 ⓑ				10.3	
℄				11.2	289.9
617+91 29 B.C. ⓑ				11.8	
℄				12.5	288.6
618+00 ⓑ				12.1	
℄				12.6	288.5
T.P #96			12.04		289.08
T# 97	0.95	290.03✓			
618+50 ⓑ				2.3	
℄				2.6	287.4
619+00 ⓑ				3.6	
℄				4.1	285.9
619+11 14 EC. ⓑ				3.7	
℄				4.4	285.6
619+50 ⓑ				4.3	
℄				4.7	285.3
620+00 ⓑ				4.7	
℄				5.0	285.0
620+50 ⓑ				4.6	
℄				4.8	285.2

301.12
0.95
302.07
12.04
290.03

STA	+	H.I	−	ROD	ELEV
⅄ #97		290.03 ✓			
621+00 ⑧				4.6	
℄				4.8	285.2
621+50 ⑧				4.7	
℄				4.7	285.3
622+00 ⑧				4.0	
℄				4.6	285.4
622+50 ⑧				3.8	
℄				4.2	285.8
623+00 ⑧				3.3	
℄				3.8	286.2
623+35 B.C. ⑧				2.8	
℄				3.2	286.8
623+50 ⑧				2.6	
℄				3.3	286.7
624+00 ⑧				1.6	
℄				2.6	287.4
624+50 ⑧				0.6	
℄				1.7	288.3
T.P #97			0.64		289.39
⅄ #98	10.00	299.39 ✓			
625+00 ⑧				8.7	
℄				9.8	289.6
625+16 5½ EC ⑧				8.3	
℄				9.3	290.1

COBBLESTONE DITCH MORTARED TOGETHER 1' DEEP 1' WIDE AT STA 621+80 27' E OF ℄; AT 622+10 15' EAST OF ℄; WITH A SLIGHT GRADE FALL EAST & NORTH INTO DRAW.

290.03
10
300.83
299.39

STA.	+	H.I. 299.39	−	ROD	ELEV
625+32 51 ℄ 5°27 Ⓑ				8.0	
℄				9.2	290.2
625+33 03 B.C Ⓑ				8.0	
℄				9.2	290.2
625+50 Ⓑ				7.7	
℄				8.9	290.5
626+00 Ⓑ				7.2	
℄				8.3	291.1
626+50 Ⓑ				6.8	
℄				7.9	291.5
627+00 Ⓑ				6.3	
℄				7.3	292.1
627+13 38 Ⓕ				6.2	
℄				7.1	292.3
627+50 Ⓑ				5.8	
℄				6.7	292.7
628+00 Ⓑ				5.2	
℄				5.9	293.5
628+50 Ⓑ				4.7	
℄				5.2	294.2
629+00 Ⓑ				4.2	
℄				4.5	294.9
629+50 Ⓑ				3.8	
℄				4.1	295.3

? Is there angle at 625+32 51 ? no such angle shown on Alignment notes pp 889

STA	+	H.I	−	ROD	ELEV
BM #98		299.39 ✓			
630+00 ℄				3.6	.8
℄				4.0	295.4
630+50 ℄				3.0	
℄				3.1	296.3
631+00 ℄				2.4	
℄				2.6	296.8
631+50 ℄				2.0	
℄				2.2	297.2
632+00 ℄				1.4	
℄				1.7	297.7
632+50 ℄				0.8	
℄				1.3	298.1
632+43.80 B.C. T.P. ℄				0.1	
℄				0.7	298.7
T.P #98			0.12		299.27
BM #99	11.16	310.43 ✓			
633+00 ℄				11.0	299.4
℄				11.6	298.8
633+50 ℄				9.8	
℄				10.7	299.7
634+00 ℄				7.8	
℄				8.7	301.7
634+50 ℄				5.1	
℄				6.1	

299.39
11.16
310.55
12
310.43

STA	+	H.I	−	ROD	ELEV
℄ #99		310.43			
634+89.27 E.C. ⑧ ∡5° LT.				2.8	307.6
℄				3.6	306.8
635+05 27 ∡5° LT. ⑧				1.9	
℄				2.7	307.7
635+21 27 ∡5° LT. ⑧				1.1	
℄				1.8	
635+37 27 ∡5° LT ⑧				0.4	
℄				1.2	
T.P. #99			0.39		310.04
℄ #100	11.90	321.49			
635+53 27 ∡1° LT. ⑧				10.7	
℄				11.5	
636+00 ⑧				8.5	
℄				9.5	311.9
636+50 ⑧				5.2	
℄				5.9	
637+00 ⑧				1.6	
℄				1.9	319.5
T.P #100 ON ROCK 637+20			0.12		321.32
℄ #101	11.60	332.92			
637+50 ⑧				9.5	
℄				9.1	
638+00 ∡5° RT ⑧				5.7	
℄				5.3	327.6
	23.00		0.51		

310.43
+ 23.00
333.43
− 0.51
332.92

STA	+	H.I	−	ROD	ELEV
T 101		332.92			
638+16 ⊄ 5° RT ⑧				4.7	
℄				4.2	
638+32 ⊄ 5° RT ⑧				3.8	329.1
℄				3.1	
638+48 ⑧				2.8	
638+48 ℄				2.0	
T.P. # 101			0.37		332.55
T # 102	12.90	345.45			
639+00 ⑧				11.9	
℄				11.2	334.25
639+48 ⊄ 5° RT. ⑧				8.3	
℄				7.7	
CULVERT AT 638+32 #19					
F. FLO LINE		329.1 6.1 335.2		9.2	326.0
W. FLO LINE				15.3	329.9
639+80 5° ⊄ RT. ⑧				6.0	
℄				5.4	340.05
640+28 ⊄ 5° RT. ⑧				2.9	
℄				2.3	343.15
T.P. # 102			0.13		345.32
T # 103	12.85	358.17			
641+28 ⊄ 5° Lt ⑧				9.1	
℄				8.9	349.3
	25.75		0.50		

EAST HEADWALL "L" SHAPED WITH (5) N.W.

332.92
25.75
358.67
.50
358.17

STA	+	H.I	−	ROD	ELEV.
℄ #103		358.17 ✓			
642+00 ⓔ				5.2	
℄				0.0	358.2
B.C. 642+25 GT ⓔ T.P.				0.3	
T.P. #103			0.27		357.90
℄ #104	9.94	367.84			
642+25 GT ℄				6.2	
642+50 ⓔ				12.2	
℄				11.9	
ON ⓔ 642+90 BOTTOM SMALL DRAW				10.2	
643+00 ⓔ				8.0	359.8
℄				8.4	359.4
T.P. #104 ON ROCK 643+25			0.35		367.49
℄ #105	12.00	379.49			
643+50 ⓔ				4.8	
℄				5.2	
T.P. #105			0.51		378.98
℄ #106	12.72	391.70			
644+00 ⓔ				8.0	
℄				8.4	383.3
T.P. #106			0.14		391.56
℄ #107	12.40	403.96 ✓			
644+50 ⓔ				11.0	
℄				10.9	
	47.06		1.27		

358.17
47.06
405.23
1.27
403.96

JAN 15 1941
MELHORN T
WHITLOCK'S NOTES

STA	+	H.I	−	ROD	ELEV
#107		403.96 ✓			
645+00 ⑧				4.1	
℄				3.9	400.1
T.P #107			0.02		403.94
T #108	5.43	409.37			
645+50 ⑧				5.2	
℄				4.6	
646+00 ⑧				4.9	
℄				4.2	405.2
646+50 ⑧				4.1	
℄				3.4	
647+00 ⑧				3.0	
℄				2.5	406.9
647+50 ⑧				2.6	
℄				2.5	
647+84.17 EC. ⑧				3.3	
℄				2.6	
648+00 ⑧				3.3	
℄				3.3	406.1
648+50 ⑧				5.7	403.7
℄				5.1	
649+00 ⑧				9.9	
℄				9.5	399.9
T.P #108			12.61		396.76
T #109	0.43	397.19 ✓			
	5.86		12.63		

403.96
5.86
409.82
12.63
397.19

STA	+	H.I	−	ROD	ELEV.
T #109		397.19 ✓			
649+50 Ⓑ				2.2	
℄				1.8	
650+00 Ⓑ				7.9	
℄				7.0	390.2
T.P 109	650+40 ON ROCK		13.02		384.17
T #110	0.62	384.79			
650+50 Ⓑ				2.7	
℄				2.6	
651+00 Ⓑ				11.6	
℄				11.8	373.0
T.P #110	ON ROCK 651+05		12.19		372.60
T #111	0.55	373.15			
651+50 Ⓑ				9.4	
℄		4.0 360.0 364.0		10.5	
651+90 Ⓑ TOE – MIDDLE OF CHANNEL ALSO				10.4	355.6
℄				8.4	357.6
652+50 Ⓑ		373.15 ✓		4.8	368.35
℄				3.8	369.35
653+00 Ⓑ				1.2	
℄				0.6	372.55
T.P #111			0.50		372.65
T #112	12.71	385.36 ✓			
653+50 Ⓑ				7.1	
℄				6.9	
	13.88		25.71		

AT 651+47 20 WEST OF ℄ IS TR. #4 ON CITY PIPE LINE;
2 CONC. PIERS APPROX 7' WIDE AT STAS 651+75 & 652+10
PIPE IS EXPOSED TO STA 651+90, END OF TRESTLE.
"V" SHAPED DRAW.

397.19
13.88
411.07
25.71
385.36

STA	+	H.I	−	ROD	ELEV
T.P #112		385.36 ✓			
654+00 ℄				2.4	
℄				1.5	383.9
654+25 ON ROCK					
T.P #112			1.31		384.05
T.P #113	6.89	390.94 ✓			
654+50 ℄				4.7	
℄				3.9	
655+00 ℄				4.3	
℄				3.7	387.2
655+50 ℄				4.0	
℄				2.9	
656+00 ℄				3.4	
℄				2.7	388.2
656+50 ℄				3.2	
℄				2.1	
657+00 ℄				4.0	
℄				2.8	388.1
657+50 ℄				4.3	
℄				2.6	
658+00 ℄				5.9	
℄				5.1	385.8
658+50 ℄				6.7	
℄				6.1	
659+00 ℄				7.6	
℄				6.6	384.3

385.36
+ 6.89
392.25
− 1.31
390.94

JAN 16, 42
MELHORN Δ
WHITLOCK ⌀

STA.	+	H.I	−	ROD	ELEV.
Δ #113		390.94			
659+50	⑧			7.0	
	℄			6.9	
660+00	⑧ T.P.			12.5	
	℄			12.5	378.4
T.P #123			12.47		378.47
Δ #114	0.53	379.00			
660+50	⑧			6.9	
	℄			6.2	
661+00	⑧			11.5	
	℄			11.2	367.8
T.P #114			12.91		366.09
Δ #115	0.18	366.27			
661+50	⑧			4.1	
	℄			3.7	
662+00	⑧			9.8	
	℄			9.9	356.4
T.P #115			12.89		353.38
Δ #116	0.47	353.85			
662+50	⑧			3.3	
	℄			3.6	
663+00	⑧			10.0	
	℄			9.9	343.95
T.P #116			12.95		340.90
Δ #117	113	342.03	3		
	.31		51.22		

390.94
2.31
393.25
51.22
342.03

STA	+	H.I	−	ROD	ELEV
T.P. #117		342.03 ✓			
663+50 ℄				3.1	
℄				3.5	
664+00 ℄				6.1	
℄				6.3	335.7
664+50 ℄				8.8	
℄				9.0	
665+00 ℄				10.7	
℄				11.6	330.4
665+50 ℄ T.S.				12.4	
℄				12.6	
T.P. #117			12.41		329.62
T.P. #118	1.30	330.92 ✓			
666+00 ℄				4.9	
℄				5.0	325.9
666+50 ℄				6.7	
℄				6.7	
666+78 ~~22~~ B.C. ℄				5.5	
℄				5.6	
667+00 ℄				4.4	
℄				5.2	325.7
667+50 ℄				6.7	
℄				6.7	
667+56 ~~22~~ E.C. ℄				7.0	
℄				7.2	

342.03
1.30
343.33
12.41
330.92

STA	+	H.I	−	R.O	ELEV
Δ #118		330.92 ✓			
T.P #118			13.12		317.80
Δ #119	−0.02	317.78			
668+00 ℄				1.6	
℄				1.9	315.9
T.P #119			13.03		304.75
Δ #120	0.30	305.05			
668+50 ℄				4.8	
℄				4.0	
T.P #120			13.09		291.96
Δ #121	0.35	292.31			
669+00 ℄				9.8	
℄				10.5	281.8
T.P. #121			12.65		279.66
Δ #122	0.41	280.07			
669+50 ℄ T.P.				12.5	
℄				15.1	
T.P #122			12.52		267.55
Δ #123	0.92	268.47			
T.P #123			13.11		255.36
Δ #124	0.29	255.65 ✓			
670+00 ℄				1.8	
℄				3.1	252.55
670+50 ℄				11.2	
℄				12.8	

$-\frac{2.21}{0.02}$

2.35

17.52

330.92
2.35
333.17
77.52
255.65

STA	+	HI	−	ROD	ELEV
⅄ #124		255.65 ✓			
I.P #124			12.62		243.03
⅄ #125	0.52	243.55			
671+00 Ⓑ				6.6	
℄				6.5	237.05
H.L.			12.95		230.60
⅄ HAND LEVEL	0.0	230.6 ✓			
671+40 Ⓑ TOP OF CUTBANK				3.5	227.1
671+40 ℄				5.0	225.6
671+46 Ⓑ TOE OF BANK				10.1	220.5
671+43 ℄ TOE OF BANK.				10.6	220.0
671+50 Ⓑ				10.5	220.1
℄				10.0	220.6
BOTTOM OF FOOTING ON NUMBER #1 PIER				12.0	218.6
671+90 Ⓑ BOTTOM CHANNEL				12.5	218.1
671+98 TOE SLOPE				12.1	218.5
672+10 Ⓑ TOP "				5.4	225.2
℄				4.2	226.4
672+50 Ⓑ				3.0	227.7
℄				1.6	229.0
673+00 Ⓑ		⅄ #125		10.1	220.5
℄				7.2	
673+50 Ⓑ				5.0	
℄				2.0	
			25.57		

STARTING AT 671+40 #5 TRESTLE ON CITY PIPE LINE CONSISTING OF (2) 7½ FT. WIDE CONC PIERS AT 671+75 & 672+05 END 672+25 DRYWASH AT TRESTLE FLOWS UP TO NORTH END OF TRESTLE FROM THE EAST; THEN TURNS ABRUPTLY TO THE SOUTH PARRALLELING TRESTLE FOR APPROX 50' THEN PASSES ON UNDER IN THE NEIGHBORHOOR OF 672+00 TOWARDS THE WEST, & SOUTH; NO. #1 PIER IS NEARLY UNDERCUT, BEING NOW JUST SETTING ON STREAM BED WITH NO FOUNDATION IMBEDDED TO SPEAK OF. AT STA 671+60 ON EAST. AN OUTLET FIXTURE PROTRUDES 3½' TOWARDS OUR PROPOSED LINE (#37 BLOW OFF ALSO 671+93) ALSO NO 2 PIER IS MORE OR LESS IN A CONDITION SIMILAR TO NO 1.

255.65
.52
256.17
25.57
230.60

STA	+	H.I	−	ROD	ELEV
Δ #125		243.55 ✓			
673+66.15 B.C ⑧				2.8	
℄				0.0	
T.P #125			2.80		240.75
Δ #126	4.70	245.45			
674+00 ⑧				3.4	
℄				+0.7	MAKING ELEV = 246.15
674+50 ⑧				6.1	
℄				1.2	
674+72.96 E.C ⑧				6.0	
℄				1.9	
675+00 ⑧				9.2	
℄				4.8	240.65
675+50 ⑧				11.5	
℄				7.2	
676+00 ⑧				10.6	
℄				5.5	239.95
676+50 ⑧				6.9	
℄				2.9	
677+00 ⑧				9.8	
℄				4.8	240.65
T.P #126			4.82		235.63
Δ #127	6.04	241.67 ✓			
677+50 ⑧				5.9	
℄				0.1	
	10.74		12.62		

245.55 ✓
10.74
254.29
12.62
241.67

STA	+	HI	−	ROD	ELEV
Δ 127		241.67 ✓			
678+00 ⓐ				9.0	
℄				5.0	236.7
678+50 ⓐ				10.6	
℄				4.7	
679+00 ⓐ				9.6	
℄				7.4	234.3
679+50 ⓐ				11.3	
℄				10.1	
679+80 Δ 5° Lt ⓐ				13.7	
℄				12.9	
T.P # 127			12.78		228.89
Δ # 128	0.62	229.51			
680+00 ⓐ				3.5	
℄				2.4	227.1
680+27 ~~3 Δ 5° Lt.~~ ⓐ				7.2	
℄				5.2	
680+43 ~~3 Δ 5° Lt~~ ⓐ				9.8	
℄				8.2	
680+59 ~~3 Δ 5° Lt~~ ⓐ				12.2	
℄				10.8	
T.P #128			12.78		216.73
Δ # 129	0.46	217.19 ✓			
680+75 ~~3 Δ 5° Lt~~ ⓐ				2.0	
℄				0.0	
	1.08		25.56		

241.67
1.08
242.75
25.56
217.19

STA	+	H.I	−	ROD	ELEV.
T #129		217.19 ✓			
680+91 $\frac{3}{4}$ 5° LT Ⓑ				4.2	
℄				2.0	215.2
681+07 $\frac{3}{4}$ 5° LT Ⓑ				7.2	
℄				5.0	212.2
681+23 $\frac{3}{4}$ 5° LT Ⓑ				10.2	
℄				7.8	
681+39 $\frac{3}{4}$ 5° LT Ⓑ				13.7	
℄				11.1	
T.P #129			12.95		204.24
T #130	0.05	204.29			
681+55 $\frac{3}{4}$ 5° LT Ⓑ				4.2	
℄				1.5	
682+00 Ⓑ				13.3	
℄				11.8	192.5
T.P #130			12.68		191.61
T #131	0.68	192.29 ✓			
682+38 $\frac{72}{4}$ 3° 57' LT Ⓑ				10.3	
℄				8.7	
682+50 Ⓑ				12.7	TURN +4.0 179.6
℄				11.6	
682+75 TOP BANK Ⓑ	+4.0	183.6		4.7	178.9
℄		183.6		4.5	179.1
683+00 CENT. CHANN. Ⓑ		183.6		8.5	175.1
℄ at 683+00		183.6		6.7	176.9
	0.93		25.63		

AT STA. 682+18 #6 TRES. ON CITY PIPE LINE; 4 PIERS 682+40, 682+70, 683+09 + 683+30

PIERS #2 + 3 SOMEWHAT UNDERCUT BY THE CHANNELS FLOW. WHICH IS BETWEEN #2 + #3 CONC. PIERS ARE 1' WIDE. APPROX.

ON SOUTH END OF TRES. STA 683+00 IS A CONC. ANCHOR BLOCK 9' WIDE

CHANNEL FLOWS WEST & AT 30° ∠ WITH TRESTLE

217.19
.73
217.92
25.63
192.29

JAN 17 1942
MELHORN T
WHITLOCK NGYES

STA.	+	H.I	−	ROD	ELEV
T #131		192.29 ✓			
683+30 ⓑ	TOE SLOPE	183.6		7.0	176.6
℄		"		9.0	174.6
683+50 ⓑ		192.29		6.8	
℄	(IN CHANNEL)	"		14.4	
T.P #131			0.14		192.15
T #132	12.54	204.69			
684+00 ⓑ				7.7	
℄				9.5	195.2
T P #132			0.46		204.23
T 133	12.13	216.36			
684+50 ⓑ				10.0	
℄				11.1	
685+00 ⓑ	(IN A DEEP ERODED CUT 4' WIDE ON NATURAL GROUND			4.2	
℄				1.0	215.4
T.P #133			0.33		216.03
T #134	12.33	228.36			
685+60 ⓑ				4.6	
℄				5.5	
T.P #134			0.52		227.84
T #135	11.39	239.23			
686+00 ⓑ				7.5	
℄				9.8	234.4
T.P #135	ON Rock 686+30		1.97		237.26
T #136	12.32	249.58 ✓			
	60.71		3.42		

192.29
60.71
253.00
3.42
249.58

STA	+	H. I	−	ROD	ELEV
Π # 136		249.58 ✓			
686+50 ℄				7.9	
℄				9.6	
T.P. # 136			0.10		249.48
Π # 137	12.13	261.61			
687+00 ℄				8.5	
℄				10.7	250.9
687+50 ℄				1.5	
℄				4.1	
T. P # 137			0.06		261.55
Π # 138	12.08	273.63			
688+00 ℄				9.3	
℄				12.7	260.9
688+50 ℄				7.4	
℄				11.4	
T.P # 138			0.10		273.53
Π # 139	12.17	285.70			
689+00 ℄				8.9	
℄				11.9	273.8
689+30 B.C. ℄				1.9	
℄				4.2	
T.P # 139			0.06		285.64
Π # 140	12.48	298.12 ✓			
689+50 ℄				9.7	
℄				11.0	
	48 86		0.3 ✓		

249.58
48.86
29844
32
298.12

STA	+	H.I. 298.12	−	ROD	ELEV
T.P #140			0.18		297.94
Δ #141	11.93	309.87			
690+00 ℄				9.2	
℄				9.8	300.1
T.P. #141			0.13		309.74
Δ #142	11.41	321.15			
690+50 ℄				8.1	
℄				8.9	
T.P #142			0.20		320.95
Δ #143	12.46	333.41			
691+00 ℄				5.7	
℄				5.7	327.7
TP #143			0.54		332.87
Δ # 144	12.50	345.37✓			
691+50 ℄				12.2	
℄				11.8	
692+00 ℄				9.4	
℄				8.7	336.7
692+27 57 E.C. 44° Rt ℄				7.3	
℄				6.5	
692+43 57 44° Rt ℄				6.2	
℄				5.6	
692+59 51 B.C. ℄				4.2	
℄				3.2	
	48.30		1.05		

298.12
48 30
346 42
1 05
345.37

STA	+	H.I.	−	Rod	ELEV
Δ #144		345.37✓			
T.P. #144			1.14		344.23
Δ #145	11.59	355.82			
693+00 ℄				11.7	
℄				11.6	344.2
693+50 ℄				8.6	
℄				8.6	
694+00 ℄				7.8	
℄				7.6	348.2
694+50 ℄				6.1	
℄				6.2	
695+00 ℄				4.8	351.0
℄				4.4	351.4
695+50 ℄				3.7	352.1
℄				3.6	352.2
695+57 44 E.C. & ORLT. ℄				4.2	351.6
℄				4.4	351.4
695+83 35 BC ℄				4.1	351.7
℄				4.7	351.1
696+00 ℄				2.7	353.1
℄				2.7	353.1
T.P. #145			2.73		353.09✓
Δ #146	10.96	364.05✓			
696+50 ℄				11.2	352.9
℄				10.6	353.5
	12.55		3.87		

345.37
12.55
367.92
3.87
364.05

STA	+	H.I	−	ROD	ELEV
A# 196		364.05✓			
697+00 (B)				8.2	355.9
℄				8.5	355.6
697+50 (B)				7.0	357.1
℄				9.0	355.1
698+00 (B)				8.9	355.2
℄				8.8	355.3
698+50 (B)				8.8	355.3
℄				8.6	355.5
699+00 (B)				8.0	356.1
℄				7.8	356.3
699+50 (B)				8.2	355.9
℄				8.3	355.8
700+00 (B)				4.7	359.4
℄				5.2	358.9
700+50 (B)				5.0	59.1
℄				5.4	58.7
701+00 (B)				5.5	58.6
℄				5.7	58.4
701+50 (B)				6.1	58.0
℄				5.9	58.2
702+00 (B)				6.5	57.6
℄				6.3	57.8
702+50 (B)				5.1	59.0
℄				5.3	58.8

STA	+	H.I	−	ROD	ELEV.
T#146		364.05✓			
702+98 T.P. EC. ℞				7.9	56.2
℄				7.9	56.7
T.P#146			7.88		356.17✓
T#147	6.11	362.28✓			
703+50 ℞				5.0	57.3
℄				5.8	56.5
704+00 ℞				6.3	56.0
℄				6.1	56.2
704+50 ℞				6.6	55.7
℄				6.6	55.7
705+00 ℞				6.2	56.1
℄				6.9	55.4
705+50 ℞				7.0	
℄				6.6	55.7
706+00 ℞				6.5	
℄				5.9	56.4
706+50 ℞				3.9	
℄				3.7	58.6
707+00 ℞				5.8	
℄				5.7	56.6
707+50 ℞				7.0	
℄				6.7	55.6
708+00 ℞				8.5	
℄				8.1	54.2

364.05
6.11
370.16
7.88
362.28

JAN 19, 1942
MELHORN T
WHITLOCK NOTES &

STA	+	H.I	−	ROD	ELEV
T #147		362.28 ✓			
708+50 ⑧				9.9	
℄				9.8	52.5
709+00 ⑧				11.7	
℄				11.5	50.8
T.P #147			13.05		349.23 ✓
T #148	854	357.77 ✓			
709+50 ⑧				10.2	
℄				9.8	48.0
710+00 ⑧				13.6	
℄				13.0	44.8
710+20 ⑧ BOTTOM SMALL DRAW.				18.5	
℄				18.5	39.3
710+50 ⑧				13.0	
℄				12.8	45.0
711+00 ⑧				8.8	
℄				8.5	49.3
711+50 ⑧				5.8	
℄				6.6	51.2
712+00 ⑧				5.1	
℄				4.5	53.3
712+50 ⑧				3.2	
℄				3.7	54.1
713+00 ⑧				3.0	
℄				2.2	55.6

362.28
8.57
370.85
12.05
357.77

STA	+	H.I	−	ROD	ELEV.
T.P. #148		357.77			
713+50 ℄				0.7	
				0.0	57.8
T.P. #148			0.74		357.03
T.P. #149	10.35	367.38			
714+00 ℄				10.1	
				9.8	57.6
714+20.24 B.C. ℄				9.8	
				9.4	58.0
714+50 ℄				9.5	
				9.2	58.2
715+00 ℄				8.8	
				8.7	58.7
715+50 ℄				8.5	
				8.4	59.0
716+00 ℄				7.4	
				6.3	61.1
716+50 ℄				6.7	
				6.2	61.2
717+00 ℄				5.4	
				5.3	62.1
717+50 ℄				4.3	
				4.8	62.6
718+00 ℄				4.2	
				3.7	63.7

357.77
10.35
368.12
74
367.38

STA.	+	H.I.	−	ROD	
T#149		367.38 ✓			
718+50 Ⓑ				4.9	
℄				3.4	64.0
719+00 Ⓑ				10.4	
℄				8.2	59.2
T.P.#149			10.40		356.98 ✓
T#150	0.54	357.52 ✓			
719+50 Ⓑ				10.1	
℄				8.0	49.5
720+00 Ⓑ				13.4	
℄ IN BOTTOM OF A RAVINE.				14.3	43.2
720+50 Ⓑ				7.8	
℄ IN RAVING.?				10.3	47.2
720+58.79 E.℄ Ⓑ				6.8	
℄				8.0	49.5
T.P.#150			0.97		356.55 ✓
H.I. #151	12.08	368.63 ✓			
721+00 Ⓑ				10.5	
℄				12.8	55.8
721+50 Ⓑ				1.8	
℄				3.8	64.8
T#151			0.67		367.96 ✓
T 152	13.02	380.98 ✓			
722+00 Ⓑ				6.5	
℄				8.6	372.4
	25.64		12.04		

JAN 19, 1942
MELHORN T
WHITLOCK NOTES

56

367.38
25.64
393.02
12.04
380.98

STA	+	H.I	−	ROD	ELEV.
Δ #152		380.98 ✓			
T.P #152			0.01		380.97
Δ #153	11.88	392.85 ✓			
722+50 Ⓡ 44° RT.				8.5	
℄				9.9	383.0
722+82 Ⓡ				4.0	
℄				5.5	87.4
723+14 Ⓡ				0.0	
℄				0.0	92.9
T.P #153			0.02		392.83 ✓
Δ #154	12.65	405.48 ✓			
723+46 Ⓡ				10.8	
℄				11.2	394.3
723+78 Ⓡ				7.1	398.4
℄				7.0	98.5
724+10 Ⓡ				6.5	
℄				6.2	99.3
724+42 Ⓡ				4.8	
℄				4.5	401.0
724+74 Ⓡ				3.8	
℄				3.1	402.9
725+06 Ⓡ				3.1	
℄				2.3	403.2
725+50 Ⓡ				2.3	
℄				2.0	403.5
	24.53		0.03		

380.98
24.53
405.51
0.03
405.48

STA	+	H.I	−	ROD	ELEV
T#154		405.48 ✓			
T.P #154			2.28		403.20 ✓
T#155	5.98	409.18 ✓			
726+00 ℄				3.6	
℄				4.1	405.1
726+50 ℄				4.0	
℄				4.1	405.1
727+00 ℄				5.9	403.3
℄				6.8	403.4
727+50 ℄				7.0	402.2
℄				5.9	404.2
727+78 ℄				8.4	400.8
℄				7.8	401.4
728+10 ℄				11.7	397.5
℄				11.3	397.9
T.P #155			12.55		396.63
T#156	1.57	398.20			
728+42 ℄				4.1	
℄				3.6	394.6
728+74 ℄				6.7	391.5
℄				5.7	392.5
729+06 ℄				10.2	
℄				9.0	389.2
T.P #156			12.58		385.62 ✓
T#157	1.13	386.75 ✓			
	8.68		27.41		

END OF JAN. 19th WORK · AMW.

JAN 20, 1942

404.48
8.68
414.16
27.41
386.75

STA	+	H.I	−	ROD	ELEV.
BM #157		386.75 ✓			
729+50 ℄				7.1	
℄				5.1	381.7
T.P #157			12.70		374.05 ✓
BM #158	0.74	374.79 ✓			
730+00 ℄				7.8	
℄				5.8	369.0
T.P #158			12.52		362.27 ✓
BM #159	0.39	362.66			
730+50 ℄				5.7	
℄				3.9	358.8
731+00 ℄				9.0	353.66
℄				8.3	354.4
731+03 ℄				12.1	
731+08 ON ℄ BOTTOM OF				11.8	350.9
T.P #159			0.0		362.66 ✓
BM #160	13.04	375.70 ✓			
731+50 ℄				10.6	
℄				11.8	363.9
T.P. #160			0.08		375.62 ✓
BM #161	13.07	388.69 ✓			
732+00 ℄				6.4	382.29
℄				8.4	380.3
T.P #161			8.08		388.61 ✓
BM #162	12.36	400.97 ✓			
	39.60		25.38		

BOTTOM OF SMALL CREEK 6' WIDE (WIRE GRASS & WATER)

386.75
39.60
426.35
25.38
400.97

JAN 20, 1942
Whitlock ⊼
Malbaum ∂

STA	+	H.I	−	ROD	ELEV
⊼ #162		400.97 ✓			
732+50 ℄				9.1	391.87
℄				11.1	389.9
733+00 ℄				2.5	398.47
℄				3.8	397.2
T.P #162			0.38		400.59
⊼ #163	11.92	412.51			
733+48.42 BC ℄				9.0	
℄				9.5	403.0
734+00 ℄				3.0	
℄				4.0	408.5
734+50 ℄				1.9	
℄				2.7	409.8
T.P #163			1.11		411.40 ✓
⊼ #164	13.09	424.49 ✓			
735+00 ℄				11.6	
℄				11.9	412.6
735+50 ℄				10.4	
℄				10.9	413.6
736+00 ℄				8.4	
℄				8.4	416.1
736+50 ℄				6.2	
℄				5.6	418.9
737+00 ℄				1.2	
℄				1.1	420.4

STA.	+	H.I	—	ROD	ELEV
T#164		429.49 ✓			
737+50 P.C.C. Ⓑ				1.5	
℄				1.3	423.2
T.P #164			0.87		423.62 ✓
T#165	12.87	436.49 ✓			
738+00 Ⓑ				12.0	
℄				12.0	424.5
738+50 Ⓑ				10.4	
℄				10.5	426.0
739+00 Ⓑ				9.7	
℄				9.5	427.0
739+50 Ⓑ				6.7	
℄				6.5	430.0
740+00 Ⓑ				4.4	
℄				4.1	432.4
740+50 E.C. Ⓑ				1.2	
T℄				1.2	435.3 ✓
T.P #165			1.20		435.29
T#166	4.15	439.44 ✓			
741+00 Ⓑ				3.8	
℄				3.4	436.0
741+50 Ⓑ				5.0	
℄				4.5	434.9
742+00 Ⓑ				7.7	
℄				6.9	433.0

STA	+	H.I	−	ROD	ELEV
H.I #166		439.44 ✓			
742+50 ℄				9.3	
℄				8.5	430.9
743+00 ℄				10.4	
℄				9.5	429.9
743+51 56 ℄ B.C				10.8	
℄				9.8	429.6
744+00 ℄				9.0	
℄				8.2	431.2
744+49 23 ℄ E.C.				7.4	
℄				6.8	432.6
T.P #166			7.43		432.01 ✓
T #167	7.00	439.01 ✓			
745+00 ℄				6.0	
℄				5.4	433.6
745+50 ℄				4.3	
℄				3.7	435.3
746+00 ℄				4.2	
℄				3.9	435.1
746+50 ℄				5.3	
℄				4.9	434.1
747+00 ℄				7.8	
℄				7.1	431.9
747+50 ℄				11.5	
℄				10.9	428.1

STA	+	H.I	−	ROD	ELEV
℄ #167		439.01 ✓			✓
T.P #167			12.53		426.48
℄ #168	0.65	427.13 ✓			
748+00 ℄				4.6	
℄				3.4	423.7
T.P #168			12.85		414.28
℄ #169	0.11	414.39			
748+50 ℄				2.4	
℄				0.0	414.4 ✓
T.P #169			12.91		401.48
℄ #170	0.28	401.76 ✓			
749+00 ℄				6.5	
℄				3.0	398.8 ✓
T.P #170			12.30		389.46
℄ #171	2.97	392.43 ✓			
749+50 ℄				6.7	
℄				4.0	388.4
749+95 BOTTOM SMALL DRAW ℄				16.2	
750+00 ℄				12.4	
℄				14.0	378.4
T.P #171			0.32		392.11 ✓
℄ #172	12.23	404.34 ✓			
750+50 ℄				8.4	
℄				8.0	396.3
/					

STA	+	H.I	−	ROD	ELEV
B.M. #172		404.34 ✓			
T.P. #172			0.80		403.54 ✓
B.M. #173	12.83	416.37 ✓			
751+00 ⑧				10.4	
℄				9.4	407.0
751+50 ⑧				3.1	
℄				2.4	414.0
T.P. #173			0.74		415.63 ✓
B.M. #174	12.63	428.26 ✓			
752+00 ⑧				7.0	
℄				6.0	422.3
T.P. #174			0.00		428.26 ✓
B.M. #175	12.89	441.15 ✓			
752+50 ⑧				12.8	
℄				12.1	429.1
753+00 ⑧				5.7	
℄				5.2	436.0
T.P. #175			1.18		439.97 ✓
B.M. #176	13.00	452.97 ✓			
753+50 ⑧				11.6	
℄				11.6	441.40
754+00 ⑧				10.8	
℄				10.5	442.5
754+50 ⑧				9.5	
℄				9.3	443.7

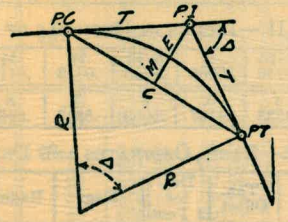
STA	+	H.I	—	ROD	ELEV
Λ^{PT} 176		452.97			
755+00 Ⓑ				10.8	
℄				10.1	442.9
755+50 Ⓑ				8.8	
℄				8.4	444.6
756+00 Ⓑ				8.2	
℄				7.6	445.4
756+50 Ⓑ				5.4	
℄				4.7	448.3
757+00 Ⓑ				4.3	
℄				3.9	449.1
757+50 Ⓑ Δ 0°25' LT.				3.7	
℄				3.6	449.4
758+00 Ⓑ				4.1	
℄				3.7	449.3
758+50 Ⓑ				4.6	
℄				4.0	449.0
759+00 Ⓑ				5.1	
℄				4.8	448.2
759+50 Ⓑ				5.6	
℄				4.9	448.1
760+00 Ⓑ				6.3	
℄				5.7	447.3
760+50 Ⓑ				6.7	
℄				6.0	447.0

STA	+	H.I	−	ROD	E.L
T#176		452.97	✓		
760+89 43 F.Pt.℗				6.7	
℄				6.2	446.8
B.M			3.82		449 .15
B.M. & TP#176			0.50		452 .47
T#177	12.54	465.01			
T.P#177			0.06		464 .95
T#178	8.44	473.39			
To NAIL ON POLE # 76918			0.94		472 .45

SET B.M ON 757+50 ℗ 70°25' LT.
ON ROCK 80' E OF 756+50

SPIKE IN POLE No 76918
CITY ELEV. 472.59 0.14 diff.

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



CURVE FORMULAS

Radius=R=$\frac{50}{\text{sin. } D/2}$ (1) Degree of Curve=D and sin. $\frac{D}{2}=\frac{50}{R}$ (2)

Tangent=T=R tan $\frac{\Delta}{2}$ (3) Length of Curve=L=$100\frac{\Delta}{D}$ (4)

Middle ordinate=M= R(1—cos. $\frac{\Delta}{2}$) (5) =R vers $\frac{\Delta}{2}$ (6)

External=E=T tan $\frac{\Delta}{4}$ (7) =R ÷ cos. $\frac{\Delta}{2}$ –R (8)=R exsec $\frac{\Delta}{2}$ (9)

Long Chord=C=2 R sin. $\frac{\Delta}{2}$ (10) Δ=Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161 +60.35 to find Sta. of P. C. and P. T. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157 +45.50. Also from (4) L=746.00 and P. T.=Sta. P. C. +L=164 +91.50.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent-offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26)$=2.16 ft.

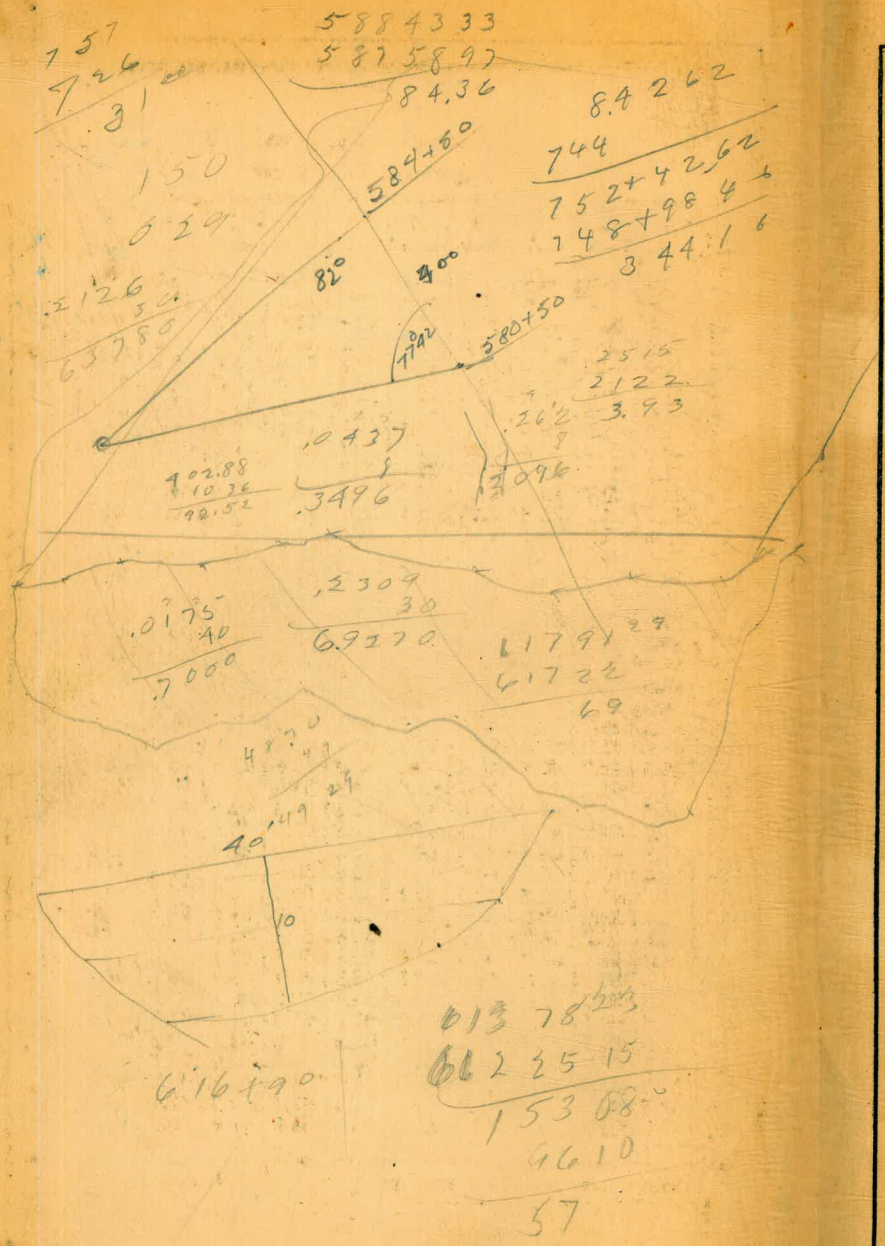
Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′ +8° 20′ ÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6 ÷8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30′.

998+16.3
994+41.4

404.9
42.2
447.10
43 56
403.54

674+85.56
4 03.54
678+89.10



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9+(20—16)÷2 or 2 ft. added to 41.9 =43.9. For slopes of 1 on 1 see inside of front cover.

MADE IN U.S.A.