#697

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 16 feet wide. Side Slopes 1 on 1.
For 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.

Elev 541

221+69.55

198+90

168+68

This Field Book is manufactured 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.

Indexed to p. 31 - 3/14/46 mcd.
" to p 90 - 4/21/46 mcd.
" p 92 (including 21-23 & 24) 2/2/47
p 44 - 3/3/47 mcd
p 70 - 3/31/47 mcd
p 78 - 8/28/47 mcd.

Index

Lake Murray

Alignment For Drainage Ditch @ 4.2% grade
Around Lake Murray.

Pt. #	Dist.	Hor ∠	Mag. Bearing	Vert ∠	H.I.	Rd.
			N 38° 00 E			
10 – 11	315'	46° 39' 30" Rt.			4.72	4.72
			N 08° 00 W			
9 – 10	151'	24° 26' Rt.			4.64	4.64
			N 33 00' W			
8 – 9	235'	34° 50' Lt.			4.83	4.83
			N 1° 00' W			
7 – 8	98'	44° 12' Lt.			4.72	4.73
			N 46° 30 E			
6 – 7	288'	10° 39' Rt.			4.72	4.73
			N 35° 30' E			
5 – 6	201'	32° 43 Lt.			4.69	4.64
			N 67° 30 E			
4 – 5	128'	13° 54 Lt.			4.83	4.83
			N 81° 05' E			
3 – 4	233'	27° 34' Lt.			4.72	4.72
			S 76° 15' E			
2 – 3	137'	10° 43' Rt.			4.64	4.64
			S 81° E			
1 – 2	139'	27° 50' Rt.			4.6	4.6
			N 71° E			
0 – 1	128'				4.6	4.6

1-29-46 - King - Klinger - Ward - Leonard

1

U.S.G.S. Datum F.S.J. 1/26/46

Elev.

566.9

566.3

566.0

565.5

565.5 - Correct 565.3 on Sta. 13+00

565.0

564.6

564.3

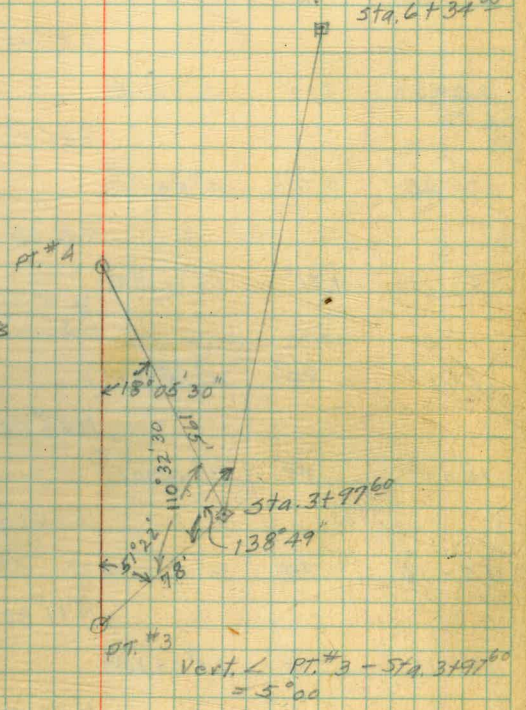
563.8

563.6

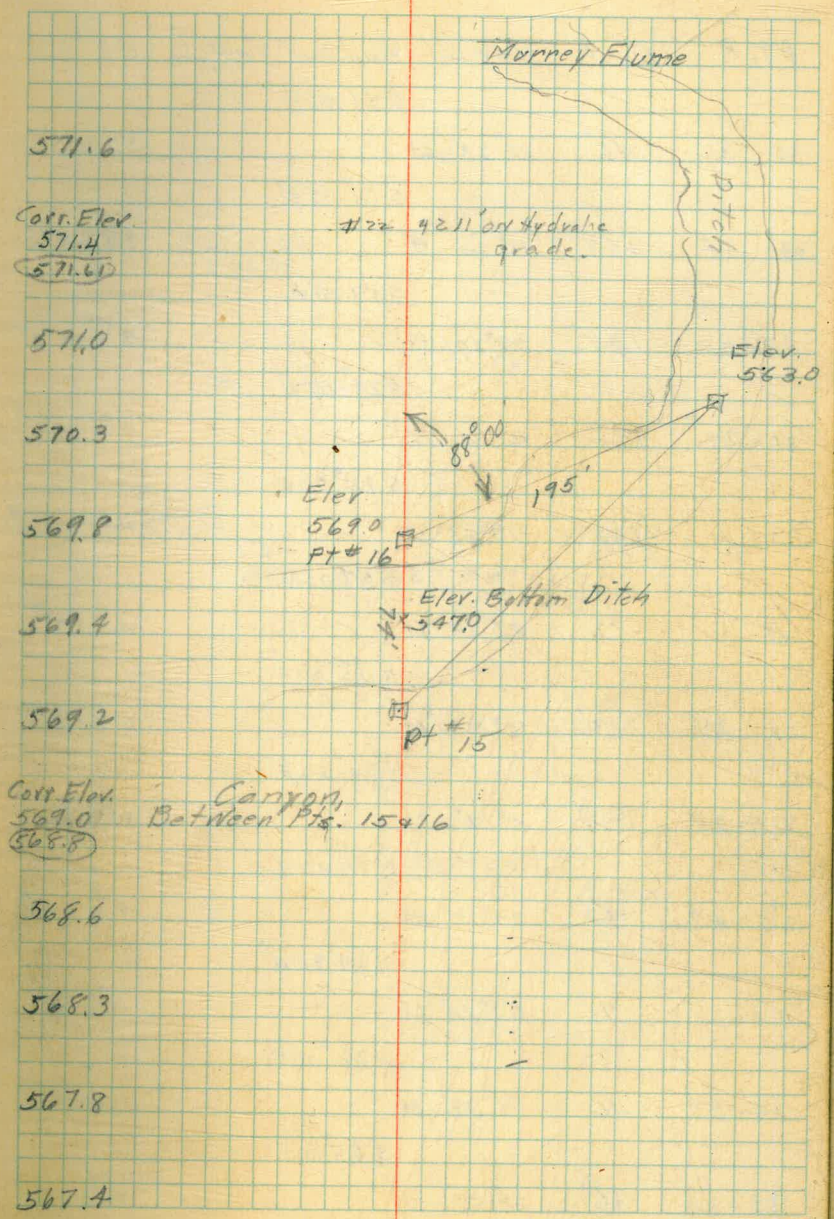
563.3

Elev. @ 00 = 568.00

Hub & tack



Pt #	Dist	Hor. ∠	Mag. Bear.	Vert. ∠	HI	Rod
			N 87° 30 E			
22-23	73'	31° 22' 30" Rt			4^{70}	4^{70}
			N 56° 00 E			
21-22	316'	5° 12' Rt			4^{83}	4^{83}
			N 51° 45 E			
20-21	331'	5° 04' Rt			4^{83}	4^{83}
			N 47° 30 E			
19-20	270'	4° 50' Rt			4^{83}	4^{83}
			N 42° 00' E			
18-19	171'	39° 16' 30" Rt	N 2° 39 E. EE. N 2° 30' W		4^{83}	4^{83}
17-18	80'	36° 25' 30" Rt			4^{86}	4^{86}
			N 33° 00 W			
16-17	89'	76° 56' 30" Lt			4^{74}	4^{74}
			N 44° 00 E			
15-16	74'	36° 19' Lt			4^{83}	4^{83}
			N 81° 00 E			
14-15	138'	28° 03' 30" Rt			5^{-}	5^{-}
			N 52 00 E			
13-14	263'	10° 17' Rt			4^{9}	4^{9}
			N 41 00 E			
12-13	174'	16° 30' 30" Rt			4^{9}	4^{9}
			N 24 30' E			
11-12	252'	13° 52' Lt			4^{91}	4^{91}
			N 38° 00 E			



Pt. #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	HI	Rod
			S 51° 00' W			
34 - 35	146'	20° 28' Lt			5.0	5.0
			S 71° 30' W			
33 - 34	152'	15° 20' Rt			4.83	4.83
			S 57 00 W			
32 - 33	135'	29° 20' 30" Rt			4.83	4.83
			S 28° 00' W			
31 - 32	126'	16° 46' Lt			4.87	4.87
			S 44° 00 W			
30 - 31	137'	77° 36 Lt			4.74	4.74
			N 57 00 W			
29 - 30	82'	82° 38 Lt			4.9	4.9
			N 25 00 E			
28 - 29	213'	10° 19' 30" Lt			4.74	4.74
			N 34° 30 E			
27 - 28	145'	5° 17° Rt			4.66	4.66
			N 30° 00 E			
26 - 27	94'	54° 20' Rt			4.9	4.9
			N 24° 30 W			
25 - 26	71'	51° 24' Lt			4.75	4.75
			N 26° 30 E			
24 - 25	46'	89° 33' Lt			4.56	4.56
			S 65° 00 E			
23 - 24	76'	28° 57' Rt			4.64	4.64
			N 87° 30 E			

574.1

574.2 Correct Elev 573.80

573.9

573.7

~~573.4~~ 572.4 err

573.1

573.0

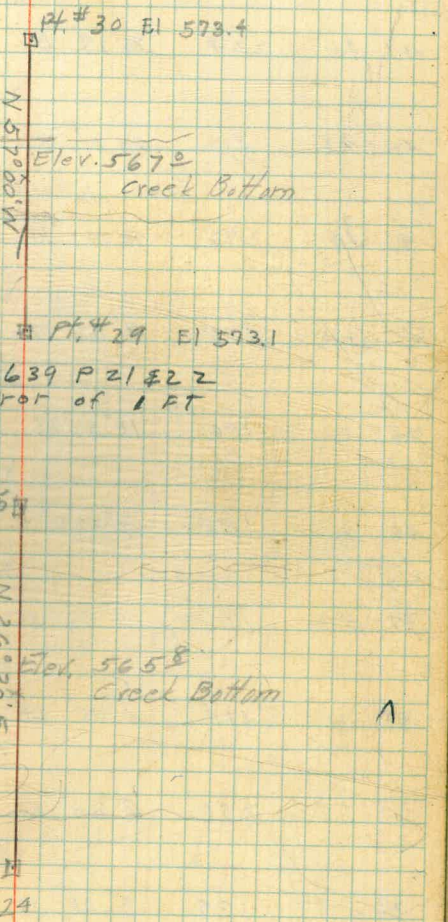
572.5

572.2

572.0

571.9

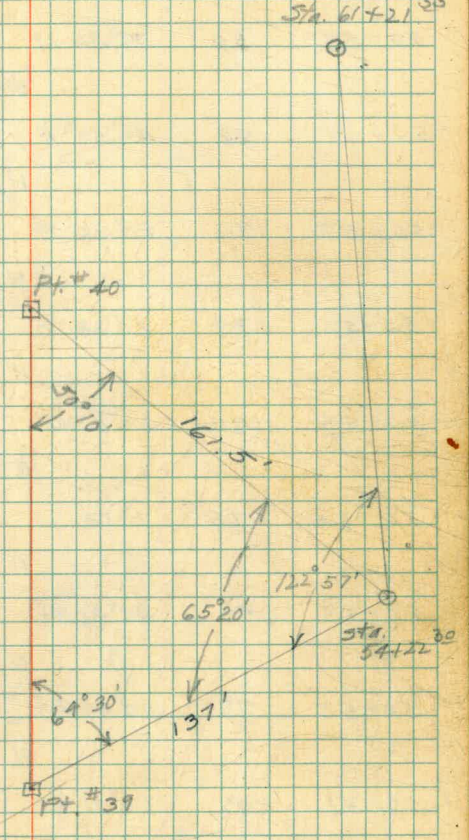
571.8



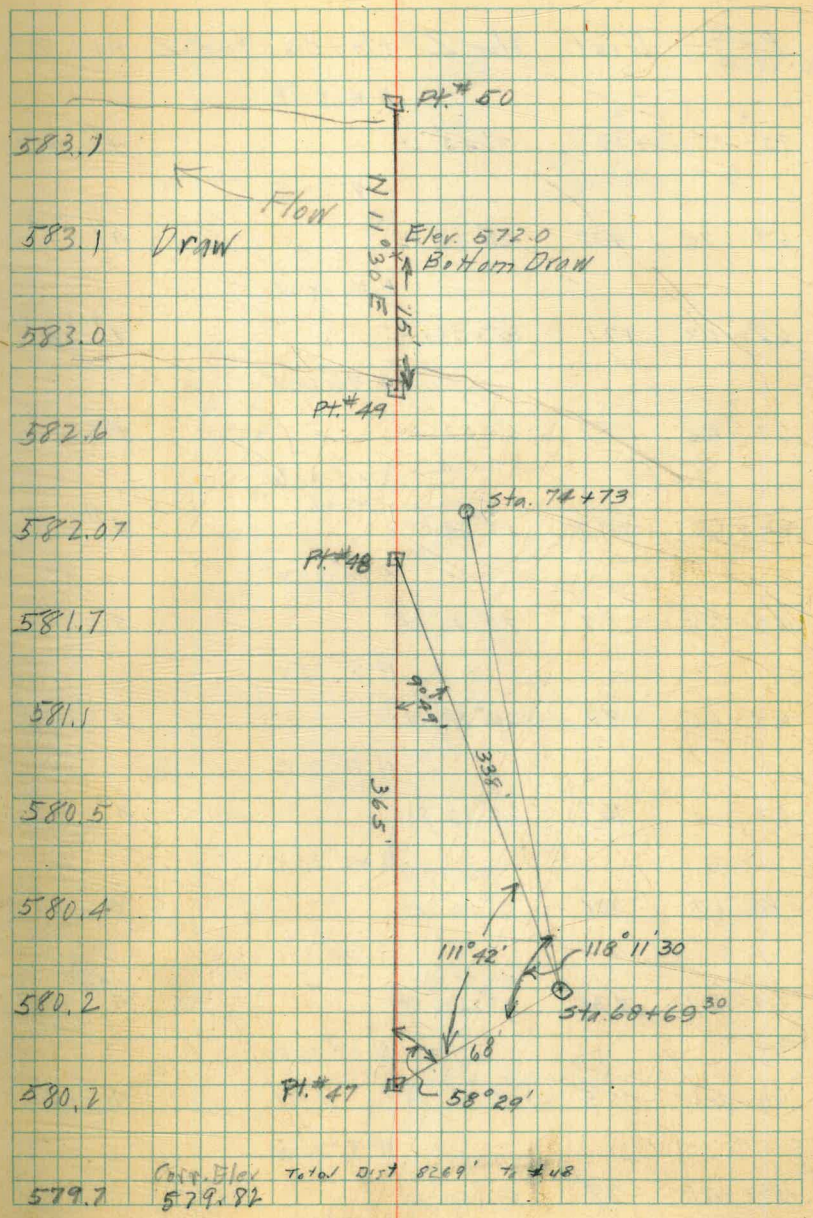
See BK 639 P 21 & 22
error of 1 FT

Pt. #	Dist	Hor. ∠	Mag. Bear.	Vert. ∠	HI	Rod
			N 4° 30' W			
46 - 47	250'	64° 09' Rt			4.79	4.79
			N 69° 30' W			
45 - 46	224'	76° 29' Lt			4.83	4.87
			N 6° 00 E			
44 - 45	81'	55° 48' Rt			4.79	4.79
			N 50 00W			
43 - 44	296'	40° 00' 30" Rt			4.83	4.83
			S 89° 30' W			
42 - 43	178'	9° 02 Lt			4.91	4.91
			N 82° 30 W			
41 - 42	106'	11° 32' Rt			4.83	4.83
			S 86° 30 W			
40 - 41	158'	14° 37' 30" Rt			4.79	4.79
			S 72° 00 W			
39 - 40	163'	15° 32' Rt			4.75	4.75
			S 57° 30 W			
38 - 39	114'	5° 48' Lt			4.80	4.80
			S 63° 30 W			
37 - 38	306'	6° 35' Rt			4.83	4.83
			S 56° 30' W			
36 - 37	139'	3° 01' Lt			5.81	5.87
			S 59° 30 W			
35 - 36	182'	7° 41' Rt			4.91	4.91
			S 51° 00' W			

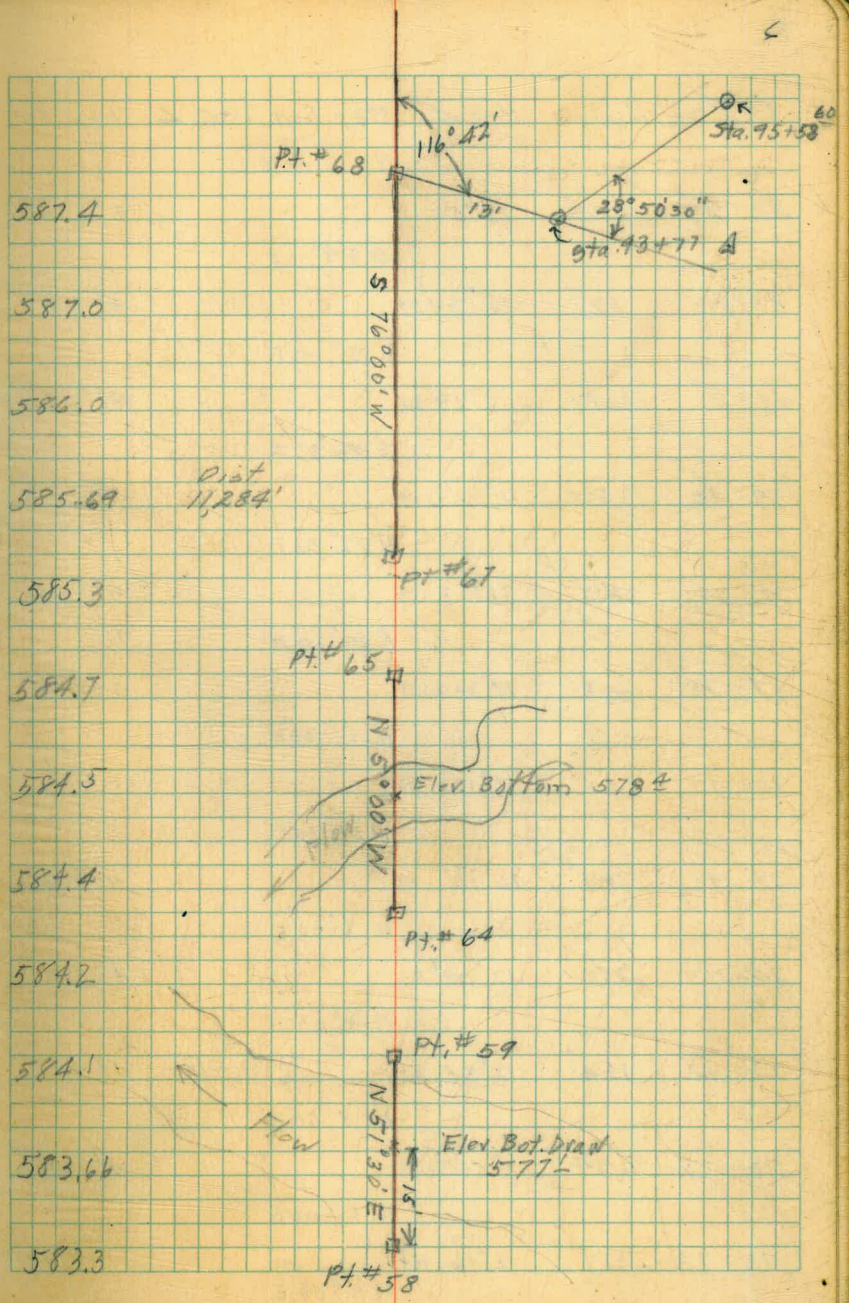
578.9
578.3
577.9
577.1
Corr. Elev. 577.02
576.86 Sta. 60+00
576.5
576.3
576.0
575.6
575.4
574.8
574.5



Pt. #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	H.I	Rod
			N 51° 30 E			
58 - 59	35'	79° 35' Lt			4.75	4.75
			S 48° 00 E			
57 - 58	88'	45° 59' Rt			4.66	4.66
			N 85° 30 E			
56 - 57	194'	20° 05' Rt			4.91	4.91
			N 65° 00 E			
55 - 56	239'	21° 38' Rt			5.0	5.0
			N 43° 00 E			
54 - 53	199'	32° 07' 30" Rt			4.91	4.91
			N 11° 30 E			
53 - 54	275'	7° 54' Lt			4.83	4.83
			N 19° 00 E			
52 - 53	296'	42° 48' Rt			4.75	4.75
			N 24° 00 W			
51 - 52	79'	30° 43' Rt			4.91	4.91
			N 54° 00 W			
50 - 51	107'	65° 31' Lt			4.83	4.83
			N 11° 30 E			
49 - 50	21'	76° 26' Lt			4.66	4.66
			N 87° 00 E			
48 - 49	169'	59° 44' Rt			4.68	4.68
			N 28° 00 E			
47 - 48	365'	32° 47' Rt			4.79	4.79
			N 4° 30 W			

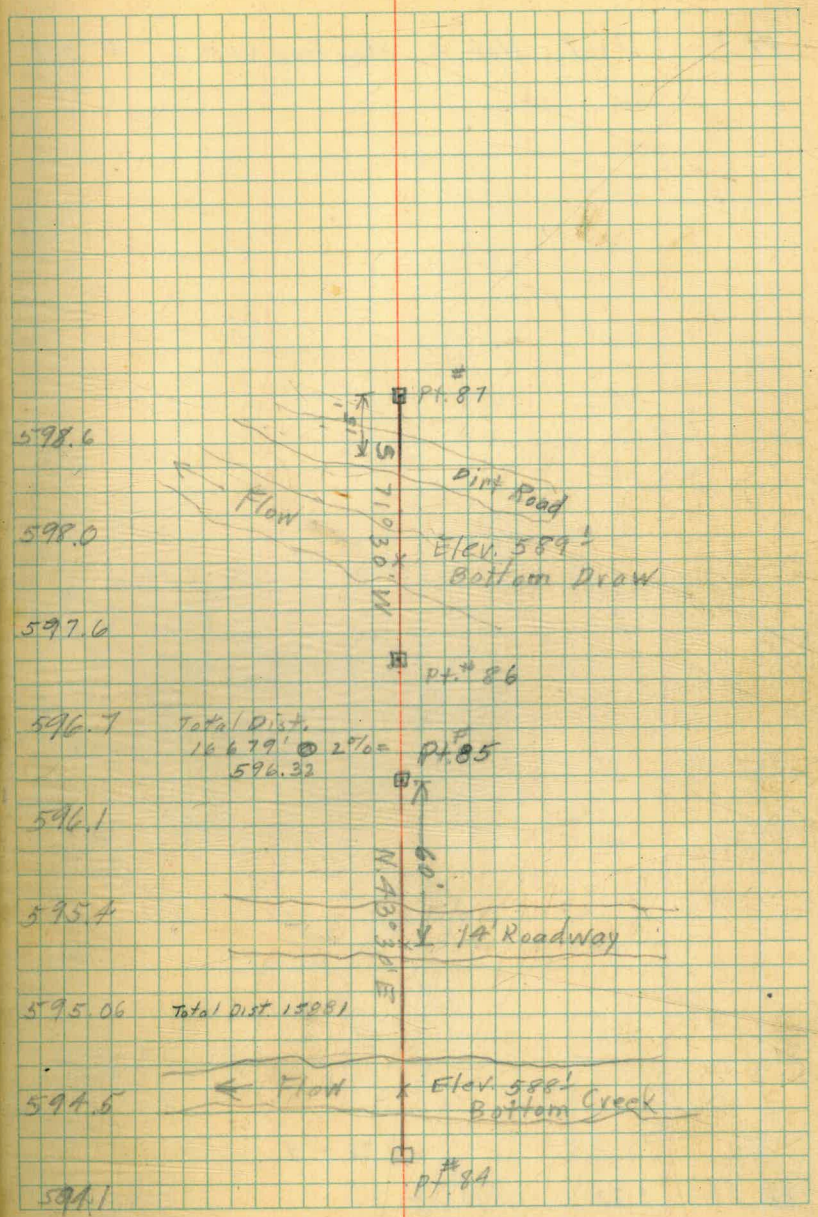


Pt. #	Dist	Hor. ∠	Mag. Bear.	Vert. ∠	HI	Rod
			N 4° 00' E			
70 - 71	195	3° 44' Lt.			4.91	4.91
			N 8° 00' E			
69 - 70	478'	22° 44' Rt.			4.91	4.91
			N 16° 00' W			
68 - 69	171'	87° 57' 30" Rt.			4.90	4.90
			S 76° 00' W			
67 - 68	197'	9° 55' 30" Rt.			4.83	4.83
			S 66° 30' W			
66 - 67	297'	17° 14' (Rt) LT. EE			4.91	4.91
			S 84° 30' W			
65 - 66	67'	89° 46' Lt.			5.0	5.0
			N 5° 00 W			
64 - 65	88'	76° 29' Lt.			5.10	5.10
			N 71° 00' E			
63 - 64	67'	28° 13' Rt.			4.91	4.91
			N 42° 00 E			
62 - 63	91'	7° 13' Rt.			4.80	4.80
			N 34° 30' E			
61 - 62	238'	27° 21' 30" Rt.			4.75	4.75
			N 08° 00' E			
60 - 61	185'	16° 24 Rt.			4.83	4.83
			N 9° 00' W			
59 - 60	77'	60° 50' Lt.			4.75	4.75
			N 51° 30' E			

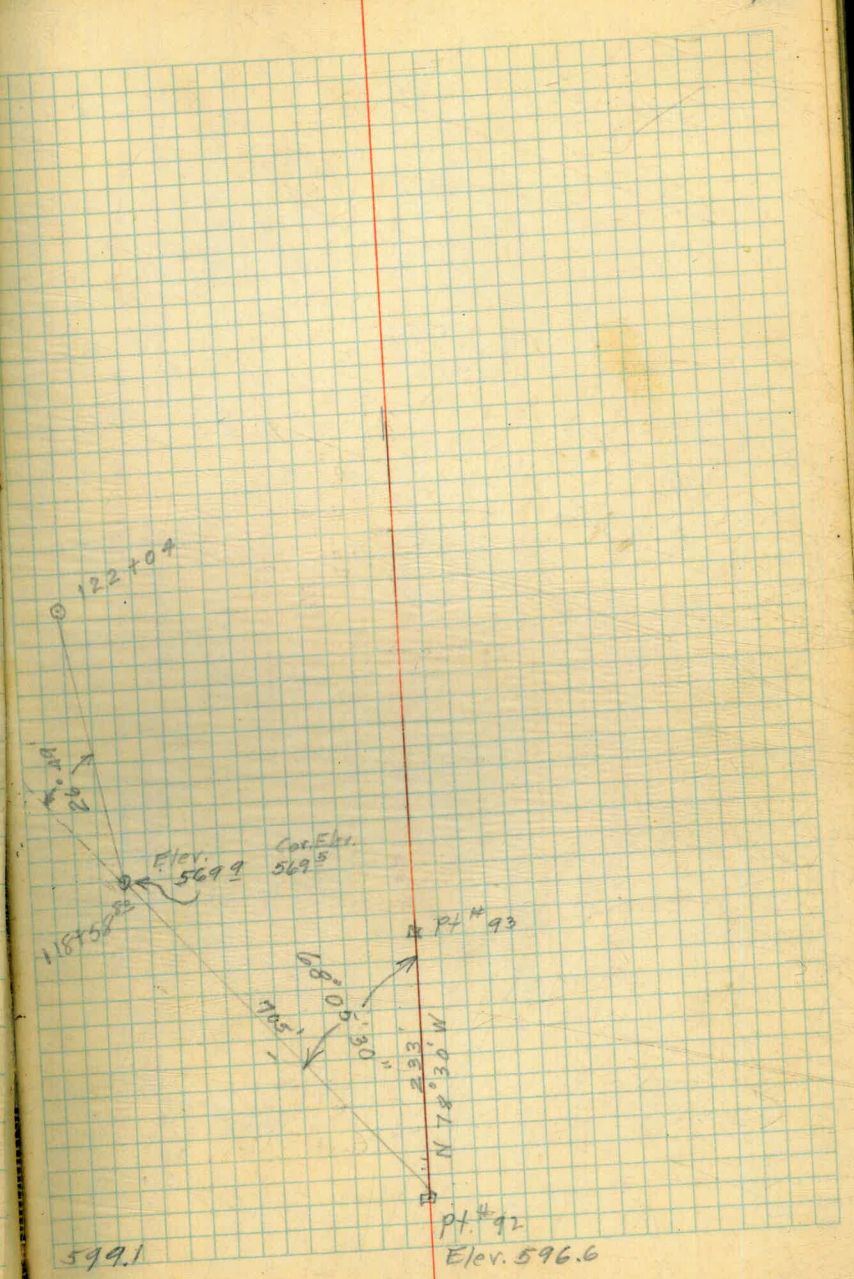


Pt. #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	HI	Rod	
			N 75° 00' E				
~~82-83~~	633'	15°57' Lt			4.87	4.87	593.8
			S 89° 00' E				
81-82	171'	18°34' Rt			4.75	4.75	592.5
			N 72° 00' E				
80-81	287'	22°29' Lt			4.75	4.75	592.1
			S 85° 30' E				
79-80	384'	16°26'30" Rt			4.83	4.83	591.5
			N 77° 30' E				
78-79	282'	18°17' Rt			4.75	4.75	590.7
			N 59° 30' E				
77-78	108'	17°33'30" Rt			4.75	4.75	590.2
			N 42° 30' E				
76-77	64'	18°12' Rt			5.04	5.09	589.9
			N 23° 30' E				
75-76	161'	16°12' Rt			4.75	4.75	589.8
			N 7° 30' E				
74-75	385'	12°08' Rt			4.91	4.91	589.5
			N 4° 00' W				
73-74	124'	12°55' Lt			4.97	4.97	588.7
			N 8° 30' E				
72-73	194'	2°56'30" Rt			4.75	4.75	588.5
			N 6° 00' E				
71-72	317'	2°16' Rt			4.75	4.75	588.1
			N 4° 00' E				

Pt. #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	Hi. Rod
			N 66° 30' W		
91 - 92	304'	16° 38' Rt			4.85 4.85
			N 82° 30' W		
90 - 91	192'	13° 27' Lt.			4.59 4.59
			N 67° 30' W		
89 - 90	419'	24° 34' 30" Rt			4.87 4.87
			S 86° 30' W		
88 - 89	310'	12° 16' Lt			4.87 4.87
			N 80° 30' W		
87 - 88	333	27° 33' Rt			5.0 5.0
			S 71° 30 W		
86 - 87	155'	48° 48' Lt			4.91 4.91
			N 59 30 W		
85 - 86	264'	102° 07' Lt			5.0 5.0
			N 43° 30' E		
84 - 85	206'	44° 43' Lt			5.04 5.02
			N 87 00 E		
83 - 84	173'	11° 59' 30" Rt			4.75 4.75
			N 75° 00' E		



Pt. #	Dist	Hor. ∠	Mag. Bear	Vert. ∠	HI	Rod
			N 78°30'W			
92-93	233'	12°19'30"		5°	5°	
			N 66°30'W			



Alignment of ditch around North side of Morton Lake +0.2 % Grade

PT #	DIST	HOR ∠	MAG Bear	VERT ∠	HI	Rod
			N12° 30' E			
11-12	117'	17° 04' LT			4.75	4.75
			N29° 00' E			
10-11	145'	53° 00' RT			4.60	4.60
			N25° 00' W			
9-10	41'	68° 12' RT			4.83	4.83
			S85° 30' W			
8-9	207'	32° 43' 30" LT			4.83	4.83
			N60° 00' W			
7-8	211'	24° 00' LT			4.95	4.95
			N36° 30' W			
6-7	107'	12° 14' LT			4.90	4.90
			N24° 00' W			
5-6	293'	17° 02' LT			4.72	4.72
			N6° 30' W			
4-5	117'	22° 42' LT			4.83	4.83
			N16° 00' E			
3-4	109'	31° 43' LT			5.00	5.00
			N47° 30' E			
2-3	80'	11° 31' LT			4.64	4.64
			N59° 30 E			
1-2	171'	18° 51' LT			4.64	4.64
			N 78° 0' E			
0-1	71'	137° 24' RT			4.10	4.10

Cool
2-4-46 showers A.M cloudy P.M

Nelson Notes
King π
Leonard ϕ

91

Elev.

566.4

566.1

565.85

565.4

564.9

564.7

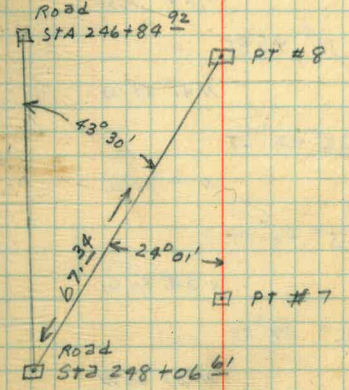
564.1

563.9

563.6

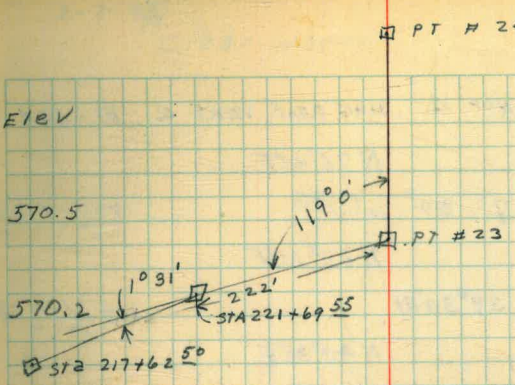
563.5

563.1



Elev 0+00 = 563.00 0+00 on axis of dam sta 258+37 87

PT #	dist	HOR <	MAG Bear	Vert <	HI	Rod	Elev
			N 67°00'E				
23-24	173'	69° 13' RT			4.91	4.91	570.5
			N 2° 30' W				
22-23	315'	35° 36' RT			4.86	4.86	570.2
			N 37° 30' W				
21-22	187'	8° 05' LT			4.83	4.83	
			N 29° 30' W				
20-21	114'	11° 45' RT			5.00	5.00	569.2
			N 41° 30' W				
19-20	244'	22° 02' LT			4.91	4.91	568.9
			N 19° 00' W				
18-19	98'	5° 46' RT	N 19°		4.83	483	568.4
			N 24° 30' W				
17-18	388	2° 38° RT			5.00	5.00	568.2
			N 27° 30' W				
16-17	189'	40° 31' LT			5.00	5.00	567.5
			N 13° 00' E				
15-16	81'	8° 54' RT			4.75	4.75	567.1
			N 5° 00' E				
14-15	108'	34° 51' RT			4.85	4.85	566.9
			N 31° 00 W				
13-14	79'	25° 55' LT			4.64	4.64	566.70
			N 5° 00' W				
12-13	87'	16° 07' 30" LT			4.83	4.83	566.5



569.53 + 8.84 = 578.37 = 578.4 STA 226+00 Rd

2-7-46
Clear-Warm

Nelson π
Rice Notes 13
Leonard ϕ

Point #	distance	Hor ∠	MAG BEAR	VERT ∠	HI	Rod	Elev.
			N 76°45'E				
35-36	385.	7° 02'	Lt. EE		4.90	4.90	575.3
			N 83°30'E				
34-35	150	39°30'Rt			4.95	4.95	574.5
			N 43°30'E				
33-34	107	43° 08'	Lt. EE		5.16	5.16	574.2
			N 86°0'E				
32-33	256	30° 10' Lt.			5.03	5.03	574.0
			S 62°0'E				
31-32	214.	62° 32' Rt			5.27	5.27	573.5
			N 54°0'E				
30-31	78.	78° 04' Rt			5.10	5.10	573.1 Dry Creek → 30+36
			N 24°0'W				
29-30	182.	88° 47' Lt.			4.95	4.95	572.9 2/7/46 Start
			N 64°30'E				
28-29	152.	61° 55' Rt			4.65	4.65	572.5
			N 2°00'E				
27-28	83'	89° 25' Rt			4.92	4.92	572.2 dry creek → 27+65
			N 87°00'W				
26-27	240'	17° 04 Lt			4.83	4.83	572.0 - 0.9 = 571.1 = 571.0 S+2 217+00 Rd
			N 70°0'W				
25-26	292'	25° 43' Lt			4.95	4.95	571.55
			N 45°0'W				
24-25	231'	111° 42' Lt			4.91	4.91	571.0

2-8-46
clear warm

Nelson T
Rice Notes
Leonard Φ

Point #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	H.I.	Rod
	see page #16					
			N19°30'W			
47-48	115	21°40' Lt.			4.88	4.88
			N 9°0'E			
46-47	253	26°39' Lt.			4.92	4.92
			N35°0'E			
45-46	230	16°44 Lt			5.07	5.07
			N51°30'E			
44-45	376	56°73' Lt.			5.10	5.10
			S71°30'E			
43-44	490	25°50' Lt.			5.05	5.05
			S46°0'E			
42-43	390	5°11' Lt.			4.98	4.98
			S41°0'E			
41-42	266	3°14' Rt.			5.00	5.00
			S46°0'E			
40-41	382	53°04' Rt.			4.98	4.98
			N82°30'E			
39-40	125	72°19'30" Rt.			4.88	4.88
			N10°30'E			
38-39	320	4°24' Lt.			4.97	4.97
			N15°0'E			
37-38	233	23°50' Lt.			4.90	4.90
			N38°30'E			
36-37	295	37°29'Lt.			5.06	5.06

Elev.

581.25 corrected elev — 2/8/46 start

581.8 — 9962' total dist. 18.924 total rise
563.00 + 18.924 = 581.924 ELEV.
581.92 + 3.20 = 585.12 = 584.2 Elev of Sta 156+00 Road

581.3

580.8

580.0 - 12.12 = 567.88 = 567.2 Elev of 168+68 60

579.3

578.5

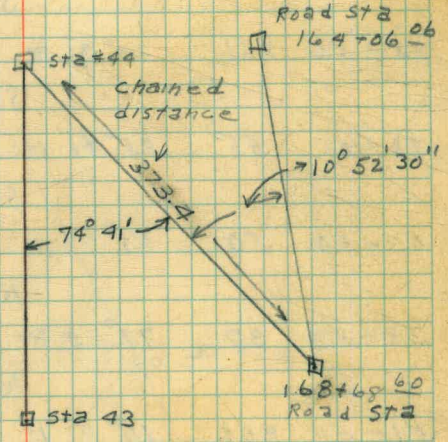
578.0

577.2

577.0

576.4

575.9



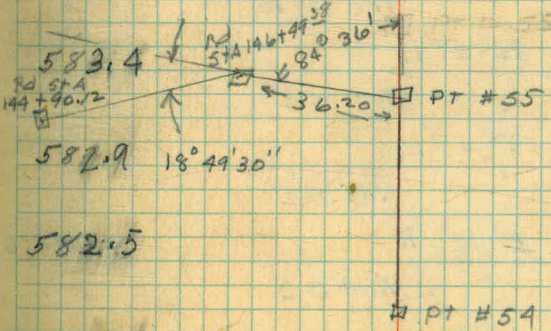
Point #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	H.I.	Rod	Elev.
59-60							
58-59		see page 16					
57-58							
			S 39° 0' E				
56-57	84'	9° 08' 30" Lt.			4.89	4.89	583.7
			S 31° 30' E				
55-56	261	23° 31 Rt.			5.02	5.02	583.5
			S 55° 0' E				
54-55	55	25° 41' Lt.			4.88	4.88	583.0
			S 28° 0' E				
53-54	50	81° 29' Rt.			5.13	5.13	582.9
			N 69° 0' E				
52-53	37	78° 23' Rt.			5.05	5.05	582.8
			N 9° 0' W				
51-52	206	10° 7' Lt.			4.90	4.90	587.7
			N 1° 0' E				
50-51	249	27° 50' Lt.			5.08	5.08	587.0
			N 31° 30 E				
49-50	94	65° 05' Rt.			4.92	4.92	581.8
			N 36° 0' W				
48-49	68	22° 37' Lt.			4.92	4.92	581.6

dry creek → 52+20

2-8-96
clear-warm

Nelson ↑
Rice Notes
Leonard ϕ

Point #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	H.I.	Rod.	Elev.
			N 21°30'E				
58–59	160'	1° 21' Lt.			5.05	5.05	585.9
			N 22°0'E				
57–58	332'	23° 17' Lt.			4.92	4.92	585.6
			N 45°30'E				
56–57	240'	75° 45' Lt.			5.03	5.03	584.9
			S 58°30'E				
55–56	77'	26°59' Lt.			4.90	4.90	584.4 corrected elev
			S 32°0'E				
54–55	276'	13° 0' Rt.			4.75	4.75	584.3 + 5.10 = 589.4 = 588.9 sta 146+49 38 Rd. .5 Low
			S 45°E				
53–54	134'	68° 33' Rt.			4.75	4.75	583.7
			N 66°30'E				
52–53	24'	74° 42' Rt.			4.75	4.75	583.5 Dry Creek ⟹ 52+10
			N 8°0'W				
51–52	230'	11° 03' Lt.			4.81	4.81	583.4
			N 3° 0'E				
50–51	240'	23°37'30" Lt.			4.82	4.82	582.9
			N 26°0'E				
49–50	92'	57°58' Rt.			4.96	4.96	582.5
			N 31°30'W				
48–49	76'	11°37' Lt.			5.08	5.08	582.3
			N 20°0'W				
47–48	116'	28°54' Lt.			4.92	4.92	582.1 - CO



Point #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	H.I.	Rod
			N 20° 30' E			
70–71	192'	19° 37' Lt.			4.82	4.82
			N 40° 0' E			
69–70	64'	45° 02' Lt.			4.87	4.87
			N 85° 0' E			
68–69	98'	31° 17' Lt.			4.94	4.94
			S 63° 30' E			
67–68	136'	66° 39' Rt.			4.98	4.98
			N 50° 0' E			
66–67	50'	84° 18' Rt.			5.01	5.01
			N 34° 30' W			
65–66	64'	1° 55' Rt.			4.97	4.97
			N 37° 30' W			
64–65	215'	16° 54' Lt.			5.02	5.02
			N 19° 30' W			
63–64	100'	26° 59' Lt.			5.15	5.15
			N 7° 30' E			
62–63	350'	7° 57' Lt.			5.12	5.12
			N 15° 30' E			
61–62	290'	2° 12' Rt.			5.06	5.06
			N 14° 0 E			
60–61	189'	19° 36' Lt.			5.09	5.09
			N 32° 30' E			
59–60	173'	12° 16' Rt.			5.13	5.13

2/9/46
clear–warm

Nelson
Rice
Leonard

Notes
Rod

17

Elev.

589.7

589.4

589.2 − 5.20 = 589.0
= 583.9 Sta 126+00.33

589.0 Start 2-11-46

588.8

588.7

588.5

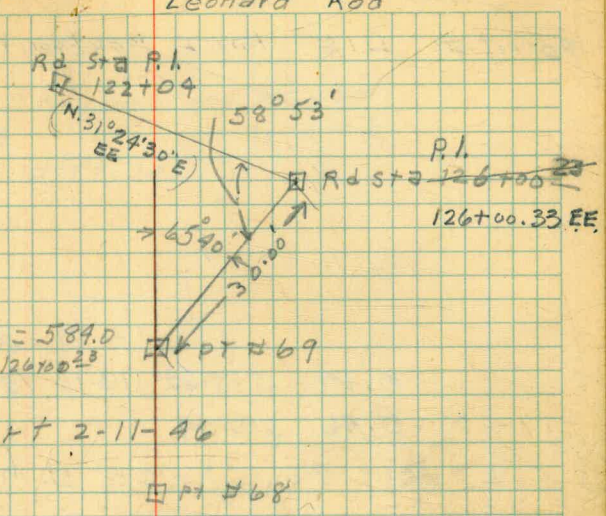
588.1

587.9

587.2 + 3.1 = 590.3 = 590.2 Elev Sta 133+00

586.6

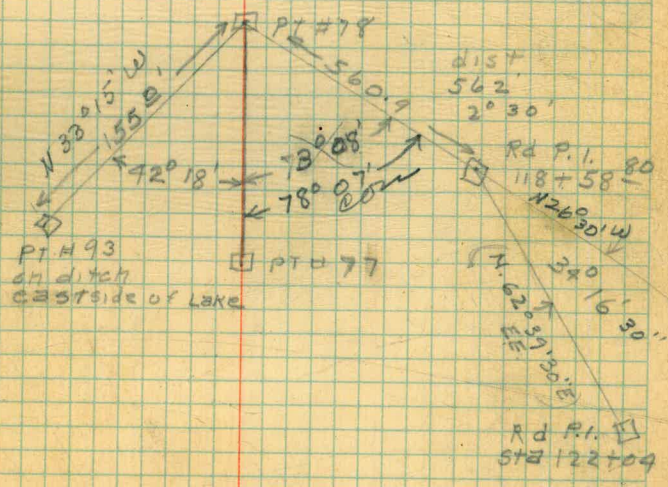
586.2



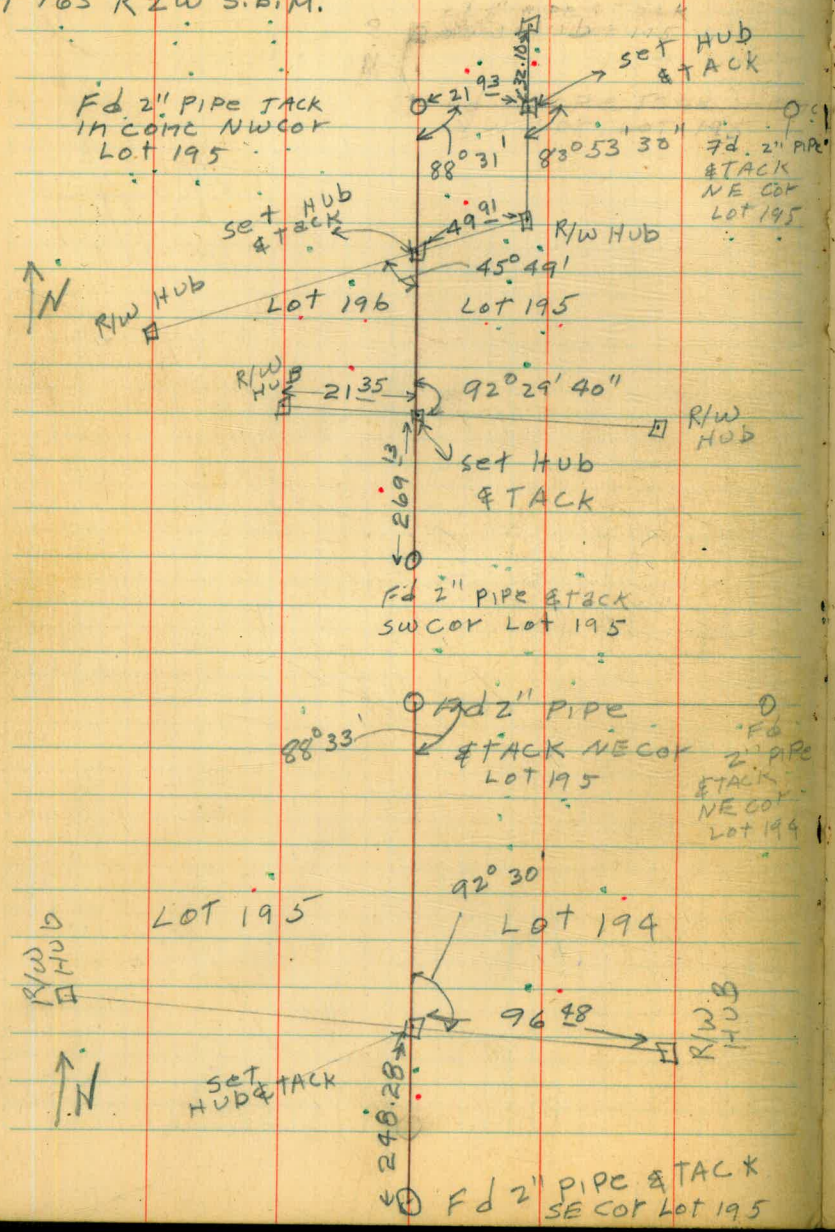
2-11-46 Cool Cloudy Rain A.M.

Nelson π
Rice Notes 18
Leonard Rod

Point #	Dist.	Hor. ∠	Mag. Bear.	Vert. ∠	H.I.	Rod	Elev.
							9.85 Reading on PT #78
							3.98 " on Pt #93
							5.87 diff. in elev.
			12.99	566.69 -	B.M. 566.23		
	0.19	579.63	13.10	579.47			
	0.46	592.54			592.08		
Levels To Check B.M.							
			S75°0'E				
77-78	205'	98°19' Rt.			4.93	4.93	592.1
			N7°0'E				
76-77	154'	11°43' Lt			5.03	5.03	591.7
			N18°0'E				
75-76	185'	17°0' Lt			5.00	5.00	591.4
			N35°0'E				
74-75	205'	7°57' Lt.			4.77	4.77	591.0
			N43°0'E				
73-74	174	13°20'30" Lt.			5.00	5.00	590.6
			N56°0'E				
72-73	150'	52°12' Rt.			4.97	4.97	590.2
			N5°0'E				
71-72	101'	16°10' Lt			5.08	5.08	589.9



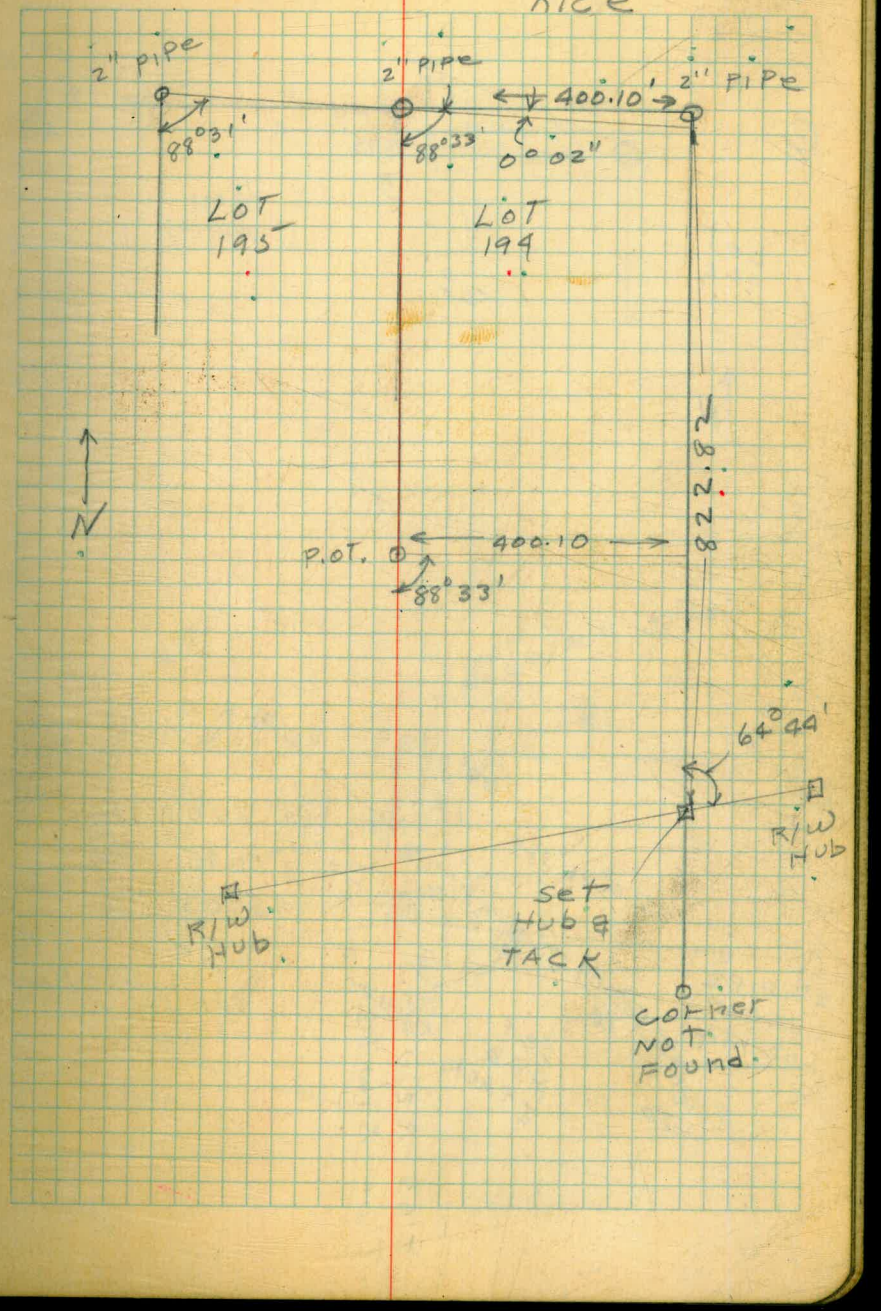
Property corner Ties TO R/W Line
around Murray lake SECTION 12
T 16S R 2W S.B.M.



6-11-46
Hot-dry

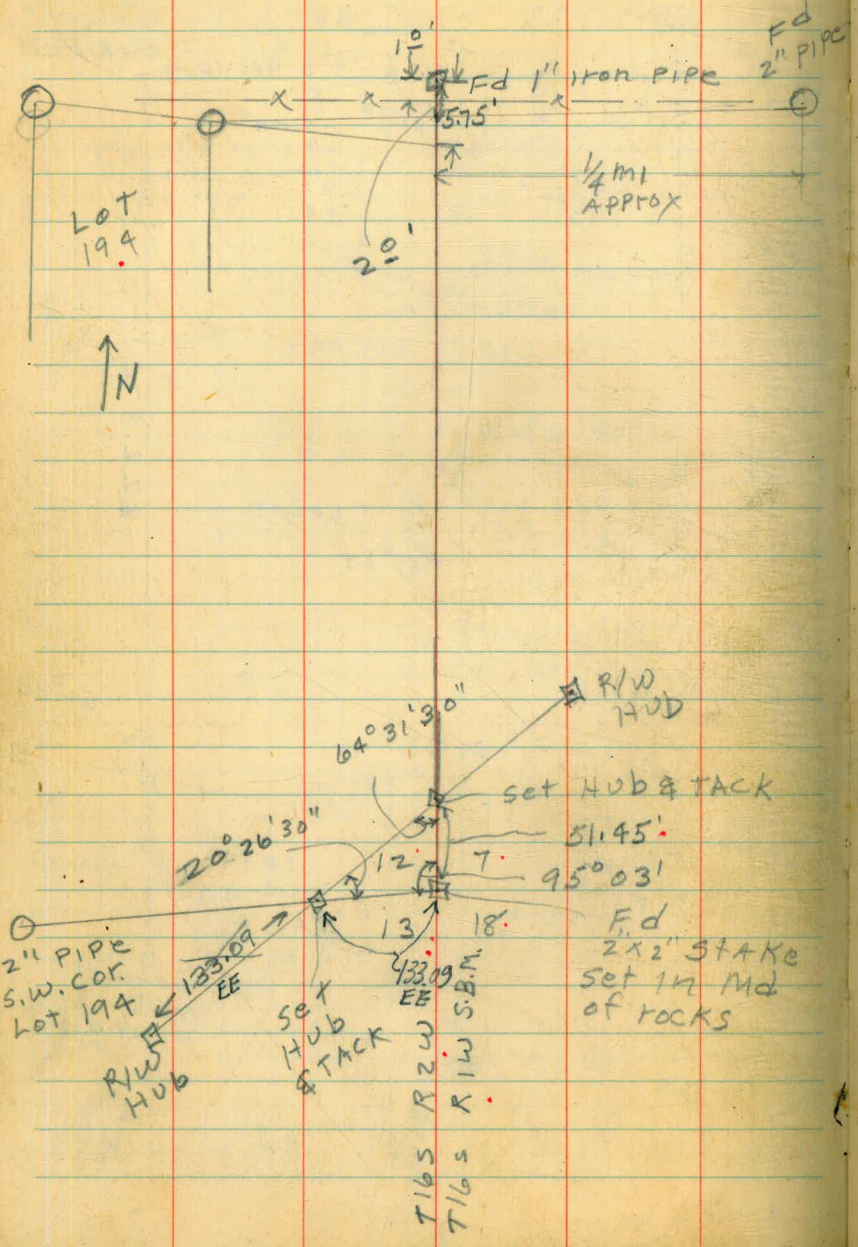
Nelson
Leonard
Rice

22.



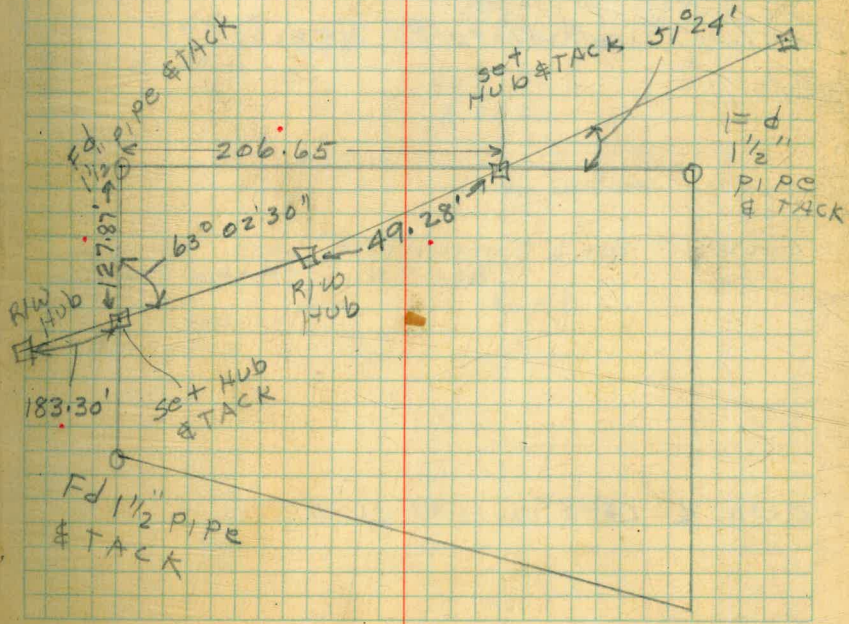
6-12-46
Hot-dry

Nelson
Leonard
Rice



6-13-46
Hot dry

Nelson
Leonard
Rice



R/W line west side Lot 98
La Mesa Colony – S.H. Grove
Alignment Road to Tr. Plant from (owner)
Murray BLVD via Kiowa drive.

END
6+95.40 – North prop. Line Lot 98

6+87 & cross ROAD 10' wide

Note see page
41 & 42 for cross sections

2+05 & cross ROAD 10' wide

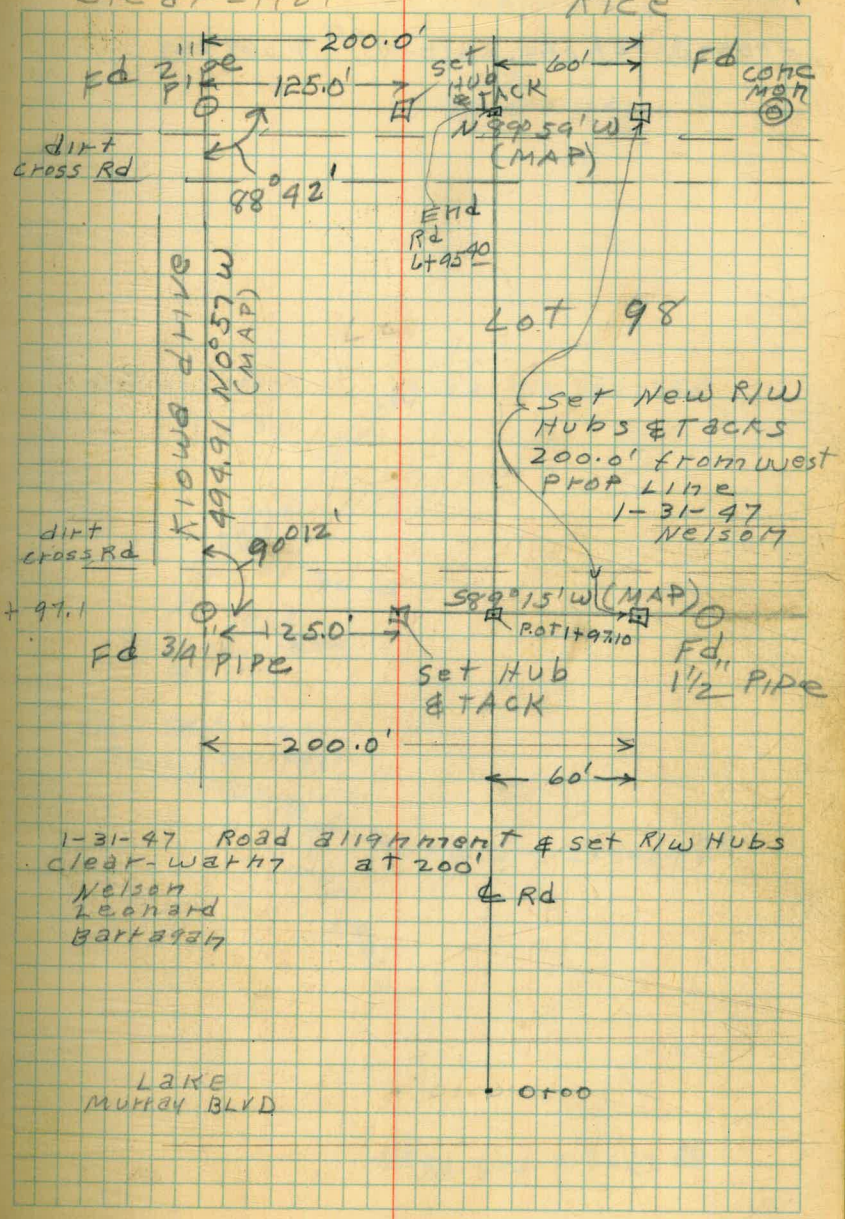
P.O.T
1+97.10 south property line Lot 98

0+00 & Lake Murray BLVD

6-11-46
clear-hot

Nelson, Leonard
Rice

24



Murray Lake

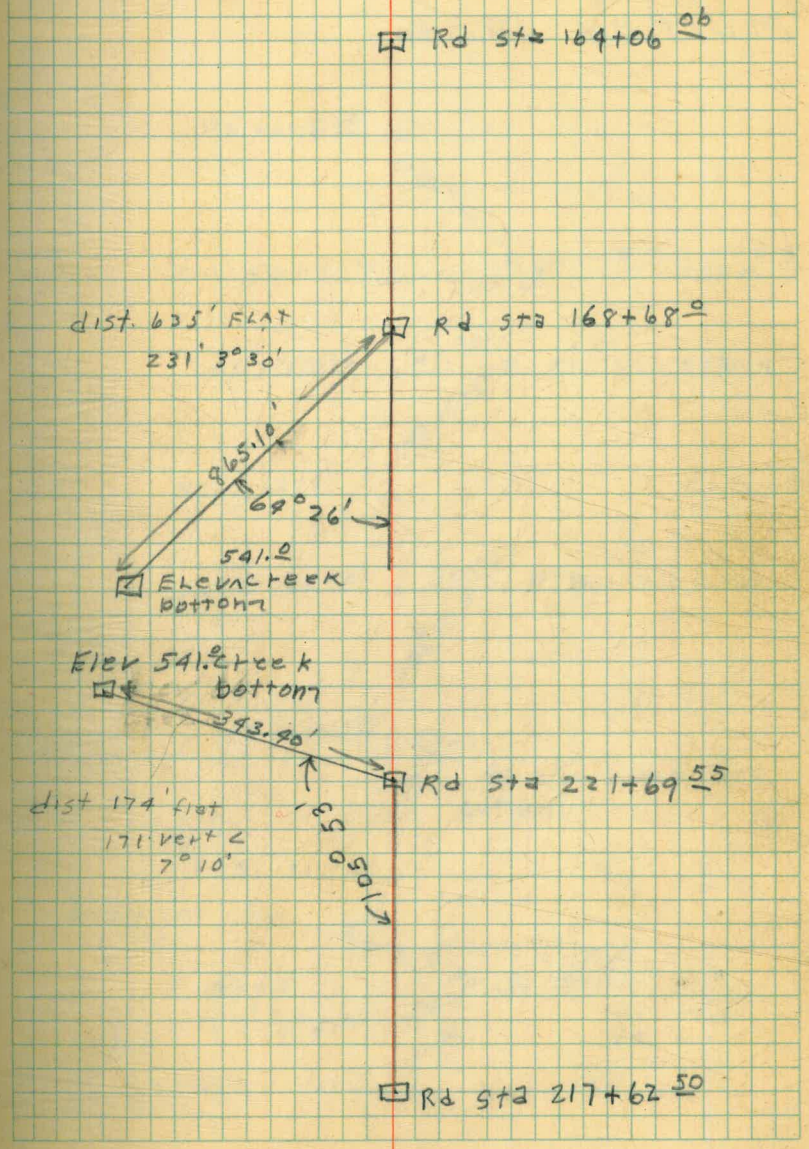
Ties to Elev 541.00 creek bottoms

from △ Stations: 221+69.55 & 168+68

2-9-46 clear
Warm

Nelson π
Rice Notes
Leonard ϕ

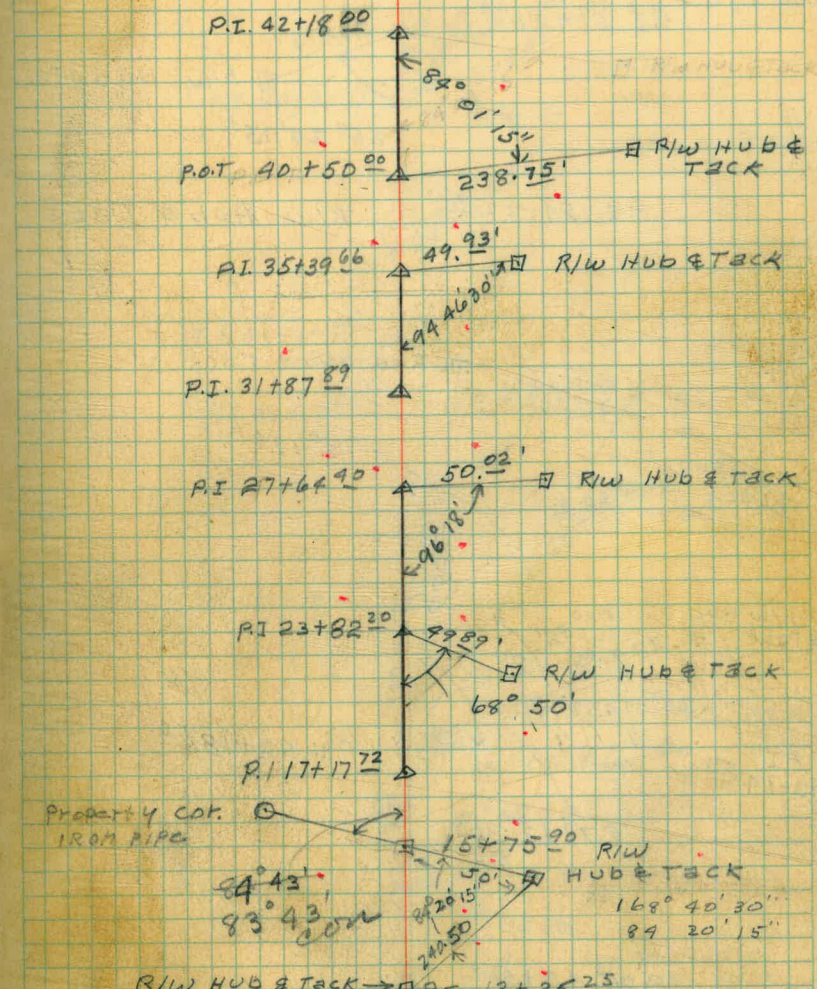
25

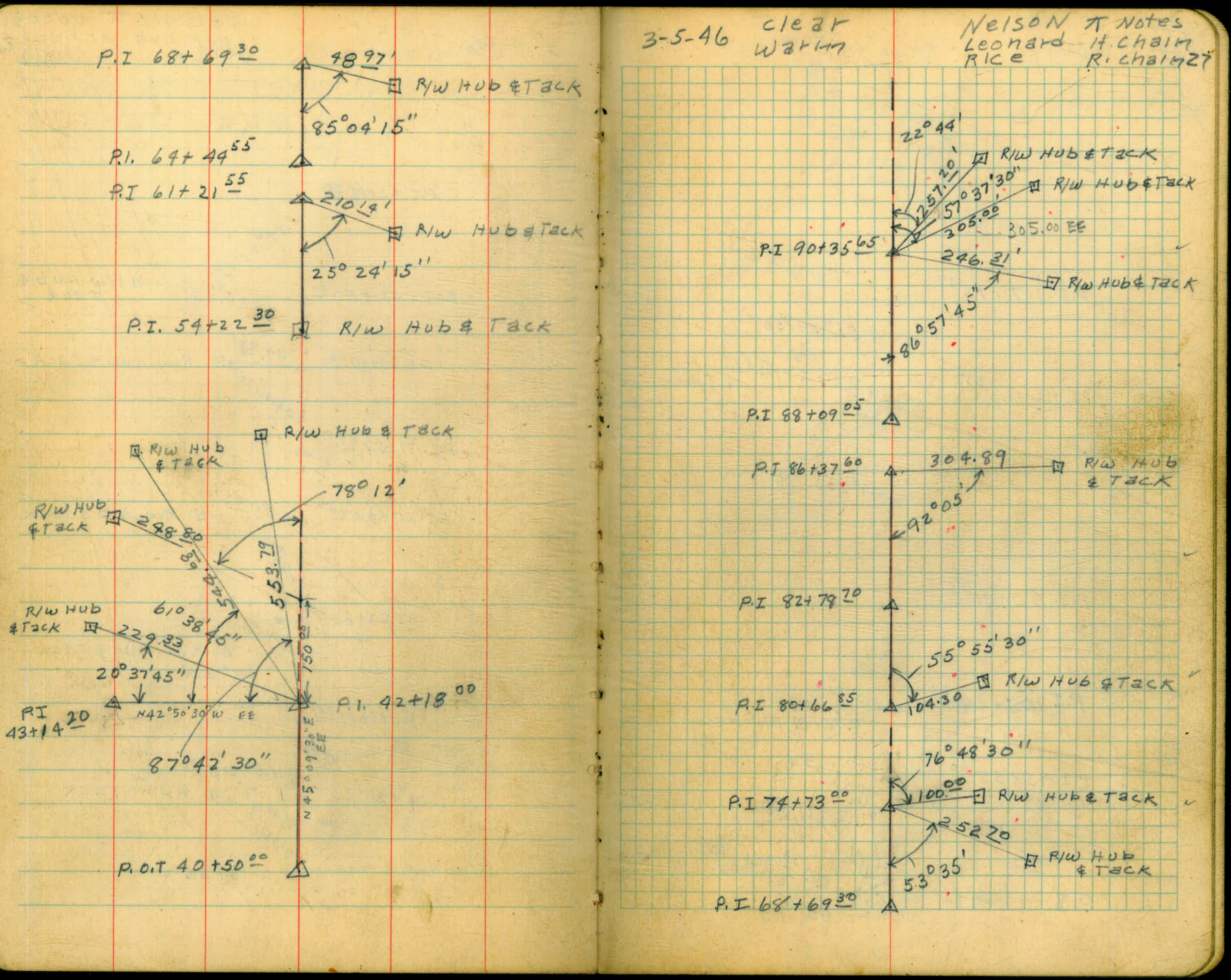


Location Ties to R/W Hubs
from Road Stations around
Murray Lake

3-4-46 clear
warm

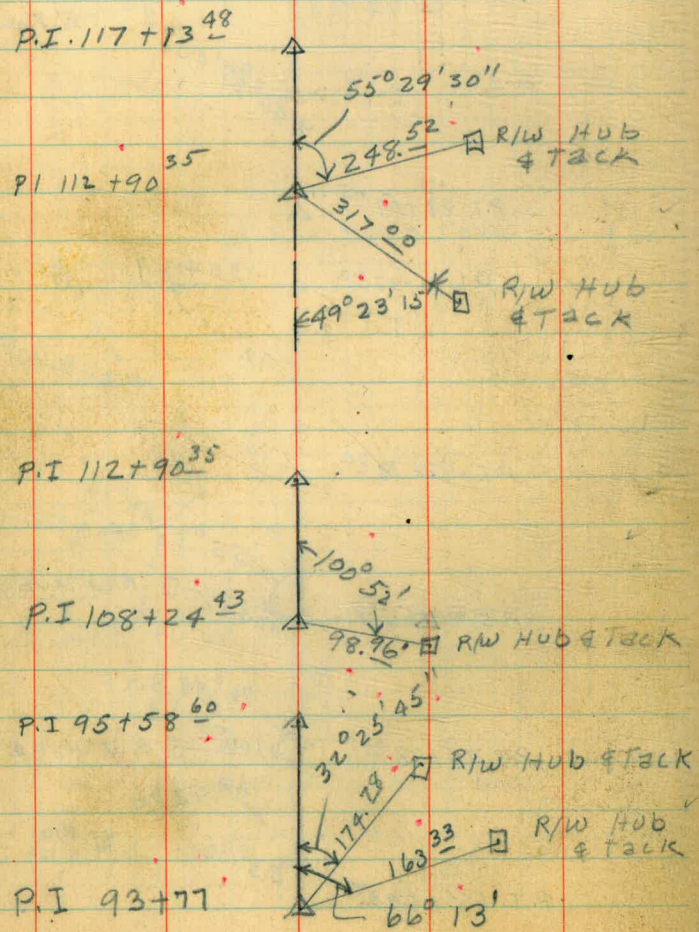
Nelson T Notes
Leonard H. chain 26
Rice R. chain

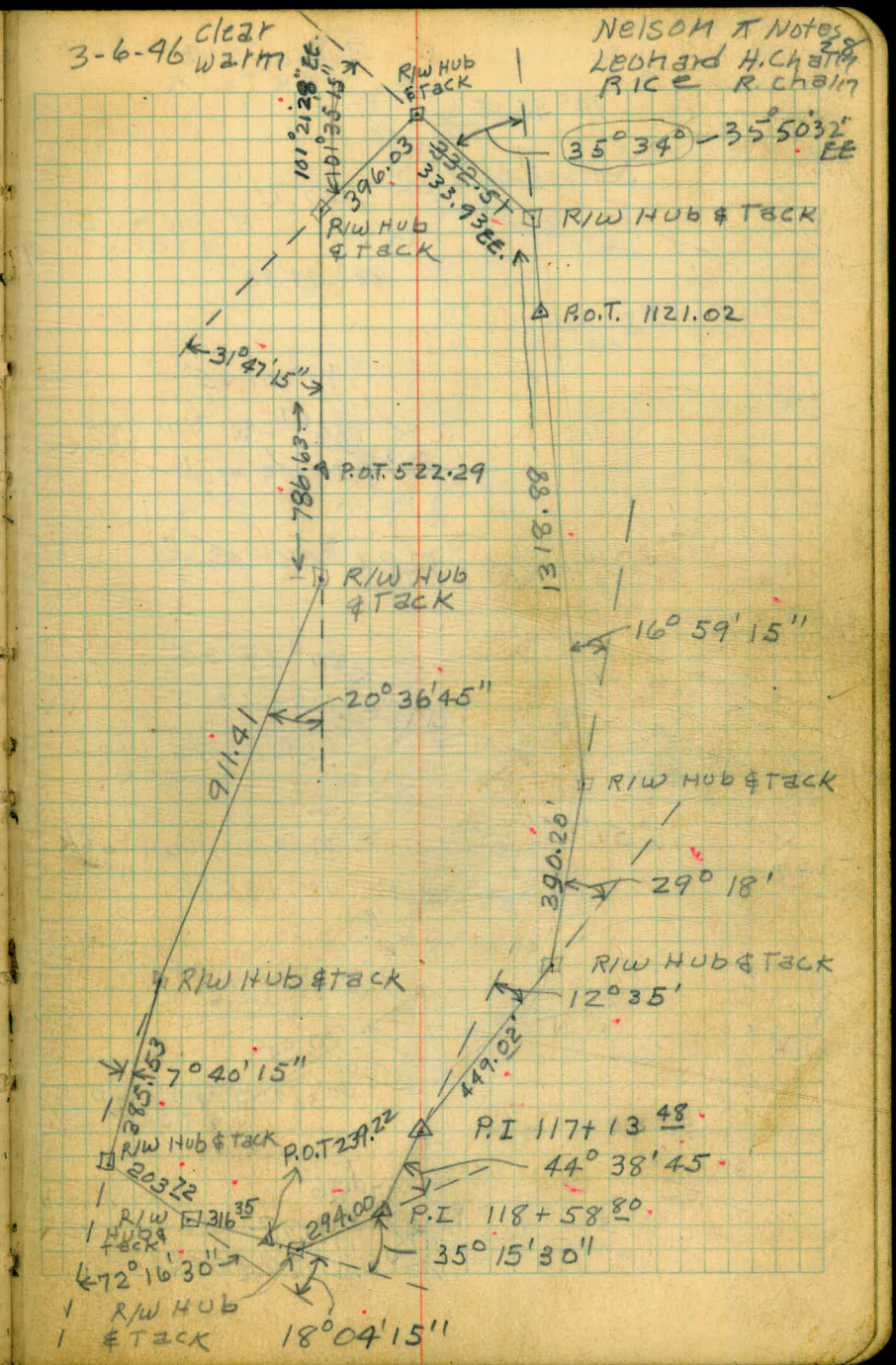


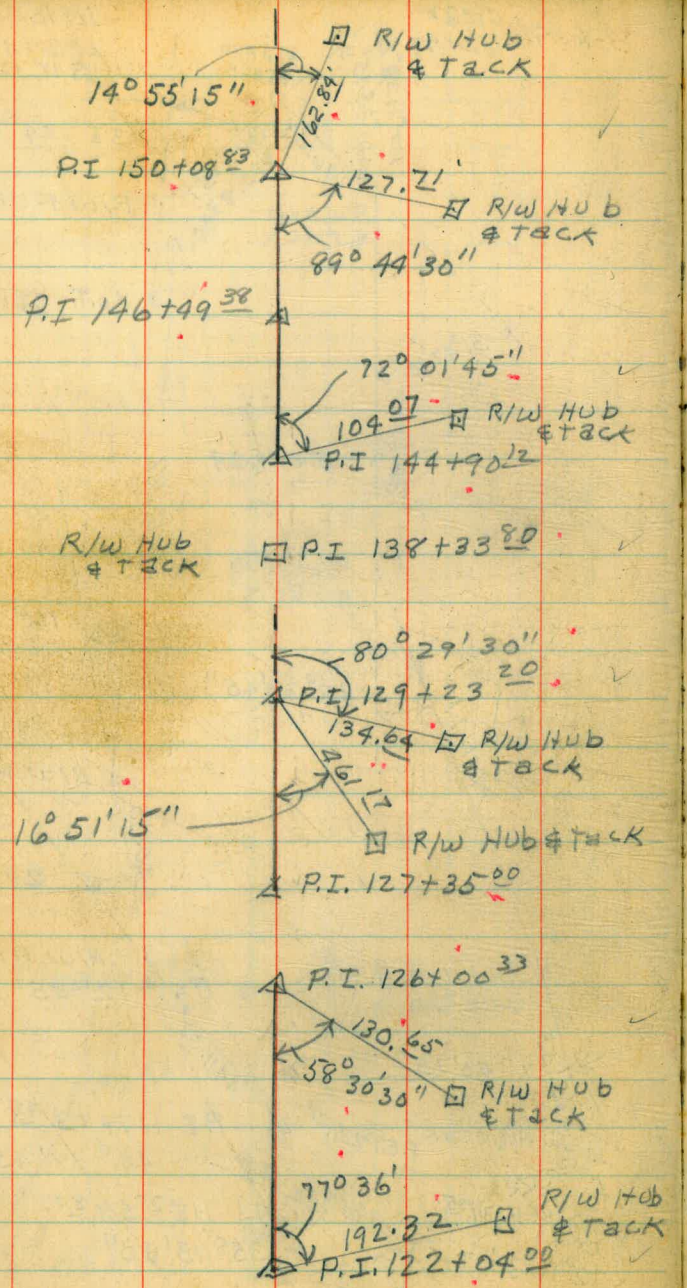

P.I 68+69 30
48 97'
R/W Hub & Tack
85°04'15"
P.I. 64+49 55
P.I 61+21 55
210 14'
R/W Hub & Tack
25° 24' 15"
P.I. 54+22 30
R/W Hub & Tack
R/W Hub & Tack
R/W Hub & Tack
78° 12'
R/W Hub & Tack
298 80
89°
553.79
544.42
R/W Hub & Tack
610 38' 40"
229.33
20° 37' 45"
150.05
P.I. 42+18 00
RI 43+14 20
N42°50'30"W EE
87°42' 30"
N 45°09'30" E EE
P.O.T 40+50 00
3-5-46 clear Warm
Nelson T Notes
Leonard 14 chain
Rice R. chain 27
22° 44'
R/W Hub & Tack
257.21
57° 37' 30"
R/W Hub & Tack
305.00
305.00 EE
P.I 90+35 65
246.31
R/W Hub & Tack
86° 05' 45"
P.I 88+09 05
P.I 86+37 60
304.89
R/W Hub & Tack
92° 05'
P.I 82+79 70
55° 55' 30"
R/W Hub & Tack
P.I 80+66 85
104.30
76° 48' 30"
100.00
P.I 74+73 00
R/W Hub & Tack
52 20
R/W Hub & Tack
5.3° 35'
P.I 68+69 30

3-6-46 clear warm

Nelson π Notes 28
Leonard H. Challis
Rice R. Challis



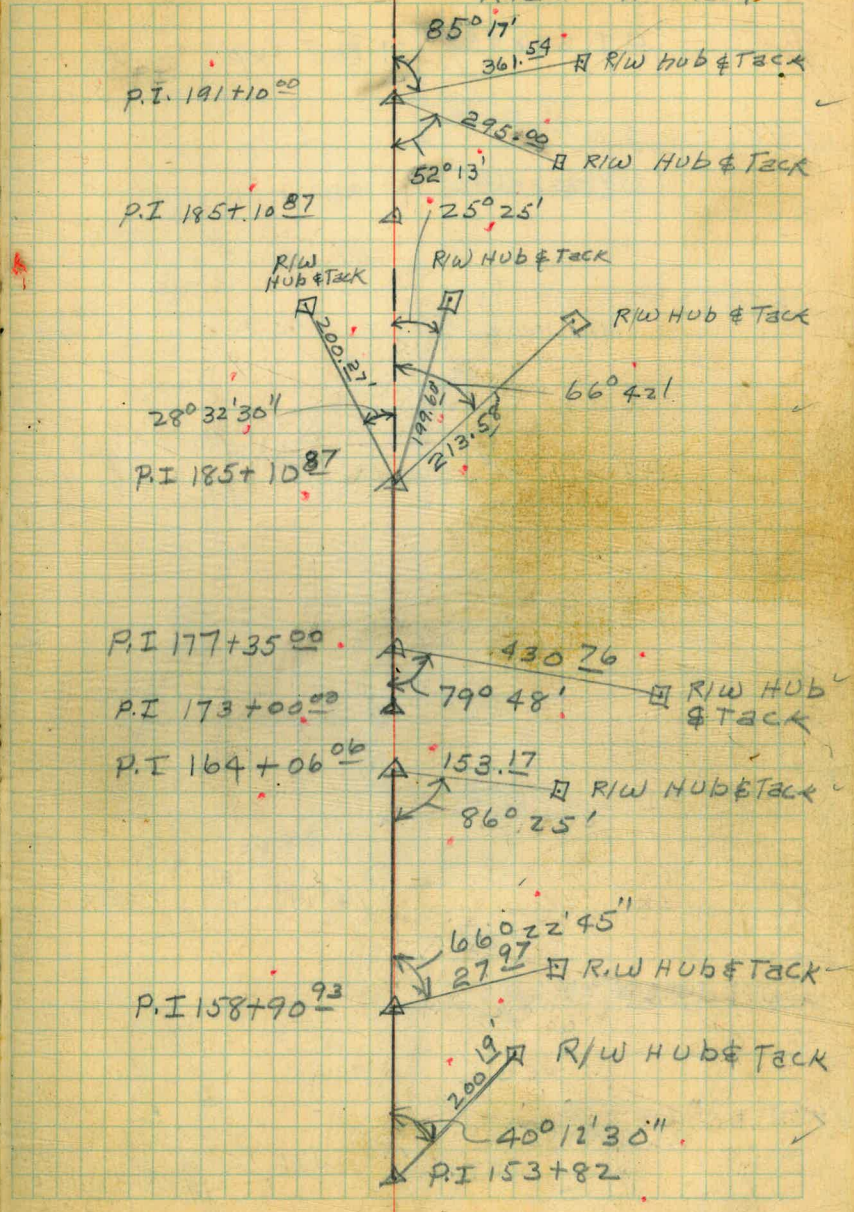




3-7-46 clear warm

Nelson Notes π
Leonard H. Chalm
Rice R. Chalm.

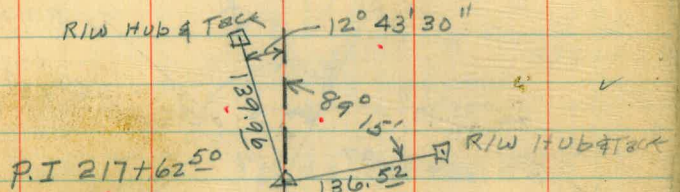
29



3-8-96 clear & warm

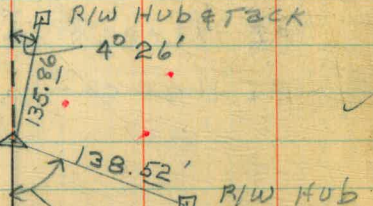
P.I. 226+46.00 R/W Hub & Tack

P.I 221+69.55 R/W Hub & Tack



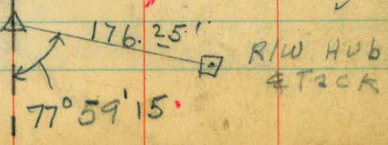
P.I 217+62.50

P.I 215+95.70



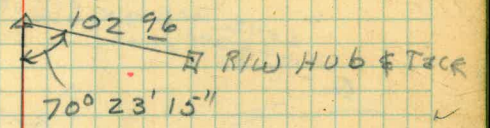
P.I 214+14.20

P.I 212+60

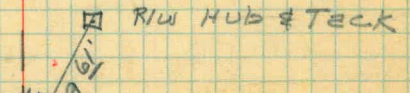


P.I 209+55

P.I 246+84.92

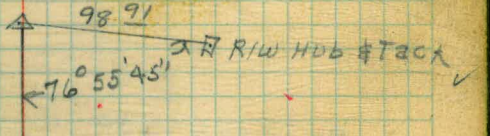


P.I 245+11.70

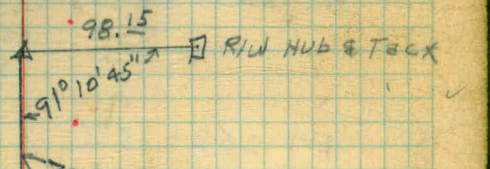


P.I 245+11.70

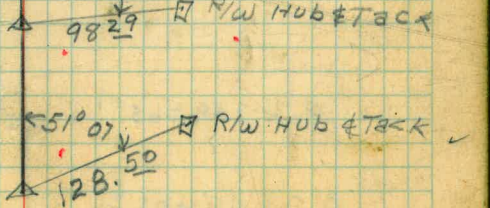
P.I 243+25.00



P.I 241+50.59



P.I 237+65.30

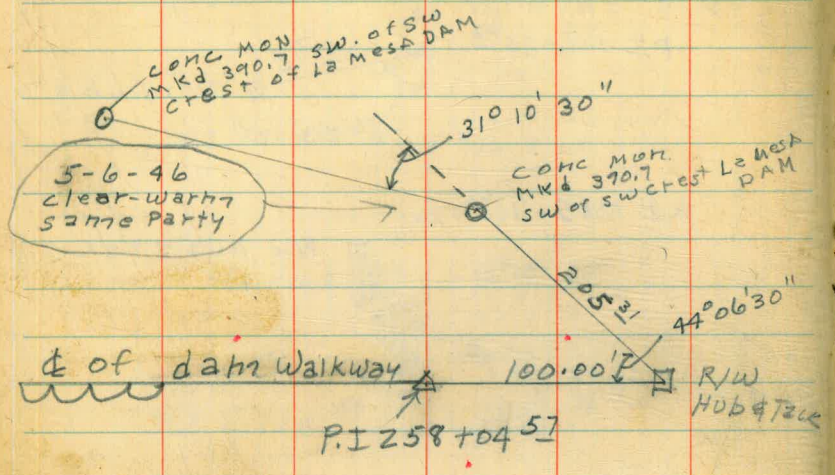


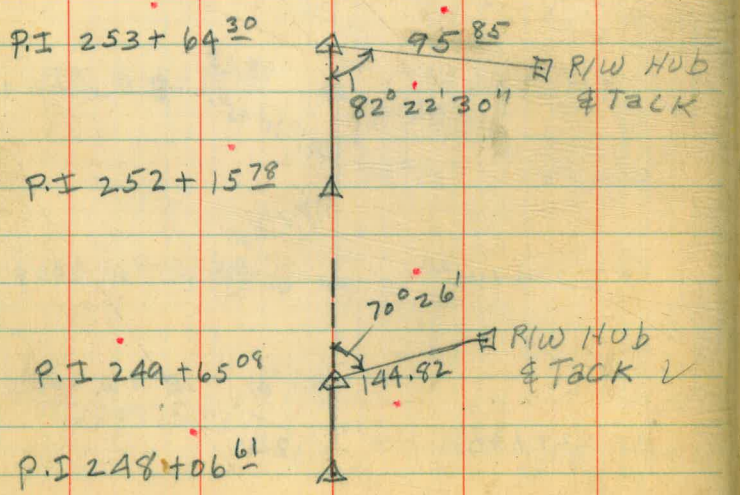
P.I 234+94.30

P.I 229+80.00

Nelson ⊼ Notes
Leonard H. CH&Ln
Rke R. CH&Ln

3-9-46 clear-warm





Bliss
King
Davis
Phillips
5/18/46

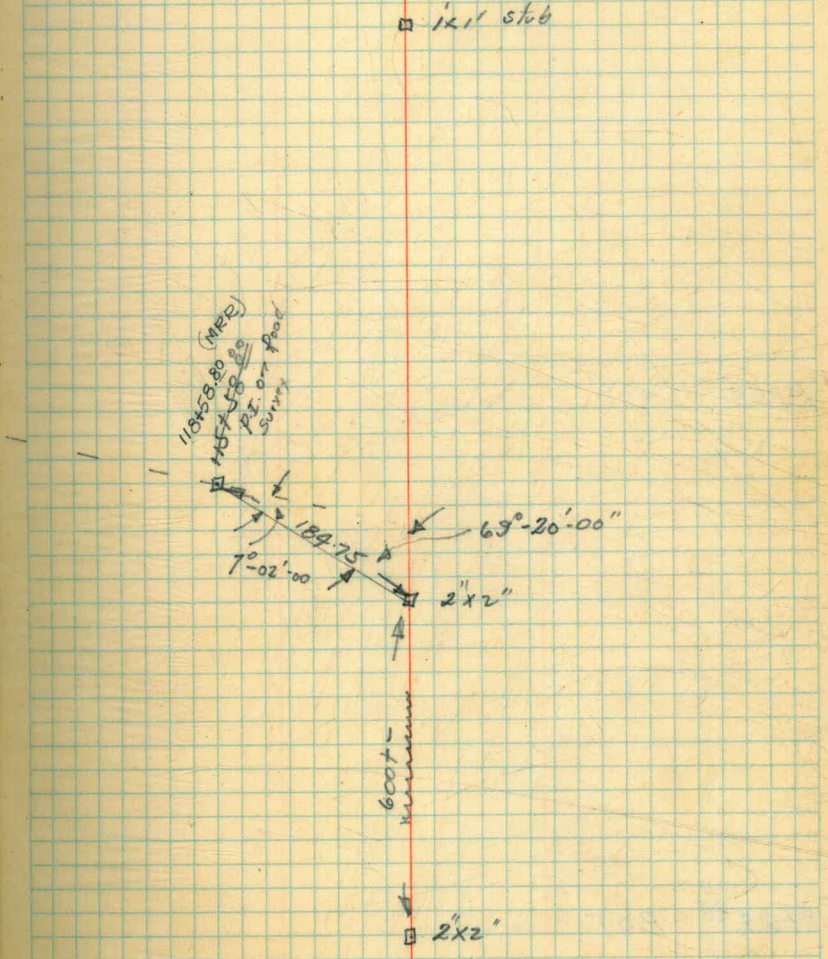
Alignment Proposed Tunnel from the North End of Murray Lake to San Diego River Watershed

4+73.21 P.O.T.

1223+04 P.I. on Road Survey

6+00

P.O.T on Back Tan on Top of Hill to South



11+98. P.O.T.

8+29.25 P.O.T.

□ 1x1 stub

□ stub 1x1"

26+57 78

~~27+07~~ 78 End of line

25+19 10 P.O.T.

20+95 22 P.O.T.

2x2 Hub

Stub

5/20/46 Profile levels over Proposed Tunnel
Murray Lake to S.D.A. River Basin

B.M.		11.04	576.95		565.41	Hub set on Road Survey Elev Carried from Murray Dam
0+00	on Slope			12.57	563.88 ✓	
	+50			10.9	565.6	
	1			6.2	570.3	
	+50			1.9	574.6	
T.P.		12.40	588.78	0.07	576.38 ✓	
	2			8.0	580.8	
	+50			3.1	585.7	
T.P.		12.96	601.41	0.33	588.45 ✓	
	3			9.0	592.4	
T.P.		13.00	612.84	1.57	599.84 ✓	
	+50			11.7	601.1	
	4			0.6	612.2	
T.P.		12.55	624.83	0.56	612.28 ✓	
	+50			8.5	616.3	
	+73			5.56	619.3	
5				3.5	621.3	
	T.P.	12.35	636.83	0.35	624.48 ✓	
	+50			10.3	626.5	

		↑ 636.83		
6			6.3	630.5
T.P.	11.45	647.78	0.50	636.33 ✓
+50			14.0	633.8
7			10.3	637.5
+50			7.6	640.2
8			5.2	642.6
+29.25	Pot		3.70	644.1
+50			3.0	644.8
T.P.	11.44	658.55	0.67	647.11 ✓
9			11.3	647.3
+50			9.6	649.0
10			8.4	650.2
+50			4.8	653.8
11			3.7	654.9
+50			3.3	655.3
+98	Pot on stake		3.18	655.37
12			3.1	655.5
+50			4.7	653.9
13			6.8	651.8
T.P.	0.36	653.03	5.88	652.67 ✓
+50			5.6	647.4
14			8.5	644.5
T.P.	0.21	640.35	12.89	640.14 ✓
+50			3.0	637.4
15			10.5	629.9
T.P.	1.83	629.69	12.49	627.86 ✓

		629.69		
15 +50			5.3	624.4
16			12.9	616.8
+50			16.1	613.6
T.P.	1.85	619.20	12.34	617.35
17			6.8	612.4
+50			7.3	611.9
18			6.6	612.6
+50			5.7	613.5
19			6.0	613.2
+50			5.6	613.6
20			8.5	610.7
POT +45 22	0.66	606.87	12 ~~99~~ 99	606.21
+50			1.0	605.9
21			3.1	603.8
+50			9.8	597.1
T.P.	0.00	594.81	12.06	594.81 ✓
22			5.9	588.91
+50			9.4	585.4
T.P.	0.32	582.40	12.73	582.08
23			1.9	580.5
+50			7.4	575.0
24			12.6	569.8
T.P.	0.85	570.61	12.69	569.76 ✓
+50			6.3	564.3

NOTES REDUCED 6-21-'46 MR.

			570.61		
25+0				13.1	557.5
T.P.		0.21	558.08	12.74	557.87
+19 Lt				3.16	554.92
+50				10.1	548.00
+63		In Creek bed		14.2	543.9
+90		" "	"	16.0	542.1
26+15				13.5	544.5
T.P.		0.92	546.56	12.44	545.64
26+50				5.7	540.9
+57.78		on Hub-Edge Ditch		7.66	538.90
+61	on Hub	Bottom Ditch		8.7	537.9
T.P.	Eastline	13.06	551.96	7.66	538.90
T.P.		11.86	562.88	0.94	551.02
T.P.		12.93	575.14	0.67	562.21
T.P.		12.41	587.43	0.12	575.02
T.P.		12.99	600.22	0.15	587.28
T.P.		12.50	612.67	0.05	600.17
T.P.		12.48	624.93	0.22	612.45
T.P.		12.75	637.51	0.17	624.76
T.P.		12.20	649.42	0.29	637.22
T.P.		7.42	656.69	0.15	649.27
T.P.		0.05	646.64	10.10	646.59
T.P.		0.49	634.78	12.35	634.29
T.P.		0.47	622.49	12.76	622.02
T.P.		0.79	610.23	13.05	609.44

* Note This Point 25' Below Take off.

		T 610.23		
TP	0.12	597.40	12.95	597.28
TP	0:09	584.40	13.09	584.31
T.P.	3.84	575.31	12.93	571.47
Check Starting BM			9.92	565.39
				565.41
				0.02 error

Cross Sections Road TO Treatment Plant from Murray Blvd via Kiowa drive,

	10.19	524.87 ✓		514.68
0+00				
+15		NOTE See Page 24 FOR Alignment		
+18				
+24				
+50				
1+00				
+50				
T. P	13.06	537.22 ✓	0.71	524.16 ✓
T. P.	12.50	543.23 ✓	6.49	530.73 ✓
+97				
2+00				
2+05	℄ Rd			
+50				
3+00				
+50				

1-31-41
Clear-Warm

Nelson Notes
Leonard
Barragan π

41.

City Datum

BM L&T ACK & Kiowa & Lake Murray Blvd

15.6 16.7 517.87 19.0 19.7
9.3 8.1 7.0 5.9 5.2
100 50 50 100

℄
16.5 517.7 19.0
8.4 7.2 5.9
50 60

17.4 518.7 20.0
7.5 6.2 4.9
50 60

16.8 518.0 19.5
8.1 6.9 5.4
50 60

17.5 518.4 19.3
7.4 6.5 5.6
50 60

18.7 519.7 20.2 20.1
6.2 5.2 4.7 4.8
50 30 60

20.6 521.9 22.2
4.3 3.0 2.7
50 60

On Hub Sta 1+97.1

22.6 524.43 25.3
20.6 18.8 17.9
50 60

21.2 23.2 24.6 26.0 26.9
22.0 20.0 18.6 17.2 16.3
100 50 24.9 50 100

25.3 528.0 30.6
17.9 15.2 12.6
50 60

26.6 530.5 36.3
16.6 12.7 7.0
50 60

26.9 531.2 35.2 43.2
16.3 12.0 8.0 0.8
50 35 60

		543.23 ✓		
4+00				
+50				
T. P.	9.90	541.22 ✓	11.91	531.32 ✓
5+00				
+50				
6+00				
+50				
+87	℄ Rd			
CK. B.M			5.71	535.51 = 535.51

26.5		531.0 ℄	34.4	41.0
16.7	12.2		8.8	2.2
50			33	60
26.9	530.63		33.9	38.6
16.3	12.6		9.3	4.6
50			32	60
26.8	530.9		37.2	
14.4	10.3		4.0	
50			60	
38.5	531.8		37.0	
12.7	9.4		4.2	
50			60	
30.5	532.3		36.9	
10.7	8.9		4.3	
50			60	
32.3	534.0		37.8	
8.9	7.2		3.4	
50			60	

34.6	33.4	35.0	34.2	38.9	34.5	535.8	38.6	39.3	42.6
6.6	7.8	6.2	7.0	7.3	6.7	5.4	2.6	1.9	+1.4
184	183	162	150	100	50		50	60	100
		↑ ℄							
		KIOWA							

Bliss
King
Phillips
Nienow
2/22/47
-O-
Hot

Test Holes. Angles Turned from 3+97 60
Alignment for Drainage Ditch See Page 1
Sighted on 6+39 95

#1	116'	6°-28 Lt
#2	298'	22°-25'-00 Lt
#3	472'	32°-28'-00 "
#4	648'	39°-00'-00 "
#5	790	42°-08'-00 "
#6	900'	43°-40'-00 Lt

Test Holes. Angles Turned from 118+58 80
L. Turned by Sighting 117+43 48 See Page 28

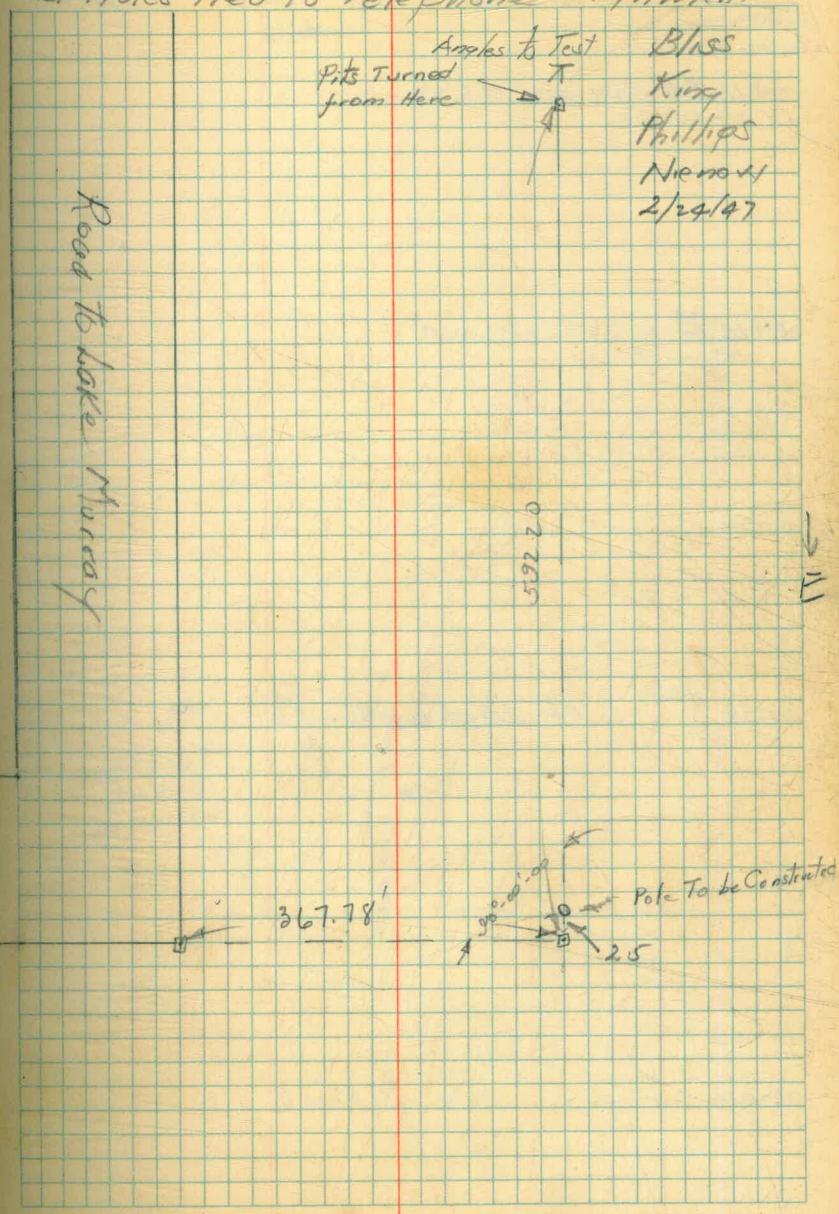
#2	580'	87°-16'-00 Lt
#1	513'	79°-34'-00 "
#3	296'	60°-58'-00 "
#4	565'	18°-42'-00 "
#5	698'	17°-40'-00 "
#6	1003'	17°-16'-00 Lt

Telephone Pole Set Up Lake Murray

	Dist.	L Angle
Test Pit #1.		
	34'	23°-14' Rt
" " #4	165	0°-28' Lt
" " #3	195	27°-56' Lt
" " #5	120'	47°-30'- "
" " #2	92	25°-20' "

Angles Turned Counter clockwise Sighting To East See sketch

Test Holes Tied to Telephone Alignment



"A" Line See large Map # 2963

Traverse of Prop Line. Lake

Mag Bearing

6+60.09

5+13.25

2+38.82 L. Rt. 24°-06-00 N 96°-15 E

0+00 N 22°-0 E

H.11 45

Bliss Notes

King π

Leonard H. Choin

Nielson 3/24/47

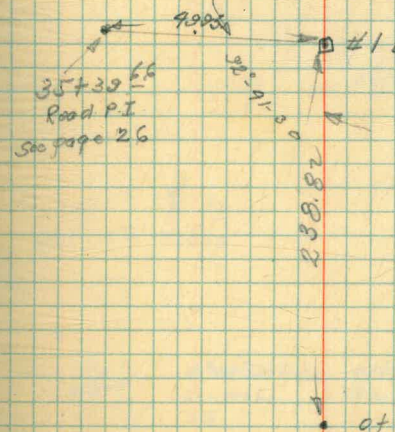
Murray - Preliminary Road Location

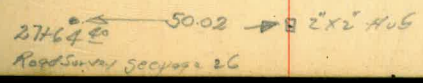
Fd 2"x2" Hub P.O.T. East Line Sec 12

See page 23

Fd 2x2 Hub P.O.T. 1/4 Sec Line Sec 11

See page 23





Road Survey See page 26

		Mag Bearing
17+80 ±	L. Lt 74°-23-30	S 27°-00-00 W
15+32 ±	L. Lt 86°-11'-45"	N 76°-10'-00 W
10+47 +-	P.O.T.	
7+95 ±	L. Lt 36°-29'-00	N 10°-15'-00 E

42+18 Road Survey
See page 27

544.68

2X2 Hub #4 L.

2X2 Hub #3 L.

553.79

P.O.T. Nail

See page 27

℄ Pt. 42+18

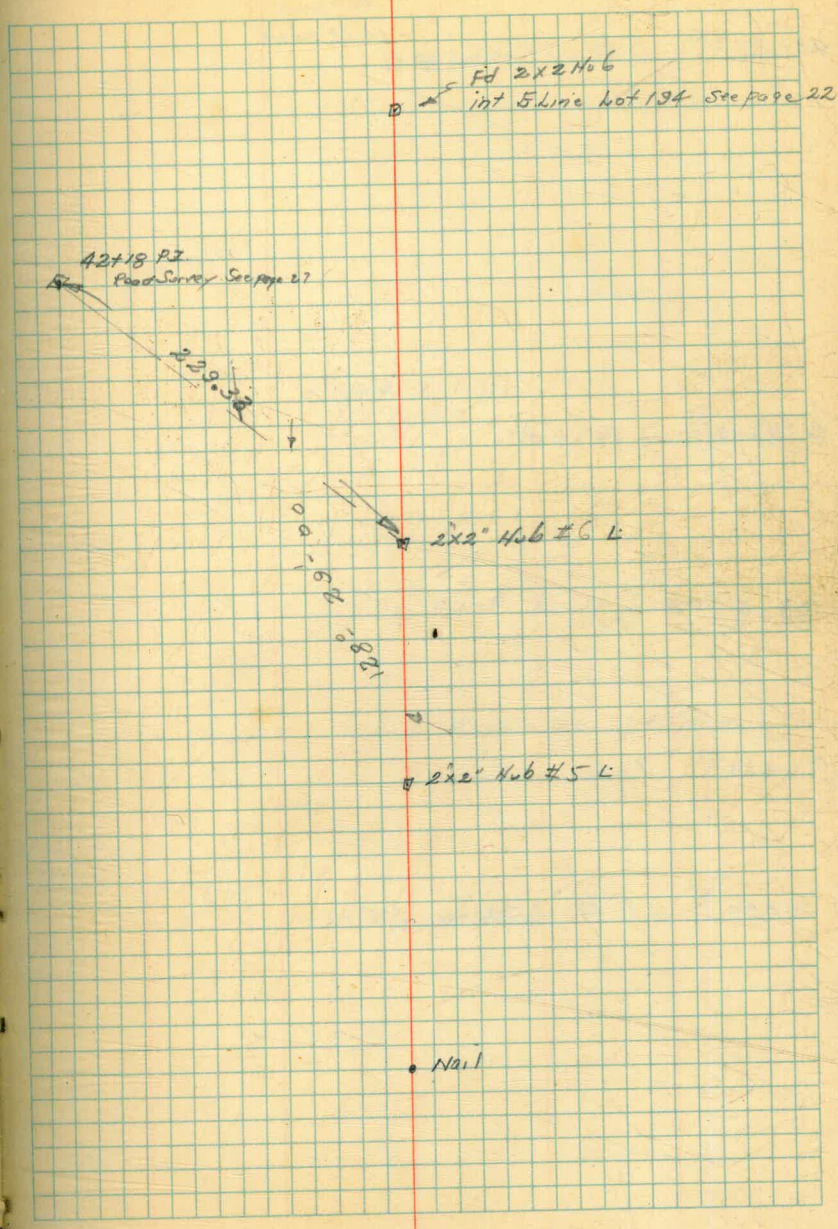
P.O.T. Road Survey 40+50

238.75

See page 26

2X2 Hub #2 R.O.W L.

29+89 10	P.O.T.	
21+84. 58	L. 35°-03'-00 Rt	S48°-15'-00 W
20+67 95	L.Lt 16°-11'-00	S13°-15'-00 W
19+55+-	P.O.T.	



		Mag Bearing
43+85.26	L Rt 77°-06'-00	N 28°-30'-00 E
		N 49° W
Δ 38+42.32	L 56°12' Rt	
38+20.98	P.O.T.	
34+21.33	P.O.T.	
33+24.85	L Rt 27°-96'-00	S 76°-30'-00 W

#9

#8

East Line Lot 196

East Line Lot 195

#7 34+22.30

Mag Bearing

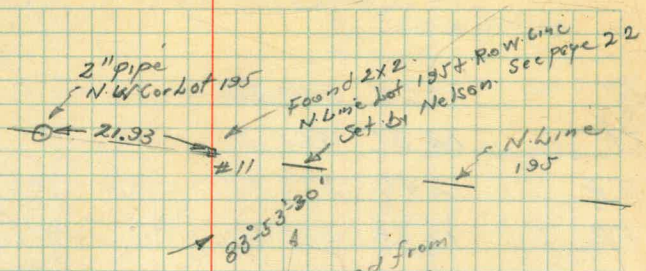
4

50+29 $\frac{10}{}$ int N Line Lot 135

N 21°-30-00 W

48+58 $\frac{57}{}$ L. Lt 50°-27-00

48+08 $\frac{68}{}$ P.O.T. int. W Line Lot 195



I copied from
Nelson's Notes

2" x 2" Hub
#10

2 x 2 Hub

"A" Line

Profile levels over R.O.W ℄ for Contemplated Road Lake Murray

BM.	12.69	549.23 ✓		536.54
T.P.	12.31	561.53 ✓	0.01	549.22 ✓
T.P.	12.46	573.05 ✓	0.94	560.59 ✓
T.P.	12.88	585.67 ✓	0.26	572.79 ✓
T.P.	12.87	598.43 ✓	0.11	585.56 ✓
T.P.	12.48	610.81 ✓	0.10	598.33 ✓
0+00			5.3	605.5
0+40			2.3	608.5
+55			4.4	606.4
1+00			3.1	607.7
+40			1.3	609.5
+65			3.2	607.6
+80			2.4	608.4
2+0			4.3	606.5
+38 82 — L 5.73		612.49 ✓	4.05	606.76 ✓
+75			6.6	605.9

Elev of Lake March 27-97

Topo's End = BM 542.51
Murray Dam 5.42 +
547.93
11.39 -
Elev of Lake 536.54 ✓

Hill
Bliss ℄
King 3/27/47
Leonard
Nenow

		612.49 ✓		
3+00			5.5	607.0
+50			5.1	607.4
4			3.8	608.7
+15			4.4	608.1
+50			4.6	607.9
5			5.3	607.2
+35			4.9	607.6
+50			6.4	606.1
6			8.2	604.3
+25			11.3	601.2
T.P.	0.64	600.49 ✓	12.64	599.85 ✓
+75			1.8	598.7
7			4.2	596.3
+35			6.2	594.3
+60			9.2	591.3
+75			12.5	588.0
T.P.	0.93	588.61 ✓	12.31	588.18 ✓
+75 20° L. on Hub			2.5	586.10 ✓
8+00			3.4	585.2
+48			16.9	571.7
+56			17.5	571.1

W. Side Drain

Intersect of Drain

		* 588.61 ✓		
+68			16.7	571.9
9+0			8.1	580.5
T.P.	10.85	578.86 ✓	0.60	588.61 ✓
+37			12.6	586.26
+83			9.2	589.7
10+0			8.9	590.0
+50			7.3	591.6
11			6.5	592.4
+50			7.3	591.6
12			6.7	592.2
+42			6.6	592.3
+80			10.0	588.9
13			8.9	590.0
+32			6.3	592.6
+60			7.2	591.7
14			6.0	592.9
+25			4.3	594.6
+45			3.6	595.3
+65			4.8	594.1
15+0			3.7	595.2
+32.33	0.82	596.01 ✓	3.67	395.19 ✓
+50			3.8	592.2
+94			12.6	583.4
T.P.	2.39	585.34 ✓	13.06	592.95 ✓
16			4.5	580.8

East Side Drain

		58534 ✓		
+20 Toe of slope			10.5	574.8
+50			12.1	73.2
+85 Bank wash			13.5	71.8
+90 · in wash			15.7	69.6
+98 " "			14.3	71.0
17+00 OH Bank wash			9.5	75.8
+02 · Top Bank			8.1	77.2
+10			7.1	78.2
T.P.	11.38	596.61 ✓	0.11	585.23 ✓
+50			9.7	86.9
+80 17			6.09	590.52 ✓
18			5.3	91.3
+50			5.4	91.2
19			4.9	91.7
+50			4.6	92.0
+75			6.3	90.3
20			6.3	90.3
+25			10.7	85.9
+50 Bottom of ditch Draw			17.0	79.6
+67 95 L.			14.8	81.8
21			9.5	87.1
+30			7.4	89.2
+60			7.9	88.7
T.P. +84 58 OH 06.	11.88	600.12 ✓	8.37	588.24 ✓

		600.12 ✓		
22+0			11.4	588.7
+50			10.5	89.6
23			9.9	90.2
+50			10.2	89.9
24			9.6	90.5
+25			9.2	90.9
+50			9.0	91.1
25			8.3	91.8
+35			8.5	91.6
+50			8.1	92.0
26			7.9	92.2
TP.	8.03	604.76	3.39	596.73 ✓
+50			11.6	593.16
27			10.4	594.4

		604.76 ✓		
27+50			10.0	594.76
28			8.2	96.6
+50			8.5	96.3
29			8.8	96.0
+50			9.4	95.4
+90			9.8	95.0
30			9.2	95.6
+50			10.6	94.2
31			11.0	93.8
+25			10.1	94.7
+50			12.0	92.8
T.P	7.61	601.62 ✓	10.75	594.01 ✓
32			8.0	93.6
+50			8.8	92.8
33			10.0	91.6
+24 $\frac{85}{}$ on Hub L			10.42	91.2
+50			10.1	91.5
34			10.7	90.9

		601.62 ✓		
34+15			10.0	591.6
+30			12.0	89.6
+50			12.0	89.6
+75			11.0	90.6
35			13.0	88.6
T.P.	3.64	592.38 ✓	12.88	588.74 ✓
+29			3.8	88.6
+45			5.4	87.0
36			6.2	86.2
+50			6.6	85.8
37			7.2	85.2
+19			8.8	83.6
+35			7.7	84.7
+60			9.0	83.4
38			9.5	82.9
+42.32 L			10.36	82.0
TP on Hub	7.14	589.16 ✓	10.36	582.02 ✓
39			6.0	83.2
+50			6.2	83.0

		589.16 ✓		
40			6.4	582.8
+50			6.4	82.8
41			8.0	81.2
+50			5.7	83.5
42			5.2	84.0
+50			5.8	83.4
43			6.7	82.5
+40			6.2	83.0
+85 25L on Hob	11.24	593.62 ✓	6.78	582.38 ✓
44			9.7	83.9
+20			11.8	81.8
+42			9.9	83.7
+70			11.2	82.4

5936.62

45			8.1	585.5
	+18		10.0	83.6
	+43		7.8	85.8
	+59		9.3	84.3
	+73		7.8	85.8
45			9.0	84.6
	+17		7.3	86.3
	+50		7.3	86.3
47			6.3	87.3
	+50		6.6	87.0
	+75		7.7	85.9
48			11.0	82.6
	+08	Bottom drawn	12.5	81.1

		593.62 ✓		
48+35			8.0	585.6
T.P. on Hub +58 57 L	5.93	592.89 ✓	6.66	586.96 ✓
49+0			6.4	86.5
+35			3.3	89.6
+65			5.1	87.8
50+0			3.4	89.5
+29.10	End of line on Hub		4.81	588.08
T.P.	1.01	580.85 ✓	13.05	579.84 ✓
T.P.	0.99	569.14 ✓	12.70	568.15 ✓
T.P.	0.76	556.86 ✓	13.09	556.10 ✓
T.P.	0.66	546.16 ✓	11.42	545.44 ✓
Check off Lake Surface	9:00 PM 3/27/07		9.61	536.49 ✓
				536.54
				0.05 Diff

"B" Line

Preliminary Line from Pt #2 to Pt #6 Lake Murray
For Road Location Levelson Page 64

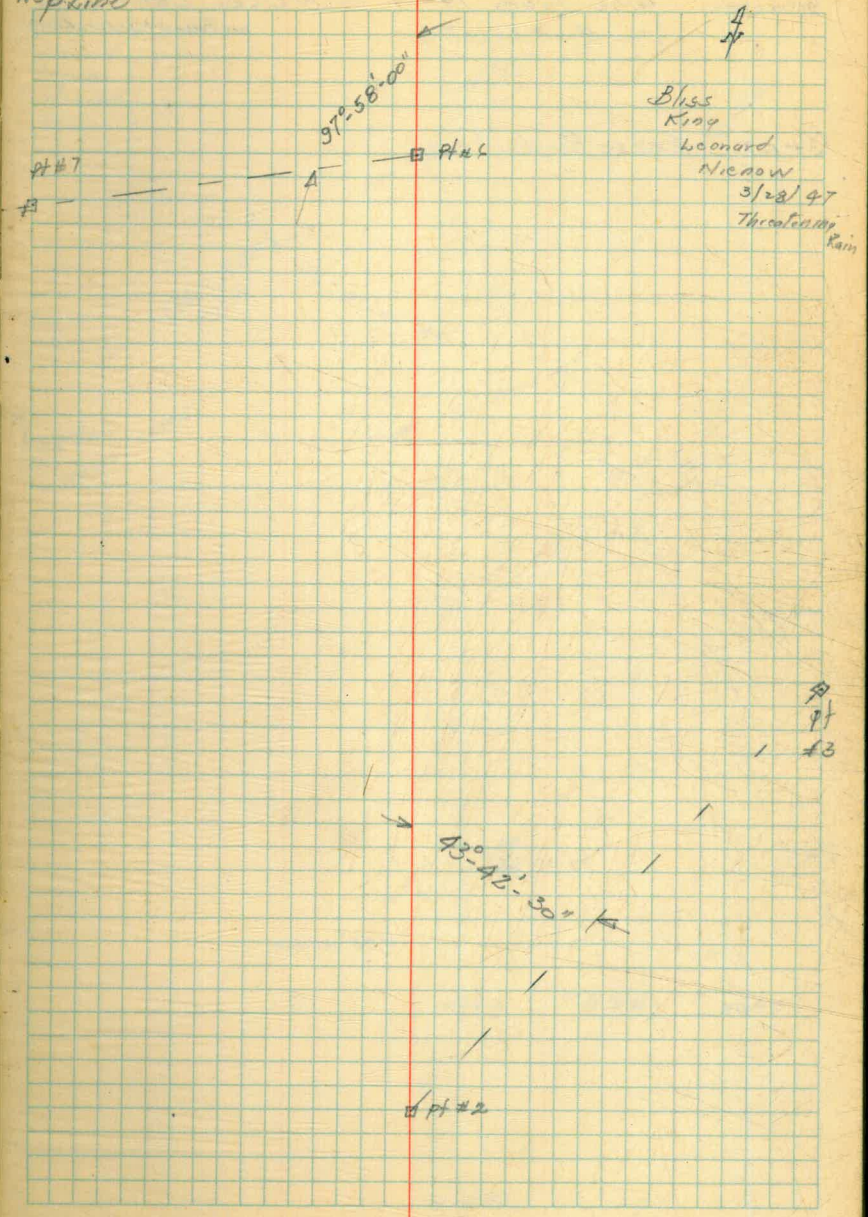
Mag Bearing

5705.30 End

N 31°-30 W

0700

Prop Line



Preliminary "C" Line
Line From Pt #4 to NE Cor Lot 12
For Road Location on Transmission Line

3+09 End on Rancho

1+50 ± +-

N 74°-30'-00 W

0+00

Bliss Notes
King
Leonard
Nanow
3/28/47
Cloudy - Cool

⊙ 2" Pipe
NE Cor Lot 194

41
30°-37'

Fd 1" Pipe

2°

T 16 S R 2 W
R 1 W

S 6°-37'-00 E

30°-37'-00

Fd 2"x2"
in Mound of rocks

Transmission Line

P.O.T. Nail

1°-37'-00 Rt.

Fd 2" Pipe

pt #3 ? #4 N.A.

pt #3

"D" Line

Preliminary Line From the N E Cor Lot 12
Road Location

See Page 67 for Intk

8+12 3/4 +-

Mag Bearing

N 72° 30 E

0+00

to 812' Eastly

Fd 2" iron pipe

Bliss
King
Leonard
Nienow
3/28/47
cloudy & cool

Trans Mission Line

87° 14' 00"

Fd 1" pipe
N E Cor
Lot 12

2°

R.1.W.

T 16 S R 2 W

2" iron pipe N E Cor Lot 194

"E" Line Preliminary Line from Pt. #3 to a Pt. on Road Location

3+24 12
= 6+50

N16°-00'-00 E

0+00

Transmission Line

Bliss Notes
King T
Leonard Mchain
Nienow R. H
3/28/47
Cloudy + Cool

Transmission Line

121° 07' 00"

NAil

650'

20" Iron Pipe

T16S R2W

5°-59'-00 Rt.

#3

#2

Profile Levels "B" Line. See Page 60 for Alignment

2 x 2 Hub #2
7+35 ± 20' Aline
See Page 51

B.M. 0+00	0.14	586.24		586.10
0+38			6.9	79.34
+50			11.1	75.1
T.P.	0.49	573.85 ✓	12.88	573.36 ✓
+83.5	Side wash		5.1	68.8
1 ℄	wash		5.9	68.0
+15	N Side wash		6.1	67.8
+43			1.3	72.6
+50			1.0	72.9
2			0.0	73.9
+36			4.3	69.6
+50			8.3	65.6
+70	Toeslope Main wash		12.0	61.9
3			13.4	60.5

Bliss Notes
King ⇈
Leonard
Nielsen
3/28/47
cloudy & cool

		57385 ✓		
3 +16	Bank of wash		15.8	58.1
+20	Bottom S Side wash		17.3	56.6
+28	" N. Side wash		16.5	57.4
+35	Toe slope		15.6	58.3
+50			13.7	60.2
+75			7.0	66.9
4+0			2.0	71.9
T.P.	12.30	585.27 ✓	0.88	572.97 ✓
+50			4.0	81.3
T.P.	12.76	597.29 ✓	0.74	584.53 ✓
5+0			3.7	87.6
+05 30	End on # 6		3.09	588.25 ✓
				588 24 ✓
				.01

Profile Levels "C" Line Preliminary Road Survey

L. ✱ and A

see Page 61 for alignment

see Page 53

BM	12.71	603.23 ✓		590.52
0+00			12.7	90.5
0+50			5.5	97.7
1+0			1.0	602.2
T.P.	9.22	611.09 ✓	1.36	601.87 ✓
+15			7.9	603.2
+50			6.3	604.8
+94			6.3	604.8
2+0			5.3	605.8
+50			5.2	605.9
+84			5.2	605.9
3+0			3.4	607.7
3+09 End			2.9	608.2
Set BM			2.58	608.51 ✓

1" pipe 2° N. Line

Bliss Notes
Map #
Leonard Rod
Nichols
3/27/47

Profile Levels "0" Line See Page 62 for Alignment

BM	2.58	611.09		608.51
0+00			2.9	608.2
+08			2.9	608.2
+25			5.1	606.0
+50			5.1	606.0
+64			3.4	607.7
+86			4.7	606.4
1+0			4.7	606.4
+10			3.7	607.4
+30			3.3	607.8
+47			5.3	605.8
+75			4.4	606.7
2			5.9	605.2
+14			7.1	604.0

1" Pipe 2" N. Transmission Line

B/ss Notes
Kept N
Leonard
Nienow
3/20/47
cloudy+cool

		611.09 ✓		
2+30			6.4	604.7
+50			7.3	603.8
+80			9.4	601.7
T.P.	1.27	599.56 ✓	12.80	598.29 ✓
3+0			1.8	97.8
+35	Bottom Draw		7.6	92.0
+50			6.0	93.6
4+0			4.2	95.4
+12			3.7	95.9
+40			5.8	93.8
+70			6.3	93.3
5+0			8.7	90.9
T.P.	2.14	589.00 ✓	12.70	586.86 ✓
+50			3.6	85.4
+0				
+81	Bottom + W Sidewash		11.0	78.0
+91	" + E "		10.6	78.4

		589.00 ✓		
6+0			9.3	579.7
+38			5.8	83.2
+50			5.4	583.6 ✓
+61			4.5	584.5
T.P.	12.86	600.87 ✓	0.99	588.01 ✓
7+0			8.3	592.6
+50			0.9	600.0
T.P.	8.37	608.77 ✓	0.47	600.40 ✓
+57			7.3	601.47
8+0			3.8	604.97
+12.3	End		3.3	605.5
T.P.	2.88	599.08 ✓	12.57	596.20 ✓
Check L. #3			3.89	595.19 ✓

Nail in Power Pole # 76944

Profile Levels Preliminary Road Line E. 2x2 #06 & #3

BM	3.89	599.08 ✓		595.19
0+00			3.9	595.2
0+20			3.2	95.9
0+50			4.1	95.0
+70			4.2	94.9
1+0			7.1	92.0
+12			7.2	91.9
+50			11.1	88.0
T.P.	4.34	591.15 ✓	12.27	586.81 ✓
2+0			5.6	85.6
+10			5.6	85.6
+27			7.3	83.9
+50			6.8	84.4
+80			7.6	83.6
3+0			6.5	84.7
3+24			7.5	583.5 65

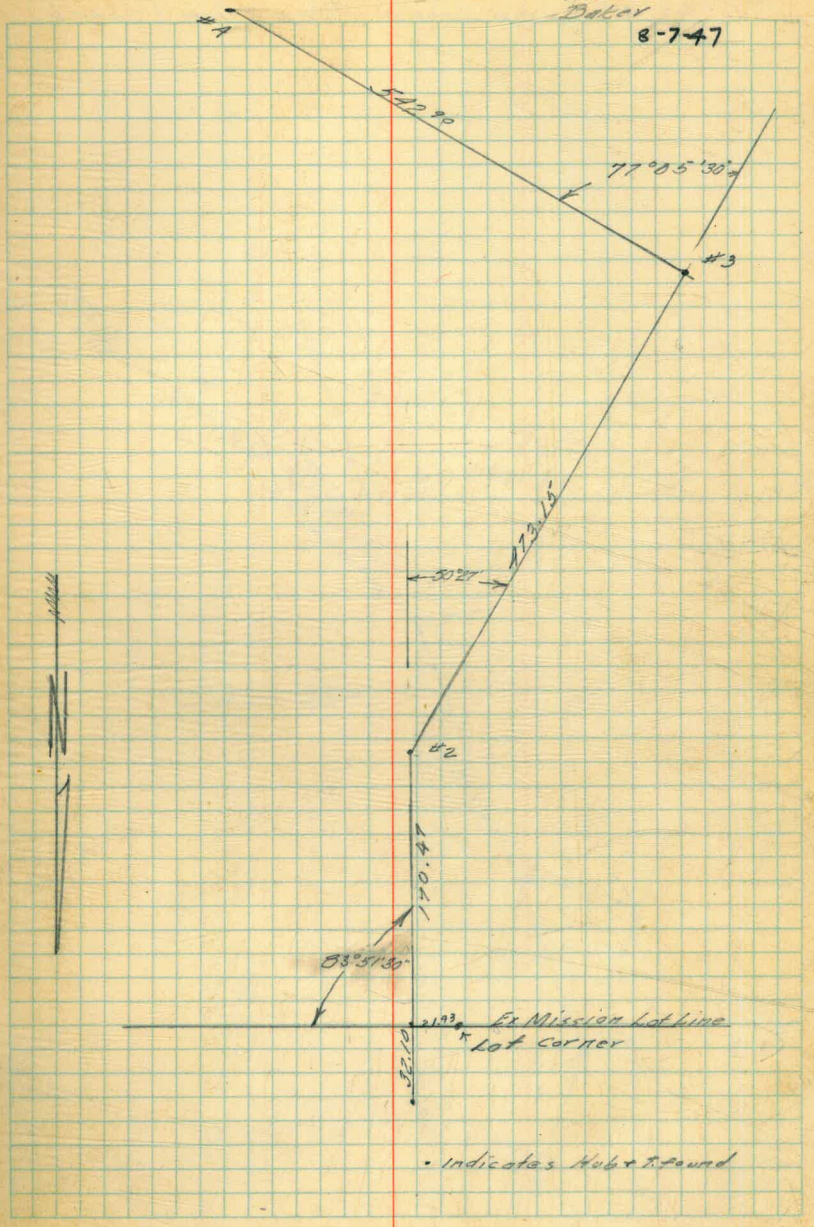
See Page 63 for Alignment

Bliss Notes
King & Leonard
Norway
3/28/47
cloudy, cool

Murray Lake Property Line Check

Rainey
King
Nierow
Baker

8-7-47

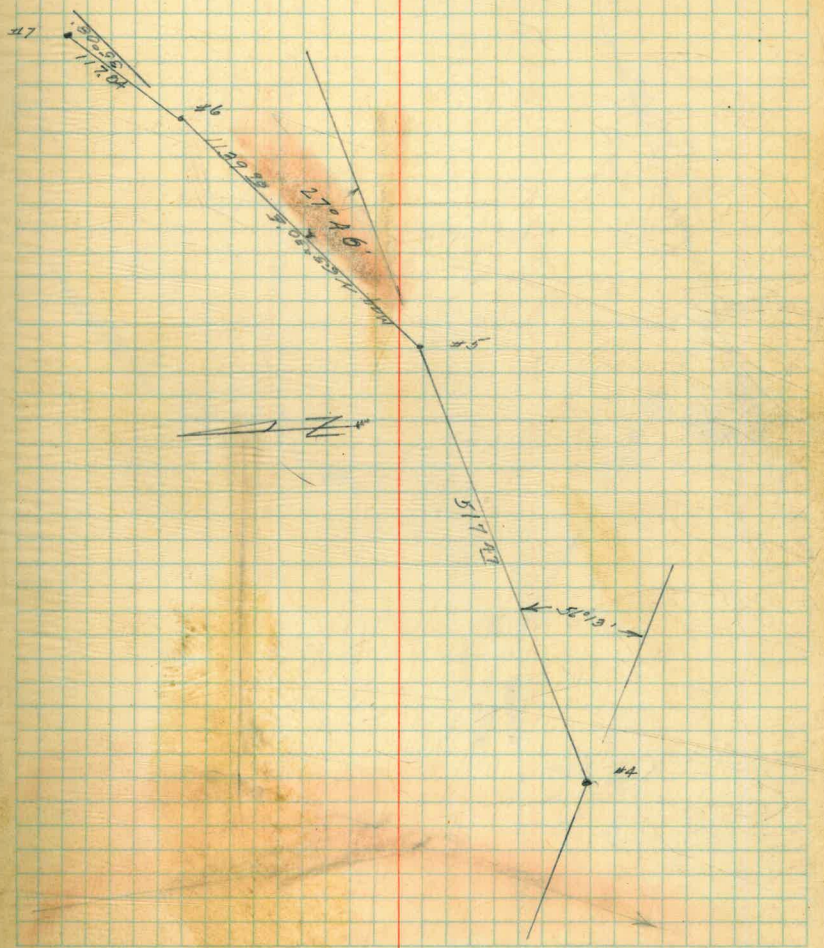


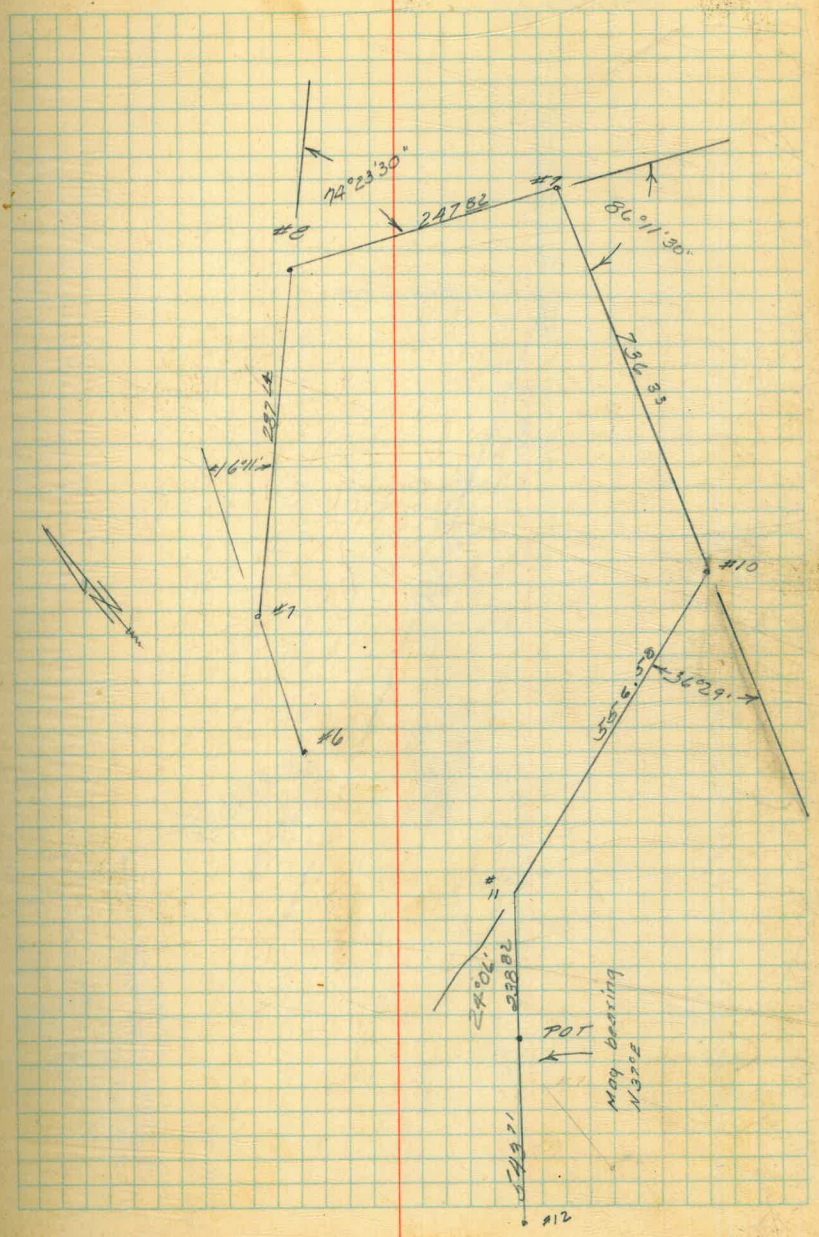
72

Murray Lake Prop Line (check)

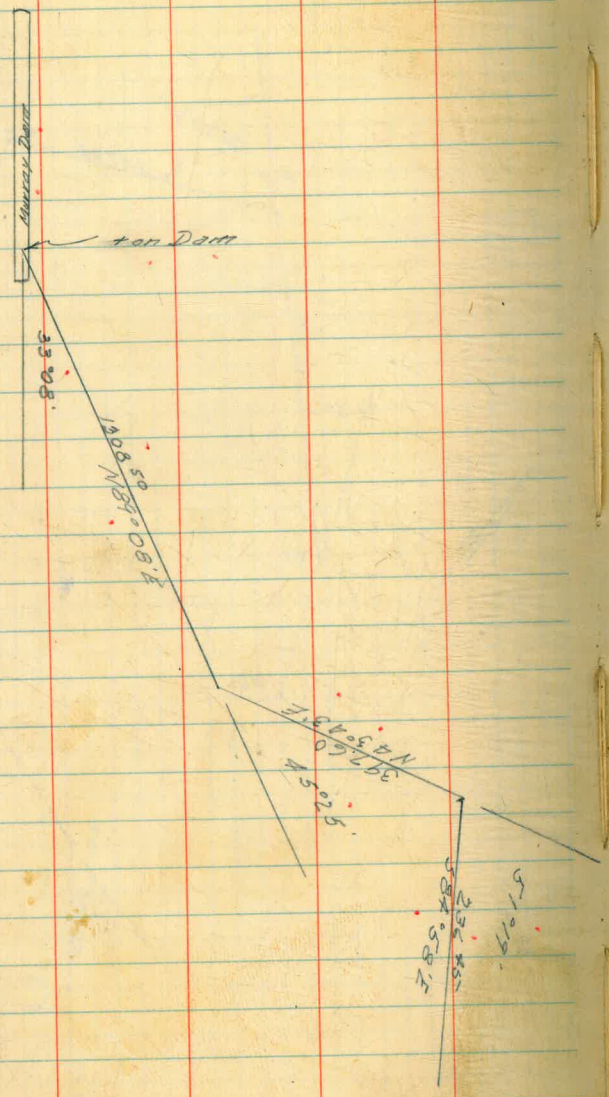
1987

72

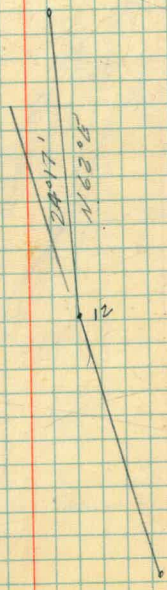



#8
14°23'30"
#9
247.82
86°11'30"
736.33
#10
237.4
+/-64'+/-
#7
#6
35°6.5'
+36°29'+
#11
<4°04'
238.82
POT
Mag. bearing
N 32°E
#12

74 From Murray Dam To Edge of Roperty



74

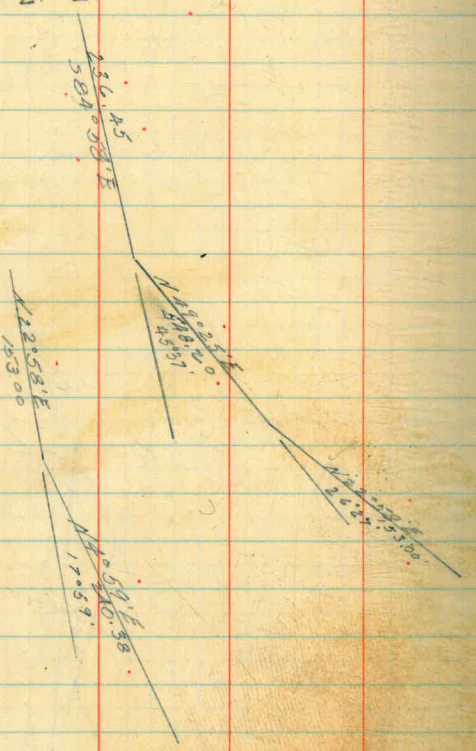


75

137° 23'

N 62° 58' 10" E
N 26° 39' 06" E
36° 19' 04"

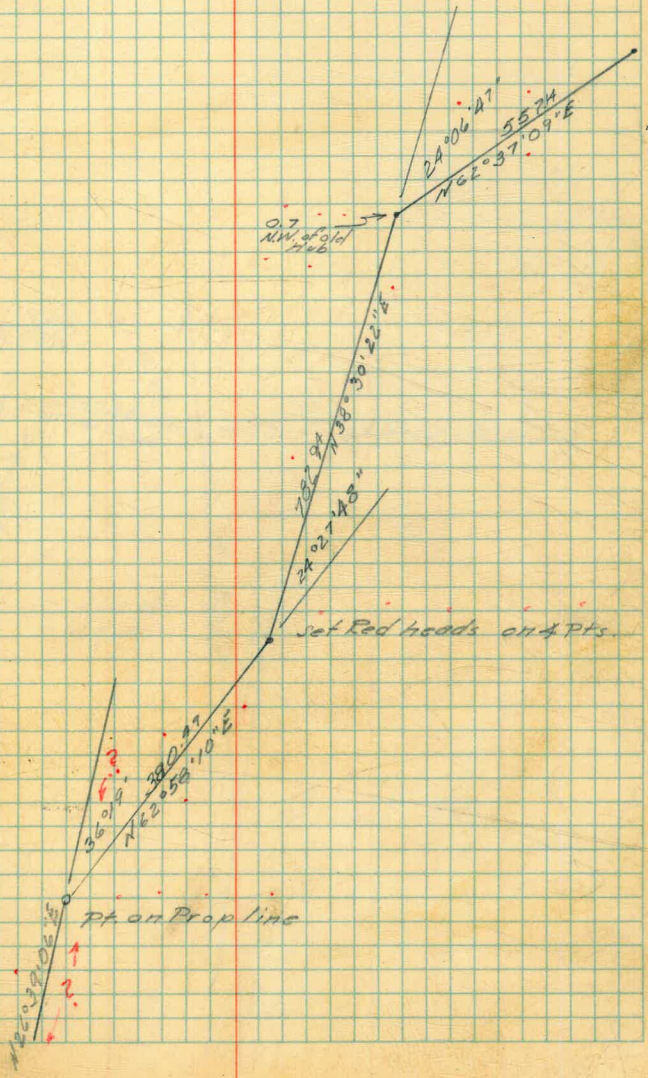
N 62° 58' 10" E
N 38° 30' 22" E
24° 27' 48"



Traverse around Murray Prop lines

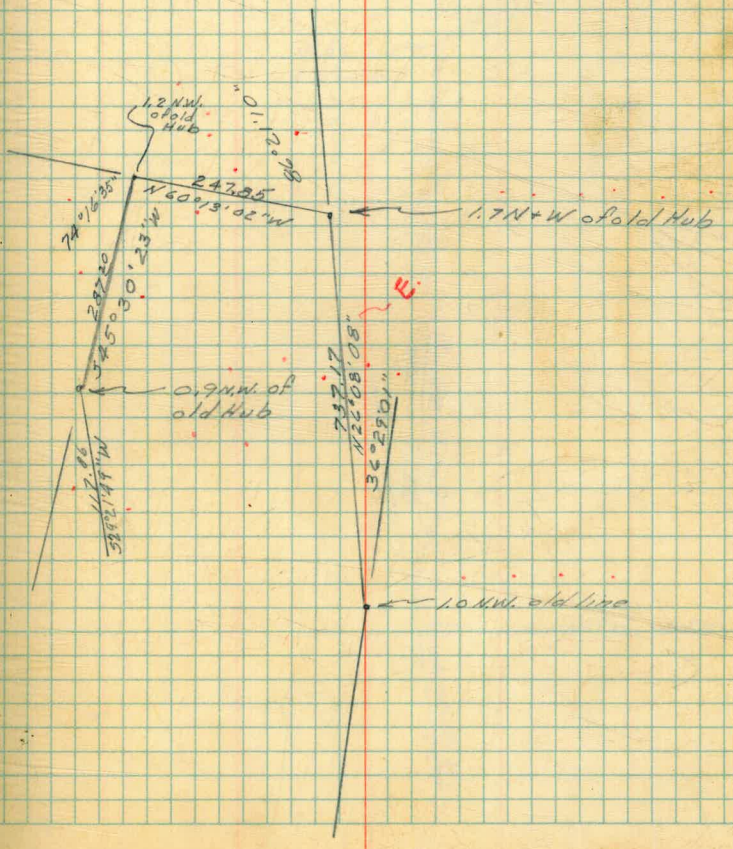
75

Bearings + Distances from Map #3515

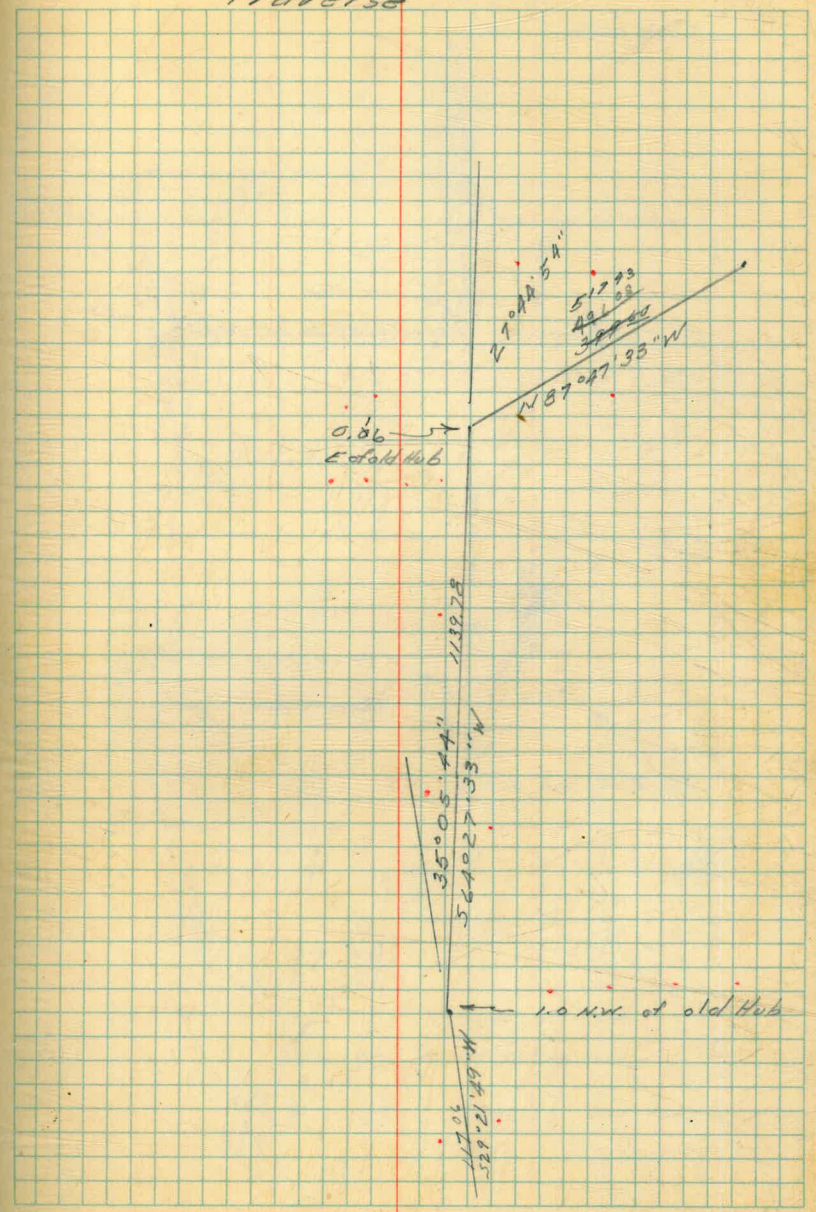


76

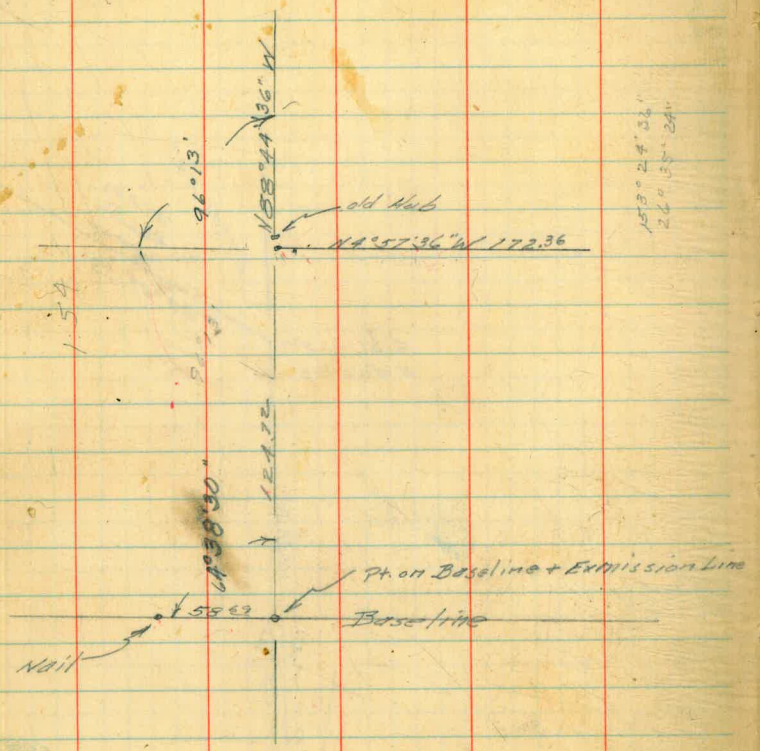
Murray Pipeline Traverse (cont)

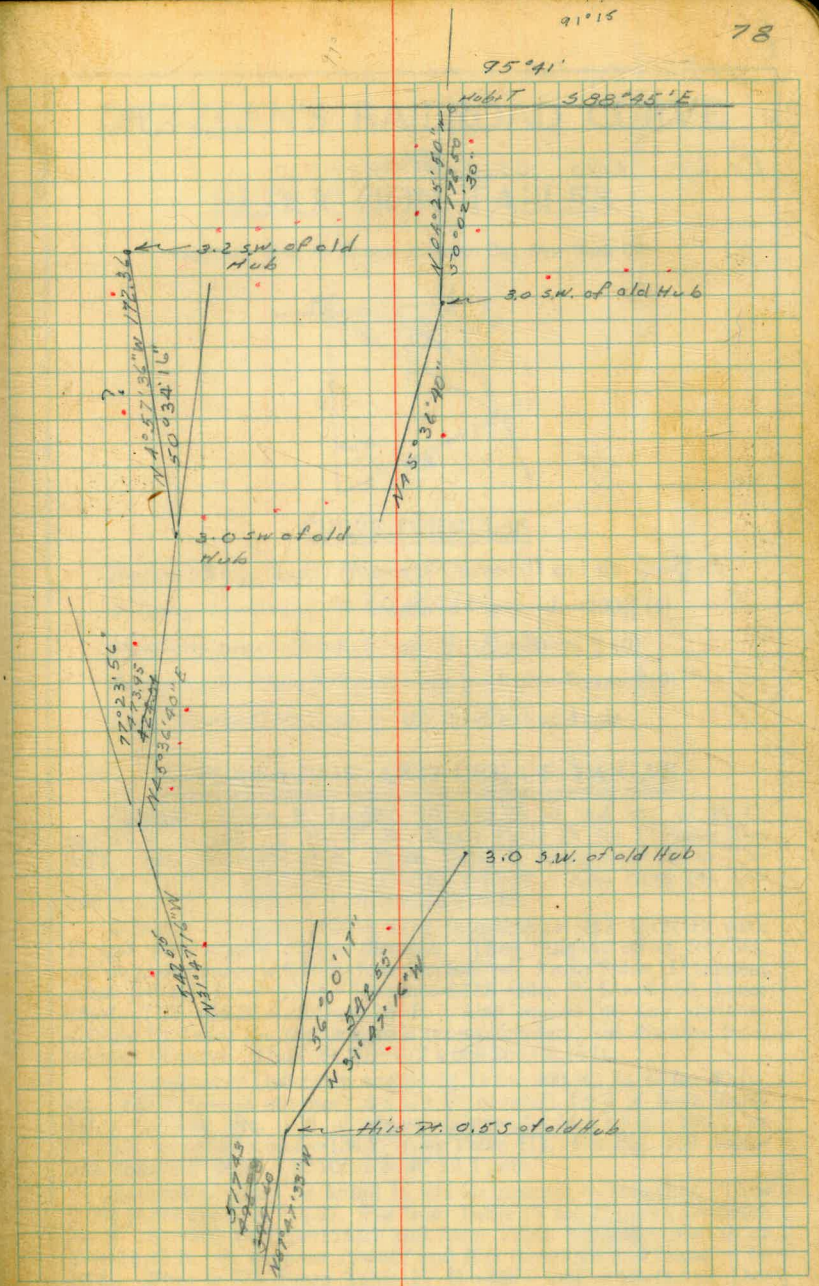


Traverse


N 7°44' 54" W
5' 93
N 87°47' 93" W
0.86
E of old Hub
1139.78
S 35°05' 44" W
S 54°27' 33" W
1.0 N.W. of old Hub
N 70°
S 20°21' 44" W

T.I.C. To Existing Baseline

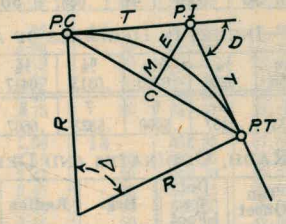




BM 566 [2-3]

Pt. 68 1.95' Lower 93+77

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=Rtan$\frac{\Delta}{2}$ (3) Length of Curve=L=100$\frac{\Delta}{D}$ (4)

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

External=E=Ttan$\frac{\Delta}{4}$-(7)=R÷cos.$\frac{\Delta}{2}$—R(8)=Rexsec$\frac{\Delta}{2}$(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 $(54.50\div100)^2$=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2\div(2\times688.26)$=2.16 ft.

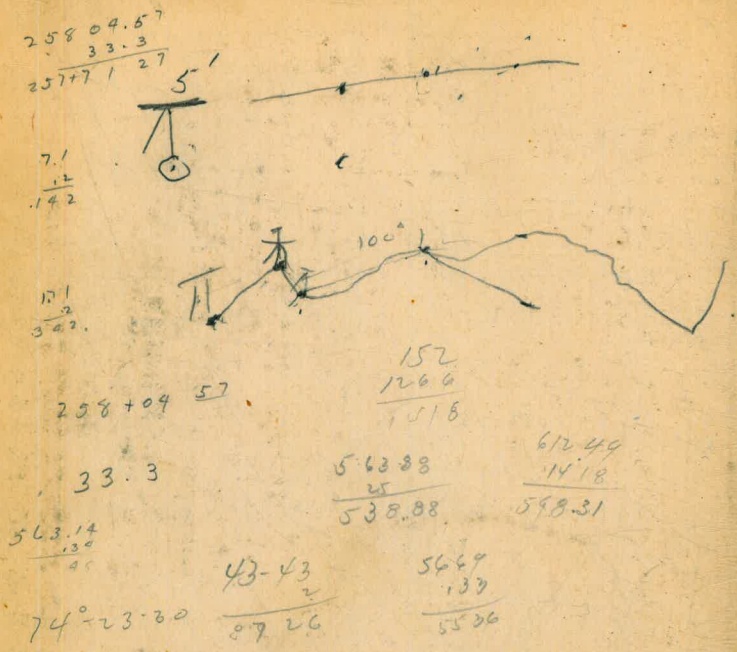
Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′ +8° 20′ ÷2=6° 26.2′,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

Externals.—May be found in similar manner to tangents. Thus E for curve above is 115.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6÷8⅓=115.27 and from Table V correction=.10 or E=115.37 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′.

S 38° E

N 42° 50 - 30
20 37
S 22 · 13 - 06 E

38°



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.