1109

DIETZGEN

ENGINEER'S

FIELD BOOK

No. 404

EUGENE DIETZGEN CO.

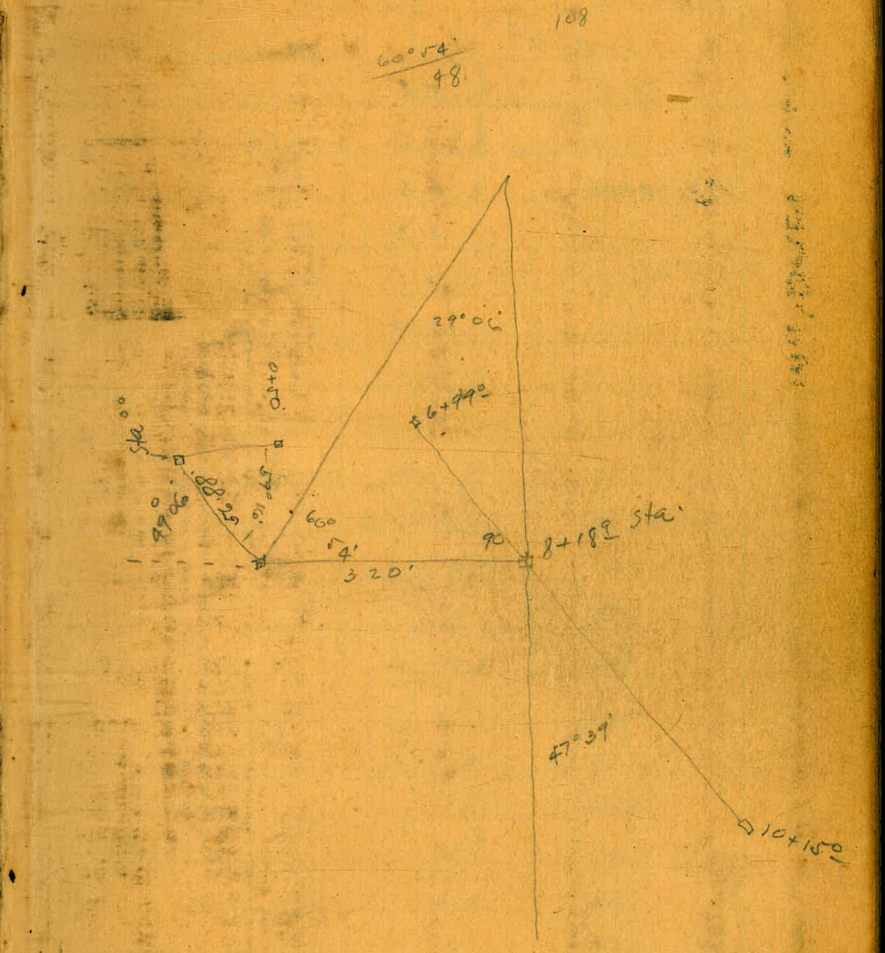
DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

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



9+07	12.7	629
+21	10.8	648
+36	7.2	684

Cont. on Next Page

Δ 33° 22'

Sta 21+73.5

Sta.	+	HI	−	Elev. Ground
		75.64		
0+55			5.3	70.3
1+00			2.2	73.4
1+34.77 = MH#69 = 0+00			0.5	75.1
0+40			4.3	71.3
+90.45 = MH#231			12.1	63.5
			9.00	66.64

38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	[illegible]	[illegible]
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.

Preliminary Levels in Mission Valley
Bet. Sta. 53+84 + 55+86 Page 53

Sta.	+	HI	−	Elev. Ground	
	6.82	73.74		66.92	Redwood hub Sta 53+84 Page 53
55+56 = 0+00 = ℄ MH#68 Profile 4, 5' Lt. Bott. Bank			10.1	63.6	
0+08			11.2	62.5	
+20			9.4	64.3	
+44			5.5	68.2	
+46 = Bottom Bank			22.0	51.7	
1+26 12' Lt. = Bank			20.5	53.2	
1+28			4.4	69.3	
+52			6.8	66.9	

Levels New ℄

Sta.	+	HI	−	Elev. Ground	
MH#67 = 0+00		75.64	12.36	63.28	= B.M. on
+27			8.0	67.6	
+38			8.2	67.4	
+42			11.2	64.4	
+62			15.6	60.0	
+84			13.4	62.2	
+94 = Top Bull Run			9.4	66.2	
+95 = Bottom " "			13.4	62.2	
1+14 = " " "			13.4	62.2	
+15 = Top "			9.1	66.5	
1+38 = ℄ MH#68 = 0+00			11.4	64.2	
0+07			12.7	62.9	
+21			10.8	64.8	
+36			7.2	68.4	

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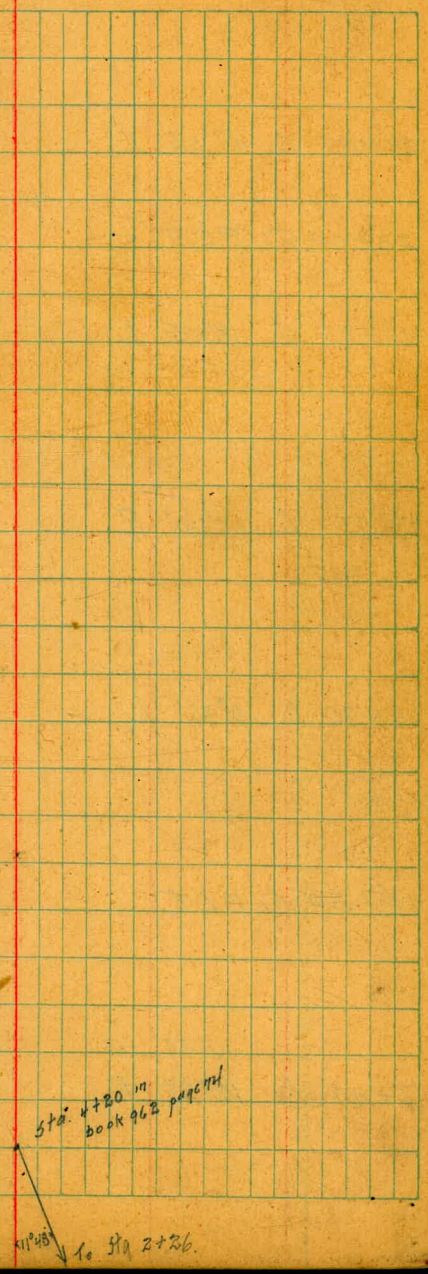
12/14/23 Gregory. Location of Mission Valley Sewer seepage 14 for Levels

10+15	Δ 4°48'	L
6+99	27°11'	L
4+96	23°14	R.
4+09	39°54'	R.
3+54	97°20'	R.
1+03	45°56'	L
0+50	34°46'	L

4+20 in book 962 page 74
= 0+00



24+07 △ 47°55 L

23+00 ⊙ P.O.T.

19+25 △ 13°45' L

17+75 △ 17°40' R.

16+30 △ 10°36' L

14+50 ⊙ P.O.T.

180

10°59' 30"

12+40' △ 12°28 R.?

37+46 △ 55°37' R

35+90 △ 76°06' R, = 31+46 Hile:
Note: Hile continues on this line to its end =
46+01 Gregory 41+57

35+00 △ 74°18' L

31+65 △ 8°02' R

29+50 △ 8°12 L

27+90 ⊙ POT

25+40 △ 10°36' L

40+15 △ 9°12' L.

38+30 △ 46°10' L = 41+57 Mile:

	+	℄ 32.40	−	Ground	Grade
			From Page 58.		
132+00			6.8	25.6	
+28			11.0	21.4	
132+32 Δ Lt.			12.65	19.79	
+34			13.3	19.1	
+42			13.3	19.1	18.68 ✓
132+96			4.3	28.1	
132+51°° P.O.T. = Hilo 118+62°° Δ			3.77	28.67	
+67			3.0	29.4	
133			10.55	21.9	
+40			10.4	22.0	
+40			11.6	20.8	
# 133+43°° Δ Rt. 5.72		26.49	11.67	20.77	18.07 ✓
+50			7.3	19.2	
+65			8.7	17.8	
+70			8.6	17.9	
+75			6.2	20.3	
133+91° Δ Rt. 9.51		30.21	5.79	20.70	17.78
134			9.7	20.5	
+40			9.0	21.2	
+50			4.2	26.0	
+63			5.7	25.5	
+80			15.55	14.7	
+92			18.5	11.7	
135	On old Pump foundation.		18.0	12.2	
+26			17.6	12.6	
+34			14.0	16.2	
#	12.65	37.49	5.37	24.84 = Hilos 119+62 Δ 24.75	

	+	℄ 37.49	−	Ground	Grade
135+42			5.2	32.3	
+50			4.1	33.4	
+55 = P.O.T.			Hub. 3.61	33.9	
+60			3.7	33.8	
+70			11.9	25.6	
135+97° Δ Lt.			13.5	24.0	16.55 ✓
# 1.37		26.21	12.65	Hilo hub. 24.84	
136			2.2	24.0	
+50			3.8	22.4	
137			5.3	20.9	
+50			6.0	20.2	
138			7.8	18.4	
+50			8.4	17.8	
+70			9.7	16.5	14.91
139			9.5	16.7	
+25			8.0	18.2	
+50			7.9	18.3	
# 4.88			Hub.		
139+73° Δ Lt.		23.41	7.68	18.53	14.29
+90			4.4	19.0	
140			3.2	20.2	
+15			2.9	20.5	
+35			5.6	17.8	
+50			5.7	17.7	
141°			8.5	14.9	13.52
+50			8.0	15.4	

	+	π	−	
		23.41		
+57			7.5	15.9
+60			5.9	17.5
+70			5.1	18.3
#			Hub.	
141+80 Δ ℄	4.81	27.57	5.65	17.76 13.05
142			6.8	15.8
+05			7.8	14.8
+50			6.8	15.8
143			6.5	16.1
+20			8.2	14.4
+50			8.0	14.6
#	4.18	23.32	3.43	19.14 = Rock.
			4.18	19.14 = Hile's 19.10

Nail in old Concrete Bridge 1' from N.E. Cor.

Sta	Elev
143+50	15.0
+54	16.0
+70	16.8
+85	17.0
144+00	16.6
+16	16.8
+27	16.5
+32	16.8
+35	19.0
+40	20.0
+60	21.0
+67	22.0
+75	23.0
+86	22.0
145+00	18.0
+06.28	19.5

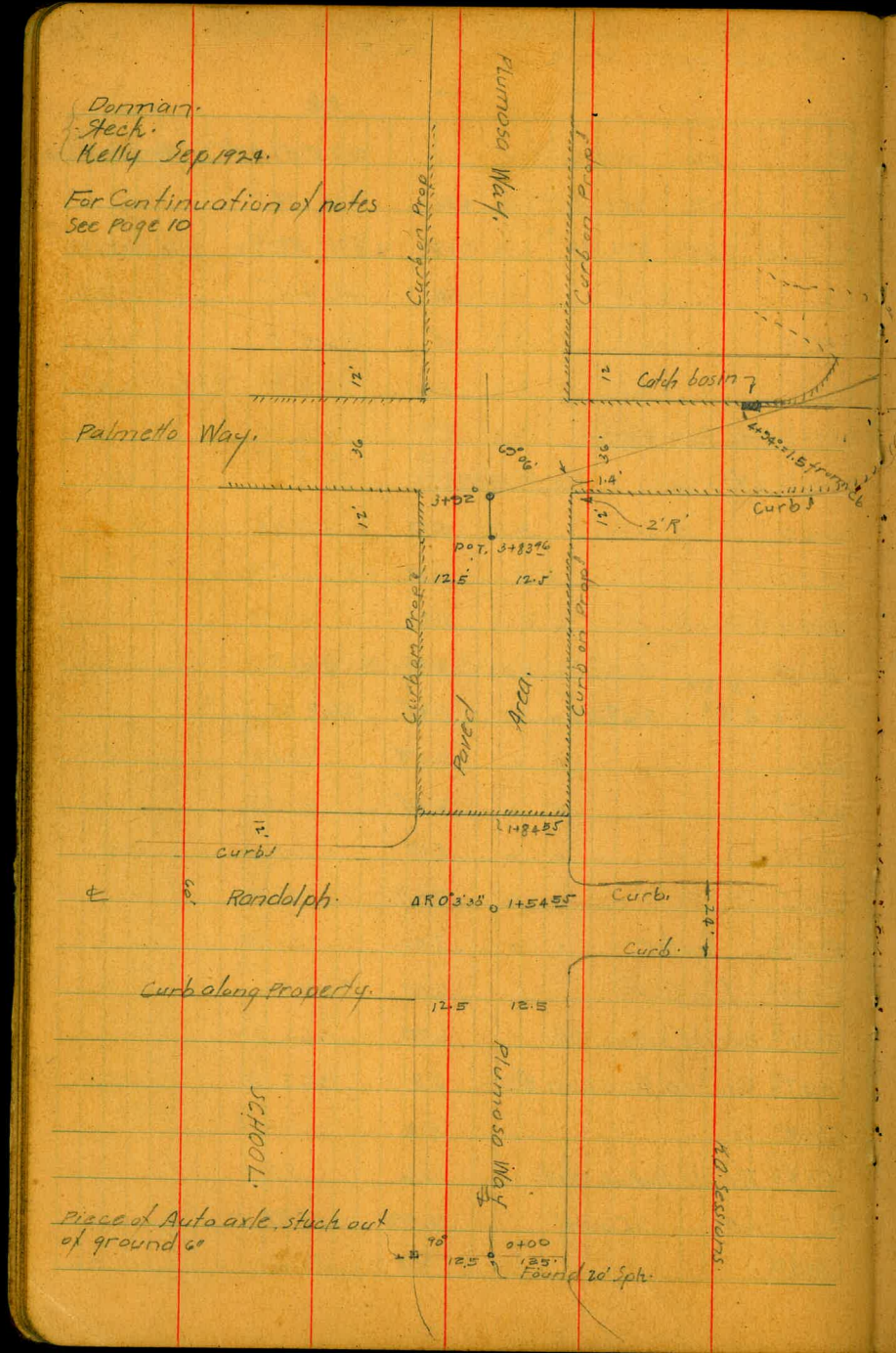
From contour plat for Flush Tank by GRH.

From K.O. Sessions house to Allen Terrace Septic tank. See Page 7. Sketch. 6

	+	π	−	Elv
#	4.14	279.65		=275.51 S.W. Cor Randolph & Lewis
#	6.21	281.00	4.86	274.79
#	0.37	271.90	9.47	271.58
00			7.4	264.5
0+50			6.5	265.4
1+00			5.6	266.3
1+54.5 ℄ Randolph			5.2	266.70
1+84.5 = W.C. "			6.3	265.77
			On Pavement	
2+00		" "	5.87	66.03
2+50		" "	5.38	66.52
3+00		" "	4.81	67.09
3+50		" "	3.98	67.92
# 3+92 Δ R	0.37 268.72	" "	3.45	268.45
4+00		" "	0.59	68.13
4+50		" "	2.45	66.27
5+00		" "	5.18	63.54
+25		" "	7.00	61.72
5+30.3 = Gutter		" "	7.00	61.72
5+33.3 On Curb			6.67	262.05
5+37 Outside Bottom Wall			6.70	262.02
5+37 On top Hardpan Wall.			5.4	263.3
5+38 " " " "			5.4	63.3
5+41 Inside Bottom Wall.			13.6	55.1
#	0.81	256.64	12.80	255.83
5+50			2.3	54.3

Donnan.
Heck.
Kelly Sep 1924.

For Continuation of notes
See Page 10



6+00.35
For Continuation of notes See Page 10

Note at 5+34.8 Line cuts across inside end Curb. At Cor.

5+34.8 = P.O.T. Hub.

12" Cor. ∫

Curb Inlet.

		+	π	−	Ele
			276.64		
√7√5√				2.7	53.94
+56	Dry Rubble Wall			4.8	51.84
+80				8.8	47.84
6+00.35	Δ Rt	0.24	254.32	8.56	248.08
+50				8.8	45.5
7				9.9	44.4
+50				11.4	42.9
#	Δ Rt.	0.35	241.96	12.71	Hub 241.61
8				1.5	40.46
+50				8.1	33.86
#		0.00	230.04	11.92	Pipe in rubble wall 230.04
8+99°	Bottom hardpan Wall			2.2	27.8
8+99°	Top " "			0.4	29.64
9+00	On Wall.			0.4	29.64
Δ 4 9+36				Hub 5.88	224.16 (0+93)
9+47				6.2	23.84 (0+82)

	+	π 230.04	−		
9+50	Top Ridge		5.3	224.74	(0+79)
9+75	"		5.6	224.44	(0+54)
10+00			7.6	222.44	(0+29)
#					(0+00
10+29.2 Δ Rt.	0.37	217.85	12.56	217.48	(16+77)
10+50			3.7	214.2	(16+98)
11+00			12.2	205.7	(17+48)
#	1.85	207.17	12.58	205.27	
11+50			8.1	199.0	(17+98)
12+00			11.6	195.5	(18+48)
#	2.34	196.58	12.88	194.29	
#				Hub	
12+52.9 Δ Rt	0.03	187.37	9.24	187.34	(19+00)
#	0.39	174.78	12.98	Rock 174.39	
13+00			4.3	170.6	(19+48)
#	0.07	161.77	13.03	Rock 161.75	
#	0.19	148.96	13.00	Rock 148.77	
13+50			1.3	147.7	(19+98)
#	0.37	137.07	12.26	Rock 136.70	
14+00			9.5	127.6	(20+48)
#	0.11	124.74	12.44	Rock 124.63	
+50			11.8	112.9	(20+98)
#	0.90	113.23	12.41	Rock 112.33	
15+00			11.4	101.8	(21+48)
#	1.37	102.17	12.43	100.80	
15+36.9 Δ Rt	Water line		7.06	95.11	(21+84.4)
"	Top of Cover		4.71	97.46	
15+50			7.4	94.77	(21+98)
15+55	Crosses fence.				

(Stations used in plotting)

48.2

	+	π 102.17	−	Elc	
16+00			12.4	89.8	22+48
#	0.28	89.80	12.65	89.52	
16+50			4.8	85.0	22+98
17			11.5	78.3	23+48
#	1.00	78.15	12.65	77.15	
+50			7.5	70.65	23+98
#	0.29	66.03	12.41	65.74	
18+00			2.4	68.6	24+48
18+50			7.7	58.3	24+98
#	3.71	57.00	12.74	53.29	
19+00			6.6	50.4	25+48
19+17.3 = 83+53			9.46	47.54 = 48.00	25+65.3

New line figured from 21+77 to M.N.L to miss tank
Last station = 25+63.1 Used same levels

144+06.2 = 127+94.4 Hile = Nail Header board.

141+80 ℄ 6°16'

139+73 ℄ Δ 12°35'

135+97 ℄ Δ. Δ 44°53'

135+55.3 P.O.T.

133+91 ℄ Δ Rt 59°48' From Page 60.

(25+65.3)

13+17± = 83+53° Mission Valley Δ Lt 0.5° to 85+21±

15+36± Δ Rt 45°31' (21+84.4)

12+52± Δ Lt 31°25' (19+00)

10+29± Δ Rt 50°42'

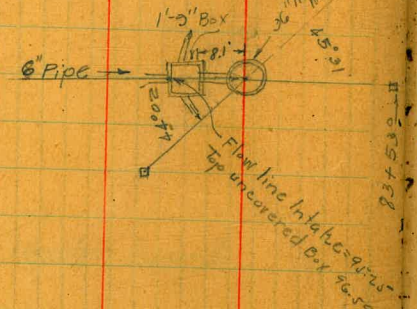
9+36± Δ Lt 59°34'

7+85± Δ Rt 2°55'

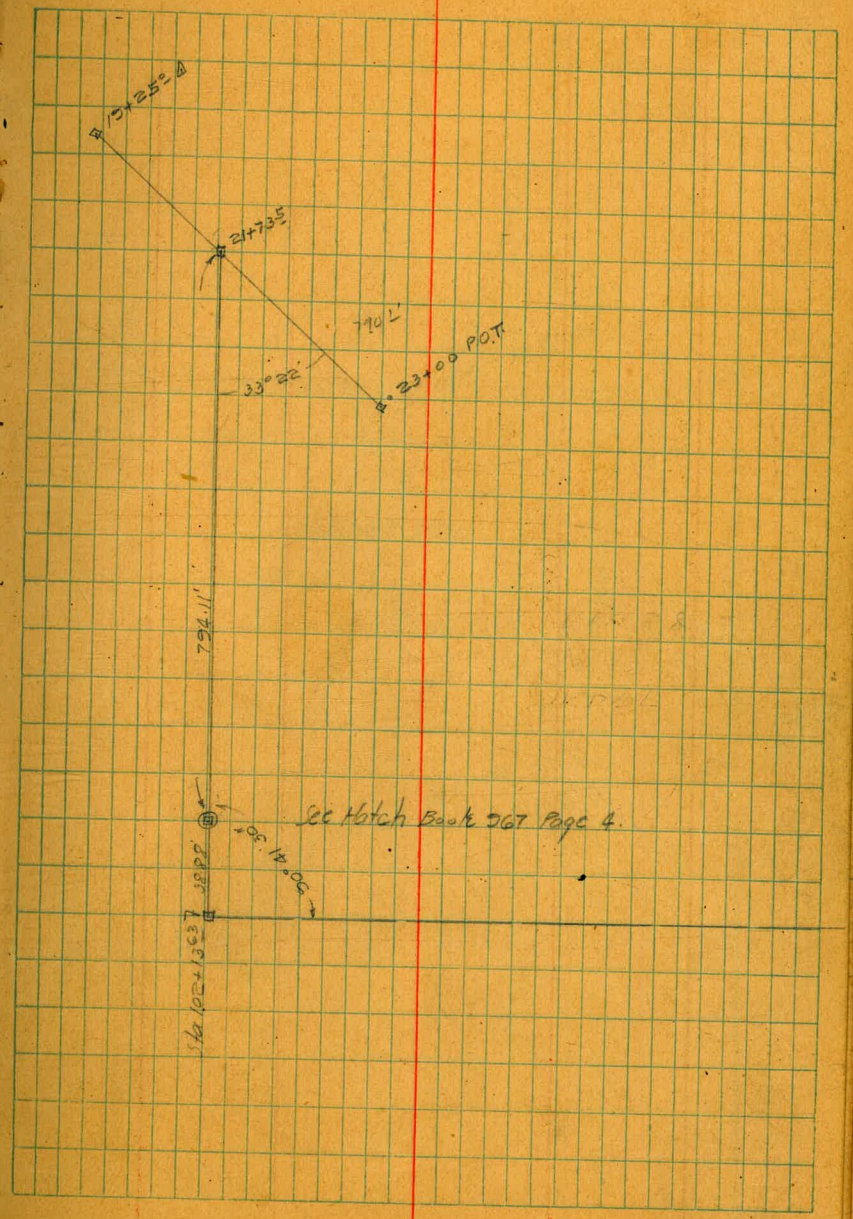
6+00±35 Δ Rt 21°46'

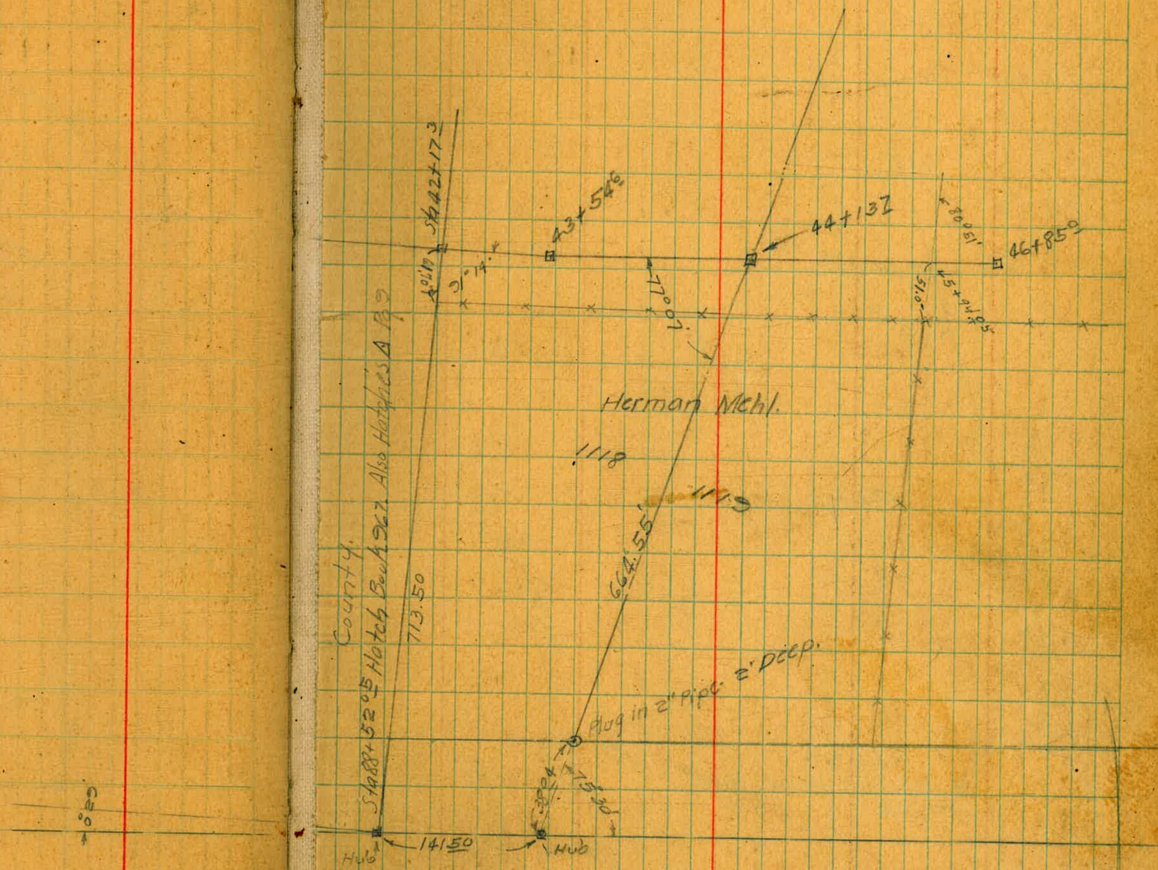
5+34± P.O.T.

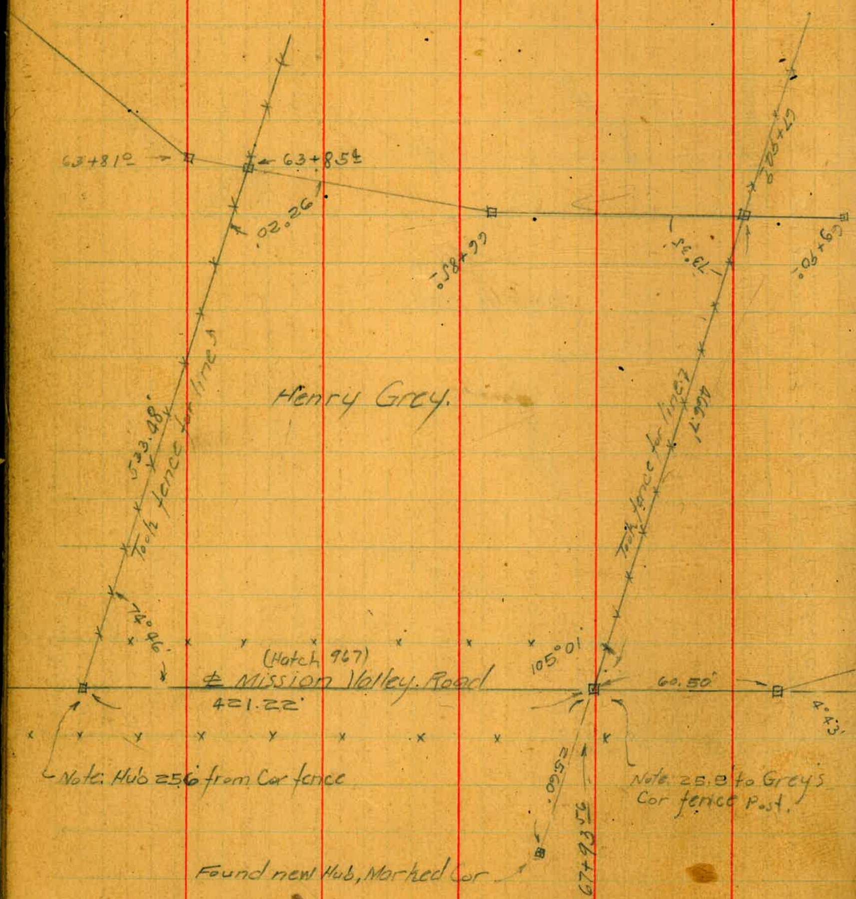
3+92± Δ Rt 69°06' See Page 7.

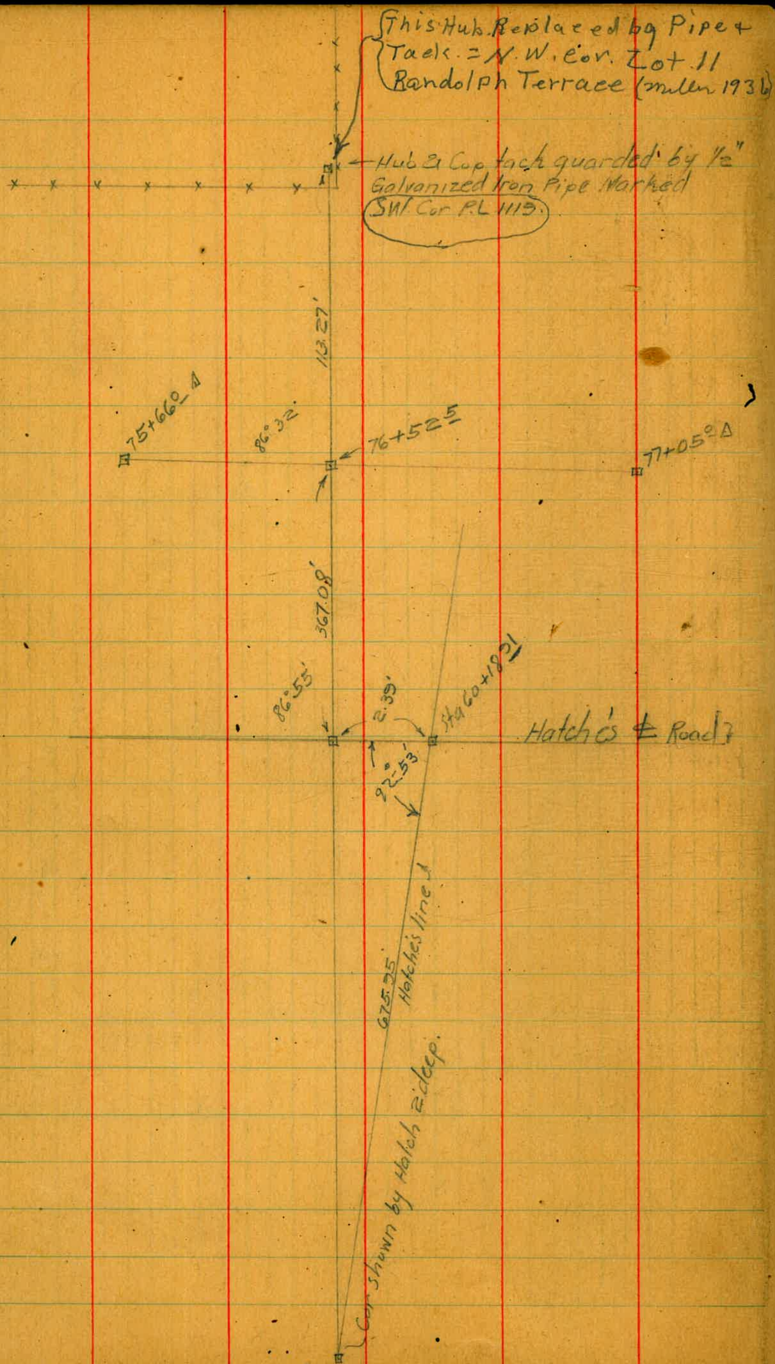


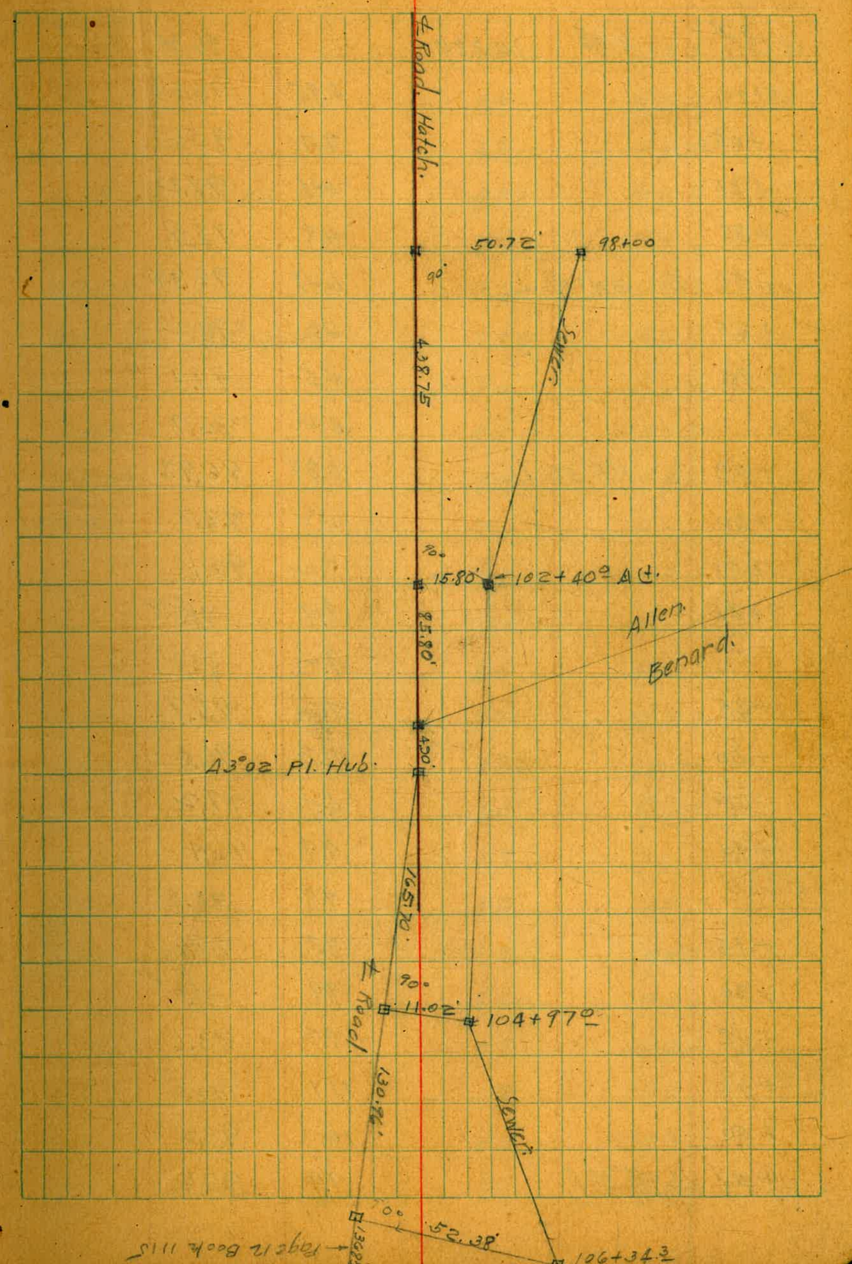
Sur p39




Sta 42+17.3
43+54.0
44+13.2
46+85.0
Herman Mehl.
1118
1119
664.55'
713.50
County.
Plug in 2" Pipe 2' Deep.
Hub
141.50
Hub


63+81º
63+85±
02.26'
66+85.
73°35'
67+85±
69+90.
Henry Grey.
533.48'
Took fence for line
Took fence for line
406.7'
74°46'
(Hatch 967)
℄ Mission Valley. Road
421.22'
105°01'
60.50'
4°43'
Note: Hub 25.6 from Cor fence
Note: 25.8 to Grey's Cor fence Post.
25.60'
67+93±
Found new Hub, Marked Cor


This Hub Replaced by Pipe + Tack = N.W. Cor. Lot 11 Randolph Terrace (miller 1936)
Hub & Cup tack guarded by 1/2" Galvanized Iron Pipe Marked SW Cor PL 1115
13.27'
75+66.0 Δ
86°32'
76+52.5
77+05.0 Δ
367.08'
86°55'
2°35'
Sta 6+18.91
Hatch's ℄ Road?
92°53'
675.35 Hatch's line
Cor shown by Hatch 2' deep


℄ Road. Hatch.
50.72
98+00
90°
438.75
90°
15.80'
102+40.0 A ℄
85.80'
Allen
Benard.
4.20
Δ3°02' P.I. Hub
165.70
℄ Road
90°
11.02'
104+97.0
130.92'
Sewer
90°
52.38'
106+34.3
Page 12 Book 1115
3.90'

12/14/23 Gregory

Levels on Mission Valley Sewers

See page 1 for location

on BM	6.95	103.29	96.34	Hub at 0+00
0+00		6.95	96.34	
+05.0		7.7	956	
+25		6.1	97.2	
+38		4.8	98.5	
+50	△ 34°46' L	6.41	96.88	on hub
+65		4.1	99.2	
+90		4.5	98.8	
1		6.4	96.9	
+03	△ 45°56' L	6.37	96.92	on hub
+20		4.4	98.8	1' R = 1.3 lower
+50		7.2	96.1	
+85		8.9	94.4	
2		9.4	93.9	
+25		7.6	95.7	
+50		7.3	96.0	
+75		6.1	97.2	
+90		6.9	96.4	
3		7.8	95.5	
+15		7.7	95.6	
+30		9.9	93.4	
+42		9.7	93.6	
+46		11.1	92.2	
+50		10.1	93.2	
+54	△ 97°20' R	9.9	93.4	
+60		9.4	93.9	
+80		9.9	934	
4		9.8	93.5	
+09	△ 39°54' R	9.80	93.5	on hub
+50		9.7	93.6	
+75		9.6	93.7	
+96	△ 23°14' R	7.59	95.7	on hub
5		7.0	96.3	
+30		9.4	93.9	
+50		8.2	95.1	
+75		8.0	95.3	
6		7.9	95.4	
+25		7.4	959	
+50		8.1	95.2	
+80		7.7	95.6	
+99	△ 27°11' L	9.33	93.96	on hub
7+10	= edge of Road	5.4	97.9	
+20		6.7	96.6	
+50		8.8	94.5	
+80	= edge of Road	10.9	92.4	
8		8.2	95.1	
+05.0		7.9	95.4	
+15		4.8	98.5	5' R = 7.3 lower
+30		5.4	97.9	
+50		7.6	95.7	

		103.29			
+69			10.8	92.5	
+72			7.5	95.8 ✓	1' R = 4.3 lower
+81			5.8	97.5	3' R = 8' lower
9			7.1	96.2	
+23			4.6	98.7	
+32			6.1	97.2	
+37			7.9	90.4	
+50			4.3	99.0	
+56			5.2	98.1	
+65			8.6	94.7	
+68			6.3	97.0	
+85			6.6	96.7	
10			4.4	98.9	
+09.0			2.8	100.5	
+15	△ 4°48' L		3.63	99.66 ✓	88.16 on hub.
+32			6.3	97.0	
+38			9.6	93.7	
+50			10.5	92.2 ✓	
T.P.	0.96	92.98 ✓	11.27	92.02 ✓	
+75			1.9	91.1	
11			2.3	90.7	
+15			3.0	90.0	
+50			2.7	90.3	
+78			0.1	92.9	
T.P.	3.91	96.26 ✓	0.63	95.35 ✓	
12+00			2.1	94.16	

12+17			3.9	92.36	
+26			6.5	89.76	
+33			7.6	88.7 ✓	
+40	△ 10°58' R.		7.06	89.20 ✓	on hub
+60			6.1	90.16	
+90			6.9	89.36	
13			6.4	89.86	
+25			5.3	90.96	
+50			2.4	93.86	
+65			2.0	94.26	
T.P.	9.47	93.93 ✓	11.80	84.46 ✓	
+90			2.5	91.4	
14			4.6	89.3	
+10			5.8	88.1	
+40			3.7	90.2	
+50	9.21	98.68 ✓	4.46	89.47 ✓	85.5 on hub
+54			9.3	89.38	
+60			11.3	87.38	
+85			11.9	86.8 ✓	85.5
15			10.8	87.88	
+25			7.1	91.58	
+50			5.8	92.88	
+70			5.1	93.58	
16			7.4	91.28	
+05.0			7.0	91.68	

		9868			
+15			9.5	89.18	
+30	△ 10°36' L.		10.40	88.28 ✓	on hub
+50			8.8	89.88	
+65			8.5	90.18	
17			4.6	94.08	
+15			5.1	93.58	
TP	9.09	97.86 ✓	9.91	88.77 ✓	
+40			10.1	87.76	
+57			12.6	85.26	
+72			13.0	84.86	
+75	△ 17°40' R.		14.44	83.42 ✓	83.60 on hub
+78			12.7	85.16	
18+00			13.8	84.06	
+30			11.6	86.26	
+50			11.0	86.86	
+75			10.6	87.3 ✓	
19			11.3	86.56	
+15			8.1	89.76	
+25	△ 13°45' L		8.10	89.76 ✓	94.1 on hub
+50			5.8	92.06	
+73			10.6	87.26	
+85			17.9	79.96	
+90			14.2	83.7 ✓	97.3
20			13.0	84.9 ✓	
+20			12.5	85.36	
+35			13.6	84.3 ✓	

20 540 144 ✓ — 85 ✓ 14 ✓ 8360 — 32 ✓ 1450

+50			13.6	84.26	97.8
+75			12.5	85.4 ✓	
21			11.4	86.46	
+30			8.9	88.96	
+47			9.9	87.96	
+50			9.4	88.46	81.5
22+00			3.4	94.5 ✓	
TP	10.80	105.89 ✓	2.77	95.09 ✓	
+15			7.8	98.09	1 IP = 24 hours
+21			8.9	96.99	
+50			4.9	101.0 ✓	
+75			5.2	100.69	
23+00	1.84	102.08 ✓	5.65	100.24 ✓	90.46 + 9.65 IP = 5 hours
+25			3.8	98.3	
+50			5.3	96.8	
+75			6.4	95.7	
24			11.8	90.3	
+07	△ 47°55 L.		15.54	86.54 ✓	99.81
TP	9.81	98.92 ✓	12.97	89.11 ✓	
+25			9.4	89.52	
+50			8.4	90.52	
+85			9.8	89.12	
25			13.1	85.82	
+07.0			14.5	84.42	
+20			14.9	84.02	

		98.9			
T.P	6.95	93.14	12.73	86.19	
+40 △ 10°36' L			9.50	83.64	79.81 on hub
+50			8.8	84.34	
26			7.5	85.64	
+50			5.1	88.04	
+75			6.7	86.94	
27			5.2	87.94	
+25			4.8	88.34	
+50			3.1	90.0	
+60			2.4	90.74	
+90			4.76	88.38	on hub
T.P.	1.30	87.86	6.58	86.36	
28			1.7	86.16	
+22			10.3	77.56	
+35			11.9	76.0	
+50			9.2	78.66	
+77			2.8	85.1	
29			3.4	84.5	76.85
+30			5.0	82.9	
+50 △ 8°12' L			7.16	80.70	76.8
+60			7.8	80.06	
+63			7.1	80.76	
30+00			7.3	80.56	
+50			6.3	81.56	
+65			6.5	81.36	
31+00			8.5	79.36	

+50			9.4	78.46	
+65 △ 8°02 R			9.35	78.51	75.32 on hub
T.P	6.27	85.29	8.84	79.02	
+75			7.2	78.09	
32			6.2	79.09	
+50			4.4	80.89	
+65			3.9	81.39	
33			3.6	81.69	
+20			2.6	82.69	
+50			3.1	82.19	
+65			2.9	82.39	
+80			2.2	83.09	
34			3.1	82.19	
+50			4.2	81.1	73.61
+80			6.3	78.99	
35 △ 74°18 L			9.62	75.67	73.25 on hub
+15			5.5	79.79	
+25			4.2	81.09	
TP	4.35	85.44	4.20	81.09	
+35			4.9	80.54	
+50			3.9	81.54	
+77			5.3	80.14	
+90 △ 76°06 R			7.97	77.47	72.71
TP	0.53	73.26	12.71	72.79	
36			3.1	70.16	

Cont'd Page 52 by MMD

		7326			
+ 09.0			10.5	62.76	
T.P.	3.06	65.82 ✓	10.50	62.76 ✓	
+ 29			10.9	54.92	
+ 50			11.4	54.42	
+ 69			11.0	54.82	
+ 74			12.2	53.62	
+ 79			11.3	54.52	
+ 85			13.2	52.62	
+ 91			8.6	57.22	
37			5.7	60.12	
+ 11			1.7	64.12	
T.P.	12.26	77.37 ✓	0.71	65.11 ✓	
+ 30			8.1	69.27	
+ 46	△ 55°37	R.	1.96	75.41 ✓	71.87 on hub
+ 50			1.6	75.77	
T.P.	5.05	81.73 ✓	0.69	76.68 ✓	
38			3.0	78.73	
+ 30	△ 46°10'	L	7.03	74.70 ✓	71.27 on hub
+ 50			5.8	75.93	
+ 80			4.4	77.33	
39			4.9	76.83	
+ 15			4.6	77.13	
+ 35			5.7	76.03	
+ 50			5.4	76.33	
40 + 00			6.3	75.43	
+ 15	△ 9°12	L	7.50	74.23 ✓	70.16 on 706

TP	340	78.77 ✓	6.36	75.37 ✓	
+ 35			5.8	72.97	
+ 50			5.6	73.17	
+ 60			5.6	73.17	
+ 75			6.8	71.97	
41 + 00			5.3	73.47	
+ 15			4.7	74.07	
+ 50			5.7	73.07	
+ 65			6.4	72.37	
42			4.3	74.47	
+ 50			3.8	74.97	
43			4.1	74.67	
+ 50			4.5	74.27	
44			7.0	71.77	
+ 50			5.1	73.67	
+ 80			6.7	72.07	
45			7.2	71.57	
+ 50			6.5	72.27	
46 + 01	△ = 41 + 57°	Hilo:	8.65	70.12 ✓	on hub

3/8/24

Hile
Walker
Preston
Hartigan

Levels – Mission Valley Sewers

For Location see Page 41

Sta	+	H I	−	El.
B.M.	△ R. 25°25'			
4+20 = 0+00	1.29	97.63		96.34 = B.M.
0+15			3.32	94.31
0+30			5.25	92.38
0+50			8.77	88.86
0+75			11.28	86.35
1+00			12.77	84.86
T.P.	0.29	87.19	10.73	86.90
1+25			2.80	84.39
+50			3.63	83.56
+75			4.10	83.09
2+00			4.42	82.77
+25			5.13	82.06
+50			6.61	80.58
+70			11.65	75.54
+77			7.90	79.29
+97			4.40	82.79
3+05			0.57	86.62
T.P.	10.52	95.61	2.10	85.09
3+17			3.00	92.61
+42			3.90	91.71
T.P.	4.75	100.02	0.34	95.27
3+55.64	△R 37°45'		1.39	98.63
3+70			2.68	97.34
+85			3.94	96.08
4+00			5.38	94.64

Note. For grade of pipe at Sta. 0+00 use 90.40 Elv at .6% or .6 ft in 100' fall or .006 fall per ft. } Rood

Sta	+	H I	−	Elv.	
4+14		100.02	2.15	97.87	
+19			0.66	99.36	
+35			2.33	97.69	
+59			2.02	98.00	
+73			0.11	99.91	
+75			0.82	99.20	
+92			0.10	99.92	
5+04			1.68	98.34	
+25			3.10	96.92	
T.P.	5.87	105.07	0.82	99.20	
T.P. 5+59.8	△L 5°8' 1.85	101.52	5.40	99.67	T.P. on hub.
+75			4.08	97.44	
+90			8.21	93.31	
6+00			9.02	92.50	
+25			10.44	91.08	
+50			11.71	89.81	
+75			11.76	89.76	
7+00			11.90	89.62	
+15			9.64	91.88	
+30			9.58	91.94	
+50			9.08	92.44	
+70			13.30	88.22	
8+07.66	△ R, 10°10'30"		11.30	90.22	
+33			11.60	89.92	
8+50			10.88	90.64	

Sta.	+	HI	—	Elv.
8+70		101+52	9.40	92.12
+85			7.04	94.48
9+00			5.75	95.77
+15			5.70	95.82
+30			7.60	93.92
+45			11.40	90.12
+58			12.90	88.62
+75			11.44	90.08
+90			11.20	90.32
10+05			13.10	88.42
+20			13.50	88.02
+40			12.20	89.32
+60			9.74	91.78
+75			7.70	93.82
+85			7.34	94.18
11+00			6.84	94.68
11+14.81	△ L 6° 31' 30"		6.65	94.87
T.P.	0.65	99.96	2.21	99.31
T.P.	0.67	91.44	9.19	90.77
T.P.	7.52	98.29	0.67	90.77
11+30			2.82	95.47
+45			11.94	96.35
+60			2.92	95.37
+75			3.84	94.45
+90			3.24	95.05

Sta	+	HI	—	Elv.
12+05		98.29	3.04	95.25
+15			2.80	95.49
+30			1.26	97.03
+54.76	⊙ P.O.T.		1.25	97.04
+70			5.75	92.54
+85			10.06	88.23
13+00			13.00	85.29
+15			14.02	84.27
+18			15.30	82.99
+22			13.20	85.09
+35			13.34	84.95
+45			11.32	86.97
+55	△ R. 14° 43' 30"		9.22	89.07
+70			7.50	90.79
+85			6.55	91.74
14+00			7.10	91.19
+15			6.25	92.04
+30			6.42	91.87
+45			7.44	90.85
+60			4.15	94.14
+83	△ L 15° 08'		5.28	93.01
15+00			5.44	92.85
+15			7.96	90.33
+30			13.30	84.99
+35			16.70	81.59

Sta.	+	HI	—	Elv.	
15+40		98.29	13.70	84.59	✓
+55			11.32	86.97	✓
+70			10.24	88.05	✓
+78			11.80	86.49	✓
+90			11.32	86.97	✓
16+00			11.49	86.80	✓
+15			10.78	87.51	✓
+30			10.04	88.25	✓
+40	Bob's 21+00 is 4' R of HH 16+44		9.80	88.49	✓
+55			7.88	91.41	✓
+70			7.14	91.15	✓
+86	△ P 9° 19'		8.41	89.88	✓
17+00			8.70	89.59	✓
+15			8.94	89.35	✓
+30			7.40	90.89	✓
+45	on Pole Line 30' (?) E of Wire of road across valley		7.65	90.64	✓
+55			8.94	89.35	✓
+70			8.75	89.54	✓
+85	17+86 on Witness line of road across valley		8.36	89.93	✓
18+00			9.16	89.13	✓
+20	△ L 17° 10' 30"		11.36	86.93	✓
+35			12.05	86.24	✓
+50			10.26	88.03	✓
+65			9.54	88.75	✓
+80			9.10	89.19	✓

Sta.	+	HI	—	Elv.	
18+95		98.29	7.84	90.45	✓
19+10			6.60	91.69	✓
+25			5.90	92.39	✓
+35			7.25	91.04	✓
+40			8.12	90.17	✓
+45			7.26	91.03	✓
+54	Bob's 24+07 is 15' R of Δ △ L 40° 22'		11.10	87.19	
T.P	5.43	93.05 ✓	10.67	87.62	✓
19+70			2.30	90.75	✓
+85			2.58	90.47	✓
20+00			1.34	91.71	✓
+15			2.40	90.65	✓
+38			2.90	90.15	✓
+50			4.10	88.95	✓
+65			5.51	87.54	✓
+80			7.35	85.70	✓
T.P	3.30	91.64 ✓	4.71	88.34	✓
21+02.45	△ L 9° 36' 30"		6.35	85.29	
+15			5.60	86.04	✓
+30			5.61	86.03	✓
+50			5.30	86.34	✓
+70			4.54	87.10	✓
+85			4.24	87.40	✓
22+03	22+05 = Bobs 16+50		2.90	88.74	✓
+20			3.74	87.90	✓

Sta	+	HI	−	Elv.	
22+35		91.64	4.18	87.46	✓
+50			3.84	87.80	✓
+65			2.92	88.72	✓
+80			3.05	88.59	✓
23+00			2.05	89.59	✓
+15	+0.7 K		1.10	90.54	✓
+30			1.43	90.21	✓
+45.51	⊙ P.O.T		3.30	88.34	✓
+55			5.40	86.24	✓
+60			7.26	84.38	✓
+65			8.74	82.90	✓
+70			10.53	81.11	✓
+75			12.84	78.80	✓
+80			14.60	77.04	✓
+85			15.00	76.64	✓
+90			15.90	75.74	✓
+95			15.80	75.84	✓
24+00			14.30	77.34	✓
24+05			13.20	78.34	✓
+10			11.82	79.82	✓
+15			10.40	81.24	✓
+20			9.35	82.29	✓
+25			8.27	83.42	✓
+30			7.52	84.12	✓
+45	+4.6 H		6.84	84.80	✓

Sta	+	HI	−	Elv.	
24+60		91.64	7.54	84.10	✓
+75			8.32	83.32	✓
+90	△ L 9° 02'		9.22	82.42	✓
25+05			10.60	81.04	✓
+20			10.40	81.24	✓
+35			10.60	81.04	✓
+50			10.45	81.19	✓
+65			9.80	81.84	✓
+80			10.02	81.62	✓
+90			9.40	82.24	✓
26+00			9.00	82.64	✓
+15			9.20	82.44	✓
+30			9.50	82.14	✓
+45			10.50	81.14	✓
+60			11.15	80.49	✓
+75			11.30	80.34	✓
+90			11.75	79.89	✓
27+05			11.60	80.04	✓
T P	4.67	84.95 ✓	11.36	80.28	✓
27+20	△ R 9° 08' 30"		5.07	79.88	✓
+35			5.45	79.50	✓
+50			4.86	80.09	✓
+65			4.48	80.47	✓
+80			3.78	81.17	✓
+95			2.95	82.00	✓

Sta.	+	HI	−	Elv.
28+10		84.95	2.85	82.10
+20			2.42	82.53
+35			2.37	82.63
+50			2.26	82.69
+65			1.68	83.27
+80			1.15	83.80
+95			1.92	83.03
29+10			2.02	82.93
+20			2.02	82.93
+35			1.48	83.47
+50			2.35	82.60
+65			2.78	82.17
+80			2.90	82.05
+95			3.48	81.47
30+10	30+01.1 P.O.T.		3.98	80.97
+20			4.68	80.27
+45			6.75	78.20
+56 H	△ L	74°49'	9.20	75.75
T.P.	10.27	82.26	12.96	71.99
30+70			2.85	79.41
+85			1.92	80.34
31+00			0.95	81.31
+15			1.49	80.77
+30			2.08	80.18
+46	△ R	76°03'	4.60	77.66

on hillside E of Boys+Girls home

Sta	+	H.I.	−	Elv.
31+55		82.26	12.31	69.95
TP	1.12	70.42	12.96	69.30
31+65			7.02	63.40
+75			11.67	58.75
+85			15.40	55.02
32+00			15.80	54.62
+15			16.10	54.32
+30			16.80	53.62
+40			17.60	52.82
+50			12.40	58.02
+60	at cor of fence B+G Home		9.00	61.42
+70			6.00	64.42
+80			3.90	67.02
T.P.	12.96	83.14	0.24	70.18
T.P.	9.23	81.32	11.15	71.99
32+90			10.05	71.27
33+02	△ R	55°35'30"	5.95	75.37
+15			5.25	76.07
+30			3.82	77.50
+45			3.12	78.20
+60			2.95	78.37
+75			4.90	76.42
786 K	△ L	46° 10'	5.65	74.67
TP	6.35	80.49	7.18	74.14
34+00			4.80	75.69

Sta	+	H.I.	−	Elv.	
34+20		80.49	3.84	76.65	✓
+40	34+34 on line with fence between B+G Home+Weston's Dairy		3.42	77.07	✓
+60			3.60	76.89	✓
+80			3.95	76.54	✓
35+00			4.50	75.99	✓
+20			4.35	76.14	✓
+40			5.36	75.13	✓
+60			5.45	75.04	✓
+71	△ℓ 9° 12'		6.35	74.14	✓
+85			7.34	73.15	✓
36+00			7.65	72.84	✓
+20			7.85	72.64	✓
+40	N+S about 36+50 fence crossing from foot of hill up hill		7.94	72.55	✓
+60			6.87	73.67	✓
+80			6.93	73.56	✓
37+00	Dairy Barn 100' R		7.45	73.04	✓
+20			8.30	72.19	✓
+40			6.98	73.51	✓
+60			6.06	74.43	✓
+80			5.80	74.69	✓
38+00			5.70	74.79	✓
+20			6.00	74.49	✓
+40			5.68	74.81	✓
+60			5.93	74.56	✓
+80			5.93	74.56	✓

Sta	+	H I	−	Elv.	
39+00		80.49	6.22	74.27	✓
+20			7.56	72.93	✓
+40			8.36	72.13	✓
+60			8.25	72.24	✓
+80			6.35	74.14	✓
40+00			6.60	73.89	✓
+20			7.00	73.49	✓
+40			8.70	71.79	✓
+60			8.80	71.69	✓
+80			8.90	71.59	✓
41+00			8.40	72.09	✓
+20			8.62	71.87	✓
+40			10.00	70.49	✓
T.P.	1.05	69.04 ✓	12.50	67.99	✓
T.P.	6.48	63.05 ✓	12.47	56.57	✓
41+57	△ℓ 3° 57' 30" = 46+01 Gregory.				
+80			1.45	61.60	✓
+90			9.10	53.95	✓
T.P.	2.96	53.53 ✓	12.48	50.57	✓
42+00			6.15	47.38	✓
+10			10.52	43.01	✓
+20			13.30	40.23	✓
+40			13.60	39.93	✓
+60			12.62	40.91	✓
+80			10.55	42.98	✓

Sta	+	HI	−	Elv.	
43+00		53.53	10.12	43.41	✓
+24			9.95	43.58	✓
+40			10.16	43.37	✓
+60			7.05	46.48	✓
+70			4.84	48.69	✓
+80			1.54	51.99	✓
TP	12.23	65.43 ✓	0.33	53.20 ✓	
+90			8.94	56.49	✓
44+00			4.84	60.59	✓
+03			4.00	61.43	✓
+07			5.15	60.28	✓
+16			1.60	63.83	✓
T.P.	12.28	76.03	1.68	63.75 ✓	
44+32	△R 16° 32' 30"		8.72	67.31	✓
+40			7.92	68.11	✓
+60			6.00	70.03	✓
+80			4.32	71.71	✓
45+00			3.95	72.08	✓
+20			3.56	72.47	✓
+40			3.78	72.25	✓
+60			3.90	72.13	✓
+80			4.15	71.88	✓
46+00			3.95	72.08	✓
+20			5.52	70.51	✓
+40			6.56	69.47	✓

Sta	+	HI	−	Elv.	
46+60		76.03	6.56	69.47	✓
T.P.	9.73	73.48 ✓	12.28	63.75	✓
+80			4.44	69.04	✓
+95	△L 13° 06'		6.73	66.75	✓
47+20			6.00	67.48	✓
+40			5.55	67.93	✓
+60			4.95	68.53	✓
+80			4.66	68.82	✓
48+00			4.80	68.68	✓
+20			4.95	68.53	✓
+40			5.13	68.35	✓
+60			5.00	68.48	✓
+80			5.08	68.40	✓
49+00			5.92	67.56	✓
+20			7.34	66.14	✓
+33			6.50	66.98	✓
+36			10.10	63.38	✓
+38			6.15	67.33	✓
+60			5.30	68.18	✓
+80			5.55	67.93	✓
50+00			6.06	67.42	✓
+20			6.90	66.58	✓
+40			6.87	66.61	✓
+65	△R 3° 11'		8.05	65.43	✓
+80			9.80	63.68	✓

Sta.	+	HI	—	Elv.	
51+00		73.48	10.15	63.33	✓
	51+13 Fence Cor W+N. to road) Cor 2'L				
+20			10.42	63.06	✓
+40			10.40	63.08	✓
+60			10.38	63.10	✓
+80			8.60	64.88	✓
52+00			9.30	64.18	✓
+20			9.75	63.73	✓
+40			10.20	63.28	✓
+60			10.00	63.48	✓
+80			9.55	63.93	✓
53+00			9.47	64.06	✓
+20			10.10	63.38	✓
+40			10.25	63.23	✓
+60			9.85	63.63	✓
T.P.	3.67	67.70 ✓	9.45	64.03	✓
+70	△ L 9°56'30"		3.68	64.02	✓
54+00			3.00	64.70	✓
+20			3.72	63.98	✓
+40			4.60	63.10	✓
+60			5.76	61.94	✓
+80			4.90	62.80	✓
55+00			3.85	63.85	✓
+20			3.80	63.90	✓
	55+25 N+S fence				
+40			4.32	63.38	✓
+50	K ✓		6.04	61.66	✓

Sta	+	HI	—	Elv.	
55+60		67.70	6.94	60.76	✓
+70			5.60	62.10	✓
+80			5.10	62.60	✓
56+00			5.10	62.60	✓
+20			4.40	63.30	✓
+40			4.12	63.58	✓
+60			5.06	62.64	✓
+80			5.42	62.28	✓
57+00	△ R-10°14'30"		5.80	61.90	✓
+10			6.85	60.85	✓
+20			8.24	59.46	✓
+30			9.90	57.80	✓
+40			11.42	56.28	✓
+50			12.14	55.56	✓
+60			13.15	54.55	✓
+70			14.17	53.53	✓
+80			15.30	52.40	✓
+90			17.20	50.50	✓
58+00			16.30	51.40	✓
+20			15.80	51.90	✓
+30			14.62	53.08	✓
+40			11.75	55.95	✓
+50			8.80	58.90	✓
+60			6.85	60.85	✓
+70			5.10	62.60	✓

Sta	+	H.I.	−	Elv.
58+80		67.70	3.72	63.98
59+00	K. to rear		2.34	65.36
+20			1.30	66.40
+40			2.20	65.50
+60			2.80	64.90
+80			3.42	64.28
60+00			4.53	63.17
+20			5.60	62.10
+40			6.50	61.20
T.P.	8.32	68.67	7.35	60.35
+50	△ L	6°38'30"	7.62	61.05
+50			9.68	58.99
61+00			10.23	58.44
+20			10.63	58.04
+40			11.36	57.31
+60			11.84	56.83
+80			11.52	57.15
62+00			11.30	57.37
+20			10.82	57.85
+40			10.50	58.17
+60			10.00	58.67
+85	△ R	32°56'30"	9.84	58.83
63+00			10.25	58.42
+20			10.10	58.57
+40			11.20	57.47

Sta	+	H.I.	−	Elv.
63+60		68.67	10.90	57.77
+80			10.61	58.06
64+00			10.26	58.41
+20			10.15	58.52
+40			9.25	59.42
+60			8.96	59.71
+80			9.65	59.02
65+00			10.00	58.67
+20			10.24	58.43
+50	△ L	18°12'30"	12.34	56.33
T.P.	4.42	61.27	11.82	56.85
65+60			5.22	56.05
+70			8.20	53.07
+60			12.54	48.73
+90			13.50	47.77
66+00			16.71	44.56
+25			18.70	42.57
+30			17.14	44.13
+50			17.53	43.74
+60			16.10	45.17
+70			15.15	46.12
+80			13.92	47.35
+90			12.65	48.62
67+00			10.55	50.72
+20			8.62	52.65

Sta	+	HI	−	Elv.
67+40		61,27	5.85	55.42 ✓
+60			4.24	57.03 ✓
+80			3,92	57.35 ✓
68+00			3,75	57.52 ✓
+20			3,39	57.88 ✓
+40			3.60	57.67 ✓
+60			4,55	56.72 ✓
+80			5,95	55.32 ✓
69+00			6,15	56.12 ✓
+20			5,52	55.75 ✓
+40			3,40	57.87 ✓
+60			1,40	59.87 ✓
+80			0,25	61.02 ✓
70+00			0.30	60.97 ✓
+20			0,15	61.12 ✓
+40			0.50	60.77 ✓
+60			1.20	60.07 ✓
T.P.	5.62	60,55 ✓	6.34	54.93 ✓
70+70	△L 23°09'		0,52	60.03 ✓
+80			0,27	60.28 ✓
71+00			0,57	59.98 ✓
+20			0,83	59.72 ✓
+40			0,64	59.91 ✓
+60			2,81	57.74 ✓
+80			6.10	54.45 ✓

Sta	+	HI	−	Elv.
72+00		60.55	9.11	51.44 ✓
+20			8,87	51.73 ✓
+35			8,85	51.70 ✓
+40			10,80	49.75 ✓
+45			8.75	51.80 ✓
+60			8.59	51.96 ✓
+80			7,55	53.00 ✓
73+00			4,80	55.75 ✓
+20			7.88	52.67 ✓
+40			2.47	58.08 ✓
+60			2.69	57.86 ✓
+80			3.73	56.82 ✓
74+00			4.26	56.29 ✓
+15	△R 39°55'		5.14	55.41 ✓
+40			7.05	53.50 ✓
+48			8.44	52.11 ✓
+51			7.60	52.95 ✓
+60			8.06	52.49 ✓
+80			8.60	51.95 ✓
75+00			8.90	51.65 ✓
+20			9.65	50.90 ✓
+40			9.63	50.92 ✓
+60			9.40	51.15 ✓
+80			10.35	50.20 ✓
76+00			10.75	49.80 ✓

Sta.	+	H.I.	—	Elv.
76+20		60.55	11.05	49.50
+40			10.62	49.93
+60			10.25	50.30
+70			11.55	49.00
+80			12.50	48.05
+90			12.15	48.40
+95			11.35	49.20
T.P.	5.26	53.20	12.61	47.94
77+00	△ R 46°	54' 30"	2.32	50.88
+20			1.95	51.25
+40			0.60	52.60
+60			1.50	51.70
+80			2.95	50.25
78+00			2.90	50.30
+20			2.90	50.30
+40			2.55	50.65
+60			3.05	50.15
+80			2.90	50.30
79+00			4.72	48.48
+20			6.30	46.90
+40			5.38	47.82
+60	△ L 49° 33'		5.55	47.65
+80			6.25	46.95
80+00			5.72	47.48
+20			5.28	47.92

Sta	+	H.I.	—	Elv.
80+40		53.20	5.40	47.80
+60			5.25	47.95
+80			4.90	48.30
81+00			5.03	48.17
+20			5.50	47.70
+40			5.60	47.60
+60			5.72	47.48
+80			5.85	47.35
82+00	In field below Allens Dairy		6.55	46.65
+20			7.20	46.00
+40			7.39	45.81
+60			7.77	45.43
+80			8.32	44.88
83+00	K-50'L Photo to rear		8.62	44.58
+20			8.34	44.86
+40			8.22	44.98
+60			7.95	45.25
+80			8.10	45.10
84+00			8.50	44.70
+20			8.63	44.57
+40			8.65	44.55
+60			8.75	44.45
+80	84+85? Fence N E Line Benards +E Line of Entrance to Allens Dairy		8.65	44.55
85+00			9.53	43.67
+20			10.05	43.15

Sta.	+	H.I.	−	Elv.	
85+40	& Main Road 45'R	53.20	10.00	43.20	✓
+50	△L 24°	21'	9.83	43.37	✓
T.P.	6.25	49.93 ✓	9.52	43.68	✓
+60			6.46	43.47	✓
+80			6.40	43.53	✓
86+00			6.30	43.63	✓
+20			6.45	43.48	✓
+40			6.25	43.68	✓
+60			6.12	43.81	✓
+80			6.16	43.77	✓
87+00			5.87	44.06	✓
+20			5.71	44.22	✓
+40			5.46	44.47	✓
+60			5.23	44.70	✓
+80			5.12	44.81	✓
88+00			4.77	45.16	✓
+20			4.52	45.41	✓
+50	In Benards Chicken Yard		4.22	45.71	✓
+80	△R 13°09'		4.03	45.90	✓
T.P.	1.33	51.21 ✓	0.05	49.88	✓
89+00			5.12	46.09	✓
+40			7.00	44.21	✓
+60			7.65	43.56	✓
+80			8.16	43.05	✓
90+00			9.03	42.18	✓

Sta	+	H.I.	−	Elv.	
90+20		51.21	10.25	40.96	✓
+40			11.20	40.01	✓
+60			12.00	39.21	✓
+80			12.65	38.56	
91+00			12.95	38.26	
+20			12.60	38.61	
+40			12.90	38.31	
+60			12.00	39.21	
+80	91+80-Old vacant house 35'R		10.40	40.81	
92+00			9.70	41.51	
+20			9.09	42.12	
+40			8.55	42.66	
T.P.	6.08	45.97 ✓	11.32	39.89	✓
92+62.41	△L 5° 0'		4.91	41.06	
+80			5.84	40.13	
+96			6.73	39.24	
93+00			8.55	37.42	
+01			6.62	39.35	
+20			8.30	37.67	
+40			6.85	39.12	
+60			5.47	40.50	
+80			5.15	40.82	
94+00	Steep side hill		4.52	41.45	
+20	"		4.27	41.70	
+40	"		3.58	41.39	

Sta.	+	H.I.	−	Elv.
94+55	△L 7° 37' steep hillside	45.97	4.12	41.85
+80	"		4.10	41.87
95+00			5.23	40.74
+20			7.30	38.67
+40			7.30	38.67
+60			7.50	38.47
+80			7.30	38.67
96+00			6.65	39.32
+20			5.87	40.10
+40			4.75	41.22
+60			5.51	40.46
+80			5.22	40.75
T.P.	10.65	47.52 ✓	9.10	38.87 ✓
97+00	△R 12° 58'		7.28	40.24
+20			8.63	38.89
+40			7.20	40.32
+60			5.27	42.25
+80			7.60	39.92
+87			8.50	39.02
+89			11.47	36.05
+94			9.10	38.42
98+00			10.20	37.32
+20			10.00	37.52
+40			8.60	38.92
+60			7.95	39.57

Sta	+	H.I.	−	Elv.
98+80	steep hillside	47.52	7.17	40.35
99+00	"		8.10	39.42
+20			8.90	38.62
+30			9.83	37.69
+40			9.82	37.70
+50			9.95	37.57
+60			8.04	39.48
+80			9.00	38.52
100+00	K ahead on N+S fence		9.02	38.50
+15	△L 12° 42' 30"		11.52	36.00
+40			9.20	38.32
+60			7.32	40.20
+80			9.45	38.07
101+00			10.37	37.15
+20			10.25	37.27
+40			9.16	38.36
+60			9.90	37.62
+80			10.67	36.85
102+00			12.00	35.52
+20			13.30	34.22
+40			12.75	34.77
+60			8.90	38.62
+80	small shack 25' R		7.67	39.85
103+00			7.70	39.82
+20	△R 13° 24' 30"		10.12	37.40

Sta	+	HI	−	ELV.
T.P.	0.25	37.65 ✓	10,12	37,40 ✓
103+40	steep hillside		4.90	32.75
+50	"		6.50	31.15
+60			5.05	32.60
+80			6,12	31.53
104+00			4,66	32.99
+20			4.73	33.42
+40			2.75	34.90
+60			2,45	35.20
+80			2.00	35.65
105+00			1,44	36.21
+30	△L 14°34'30"		3.15	34.50
+50			2.31	35.34
+60			2.75	34.90
+80			4.50	33.15
106+00			6.45	31.20
+20			6,33	31.32
+40			5.94	31.71
+60			6.15	31.50
+80			6,17	31.48
107+00			7,35	30.30
+20			5,87	31.78
+40			5.90	31.75
+60			5.00	32.65
+80			3.40	34.25

Sta	+	HI	−	ELV
108+00	steep hillside	37,65	2,10	35.55
+20	"		1,65	36.00
+40	△R 37°28'		3,50	34.15
T.P.	1.14	37.62 ✓	1,17	36.48 ✓
+50			7,90	29.72
+60			7.70	29.92
+70			5.15	32.47
+80			4,50	33.12
109+00			5,02	32.60
+20			6.85	30.77
+40			10,32	27.30
+60			11,63	25.99
+75			16.80	20.82
+80			14.50	23.12
+90			11,35	26.27
110+00			12,00	25.62
+20			11,70	25.92
+40			8.70	28.92
+60			7.18	30.44
+80			5.28	32.34 ~~32.44~~
111+00			3.46	34.16
+10	△L 4°08'		2,20	35.42
T.P.	4.69	41.17 ✓	1.14	3648 ✓
+30	Very steep		5.60	35.57
+40	"		4,03	37.14

Sta	+	H.I.	−	Elv.	
111+60	Very steep	41.17	6.58	34.59	
+80	"		6.10	35.07	
112+00	"		5.78	35.39	
+20	"		2.43	38.74	
+40	"		3.20	37.97	
+59.19	⊙ P.O.T.		4.37	34.80	
+80	"		5.80	35.37	
T.P.	6.40	43.20 ✓	4.37	36.80 ✓	on hub at 112+59.19.
T.P.	4.17	35.87 ✓	11.50	31.70 ✓	
112+98	△ L 20° 52'		2.54	33.33	
113+20	"		0.56	35.31	
+30	"		1.76	34.11	
+40	"		1.45	34.42	
T.P.	10.17	38.79 ✓	7.75	28.62 ✓	
113+50	Very steep		2.40	36.39	
+60			1.75	37.04	
+75			3.30	35.49	
+85			4.30	34.49	
114+00			7.00	31.79	
+15			8.60	30.19	
+20			8.30	30.49	
+25			6.10	32.69	
+30			4.20	34.59	
+35			3.40	35.39	
+40			2.80	35.99	

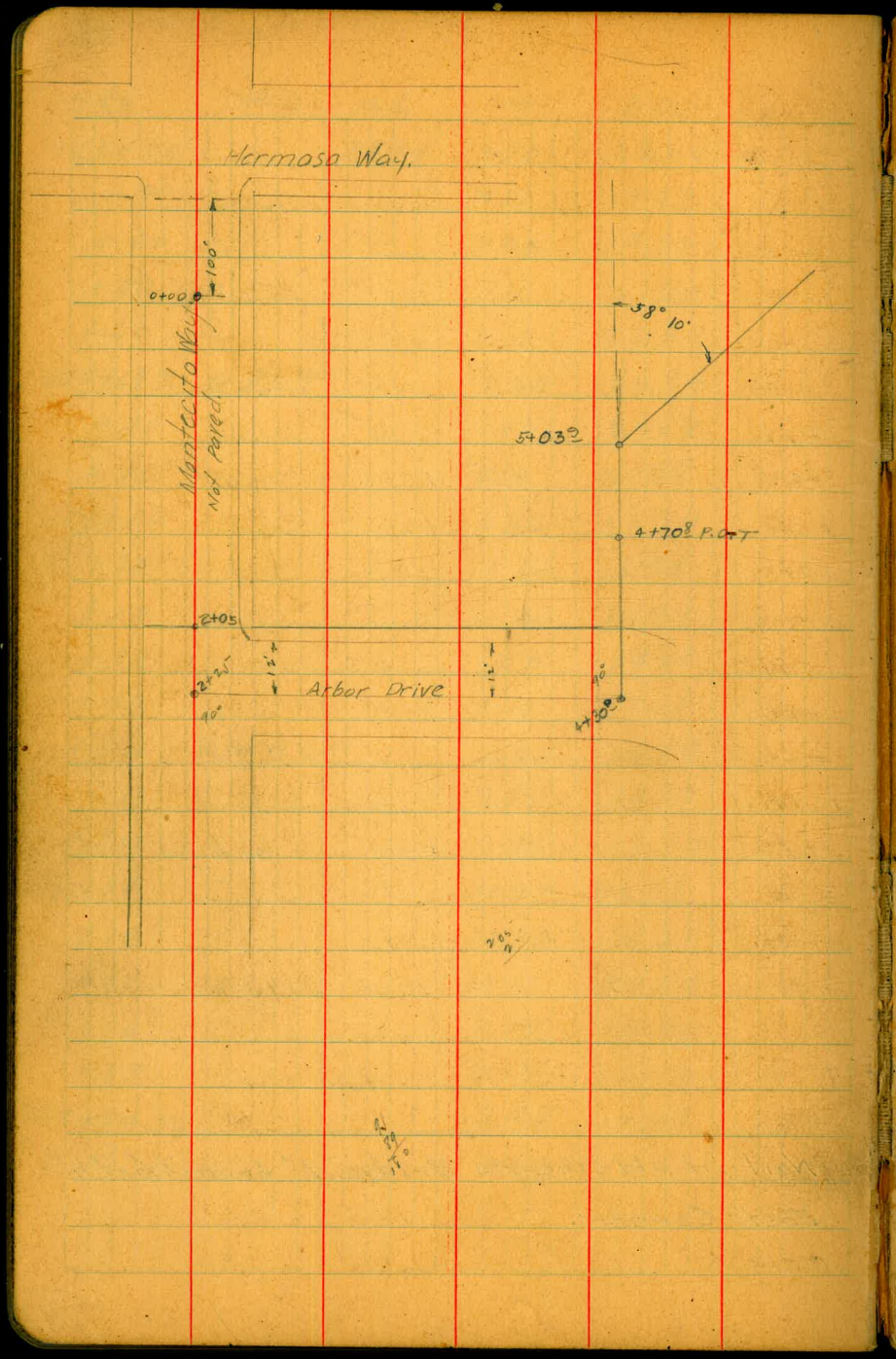
Sta	+	H.I.	−	Elv.	
		38.79			
T.P.	5.58	33.45 ✓	10.92	27.87 ✓	
114+62	℄ △ L 86° 14' ℄ House 10' R		4.81	28.64	
+80			2.85	30.60	
115+00			1.52	31.93	
+20			3.92	29.53	
+40			6.00	27.45	
+60			7.20	26.25	
+73			8.24	25.21	
+76			11.43	22.02	
+90			12.20	21.25	
116+00			9.63	23.82	
+20			11.22	22.23	
+40			9.22	24.23	
+50			8.37	25.08	
+63	△ R 142° 11'		5.90	27.55	
+80			4.07	29.38	
117+00			4.20	29.25	
+20			7.05	26.40	
+40			10.00	23.45	
+60			10.15	23.30	
+80			10.00	23.45	
118+00			11.12	22.33	
+20			12.00	21.45	
+30			11.45	22.00	

Sta.	+	HI	—	ELV.	
118+40		33,45	8.80	24.65	
+50	⊙ P.O.T.		6.22	27.23	
+60			8.40	25.05	
T.P.	0.86	21.27	13.04	20.41	
118+70			3.20	18.07	
+85			7.50	13.77	
119+00			7.90	13.37	
+10			8.61	12.66	
+25	straight up & down	Bottom of cliff straight up	9.15	12.12	
+35			5.30	15.97	
T.P.	10.67	30.90	1.04	20.23	
+45	straight up & down		1.70	29.70	
+50			1.50	29.40	
+55			4.23	26.67	
+62	△L 46° 37' 30"		6.15	24.75	
T.P.	17.90	31.42	12.38	18.52	
+80	{ circular brick 4" thick Tank 8' Deep.		5.50	25.92	East Edge of Tank
+96			4.65	26.77	West Edge of Tank
120+00	At foot of steep cliff on left		5.40	26.02	
+20			4.83	26.59	
+40	"		5.10	26.32	
+60	"		5.20	26.22	
+80	"		7.00	24.42	
121+00	"		7.30	24.12	
+20	"		6.00	25.42	

Sta	+	HI	—	ELV.
121+40		31.42	7.30	24.12
+60			8.33	23.09
+80			9.75	21.67
+90	△L 5° 42'		10.15	21.27
122+00			9.55	21.87
+20			10.00	21.42
+40			9.95	21.47
+60			12.13	19.29
+80			12.22	19.20
123+00			11.30	20.12
+20			7.37	24.05
+40			12.44	18.98
+60			11.05	20.37
+80			8.50	22.92
124+00			6.40	25.02
+10			7.05	24.37
+20			8.90	22.52
+30	△L 12° 58'		11.49	19.93
+50			11.90	19.52
+60			10.65	20.77
T.P.	7.01	26.94	11.49	19.93
+80			6.33	20.61
+90			6.89	20.05
125+00	Steep		4.63	22.31
+10			3.30	23.64

Sta	+	HI	−	ELV.
125+20		26.94	6.70	20.24
+30			9.01	17.93
+40			7.63	19.31
+50			5.30	21.64
+60			2.00	24.94
125+69.7	⊙ P.O.T		0.58	26.36
+80			1.80	25.14
+90			5.06	21.88
126+00			9.20	17.74
+10			10.00	16.94
+20			10.00	16.94
+30			7.54	19.40
+40			9.33	17.61
+50	At foot of cliff		10.05	16.89
+60			8.85	18.09
+80			9.20	17.74
127+00			10.87	16.07
+20			12.73	14.21
+40			12.30	14.64
+60			11.50	15.44
+80			10.15	16.79
127+94.50			9.45	17.49
B.M.			7.84	19.10

Nail in old Concrete Bridge 1' from inforth East Corner.



	+	π	−	Elc	
	3.68	279.19		275.51	Plug S.W. Cor Randolph & Lewis.
	2.16	278.87	2.48	276.71	
	3.55	270.18	12.24	266.63	
00+00			2.9	267.3	
0+50			5.2	265.0	
1+00			6.4	263.8	
1+50			6.7	263.5	
2+00			5.9	264.3	
2+05 = E.L. Arbor Drive			5.7	264.5	
2+25 ± ℄ Montecito & Arbor - ΔL_4			5.7	265.0	
2+50 = N.L. Montecito			6.0	264.2	
3+00			5.5	264.7	
3+50			5.7	265.0	
4+00			4.6	265.6	
4+20 A℄			3.9	266.3	
#	1.79	269.09	2.28	267.90	Cor Wall
4+38 = Gutter			4.1	265.6	
4+47 = Approximate W.L. Arbor			3.1	266.6	
4+70℄			HUB 3.22	266.5	
4+89			6.8	262.9	
#	3.56	261.02	13.23	257.46	
5+03℄			5.70	255.32	251.0
5+50			4.8	256.2	
5+65			4.4	256.6	
5+67			6.3	254.7	

FOR CHANGES OF LINE SEE Book 1003-77
Plotted 11-6-24
CAT

12+52 ± Δ Lt 20° 47' Allen tank line

16+77 ± = 10+29 ± Allen tank line See Page 10

15+29 ± Δ Rt 19° 36'

14+21 ± Δ Lt 23° 48'

13+52 ± Δ Rt 14° 28'

12+10 ± Δ Lt 20° 24'

11+01 ± Δ Lt 18° 20'

9+73 ± Δ Rt 14° 10'

9+33 ± Δ Lt 34° 48'

8+50 ± Δ Rt 44° 50'

7+87 ± Δ Lt 40° 31'

7+12 ± Δ Rt 5° 33'

6+09 ± Δ Rt 86° 41'

5+03 ± Δ Rt 58° 10'

FOR CHANGE OF LOCATION SEE Book 1003-77

4+70 ± P.O.T.

	+	π	−	Ground	Grade	
		261.02				
6+00			7.8	253.2		
# 6+09 ± Δ Rt	3.43	256.10	8.35	252.67	248 ±	+47
6+50			0.8	255.8		
6+60			2.2	253.9		
6+68			6.3	249.8		1.0%
6+78			8.5	247.6	247.3	
6+85			6.4	249.7		
7+40			0.8	4.3		
# 7+12 ± Δ Rt	4.86	259.45	1.49	254.61	246.97	+75
7+50			8.9	250.6		
+75			6.9	252.6		
7+87 ± Δ	4.66	259.46	4.65	254.80	246.22	+86
#	8.53	255.13	12.86	246.60 Rock		
8			+0.7	255.8		
8+32			+1.5	256.6		
8+50 ±			4.95	250.18	245.58	+36
8+60			3.1	251.7		
# 9+33 ± Δ Lt	2.03	255.72	1.44	253.69	244.76	79
9+50			3.9	251.8		
# 9+49.3° Δ Rt	4.00	252.5 ±	7.17	248.55	249.16	34
10			4.0	248.6		
+50			5.1	247.5		
11+01 ± Δ Lt			3.73	248.82	243.08	47
11+50			5.9	246.7		
12			4.7	247.9 Hub		
# 6.65		254.36	4.84	247.712	241.99	47
12+10 ± Δ						

	+	⊤ 254.36	—	=
12+50			10.7	244.2
13+00			10.3	244.1
+25			13.0	241.4
# 13+52.8 Δ Rt	1.81	243.32	12.85	241.51
13+70			4.5	241.8
14			6.4	236.9
# 14+21 = Δ Lt	1.66	236.43	8.58 Mid.	234.77
+50			1.5	234.9
15			4.5	231.9
N 7+29 = Δ Rt			8.36	228.0
+50			8.9	227.5
16+00			11.6	224.8
#	1.21	226.72	10.92	225.51 On Stake
+50			6.6	220.1
16+77 = 10+29			9.29	Check 217.43 = 217.48 See Page 8

Stationing of line carried on to Mission Valley Line. See Page 8, Sta. 10+29. CAT 11-6-24

8+13.4 = 1+56.55 = ℄ Randolph & Plumosa; Allen tank line Page 7 Rt 90° to 3+92 =

6+79.8 Δ Rt. 67° 25'

6+40.8 Δ Rt 66° 46'

5+71 ° Δ Rt 66° 51'

5+33 ° Δ Rt. 22° 57'

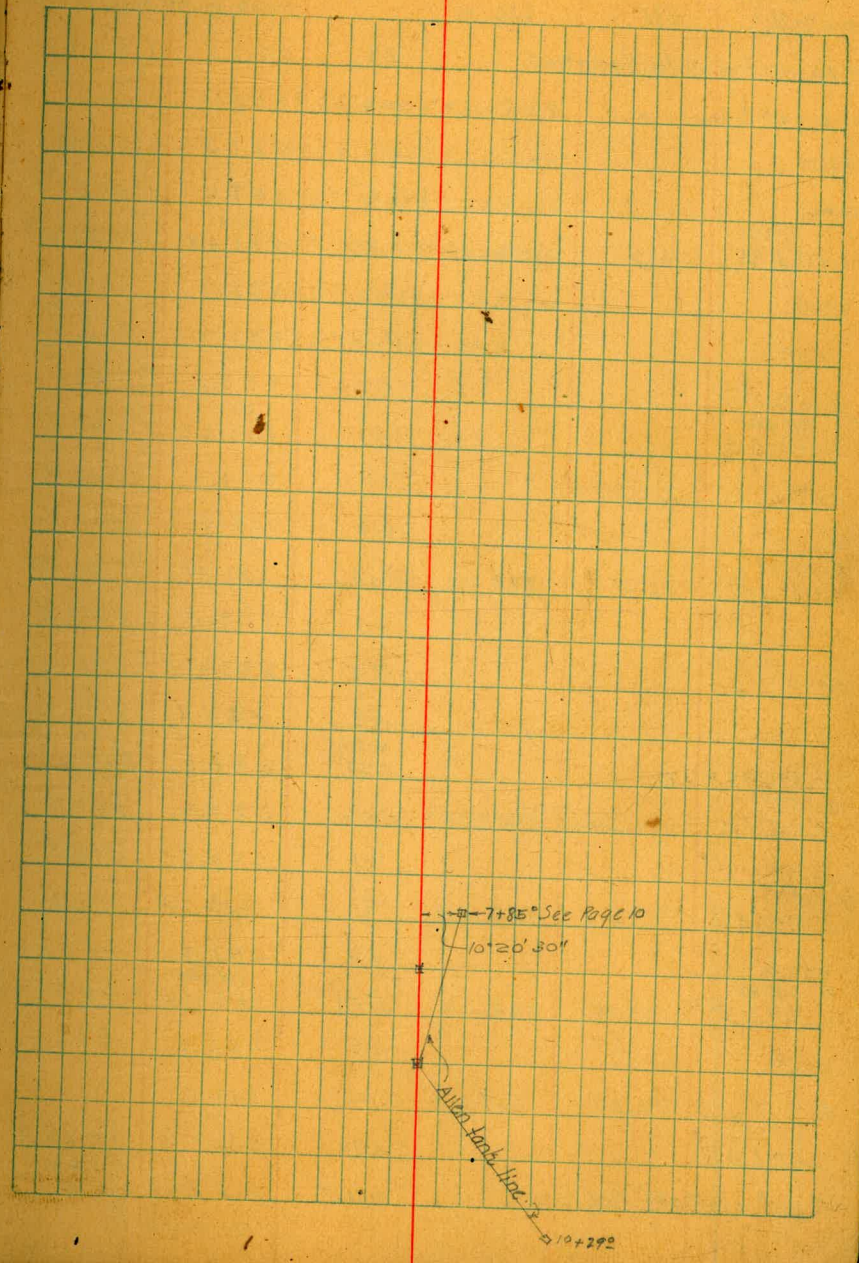
5+03.3 P.O.T.

4+18.5 Δ Rt 46° 58'

3+37 ° Δ Lt 91° 44'

1+51.4 Δ Rt. 6° 56'

0+00 = 9+36 ° of Allen tank line. See Page 10.



	+	T	−		
59°36'L					
00 = 5+36 =	11.85	236.01		224.16	See Page 7 = 5+36 (0+93)
0+30 on top of Hardpan Wall			8.7	227.8	(1+23)
0+30 at Bottom	"	"	10.4	225.6	(1+23)
0+50			8.7	227.3	(1+43)
1+00			6.4	229.6	(1+93)
6°56'				Hub.	
1+51½ Δ Rt	11.13	242.62	4.52	231.49	(2+44.4)
2+00			9.9	232.7	2+93
+50			9.7	232.9	3+43
3+00			9.3	233.3	3+93
91°44'				Hub.	
3+37° Δ Lt			6.80	235.82	4+30
+50			7.7	234.9	4+43
4+00			4.2	238.4	4+93
# 46°58'				Hub?	
4+18½ Δ Rt	12.15	249.64	5.13	237.49	5+11.5
4+50			10.1	239.5	5+43
4+70			12.1	237.5	5+63
5+00			5.8	243.8	5+93
5+03½ P.O.T.			Hub? 5.24	244.4	5+96.3
22°57'					
5+33° Δ Lt Line Should Stop here:			11.04	238.6	6+26
5+50 =			9.1	240.5	6+43
# 66°51'					
5+71° Δ Lt	7.71	247.54	9.81	239.83	6+64
6+00			5.6	241.9	6+93
# 66°46'				& Hub	
6+40 Δ Rt	12.58	254.61	5.51	242.03	7+33
6+50			8.2	241.4	7+43
# 67°25'	12.57	267.13	0.05	254.56	
6+79⅛ Δ Rt			4.76	262.3	7+72.8
8+13⅝ = 1+54⅝ See Page 6.			0.45	266.68 =	9+96.4 266.70
				See Page 6	

In plotting this line 10+29 on Page 8 was taken as 0+00 CAT 11-2-42

10+29 = 0+00 = 217.48

10+00 = 0+29 = 222.44

9+75 = 0+54 = 224.44

9+50 = 0+79 = 224.74

9+47 = 0+82 = 223.84

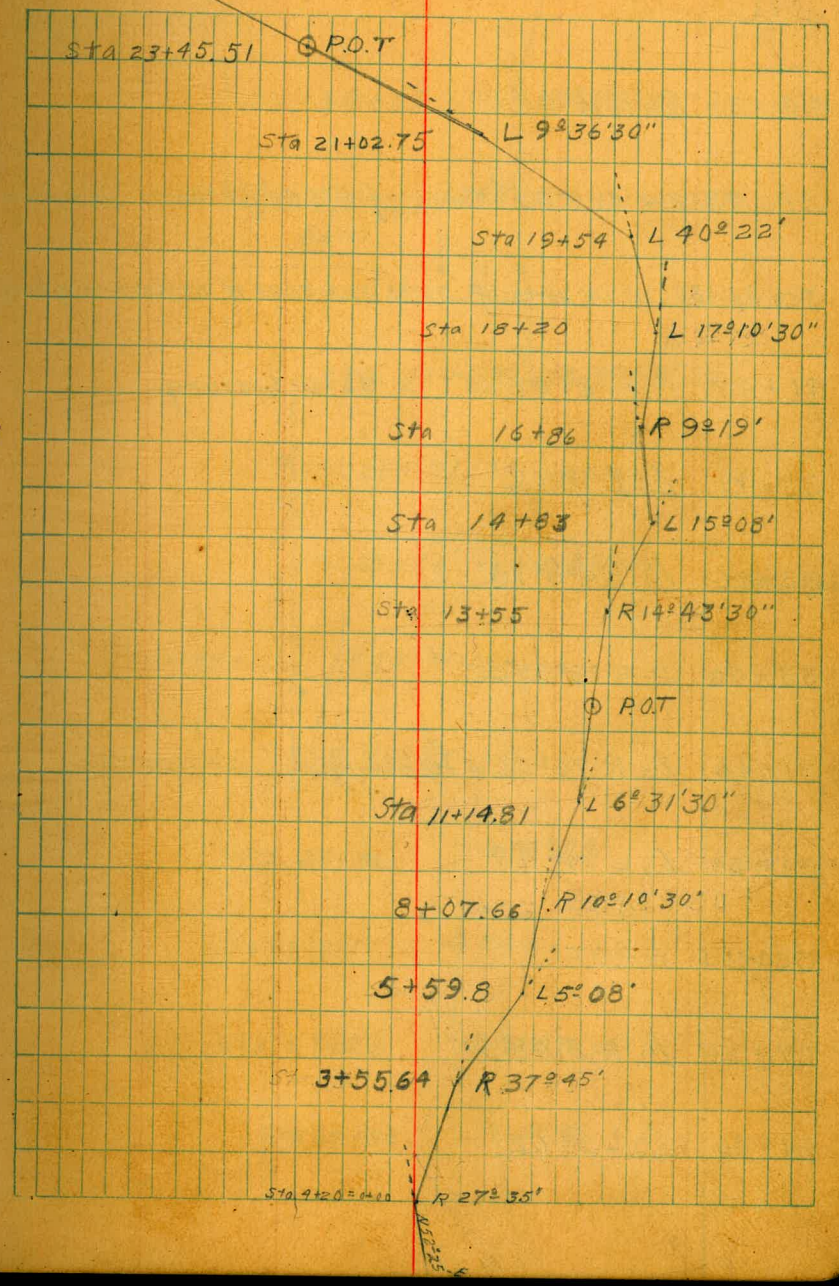
9+36 = 0+93 = 224.16

3/8/24 Hile Walker Preston Hartigan

Location Mission Valley Sewers

for Levels see Page 13

Sta.	
23+45.51	⊙ P.O.T
21+02.75	△ L 9° 36' 30"
19+54	△ L 40° 22'
18+20	△ L 17° 10' 30"
16+86	△ R 9° 19'
14+83	△ L 15° 08'
13+55	△ R 14° 43' 30"
12+54.76	⊙ P.O.T
11+14.81	△ L 6° 31' 30"
8+07.66	▽ R 10° 10' 30"
5+59.8	▽ L 5° 08'
3+55.64	△ R 37° 45'
4+20 = 0+00	△ R 27° 35'



Sta.

44+32 △ R 16° 31' 00"

Sta 43+24 is 5.45' North of N.W. edge Weston dairy Barn

Sta 42+80 is 10' North of North east edge of westons Dairy Barn

41+57 △ R 3° 57' 30" = 46+01 Gregory.

35+71 △ L 9° 12'

33+86 △ L 46° 10'

33+02 △ R 55° 35' 30" ✓

31+46 △ R 76° 03' = 354 to Gregory's ✓

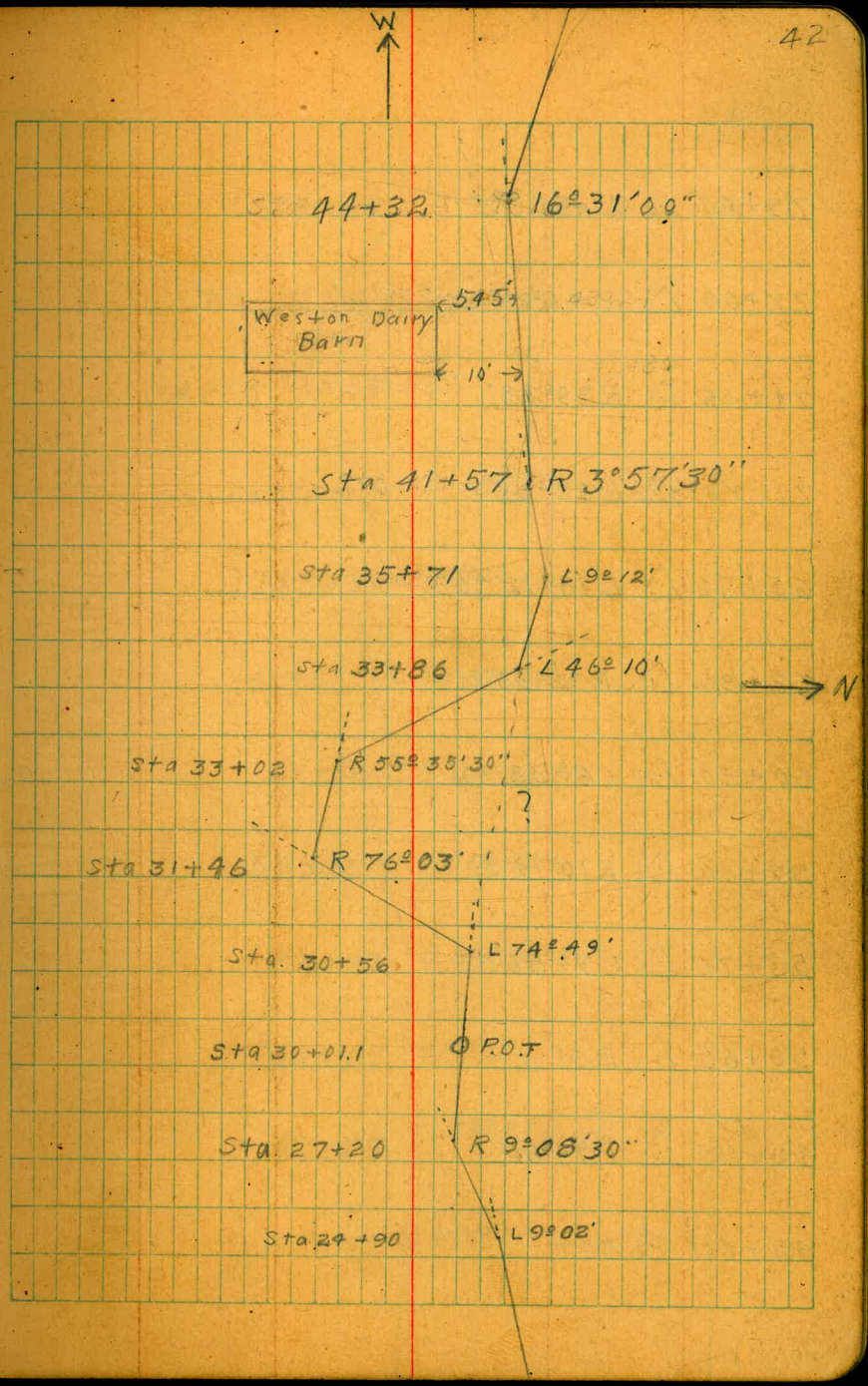
30+56 △ L 74° 49'

30+01.1 ⊙ P.O.T

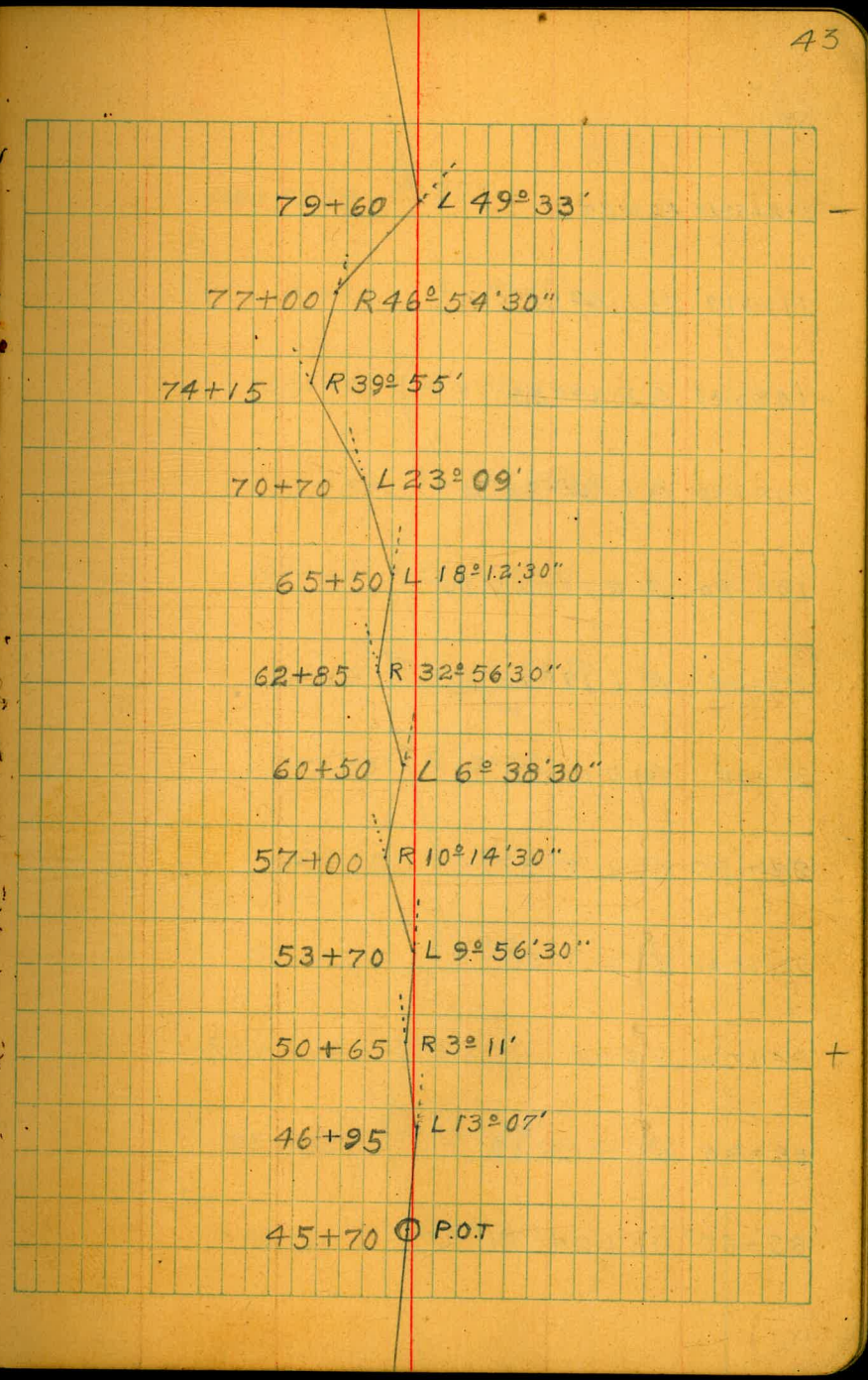
27+20 △ R 9° 08' 30"

24+90 △ L 9° 02'

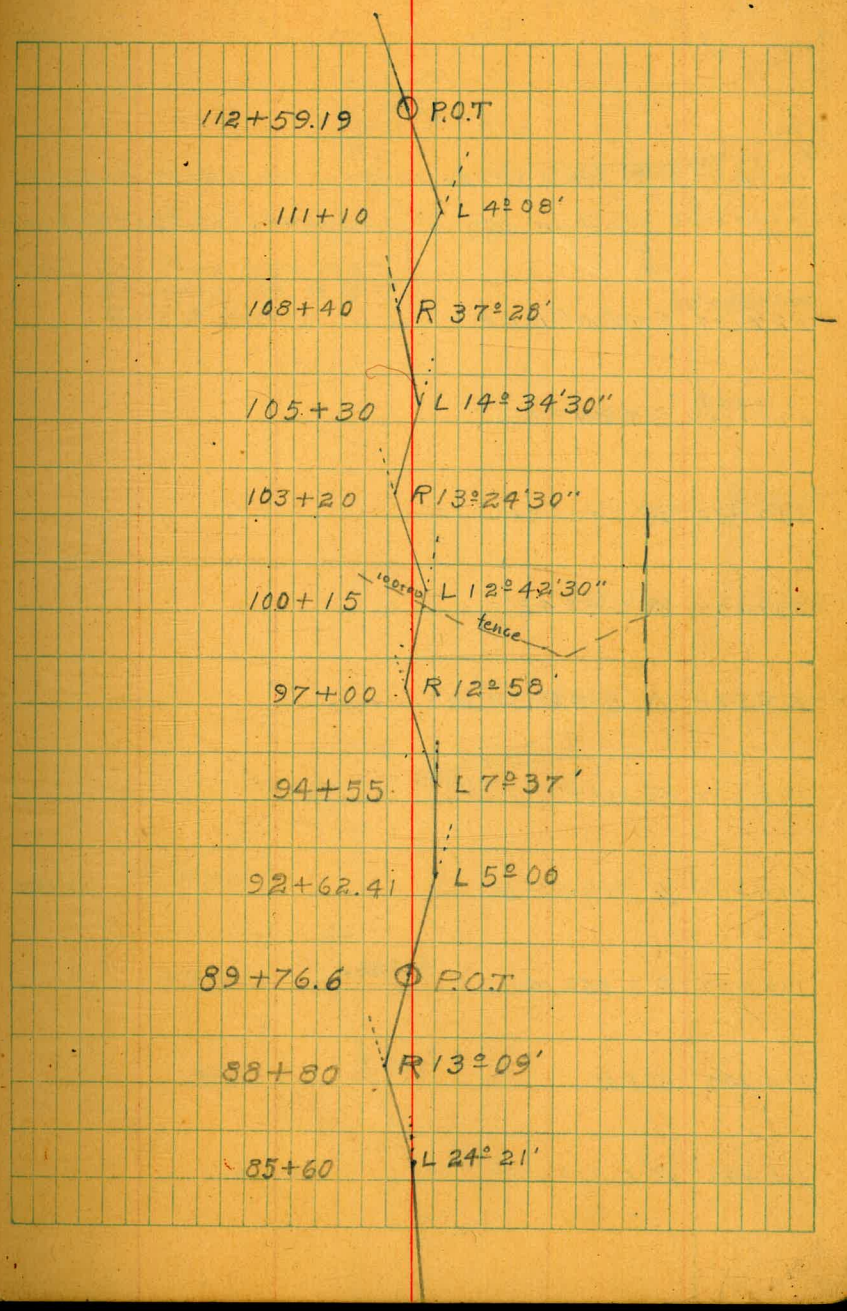
On Gregory's line



Sta.	
79+60	△ L 49° 33'
77+00	△ R 46° 54' 30"
74+15	△ R 39° 55'
70+70	△ L 23° 09'
65+50	△ L 18° 12' 30"
62+85	△ R 32° 56' 30"
60+50	△ L 6° 38' 30"
57+00	△ R 10° 14' 30"
53+70	△ L 9° 56' 30"
50+65	△ R 3° 11'
46+95	△ L 13° 07'
45+70	⊙ P.O.T



Sta.	
112+59.19	⊙ P.O.T
111+10	△ L 4° 08'
108+40	△ R 37° 28'
105+30	△ L 14° 34' 30"
103+20	△ R 13° 24' 30"
100+15	△ L 12° 42' 30"
97+00	△ R 12° 58'
94+55	△ L 7° 37'
92+62.41	△ L 5° 00
89+76.6	⊙ P.O.T
88+80	△ R 13° 09'
85+60?	△ L 24° 21'



127+94.5 = line produced from sta. 124+30 to east edge of highway (nail in header board)

127+00 End of line

125+69.7 ⊙ P.O.T

124+30 △ L 12° 58'

121+90 △ L 5° 42'

119+62 △ L 46° 37' 30"

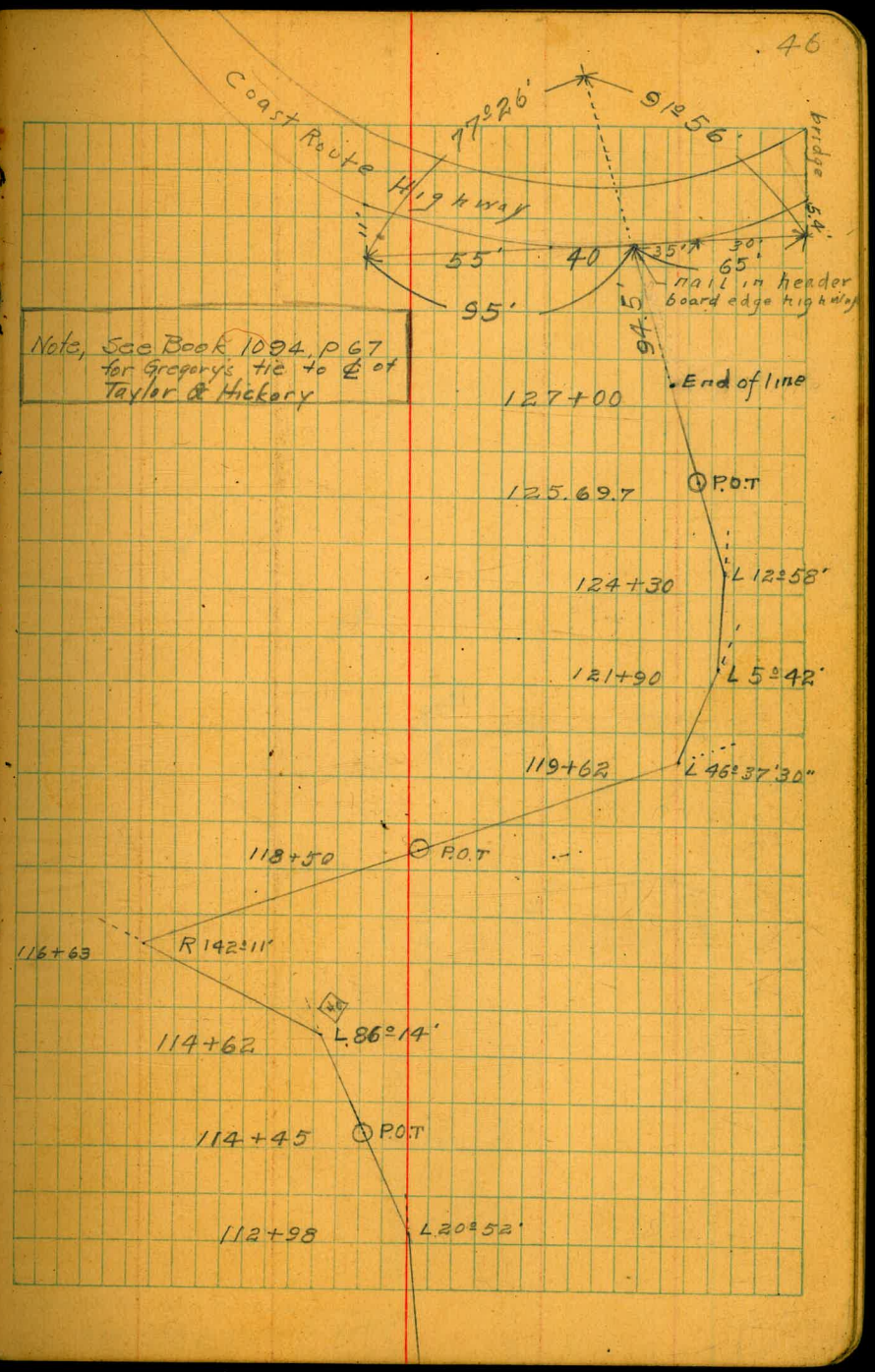
118+50 ⊙ P.O.T

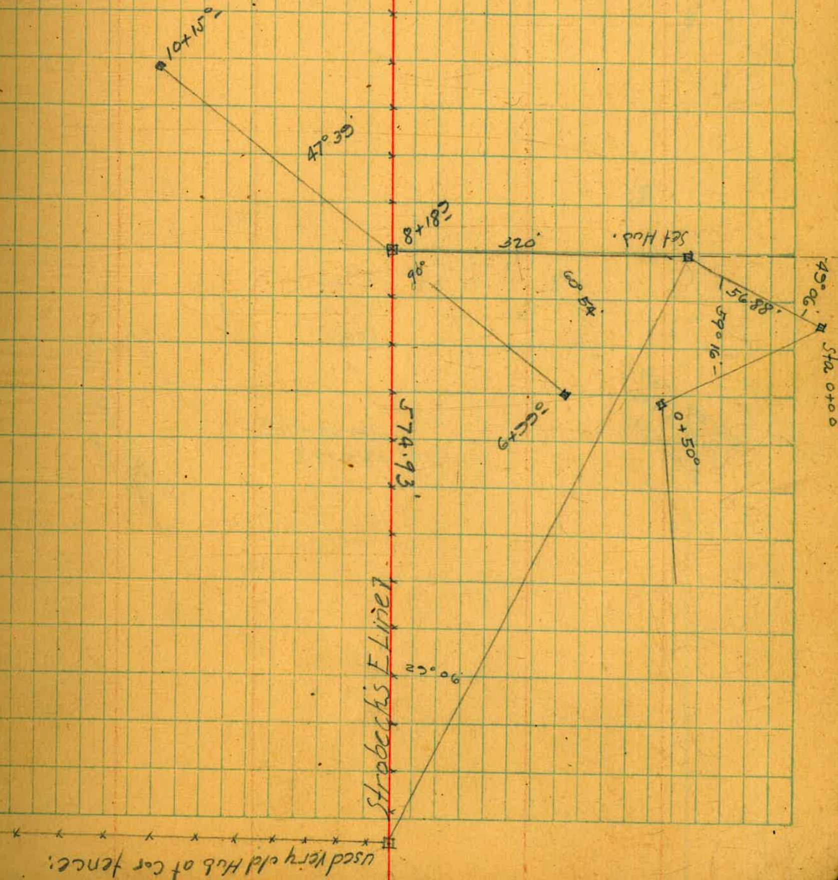
116+63 △ R 142° 11'

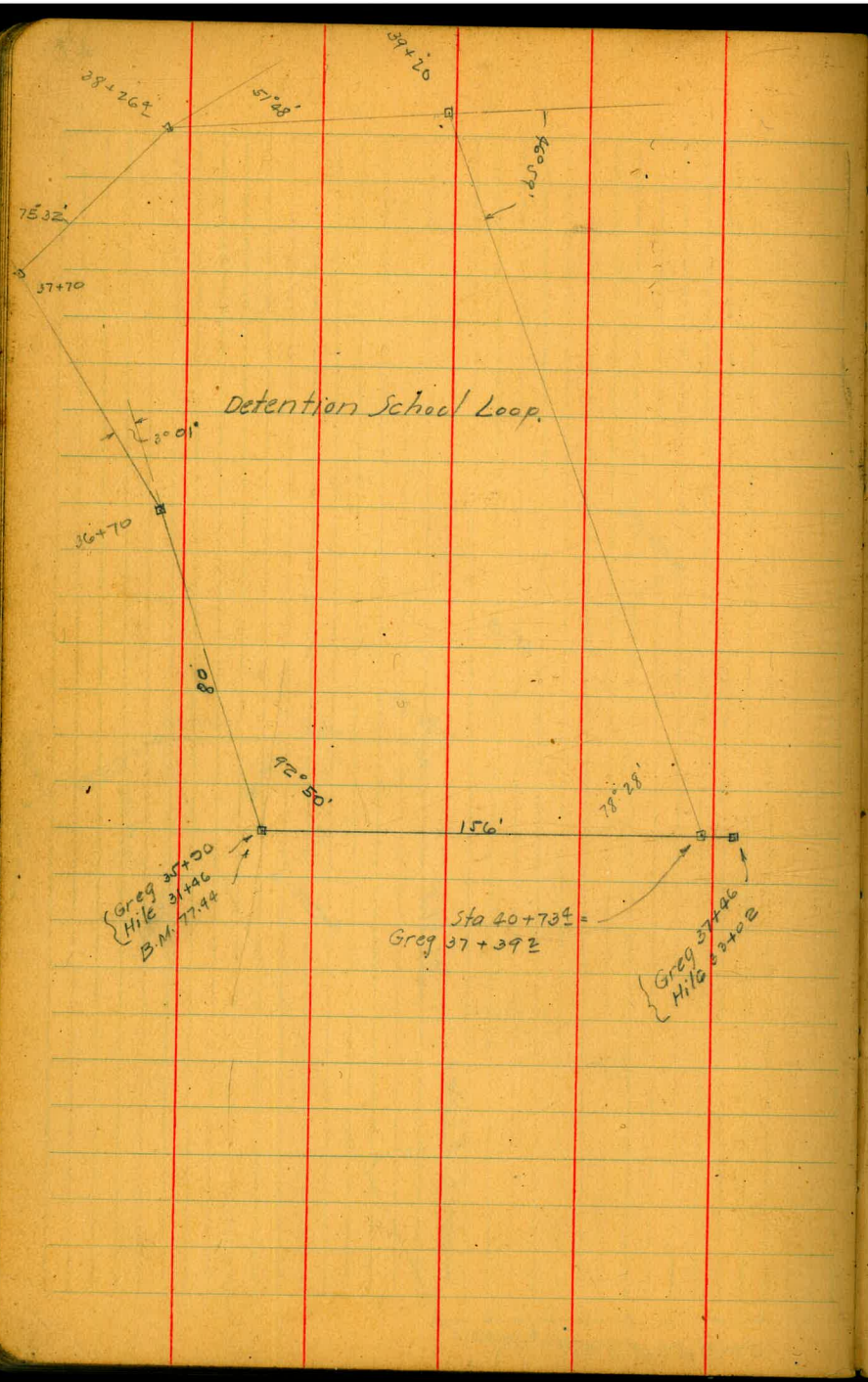
114+62 △ L 86° 14'

114+45 ⊙ P.O.T

112+98 △ L 20° 52'




10+15°
47°35'
8+18°
320'
Set Hub
90°
56.88'
49°26'
Sta 0+00
0+50°
574.93'
Strobecks E Line
used very old Hub of cor fence:



92-30
76 06
16 44

Donnan
Steck
Kelly. July 1924.

58+35 Δ Lt 13° 20'

56+62 Δ Lt 54° 32'

53+84 ± Δ Rt 76° 25'

52+55 Δ Rt 87° 06'

52+15 ± P.O.T.

51+00 ± Δ Lt 7° 07'

49+58 ± P.O.T.

49+51 ± Δ 71° 20' Lt.

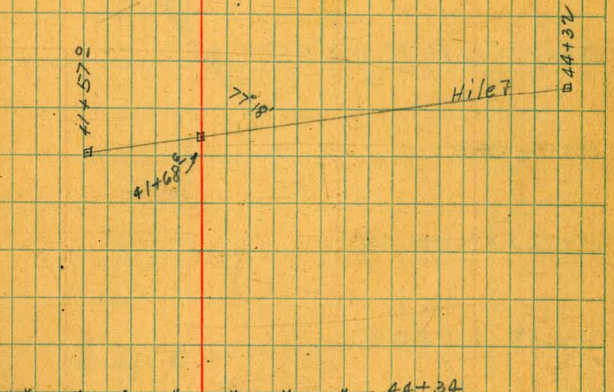
46+85 ± Δ Lt 3° 47'

43+54 ± Δ Lt. 7° 6'

41+63 Δ Lt 49° 17'

40+73 ± Greg's 37+39 Δ Lt 20° 0.5'

39+20



72+58 Δ Lt 60° 05'

71+05 °° Δ Rt 88° 01'

69+90 °° Δ Lt 17° 29'

82+50 P.O.T.

78+39 ° Δ Rt 9° 00'

78+07 °5 P.O.T.

78+00 P.O.T.

75+32 Δ Rt. 29° 05'

73+24 ° Δ Lt 25° 27'

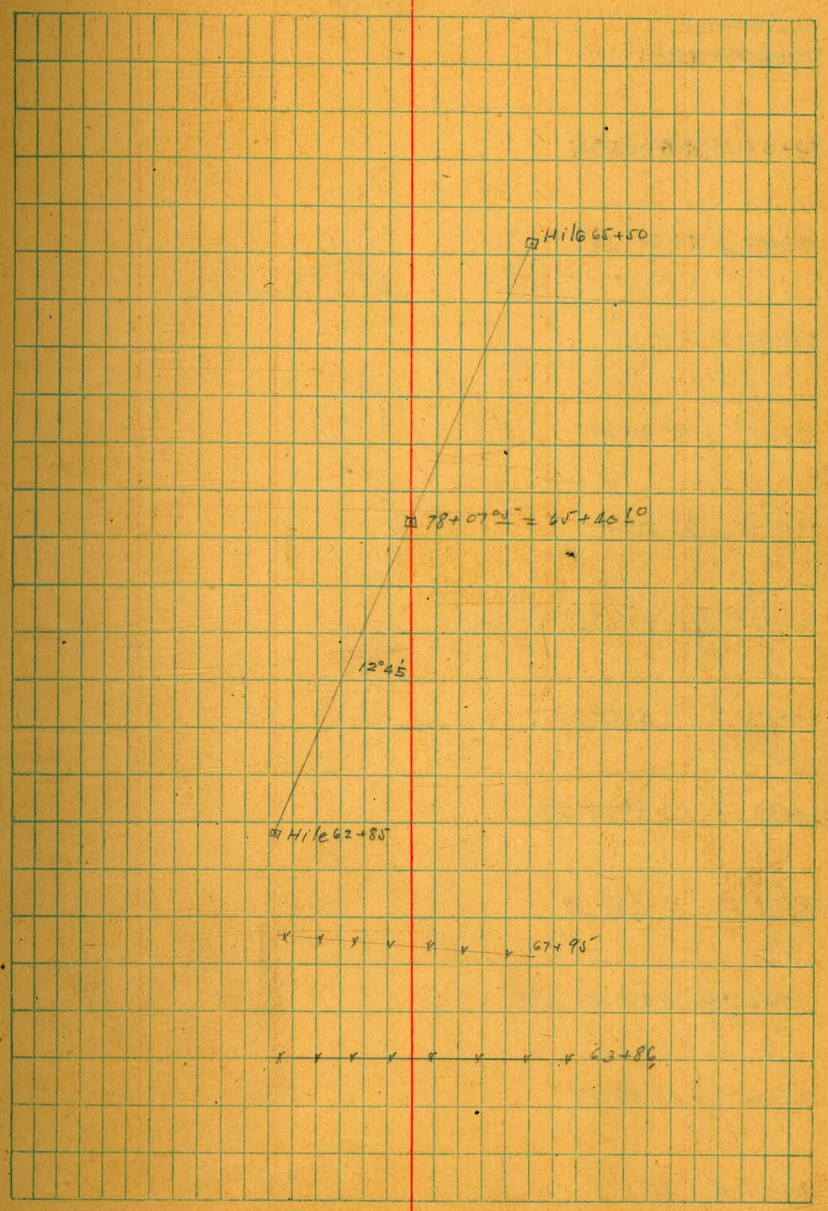
69+90 ° Δ Rt 22° 00'

66+85 Δ Lt 14° 18'

63+81 Δ Rt 6° 41'

60+40 Δ Lt 8° 48'

Abandoned.



Continued Page 59.

94+15 P.O.T

~~93+30 Δ Rt.~~

93+07 Δ Rt 30° 53'

92+07 Δ Rt 24° 34' ✓

91+00 P.O.T. ✓

89+45 Δ Rt 40° 41'

87+70 Δ Lt 47° 59'

85+21 Δ Lt 103° 28'

83+53 Δ Rt 73° 31'

80+88 Δ Rt 62° 25'

78+71 Δ Lt 87° 58'

77+05 Δ 46° 35' Δ Rt

75+66 Δ Rt 46° 37'

74+71 Δ Lt 37° 39'

Dennam. Steck Kelly	+	π	−		G
7-26-24	3.27	85.41 ✓		BM. 82.14 Hile = Sta 29+88	
	5.94	83.38 ✓	7.97	77.44	= Hub 35+90
35+90 A			5.95 Hub	77.43	72.71
36			6.3	77.1	
+50			3.7	79.7	
36+70 A			5.88 Hub	77.5	
37			6.0	77.4	
+20			3.8	79.6	
+50			7.6	75.8	
# 37+70 A Rt.	3.43	75.63 ✓	11.18 Hub	72.20	71.63
37+90			9.1	66.5	
38+00			8.1	67.5	
38+10			8.5	67.1	
38+26 A Rt.			3.10 Hub	72.5	
+50			0.5	75.1	
39+00			+1.0	76.6	
39+20 A Rt.			7.24	73.39	70.73
+50			9.0	66.6	
+65			9.3	66.3	
40			4.8	70.8	
+20			3.3	72.3	
+50			3.5	72.1	
# 40+73 A Lt.	3.24	75.71 ✓	3.16	72.47	69.81 ✓
41			1.3	74.4	
+25			+0.4	76.1	
+50			1.6	74.1	

Sta	+	π 75.71 ✓	−	Ground	Grade
41+63° A Lt			3.56	72.15	69.27
42			1.5	74.2 ✓	
+50			1.8	73.9	
43			1.8	73.9	
# 43+54 A Lt	5.56	76.40 ✓	4.87 Hub	70.84	68.12 ✓
44			7.0	69.4	67.85
+50			7.8	68.6	67.55 ✓
+70			7.1	69.3	67.43 ✓
45			9.5	66.9	67.25 ✓
+20			8.4	68.0	67.13
+50			6.9	69.5	66.95 ✓
46			6.8	69.6	66.65 ✓
+50			8.0	68.4	66.35 ✓
46+85 # A Lt	5.24	73.10 ✓	8.54 Hub	67.86	66.14 ✓
47			5.6	67.5	66.05
+35			7.1	66.0	65.84
+50			6.4	66.7	65.75
48			5.6	67.5	65.45 ✓
+50			6.2	66.9	65.15
49			5.7	67.4	64.85 ✓
49+51° A Lt #	5.67	71.02 ✓	7.75 Hub	65.35	64.54 ✓
49+58 Rt.	6.5		3.51 Hub	67.51	64.50
50			3.8	67.2	64.25 ✓
+50			1.6	69.4	63.95 ✓
# 51+2° A	8.44	75.41 ✓	4.05 Hub	66.97	63.65 ✓

	+	π	−	Ground.	Grade
		75.41			
51+50°			10.4	65.0	63.35
+70°			8.5	66.9	63.23
+75			9.3	66.1	63.20
52°°			5.0	70.4	63.05
52+15 P.O.T			3.92	71.49	62.96
+50			2.9	72.5	62.75
52+55 Δ Rt.			2.43	72.98	62.72
#	0.24	63.24	12.41	63.00	
52+75			2.0	61.2	62.60
53			12.9	50.3	62.45
+5			13.2	50.0	62.42
+10			11.5	51.7	62.39
+20			11.5	51.7	62.33
+25			12.9	50.3	62.30
35			11.5	51.7	62.24
+50 Road 9' Clearance			10.2	53.0	62.15
+70 Fence.			3.3	59.9	62.03
#	9.84	71.36	1.72	61.52	
53+84 Δ Rt			4.44	66.92	61.95
54			2.3	69.1	61.84
+50			2.3	69.1	61.54
55			3.7	67.7	61.24
+8			4.8	66.6	61.20
+18			7.7	63.7	61.14
+25			9.2	62.2	61.10
+50			4.7	66.7	60.95
+70			4.7	66.7	60.83

Note: Large Excavation Bet. Sta. 53+80 + 55+56 } For New 8' Prelim Levels See Page D

	+	π	−		
		71.36			
55+95			11.8	59.6	60.68
56			11.5	59.9	60.65
+25			5.4	66.0	60.50
+35			4.3	67.1	60.44
+50			6.0	65.4	60.35
# 56+62 Δ	3.53	66.81	8.08	Hub 63.28	60.28
+67			2.9	63.9	60.25
+70			4.6	62.2	60.23
+75			4.8	62.0	60.20
+80			2.1	64.7	60.17
57			1.2	65.6	60.05
+50			0.1	66.7	59.75
58			2.1	64.7	59.45
+35 Δ			5.10	Hub 61.71	59.24
+50			4.5	62.3	59.15
59			4.5	62.3	58.85
+50			3.9	62.9	58.55
60			5.4	61.4	58.25
60+40 Δ	5.07	65.35	6.53	Hub 60.28	58.01
60+50			5.0	60.4	57.95
61			5.3	60.1	57.65
+50			5.5	59.9	57.35
+98			5.8	59.6	57.06
62+02 Ditch Right angle			9.6	55.8	
62+03			9.6	55.8	
62+04			4.7	60.7	57.03

	+	⊼ 65.35	−		
62+50			3.4	62.0	56.75
63+00			3.3	62.1	56.45
+50			5.5	59.9	56.15
63+81 A Rt.	5.92	65.61	5.66	Hub 59.69	55.96
64			6.1	59.5	55.85
+30			6.4	59.2	55.67
+50			4.8	60.8	55.55
+70			6.2	59.4	55.43
65			6.9	58.7	55.25
+50			6.3	59.3	54.95
66			6.9	58.7	54.65
+50			5.7	59.9	54.35
66+85 A Rt			Hub. 7.56	58.05	54.14
67			7.3	58.3	54.05
+25			9.9	55.7	54.90
+40			10.7	54.9	53.81
+50			9.3	56.3	53.75
68			7.0	58.6	53.45
+35			9.4	56.2	53.24
+50			8.0	57.6	53.15
69			7.8	57.8	52.85
+50			7.7	57.9	52.55
69+90 A #	5.45	61.85	9.21	Hub. 56.40	52.31
70		Abandoned.	7.1	54.8	52.25
+50			11.6	50.3	51.95
+70			13.4	48.5	51.83
+73			15.0	46.9	51.81

	+	⊼ 61.85	−	Ground	Grade:
+75			13.3	48.6	51.80
71			12.7	49.2	51.65
+10			11.9	50.0	51.59
+50			4.7	57.2	51.35
72			2.5	59.4	51.05
+50			3.6	58.3	50.75
73			5.6	56.3	50.45
73+24 A #	4.56		7.07	54.78	50.31
73+50			4.2	55.1	50.15
74			5.7	53.6	49.85
+50			8.0	51.3	49.55
+75			9.0	50.3	49.40
75			7.3	52.0	49.25
75+32 A Rt			5.65	Hub. 53.68	49.06
+50			6.2	53.1	48.95
+65			7.2	52.1	48.86
76+00			6.9	52.4	48.65
+50			5.2	54.1	48.35
77+00			1.8	57.5	48.05
77+50			1.5	57.8	47.75
78+00 #	0.95	58.23	2.06	57.28	47.45
78+25			2.1		
78+39 A Rt.			6.64	51.59	47.22

Abandoned.

	+	ℸ	−	Ground Hub.	Grade. Change 0.5%
69+90	0.71	57.11 ✓		56.40 ✓	52.31
70			1.1	56.0	52.26
+50			2.8	54.3	52.01
+80			4.0	53.1	51.86
71			2.9	54.2	51.76
71+05 Δ			2.72	54.39	51.73
71+30			3.0	54.1	51.61
+50			1.6	55.5	51.51
+75			0.5	56.6	51.38
72			1.1	56.0	51.26
+25			0.9	56.2	51.13
+50			3.5	53.6	51.01
72+58.00 Δ Lt.	5.04	58.58 ✓	3.57	53.54	50.97 ✓
73			3.7	54.9	50.76
+50			3.2	55.4	50.51
74			4.2	54.4	50.26
+50			5.2	53.4	50.01
74+71 Δ			Hub 5.86	52.72	49.91
75			6.7	51.9	49.76
+50			6.7	51.9	49.51
75+66.00 Δ Rt			Hub. 6.63	51.95	49.43
76			6.8	51.8	49.26
+50			7.9	50.7	49.01
77			6.7	51.9	48.76
77+05 Δ Rt	2.99	55.14 ✓	6.43	52.15	48.73
77+50			2.7	52.4	48.51

	+	ℸ	−	Ground	Grade.
		55.14			
78+00			2.6	52.5	48.26
+50			3.5	51.6	48.01
78+71 Δ Lt	1.63	52.79 ✓	Hub 3.98	51.16	47.90
79			0.9	51.9	47.76
+50			1.0	52.8	47.51
80			+0.6	53.4	47.26
+12			+1.2	54.2	47.20
+25			2.8	50.0	47.13
+50			3.0	47.8	47.01
+70			4.9	47.9	46.91
+73			5.6	47.2	46.90
+78			4.8	48.0	46.87
80+88 Δ Rt	10.37	59.30 ✓	Hub. 3.86	48.93	46.82 ✓
81			10.6	48.7	46.76
+36			7.2	52.1	46.58
+50			7.8	51.5	46.51
+80			5.9	53.4	46.36
82			5.4	53.9	46.26
R.O.T. 82+50			Hub. 3.40	55.90 ✓	46.01
83+00			6.2	53.1	45.76
+50			11.2	48.1	45.51
83+53.00 Δ Rt			Hub 11.30	48.00	45.50
84+00			11.3	48.0	45.26
+50			10.2	49.1	45.01
85+00			11.6	47.7	44.76
#85+21.00	4.50	51.58 ✓	12.22	47.08	44.66

	+	π 51.58	−		
85+50			3.6	48.0	44.51
86			3.5	48.1	44.76
+50			3.6	48.0	44.01
87			4.5	47.1	43.76
+50			5.2 Hub	46.4	43.51
87+70 Δ Lt			5.73	45.85	43.41
88			4.8	46.8	43.76
+50			4.0	47.6	43.01
+80			4.2	47.4	42.85
89			6.0	45.6	42.75
+15			7.9	43.7	42.68
# +45 Δ Rt.	5.53	50.41	6.70	44.88	42.53
90			4.6	45.8	
+7			5.6	44.8	
+8			7.8	42.6	
+10	Small Wash.		7.8	42.6	
+11			5.0	45.4	
+50			2.7	47.7	
91+00 P.O.T.			1.7	48.7	
+50			2.3	48.1	
+85			6.3	44.1	
+88			8.5	41.9	
+91			6.5	43.9	
+94			6.7	43.7	
+95			9.0	41.4	
+97			9.0	41.4	

	+	π 50.41	− Ground Grade 56		
+98			6.6	43.8	
92+00			6.4	44.0	
# 92+07 Δ	11.43	85.63	6.21	44.20	41.22
+50			12.6	43.0	
93			12.4 Hub	43.2	
# 93+07 Δ Rt.	6.60	50.41	11.82	43.81	40.72
+46			6.8	43.6	
+50			7.4	43.0	
+56			6.2	44.2	
+70			6.7	43.7	
+75			8.5	41.9	40.38
+90			7.6	42.8	
94 +00			7.4 Hub	43.0	
94+15 P.O.T.			7.39 Hub.	43.02	40.18
94+30 Δ Rt			7.61	42.80	40.11
94+50			8.7	41.7	
95			7.4	43.0	
+22 = fence			5.0 Hub	45.4	
95+00.00 Δ Lt			8.12	42.29	39.51
96			6.9	43.5	
+50			7.1	43.3	
97			7.7	42.7	
+50			8.5	41.9	
# 98+00 Δ Lt	6.37	47.65	9.13	41.28	38.26
+50			5.9	41.7	38.01

	+	℄ 47.65	−		
99			5.7	42.0	37.76
+50			5.3	42.3	37.51
100			6.0	41.6	37.26
+50			6.0	41.6	37.01
101			5.7	42.0	36.76
+50			6.4	41.3	36.01
102			5.8	41.9	36.26
# 102+40 Δ Lt	1.78	43.23	Hub 6.20	41.45	36.06
103			1.8	41.4	
+50			2.9	40.3	
104			4.0	39.2	
+50			5.0	38.2	
# 104+97 Δ Lt	5.33	42.18	6.38	36.85	34.78
105			5.6	36.6	
+20			3.9	38.3	
+50			4.0	38.2	
106			4.6	37.6	
# +34.3 Δ Rt			3.80	38.38	34.09
#	4.99	38.90	8.27	33.91	
107+01.4 Δ Lt			2.43	36.47	33.75
+50			3.2	35.7	
108			3.4	35.5	
+35			4.1	34.8	33.08
+50			3.7	35.2	
# 108+70.00 Δ Rt	4.81	40.66	3.05	35.85	32.91
109			5.7	35.0	

Note: 102+40 to 104+97 are in West side of Mission Valley Road.

0.50
0.60

	+	℄ 40.66	−	
109+55			5.7 Hub	35.5
# 8.36 110+05 Δ Lt		43.23	5.79	34.87
+50			8.4	34.8
+68			8.2	35.0
+69	Wash		10.9	32.3
+74			7.9	33.3
+75			7.8	35.4
111+05			8.7	34.5
# 5.07 111+38 Δ		43.09	5.21	38.02
111+50			5.4	37.7
112+00			5.6	37.5
112+50			7.9	35.2
# 10.37 112+56 Δ		44.87	8.59	34.50
113			13.7	31.2
+50			11.7	33.2
# 3.10 114+00 Δ		40.03	7.94	36.93
+50			7.6	34.4
+85			9.5	30.5
115			8.0	32.0
+35			3.3	36.7
# 0.21 115+50 Δ		37.41	2.83	37.20
+88			5.8	31.6
+90			7.7	29.7
+92			5.8	31.6
116+00			7.0	30.4
+50			6.4	31.0

	32.10
	31.72
	30.59
	30.33
	29.73
	29.22
	28.83

	+	π 37.41	−		
117+00			6.4	31.0	
+50			5.5	31.9	
117+94 Alt	8.54	38.78 ✓	7.17	Hub 30.24	27.38 ✓
118			7.7	31.1	
+25			5.4	33.4	
+50			5.7	33.1	
+80			9.7	29.1	
119			10.7	28.1	26.73
+20			8.5	30.3	
+50			9.3	29.5	
# 120+00 A	7.91	37.23 ✓	9.46	Hub 29.32	26.13 ✓
+44			7.7	29.5	
+45			9.4	27.8	
+50			9.4	27.8	
+57			8.3	28.9	
+80			6.9	30.3	
121			8.5	28.7	25.53
+20			8.8	28.4	
121+50 ARt			5.98	31.25	25.23
+62			7.5	29.7	
122			7.6	29.6	
+50			6.6	30.6	
123			8.8	28.4	
# 123+05 Alt	5.62	33.20 ✓	5.65	27.58	24.30 ✓
+50			5.3	27.9	
124			5.8	27.4	
+50			6.1	27.1	

	+	π 33.20	+	Ground Grade 58	
124+75			7.2	26.0	23.28
124+85 ARt			6.52	26.68	23.22
125			5.3	27.9	
+50			6.5	26.7	
126			6.5	26.7	
# 126+21			8.8	24.4	
126+25 ARt	8.32	33.82 ✓	7.70	25.50	22.38 ✓
126+28			9.3	24.5	
+50			5.7	28.1	
127+00			5.6	28.2	
+38			7.5	26.3	
+45			11.4	22.4	
+51			7.5	26.3	
127+56 ARt.			8.49	25.33	21.59
+62			4.7	29.1	
+85			8.8	25.0	
128			7.1	26.7	
+08			6.1	27.7	
# 10.12		33.03 ✓		Hub	
128+53 Alt (6' Rt = 5' Lower)			10.91	22.91	21.01 ✓
+85			6.0	27.0	
129 (4' Rt = 6.6 lower.			8.1	24.9	
# 9.63				Hub	
129+53 A		37.54 ✓	5.12	27.91	20.41
130			8.8	28.7	
+50			10.3	27.2	
+70			11.15	26.39	19.71
131			10.4	27.1	
+50			10.7	26.8	
# 2.91		32.44 ✓	9.01	Hub 28.53	18.99 ✓
131+90 P.O.T.					

Continued Page 5.

115+89 ±

115+50 ± Δ Rt 0° 23'

114+00 ± Δ Rt 13° 47'

112+56 ± Lt 12° 43'

111+38 ± Δ Rt 16° 36'

110+05 ± Δ Lt 30° 35'

108+70 ± Δ Rt 27° 33'

107+69 ±

107+01 ± Δ Lt 12° 49'

106+34 ± Δ Rt 15° 43'

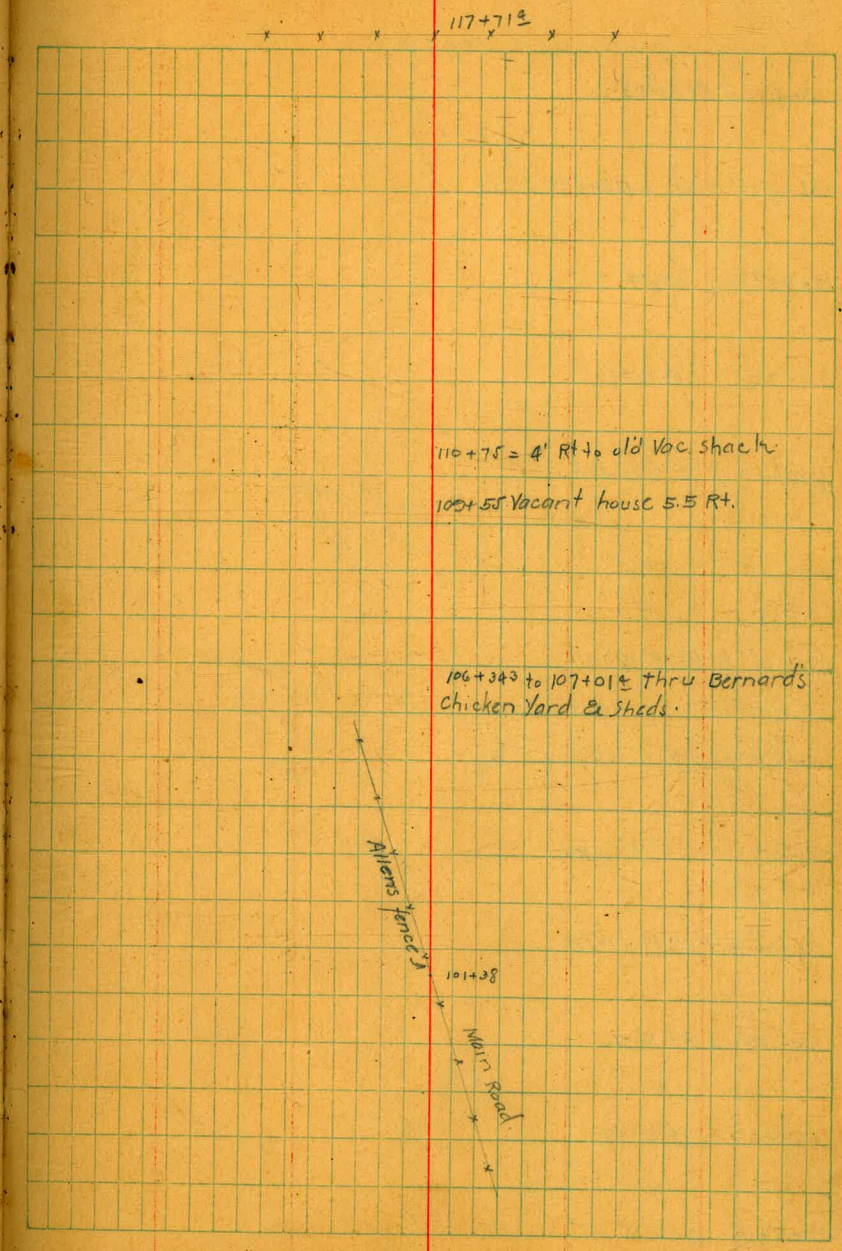
104+97 Δ Lt 17° 32'

102+40 Δ Lt 1° 32'

98+00 Δ Lt 42° 59'

95+50 ± Δ Lt 37° 8'

94+30 ± Δ Rt 44° 17' ~ From Page 51.



Continued Page 9.

133+93 ± Δ Rt 64°24'

132+51 ± P.O.T. = 114+62 ± Hilc:

132+32 ± Δ Lt 76°59'

130+70 ± Δ Lt 16°18'

129+53 Δ 2°20' Rt.

129+91.10

128+53 ± Δ Lt 17°56'

127+56 Δ Rt 18°18'

126+34.63

126+25 Δ Rt 25°42'

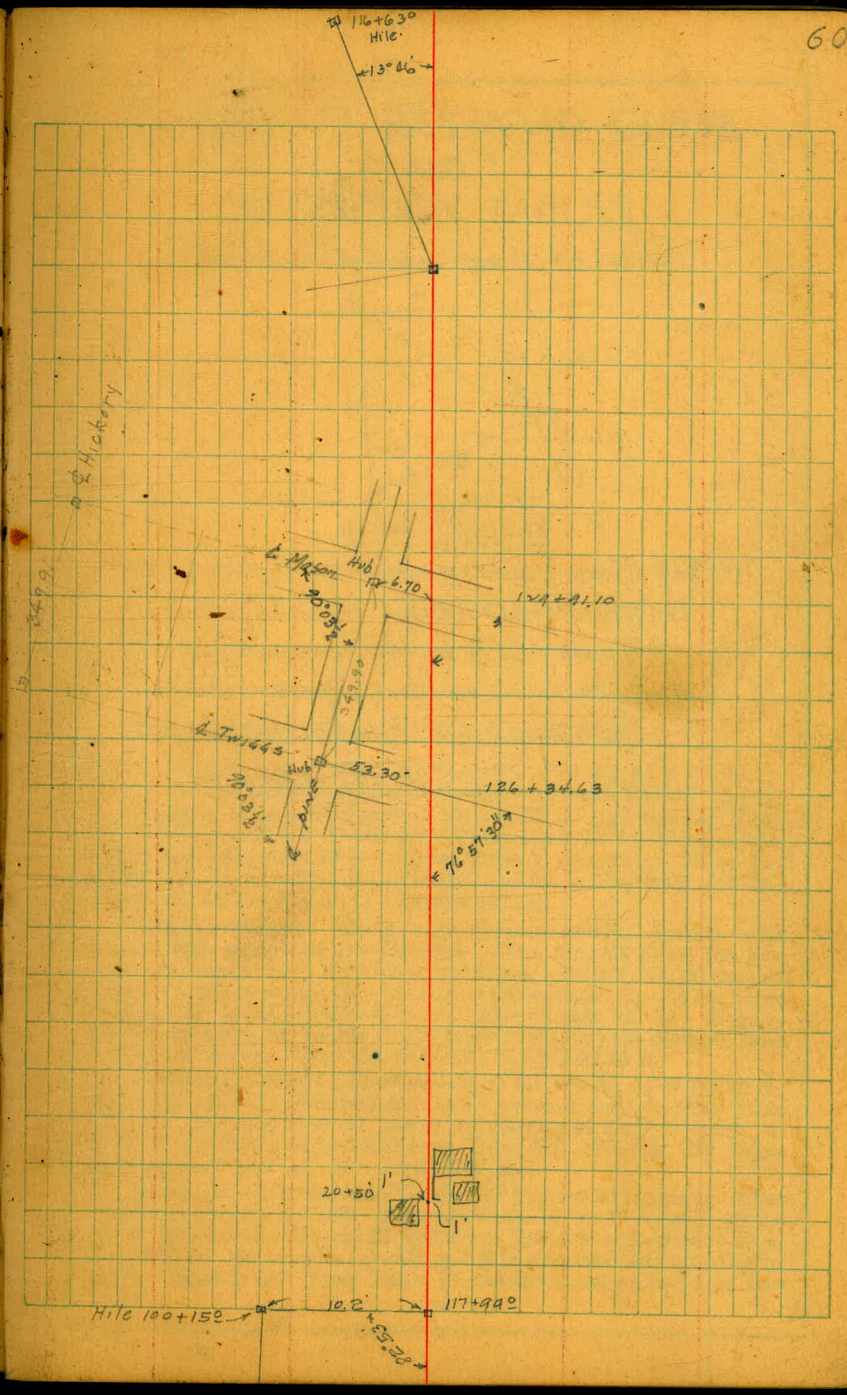
124+85 Δ 5°16' Δ Rt.

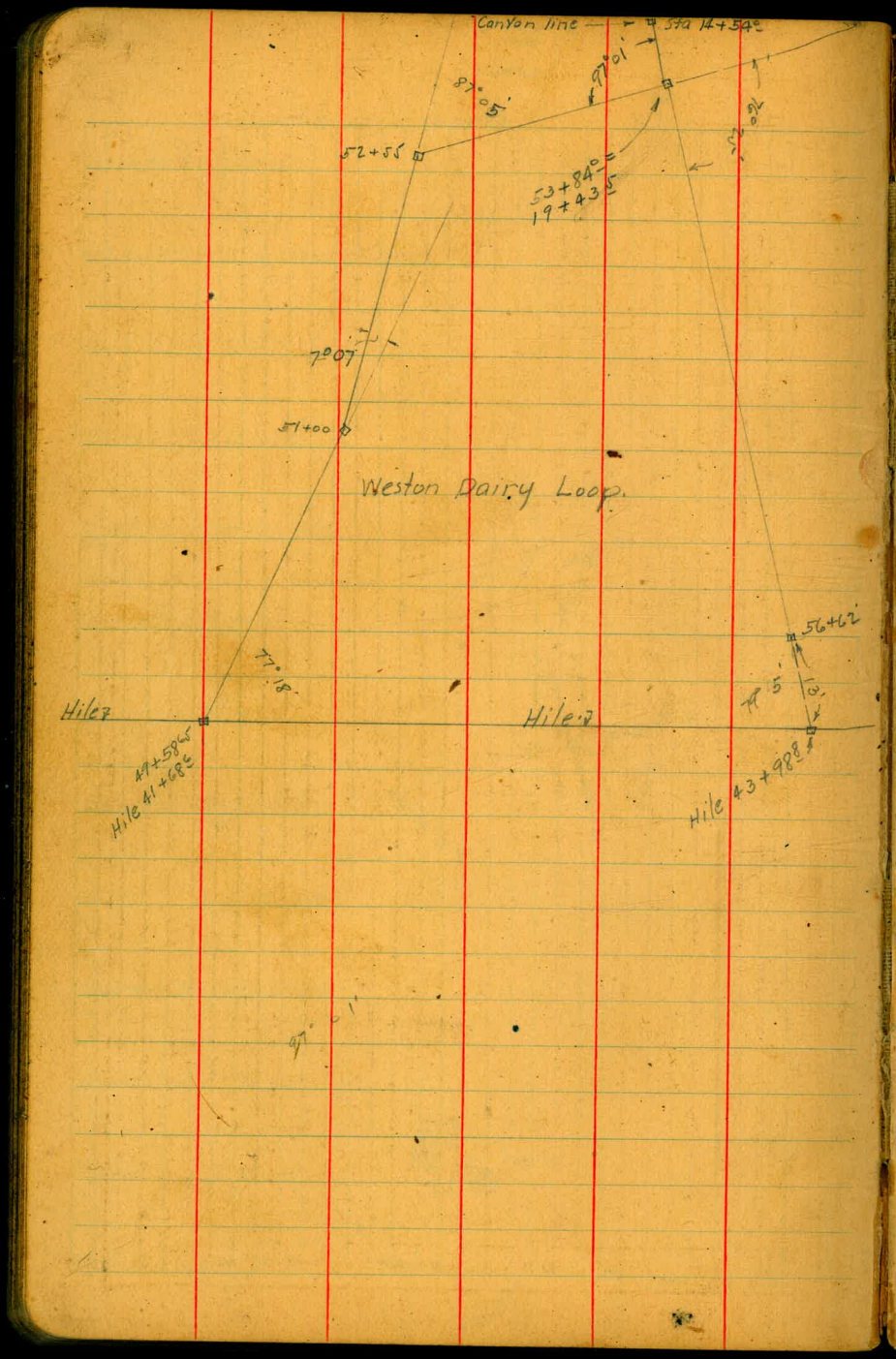
123+05 ± Δ Lt 17°50'

121+50 ± Δ Rt 16°06'

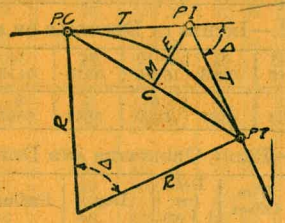
120+00 ± Δ Lt 2°19'

117+94 ± Δ Lt 8°57'





DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES



37 + 46
35 + 90
1 + 56

40 + 734
35 + 90
4 + 834
1 56
2 74

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 x sec $\frac{\Delta}{2}$ (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 ÷ 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 ÷ (2 x 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′.

Table I.—Minutes in Decimals of a Degree.

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

Table II.—Inches in Decimals of a Foot.

1–16	3–32	1/8	3–16	1/4	5–16	3/8	1/2	5/8	3/4	7/8
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

Table III.—Radii, Ordinates and Deflections.

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan Offset	Def. for 1 Foot
0° 10′	34377.5	.036	.145	0.05′	7°	819.02	1.528	6.105	2.10′
20	17188.8	.073	.291	0.10	20′	781.84	1.600	6.395	2.20
30	11459.2	.109	.436	0.15	30	764.49	1.637	6.540	2.25
40	8594.42	.145	.582	0.20	40	747.89	1.673	6.685	2.30
50	6875.55	.182	.727	0.25					
					8	716.78	1.746	6.976	2.40
1	5729.65	.218	.873	0.30	20	688.16	1.819	7.266	2.50
10	4911.15	.255	1.018	0.35	30	674.69	1.855	7.411	2.55
20	4297.28	.291	1.164	0.40	40	661.74	1.892	7.556	2.60
30	3819.83	.327	1.309	0.45					
40	3437.87	.364	1.454	0.50	9	637.28	1.965	7.846	2.70
50	3125.36	.400	1.600	0.55	20	614.56	2.037	8.136	2.80
					30	603.80	2.074	8.281	2.85
2	2864.93	.436	1.745	0.60	40	593.42	2.110	8.426	2.90
10	2644.58	.473	1.891	0.65					
20	2455.70	.509	2.036	0.70	10	573.69	2.183	8.716	3.00
30	2292.01	.545	2.181	0.75	30	546.44	2.292	9.150	3.15
40	2148.79	.582	2.327	0.80	11	521.67	2.402	9.585	3.30
50	2022.41	.618	2.472	0.85	30	499.06	2.511	10.02	3.45
					12	478.34	2.620	10.45	3.60
3	1910.08	.655	2.618	0.90	30	459.28	2.730	10.89	3.75
10	1809.57	.691	2.763	0.95	13	441.68	2.839	11.32	3.90
20	1719.12	.727	2.908	1.00	30	425.40	2.949	11.75	4.05
30	1637.28	.764	3.054	1.05	14	410.28	3.058	12.18	4.20
40	1562.88	.800	3.199	1.10	30	396.20	3.168	12.62	4.35
50	1494.95	.836	3.345	1.15					
					15	383.07	3.277	13.05	4.50
4	1432.69	.873	3.490	1.20	30	370.78	3.387	13.49	4.65
10	1375.40	.909	3.635	1.25	16	359.27	3.496	13.92	4.80
20	1322.53	.945	3.718	1.30	30	348.45	3.606	14.35	4.95
30	1273.57	.982	3.926	1.35	17	338.27	3.716	14.78	5.10
40	1228.11	1.018	4.071	1.40	18	319.62	3.935	15.64	5.40
50	1185.78	1.055	4.217	1.45	19	302.94	4.155	16.51	5.70
5	1146.28	1.091	4.362	1.50	20	287.94	4.374	17.37	6.00
10	1109.33	1.127	4.507	1.55	21	274.37	4.594	18.22	6.30
20	1074.68	1.164	4.653	1.60	22	262.04	4.814	19.08	6.60
30	1042.14	1.200	4.798	1.65	23	250.79	5.035	19.94	6.90
40	1011.51	1.237	4.943	1.70	24	240.49	5.255	20.79	7.20
50	982.64	1.273	5.088	1.75					
					25	231.01	5.476	21.64	7.50
6	955.37	1.309	5.234	1.80	26	222.27	5.697	22.50	7.80
10	929.57	1.346	5.379	1.85	27	214.18	5.918	23.35	8.10
20	905.13	1.382	5.524	1.90	28	206.68	6.139	24.19	8.40
30	881.95	1.418	5.669	1.95	29	199.70	6.360	25.04	8.70
40	859.92	1.455	5.814	2.00	30	193.18	6.583	25.88	9.00

Note. Chord Deflection=2 times tangent deflection.

Table IV.—Tangents and Externals to a 1° Curve.

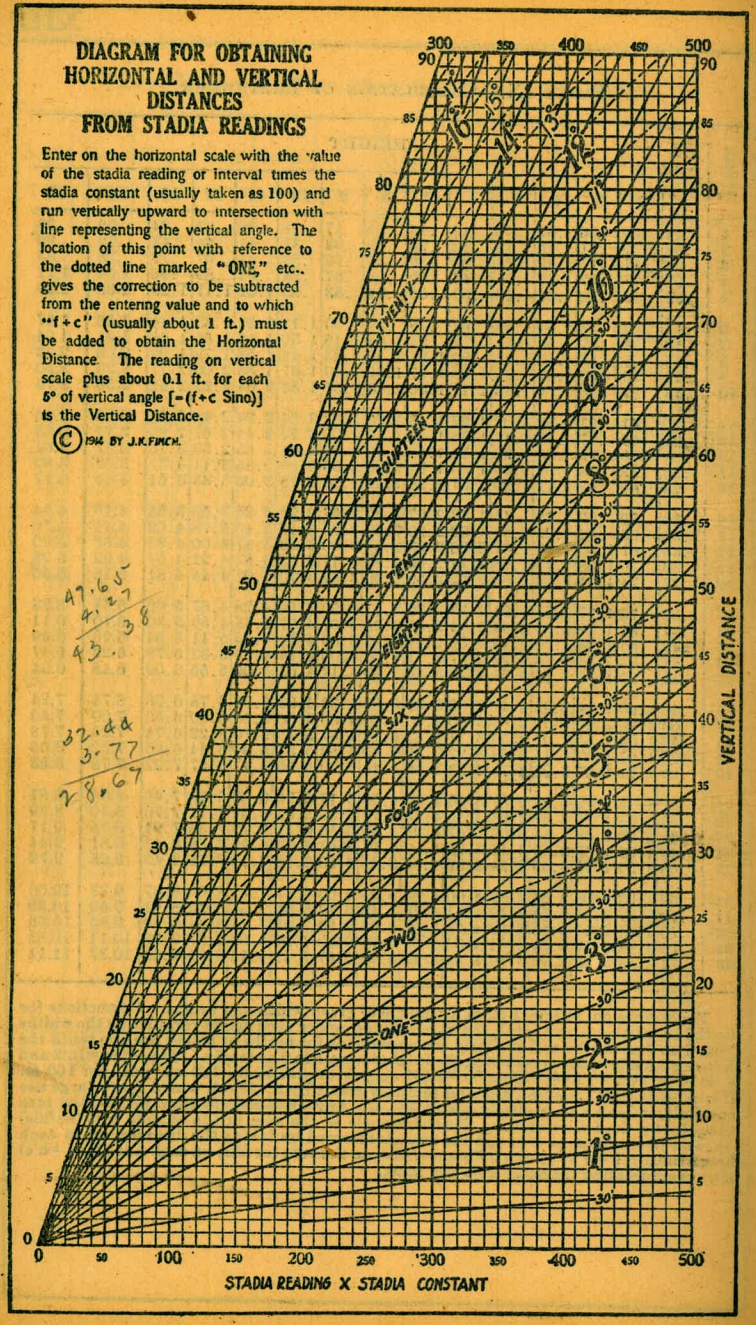
Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
1°	50.00	.22	11°	551.70	26.50	21°	1061.9	97.57
10′	58.34	.30	10′	560.11	27.31	10′	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2	100.01	.87	12	602.21	31.56	22	1113.7	107.24
10	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
20	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
30	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
40	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
50	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
3	150.04	1.96	13	652.81	37.07	23	1165.7	117.38
10	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
20	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
30	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
40	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
50	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
4	200.08	3.49	14	703.51	43.03	24	1217.9	128.00
10	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
20	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
30	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
40	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
50	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
5	250.16	5.46	15	754.32	49.44	25	1270.2	139.11
10	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
20	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
30	275.21	6.61	30	779.77	52.89	30	1296.5	144.85
40	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
50	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
6	300.28	7.86	16	805.25	56.31	26	1322.8	150.71
10	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
20	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
30	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
40	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
50	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
7	350.44	10.71	17	856.30	63.63	27	1375.6	162.81
10	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
20	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
30	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
40	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
50	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
8	400.66	13.99	18	907.49	71.42	28	1428.6	175.41
10	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
20	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
30	425.79	15.80	30	933.13	75.49	30	1455.1	181.89
40	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
50	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
9	450.93	17.72	19	958.81	79.67	29	1481.8	188.51
10	459.32	18.38	10	967.38	81.09	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
10	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
10	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
20	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
30	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
40	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
50	543.29	25.70	50	1053.3	96.01	50	1580.0	213.86

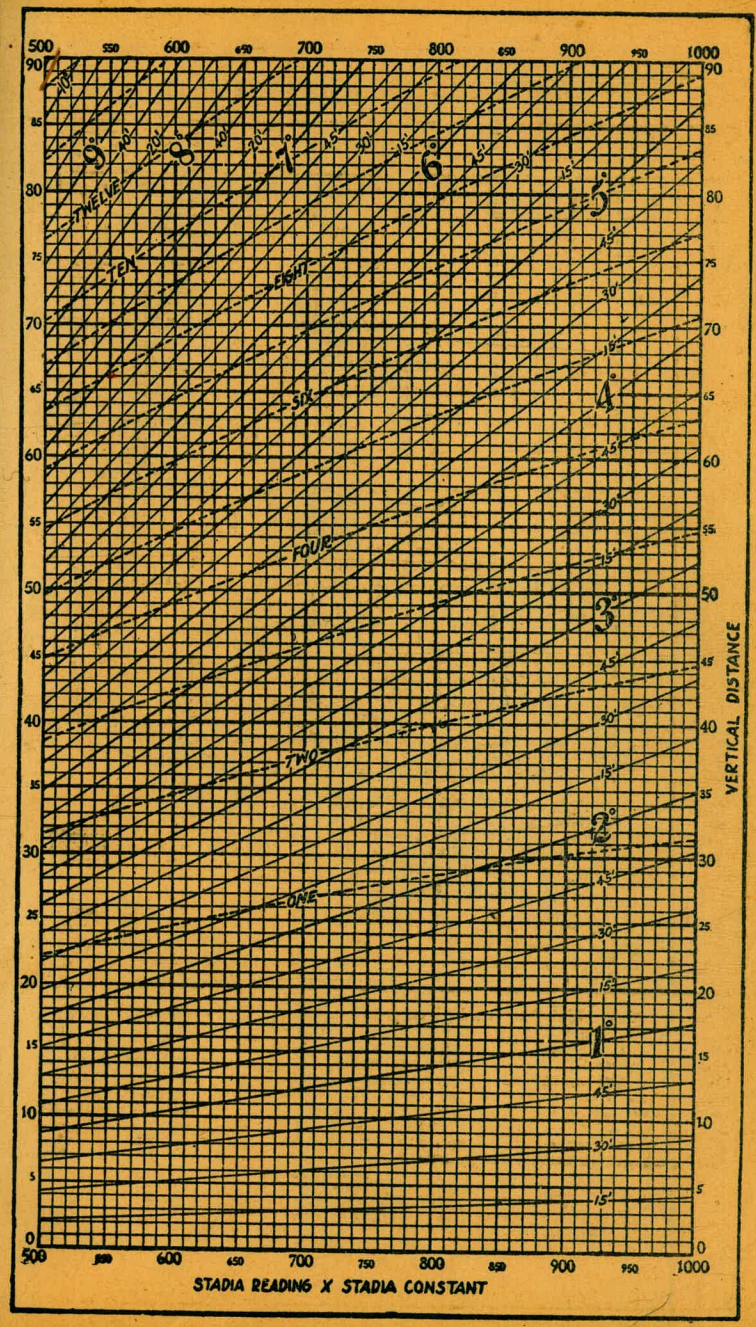
DIAGRAM FOR OBTAINING HORIZONTAL AND VERTICAL DISTANCES FROM STADIA READINGS

Enter on the horizontal scale with the value of the stadia reading or interval times the stadia constant (usually taken as 100) and run vertically upward to intersection with line representing the vertical angle. The location of this point with reference to the dotted line marked "ONE," etc., gives the correction to be subtracted from the entering value and to which "f + c" (usually about 1 ft.) must be added to obtain the Horizontal Distance. The reading on vertical scale plus about 0.1 ft. for each 5° of vertical angle [= (f + c Sine)] is the Vertical Distance.

47.65
4.27
43.38

32.44
3.77
28.67





38.4
3
41.4
7
34.4
31.8
2.6

117
6
702

262.05
+ 3.08
265.13
11.98
253.15
1.22
254.37
6.65
247.72

Ele

34.4
31.8
2.6

5.6
1.8
7.4

38 30
37+ 46
8 4

38
33
7 1

45.33
0.42
[illegible]

73.10
2.98
70.12

43.81
40.72
3.09

55.63
42
55.21

73.10
85
72.25

110 + 05
108 + 70
1.35
6
8 1 0

32.91
80
10

34.87
8.36
43.23

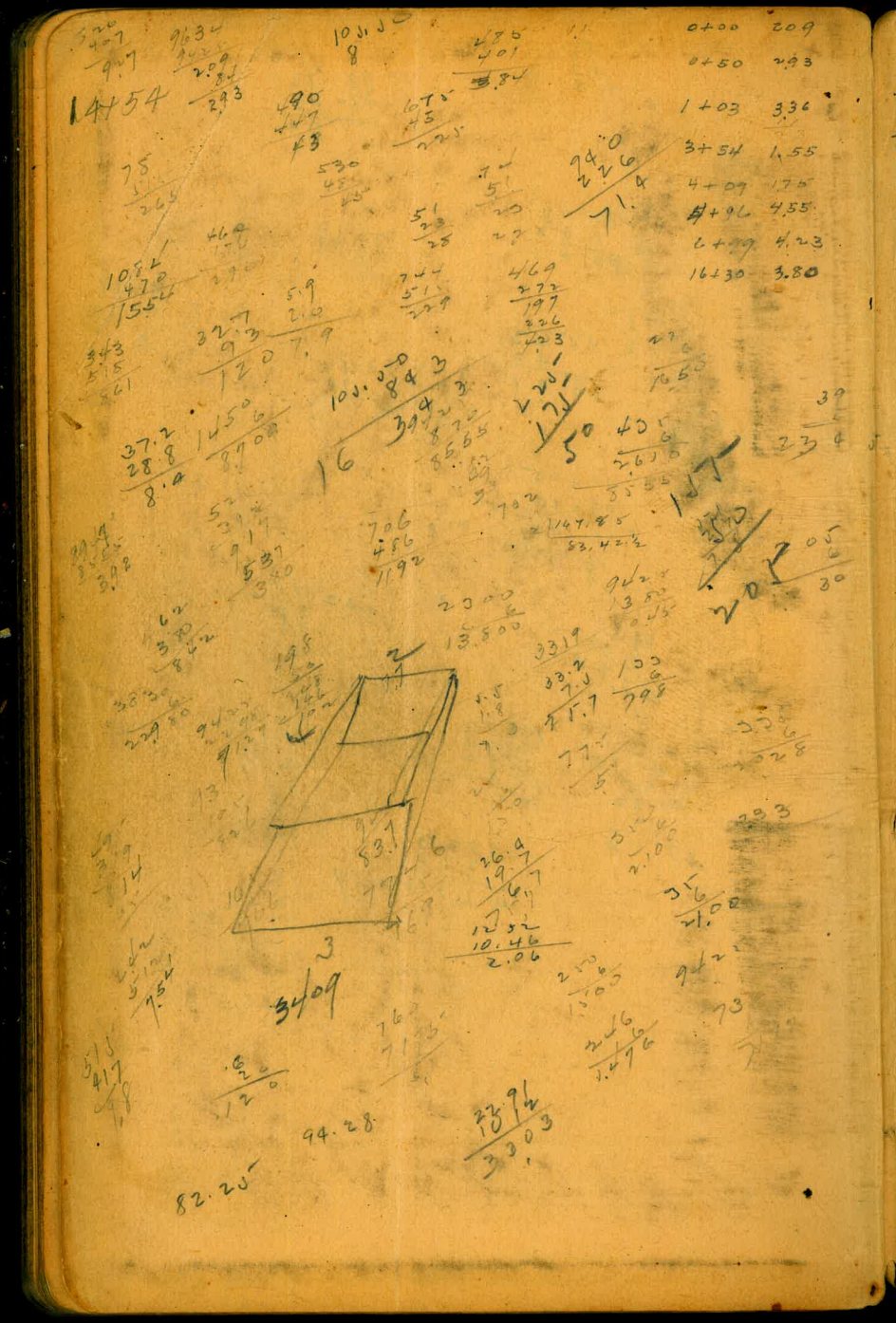
108.70
69 90
38 80
144

52.31
19 00
29

29.32
7.91
37 23

43.23
2.10
41.13 = 7

9 80 30
73° 20' 30"
2 55
70° 25' 30"



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	25.2	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.

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