

UNITED STATES
GEOLOGICAL SURVEY

MINING

TRANSIT BOOK

No. 422F

#720

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distribution Center for Roadway for Cross-Sectioning Roadway 16 feet wide. 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 $30.6 + (20 - 16) \div 2$ or 2 ft. added to 30.6 = 32.6. For slopes of 1 on $1\frac{1}{2}$ see inside of back cover.

Copyright, 1914, by Eugene Dietzgen Co.

Indexed top 16- 8/20/47 med
 ✓ 28 1/27/49 med

242
 184
 58
 184
 57.50
 291.50

77
 90
 157
 100
 267
 35
 292
 26.61
 318.61

6277.66
 1.91
 6318.66
 2907
 29000
 132.43
 122.00
 528.50

52.11
 52.11
 290
 8884
 378.84

41.8881
 177.90
 597447
 67.0260
 277.89

1286.71
 578.50
 4565.21
 214.44

4779.65
 115.08
 597447
 323.89
 6277.66

4874.73
 117.39
 6956.60
 323.90

5012.62
 130.37
 6979.90
 269.94

5442.49
 318.61
 7249.84
 219.84

5461.10
 241.50
 7469.68

Please Return to
 City of San Diego Water Dept.
 Room 268 Civic Center
 Telephone Main 5161

536.60
 6.98
 543.68

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.

6780

Made in U. S. A.

Olivet Cabrillo

Terrence Roy way to Eagle ✓

L. H. H. field Morena to Frank ✓

Milton

Morena to Calv. ✓

Olivet + Ravina SE B.P. 38.74

Frankfort + Milton conc. Mont 53.67

Market + Old Bdry S.B.P. 139.92

Goldfinch + Sutter N.E. Plug Corb 256.99

Ivanhoe + Torrey Rd NE Cor. Plug

133.27

W. L. H. 157.22

13

Lake Murray Prop Line Traverse P1-28

Ties to proposed City Boundary across
Lake Murray at 28

Lake Murray Drainage Ditch ✓
South side 29-33
Alice

Alvarado Filter Plant - E. property line 32-35
Lot 1 Block 3 - RASONIA, Sketch & sections Alice

Lake Murray Drainage Ditch Cont 34-35 Alice

29TH ST. LANDIS To WEIGHTMAN GR. 102
STKS. For 6" A.C. MAIN 76 Alice

POB St. Willow to Plum Sts for Meters
75 Alice

Ties to LAKE MURRAY PROPERTY

TRAVERSES from LAKE MURRAY Drainage
Ditch Survey 45-48 Alice

1.

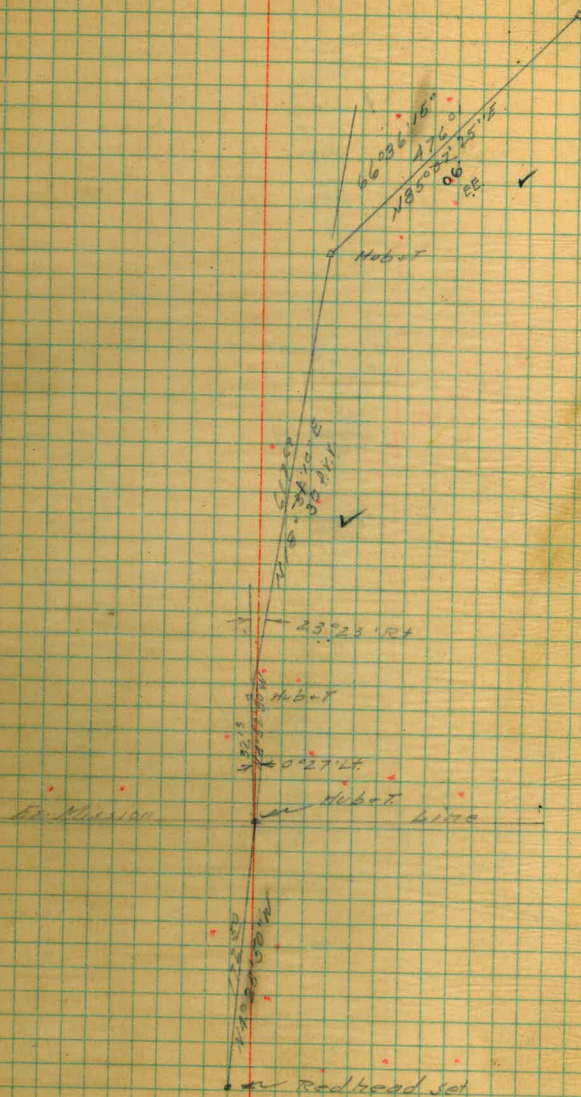
Aug. 7, 1947

Raney
Nieman
Bater

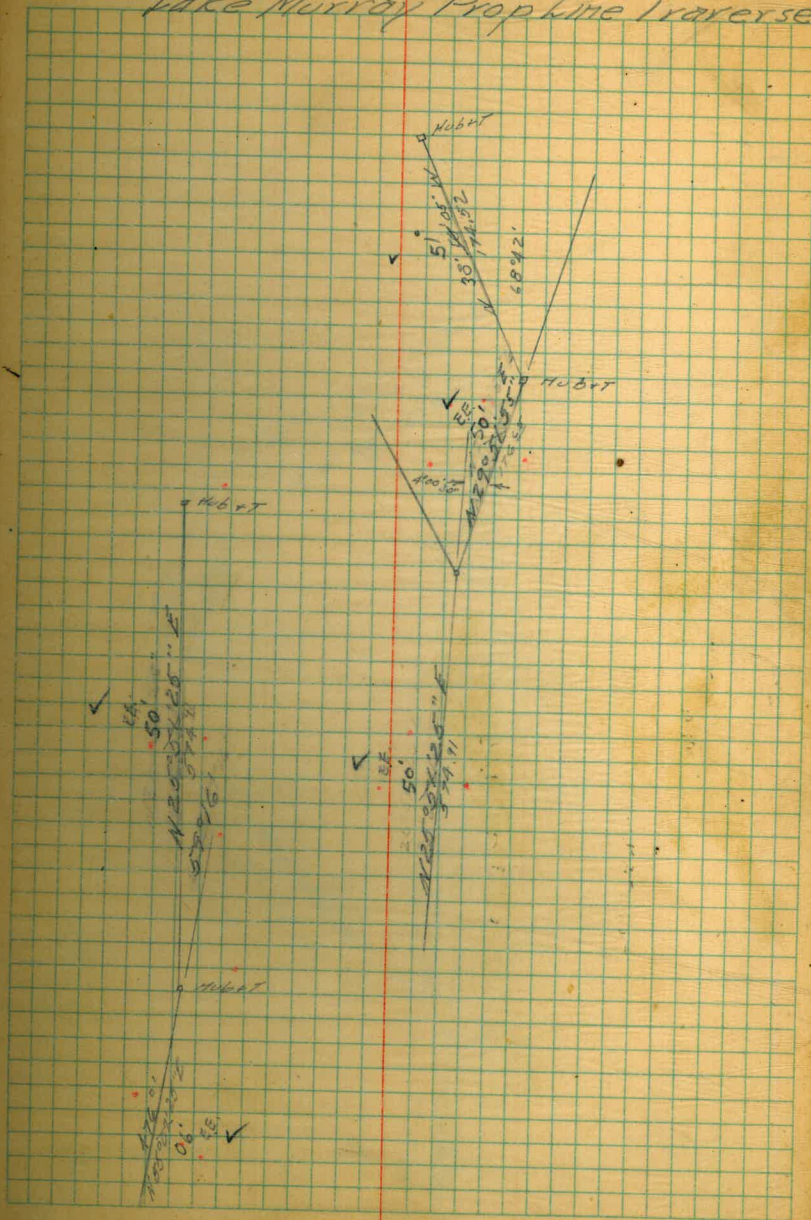
This Traverse continued from
field book # 697 starts at pt. Under
fence on Ex Mission line. Thence
through all hubs on Prop line as
shown on sketch. Run Counter Clockwise

Murray Lake Propline Traverse

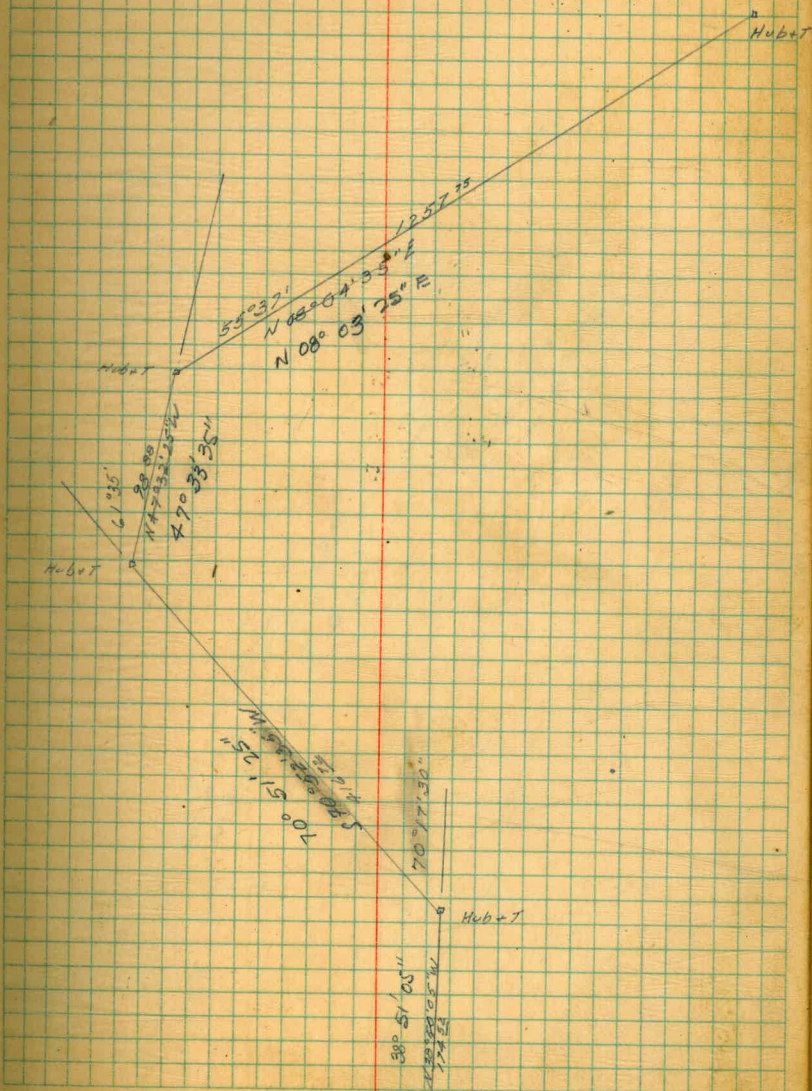
1.



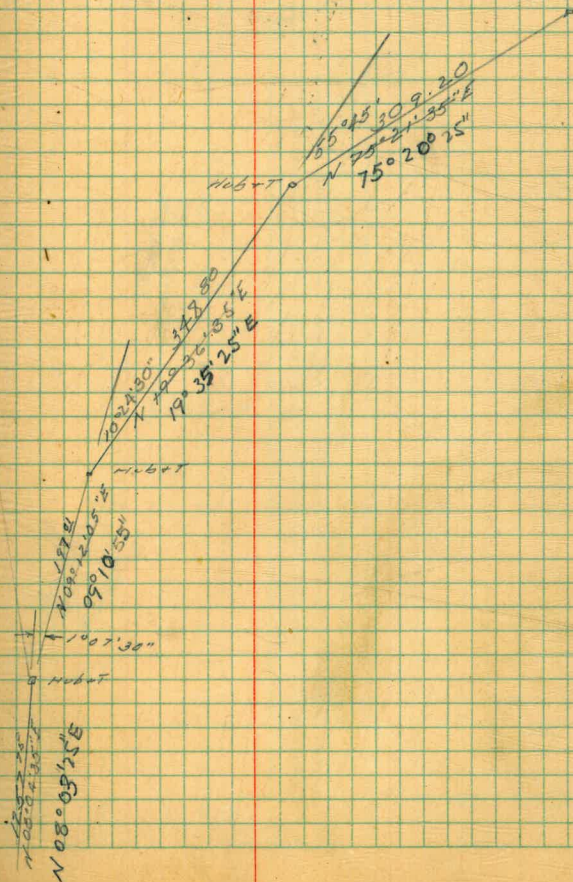
Lake Murray Prop Line Traverse



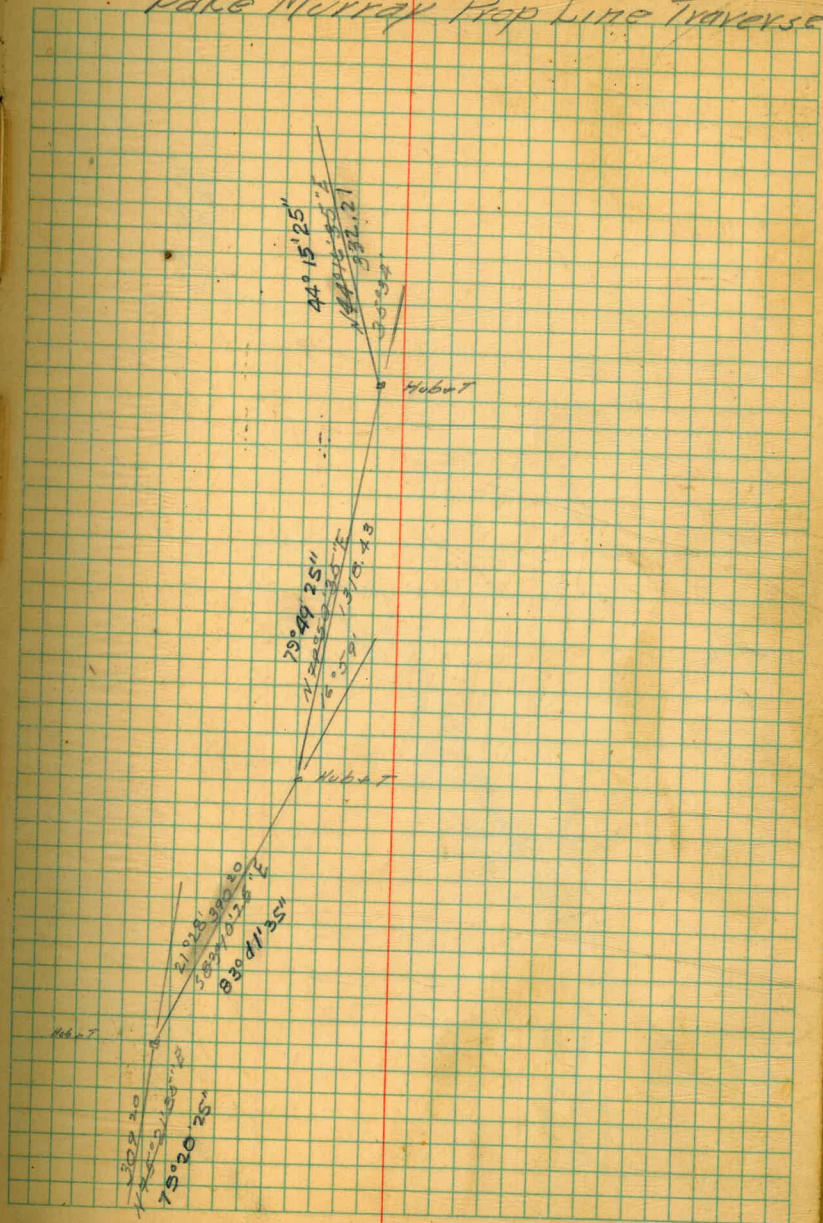
Lake Murray Prop Line Traverse



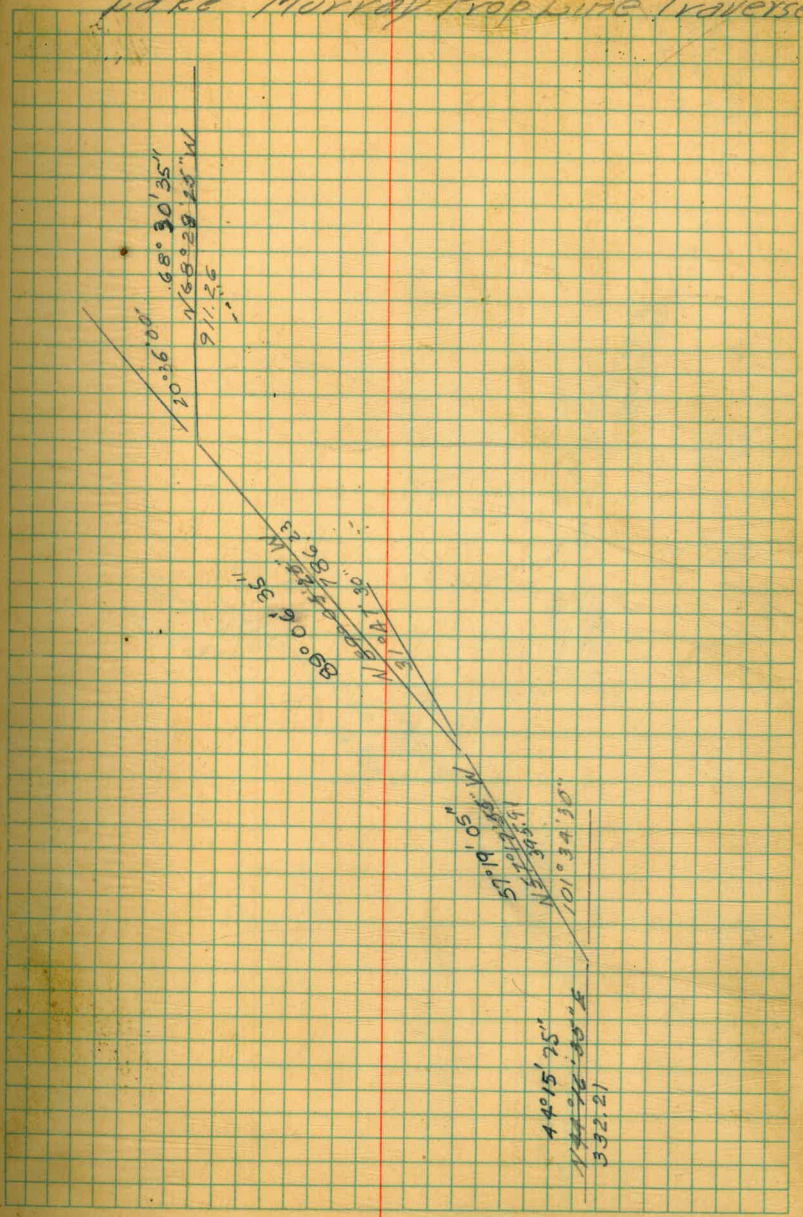
Lake Murray Prop Line Traverse



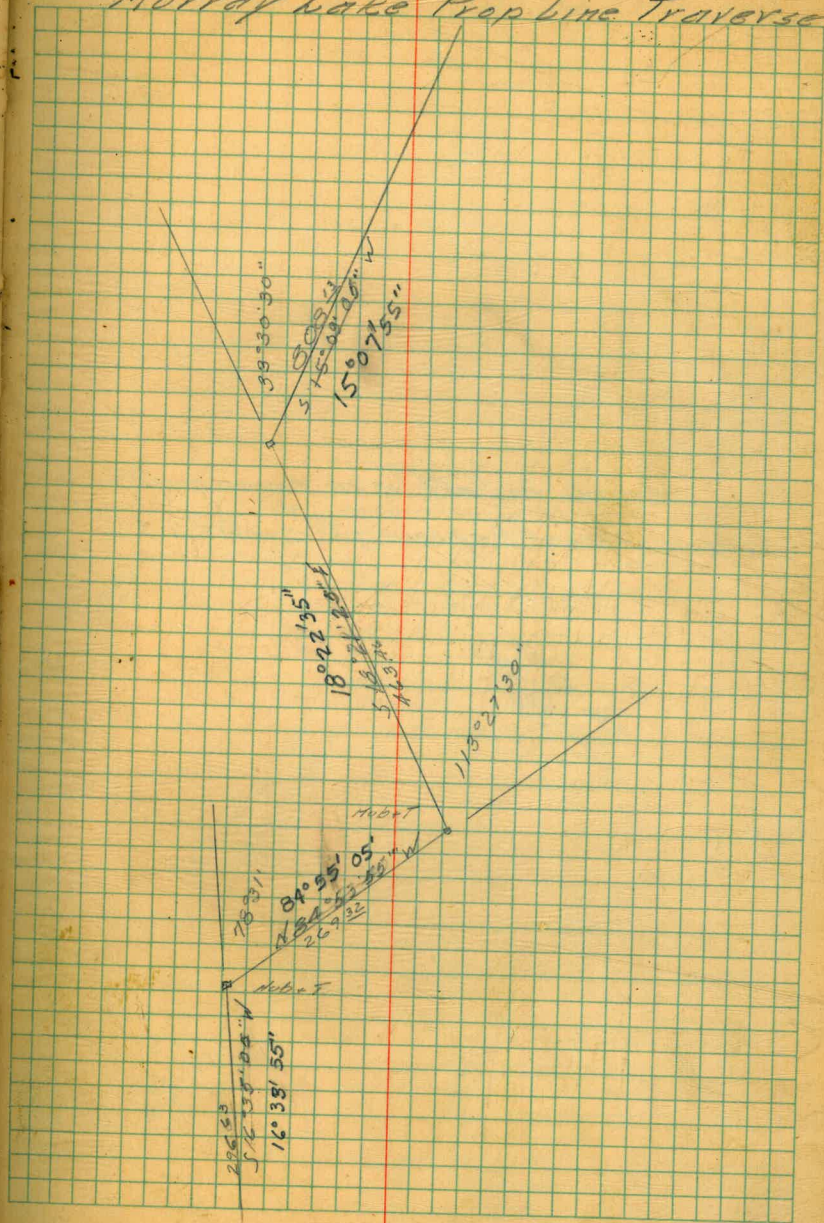
Lake Murray Prop Line Traverse



Lake Murray Prop Line Traverse

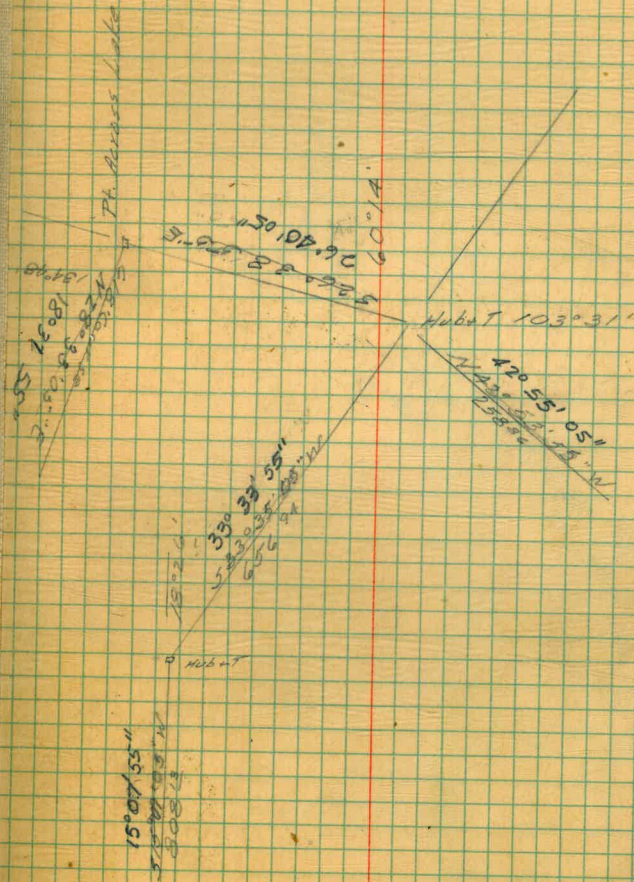


Murray Lake Prop line Traverse

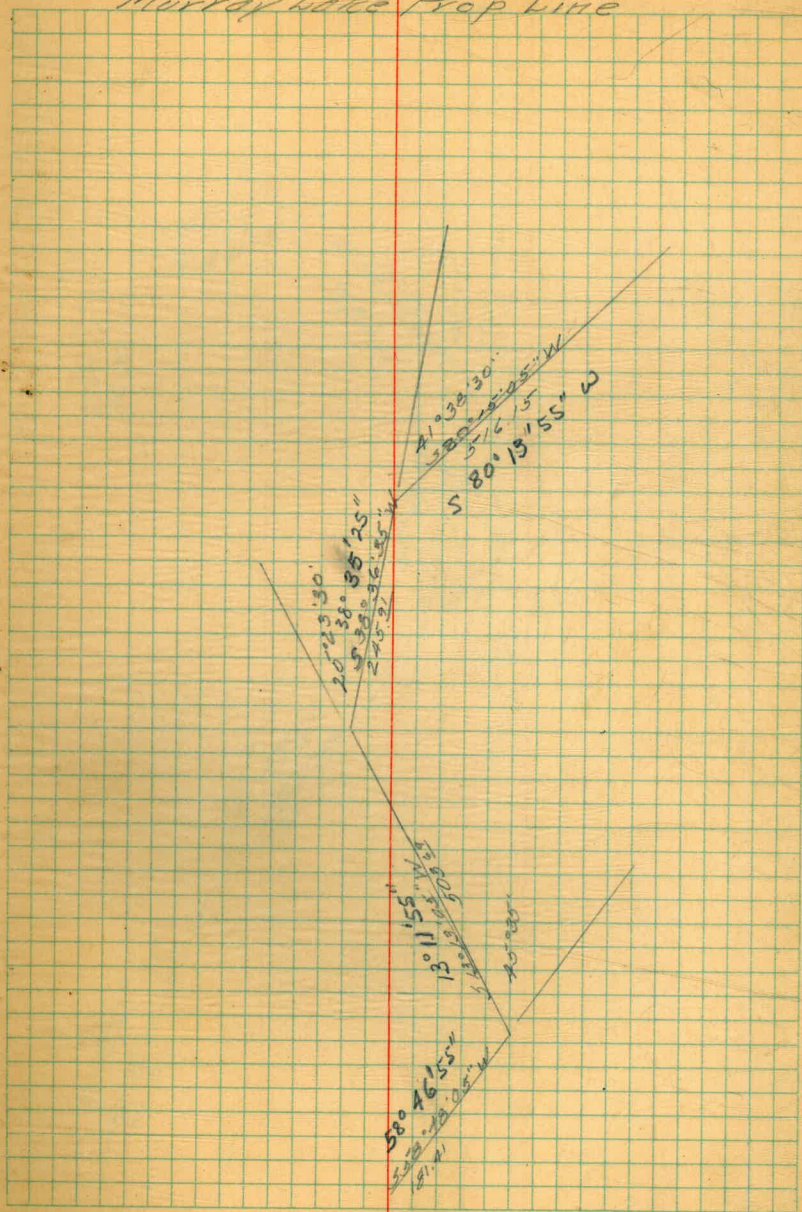


Angles to left are triangulation
into Pt. of beginning on P.L.

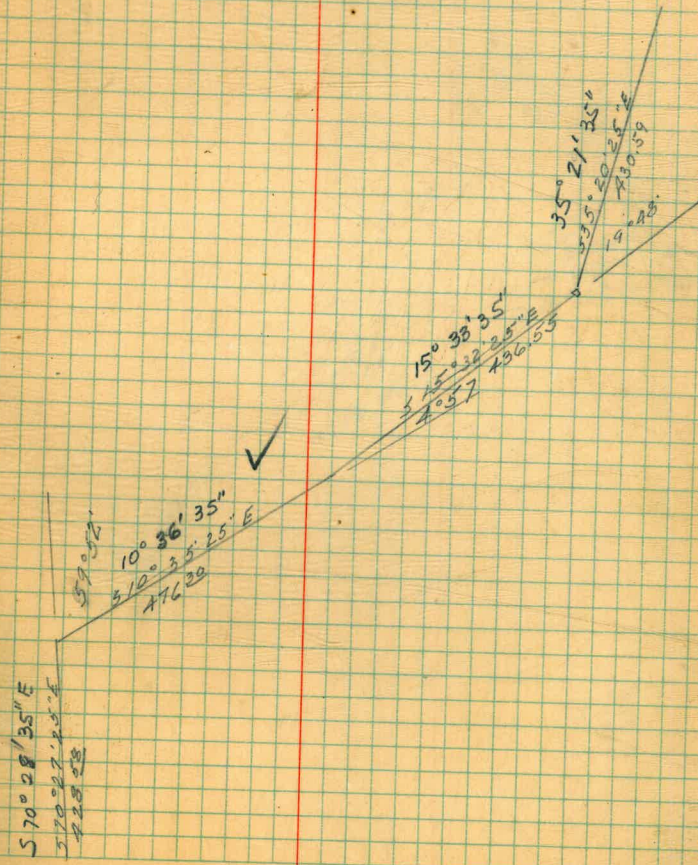
Murray Lake Prop. Lite Traverse



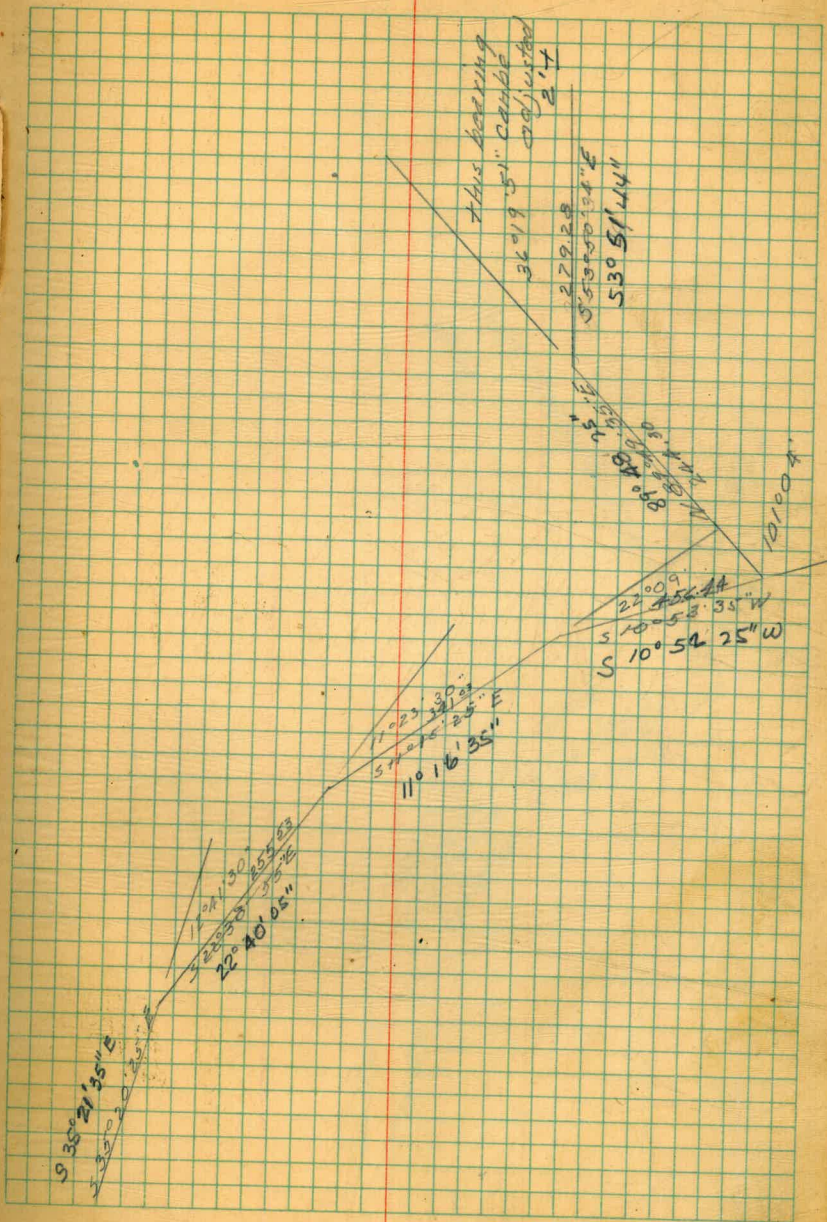
Murray Lake Prop line



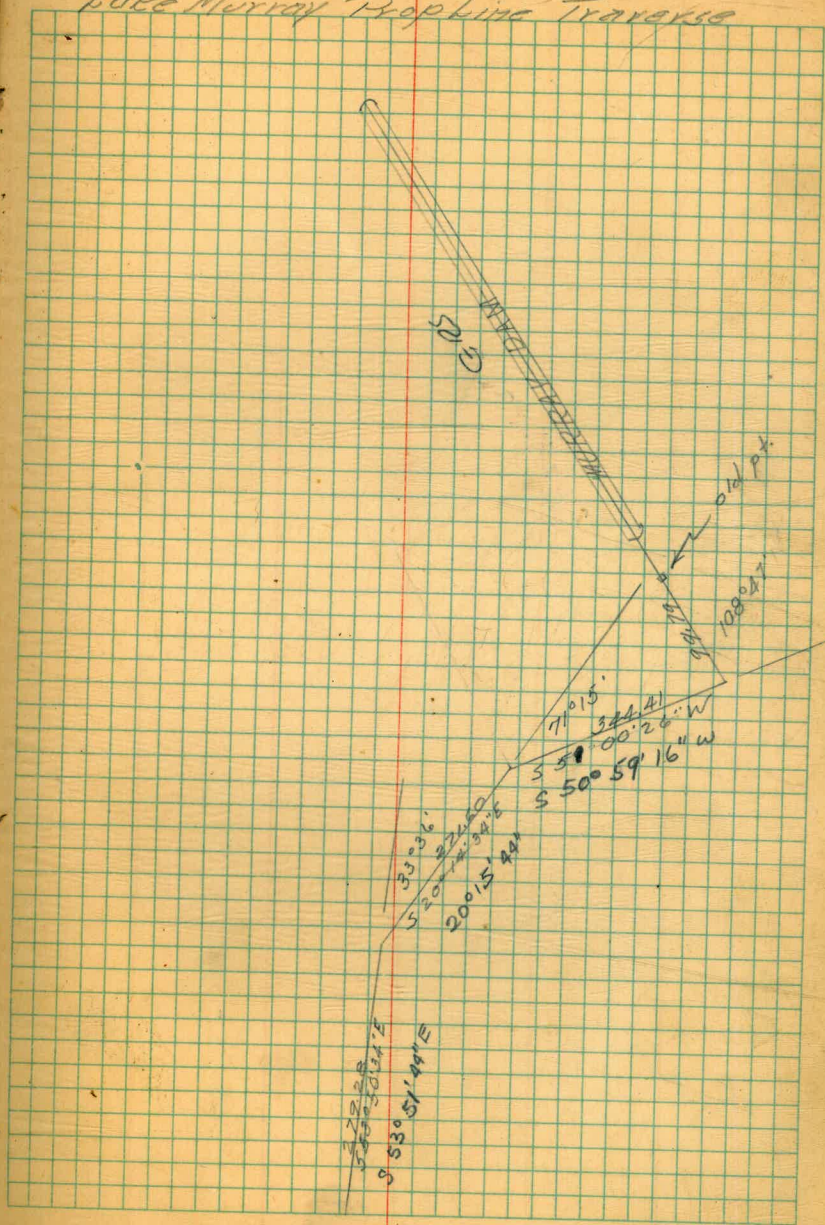
Lake Murray Prop Line Traverse

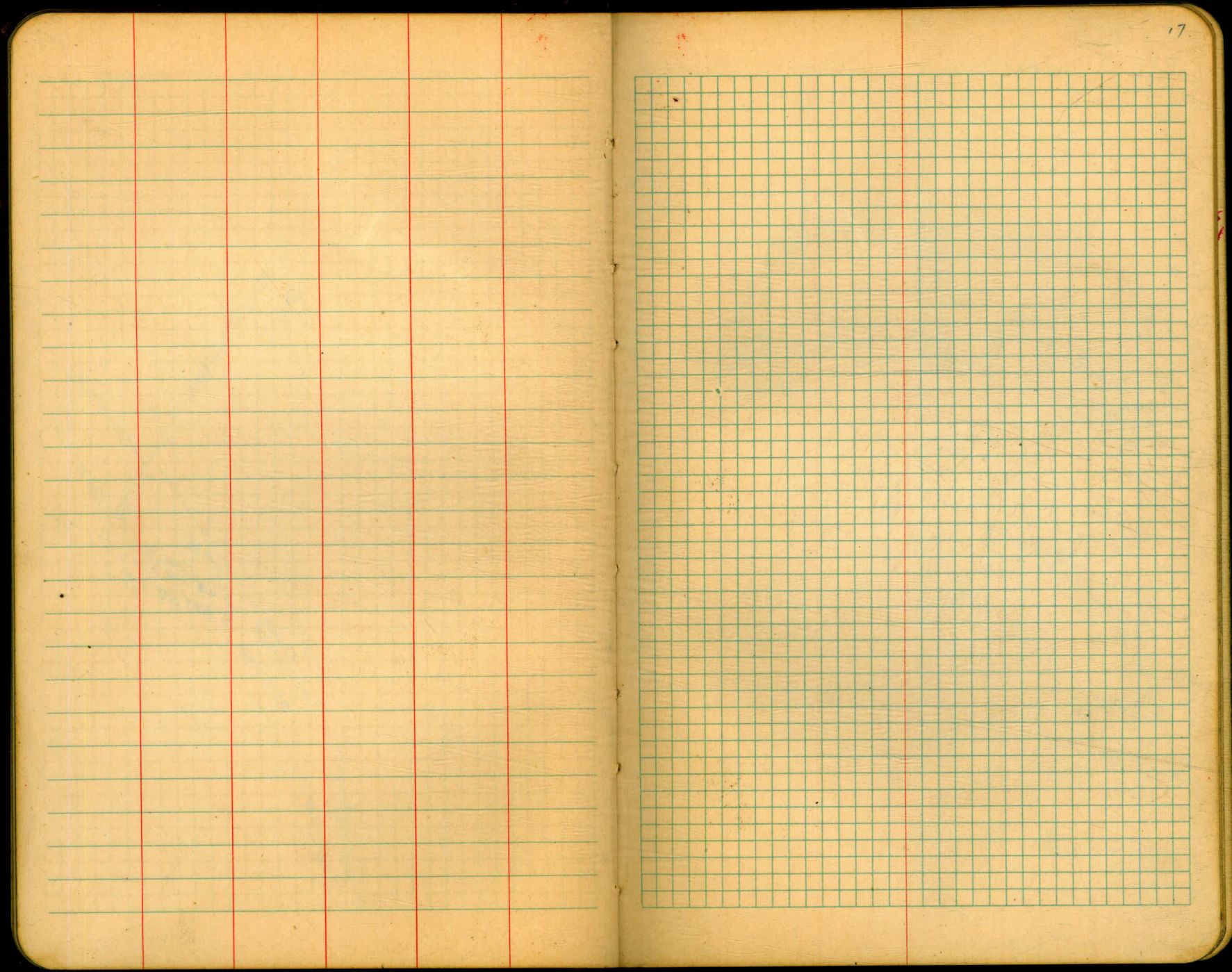


Lake Murray Prop Line Traversed 5



Lake Murray Propking Traverse



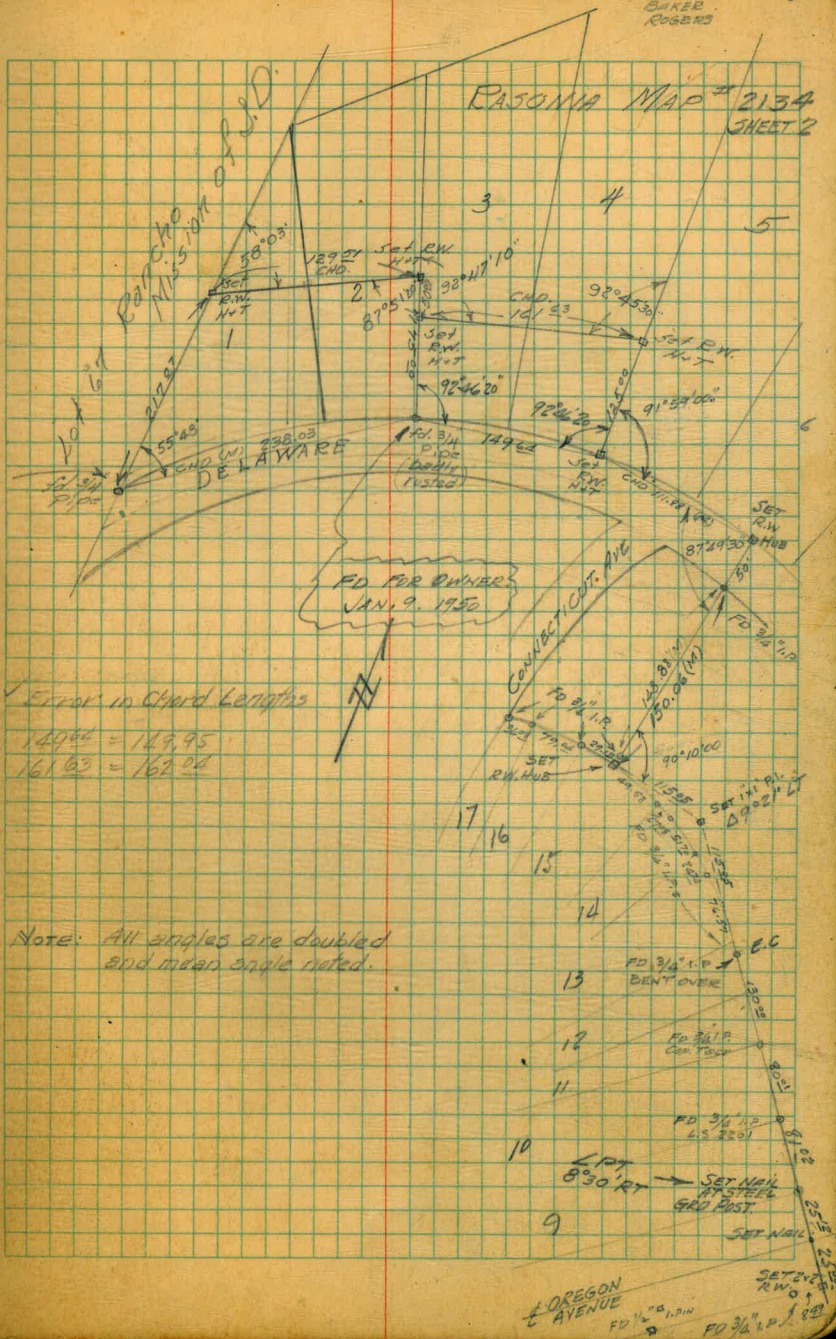


LAKE MURRAY PROPERTY TRAVERSE

DEC 20 1948

RAINEY
BEATTY
BAKER
ROGERS 18

RASONIA MAP # 2134
SHEET 2



NOTE:
This point obliterated
during construction
of pipeline
Replaced with H.P.

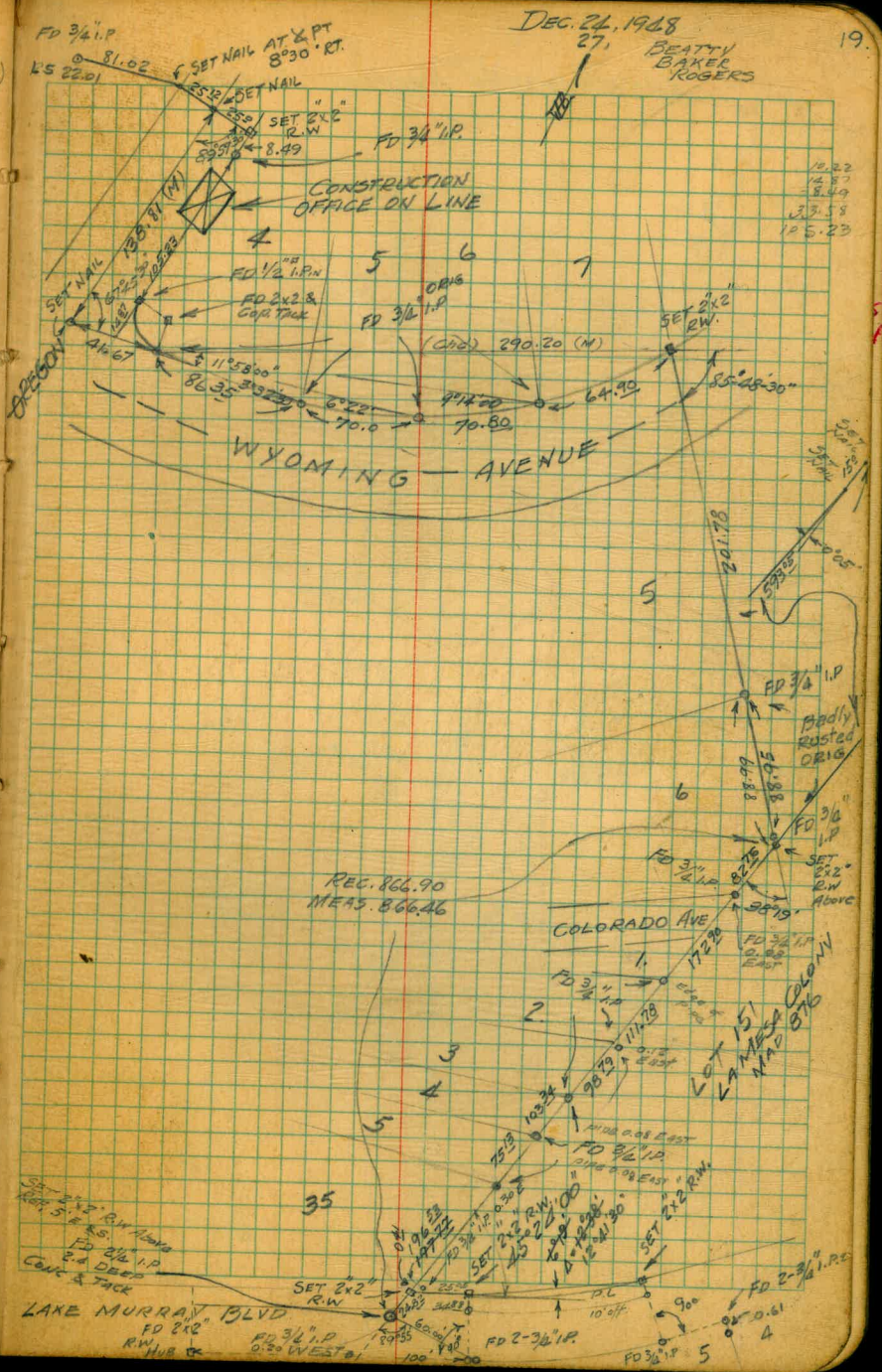
✓ Error in Chord Lengths
14964 = 14995
16163 = 16204

Note: All angles are doubled
and mean angle noted.

OREGON AVENUE
FD 1/2" R.W.
FD 3/4" R.P.
SET NAIL AT STEEL GRD POST
SET NAIL R.W.

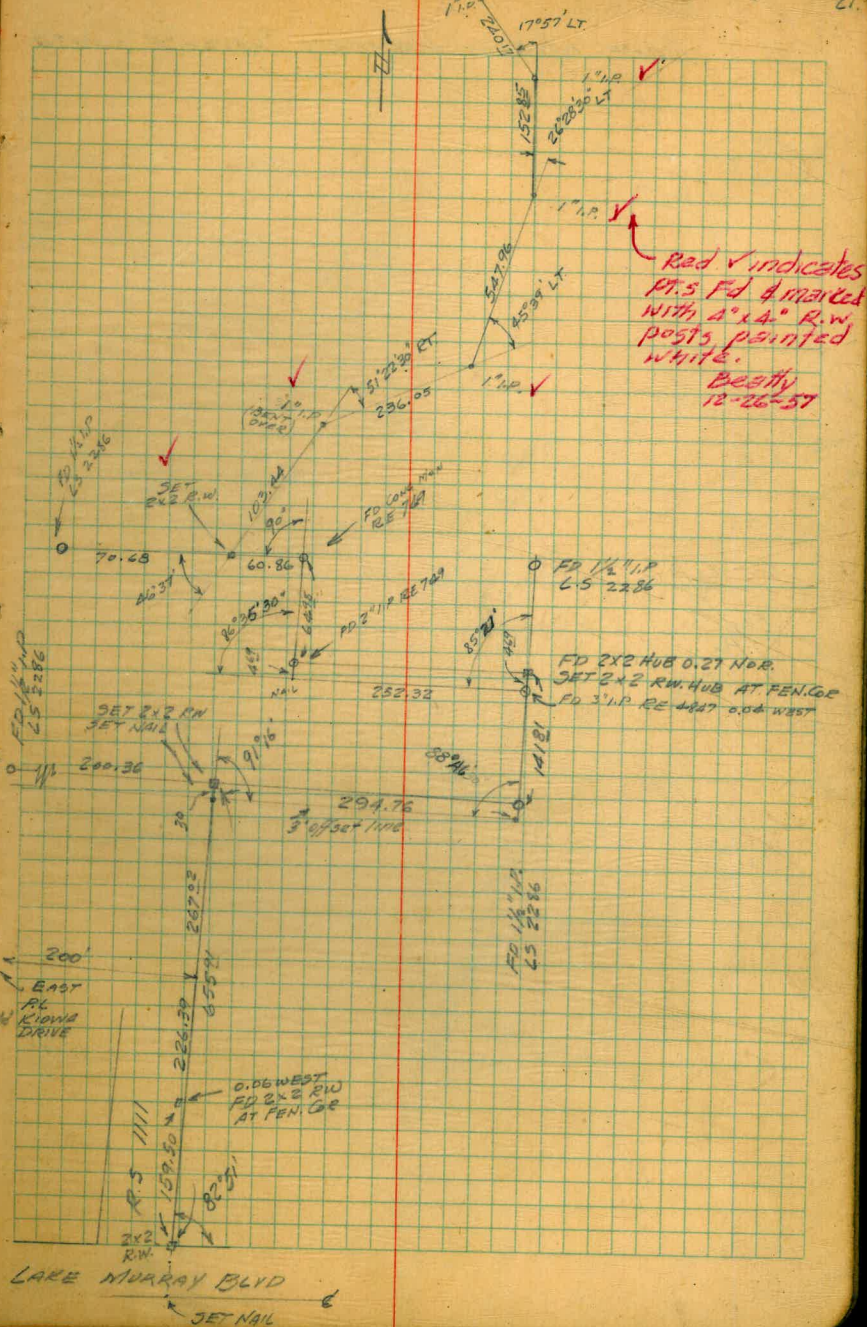
LAKE MURRAY PROPERTY TRAVERSE (CONT'D)

201.78
85.88
390.77



LAKE MURRAY PROPERTY TRAVERSE CONT'D

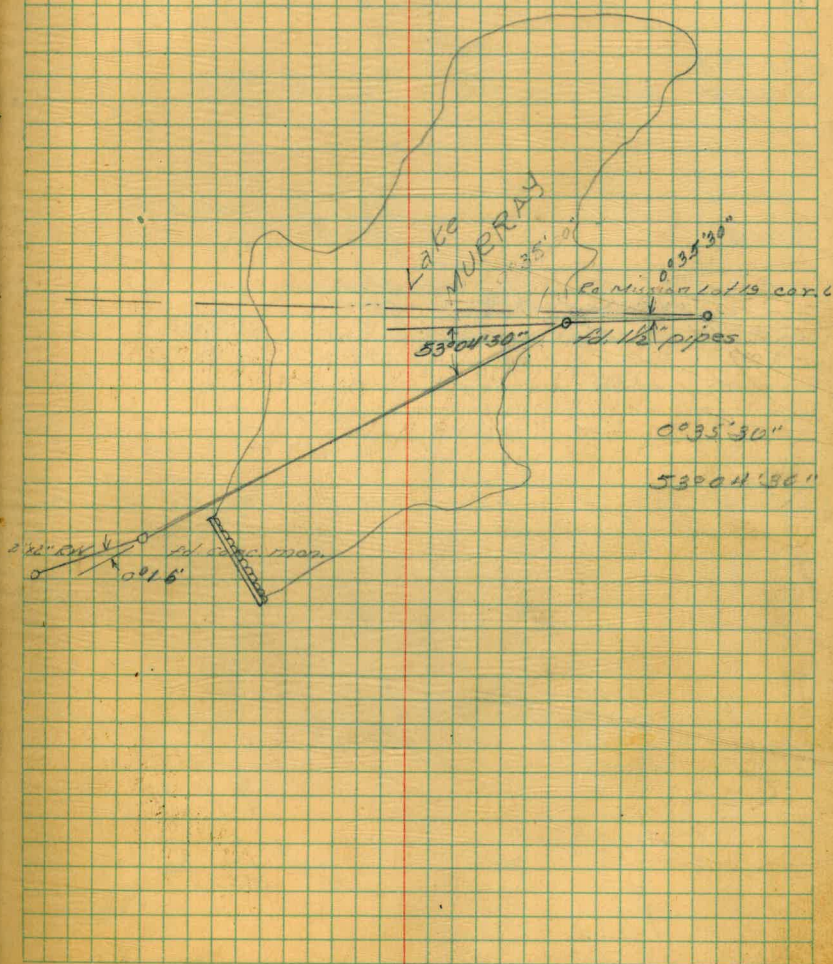
JAN 6 1949 Same Party



Raney shipman
West
Payne

May 31, 1949

Ties to proposed city boundary
across Lake Murray 28.



Lake Murray Drainage Ditch (0.1% Grade)

Sta	Horiz Ang	Distance	Elevation	Notes
			535.18	Top 48" CP 9' 21' at 5+04
5+01.90		35.83		
5+04	28° 10' LT	36'	537.04	

1+41 19" Core Waist Line
4' 11" to 4' x 4' Grate on

1+03.31		398.59		
1+04	16° 31' 30" RT	400'	536.65	48" Wood Water Line & Pipe

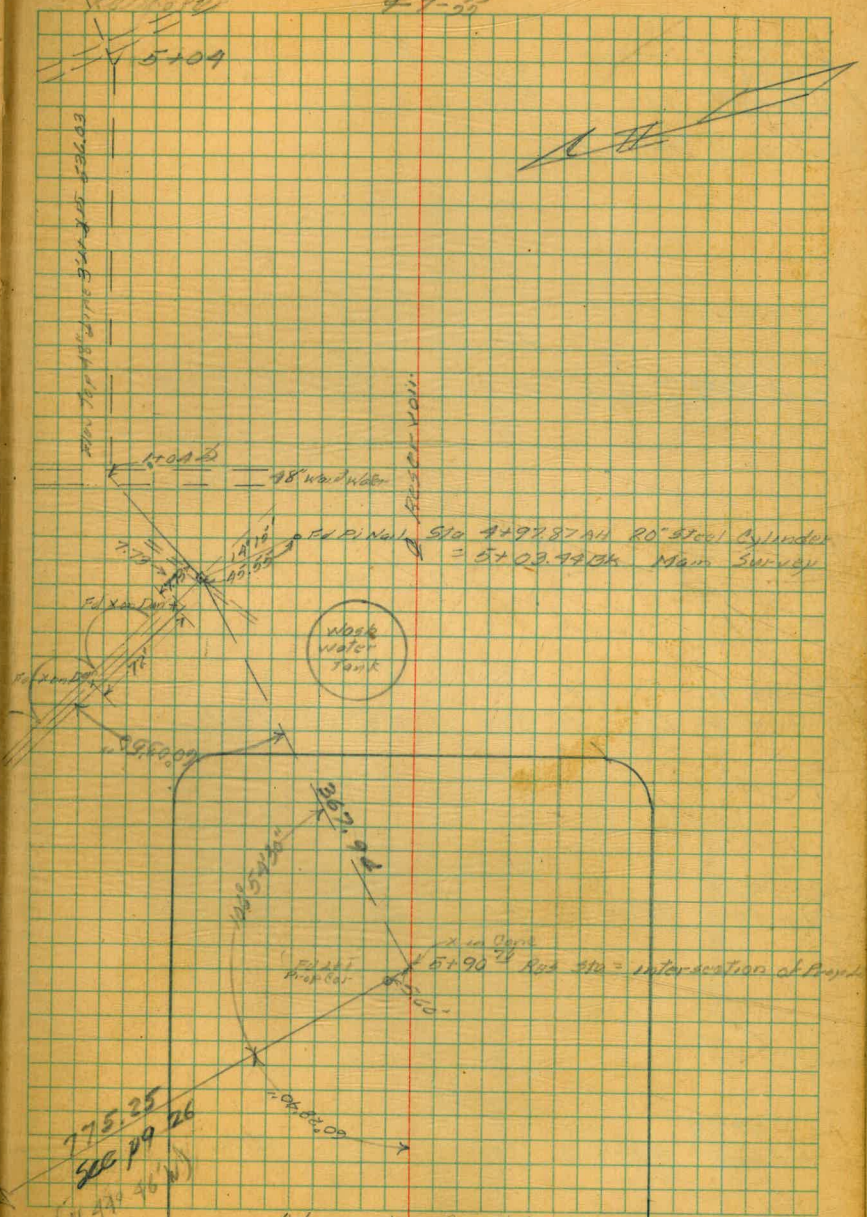
0+13 533.81 end of 16" CI
333.81 drain line 6' 21"

		103.31		
		104'	536.6	
0+00	16° 13' 21"	Hub & Tank 4' south of end of Dam		



Ed Corr
1958
See page 26

West Williams Varon Top 48" CP 4/5/56 Chained Line 9-7-55



Alvarado Regulating Res

	Angle	Stadia	Elev	
	Horiz	Dist	Elevation	Mag. Bearing
19+35.05	LT	390.76		
19+45	38°55'40"	393	538.52	RESET 4/5/56

New Angle 38°53'40"

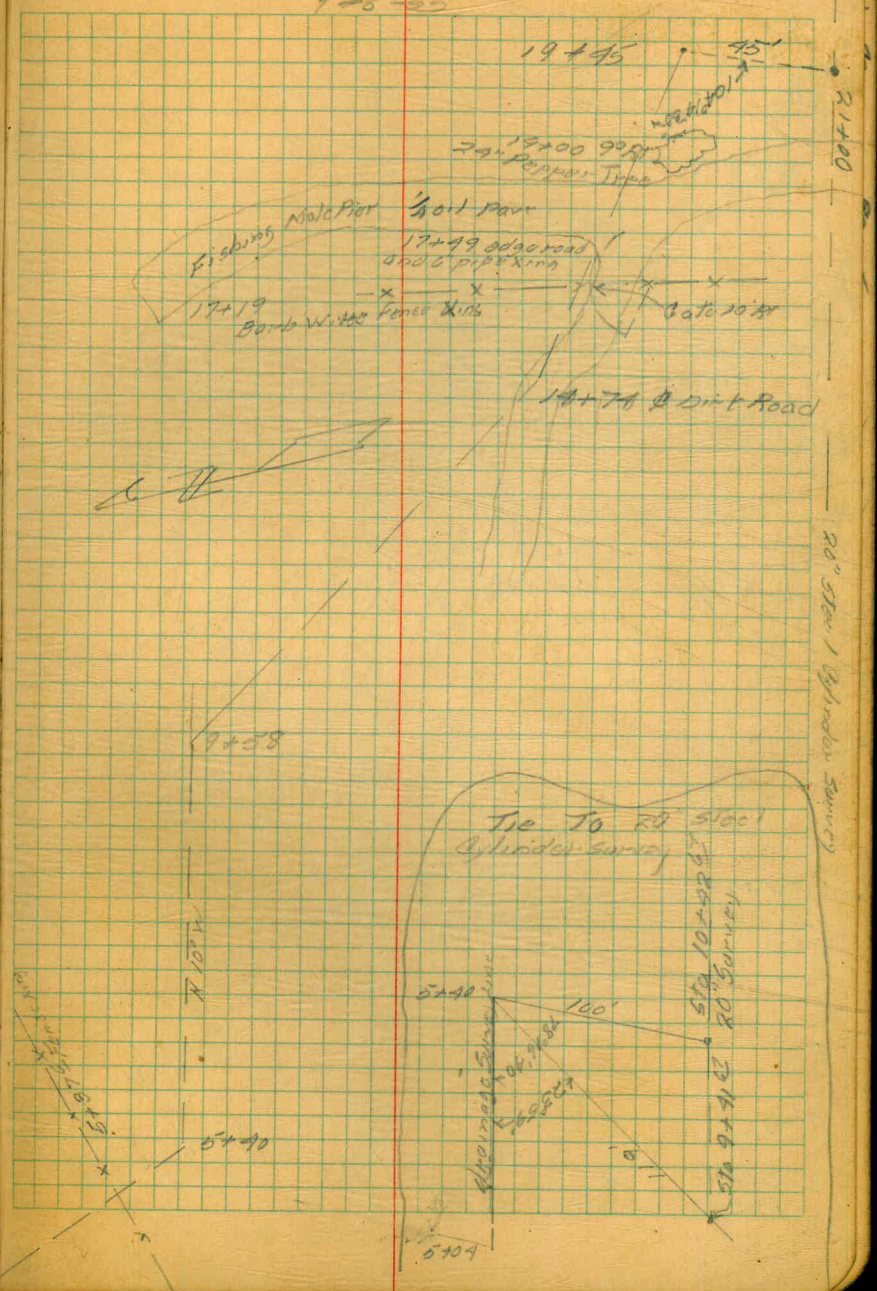
14+66.71	LT	468.37	TP	
14+74	3°48'20"	471	538.13	N87°30' E

9+55.74	RT	510.97		
9+58	6°38'40"	516	537.54	N94° E

7+54.09	RT	201.65	TP	
7+56	12°04'20"	202	532.92	N31°30' E

5+37.73	LT	216.36		
5+40	42°46'20"	216	532.22	N10° W

9+8-55



21+00

20" steel / aluminum survey

Lake Murray Drainage Ditch

Station	Angle	Dist	Elev
38+03.71	Horiz	305.10	TP
38+19	64°22'00"	305'	540.37

33+98.00	RT	405.71	5' LT
34+19	85°44'00"	406'	540.08 edge Road

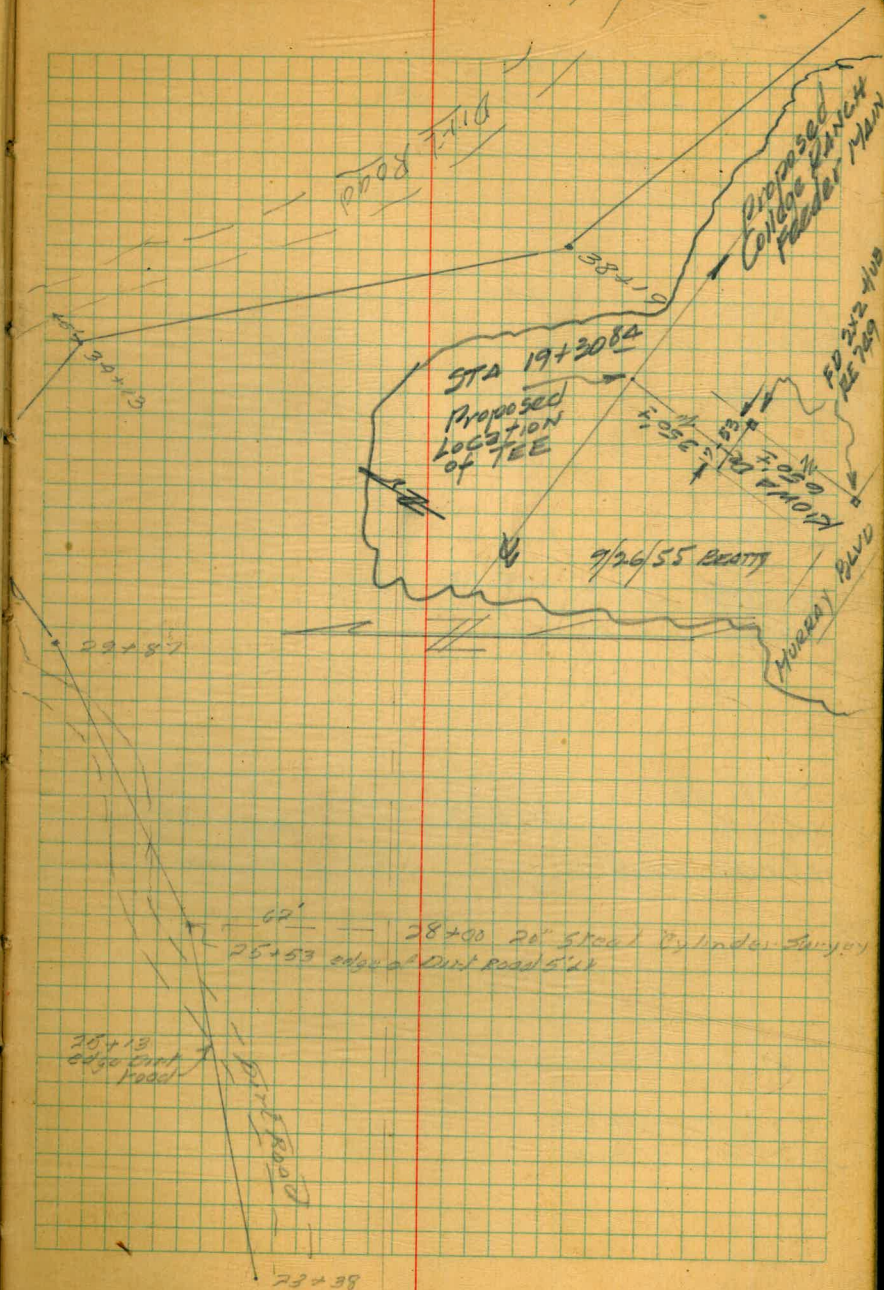
32+81.93	RT	116.07	road
32+96	75°24'30"	117'	539.43 5' LT to edge of road

29+79.53	LT	308.40	TP
29+87	75°35'00"	309'	539.66

25+40.81	LT	432.72	
25+53	57°00'20"	434'	539.20

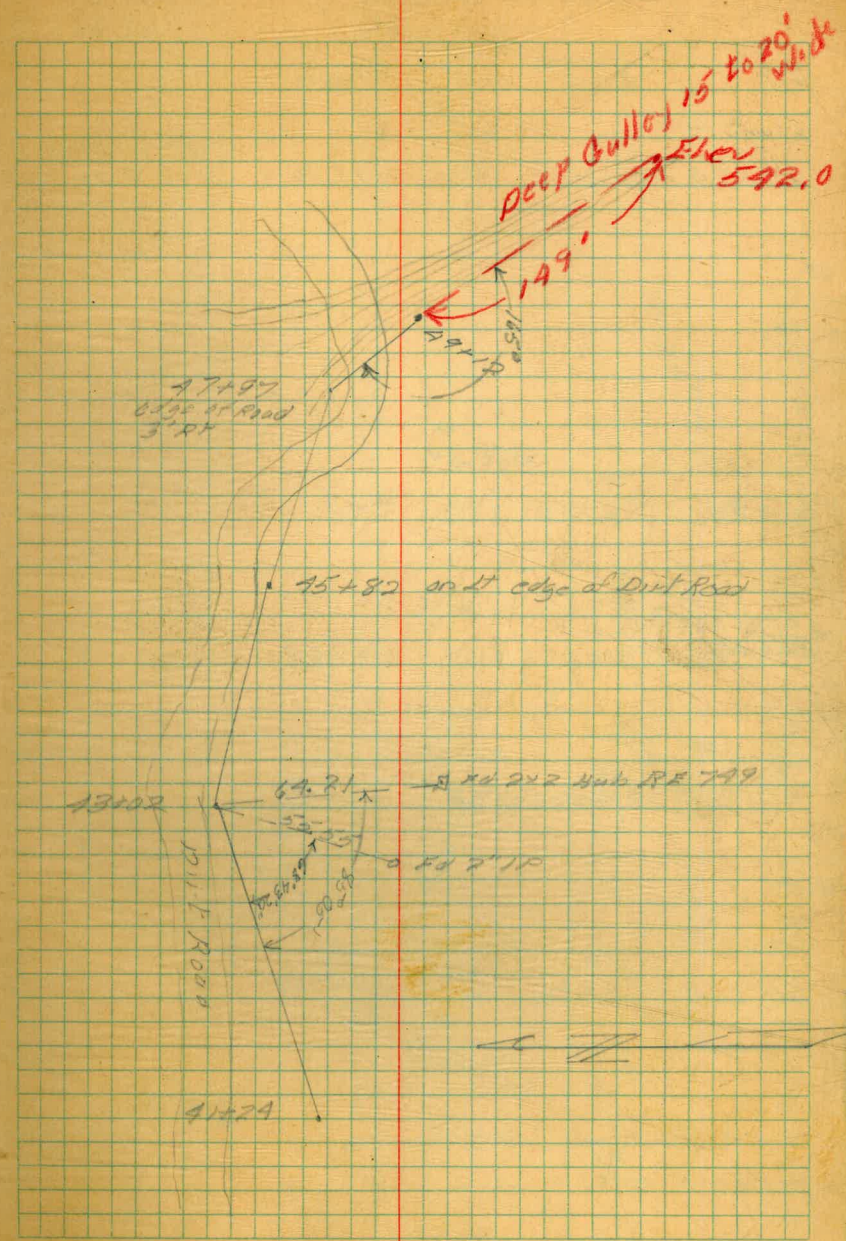
23+28.91	LT	215.00	TP
23+38	29°32'40"	215'	538.93

RESET 7/15/56



Lake Murray Drainage Ditch

	Angle	Stadia	
Horiz	Dist	Elev	
50+12.12	RT	130.37	TP
50+20	25°13'00"	131'	541.71
48+94.73	LT	117.39	TP
49+12	88°01'00"	118'	541.47
47+79.65	RT	115.08	
47+97	48°13'00"	115'	541.39
45+65.81	RE	214.44	Reset Binney
45+82	3°55'20"	215'	541.23
42+86.71	RE	278.50	Reset Binney
43+02	31°26'40"	280'	541.19 P. on South edge
41+08.81	LT	177.90	TP
41+24	21°34'20"	178'	540.81



Sta	Horizontal Angle	Stadia dist	Elevation	
66+56.62	RT	323.30 325		
66+79	10°02'40"	380'	543.35	10° RT to Edge Dirt Road

62+77.66	LT	378.84	.74	
62+99	0°30'20"	380'	542.92	

59+74.47	LT	303.19		
59+76	16°33'20"	303'	542.62	Bottom of brush 20' West of Road

57+02.50	LT	271.87		
57+24	12°44'00"	272'	542.37	

54+61.10	RT	241.50	TP	
54+82	6°34'30"	242'	542.02	

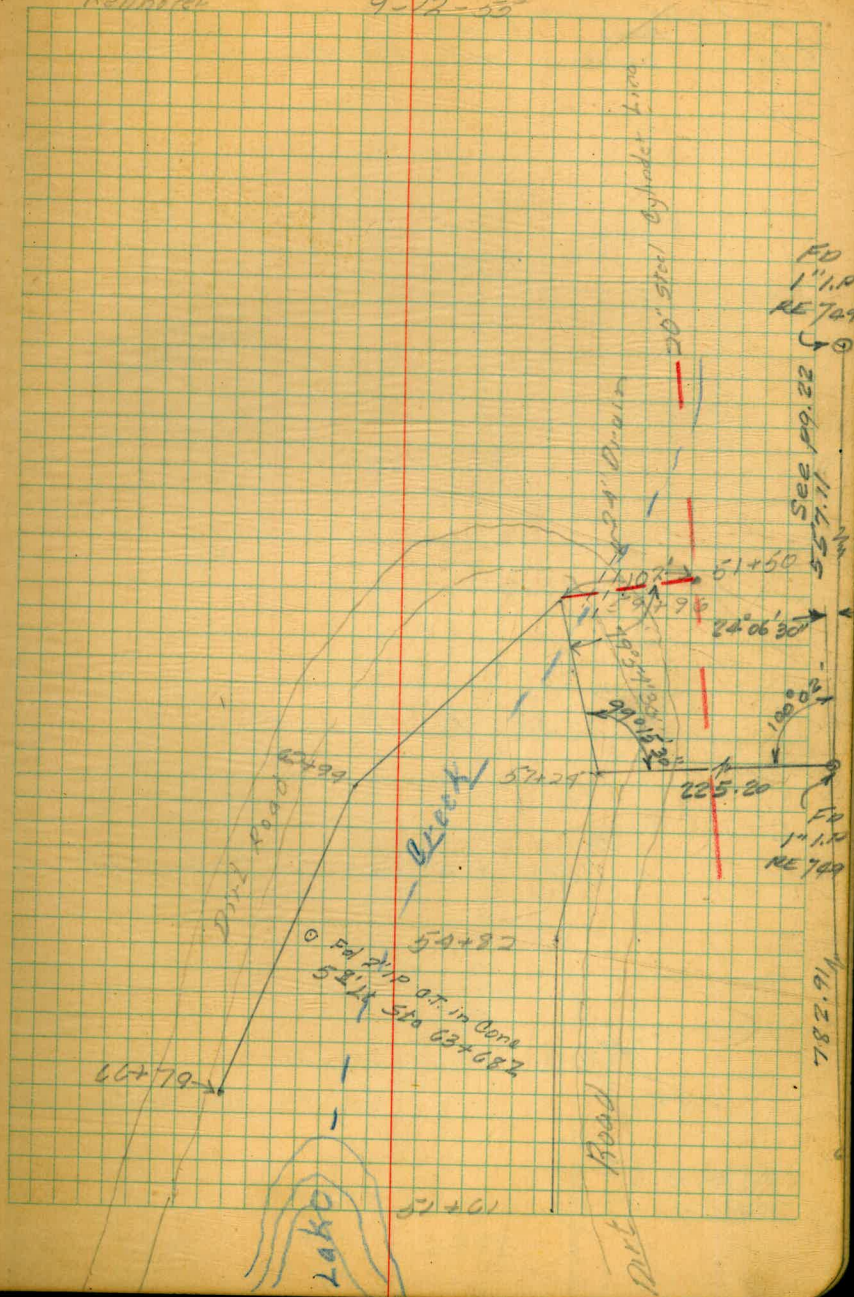
51+42.42	RT	318.61		
51+61	7°02'20"	321'	541.85	

West
Williams
Varenfakke
Kellhofer

1/6/56. Shaded

9-12-55

32



Lake Murray Drainage Ditch Cont

Sta	Horiz Angle	Stadia Dist	Elevation
-----	----------------	----------------	-----------

21	76° 16' 30"	To Sta 1+04	
----	-------------	-------------	--

21	109° 35' 00"	X on Dam To Hub+Task 0+00	
----	--------------	---------------------------	--

21	19° 26' 00"	To X on Dam	
----	-------------	-------------	--

530.27 Lake Surface

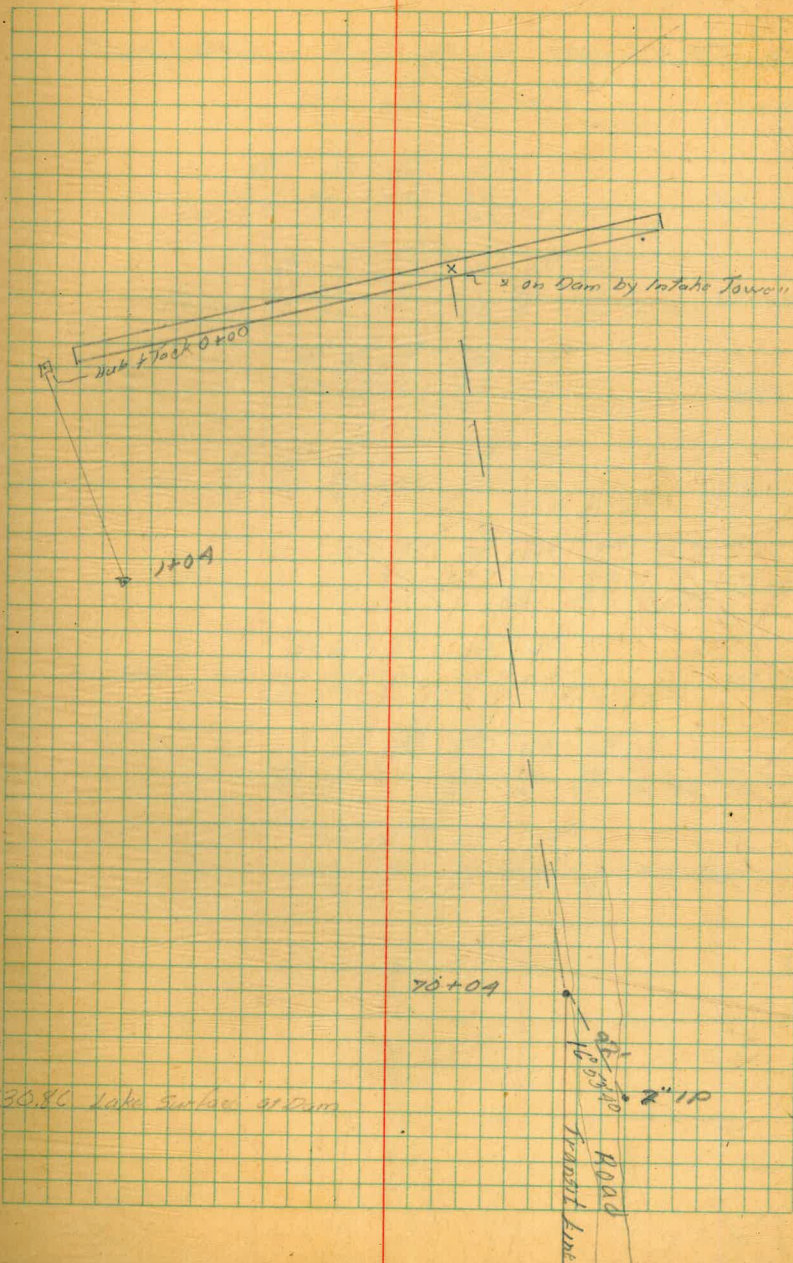
69+79.90

70+04

110° 02' 30"

543.53

323.40



530.80 Lake Surface at Dam

ALVARADO FILTER PLANT
 Cross-sections of existing fill, ect.
 ADJACENT TO LOT 1 BLOCK 3 RASONIA

1-4-53 '56
 BEATTY
 MARTELL

TBM 0.00 533.23

0+50

0+75

0+84

1+00

1+22

1+27

1+50

1+71

2+00 = 1' from

0+00 Top of RES. ROOF See F.B. 785 pg. 1

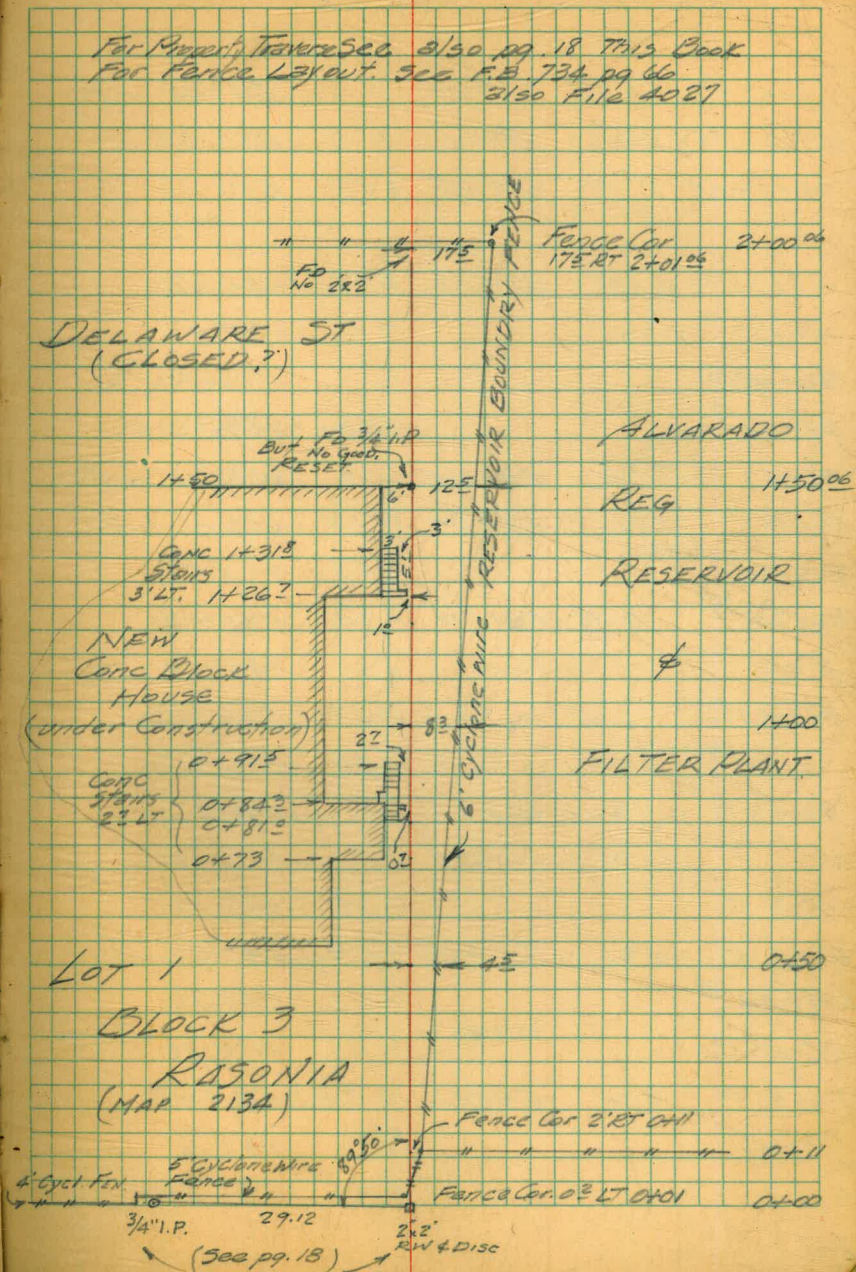
	511.1	511.3	511.2	510.8
	2.1	1.9	2.0	2.2
	6	2	2	4.5 @ fen.
	514.0	513.3	512.8	512.9
Top	+0.75	3.0	3.0	3.3
Block wall	5.7	5.7	0	6.5 @ fen.
	520.5	520.9	520.9	520.5
Top	2.7	7.3	7.3	6.7
Block wall	0.7	0.2	0	2.5 3.5 3.3 @ fen.
	524.4	524.6	524.3	524.3
	8.2	8.4	7.9	3.9
	10	1	4	8.5 @ fen.
	525.4	525.3	524.5	524.7
Fin Floor	7.2	7.8	7.9	8.7
	10	2	2	8.5
	526.4	526.3	524.5	524.7
	7.2	7.8	7.9	8.7
	10	2	2	8.5
	527.4	527.3	527.3	527.3
Top Block wall	7.1	10.1	9.9	9.7
	1	1	2	1
	8.5	8.5	10.0	10.0 @ fen.
	528.4	528.3	528.3	528.3
Fin Floor	10.52	11.2	11.2	9.2
	6	2	0	11
	12.2	12.2	12.2	12.2 @ fen.
	529.5	529.1	529.5	529.5
	10.7	10.1	8.7	8.2
	10	3	0	3.0
	10	10	14.8	14.8 @ fen.
	530.0	531.1	529.3	530.0
	15.2	11.5	3.7	3.2
	10	0	12	17.0 @ fen. Cor

S = PROPOSED LINE

ALVARADO FILTER PLANT
E. prop line LOT 1 BLOCK 3 RASONIA

1-4-53
E.B. 711
Martell

1956



LAKE MURRAY DRAWAGE DITCH

Levels 0.1% Grade

66+56 ⁶⁰	5.65	549.00		543.35
72+49.84	6.64	550.61	5.03	543.97
74+69.68	10.22	554.28	6.55	544.06
77+76 ⁹⁵	7.77	552.15	9.90	544.38
77+57 ⁷²			7.56	544.59
80+49 ⁶³				544.58
81+34 ⁹¹			7.33	544.82
83+57 ³⁰	11.29	556.25	7.19	544.96
85+16 ¹²	8.81	554.04	11.02	545.23
87+59 ⁵⁵			8.58	545.46
92+20 ⁴⁶	6.14	551.94	8.24	545.80
95+22 ³²			5.81	546.13
96+42 ³⁷			5.64	546.30
97+79 ⁵¹			5.52	546.42
99+83 ⁷⁹	6.18	552.61	5.51	546.43
103+11 ⁵³	8.17	555.25	5.53	547.08
106+31 ⁰⁹			8.04	547.21
110+50 ⁹⁷	11.37	559.03	7.59	547.66
114+04 ¹⁵			11.09	547.94
115+07 ⁵⁰			10.83	548.20
116+96 ⁴⁵	9.02	557.31	10.74	548.29
120+20 ¹¹			8.70	548.61
			8.46	548.85

West
Williams
Varonakis
Kellhofer

4/9/56

36

536.60 = 0+00

9.76

545.39

Turn on Gunney

Turn on Gunney 72+49⁸⁴ = 543.85

Turn on Gunney = 544.07

Turn on Gunney = 544.38

Turn on Gunney = 544.56

Draw

North Bank of Draw

Turn on Gunney = 544.96

Turn on Gunney = 545.36

Turn on Gunney 4/25/56 = 545.82

= 546.12

Gunney in both of Draw to East

Gunney on North Bank of Draw

Turn on Gunney = 546.48

Turn on Gunney = 546.91

Turn on Gunney = 548.15

Turn on Gunney = 548.30

Turn on Gunney

LAKE MURRAY DRAINAGE DITCH
Levels Cont

122+45 ⁰³	11.04	559.89		548.85
126+38 ⁵¹	10.60	559.89	10.60	549.29
129+69 ⁰⁶	9.75	559.31	10.33	549.56
133+34 ⁵²	12.18	562.14	9.35	549.96
136+22 ²¹			11.92	550.22
139+77 ⁸⁸	11.25	561.76	11.63	550.51
			10.98	550.78
	4.24	554.39	11.61	550.15
			4.49	549.91
	3.26	544.68	12.97	541.42
	1.61	538.95	1.34	537.34 = 537.58
+	12.28	539.95	11.28	527.67
	7.10	542.03	5.02	534.93
			2.51	539.52 = 539.66

West
Williams
Vor-on-fokis
Kollhofer

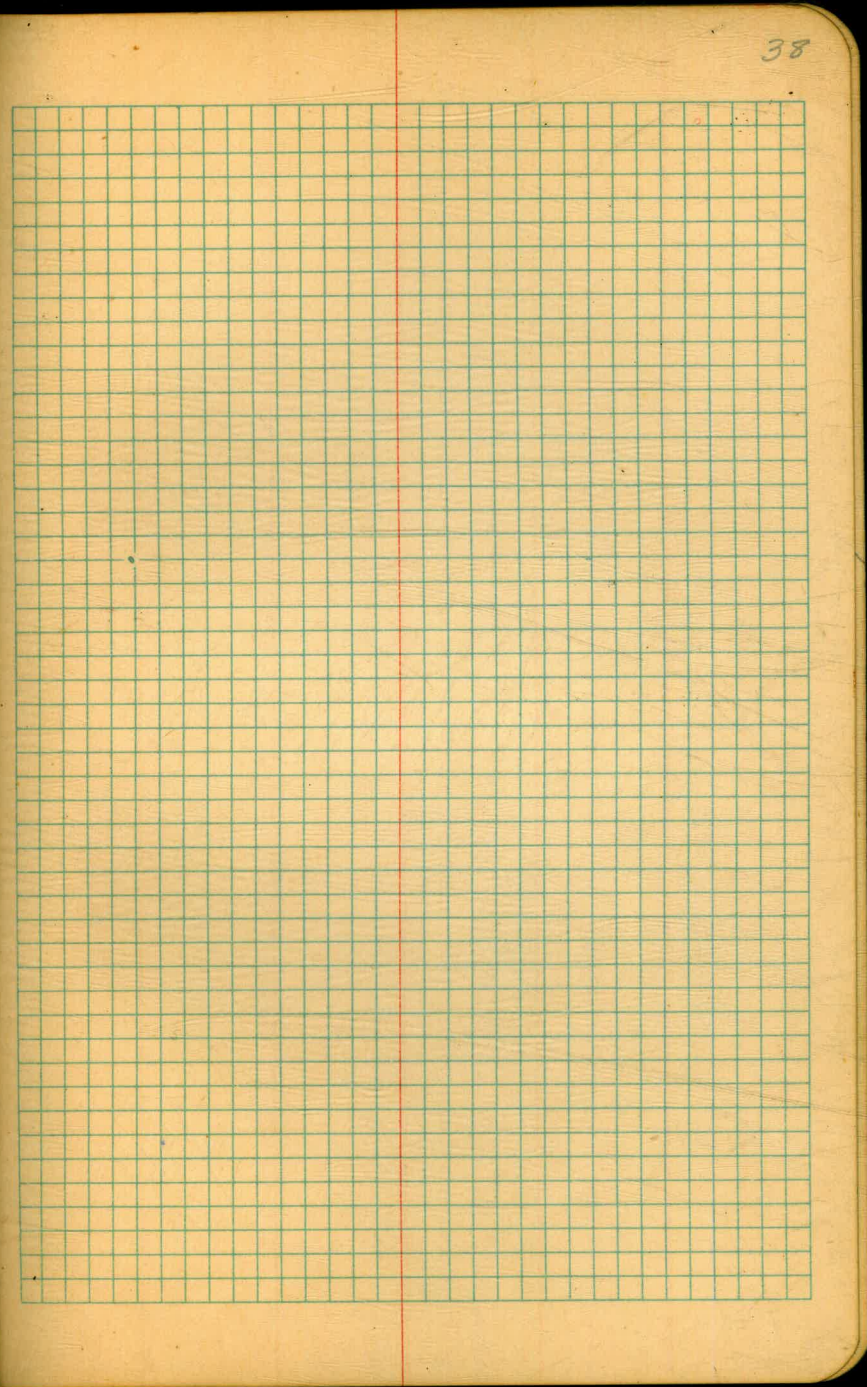
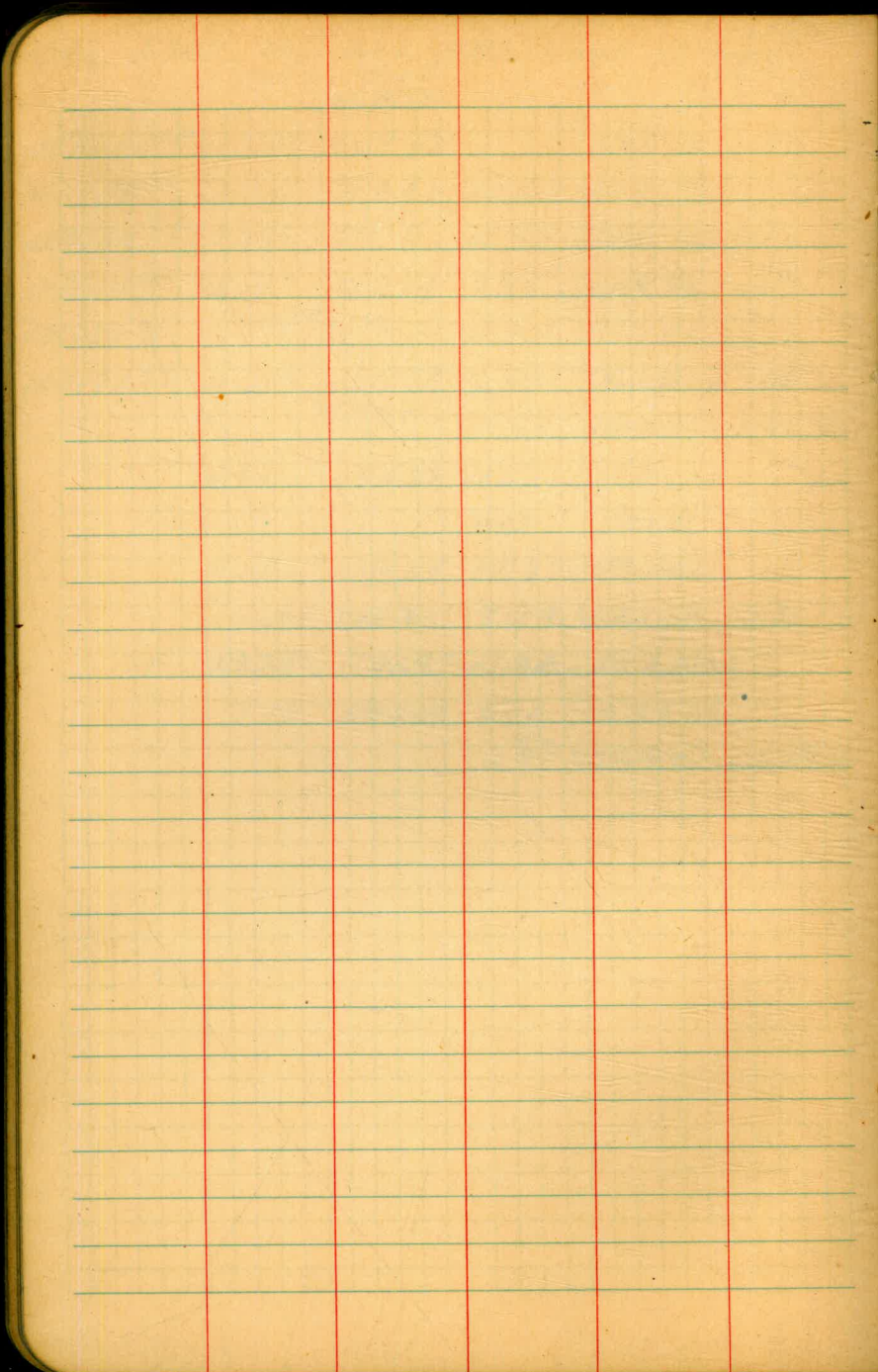
37

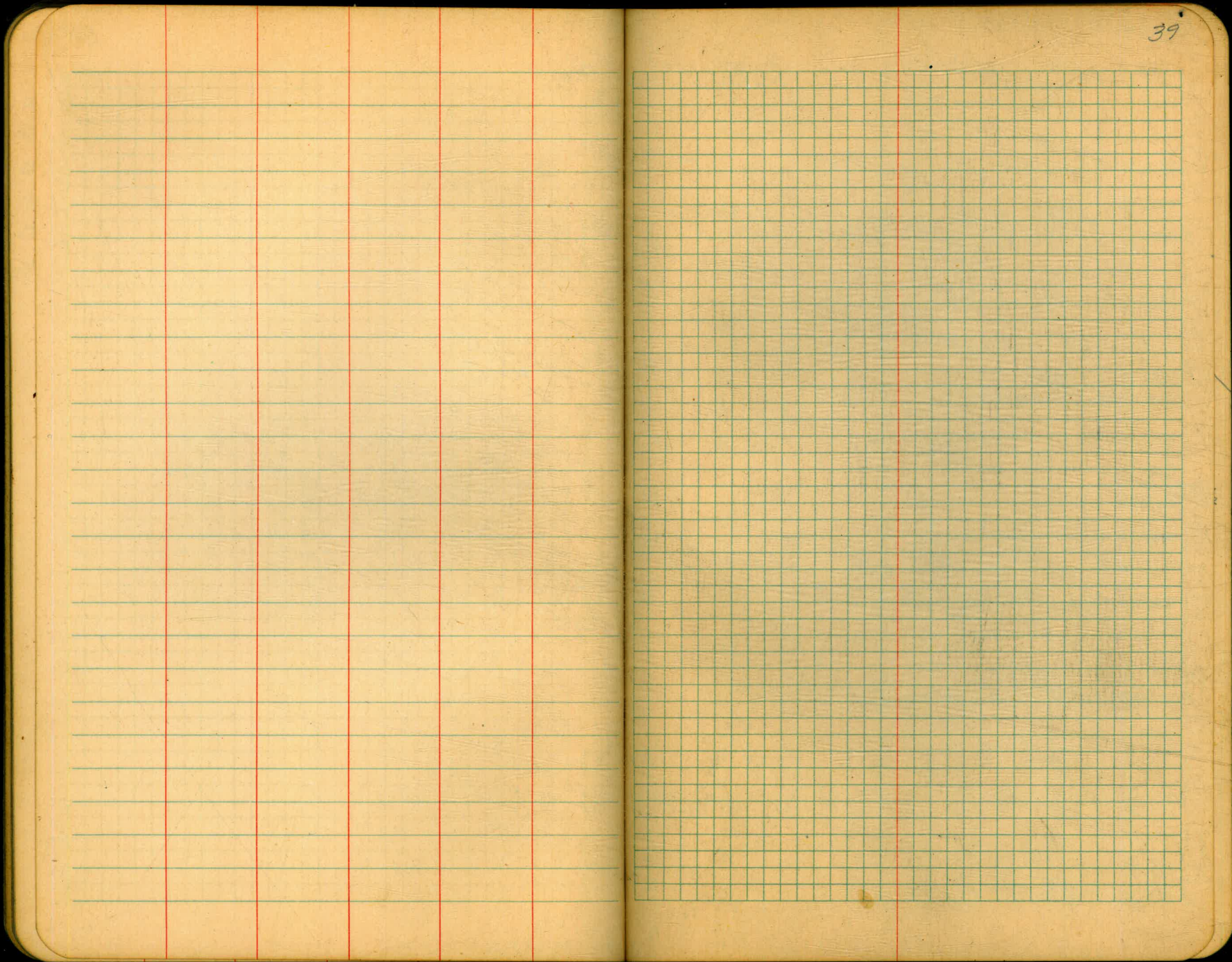
4/30/56

Turn on Ginney
Turn on Ginney
= 530.21
Turn on Ginney
= 537.6
In Break Bottom

City Eng BM N° 57 Done Man
Water Surface of Lake 5/1/56

Ginney 29+73⁵³





LAKE MURRAR DRAINAGE DITCH

Traverse 0.1% Grade cont from Page 33

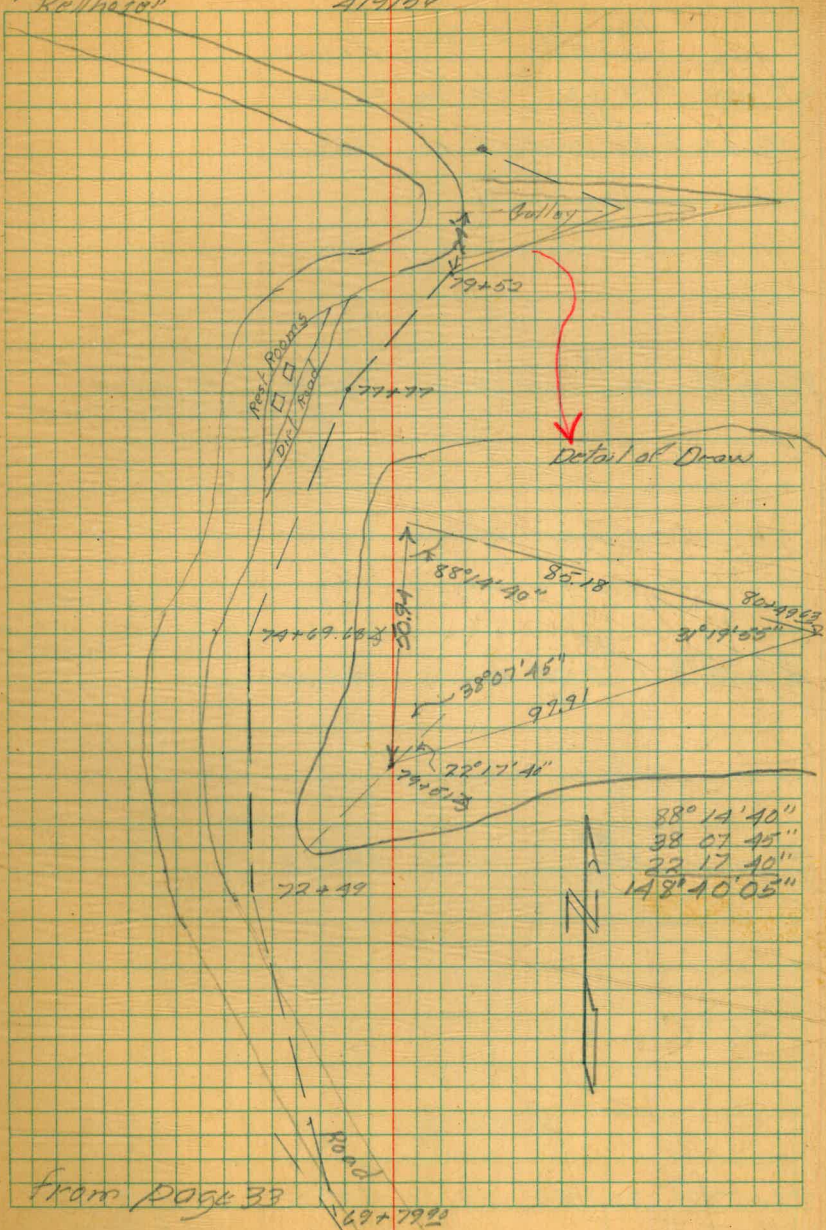
STA	Horizontal Angle	Distance	Elevation	
	RT			
7 81+34.91	10°31'40"	222.49	549.82	
6 80+49.63	148°40'05"	85.18	544.68	↓ Draw
	RT			
5 79+57.73	22°17'40"	97.91	544.59	South edge of Draw
	RT			
4 77+76.95	72°49'55"	174.77	544.38	
	RT			
3 74+67.68	20°11'45"	302.27	544.06	edge Road 15' Lt
	RT			
2 72+49.84	15°07'15"	219.84	543.97	on edge of Road
	RT			
0 69+79.92	3°44'50"	269.94	543.53	

Wood
Williams
Vernon Lakes
Reclamation

1/19/66

1/19/64

40



LAKE MURRAY DRAINAGE DITCH

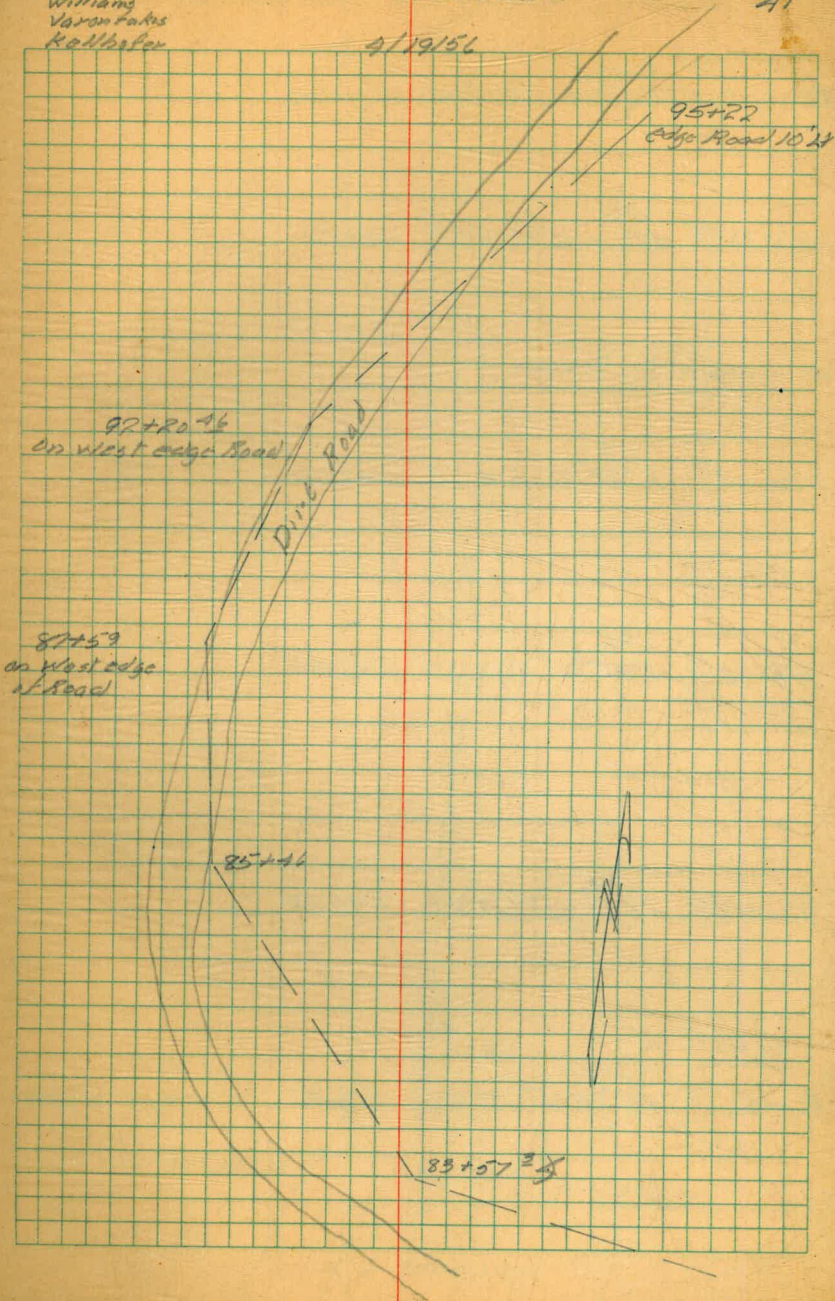
	Horizontal Angle	Distance	Elevation	
	15° 31' 15"	to Sta	97+79 ⁵¹	
12	95+22 ³⁷ RE	57° 54' 30"	120.00	546.13
11	97+20 ⁴⁶ RT	15° 30' 40"	301.91	545.80
10	87+59 ⁶⁵ RT	8° 18' 45"	460.91	545.46
9	85+46 ¹⁰ RT	40° 37' 00"	213.45	545.23
8	83+57 ³⁰ RT	83° 35' 00"	188.80	544.96
				27' 11" to edge Dirt Road

West
Williams
Varon Lakes
Kellhofer

Clear + Warm

A1

9/19/56



LAKE MURRAY DRAINAGE DITCH

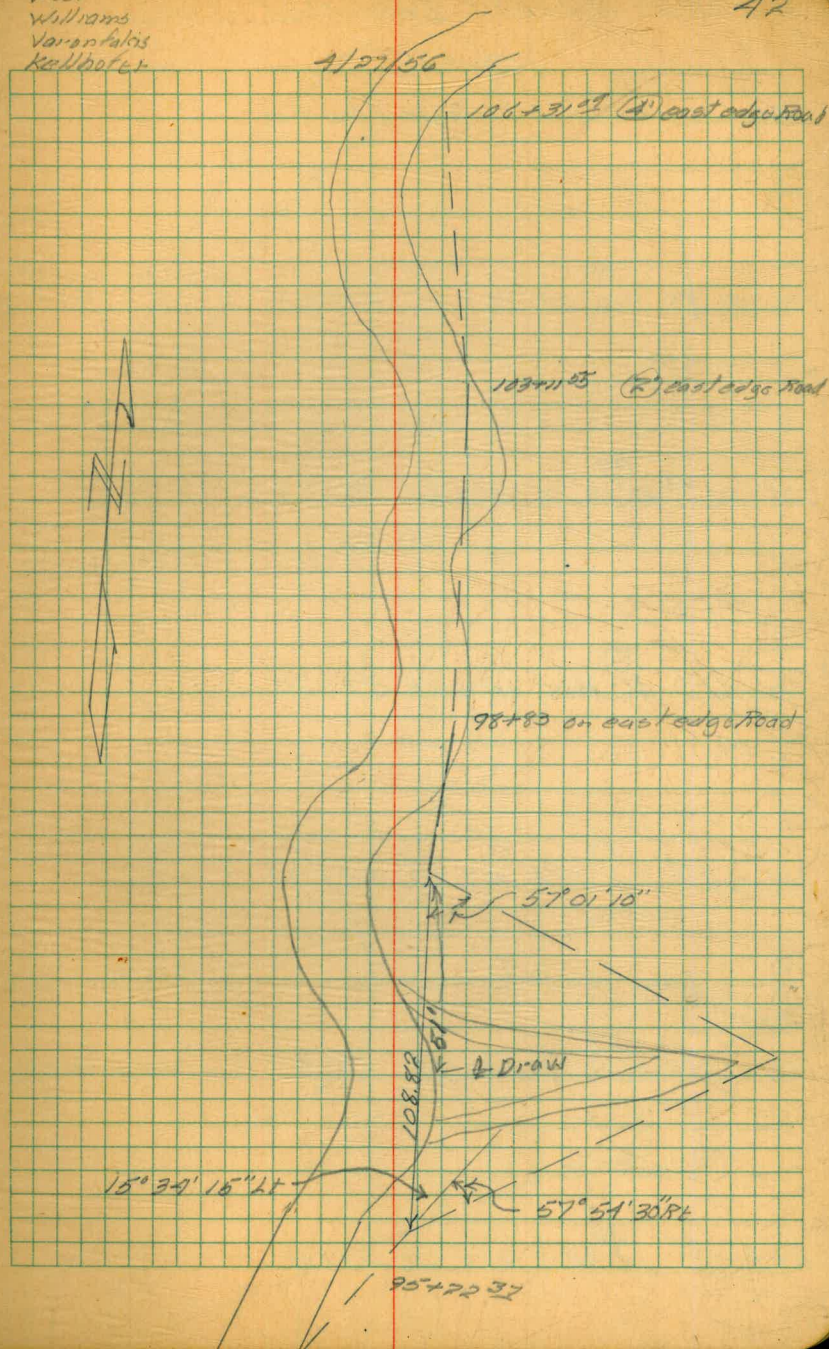
Sta	Angle	Horizontal Distance	Elevation
17 106+31 ⁰²	RT 49° 17' 00"	419.88	547.21
16 103+11 ⁵⁵	RT 5° 39' 20"	319.54	547.08
15 98+83 ²²	RT 4° 53' 05"	427.77	546.43
14 97+79 ⁵¹	RT 18° 18' 50"	104.27	546.42
13 96+12 ³²	LT 130° 29' 55"	137.14	546.30

to East
in Bottom of Draw

West
Williams
Varian Falls
Kellhofer

42

4/27/56

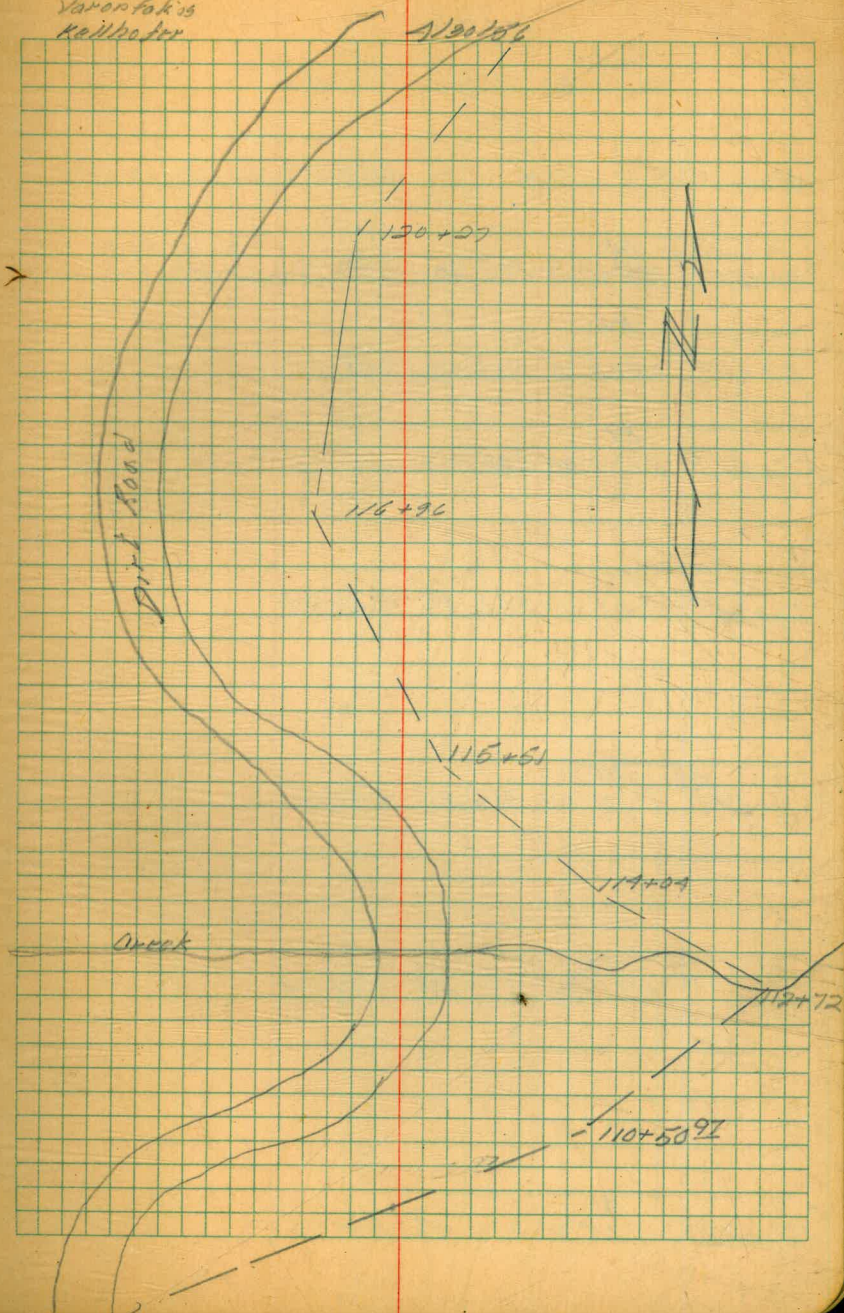


LAKE MURRAY DRAINAGE Ditch

Sta	Angle	Horizontal Distance	Elevation	Ditch
120+20.27	RT 0° 41' 10"	224.76	548.61	Sta 30' East of Road
116+96.45	RT 50° 56' 50"	323.82	548.29	
115+57.50	RT 46° 38' 30"	144.95	548.20	
114+04.15	RT 24° 29' 20"	147.35	547.94	
112+72.59	LT 165° 28' 30"	131.56	547.91	in creek bottom
110+50.97	LT 20° 34' 10"	221.62	547.66	

West
Williams
Varonakis
Kailbofer

43



51156

Sta	Angle	Horizontal Distance	Elevation	
31			550.81±	
30	Lt 133° 21' 10"	106.20	550.78	100 Creek Bottom
29	Rt 130° 03' 10"	233.50	550.51	
28	Rt 23° 12' 40"	305.17	550.22	
27	Lt 103° 37' 50"	288.19	549.96	
26	Lt 1° 25' 40"	365.46	549.56	
25	Lt 11° 17' 00"	330.55	549.29	
24	Rt 30° 35' 30"	393.48	548.85	

On North West Creek Bank Returning toward Dam

End of Traverse fence line 62'± North (private property)

Sta 20' east of Creek Bottom

TIES To Lake Murray Property
Survey from Drainage Ditch Survey

→ To Sta 29+73.13

Elm 539.20'
25+40.81

Drainage Ditch Survey

To Sta 23+35.81

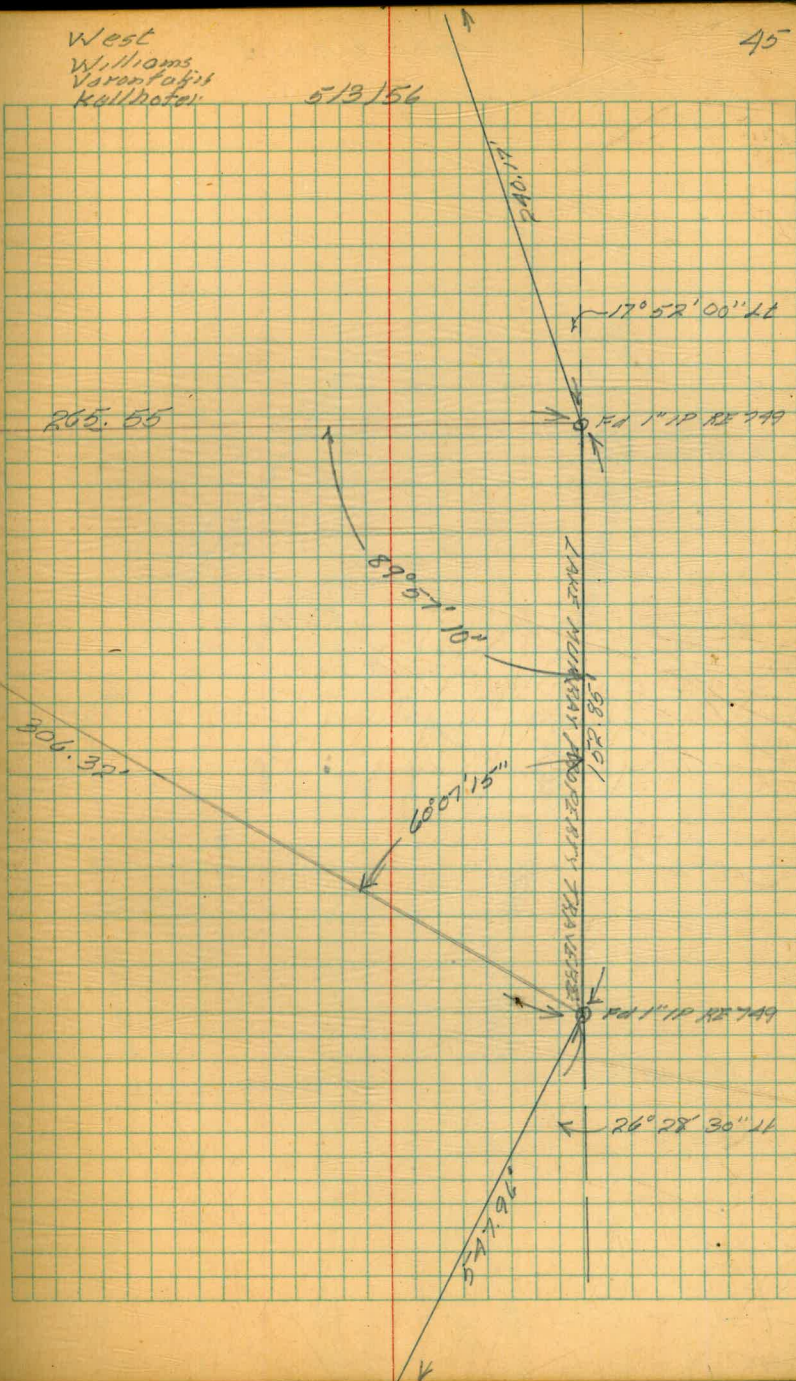
39° 54' 50"
63° 16' 45"



West
Williams
Varnofelt
Kallhofer

513156

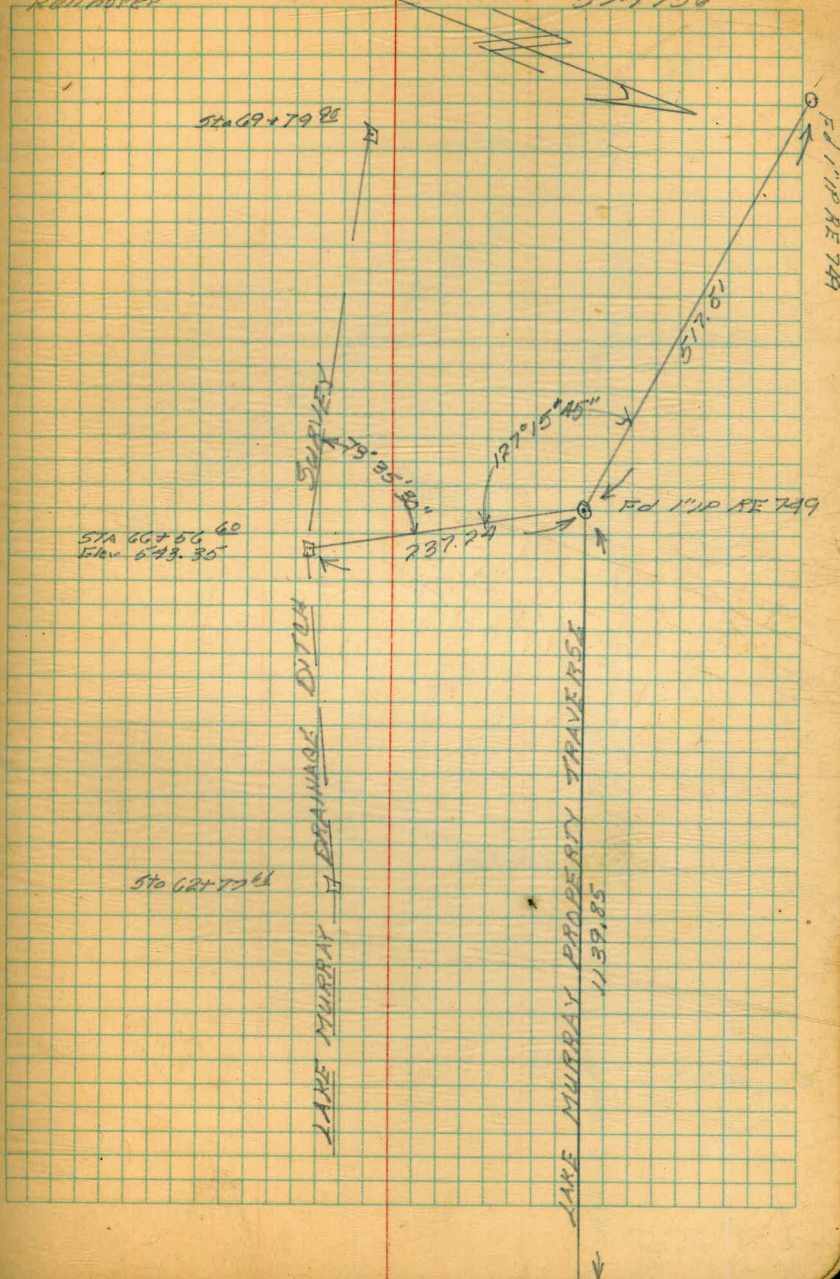
45



LAKE MURRAY TIES CONT

Wool
Williams
Varentakis
Kallhofer

519 156

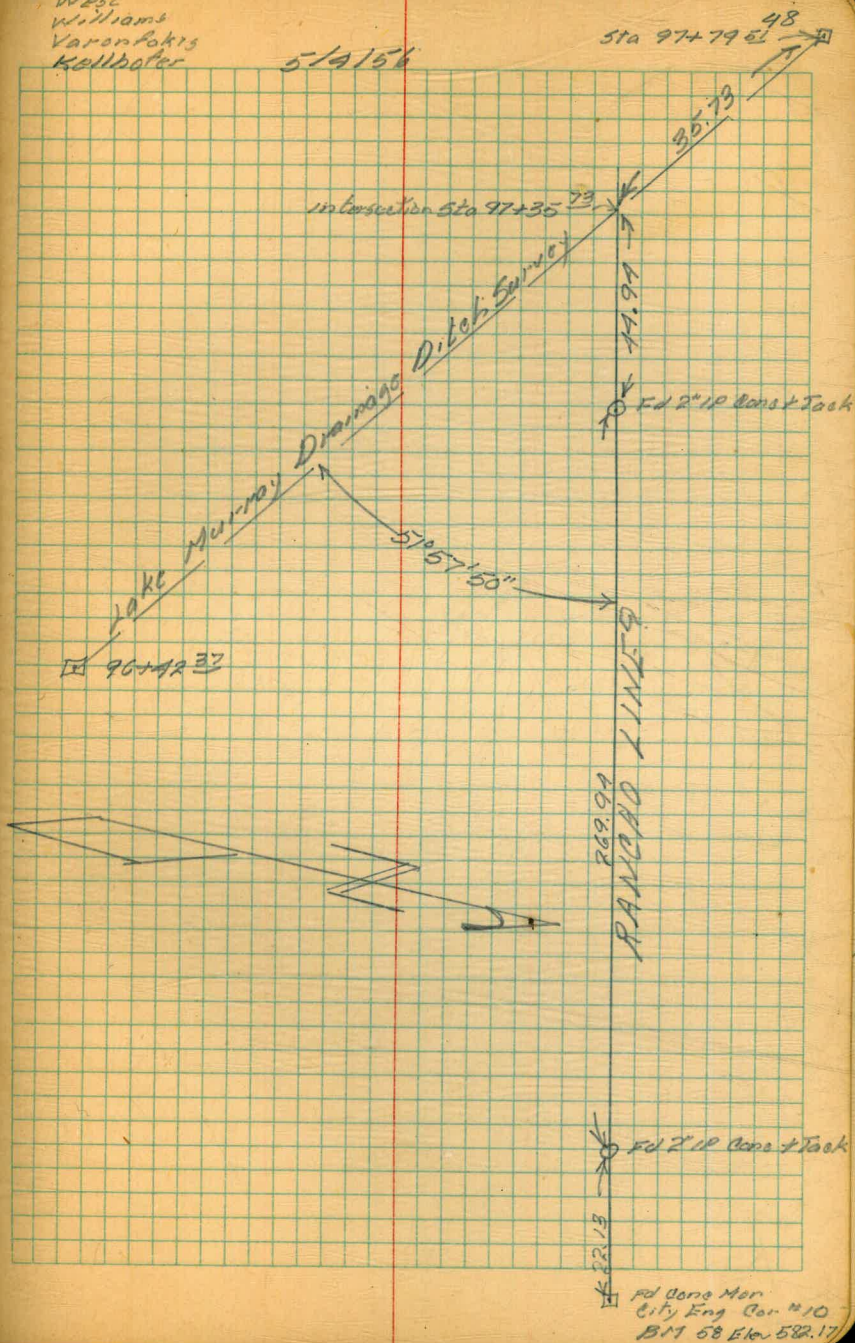


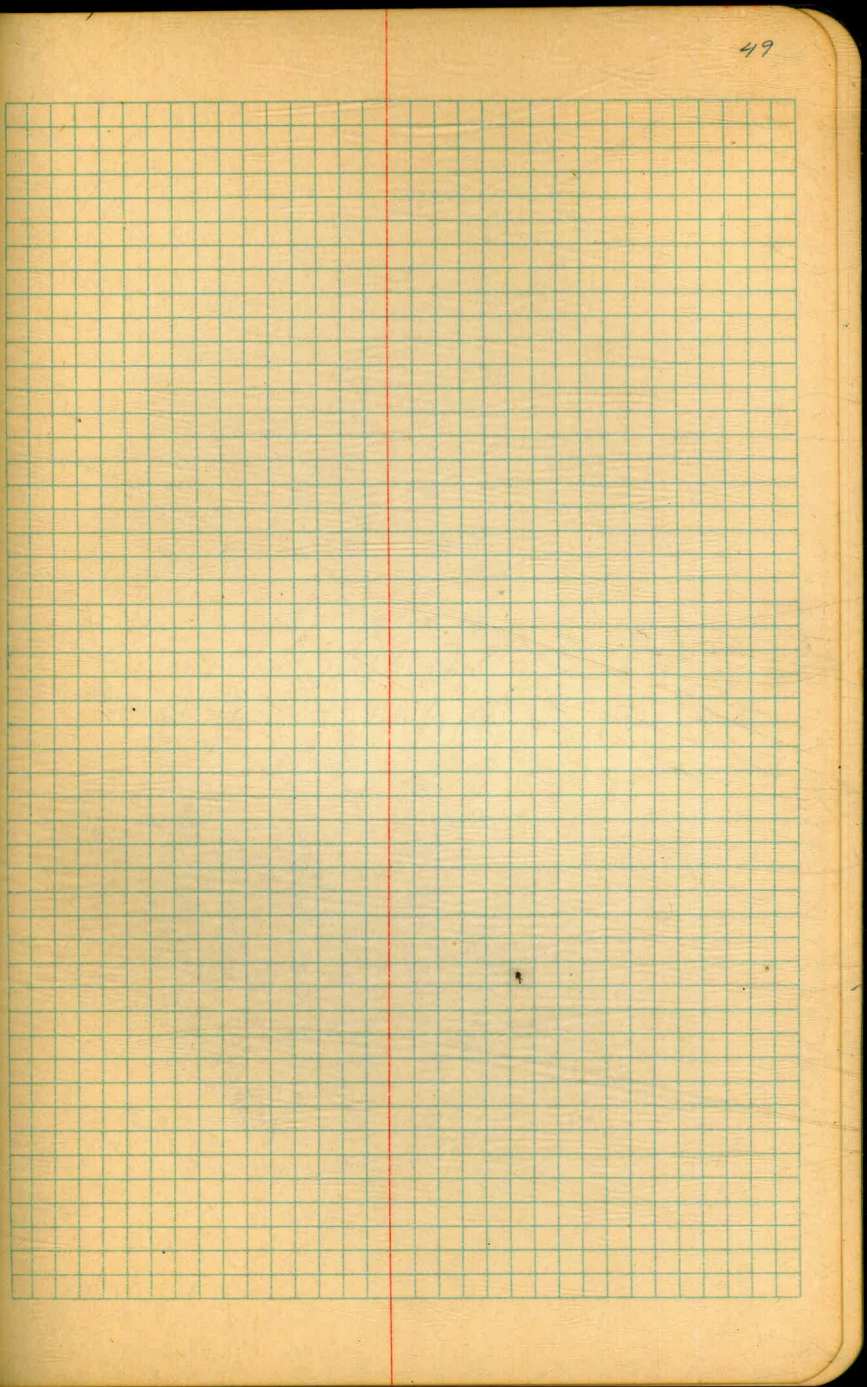
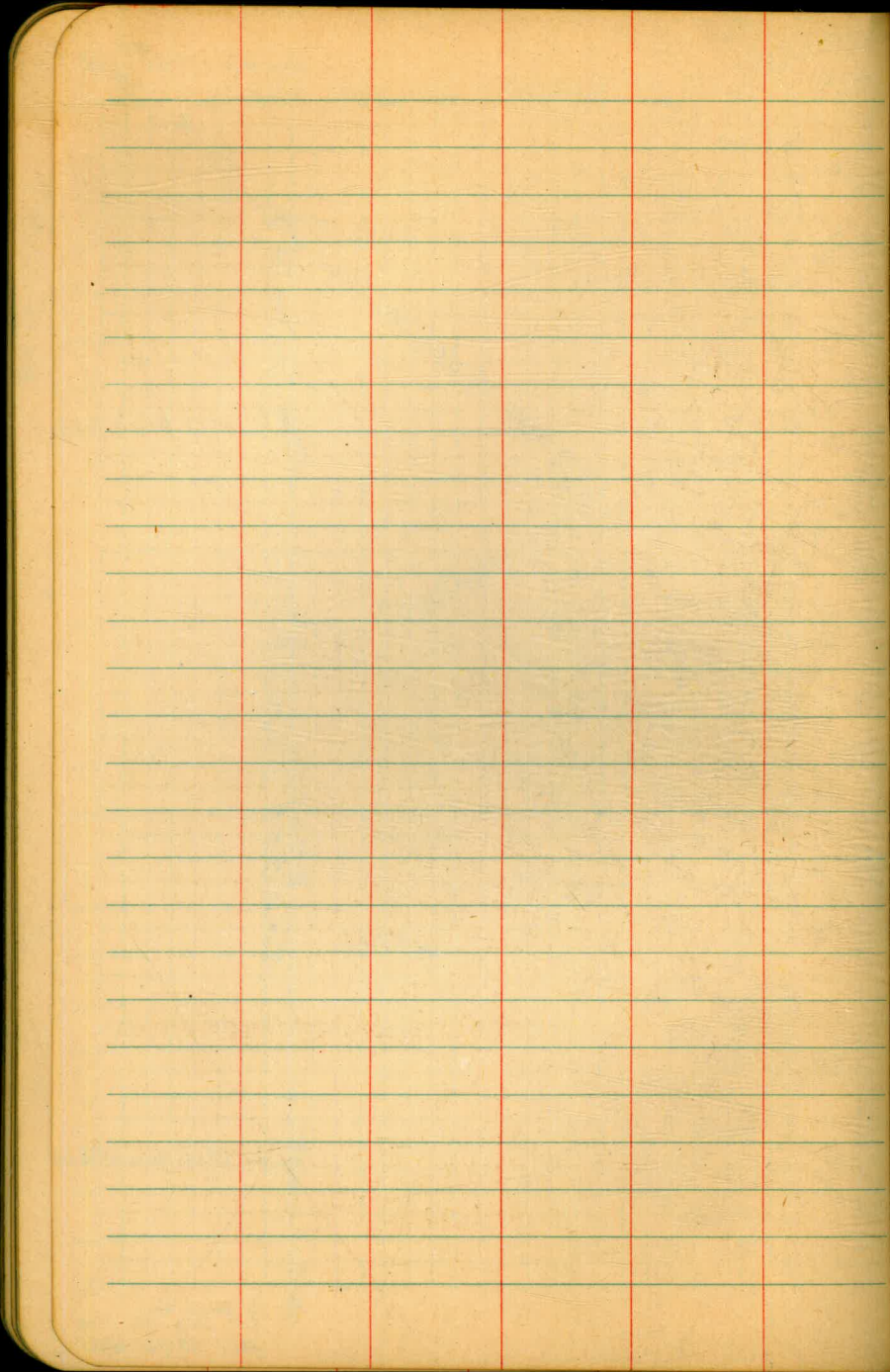
LAKE MURRAY TIES Cont

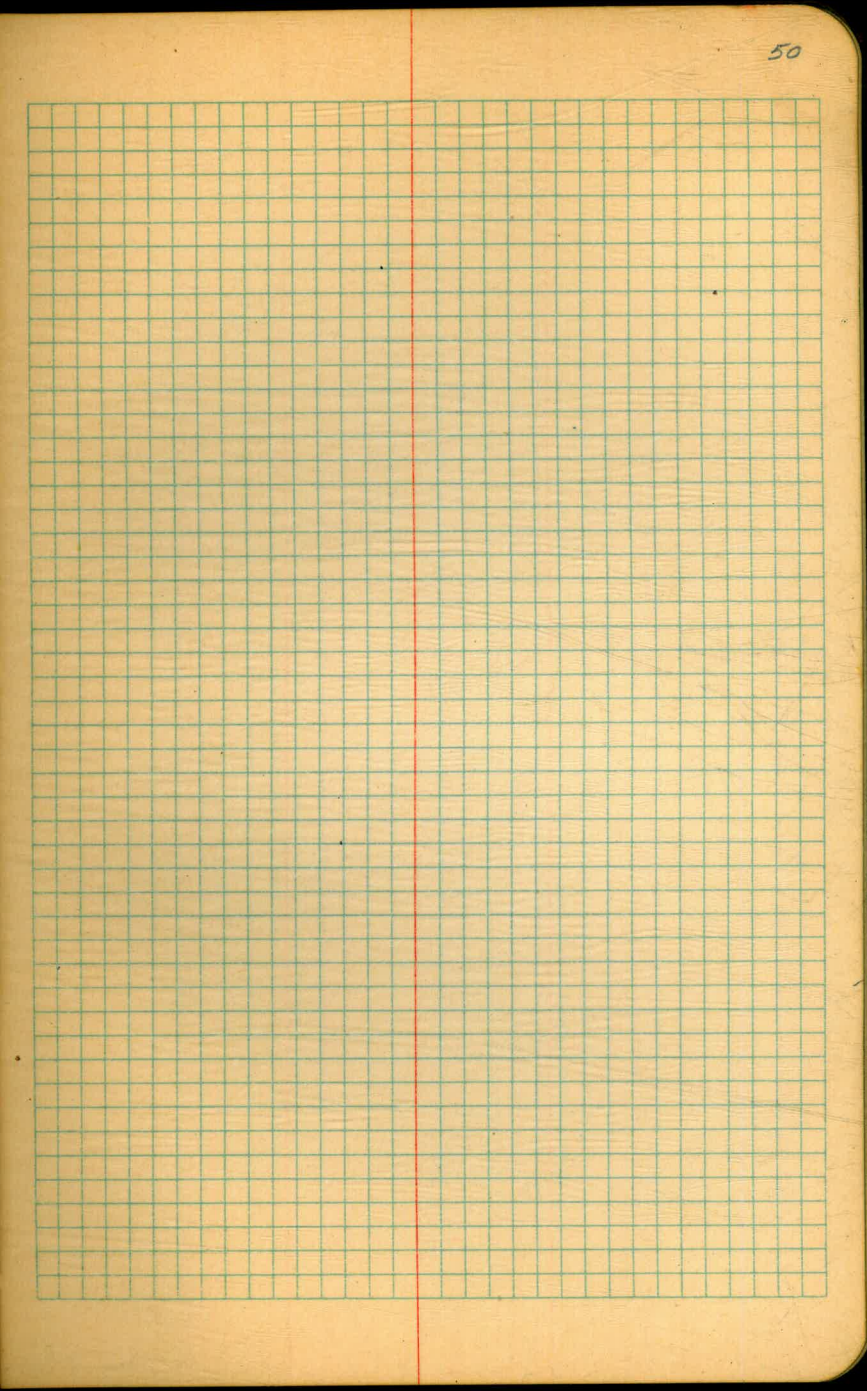
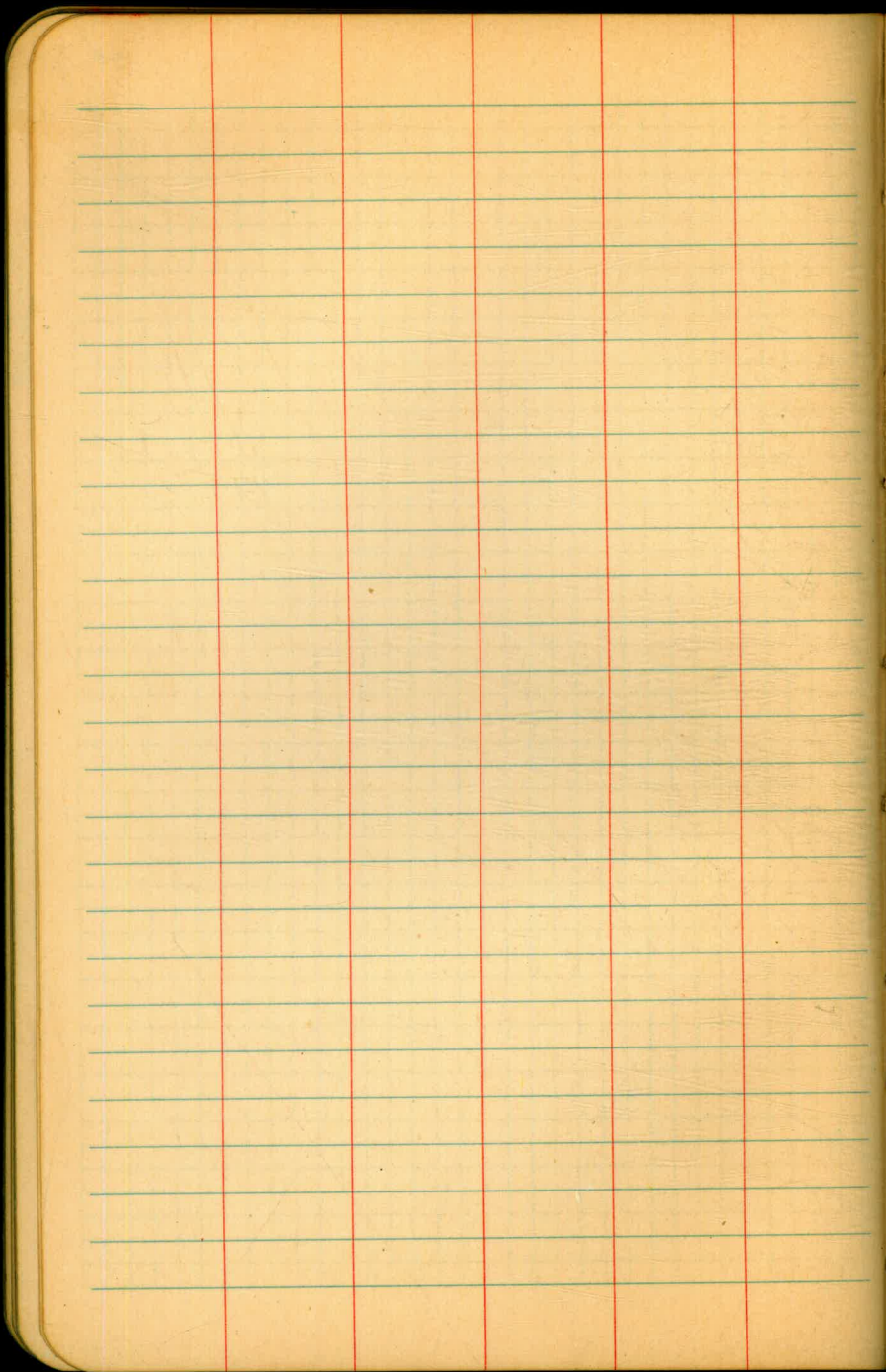
West
Williams
Varon Pokis
Kellpater

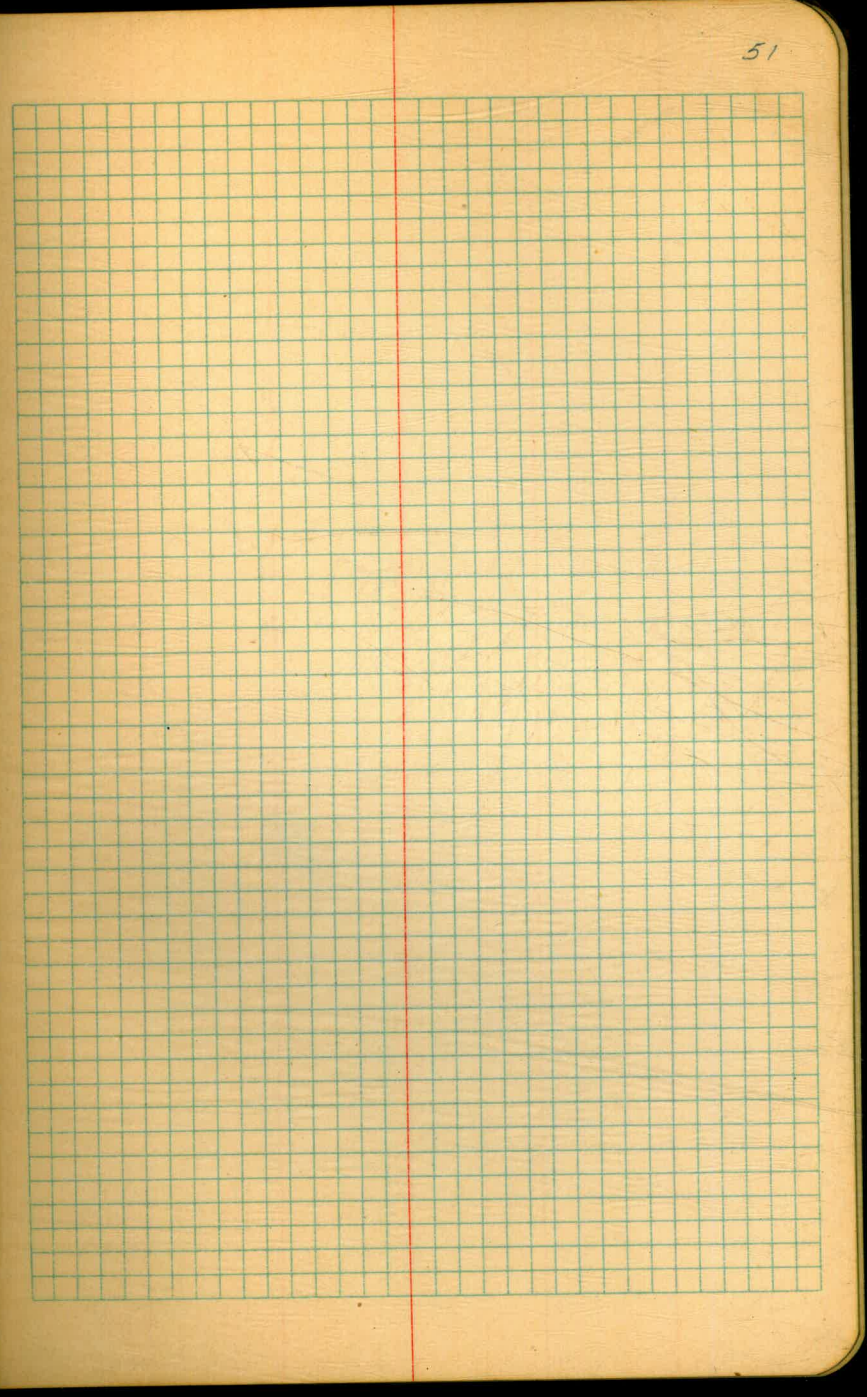
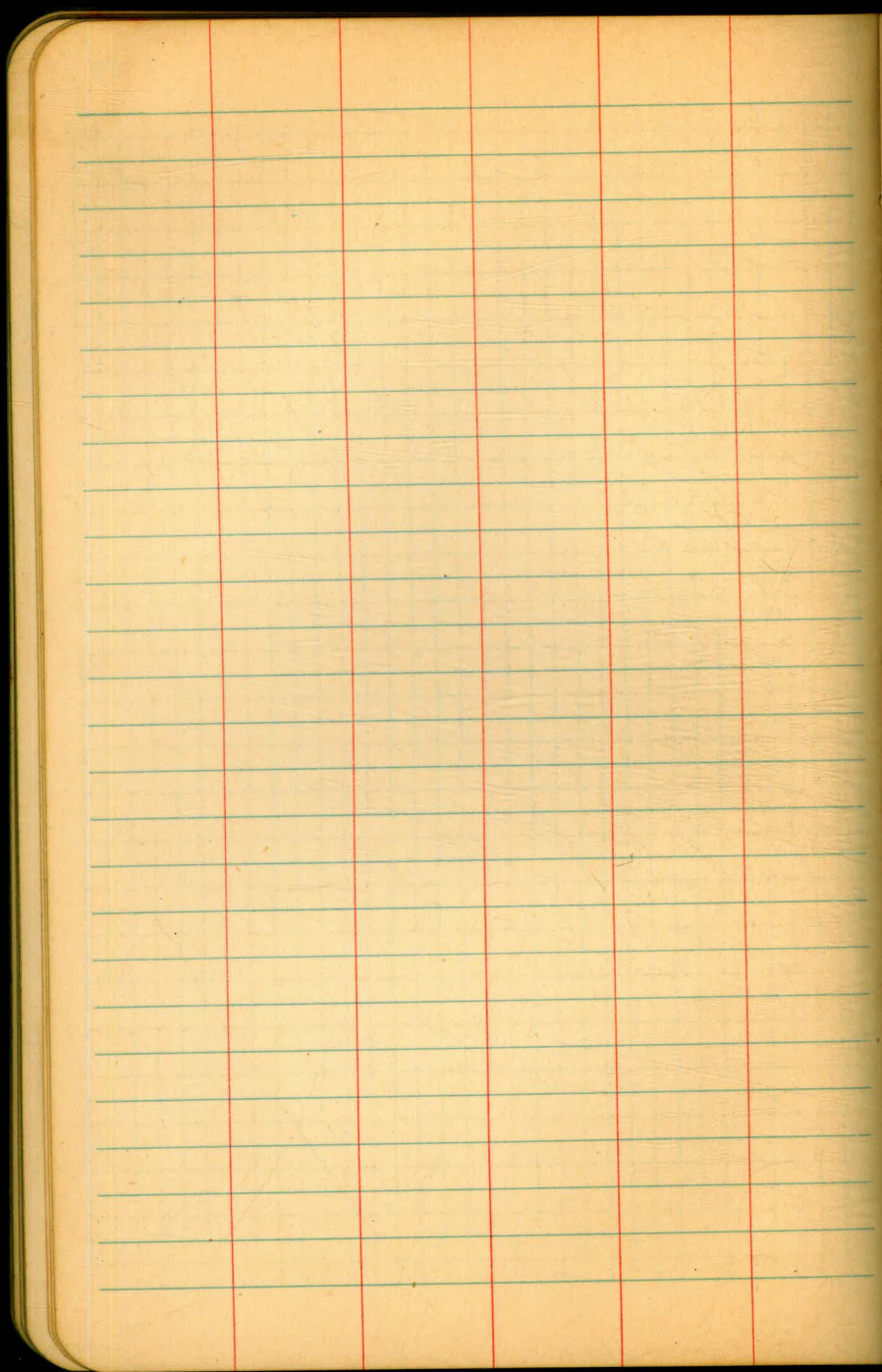
5-19-56

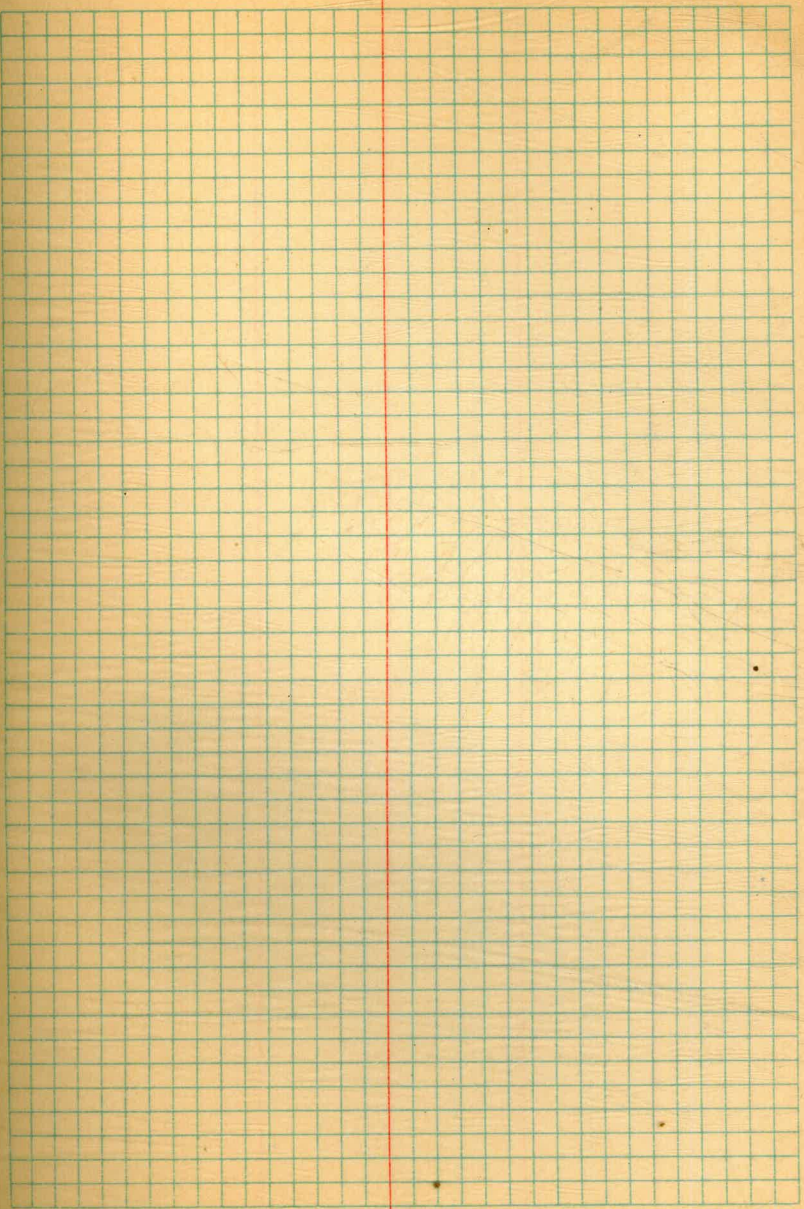
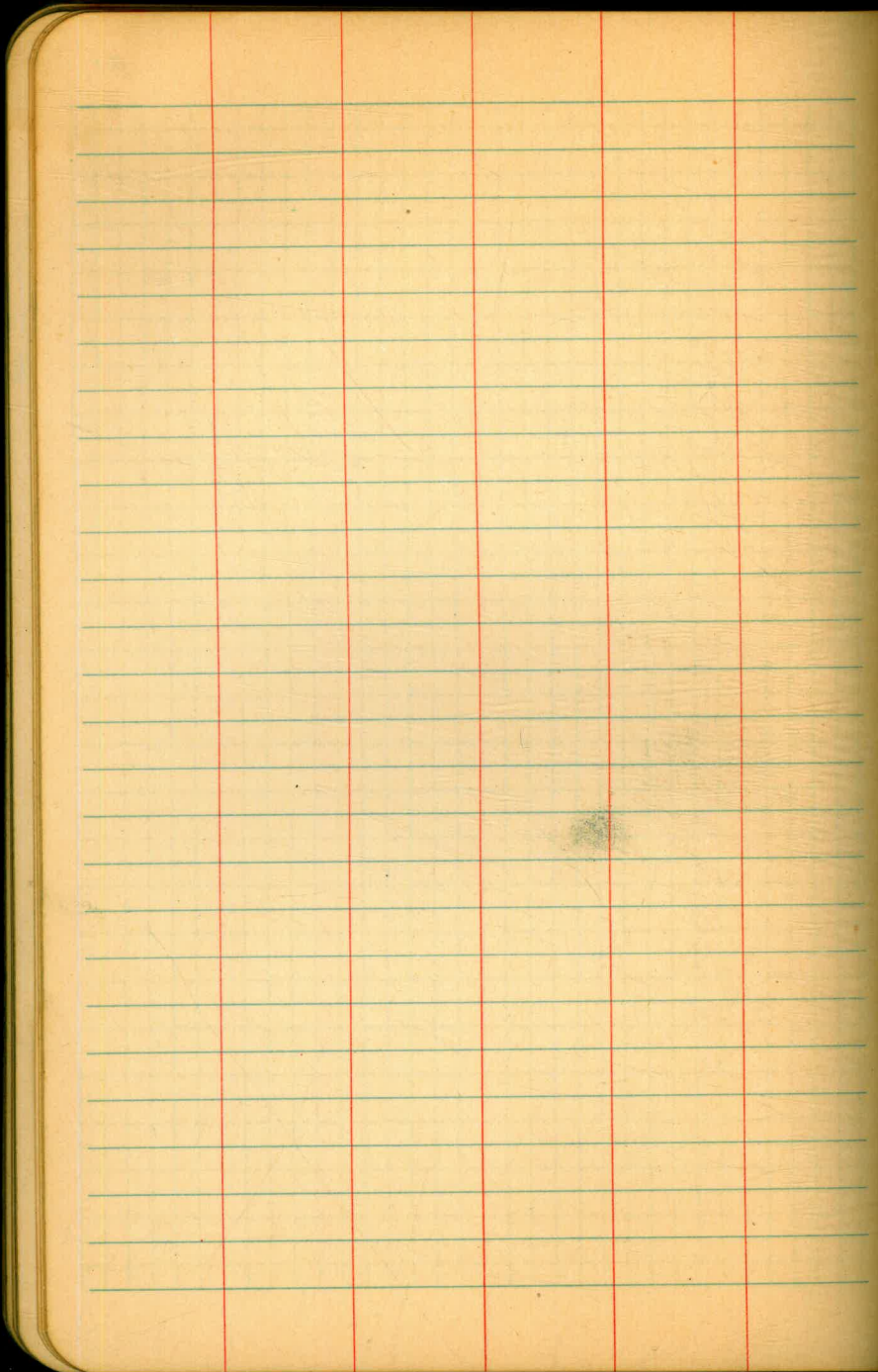
Sta 97+79.5

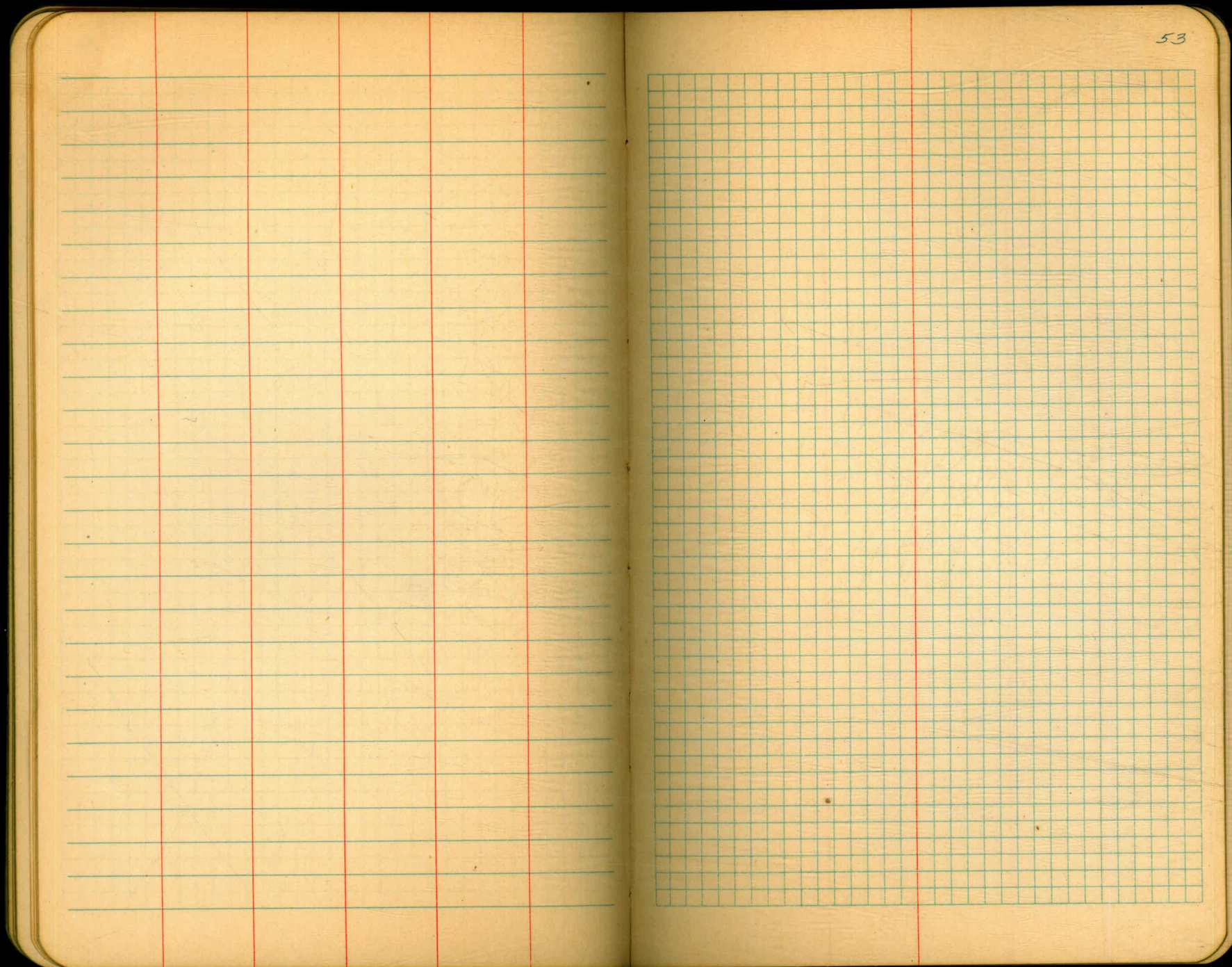


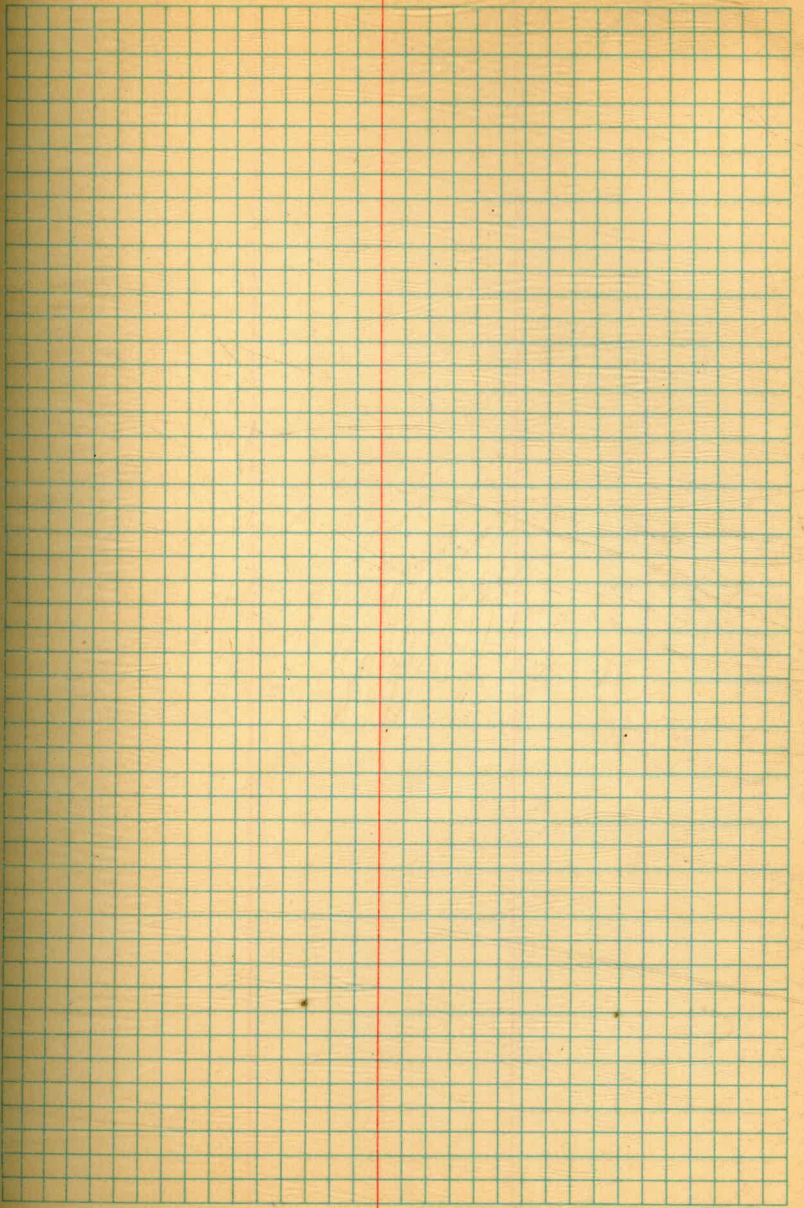
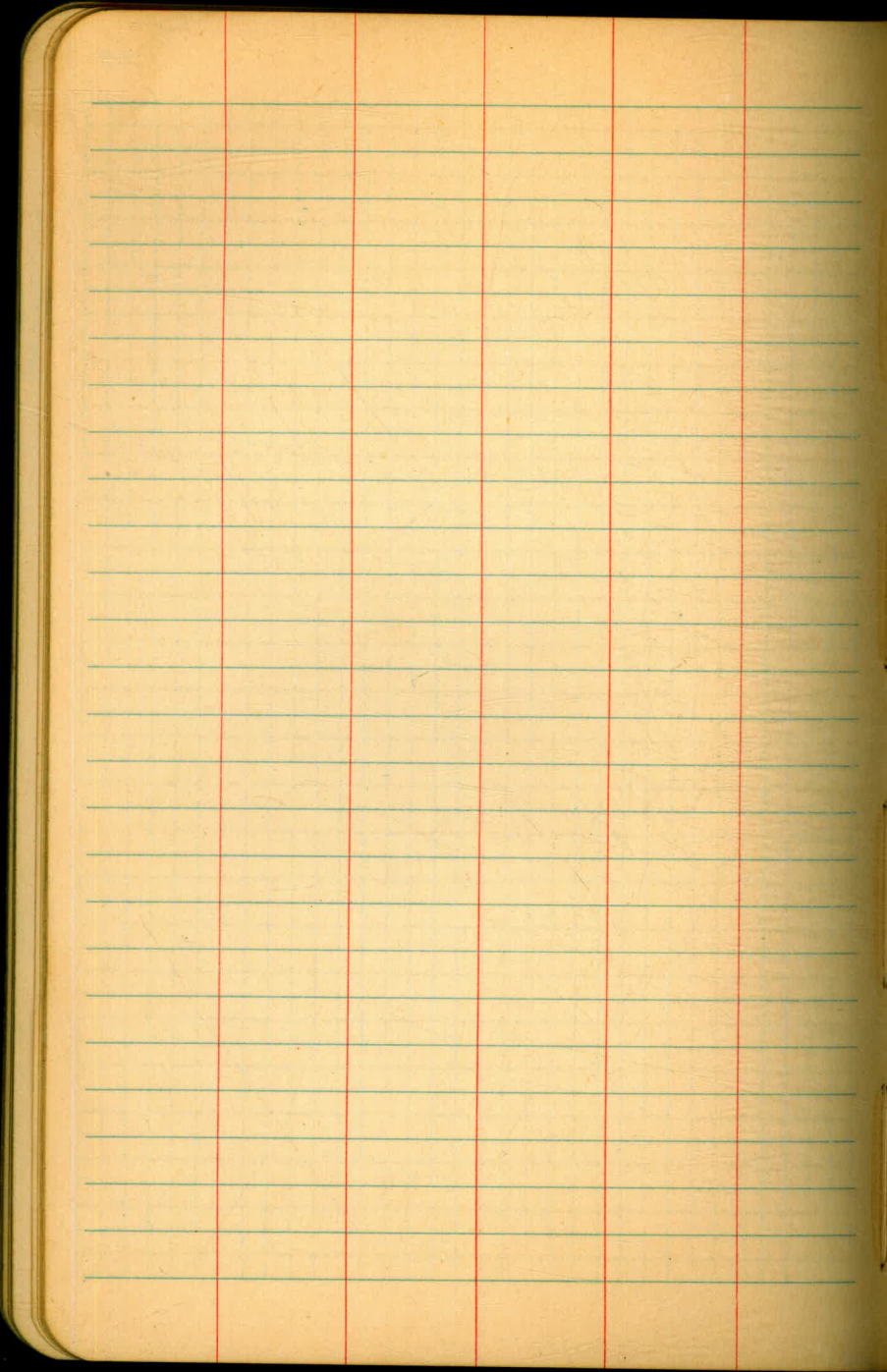


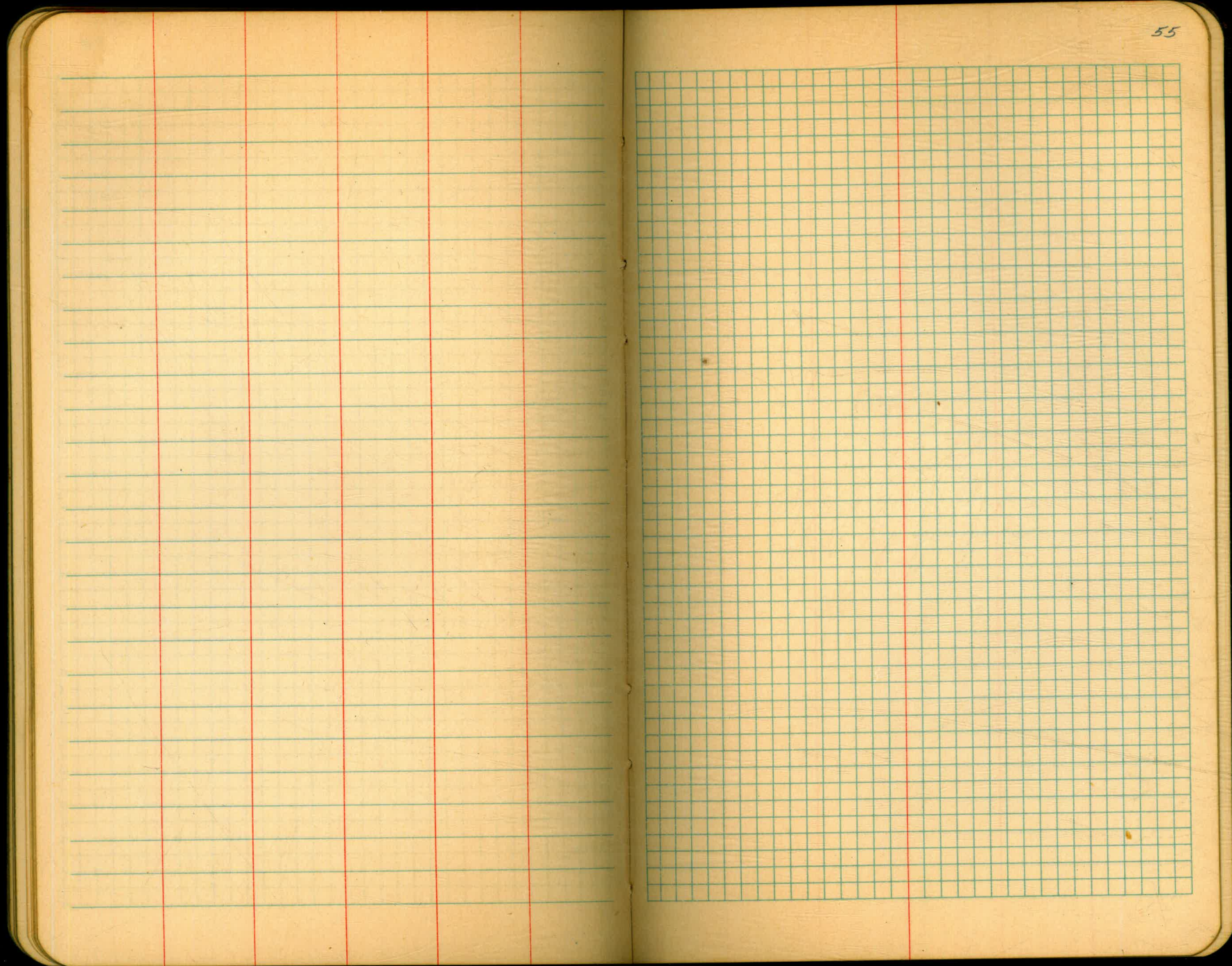


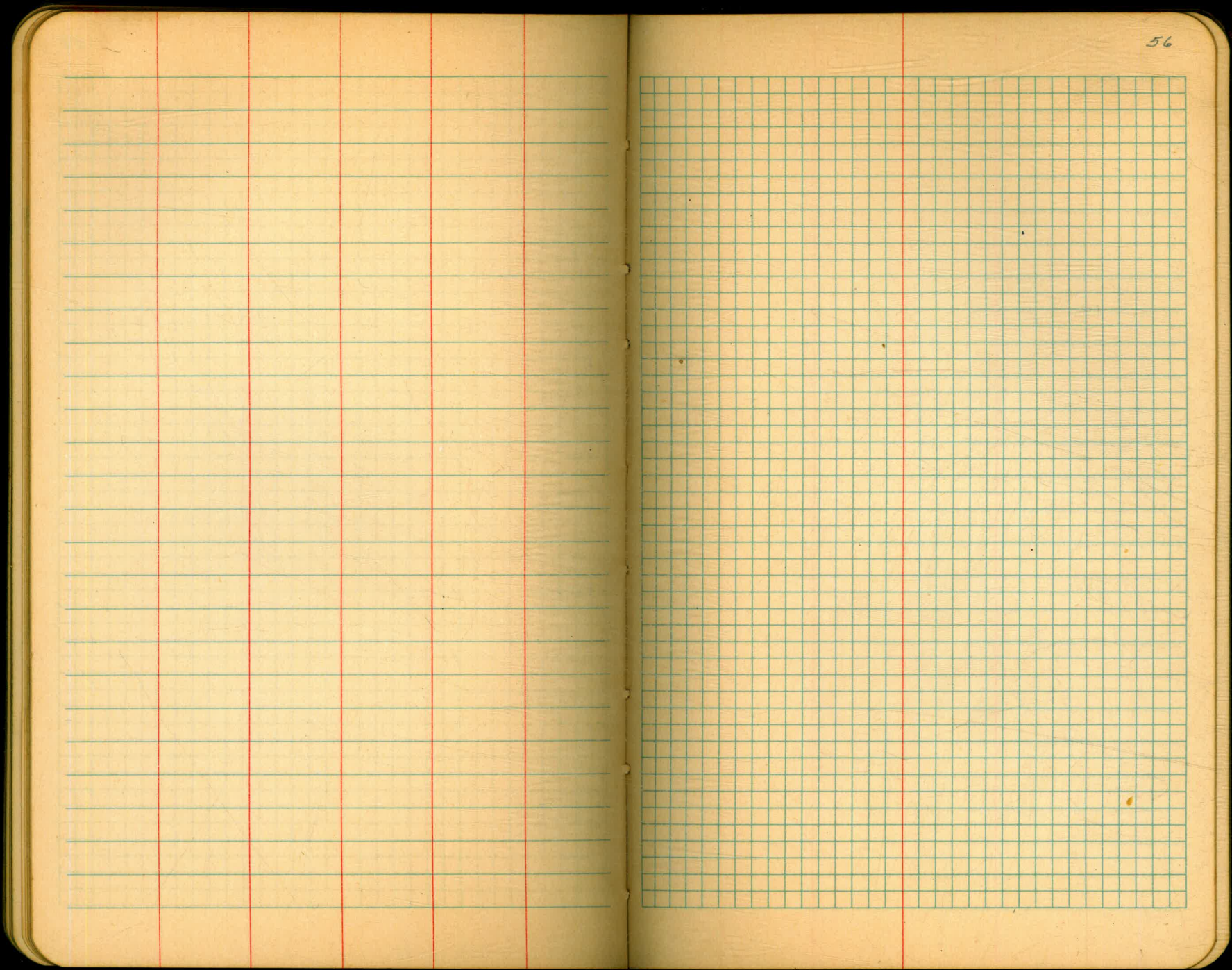


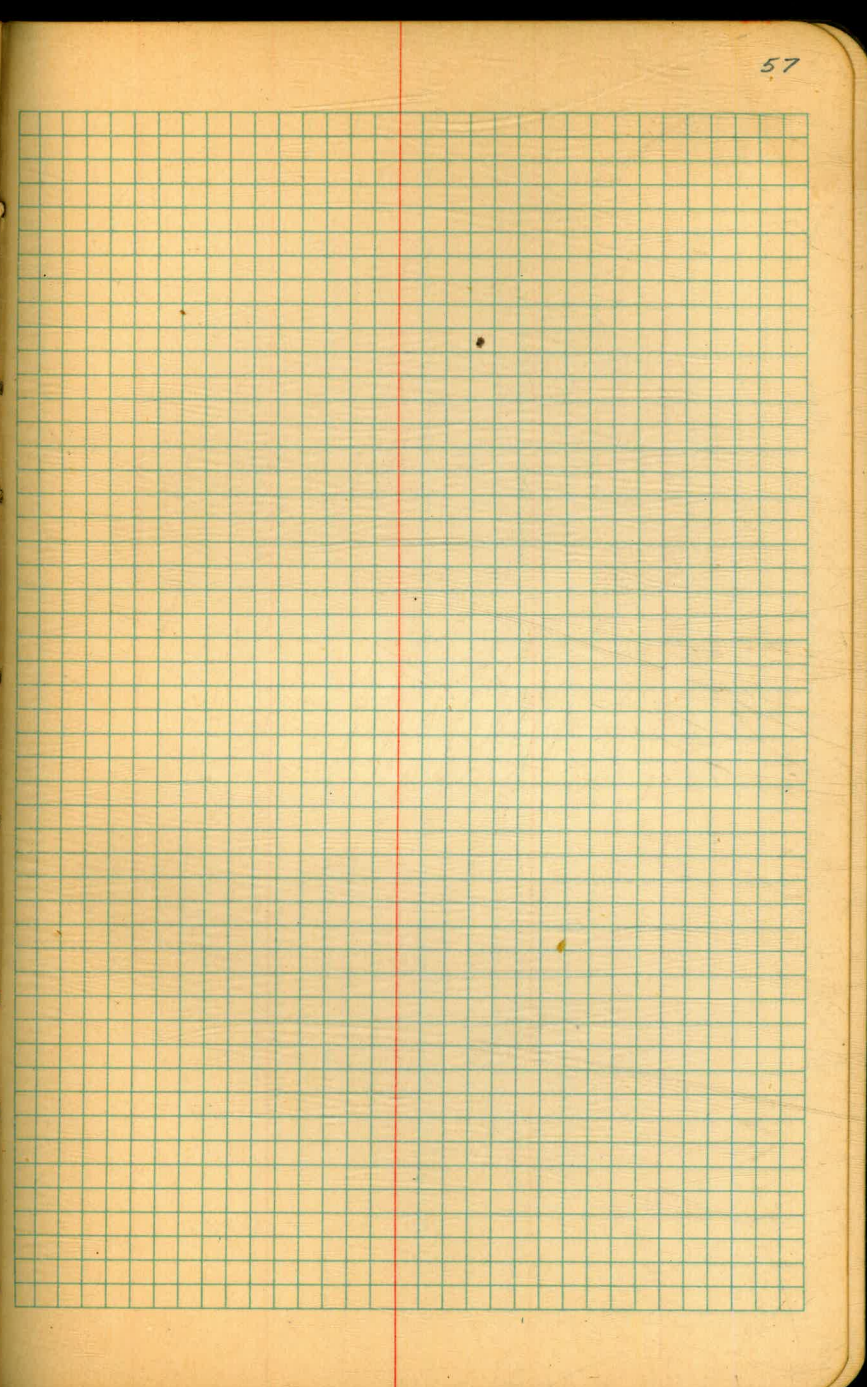
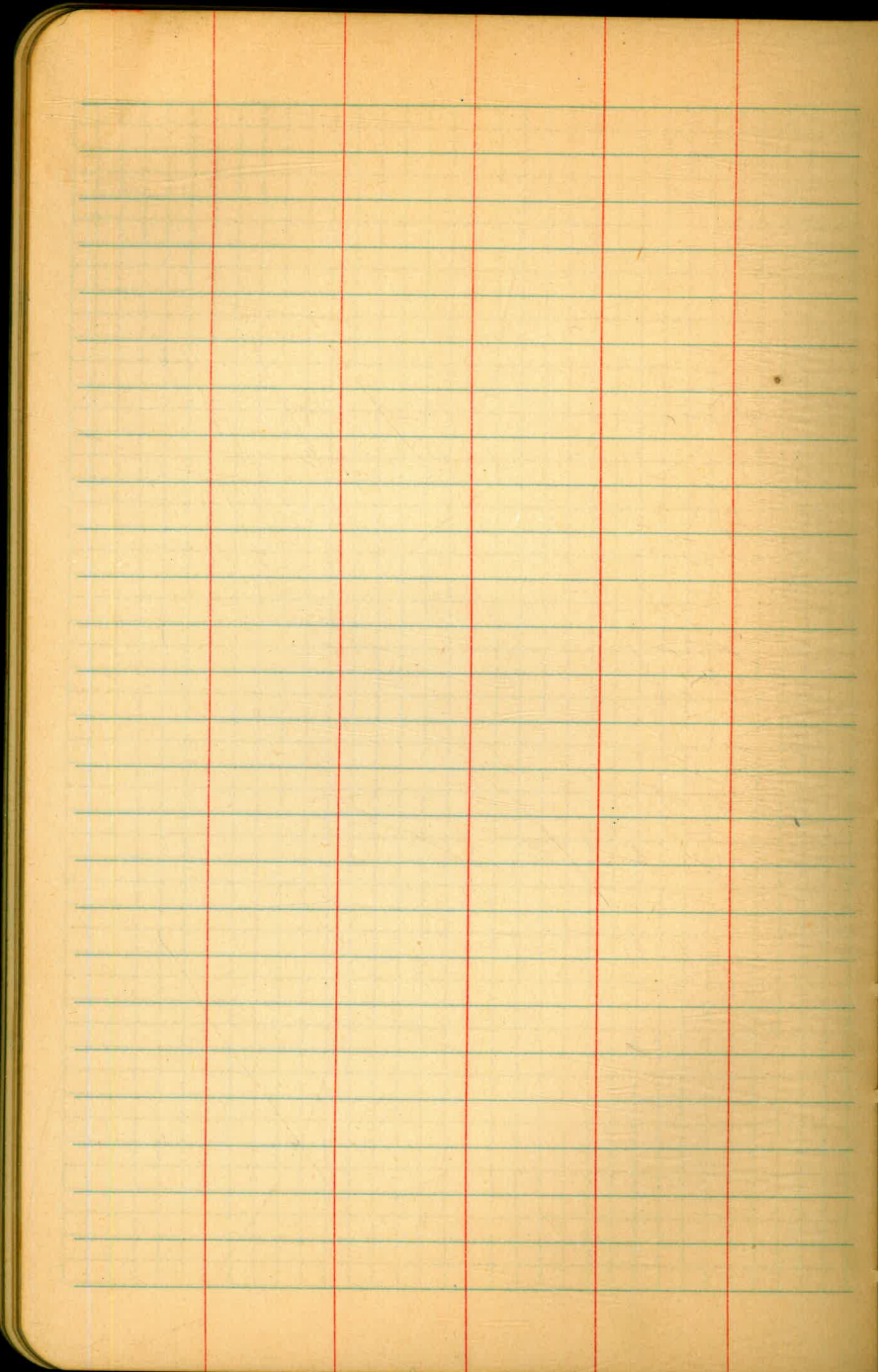


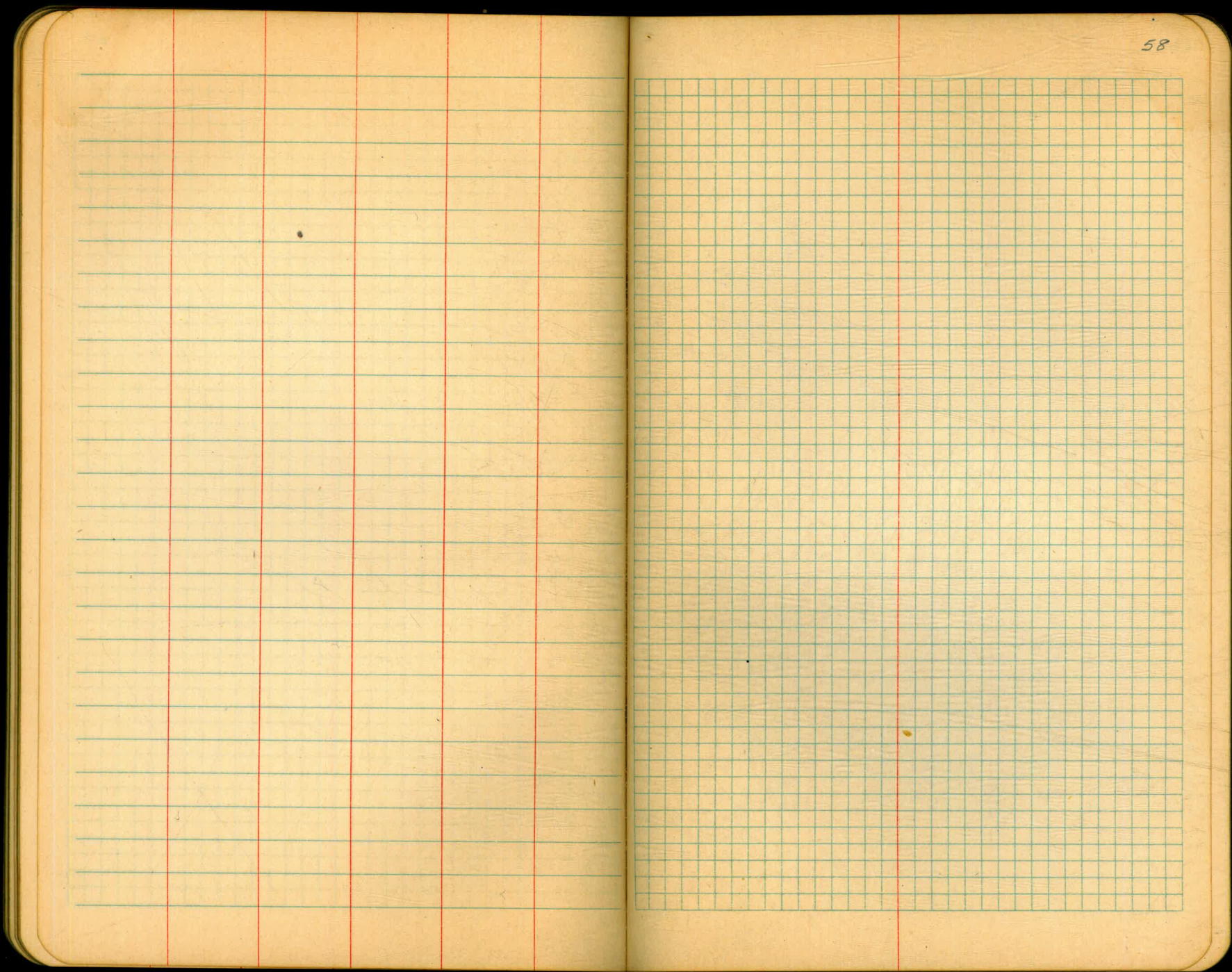


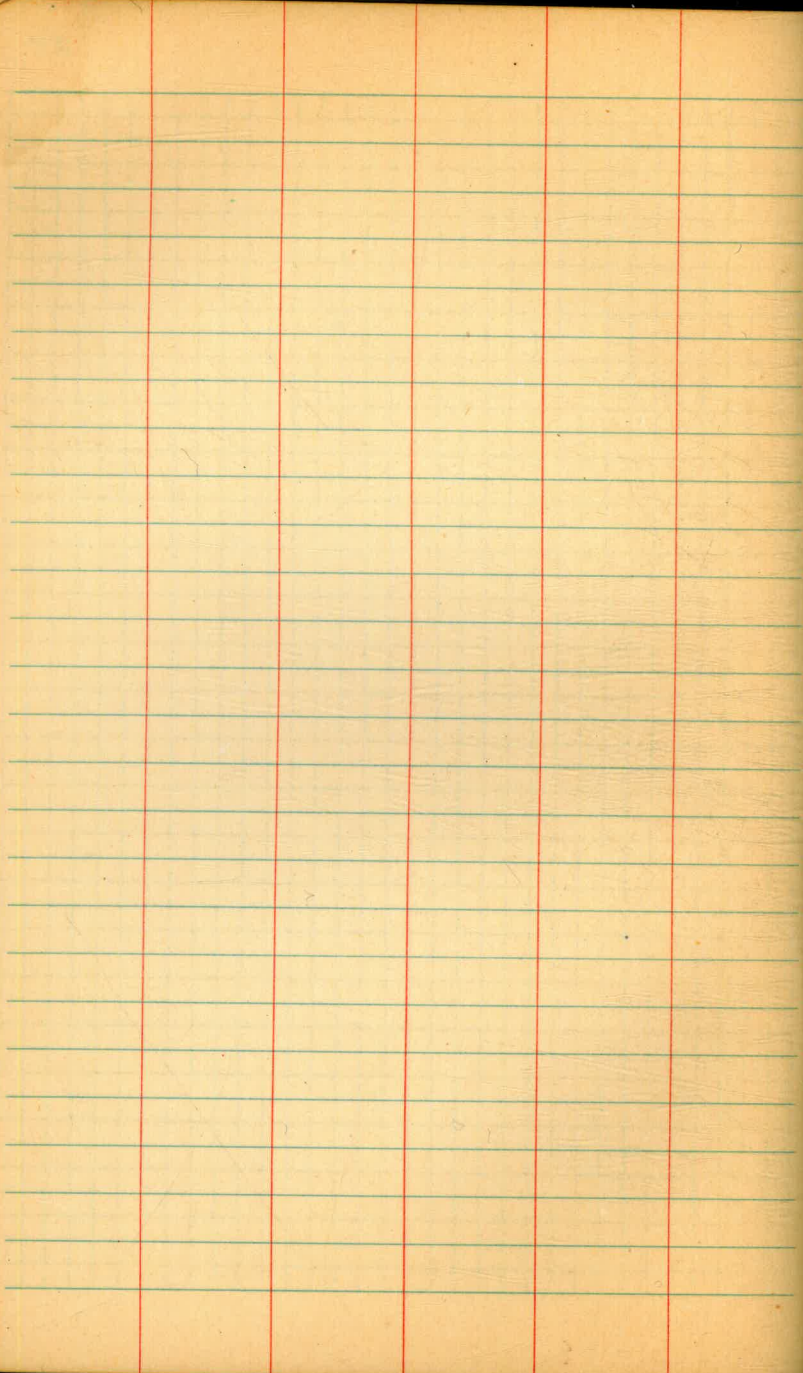
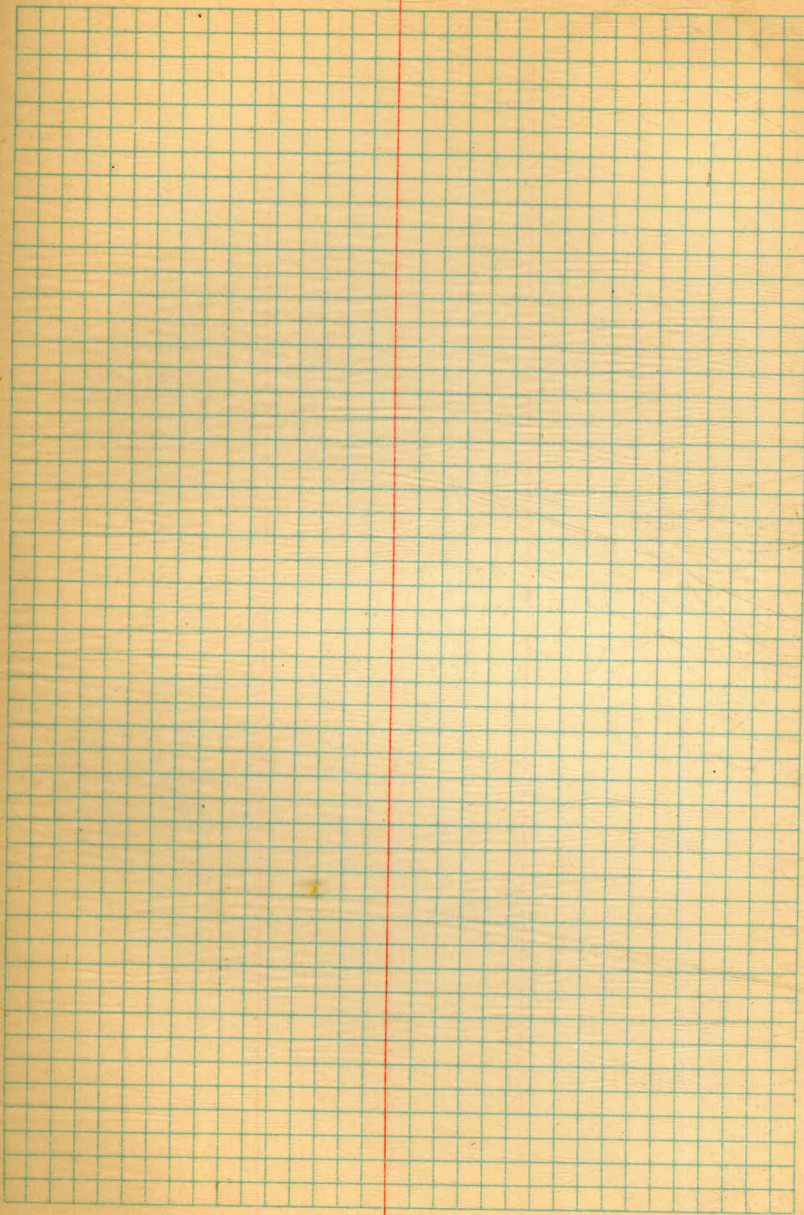


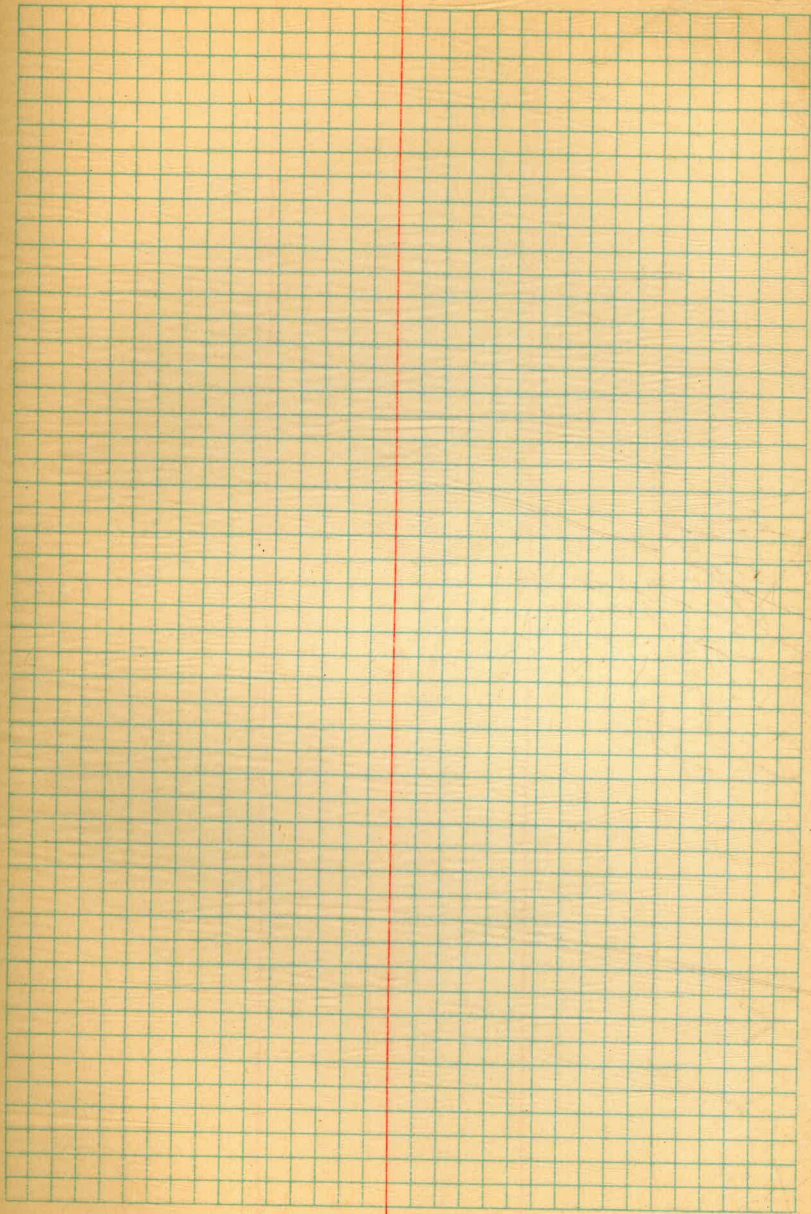
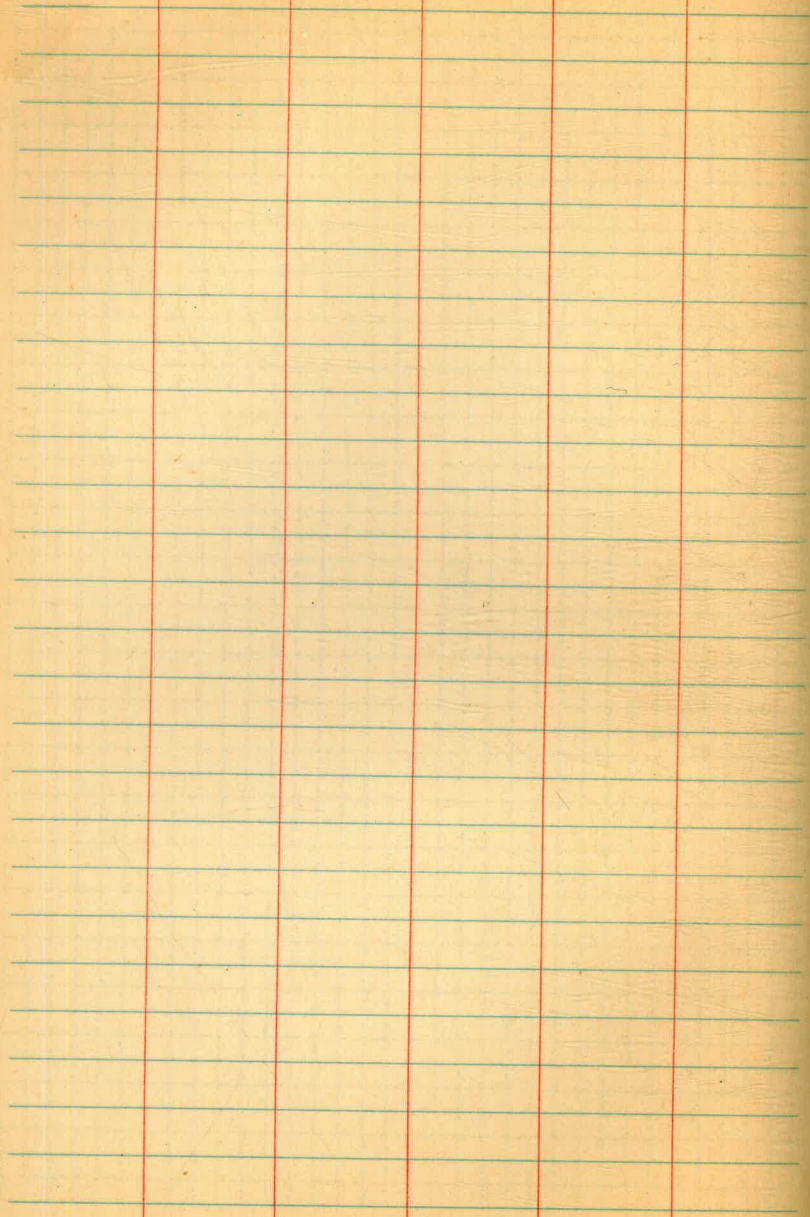


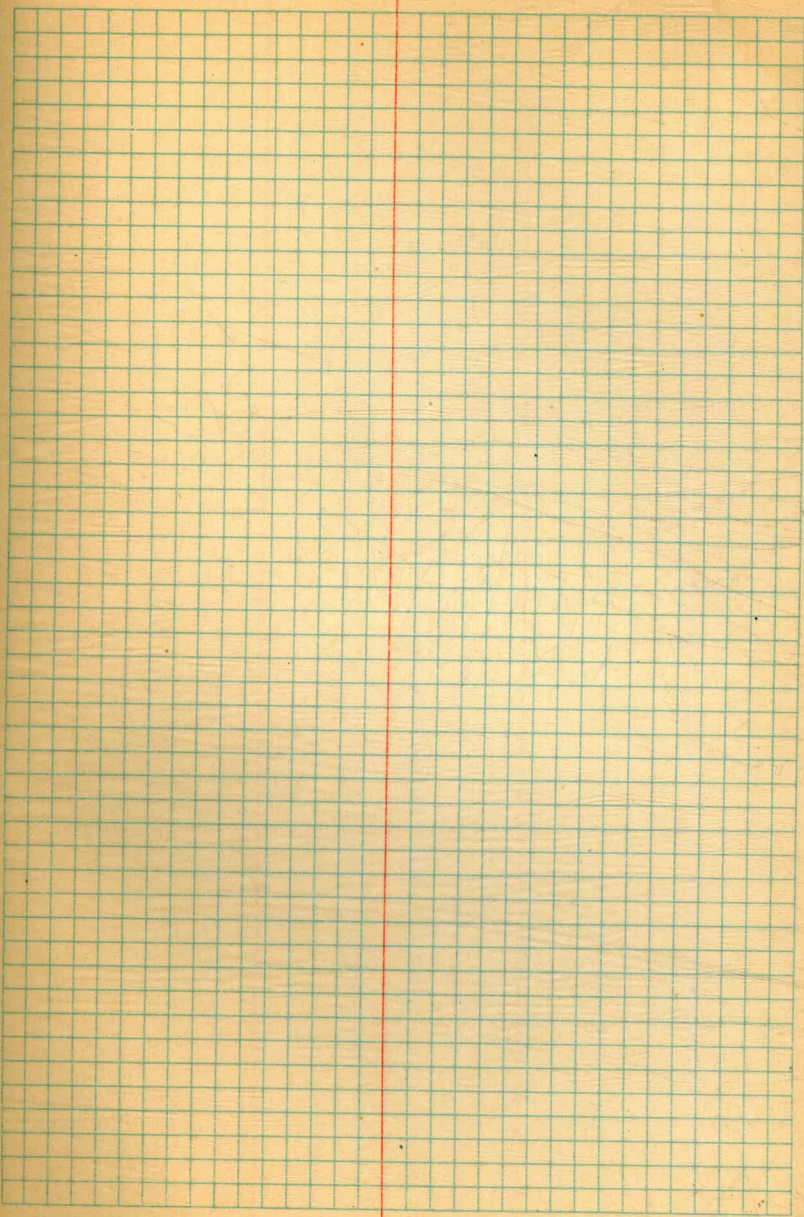
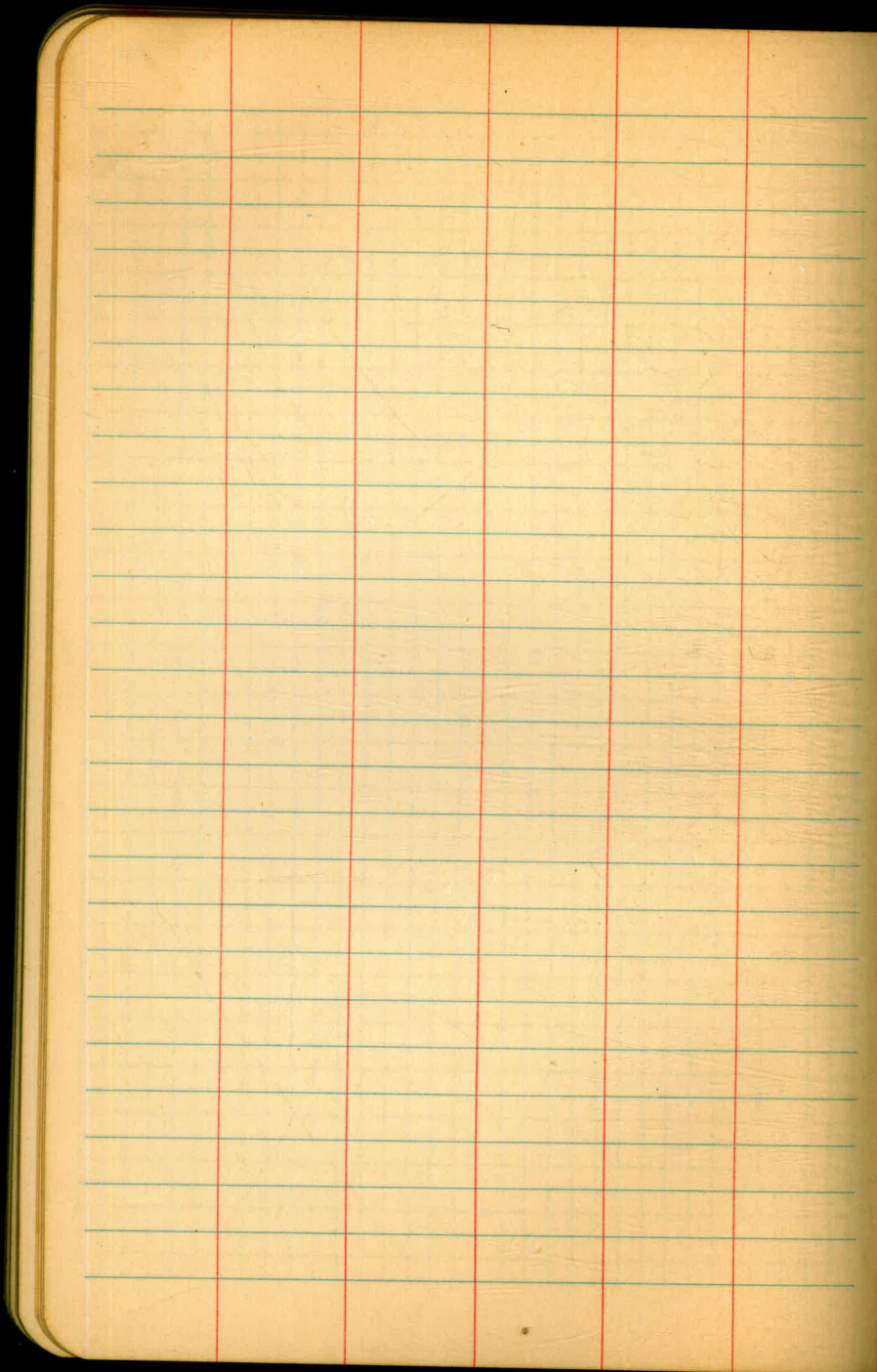


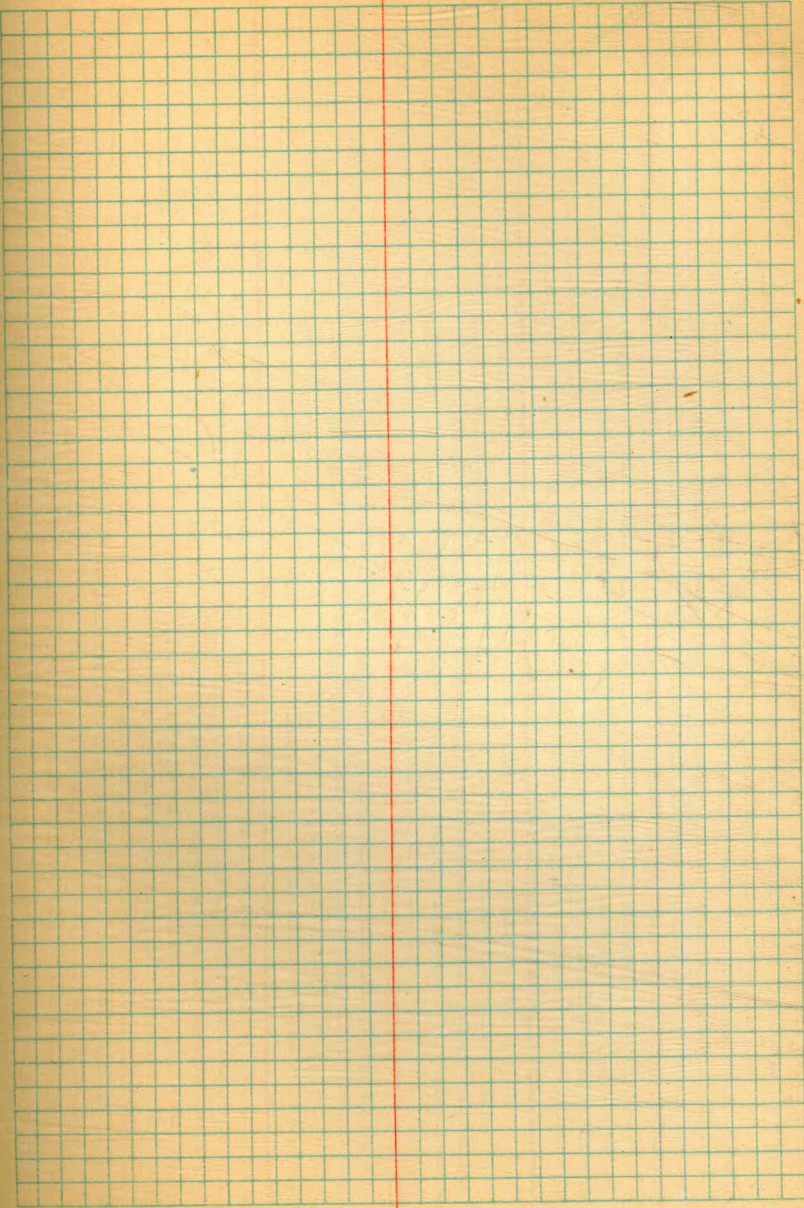
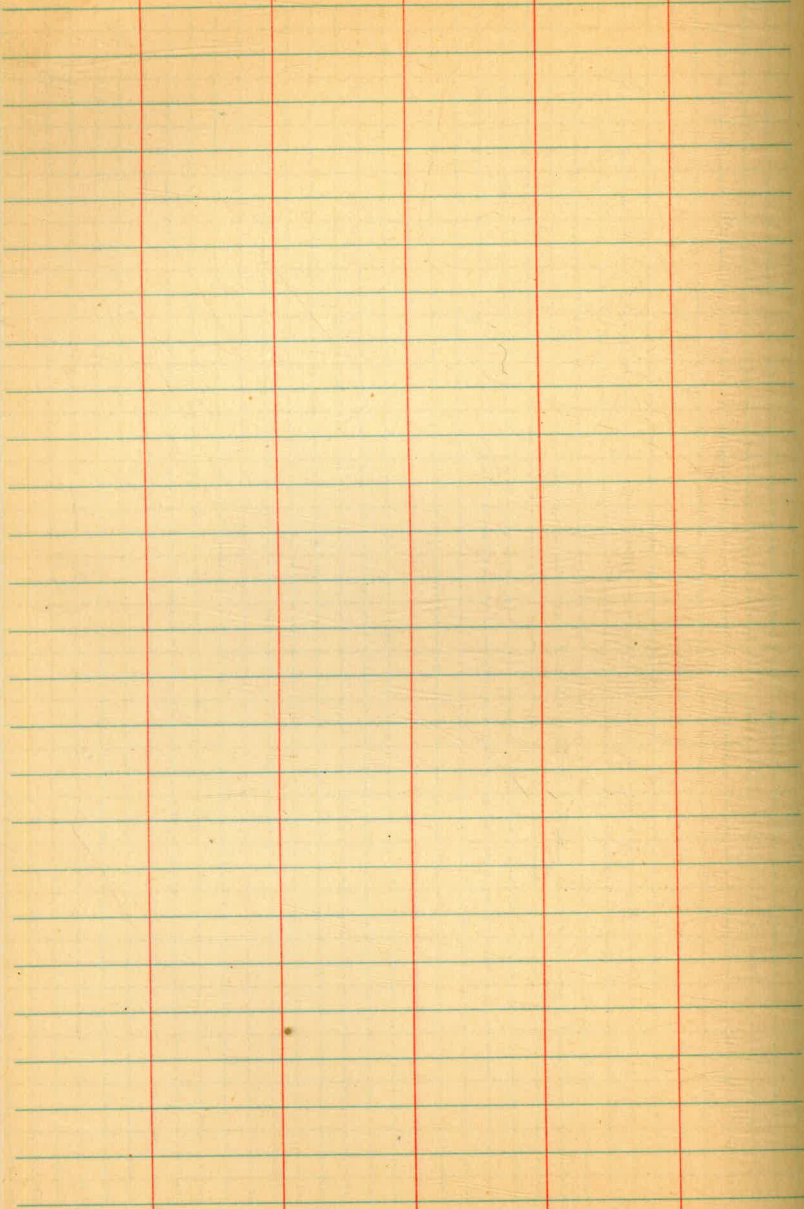


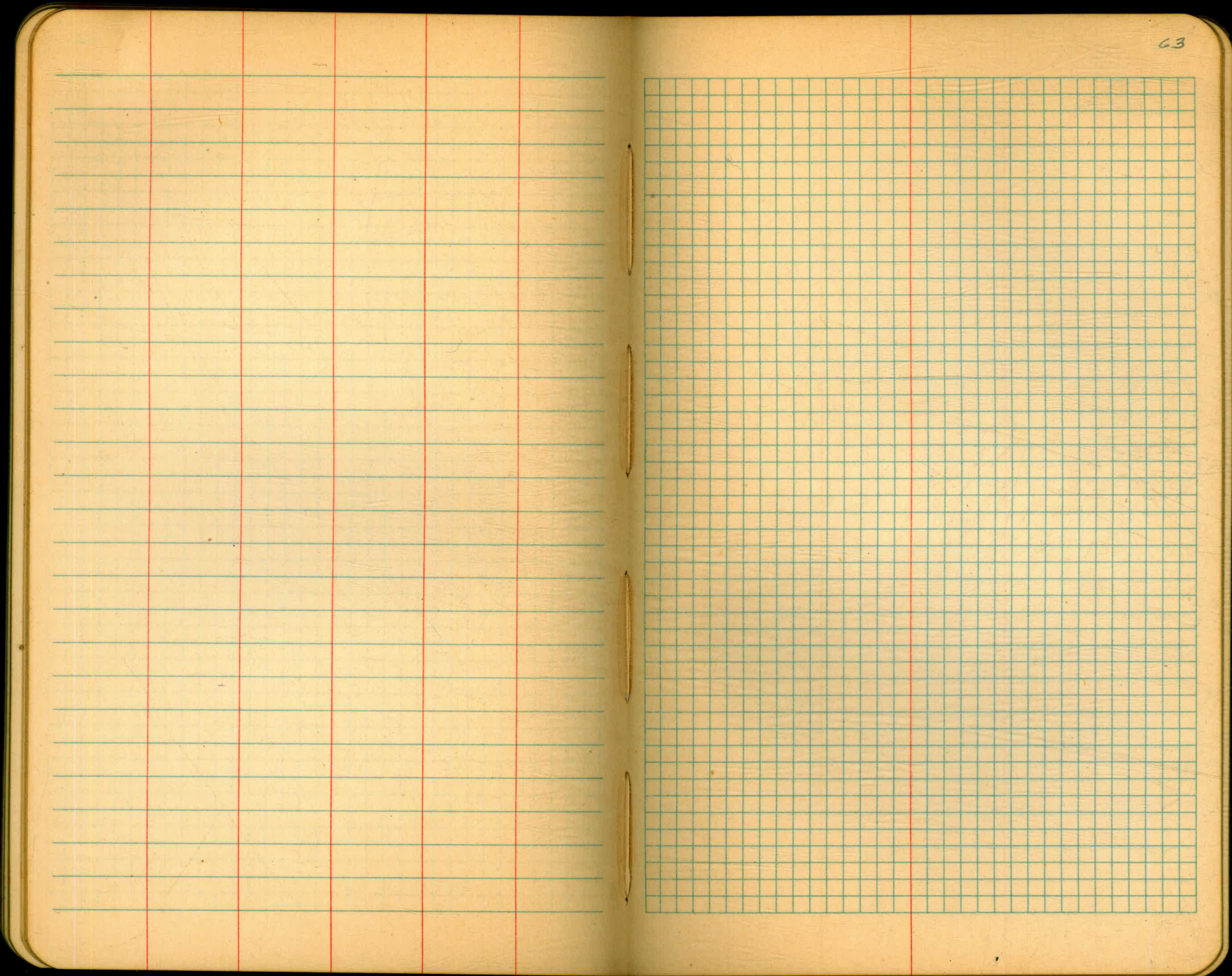


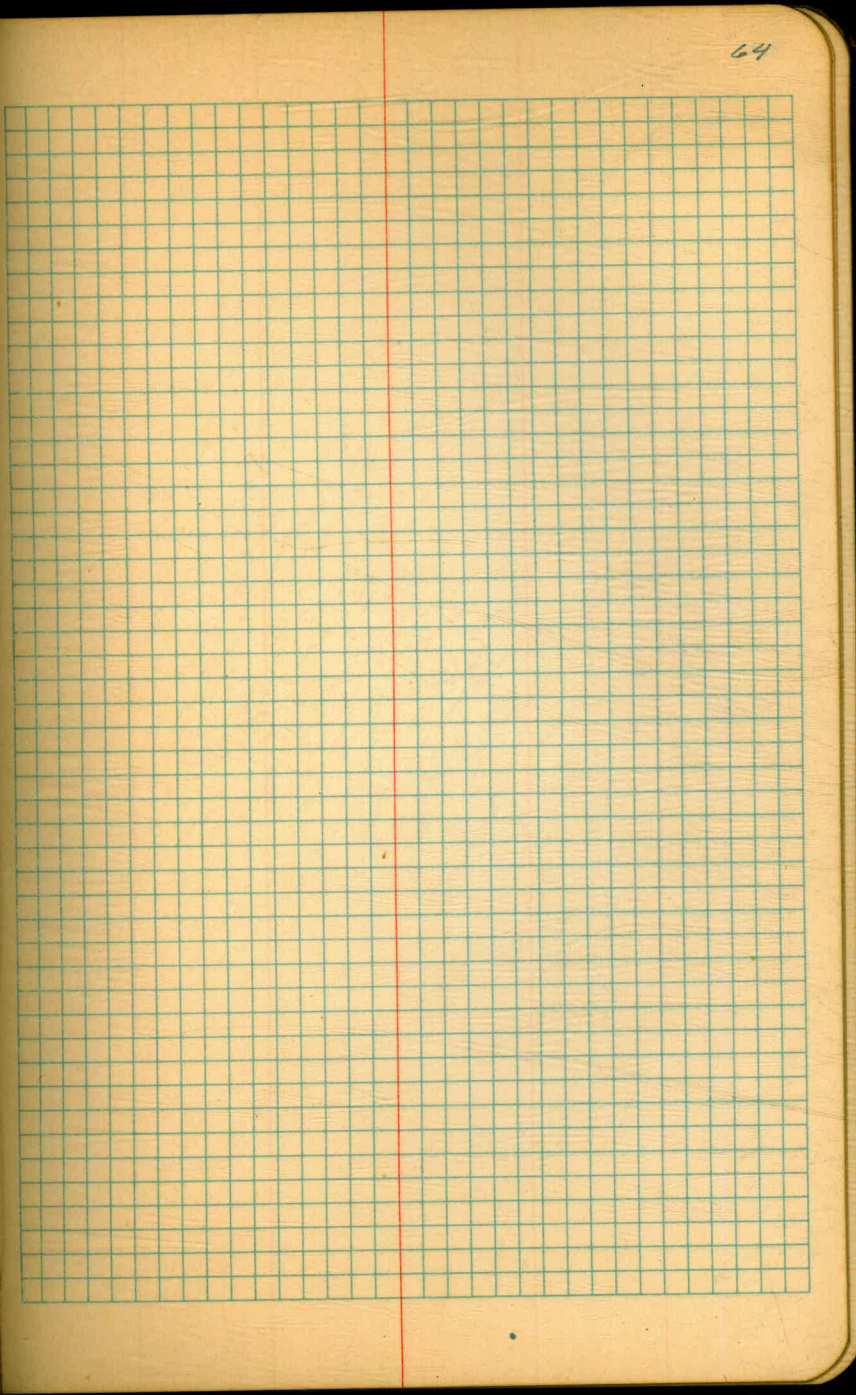
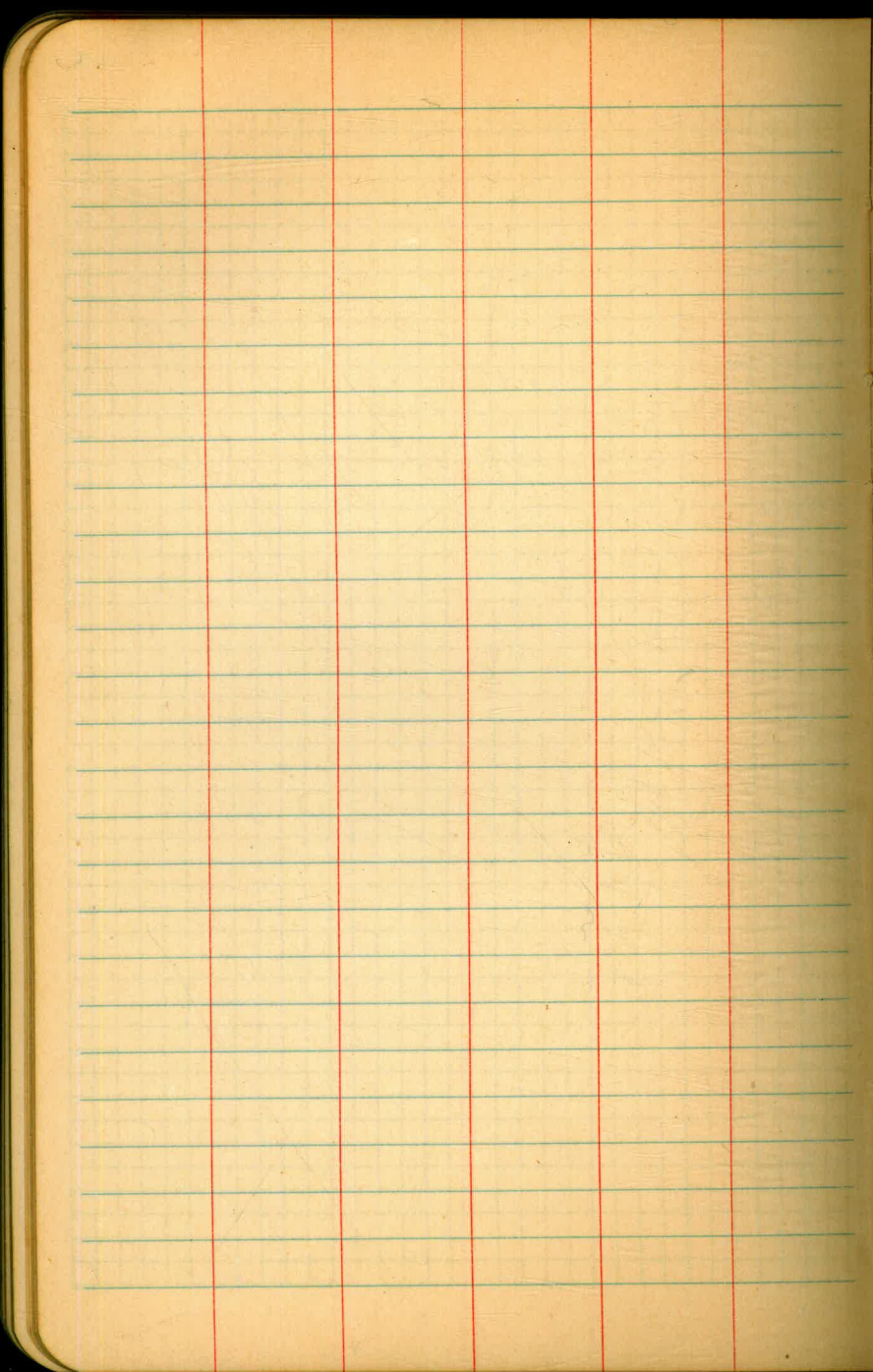


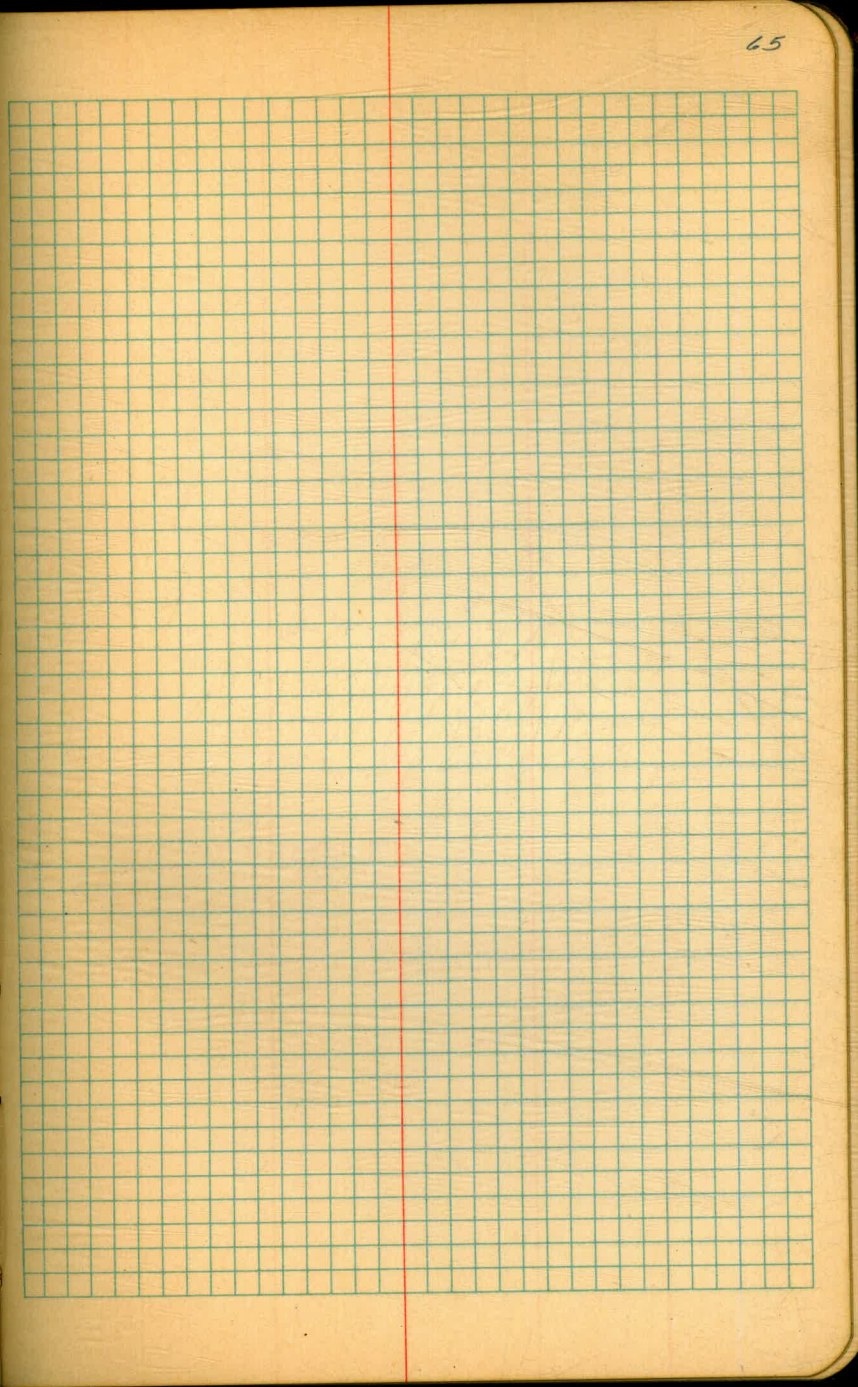
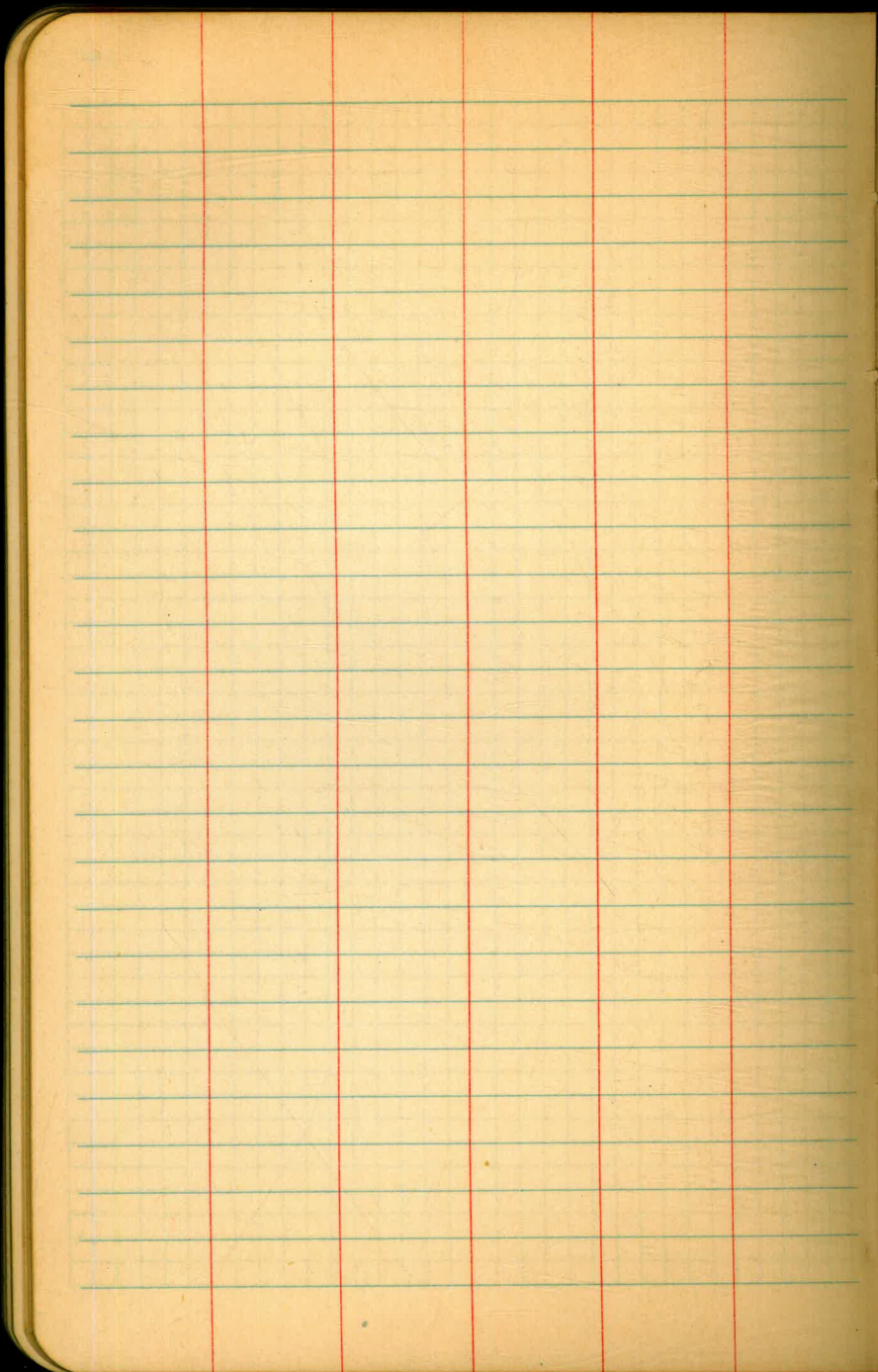


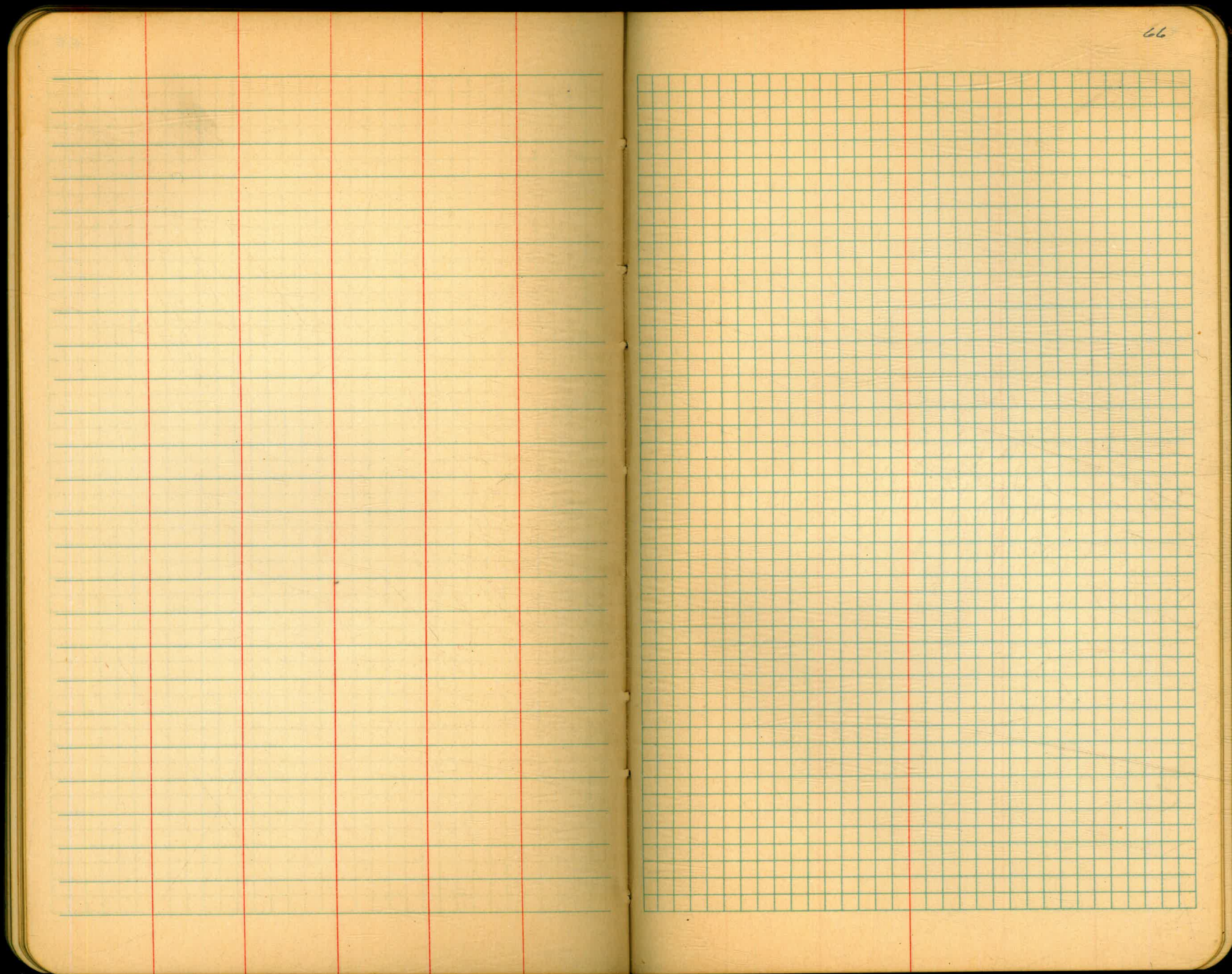




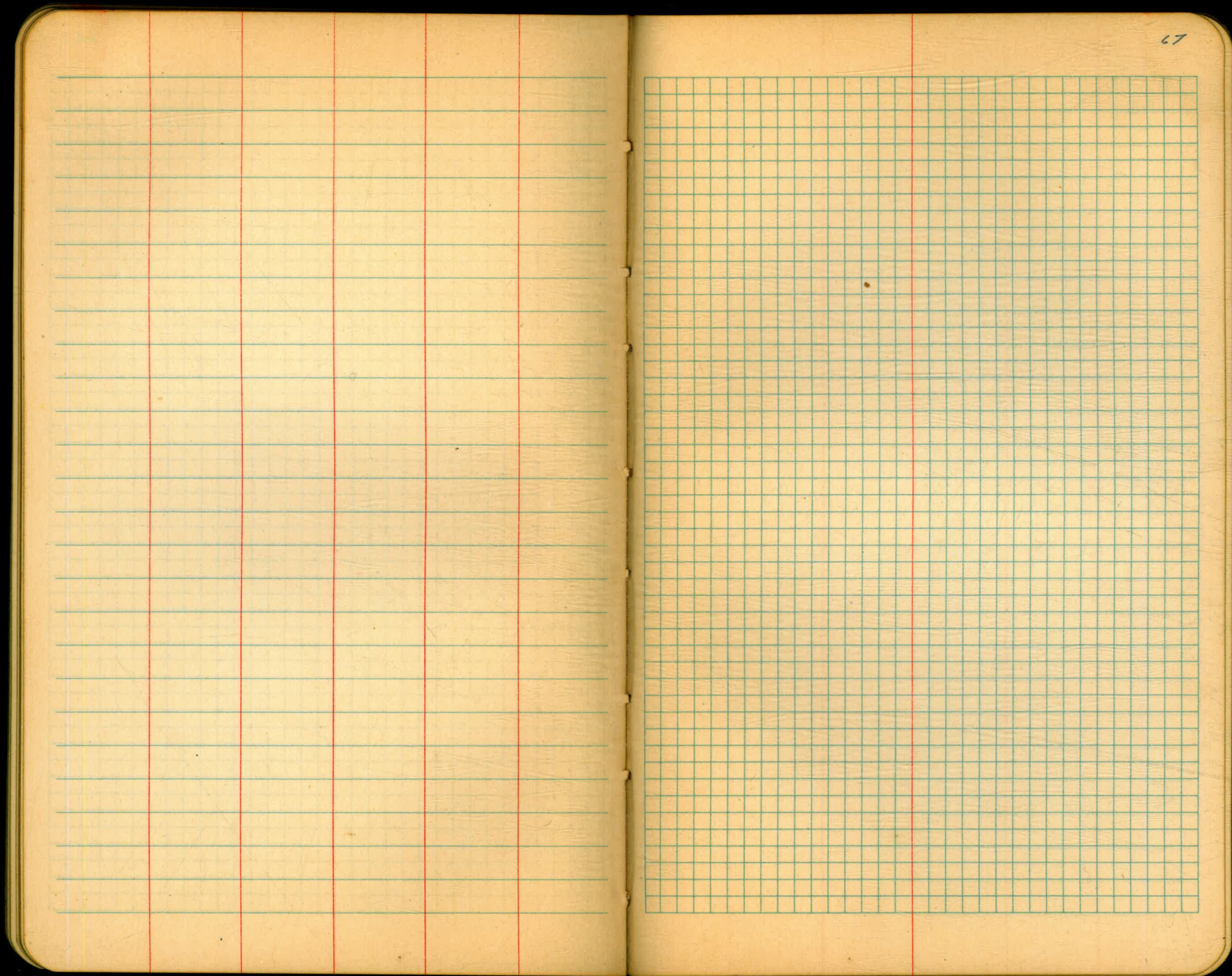


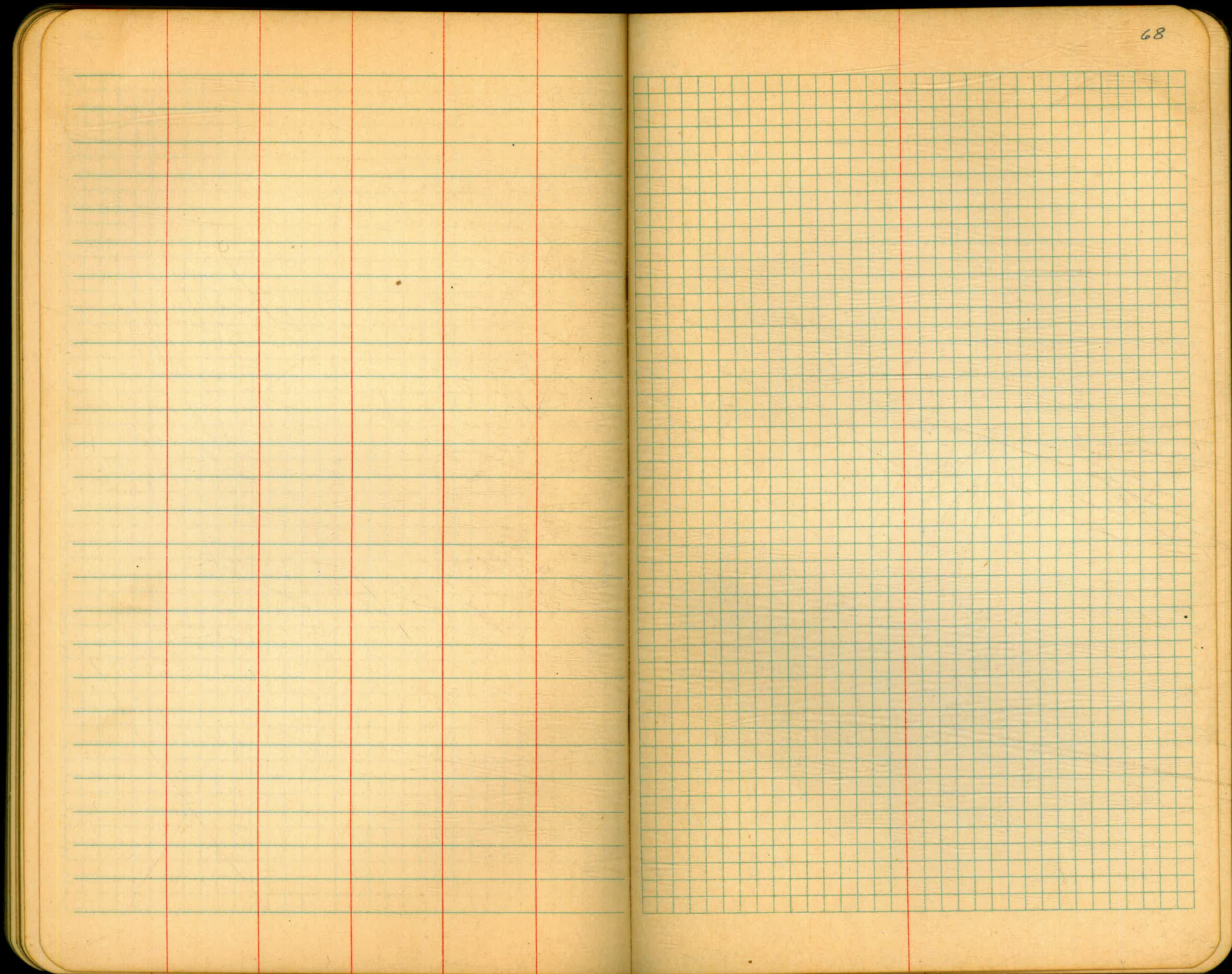


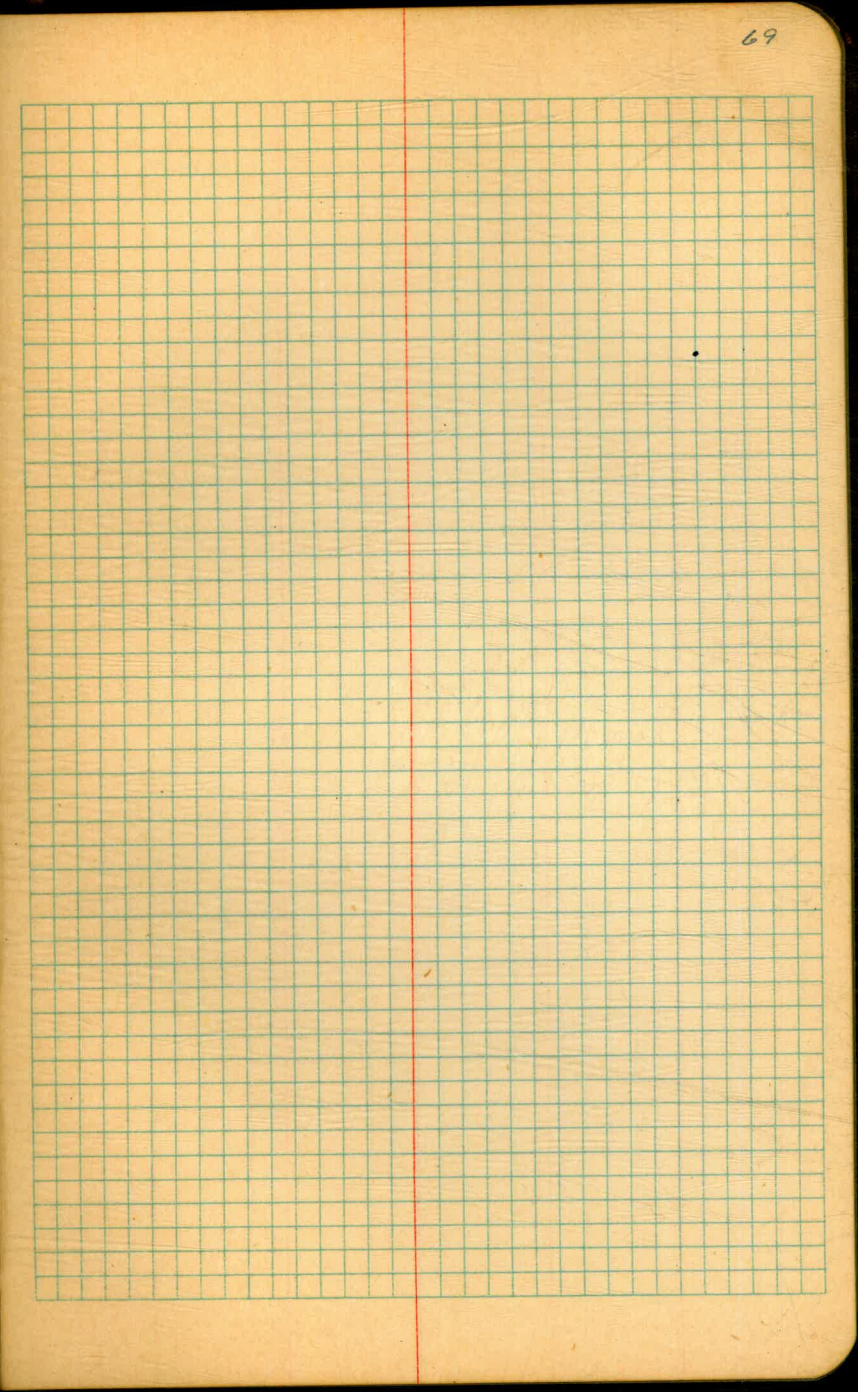
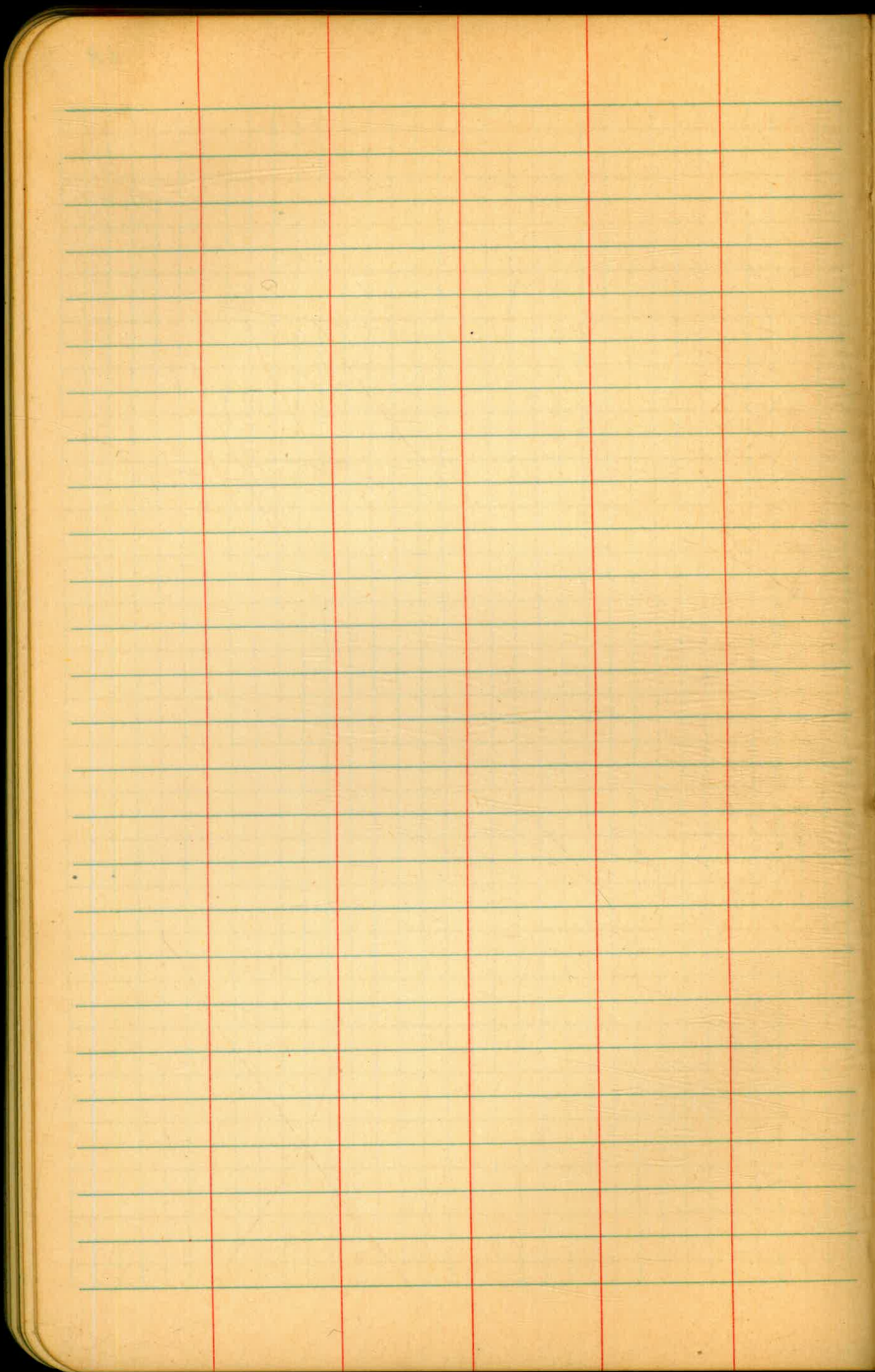


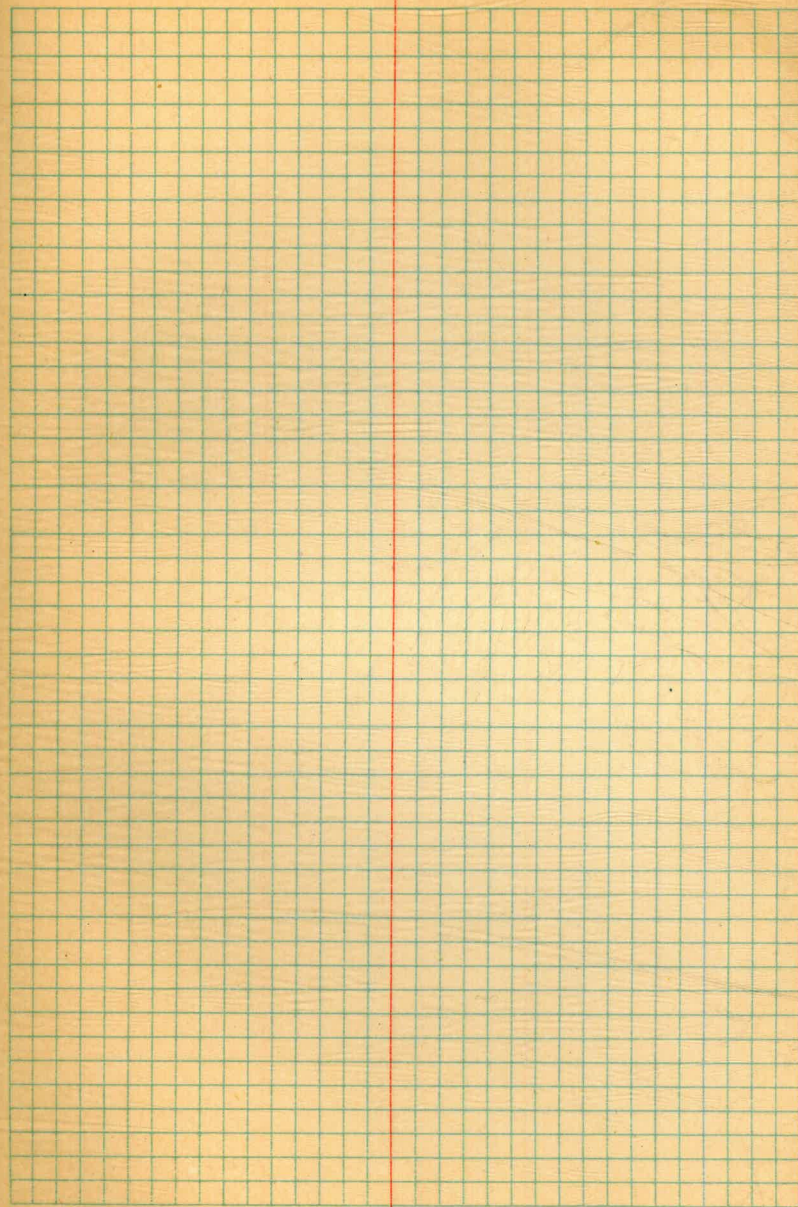


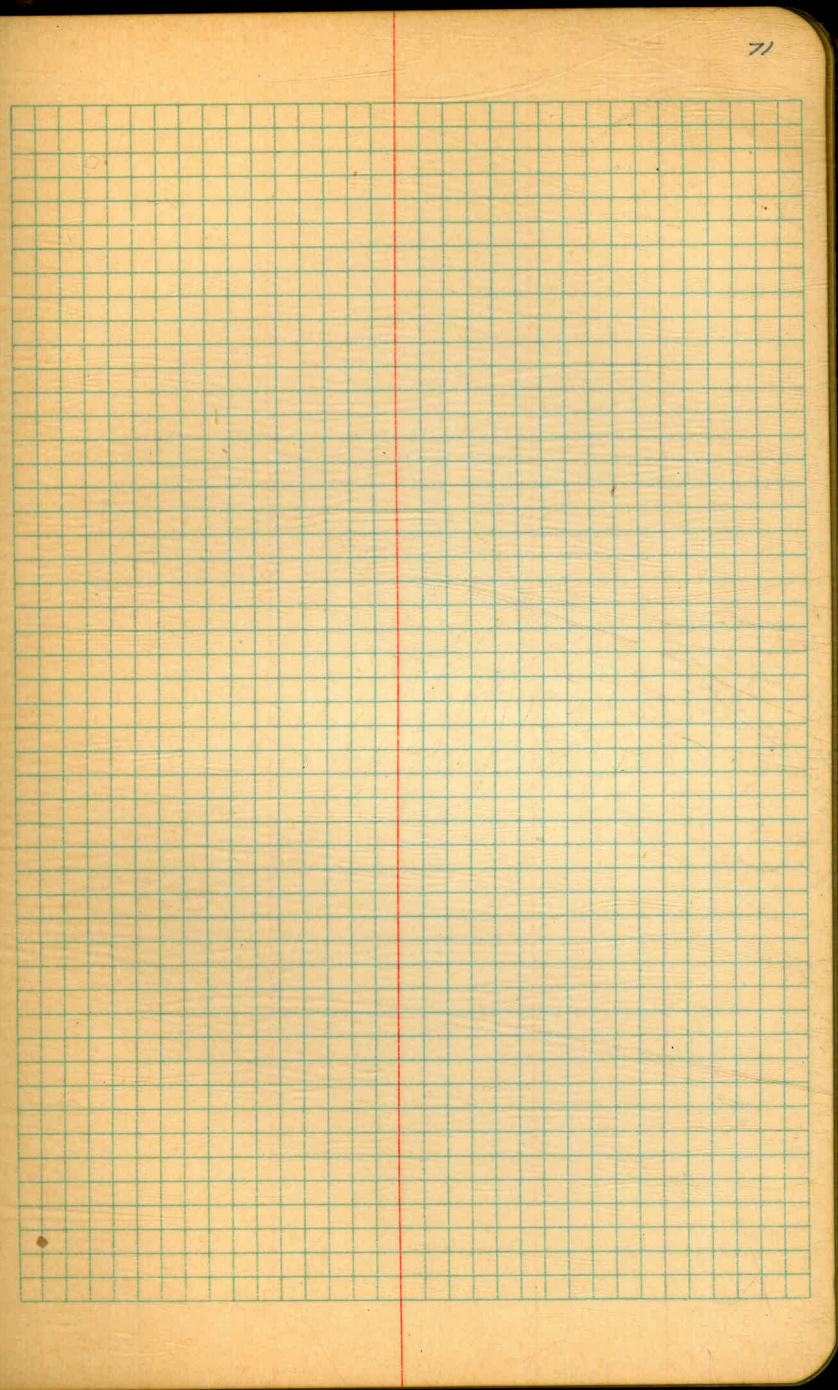
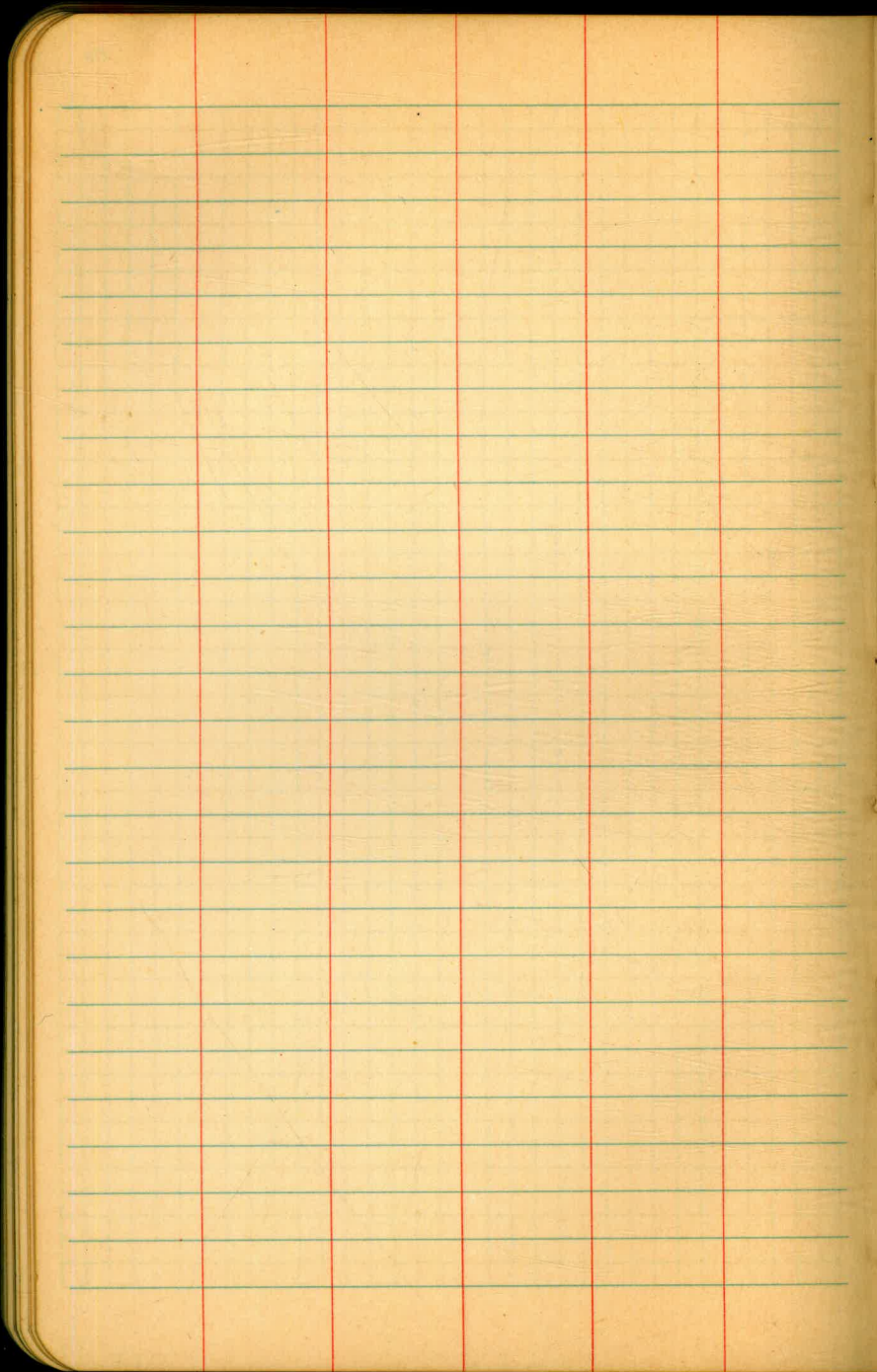
66

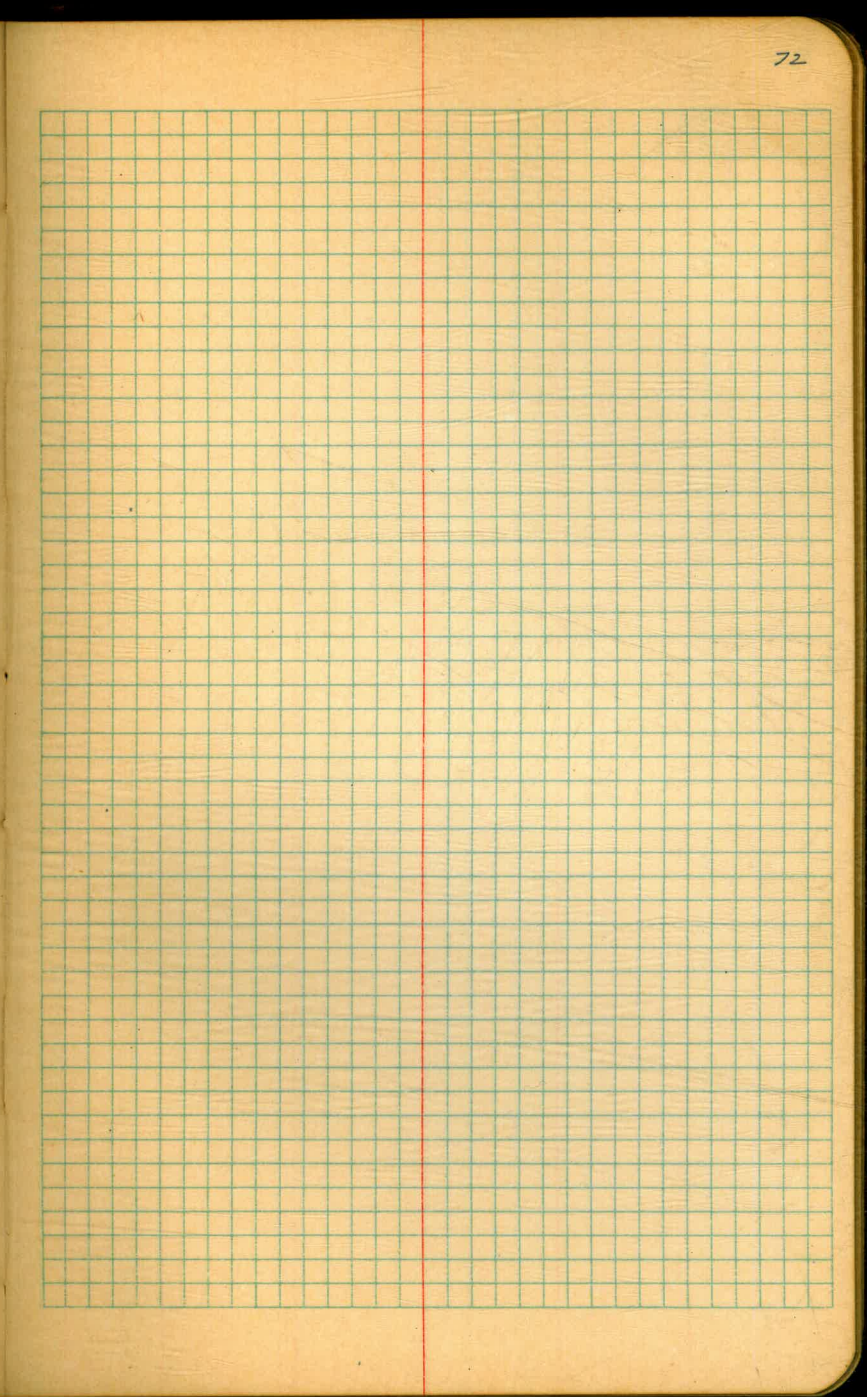
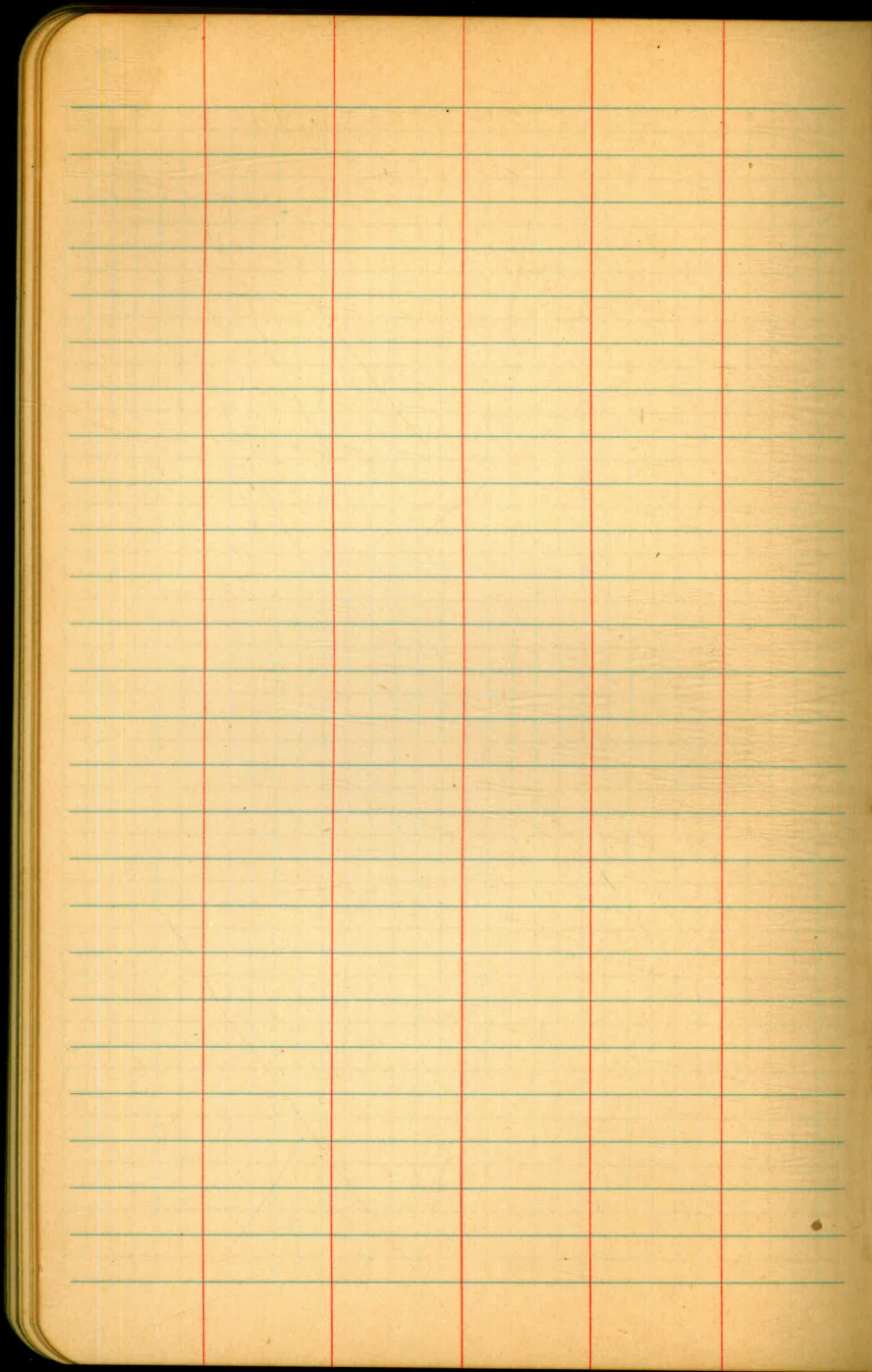


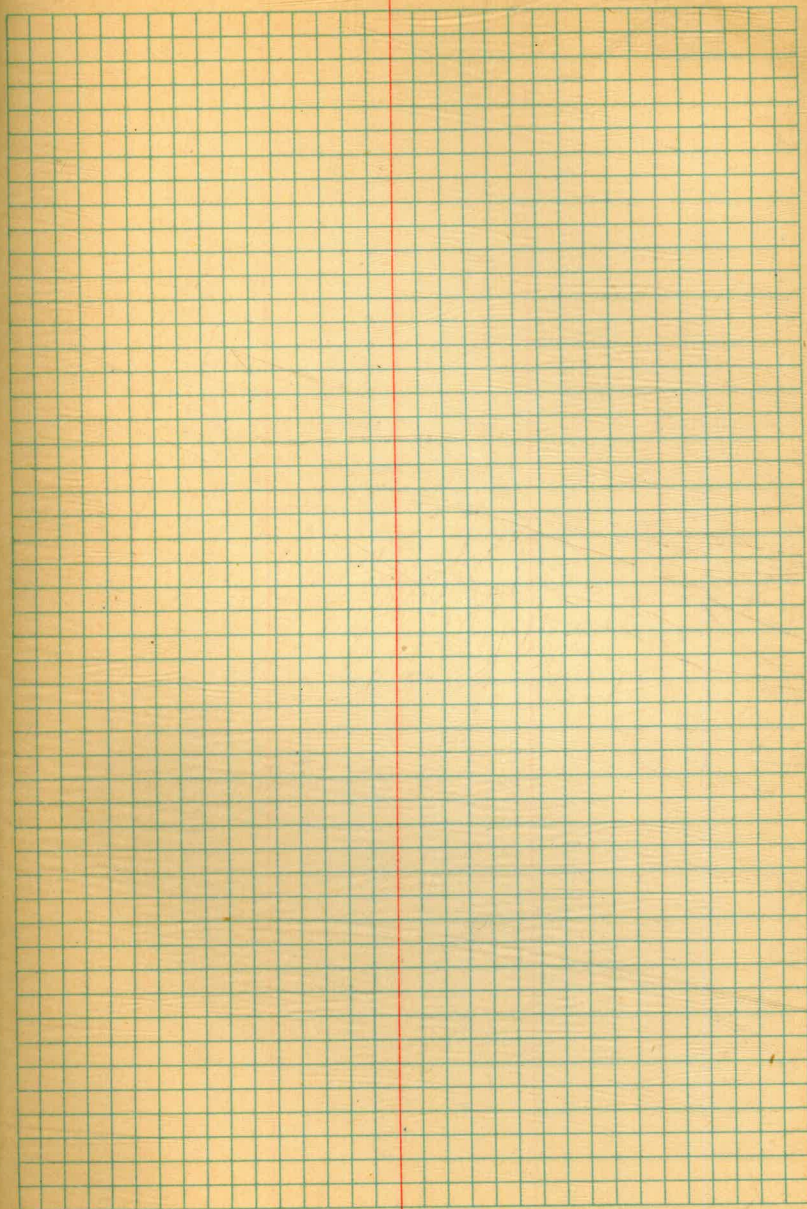


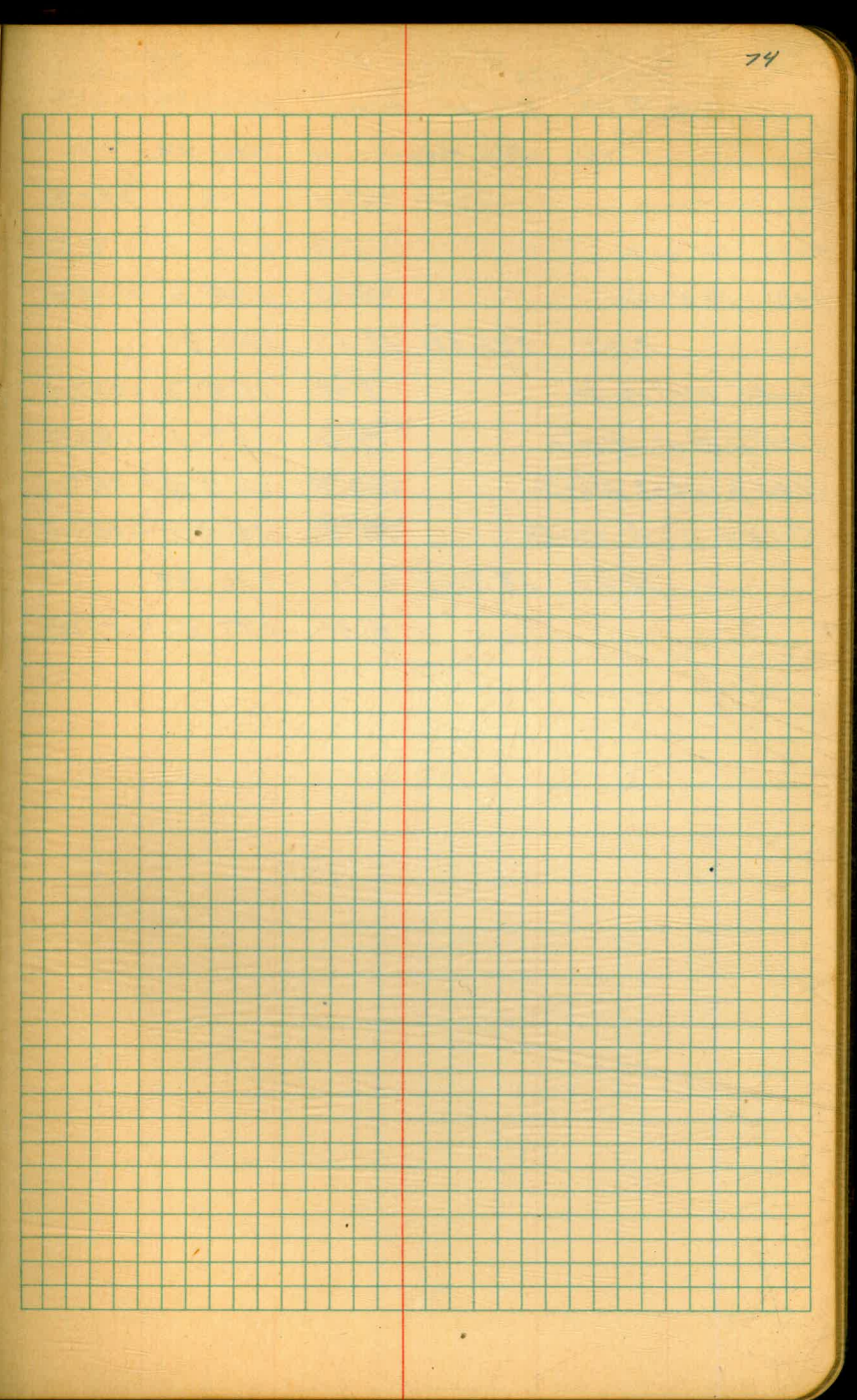
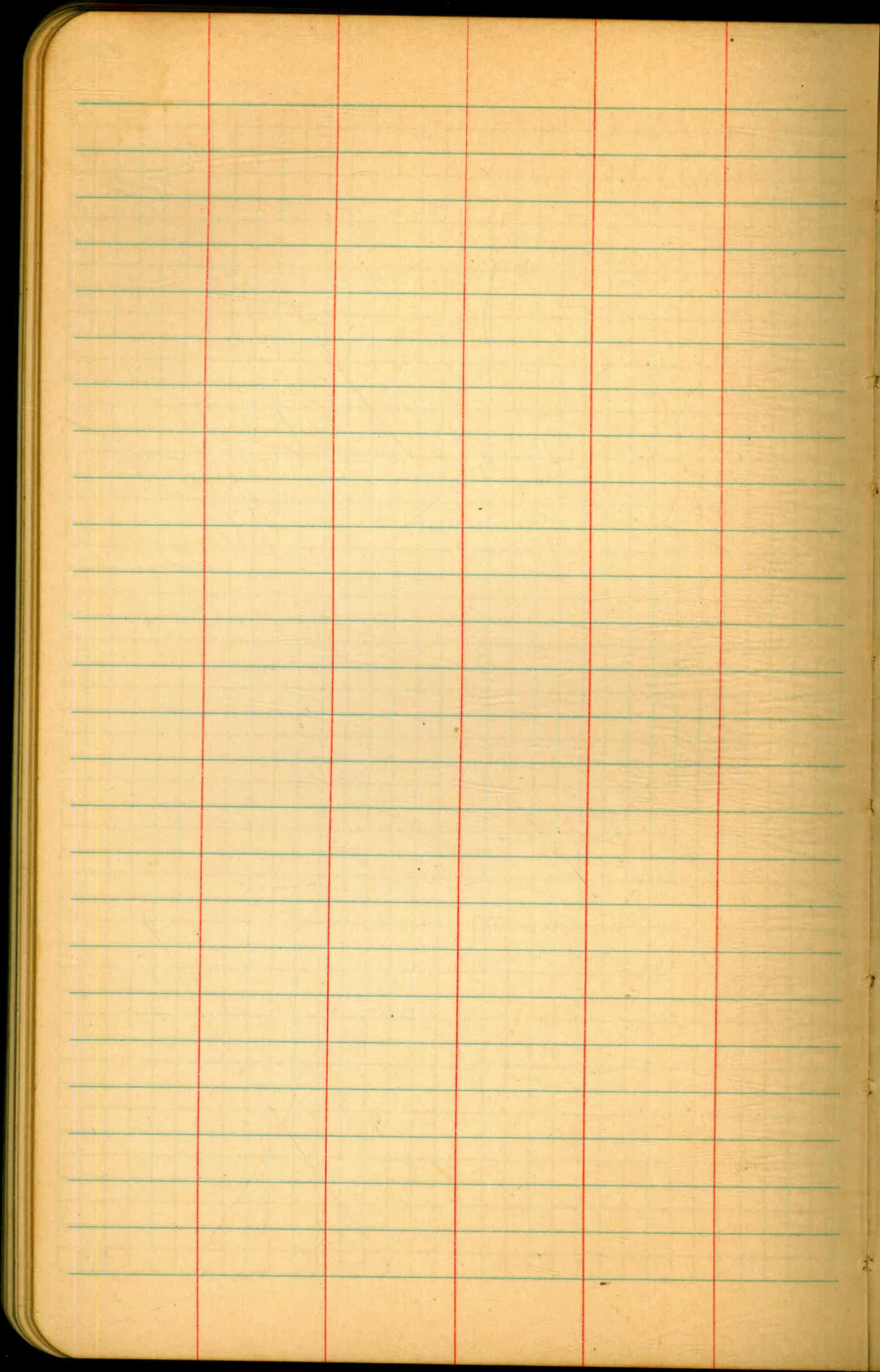












POE 58 Willow to Plum St
 57ks for Meters
 Vert. Rise set 10" from Q 300JD

110	5.77	183.56	177.79
0+100 Met South	5.4	178.2	177.3
0+99 Met South	7.3	176.3	173.8
1+01 M North	8.0	175.6	174.8
0.71	171.10	13.17	170.39
1+45 Met North	1.4	169.7	167.6
1+52 Met South	2.0	169.1	165.4
2+03 Met North	10.7	160.4	157.4
2+57 Met North	16.8	154.3	153.8
12.72	183.11	0.71	170.39
		5.31	177.80 = 177.79

WEST
 WILLIAMS
 VARONAKIS
 KELLNOFER

4/16/56
 CLOUDY

75

BM SW BP	W. Mount Poe St.
002	1890 Willow
025	3321
008	3318
021	3330
037	3329
032	3339
005	3344

29TH ST. LANDIS To WEIGHTMAN GR. 102
 STKS. FOR 6" A.C. MAIN

B.M.		339.95	
B.M.		338.99	
B.M.	9.09	344.98	335.89
0-3		4.9 34 0.1	336.2
+50		4.3 34 0.7	336.7
+75		3.9 34 1.1	337.1
1+00		3.8 34 1.2	337.3
+50		3.4 34 1.6	337.7
2+00		3.1 34 1.9	338.0
+50		2.8 34 2.2	338.3
3+00		2.4 34 2.6	338.6
+50		2.1 34 2.9	339.0
T.P.	9.25	352.18	2.05 342.93
4+00		8.9 34 3.3	339.4
+50		8.3 34 3.9	339.9
5+00		7.7 34 4.5	340.4
+50		7.2 34 5.0	340.9
6+00		6.7 34 5.5	341.5
+50		6.2 34 6.0	342.0
7+00		5.7 34 6.5	342.5
+50		5.2 34 7.0	343.1
+56.5		5.1 34 7.1	343.2
CHECK B.M.	9.27	342.91	342.92

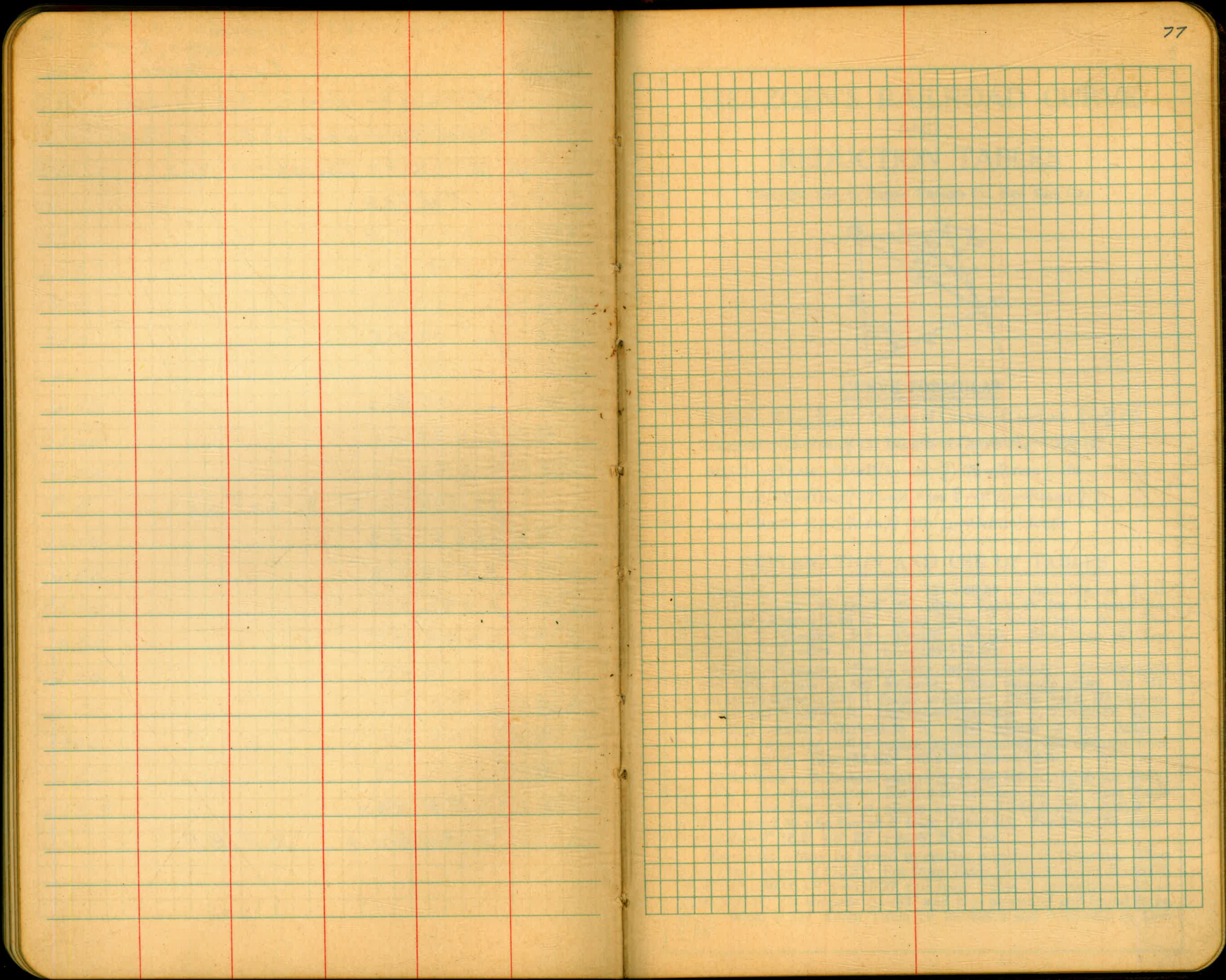
WEST
 WILLIAMS
 VIRONFARIS †
 KELLHOFFER X

4/13/56 76

SHOWERS 8:30AM

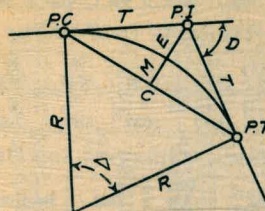
CUTS PAINTED 5/4/56

S.E.B.P.	29+ LANDIS (B.M. 1s OUT)
S.E.B.P.	30+ LANDIS (B.M. 1s OUT)
S.E.B.P.	29+ DWIGHT
C3	♀ F.H. TEE
C4	♀
C4	♀
C3	♀
C3	♀
C3	♀
C3	♀
C4	♀
C3	♀
C3	♀
C4	♀
C4	♂
C4	♂
C4	♀
C4	♀
C4	♀
C4	♀
C3	♀
C3	♀ F.H. TEE
	29+ GUNN S.E.B.P.



DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

Copyright, 1914, by Eugene Dietzgen Co., New York City



CURVE FORMULAS

Radius= $R = \frac{50}{\sin \frac{D}{2}}$ (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) $= R \text{vers } \frac{\Delta}{2}$ (6)

External= $E = T \tan \frac{\Delta}{4}$ (7) $= R \div \cos \frac{\Delta}{2} - R$ (8) $= R \text{exsec } \frac{\Delta}{2}$ (9)

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

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.—Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta = 62^\circ 10'$ $D = 8^\circ 20'$. From Table IV for 1° curve $T = 3454.1$ and $\div 8\frac{1}{3} = 414.49$ ft. From Table V correction = .36 or $T = 414.85$ ft. P. C. = Sta. P. I. $- T = 157 + 45.50$. Also from (4) $L = 746.00$ and P. T. = Sta. P. C. $+ L = 164 + 91.50$.

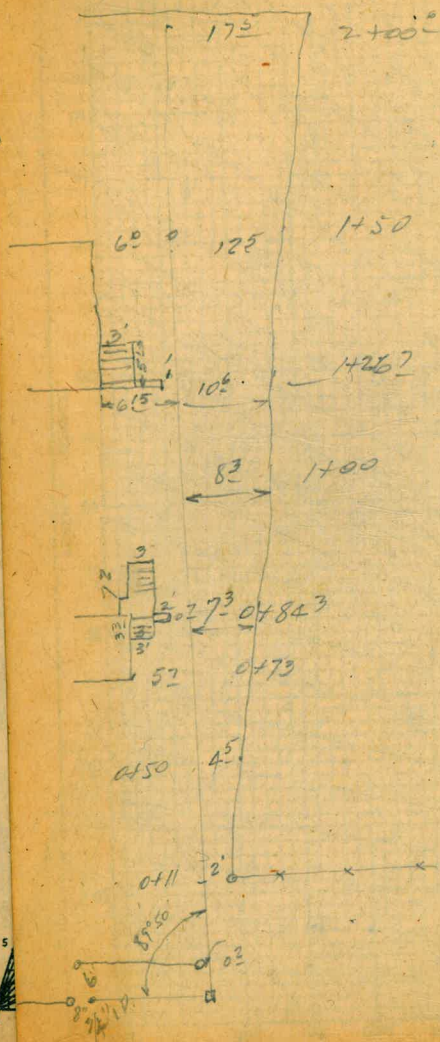
Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft. = 7.27 ft. Distance = 158—Sta. P. C. = 54.50, hence offset = $7.27 (54.50 \div 100)^2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

Deflections.—Deflection angle = $\frac{1}{2} D$ for 100 ft., $\frac{1}{4} D$ for 50 ft., etc. For c ft. = (in minutes) $.3 \times C \times D^\circ$ or = defl. for 1 ft. from Table III $\times C$. For Sta. 158 of above curve = $.3 \times 54.5 \times 8\frac{1}{3} = 136.2'$ or $2^\circ 16.2'$, or = $2.50 \times 54.5 = 136.2'$ from Table III. For Sta. 159 deflection angle = $2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$, 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 $8^\circ 20' = 960.6 \div 8\frac{1}{3} = 115.27$ and from Table V correction = .10 or $E = 115.37$ ft. Or suppose $\Delta = 32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E = 230.9$ and $\div 42 = 5.5$ or $D = 5^\circ 30'$.

541.04

$$\begin{array}{r}
 541.04 \\
 589 \\
 \hline
 335.15 \\
 7.54 \\
 \hline
 353.81
 \end{array}$$

$$\begin{array}{r}
 16 \\
 133 \\
 541.04 \\
 5.02 \\
 \hline
 596.13
 \end{array}$$


$$\begin{array}{r}
 95.03 \\
 191.21 \\
 \hline
 286.24 \\
 58.17 \\
 \hline
 344.41
 \end{array}$$

$$\begin{array}{r}
 9907 \\
 193 \\
 \hline
 29721 \\
 89163 \\
 9907 \\
 \hline
 1912051
 \end{array}$$

$$\begin{array}{r}
 7032 \\
 63.84 \\
 91.12 \\
 \hline
 127.68 \\
 6384 \\
 6384 \\
 \hline
 57456 \\
 58171008
 \end{array}$$

$$\begin{array}{r}
 74+69.68 \\
 307.27 \\
 \hline
 77+76.95
 \end{array}$$

$$\begin{array}{r}
 106.78 \\
 93.46 \\
 \hline
 640.68 \\
 42712 \\
 32039 \\
 96102 \\
 \hline
 99.79
 \end{array}$$

$$\begin{array}{r}
 380371 \\
 305.10 \\
 \hline
 4108.81
 \end{array}$$

$$\begin{array}{r}
 536.60 \\
 7.78 \\
 \hline
 544.38
 \end{array}$$

563.8

134.52
 .9879
 121068
 94164
 107616
 121068
 132892308

14'06"
 62.08
 .97
 43456
 55872
 60.22

103
 7941
 103
 29823
 99410
 102.39

322
 5366
 5
 9599
 99
 86391
 86391
 9503

504
 63
 441
 135.87
 .9909
 122283
 67935
 122283
 122283
 135313933

25-00-30
 51-00
 EAST
 361.96

24-58-30
 29-57-00
 WEST

457.10
 4.10
 456.20
 119
 71
 119
 833
 84

541.04
 336.7
 84.3
 541.04
 439
 366.65

452.2
 3.9
 456.10

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1 1/2
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.