

196

THE  
AMERICAN  
ENGLISH BOOK  
1934

# KEUFFEL & ESSER CO.

## DRAWING MATERIALS AND SURVEYING INSTRUMENTS. NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

### TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.

FOR SINGLE TRACK EXCAVATION.

"Copyright, 1895, by Keuffel & Esser Co."

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

Calculated by Julien A. Hall, M. Am. Soc. C. E.

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*Stanley M. Shartle*  
*Deputy Surveyor, Hendricks Co.,*  
*Danville, Indiana.*

CF

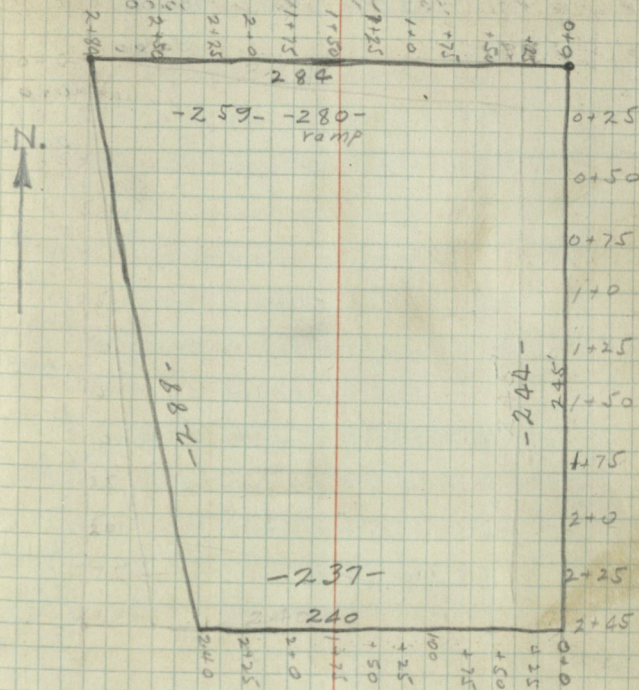
I

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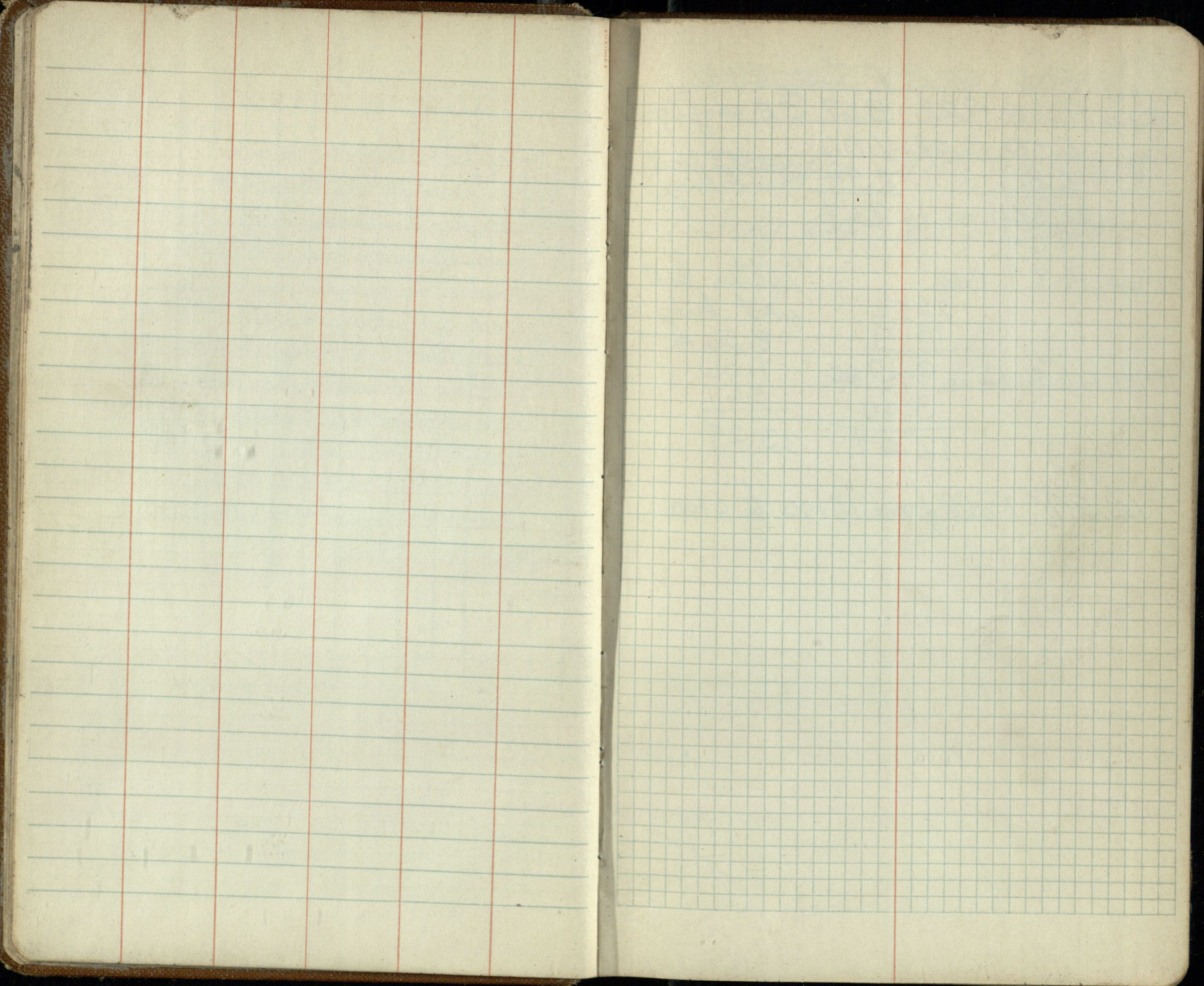
Levels on Borrow Pit on  
 Strong Miles Farm in Liberty Twp.  
 Aug. 2, 1940

Cook.  
 Newman.  
 Walls.

Clear-Hot.







sta	B.S.	I.	F.S.	B.M.
0+0				
7+0	9.25	9.25	3.67	#1 SE wing Top
log.	6.50	12.08	1.06	
	6.81		2.94	#2 End board west bridge
	<u>22.56</u>		7.67	
	7.67			

BM#1 BM#2 14.89 Fall

22.56  
13.29

BM#1 to water line w.br. 9.27 Fall  
3.00  
12.27

F.S. water level  
west bridge  
8.56

1.06  
3.67  
13.29

12.27' Fall from 17+00 to 0+00

Jackson Road ditch.

Stanley Shartle-Deputy.

July 24-25, 1948.

14.89  
9.27  
5.62

	B.S.	H.I.	F.S.		
0+00	8.12	108.12	2.62	B.M#1	El. 100.
			3.82		
2+00	2.81	108.31	3.26	457	
	4.03		4.57	326	
				1.31	4.89
					3.57
3+00	3.57	108.31	3.23	57	1.52
	4.89		4.55	26	
				31	57
					23
					34
4+00					
				3.23	446
				3.06	306
				7	100
				3.92	269
				2.69	192
				1.23	89
	105.26			3.30	526
	7.21			1.82	142
	112.47			1.48	3.84
				7.21	6.68
				6.59	
				1.62	
	281				
	105.50				
	131				
				5.79	
				4.98	
				81	

	Elev. Stake	Elev. Ground at stake
2	105.50	104.30
3	105.05	103.74
4	104.74	103.42
5	105.08	103.96
6	105.25	103.85
7	104.39	103.16
8	105.26	103.78
9	105.88	
10	106.68	
11	107.49	



$$\begin{array}{r} 376 \\ 241 \\ \hline 135 \end{array}$$
$$\begin{array}{r} 4.20 \\ 1.18 \\ \hline 3.02 \end{array}$$
$$\begin{array}{r} 4.98 \\ 3.76 \\ \hline 1.22 \end{array}$$
$$\begin{array}{r} 1.49 \\ 1. \\ \hline \end{array}$$
$$\begin{array}{r} 4.20 \\ 3.19 \\ \hline 1.01 \end{array}$$
$$\begin{array}{r} 749 \\ 122 \\ \hline 871 \end{array}$$
$$\begin{array}{r} 241 \\ 149 \\ \hline 92 \end{array}$$
$$\begin{array}{r} 395 \\ 319 \\ \hline 76 \end{array}$$

~~12. 108.71~~

~~13. 110.06~~

~~14. 110.98~~

~~15. 111.46~~

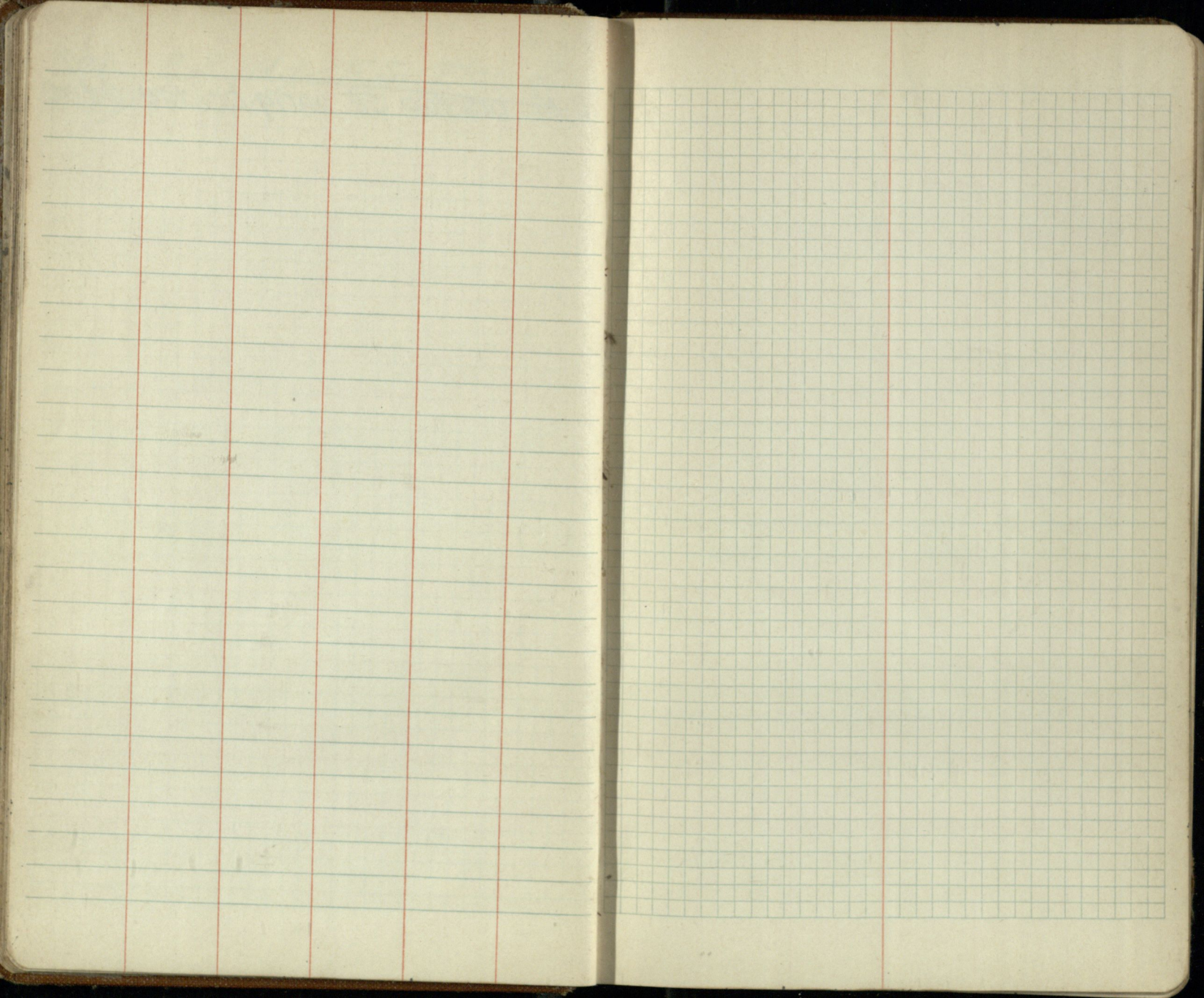
~~16. 114.48~~

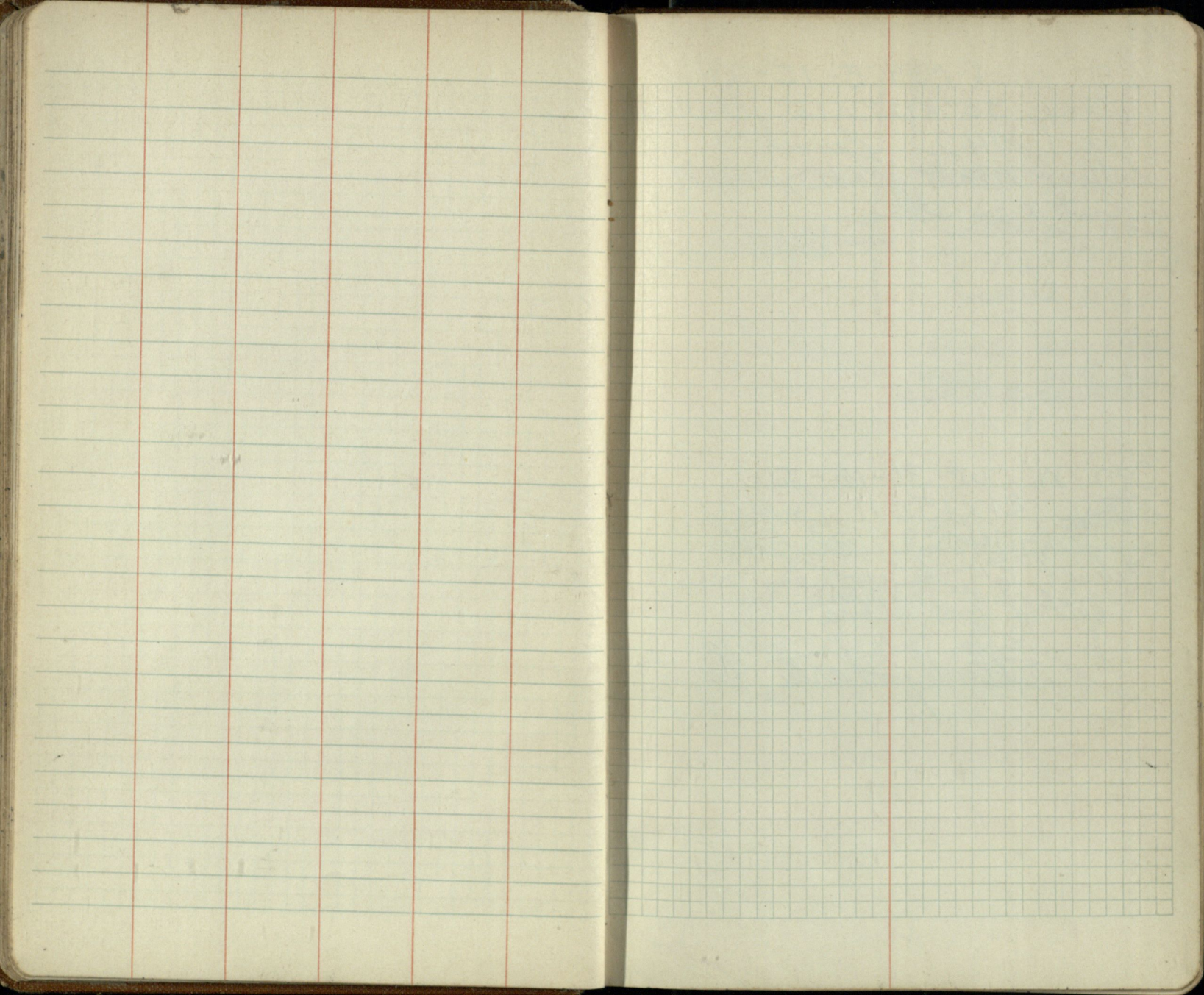
~~17. 115.49~~

B.M.#2 116.25

Sta. B.S. H.I. F.S. Elev. <sup>Height</sup><sub>of</sub> <sup>stake</sup>  
B.M. 100.

~~B.M. on top SE. wing bridge D+00.~~

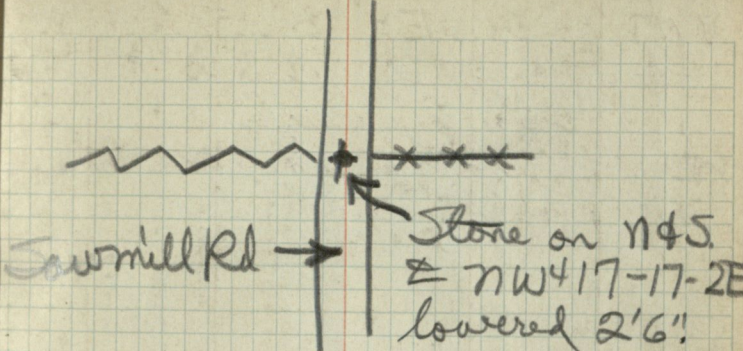




Cen. N. of NE4 5-15-2W  
 Stone 30" x 12" x 12" lowered  
 Aug 1, 1942 Buried 7"  
 below road grade, 10 AM.  
 cut X on stone

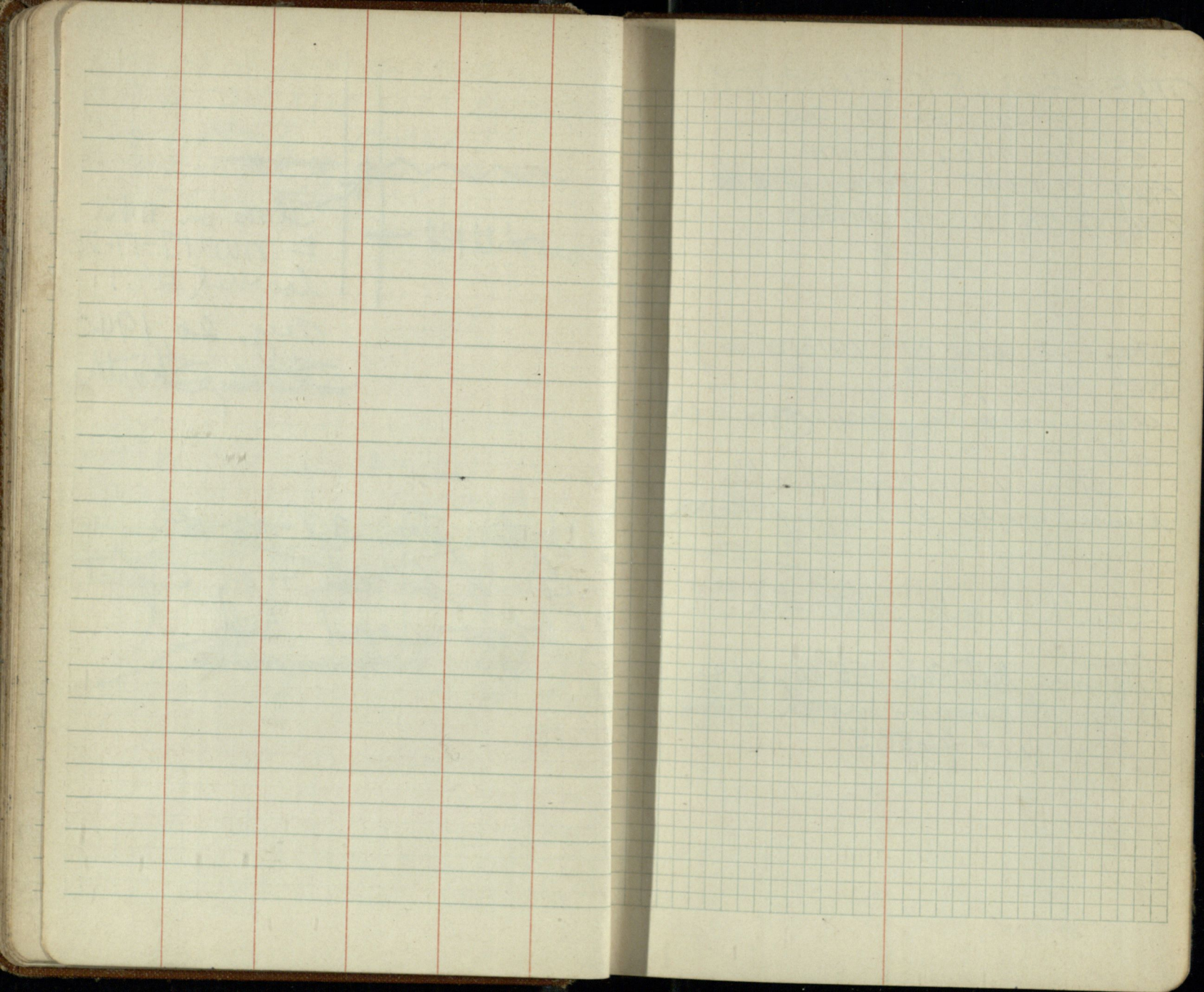
Cen. W. SW<sup>4</sup> 31-16-2W  
 stone 21 x 15 x 11 lowered.  
 Aug 1, 1942 11:30 A.M.  
 Buried 6" below road grade.  
 cut X on stone

Stanley Shurtle, Deputy.



Stone on N45  
 ± NW4 17-17-2E  
 lowered 2 1/6"  
 Aug. 20, 1942.  
 Stanley Shurtle

~~Center Sec. 32-16-1E  
 found buried 4 or 5 feet  
 below road bed.~~  
 Stanley Shurtle.



## OTIS GULLEY SURVEY

Pt. SE<sup>4</sup> SE<sup>1</sup> 31-15-2W

Coatesville, Indiana

Aug. 13, 1942 Stanley Shurtle

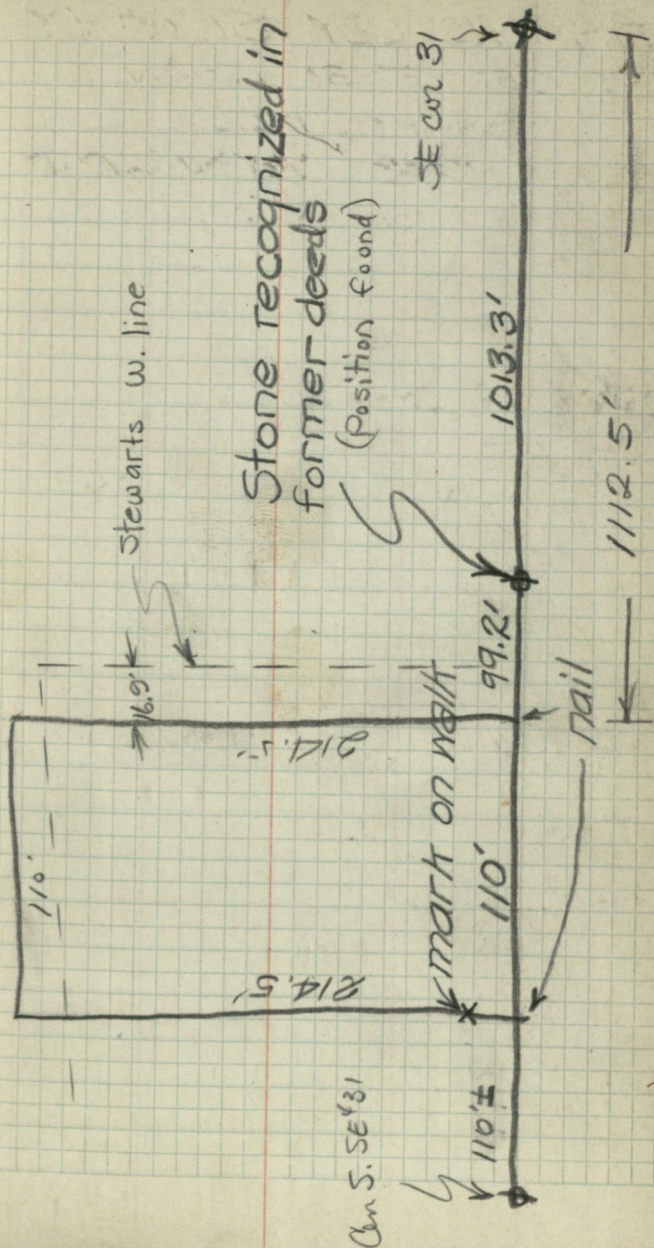
Fair &amp; Warm J. Christie.

Stone S. line 31 1013.3' W of

SE cor:

chisel marks on conc. walks each  
side -Stone 7' 5" S of N. walk & on line  
between marks 31' N of S. walk.

South mark obliterated!

Distance between SE cor 31 &  
fence at running north from  
5<sup>2</sup> mile = 2658.5'

13

A ledger page with horizontal blue lines and four vertical red lines creating columns. The columns are of varying widths, with the widest in the center. The page is otherwise blank.

A grid page with a vertical red line on the left side and a grid of blue lines. The grid is approximately 20 columns wide and 30 rows high. The page is otherwise blank.

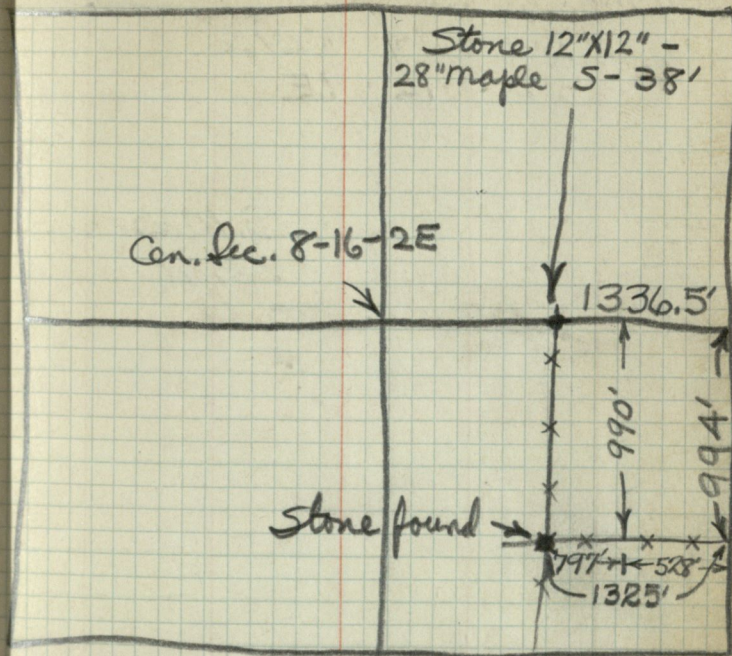


14

SIMMONS SURVEY OF HAGGARD  
PLACE FOR VERN NICHOLS  
8-16-2E.

Aug. 15, 1942  
Cloudy

S. M. Shartt  
J. Christie.



15

A blank ledger page with horizontal blue lines and four vertical red lines creating five columns. The columns are of varying widths, with the leftmost column being the widest and the rightmost being the narrowest. The page is otherwise empty.

A blank page with a grid pattern. A vertical red line is positioned on the left side, approximately one-fifth of the way across the page. The rest of the page is covered in a light blue grid. The page is otherwise empty.

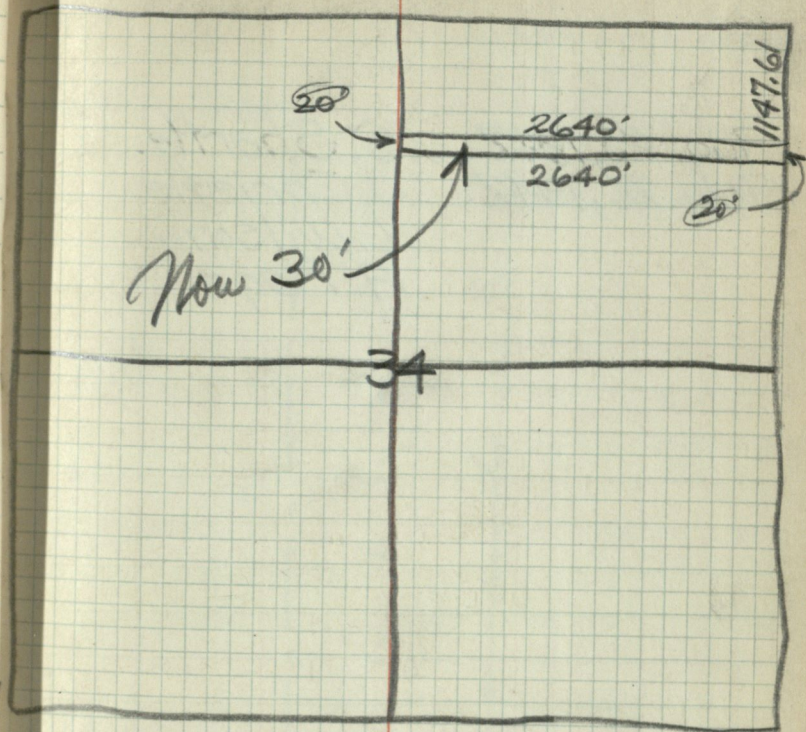
16

ORIAN S. MERRITT ROAD.

Lincoln Twp.

34-16-1E.

Road Record 7, Page 346.

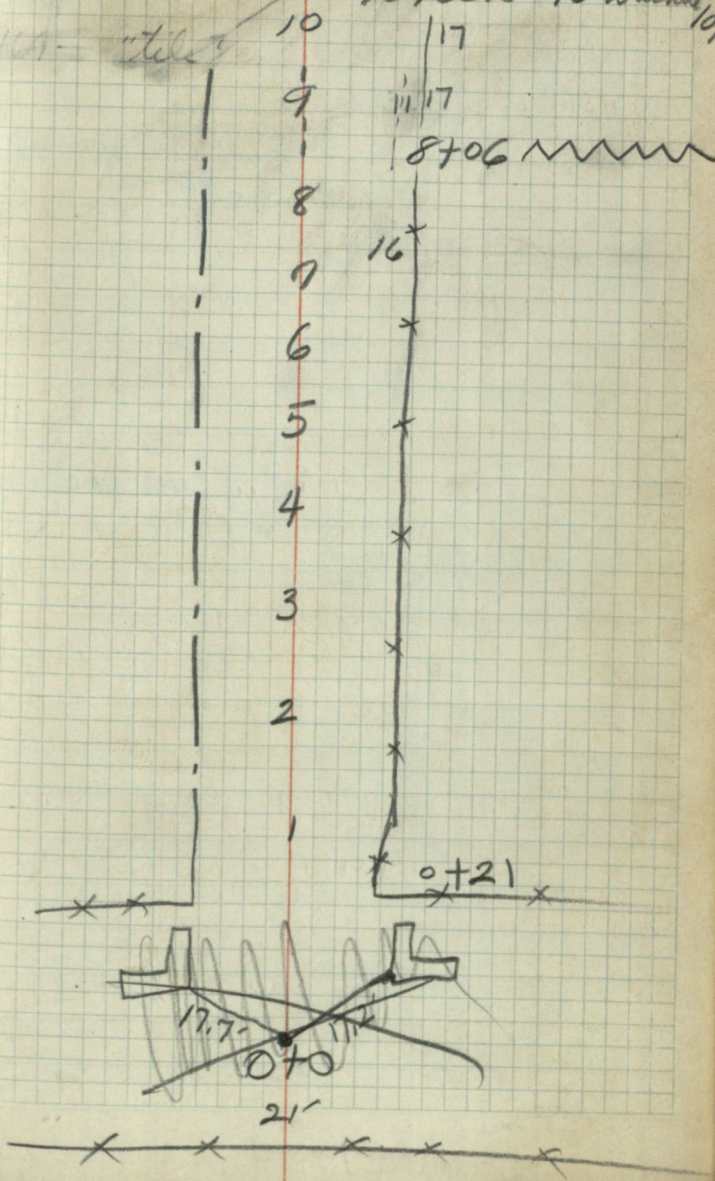


Aug. 25, 1942.  
Aug. 26, 1942.

S. Shartle.  
J. Christie.  
L. Wilson.  
A. Page.

10+85-18" walnut 14 1/2" R

10+100.5-16" walnut 10" R

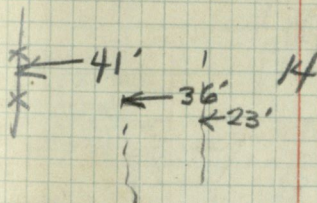


$$\begin{array}{r} 26 \\ 15 \\ \hline 41 \end{array}$$

14+64 Wash

14+24-18" Ash 5'R

14+11-12" ash 4'R



13+93-10" Walnut 5'R

13+91.5'-fence begins  
3'R.

⊕ 13+32.21 defl. 20.5'R.

13+08 fence cor.

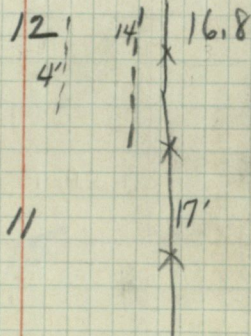
13

12+70 Post 13'R

12+76-14" Elm 10'R

12+60-12" Walnut 10'R

12+50 \* Corner Cor post. 16.8'R



18+80  
drive  
18+71

13198

8 18 31

25' 17

16'

16  
18  
28

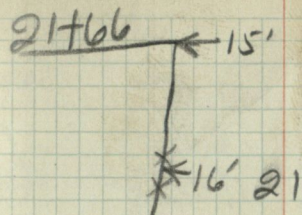
15+07

33' 22'

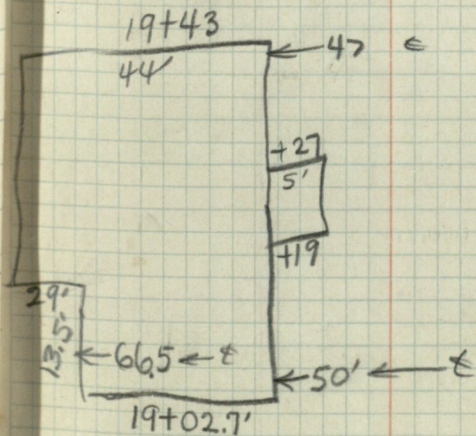
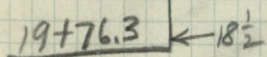
31'

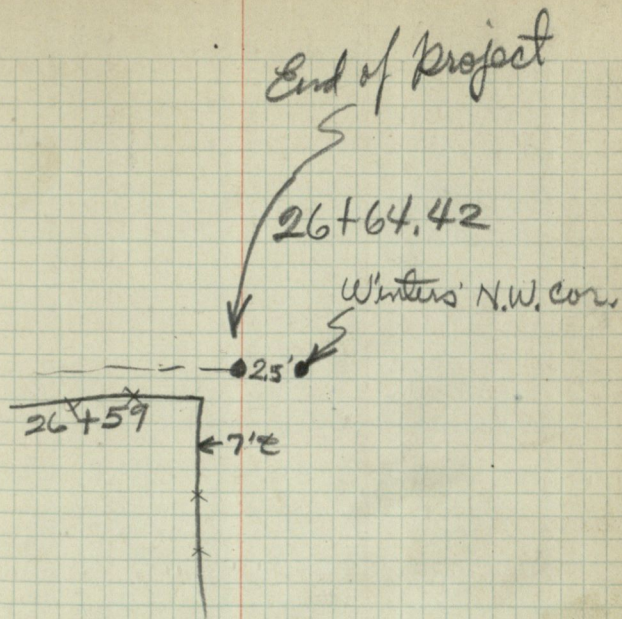
15

14+78.24" oak, 3'R

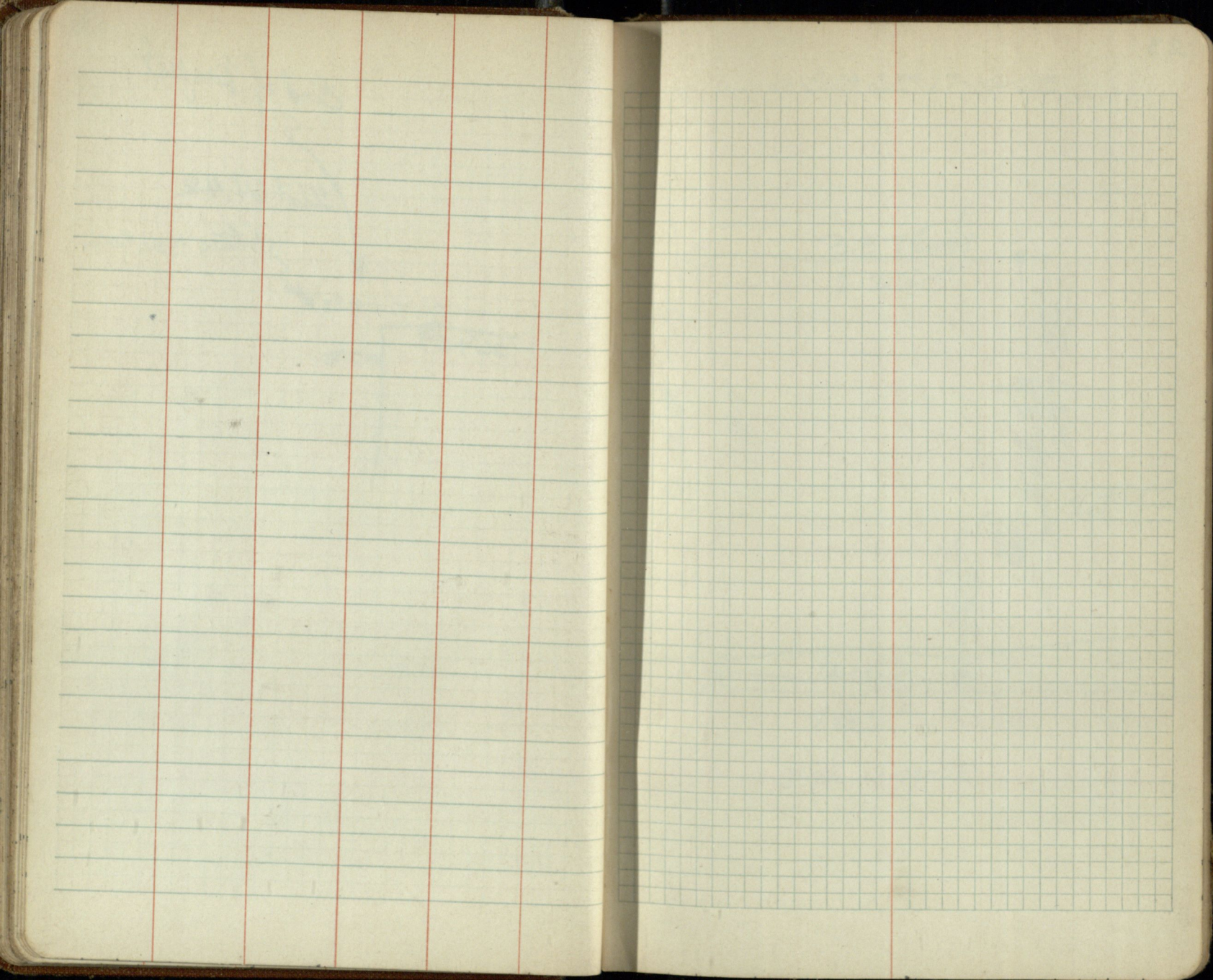


12" maple 20+78-19 1/2

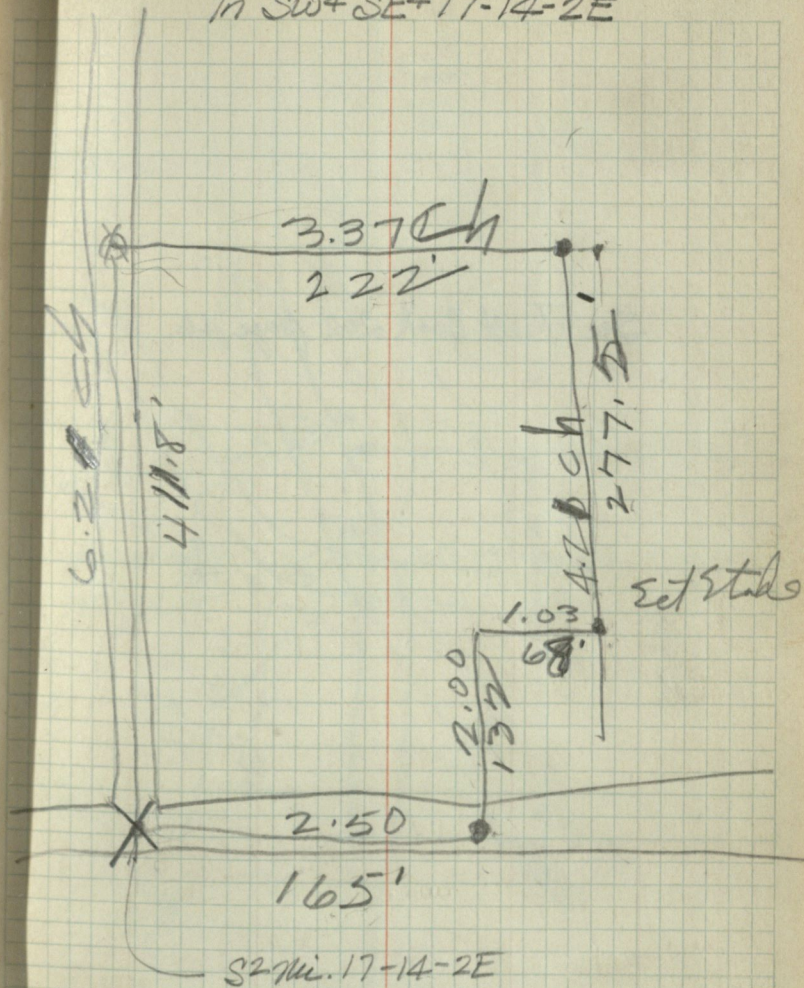




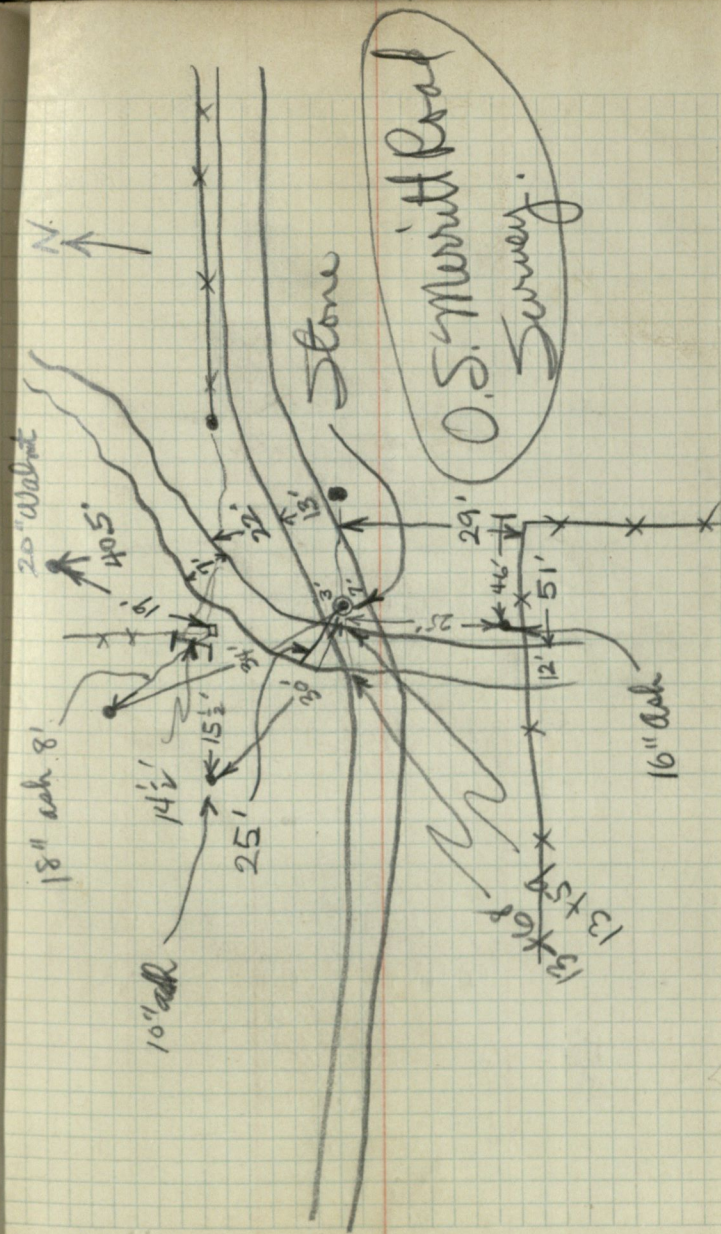


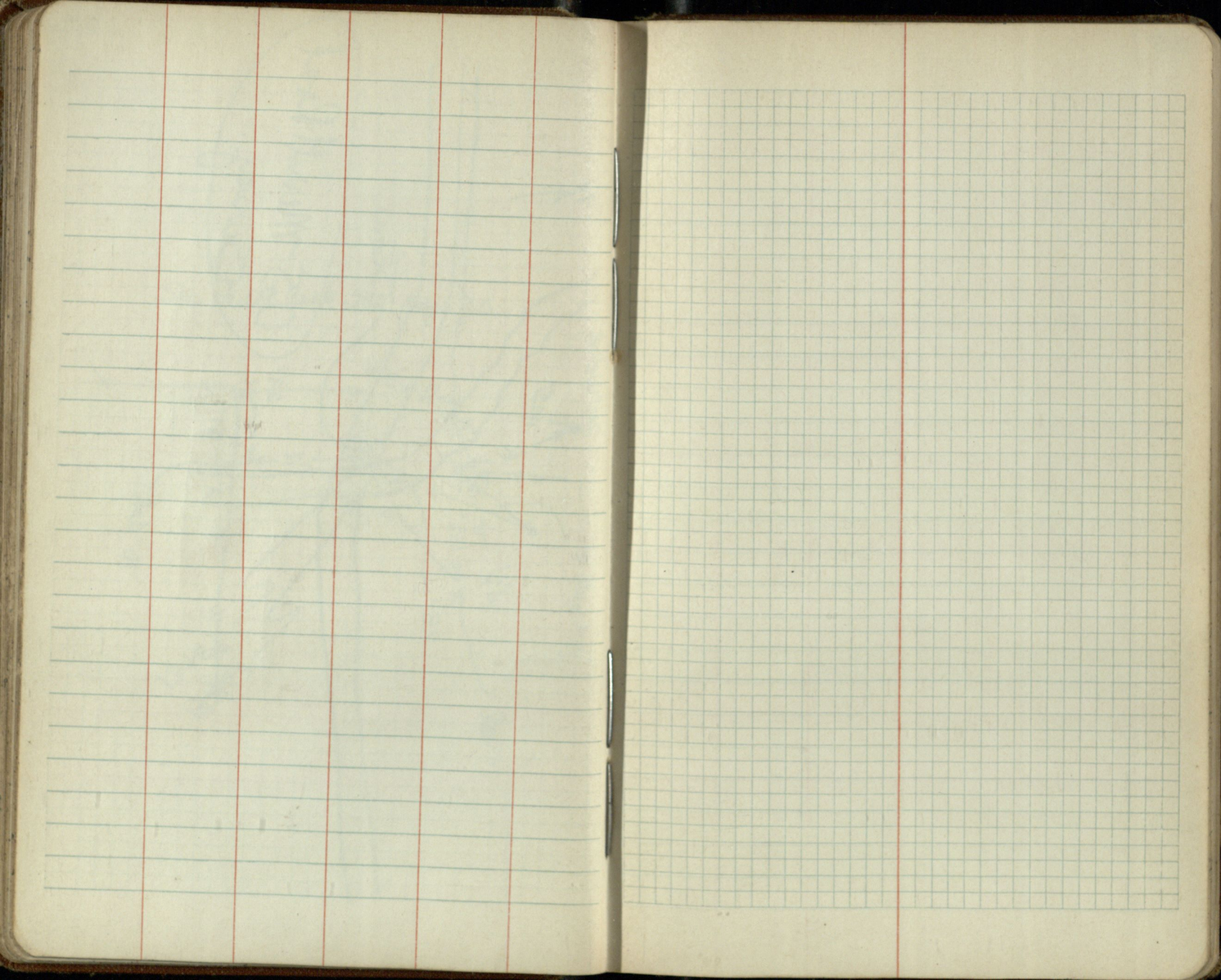


In SW4 SE4 17-14-2E

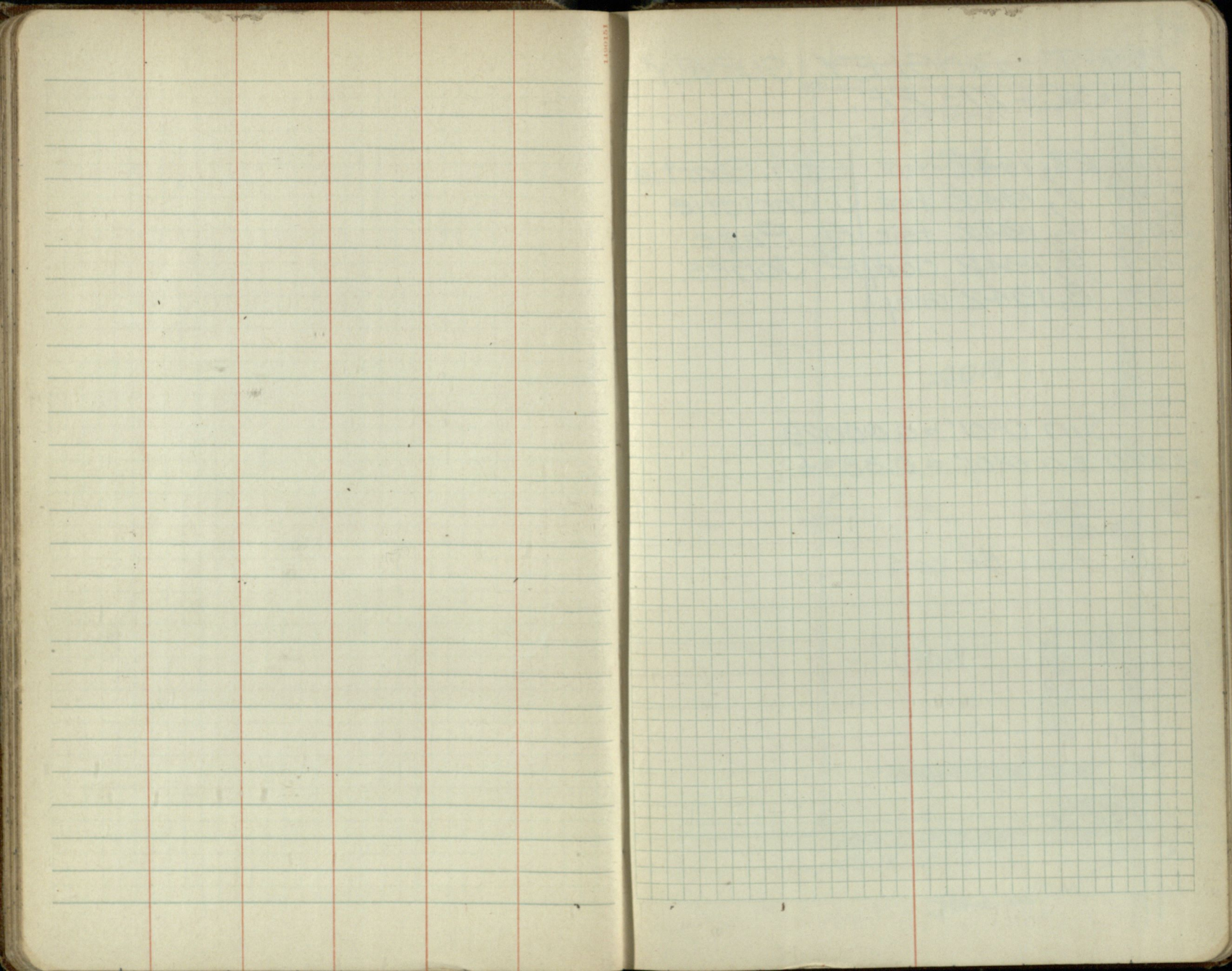


See Field Book 202 page 46.









28

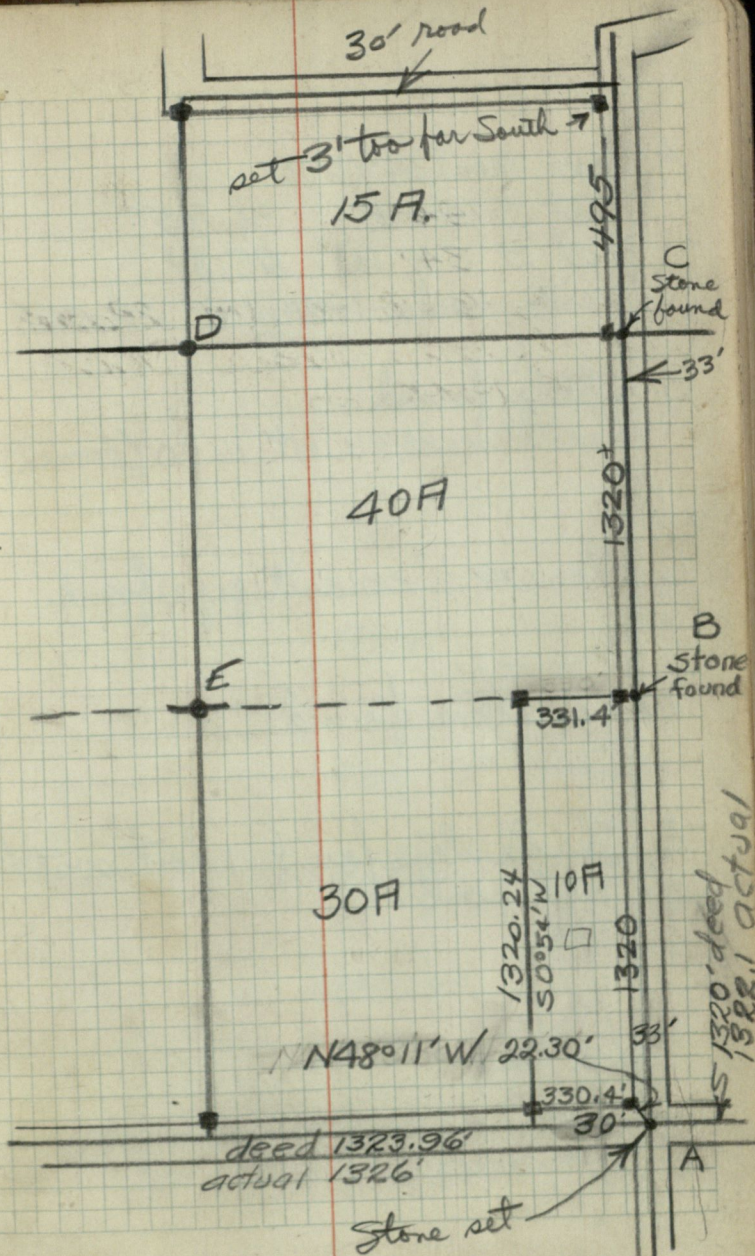
BERT DINGLEY SURVEY  
32-17-RE.

Aug. 28, 1942 hot. Stan. Shartle  
Sept. 2, 1942 hot. J. Christie.  
Sept. 4, 1942 fair. A. Page.  
Sept. 7, 1942 cloudy R. Jones.  
Sept. 8, 1942 rainy.

$$\sin 0^{\circ}01' = 0.00029.$$

$$1320 \sin 0^{\circ}01' = 0.383 \pm.$$

See Field Bk 205



A- Concr. mont 24"X6"X6"

Post S 40°E 36.75'

Post S 34°W 25.8'

Concrete marker N48°11'W 22.30'

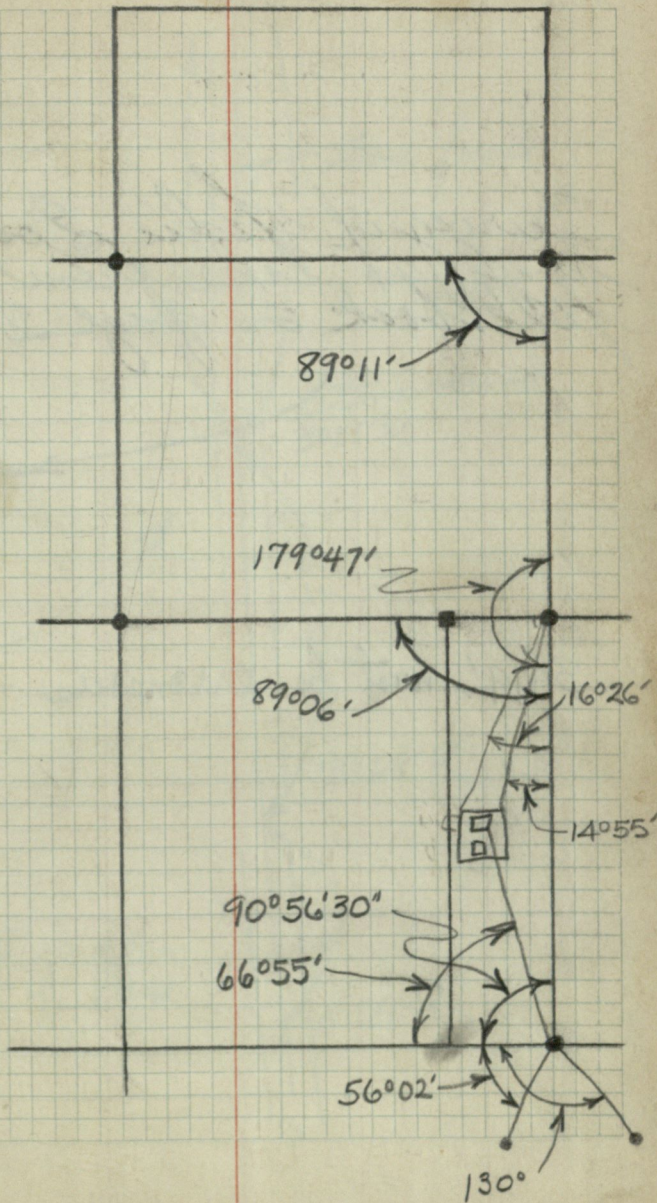
B- Stone found

Concrete mont. West 16.50' (buried)

C. Stone & ½" conduit pipe found.

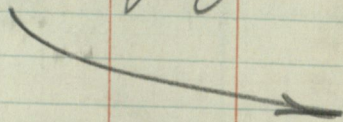
D. Red stone found.

E. Small stone found 1 foot south of end post.



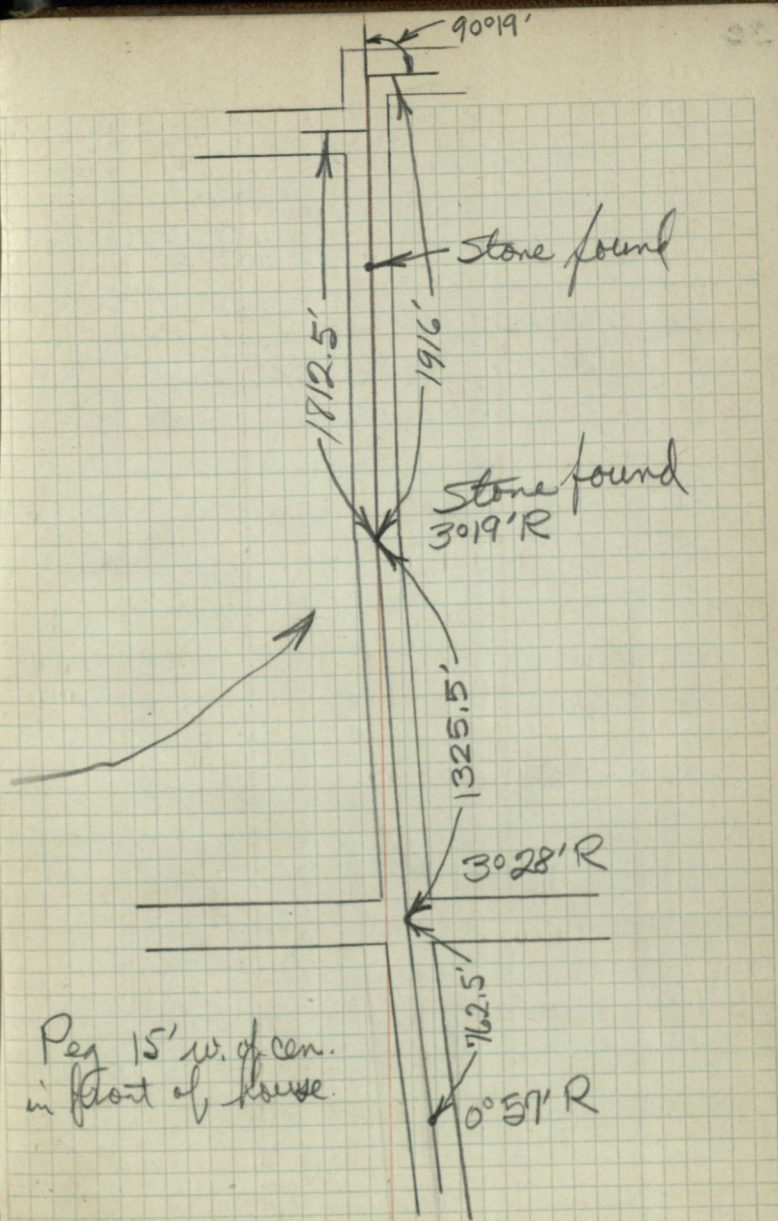


Survey of Sidie Good  
road as taken from  
field book 20 page 2.

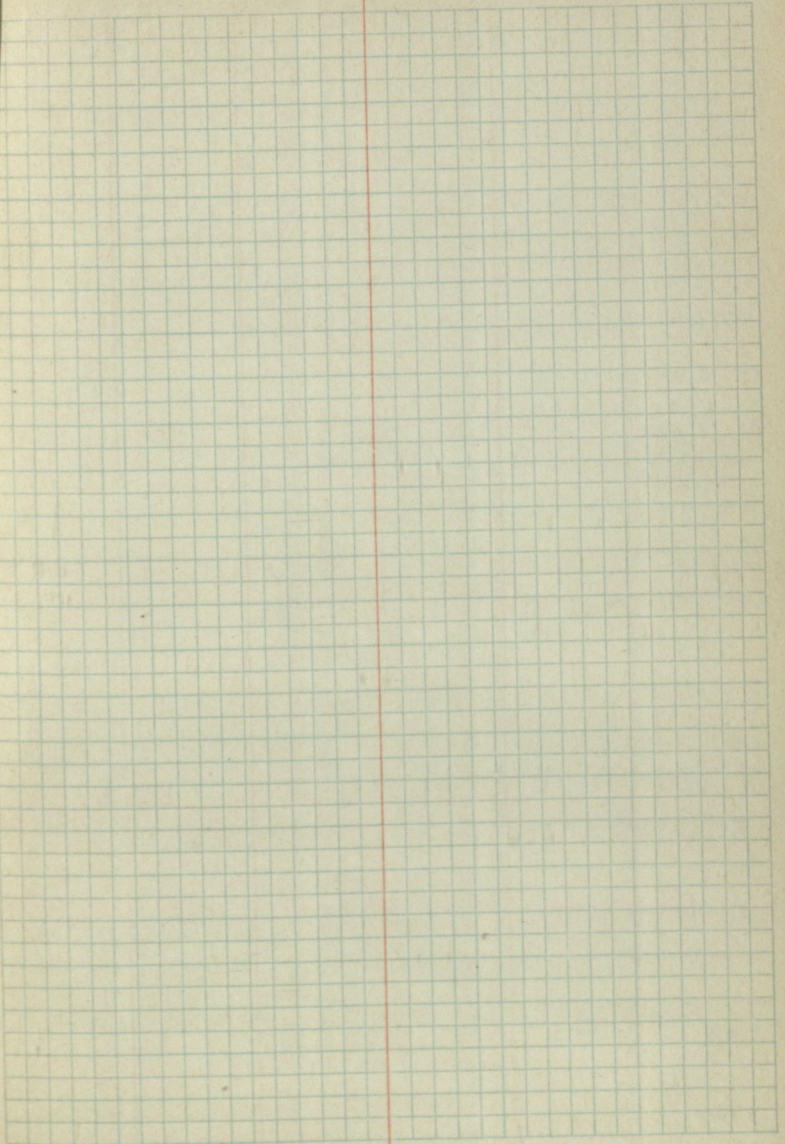
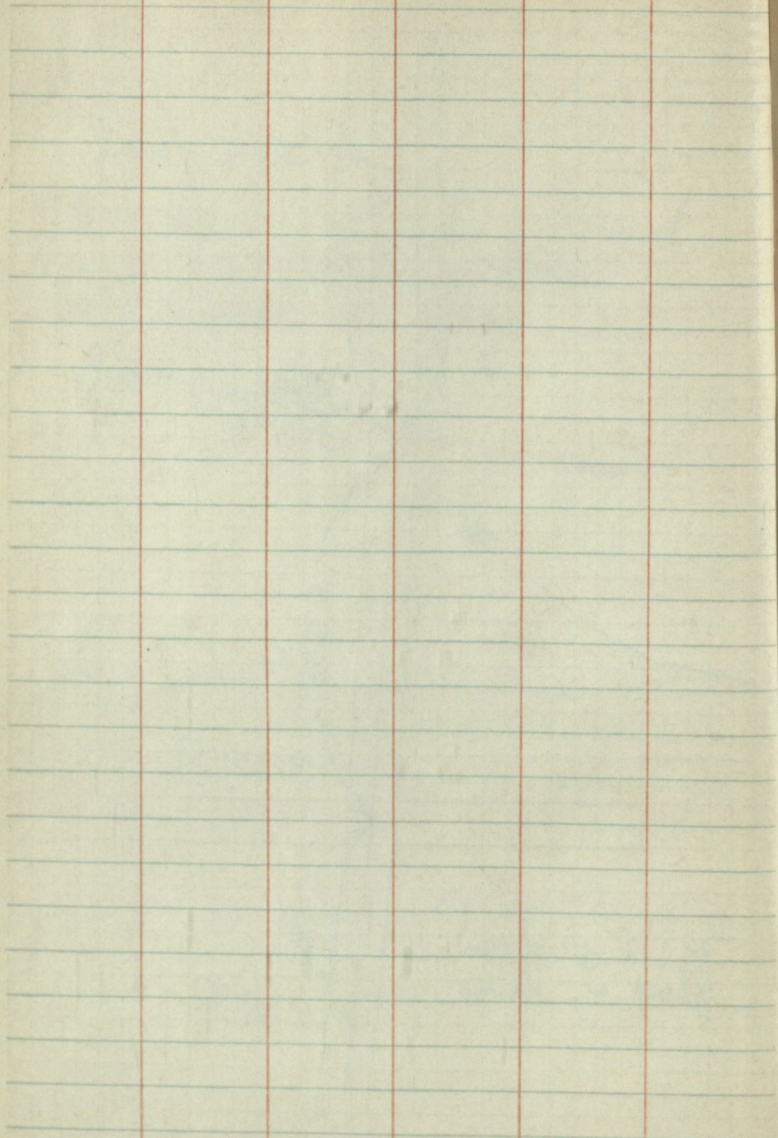


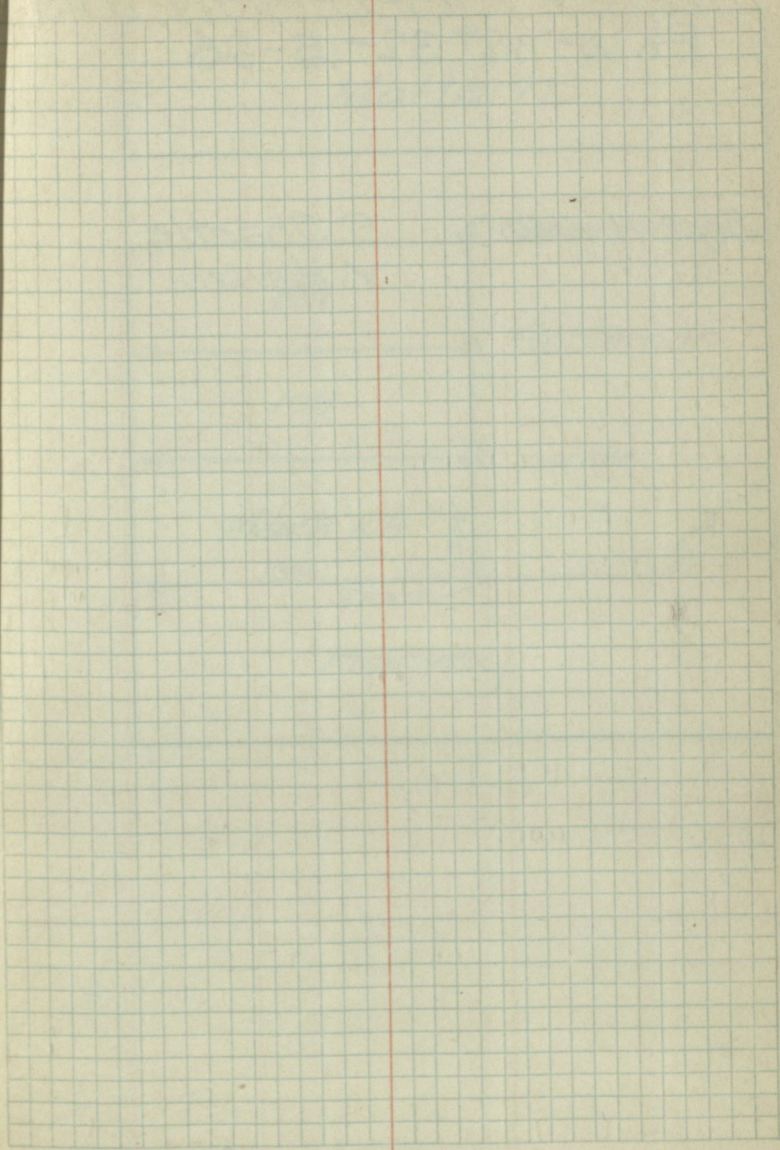
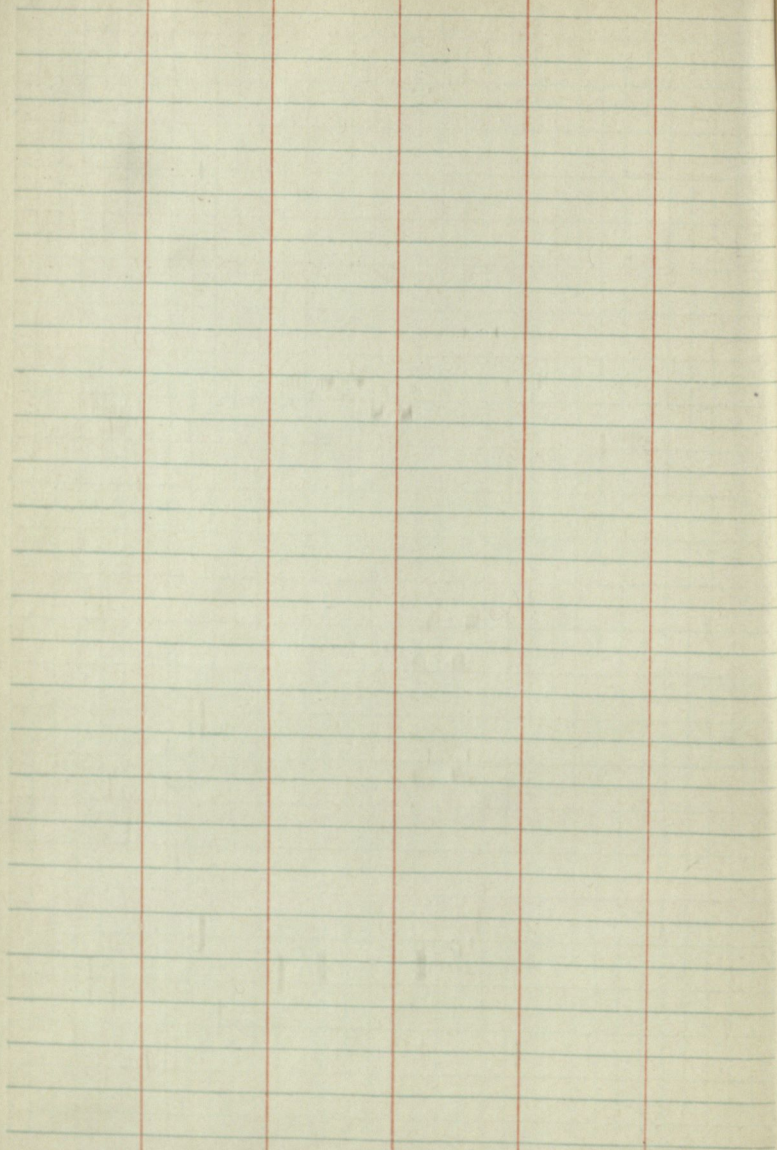
3019' must be erroneous

Peg 15' w. of cen.  
in front of house.



31



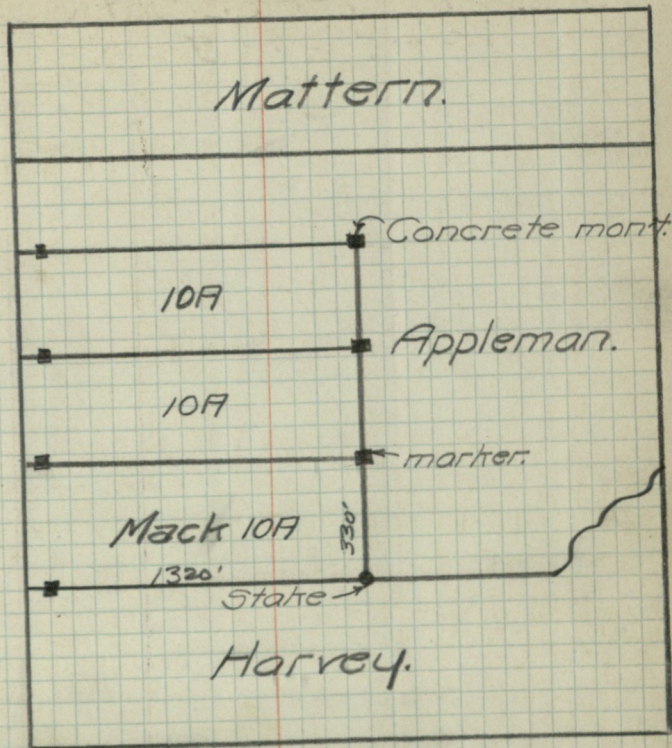


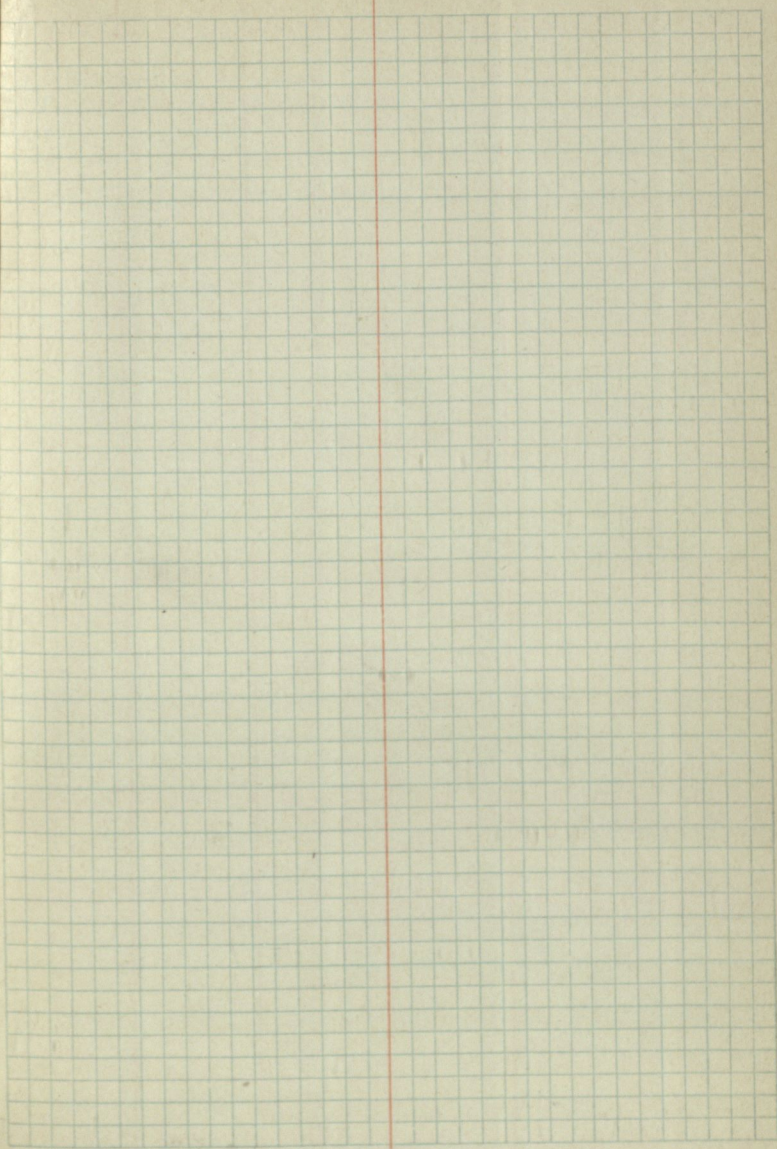
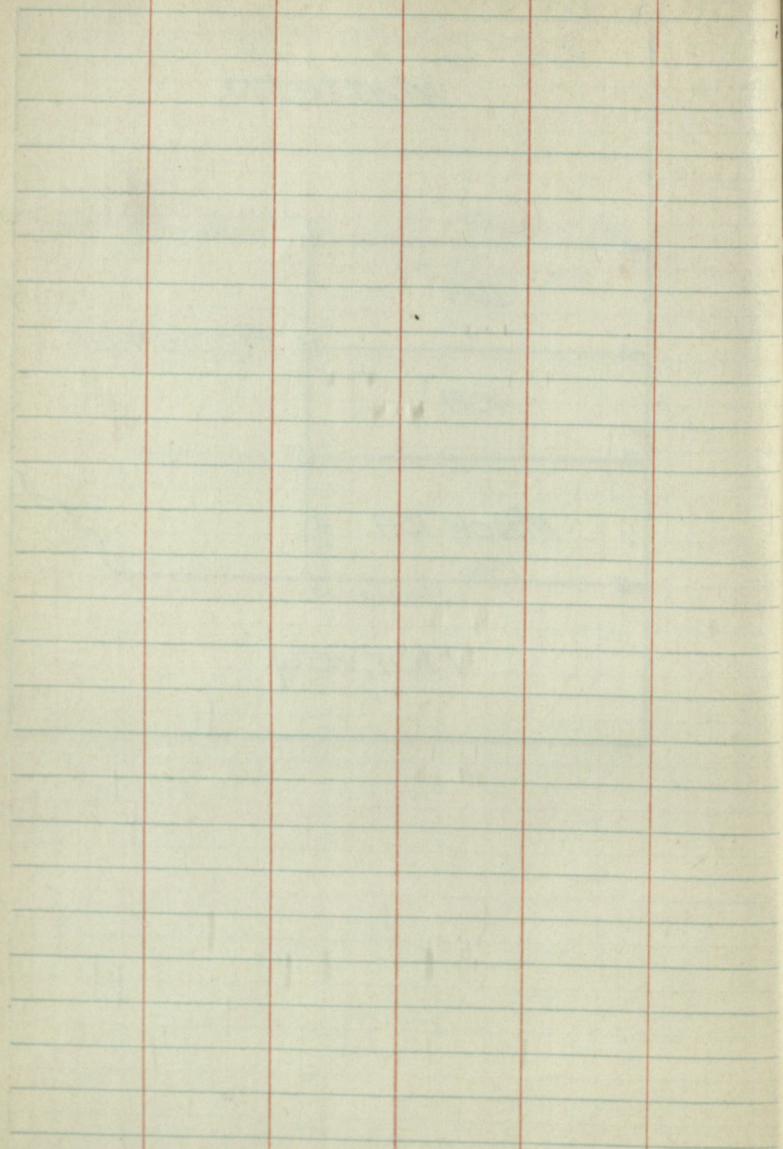
33

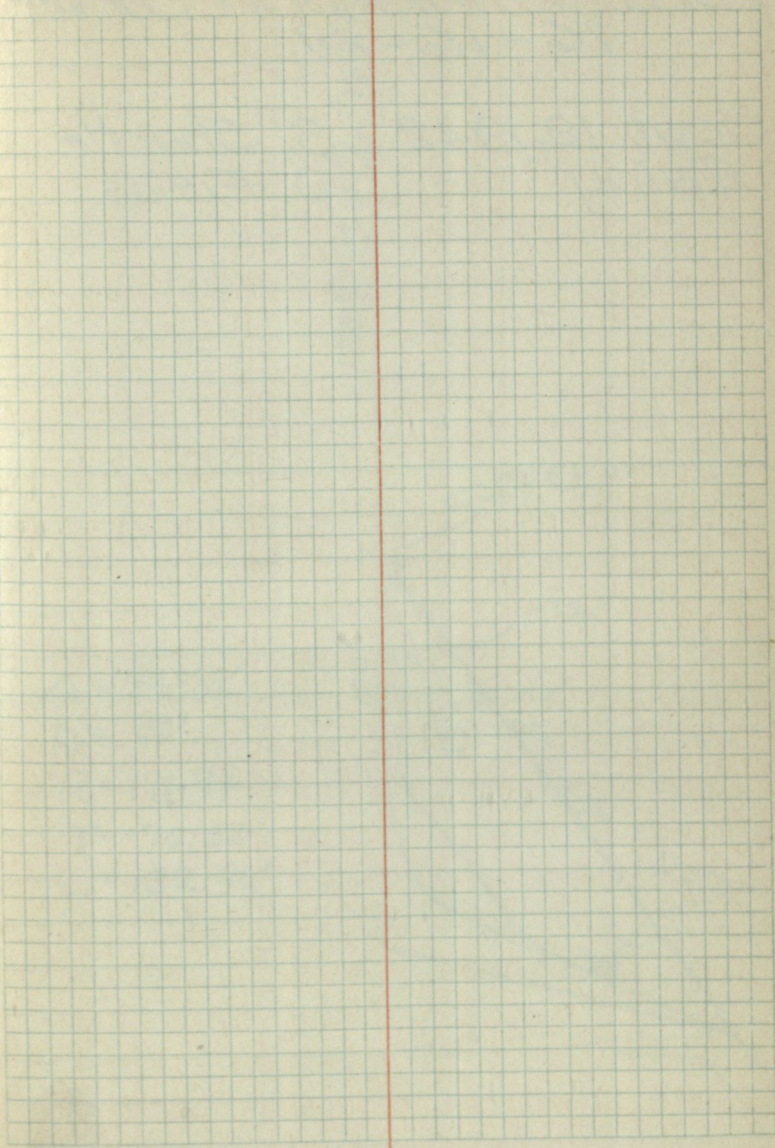
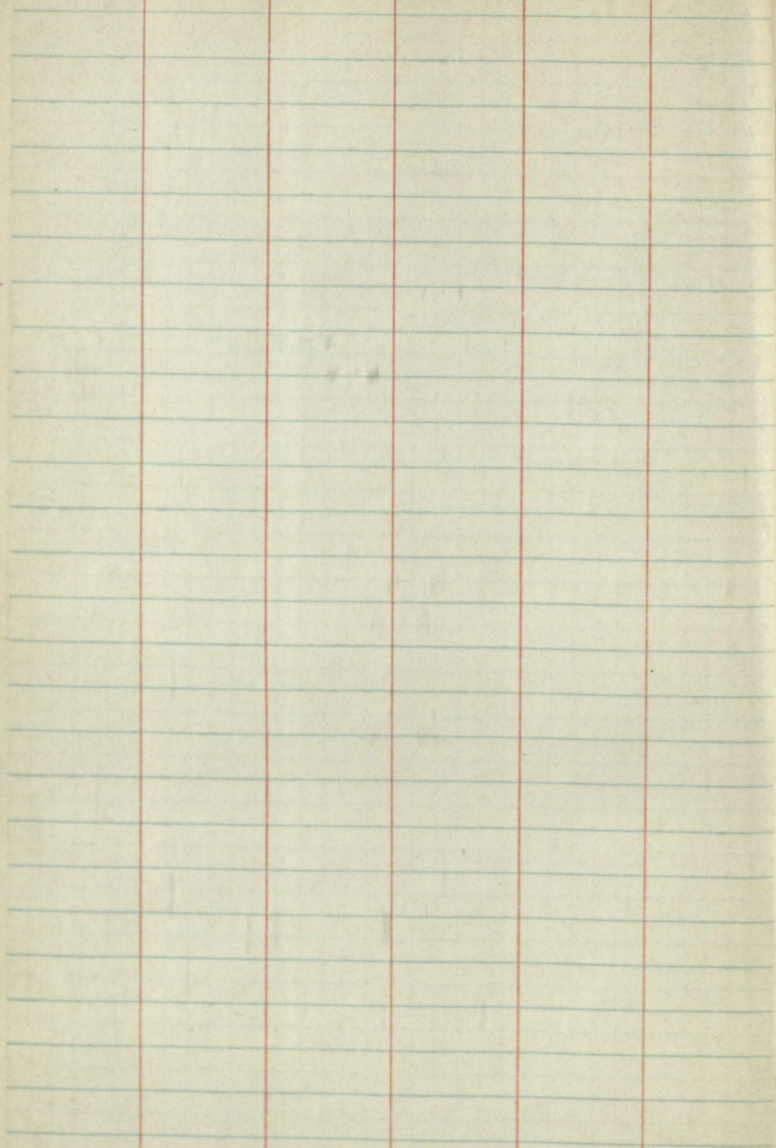
MACK & APPLEMAN LOTS  
Pt. W<sup>2</sup>NE<sup>4</sup> 32-15-28

Sept. 11, 1942

S. Shartle  
V. Harvey.



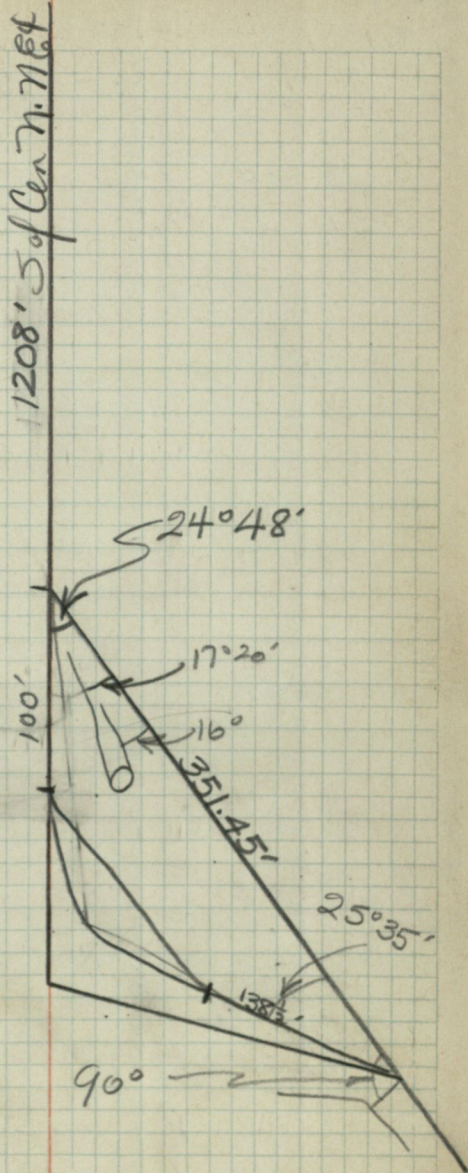


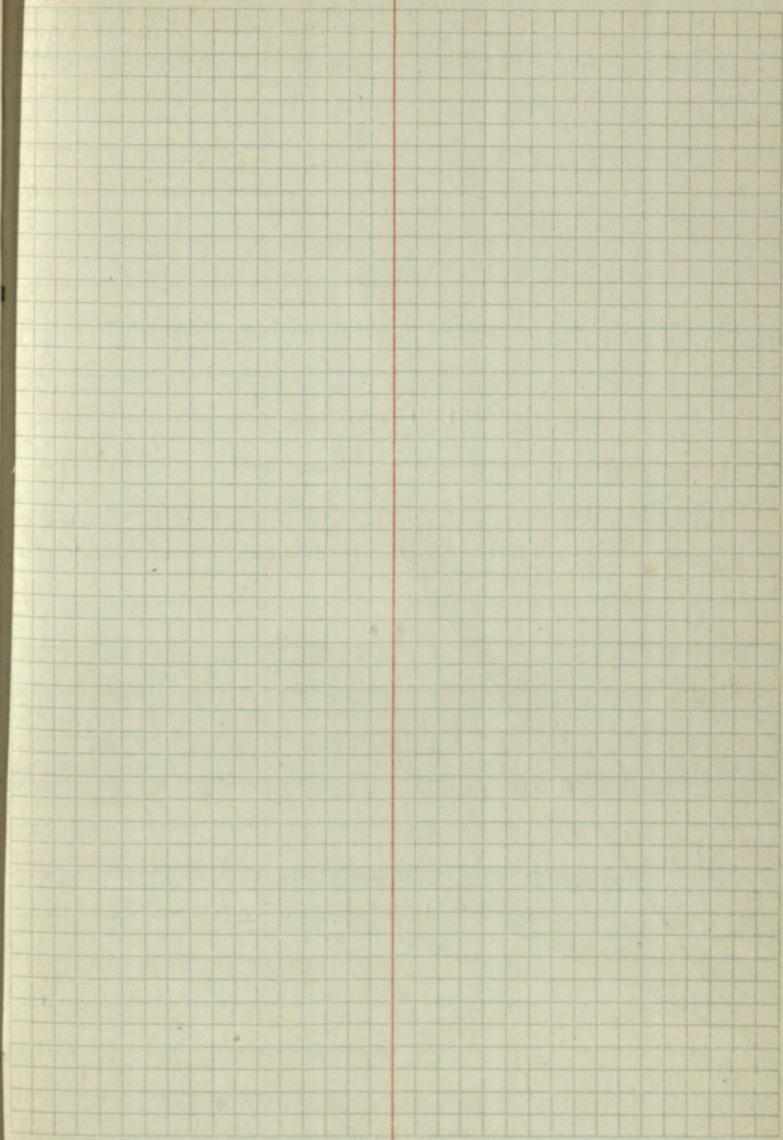
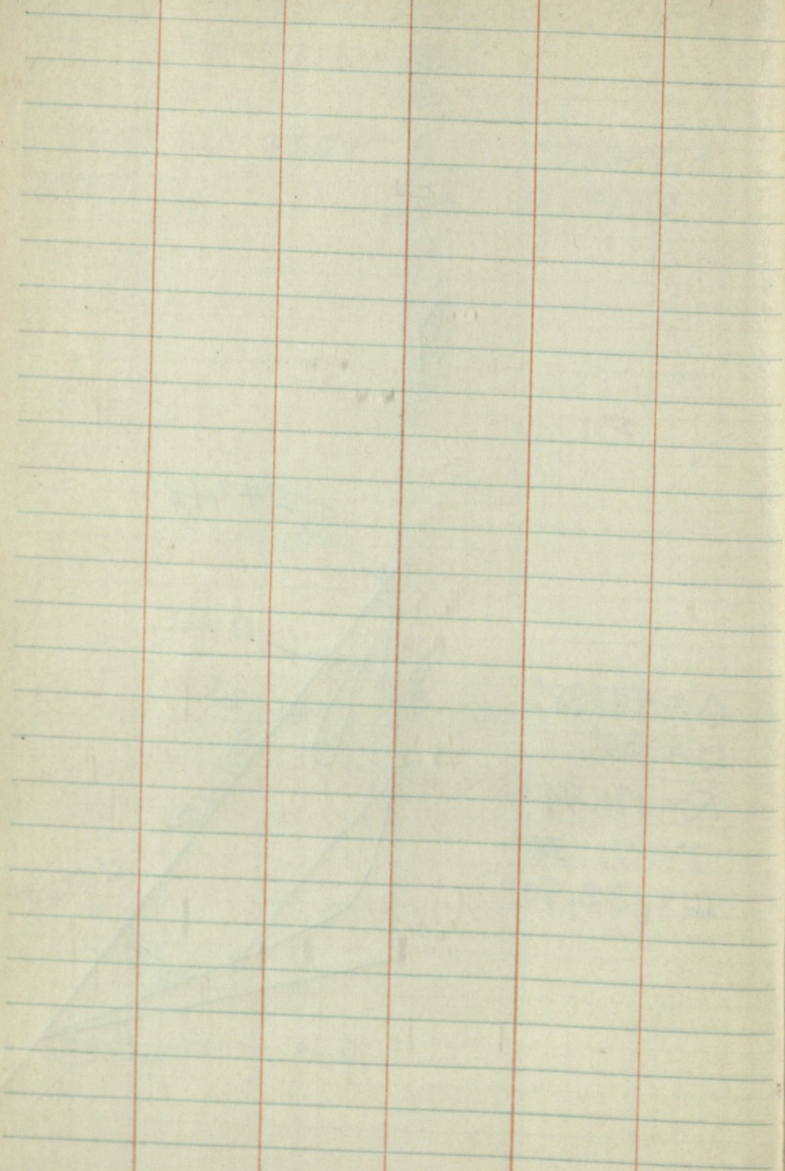


POPE & HARRISON SURVEY  
16-16-1W.

Sept. 19, 1942 S. Shartle.  
Rainy D. Fields.

$$\begin{aligned}\Delta &= 44^{\circ}38' \\ D &= 30^{\circ} \\ R &= 171.94' \\ T &= 70.58' \\ L &= 133.90'\end{aligned}$$









THOS. L. BURNS ADD. TO GREEN  
LAWN CEMETERY, B'BURG.  
2-16-1E.

Sept. 22, 1942

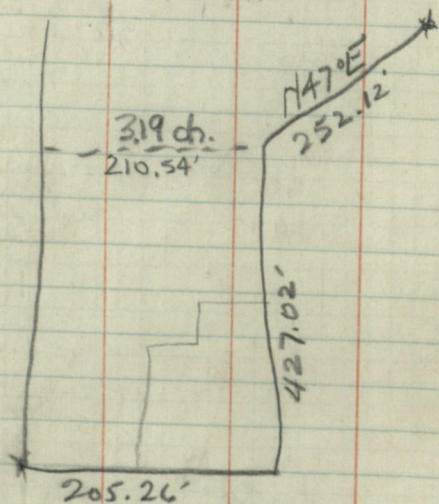
" 23, 1942

" 24, 1942

Fair - Windy - Cold

S. Shartle

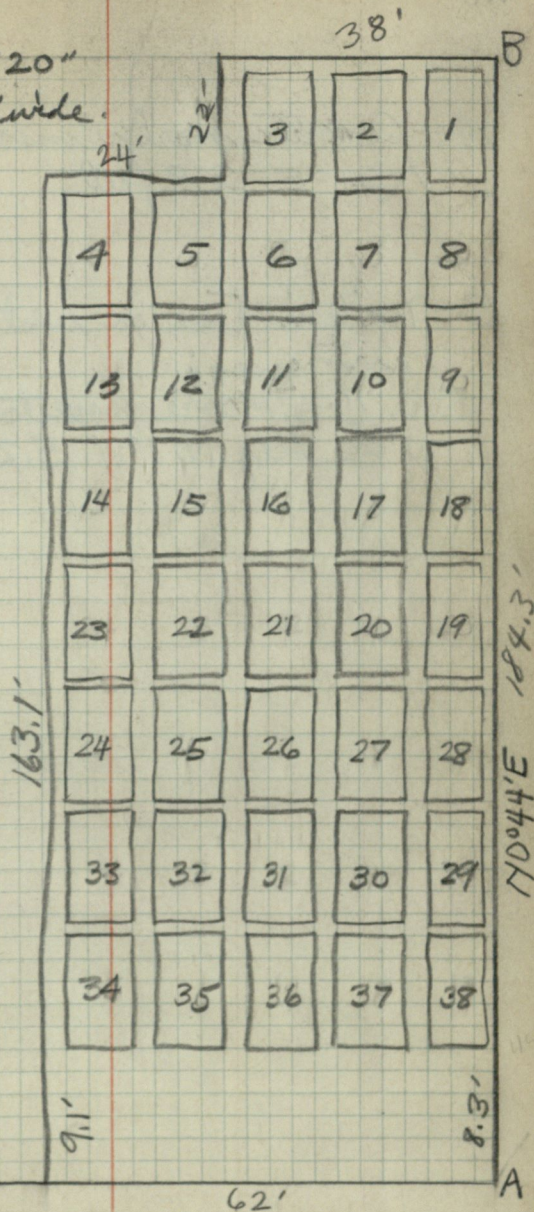
D. Fields.



all lots 10' x 20"  
all alleys 2' wide.

Cont. 0.258 acres

\* 143.26'

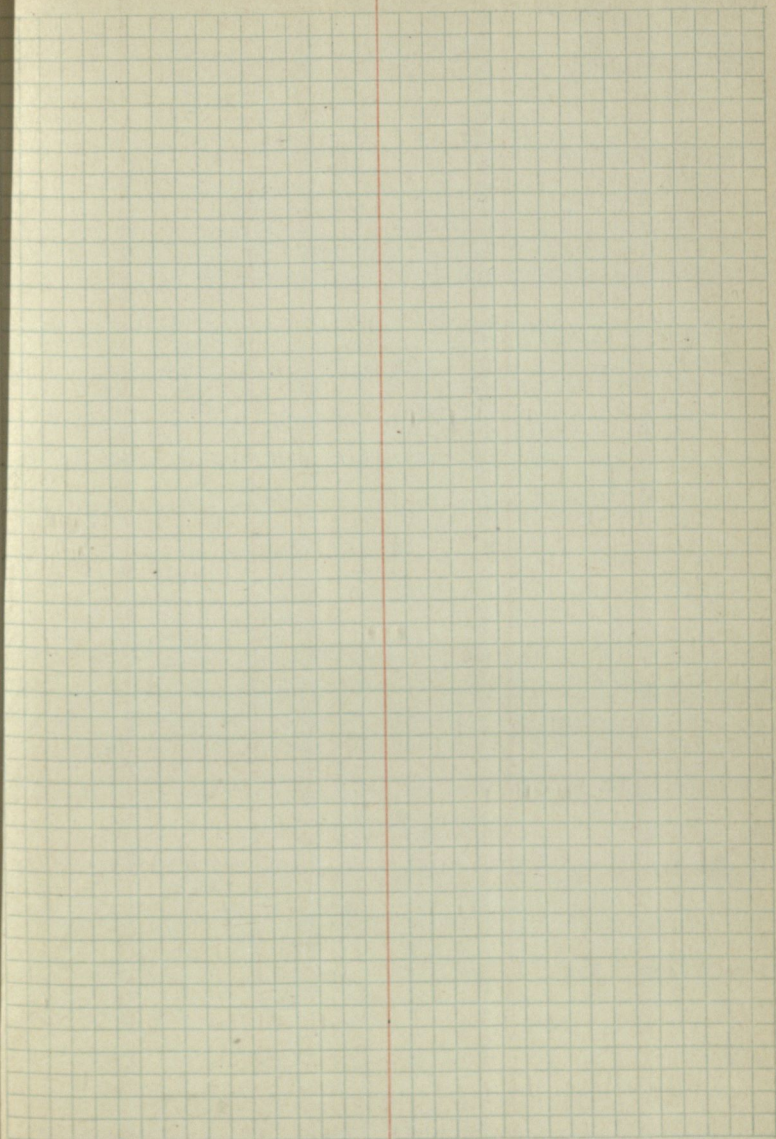
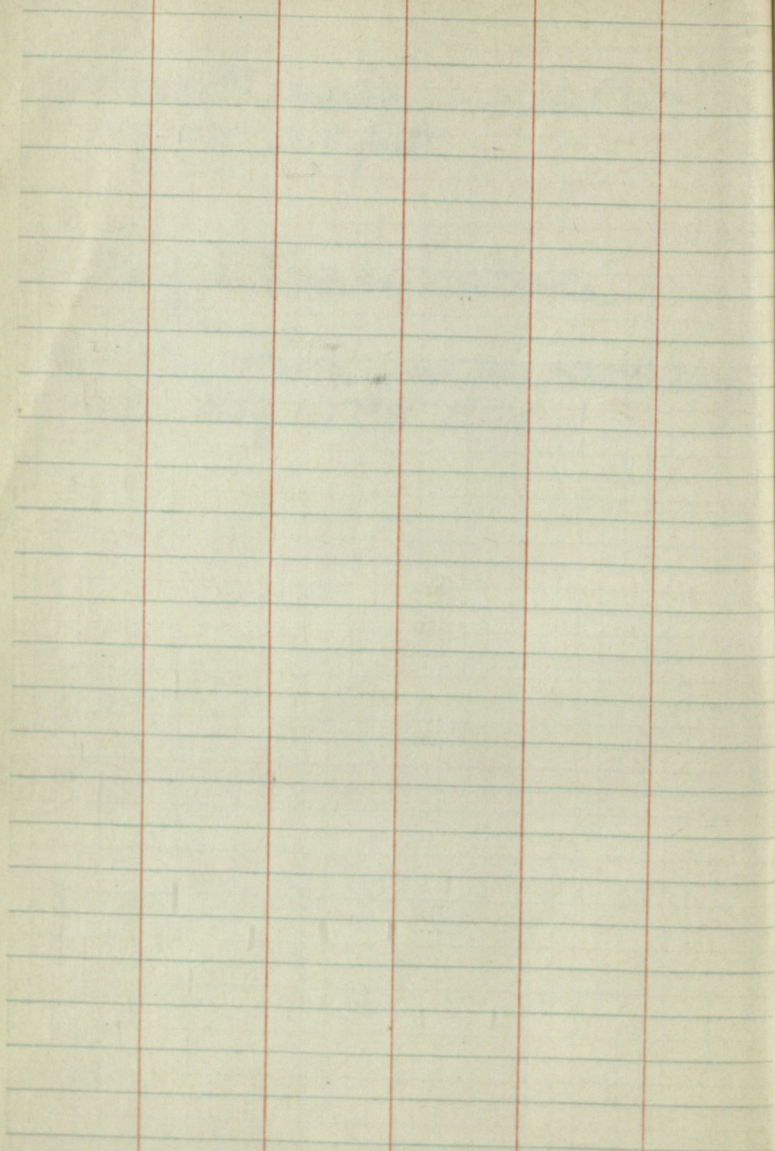


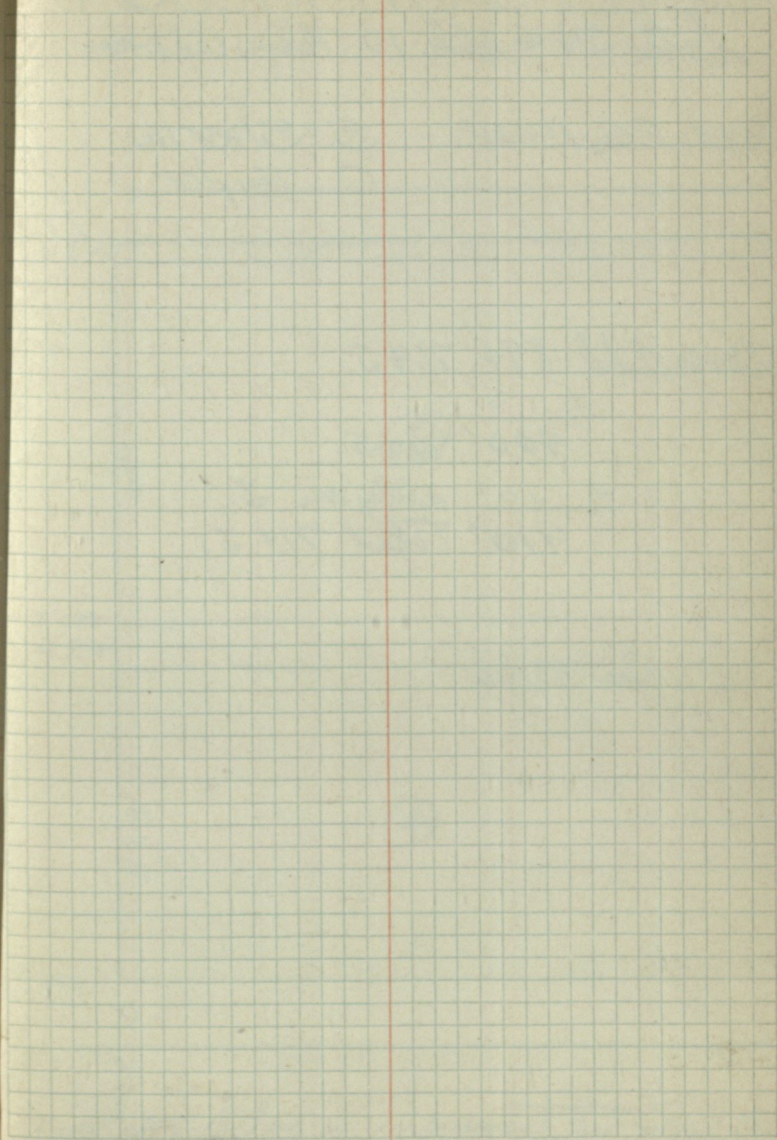
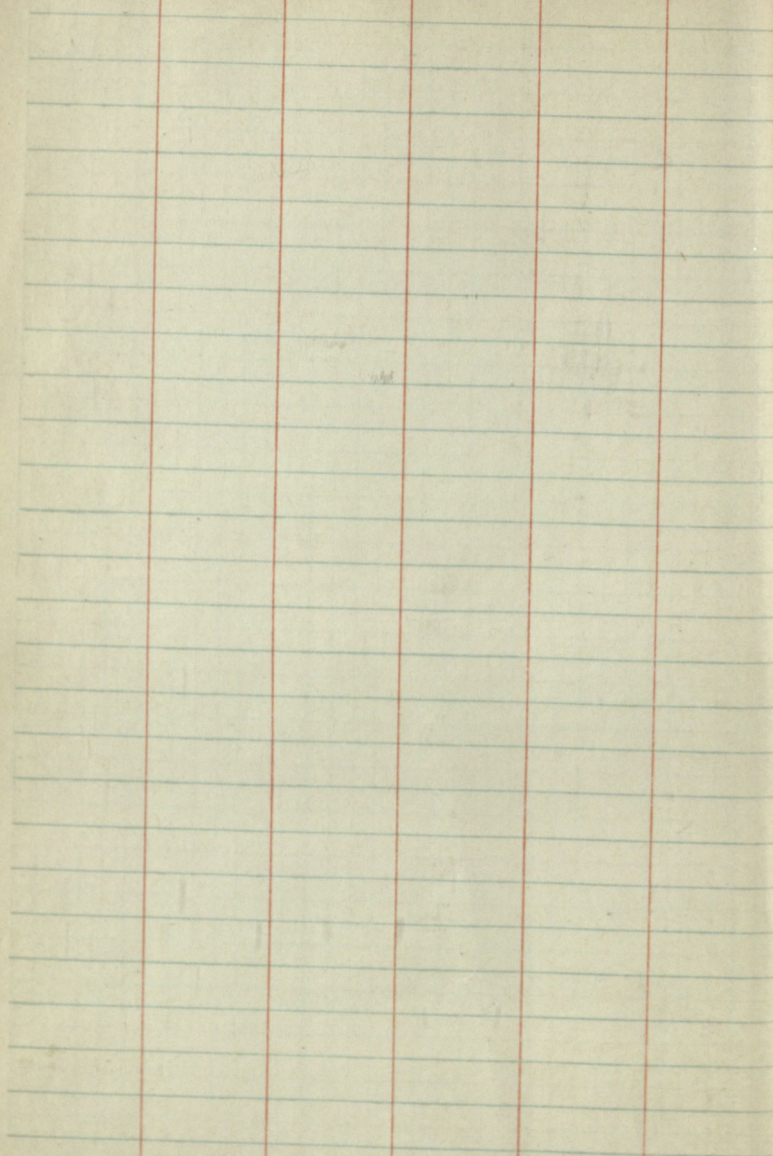
A - Concrete marker inscribed "G"  
N21°E 2.8 feet.

B - Nail in tree on west side.  
witnesses:

S.W. Cor. Moore gravestone N80°E 26.6'

S.W. Cor. bldg. N17°W 5.2'





43

KIRTLEY-SMITH-RIGDOM.

lots 344 blk 10 Navis Adh. Plan.

Sept. 26, 1942

S. Shurtle.

C. Taylor.

Navis Adh. 894' 71.45.

+ 6'

900' 71.45.

+ 10' alley on S.

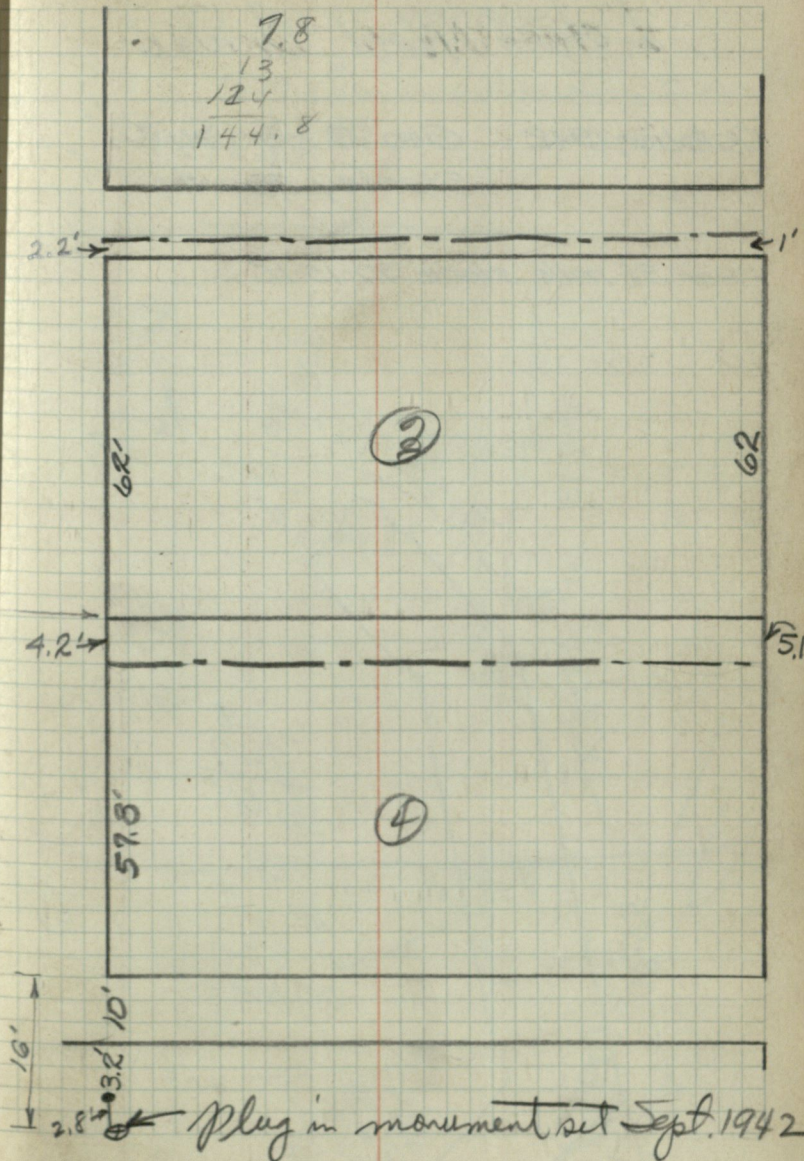
910' Total 71.45.

Sec 193/26

832' S.

894' S.

910' S.

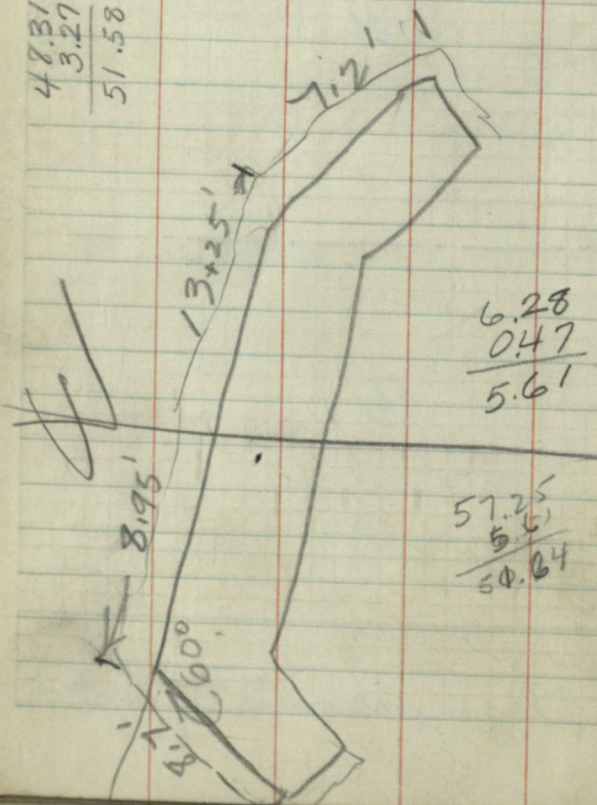


## Leland West Bridge

October, 1942 Geo. R. Harvey  
Stanley Shurtle

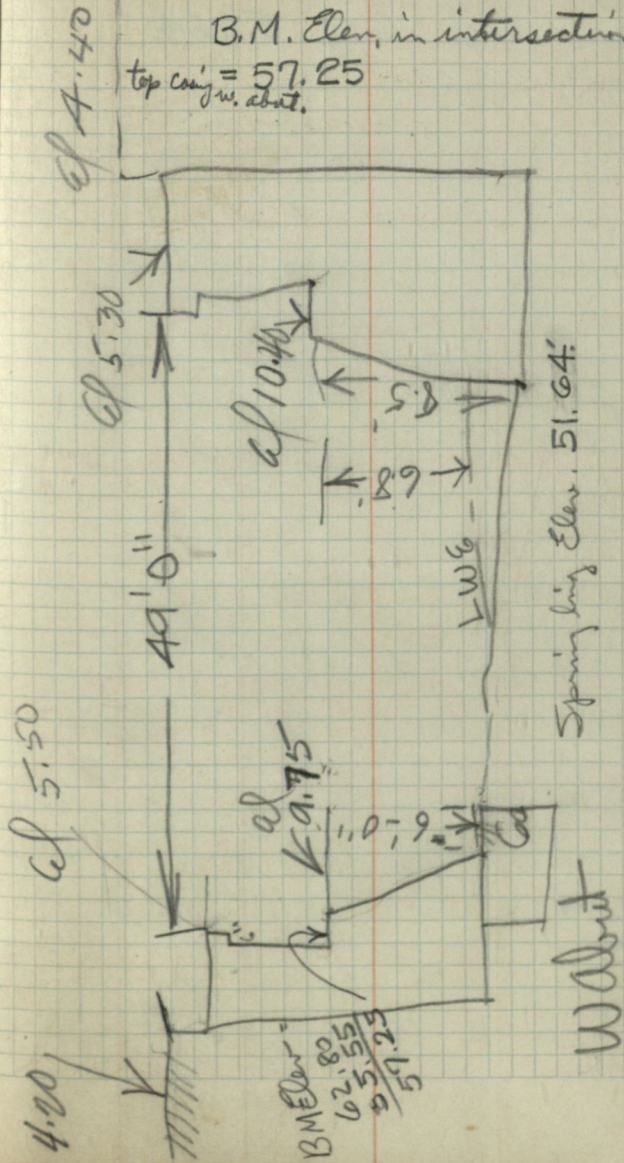
Near 5 1/2 mile stone 30-15-1E.

48.31
3.27
51.58



## LELAND WEST BRIDGE

B.M. Elev. in intersection of road &  
top coring = 57.25  
w. about.



Springing line elev. 51.64'



VIRGIL C. FOSTER SURVEY  
lots 1, 2, 3, 6, 7, & 8 Becks. Add.  
Danville. Blk. 1.

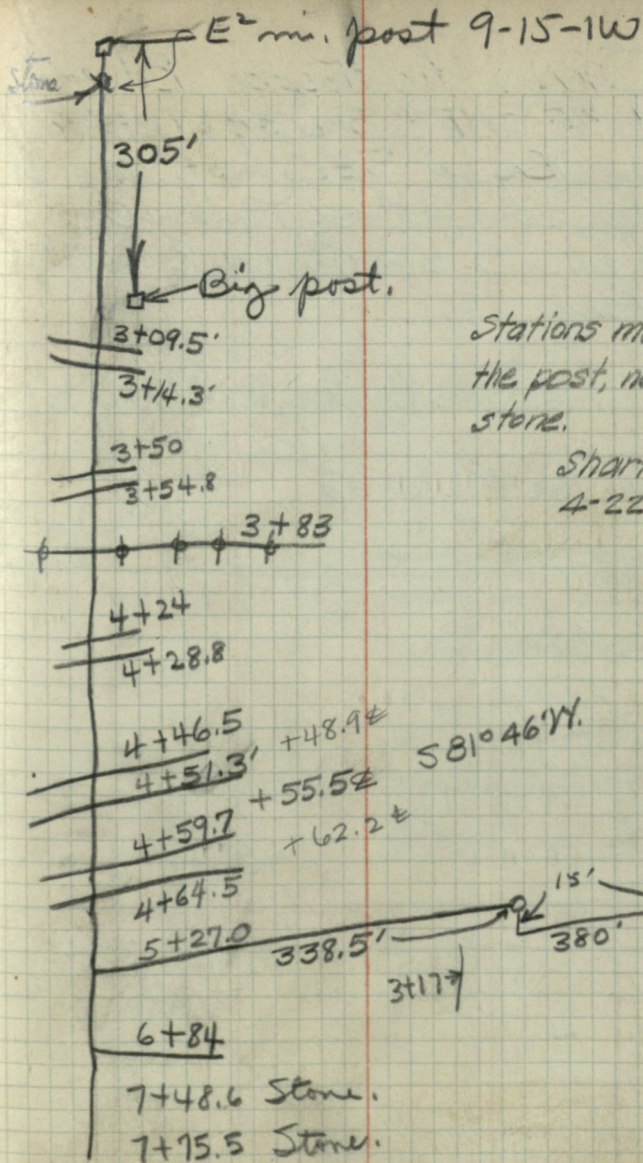
Oct. 6, 1942. 31

STANLEY SHARTLE

A corner rock located in the center  
of street 42 rods west of the  $E\frac{1}{2}$  mi.  
stone: Beck stump S3E 53 links.  
SW cor bldg.  $76\frac{1}{2}$ E 51 links.

455.5  
17.0  
472.5  
290  
182.5

684  
527.5  
156.5

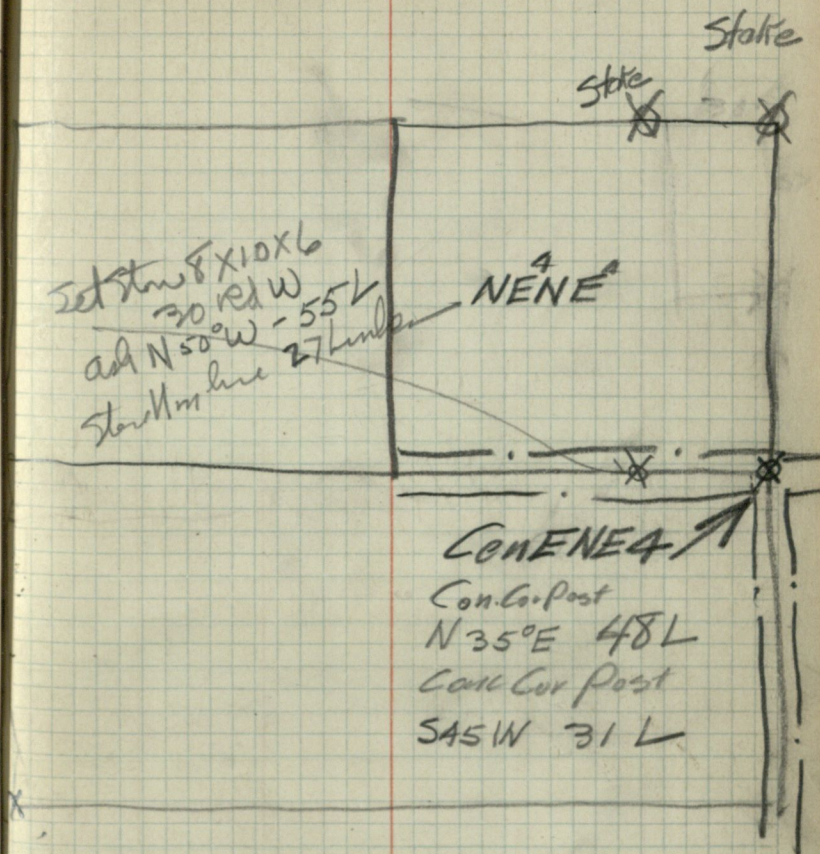


47

Survey for Roscoe Edwards  
 A pt NE<sup>4</sup> NE<sup>4</sup> Sec 34 - T<sup>15</sup>N  
 R<sup>2</sup>W - Beg at SE Cor of said Quarter  
 Sec - N-56 Rods - W  
 30 Rods - S 56 Rods - E 30 Rods  
 To Beg

By Geo R. Harvey

See Bk 197 p. 35



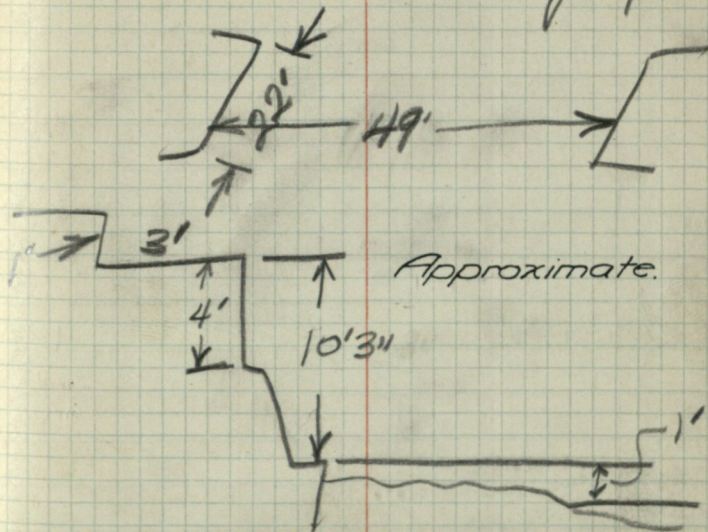
48

49

1942

## Leland West Bridge

S. Shurtle - Deputy Surveyor



SEE PAGE 44.

50

51

5

## SURVEY OF ALVA FOX PLACE.

Southwest Quarter Sec. 3, T.15N, R.1W.  
 Nov. 6, 1942 S. SHARTLE  
 Fair-Cool. J. CHRISTIE

- 0+00.0 Stone at A  
 4+45.5 Fence  
 7+52 "  
 7+54.5 Stone 96' N. of N.E. cor. *Chambers old.*  
 7+96 S. Edge S. Walk. Columbia St.  
 8+09.1 Stake found.  
 8+50.5 Point 96' S. of stone  
 9+12.5 S. Fence Park Drive E.  
 13+26.3 metal cor post for NE cor. O.T.

See Book 116 page 35.

See Book 21 page 54.

See Book 203 page 35.

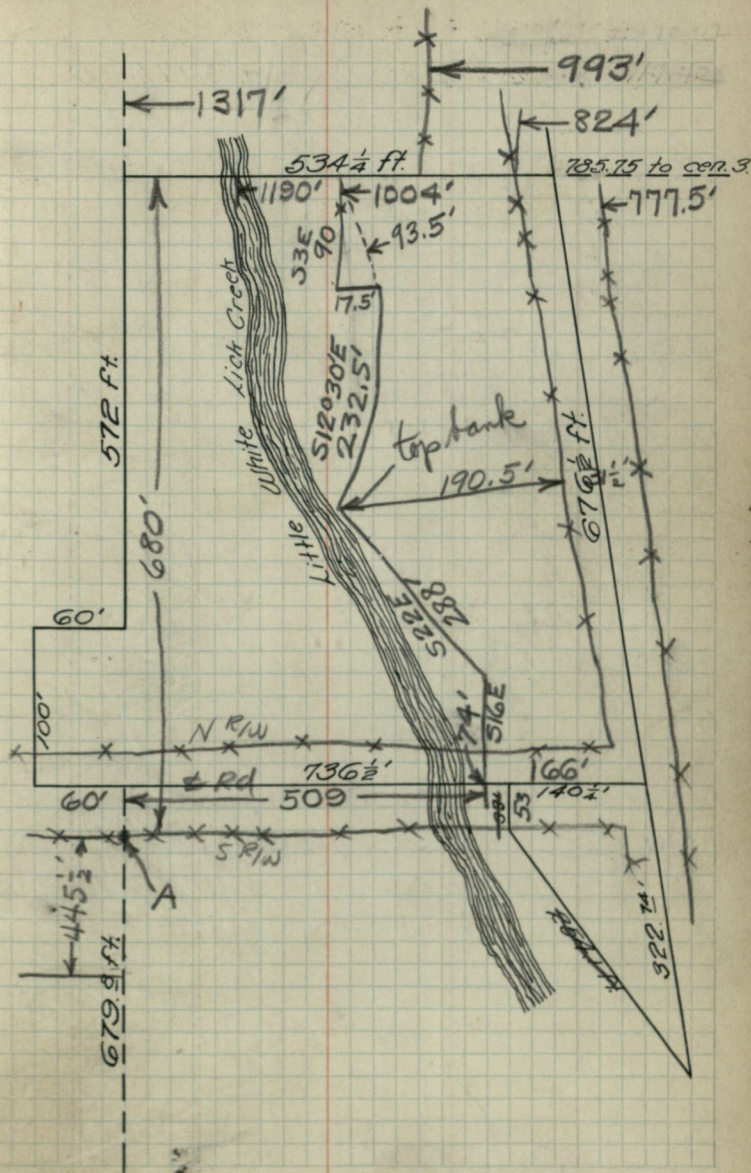
See Book 211 page 45

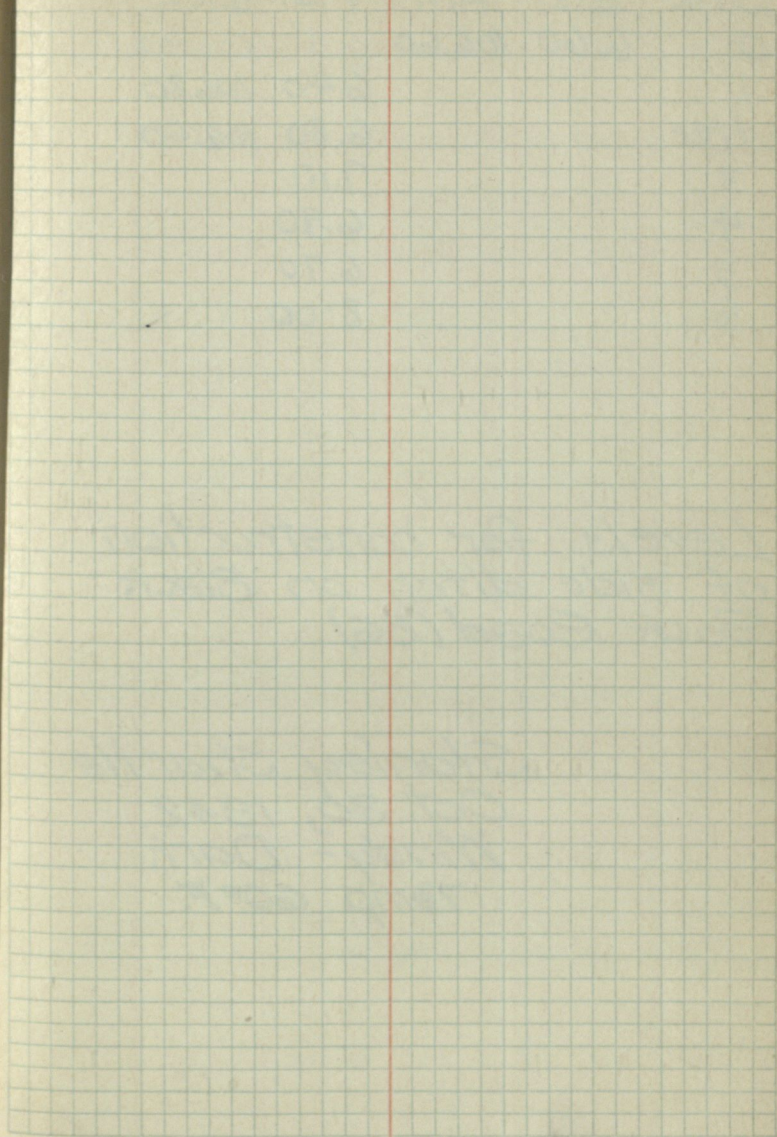
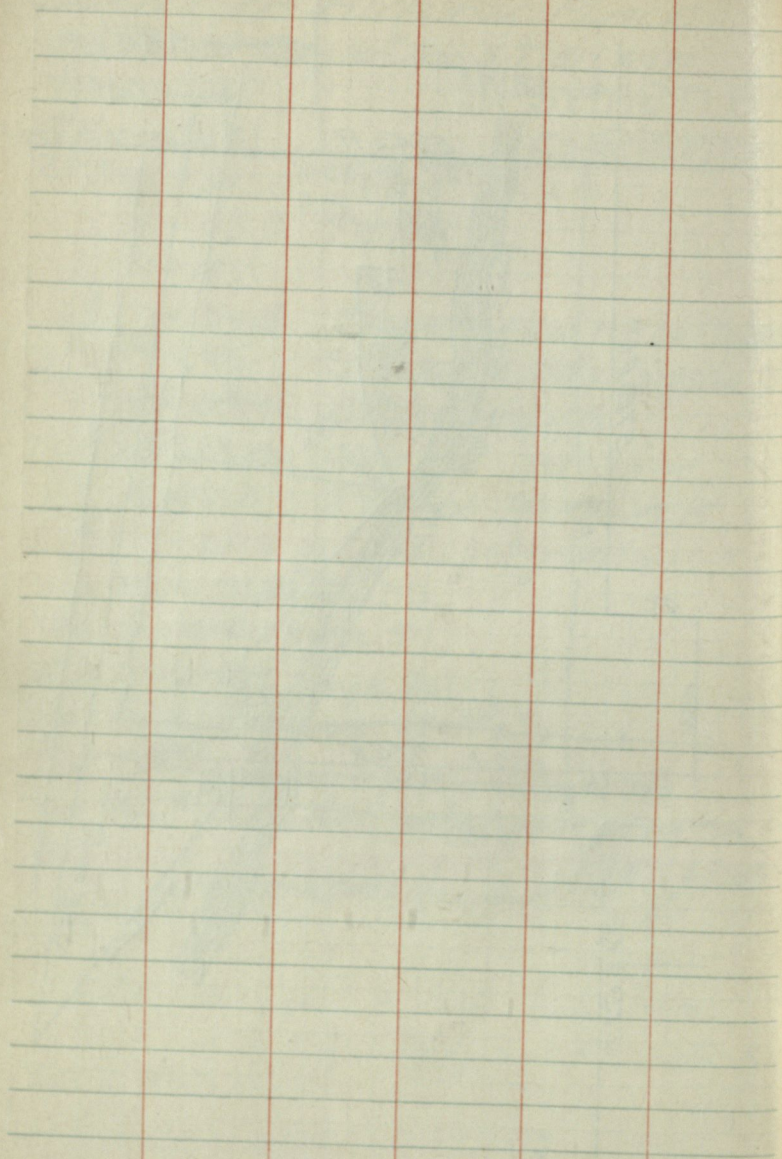
Old witnesses on  $S\frac{1}{2}$  mi. stone sec. 3:

SE cor. brickwork of water works N32W 781

SW " See Book 200 for new wits. " N54°W 1.285

Trotter's survey for O. B. Hecker gives 811.80'  
 for dist from E. end of old RR to Cent RR N to  
 cen W.  $N\frac{1}{2}$  Sec 1/4.





53

Sta.	B.S.	H.I.	F.S.	Elev.
0	6.60	106.60	6.40	106.80
1			6.40	106.80
2 tree			6.80	106.40
3			7.10	
4			6.90	
5			6.70	
6			8.00	

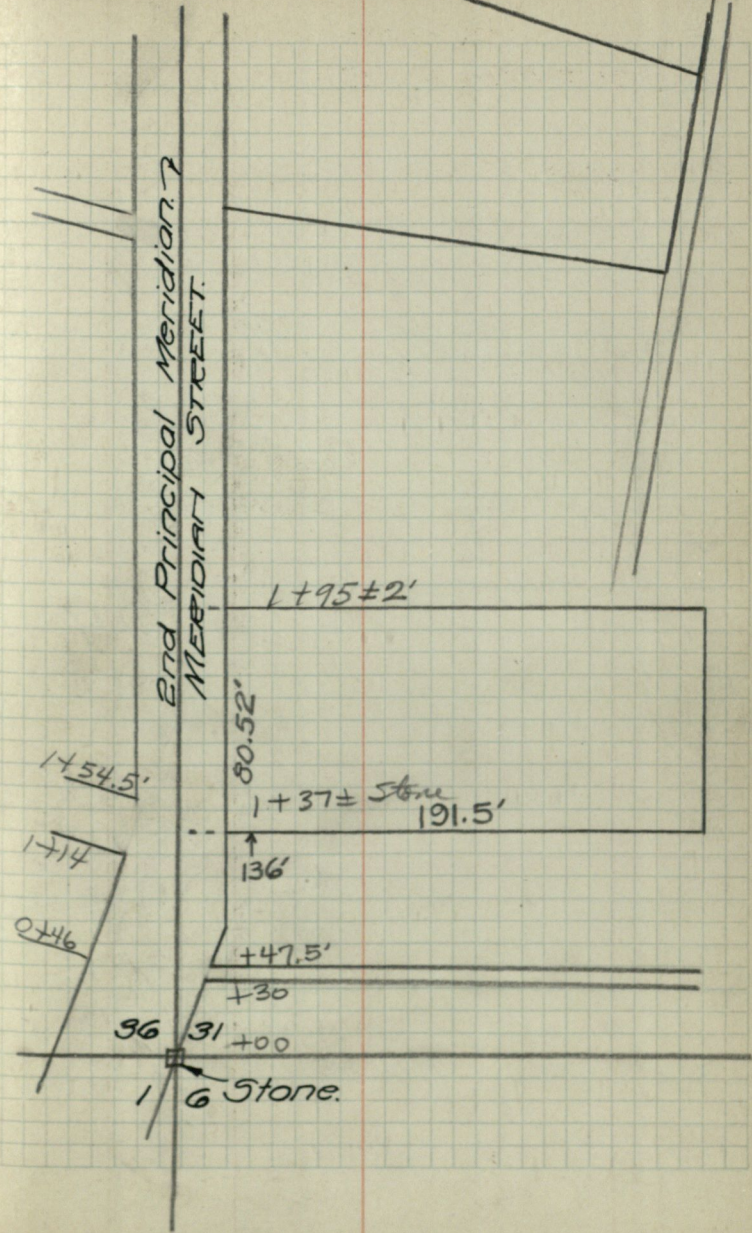
Levels for construction  
of side ditch on Black  
Rock Road (B6)

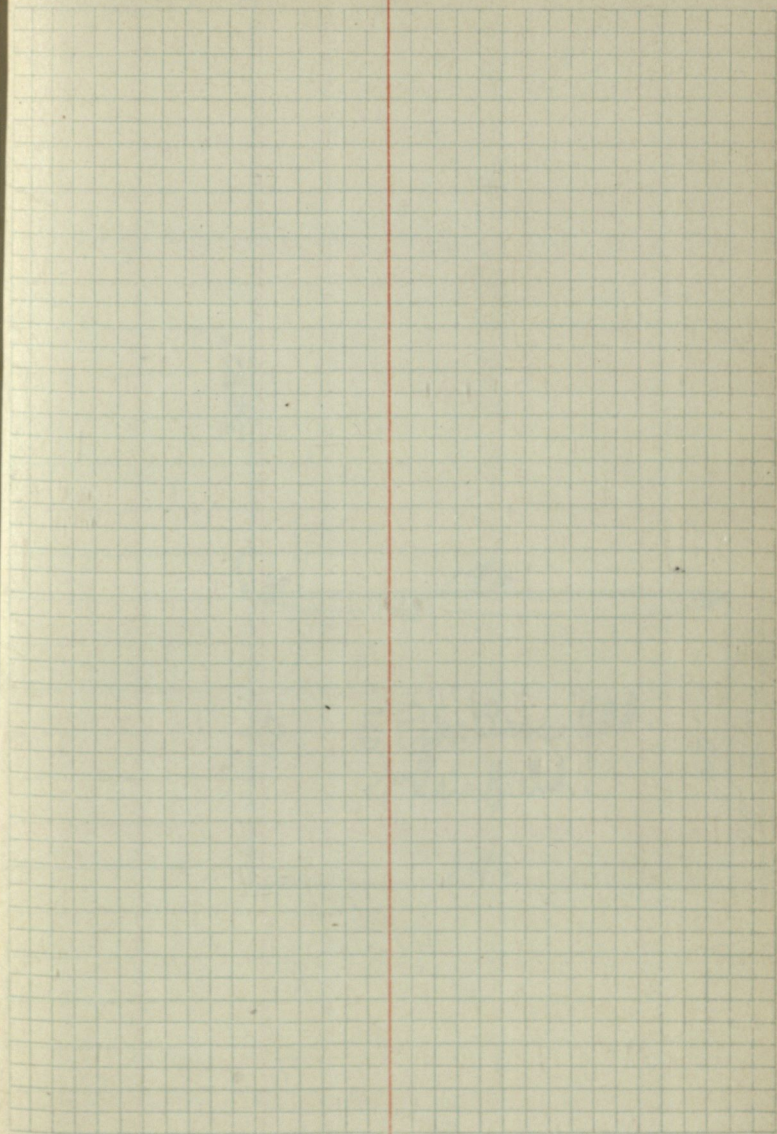
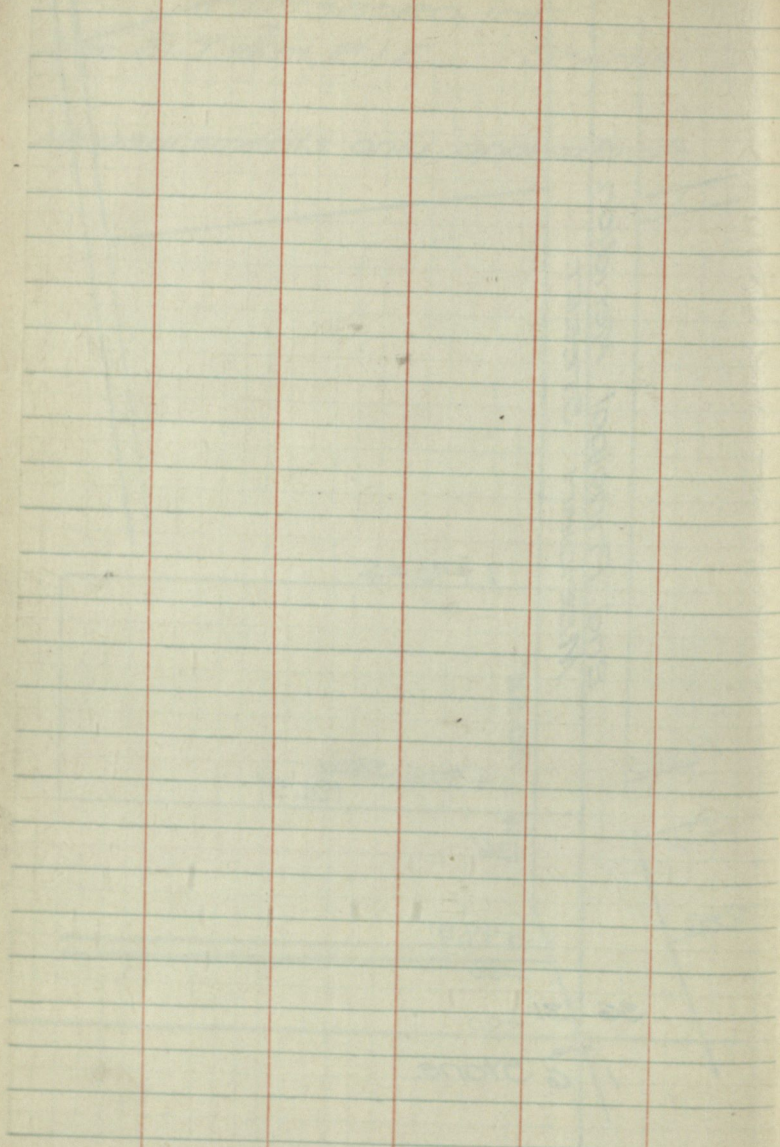
Stanley Shartle  
Oct. 30, 1942.  
Windy - Dark  
Temp. 60° F.

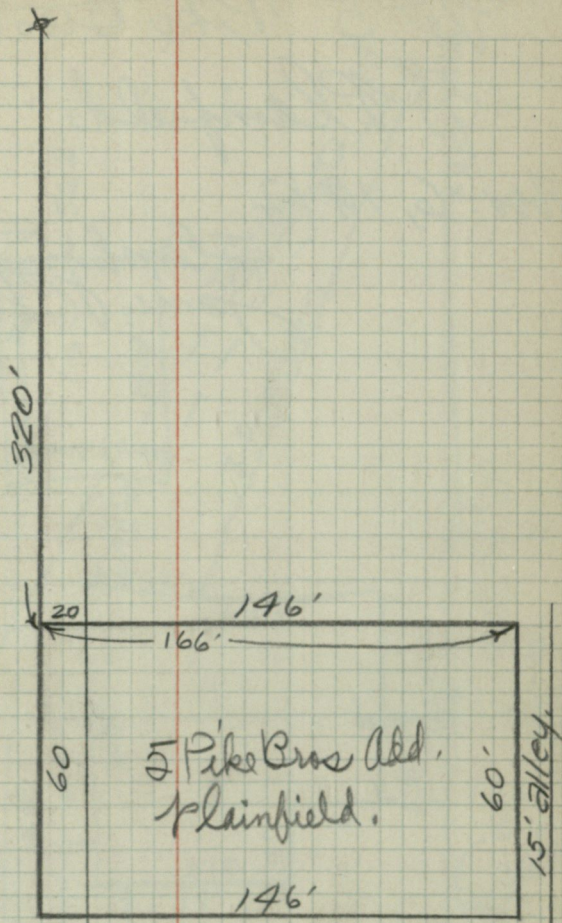


PITTSBORO, IND.  
 Sec. 31. T. 16 N., R. 1 E. Shartle

Measurements only approximate.





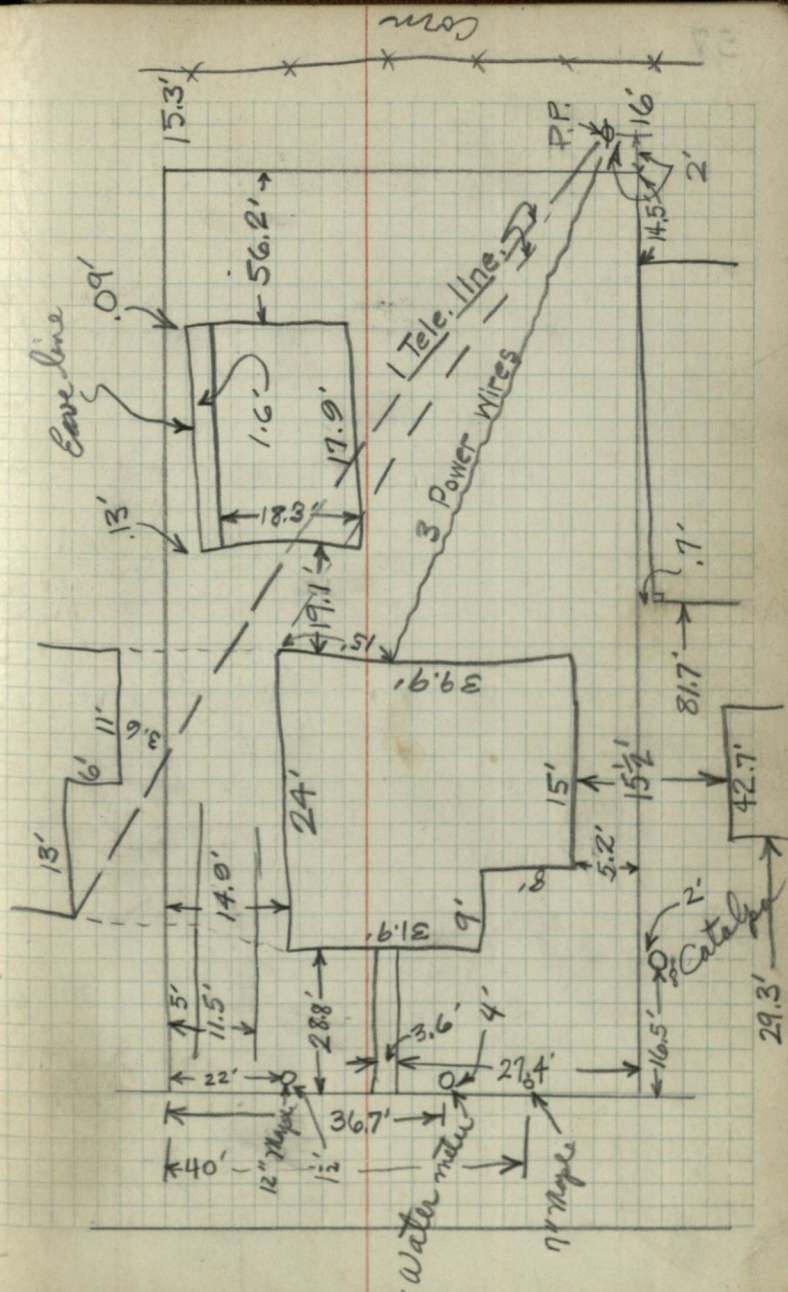


57

Lot 5 Pike Bros Old  
Plainfield.

Nov. 6, 1942

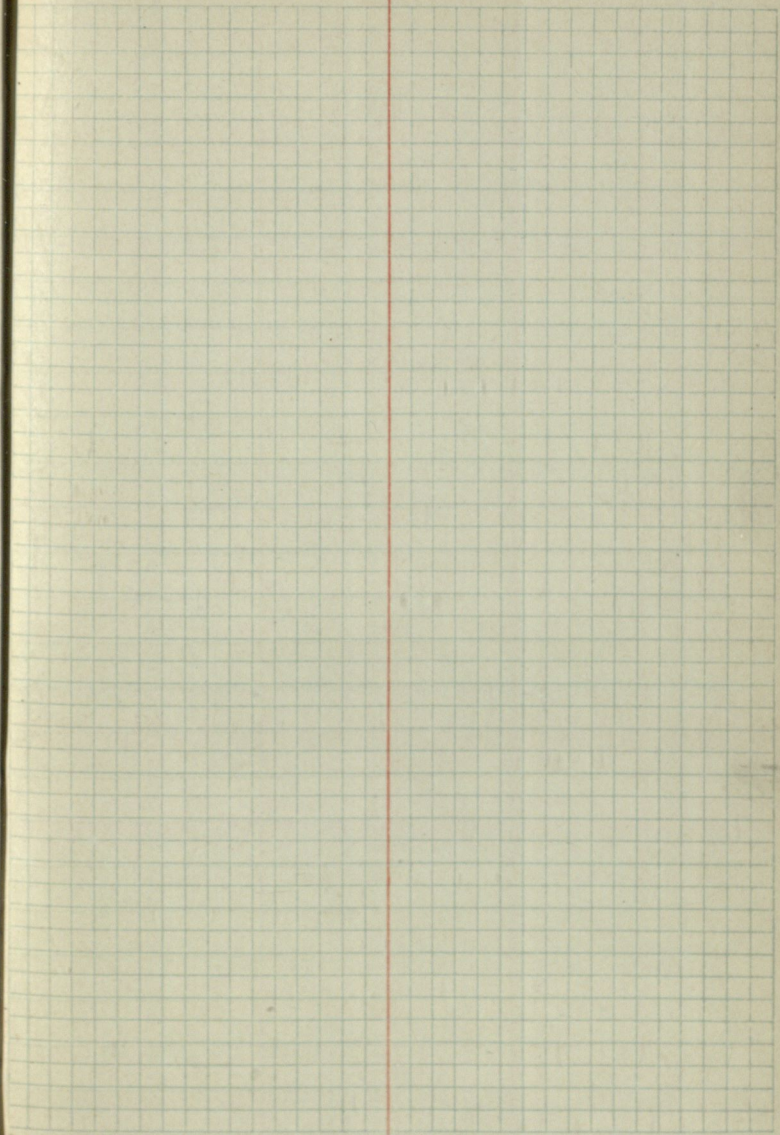
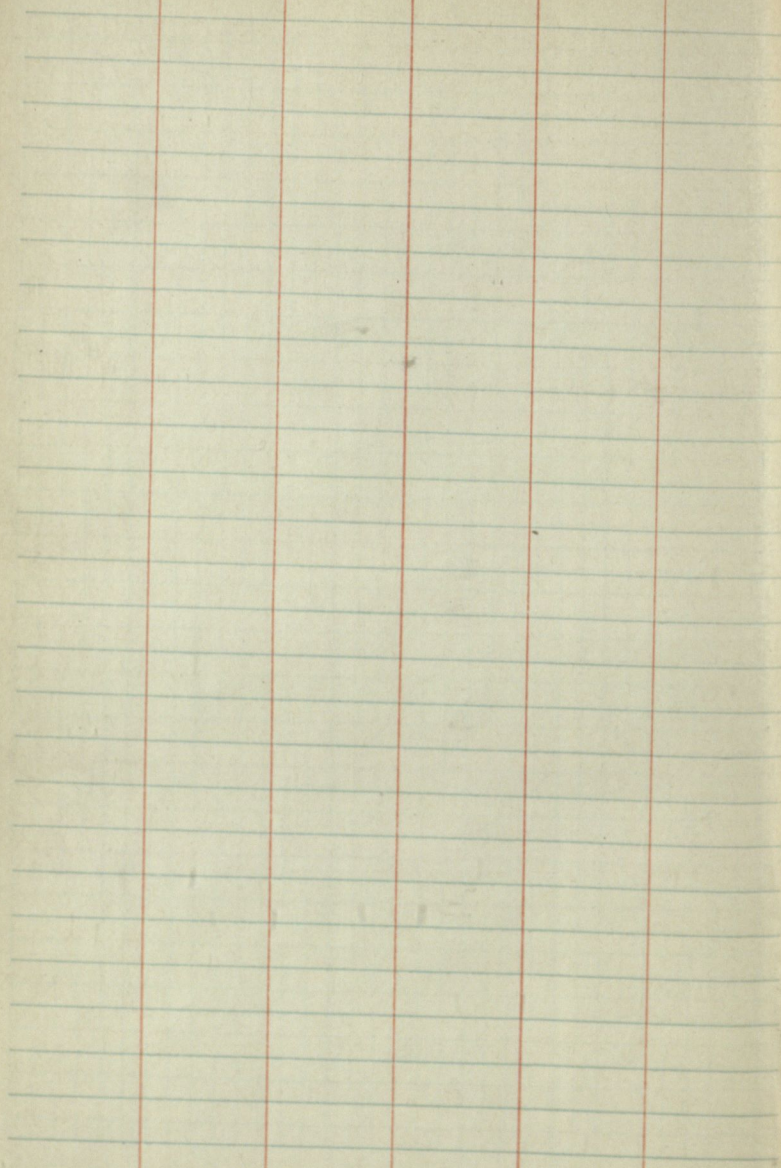
Stanley Spittle  
James Christie

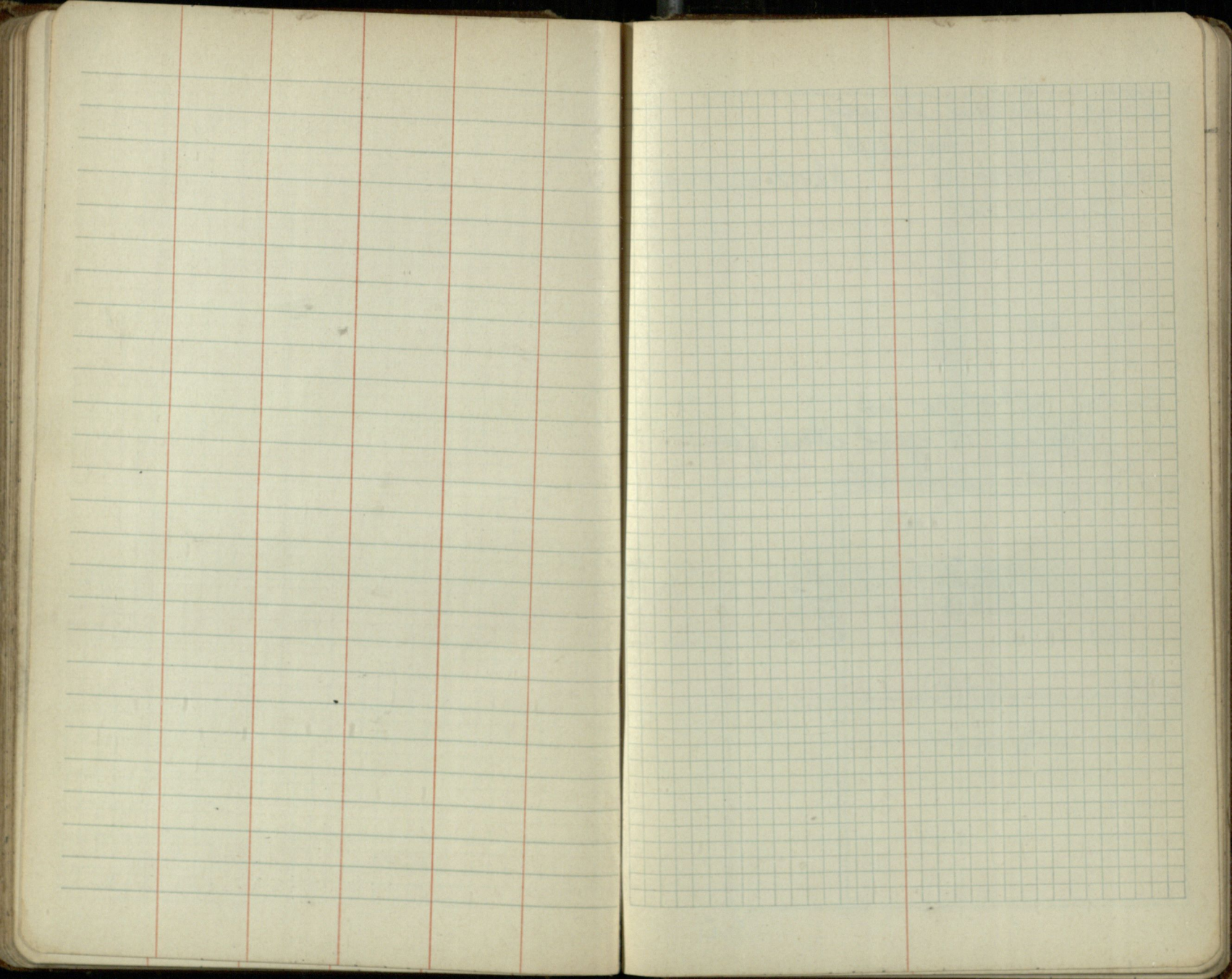


Blank lined page with three vertical red margin lines.

Blank grid page with a vertical red margin line.

59





61

Benj. Sellars Survey

548-16-2W

Major Franklin

March 10, 1944.

S. Shartle

Cen S of SE<sup>4</sup> 5-16-2W

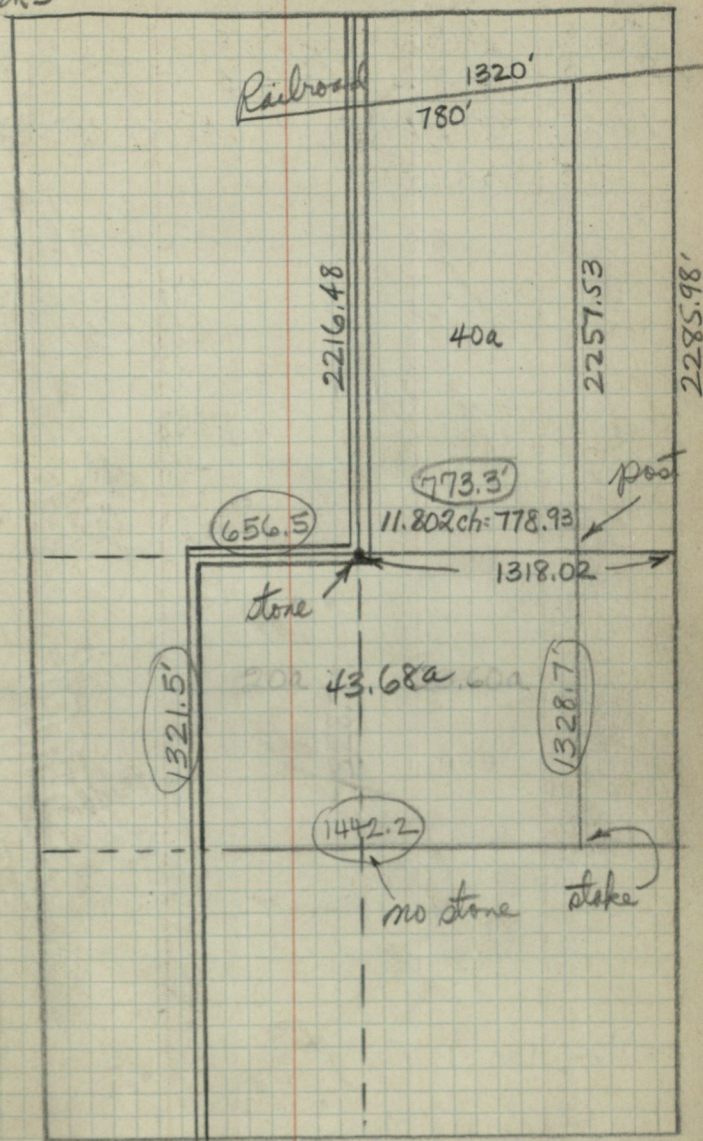
Stone 12x15 good stone found.

36' W of S. Shartle 39'

$$\begin{array}{r} 656.5 \\ 773.3 \\ \hline 1429.8 \end{array}$$

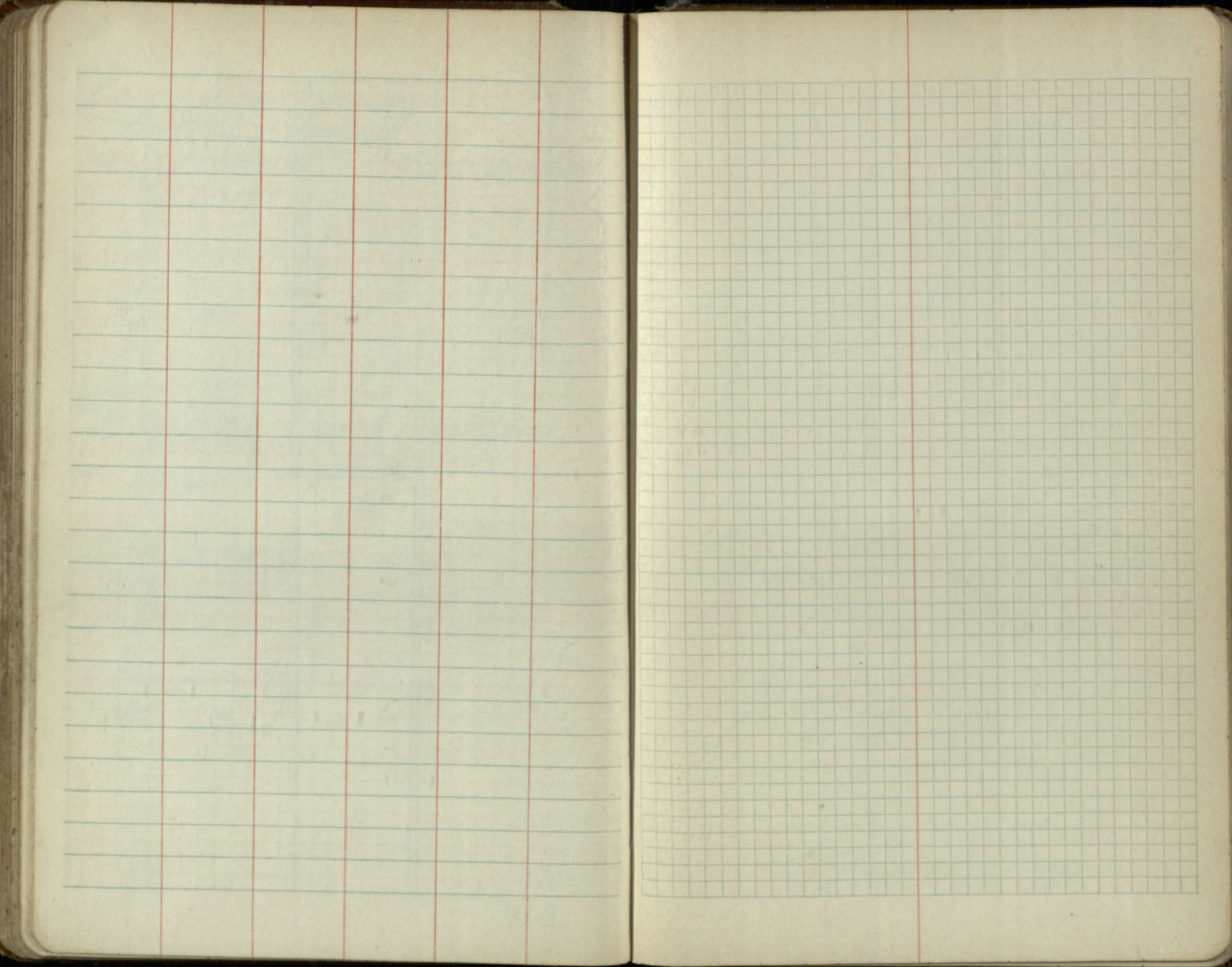
$$\begin{array}{r} 1442.2 \\ 1429.8 \\ \hline 13.4 \end{array}$$

Cen 5

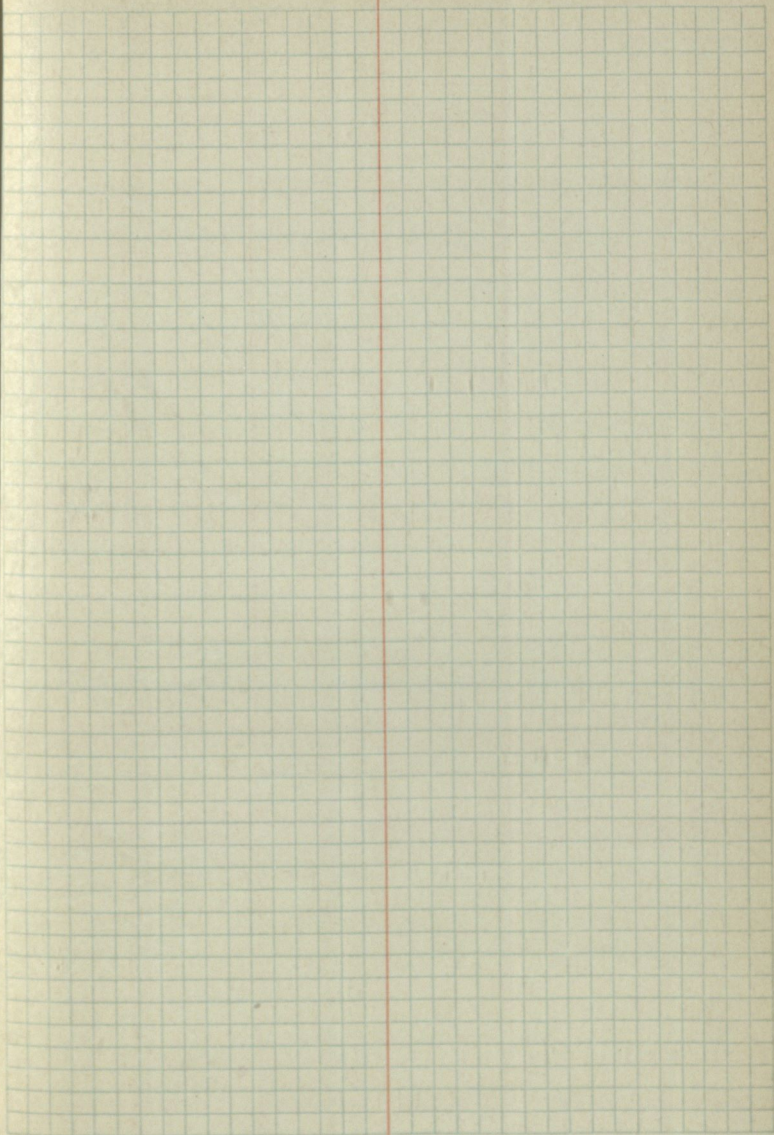
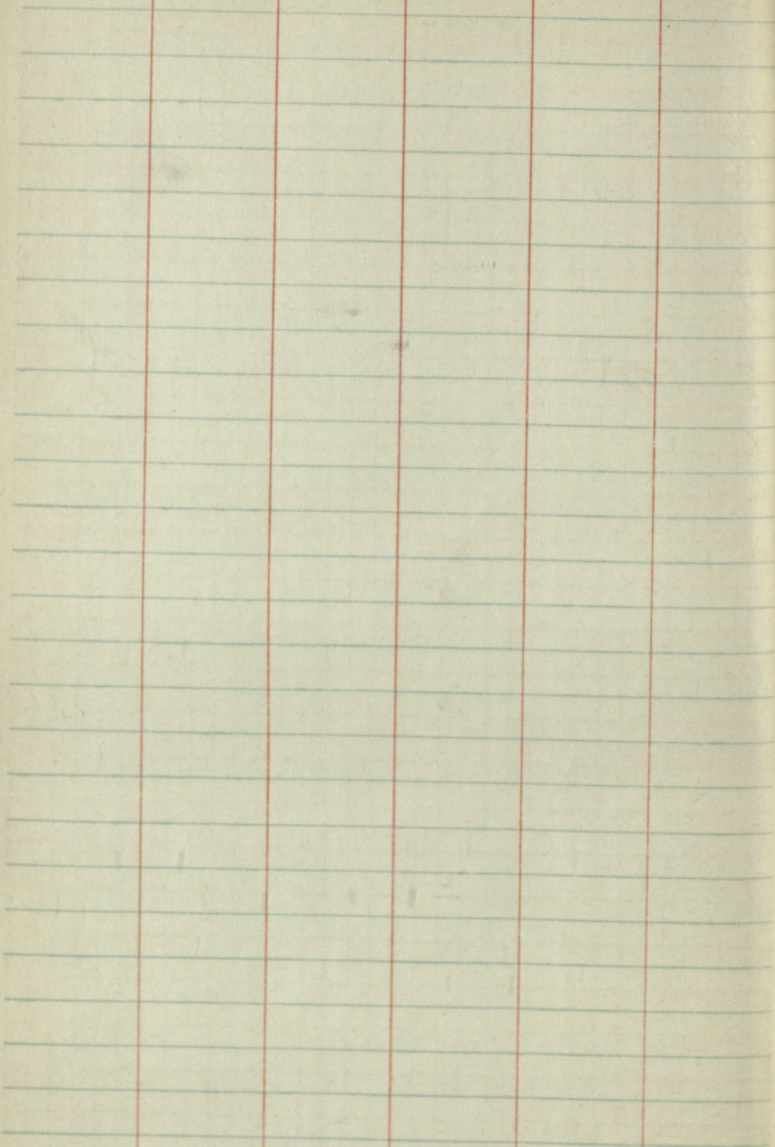


Cen 8





63



64

70

65

66

66

67

67

Hampton Bridge  
19-15-1W

R. Major Franklin      March 1944.  
Ses. R. Harvey        8 May 1944.  
S. M. Skarthe

103.17 H.I.  
91.54 top footing  
11.63  
7.20  
4.43

103.17 H.I.  
7.20      10000  
95.97      95.97  
4.03  
4.03

Spike in sycamore tree

BM Elev  
10020

E

103.18

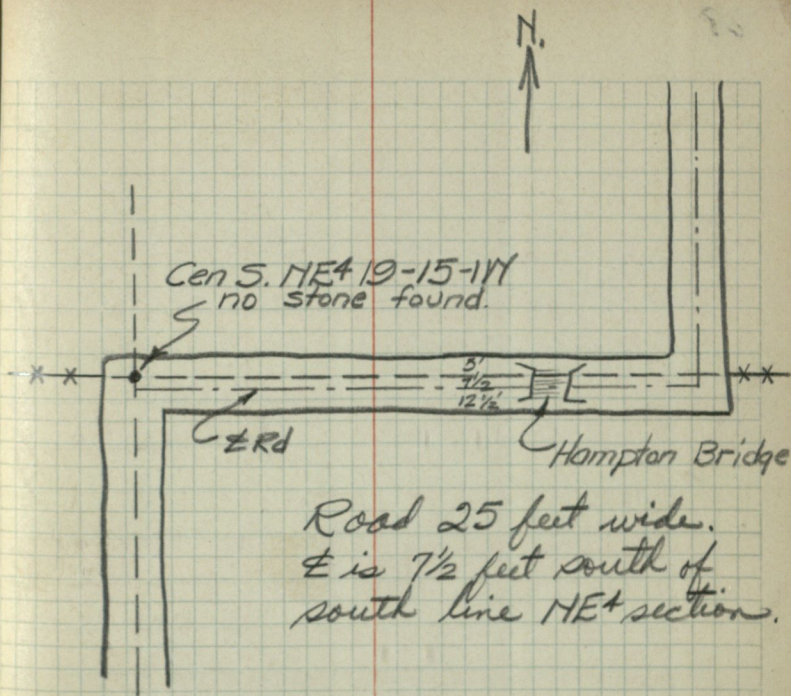
floor bridge  
& to coakway  
crown

N  
←

93.54 ± stream flowline  
987

102.53 ± rock

W



69

70



70

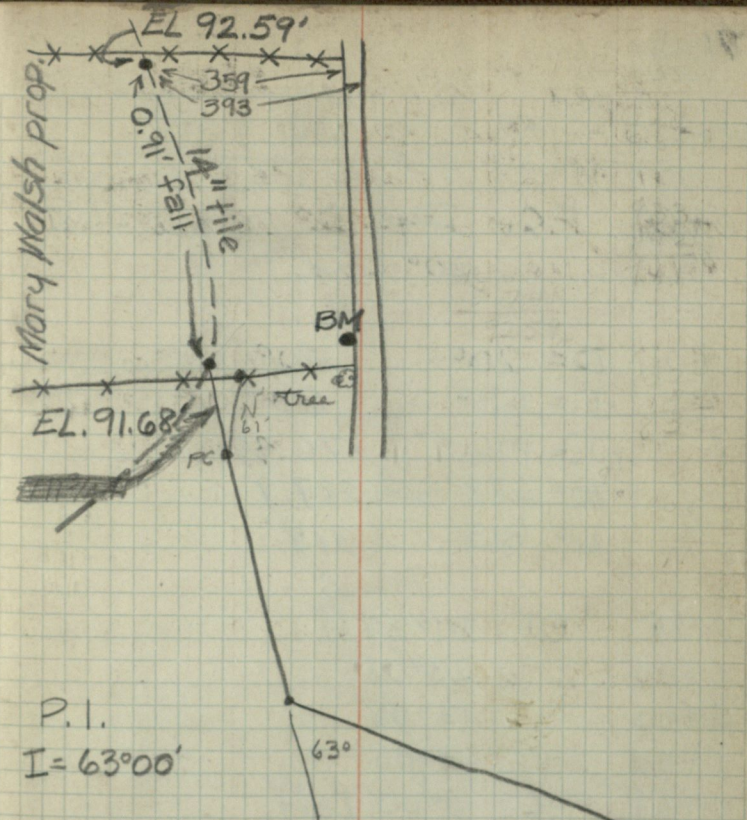
Steve Maloney ~~litch~~ Arm  
of Wm. Baty Drain.  
B.M. #1 Elevation 100<sup>00</sup> on big  
gray stone about 16 feet north  
of buckeye tree.

14 March 1944

17 " "

Major Franklin  
S. Maloney  
S. Shartle

B.M. #2 El. 95.97 Top NW wing of bridge  
over Baty drain



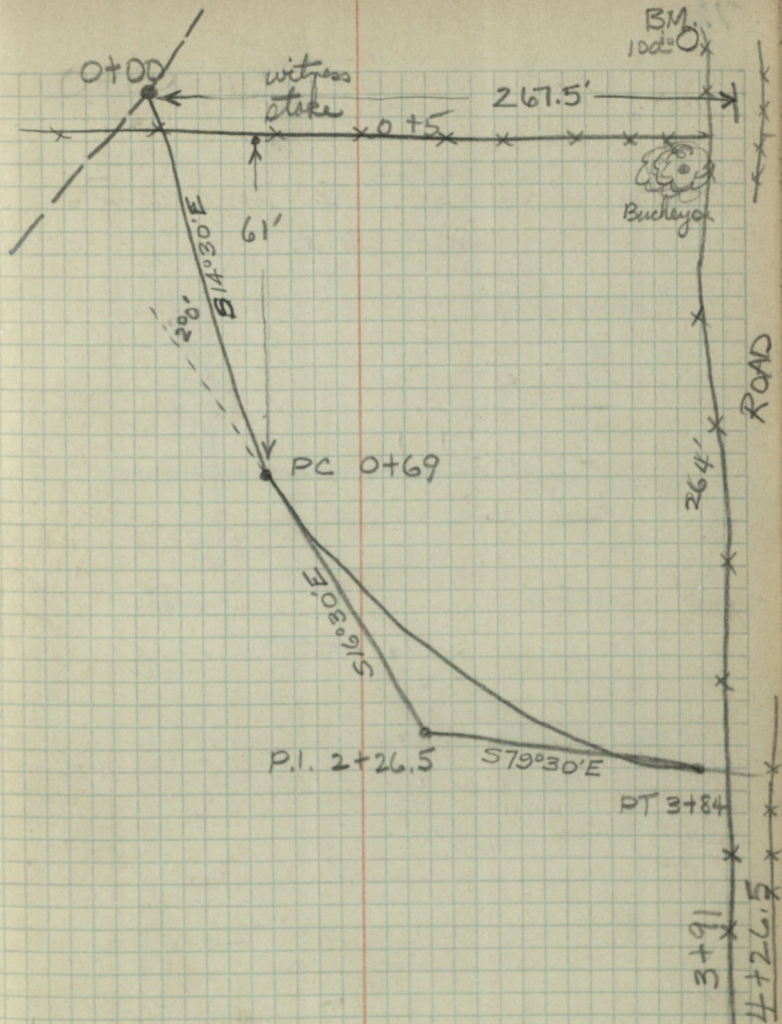
71

0+00

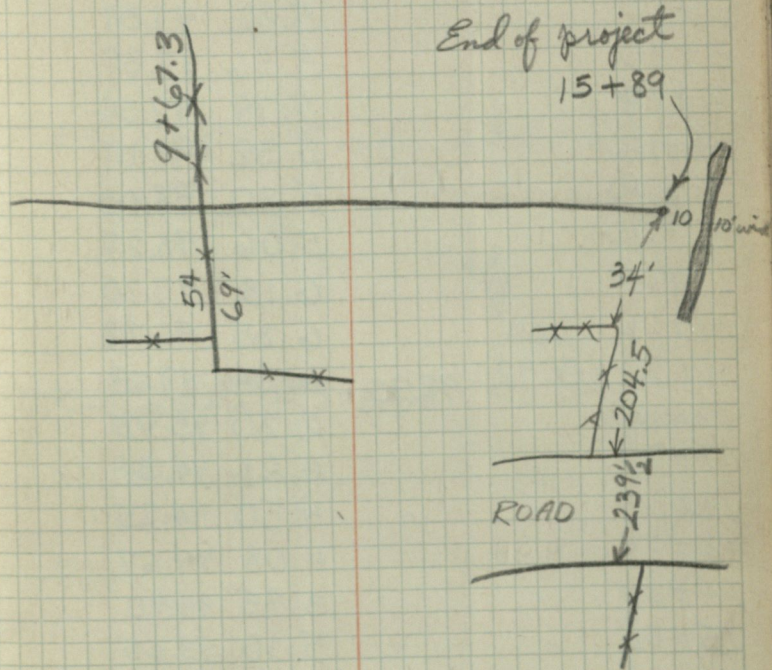
0+69 P.C. Defl.  $2^\circ$  Left to start  
 $20^\circ$  curve

D = $20^\circ$	$20^\circ$
I = $63^\circ$	$63^\circ$
T = $176.5'$	$176.42'$
R = $288'$	$287.9'$
L = $315'$	$315'$

3+84	PT	$31^\circ 30'$
3+00		$23^\circ 06'$
2+00		$13^\circ 06'$
1+00		$3^\circ 06'$ ↑
0+69	PC	$0^\circ 00'$ Left.



EQUATION:  
 $16+04=100+42$



73

	BS	HI	FS	EL.
BM#1	3.33	103.33	—	100.00
0+00			4.94	91.68 <i>bot. ditch</i>
0+69			5.99	97.34
1+00			7.11	96.22
2+00			5.82	97.51
3+00			5.96	97.39
3+84			5.79	97.54
4+00			5.32	98.01
5+00			5.30	98.03
6+00			5.06	98.27
7+00			6.13	97.20
8+00			6.35	96.98
9+00	0.92	98.75	6.04	97.29
10+00			2.80	95.95
11+00			4.21	94.54
12+00			4.50	94.25
13+00			4.08	94.67
14+00			3.85	94.90
15+00			5.10	93.65
15+89			5.65	93.10
16+04			11.68	87.07
BM#2			2.78	95.97

14" tile Ground elev. = 98.39

F.S. - 6.25 in E side ditch - Elev 97.08'

T.P. on top stake F.S. = 5.50

± Batz drain - bottom (at 100+42)  
Top N.W. wing bridge over Batz dr.

Notes for re-setting stakes  
on Madoney Arm of Batz Drain.

0+00 at 14" tile of Kate Lee ditch  
5' north and 267.5' west of  
Center N of SE<sup>+</sup> 25-17-1E

0+05 fence line for N<sup>+</sup> SE<sup>+</sup> 25-17-1E

0+69 P.C. - The tangent of this curve  
is deflected to left 2°00' from  
0+00 to 0+69 at this P.C.

$$\begin{array}{r}
 D = 20^\circ \quad 0+69 = \text{P.C.} \\
 I = 63^\circ 00' \quad 176.42 \\
 T = 176.42' \quad 2+45.42 = \text{P.I.} \\
 R = 287.9' \quad 0+69 = \text{P.C.} \\
 L = 315' \quad \begin{array}{r} 365 = L \\ \hline 3+84 = \text{P.T.} \end{array}
 \end{array}$$

Deflect from P.I. to Left

1+00	3°06'
1+25	5°36'
1+50	8°06'
1+75	10°36'
2+00	13°06'
2+25	15°36'

2+50	18°06'
2+75	20°36'
3+00	23°06'
3+25	25°36'
3+50	28°06'
3+75	30°36'
P.T. 3+84	31°30'

3+91 = W. fence Garner Road.  
4+00 = 264' South of N<sup>+</sup> SE<sup>+</sup> 25-17-1E  
4+26.5 = E fence Garner Road.

75

Feb 18, 1947

Franklin K  
Shartle - record  
Claypool - rodElev.  
Bottom  
ditch

Sta	B.S.	H.I.	F.S.	Elev
B.M.#2.	6.10	102.07		95.97
15+89			9.72	92.35
15			7.78	94.29
14			6.69	95.38
13			7.04	95.03
12			7.50	94.57
11			6.85	95.22
10			5.74	96.33
9			4.47	97.60
8			4.92	97.15
7			4.66	97.41
6	4.25	102.83	3.49	98.58
5			4.62	98.21
4			5.15	97.68
3			5.42	97.41
2			5.16	97.67
1			6.23	96.60
0			4.20	98.63
B.M.#1			3.17	99.66

100.00

99.66

.34 error

Levels on stakes re-set.

2.60

4.45

5.44

4.99

4.43

5.18

5.99

7.16

6.61

6.77

7.84

7.37

6.74

6.37

6.53

5.36

7.29

Feb. 26, 1947.

Cold - Snow Temp 32

Ophir Claypool

Came on job found they had  
16" pipe and two tile laid.

15+59 began laying tile, backfilled  
around tile by putting loose dirt and  
tamping

19+78 end of day

Feb. 27, 1947

Clear Temp 35°

14+78 began laying tile

14+52 cut thru 4" flat bottom tile

running in N.W. to S.E. direction. No water flowing

Back filled some, first putting 3 inch  
layers of dirt then tamping. Filled  
12" above tile then used bull dozer to  
place rest of dirt. As the dirt was partly  
frozen I did not think this was  
satisfactory, so stopped.

Poured concrete at Sta. 15+73 used  
4 1/2 bags of cement in yard of gravel, used hot  
water. placed cement sack over cracks between  
tile and pipe. Placed empty cement sacks  
over concrete then covered with 12" of dirt.

Began backfilling again in afternoon, using

dirt that dug up today. Covered all tile  
that was laid this far 6" to 12" of  
dirt  
13+72 end of day

Feb 28 1947

Clear Temp 40°

13+72 started laying tile. bottom very  
hard, some water in ditch. Backfilling  
around tile so they will not move.  
I checked flow line of tile at 13+40 found  
it to be .02 low. They filled the ditch  
with bull dozer from 13+90 to 14+40  
I checked flow line of tile at 12+00  
found it to be .02 low.  
I've found the soil at this place  
to be lumpy and clay will not  
crumble up. The bottom of ditch  
is solid. The tile that was laid  
to clay was not completely covered  
as there was no loose dirt in the  
swag.  
11+73 end of day.

Mar 3, 1947

Clear Temp 35°

11+73 started laying tile, backfilling  
around sides of tile and over tile 6" to 12"  
11+60 began filling ditch completely

10+50 cut thru 6" clay tile running in  
a East to West direction. 1 1/2' to 2' below top of  
ground, no water in tile  
10+39 where tile leaves the ditch on the  
side. They filled the ditch completely about  
100'. I checked grade at 10+10 found it to be .02 low.  
9+73 end of tile for day. The Collins  
The Boone Co. survey came in afternoon.  
all tile that was laid today was covered.

Mar 4 1947

Cloudy Temp 35°

Ophir Claypool  
9+73 started laying tile. Backfilled  
upon sides of tile so they would not move  
8+90 to 8+70 end bottom

8+50 ditch started to cave in. From this place on they had trouble as the water softened the bottom  
8+19 quit for day.

Mar. 5, 1947.

Clear Temp 40°

Ophir Claypool

8+19 Began laying tile. As the ditch continued to cave in they would lay two to three tile then dig some more on ditch. Mr. Franklin came about 10 AM. We checked the grade at 8+00 found it to be .55 high.

7+17 quit for day.

Mar 6 1947

Cloudy Temp 35°

Ophir Claypool

7+17 began laying tile, ditch is giving them some trouble by caving, the bottom is solid; 6+80 cut there a 3" flat bottom tile running N.W. to S.E. direction. Tile 2.5" below surface no water flowing

6+70 where tile leaves ditch

6+59 cut into 4" tile running N.W. to S.E. direction tile 2' below surface, half full of dirt no water flowing.

6+55 quit for day broke down

Mar 8 1947.

Cloudy. Temp 35°

Ophir Claypool

4+55 began laying tile, bottom good covered all tile but 10"  
5+35 bottom getting soft and ditch caving  
5+53 end of day

Mar 10 1947

Clear Temp 40°

Ophir Claypool

5+53 began laying tile, backfilled and covered all tile. They then started laying ditch with full cover, did not make much head way. They had trouble of the ditch caving. at 5+00 Schuber the grade I found it to be .05 low advised them to bring it up, which they did. On the account of break down of digger they did not work more than 5 1/2 hrs.  
4+75 end of day.

Mar 11 1947

Clear Temp 40°

Ophir Claypool

4+75 began laying tile, bottom of ditch is solid, ditch is caving some.  
4+ dug into 4" flat bottom tile 1.5" under surface. Tile running East & West.  
Reached East road fence at noon.  
In arriving road we put 20" 18" corrugated pipe tamped dirt around pipe and filled ditch with load of gravel on pipe. In road ditches they put ahead of crushed stone to act as a catch basin. Major came out today.  
3+51 end of day.

Mar 12 1946

Clear Temp 45°

Ophir Claypool.

3+51 began laying tile, backfilled around tile, covered tiles, and placed piece of broken tile over spawner in tile line caused by going around curve  
17 15' end of day.



Mar 13 1947

Cloudy and Rain Temp. 40°

Ophir Claypool

1+15 began laying tile.

Mr Arthur came. Asked him about connecting small tile. He said "To not drop the in to the other tile. If the property owner wished to have the tile connected and was willing to pay the bill to go back 100' and bring the tile down gradually and connect it. He also said to cement around the joint that the 16" tile make with the 18" tile also the same where the 16" tile connects to the Lee tile.

1+09 end for day rained out.

Mar. 14 1947

Cloudy Snowing Temp 30°

Ophir Claypool

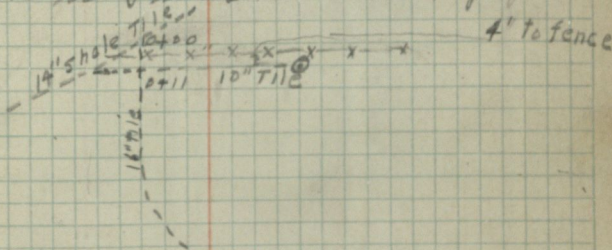
Reported for work. The contractors help did not show up, as the weather was bad, the contractor decided to wait another day.

Mar 15 1947

Cloudy Temp. 30°  
Ophir Claypool

1+09 began laying tile  
1+22 changed from 18" tile to 16" tile.  
did not cement joint, as they did not want any concrete available.  
1+00 found 19" shale tile bearing N.E. to S.W. connected the new tile to the shale tile. The grade of the two tiles were the same. They then laid a 10" tile. Connecting into old tile at 3' ca p+11 then going above new tile 0.2' then extending in an Easterly direction 66 ft to point where the catch basin is to be built. The 10" tile was laid on a grade of 0.2' in 60'. The flow line of the 10" tile at the catch basin will be 2.7' below the surface of the ground.  
The contractor did not cement any of the joints today.

All the tile was covered except connection



$$20^\circ \times .31 = 6.2^\circ = 6^\circ 12'$$

$$2 \times 288 (\text{at } 3006) = 31.1'$$

$$100 \frac{1}{D} = 100 \times \frac{63}{20} = 20630$$

$$\begin{array}{r} 3 \ 06 \\ 13 \ 06 \\ \hline 6 \ 122 \ 16 \ 12 \\ 8 \ 06 \end{array}$$

$$PC = \underline{0+69}$$

$$L = \underline{3+75}$$

$$PT = \underline{3+84}$$

$$306'$$

$$\begin{array}{r} .84 \\ 20 \\ \hline 16.80 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \ 16^\circ 48' \\ 8^\circ 24' \\ 23 \ 06 \\ \hline 31 \ 30' \end{array}$$

~~$$3+84 = PT$$~~

~~$$2+60$$~~

~~$$2+00$$~~

~~$$1+00$$~~

~~$$0+69 = PC$$~~

~~$$3+30$$~~

~~$$2+06$$~~

~~$$19^\circ 06'$$~~

~~$$600'$$~~

~~$$0+00$$~~

~~$$D = 20^\circ$$~~

~~$$L = 63^\circ$$~~

~~$$T = 176.5'$$~~

~~$$R = 288$$~~

~~$$L = 315$$~~

~~$$PC = 0+69$$~~

~~$$PT = 3+84$$~~

~~$$274.53$$~~

~~$$26.5$$~~

~~$$95.97$$~~

~~$$6.10$$~~

~~$$103.07$$~~

~~$$3.29$$~~

~~$$98.58$$~~

~~$$4.25$$~~

~~$$102.83$$~~

~~$$3.17$$~~

~~$$99.66$$~~





Angl

16

17

1

$$\begin{array}{r}
 1103 \\
 \underline{225} \\
 5515 \\
 2206 \\
 \underline{2206} \\
 248175
 \end{array}$$

$$\begin{array}{r}
 679.9 \\
 \underline{20} \\
 659.9
 \end{array}$$

$$\begin{array}{r}
 270 \\
 \underline{18} \\
 2160 \\
 270 \\
 \underline{\quad} \\
 4860
 \end{array}$$

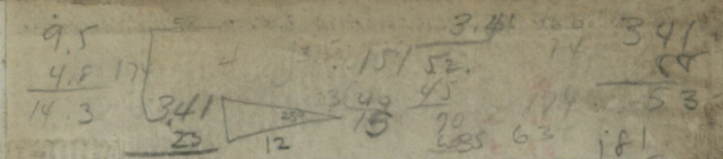
3

1802

29

176

215 5.36  
 4.81  
 10.17  
 7.29  
 93.54  
 88  
 17.50  
 532.1  
 266  
 235  
 910  
 435  
 509  
 166  
 675  
 60  
 735  
 24.08  
 24.68  
 19264  
 9632  
 4816  
 579.8564  
 2400  
 2504  
 9616  
 4808  
 5779216  
 14.75  
 70  
 98  
 1050  
 62  
 60  
 134  
 256  
 385  
 3  
 534.25  
 765.95  
 1320.00  
 4743  
 71  
 320  
 60  
 335  
 40  
 295  
 17  
 17  
 119  
 17  
 289  
 2  
 578  
 24.0  
 1578  
 876  
 48  
 20000  
 3  
 58174  
 174  
 720  
 293  
 42.7  
 60.0  
 33.6  
 226.4  
 3.2  
 47.11  
 335  
 40  
 295  
 17  
 17  
 119  
 17  
 289  
 2  
 578  
 24.0  
 1578  
 876  
 48  
 20000  
 3  
 58174  
 174  
 720  
 293  
 42.7



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.  
 ROADWAY 14 FEET WIDE. SIDE SLOPES 1 1/2 TO 1.  
 FOR SINGLE TRACK EMBANKMENT.

	0	1	2	3	4	5	6	7	8	9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

180  
 117  
 63  
 350  
 6300  
 330  
 2800  
 8.00  
 1.17  
 .16  
 9.33  
 3.0  
 63  
 175  
 MADE IN GERMANY.  
 166  
 333

