

Land Surveys

1926

194

THE
LAND SURVEYING
OFFICE

4

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.

10.70

40 | 66

100.00

31 lines

4.95
3.03

1485

14850
149985

9.88

351

988

4940

66 | 40.0
396 | 2964
400

3.46788

15
303

3.03

1500.00

2880

2729

4.95

1530

1515

15

From Horace Hanna Corn.
Dana Simmons.
To Reeph Bly.

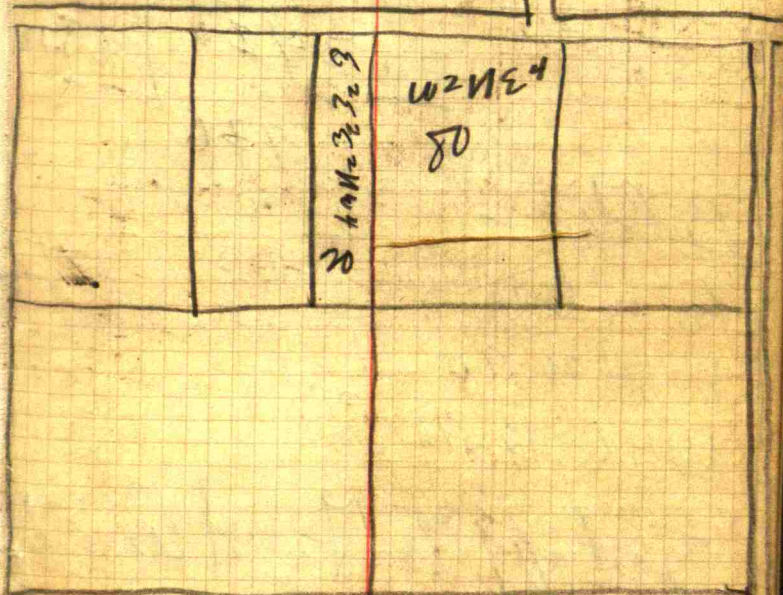
$$\begin{array}{r} 165 \\ 16 \\ \hline 990 \\ 165 \\ \hline 2640 \end{array}$$
$$\begin{array}{r} 16036 \\ 1937 \\ \hline 9613 \end{array}$$

4 x 25
70 x 25

2.5

$$\begin{array}{r} 18960 \\ 7023 \\ \hline 11937 \end{array}$$

Fred Creech
Partition



Sec 35 - T16N R2W

Bldgs — 2160
 E. 60 75.00 4500
 W 40 90.00 3600

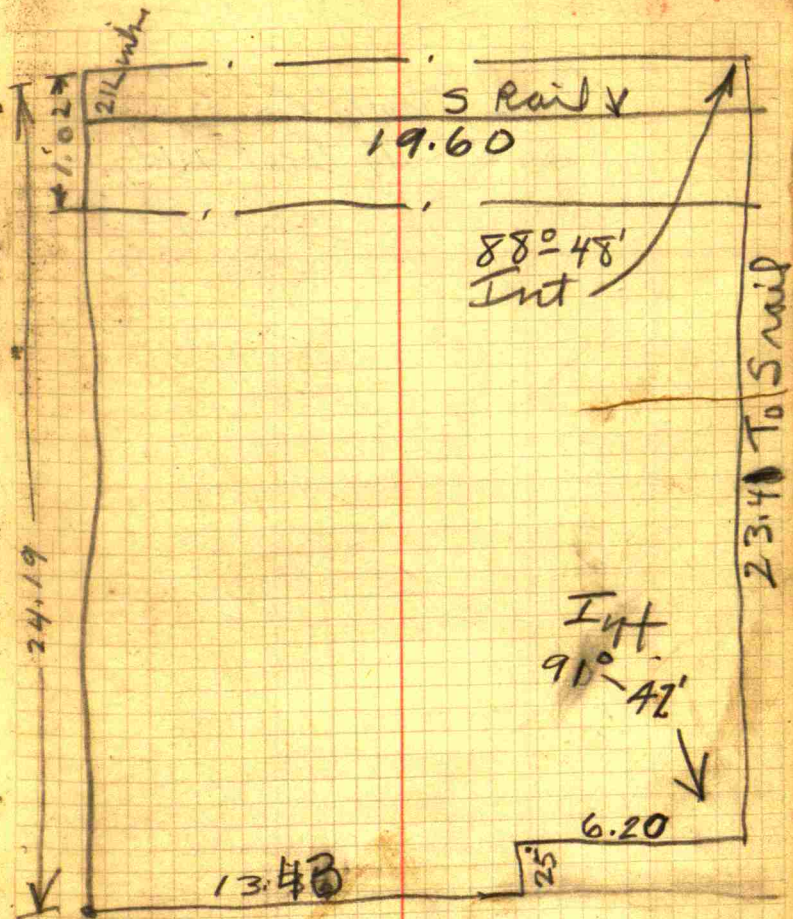
 3 10260

 90 3420 | 3800
 270

 720

Bldgs — 2000
 E 40-75 3500
 Middle 20-90 1500
 W 40-92.50 3700

Set off to Fred Auer
 38 Acres on W side
 of 100 Acre tract.

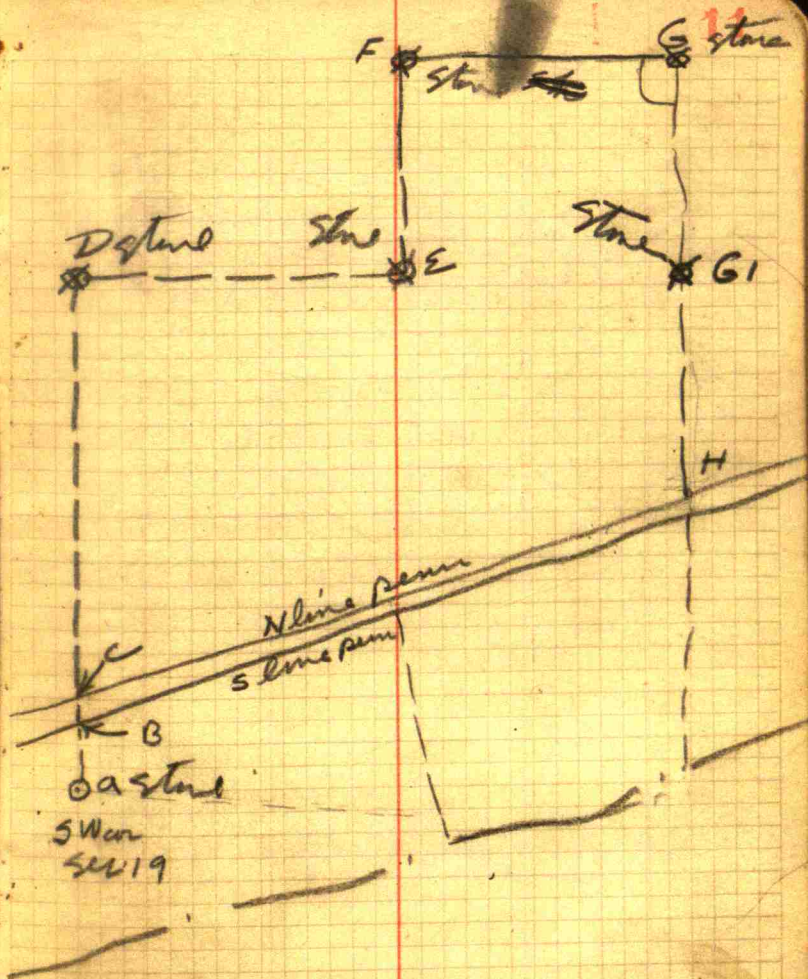


Floyd Realty Co.
505 City Trust Bldg

11 Geddes

AB-208.6'
 BC-104.6'
 CD-2378.4'
 DE-914.9'
 EF 696.3'
 FG 907.0'
 GH 705.0'
 GI-H 1837.0'
 H+C 1910.0'

19-15-28



74ack

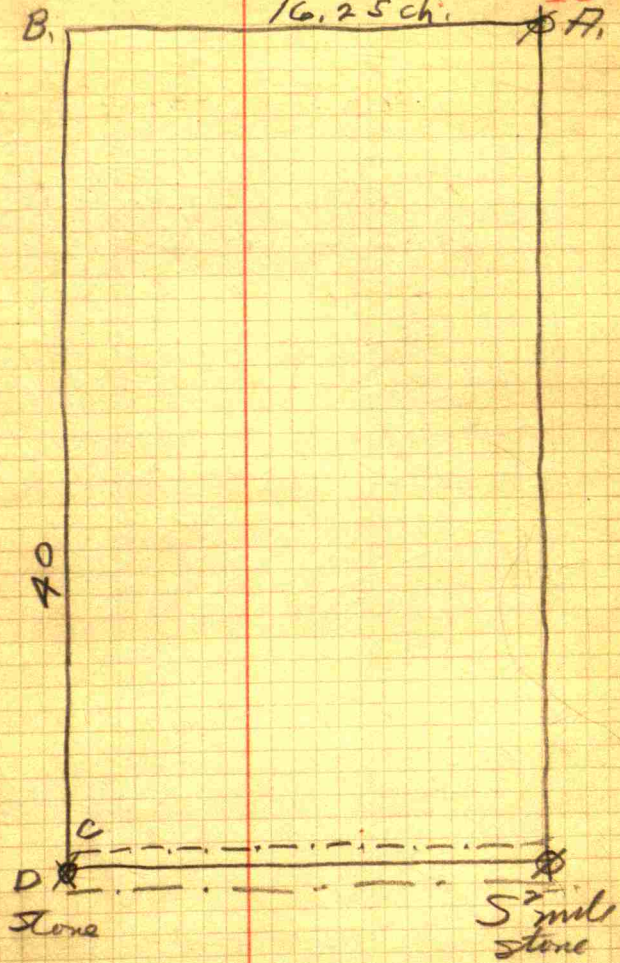
Sec 5-14-1E.

A to B. - 16.25 ch.

B to C. - 40.235 ch.

B to D. - 40.46 ch.

Cent. Sec 5 15
16.25 ch. ~~A~~



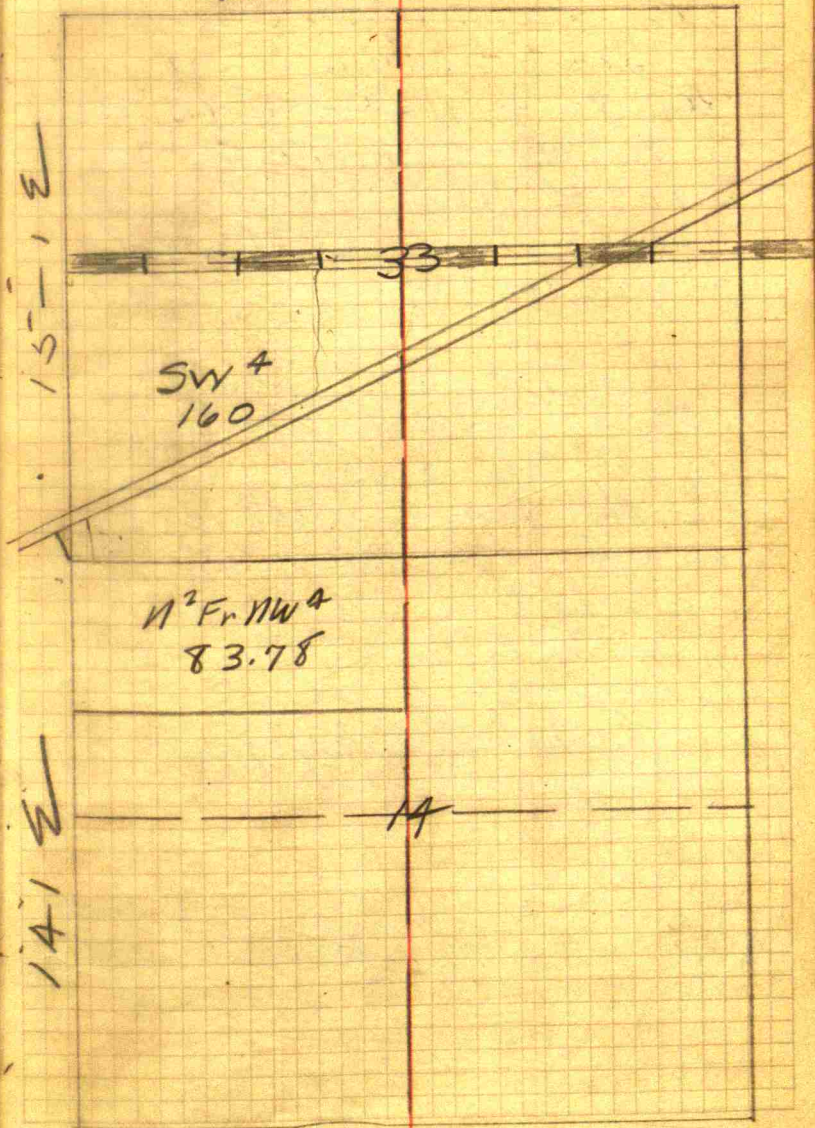
$$\begin{array}{r} 17960 \\ 3301 \\ \hline 14659 \end{array}$$

$$\begin{array}{r} 17960 \\ 3301 \\ \hline 14659 \\ 7636 \\ \hline 7023 \end{array}$$

$$\begin{array}{r} 7023 \\ 1937 \\ \hline \end{array}$$

1788
SW 4 - 33-15-1-E 160
N² Fr NW 4 - 4-14-E - 83.78
M SW 4 - 33-15-1-E - .25

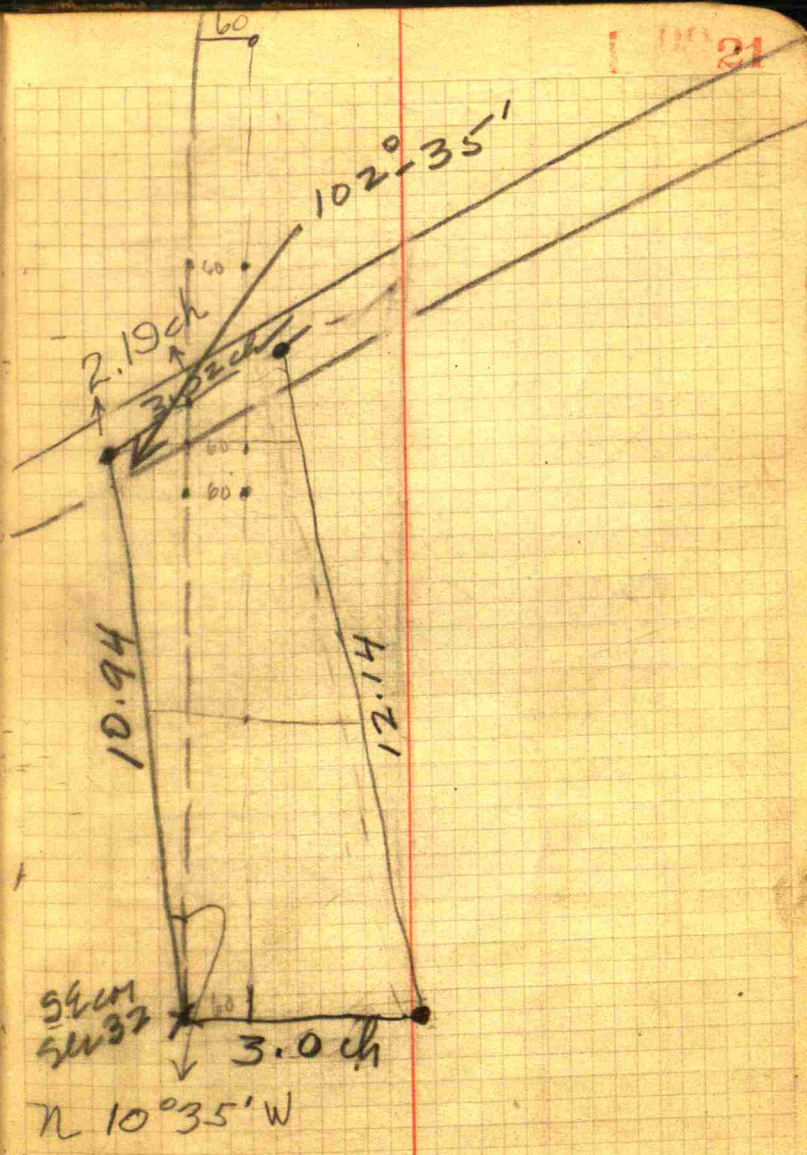
Thomson Little 19



Commencing at the SE corner
of Sec 32. Thence N. on
Sec. line 11 ch 6 links, Thence
S. $76^{\circ}W$ - 2 ch. 4 links, Thence
S $10^{\circ}E$. - 10 ch 3 links to the
place of beg. Containing 1.2
more or less.

Also Pt. SW 4 Sec 33.
Beg. 34 rods $5\frac{1}{2}$ links N.
of the SW corner of said sec
on the Sec. line thence N
10 rods, Thence N. $63\frac{1}{4}^{\circ}E$
 $2\frac{1}{2}$ rods to a stone, Thence
S $26\frac{3}{4}^{\circ}E$. to a stone, Thence
S $63\frac{1}{4}^{\circ}W$ - 6 rods to the beg.
Cont $38\frac{1}{4}$ sq. poles.

12.14
.25
12.25
10.74
12.11
22.93
11.52
11.30
9.70
9.70
3.53
3.53
3.53



Thos. Little
(4/14/28)

1161
1426

2587
1297

1290
660

77600
726

853800

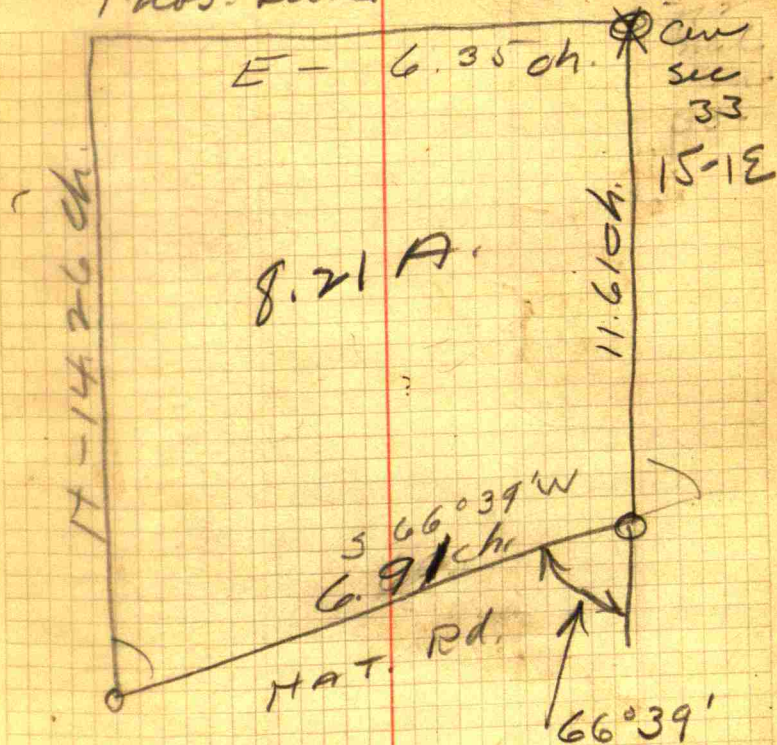
635
26

663

91
35

56

Thos. Little. ~~com~~ 23



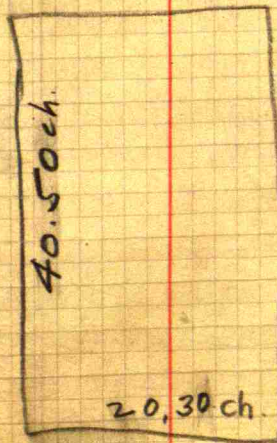
Catherine Cunningham ²⁵
 Pt. E ²⁵ E 4 - 8-14-1E-7476
 Pt. W ²⁵ SW 4 - 9-14-1E-17552

West line 40.51 ~~4~~

Beq. at the SW corner of
 sec 9-14-1E

Thence by L. $89^{\circ}30'$
 N. - 6.37 ch - E. - 16.66 $\frac{2}{3}$
 S - 6.37 ch. Thence
 W. 17.27 $\frac{1}{2}$ ch. Thence
 continue W - 3 ch.

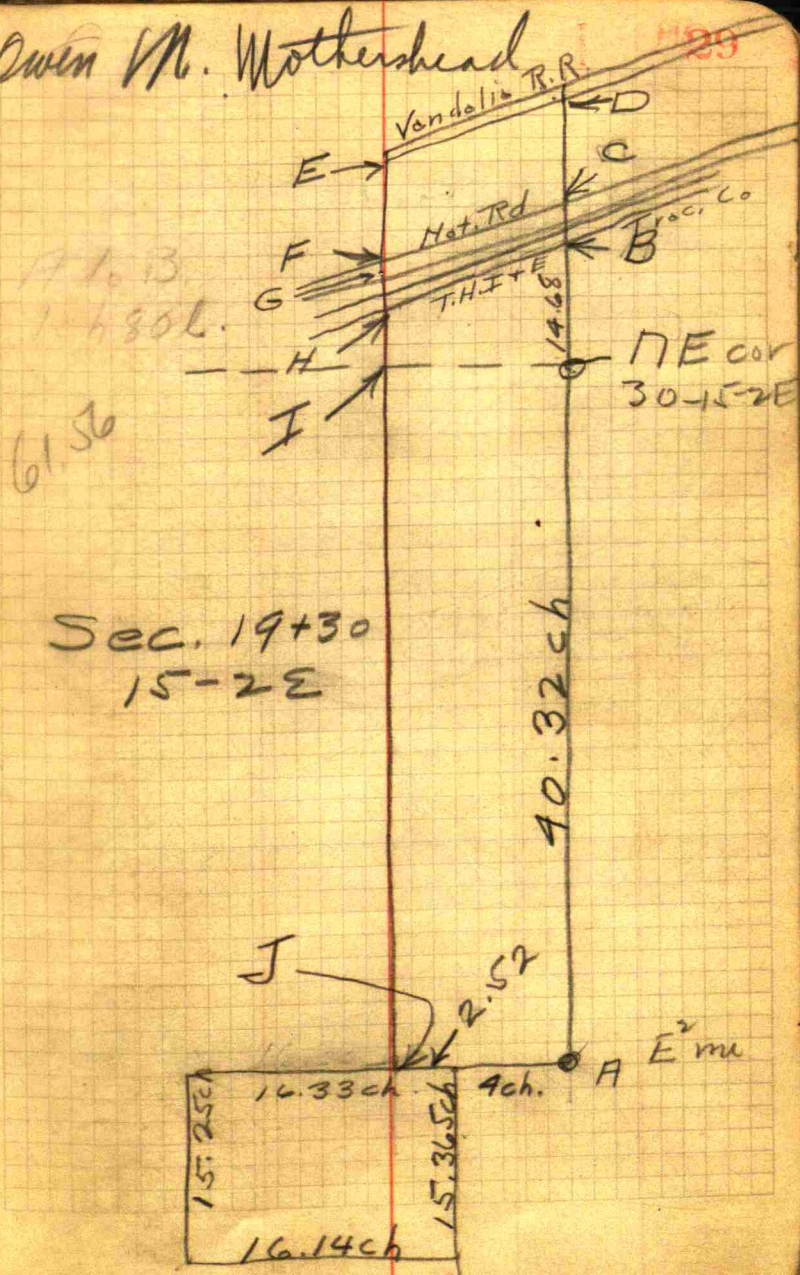
20.15
 stone



B-C - 1.80 ch.
 A-D - 63.07 ch.
 D-E - 6.59 ch.
 G - E National Rd.
 E-F - 7.51 ch
 G - 7.978 ch - 6.02
 H - 9.295 ch.
 I - 20.80 ch -

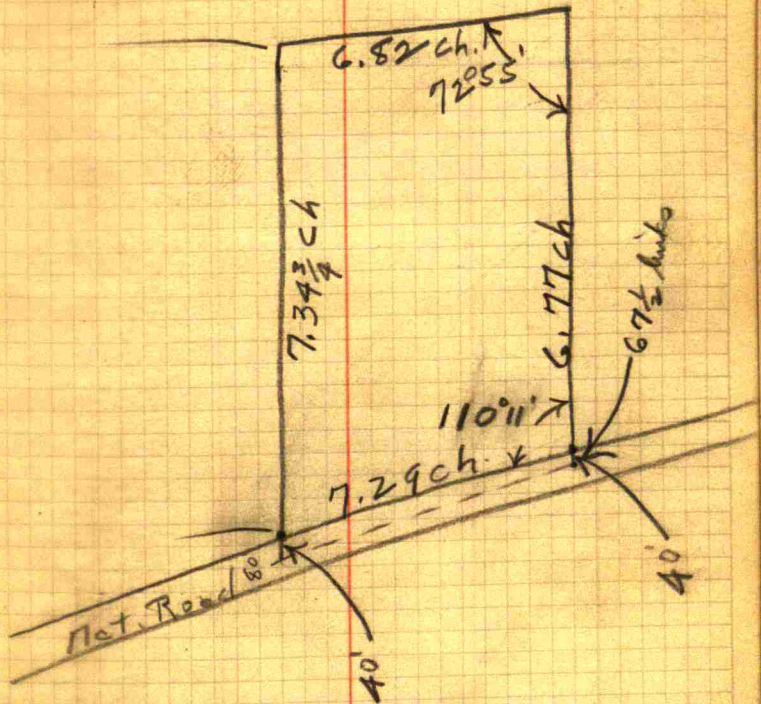
ne / Bluff 10" / 41 / 14 Links
 3p / Beach 12' / S 21° 0' W / 17 11
 2w / Bluff oak 30' / S 45° 0' / 1 / 7 Links
 2d / Black 20' / N 39° 2' / 84 1/2"

Owen M. Mothershead



Mat. Road

Mothershead.



Kocher

N² in store Sec 14-15-1E.

Transmission line Pole

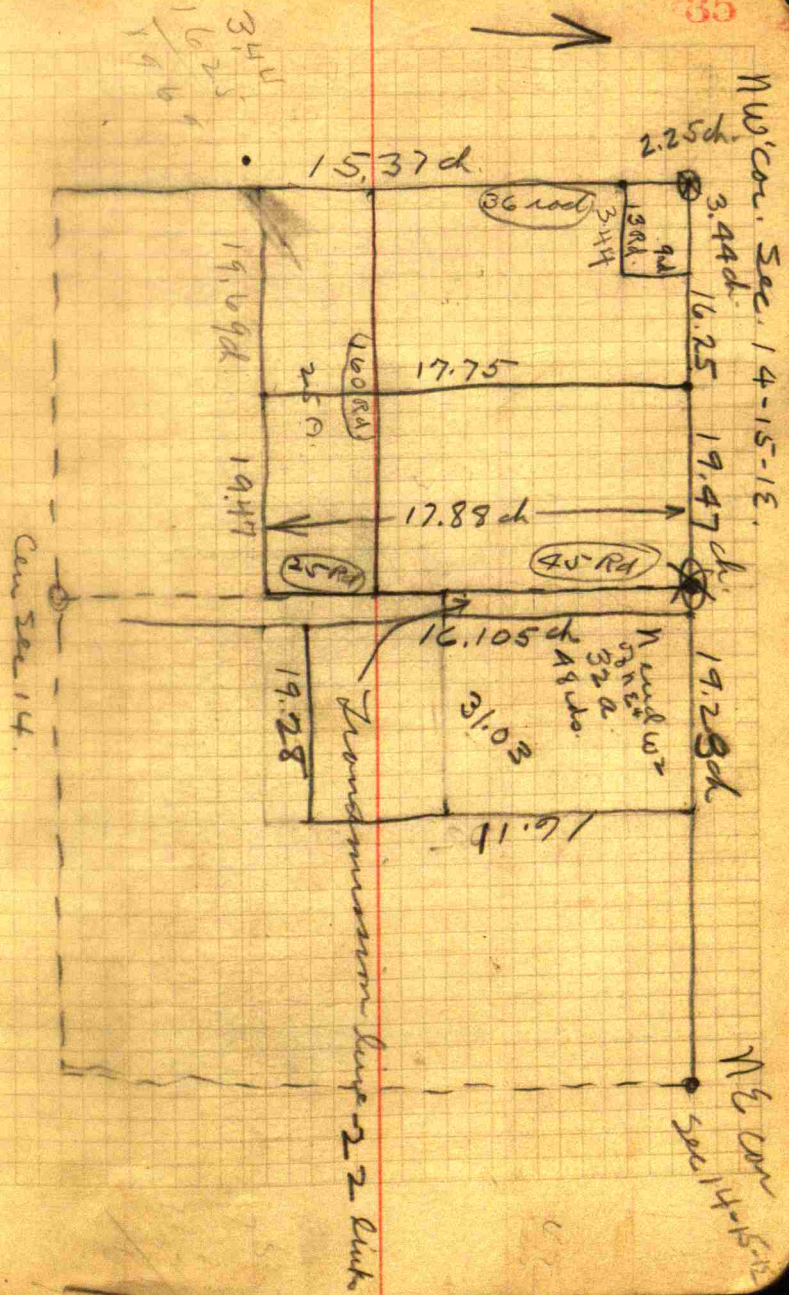
N 5° W - 25.8 lks

Iron line Pole

S 5° W - 1.33 ch.

19.47

16.10
 19.30
 58300
 14480
 1610
 3107300



340
 1625
 1600



N 1/2 Cor. Sec. 14-15-1E.

N 1/2 Cor. Sec. 14-15-1E.

Transmission line Pole - 22 links

Can Sec 14.

15.37 ch

2.25 ch

3.44 ch

17.75

17.89 ch

16.105 ch

19.28

16.11

19.28 ch

N 1/2 Sec 14-15-1E

31.05

48 lks

32 ch

344

3rd

94

460 (84)

25 ch

25 Rd

45 Rd

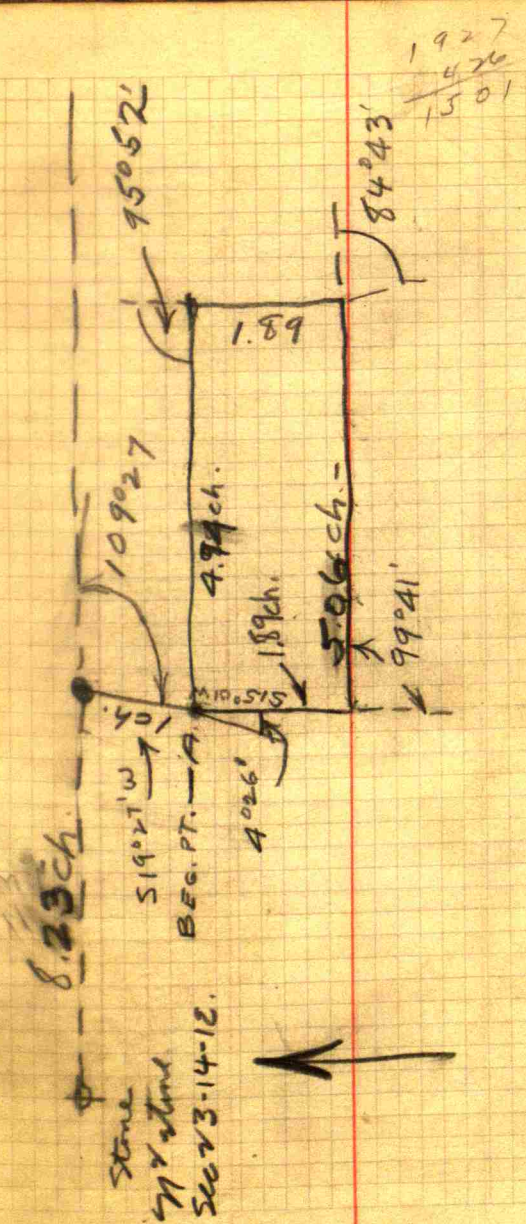
36 root

19.69 ch

19.47

Transmission line Pole - 22 links

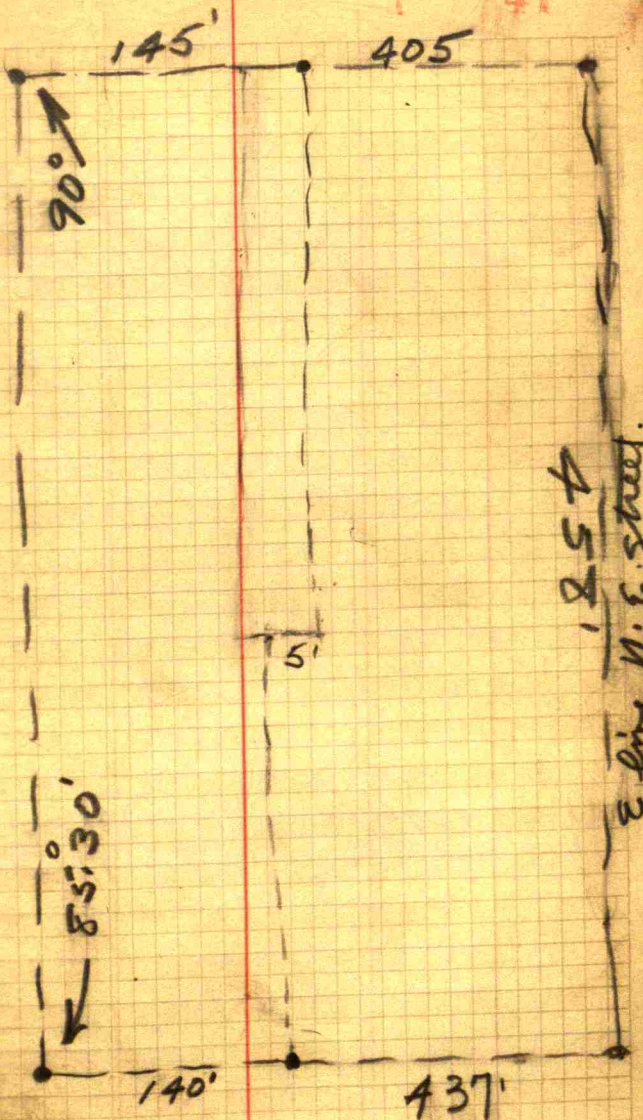
Guilford Troop School.



Bailow
Plainfield,

Sta 46+80 Cont'd

Sta 51+80



44

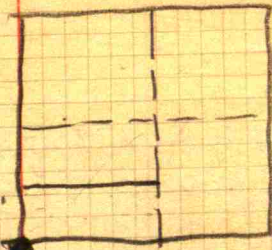
Dana Simmons.

Horace Kanne Core. to
Rueph Bly

12 a. off of τ across the
entire South side of the S^2 of
the SW $\frac{1}{4}$ NE $\frac{1}{4}$ - 36-15-1E.

45

5.9ch.



K2033A

S² NW⁴ - 35 - 15 - 1E

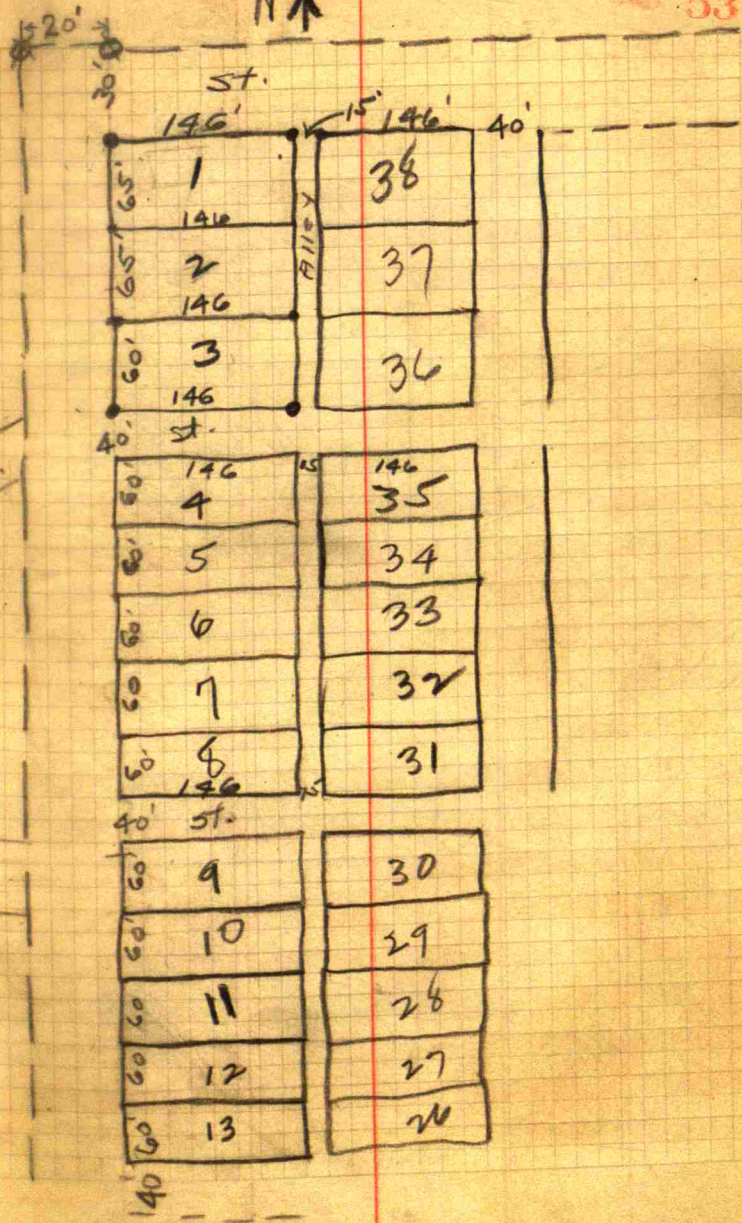
W² NE⁴ - 35 - 15 - 1E

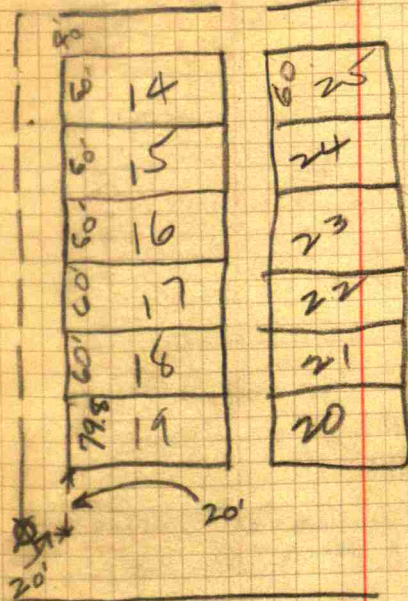
36 a. ~~NE~~ N pt. of W² of SW⁴

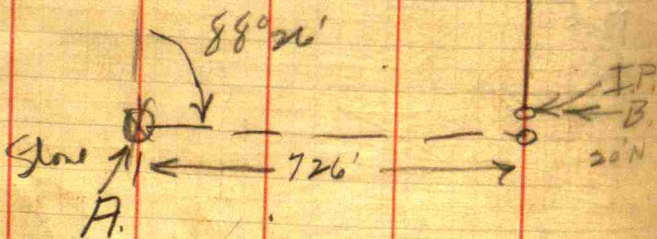
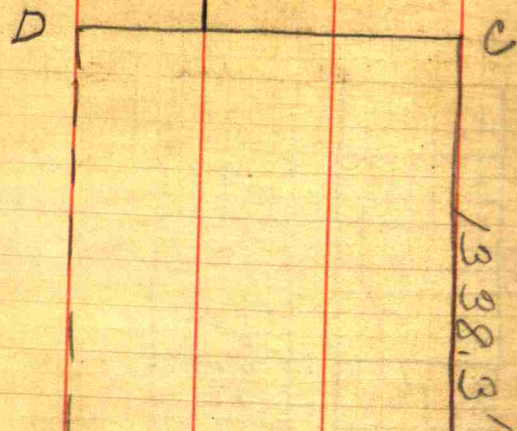
Sec 35-15-1E

Pike Bros. 1st. Add.
Plainfield, Ind.

N ↑







$$\begin{array}{r}
 146 \\
 4 \\
 \hline
 584 \\
 30 \\
 20 \\
 40 \\
 51 \\
 \hline
 726 \\
 11 \\
 \hline
 715
 \end{array}$$

South East corner of addition ⁵⁷
 B { North 1 Degree East 25.3'
 Maple.

North 45 Degree East 37.7'
 Maple.

South 3.6'
 Concrete Post

206 feet to R. Osborne
 Back Line

{ North 5 degrees West 15.4'
 Beach tree 1-ON P117 }

{ North 2 degrees West 14.6'
 Beach tree }

C North East corner of add.
 Fence post 5.5' South

210 from Conto
S rail of R.R.

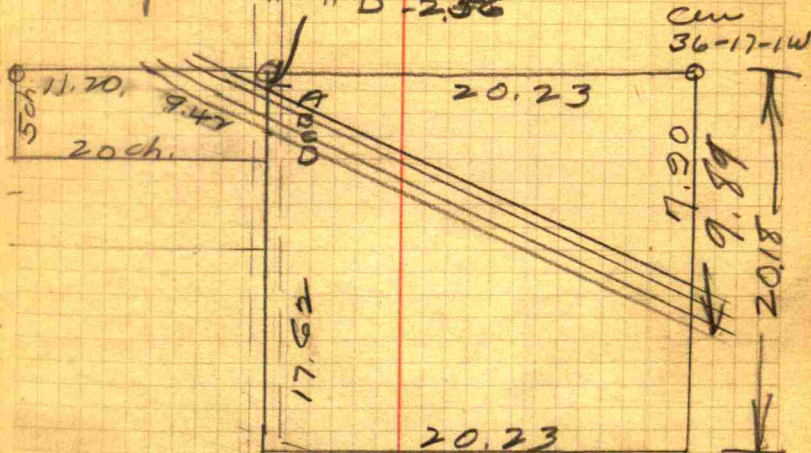
Marion Peterson
36-17-1W

256
1750

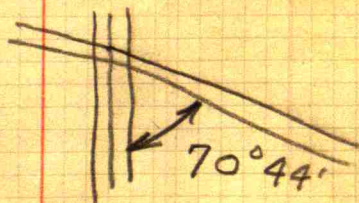
2006

Sec 36-17-1W

Conto A - 73L
" B - 1.55
" C - "
" D - 2.56



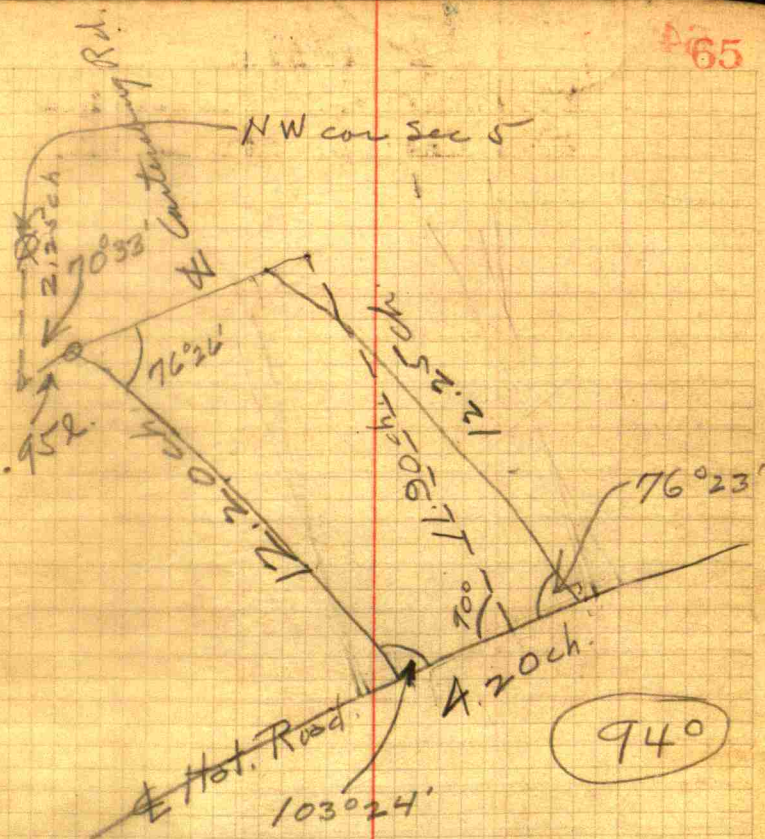
angle at D



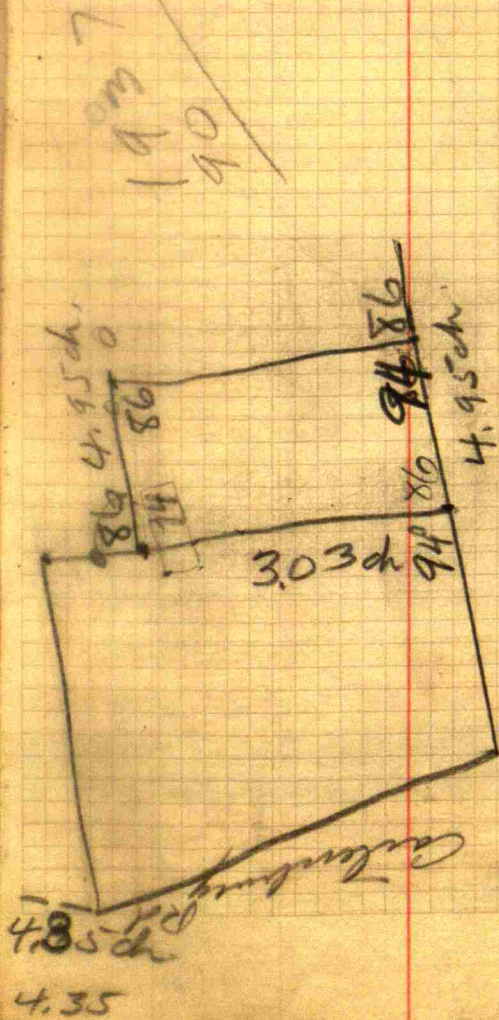
Little

32-15-1E-SW cor 37

5-14-1E-NW cor 5



4.53 E
 4.53 d



JAM LITTLE

5A. - PT NW⁴ 17W⁴ - Sec 5 - 14-1E
 1.50A. - PT NW⁴ 17W⁴ - 5-14-1E

334
 9
3006

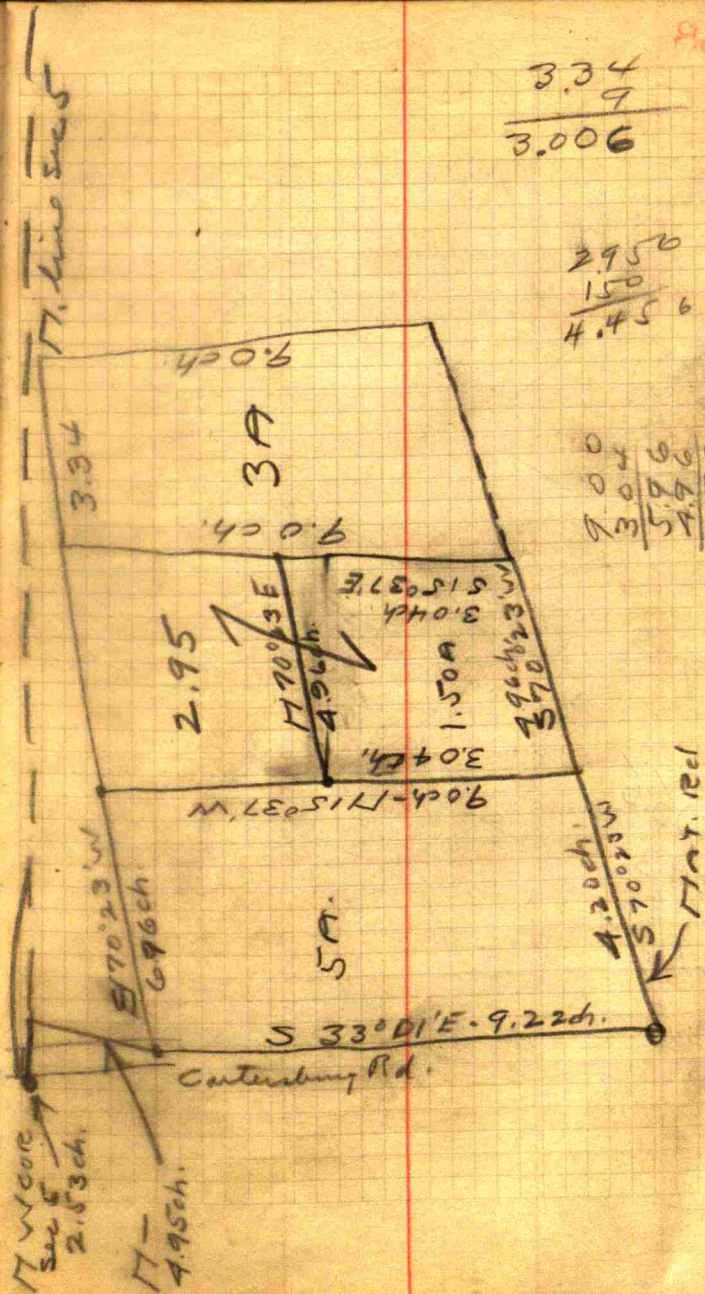
9 $\sqrt{334}$
 300
 27
 30
 27
 30

4.464

334
 9
3006

2956
 150
4.456

908
 908
5496
 338
295616

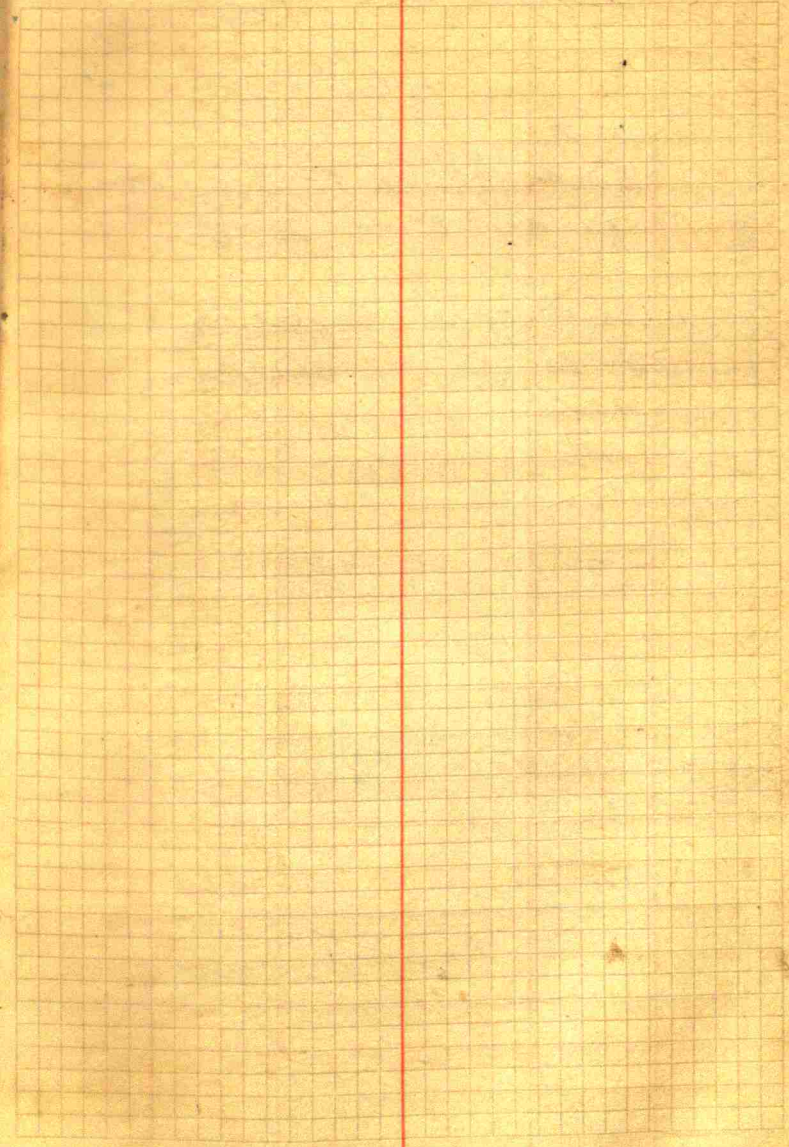


79

$\left\{ \begin{array}{l} 139.5 \\ W 147.5 \\ 288.5 \end{array} \right.$

77

$\left\{ \begin{array}{l} 340.5 \\ 143 \\ 150 \\ 286.5 \end{array} \right.$



Martha L. Hawley Add.

E^r mile stone - 34-15-12.
Wit.

End of E. Curb of S.E. St.
N 45° E - 29.5'

End of W. Curb of S.E. St.
N 45° W - 30.7'

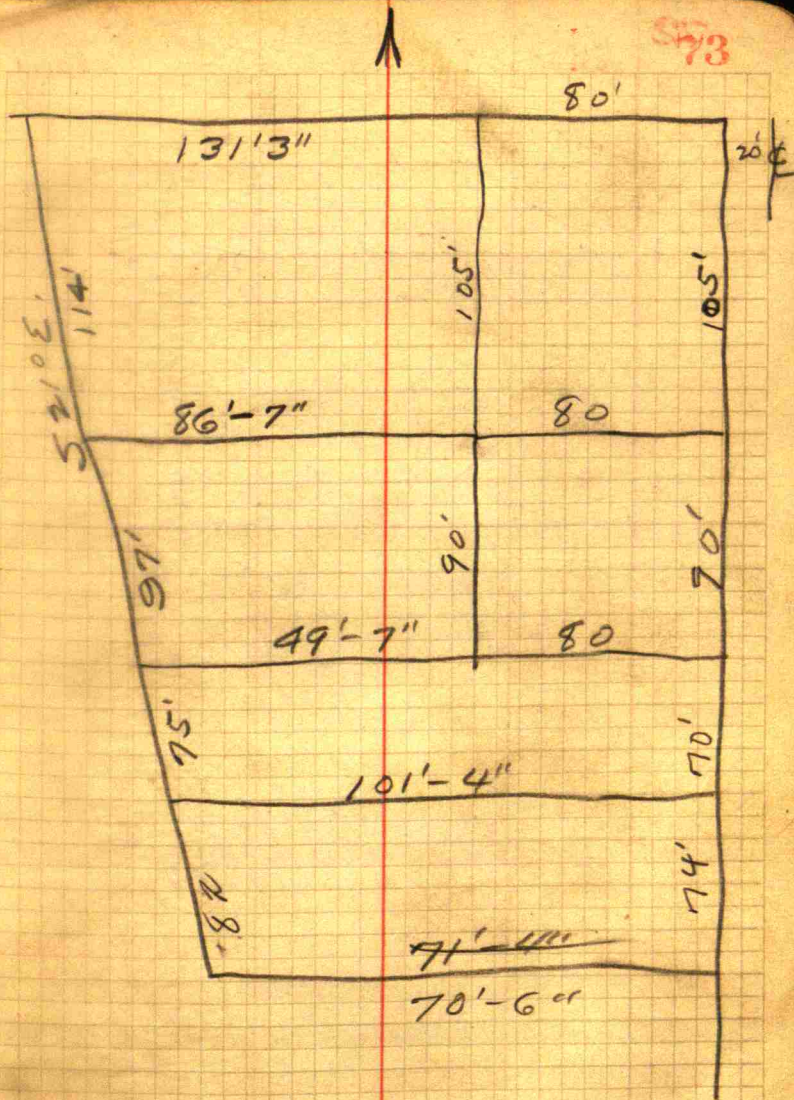
131
86
45

131
195

86
80
166'7"

360
195
165

340
195
145



100
70
74
339
340
339
1

78 A. B. Brown

Road 71.45, at S. line
is 28.00 ch. from corner
of sec. 18 - at N. line
it is 26.50 ch.

150.00
577
423

95
53
48

1987 5315
410 2930
15.77 2345
410
17.87



S 48' 15" W

L-4315

2930
5
3430

8960

3430

5530

534 W - Ray St

8960

2145

6715

16.18

635

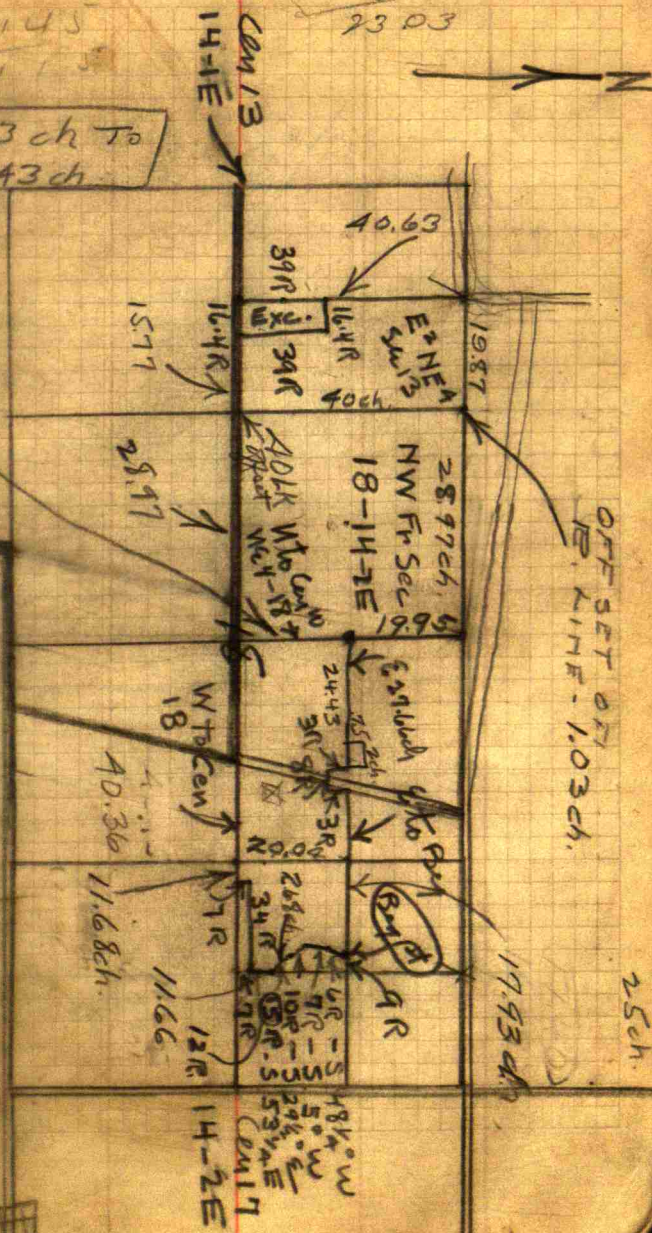
23.03

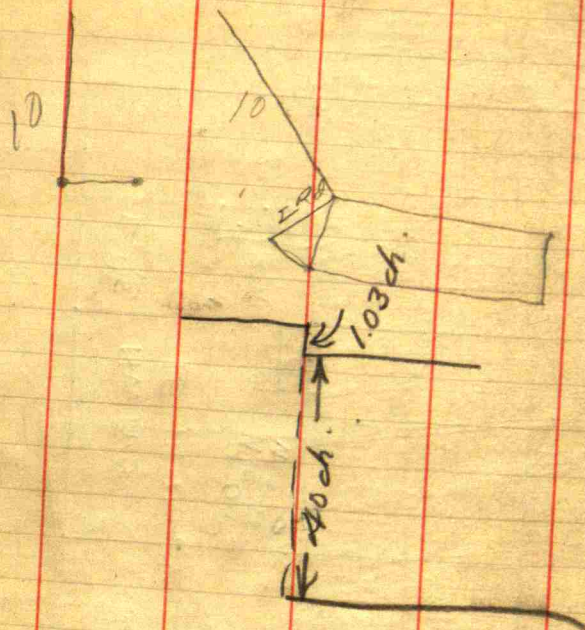
79



26.43 ch To
28.43 ch

39.90 ch





70 1/2 stone 17

05.02

40.40 ch.

qu.

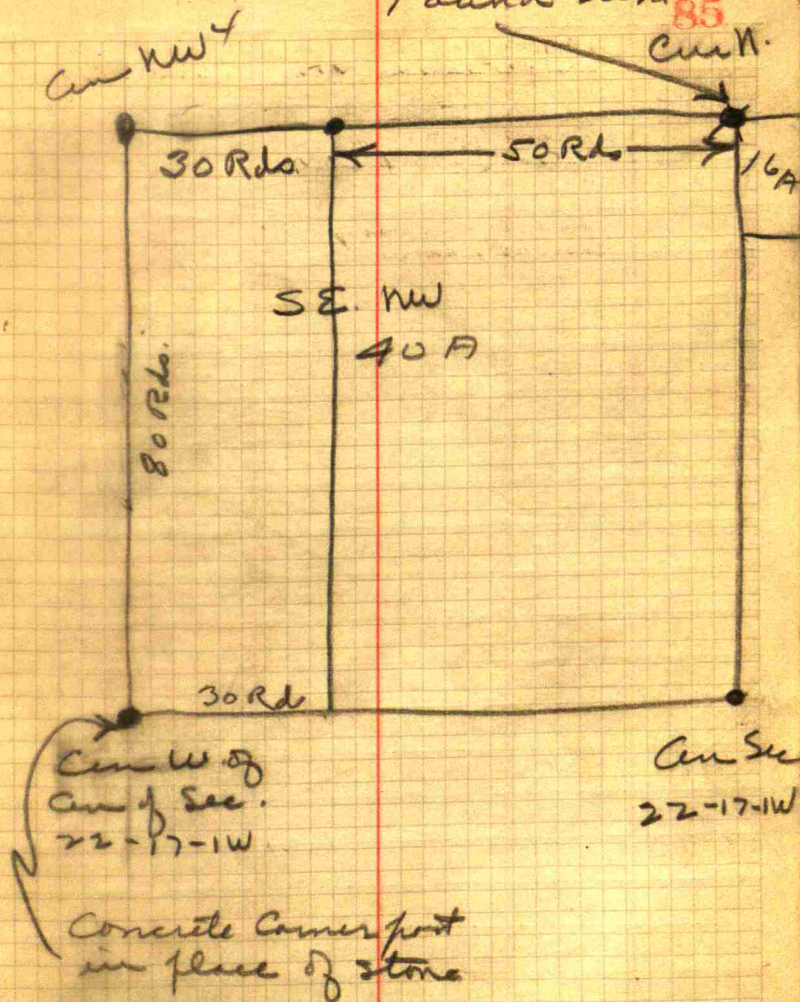
Den Sec 17.

20.12

40.31

Semi Stone

William R. Odom
to
N. C. Brown
Ligton #1



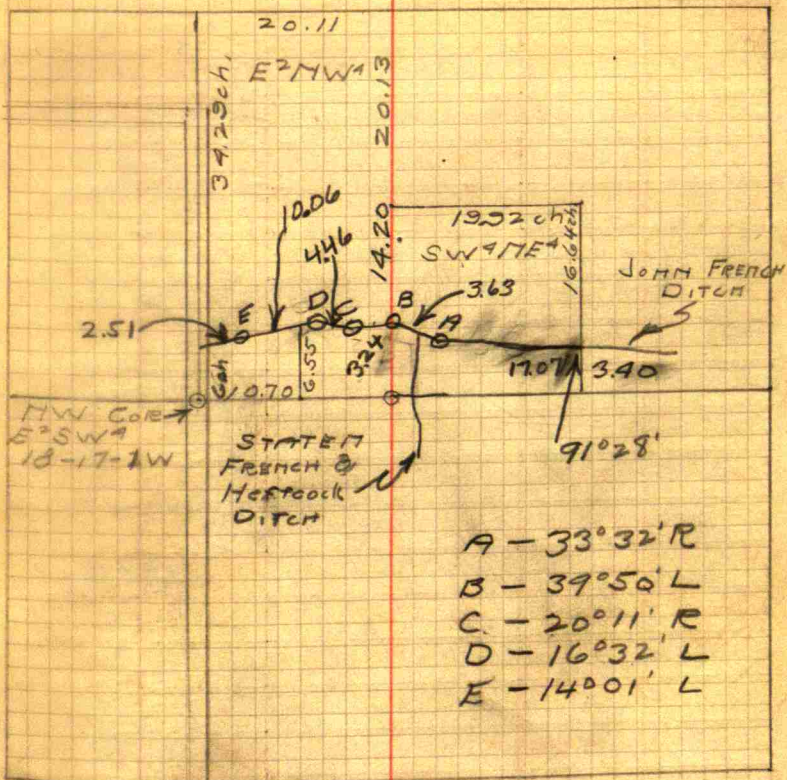
86

For Geo. Piersol of
JAMESTOWN.

A SURVEY OF THE DALE FARM
Sec. 18-17-1W

87

Sec -18-17-1W.



- A - 33°32' R
- B - 39°50' L
- C - 20°11' R
- D - 16°32' L
- E - 14°01' L

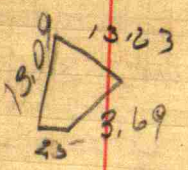
E. LINE OF 6A
TRACT IS 1.6 Sch
WEST OF D

State Ditch enters
French Ditch 75 lbs
W. of A.

88 GROVER & JULIA CLEMENT.

16.675
 2.6
 99750
 33250
 9.32250

17.2



286
 8.39

7074
 2358
 6288
 6.59459

2000
 691
 19.09

16.025
 375
 20.375
 17.2
 40750
 142625
 20375
 35.09500

2/678
 8.39

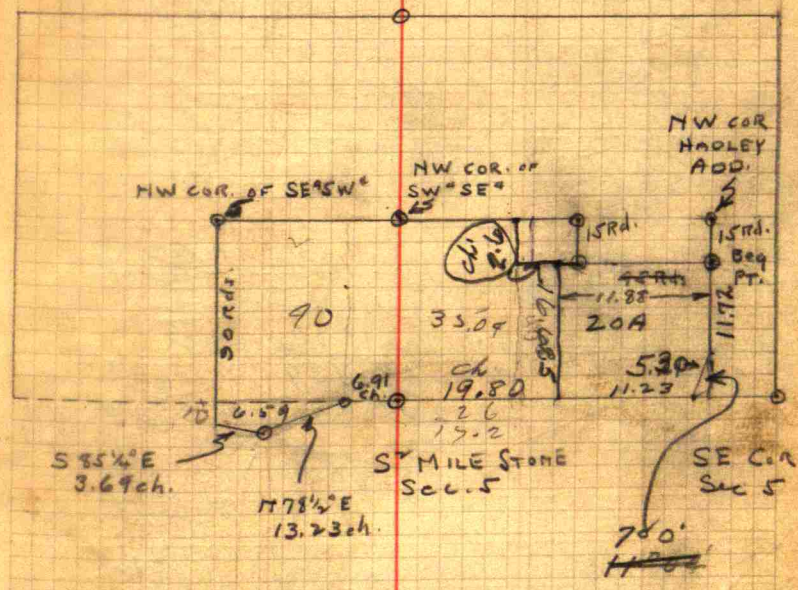
38.39
 2/7678

4/573
 7.86

80.00
 6.91
 79.09

2671 89
 691
 1980

Gen Sec 5.



40
 6.59
 35.04
 4.32
 85.95

$$\begin{array}{r} 20.68 \\ 40.65 \\ \hline 10340 \\ 12408 \\ 82720 \\ \hline 8406420 \end{array}$$

$$\begin{array}{r} 40.65 \\ 20.63 \\ \hline 12195 \\ 24390 \\ 81300 \\ \hline 8386095 \end{array}$$

$$\begin{array}{r} 40.55 \\ 19.73 \\ \hline 12165 \\ 28385 \\ 36495 \\ 4055 \\ \hline 9900515 \end{array}$$

$$\begin{array}{r} 2063 \\ 4065 \\ \hline 10315 \\ 12378 \\ 82520 \\ \hline 8386095 \end{array}$$

$$\begin{array}{r} 4065 \\ 4038 \\ \hline 32520 \\ 12195 \\ 162600 \\ \hline 16414470 \end{array}$$

$$\begin{array}{r} 40.65 \\ 19.70 \\ \hline 284550 \\ 36585 \\ 4065 \\ \hline 8008050 \end{array}$$

$$\begin{array}{r} 40.52 \\ 19.70 \\ \hline 283640 \\ 36468 \\ 4052 \\ \hline 7982440 \end{array}$$

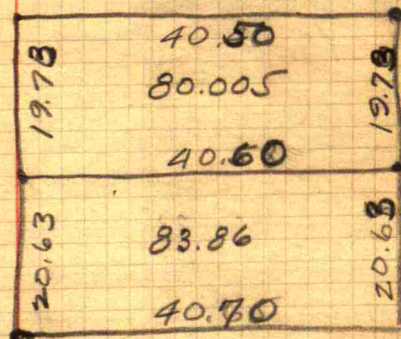
$$\begin{array}{r} 2063 \\ 4070 \\ \hline 4410 \end{array}$$

$$\begin{array}{r} 2068 \\ 1970 \\ \hline 4038 \end{array}$$

$$\begin{array}{r} 40.46 \\ 40.70 \\ \hline 281.16 \\ 40.58 \\ 40.33 \\ \hline 12174 \\ 12174 \\ 2320 \\ \hline 2063 \\ 1970 \\ \hline 4033 \\ 365918 \end{array}$$

M^cKee
Sec. 19-15-2E

34 LKS.



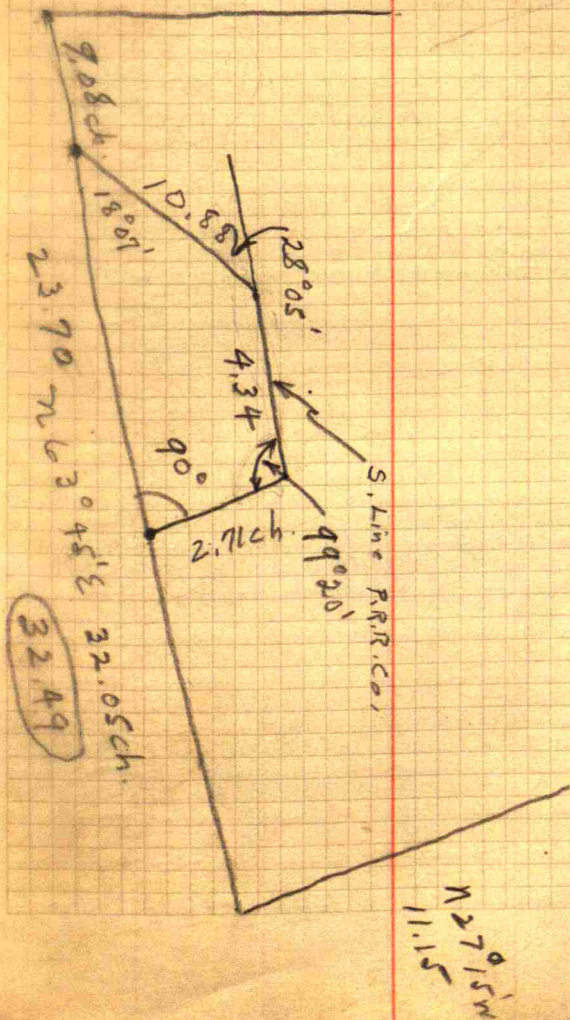
Center Sec 19

$$\begin{array}{r} 40.46 \\ 40.70 \\ \hline 281.36 \\ 40.63 \\ \hline 1 \\ 9865 \\ 9865 \\ 78920 \\ \hline 8000515 \end{array}$$

$$\begin{array}{r} 64 \\ 100 \end{array}$$

Gause Pitkins, & Gause
 12th floor
 Fletcher Trust Bldg.
 To Mr. Harry Gause

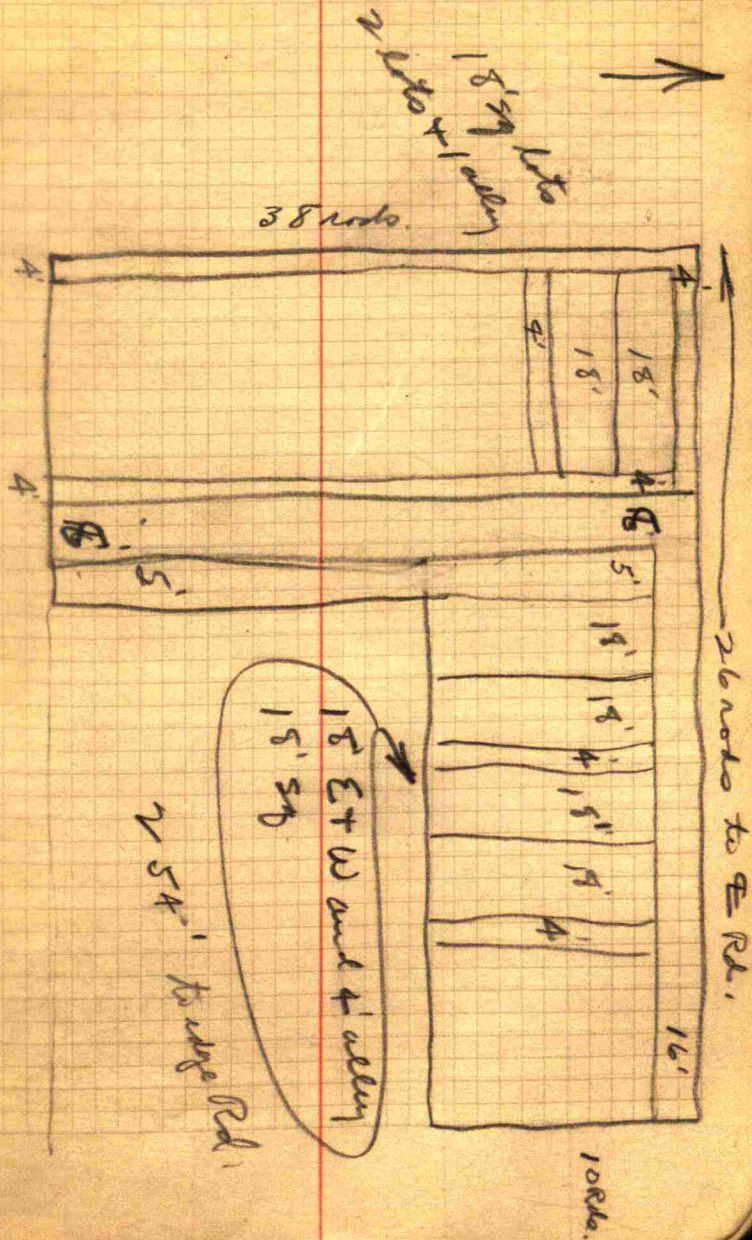
Mrs. Cora Zimmerman
 July 1937
 H. Cook
 see file



Clayton Cem.

From Samuel Edmonson
last. 1929

Leave surplus on N. pt.
to the East & South



Harvey Durham et al.
 NE corner Sec 27.
 Concrete Post N 23 1/2 links

NW 4 corner Sec 27
 Post - N. 31 1/2 links

Rock S 45° W 30 links

45.38
 15.13
 7.56
 7.56
 4.78

80.41

9
 16

689

16 | 672 | 38.25

48
 32

128

8068

8041

27

38

9

16 | 42.0 | 27.37

32

22

16

609

44

120

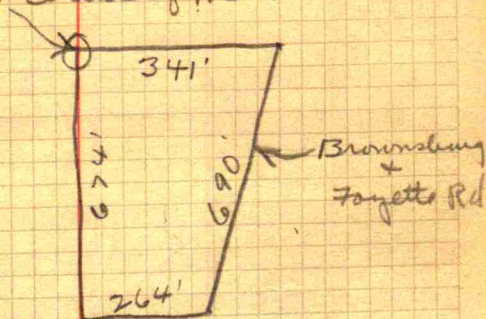
112

ALLIE B. Davidson

Note - This survey was probably made by Harold Cook in 1927 or 1928. He gives the distance from NW cor NE⁴ NW⁴ 11-16-1E to center Brownsburg & Fayette Rd as 341 ft. Both Mr. Carl Logan and I have chained this distance and have found it to be 6.69 chains or 441.54 ft which proves that he must have erred in counting his tally pins and that he actually measured 441 ft in lieu of 341 ft.

Stanley Skuttle, March 20-46.

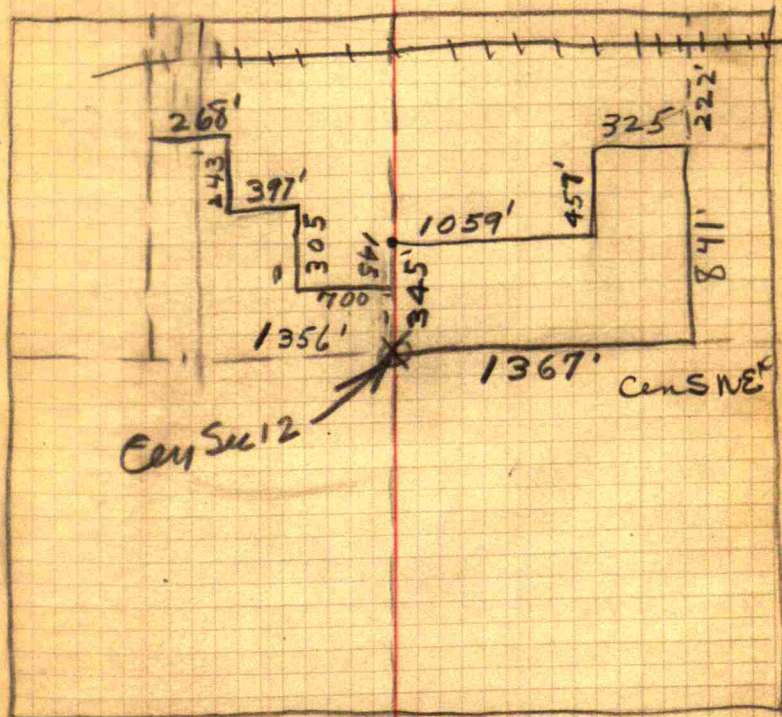
NW corner of NE⁴ NW⁴ 11-16-1E



Frank Hessong.

Sec 12 Tp 15 N - R 1 E.

~~516~~
~~397~~
~~1700~~
~~1360~~



ALICE J. TOWNSEND
To.

ROMMIE C. VERMILLION

R. C. Vermillion
Stock Yards.

From Dottie Vermillion
To
Sherman Roberts.

39.42
2094
15768
35478
78840
8254548

17.46
9254
10000

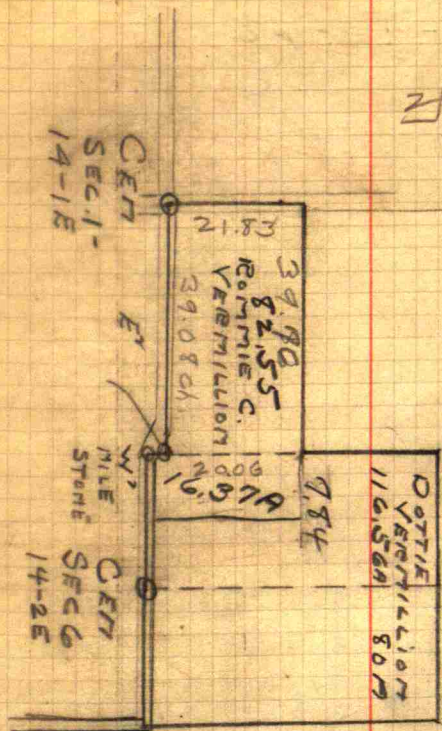
20885
174600.00
167080
75200
62655
125450

830
784
52

20.04
82.44
20888.44

39.76
39.08
78.84
39.42

2183
2006
2177
88%



3970
3908
7888
3944
2183
2006
34189
2094

10000
8363
16.37
39.74
2094
15976
35946
79880
8363436

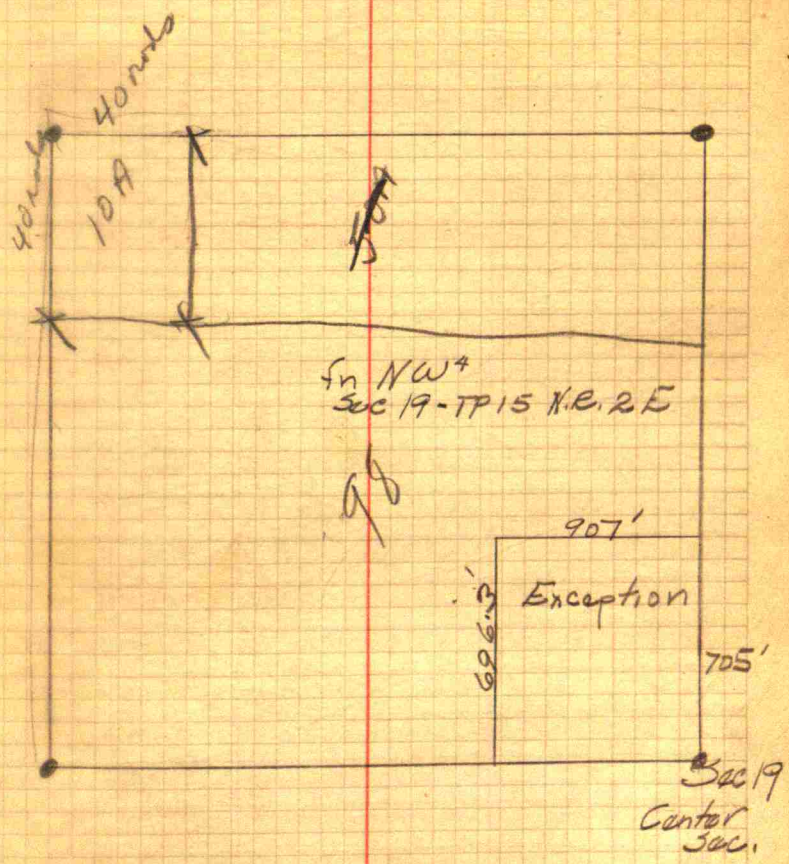
DOFFEY

Sec. 7-14-2E
Sec 12-14-1E



14.38

66	949
	66
	289
	264
	250
	198
	570
	578



100.5

27

11

8

11

27.5

 185.0

X 0178

X 1+22

 Φ bldg

X 1+56

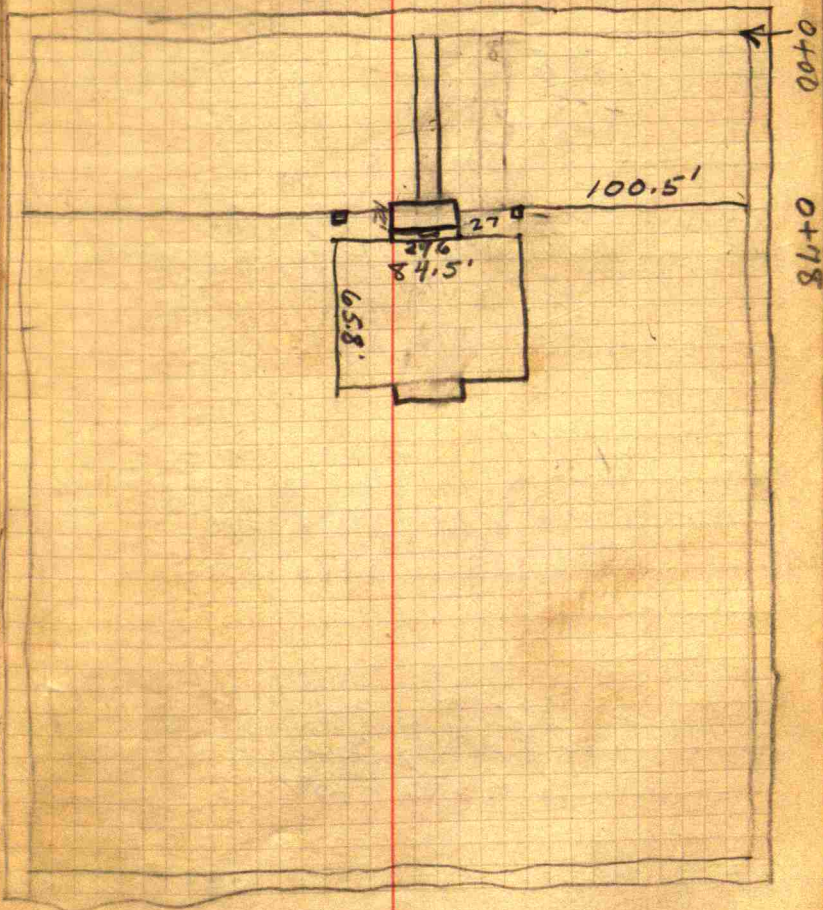
Int in N. Walk 1+56-1+70

X 2+00

X 2+40

X 2+70

X 2+98



120

Stamp 10' E of A67

Stamp 67' S of B

Stamp 30' E of D184

Stamp 30' E of D 225

121

70
56
14
14
139

422

E² mi Stone Sec 32-15-2E.

WIT: -

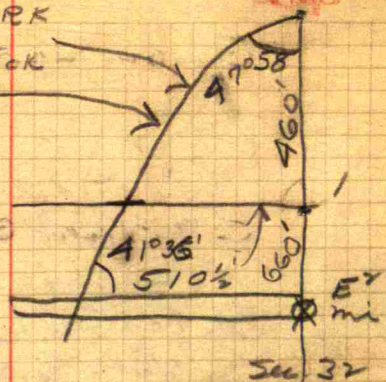
12" Maple N 10° W - 22'

30" Birch. S 5° E - 60 1/2'

40	
16 1/2	
20	
240	
40	
660	

43	
17	
60	

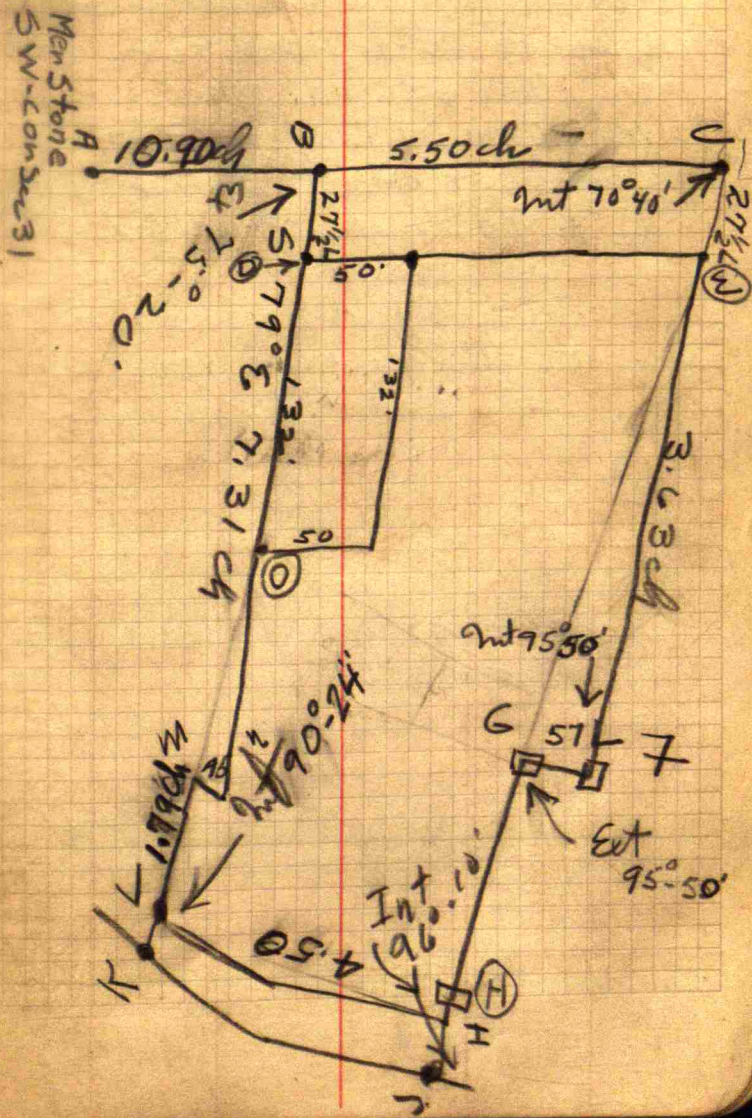
123

EAST FORK
OF
WHITE LICK
687'

Chas. H. Anderson
Maude Anderson

B - Gas pipe

- C, 50 Head Bolt, 5 rail main
 trunk V 49 links, on line
 D. Find reel E on line 27½ L
 E. stake E on RR line 27½ L
 ⑦ RR Cone marker -
 ⑧⑦ - 3.63 ch
 G - RR Cone Marker
 FG - 57 links
 H - RR Cone Marker
 I Wedge walk -
 GI = 4.26 ch
 IJ = 32½ links I cen st.
 J - Int L 96° 10'
 JK = 4.50
 KL = 32½ links - L x on wlk
 K Int 90° - 24
 KM - 1.79 ch
 M - Int 90°
 MN - 45 L -
 N - 0 - 3.12 ch



Thence $S 58^{\circ}30'E$ -
 1 ch. $54\frac{1}{2}$ links, Thence
 Def L $37^{\circ}10'$ and run 5.41 ch
 Def R $95^{\circ}20'$ and run
 14.35 ch. Def L $84^{\circ}18'$
 run 8 ch. - Thence Def
 L $2^{\circ}14'$ run 9 ch. 69 links

8960
 3230
 730

$S 52^{\circ}E$

90
 52
 38
 730
 4530

A. - $48^{\circ}45'$
 B. - $45^{\circ}30'$

90
 52
 38
 730
 4530

36010 W
 8475
 4028
 214
 2042

825
 104 ch

52
 3710
 58410 E

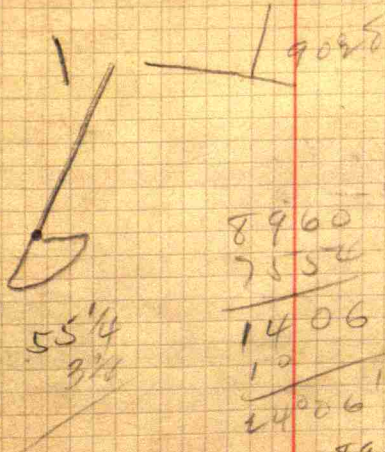
9520
 8910
 5610 W

9028
 610

8418
 600

57809 E
 214

57554 E
 74
 1



5514
 870

8960
 7554
 1406
 10
 24006

8960
 540
 8420
 9520
 17960
 90
 8940

5830
 3710
 9500

BARLOW

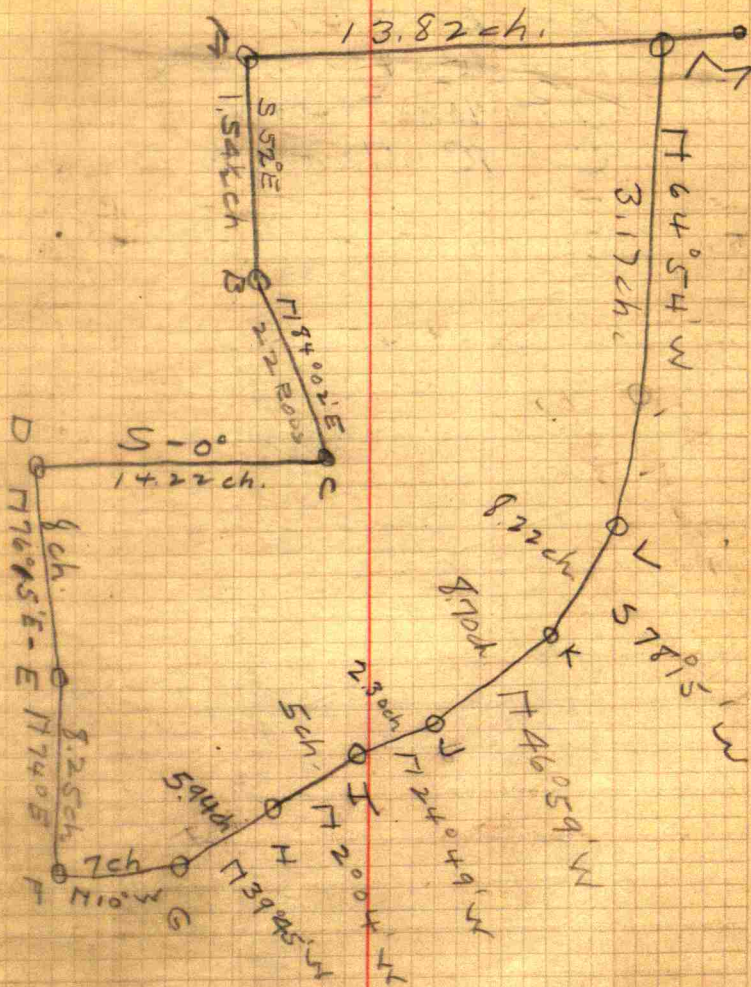
- A - 48° 45' - L - 1.54 1/2 ch.
- B - 43° 58' - L - 22 Rds
- C - 95° 58' - R - 14.22 ch.
- 6 LK-S D - 113° 45' - L - 8 ch.
- 3 LK-S E - 2° 15' - L - 8.25 ch.
- 4 LK-S F - 84° 00' - L - 7.15 ch.
- 1.35 ch-E G - 29° 45' - L - 59.4 ch.
- 5 LKs-E H - 37° 41' - R - 5 ch.
- 3 LKs EAST EDGE WINTER I - 22° 45' - L - 2.30 ch.
- " " J - 22° 10' - L - 8.70 ch.
- " " K - 54° 46' - L - 8.22 ch.
- " " L 36° 51' - R - 3.17 ch.
- 3.20 ch. M 117° 40' - L - 13.82
- n to creek

Point -

Wood Post S 45 E - 43 1/2 LK

Point Tree N 25° W - 19 1/2 LK

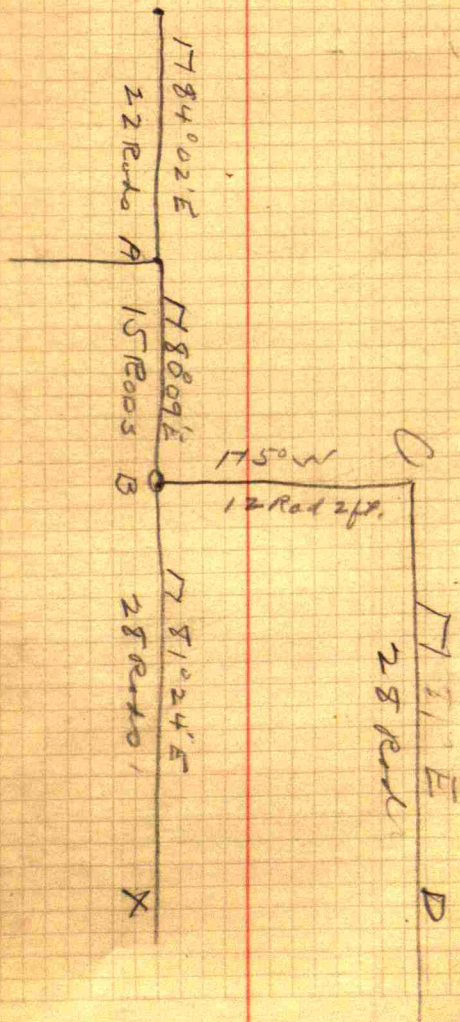
The Survey made



EXCEPTION TO
BARLOW

- A - L - $3^{\circ}53'$
 B - R - $1^{\circ}15'$ to X
 B - L - $85^{\circ}09'$ to C
 C - R - $72^{\circ}40'$ to D

8009
 115
 9124



EDITH J. BUTLEDGE
vs.
MARTHA J. HALE

12423

ER $\frac{1}{4}$

SW+NE⁴
27-17-1W

M.H. $\frac{3}{4}$

3000 ⁰⁰
1500 ⁰⁰
<hr/> 4500 ⁰⁰

3375 ⁰⁰
3000 ⁰⁰
<hr/> 6375 ⁰⁰
4500 ⁰⁰
<hr/> 1875 ⁰⁰
1125 ⁰⁰
<hr/> 3000 ⁰⁰

SW+NW⁴
27-17-1W

ER $\frac{1}{2}$
M.H. $\frac{1}{2}$

3000 ⁰⁰

SE⁴NW⁴
24-17-1W

ER $\frac{1}{2}$
M.H. $\frac{1}{2}$

3000 ⁰⁰

AIRPORT.

A. Electric light current

City water from BB.
can be piped $1\frac{3}{4}$ mi to
west line of airport

Telephone line along
20 side state Rd.

J.N. S. & E. line - 133'
P.E. Riv. - Big 7 am. - 133'
Both R. of W. str. 116'

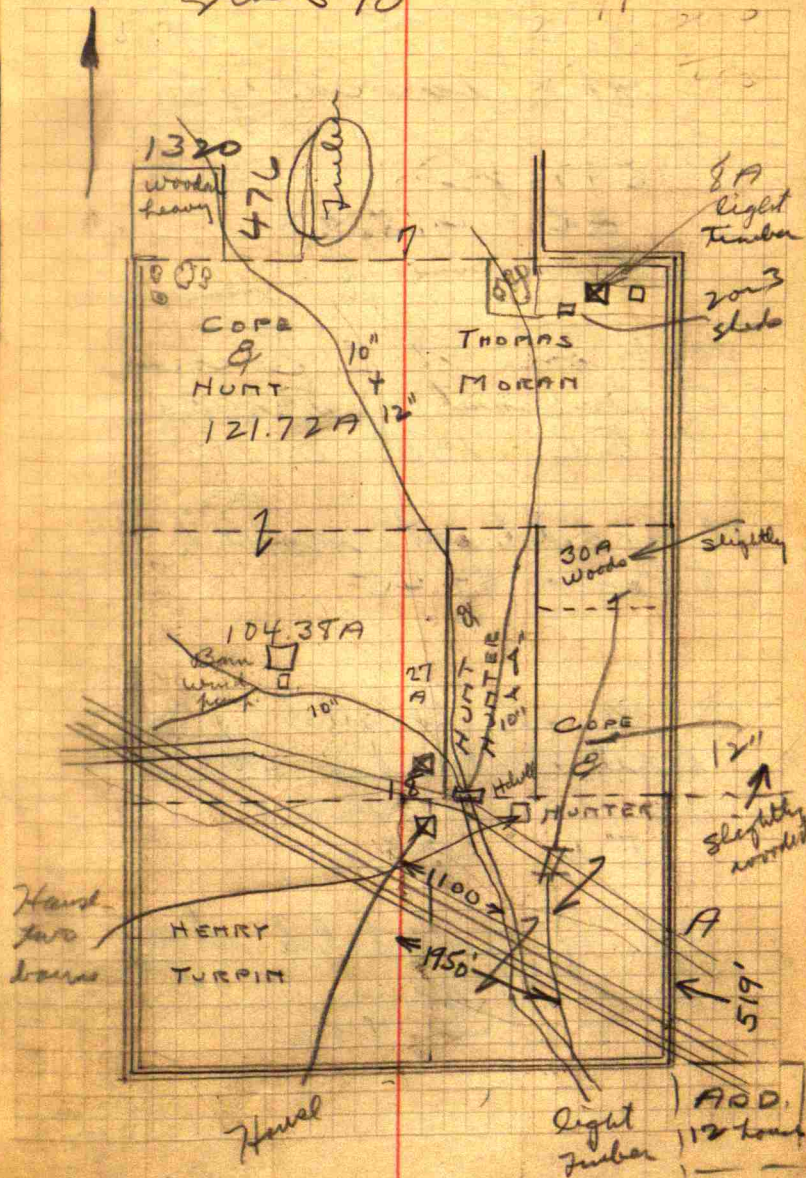
From S. R. of W. of RR. to
SE cor Sec. 18 - 469'

From state Rd. to RR. along
E N & S of Sec 18 - 562'

3096' along the RR.

From S² mile stone to S. RR.
2044'

Sta 590



~~B.M.
N.E. corner of S. Rail
of Bridge 11' E of Sta
597472
EL. 415.83~~

B.M. on N.E. corner
of S. Rail of Bridge
EL. 100.00

Fl. of ditch at mouth of
tiles - 92.45

B.M. on E end of N.
rail of bridge at
S. line of farm.
EL. 93.11

Fl. of open ditch at so.
line of farm.
EL. 94.24

⊙ 97.45
⊙ 99.31
⊙ 97.20
⊙ 94.78

92.45
84.24
- 8.21

$$\begin{array}{r}
 43560 \overline{) 4726020} \\
 \underline{43560} \\
 370020 \\
 \underline{348480} \\
 215400
 \end{array}$$

$$\begin{array}{r}
 43560 \\
 \hline
 87120
 \end{array}$$

$$\begin{array}{r}
 498 \overline{) 87120} \\
 \underline{498} \\
 3732 \\
 \underline{3486} \\
 2460 \\
 \underline{1992} \\
 4680 \\
 \underline{4482} \\
 1998 \\
 \hline
 249.4
 \end{array}$$

$$\begin{array}{r}
 174.9 \\
 \hline
 699.6
 \end{array}$$

10.85

$$\begin{array}{r}
 43520 \\
 1015 \\
 \hline
 429 \overline{) 435600} \\
 \underline{429} \\
 660 \\
 \underline{429} \\
 2310 \\
 \underline{2145} \\
 165
 \end{array}$$

$$\begin{array}{r}
 43560 \\
 \hline
 5 \\
 \hline
 217800
 \end{array}$$

$$\begin{array}{r}
 249.4 \\
 498 \\
 \hline
 19952 \\
 22446 \\
 9976 \\
 \hline
 124201.2
 \end{array}$$

$$\begin{array}{r}
 8765 \overline{) 2178000.} \\
 \underline{17530} \\
 42500 \\
 \underline{35060} \\
 74420 \\
 \underline{70120} \\
 43800 \\
 \underline{35060} \\
 8740
 \end{array}$$

$$\begin{array}{r}
 2484 \\
 4 \\
 \hline
 993.6
 \end{array}$$

$$\begin{array}{r}
 43560 \overline{) 124201} \\
 \underline{285} \\
 87120 \\
 \hline
 370810 \\
 \underline{348480} \\
 223300 \\
 \underline{217800} \\
 55
 \end{array}$$

$$\begin{array}{r}
 1311.4 \\
 993.6 \\
 \hline
 317.8
 \end{array}$$

$$\begin{array}{r}
 64 \\
 165 \overline{) 10150} \\
 \underline{990} \\
 250 \\
 \underline{165} \\
 85
 \end{array}$$

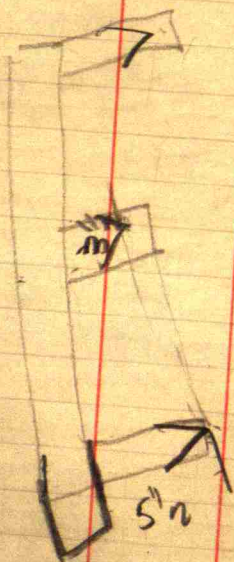
$$\begin{array}{r}
 432 \\
 66 \\
 \hline
 498
 \end{array}$$

$$\begin{array}{r}
 949 \\
 498 \\
 \hline
 7592 \\
 8541 \\
 \underline{3796} \\
 472602
 \end{array}$$

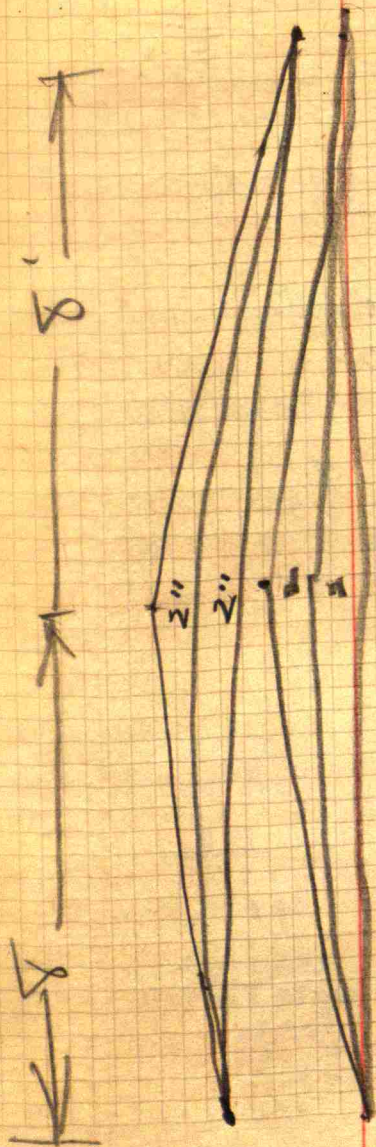
20

476
46

$$\begin{array}{r}
 721 \\
 \hline
 600 \mid 4760 \\
 \quad 462 \\
 \hline
 \quad 140 \\
 \quad 132 \\
 \hline
 \quad \quad 80
 \end{array}$$



$$\begin{array}{r}
 721 \\
 20 \\
 \hline
 14420
 \end{array}$$



$$\begin{array}{r} 8.81 \\ - 30 \\ \hline 8.51 \\ 30 \end{array}$$

$$\begin{array}{r} \underline{\quad} 20 \\ 12 \\ \hline 40 \\ 20 \end{array}$$

$$\begin{array}{r} 79 \overline{) 2400.} \\ \underline{237} \\ 300 \end{array}$$

$$\begin{array}{r} 750 \\ 634 \\ \hline 586 \\ 1970 \end{array}$$

$$\begin{array}{r} 851 \\ 634 \\ \hline 754 \times 1.01 \\ 1974 \end{array}$$

$$7.50 + 38$$

$$\begin{array}{r} 101 \\ 75 \\ \hline 505 \\ 707 \\ \hline 757.5 \\ 38 \end{array}$$

$$\begin{array}{r} 197 \overline{) 7575} \\ \underline{598} \\ 1665 \\ \underline{1578} \\ 87 \end{array}$$

$$\begin{array}{r} 634 \\ 1970 \end{array} \times 101 = \begin{array}{r} 634 \\ 101 \\ \hline 634 \\ 6340 \\ \hline 64034 \end{array}$$

$$634 + 33$$

$$\begin{array}{r} 1970 \overline{) 64034} \\ \underline{5910} \\ 4934 \\ \underline{3940} \\ 994 \end{array}$$

$$\begin{array}{r} 586 \\ 1970 \end{array} \times 101$$

$$\begin{array}{r} 586 \\ 101 \\ \hline 586 \\ 5860 \\ \hline 59186 \end{array}$$

$$\begin{array}{r} 38 \\ 33 \\ \hline 30 \\ 109 \end{array}$$

$$\begin{array}{r} 1970 \overline{) 59186} \\ \underline{5910} \\ 80 \end{array}$$

$$\begin{array}{r} 586 \\ 30 \\ \hline 616 \end{array}$$

$$\begin{array}{r} 750 \\ 38 \\ \hline 788 \end{array}$$

$$\begin{array}{r} 875 \\ 478 \\ \hline \end{array}$$

$$\begin{array}{r} 43560 \overline{) 1149442} \\ \underline{87120} \\ 278242 \\ \underline{261360} \\ 168820 \\ \underline{130680} \\ 381400 \\ \underline{348480} \end{array}$$

$$\begin{array}{r} 1311.4 \\ 876.5 \\ \hline 65570 \\ 78684 \\ \hline 104912 \\ 1149442.10 \end{array}$$

$$\begin{array}{r} 43520 \\ \hline 87120 \end{array}$$

$$\begin{array}{r} 207.3 \\ \hline 4305 \overline{) 871200.} \\ \underline{8610} \\ 1000 \\ \underline{8610} \\ 15900 \\ \underline{12915} \end{array}$$

$$\begin{array}{r} 202.4 \\ \hline 430.5 \\ \hline 10120 \\ 860720 \\ \hline 87133.20 \end{array}$$

$$\begin{array}{r} 1311.4 \\ \hline 1012. \\ \hline 299.4 \end{array}$$

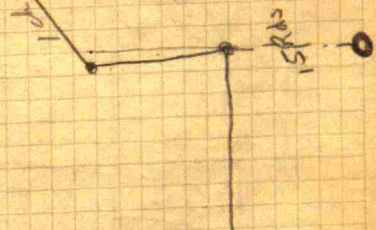
$$\begin{array}{r} 202.4 \\ \hline 1012.0 \\ \hline 299.4 \\ 430.5 \\ \hline 14970 \\ 89820 \\ \hline 11976 \\ \hline 128891.70 \end{array}$$

$$\begin{array}{r} 7.96 \\ \hline 4356 \overline{) 128891} \\ \underline{87120} \\ 417710 \\ \underline{392040} \\ 256700 \\ \underline{261360} \end{array}$$

$$\begin{array}{r} 3945 \\ \hline 3741 \\ \hline 204 \end{array}$$

$$\begin{array}{r} 320 \\ 80 \end{array}$$

$$\begin{array}{r} 9.60 \\ \hline 20 \\ \hline 192.00 \end{array}$$



$$\begin{array}{r} .960 \\ \hline 2082 \overline{) 2000.00} \\ \underline{18738} \\ 12620 \\ \underline{12492} \\ 1280 \end{array}$$

$$\begin{array}{r} 40 \\ \hline 20 \\ \hline 80.0 \end{array}$$

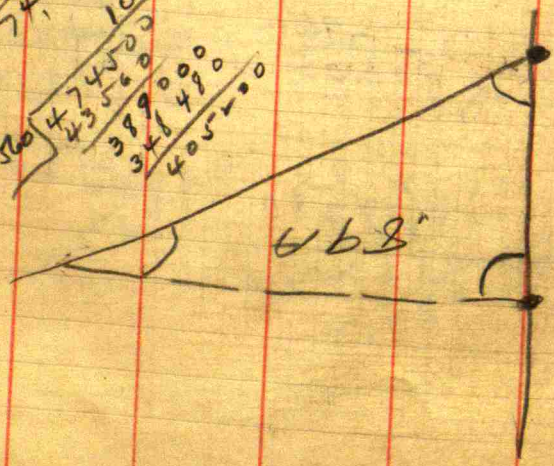
$$2082 \overline{) 2000.}$$

74 Rd.
N. side 19.745 ch.
W. side 40.10 ch

1987
66
11922
11922
1311.42

10.08
19.75 19.80.0.
19.75
5000
900

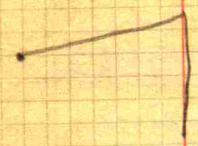
949
5
474500
1089
4300 474500
435600
389000
326490
405200



90
35
6

74
10

16.
20
32.0



~~19.745
4010
19.7450
394900
89.687450~~

780.5
3651
11506
80
2506

19.745
4010
697450
787800

8960 79.177450
2506
6454

80
79.18
82
20

$$\begin{array}{r} 4659 \\ 5446 \\ \hline 10145 \end{array}$$

$$76\frac{1}{4} \quad 8960$$

$$\begin{array}{r} 4.20 \overline{) 50.00.0} \\ \underline{420} \\ 800 \\ \underline{420} \\ 3800 \\ \underline{3780} \\ 200 \end{array}$$

$$\begin{array}{r} 10145 \\ 90 \\ \hline 1145 \end{array}$$

$$\begin{array}{r} 450 \\ 200 \\ \hline 250 \end{array}$$

$$\begin{array}{r} 8960 \\ 1145 \\ \hline 7815 \end{array}$$

$$\begin{array}{r} 11.90 \\ 4.20 \\ \hline 23800 \\ 4760 \\ \hline 499800 \end{array}$$

1002

$$\begin{array}{r} 634 \\ 411 \\ \hline 220 \end{array}$$

7850

$$\begin{array}{r} .66 \\ .27 \\ \hline \end{array}$$

$$\begin{array}{r} .25 \\ .27 \\ \hline 175 \\ 50 \\ \hline 675 \end{array}$$

$$\begin{array}{r} 68 \\ 3 \\ \hline 16 \overline{) 204} \\ \underline{16} \\ 44 \\ \underline{32} \\ 120 \\ \underline{112} \\ 8 \end{array}$$

$$\begin{array}{r} 8960 \\ 8402 \\ \hline 558 \end{array}$$

$$\begin{array}{r} 10927 \\ 8960 \\ \hline 1927 \end{array}$$

$$\begin{array}{r} 5520 \quad E \\ 4358 \\ \hline 9558 \\ 9558 \\ \hline 8960 \\ 08 \end{array}$$

$$\begin{array}{r} 8960 \\ 558 \\ \hline 8402 \end{array}$$

20.33 ch.

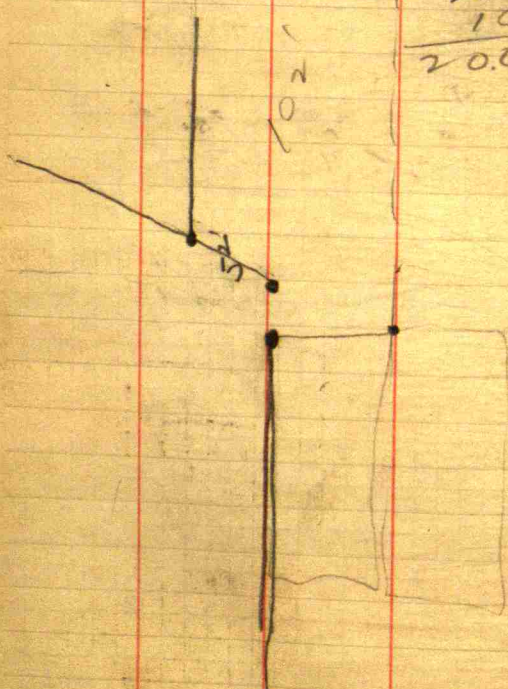
$$\begin{array}{r} 24 \\ 165 \overline{) 4290} \\ \underline{330} \\ 990 \\ \underline{990} \\ 0 \end{array}$$

$$\begin{array}{r} 16.5 \\ 16 \\ \underline{1990} \\ 165 \\ \underline{264.0} \end{array}$$

$$\begin{array}{r} 10. \\ 20 \overline{) 200} \\ \underline{200} \\ 0 \end{array}$$

$$\begin{array}{r} 20 \\ 10 \\ \underline{200} \end{array}$$

$$\begin{array}{r} 750 \\ 60 \\ \underline{4500} \\ 45 \\ \underline{49500} \end{array}$$



$$\begin{array}{r} 104.6 \\ 430 \overline{) 45560} \\ \underline{430} \\ 0500 \\ \underline{430} \\ 2700 \end{array}$$

$$\begin{array}{r} 432 \\ 429 \\ \underline{661} \\ 430.5 \end{array}$$

$$\begin{array}{r} 12 \\ 40 \\ \underline{480} \end{array}$$

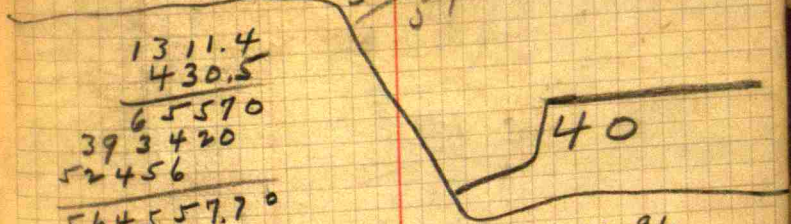
60.8 l.

$$\begin{array}{r} 33 \\ 16 \frac{1}{2} \\ \underline{49 \frac{1}{2}} \end{array}$$

$$\begin{array}{r} 60.7 \\ 7.9 \overline{) 4800.0} \\ \underline{474} \\ 6000 \\ \underline{543} \\ 57 \end{array}$$

7.9

$$\begin{array}{r} 1311.4 \\ 430.5 \\ \underline{65570} \\ 393420 \\ 52456 \\ \underline{564557.7} \end{array}$$



$$\begin{array}{r} 12.96 \\ 43560 \overline{) 564557.7} \\ \underline{43560} \\ 128957 \\ \underline{87120} \\ 418377 \\ \underline{392040} \\ 263370 \\ \underline{261360} \\ 2010 \end{array}$$

$$\begin{array}{r} 8960 \\ 8230 \\ \hline 730 \end{array}$$

$$\begin{array}{r} 151 \\ 15 \\ 151 \\ 40 \\ 151 \\ 15 \\ 151 \\ 40 \\ \hline 714 \end{array}$$

$$\begin{array}{r} 146 \\ 15 \\ 146 \\ 40 \\ 146 \\ 15 \\ 146 \\ 40 \\ 20 \\ \hline 714 \end{array}$$

$$60 \times 146 \cdot 16.5 \overline{) 13200.}$$

$$\begin{array}{r} 8 \\ \hline 13200 \\ 1320 \\ \hline 100 \end{array}$$

80 lbs. = $\frac{1}{4}$ mi.
20 ch = $\frac{1}{4}$ mi.

$$\begin{array}{r} 80 \\ 16 \\ 40 - \frac{1}{4} \\ 80 \text{ ch mi.} \\ 320 = \text{mi.} \end{array}$$

$$\begin{array}{r} 5415 \\ \hline 825 \\ 8961 \\ 160 \\ \hline 162 \\ \hline 3.28 \end{array}$$

320 lbs mi.

$$\begin{array}{r} 160 \\ 160 \\ \hline 9600 \\ 160 \\ \hline 25600 \end{array}$$

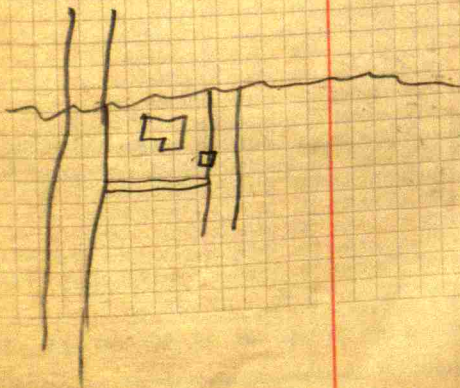
$$\begin{array}{r} 12 \\ 10 \\ \hline 120 \end{array}$$

$$\begin{array}{r} 5280 \\ 40 \end{array}$$

$$\begin{array}{r} 59 \\ 4 \\ \hline 23.6 \end{array}$$

$$\begin{array}{r} 10 \\ 10 \\ \hline 100 \end{array}$$

$$2033 \overline{) 12000.}$$

$$\begin{array}{r} 5.9 \\ \hline 10165 \\ \hline 18350 \\ 18297 \\ \hline 530 \end{array}$$


694

10 00
95

9.08
115
15

115
40
115
15

115
40

570
115

685

714
12

726

726 714

714
150

56
4

714
110

604
151

130
15

130
40
130
15

130
40

630
130

760

130
15
130
40
130
15
130

590
40

630

125
15
125
40
125
15

140
15
140
40
140
15
140
40

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.		
0°	0	0	1.	∞	∞	1.	90°	S	.1392	.1405	1.0098	7.185	7.115	.99027	82
10	.0029	.0029		343.8	343.8	I.	50	10	.1421	.1435	1.0102	7.040	6.988	.98988	50
20	.0058	.0058		171.9	171.9	.99998	40	20	.1449	.1465	1.0107	6.800	6.827	.98944	40
30	.0087	.0087		114.6	114.6	.99996	30	30	.1478	.1495	1.0111	6.768	6.891	.98902	30
40	.0116	.0116	1.0001	85.94	85.94	.99993	20	40	.1507	.1524	1.0115	6.836	6.561	.98858	20
50	.0145	.0145	1.0001	68.76	68.76	.99989	10	50	.1536	.1554	1.0120	6.512	6.435	.98814	10
1	.0175	.0175	1.0002	57.30	57.29	.99985	89	9	.1564	.1584	1.0125	6.304	6.314	.98769	81
10	.0204	.0204	1.0002	49.11	49.10	.99979	50	10	.1593	.1614	1.0129	6.277	6.197	.98723	50
20	.0233	.0233	1.0003	42.88	42.96	.99973	40	20	.1622	.1644	1.0134	6.166	6.084	.98676	40
30	.0262	.0262	1.0003	38.20	38.19	.99966	30	30	.1650	.1673	1.0139	6.059	5.976	.98629	30
40	.0291	.0291	1.0004	34.38	34.37	.99958	20	40	.1679	.1703	1.0144	5.955	5.871	.98580	20
50	.0320	.0320	1.0005	31.26	31.24	.99949	10	50	.1708	.1733	1.0149	5.855	5.769	.98531	10
2	.0349	.0349	1.0006	28.65	28.64	.99939	88	10	.1736	.1763	1.0154	5.759	5.671	.98481	80
10	.0378	.0378	1.0007	26.45	26.43	.99929	50	10	.1765	.1793	1.0160	5.665	5.576	.98430	50
20	.0407	.0407	1.0008	24.56	24.54	.99917	40	20	.1794	.1823	1.0165	5.575	5.485	.98378	40
30	.0436	.0437	1.0010	22.93	22.90	.99905	30	30	.1822	.1853	1.0170	5.488	5.396	.98325	30
40	.0465	.0466	1.0011	21.49	21.47	.99892	20	40	.1851	.1883	1.0176	5.403	5.309	.98272	20
50	.0494	.0495	1.0012	20.23	20.21	.99878	10	50	.1880	.1914	1.0181	5.320	5.226	.98218	10
3	.0523	.0524	1.0014	19.11	19.08	.99863	87	11	.1908	.1944	1.0187	5.241	5.145	.98163	79
10	.0552	.0553	1.0015	18.10	18.07	.99847	50	10	.1937	.1974	1.0193	5.164	5.066	.98107	50
20	.0581	.0582	1.0017	17.20	17.17	.99831	40	20	.1965	.2004	1.0199	5.089	4.989	.98050	40
30	.0610	.0612	1.0019	16.38	16.35	.99813	30	30	.1994	.2035	1.0205	5.016	4.915	.97992	30
40	.0640	.0641	1.0020	15.64	15.60	.99795	20	40	.2022	.2065	1.0211	4.945	4.843	.97934	20
50	.0669	.0670	1.0022	14.96	14.92	.99776	10	50	.2051	.2095	1.0217	4.877	4.773	.97875	10
4	.0698	.0699	1.0024	14.34	14.30	.99756	86	12	.2079	.2126	1.0223	4.810	4.705	.97815	78
10	.0727	.0729	1.0027	13.76	13.73	.99736	50	10	.2108	.2156	1.0230	4.745	4.638	.97754	50
20	.0756	.0758	1.0029	13.23	13.20	.99714	40	20	.2136	.2186	1.0236	4.682	4.574	.97692	40
30	.0785	.0787	1.0031	12.75	12.71	.99692	30	30	.2164	.2217	1.0243	4.620	4.511	.97630	30
40	.0814	.0816	1.0033	12.29	12.25	.99668	20	40	.2193	.2247	1.0249	4.560	4.449	.97568	20
50	.0843	.0846	1.0036	11.87	11.83	.99644	10	50	.2221	.2278	1.0256	4.502	4.390	.97502	10
5	.0872	.0875	1.0038	11.47	11.43	.99619	85	13	.2250	.2309	1.0263	4.445	4.331	.97437	77
10	.0901	.0904	1.0041	11.10	11.06	.99594	50	10	.2278	.2339	1.0270	4.390	4.275	.97371	50
20	.0929	.0934	1.0043	10.76	10.71	.99567	40	20	.2306	.2370	1.0277	4.336	4.218	.97304	40
30	.0958	.0963	1.0046	10.43	10.39	.99540	30	30	.2334	.2401	1.0284	4.284	4.165	.97237	30
40	.0987	.0992	1.0049	10.13	10.08	.99511	20	40	.2363	.2432	1.0291	4.232	4.113	.97169	20
50	.1016	.1022	1.0052	9.839	9.788	.99482	10	50	.2391	.2462	1.0298	4.182	4.061	.97100	10
6	.1045	.1051	1.0055	9.587	9.514	.99452	84	14	.2419	.2493	1.0306	4.133	4.011	.97030	76
10	.1074	.1080	1.0058	9.309	9.255	.99421	50	10	.2447	.2524	1.0314	4.086	3.962	.96959	50
20	.1103	.1110	1.0061	9.065	9.010	.99390	40	20	.2476	.2555	1.0321	4.039	3.914	.96887	40
30	.1132	.1139	1.0065	8.834	8.777	.99357	30	30	.2504	.2586	1.0329	3.994	3.867	.96815	30
40	.1161	.1169	1.0068	8.614	8.556	.99324	20	40	.2532	.2617	1.0337	3.949	3.821	.96742	20
50	.1190	.1198	1.0072	8.405	8.345	.99290	10	50	.2560	.2648	1.0345	3.906	3.776	.96667	10
7	.1219	.1228	1.0075	8.208	8.144	.99255	83	15	.2588	.2679	1.0353	3.864	3.732	.96593	75
10	.1248	.1257	1.0078	8.016	7.953	.99219	50	10	.2616	.2711	1.0361	3.822	3.689	.96517	50
20	.1276	.1287	1.0082	7.834	7.770	.99182	40	20	.2644	.2742	1.0369	3.782	3.647	.96440	40
30	.1305	.1317	1.0086	7.661	7.596	.99144	30	30	.2672	.2773	1.0377	3.742	3.606	.96363	30
40	.1334	.1346	1.0090	7.496	7.429	.99106	20	40	.2700	.2805	1.0386	3.703	3.566	.96285	20
50	.1363	.1376	1.0094	7.337	7.269	.99067	10	50	.2728	.2836	1.0394	3.665	3.526	.96206	10
							82								74

Cosin. Cotg. Cosec. Sec. Tan. Sine. Angla.

Cosin. Cotg. Cosec. Sec. Tan. Sine. Angla.

Natural Trigonometrical Ratios.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
16	.2766	.2867	1.0403	3.628	3.487	.96126	74	.4067	.4452	1.0946	2.456	2.246	.91355	
10	.2784	.2899	1.0412	3.592	3.450	.96046	50	10	.4094	.4487	1.0961	2.443	2.229	.91236
20	.2812	.2931	1.0423	3.556	3.412	.95984	40	20	.4120	.4522	1.0975	2.427	2.211	.91116
30	.2840	.2962	1.0429	3.521	3.376	.95882	30	30	.4147	.4557	1.0989	2.411	2.194	.90996
40	.2868	.2994	1.0438	3.487	3.340	.95799	20	40	.4173	.4592	1.1004	2.396	2.177	.90875
50	.2896	.3026	1.0448	3.453	3.305	.95715	10	50	.4200	.4628	1.1019	2.381	2.161	.90753
17	.2924	.3057	1.0457	3.420	3.271	.95630	73	25	.4228	.4663	1.1034	2.366	2.145	.90631
10	.2952	.3089	1.0466	3.388	3.237	.95545	50	10	.4255	.4699	1.1049	2.351	2.128	.90507
20	.2979	.3121	1.0476	3.357	3.204	.95459	40	20	.4279	.4734	1.1064	2.337	2.112	.90383
30	.3007	.3153	1.0485	3.326	3.172	.95372	30	30	.4305	.4770	1.1079	2.323	2.097	.90259
40	.3035	.3185	1.0495	3.295	3.140	.95284	20	40	.4331	.4806	1.1095	2.309	2.081	.90133
50	.3062	.3217	1.0505	3.265	3.108	.95195	10	50	.4358	.4841	1.1110	2.295	2.066	.90007
18	.3090	.3249	1.0515	3.236	3.078	.95106	72	26	.4384	.4877	1.1126	2.281	2.050	.89879
10	.3118	.3281	1.0525	3.207	3.048	.95015	50	10	.4410	.4913	1.1143	2.268	2.035	.89752
20	.3145	.3314	1.0535	3.179	3.018	.94924	40	20	.4436	.4950	1.1158	2.254	2.020	.89623
30	.3173	.3346	1.0545	3.152	2.989	.94832	30	30	.4462	.4986	1.1174	2.241	2.006	.89493
40	.3201	.3378	1.0555	3.124	2.960	.94740	20	40	.4488	.5022	1.1190	2.228	1.991	.89363
50	.3228	.3411	1.0566	3.098	2.932	.94646	10	50	.4514	.5059	1.1207	2.215	1.977	.89232
19	.3256	.3443	1.0576	3.072	2.904	.94552	71	27	.4540	.5095	1.1223	2.203	1.963	.89101
10	.3283	.3476	1.0587	3.046	2.877	.94457	50	10	.4566	.5132	1.1240	2.190	1.949	.88969
20	.3311	.3508	1.0598	3.020	2.850	.94361	40	20	.4592	.5169	1.1257	2.178	1.935	.88835
30	.3338	.3541	1.0608	2.996	2.824	.94264	30	30	.4617	.5206	1.1274	2.166	1.921	.88701
40	.3365	.3574	1.0619	2.971	2.798	.94167	20	40	.4643	.5243	1.1291	2.154	1.907	.88566
50	.3393	.3607	1.0631	2.947	2.773	.94068	10	50	.4669	.5280	1.1308	2.142	1.894	.88431
20	.3420	.3640	1.0642	2.924	2.747	.93969	70	28	.4695	.5317	1.1326	2.130	1.881	.88295
10	.3448	.3673	1.0653	2.900	2.723	.93869	50	10	.4720	.5354	1.1343	2.119	1.868	.88158
20	.3475	.3706	1.0665	2.878	2.699	.93769	40	20	.4746	.5392	1.1361	2.107	1.855	.88020
30	.3502	.3739	1.0676	2.856	2.675	.93667	30	30	.4772	.5430	1.1379	2.096	1.842	.87882
40	.3529	.3772	1.0688	2.833	2.651	.93565	20	40	.4797	.5467	1.1397	2.085	1.829	.87743
50	.3557	.3805	1.0700	2.811	2.628	.93462	10	50	.4823	.5505	1.1415	2.073	1.816	.87603
21	.3584	.3839	1.0711	2.790	2.605	.93358	69	29	.4848	.5543	1.1434	2.063	1.804	.87462
10	.3611	.3872	1.0723	2.769	2.583	.93253	50	10	.4874	.5581	1.1452	2.052	1.792	.87321
20	.3638	.3906	1.0736	2.749	2.560	.93148	40	20	.4899	.5619	1.1471	2.041	1.780	.87178
30	.3665	.3939	1.0748	2.729	2.539	.93042	30	30	.4924	.5658	1.1490	2.031	1.767	.87036
40	.3692	.3973	1.0760	2.709	2.517	.92935	20	40	.4950	.5696	1.1509	2.020	1.756	.86892
50	.3719	.4006	1.0773	2.689	2.496	.92827	10	50	.4975	.5735	1.1528	2.010	1.744	.86748
22	.3746	.4040	1.0785	2.670	2.475	.92718	68	30	.5000	.5774	1.1547	2.000	1.732	.86603
10	.3773	.4074	1.0798	2.650	2.455	.92608	50	10	.5025	.5812	1.1566	1.990	1.720	.86457
20	.3800	.4108	1.0811	2.632	2.434	.92499	40	20	.5050	.5851	1.1586	1.980	1.709	.86310
30	.3827	.4142	1.0824	2.613	2.414	.92388	30	30	.5075	.5890	1.1606	1.970	1.698	.86163
40	.3854	.4176	1.0837	2.595	2.394	.92278	20	40	.5100	.5930	1.1626	1.961	1.686	.86015
50	.3881	.4210	1.0850	2.577	2.375	.92164	10	50	.5125	.5969	1.1646	1.951	1.675	.85866
23	.3907	.4245	1.0864	2.559	2.356	.92050	67	31	.5150	.6009	1.1666	1.942	1.664	.85717
10	.3934	.4279	1.0877	2.542	2.337	.91936	50	10	.5175	.6048	1.1687	1.932	1.653	.85567
20	.3961	.4314	1.0891	2.525	2.318	.91822	40	20	.5200	.6088	1.1707	1.923	1.643	.85419
30	.3987	.4348	1.0904	2.508	2.300	.91706	30	30	.5225	.6128	1.1728	1.914	1.632	.85264
40	.4014	.4383	1.0918	2.491	2.282	.91590	20	40	.5250	.6168	1.1749	1.905	1.621	.85112
50	.4041	.4417	1.0932	2.475	2.264	.91472	10	50	.5275	.6208	1.1770	1.896	1.611	.84959

Cosin. Cotg. Cosec. Sec. Tan. Sine. Angl.

Cosin. Cotg. Cosec. Sec. Tan. Sine. Angl.

Natural Trigonometrical Ratios.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
32	.5299	.6249	1.1792	1.887	1.600	.84805	58	30	.8225	.7954	1.2778	1.606	1.257	.78261
10	.5324	.6289	1.1813	1.878	1.590	.84650	50	40	.8248	.8002	1.2808	1.601	1.250	.78079
20	.5348	.6330	1.1835	1.870	1.580	.84495	40	50	.8271	.8050	1.2838	1.595	1.242	.77897
30	.5373	.6371	1.1857	1.861	1.570	.84339	30	39	.8293	.8098	1.2868	1.589	1.235	.77715
40	.5398	.6412	1.1879	1.853	1.560	.84182	20	10	.8316	.8146	1.2898	1.583	1.228	.77531
50	.5422	.6453	1.1901	1.844	1.550	.84025	10	20	.8338	.8195	1.2929	1.578	1.220	.77347
33	.5446	.6494	1.1924	1.836	1.540	.83867	57	30	.8361	.8243	1.2959	1.572	1.213	.77162
10	.5471	.6536	1.1946	1.828	1.530	.83708	50	40	.8383	.8292	1.2989	1.567	1.206	.76977
20	.5495	.6577	1.1969	1.820	1.520	.83549	40	50	.8406	.8342	1.3022	1.561	1.199	.76791
30	.5519	.6619	1.1992	1.812	1.511	.83389	30	40	.8428	.8391	1.3054	1.556	1.192	.76604
40	.5544	.6661	1.2015	1.804	1.501	.83228	20	10	.8450	.8441	1.3086	1.550	1.185	.76417
50	.5568	.6703	1.2039	1.796	1.492	.83066	10	20	.8472	.8491	1.3118	1.545	1.178	.76229
34	.5592	.6745	1.2063	1.788	1.483	.82904	56	30	.8494	.8541	1.3151	1.540	1.171	.76041
10	.5616	.6787	1.2086	1.781	1.473	.82741	50	40	.8517	.8591	1.3184	1.535	1.164	.75851
20	.5640	.6830	1.2110	1.773	1.464	.82577	40	50	.8539	.8642	1.3217	1.529	1.157	.75661
30	.5664	.6873	1.2134	1.766	1.455	.82413	30	41	.8561	.8693	1.3251	1.524	1.150	.75471
40	.5688	.6916	1.2158	1.758	1.446	.82248	20	10	.8583	.8744	1.3284	1.519	1.144	.75280
50	.5712	.6959	1.2183	1.751	1.437	.82082	10	20	.8604	.8795	1.3318	1.514	1.137	.75088
35	.5736	.7002	1.2208	1.743	1.428	.81915	55	30	.8626	.8847	1.3352	1.509	1.130	.74896
10	.5760	.7046	1.2233	1.736	1.419	.81748	50	40	.8648	.8899	1.3386	1.504	1.124	.74703
20	.5783	.7089	1.2258	1.729	1.411	.81580	40	50	.8670	.8952	1.3421	1.499	1.117	.74509
30	.5807	.7133	1.2283	1.722	1.402	.81412	30	42	.8691	.9004	1.3456	1.494	1.111	.74314
40	.5831	.7177	1.2308	1.715	1.393	.81242	20	10	.8713	.9057	1.3492	1.490	1.104	.74120
50	.5854	.7221	1.2335	1.708	1.385	.81072	10	20	.8734	.9110	1.3527	1.485	1.098	.73924
36	.5878	.7265	1.2361	1.701	1.376	.80902	54	30	.8756	.9163	1.3563	1.480	1.091	.73728
10	.5901	.7310	1.2387	1.695	1.368	.80730	50	40	.8777	.9217	1.3600	1.476	1.085	.73531
20	.5925	.7355	1.2413	1.688	1.360	.80558	40	50	.8799	.9271	1.3636	1.471	1.079	.73333
30	.5948	.7400	1.2440	1.681	1.351	.80386	30	43	.8820	.9325	1.3673	1.466	1.072	.73135
40	.5972	.7445	1.2466	1.675	1.343	.80212	20	10	.8841	.9380	1.3711	1.462	1.066	.72937
50	.5995	.7490	1.2494	1.668	1.335	.80038	10	20	.8862	.9435	1.3748	1.457	1.060	.72737
37	.6018	.7536	1.2521	1.662	1.327	.79864	53	30	.8884	.9490	1.3786	1.453	1.054	.72537
10	.6041	.7581	1.2549	1.655	1.319	.79688	50	40	.8905	.9545	1.3824	1.448	1.048	.72337
20	.6065	.7627	1.2577	1.649	1.311	.79512	40	50	.8926	.9601	1.3863	1.444	1.042	.72136
30	.6088	.7673	1.2605	1.643	1.303	.79335	30	44	.8947	.9657	1.3902	1.440	1.036	.71934
40	.6111	.7720	1.2633	1.636	1.295	.79158	20	10	.896					

684
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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
8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	32.6	16
32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	34.1	17
34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	35.6	18
35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	37.1	19
37.3	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	38.6	20
38.8	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	40.1	21
40.5	40.5	40.6	40.8	40.9	41.1	41.2	41.4	41.6	41.8	22
42.0	42.1	42.3	42.4	42.6	42.7	42.9	43.1	43.3	43.5	23
43.5	43.6	43.8	43.9	44.1	44.2	44.4	44.6	44.8	45.0	24
45.0	45.1	45.3	45.4	45.6	45.7	45.9	46.1	46.3	46.5	25
46.5	46.6	46.8	46.9	47.1	47.2	47.4	47.6	47.8	48.0	26
48.0	48.1	48.3	48.4	48.6	48.7	48.9	49.1	49.3	49.5	27
49.6	49.6	49.8	49.9	50.1	50.2	50.4	50.6	50.8	51.0	28
51.1	51.3	51.4	51.6	51.7	51.9	52.1	52.3	52.5	52.7	29
52.6	52.8	52.9	53.1	53.2	53.4	53.6	53.8	54.0	54.2	30
54.3	54.4	54.6	54.7	54.9	55.1	55.3	55.5	55.7	55.9	31
55.8	55.9	56.1	56.2	56.4	56.5	56.7	56.9	57.1	57.3	32
57.3	57.4	57.6	57.7	57.9	58.1	58.3	58.5	58.7	58.9	33
58.8	58.9	59.1	59.2	59.4	59.6	59.8	60.0	60.2	60.4	34
60.4	60.6	60.7	60.9	61.1	61.3	61.5	61.7	61.9	62.1	35
61.9	62.1	62.2	62.4	62.6	62.8	63.0	63.2	63.4	63.6	36

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Am. Soc. C. E.

MADE IN GERMANY.

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 120 590 120 295 16 1/2
 15 9.4 120 120 40
 120 255 415
 40 40 15
 120 295 430
 15 120 120
 40 415 120
 120 430 15
 40 450 1
 590 590 2
 120 9710 120
 15 9.01 710
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429
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 III III

26
 77
 234
 1350
 2584.56
 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
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4

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

12,85.02
 39.63
 III III
 MADE IN GERMANY.