

88.

ALMA MATER
TRAVEL BOOK

1852
208

Book opened Feb 1st

Return to

J. W. Curo,

Walker, Minn.

1915

①

①

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^{wagon roads}
Hiram Twp. 140-31 Sec 14 & others

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Sec. 14-140-31

26-39

Same (Cont')

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7)

Hiram (2) Twp.

Hackensack N.J. Feb. 2, 1915

I am working for Hiram Twp - 140-31 on survey of wagon roads.

Feb. 1, Curo and I left Wilkenson via G.N.R.R. 7:25 AM and arrived in Walker 8:30 AM and worked all day in office on plat of sec 32-144-31. Stayed at Chase Hotel, room 35

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Tuesday, Feb. 2, 1915 Commissioners met Curo stayed all day in Walker and paid my bill at Chase Hotel. I get chain repaired .25¢ and hubbers fixed .20¢
Leave Walker for Hiram Twp via

Hackensack. Paid R.R. fare to Hackensack .28¢ M.I.R.R. Arrive at Hackensack 10:1

329

Herbert Gorman

Dinner at Spaine's.
P.M.

Walk across Birch Lake
to Victor Martin's in
sec. 14 - 140-31.

Meet Victor on ice with
load of ties. Worked P.M.
checking up field notes.
Over night with Martin.

Wednesday Feb. 3, 1915
To establish the $\frac{1}{2}$ cor & $\frac{1}{4}$ W
sec. 16 - 17 - 140-31 Victor Martin
and I walk to Elmer Blanchard's
(Twp clerk) then to $\frac{1}{4}$ cor on
W side of sec 16 where V.S. notes
call for a meander cor Ne 26
post 50.773 S with following B.T.s.
Sp P 6 N 20° E 10 775 = 6.072.
" " 6 S $38^{\circ}30'$ E 8 " = 5.2871

All appear to be gone and
walk back to Blanchard's for
dinner. Eat lunch brought
by Martin.

Herbert D. Garrison

P.M.

Victor Martin Elmer
 Blanchard and I. go to
 Iron cor. to 8-9-16-17-140-31
 previously established
 by C. & S. where we place
 a flag then with transit
 to note S near an old
 stub which appears to
 be meander cor. of back-
 sight on cor to sec. 8-9-16-17
 from which we chain S
 on ice over Ten mi lake
 and set stakes every 300 ft.
 @ 2700 ft. set snow hub and ice
 @ 2850 ft. transit
 @ 3000 ft. leave lake

Quit for Night.

Supper with Martin and
 walked to Hackensack
 Lodging with Spain.

I am using Steel chain
 and new Sunley transit
 in good adjustment

329 Herbert S. Garman

329'

Thursday Feb. 4. 1915.

I leave Spains before breakfast - Caro & I walk across Brick Lake to Martins where I get breakfast. Caro went to Anton Linberg's to correct lines previously run on Sec. 12.

Victor Martin & I go to the W cor 8th W sec 16-21-140-31 where U.S. notes call for post and following B.T.'s. (K-W-4) W.P. 16 West 15.50 7Ks = 1023.7t We find the stump of old B.T. also the iron 1/4 cor previously established by Caro by proportionate measurement E & W for the true 1/4 cor. 8th W sec 16-21-140-31 But 1023.7t U.S. chain = only Caro chain.

We place transit over old B.T. stump back sight on iron 1/4 cor. and

Herbert A. Luman

329

(6)

329

Hiram

(6)

Twp

beginning at head of
stump we chain W. Var 1030'
Blanchard A. & Martin &
J chain. set stakes every
300 ft. @ 1389.85 hub
P. M.

Continue W. @ 1950.00 hub
@ 1617 set hub temporary
cor to sec 16-17-20-21-140-31
where U.S. notes call for:

WP 14 S 68° E 100 = 66.00 ft

" 18 N 41° W 112 = 73.92 ft

NP 16 N 76° E 142 = 93.72 ft.

We do not find them and
continue W. 4:30 S now
blowing makes transit
work uncertain.

Quit for Night

We use 300 ft steel tap and
new Gurley transit in
good adjustment. Thumb-
bar chain and double
center hubs

329

Herbert A. German

Feb 1915
Meals and Lodging on survey 07-See 16-140-31

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Spain																				
Germany	I						IIII									IIII				
Costa																				
Martin Gorman	II	III	III	III	III	III		IIII	IIII	IIII	IIII	IIII	IIII	IIII						

(7)

329

4

329

329

Hiram

⑧

Trip

Friday.

Feb. 5, 1915.

Blanchard and Treegettern did not show up. Martin & I continue W. Heavy brush slow progress.

@ 1800 stake @ 2100, 2400, 2700, 3000 stake @ 3012.90 Hub. then 3300, 3600, 3900, 4200, stakes @ 4241.82 look for $\frac{1}{4}$ cor B.T.W. sec 17-20-140-31 where U.S. notes call for post 8; (N-W 05).

asp 8 North 10 = 6.60 ft

Sp. P. 6 South 4 = 2.64 ft.

We find an old stake set by someone near this pt. but as there are no B.T. to ck. in any direction with stake we believe it is wrong and continue W.

@ 4257.00 hub. @ 4500 set stake cut brush W. until 4:30 P.M. then go to Blanchard's to get Brush cutters.

Quit for night

329

H. D. Gorman

Time Sheet working for Laramie Twp 140-31

Feb 1915

Sun

Sun

13

*

Gorman

Martin

E. Blanchard

D. Blanchard

Freeze/tern

12

11

10

9

8

7

6

5

4

3

2

1

0

PM

1/2

0

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329

329

* 1/2 day on field notes

Notes drawn to E. Linn. Blanchard

10) 329 Hiram ⑩ Twp.

Saturday Feb. 6, 1915.

Byron Treepecker,
Blanchard Asmen. Victor
and I chain continue
West. @ 4800, 5100, 5400,
stakes, 5573.40 hub, 6000,
6300, 6900, stakes @
6998.50 Hub.

From hub 6998.50 I run
a picket line of small
stakes E @ 161

① $1617.00 \text{ ft} + 5249.64 = 6866.64$
Temp cor to sec 17-18-19-20-
140-31. The true cor set 115.26
ft W and 23 ft South or @
6981.90 W the cor sets S
23 ft. @ the pt being
cor to 17-18-19-20 US notes
call for post and
following B's

Pd P 12 N 51° E 85 = 56.10

" " 12 S 7° W 47 = 31.02

P 3 N 14° W 32 = ~~20~~ 21.12

asp 3 S 42° E 65 = 42.90

329

H. L. Loman

⑪

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11

We find a stake set for cor. sec.
17-18-19-20 from which
a cut out road leads W
and another S. We also
find old stump which
may have been B.T.
and which c.k. out fairly
well for course & distance
with the stake. We accept
stake as true cor. and
mark true B.Ts. Var $10^{\circ}30'$

SP 12 N $53^{\circ}43'$ W 39.20 ft.

" 6 S $31^{\circ}18'$ W 38.80 ft.

" 10 S $52^{\circ}19'$ E 68.80 ft.

To spike at flat spot at
base of trees.

P.M.

We walk pt near 4 post
btw sec 16-17-140-31 and
continue our transit
line S. Var $1^{\circ}15'$

At 3000 ft leave Ten Mile
Lake.

Quit for Night

Supper with Martin and over
night with Spain in Hackensack.

H. B. Gorman 329

12) 323 Hiram (12) Twp

Sunday

Feb. 7, 1915.

Curo & I write field notes
until 1:30 P.M. I am
staying with Spain.
Supped with Spain. I
get some 800 spikes
from Curo and walk
back to Martins.

Monday

Feb. 8, 1915.

Martin and I go to W side
of Sec 16-140-31 and continue
chaining, with B Blanchard
and Treefeather cutting.
We set stakes every 300 ft and
leave swamp a 3900.

@ 4371.70 we set hub and at
this pt the var. change to
90°. @ 4960.35 set hub.

Blanchard and Treefeather
start home for dinner.
Victor and I build camp
fire.

P.M.

We continue with random
and chaining. B Blanchard

(13)

and together return
from dinner.

ETW
@ 5303.57 We intersect H&S
random line 124.33 ft to the E.
We are unable to locate
any of the old BTs so
continue random line
and chain S.

Quit for night.

Tuesday,

Feb. 9, 1915.

Martin and I chaining &
E. Blanchard and T. J. Patton
cutting brush.

We continue chaining S
and set stake at 5400,
hub @ 5489.30 stake 5700,
6000, 6300, hub at 6437.30,
stake at 6600, 6900, 7200, 7500
& 7800. At 7887.00 we blaze
side of old pine windmill
and mark it "7887.00." Using
U.S. chain the 1/4 cor.
B.T. in sec 20-21-140-31 showed

M. D. German

829

14

Hiram

Twp

329

(14)

lay W of this p.t.
 Blanchard and
 Treecatcher start home
 for dinner.

P.T.

Martin and I try to
 locate Bt's for $\frac{1}{2}$ sec
 cor 67W sec. 20-21 where
 U.S. notes call for
 post and following
 Bt's.

WP 20 East 40 = 26.40 ft.

Oak 6 S 41W 19 = 12.54 ft.

We find an old oak
 stump torn loose from
 its roots and lying
 on the ground which
 appears to have been
 blown but all evidence
 of the pine tree is gone.
 We continue line S and
 set stakes every 300 ft.
 We strike heavy Pine
 timber and I send

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H. Gorman

three men cutting.

Quit for Night.

Wednesday Feb. 10, 1915.

I start D. Blanchard & ...
Freegeth in cutting on line S
and Victor and I go to
see Geo. Robinson about
Cor post to Sec's 20-21-28-29-
140-31. Robinson goes
with us and we locate
post in Tamarac Swamp
set by surveyor Hallett.
Victor and I go back
and continue Random
line and chain setting
stakes every 300 ft and
Hub at 8398.00. We enter
Swamps at 10200.00 and
set Hub at 10750.00. I set
a line of picket 5 along
Random line N from Hub
at 10750.00.

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327

Harran (16) Twp

At cor post to sec's 20-21-
28-29 I find the BTs
standing and plainly
marked.

U.S. notes call for BTs
as follows:

$$BP 12 S 26 E 26 = 17.16$$

$$" 12 N 24 E 33 = 21.78$$

$$" 8 N 4 W 21 = 13.86$$

$$" 4 S 81 W 46 = 30.36$$

Three of the BTs are out
as follows:

$$\text{Tam } 20 S 3^{\circ} 21' E 16.60$$

$$" 16 N 13^{\circ} 20' E 21.90$$

$$\text{P.spr } 10 N 46^{\circ} 27' W 12.85$$

I placed the above round
tree and used them as
new BTs.

At apt. 4.25 ft N of hub
at 10750.00 I set up transit
and found the cor to sec's
20-21-28-29 to be 90.35 ft W.
or at at pt 10748.75 ft S
of true cor post to sec's
18-9-16-17-140-31 (set by Curc)

329

H. D. Gorman

the true cor to sec 20-21-22-
29 - set W 90.35 ft.

Quit for Night.

Thursday

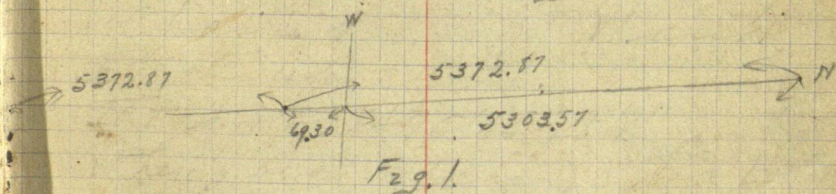
Feb. 11, 1915

Victor Martine, Pass Blanchard
and I work.

Correcting back at cor to
Sec 16-17-20-21-140-31.

At a pt 5303.57, where N & S, E & W
random lines intersect.

Chain 569.30 ft to a
pt 5372.17 ft S of cor to sec.
8-9-16-17 as in Fig. 1.



Correcting back an E & W random
line.

From a pt 6866.64 ft W of stump (set
by U.S. survey) true cor to sec.
~~17-18-19-20~~
~~18-19-20-21-140-31~~ set W 115.15 [016711]
to 6911.80

329
Herbert J. German

18

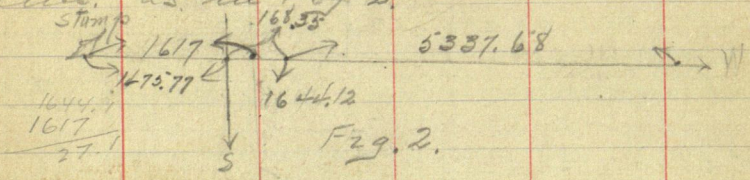
329

Hiram

18

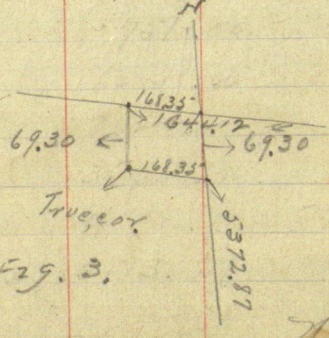
Twp

Temp. cor. at 1617 goes W 27.12 ft
to 1644.12 or 168.35 N. of ^{N.S.} E & W random
line, as in Fig. 2.



At 5303.57 on E & W random
line of chain W 168.35 ft and
from a pt. 1644.12 ft on N & S
random line of Chained S
69.30 ft. At a pt. 168.35 ft W
of N & S random line and 69.30
ft S of E & W random line of
set true cor. to sec's 16-17-20-21
140-31. (Fig 3.) I drive 80 ft spike and
put the pallings Bts. Var 9.15'
P. Stamp 25 N 41° 2' W 65.60

" " 36 S 74° 36' W 89.00



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Fig. 3.

N. D. Gorman

Hiram 19

Twp

329

19

F. M.

Starting at $\frac{1}{4}$ cor (set by Todd)
 7th sec. 15-16-140-31. I run
 a random line and chain
 ever cut out line setting
 stakes ever 300 ft. and
 Hubs as follows:

Hub at W 751. W

" " 1622

" " 2640

" " 3765.90

" " 4150.90. Enter Lake,

at 5051.10 intersect N & S.
 Random line and at 3713.27
 leave lake.

Quit 700 night.
 I walk across lake to
 Hackensack to see Curro
 about field rats. Return
 same night.

July 14-1927

1644.1

1612.1

32.0

1681.4

136.4

Green's Hub and Bodah

Drove 1 M. at 80 penny spike

Set up at 1612.1. Left 53°48' - 81' Ft.

S. 3°30' E to BB Stake - 12.5'

Norbert S. Gorman

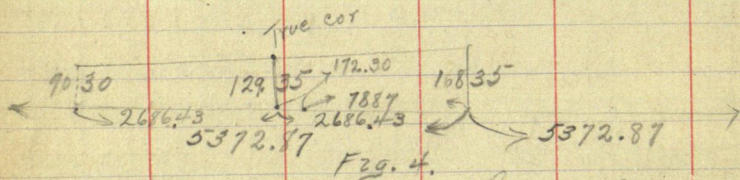
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70 **329** Hiram (70) Twp

Friday

Feb. 12, 1915

Victor Martin E. Blanchard
and I working. We go to 4th
true cor. post 6th W sec
20-21-140-31 and correct
back. From a hub at
7887.00 we chain 172.30 ft S along
random line 8059.30 ft S of
true cor. to sec 8-9-16-17-140-31
where we set hub. (Fig. 4.)



I set transit on hub last
set and turn a right angle
and set true 4th cor. 6th W sec. 20-21
to which I put the yellowing
Bts. Val. 9°15'

N.P. 12 N 3°42' W 54.80

S.P. 6 S 22°3' W 29.40

I drove 80 ft spike in
ground.

329

Herbert L. Gorman

Hiram (21)

Twp.

329 (2-1)

P. M.

Correcting back on S line
of sec. 5/17 to set 1/4 sec

Stake b/w secs 17-20-140-31.

From hub at 4257 ft W

of stump (set by U.S. survey)

of chain W 55.90 ft and

set hub. From this pt true

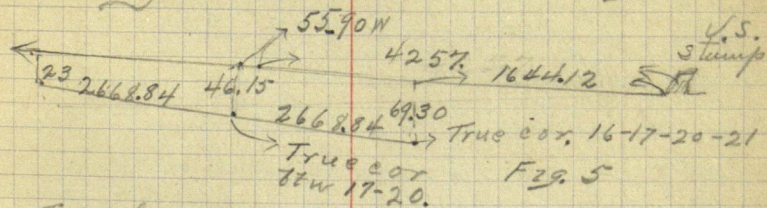
cor sets S 46.15 ft. From

hub last set at 4312.96 ft

set transit and turn right
angle from random line

and chain 46.15 ft S

along line as in Fig. 5.



At this pt. I drive 80 lb spike
for true 1/4 cor b/w secs 17-20-140-31
and put the following Bts. V 1030'

W P 12.33° 6' E 15.40

Oak Stump 14 S 82° 43' W 27.60

Norbert J. Gorman

22

329

Hiram (22) Twp

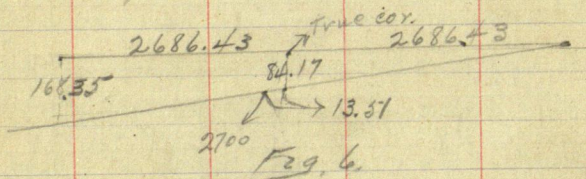
Saturday

Feb. 13 1915

D. Blanchard and I go to
1/4 cor. betw sec 16-17-140-31

correcting Back.

Hit a hub 2700.00 ft S of cor
post to sec's 8-9-16-17 & chain
13.51 ft and set temp hub.
From this pt which is 2686.43
ft S of cor post to sec 8-9-16-17
true cor goes W 84.17 ft. as in Fig 6



From a pt. 2686.43 ft on random
line I set up transit and
turn right angle and chain
84.17 ft W. I drive 80# spike
in ground 22.00 ft W of bank
of Ten Mile Lake for true 1/4
cor. betw sec's 16-17-140-31
and take following Bts Ver. 9'15"

Birch 12 N 48° 30' W 28.90

Balcon 10 S 9° 49' W 24.30

Spr 8 S 43° 55' E 37.00

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Norbert D. Gorman

Feb 13-1915
cont'd

(23)

Huam Tap
1940-31

(23)

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Correcting back all centers
line b/w E & W half of
Sec. 16-140-31.

I set up transit on hub at
450.90 use backsight
set at previous hub and
run a line of pickets SW along
random line from a pt
5113.27. I find that
random line misses true
1/4 cor b/w Sec's. 16-17, 5.00 to S
or at a pt 5135.27 true cor
set N 5.00

Correcting Back [000973658]

Hub at 751. goes N .73

" " 1622 " " 1.58

" " 2640 " " 2.57

Drive 2 in. bolt in ground
to which I put yellow B.T. V. 90/15
S. P. S 29°45' E 52.70

Hub at 3765.90 goes N 3.67

" " 4150.90 " " 4.05 =

E Br of Ten Mile Lake I drive
80¢ spike in ground to which
I put yellow B.T. V. 90/15

Poplar 10 N 37°23' W 9.90 1.5

Set 1. M. July 14, 1927 - 16.2 E 329

W. J. Garner

24)

829

(24)

Sunday Feb 14-1915

All day at Hains hotel
Checked up notes with Cars
Over night at Hains

Monday Feb 15-1915

Make out bill against Hain
Twp as per line sheet on page
9. of this book \$55.00
Take 10-9 AM train to
Milledale to work for Pine River Twp

40.00
15.50
24.50
66
1470
1470
1617.0

829

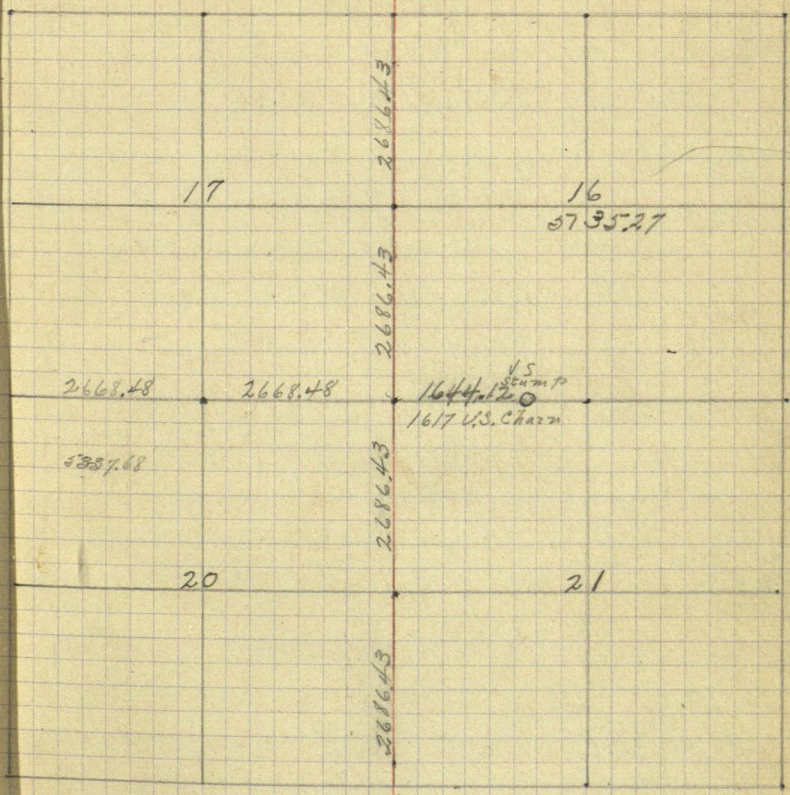
H D Gorman

(25)

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329

Temp. 140 Pa 31.



N. K. German

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140-31

swamp

March 20, 1915 Work for Martin.
A.M.

I pay Hotel bill @ Chan 1.50
and leave Walker on 9.35
train. R.R. fare from Walker
to ten mile .20.

At ten mile I start
the survey of Sec. 36
and then walk to Hack.
Dinner @ Lake View Hotel
March 21, 1915

I walk over to Victor
Martins and we chain the
north & south center line
thru Sec. 14-140-31.

Transit line run by Bryant.
Starting from the $\frac{1}{4}$ Corner
on the S. side of Sec. 14
we chain ^{North} east var. 90°30'

- @ 5 + 51.8 Hub
- @ 11 + 41.5 "
- @ 16 + 59.5 "
- @ 17 + 75 enter swamp
- @ 21 leave " "
- @ 24 + 41.6 Hub.

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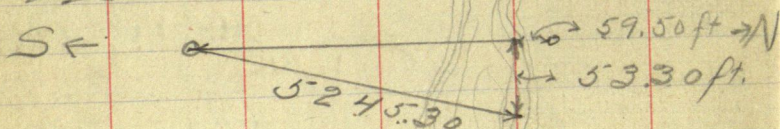
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②
140-31March 21st 1915 Continued.

72590

@ about 26.90 intersect
 F & W random line
 @ 26 + 50 enter swamp
 @ 35 + leave lake.
 @ 37 + 75 enter lake.
 @ 52 + 45.3 the true $\frac{1}{4}$
 corner on the N side of
 Sec. 14 - 140-31 set about
 53.30 ft.

The true $\frac{1}{4}$ corner
 sets south 59.5 ft. from
 true M. C. where a
 2" x 48" Galv. iron pipe is
 set.



Over night @ Lake View Hotel.

I get call from Curo
 stating that I do not have
 to go out with Scribner
 tomorrow.

330

140 - 31

Working for Victor Martin.
March -

	19	20	21	22	23
Frank A. Danner	0	0	1	1	0
Expences	0	17 ⁰⁰	0	0	2 ⁰⁰
Victor Martin.	0	1/2	0	1	1/2
	9	0	7	7	2
	11	12	13	14	
	1	1	1	1	

Frank A. Danner
Expences
Victor Martin.

German N.P.

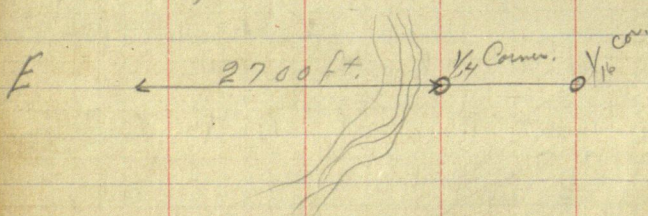
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(4)
140-31 clear & warm

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March 22, 1915, Cont. for Martin.
A.M.

Breakfast @ Lake View Hotel and then I take transit and walk across lake to Victor Martin's place.

I set over iron @ the $\frac{1}{4}$ Corner on the south side of Sec. 14-140-31 and back-sighting on the iron @ the true $\frac{1}{16}$ corner $\frac{1}{4}$ mile west I run true line into lake. @ 65 ft enter lake.

Starting from a true Hub set by Curo on the East side of Sec. 14 and back sighting on true Hub I run true line

330

5-
140-31

330

March 22, 1915 Continued

A.M.

into Birch Lake.

Starting to chain from the N.E. Sec. corner of Sec. 14 - 140-31 we chain south on true line

@ 4 + 31.8 Hub

@ 10 + 75.5 "

@ 13 + 15

@ 13 + 60 set 100' spike for temporary Meander corner.

@ 13 + 70 enter Birch lake.

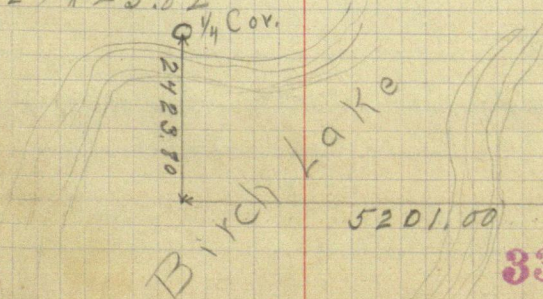
We chain out in the lake to about 35 and quit for dinner with Victor Martin.

P.M.

We continue south with true line

@ 52 + 1 intersect E & W. true line

@ 24 + 23.8 E



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⑥
140-31March 22, 1915 Continued.
P.M.

Starting to chain a
random line run by
Bryant from the $\frac{1}{4}$ Ccr.
on the west side of Sec.
14-140-31. We chain East.

@ 3 enter swamp

@ 5 leave "

@ 11 + 91.8 Hub

@ 15 enter swamp

@ 15 + 25 leave swamp

@ 19 + 92.3 Hub

@ 25 + 79.4 "

@ about 27 + 57 intersect
N. & S. lines @ about 26.90 N.

@ 28 + 93.7 Hub

@ 34 + 90.1 "

@ 39 + 25 enter lake

@ 40 + 75 leave "

Quit for night
Supper & over night
with Victor Martin.

⑦

140-31

330 33

March 23, 1915. Cont for Martin.
A.M.

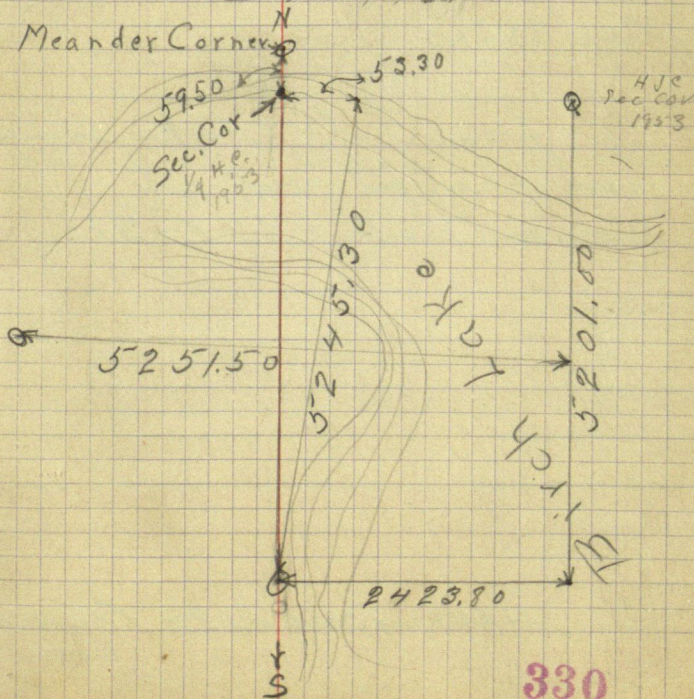
We continue chaining
with E & W. center line

@ 44 + 53.00 Hub. where I set
transit and continue random
line East. var. $9^{\circ}30'$

@ 46 + 25.9 set 100' spike for
temporary Meander Corner.

@ 46 + 70.5 enter Birch Lake.

@ 52 + 57.5 intersect N. & S.
true line @ 26 + 43.105



8
140-31

March 23, 1915 Continued.

A.M.

I take outfit and walk
across lake to Hackensack.
Call up Curo and he tells
me to take 10.03 train
to Backus and start
survey of Sec. 2-3-10-138-31.
Hotel @ Lake View \$2.00
Dinner @ Fairview Hotel.
P.M.

March 23, 1915

P.M.

John Tils takes me
and outfit out to Meander
Corner No. 6 - 138-31

Survey made by Frank A. Donner
Donner

330 14-140-31
For Victor Martin

Monday April 12 1915

Gorman Transman

Martin Charman

Nelson Axman

Start at iron cor. to sec's. 14-15-
22-²³140-31 run tangent to the
(Var. 10°) & charn N b/w sec's. 14-15
cor. run sets in SW amp.

① 700.24 "

① 1020.75 Hub

① 1259.60 "

① 1850.50 "

① 2284.50 "

① 4656.75 1/4 cor. b/w sec's. 14-15
-140-31. Ties 91 ft To the W.

Correcting Back [34985]

Hub ① 1040.75 goes W 34.97.

" " 1259.60 " "

" " 1378.37 " " 45.50 To

True S 1/2 cor. on W line b/w sec's
14-15-140-31. Set 1/2 cor. Drive
3x3 pine stake

Hub ① 1850.50 goes W 63.44

Hub ① 2284.50 " "

14-140-31

37

330

Correcting Back on E line [01589]

Beginning @ NE cor of sec 14

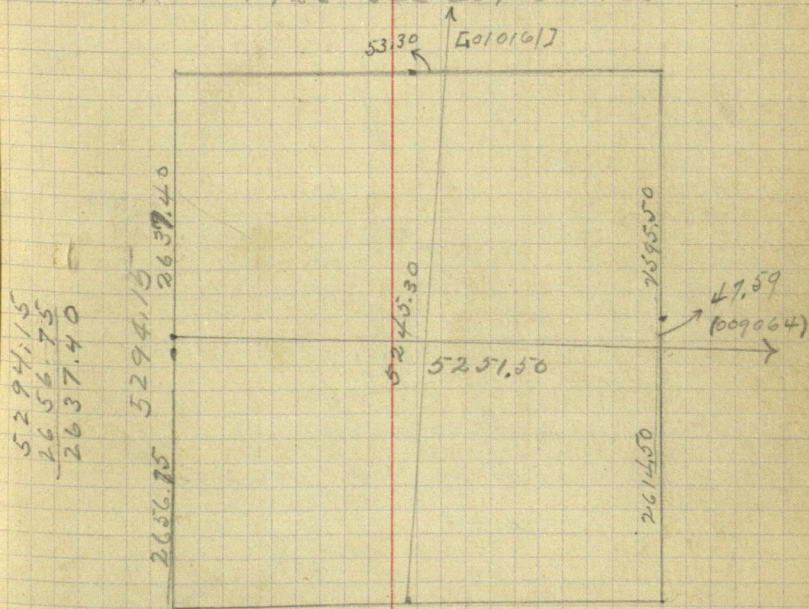
@ 2637.40 set Temp $\frac{1}{4}$ cor

@ 5210. " Temp sec cor

Correction in proportion to W line

@ 2637.40 True $\frac{1}{4}$ cor goes N 41.90 ft
to 2595.50

@ 5210 = True sec corner



5294.15
2656.75
2637.40

5294.15

2656.75

2637.40

5245.30

5251.50

2614.50

2595.50

47.59

(0090664)

W. D. Gorman

330

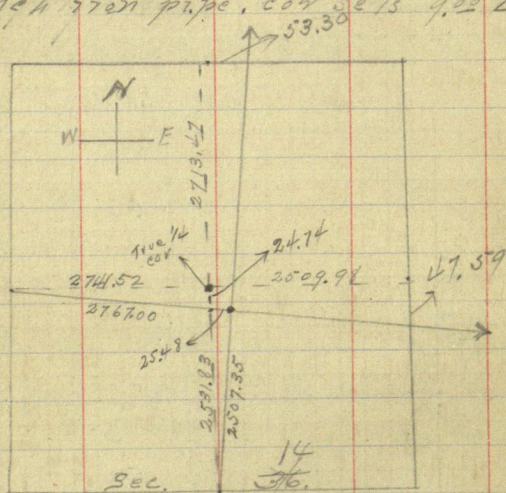
38

330

14-140-31

Monday (cont) April, 12, 1915

To establish 1/4 center of sec 14,
 @ 2507.35 Hm b goes W 75.48
 To 2741.52 Thence N 24.74 To
 2531.83 True 1/4 cor. center sec 36-140-31. 31
 Set 1 1/2 inch iron pipe, cor sec 75 9.02 E of
 Large grey
 Boulder.



Hub @ 2579.40 goes N 23.54
 " @ 1994.30 " N 17.05
 @ 1370.26 set E 1/2 cor on
 E & W center true 12.24 ft N
 Drive 1 1/2 inch iron Bolt.

RTs for 930'

P Stump 18 N 45° E 31.50

330

H. D. Gorman

14-140-31

39
330

Correcting Bick on N/S center

line

Hub @ 22.74 goes W 23.30

" @ 1615.95 " W 16.30

@ 1265.91 set. True S 46 on N/S center

line 12.85 ft W. Pinle 1 inch iron Bolt.

Bt.

P. Stump rd N 50° E 23.50

Hub @ 551.75 goes W 5.60

Quit for night.

Tuesday

April, 13, 1915

continue correction on N/S center

line.

@ 3725.25 set M.C. on S BA
of NW Bay of Birch Lake, 37.85
ft W.

BTS Ver 9° 30'

NP 10 S 7° 30' E 7.75

" 8 S 76° 30' N 35.40

Note: This survey
is not correct and
I will look it over
at some future
date. Curo
Feb 27-1917

330

W. Gorman

Plat in Lot 4, Sec. 14-140-31

July 19, 1928

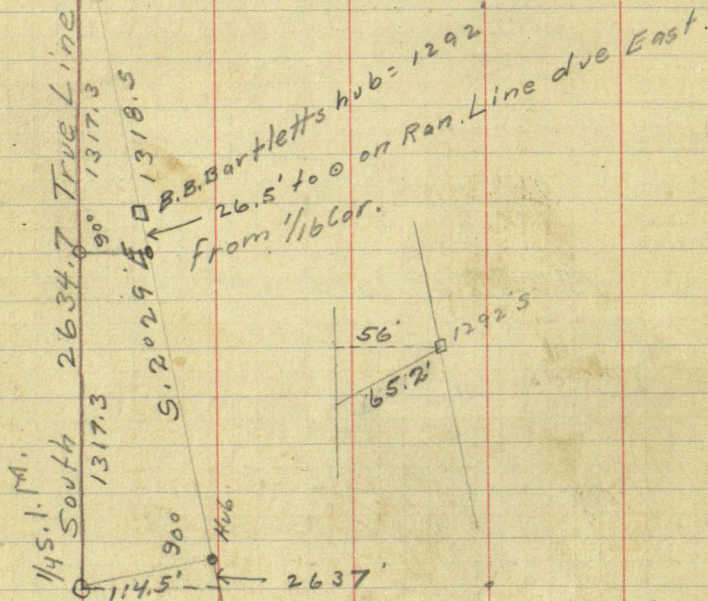
Plat of Ritz mound

J. M. Greene - Trans

B. B. Bartlett } Axe & chain.

Frank Bartholmey }

Sec. 14
Cor. 1. M.



1200
266
11734

41

Chaining South
Sta. 0 = N.W. Cor. Sec. 14-140-31

11+73.4 = hub in Road

12+92 = B.B. Bartlett's 1/6-Temp.

26+32.2 = 1/4 Ram. X 90° to I.M. = 114.5 West
22.99 = Cotan 2° 29'

114.5 | 2632.2 2634.7

2290

3422

2290

11320

10305

10150

57.3

22.99 | 1317.3000

1149.5

16780

16093

6870

6897

99906 | 2632.20

199812

634080

599436

346440

299718

467220

399624

675960

1318.5

99906 | 1317.3000

99906

318240

299718

185220

99906

853140

799248

538720

Sta. 11+73.4'
150.5' N. 44° 35' E 5.59° 07' W 65.2'

56.02

22.99 | 129200

11495

14250

59° 10'

375.5' N. 17° 55' E 13794

45600

813'
81.7' N. 29° 57' E to Cor. of Lot 1

S. 56° 37' E along back Lot Line

N 33° 23' E to lake

50+300+100 OX 2° 07' R

119.6 OX 29° 18' R

278.85 OX 25° 55' L

S. 56° 37' E

2° 07'

S. 54° 30' E

29° 18'

S 25° 12' E

25° 55'

S 51° 07' E

42

Lot Line 44.6' S. 56° 37' E. & R. 25° 58'

44.6 S. 30° 39' E

50' Lots 200.0 S. 30° 39' E

51.3' 205.2 S. 43° 39' E @ X 130°

43° 39'

49° 13'

92° 52'

N 87° 08'

173.4' @ Lake 29° 36'

S. 43° 39' E

177° 00'

120° 39'

N 59° 21' E

110° 25'

S. 50° 04' E 183.5

25° 51'

25° 13'

29° 16'

54° 29'

Lot Line S. 56° 37' E

450

Tan S. 56° 37' E

44.6

Tan S. 30° 39' E

44.6

$\Delta = 25° 58'$

183.5 ✓

75.4

118.1

2

53.4

53.4

167.9

160.2

$$\begin{array}{r}
 102.63 \\
 97437 \overline{) 100000} \\
 \underline{97437} \\
 256300 \\
 \underline{194874} \\
 614260 \\
 \underline{584622} \\
 296380
 \end{array}$$

47' B.B.B' 1/16 Line

$$\begin{array}{r}
 136 \\
 37.4 \\
 \hline
 1734
 \end{array}
 \qquad
 \begin{array}{r}
 155 \\
 22.3 \\
 \hline
 177.3
 \end{array}$$

Mean $69^{\circ}35'$ $110^{\circ}25'$ $15^{\circ}36'$

$$\begin{array}{r}
 56^{\circ}37' \\
 \underline{25^{\circ}58'} \\
 30^{\circ}39' \\
 \underline{13^{\circ}} \\
 43^{\circ}39' \\
 \underline{77^{\circ}} \\
 120^{\circ}39' = N 59^{\circ}21'E
 \end{array}
 \qquad
 \begin{array}{r}
 54^{\circ}30' \\
 \underline{29^{\circ}16'} \\
 25^{\circ}14' \\
 \underline{25^{\circ}51'} \\
 51^{\circ}05' \\
 \underline{69^{\circ}35'} \\
 158.9 \\
 \underline{149.8} \\
 9.1
 \end{array}$$

 $120^{\circ}39' = N 59^{\circ}21'E$

$$\begin{array}{r}
 110^{\circ}25' \\
 N 51^{\circ}04' W \\
 \underline{25^{\circ}51'} \\
 N 25^{\circ}13' W \\
 \underline{29^{\circ}16'} \\
 N 54^{\circ}29' W \\
 \underline{2^{\circ}07'} \\
 N 56^{\circ}36' W
 \end{array}
 \qquad
 \begin{array}{r}
 N 25^{\circ}13' W \\
 \underline{15^{\circ}36'} \\
 40.49
 \end{array}$$

$$\begin{array}{r}
 147. \\
 \underline{81.2} \\
 155.2 \\
 \underline{13.65} \\
 168.85
 \end{array}$$

$$\begin{array}{r}
 158.2 \\
 \underline{149.} \\
 9.2
 \end{array}$$

$$\begin{array}{r}
 183.5 \\
 \underline{160.2} \\
 23.3 \\
 \underline{53.4} \\
 76.7
 \end{array}
 \qquad
 53$$

16-17 158.2 + 10.7 to stake

Hub with nail S. $54^{\circ}13'E$

N. $60^{\circ}38'E$ to $\frac{1}{4}$ W.C. Sec 14

N. $54^{\circ}30'W$

I.M. Lot 1 S. $56^{\circ}37'E$

N. $73^{\circ}36'E$ to $\frac{1}{4}$ W.C. Sec 14

Cor. Lot S. $56^{\circ}37'E$

S. $30^{\circ}52'W$ to Hub

Hub^u

N. $29^{\circ}57'E$ to other I.M.

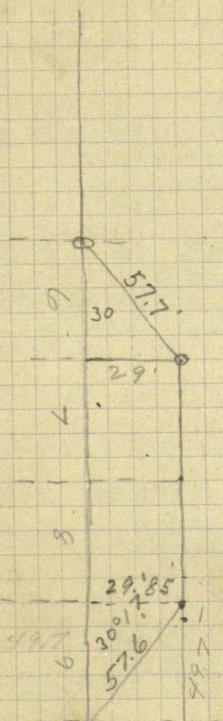
S. $17^{\circ}59'W$ to Next Hub

45
57.7
115.4

86603 / 100000
86603
133970
86603
473670
433015
406550
57.9
115.8

86354 / 100000
86354
136460
86354
501060
431770
692900

86354
57.6
518124
604478
431770
49.739909



Hk. Aug. 9 - 1933 Sec. 11-140-31-Lot 4

Jaeger & Hill survey
Notes N. Line Sec. 14 - S. Line Sec. 11

West	W. Pine 4"	N. 52 E	840
Sec. Cor. = M.C. #7	" " 16"	N. 28 1/2 E.	870

10-11-14-15

M.C. #8	Tarn 14	N. 60 E	21
	W. Birch 10	N. 42 E	26

M.C. #9	N. Pine 16"	N. 66 E	14
---------	-------------	---------	----

M.C. #10	N. Pine 14"	N. 75 E	4
	N. Pine 14"	N. 60 W	37

1/4 Cor.

East	N. Pine 12"	S. 41 1/2 W	50
Sec. Cor.	" " 10"	N. 19 E	21
	" " 10"	S. 41 E	37

11-12-13-14

M.C. #23	N. Pine 14	S. 72 E	100
			95.1, 30.9
			62.8, 20.4

1/4 Cor.	N. Pine 14	S. 66 E	50
	W. Pine 12	N. 80 E.	47

M.C. #22	S. Pine 8	S. 38 E.	45
	N. " 12	N. 37 1/2 E	22

M.C. #11	W. Pine 6	N. 56 E 4	
	" " 5	N. 77 W 6	

Note: Arrive Walker at noon Aug. 7. Work in office P.M. + Aug. 8 Rest of week to Aug 12 on survey.

John M. Greene

Aug. 9, 1933
Aug. 11, 1933
Aug 10, 1933

Paul Purwin
Perry Larawa

47

Cor 10-11-14-15 1.M.

E & W. True line $\frac{11}{14}$

Running N. $0^{\circ}16'E$ E. $0^{\circ}14'E$

South R. Line Tritamound

Old R. Line $\frac{11}{14}$ with a post N. $0^{\circ}44'E$

Brushed out Line N. $49^{\circ}E$

○ on high bank 10 Mile Lake

Line bears N. $0^{\circ}16'E$

To ○ I. P. Mon. B.B. Bartlett's Cor. Long Beach

S. $86^{\circ}54'E$ S. $86^{\circ}58'E$

S. $89^{\circ}45'E$ along South line Long Beach. $42^{\circ}50'L$

To ○ I. P. Mon. Long Beach - White Pine Beach

N. $72^{\circ}25'E$ N. $72^{\circ}22'E$

S. $0^{\circ}44'W$

S $34^{\circ}24'W$ to □ #19 on Lake shore

S. $89^{\circ}45'E$ S. Line Long Beach

$\frac{89^{\circ}15}{179^{\circ}00}$

N. $1^{\circ}E$ by B.B.'s A

N. $0^{\circ}44'E$ by Fence posts

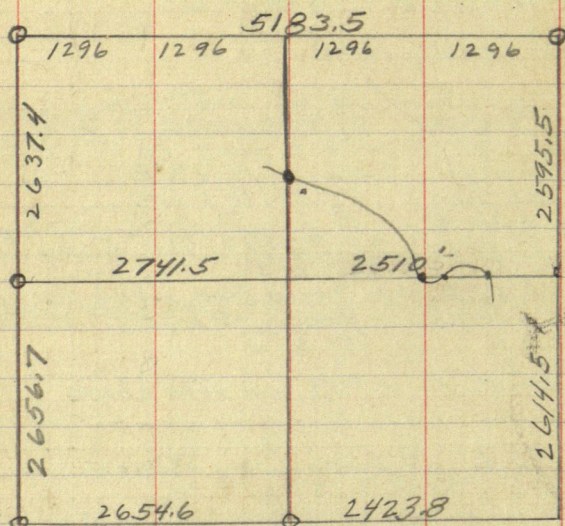
N. $72^{\circ}25'E$

N. $0^{\circ}44'E$

$\frac{71^{\circ}41}{70^{\circ}51}$

$\frac{70^{\circ}51}{0^{\circ}50'}$

$\frac{0^{\circ}50'}{0^{\circ}50'}$



Long
Beach

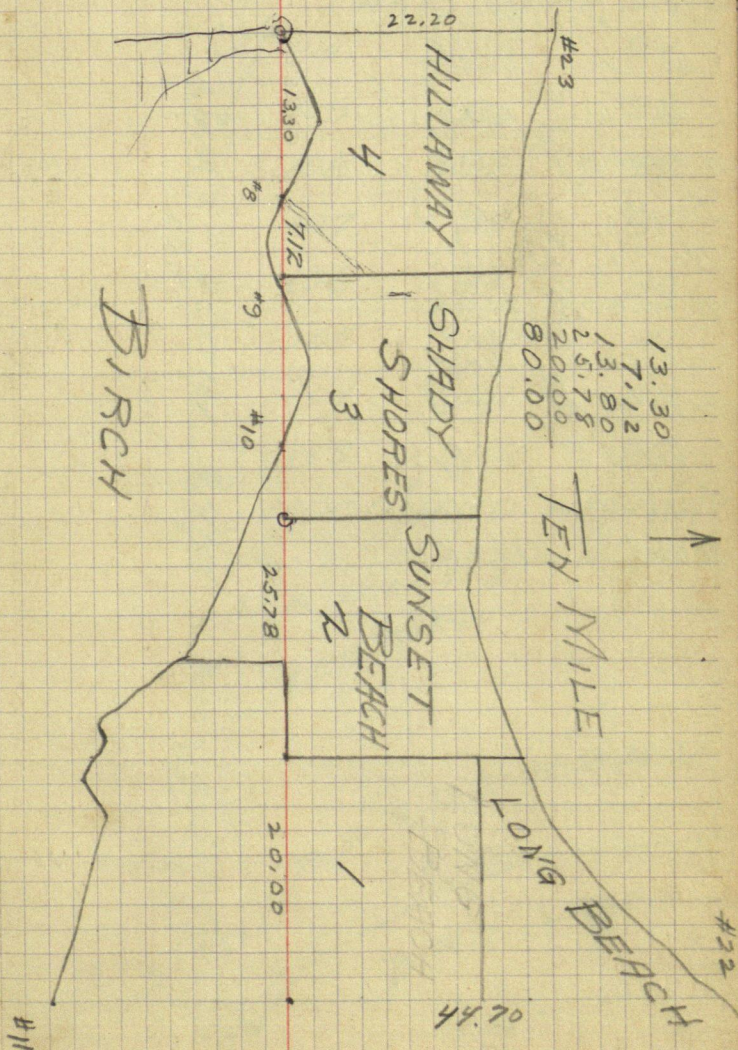
2640

545.5'

0 1/4 Cor

0 M.C.

White Pine Beach



50

TRAVERSE of SHADY SHORES

S. 88° 20' W 1296' E + W.

North

65'

 $21.78 = 2^{\circ}38'$

S. 76° 30' W

150'

59.5 | 2960

1190

N. 76° 30' W

150'

1060

N. 63° 30' W

298.7

595

S. 84° W

402.4

4650

4165

S. 65° W

225.0

4850

4760

S. 48° W

139.0

N. 88° 40' W

25.5

South

5.0

North

1330.2

N. 85° 50' E

250.0

N. 81° 30' E

303.0

S. 76° 45' E

S. 67° 30' E

S. 72° E

South

1120.5

HILLAWAY

249.2'

26 25 24 23 22 21 20 19 18 17 16

507

PINE RIDGE WAY

33'

507

PINE RIDGE WAY

66'

PINE RIDGE WAY

33'

508

25' Path

227

20.5'

5' Path

1296'

LAKE SHORE DRIVE

110

109

108

107

106

105

104

103

95

96

97

98

99

100

101

102

94

93

92

91

90

89

88

87

HARRY SHORES

HIGHLAND AVE

WOODLAND HIGHWAY

50 " " 50 60 100 50 50 50 50

57 56 55 54 53

CROSS ROAD

28 29 30 31 32 33 34 35 36 37

BIRCH LAKE

Arthur's Point.

Aug. 24, 1923 + Aug.

C. M. Fancher.

$$300 - 9.3 + 0.7 + 0.0$$

$$290.7 + 0.7 = 291.4$$

We located the south line of
Lot No. 1 - 2.99 Acres & establish point
at edge of road 8.6' from stone mon.
point is offset 0.8' to avoid tree

Bearing of line on plat is N. 58° 45' W

From S.E. Cor. Lot 1

Bearing of line as offset is N. 58° 54' W

N. 58° 54' W 8.6'

S. 47° 25' W 271.5'

S. 18° 26' W 254.2'

S. 12° 42' E 114.8' to I.M.

N. 87° 20' W 236.3' to 1/16 Cor.

Diff. = 2° 57' from Var. given.

From 1/16 Cor.

N. 89° 43' E 236.3'

N. 15° 38' W 114.8

N. 15° 30' E 254.2

N. 44° 29' E 271.5

S. 61° 50' E 8.6'

Correct for 0.017' N

East

236.3

E 236.3

W.

N. 15° 21' W

114.8

110.7

30.4

Less 6.0

N. 15° 47' E

248.2

238.9

67.6

to I.M.

East

22.6

22.6

349.6

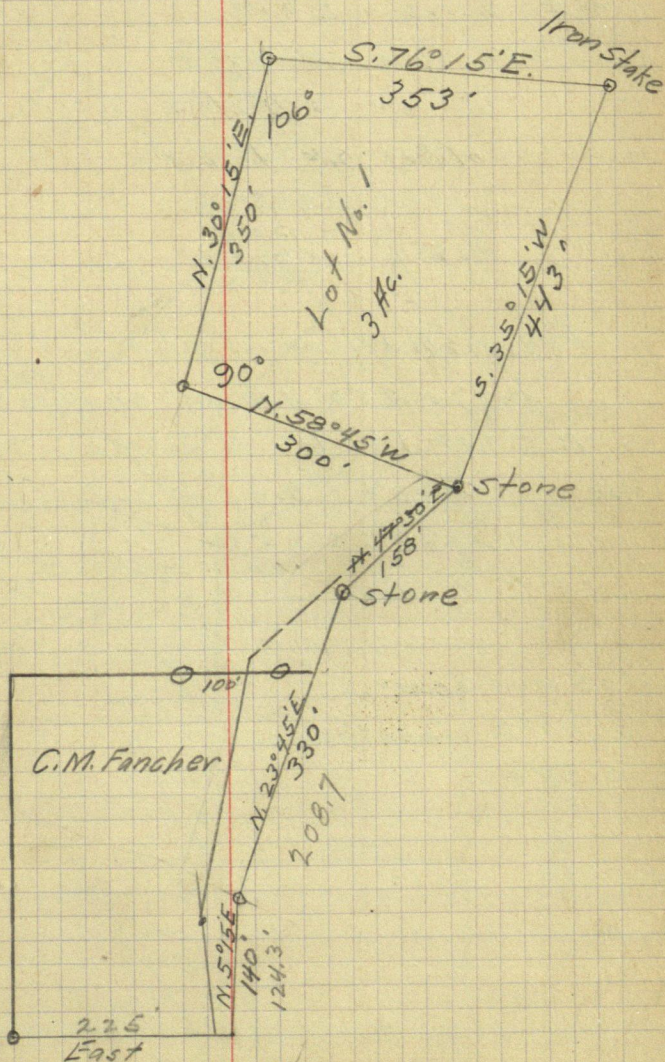
Assts. C. M. Fancher
G. Woodruff

John Mulgrave.

53

25 + Part of Aug. 26

2 days @ 7.50 = 15.00
Room 2 days @ 1.50
Board 4.00
Mileage 100 8.00
328.50



54

Rocklin's Morrison Lake Lots
in Lot 4- Sec. 29-139-25

References Book 95

Survey April-1908.

1/16 Cor. Page 11

Sec. Line - E+W.

Road line N. 45° 14' E.

N. 45° 04' E (Correction)

135° 00'

 $\angle = 67^\circ 32'$

27° 00'

 $\angle = 22^\circ 28'$

222

70.6

41353

41.4

29.2

From N.W. Cor. of plat

N. 4° 13' W to hub on sea wall. 153.17

N.E. Cor. Lot 6 N. 26° 14' E. 272.1

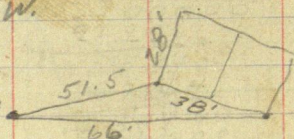
272.10 N. 70° 15' E. S.W. Cor. Lodge 51.5

S. 76° 26' E S.E. " " 66'

N. 18° 52' W.

168.8

168.80 on Lakeshore



N. 49° E /a ke shore

S. 58° W

" "

272.1

16

Road Center
N. 45° 14' E. 33'

15

14

13

12

11

N. 45° 14' E.

70.6

33'

35.7'

13.6'

108.2'

108.4'

143.8'

41.4'

33'

84.2'

70.6'

100'

100'

9

100'

8

100'

7

100'

6

33'

East

East

N. 22° 23' W.

67° 37'

67° 37'

24.2'

129.4'

Block Cor.

1537'

22° 23' W.

54'

S. 5°08'E.

S.W. Cor. 36-383.6' to birch picket S. 89°08'E.

Worran lake.

S. 89°13'E to stick

N. 32°31'E to flag on 1/4 Line

S. 72°27'E to point

Running N. 5°08'E 790' hub

917 Stake

925± Lake shore

North = N. 5°54'W 928 picket - waters edge.

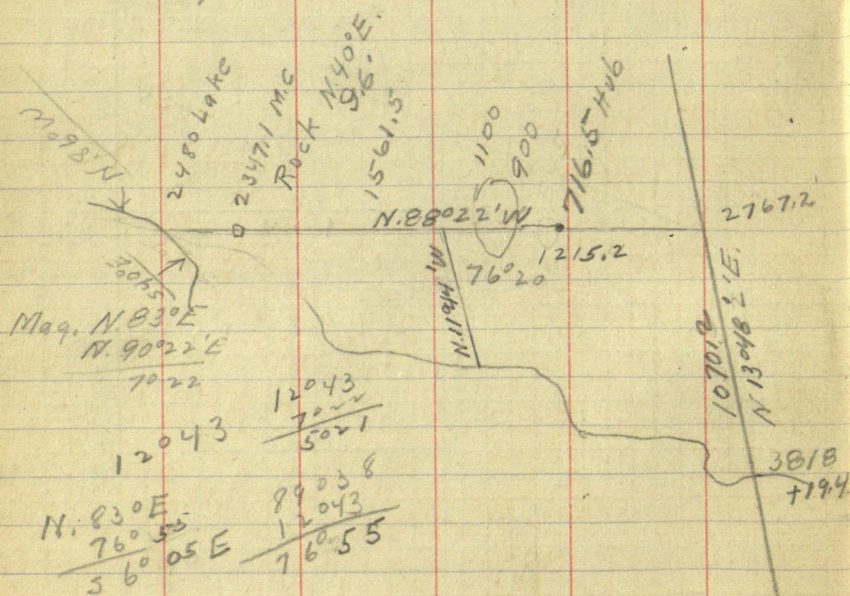
East = N. 89°54'E

from point N. 89°55'E = N. 89°49'E

To I.M. N. 45°21'E. 179'

N. 15°02'W Plot

I.M. along N. & S. Line N. 14°56'W.



$$\begin{array}{r}
 2347.1 \\
 1561.5 \\
 \hline
 785.6 \\
 275 \\
 \hline
 1060.6
 \end{array}$$

$$\begin{array}{r}
 1561.5 \\
 1213.4 \\
 \hline
 348.1
 \end{array}$$

$$\begin{array}{r}
 5.830W \\
 7022Var \\
 12043 \\
 \hline
 N. 5.21W
 \end{array}$$

$$\begin{array}{r}
 2347.1 \\
 1213.4 \\
 \hline
 1133.7 \\
 785.6 \\
 \hline
 348.1 \\
 275 \\
 \hline
 73.1
 \end{array}$$

$$\begin{array}{r}
 2347.1 \\
 1060.6 \\
 \hline
 1286.5
 \end{array}$$

Rocky shore

Merrys
point

Town Line

N. 6° W.

96°

551

383.6

N. 89° 55' E

S. 73° 19' E

$$\begin{array}{r}
 N. 31039'E \\
 52 \\
 \hline
 2231
 \end{array}$$

58

Sec. 31-141-28

N.

S.

E

W

N. 5° 08' W	5460.6'	5438.7		488.6
5.87° 46' E	2221.4		86.6	2219.7
"	2229.4		86.9	2227.7
S. 13° 48' E	2767.2		2687.3	660.1
"	2619.6		2544.0	624.9
S. 11° 12' E	147.6		143.3	35.2
N. 88° 47' W	2631.6	56.9		2631.3
"	2631.6	56.9		2631.3

5552.5 5548.1 5767.6 5751.2

2767.2

341.2

2767.2

322.7

99.1

2767.2

766.6

88.37

766.6

69.37

33.30

13° 48'

2904

11° 11'

1215.2--

9641.2

1215.2

48608

72912

109368

117157432

96578

13158

772624

482890

96578

289734

96578 324

270773

26556-2-3

1215.2--

111 53112

132780

26556

53112

26556

322708512

25938

113158

207504

129690

25938

77814

25938

341292204

2427.2

1114.6

33438

11001

11001

Lot 3 Sec 14-140-31

61

April 1st 1964

I get a letter or card from
Bob Mayer as follows

Hackensack Minn
March 30 1964

Dear Mr Curo

I have a small surveying job. If you
have time let me know or come and see me.
I am on the S side of Ten Mile Lake on Birch
Lake at Shady Shores

Yours Truly
Bob Mayer

I was going to go to Cross Lake but got a
late start so Bob & I drive to Shady Shores

Bob Mayer who has Shady Shore Resort

1/4 Sec 11-140-31

Also owns Lot 3 Sec 14-140-31 he goes with
us and shows us the 24x48" Gal. County iron

at the SW corner of the Plat of Shady Shores

he wants his N line ran which is the N line of
Sec 14-140-31 his property is a small point
in Birch Lake

As there is a 5 foot path along the West line of
Shady Shores for a distance of 254.5 ft ~~N~~ ^N ~~which~~
from the N line of sec 14 then there is a 33rd

Street which goes on N to the Public Highway
as HILLAWAY owns Lot 4 Sec 11 and will sell

Mayers some extra land for him to build a road
into his point he want to find out what
the acres would be to run a line from the 33rd

street SW to where his line enters the bay of
Birch Lake at his West corner We drive
him home and come back to Akeley to check
old field notes

See Sketch of Shady Shores on page 51 also
Sketch of N line Sec 14 and Lots 1-2-3-4 Sec 11
on page 48-49 This book 88

April 8th 1964

As I fell and hurt my back
April 1- and we have gotten
snow and cold weather since
we have not been able to do
any work.

To-day Bob & I will try and
establish the N line of Sec 140-31
Bob & I to Sec. 14-140-31 we walk
South from road along E. Power line
do not find NW Cor Sec. 14, on Power line
I go E over bay of Birch Lake to W $\frac{1}{4}$
I M N line Sec. 14 and pass W after
putting Bob about on line Bob find I M
10-11-14-15 while I am about 200 ft E
of it We set a flag on top of I M
and go E. 'Work T on line bet said
Sec Cor and W $\frac{1}{4}$ I M bet Sec 11-14
then line N hits cabin so we offset
E 10 ft. to get by cabin
Turn back on 10 ft E of W $\frac{1}{4}$ I M
BS W on sec line and turn R

139.9
334
100103.7
152.4
256.126.7
50

63

91°20' angle shown on Plat of
Shady Shores

Chain Line bet Sec. 11-14

beg. at spike hub in E road w of $\frac{1}{4}$ Chain
West @ 103.7 hub on ridge + 152.4 =
256.1 spike hub pt for I.M. + to
edge of bog @ 100 w water

from spike in E road w of $\frac{1}{4}$ Chain East
76.7 I.M. W $\frac{1}{4}$ + 41. To $\frac{1}{2}$ " I.M. on
seawall 6 ft w of water

from 10' ft offset chain N @ 94.7
spike hub + 136.9 hub

254.5

281.6

22.9

256.1

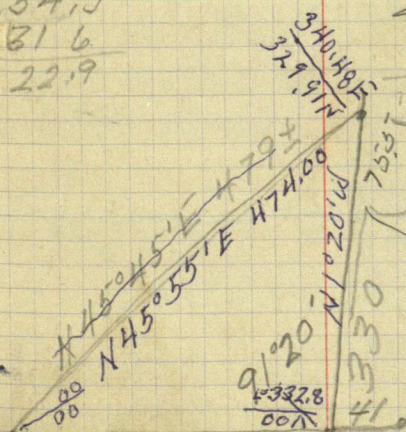
76.7

332.8

254.5

75.5

330.0



N 1° 20' E 330
Sine 0.2327 x 330 = 76.8
Cosine 99973 x 330 = 329.91

332.8 E

76.8

340.48

332.8

S 45° 45' W 479.4

Sine 71630 x 479.4 = 343.11

Cosine 69779 x 479.4 = 334.24

fig.

340.48 E + 329.91 N

, 96896 checks

340.48 / 329.91.0

75°41'

45°55'

~~718~~ 71833 x 48941 =

69570 into 34048 = 48941

1.03204

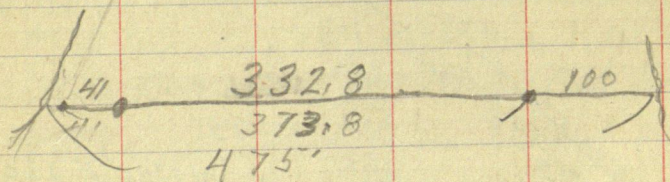
329.91 / 34048

45°55'

3328

141

473.8



April 9th 1964

Bob & I to Sec. ~~11~~ 11 - 140 - 31

Tower hub on W $\frac{1}{16}$ line on 10th offset E
231.6 N of S. line from hub - 254.5' chain
N 75.5 to 330. N.

508

330

178.

at pt 254.5' N. We set pt W 10' on line

@ pt 330 N we set pt 10' W on W $\frac{1}{16}$ line

@ 508 N we set pt 10' W on W $\frac{1}{16}$ line
NW Cor of street Pine Ridge Way
of Plat.

Shore line

Tower 1" I.M. 41 ft E of W $\frac{1}{16}$ Cor
run S 38° 47' W 160 Mo 1 - 3' from water

Tower 160 BS N 38° 47' E run

at 80 water 8' E

S 59° 16' W 160 Mo 2 where continues
10 ft + is 8-5

Tower 160 BS N 59° 16' E run

N 68° 25' W 50 ft 20 to water + 50 to water

@ 35 point is SW 30 ±

Tower 50 BS S 68° 25' E run N. 25° 22' W

@ 70 where 10 R. + 5 over bag top of bag ±

@ 120 E edge of bag, bag 20' W

@ 210.25 - 2' spike on line = 208.2

66

CLAYTON TRAPP

117-29-20
234-58-40

117-29-20

20

4.29

15.71

20

6.72

13.28

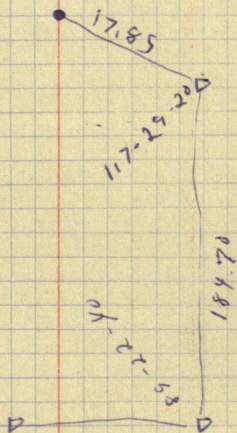
50

7.51

42.48

TIES
 6" WP N 70 E 13.28
 6" WP S 45 E 42.48
 24" WP S 5 E 15.71
 5" W OAK S 40 W 6.25

5 1/4 SEC 17
 80 PENNEY SPR
 SEC PG 20 THIS OR



Trapp

174-16-50
348-33-34

174-16-47

$$\begin{array}{r} 1440 \\ - 263 \\ \hline 1437.35 \end{array}$$

177-31-30
355-02-42

177-31-21

$$\textcircled{3} \textcircled{a} 94-55-30 \quad 22460 \quad \textcircled{223.77} \\ + 230$$

179-04-06
354-08

179-04

$$\textcircled{4} \quad 279.85$$

175-46
351-31-48

175-45-53

$$\textcircled{5} \textcircled{a} 266-54-42 \quad 299.56 \\ - 300.0 \\ + 40.45$$

111-43-16
223-26-36

111-43-18

$$\textcircled{6} \textcircled{a} 274-43-26 \quad 185.05$$

190-41-48
361-23-06

180-41-33

$$\textcircled{7} \textcircled{a} 95-41-34 \quad 298.52 \\ + 300.0 \\ 474.66$$

174-31-30
349-02-54

174-31-27

$$\textcircled{8} \quad 830 \\ - 37.77 \quad 822.27$$

185-52-42
11-45-16

185-52-38

$$\textcircled{9} \quad 165.0$$

169-57-44
339-52-54

169-56-27

$$\textcircled{10} \textcircled{a} 261-55-18 \quad 201.25 \\ 203.27$$

169-58-20
339-56-15

169-58-09

$$\textcircled{11} \quad 289.0$$

$$\textcircled{12} \quad 294.52$$

138-39-40
277-19-16

138-39-38

$$\textcircled{13} \quad 774.63$$

$$\textcircled{14} \quad 731.68$$

140-57-56
281-55-40

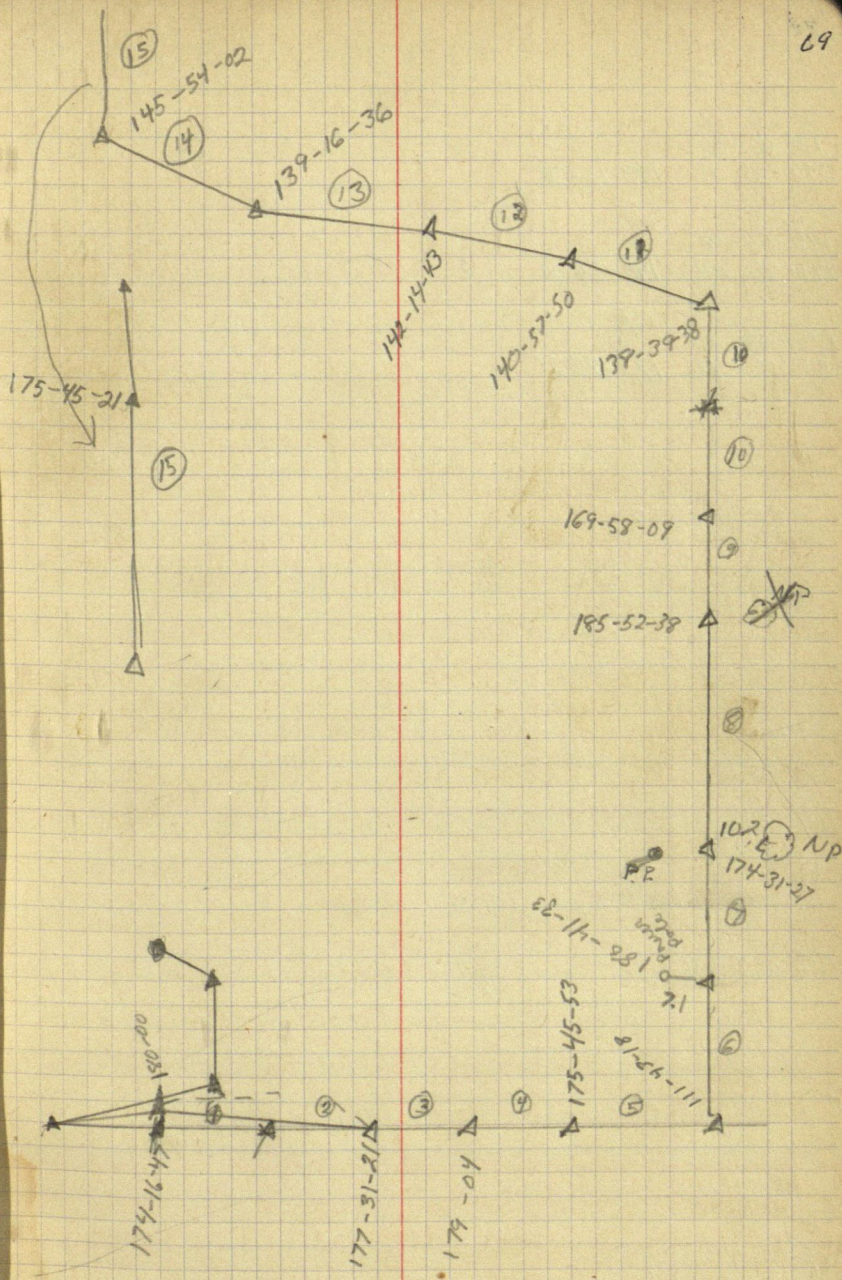
140-57-50

$$\textcircled{15} \quad 3276.83$$

$$3280 \\ - 3.17$$

142-14-50
284-19-26

142-14-43



~~139-16-38~~~~278-33-12~~

139-16-36

~~145-54-08~~~~291-48-04~~

145-54-02

~~176-45-28~~~~351-30-42~~

175-45-21

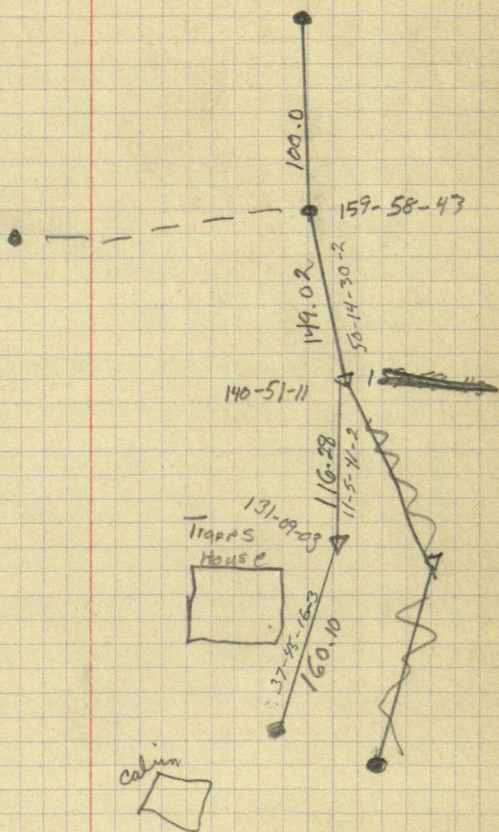
159-58-52
319-57-26 159-58-43

140-51-20
281-42-22 140-51-11

131-09-10
262-18-06 131-09-03

Trap Paul Ron Ken

73



74

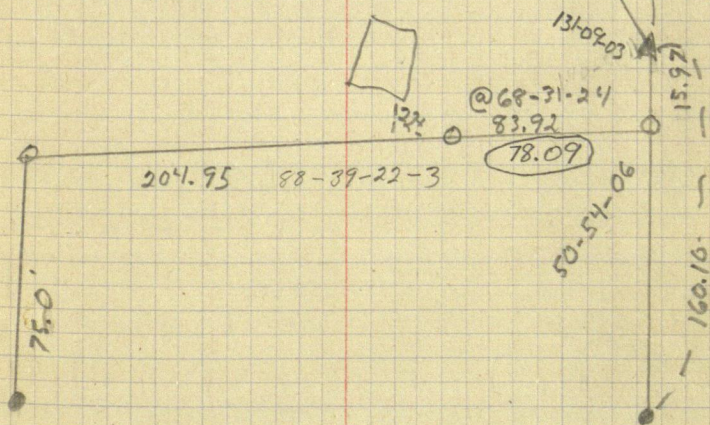
Paul
Ron Ken

50-54-20
101-48-12

50-54-06

Trapp

See page 73



Board with Victor Martin

Feb. 1915

1 2 3 4 5 6 7 8 9 10 11 12 13

German

12 11 10 9 8 7 6 5 4 3 2 1

30.8 ✓

97437

300000

292311

768900

779496

94040

$$\begin{array}{r}
 40 \\
 59.7 \\
 \hline
 99.7 \\
 5 \\
 \hline
 94.7
 \end{array}$$

$$\begin{array}{r}
 109.7 \\
 6 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 3.00 \\
 59.60 \\
 \hline
 240.40
 \end{array}$$

$$\begin{array}{r}
 376.9 \\
 168.00 \\
 \hline
 360
 \end{array}$$

$$\begin{array}{r}
 160.4 \\
 8 \\
 \hline
 152.4
 \end{array}$$

$$\begin{array}{r}
 1268.91 \\
 1141.30 \\
 \hline
 12441
 \end{array}$$

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES $1\frac{1}{2}$ 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.

MADE IN GERMANY.