

17

1

1949

CITRUS

1

1

1949

K & E
LEVEL BOOK

COUNTY

CITRUS
MARION
LEVY

Nov. 30, 1948 - Leveling F.G.S. To

QUANSET HWT. Tallahassee Fla. 9

Sta. +5 H.I. -5 Elev. 100.00

F.G.S. 0.28 100.28 100.00

TP₁ 0.00 89.19 11.09 89.19

TP₂ 1.60 81.17 10.62 79.57

TP₃ 0.68 72.02 9.83 71.34

TP₄ 2.01 62.88 11.15 60.87

TP₅ 0.53 52.49 10.92 51.96

TP₆ 2.93 49.65 5.77 46.72

HWT +8.03 3.29 46.36

61.67 -61.67

53.64

Rod. B. EATEN Level & Roc. +/T
Chittum

100. ELEVATION ASSUMED AT

F.G.S.

100.00 FGS

-53.64 DIFF. Elev.

46.36 HWT CHECK

Nov. 30, 1948 - Leveling, F.G.S. To

QUANSET HWT. Tallahassee Fla. 9

STA. +5 H.I. -5 Elev. 100.00

F.G.S. 0.28 100.28 100.00

TP₁ 0.00 89.19 11.09 89.19

TP₂ 1.60 81.17 10.62 79.57

TP₃ 0.68 72.02 9.83 71.34

TP₄ 2.01 62.88 11.15 60.87

TP₅ 0.53 52.49 10.92 51.96

TP₆ 2.93 49.65 5.77 46.72

HWT +8.03 3.29 46.36

61.67 -61.67

-53.64

Rod. B. EATEN Level & Roc. +/T
Chittum

100 ELEVATION ASSUMED AT

F.G.S.

10/0.00 FGS

-53.64 DIFF. Elev.

46.36 HWT CHECK

Sta.	+ S	N.I.	- S	Elv.
Wt	7.44	53.80		46.36
TP ₁	7.26	54.85	6.21	47.59
TP ₂	9.02	62.84	1.03	53.82
TP ₃	9.53	71.34	1.03	61.81
TP ₄	9.49 0.20	80.63	0.20	71.14
TP ₅	10.71	91.28	0.06	80.57
TP ₆	10.34	100.75	0.87	90.41
TP ₇	1.62	102.08	0.29	100.46
FGS	15.41		0.99	101.09
	10.68		10.68	
	54.73			

101.09

46.36

54.73

Check FGS.

FGS - Q Ht. Recheck

Sta	+S	H1	-S	Elev
FGS	0.32	100.32		100.00
TP ₁	0.07	89.98	10.41	89.91
TP ₂	0.04	80.10	9.92	80.06
TP ₃	1.05	70.35	10.80	69.30
TP ₄	0.19	59.43	11.11	59.24
TP ₅	2.16	50.53	11.06	48.37
TP ₆	4.92	51.13	4.32	46.21
Hwt	8.75		5.99	45.14
	<u>63.61</u>		<u>63.61</u>	
	-54.86			

TBM #1

TBM #2

TBM #3

100.00

45.14

54.86 Check

63.61
87.5
54.86

Sta	+S	HI	-S	Elev
HUT	5.33	50.47	4.12	45.14
TP ₁	4.22	50.57	4.12	46.35
TPM ₂	10.85	59.12	2.30	48.27
TP ₂	10.35	69.46	0.44	58.68
TP ₃	9.41	78.58	0.26	69.17
TP ₄	8.04	86.24	0.38	78.20
TP ₅	10.58	96.46	0.36	85.88
TP ₆	6.34	102.18	0.62	95.84
FCS	65.52		7.18	100.00
	10.66		10.66	
	54.86			

100.00 F.G.S.

45.14 Q Hut

54.86 Diff Elev

54.86 Chick

Sta	IS	HI	-S	Elev
FGS	1.03	101.03		100.00
TP ₁	2.39	91.38	10.04	90.99
TP ₂	2.03	85.45	7.96	83.42
TP ₃	1.78	76.98	10.25	75.20
Post	6.51	74.12	9.37	67.61
TP ₄	9.54	82.96	0.70	73.42
TBM #1	8.77	88.82	2.91	80.05
TP ₅	11.15	99.88	0.09	88.73
TP ₆	1.43	101.05	0.26	99.62
FGS			1.03	100.02

STA 45 H1 -5 Elev

FGS 1.23 100.73 100

TP₁ 11.07 104.08 8.22 93.01

TP₂ 9.89 113.22 0.75 103.33

TP₃ 8.56 120.69 1.09 112.13

TP₄ 9.53 129.94 0.28 120.41

TP₅ 4.94 133.56 1.32 128.62

BM 45.22 6.06 127.50

17.72 17.72

BM 6.28 133.78 127.50

TP₁ 1.58 127.06 8.30 125.48

TP₂ 0.55 116.48 11.13 115.93

TP₃ 0.85 106.23 11.10 105.38

TP₄ 0.61 96.12 10.72 95.51

TP₅ 4.30 90.00 9.42 86.70

TP₆ 10.18 100.95 0.23 90.77

24.35 -83 100.12

51.73 51.73

2738

127.50 BM elev

100.00 FGS elev

27.50 Diff check

157.89

27.44 27.44 Av.

130.45

127.50 BM elev

100.12 FGS elev

27.38 Diff Check

Sta	+S	HI	-S	Elev
FGS	1.21	131.66		130.45
TP ₁	0.36	121.23	10.79	120.87
TP ₂	7.01	120.58	7.66	113.57
TP ₃	4.53	125.08	0.03	120.55
TP ₄	3.61	120.27	8.42	116.66
TP ₅	0.26	109.98	10.53	109.72
YFP	10.60	119.59	0.99	108.99
TP ₆	6.97	123.01	3.55	116.04
TBM ₁			(2.86)	(120.15)
TP ₇	10.60	123.61	10.00	113.01
TP ₈	9.60	132.28	0.93	122.68
FGS			2.19	130.09

STA 45 HI - S ELEV

TBM, 0.69 100.69 100

TT, 7.59 101.14 7.14 93.55

TBM 1.12 100.02

INSTRUMENT check Jan 6, 1949

AVERAGE ERROR too small to correct

READING AT POINT 'A' 4.265
 " " " 'B' 0.705
 App DIF. 3.565

3.565

3.575

7.140

3.570
 7.140
 6
 14
 10
 14
 14
 0

READING AT POINT 'B' 4.370
 7.945
 3.575

3.570

4.370

7.940

Reading AT POINT 'A' 4.400
 " " " 'B' 0.845
 3.555

3.555

3.580

7.135

3.567
 7.135
 6
 11
 10
 13
 12
 15

3.567

4.400

8.047

4.480

8.060

3.580

Reading of Rod at A' From A'	4.12
" " " " B' " A'	<u>0.56</u>
	3.56

3.57

4.39

7.96

Reading of Rod at B From B'	4.39
" " " " A " B'	<u>7.97</u>
	3.58

TRAVELSE #1

Leveling From B.M. on W. Hill COOCHEE

DAM to WATER GAGE ABOVE DAM

Sta	+S	HI	-S	Elev.
B.M.	3.43	35.70		32.27
30' on Gage	6.94		6.94	28.76
	3.51	←	→	3.51

30' on Gage	6.91	35.67		28.76
	3.40		3.40	
	3.51			32.27 ✓
		→	←	3.51

JAN 7, 1999

Level: H.T. Chittum

Rod: R.C. GRAY

ELEVATION to top of 30'

MARK ON WATER GAGE is 28.76
ABOVE M.S.L.

Tea Verde #2 USCYES CITRUS Co.
Leveling From BM L41 To Sec. 12 Mine

Sta.	+S	H.I.	-S	Elev.
BM	9.80	89.25		79.45
TP ₁	9.75	98.61	0.39	88.86
TP ₂	7.03	104.18	1.46	97.15
TP ₃	6.46	110.52	0.12	104.06
TP ₄ (TBM ₁)	3.70	111.32	2.90	107.62
TP ₅	10.27	118.89	2.70	108.62
TP ₆	0.86	113.41	6.34	112.55
TP ₇	0.35	102.93	10.83	102.58
TP ₈ (TBM ₂)	0.45	91.95	11.43	91.50
TP ₉	1.29	83.51	9.73	82.22
TP ₁₀	2.51	81.61	4.42	79.09
TP ₁₁	11.28	92.70	0.18	81.42
TP ₁₂	11.71	104.37	0.04	92.66
TP ₁₃	4.82	109.02	0.17	104.20
TP ₁₄	2.73	104.65	7.10	101.92
TP ₁₅	<u>9.73</u>	111.06	3.32	101.33
TBM ₃	92.74		<u>0.23</u>	110.86
	<u>61.36</u>		<u>61.36</u>	
	31.38			

Jan 10, 1944

Hot + Sunny w.
Much distortion

Level: H. Chittum
Rad. C. Gray

110.83 Final Elev.

79.45 BM Elev

31.38 Diff in Elev. Check -

Leveling From Top Sec 12 Mine to BM 141

Citrus Co.

usc+GS

JAN 11, 1949

Hot & Sunny

Sta	+S	HI	-S	Elev.
TBM ₃	9.50	120.33		110.83
TOP MINE			0.84	119.49
Top of Rock estimated to be 100' ± 1.00'				

TOP MINE	0.80	120.29		119.49
TBM ₃	0.21	111.00	9.50	110.79
TP ₁	3.06	104.36	9.70	101.30
TP ₂	6.02	109.19	1.19	103.17
TP ₃	2.32	108.14	3.37	105.82
TP ₄	0.09	97.17	11.06	97.08
TP ₅	0.05	86.20	11.02	86.15
TP ₆	1.88	79.24	8.84	77.36
TP ₇	11.26	86.37	4.13	75.11
TP ₈	7.73	93.77	0.33	86.04
TBM ₂	11.31	103.68	1.40	92.37
TP ₉	9.78	113.33	0.13	103.55
TP ₁₀	7.13	120.52	0.14	113.19
TP ₁₁	1.25	111.29	10.28	110.04
	62.89		71.09	-8.20

Level H.T. Chittum.

Rod. R.L. Gray

9.50 119.49

.84
8.66

110.83



8.66 elev. diff. Check.

+62.89 elev. diff. is -8.20

-71.09 check -

-8.20

STA	+S	HI	-S	Elev
TBM ₁	4.07	111.29	3.85	107.44
TP ₁₂	0.52	111.48	7.54	103.94
TP ₁₃	2.04	104.46	7.90	96.56
TP ₁₄	1.21	98.60	9.68	88.92
TP ₁₅	2.93	90.13	6.36	83.77
	10.74	86.70	7.01	79.69
	<u>38.49</u>		38.49	²⁶ 27.75
	27.75			

+10.74 Elev. diff. is
-38.49 -27.75 check.
 -27.75

check run reads 79.69,
 BM is 79.45 i. diff.
 divided by two gives elevation
 of true as 119.37 $\pm$.12 of
 a foot.

TRAVERSE #3 CHENS Co.
Leveling From Water level to C.S. Dean #1

Sta	+S	HI	-S	Elev.
TBM ₁	6.09	106.09		100.00 ASSN
TP ₁	2.76	106.96	1.89	104.20
TP ₂	6.36	111.24	2.08	104.88
C.S. Dean #1	15.21		8.97	102.27
	12.94		12.94	2.27 ✓
	2.27			

C.S. Dean #1	8.93	111.20		102.27
TP ₁	2.05	106.92	6.33	104.87
TP ₂	1.90	106.05	2.77	104.15
TBM ₁	12.88		6.08	99.97
	15.18		15.18	2.30 ✓
	2.30			

TBM ₁	6.08	106.08		100.00
Water level	6.96		6.96	99.12
	.88			.88 ✓

Water level	6.95	106.07		99.12
TBM ₁	6.06		6.06	100.01 ✓
	.89			.89

Jan. 12, 1949 Clear + Hot

Level: N.T. Chittum

Rod: R.C. Gray

Elev. diff. From TBM₁ to C.S. Dean #1 is
+2.27' check.

Elev. diff. From C.S. Dean #1 to TBM₁ is
-2.30' check.

Elev. diff. From TBM₁ to water level is
0.88 check

Elev. diff. From water level to TBM₁ is
+0.89 check

C.S. Dean #1 is $2.28 \pm .01$ above TBM₁,
which is 0.885 above water level, therefore,
C.S. Dean #1 is $3.16 \pm .01$ above water level.
water level at 12:00 noon was 26.95 above
MSL. Elev. of C.S. Dean #1 is $29.61 \pm .01$.

Traverse # 4
Leveling From C.S. Dean #1 to Hwy.

Sta	+S	HI	-S	Elev
C.S. Dean #1	4.51	34.12		29.61 ± 0.1
TP ₁	8.95	42.82	0.25	33.87
TP ₂	1.24	37.75	6.31	36.51
TP ₃	5.14	37.98 37.79	4.91	32.64 32.84
TP ₄	6.56	43.37 43.17	1.17	36.61 36.81
TBM ₁	26.40 15.89		3.25	39.92 40.12
	10.51		15.89	10.31 10.51 ✓

TBM ₁	^{2.2} 2.15	42.27 42.07		40.12 39.92
TP ₁	2.96	36.03 35.83	9.20	33.07 32.87
TP ₂	10.28	44.07 43.87	2.24	33.79 33.59
TP ₃	1.68	36.36 36.10	9.45	34.62 34.42
TP ₄	17.07		6.83	29.47 29.27
	27.72		27.72	10.65 10.65 ✓
	10.65			

Jan. 12, 1949

Clean, Hot + Windy -

level: H.T. Chittum

Rod: R.C. Gray

Elev. diff. From C.S. Dean #1 TBM₁

is +10.51' check =

Elev. diff. From TBM₁ to C.S. Dean #1

is -10.65' check.

True Elev. of TBM₁ is 40.19 $\pm .08$

Leveling From TBM₁ To L.S. Pit

Sta	+S	HI	-S	Elev.
TBM ₁	4.71	44.90		40.19 ± .08
TP ₁	6.73	50.62	1.01	43.89
TP ₂	4.02	50.77	3.87	46.75 ^{96. is} 50.77
Top of Ls.	15.46		3.79	46.98
	- 8.67		8.67	6.79 ✓
	<u>6.79</u>			

Jan. 13, 1949

Clear, gusty wind.

level: W. Chittum

Road: C. Gray

Elev diff is 6.79 check

Elev diff is 6.59 check

Actual elev. L.S. pit is 46.88 ± .18

Top Ls.	3.84	50.82		46.98
TP ₁	4.26	51.01	4.07	46.75
TBM ₂			6.42	44.59 ± .18
TP ₂	0.96	44.97	7.00	44.01
TBM ₁	9.06		4.58	40.39
	15.65		15.65	6.59 ✓
	<u>6.59</u>			

40.19

6.69

46.88

Leveling From TBM₁ to OMWAKE #1

TBM ₁	4.59	44.78		40.19 ± .08
TP ₁	6.88	50.71	0.93	43.83
TBM ₂			6.33	44.38

Leveling From TBM₁ to Omwake #1

Jan 13, 1949

Clear, gusty

Sta	+S	HI	-S	Elev.
TP ₁	6.88	50.71	0.95	43.83
TP ₂	2.30	44.06	8.95	41.76
TP ₃	4.52	46.62	1.96	42.10
DMwake #1	18.29		5.01	41.61
	16.87		16.87	
	1.42			1.42

level: H Chittum

Rod: C Gray

Elev diff +1.42 check

DMwake #1	4.92	46.53		41.61
TP ₁	7.53	49.16	4.90	41.63
TBM ₂	6.56	50.92	4.80	44.36
TP ₂	0.78	44.56	7.14	43.78
TBM ₁	19.79		4.46	40.10
	21.30		21.30	
	1.51			1.51

Elev diff -1.51 check

TBM₁ - 40.19 ± .08

40.10

diff. .09

Av. diff in elev = 1.46

Omwake #1 is 41.65 ± .13

Leveling From BM AK50 to PARTIN #1

JAN 13, 1949

Sta	+S	HI	-S	Elev
BM AK50	³ 4.70	72.50		67.80
TP ₁	2.00	62.97	^{1 2 3} 11.53	60.97
TP ₂	9.31	72.11	0.17	62.80
TP ₃	1.65	70.78	2.98	69.13
TP ₄	2.42	65.87	7.33	63.45
TP ₅	5.67	66.42	5.12	60.75
TBM ₁			<u>4.84</u>	<u>61.38</u>
TP ₆	7.76	73.16	1.02	65.40
PARTIN #1	33.51	30.52	2.37	70.79
	2.99		30.52	2.99

PARTIN #1	2.36	73.15		70.79
TP ₁	0.53	65.94	7.74	65.41
TBM ₁			<u>4.35</u>	<u>61.59</u>

Elev. diff 2.99 check

Jan 14, 1949

Sta.	+S	HI	-S	Elev
TBM ₁	4.83	66.21		61.38
TP ₁	7.62	72.84	0.99	65.22
PARTIAL HI	12.45		2.23	70.61
	<u>3.22</u>		<u>3.22</u>	
	9.23			9.23 ✓

PARTIAL HI	2.22	72.83		70.61
TP ₁	0.80	66.05	2.58	65.25
TBM ₁			<u>4.63</u>	<u>61.42</u>
TP ₂	4.88	65.64	5.29	60.76
TP ₃	6.10	69.39	2.35	63.29
TP ₄	2.33	71.28	0.44	68.95
TP ₅	0.31	62.94	8.65	62.63
TP ₆	11.44	72.23	2.15	60.79
BM AK 50	28.08		4.49	61.14
	<u>30.85</u>		<u>30.85</u>	2.87 ✓
	2.87			

Elev. diff. 9.23 check

Elev. diff. 2.87 check

TRAVERSE #6
Leveling From TBM₁ to Natural Well

Jan 17, 1949

Hot + Sunny

Sta.	+S	HI	-S	Elev.
TBM ₁	⁵ 1.57	41.76		40.19 ±.08
TP ₁	3.10	33.38	²⁺⁵ 11.48	30.28
TBM ₂ TP ₂	5.13	38.31	0.20	33.18
TP ₃	11.60	47.27	2.64	35.67
TP ₄	11.85	57.89	1.23	46.04
TP ₅	10.60	68.46	0.03	57.86
TP ₆	10.14	78.54	0.06	68.40
TP ₇	10.35	88.53	0.36	78.18
TP ₈	9.70	97.84	0.39	88.14
TP ₉	1.70	91.73	7.81	90.03
TP ₁₀	0.96	81.02	11.67	80.06
NAT. Well	76.70		9.45	71.57
	45.32		45.32	31.38 ✓
	<u>31.38</u>			

Elev. diff. 15.31.38 check

TRAV. # 6 (cont)

	±S	HI	-S	Elev
well	² 9.50	81.07		71.57
TP ₁	11.00	81.07 ^{91.03}	1.04	80.03
TP ₂	7.82	98.36	0.99	90.54
TP ₃	0.90	88.20	11.06	87.30
TP ₄	0.46	77.36	11.30	76.90
TP ₅	0.55	66.59	11.32	66.04
TP ₆	0.08	54.95	11.72	54.87
TP ₇	0.33	43.39	11.89	43.06
TP ₈	4.45	40.03	7.81	35.58
TP ₉	0.33	33.40	6.86	33.17
TP ₁₀	10.37	42.84	0.93	32.47
TBM	45.79		2.65	40.19
	77.17		77.17	31.38 ✓
	31.38			

JAN. 17, 1949

Hot & Sunny
with brush fires
& dead skunk

Elev. diff is. 31.38 check.

TRAVERSE

#7

CHAS CO.

Leveling From BM#2 to W-1763

Jan 19, 1949

SUNNY + warm

Sta.	+S	HT	-S	Elev
BM#2	4.20	10.13		5.93
TP ₁	4.77	9.86	5.04	5.09
AKLIN well	8.97		5.25	4.61
	10.29		10.29	1.32 ✓
	1.32			

ACKLIN well	5.26	9.87		4.61
TP ₁	5.09	10.17	4.79	5.08
BM#2	10.35		4.24	5.93
	9.03		9.03	1.32 ✓
	1.32			

Elev. diff. 1.32 check-

Elev. diff. 1.32 check-

TRANSER #8

Levy Co

BM check Ellzey

BM N12 4.039 29.315 25.276

BM AK15

(3.932) 25.383

Ellzey #1 3.250

3.250 26.065

.789

.789

Ellzey #1 3.238

26.065

BM AK15 (3.920) 29.303 ~~3.920~~ 25.383

BM N12

4.022 25.281

4.022

.784

.784

Jan 19, 1949

Clear + Hot

Elev diff = .789 check

" " .784 check

TRAVERSE # 9

Levy Co

leveling from BMAK 86 to W-1843

JAN 20, 1999

clean + cool (8:00 AM)

STA	+S	HI	-S	Elev
BMAK 86	2.80	31.19		28.39
TP ₁	4.46	31.27	4.38	26.81
HogNE #1	7.26		6.08	25.19
	10.46		10.46	3.20 ✓
	3.20			

HogNE #1	6.09	31.28		25.19
TP ₁	4.57	31.38	4.47	26.81
BMAK 86	10.66		2.98	28.40
	7.45		7.45	3.21 ✓
	3.21			

Elev. diff. 320 check.

" " 3.21 check

TRAVERSE # 10
leveling from BM AK 12 to W-1849

Levy Co

JAN 20, 1949 Clear & Warm

Sta.	+S	HI	-S	Elev
BM AK 12	5.18	22.77		17.59
TP ₁	5.01	23.40	4.38	18.39
TP ₂	5.06	24.19	4.27	19.13
TP ₃	4.02	25.03	3.18	21.01
TP ₄	5.13	26.43	3.73	21.30
TP ₅	5.07	25.64	5.86	20.57
EPPERSON #1	29.47		5.25	20.39

26.67
2.80

26.67 280 ✓

EPPERSON #1	5.25	25.64		20.39
TP ₁	5.79	26.36	5.07	20.57
TP ₂	4.15	25.44	5.07	21.29
TP ₃	3.36	24.37	4.43	21.01
TP ₄	4.19	23.29	5.27	19.10
TP ₅	3.95	22.31	4.93	18.36
BM AK 12	26.69		4.74	17.57
	29.51		29.51	2.82

2.82

Elev. diff. 2.80 check.

" " 2.82 check

Actual Elev. Epperson #1
is 20.38 ± .01

TRAVERSE #11
leveling from BMD 50 to W-1844

Sta	+S	HI	-S	Elev.
BMD 50	2.82	34.69		31.87
TP ₁	3.10	34.88	2.91	31.78
TP ₂	5.16	35.88	4.16	30.72
TP ₃	5.63	38.29	3.22	32.66
TP ₄	3.52	36.14	5.67	32.62
TP ₅	5.12	37.86	3.40	32.74
TP ₆	3.97	36.77	5.06	32.80

Meeds #1 29.32 5.30 31.47

29.72 29.72 00.40 ✓

00.40

Meeks #1 5.26 36.73 31.47

TP₁ 4.93 37.75 3.91 32.82

TP₂ 2.80 35.55 5.00 32.75

TP₃ 5.85 37.99 3.41 32.14

TP₄ 4.40 37.36 5.03 32.96

TP₅ 4.03 34.79 6.60 30.76

TP₆ 4.36 35.68 3.47 31.32

BMD 50 31.63 3.82 31.86

31.24 31.24 00.39 ✓

Jan 20, 1949

Hot!

Elev. diff. 0.40 check

" " 0.39 check

Finished at 1800 hours

leveling From BM A22 to W-1699

Jan 26, 1949

Sta.	IS	HI	IS	Elev
BM A22	4.18	80.57		76.39
TP.	0.12	76.14	4.55	76.02
ICE PLANT	4.30		4.92	71.22
	9.47		9.47	5.17 ✓
	5.17			

Elev. diff. 5.17 check

" " 5.16 check

ICE PLANT	4.96	76.18		71.22
TP.	3.96	79.98	0.16	76.02
BM A22	8.92		3.60	76.38
	3.76		3.76	5.16 ✓
	5.16			

Elev of. Conc. Floor 71.22

Trav #13
leveling From BM BG 6 to W-1633

levy 93

Jan 27, 1949

Hot + Sunny

Sta.	+S	HI	-S	Elev
BM BG 6	⁵ 1.57	107.78		106.21
TP ₁	1.26	98.49	^{2 3 4} 10.55	97.23
TP ₂	2.47	89.73	11.23	87.26
TP ₃	6.36	95.33	0.76	88.97
TP ₄	9.93	99.71	5.55	89.78
TP ₅	3.72	100.54	2.89	96.82
TP ₆	4.87	100.79	4.62	95.92
TP ₇	5.91	102.57	4.13	96.66
Well	36 09		2.19	100.38
	41.92		41.92	5.83 ✓
	5.83			

44

TRAVERSE # 13

Levy Co

leveling from W-1633 to BM BG6

Jan 27, 1999

HOTTER + SUNNIER!

Sta	±S	HI	-S	Elev
B W-1633	³ 1.77 ⁴	102.15	³ 5.50 ⁴	100.38
TP ₁	4.27	100.92	5.50	96.65
TP ₂	5.58	101.35	5.15	95.77
TP ₃	1.32	99.72	2.95	98.40
TP ₄	4.93	95.30	9.35	90.37
TP ₅	1.27	90.18	6.39	88.91
TP ₆	11.19	98.38	2.99	87.19
TP ₇	<u>10.00</u>	<u>107.20</u>	<u>1.18</u>	<u>97.20</u>
BM BG6	40.33		<u>1.02</u>	<u>106.18</u>
	<u>34.53</u>		<u>34.53</u>	5.80 ✓
	5.80			

100.37 ±.01

Traverse # 14
leveling From BM AK 22 to Thompson Field

Sta.	+S	HI	-S	Elev
BM. AK22	4.15	48.28		44.13
TP ₁	3.15	46.94	4.49	43.79
TP ₂	5.44	47.70	4.68	42.26
TP ₃	5.54	48.11	5.13	42.57
TP ₄	4.21	46.45	5.87	42.24
TP ₅	5.01	46.57	4.89	41.56
TP ₆	4.60	46.27	4.90	41.67
TP ₇	6.11	47.39	4.99	41.28
TP ₈	4.74	46.89	5.24	42.15
TP ₉	4.45	46.57	4.77	42.12
TP ₁₀	4.16	44.47	6.26	40.31
TP ₁₁	3.80	44.07	4.20	40.27
TBM ₁	5.05	44.27	4.85	39.22
TP ₁₂	5.10	44.61	4.76	39.51
TBM ₁ TP ₁₃	4.60	41.92	7.29	37.32
TP ₁₄	70.11		2.62	39.30
	74.94		74.94	4.83 ✓
	4.83			

Jan 27, 1949

Wet & windy

Elev. diff. 4.83 check.

← Jan 28, 1949

Traverse #14 Cont.
leveling from BM AK 22 to Thompson Field

Lery Co

Jan. 28, 1949

Sunny + windy

Sta	+S	HI	-S	Elev
TP ₁₄	4.76	44.06		39.30
TP ₁₅	4.08	41.98	6.16	37.90
TP ₁₆	3.97	42.15	3.80	38.18
TP ₁₇	4.90	42.00	5.05	37.10
TP ₁₈	4.29	40.49	5.80	36.20
Well 'A'	22.00		6.32	34.17
	27.13		27.13	5.13 ✓
	5.13			

Well 'A'	4.34	38.51		34.17
Well 'B'	5.43	39.50	4.44	34.07
Well 'C'	9.77		5.29	34.21
	9.73		9.73	0.04 ✓
	0.04			

Well 'C'	5.10	39.31		34.21
Well 'B'	4.43	38.51	5.23	34.08
Well 'A'	9.53		4.34	34.17
	9.57		9.57	0.04 ✓
	0.04			

Elev. diff 5.13 check -

No method of determining which well was #3 could be found, therefore all three were run.

Elev diff 0.04 check

" " 0.04 check

LEVELING FROM THOMPSON FIELD TO BMAK 22

JAN 28, 1949

Sunny & windy

Sta.	+S	HI	-S	Elev.
Well A'	6.32	40.49		34.17
TP ₁	5.84	42.05	⁵ 4.28	36.21
TP ₂	5.09	42.23	4.91	37.14
TP ₃	3.80	42.03	4.00	38.23
TP ₄	6.17	45.13 44.13	4.07	39.96 37.96
TP ₅	2.96	42.97 41.97	5.12	40.01 39.01
TP ₆	7.19	44.56	4.60	37.37
TP ₇	4.29	43.80	5.05	39.51
TBM ₁			(4.57)	39.23
TP ₇	6.11	45.01	4.90	38.90
TP ₈	4.73	44.89	4.85	40.16
TP ₉	3.65	45.94	2.60	42.29
TP ₁₀	4.04	46.53	3.45	42.49
TP ₁₁	5.88	46.21	6.20	40.33
TP ₁₂	3.20	45.38	4.03	42.18
TP ₁₃	5.86	48.01	3.23	42.15
TP ₁₄	75.13		5.55	42.46
	66.84		66.84	8.29
	8.29			

Elev diff. is 8.29 check

TRAV. # 14 (CONT.)

Levy Co.

JAN 28, 1949

WIND & RAIN

Sta.	+5	HI	-5	Elev
TP ₁₄	5.27	47.73		42.46
TP ₁₅	5.06	47.21	5.58	42.15
TP ₁₆	4.31	47.92	3.60	43.61
BM AK22	14.64		3.82	44.10
	<u>13.00</u>		13.00	1.64 ✓
	1.64 ✓			

Elev. diff. is 1.64 check

leveling from BMZ49 to W-1564

Jan 31, 1949

Rain, Sun, Wind

Sta	+S	HI	-S	Elev
BMZ49	6.54	42.22		35.68
TP ₁	3.10	41.54	3.78	38.44
TP ₂	4.15	41.34	4.35	37.19
TP ₃	3.83	40.37	4.80	36.54
TP ₄	2.40	40.55	2.22	38.15
TP ₅	4.66	41.61	3.60	36.95
TP ₆	5.57	41.03	6.15	35.46
TP ₇	5.42	39.86	6.59	34.44
TP ₈	4.57	39.30	5.13	34.73
TP ₉	3.71	37.84	5.17	34.13
TP ₁₀	6.79	36.86	7.77	30.07
TP ₁₁	4.46	35.32	6.00	30.86
W.W. P _{owers}	55.20		5.21	30.11
	60.77		60.77	5.57 ✓
	5.57			

Elev. d. = 5.57 check

Traverse # 15 (cont) Levy Co
leveling from W-1564 to BMZ49

JAN 31, 1949

STA.	+S	HI	-S	Elev.
WW Powers #1	5.26	35.37		30.11
TP ₁	5.58	36.44	4.51	30.86
TP ₂	7.89	37.92	6.39	30.03
TP ₃	5.64	39.75	3.81	34.11
TP ₄	5.16	39.84	5.07	34.68
TP ₅	6.52	40.95	5.41	34.43
TP ₆	6.12	41.57	5.50	35.45
TP ₇	3.56	40.48	4.65	36.92
TP ₈	3.59	41.69	2.38	38.10
TP ₉	5.62	42.01	5.30	36.39
TP ₁₀	4.68	41.82	4.87	37.14
TP ₁₁	3.20	41.60	3.42	38.40
BMZ49	62.82		5.94	35.66
	57.27		57.27	5.55
	5.55			

Elev. diff 5.55 check

True elev. is 30.10 ± .01

Trav. #16
leveling From BM B41 to clay pit. Citrus Co

Feb 10, 1949

cool + windy

STA +S HI -S Elev.

TP₁ 5.76 99.35 93.59

TP₂ 10.04 108.98 0.41 98.94

TP₃ 11.93 120.70 0.21 108.77

TBM₁

(3.52 117.18)

15 PACES

TP₄ 4.80 122.30 3.20 117.50

TP₅ 8.38 123.00 7.68 114.62

TP₆ 6.78 128.27 1.51 121.49

Highest pt.
in pit.

47.69

15.19

32.50

2.18 126.09

15.19 32.50 ✓

Highest pt.
in Pit

2.45

128.54

126.09

TP₁ 1.53 123.02 7.05 121.49

TBM₂

(7.03 115.99)

RR IN S.W.
SPIKE COR OF WATER TOWER at clay pit SEC 2, T21S, R19E

TP₂ 7.70 122.31 8.41 114.61

TP₃ 3.13 120.64 4.80 117.51

TBM₁

(3.45 117.17)

TP₄ 0.47 108.25 11.86 108.78

TP₅ 0.55 99.50 10.30 98.95

B41

15.83

48.32

32.49

5.90

93.60

48.32 32.49 ✓

Travel 16
leveling From TBM. to High Ls. Hill Citrus Co

Sta +S HI -S Elev

TBM₁ 0.18 117.36 117.18

TP₁ 1.00 106.78 11.58 105.78

TP₂ 0.20 95.57 11.41 95.37

TP₃ 0.11 84.11 11.57 84.00

TP₄ 4.78 77.31 11.58 72.53

TP₅ 11.72 88.94 0.09 77.22

TP₆ 9.57 98.38 0.13 88.81

TP₇ 10.82 108.42 0.78 97.60

TBM₃ 38.38 8.49 99.93

55.63 55.63 17.25 ✓

TBM₃ 0.63 100.56 99.93

TP₈ 0.52 89.89 11.19 89.37

TP₉ 2.67 83.54 9.02 80.87

TP₁₀ 0.94 72.93 11.55 71.99

TP₁₁ 4.25 65.47 11.71 61.22

TP₁₂ 1.65 57.16 9.96 55.51

TP₁₃ 10.66 11.69 45.47

65.12 65.12 54.46 ✓

54.46

Feb 10, 1949

Cool & windy -
much dust.

Elev diff is 17.25 - check

R.R. 371 KB
IN BASE OF 22" OAK 10' S of Hwy in sec 34 NE cor, SE 1/4 of SW 1/4

T20S R19E

Feb 11, 1949

Elev diff. is 54.46 - check

TRAV #16

Feb 11, 1949

Hot & windy

Sta.	+S	HI	-S	Elev
TP ₃	1.48	46.95	2.7	45.47
TBM ₄			(5.07)	(41.88)
TP ₄	11.98	56.68	2.25	44.70
TP ₅	11.43	67.75	0.36	56.32
TP ₆	11.52	79.25	0.02	67.73
TP ₇	11.80	90.97	0.08	79.17
TP ₈	11.96	102.88	0.05	90.92
TP ₉	11.85	114.71	0.02	102.86
TP ₂₀	11.92	126.57	0.06	114.65
TP ₂₁	11.43	137.97	0.03	126.54
TP ₂₂	11.28	149.22	0.03	137.94
TP ₂₃	9.65	158.74	0.13	149.09
TP ₂₄	11.05	169.53	0.26	158.48
TP ₂₅	10.79	180.28	0.04	169.49
TP ₂₆	10.49	190.75	0.02	180.26
TP ₂₇	5.08	195.36	0.47	190.28
Top hill	153.71		3.89	191.47
	7.71		7.71	146.00
	146.00			

gash in dead tree ON FIRE TRAIL

Elev diff 146.00 FT check

TRA 1, #16

Feb 13, 1999

STA	+S	HI	-S	Elev.
Top hill	^{6.5} 2.92	194.39	^{29.6}	191.47
TP ₁	0.63	183.33	11.69	182.70
TP ₂	0.76	172.38	11.71	171.62
TP ₃	0.76	161.22	11.87	160.51
TP ₄	0.59	150.07	11.79	149.48
TP ₅	1.13	139.44	11.76	138.31
TP ₆	0.22	127.85	11.81	127.63
TP ₇	0.70	^{116.74} 136.74	11.81	^{116.04} 136.04
TP ₈	0.13	^{105.01} 125.01	11.86	^{104.88} 124.88
TP ₉	0.63	^{93.77} 113.77	11.87	^{93.14} 113.14
TP ₁₀	0.45	^{82.39} 102.39	11.83	^{81.94} 101.94
TP ₁₁	0.24	^{70.83} 90.83	11.80	^{70.59} 90.59
TP ₁₂	0.45	^{61.69} 81.69	9.59	^{61.24} 81.24
TP ₁₃			0.11	^{61.56} 81.56
TP ₁₄	2.43	52.41	11.71	49.98
TBM ₄	9.61		10.72	41.69
			139.50	129.89 ✓
			9.61	
			129.89	

TRAV #16

Feb 13, 1949

Hot & Sunny

Sta	+S	HI	-S	Elev	
TP ₁₃	11.11	72.69		61.58	
TP ₁₄	11.27	83.70	0.26	72.43	
TP ₁₅	10.22	93.40	0.52	83.18	
TP ₁₆	8.65	101.41	0.64	92.76	
TBM ₃	41.25		1.52	99.89	
	<u>2.94</u>				
	38.31		2.94	38.31	✓
TBM ₃	^{8.3} 8.48	108.39		99.91	±.02
TP ₁	1.33	97.98	^{11.74} 11.74	96.65	
TP ₂	1.56	88.01	11.53	86.45	
TP ₃	2.60	82.29	8.32	79.69	
TP ₄	11.43	93.62	0.10	82.19	
TP ₅	10.18	103.66	0.14	93.48	
TP ₆	10.03	113.51	0.18	103.48	
TP ₇	7.83	121.09	0.25	113.26	
TBM ₁	53.44		4.00	117.09	
	<u>36.26</u>		36.26	17.18	✓
	17.18				

True Elev. of hill is 191.52 ±.05

leveling	Trav # 17	From	BC41	to Phosphate Mine	
Sta	TS	HI	-S	Elev.	
BMC41	7.67	124.85		117.18	
TP ₁	7.41	131.92	⁺⁶ 0.34	124.51	
TP ₂	1.19	121.75	11.36	120.56	
TP ₃	9.33	119.68	11.40	110.35	
TP ₄	1.26	112.96	7.98	111.70	
TP ₅	3.40	107.89	8.47	104.49	
TBM ₁	SW Cor 12		(4.19	103.70)	
TP ₆	1.87	100.24	9.52	98.37	
TP ₇	0.05	88.86	11.43	88.81	
TP ₈	0.96	77.88	11.44	77.42	
TP ₉	0.44	66.64	11.68	66.20	
TP ₁₀	7.33	73.72	0.25	66.39	
TP ₁₁	0.75	62.66	11.81	61.91	
TP ₁₂	4.61	64.09	3.18	59.48	
TBM ₂	45 77		3.77	60.32	
			102.63	56.86	
			45.77		
			56.86		

Feb 14, 1949

Hot & Sunny

✓

From TBM₂ to BMC 4

Feb 14, 1949

Hof + Sunny

Sta.	+S	HI	-S	Elev
TBM ₂	²² 3.29	63.61		60.32
TP ₁	10.68	73.37	² 0.92	62.69
TP ₂	1.42	66.74	8.05	65.32
TP ₃	11.08	77.44	0.38	66.36
TP ₄	10.16	87.59	0.01	77.43
TP ₅	9.71	96.72	0.58	87.01
TP ₆	8.31	104.99	0.04	96.68
TBM ₁	54.65		1.27	^{103.72} 102.72
	^{11.25} 43.40		11.25	^{43.40} 42.40 ✓
TBM ₁	4.73	108.45		103.72
TP ₇	10.92	118.19	1.18	107.27
TP ₈	4.23	119.00	3.42	114.77
TP ₉	11.72	130.57	0.15	118.85
TP ₁₀	<u>3.06</u>	123.16	10.47	120.10
BMC 4	34.66		<u>5.97</u>	117.19
	<u>21.19</u>		21.19	13.47 ✓
	13.17			

Leveling From TBM₂ to Phosphate Mine

Feb 15, 1949

Hot & Sunny

Sta.	+S	HI	-S	Elev
TBM ₂	2.55	62.87		60.32
Pit edge	<u>7.66</u>		7.66	<u>55.21</u>
	5.11			5.11 ✓
Pit edge	9.55	64.76		55.21
TBM ₂	<u>4.44</u>		4.44	<u>60.32</u> ✓
	5.11			5.11

Leveling From TBM₂ to Clay pit

Sta	+S	HI	-S	Elev
Pit edge ¹	9.55	64.76		55.21
TP ₁	9.95	71.35	3.36	61.40
TP ₂	9.97	81.08	0.24	71.11
TP ₃	10.95	91.99	0.04	81.04
TP ₄	1.88	82.39	11.48	80.51
TP ₅	1.48	73.12	10.75	71.64
TP ₆	<u>10.97</u>	<u>74.17</u>	9.42	<u>63.70</u> TBM
TP ₇	<u>54.25</u>		0.08	<u>74.09</u>
	<u>35.37</u>		<u>35.37</u>	<u>18.88</u> ✓
	<u>18.88</u>			

TRAV #17

Leveling From TBM to Clay Pit

Feb. 15, 1949

Sta	±S	HI	±S	Elev	
TP ₁	9.22	83.31		74.09	
TP ₈	11.68	94.62	0.37	82.94	
TP ₉	11.25	105.82	0.05	94.57	
TP ₁₀	5.17	110.97	0.02	105.80	
TP ₁₁	1.09	100.42	11.64	99.33	
TP ₁₂	5.94	96.84	9.52	90.90	
TP ₁₃	11.59	103.80	4.63	92.21	TBM
TP ₁₄	11.51	115.29	0.02	103.78	
TP ₁₅	11.43	126.67	0.05	115.24	
TP ₁₆	11.92	138.42	0.17	126.50	
TP ₁₇	11.21	149.53	0.10	138.32	
TP ₁₈	11.10	160.53	0.10	149.43	
TP ₁₉	10.92	171.43	0.02	160.51	
TP ₂₀	7.64	178.99	0.08	171.35	
TP ₂₁	9.48	187.42	1.05	177.94	
TP ₂₂	11.57	198.97	0.02	187.40	
TP ₂₃	2.39	197.51	3.84	195.13	
TP ₂₄	155.11		6.04	191.48	
	37.72				
	117.39				
			37.72	117.39 ✓	

Feb 15, 1999

Sta	+B	HI	-S	Elev
TP ₂₄	2.48	193.96		191.48
Top Edge of Pit			8.15	185.81
Top of Pit	7.53	193.34		185.81
TP ₁	7.68	200.62	0.40	192.94
TBM ₃	3.46	201.35	2.73	197.89
TP ₂	0.45	189.97	11.83	189.52
TP ₃	0.77	178.98	11.76	178.21
TP ₄	0.49	167.80	11.67	167.31
TP ₅	1.30	157.63	11.47	156.33
TP ₆	1.05	147.19	11.49	146.14
TP ₇	0.28	136.09	11.38	135.81
TP ₈	0.01	124.49	11.61	124.48
TP ₉	0.14	112.90	11.73	112.76
TP ₁₀	1.04	102.47	11.47	101.43
TP ₁₁	4.52	96.75	10.24	92.23
TP ₁₂	11.68	102.57	5.86	90.89
TP ₁₃	40.40		0.13	102.44

123.77
8337 ✓

R.R.
SPike in 18" oak stump to hill opposite
"Portland House".

Leveling From clay P. to TBM₂

Feb 5, 1949

TP₁₃ ⁵ 7.38 109.82 _{49.6} 102.44

TP₁₄ 0.36 98.45 11.73 98.09

TP₁₅ 0.42 87.19 11.68 86.77

TP₁₆ 1.55 77.25 11.49 75.70

TP₁₇ 3.34 72.35 8.24 69.01

TP₁₈ 4.85 68.59 8.61 63.74

TP₁₉ 9.68 78.22 0.05 68.54

TP₂₀ 9.21 87.35 0.08 78.14

TP₂₁ 0.95 88.21 0.09 87.26

TP₂₂ 0.20 77.41 11.00 77.21

TP₂₃ 0.24 68.56 9.09 68.32

TBM₂ 38.18 8.24 60.32

80.30 80.30 42.12 ✓

42.12

Elev. diff 42.12 check

TRAV #18 W. th. acocoochee R Bridge
leveling From on st rd 48 to Floral City

Feb 17, 1949

Sta	+S	HI	-S	Elev
Bridge Floor	3.44	50.04		46.60 $\pm .20$
TP ₁	4.27	47.13	7.18	42.86
TP ₂	4.24	47.06	4.31	42.82
TP ₃	7.29	52.75	1.60	45.46
TP ₄	3.95	54.89	1.31	51.44 TBM
TP ₅	1.79	49.57	7.11	47.78
TP ₆	3.69	45.37	7.89	41.68
TP ₇	9.50	45.37	4.50	40.87
TP ₈	12.00	57.30	0.07	45.30
TP ₉	1.98	48.09	11.19	46.11 TBM
TP ₁₀	4.42	45.84	6.67	41.42
TP ₁₁	5.34	45.70	5.48	40.36
TP ₁₂	11.95	57.46	0.19	45.51
TBM ₁			6.25	51.21
SRD BM #4			9.55	47.91

Ran from Floor of Bridge till
then when approximate location
of BM was reached, a line was
drawn at elev. of TBM #4 + the
BM was found by cutting 6"
gas in a surface root.

Traverse continues as #18A
to Ferris Paving Plant.

TRAV # 18A
SRD BM #4 to Ferris Packing Plant

Feb 17, 1949

Sta	+5	HI	-5	Elev.
SRD BM #4	³ 9.54	³ 57.51		47.97
TP ₁	11.96	69.32	² 0.15	57.36
TP ₂	4.09	73.21	0.20	69.12
TP ₃	0.72	62.95	10.98	62.23
TP ₄	5.63	68.35	0.23	62.72
TP ₅	9.23	67.04	10.54	57.81
TP ₆	3.19	^{70.19} 63.81	0.04	67.00
CF Well House	44.36		^{63.59} 6.60	57.21
	28.74		28.74	15.62 ✓
	15.62			
CF Well House	6.24	^{69.83} 63.45		^{63.59} 57.21
			² 2.83	61.00
TP ₁	0.31	67.31	2.83	60.62
TP ₂	5.65	65.87	7.09	60.22
CONC. MONT. Ecl RR Sta.			(3.29)	(62.58)
Sidewalk			(2.16)	(63.71)
TP ₃	0.62	63.26	3.23	62.64
TP ₄	9.20	71.30	1.16	62.10
TP ₅	0.23	59.73	11.80	59.50
BM #4	22.25		11.75	47.98
			37.86	15.61 ✓
			15.61	

Elev. Diff 15.62 Check

Elev Diff 15.61 Check

leveling From US Hwy 19 to Crystal R.

Rock Quarry, Feb 21, 1949

Sta +S HI -S Elev

Hot & Sunny

Hwy^{AT} RR. 5.23 15.23 10.00

W. much distortion

TP₁ 1.62 16.45 0.40 14.83

Elev. diff. 14.87 check

TP₂ 3.33 13.70 6.08 10.37

TP₃ 4.61 17.59 0.72 12.98

TP₄ 0.34 16.21 1.72 15.87

TBM

TP₅ 6.58 20.17 2.62 13.59

TP₆ 5.57 24.43 1.31 18.86

TP₇ 2.03 15.76 10.68 13.75

TP₈ 4.08 15.63 4.23 11.55

TP₉ 6.22 17.94 3.91 11.72

TP₁₀ 11.24 26.42 2.76 15.18

TP₁₁ 3.35 28.33 1.44 24.98

TBM₁ 54.20 3.46 24.87

39.33
14.87

39.33 14.87 ✓

Elev. diff. 13.31 check

TBM₁ 1.97 26.84 24.87

TP₁ 3.07 18.25 11.66 15.18

TP₂ 4.30 16.01 6.54 11.71

TP₃ 9.34 4.45 11.56

22.65
13.31

22.65 13.31 ✓

STA	+S	HI	-S	Elev.
TP ₃	³ 5.05	16.61		11.56
TP ₄	11.38	24.01	⁴ 3.98	12.63
TP ₅	0.63	19.44	5.20	18.81
TP ₆	0.04	13.40	6.08	13.36
TP ₇	6.66	19.30	0.76	12.64
TP ₈	4.36	16.80	6.86	12.44
TP ₉	7.48	17.22	7.06	9.74
TP ₁₀	5.72	16.84	6.10	11.12
HYPER.	41.32		<u>6.97</u>	<u>9.87</u>
	<u>43.01</u>		<u>43.01</u>	<u>1.69</u>
	1.69			

Feb. 21, 1949

Hot + Sunny

w/ much distortion -

Elev diff 1.69 check

TBM. is 24.81 ± .065

TRAV # 19 CONT.

leveling from TBM₁ K W- 720

Sta +S HI -S Elev

TBM₁ 8.39 33.20 24.81 ±.06TP₁ 11.44 44.38 0.26 32.94TP₂ 11.89 56.00 0.27 44.11TP₃ 10.24 66.14 0.10 55.90TP₄ 11.62 77.75 0.01 66.13TP₅ 11.16 88.89 0.02 77.73TP₆ 11.92 100.69 0.12 88.77TP₇ 11.02 111.67 0.04 100.65TP₈ 8.54 120.01 0.20 111.47TP₉ 10.11 130.05 0.07 120.94TBM₂ 8.46 121.59 122.59TP₁₀ 11.19 141.03 0.21 130.84TP₁₁ 8.45 149.46 0.02 141.01TP₁₂ 11.79 161.17 0.08 150.38TP₁₃ 11.68 172.77 0.08 162.09

C.P. W- 720 149.44 2.73 171.04

4.21 145.23

145.23

Feb. 22, 1949

Elev. diff. 18 145.23

leveling From W-720 to TBM₁

Sta	+S	HI	-S	Elev
W-720	2.82	172.86		170.04
TP ₁	0.10	161.19	11.77	161.09
TP ₂	0.17	149.54	11.82	149.37
TP ₃	2.29	140.35	11.48	138.06
TP ₄	0.39	128.99	11.75	128.60
TP ₅	4.35	121.45	11.89	117.10
TP ₆	2.28	112.05	11.68	109.77
TP ₇	0.44	101.13	11.36	100.69
TP ₈	1.69	91.31	11.51	89.62
TP ₉	0.07	79.91	11.47	79.84
TP ₁₀	0.60	68.97	11.54	68.37
TP ₁₁	0.15	57.45	11.67	57.30
TP ₁₂	1.26	47.00	11.71	45.74
TP ₁₃	1.68	37.45	11.23	35.17
TP ₁₄	5.01	33.44	9.02	28.43
TBM ₁	23.30		8.62	24.82
			168.52	
			2330	145.22 ✓
			145.22 ✓	

Feb, 22, 1949

Elev. diff. is 145.22

TRUE Elev. W-720 is 170.04 ± 0.01

leveling From TBM₁ to Locant Rd.

Sta	+S	HI	-S	Elev
TBM ₁	1.21	26.02		24.81 ±.065
TP ₁	4.53	20.45	10.30	15.92
TP ₂	3.45	20.77	3.13	17.32
TP ₃	11.65	24.86	7.56	13.21
TP ₄	1.40	24.51	1.75	23.11
TP ₅	8.31	21.87	10.95	13.56
TBM #3			0.58	21.29 RR.
	30.55		34.07	3.52 ✓
	34.07			
	3.52			

TBM ₃	1.84	23.13		21.29 ±.07
TP ₁	7.56	24.65	6.04	17.09
TP ₂	3.72	26.53	1.84	22.81
TP ₃	0.88	18.85	8.56	17.97
TP ₄	6.75	18.33	7.27	11.58
TP ₅	2.89	18.06	3.16	15.17
TP ₆	3.47	20.03	1.50	16.56
TP ₇	27.11		6.98	13.05
	35.35		35.35	8.24 ✓
	8.24			

Feb, 23, 1949

Hot & Sunny

Elev. diff. 3.52 check

 spike in base of 15" oak 19' N of st. rd # 44
 300' E of crystal River Rock Co. Road.

Elev diff is 8.24 check

Trav. # 19 Cont.

Sta	±S	HI	-S	Elev
TP ₁	6.50	19.55		13.05
TP ₂	8.60	26.55	1.60	17.95
	15.10		1.74	24.81 ✓
	3.34		3.34	11.76 ✓
	11.76			

leveling to Powerline - Maxwell land contact.

TBM #3	0.79	22.08		21.29
TP ₁	3.16	18.17	7.07	15.01
TP ₂	6.62	14.44	10.35	7.82
TP ₃	7.60	14.32	7.72	6.72
TP ₄	11.19	25.16	0.35	13.97
TP ₅	5.54	27.96	2.74	22.42
TP ₆	5.60	23.58	9.98	17.98
TP ₇	2.16	23.12	2.62	20.96
TP ₈	6.08	22.20	7.00	16.12
TP ₉	11.36	33.32	0.24	21.96
TP ₁₀	11.11	44.36	0.07	33.25
TBM #4	11.21		3.50	40.86
	51.64		51.64	19.57 ✓
	19.57			

Feb 23, 1949

Hot & Sunny

Elev. diff. 11.76 check

Feb 24, 1949

Hot & Sunny

Elev. diff. 19.57 check

TBM #4 is in W. Edge of Conc. Cattle yard
in SW cor Sec 19, T18S, R18E under
Power line. A cross (+) cut in conc.

TRAV # 19

leveling From TBM #4 to TBM #3

Sta.	+S	HI	-S	Elev
TBM #4	⁴ 3.17	44.03		40.86
TP ₁	0.24	33.49	⁶ 5 10.78	33.25
TP ₂	0.43	22.07	11.85	21.64
TP ₃	2.65	23.62	1.10	20.97
TP ₄	11.01	28.36	6.27	17.35
TP ₅	1.75	26.00	4.11	24.25
TP ₆	0.11	14.45	11.66	14.34
TP ₇	6.95	14.61	6.79	7.66
TP ₈	10.04	17.68	6.97	7.64
TP ₉	8.88	22.67	3.89	13.79
TBM #3	45.23		<u>1.66</u>	<u>21.01</u>
			65.08	19.85
			45.23	
			19.85	

Feb 24, 1949

Elev. diff is 19.85 check

TBM #4 Failed to close

SO A NEW RUN FROM TBM #4 TO
TBM #3 IS NECESSARY.

leveling From TBM #4 to TBM #3

Sta	+S	HI	-S	Elev
TBM #4	^{3.6} 3.07	43.93		40.86
TP ₁	0.20	33.46	^{7.56} 10.67	33.26
TP ₂	0.03	21.98	11.51	21.95
TP ₃	9.55	25.67	5.86	16.12
TP ₄	0.34	14.76	11.25	14.42
TP ₅	2.16	13.99	2.93	11.83
TP ₆	1.98	10.94	5.03	8.96
TP ₇	4.19	12.48	2.65	8.29
TP ₈	7.27	13.56	6.19	6.29
TP ₉	4.16	11.63	6.09	7.47
TP ₁₀	3.10	10.49	4.24	7.39
TP ₁₂	9.37	15.81	4.05	6.44
TP ₁₃	9.26	23.14	1.93	13.88
TBM #3	54.68		<u>2.16</u>	20.98
			74.56	19.88 ✓
			<u>54.68</u>	
			19.88	

Feb. 24, 1949

Rerun from TBM #4 to TBM #3

Elev diff. 19.88 check.

The elev. diff of this run is only 0.03 above the first run in this direction, so it is assumed that something happened to the stake used as a TBM. This stake was left overnight and the run continued from it the next day.

TBM #4 therefore is 19.86 ± 0.15 above TBM #3.

True elev. of TBM #4 is 21.29 ± 0.06

19.86 ± 0.15

41.15 ± 0.08

TRAV. # 19

leveling From TBM #4 to W-1747

Sta 45 HI -5 Elev.

TBM #4 ⁷4.77 45.92 41.15TP₁ 1.21 35.17 ⁺⁵⁶11.96 33.96TP₂ 7.88 36.66 6.39 28.78TP₃ 5.94 40.93 1.67 34.99TP₄ 10.84 51.33 0.44 40.49TP₅ 6.82 55.87 2.28 49.05TP₆ 8.14 63.85 0.16 55.71

TBM #5 0.64 63.27 1.22 62.63

TP₇ 0.34 52.08 11.53 51.74TP₈ 0.32 41.20 11.20 40.88TP₉ 0.67 30.02 11.85 29.35TP₁₀ 4.22 25.21 9.03 20.99TP₁₁ 6.24 26.07 5.38 19.83

TBM #6 58.03 8.60 1747

81.71 23.68 ✓

58.03
23.68

Feb 24, 1949

Hot, Sunny & Windy

Elev. diff. is 23.68 check.

R.R. SPIKE SET IN S. SIDE OF A FENCE POST AT
CORNER OF Sections 19, 18, 13, 24, T18S ON LINE
OF Ranges 17E + 18E

R.R. SPIKE SET IN N SIDE OF 18" PINE TREE .25'
S. OF 1/2 LINE OF SEC 13 + 24 T18S, R 17E.

Trav # 19
leveling From TBM # 6 To W- 1767

Feb. 25, 1949

Sta	+S	HI	-S	Elev.
TBM#6	7.78	25.25		17.47
TP ₁	3.95	17.91	11.29	13.96
TP ₂	6.57	19.17	5.31	12.60
TP ₃	4.93	18.55	5.55	13.62
TBM7	1.87		10.95	7.60
TP ₄	11.91	28.59	1.87	16.68
TP ₅	7.68	36.03	0.24	28.35
TP ₆	2.39	38.29	0.13	35.90
TP ₇	3.95	34.64	7.60	30.69
TP ₈	4.69	36.36	2.97	31.67
TBM8			3.56	32.80
TP ₉	3.51	35.51	4.36	32.00
TP ₁₀	4.69	30.44	9.76	25.75
TP ₁₁	7.21	37.16	0.49	29.95
TP ₁₂	5.56	36.36	6.36	30.80
TP ₁₃	11.67	47.48	0.55	35.81
TP ₁₄	11.49	58.70	0.27	47.21
TP ₁₅	97.98		0.31	58.39
	57.06		57.06	40.92 v

RR SPIKE IN 15" PINE ON W side of Rd.
ON 1/2 LINE SEC 12+13, T18S, R17E

RR SPIKE IN 6" OAK ON W. side of road
ON 1/2 LINE SEC 12+1, T18S, R17E.

Elev dif 40.92 check

Trav # 19. Citrus Co
leveling From TBM #6 to W-1767

TP ₁₅	7.89	66.28		58.39
TP ₁₆	9.74	75.15	0.87	65.41
TBM #9	5.49	78.13	2.51	72.64
TP ₁₇	10.39	86.44	2.08	76.05
TP ₁₈	9.41	95.54	0.31	86.13
TP ₁₉	10.88	105.65	0.71	94.77
TP ₂₀	11.22	116.79	0.08	105.57
TP ₂₁	10.70	127.46	0.03	116.76
TP ₂₂	5.91	133.28	0.09	127.37
TBM #10			1.47	131.81
TP ₂₃	7.41	129.43	11.26	122.02
TP ₂₄	6.10	134.87	0.66	128.77
TP ₂₅	0.39	123.77	11.49	123.38
TP ₂₆	2.86	115.04	11.59	112.18
TP ₂₇	8.81	123.61	0.24	114.80
TP ₂₈	9.50	132.83	0.28	123.33
TBM #11	116.70		1.18	131.65
	43.44			
	73.26		43.44	73.26

Feb 25, 1949

Hot & Sunny

RR SPIKE IN BASE OF 12" OAK ON W SIDE
OF ROAD ON 1/2 OF 36+1, ON LINE T175+T185

R17E.

RR SPIKE IN BASE OF 16" PINE ON N SIDE OF RD
ON POINT BETWEEN T175+T185, R17E+18E

RR SPIKE IN BASE OF 10" PINE ON N SIDE OF RD
LINE BETWEEN T175+T185 SEC 31+32.

Elev. diff is 73.26 check

Thao. # 19

leveling From TBM #6 to W-1767

Sta	+S	HI	-S	Elev
TBM #11	¹ 3.19	134.84		131.65
TP ₂₉	0.75	124.16	¹⁴ 11.43	123.41
TP ₃₀	0.80	113.18	11.78	112.38
TP ₃₁	5.85	118.51	0.52	112.66
TP ₃₂	2.70	113.39	7.82	110.69
TBM #12	7.72	120.12	0.99	112.40
W-1767	<u>21.01</u> 39.11		6.57	113.55
	18.10		39.11	18.10 ✓
W-1767	6.25	119.80		113.55
TBM #12			7.40	112.40
			6.25	1.15 ✓
			1.15	

leveling From TBM #12 to W-1791

Sta	+S	HI	-S	Elev.
TBM #12	11.09	123.49		112.40
TP ₁	3.51	126.99	0.01	123.48
TP ₂	6.18	131.13	2.04	124.95
TBM #13	20.78		5.67	125.46
	<u>7.72</u>		7.72	13.06 ✓
	13.06			

Feb 25, 1949

Hot & Sunny

RR Spike in top of corner gate post at a
Rt. X bend in road - 800' E of 1/2 marker
Sec 32 + 5 along line between T 175 + T 185,
R 18 E.

Elev. diff. 18.10 check

Elev. diff. 1.15 check

Feb 26, 1949

Elev. diff. 13.06 check

TRAV. # 19
leveling From TBM # 12 to W-1791

Feb 26, 1949

Hot & Sunny

Sta	+S	HI	-S	Elev
TBM 13	10.19	135.65		125.46
TP ₃	6.86	138.11	4.40	131.25
TP ₄	4.21	136.35	5.97	132.14
TP ₅	2.15	126.86	11.64	124.71
TP ₆	0.66	116.28	11.24	115.62
W-1791	24.07		8.33	107.95
	41.58		41.58	17.51 ✓
W-1791	8.21	116.16		107.95
TBM # 14			6.29	109.87
TP ₁	11.62	127.71	0.07	116.09
TP ₂	11.32	136.04	2.99	124.72
TP ₃	1.15	133.83	3.36	132.68
TP ₄	6.80	131.54	9.09	124.74
TP ₅	3.10	132.38	2.26	129.28
TBM # 13	6.96	132.48	6.86	125.52
TP ₆	5.10	126.75	10.83	121.65
TP ₇	1.73	118.45	10.03	116.72
TBM # 12	55.99		6.05	122.40 ✓
	51.54		51.54	44.5
	4.45			

Elev. diff. 17.51 check

R.R. Spike in 10" PINE on W. side of road
at NE cor SEC 32

Trav. # 19

leveling from TBM #12 to TBM #4

Sta	BS	HI	-S	Elev.
TBM #12	2.42	114.82		112.40
TP ₁	0.91	115.36	0.37	114.45
TP ₂	11.04	126.20	0.20	115.16
TP ₃	8.95	134.90	0.25	125.95
TBM #11	0.76	132.32	3.34	131.56
TP ₄	0.23	121.24	11.31	121.01
TP ₅	2.04	112.19	11.09	110.15
TP ₆	5.61	111.13	6.67	105.52
TP ₇	9.97	120.97	0.13	111.00
TP ₈	11.80	132.74	0.03	120.94
TP ₉	4.60	129.08	8.26	124.48
TP ₁₀	7.00	133.78	2.30	126.78
TBM #10	0.06	131.89	1.95	131.83
TP ₁₁	0.24	120.29	11.84	120.05
TP ₁₂	0.40	108.87	11.82	108.47
TP ₁₃	2.66	99.84	11.69	97.18
TP ₁₄	0.76	89.46	11.14	88.70
TP ₁₅	69.45		11.54	77.92
			103.93	
			69.45	
			34.48	

Feb 28, 1949

Sunny, windy +

cool

TRAV. # 19

leveling from TBM #12 to TBM #4

Sta	+S	HI	-S	Elev
	³ ₃			
TP ₁₅	1.11	79.03		77.92
			³ ₃	
TBM #9	0.46	73.12	6.37	72.66
TP ₁₆	0.20	63.43	9.89	63.23
TP ₁₇	0.91	53.01	11.33	52.10
TP ₁₈	0.24	41.73	11.52	41.49
TP ₁₉	3.59	35.11	10.21	31.52
TP ₂₀	0.48	31.12	4.47	30.64
TP ₂₁	6.62	36.41	1.33	29.79
TBM #8	13.61		3.65	32.76
			58.77	45.16
			13.61	
			45.16	

TBM #8	3.35	36.11		32.76
TP ₁	4.97	35.19	³ ₂	5.84 30.27
TP ₂	4.56	38.82	0.93	34.26
TP ₃	1.33	30.23	9.92	28.90
TP ₄	2.24	21.00	11.47	18.76
TP ₅	16.40		9.67	11.33
	37.83		37.83	21.43 ✓
	21.43			

Feb. 28, 1949

Sunny, Cool & windy

Elev. diff. 45.16 check

Mar. 1, 1949

Sunny, B. / & windy
Cold in fact

Elev. diff. 21.43 check

leveling from TBM #12 to TBM #4

Mar. 1, 1949

Sunny, Cold + Windy

Sta	+S	H.I.	-S	Elev.
TP ₅	(1.92)	(13.25)		11.33
TBM #7			(5.78)	(7.47) 7.60
TP ₅	⁴ 8.04	⁵ 19.37		11.33
TP ₆	3.97	18.97	³ 4.37	15.00
TP ₇	4.05	16.44	6.58	12.39
TP ₈	4.93	18.22	3.15	13.29
TP ₉	6.34	24.19	0.37	17.85 ✓
TBM #6			(6.80)	(17.39) 17.47
TP ₁₀	4.12	27.07	1.24	22.95 ✓
TP ₁₁	10.45	25.67	11.85	15.22 ✓
TP ₁₂	11.34	36.98	0.03	25.64 ✓
TP ₁₃	11.19	^{48.09} 47.27	0.08	36.90 ✓
TP ₁₄	11.08	^{59.14} 58.32	0.03	^{48.06} 47.24
TP ₁₅	6.52	^{65.57} 64.75	0.09	^{54.05} 53.23
TBM #5	1.75	^{64.41} 64.31	2.91	^{62.66} 61.48 62.63
TP ₁₆	83.78		10.24	^{54.17} 54.07
	40.94		40.94	42.84 ✓
	42.84			

F/cr. diff is 42.84 check

Trav. # 19

leveling From TBM #12 to TBM #4

Mar 1, 1949

Sunny, windy & cool

Sta	IS	HI	IS	Elev
TP ₆	0.47	54.64		54.17
TP ₇	2.76	45.94	11.46	43.18
TP ₈	2.43	39.93	8.44	37.50
TP ₉	4.05	34.80	9.18	30.75
TP ₂₀	9.23	43.78	0.25	34.55
TBM #4	18.94		2.62	41.16 (41.15)
			31.95	13.01 ✓
			18.94	
			13.01	

Elev. diff is 13.01 check

TRAV. # 16 (Cont)

CITRUS Co.

leveling from TBM#4 to TBM#5

MAR. 1, 1949

Sunny & warm

Sta	+S	HI	-S	Elev.
TBM#4	9.01	50.79		41.78 $\pm .09$
TP ₁	11.64	62.31	0.12	50.67
TP ₂	9.55	71.81	0.05	62.26
TP ₃	10.22	81.36	0.67	71.14
TP ₄	7.64	88.83	0.17	81.19
TBM#5	48.06		3.46	85.37
	4.47		4.47	43.59 ✓
	43.59			

Elev. diff. 43.59 check

TBM#5	1.37	86.74		85.37
TP ₁	1.01	76.14	11.61	75.13
TP ₂	1.93	67.11	10.96	65.18
TP ₃	0.28	55.66	11.73	55.38
TP ₄	2.12	47.33	10.45	45.21
TBM#4	6.71		5.57	41.76
			50.32	43.61 ✓
			6.71	
			43.61	

Actual elev. TBM#5 is 85.36 $\pm .10$

Elev. diff. 43.61 check

Trav. #16 cont.
leveling from TBM #5 to Thomas ls pit

Mar. 1, 1949

cool + cloudy

Sta.	+S	HI	-S	Elev.
TBM#5	9.13	94.49		85.36 ±.10
TP ₁	4.72	87.64	11.57	82.92
TP ₂	0.49	83.66	4.47	83.17
TP ₃	1.81	75.14	10.33	73.33
TP ₄	10.05	81.47	3.72	71.42
TP ₅	9.70	91.13	0.04	81.43
TBM#6	35.90		1.94	89.19
	32.07		32.07	3.83 ✓
	3.83			

Elev. diff is 3.83 check

Mar. 2, 1949

Sunny + cool

TBM#6	2.78	91.97		89.19
TP ₁	1.01	81.51	11.47	80.50
TP ₂	5.07	79.23	7.35	74.16
TP ₃	0.76	69.41	10.58	68.65
TP ₄	2.78	61.38	10.81	58.60
TP ₅	10.52	66.78	5.12	56.26
TP ₆	10.65	77.38	0.05	66.73
TBM#7	33.57		1.63	75.75
	47.01		47.01	13.44 ✓
	13.44			

Elev diff 13.44 check

'I' shaped mark on nail in SE cor. of
cath gap. between Sec 31, 32

leveling From TBM #5 to Thomas pit

MAR. 2, 1949

cool & cloudy

Sta	+S	HI	-S	Elev.
TBM#7	4.18	79.93		75.75
TP7	10.03	87.90 ^{+5.9}	2.06	77.87
TP8	4.18	91.90	0.18	87.72
TP9	0.84	80.91	11.83	80.07
TP10	3.67	83.46	1.12	79.79
TP11	2.19	75.87	9.78	73.68
TP12	1.99	68.20	9.66	66.21
TBM#8	2.79	61.31	9.68	58.52
TP13	2.41	52.54	11.18	50.13
TP14	7.27	58.40	1.41	51.13
TP15	11.02	69.25	0.17	58.23
TP16	11.96	80.69	0.02	69.23
TP17	10.29	90.83	0.15	80.54
TP18	10.97	101.64	0.16	90.67
TBM#9	10.80	110.71	1.73	99.91
TP19	10.78	120.79	0.10	110.61
TP20	4.17	119.51	5.45	115.34
Pit Edge	108.44		5.18	114.33
	<u>69.86</u>		<u>69.86</u>	<u>38.58</u>
	38.58			

leveling from Thomas Pit to TBM # 5

Sta	+S	HI	-S	Elev
Pit Edge	^{8 6} +5.20	119.53		114.33
TP	4.34	119.67	^{48 7} 4.20	115.33
TP ₂	1.62	111.49	9.80	109.89
TBM#9	0.03	99.96	11.56	99.93
TP ₃	0.91	89.03	11.84	88.12
TP ₄	1.89	79.15	11.77	77.26
TP ₅	0.98	68.48	11.65	67.50
TP ₆	1.29	58.30	11.47	57.01
TP ₇	1.52	52.62	7.20	51.10
TP ₈	10.36	61.61	1.37	51.25
TBM#8	9.36	67.90	3.07	58.54 (58.52)
TP ₉	12.00	79.37	0.53	67.37
TP ₁₀	6.39	85.04	0.72	78.65
TP ₁₁	6.94	90.52	1.46	83.58
TP ₁₂	1.60	80.37	11.75	78.77
TBM#7			<u>4.81</u>	<u>75.56</u>
TP ₁₃	1.91	70.39	11.89	68.48
TP ₁₄	66.84		11.68	58.71
	<u>21.96</u>		<u>121.96</u>	<u>55.62</u>
	55.62			5562 ✓

leveling From Thomas Pit to TBM #5

Sta	+S	HI	-S	Elev
TP14	^{3 1} 1.13	59.84		58.71
TP15	9.80	60.76	^{3 4 2} 8.88	50.96
TP16	11.34	71.89	0.21	60.55
TP17	8.00	79.69	0.20	71.69
TP18	11.70	91.02	0.37	79.32
TBM #6			2.44	88.58
TP19	2.10	81.77	11.35	79.67
TP20	3.44	75.31	9.90	71.87
TP21	11.50	86.76	0.05	75.26
TP22	7.81	92.87	1.70	85.06
TBM #5	66.82		7.72	85.15
	40.38		40.38	26.44 ✓
	26.44			

Elev diff 26.44 check

True elev. of Thomas Pit
is 114.22 ± .20

85.36 = 85.25
85.15
51
85.25 ± .20

Trav. #20

Leveling from Rd. to D. 1. Pit to Pit

MAR. 3, 1949

Sta	IS	HI	-S	Elev.
Rd #19	1.94	40.24		38.30
TP ₁	0.50	33.72	7.02	33.22
TP ₂	1.77	28.94	6.55	27.17
Hard Rock North Pit			11.69	17.25
SURFACE OF GROUND N. P. T			6.02	22.92
TP ₃	5.42	26.17	8.19	20.75
TP ₄	7.00	27.46	5.71	20.96
Top of Rock S. Pit			5.26	22.20
Top Gnd.	16.63		3.57	23.89
	31.04		31.04	14.41 ✓
	14.41			

Top Ground	2.2	3.62	27.51		23.89
TP ₁	5.57	26.12	6.96	20.55	
TP ₂	8.68	31.06	3.74	22.38	
TP ₃	9.14	32.90	7.30	23.76	
TP ₄	10.30	40.18	3.02	29.88	
Rd #19	37.31		1.88	38.30	
	22.90		22.90	14.41 ✓	
	14.41				

Elev. diff is 14.41 check

Elev. diff is 14.41 check

TRAVEL #21

leveling From Hwy 336-19 int. to Sun-Garth

MAR. 3, 1949

Sta	+S	HI	-S	Elev
Hwy 336-19	⁵ 6.00	37.00		31.00
TP ₁	5.28	37.06	⁵ 5.22	31.78
TP ₂	6.59	38.18	5.47	31.59
TP ₃	2.57	^{35.22} 35.23	5.53	^{32.65} 32.66
TP ₄	3.75	²³ 38.24	0.74	⁴⁸ 34.44
TBM#1			⁸³ <u>(3.40)</u>	⁸³ <u>34.84</u>
TP ₅	3.64	⁶⁹ 38.70	3.18	⁵ 35.06
TP ₆	4.82	⁵⁷ 39.38	3.94	⁷⁵ 34.56
TP ₇	3.88	⁷⁶ 37.57	5.69	⁸⁸ 33.67
TP ₈	2.64	⁶⁶ 34.47	5.74	^{32.02} 37.83
TBM#2			^{32.05} <u>(2.61)</u>	^{32.05} <u>34.86</u>
TP ₉	5.08	⁵⁷ 36.38	3.17	³⁹ 31.38
TP ₁₀	<u>6.11</u>	³⁹ ¹⁵ 38.96	3.53	³³ ⁰⁴ 32.85
TBM#3	50.36		<u>3.56</u>	⁵⁹ <u>35.40</u>
	45.77		45.77	4.40
	<u>4.59</u>			4.59 ✓

Elev. diff 4.59 check (finally!)

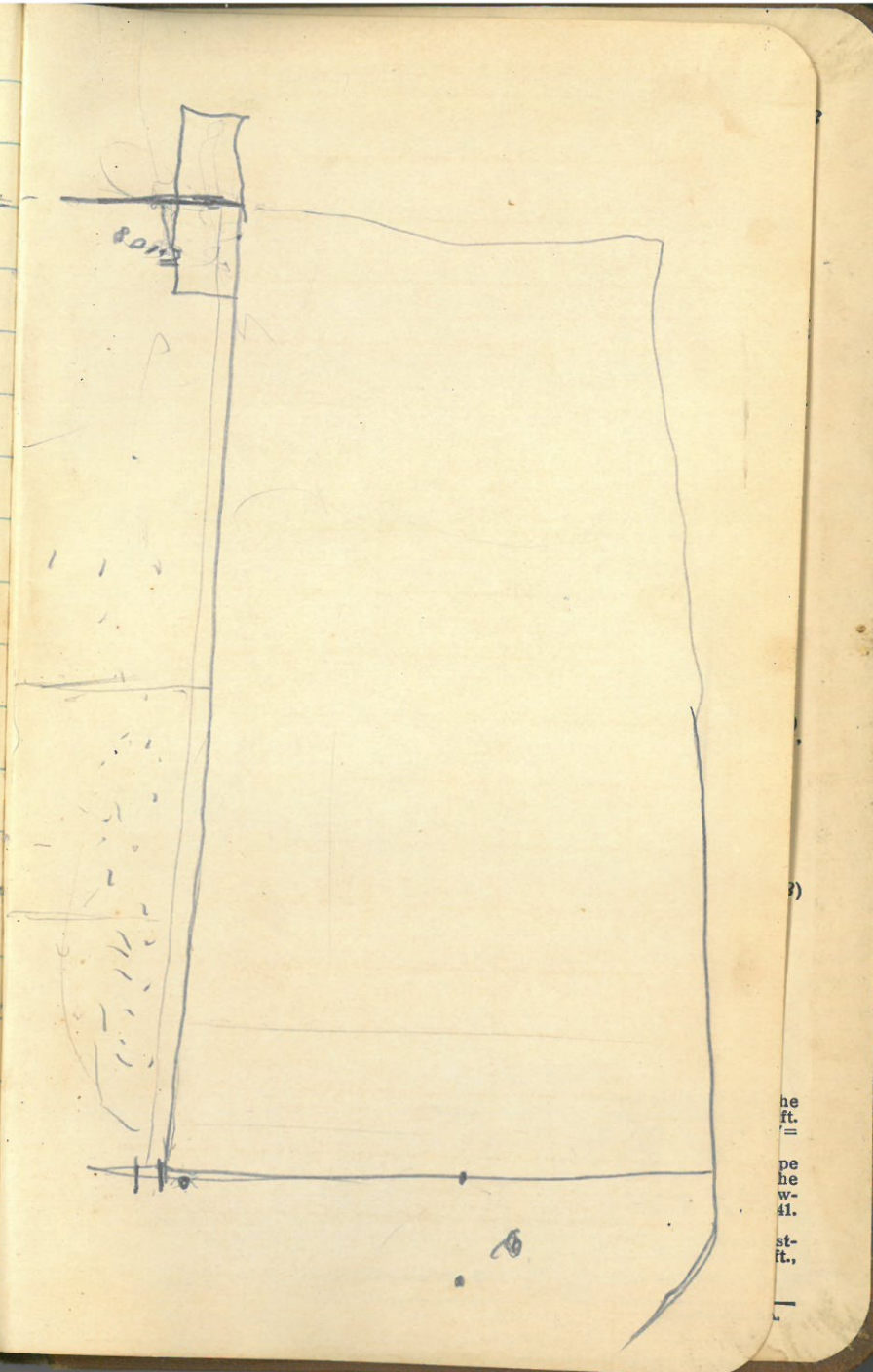
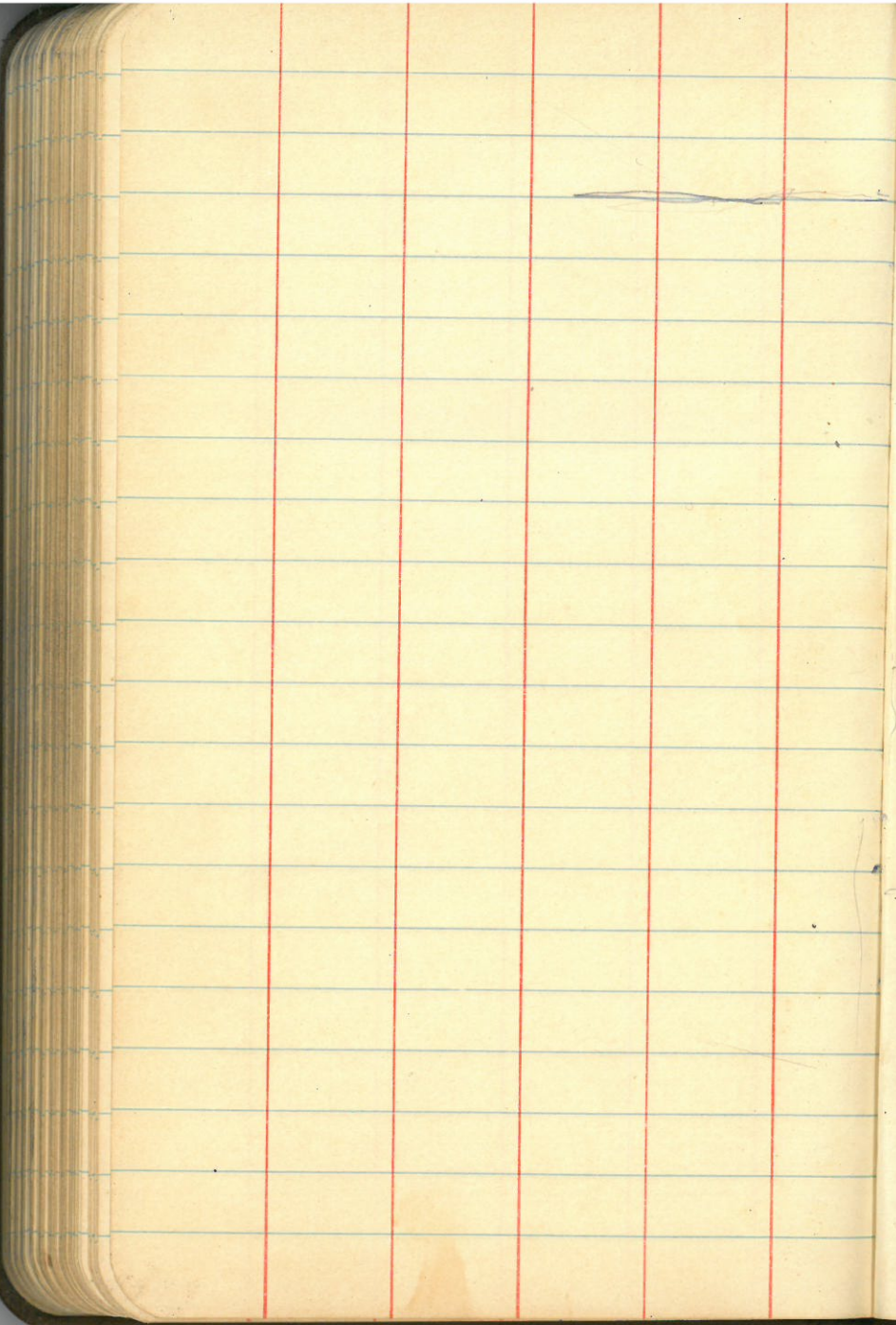
Mar. 4, 1949

Sta.	+S	HI	-S	Elev.
TBM#3	^{2 2} 3.44	39.03	^{2 3}	35.59
TP ₁₁	5.43	40.77	3.69	35.34
TP ₁₂	5.64	41.18	5.23	35.54
TP ₁₃	5.27	40.09	1.36	34.82
TP ₁₄	3.12	37.76	5.45	34.64
TP ₁₅	5.47	37.07	6.16	31.60
Sun Goeth	28.37		7.87	29.20
	<u>34.76</u>		<u>34.76</u>	6.39 ✓
	6.39			

Elev. diff 6.39-check

Sun Goeth	^{2 2} 7.58	36.78		29.20
TP ₁	6.28	37.69	^{2 3} 5.37	31.41
TP ₂	5.74	40.35	3.08	34.61
TP ₃	6.23	41.03	5.55	34.80
TP ₄	5.17	40.76	5.44	35.59
TP ₅	4.35	40.25	4.86	35.90
TP ₆	4.49	39.13	5.01	35.24
TBM#3	39.84		4.15	35.58
	<u>33.46</u>		<u>33.46</u>	6.38 ✓
	6.38			

Elev. diff is 6.38-check



he
ft.
pe
he
w-
41.
st-
it.

Elev. RR. AT crossing of Navy
AT Crystal R. Airport 10.00'

89.19
88.58
0.61

86.24
6.37
79.87

80.06
79.77
19

73.37
11.43
61.94

BM #4 in Floral City RR. spike
90" oak 18 ft. 46 + 25
Elev. 47.97

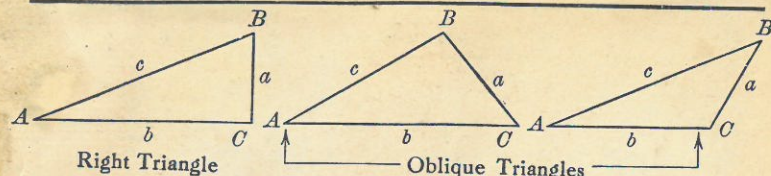
1 yds. N. of 783, 42.3' E of RR. 1
20' S of sand rd. 117.175 C 41

57.46
47.97
9.49

41.88

88
69
2157
78

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

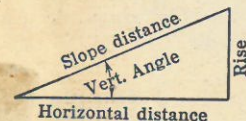
For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{a}$, $\csc = \frac{c}{b}$

Given a, b	Required A, B, c	$\tan A = \frac{a}{b} = \cot B$, $c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B$, $b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90^\circ - A$, $b = a \cot A$, $c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90^\circ - A$, $a = b \tan A$, $c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90^\circ - A$, $a = c \sin A$, $b = c \cos A$

Solution of Oblique Triangles

Given A, B, a	Required b, c, C	$b = \frac{a \sin B}{\sin A}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180^\circ - C$, $\tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$ $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a + b + c}{2}$, $\sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{b c}}$ $\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{a c}}$, $C = 180^\circ - (A + B)$
a, b, c	Area	$s = \frac{a + b + c}{2}$, $\text{area} = \sqrt{s(s - a)(s - b)(s - c)}$
A, b, c	Area	$\text{area} = \frac{b c \sin A}{2}$
A, B, C, a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10'. From Table, Page IX. $\cos 5^\circ 10' = .9959$. Horizontal distance = $319.4 \times .9959 = 318.09$ ft. Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

When the rise is known, the horizontal distance is approximately: — the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft. slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.