

Alignment Sect 2
Reference Points

50

FIELD BOOK.

No. 403

W6Z

MICROFILMED

JAN 6 1965

11 25 + 002
29 11
5 68
80 5

5 8

Station 2011
Atand. Ave

Δ Dist
167+19.5 Δ 119.15
New P.I. $\frac{205.15}{167.15}$ to New P.I.
use New P.I.

Alignment Sec 2
Reference Points

40.45
25.30
14.15



Dakota Conduit Extension

Alignment, showing changes	2-17
Reference Points	32-34
Final Location Line 1 ^E	43-47
Traverse Line New Road From Junction of Cottonwood & Houser Canyons	48-50
Equations -	65-67
Line Ties Nov. 11, 1914	68-69
Magnetic Traverse Line showing Road Location thro Grigsby & Pierson Property	70
Levels - 0+00 to 15+54	72

Mk	Sta	Curve L	
P.C.	167+30 ¹⁸	56° L	
	167+55 ¹⁸	7° 0'	P.I. = L 168+31 ²⁵ 167+44 ⁴⁵
P.T.	167+58 ²⁶	7° 51' 45"	S 81° 35' E
P.C.	167+96 ²¹	42° R	
	168+21 ²¹	5° 15'	P.I. = L 169+03 ⁸⁰ 168+10 ⁵⁴
P.T.	168+24 ⁶⁰	5° 57' 45"	S 69° 39 1/2° E
P.C.	169+58 ³⁴	20° L	
	169+83 ³⁴	2° 30'	P.I. = L 170+88 ³⁵ 169+94 ²²
	170+08 ³⁴	5° 0"	S 84° 09 1/2° E
P.T.	170+30 ⁸⁴	7° 15'	S 84° 09 1/2° E
P.C.	175+48 ⁶¹	18° R	
	175+73 ⁶¹	2° 15'	P.I. = L 176+76 ⁹⁰ 175+82 ⁹¹
	175+98 ⁶¹	4° 30'	S 71° 54 1/2° E
P.T.	176+16 ⁶⁶	6° 07' 30"	

$\Delta = 15^\circ 43' 30''$	$T = 14.27$
$D = 56^\circ L$	$L = 28.08$
$R = 103.35$	$E = 9.80$
$\Delta = 11^\circ 55' 30''$	$T = 14.33$
$D = 42^\circ R$	$L = 28.39$
$R = 137.19$	$E = 0.75$
$\Delta = 14^\circ 30'$	$L = 72.50$
$D = 20^\circ L$	$E = 2.31$
$R = 286.84$	
$T = 36.48$	
$\Delta = 12^\circ 15'$	B.S. on 170+88 ³⁵ F.S. on 183+17 ²⁰
$D = 18^\circ R$	$\Delta = 2^\circ 14' 30''$
$R = 319.62$	$D = 20^\circ$
$T = 34.36$	$R = 286.842$
$L = 68.05$	$T = 53.76$
$E = 1.83$	$L = 106.21$
	$E = 4.99$

Mk. Sta. Curve Ls

P.T. 176+16⁶⁶
 177+00⁰⁰ *
 P.C. 177+93⁵⁹ 8° L
 178+18⁵⁹ 1° 0'
 178+43⁵⁹ 2° 0'
 178+68⁵⁹ 3° 0'
 P.T. 178+93³⁸ 3° 59' 30"

P.I. = $\frac{179+38^{15}}{178+43^{61}}$

379²⁵
 S 79° 53 1/2° E

P.C. 181+96³² 48° R
 182+21³² 6° 0'
 182+46³² 12° 0'
 P.T. 182+48⁶⁸ 12° 34'

P.I. = $\frac{183+17^{90}}{182+23^{11}}$

191²⁵
 S 54° 45 1/2° E

P.O.T. 183+01²⁹
 P.C. 183+85⁸⁸ 48° L
 184+10⁸⁸ 6° 0'
 184+35⁸⁸ 12° 0'
 P.T. 184+38²⁴ 12° 44'

P.I. = $\frac{185+09^{05}}{184+13^{19}}$

197²⁵
 S 80° 13 1/2° E

Change of Grade

177+00

This curve eliminated.

$\Delta = 7^{\circ} 59'$
 $D = 8^{\circ} 1'$
 $R = 716.77$
 $T = 50.02$
 $L = 99.79$
 $E = 1.70$

From Sta 176+70²⁰
 To Sta 183+17⁹⁰ Cut out
 Bl. L. 179+59¹⁵ Chained
 Dist. = 638²⁰

$\Delta = 25^{\circ} 08'$
 $D = 48^{\circ} R$
 $R = 120.24$
 $T = 26.79$
 $L = 52.36$
 $E = 2.95$

$\Delta = 8^{\circ} 57'$
 $T = 44.9$

$\Delta = 25^{\circ} 28'$
 $D = 48^{\circ} L$
 $R = 120.24$
 $T = 27.16$
 $L = 53.06$
 $E = 3.03$

183+75
 Drop of 11³⁵'
 184+25

Mk Sta. Curve L₃
 P.C. 185+93³⁷ 48° R
 186+18³⁷ 6° 0'
 P.T. 186+24²⁹ 7° 25' 15'

$$P.I. = \frac{L \frac{187+06^{30}}{186+09^{03}}}{186+09^{03}}$$

168²⁵

S 65° 23' E

$$\Delta = 14^\circ 50' 30''$$

$$D = 48^\circ R$$

$$R = 120.24$$

$$T = 15.66$$

$$L = 30.92$$

$$E = 1.02$$

P.C. 187+50⁵⁵ 5° R
 187+75⁵⁵ 0° 37' 30"
 188+00⁵⁵ 1° 15'
 188+25⁵⁵ 1° 52' 30"

$$P.I. = \frac{L \frac{188+75^{25}}{187+99^{23}}}{187+99^{23}}$$

427⁸⁰

S 60° 27' E

$$\Delta = 4^\circ 56'$$

$$D = 5^\circ R$$

$$R = 1146.28$$

$$T = 49.38$$

$$L = 98.67$$

$$E = 1.06$$

P.T. 188+49²² 2° 28'
 P.O.T. 190+44³⁹ or L³ 191+19⁸⁰

P.C. 191+41¹⁸ 14° L
 191+91¹⁸ 3° 30'
 192+41¹⁸ 7° 0'
 192+91¹⁸ 10° 30'
 P.T. 193+11¹⁸ 11° 54'

$$P.I. = \frac{L \frac{193+03^{05}}{192+27^{64}}}{192+27^{64}}$$

128³⁶

S 84° 15' E

$$\Delta = 23^\circ 48'$$

$$D = 14^\circ L$$

$$R = 410.27$$

$$T = 86.46$$

$$L = 170.00$$

$$E = 9.01$$

Change of Grade

Changed to 28° Curve
 See Page

191+50

Drop 3⁸⁵'

192+00

Mk Sta Curve L's
 P.C. 193+32⁴⁷ 80°R
 193+42⁴⁷ 40°'
 193+52⁴⁷ 8°0'
 193+62⁴⁷ 12°0'
 P.T. 193+72³⁹ 15°58'

P.I. = 194+31⁴⁰
 = 193+53⁰⁷
 64 20'
 552°19'E

Δ = 31°56'
 D = 80°R
 R = 71.98
 T = 20.60
 L = 39.92
 E = 2.89

This Curve Cut Out
 Sept 7 1914
 Jones
 Judy

P.C. 194+02¹⁹ 112°L
 194+12¹⁹ 5°36'
 194+22¹⁹ 11°12'
 P.T. 194+29⁸¹ 15°28'

P.I. = 194+96¹⁰
 = 194+16⁴³
 439 10'
 583°15'E

Δ = 30°56'
 D = 112°L
 R = 51.67'
 T = 14.30'
 L = 27.62
 E = 1.94

changed to 28° Curve
 Sept 9, 1914

P.C. 198+15²⁰ 22°L
 198+40²⁰ 2°45'
 198+65²⁰ 5°30'
 198+90²⁰ 8°15'
 P.T. 198+93³¹ 8°35'30"

P.I. = 199+35²⁰
 = 198+54⁰¹
 264 80'
 N 79°34'E

Δ = 17°11'
 D = 22°L
 R = 260.84
 T = 39.41
 L = 78.11
 E = 2.96

Mk Sta Curve L Change P.C. = 199+41³⁰
 P.C. 200+54¹¹ 11° R
 201+04¹¹ 2°45' P.I. L 202+00
 201+54¹¹ 5°30' 201+18²⁰
 P.T. 201+82⁴⁴ 7°03'30" Changed P.T. = 202+94²²

Δ = 14°07'
 D = 11° R
 R = 521.67
 T = 64.59
 L = 128.33
 E = 3.98

Change of Grade
 Changed to 4° Curve
 Sept 8 1914
 R = 1432.69
 T = 177.40 E = 10.95
 L = 352.92

P.C. 205+22⁵⁴ 7° R
 205+72⁵⁴ 1°45'
 206+22⁵⁴ 3°30' P.I. L = 206+82²⁵
 206+72⁵⁴ 5°15' 206+00⁸⁰
 P.T. 206+78.49 5°27'30"

Δ = 10°55'
 D = 7° R
 R = 819.02
 T = 78.26
 L = 155.95
 E = 3.37

New P.I. on Tangent
 Bet. L 202+00 + L 206+82²⁵
 is 677⁴⁴ from L 202+00.

P.C. 208+14⁰⁸ 98° L
 208+24⁰⁸ 4°54'
 208+34⁰⁸ 9°48' P.I. = L 209+09
 208+26²⁸
 P.T. 208+37²⁶ 11°42'

Δ = 23°24'
 D = 98° L
 R = 58.91
 T = 12.20
 L = 23.88
 E = 1.24

Drop 4.95'

208+50

482²⁵
 S 86°19' E

226²⁵
 S 75°24' E

432²⁰
 N 81°12' E

From L 206+82²⁵ to New P.I. on
 line bet. L 209+09 + L 213+41¹⁹ the chained
 dist = 415⁰⁶

P.C. 212+47⁰⁰ 180° R.
 212+57⁰⁰ 9° 0'
 212+67⁰⁰ 18° 0'
 P.T. 212+67⁴⁴ 18° 24'

P.I. L 213+41¹⁰
 212+57⁸⁷

134²⁰
 S 62° 00' E

Δ = 36° 48'
 D = 180° R
 R = 32.66
 T = 10.87
 L = 20.44
 E = 1.76

P.C. 213+75³¹ 197° L
 213+85³¹ 9° 51'
 213+95³¹ 19° 42'
 P.T. 214+03²⁹ 27° 33' 30"

P.I. L 214+75⁵⁰
 213+90⁹⁷

168²⁰
 N 62° 53' E

Δ = 55° 07'
 D = 197° L
 R = 30.00
 T = 15.66
 L = 27.98
 E = 3.84

P.C. 215+45²⁸ 197° R
 215+55²⁸ 9° 51'
 P.T. 215+64⁹⁵ 19° 22' 30"

P.I. L 216+43²⁰
 215+55⁸³

147²⁵
 S 78° 22' E

Δ = 38° 45'
 D = 197° R
 R = 30.00
 T = 10.55
 L = 19.67
 E = 1.80



P.C. 216+90²⁸ 197° L
 217+00²⁸ 9° 51' P.I.
 217+10²⁸ 19° 42'

P.T. 217+11²⁸ 20° 26' 15"

287.80

N 60° 45 1/2 E

$\Delta = 40^{\circ} 52' 30''$

D = 197° L

R = 30.00

T = 11.17

L = 20.75

E = 2.01

$\Delta = 24^{\circ} 54' 30''$

D = 16° R

R = 359.27

T = 79.35

L = 155.67

E = 8.65

P.C. 219+09⁰¹ 16° R
 219+59⁰¹ 4° 0'

220+09⁰¹ 8° 0' P.I.

220+59⁰¹ 12° 0'

P.T. 220+64⁶⁸ 12° 27' 15"

172.50

N 85° 40' E

$\Delta = 220 - 79 = 141$

P.I. =

219+88³⁶

R = 359.27

T = 79.35

L = 155.67

E = 8.65

$\Delta = 27^{\circ} 32' 30''$

D = 144° L

R = 40.45

T = 9.90

L = 19.30

E = 12.8

P.C. 221+47²³ 144° L

221+57²³ 7° 12' P.I.

P.T. 221+67⁰⁶ 13° 46' 15"

136.80

N 58° 07 1/2 E

$\Delta = 222 + 51 = 273$

L 222+51²⁵

221+57²³

D = 144° L

R = 40.45

T = 9.90

L = 19.30

E = 12.8

P.C. 222+87²⁷ 197° R

222+97²⁷ 9° 51' P.I.

223+02⁷⁸ 15° 16' 30"

235.65

N 88° 41' E

L 223+88⁵⁵

222+95⁴⁶

$\Delta = 30^{\circ} 33'$

D = 197° R.

New P.I. 3.48' North.

R = 30.00

T = 8.19

L = 15.51

E = 1.10

N 88° 41' E

P.C. 224+72¹³ 7° R
 225+22¹³ 1°45'
 225+72¹³ 3°30' P.I.
 P.T. 225+88⁰⁸ 4°03'30"

L 226+24²⁰
 225+30²⁴

175°

S 83°12'E

Δ = 8°07'
 D = 7° R
 R = 819.02

T = 58.11
 L = 115.95
 E = 2.06

P.C. 226+67²⁵ 16° L
 226+92²⁵ 2°00'
 227+17²⁵ 4°00' P.I.
 227+42²⁵ 6°00'
 P.T. 227+43³⁴ 6°05'15"

L 227+99⁸⁰
 227+05⁵⁷

131°

N 84°37'30"E

Δ = 12°10'30"
 D = 16° L
 R = 359.27

T = 38.32
 L = 76.09
 E = 2.04

P.C. 227+57¹³ 8° R
 228+07¹³ 2°00'
 228+57¹³ 4°00' P.I.
 229+07¹³ 6°00'
 P.T. 229+14⁸⁴ 6°18'30"

L 229+31¹⁵
 228+36³⁷

337°

S 82°45½'E

Δ = 12°37'
 D = 8° R
 R = 716.78

T = 79.24
 L = 157.71
 E = 4.37

P.C. 231+29⁰⁷ 18° L
 231+54⁰⁷ 2°15'
 231+79⁰⁷ 4°30' P.I.
 232+04⁰⁷ 6°45'
 P.T. 232+16²¹ 7°53'15"

L 232+68⁹⁰
 231+73²⁵

100°

N 81°28'E

Δ = 15°46'30"
 D = 18° L
 R = 319.62

T = 44.28
 L = 87.64
 E = 3.05

P.C. 232+44⁰⁴ 46° R
 232+09⁰⁹ 5°45'
 232+94⁰⁴ 11°30'

P.T. 233+00⁵⁴ 12°59'45"

P.I.

L 233+69⁴⁵
 232+72²⁸

118 20'

S 72°32'½ E

S 73°33'30" E

A = 25°59'30"
 D = 46° R
 R = 125.40
 T = 28.94
 L = 56.50
 E = 3.29

P.C. 233+02⁵³ 9° L
 233+52⁵³ 2°15'
 234+02⁵³ 4°30'
 234+52⁵³ 6°45'

P.T. 234+65¹² 7°19'

P.I.

L 234+82²⁹
 233+84³⁵

160 55'

S 87°10'½ E

S 87°10'30" E

A = 14°38'
 D = 9° L
 R = 637.28
 T = 81.82
 L = 162.59
 E = 5.23

P.C. 235+02⁵¹ 20° R
 235+27⁵¹ 2°30'
 235+52⁵¹ 5°00'
 235+77⁵¹ 7°30'

P.T. 235+84⁷² 8°13'15"

P.I.

L 236+42⁸⁵
 235+23²⁵

82 20'

S 70°44' E

S 70°44' E

A = 16°26'30"
 D = 20° R
 R = 286.84
 T = 41.44
 L = 82.21
 E = 2.98

P.C. 235+89²⁴ 14° L
 236+14²⁴ 1°45'
 236+39²⁴ 3°30'

P.T. 236+61⁸⁴ 5°02'

P.I.

L 237+25⁶⁵
 236+26⁰⁸

285 20'

S 80°48' E

S 80°48' E

A = 10°04'
 D = 14° L
 R = 410.28
 T = 36.14
 L = 71.90
 E = 1.58

P.C. 237+78⁴¹ 6° R.
 238+78⁴¹ 1° 30'
 238+78⁴¹ 3° 00'
 239+78⁴¹ 4° 30'
 239+78⁴¹ 6° 00'
 240+78⁴¹ 7° 30'

P.T. 240+42⁵⁷ 7° 55' 30"

P.C. 243+16²¹ 22° L

243+41²¹ 2° 45'

243+66²¹ 5° 30'

P.T. 243+79⁸⁵ 7° 00'

P.C. 244+85⁵¹ 13° R

245+10⁵¹ 1° 37' 30"

245+35⁵¹ 3° 15'

P.T. 245+45⁸³ 3° 55' 15"

P.C. 245+71²³ 112° L

245+81²³ 5° 36'

245+91²³ 11° 12'

P.T. 245+96⁴⁵ 13° 44'

P.I. L 240+11³⁵
 239+11²⁰
 If = 238+22¹¹

438 65
 S 64° 57' E

P.I. L 244+50⁰⁰
 243+48²³
 = 242+60⁵³

167 25
 S 78° 57' E

P.I. L 246+17²⁴
 245+15¹⁰

69 00
 S 71° 06' 1/2 E

P.I. L 246+86²⁵
 245+84⁵⁶

56 80
 N 81° 25' 1/2 E

A = 15° 51'
 D = 6° R. ^{265.98}

R = 955.37
 T = 132.99 ^{0-1.84}

L = 264.16
 E = 9.20

A = 14° 00'

D = 22° L

R = 260.84

T = 32.02

L = 63.44

E = 1.96

A = 7° 50' 30"

D = 13° R

R = 441.68

T = 30.27

L = 60.32

E = 1.00

A = 27° 28'

D = 112° L

R = 51.67

T = 12.63

L = 24.52

E = 1.52

P.C. 246+17⁴³ 40°R

246+42⁴³ 5°00

P.I.

L 247+43⁷⁵
246+40⁶²

P.T. 246+63¹⁸ 9°09

139.75

S 80°16' E

P.C. 247+07⁴⁷ 3°R

247+57⁴⁷ 0°45'

P.I.

L 248+88¹⁵
247+79⁷⁴

248+07⁴⁷ 1°30'

P.T. 248+51⁹² 2°10'

266.75

S 75°56' E

P.C. 250+32⁴⁰ 42°L

250+57⁴⁰ 5°15'

P.I.

L 251+50²⁵
250+46⁴⁹

P.T. 250+60¹⁶ 5°49'45"

426.65

S 87°36' E

P.C. 253+67²⁰ 13°R

254+17²⁰ 3°15'

254+67²⁰ 6°30'

P.I.

L 255+76¹⁰
254+72²¹

255+17²⁰ 9°45'

255+67²⁰ 13°00'

P.T. 255+74⁰⁶ 13°26'45"

233.10

S 60°42' E

Δ = 18°18'

D = 40°R

R = 143.97

T = 23.19

L = 45.75

E = 1.90

Δ = 4°20'

D = 30°R

R = 1910.08

T = 72.27

L = 144.45

E = 1.37

Δ = 11°39'30"

D = 42°L

R = 137.19

T = 14.00

L = 27.76

E = 0.71

Δ = 26°53'30"

D = 13°R

R = 441.68

T = 105.61

L = 206.86

E = 12.45

P.C. 255+77²⁶ 7°R
 256+02⁹⁶ 0°52'30"

P.I.

L 257+10⁰⁰
 256+01⁵⁵

P.T. 256+25¹⁰ 1°39'

126²⁰

S 57°24½ E

Δ = 3°18'

D = 7°R

R = 819.02

T = 23.59

L = 47.14

E = 0.27

P.C. 256+94⁵⁴ 28°L

257+19⁵⁴ 3°30'

257+44⁵⁴ 7°00'

P.I.

L 258+36²⁰
 257+27²¹

P.T. 257+60¹⁷ 9°11'15"

217⁶⁵

S 75°47' E

Δ = 18°22'30"

D = 28°L

R = 205.14

T = 33.17

L = 65.63

E = 2.66

P.C. 258+69⁵⁶ 8°L

259+19⁵⁶ 2°00'

259+69⁵⁶ 4°00'

P.I.

L 260+53⁸⁵
 259+44⁶⁵

P.T. 260+19⁰⁴ 5°58'45"

285²⁵

S 87°44½ E

Δ = 11°57'30"

D = 8°L

R = 716.78

T = 75.09

L = 149.48

E = 3.92

P.C. 261+50¹⁵ 8°L

262+00¹⁵ 2°00'

262+50¹⁵ 4°00'

P.I.

L 263+39⁶⁰
 262+29²⁰

263+00¹⁵ 6°00'

P.T. 263+08⁴⁸ 6°20'

412⁶⁰

N 29°35½ E

Δ = 12°40'

D = 8°L

R = 716.78

T = 79.55

L = 158.33

E = 4.46

P.C.	266+06 ⁰²	20° R.	
	266+31 ⁰²	2° 30'	P.I. 267+52 ²⁰
	266+56 ⁰²	5° 00'	266+41 ⁵³
P.T.	266+76 ⁶⁰	7° 03' 30"	

53.20

S 86° 17 1/2° E

P.C.	271+56 ⁹⁴	18° R.	
	271+81 ⁹⁴	2° 15'	P.I. 272+94 ¹⁰
P.T.	271+88 ⁸⁸	2° 52' 30"	271+72 ⁹⁹

83.25

S 80° 32 1/2° E

P.C.	272+38 ⁴⁸	64° L	
	272+48 ⁴⁸	3° 12'	
	272+58 ⁴⁸	6° 24'	P.I. 273+67 ³⁵
	272+68 ⁴⁸	9° 36'	272+56 ⁰⁸
P.T.	272+73 ¹³	11° 05' 15"	

64.20

N 77° 17' E

P.C.	273+03 ⁶⁷	64° R.	
	273+13 ⁶⁷	3° 12'	
	273+23 ⁶⁷	6° 24'	P.I. 274+31 ¹⁵
	273+33 ⁶⁷	9° 36'	273+19 ¹³
P.T.	273+35 ¹⁷	10° 04' 45"	

70.85

S 82° 33 1/2° E

$\Delta = 14^{\circ} 07'$
 $D = 20^{\circ} R$
 $R = 286.84$
 $T = 35.51$
 $L = 70.58$
 $E = 2.20$
 $\Delta = 5^{\circ} 45'$
 $D = 18^{\circ} R$
 $R = 319.62$
 $T = 16.05$
 $L = 31.94$
 $E = 0.40$
 $\Delta = 22^{\circ} 10' 30''$
 $D = 64^{\circ} L$
 $R = 89.82$
 $T = 17.60$
 $L = 34.65$
 $E = 1.71$
 $\Delta = 20^{\circ} 09' 30''$
 $D = 64^{\circ} R$
 $R = 89.82$
 $T = 15.96$
 $L = 31.50$
 $E = 1.40$

P.C. 273+42⁶⁷ 20° R
 273+67⁶⁷ 2° 30'
 273+92⁶⁷ 5° 00'
 274+17⁶⁷ 7° 30'
 P.T. 274+36⁵⁰ 9° 23'

P.I. L 275+02³⁰
 273+90⁰⁶
 268³⁰
 S 63° 47 1/2 E

Δ = 18° 46'
 D = 20° R
 R = 286.84
 T = 47.39
 L = 93.83
 E = 3.89

P.C. 276+43⁴⁹ 64° R.
 276+53⁴⁹ 3° 12'
 276+63⁴⁹ 6° 24'
 P.T. 276+71⁰² 8° 48' 30"

P.I. L 277+70⁶⁰
 276+57⁴¹
 87²⁵
 S 46° 10 1/2 E

Δ = 17° 37'
 D = 64° R.
 R = 89.82
 T = 13.92
 L = 27.53
 E = 1.07

P.C. 277+05²⁰ 72° L
 277+25²⁰ 7° 12'
 277+45²⁰ 14° 24'
 277+65²⁰ 21° 36'
 P.T. 277+78⁶⁷ 26° 27'

P.I. L 278+58⁴⁵
 277+44⁹⁵
 82²⁸
 N 80° 55 1/2 E

Δ = 52° 54'
 D = 72° L
 R = 79.91
 T = 39.75
 L = 73.47
 E = 9.30

P.C. 278+02⁴⁸ 22° L.
 278+27⁴⁸ 2° 45'
 P.T. 278+41¹² 4° 15'

P.I. L 279+41⁴⁰
 278+21⁸⁷
 100⁶⁵
 N 72° 25 1/2 E

Δ = 8° 30'
 D = 22° L
 R = 260.84
 T = 19.39
 L = 38.64
 E = 0.70

P.C. 279+06³² 18° R.
 279+31³² 2° 15' P.I.
 P.T. 279+38²⁶ 2° 52' 30"

L 280+42⁰⁵
 279+22³⁸

Δ = 5° 45'
 D = 18° R.
 R = 319.62
 T = 16.06
 L = 31.94
 E = 0.40

167.70
 N 78° 10' 4" E

P.C. 280+74⁴² 80° R
 280+84⁴² 4° 00'
 280+94⁴² 8° 00' P.I.
 281+04⁴² 12° 00'
 P.T. 281+04⁷⁶ 12° 08' 15"

L 282+09⁷⁵
 280+89⁹⁰

Δ = 24° 16' 30"
 D = 80° R.
 R = 71.98
 T = 15.48
 L = 30.34
 E = 0.65

118.50
 S 77° 33' E

P.C. 281+37⁴⁸ 12° R.
 281+62⁴⁸ 1° 30'
 281+87⁴⁸ 3° 00'
 282+12⁴⁸ 4° 30' P.I.
 282+37⁴⁸ 6° 00'
 282+62⁴⁸ 7° 30'
 P.T. 282+76⁹⁹ 8° 22' 15"

L 283+28¹⁰⁵
 282+07¹⁰⁰

Δ = 16° 44' 30"
 D = 12° R
 R = 478.34
 T = 70.40
 L = 139.51
 E = 5.15

274.25
 S 62° 10' E

?

P.C. 284+50⁰⁰ 48° L
 284+75⁰⁰ 6° 00' P.I.
 285+00⁰⁰ 12° 00'
 P.T. 285+10⁸¹ 14° 36' 30"

L 286+03¹⁰
 284+81³⁴

Δ = 29° 13'
 D = 48° L
 R = 120.24
 T = 31.34
 L = 60.87
 E = 4.02

79.60
 N 60° 20' E

P.C. 285+34⁶¹ 38° R

285+59⁶¹ 4° 45'

P.T. 285+82⁸⁶ 9° 07' 45"

P.I. L 286+82⁷⁰
285+59¹³

III.

N 89° 58' 1/2 N

$\Delta = 18^{\circ} 15' 30''$

D = 38° R

R = 151.47

T = 24.32

L = 48.05

E = 1.94

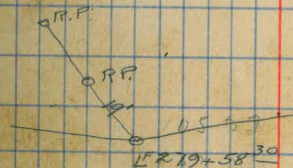
REFERENCE POINTS

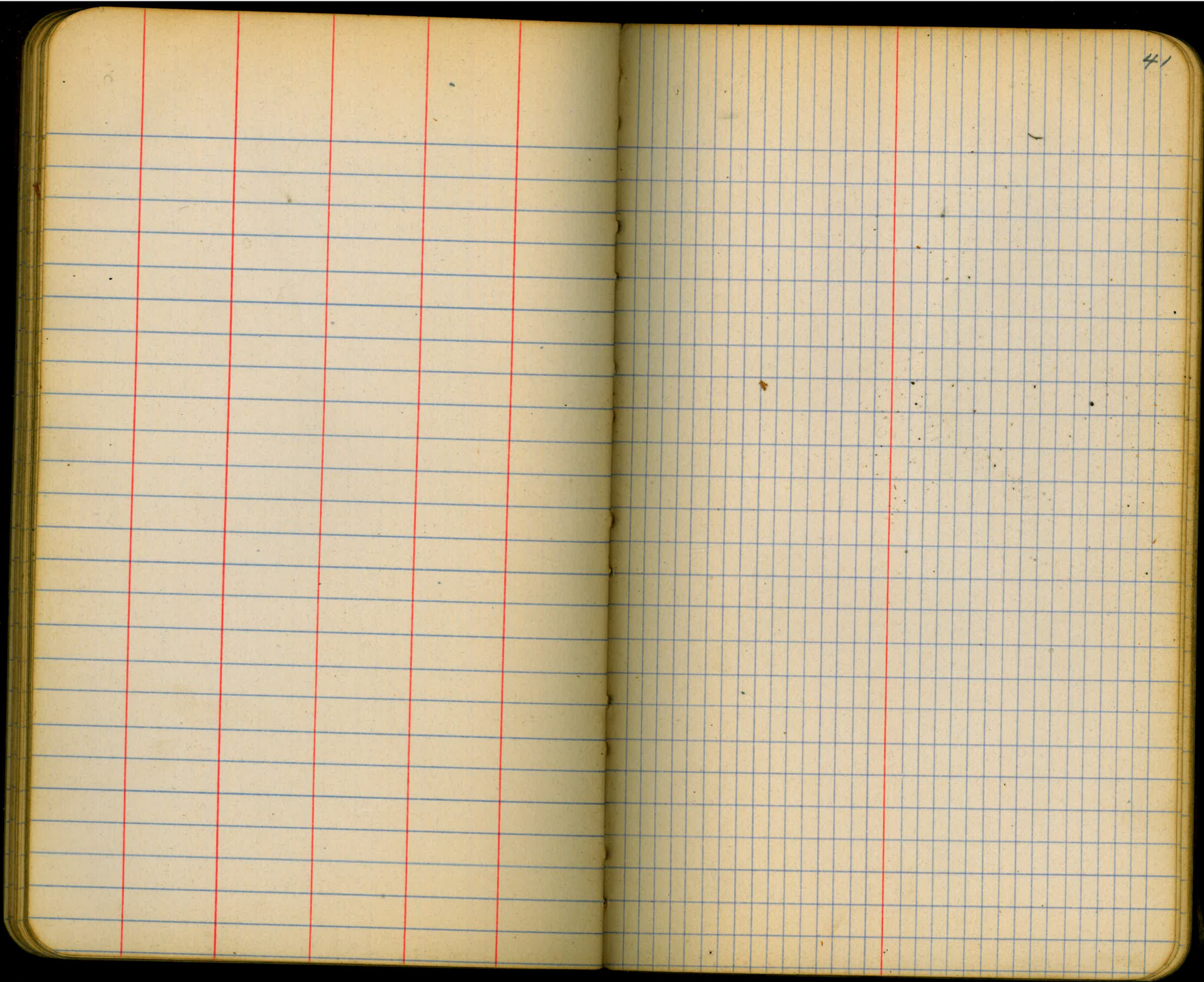
Sta	L From	Dist	L	Pt No.			
1	2	68.68	107°45' L	L ¹⁹⁴⁺⁹⁶ ²⁰	P.I.	R.P.#1	Under Tree
3	4	34.27	56°08' R	L ¹⁹³⁺⁰³ ²⁵	P.I.	R.P.#3	" " R.P.#4 Under Tree
5	3				P.I.		
6	7	102.91	61°28' R	197+94 ⁹³	P.C	R.P.#6	S. Side near Tree
6	7	71.65	110°37' R	198-73 ⁹⁴	P.T	" #7	S. Side " "
9	8	86.89	13°35' R	200+54 ¹¹	P.C	R.P.#8	S. Side " "
9	8	70.67	122°08' R	201+82 ⁹⁴	P.T	R.P.#9	" " " Stump. Opp P.I.
3	4	32.9	97°26' R	191+41 ¹⁸	P.C		
3	4	45.6	25°05' R	7 ¹²	P.T		
10	9	89.74	100°13' R	202+96 ¹⁰	P.T	R.P.#9	²⁰²⁺⁹⁶ ¹⁰ S. Side Base of tree near lge rock
6	7	93.99	140°33' R	199-21 ⁰⁴	P.C		
11	12	31.05	26°31' R	L ¹⁸⁷⁺⁰⁶ ³⁰ -11.51	P.C	R.P.11	N. Side Large Rock S. of Line
11	12	12.30	66°30' R	L ¹⁸⁷⁺⁰⁶ ³⁰ +11.51	P.T	R.P.12	S. Tree S. of Line
13	14	32.91	127°41' R	L ¹⁸⁸⁺⁹⁷ ⁶⁰ For P.I.	P.O.T.	R.P.13	N. Live Oak S. Line #14 N. Rock S. Line
15	16	89.00	111°51' L	L ¹⁸³⁺¹⁷ ²⁰	P.T	R.P.15	In Field 80' N of Old Road
15	16	99.56	55°30' L	"	P.C	R.P.16	" " " " " " "
17	18	50.15	26°34' R	For P.I. L ¹⁷⁶⁺⁷⁶ ²⁰	P.C	R.P.17	N Maple 13' S " ☉ of Line
17	18	62.21	171°49' R	"	P.T	R.P.18	N of Willow 30' W of RP 17
15	16	79.40	81°35' L	P.I. L ¹⁸²⁺¹⁷ ²⁰	P.I.		
17	18	21.12	114°30' R	L ¹⁷⁶⁺⁷⁶ ²⁰	P.I.		
19	20	40.23	24°59' R	P.I. L ¹⁷⁰⁺⁸⁸ ³⁵	P.C	19	S. E of Oak 11' S of P.I.
19	20	10.63	87°18' R	L ¹⁷⁰⁺⁸⁸ ³⁵	P.I.	20	S. W " " near Rock 15' W of #19
19	20	38.50	159°25' R	P.I. L ¹⁷⁰⁺⁸⁸ ³⁵	P.T		

R.P. Δ	From	Dist	L	To Pt. No	Mk.	
21	22	39 ⁶⁶	96°31'	New P.I. 677 ⁴⁴ to 122000	P.I.	#21 - 25' N.W. of Oak S of New P.I. Dist 21-22 = 80 ⁸⁰
21	22	—	186°03'	New P.I. See Page 7	R.P. 23	#22 - 12' E of Large Rock S.E. of New P.I. Dist 21-23 = 79 ²⁴
24	25	53 ³⁷	93°36'	R.P. #22		#24 - Bet. two small live Oaks S of Line
L 208-77 ⁴⁴	L 202+00		31°56' L	R.P. #22		#25 - Base Large Live oak S. Line
"	"	39 ⁶⁶	90°38' L	R.P. #21		#26 - 39' S.E. of P.I. in bushes
"	"		154°36' L	R.P. #23		#27 - 30' W of #26 in bushes under oak
26	27	32 ⁵⁴	42°40' R	New P.I. 3.16 E of L 223+88 ⁵⁵		
29	28	23⁵⁰ 18 ⁷¹	77°02' L 51°59' R	L 234+78 ⁵¹	P.I.	#28 S of Line at base of oak. #29 S Line 19' S of P.I.
30	31	19⁵⁸ 18 ⁷¹	58°05' L 55°56' L	L 240+11 ⁵⁵	P.I.	#30 - S. Line 20' from line near Rock #31. Near Manzanita.
32	33	23 ⁶⁵	56°40' R	227+90 ⁹⁸	New P.I.	#32 - 20' S of Line #33 - S of line Near Oak
34	35	22 ⁷⁸	67°06' R	224+99 ⁹⁷		#34 - 20' S. P.I. near small rock. #35 - S Line near large Rock
1	2	79.67	132°10'	L 194+30 ⁹⁸	New P.I.	
36	37	26.97	42°33' R	L 167+44 ⁴⁵	P.I.	#36 E side Cottonwood 25' N of line #37 N side Oak S. of Line
38	39	18.89	20°58' R	L 244+50	P.I.	#38 S. line nr sm oak. 19' S.E. of P.I. #39 S. line nr lge oak
41	40	16.85	49°45' R	L 246+17 ⁹⁵	P.I.	#40 S. line nr rock S.W. of P.I. #41 S. line 17' S of P.I.
42	43	16.15	51°36' L	L 246+86 ⁹⁵	P.I.	#42 S.W. of P.I. nr sm oak #43 17' S of line nr rock
44	45	24.80	77°29' R	L 247+43 ⁷⁵	P.I.	#44 S. of line in bushes. #45 S.W. of P.I. behind lge rock.
47	46	14.39	65°46' L	L 248+83 ⁵⁰	P.I.	#46 S.E. of P.I. near bushes. #47 15' S.W. of P.I. near bushes.
49	48	20.79	44°58' L	L 251+50 ²⁵	P.I.	#48 - 25' S.E. of P.I. in bushes. #49 S.W. of P.I. 10' S.W. of Maple
50	51	27.55	86°41' L	L 255+19 ⁶⁰	P.O.T.	#50 - S. line near Sm. Rock. #51 18' S. line in bushes.
52	53	45.65	126°38' L	L 255+76 ⁹⁰	P.I.	#52 N. line near dead stump #53 N. line near leaning willow
55	54	31.34	21°43' R	L 257+10 ⁰⁰	P.I.	#54 N. line at base sm maple #55 N. line base lge maple
56	54	17.95	92°50'	L 258+36 ²⁰	P.I.	#56 18' N. of P.I. base lge maple #57 - 36' E of P.I. mouth ravine
57	58	35.90	85°03' R	L 260+53 ⁸⁵	P.I.	#58 - 12' S.W. of R.P. 57 base lge rock.

R.R.A	From	Dist	Angle	Pt.		
59	60	33.15	93°52' R	L263+39 ⁶⁰	P.I.	#59 - S. line base lge oak #60 - 15' S. of R.P. 59 in bushes.
61	62	28.82	142°14' L	L267+52 ²⁹	P.I.	#61 - 29' S.E. of P.I. in open #62 - 15' S.E. of #61 base of oak.
63	64	26.48	116°57' R	L272+84 ¹⁰	P.I.	#63 - Base sm. oak 21' S.E. of P.I. #64 - Base rock 20' E. of R.P. 63
65	66	14.17	74°05' R	L273+67 ³⁵	P.I.	#65 - Back of lge rock S.E. of P.I. #66 - W of 65 Base sm. Rock.
67	65	19.95	134°25' R	L271+31 ⁴⁵	P.I.	#67 - S. line 20' S.W. of P.I.
1	2	60.30	53°22' L	193+39 ⁹⁹	P.C.	New corrected Sta
1	2	147.94	103°36' L	195+18 ⁷⁹	P.T.	" " "
68	69	39.92	117°38' R	168+38 ¹³	New P.I.	#68 N. of line E. side Cottonwood #69 - 40' E of #68 N. of Elm.
36	37	40.19	80°47' R	167+19 ¹⁵	New P.I.	
19	20	13.14	89°06' R		New P.I.	New P.I. 2' N. of Old P.I. L190+88 ²⁵
19	20	16.46	138°02' R		"	New P.I. 15' E of " " "
P.I. L170+88 ³⁵	P.I. L176+76 ²²	12.72	2°35' R		"	New P.I. 12' E of " " "
L244+50	#39	31.37	65°08' R	P.I. L247+34 ⁵¹		
L244+50	L246+17 ⁹⁵	31.37	134°21' L	"		
11	12	20.72	38°07' R	185+97 ⁵⁸	P.I.	
#68 Top P.O.R.	Morena	22.36	52°43' 30"		P.I. L273+44 ³²	
					P.I. L279+58 ³⁰	

st. line Method d=19'





Change in Line

42

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FINAL LOCATION LINE L^F

Sta	L ^F	Correct Dist	L	Curve L ^s	P.I.s.
P.O.T.	167+92 ⁸⁰	167+00 ⁰⁰	1167+92 ⁸⁰		
P.C.	167+01 ⁹⁸			28° L	
P.T.	167+36 ¹⁵			4° 47'	L ^F 168+11 ⁹⁵ = 167+19 ¹⁵
P.C.	168+13 ⁷⁵			10° R	L ^F = 167+31 ¹⁹
P.T.	168+67 ⁴⁸			2° 26'	= 168+38 ¹³
P.C.	169+20 ⁹⁰			8° L	
	169+70 ⁹³			2° 00'	L ^F 170+99 ⁷⁵
	170+20 ⁹⁶			4° 00'	= 170+06 ⁶⁹
	170+70 ⁹⁹			6° 00'	
P.T.	170+91 ⁵³			6° 49' 30"	
P.C.	175+44 ³⁰			10° R	L ^F 176+76 ⁴⁰
	175+94 ³⁵			2° 30'	L ^F 176+76 ⁴⁰
P.T.	176+19 ⁹¹			3° 47'	= 175+82 ²⁹
P.C.	181+08 ¹⁰	181+82 ⁸⁰		15° R	
	181+58 ¹¹	182+32 ⁸⁷		4° R	
P.T.	182+08 ¹²	182+57 ³⁹		3°	L ^F 183+17 ⁷⁰
	182+58 ¹³			4° 48' 30"	L ^F 183+15 ¹⁰
	183+08 ¹³			3°	= 182+20 ²³
P.T.	183+31 ⁸⁵			4°	

Δ = 9° 34'	T = 17.17	Corrected Δ
D = 28° L	L = 34.17	Oct 13 1914 = 8° 32'
R = 205.137	E = .72	New P.I. =
Δ = 4° 52'	T = 24.38	
D = 10° R	L = 48.67	
R = 573.686	E = .52	
Δ = 13° 39'	T = 85.79	
D = 8° L	L = 170.63	
R = 716.78	E = 5.12	
Δ = 7° 34'	T = 37.94	
D = 10° R	L = 75.67	
R = 573.686	E = 1.25	
Δ = 8° 57'	T = 112.13	Δ = 8° 57' T = 37.43
D = 4° R	L = 223.75	D = 12° R L = 74.59
R = 1432.69	E = 4.38	R = 478.34 E = 1.46

168.65

638.20

378.45

182+40³³
37+3
2280
7754
3739

Sta	LF	Corrected Dist	L	Curve L's	P.I.'s		
P.C.		185+68 ⁶¹		4° R.	L 187+06 ³⁰	$\Delta = 2^\circ 19'$	$T = 28.97$
		186+18 ⁶²		1°	L 186+93 ⁵²	$D = 4^\circ R$	$L = 57.92$
P.T.		186+26 ⁵³		1° 09' 30"	= 185+97 ⁵²	$R = 1432.69$	$E = 0.29$
P.O.T.	L 188+84 ⁸⁶		L 188+75 ²⁵				
P.C.		193+39 ⁹⁹		10° L			
		193+90 ⁰⁴		2° 30'	L 195+29 ²⁶	$\Delta = 17^\circ 51'$	$T = 90.09$
		194+40 ⁰⁹		5° 00'	L 195+26 ⁰²	$D = 10^\circ L$	$L = 178.50$
		194+90 ¹⁴		7° 30'	= 194+30 ⁰²	$R = 573.686$	$E = 7.03$
P.T.		195+18 ⁴⁹		8° 55' 30"			
P.C.		197+94 ²³		22° L	L 199+35 ²⁰	$\Delta = 17^\circ 11'$	$T = 39.41$
		198+44 ⁹³		5° 30'	L 199+32 ⁰²	$D = 22^\circ L$	$L = 78.11$
P.T.		198+73 ⁰⁴		8° 35' 30"	= 198+34 ³⁴	$R = 260.84$	$E = 2.96$
P.C.		199+21 ⁰⁴		4° R.		$\Delta = 14^\circ 07'$	$T = 177.39$
		199+71 ⁰⁵		1°		$D = 4^\circ R$	$L = 352.92$
		200+21 ⁰⁶		2°	L 202+00 ⁰⁰	$R = 1432.686$	$E = 10.94$
		200+71 ⁰⁷		3°	L 201+96 ⁸²		
		201+21 ⁰⁸		4°	= 200+98 ⁴³		
		201+71 ⁰⁸		5°			
		202+21 ⁰⁹		6°			
		202+71 ¹⁰		7°			
P.T.		202+73 ⁹⁶		7° 03' 30"			

191 21
 232 52
 405
 267 80
 182 25

Sta L^F Corrected Dist L Curve L_s P.I.s

P.O.T. 1^F 206+79⁷⁷ 206+82²⁵

P.C. 206+40⁵⁵ 2° L
 206+90⁵⁵ 0° 30'
 207+40⁵⁵ 1° 00' L^F = 208+74²²
 207+90⁵⁵ 1° 30' = 207+74²²
 208+40⁵⁵ 2° 00'
 208+90⁵⁵ 2° 30'
 P.T. 209+07²² 2° 40'

↑ 194.22
↓
↑ 699.21
↓

Δ = 5° 20'
T = 133.46
D = 2° L
L = 266.67
R = 2864.93
E = 3.11

P.C. 214+34⁷⁷ 20° L
 214+84⁷⁷ 5°
 P.T. 215+11²² 7° 37' 30"

L^F 215+73⁶⁷
= 214+73¹⁷

Δ = 15° 15'
T = 38.40
D = 20° L
L = 76.25
R = 286.842
E = 2.56

↓ 757.28
↑
↓ 289.22
↑

P.C. 221+66⁶⁵ 20° R
 222+16⁶⁵ 5°
 P.T. 222+52⁴⁰ 8° 34' 30"

L^F 223+10⁹⁵
= 222+09²²

Δ = 17° 09'
T = 43.25
D = 20° R
L = 85.75
R = 286.842
E = 3.24

P.C. 224+60¹⁰ 4° R
 225+10¹¹ 1°
 P.T. 225+38⁰² 1° 33' 30"

L^F 226+00⁶⁷
= 224+99⁶²

Δ = 3° 07'
T = 38.97
D = 4° R
L = 77.92
R = 1432.69
E = 0.52

↑ 291.23
↓

Sta.	L'	Corrected Dist	L	Curve is	P.I.'s
P.C.		227+69 ⁵²		4° R	L=228+97 ⁵²
P.T.		228+12 ⁹⁴		0°51'30"	=227+90 ⁹⁸
P.C.		234+22 ⁷²		10° R	L=236+42 ⁸⁰
		234+70 ⁷⁵		2°30'	L=235+57 ⁸⁷
P.T.		234+88 ⁷²		3°16'30"	=234+55 ⁵⁵
P.C.		237+94 ⁷⁵		20° R	
		238+44 ⁷⁵		5°00'	L=240+11 ³⁵
P.T.		238+50 ⁸²		5°34'	L=239+24 ⁸⁹ =238+27 ⁷¹
P.C.		241+78 ¹⁵		10° R	
		242+28 ²⁰		2°30'	
		242+78 ²⁵		5°00'	L=243+36 ⁵⁵ =242+34 ²²
P.T.		242+89 ⁹⁸		5°35'30"	
P.C.		247+80 ⁵⁴		4° L	
		248+30 ⁵⁹		1°	L=249+60 ⁵⁴ =248+57 ⁵⁰
		248+80 ⁶⁴		2°	
		249+30 ⁶⁹		3°	
P.T.		249+34 ²⁹		3°04'30"	

$\Delta = 1^\circ 43'$
 $D = 4^\circ R$
 $R = 1432.69$
 $T = 21.40$
 $L = 42.92$
 $E = .16$

$\Delta = 6^\circ 33'$
 $D = 10^\circ R$
 $R = 573.686$
 $T = 32.83$
 $L = 65.50$
 $E = .94$

$\Delta = 11^\circ 08'$
 $D = 20^\circ R$
 $R = 286.842$
 $T = 27.96$
 $L = 55.67$
 $E = 1.36$

$\Delta = 11^\circ 11'$
 $D = 10^\circ L$
 $R = 573.686$
 $T = 56.17$
 $L = 111.83$
 $E = 2.74$

$\Delta = 6^\circ 09'$
 $D = 4^\circ L$
 $R = 1432.69$
 $T = 76.90$
 $L = 153.75$
 $E = 2.07$

241.93
 21.40
 270.47

$239+1469$
 $235 5737$
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227+90 92.

46

$235+5737$
 $228+2580$
 66457

136.27

$243+47$
 $74 76$
 $546 73$

411 36

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Sta. Mk.	Correct Dist	Curve Ls.	P.I.'s
P.O.T	260+50		
P.C.			

[Handwritten scribble]

Dilley Inst. + chain
Garner chain B.S. + F.S.

48

Traverse Line New Road From Junction
of Cottonwood & Hauser Canyons

Sta	ΔL	ΔR	C.C.	M.C.
175 ⁹³			S48°15'E	
413+83 ⁸	2°55'			
119 ²			S45°20'E	
412+65 ¹		16°35'		
193 ⁸			S61°55'E	
410+71 ³		30°23'		
146 ⁹			N87°42'E	
409+24 ⁴	13°15'			
359 ⁴³			S79°03'E	
405+64 ⁹²		12°55'		
244 ³⁰			N78°02'E N 81°E	
403+20 ²⁷	35°37'			
241 ⁸			S56°21'E S56°15'E	
400+78 ⁸⁹		15°21'		
295 ¹			S71°42'E S71°30'E	
397+83 ⁷⁹		37°09'		
212 ²²			N71°09'E N71°E	
395+71 ⁵⁷	15°12'			
187 ¹⁰			N86°21'E N86°30'E	
394+34 ⁸²	54°43'			
74 ⁸²			S38°56'E S38°30'E	
393+59 ¹		46°54'		
			S85°50'E	

<100>

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Road line

Hauser

397+25

A520
285
4845

Beginning of Floss construction

Sta	ΔL	ΔR	C.C.	M.C.
136 ²			S10°10'E	S9°40'E
430+60 ³³		45°07'		
111.8			S55°17'E	S54°45'E
429+48 ⁵³	8°52'			
244 ⁶⁰			S46°25'E	S46°0'E
427+03 ⁹³		56°13'		
792			N77°22'E	N78°0'E
426+21 ²³	35°37'			
91 ²⁵			S67°01'E	S67°45'E
425+32 ³⁵		36°41'		
80 ³⁵			N76°18'E	N76°45'E
424+51 ⁵³	42°13'			
98 ²			S61°29'E	S61°0'E
423+53 ³³		21°41'		
171 ²			S73°10'E	S82°45'E
421+82 ¹³	28°03'			
132 ⁶²			S55°07'E	S54°30'E
420+44 ⁴⁸		21°28'		
190 ²⁵			S81°35'E	S81°15'E
418+59 ³³	2°31'			
202 ²			S79°04'E	S78°50'E
416+56 ⁵³	13°10'			
186 ⁸			S65°54'E	S65°30'E
415+69 ⁷³	17°39'			

Head line

Hausen aback

Sta	ΔL	ΔR	C.C.	M.C.
444+40 ²²				
312 ²			S48°30'E	S48°15'E
441+27 ⁹³	21°07'			
203.3			S69°41'E	S69°15'E
439+24 ¹³	6°17'			
234 ⁵			S63°24'E	S63°E
436+89 ⁶²	16°50'			
954.			S80°14'E	S79°45'E
435+94 ²²	33°13'			
132 ³			S47°01'E	S45°40'E
434+61 ⁹³	14°50'			
264 ²			S32°11'E	S31°45'E
431+97 ¹³	22°01'			

Road line

Hanser creek

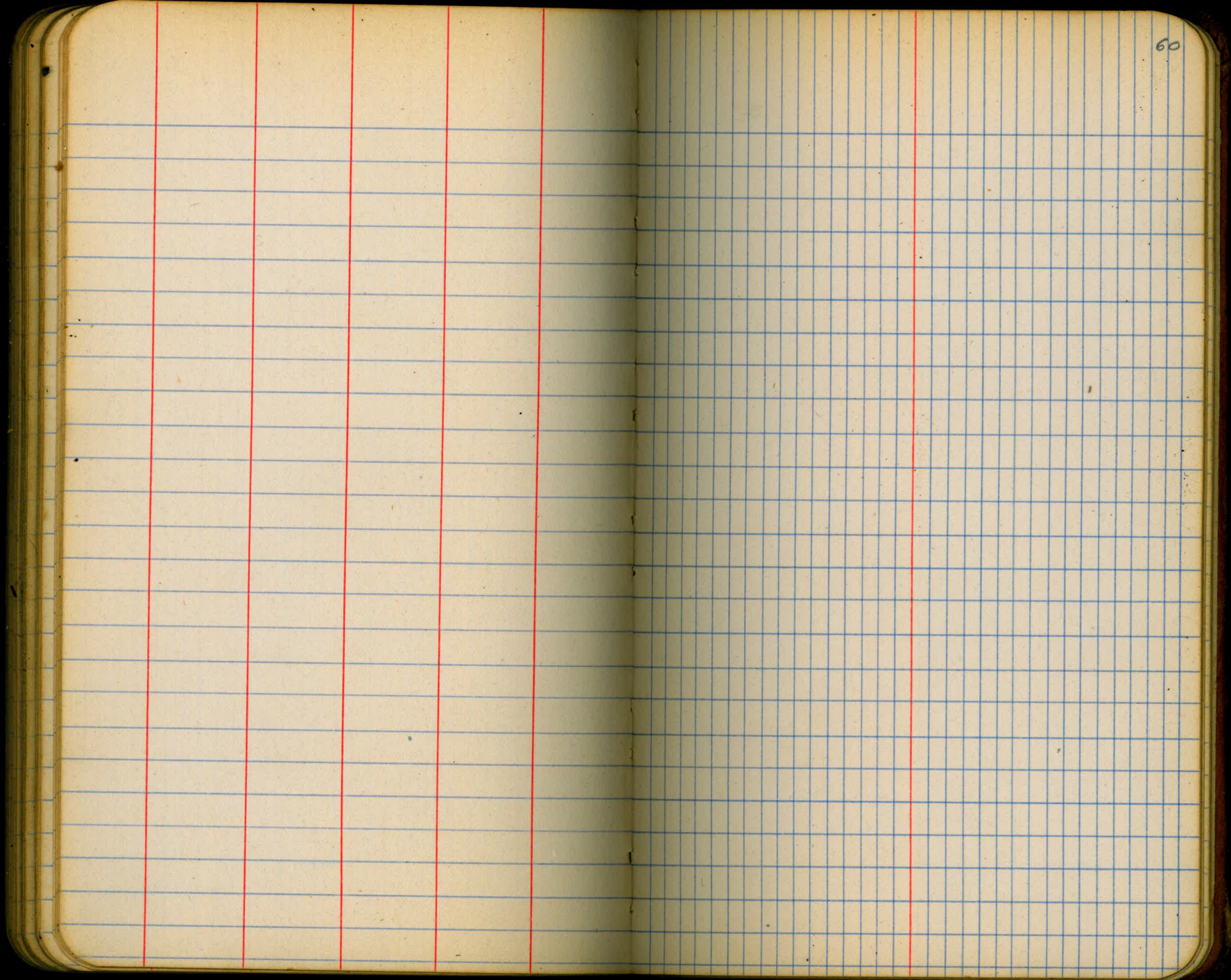
44+28

sta AL AR CC MC

sta AL AB C.C. M.C.

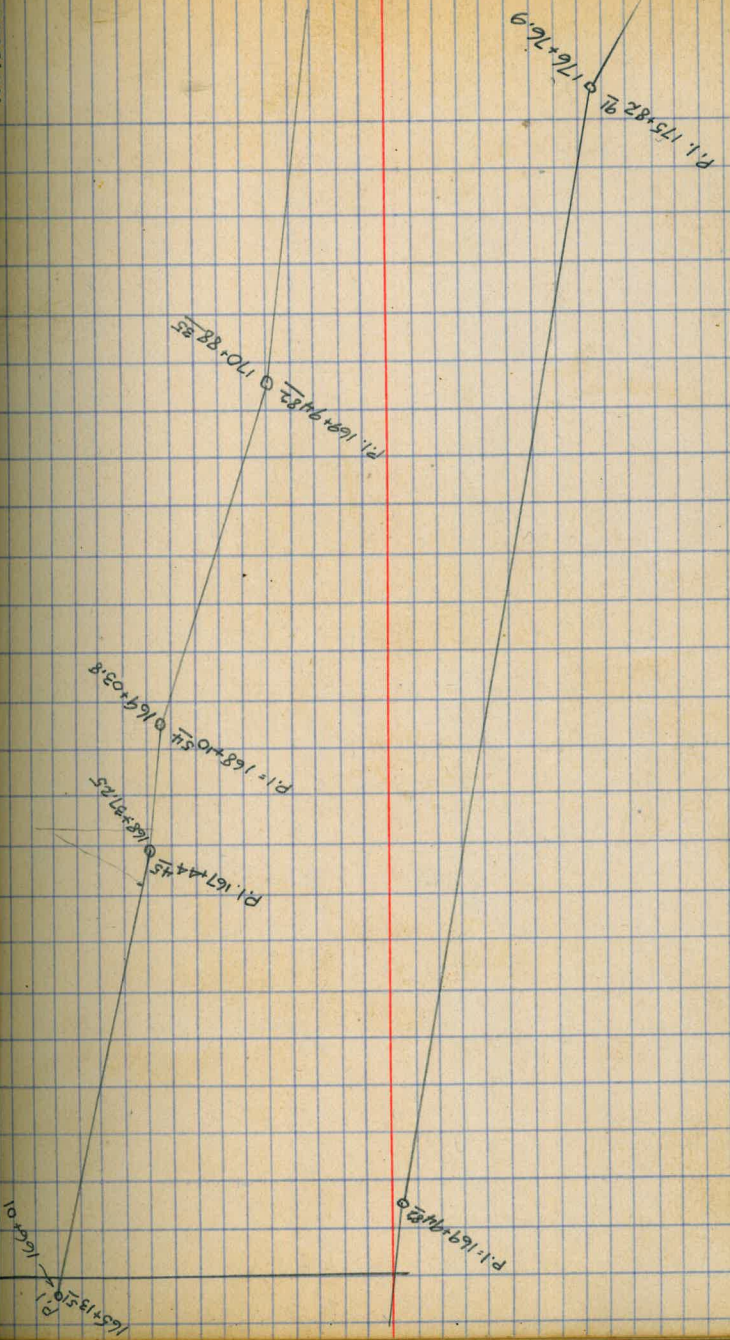
52

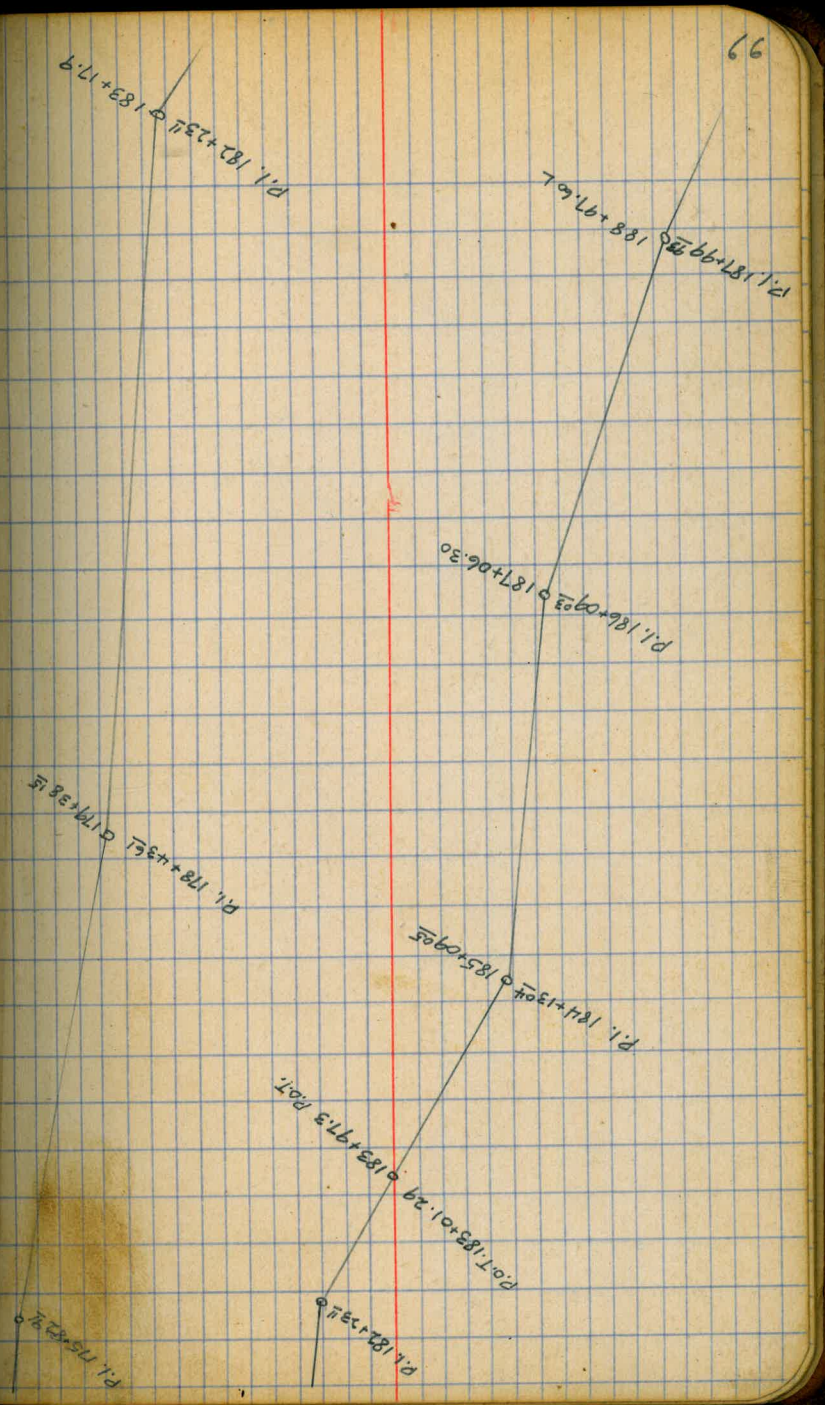
54



N = 10000

65





P.I. 201+18 19 202+00

P.I. 194+16 19 194+20.10
P.I. 194+31.40

P.I. 193+53.29 194+31.40

P.I. 198+54.61 199+35.20

P.I. 197+27.94 193+03.05

P.O.T. 190+44.39 191+04.40 P.O.T

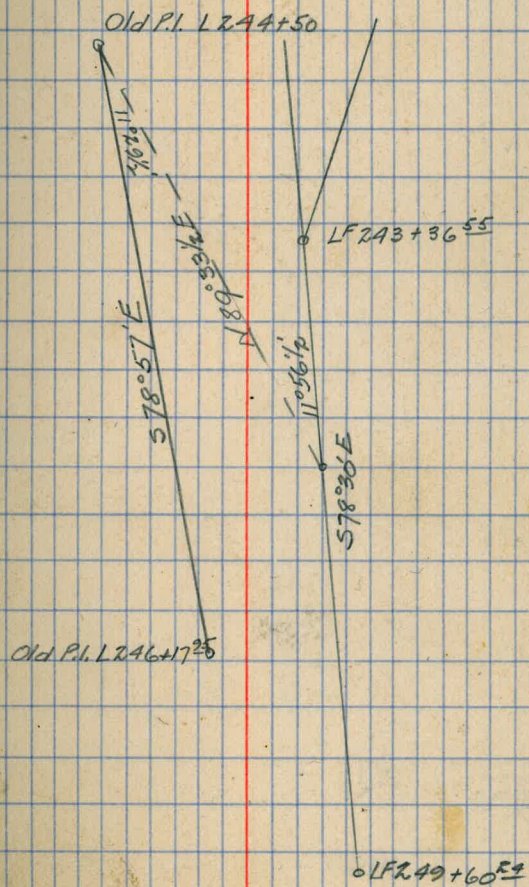
P.I. 197+99.30

P.I. 194+16 19

Line Tie

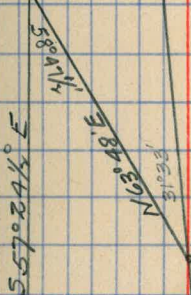
Line Tie

68
Nov 11 1914



Line Tie

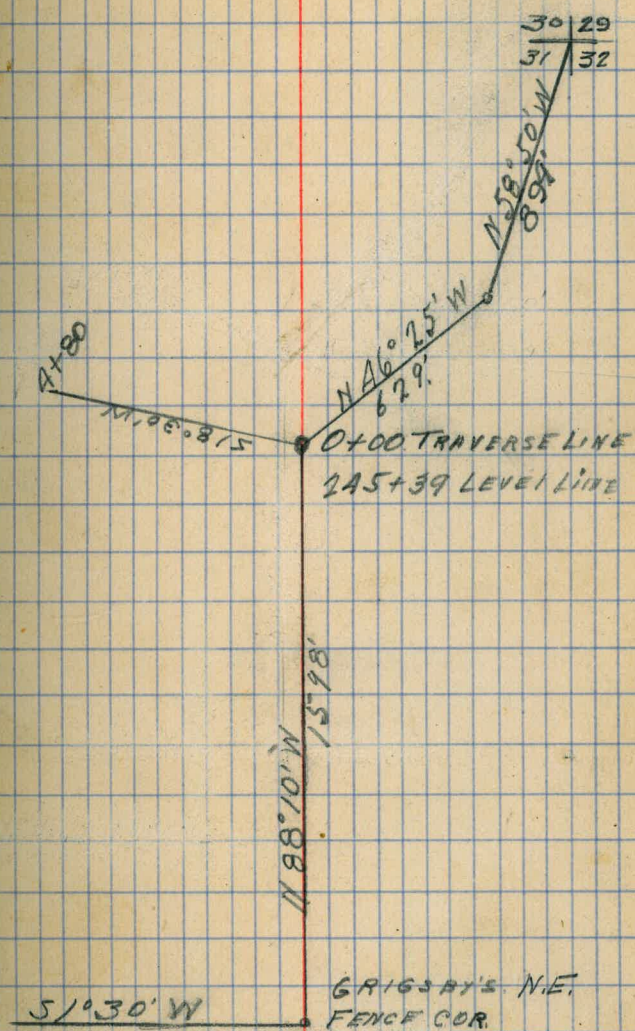
Nov 11 1914

• L²⁴⁹+60²⁴Old P.I. L²⁵⁷+10⁰⁰Old P.I. L²⁵⁸+36²⁰

S 81° 39' E

Magnetic Traverse line showing Road
 location thru Griggby & Benson Property
 Sta Dist M.C.

29+50=		
215+50	360	N 88° 15' W
25+50=		
219+00	760	S 64° 45' W
18+30=		X FENCE LINE
226+33	946	S 58° 15' W
3+84=		
306+50	409	S 43° W
4+80=		
240+50	480	S 18° 30' W
1598=	0+00	TRAVERSE LINE = 295+39 LEVEL LINE



Sta	+	HI	-	Elev
0+00	0.8	100.8		100.
1+00			6.6	94.2
2+00	3.0	91.1	12.7	88.1
3+00			9.0	82.1
3+87			12.5	78.6
4+00			11.3	79.8
5+00	12.2	100.3	3.0	88.1
6+00			4.9	95.4
TP	13.0	112.7	0.6	99.7
7+00			9.0	103.7
8+00			2.6	110.1
	12.1	124.7	0.1	112.6
9+00			8.6	116.1
10+00			2.7	122.0
TP	12.5	137.2	0.3	124.4
11+00			5.6	131.6
TP	13.2	149.9	0.5	136.7
12+00			8.9	141.0
TP	13.0	162.6	0.3	149.6
13+00			11.3	151.3
14+00			1.9	160.7
	12.4	175.0	0.2	163.4
15+00	8.2	180.7	2.5	172.5
15+54			2.8	179.9

74

75

$$\begin{array}{r}
 19.2 \\
 17.6 \\
 \hline
 11.5 \\
 384 \\
 192 \\
 \hline
 6) 2419.2 \quad (15.12 \\
 12 \\
 \hline
 180 \\
 \hline
 60 \\
 \hline
 19.2
 \end{array}$$

$$\begin{array}{r}
 1032' 30'' \\
 60 \\
 5) 960 \quad (19.2 \\
 480 \\
 \hline
 480 \\
 \hline
 100
 \end{array}$$

$$\begin{array}{r}
 6) 19.2 \quad (1.2 \\
 12 \\
 \hline
 52
 \end{array}$$

$$\begin{array}{r}
 15' 07'' \\
 19 12 \\
 \hline
 34' 19'' \\
 19 12 \\
 \hline
 53' 31'' \\
 19 12 \\
 \hline
 1012 43''
 \end{array}$$

$$\begin{array}{r}
 19' 12'' \\
 35 \\
 60 = 1.00 \\
 60) 5500 \quad (58 \\
 3000 \\
 \hline
 500
 \end{array}$$

$$\begin{array}{r}
 1.20) 1.58 \quad (1.31 \\
 120 \\
 \hline
 380 \\
 240 \\
 \hline
 200
 \end{array}$$

$$\begin{array}{r}
 19 12 \\
 19 12 \\
 \hline
 1031' 55''
 \end{array}$$

$$\begin{array}{r}
 7.02 \\
 19.2 \\
 14.84 \\
 66.18 \\
 74.2 \\
 148.4 \\
 \hline
 6) 172.44 \quad (9 \\
 60 \\
 \hline
 11.31 \\
 77.91
 \end{array}$$

$$\begin{array}{r}
 9' \\
 19 12 \\
 \hline
 28 12 \\
 19 12 \\
 \hline
 47' 24'' \\
 19 12 \\
 \hline
 106' 36'' \\
 19 12
 \end{array}$$

$$\begin{array}{r}
 1.5 = 3.0 \\
 16) 114.5 \quad (7.156 \\
 112 \\
 \hline
 25 \\
 90 \\
 180 \\
 \hline
 114.5
 \end{array}$$

$$\begin{array}{r}
 7.156 \\
 25
 \end{array}$$

$$\begin{array}{r}
 716) 1526.500 \quad (2.1319 \\
 1432 \\
 \hline
 9450 \\
 716 \\
 \hline
 2290 \\
 2148 \\
 \hline
 1420
 \end{array}$$

$$\begin{array}{r}
 50 \$3 \\
 25 \\
 1200 \\
 1226.5
 \end{array}$$

$$\begin{array}{r}
 230.52 \\
 1380 \\
 1432 \\
 716
 \end{array}$$

$$\begin{array}{r}
 114.5
 \end{array}$$

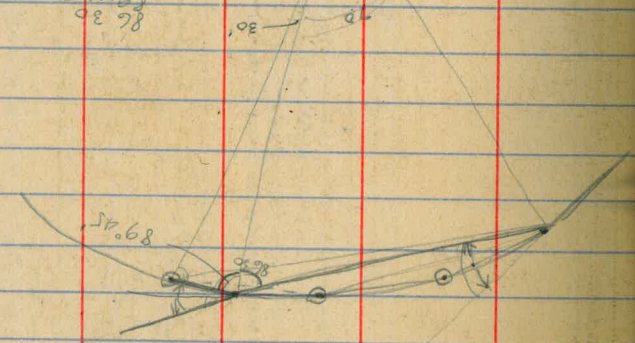
16 30
34480
452
300
300
9.6
9'36"
52.0
2040
13.9
1.6
83.4
1.31
16.77.4
7.67
39
60
23.4
14.45
13.90
28.35
48.00
535335
44800
4730

- ① 1°23'24
 - ② 2°59
 - ③ 4°35
 - ④ 6°11
- 125.24
55.67
48.47
50.20
3.3400
44800
46
33400
1.4.23
16
8538
1243

14.23
13.7
48
76.13

- ① 136 LF 239+242
- ② 312
- ③ 428
- ④ 5°35'00

157.00
11961
1068
0898



530
60107625
380
4330
16
1856
1771
8355
830
78
5.3
10.38'
45
16.0
21.3
5.75
390
3430

50 330
48
48
5280
50
280
250
30
45.6
50
1056
1056
1°45'
190830
50120
150
205
250
330
5.3
990
1650
174
150
200
2490
500
16
30
436
5948
450
30
50
300
16
4.75
50
430
300

430
936
1414
936
2350
936
3326
936
4302
936
5238
936
10214
936
19115
936
102126
936
936
104038
936
105014
936
775
16.00
2376
16.
3975
1600
5575
1600
7175
1600
2775
1600
1600
10375
1000
13575
1600
15175
1600
16775
1600
18375
1600
75

- 16-136' ①
- 32-302' ② LF 223+095
- 48-4048' ③
- 64-624' ④
- 80-800' ⑤
- 95.75-824'30" ⑥

775
30
2325
200
32
50
32
62
384

$$E = T \tan \frac{1}{4} I$$

$$T = R \tan \frac{1}{2} I$$

$$L = \frac{\frac{1}{2} I}{\text{Def. for } 1}$$

$$\tan 25^\circ 26' = 9.677357$$

$$\tan 12^\circ 43' = 9.353614$$

$$\begin{array}{r} 2.380211 \\ 9.677357 \\ 2.057568 \quad T = 114.17 \\ 9.353614 \\ \hline 1.411180 \quad E = 25.78 \end{array}$$

28° curve.

$$T = R \tan \frac{1}{2} I$$

$$E = T \tan \frac{1}{4} I$$

$$E = R \tan \frac{1}{4} I \tan \frac{1}{4} I$$

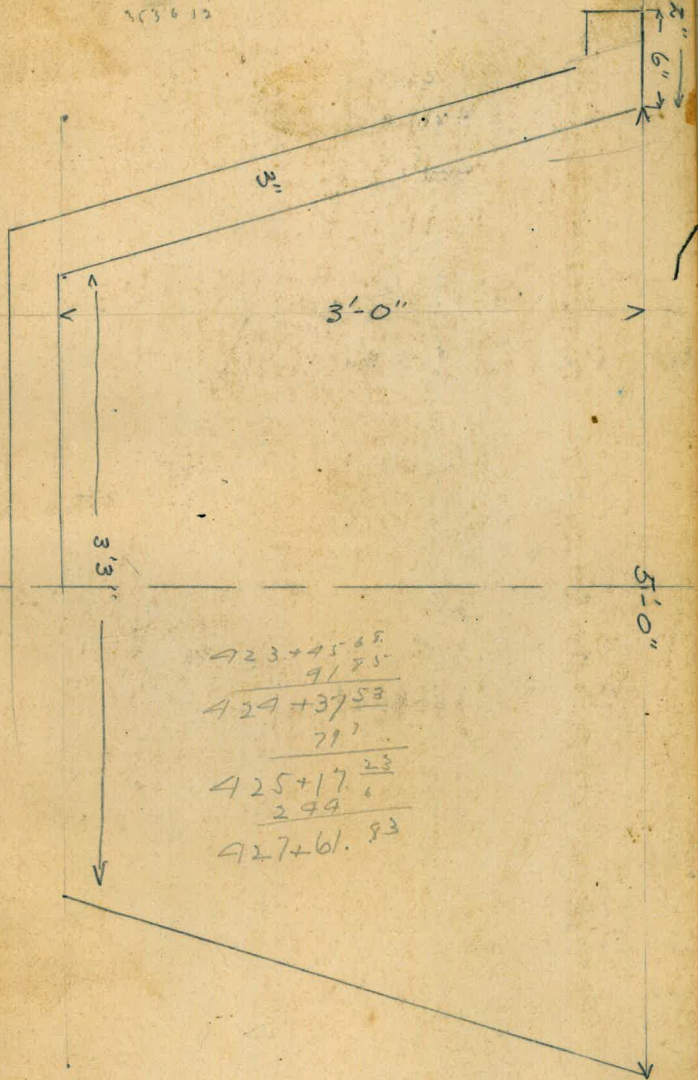
$$\begin{array}{r} 2.380211 \\ 9.677224 \\ 9.498662 \\ 1.296097 \end{array}$$

$$19.78$$

$$1997435$$

$$\begin{array}{r} 354053 \\ 9353465 \\ 0588 \\ 127 \\ 354200 \\ 353612 \end{array}$$

$$\begin{array}{r} 9.677194 \\ 677520 \\ 54710 \\ 77357 \end{array}$$



183750
183717.90

125530

121.69

5°07'

3°07'

8°14' New Δ

L 226 + 0087
1 2169

L - 22 2256

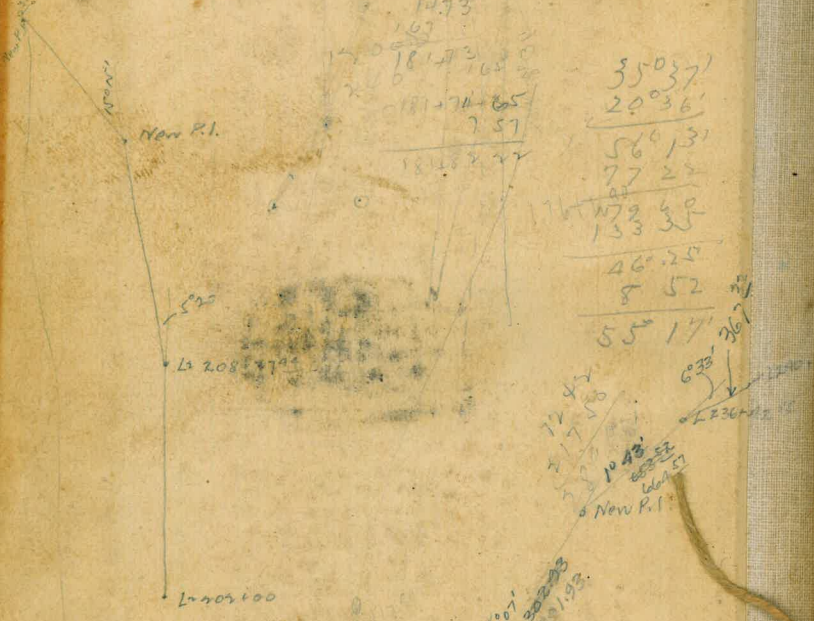
821.20

37.28

699.41

737.28

322.05 from P.I. of 1837
to P.C.



1479
1473
107
181.73
181.74 + 65
7.57
184.62 27
350371
200361
560131
77 22
179 60
133 35
46.25
8 52
55 17

New P.I.
New P.I.
New P.I.

707 m #15 1' above flat. L 254 87.94 84 87
#16 1' above flat L 268 92.75 84

534
New P.I. old P.I.
New P.I. 222 + 22.50
81

136
224
118
312

P.O.R. 277+705 level of cond should be
at least 6' higher

6129.

4213

855.50
30
175.30

103 42

17960

103842

130

37

92

18

259

76.18

3641

38

782

4194 95 33 11 2 59

1 + 71

421 + 66 55

117960

11259

567016

3503

10238



117960

10238

1877.225

8370

2197

61.29

18430

7460

257