

284 D

ENGINEERS
FIELD BOOK
No. 404 F

W.284 D

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.0 ft. above grade, how high is it from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be $30.6 + (20 - 16) \times 2$ or 2 ft. added to $30.6 = 32.6$. For slopes of 1 on 1½ see inside of back cover.

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July 14th offset 347-50 Levels + Cuts 284-D
333-00
14-50
342
1400

July 15th offset 333-00 Levels + Cuts 343-00
320-00
1300
333-00
900

July 16th offset 333-00 Levels + Cuts 333-00
323
1000

July 17th offset 320-00 Levels + Cuts 323-00
306-50
1350
306-50
1600

July 18th offset 278-75 Levels + Cuts 278-75
255-00 -300
244-100
235-25

July 19th offset 278-75 Levels + Cuts 278-75
255-00
2300

July 20th offset 306-50 Levels + Cuts 298-00
298-00
792-50
235-25
233-55-00
169-00

July 21st offset 254-00 Levels + Cuts 254-00
244-20-00
1000
254-00
1567-00

MICROFILMED

JAN 1 1965

Otoy Res. San Diego 2nd Main Pipeline

Index

Pages 1 to 53

Finish grades 240+00 to 265+85

2.75

378.66

375.91 = B.M. #65

T.P. 12.82 365.84

0.33

366.17

365+85³⁵

X

9.48 356.69

T.P. 12.77 353.40

0.86

354.26

365+59⁹⁴

3.52 350.74

2.52 351.74 = out 10 set on E.

365+29⁵⁴

8.96 345.30

7.96 346.30 = out 10 set on E.

364+99⁷⁰

K.G.

12.05 342.21

364+69⁷¹

12.75 341.51

364+39⁷⁵

X

11.08 343.18

7/26/30

Simpson

Keeky

Bliss

clear and warm

364+00	↑	354.26	7.26	347.00	
	-26%				
363+79 $\frac{53}{-}$	X		5.30	348.96	
	N.C.				
363+49 $\frac{56}{-}$	X	T.P.	3.86	350.40	
	1.08	351.48			
	00%				
363+30 $\frac{23}{-}$	X		1.08	350.40	
363+00 $\frac{25}{-}$			2.27	349.21	
	N.C.				
362+70 $\frac{46}{-}$			5.84	345.64	
362+41 $\frac{06}{-}$	X		11.77	339.71	
			10.77	340.71	= cut 10 Set aside

7/26/30
Simpson
Lecky
Bliss

clear and warm

		351.48	
		T.P. 12.92	338.56
362+00	0.28	338.84	
	X	9.13	329.71
		T.P. 12.72	326.12
	0.62	326.74	
361+60	X	5.14	321.60
		5.14	321.60
		4.14	322.60 = cut 10
			set in
			side Bank
361+00		2.10	324.69
		T.P. 0.48	326.26
	12.79	339.05	
360+50		4.27	334.78
		3.27	335.78 = cut 10
		T.P. 0.03	339.02 = set 8
	12.67	351.69	
360+00	X	6.79	344.90
		5.79	345.90 = cut 10
			set in
			side
		T.P. 2.27	351.42
	12.91	364.33	

7/26/30
 Simpson
 Lecky
 Bliss

		364.33	
359+50	- 15.00	11.93	352.40
		10.93	353.40 = cut 10
			Set on
			Side Bank
359+00	X	4.43	359.90
358+50		T.P. 0.63	363.70
	10.44		374.14
358+00	- 7.60	6.64	367.50
357+50	X	2.84	371.30
357+00		0.84	378.30
		T.P. 0.98	373.16
	8.04		381.20
356+50	- 4.00	5.90	375.30
356+00	X	3.90	377.30

7/26/30
 Simpson
 weekly
 Bliss

clear and warm

B.M. #64. El. = 386.34

60' Rt. Sta. 356+00 - Top A.V.

	↑	0.0%	381.20	
355+30 ⁰⁶	X		3.90	377.30
355+00 ⁰⁸	V		5.02	376.18
		T.P.	5.06	376.14
			388.20	386.34 B.M. #64
354+70 ²⁷	X	1.86	375.98 T.P.	13.06
		0.84	3.14	372.84
			2.14	373.84 = cut 10' Set in side Bank
354+50		+ 15.0%	6.18	369.80
354+14 ⁸⁵	X		11.75	364.53
			T.P.	13.03
				362.95
353+85 ⁴¹	X	0.57		363.52
			4.74	358.78
353+50		+ 24.133%		350.22
			11.30	352.22 = cut 2' Set in side Bank
			T.P.	12.96
				350.56
		0.36		350.92

↑
7/6/30
Simpson
Leeky
Bliss
Clear and warm

7/28/30
Simpson
Leeky
Bliss
↓
Clear and warm

		350.92	
		T.P. 10.39	340.53
353+25	0.36	340.89	344.19
353+00		2.74	338.15
		T.P. - 12.98	327.91
	0.0	327.91	
352+75			332.12
352+50		1.81	326.10
352+24 ²⁹		6.91	321.00
351+94 ⁶⁹		11.79	316.12
		T.P. 12.35	315.56
	7.49	323.05	
351+64 ⁸³		9.86	313.19

7/28/30
Simpson
Lecky
Bliss

Clear and warm

B.M. #63 - E.I. = 320.87

32' Rt. Sta. 351+50 - Nail in Top of Hub,

351 + 34 ⁸⁵

↑
323.05

X

10.84 312.2125

0.00

350 + 84 ²⁵

X

10.84 312.2125

T.P. 0.02 323.03

12.77 335.80

350 + 63 ⁶⁶

11.70 324.10

350 + 50 ⁴¹

4.66 331.14

T.P. 0.03 335.77

12.79 348.56

↓

350 + 36 ⁷¹

11.33 337.23

350 + 22 ⁶¹

6.21 342.35

350 + 08 ¹⁸

X

2.09 346.47

7/28/30
S. Simpson
Lecky
Bliss

		348.56		
		T.P. 0.08	348.48	
349+75	12.60	361.08		
		6.38	354.70	
349+54 ¹⁸	X	1.22	359.86	
		T.P. 0.09	360.99	
	13.28	374.27		
349+24 ⁸¹	K.C.	8.29	365.98	
348+95 ⁰⁷	X	4.59	369.68	
348+50	X	T.P. 0.72	373.55	
	5.89	379.44		
348+00		5.16	374.28	
347+50	X	4.44	375.00	

7/28/30
Simpson
Lecky
Bliss

clear and warm

B.M. #62 - E1 = 389.76

R.L. Sta. 347+33 - Top A.V.

379.44

+25
347+00

5.69 373.75

6.94 372.50

5.0 %
+346+65⁰²

X

8.69 370.75

T.P. 10.50 368.94

0.36 369.30

40

346+35²²

X

2.08 367.22

346+00

8.71 360.59

T.P. 12.96 356.34

0.31 356.65

18.8 %
+

345+75

355.89

345+50

5.46 351.19

T.P. 12.79 343.86

0.53 344.39

9

7/28/30
Simpson
Lee Ky
Bliss

345+25 ↑ 344.39 346.49

18
90
+

345+00 X 2.59 341.80

344+83 ²⁵ 6.85 337.54

344+54 ⁴⁵ 13.29 331.10

U
X T.P. -12.95 331.44
0.39 331.83

344+24 ⁷³ 7.84 326.99

343+94 ⁷⁸ X 6.57 325.26

7/28/30 Clear and warm
Simpson
Weekly
Bliss

331.83

343+60
+50

1.81 9/10

7.38 324.63
324.45

+

343+25

X

7.83 324.00

-2.0 9/10

342+85 ^{9/1}

X

7.04 324.79

342+55 ^{9/5}

5.38 326.45

342+25 ^{6/9}

KO

1.59 330.24

T.P. 0.46 331.37

12.93 344.30

341+96 ^{2/8}

8.17 336.13

341+67 ^{3/5}

X

0.21 344.09

T.P. -0.22 344.08

12.73 356.81

7/28/30
Simpson
hooky
Bliss

Clear and Warm

			356.81	
341+50			7.28	349.53
		T.P.	0.00	356.81
	12.73	↑	369.54	
		31.38%		
341+25				357.38
		X		
341+05 ⁶⁸			6.09	363.45
		T.P.	0.32	369.22
	12.57			381.79
		Z		
340+76			10.59	371.20
		K		
340+47 ¹⁷			5.34	376.45
		T.P.	0.11	381.68
	11.95			393.63
			3.01	390.62 = check on
	3.01			390.69 = Record E1
			11.95	381.70 = T.P. Set
340+17 ²⁹	9.05			390.75
		X		
			11.38	379.17

↑

7/28/30
Simpson
Lecky
Bliss

B.M. #61

in Side Bank, sta 340+00

7/30/30
Simpson
Lecky
Bliss

↓

clear and warm

clear and warm

		390.75	
340+00		10.75	380.00
339+50		8.35	382.40
	- 4.80%		
339+00		5.95	384.80
338+75	X	4.75	386.00
338+50		4.93	385.82
		3.73	386.82 = cut 1 st set in side Bon
	+ 0.71%		
338+00		5.29	385.46

7/30/30
Simpson
Leeky
Bliss

clear and warm

B.M. #61 - El. = 390.64

Top of Air Valve - Rt. Sta. 338+00

390.75

337+60

+50

+ 0.71%

385.18

5.64

385.11

337+30⁰⁷

X

5.78

384.97

337+00⁰⁹

1.5

6.90

383.85

336+70²⁸

X

10.33

380.42

T.P. 12.84

377.91

1.41

379.32

336+50

+ 1.5%

2.02

377.30

336+09⁷⁷

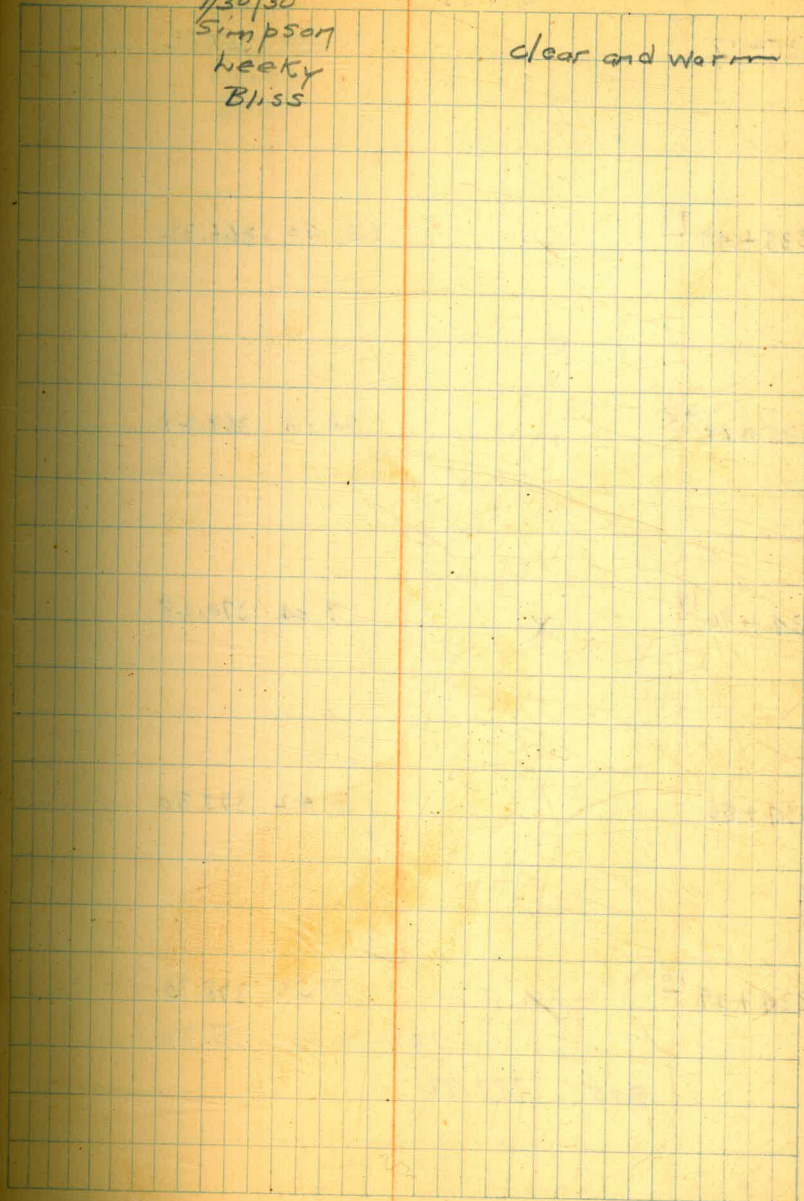
X

8.22

371.10

7/30/30
Simpson
heeky
Bliss

clear and warm



335+79 ⁹⁴ 379.32
11.70 367.62 ✓

335+49 ⁹⁷
13.00 366.32

335+19 ⁹⁸
12.11 367.21

334+90 ¹⁴ X
9.04 370.28

334+50
3.42 375.90

334+29 ⁷⁶ X
0.59 378.73

T.R. 0.60 378.72

9.05 387.77

7/30/30

Simpson
Lecky
Bliss

Clear and Warm

333 + 99 ⁹³ 387.77 5.84 381.93

K.C.

333 + 69 ⁹⁸ X 4.59 383.18

333 + 20 ²⁹ X 4.13 383.64

332 + 90 ²⁶ K.C. 5.09 382.68 ✓

332 + 60 ⁴⁵ 8.51 379.26

T.P. 13.05 374.74

0.55 375.27

332 + 31 ⁰³ X 1.86 373.41

7/30/30 clear and warm
Simpson
Lecky
Bliss

BM # 61-E1390.64

332+00 375.27
 9.37 365.90
 T.P. 12.98 362.29
 0.41 362.70

331+75 359.85

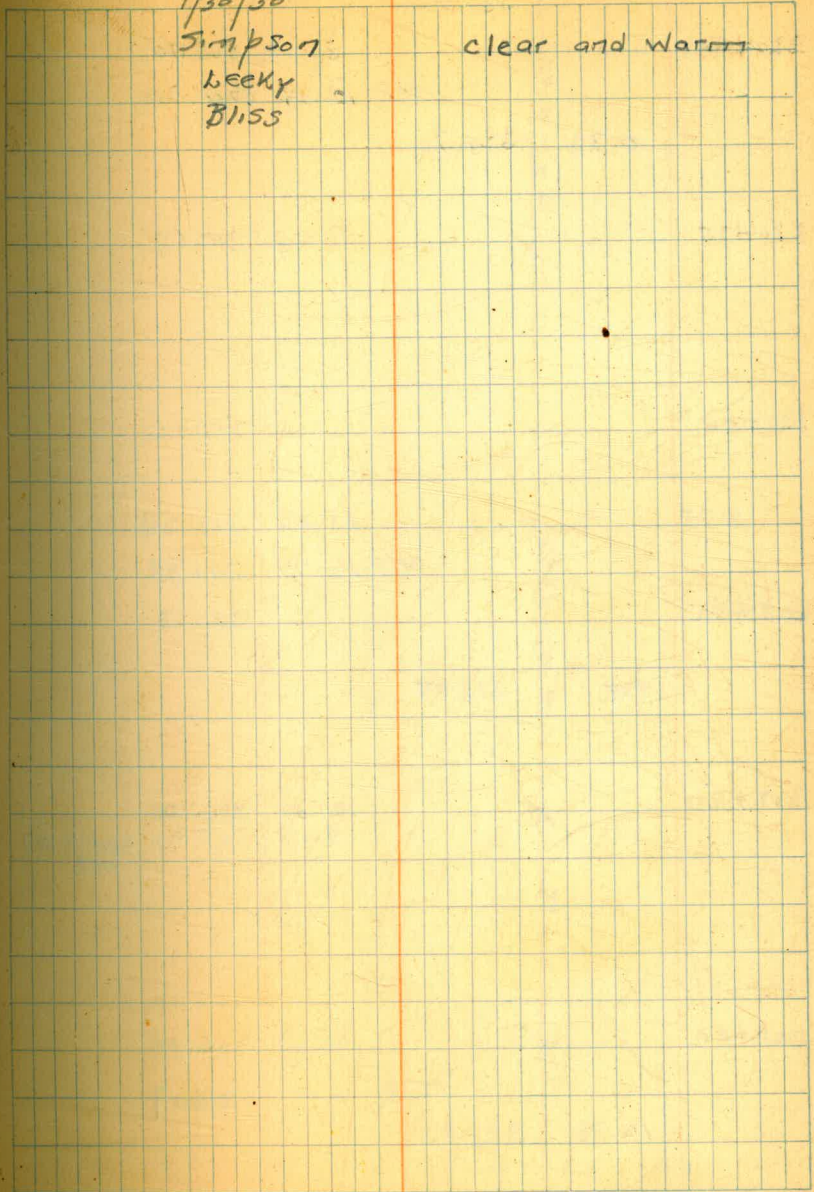
331+50 8.90 353.80
 T.P. 12.90 349.80
 0.36 350.16
 + 24.2%

331+25 347.75

331+00 8.46 341.70
 T.P. 13.07 337.09
 0.34 337.43

330+75 335.22
 + 25.91%

7/30/30
 Simpson
 Becky
 Bliss
 clear and warm



330+50 337.43
 8.69 328.74

T.P. 13.09 324.34

0.36 324.70

↑
 + 25.91070

330+15 X 3.03 319.67

330+00 317.26

+75 11.46 313.24

T.P. 12.77 311.93

329+65 311.63

↑
 + 16.08890

4.14 + 316.07

329+30 X 10.07 306.00

9.07 307.00 = cut 10 set on 6.

↑
 0.00

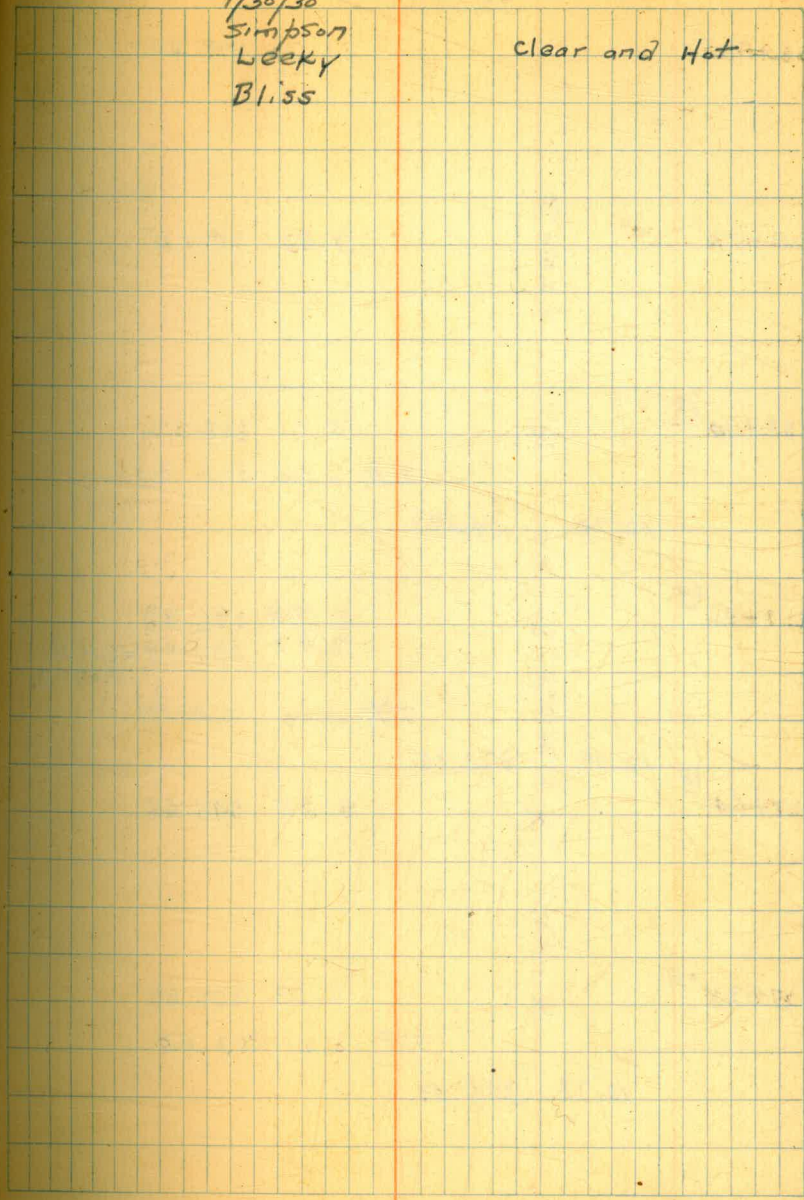
329+00 X 10.07 306.00

T.P. 0.00 316.07

12.76 328.83

7/30/30
 Simpson
 Leeky
 Bliss

clear and Hot



328.83

328+75-

312.50

328+50

26.0%

9.83 319.00

328+14⁵³-

X

0.61 328.22

T.P. 0.60 328.23

12.74 340.97

327+85⁸⁹-

X

3.99 336.98

2.99 337.98 = cut 1°
set on 2

T.P. 0.00 340.97

12.99 353.96

327+64¹⁸-

X

9.35 344.61

LC

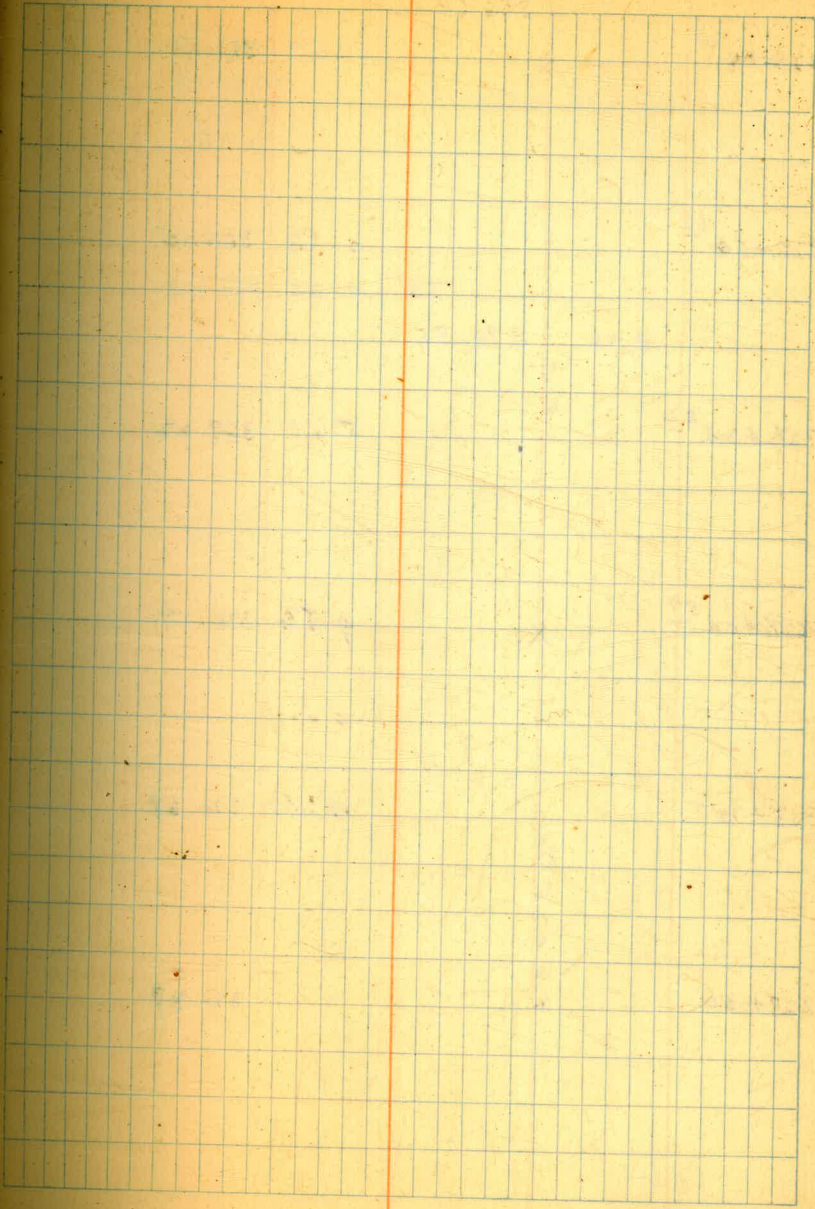
327+35²⁸-

X

1.33 352.63

T.P. 0.01 353.95

12.73 366.68



326+94²³ X 366.68
 5.59 361.09

326+64⁶⁶
 0.53 366.15
 T.P. 0.55 366.13
 8.72 374.85

326+34⁸² V.C. 5.63 369.22

326+04⁸⁹ X 4.56 370.29

325+75 4.57 370.28

325+50 + 0.025 070 370.27

7/30/30
 Simpson
 Weekly
 Bliss

Clear and warm

377.85

21

325+00

4.59 370.26

324+50

4.60 370.25

324+25

4.61 370.24
3.61 371.24 = cut 1st set
in Side Bank

324+00

4.61 370.24
3.61 371.24 = cut 1st set
in Side Bank

323+75

see opp page
382.924.62 370.23
3.62 371.23 = cut 1st set
in Side Bank

- 323+50

370.22

+37

+ 0.02
+ 0.00
+ 0.00

12.70 370.22

323+00

1.90

372.95

T.P.

11.87 371.05 = set T.P.
inside Bank

2.74 370.21

322+50

1.89
1.11

3.33 369.62

B.M. # 59 - El. 390.64

60' Rt. Sta. 324+18 - Top A.V.

390.64 = B.M. # 59

3.32 373.96

12.65 - 381.31

1.61 382.92

7/30/30
Simpson
Lecky
Bliss

11.65

371.27 = check on

1st cut Sta.
Sta. 323+75

clear and warm

8/1/30
Simpson
Lecky
Bliss

clear and warm

8/1/30
Simpson
Lecky
Bliss

clear and warrant

372.95

322+00

3.92 369.03

+68²

4.19 368.76

321+50

4.41 368.44

321+42⁵⁶

X

4.60 368.35

19
118
152
19
3242

321 + 12⁶ 372.95 6.05 366.90

K.C.

320 + 82⁸² X 9.70 363.25

T.P. 12.75 360.20

0.73 360.93

320 + 50 2.93 358.00

+ 25 6.93 354.00

+ 16.00%

320 + 00 10.93 350.00

T.P. 12.87 348.06

0.59 348.65

319 + 50 6.65 342.00

T.P. 12.86 335.79

0.59 336.38

319 + 00 X 2.38 334.00

8/1/30
Simpson
Lecky
Bliss

clear and warm

318+50	336.38	7.38	329.00	
	+ 10.0 %	6.38	330.00	cut 1 st set in Side Bank
318+00	X	12.38	324.00	
		T.P. 12.75	323.43	
	0.32		323.75	
317+50	+ 15.0 %	7.25	316.50	
		6.25	317.50	cut 1 st Set in Side Bank
		T.P. 12.92	310.83	
	0.90		311.73	
317+00	X	2.73	309.00	
316+50		6.73	305.00	
	+ 8.0 %			
316+00		10.73	301.00	
		T.P. 10.72	301.04	
	2.63		303.64	

8/1/30
Simpson
wecky
Bliss

Clear and Hot

		303.69		
315+50	8.68%		6.64	297.00
			T.P. 6.63	297.01 on Grade Sta. 315+50
	10.82 +	307.83		
315+12 ⁵	X		13.83	294.00
			12.83	295.00 - cut 12 Sat on 12
	0.0%			
314+82 ⁷⁰	X		13.83	294.00
314+55			11.83	296.00
314+50	2.255%		10.83	297.00 - cut 10 set in side Bank
				296.37
+30	-		10.01	297.82 set to grade
314+00	X		7.83	300.00
	26.667%			
313+75				306.67
		T.P. 0.14		307.69.
313+70	11.31	319.00	11.00	308.00

↑
8/1/30
Simpson
Lee Ky
Bliss
clear and Hot

8/4/30
Simpson
Lee Ky
Bliss
Clear and Warm

313+50 ↑ 319.00
 - 26.667 % 313.33

313+40 X 3.00 316.00
 T.P. 0.14 318.86
 13.05 331.91

313+00 -18.647 % 8.45 323.46

312+69 ⁴⁸ X 2.76 329.15
 T.P. 0.29 331.62
 6.75 338.37

312+39 ⁷⁸ - 4.96 333.41

8/4/30

Simpson

becky

Bliss

clear and warm

B.M. # 57 - El. = 336.42

50' Rt. Sta. 312+00 - Top. A.V.

312+09 ⁸⁴ 338.37
 3.10 335.27

V.C.

311+79 ⁸⁴ X
 3.66 334.71

311+50 + 5.89 9/10
 5.42 332.95

311+14 ⁹⁹ X
 7.78 330.89

V.C.

310+85 ¹⁵ X
 10.57 327.80

T.P. 12.98 325.39

0.45 325.84

8/4/30
 Simpson
 Heeky
 Bliss

clear and warm

327.8
 6.9
 334.7
 2.3
 337.0
 6.6
 330.4
 8.3
 8.1

		325.84		
310+50			3.56	322.28
310+25				318.35
310+00			11.41	314.43
			10.41	315.43
				= cut 10 set in Side Bank
309+87 ²²			13.42	312.42
			12.42	313.42
				= cut 10 set in Side Bank
309+72 ⁰⁷ P.O.T.				
309+78 ⁰⁹ P.T.			11.36	314.48
309+50			7.55	318.29
				318.00
309+30			4.81	321.00
			T.P. 0.23	325.61
			12.32	337.93

+ 15.705 070

X

-13.57 070
on account of
Equation
Wrong on the sheet.

X

+ 23.020

309+00

X

337.93

10.03

327.90

9.03

328.90 = cut 1st set
in side
bank

3

308+75

T.P.

2.28

335.65

8.00

0.70

343.65

3.10

1

308+50

X

0.25

343.40

308+25

0.92

0.70

392.40

1.21

1.00

380.78

T.P. 12.83

12.47

399.40

391.48 = B.M. 56

379.57

368.51

308+00

2.45

2.40

370.76

15.36

355.40

9.36

361.40 = set 6th cut
in side of old
W.S. Pipe307+79²³

X

10.37

360.39

7.37

363.39 = cut 3rd set
in side bank

336.42

1.50

337.92

↑
8/9/30
Simpson
Weeky
Bliss

8/7/30
Simpson
Weeky
Bliss

↓

clear and warm

307+49 ⁸³	↑	270.76	4.41	366.35
	V.C.			
307+20 ⁰⁷	X		0.54	370.22
		T.P.	0.51	370.25
		11.64		381.89
307+00				372.12
+75	-		7.41	374.48
306+54 ⁹²	X		5.51	376.38
			4.51	377.38
				= cut 12 set in side bank
306+24 ⁹⁷	V.C.		3.70	378.19
305+94 ⁹⁷	X		3.89	378.00

8/7/30
Simpson
Lecky
Bliss

Clear and Warm

B.M. # 56 - E1 = 391.48

Lt. Sta. 306+10 - Top Air Valve

381.89

305+67²⁸

5.00 376.89

305+50

5.69 376.20

T.P. 7.09 374.80

1.70 376.50

305+00

2.30 374.20

304+50

4.30 372.20

304+00

6.30 370.20

303+50

8.30 368.20

303+00

10.30 366.20

X

+ 4.00/0

8/7/30
Simpson
Hecky
Bliss

clear and warm

302+50	376.50		
		10.60	365.90
		T.P. 10.58	365.92
6.73	+ 372.65		
302+00	X	7.05	365.60
301+50		5.82	366.83
301+12 ⁴⁷	-		367.75
301+00	X	4.59	368.06
300+75			368.22
300+59 ⁶⁹		4.32	368.33
300+50			368.41
300+10 ⁰⁷	X	3.96	368.69
		2.96	369.69

cut 1st set on 1st

8/7/30
Simpson
Heeky
Bliss

299+80	$\frac{10}{-}$	↑	372.65	
		V.C.		2.55 370.10
				1.55 371.10 = cut 10 Set on 4
	12.82	T.P.	385.37	0.08 372.57
299+50	$\frac{39}{-}$	X		11.49 373.88
299+09	$\frac{66}{-}$			4.65 380.72
		T.P.	0.37 385.00	
	4.69	V.C.	389.69	
			85.10	
			4.00	
298+79	$\frac{89}{-}$	V.C.	85.79	
			3.90	
			5.22 384.47	
			4.22 385.47 = cut 10	Set on 4
298+49	$\frac{92}{-}$	X		3.95 385.74
		-0.10%		
298+03	$\frac{92}{-}$			
			North Portal Tunnel #	9 = 385.79
		↓		

↑
8/7/30
Simpson
Jacobszoon
Necky
Remmer

B.M. #55 - El. = 394.49

S.E. Cor. concrete cap at North
Portal Tunnel #4

$287+12 \frac{95}{42} =$
 $287+08 \frac{42}{42} =$ South Portal Tunnel # 386.88
 286+97 $\frac{95}{42}$ 386.90
 2.96 394.87 391.91 = B.M. #53
 286+67 $\frac{56}{42}$ 8.91 385.96
 7.91 386.96 = cut 1st
 Set in Side Bank
 286+50 385.40
 286+40 9.79 385.08 = Grade
 Set
 286+25 384.60
 286+06 $\frac{63}{42}$ 10.85 384.02
 8.85 386.02 = cut 2nd
 Set in Side Bank
 285+75 11.86 383.01
 10.86 384.01 = cut 1st Set
 in Side Bank



B.M. # 54 - El = 395.18
 top of concrete cap S.W. corner # 4
 South Portal # 4

0.24 392.15 391.91 = B.M. # 53
 4.05 + 3.18% 386.41 T.P. 9.79 382.36

285+50

X

382.20

+25

285+00

cut 1" set out

4.21 382.20

284+75

4.21 382.20

284+50

4.21 382.20

284+15⁵

0.00%

4.21 382.20

283+75

X

4.21 382.20

8/9/30

Simpson

clear and warm

Jacobszoon

heeky

Remmer

↓

283+50	↑ 0% + 6.93	386.41	5.94	380.47
283+00	X		9.41	377.00
			T.P. 9.43	376.98
		4.36		381.34
282+50			4.50	376.84
282+00			4.66	376.68
281+50	+ 0.32070		4.82	376.52
			3.82	377.52
				-Cut 1 st set in side Bank
05 ²²			4.96	376.38
281+00			4.98	376.36
280+75			5.06	376.28
280+50	X		5.14	376.20
		0.19	T.P. 5.13	376.21
				376.40

8/9/30
Simpson
Lecky
Remmen
Jacobs 2007

	↑	376.40	
280+25	+ 7.9%		2.23 374.17
280+00			7.15 372.25
279+80	X		5.73 370.67
279+50 ⁰¹	0		6.76 369.64
279+20 ⁰⁶	X		5.11 371.29
279+00			3.10 373.30
			T.P. 3.11 373.29
		11.24 384.53	
278+75			8.73 375.80
			7.73 386.80 = cut 10 Set on E
278+50	10.0%		378.30
278+39 ⁹⁴	X		5.22 379.31

8/9/30
Simpson
Leeky
Remmer
Jacobszoon

clear and warm

				384.53	
278+09	⁹⁸				
					3.73 380.80
277+85	³⁹				
					3.65 380.88
277+55	⁴⁰				
					4.75 379.78
					3.75 380.78 <small>cut 1°</small>
					391.91 - B.M. <small>Set in side Bank</small>
277+25	⁵⁶	0.53	2.79	394.70	12.95 381.75 ⁵²
					382.28 <small>T.P.</small>
					5.57 376.71
					4.57 377.71 <small>cut 1° set in side Bank</small>
276+96	⁵				
					10.66 371.62
					9.66 372.62 <small>cut 1° set in side Bank</small>
276+66	⁸⁵	0.29		369.78 <small>T.P.</small>	12.79 369.49
					5.26 364.52
276+50					
					9.98 359.80
					0.33 357.10 <small>T.P.</small>
					12.91 356.87
276+25					
					6.40 350.80
					0.33 344.99 <small>T.P.</small>
					12.54 344.66
276+00					
					341.80

B.M. #52 - El. = 391.91

60' Rt. Sta. 277+80 - A.V.

8/9/30

Simpson
Jacobson
Lecky
Remmen

8/11/30

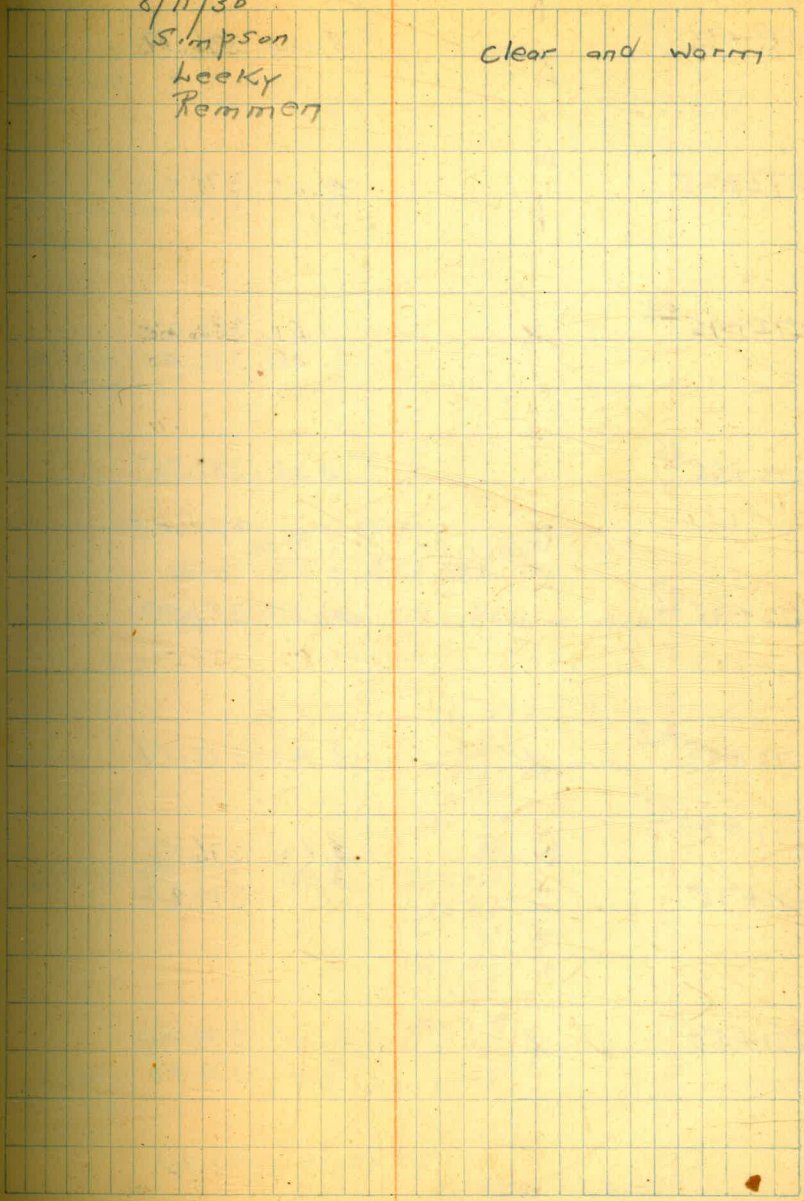
Simpson
Lecky
Remmen

Clear and warm

275+85	X	344.99	8.59	336.40	
			6.59	338.40	- cut 28 set in side Bank
275+50			8.59	336.40	
275+12 ⁵	X		8.59	336.40	
			6.59	338.40	- cut 28 set in side Bank
		12.63	T.P. 0.28	349.71	
274+81 ⁴¹	X	357.34			
			9.00	348.34	
		12.84	T.P. 0.23	357.71	
274+53 ⁰⁴		369.95			
			17.87	358.08	
274+24 ⁰⁴			4.18	365.77	
		12.13	T.P. 0.07	369.88	
273+94 ⁵⁶		382.01			
			10.65	371.36	
273+64 ⁷⁶	X		7.19	374.82	

8/11/30
Simpson
leeky
Remmen

Clear and warm



Station	Notes	Dist	Height	Remarks
273+41 ⁹⁰		5.84	376.17	B.M. #1 How come?
273+25		4.01 3.01	378.00 379.00	cut 1 st set in side Bank
272+95 ⁰³	X	1.61 0.61	380.40 381.40	cut 1 st set in side Bank
272+65 ⁰⁶		0.26	381.75	
272+35 ⁰⁷	1.10	3.81.65 T.P.	1.46 380.55	
272+05 ²⁰	X	3.48	378.17	
271+93 ⁸⁷		4.85 3.95	376.70 377.70	cut 1 st set in side Bank
271+75			374.24	
271+50	X	10.65 9.65	371.00 372.00	cut 1 st set in side Bank
		0.83	369.58	T.P. 12.90 368.75

8/11/30
Simpson
hooky
Remmen

clear and Warren

B.M. # 51 - El = 392.97
60' RT. Sta. 272+60 - A.V

392.97
1.63
394.60
12.72
381.88
38
382.26
12.81
11.26
369.45
0.83
370.28
5.14
375.14
13.14
579.7
7028
5714
1287
5797
7028

369.58

271+25

368.95

12.43

076

T.P. + 0.56

382.57

370.14

271+00

+ 19.27

+ 19.33

8.57

361.01

361.34

270+80

X

357.14

47 ← Revision

270+21

7

X

357.14

47

269+93⁰¹

16.66

365.91

13.66

368.91

Cut 3° set
in side Bank

269+63

25

10.03

372.54

V.C.

269+34⁰⁸

5.59

376.98

269+04¹⁶

3.36

379.21

268+74¹⁶

X

3.35

379.22

41

8/11/30

Simpson

hooky

Remmen

clear and warm

382.57

268+50

4.23 378.34
3.23 379.34 = cut 10
Set in Side
Bank

268+00

6.07 376.50
5.07 377.50 = cut 10
Set in Side
Bank

+59 ⁷⁵

267+50

7.55 375.02
374.66
T.P. 7.58 374.99³⁶

X 3.67 970

267+00

1.56 376.55
2.81 373.74
372.82

266+97 ⁹²

X 3.79 372.76

266+67 ⁹⁸

5.77 370.78

266+38 ²²

0.52 367.55
T.P. 9.52 367.03

KC

266+08 ⁷³

6.02 361.53

0.54 355.01
T.P. 13.08 354.47
Set in Side
Bank

265+77 ⁶¹

X 0.71 354.30

B.M. #50 - E1 = ^{393.27}
~~392.96~~

60' Pt. - Sta. 268+33 - A.V.

↑
Simpson
Lecky
Remmert

8/11/30

Bliss
Jacobszorn
8/11/30
↓

Clear and Warren

265+50	↑	355.01	9.00	346.01
T.P.	28.0%		11.96	343.05
	5.09 +	348.14		
265+15	X		11.94	336.20
			5.94	
			6.00	Cut = Red Top Stake
264+85	X		11.94	336.20
			9.94	
			2.00	Cut = Red Top Stake
264+70 ¹⁹			6.15	341.99
T.P.			0.34	341.80
	12.58	360.38		
264+42 ¹⁷			8.29	352.09
T.P.			0.22	360.16
	12.59	372.75		
264+13 ³⁰			12.57	360.18
			11.57	
			1.00	Cut = Red Top Stake
263+83 ⁹¹			6.54	366.21
			5.54	
			1.00	Cut = Red Top Stake
263+54 ¹⁷			2.58	370.17
263+24 ²³	X		0.73	372.02

8/12/30

81.55

Jacobszoon

B.M. # 19 - El. = 346.00

60' Rt. Sta. 265+10

Nail in sill of old Trestle # 22

263+00		372.75	0.08	372.67
T.P.			0.06	372.69
+79	2.07	374.76	1.43	373.33
262+50	X		0.76	374.00
262+00			0.76	374.00
261+50			0.76	374.00

0.0%

261+25	X		0.76	374.00
--------	---	--	------	--------

261+00				372.12
--------	--	--	--	--------

+ 7.5%

260+75			4.50	370.26
			3.50	
			1.00	cut = Red Top Stake

260+05	X		9.76	365.00
--------	---	--	------	--------

0.0%

Trestle O.K.

259+75	X		9.76	365.00
--------	---	--	------	--------

8/12/30
Bliss
Jacobszoon

B.M. # 48 - E1 = 392.43
60' Rt. Sta. 261+37 - A.V.

259+50	37476	367.00
259+25	5.76	369.00

259+00		371.00
258+86 ²³	2.67	372.09

258+75	X	1.76	372.00
--------	---	------	--------

258+50		1.46	373.30
T.P.		1.51	373.25

6.00 379.25

258+25		5.65	373.60
--------	--	------	--------

258+00		5.35	373.90
--------	--	------	--------

257+75		5.05	374.20
		4.05 =	375.20
		Cut 1.0 = Nail in Book	

257+50		4.75	374.50
--------	--	------	--------

8/12/30
B.L.S.S.
Jacobs 2007

B.M. # 47 - E.I. = 392.02

60' Rt. Sta. 257+85 - Top A.V.

257+25	↑	379.25	4.45	374.80
257+06 ¹²	1.2%		4.22	375.03
256+86 ⁵⁷	X		3.99	375.26
256+56 ⁵⁸			4.56	374.69
256+26 ⁷⁰	U		7.36	371.89
255+97 ⁰⁸			12.09	367.16
T.P.			12.80	366.45
255+67 ⁸⁴	0.66	367.11		
	X		6.69	360.42
255+40	X		14.11	353.90
255+10	X		14.11	353.00

X
 +26.02%
 X
 0.00%
 X

8/12/30
 B.L.S.S.
 Jacobszoon

clear and warm

 B.M. 46 - El. = 363.50
 60' R.L. Sta. 255+17
 Nail in sill of old Trestle #20

255+00	↑	367.11	354.65	
254.75			8.35	358.76
254+60				361.21
254+50				362.88
B.M. #46 - Nail in Sill			3.53	363.58
				363.50 Correct
		π 367.03		
254+39 ⁸⁹	X		2.47	364.56
T.P.			2.44	364.59
		10.85		375.44
254+09 ⁹²	X		8.08	367.36
253+75			7.24	368.20
253+50			6.64	368.80
253+00	X		5.94	370.00
252+50			5.96	367.48

8/12/30

B/ISS

Jacobszooom

clear and warm

B.M. # AS - El. = 393.24

60' Rt. Sta. 252+62 - Top A.V.

252+00

375.44

6.99 368.95

6.75 Pier 5 368.69

6.91 Pier 4 368.53

7.07 Pier 3 368.37

7.23 Pier 2 368.21

7.39 Pier 1 368.05

Tire stile
Out on grade

251+00

7.59 367.90

250+94⁹⁶

367.85

250+75

7.80 367.64

250+53⁰⁶

8.03 367.41

+ 1.05 070

250+25

8.32 367.12

250+00

8.59 366.85

T.P.

11.93 363.51

0.22 363.73

249+50

1.34 362.39

362.39
Grove Nail in Bank

+ 8.92 070

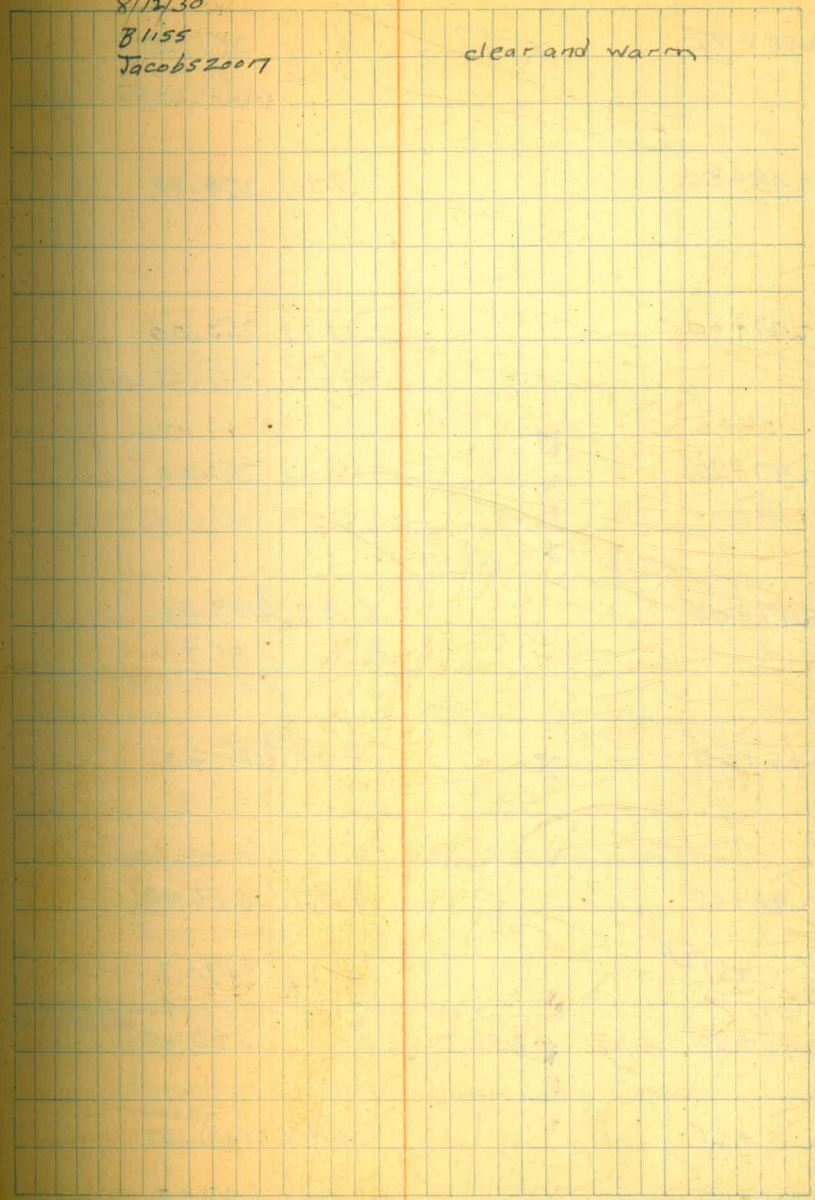
249+00

5.80 357.93

←

8/12/30
Bliss
Jacobs 2007

clear and warm



248+75
 X 363.73
 8.03 355.70
 7.03 356.70
 Cut 1.00 = Nail in Bank

248+50
 8.93 354.80

248+00
 10.73 353.00
 9.73 354.00
 Cut 1.00 = Red Top Side

247+50
 T.P.
 12.53 351.20
 12.54 351.19

+ 892.767

2.18 X 353.37

247+00
 3.97 349.40
 2.97 250.40
 Cut 1.00 = Nail in Bank

246+50
 X 5.77 247.60

246+00
 5.97 347.40

+57 57
 T.P.
 245+50 4.28 351.52
 6.14 347.23
 6.13 347.24
 347.20
 Grade Stake Sta 245+57.42

+25
 X 4.42 347.10

245+00
 X 4.52 347.00

↑
 8/12/30
 Bliss
 Jacobs 2001
 Clear and warm

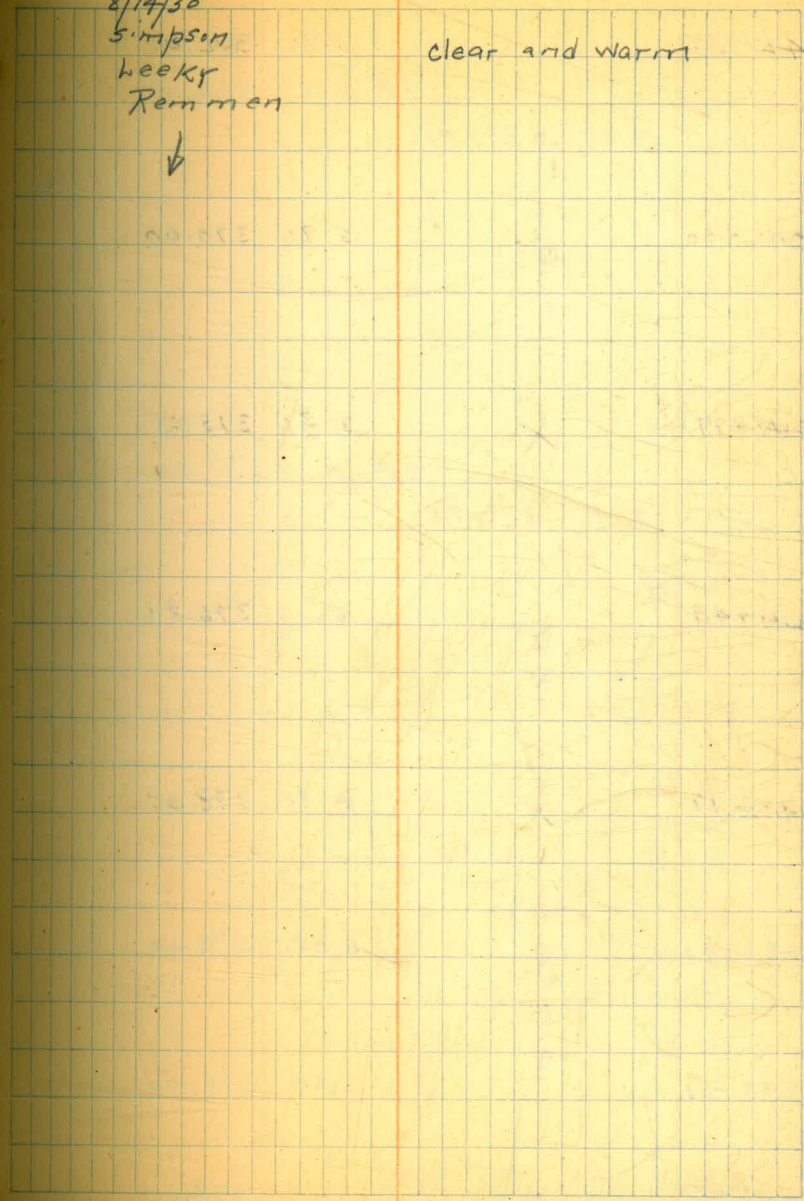
8/14/30
 Simpson
 Lecky
 Remmert
 Clear and warm

↓

+75			5.52	346.00
244+50	↑			345.00
1	0%			
	+			
244+40 ⁰²	X		6.92	344.60
	K.C.			
244+10 ⁰²	X		6.32	345.20
			5.32	346.20 = cut 18 set in Side Bank
244+00			5.52	346.00
	0%			
243+50	↓		1.52	350.00
	8.0		T.P. 0.33	351.19
	12.51			363.70
243+00	X		9.70	354.00

8/14/30
Simpson
Weekly
Remmen

Clear and warm



363.70

242+50

1.70 362.00

T.P. 0.17 363.50

12.38 375.91

242+00

5.91 370.00

241+79⁶⁹

2.66 373.25

T.P. - 0.11 375.80

7.18 382.98

241+49⁹⁰

6.17 376.81

241+19⁹³

7.98 378.00

241+00

4.98 378.00

240+50

4.98 378.00

240+00

378.00

51

8/19/30

Simpson
hooky
Remmen

clear and warm

B.M. #44 E.L. 389.85

R. - 283+43.

426.1
92

4 cut

$$131+75 \quad 392.4 \quad \frac{30^{\circ}}{20^{\circ}} \frac{26^{\circ}}{15^{\circ}} \frac{26^{\circ}}{10^{\circ}} \frac{26^{\circ}}{8^{\circ}} \frac{21^{\circ}}{6^{\circ}} \frac{17^{\circ}}{3^{\circ}}$$

$$132+00 \quad 392.4 \quad \frac{30^{\circ}}{20^{\circ}} \frac{28^{\circ}}{16^{\circ}} \frac{28^{\circ}}{10^{\circ}} \frac{27^{\circ}}{9^{\circ}} \frac{17^{\circ}}{6^{\circ}} \frac{14^{\circ}}{2^{\circ}}$$

$$132+25 \quad 392.4 \quad \frac{29^{\circ}}{20^{\circ}} \frac{28^{\circ}}{16^{\circ}} \frac{26^{\circ}}{11^{\circ}} \frac{21^{\circ}}{8^{\circ}} \frac{14^{\circ}}{2^{\circ}} \quad 8^{\circ}$$

$$132+47 \quad 392.4 \quad \frac{7^{\circ}}{15^{\circ}} \frac{5^{\circ}}{5^{\circ}} \quad 2^{\circ}$$

$$132+75 \quad 392.4 \quad \frac{30^{\circ}}{21^{\circ}} \frac{27^{\circ}}{16^{\circ}} \frac{26^{\circ}}{10^{\circ}} \frac{20^{\circ}}{7^{\circ}} \frac{16^{\circ}}{2^{\circ}} \quad 10^{\circ}$$

$$133+00 \quad 392.5 \quad \frac{30^{\circ}}{20^{\circ}} \frac{28^{\circ}}{16^{\circ}} \frac{21^{\circ}}{10^{\circ}} \frac{16^{\circ}}{2^{\circ}} \quad 6^{\circ}$$

$$133+50 \quad 392.5 \quad \frac{27^{\circ}}{20^{\circ}} \frac{25^{\circ}}{16^{\circ}} \frac{24^{\circ}}{13^{\circ}} \frac{23^{\circ}}{7^{\circ}} \frac{16^{\circ}}{2^{\circ}}$$

$$133+75 \quad 392.5 \quad \frac{28^{\circ}}{20^{\circ}} \frac{22^{\circ}}{16^{\circ}} \frac{21^{\circ}}{11^{\circ}} \frac{19^{\circ}}{8^{\circ}} \frac{18^{\circ}}{4^{\circ}} \quad 10^{\circ}$$

7.7 cut

12.4
5.9
6.7

$$\frac{2^{\circ}}{2^{\circ}} \frac{19^{\circ}}{5^{\circ}}$$

$$\frac{3^{\circ}}{1^{\circ}} \frac{2^{\circ}}{4^{\circ}}$$

$$\frac{3^{\circ}}{2^{\circ}} \frac{19^{\circ}}{5^{\circ}}$$

$$\frac{1^{\circ}}{7^{\circ}} \frac{12^{\circ}}{5^{\circ}}$$

$$\frac{2^{\circ}}{2^{\circ}} \frac{2^{\circ}}{5^{\circ}}$$

$$\frac{3^{\circ}}{4^{\circ}} \frac{2^{\circ}}{5^{\circ}}$$

$$\frac{2^{\circ}}{2^{\circ}} \frac{1^{\circ}}{5^{\circ}}$$

$$\frac{1^{\circ}}{5^{\circ}} \frac{0^{\circ}}{5^{\circ}}$$

21.7

15.7

Lt cut

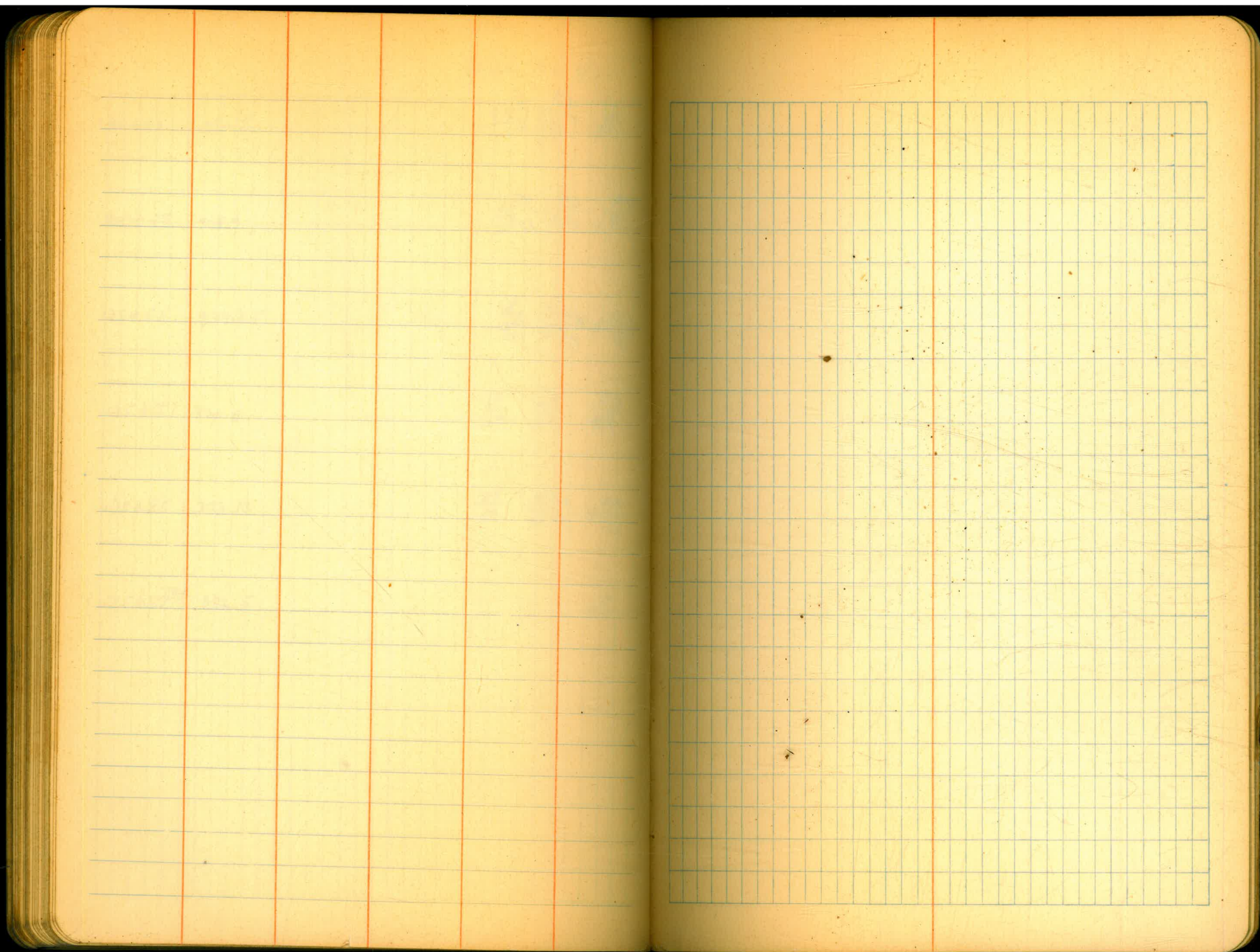
Rt cut

Station	Value	$\frac{20^{\circ}}{20^{\circ}}$	$\frac{19^{\circ}}{16^{\circ}}$	$\frac{19^{\circ}}{8^{\circ}}$	$\frac{18^{\circ}}{4^{\circ}}$	$\frac{2^{\circ}}{14^{\circ}}$
134+00	392.5					
134+17	392.5		$\frac{18^{\circ}}{20^{\circ}}$	$\frac{17^{\circ}}{16^{\circ}}$	$\frac{17^{\circ}}{7^{\circ}}$	13°
134+30	392.6	$\frac{16^{\circ}}{20^{\circ}}$	$\frac{16^{\circ}}{16^{\circ}}$	$\frac{16^{\circ}}{7^{\circ}}$	$\frac{13^{\circ}}{30}$	$\frac{7^{\circ}}{2^{\circ}}$ 55
134+67 ⁶³	392.6			$\frac{11^{\circ}}{12^{\circ}}$	$\frac{11^{\circ}}{6^{\circ}}$	8 ⁹
134+82 ⁶⁴	392.1		$\frac{9^{\circ}}{12^{\circ}}$	$\frac{8^{\circ}}{5^{\circ}}$	$\frac{8^{\circ}}{3^{\circ}}$	7 ³
134+97 ⁵⁶	390.57			$\frac{6^{\circ}}{10^{\circ}}$	$\frac{7^{\circ}}{5^{\circ}}$	7 ⁷
135+12 ³	388.05			$\frac{7^{\circ}}{10^{\circ}}$	$\frac{7^{\circ}}{5^{\circ}}$	7 ⁶
135+25	385.5		$\frac{7^{\circ}}{10^{\circ}}$	$\frac{8^{\circ}}{5^{\circ}}$		8 ²
135+38	382.8		$\frac{9^{\circ}}{10^{\circ}}$	$\frac{9^{\circ}}{5^{\circ}}$		10°

Station	Value	$\frac{0^{\circ}}{4^{\circ}}$	$\frac{0^{\circ}}{5^{\circ}}$
	385.19		
	11.90		
	397.09		
	90.57		
	6.52		
	97.09		
	84.05		
	90.4		
	97.09		
	85.5		
	11.6		
	97.09		
	82.79		
	14.30		

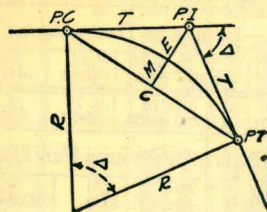
	Grade	L cut.	R cut.
135+50	380.3	$\frac{8^2}{10^2}$ $\frac{8^2}{5^2}$ 8 ⁹	
135+57	378.9	$\frac{5^2}{10^2}$ $\frac{5^2}{5^2}$ 5 ⁸	
135+68	377.45	$\frac{3^2}{10^2}$ $\frac{4^2}{5^2}$ 6 ⁰	
135+77	374.8	$\frac{3^2}{10^2}$ $\frac{7^2}{5^2}$ 4 ²	
135+85	373.13	$\frac{8^2}{5^2}$ $\frac{9^2}{2^2}$ 9 ¹	
135+87 ²⁸	372.5		9 ¹

R1 cut.		
$\frac{8^2}{5^2}$	$\frac{6^2}{11^2}$	$\frac{6^2}{15^2}$
$\frac{7^2}{6^2}$	$\frac{6^2}{13^2}$	$\frac{7^2}{18^2}$
$\frac{6^2}{5^2}$	$\frac{7^2}{7^2}$	$\frac{3^2}{17^2}$
$\frac{5^2}{7^2}$		
$\frac{9^2}{2^2}$	$\frac{9^2}{5^2}$	



DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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CURVE FORMULAS

Radius= $R = \frac{50}{\sin \frac{D}{2}}$ (1) Degree of Curve= D and $\sin \frac{D}{2} = \frac{50}{R}$ (2)

Tangent= $T = R \tan \frac{\Delta}{2}$ (3) Length of Curve= $L = 100 \frac{\Delta}{D}$ (4)

Middle ordinate= $M = R(1 - \cos \frac{\Delta}{2})$ (5) = $R \text{vers } \frac{\Delta}{2}$ (6)

External= $E = T \tan \frac{\Delta}{4}$ (7) = $R \div \cos \frac{\Delta}{2} - R$ (8) = $R \text{exsec } \frac{\Delta}{2}$ (9)

Long Chord= $C = 2 R \sin \frac{\Delta}{2}$ (10) Δ = Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I. = Sta. 161 + 60.35 to find Sta. of P. C. and P. T. $\Delta = 62^\circ 10'$ $D = 8^\circ 20'$. From Table IV for 1° curve $T = 3454.1$ and $+8\frac{1}{2} = 414.49$ ft. From Table V correction = .36 or $T = 414.85$ ft. P. C. = Sta. P. I. - $T = 157 + 45.50$. Also from (4) $L = 746.00$ and P. T. = Sta. P. C. + $L = 164 + 91.50$.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft. = 7.27 ft. Distance = $158 - \text{Sta. P. C.} = 54.50$, hence offset = $7.27 (54.50 \div 100)^2 = 2.16$ ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26) = 2.16$ ft.

Deflections.—Deflection angle = $\frac{1}{2} D$ for 100 ft., $\frac{1}{4} D$ for 50 ft., etc. For c ft. = (in minutes) $.3 \times C \times D^2$ or = defl. for 1 ft. from Table III $\times C$. For Sta. 158 of above curve = $.3 \times 54.5 \times 8\frac{1}{2} = 136.2'$ or $2^\circ 16.2'$, or = $2.50 \times 54.5 = 136.2'$ from Table III. For Sta. 159 deflection angle = $2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve $E = 960.6$ for $8^\circ 20' = 960.6 \div 8\frac{1}{2} = 91.27$ and from Table V correction = .10 or $E = 91.37$ ft. Or suppose $\Delta = 32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E = 230.9$ and $+42 = 5.5$ or $D = 5^\circ 30'$.

$$\begin{array}{r} 3 \ 6 \ 2 \ 8 \ 8 \\ 3 \ 5 \ 2 \ 6 \ 3 \\ \hline 3 \ 8 \ 2 \ 3 \end{array}$$

$$\begin{array}{r} 35463 \\ 411 \\ \hline 35876 \end{array}$$

$$\begin{array}{r} 14.11 \\ 1.30 \\ \hline 12.81 \end{array}$$

DISTANCES FROM CENTER OF ROADWAY FOR
CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.3. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be $41.9 + (20 - 16) \div 2$ or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.

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