

1821

DEPT. OF THE INTERIOR

MEMBERS

FIELD BOOK

No. 4035

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

F.B. 1821

This Field Book is manufactured of a High
Grade 50% Rag Paper having a **WATER
RESISTING SURFACE**, and is sewed with
Bing Special Enamel Waterproof thread.

Made in U. S. A.

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 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 $30.6 + (20 - 16) \div 2$ or 2 ft. added to $30.6 = 32.6$. For slopes of 1 on $1\frac{1}{2}$ see inside of back cover.
Copyright, 1914, by Eugene Dietzgen Co.

Main Sewer
ON
Napier St

9+05.07
Δ 0° 56' RT.

Denver St

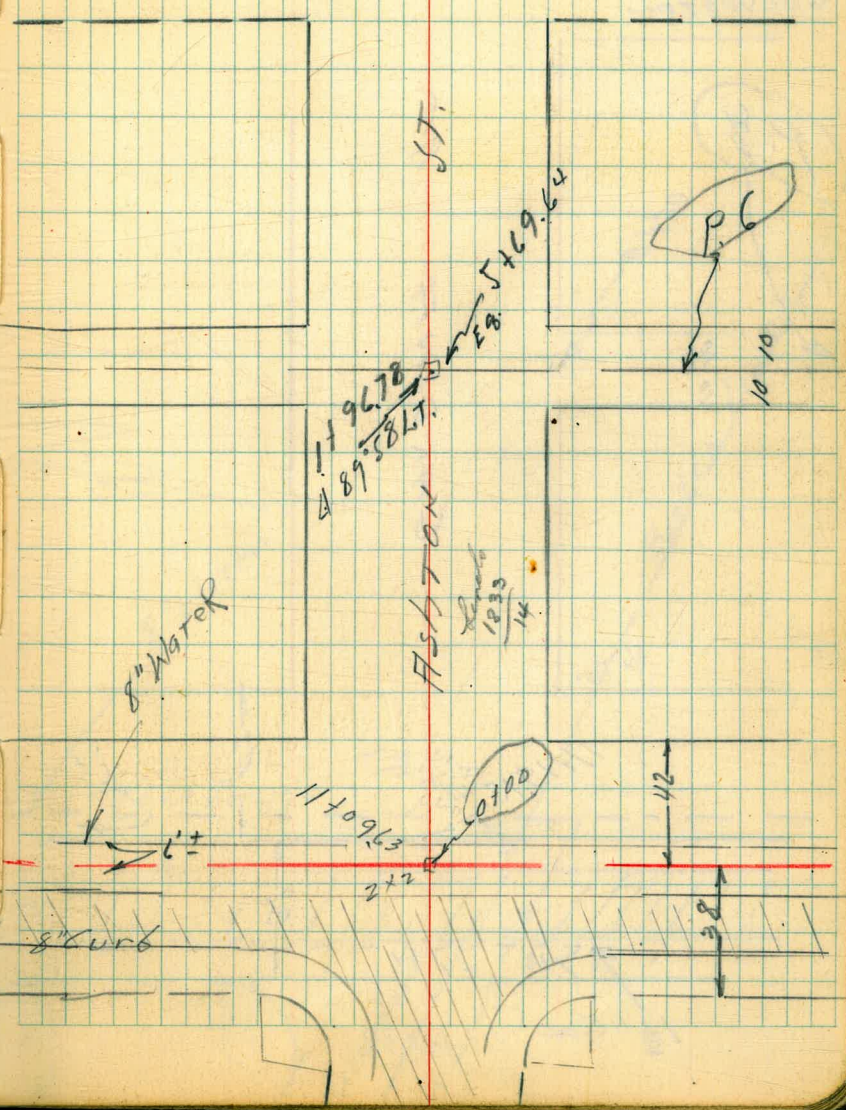
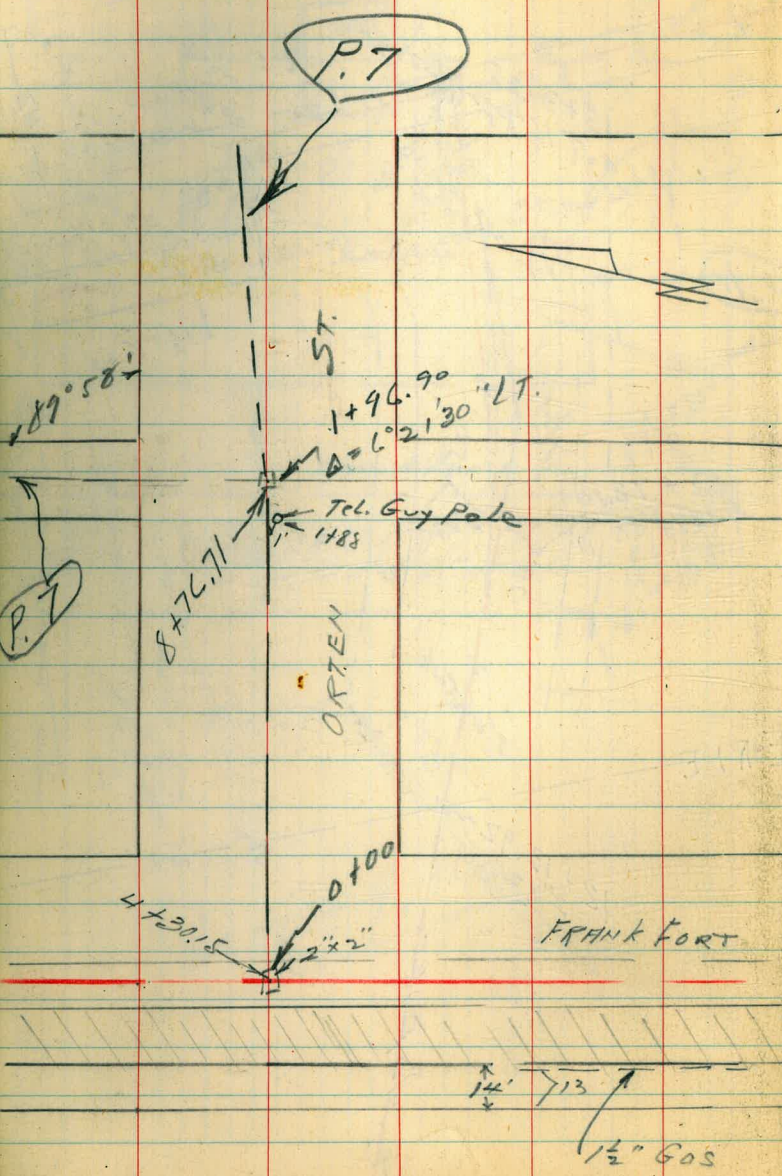
25+07.07

Goldfield

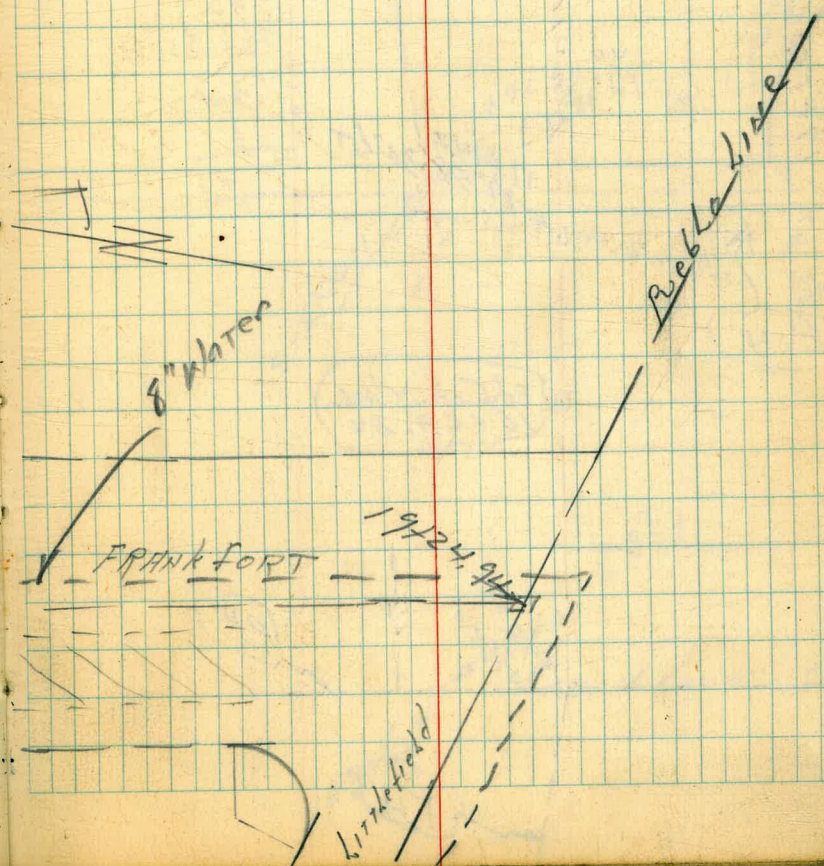
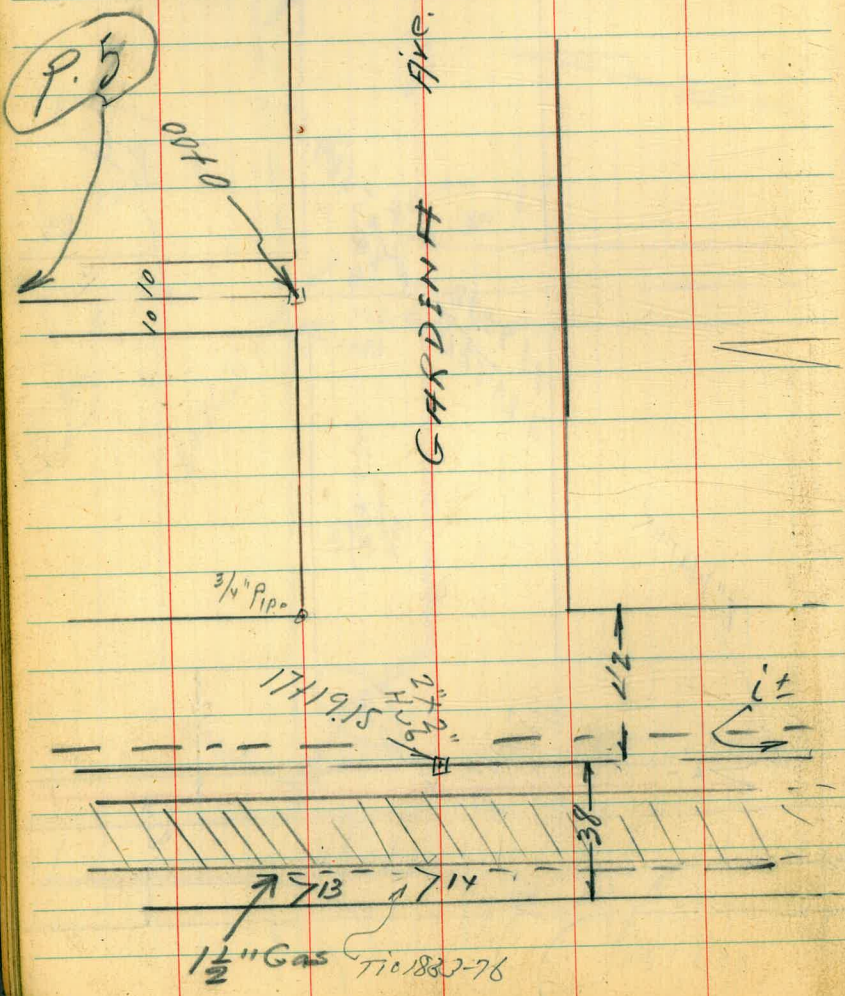
NAPIER

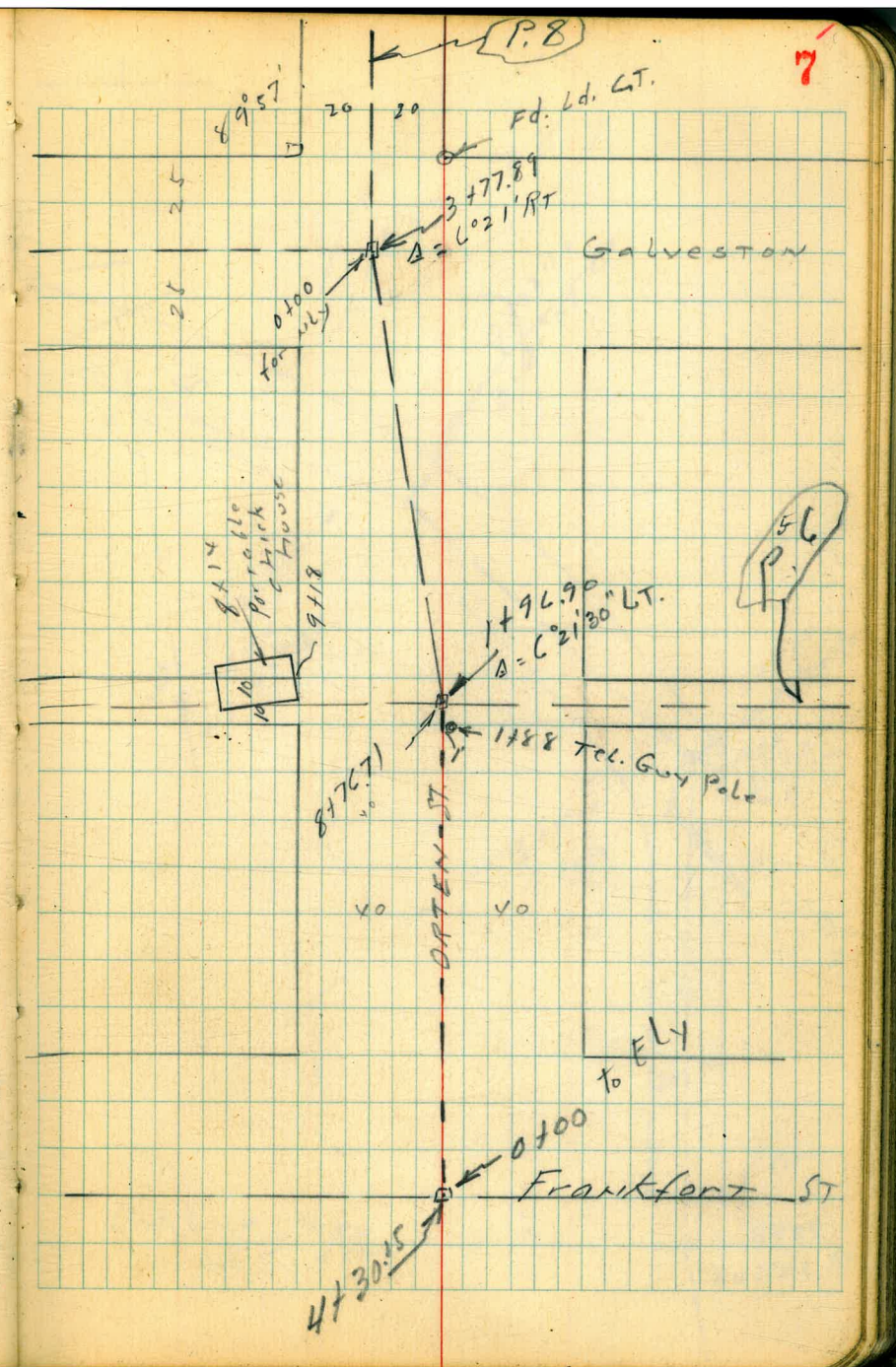
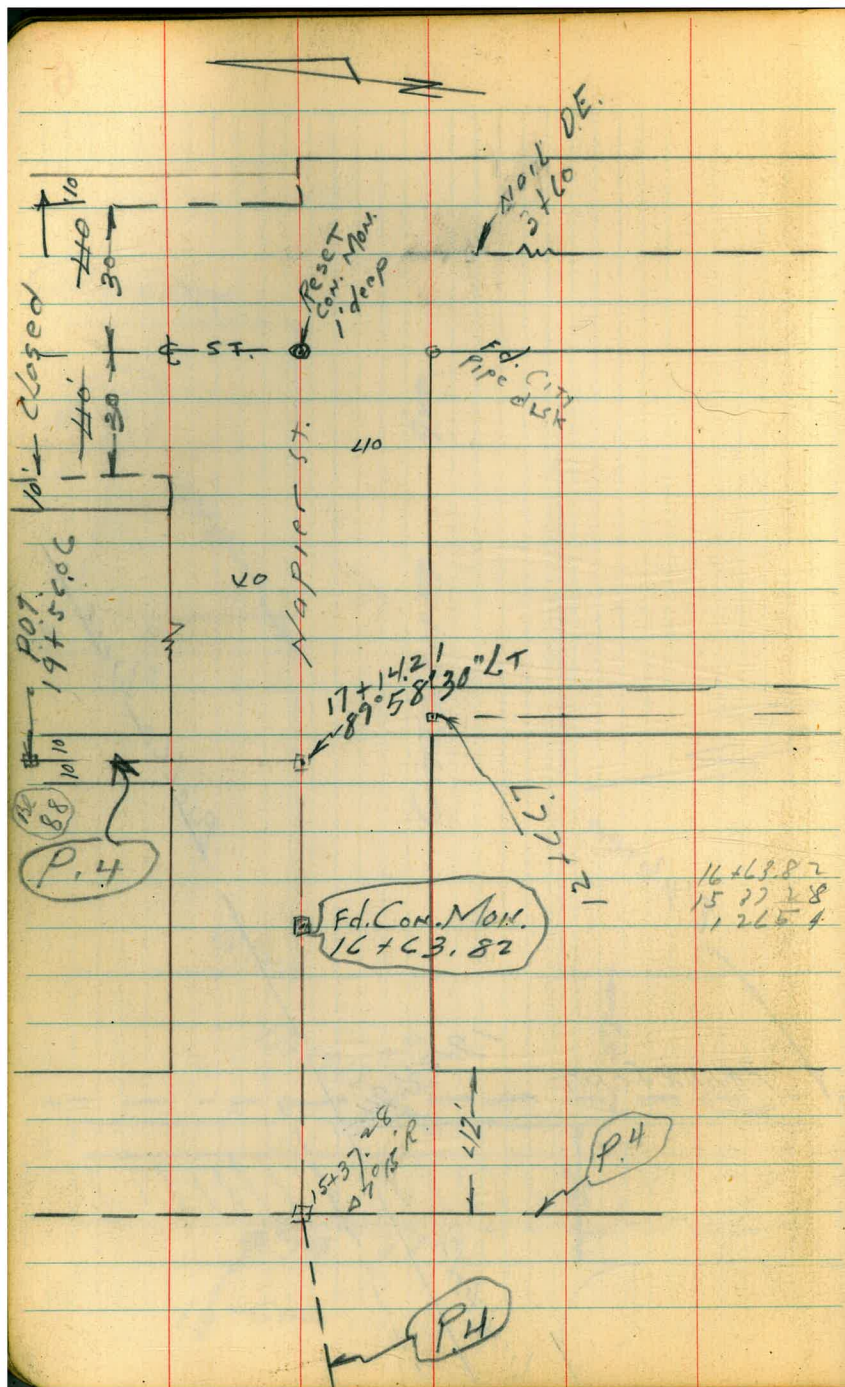
Chicago

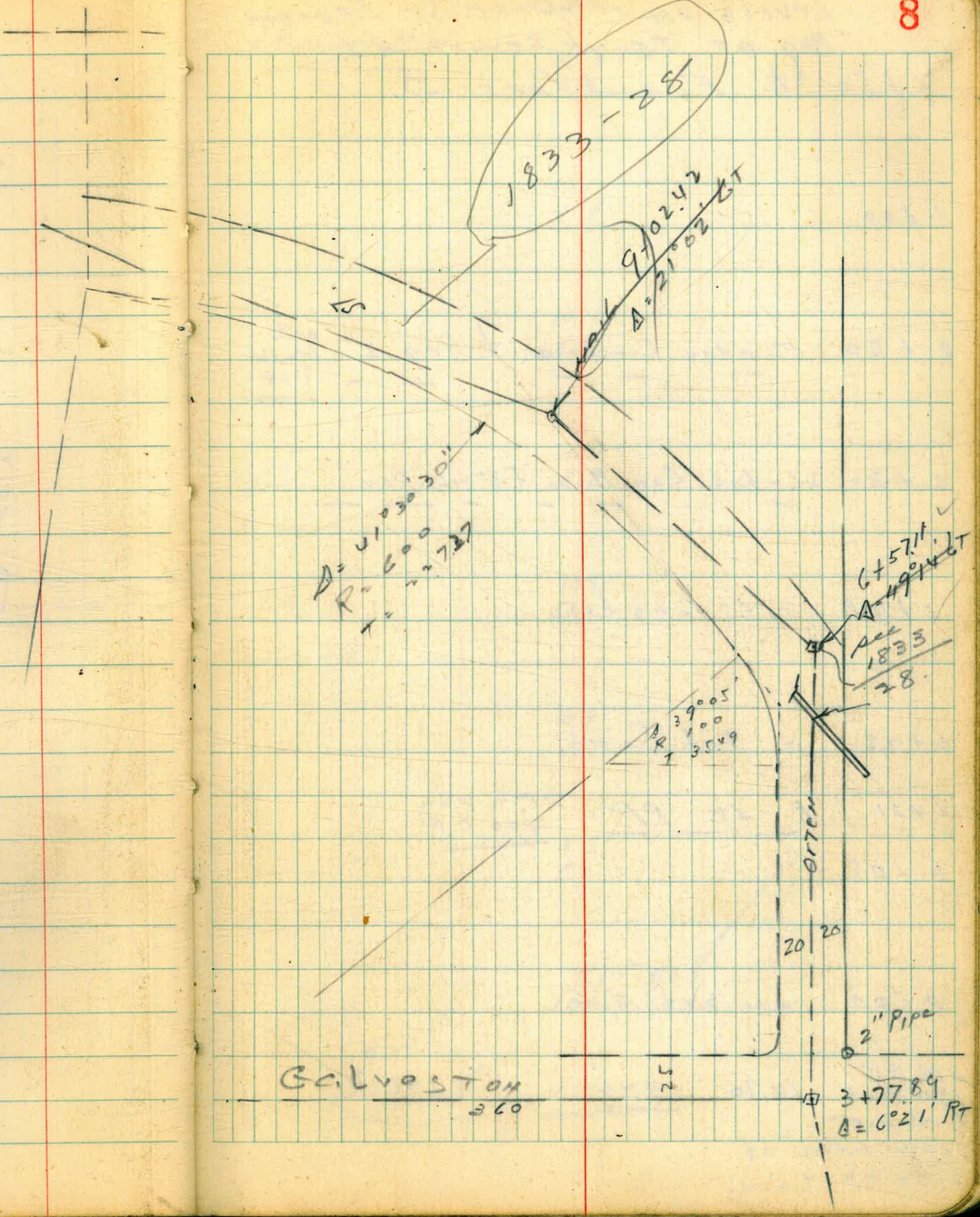
3+45.04
27° 30' LT.



Galveston







1833-28
 9102.42
 Δ = 21°02' 41"

D = 31°30'30"
 R = 600
 T = 727

C+57.11
 Δ = 49°14' 41"
 Acc
 1833
 28

A 3905
 R 1000
 T 3549

ORTEN
 20
 25

Galveston
 360

2" Pipe
 3+77.89
 Δ = 62°1' 17"

Levels on Napier St. Sewer
Beg. at Trunk Sewer #2
1750 to Frankfurt St.

1700

0 + 50 E edge Con. Base + Beg. 2" ^{oil} Rock Pav.

0 + 30 Wedge Con. Base + 3" W.S. Pav.

0 + 28 = 6" Gas Line

0 + 25 = Tel. Cond.

0 + 21 8' Lt. PP ^{S.P. 2802}
600 C.P.

0 + 15

0 + 00 on 2x2 Hub

BM. BP
150' S of 10.70 17.46
& Napier
Top W. Hdwl of
S. F. R.R. Culv.

17.46 ✓

Sketch p. 1

13.5 ✓
4.0

12.1 ✓
5.4

10.9 ✓
6.6

10.7 ✓
6.8

10.5 ✓
7.0

10.5 ✓
7.0

9.5 ✓
8.0

7.17 ✓ E.I. ✓
10.29 ✓ Rod

17.46 ✓

9

+50

T

+50

4

3 + v 50x A 27° 30' LT. on Chicago St.

T.P. 9.47 26.83 0.10 17.36

3

+50

2+00

17.46

23.4 ✓
3.4 ✓

22.0 ✓
4.8 ✓

20.6 ✓
6.2 ✓

19.1 ✓
7.7 ✓

18.1 ✓
7.1 ✓

8.9x on Hub

26.83

17.4 ✓
0.1 ✓

16.1 ✓
1.2 ✓

14.8 ✓
2.7 ✓

17.46

9

+50

8

+50

7

^{Set}
 T.P. BM. 10.51 36.94 0.40 ^{Napier} 2643 Goldfield
 Chisel \square
 SE. Ret.

+50

6 + 25.07 & Goldfield & Napier

6 + 00

2683

32.3 ✓
4.1

31.2 ✓
5.7

30.0 ✓
6.9

28.6 ✓
8.3

27.4 ✓
9.5

36.94 ✓

26.1 ✓
8.7

25.53 ✓
1.30

24.83 ✓
2.00

2683 ✓

12 + 13.92 Hub & Erie St.

12

+ 50

1100

+ 50

T.P. 12.08 48.00 102 35.92

10

+ 50

9 + 05.07 Δ 0° 56' RT. & Denver

36.9442.6 ✓
5.4Hub under
pile
dirt42.3 ✓
5.740.5 ✓
7.538.9 ✓
9.137.2 ✓
10.848.00 ✓35.4 ✓
1.533.7 ✓
3.232.4 ✓
3.2

44.5 2x2 Hub

36.94 ✓
2

8

59.8 ✓

5.4

52.5 ✓

7.7

50.2 ✓

10.0

49.26 ✓

10.95 on HUB

48.1 ✓

12.1

60.21 ✓

45.8 ✓

2.2

43.9 ✓

4.1

48.00 ✓

15

+50

10

137810 Δ 19'18" RT

+50

T.P. 1260 60.21 0.39 47.61 ✓

13

SET BM. Chisel Sp. 2.96 43.04 ✓
 Z S.E. RET. ON
 HAPIER + ERIC

12 + 50

48.00 ✓

VIA 20' ALLEY

17+14.21 $\Delta = 89^{\circ}58'30''$ \angle Bl. 88

17

+50

16

T.P. 12.77 72.51 0.47 59.74 ✓

+50

Check to B.M. B.P. on c6.
NW Ret. Napier +
Frankfort

505

55.16

Walter
55.13
0.03

15+37.28 Δ $7^{\circ}15'$ Rt. 2x2 Hub
2' W of E of Frankfort.

15+31.3 end of 2" Oil Rock Pav.

60.21

\angle

E

P

14

71.77 ✓
0.74

Hub

70.4 ✓
2.1

65.2 ✓
7.3

60.1 ✓
12.4
100

60.7 ✓
11.8

62.0 ✓
10.5
100

72.51 ✓
57.4 ✓
2.8

56.4 ✓
3.8

55.7 ✓
11.5

60.21 ✓

LT
Low side

check to NW BP
Napier &
Frankfort 511 55.15 55.13

T.P. 0.64 60.26 9.33 59.62

21 DE + P 4 Pl. 88.

+50

20 + 00

T.P. 1.36 69.00 5.87 66.64

19 + 56.06 P.O.T. 220

19

+50.

18

17 + 50

72.51

57.5 ✓
11.5
120

60.2 ✓
8.8

60.8 ✓
8.7

59.3
9.7
100

63.8 ✓
5.7

69.00

66.64 ✓
5.87 HUB

61.4
11.1
100

68.4 ✓
4.1

69.2 ✓
3.3

60.9
11.6
100

69.5 ✓
3.0

70.7 ✓
1.8

72.51 ✓

Sewer on Frankfort
Napier to Milton
Sketch P. 4

CONT'D. FP. 1833

alley to East
↓ is same length

4 + 30 = E MILTON

3 + 80 D.E. OUT

3 + 37 = S.L. House under
CONST = Last Possible
Dwelling

3 + 00

2 + 45 = N.L. House under
CONST.

2 + 00

1 + 61 = S.L. House on SW Cor

1 + 00

150

0 + 00 = Δ HUB at Napier

60.26
H.I. Fwd. from
P. 15

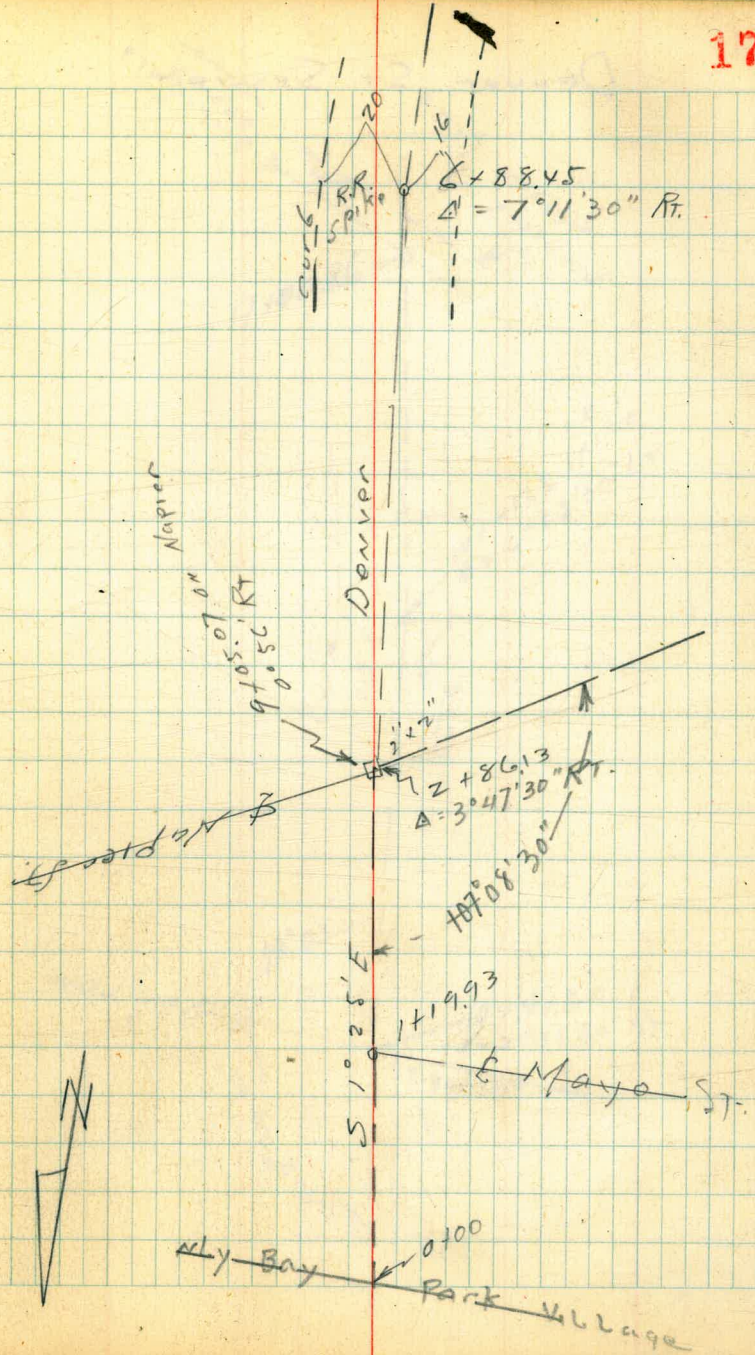
L. low side &

16

		53.8 ✓
		6.5
		6 ✓
		52.3
		7.7
49.5 ✓	50.9 ✓	6 ✓
10.8	9.1	52.3
110	107	7.7
ground	SW Cor Floor EL.	6.0 ✓
		52.7
		7.3
49.4 ✓	52.9 ✓	6 ✓
10.9	7.4	53.8
79	89	6.7
ground	FD. EL. N.W. Cor House	54.0 ✓
		6.3
53.1 ✓	54.7 ✓	6 ✓
7.2	5.6	54.3 ✓
90	80	6.0
gar. Floor at Wash Tray	FL. EL.	54.9 ✓
		5.4
		55.4 ✓
		4.9
		56.4 ✓
		3.9
		60.26 ✓
		2

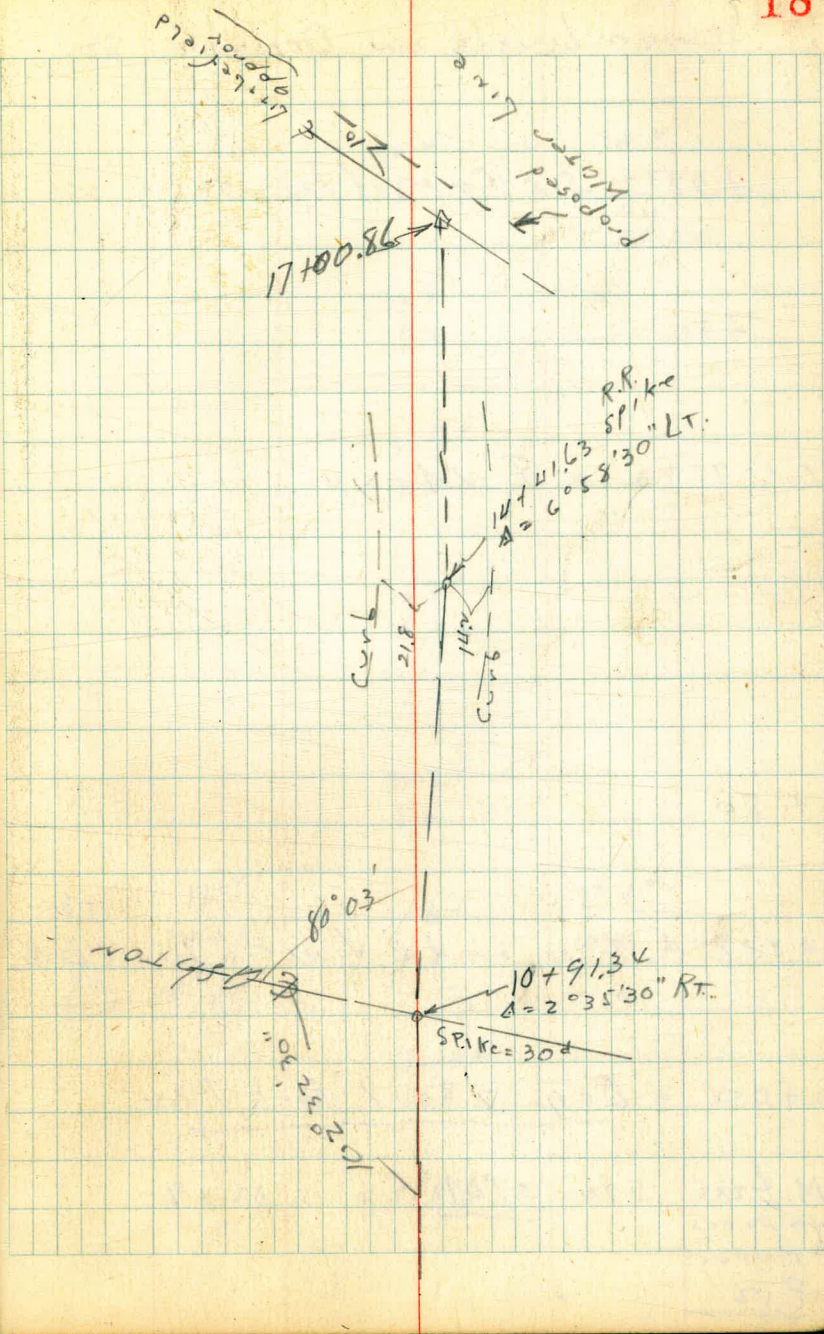
Sewer Profile on Denver St.
 n.l. R.P.R. v.l. sly to Littlefield

17



DENVER ST SENIOR

18



Sewer Levels on Denver St.

+98 SE Cor of house

+50

1 + 19.93 = E Mayo

+50

0 + 38 ft House on L.T. & NE Cor. House on R.

0 + 00 = Beq. 2" oil Rock Pav.

BM. 6"x6" 5.20 37.69 32.49
 Napier
 Denver
 P. 12

32.4 ✓
 5.3

34.4 ✓
3.5
 44
 FL. EL.

32.5 ✓
 5.2

32.7 ✓
 5.0

32.7 ✓
 5.0

32.7 ✓
 5.0

35.7 ✓ 38.0 ✓
2.9 +0.3
 70 70
 9rd FL. EL.

32.8 ✓
 4.9

33.4 ✓
4.3
 42
 FL. EL.

32.9 ✓
 4.8

37.69 ✓

5 + 20

4 + 95

+ 50

T.P. 6.92 $\langle \frac{410.00}{4.63} \rangle$ $\langle 33.06 \rangle$

4

+ 50

3

2 + 86.13 3°47'36" Rt E Napier

2 + 50

$\langle 37.69 \rangle$

Lr

2

Rt

20

33.6

6.4

4.6

gar FL, Wash tray

33.6 ✓

4.2

35.1 } same P.O.
4.3

4.2
E house FL el.

33.2 ✓

6.8

32.9 ✓

4.8

30.4

7.3

12.5 no house
9nd.

32.7 ✓

5.0

32.5 ✓

5.2

32.5 ✓

5.2

Hv6

32.1 ✓

5.6

7+50 E house

7+23

7+07

C+88.45 Δ 7°11'30" Rt

+75 E house

+43

+15 E house

C

5+50

40.00

35.3 ✓
4.7

35.1 ✓
4.9

35.0 ✓
5.0

34.9 ✓
5.1

34.8 ✓
5.2

34.6 ✓
5.4

34.6 ✓
5.4

34.4 ✓
5.6

34.2 ✓
5.8

34.7 ✓
2.9 21

40 = FL. EL.

33.9 ✓
4.1 ✓ SAME
95 NO WASH
gar. FL.

33.9 ✓
4.1

90 gar. FL.

SAME

36.4 ✓
3.6

44 FL. EL.

34.2 ✓
5.8

60 W. T. way
gar. FL.

SAME

36.9 ✓
3.1

40 FL. EL.

T.P. 8.13 $\left\langle \frac{44.50}{2} \right\rangle 3.63 \left\langle 3.63 \right\rangle$

+50

9

8+90

+60 £ house

+50

8+07

7+90

40.00

£

R.

22

36.6 ✓
3.4

36.3 ✓
3.7

36.2 ✓
3.8

33.6 ✓

6.4

92 900 FL.

36.0 ✓
4.0

36.7 ✓

3.3

44 FL. FL.

36.0 ✓
4.0

35.6 ✓
4.4

36.4 ✓

3.6

45 House
FL.

35.5 ✓
4.5

35.1 ✓

4.9

45 900 FL.

DENVER

12

+76 ♀ house

+50

11

+91.3v Δ 2°35'30" RT E ASHTON

+80

10

9+65 House

44.50

♀

Rt 23

39.4 ✓
5.1

39.1 ✓
5.4

39.2

5.3

v L

FL. EL.

NO
Wash
in gar

38.7 ✓
5.8

37.8 ✓
4.7

37.8 ✓
6.70

30d

~~Hub~~ Spike

37.2 ✓
7.3

37.1 ✓
7.4

34.9 ✓

9.6

FL. EL.

gar.

36.7 ✓
7.8

73

27

37.8 ✓
6.7

FL. EL.

Wash
in gar.



+ 52 NE Cor house

14 + 41.63 Δ 1058'30"67,

14 + 25 E House

+ 93 gar in rear

+ 53 E house No Wash ⁱⁿ gar

T.P. 740 \langle 48.63 \rangle 327 \langle 41.23 \rangle

13 House

+ 80

+ 50

12 + 30 E house

\langle 44.50 \rangle

2

Rt. 24

43.0 \checkmark
5.2

42.8 \checkmark
5.8

42.7 \checkmark
5.9

42.4 \checkmark
6.4

41.6 \checkmark
7.0

40.9 \checkmark
3.5

40.6 \checkmark
3.9

40.2 \checkmark
4.3

39.9 \checkmark
4.6

43.3 \checkmark gar. Same
5.3
46 House FL.

43.3 \checkmark
5.3
54 FL. EL.

40.0 \checkmark SAME
8.1
97 99 FL.

42.9 \checkmark
5.7
46 FL. EL.

41.8 \checkmark
3.7
52 FL. EL.

SAME P.O.
40.5 \checkmark
4.0
52 = 99 FL. Wash?

40.6 \checkmark No Wash
3.9
46 FL. EL. 99?

Fd. B.P. B.M. on 66.
N.E. Cor Littlefield 190 46.73 Rec. 3
and Denver

17+00.80 = end of Littlefield

16+80 = END 2" oil Rock Pav.

16+50

+94 NE Cor House

+50

+25 E House NO Tray in gar

15

48.63

47.08 ✓
1.55 on 2x2 Hub

46.7 ✓
1.9

45.9 ✓
2.7

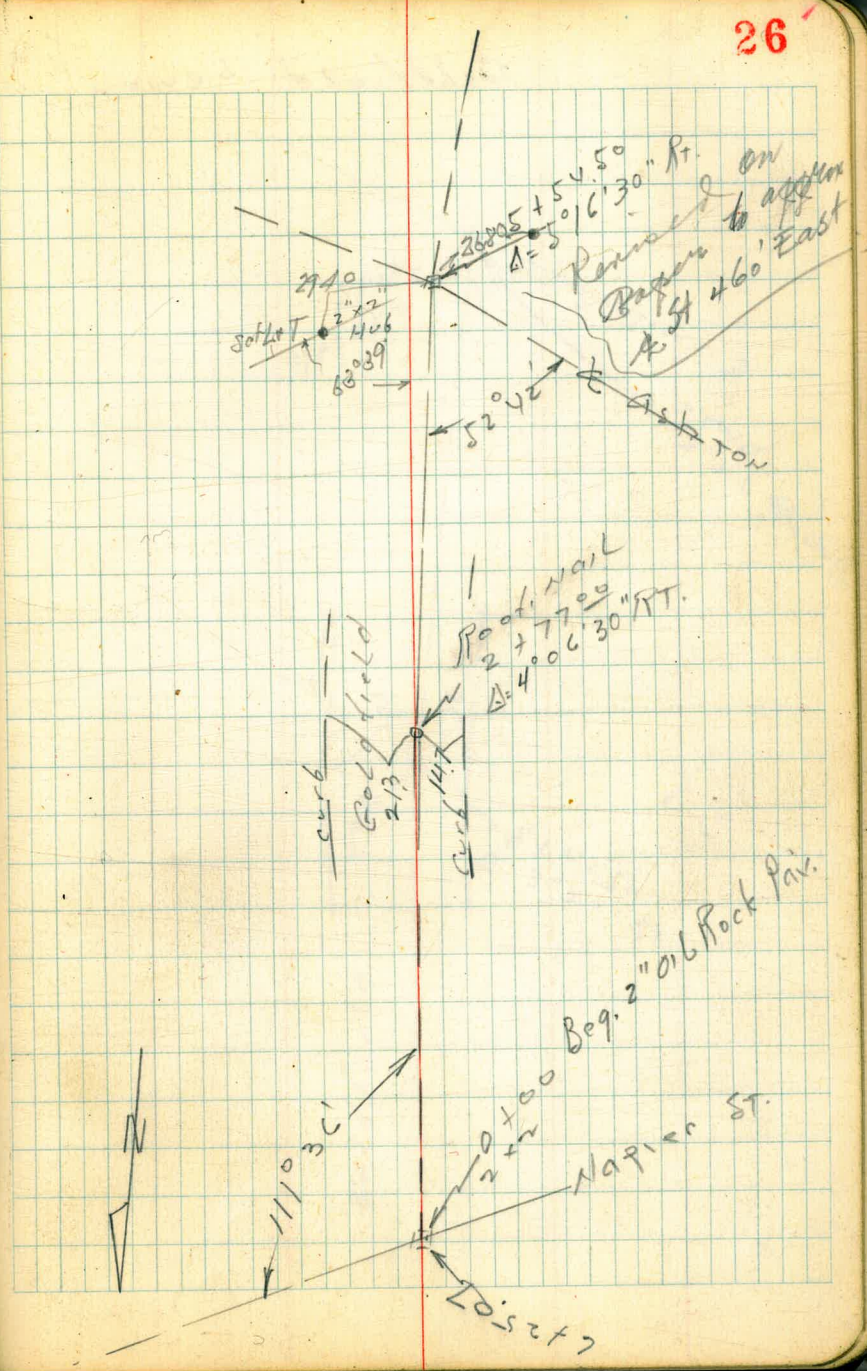
45.0 ✓	47.5 ✓	44.9 ✓
3.6	1.1	3.7
	4.5	4.5
	F.L.E.L.	9th

44.3 ✓
4.3

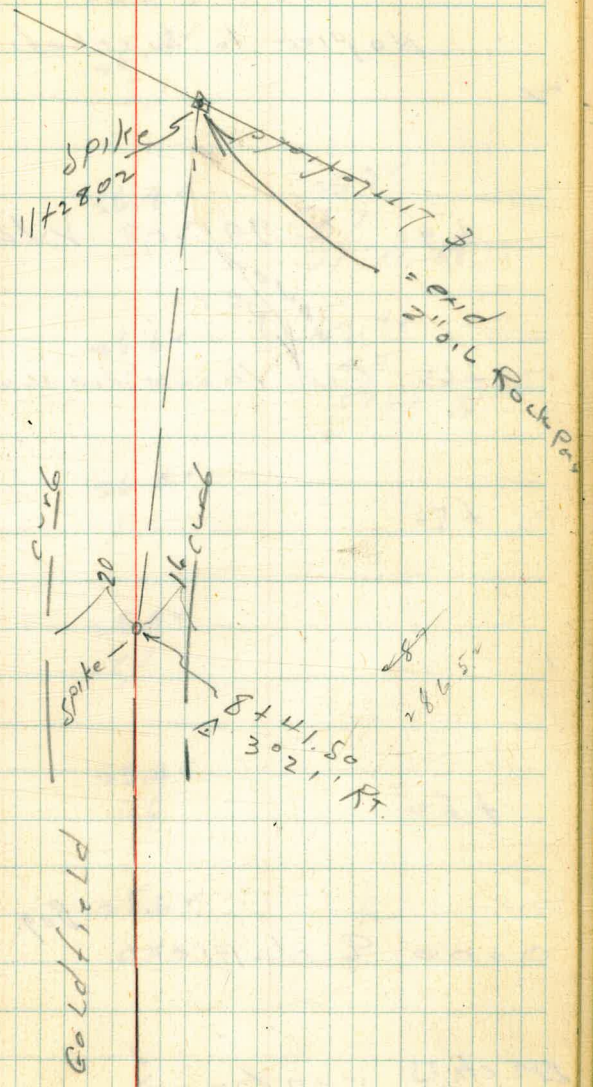
44.0 ✓	46.2 ✓
4.6	2.4
	53. F.L.E.L.

43.7 ✓
4.9

Sewer on Goldfield
Napier to Littlefield



Goldfield Sewer



Sewer Levels on
Goldfield
Napier to Littlefield

+90 E 900, West Tr.

+65 Ctr. front house

+50

+50

0+00 E Napier Beg. 2" oil Pipe
Rock Pass

BM. ch. □
SE cb Ret.
Napier &
Goldfield

8.57

32.00

26.43

P. 11

£

P. 28

26.9 ✓
5.1

26.8 ✓
5.2

26.6 ✓
5.4

26.4 ✓
5.4

25.9 ✓
6.1

25.4 ✓
6.9

25.6 ✓
6.4

26.3 ✓
5.7
71 FL. EG.

27.7 ✓
4.3
57 FL. H.

4 + 50

4 + 01 to N. E. Cor. house

T.P. 6.65 $\left\langle \begin{matrix} 35.28 \\ \hline 24 \end{matrix} \right\rangle$ 3.37 $\left\langle 28.63 \right\rangle$

4

+70 Q Gar Wash Tray

↑
5

+45 Q Fr. House

3

2 + 77 A Pt. ~~4° 06' 30" RT~~
4° 06' 30" RT ✓

γ + 80

$\left\langle 34.00 \right\rangle$

RT 29

29.1 ✓
62

29.9 ✓	26.9 ✓
5.4	8.4
<u>45</u>	<u>93</u>
FL. H.	FL.
	99
	W. Tr.

28.6 ✓
34

28.3 ✓
37

27.5 ✓
45
41 FL.

28.2 ✓
38

28.6 ✓
34
53 FL.

27.7 ✓
43

27.5 ✓
45

27.4 ✓
46

8+25 E gar. Wash Tr.

SAME

7+95 E FRONT house

+50 E FRONT of house No wash
IN GAR

7+08 to E Sep. Tk. which is 6'
ELY from SE. Cor.
of house

+50

5+54.5 A Pt. E ASTON

35.28

17. 30

32.0 ✓
3.3

30.1 ✓
5.2
8.2

gar. FL. el.

31.7 ✓
3.6

33.9 ✓
1.4
44 H. FL. el.

31.2 ✓
4.1

32.0 ✓
3.3
47 fl. el.

30.9 ✓
4.4

31.8 ✓
3.5
44.5

30.3 ✓
5.0
44

SE Cor FL. el.
house

30.4 ✓
4.9

29.9 ✓
5.4

29.6 ✓
5.7

29.3 ✓
1.0

+50

10

+40 E gar. Wash Tr.

+20 E house front

T.P. 689 $\langle 39.40 \rangle$ 277 $\langle 32.51 \rangle$

9

+65 E house, front

↑
5.90

8 + 42 Gar. Wash Tr.

8 + 415 = A Pt.

$\langle 35.28 \rangle$

P. 31

34.0^v
5.4

29.8^v
9.6 = 90d.
125 vac. lat.

33.5^v
5.9

32.9^v
6.5

31.5^v
7.9
85 FL.OL.

32.7^v
6.7

34.3^v
5.1
47 FL.OL.

32.7^v
2.6

32.4^v
2.9

34.2^v
1.1
50 FL.OL.

32.2^v
2.1

32.3^v
3.0
51 gar. FL.OL.

32.2^v
3.1

Found
 Check to B.M. B.P.
 NE Curb Ret.
 Denver + Littlefield 331 <46.77> ✓
 Rec. 70

P. 25
 Me

T.P. 1272 <5003> 209 <37.31> ✓

11 + 28 on E Littlefield

11 + 00

10 + 70 = N.W. Cor. East
 House on Lt.

<39.40> ✓

end 2" old Rock Pav. 34.5 ✓
 49

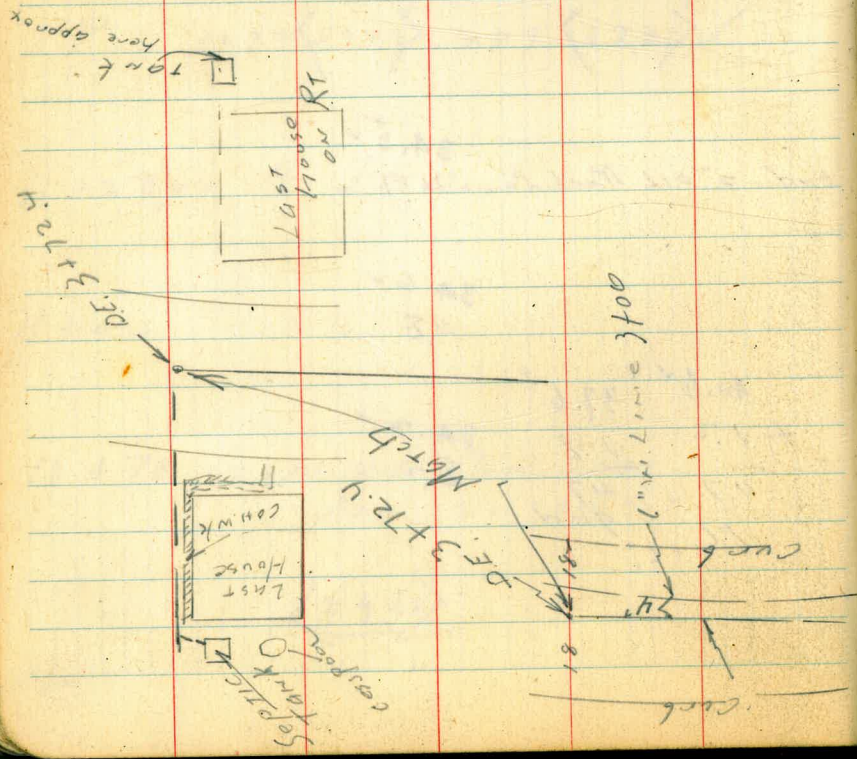
34.6 ✓
 48

40.6 ✓ 37.6 ✓
 + 1.2 .8
 47 47
 FL. CL. 9nd.
 34.2 ✓
 5.2

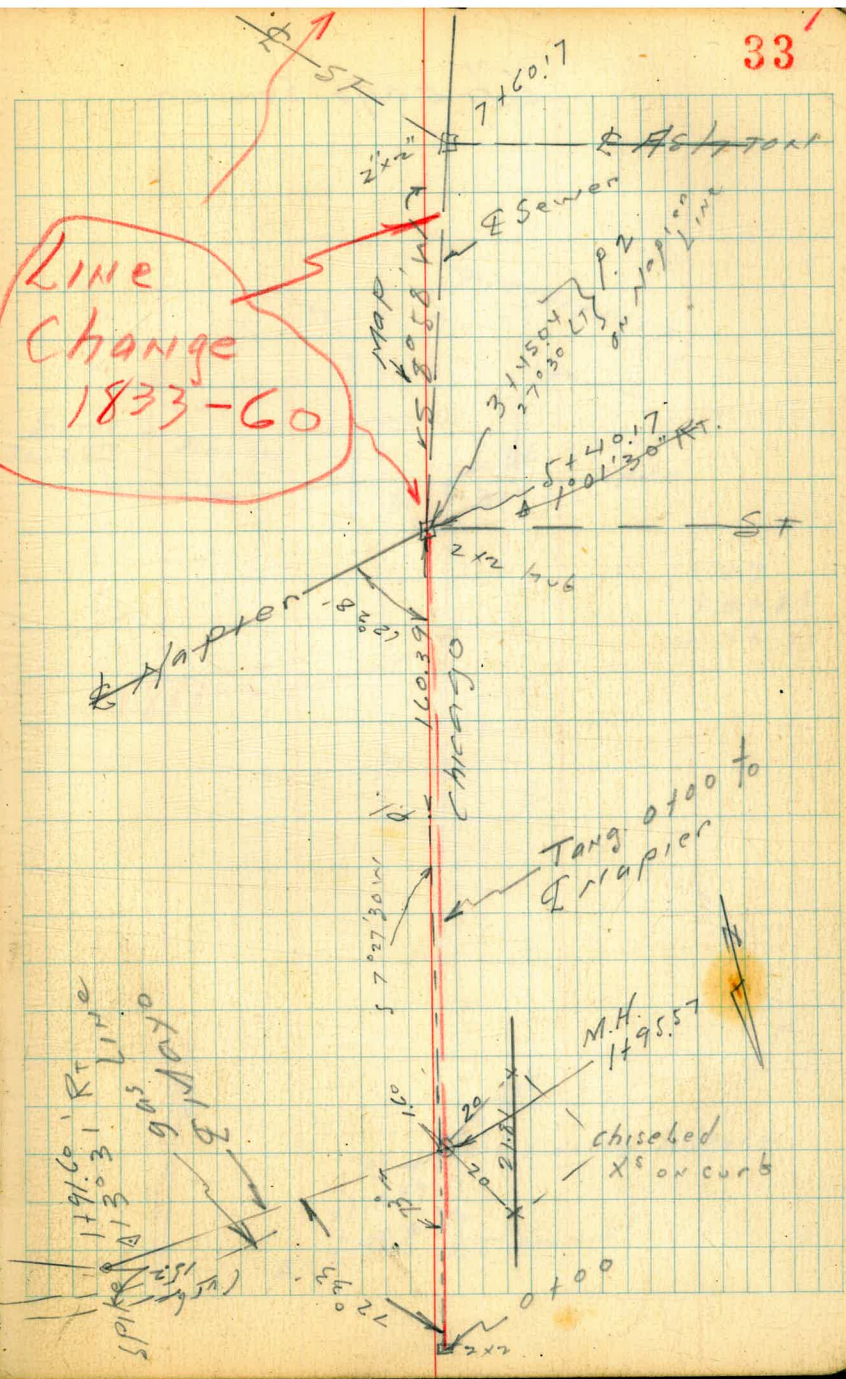
Sewer on Chicago Mayo to Littlefield

W 0 31474

Levels NOT
changed

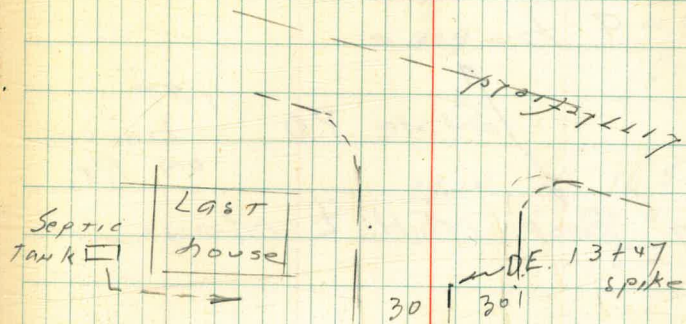


Line
Change
1833-60



Chicago Sewer

34



1347
930.89
√ 16.11

1833-60



P.I. → 92x2 Hob
9120.89 = NL alloy to west
Δ = 2° 43' 36" RT

Sewer Levels on
Chicago St.
Mayo St. to Littlefield

CONT'D. P. 38

2+15 E house

↑
SAME P.O. 1ST house
ON RT.

1+95.57 Prop. M.H. E Mayo

1+50

1+00

0+50

0+00 Sketch P. 33

T.P. 5.08 $\langle 24.08 \rangle$ 7.65 $\langle 19.00 \rangle$

0.22 $\langle 26.65 \rangle$

$\langle 26.43 \rangle$

= B.M. P. 11
chisel \square S.E. Ret. Napier + Goldfield

E

R

35

19.2✓
2.9

19.2✓
4.9
5.0

F.L. House

19.1✓
5.0

16.5✓
7.6
5.7

F.L. 997
WASH TRAY

19.3✓
4.8

19.6✓
4.5

15.7✓
8.4
7.5

19.8✓
4.7

20.2✓
3.9

18.0✓
6.1
13.5

$\langle 24.08 \rangle$

Sewer Levels on Mayo St.
Chicago Ely

R

3

27.4 ✓
4.5

+50

25.8 ✓
6.7

2

24.2 ✓
7.7

1 + 91.6 Δ 13° 31' Rt

23.9 ✓
8.0

+50

22.7 ✓
9.2

1

21.3 ✓
10.6

+50

19.8 ✓
12.1

0 + 00 = 1 + 95.7 on Chicago St (Beg. 2" oil Rock Pav.)

19.1 ✓
12.8

T.P.
P. 35

12.94 <31.94> <19.00>

<31.94>

Mayo St.

3172 N D.E. = approx W/E of SE Cor. →

3158

3150

31.94 ✓

SE Cor.	31.0 ✓
House	0.9
FL. EL.	45

29.5 ✓

2.4

29.0 ✓

2.9

30.2 ✓

1.7	NE Cor
47	House
	FL. EL.

28.8 ✓

3.1

31.94 ✓

Chicago St.

41 + 12 to NW Cor. 9PTS. rear of

4

+ 50

3 + 32 E house

3 + 11 E gar. Wash tray

T.P. 5.20 $\langle \frac{23.98}{4} \rangle$ 5.36 $\langle \frac{18.72}{4} \rangle$

3

2 + 75 E house

2 + 54 gar. FL.

$\langle \frac{24.08}{4} \rangle$ H.V. from P. 35

Sewer

Store Bldg.

18.4 ✓

5.5

18.4 ✓

5.0

18.6 ✓

5.4

18.1 ✓

5.3

$\frac{23.98}{4}$ ✓

18.7 ✓

5.4

18.9 ✓

5.2

19.0 ✓

5.1

P.T.

20.1 ✓

3.9

4.8

FL. ch

19.8 ✓

4.7

5.9

FL. ch.

17.1 ✓

5.9

5.0

FL. ch.

19.5 ✓

4.0

5.1

17.0 ✓

7.1

5.0

FL. 900

38

18.1 ✓

5.9

5.0

900

150

7

T.P. 651 $\left\langle \begin{array}{l} 25.28 \\ 2 \end{array} \right\rangle$ 521 $\left\langle \begin{array}{l} 18.77 \\ 2 \end{array} \right\rangle$

150

6

150

5 + 40.17 $\Delta = 1^{\circ} 01' 30''$ R. & Napier St

5 + 100

4 + 50

$\left\langle \begin{array}{l} 23.98 \\ 2 \end{array} \right\rangle$

19.1 ✓

6.2

19.0 ✓

6.3

$\frac{25.28}{2}$ ✓

18.1 ✓

5.3

16.4 ✓

5.4

16.1 ✓

5.9

17.9 ✓

6.1

18.0 ✓

6.0

18.2 ✓

5.8

$\left\langle \begin{array}{l} 23.98 \\ 2 \end{array} \right\rangle$

Note! from 9+2089 Sly, Houses on Rt.

prefer alley connect 70ns 95 at

+50

Least 3 P.O. plan dwellings

in Rear, also present Tanks are

in " of approx. CTR. of Dwellings

10

For housing at

+50

50 ft

9+2089 $\Delta = 2^\circ 43' 30''$ Rt

+80

55 Rt to N.W. Con. Barber Shop

+50

8

+80

7+6017 9 Ash ton

25.28

22.0 ✓

33

21.6 ✓

37

21.2 ✓

41

4.47

on 2x2 6x6

20.5 ✓

4.8

21.1 ✓

4.2

55 FL, EL

20.1 ✓

5.2

19.7 ✓

5.6

19.1 ✓

6.2

25.28

check to T.P. 3.94 $\langle 37.31 \rangle$ 37.31
S. end Goldfield.

T.P. 12.95 $\langle 41.25 \rangle$ 0.77 $\langle 28.30 \rangle$

13 + 47 D.E.
2" oil Rock gas cont'd
to Littlefield

13

+50

12

T.P. 5.90 $\langle 29.07 \rangle$ 2.11 $\langle 27.17 \rangle$

+50

11

$\langle 25.28 \rangle$

R 41

Septic Tank 24.3 ✓
Higher than P₂ 4.8
ON LT
Last house 23.9 ✓
5.2

23.5 ✓
5.6

23.2 ✓
5.9

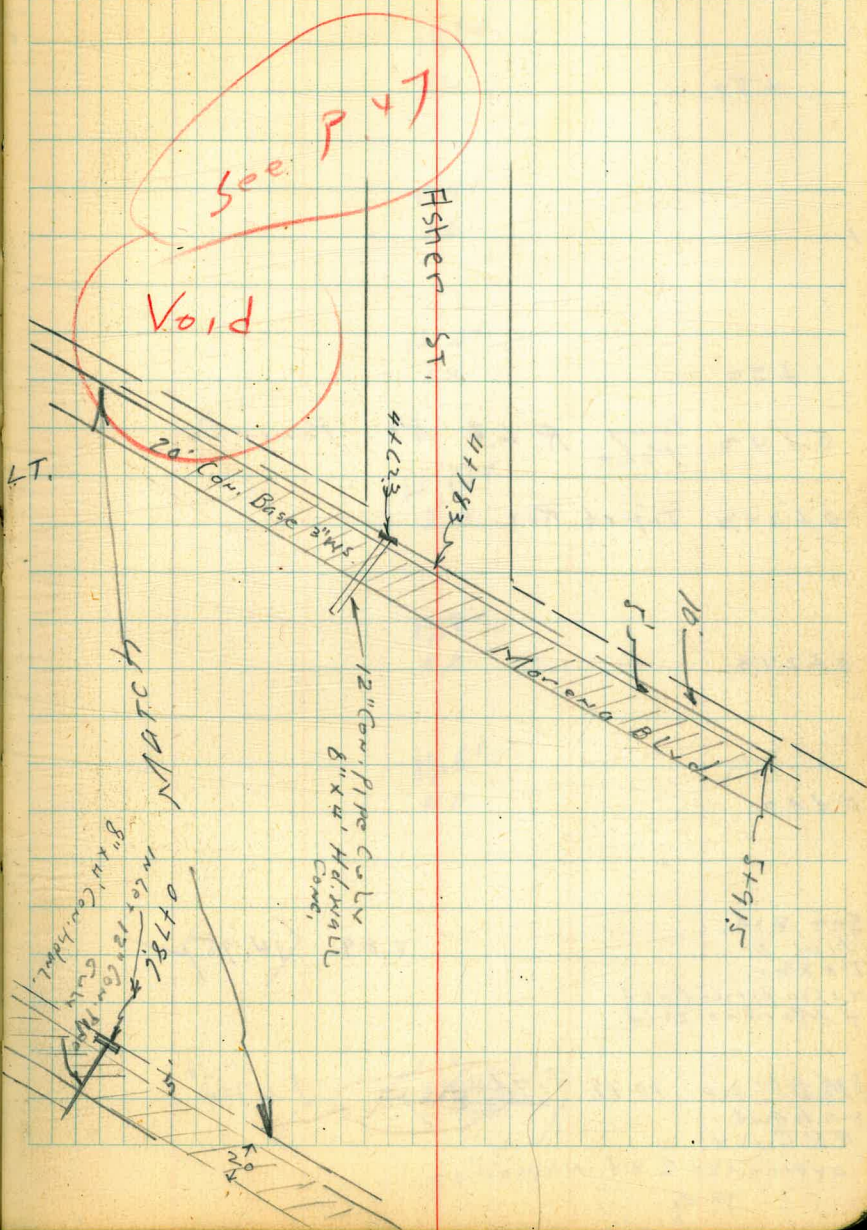
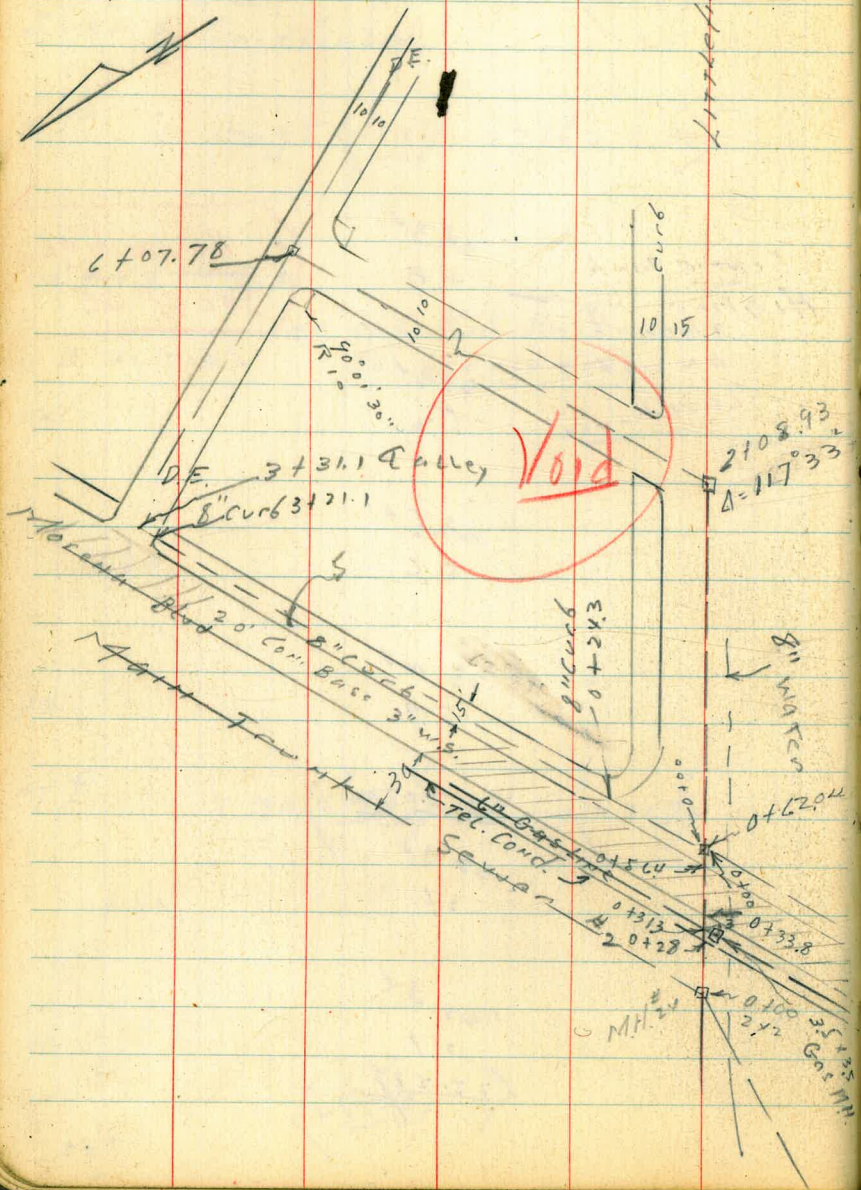
22.07 ✓
22.1 ✓
2.6

22.1 ✓
2.9
 $\langle 25.28 \rangle$

House + gas.
See PUC

Last on Pt

Alley series in Blk. Bern
 Ashton + Littlefield
 Marana Blvd + Chicago



Sewer Leucki, E. side Morena Blvd
Littlefield, Nby to ALLEY

43

+50

13.6 ✓
40

+50

13.8 ✓
38

0+42 Guy R.L.B Pt. Power Co.
Pole

14.2 ✓
34

0+243 Top cb. Ret.

14.5 ✓
310

0+243

13.8 ✓
38

0+00

13.5 ✓
41

Set B.M.
Chisel □
Top Ret.
N.E. Cor Littlefield
+ Morena Blvd.

2.89

14.75 ✓

B.M. B.P. Top
w. hdwl.
P.R. CULY

10.88

17.64 ✓

6.70 ✓

approx. 150 S of Napier St

P. 9

17.64 ✓

3 + 21.1 E alley

3 + 21.1 9T.

3 + 21.1 Top alley Ret.

3

150

2.100

1764

14.2 ✓
5.4

14.3 ✓
5.3

14.90 ✓
4.74

14.9 ✓
4.7

13.1 ✓
4.5

13.5 ✓
4.1

1764 ✓
1764

Littlefield see Pg 47.

2408.93 S 117°33' LT

2

+50

1400

046204 Prop. M.H.

04564 E edge Pav.

04328 W. edge Pav.

0400 M.H.

B.M. Ch. □
TAPNER CT 9.21
Li Littlefield
Merena Blvd
P.43

23.96

14.75

19.1 ✓

4.9

18.8 ✓

5.7

17.2 ✓

6.8

15.5 ✓

8.5

13.5 ✓

10.5

13.8 ✓

10.2

13.7 ✓

10.3

13.5 ✓

10.5

23.96

Alley H of Littlefield
of Nevada.
Alley on Blvd P

5

4 + 90 E house LT 0
Builder Lets CONTRACT
IN 10 days

+ 50 E house RT

4 E house on RT

+ 50

+ 30 E house on RT

3

2 + 60 E House on RT or EAST

2 + 50

23.96

LT

15.8

5.2

18

18.8

5.2

10.1

5.3

19.3

4.7

19.2

4.8

19.1

4.9

19.2

4.8

19.3

4.7

19.2

4.8

23.96

19.9 RT

4.1

2.3

60000 House
in Rear
soon to
have Toilet

22.5

1.5

82 FL. CL.

24.2

+ 0.7

75 FL. CL.

24.2

+ 0.7

75 FL. CL.

24.3 House 1.0
+ 0.3 FL. CL. 99.0
74 FL. CL.
1st on RT.

46

Alley N of Littlefield
E of Morena

check to T.P. P. 40 214 $\langle 20.83 \rangle$ $\frac{20.81}{0.02}$

C+07.78 E + W alley

T.P. 5.62 $\langle 22.97 \rangle$ 661 $\langle 17.35 \rangle$

6

5+90 E gar.

+70 E house on RT

+50

5+26 E gar.

5+11 E house on RT

$\langle 23.96 \rangle$

LT

E

RT

48

13.1 ✓ 16.0 ✓ 17.6 ✓ 18.5 ✓ 20.0 ✓
 $\frac{9.9}{110}$ $\frac{7.0}{55}$ 5.4 $\frac{4.5}{50}$ $\frac{3.0}{115}$

$\langle 22.97 \rangle$
17.6 ✓
6.4

20.1 ✓
 $\frac{3.3}{90}$ gar. FL.

18.2 ✓
5.8

21.3 ✓
 $\frac{1.7}{90}$ FL. OL.

18.3 ✓
5.7

18.1 ✓
5.3

20.9 ✓
 $\frac{3.1}{48}$ FL. OL.

18.8 ✓
5.3

23.0 ✓
 $\frac{1.0}{83}$ FL. OL.

$\langle 23.96 \rangle$

Sewer line on E. side Mariona Blvd. LT = Eastly \ominus
Littlefield Sly past Grachen ST

Rt 49

1+50

14.0 \checkmark
7.3

1+00

14.0 \checkmark
7.3

0+82

13.8 \checkmark
7.5

0+78.6 F.G. 12" CON. P.I.P.E

10.90 \checkmark
10.35

13.90 \checkmark
7.35
Top h \checkmark wl.

0+75

13.8 \checkmark
7.5

0+50

13.8 \checkmark
7.5

0+31 P.P. 2487 5.5 LT.

0+00 = 0+620x on 2

13.4 \checkmark
7.8

B.M. \square chisel
NERCT.
Littlefield
Morena

6.50 $\langle 21.25 \rangle$

$\langle 14.75 \rangle$

$\langle 21.25 \rangle$

4

+56 P.P. 2431 5 LT

+50

3 +43

ctr. door to Kennedy's ^{old} Rd. House

3

+50

2+00

1+81 P.P. 2471 5.5 LT.

1+69 8" acacia tree 4' LT.

21.25

LT

E

R

50

14.6 ✓
6.7

14. ✓ ✓
7.0

14. ✓ ✓
7.0

14.4 ✓

6.8

48

FL. 56

14. ✓ ✓
7.0

14. ✓ ✓
7.1

14.0 ✓
7.7

21.25 ✓

Levels CONT'D, P. 79 1/2

5 + 91.5 D.E.

150

+17 PP 2399 4.C LT.

5

4 + 78.3 E gster

+66

+62.3 Fl. 12" Conn. ^{INLET} Pipe Cyl.

+60

4 + 50

← 21.25 ✓

LT

E

R

51

16.0 ✓
5.2

15.4 ✓
5.8

14.8 ✓
6.4

21.8 ✓	19.6 ✓	17.2 ✓	14.8 ✓
+0.6	1.6	4.0	6.5
150	100	50	

14.6 ✓
6.6

11.53 ✓
9.7 ✓

14.6 ✓
6.6
TOP to d wt.

14.6 ✓
6.6

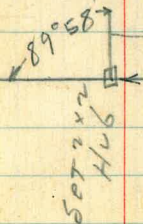
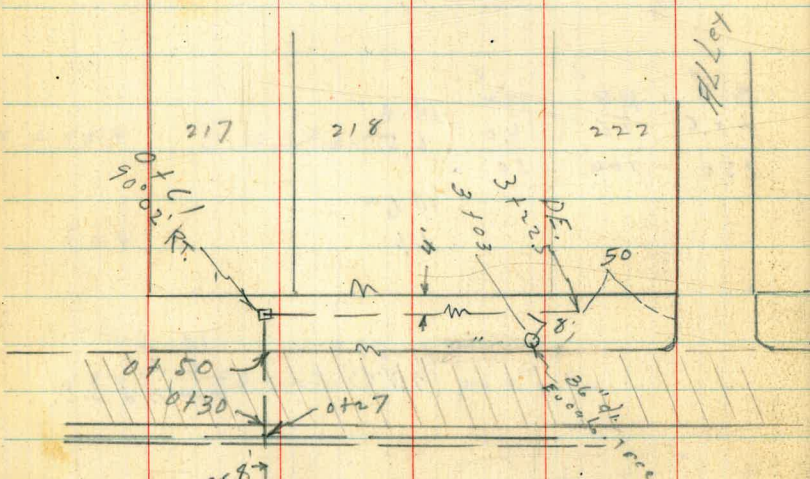
14.6 ✓
6.6

← 21.25 ✓

Senior to serve

Lots 217 to 222

Bay Park Village

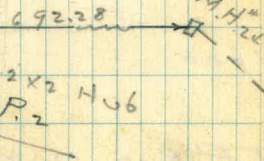


Crossing Morena
 move this line 30 S. r Get Levels
 Find Morena



492

5' x 5' Hub



53
 Sewer Levels
 ON ORTEN ST.
 CONTD. FROM F.B. 1833-

+50

9+33.56 d. Pt. see Bk. 1833

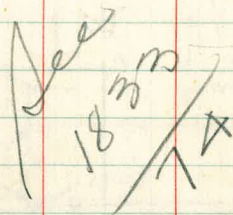
T.P. 11.31 $\left\langle \begin{array}{c} 115.57 \\ \hline \end{array} \right\rangle$ 0.25 $\left\langle \begin{array}{c} 104.20 \\ \hline \end{array} \right\rangle$

9

Note! 1" gas line
 follows line of
 ditch on LT.

+50

8



+50

7+00

T.P. Rock 12.19 $\left\langle \begin{array}{c} 104.51 \\ \hline \end{array} \right\rangle$ 92.32

See 1833
 $\frac{12}{12}$

LT

53
 Sewer

107.3^v
 8.3

103.6^v
 $\frac{12.0}{2.2}$
 ditch

106.4^v
 9.2

$\left\langle \begin{array}{c} 115.57 \\ \hline \end{array} \right\rangle$

104.5^v
 0.0

99.1^v
 $\frac{5.4}{1.4}$
 Ditch

102.3^v
 2.2

99.9^v
 4.6

95.0^v
 $\frac{9.5}{1.5}$
 IN STORM
 ditch

97.2^v
 7.3

94.4^v
 10.1

$\left\langle \begin{array}{c} 104.51 \\ \hline \end{array} \right\rangle$

13+00

T.P. 1226 $\langle 137.93 \rangle$ 0.08 $\langle 125.67 \rangle$

12+44.42

12

+55

+45 end ditch + 1/2" oil Pav.

T.P. 1110 $\langle 125.75 \rangle$ 0.92 $\langle 114.65 \rangle$

11

+50

10+00

$\langle 115.57 \rangle$

127.6^v
10.3
17
gas line

126.4^v
11.5

126.1^v
11.8
15

126.7^v
11.2
30

54

123.8^v
2.0
25

$\langle 137.93 \rangle$

121.1^v
4.7

121.7^v
4.0
25

118.3^v
7.4

116.3^v
9.4
10

115.7^v
10.1

115.3^v
10.4
10

116.8^v
9.0
7

113.8^v
12.0
5

19 gas
4

113.5^v
12.2

113.5^v
12.2
2

115.5^v
10.3
4

115.5^v
10.2
20

$\langle 125.75 \rangle$

111.1^v
4.5
11
ditch

113.3^v
2.3

111.4^v
4.2

105.4^v
10.2
14
ditch

109.7^v
5.9

$\langle 115.57 \rangle$

T.P. 10.05 $\langle 157.64 \rangle$ 1.05 $\langle 147.59 \rangle$

15

14 + 49.90 = Δ LT. F.B. 1833 $\text{\textcircled{C}}$ 166102

14

T.P. 11.70 $\langle 148.64 \rangle$ 0.99 $\langle 136.94 \rangle$

+68

+50

+31

13 + 12 Δ RT F.B. 1833

$\langle 137.93 \rangle$

146.9[✓]
1.7

144.9[✓]
3.7

139.1[✓]
9.5

$\langle 148.64 \rangle$

135.4[✓]
2.5

132.0[✓]
5.9

128.5[✓]
9.4

127.9[✓]
10.0

$\langle 137.93 \rangle$

Set B.M. ^{TOP} 8th Conn. Men.

N.E. Cor. MILTON
and ILLION

1.17 $\langle 156.47 \rangle$

16 + 54.92

E. of MILTON + ILLION

156.2^v
14

16

152.5^v
5.1

15 + 50

$\langle 157.64 \rangle$

148.7^v
8.9

$\langle 157.64 \rangle$

Sewer Levels on
Galveston

Orten Nly to Napier St.

3 + 60 D.E.

3 + 12

S.E. Cor. of House

FL. el. of
BASEMT.
with wash trays

+ 50

T.P.

3.74

(98.15)

0.41

94.44

2

+ 50

1

+ 50

0 + 00 = ON STA. 3 + 77.89 @ Galveston
and Orten

B.M. 2" Pipe
S.E. Cor. of
ORTEN +
Galveston

10.64

94.85

84.21

L.T.

E

P.T.

57'

4 + 00 end 1/2" o.l. Pav.

82.6 ✓	91.1 ✓	88.8 ✓	96.5 ✓
15.4	7.0	9.4	1.7
↑	57	57	95.9 ✓
	FL. el.	2nd	2.3

750 ±
house top
of hill 40' higher

95.0 ✓
3.2

(98.15)

148.8 ✓
16.1
125

94.4 ✓
0.5

93.2 ✓
1.6

74.9 ✓
20.0
125

90.8 ✓
41

87.6 ✓
7.3

83.4 ✓

11.4 = Beg. 1/2" o.l. Pav.

94.85

Sewer Levels Morona Sub.
Sketch 1833-20

T.P. 98' $\left\langle \begin{array}{l} 27.80 \\ \hline \end{array} \right\rangle$ 1.69 $\left\langle \begin{array}{l} 17.99 \\ \hline \end{array} \right\rangle$

6 + 50

T.P. 224 $\left\langle \begin{array}{l} 19.68 \\ \hline \end{array} \right\rangle$ 1.68 $\left\langle \begin{array}{l} 17.44 \\ \hline \end{array} \right\rangle$

6 + 29.88 Δ 90° or 30° LT = E MILTON

6 + 06

+ 50

5

+ 50

4

+ 60 S.E. Cor. of APTS. under CONST.

+ 50

3 + 00

Fd. T.P.
1833-24 4.71 $\left\langle \begin{array}{l} 19.12 \\ \hline \end{array} \right\rangle$
2.50 1833
24

1441

7400 Contd. on P. 60

18.14

1.6

$\left\langle \begin{array}{l} 19.68 \\ \hline \end{array} \right\rangle$

17.44

1.7

17.44

1.9

16.84

2.3

16.04

3.1

12.5

66

125

9rd.

15.14

4.0

14.64

4.5

14.24

4.9

13.1

14.1

5.7

5.0

30

41

Fl. el.

13.94

5.2

9rd. over
Septic
Tank

13.34

5.8

$\left\langle \begin{array}{l} 19.12 \\ \hline \end{array} \right\rangle$

Sewer Levels on Milton
Beg. at Main Trunk Sewer #2 and
going Ely to alley STA. 6+29.88

2+00 ± = 6+29.88 E alley to north

+50

1+00

0+50 E edge pav.

0+30 W edge 20' pav. Con. Base 3" W.S.

0+28 cross 6" Gasline

0+25 Cross Tel. Cond.

0+00

~~1968~~ Page
M.H. 1. 58

17.5 ✓
2.2

15.7 ✓
2.0

13.4 ✓
6.3

11.1 ✓
8.6

11.1 ✓
8.6

12.2 ✓
7.5

~~1968~~

MILTON

TP 9.22 $\langle 36.10 \rangle$ 0.92 $\langle 26.88 \rangle$
9+50

9+00

spike
in SP
set spike for alley 4021
3.52 25.28 425544

8+50

8+00

7+50

7+00

from Page 58

$\langle 27.80 \rangle$
H.I.P. 58

26.8 ✓
1.0

25.1 ✓
2.7

23.5 ✓
4.3

22.0 ✓
5.8

20.8 ✓
7.0

19.5 ✓
8.3

$\langle 37.80 \rangle$

Milton

12+0

11+50

11+00

10+50

10+00

9+79⁶⁴

36 10 ✓

34.6 ✓
1.5

33.3 ✓
2.8

31.2 ✓
4.9

29.7 ✓
6.4

28.2 ✓
7.9

27.7 ✓
8.4

36 10 ✓

R

61 ✓

35.2 ✓
0.9
12.5 ✓

31.9 ✓
4.2
12.5 ✓

Milton
B.M. B.P. 1101 $\langle 53.11 \rangle$

$\langle 42.10 \rangle$

check to B.M. B.P.

7.55

$\langle 42.10 \rangle$

B.M. chisel
SB Top curb 6.61 $\langle 49.65 \rangle$

43.0V

CTR. SE. Cor. NAPIER & ERIE ST.

Set B.M. B.P. on Curb
SW Cor. of MILTON
AND ERIE ST.

4.09 $\langle 42.09 \rangle$

15

+50

14

+50

13 +29.40 Alley to North

13

T.P. 11013 $\langle 46.18 \rangle$ 0.05 $\langle 36.05 \rangle$

17+50

$\langle 36.10 \rangle$

SW curb Return MILTON & ERIE

62

42.6 ✓

3.6

41.2 ✓

5.0

40.1 ✓

6.1

38.6 ✓

7.0

38.0 ✓

8.2

37.2 ✓

9.0

$\langle 46.18 \rangle$ ✓

35.7 ✓

0.4

$\langle 36.10 \rangle$

20

+50

19

18+50

T.P

11.21 < 44.19 >

0.13 < 52.98 >

18

+50

17

16+79.6 Alley to North

+50

16

15+50

< 53.11 >

2

63

57.1 ✓
6.555.1 ✓
8.554.5 ✓
9.753.1 ✓
10.5

< 44.19 >

52.2 ✓
9.950.6 ✓
2.548.9 ✓
4.248.1 ✓
5.047.0 ✓
6.145.4 ✓
7.943.9 ✓
9.2

< 53.11 >

23+0

22+50

T.P. 12.99 $\langle 87.79 \rangle$ 0.22 $\langle 74.80 \rangle$

22 + 03.66 \varnothing GALVESTON

+ 80

+ 50

21

T.P. 11.42 $\langle 75.02 \rangle$ 0.79 $\langle 63.40 \rangle$

+ 50

20 + 28.85 \varnothing ALLEY TO SOUTH

$\langle 64.19 \rangle$

83.4[✓]
4.4
100

85.8[✓]
2.0

78.2[✓]
9.6

$\langle 87.79 \rangle$

75.0[✓]
0.0

73.9[✓]
1.7

70.2[✓]
4.8

64.5[✓]
10.5

$\langle 75.02 \rangle$

64.4[✓]
0.0
1100

60.3[✓]
3.9

59.1 [✓]	58.8 [✓]	60.7 [✓]	62.5 [✓]	64.0 [✓]
5.1	5.4	3.5	1.4	0.2
	25	50	100	130
			hook	

$\langle 64.19 \rangle$

CANTON
FROM NE.



Milton
T.P. 12.95 $\langle 161.41 \rangle$ 0.34 $\langle 148.46 \rangle$

+50

T.P. 12.44 $\langle 148.80 \rangle$ 0.62 $\langle 136.30 \rangle$

20

T.P. 12.67 $\langle 136.98 \rangle$ 0.40 $\langle 124.31 \rangle$

153.8 E Hartford No H.

25

T.P. 12.15 $\langle 124.71 \rangle$ 0.32 $\langle 112.50 \rangle$

+50

24

T.P. 12.77 $\langle 112.88 \rangle$ 0.13 $\langle 100.11 \rangle$

23+50

T.P. 12.73 $\langle 100.24 \rangle$ 0.28 $\langle 87.51 \rangle$
 $\langle 87.79 \rangle$

LT

E

141.8 ✓
7.0

$\langle 148.80 \rangle$ ✓

130.8 ✓
6.2
100

131.0 ✓
6.0

$\langle 136.98 \rangle$ ✓

123.0 ✓
1.7

112.6 ✓
12.1
100

114.8 ✓
9.9

$\langle 124.71 \rangle$ ✓
10.1 ✓
96.0 ✓
5.2

97.9
15.0
100

100.9 ✓
12.0

$\langle 112.88 \rangle$?

93.7 ✓

6.5

$\langle 100.24 \rangle$ ✓
 $\langle 87.79 \rangle$

8"x8"
check to B.M. Mon.
N.E. Cor. of
Milton and
16610N

4.92 $\langle 156.49 \rangle$ 156.47

29 + 0.29 = E 16610N

+50

28

+50 N.E. Cor. of house = Rear house^{of}

27

$\langle 161.41 \rangle$

156.7 ✓
4.7

158.5 ✓
2.9

160.4 ✓
1.0

156.8 ✓
4.6

157.1 ✓
4.3
56 F.G. 06.

152.8 ✓
8.6
100

150.5 ✓
10.9

$\langle 161.41 \rangle$

Alley sewer Levels
 Betw. Marena Blvd. and Chicago
 Lister to Ingham.

5
 4 + 40 E Kane St.

4 + 00
 3 + 45 S.E. Cor. of house
 T.P. 5.10 $\langle 18.85 \rangle$ 3.02 $\langle 13.75 \rangle$

3
 + 50

2
 + 50

1
 + 50

0 + 00 E Lister

Fd. T.P.
 P. 58 236 $\langle 16.77 \rangle$ 14.41
 1833-24

LT

67

5 + 50	15.4 ✓
	3.5
	14.6 ✓
	4.3
	14.4 ✓
	4.4
	14.2 ✓
	4.4
14.4 ✓	13.6 ✓
$\frac{4.4}{34}$	5.7
Fl. el. 34	$\langle 18.85 \rangle$ ✓
9.2 ✓	13.5 ✓
$\frac{7.6}{100}$	3.3
	12.6 ✓
	4.2
8.7 ✓	12.4 ✓
$\frac{8.1}{100}$	4.4
	12.0 ✓
	4.8
9.7 ✓	11.8 ✓
$\frac{7.1}{100}$	5.0
	12.2 ✓
	4.6
	12.2 ✓
	4.6
	$\langle 16.77 \rangle$ ✓

T.P.

1028

$\langle 35.89 \rangle$

0.91

$\langle 25.61 \rangle$

10

+50

9

8+80

E JELLOTT

+50

8

+50

7

6+81

SE Cor of House

T.P.

7.77

$\langle 26.52 \rangle$

0.10

$\langle 18.75 \rangle$

6+50

5+90

SE Cor of House

$\langle 18.85 \rangle$

L+

R

68

21.7 ✓
5.3
100
9rd

25.7 ✓
0.8

23.3 ✓
3.2

22.1 ✓
4.4

21.8 ✓
4.7

21.9 ✓
4.6

16.3 ✓
10.7
100
9rd

21.5 ✓
5.0

20.9 ✓
5.4

19.8 ✓
6.7

18.5 ✓
8.0
13
FL. 06.

19.6 ✓
6.9

$\langle 26.52 \rangle$ ✓

18.9 ✓
0.0

13.9 ✓
5.0
100
9rd

14.8 ✓
4.1
55
FL. 06.

16.6 ✓
2.2

$\langle 18.85 \rangle$ ✓

Set nail B.M. Betw. 3.12
Fence cor chic.
Next alley E. Den.
Sk. Ingult

42.05

T.P. 9.88 <45.17> 0.60 <35.79>

13+00 at Ingult

+70

+50

12

+50

11

10+50

35.89

Lt

E

69

20.6 ✓
15.3

30.5 ✓
5.4

31.2 ✓
4.7

19.1 ✓
16.7
120

30.9 ✓
5.0

30.1 ✓
5.8

22.5 ✓
13.4
100
9.0

27.8 ✓
8.1

26.2 ✓
9.7

35.89

E Alley sewer Levels
 Betw. Chicago & Denver
 MILTON to Ingulf.

T.P. 5.95 $\langle 32.42 \rangle$ 5.18 26.47 ✓

3

+80 gar FL.

2 +65 House

2 +30 gar. with ldy. tray

2 House

+75 9 gar. House Fl. 2' Higher

+50

1 SE Car Gar with wash tray House
F.L. 1' higher

+50 S.E. Car house

0+00 E MILTON ST

B.M. Spike
ON P.P.
P. CO

6.37 $\langle 31.65 \rangle$ $\langle 25.28 \rangle$

LT

E

70 ✓

26.4 ✓
5.0

23.4 ✓
8.4
9.0

24.8 ✓
6.9
FL. 9.0

24.4 ✓
9.2
FL. 9.0

24.0 ✓
7.7
FL. el. 9.0

23.0 ✓
8.6
9.0
gar. FL.

24.4 ✓
7.5
FL. el. 8.5

26.4 ✓
5.2
9.0
FL. el.

25.7 ✓
6.0

25.4 ✓
6.3

25.0 ✓
6.7

25.4 ✓
6.2

26.0 ✓
5.0

26.2 ✓
5.5

26.8 ✓
4.8

27.1 ✓
4.0

$\langle 31.65 \rangle$

8

+50

7 + 12

+95

T.P.

gar. Ldy. trays
house FL. e.L.

800 <35.42> 11.96 <27.42> ✓

+50

6

+50

5

+50

4 + 30 E Lister St.

4

+50 gar with ldy. + house = 3 + 68

3 + 20

house + gar. with ldy.

<32.42> ✓

LT 24.9 ✓

10.0

100

9rd.

26.0 ✓

10.5

8rd

gar. FL.

26.0 ✓

9.5

90

House FL

30.3 ✓

5.2

29.4 ✓

5.1

28.3 ✓

7.2

27.9 ✓

7.6

<35.42> ✓

27.0 ✓

5.4

22.4 ✓

10.0

100

9rd

26.5 ✓

5.9

25.8 ✓

6.6

23.3 ✓

9.1

100

9rd

27.4 ✓

5.0

28.0 ✓

4.4

27.5 ✓

4.9

27.3 ✓

5.1

25.6 ✓

6.8

House 95

25.2 ✓

7.2

90

house

24.0 ✓

8.4

95

gar.

23.7 ✓

8.7

90

gar

27.0 ✓

5.4

26.7 ✓

5.7

<32.42> ✓

13

+50

+15 S.E. Cor, house

12

+48 house FL. el.

11 house FL. el.

10+40 house

T.P. 5.14 $\langle 39.48 \rangle$ 1.12 $\langle 30.30 \rangle$

9+92 house FL. el.

+50

9

8+70 F Kame ✓

8+50

$\langle 35.46 \rangle$

Lr

36.5 ✓
33.5

72

36.4 ✓
3.1

32.5 ✓ 35.5 ✓
7.0 4.0
90 90
9rd. FL. el.

35.5 ✓
4.9

35.2 ✓
4.3

31.1 ✓ 32.9 ✓
8.5 ✓ 6.6
70 90 FL. el.
9rd. 34.0 ✓

34.4 ✓
5.1

7.5
7.5

34.0 ✓
5.5

30.2 ✓
9.3

34.4 ✓
5.1

90
FL. el.

$\langle 39.48 \rangle$

30.7 ✓
4.8
93

33.7 ✓
1.8

32.7 ✓
2.8

31.0 ✓
4.5

30.5 ✓
5.0

30.0 ✓
5.5

$\langle 35.46 \rangle$

Set. B.M. Ingulf + Denver 0.29 $\langle 53.34 \rangle$
 Check to mail B.M. 11.56 $\langle 42.07 \rangle$ 42.05
 P. 69
 T.P. 1134. $\langle 53.63 \rangle$ 2.75 $\langle 42.29 \rangle$
 17 near Ingulf St.

+75 house

+50

16

+75 house FL. el.

+50

15

+50

T.P. 643 $\langle 45.04 \rangle$ 0.87 $\langle 38.61 \rangle$

14

+50

13410 & Jellert ✓
 $\langle 39.48 \rangle$

Lr

€

73

41.8 ✓
 3.2

37.6 ✓ 406 ✓ 41.4 ✓
 7.4 4.4 2.5
 55 55
 FL. el.

40.5 ✓
 4.5

40.0 ✓
 5.0

37.0 ✓ 38.5 ✓ 39.8 ✓
 8.0 6.5 5.2
 60 20
 9nd FL. el.

39.8 ✓
 5.2

39.0 ✓ 39.7 ✓
 12.0 5.3
 115

40.0 ✓
 5.0

$\langle 45.04 \rangle$

38.0 ✓ 38.8 ✓
 6.5 0.7
 100

37.0 ✓
 2.5

36.1 ✓
 3.4

$\langle 39.48 \rangle$

± alley sewer levels
Berw. Denver + Erie

Block 56

MILTON to LISTER

5 + 00

+ 50

+ 30 E LISTER

4

+ 50

F.P.

1023

48.04

6.73

37.81

3

+ 50

House

2

+ 50

1

+ 50

0 + 00 ± MILTON

B.M.B.P.

S.W. Fet. 244

Erie + MILTON

P.L2

44.54

42.10

LT

E

74

36.6 ✓
11.4
100

43.0 ✓
5.0
40.7 ✓
7.3
40.5 ✓
7.5

40.5 ✓
7.5

33.8 ✓
14.2
100

39.4 ✓
8.6

48.04 ✓

37.8 ✓
4.7

34.4 ✓
10.1
95
H.O.L.

37.5 ✓
7.0

37.5 ✓
7.0

38.2 ✓
6.3

38.1 ✓
6.4

38.4 ✓
6.1

38.0 ✓
6.5

44.54 ✓

Block 56

Sewer Levels E Kane St.
From alley West of Denver
Ely to E Denver

3+07 Sw Con School

2

1+75 = 45° LT. E Denver & Kane

1+50

T.P. 11.90 $\langle \underline{50.67} \rangle$ 0.25 $\langle \underline{38.77} \rangle$

1

0+50

P. 72 }
8+70 = 0+100

T.P. → 11.56 $\langle \underline{39.02} \rangle$ $\langle \underline{27.46} \rangle$
P. 71

E

75

41.0
1.7
Lowest ground at Bldg.

42.1 ✓
8.6

41.3 ✓
9.4

40.1 ✓
10.6

$\langle \underline{50.67} \rangle$

37.1 ✓
1.3

36.2 ✓
4.8

30.7 ✓
8.3

$\langle \underline{39.02} \rangle$

Sewer Levels @ Jellett
 from alley west of Denver
 to " East " " Thence
 Lt. on Nly to

3 + 00

+ 50

2 + 00

1 + 75 @ Jellett + Denver

1 + 50

T.P. 12.57 $\langle 54.87 \rangle$ 0.33 $\langle 42.30 \rangle$

1 + 00

0 + 50

13 + 10 = 0 + 00 P 73

T.P. 73

402

$\langle 42.63 \rangle$

$\langle 38.61 \rangle$

57.3 ?
1.6

49.6 ✓
5.3

46.1 ✓
8.8

44.6 ✓	45.7 ✓	46.9 ✓	46.9 ✓	46.4 ✓
10.3	$\frac{9.2}{50}$	$\frac{8.0}{100}$	$\frac{8.0}{150}$	$\frac{8.5}{200}$

43.4 ✓
11.5

$\langle 54.87 \rangle$ ✓

40.8 ✓
1.8

38.2 ✓
4.4

36.0 ✓
6.6

$\langle 42.63 \rangle$ ✓

R7 76 ✓

check to T.P. P.73 1009 $\langle 53.32 \rangle$ 53.32

7+40

7

6+68 house FL. el.

T.P. 543 $\langle 63.41 \rangle$ 427 $\langle 57.98 \rangle$

6+18 house FL. el.

+65 house FL. el.

+15 house FL. el.

5

+68 house FL. el.

+50

4

3+50 Δ 89°58'30" L.T. via alley

T.P. 7.42 $\langle 62.25 \rangle$ 0.04 $\langle 54.83 \rangle$
 $\langle 54.87 \rangle$

LT.

E

77

58.4 ✓

5.0

53.3 ✓

5.1

57.4 ✓

6.0

90

FL. el.

57.9 ✓

5.5

$\langle 63.41 \rangle$ ✓

54.8 ✓

7.0

92 96

54.3 ✓

8.0

92 90

52.4 ✓

9.9

90

92

55.8 ✓

6.5

96 FL. el.

54.9 ✓

7.5

90 FL. el.

53.4 ✓

8.9

90

FL. el.

57.4 ✓

4.8

57.0 ✓

5.3

57.0 ✓

5.3

57.0 ✓

5.3

52.6 ✓

9.6

90

57.3 ✓

5.0

57.2 ✓

5.1

57.0 ✓

5.2

56.4 ✓

5.9

$\langle 62.25 \rangle$ ✓

Sewer Levels on LISTER ST.
ALLEY west of Chicago to
" EAST " "

3 + 49.8 = 4 + 30 P. 71

3 + 00

T.P. 5.67 $\langle \underline{30.33} \rangle$ 0.30 $\langle \underline{24.66} \rangle$

2 + 50

2 + 00

1 + 50

1 + 00

0 + 50

0 + 00 = 1 + 99.88 IN 1833-23

Fd. T.P.
1833-24

10.55 $\langle \underline{24.96} \rangle$

14.41 See P. 58

27.5 ✓

2.8

26.1 ✓

2.2

$\langle \underline{30.33} \rangle$ ✓

23.9 ✓

1.1

21.3 ✓

3.7

18.7 ✓

6.3

16.4 ✓

8.6

13.9 ✓

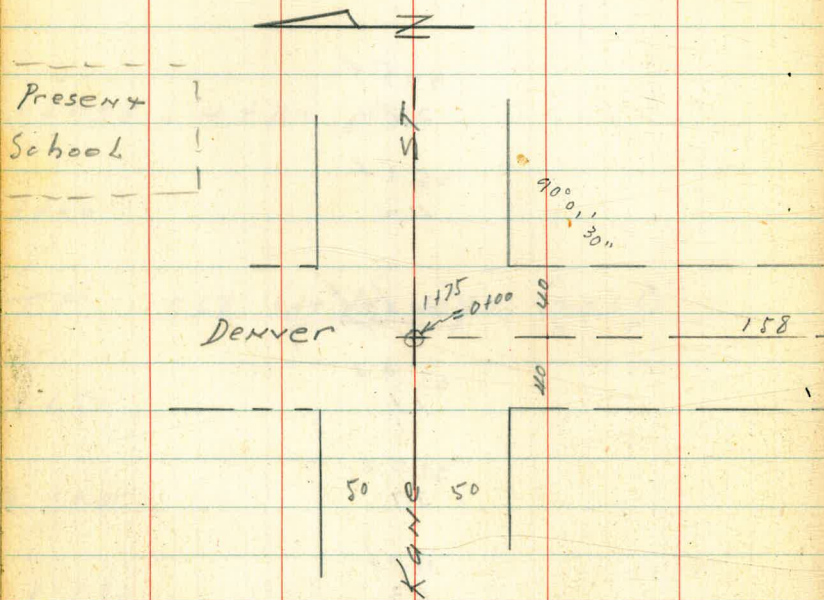
11.1

12.3 ✓

12.7

$\langle \underline{24.96} \rangle$ ✓

Sewer levels to get
School Cess Pool



2 + 40 ground at cess pool.

1 + 58 = Δ 90° L₇

1 + 00

0 + 50

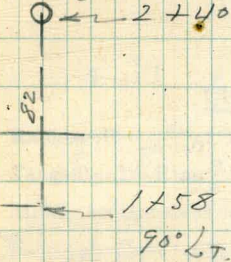
0 + 00 = 1 + 75 Δ Kane + Denver P. 75

Ground			
Δ Kane + Denver	4.8	46.10	41.3
<u>P. 75</u>		<u>46.10</u>	

School Bldg. Planned.

Here

School
cess pool



45.0 ✓
4.1 ✓
38.0 ✓
8.1 ✓
38.8 ✓
7.5 ✓
40.4 ✓
5.9 ✓
41.3 ✓
41.8 ✓

46.10

79 1/2

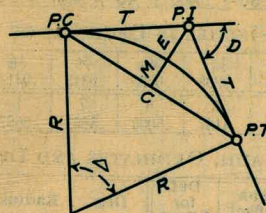
Morena Blvd Sewer Levels
Contd. from P. 49 & 51

9+50		2.0	21.6	
9		3.0	20.6	
150		3.5	20.1	
8		4.3	19.3	
7+50		5.1	18.5	
53	LAST LT of 7135 cabin of Indian Dwelling	0.7	22.9	Floor EL.
7+35		5.4	18.2	
7+00		5.8	17.8	
750		6.4	17.2	
6+00		7.6	16.0	
5+91.5	OLD DE.	9.51	7.6	16.0
T.P.	857	(23.63)	3.96	(15.06)
check D NE Curve	4.27	(19.02)	14.75	

Littelfield
Morena Bl.
P. 49

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

Copyright, 1914, by Eugene Dietzgen Co., New York City



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) $= R + \cos \frac{\Delta}{2} - R$ (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 $\div 8 \frac{1}{2} = 414.49$ 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) $.3 \times C \times D^\circ$ 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 115.37. For from Table IV for 1° curve $E = 960.6$ for $8^\circ 20' = 960.6 \div 8 \frac{1}{2} = 115.27$ and from Table V correction = .10 or $E = 115.37$ 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 $\div 42 = 5.5$ or $D = 5^\circ 30'$.

TABLE IV.—TANGENTS AND EXTERNALS TO A 1° CURVE.

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
91°	5830.5	2444.9	101°	6950.6	3278.1	111°	8336.7	4386.1
10'	5847.5	2457.1	10'	6971.3	3294.1	10'	8362.7	4407.6
20	5864.6	2469.3	20	6992.0	3310.1	20	8388.9	4429.2
30	5881.7	2481.5	30	7012.7	3326.1	30	8415.1	4450.9
40	5898.8	2493.8	40	7033.6	3342.3	40	8441.5	4472.7
50	5916.0	2506.1	50	7054.5	3358.5	50	8468.0	4494.6
92	5933.2	2518.5	102	7075.5	3374.9	112	8494.6	4516.6
10	5950.5	2531.0	10	7096.6	3391.2	10	8521.3	4538.8
20	5967.9	2543.5	20	7117.8	3407.7	20	8548.1	4561.1
30	5985.3	2556.0	30	7139.0	3424.3	30	8575.0	4583.4
40	6002.7	2568.6	40	7160.3	3440.9	40	8602.1	4606.0
50	6020.2	2581.3	50	7181.7	3457.6	50	8629.3	4628.6
93	6037.8	2594.0	103	7203.2	3474.4	113	8656.6	4651.3
10	6055.4	2606.8	10	7224.7	3491.3	10	8684.0	4674.2
20	6073.1	2619.7	20	7246.3	3508.2	20	8711.5	4697.2
30	6090.8	2632.6	30	7268.0	3525.2	30	8739.2	4720.3
40	6108.6	2645.5	40	7289.8	3542.4	40	8767.0	4743.6
50	6126.4	2658.5	50	7311.7	3559.6	50	8794.9	4766.9
94	6144.3	2671.6	104	7333.6	3576.8	114	8822.9	4790.4
10	6162.6	2684.7	10	7355.6	3594.2	10	8851.0	4814.1
20	6180.2	2697.9	20	7377.8	3611.7	20	8879.3	4837.8
30	6198.3	2711.2	30	7399.9	3629.2	30	8907.7	4861.7
40	6216.4	2724.5	40	7422.2	3646.8	40	8936.3	4885.7
50	6234.6	2737.9	50	7444.6	3664.5	50	8965.0	4909.9
95	6252.8	2751.3	105	7467.0	3682.3	115	8993.8	4934.1
10	6271.1	2764.8	10	7489.6	3700.2	10	9022.7	4958.6
20	6289.4	2778.3	20	7512.2	3718.2	20	9051.7	4983.1
30	6307.9	2792.0	30	7534.9	3736.2	30	9080.9	5007.8
40	6326.3	2805.6	40	7557.7	3754.4	40	9110.3	5032.6
50	6344.8	2819.4	50	7580.5	3772.6	50	9139.8	5057.6
96	6363.4	2833.2	106	7603.5	3791.0	116	9169.4	5082.7
10	6382.1	2847.0	10	7626.6	3809.4	10	9199.1	5107.9
20	6400.8	2861.0	20	7649.7	3827.9	20	9229.0	5133.3
30	6419.5	2875.0	30	7672.9	3846.5	30	9259.0	5158.8
40	6438.4	2889.0	40	7696.3	3865.2	40	9289.2	5184.5
50	6457.3	2903.1	50	7719.7	3884.0	50	9319.5	5210.3
97	6476.2	2917.3	107	7743.2	3902.9	117	9349.9	5236.2
10	6495.2	2931.6	10	7766.8	3921.9	10	9380.5	5262.3
20	6514.3	2945.9	20	7790.5	3940.9	20	9411.3	5288.6
30	6533.4	2960.3	30	7814.3	3960.1	30	9442.2	5315.0
40	6552.6	2974.7	40	7838.1	3979.4	40	9473.2	5341.5
50	6571.9	2989.2	50	7862.1	3998.7	50	9504.4	5368.2
98	6591.2	3003.8	108	7886.2	4018.2	118	9535.7	5395.1
10	6610.6	3018.4	10	7910.4	4037.8	10	9567.2	5422.1
20	6630.1	3033.1	20	7934.6	4057.4	20	9598.9	5449.2
30	6649.6	3047.9	30	7959.0	4077.2	30	9630.7	5476.5
40	6669.2	3062.8	40	7983.5	4097.1	40	9662.6	5504.0
50	6688.8	3077.7	50	8008.0	4117.0	50	9694.7	5531.7
99	6708.6	3092.7	109	8032.7	4137.1	119	9727.0	5559.4
10	6728.4	3107.7	10	8057.4	4157.3	10	9759.4	5587.4
20	6748.2	3122.9	20	8082.3	4177.5	20	9792.0	5615.5
30	6768.1	3138.1	30	8107.3	4197.9	30	9824.8	5643.8
40	6788.1	3153.3	40	8132.3	4218.4	40	9857.7	5672.3
50	6808.2	3168.7	50	8157.5	4239.0	50	9890.8	5700.9
100	6828.3	3184.1	110	8182.8	4259.7	120	9924.0	5729.7
10	6848.5	3199.6	10	8208.2	4280.5	10	9957.5	5758.6
20	6868.8	3215.1	20	8233.7	4301.4	20	9991.0	5787.7
30	6889.2	3230.8	30	8259.3	4322.4	30	10025.0	5817.0
40	6909.6	3246.5	40	8285.0	4343.6	40	10059.0	5846.5
50	6930.1	3262.3	50	8310.8	4364.8	50	10093.0	5876.1

TABLE V.—CORRECTIONS FOR TANGENTS AND EXTERNALS.

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table IV) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.79	.81	.92	1.04	1.29	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	.43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22

FOR EXTERNALS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.029	.032	.035	.039	.043	.047	.051
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.127	.135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.771	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.286	.383	.480	.578	.678	.777	.877	.977	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1					

TABLE VII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
0	0	0	00	1	90	0	.1392	.1405	7.115	.99027	82
10	.0029	.0029	343.8	I	50	10	.1421	.1435	6.968	.98986	50
20	.0058	.0058	171.9	.99998	40	20	.1449	.1465	6.827	.98944	40
30	.0087	.0087	114.6	.99996	30	30	.1478	.1495	6.691	.98902	30
40	.0116	.0116	85.94	.99993	20	40	.1507	.1524	6.561	.98858	20
50	.0145	.0145	68.75	.99989	10	50	.1536	.1554	6.435	.98814	10
1	.0175	.0175	57.29	.99985	89	9	.1564	.1584	6.314	.98769	81
10	.0204	.0204	49.10	.99979	50	10	.1593	.1614	6.197	.98723	50
20	.0233	.0233	42.96	.99973	40	20	.1622	.1644	6.084	.98676	40
30	.0262	.0262	38.19	.99966	30	30	.1650	.1673	5.976	.98629	30
40	.0291	.0291	34.37	.99958	20	40	.1679	.1703	5.871	.98580	20
50	.0320	.0320	31.24	.99949	10	50	.1708	.1733	5.769	.98531	10
2	.0349	.0349	28.64	.99939	88	10	.1736	.1763	5.671	.98481	80
10	.0378	.0378	26.43	.99929	50	10	.1765	.1793	5.576	.98430	50
20	.0407	.0407	24.54	.99917	40	20	.1794	.1823	5.485	.98378	40
30	.0436	.0437	22.90	.99905	30	30	.1822	.1853	5.396	.98325	30
40	.0465	.0466	21.47	.99892	20	40	.1851	.1883	5.309	.98272	20
50	.0494	.0495	20.21	.99878	10	50	.1880	.1914	5.226	.98218	10
3	.0523	.0524	19.08	.99863	87	11	.1908	.1944	5.145	.98163	79
10	.0552	.0553	18.07	.99847	50	10	.1937	.1974	5.066	.98107	50
20	.0581	.0582	17.17	.99831	40	20	.1965	.2004	4.989	.98050	40
30	.0610	.0612	16.35	.99813	30	30	.1994	.2035	4.915	.97992	30
40	.0640	.0641	15.60	.99795	20	40	.2022	.2065	4.843	.97934	20
50	.0669	.0670	14.92	.99776	10	50	.2051	.2095	4.773	.97875	10
4	.0698	.0699	14.30	.99756	86	12	.2079	.2126	4.705	.97815	78
10	.0727	.0729	13.73	.99736	50	10	.2108	.2156	4.638	.97754	50
20	.0756	.0758	13.20	.99714	40	20	.2136	.2186	4.574	.97692	40
30	.0785	.0787	12.71	.99692	30	30	.2164	.2217	4.511	.97630	30
40	.0814	.0816	12.25	.99668	20	40	.2193	.2247	4.449	.97566	20
50	.0843	.0846	11.83	.99644	10	50	.2221	.2278	4.390	.97502	10
5	.0872	.0875	11.43	.99619	85	13	.2250	.2309	4.331	.97437	77
10	.0901	.0904	11.06	.99594	50	10	.2278	.2339	4.275	.97371	50
20	.0929	.0934	10.71	.99567	40	20	.2306	.2370	4.219	.97304	40
30	.0958	.0963	10.39	.99540	30	30	.2334	.2401	4.165	.97237	30
40	.0987	.0992	10.08	.99511	20	40	.2363	.2432	4.113	.97169	20
50	.1016	.1022	9.788	.99482	10	50	.2391	.2462	4.061	.97100	10
6	.1045	.1051	9.514	.99452	84	14	.2419	.2493	4.011	.97030	76
10	.1074	.1080	9.255	.99421	50	10	.2447	.2524	3.962	.96959	50
20	.1103	.1110	9.010	.99390	40	20	.2476	.2555	3.914	.96887	40
30	.1132	.1139	8.777	.99357	30	30	.2504	.2586	3.867	.96815	30
40	.1161	.1169	8.556	.99324	20	40	.2532	.2617	3.821	.96742	20
50	.1190	.1198	8.345	.99290	10	50	.2560	.2648	3.776	.96667	10
7	.1219	.1228	8.144	.99255	83	15	.2588	.2679	3.732	.96593	75
10	.1248	.1257	7.953	.99219	50	10	.2616	.2711	3.689	.96517	50
20	.1276	.1287	7.770	.99182	40	20	.2644	.2742	3.647	.96440	40
30	.1305	.1317	7.596	.99144	30	30	.2672	.2773	3.606	.96363	30
40	.1334	.1346	7.429	.99106	20	40	.2700	.2805	3.566	.96285	20
50	.1363	.1376	7.269	.99067	10	50	.2728	.2836	3.526	.96206	10
	Cosin.	Cotg.	Tan.	Sine.	Angle		Cosin.	Cotg.	Tan.	Sine.	Angle

TABLE VIII.—NATURAL TRIGONOMETRICAL FUNCTIONS.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
16	.2756	.2867	3.487	.96126	74	16	.4067	.4452	2.246	.91355	66
10	.2784	.2899	3.450	.96046	50	10	.4094	.4487	2.229	.91236	50
20	.2812	.2931	3.412	.95964	40	20	.4120	.4522	2.211	.91116	40
30	.2840	.2962	3.376	.95882	30	30	.4147	.4557	2.194	.90996	30
40	.2868	.2994	3.340	.95799	20	40	.4173	.4592	2.177	.90875	20
50	.2896	.3026	3.305	.95715	10	50	.4200	.4628	2.161	.90753	10
17	.2924	.3057	3.271	.95615	73	25	.4226	.4663	2.145	.90631	65
10	.2952	.3089	3.237	.95545	50	10	.4253	.4699	2.128	.90507	50
20	.2979	.3121	3.204	.95459	40	20	.4279	.4734	2.112	.90383	40
30	.3007	.3153	3.172	.95372	30	30	.4305	.4770	2.097	.90259	30
40	.3035	.3185	3.140	.95284	20	40	.4331	.4806	2.081	.90133	20
50	.3062	.3217	3.108	.95195	10	50	.4358	.4841	2.066	.90007	10
18	.3090	.3249	3.078	.95106	72	26	.4384	.4877	2.050	.89879	64
10	.3118	.3281	3.048	.95015	50	10	.4410	.4913	2.035	.89752	50
20	.3145	.3314	3.018	.94924	40	20	.4436	.4950	2.020	.89623	40
30	.3173	.3346	2.989	.94832	30	30	.4462	.4986	2.006	.89493	30
40	.3201	.3378	2.960	.94740	20	40	.4488	.5022	1.991	.89363	20
50	.3228	.3411	2.932	.94646	10	50	.4514	.5059	1.977	.89232	10
19	.3256	.3443	2.904	.94552	71	27	.4540	.5095	1.963	.89101	63
10	.3283	.3476	2.877	.94457	50	10	.4566	.5132	1.949	.88968	50
20	.3311	.3508	2.850	.94361	40	20	.4592	.5169	1.935	.88835	40
30	.3338	.3541	2.824	.94264	30	30	.4617	.5206	1.921	.88701	30
40	.3365	.3574	2.798	.94167	20	40	.4643	.5243	1.907	.88566	20
50	.3393	.3607	2.773	.94068	10	50	.4669	.5280	1.894	.88431	10
20	.3420	.3640	2.747	.93969	70	28	.4695	.5317	1.881	.88295	62
10	.3448	.3673	2.723	.93869	50	10	.4720	.5354	1.868	.88158	50
20	.3475	.3706	2.699	.93769	40	20	.4746	.5392	1.855	.88020	40
30	.3502	.3739	2.675	.93667	30	30	.4772	.5430	1.842	.87882	30
40	.3529	.3772	2.651	.93565	20	40	.4797	.5467	1.829	.87743	20
50	.3557	.3805	2.628	.93462	10	50	.4823	.5505	1.816	.87603	10
21	.3584	.3839	2.605	.93358	69	29	.4848	.5543	1.804	.87462	61
10	.3611	.3872	2.583	.93253	50	10	.4874	.5581	1.792	.87321	50
20	.3638	.3906	2.560	.93148	40	20	.4899	.5619	1.780	.87178	40
30	.3665	.3939	2.539	.93042	30	30	.4924	.5658	1.767	.87036	30
40	.3692	.3973	2.517	.92935	20	40	.4950	.5696	1.756	.86892	20
50	.3719	.4006	2.496	.92827	10	50	.4975	.5735	1.744	.86748	10
22	.3746	.4040	2.475	.92718	68	30	.5000	.5774	1.732	.86603	60
10	.3773	.4074	2.455	.92609	50	10	.5025	.5812	1.720	.86457	50
20	.3800	.4108	2.434	.92499	40	20	.5050	.5851	1.709	.86310	40
30	.3827	.4142	2.414	.92388	30	30	.5075	.5890	1.698	.86163	30
40	.3854	.4176	2.394	.92276	20	40	.5100	.5930	1.686	.86015	20
50	.3881	.4210	2.375	.92164	10	50	.5125	.5969	1.675	.85866	10
23	.3907	.4245	2.356	.92050	67	31	.5150	.6009	1.664	.85717	59
10	.3934	.4279	2.337	.91936	50	10	.5175	.6048	1.653	.85567	50
20	.3961	.4314	2.318	.91822	40	20	.5200	.6088	1.643	.85416	40
30	.3987	.4348	2.300	.91706	30	30	.5225	.6128	1.632	.85264	30
40	.4014	.4383	2.282	.91590	20	40	.5250	.6168	1.621	.85112	20
50	.4041	.4417	2.264	.91472	10	50	.5275	.6208	1.611	.84959	10
	Cosin.	Cotg.	Tan.	Sine.	Angle		Cosin.	Cotg.	Tan.	Sine.	Angle

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 41.9. 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.

MADE IN U.S.A.