

272

S.M.P.L. ~ ~ ~
TRANSIT NOTES

1881

FIELD BOOK

No. 385 F

W 272

Our Leather Bound Engineers Note Books are carried in the following rulings:

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THE FREDERICK POST CO.
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Page 2-26. Transit Notes on Alignment
for Second Main Otway Pipe Line
from Lantanna Drive (Sta. 855+98.02)
to Univ. Heights Res. (Sta. 1013+72.68)

Page 28 New $\&$ Location on Lantanna
Drive.

Page 29 Level Notes, new location on Lantanna

Page 30 New $\&$ Location on Boundary Street

Pages 31-35 New location on Lantanna
level notes with sewer plans

Page 37-41 Ref. Points from Lantanna to Univ. Hts. Res.

Page 77 List Horizontal Equations-

Sta Detlev Bear Mag

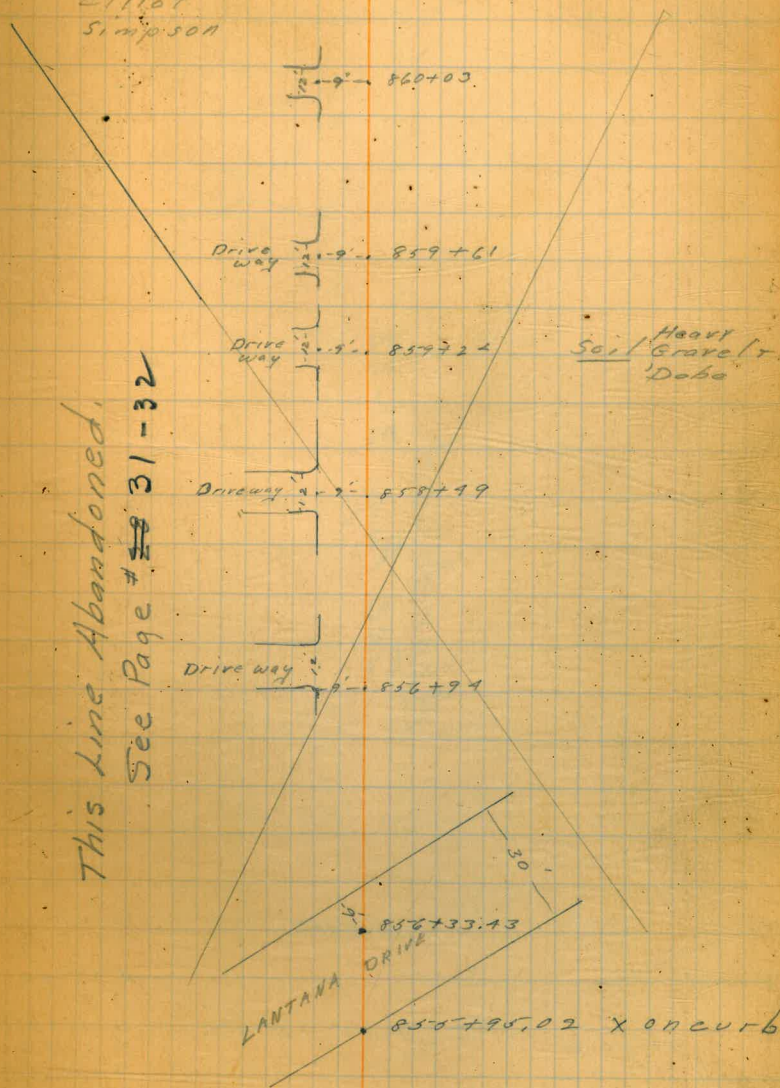
67° 25'
856+33.43 30° 41' R

N36-00W

5/20/29 Clear
Parker
Converse
H. H.
Elliot
Simpson

2

This Line Abandoned.
See Page # ~~30~~ 31-32



Sta. Detloa Bear Mag.
117° 01'
861+6137 - 57° 00' 30" N 12° 00' E

Abandoned.
See Page 31-32.

N 56° 00' W

861+29.98 P.T.

43-59-30

860+6231 22°-00' L

857+92.48 P.C.

Δ 22-00 L

D 16

L 137.5-0

R 359.26

T 67.83

EXT. 6.72 (at 2)

" 6.6 miles to curb



Drive 9' - 862+42

Drive 9' - 862+25

860+6231 P.I. - 61 - M.H.

Abandoned.
See Page # 28

Sta. Delec. Bear. Mag.

N89°28'W

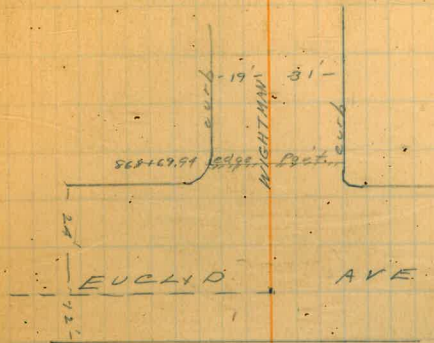
N89°30'W

180°-00'
868+3412 90°-00'L

N0°32'E

864+74.55 P.O.T.

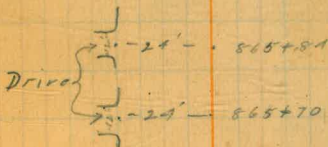
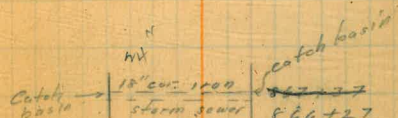
Drive } 19'-869+87



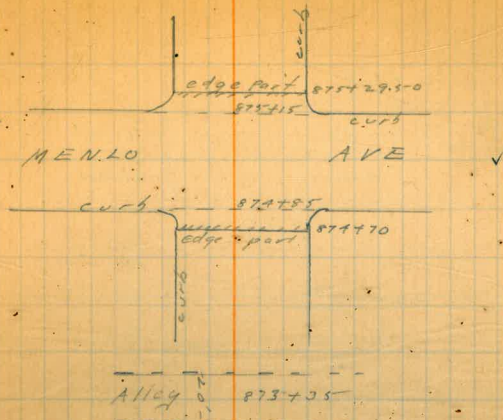
Soil Gravel Dobe

M.H. 31.5
867+32.5

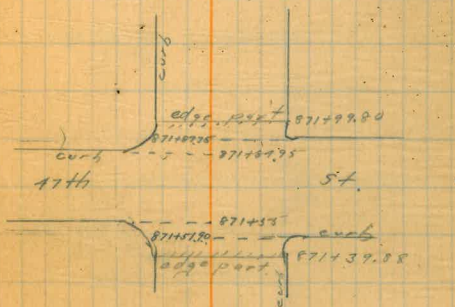
867+29.52 = Wightman St



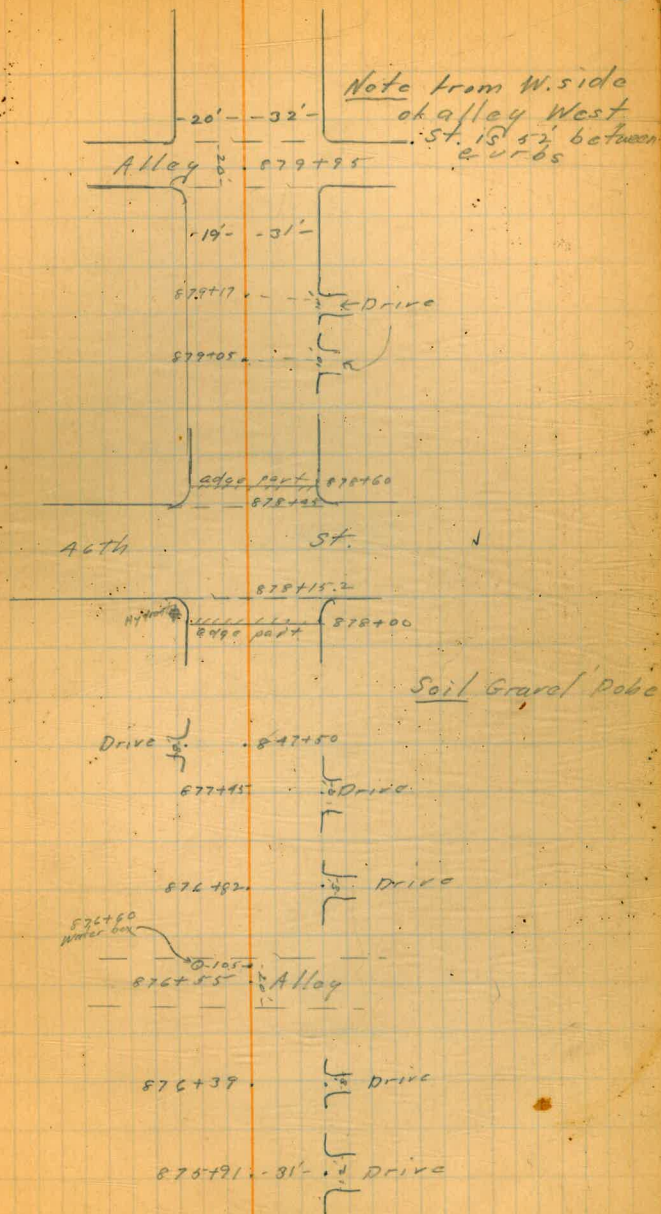
N89°28'W



Soil Gravel Dobe



N 89° 28' W



N 87° 28' W

881+3023 P.O.T.

Drive } 881+97

Drive } 881+78

881+20.2
881+20.0

15th St

+72.3
881+60.2

Drive } 881+75

Alley } 881+25

edge part
881+30.3
+25.0

Chamoun Ave

+22.2 curb
881+30.23
edge part

Drive } 881+72 } Drive

891+2535 P.O.T.

N89°28'W

DRIVE } 70
892+95 } DRIVE

edge Part 891+95
770.3

44th

St.

2375
hydrant } edge Part 891+25.35

89051. --- } DRIVE

Alley 889+90

water tap

889+21 --- } DRIVE

Soil Gravel Dobo.

888+515
779.2

HIGHLAND AVE

888+02.7
hydrant } 887+90.7

887+36 --- } DRIVE

DRIVE } 887+26

Alley } 886+55.5

N 89° 28' W.

Drive 900+32

Paved Alley 900+16
Commencing at prop. lines

Drive 899+37

edge part 898+60
52.0

43RD ST.

898+00
hydraul edge part 897+80.0

Drive 897+31

Drive 897+27

896+10.3 Alley

895+88. Drive

edge part 894+15
52.0
FAIRMONT AVE
catch basin
6" dia pipe 894+55.5
hydraul edge part 894+55.5

Alley 893+20.3

N 89° 28' W

905+10 --- DRIVE

DRIVE --- 904+95

904+75 --- DRIVE

Part connection
at prop. lines
pared 903+25.5
alley

903+50 --- DRIVE

DRIVE --- 903+30

Sail Grand Dobe

902+85 --- DRIVE

edge part 902+65.5
902+215

VANDYKE AVE

+79.6
hydrant & edge part 901+65.0

DRIVE --- 901+04

900+75 --- DRIVE

N 89° 28' W

905+15.52

Alley } 911+58.8

Drive } 910+77

20' - 31.8' edge part } 910+06.1
+ 91.2

MARLBOROUGH AVE |

139.5 } 909+25.6
hydraulic } edge part

908+59 } Drive

Alley } 907+75

907+38 } Drive

Drive } 907+12

906+01 } Drive

19.5 - 32.5 } 906+25.5
edge part } 906+11.2

42ND ST. |

15.9.5 } 905+45.52
hydraulic } edge part

N 89° 28' W

916+86.18 P.O.T.

+ 48.35
914+88.15 6-03 R

913+72.95 12-06 L

912+97.65 6-03 R

Note These angles turned
to miss M.H. at sta.
913+72.5. Ties shown
on opposite page are
from regular line.

21.4 - 30.9
edge part 921+45.7
921+51.5

40TH ST. 1

hydrant 920+65.6
edge part

DRIVE 919+54

Alley 919+16

DRIVE 918+58

21.15 - 30.7
edge part 917+66.1
917+62

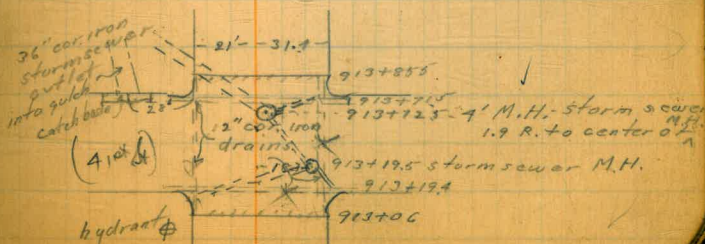
CENTRAL AVE

hydrant 917+00
916+86.18
21.1 - 30.8

DRIVE 916+13

915+81 DRIVE

Alley 915+35.8



5/21/29 clear

13

Parker
Converse
Hill
Elliot
Simpson

Drive $\frac{1}{7}$ --- 927+43

Alley $\frac{1}{9}$ --- 926+76

926+25 --- $\frac{1}{10}$ DRIVE

Drive $\frac{1}{3}$ --- 926+18

$\frac{21.4}{17.4}$ $\frac{30.60}{17.4}$
add part 925+25.94

925+117

39TH ST.

924+528

hydroly $\frac{1}{10}$ add part 924+16

924+03 --- $\frac{1}{10}$ Drive

923+65 --- $\frac{1}{10}$ Drive

Alley $\frac{1}{9}$ --- 922+95.6

922+36 --- $\frac{1}{10}$ Drive

M8928W

N89°28'W

Alley 934+35

Drive 933+64

21 - 31
932+95.1
932+95.1
932+95.1

37TH ST.

hydrant edge path 932+05.2

931+42

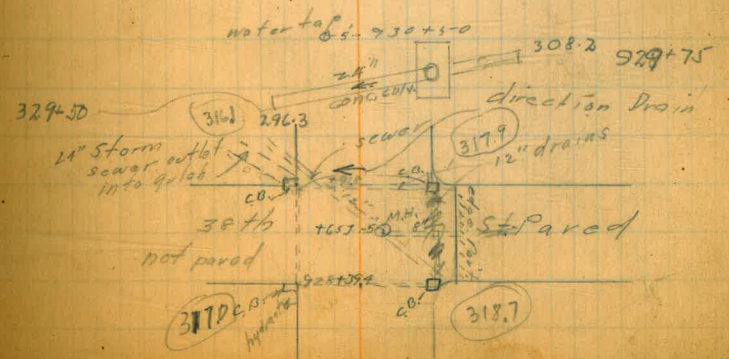
Drive to 9 garages

931+08

931+126

930+73.6 Drive

Alley 930+53.6



2057-31.40
 edge Point 940+45.1
 940+31.3
 36TH ST. ↓

Hydrant Ⓟ +72.3
 edge Point 939+65

Drive ↓ 938+17

← 20' Alley 938+15.6

937+97. ↓ Drive

937+52. ↓ Drive

937+07. ↓

217-31.3
 edge Point 936+64.8
 936+51
 CHEROKEE AVE. ↓

935+89.30
 Hydrant Ⓟ edge Point 935+87.60
 2075-31.1

935+12. ↓ Drive

Drive ↓ 934+96

MBC 068N

935+89.66 P.O.T.

Drive } 946+51
 }
 946+23 } DRIVE
 }
 Drive } 946+20

± 20' Alley 945+75

944+90 } DRIVE

Drive } 944+59

edge part 944+25.1
 944+11.1
 WILSON AVE

+37.2
 hydrant 20.1 - 31.8 } 943+45.2

Drive } 942+79

Drive } 942+10

± 20' Alley 941+95

941+33 } DRIVE

Msc 6811

Sta. Deflec. Bear. Mag.

N15°59'30"W

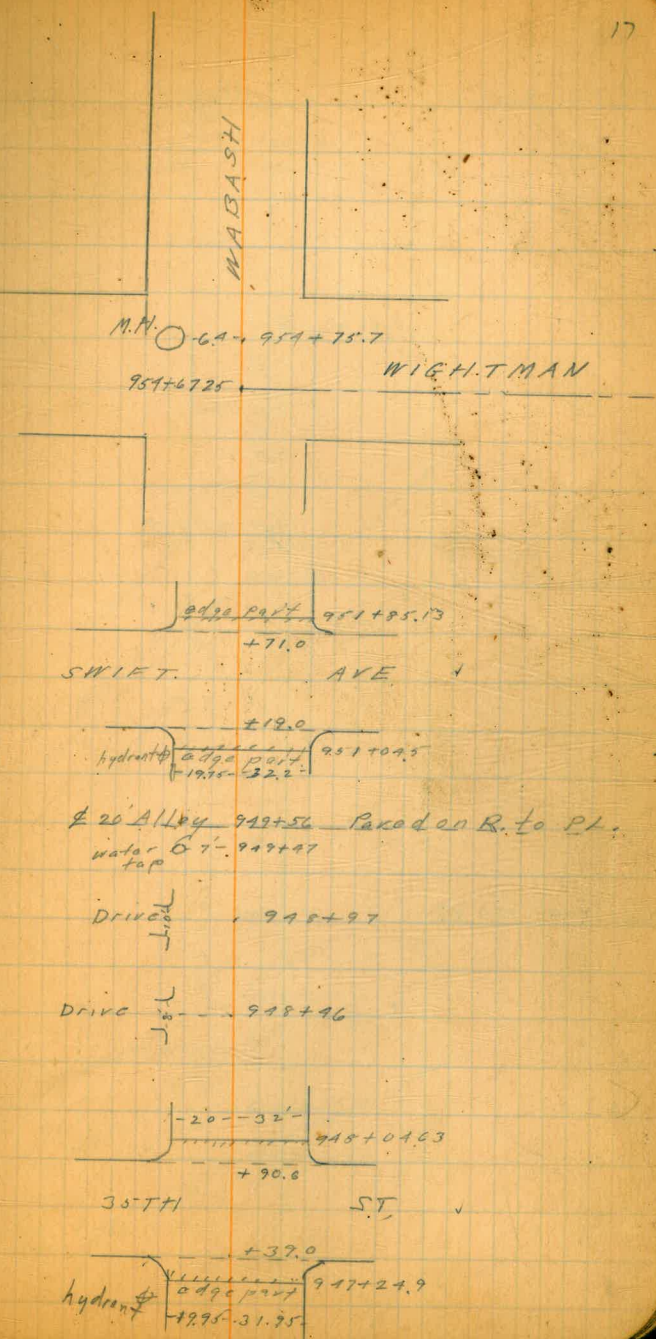
146-57'

954+6725 73° 28-30 R

951+85.13 P.O.T.

N89°25'W

948+04.63 P.O.T.



Sta. DeHea. Bear. Mag.

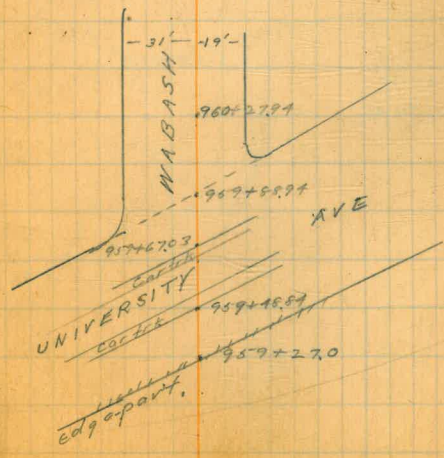
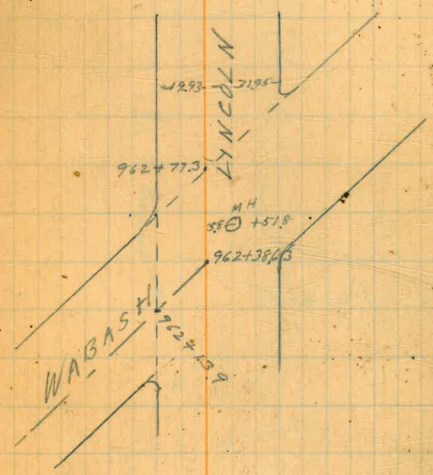
N69°05'30" W

N69°30" W

106°-12'
962+3867 53-06'

960+2794 P.O.T.

965+2075
 - 965+14 - 6'0" MH.
 ALLEY - 964+958
 hydrant - 964+75
 Drive - 964+21
 }
 964+02 - DRIVE



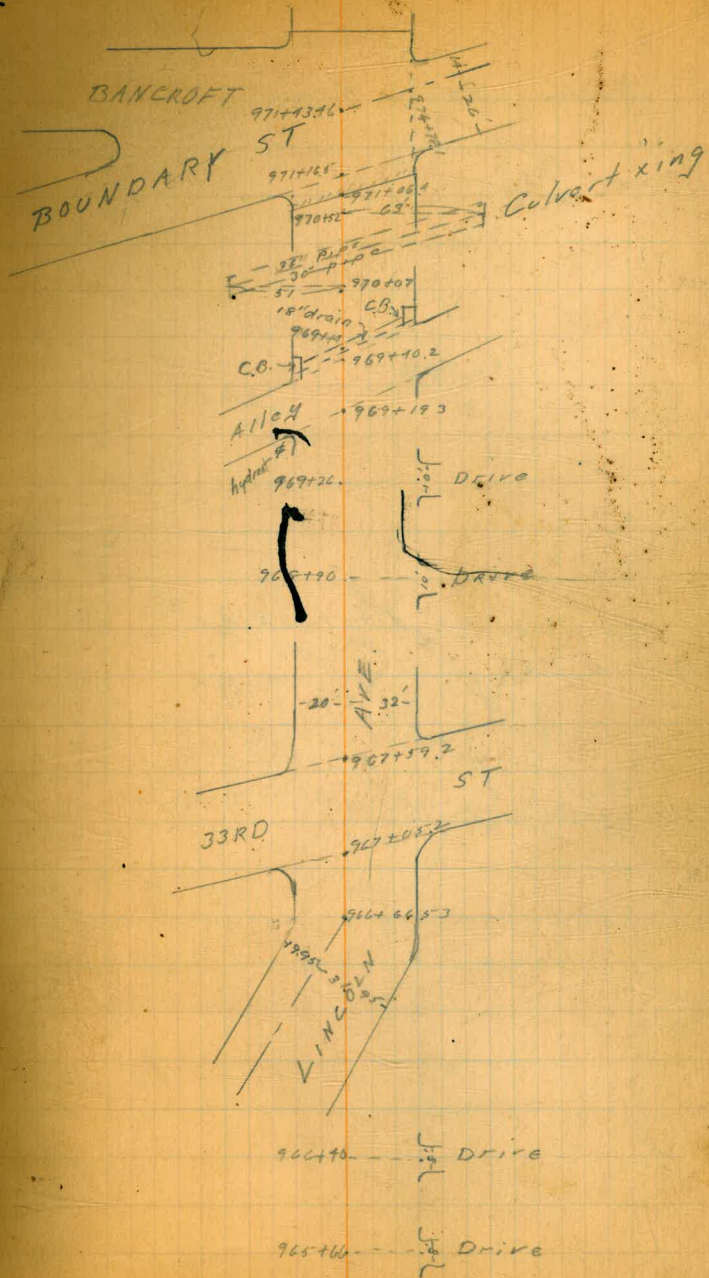
Sta Delec. Bear Mag.

97H4346 1780430 74/05R
Revised N17-00W
See Page 30
W.

S 89° 43' W

S 89-00W

12-22-30
966+6653 21-11-30 L

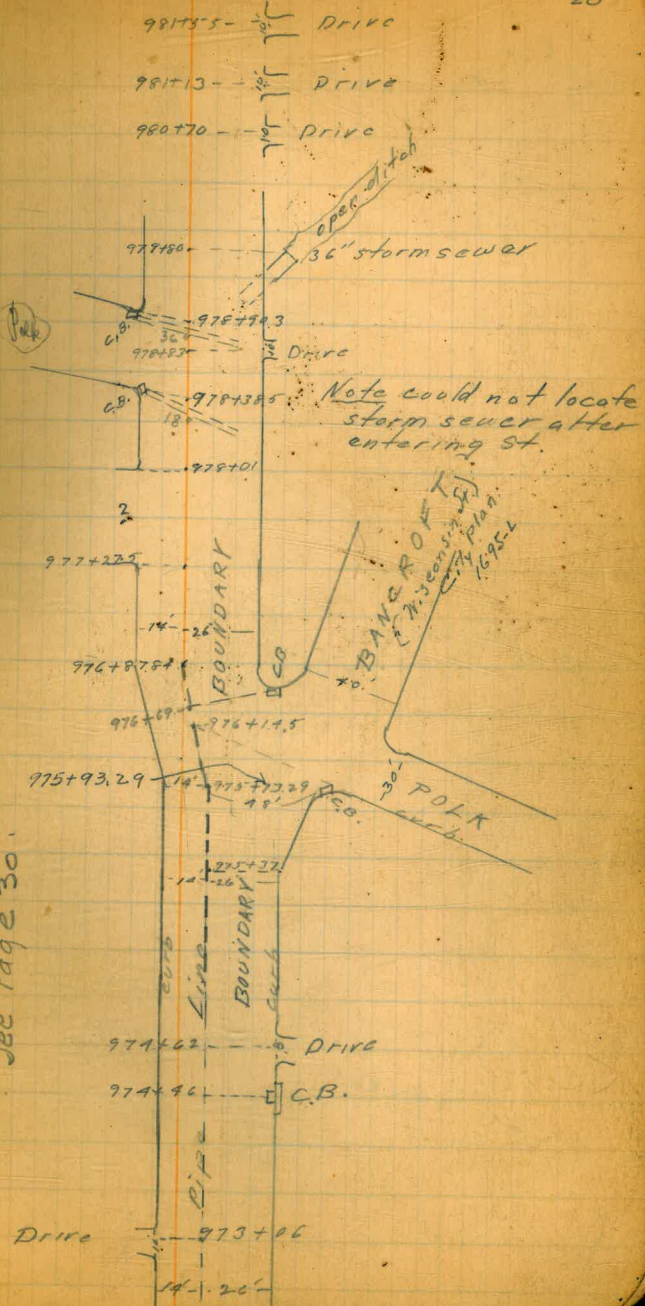


Sta. Delec. Bear. Mag.

N 167° 2' W

18° 01'
 976+8784 9-00-30
 18° 01'
 975+7329 9-00-30 L

See Page 30
 N 18° 00' W
 N 25° 30' W



Abandoned.
 See Page 30.

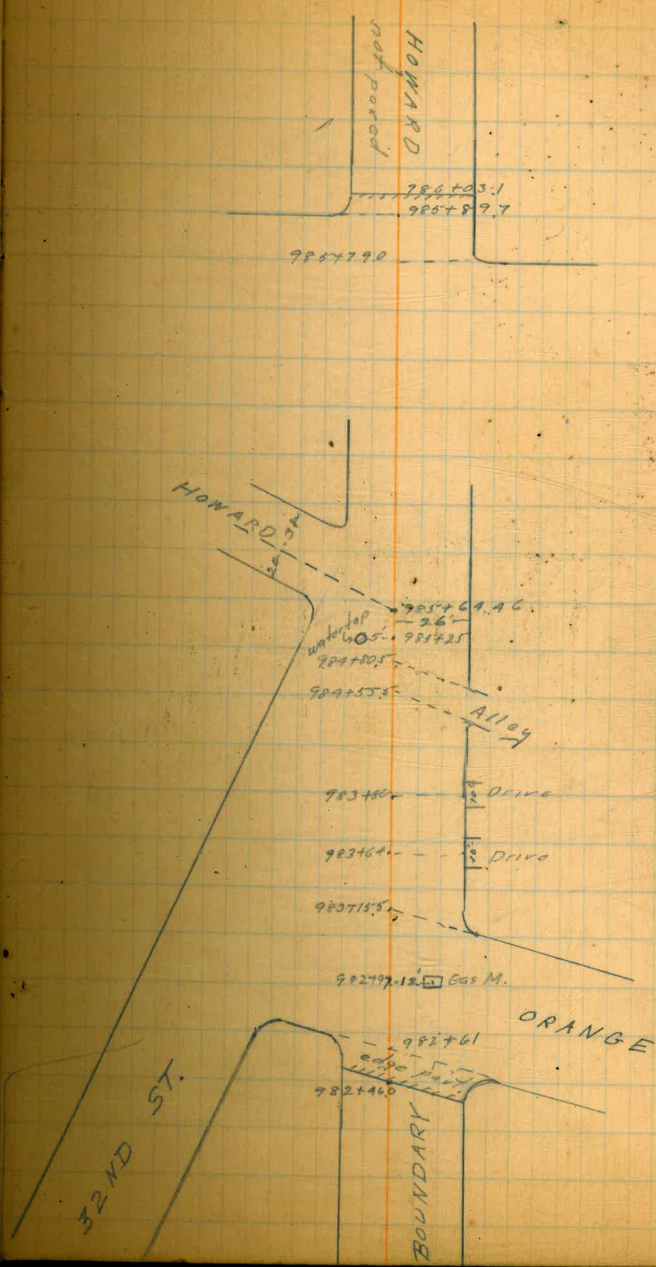
Sta. DeLee Bear. Mag.

589°45'W

198-05-95
985+69.76 79-03 L

S 89°20'W

N 16°12'W



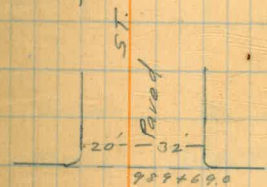
M. 57.685

Drive $\frac{1}{2}$ - 992+05

991
999+033.6' MH $\frac{1}{2}$ 20' Alley

990+88 $\frac{1}{2}$ Drive

Double drive $\frac{1}{2}$ - 990+57



10 WA ST.



988+33 $\frac{1}{2}$ Drive

987+53.2 $\frac{1}{2}$ 20' Alley

987+32 $\frac{1}{2}$ Drive

Drive $\frac{1}{2}$ - 987+10.9

998+93 - 20' Alley

998+14 - Drive

OHIO ST
 997+29
 996+77
 Hydrant

995+80 - Drive

995+65 - "

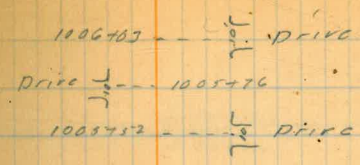
995+133 - E1 - 20' Alley

994+69 - Drive
 Drive - 994+61
 994+56 - Drive

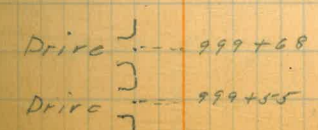
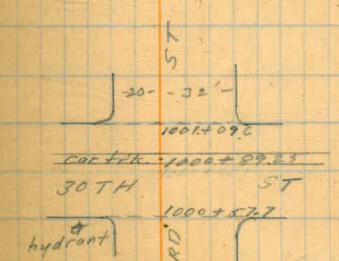
ST
 993+46.8
 ILLINOIS ST
 992+96.8
 Hydrant

HOWARD

S 89° 45' W



1002735.6' ^{M.H.} 20' Alley

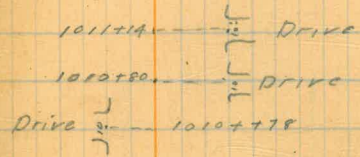
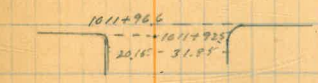
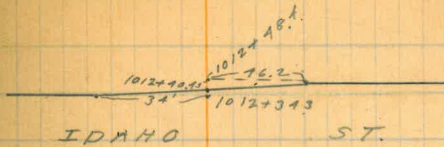


S 89° 45' W

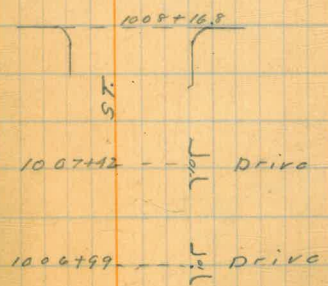
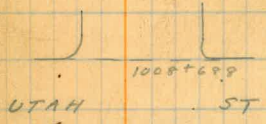
999+00 P.O.T.

1012+3882 P.O.T. Nail in asphalt part 1.6' from curb

S 89° 45' W



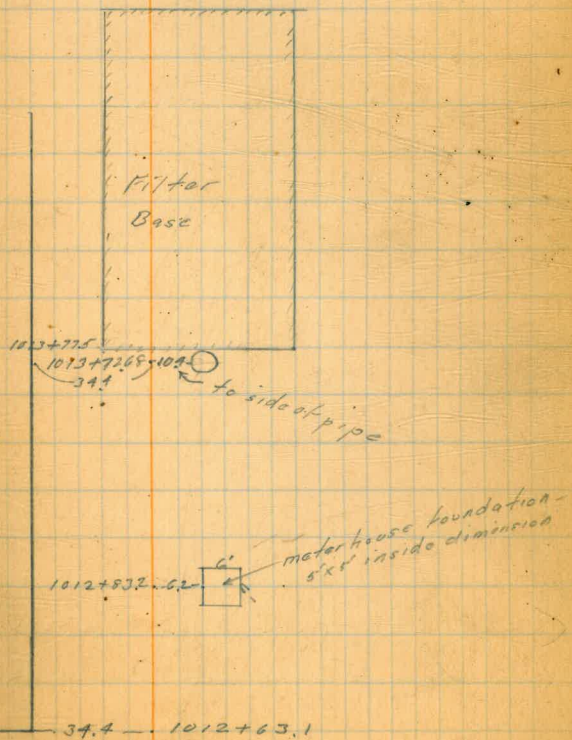
4 20' Alley 1010+32.5



4 20' Alley 1006+53.3

HOWARD

RESERVOIR



New Location Alignment on
Latanna Drive

See Page 2-3, This Book

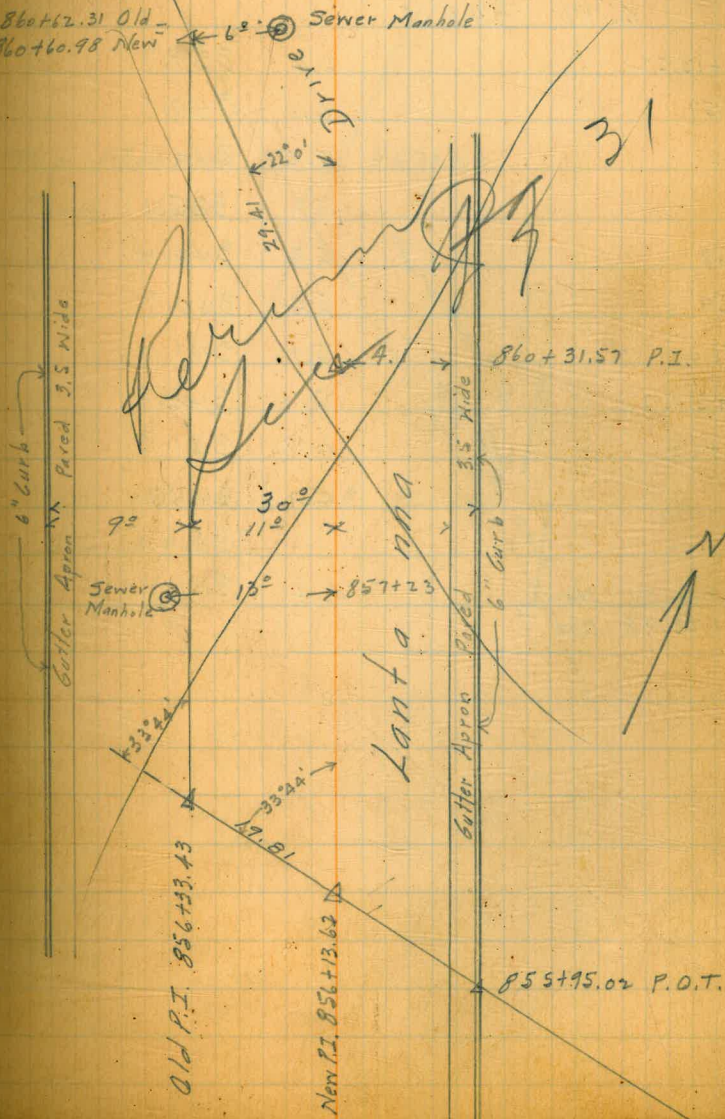
860 + 29.41	29.41
860 + 31.57	31.57
860 + 60.98	60.98
861 + 30.81	69.83

69.83

21-59-30
43-59-15
21-59-38

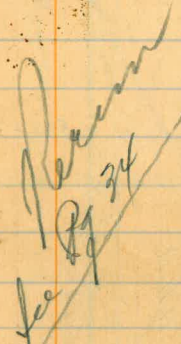
Aug. 7, 1929
Converse
Elliott
Jimpson

P.I. 860+62.31 Old
P.I. 860+60.98 New



Profile Levels on New Location
on Lantanna Drive

	6.77	346.1	339.3
856+13.52	6.4		339.7
857	6.0		340.1
	5.5		340.6
			335.1
858	5.7		340.4
859	5.4		340.7
860	5.1		341.0
+31.57	5.3		340.8
+61	4.8		341.3
	4.9		341.2
			333.45
861+30.81 New	4.4		341.7
861+29.98 Old			



5.4
3.7
1.7

Top Curb 855+95.02

Top Manhole 13' L. 857+23
Flow Line

Top Manhole 6' R. 860+61
Flow Line

New Location Alignment on
Boundary Street.

See Page 19-20 this Book.

N11°12'

72-25-15

144-50

1°40'

3-20-10



32.33
54.56
86.89

74°05'

9

65°05'

9

74°05'

72-25

140

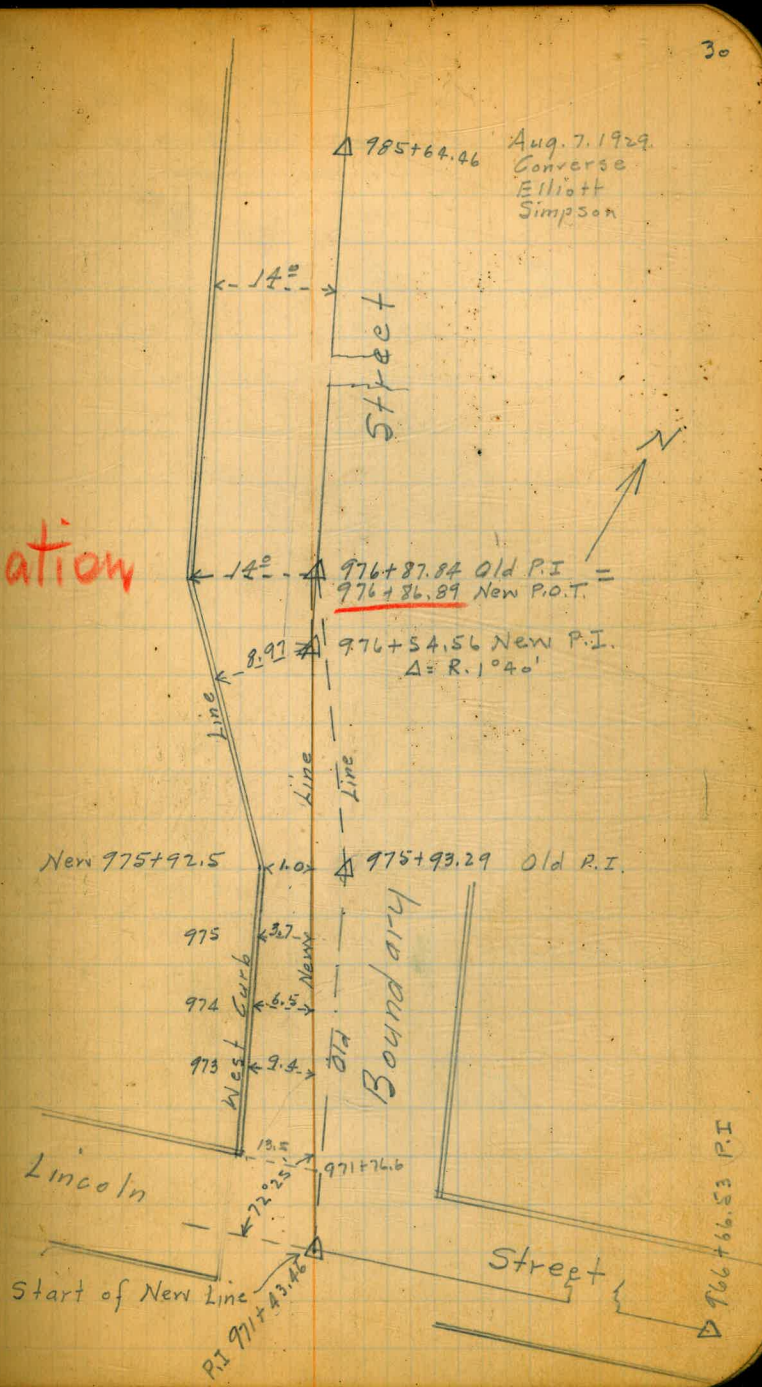
74-05

N17°52'W



S89°43'W

Equation



New Location on Lantana

warm

73°-56'
860+60.57 21°-58'
7

Note from end of D" line
at Lantana P.L. was re-
located and construction
supervised by city eng's dept.
See city eng. for new align-
ment. ~~M.B.~~

N34°29'W

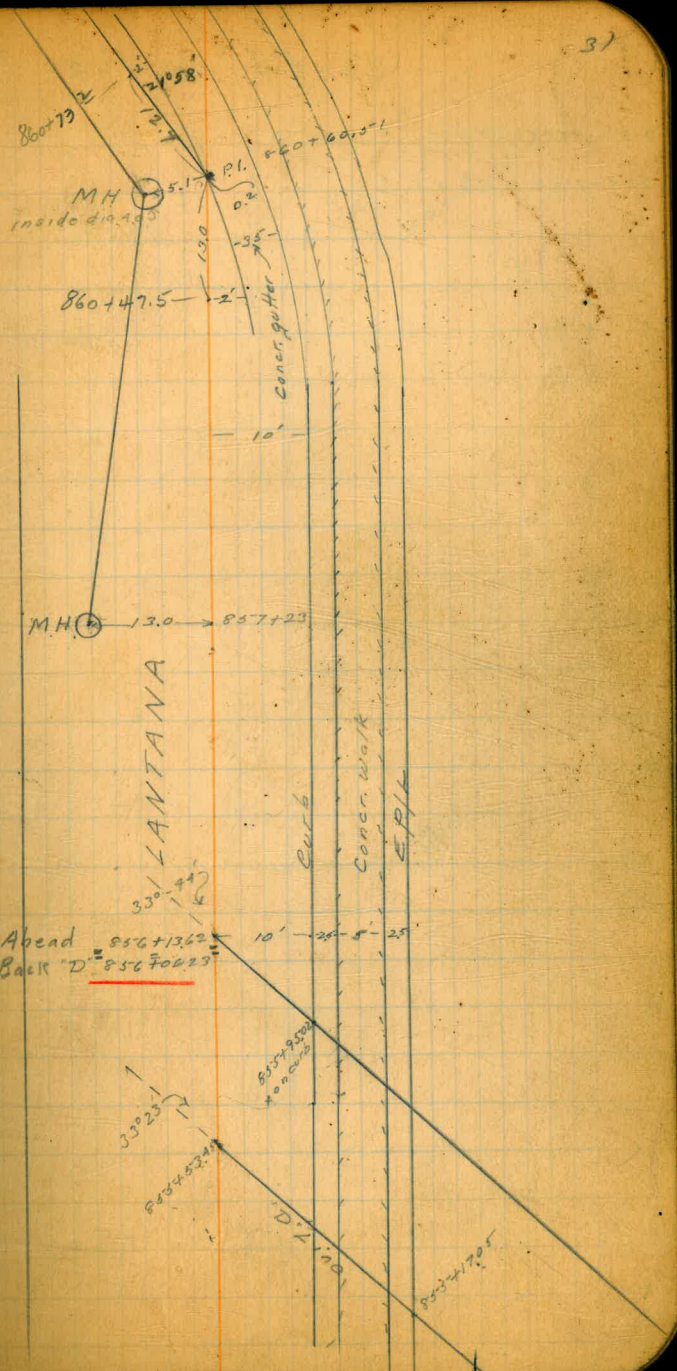
856+1362 33°-44' R

Equation-

Contd. from Page 14. Book #274.

Void

9/13/29
Hill
Elliot
Simpson

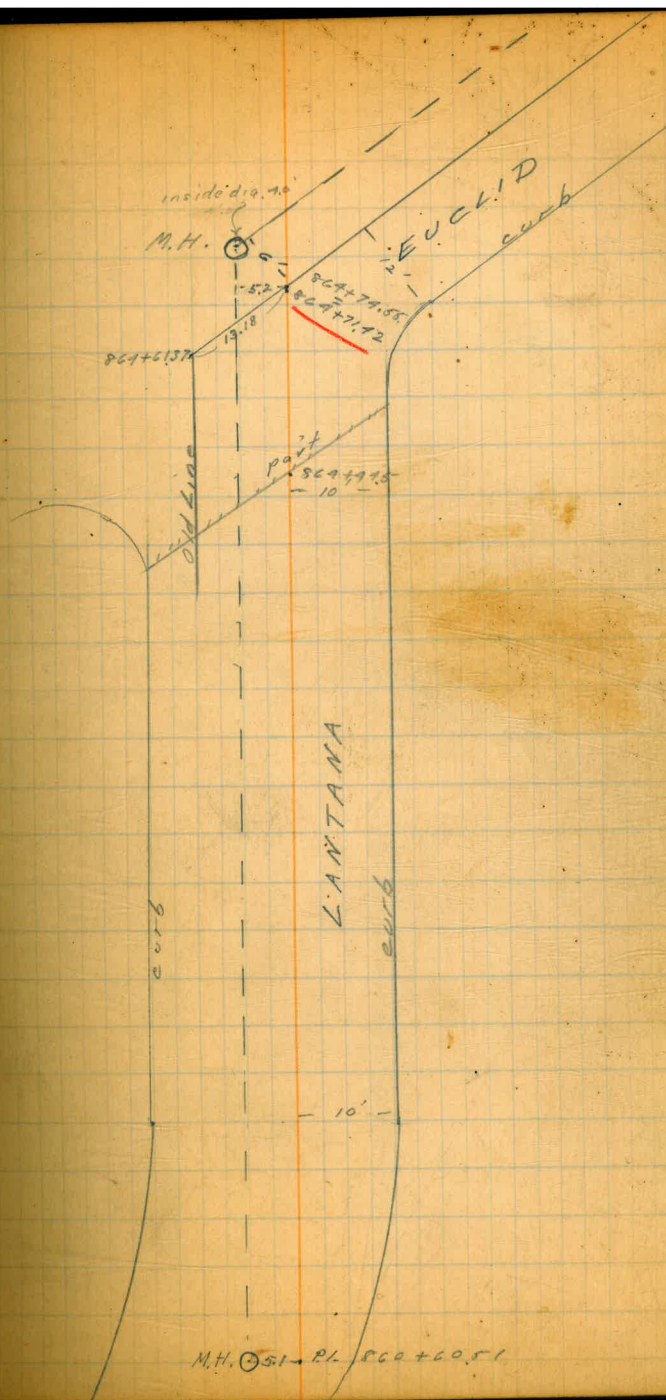


Cont'd. on Page 4. This Book

864+74.55 old line
= 113-57-30
864+71.42 56°-59' R

Equation —

Void



WIGHTMAN

G.M.H.

18' → 867+37

M.H. ⊙ 6' - 867+32.5

Inside width 4.0

WIGHTMAN

- 12' -

3' x 3.5' 6" concrete

866+27

storm sewer

30°

2 1/2"

17.53'

3/4"

24" cast iron pipe

Cast Iron

EUCLID

- 12' -

2 1/2"

EUCLID

Levels over new location (Lantana) 9/13/29 Hill Warm
 + sewer elevs on Euclid Elliot
 Simpson

31

	7.01	396.31 ✓	339.3 ?	
855+853.15			7.2	39.1 ✓
856+866.23			6.6	39.7 ✓
856+856.2			6.2	40.1 ✓
857			5.7	40.6 ✓
857+23 13' L			11.15	35.16 ✓
858			5.9	40.4 ✓
859			5.6	40.7 ✓
860			5.4	40.9 ✓
860+805.1 5.1 L			5.1	41.2 ✓
"			12.9	33.1 ✓
" 21			5.6	40.7 ✓
861			5.0	41.3 ✓
862			4.8	41.5 ✓
863			5.0	41.3 ✓
864			5.0	41.3 ✓
+74.5			5.4	40.9 ✓
+67			5.7	40.6 ✓
+71.22			5.3	41.0 ✓
+74.55				
M.H. at Lantana Euclid			5.3	41.0 ✓
" " "			15.0	31.3 ✓
T.P.	3.56	394.37	5.50	390.81 ✓

Top of curb at 855+95.02

Top M.H.

Flowline

Top M.H.

Flowline

Edge part

Top M.H.

Flowline

349.37 ✓

867+325	6'L	1.6	39.8	✓
"	"	12.6	31.8	✓
867+37	18'L	1.7	37.7	✓
"	"	7.0	37.1	✓
"	"	7.3	37.1	✓
866+27	24'L	6.7	37.7	✓
"	24'L	9.9	37.5	✓
"	6'L	5.6	38.8	✓
"	12'R	6.6	37.8	✓
"	12'R	11.2	33.2	✓
"	12'R	5.3	39.1	✓
"	22'R	5.1	39.3	✓
"	25'R	4.6	39.8	✓
"	26'R	6.5	37.9	✓
"	32'R	6.9	37.5	✓
"	88'R	14.3	30.1	✓
"	125'R	15.7	28.7	✓
"	137'R	15.3	29.1	✓
"	145'R	17.3	27.1	✓
"	145'R	14.5	29.9	✓
"	148'R	21.7	22.7	✓
"	148'R	23.7	20.7	✓

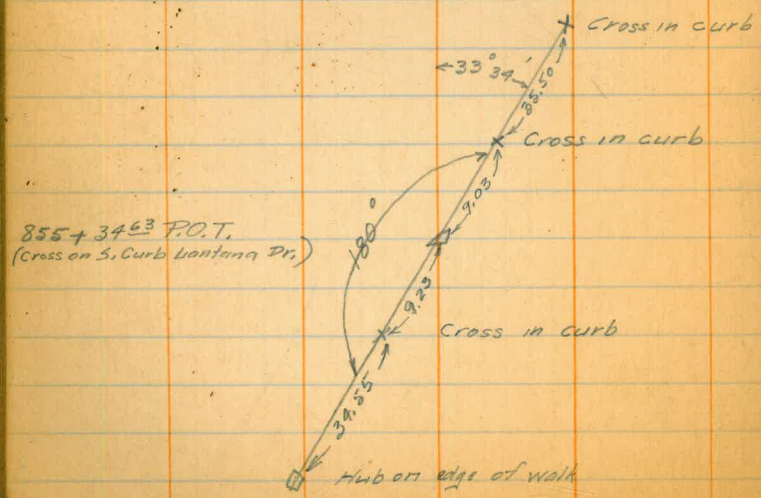
Top M.H.
 Flowline - 0.5 higher to inlet from Wicket man
 Top Gas. M.H.
 " at pipe outlet Note: M.H. filled with water
 bot. of M.H.
 Top grating at C.B. - storm sewer
 Flowline
 & Euclid
 Top of grating at C.B.
 Flowline
 Top of curb
 E. edge of concr. walk
 Top 12" rubble wall
 bot. " " "
 Ground
 " "
 " "
 " "
 Top 12" Concr. masonry wall
 Flowline 24" cor. iron culv. (outlet thru wall)
 bot. of ditch

Otay to San Diego 2nd Main Pipe Line
 Ref. Points from 855+34⁶³ to 1012+38⁸²

Lt



Rt.



Jan 4 - 1930

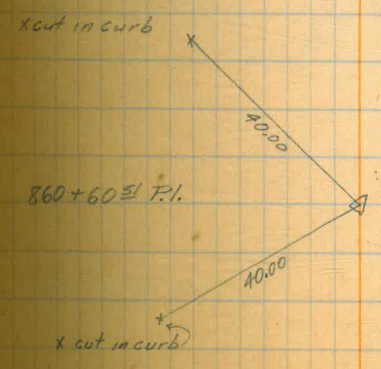
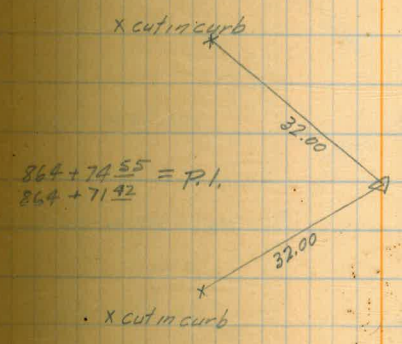
37

Hill
 Elliott
 Simpson
 Walton

Lt



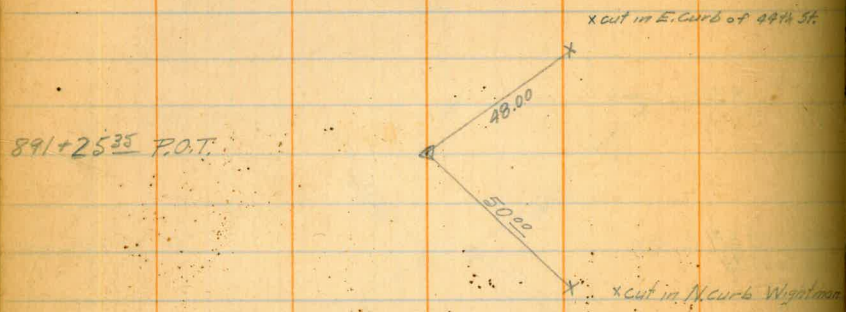
Rt.



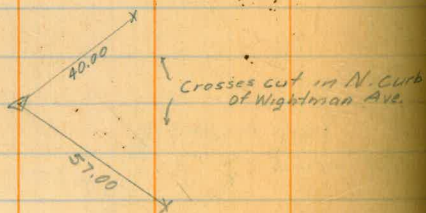
Lt

C

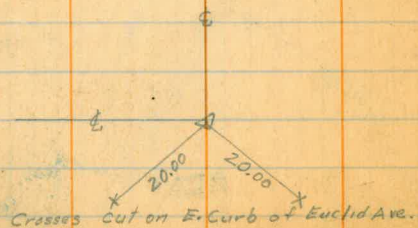
Rt



881+30²³ P.O.T.



868+34¹² P.I.



Lt

C

Rt

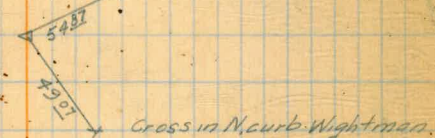
914+98³⁵ P.I.



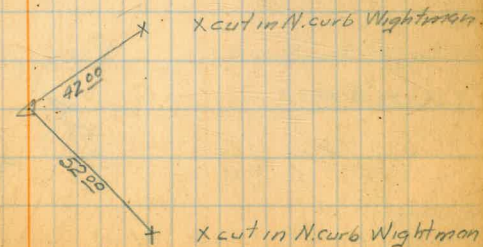
913+72⁹⁵ P.I.



912+97⁵⁵ P.I.



905+45⁵² P.O.T.



Jan 6, 1930 - Cloudy - cold - rain 39

Elliott
Simpson
Walton

Lt

C

Rt

107-39-30

Foreward Tangent

Prod Hd. in Power Park

57°07'

61.00

164.47'

111.00

Hub + tk.

85.00

Hub + tk.

954+6725 P.I.

951+8513 P.O.T.

32.50

Cross in N. curb Wightman

85.00

Cross in N. curb Wightman

Lt

E

Rt

948+0468 P.O.T.

X cut in N. Curb Wightman

50.00

42.00

X Cross cut in W. curb 35th St.

935+8466 P.O.T.

X cut E. curb of Cherokee Ave.

40.00

46.00

X cut in N. curb of Wightman

916+8618 P.O.T.

X cut in E. curb of Central Ave.

40.00

47.00

X cut in N. Curb Wightman

4t

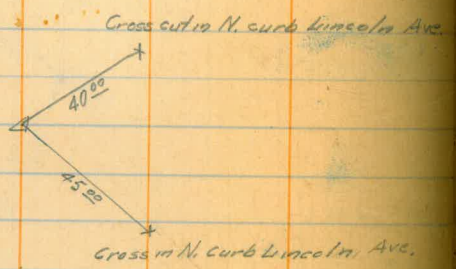
C

RT

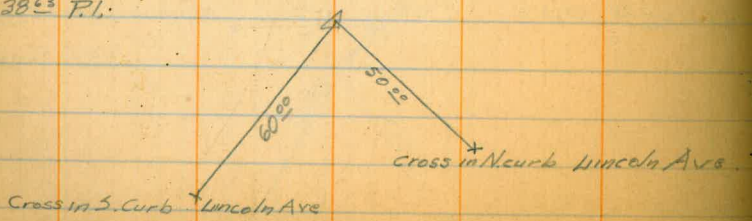
971+43.46 P.I.



966+66.53 P.I.



962+38.83 P.I.



4t

E

RT

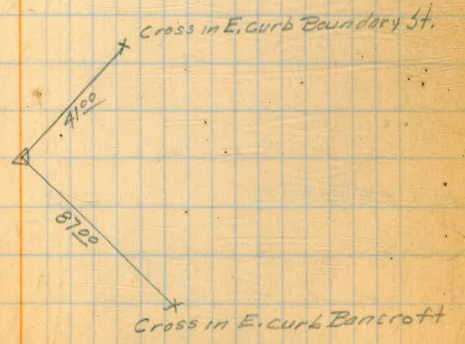
999+00 P.O.T.



985+64.46 P.I.



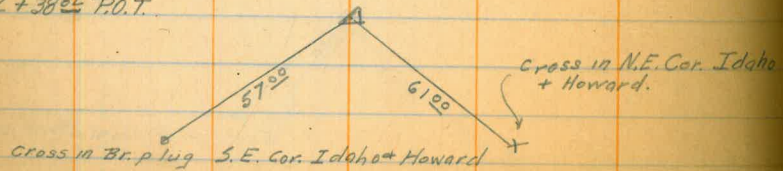
976+54.56 P.I.



Wt.

E

Tt.

1012 + 38⁰⁰ F.O.T.

44

AG

49

54

53

57

58

59

6

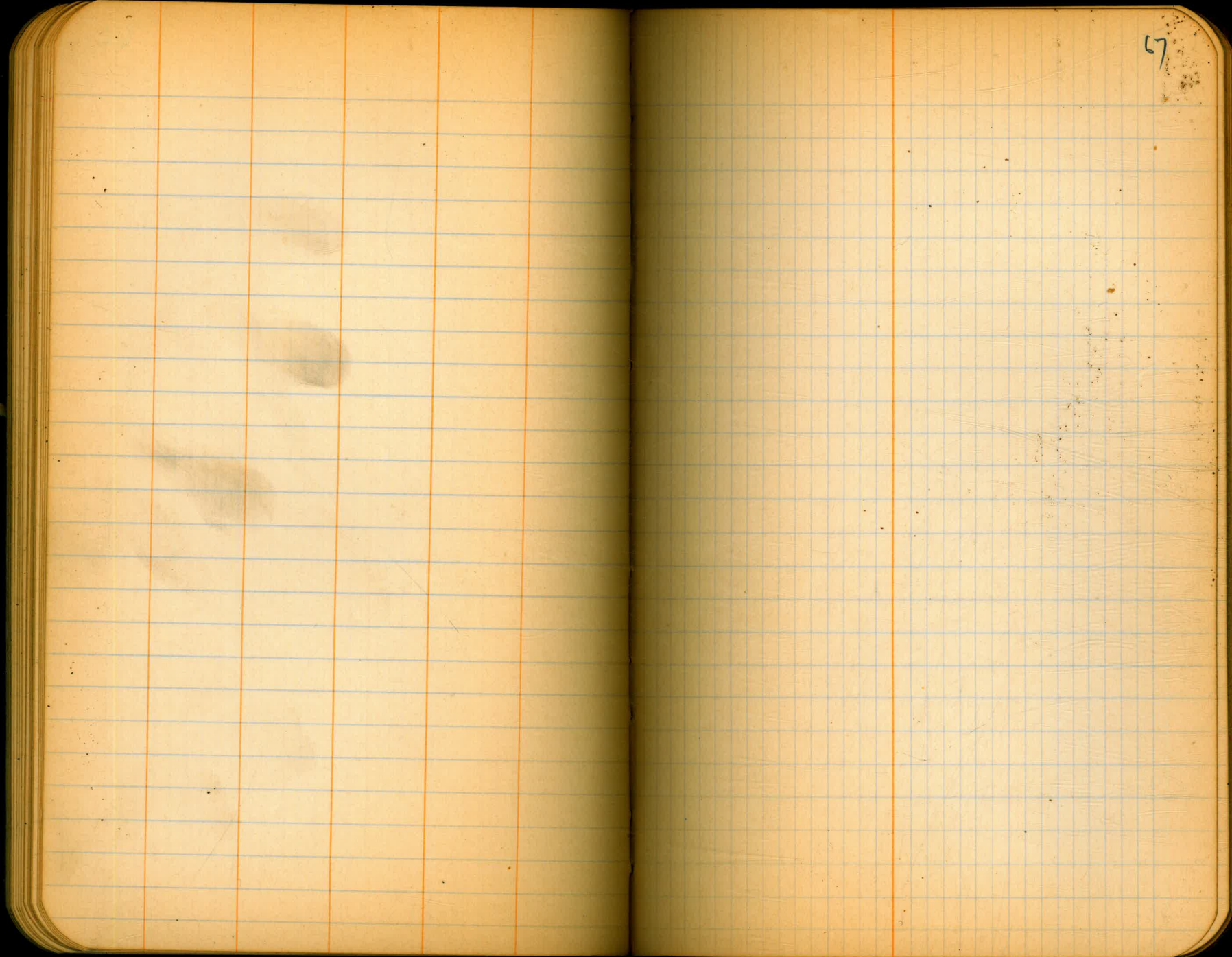
62

63

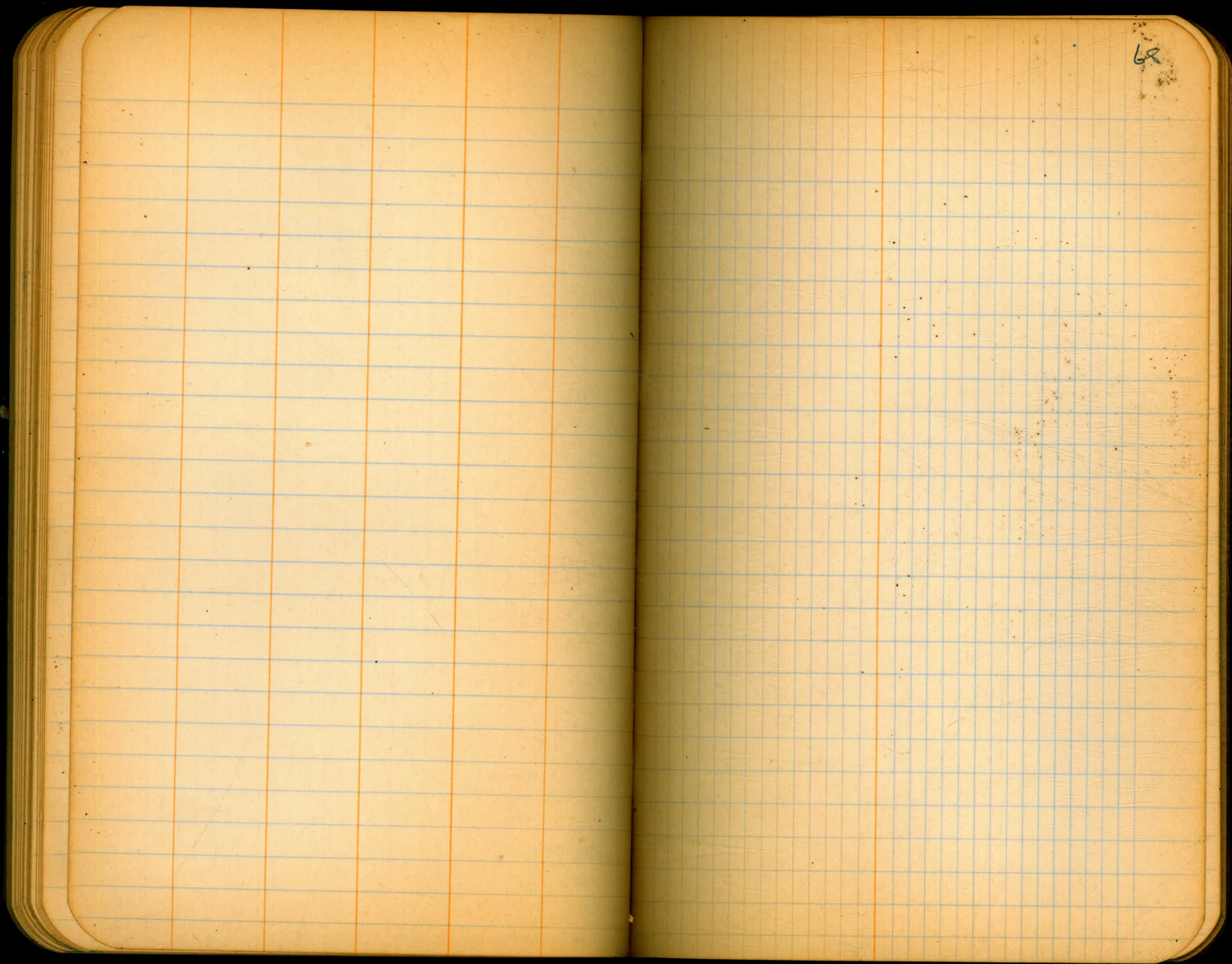
64

65

66



67



69

72

73

74

75

Otay Reservoir - San Diego
Second Main Pipe Line -

Horizontal Equations -

Copied 3/31/31 by #3

80 + 47.66	=	80 + 36.66	P.T.	+ 11 ⁰⁰
145 + 93.51	=	145 + 86.11	P.T.	+ 7 ⁴⁰
172 + 08.97	=	172 + 05.50	P.O.T.	+ 3 ⁴⁷
225 + 63.25	=	225 + 44.86	P.O.T.	+ 18 ³⁹
287 + 12.95	=	287 + 08.42	P.O.T.	+ 4 ⁵³
309 + 78.09	=	309 + 72.07	E.C.	+ 6 ⁰²
505 + 79.57	=	505 + 76.31	B.C.	+ 3 ²⁶
510 + 46.73	=	510 + 36.49	P.O.T.	+ 10 ²⁴
763 + 22.51	=	763 + 49.88	"	- 27 ³⁷
802 + 21.04	=	800 + 66.20	P.I.	+ 154 ⁸⁴
856 + 06.23	=	856 + 13.62	P.O.T.	- 7 ³⁹
864 + 71.42	=	864 + 74.55	P.I.	- 3 ¹³
976 + 86.89	=	976 + 87.84	P.O.T.	- 0 ⁹⁵

Deep Cut -

So. Portal Tunnel #1

So. Portal " #2

154.59' N. of Ho. Portal Tunnel #3

So. Portal Tunnel #4

End of 12° Curve Rt.

Beginning of 22° Curve Rt.

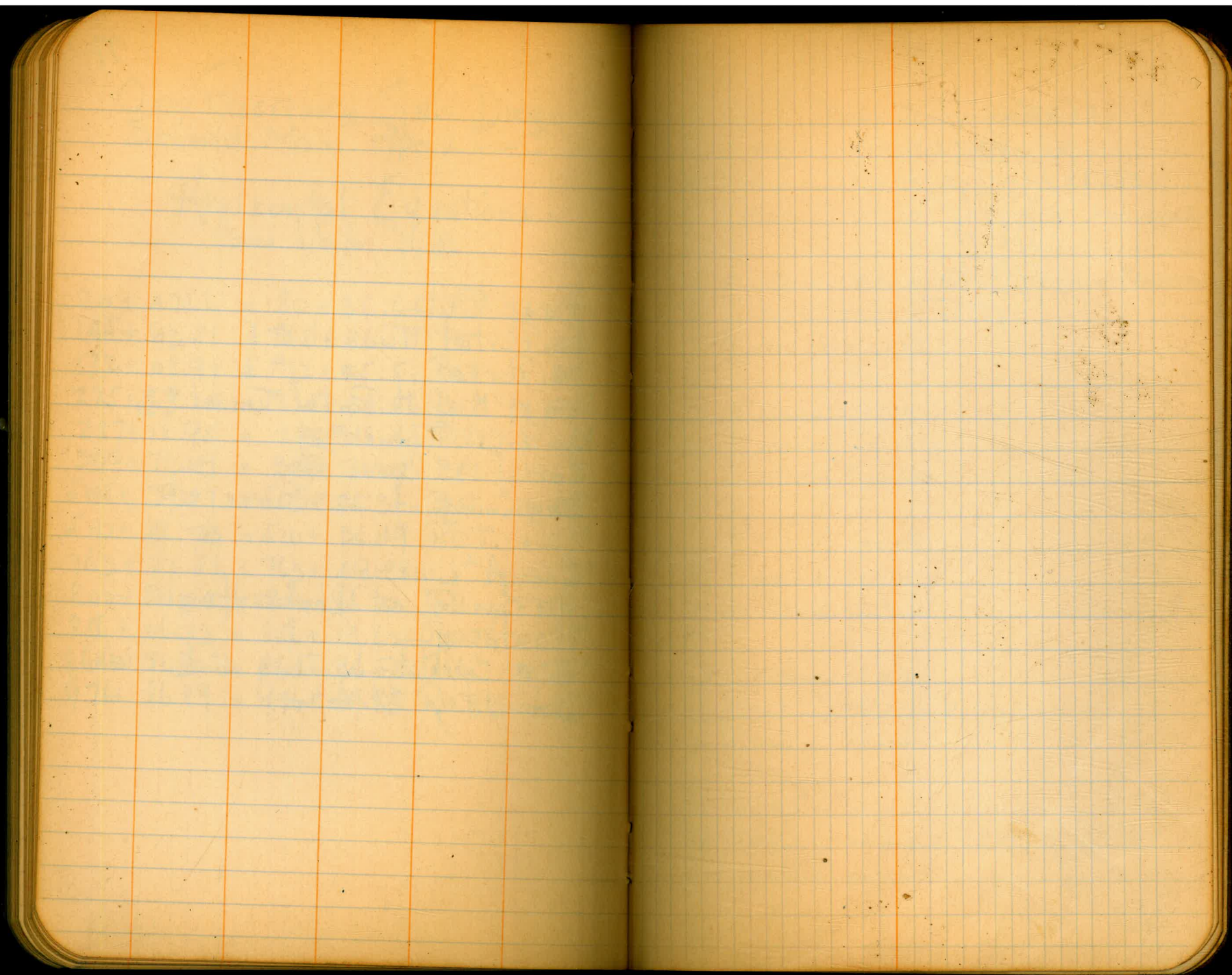
End A⁴ Line -

90° Special at Chollas Heights -

Lantana -

56°59' Special - Lantana at Euclid -

Boundary Street -



$4 = 33^{\circ}44'$

$$\begin{array}{r} 19.808 \\ .55533 \overline{)11.00000} \\ \underline{55533} \\ 544670 \\ \underline{499797} \\ 448730 \\ \underline{444264} \\ 44660 \end{array}$$

Solar Observations

- #1 { Time - 9-04 A.M. 5/21/29
Hor. L - $7^{\circ}39\frac{1}{2}' R$
Vert. L - $+51^{\circ}-19'$ *Note Hor. angles*
meas. from back
- #2 { Time - 9-06 $\frac{1}{2}$ A.M. tang. at 935+8966
Hor. L - $9^{\circ}-07' R$
Vert. L - $+52^{\circ}-23\frac{1}{2}'$
- #3 { Time - 9-08
Hor. L - $8^{\circ}-35' R$
Vert. L - $+52^{\circ}-33'$
- #4 { Time - 9-11 $\frac{1}{2}$
Hor. L - $9^{\circ}-59' R$
Vert. L - $+53^{\circ}-26'$
- #5 { Time - 9-13 $\frac{1}{2}$
Hor. L - $9^{\circ}-29\frac{1}{2}' R$
Vert. L - $53-16$
- #6 { Time - 9-16
Hor. L - $10^{\circ}-48\frac{1}{2}' R = 589-31-30 L$
Vert. L - $54^{\circ}-20'$

Solar Observation

#1 { Time 2:40 1/2 PM 5/20/29
 Hor. L = L 70° 11 1/2'
 Vert L = + 79° 40'
 Sta. 116 + 85.38 Fore-sight on Line ahead

#2 { Time 2:42 1/2 P.M.
 Hor. L 70° 54 1/2' " " " "
 Vert. L + 78° 35'

#3 { Time = 2:45 P.M.
 Hor. Δ - 16° 45' " " " "
 Vert. Δ + 48° 24'

#4 { Time 2:47 P.M.
 Hor. L 70° 04' " " " "
 Vert L + 47° 49'
 Mag S 89° 45' W

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

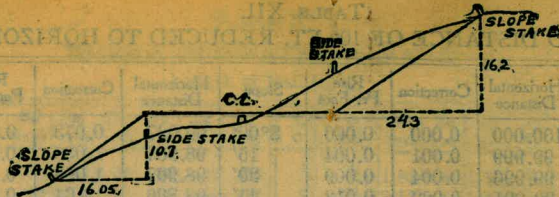
Distance of slope stake from side of shoulder
 stake for any width roadway slope 1:1 to 1:
 If ground is nearly level, the cut or fill at side
 stake is located by the double entry method in
 left column and top row. The number in both
 left column and top row gives the distance
 from side stake to slope stake. If ground is not

IMPROVED TABLES

AND

INFORMATION

To find Tangent and External for curve of
 any other degree divide by degree of curve and
 add correction found in column of correction.
 Degree of curve with a given L may be found
 by dividing tangent (or external), opposite L by
 given tangent (or external).
 The distance from a point on the tangent to
 the curve is very nearly the square of the tangent
 length divided by twice the radius.



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0 30	0 45	0 60	0 75	0 90	1 05	1 20	1 35	0
1	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70	2 85	1
2	3 00	3 15	3 30	3 45	3 60	3 75	3 90	4 05	4 20	4 35	2
3	4 50	4 65	4 80	4 95	5 10	5 25	5 40	5 55	5 70	5 85	3
4	6 00	6 15	6 30	6 45	6 60	6 75	6 90	7 05	7 20	7 35	4
5	7 50	7 65	7 80	7 95	8 10	8 25	8 40	8 55	8 70	8 85	5
6	9 00	9 15	9 30	9 45	9 60	9 75	9 90	10 05	10 20	10 35	6
7	10 50	10 65	10 80	10 95	11 10	11 25	11 40	11 55	11 70	11 85	7
8	12 00	12 15	12 30	12 45	12 60	12 75	12 90	13 05	13 20	13 35	8
9	13 50	13 65	13 80	13 95	14 10	14 25	14 40	14 55	14 70	14 85	9
10	15 00	15 15	15 30	15 45	15 60	15 75	15 90	16 05	16 20	16 35	10
11	16 50	16 65	16 80	16 95	17 10	17 25	17 40	17 55	17 70	17 85	11
12	18 00	18 15	18 30	18 45	18 60	18 75	18 90	19 05	19 20	19 35	12
13	19 50	19 65	19 80	19 95	20 10	20 25	20 40	20 55	20 70	20 85	13
14	21 00	21 15	21 30	21 45	21 60	21 75	21 90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23 10	23 25	23 40	23 55	23 70	23 85	15
16	24 00	24 15	24 30	24 45	24 60	24 75	24 90	25 05	25 20	25 35	16
17	25 50	25 65	25 80	25 95	26 10	26 25	26 40	26 55	26 70	26 85	17
18	27 00	27 15	27 30	27 45	27 60	27 75	27 90	28 05	28 20	28 35	18
19	28 50	28 65	28 80	28 95	29 10	29 25	29 40	29 55	29 70	29 85	19
20	30 00	30 15	30 30	30 45	30 60	30 75	30 90	31 05	31 20	31 35	20
21	31 50	31 65	31 80	31 95	32 10	32 25	32 40	32 55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33 60	33 75	33 90	34 05	34 20	34 35	22
23	34 50	34 65	34 80	34 95	35 10	35 25	35 40	35 55	35 70	35 85	23
24	36 00	36 15	36 30	36 45	36 60	36 75	36 90	37 05	37 20	37 35	24
25	37 50	37 65	37 80	37 95	38 10	38 25	38 40	38 55	38 70	38 85	25
26	39 00	39 15	39 30	39 45	39 60	39 75	39 90	40 05	40 20	40 35	26
27	40 50	40 65	40 80	40 95	41 10	41 25	41 40	41 55	41 70	41 85	27
28	42 00	42 15	42 30	42 45	42 60	42 75	42 90	43 05	43 20	43 35	28
29	43 50	43 65	43 80	43 95	44 10	44 25	44 40	44 55	44 70	44 85	29
30	45 00	45 15	45 30	45 45	45 60	45 75	45 90	46 05	46 20	46 35	30
31	46 50	46 65	46 80	46 95	47 10	47 25	47 40	47 55	47 70	47 85	31
32	48 00	48 15	48 30	48 45	48 60	48 75	48 90	49 05	49 20	49 35	32
33	49 50	49 65	49 80	49 95	50 10	50 25	50 40	50 55	50 70	50 85	33
34	51 00	51 15	51 30	51 45	51 60	51 75	51 90	52 05	52 20	52 35	34
35	52 50	52 65	52 80	52 95	53 10	53 25	53 40	53 55	53 70	53 85	35
36	54 00	54 15	54 30	54 45	54 60	54 75	54 90	55 05	55 20	55 35	36
37	55 50	55 65	55 80	55 95	56 10	56 25	56 40	56 55	56 70	56 85	37
38	57 00	57 15	57 30	57 45	57 60	57 75	57 90	58 05	58 20	58 35	38
39	58 50	58 65	58 80	58 95	59 10	59 25	59 40	59 55	59 70	59 85	39
40	60 00	60 15	60 30	60 45	60 60	60 75	60 90	61 05	61 20	61 35	40
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.

21
+ 18
+ 21.9
- 39

+ 27.0
21.84
+ 48.84
19.19
+ 67.03
21.91
+ 88.94
39.00
730 + 27.94

164-41

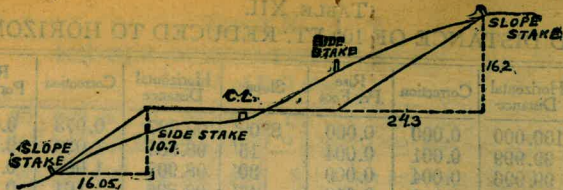
Otago Reservoir San Diego 2nd main Pipe Line
Horizontal Equations

- | | | | |
|------|------------------------------------|---|----------|
| (1) | $80 + 47.66 = 80 + 36.66 =$ | P.T. Deep Cut. | + 11.00 |
| (2) | $145 + 93.51 = 145 + 86.11 =$ | P.T. So. Portal Tunnel #1. | + 7.40 |
| (3) | $172 + 08.97 = 172 + 05.50 =$ | P.O.T. So. Portal Tunnel #2 | + 3.47 |
| (4) | $225 + 63.25 = 225 + 44.86 =$ | P.O.T. - 104.69' 710. of 710 Portal Tunnel #3 | + 18.39 |
| (5) | $287 + 12.95 = 287 + 08.42 =$ | P.O.T. So. Portal Tunnel #4 | + 4.53 |
| (6) | $E.C. 309 + 78.09 = 309 + 72.07 =$ | End of 12° curve Right | + 6.02 |
| (7) | $B.C. 505 + 79.57 = 505 + 76.31 =$ | Beginning of 22° curve Right | + 3.26 |
| (8) | $510 + 46.73 = 510 + 36.49 =$ | P.O.T. | + 10.24 |
| (9) | $763 + 22.51 = 763 + 49.88 =$ | P.O.T. End A ⁴ Line | - 27.37 |
| (10) | $802 + 21.04 = 800 + 66.20 =$ | P.I. 90° Special at Chollas Heights | + 154.84 |
| (11) | $856 + 06.23 = 856 + 13.62 =$ | P.O.T. Lantanna. | - 7.39 |
| (12) | $864 + 71.42 = 864 + 74.55 =$ | P.I. 56° 59' Special Lantanna at Euclid. | - 3.12 |
| (13) | $976 + 86.89 = 976 + 87.84 =$ | P.O.T. Boundary Street. | - 0.95 |

+ 218.35

- 38.83

+ 179.52



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

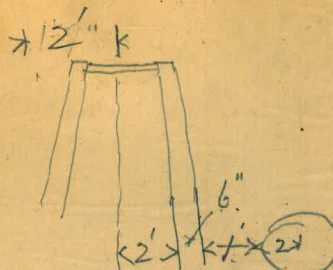
SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0 30	0 45	0 60	0 75	0 90	1 05	1 20	1 35	0
1	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70	2 85	1
2	3 00	3 15	3 30	3 45	3 60	3 75	3 90	4 05	4 20	4 35	2
3	4 50	4 65	4 80	4 95	5 10	5 25	5 40	5 55	5 70	5 85	3
4	6 00	6 15	6 30	6 45	6 60	6 75	6 90	7 05	7 20	7 35	4
5	7 50	7 65	7 80	7 95	8 10	8 25	8 40	8 55	8 70	8 85	5
6	9 00	9 15	9 30	9 45	9 60	9 75	9 90	10 05	10 20	10 35	6
7	10 50	10 65	10 80	10 95	11 10	11 25	11 40	11 55	11 70	11 85	7
8	12 00	12 15	12 30	12 45	12 60	12 75	12 90	13 05	13 20	13 35	8
9	13 50	13 65	13 80	13 95	14 10	14 25	14 40	14 55	14 70	14 85	9
10	15 00	15 15	15 30	15 45	15 60	15 75	15 90	16 05	16 20	16 35	10
11	16 50	16 65	16 80	16 95	17 10	17 25	17 40	17 55	17 70	17 85	11
12	18 00	18 15	18 30	18 45	18 60	18 75	18 90	19 05	19 20	19 35	12
13	19 50	19 65	19 80	19 95	20 10	20 25	20 40	20 55	20 70	20 85	13
14	21 00	21 15	21 30	21 45	21 60	21 75	21 90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23 10	23 25	23 40	23 55	23 70	23 85	15
16	24 00	24 15	24 30	24 45	24 60	24 75	24 90	25 05	25 20	25 35	16
17	25 50	25 65	25 80	25 95	26 10	26 25	26 40	26 55	26 70	26 85	17
18	27 00	27 15	27 30	27 45	27 60	27 75	27 90	28 05	28 20	28 35	18
19	28 50	28 65	28 80	28 95	29 10	29 25	29 40	29 55	29 70	29 85	19
20	30 00	30 15	30 30	30 45	30 60	30 75	30 90	31 05	31 20	31 35	20
21	31 50	31 65	31 80	31 95	32 10	32 25	32 40	32 55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33 60	33 75	33 90	34 05	34 20	34 35	22
23	34 50	34 65	34 80	34 95	35 10	35 25	35 40	35 55	35 70	35 85	23
24	36 00	36 15	36 30	36 45	36 60	36 75	36 90	37 05	37 20	37 35	24
25	37 50	37 65	37 80	37 95	38 10	38 25	38 40	38 55	38 70	38 85	25
26	39 00	39 15	39 30	39 45	39 60	39 75	39 90	40 05	40 20	40 35	26
27	40 50	40 65	40 80	40 95	41 10	41 25	41 40	41 55	41 70	41 85	27
28	42 00	42 15	42 30	42 45	42 60	42 75	42 90	43 05	43 20	43 35	28
29	43 50	43 65	43 80	43 95	44 10	44 25	44 40	44 55	44 70	44 85	29
30	45 00	45 15	45 30	45 45	45 60	45 75	45 90	46 05	46 20	46 35	30
31	46 50	46 65	46 80	46 95	47 10	47 25	47 40	47 55	47 70	47 85	31
32	48 00	48 15	48 30	48 45	48 60	48 75	48 90	49 05	49 20	49 35	32
33	49 50	49 65	49 80	49 95	50 10	50 25	50 40	50 55	50 70	50 85	33
34	51 00	51 15	51 30	51 45	51 60	51 75	51 90	52 05	52 20	52 35	34
35	52 50	52 65	52 80	52 95	53 10	53 25	53 40	53 55	53 70	53 85	35
36	54 00	54 15	54 30	54 45	54 60	54 75	54 90	55 05	55 20	55 35	36
37	55 50	55 65	55 80	55 95	56 10	56 25	56 40	56 55	56 70	56 85	37
38	57 00	57 15	57 30	57 45	57 60	57 75	57 90	58 05	58 20	58 35	38
39	58 50	58 65	58 80	58 95	59 10	59 25	59 40	59 55	59 70	59 85	39
40	60 00	60 15	60 30	60 45	60 60	60 75	60 90	61 05	61 20	61 35	40
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.

21.84 1st rail 5
 + 18.19
 + 21.91
 39+00

3
 5
 6 + 202



713 + 72.5
 2 75.0
 912 + 97.5

+ 27.0
 21.84
 + 48.84
 18.19
 + 67.03
 21.91
 + 88.94
 39.00
 730 + 27.94

1.5
 2'
 0.5
 1.0
 2.
 7.5

75.34
 75.97
 150.81 913 + 70.2
 75.40 97.55
 75.97

912 + 97.55
 75.40
 913 + 72.95
 75.40
 919 + 98.35

107 - 40
 57 - 07
 39 - 24

856 + 83.43
 855 + 95.02
 38.41

164 - 47

179 - 59 60
 73 - 28 - 30

106 - 31 - 30
 39 - 24

57 - 07

$\frac{11}{3} \frac{50}{109}$

$\frac{90}{12} \frac{12}{12}$

$\frac{5533}{110200000}$
 $\frac{1881}{52465}$
 $\frac{499797}{3348730}$
 $\frac{448264}{94654}$

$\frac{17}{5}$
 $20 \frac{85}{5} 3$
 $\frac{869}{231}$
 $\frac{89+25}{185}$

$\frac{213}{385}$
 $\frac{631}{144}$
 $\frac{388}{852}$