1625

[illegible]

FIELD BOOK

[illegible]

MICROFILMED
DEC 24 1964

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 22.6 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)÷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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1625

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CITY ENGINEER

ENGINEERING DEPARTMENT,
CITY OF SAN DIEGO,
CALIFORNIA.

The paper stock of this book is made of a high grade 50% rag paper having a water resisting surface. This book is sewed with Bing Special Enamel Waterproof Thread.

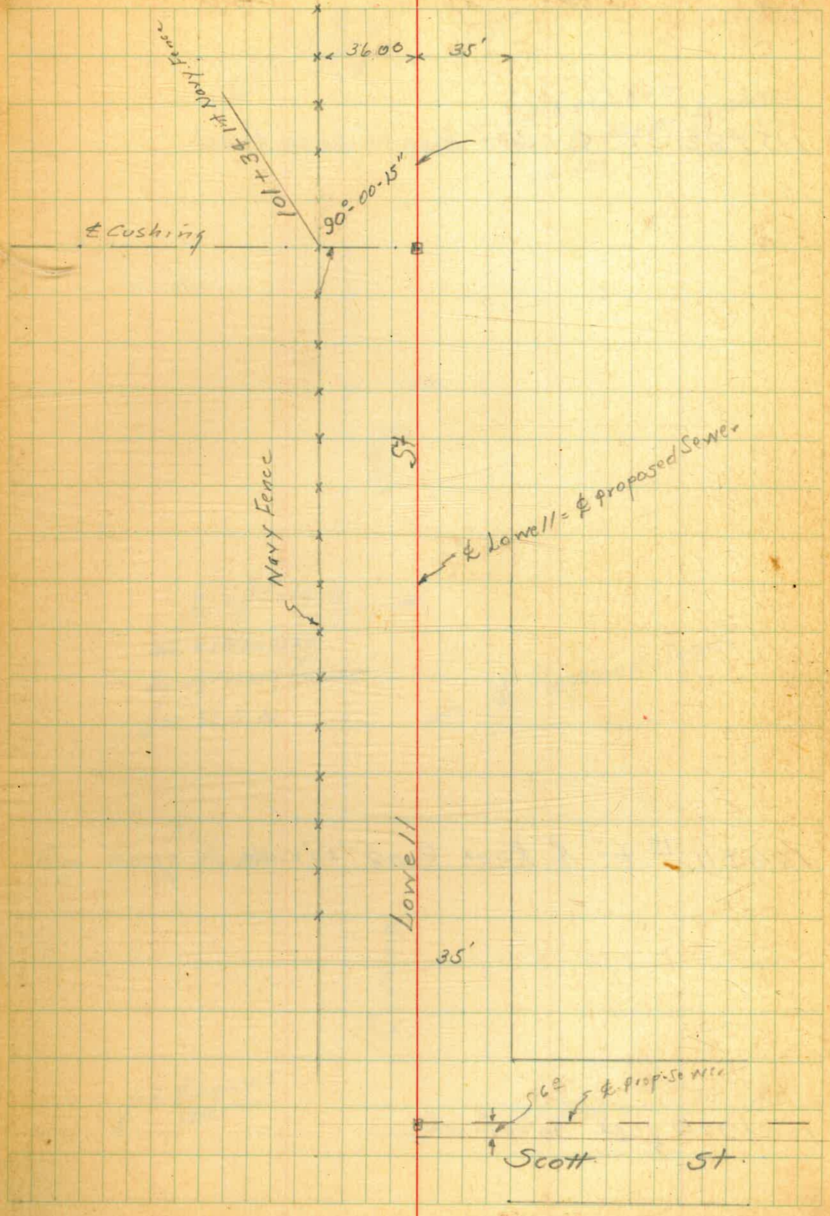
Made in U. S. A.

Bliss
Sommermyer
Beggs
1/13/42

New Alignment of Proposed Sewer through N.T.S. Lowell St. to Porter St. in Naval Training Station

100+97.10	∠ Lt.	90°-00'-15"

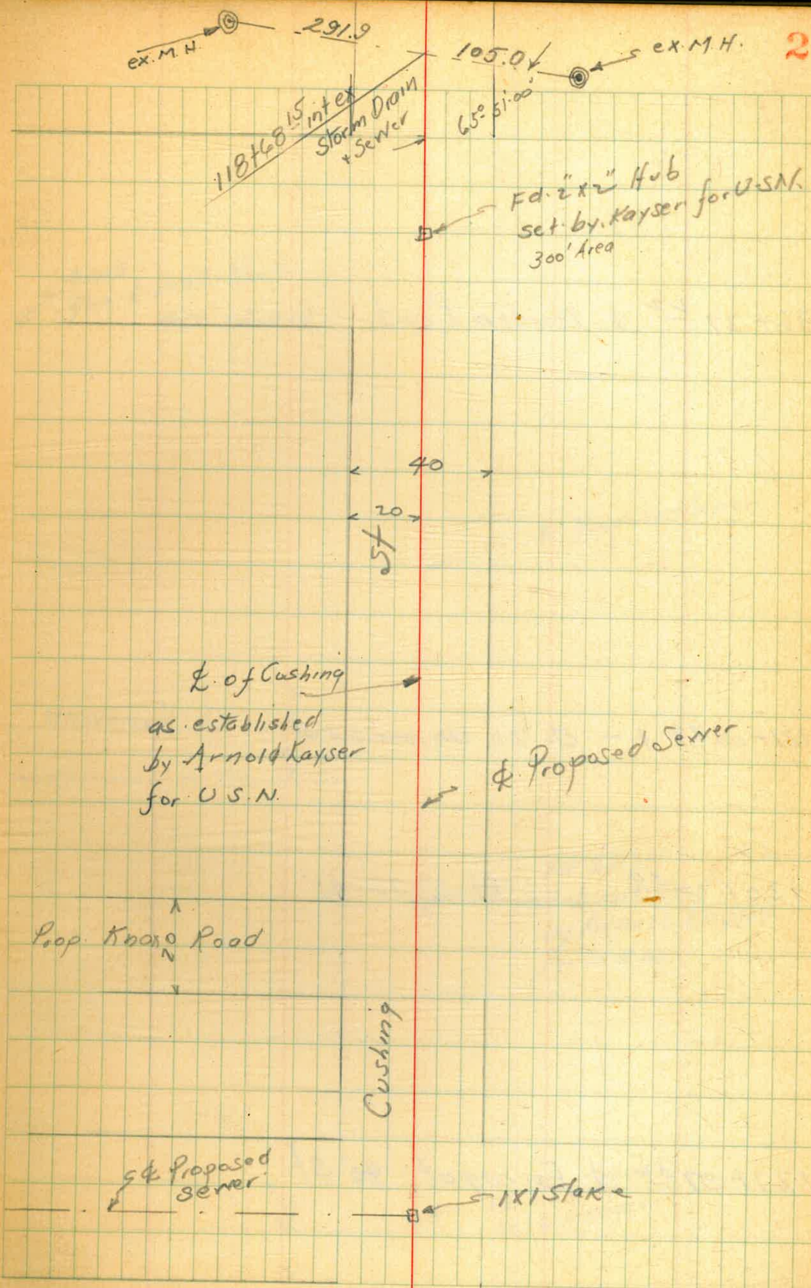
Indexed
C.S.K.


101+34 1st Navy Fence
36.00
35'
90°-00'-15"
℄ Cushing
Navy Fence
St
Lowell
℄ Lowell = ℄ proposed Sewer
35'
6"
℄ prop. Sewer
Scott St.

115+82.32 ℄ 300' Area + Cushing Road

104+11^{10} +- ℄ Knox Road 20' wide

100+97^{10} L.Lt 90°-00'-15"

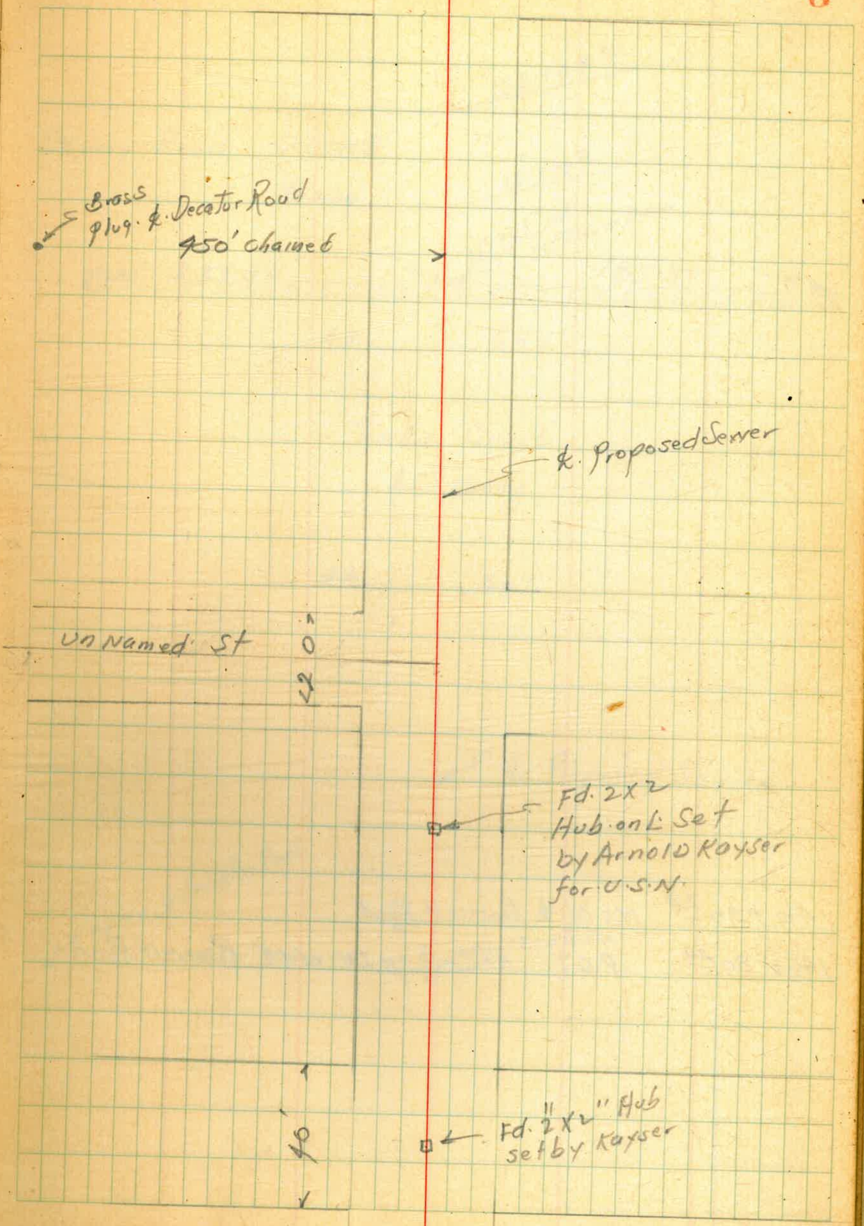

ex. M.H.
291.9
105.0
ex. M.H.
118+68^{15} int ex
Storm Drain + Sewer
65°-51'-00"
Fd. 2"x2" Hub set by Kayser for U.S.N. 300' Area
40
20
5'
℄ of Cushing as established by Arnold Kayser for U.S.N.
℄ Proposed Sewer
Prop. Knox Road
20
Cushing
℄ Proposed sewer
1x1 Stake

136+27$^{\underline{22}}$ ℄ Worden Road

131+00.$^{\underline{98}}$ + – ct 20' Un named st

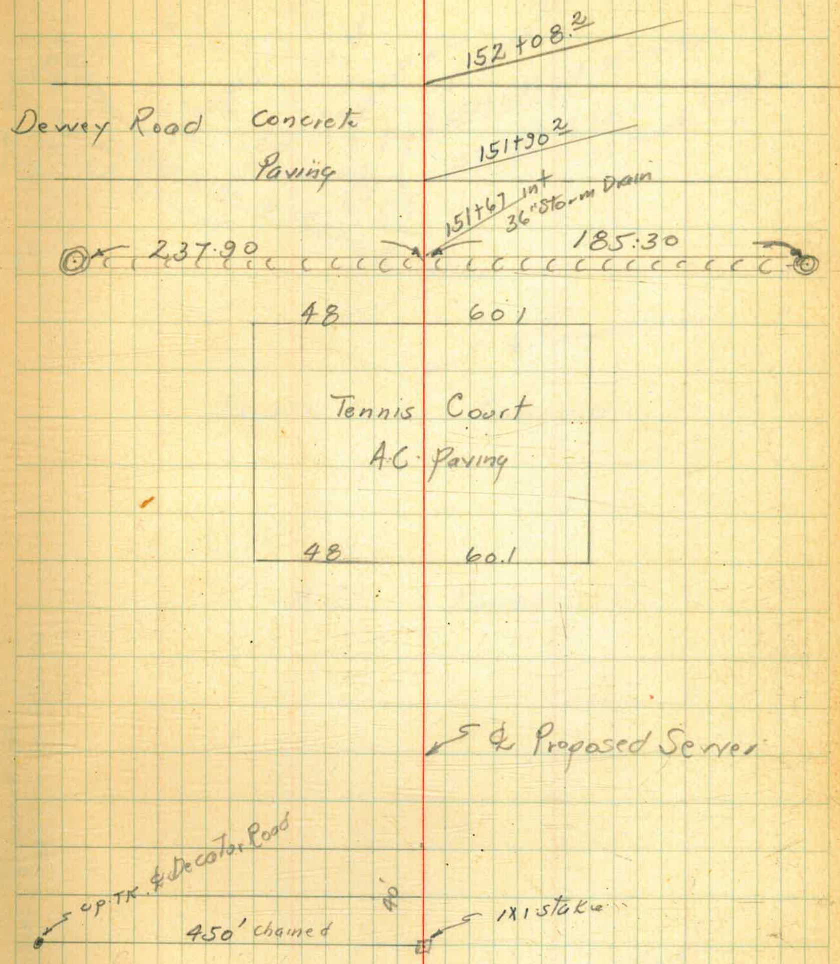
130+60.$^{\underline{54}}$ ∠ Rt 5°-33'-45"

127+97$^{\underline{32}}$ ℄ Farragot 40' St

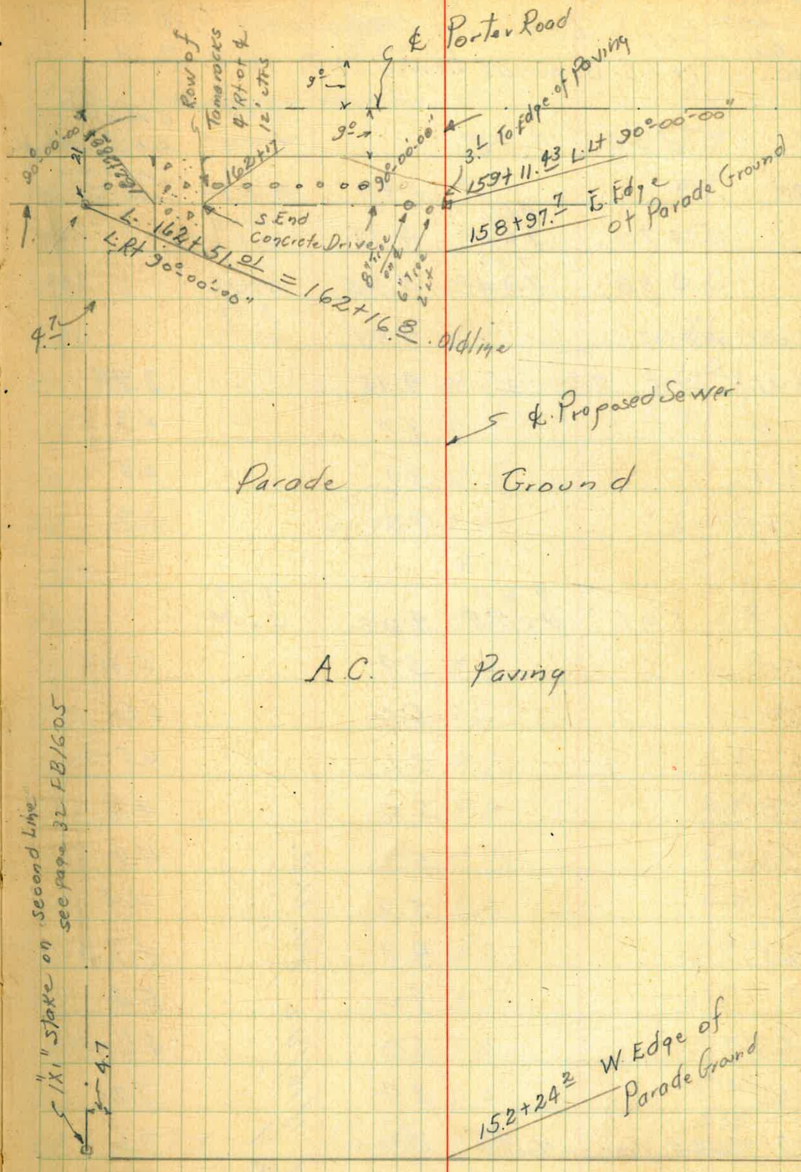

Brass plug ℄ Decatur Road
450' chained
℄ Proposed Sewer
Un Named St
20'
Fd. 2x2 Hub on ℄ Set by Arnold Kayser for U.S.N.
40'
Fd. 2"x2" Hub set by Kayser

$146+90^{24}$ N.C.W. ℄ Roosevelt Road

$146+80.^{24}$ P.O.T. Rt L. to cp.TK. old ℄ Roosevelt Road.



$152+08.^{2}$
Dewey Road Concrete Paving
$151+90^{2}$
151+67 int
36" Storm Drain
237.90
185:30
48
60.1
Tennis Court
A.C. Paving
48
60.1
℄ Proposed Sewer
cp.TK. ℄ Decator Road
80
450' chained
1x1 stake


℄ Porter Road
Row of Tamaracks 4' Rt of ℄ 12' ctrs
9°
9°
9°
90°00'00"
162+88.21
90°00'00"
162+17
S End Concrete Drive
L. 162+51.01
L. Rt 90°00'00"
= 162+16.8 Old line
4.7
8" Tree
6" Tree
3' To Edge of Paving
90°00'00"
159+11.43 L. Lt 90°00'00"
158+97.7 E. Edge of Parade Ground
℄ Proposed Sewer
Parade Ground
A.C. Paving
1"X1" Stake on Second Line see page 32 FB 1605
4.7
152+24.2 W. Edge of Parade Ground

~~Bliss~~ Notes
Sommermyer ⊼
Begg. Rod.
1/15/42

Profile Levels for Line change through N.T.S. Grounds Lowell St to Porter Road

B.M	3.30	4.35		1.05 ~~1.00~~	S.W. 4x4 Prop Hob. Lowell-Scott
Set BM			3.45	.90 ~~0.85~~	SW 7" Mon Lowell-Scott
T.P.	9.70	9.66 ~~9.61~~	4.39	-0.04 ~~-0.09~~	
T.P.	3.98	7.99 ~~7.94~~	5.65	4.01 ~~3.96~~	
Check old L now P.O.T			4.01	3.98 ~~3.93~~	
100+97 2' L Lt 90°00'-15"			4.15		3.84
101+00			3.7		4.3
+26			3.7		4.3
+33			4.3		3.7
T.P.	5.61	9.60 ~~9.55~~	4.00	3.99 ~~3.94~~	
+40			5.4		4.2
+50			5.0		4.6
102			5.1		4.5
+50			5.0		4.6
+75			5.2		4.4
103			5.2		4.4
+25			4.9		4.7
+35			4.2		5.4
+62			5.0		4.6
+65			2.4		7.2
+71 W side drainage channel Top			2.0		7.6
+79 " " Bottom			7.5		2.1
+80			8.6		1.0
+85 ctr			8.6		1.0
+89 E Side Bottom			7.5		2.1

Red. 1/16/42 W.V.O.
Plotted "

indexed
C.S.K.

428
579
1007

		9.60 ~~9.55~~		
+96 E Side Drainage channel Top			3.1	6.5
104			3.7	5.9
+02			4.7	4.9
+30			4.6	5.0
+40			3.0	6.6
+60			2.5	7.1
105			2.7	6.9
+50			2.5	7.1
106			2.6	7.0
T.P.	5.03	11.17 ~~11.12~~	3.46	6.14 ~~6.09~~
+50			4.0	7.2
107			4.3	6.9
+50			4.4	6.8
108			4.6	6.6
+50			4.6	6.6
109			4.8	6.4
+50			5.0	6.2
110			5.2	6.0
+50			5.5	5.7
111			5.7	5.5
+50			5.9	5.3
112			6.0	5.2
T.P.	5.79	10.12 ~~10.07~~	6.84	4.33 ~~4.28~~
+50			5.0	5.1
113			5.4	4.7
+50			5.6	4.5

		⊼ 10.12 ~~10.07~~		104.7 Rt to M.H	
114+00			5.5		4.6
+50			5.3		4.8
115			5.1		5.1
+50			4.9		5.2
+82^{32}	℄ Cushing + 300' Area		4.8		5.3
" " Set BM	Iron pin in Con Mon 20'S of Above		5.49		4.63
116			4.8		5.3
+50			4.9		5.2
117			5.0		5.1
+50			5.0		5.1
118			4.8		5.3
+50			4.4		5.7
+67^{5}	Int ex Storm Drain & Sewer		4.5		5.6
" "	104.7 Rt to ctr ex M.H.				
T.P.	5.33	10.27 ~~10.22~~	5.18	4.94 ~~4.89~~	
Check BM			3.51	6.76 ~~6.71~~	x in Rim of M.H
119			4.6		5.7
+50			4.5		5.8
120			4.5		5.8
+50			4.5		5.8
121			4.3		6.0
+50			4.3		6.0
122			4.1		6.2
+50			4.0		6.3
123			4.0		6.3
+50			4.1		6.2
124			4.2		6.1

		⊼ ~~10.22~~ 10.27		
+50			4.1	6.2
125			4.1	6.2
+50			4.6	5.7
126			4.9	5.4
TP	5.12	10.04 ~~9.99~~	5.35	4.92 ~~4.87~~
+50			4.9	5.1
127			5.3	4.7
+50			5.8	4.2
+97^{32} ~~40~~	℄ Farragut		5.7	4.3
128			5.7	4.3
+15			6.1	3.9
+40			5.5	4.5
129			5.3	4.7
+50			5.1	4.9
130			4.9	5.1
+50			4.8	5.2
+60^{54}	∠ Rt 5°	on Hub	5.32	4.72
" "	Ground		4.1	5.9
131			4.2	5.8
+50			4.1	5.9
132			3.9	6.1
+50			4.1	5.9
133			4.4	5.6
+50			4.6	5.4
TP	3.43	8.57 ~~8.52~~	4.90	5.14 ~~5.09~~

		⊼ 8.57 ~~8.52~~			
134+00			3.2		5.4
+50			3.4		5.2
135			3.7		4.9
+50			4.0		4.6
136			4.5		4.1
+27^{22}	℄ st		4.2		4.4
+50			4.4		4.2
137			4.5		4.1
+50			4.4		4.2
138			4.7		3.9
+50			4.4		4.2
139			4.6		4.0
+20			3.8		4.8
+50			4.2		4.4
TP	3.85	9.02 ~~8.97~~	3.40 ~~4.30~~	5.12 ~~4.22~~	5.17
140			5.3		3.7
+50			5.0		4.0
141			5.0		4.0
+50			4.9		4.1
142			5.0		4.0
+50			5.0		4.0
143			4.9		4.1
+50			5.2		3.8
144			4.9		4.1
+50			4.8		4.2

		⊼ ~~8.97~~ 9.02		
145			4.8	4.2
+50			4.8	4.2
146			4.5	4.5
+50			4.6	4.4
146+80^{24} Rt L to ℄ on pot			4.64	4.38 ~~4.33~~
T P on Pot	1.14	5.52 ~~5.47~~	4.64	4.38 ~~4.33~~
147			1.2	4.3
+50			1.2	4.3
148			1.4	4.1
+50			1.6	3.9
+91			1.8	3.7
+96			0.0	5.5
149			2.9	2.6
+04			5.0	0.5
+50			4.6	0.9
150			4.5	1.0
18^{2} Begin Tennis Ct A.C. paving			4.42	1.10
+50			4.33	1.19
151			4.28	1.24
+ 42^{2} End Tennis Ct			4.41	1.11
+51^{67} int 36" Storm Drain			4.4	1.1
T.P.	4.81	5.96 ~~5.91~~	4.37	1.15 ~~1.10~~
+90^{2} W. Edge Dewey Road			5.03	0.93
152			4.93	1.03
+08^{2}			5.03	0.93

		⊼ ~~5.91~~ 596			
152+24^{2}	W Edge Parade Ground A.C. Paving		5.00		0.96
+50			4.93		1.03
153			4.84		1.12
+50			4.93		1.03
154			4.86		1.10
+50			4.95		1.01
155			4.92		1.04
+50			4.90		1.06
156			4.90		1.06
+50			4.93		1.03
157			5.02		0.94
+50			4.99		0.97
T.P. 158+00	4.70	~~5.71~~ 5.76	4.90	~~1.01~~ 106	
+50			4.62		1.14
+97^{2}	E Edge Parade Ground		4.85		0.91
159			4.9		0.9
+11.^{43}	∠ Lt 90°-00'-00"		4.86		0.90
〃 +11.^{43}	3.1 Rt to Paving		4.81		0.95
+22	6" Tree 2± Lt				
+34	10" 〃 on line				
+50			4.8		1.0
+58	8" Tree 3.8 Rt				
+82	6 〃 4± Rt				
+94	6 〃 4± Rt				
160			4.6		1.2
〃	4.1 Lt Paving Parade Ground		4.58		1.18

		⊼ ~~5.71~~ 5.76		
+50			4.5	1.3
161			4.3	1.5
〃 〃 4.2 Lt Paving			4.18	1.58
TP	5.54	~~7.05~~ 7.10	4.20	~~1.51~~ 1.56
+50			5.1	2.0
162			4.6	2.5
〃 〃 4.2 Lt Paving			5.03	2.07
+17 S Edge Con Drive			4.47	2.63
+28^{8} N Edge Con Drive			4.40	2.70
+46			3.9	3.2
〃 〃 4.2 Lt Paving			4.68	3.42✓
+51.01 ∠ Rt 90°00'00"			3.78	3.32✓
+51.01 = 162+16^{8} old line				
Check B.M.			1.32	5.77✓ SE Top Hy 5.77 0.00 Porter Road

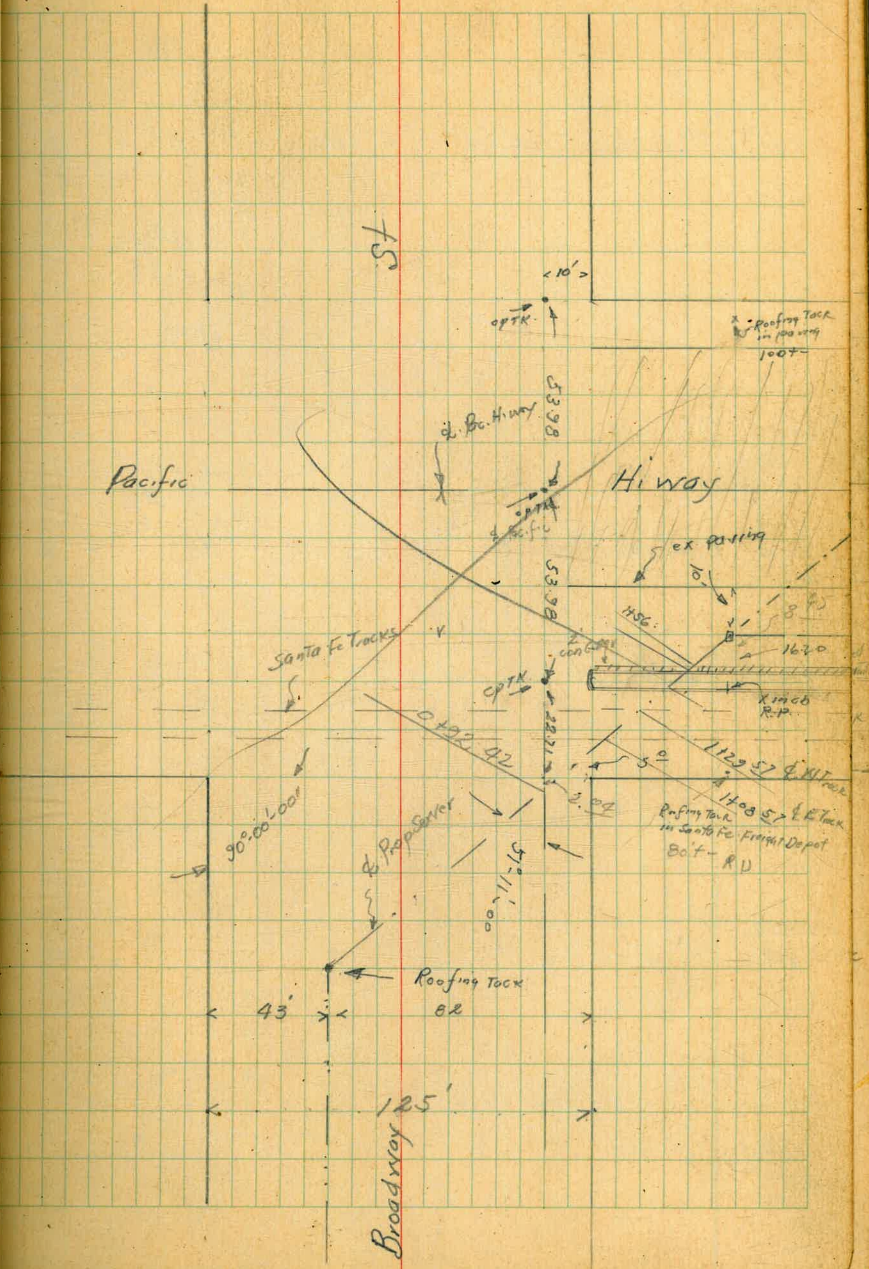
1+69 45 L Rt ~~38-50~~ 39° 09' 00 -00

Void

0+00 L Rt

125
43
82

2475
2231
204



St
<10'>
op TK
℄ Pac. Hiway
53.98
Pacific
Hiway
op TK
℄ Pacific
Roofing Tack in paving
100'±
ex paving
10'
53.98
456:
8.45
16.20
Santa Fe Tracks
con. Gutter
op TK
X in cb R.P.
0+92.42
22.71
5'
1+29.57 ℄ W.I. Track
2.04
1+08.57 ℄ E Track
Roofing Tack in Santa Fe Freight Depot 80'± R.D.
90°-00'-00"
℄ Prop Sewer
57°-11'-00"
Roofing Tack
43'
82
125'
Broadway

$10+12^{01}$ ℄ Lt 3°-14'-30" (= $10+04.^{22}$ Page 18
7.79)

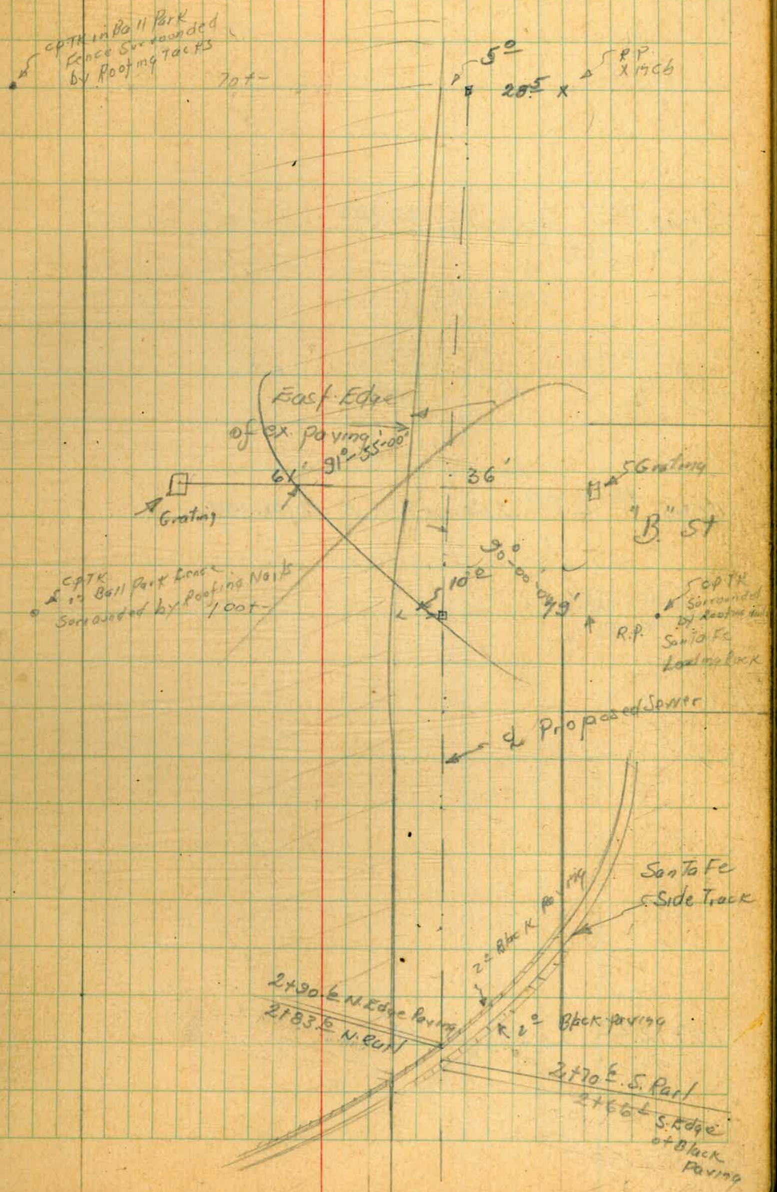
Void

N 33^{50}

8+27
1.35
8-14

8+27 ℄ Storm Drain Dbl. 6.5 × 4.5 Box. (New Sta $8+19.^{21}$)
1.5

$7+78^{60}$ ℄ Rt 1°-30'-00 Rt


CPTK in Ball Park Fence Surrounded by Roofing Tacks
70±
5°
28.5
R.P. X 14 C6
East Edge of ex. paving
91°-55'-00"
61'
36'
Grating
S Grating
"B" St
CPTK ℄ in Ball Park Fence Surrounded by Roofing Nails
100±
10°
90°-00'-00"
79'
CPTK Surrounded by Roofing Nails
R.P.
Santa Fe Loading Rack
℄ Proposed Sewer
Santa Fe Side Track
2" Black paving
2" Black paving
2+90 ℄ N. Edge Paving
2+83.5 ℄ N. Rail
2+70 ℄ S. Rail
2+66 ℄ S. Edge of Black Paving

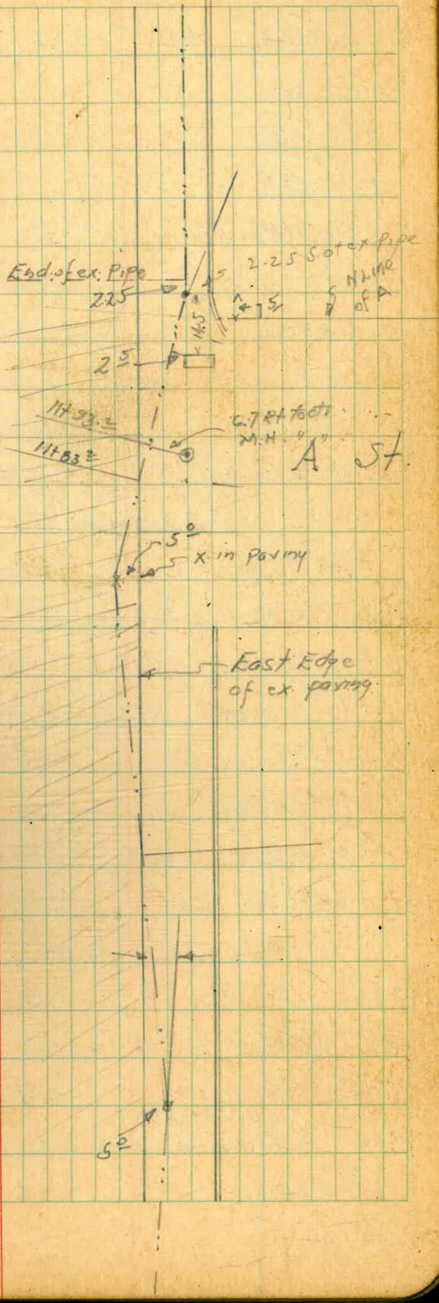
12+39.90 L·Lt 19°-31'-00

7444

11+65.45 L·Rt 21°-00-00 x in paving

15336

10+12.10 L·Lt 3°-14'-30"


End of ex. Pipe
2.25
2.25 S. of ex. Pipe
℄ N Line of A
5'
14.5
2.5
11+93.2
11+83.2
6.7 Rt to ℄ M.H.
"A" St
5.0
x in paving
East Edge of ex. paving
5.0

Red ch. N.

#5 SHINY BM. NW. Pac & Broadway	4.11	8.79 ✓		4.68
0+00			4.11	4.68 ✓
+50			4.63	4.16 ✓
+70			5.31	3.48 ✓
+80 N. Gutter			5.88	2.91 ✓
1+00			5.09	3.70 ✓
+04 67			4.74	4.05 ✓
+07 65 Edge paving			4.86	3.93 ✓
+08 Rail			5.1	3.7 ✓
+12 50 "			4.88	3.91 ✓
+25 65 E Rail W. Track			4.80	3.99 ✓
+32 6 W " " "			4.83	3.96 ✓
+37 6 Rt. angles to L. Island 58			5.2	3.6 ✓
+40 Ground			5.2	3.6 ✓
+43 2 Top cb			4.01	4.78 ✓
+51 " "			3.99	4.80 ✓
" " Gutter			4.59	4.20 ✓
+56 Edge 2' Gutter			4.46	4.33 ✓
L. Pt +69 45 on Hub			4.83	3.96 ✓
" " 10' Lt ex. paving			4.27	4.52 ✓
2+00			4.8	4.0 ✓
" 10' Lt Paving			4.31	4.48 ✓
+50			5.1	3.7 ✓
+66 1 edge of Black Paving on Santa Fe Tracks			4.67	4.12 ✓
+70 6 S. Rail			4.67	4.12 ✓
+83 6 N "			4.79	4.00 ✓

⟨8.79✓⟩

+90 6 N. Edge Black Paving			4.90	3.89 ✓
3+00			5.2	3.6 ✓
" " 10' Lt. Paving			4.73	4.06 ✓
+50			5.6	3.2 ✓
4+00			5.8	3.0 ✓
" " Paving opp. Compute			4.86	3.93 ✓
+50			5.6	3.2 ✓
5+00			5.6	3.2 ✓
" " Paving opp. Compute			4.93	3.86 ✓
T.P.	4.16	⟨8.06⟩ ✓	4.89	⟨3.90⟩ ✓
+50			4.9	3.2 ✓
6+00			4.8	3.3 ✓
" " Paving opp. Compute			4.03	4.03 ✓
+50			4.3	3.8 ✓
7+00			4.3	3.8 ✓
" Paving opp Compute			$\overset{3}{4}$.52	4.54 ✓
T.P.	4.23	⟨8.77⟩ ✓	$\overset{3}{\cancel{4}}$.52	⟨4.54⟩ ✓
+50			4.6	4.2 ✓
+78 60 L on stake			4.57	4.20 ✓
" " 10' Lt. Paving			3.96	4.81 ✓
8+00			4.7	4.1 ✓
" " 9.6 Lt. Paving			3.96	4.81 ✓
+50			4.7	4.1 ✓
9+00			5.0	3.8 ✓
" " 7.45 Lt. Paving			4.35	4.42 ✓

	⊼ ⟨8.77⟩ ✓			
+50		5.1	3.7	✓
10+00		5.3	3.5	✓
" " 5.3 Lt Paving		4.87	3.90	✓
+12^{01} L. Lt on stake		5.35	3.42	✓
" " 5' Lt. Paving		4.93	3.84	✓
+50		5.8	3.0	✓
+77^{4} m Lt East Edge Paving Grd		5.9	2.9	✓
" " " " Paving		5.29	3.48	✓
11+00		5.39	3.38	✓
" 1.75 Rt edge Paving		5.41	3.36	✓
+50		5.62	3.15	✓
+65^{46} L. Rt		5.64	3.13	✓
+83^{2} m Lt ex Paving		5.78	2.99	✓
+93^{2} Rt L to ex M.H.		5.88	2.89	✓
" 6.7 Rt to ctr. 'rim'		6.41	2.36	✓
12+00		5.94	2.83	✓
+17$^{\pm}$ edge of Rock-oil Berm		6.06	2.71	✓
+25^{6} Rt L. to edge of Storm Drain Box		6.1	2.7	✓
" 2.5 Rt to corner of Box		6.36	2.41	✓
+27		13.9	− 5.13	✓
+39^{9} Grd ctr M.H.		19.1	−10.33	✓
Flow Line Pipe in place 2.25 of North of MH.		20.45	−11.68	✓
Check 11+00 19' Rt of ℄ C 14.32		5.76	3.01	✓
			2.98	
			0.03	

⊼

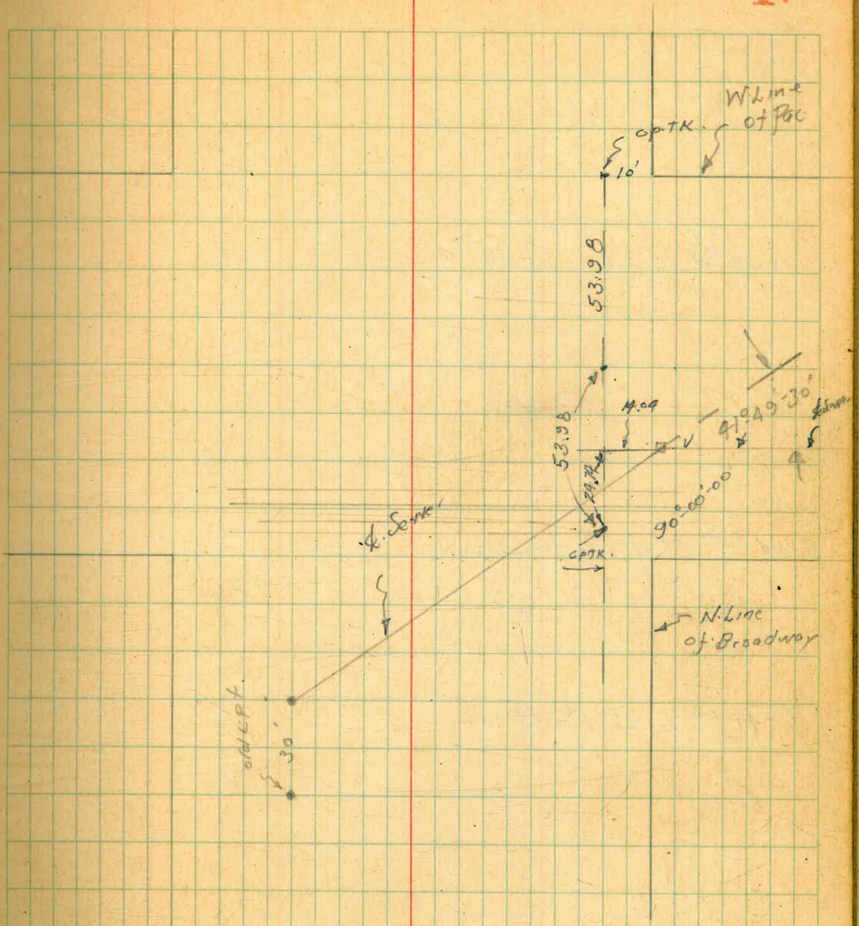
Storm Drain Elevs. 8+27 on ℄ Sewer

	5.11	9.31 ✓		4.20
8+27. Flow Line 36' Rt.			11.10	− 1.79
" " " 61 "			12.59	− 3.28

Realignment Pac. Ave Sewer from Broadway to 10+12.2' old line

0+00

indexed
c.s.k.

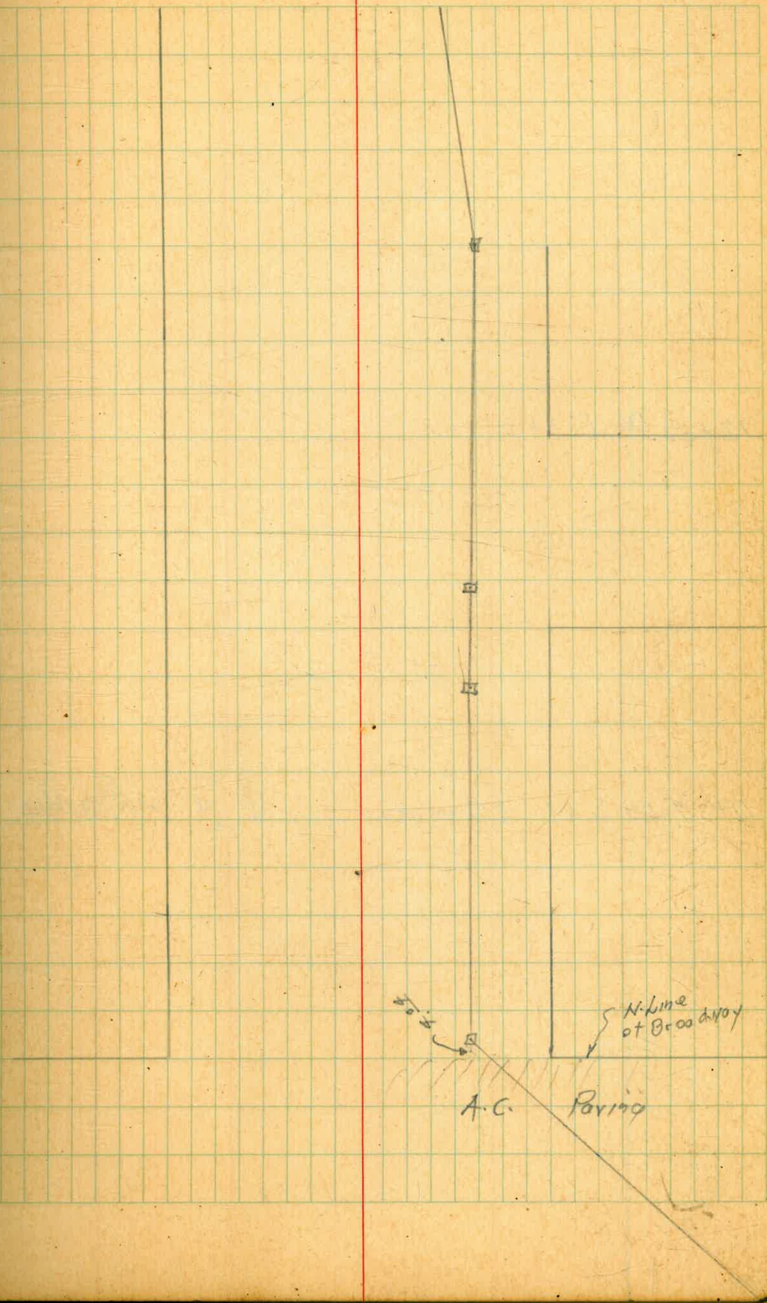

W.Line of Pac
op.TK.
10'
53.98
53.98
14.09
24.74
41°49'30'
90°00'00
℄ Sewer
op.TK.
N.Line of Broadway
orig. P.T.
30'

$10+04^{23}$ L. Lt 3°-13'-00

$8+04^{22}$ M.H. To be constructed

$6+42^{14}$ L Rt 1°-47'-00

1+15.50 L Rt 41°-49'-30"


4.8
N. Line of Broadway
A.C. Paving

12+32.^{12} . L. Lt =

11+57.59 L Rt 21°-00'-00

Profile levels Realignment Broadway

			Rod	Elev	Rod & Ch.
To A		<8.78 ✓>	4.10	~~4.10~~	4.68
0+00			4.45	4.33 ✓	
+25			4.55	4.23 ✓	
+50			4.62	4.16 ✓	
+53 Rail			4.71	4.07 ✓	
+60^{3} Rail			4.73	4.05 ✓	
+72^{5} Rail			4.73	4.05 ✓	
+75			4.72	4.06 ✓	
+79^{2} Rail			4.74	4.04 ✓	
+97 Rail			4.75	4.03 ✓	
1+00			4.75	4.03 ✓	
1+10			4.72	4.06 ✓	
+11			5^{1}	3.7 ✓	
∠ +15^{5}			5^{12}	3.66 ✓	
1+61.45			4^{89}	3.89 ✓	
2+00			4^{9} El.	3.9 ✓	
" ?	9.2 Rt		4.46	4.32 ✓	
" "	9.2 Lt		4.36	4.42 ✓	
+50			5^{1}	3.7 ✓	
	9^{2} Lt		4.65	4.13 ✓	
	9^{2} Rt		4.53	4.25 ✓	
+60^{8} Rail			4.64	4.14 ✓	
+73^{4} Rail			4.72	4.06 ✓	
3+00			5^{4}	3.4 ✓	
✓	9^{2} Lt		4.71	4.07 ✓	
T.P. ✓	~~9^{2} Rt~~ 4.21	<8.27 ✓>		Rod 4.72	<4.06 ✓>
3+50			5^{1} ~~4.25~~	3.1 ✓	
	9^{2} Rt		4.25	4.02 ✓	
4+00			4^{2}	4.07 ✓	
✓	9^{2} Rt		4.34	3.93 ✓	
	9^{2} Rt.		4.37	3.90 ✓	

<8.27 ✓>

~~Indexed~~
C.S.K.

Page 15?				
4+50			4^{8}	3.5 ✓
✓ 9^{2} Lt.			4.39	3.88 ✓
✓ 9^{2} Rt			4.55	3.72 ✓
5+00			4^{8}	3.5 ✓
" 9^{2} Lt			4.42	3.85 ✓
" 9^{2} Rt			4.63	3.64 ✓
+50			4^{9}	3.37 ✓
" 9^{2} Lt			4.41	3.86 ✓
" 9^{2} Rt			4.51	3.76 ✓
6+00			4^{7}	3.6 ✓
" 9^{2} Lt			4.19	4.08 ✓
" 9^{2} Rt			4.41	3.86 ✓
T.P.	4.64	<8.89 ✓>	4.02	<4.25 ✓>
6+50			5^{1}	3.79 ✓
" 9^{2} Lt			4.60	4.29 ✓
" 9^{2} Rt			4.84	4.05 ✓
7+00			4^{9}	4.0 ✓
" 10^{5} Lt			4.32	4.57 ✓
+50			4^{7}	4.2 ✓
" 10^{5} Lt			4.10	4.79 ✓
8+00			4^{7}	4.19 ✓
" 10' Lt.			4.10	4.79 ✓
8+04.2 M.H.			4^{8}	4.1 ✓
8+50			4^{8}	4.1 ✓
" 8^{4} Lt.			4.20	4.7

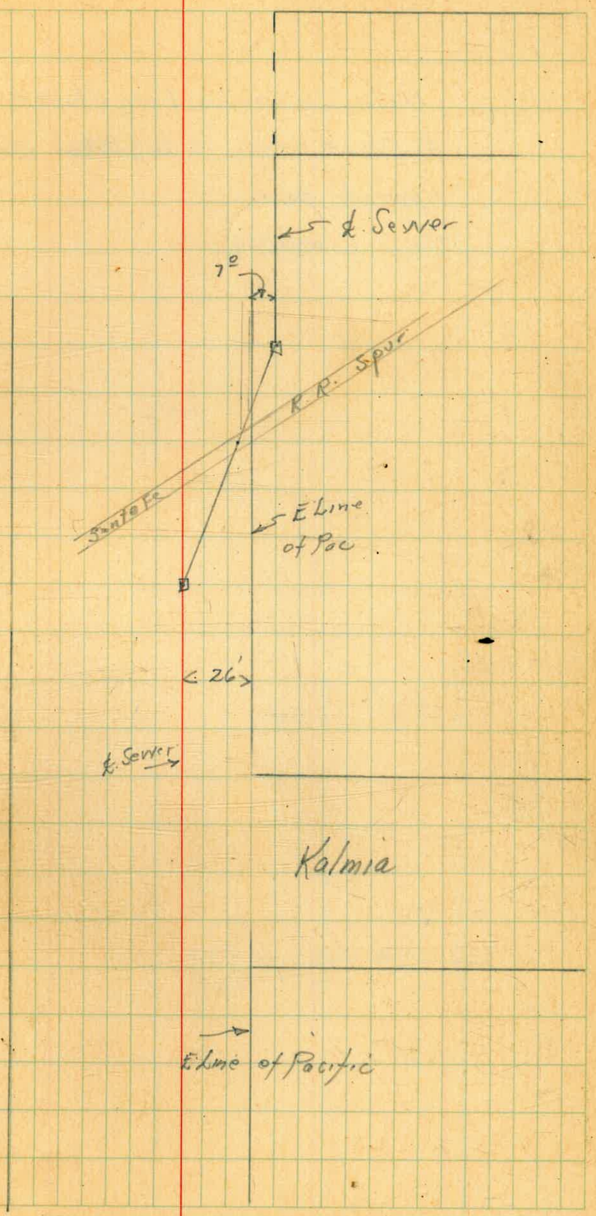
		⟨8.89⟩ ✓			
9+00			4~~8~~	4.1	✓
"	7^{9} Lt		4.50	4.4	✓
9+50			5^{0}	3.9	✓
	6^{5} Lt.		4,79	4.10	✓
$10+09^{22}$	℄		5^{5}	3.4	✓
"	5' Lt		5.10	3.8	✓
T.P.	3.53	⟨7.45⟩ ✓		4.97	⟨3.92⟩ ✓
10+50	2^{2} Lt		3.80	3.65	✓
$10+69^{6}$	℄ meets paving		3.98	3.47	✓
$+92^{2}$			4.08	3.37	✓
"	1^{8} Rt.		4.12	3.33	✓
Check 11+00	N. of A			4.46 s.8. Error	⟨2.99⟩ ✓ 2.98 .01

Alignment Pac Ave Sewer North of Kalmia

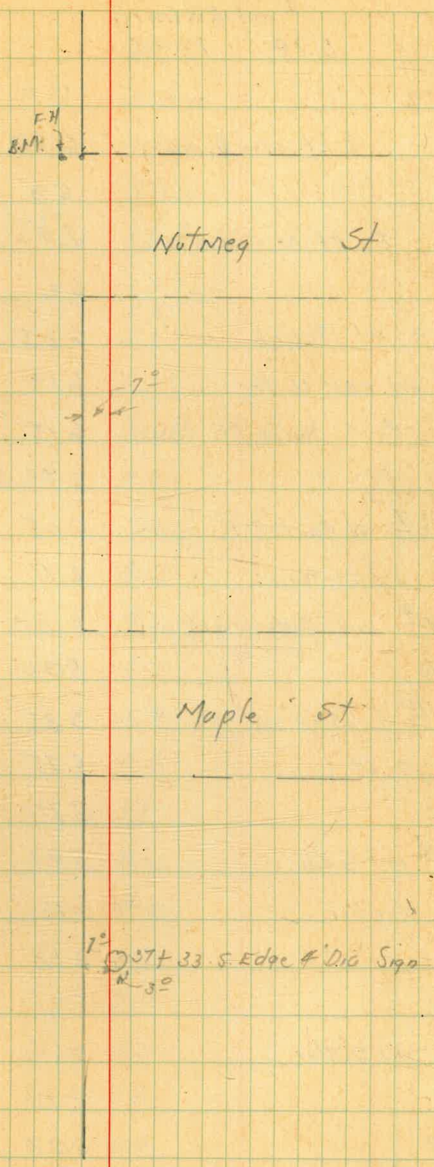
36+54.11	N Line of Laurel
35+59^{10}	L. Lt 12°-15-00
34+02^{65}	L Rt MH #43 L Rt 12°-15'-00

1/27/43
[illegible]
Sheet 968-D
W.

~~indexed~~
C.W.K.


℄ Sewer
7°
R.R. Spur
Santa Fe
E Line of Pac
26'
℄ Sewer
Kalmia
E Line of Pacific

Note. Sewer has been staked
to Sta. 43+00. in the position shown on
opposite page


F.H.
B.M.
Nutmeg St
7°
Maple St
1°
37+33 S. Edge 4' Dia Sign
3°

Profile Levels for Line Change North of Kalmia

BM	5.74	13.86		8.12
34+02.65 L			7.0	
" " 8' Lt edge Paving			6.69	
+50			6.9	
" " 8.2 Rt N End cb inlet			7.40	
+70			6.2	
" 3.9 Rt Top cb			6.25	
+88.5 int east cb. Pac			6.18	
+92.5 S. Rail Santa Fe Spur			6.15	
35+00			6.1	
+00.7 N Rail S Fe Spur			6.05	
+03 3.3 Lt Top cb			6.11	
+04.4 int Sidewalk 17.3 back to walk			6.01	
+26			5.90	
+59.10 L. Lt 12°-15'-00			5.35	
" " 7' Lt			5.75	
+78			5.73	
+87.8 int S. Cb.			5.81	
" " Gutter			6.75	
36+00			6.18	
+20			5.80	
+31 N Gutter			5.62	
+45			4.79	
+73			3.97	
" 11.4 Lt			4.63	

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⊼
13.86

37+00			3.75	
+50			3.32	
38+00			2.85	
+50			2.56	
" " Floor Gas Sta 23.6 Rt			1.65	
+50 7 Rt To Gas Pump Stand			1.94	
+62 " "			1.97	
+77 S End Con Driveway 7' Lt			2.47	
39+00			2.03	
+02 Top			1.77	
" " 7' Lt Edge Con Drive			2.27	
TP	5.40	16.97	2.29	9.57
+5			5.2	
+8			4.9	
+50			4.2	
" " 5' Lt			5.2	
40+00			3.8	
" " 5' Lt			4.6	
+15			3.5	
+25			4.2	
+50			4.0	
+85			3.5	
41+00			2.7	
" 4' Lt			3.6	
+40			1.8	
" " 4' Rt			0.9	
" " 5 Lt			3.0	

		⊼ 16.97		
+65			0.7	
" " 4' Rt			0.7	
" " 6' Lt			3.0	
T.P.	5.45	19.64	2.78	12.19
42+00			3.0	
" " 4 Rt			3.0	
" " 4 Lt			4.9	
+50			2.9	
" " 4' Rt			2.9	
" 4' Lt			4.8	
43+00			2.9	
" " 4' Rt			2.9	
" " " Lt			4.6	
check BM			1.26	18.38

Bliss
Begg
8/13/62

Proposed Realignment Pacific Ave Sewer
Vine to Harasthy.

15°-22'-00
Δ ~~7-41-00~~
R·3660
Tan
L.C·981·61

indexed
C.S.K.

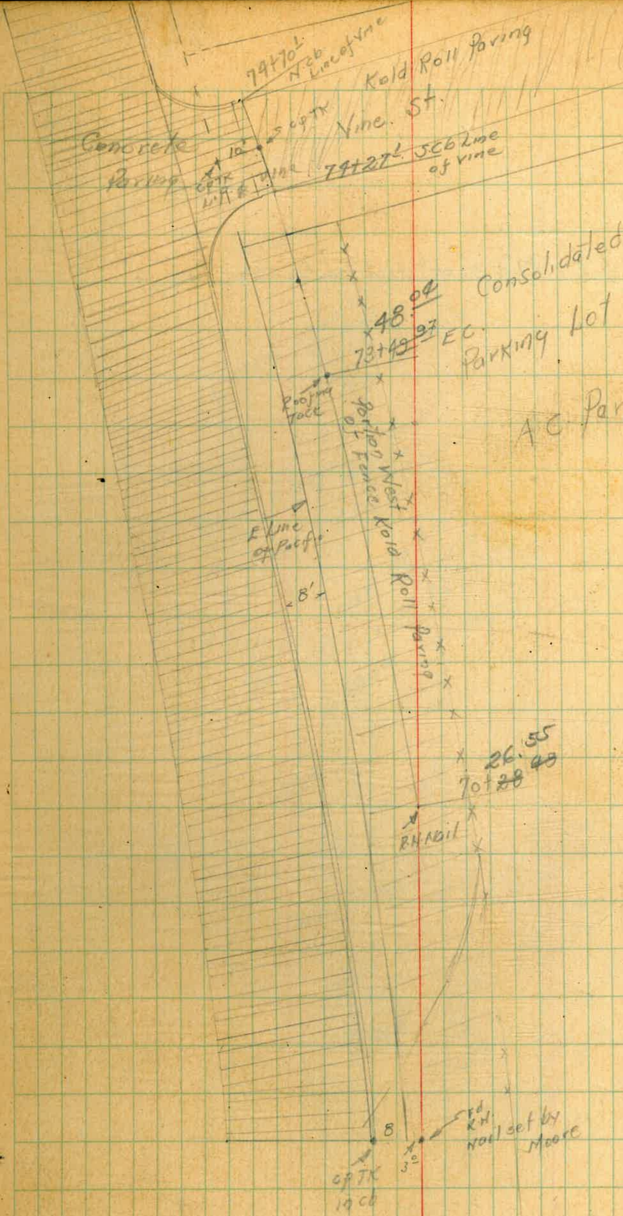
= 74+43.81
74+~~51.77~~ = BC Lt ℄ Vine St
49.84

48.04
73+~~49.97~~ E.C.

Δ 9°24'-30
R·1957·75
T 161.10
L.C 321.48

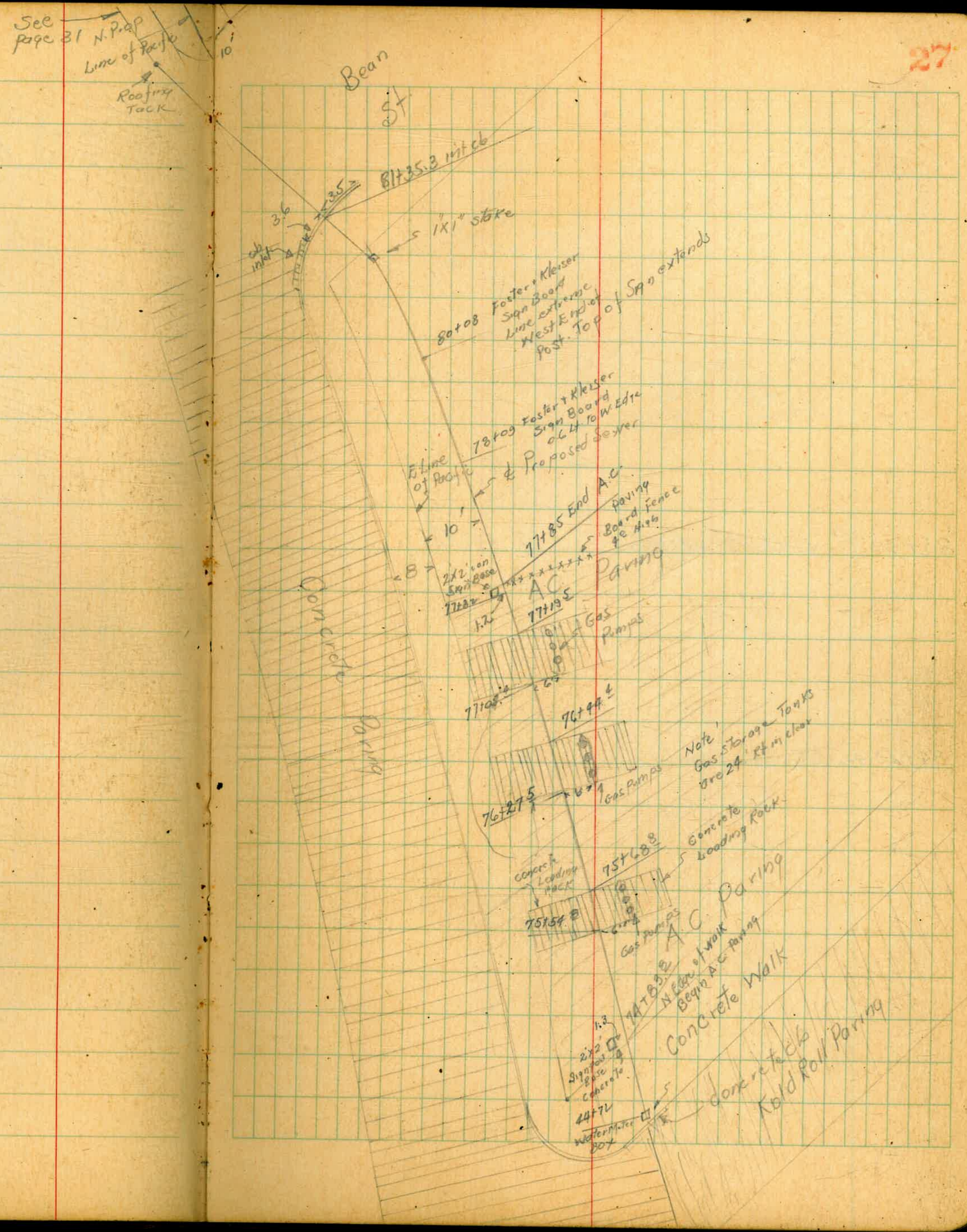
26.55
70+~~28.49~~ B.C. Lt Realigned from this point

68+45.74 B.C. Prop. E Line of Pacific
54.26


74+70± N cb Line of Vine
Kold Roll Paving
S cp Tk
Vine St.
10'
74+27± S cb Line of Vine
Concrete Paving
cp Tk
Vine
Consolidated Parking Lot
48.04
73+~~49.97~~ E.C.
Roofing Tack
Portion West of Fence Kold Roll Paving
A.C. Paving
E Line of Pacific
8'
26.55
70+~~28.49~~
RH Nail
8
cp Tk
3'
Fd RH Nail set by Moore

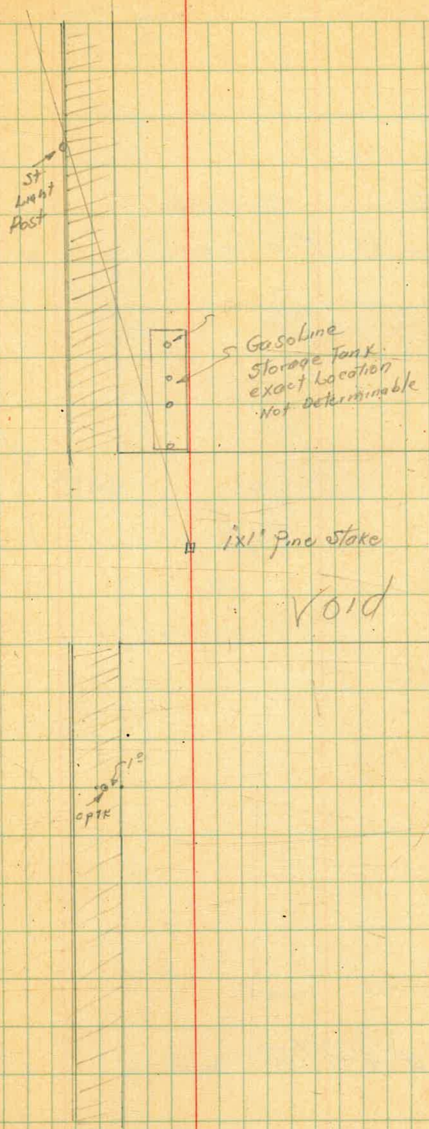
68+45.74
54.26

81+26.21 E.C. L Lt 19°52'-00" From Tan. to Curve


See page 31
N. Prop Line of Pacific
10'
Roofing Tack
Bean St
81+35.3 int cb
3.6
3.5
cb inlet
1"x1" stake
80+08 Foster + Kleiser Sign Board Line extreme West End of Post. Top of Sign extends
78+09 Foster + Kleiser Sign Board o.6 Lt. to W. Edge
E Line of Pacific
℄ Proposed Sewer
10'
8
77+85 End A.C. Paving
Board Fence 4' High
2x2' on Sign Base
77+82
1.2
A C Paving
77+19.5
Gas Pumps
6'
77+05.4
76+44.4
Note! Gas Storage Tanks are 24' Rt. in clear
Gas Pumps
6'
76+27.5
Concrete Paving
75+68.8
Concrete Loading Rack
Concrete Loading Rack
75+54.8
6'
Gas Pumps
A C Paving
74+83.2 N Edge of Walk Begin A.C. Paving
Concrete Walk
1.3
2x2' Sign Post Base Concrete
44+72
Water Meter Box
Concrete Curb
Kold Roll Paving

85+40.09 ∠.Lt 4°-07'-00" Void

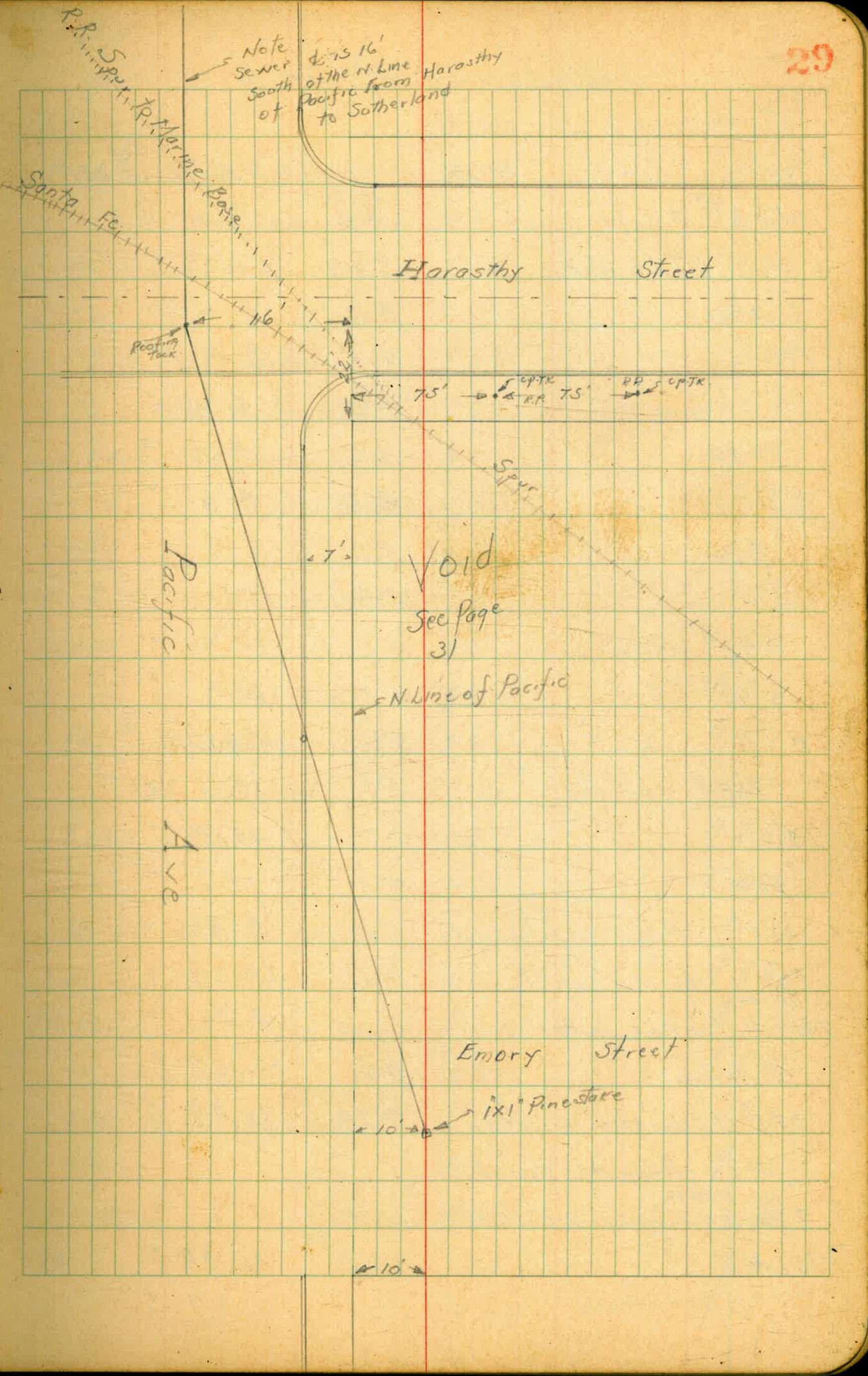
84+25.42 E.C. State Hiway Prop Curve


St Light Post
Gasoline Storage Tank exact Location Not Determinable
1x1' Pine Stake
Void
1°
cptk

$89+03.^{\underline{09}}$ ∠ Rt 4°-07'-00"

Void See page 31

$85+40.^{\underline{09}}$ L. Lt 4°-07'-00



Note sewer ℄ is 16' South of the N. Line of Pacific from Harosthy to Sotherland

Void See Page 31

R.R. Spur to Marine Base
Santa Fe
Harosthy Street
116'
Roofing Tack
75'
75'
cp.TK
R.R
RR
cp.TK
Spur
7'
Pacific Ave
N. Line of Pacific
Emory Street
1x1" Pine stake
10'
10'

Profile Levels Line Change Pac Ave Sewer

B.M.	5.70	13.96 ✓		〈8.26〉	op TP. in cb 11 Lt of 68+45.74
$70+28^{49}$ B.C. Lt			4.8	9.2	✓
" " 7.5 Lt. Walk			5.03	8.93	✓
+50			4.8	9.2	✓
71			4.7	9.3	✓
" Walk opp.			4.78	9.18	✓
+50			4.6	9.4	✓
72			4.4	9.6	✓
+50			4.1	9.9	✓
73			3.8	10.2	✓
$+43^{3}$ Con slab			3.8	10.2	✓
$+49^{97}$ E.C.			3.8	10.2	✓
TP	5.07	〈15.23〉 ✓	3.80	〈10.16〉 ✓	
$+58^{3}$ N. Side slab			5.1	10.1	✓
74			5.0	10.2	✓
+12			4.9	10.3	✓
$+27^{1}$ Edge Con S. cb of Vine St.			5.31	9.92	✓
$74+51^{77}$ = 74+93.81 B.C. Lt & Vine St			4.84	10.39	✓
$74+70^{1}$ N. Cb Vine Gutter			5.30	9.93	✓
" " Top Cb			4.60	10.63	✓
$+83^{8}$ N. Edge Walk N. Line Vine			4.74	10.49	✓
" " " Begin A.C. Paving					
+85 S. Edge 2x2 Lamp Base 2.3 Lt fo ctr					
75+00			4.84	10.39	✓
" " 16 Lt walk			4.96	10.27	✓

8/31/42 [illegible]

indexed
C.S.K.

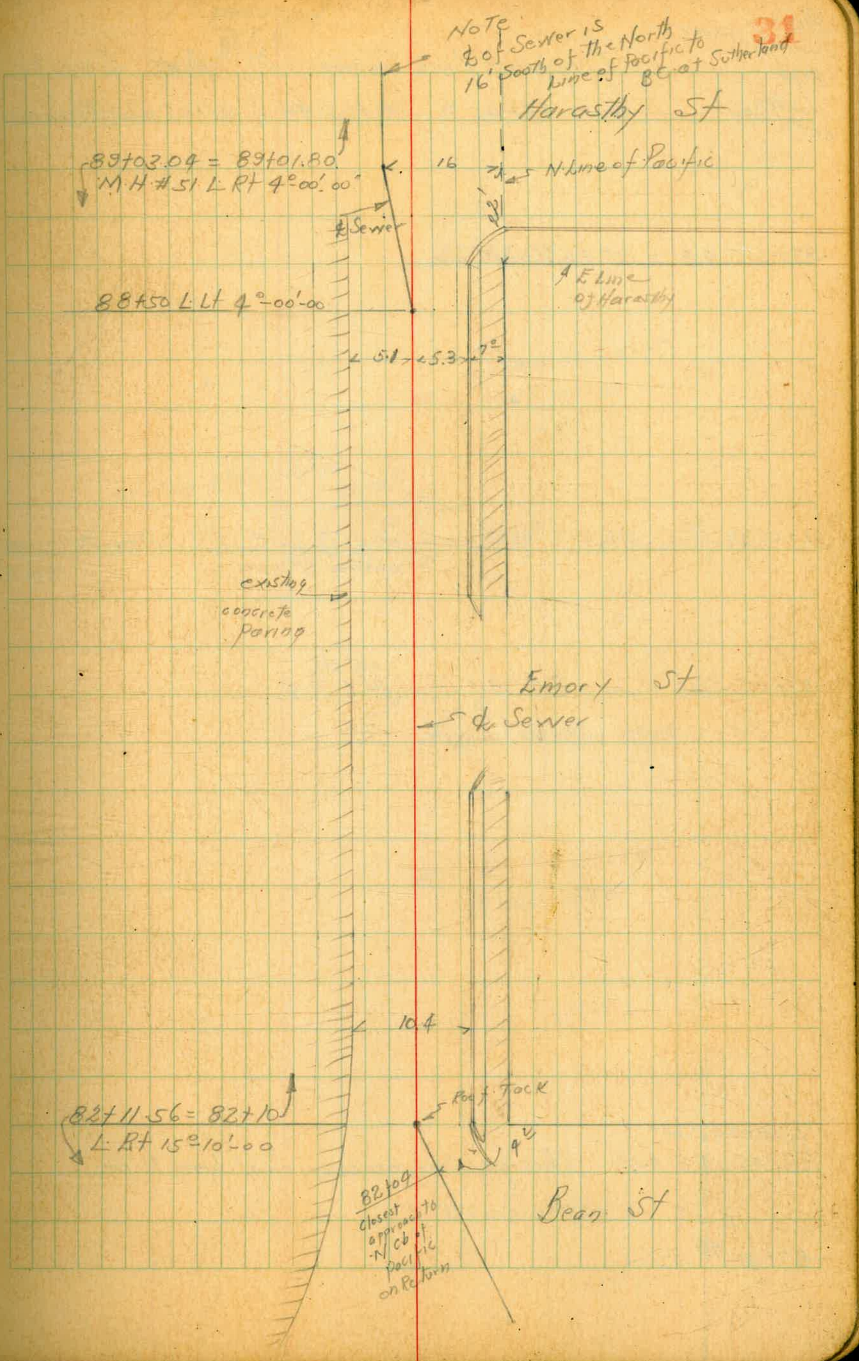
70+28.49
68+45.74
1 82.75

54+74

		〈15.23〉 ✓			
75+50			5.00	$10.^{23}$	✓
$+54^{8}$ S. Side Gas Pump Rack			4.94	10.29	✓
" " 6' Rt. S. Side 3 pump Gas Rack 2.5 wide			4.49	10.74	✓
$+68^{8}$ N. Side Gas Rack			4.94	10.29	✓
76+00			5.10	10.13	✓
$+27^{5}$ S. Side Gas Rack			5.10	10.13	✓
" " 6' Rt. W. Edge Pump Rack 2.5 wide			4.60	10.63	✓
$+44^{4}$ N. Side Gas Rack 3 pump			5.10	10.13	✓
" " " 6' Rt. Top Pump Stand			4.60	10.63	✓
76+50			5.10	10.13	✓
T.P.	4.70	〈14.58〉 ✓	5.35	〈9.88〉 ✓	
77+00			4.62	9.96	✓
" " 10' Lt. edge walk			4.82	9.76	✓
$+05^{4}$ S. Side Gas Rack 3 pump			4.65	9.93	✓
" 57 Rt. Top Gas Pump stand			4.19	10.39	✓
+19.5 N. Side Gas Rack			4.72	9.86	✓
+50			4.78	9.80	✓
+82 S. End 2x2' Lt Stand 1.2 Lt in clear					
+85 End A.C. Paving			4.70	9.88	✓
78+00			4.9	9.7	✓
" " 10' Lt walk			5.06	9.52	✓
+09 Foster Kleiser Sign Board 0.6 Lt to Edge					
+50			5.2	9.4	✓
T.P.	4.75	〈14.05〉 ✓	5.28	〈9.30〉 ✓	
79			4.7	9.4	✓
" " 16' Lt			4.88	9.17	✓

		14.05 ✓			
79+50			4.9	9.2 ✓	
80+00			4.8	9.3 ✓	
" " Walk 10' Lt			5.19	8.86 ✓	
80+08	Foster & Kleise, Signboard Line on West End				
+50			4.9	9.2 ✓	
81+00			5.1	9.0 ✓	
+26.21 EC Ground			4.7	9.4 ✓	
" " Walk			5.28	8.77 ✓	
TP	4.99	13.81 ✓	5.23	8.82 ✓	
Check BM	4.88	13.99 ✓	4.70	9.11 ✓	N.E. Iron Pin S. driveway Bean & Pac.
81+35.26 n of cb Return			4.77	9.22 ✓	
+40			5.8	8.2 ✓	
+55			5.1	8.9 ✓	
82			6.1	7.9 ✓	
+11.56 = 82+10 L			6.0	8.0 ✓	
" " 5.3 Rt cb			5.44	8.55 ✓	

Note Profile from Bean to Harasthy Same as origional Alignment



Note
℄ of Sewer is 16' South of the North Line of Pacific to BC at Sutherland
Harasthy St
89+03.04 = 89+01.80
M.H. #51 ∠ Rt 4°-00'-00"
16
N. Line of Pacific
3'
℄ Sewer
E Line of Harasthy
88+50 ∠ Lt 4°-00'-00
5.1
5.3
7'
existing concrete paving
Emory St
℄ Sewer
10.4
Pac. & Tack
82+11.56 = 82+10
∠ Rt 15°-10'-00
4'
82+09 closest approach to N cb of Pacific on Return
Bean St

Bliss
Sommermyer
Begg
Hardin
Oct 7, 1942

Proposed Line Change 11th Ave Sewer
from 88+45 to 95+65.48 = 95+65 old Alignment

95+65.48 = 95+65 old line

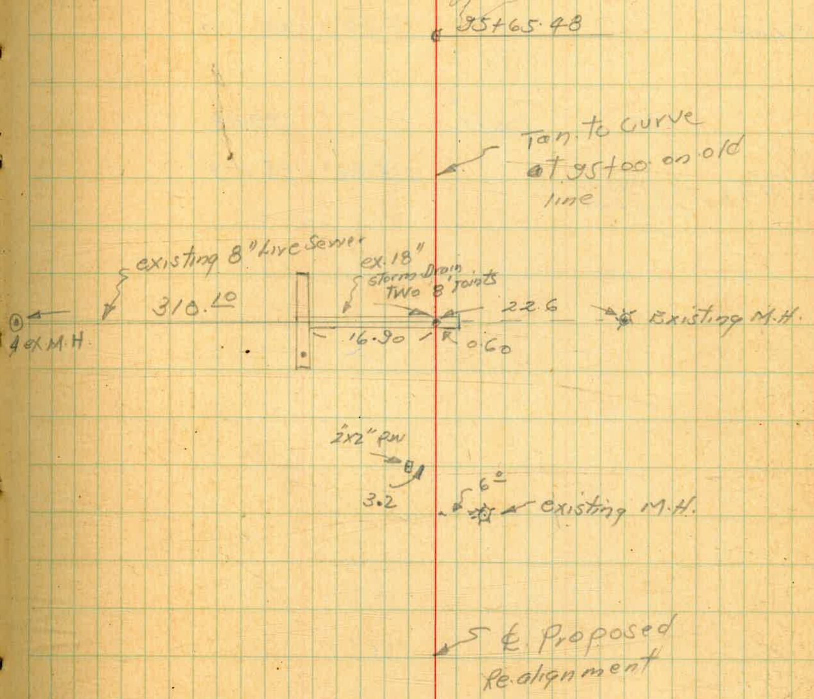
$93+87.^{78}$ L. Rt. 5°-49'-00 M.H. To be Constructed over existing 8" Sewer

93+68 State Hiway B.C 3.2 Lt. of Rt L to ℄

L. Lt 0°-44'-00"
88+45 M.H. #20 This position on origional Line to be Maintained

$87+99^{48}$ E.C.

Indexed
C.S.K.


95+65.48
Tan. to curve at 95+00 on old line
existing 8" Live Sewer
ex. 18" Storm Drain Two 8' Joints
310.10
22.6
Existing M.H.
16.90
0.60
4 ex M.H
2x2" RW
3.2
6°
existing M.H.
℄ Proposed Re-alignment

Levels to Establish Elevation of

Existing 8" Sewer · on 11th Canyon Line change

State BM Highway	6.94	106.02 ✓		99.08
Rim M·H 3 310' Rt of ℄			1.26	104.76 ✓
Flow Line			7.80	98.22 ✓
BM	1.69	100.77 ✓		99.08
Flow Line M·H 22' Rt of ℄ ·	on 8" Sewer From East		15.68	85.09 ✓

Profile Levels Line Change 11th St
Canyon Sewer from 88+45 to 95+65 2d = 95+65 old

BM Grade Pt 10' Lt M.H. #20.				105.23		
G-8203-P.13	3.74	108.97 ✓				
88+45			3.3	105.7 ✓		℄ Cut
89			4.1	104.9 ✓	89.3	+15.6
+50			4.9	104.1 ✓	88.7	+15.4
90			5.7	103.3 ✓	88.1	+15.2
+50			5.4	103.6 ✓	87.5	+16.1
91			5.8	103.2 ✓	86.9	+16.3
+50			7.0	102.0 ✓	86.3	+15.7
T.P.	3.16	105.18 ✓	6.95	102.02 ✓		
92			7.4	97.8 ✓	85.7	+12.1
+50			10.9	94.3 ✓	85.1	+9.2
93			11.6	93.6 ✓	84.5	+9.1
+12			8.0	97.2 ✓		
+25			8.3	96.9 ✓		
+50			8.9	96.3 ✓	83.9	+12.4
+58			9.1	96.1 ✓		
℄ M.H. #21 +87 78			13.4	91.8 ✓	83.4	+8.4
T.P.	3.11	98.67 ✓	9.62	95.56 ✓		
94			8.5	90.2 ✓	83.3	+6.9
+50			9.4	89.3 ✓	82.7	+6.6
+62			9.8	88.9 ✓		
+66			12.8	85.9 ✓		
+73			10.4	88.3 ✓		

						℄ cut
		98.67 ✓				
94+73	2' Rt.		12.4	86.3 ✓		
+80			12.9	85.8 ✓		
+97			13.0	85.7 ✓		
95			12.0	86.7 ✓	82.1	+ 4.6
+13			9.6	89.1 ✓		
+22	work started Here		9.0	89.7 ✓		
+35			4.5	94.2 ✓		
+50			4.6	94.1 ✓	81.6	+ 12.5
95 +65 ^{00} = 95+65 ^{48}			5.0	93.7 ✓	81.10	+ 12.6
T.P.	7.12	102.68 ✓	3.11	95.56 ✓		
check B.M.			3.59	99.09 ✓		

Walker
Osborne
Hazard
Beggs 7-19-43

Proposed Change in Alignment of Encanto Trunk Sewer Between 40th St. And National Ave.

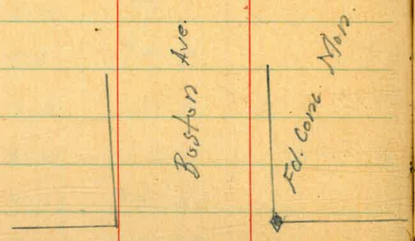
Stations

50+30 = Δ Lt ~~14°45'~~ 15°23'30" ✓ Set Pav. Stake

= 46 + 68
46 + 57.69 = Δ Lt. ~~6°12'~~ 5°28' ✓ Equation. Set Paving Stake

Portion of This Line Same as in FB 1618-4

~~39+97.66~~ F.B. 1618-4 = Δ ~~90°18'~~ 07' Rt. 90°18' = According To Plan.
39 + 80.95 = Drawing



Boston Ave.
Fd. Conc. Mon.

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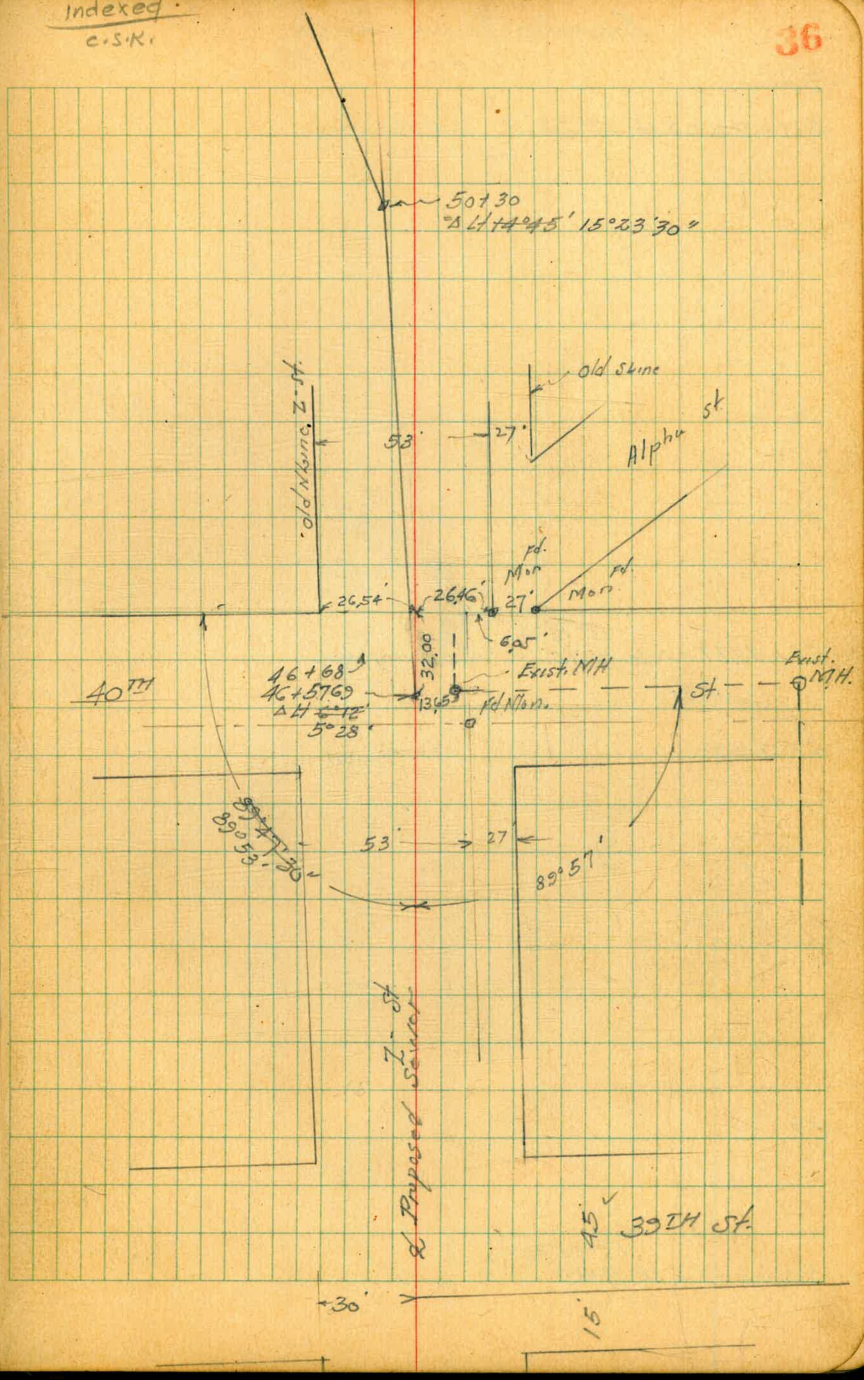


50+30
Δ Lt ~~14°45'~~ 15°23'30"
Old N. Line Z St.
Old S. Line
53'
27'
Alpha St.
Fd. Mon
Fd. Mon
26.54'
26.46'
27'
6.05'
32.00
46+68
46+57.69
Δ Lt ~~6°12'~~ 5°28'
13.65
Exist. M.H.
Fd. Mon.
40TH St
Exist. M.H.
~~89°47'~~ 89°53'30"
53'
27'
89°57'
Z St
℄ Proposed Sewer
45'
39TH St.
30'
15'

ENCANTO TRUNK SEWER
Cont. from P. 36

Stations

56 + 70 = Δ Lt. 17°24' ✓ Set Pav. stake

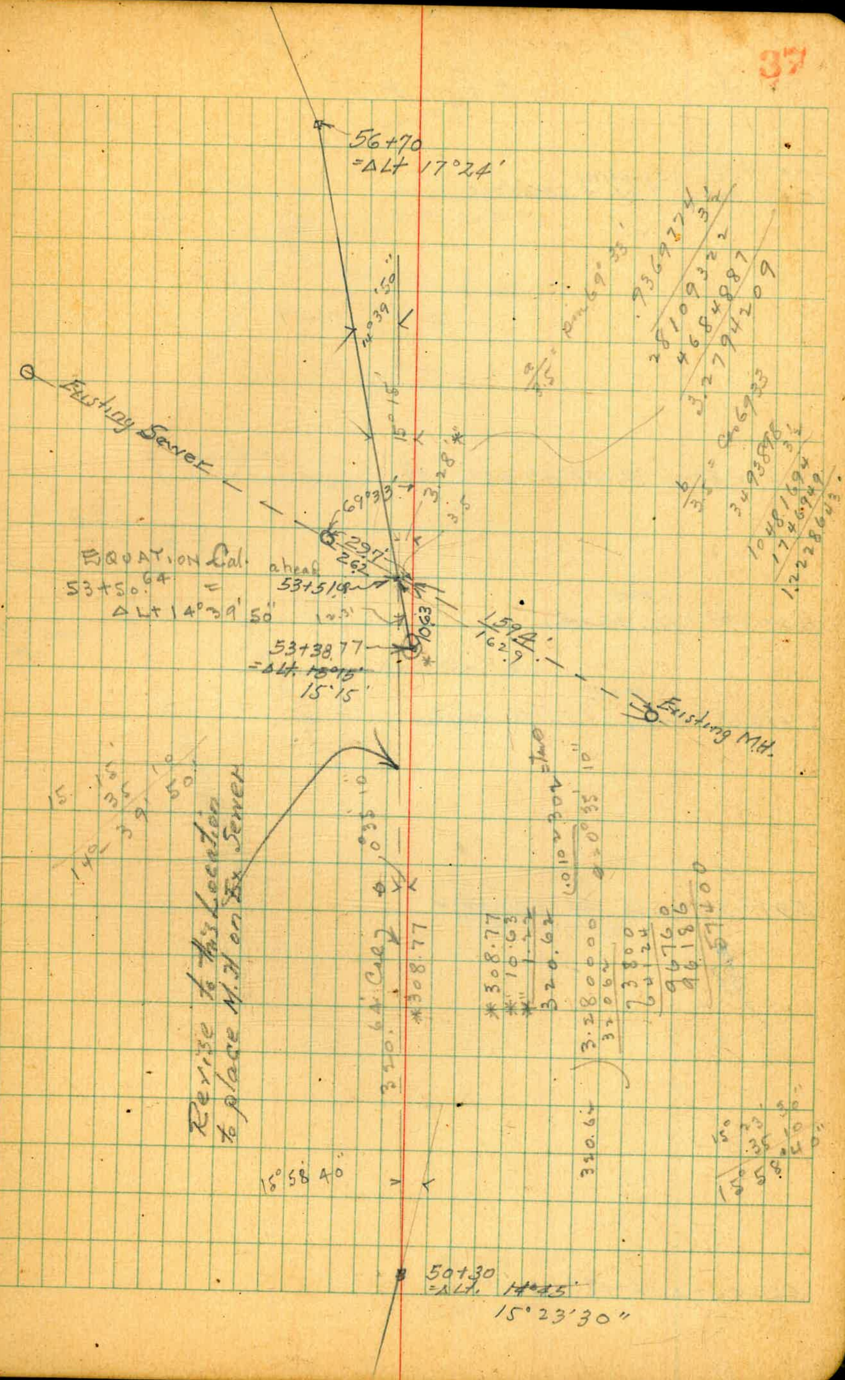
53 + 3877 = Δ Lt. ~~15°15~~ 15°15' ✓ Set Paving stake

53 + 00

52 + 00

51

50 + 30 = Δ Lt ~~14°45'~~ 15°23'30" ✓ Set Paving stake


56+70
= Δ Lt 17°24'
14°39'50"
15°15'
69°33'
Existing Sewer
EQUATION Cal.
53+50.64 = ahead 53+51.08
Δ Lt 14°39'50"
2.97'
2.62
10.63
53+38.77
= Δ Lt. ~~15°15~~
15°15'
1.59.4'
1.62.9
Existing M.H.
Revise to this Location
to place M.H on Ex Sewer
15°58'40"
320.64 Curve
*308.77
*308.77
*10.63
*1.22
320.62
320.64
15°23'30"
35'10"
15°58'40"
50+30
= Δ Lt. ~~14°45'~~
15°23'30"

ENCANTO TRUNK SEWER

Cont. from P-37

=68+04.85 } Equation
65+61.30 } =Δ Lt. 23°26'30"

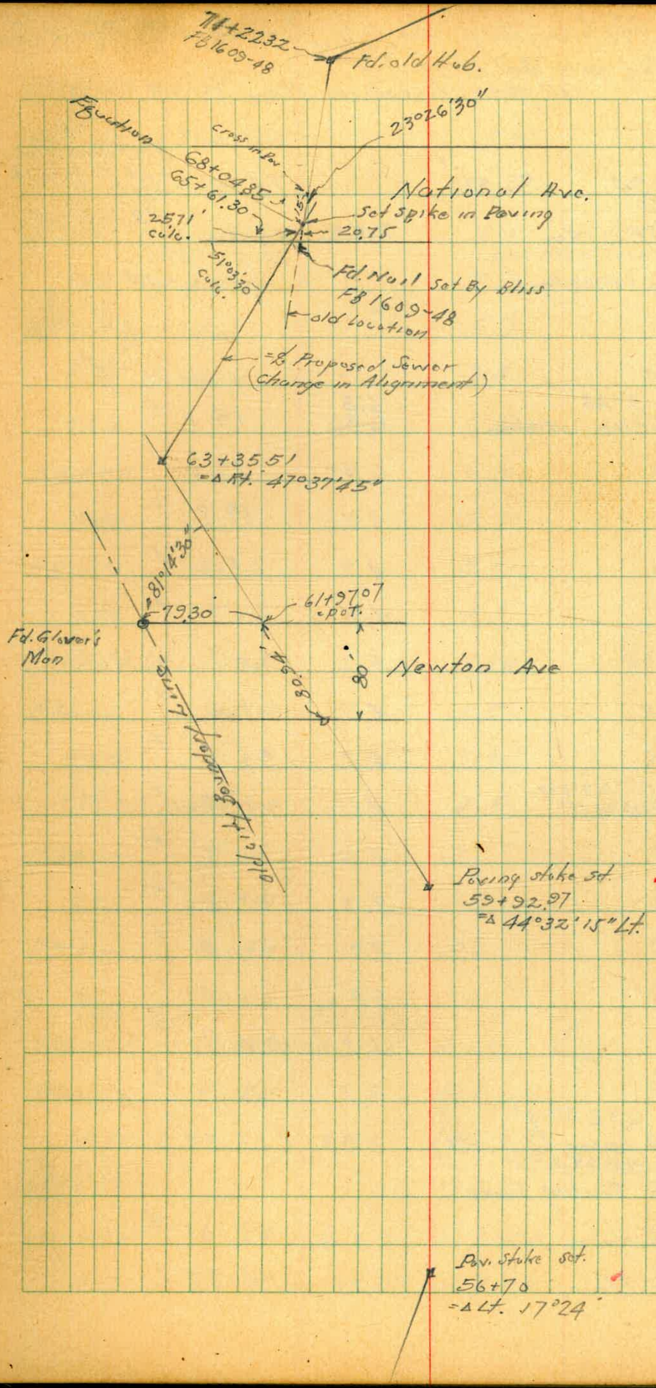
63+35.51 =Δ Rt. 47°37'45" Fd

61+97.07 =N.L. Newton =P.O.T.

61+16.13 =Intersection S.L. Newton =P.O.T.

59+92.97 =Δ Lt. 44°32'15"

56+70 =Δ Lt. 17°24'



71+22.32
FB 1609-48
Fd. old Hub.
Equation
cross in Pav.
23°26'30"
68+04.85
65+61.30
National Ave.
Set Spike in Paving
25.71' calc.
20.75
15'
51°03'30" calc.
Fd. Nail Set By Bliss FB 1609-48
old Location
=℄ Proposed Sewer (Change in Alignment)
63+35.51 =Δ Rt. 47°37'45"
81°14'30"
79.30
Fd. Glover's Mon
61+97.07 =P.O.T.
80.94'
80
Newton Ave
old City Boundary Line
Paving stake set. 59+92.97 =Δ 44°32'15" Lt.
Pav. stake set. 56+70 =Δ Lt. 17°24'

Walker
Osborne
Hazard
Beggs 7-20-43

Preliminary Levels for Encanto Trunk Sewer
Bet. 40th And Nat'l. Ave
as per Location Pages 36-38

SE.Cor Z-& 40th	6.94	25.86 ✓		18.92 ✓	BM=Rim MH. =8.5 Rt 46+67.4 FB.1618-14 FB.1637-14
Chk. B.M. on ½" I.P. in Mon			7.52	18.34	
39+80.95 = Δ Rt 90°07' = Drawing.				18.32 = BM	
~~39+97~~.66 = Δ Rt. 90°18 FB1618 Page 4				0.02 = diff.	
↑ Levels FB1618-14					[illegible]
46+57.69					
= 46+68.0 = Δ Lt. ~~6°12~~ 5°28 ~~on stake~~			~~6.86~~ 6.8	19.1	✓
47+00			6.8	19.1	✓
+50			6.1	19.8	✓
48+00			4.7	21.2	✓
+50			4.8	21.1	✓
49+00			5.2	20.7	✓
+50			4.9	21.0	✓
50+00			4.3	21.6	✓
50+30 = Δ Lt. ~~14°45'~~ 15°23'30"			4.16	21.70	✓
+50			4.0	21.9	✓
51+00			3.8	22.1	✓
+50			3.9	22.0	✓
52+00			3.8	22.1	✓
+50			3.2	22.7	✓
53+00			2.7	23.2	✓
T.P. 53+38.77 = Δ Lt. ~~15°15~~ 15°23'30"	6.32 15°15' ✓	⟨29.89⟩	2.29	⟨23.57⟩ ✓	
53+51.08 = Int Existing Sewer					F.L. Cal. 14.47
26.2' Lt	on Rim M.H.		6.28	23.61	✓
"	" Flow " "		15.31	14.58	✓

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29.89 ✓

39

(53+51.08)

162.9' Rt. on Rim MH.	5.32	24.57	✓
" " " Flow "	16.07	13.82	✓
53+67 = W edge Sewer Ditch.	6.0	23.9	✓
+68 = in Bottom " "	9.8	20.1	✓
54+13 = W edge " " #2	5.9	24.0	✓
+14 = Bottom " " "	9.4	20.5	✓
+50	6.0	23.9	✓
55+00	6.3	23.6	✓
+50	5.7	24.2	✓
56+00	5.1	24.8	✓
+50	4.3	25.6	✓
56+70 = Δ Lt. 17°24	3.88	26.01 on stake	✓
57+00	3.5	26.4	✓
+55	3.0	26.9	✓
+56 = ℄ Ditch	4.5	25.4	✓
58+00	3.1	26.8	✓
+50	3.9	26.0	✓
59+00	3.6	26.3	✓
+50	3.0	26.9	✓
T.P. 5.44 ⟨33.23⟩ ✓ 59+92.97 = Δ Lt. 44°32'15"	2.10	⟨27.79⟩	✓
60+00	5.2	28.0	✓
+50	4.1	29.1	✓
61+00	3.9	29.3	✓
61+16.13	3.7	29.5	✓
+50	2.7	30.5	✓

Encanto Sewer Cont. from P-39

		33.23 ✓			
61+87			4.4	28.8	✓
+92			5.5	27.7	✓
62+00			6.0	27.2	✓
+42			6.3	26.9	✓
+50			7.4	25.8	✓
63+00			7.0	26.2	✓
+35.51 = Δ Rt 47°37'45"			6.78	26.45	✓ on stake
+50			6.9	26.3	✓
64+00			6.7	26.5	✓
N.L. Newton on old city Boundary Chk BM Conc. Mon			10.23	23.01 F.B. 1618-16 23.00 ✓	0.01 diff
T.P.	11.00	〈37.76〉 ✓	6.47	〈26.76〉 ✓	
64+50			11.5	26.3	✓
65+00			8.8	29.0	✓
+41			5.3	32.5	✓
+48			6.1	31.7	✓
+51			4.5	33.3	✓
+56 = S edge Oil Rock Pav			3.5	34.3	✓
65+61.30 +68+04.85 = Equation = Δ Lt 23°26'30"			3.39	34.37	✓
68+16.4 = S edge Conc. Strip Pav. Nat'l Ave			3.05	34.71	✓
				34.72 = FB 1618-16 0.01 diff.	

Check Elev. M.H. 22' Rt. of old Sta. 64+37' FB. 1609 P-48

	12.14	〈35.15〉 ✓		23.01 = B.M. Above Mon.	
			3.03	32.12	✓
			14.20	20.95	✓

Line Change Encanto Sewer
Siva St. Dalbergia to Birch

B.M.	4.70	10.98 ✓		6.28	Chisel □ S of Main St. NL Rigel 1642.8
	4.57	11.10 ✓	4.45	6.53 ✓ m	10/4/43 Plotted
	5.75	12.14 ✓	4.71	6.39 ✓	
B.M.			6.38	5.76 ✓	13' Mon Dalbergia + Siva
0+0 =	Ground		6.5	5.6 ✓	
..	Exist M.H.		4.00	8.14 ✓	on Rim MH
"			19.48	-7.34 ✓	Flow Line
+15			6.3	5.8 ✓	
+21			4.4	7.7 ✓	
+26			4.3	7.8 ✓	
+32			7.0	5.1 ✓	
+47			11.4	0.7 ✓	
+63			13.9	-1.8 ✓	
+68			13.3	-1.2 ✓	
+80			8.9	3.2 ✓	
+95			9.0	3.1 ✓	
1+05			4.4	7.7 ✓	
+15			9.3	2.8 ✓	
+50			8.7	3.4 ✓	
2+0			8.4	3.7 ✓	
+29.27	Δ Lt		8.75	3.39 ✓	on Hub
M.H. 15' Lt	of 2+29.27		4.75	7.39 ✓	on Rim MH
			18.84	-6.70 ✓	Flow Line

Sept. 30 - 43
Sisson
Bliss
Begg

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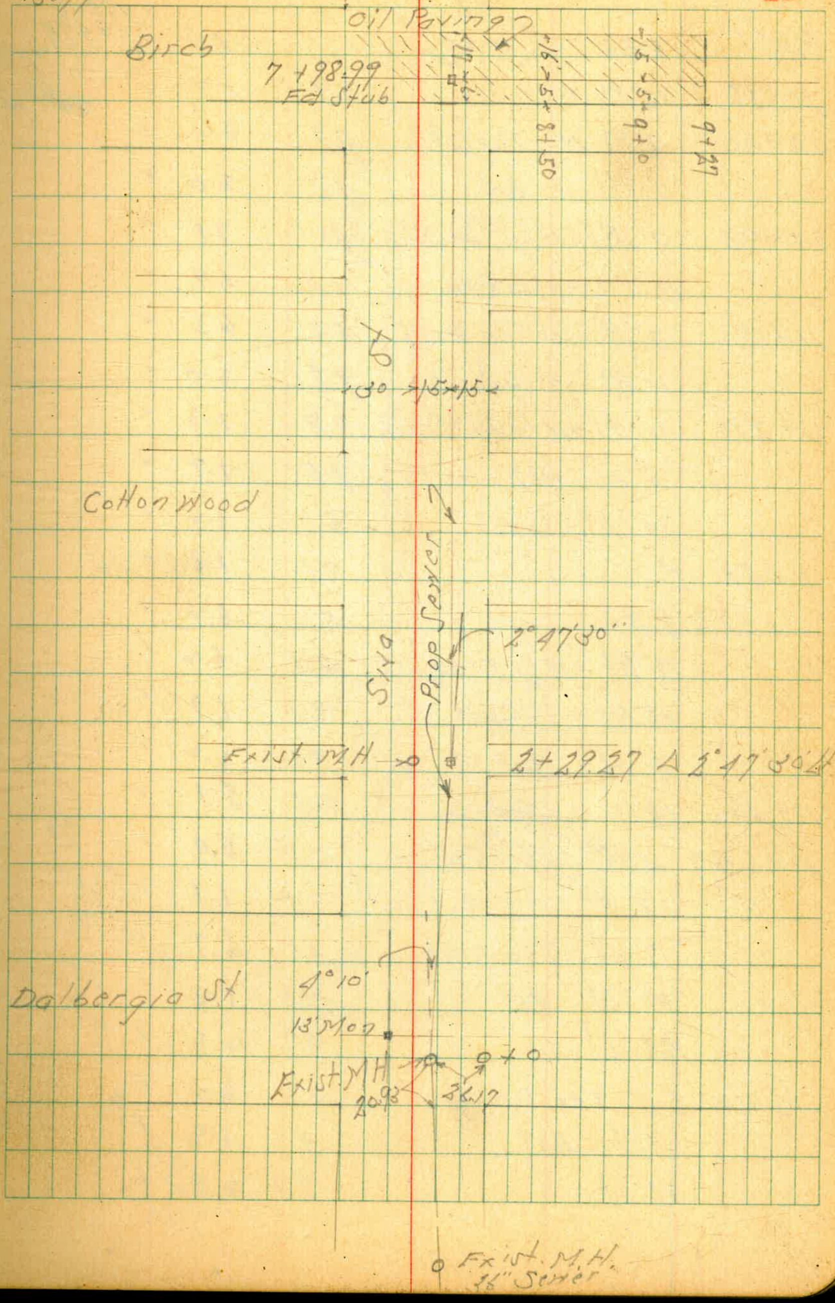
Oil Paving?
Birch
7+98.99
Fd Stub
+10
8+50
9+0
9+27
30
15
15
Cottonwood
Siva
Prop Sewer
2°47'30"
Exist. MH
2+29.27 Δ 2°17'30" Lt
Dalbergia St
4°10'
13' Mon
Exist MH
20.93
36.17
0+0
Exist. M.H.
36" Sewer

Location & Levels of Ditches
Birch - 36th & Beta Sts.

B.M.	4.54	H.I 11.20 ✓		6.66	oo Stub 9+34.94 Recon Survey #1660-5 Plotted
10+28	12' Rt = N'ly Ditch		9.9	1.3	✓
10+50	9' Rt N'ly Top Ditch		5.2	6.0	✓
	11' Rt " Bot. "		9.2	2.0	✓
10+95	9' Rt = N'ly Top Ditch		4.1	7.1	✓
	11 " = N'ly Bot. "		9.3	1.9	✓
11+12	7' Rt: S'ly Top Ditch		4.9	6.3	✓
	11 Rt " Bot "		9.2	2.0	✓
11+28	11' Rt N'ly Bot Ditch		9.9	1.3	✓
	5' Lt Bot "		9.5	1.7	✓
	10' Lt = Top "		5.0	6.2	✓
11+43	℄		9.6	1.6	✓
	8' Rt		5.0	6.2	✓
	12' Rt = N'ly Top Ditch		5.0	6.2	✓
	15' Rt = " Bot "		9.3	1.9	✓
	8' Lt: Bot "		9.0	2.2	✓
11+43	14 " : Top "		5.5	5.7	✓
11+63.97	11' Rt = N'ly Top "		5.3	5.9	✓
"	13' Rt N'ly Bot "		9.5	1.7	✓
"	7' Lt: Top Ditch		4.5	6.7	✓
"	14' Lt Bot "		9.4	1.8	✓
"	24' Lt " "		8.7	2.5	✓
12+0	6' Lt: Top Ditch		5.0	6.2	✓
	12' Lt: Bot "		9.4	1.8	✓
	32' Lt " "		8.9	2.3	✓

Sept 30-43
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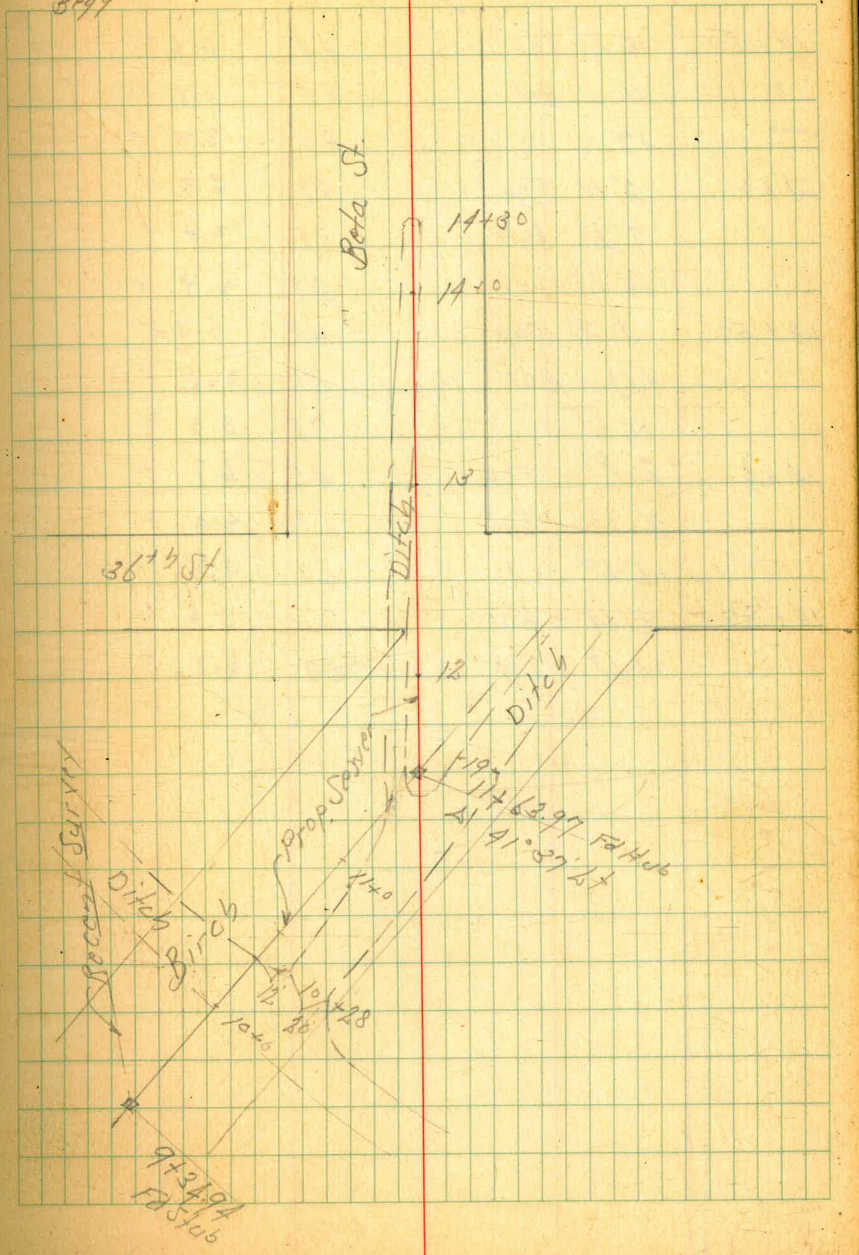
Bliss
Begg


Beta St.
14+80
14+0
13
36th St.
Ditch
12
Ditch
+19
11+63.97 Fd Hub
41.87' Lt
Prop. Sewer
11+0
Recon Survey
Ditch
Birch
12
10
10+6
+28
9+34.94
Fd Stub

✓
<11.20>

12+50	5' Lt Top Ditch	4.6	6.6	✓
	11 " Bot "	8.1	3.1	✓
	17 " " "	8.0	3.2	✓
13+0	2' Lt Top "	4.9	6.3	✓
	7 Lt Bot "	8.8	2.4	✓
	15 Lt " "	8.3	2.9	✓
13+50	3' Rt Top "	4.8	6.4	✓
	4 Lt Bot "	8.6	2.6	✓
	15' Lt " "	7.9	3.3	✓
14+0	2' Rt Top "	4.5	6.7	✓
	2' Lt Bot "	6.8	4.4	✓
	13' Lt " "	6.9	4.3	✓
14+30	2' Lt Bot	7.7	3.5	✓
	13 Lt Top "	5.9	5.3	✓

Sewer Line Change Akins St.
Between 68th + 69th St.

BM	11.26	⟨260.49⟩ ✓		249.23 ✓	SM Top Hyd Imperial + 68 1618-51 10/4/43
270+56.40 Δ 3°02' Lt.			10.4	250.1 ✓	
270+73.4 = Ely Pav			10.47	250.02 ✓	
271+0			10.1	250.4 ✓	
+50			8.6	251.9 ✓	
272+0			7.1	253.4 ✓	
+56	Δ 12°07' Lt		5.77	254.72 ✓	on Stub
"	12' Rt. = Nly Cut Ditch		5.5	255.0 ✓	
273+0			4.5	256.0 ✓	
+50			4.1	256.4 ✓	
274+0			3.2	257.3 ✓	
+50			3.6	256.9 ✓	
+91.5	7' Lt = Sly Tel Pole				
275+0			4.0	256.5 ✓	
+35			3.8	256.7 ✓	
+55	Δ 11°50' Lt.		4.2	256.3 ✓	
"	15 Rt = Nly Cut Ditch		4.0	256.5 ✓	
TP	1.66	⟨257.90⟩ ✓	4.25	⟨256.24⟩ ✓	on Stub 275+55
276+0			3.1	254.8 ✓	
276+44	7.5' Lt. Sly Tel Pole				
+50			4.8	253.1 ✓	
277+0			5.4	252.5 ✓	
+56			4.9	253.0 ✓	
+76.45			4.37	253.53 ✓	on Stub
"	20' Rt.		6.0	251.9 ✓	
"	30' Rt		10.2	247.7 ✓	

Oct 1-43
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257.90

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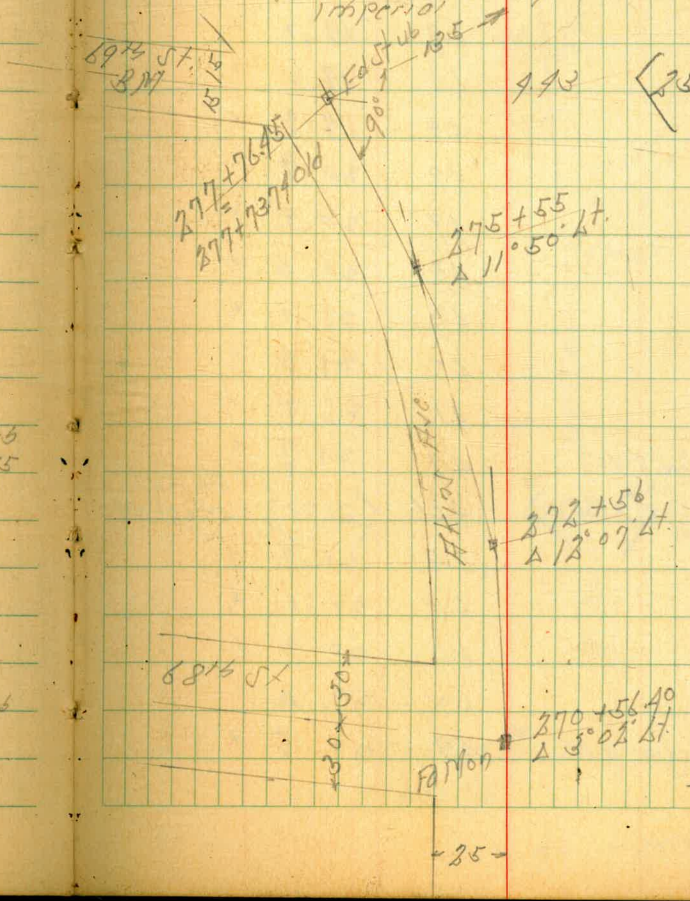
277+76.45	47' Rt	2.9	255.0 ✓
"	57' Rt	6.5	251.4 ✓
"	72.5' Rt = Top Nly Rail	3.10	254.80 ✓
"	85' Rt	3.8	254.1 ✓
"	90' Rt	7.1	250.8 ✓
"	100 Rt	7.1	250.8 ✓
"	127' Rt	6.5	251.4 ✓
"	135 Rt = Nly Pav on Imperial	3.95	253.95 ✓
		4.43	⟨253.47⟩ ✓ SM Apr @ Imperial + 69th St.

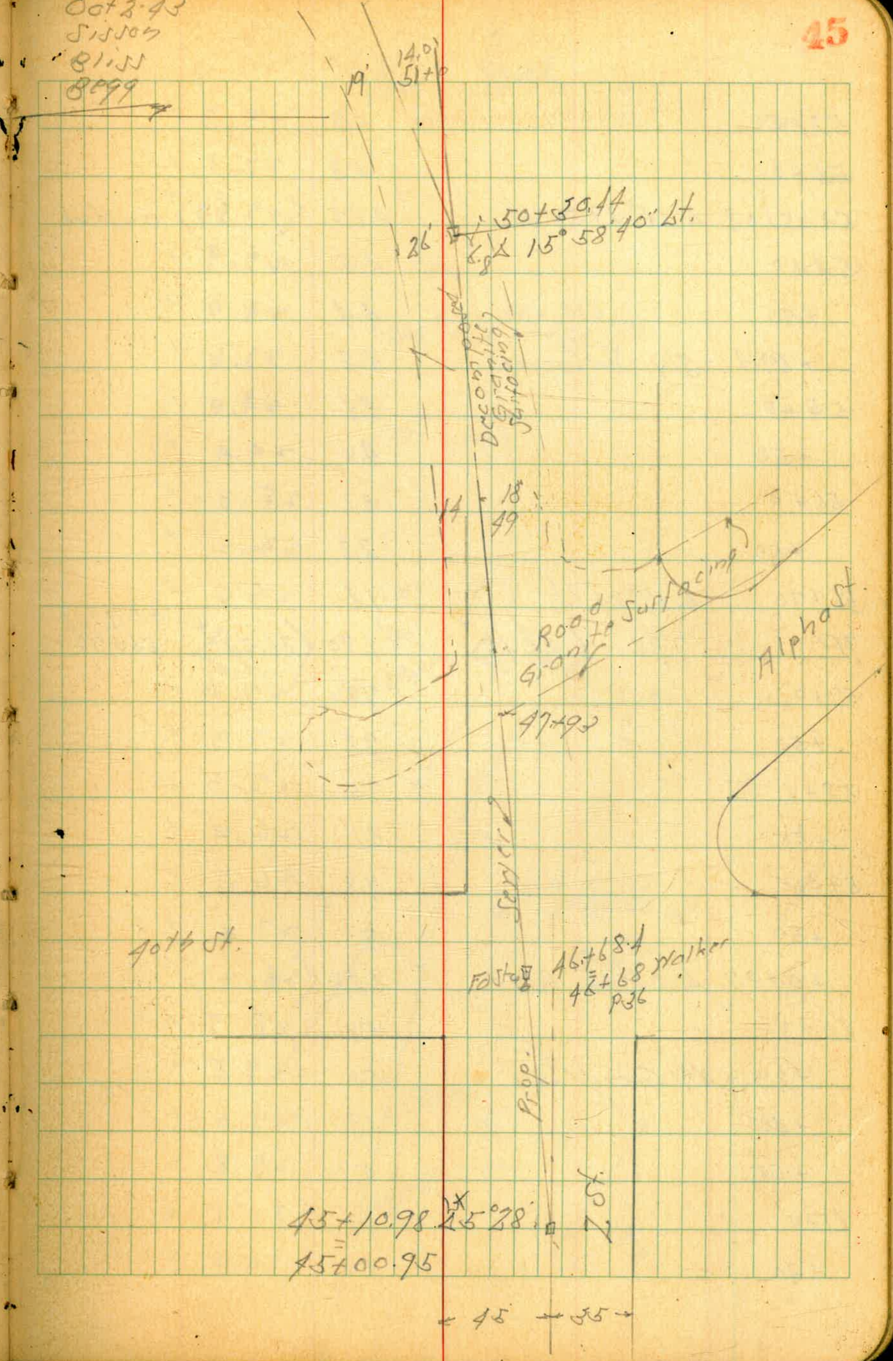

69th St.
BM
5
5
Ed Stub 135
90°
277+76.45 = 377+73.71 old
275+55 Δ 11°50' Lt.
Akins Ave
272+56 Δ 12°07' Lt.
68th St
30
30
Fallon
270+56.40 Δ 3°02' Lt.
25

Line Change Encanto Sewer
40th St. to Hexton Sta 45 to 60

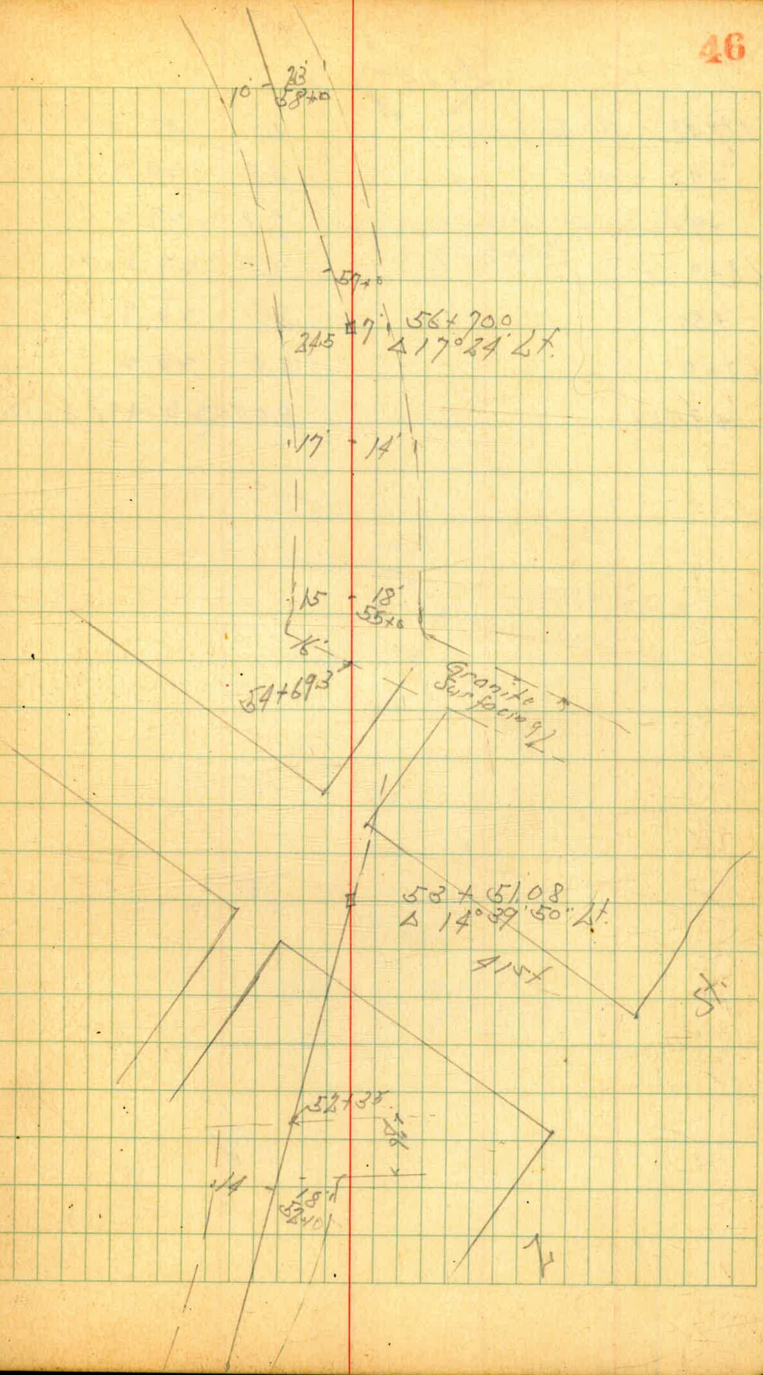
~~indexed~~
C.S.Ki

BM	7.47	(25.79) ✓		18.32	½ I.P. & Mon S.E. Cor. Z St & 40th St P39
45+10.98	Δ 5°28' Lt.		8.40	17.39	✓ n. 10/5/43 on Hub
+50			8.6	17.2	✓ ~~Flattens~~ on
46+0			8.5	17.3	✓ 999D m'
+35			8.1	17.7	✓
+50			7.2	18.6	✓
+68.4			6.64	19.15	✓ on Stab
47+0			6.7	19.1	✓
+40			6.6	19.2	✓
+50			5.9	19.9	✓
+93			4.9	20.9	✓
48+0			4.9	20.9	✓
+50			4.8	21.0	✓
49+0			4.7	21.1	✓
+50			4.5	21.3	✓
50+0			4.1	21.7	✓
+30.44	Δ 15°58'40"		4.1	21.7	✓
TP	6.70	(28.43) ✓	4.06	(21.73) ✓	on Hub 50+30.44
+50			6.5	21.9	✓
51+0			6.3	22.1	✓
+50			6.1	22.3	✓
52+0			6.0	22.4	✓
+35 : Hy Surfacing			5.9	22.5	✓

Oct 2-43
Sisson
Bliss
Beggs

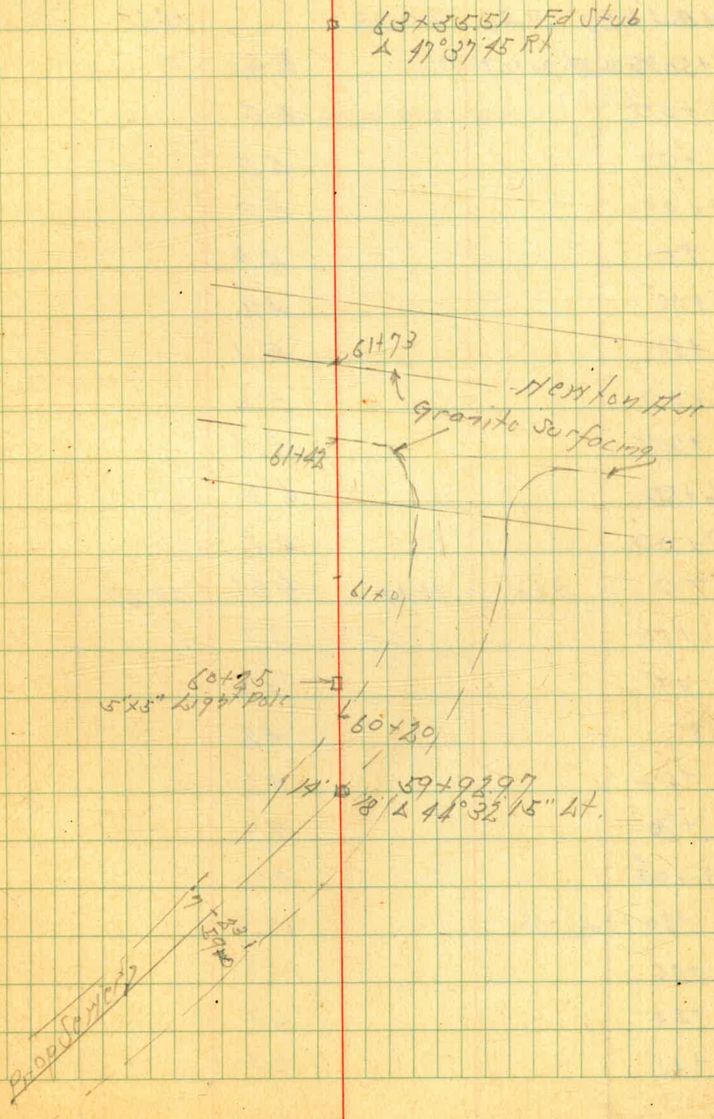

14.0'
51+0
19'
26'
50+30.44
Δ 15°58'40" Lt.
6.8
Decomposed Granite Surfacing
18
49
14
Road Granite Surfacing
Alpha St
47+93
Sewer
40th St.
Fo Sta
46+68.4
= 46+68
P36
Walker
Prop.
45+10.98 Δ 5°28' Lt
= 45+00.95
Z St
45
35

		28.43 ~~25.99~~			
52+50			5.7	22.7	✓
53+0			5.3	23.1	✓
53+51.08	∆ 14°39'50" Lt.		4.85	⟨23.58⟩ ✓	on Hub
54+0			4.5	23.9	✓
+50			4.4	24.0	✓
+69.3 - Sly Surfacing			4.8	23.6	✓
55+0			4.4	24.0	✓
+50			4.0	24.4	✓
56+0			3.1	25.3	✓
+50			2.2	26.2	✓
56+70	∆ 17°24' Lt.		1.8	26.6	✓
TP	7.94	⟨34.47⟩ ✓	1.90	⟨26.53⟩ ✓	on Stub 56+70
57+0			7.5	27.0	✓
+50			7.2	27.3	✓
58+0			7.5	27.0	✓
+50			8.1	26.4	✓
59+0			7.8	26.7	✓
+50			7.1	27.4	✓
+92.97	∆ 4°32'15" Lt		6.20	⟨28.27⟩ ✓	
60+0			5.8	28.7	✓
+20 - Nly Granite Surf.			5.0	29.5	✓
+40			4.9	29.6	✓
+55			5.7	28.8	✓
61+0			4.4	30.1	✓
+30			4.5	30.0	✓



10'
23'
58+0
57+0
24.5
7'
56+70.0
∆ 17°24' Lt.
17'
14'
15
18'
55+0
8'
54+69.3
Granite Surfacing
53+51.08
∆ 14°39'50" Lt.
4.5
5'
52+35
18'
14
53+0
7

		<34.47> ✓			
61+42	= S'ly Surfacing		3.5	31.0 ✓	
+73	= N'ly "		4.8	29.7 ✓	
+94			7.3	27.2 ✓	
62+0			7.4	27.1 ✓	
+50			8.6	25.9 ✓	
63+0			8.3	26.2 ✓	
+35.51			8.05	<26.42> ✓	on Stas



63+35.51 Fd Stub
∆ 17°37'45 Rt
61+73
Hexton Av
Granite Surfacing
61+42
61+0
60+35
5"x5" Light Pole
60+20
14'
59+92.97
18'
∆ 44°32'15" Lt.
Prop Sewer

Walker
Hazard
Harden
12-15-48

Profile Levels for New Location
Encanto Trunk Sewer
℄ Sewer = 15' East of ℄ 39th St
From Beta To Z-Sts.

		x			
B.M. Grd Book 212-9	5.46	20.08		14.62	Elev. Stake on cut 10' Lt of Stake 32+20.95
32+50.95 = Δ	Rt 90°07'		3.6		
33+00			5.5		
+50			5.5		
34+00			5.0		
+50			4.6		
35+00			4.9		
+50			5.1		
36+00			5.6		
+20.95			5.1		
36+50			4.9		
37+00			4.4		
T.P.	3.60	19.27	4.41	15.67	
+50			3.7		
+75			4.2		
38			4.8		
+50			4.9		
+80			5.0		
39+05			8.6		
+20 = Sedge ch.			12.2		
+35			10.6		
+44			6.2		
+45			2.8		

1927		
39+78	3.3	
+85	1.4	
39+95.95 =40+10.95	0.9	
Chk 13' N on Z- & 39th	2.32	16.95
Grd Book 212-P-9		16.98
		0.03

Indexed
C.S.K.

Levels on S. Side of Imperial From 65th E. for Raising Sidewalk.

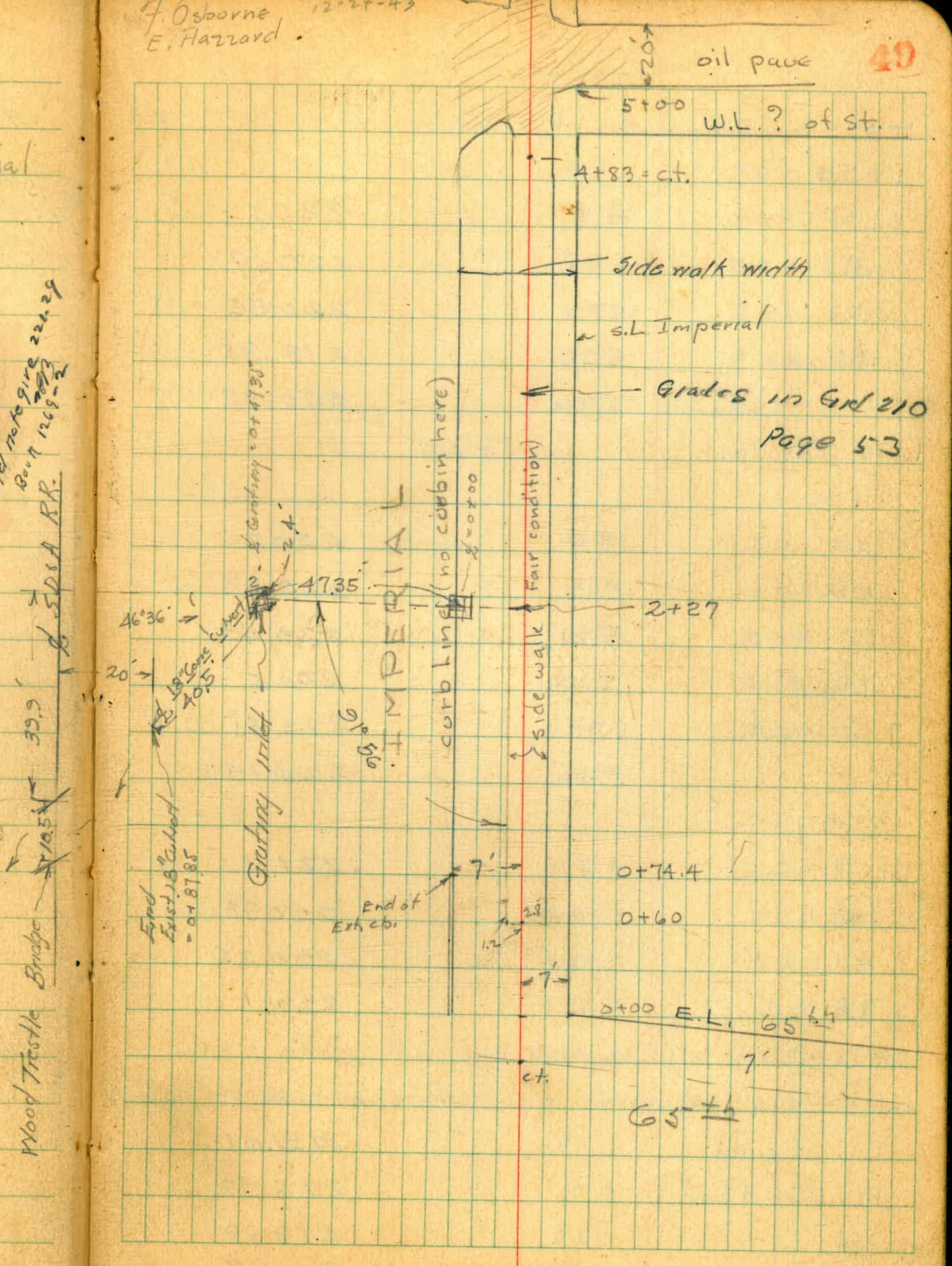
should be 14' curbs. Base line = S. 7' Line Imperial

B.M. = S.E. Top Hydrant 65th & Imperial				223.64
	2.00	225.64		
B.P. in cb. S.E. Cor. 65th & Imperial			4.49	221.15
0+00 = E.L. 65th				
S.L. = 7' rt. on conc.			4.26	221.38
cb. = 6.6 Lt. top			4.50	221.14
gut.			5.17	220.47
17' Lt. on Asphalt pave.			4.96	220.68
0+74.4				
S.L.			4.0	221.6
2.8 Rt. = edge of walk			4.15	221.49
1.2 Lt. = " " "			4.14	221.50
6.2 Lt. = Top of End of cb.			4.93	220.71
gut.			5.45	220.19
17' Lt. on pave			5.19	220.45
1+00				
S.L. 2'rt			3.7	221.9
Edg. walk			4.32	221.32
E walk (same distances unless noted)			4.44	221.20
7' Lt. = gut. on oil pave.			5.52	220.12
17 Lt.			5.16	220.48
1+03				
Guy Pole 3.6 Lt.				

Reduced & Plotted 12/27-1943 CBH

(Scale 40' Hor. 1½ Vert.)

7 Osborne
E. Hazzard 12-24-43


old note give 221.29
Book 1269-2
℄ SD&A RR.
39.9
10.5
flow
Wood Trestle Bridge
46°36'
20'
18" Conc. Culvert
40.5
℄ Grating = 0+47.35
2.4'
47.35
End Exist. 18" Culvert = 0+87.85
Grating inlet
6% 56
IMPERIAL
Curb Line (no curb in here)
℄ = 0+00
Sidewalk (Fair condition)
oil pave
20'
5+00
W.L. ? of St.
4+83 = ct.
Side walk width
S.L. Imperial
Grades in Grd 210 Page 53
2+27
7'
End of Exh. cb.
2.8
1.2
0+74.4
0+60
7'
0+00 E.L. 65th
ct.
7'
65th

	225.64	
1+23 = Guy deadman 3.6 Lt.		
1+50		
S.L	4.9	220 7
walk	4.95	220 69
walk	5.08	220 56
7' Lt. = gutr	5.70	219.94
17 " } on pave unless noted	5.26	220.38
1+94 = Pole 2.8 Lt.		
2+00		
S.L.	4.9	220 7
walk	5.12	220 52
"	5.21	220 43
5' Lt.	5.0	220 6
7' " = gut	5.79	219. 85
17 "	5.45	220 19
2+27		
S.L.	4.5	221. 1
walk	5.31	220 33
"	5.38	220 26
5' Lt.	5.5	220. 1

5.8 Lt. = S. edge of ℄ 2'x2' Catch basin with grating 2' E&W and 2.5' N&S. about 18" pipe seems to go N. about 90° to Imperial

Top of grate	6.63	219.01
Flow line of box	8.71	216 93
12' Lt.	5.65	219. 99
17' "	5.47	220 17

	225.64	
2+50 = begining of driveway to Service Sta.		
S.L.	4.7	220.9.
walk	5.24	220.40
"	5.37	220.27
7.5 Lt. = gut	6.03	219.61
17' Lt.	5.38	220.26
T.P.	4.94	220.70
4.72 225.42		
2+75		
S.L. on oil pave in drive	4.42	221.00 ✓
walk	5.03	220.39
"	5.07	220.35
8' Lt. = gut	5.47	219.95
17' Lt.	5.02	220.40
2+89 = End of Drive		
3+00		
S.L.	4.6	220.8
walk	4.90	220.52
"	5.02	220.40
7' Lt. = gut	5.51	219.91
17 "	4.92	220.50
3+20 Begining of E. drive to Same Sta.		
3		

	225.42	
3+25		
S.L. on oil pave in drive	4.25	221.17
walk	4.89	220.53
"	4.98	220.44
7' Lt. gut.	5.41	220.01
17' Lt.	4.84	220.58
3+50 End of Drive		
S.L. on oil pave in drive	4.54	220.90
walk	5.01	220.41
"	5.11	220.31
7' Lt. gut.	5.23	220.19
17' "	4.82	220.60
3+75		
S.L.	4.5	220.9
walk = 2.8 rt.	4.62	220.80
" = 1.2 Lt.	4.68	220.74
8' Lt. = gut	4.98	220.44
17' "	4.69	220.73
3+98 - 4' Lt. = ℄ 3' Pepper tree		
4+00		
S.L.	3.8	221.6
walk = 2.7 Rt.	4.05	221.37
" = 1.3 Lt.	4.02	221.40
8' Lt. = gut	4.75	220.67
17' "	4.52	220.90

Note: walk jogs here
W = 2.8 Rt. + 1.2 Lt.
E = 2.7 " + 1.3 Lt.

225.42		
4+05		
S.L. on ℄ 4' walk to house	3.60	221.82
Edge Walk = 2.7 Rt.	4.02	221.40
" 1.3 Lt.	4.06	221.36
8' Lt. = gut	4.73	220.69
17' "	4.49	220.93
4+22 = 4' Lt. = ℄ 2.5' Pepper tree		
4+25		
S.L.	3.1	222.3
walk	3.36	222.06
"	3.42	222.00
8' Lt. = gut.	4.50	220.92
17' "	4.34	221.08
4+50		
S.L.	2.2	223.2
walk	2.86	222.56
"	2.99	222.43
6' Lt	3.4	222.0
8' Lt = gut	4.28	221.14
17' "	4.11	221.31
4+75 = 4' Lt. = ℄ 1.5' Pepper tree		
S.L.	1.8	223.6
walk	2.27	223.15
"	2.23	223.19
5' Lt.	2.4	223.0
8' " = gut	3.93	221.49
17' "	3.74	221.69

		225.42			
4+85.2 = End of Walk					
S.L.			1.5	223	9
Edge walk = 2.8 Rt.			2.06	223	,36
" " = 1.2 Lt.			2.09	223.	33
5' Lt.			2.6	222	8.
8' Lt. = gut			3.78	221.	64
17 "			3.54	221.	88
T.P.			5.22	220.20	
	5.61	225.81			
on top Hyd.			2.16	223.65 .64	
Levels on Culvert Sketch P-49					
	4.03	224.29		220.26	El. N edge Walk 2+27 P-50
0+00 = ℄ Grating. Chk ℄ Grating on South			5.28	219.01	
0+18.4 = ℄ Paving.			3.94	220	35
0+33.4 = N edge Pav.			4.16	220	13
0+44 on Ground			4.6	219.	7
Δ Lt 46°36' 0+47.35 = ℄ Grating. on Top.			5.05	219	24
" ℄ " " Flow			8.15	216	14
0+87.85 = End 18" Pipe " Line			8.78	215	.51
" on Flow Mud			8.0	216	3
℄ RR Trestle on Ties			6.06	218.	23
" " " " Flow Mud ch.			8.95	215.	34
30' NW of Bridge ℄ Ditch			10.0	214	3

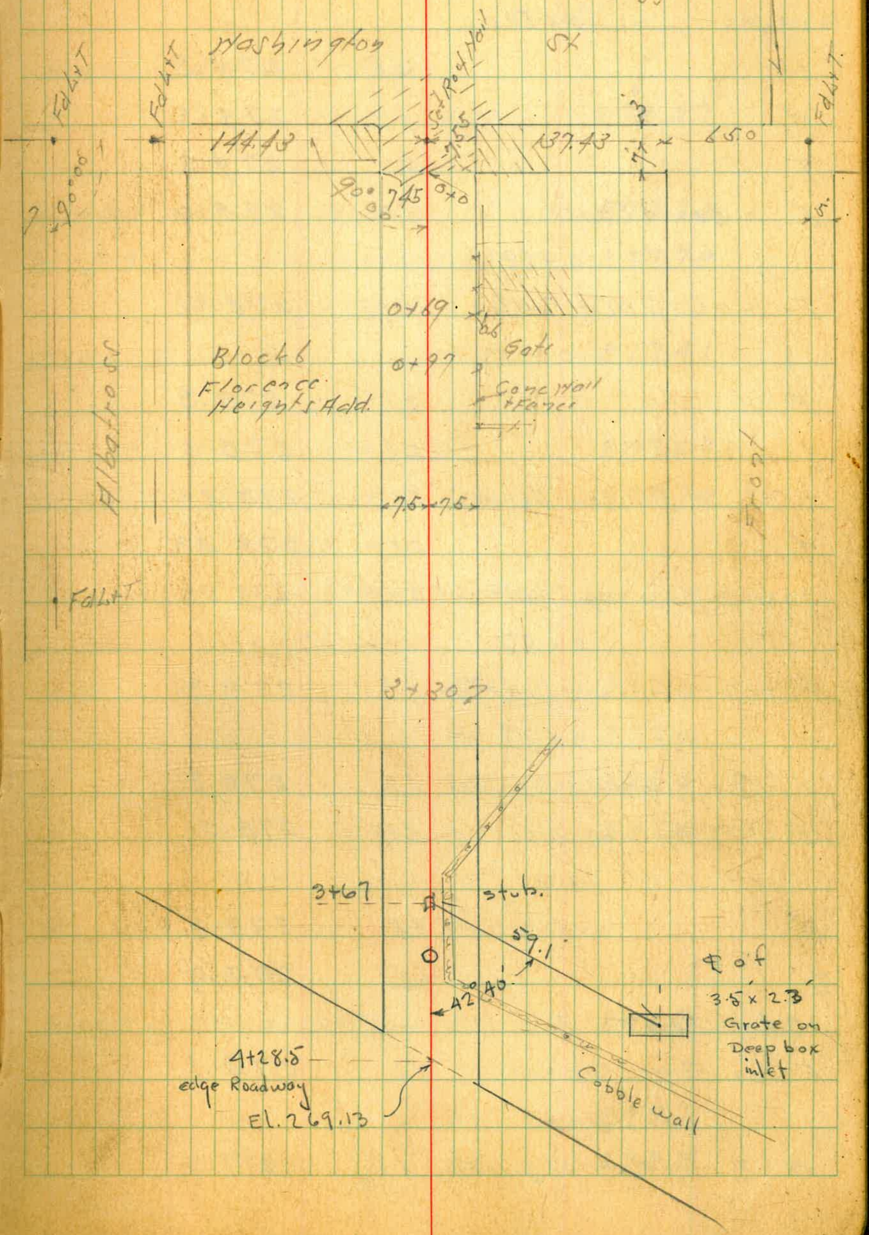
Cross Section Alley Block 6 Florence Heights
Between Albatross + Front South of Washington

BM		7.41	284.40		276.99	NW BP Washington + Albatross
	0 - 10 = S ℄ Line of Washington					
W	on Paving			6.62	277.78	
℄	" "			6.57	277.83	
E	" "			6.53	277.87	
	0 + 0 = S.L. Washington					
E	on Paving ℄			5.76	278.64	
℄	" "			5.97	278.43	
W	" " + ℄			5.98	278.42	
	0 + 10					
W				4.6	279.8	
℄				5.2	279.2	
E	= Wly Bldg			5.2	279.2	
F	= Floor of Bldg			4.25	280.15	MG CWB
	0 + 12					
E + 0.9 = Ely Power Pole						
	0 + 25					
E	= Wly Bldg.			5.3	279.1	
+ 2.5				5.2	279.2	
+ 4				4.6	279.8	
℄				4.5	279.9	
W				4.6	279.8	
+ 0.2	= Wire Fence					
	0 + 46					
W - 0.2	= Sly Wire Fence					
	0 + 40.					

E = S. end of Bldg. shown above

Indexed
C.S.K

March 15-41
Sisson
Bliss
Bagg


Washington
St
Fd I+T
Fd I+T
Fd I+T
Fd I+T
Set Rod Nail
144.43
137.43
65.0
3
7.5
7.5
90°00'
90°
7.45
0+0
3
7.5
5.
0+69
6.6
Gate
0+97
Conc Wall + Fence
Block 6
Florence Heights Add.
Albatross St
Front
7.5
7.5
3+30?
3+67
stub.
59.1
40'
42
℄ of 3.5' x 2.3' Grate on Deep box inlet
4+28.5
edge Roadway
El. 269.13
Cobble wall

		284.40	
	0+50		
-5'		5.1	279.3
W		4.9	279.5
℄		5.1	279.3
E	= Board Fence	5.5	278.9
	0+69		
E -0.6	= S.W Cor Conc Por.	5.78	278.62
	0+75		
E		6.1	278.3
℄		5.6	278.8
+7.3	= Ely Conc Apron	5.57	278.83
W		5.57	278.83
+1.6	= ℄ Garage Conc Floor	5.57	278.83
	0+87		
W -1.7	= ℄ Garage Dirt Floor	6.1	278.3
	0+97		
W -1.7	= ℄ Garage Dirt Floor	6.2	278.2
E	Top Conc Wall	5.89	278.51
	1+0		
W		6.5	277.9
℄		6.5	277.9
+7.4	= Ely Tel Pole		
E	= Fence + Conc Wall	6.3	278.1
	1+13		
W -2'	= ℄ Garage Dirt Floor	6.8	277.6

Note this portion of wall still in o.k. for el.

		284.40	
	1+20		
W +0.8	= Nly Power Pole		
E	= Sly Top Conc Wall	5.83	278.57
	1+21		
W +0.3	= Nly Conc Apron	6.66	277.74
W -2.2	= Nly Garage Conc Floor	6.62	277.78
	1+24		
E +0.5	= ℄ Conc Drive	6.99	277.41
	1+34		
W	= Sly Conc Apron	6.71	277.69
W -2.4	= Sly Garage Door C.F.	6.66	277.74
	1+40		
W	= Nly Wire Fence Metal Posts		
	1+50		
-10		6.8	277.6
E		7.4	277.0
℄		7.5	276.9
W		7.0	277.4
	1+60		
W	= Sly Wire Fence Nly Board Fence		
	1+89		
W -0.2	= ℄ Garage Dirt Floor	8.2	276.2
	2+0		
W		8.7	275.7
℄		8.6	275.8

		284.40			
E			8.4	276.0	
+10			8.4	276.0	
2+05					
W - 4.9 = ℄ Garage Dirt Floor			8.7	275.7	
2+10					
E +0.5 = Ely Tel Pole					
2+15					
W +0.2 = Nly Board Fence					
2+25					
W +0.1 = Wly Power Pole					
2+39					
W +0.1 = Sly Board Fence					
2+40					
-10			8.5	275.9	
E			9.2	275.2	
℄			9.8	274.6	
W			9.8	274.6	
+10			10.4	274.0	
TP	3.51	278.28	9.63	274.77	
2+57					
W - 0.2 = Ely ℄ 6.5' Conc Landing			3.60	274.68	
W - 2.9 = Ely House on Conc.			3.68	274.60	
				275.00	= Floor of House
2+64					
E +0.4 = Ely Anchor Pole					

278.28		
2+75		
-13	5.2	273.1
W	4.3	274.0
℄	4.1	274.2
+5	3.9	274.4
E	2.6	275.7
+10	3.1	275.2
3+0		
-10	4.6	273.7
E	4.6	273.7
℄ = Top Sewer M.H.	4.90	273.38
W	5.30	272.98
+4.1 = Nly Conc Apron	5.58	272.70
+89 = Nly Garage Conc Floor	5.34	272.94
3+12		
W - 4.1 = Sly Conc Apron	5.73	272.55
W - 8.9 = Sly Garage Conc Floor	5.40	272.88
3+16		
-8	6.0	272.3
W	5.9	272.4
℄	5.9	272.4
E	6.5	271.8
3+19		
W +0.1 = Wly Power Pole		

278.28

3+30

E 13.5 264.8

℄ 12.6 265.7

W 11.7 266.6

Slope Cont Down

o.k. as shown

TP 7.82 1.90 276.38

BM 7.21 276.99 N.W. B.P. Washington & Albatross 276.99

Add. Levels - for new Const. or changes 10-11-46
7.0.

7.39 284.38 276.99

0 + 42

E = ℄ 2.5 Conc. walk bet. bldgs. 5.32 279.06 top conc.

0+43 - E +0.2 = N.W. Cor. 2 story Heating & Plumbing shop.

0+54 = N. end opening to shop - Conc. floor

E + 0.2 = on Conc. 5.48 278.90

0+85 = S. end opening

E + 0.1 = Conc. floor 5.92 278.46

1+00 = S end of extra Door

E + 0.1 = floor - Conc. 6.01 278.37

1+17 - E + 0.1 = S.W. Cor. Bldg.

284.38

2+45 = ℄ of 3' Conc. walk on E.

E + 1.0 = edge of walk 9.08 275.30

Additional Levels for Drain - See sketch P 54

Taken from ℄ as base Line

0.15 275.45 275.30 10-25-46
7.0.

1.10 263.42 13.13 262.32

3+30

43' Lt. = Toe slope & Top Cobble wall 14.44 248.98

T.P. 1.18 251.86 12.74 250.68

3+51 - 6.7' Lt = ℄ 10" Pepper

3+61

20' Rt. + 1.5 250.36

10' Rt = W.L. 0.5 251.36

℄ 3.4 248.46

2.6' Lt. = angle in Cobble wall 3.64 248.22 Top wall

10' Lt. in playground. 4.7 247.16

20 Lt. 4.6 247.26

3+67 = angle 42°40 Lt. to ℄ inlet.

℄ on stub. 3.25 248.61

3+72 - 6.3 Rt. = ℄ 10" Pine

3+76 = ℄ M.H. Sewer

Top rim 2.75 249.11

3+81

20' Rt. + 2.9 248.96

10 Rt 1.0 250.86

℄ 2.7 249.16

5.3 Lt. = Angle in Cobble wall 3.74 248.12

10 Lt = E.L. 3.9 247.96

Notes Reduced by C.A. Smith
10-28-46

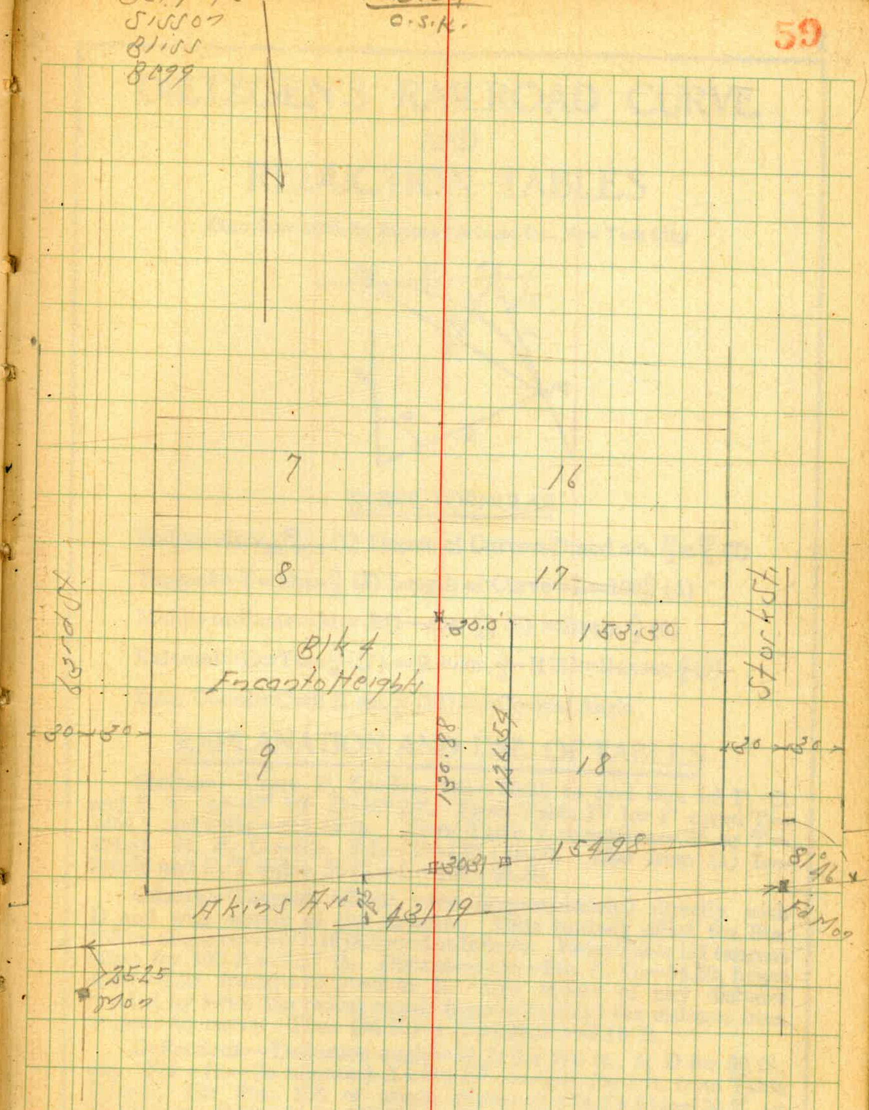
	251.86			
4+00				
10' Rt = W.L.		+ 5.2	246.66	
℄		+ 2.1	249.76	
10' Lt. = E.L.		0.7	251.16	
24.8 Lt = Cobble wall		3.64	248.22	Top wall
Levels on line to inlet				
0+00 = Stub. - 3+76			248.61	
0+06 - Top edge wall		3.73	248.13	
0+10		4.7	247.16	
0+40		4.7	247.16	
0+59.1 = ℄ Inlet Grate		5.63	246.23	Top grate
Flow Line box		18.33	233.53	
2.8 Rt. = face cobble wall				

checked Levels -

Survey Westerly 30' of Lot 18
Block 4 Encanto Hts

Oct 1-43
Sisson
Bliss
8099

indexed
O.S.K.


7
16
8
17
Blk 4
Encanto Heights
30.0'
153.30
9
130.88
126.54
18
30.31
154.98
Akins Ave
25
431.19
Gare St
30
30
Stork St
30
30
81°46'
Fd Mon
25.25
Mon

146 L 6+12 14 L

10+15.01 3°13'00

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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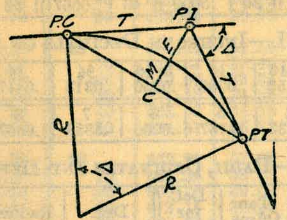


CURVE FORMULAS

Radius $= R = \frac{50}{\sin. D/2}$ (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) $\Delta =$ Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=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—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=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′+8° 20′÷2=6° 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° 20′=960.6÷8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose Δ=32° 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° 30′.

4°7
11 23
15.3

11.2
4.89
16.07

TABLE I.—MINUTES IN DECIMALS OF A DEGREE.

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

TABLE II.—INCHES IN DECIMALS OF A FOOT.

1-16	3-32	⅛	3-16	¼	5-16	⅜	½	⅝	¾	⅞
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

TABLE III.—RADII, ORDINATES AND DEFLECTIONS.

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot
0° 10′	34377.5	.036	.145	0.05′
20	17188.8	.073	.291	0.10
30	11459.2	.109	.436	0.15
40	8594.42	.145	.582	0.20
50	6875.55	.182	.727	0.25
1	5729.65	.218	.873	0.30
10	4911.15	.255	1.018	0.35
20	4297.28	.291	1.164	0.40
30	3819.83	.327	1.309	0.45
40	3437.87	.364	1.454	0.50
50	3125.36	.400	1.600	0.55
2	2864.93	.436	1.745	0.60
10	2644.58	.473	1.891	0.65
20	2455.70	.509	2.036	0.70
30	2292.01	.545	2.181	0.75
40	2148.79	.582	2.327	0.80
50	2022.41	.618	2.472	0.85
3	1910.08	.655	2.618	0.90
10	1809.57	.691	2.763	0.95
20	1719.12	.727	2.908	1.00
30	1637.28	.764	3.054	1.05
40	1562.88	.800	3.199	1.10
50	1494.95	.836	3.345	1.15
4	1432.69	.873	3.490	1.20
10	1375.40	.909	3.635	1.25
20	1322.53	.945	3.718	1.30
30	1273.57	.982	3.926	1.35
40	1228.11	1.018	4.071	1.40
50	1185.78	1.055	4.217	1.45
5	1146.28	1.091	4.362	1.50
10	1109.33	1.127	4.507	1.55
20	1074.68	1.164	4.653	1.60
30	1042.14	1.200	4.798	1.65
40	1011.51	1.237	4.943	1.70
50	982.64	1.273	5.088	1.75
6	955.37	1.309	5.234	1.80
10	929.57	1.346	5.379	1.85
20	905.13	1.382	5.524	1.90
30	881.95	1.418	5.669	1.95
40	859.92	1.455	5.814	2.00

Deg.	Radius	Mid. Ord.	Tan Offset	Def. for 1 Foot
7°	819.02	1.528	6.105	2.10′
20′	781.84	1.600	6.395	2.20
30	764.49	1.637	6.540	2.25
40	747.89	1.673	6.685	2.30
8	716.78	1.746	6.976	2.40
20	688.16	1.819	7.266	2.50
30	674.69	1.855	7.411	2.55
40	661.74	1.892	7.556	2.60
9	637.28	1.965	7.846	2.70
20	614.56	2.037	8.136	2.80
30	603.80	2.074	8.281	2.85
40	593.42	2.110	8.426	2.90
10	573.69	2.183	8.716	3.00
30	546.44	2.292	9.150	3.15
11	521.67	2.402	9.585	3.30
30	499.06	2.511	10.02	3.45
12	478.34	2.620	10.45	3.60
30	459.28	2.730	10.89	3.75
13	441.68	2.839	11.32	3.90
30	425.40	2.949	11.75	4.05
14	410.28	3.058	12.18	4.20
30	396.20	3.168	12.62	4.35
15	383.07	3.277	13.05	4.50
30	370.78	3.387	13.49	4.65
16	359.27	3.496	13.92	4.80
30	348.45	3.606	14.35	4.95
17	338.27	3.716	14.78	5.10
18	319.62	3.935	15.64	5.40
19	302.94	4.155	16.51	5.70
20	287.94	4.374	17.37	6.00
21	274.37	4.594	18.22	6.30
22	262.04	4.814	19.08	6.60
23	250.79	5.035	19.94	6.90
24	240.49	5.255	20.79	7.20
25	231.01	5.476	21.64	7.50
26	222.27	5.697	22.50	7.80
27	214.18	5.918	23.35	8.10
28	206.68	6.139	24.19	8.40
29	199.70	6.360	25.04	8.70
30	193.18	6.583	25.88	9.00

Note. Chord Deflection=2 times tangent deflection.

47 35
12.8
60 15

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

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
1°	50.00	.22	11°	551.70	26.50	21°	1061.9	97.57
10′	58.34	.30	10′	560.11	27.31	10′	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2	100.01	.87	12	602.21	31.56	22	1113.7	107.24
10	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
20	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
30	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
40	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
50	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
3	150.04	1.96	13	652.81	37.07	23	1165.7	117.38
10	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
20	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
30	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
40	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
50	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
4	200.08	3.49	14	703.51	43.03	24	1217.9	128.00
10	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
20	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
30	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
40	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
50	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
5	250.16	5.46	15	754.32	49.44	25	1270.2	139.11
10	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
20	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
30	275.21	6.61	30	779.77	52.89	30	1296.5	144.85
40	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
50	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
6	300.28	7.86	16	805.25	56.31	26	1322.8	150.71
10	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
20	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
30	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
40	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
50	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
7	350.44	10.71	17	856.30	63.63	27	1375.6	162.81
10	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
20	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
30	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
40	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
50	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
8	400.66	13.99	18	907.49	71.42	28	1428.6	175.41
10	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
20	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
30	425.79	15.80	30	933.13	75.49	30	1455.1	181.89
40	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
50	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
9	450.93	17.72	19	958.81	79.67	29	1481.8	188.51
10	459.32	18.38	10	967.38	81.09	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
10	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
10	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
20	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
30	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
40	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
50	543.29	25.70	50	1053.3	96.01	50	1580.0	213.86

Table VI.—Corrections for Sub-Chords and Long Chords.

	FOR SUB-CHORDS ADD									Excess of arc per 100 ft.	LONG CHORDS				
D	10	20	30	40	50	60	70	80	90		D	200	300	400	500
4°	.00	.00	.01	.01	.01	.01	.01	.01	.00	.02	1	199.99	299.97	399.92	499.85
6	.00	.01	.01	.02	.02	.02	.02	.01	01	.05	2	199.97	299.88	399.70	499.39
8	.01	.02	.02	.03	.03	.03	.03	.02	.01	.08	3	199.93	299.73	399.32	498.63
10	.01	.02	.03	.04	.05	.05	.05	.04	.02	.13	4	199.88	299.51	398.78	497.57
12	.02	.04	.05	.06	.07	.07	.07	.05	.03	.18	5	199.81	299.24	398.10	496.20
14	.02	.05	.07	.08	.09	.10	.09	.07	.04	.25	6	199.73	298.90	397.26	494.53
16	.03	.06	.09	.11	.12	.12	.12	.09	.05	.33	7	199.63	298.51	396.28	492.57
18	.04	.08	.11	.14	.15	.16	.15	.12	.07	.41	8	199.51	298.05	395.14	490.31
20	.05	.10	.14	.17	.19	.20	.18	.15	.09	.51	9	199.38	297.54	393.86	487.75
22	.06	.12	.17	.21	.23	.24	.22	.18	.10	.62	10	199.24	296.96	392.42	484.90
24	.07	.14	.20	.25	.28	.28	.26	.21	.12	.74	12	198.90	295.63	389.12	478.34
26	.09	.17	.24	.29	.32	.33	.31	.25	.15	.86	14	198.51	294.06	385.22	470.65
28	.10	.19	.27	.34	.37	.38	.36	.29	.17	1.00	16	198.05	292.25	380.76	461.86
30	.11	.22	.31	.39	.43	.44	.41	.33	.19	1.15	18	197.54	290.21	375.74	452.02
32	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31	20	196.90	287.94	370.17	441.15
34	.15	.28	.40	.50	.55	.57	.53	.43	.25	1.48	22	196.32	285.44	364.06	429.30
36	.17	.32	.45	.56	.62	.64	.59	.48	.28	1.66	24	195.63	282.71	357.43	416.53
38	.18	.36	.51	.62	.70	.71	.66	.53	.31	1.86	26	194.87	279.76	350.30	402.89
40	.21	.40	.56	.69	.77	.79	.73	.59	.35	2.06	28	194.06	276.59	342.69	388.43
42	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28	30	193.18	273.20	334.61	373.20
44	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50	32	192.25	269.61	326.08	357.28
46	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74	34	191.26	265.81	317.12	340.73
48	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99	36	190.21	261.80	307.77	323.61
50	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24	38	189.10	257.60	298.03	305.99
52	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52	40	187.94	253.21	287.94	287.94
54	.38	.73	1.04	1.28	1.42	1.46	1.35	1.09	.64	3.80	42	186.72	248.63	277.51	269.54
56	.41	.78	1.12	1.38	1.53	1.57	1.46	1.17	.69	4.09	44	185.44	243.87	266.78	250.85
58	.44	.84	1.20	1.48	1.65	1.69	1.57	1.26	.74	4.40	46	184.10	239.93	255.78	231.95
60	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72	48	182.71	233.83	244.51	212.92

Note.—When a chord of less than 100 ft. is used the corrections given in the above table should be added to the nominal length of chord to get the length which should be used in order that the 100 ft. points will check with those obtained by using the standard 100 ft. chord. Thus in locating a 14° curve by 25 ft. chords measure 25′.06 for each chord. Long chords are useful in passing obstacles.

Table VII.—Middle Ordinates for Rails in Feet.

Deg. of Curve	LENGTH OF RAILS							Deg. of Curve	LENGTH OF RAILS.						
	32	30	28	26	24	22	20		32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.038	.034	.029	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.067	.058	.051	.044	.037	.031	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.069	.060	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.099	.086	.074	.063	.053	.044	20	.445	.392	.341	.296	.250	.212	.174
6	.134	.117	.102	.088	.076	.064	.052	21	.466	.410	.357	.309	.262	.222	.182
7	.156	.137	.120	.104	.088	.074	.061	22	.487	.430	.375	.325	.275	.233	.191
8	.179	.158	.137	.119	.100	.085	.070	23	.509	.450	.390	.338	.287	.243	.199
9	.201	.175	.153	.133	.112	.095	.078	24	.531	.469	.408	.354	.299	.253	.208
10	.223	.196	.171	.148	.125	.106	.087	25	.552	.486	.424	.367	.311	.263	.216
11	.245	.216	.188	.163	.139	.117	.096	26	.573	.506	.441	.382	.323	.274	.225
12	.268	.236	.206	.179	.151	.128	.105	27	.594	.524	.457	.396	.335	.284	.233
13	.290	.254	.222	.192	.163	.138	.113	28	.618	.545	.475	.411	.348	.294	.242
14	.312	.275	.239	.207	.175	.148	.122	29	.638	.564	.491	.424	.361	.303	.250
15	.334	.295	.257	.223	.188	.159	.131	30	.660	.583	.508	.438	.374	.313	.259

SLOPE REDUCTIONS.

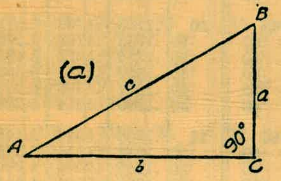
When distances are measured on a slope they may be reduced to the equivalent horizontal distance by the following approximate rule:—subtract from the slope distance the square of the rise divided by twice the slope distance. Thus for a slope distance of 250.3 ft. and a rise of 15 ft. correction$=15^2\div2\times250.3=.45$ (by slide rule) or horizontal distance$=250.3-.45=249.85$. When vertical angle=V. A. is measured horizontal distance=slope distance—slope distance (1—Cos. V. A.). Thus for slope distance of 248.7 ft. and V. A. of 4° 20′ from Table VIII Cos=.99714 and correction$=1-.99714=.00286$ per foot or total of $.286\times2\frac{1}{2}$ (near enough)$=.57$ and horizontal distance$=248.7-.57=248.13$ ft.

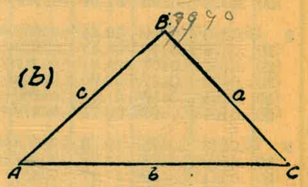
TRIGONOMETRICAL FORMULAS.

4515
5.25

See fig. (a).

sin. $A=\frac{a}{c}$
cos. $A=\frac{b}{c}$
tan. $A=\frac{a}{b}$
cot. $A=\frac{b}{a}$
sec. $A=\frac{c}{b}$
cosec. $A=\frac{c}{a}$





Formula for Solving Triangles.

Given	Sought.	Right triangles. See fig. (a).
a, c	$A, B. b$	sin. $A=\frac{a}{c}$, cos. $B=\frac{a}{c}$, $b=\sqrt{(c+a)\ (c-a)}$
a, b	A, B, c	tan. $A=\frac{a}{b}$, cot. $B=\frac{a}{b}$, $c=\sqrt{a^2+b^2}$.
A, a	B, b, c	$B=90°-A$, $b=a$ cot. A, $c=\frac{a}{\text{sin. } A}$.
A, b	B, a, c	$B=90°-A$, $a=b$ tan. A, $c=\frac{b}{\text{cos. } A}$.
A, c	B, a, b	$B=90°-A$, $a=c$ sin. A, $b=c$ cos. A
Given	**Sought.**	**Oblique triangles. See fig. (b).**
A, B, a	b	$b=\frac{a \text{ sin. } B}{\text{sin. } A}$
A, a, b	B	sin. $B=\frac{b \text{ sin. } A}{a}$
a, b, C	$A - B$	tan. $\frac{1}{2}(A-B)=\frac{(a-b)\text{ tan. }\frac{1}{2}(A+B)}{a+b}$
a, b, c	A	If $s=\frac{1}{2}(a+b+c)$, sin. $\frac{1}{2}A=\sqrt{\frac{(s-b)\ (s-c)}{b\ c}}$ cos. $\frac{1}{2}A=\sqrt{\frac{s\ (s-a)}{b\ c}}$, tan. $\frac{1}{2}A=\sqrt{\frac{(s-b)\ (s-c)}{s\ (s-a)}}$, sin. $A=\frac{2\sqrt{(s-a)\ (s-b)\ (s-c)\ s}}{b\ c}$
A, B, C, a	area	area$=\frac{a^2 \text{ sin. } B \text{ sin. } C}{2 \text{ sin. } A}$
A, b, c	area	area$=\frac{1}{2}\,b\,c$ sin. A
a, b, c	area	$s=\frac{1}{2}(a+b+c)$, area$=\sqrt{s\ (s-a)(s-b)(s-c)}$

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.	
° ′					
32	.5299	.6249	1.600	.84805	58
10	.5324	.6289	1.590	.84650	50
20	.5348	.6330	1.580	.84495	40
30	.5373	.6371	1.570	.84339	30
40	.5398	.6412	1.560	.84182	20
50	.5422	.6453	1.550	.84025	10
33	.5446	.6494	1.540	.83867	57
10	.5471	.6536	1.530	.83708	50
20	.5495	.6577	1.520	.83549	40
30	.5519	.6619	1.511	.83389	30
40	.5544	.6661	1.501	.83228	20
50	.5568	.6703	1.492	.83066	10
34	.5592	.6745	1.483	.82904	56
10	.5616	.6787	1.473	.82741	50
20	.5640	.6830	1.464	.82577	40
30	.5664	.6873	1.455	.82413	30
40	.5688	.6916	1.446	.82248	20
50	.5712	.6959	1.437	.82082	10
35	.5736	.7002	1.428	.81915	55
10	.5760	.7046	1.419	.81748	50
20	.5783	.7089	1.411	.81580	40
30	.5807	.7133	1.402	.81412	30
40	.5831	.7177	1.393	.81242	20
50	.5854	.7221	1.385	.81072	10
36	.5878	.7265	1.376	.80902	54
10	.5901	.7310	1.368	.80730	50
20	.5925	.7355	1.360	.80558	40
30	.5948	.7400	1.351	.80386	30
40	.5972	.7445	1.343	.80212	20
50	.5995	.7490	1.335	.80038	10
37	.6018	.7536	1.327	.79864	53
10	.6041	.7581	1.319	.79688	50
20	.6065	.7627	1.311	.79512	40
30	.6088	.7673	1.303	.79335	30
40	.6111	.7720	1.295	.79158	20
50	.6134	.7766	1.288	.78980	10
38	.6157	.7813	1.280	.78801	52
10	.6180	.7860	1.272	.78622	50
20	.6202	.7907	1.265	.78442	40
° ′					
30	.6225	.7954	1.257	.78261	30
40	.6248	.8002	1.250	.78079	20
50	.6271	.8050	1.242	.77897	10
39	.6293	.8098	1.235	.77715	51
10	.6316	.8146	1.228	.77531	50
20	.6338	.8195	1.220	.77347	40
30	.6361	.8243	1.213	.77162	30
40	.6383	.8292	1.206	.76977	20
50	.6406	.8342	1.199	.76791	10
40	.6428	.8391	1.192	.76604	50
10	.6450	.8441	1.185	.76417	50
20	.6472	.8491	1.178	.76229	40
30	.6494	.8541	1.171	.76041	30
40	.6517	.8591	1.164	.75851	20
50	.6539	.8642	1.157	.75661	10
41	.6561	.8693	1.150	.75471	49
10	.6583	.8744	1.144	.75280	50
20	.6604	.8796	1.137	.75088	40
30	.6626	.8847	1.130	.74896	30
40	.6648	.8899	1.124	.74703	20
50	.6670	.8952	1.117	.74509	10
42	.6691	.9004	1.111	.74314	48
10	.6713	.9057	1.104	.74120	50
20	.6734	.9110	1.098	.73924	40
30	.6756	.9163	1.091	.73728	30
40	.6777	.9217	1.085	.73531	20
50	.6799	.9271	1.079	.73333	10
43	.6820	.9325	1.072	.73135	47
10	.6841	.9380	1.066	.72937	50
20	.6862	.9435	1.060	.72737	40
30	.6884	.9490	1.054	.72537	30
40	.6905	.9545	1.048	.72337	20
50	.6926	.9601	1.042	.72136	10
44	.6947	.9657	1.036	.71934	46
10	.6967	.6713	1.030	.71732	50
20	.6988	.9770	1.024	.71529	40
30	.7009	.9827	1.018	.71325	30
40	.7030	.9884	1.012	.71121	20
50	.7050	.9942	1.006	.70916	10
	.7071	1.	1.	.70711	45
					° ′
	Cosin.	Cotg.	Tan.	Sine.	Angle.

7.35
2)15.10

54.26
1.00
26.58

100.84
180.84

Table IX.—Calculation of Earthwork.

Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if w =16.2 and h =5.3, cu. yds. =1.48+.028+.089 =1.597 cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) =h, and ½ the roadbed =w, add the triangles formed by taking the distance out to each break in turn (=w's) by the difference between the cuts (or fills) on each side of it (=h's) always subtracting the outer from the inner.

49
63

576
833
− 1.67 above SBM.

56
6 3
437

1.67

386
15
2

65 x 4.5

298
167
− 1.31

Skew 3° Lt.

307+05 State & Sta.

74+51.77
40
118

82+10 L 15°10'
30°20'

24.7
15
40

74+51.77
24.7
74+27.07

26.3

74+43.81
26.3
74+70.11
13.7
838

1

81426 21

5.6

468
167
301

137
2/3-74

30.6
20.15
+ 50.75

46

45.94
115.5
161.44
30.7

169.45
161.44
8.00

1386
194
11.92
370
1562
341
12.21

3

1386
1221
1.65

276.99
7.37
284.38

41°50'00

4150
2
8340

8339

~~15+70~~
53 50.08
50+30
329.64

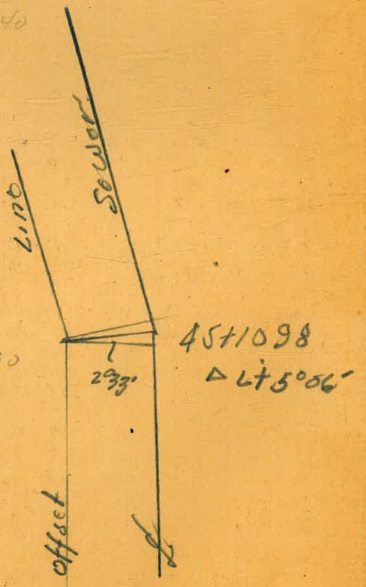
4169
2
8338

14.0f

728
150
878

1.47
2/334
9.4

4.42
)8-24-30
84



12.07
8.66
3.41

1.21
7.6
5.5

1222
3.51
8.71

330 430

26
6.5
32.5

675
325
689.00
5.33
1222

1222
4.6
7.6

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)÷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.