551
FIELD
F.R. 551

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TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

MICROFILMED
DEC 11 1964

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	89
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	88
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	87
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	86
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	85
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	84
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	83
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	75
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	73
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	72
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	69
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	67
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	61
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	45
45	70.71	70.71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees
	DEGREES		¾ DEGREE.		½ DEGREE.		¼ DEGREE.		

E Track

+14	4½ 1"	
SL. Date	4¼ 0½	
−14	4¼ 0½"	
+50	5" 1"	5½" above stakes
2	5" 0¾	0½" below grade.
+50	5¼ 1"	
NL. Cedar	4¾ 0½	

SL Cedar	3½ 00	
−14	4" 0¾	
+50	6" 2"	
2	6" 2"	
+50	6" 0"	6" block to grade
1	5½ 1½	
+50	4" 1¼"	
+14	4½ 1¼	
NL Beech	6¼ 1½	
−14	5¼ 0¾	

SL. Beech	3¼ 00	
+50	5½ 2½	
2	4¾ 1½	
+50	4¾ 00	
1	4½ 1⅝	5" above stakes
+50	3½ 1½"	= 1" low
+14	4½ 1¼"	
NL. Ash	5" 2"	

above stake | above paving

E Track

+14	4⅝ 1"	5"
SL Grape	4½ 1¾	5"
−14	4¼ 1½	5"
+50	5¾ 1¼	✓
2	6½ 1¼	✓
+50	6½ 1½	✓
1	5½ 0¾	✓
+50	4⅜ 0⅝	5"
+14	5 2½	5"
NL Fir	5¾ 3½ 1½ 3½	
−14	4⅜ 0½	5"

this block 5" above stakes = 1" below grade except where already raised too high

SL. Fir		5"
+50		5¼
2	4½ 0¾	5⅜
+50	5¼ 0¾	5½
1	5¾ 0¾	5¾
+50	5" 1½	5⅜
+14	5⅜ 1"	6"
NL Elm	6¼ 1½	6"
−14	6" 00	

Block runs from grade at Elm to 1" below a Fir

+14	4½ 00	
SL Elm	4" 0½	5½" above stakes
−14	4¼ 0¾	0½" below grade
+50	5½ 1"	
2	5¾ 1½	
+50	5¾ 1¼	
1	5⅜ 1½	let brick remain as it is
+50	6" 0¾	
+14	8" 1½	
NL. Date	8½ 1⅜	
−14	9¾ 1½	

above stake | above paving

E Track

+14	4 3/8	0 1/4
SL Jupr	4"	0 3/4
-14	3 7/8	0 1/2
+50	5"	1"
2	5 3/8	1 1/4
+50	5"	0 3/4
1	5 1/8	1"
+50	5 3/4	1 1/2
+14	6 7/8"	2 1/2
NL Ivy	7 1/4	2"
-14	6 3/8	1 1/2

This block to grade 6" above stakes

+14	5"	0 1/2
SL Ivy	4 1/4	00
-14	5"	0 1/2"
+50	5 1/2	1"
2	5"	0 1/4
+50	5 3/8	0 1/4
1	6"	0 1/2
+50		
+14	5 1/2	1"
NL Hawn	6 1/2	1"
-14	6 3/8	1 1/2

This block to grade 6" above stakes

+14	4 1/4	1/2"
SL Hawn	5"	0 1/2
-14	5 3/4	1"
+50	6"	1 1/4
2	6"	1 1/4
+50	5 3/4	1 1/2
1	5 1/2	1"
+50	3 3/4	-1"
+14	5"	1 1/4
N.L. Grape	6 5/8	1"
-14	4 3/4	1 1/4

Above Stakes — Above Paving

This block to grade 6" above Stakes

+50	6"	2"
1	6"	1 3/4
+50	6"	2
+14	6	1 1/2
NL Laurel	6	1 1/2
-14	6	2

To grade

+14	6	3"
SL Laurel	6	2 1/4
-14	"	2 1/8
+50	"	1 5/8
2	6	2 1/2
+50	4	0 1/2
1	4	0 3/4
+50	3 1/2	0 1/2
+14	3 1/2	0 1/4
N.L. Kalmia	3 3/4	00
-14	3 3/4	00

This block to grade 6" above stakes

+14	3 3/8	-0 1/2
SL Kalmia	3 1/4	-1 1/8
-14	3 1/4	0 1/4
+50	4 1/4	0 1/2"
2	3 1/2	-0 1/2
+50		
1	6"	1 3/8
+50	4 1/2	0 1/4
+14	5"	0 3/8
N.L. Jupr	5 5/8	0 3/4
-14	5 7/8	0 1/2

This block to grade 6" above Stakes

W Track

Paring above stake

+14	4"	
SL Date	3 7/8	
-14	4 1/4	
+50	3 1/2	hole
2	5 1/8	
+50	5 1/4	
1	5 1/2	
N.L. Cedar	5 1/2	
-14	4 3/4	-1 1/8

+14	4"	-0 3/4
S.L. Cedar	3 5/8	-1 1/2
-14	3 3/8	-1 3/4
+50	3 1/4	-1 1/4
2	3 1/2	-1 1/2
+50	4 1/8	-0 1/2
1	4 1/4	-1 1/4
+50	4"	-1 1/4
+14	4 1/4	-1 1/2
N.L. Beech	5 3/4	-1 1/4
-14	3 1/8	-1"

grade 6" above

+14	4 7/8	-1"
S.L. Beech	4 3/8	-0 5/8
-14	3 7/8	-0 7/8
+50	4"	-1 1/4
2	4 1/4	-0 3/4
+50	5"	-1 1/2
1 +50	4 5/8	00
+50	4 1/2	1/2"
+14	5 3/8	1 1/4
N.L. Ash	6 1/4	1"
-14	6 1/2	00

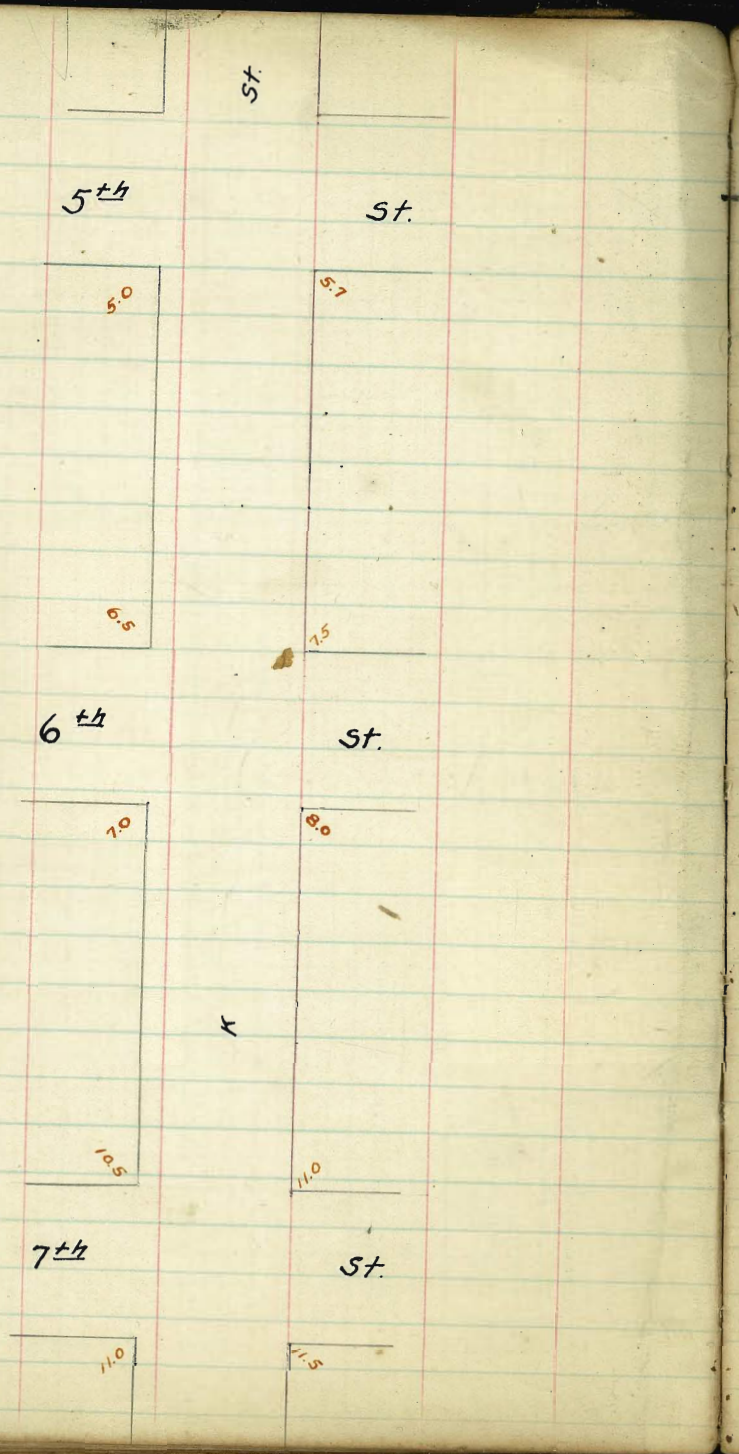
Above Stakes — Above Paving

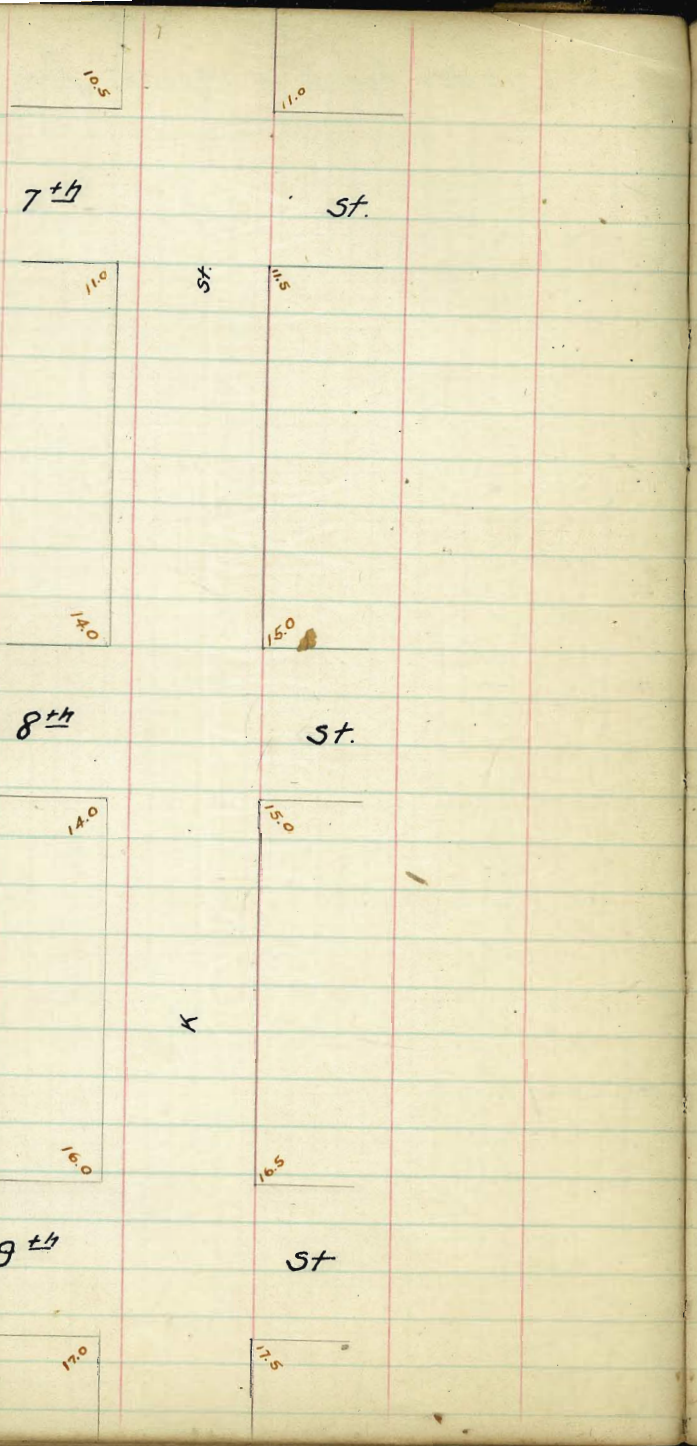
2		3 1/4
+50		4 3/4
1		4 1/4
+50		3 1/4
+14		3 1/4
N.L. Elm		6 1/4
-14		6 5/8

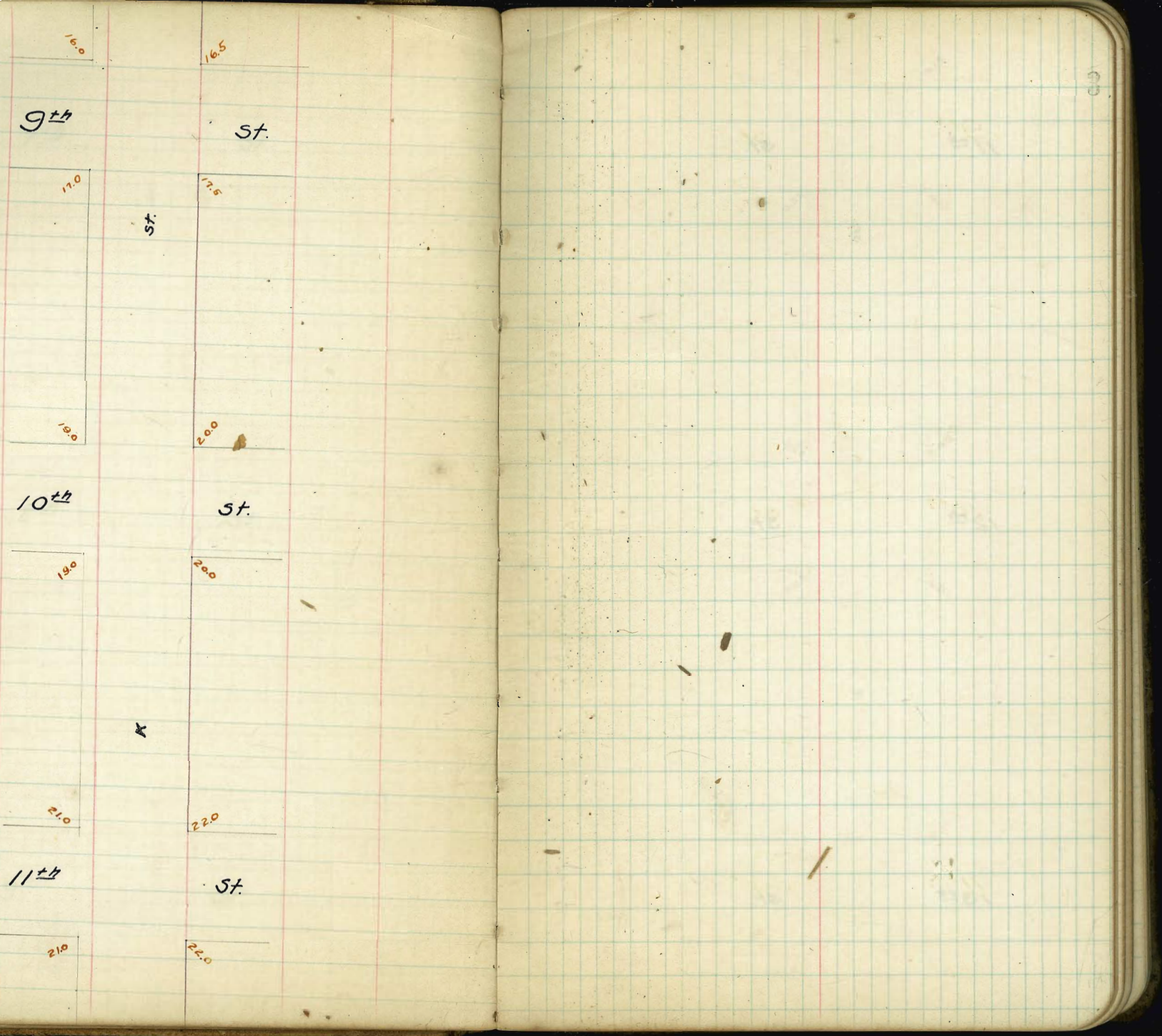
+14		6 1/2
S.L. Elm		4 1/2
-14		4
+50		4 1/2
2		5 3/4
+50		4 3/4
1		5"
+50		5 3/4
+14		6 3/4
N.L. Date		7
-14		6 1/4

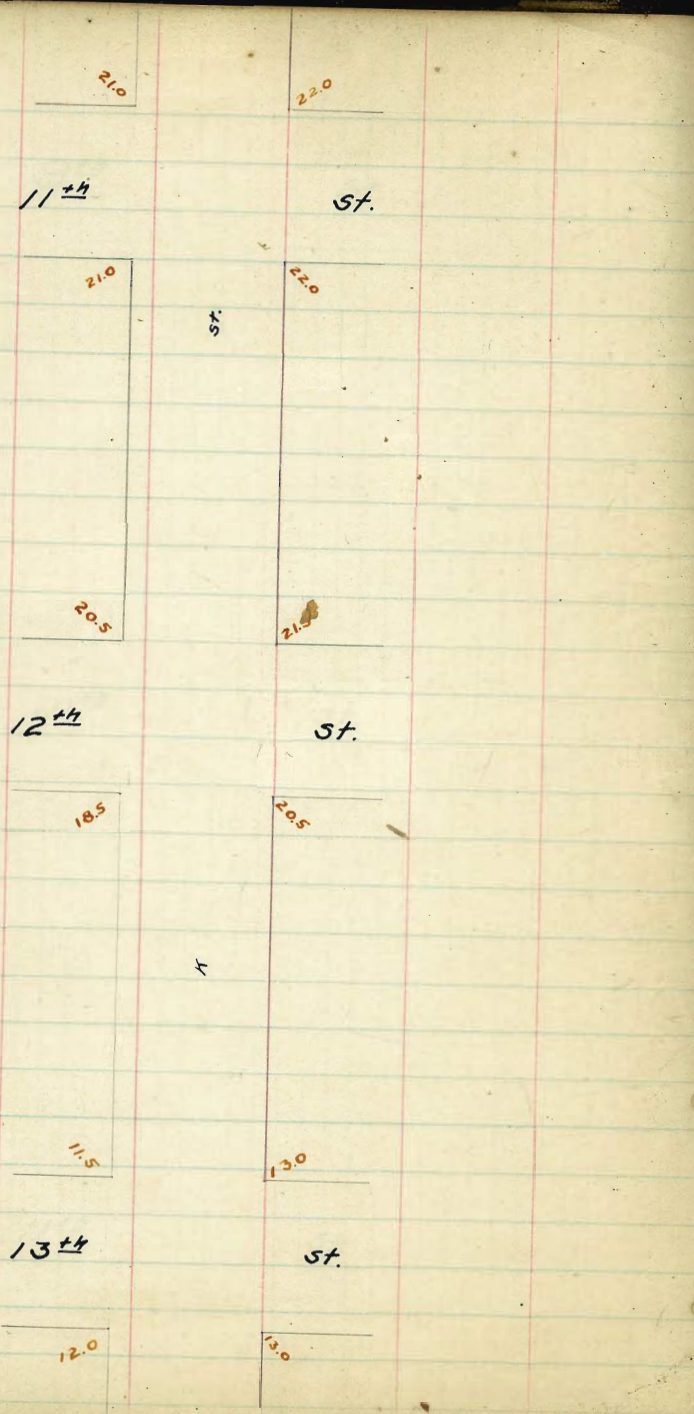
Paring above Stakes

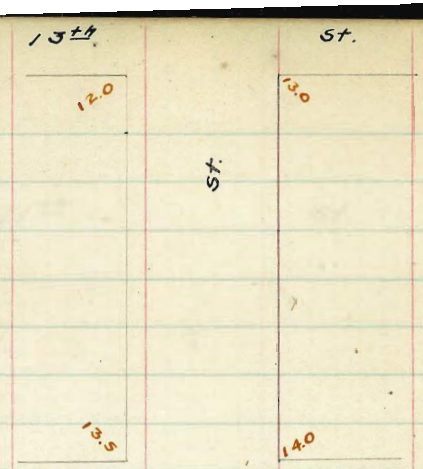
Grades for K St & Grant Ave Car Line

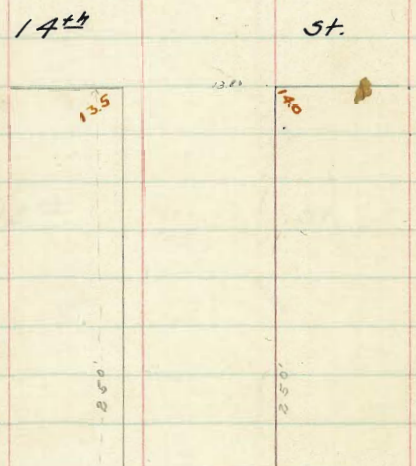



10.5
11.0
7th St.
St.
11.0
11.5
14.0
15.0
8th St.
14.0
15.0
X
16.0
16.5
9th St
17.0
17.5

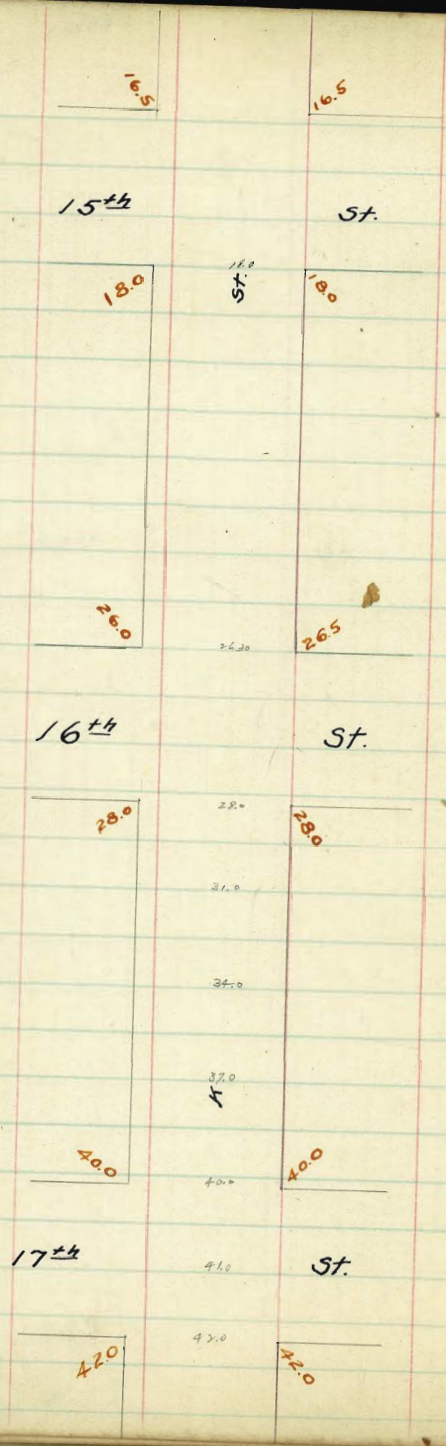

16.0
16.5
9th St.
17.0
17.5
St.
19.0
20.0
10th St.
19.0
20.0
21.0
22.0
11th St.
21.0
22.0


21.0
22.0
11th St.
21.0
St.
22.0
20.5
21.5
12th St.
18.5
20.5
St.
11.5
13.0
13th St.
12.0
13.0


13th
St.
12.0
13.0
St.
13.5
14.0


14th
St.
13.5
14.0
250'
250'

14.2
14.8
K
16.5
16.5
15th
St.



N.E 16 - 28.014

N.E 17 41.981

41.98	40.[illegible]	37.[illegible]	34.[illegible]	31.[illegible]
0.19	2.17	5.17	8.17	11.17
42.17 HT				

N.E18-53961

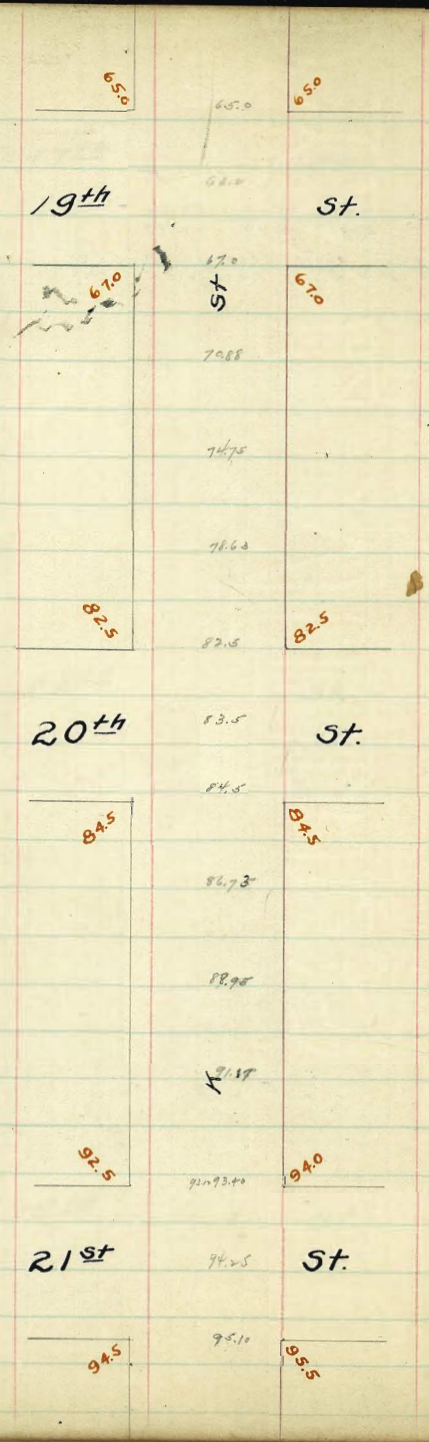
41.98
10.11
52.09 H.I.

41.00 / 11.09 | 42.00 / 10.09

44.50 / 7.59 | 47.00 / 5.09 | 49.50 / 2.59 | 52.00 / 00.09

53.96
10.84
64.80 H.I.

53.00 / 11.80 | 54.00 / 10.80 | 56.75 / 8.05 | 59.50 / 5.30 | 62.25 / 2.55 | 65.00 / 40.2



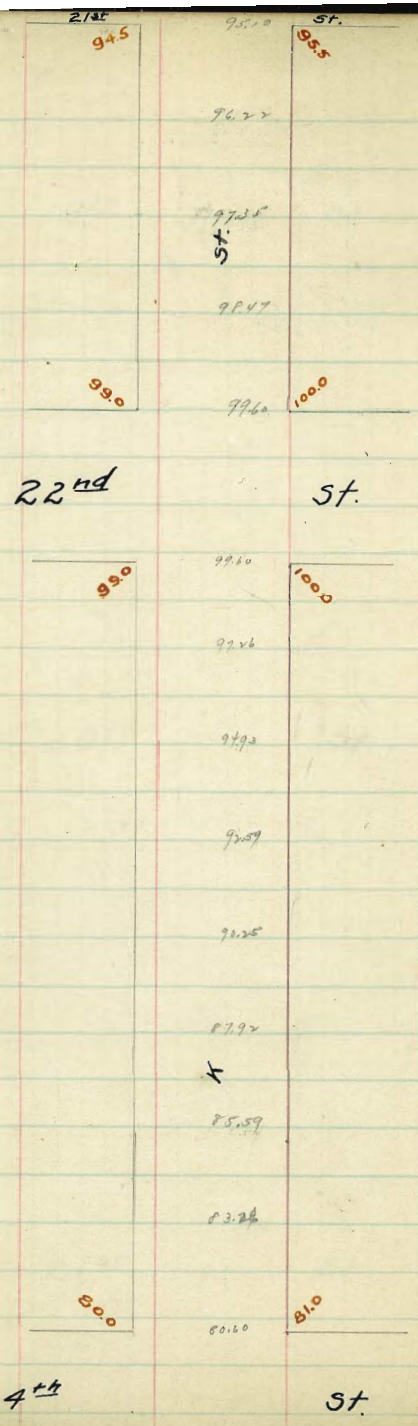
66.90
10.95
74.85 HI
3.10
74.75 T.P.
11.88
86.63 HI

66.00 / 17.85 — 67.00 / 10.85 — 70.88 / 6.97 — 74.75 / 3.10

78.63 / 8.00 — 82.50 / 4.13 — 83.50 / 3.13 — 84.50 / 2.13

84.48 BM 20th
8.93
93.41 HI
1.00
92.41 T.P.

86.73 / 6.68 — 88.95 / 4.46 — 91.17 / 2.24



N.E 22nd K 9.9.92

92.41
7.80
100.21 HT.

94.25
5.96

95.10
5.11

96.22
3.99

97.35
2.86

98.47
1.74

98.47
4.07

95.33
7.21

92.00
10.54

99.92
2.62
102.54 HT
12.29
90.25 TP
0.40
90.65 HT.

99.60
2.94

97.26
5.28

94.93
7.61

92.59
9.95

90.25
12.29

87.92
2.73

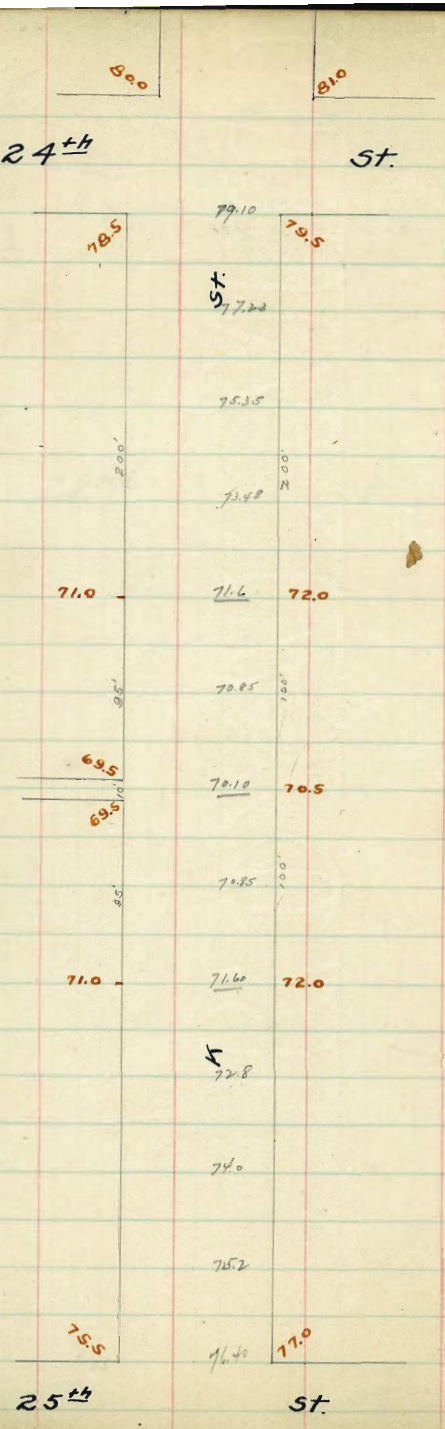
87.92
2.73

85.59
5.06

79.43
4.38
83.81

83.26
0.55

80.60
3.21



83.81 HI

79.10
4.71

79.43
0.41
79.84 HI
9.0
70.84 TP
7.32
78.16 HI
76.93 BM
3.50
79.93 HI

77.23
2.61

75.35
4.49

73.48
6.36

71.60
8.24

70.85
8.99

70.10
8.06

70.85
7.31

71.60
6.56

72.80
5.36

76.40
4.53

75.20
4.73

74.10
5.93

N.E 25th & K 76.93

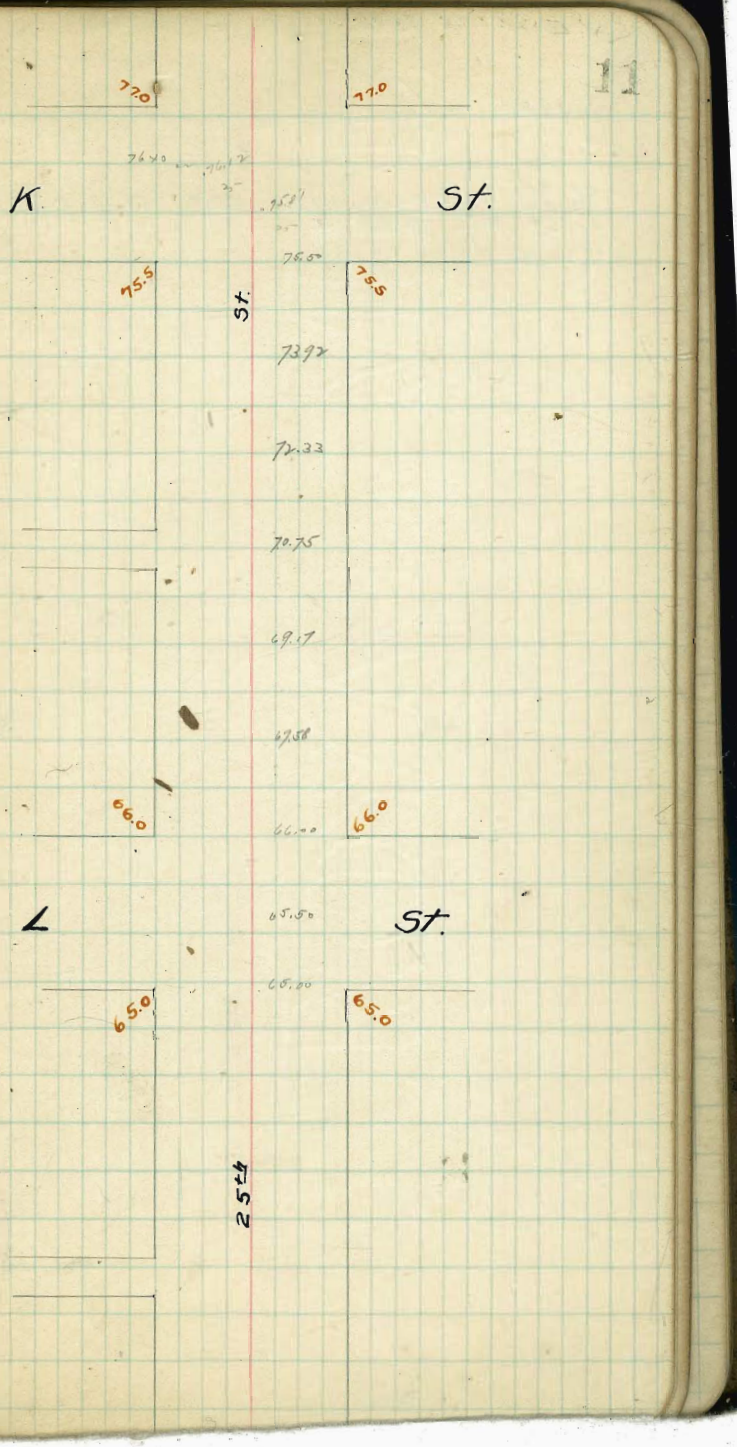
N.E 25th & L 66.91

79.93 M | 75.50 / 4.43 | 75.81 / 4.12 | 76.12 / 3.81

65.91 / 9.37 / 75.28 M | 66.00 / 9.28 | 67.58 / 7.70 | 69.17 / 6.11 | 70.71 / 4.53 | 72.33 / 2.96 | 73.92 / 1.37

10.96 / 65.91 / 66.87 M | 66.60 / 1.27 | 65.00 / 1.87

65.91 / 2.31 / 68.22 M | 66.00 / 2.22 | 65.50 / 2.72 | 66.00 / 3.22

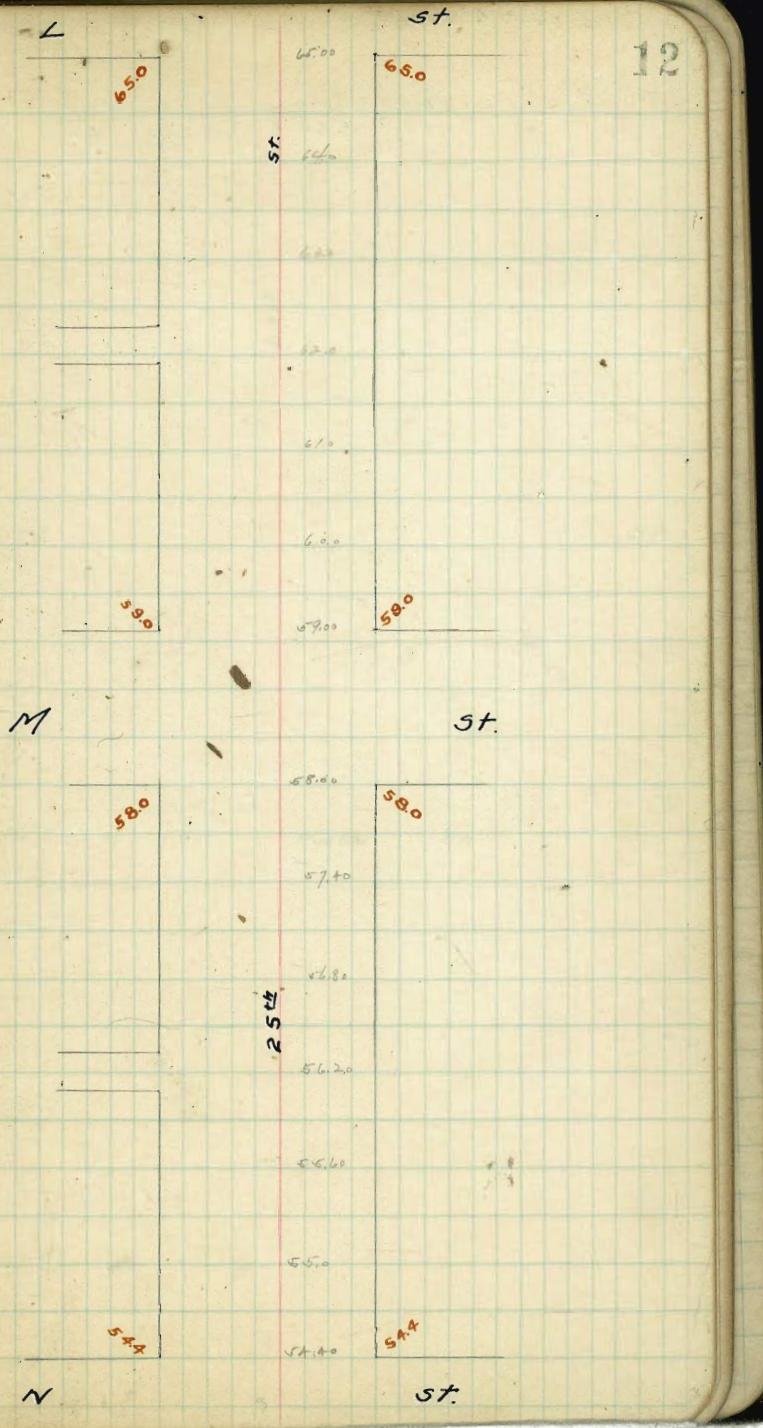


N.E 25th M 58.94

66.87 M. 64.00 / 2.87 3.87 4.87 5.87 6.87 7.87

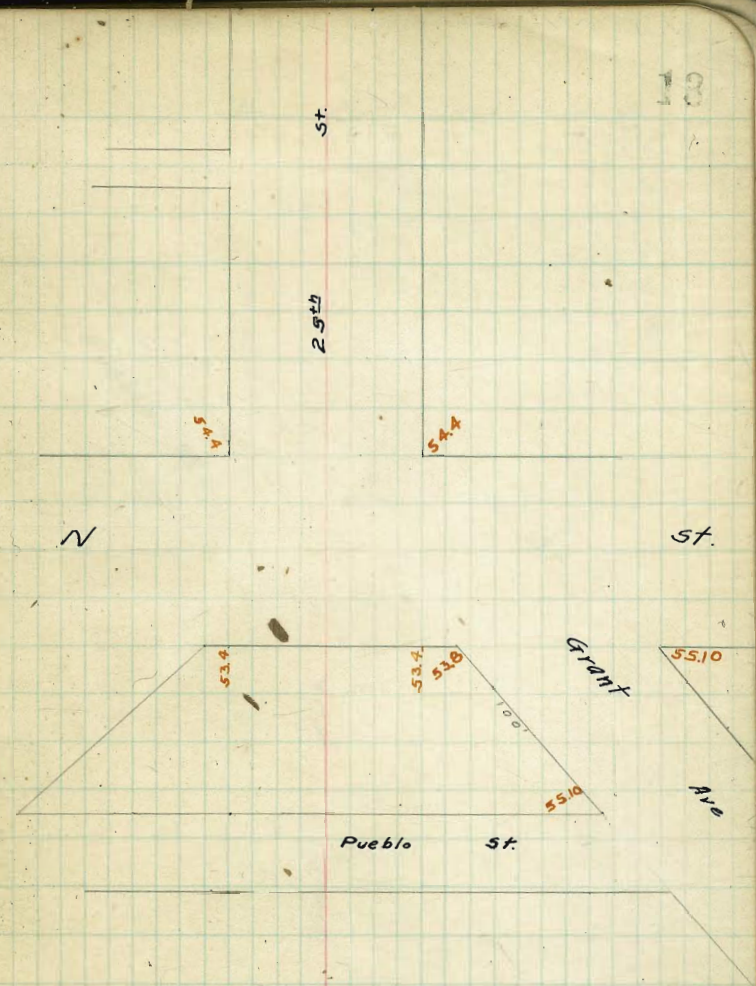
58.94 / 2.30 / 61.24 M. 58.00 / 3.24 57.40 / 3.84 56.80 / 4.44 56.20 / 5.04 55.60 / 5.64 55.00 / 6.24

68.22 M. 64.00 / 4.22 63.00 / 5.22



N.W 25 N 54.32

54.32	54.40	4.60	54.53	54.46
4.81	4.73	54.53	54.40	4.67
59.13 M			.13	



N W 25 N 54.32

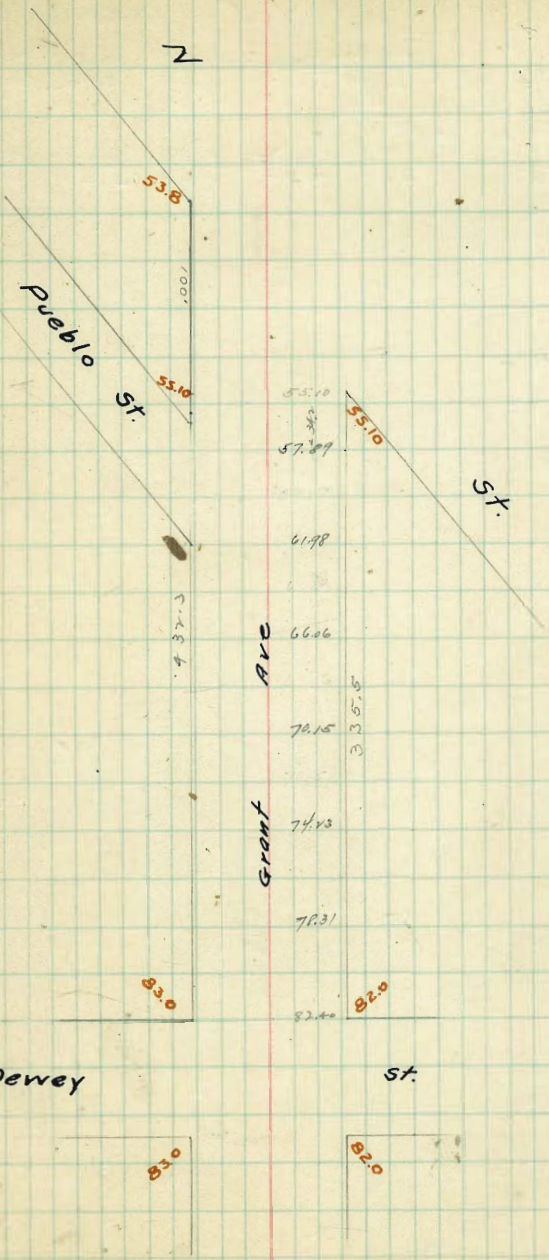
54.32
4.86
59.18 HI
1.28
57.90 TP
11.60
69.50 HI
1.57
67.93 TP
11.55
79.48 HI
1.17
78.31 TP
8.38
86.69 HI
1.59
85.10 TP Hpt

55.10 / 4.08 — 57.89 / 1.29

61.98 / 7.52 — 66.06 / 3.44

70.15 / 9.33 — 74.23 / 5.25 — 78.31 / 1.17

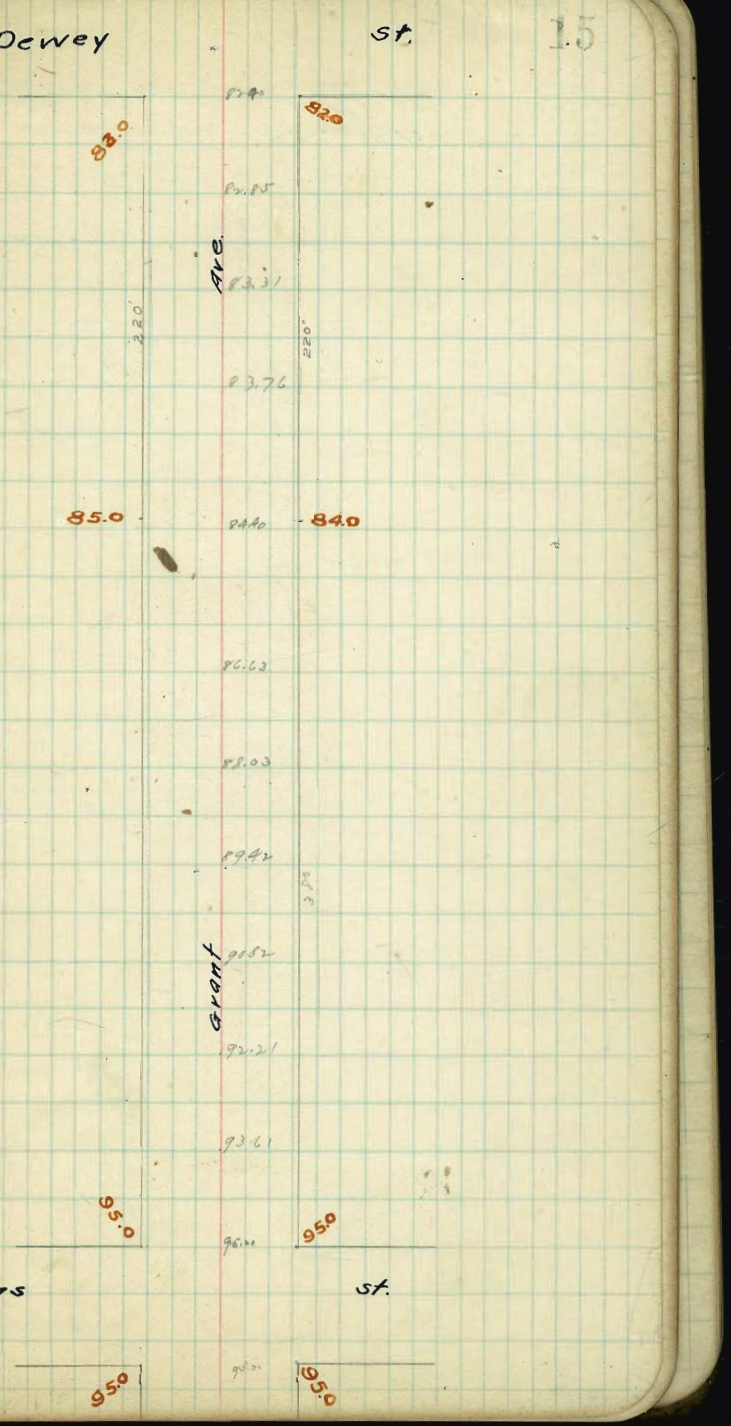
82.40 / 4.29 — 3.75 / 82.94



94.99 BM SE Grant and Evans

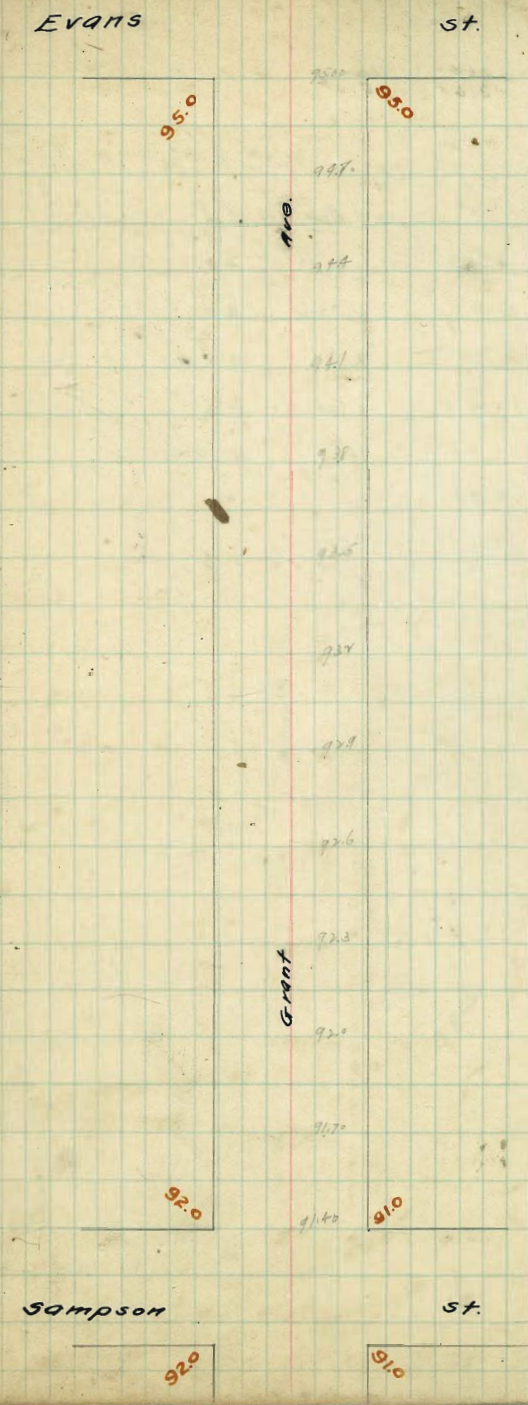
PS 10

3.24		82.40	82.82	82.85	83.21	83.76
88.34	HI	5.94	6.34	5.49	5.05	4.58
1.71		84.11	86.63			
86.63	TP	3.94	1.71			
9.81		86.03	89.42	90.82	92.21	93.61	95.00
96.44	HI	8.41	7.02	5.67	4.23	2.83	1.44
1.71							
94.99	BM						



90.97 BM N.W. Sampson & Grant

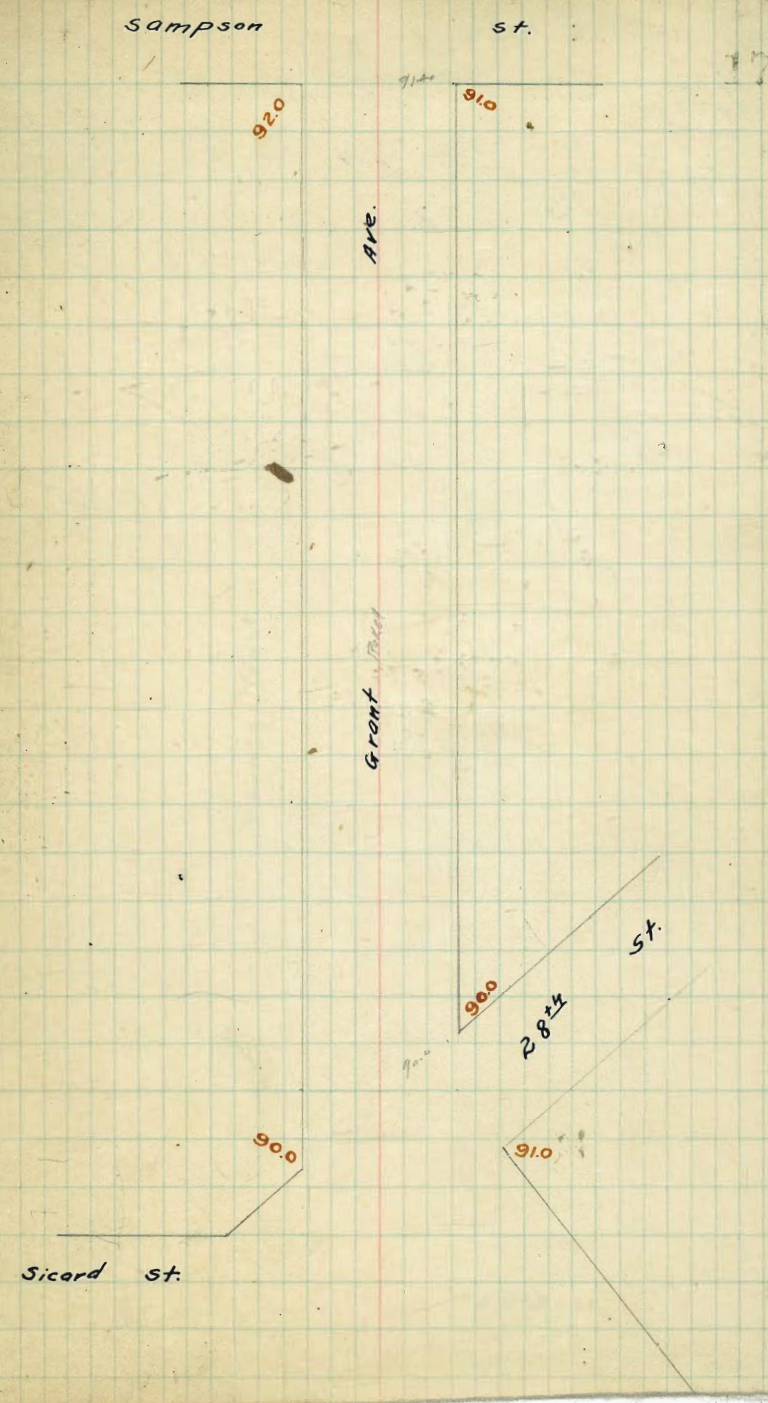
94.99	95.0	94.70	3.08	3.38	3.68	3.98	4.28
2.49	2.48	2.78				91.40	
97.48 H.	4.58	4.88	5.18	5.48	5.78	6.08	
1.52							
90.96 BM							



90.97		
5.11	91.40	90.00
96.08 H.I.	4.68	6.08

T 81.39

Spiral		C C R 180'	
Ang	dist	Ang	dist
offset .01	5.50	3°11'	20
0°19'	11.00	6°22'	40
0°35'	16.50	9°33'	60
0°57'	22.0	12°44'10"	80
1°23'	27.49	14°33'	91.42
1°54'	32.99		



90.00
P.02
98.02 MH
0.35
97.67 TP
8.41
106.08 MH

91.00 7.02 | 92.00 5.82 | 93.40 4.62 | 94.60 3.42 | 95.80 2.22 | 97.00 1.02

99.20 7.88 | 99.40 6.68 | 100.60 5.48 | 97.60 .48 | 99.85 6.23 | 99.10 6.98
99.05 7.73 | 97.60 8.48

28th St.

91.0 | 92.2 | 93.4 | 94.6 | 95.8 | 97.0 | 98.2 | 99.4 | 100.0 | 100.6 | 101.0 | 99.85 | 99.10 | 98.35 | 97.6 | 98.0

400'

Kounty Tract

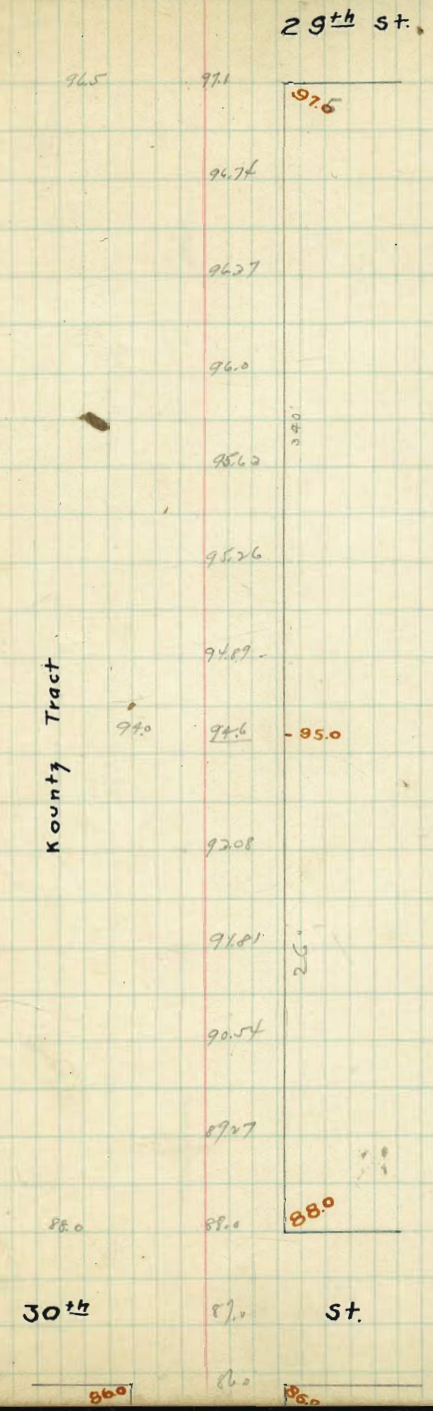
97.0

29th St.

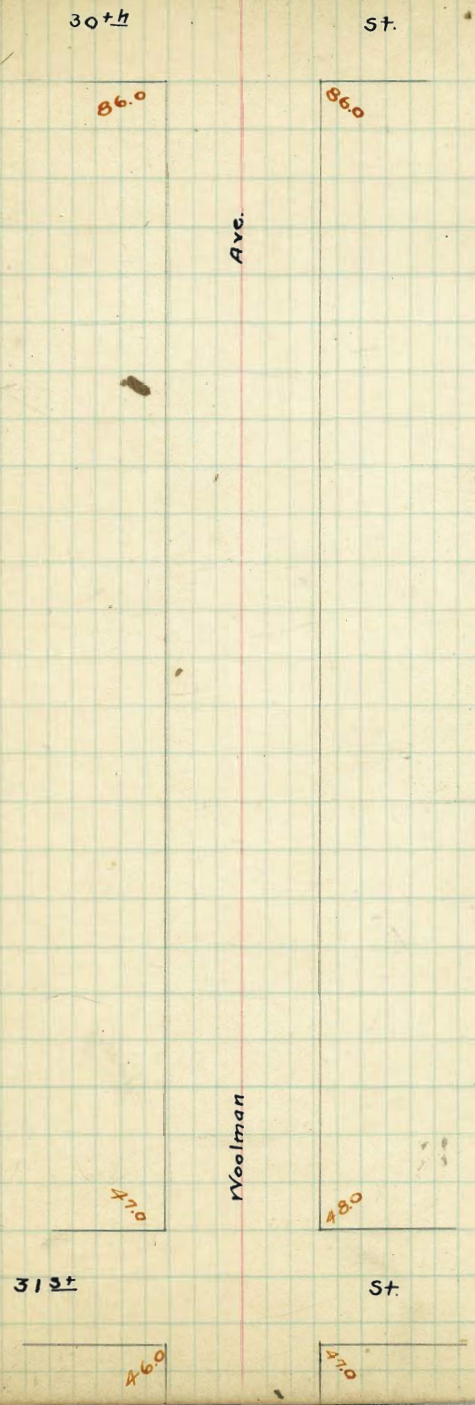
96.5 | 97.0

9.17

91.00	94.60	97.60					
9.17	5.57	3.17					
100.17 HI							
5.57							
94.60 TP	94.89	95.26	95.63	96.00	96.37	96.74	97.10
6.17	5.88	5.51	5.14	4.77	4.40	4.03	3.67
100.77 HI							
91.00	87.00	88.00	89.27	90.54	91.81	93.08	
6.23	10.23	9.23	7.96	6.69	5.42	4.15	
97.23 HI							



91.00 BM NW 30th & Woolman



N.E 13th M 3.00 N.E

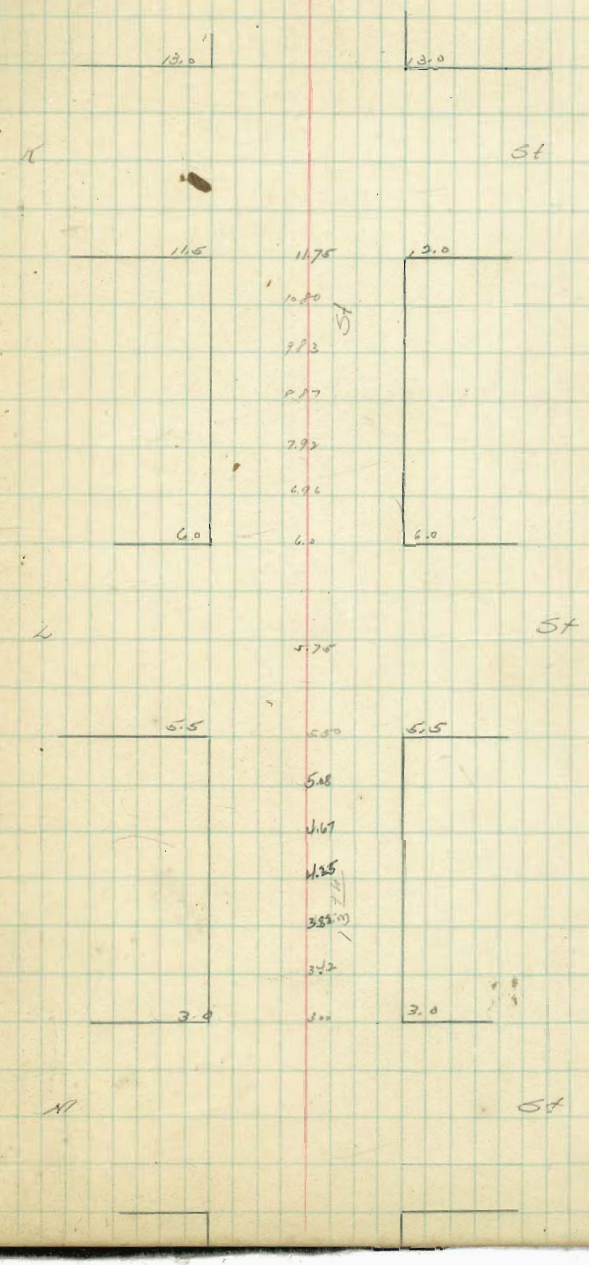
N.W 13th K 12.98

3.00	5.50	2.90	4.10	4.20	4.7	4.1
3.90	1.40	4.00	2.80	4.3	3.5	3.4
6.90 Hs	.00	-1.0	-1.9	2.7	2.2	2.8
1.18				-1.6	-1.6	-5.6
5.72 T.P.	3.42	3.83	4.25	4.67	5.08	5.50
7.10	3.48	3.07	2.65	2.23	1.82	1.40
12.82 Hs	6.00	6.96	7.92	8.87	9.83	10.80	11.75
	6.82	5.86	4.90	3.96	2.99	2.02	1.07

3.00	3.42	3.83	4.25	4.67	5.08	5.50	5.75	6.00	6.96
1.52	6.10	5.69	5.27	4.85	4.44	4.02	3.77	3.52	2.56
9.52 Hs	7.92	8.87	9.83	10.80	11.50				
2.59	5.93	4.98	4.02	3.05	2.35				
6.93 T.P.									
6.92									
13.85 Hs.									

Grades for St. Ry 13th St. K to M

28/70 / 10 { Dr. Mullen / Hanson Park Point

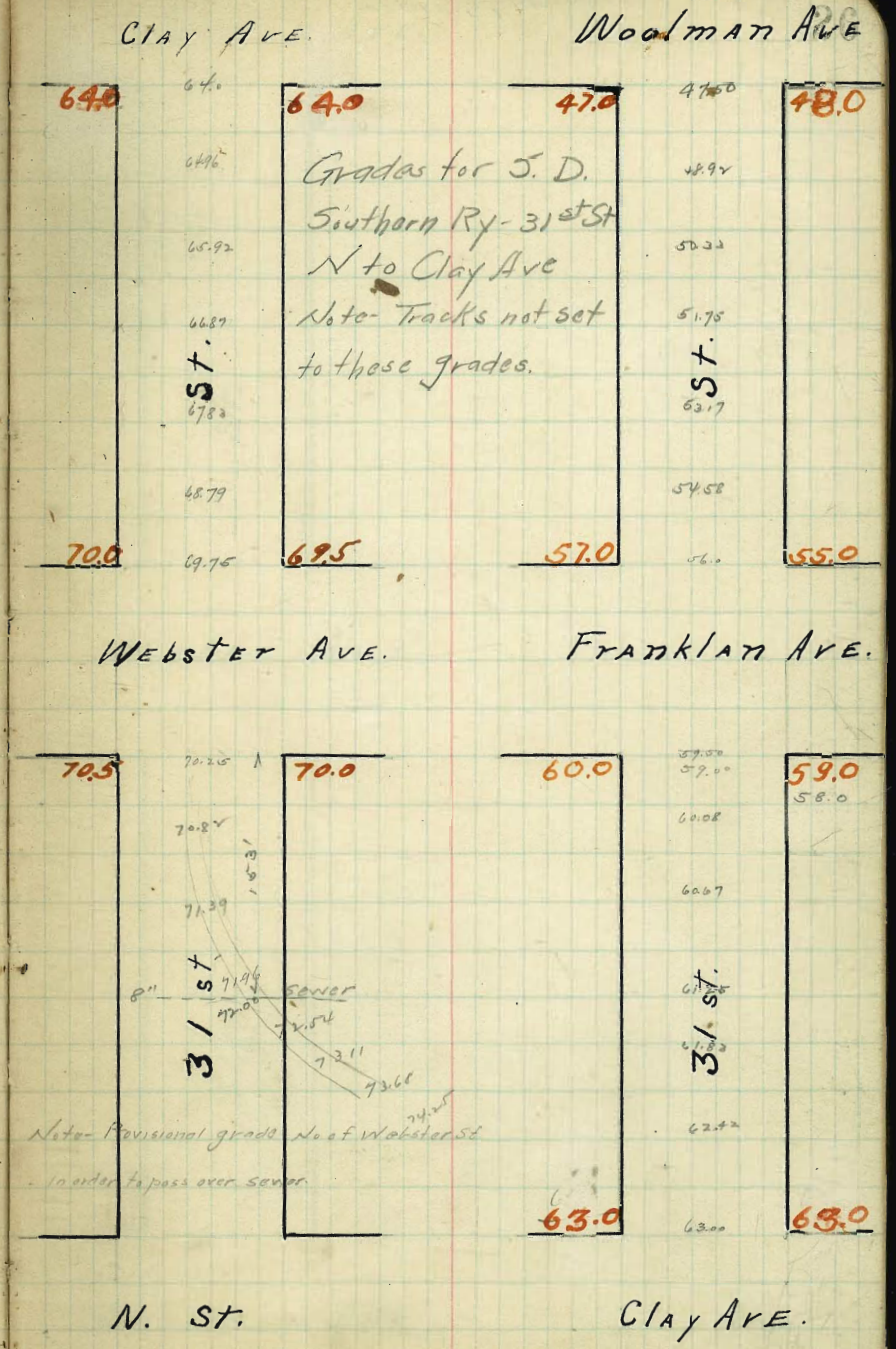


73.08 BM S.E Webster RR. spk

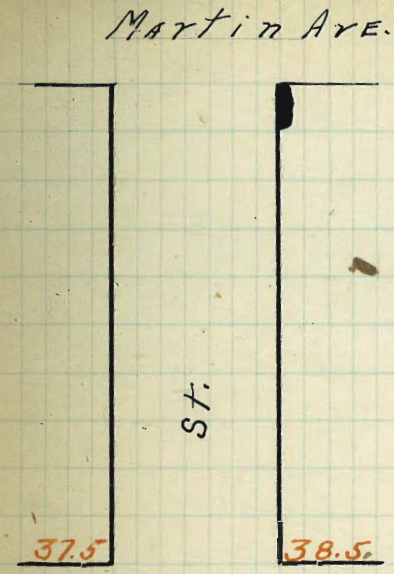
1/4 { Davis
11 { Williams
Saw

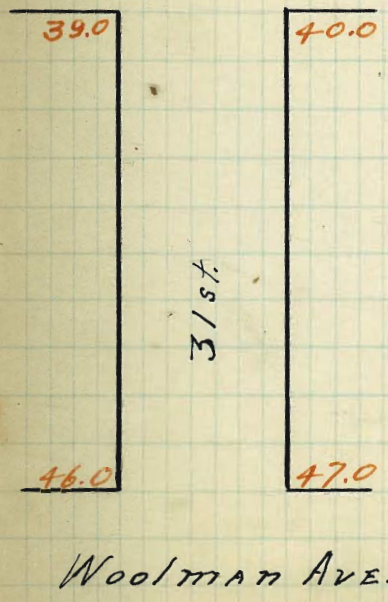
52.56 BM	47.50	48.92	50.33	51.75	53.17	54.58
4.34	9.40	7.98	6.57	5.15	3.73	2.32
56.90 HI	9.44	8.40	7.53	6.02	5.08	3.70
0.44	-0.04	-0.42	-0.96	-0.87	-1.35	-1.38
56.46 TP						
8.91						
65.37 HI	56.00	59.50	60.08	60.67	61.25	
0.61	0.90	5.87	5.29	4.70	4.12	
64.76 TP	1.34	8.39	7.37	6.26	4.78	
9.14	-0.44	-2.52	-2.08	-1.56	-0.66	
73.90 HI	61.83	62.42	63.00	64.00	64.96	65.92	66.87
3.49	3.54	2.95	2.37	9.90	8.94	7.98	7.03
70.41 TP	3.95	2.94	1.66	8.65	6.44	5.36	4.42
8.78	-0.41	0.0	+0.71	+1.25	+2.50	+2.62	+2.61
79.19 HI	67.83	68.79	69.75				
	6.07	5.11	4.15				
	3.66	2.80	3.49				
	+2.41	+2.31	+0.66				
	70.25	70.82	71.39	71.96	72.54	73.11	73.68
	8.94	8.37	7.80	7.23	6.65	6.08	5.51
	7.4	5.11	4.81	4.54	4.82	4.85	5.20
	+1.54	+3.26	+2.90	+2.69	+1.83	+1.23	+0.26

52.56	74.25					
6.00	4.94					
58.56 HI	5.38					
0.17	-0.44					
58.39 TP						
8.07						
66.46 HI	47.50	56.00	0.17	63.00	64.00	69.75
0.60	11.06	2.56	59.00	3.46	11.84	6.09
65.86 TP	11.10	2.29	58.39	2.98	8.74	5.37
9.98	-0.04	+0.27	F-0.61	+0.48	+3.10	+0.72
75.84 HI	7.47	5.41	5.07	4.57	5.18	4.90	5.60	5.75
3.75	72.09	74.15	74.49	74.99	74.38	74.66	73.96	74.25
72.09 TP	70.25	70.82	71.39	71.96	72.54	73.11	73.68	73.81
7.47	1.84	+3.33	+3.10	+3.03	+1.84	+1.55	+0.28	F0.44
79.56 HI								



52.56 · R.W. Woolman plg in mon.





255.00 BM N.W. 1st & Thorn
2.75
257.75 HI
11.09
246.66 TP
1.24
247.90 HI
12.08
235.82 TP
0.60
236.42 HI
11.49
224.93 TP
1.02
225.95 HI
10.92
215.03 TP
1.47
216.50 HI

10.69 / 225.73 — 10.56 / 225.86

4.52 / 211.98 — 8.55 / 207.95

5.46
211.04 TP
11.49
222.53 HI
1.52
221.01 TP
6.99
228.00 HI
2.12
225.88 TP
11.84
237.72 HI
1.67
236.05 TP
11.61
247.66 HI
0.57
247.09 TP
9.05
256.14 HI
1.14
255.00 BM

4.66 / 217.87

0.91 / 227.09

227.09
9.47
236.56 HI

6.80 / 229.76

235 / 1.52

225.73
6.26
231.99 HI

1.72
232.00
230.27
-1.73

364
228.35
227.20
+1.16

7.24
224.65
222.40
+2.25

12.06
220.00
219.43
-0.57

219.4 / 231

235.00
227.09
7.91

211.98
9.76
221.74

227.09
1.70
228.79

Grades for Sidewalk Spruce St bridge

Floor	2.20.00
+25	222.40
+50	224.80
+75	227.20
1	229.60
W.L. Front +25	232.00

22586
548
231.34 HI

1.08
230.26
232
-1.74
1-8 7/8"

229.60
1.74
1.50
+0.24
+0-2 7/8"

227.20
4.14
2.97
+1.17
1-2"

224.80
6.54
4.75
+1.79
1-9 1/2"

222.40
8.94
5.92
+3.02
+3-0 1/4"

E

22586 BM
222
228.08 HI
0.97
227.11

20.00
8.08
-0.01
+0.07
20.746
7.32
+0.08

+0.06
20.187
7.893
OK
+0.08
20.75
7.33

+0.08
20.346
7.73
+0.04

+0.10
20.48
7.60
20.06

+0.09
20.59
7.49
+0.06

+0.06
20.66
7.42
+0.09

+0.06
20.72
7.36
+0.09 W

27 treads @ 11"
28 risers

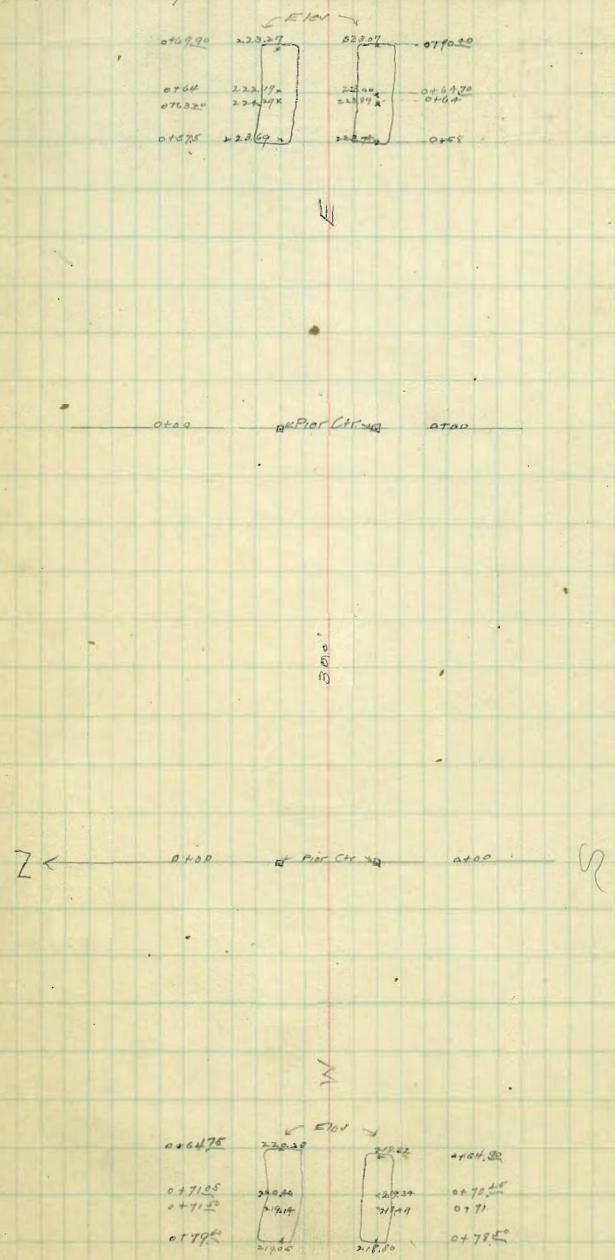
24.75 = End bridge to last riser.

TIES FOR SPRUCE ST BRIDGE 4/18/11 {Davis Hancock Williams

		H.I.					
6.26		231.99				225.73	
8.25	8.10	8.99	8.92	8.30	7.70	8.80	8.72
223.74	223.89	223.00	223.07	223.69	224.29	223.19	223.27
7.22		225.09				217.87	
6.29	6.62	5.75	6.27	6.04	5.95	4.63	4.71
218.80	218.47	219.34	218.82	219.05	219.14	220.46	220.38

5 / 0 / 11 { Davis / Williams / Hazlock.

Elevations of Anchor pits and distances from Pier Centers



7.48 N.E. 10th & M. 14.11 N.W. 10th & L 20.02 N.W. 10th & K

14.11
6.52
20.63 HI

18.17
2.46
33
2.79

1.67
19.00

17.33
3.30
33
3.63

16.50
4.13
33
4.46

15.67
4.96
33
5.29

14.83
5.80
33
6.13

14.00
6.63
33
6.96

14.11
2.12
16.23 HI

13.25
2.98

12.50
3.73
33
4.06

11.67
4.56
33
4.89

10.83
5.40
33
5.73

10.00
6.23
33
6.56

9.17
7.06
33
7.39

8.33
7.90
33
8.23

20.02
4.15
24.17 HI

19.00
5.17
33
5.50

17.33
16.84
33
7.17

18.17
6.00

19.40
4.77

19.60
4.57

7.48
4.22
11.70 HI

8.33
3.37
33
3.70

7.50
4.20

19.37
4.705

19.60
4.47

20.02
4.055
24.075 HI

6.90
3.75

4.60
6.05

4.13
6.52

7.48
3.17
10.65 HI

6.30
4.35

5.85
4.80

5.40
5.25

6.50
4.15

6.70
3.95

6.90
3.75

14.11
1.94
16.05 HI

9.17
6.88

13.25
2.80

12.50
3.55

11.67
4.38

10.83
5.22

10.00
6.05

7.50
4.32

7.10
4.72

8.33
3.49

7.48
4.34
11.82 HI

19.00
3.13

18.17
3.96

17.33
4.80

16.50
5.63

15.67
6.46

14.83
7.30

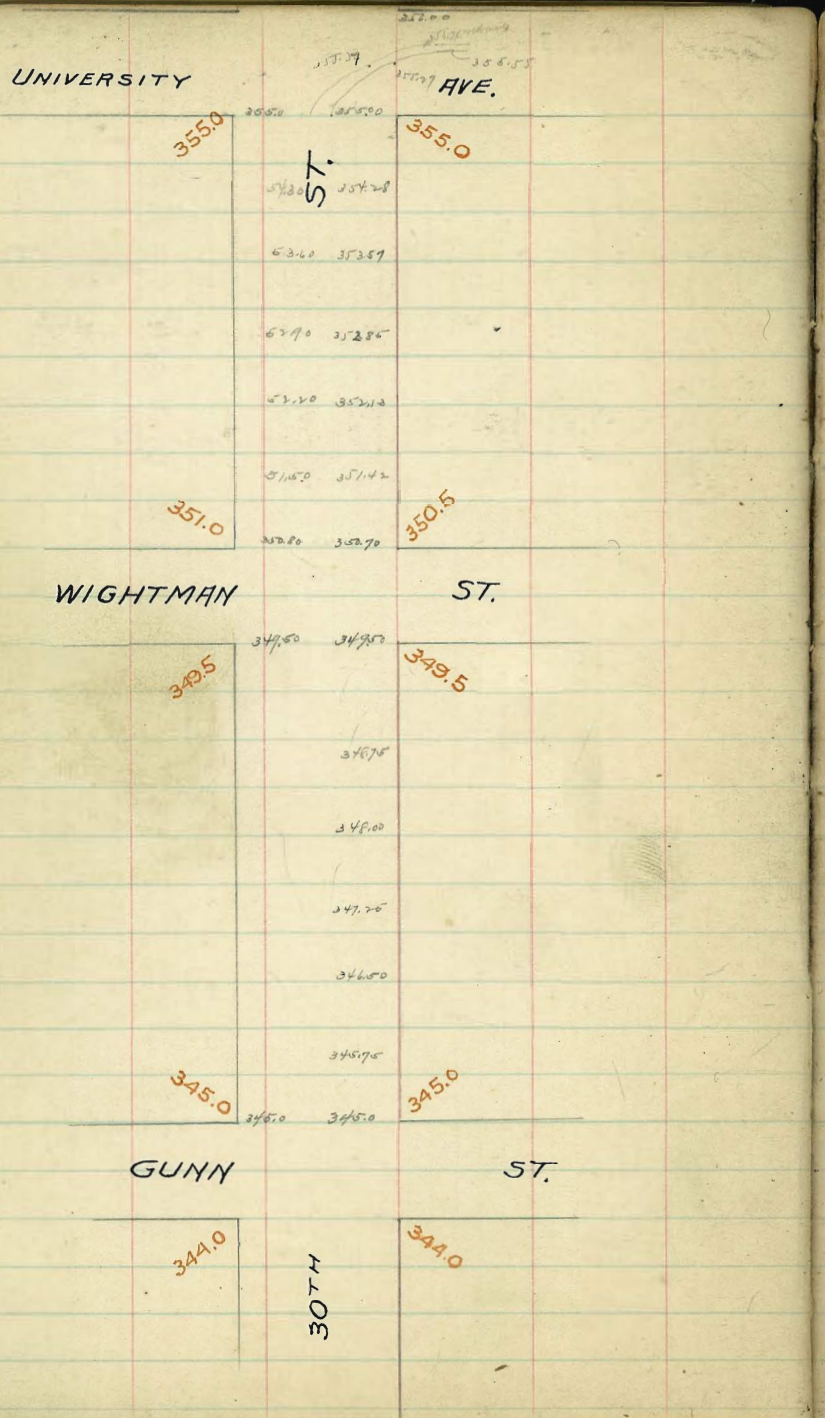
14.00
8.13

19.60
2.53

20.02
2.11
22.13 HI

Grades for St. Ry 10th K to M. M 10th to 11th

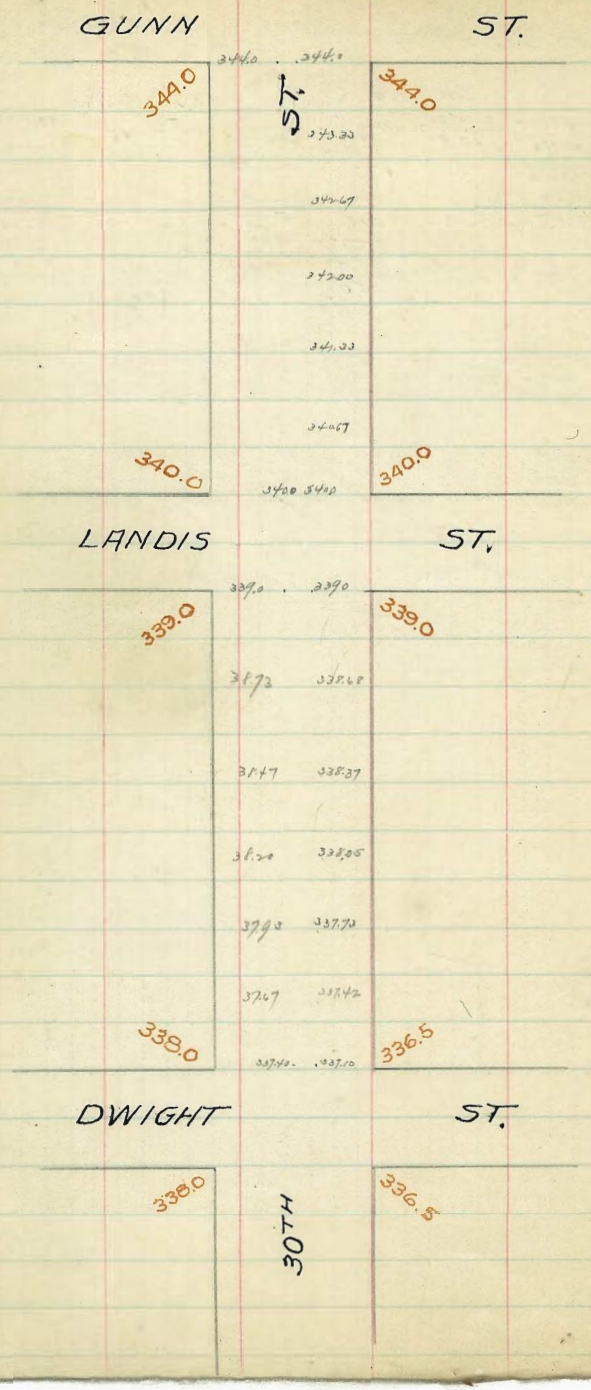
17.5			20.00			20.00
17.30	/	20' 19.37	19.60			19.60
7.00	So. line K		19.0	19.00		19.0
	+50			18.17		
	1			17.33		
	+50			16.50		
	2			15.67		
	+50			14.83		
	3 - N.L. L St		14.0	14.00	14.00	14.0
	Ctr "			13.25	13.25	
	So. Line L		12.5	12.50	12.50	12.50
	+50			11.67		
	1			10.83		
	+50			10.00		
	2			9.17		
	+50			8.33		
	3 N.L. M		7.5	7.50	7.50	7.5
			6.0			6.5
	E. line 10th		6.5	6.90	7.10	7.5
	50				6.90	
	1				6.70	
	+50				6.50	
	W.L. 11th		6.00	6.20	6.30	6.50
	E.L. 11th		6.00	6.20	6.30	6.50
	+50				5.85	
	1				5.40	
	+50				4.95	
	W.L. 12th		4.50	4.50	4.50	4.50



Grades for Golden Hill Extension of S.D.E.R.Y.

25th & D to Univ & Boundary

Spike pole N.W. Wightman



338.40 / 4.21 / 342.61 HI / 1.11 / 341.50 TP / 1.23 / 349.73 HI

337.10 / 5.51 / 6.01 — 337.42 / 5.19 / 5.69 — 337.73 / 4.85 / 5.38 — 338.05 / 4.56 / 5.06 — 338.37 / 4.24 / 4.74 — 338.68 / 3.93 / 4.43 — 339.00 / 3.61 / 4.11

340.0 / 2.61 / 3.11 — 340.67 / 1.94 / 2.44 — 341.33 / 1.28 / 1.78 — 342.00 / 0.61 / 1.11 — 342.67 / 7.06 / 7.56 — 343.33 / 6.40 / 6.90 — 344.00 / 5.73 / 6.23

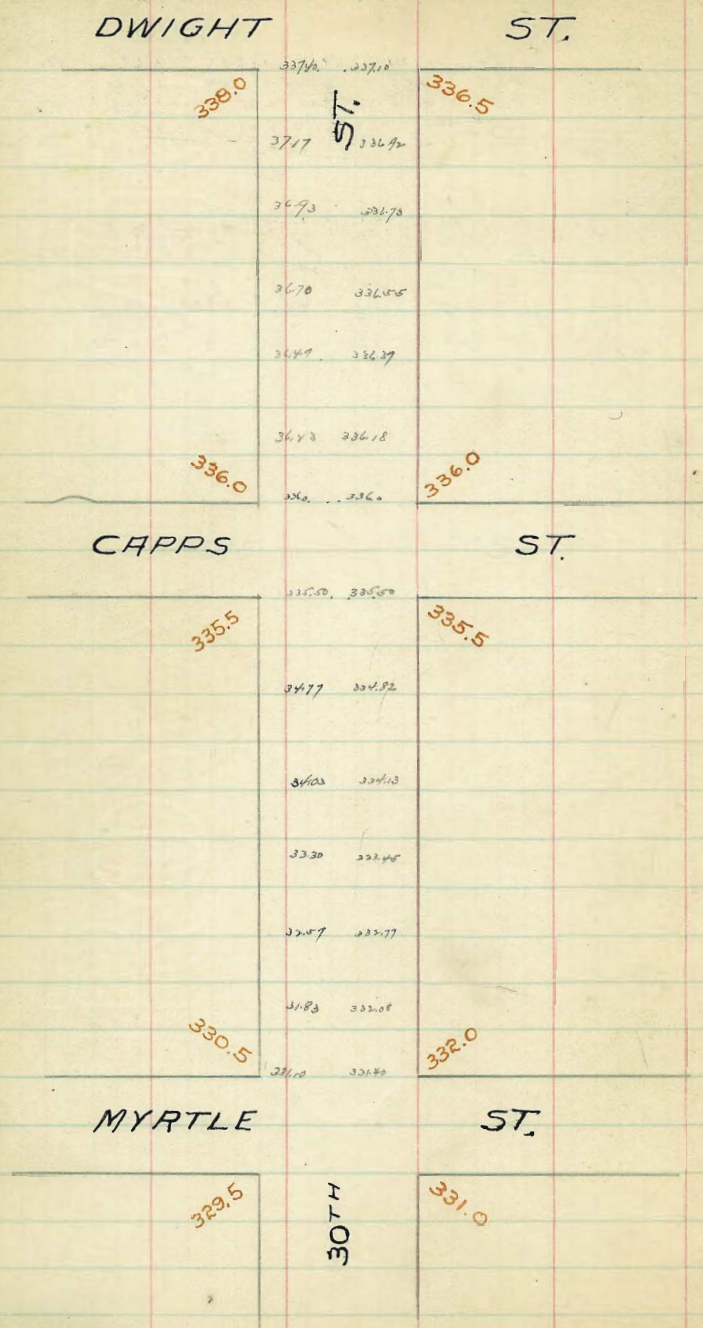
341.35 HI / 0.43 / 340.92 Top Hydt Landis

340.00 / .73 / 337.40 / 0.95 / 4.46 — 37.67 / 3.68 / 4.18 — 37.93 / 3.42 / 3.92 — 38.20 / 3.15 / 3.65 — 38.47 / 2.88 / 3.38 — 38.73 / 2.62 / 3.12 — 39.00 / 2.35 / 2.85

5.18 / 1.33 / 6.51

9.01 / 340.92 / 349.93 HI / 0.36 / 349.62 BM Nail post S.W. Wgtman.

340.00 / 9.93 / 10.43 — 40.67 / 9.26 / 9.76 — 41.33 / 8.60 / 9.10 — 42.00 / 7.93 / 8.43 — 42.67 / 7.26 / 7.76 — 43.33 / 6.60 / 7.10 — 44.00 / 5.93 / 6.43



Brass plug conc mon S.E Capps 336.76

336.76
0.92
337.68 HT.
5.04
341.80 HT
3.40
338.40 Nail poles W 30th & Dwight

335.50	334.82	334.13	333.45	332.77	332.08	331.40
2.18	2.86	3.55	4.23	4.91	5.60	6.28

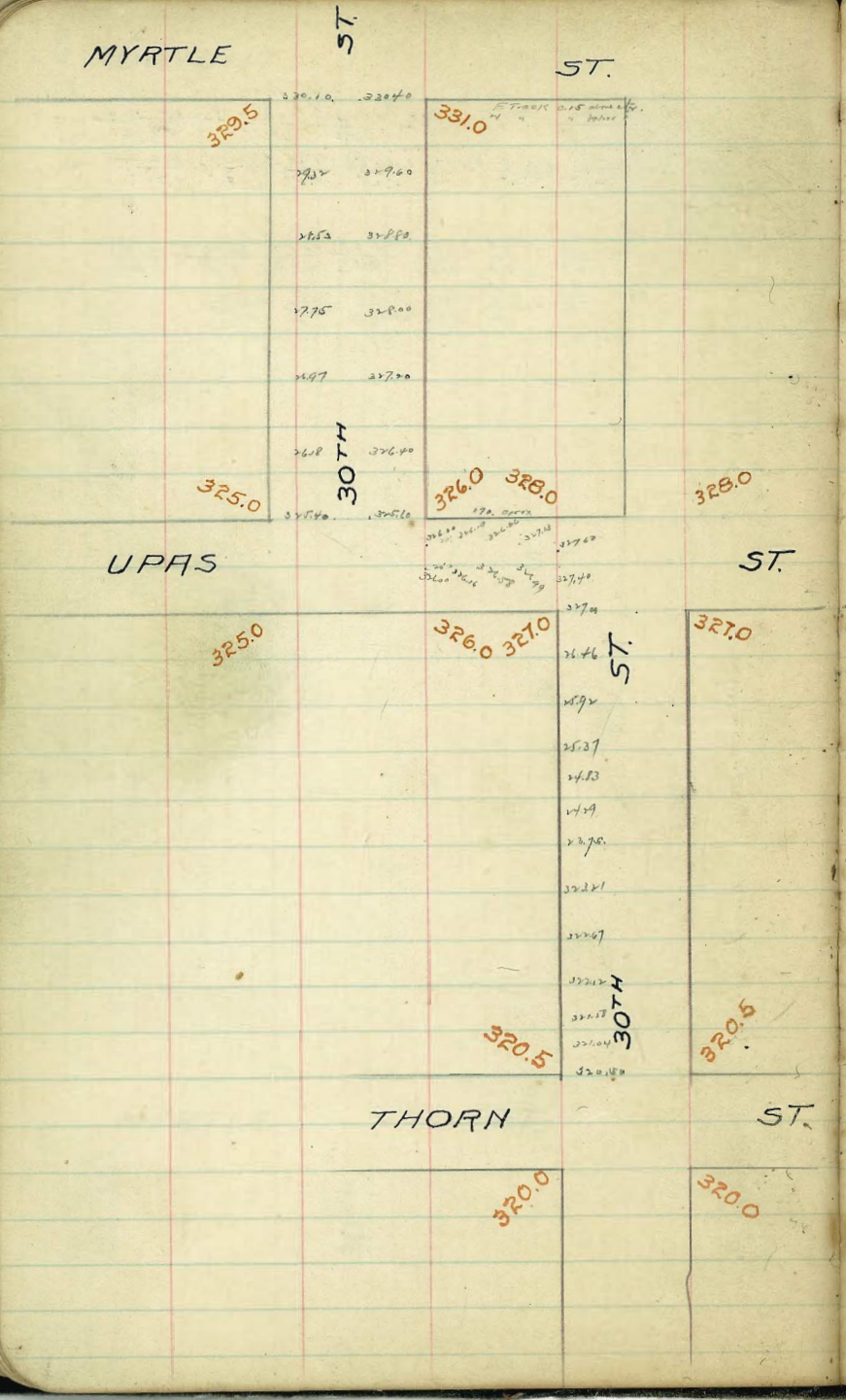
336.00	336.18	336.37	336.55	336.73	336.92	337.10
5.80	5.62	5.43	5.25	5.07	4.88	4.70

336.76
6.4
337.40 HT

35.50	34.77	34.03	33.30	32.57	31.83	31.10
1.90	2.63	3.37	4.10	4.83	5.57	6.30

336.76
4.59
341.35 HT.

36.00	36.23	36.47	36.70	36.93	37.17	37.40
5.35	5.12	4.88	4.65	4.42	4.18	3.95
			50	50	50	5
			5.15	4.92	4.68	4.45



336.76 Mon. S.E. Capps
943
337.19
679
330.40 TP
196
332.36 HI
636
326.00 TP
541
331.41 HI
421
327.20 BM Spk pole. Svl 30th & Upas - .50

330.40	329.60	328.80	328.00	327.20	326.40	325.60
6.79	2.76	3.56	4.36	5.16	5.96	6.76
326.00	326.19	326.66	327.13	327.60	327.00	27.33
6.36	5.22	4.75	4.28	3.81	4.41	4.08

327.20
3.39
330.59 HI

327.00
3.59

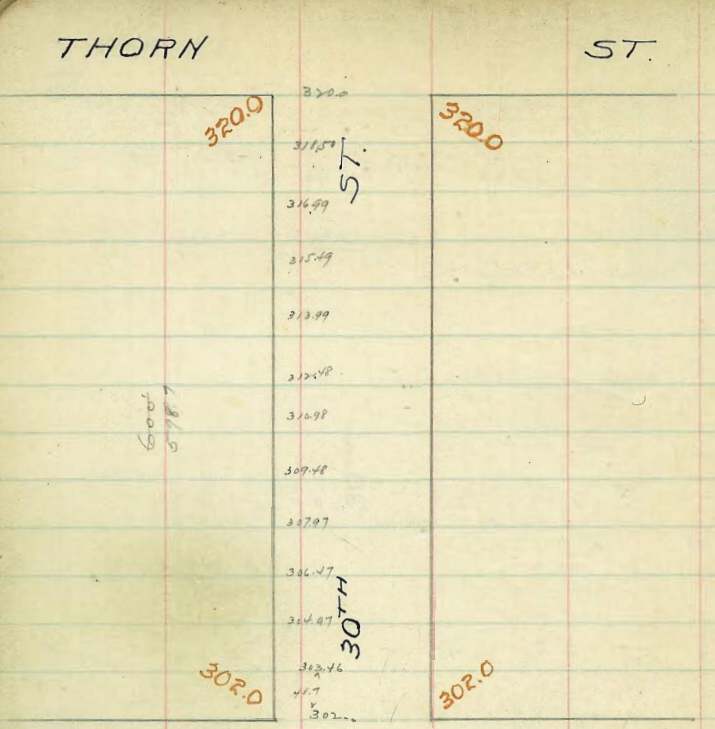
320.21 BM
4.00
324.21 HI
337.40 HI
887
328.53 TP
288
331.41 HI

320.50
3.71

330.10	29.32	28.53
7.30	8.08	3.87
27.75	26.97	26.18
3.66	4.44	5.23

327.20
3.39
330.59 HI

327.00	327.20	327.40	326.99	326.58	326.16	326.00
3.59	3.39	3.19	3.60	4.01	4.43	4.59
325.70	325.40	26.18				
4.89	5.19	4.41				

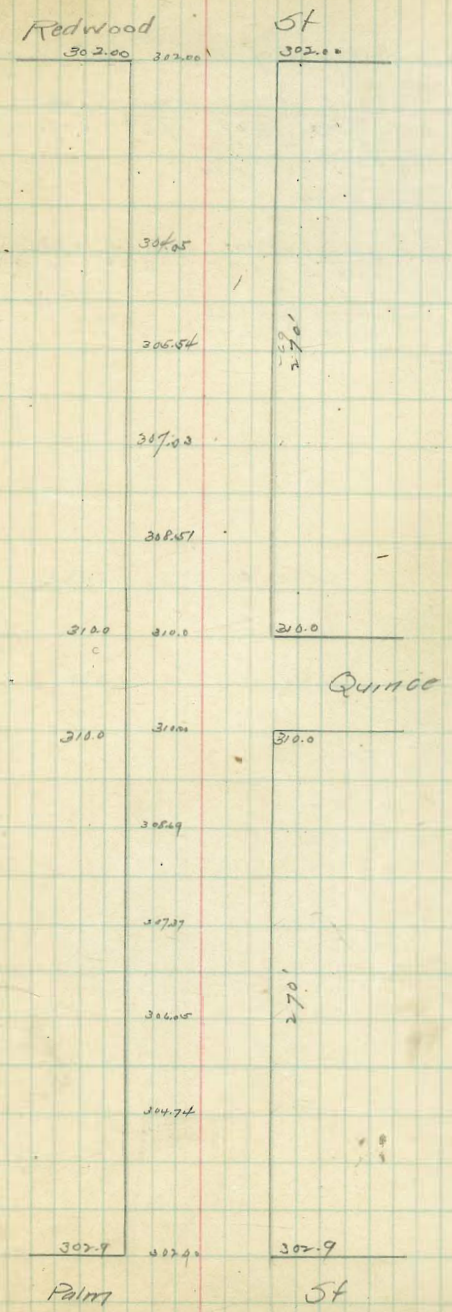

THORN ST.
320.0
320.0
320.0
316.99
315.49
313.99
312.48
310.98
309.48
307.97
306.47
304.97
303.46
302.0
302.0
30TH ST.
REDWOOD ST.
302.0
302.0

304.62 - Top 4x4 at water plug nail - NE Palm
7.24
311.86 HI
2.91
Spk N.W.Q 308.95 TP
5.43
314.38 HI
6.84
307.54 TP
12.73
320.27 HI
0.06
Spk S.E. Thorn 320.21 T.P.
7.34
327.55 HI
6.31
327.24

302.90	304.74	306.05	307.37	308.69	310.00
8.96	7.12	5.81	4.49	3.17	1.86

10.61
303.77 Spk N.W. Rwd.

308.95 BM	310.00	308.51	307.03	305.54	304.05	302.00
2.56	1.51	3.00	4.48	5.97	7.46	9.51
311.51 HI						



280.75 BM. Mon in Swk. N. end bridge

304.62
.11
304.73 HI.
12.93
291.80 TP
.006
291.86 HI
11.13
280.73
10

304.62
0.07
304.69 HI.
10.79
293.90 TP
2.05
295.95 HI

300.90
8.79
290.47
5.48

97.40
7.29

93.90
10.79

280.73 BM
9.79
290.52 HI.

280.72
4.37
285.10 HI

280.00
10.52

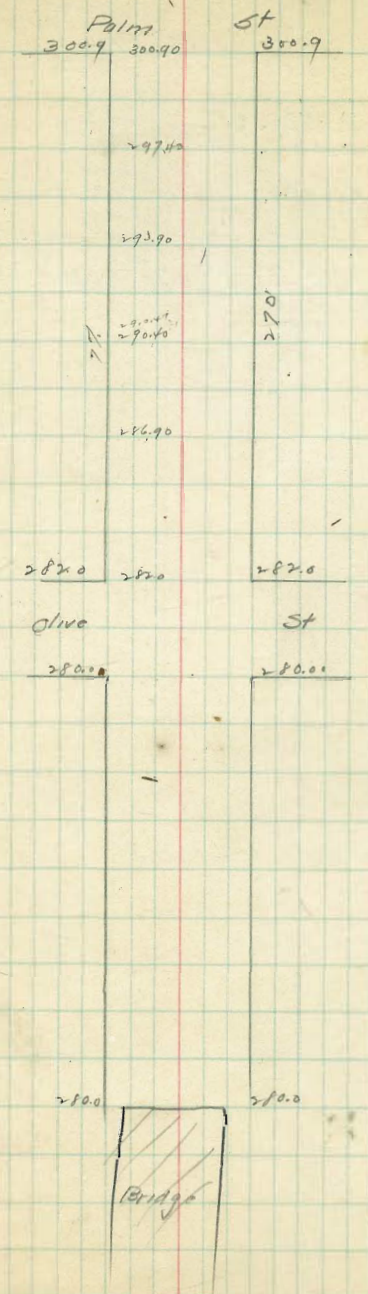
282.00
8.52

286.90
3.62

290.40
0.12

~~280.00~~
5.10

282.00
3.10



285.73 BM
7.23
292.96 HI
2.96
290.00 TP
4.26
294.26 HI
6.34
287.92 BM spk in pile S.W Laurel
1.40
289.32 HI

289.37 / 2.59 — 289.55 / 3.41 — 289.74 / 3.22 — 290.00 / 2.96

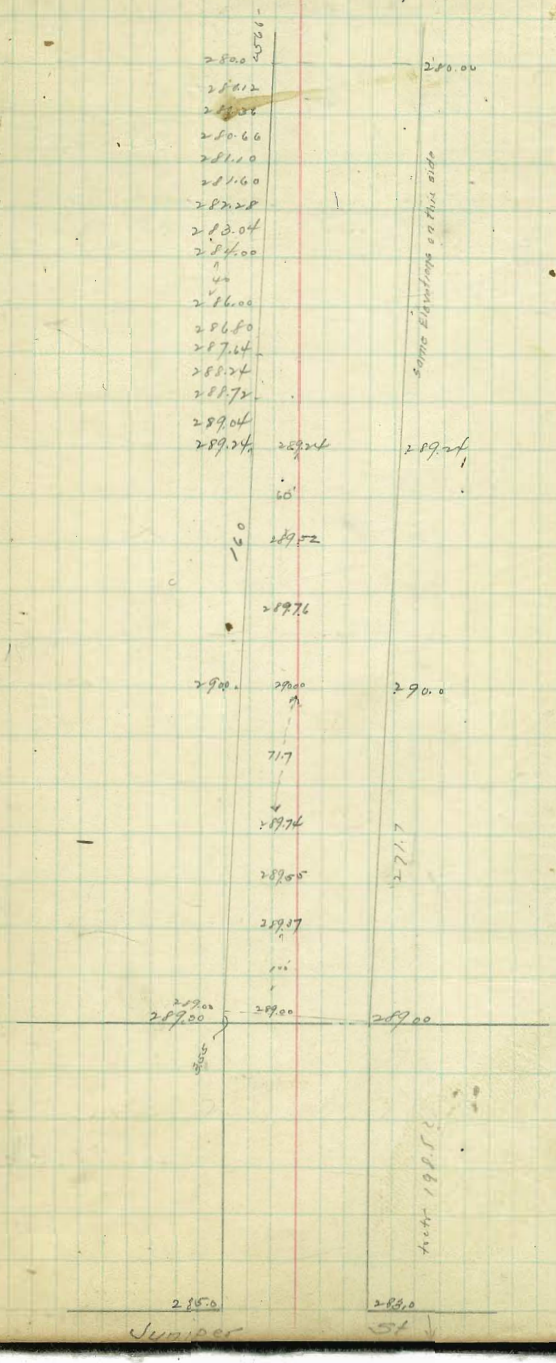
289.76 / 4.50 — 289.52 / 4.74 — 289.24 / 5.02

289.24 / 0.18 — 289.04 / 0.60 — 288.72 — 288.24 / 1.08 — 87.64 / 1.68 — 86.80 / 2.52 — 86.00 / 3.32

84.00 / 5.32 — 83.04 / 6.28 — 82.28 / 7.04 — 81.60 / 7.72 — 81.10 / 8.22 — 80.66 / 8.66 — 80.36 / 8.96

80.12 / 9.20 — 80.00 / 9.32

289.955 S.E Kalmia
280.75 stop in SWK. No end bridge



NE Ivy 286.24 RR.SPK
S.W. Jpr 285.73 Con. Mon

280.10
6.41
286.51 HT

2.17
284.04

151
85.00

283.27
3.24

82.70
3.81

82.13
4.38

81.57
4.94

81.00
5.57

286.24
2.11
288.35 HT

283.27
5.08

283.88
4.47

284.50
3.85

4.15
2.52
1.63

284.92
3.43

285.33
3.02

285.83
2.52

285.33
3.02

284.83
3.52

3.92
5.3
4.45
285.73
1.82
287.55 HT

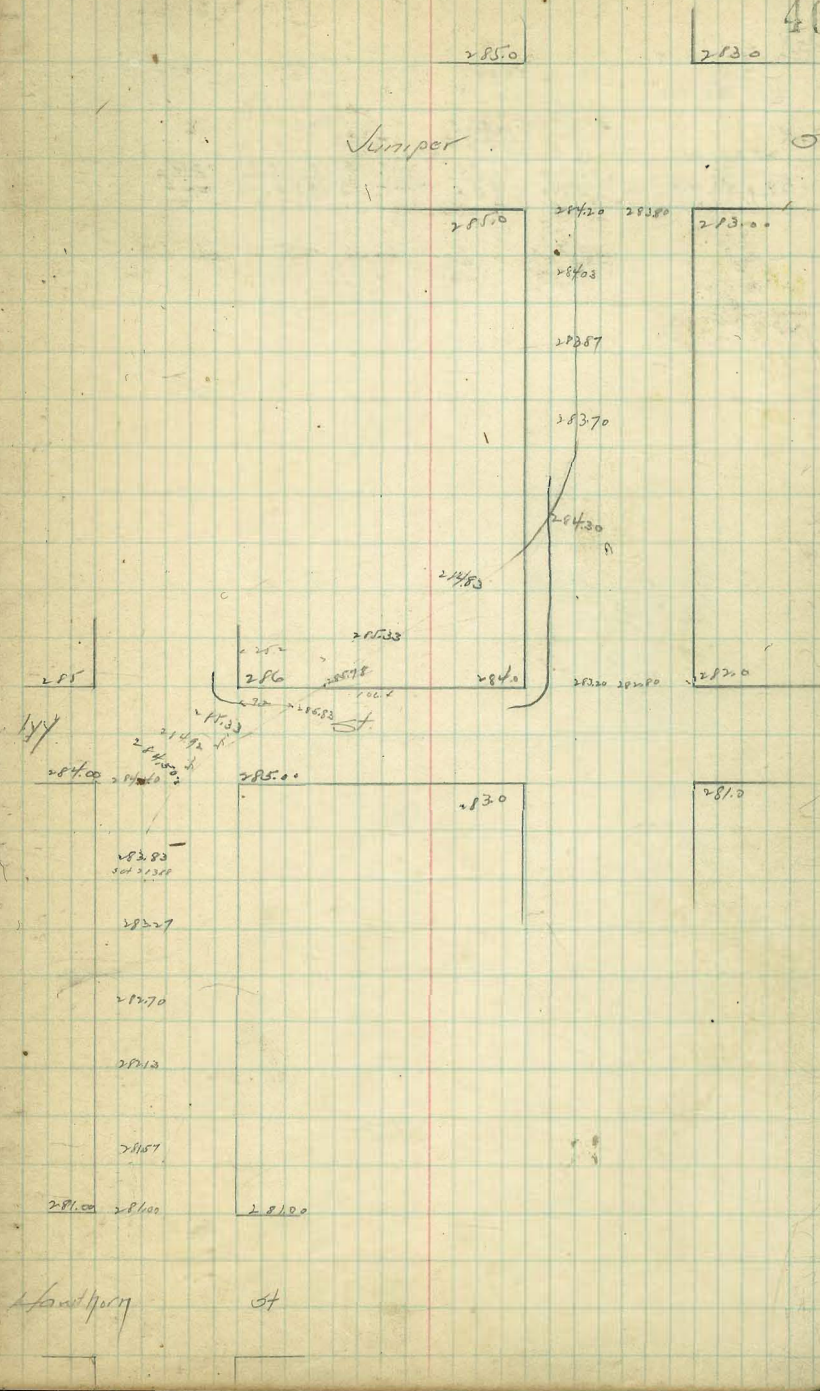
284.20
3.35

284.03
3.52

283.87
3.68

283.70
3.85

284.30
3.25



Hawthorn S.E R.R. Spk 280.10

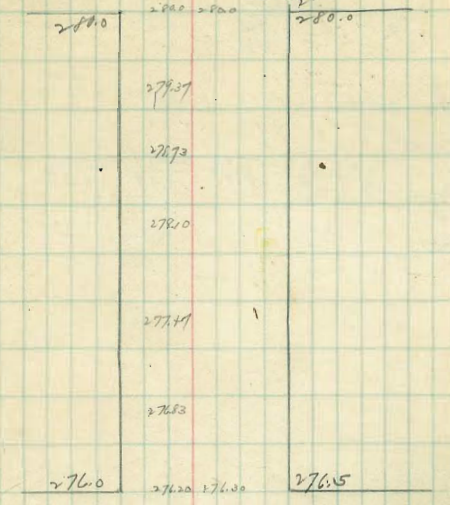
268.08 BM
7.96
276.04 HI

268.40	269.57	270.73	271.90	273.06	274.23	275.40
7.64	6.47	5.31	4.14	2.98	1.81	0.64
276.63	276.04					

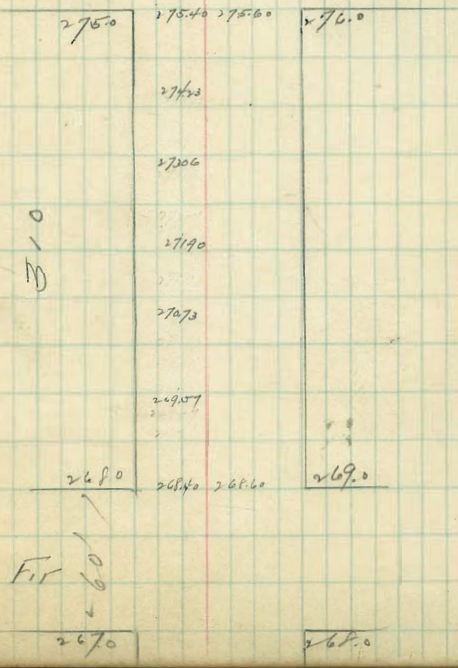
280.10 BM
1.71
278.81 HI
281.79 HI

276.20	276.83	277.47	278.10	278.73	279.37	280.00
5.59	4.96	4.32	3.69	3.06	2.42	1.79
281.79						

Hawthorn



Grape



Elm S.E Mon. 257.23
Fir S.E R.R Spk 268.08
Grape N.E R.R 276.61

236.86
11.21
248.07 HI
1.51
246.56 T.P.
10.81
257.37 HI

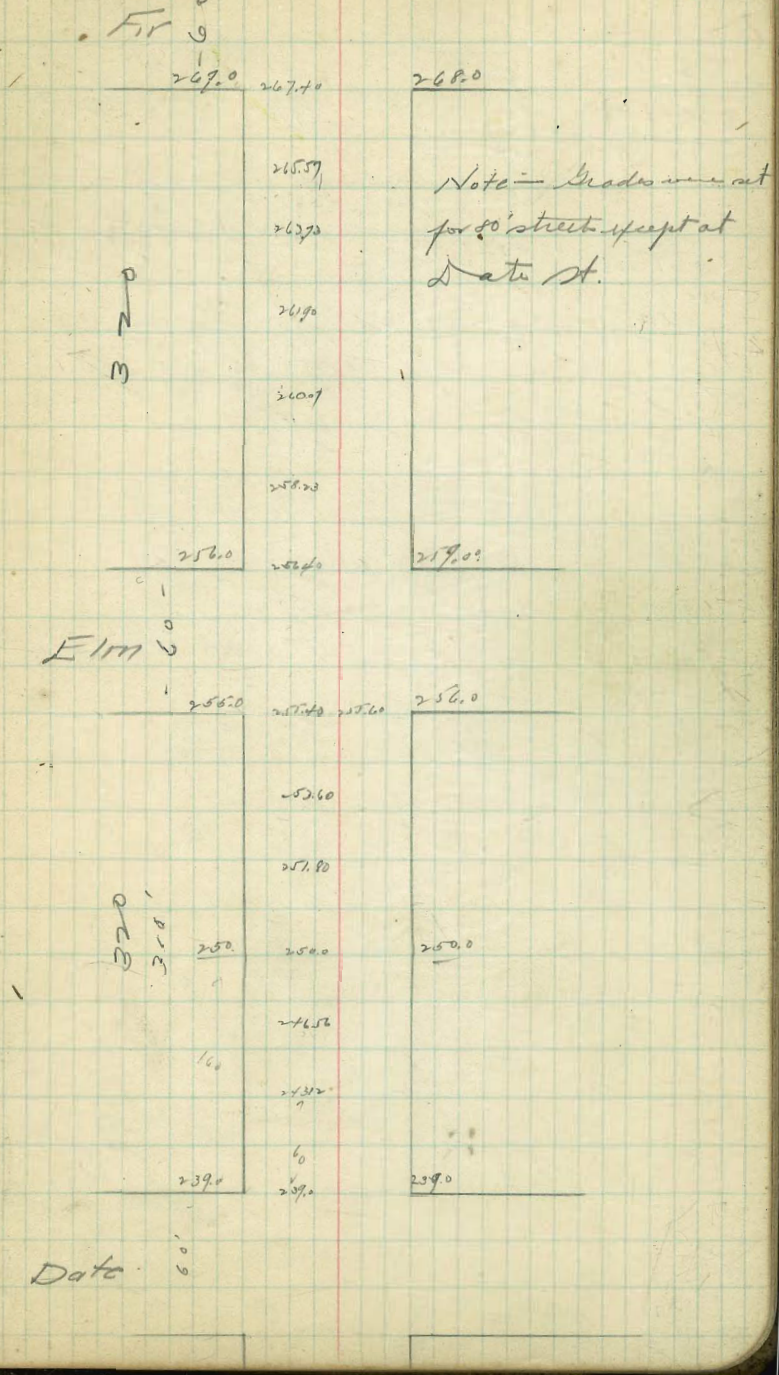
246.56
10.14
256.70 HI

257.23 BM
10.81
268.04 HI

239.00 / 9.07 — 243.12 / 4.95 / 0.40 — 246.56 / 1.51 — 250.00 / 7.37

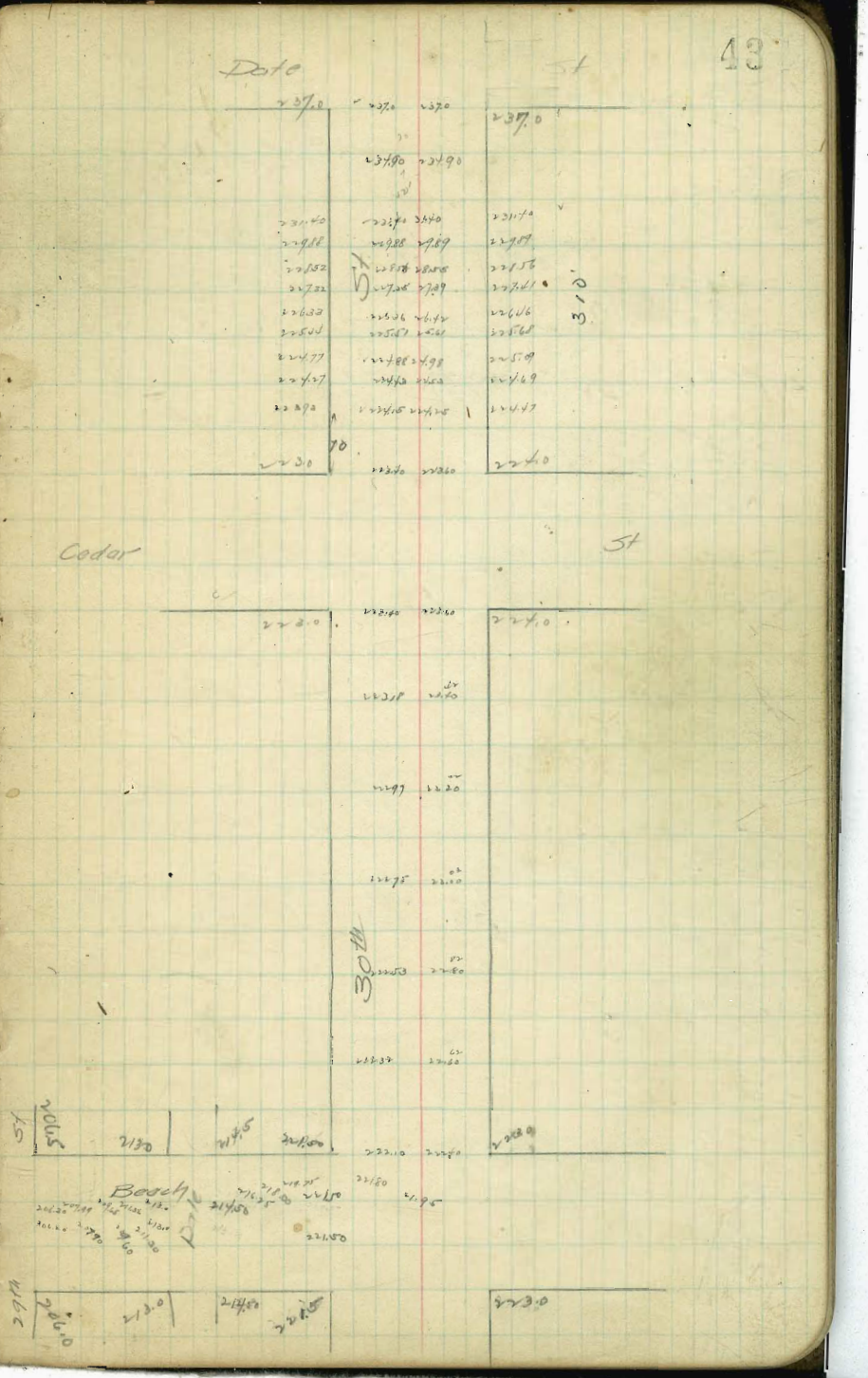
251.80 / 4.90 — 253.60 / 3.16 — 255.40 / 1.30

256.40 / 11.64 — 258.23 / 9.81 — 260.07 / 7.97 — 261.90 / 6.14 — 263.73 / 4.31 — 265.57 / 2.47 — 267.40 / 0.64



Note — Grades were set for 80' streets except at Date St.

Beech & 30th St SE Spk 223.29
Cedar " N° " 224.07
Date 236.86



208.50 N.W. Granada plg
207.21 – SE 29th – Spk pole 1st pl
216.63 NE 28th & Beech.

2.69
219.32 HI

215.58 / 3.74 | 3.59 / 215.73 | 215.17 / 3.21 | 3.63 / 15.75 | 4.05 / 215.33

216.63
2.75
219.38 HI

213.50 / 5.78 | 212.50 / 6.78

219.31 —

213.50
5.73
219.28

216.47
1.28
218.75
210.45
8.30

216.00 / 3.31 | 216.15 / 3.16 | 216.30 / 3.01

219.31 HI

10.17
208.44

212.40 / 6.91 | 214.35 / 4.96

207.21
7.22
214.43 HI

211.29
2.67

208.50
5.46
213.96 HI

3.80
207.21
211.09 HI
.64
210.45 TP
7.38
217.83 HI
16.47
1.36

206.30 / 4.79 | 206.65 / 4.44 | 207.00 / 4.09 | 208.50 / 2.59 | 210.45 / 0.64 | 1.28 / 16.55

208.50 / 3.46 | 210.45 / 1.61

208.50
3.56
212.06 HI

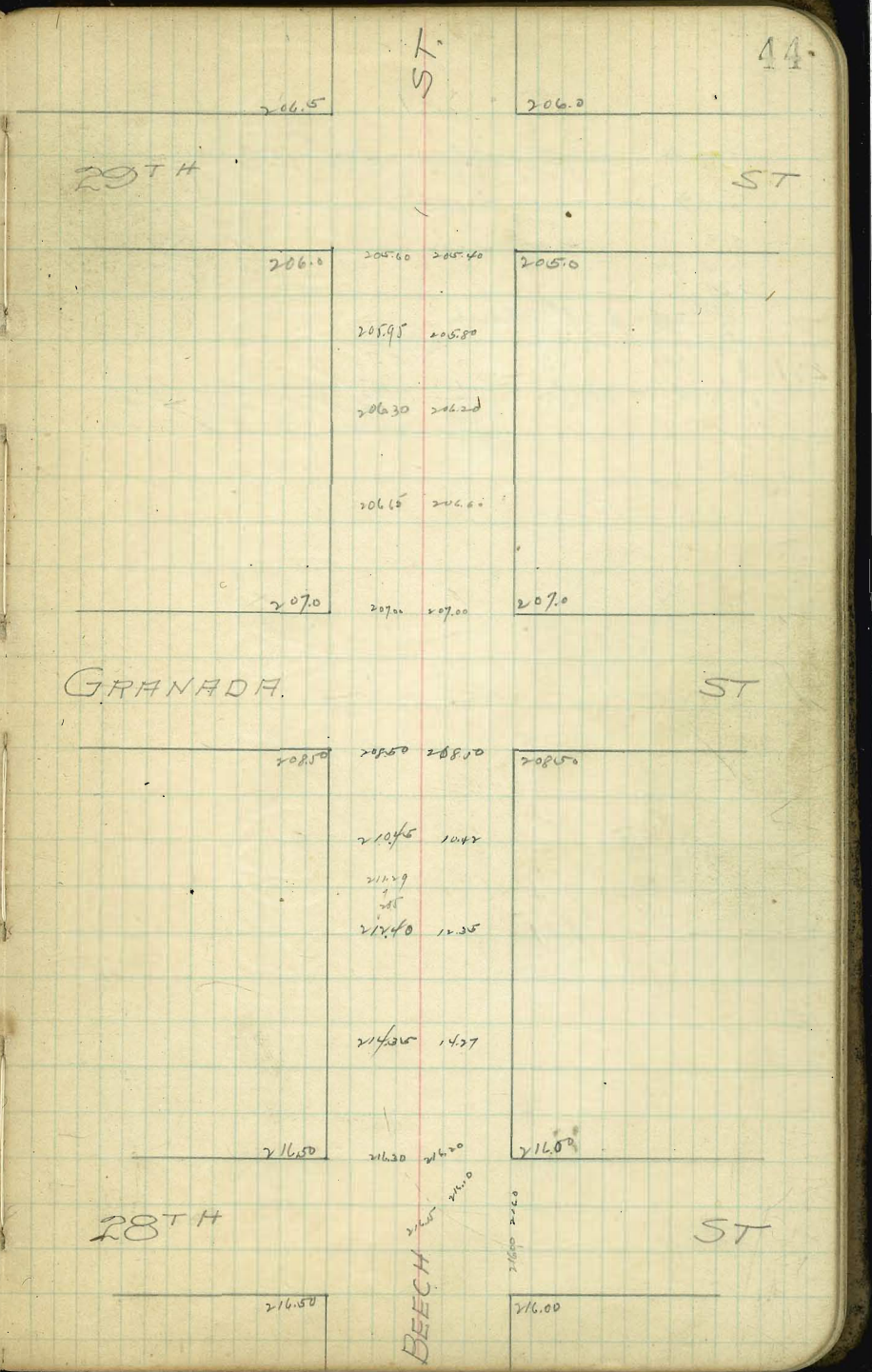
206.20 / 4.12 | 205.40 / 4.92 | 5.80 / 4.52 | 6.20 / 4.12 / .25 / 4.37 | 6.60 / 3.72 / .25 / 3.97 | 7.00 / 3.32 / .25 / 3.57

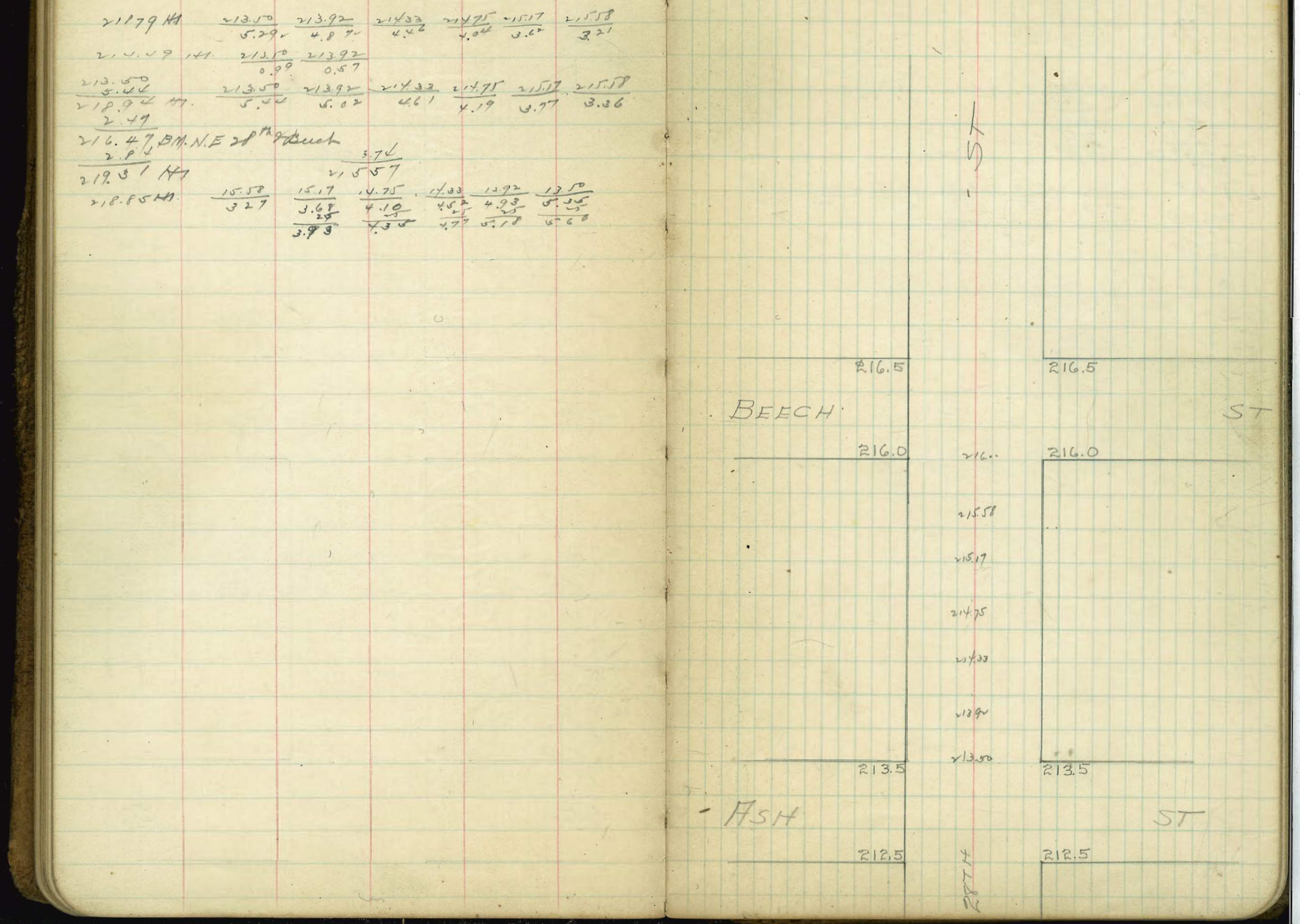
207.21 SE 29th
3.11
210.32 HI

216.00 / 2.44 / .25 / 2.69 | 216.10 / 2.34 / .25 / 2.59 | 16.20 / 2.24 / .33 / 2.57 | 14.27 / 4.17 | 12.35 / 6.09 / .25 / 6.34 | 10.42 / 8.02 / .25 / 8.27 | 8.50 / 9.94 / .25 / 10.19

216.47
1.97
218.44 HI

215.75
3.10
218.85 HI




216.5
216.5
BEECH ST
216.0
216.0
213.5
213.5
ASH ST
212.5
212.5

A & 28th NW Pig 206.98
Ash " NE " 213.50
Beech " " " 216.49

206.98
6.53
213.51 Hi

207.00 / 6.57 — 212.50 / 1.01 — 211.81 / 1.70 — 211.12 / 2.39 — 210.44 / 3.07 — 209.75 / 3.76

209.06 / 4.45 — 208.38 / 5.13 — 207.69 / 5.82

208.50
9.43
217.93 Hi
1.44
216.49

213.50
5.29
218.79 Hi.

213.50
1.01
214.51
7.51
207.00

206.98
1.01
207.99 Hi.
7.51
200.48

207.00 / 7.49 — 207.69 / 6.80 — 208.38 / 6.11 — 209.06 / 5.43 — 209.75 / 4.74 — 210.44 / 4.05

206.98
7.51
214.49

211.12 / 3.37 — 211.81 / 2.68 — 212.50 / 1.99

206.98
2.68
209.66 Hi

205.00
4.66

206.98
2.09
209.07 Hi

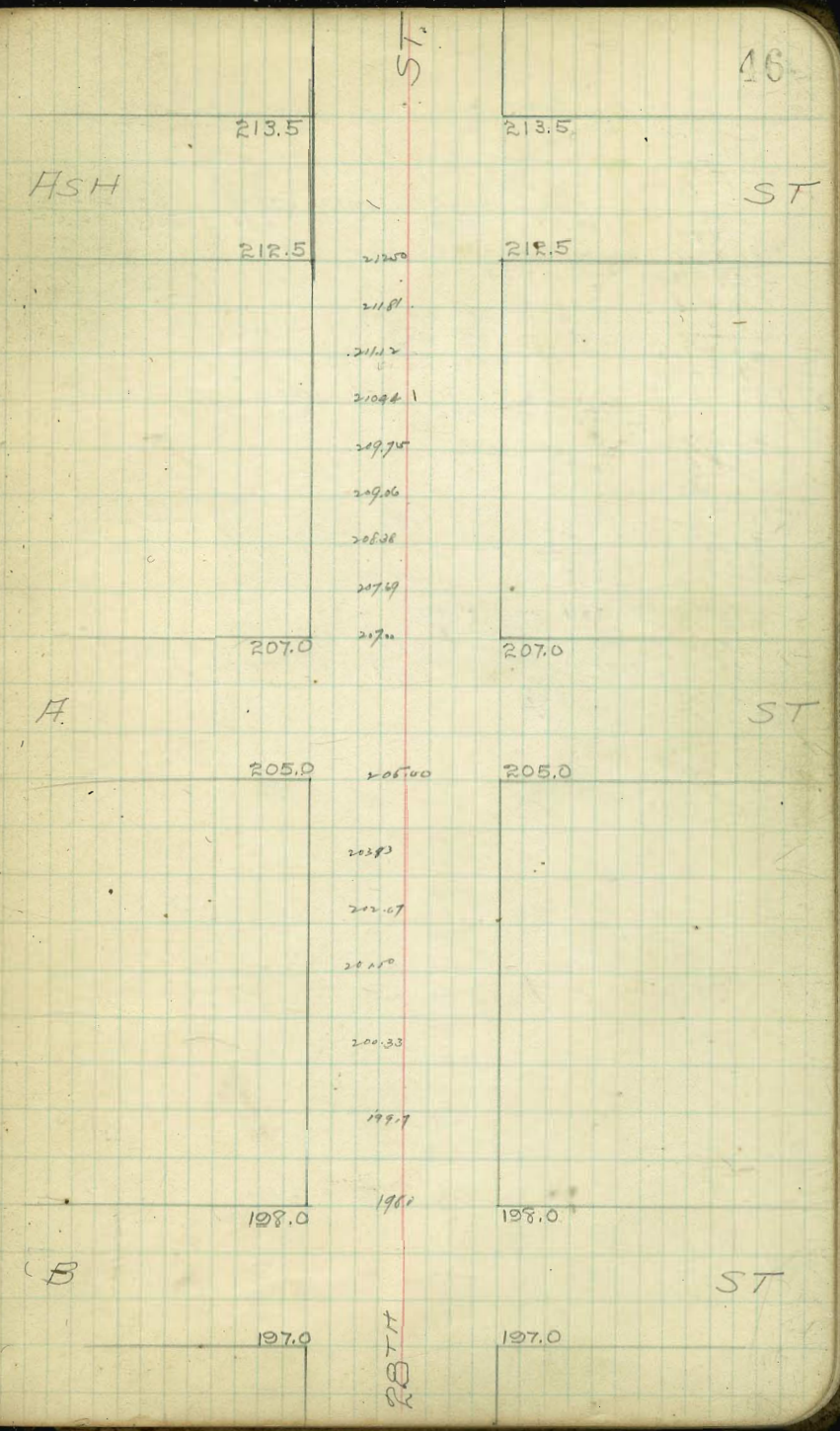
203.83 / 5.24 — 202.67 / 6.40 — 13.25 / 2.62

213.50
2.37
215.87 Hi

12.50 / 3.37 / 25 / 3.62 — 11.81 / 4.06 / 25 / 4.31 — 11.12 / 4.75 / 25 / 5.00 — 10.44 / 5.43 / 25 / 5.68

206.98
5.69
212.67 Hi

207.00 / 5.67 / 25 / 5.92 — 7.69 / 4.98 / 25 / 5.23 — 8.38 / 4.29 / 25 / 4.54 — 9.06 / 3.61 / 25 / 3.86 — 9.75 / 2.92 / 25 / 3.17 — 10.44 / 2.23 / 25 / 2.48 — 1.12 / 1.55 / 25 / 1.80



196.97 NW 27 TH

196.82
3.97
200.79 HT
3.90
196.89

197.60 197.52 197.43 197.35 197.27 197.18 197.10 197.02 196.93
3.29 3.37 3.46 3.54 3.62 3.7 3.79 3.871 3.96

196.85 196.77 196.68 196.61
4.04 4.12 4.21 4.29

2.76
7.99
196.96
204.95 HT

7.96 197.40 197.70 198.00 199.17 200.33
197.09 7.55 7.25 6.95 5.78 4.62

20[illegible] 20[illegible] 7.88 203.82
3.45 2.28 1.12

96.40 96.48 96.57 96.65 96.73 3.765 3.765
4.53 4.76 4.68 4.60 4.52 5.01 3.99
5.00 4.91 4.83 4.75

196.97 3.765 3.765
4.26 4.09
201.23 HT.

196.97 4.53 96.47 96.54 96.61 3.765
4.26 196.70 4.76 4.69 4.62 4.26

196.97 96.73 96.65
4.26 5.81 5.89
201.23 HT. 6.00 5.92

196.92 SW 27TH.
5.62
202.54 HT.
196.48
6.05
202.53 HT.

96.82 96.90 96.99 97.07 97.15 97.23 97.32 97.40
5.69 5.61 5.53 5.45 5.36 5.28 5.19 5.11
5.76 5.68 5.60 5.52 5.44 5.36 5.27 5.19
5.72 5.64 5.56 5.48 5.40 5.32 5.23 5.15

197.43 Bill. Tack Ch on E Line to E. of Ted Stone bet 27 TH & 28 TH

196.96 Bill NW. 27TH & SE 28TH & C
5.78
202.44 HT
96.96
4.90
201.86 HT

96.48 96.569 96.65 96.73 96.82 6.90 6.98 7.18
5.96 5.87 5.79 5.71 5.62 5.54 5.46 5.26
6.04 5.95 5.87 5.79 5.70 5.62 5.54 5.34
6.00 5.91 5.83 5.75 5.66 5.58 5.50 5.30

7.32 7.43
4.54 4.43
4.93

198

205.0 203.83 201.67 200.33
28 TH 198.0

198.0

197.0

27 TH

197.0

196.0

26 TH

195.0

1970

197.70 ST.

197.60 197.50 1970
197.68 96.48
197.77 96.57
197.85 96.65
197.93 96.73
197.02 96.82
197.10 96.90
197.18 96.98
197.27 97.07
197.35 97.15
197.43 97.23
197.52 97.32
197.60 197.40 1978.0

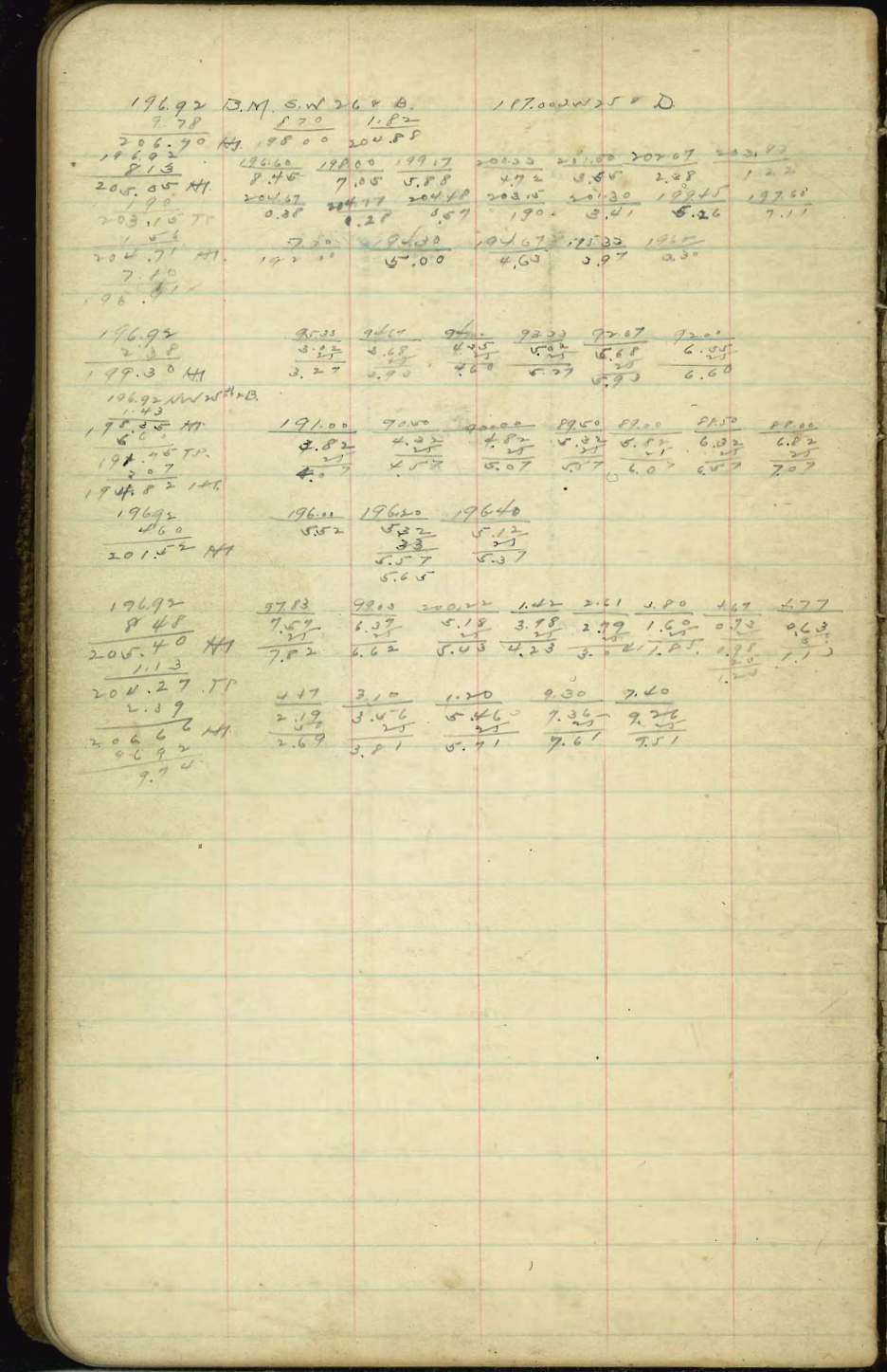
1970

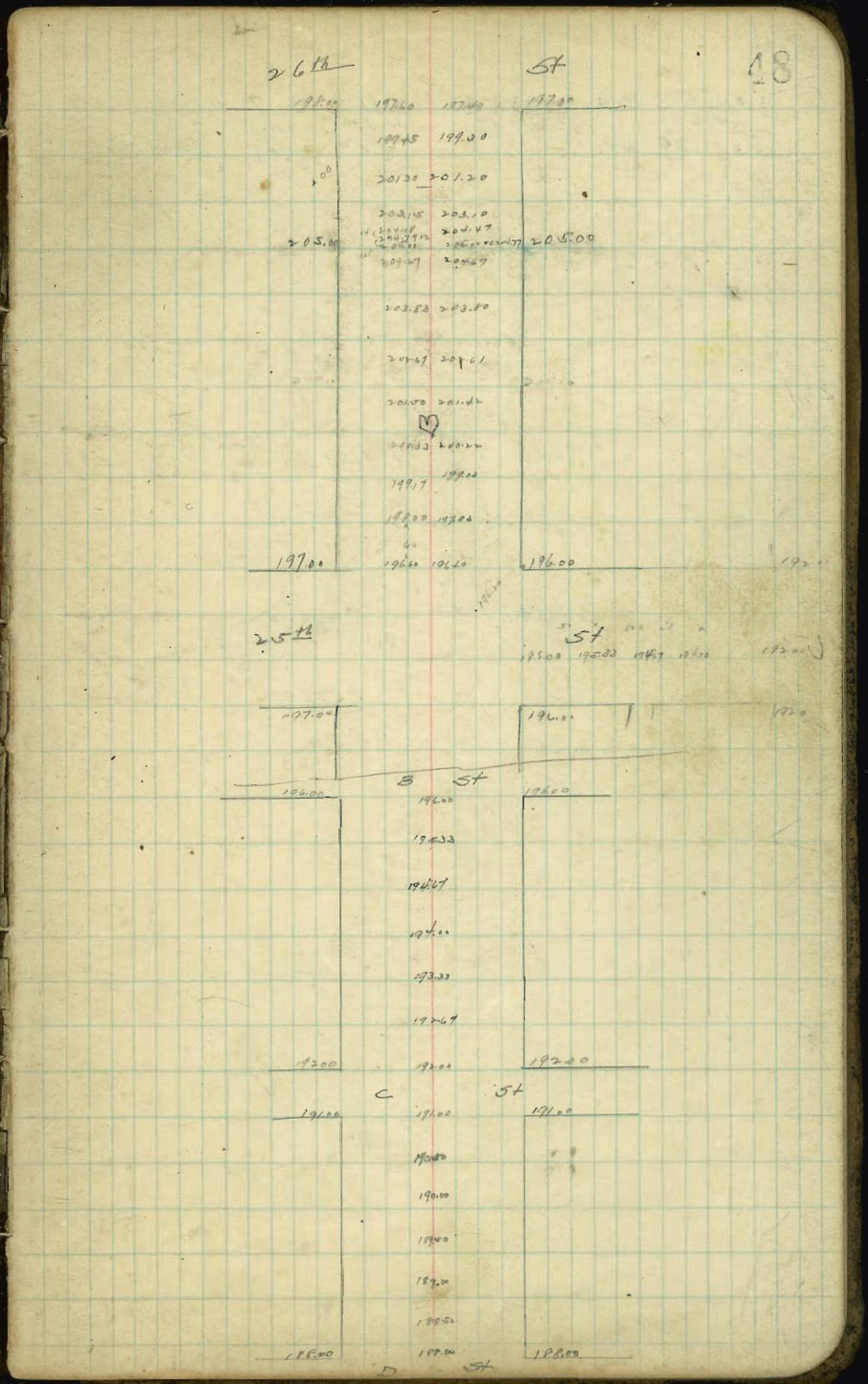
97.60 97.50 1970
7.52 97.32
7.43 97.22
97.15
97.07
97.18 96.98
96.90
96.82
96.73
96.65
96.57
96.48
96.40 96.40 1964.0

ST.

ST.

1970




26th
St
25th
St
B
St
C
St
D
St

355.69 BM-	355.71	355.36	355.17	354.99	354.80
401	4.15	4.34	4.53	4.71	4.90
359.70 HI	4.65	4.94	5.03	5.21	5.40

304 St

Ray St

Grim

8 Ohio

13.94 BM SW G & 2d
8.00
21.94 HI
4.58
17.36 TP
4.65
22.01 HI

5.43 / 16.51 | 4.73 / 17.28 | 16.85 / 5.16 | 17.28 / 16.51 / 77 | 17.24 / 4.77

17.17 / 5.00 | 17.05 / 5.12 | 16.97 / 5.20 | 16.96 / 5.21

17.36
4.81
22.17 HI
5.21
16.96
4.35
21.31 HI

16.85 / 4.46 | 16.74 / 4.57 | 16.62 / 4.69 | 16.51 / 4.80

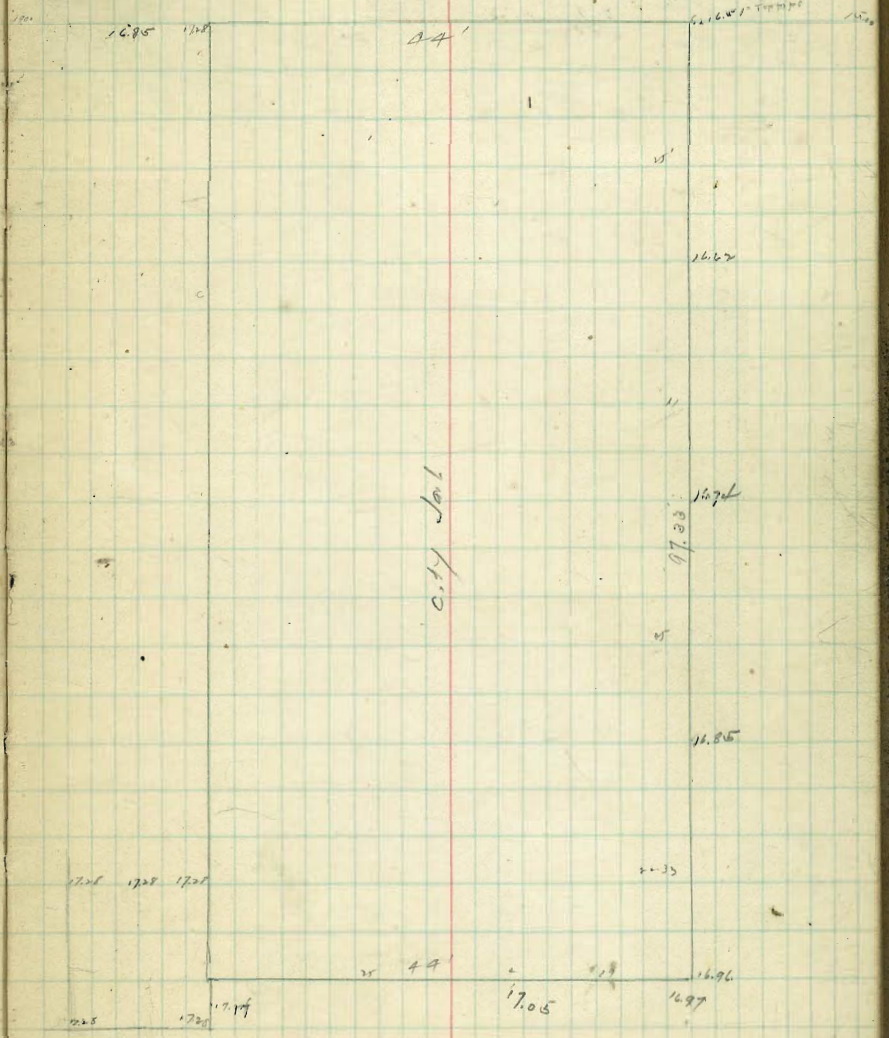
17.36
4.82
22.18 HI

17.17 / 5.01 | 17.05 / 5.13 | 16.97 / 5.21

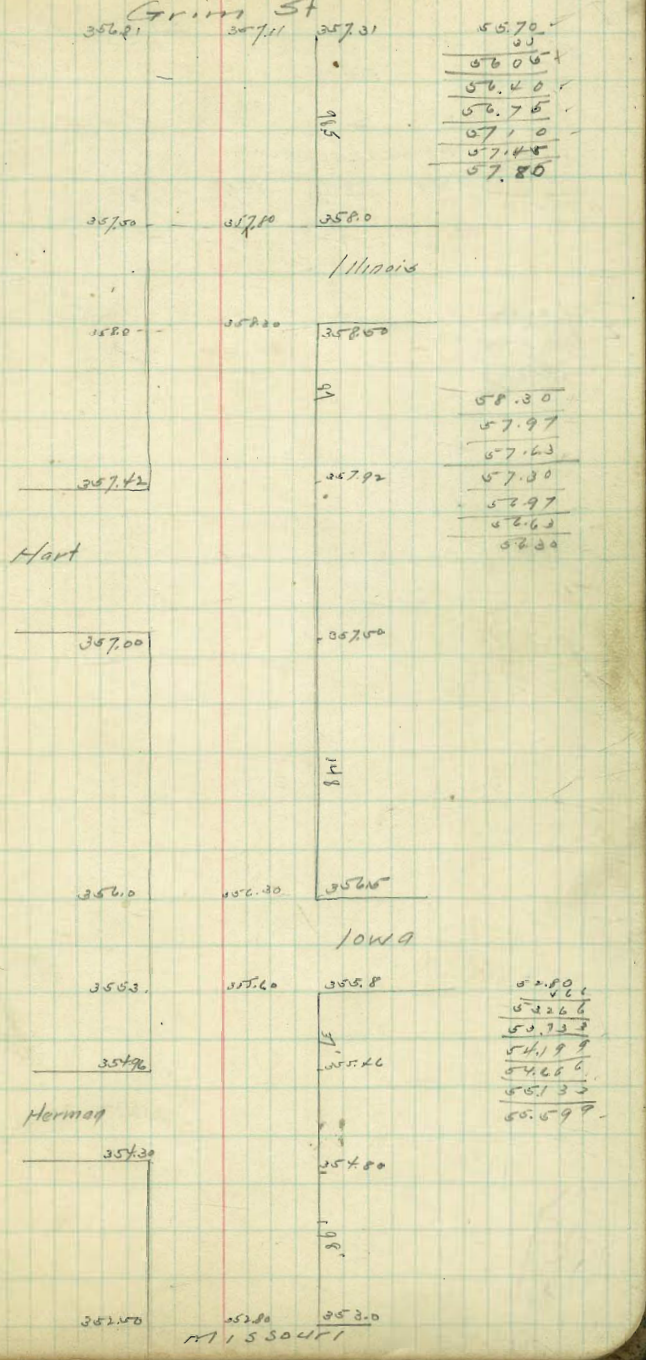
Grades for walks around city Jail

11/29 { Dam
11 { Sha
Hancock

2d St



Note! Union Ave Grades continued on next page

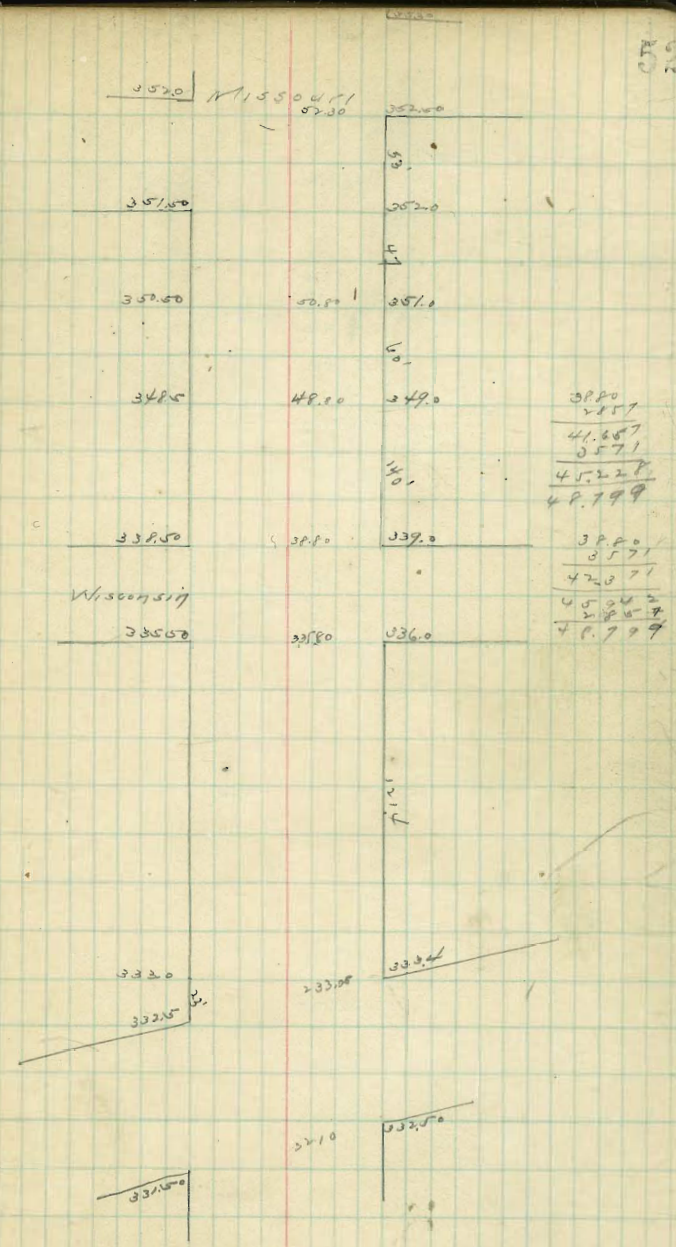

Grimm St
Illinois
Hart
Iowa
Herman
Missouri

352.71
261
355.32 H.
1 2 4 2
342.90 TP
94
343.84 H
8 6 8
335.16 BM Nail post S.E Wn.
4 6 8
339.84 H.

52.30 / 3.02 / 3.52 — 51.55 / 3.77 — 48.80 / 6.52 — 50.80 / 4.52 — 45.94 / 9.38

42.37 / 1.47 — 38.80 / 5.04

33.05 / 6.79 / 7.29 — 35.80 / 4.04 — 38.80 / 1.04



38.80
2857
41.657
3571
45.228
48.799

38.80
3571
42.371
45.942
2857
48.799

3rd - Cedar to Elm

Beech NW 88.01 Pig
Cedar " " 104.09 "
Date " " 109.24 "
Elm " " 139.46 "

Elm

Date

Cedar

118.5 | 118.5

Cedar

116 | 16.00 16.00 | 116.

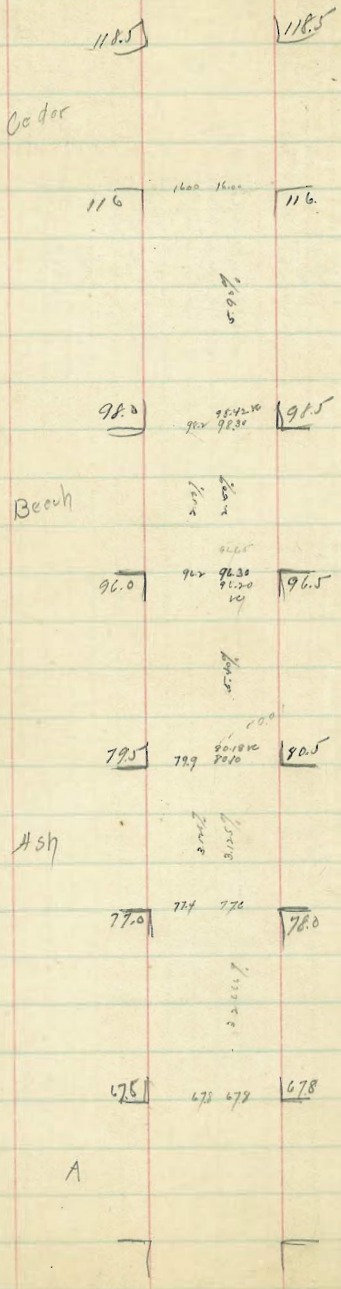
5.90

98.0 | 98.2 98.42 vc 98.30 | 98.5

Beech

96.0 | 96.2 96.30 96.20 vc | 96.5

5.40



79.5 | 79.9 80.18 vc 80.10 | 80.5

Ash

3.125 3.125

77.0 | 77.4 77.6 | 78.0

67.5 | 67.8 67.8 | 67.8

A

A NW 67.82.

Ash " " 79.47

Beech " " 98.02

Cedar " " 118.52

77.60	79.66	80.18
5.79	3.73	3.21
	50	
	4.23	
96.65	96.20	
5.40	5.85	

79.47
3.92
83.39 H.I.
98.02
4.03
102.05 H.I.

BM 98.02 B.P. N.W. Cor 5th & Beech. 102.43 102.43 102.43 102.43 102.43 102.43
4.41 96.65 96.19 96.54 97.95 98.42 99.13
102.43 H.I. 5.78 5.24 6.89 4.48 4.01 3.30

BM 118.52 " " " " " Cedar.
1.62
120.14 H.I. 120.14 120.14 120.14 120.14 120.14
15.17 15.90 16.44 18.06 18.53 19.04
4.97 4.24 3.70 2.08 1.61 1.10

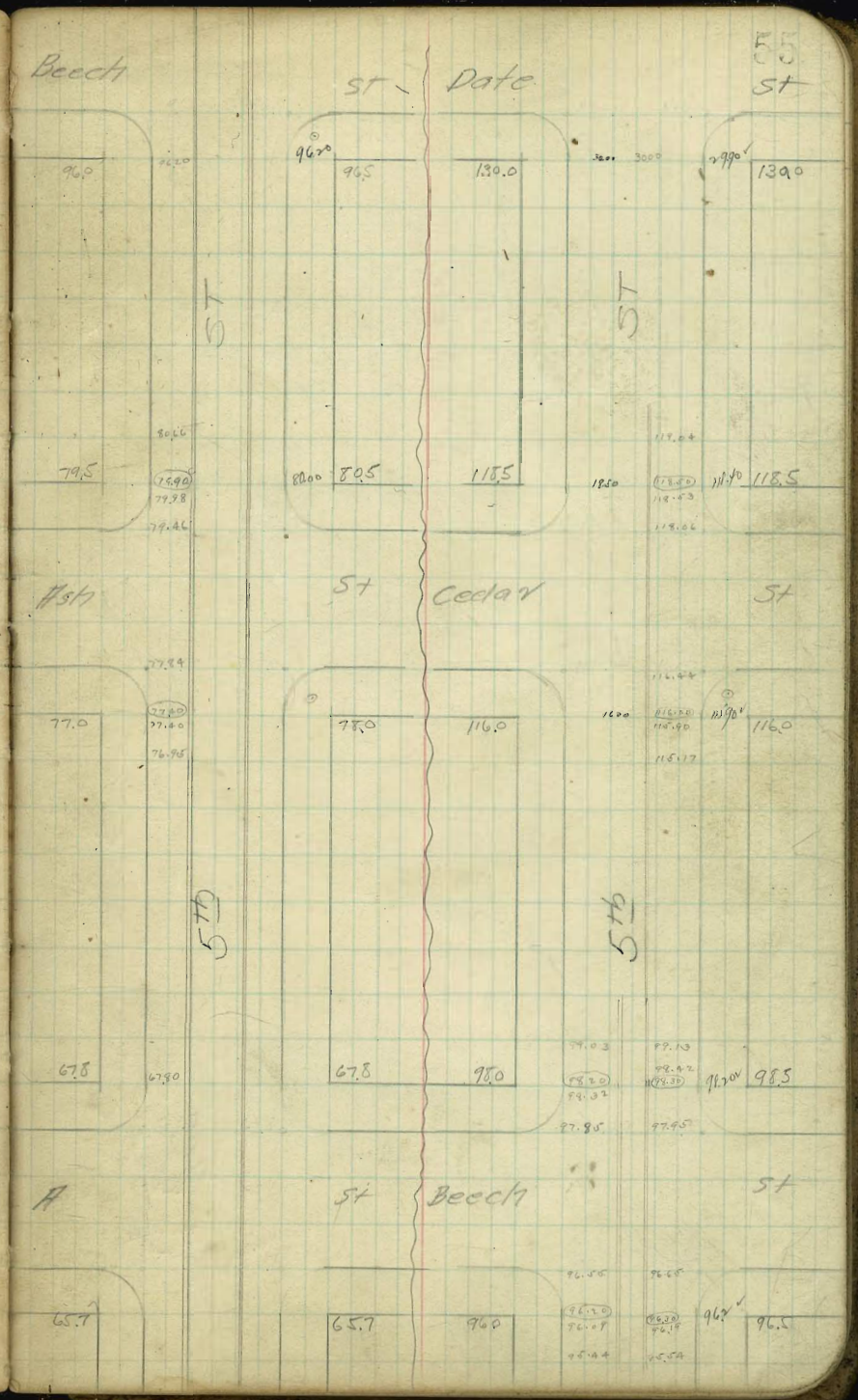
BM 131.00 " " " " " Date.
3.08
134.08 H.I. 134.08 134.08 134.08 134.08 134.08 134.08
129.46 129.91 130.18 130.82 131.06 131.44
4.62 4.17 3.90 3.26 3.02 2.64

" 79.47 " " " " " Ash. 83.50 83.50 83.50 83.50 83.50
14.03 80.66 79.98 79.46 77.84 77.40
83.50 H.I. 2.84 3.52 4.04 5.66 6.10

" 98.02 " " " " " Beech.
13.78
101.80 H.I. 101.80 101.80 101.80 101.80 101.80 101.80
96.44 96.09 96.55 97.85 98.32 99.03
6.36 5.71 5.25 3.95 3.48 2.77

118.52 " " " " " Cedar. 121.62 121.62 121.62 121.62 121.62 121.62
13.10 15.17 15.90 16.44 18.06 18.53 19.04
121.62 H.I. 6.45 5.72 5.18 3.56 3.09 2.58

18.52 18.50 4.27
4.45 4.49
22.97 H.I.



BM 141.89 N.W. Cor 5th & Elm.
2.61
144.30 HI.

144.30	144.30	144.30	144.30	144.30	144.30
142.68	142.10	141.74	140.76	140.45	140.06
1.62	2.20	2.56	3.54	3.85	4.24

" 158.00 " " " " Fir.
+2.91
160.91 HI.

160.91	160.91	160.91	160.91	160.91
56.40	56.76	57.74	58.15	58.86
4.51	4.15	3.17	2.76	2.05

" 178.51 " " " " Grape.
+2.75
181.26 HI.

181.26	181.26	181.26	181.26	181.26	181.26
79.32	78.56	78.15	76.85	76.37	75.64
1.94	2.70	3.11	4.41	4.89	5.62

" 188.47 " " " " H
+1.63
200.10 HI.

200.10	200.10	200.10			
195.18	95.91	96.44			
4.92	4.19	3.66			

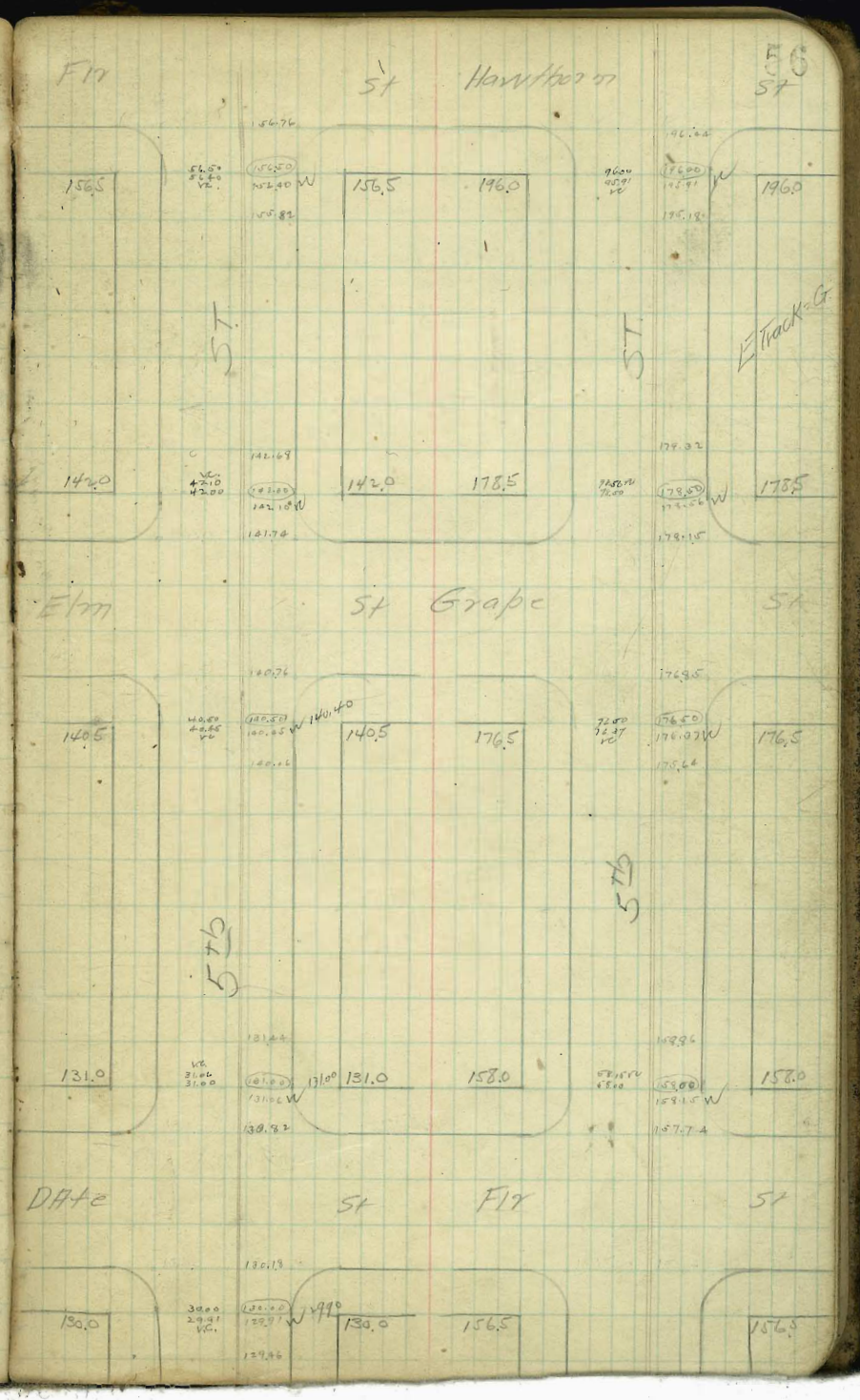
29.41	31.06	41.89	42.10	40.45							
5.36	4.21	4.15	3.93	5.58							
5.43	6.44	5.91	5.18	79.32	78.56	78.15	76.85	76.37	75.64		
56.19	5.56	6.09	6.82	2.98	3.74	4.15	5.45	5.93	6.66		
78.51	158	58.86	58.15	57.74							
3.79	6.08	5.22	5.93	6.3							
82.30 HI.	164.08 HI.										
55.82	6.40	6.76									
5.94	5.36	5.00									

131.00
427
35.27 HI.

58.00
362
61.62 HI.

198.47
353
202.00 HI.

158.00
376
61.76 HI.



BM 215.00 B.P. NW Cor 5th & Ivy Sts.
+2.05
217.05 HI.

217.05	217.05	217.05	217.05	217.05	217.05
15.61	15.06	14.65	13.35	12.92	12.32
1.44	1.99	2.40	3.70	4.13	4.73

" 198.47 " " " " Hawthorne.
1.61
200.08 HI.

200.08	200.08	200.08	200.08	200.08	200.08
99.18	98.56	98.06	96.44	95.91	95.18
.90	1.52	2.02	3.64	4.17	4.90

" 229.98 " " " " Juniper.
+1.93
231.91 HI.

231.91	231.91	231.91	231.91	231.91	231.91
27.39	27.94	28.35	29.65	30.03	30.49
4.52	3.97	3.56	2.26	1.88	1.42

" 239.87 " SW " " " Kalmia

244.73	244.73	244.73	244.73	244.73	244.73
40.11	40.52	40.78	41.42	41.64	41.97
4.62	4.21	3.95	3.31	3.09	2.76

4.86
244.73 HI.

" 249.95 " NW " " Laurel
+4.94
254.89 HI.
202.00 HI.

254.89	254.89	254.89	254.89	254.89	254.89	254.89
49.23	49.55	49.78	50.42	50.64	50.95	54.35
5.66	5.34	5.11	4.47	4.25	3.94	0.54

29.98 Am.
3.19
33.17 HI

99.18	8.56	8.06	8.25	7.94	7.93	7.39
2.82	3.44	3.94	4.82	5.23		5.78

215.03
3.57
18.57 HI.

15.61	15.06	14.65	13.35	12.92	12.32	
2.96	3.51	3.92	5.22	5.65	6.25	
50.75	50.44	50.22	9.58	9.35	9.03	
3.19	3.42	3.64	4.28	4.51	4.83	

49.95
3.91
53.86 HI

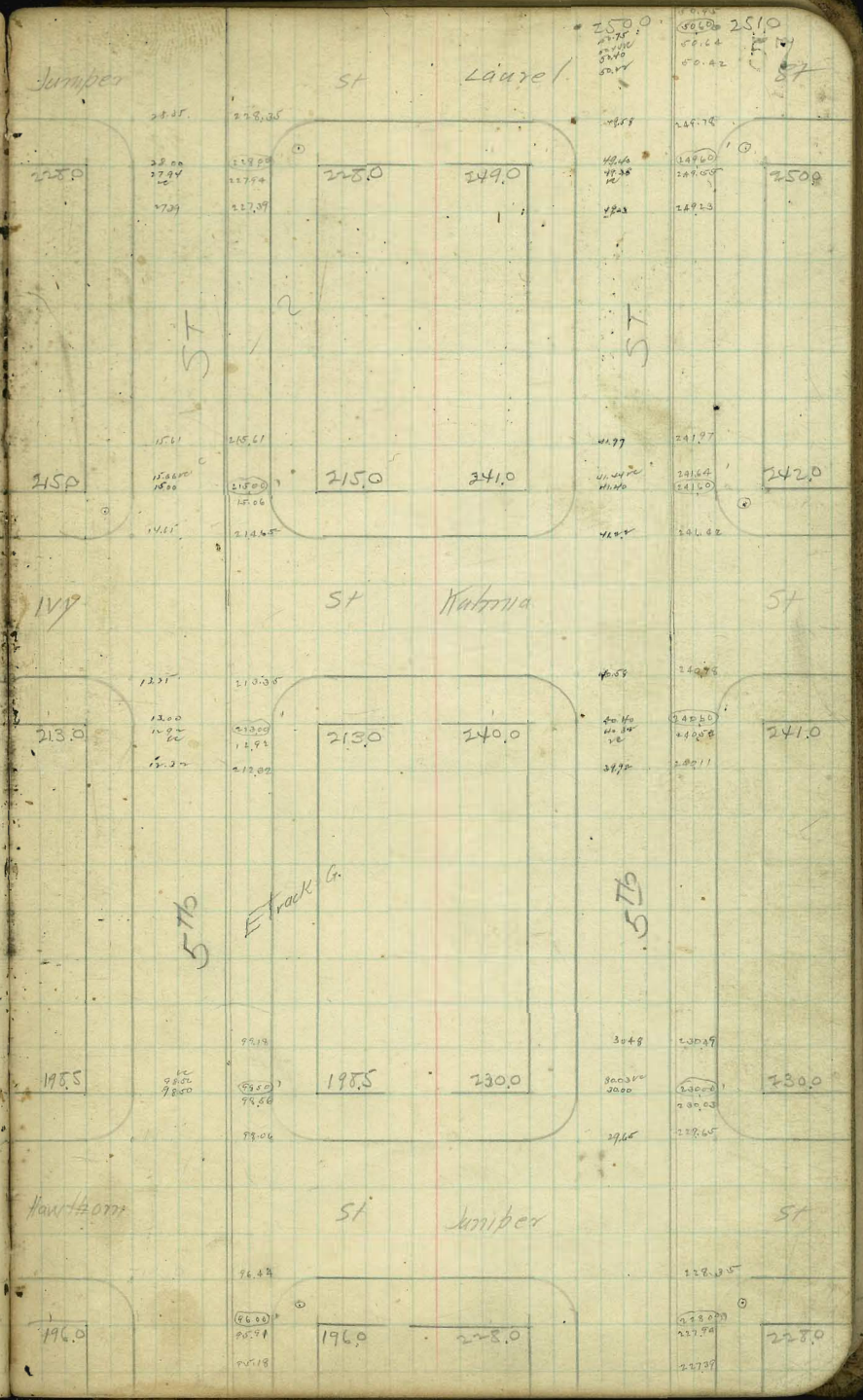
39.89	41.77	41.44	41.22	40.58	40.32	39.92
5.87	3.97	4.30	4.52	5.16	5.42	5.82
45.74 HI						

29.98
4.05
34.03 HI.

30.48	30.03	29.65
3.55	4.00	4.38

BM 249.95
+4.18
254.13 HI.

254.13	254.13
50.75	50.44
3.38	3.69



B.M. Maple SW 257.41
" Nutmeg NW 264.95
" Olive NW 271.01

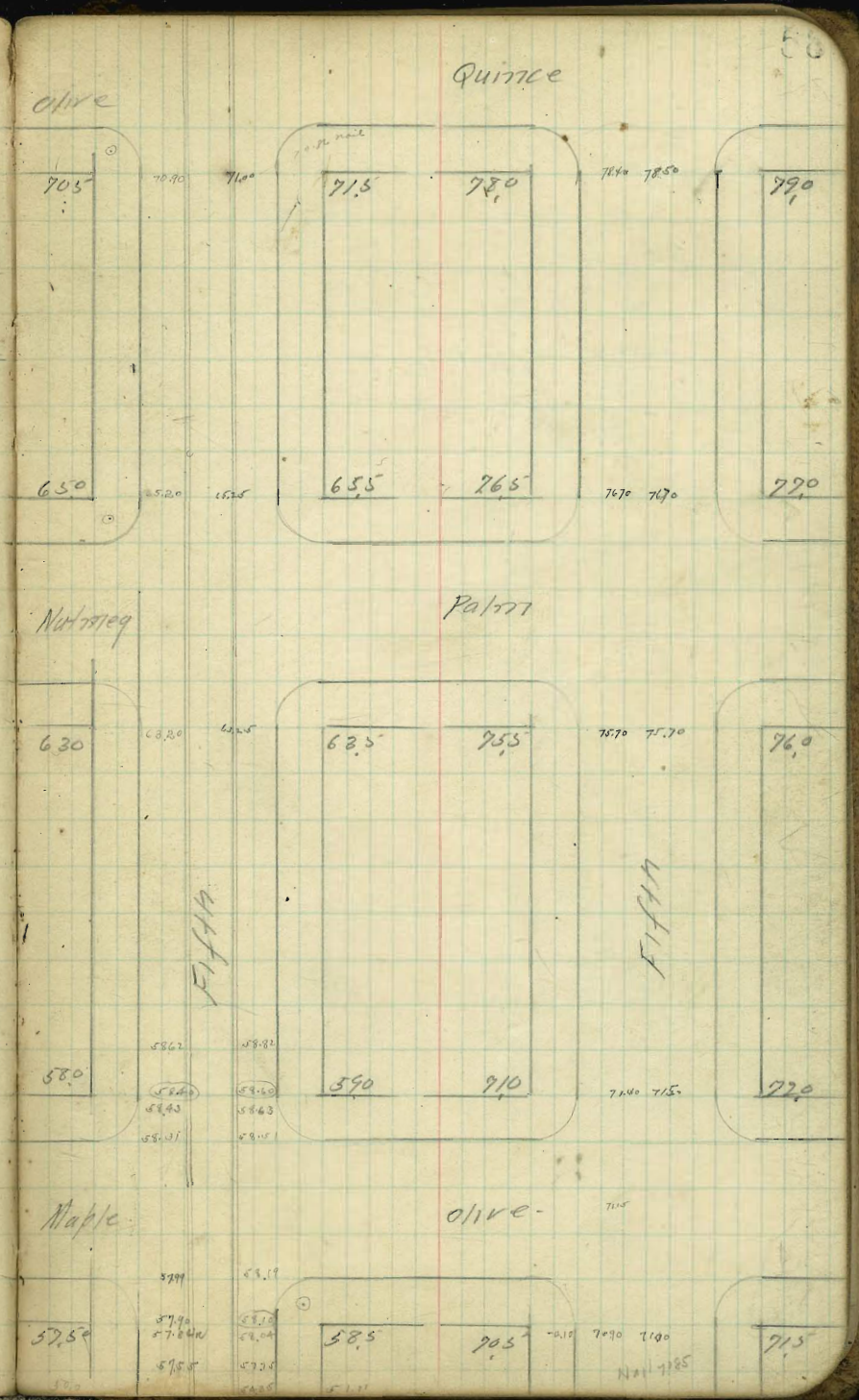
B.M. 257.41 B.P. S.W. Cor Maple & 5th,

B.M. 264.95 B.P. N.W. Cor Nutmeg & 5th,

" 271.01 " " " Olive " "

B.M. 276.49 B.P. N.W. Cor 5th & Palm

" 278.01 " " " " " Quince

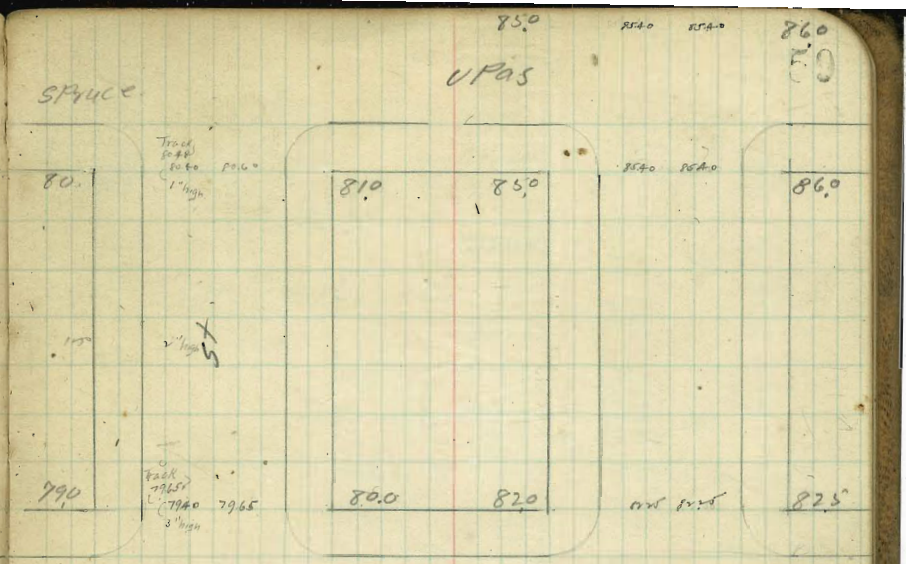


BM 279.01 B.P. NW Cor 6th & Redwood

" 279.98 " " " " " Spruce.

" 281.89 " " " " " Thorn.

" 284.91 " " " " " Upas.



Walnut 83.98 Robnsn 87.89
Brookes 79.91 Univ 89.94
Penna 82.41

84.91 Bell 4.33 4.38 85.40 4.42
4.78 85.36 85.31 4.29 5.27
89.69 HT 84.91
81.89 4.77 4.90 83.98 5.41 83.90 4.25 4.32
4.34 89.68 HT 4.78 5.73 84.30 5.87 3.90 3.90
86.23 HT 89.71 HT 5.46 5.39 .35 .04
84.25 84.32

83.89 4.98 83.25
4.725 83.63 5.365
88.615 HT
79.91 5.52 5.65 5.47 78.90 5.52 5.37 5.56 79.00
5.02 79.41 79.28 79.46 6.03 79.41 79.56 79.27 EP 5.93
84.93 HT WP 72 Wh
5.31 5.29 6.57 81.50 4.10 86.90
82.41 82.03 2.05 80.77 80.77 4.73 3
4.93 0.73 4.83
87.34 HT 81.50 4.29 4.33 82.00
82.41 5.25 82.46 82.42 4.75
4.34 87.89 4.86 4.15 4.98
86.75 HT 4.33 87.36 87.27 87.24
92.22 HT 83.98
79.91 4.86 83.25 83.90
3.73 79.50 88.84 HT 5.59 4.94
83.64 HT 4.14
82.41 82.00
79.91 79.00 4.68 5.09
4.19 5.10 87.09 HT 82.41
84.10 HT 81.50 82.00 4.69
82.41 5.81 5.31 87.10 HT
4.90
87.31 HT
83.90 83.25
5.95 6.60
83.98
5.87
89.85 HT

2800	79.50	79.40	2790				
Brookes			Ave				
	79.50	79.50		282.5	82.50	82.50	282.5
2800			2790				
				Penn			Ave
				282.0	82.00	82.00	282.0
			282.2				
			Wy. lane				
			282.6				
2840	83.75	83.75	2840				280.6
Walnut			St				Anderson Place
2845	84.40	84.40	2845				280.4
	Fifth St				Fifth		
2850	85.40	85.40	2860	2800	79.50	79.40	2790
Upas			St	Brookes			Ave
2850	85.40	85.40	2860	2800	79.50	79.50	2790

Penna 82.41 NW
Robnsn 87.89 " "
Univ 89.94 " "

82.41
6.15
88.56 H1

3.93
84.63
SW

4.09
84.47
S.E

3.64 3.51
84.92 85.05
N.E N.W

84.50
4.06

84.05
4.51

87.89
4.39
92.28 H1

86.90
5.38

4.27
88.01

4.38
87.90

88.00
4.28

84.15
4.88
89.03 H1

84.60
4.43

84.15
2.95

84.60
2.58

87.89
4.285
92.17 H1

5.44
86.73

7.40
6.73
67

86.90
86.73
.17

~~3.73~~
~~87.10~~ H1
87.89
4.79
92.68 H1

87.50
5.18

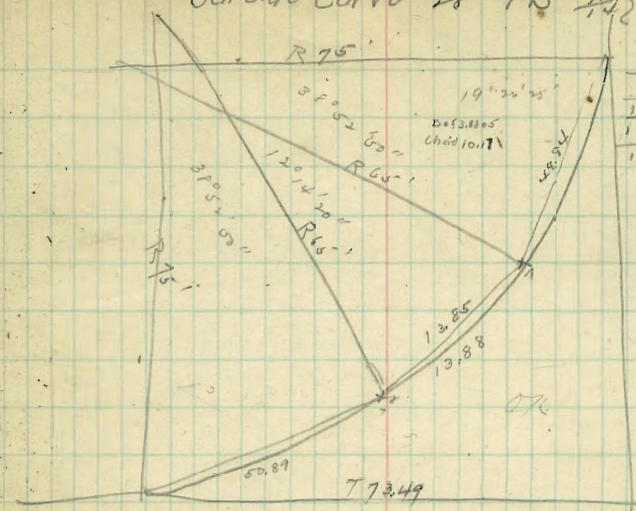
86.90
5.78

2900			2900
Univ			Ave
2900			2900
2880	88.00	88.00	2880
Robinson			Ave
2875	87.40	87.40	2875
15.20	85.10	85.00	2850
			Evans Place
84.79	84.65	84.55	2845
2825	82.50	82.50	2825
Penn			Ave

15 4/14/51

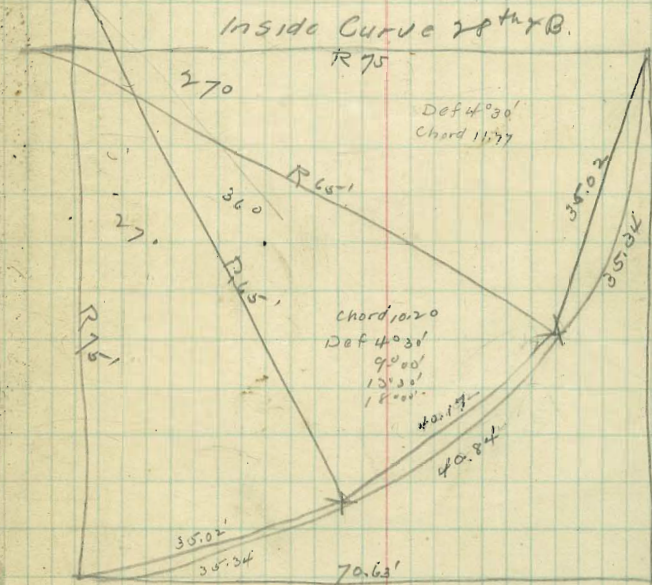
Fifth

Outside Curve 28th & B $\frac{2}{11}$ / 14 { Davis Hancock Bumbly



3.88805	3°53'	20"
7.77610	7°46'	30"
11.66415	11°39'	50"
15.55220	15°	33'
19.44025	19°21'	25"

Inside Curve 28th & B.



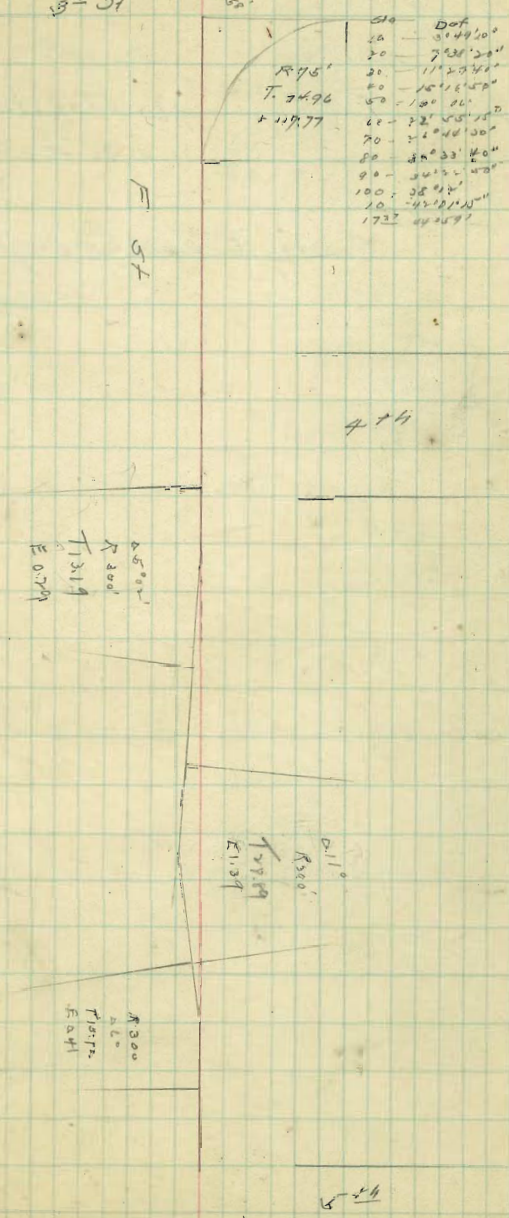
Curve 28th a. △ 6°26'

63.06

63.20

62.98

"F" St. 3d to 5th



35.58
7.22
963
52.43

Standard T.O.

4.53

.09629
75
48445 Δ 11°
67403
7.22475 = S.T. R75

Δ 11°
9.63 = S.T. R100'

1°42'

.00463
75
2315
3241
.34725 E

0.46 E

Curve E. Track at Angle No of Jumper

Δ 3°24'

R 1000'

T 29.68

E 0.44

44) .47 (107
44
300
308

Δ 90°06'

Curve E Track So of bridge

R = 1146

Δ 1°08½'

S.T. = 11.42

E 0.06

1146
996
6876
10324
10324
11.42516

1146
.00005
.05730

Curve E Track No of Bridge

R 1146

Δ 2°42½'

S.T. 27.09

E 0.32

.02364
1146
14184
9456
2364
2364
27.09144

1146
.00028
9168
2292
.32088

Curve W. Track So of Bridge

R 1146

Δ 1°14'

S.T. 12.33

E 0.07

.01076
1146
6456
4304
1076
1076
12.33096

1146
6
.06876

Curve W Track No of Bridge

R 1146

Δ 2°24'

S.T. 23.99

E 0.25

.02095
1146
12570
8380
2095
2095
23.98870

1146
22
2292
2292
.025212

40°09½'

.6981317
26180
1454

.7008951
150

350447550
7008951

105.1342650

.7008951
152.36

42053706
21026853
14017902
35044755
7008951

106.788377436 outside 106-9 15/32

.7008951
147.64

28035804
42053706
49062657
28035804
7008951

103.480152564 inside 103-5¾"

changed to 40°04'

40°22'

.6981317
63995

.7045312
150

352265600
7045312

105.6796800
08727

105.76690 .7045312
152.36

42271872
21135936
14090624
35226560
7045312

107.342373632 ~~outside 107-4⅛"~~
08 86 33 0 48

107.431 .7045312 0 out 107-5 3/16"
147.64

28181248
42271872
49317184
28181248
7045312

104.016986368 inside ~~104-0 7/32~~
08589 6952

104.102883320 17-104'-1¼"
152.36
5818

121888
15236
121888
76180

088'643048

147.64
5818

118112
14764
118112
73820

.0858969.52

.0005818
150

290900
5818

.0872700

Def. for Spirals 30th & Ivy.

Dist	Def
5.24	0°10'
10.47	0°25'
15.71	0°46½'
20.94	1°15'
26.17	1°50'

OG 150.266
G.S. 13.074

M.O. R152.36 - 20' chord = 0.3275
" " R147.64 " " = 0.3410

L.C.C 105.77
LC 103.59

50°24'

Fern St.

Def 1' R150 = .19091

Def C.C R150'.

+10 — 1°54'30"
+20 — 3°49'10"
+30 — 5°43'45"
+40 — 7°38'20"
+50 — 9°33'
+60 — 11°27'30"
+70 — 13°22'10"
+80 — 15°16'45"
+90 — 17°11'20"
1+05 1/3 = 20°04'45"

50°09½'

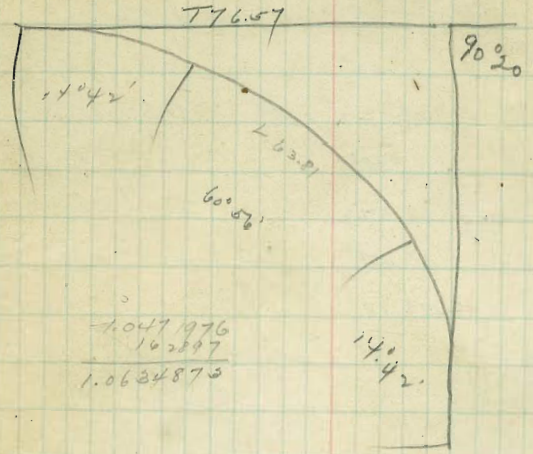
L.C.C. 105.13
LC 102.99

Ivy St.

30th

83.40

Curve 30th & Beach



1.0471976
162897
1.0634873

1.0634873
62.3542
2126974 6
4253949 2
5317436 5
3190461 9
2126974 6
6380923 8
66.3128998 0166
66' – 3 3/4"

1.0634873
57.6458
8507898 4
5317436 5
4253949 2
6380923 8
7444411 1
5317436 5
61.3055761 9834
61' – 3 1/16"

25th & B

O.G. 60.875
G.S. 15.342
76.217

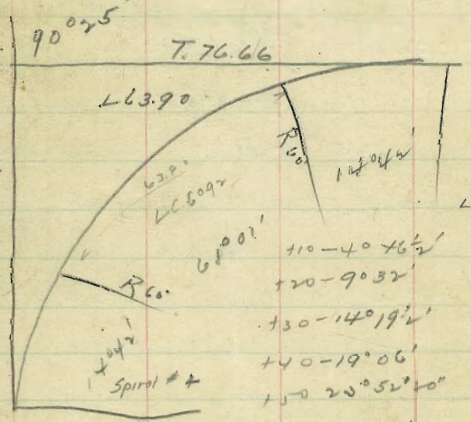
T. 76.22
L C.C. 63.45

#4

Sta	Def. for Spirals C.C.R = 60'	
5.13	0°22'	O.G. 60.875 } Spiral #4 C.C. 60'R
10.27	0°52½'	G.S. 15.342 }
15.40	1°38'	
20.51	2°37½'	
25.62	3°51'	
30.70	5°18½'	

Curve 28th & Beach

Def 1'60'R = .47746

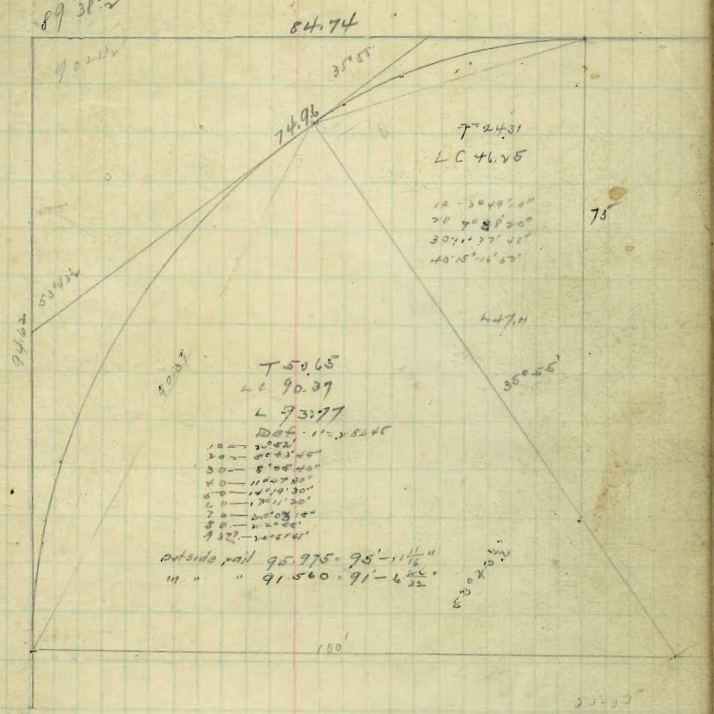


66'-4 27/32"
Length cc outside rail 66.40
" " " " " 61.39
61'-4 11/16"

+10 — 4° 46½'
+20 — 9°32'
+30 — 14°19½'
+40 — 19°06'
+50 — 23°52'20"
+60 — 28°39'
+63.90 = 30°30½'

Curve 30th & Univ Ave

5343½
3555
8938½



Δ 89°38½
Δ 75 45°55
Δ 100 63°45

Curve 20° & Upas No

Spiral

Sta	Δ	Ctr Curve R 60'	Δ 90°
5.13	0°22'	Def	T. 76.2
10.27	0°52½'	10 - 4.7746	4°46½' L.C.C. 63.46
15.40	1°38'	20 - 9.5492	9°33'
20.51	2°37½'	30 - 14.3238	14°19½'
25.64	3°51'	40 - 19.0984	19°06'
31.70	5°18½'	50 - 23.8730	23°52½'

Curve 30° & Upas - 50

R 50'

Sta	Spiral Δ				
5.24	0°30'	10	5.729	5°43'11"	T. 43.94
10.49	1°16'	20	11.458	11°27½'	
16.70	2°20'	30	17.187	17°11'	
20.92	3°46'	40	22.916	22°55'	
26.10	5°30'	52.46	30.054	30°03½'	

Inside Curve 30° - 50

Outside Rail C.C. = 54.92 54'-11 3/32"

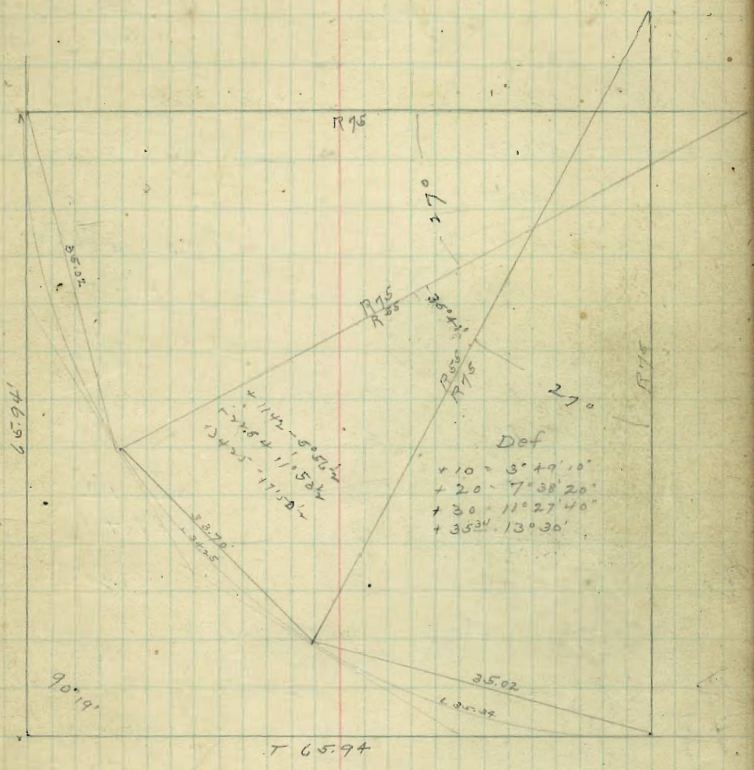
In " " " = 49.97 49'-11 5/32"

Δ 90°06'

T 63.93

L 52.45

Curve - 10° & M



M . 54.

Grades for Temporary Track 27th to Bridge

196.97 BM
3.48
200.45 HI.

196.60
3.85

2.62
196.83

39.7
6.4
33.3
14.4
47.7
2.3
1.0
48.8
2.6
40.4

52.5
21.9
21.9
83.0
14.4
39.7
14.4
5
21.9
21.9
50.0
346.6

43.5
2.5
40.0

29.2
14.4
43.6
6.4

E.L. 27th	196.60
+50	196.63
1	196.67
+50	196.70
2	196.73
+50	196.76
3	196.80
Bridge +46.6	196.83

Temporary Grades for Tracks from 27th to Bridge in B. St.

.347) .2300 | 6628
2082
2180
2082
980
694
2860
2776
.00.0628
47
4639
26552
.0211416
06628
.03314

196.97
3.86
200.83 HI

196.63
4.20
196.80
4.03

196.67
4.16
196.76
4.07

196.70
4.13
196.73
4.10

5°17'
2°38½'

T 0.461
23.070 S.T.

00.109
E 0.535

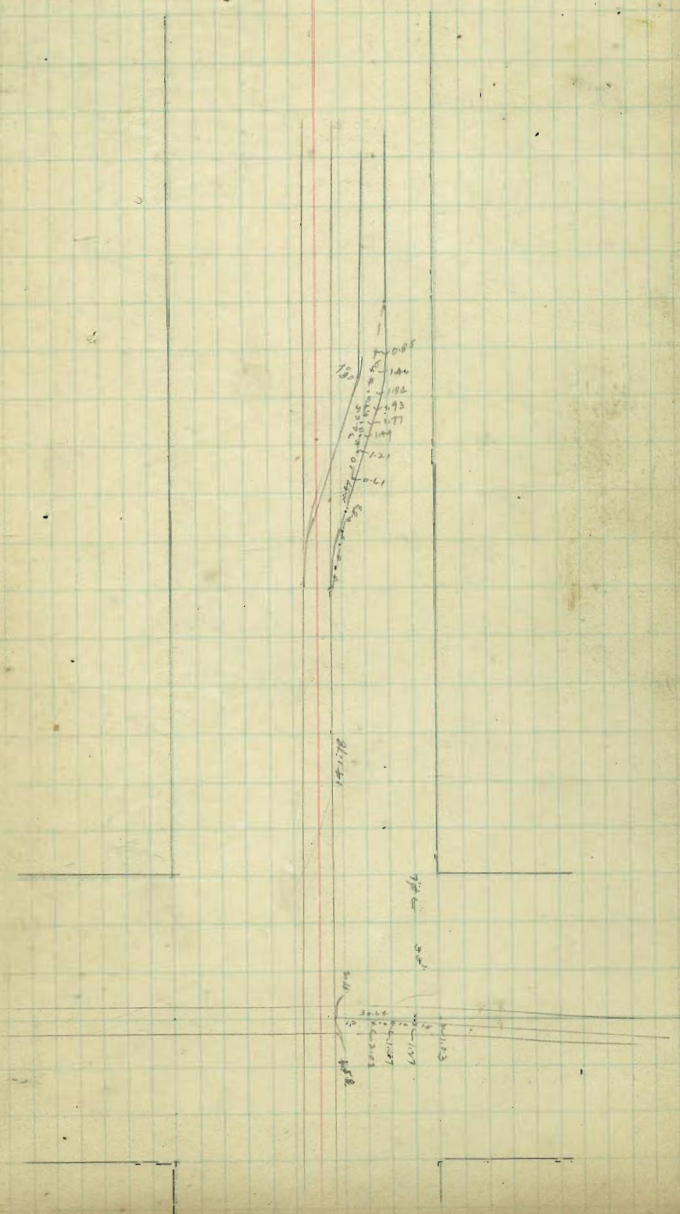
46.4
45.6

196.60
03314
196.63314
196.66628
196.69942
196.73256
196.76570
196.79884
03114
196.82998

500'
R 500

04366
T 21.820

.00095
E .475



#380

Inside curve 108 K

10 - 3.82 - 2°49'10"
20 - 7.64 - 7°38'20"
30 - 11.46 - 11°27'40"
35.34 - 13.50 - 13°-30'

.4712389
75
23561945
32986723
35.342917 45

.45399
75
226995
317793
.97237) 34.04925 (35.02
29.171
487875
486185
163000

.6283185
55
314,5925
314159250
34.5575176

55 : 572 : x : 336

.58779
55
293895
293895
.95106) 32.32845 (33.99

3456) 18000 (.5208
17280
7200
6912
28800
27648

10 - 5.208 - 5°12'30"
20 - 10.416 - 10°25'
30 - 15.624 - 15°37'30"
34.56 17.998 - 18°-0'

Laurel 203.96 new
7.58
211.54

Maple

63.20
58.40
314.80
.016.0

58.62
58.31
.31

Laurel

300.90
3.5
297.40
31
289.9

203.96
6.09
210.05 H1.

203.96
6.09
210.05 H1

5.67
5.868
6.000

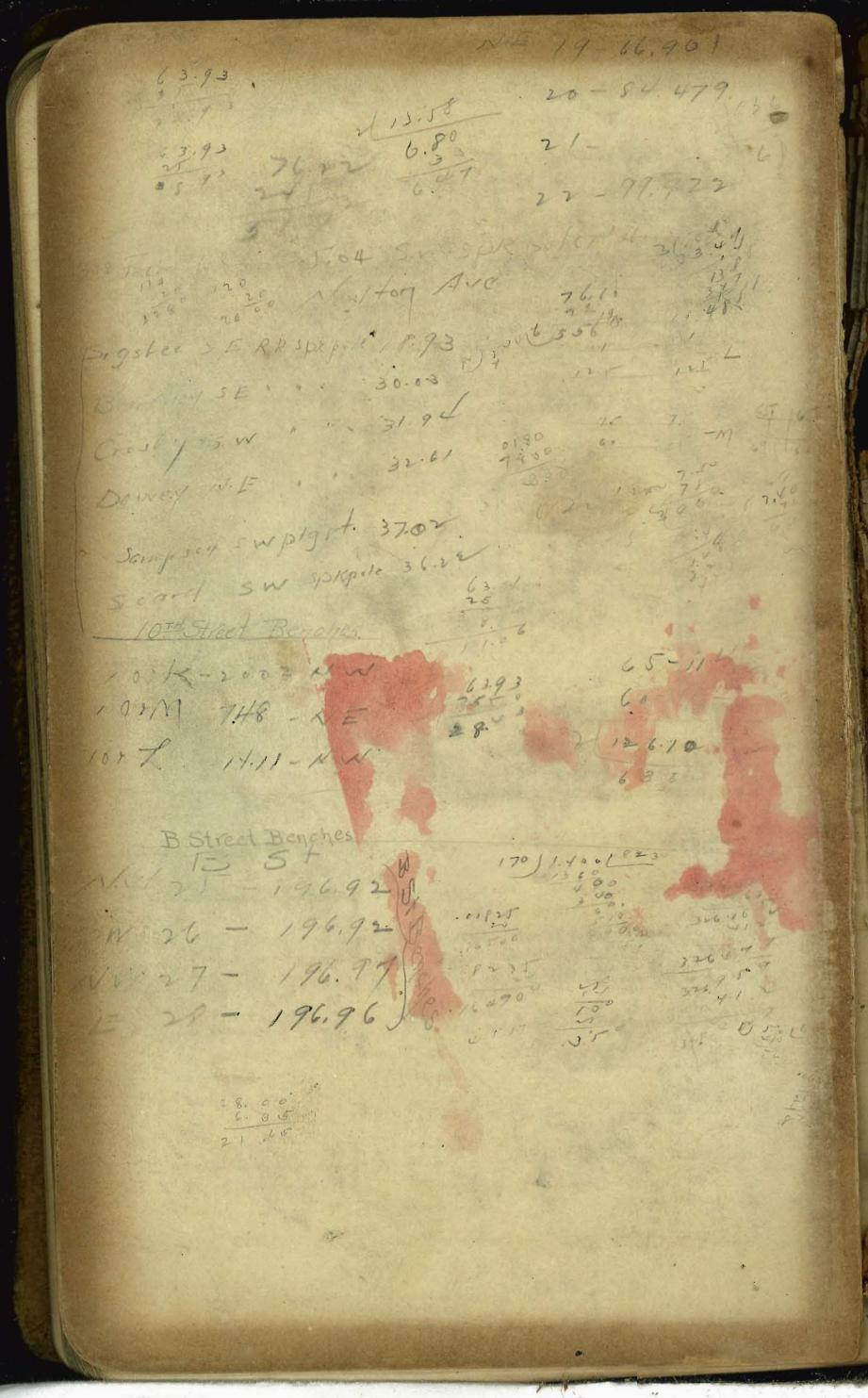


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Table showing the difference of latitude and departure in running 80 chains at any course from 1 to 60 minutes.

MINUTES.	LKS.	MINUTES.	LKS.	MINUTES.	LKS.
1	2 1/3	21	49	41	95 2/3
2	4 2/3	22	51 1/3	42	98
3	7	23	53 2/3	43	100 1/3
4	9 1/3	24	56	44	102 2/3
5	11 2/3	25	58 1/3	45	105
6	14	26	60 2/3	46	107 1/3
7	16 1/3	27	63	47	109 2/3
8	18 2/3	28	65 1/3	48	112
9	21	29	67 2/3	49	114 1/3
10	23 1/3	30	70	50	116 2/3
11	25 2/3	31	72 1/3	51	119
12	28	32	74 2/3	52	121 1/3
13	30 1/3	33	77	53	123 2/3
14	32 2/3	34	79 1/3	54	126
15	35	35	81 2/3	55	128 1/3
16	37 1/3	36	84	56	130 1/3
17	39 2/3	37	86 1/3	57	133
18	42	38	88 2/3	58	135 1/3
19	44 1/3	39	91	59	137 2/3
20	46 2/3	40	93 1/3	60	140

TABLE FOR RUNNING ON SLOPES.

In the following table the first column shows the angle, the second the number of links to be added to a chain on the slopes, to make one chain, horizontal measurement.

ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS
°		°		°		°	
4	0.24	11	1.88	18	5.14	25	10.54
5	0.38	12	2.24	19	5.76	26	11.26
6	0.55	13	2.63	20	6.42	27	12.24
7	0.76	14	3.06	21	7.11	28	13.37
8	0.98	15	3.53	22	7.85	29	14.34
9	1.24	16	4.02	23	8.64	30	15.47
10	1.55	17	4.56	24	9.47	35	22.07