

9

TRANSIT

F.B. 630

630

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

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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.
0		0		0		0	
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	13.57
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

MICROFILMED
DEC 14 1964

63

MICROFILMED

RAW

ks to

agle.

4
5
6
7
8
9
10

610.0

49.95
20.00
29.95

49.85
49.95
99.80

Sta	t.	HA	Grade	ave	elw
B9m	5.47	56.13			50.66
#	6.26	61.37		1.02	55.11
B9m				3.20	58.17
+30			54.50	6.87	
+75			55.17	6.20	
			55.83	5.54	✓
+25			56.50	4.87	✓
+50			57.17	4.20	✓
+75			57.83	3.54	✓
			58.50	2.87	✓
			60.50	0.87	✓

4th and 13 St

B9m HA and ASL

South of ASL

North of ASL

Cont grades on east side
of 4th St bet. A and B St.

June 9 1890

Hanchin }
William }
Hensley }

Sta	+	HO	Grade	rod	chr.
B.M.	7.23	57.89			50.66
0			50.50	7.39	✓
+25			51.17	6.72	✓
+50			51.83	6.06	
+75			52.50	5.39	✓
1			53.17	4.72	✓
+25			53.83	4.06	✓
+50			54.50	3.39	✓
+75			55.17	2.72	✓
2			55.83	2.06	✓
+25			56.50		
+50			57.17		
+75			57.83		
3			58.50		
#	6.21	62.05	2.05		58.84
B.M.			3.88		58.17
B.M.			0.23		61.82
B.M.	4.08	54.74			50.66
			50.50	4.24	✓
			51.17	3.57	✓
			51.83	2.91	✓

4th and B St.
North line of B St.

7.35.
7.63
8.00

South line of B St.
old B.M.

top of picket
5th and B St.

check.

Comb grader on 4th St bet
H and St set on West side

St	+	AD	Grade	Prod	Blu
B9	1.79	18.84			17.05
0			11.60	7.84 ³⁸	
+25			11.38	7.46 ³⁸	
+50			11.75	7.09 ³⁷	
+75			12.13	6.71 ³⁸	✓
1			12.50	6.34 ³⁷	✓
+25			12.88	5.96 ³⁸	✓
+50			13.25	5.59 ³⁷	✓
+75			13.63	5.21 ³⁸	✓
2			14.00	4.84 ³⁷	✓
+25			14.38	4.46 ³⁸	✓
+50			14.75	4.09 ³⁷	✓
+75			15.13	3.71 ³⁸	✓
3			15.50	3.34 ³⁷	
B911				8.04	10.80

North line of St.

South line of H St
H and St

Center grade on 4th St
bet H and J St.

Sta	+	HD	Grade	Prod	Blu
Bm	2.05	19.10			17.05
0			10.67	8.43	✓
+25			11.04	8.06	³⁷
+50			11.42	7.68	✓
+75			11.79	7.31	³⁷
1			12.17	6.93	✓
+25			12.54	6.56	
+50			12.92	6.18	✓
+75			13.29	5.71	
2			13.67	5.43	✓
+25			14.04	5.06	³⁷
+50			14.42	4.68	✓
+75			14.79	4.31	³⁷
3			15.17	3.93	✓
Bm.					

North line of J St

South line of H St
14th and J St.

Curb grades on East side of
4th St bet H and I St

June 10 1890

Sta	+	H I	Grade	rod	Elev
B.M.	2.05	19.10			17.05
0			11.00	8.10 ₃₈	
+25			11.38	7.72 ₃₇	✓
+50			11.75	7.35 ₃₈	✓
+75			12.13	6.97 ₃₈	✓
1			12.50	6.60 ₃₇	✓
+25			12.88	6.22 ₃₈	✓
+50			13.25	5.85 ₃₇	✓
+75			13.63	5.47 ₃₈	✓
2			14.00	5.10 ₃₇	✓
+25			14.38	4.72 ₃₈	✓
+50			14.75	4.35 ₃₇	✓
+75			15.13	3.97 ₃₈	✓
3			15.50	3.60 ₃₇	✓
B.M.				8.30	10.80

4th and H St
North line of I St

Southern line of H St
4th and I St

Center grades on 6th St
bet 7th and 8th St

June 10 1890

Sta	+	AD	Grade	Rod	Obs
B.M.	1.30	38.90			37.60
0			31.92	6.98	✓
+25			32.25	6.65	✓
+50			32.59	6.31	✓
+75			32.93	5.97	✓
1			33.27	5.63	✓
+25			33.60	5.30	✓
+50			33.94	4.96	✓
+75			34.28	4.62	✓
2			34.62	4.28	✓
+25			34.95	3.95	✓
+50			35.29	3.61	✓
+75			35.63	3.27	✓
3			35.97	2.93	✓
				5.28	38.62

6th and 7th St
North line of 8th St

South line of 7th St

Elev of gutter of N E cor of 6th and 8th

Sta	+	NO	-	Elev
13 m	3.38	47.93		44.53 13 m
			5.19	42.74
			5.25	42.68
			5.10	42.83

6th and 8th
 At East of 6th St
 at center of curb
 At N of 8th

Grades on 4th St bet Cedar and Bate

Sta	+	RD	Grade	rod	Blv
B.M.	9.85	122.27			112.42
0			110.50	11.77 ✓	
				4.75	
1+50			115.25	7.02 ✓	
				4.75	
3			120.0	2.27 ✓	
				0	
0			111.00	11.27	
				5.0	
1+50			116.60	6.27 ✓	
				5.0	
3			121.00	1.27	
				0.81	121.46

North line of Cedar St

West

South line of Bate St

North line of Cedar St

East

South line of Bate St

Grade on 4th St bet. Bate and Elm St

Sta	f	HD	Grade	rod	Elev
B.M.	8.973	130.44			121.465
0	122.		122.00	8.44	✓
1+50			128.50	1.94	✓
#	11.19	140.29		1.34	129.10
3			135.00	5.29	
			(130.44)	140.	
0			123.00	7.44	✓
1+50			129.00	1.44	
			140.29		
3			135.00	5.29	
B.M.				2.15	138.14

North line of Bate St

} West

South line of Elm St

North line of Bate St

} East

South line of Elm St
4th and Elm St

Sta	x	HO	Grade	rod	elev.
Bm	0.14	61.96			61.82
#	4.01	57.47		8.50	53.46
Bm,				6.81	50.66
0			50.50	6.97	✓
+25			51.17	6.30	✓
+50			51.83	5.64	✓
+75			52.50	4.97	✓
1			53.17	4.30	✓
+25			53.83	3.64	✓
+50			54.50	2.97	✓
+75			55.17	2.30	✓
2			55.83	1.64	✓
			56.50	0.97	✓
			57.17	0.30	
			57.83		
3			58.50		

29.7
 1.25
 2.72

564
 111
 5.59
 1.25
 .67

4th and 8th

4th and 8th

North line of 8th

South line of 8th

Cont. grades on 4th St bet
A and BSt on West side

Sta	+	RO	Grade	Rod	Elev
B.M.	7.16	57.82			50.66
0			50.50	7.32	
+25			51.17	6.65	
+50			51.83	5.99	
+75			52.50	5.32	
1			53.17	4.65	
+25			53.83	3.99	
+50			54.50	3.32	
+75			55.17	2.65	
2			55.83	1.99	
# 25	6.44	62.94		1.32	56.50
+25			56.50	6.44	
+50			57.17	5.77	
+75			57.83	5.11	
3			58.50	4.44	
B.M.				1.105	61.835
			60.56	2.44	

4th and BSt spts cor fence
North line of BSt

South line of A Street.
4th and ASt

Grade of intersection of 8th
and H St.

Sta	+	AD	Grade	Rod	Elev
B.M.	5.26	31.31			26.05
			24.41	6.80 ^{.34}	
			24.33	6.98 ^{.04}	
			24.25	7.06 ^{.08}	
			25.07	6.24 ^{.10}	
			25.17	6.14	
			25.33	6.98 ^{.18}	
			25.15	6.16	
			25.42		
			25.75	7.66 ✓	
			25.83	7.48 ✓ ^{.08}	
			24.17	7.14 ✓ ^{.34}	
			24.57	6.74 ✓	
			24.67	6.64 ✓	
			24.23	7.08 ✓ ^{.10}	
			24.33	6.98 ✓	
			24.65	6.66 ✓ ^{.18}	
			24.83	6.48 ✓	
			24.73	6.58	

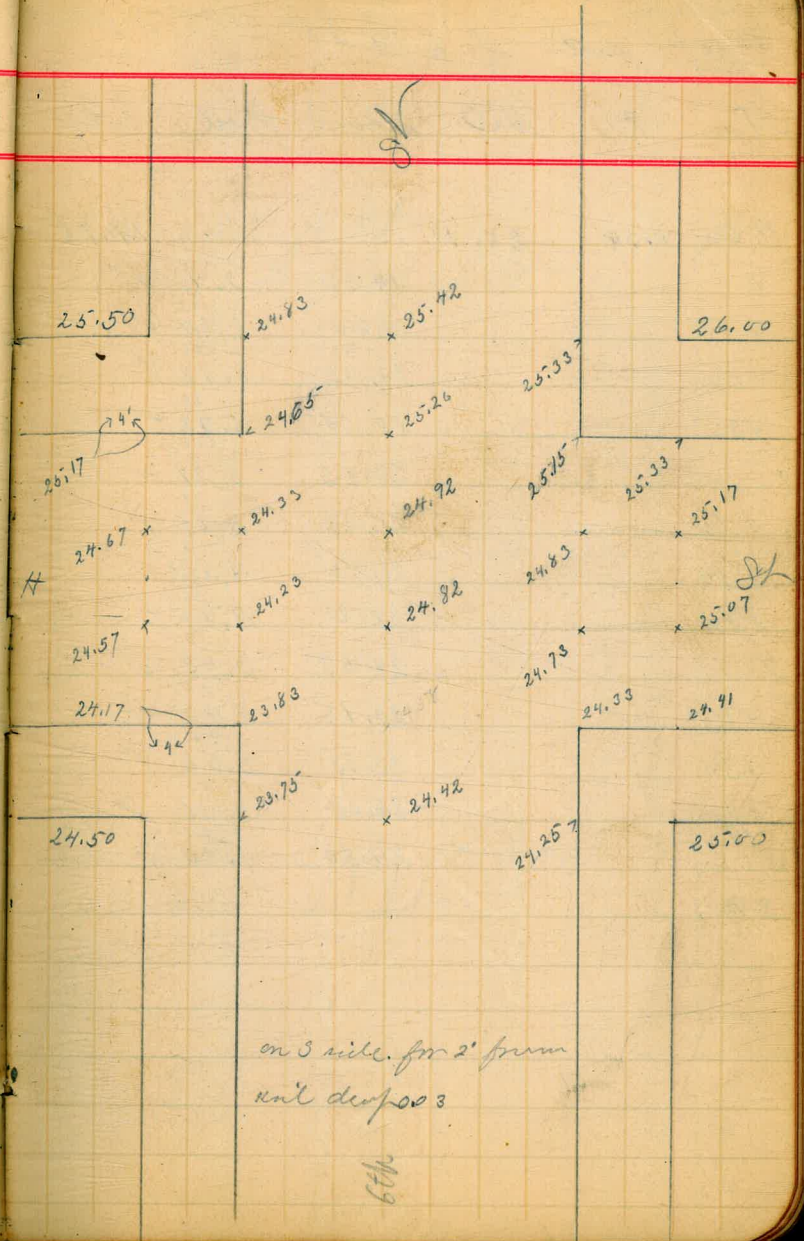
checked on cut.

27.52
24.41
3.11

27.52
25.01
2.95
2.79
34

31.31
24.50
6.81

27.52
24.73
2.79



Check of level-rod in
West side of 6th St bet H

and O June 12 1890

Sta + HD Grad Rod Elev

Sta	+	HD	Grad	Rod	Elev
B.M.	6.34	26.10			19.76
0			19.00	7.10	✓
+25			19.46	6.64 ^{.46}	✓
+50			19.92 ^{.46}	6.18 ^{.46}	✓
+75			20.38 ^{.46}	5.72 ^{.46}	✓
1			20.83 ^{.45}	5.27 ^{.45}	✓
+25			21.29 ^{.46}	4.81 ^{.46}	✓
+50			21.75 ^{.46}	4.33 ^{.46}	✓
+75			22.21 ^{.46}	3.89 ^{.46}	✓
2			22.67 ^{.43}	3.43 ^{.43}	✓
+25			23.13 ^{.46}	2.97 ^{.46}	✓
+50			23.58 ^{.45}	2.52 ^{.45}	✓
+75			24.04 ^{.46}	2.06 ^{.46}	✓
3			24.50 ^{.46}	1.60 ^{.46}	✓
B.M.					

6th and H St
North line of St.

South line of H. St.
6th and O St

Check of curb grades on
6th St bet H and I Cross
mils

June 12 1890

Sta	+	H ₂ O	Grade	Prod	Elv
-----	---	------------------	-------	------	-----

B ₉ m		26.10	see preceding page		
------------------	--	-------	--------------------	--	--

0			19.50	6.60	L
---	--	--	-------	------	---

+25			19.96	6.14	v
-----	--	--	-------	------	---

+50			20.42	5.68	-
-----	--	--	-------	------	---

+75			20.88	5.22	v
-----	--	--	-------	------	---

1			21.33	4.77	
---	--	--	-------	------	--

+25			21.79	4.31	
-----	--	--	-------	------	--

+50			22.25	3.85	
-----	--	--	-------	------	--

+75			22.71	3.39	
-----	--	--	-------	------	--

2			23.17		
---	--	--	-------	--	--

+25			23.63		
-----	--	--	-------	--	--

+50			24.08		
-----	--	--	-------	--	--

+75			24.54		
-----	--	--	-------	--	--

3			25.00		
---	--	--	-------	--	--

North line of I St

South line of H St

changed grades on West
on West side to correspond with

side of 4th St bet A and B
walk already in.

57.48

0	50.50	6.98 ₇₃	
+25	51.23	6.25 ₇₃	✓
+50	51.96	5.52	✓
+75	Walk	in	- - -
1	53.00	4.48 ₇₁	✓ 4.23
+25	53.71	3.77 ₇₁	✓ 3.52
+50	54.42	3.06 ₇₁	✓ 2.81
+75	55.12	2.36 ₇₀	✓
2	55.83	1.65 ₇₁	

North line of 1st ordinance grade

elev. of walk

elev. of Walk

Gutter grades on East side
of 4th St bet F and E St

Sta	+	HO	Grade	rod	lev.
B.M.	7.44	38.49			31.05
0			29.33	9.16	31.05
+25			29.83	8.66	✓
+50			30.33	8.16	✓
+75			30.83	7.66	✓
1			31.33	7.16	✓
+25			31.83	6.66	✓
+50			32.33	6.16 ⁵⁰	✓
+75			32.83	5.66 ⁵⁰	✓
2			33.33	5.16 ⁵⁰	✓
+25			33.83	4.66 ⁵⁰	✓
+50			34.33	4.16 ⁵⁰	✓
+75			34.83	3.66 ⁵⁰	✓
3			35.33 ⁵⁵	3.16 ⁴²	3.16
B.M.			35.25	3.84	
				0.09 ¹⁶	38.40
			35.41	3.08	

4th and F St.
North line of F St.

South line of E St
E St. and 4th

Grade on West side
of 4th St bet 7th and 8th

Sta	+	NO	Grade	rod	Elev.
B.M.	0.18	38.59			38.41
0			28.83	9.76 ^{.54}	✓
+25			29.37	7.22 ^{.54}	✓
+50			29.91	8.68 ^{.53}	✓
+75			30.46	8.13 ^{.54}	✓
1			31.00	7.59 ^{.54}	✓
+25			31.54	7.05 ^{.54}	✓
+50			32.08	6.51 ^{.54}	✓
+75			32.62	5.97 ^{.54}	✓
2			33.16	5.43 ^{.54}	-
+25			33.70	4.89 ^{.53}	✓
+50			34.25	4.34 ^{.54}	✓
+75			34.79	3.80 ^{.54}	✓
3			35.25	3.24 ^{.52}	✓
B.M.				7.58	31.06
4			35.68	2.93	

4th and 8th
North line of 7th

inverted .08

South line of 8th
4th and 7th
on West line

32.6
32.3
32.0

Grade at N line of 4th and
10th

Sta	+	HO	Grade	Red	Clor
B.M.	1.90	48.42			46.52
3			43.83	4.69	
3			44.17	4.23 ^{.39} ✓	
			43.97	4.45 ✓	
St 40			43.77	4.65 ✓	
			44.03	4.39 ✓	

Checked on stakes set before

B.M.	1.64	48.16			46.52
St 0			4.83	43.33	
			4.98	43.18	
				.81	
			5.12	43.04 ^{.29}	

4th and 10th
Gutter on N line
Center on N line

Center of 10th
top of cover to water gate

4th and 10th
Gutter on center of St
Gutter on N line

Center grade on 4th St
from H to 8th

Sta	x	HQ	Grade	Prod	Color
B.M.	0.65	25.12			24.47
B.M.				8.07	17.05
0			16.17	8.95 ⁹²	
+50			17.09	8.03 ⁹¹	✓
1			18.00	7.12 ⁹²	✓
+50			18.92	6.20 ⁹²	✓
2			19.84	5.28 ⁹²	✓
+50			20.76	1.83	
3			21.67	3.45	

4th and 8th
4th and N St
North line of N St

South line of 8th

Center grade on east side
of 4th St from 100' North of N St

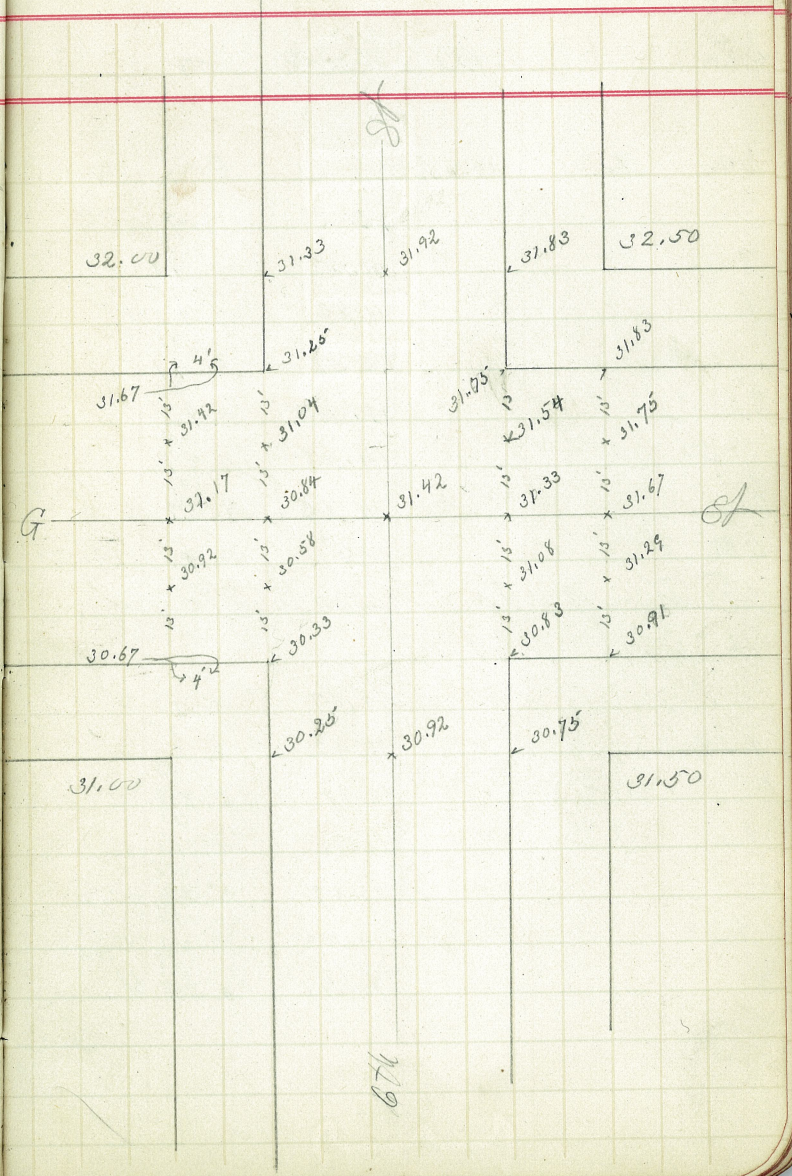
0			15.83	9.29 ⁴⁶	✓
+25			16.29	8.83 ⁴⁶	✓
+50			16.75	8.37 ⁴⁶	✓
+75			17.21	7.91 ⁴⁵	✓
1			17.66	7.46	✓

North line of N St

Grades at intersection of
G and 6th St

Sta	+	HI	Grade	Rod	Color
B.M.	3.28	36.90			33.62
			31.83	5.07	
			31.75 ^{.08}	5.15	
			31.67 ^{.34}	5.23	✓
			31.33	5.57	✓
			31.42	5.48	
			30.92	5.98	
			30.75 ^{.11}	6.15	
			30.83 ^{.08}	6.07	
			30.91 ^{.08}	5.99	✓
B.M.	2.42	36.04			33.62
Sta	Grade	rod	Sta	Grade	Rod
			30.67	5.37	
			30.33 ^{.34}	5.71	✓
			30.25 ^{.05}	5.79	✓
			31.17 ^{.92}	4.87	✓
			31.67 ^{.56}	4.37	✓
			31.25 ^{.42}	4.79	✓
			30.84	5.20	33

checked on curb



6th

Center grade on 4th St
bet H and I

Sta	t	HS	Grade	Rock
B.M.	2.00	19.05		17.05
0			10.33	8.72 ₇₅
+50			11.08	7.97 ₇₅
1			11.83	7.22 ₇₅
+50			12.58	6.47 ₇₅
2			13.33	5.72 ₇₅
+50			14.08	4.97 ₇₅
3			14.83	4.22 ✓
B.M.			8.24	10.81

Center grade on 4th St bet
H and I

0			10.67	8.38 ✓
+50			11.42	7.63 ₇₅ ✓
1			12.17	6.88 ₇₅ ✓
+50			12.92	6.13 ₇₅ ✓
2			13.67	5.38 ₇₅ ✓
+50			14.42	4.63 ₇₅ ✓
3			15.17	3.88 ₇₅ ✓

B.M. 15th and H St
North line of I St

South line of H St

South line of H St

Grades for culvert across 4th St
at B St

Culvert grade W. line of B St Grade = 49.83

Sta	T	HO	Grade	Rwd
B.m.	2.87	53.53		50.66
Bottom grade of flume			40.42	
			40.33	
			40.25	
9' above bottom grade			49.42	4.11 ✓
			49.33	4.20 ✓
			49.25	4.28 ✓
B.m.			4.255	29.275
B.m.	3.12	53.78		50.66
#	1.76	45.99		9.55 44.23
#	9.98	54.21	40.42	5.57 ✓
			40.25	5.74 ✓
B.m.			7.76	44.28
B.m.	3.23	53.89		3.56 50.65
#	0.66	44.93		9.62 44.27
			40.42	4.51 ✓
			40.33	4.68 ✓
			40.25	4.68 ✓

East line 4th St
Center of 4th St
West line of 4th St

578

3.74
67
4.90

50.71
5

3.78
23
4.53

4th and C St
4th and B St

4th and B St.
check on grades at before

Center grades on 6th St
from G to H St

Sta	+	HO	Grade	Rod	Blvs
B.M.	1.15	34.77			33.62
B.M.	0.71	34.33	(34.77)		33.62
0			25.42	9.35	L
+25			25.88	8.89	V
+50			26.33	8.44	V
+75			26.79	7.98	V
1			27.25	7.52	V
+25			27.71	7.06	V
+50			28.17	6.60	V
+75			28.33 28.62	5.71	V
2			29.08	5.25	V
+25			29.54	4.79	V
+50			30.00	4.33	V
+75			30.46	3.87	V
3			30.92	3.41	V
B.M.				8.28	26.05
				8.72	26.05

6th and G St
6th and H St
North line of H St

South line of G St
6th and H St
" " "

Elev 13' from curb toward
 center of St on 4th bet E and F
 West on West side

June 14 1890

Pod	Elev	Sub Grade		Sta
			(38.49)	
9.81	28.69	28.30	+0.39	0
8.80	29.69	29.36	+0.33	+50
7.66	30.83	30.42	+0.41	1
6.66	31.83	31.48	+0.35	+50
5.97	32.62	32.55	-0.03	2
5.00	33.49	33.61	-0.12	+50
4.01	34.48	34.67	-0.19	3

Sta + HO Guide Pod
 4th and F St
 Bm 7.44 38.49 38.12 31.05

North line of F St

South line of E St
 Bm 4th and E St 0.09 38.40

Lev. grades on H St
bet G and H St

Sta	+	H.S.	Grade	rod	Blv.
B.M.	0.70	25.17			24.47
0		16.50	16.50	8.67	✓
+25		16.96	16.96	8.21 ⁴⁶	✓
+50		17.42	17.42	7.75 ⁴⁶	✓
+75		17.88	17.88	7.29 ⁴⁶	✓
1		18.33	18.33	6.84 ⁴³	✓
+25		18.79	18.79	6.38 ⁴⁶	✓
+50		19.25	19.25	5.92 ⁴⁶	✓
+75		19.71	19.71	5.46 ⁴⁶	✓
2		20.17	20.17	5.00 ⁴⁶	✓
+25		20.63	20.63	4.54 ⁴⁶	✓
+50		21.09	21.09	4.08 ⁴⁶	✓
+75		21.54	21.54	3.63 ⁴⁶	✓
3		22.00	22.00	3.17 ⁴⁶	✓
B.M.				8.12	17.95
		16.83		9.34	✓
				8.17	
				67	

H St and G St
North line of H St

South line of G St
H St and H St

Grades for St. cas. br. of
4th and 5th St.

Sta	+	100	Grade	Rod	Elev
B.M.	6.78	31.25	26.50	4.75	24.47
			26.05	4.25	✓
			28.67	2.58	
				0.21	31.04
B.M.	0.86	31.91			31.05
2			28.92	2.99	✓
+14			28.59	3.32 ³³	✓
			54	54	
+40			29.05	2.86	✓
			21	21	
+66			28.84	3.07	✓
			33	33	
0			29.17	2.74	✓

West of 4th St

East of 4th St

Curb grade on 4th St bet
cedar and Bate. West side

Sta	+	H ₀	Grade	rod	Elev.
B.M.	9.66	122.08			112.42
0			110.50	11.58	✓
+25			111.29	10.79	✓
+50			112.08	10.00	✓
+75			112.87	9.21	✓
1			113.67	8.41	✓
+25			114.46	7.62	✓
+50			115.25	6.83	✓
+75			116.04	6.04	✓
2			116.83	5.25	✓
+25			117.62	4.46	✓
+50			118.42	3.66	✓
+75			119.21	2.87	✓
3			120.00	2.08	✓
			0.63		121.45

North line of cedar st

South line of Bate St

Cont grades on East side
of 4th bet Cedar and State

Sta	+	H.O	Grade	Prod	Elev
B.M.	4185	117.27			112.42
0			111.00	6.27 ✓	
+25"			111.83	5.44 ¹⁴ ✓	
+50			112.56	4.61 ⁸³ ✓	
+75"			122.08	see preceding page	
1			113.50	8.58 ✓	3.77
+25"			114.33	7.73 ⁸³ ✓	
+50			115.16	6.92 ⁸³ ✓	
+75"			116.00	6.08 ✓	
2			116.83	5.25 ⁸³ ✓	
+25"			117.66	4.42 ⁸³ ✓	
+50			118.50	3.58 ⁸³ ✓	
+75"			119.33	2.75 ⁸³ ✓	
3			120.16	1.92 ⁸³ ✓	
			121.00	1.08 ⁸⁴ ✓	

12.00
11.47
5.53
4.51

North line of Cedar St

South line of State St

Center grade on 5th St bet
4th and 5th St

Sta	+	HO	Grade	rod	Elev.
B.M.	5.89	36.94			31.05
2			28.92	8.02	✓
+16			28.59	8.36 ³³	✓
+48			29.05 ⁴⁸	7.89 ⁴⁸	✓
+66			28.84	8.10 ³³	✓
0			29.17	7.77	✓
+50			30.17	6.77	✓
1			31.17	5.77	✓
+50			32.17	4.77	✓
2			33.17	3.77	
				3.51	33.43

4th. and 5th St.
West of 4th St

Center of 4th St

East of 4th St

West line of 5th St.

Gutter grades on 4th St
bet B. and C

Sta	+	HO	Grade	rod	elev
Bm	4.94	54.20			49.26
0			47.33		
+25			47.50		
+50			47.66		
+75			47.83		
1			48.00		
+25			48.16	6.04 ✓	
+50			48.33	5.87 ✓	
+75			48.50	5.70 ✓	
2			48.66	5.54 ✓	
+25			48.83	5.37 ✓	
+50			49.00	5.20 ✓	
+75			49.16	5.04 ✓	
3			49.33	4.87 ✓	
Bm, 4th and 6 St.				3.54	50.66
			49.25	4.95 ✓	
			49.67	4.53 ✓	
			49.41	4.79	
			49.37	4.83 ✓	

C and 4th St
North line of lot

49.33
08
496.91

South line of B St

Check center bet B. and C

June 17 1890

Hambur.

Wittmann

Sta	+	NO	Grade	Prod	Elev.
		54.20			
0					
+25			47.84		
+50			48.00	6.20	✓
+75			48.17	6.03	✓
1			48.34	5.86	✓
+25			48.50	5.70	✓
+50			48.67	5.53	✓
+75			48.84	5.36	✓
2			49.00	5.20	✓
+25			49.17	5.03	✓
+50			49.34	4.86	✓
+75			49.50	4.70	✓
3			49.67	4.53	✓

433
42
4.95

check center grade on 4th
bet B and C

Sta	+	NO	Grade	Prod
B, 9m.	1.61	48.13		46.52
			43.70	4.43
			43.03	5.10
			43.00	5.13
			43.37	4.76 ✓
			42.79	⁵⁸ 5.34 ✓
			42.21	⁵⁸ 5.92 ✓
			41.63	⁵⁸ 6.30 ✓
				<u>58</u>
				7.08

checked on curb and stakes
set before.

4th and 1st — 43.03
curb 3 of 1st

grade at end of curb

of 1st

2 + 75

+ 50

+ 25

Curb grades on 4th St
bet Elm and Fir

Sta	+	HO	Grade	Prod	Elv.
B.M.	8.66	146.82			138.16
0			138.00	8.82 ✓	
1			7.83	7.83	
#			145.83	0.99 ✓	
2	8.75	154.58		0.99 ✓	145.83
#			153.67	0.91 ✓	
3	10.20	163.87		0.91	153.67
B.M.			161.50	2.37 ✓	
#			2.85		161.02
B.M.	7.50	169.00		2.57	161.50
			5.49		166.51

North line of Elm St

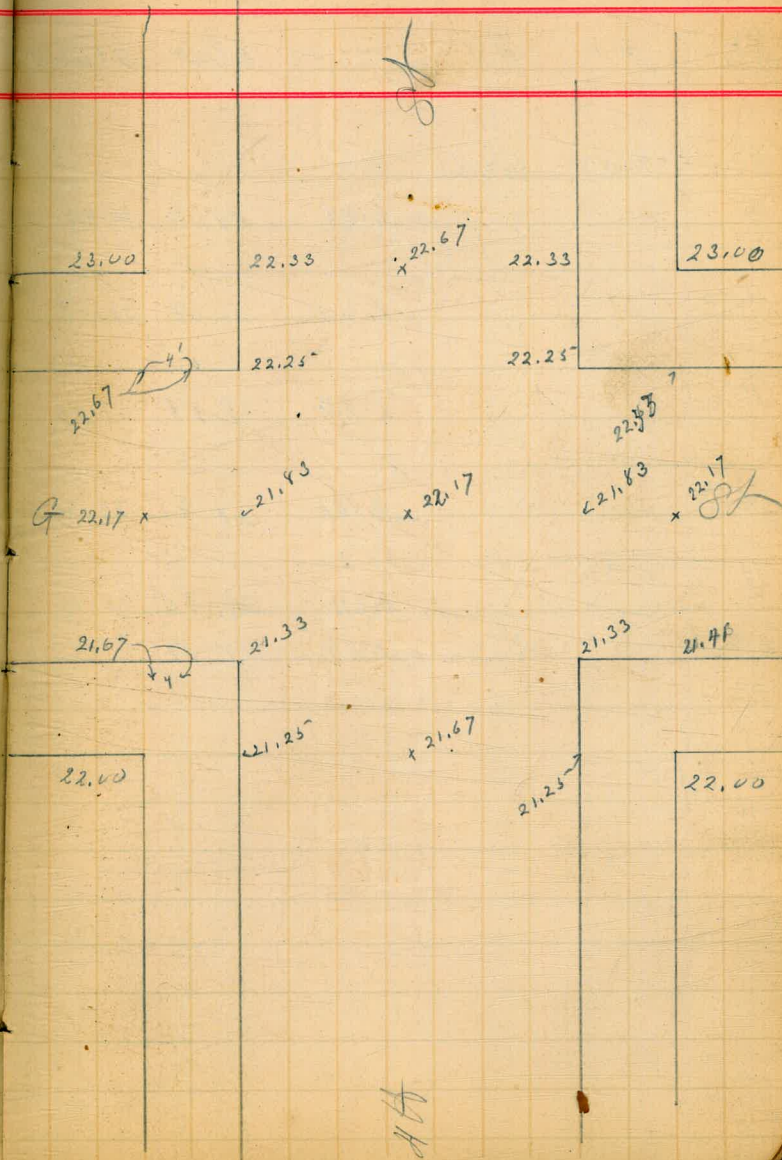
South line of Fir St
4th and Fir St

3rd and Fir

Grades at intersection of
4th and 8th

Sta + H.S. Grade Prod Elev

Sta	+	H.S.	Grade	Prod	Elev
Bm	3.67	28.14			24.47
			23.00	5.14	
			22.67	5.47 ✓	
			22.25	5.89 ✓	
			22.33	5.81 ✓	
			22.17	5.97 ✓	
			21.83	6.31 ✓	
			21.67	6.47 ✓	
			21.33	6.81 ✓	
			21.25	6.89 ✓	
			21.67	6.47 ✓	5.47
			21.41	6.73 ✓	



Elev's midway between
 track and curb on W side of 10th

Sta	+	RD	-	Elev	Grade
B.M.	4.58	44.58			
0			9.08	36.50	35.44
1.50			8.00	36.58	36.60
1			6.80	37.78	37.75
1.50			5.81	38.71	38.90
2			4.64	39.94	40.10
B.M.			7.39	37.19	

40.00 B.M. 2nd and 10th
 East of 2nd St

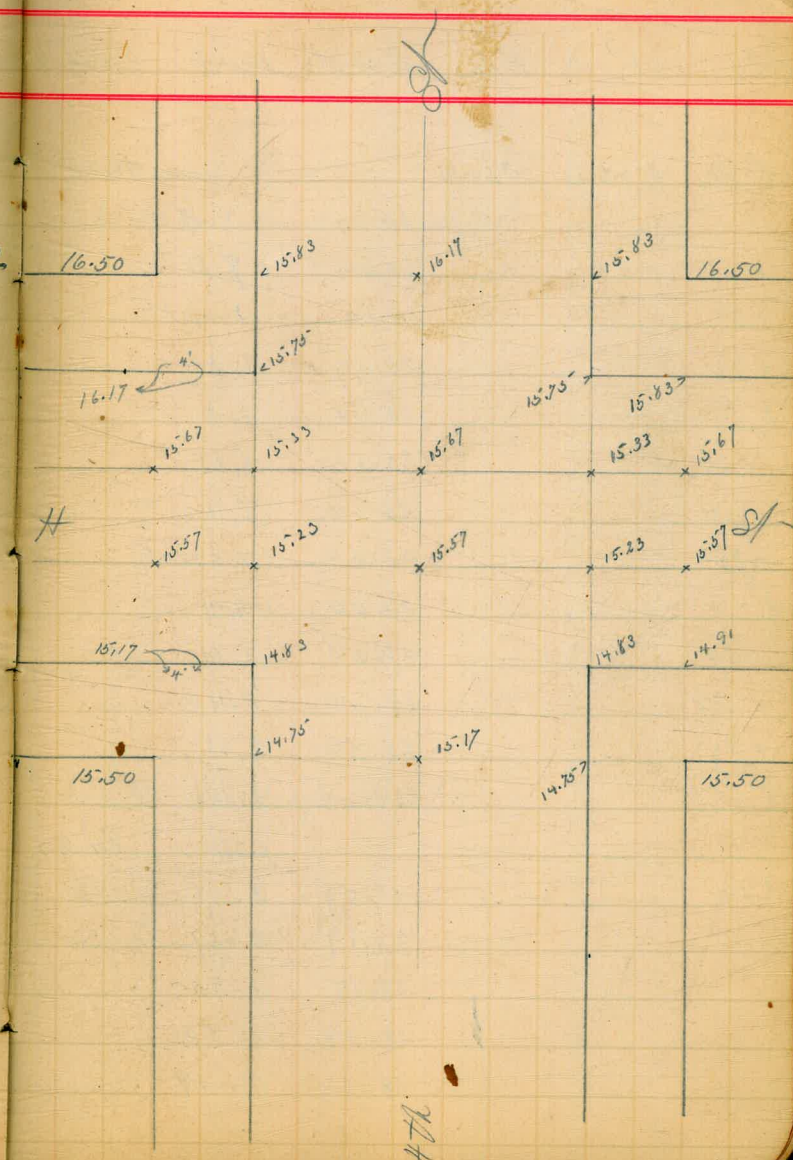
West of 2nd St
 and end 10th

Grades at intersection of 4th
and H St

on east 1.3
center 0.7
west 0.3

Sta + H.O. Grade Rod Elev.

Sta	+	H.O.	Grade	Rod	Elev.
B.M.	1.75	18.80		17.49 B.M. #64	17.05
	(18.80)			1.63	
End Rod			15.57	19.12 H.O.	8.32
15.57	3.23	(19.12)		10.80 B.M. 4th on I	
15.23	3.57	15.67		3.43 ✓	
14.83	3.97	15.33		3.79	
14.91	3.89 ✓	30.5			
15.67	3.13	17.99			
16.17	2.63	(20.34)		4.71 ✓	
15.75	3.05 ✓	15.80		4.79 ✓	
15.83	2.97	7.71		4.97 ✓	
15.17	3.63 ✓	15.75		5.31 ✓	
14.83	3.97	15.23		5.37	
14.75	4.05	15.17			



Check of level grades on 4th
Street S and T Sts

Sta	+	HO	Grade	Rod	Elev.
B.M.	0.06	31.11			31.05
0			23.00	8.11 ✓	
+25			23.50	7.61	
+50			24.00	7.11 ✓	
+75			24.50	6.61 ✓	
1			25.00	6.11 ✓	
+25			25.50	5.61 ✓	
+50			26.00	5.11 ✓	
+75			26.50	4.61 ✓	
2			27.00	4.11	
+25			27.50	3.61	
+50			28.00	3.11	
+75			28.50	2.61	
3			29.00	2.11	
+40				6.64	27.47
			29.05	2.06	
			28.84	2.27	
			29.17	1.94	
			28.59	2.52	
			28.92	2.19	

4th and T St

North line of St

South line of T St

center of T St

Chick on sidewalk on 4th St
bet Fir and Supt on east side

2.55 m N

2.50 m S

Sta	t	H ₂ O	S.	Alu
B. am,	11.40	172.42		161.02
1			1.24	171.18
#	11.38	183.25	0.55	171.87
2			6.93	176.32
B. m			0.72	182.33

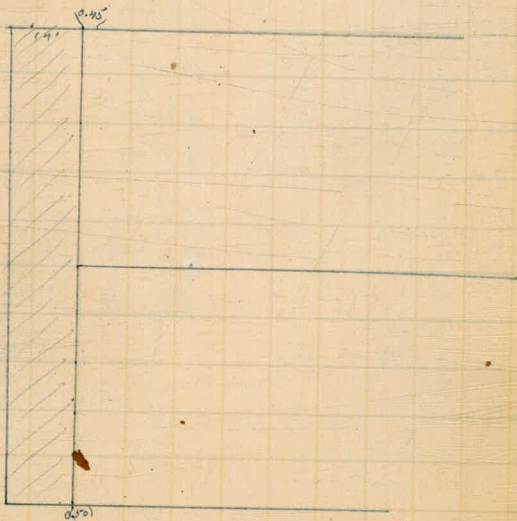
4th and Fir
South end of walk.

North end of walk.

4th and Supt St

25°

14
21



Wall in lock on lot 0.45 on North end

" " " 0.50 " South end.

Sto	+	SO	Side	Prod	eliv
Bm.	1.10	47.62			46.52
0		(43.11)	36.42	6.69	✓
+25			37.00	6.11	✓
+50			37.58	5.53	✓
+75			38.16	4.95 ⁵⁸	✓
1			38.74	4.37 ⁵⁸	✓
+25			39.31	3.80	✓
+50			39.89	3.22 ⁵⁸	✓
+75			40.47	2.64	
2			41.05		
+25			41.63		
+50			42.21		
+75			42.79		
3			43.37		
#	3.23	43.11		7.74	39.88
Bm.				4.70	38.41

4th and 1st
North line of Est

South of 1st
4th and 1st

Gutter guller on West side
of 11th bet Canal St

Sta	+	NO	Griddle	Mod	Blue
		43.11	see preceding page		
0			35.83	7.28	
+25			36.47	6.64	✓
+30			37.11	6.00	✓
+75			37.74	3.37	✓
1			38.38	4.73	✓
+25			39.02	4.09	✓
+30			39.66	3.95	✓
+55			39.79	3.32	
Str.					
Bm	2.93	53.69		50.66	
3+10			50.08	3.51	
			3.75	49.84	
#	11.73	62.85	2.97	50.62	
			0.53	61.82	
2+0			6.47	55.88	
			5.79	66.56	
			5.16	57.19	

North of Est

67
335
83
56.163

35.83
36.30
2) 112.33
56.16

O. Gm. 11th and B St
center of B St

62.35
6.73
55.12
35.15
.04

49.69
40.42
9.42

62.35
5.48
56.50

62.35
5.32
56.83

Center on 4th St bet 4th
and 5th St

Sta	+	HD	Grade	Pool Elev
Bgn	2.36	33.41		31.05
0			29.17	4.24
+50			30.17	
1			31.17	
+50			32.17	
2			33.17	4.24

East line of 4th St

Set with grade to

West line of 5th St

~~$$\begin{array}{r} 38.41 \\ 7.65 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$~~

$$\begin{array}{r} 39.46 \\ 36.05 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$

~~$$\begin{array}{r} 39.46 \\ 35.86 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$~~

$$\begin{array}{r} 39.46 \\ 35.86 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$

~~$$\begin{array}{r} 39.46 \\ 35.86 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$~~

$$\begin{array}{r} 39.46 \\ 35.86 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$

~~$$\begin{array}{r} 39.46 \\ 35.86 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$~~

$$\begin{array}{r} 39.46 \\ 35.86 \\ \hline 39.46 \\ 35.86 \\ \hline 38.41 \end{array}$$

Lev. grades on 4th St bet
I and J St

Sta	+	H ₂	Grade	Prod	Bliv
B.M.	1.72	7.89			6.17
0			2.00	5.89	
1			3.00	4.89	
2			4.00	3.89	
3			5.00	2.89	
				4.44	3.45
B.M.	1.88	12.68			10.80
0			5.80	6.88 ✓	
				1.40	
1			7.20	5.48 ✓	
				1.40	
2			8.60	4.08 ✓	
				1.40	
3			10.00	2.68 ✓	
				6.51	6.17

4th and J St
North line of K St

South line of J St
4th and K St
4th and I St
North line of J St

South line of I St
4th and J St

Grade at intersection
of 6th and H St

Sta	+	H.O	Grade	rod	Elev
Bm	3.38	29.43			26.05
			25.12	4.31	
			24.67	4.76	

$$\begin{array}{r} 1.24 \\ 381.41 \\ \hline 39.65 \\ 371.00 \\ \hline 2.65 \\ 39.65 \\ 37.34 \\ \hline 2.07 \end{array}$$

6th and H St
4' S of curb line of W of 6th

$$\begin{array}{r} 36 \\ 5 \\ \hline 36.25 \\ 33 \\ \hline 59.92 \\ 3 \\ \hline \end{array}$$

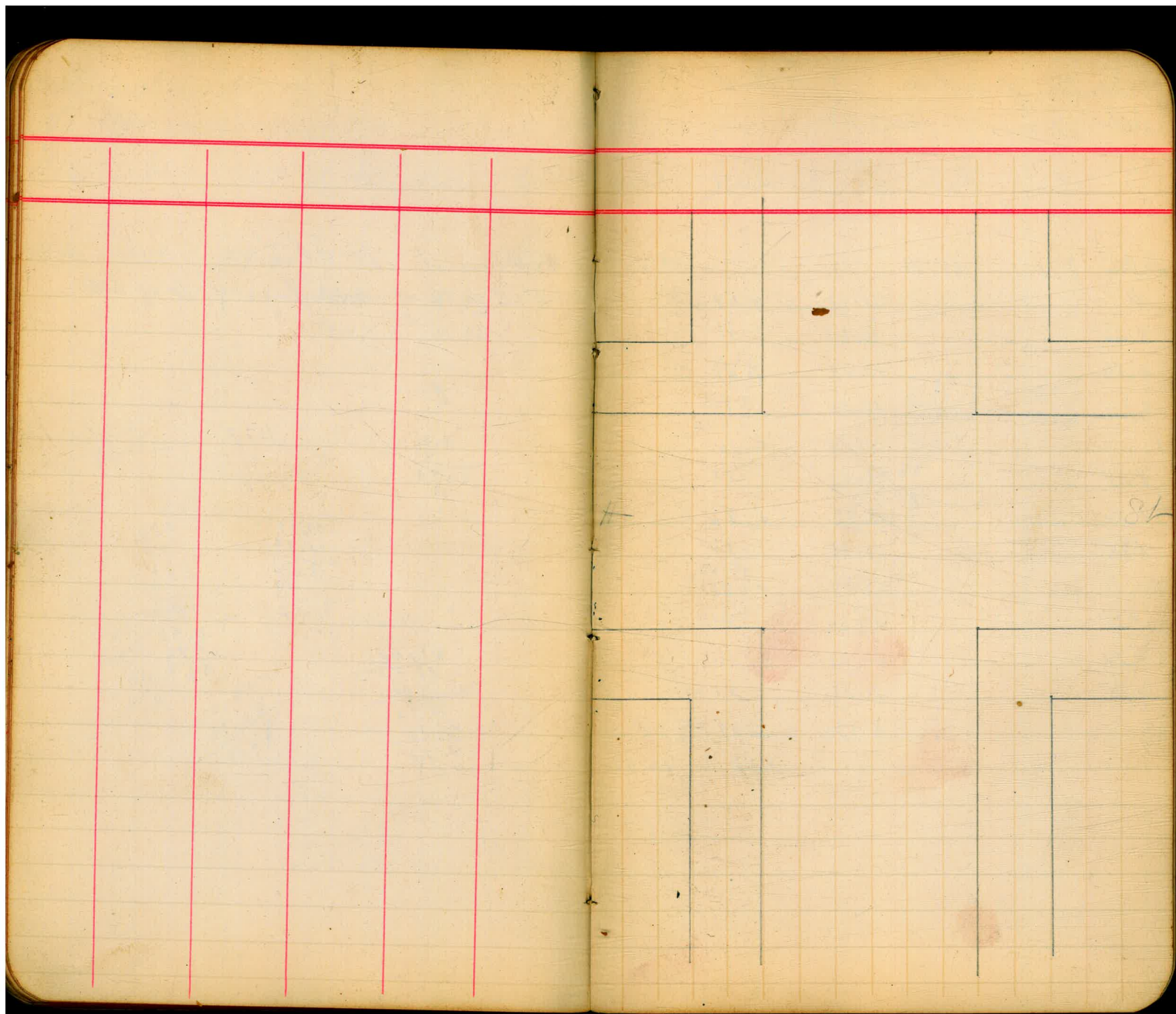
$$\begin{array}{r} 3.37 \\ 13 \\ \hline 3.50 \end{array}$$

$$\begin{array}{r} 3.37 \\ 25 \\ \hline 62 \end{array}$$

$$\begin{array}{r} 89.66 \\ 35.92 \\ \hline 3.73 \\ 23 \\ \hline 4.06 \end{array}$$

$$\begin{array}{r} 3.73 \\ 13 \\ \hline 3.60 \\ 13 \\ \hline 7.5 \\ 3.47 \\ 33 \\ \hline 0.87 \end{array}$$

$$\begin{array}{r} 36.50 \\ 37.00 \\ \hline 273.50 \\ 36.75 \\ 33 \\ \hline 36.72 \\ 34.65 \\ \hline 0.23 \end{array}$$



Center grade on 4th St
bet G and H St

Sta	+	HQ	Grade	Rock	Clear
Bgn	7.71	24.76			17.05
0			16.17	8.59 ✓	
+25			16.63	.92	
+30			17.09	7.67 ✓	
+75			17.55	.91	
1			18.00	6.76 ✓	
+25			18.46	.92	
+50			18.92	5.84 ✓	
+75			19.38	.92	
2			19.84	4.92 ✓	
+25			20.30	.92	
+50			20.76	4.00	
+75			21.22	.91 ✓	
3			21.67	3.09 ✓	
			0.28		24.48

North line of H St

6.76
53
7.09

24.76
17.66
7.10 - 17.56

24.76
17.66
7.10 - 17.20
43

24.76
19.80
5.26

4.92
39
5.26

South line of G St

Center grade on 6th St
bet H and J St

Sta	+	HD	Grade	Roll	Elev
Bm	1.47	27.52			26.05
0			18.92	8.60	
+25			19.38		
+50			19.83		
+75			20.29		
1			20.75		
+25			21.21		
+50			21.67	5.75	
+75			22.13	5.39	
2			22.58	4.94	✓
+25			23.04	4.48	✓
+50			23.50	4.02	✓
+75			23.96	3.56	✓
3			24.42	3.10	✓
			7.75		19.77

27.52
24.17
3.35

27.52
19.83
7.69
3.34

North line of J St

27.52
24.17
3.35

27.52
24.83
2.69
3.57
0.87

South line of H St

Curb grades on West side
of 4th St bet Bates and Elm

Sta	+	HO	Grade	Road	Elm
B9m	6.67	128.14			121.47
0			122.00	6.14 ✓	
+25			123.08	^{1.08} 5.06 ✓	
+50			124.17	^{1.09} 3.97 ✓	
+75			125.25	^{1.08} 2.89 ✓	
1 #	6.66	132.99	126.33	^{1.04} 1.81 ✓	126.33
+25			127.42	5.57 ✓	
#			128.50	1.08	
+50			129.50	4.49 ✓	
+75			129.58	^{1.08} 3.41 ✓	
2			130.67	^{1.09} 2.32 ✓	
+25			131.75	^{1.08} 1.24 ✓	
+50 #		139.28	132.83	^{0.99} 6.45 ✓	132.00
+75			133.92	^{1.09} 5.36 ✓	
3			135.00	^{1.08} 4.28	

North line Bates St.

132.99
124.17
8.82

135.25
7.79

7.53

South line of Elm St

Curve grades on 4th St bet
Hate and Elm on East

3.14
25
2.89

2.14
25
1.89

Sta	+	HO	Grade	Prod	Elw
-----	---	----	-------	------	-----

B.M.	6.67	128.14			121.47
------	------	--------	--	--	--------

0			123.00	5.14	
---	--	--	--------	------	--

+25			124.00	4.14	✓
-----	--	--	--------	------	---

+50			125.00	3.14	-
-----	--	--	--------	------	---

+75			126.00	2.14	-
-----	--	--	--------	------	---

1	6.66	132.99	127.00	1.81	126.33
---	------	--------	--------	------	--------

#				5.99	
---	--	--	--	------	--

+25			128.00	4.99	✓
-----	--	--	--------	------	---

+50			129.00	3.99	✓
-----	--	--	--------	------	---

+75			130.00	2.99	✓
-----	--	--	--------	------	---

2			131.00	1.99	✓
---	--	--	--------	------	---

+25	# 7.61	139.61	132.00	0.99	132.00
-----	--------	--------	--------	------	--------

+50			133.00	6.61	
-----	--	--	--------	------	--

+75			134.00	5.61	
-----	--	--	--------	------	--

3			135.00	4.61	
---	--	--	--------	------	--

B.M.				1.47	138.14
------	--	--	--	------	--------

North line of Hate St

South line of Elm St

4th and Elm St

Check Bms on 4th St

Sto	+	HJ	body	Extra
B9m	9.50	121.92		112.42
B9m #	8.45	129.92	0.47	121.45 121.47
#	10.70	139.28	1.34	128.68
B9m			1.14	138.14 138.16

139.28
135
4.28

0.17
24.47
24.64 HJ
2
22.64

24.64
7.15
17.49

121.47
8.45
129.92
10.70
.62

129.92
1.34
128.58
10.70
139.28
1
138.14

17.49
11.63
19.12
18.52
10.80

145.85
8.75
154.60
4th incl JBL
126.63
28.00
9.62

19.76
2.67
22.43
19.50
2.93

34.75
5.33
30.42

126.62
123.62
3.00

31.05
5.70
36.75
29.17
7.58

26.05
3.40
29.45
24.50
4.95
29.45
23
4.45 checked in
cubic

B. Mr. in 6th St

C	57.42	SE	lydth nozzle
H	52.07	SE	West nozzle to lydth
C	44.55	SE	N hinge to lydth
F	37.60	SE	Nozzle to lydth
S	32.21	SW	sph to tel
S	33.62	SE	N end lydth hinge
H	26.05	SW	Nozzle to lydth
J	19.77	NE	cap steps of Solovon
J	13.74	SE	nozzle to lydth
K	8.32	S.E.	nozzle to lydth

4th St B. Mr's

K	3.44	S.W.	N end lydth hinge
J	6.18	S.W.	nozzle to lydth
J	10.80	S.W.	sph cor - barn
H	17.05	S.W.	north hinge lydth
S	24.47	SE	N end lydth hinge
F	31.05	SW	" " " "
C	38.91	SE	N hinge lydth
H	46.52	S.W.	" " " "
C	49.26	S.E.	" " " "
B	50.66	NE	sph cor fence

3
18 4

40) 50 (0125
90
100

0115
26
250
250
3250
31.42
31.7450
175
31.920

0115
17
500
20
1750

8
7
6
5
4
3
2
1
0
9
48
47
46
45
Degrees

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

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	90
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	89
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	88
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	87
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	86
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	85
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	84
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	83
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	82
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	81
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	80
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	79
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	78
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	77
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	76
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	75
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	74
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	73
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	72
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	71
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	70
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	69
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	68
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	67
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	66
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	65
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	64
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	63
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	62
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	61
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	60
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	59
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	58
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	57
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	56
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	55
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	54
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	53
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	52
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	51
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	50
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	49
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	48
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	47
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	46
45	70.71	70.71							45
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		

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