

9

TRANSIT

F.B. 629

629

able 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	2½	21	49	41	95½
2	4½	22	51½	42	98
3	7	23	53½	43	100½
4	9½	24	56	44	102½
5	11½	25	58½	45	105
6	14	26	60½	46	107½
7	16½	27	63	47	109½
8	18½	28	65½	48	112
9	21	29	67½	49	114½
10	23½	30	70	50	116½
11	25½	31	72½	51	119
12	28	32	74½	52	121½
13	30½	33	77	53	123½
14	32½	34	79½	54	126
15	35	35	81½	55	128½
16	37½	36	84	56	130½
17	39½	37	86½	57	133
18	42	38	88½	58	135½
19	44½	39	91	59	137½
20	46½	40	93½	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	13-37
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

6795

MICROFILMED

DEC 14 1964

Grade at intersection of
H Street

Aug 11 1890

Sta	+	HO	Grade	Prod	Obs
B. 9m	4.18	21.67			12.49
3+40			15.57	6.10	✓
"			15.23	6.44	✓
"			15.57	6.10	✓
"			15.23	6.44	✓
"			15.57	6.10	✗

4 H St

Center of H Street West line

Gutter on west

Center of H St

Gutter on east

East line H St

Check of curb stakes on N
side of 6th bet 4th & 5th

Aug 11 1890

Q 5th & 6th

Sta	+	HO	Grade	rod	Elv
B _{9m}	6.01	55.27			49.26
0			48.00	7.27 ₆₁	✓
+25			48.61	6.66 ₆₂	✓
+50			49.23	6.04 ₆₁	✓
+75			49.84	5.40 ₆₁	✓
1			50.45	4.82 ₆₁	✓
+25			51.06	4.21 ₆₂	✓
+50			51.68	3.59 ₆₁	✓
+75			52.29	2.98 ₆₁	✓
2			52.90	2.37	✓
B _{9m}			52.57	0.80	54.42
0			52.50		
+25			53.35		
+50			53.80		
+75			54.25		
1			54.70		
+25			55.15		
+50			55.60		
+75			56.05		
2			56.50		
B _{9m}					

East of 4th St

West of 5th St

East of 5th St

West of 6th St

Gutter grades on 1st bet
5th & 6th

Aug 12 1890

Sta	+	H.D	Grade	Prod	Clear
B.M.	1.71	35.33			33.62
0			26.63	8.70	
+25			27.22	8.11	✓
+50			27.81	7.52	✓
+75			28.39	6.94	✓
1			28.98	6.35	✓
+25			29.58	5.75	✓
+50			30.16	5.17	✓
+75			30.74	4.59	✓
2			31.67	3.66	✓
0			25.63	9.70	✓
+25			26.22	9.11	✓
+50			26.81	8.52	✓
+75			27.39	7.94	✓
1			27.98	7.35	✓
+25			28.57	6.76	✓
+50			29.16	6.17	✓
+75			29.74	5.59	✓
2			30.67	4.66	✓
			6.98		28.35

East line of 5th St

North side

$\frac{59}{33}$

West line of 6th St

East line of 5th St

South side

$\frac{54}{34}$

West line of 6th St

Center guide on G St
bet 5th & 6th

Aug 12 1890

Sta	+	HO	Guide Rod	Elev
-----	---	----	-----------	------

Sta

0

26.47

+50

27.65

1

28.82

+50

30.10

2

31.17

East of 5th St

West of 6th St

Sutter grade on south side
of 4th bet 4th & 5th

Aug 11 1890

Sta	T	HO	Grade	rod	Elev.
-----	---	----	-------	-----	-------

Bm	3.42	36.85			33.43
0			28.41	8.44 ✓	
+30			29.31	7.54 ✓	
1			30.28	6.57 ✓	
+50			31.26	5.59 ✓	
2			32.23	4.62 -	

center grade on east side bet 5th

Bm	4.96	46.61			41.65
0			39.87	6.74	
+30			40.55	6.06 ✓	
1			41.22	5.39 ✓	
+50			41.90	4.71	
2			42.57	4.04	
				2.05	44.56

5th & 4th St
East of 4th St

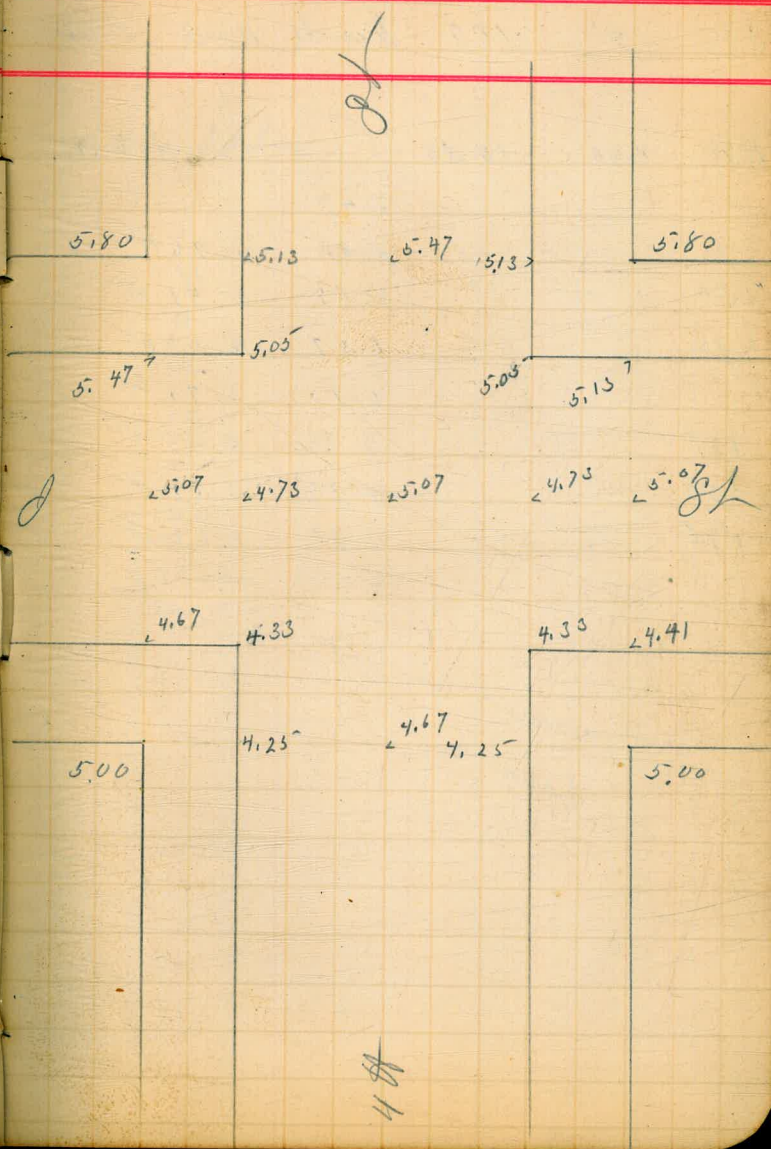
West of 5th St
4th & 5th St
5th & 6th St
East of 5th St

West of 6th St

Grades at intersection of
4th & 9th

Stk	+	HO	Grade	Prod	Elev
B 9m	4.40	10.38			6.18
			5.47	5.11	✓
			5.05	5.58	✓
			5.13	5.43	✓
			5.07	5.51	✓
			4.73	5.83	✓
			4.67	5.91	✓
			4.33	6.25	✓
			4.25	6.33	-
			4.41	6.17	-

checked on stakes
set before



check of center stakes on
4th St nr of Jth

July 12 1880

Sta	+	H ₂	Grade	rod	Elev
B.M.	4.40	10.58			6.18
0			5.47		
+25			5.82	4.76	
+50			6.17	4.41 ^{.35}	✓
+75			6.52	4.06 ^{.35}	✓
1			6.87	3.71 ^{.35}	✓
+25			7.22	3.36 ^{.35}	✓
+50			7.57	3.01 ^{.35}	✓
+75			7.92	2.66 ^{.35}	✓

4th St Jth

checked on stakes set
before.

Check of curb stakes at
Elm & 4th Aug 13 1890

32' 9"
14
18' 9"

Sta	r	120	Grade	Dist	Blk
B. 9m,	4.70	142.86			138.16
			138.00	47.86	
center grade on 1st St bet					
5th & 6th Aug 14. 1890					
B. 9m,	5.93	54.70			48.77
0			46.92	7.78	✓
+50			47.79	6.91	✓
1			48.67	6.03	✓
+50			49.54	5.16	✓
2			50.42	4.28	✓
B. 9m,		2.63		52.07	

4th & 5th St
north of Elm St

East of 5th St

West of 5th St
6th & 7th St

Levit grades on Fr St - bet
4th & 5th for Keating Block

Aug 13 1880
Hamlin
Aiton
Willis
Kensley

Sta	+	H.O	Grade	Prod	Clear
B.M.	4.80	35.85			31.05
1			32.05	3.80 ✓	
				1.03	
+50			33.08	2.77 ✓	
				1.02	
2			34.10	1.75 ✓	
B.M.				2.42	33.43

100' East of 4th St

East line of 5th St
5th & Fr St

$$\begin{array}{r} 32.05 \\ 31.17 \\ \hline .88 \\ 3.80 \\ \hline 4.68 \end{array}$$

$$\begin{array}{r} 33.04 \\ 32.17 \\ \hline .87 \\ 2.77 \\ \hline 3.64 \end{array}$$

$$\begin{array}{r} 34.10 \\ 33.17 \\ \hline .93 \\ 1.75 \\ \hline 2.68 \end{array}$$

Enter grades on 4th St
bet J & K

Sta	+	HO	Grade	rod	elev
B.M.	2.52	8.70			6.18
0			1.33	7.37	✓
+25			1.58	7.12 ^{.25}	✓
+50			1.83	6.87 ^{.25}	✓
+75			2.08	6.62 ^{.25}	✓
1			2.33	6.37 ^{.25}	✓
+25			2.58	6.12 ^{.25}	✓
+50			2.83	5.87 ^{.25}	✓
+75			3.08	5.62 ^{.25}	✓
2			3.33	5.37 ^{.25}	✓
+25			3.58	5.12 ^{.25}	✓
+50			3.83	4.87 ^{.25}	✓
+75			4.08	4.62 ^{.25}	✓
3		4.37 ^{.25}	4.33	4.37 ^{.25}	✓
		4.29		5.24	3.46
			4.73	3.97 ^{.34}	✓
			5.07	3.63 ^{.34}	✓
			5.13	3.57 ^{.34}	✓
			5.05	3.65 ^{.34}	✓
			5.47	3.23	✓
		3.57			
		3.23			
		3.			

B.M. 4th St

South of 1st

level grade in N of 5th
75' East of 5th St

Aug 15 1890

Sta	+	HD	Grade	Prod
B.M.	3.64	58.06		54.42
0			52.90	5.16 ✓
+25'			53.35	4.71 ✓
+50'			53.80	4.26 ✓
+75'			54.25	3.81 ✓ 5.03 ✓
1			54.70	3.36 ✓
B.M.				4.58 ✓ 54.42
+25'			55.15	4.13 ✓
+50'			55.60	3.68 ✓
+75'			56.05	3.23 ✓
2			56.50	2.78 ✓
	1.86	59.28		57.42
			4.85	54.42

5th & 6th
East of 5th St

5th & 6th

Backed up from 6th St

West line of 6th St

6th St B.M.

5th St " " Checked

center gully on 11 A St
bet J & K St

Aug 15-1890

Sta	x	H.O	Grade Rod	Elev
B.M.	2.57	8.69		6.18
1		2.67	6.02 ✓	
+25		2.92	5.77 ✓	
+50		3.17	5.52 ✓	
+75		3.42	5.27 ✓	
2		3.67	5.02 ✓	
+25		3.92	4.77 ✓	
+50		4.17	4.52 ✓	
+75		4.42	4.27 ✓	
3		4.67	4.02 ✓	
B.M.			5.24	3.45

4th J St
100' north of K St

$$\begin{array}{r} 5.27 \\ 35 \\ \hline 7.94 \end{array}$$

$$\begin{array}{r} 5.02 \\ 5.27 \\ \hline 10.29 \\ 5.14 \end{array}$$

$$\begin{array}{r} 5.17 \\ 39 \\ \hline 5.51 \end{array}$$

$$\begin{array}{r} 5.02 \\ 12 \\ \hline 5.14 \\ 5.27 \end{array}$$

South line of J St
4th & K St

Gutter grades on 4th St bet
J & R.

Aug 13 - 1890

Sta	+	HD	Grade	Rod	Ch
B.M.	2.57	8.69			6.18
0			11.33	7.36 ^{.25}	✓✓
+25			11.58	7.11 ^{.25}	✓✓
+50			11.83	6.86 ^{.25}	✓✓
+75			21.08	6.61 ^{.25}	✓✓
1			21.33	6.36 ^{.25}	✓✓
+75			21.58	6.11 ^{.25}	✓✓
+30			21.83	5.86 ^{.25}	✓✓
+75			31.08	5.61 ^{.25}	✓✓
2			31.33	5.36 ^{.25}	✓✓
+75			31.58	5.11 ^{.25}	✓✓
+50			31.83	4.86 ^{.25}	✓✓
+75			41.08	4.61 ^{.17}	✓✓
3			4.25	4.44	✓✓
B.M.				5.24	3.45

B.M. 4th & J St
North of R St

South of J St
4th & R St

Gutter grades on East
bet 4th & 5th

Aug 16 1890

22.83
21.33
1.50
24.33
22.83
1.50

Sta	+	150	Grade	Prod	Elv
B.M.	0.48	28.83			28.35
0			22.33	6.50 ✓	
+50			23.58	1.25 ✓	
1			24.83	5.25 ✓	
+50			25.73	1.25 ✓	
2			26.63	.90 ✓	
				2.20 ✓	
0			21.41	7.42 ✓	
+50			22.83	1.42 ✓	
1			24.33	6.00 ✓	
+50			24.98	1.50 ✓	
2			25.63	.65 ✓	
				3.20 ✓	
				4.72	24.11

5th & East

East line of 4th St

North Side

West line of 5th St

East line of 4th St

South Side

West line of 5th St

Gutter grades on H St
bet 4th & 5th

Aug 16 1890

Sta	+	HS	Gude Rod	Elv-
Bm	7.68	-25.17		17.49
0			15.83	
+50			17.08	
1			18.33	
+50			19.58	
2			20.83	
			14.83	
0			14.91	10.26 ✓
+50			16.06	1.15 ✓
1			17.28	9.11 ✓
+50			18.51	1.22 ✓
2			19.73	7.89 ✓
				1.23 ✓
				6.66 ✓
				1.23 ✓
				5.44 ✓
			2.13	23.04

East line 4th St

North side

West line 5th St

East of 4th St

South side

West of 5th St

center grade on H St - bet
J & R St

Sta	+	HO	Grade	Prod	Elev
B 9m	1.36	7.54			6.18
0			1.67	5.87	✓
+25			1.92	5.62 ^{.25}	✓
+50			2.17	5.37 ^{.25}	✓
+75			2.42	5.12 ^{.25}	✓
1			2.67	4.87 ^{.25}	✓
+25			2.92	4.62 ^{.25}	✓
+50			3.17	4.37 ^{.25}	✓
+75			3.42	4.12 ^{.25}	✓
B 9m,				4.09	3.45

4th & J St
North line of R St

7.54
1.05
6.49

Level grades on 1st bet
Sta 1 and 2 on N side bet

4th & 5th

Sta	+	H ₂ O	Grade mod	Elev
B.M.				46.52
1			46.15	
+25			46.56	
+30			46.98	
+75			47.39	
2			47.80	

4th & 10th St

100' East of 4th St

West line of 5th St

Level grades on 1st bet
100' East of 4th & West of 5th

B.M.	2.83	49.35		46.52
1			46.15	3.20
+25			46.56	2.79 ✓
+50			46.98	2.37 ✓
+75			47.39	1.96 ✓
2			47.80	1.53 ✓
			0.57	49.78

West of 5th St

Cut grades on esth from
Sta 0+95 to West of 6th St on

Aug 16 1890

Northside

Sta	+	HS	Grade	Prof	Elev
Bm	3.32	44.97			41.65
0+80			41.84	3.13 ✓	
1			42.10	2.87 ✓	
+25			42.43	2.54 ✓	
+50			42.75	2.22 ✓	
+75			43.08	1.89 ✓	
2			43.40	1.57 ✓	
Bm			0.41		44.56

5th & 8.
80 East of 5th St

57.32
- .064

4
- .256

West line of 6th St
6th & 8

41.78
- .064

42.844
- .256

42.100

41.78
- .26

41.04
- .065

41.105

41.10
41.78

57.32
- .065

20
- .30

30
- .064

254

1/5) .32
 3) 124 (32
 20
 20
 0

41.78
- .064

41.814
- .256

42.070

41.78
- .065

41.845
- .26

42.105

57.32
- .064

4
- .256

42.000
- .065

42.100

Eliv on Walk at S.W. cor
of 5th & First for Mr Spencer

Aug 18 1890

Sta	+	H ₂ O	-	Eliv B.M.
B.M.	5.16	36.21		31.05
2			3.16	33.05
1+86			3.26	32.95
B.M.			2.78	33.43

at Sta 2+86 curb 1' deep
at Sta 2 gutter 10" deep

at Sta 2				
		33.05		
		32.90		
		.15	high	3.10
		32.95	eliv.	
Sta 1+86		32.63		
		.32	high	

5th & First
West line of 5th
End of concrete walk.
5th & First

Chiller for Piers at Heating
 alk bet 4 H & 5 H

Aug 18 1890

St	+	HO	June	and	
Bm	5.16	36.21			31.05
+ 25			32.81	3.40 ✓	
+ 43			33.18	3.03 ✓	
			32.30	3.91 ✓	
			4.16		
				25	

$$\begin{array}{r} 2/4.1 \\ 2.05 \\ \hline \end{array}$$

$$\begin{array}{r} 34.1 \\ 30 \\ \hline 200) 4.16205 \\ 400 \\ \hline 1000 \\ 1000 \\ \hline \end{array}$$

$$\begin{array}{r} 145 \\ 32.56 \\ 25 \\ \hline 32.81 \end{array}$$

$$\begin{array}{r} 32.56 \\ 32.05 \\ 57 \\ \hline \end{array}$$

$$\begin{array}{r} .0205 \\ 143 \\ \hline 615 \\ 820 \\ 203 \\ \hline 2.9315 \end{array}$$

$$\begin{array}{r} 3.40 \\ 51 \\ 25 \\ \hline 4.16 \end{array}$$

$$\begin{array}{r} 30 \\ 32.93 \\ 25 \\ \hline 35.18 \\ 117 \\ \hline 34.35 \end{array}$$

$$\begin{array}{r} .0105 \\ 57 \\ \hline 143 \\ 1025 \\ \hline 1.1655 \end{array}$$

$$\begin{array}{r} 32.05 \\ 25 \\ \hline 32.30 \end{array}$$

$$\begin{array}{r} 34.10 \\ 95 \\ \hline 34.35 \end{array}$$

Curb grades on South
Side of ESt bet 5th & 6th

Aug 19 1890

Sta	+	H ₂ O	Grade	Rod	Elev
B ₉ m	3.81	45.46			41.65
0			39.60	5.86	✓
+25			39.95	5.51 ^{.35}	✓
+50			40.30	5.16 ^{.35}	✓
+75			40.65	4.81 ^{.35}	✓
1			41.00	4.46 ^{.35}	✓
+25			41.35	4.11 ^{.35}	✓
+50			41.70	3.76 ^{.35}	✓
+75			42.05	3.41 ^{.35}	✓
2			42.40	3.06 ^{.35}	✓
B ₉ m.				0.90	44.56

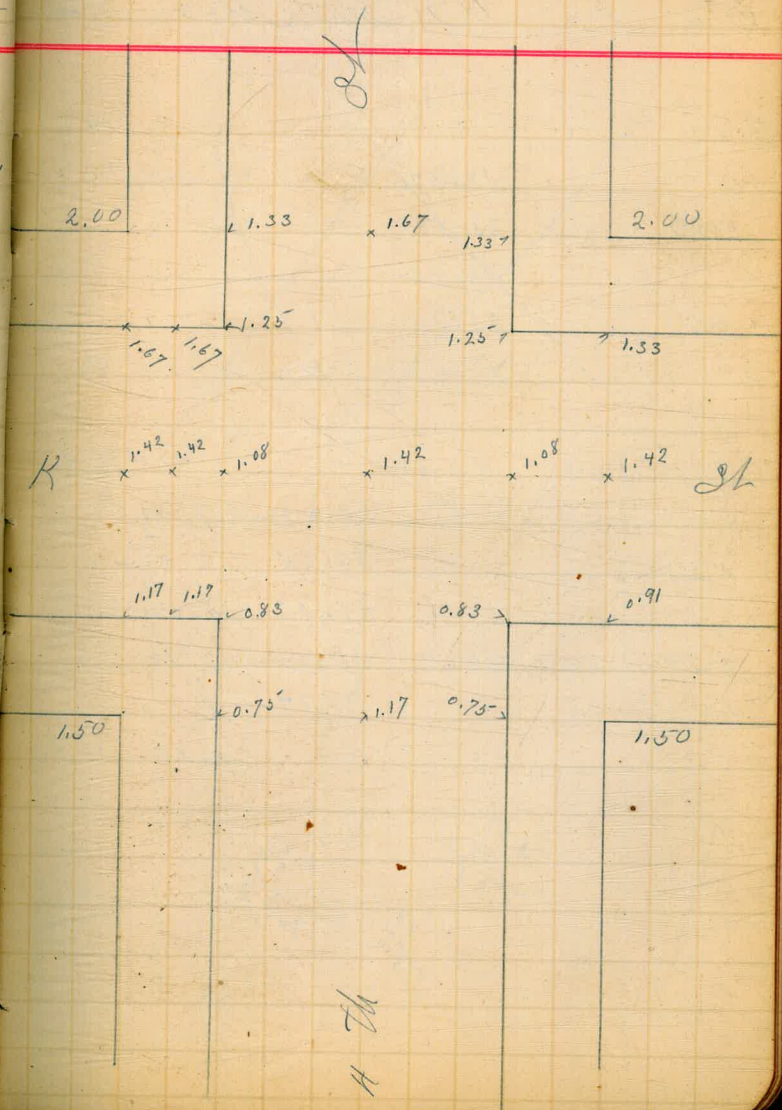
5th & ESt
East line of 5th St

West line of 6th St
6th & ESt

Grades at intersection of
4th & R St

Aug 19 1890

BM	+	HO	Grade Rod	Elev
6.18	0.85	7.03	4th & J SW cor	
			3.57	3.46
			1.33	5.70
			1.25	5.78
			1.42	5.61
			1.08	5.95
			0.91	6.12
			0.83	6.20
			0.75	6.28
			1.17	5.86
			1.67	5.36
			3.42	3.61



Center grades on East
bet 4th & 5th

Aug 19 1890

Sta	+	HO	Grade	Prod	Blor
B.M.					24.11
0		22.17			
+50		23.55			
1		24.92			
+50		25.70			
2		26.47			
B.M.	5.53	33.88			28.35
0			26.47	7.41	
+50			27.65	6.23	
1			28.82	5.06	
+50			30.00	3.88	
2			31.17	2.71	
				0.26	33.62

3.44
84
4.72

5.06
44
5.90

6.23
84
7.08

~~East line of 4th St~~
~~West line of 5th St~~
5th St
East line of 5th St
West line of 6th St

Check grade on 4 ft
Bet Redwood & Spruce

Grade Rod West		Grade Rod East	
		278.57	
269.50	9.07 ✓	270.50	8.07 ✓
			.33
270.00	8.57 ✓	270.83	7.74 ✓
			.33
270.50	8.07 ✓	271.16	7.41 ✓
			.34
271.00	7.57 ✓	271.50	7.07 ✓
			.33
271.50	7.07 ✓	271.83	6.74 ✓
272.00	6.57 0.2 low	272.17	6.40 ✓
			.33
272.50	6.07	272.50	6.07

Sta + HD - Elev
 Bm 6.19 278.57 272.38
 0 North of Redwood
 +50
 1
 +50
 2
 +50
 3 South of Spruce
 Bm 4 ft & Redwood 8.82 269.75

Check of Gunders on Spruce
St. bet 3rd & 4th

Gunde	Prod	Gunde	Prod	Gunde	Prod
271.5	7.07	271.25	7.32	271.00	7.57
271.88	6.69	271.63	6.94	271.38	7.19
272.25	6.32	272.00	6.57	271.75	6.82
272.63	5.94	272.38	6.19	272.13	6.44
273.00	5.57	272.75	5.82	272.50	6.07
273.00	5.57	272.75	5.82	272.50	6.07

Sta	T	H	Ele
B.M.	6.19	278.57	272.38
0 East of 3rd			
	+50		
	1		
	+30		
2 West of 4th St			
	+40		
0 East of 4th St			
B.M. 4th St	8.82		269.75

278.57

3

cut 27

0 East of 3rd

+50

1

+30

2 West of 4th St

+40

0 East of 4th St

B.M. 4th St

8.82

269.75

East grader on 7th St bet
4th & 5th St on South side

Sta	+	HQ	Grade	Pod	Elev
B.M.	4.88	35.93			31.05
0			29.00	6.93	✓
+25			29.49	6.44 ^{.49}	✓
+50			29.98	5.95 ^{.49}	✓
+75			30.46	5.47 ^{.48}	✓
1			30.95	4.98 ^{.49}	✓
+25			31.44	4.49 ^{.49}	
+50			31.93		
+75			32.41		
2			32.90		
B.M.			2.50		33.43

4th & 7th St.
East line of 4th St.

West line of 5th St.
5th & 7th Street.

Gutter grades on North
side of 1st 100' East of 4th

Aug 21 1880

Sta	+	H.S	Grade	Rod	Elev
B.M.	304	49.57			46.53
0			43.83	5.74	
+25			44.24	5.33	✓
+50			44.66	4.91	✓
+75			45.07	4.50	✓
1			45.48	4.09	
B.M.				0.80	48.77

4th & 1st
East line of 4th St

~~5th & 1st~~

Cent stake on south side
of F Street bet 4th & 5th

Aug 21 1890

Sta	+	HD	Grade	Rod	Elev
B.M.	4.96	36.01			31.05
0			29.00	7.01 ✓	
+25			29.49	6.52 ✓	
+50			29.98	6.03 ✓	
+75			30.46	5.55 ✓	
1			30.95	5.06 ✓	
+25			31.44	4.57 ✓	
+50			31.93	4.08 ✓	
+75			32.41	3.60 ✓	
+86			32.63	3.38 ✓	
0			32.90	3.11 ✓	
B.M.				2.58	33.43
0+5			29.10	6.91 ✓	
check of stake of 0+05 on south of F St east of 4th					
B.M.	3.63	34.68			31.05
			29.00	5.68	
			29.10	5.58	
			29.49	5.19 ✓	

4th & F St
East line of 4th St

End of concrete curb
West line of 5th St
5th & F St

$$\frac{1}{5} \times 49 \times \frac{49}{5} = .098$$

$$\frac{4}{5} \times \frac{49}{1} = \frac{196}{5} = .392$$

29.098	25) 49 (0.96
29.098 - 0+5	240
392	225
29.490 + 75	150
	150
.0196	.0980
.3920	.0980

Curb grades on North
side of 5th from Sta 1 to
West of 5th St bet 4th & 5th

Sta	+	HO	Grade	Prod	Blw
B9	4.99	29.10			24.11
1			25.50	3.60	✓
+25			25.95	3.15 ^{.45}	
+50			26.40	2.70 ^{.45}	✓
+75			26.85	2.25 ^{.45}	✓
2			27.30	1.80 ^{.45}	✓

Curb grades on South side
of 5th bet 4th & 5th 100' East
of 4th St

0			22.00	7.10	✓
+25			22.75	6.35 ^{.75}	✓
+50			23.50	5.60 ^{.75}	✓
+75			24.25	4.85 ^{.75}	✓
1			25.00	4.10 ^{.75}	✓
B9m				0.75	28.35

B.M. 4th & 5th

West line of 5th St

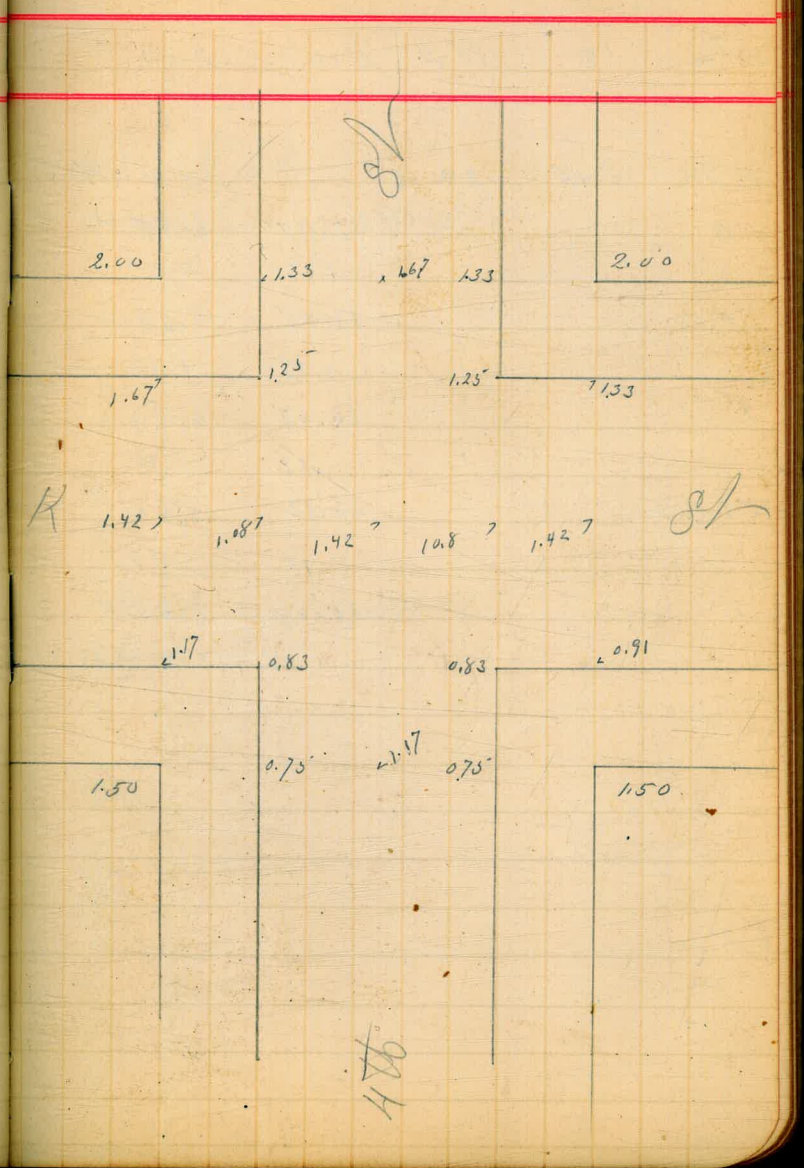
East line of 4th St

5th & 6th

Grades at 4th & R St

Aug 21 1890

H	H ₂	Grade Rod	B.M.
1.41	7.59	4th St	6.18
	1.67	5.92 ✓	
	1.25	6.34 ✓	
	1.33	6.26 ✓	
	1.42	6.17 ✓	
	1.08	6.51 X	
	1.17	6.42 ✓	
	0.83	6.76 X	
	0.75	6.84 ✓	
	0.91	6.68	
B.M.	4th R	4.13	3.76



B St center grade bef
~~4th & 5th~~

Sta	+	N.O	Grade	rod
B.M	5.05	29.16		24.11
0			22.17	6.99 ✓
+			1.38	1.38
+50			23.55	5.61 ✓
			1.37	1.37
1			24.92	4.24 ✓
			.78	.78
+50			25.70	3.46 ✓
			.77	.77
2			26.47	2.69 ✓
			0.81	28.35

25
 25.30
 250.50
 257.20
 33
 24.92

4th & B St
 East line of 4th St

West line of 5th St
~~5th & B St~~

Curb grade on 5th St bet
5th & 6th on South side
from Sta 1 to West line 6th

Sta	+	HD	Grade	Roll	Elev
Bm	5.68	34.03			28.35
1			28.65	5.38	✓
+25			29.24	4.79	✓
+50			29.83	4.20	✓
+75			30.41	3.62	✓
2		5	31.00	3.03	✓
Bm				0.42	33.61

→ curb 2 1/2" low 2 1/2" out in St
100' East of 4th St

West line of 6th St
6th & 5th

Public grounds on 1st bet
4th & 5th Aug 23 1890

Sta	+	NO	Small Rod	Elv
B.M.	7.53	18.33		10.80
0			9.33	9.00
+50			10.58	7.75 ✓
1			11.83	6.50 ✓
+50			13.08	5.25 ✓
2			14.33	4.00 -
0			10.33	8.00 ✓
+50			11.58	6.75 ✓
1			12.83	5.50 ✓
+50			14.08	4.25 ✓
2			15.33	3.00
B.M.			1.24	17.09

7.33
5) 1.25

1.25

4th & 1st
East of 4th St

West line of 5th St

East line 4th

West line 5th St

5th & J

South side

North side

1.25) 11.33 (5
12.5

2) 1.15
30

30) 2.50
75

Grades in 1st bet 3rd
& 6th

Aug 23 1890

Grade	Prod.	Grade	Prod.	Grade	Prod.
North			South		
		(21.66)			
15.33	✓ 6.33 .75	15.17	6.49 .75	✓ 14.33	7.33 .75
16.08	✓ 5.58 .75	15.92	✓ 5.74 .75	15.08	6.58 .75
16.83	✓ 4.83 .75	16.67	✓ 4.99 .75	15.63	✓ 3.83 .75
17.58	4.08 .75	17.42	4.24 .75	16.58	✓ 5.08 .75
18.33	✓ 3.33	18.17	✓ 3.49	17.33	4.33

Sta	+	HO	-	Elev.
5th & O				
B.M.	4.58	21.66		17.08
B.M.	5th & O		1.92	19.74
0	East of 5th St			
750				
1				
750				
2	West line 6th St			

Dutter grade on East N side
100' East of 5th St

Sta	+	HO	Grade	Mod	Elev
B. 9m	3.67	45.32			41.65
B. 9m				0.76	44.56
0			40.13	5.19	✓
+25			40.46	4.86	✓
+50			40.78	4.54	✓
+75			41.11	4.21	✓
1			41.43	3.89	✓

5th & E 11
6th & 28th
East of 5th St

100' East of 5th St

Grade & center for 8th car
 on bet 5th & 6th on H

Aug 23, 1890.

$\frac{3.76}{3.72}$

Sta	+	H ₂	Grade	Prod	Elev
B.M.	5160	39.03			33.43
0			33.17	5.86 ✓	
				.76	
+50			33.93	5.10 ✓	
				.77	
1			34.70	4.33 ✓	
				.76	
+50			35.46	3.57 ✓	
				.76	
2			36.22	2.81 ✓	
				.34	
+14			35.88	3.15 ✓	
				.34	
+40			36.22	2.81 ✓	
				.34	
+66			35.88	3.15 ✓	
				.34	
0			36.22	2.81 ✓	
				1.43	39.60

5th & H

East line of 5th St

2.24
 $\frac{37.59}{39.83}$
 $\frac{36.12}{3.61}$
 $\frac{3.55}{3.94}$
 3.91

West line of 6th St

East line of 6th St

Level grader on South side
of S. St. bet 4th & 5th

Aug. 23, 1890

Sta	+	H ₀	Grade	Roll	Elev
-----	---	----------------	-------	------	------

B.M.

0

22.00

East of 4th St

+25

22.68

+50

23.36

+75

24.05

1

24.73

+10

25.00

110' East of 4th St

level grades on south side
of St. bet 5th & 4th
1 mi. east of 4th

Sta	+	H ₂ O	Grade	Prod	Blow
B _{9m}	0.89	29.24			28.35
B _{9m}				5.13	24.11
0			22.00	7.24 ✓	
				.71	
+25			22.71	6.53 ✓	
				.71	
+50			23.42	5.82 ✓	
				.70	
+75			24.12	5.12 ✓	
1			24.83	4.41 ✓	
				.41	
+10			25.00	4.24 ✓	1K
+25			25.24	4.00 ✓	.06' Low
				.42	
+50			25.66	3.38 ✓	.08 "
				.42	
+75			26.08	3.16 ✓	.07 "
				.42	
2			26.50	2.74	

5th & 6th

4th & 5th

Levelling for Masonic
 Building at NW cor. of
 6th & H St North side

July 25

Sta	+	HD	Grade	Red	Blu
Bm	4.84	27.90			23.06
1			23.50	4.40 ✓	
				.50	
+25			24.00	3.90 ✓	
				.50	
+50			24.50	3.40 ✓	
				.50	
+75			25.00	2.90 ✓	
				.50	
2			25.50	2.40	
Bm	4.28	30.32		1.86	26.04
0			25.50	4.82 ✓	
				.46	
+25			25.96	4.36 ✓	
				.46	
+50			26.42	3.90 ✓	
				.46	
+75			26.88	3.44	

5th & H St

West line of 6th St

North line Masonic Hall

checked on granite curb

Lev. Bench on N St
bet 4th & 5th on south side

Aug 23

6.63
87
7.56

Sta	+	HO	Grade	Rod	Blu
Bm	5.93	23.42			17.49
0			15.50	7.92	✓
+25			16.11	7.31 ^{.61}	✓
+50			16.73	6.69 ^{.62}	✓
+75			17.34	6.08 ^{.61}	✓
1			17.95	5.47 ^{.61}	✓
+25			18.56	4.86 ^{.62}	✓
+50			19.18	4.24 ^{.61}	✓
+75			19.79	3.63 ^{.61}	✓
2			20.40	3.02	✓
				0.57	23.05

4th & N St
East line of 4th St

West line of 5th St

Cont grade on H&H bet
 57 & 67 on South side

Bm	+	HO	Grade	Pod	Elv
Bm	1.98	28.03			26.05
1			22.45	5.58 ✓	
+25			22.96	5.07 ✓	
+50			23.48	4.55 ✓	
+75			23.99	4.04 ✓	
2			24.50	3.53 ✓	
				4.97	23.06

100' East of H&H

West line of 57 & 67

Grades on 1st bet 4th

8th
North Center South

Grade Rod Grade Rod Grade Rod

12.43

5.13	7.30	5.07	7.36	4.33	8.10
6.23	6.20	6.16	6.27	5.41	7.02
7.33	5.10	7.25	5.18	6.48	5.95
8.43	4.00	8.33	4.10	7.56	4.87
9.53	2.90	9.42	3.01	8.63	3.80

15.04

9.53	5.51	9.42	5.62	8.63	6.41
10.23	4.81	10.11	4.93	9.31	5.73
10.93	4.11	10.80	4.24	9.98	5.06
11.63	3.41	11.48	3.56	10.66	4.38
12.33	2.71	12.17	2.87	11.33	3.71

Aug 25

Sta + H 2 - Elev

B.M. 6.25 12.43 6.18

0 East line of 4th

+50

1

+50

2

West line of 5th

B.M. 0.98 11.45

B.M. 3.61 15.04 11.43

0 East line of 5th

+50

1

+50

2

West line of 6th

B.M. 1.30 13.74

R St bet 5th & 6th

Aug 25

Sta + H.O. Grade Rod Elev

Sta	+	H.O.	Grade	Rod	Elev
B.M.	3.64	11.02			7.38
0			4.33	6.69	✓
+50			4.71	6.31 ^{.38}	✓
1			5.08	5.94 ^{.37}	✓
+50			5.46	5.56 ^{.34}	✓
2			6.17	4.85 ^{.71}	✓
0					
105			5.02	6.00	✓
+50			5.43	5.59 ^{.41}	✓
1			5.85	5.17 ^{.42}	✓
+50			6.26	4.76 ^{.41}	✓
2			6.67	4.35 ^{.41}	✓
B.M.				1.71	8.31

B.M. 5th & R
 East line of 5th St }
 South
 West line of 6th St }
 East of 5th St }
 Centre
 West of 6th St }
 6th & R

Center grade on 2nd bef
 4th & 3rd

Sta	+	HO	Inch	rod
Bm	6.96	17.76		10.80
0			10.17	7.59 ✓ 1.25
+50			11.42	6.34 ✓ 1.25
1			12.67	5.09 ✓ 1.25
+50			13.92	3.84 ✓ 1.25
2			15.17	2.59 ✓
B.M.			0.67	17.09

4th & 2nd
 East line of 4th

West line 5th

center grades on East
bet 5th & 6th St

Sta	+	HO	Grade	Prod	Blu
-----	---	----	-------	------	-----

Bm	3.65	45.30			41.65
----	------	-------	--	--	-------

0			39.87	5.48	
+25			40.21	5.09 ³⁴	✓
+50			39.53	4.73 ³³	✓
+75			40.88	4.42 ³³	✓

				.34	
1			41.22	4.08 ³⁴	✓
+25			41.56	3.74 ³⁴	✓
+50			41.90	3.40 ³³	✓
+75			42.23	3.07 ³³	✓

2			42.57	2.73	
+25				0.74	44.56

5th & E Street
East line of 5th St

West line of 6th St

Dr. St. gutter grades on 8
side bet. 5th & 6th

Prof 281890

Sta	+	HO	Grade	Prod	Elev
B.M.	4.82	38.25			33.43
0			32.23	6.02 _{.43}	✓
+25			32.66	5.59 _{.42}	✓
+50			33.08	5.17 _{.43}	✓
+75			33.51	4.74 _{.42}	✓
1			33.93	4.32 _{.48}	✓
+25			34.36	3.89 _{.42}	✓
+50			34.78	3.47 _{.43}	✓
+75			35.21	3.04 _{.76}	✓
2			35.97	2.28	✓
				0.67	37.58
1			34.78	3.47 _{.39}	
+25			35.12	3.13 _{.34}	
+50			35.46	2.79 _{.33}	✓
+75			35.79	2.46 _{.68}	✓
2			36.47	1.78	out

B.M. 5th & 7th St
East line of 5th St

West line of 5th St

" " 0.04 low.
edge gutter 1.5 low

least grade on I & J
bet 5A & 1A sta both sides

Sta	+	HO	Grade	Prod	Clear
Bm	3.69	20.77			17.08
0			16.00	4.77	✓
+25			16.58	4.39 ^{.38}	✓
+50			16.75	4.02 ^{.57}	✓
+75			17.13	3.64 ^{.38}	✓
1			17.50	3.27 ^{.37}	✓
+25			17.88	2.89 ^{.38}	✓
+50			18.25	2.52 ^{.37}	✓
+75			18.63	2.14 ^{.38}	✓
2			19.00	1.77 ^{.37}	✓
Bm				1.02	19.75
0.5			15.00	5.77	✓
+25			15.38	5.39	✓
+50			15.75	5.02	✓
+75			16.13	4.64	✓
1			16.50	4.27	✓
+25			16.88	3.89	✓
+50			17.25	3.52	✓
+75			17.63	3.14	✓
2			18.00	2.77	✓

5A & 1A
East line

8L

West

West line

8L

5A & 1A
East line

8L

South

West line

8L

Center grade on 18th
from steam truck bet 50th & 50th

50th

Sta	+	H ₂ O	Grade	rod	Elv
B.M	4.35	53.13			48.78
0			46.92	6.21 ✓	
				.87	
+50			47.79	5.34 ✓	
				.88	
1			48.67	4.46 ✓	
				.87	
+50			49.54	3.69 ✓	
				.88	
2			50.42	2.71 ✓	
B.M				1.06	52.07
+14			50.08	3.05	

20th & 50th St

East line of 30th St

Full West line of 50th St
6th & 10th St

Center grade on 4th St
11 feet East of East Rail cobb

bet 4th & 5th Sts
door July 29 1890

Sta	+	HD	Grade	Rod	Elv
B.M.	9.22	71.04			61.82
0			60.50	10.54 ✓	
+25			62.02	1.52 ✓	
+50			63.54	1.52 ✓	
+75			65.06	1.52 ✓	
				1.52	
1			66.58	4.46 ✓	
+25			68.10	2.94 ✓	
+50	#10.70	80.32	69.62	1.52 ✓	69.62
+75			71.14	1.52 ✓	
				1.52	
2			72.66	7.66 ✓	
+25			74.18	1.52 ✓	
+50			75.70	1.52 ✓	
+75			77.22	1.52 ✓	
				1.53	
3			78.75	1.57 ✓	1.03 lowered
B.M. #	1.07	80.84		0.55	79.77
B.M.			10.67	70.17	

4th & 5th St
North line of 4th St

South line of 4th St
4th & 5th St
Side of 4th St

$$\begin{array}{r} 11.85 \\ \underline{5} \\ 12.35 \\ \underline{7.08} \\ 5.27 \end{array}$$

$$\begin{array}{r} 40 \\ \underline{7.25} \\ 32.75 \end{array}$$

$$\begin{array}{r} 32.94 \\ \underline{7.34} \\ 25.60 \end{array}$$

$$\begin{array}{r} 39 \quad 12 \\ 40.50 \quad 150 \quad 5.15 \quad 35 \\ \underline{4.50} \\ 3.6 \quad \underline{7.50} \\ 25.0 \end{array}$$
~~3.00~~

$$.035 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1$$

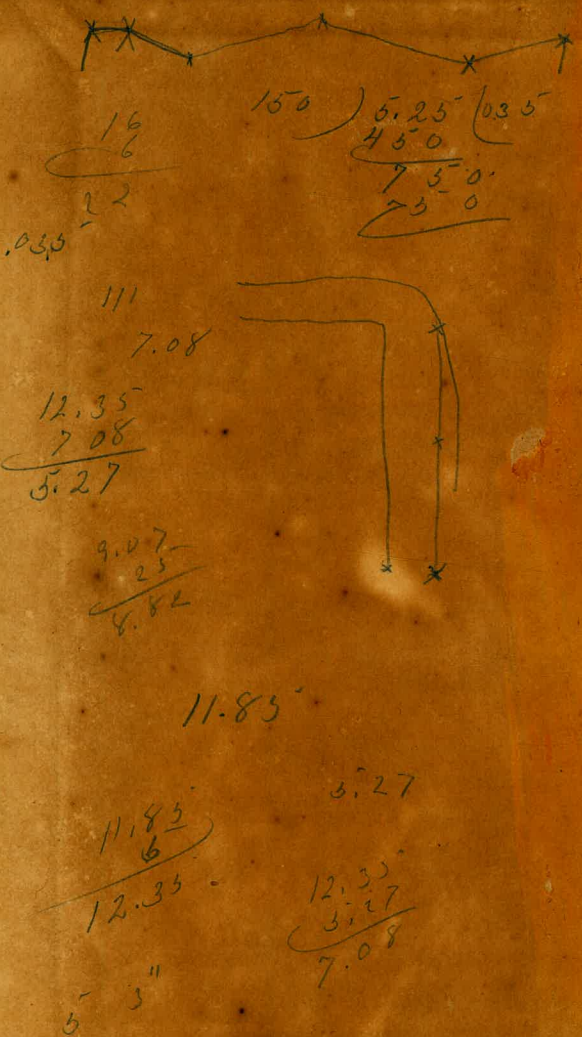
$$\begin{array}{r} .035 \quad 1.000 \\ \underline{70} \\ 300 \end{array} \quad 88$$

$$\begin{array}{r} .035 \quad 1.000 \\ \underline{70} \\ 300 \\ \underline{280} \\ 200 \\ \underline{210} \end{array} \quad 28.6$$

$$\begin{array}{r} 40 \quad 150 \\ \underline{160} \end{array} \quad 14$$

$$28.5$$

$$\begin{array}{r} 30 \quad 150 \\ \underline{15} \end{array} \quad 5$$



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	85
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	84
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	83
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	82
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	81
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	80
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	79
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	78
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	77
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	76
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	75
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	74
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	73
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	72
14	97.05	24.19	96.92	24.62	96.81	25.04	96.70	25.46	71
15	96.65	25.88	96.48	26.30	96.36	26.72	96.25	27.14	70
16	96.23	27.56	96.00	27.98	95.88	28.40	95.76	28.82	69
17	95.79	29.24	95.50	29.65	95.37	30.07	95.24	30.49	68
18	95.33	30.90	94.97	31.32	94.83	31.73	94.69	32.14	67
19	94.85	32.56	94.41	32.97	94.26	33.38	94.12	33.79	66
20	94.37	34.20	93.82	34.61	93.67	35.02	93.51	35.43	65
21	93.86	35.84	93.20	36.24	93.04	36.65	92.88	37.06	64
22	93.34	37.46	92.55	37.86	92.39	38.27	92.22	38.67	63
23	92.80	39.07	91.88	39.47	91.71	39.87	91.53	40.27	62
24	92.25	40.67	91.18	41.07	91.00	41.47	90.81	41.87	61
25	91.68	42.26	90.45	42.66	90.26	43.05	90.07	43.44	60
26	91.08	43.84	89.69	44.23	89.49	44.62	89.30	45.01	59
27	90.46	45.40	88.90	45.79	88.70	46.17	88.50	46.56	58
28	89.82	46.95	88.09	47.33	87.85	47.72	87.67	48.10	57
29	89.16	48.48	87.25	48.86	87.04	49.24	86.82	49.62	56
30	88.48	50.00	86.38	50.38	86.16	50.75	85.94	51.13	55
31	87.77	51.50	85.49	51.88	85.26	52.25	85.04	52.62	54
32	87.04	52.99	84.57	53.36	84.34	53.73	84.10	54.10	53
33	86.29	54.46	83.63	54.83	83.39	55.19	83.15	55.56	52
34	85.52	55.92	82.66	56.28	82.41	56.64	82.16	57.00	51
35	84.73	57.36	81.66	57.71	81.41	58.07	81.16	58.42	50
36	83.92	58.78	80.64	59.13	80.39	59.48	80.13	59.83	49
37	83.09	60.18	79.60	60.53	79.34	60.88	79.07	61.22	48
38	82.24	61.57	78.53	61.91	78.26	62.25	77.99	62.59	47
39	81.37	62.93	77.44	63.27	77.16	63.61	76.88	63.94	46
40	80.48	64.28	76.32	64.61	76.04	64.94	75.76	65.28	45
41	79.57	65.61	75.18	65.93	74.90	66.26	74.61	66.59	44
42	78.64	66.91	74.02	67.24	73.73	67.56	73.43	67.88	43
43	77.69	68.20	72.84	68.52	72.54	68.84	72.24	69.15	42
44	76.71	69.47	71.63	69.78	71.33	70.09	71.02	70.40	41
45	75.71	70.71							40
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		

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