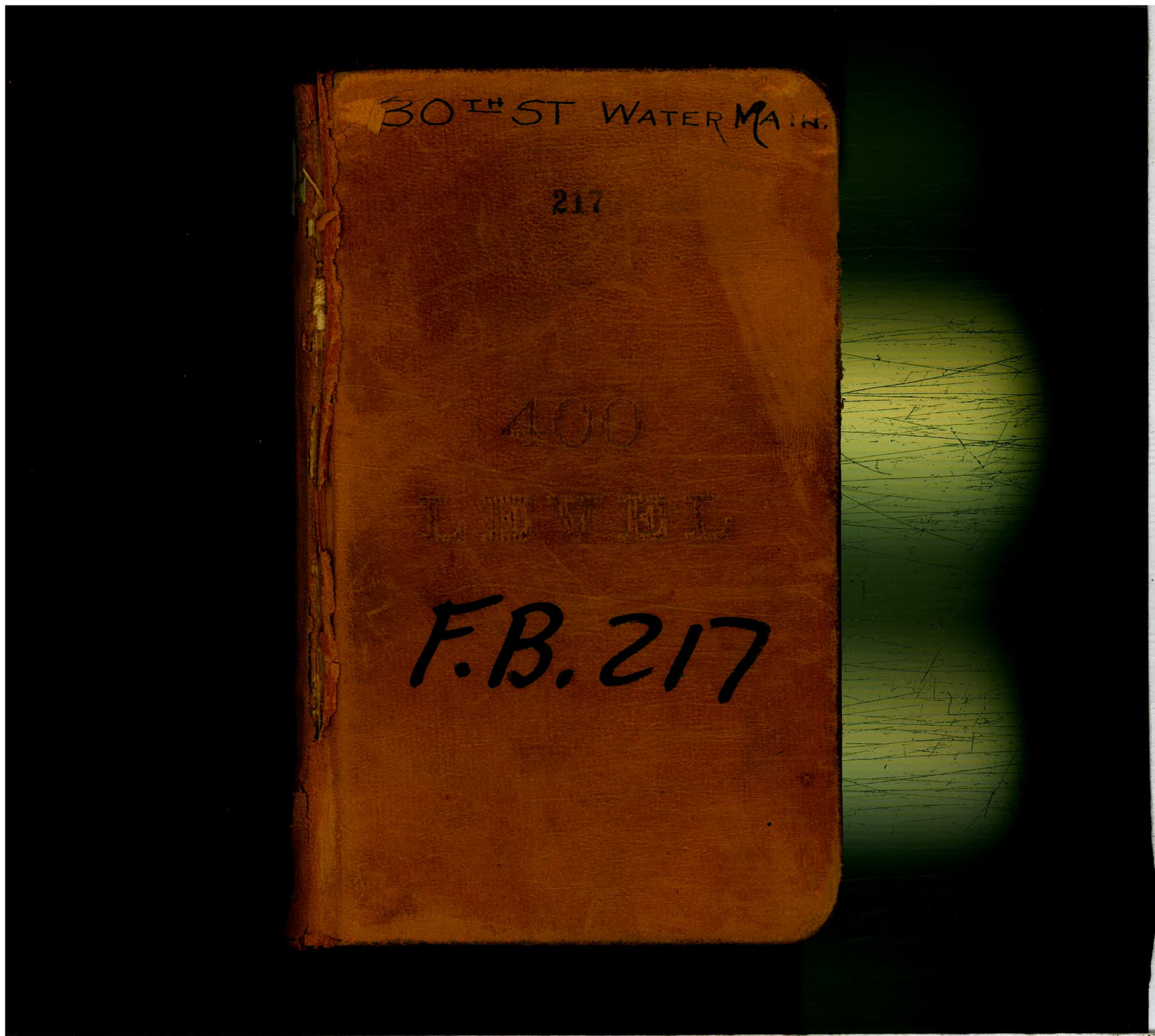
30TH ST WATER MAIN.
217
400
F.B. 217

217

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

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City Hall, San Diego, Cal.

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.

MICROFILMED
DEC 8 1964

Angle	Cor. in Links	Angle	Cor. in Links	Angle	Cor. in Links	Angle	Cor. in Links
o		o		o		o	
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

217

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LEVELS FOR 30TH ST WATER MAIN.

Sta	Rod	Ground	Grade	±
5.56	372.88		367.32 BM	
			360.00	
-58=Wood Pipe in El Cajon Ave.				
0+52 EC.	7.14	365.74	360.44	+5.3
+50	7.70	365.18	360.82	+4.36
1	7.06	365.82	361.20	+4.62
+50	6.47	366.41	361.57	+4.84
2	5.58	367.30	361.95	+5.35
+50	5.35	367.53	362.33	+5.20
3	5.24	367.64	362.71	+4.93
138=No Line Hw'd	5.53	367.35	363.00	+4.35
+78 Ctr.	5.67	367.21	362.75	+4.46
0+50 Line	5.87	367.01	362.50	+4.51
+50	4.20	368.68	362.17	+6.51
1	6.51	366.37	361.83	+4.54
+50	6.56	366.32	361.50	+4.82
2	5.56	367.32	361.17	+6.15
+50	7.61	365.27	360.83	+4.44
TP	4.21	369.47	7.62	365.26

Note - Levels Re-run as far as ... 2
Univ Ave - on account of Cave in.

Sta	Rod	Ground	Grade	±
	369.47			
3	4.72	364.75	360.50	+4.25
+50	5.20	364.27	360.17	+4.10
4	5.60	363.87	359.83	+4.04
+50	5.64	363.83	359.50	+4.33
5	5.60	363.87	359.17	+4.70
+50	5.77	363.70	358.83	+4.87
6=No. Polk	5.50	363.97	358.50	+5.47
3.38	368.52		365.14 BM N.E. Polk	
+40=Ctr	4.56	363.96	359.00	+5.0
1+80+00=So line Polk	3.80	364.72	359.50	+5.22
+50	4.04	364.48	359.67	+4.81
1	3.35	365.17	359.83	+5.34
+50	3.90	364.62	360.0	+4.6
2	3.00	365.52	360.17	+5.35
+50	2.52	366.00	360.33	+5.67
3	4.00	364.52	360.50	+4.02
+50	4.32	364.20	359.97	+4.23

7/14/06 { David, Evans, Tyrone, Thomas

Sta		Rod	Ground	Grade	±
		368.52 HI			
4		4.45	364.07	359.45	+4.62
+50		4.05	364.47	358.97	+5.55
5		4.80	363.72	358.39	+5.33
+50		6.52	362.00	357.87	+4.13
6=No line Lincoln		6.16	362.36	357.34	+5.02
+40=Ch		5.90	362.62	356.92	+5.70
+80=00 Soline		8.30	360.22	356.50	+3.72
+50		9.20	359.32	356.08	+3.24
T.P	4.49	363.78	9.23	359.29	
1		3.75	360.03	355.67	+4.36
+50		4.60	359.18	355.25	+3.93
2		3.80	359.98	354.83	+5.15
+50		3.75	360.03	354.42	+5.61
3		4.03	359.75	354.00	+5.75
+50		3.64	360.14	353.58	+6.56
4		4.62	359.16	353.17	+6.00
+50		5.55	358.23	352.75	+5.48

Sta		Rod	Ground	Grade	±
		363.78 HI			
5		6.35	357.43	352.33	+5.1
+50		7.05	356.73	351.92	+4.81
6=Noline University		6.13	357.65	351.50	+6.15
	3.42	359.26	7.91	358.87 HI	351.84
+63.3=100 Ch.		2.20	357.06	351.20	+5.86
7+61.5=50 line Univ		3.90	355.36	351.00	+4.36
+50		6.34	353.92	350.29	+3.63
1		5.20	354.06	349.58	+4.48
+50		5.76	353.50	348.88	+4.62
2		5.90	353.36	348.17	+5.19
+50		7.20	352.06	347.46	+4.60
3		7.66	351.60	346.75	+4.85
+50		8.90	350.36	346.05	+4.31
4		10.20	349.06	345.34	+3.72
+50		10.86	348.40	344.63	+3.77
T.P	4.17	349.57	10.86	348.40	
5		2.35	347.22	343.92	+3.30
+50		2.50	347.07	343.22	+3.85

Sta	Rod	Ground	Grade	±
	349.57			
6 +00	3.30	346.27	342.51	+3.76
+50	3.20	346.37	341.80	+4.57
7	4.50	345.07	341.09	+3.98
+50	5.00	344.57	340.39	+4.18
8	5.50	344.07	339.68	+4.39
+50	6.00	343.57	338.97	+4.60
9	6.25	343.32	338.26	+5.06
+50	7.00	342.57	337.56	+5.01
10	7.75	341.82	336.85	+4.97
00+ +60. No line Landis	8.30	341.27	336.0	+5.27
T.P. 2.27	343.54	8.30	341.27	
+50	3.20	340.34	335.62	+4.72
1	3.94	339.60	335.25	+4.35
+50	4.30	339.24	334.89	+4.35
2	5.74	337.80	334.53	+3.27
+50	5.00	338.54	334.16	+4.38
3	5.60	337.94	333.79	+4.15

Sta.	Rod 343.54	Ground	Grade	±
3+50			333.4	
+80: N.L. Dwight	4.74	338.80	333.20	+5.60
	2.38 341.16		338.80 Sta on N.L. Dwt	
0+50	2.40	338.73	333.04	+5.69
1	3.20	337.93	332.88	+5.05
+50	3.20	337.93	332.73	+5.20
2	3.10	338.03	332.57	+5.46
+50	2.83	338.30	332.41	+5.89
3	3.23	337.90	332.25	+5.65
+50	3.60	337.53	332.09	+5.44
+80.00 N.L. Capps	3.63	337.50	332.00	+5.50
+50	4.20	336.93	331.35	+5.58
1	5.13	336.00	330.70	+5.30
+50	6.10	335.03	330.06	+4.97
2	7.43	333.70	329.41	+4.29
+50	7.73	333.40	328.76	+4.64
3	8.70	332.43	328.11	+4.32

Sta.	Rod 343.54			
1.98	340.24	5.28	338.26	
2.62	334.92	7.94	332.30	
		9.05	325.87	325.83

Sta		Rod 371.13	Ground	Grade	±
3+50		8.65	332.48	327.46	+5.02
T.P.	2.00	334.48	8.65	332.48	
4		3.03	331.45	326.81	+4.64
+50		3.88	330.60	326.17	+4.43
5		3.68	330.80	325.52	+5.28
+50		4.98	329.50	324.87	+4.63
6		6.20	328.28	324.22	+4.06
+50		6.88	327.60	323.57	+4.03
7		6.88	327.60	322.93	+4.67
+60 N.L. Upas		8.20	326.28	322.15	+4.13
8+10 1.5 Ctr Upas.		8.87	225.61	321.50	+4.11

N.C.
334.48

8.65 325.83 ✓ 325.83 ✓

CUTS FOR 30TH ST. MAIN.

3/06 Flavin, Moore, Thurman

Sta.	Rod	Ground	Grade	±
	372.34			
-58= Wood Pipe El.C.	6.30	366.04	360.00	
0+00= So line " "	6.30	366.04	360.44	+5.60
+50	6.80	365.54	360.82	+4.72
1	6.34	366.00	361.20	+4.80
+50	5.60	366.74	361.57	+5.17
2	5.15	367.19	361.95	+5.24
+50	4.65	367.69	362.33	+5.36
3	4.50	367.84	362.71	+5.13
+38= N.L. Hwd.	4.90	367.44	363.00	+4.44
+78= S.L. "	5.64	366.70	362.75	+3.95
0= So Line "	5.64	366.70	362.50	+4.20
+50	5.40	366.94	362.17	+4.77
1	5.84	366.50	361.83	+4.67
	370.16			
+50	4.20	365.96	361.50	+4.46
2	4.70	365.46	361.17	+4.29
+50	4.10	366.06	360.83	+5.23

5.02	372.34			367.32
3.70	370.16	5.88	366.46	

370.16

TP	6.06	369.97	6.25	363.91

Sta	Rod	Ground	Grade	±
	370.16			
3	5.50	364.66	360.50	+4.16
+50	6.00	364.16	360.17	+4.00
4	6.20	363.96	359.83	+4.13
+50	6.30	363.86	359.50	+4.36
5	6.50	363.66	359.17	+4.49
+50	6.40	363.76	358.83	+4.93
6 - No. line Pole	6.20	363.96	358.50	+5.46
+40 Ctr "	369.97 HI 5.85	364.12	359.0	+5.12
00 S.L. "	4.60	365.37	359.50	+5.87
+50	5.40	364.57	359.67	+4.90
1	5.07	364.90	359.83	+5.07
+50	5.17	364.80	360.0	+4.8
2	4.94	365.03	360.17	+4.86
+50	4.40	365.57	360.33	+5.24
3	5.84	364.13	360.50	+3.63
+50	5.10	364.87	359.97	+4.90

		369.97			
T.P.	2.31	366.02	6.26	363.71	

Sta	Rod	Ground	Grade	±
	H 369.97			
4	5.90	364.07	359.45	+4.62
+50	4.47	365.50	358.92	+6.58
5	6.27	363.70	358.39	+5.31
	H 366.02			
+50	2.90	363.12	357.89	+5.23
6" No. L. Lincoln	4.10	361.92	357.34	+4.58
+40	3.35	362.67	356.92	+5.75
+80=00 S.L. "	5.52	360.50	356.50	+4.00
+50	5.40	360.62	356.08	+4.54
1	5.50	360.52	355.67	+4.85
+50	6.60	359.42	355.25	+4.17
2	6.00	360.02	354.83	+5.19
+50	5.66	360.36	354.42	+5.94
3	6.70	359.32	354.00	+5.32
+50	6.70	359.32	353.58	+5.74
4	7.72	358.30	353.17	+5.13
+50	6.40	359.62	352.75	+6.87

366.02

BM.	Hub N.W. Univ Ave.	10.20	355.82 ✓	355.84 ✓	

Sta	Rod	Ground	Grade	±
	(+) 366.02			
5	8.50	357.52	352.33	+5.19
+50	9.40	356.62	351.92	+5.70
6 = No. line Univ.	8.50	357.52	351.50	+6.02

Sta	Rod	Ground	Grade	±

Mountain Water Co. line in Lincoln Ave.

Mar. 27. 1906.

Chiles
Harlan
Hawkins

Sta	Grade	H.I.	Rod	Elev.	cut.
15' E. Wisconsin	238.5	350.29	6.5	343.8	5.3
W. line Wisconsin	238.58		5.5	344.8	6.2
50' W	238.83		3.6	346.7	7.9
100' W	239.09		3.5	346.8	7.7
150' W	239.34		3.9	346.4	7.1
200' W	239.60		4.7	345.6	6.0
250' W	239.85		6.1	344.2	4.4
E. line Missouri	240.1		6.5	343.8	3.7
W. line "	240.5		7.5	342.8	2.3
50' W	244.25		1.37	348.92	4.7
100' W	248.00	361.57	8.3	353.3	5.3
150' W	251.75		4.3	357.3	5.6
200' W	255.5		1.68	359.89	4.4
250' W	256.05	367.66	6.8	360.9	4.9
E. line Iowa	256.61		3.4	364.3	7.7

Sta.	Grade	H.I.	Rod	Elev.	cut
W. line Iowa	257.5	367.66	4.9	362.8	5.3
50' W	257.7		4.8	362.9	5.2
100' W	257.9		4.4	363.3	5.4
150' W	258.1		4.4	363.3	5.2
200' W	258.3		4.6	363.1	4.8
250 W'	258.5		4.6	363.1	4.6
E. line Illinois	258.7		4.7	363.0	4.3
W. line "	258.63	369.38	6.4	363.0	4.4
50' W	258.58		6.3	363.1	4.5
100' W	258.54		6.4	363.0	4.5
150' W	258.50		6.4	363.0	4.5
200' W	258.45		6.3	363.1	4.6
250' W	258.41		5.0	364.4	6.0
E line Ohio	258.37		5.3	364.1	5.7

Sta.	Grade	H. I.	Rod	Elev.	Cut
W. line Ohio	25+8.3	369.38	6.8	362.6	4.3
50' W	25+7.5		6.4	363.0	5.5
100' W	25+6.7		5.6	363.8	7.1
150' W	25+5.9		6.9	362.5	6.6
200' W	25+5.1		6.1	363.3	8.2
250' W	25+4.3		7.1	362.3	8.0
E line 30th	25+3.5		6.7	362.7	9.2
W line 30th	25+3.5		7.43	361.95	8.4
50' W	25+4.5	368.98	6.6	362.4	7.9
100' W	25+5.5		6.7	362.3	6.8
150' W	25+6.5		6.1	362.9	6.4
200' W	25+7.5		6.0	363.0	5.5
250' W	25+8.5		5.8	363.2	4.7
E. line Kansas	25+9.5		5.4	363.6	4.1

Sta	Grade	H.I.	Rod	Elev.	cut
W. line Kansas	25-9.41	368.98	4.7	364.3	4.9
50' W	25-9.36		4.4	364.6	5.2
100' W	25-9.31		4.7	364.3	5.0
150' W	25-9.25		4.1	364.9	5.7
200' W	25-9.20		4.2	364.8	5.6
250' W	25-9.14		4.6	364.4	5.3
E. line Utah	25-9.09		3.6	365.4	6.3
W. line 4	25-9.0	367.51	2.6	364.9	5.9
50' W	25-8.67		2.2	365.3	6.6
100' W	25-8.33		3.7	363.8	5.5
150' W	25-8.0		3.3	364.2	6.2
200' W	25-7.67		3.4	364.1	6.4
250' W	25-7.33		3.6	363.9	6.6
E. line Idaho	25-7.0		3.1	364.4	7.4

Sta		Grade	H.I.	Rod	Elev.	cut
W. line Idaho		255.67	367.5	4.5	363.0	7.3
50' W		254.83		7.2	360.3	5.5
100' W		254.0		8.2	359.3	5.3
146 W	5' East center gulley	253.25				
160' W	W. line alley	253.0				

2.37	75.01			72.64
4.67	79.11	0.57	74.44	

Levels for 30th St Water Main from National Ave North.

Sta	Rod	Ground	Grade	±
	HI.= 75.01			
0=No. L. Natl.	10.35	64.66	61.84	+2.82
1	8.05	66.96	63.05	+3.91
2	6.30	68.71	64.42	+4.29
3=S.L. Logan	5.55	69.46	65.79	+3.67
0=N.L	4.40	70.61	66.89	+3.72
1	2.75	72.26	68.26	+4.00
2	0.90	74.11	69.63	+4.48
	HI.= 79.11			
3 S.L Greely	3.60	75.51	71.00	+4.51
0=N.L	4.00	75.11	71.00	+4.11
1	4.30	74.81	69.55	+5.26
2	4.80	74.31	68.10	+6.21
3 S.L. Martin	6.40	72.71	66.66	+6.05
+80=N.L 11=20	11.60	67.51	65.50	+2.01
1	13.30	65.81	67.34	-1.53
2	6.35	72.76	69.18	+3.58
3=S.L. Valle	4.30	74.81	71.02	+3.79

10.40	85.96	3.55	75.56.		
8.74	92.86	1.84	84.12		
5.19	92.26			87.07	

Sta		Rod	Ground	Grade	±
	H.I.	85.96			
0 = N.L. Valle		7.80	78.16	72.50	+5.66
+50		6.05	79.91	74.33	+5.58
1		2.60	83.36	76.17	+7.19
	H.I.	92.86			
+50		5.60	87.26	78.00	+9.26
2		5.24	87.62	79.83	+7.79
+50		5.70	87.16	81.67	+5.49
3 = S.L. Woolman		5.34	86.82	83.50	+3.32
	H.I.	92.26			
N.L.	"	4.30	87.96	83.50	+4.46
+50		1.65	90.61	82.97	+7.64
1		3.60	88.66	82.45	+6.21
+50		5.80	86.46	81.92	+4.54
2		7.85	84.41	81.39	+3.02
+50		9.00	83.26	80.87	+2.39
3		8.20	84.06	80.34	+3.72
00 = N.L. [illegible]		7.55	84.61	79.50	+5.11
+50		8.30	83.96	77.96	+6.00

					Sta		Rod	Ground	Grade	±
		92.26				HI.	92.26			
0.82	85.19	7.39	84.87		1		8.00	84.26	76.41	+7.85
						HI.	85.19			
					+50		5.00	80.19	74.87	+5.32
					2		6.20	78.99	73.32	+5.67
					+50		9.00	76.19	71.78	+4.41
					3		11.50	73.69	70.23	+3.46
2.75	78.12			75.37	+40 Ctr Clay		12.65	72.54	69.00	+3.54
						HI.	78.12			
					+80-00 N.L	"	7.90	70.22	68.89	+1.33
					+50		5.70	72.42	68.76	+3.66
					1		4.40	73.72	68.63	+5.09
					+50		4.40	73.72	68.50	+5.22
					2		4.70	73.42	68.37	+5.05
					+50		5.10	73.02	68.24	+4.78
4.34	77.87			73.53	3		5.90	72.22	68.10	+4.12
						HI.	77.87			
					+40 Ctr Wbstr		6.00	71.87	68.00	+3.87
					+80-00 N.L	"	5.85	72.02	68.18	+3.84
					+50					

				Sta	Rod	Ground	Grade	±
	77.87				~~HI 77.87~~			
				1	6.05	71.82	68.89	+2.93
				+50				
				2	6.25	71.62	69.36	+2.26
				+50				
				00=+80 . "N" St.	6.44	71.43	69.50	+1.93
				+50	5.50	72.37	69.78	+2.59
				1 = N.L " "	5.90	71.97	70.07	+1.90
				+50				
				2	4.90	72.97	70.64	+2.33
				+50				
				3	1.50	76.37	71.20	+5.17
				+50				
3.14	77.87	3.14	74.73	4	3.15	74.72	71.77	+2.95
					HI=77.87			
				c =+40= Ctr "M" St	2.50	75.37	72.00	+3.37
				00+80= N.L " "	3.20	74.67	71.74	+2.93
				+50				

77.87

3.89 73.98 73.98

Sta	Rod	Ground	Grade	±
	27.87			
	4.70	73.17	71.08	+2.09
1				
+50				
2	5.30	72.57	70.42	+2.15
+50				
3 - S.L. "L" Sta	5.05	72.82	69.76	+3.06
00+80 = X.L. "L" Sta	4.80	73.07	69.24	+3.83
+50				
1	5.50	72.37	68.58	+3.79
+50	6.			
2	6.30	71.57	67.92	+3.65
+50				
3	6.40	71.47	67.26	+4.21
+30=1+50 Ctr "K"	5.80	72.07	67.06	+5.00
+40= Ctr "			67.00	

	2.03	H.I. 77.15			75.12
T.P.	12.87	89.65	0.37	76.78	
T.P.	12,90	102.32	0.23	89.42	

Sta	Rod	Ground	Grade	±
	H.I. 77.15			
105 Crk - 50			67.06	
+50	4.70	72.45	67.40	+5.05
1	5.80	71.35	67.73	+3.62
+50	6.10	71.05	68.06	+3.00
00=2=00 = 105 Crk - No.	6.00	71.15	68.40	+2.75
+50 = N.L.K.	5.50	71.65	68.86	+2.79
1	5.30	71.85	69.32	+2.53
+50	5.10	72.05	69.78	+2.27
2	5.00	72.15	70.25	+1.90
+50	4.10	73.05	70.71	+2.34
3	3.40	73.75	71.17	+2.58
+50	2.10	75.05	71.63	+3.42
00=+90 = Crk	0.90	76.25	72.00	+4.25
	H.I. 89.65			
+50	11.40	78.25	76.17	+2.08
1	8.30	81.35	80.33	+1.62
+50	4.60	85.05	84.50	+0.55
	H.I. 102.32			
2	12.80	89.52	88.67	+0.85

	102.32		
12.83	114.52	0.62	101.69
12.69	126.90	0.31	114.21
12.71	139.40	0.21	126.69
12.69	151.55	0.54	138.86
11.94	162.98	0.51	151.04
0.88	151.19	12.67	150.31

Sta		Rod	Ground	Grade	±
	H.I.	102.32			
2+40=0.0		8.40	93.92	92.00	+1.92
+50		2.40	99.92	97.55	+2.37
	H.I.	114.52			
1		8.00	106.52	103.11	+3.41
	H.I.	126.90			
00=+80=N.L. "I"		9.30	117.60	112.00	+5.60
+50		0.10	126.80	116.50	+10.30
	H.I.	139.40			
1		3.30	136.10	121.00	+15.10
	H.I.	151.55			
+50		5.45	146.10	125.50	+20.60
	H.I.	162.98			
2		9.55	153.43	130.00	+23.43
+50		4.28	158.70	134.50	+24.20
3=S.L. "H" St		2.60	160.38	139.0	+21.38
Ctr " "		3.58	159.40	140	+19.40
N.L. "H" St		6.30	156.68	141.0	+15.68
+50		9.83	153.15	142.13	+11.02
	H.I.	151.19			
1		4.00	147.19	143.23	+3.96
+50		8.13	143.06	144.34	-1.3
2				145.43	

Sta	Rod	Ground	Grade	±
7+50			146.53	
3+01.6			147.63	
+31.6 on G 5			148.79	
	HI 157.07			
150' E 30th on G	4.4	153.27	152.34	+0.93

for Levels on 'G' St See Levels for Trestles back of Book

						Sta		Rod	Ground	Grade	±
							H.I.	163.94			
6.77	163.94			157.17		0+10 S. ctr G		8.80	155.14	153.73	+1.41
						+50		7.35	156.59	154.42	+2.17
						1		6.65	157.29	155.11	+2.18
						+50		5.75	158.19	155.81	+2.38
						2		4.85	159.09	156.50	+2.59
						+50		1.90	162.04	158.35	+3.69
							H.I.	176.12			
12.36	176.12	0.18	168.76			2		10.85	165.27	160.19	+5.08
						+50		8.20	167.92	162.04	+5.88
12.67	187.93	0.86	175.26			3+00 = N.L. FS		17.0	171.42	165.00	+6.42
5.27	189.78	3.37	184.51			+50		23.0	173.82	167.66	+6.16
		0.74	189.04	189.04		1	H.I.	187.93 / 12.05	175.88	170.33	+5.55
						+50		10.05	177.88	173.00	+4.88
						2		7.80	180.13	175.67	+4.46
						+50		5.45	182.48	178.33	+4.15
						3 = SL E		3.35	184.58	181.00	+3.58

	HI.			
6.13	195.17			189.04
4.10	199.05	0.22	194.95	
		4.38	194.67	194.67

Sta		Rod	Ground	Grade	±
	HI.	195.17			
10+50 CH "E" = 8.0		9.83	185.34	182.04	+3.30
1+50		7.94	187.23	183.78	+3.45
1		5.57	189.60	185.52	+4.08
+50		3.45	191.72	187.26	+4.46
2		1.42	193.75	189.00	+4.75
	HI.	199.05			
+50		3.65	195.40	189.00	+6.40
3		2.70	196.35	189.00	+7.35
+50 = S.L. "D"		5.00	194.05	189.00	+5.05
+80 = 10+50 CH "D"				189.00	

Trestle

	H.I.			
11.96	199.02			187.06
12.73	211.66	0.09	198.93	
9.93	221.10	0.49	211.17	
0.84	233.50			232.66

Sta	Rod	Ground	Grade	±
	199.02			
0=N.L. "C" St	5.34	193.68	190.00	+3.68
H.I.	211.66			
+50	10.05	201.61	194.17	+7.44
1	2.00	209.66	198.33	+11.33
H.I.	221.10			
+50	7.10	214.00	202.50	+11.50
2	5.48	215.62	206.67	+8.95
+50	4.38	216.72	210.83	+5.89
3=S.L "B"	3.70	217.40	215.00	+2.40
105 Ct	3.03	218.07	215.00	+3.07
N.L. "B"=00	1.10	220.00	215.00	+5.00
H.I.	233.50			
+50	12.00	221.50	216.18	+5.32
1	10.35	223.15	217.35	+5.80
+50	8.50	225.00	218.53	+6.47
2	8.90	224.60	219.71	+4.89
+50	7.94	225.56	220.88	+4.68
3	7.16	226.40	222.06	+4.34
+27=△=00	6.90	226.60	222.69	+3.91

Sta		Rod	Ground	Grade	±
	141.	233.50			
0+00 Δ		6.90	226.60	222.69	+3.91
+50		7.70	225.80	221.36	+4.44
1		8.50	225.00	220.02	+5.00
+50		9.35	224.15	218.69	+5.46
+76 Δ = 0+00		10.30	323.20	218.00	+5.20
+50		10.60	222.90	218.29	+4.61
1		12.80	220.70	218.59	+2.11
+50		10.70	222.80	218.88	+3.92
2		10.15	223.35	219.17	+4.18

No Levels Run in Park Add.

So.

1.14	H.I. 238.62			BM Seaman 237.48
12.84	250.32			B.M. 237.48
12.84	262.99	0.17	250.15	

Sta	Rod	Ground	Grade	±
	H.I. 238.62			
0=105' So. S.L. Seaman St	10.37	228.25	224.50	+3.75
+05	10.60	228.02	224.90	+3.12
+55	7.90	230.72	228.95	+1.77
1+05=00=S.L. " "	1.60	237.02	233.00	+4.02
	H.I. 250.32			
+30=10' So. Ctr. " "	10.70	239.62	233.75	+5.87
00+80=N.L. " "	7.60	242.72	235.00	+7.72
+50	5.40	244.92	237.75	+7.17
1	2.44	247.88	240.50	+7.38
+50	0.17	250.15	243.25	+6.90
	H.I. 262.99			
2	10.85	252.14	246.00	+6.14
+50	9.45	253.54	248.75	+4.79
3=S.L. Choate	7.13	255.86	251.50	+4.36
+30=10' So. Ctr	5.67	257.32	251.87	+5.45
00=+80=N.L. Choate	4.12	258.87	252.50	+6.37
+50	2.77	260.22	254.33	+5.89
1	1.14	261.85	256.17	+5.68

		HI 262.99				
12.73	275.54	0.18	262.81			

Sta		Rod	Ground	Grade	±
	HI	275.54			
1+50		12.10	263.44	258.00	+5.44
2		10.60	264.94	259.83	+5.11
+50		9.10	266.44	261.67	+4.77
3=S.L. VanN.		7.45	268.09	263.50	+4.59
+30-10'Sa Ctr		7.50	268.04	264.13	+3.91
+80=00=N.L.		6.10	269.44	265.18	+4.26
+50		5.05	270.49	266.23	+4.26
1		4.05	271.49	267.29	+4.20
+50		2.74	272.80	268.34	+4.46
2		1.22	274.32	269.39	+4.93
+50		0.47	275.07	270.44	+4.63
	HI	284.25			
3=S.L. Williams		8.70	275.55	271.50	+4.05
+27.5=10'Sa Ctr		8.20	276.05	271.81	+4.24
0+75=N.L. Williams		7.40	276.85	272.36	+4.49
+50		6.83	277.42	272.94	+4.48
1		6.18	278.07	273.51	+4.56

HI
284.25

7.15	291.10	0.30	283.95

Sta		Rod	Ground	Grade	±
		HI 284.25			
1+50		5.70	278.55	274.08	+4.47
2		4.90	279.35	274.66	+4.69
+50		4.30	279.95	275.23	+4.72
3=S.L.	Watkins	3.80	280.45	275.81	+4.64
+30=10' So Ctr	"	3.4-	280.81	276.15	+4.66
00+80=N.L	"	3.15	281.10	276.73	+4.37
+50		2.65	281.60	277.30	+4.30
1		2.00	282.25	277.88	+4.37
+50		0.85	283.40	278.45	+4.95
2		0.30	283.95	279.02	+4.93
		HI 291.10			
+50		6.60	284.50	279.60	+4.90
3=S.L	Horton	6.30	284.80	280.17	+4.63
+30=10' So Ctr	"	5.20	295.90	280.52	+5.38
+80=05' N.L	"	4.70	286.40	281.09	+5.31
+50		4.15	286.95	281.67	+5.28
1		3.82	287.28	282.24	+5.04

		291.10			
			1.20	289.90 ✓	289.90
B.M.	4.11	H.I. 294.01		289.90	

Sta	Rod	Ground	Grade	±
~~H.I.~~	291.10			
1+50	3.20	287.90	282.82	+5.08
2	2.95	288.15	283.39	+4.76
+50	2.45	288.65	283.96	+4.69
3 = S.L. Vassar	2.20	288.90	284.54	+4.36
+30 = 11' so ctr. H.I. 294.01			285.00	
0+00 = ~~+30~~ 10' so. Ctr. Vassar	4.6	289.4	285.00	+4.4
+50	4.5	289.5	283.39	6.1
1+00	7.2	286.8	281.78	5.0
1+55	9.8	284.2	280.0	+4.2

H.I.

B.M. 4.70 294.60 289.90

Sta.		Rod	Ground Grade		±
	H.I. = 294.60				
	10' So. c Vasca	10.4	284.2	280.0	+4.2
0+00	N line Vasca	10.3	284.3	281.19	+3.1
+50		9.2	285.4	282.38	+3.0
1+00		8.9	285.7	283.57	+2.1
+50		5.9	288.7	284.76	+3.9
+60.15	Pubelotine	5.7	288.9	285.0	+3.9
2+00		5.2	289.4	285.12	+4.3
+50		5.0	289.6	285.27	+4.3
3+00		4.9	289.7	285.44	+4.3
+50		5.2	289.4	285.59	+3.8
4+00		5.4	289.2	285.75	+3.5
+50		5.6	289.0	285.90	+3.1
+80		5.6	289.0	286.0	+3.0
5+00		5.3	289.3	285.73	+3.6
+50		4.5	290.1	285.07	+5.0
6+00		4.6	290.0	284.42	+5.6
+50		4.6	290.0	283.76	+6.2

		H.I.		
T.P.	3.83	293.91	4.5⁻²	290.08
		H.I.		
T.P.	0.08	281.80	12.19	281.72
		H.I.		
T.P.	0.88	251.29		250.41
		H.I.		
T.P.	0.49	238.80	12.98	238.31
		H.I.		
T.P.	1.26	227.63	12.43	226.37

Sta		Rod	Ground	Grade	±
6+70		4.5⁻	290.1	283.5⁻	+6.6
7+00		4.5⁻²	290.1	282.38	+7.7
+50	H.I. 293.91	3.5⁻	290.4	280.52	+9.9
8+00		3.4	290.5	278.66	+11.8
+50		3.0	290.9	276.8	+14.1
9+00		3.6	290.3	276.4	+13.9
+25		4.9	289.0	276.2	+12.8
+40		6.3	287.6	276.1	+11.5
+50		7.6	286.3	276.00	+10.3
+75⁻		5.4	276.4	267.66	+8.7
10+00		15.7	266.1	259.33	+6.8
+10			262.1	256.0	+6.1
+50		5.1	246.2	240.0	+6.2
+60		8.7	242.6	236.0	+6.6
+70			239.0	232.0	+7.0
11+00		10.0	228.8	228.79	+0.0
+50		9.6	218.0	223.46	−5.5
12+00		9.4	218.2	218.13	+0.1
+20		12.3	215.3	216.0	−0.3

		H.I.		
T.P.	1.28	216.60	12.31	215.32
T.P.	1.26	H.I. 227.63	12.43	226.37

Sta		Rod	Ground	Grade	±
12+50		6.8	209.8	212.37	−2.6
13+00		11.8	204.8	206.33	−1.5
+40	×	14.1	202.5	201.5	+1.0
+50		12.3	204.3	202.2	+2.1
13+90	×	5.2	211.4	205.0	+6.4
14+00		12.6	215.0	209.7	+5.3
+20	×	6.7	220.9	219.0	+1.9
+50		8.4	219.2	223.45	−4.2
+81.5	Pubelo line angle.	3.4	224.2	228.12	−3.9

at Woodruff

T.P.	1.26	H.I. 227.63	12.43	226.37
T.P.	0.49	H.I. 238.80	12.98	238.31
T.P.	0.88	H.I. 251.29	12.98	250.41
T.P.	0.02	H.I. 263.39	12.82	263.37
T.P.	1.83	H.I. 287.55	12.75	285.72
B.M.	2.00	H.I. 298.47		296.47
B.M.	12.07	H.I. 308.54		296.47

Sta.		Rod	Ground	Grade	±
0+00	Pueblo line C. Woodruff	3.4	224.2	228.12	−3.9
+50		4.6	234.2	235.54	−1.3
+80	×	10.8	240.5	240.0	+0.5
1+00		8.7	242.6	242.5	+0.1
+50		6.5	244.8	248.75	−4.0
+60	×	1.9	249.4	250.0	−0.6
2+00	×	1.7	261.7	264.0	−2.3
+40	×	12.7	274.9	271.5	+3.4
+50		11.6	276.0	272.25	+3.8
3+00	So. line Montana	4.5	283.1	276.0	+7.1
+60	N. line "	6.3	292.2	278.0	+14.2
+50		2.3	296.2	281.33	+14.9
1		8.0	300.5	284.67	+15.8
+50		5.8	302.7	288.00	+14.7
2		3.8	304.7	291.34	+13.4
+50		2.6	305.9	294.67	+11.2

		H.I. 309.54		
		H.I.		
JB.	8.40	316.72	0,2.2	308.32

Sta.	Rod	Grnd	Grade	±
3+ Ctr. Silka	1.4	307.1	298.0	+9.1
+50	8.4	308.3	299.33	+9.0
4	7.3	309.4	300.67	+8.7
+50	6.6	310.1	302.0	+8.1
5	5.7	311.0	303.34	+7.7
+50	5.6	311.1	304.67	+6.4
6 So. Line Alaska	5.2	311.5	306.0	+5.5
60' No. Line "	4.7	312.0	306.0	+6.0
+50	4.4	312.3	304.67	+7.6
1	4.6	312.1	303.34	+8.8
+50	5.6	311.1	302.0	+9.1
2	7.4	309.3	300.67	+8.6
+50	9.1	307.6	299.33	+8.3
+70 Solid Objn.	9.8	306.9	298.80	+8.1
3 Ctr. "	14.1	302.6	298.0	+4.6

J.P.	3.84	H.I. 318.56	2.00	314.72
J.P.	8.14	H.I. 325.93	0.77	317.79

Sta		Rod	Ground	Grade	±
2 +30		16.6	302.0	304.57	-2.6
+80		7.7	310.9	306.00	+4.9
3 +30		3.8	314.8	307.43	+7.4
+80		2.1	316.5	308.85	+7.7
4 +30		0.8	317.8	310.28	+7.5
+80		8.0	317.9	311.71	+6.2
5 +30		7.2	318.7	313.14	+5.6
+80		7.0	318.9	314.57	+4.3
6 +30	So. line crane	6.4	319.5	316.0	+3.5
+70		6.2	319.7	316.43	+3.3
7 +20		5.6	320.3	316.98	+3.3
+70		5.0	320.9	317.52	+3.4
8 +20		3.9	322.0	318.06	+4.0
+70		3.2	322.7	318.61	+4.1
9 +20		2.5	323.4	319.15	+4.2

		H.I. 325.93		
T.P.	8.82	H.I. 333.29	1.46	324.47

Sta.		Rod	Ground	Grade	±
9+70		2.1	323.8	319.69	+4.1
10+20		1.5	324.4	320.24	+4.2
+70		7.7	325.6	320.78	+4.8
11+20		8.2	325.1	321.32	+3.8
+70		7.6	325.7	321.86	+3.8
12+20		6.7	326.6	322.41	+4.2
+70		6.0	327.3	322.95	+4.3
13+20	10' So. C. upus.	5.2	328.1	323.5	+4.6
+37		5.6	327.7	323.34	+4.4
+87		6.3	327.0	322.88	+4.1
14+37		6.6	326.7	322.42	+4.3
+87		7.4	325.9	321.96	+3.9
15+37	10' So. C. upus.	7.7	325.6	321.5	+4.1

Change of Water line across Switzer's canyon.

		H.I.		
B.M.	0.10	296.57		296.47
T.S.	0.53	H.I. 284.35	12.75	283.82
T.S.	0.29	H.I. 271.88	12.76	271.59
T.S.	0.15	H.I. 259.54	12.49	259.39
T.S.	1.80	H.I. 248.57	12.77	246.77
T.S.	0.05	H.I. 235.73	12.89	235.68
T.S.	1.11	H.I. 224.31	12.53	223.20
T.S.	0.59	H.I. 212.83	12.07	212.24

July 5, 1906

Childs
Harlan
Butler

Sta		Rod	Ground	Grade	±
M. Line	Montana Southern Montana	2.4	294.2	278.0	+16.2
0+00		10.1	286.5	276.0	+10.5
+30		6.3	278.0	272.25	+5.8
+60	x	7.1	277.2	271.50	+5.7
1+00	x	4.9	267.0	264.0	+3.0
+40	x	8.0	251.5	248.0	+3.5
+50	x	13.1	246.4	246.75	−0.3
2+00		3.7	244.9	240.5	+4.4
+20	x	7.2	241.4	238.0	+3.4
+50		2.6	233.1	233.5	−0.4
3+00		10.8	224.9	226.0	−1.1
+50		5.1	219.2	218.5	+0.7
+60	x	2.9	221.4	217.0	+4.4
+90	x	12.1	212.2	205.0	+7.2
4+00		3.3	209.5	204.3	+5.2
+40	x	9.9	202.9	201.5	+1.4
+50		7.9	204.9	202.71	+2.2

		H.I. 212.83		
T.P.	1.11	H.I. 224.31	12.53	223.20
T.P.	0.05	H.I. 235.73	12.89	235.68
T.P.	1.80	H.I. 248.57	12.77	246.77
T.P.	0.15	H.I. 259.54	12.49	259.39
T.P.	0.29	H.I 271.88	12.76	271.59
B.M.	10.66	H.I. 295.69		285.03

Sta.	Rod	Ground	Grade	±
5+00	5.9	206.9	208.75	−1.8
+50	8.6	215.7	214.79	+0.9
+60	6.7	217.6	216.0	+1.6
6+00	13.7	222.0	220.0	+2.0
+50	17.8	217.9	225.0	−7.1
7+00	14.1	234.5	230.0	+4.5
+20	9.2	239.4	232.0	+7.4
+50	8.9	250.6	244.0	+6.6
+80	9.0	262.9	256.0	+6.9
8+00	1.0	270.9	262.67	+8.2
+40	9.8	285.9	276.0	+9.9
+50	8.5	287.2	276.09	+11.1
9+00	5.2	290.5	276.53	+14.0
+30	4.9	290.8	276.8	+14.0
+80	5.1	290.6	278.66	+11.9
10+30	5.3	290.4	280.52	+9.9

0.72	157.89			157.17
1.23	146.20	12.92	144.97	

Trestle for 30th St Water Main at "G" Street.

Bents 10' Apart - Stakes on Ctr.

Bent No.	Rod	Ground	Grade	Heighth.
Ht.	146.20			
1	3.05	143.15	144.34	1.19
2	3.11	143.09	144.56	1.47
3	3.23	142.97	144.78	1.81
4	3.95	142.25	145.00	2.75
5	5.07	141.13	145.22	4.09
6	6.82	139.38	145.43	6.05
7	7.85	138.35	145.65	7.30
8	8.85	137.35	145.87	8.52
9	10.55	135.65	146.09	10.44
10	11.04	135.16	146.31	11.15
11	10.38	135.82	146.53	10.71
12	10.17	136.03	146.75	10.72
13	9.53	136.67	146.97	10.30
14	8.48	137.72	147.19	9.47
15	7.66	138.54	147.41	8.87
16	6.34	139.86	147.63	7.77

	146.20		
1060	156.67	0.13	146.07

Bent N.		Rod	Ground	Grade	Heighth
		H.I. 146.20			
17		5.09	141.11	147.85	6.74
18		4.00	142.20	148.07	5.87
19	Angle at G.S.	2.88	143.32	148.29	4.97
20		3.80	142.40	148.56	6.16
21		4.38	141.82	148.83	7.01
22		4.01	142.19	149.10	6.91
23		3.81	142.39	149.37	6.98
24		2.54	143.66	149.64	5.98
25		1.51	144.69	149.91	5.22
26		0.13	146.07	150.18	4.11
		H.I. 156.67			
27		9.30	147.37	150.45	3.08
28		8.51	148.16	150.72	2.56
29		7.18	149.49	150.99	1.50
30		5.98	150.69	151.26	0.57

0.26	194.93			194.67
0.99	183.01	12.91	182.02	

Trestle on 30th St Water Main
bet "C" & "D" - Bents 10' apart 4/9/06 (Davis Brooks Hawkins)
Stakes Set 0.5' No of Ctr.

Sta	Rod	Ground	Grade	Heighth of Bent.
	Ht. 194.93			
0 = Ctr "D"	5.93	189.00	189.00	0.0
+10 = Bent No 1	7.35	187.58	189.00	1.42
+20	8.58	186.35	189.00	2.65
+30	9.48	185.45	189.00	3.55
0.0 = +40 = NL "D"	10.04	184.89	189.00	4.11
+10	10.85	184.08	188.97	4.89
+20	11.12	183.81	188.93	5.12
+30	11.27	183.66	188.90	5.24
+40	11.14	183.79	188.87	5.08
+50	11.28	183.65	188.83	5.18
+60	11.47	183.46	188.80	5.34
+70	11.86	183.07	188.77	5.70
+80	12.31	182.62	188.73	6.11
+90	12.91	182.02	188.70	6.68
	Ht 183.01			
1+00	1.48	181.53	188.67	7.14
1+10 B No 15	2.23	180.78	188.63	7.85

Sta		Rod	Ground	Grade	Height of Bent
	Ht.	183.01			
1+20	BM 16	2.73	180.28	188.60	8.32
1+30		3.46	179.55	188.57	9.02
+40		4.49	178.52	188.53	10.01
+50		5.50	177.51	188.50	10.99
+60		6.09	176.92	188.47	11.55
+70		6.95	176.06	188.43	12.37
+80		8.56	174.45	188.40	13.95
+90		10.12	172.89	188.37	15.48
2+00		11.37	171.64	188.33	16.69
+10		11.80	171.21	188.30	17.09
+20		11.60	171.41	188.27	16.86
+30		9.73	173.28	188.23	14.95
+40		7.83	175.18	188.20	13.02
+50		6.27	176.74	188.17	11.43
+60		4.89	178.12	188.13	10.01
+70	BM '31	3.44	179.77	188.10	8.33

		183.01				Sta	Rod	Ground	Grade	Height of Bent.
10.99	192.68	1.32	181.69				H.I. 183.01			
						2+80 BM #32	1.32	181.69	188.07	6.38
						H.I.	192.68			
						+90	8.82	183.86	188.03	4.17
						3+00 5.2 "C"	8.63	184.05	188.00	3.95
						+10	8.93	183.75	188.25	4.50
						+20	8.52	184.16	188.50	4.34
						+30	8.16	184.52	188.75	4.23
						+40	7.65	185.03	189.00	3.97
						+50	6.37	186.31	189.25	2.94
		5.63	187.05	187.06		+60	3.18	189.50	189.50	0.0

Trestle for 30" St Water Main
bet Edgar and Crane.

Sta		Rod	Ground	Grade	Height of Bent
	12.92	309.39			296.47
	6.73	315.20	0.92	308.47	
	0.33	303.34	12.19	303.01	
20' No of Cir. Edgar					
0+00	Grade Point	4.77	298.57	298.57	0.0
+10	Bent # 1	6.12	297.22	298.86	1.64
+20	" 2	6.97	296.37	299.14	2.77
+30	" 3	7.96	295.38	299.43	4.05
+40	" 4	10.28	293.06	299.71	6.65
+50	" 5	12.94	290.40	300.00	9.60
T.P		0.21	290.61	12.94	290.40
+60	" 6	3.13	287.48	300.28	12.80
+70	" 7	4.44	286.17	300.57	14.40
+80	" 8	5.54	285.07	300.86	15.79
+90	" 9	6.90	283.71	301.14	17.43
1+00	" 10	8.29	282.32	301.43	19.11
+10	" 11	9.16	281.45	301.71	20.26
+20	" 12	9.34	281.27	302.00	20.73

Sta		Rod	Ground	Grade	Height of Bent
+30	Bent # 13	9.60	281.01	302.28	21.27
+40	" 14	10.00	280.61	302.57	21.96
+50	" 15	11.12	279.49	302.85	23.36
+60	" 16	9.82	280.79	303.14	22.35
+70	" 17	5.30	285.31	303.43	18.12
+80	" 18	0.44	290.17	303.71	13.54
T.P	12.01	302.18	0.44	290.17	
+90	" 19	7.31	294.87	304.00	9.13
2+00	" 20	7.78	299.40	304.28	4.88
T.P	9.05	310.17	1.06	301.12	
+10	" 21	7.70	302.47	304.57	2.10
+20	" 22	5.71	304.46	304.86	0.40

	5.60	278.78		273.18

Levels for Water Pipe - Spruce

2ND to 4th 4/06 { Davis, Brooks, Thomas

Sta	Rod	Ground	Grade	±
	Hi 278.78			
0 = EL 2nd	5.65	273.13	270.35	+2.78
+50	4.34	274.44	271.10	+3.34
1	3.80	274.98	271.85	+3.13
+50	3.40	275.38	272.60	+2.78
2 = W.L. 3rd	3.90	274.88	273.35	+1.53
0 = EL 3rd	6.30	272.48	273.35	-0.77
+50	7.20	271.58	272.44	-0.86
1	7.05	271.73	271.53	+0.20
+50	6.90	271.88	270.63	+1.25
2 = W.L. 4th	6.65	272.13	269.72	+2.41

Ctr Edgar 298.0 - 60/20

S.L. Crane 316 -

630

7+50 = 10+30

70) 80) 100 (1.2.5
80
200
160
40

20
2500

140) 210 (1.5.0
140
700
700

3.5

120) 14.5 (12.087
120
250
240
1000
960
400

160) 160 (10
12.08

285.03

296.47 meter Box

90) 800 (.888
720
80

60) 450 (7.5
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355.84 } NW Hub 302 Cin.
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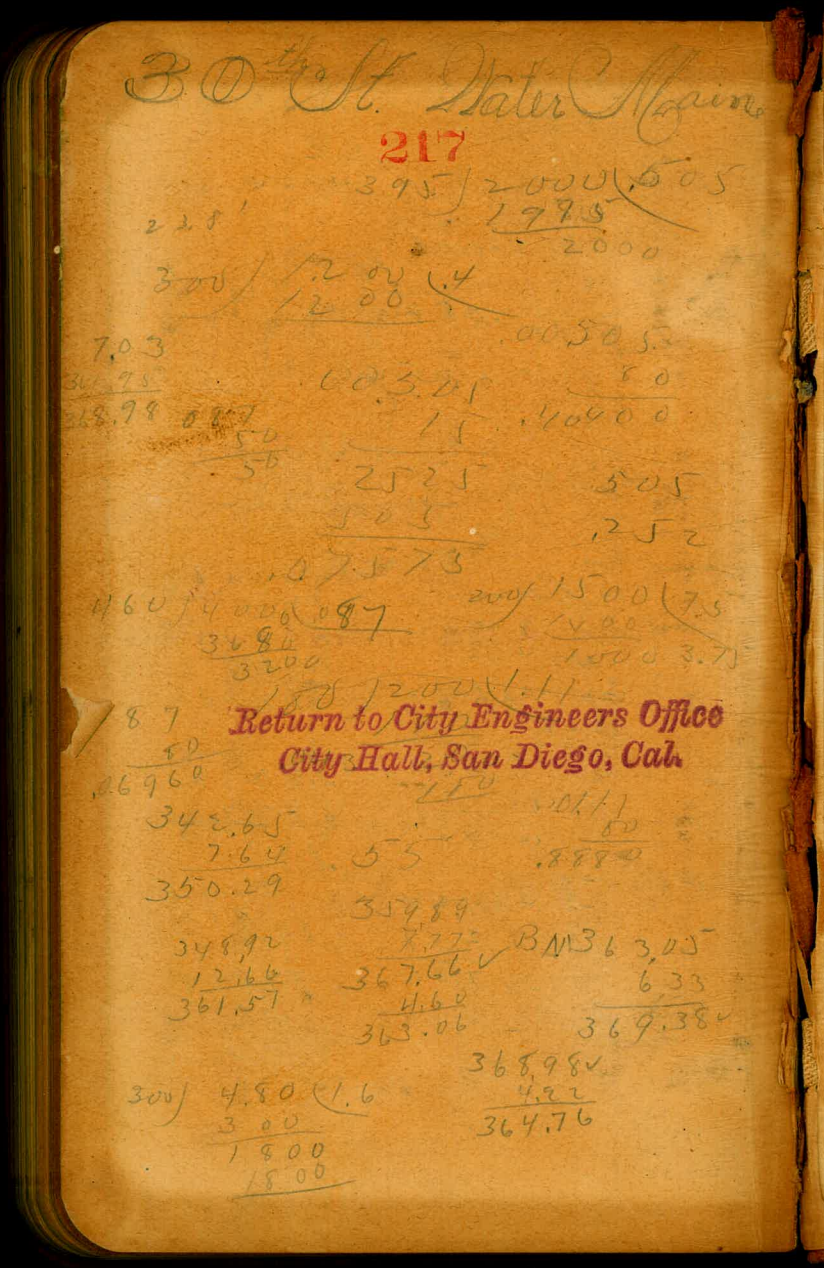

TRAVERSE TABLE FOR TRANSIT BOOK.

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	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.		

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