F.B. 48

FIELD BOOK.

360 N.

48

Return to City Engineers Office
City Hall, San Diego, Cal.

MICROFILMED
DEC 4 1964

48

Return to City Engineers Office
City Hall, San Diego, Cal.

Curb stakes on C St from 7th to 9th St

	North		South	
Sta.	Grade	Rod	Grade	Rod
1			62.40	
2	59.00	3.40	59.00	3.40
0	59.50		59.50	2.90
+ 25	59.75		59.75	2.65 (25)
+ 50	60.00		60.00	2.40 (25)
+ 75	60.25		60.25	2.15 (25)
1	60.50		66.61 / 60.50	6.11
+ 25	60.75		60.75	5.86 (25)
+ 50	61.00		61.00	5.61 (25)
+ 75	61.25		61.25	5.36 (25)
2	61.50		61.50	5.11
B.M.				4.3 / 8.8
0	62.50		62.50	
+ 25	62.81		62.81	
+ 50	63.13		63.13	
+ 73	63.44		63.44	

Cut on B.M. at 9th St. from 8th St

Sta.	H.I.		Elev.
1.06	62.40		61.34
West line of 7th			
East line of 7th			
2.36	66.61	2.15	60.25
West line of 8th St			
~~West 8th St~~			
East line of 8th St		2.67	57.74

8 Tu	North Grade Rod	South Grade Rod	
1	63.75	63.75	
+ 25	64.06	64.06	
+ 50	64.38	64.38	
+ 75	64.69	64.69	
2	65.00	65.00	West line of 9th St

Grades on C St from 6th to 24th

Sta	North	Center	South	
0	56.50	55.92	56.00	East line of 6th St
+25	56.81		56.38	
+50	57.13	56.94	56.75	
+75	57.44		57.13	
1	57.75	57.62	57.50	
+25	58.06		57.88	
+50	58.38	58.31	58.25	
+75	58.69		58.63	
2	59.00	59.00	59.00	West line of 7th St
+40	59.25	59.25	59.25	
0	59.50	59.50	59.50	East line of 7th St
+25	59.75	59.75	59.75	
+50	60.00	60.00	60.00	
+75	60.25	60.25	60.25	
1	60.50	60.50	60.50	
+25	60.75	60.75	60.75	
+50	61.00	61.00	61.00	
+75	61.25	61.25	61.25	

Grades on C St. from 6th to 24th

Sta	North	Center	South	
2	61.50	61.50	61.50	West line of 8th St
+40	62.00	62.00	62.00	
0	62.50	62.50	62.50	East line of 8th St
+25	62.81	62.81	62.81	
+50	63.13	63.13	63.13	
+75	63.44	63.44	63.44	
1	63.75	63.75	63.75	
+25	64.06	64.06	64.06	
+50	64.38	64.38	64.38	
+75	64.69	64.69	64.69	
2	65.00	65.00	65.00	West line of 9th St
+40	65.50	65.50	65.50	
0	66.00	66.00	66.00	East line of 9th St
+25	66.62	66.62	66.62	
+50	67.25	67.25	67.25	
+75	67.87	67.87	67.87	
1	68.50	68.50	68.50	
+25	69.12	69.12	69.12	

Grades on C. St from 6th to 24th

Sta	north	center	South	
+50	69.75	69.75	69.75	
+75	70.38	70.38	70.38	
2	71.00	71.00	71.00	West line of 10th St
+40	71.50	71.50	71.50	
0	72.00	72.00	72.00	East line of 10th St
+25	72.69	72.69	72.69	
+50	73.37	73.37	73.37	
+75	74.06	74.06	74.06	
1	74.75	74.75	74.75	
+25	75.43	75.43	75.43	
+50	76.12	76.12	76.12	
+75	76.81	76.81	76.81	
2	77.50	77.50	77.50	West line of 11th St
+40	78.00	78.00	78.00	
0	78.50	78.50	78.50	East line of 11th St
+25	79.25	79.19	79.12	
+50	80.00	79.87	79.75	
+75	80.75	80.56	80.37	

Grades on C St from 6th to 24th

	North	Center	South	
1	81.50	81.25	81.00	
+25	82.25	81.53	81.63	
+50	83.00	82.62	82.25	
+75	83.75	83.31	82.87	
2	84.50	84.00	83.50	West line of 12th St
+40	84.50	84.00	83.50	
0	84.50	84.00	83.50	East line of 12th St
+25	82.56	82.06	81.56	
+50	80.62	80.12	79.62	
+75	78.69	78.19	77.69	
1	76.75	76.25	75.75	
+25	74.81	74.31	73.81	
+50	72.87	72.37	71.87	
+75	70.94	70.44	69.94	
2	69.00	68.50	68.00	West line of 13th St
+40	69.00	68.50	68.00	
0	69.00	68.50	68.00	East line of 13th St
+25	69.87	69.38	68.88	
+50	70.75	70.25	69.75	

Grades on C. St. from 6th to 24th

Sta	North	Center	South	
+75	71.62	71.12	70.62	
1	72.50	72.00	71.50	
+25	73.37	72.87	72.37	
+50	74.25	73.75	73.25	
+75	75.12	74.62	74.12	
2	76.00	75.50	75.00	West line of 14th St.
+40	76.00	75.50	75.00	
0	76.00	75.50	75.00	East line of 14th St.
+25	77.88	77.38	76.88	
+50	79.75	79.25	78.75	
+75	81.62	81.12	80.62	
1	83.50	83.00	82.50 X	
+25	84.12	83.62	83.12	
+50	84.75	84.25	83.75	
+75	85.38	84.88	84.37	
2	86.00	85.50	85.00	
+25	85.38	84.88	84.37	
+50	84.75	84.25	83.75	

Grades on C St. from 6th to 24th

Sta	North	Center	South	
+25	84.12	83.62	83.12	
3	83.50	83.00	82.50	
+25	82.13	81.62	81.12	
+50	80.75	80.25	79.75	
+75	79.38	78.87	78.37	
4	78.00	77.50	77.00	West line of 15th St.
+40	78.00	77.50	77.00	
0	78.00	77.50	77.00	East line of 15th St.
+25	75.81	75.31	74.81	
+50	73.62	73.12	72.62	
+75	71.44	70.94	70.44	
1	69.25	68.75	68.25	
+25	67.06	66.56	66.06	
+50	64.88	64.38	63.87	
+75	62.69	62.19	61.69	
2	60.50	60.00	59.50	West line of 16th St.
+40	60.50	60.00	59.50	
0	60.50	60.00	59.50	East line of 16th St.

Grades on C. St. from 16th to 24th

Sta	North	Center	South	
+25	59.81	59.38	58.94	
+50	59.13	58.75	58.37	
+75	58.44	58.12	57.81	
1	57.75	57.50	57.25	
+25	57.06	56.87	56.69	
+50	56.38	56.25	56.12	
+75	55.69	55.62	55.56	
2	55.00	55.00	55.00	West line of 17th St.
+40	54.50	54.50	54.50	
0	54.00	54.00	54.00	East line of 17th St.
+25	54.25	54.25	54.25	
+50	54.50	54.50	54.50	
+75	54.75	54.75	54.75	
1	55.00	55.00	55.00	
+25	55.25	55.25	55.25	
+50	55.50	55.50	55.50	
+75	55.75	55.75	55.75	
2	56.00	56.00	56.00	West line of 18th St.

Graded on C St. from 6th to 24th

Sta.	North	Center	South	
+40	56.50	56.50	56.50	
0	57.00	57.00	57.00	East line of 18th St
+25	58.00	58.00	58.00	
+50	59.00	59.00	59.00	
+75	60.00	60.00	60.00	
1	61.00	61.00	61.00	
+25	62.00	62.00	62.00	
+50	63.00	63.00	63.00	
+75	64.00	64.00	64.00	
2	65.00	65.00	65.00	West line of 19th St
+40	66.00	66.00	66.00	
0	67.00	67.00	67.00	East line of 19th St
+25	69.50	69.50	69.50	
+50	72.00	72.00	72.00	
+75	74.50	74.50	74.50	
1	77.00	77.00	77.00	
+25	79.50	79.50	79.50	
+50	82.00	82.00	82.00	

Grades on C St from 6th to 24th

Sta	North	Center	South	
+75	84.50	84.50	84.50	
2	87.00	87.00	87.00	West line of 20th St
+40	88.00	88.00	88.00	
3	89.00	89.00	89.00	East line of 20th St
+25	92.00	92.00	92.00	
+50	95.00	95.00	95.00	
+75	98.00	98.00	98.00	
1	101.00	101.00	101.00	
+25	104.00	104.00	104.00	
+50	107.00	107.00	107.00	
+75	110.00	110.00	110.00	
2	113.00	113.00	113.00	West line of 21st St
+40	114.00	114.00	114.00	
3	115.00	115.00	115.00	East line of 21st St
+25	118.00	118.00	118.00	
+50	121.00	121.00	121.00	
+75	124.00	124.00	124.00	
1	127.00	127.00	127.00	

Grades on C. St. from 6th to 24th.

Sta	North	Center	South	
+25	130.00	130.00	130.00	
+50	133.00	133.00	133.00	
+75	136.00	136.00	136.00	
2	139.00	139.00	139.00	
+40	140.00	140.00	140.00	West line of 22nd St
0	141.00	141.00	141.00	East line of 22nd St
+25	143.75	143.75	143.75	
+50	146.50	146.50	146.50	
+75	149.25	149.25	149.25	
1	152.00	152.00	152.00	
+25	154.75	154.75	154.75	
+50	157.50	157.50	157.50	
+75	160.25	160.25	160.25	
2	163.00	163.00	163.00	West line of 23rd St.
+25	163.50	163.50	163.50	
0	164.00	164.00	164.00	East line of 23rd St
+25	166.58	166.58	166.58	
+50	169.17	169.17	169.17	

Grades on C St from 6th to 29th

Sta	North	Center	South	
+75	171.75	171.75	171.75	
1	174.33	174.33	174.33	
+25	176.92	176.92	176.92	
+50	179.50	179.50	179.50	West line of 29th St

Nov 16 1892 Hamlin Level
Shaw
Dan Hook

Lamb stake on left North Side
bet 7th & 8th.

Sta	+	H.I.	Grade	Rod	Elev
B.M.	3.70	65.04			61.34
0			59.50	5.54	
+25			59.75	.25 5.29	
+50			60.00	.25 5.04	
+75			60.25	.25 4.79	
1			60.50	.25 4.54	
+25			60.75	.25 4.29	
+50			61.00	.25 4.04	
+75			61.25	.25 3.79	
2			61.50	.25 3.54	
#	3.86	65.36		3.54	61.50
B.M.				0.69	66.05

H.I. from this shot

7th x C

East line of 7th

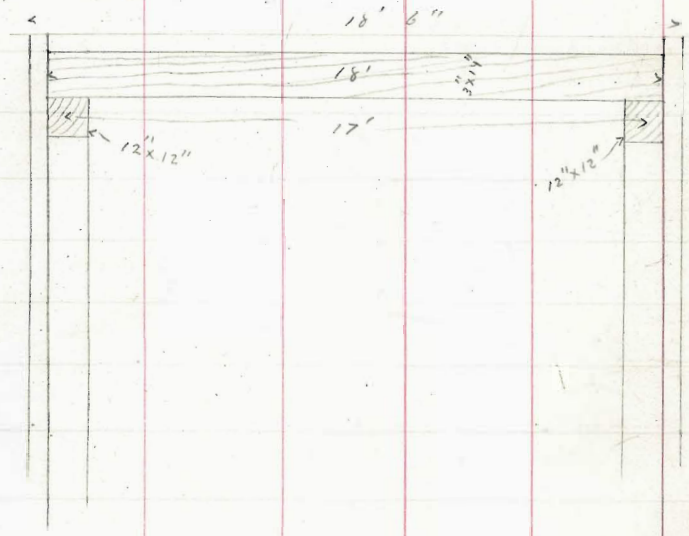
West line of 8th.

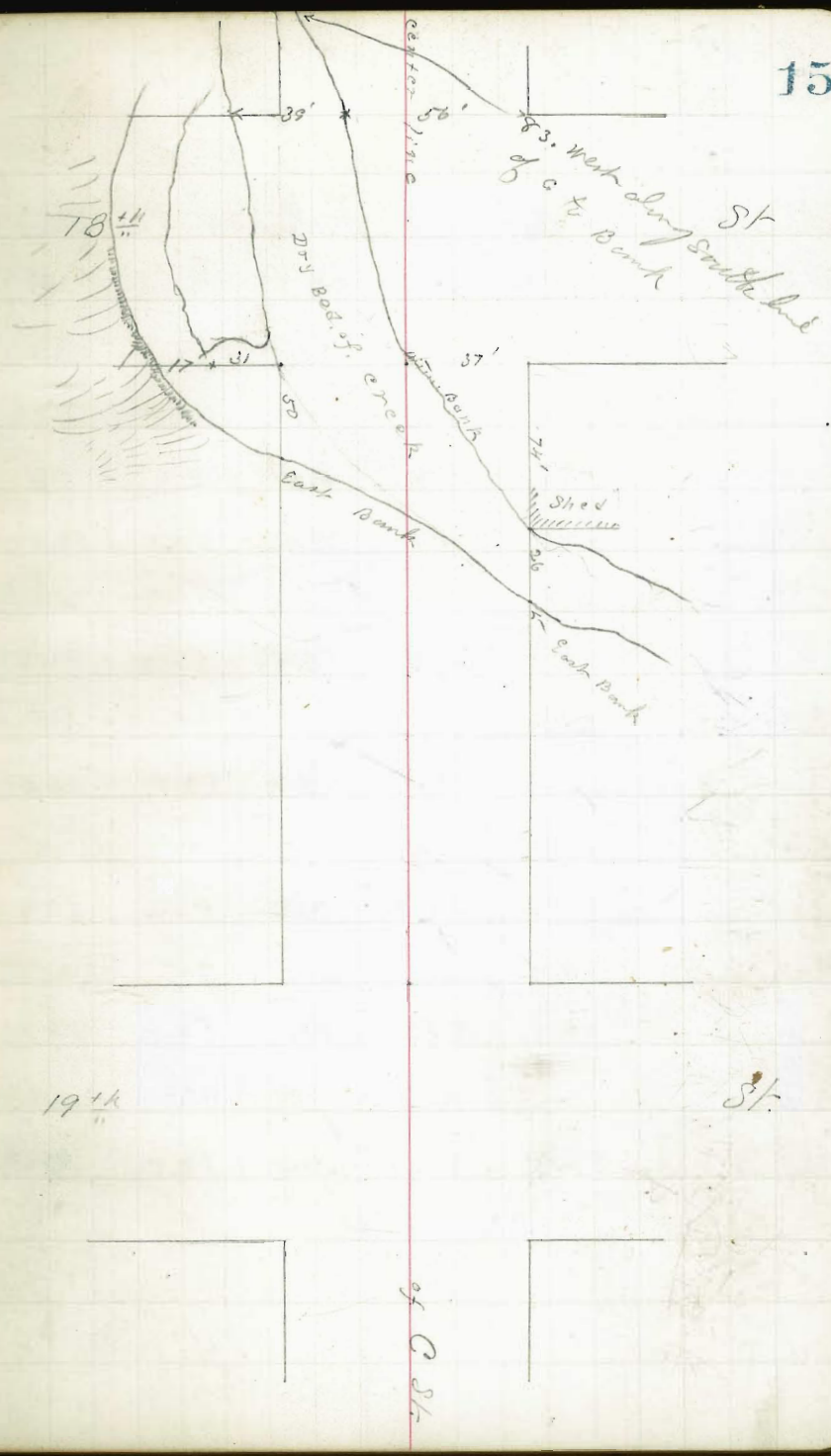
Center grades in Blk bet 7th & 8th

0			59.50	5.54	
+50			60.00	5.04	
1			60.50	4.54	
+50			61.00	4.04	
2			61.50	3.54	

Nov. 23 1892

Hamlin & Party.





Cross x 2 of intersection of ℄ & 16th

Nov 17 1892

Williams
Van Hook

Sta	North	curb	Gutter	center	Gutter	curb	South		HI		Elev
BM			4230	16 and D					1.60	6227	6047
2	1.8	2.0	2.5	2.1	3.2	2.8	2.5	West line of 16th			
	60.5	60.3	60.8	60.2	59.1	59.7	59.8				
+14	1.9	2.6	2.6	2.2	3.4	2.7	2.8	curb line			
	60.4	59.7	59.7	60.1	58.9	59.6	59.5				
+14	2.7	2.8	2.8	3.4	3.6	3.8	4.0	Gutter line			
	59.6	59.5	59.5	58.9	58.5	58.5	58.3				
+40	2.3	2.5	2.5	2.8	2.5	2.5	3.1	Center line			
	60.0	59.8	59.8	59.5	59.8	59.8	59.2				
+66	4.5	4.6	4.0	3.5	3.9	3.9	4.6	Gutter line			
	57.8	57.7	58.3	58.8	58.4	58.4	57.7				
+66	3.9	4.0	4.8	3.5	4.3	4.3	3.8	curb line			
	58.4	58.3	57.5	58.8	58.0	58.0	58.5				
0	3.9	4.3	5.0	3.8	4.0	3.4	3.5	East line 16th			
BM	58.4	58.0	57.3	58.5	58.3	58.9	58.8	16 and D		10.06	52.21

8th St bet C & B

	West	curb	center	curb	East
B M	7 and 6	66.33			
0	5.7	5.6	4.4	3.2	2.8
	60.6	60.7	61.5	63.1	63.5
+ 25	5.7	6.0	5.4	4.1	3.6
	60.6	60.3	60.9	62.2	62.7
+ 50	5.7	6.3	5.4	5.1	4.6
	60.6	60.0	60.9	61.2	61.7
+ 75	5.5	6.2	6.0	5.2	5.1
	60.8	60.1	60.3	61.1	61.2
1	5.8	6.2	5.9	5.5	5.2
	60.5	60.1	60.4	60.8	61.1

+	H	−	E
4.99	66.33		61.34
North line of C St			
		0.3	66.03

Sta	+	HI	Grade	Rod	Elev	
B.M.	4.80	66.92			62.12	9th & 16 St
#	3.61	68.62		1.91	65.01	
			61.50	7.12 ✓		West line of 8th St curb checked
0			62.50	6.12 ✓		East line of 8th St curb
			.31	.31		
+25			62.81	5.81 ✓		
			.32	.32		
+50			63.13	5.49 ✓		
			.31	.31		
+75			63.44	5.18 ✓		
			.31	.31		
1			63.75	4.87 ✓		
			.31	.31		
+25			64.06	4.56 ✓		
			.32	.32		
+50			64.38	4.24 ✓		
			.31	.31		
+75			64.69	3.93 ✓		
			.31	.31		
2			65.00	3.62 ✓		West line of 8th St
#	1.63	65.94		4.31	64.31	
B.M.				4.59	61.35	7th & 16 St.
B.M.	2.38	66.69			64.31	6th & 8th St
			62.50	4.19		

set another stake
of return 1' north
of this point

Slopes on 6 St bet 13th & 14th

Hamlin { William Shaw, Van Hook Nov 23 1892

	+	H	−	Elev
2 West line of 13th St				
B M C & 13th	6.48	75.47		68.99
+ 40				
B M C & 14th			2.84	72.63
0 East line of 13th St				
+ 50				
1				
+ 50				
2 West line of 14th St				
+ 40				
0 East line of 14th St				

North Side Slope	Cut	Elev	Grade	Grade	Elev	Cut	South Side Slope
	-0.9	68.1	69.0	68.0	68.5	+0.5	
	-1.3	67.7	69.0	68.0	66.4	-1.6	
	-0.6	68.4	69.0	68.0	65.1	-2.9	-3.1 / 4.7
	-2.4	68.3	70.7	69.7	64.9	-4.8	-4.9 / 7.5
	-4.4	68.1	72.5	71.5	65.3	-6.2	-7.0 / 10.5
-6.0 / 9.0	-6.4	67.8	74.2	73.2	65.3	-7.9	-9.5 / 14.2
-3.0 / 4.5	-3.5	72.5	76.0	75.0	66.2	-8.8	-9.9 / 14.3
	+5.4	81.4	76.0	75.0	76.7	-4.3	-5.2 / 7.8
							× 60 grade
	+10.4	86.4	76.0	75.0	78.2	+3.2	

grade at 2+17

Wing along East side of 16th St 20.5
" " North side of D — 20.0'
Depth from floor to bottom 8.0
Width on East End. 31.0 Set Posts
7.5) (length of Part 6.9
3/4 length 9.2 , South End (12.0)

Curb stake on C St. North side
bet 8th & 9th

Nov 28th 1892 Hambi { Shaw William Van Hook

21

Sta	+	BS	Grade	Rod	Elev	
B.M.	4.49	68.78			64.29	8th & C
0			62.50	6.28	✓	East line of 8th St
				.31		
+25			62.81	5.97	✓	
				.32		
+50			63.13	5.65	✓	
				.31		
+75			63.44	5.34	✓	
				.31		
1			63.75	5.03	✓	
				.31		
+25			64.06	4.72	✓	
				.32		
+50			64.38	4.40	✓	
				.31		
+75			64.69	4.09	✓	
				.31		
2 #	8.11	73.11	65.00	3.78	65.00	West line of 9th St

Curb stake on South of C bet 9th & 10th
Nov 28 1892 Hambi & Shaw

0			66.00	7.11	✓	East line of 9th St.
			.62	.62		
+25			66.62	6.49	✓	
			.63	.63		
+50			67.25	5.86	✓	
			.62	.62		
+75			67.87	5.24	✓	
			.63	.63		
1			68.50	4.61	✓	
			.62	.62		
+25			69.12	3.99	✓	
			.63	.63		
+50			69.75	3.36	✓	
				.62		

Sta	+	H.I.	Grade	Rod	Elev	
+75		73.11	70.38	2.73		
2 1		[illegible]	71.00	2.11 (62)	[illegible]	West line of 10th St
~~#~~	4.70	75.70		2.11	71.00	
B.M.				1.17	74.53	10th & C St

North Side			South Side		
Elev	Grade	cut	Elev	Grade	cut
			88.63		
3.67			4.83		
84.96	84.50	+ 0.46	83.80	83.50	+ 0.3
6.52			7.25		
82.11	80.62	+ 1.49	81.38	79.62	1.76
88.63			78.63		
11.97			1.43		
76.66	76.75	− 0.09	77.20	75.75	+ 1.45
			78.63		
5.46			6.44		
73.17	72.87	+ 0.30	72.19	71.87	+ 0.32
7.45			10.20		
71.18	69.00	+ 2.2	68.43	68.00	+ 0.5

Cut and Fill Taken on C St bet 12th and 13th Dec 1892 Hamlin Jones

Sta	+	H.I.	−	Elev
B.M.	2.73	88.63		85.90
0				
+50				
#	1.97	78.63	11.97	76.66
1				
+50		78.63 69 9.63		
2				
B.M.			2.67	68.96

Cut and Fill stakes on C St between 14th on 16th St

North line			South line		
Elev	Grade	cut	Elev	Grade	cut
			81.24	13th & C.	
0.44			9.04		
80.80	76.00	+4.8	72.20	75.00	- 2.8
90.67					
4.15			2.17		
86.52	76.00	+10.5	79.07	75.00	+ 4.1
			90.67		
2.56			6.37		
88.11	79.75	+ 8.36	84.30	78.75	+ 5.55
2.50			7.12		
88.17	83.50	+ 4.67	83.55	82.50	+ 1.0
0.78			6.06		
89.89	84.75	+ 5.14	84.61	83.75	+ 0.86
			93.58		
1.74			6.61		
91.84	86.00	+ 5.8	86.97	85.00	+ 2.0
0.87			6.40		
92.71	84.75	+ 7.96	87.18	83.75	+ 3.43
1.59			7.72		
91.99	83.50	+ 6.49	85.86	82.50	+ 3.36

Dec. 1 1892 Hamlin and 3 men.

Sta	+	HI	-	Elev
BM	12.25	81.24		68.99
2+40	Center line of 14th St			
	11.60	90.67	2.17	79.07
0	Cook " " " "			
+50				
#	3.53	93.58	0.62	90.05
1				
+50				
2				
+50				
3				

Cut and Fill stakes on C St bet'n. 14th and 16th St's

North line Elev	Grade	cut	South line Elev	Grade	cut
			(93.58)		
3.53			10.30		
90.25	80.75	+9.50	83.28	79.75	3.53
6.80			12.50		
86.78	78.00	+8.8	81.08	77.00	+4.1
	78.00			77.00	
(93.58)			(83.05)		
11.72			7.05		
81.86	78.00	+3.9	76.00	77.00	−1.0
			(83.05)		
6.18			10.93		
76.87	73.62	+3.25	72.12	72.62	−0.5
(83.05)			(71.48)		
11.57			3.21		
71.48	69.25	+2.23	68.27	68.25	0.0
			(71.48)		
7.02			5.55		
64.46	64.88	−0.42	65.93	63.87	+2.06
10.79			11.65		
60.69	60.50	+0.2	59.83	59.50	+0.3
#					

Sta	+	H.I.	−	Elev
		(93.58)		
+50				
#				
BM #	0.98	83.05	11.57	82.07
+40	Center line of 15th St			
0				
+50				
#	0.0	71.48	11.57	71.48
1				
+50				
2	West line of 16th St			
#	3.73	64.42	10.79	60.69
BM 16th & C			3.69	60.73

Finishing Stakes on C St bet 13th & 14th

Set on cut lines

Sta	North Grade	North Rod	South Grade	South Rod	
BM 13th & C		(76.86)			
0	69.00	7.86	68.00	8.86	
				1.75	
+50	70.75	6.11	69.75	7.11	
				1.75	
1	72.50	4.36	71.50	5.36	c out
				1.75	
+50	74.25	2.61	73.25	3.61	not set
				1.75	
2	76.00	0.86	75.00	1.86	

+	H I	—	Elev.
7.87	76.86		68.99

East line of 13th St

1.2 at this point

West line of 14th St

Cut & Fill stakes on C St between 16th & 17th

North line			South line		
Elev	Grade	cut	Elev	Grade	cut
			61.09		
2.57			2.24		
58.52	60.50	-2.0	58.85	59.50	-0.65
3.91			3.58		
57.18	59.13	-2.1	57.51	58.37	-0.86
5.99			7.67		
55.10	57.75	-2.65	53.42	57.25	-3.83
8.11			9.17		
52.98	56.38	-3.4	51.92	56.12	-4.20
			56.92		
9.50			5.60		
52.09	55.00	-2.91	51.32	55.00	-3.7

Dec. 3 1892 Hamilton & Biner

27

Sta	+	HO	—	Elev
BM	0.40	61.09		60.69
0				
			56.92 4.99 51.93	
+50				
1				
+50				
2				
#	4.82	56.92	9.00	52.09
B.M.			4.94	51.98

Center stakes on C St bet. 9th & 12th

Dec 4th 1892

Sta	+	HI	Grade	Rod	Elev.	
B.M.	0.35	74.90			74.55	10th & C St.
+40			65.50	9.40 -		Center line of 9th St
0			66.00	8.90 -		East line of 9th St
+50			67.25	7.65 -		
1			68.50	6.40 -		
+50			69.75	5.15 -		
2			71.00	3.90 -		
+40			71.50	3.40 -		Center of 10th St
0			72.00	2.90 -		
+50 #			73.37	1.28 -		
1			74.75	5.90 -		
+50			76.12	4.53 -		
2			77.50	3.15 -		
	6.10	80.65			74.55	
+40			78.00	2.65 -		Center line of 11th St
				3.86	71.84	Check on curb stake 10 and 6 south w/ cor
0			78.50	2.15 -		

	+	H	grade	Rod	E
+50#	7.45	87.23	79.87	0.87	79.78
1			81.25	5.98	
+50			82.62	4.61	
2			84.00	3.23	
+40			84.00	3.23	
0			84.00	3.23	
				1.34	85.89

Center line of 12th St

12 and 6

Curb stakes on the north side of C St between 9th & 10th St

Dec 5th 1892

Hampelmann Dept.
Shaw
Williams
Van Hook } assistants

Sta	+	HO	Grade	Rod	Elev.
BM	0.24	74.79			74.55
0			66.00	8.79	✓
+25			66.62	8.17	✓
+50			67.25	7.54	✓
+75			67.87	6.92	✓
1			68.50	6.29	✓
+25			69.12	5.67	✓
+50			69.75	5.04	✓
+75			70.38	4.41	✓
2.			71.00	3.79	✓

10th & C Street

East line of 9th St

West line of 10th St

Cut and Fill stakes on ℄ St between 17th St and 18th St, 24th North line × South line

Elev.	Grade	cut	Elev	Grade	cut	Sta	+	H.I.	−	Elev.
			56.15							
B.M.							4.19	56.15		51.96
4.50			5.22							
51.65	54.50	−2.85	50.93	54.50	−3.6	+40	Center line of 17th St			
4.85			5.04							
51.30	54.00	−2.7	51.11	54.00	−2.9	6				
4.12			4.56							
52.03	54.50	−2.0	51.59	54.50	−2.91	+50				
						#	5.50	57.75	3.90	52.25
3.50			4.56							
52.65	55.00	−2.35	51.59	55.00	−3.41	1				
57.75			56.15							
4.67			6.72							
53.08	55.50	−2.4	49.43	55.50	−6.1	+50				
57.75			56.15							
4.29			7.49							
53.46	56.00	−2.5	48.66	56.00	−7.34	2				
		57.75								
3.33			7.32							
54.42	56.50	−2.1	50.43	56.50	−6.1	+40	Center line of 18th St			
							B.M.		3.58	54.17
4.78			7.12							
52.97	57.00	−4.03	50.63	57.00	−6.4	0				
3.66			5.84							
54.09	59.00	−4.9	51.91	59.00	−7.1	+50				

Cut and Fill stakes on ℄ 8th
bet 18th St and

Elev	Grade	cut	Elev	Grade	cut
3.98			(57.75) 5.05		
53.79	61.00	-7.2	52.70	61.00	-8.3
(57.75)			(67.36)		
3.22			1.55		
54.53	63.00	-8.5	65.81	63.00	+2.8
(67.36)			(77.60)		
9.20			7.9		
58.16 Left of Point	65.00	-6.8	69.7	65.00	+4.7
(67.36)			(77.60)		
7.83			9.47		
59.53	66.00	-6.5	68.13	66.00	+2.1
			(77.60)		
9.30			8.86		
68.3	67.00	+1.3	68.74	67.00	+1.7
(77.60)			(88.70)		
6.44			13.4		
71.16	72.00	-0.8	78.3	72.00	+6.3
(77.60)			(88.70)		
2.87			8.57		
74.73	77.00	-2.3	80.13	77.00	+3.1
			(88.70)		
11.98			6.92		
76.72	82.00	-5.3	81.78	82.00	-0.2
(88.70)			(88.70)		
7.58			0.34		
80.12	87.00	-6.9	88.36	87.00	+1.3

Sta	+	BS	-	Elev
				57.75
1	Cut & Fill stakes out to sta 1			
#	11.31	67.36	1.70	56.05
+50				
#	11.39	77.61	1.14	66.22
2				
+40	Center line of 19th St			
0				
#	11.72	88.70	0.63	76.98
+50				
1				
+50				
2				
#	10.76	99.11	0.35	88.35

Elev		Grade	Cut	Elev	Grade	Cut
88.70				99.11		
4.09	84.61	88.00	− 3.4	8.12 90.95	88.00	+ 3.0
			99.11			
8.23				8.01		
90.88		89.00	+ 1.9	91.10	89.00	+2.1
99.11				110.34		
4.78				8.48		
94.33		95.00	− 0.7	101.86	95.00	+ 6.9
			110.34			
7.84				7.65		
102.50		101.00	+ 1.5	102.69	101.00	+ 1.7
2.83				4.20		
107.51		107.00	+ 0.5	106.14	107.00	− 0.9
			120.05			
7.86				7.82		
112.18		113.00	− 0.8	112.22	113.00	− 0.8
		114.00			114.00	
		115.00			115.00	

Sta	+	HO	−	Elev.
+40 Center line of 20th St				
		99.11		
0 #	11.77	110.34	0.54	98.57
(BM. 20th & C old)			11.17	99.17
+50				
1				
+50				
#	10.12	120.05	0.41	109.93
2				
B.M. C & 21st			6.35	113.70
+40 Center line of 21st St				
B.M. B & 21st			6.89	113.16
0				

Slopes on C° St bet 16th & 21st

Sta		North out	South out
2	West line of 17th St		
+40	Centre line of 17th St	4.2 / -2.8	-2.8 / -3.6	5.4 / -3.6
0	East line of 17th St	4.0 / -2.7	-2.7 / -2.9	4.4 / -2.5
+50			-2.0 / -2.9	4.4 / -2.9
1			-2.4 / -3.4	5.1 / -3.4
+50			-2.4 / -6.1	9.8 / -6.4
2		3.8 / -2.5	-2.5 / -7.3	10.2 / -6.8
+40	Centre line of 18th St	3.0 / -2.0	-2.1 / -6.1	9.7 / -6.5
0		6.0 / -4.0	-4.0 / -6.4	10 / -6.7
+25			-6.9	10.8 / -7.2
+50		7.3 / -4.9	-4.9 / -7.1	10.6 / -7.1
+75		12.0 / -8.0	-7.0	

Tunnel from 0 to 2

		North side	South side
1		12.8 / −8.2 ; 9.0 / −7.0 ; −7.2	−8.3 ; 12.0 / −8.0
+50		12.9 / −8.6 ; −8.5	+2.8
2		13.5 / −8.0 ; −9.6 ← on opposite ; −6.8 top of bank	
+40	Center line of 19th St	12.4 / −8.9 ; 8.0 / −9.1 ; −6.5	
0		← 0.0 Sta 3+70	
		+1.3	
+50		1.5 / −1.0 ; −0.8	
+75		9.0 / −6.0 ; −5.3	
1		6.0 / −4.0 ; −2.3	
+50		10.3 / −6.9 ; −5.3	
2		18 / −12.0 ; 16 / −12.2 ; 9.0 / −11.4 ; −6.5	
+40	Center line of 20th St	13.4 / −8.9 ; −3.4	

Cut stakes on C St between 10th & Eleventh Sts

Dec 14th 1892 Hamlin & Bassistt

Sta	+	HI	Rude	Rod	Elev	
BM	5.71	80.26			74.55	S.E. Cor 10th & C v hinge of hydt.
0			72.00	8.26	✓	East line of 10th St
				.69		
+25			72.69	7.57	✓	
				.68		
+50			73.37	6.89	✓	Set both sides of St
				.69		
+75			74.06	6.20	✓	Level N & S Sides
1			74.75	5.51	✓	
+25			75.43	4.83	✓	
+50			76.12	4.14	✓	
+75			76.81	3.45	✓	
2			77.50	2.76	✓	West line of 11th St
				0.01	80.25	B.M. not checked as near as possible
#	9.95	87.13	3.08		77.18	
			1.24	85.89		

Cut & Fill Sabre on C St from 21st St to 24th St

North Side Elev	Grade	cut	South Side Elev	Grade	cut
B.M. 9.90			(124.46) 9.91		
114.56	114.00	+ 0.56	114.55	114.00	+ 0.55
9.16			9.52		
115.36	115.00	+ 0.3	114.94	115.00	0.0
(124.46) 3.94			(135.75) 8.93		
120.52	121.00	− 0.5	126.82	121.00	+ 5.8
(124.46) 2.10			(135.75) 3.33		
122.36	127.00	− 4.6	132.42	127.00	+ 5.4
(135.75) 8.80			(146.90) 10.43		
126.95	133.00	− 6.0	136.47	133.00	+ 3.4
(135.75) 0.35			(146.90) 9.82		
135.40	139.00	− 3.6	137.08	139.00	− 1.9
			(146.90) 7.16		
5.86					
141.04	140.00	+ 1.0	139.54	140.00	− 0.5
2.43			3.64		
144.47	141.00	+ 3.4	143.26	141.00	+ 2.2
			(157.45) 6.36		
8.72					
148.73	146.00	+ 2.2	149.09	146.00	+ 2.6

Dec 7th 1892

Hamlin level
Williams Rod
Van Cook

Sta	+	BS	−	Elev
	10.83	124.46		113.63
+40 Center line of 21st St				
0				
#	11.53	135.75	0.24	124.22
+50				
1				
#	11.56	146.90	0.41	135.34
+50				
2				
B.M. 22nd & C			9.93	136.97
+40 Center line of 22nd St				
0				
#	11.76	157.45	1.21	145.69
+50				

Cut and Fill stakes on C St
between 21st & 22nd St

North Side			South Side		
Elev	Grade	cut	Elev	Grade	cut
			157.45		
3.03			3.56		
154.42	152.00	+2.4	153.89	152.00	+1.8
			168.16		
10.02			10.08		
158.14	157.50	+0.6	158.08	157.50	+0.5
6.75			6.24		
161.41	163.00	-1.6	162.12	163.00	-0.9
	163.50			163.50	
2.10			1.97		
165.06	164.00	+1.0	166.19	164.00	+2.1
			178.69		
8.86			7.22		
169.83	169.17	+0.66	171.42	169.17	+2.25
3.11			3.33		
175.58	174.33	+1.25	175.36	174.33	+1.03
			183.64		
4.15			4.26		
179.49	179.10	+0.3	179.38	179.10	+0.2

Sta	+	HI	-	Elev
		157.45		
1				
#	11.89	168.16	0.68	156.27
+60				
2				
B.M.			6.50	161.66
+25 center line of 22nd St				
0				
#	11.21	178.69	0.68	167.48
+50				
1	8.06	183.64	3.11	175.58
#				
+46 East of Culverwell & Taggarts Add				
BM			5.22	178.42

Survey for location of Culvert on C St between 18th & 19th Sts

Sta	+	HI	−	Elev	Grade
BM 18th & C	3.02	57.18		54.17	
			7.54	49.64	57.0

60
53.5
6.5
7.2
137
6.8

36.0
48.7
7.3
6.1
13.1
6.1
68
12.9
6.5

55.3
49.2
6.1

235
6.5
1175
1410
1527.5
22
3055.0
3055.0
3360.5 | 1245
27
27
66
59
120
108
12.5
13.5

1250

Dec 8 1892

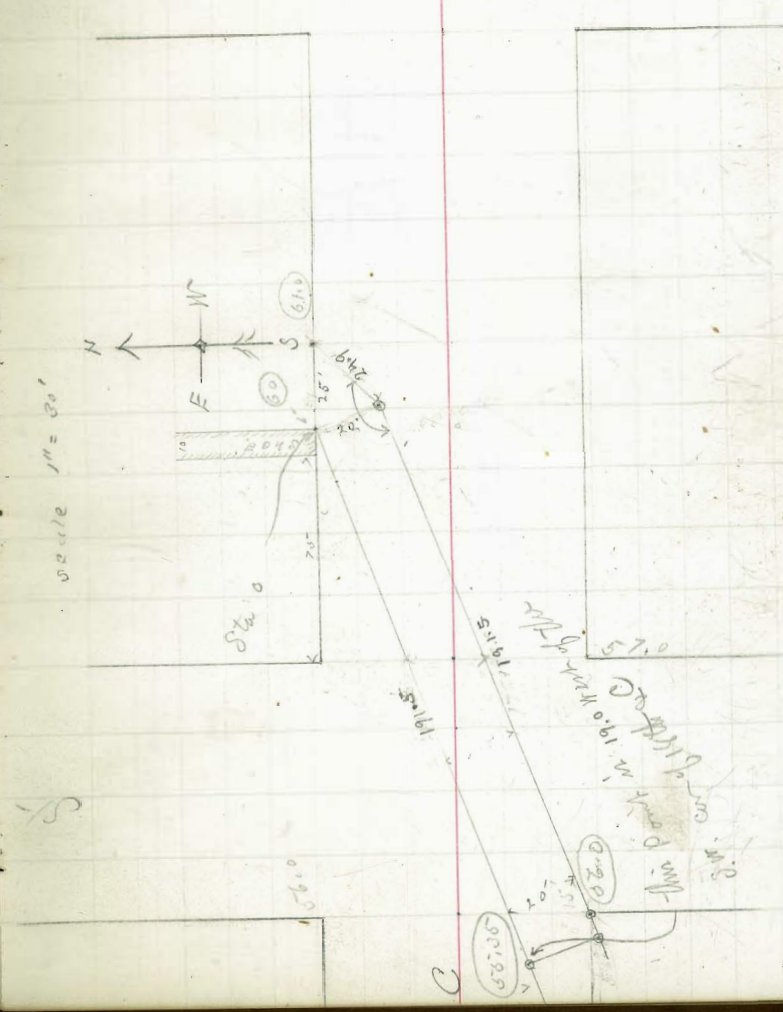
60
57.18
2.82

61
57.18
3.82

Hamlin Brot.
William } chain
Shaw
Van Hook stake

7.4 changed to dimension shown in sketch Dec 12 1892

78



4+61

18+41

Elevs. for C St Bridge

Dec 7 1892 Hamlin & Party

Left		Centre (57.12)		Right		Sta + HI − Elev
Rod	Elev	Rod	Elev	Rod	Elev	57.18
		5.5	51.7			Bottom of creek north end
4.9	52.3	5.3	51.9	3.7	53.5	0 bot face on right
5.2	52.0	5.2	52.0	3.9	53.3	+20 bot face " "
5.4	51.8	5.3	51.9	4.8	52.4	+40
5.6	51.6	5.4	51.8	5.2	52.0	+60
6.0	51.2	5.8	51.4	4.8	52.4	+80 at 8' in from Right rep drop to level of centre
6.7	50.5	4.3	52.9	5.1	52.1	1 foot drop at centre to level of left side
6.4	50.4	5.4	51.8	5.9	51.3	+20 at 16 same level as centre foot drop to same level as left
6.9	50.3	6.9	50.3	6.8	50.4	+40

Elevs for C St Bridge

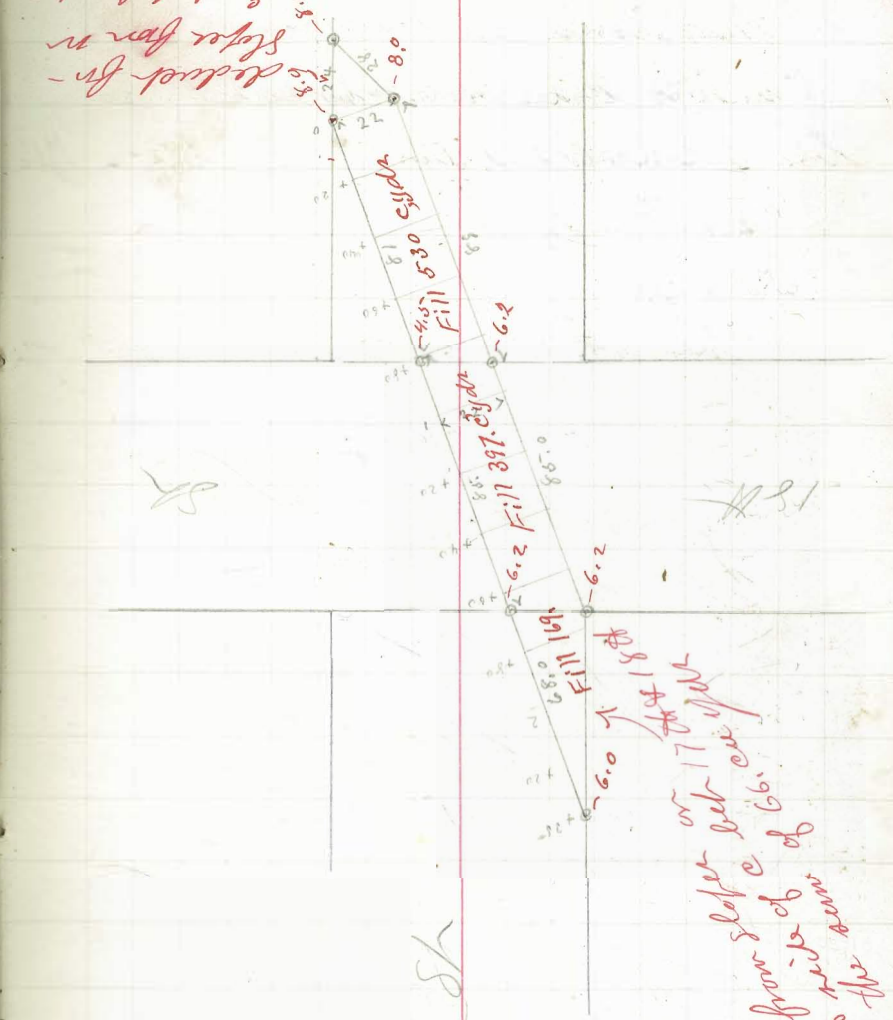
Hamilin & Party Dec 7 1892

Left		x Center		x Right				
Rod	Elev	Rod	Elev	Rod	Elev			57.18
		(57.20)						
7.9	49.3	6.5	50.3	7.3	49.7	+60		
8.5	48.7	7.4	49.8	7.4	49.8	+80	St Cen of Bridge	
				7.7	49.5	2		
				8.0	49.2	+20		
				8.0	49.2	+35		
								7.74 49.44

Check on Sta 1+50 on South side

Approximate amount of Earth Embankment to be deducted from calculated quantities on C Sh for culvert

See sketch on opposite page



X sect for Excavation under C St bridge

Dec 10 1882

This form used in taking note

Elev above datum

dist from Right Side

Right 52.6	51.6 / 5	52.2 / 22	bottom of creek	
53.0 / 0	52.1 / 2	52.0 / 22	bottom of creek	
52.3 / Right	51.6 / 11	51.6 / 22	bottom of creek	
52.0 / Right	51.7 / 11	51.2 / 22	bottom of creek	
52.2 / Right	53.3 / 8.0	51.6 / 9.0	51.6 / 11.0	50.7 / 22 bottom creek
51.9 / Right	52.6 / 12.0	50.6 / 13.0	50.6 / 22.0	Bottom creek
51.4 / Right	52.6 / 10.0	50.0 / 22.0	Bottom creek	
50.3 / Right	51.1 / 6.0	50.0 / 7.0	49.3 / 22	Bottom creek
50.0 / Right	50.0 / 22	Bottom creek		

Excavation 50 cu yds

Sta	+	120	—	Elev
BM	2.05	56.22		54.17

0 Sta 0 N.W. cor of bridge

+20

+40

+60

+80

1

Creek on Sta 2+33.

7.0 49.2

+20

+40

+60

Center stakes on C St. between 12th & 14th Sts

Sta	+	HI	Grade	Rod	Elev	
B.M.	1.42	87.32			85.90	B.M. 12th & C
0			84.00	3.32		East line of 11th St
+50						
+50			80.12	7.20		
1 #	1.79	78.04	76.25	11.07	76.25	
#						
+50			72.87	5.17		
B.M.				9.11	68.93	
2			68.50	9.54		
+40			68.50	9.54		13th St
0			68.50	9.54		
			1.75	1.75		
+50			70.25	7.79		
				1.75		
1			72.00	6.04		
				1.75		
+50			73.75	4.29		
				1.75		
2			75.50	2.54		
+40			75.50	2.54		
0 #	6.71	82.21	75.50	2.54	75.50	East line of 14th St
#			3.23			
				78.98		

57
75.25
7.75

78.98
75
+4.0

Slope on ℄ St from 21st to to 22nd

	cu yds	area	North	South	area	cu yds
0						
+50		0.1	.5 / .3 −0.5			
	7.6					
1		12.4	5.4 / −3.6 −4.6			
	34.2					
+50		24.7	7.4 / −4.9 5.0 / −7.0 −6.0			
	31.8			0.0		0.5
	77.5					
2		9.7	5.4 / −3.6 −3.6	−1.9 3.0 / −3.0	2.8	2.8
	3.5					2.2
+40			0.0	−0.5 0.8 / −0.8	0.2	
	3.5					2.2
0						
+50						
1						
+50						

Curb stakes on C St North Side
from 11th to 12th

Dec 22nd 1892

~~Hamlin~~
Shaw
Williams
Crowell

Sta	+	HO	Grade	Rod	Elev
BM	0.90	86.80			85.90
0			78.50	8.30	
+25			79.25	7.55	
+50			80.00	6.80	
+75			80.75	6.05	
1			81.50	5.30	
+25			82.25	4.55	
+50			83.00	3.80	
+75			83.75	3.05	
2			84.50	2.30	

East line of 11th St

West line of 12th St

Checked on old grade stakes
see next page

Curb stakes on C. St. South Side
from 11th to 12th

Sta	+	H.I.	Grade	Rod	
B.M.	0.90	86.80			85.90
0			78.50	8.30	
+25			79.12	7.68	
+50			79.75	7.05	
+75			80.37	6.43	
1			81.00	5.80	
+25			81.63	5.17	
+50			82.25	4.55	
+75			82.87	3.93	
2			83.50	3.30	
B.M.	0.90	86.80			85.90
				9.28	77.52

old grade stake

Dec 22nd 1892

~~Hamelin~~
Shaw
Williams
Crowell

East line of 11th St

West line of 12th St

12 St

Curb stakes on C St. bet 12th & 13th. North Side

Sta	+	HI	Grade	Rod	Elev
BM	1.31	87.21			85.90
0			84.50	2.71	✓
+25			82.56	4.65	✓
+50			80.62	6.59	✓
+75			78.69	8.52	✓
1 #	0.76	77.57	76.75	10.46	76.75
+25			74.81	2.70	✓
+50			72.87	4.64	✓
+75			70.94	6.57	✓
2			69.00	8.51	✓
BM				8.46	68.55

Jan. 3 1893

Hamlin
Williams
Shaw
Cummings

12th & C St

East line of 12th St

4.67
68.55
73.62
68.00
4.62

West line of 13th St

13th & left. spk on fence

Curb stakes on C St between 12th & 13th South Side

Sta	+	HI	Grade	Rod	Elev
BM	1.31	87.21			85.90
0			83.50	3.71 ✓	
				1.94	
+25			81.56	5.65 ✓	
				1.94	
+50			79.62	7.59 ✓	
				1.93	
+75			77.69	9.52 ✓	
1+25	1.76	77.51	75.75	11.46 ✓	75.75
+25			73.81	3.70 ✓	
+50			71.87	5.64 ✓	
+75			69.94	7.57 ✓	
2			68.00	9.51 ✓	
BM				8.51	69.00

Jan. 3 1893

Hamlin
Williams
Shaw
Cummings

12th & C.

East line of 12th St

		0.47
		85.90
		86.37
		9.61
		76.76
		0.92
		77.68
		8.73
		68.95
3.32	3.52	
68.95	68.53	
72.27	72.45	
68	68.00	
4.27	4.45	

West line of 12th St

13th & C. St

Curb stakes on C. St. bet 13th and 14th Street on North Side

Sta	+	HI	Grade	Rod	Elev
B.M.	11.71	80.66			68.95
0			69.00	11.66	
+ 25			69.87		
+ 50			70.75		
+ 75			71.62		
			72.50		
+ 25			73.37		
+ 50			74.25		
+ 75			75.12		
2			76.00	4.66	

Intermediate points not with instrument checked on property line

N.E. Cor. 13th & C spk in Post East line of 13th St

West line of 14th St

Cut stakes on C. St. between 13th and 14th Streets on South Side

Sta	+	H.I.	Grade	Rod	Elev
B.M.	10.73	79.68			68.95
0			68.00	11.68	
+25			68.88		
+50			69.75		
+75			70.62		
1			71.50		
+25			72.37		
+50			73.25		
+75			74.12		
2			75.00	4.68	

Determine the points with sprinkling chisel or pipe tacks

N.E. cor 13th & C. spk cor Park

East line of 13th St.

68.95
4.26
73.21
68
5.21

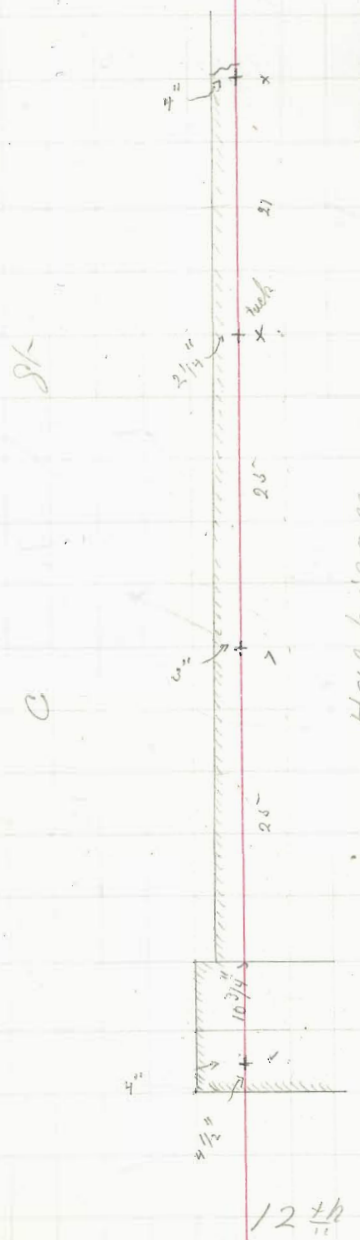
West line of 14th St.

Sta	+	HI	Grade	Rod	Elev	
B.M.	11.71	80.66			68.95	B.M. 13th & C
2			76.00	4.66		N. West cor 14th & C
			69.00	11.66		N.E. cor of 13th & C

Sketch of Harbison wall which projects into C St. cross x marked into wall as shown in sketch.

Jan 11 1893

Hamlin
Shaw
William
Cummings



Jan 25 - 1898

Hamlin
Williams
Cummings
Shriver

Curb stone on North side of C St bet 13th & 14th

Sta	+	HI	Rodd	Rod	Elev
B.M.	0.06	88.42			88.36
#	1.91	82.87		7.46	80.96
0			76.00	6.87	
				1.88	
+25			77.88	4.99	✓
				1.87	
+50			79.75	3.12	✓
				1.87	
+75 #	6.96	88.58	81.62	1.25	✓ 81.62
1			83.50	5.08	✓
				.62	
+25			84.12	4.46	✓
				.63	
+50			84.75	3.83	✓
				.63	
+75			85.38	3.20	✓
				.62	
2			86.00	2.58	✓
B.M.				0.23	88.35
				.58	
+19.3			85.52	3.06	✓
+25			85.38	3.20	
+50			84.75	3.83	✓
+75			84.12	4.46	✓
3			83.50	5.08	
B.M.				6.55	82.03

Not set.

15th & C St

Cut stakes on the south side of C St from 14th towards 15th

Sta	+	HI	Grade	Rod	Elev
B.M.	10.54	86.54			76.00
0			76.00	11.54	
				1.88	
+25			76.88	9.66	
				1.87	
+50			78.75	7.79	✓
				1.87	
+75			80.62	5.92	✓
				1.88	
1			82.50	~~4.04~~	✓
				.62	
+25			83.12	3.42	✓
				.63	
+50			83.75	2.79	✓
				.62	
+75			84.37	2.17	✓
				.63	
2			85.00	1.54	✓
+25 #	3.43	87.80	84.37	2.17	✓ 84.37
+50			83.75	4.05	✓
				.63	
+75			83.12	4.68	✓
				.62	
3 #	2.46	84.96	82.50	5.30	✓ 82.50
+25			81.12	3.84	✓
				1.37	
+50			79.75	5.21	✓
				1.38	
+75			78.37	6.59	✓
				1.37	
4			77.00	7.96	✓
B.M.				3.94	82.02

Jan 30 1853

Hamlin Leal
Shaw
Williams } chain-rod
Cummings stake.

Cut stake on N.E. cor 14th & C
East line of 16th St

Jan 18 1853

West line of 15th St
15th & C

N		×	S						
Grade	Rod	Grade	Rod	Sta	+	HI	—	Elev	
					8.23	60.19		51.96	BM 17th & C.
	(60.19)								
55.0	5.19	55.00	5.19	2		West line of 17th St			
		59.50	0.69			East line of 16th			

Feb 6 1883

Cut grade on South side of C St from 16th to 17th

Sta	+	HI	Grade	Red	Elev
B.M.	8.23	60.19			51.96
0			59.50	0.69	✓
				.56	
+25			58.94	1.25	✓
				.57	
+50			58.37	1.82	✓
				.56	
+75			57.81	2.38	✓
				.56	
1			57.25	2.94	✓
+25			56.69	3.50	✓
+50			56.12	4.07	✓
+75			55.56	4.63	✓
2			55.00	5.19	

Feb 6 1883

Sta	+	HI	Grade	Rod	Elev
2					59.50
B.M	12.03	64.26			52.23
2			55.00	9.26	
+75			55.69	8.57	
+50			56.38	7.88	
+25			57.06	7.20	
1			57.75	6.51	
+75			58.44	5.82	
+50			59.13	5.13	
+25			59.81	4.45	
0			60.50	3.76	

16 X 8 16

64.26
53.50
4.76

56.05
4.74
60.74
60.50
56.24
4.50
3.79

60.74
6.56
54.18

Level of rules on ℄ St bet 17th & 18th St on South side

Sta	+	HI	Grade	Rod	Elev	
B.M.	9.92	61.88		51.96		17th & C
0			54.00	7.88		East line of 17th St
+25			54.25	7.63 (25)		
+50			54.50	7.38 (25)		
+75			54.75	7.13 (25)		
1			55.00	6.88		
+25			55.25	6.63		
+50			55.50	6.38		
+75			55.75	6.13		
2			56.00	5.88		West line of 18th St
B.M.				7.71	54.17	18th & C St

9.92

Curb grade on C St. North side between 17th & 18th St.

Sta	+	H.I.	Grade	Rod	Elev
BM	6.79	58.75			51.96
0			54.00	4.75	
+25			54.25	4.50	
+50			54.50	4.25	
+75			54.75	4.00	
1			55.00	3.75	
+25			55.25	3.50	
+50			55.50	3.25	
+75			55.75	3.00	
2			56.00	2.75	
B.M.				4.59	54.16

Feb 18 1893

Hamlin Inst.
Shaw Stake
Cummings } Chain
Williams }

17th & C

East line of 17th St.

West line of 18th St.

18th & C

Feb 18 1893 — Hamlin Instr. Cummings } chain Williams } chain Glenn chain

Cut stakes on the South side of C St from 15th to 16th St.

Sta	+	HI	Grade	Rod	Elev
B.M.	2.94	84.96			82.02
0			77.00	7.96	
+25 #	1.75	76.56	74.81	10.15	74.81
+50			72.62	3.94	
+75			70.44	2.18 / 6.12	
1			68.25	2.19 / 8.31	
+25 #	8.59	74.65	66.06	2.19 / 10.50	66.06
+50 #	1.78	65.60	63.87	10.78	63.87
+75			61.69	3.91	
2			69.50	2.19 / 6.10	

15th & C

East line of 15th St

West line of 16th St

Feb 18 1890

Hamlin Dirk
Cummings } chain
William }
Shaw stake

15th & C

East line of 15th St.

60.35
59.50
0.85

West line of 16th St

~~16th & C St.~~

16th & B St.

16th & C St

Level stake on the North side of C St bet. 15th & 16th Sts

Sta	+	HI	Grade	Dist	Elev
B M	2.94	84.96			82.02
0			78.00	6.96	
+ 25			75.81	9.15	
+ 50 #	1.03	74.65	73.62	11.34	73.62
+ 75			71.44	3.21	✓
1			69.25	2.19 5.40	✓
				2.19	
+ 25			67.06	7.59	✓
+ 50			64.88	2.18 9.77	✓
+ 75 #	2.91	65.60	62.69	2.19 11.96	62.69
2			60.50	5.10	
B.M.				~~4.97~~	~~60.63~~
#	1.69	60.35		6.94	58.66
B.M.				8.14	52.21
#	4.47	63.95		0.87	59.48
B.M.				3.30	60.65
				3.47	60.48

Cut stake on C St North side
100' West of 15th St

Sta	+	H.I.	Grade	Rod.	
2+75	0.84	84.96			84.12
3			83.50	1.46	
				1.37	
+25			82.13	2.83	
				1.38	
+50			80.75	4.21	
				1.37	
+75			79.38	5.58	
				1.38	
4			78.00	6.96	
B.M.				2.94	82.02

Feb 18 1893

Hemphill inst.
Cummings } chain
Williams }
Shaw stake

Stake set Jan 25 see Page 55

Lamb grades on C St bet 23rd & 24th — Mar 3 1893 — Hunter, Shaw, Crowell

Sta	+	HI	Grade	Rod	Elev	
B.M.	11.60	173.24			161.64	23rd & C St
0			164.00	9.24		
				2.58		
+25			166.58	6.66		
				2.59		
+50			169.17	4.07		
				2.58		
+75	8.91	180.66	171.75	1.49	171.75	
1			174.33	6.33		
				2.59		
+25			176.92	3.74		
				2.18		
+46			179.10	1.56		East line of C.G. T & W's add
BM				2.26	178.40	

Curb stakes on C St bet 18th & 19th Sts (Street Level across)

Sta	+	H I	Grade	Rod	Elev.
BM					54.17
0			57.00		East line of 18th St
+25			58.00		
+50			59.00		
+75			60.00		
1			61.00		
+25			62.00		
+50			63.00		
+75			64.00		
2			65.00		West line of 19th St

Curb stakes on C St between 19th & 20th Street (C St. level across)

Sta	+	H.I.	Grade	Rod	Elev.	
B.M.	0.22	79.11			78.89	
0			67.00	12.11		East line of 19th St
				2.50		
+25			69.50	9.61		
				2.50		
+50			72.00	7.11		
				2.50		
+75			74.50	4.61		
				2.5		
1 #	10.94	87.94	77.00	2.11	77.00	
+25			79.50	8.44		
				2.5		
+50			82.00	5.94		
				2.5		
+75			84.50	3.44		
				2.5		
2			87.00	0.94		West line of 20th St
#	5.66	92.66		0.94	82.00	
3 curb stake				3.66	89.00	

Curb stakes on C St between 20th & 21st St (C St level across)

Mar 16 1893 Hamlin & Party

Sta	+	HO	Grade	Rod	Elev.	
B M	1.15	100.26			99.11	
0			89.00	11.26		East line of 20th St
+25			92.00	8.26		
+50			95.00	5.26		
+75			98.00	2.26		
#	10.97	111.18		0.05	100.21	
1			101.00	10.18		
+25			104.00	7.18		
+50			107.00	4.18		
+75 #	7.57	117.57	110.00	1.18	110.0	
2			113.00	4.57		West line of 21st St.
B.M.				3.95	113.62	

113.63
6.24
119.87
113.
6.87

Cont. stakes on C St. between 21st & 22nd (C St Level across)

Sta	+	HI	Grade	Rod	Elev
BM	11.52	125.15			113.63
0			115.00	10.15	
+25			118.00	7.15	
+50			121.00	4.15	
+75 #	6.71	130.71	124.00	1.15	124.00
1			127.00	3.71	
+25			130.00	0.71	
+50			133.00		
+75			136.00		
2			139.00		

East line of 21st St

West line of 22nd St

Level staker on C St bet 21st & 22nd.

Mar. 15 1893 Hamlin & Party

Sta	+	H.I.	Grade	Rod	
	4.38	141.35			136.97
2			139.00	2.35	✓
+75			136.00	5.35	✓
+50			133.00	8.35	✓
+25 #	1.87	131.87	130.00	11.35	130.00
1			127.00	4.87	✓
+75			124.00	7.87	✓
+50			121.00	10.87	✓

Curb stakes on C St between 22nd & 23rd Streets (C St level across)

Sta	+	HI	Grade	Rod	Elev
B M	11.99	148.96			136.97
0			141.00	7.96	
				2.75	
+25			143.75	5.21	
				2.75	
+50			146.50	2.46	
#	9.74	158.14	0.56		148.40
+75			149.25	8.89	
				2.75	
1			152.00	6.14	
				2.75	
+25			154.75	3.39	
				2.75	
+50 #	10.56	168.06	157.50	0.64	157.50
+75			160.25	7.81	
				2.75	
2			163.00	5.06	
B.M.				6.44	161.62
B.M.	11.96	148.93			136.97
#	9.64	158.03		0.54	148.39
#	10.58	168.06		0.55	157.48

East line of 22nd St

West line of 23rd St

167.72
4.08
163.64

163.05
163.64
.64

64
63.64
.36

64
61.26
.38

Sla			Bistract	Highwater slope
0				9.0
			1	
+50		Buckhead		8.0 ft
		+70	3.00	
1.00			2.00	8.5 out
+30			5.00	13.0
2			4.00	15.0
middle 14th		+ 14.	10.0	7.0
East side		+1		0.0

Entre 16th and 17th

Sla.		5.0
1.		
50		5.5
2		5.0

On northside slope as called for. by depth.

Sta	+	HI	Rod	Rod	Elev	
B.M.	8.94	63.11			54.17	18th & C
0			57.00	6.11		East line of 18th St
+25			58.00	5.11		
+50			59.00	4.11		
+75			60.00	3.11		
1			61.00	2.11		
+25 #	8.07	70.07	62.00	1.11	62.00	
+50			63.00	7.07		
+75			64.00	6.07		
2			65.00	5.07		West line of 19th St
#	11.24	79.50		1.81	68.26	
B.M.				0.60	78.90	19th & C

Centers graded on C St between 14th & 16th

Apr 6 1893

Hamlin Level
Shaw

Sta	+	HI	Grade	Rod	Elev.
BM	9.03	77.98			68.95
0 #	× 11.61	87.11	75.50	2.48	75.50
+50			79.25	7.86 ✓	
			3.75	3.75	
1	×		83.00	4.11 ✓	
				1.25	
+50			84.25	2.86 ✓	
				1.25	
2	×		85.50	1.61 ✓	
+50			84.25	2.86	
3	× 0.82	83.82	83.00	4.11 ✓	83.00
+50			80.25	3.57 ✓	
4	×		77.50	6.32 ✓	
+40			77.50	6.32 ✓	
					82.02
B.M.				1.78	-82.04
0	×		77.50	6.32 ✓	
+50	0.36	73.48	73.12 ✓	10.70	73.12
1			68.75	4.73 ✓	
			4.37	4.37	
+50 #	1.31	65.69	64.38	9.10	64.38
2	×		60.00	5.69 ✓	
2+			60.50	5.19	0/2

East line of 14th St

6.32
5
5.82

Center line of 15th St

15th & C

64.37

chicked in curb N.W. cor 16th & C

Slopes on north side of C St bet 21st & 22nd (distances taken from curb line

Sta.	Toe of Slope	Edge of Bank	curb line	
0				East line of 21st
+50	14.0	14.0	0.0	
1	19.0	13.0	0.0	
+50	20.0	13.0	0.0	
2	20	14.0	0.0	West line of 22nd
+20	Grade point			

Slopes on north side of C St bet 19th & 20th

2+66	22.5	14.0	0.0	
+40	27.5	15.5	0.0	Centre of 20th
2	27.5	14.0	0.0	West st of 20th
+50	22.5	14.0	0.0	
1	18.5	14.0	0.0	
+75	20.0	13.0	0.0	
+50	Grade point			

Slopes on b St between 17th & 18th

North				South			
	Toe of Slope	Start line	curb	curb	Start line	Toe of Slope	
+40	18.0	13.0	0.0	0.0	15.	18.0	cent of 17th
0	18.0	14.0	0.0	0.0	14.5	17.0	
+50	17.0	13.5	0.0	0.0	14.5	18.5	
1	17.5	13.0	0.0	0.0	14.5	19.0	
+50	17.5	14.5	0.0	0.0	15	24.0	
2	15.0	14.0	0.0	0.0	15	24.0	W. of 18th

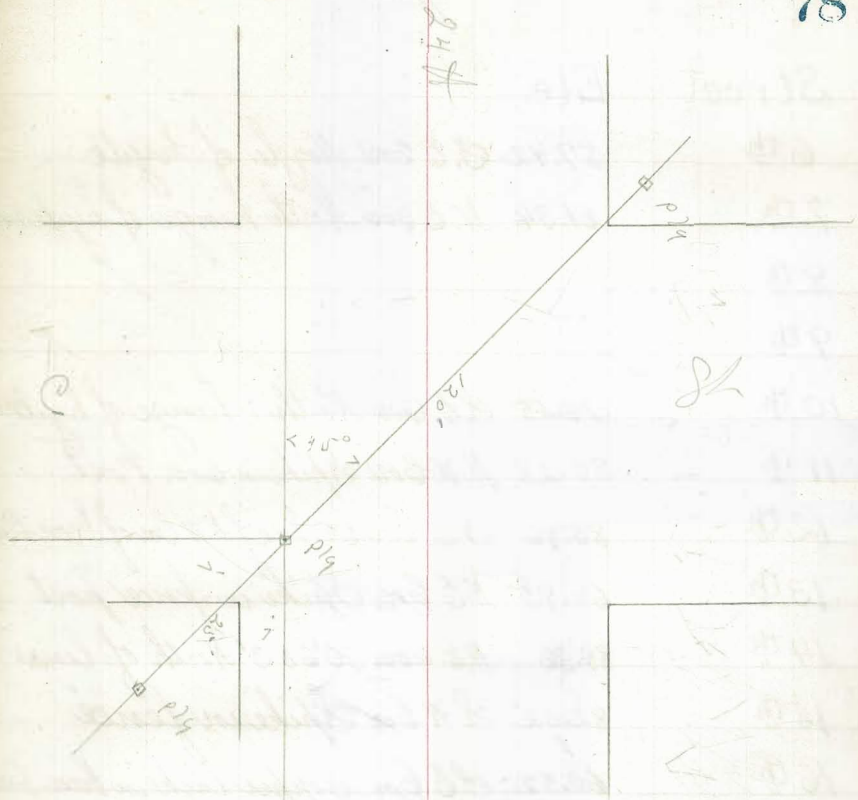
Width of walk bet 13th & 14th on South side of C

2	13.5	West line of 14th
1+50	14.0	
1	13.5	
+50	14.5	
0	17.5	East line of 13th

Inspection of gutter on Le St — Apr 10 1893 — Hamlin Shaw Prov Ty

6th to 7th	all right
7th to 8th	"
8th to 9th	"
9th to 10th	"
10th to 11th	"
11th to 12th	"
12th to 13th	"
13th to 14th	"
14th to 15th	"
15th to 16th	"
16th to 17th	"
17th to 18th	"
18th to 19th	"
19th to 20th	"
20th to 21st	"
21st to 22nd	"
22nd to 23rd	"
23rd to	"

Mar 27, 28, 1893 Tweed was
hauling Earth from 18 St bet 18 & 19
to C bet 18 & 19



B. No. 8 on C. St from 6th to 24th

Street	Ele.	
6th	57.42	S.E. Cor. Nozzle of hydr.
7th	61.34	N.E. Cor. North hinge of hydrant
8th		
9th		
10th	74.55	S.E. Cor. North hinge of hydrant
11th	80.28	N.W. Cor. Spike in Cor. Post.
12th	85.90	S.E. Cor. On base N.W. Cor. of Iron Post
13th	68.95	N.E. Cor. Spike in fence post.
14th	88.36	N.E. Cor. 50' E & 3' North of line
15th	82.02	S.W. Cor. Spike in fence
16th	60.52	S.E. Cor. Copper tack in base board
17th	51.96	S.W. 3' South of cor.
18th	54.17	N.E. 50' N of cor. spk fence
19th	78.89	SE tack in lower step hinge
20th	99.11	S.E. Cor. Copper tack in plug 5' from Cor.
21st	113.63	S.W. Cor. Spike in tel. pole
22nd	136.97	S.W. Cor. Spike in tel. pole
23rd	161.64	SW 2 pt in ground 6' from
24th	178.38	S.W. tack in crotch end of

60.52

cor

cor

bottom step

4.97
75
79.97
76.88
3.08

3.08

79.97
78.75
1.22

8.5
8.5
425
680
72.25
2.25

4
1.5
1.5
75
15
2.25

74.50 | 8.63
64
16) 10.50
8.96
172) 5400
5169
231

ork.

.8500
.8667
.8333
.9000
.9167
.9333
.9500
.9667
.9833
1.0000

⅞
.0729

11
.9167

Def. for 1 Foot
2.10
2.20
2.25
2.30
2.40
2.50
2.55
2.60
2.70
2.80
2.85
2.90
3.00
3.15
3.30
3.45
3.60
3.75
3.90
4.05
4.20
4.35
4.50
4.65
4.80
4.95
5.10
5.40
5.70
6.00
6.30
6.60
6.90
7.20
7.50
7.80
8.10
8.40
8.70
9.00

Return to City Engineers Office
City Hall, San Diego, Cal.

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TABLE I.—Minutes in Decimals of a Degree.

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

TABLE II.—Inches in Decimals of a Foot.

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

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

TABLE III.—Radii, Ordinates and Deflections.

Deg.	Radius	Mid. Ord.	Tan. Def.	Chd. Def.	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Def.	Chd. Def.	Def. for 1 Foot
0°10′	34377.	.036	.145	.291	0.05′	7°	819.0	1.528	6.105	12.21	2.10′
20	17189.	.073	.291	.582	0.10	20′	781.8	1.600	6.335	12.79	2.20
30	11459.	.109	.436	.873	0.15	30	764.5	1.637	6.540	13 08	2.25
40	8594.4	.145	.582	1.164	0.20	40	747 9	1.673	6.685	13.37	2.30
50	6875.5	.182	.727	1.454	0 25	8	716.8	1.746	6.976	13.95	2.40
1	5729.6	.218	.873	1.745	0.30	20	638.2	1.819	7.266	14.53	2.50
10	4911.2	.255	1.018	2.036	0.35	30	674.7	1.855	7.411	14.82	2.55
20	4297.3	.291	1.164	2.327	0.40	40	661.7	1.892	7.556	15.11	2.60
30	3819.8	.327	1.309	2.618	0.45	9	637.3	1.965	7.846	15.69	2.70
40	3437.9	.364	1.454	2.909	0.50	20	614.6	2.037	8.136	16.27	2.80
50	3125.4	.400	1.600	3.200	0 55	30	603.8	2.074	8.281	16.56	2 85
2	2864.9	.436	1.745	3.490	0.60	40	593.4	2.110	8.426	16.85	2.99
10	2644.6	.473	1.891	3.781	0.65	10	573.7	2.183	8.716	17.43	3.00
20	2455.7	.509	2.036	4.072	0.70	30	546.4	2.292	9.150	18.30	3.15
30	2292.0	.545	2.181	4.363	0.75	11	521.7	2.402	9.585	19.16	3.30
40	2148.8	.582	2.327	4.654	0.80	30	499.1	2.511	10.02	20.04	3 45
50	2022.4	.618	2.472	4.945	0.85	12	478.3	2.620	10.45	20.91	3.60
3	1910.1	.655	2.618	5.235	0 90	30	459.3	2.730	10.89	21.77	3.75
10	1809.6	.691	2.763	5.526	0.95	13	441.7	2.839	11.32	22.64	3.90
20	1719.1	.727	2.908	5.817	1 00	30	425.4	2.949	11.75	23.51	4.05
30	1637.3	.764	3.054	6.108	1.05	14	410.3	3.058	12.18	24.37	4.20
40	1562 9	.800	3.199	6.398	1.10	30	396.2	3.168	12.62	25.24	4.35
50	1495.0	.836	3.345	6.689	1.15	15	383.1	3.277	13.05	26.11	4.50
4	1432.7	.873	3.490	6.980	1.20	30	370.8	3 387	13.49	26.97	4.65
10	1375.4	.909	3.635	7.271	1.25	16	359.3	3.496	13.92	27.84	4.80
20	1322.5	.945	3.718	7.561	1.30	30	348.5	3.606	14.35	28.70	4.95
30	1273.6	.982	3.926	7.852	1.35	17	338.3	3.716	14.78	29.56	5.10
40	1228.1	1.018	4.071	8.143	1.40	18	319.6	3 935	15.64	31.29	5.40
50	1185.8	1.055	4.217	8.433	1 45	19	302.9	4.155	16.51	33.01	5.70
5	1146 3	1.091	4.362	8.724	1 50	20	287.9	4.374	17.37	34.73	6.00
10	1109.3	1.127	4.507	9.014	1 55	21	274.4	4.594	18.22	36.44	6.30
20	1074.7	1.164	4.653	9.305	1 60	22	262 0	4 814	19.08	38.16	6.60
30	1042.1	1.200	4.798	9.596	1.65	23	250.8	5.035	19.94	39.87	6 90
40	1011.5	1.237	4.943	9.886	1.70	24	240.5	5.255	20.79	41.58	7 20
50	982.6	1.273	5.088	10.18	1.75	25	231.0	5.475	21.64	43.28	7.50
6	955.4	1.309	5.234	10.47	1 80	26	222.3	5.697	22.50	44.99	7.80
10	929.6	1.346	5.379	10.76	1.85	27	214 2	5.918	23.35	46.69	8 10
20	905.1	1.382	5.524	11.05	1.90	28	206.7	6.139	24.19	48.38	8.40
30	881.9	1.418	5.669	11.34	1.95	29	199.7	6.360	25.04	50 07	8.70
40	859.9	1.455	5.814	11.63	2.00	30	193.2	6 583	25.88	51.76	9.00

TABLE V.—Middle Ordinates for Rails.

Deg. of Curve	LENGTH OF RAILS. 32	30	28	26	24	22	20	Deg. of Curve	LENGTH OF RAILS. 32	30	28	26	24	22	20
1°	.022	.020	.017	.015	.013	.011	.009	16°	.356	.313	.273	.236	.200	.170	.139
2	.045	.039	.034	.030	.025	.021	.017	17	.378	.333	.290	.252	.213	.180	.148
3	.067	.059	.051	.044	.038	.032	.026	18	.400	.351	.306	.265	.225	.190	.156
4	.089	.079	.068	.059	.050	.042	.035	19	.423	.371	.324	.280	.238	.201	.165
5	.112	.098	.086	.074	.063	.053	.044	20	.445	.392	.341	.296	.250	.212	.174
6	.134	.118	.103	.088	.075	.063	.052	21	.466	.410	.357	.309	.262	.222	.182
7	.156	.137	.120	.103	.088	.074	.061	22	.487	.430	.375	.325	.275	.233	.191
8	.179	.157	.137	.118	.100	.084	.070	23	.509	.450	.390	.338	.287	.243	.199
9	.201	.177	.154	.133	.113	.095	.078	24	.531	.469	.408	.354	.299	.253	.208
10	.223	.196	.171	.147	.126	.105	.087	25	.552	.4[illegible]6	.424	.367	.311	.263	.216
11	.245	.216	.188	.162	.138	.116	.096	26	.573	.506	.441	.382	.323	.274	.225
12	.268	.235	.205	.177	.151	.127	.105	27	.594	.524	.457	.396	.335	.284	.233
13	.290	.254	.222	.192	.163	.138	.113	28	.618	.545	.475	.411	.348	.294	.242
14	.312	.275	.239	.207	.175	.148	.122	29	.638	.564	.491	.424	.361	.303	.250
15	.334	.295	.257	.223	.188	.159	.131	30	.660	.583	.508	.438	.374	.313	.259

CURVE FORMULÆ.

$T = R \tan. \frac{1}{2} I$

$T = \frac{50 \tan. \frac{1}{2} I}{\text{Sin. } D}$

$\text{Sin. } D = \frac{50}{R}$

$\text{Sin. } D = \frac{50 \tan. \frac{1}{2} I}{T}$

$R = T \cot. \frac{1}{2} I$

$R = \frac{50}{\text{Sin. } D}$

$E = R \text{ ex. sec. } \frac{1}{2} I$

$E = T \tan. \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{\frac{1}{2} I}{D}$

$\text{Tan. def.} = \frac{1}{2} \text{ chord def}$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

Table IV. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found, nearly enough, by dividing the Tan. or Ext. opposite the given central angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table IV.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.), and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance; Multiply the angle by .01745, and the product by the distance.

RIGHT ANGLE TRIANGLES.—Square the altitude, divide by twice the base. Add quotient to base for hypothenuse.

Given Base 100, Alt. 10. $10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.
Given Hyp. 100, Alt. 25. $25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875$ = Base.
Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.