Misc. Surveys

F.B.10

9

TRANSIT

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

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	2⅓	21	49	41	95⅔
2	4⅔	22	51⅓	42	98
3	7	23	53⅔	43	100⅓
4	9⅓	24	56	44	102⅔
5	11⅔	25	58⅓	45	105
6	14	26	60⅔	46	107⅓
7	16⅓	27	63	47	109⅔
8	18⅔	28	65⅓	48	112
9	21	29	67⅔	49	114⅓
10	23⅓	30	70	50	116⅔
11	25⅔	31	72⅓	51	119
12	28	32	74⅔	52	121⅓
13	30⅓	33	77	53	123⅔
14	32⅔	34	79⅓	54	126
15	35	35	81⅔	55	128⅓
16	37⅓	36	84	56	130⅓
17	39⅔	37	86⅓	57	133
18	42	38	88⅔	58	135⅓
19	44⅓	39	91	59	137⅔
20	46⅔	40	93⅓	60	140

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Table for Running on Slopes.

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

Angle.	Cor. in links	Angle.	Cor. in links.	Angle.	Cor. in links.	Angle.	Co
°		°		°		°	
4	0·24	11	1·88	18	5·14	25	
5	0·38	12	2·24	19	5·76	26	
6	0·55	13	2·63	20	6·42	27	
7	0·76	14	3·06	21	7·11	28	
8	0·98	15	3·53	22	7·85	29	
9	1·24	16	4·02	23	8·64	30	
10	1·55	17	4·56	24	9·47	35	

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

1148 West Line distances

to 15th St	3
Old cor's in Jocklins 10 Acres	4
H St Gutter grader 4th to 5th	6 - 7
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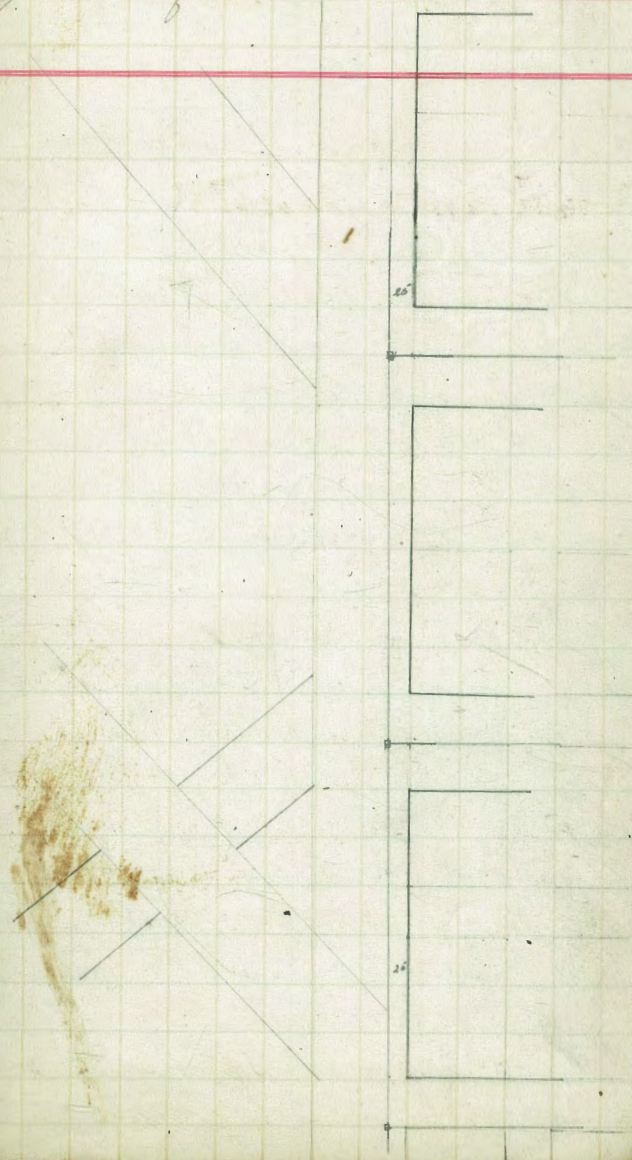
4th St x sec South of K St	28
West Park St x sec of	29 - 32
E St finishing staker bet 4th and 5th	34
Water Piper ~~Pr~~ Pier prices	36

Plat Showing streets intersecting Calif in M.T.

Survey cut grader Lot A	Blk	215			47
Roach and Benton					47



Beginning at the SW 7' point on 15th & G St measured South 180.52 to a plug set by Wilkinson on south line of 1148.

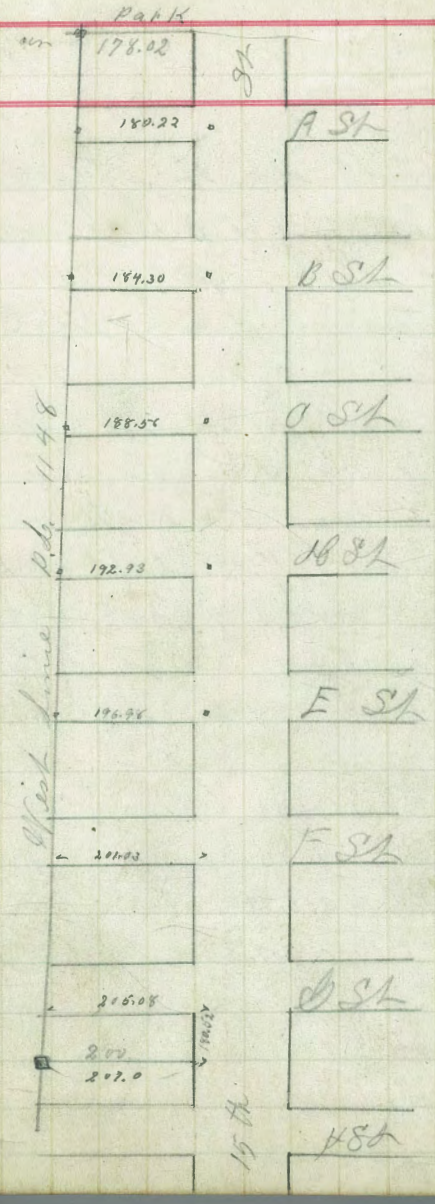
From SW 7' point on 15th & G F.S. on C & 15th SW 7' point measured to SW 7' on 15th & F

distance	380.26
To SW 7' on 15th & E	380.15
" " " " 15th & D	380.56
" " " " 15th & C	380.53
" " " " 15th & B	380.13
" " " " 15th & A	380.27
To W 7' on Park Boundary	182.98

Angle 89° 41' left to NW cor of 1146
dist 179.2 to NW cor of 1148 Pin in mound

Found plug 2"x4" with cap tack
Angle 89° 34' left. dist 178.43

Sketch showing distances to West Line of Pueblo Lot 1148 from West 7' line on 15th St



Found old spk at intersection of West line of B St th with S line of Park. dist 40.10 West of center or Park line

From SW 7' point of 15th & B measured to intersection of West line 1148 distance 192.93 from intersection to SE 7' point on B & 14 221.35'

From SW 7' point on 15th & B St set point at intersection of West line 1148 dist. 188.56 –

From S.W. 7' point 15th & B to line 1148. – – 184.30 –

From " " " 15th & H to " " 180.22

From West 7' line on 15th St cor 1148 170.80

E St 196.98

F St 201.03

G St 205.08

South line 1148. 207.0

BM - NE cal + H Spk in Fence - 0.95
NW arc + H Spk in Tel. = 0.79

NW	India TH	Grade	1.0		
SW	" "	"	1.0		
NE	Arctic "	"	0.5		
SE	" "	"	0.5		
					-0.95
	4.98	4.03			
			5.88	-1.85	

NE cor curb int.

Gutter grades on H. St from 4th to 5th St on S Side

Sta	+	HI	Grade	Rod		
						SE 43.7
						W 46.7
BM	4.20	50.73			46.53	4th & H St's
0			43.03	7.70 ✓		E Line of 4th St
+25			43.41	7.32 ✓		
						Jan 9 1890
+50			43.78	6.95 ✓		Hamlin { Astor Rod, Williams, Hemsley
+75			44.16	6.57 ✓		
1			44.53	6.20 ✓		
+25			44.91	5.82 ✓		
+50			45.28	5.45 ✓		
+75			45.66	5.07 ✓		
2			46.03	4.70		West Line of 5th St
				1.94	48.	

Sta	+	HI	-	Elev	BM	
						5.43 / 25 / 5.68
BM	0.96	11.76			10.80	4th & I St
			5.41	6.35		50' W on 4th St
	on 4th		6.32	5.44		} Ap on 4th & J
	on J		6.33	5.43		
BM			5.60	6.16	6.18	4th & J

Finishing stakes on Hawthorn St 100 West of Albatross

Sta	+	HO	Grade	Rod	B M
		S side			
B.M.	0.32	134.75			134.4
			117.50	8.67	
1					
#	1.92	126.17	10.50		124.2
+50			124.25	10.50 ✓	
2			131.00	3.75 ✓	West Line of Albatross
		N Side			
1		126.17	119.50	6.67	
+50			126.25	8.50 ✓	
2			133.00	1.75 ✓	

126.17
117.50
8.67

Sta	+	HO	Grade	Dist
		134.75		
1		126.17	118.50	7.67
+50			125.25	9.50
2				

Curbs & Gutters to be accepte
on 5th St paving

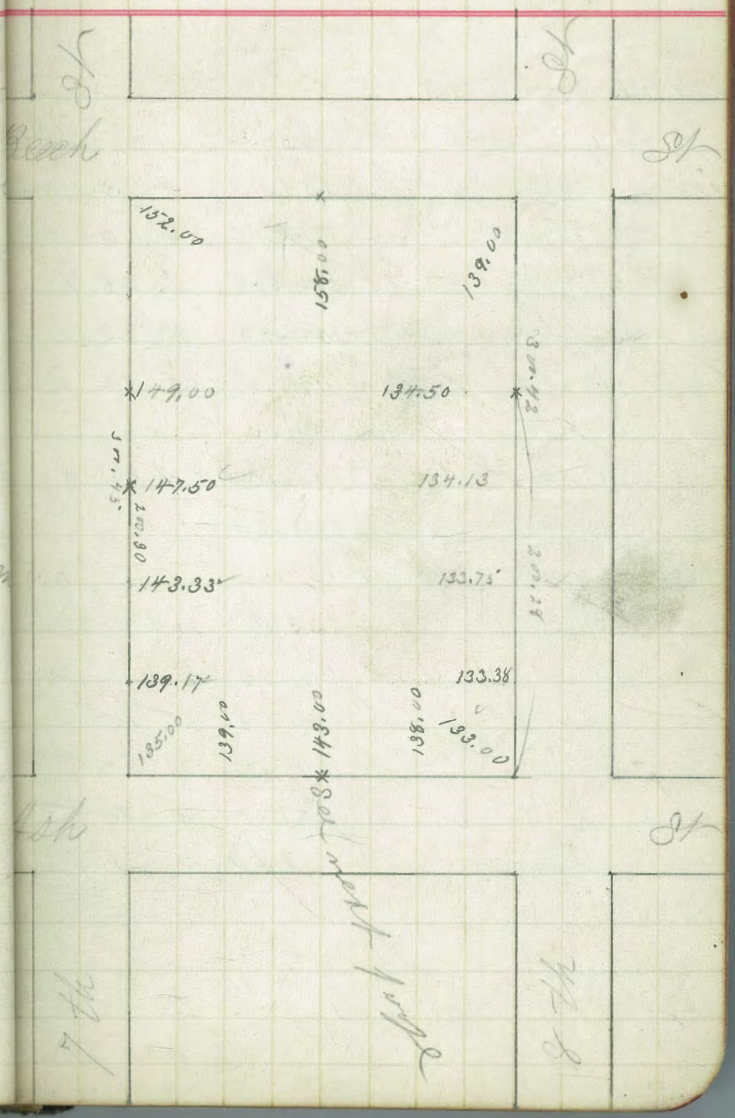
On S.W. cor 5th & Ash curb & gutt
around on ash to W Line of 5th &
100' S. on 5th St Lots K & L
On West side of 5th bet. Ash & Beech
Gutter from W Line of 5th to Lot G
not much good
Also curb on Lot H no. gutter
that is good.
At N E cor 5th & Beech curb
& gutter around the corner and to
Lots H. E & F
At N.W. cor 5th & Cedar
curb around cor and for Lots G & H
At S W cor 5th & Hate curb aroun
cor and in front of Lot 2, a gutter but
no good.
On 5th St. West side bet Hate &
Elm curb on Lot J.
At N.W. cor 5th & Hawthorn Lots
G. H. I & J curb & gutter, does not
extend around corner

On 5th bet Hawthorn & Ivy curb
& gutter on Lots A. B. C & B
on Lot A curb & gutter does not
extend around corner

Jan 13 1890 Hamlin { Orton, Williams, Hemsley

BM	+	HI	Grade	Rod
Curb lines & grades for Lots 3, 4, 5, 6, & 7 Blk 11 Carruthers Add for Havermar				
130.70	11.18	141.88		8th & Ash
			133.00	8.88
			138.00	3.88
	3.05	143.03	1.90	139.98
			143.0	0.03
			139.00	4.03
			135.00	8.03
133.90	9.13	7th & Ash		BM
	11.75	148.20	6.58	136.45
			139.17	9.03
			143.33	4.87
			147.50	0.70
	9.59	157.09	0.70	147.50
			149.00	8.09
157.16	Add 0.07			

For grades on 8th St see page 27



Vertical curve from Sta 0+50 to 1+50 on N side of Ash bet 7th & 8th see preceding page

B.M.	+	H.I.	Grade	Rod	Sta
133.90	9.53	143.43			
			139.0		0 East Line of 7th St
+50	139.0	139.0	139.00	4.43 ✓	+5
~~+75~~	139.31	139.88	139.31	4.12	+7
~~1~~	140.75	140.75	140.75	2.68	1
~~+25~~	138.81	139.38	138.81	4.62	+2
~~+50~~	138.0	138.0	138.00	5.43 ✓	+5

143.4
37
139.7

14

139.7
138.8
.9

Checked on Sta's +50 - 1+50

133.90	8.98	142.88			
			139.00	3.88 ✓	+ West Line of 8th St
			139.88	3.00 ✓	+7
			140.75	2.13 ✓	1
			139.38	3.50 ✓	+
			138.00	4.88	+

Checked on Sta's 0+50 & 1+50

Check levels on Hawthorn St

Sta	+	Hd	-	El	Grade	Rod	B.M.s
Parant		North		134.43			
	0.47	134.90					
1	1.44	124.76	11.62	123.28	7.5		Union & Haw N E Spin hd 103.29
			124.8				
			5.0				
			134.9	119.8			
+50			8.6	126.3	6.25		
			134.9				
2			2.0	132.9	3.0		
		Center	124.8				
1			5.2	119.6	8.5		
			134.9				
+50			9.2	125.7	5.25		
					2.0		
			134.9				
2			3.1	131.8			
		South	124.8				
1			6.6	118.2	7.5		
			134.9				
+50			10.7	124.2	4.25		
			134.9				
2			3.9	131.0	1.0		

Sta	+	HI	−	Elev
#		124.76		
#	1.55	1143.9	11.92	112.84
BM			11.13	103.28

Finishing stakes on Hawthorn St 100' W of Albatross

North		Center		South					
Grade	Rod	Grade	Rod	Grade	Rod	+	HI	−	Elev
		(134.72)							
						0.29	134.72		134.43
133.00	1.72	132.00	2.72	131.00	3.[illegible]				
126.25	8.47	125.25	9.47	124.25	10.50				
		(124.23)				1.01	124.23	11.50	123.22
119.50	4.73	118.50	5.73	117.50	6.7[illegible]				
						1.40	114.29	11.34	112.89
						[illegible] Winn & Haw'tn.		11.03	103.26

Gutter Grades on 4th St on E side from H to E.

BM	+	HI	Grade	Mod	Sta	+
38.41	7.44	45.85				4th & E Sts
			38.567		1	
			39.126		+25	
			39.684		+50	
			40.242	~~5.61~~	+75	
			40.800	5.05	2	
			41.359	4.49	+25	
			41.917	3.93	+50	
			42.475	3.37	+75	
			43.034	2.82	3	S Line of H St
#	4.82	47.85	2.82	43.03		
BM 4th & H Sts			1.33	46.52		Grade on 4th & E St - 37.00
Completed June 15						" " " H St - 43.70

Gutter Grade

47.85
43.41
4.44

Hamlin { Williams
Hemsley

Final x of Spruce St rd to 4th

North Centre South

Hamlin { Oxton, Williams, Hemsley

N	C	Centre	C	S	Stat	HI		Elev
		(281.22)			3rd &			
					B.M. 24	281.22		277.98
277.92	277.6	277.4	277.1	276.99	B.M. rd & Spruce		8.75	272.47
3.31	3.6	3.8	4.1	4.23				
277.9	277.8	277.5	277.2	277.0	3 Test of 3rd St			
3.3	3.4	3.7	4.0	4.2				
278.25	277.0	277.7	277.3	277.47	+14			
2.96	4.2	3.5	3.9	3.75				
278.4	277.8	278.0	277.2	277.1	+40 3rd St			
2.8	3.4	3.2	4.0	4.1				
278.66	277.7	277.7	276.9	276.65	+66			
2.56	3.5	3.5	4.3	4.57				
278.1	276.9	276.6	275.2	275.0	0 Test of 3rd St			
3.1	4.3	4.6	6.0	6.2				
276.94	274.9	275.0	273.9	273.12	+			
5.28	6.3	6.2	7.3	8.10				
274.5	274.0	273.6	272.7	271.1	+			
6.7	7.2	7.6	8.5	10.1				
273.77	273.4	272.4	271.7	270.67				
7.45	7.8	8.8	9.5	10.55				
272.8	272.8	271.8	268.9	~~270.67~~	269.3			
8.4	8.4	9.4	11.3	11.9	+2			
		~~269.8~~ ~~269.7~~	(269.8) 264.1 5.7	(269.8) 258.2 11.6	+	0.51	269.77	11.96	269.26
272.84	272.1	(281.22) 270.9	(269.8) 256.9	(269.8) 257.87	+			
8.38	9.1	10.3	12.9	11.90	+3			
			268.4 / 8.0	262.7 / 13	259.9 / 20.0	25 / 2		
						2.83	260.88	11.72	258.05
272.1	271.7	(281.22) 269.0	(260.8) 249.5	(260.8) 256.4	+			
9.1	9.5	12.2	11.3	4.4	+7			
			261.1 / 7.0			10.11	270.97	0.02	260.86

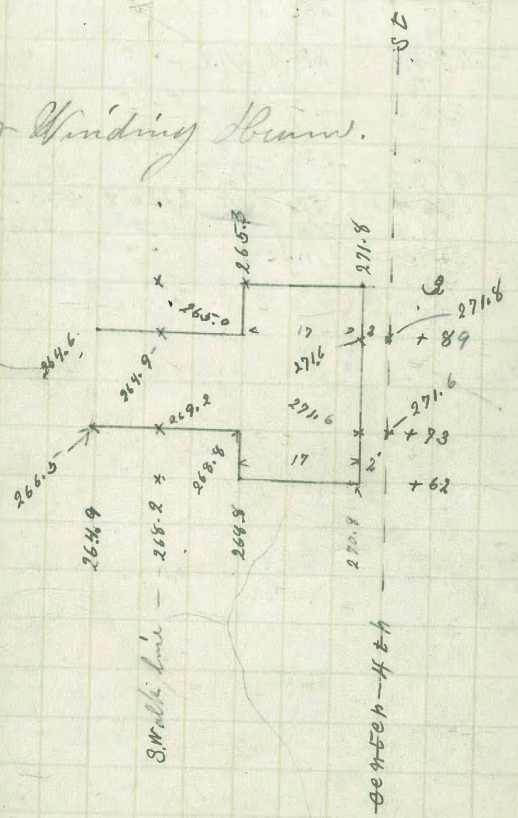
N	6	Center	6	3	St	+	HI	−	Elev.
271.40	281.22	269.8	260.9	260.9					
9.82	10.3	9.5	11.1	3.6	West of 4th St				
	261.6	268.4					270.97		
	6.0	6.0				5.13	275.86	0.24	top of out end of water pipe 270.73
281.22	269.8	269.8	260.9	269.8					
270.8	269.0	255.4	255.0	263.8					
10.4	0.8	5.1	5.9	6.0		+			
	269.4	268.2	250.1						
	10	15	14						
		265.3							
		18				+ 20			
		269.72							
266.44	264.6	259.5	268.8	271.9					
3.37	5.2	10.3	1.0	7.9	+ 4th St				
	252.7	264.2	265.6						
	12	15	7						
		269.8							
		266.5				+			
		3.3							
		12	281.22						
271.8	271.5	272.6	272.8	272.8		+			
9.4	9.7	8.6	8.4	8.4					
273.4	273.2	273.1	273.1	273.47					
7.8	8.0	8.1	8.1	7.75	West of 4th St				
					B.M. Recd.			9.66	266.20

Cut & Fill stakes on Spruce St 3rd to 4th

N			S			
Elev	Grade	Cut	Elev	Grade	Cut	Sta
For Elevations see preceding page						
277.92	271.50	+ 6.42	276.99	271.00	+ 5.	
278.26	271.50	+ 6.76	277.47	271.00	+ 6.40	3rd St
278.66	271.50	+ 7.16	276.65	271.00	+ 5.	
275.94	271.875	+ 4.06	273.12	271.38	+ 1.50	
273.77	272.25	+ 1.52	270.67	271.75	- 1.	
272.84	272.63	+ 0.21	257.87	272.13	- 14.50	
271.40	273.00	- 1.6	257.30	272.50	- 15	
266.4	273.00	- 6.6	271.90	272.50	- 0.40	4th St
273.4	273.00	+ 0.4	273.47	272.50	+ 0.	

X 4th Red'd to Spruce Jan 16 1896 Hamlin {William Hemsley

W	C	Center	C	East	St	+	H 9	-	Elev
		(275.9)		BM 4th & A		9.70	275.91		266.21
265.7	267.7	269.9	271.7	272.9					
10.2	8.2	6.0	4.2	3.0	0	N Line of Redwood			
264.4	268.5	270.4	272.3	273.8					
11.5	7.4	5.5	3.6	2.1	+2				
264.9	269.3	270.7	272.0	273.1					
11.0	6.6	5.2	3.9	2.8	+5				
269.5	270.1	271.2	272.0	273.0					
6.4	5.8	4.7	3.9	2.9	+7				
270.1	270.4	271.2	272.2	273.7					
5.8	5.5	4.7	3.7	3.2	1	Pit for Winding Drum.			
269.9	270.7	271.4	272.3	272.9					
6.0	5.2	4.5	3.6	3.0	+23				
269.4	270.4	271.3	272.5	273.0					
6.5	5.5	4.6	3.4	2.9	+5				
267.0	269.4	270.9	272.2	273.5					
8.9	6.5	5.0	3.7	2.4	+7				
263.6	267.9	270.6	271.9	272.5					
12.3	8.0	5.3	4.0	3.4	+9				
(273.2)	(275.9)								
254.0	264.2	269.7	271.9	272.6					
19.2	11.7	6.2	4.0	3.3	2				
	(273.2)	(275.9)							
255.2	259.7	268.6	272.0	272.3					
18.0	13.5	7.3	3.9	3.6	+				
		(275.9)							
264.7	266.6	270.4	272.0	272.7					
11.2	9.3	5.5	3.9	3.2	+5				
264.9 / 40	269.2 / 26	268.8 / 19	270.8 / 2	271.1 / *	+6				
266.5 / 40	269.2 / 26	268.8 / 19	271.6 / 2	271.6 / 0	+75				



Winding Drum for Cable R.R.

West	C	Centre	C	East	Sta	H I	—	Elev
						275.91		
		(275.9) 271.7 4.2	272.8 3.1	273.2 2.7	+	7.90	273.18	10.63	265.28
264.6 40	264.9 26	265.0 19	271.6 2	271.8 0	+			
(273.2) 257.4 15.6 40	275.9 264.1 11.8 265.3 19	(275.9) 271.8 4.1 2	272.9 3.0	273.4 2.5	& S line of Spruce St			
						post at end of Water pipe	2.44	270.74

Cut & Fill stakes on 4th St Redwood to Spruce

W			E			
Elev	Grade	Cut	Elev	Grade	Cut	
For elevations see preceding page						
265.7	269.50	- 3.8	272.9	270.50	+ 2.	N line of Redwood
264.9	270.00	- 5.1	273.1	270.83	+ 2.50	
270.1	270.50	- 0.4	273.7	271.17	+ 2	
269.4	271.00	- 1.6	273.0	271.50	+ 1.50	
254.0	271.50	- 17.5	272.6	271.83	+ 0	
264.7	272.00	- 7.3	272.7	272.2	+ 0.50	
257.3	272.50	- 15.2	273.4	272.50	+	S line of Spruce St

Slopes on West side of 4th St from Redwood to Spruce

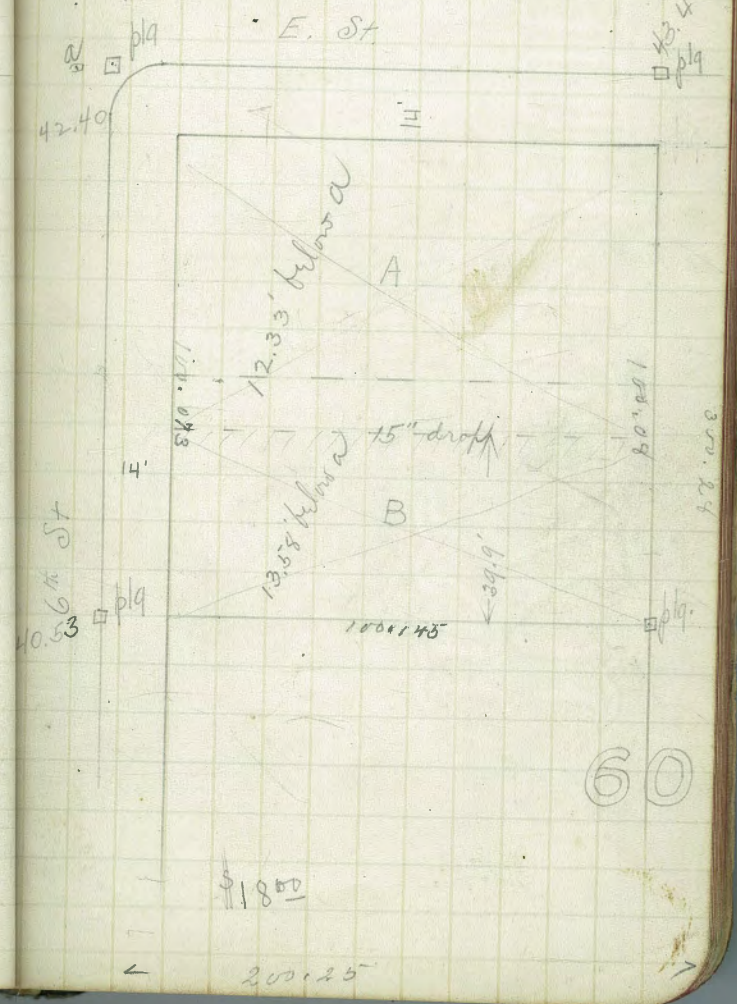
Sta				Elev	Ea.	Cu Yds
0			-14.6 / 21.9	-3.8	41.6	
+ 25			-28.7 / 43	-5.4	116.1	73
+ 50		-13.0 / 19.5	-11.3 / 11.0	-5.1	49.7	77
+ 75				-0.8	.0	15
1				-0.4		
+ 25			2.0 / 3.0	-0.9		
+ 50	-31.0 / 46.5	-29.5 / 35.0	-6.4 / 5.0	+1.6	2.4	34
+ 75			-25.8 / 38.6	-4.3	100.0	116
+ 90			-21.6 / 32.4	-7.8	150.5	201
2				-17.5	283.5	
						516

There is no slope for rest on account of Power House

Comb lines and Gwder at SE cor of 6th and E St for Cleveland

B.M.	+	H I	Grade	Rod
38.34	6.87	45.21		
			40.53	4.68
			42.40	2.81
			43.45	1.76
B.M.			0.50	44.71
1#	2.51	36.76	10.96	34.25
			30.07	6.69
			28.82	7.94
#	10.91	46.75	0.92	35.84
B.M.			2.04	44.71
Pauly Alk.			1.80	44.95

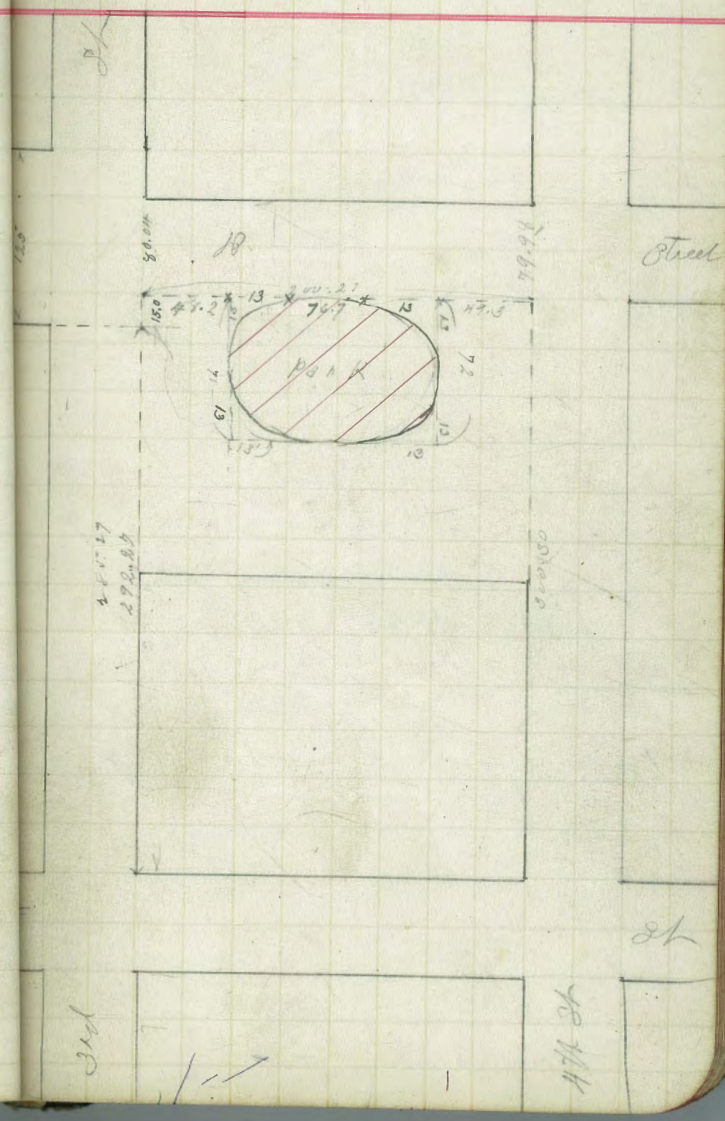
Set plugs as indicated



Survey showing location of Plaza bet 3rd & 4th on H. St.

Hamlin { Oxton, Williams, Hemsley

48.2
49.3
26
123.5
200.21
76.7



Elevs on curb E St Parly Blk Hewitt Blk

Sta	+	HI	−	Elev	
B.M.	2.43	47.14		44.71	
			4.4	42.74	Cutter at Seland Blk on N Line E St
			4.5	42.64	" " " " " E " 6th St
			2.4	44.74	" " " " 100' N on 6th St
			1.52	45.62	Curb " " " " " " " "
			3.60	43.54	" " " " on N Line of E St
			3.68	43.46	" " " " at middle of Curve
			3.66	43.48	" " " " on E Line of 6th
			2.16	44.98	" " " " 100' E on E Street
Curb at Hewitt Blk S.W. cor 7th E					
			3.19	43.95	Curb 100' W on E St
#	3.10	48.42	1.82	45.32	
			3.65	44.77	" on W Line of 7th St
			3.64	44.78	" S Line of E St
B.M.			2.85	45.57	45 S.W. cor spk of wind post. (spk out.)

Curb grades for Havermail on 8th St bet Ash & Beech

Jan 24 1890

Hamlin { Ortore, Williams, Hensley

Sta	+	HI	−	Elev	Grade		
BM	8.66	139.37		130.71			
0					133.[illegible]37		
+50			4.94	134.43	133.[illegible]	1.05	1' 0 5/8"
1			7.34	322.03	133.[illegible]	1.72	1' 8 5/8"
+50			8.99	130.38	134.1[illegible]	3.75	3' 9"
2			9.57	129.80	134.5[illegible]	4.70	4' 8 3/8"
#	5.28	142.48	2.17	137.20			
BM			8.56	133.92			

See sketch of Blk on Page 11

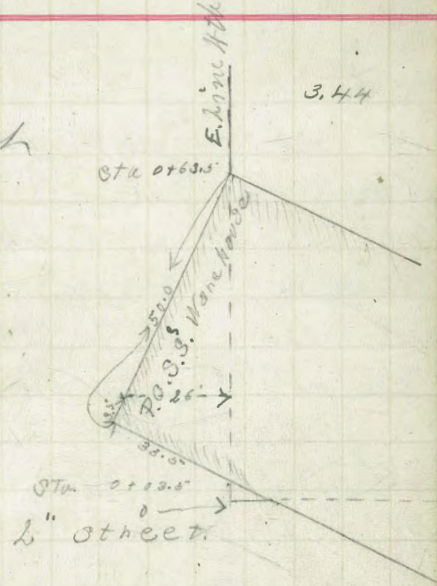
X 4th St S of K

Jan 29 1890

Hamlin { Acton, Williams, Hemsley

W	Curb	Center	Curb	East	Sta	+	H I	−	Elev.
		(6.0)							
Elev.'s	marked	+ are on	board	walk	B.M.	2.53	5.97		3.44
1.4 + 4.6	0.9 5.1	1.4 4.6	2.3 + 3.7	2.5 + 3.5	3	S Line of K St			
1.2 + 4.8	0.9 5.1	1.5 4.5	2.3 + 3.7	2.5 + 3.5	+ 75				
1.1 + 4.9	0.8 5.2	1.8 4.2	2.4 + 3.6	2.6 + 3.4	+ 50				
1.2 + 4.8	0.8 5.2	1.3 4.7	2.4 + 3.6	2.5 + 3.5	+ 25				
1.0 + 5.0	0.7 5.3	1.3 4.7	2.0 4.0	1.9 4.1	2				
0.9 + 5.1	0.7 5.3	1.1 4.9	1.6 4.4	2.0 4.0	+ 75				
0.8 + 5.2	0.6 5.4	1.0 5.0	1.5 4.5	1.7 4.3	+ 50				
0.6 5.4	0.5 5.5	1.0 5.0	1.4 4.6	1.4 4.6	+ 25				
0.6 5.4	0.8 5.2	1.0 5.0	1.0 5.0	1.4 4.6	1				
0.5 5.5	0.8 5.2	0.9 5.1	1.1 4.9	1.3 4.7	+ 7				
0.7 5.3	0.8 5.2	1.0 5.0	1.1 4.9	Warehouse	+ 50				
		(6.22)				5.07	6.22	4.82	1.15
1.40 4.82	~~1.40~~				+ 3	W.E. Rail. } C.S.R.R.			
1.42 4.80	~~1.42~~				+ 3	W. Rail. }			
−0.3 6.5	0.6 5.6	1.0 5.2	Warehouse		+ 2				
		−0.8 7.0	1.0 5.2	0.8 5.4	0	N Line of L Street			
				1.44 4.78	3 +	W.E. Rail } C.S.R.R.			
				1.47 4.75	3 + 6	W Rail }			
									3.78
								2.41	3.81

B.M. 6th & L St.



X of 60' St along West line of Park

Rod	Elev	Rod	Elev	Rod	Elev	Sta	+	HI	−	Elev
(224.6)		(224.6)		(212.7)						
1.9	222.7	10.0	214.6	13.0	199.3					
(224.6)		(224.6)		(205.8)						
0.4	224.2	10.5	214.1	8.4	197.4					
(228.8)		(217.6)		(205.8)						
3.7	225.1	9.2	208.4	12.0	193.0					
(228.8)		(217.6)		(205.8)						
1.0	227.8	4.6	213.0	10.0	195.8					
(240.7)		(228.8)		(217.6)						
10.9	229.8	0.0	228.8	3.1	214.5					
				(228.8)						
				8.3	220.5					
(240.7)		(240.7)		(217.6)						
9.1	231.6	9.4	231.3	4.3	213.50					
		(240.7)		(217.6)						
7.1	233.6	7.3	233.4	4.3	213.					
		(240.7)		(217.6)						
4.4	236.3	6.4	234.3	5.4	212.50					
		(240.7)		(228.8)						
0.6	240.1	1.5	239.2	6.5	222.					
				5.0	223.05					

Sta	+	HI	−	Elev
B.M.	8.35	224.63		216.28
S Line of Ivy St				
#	0.02	212.72	11.93	212.70
Ivy St				
#	4.72	205.76	11.68	201.04
N Line of Ivy.				
#	11.90	217.56	0.10	205.66
#	11.24	228.80	0.00	217.56
#	11.87	240.67	0.00	228.80
S Line of Juniper St				

West		Center		East						
Rod	Elev	Rod	Elev	Rod	Elev	Sta	+	HI	−	Elev
				(240.7)						
		(257.3)		6.7	234.0	3+08		240.67		
10.6	240.7	11.3	240.0	2.6	238.1	+40	Juniper St			
		(257.3)		(240.7)		#	10.99	251.27	0.39	240.28
11.2	240.1	9.6	241.7	0.8	239.9	0	N Line of Juniper St			
		(257.3)								
7.2	244.1	6.6	244.7	7.2	244.1	+50				
6.0	245.3	5.5	245.8	5.7	245.7					
7.4	243.7	5.5	245.8	4.2	247.1	+50				
6.7	244.6	5.9	245.4	4.8	246.5					
4.5	246.8	4.4	246.9	3.9	247.4	+50				
3.2	248.1	3.0	248.3	2.8	248.5	0	S Line of Kalmia St			
2.5	248.8	2.0	249.3	1.9	249.4	+40	Kalmia St			
1.4	249.9	1.5	249.8	1.5	249.8	0	N Line of Kalmia St			
0.6	250.7	0.9	250.4	1.9	249.4	+50				
		(255.7)				#	6.12	255.67	1.72	249.55
5.2	250.5	6.1	249.6	6.8	248.9					
5.0	250.7	5.5	250.2	6.8	248.9	+50				
5.9	249.8	6.7	249.0	6.9	248.8					
6.1	249.6	6.5	249.2	4.9	250.8	+50				
5.0	250.7	5.8	249.9	5.0	250.7	0	S Line of Laurel St			
4.2	251.5	5.3	250.4	5.0	250.7	+40	Laurel St			

West		Centre		East						
Rod	Elev	Rod	Elev	Rod	Elev	Sta	+	HI	−	Elev
		(255.7)						255.67		
5.0	250.7	5.6	250.1	4.0	251.0	N line of Laurel				
4.7	251.0	4.7	251.0	2.9	252.8	+50				
4.6	251.1	4.2	251.5	2.6	253.1					
4.3	251.4	4.7	251.0	4.5	251.2	+50				
2.0	253.7	3.4	252.3	4.1	251.6					
0.7	255.7	3.4	252.3	3.6	252.1	+50				
		(263.3)				#	10.70	263.26	3.11	252.56
6.9	256.4	9.9	253.4	10.8	252.3					
4.9	258.4	8.5	254.8	10.4	252.9	+40 Maple St				
5.3	258.0	7.3	256.0	9.4	253.9					
4.8	258.5	6.7	256.6	8.2	255.1	+50				
4.3	258.0	5.9	258.4	7.1	256.2					
3.4	259.9	4.9	258.4	6.2	257.1	+50				
2.4	260.9	3.8	259.5	5.5	257.8					
1.7	261.6	3.6	259.7	4.8	258.5	+50				
1.8	261.5	3.5	259.8	5.1	258.2					
−0.3	263.6	3.7	258.6	5.0	258.3	+40 Nutmeg St				
2.2	261.1	4.1	259.1	4.9	258.4					
1.9	261.4	3.5	259.8	4.4	258.9	+50				
0.7	262.6	2.3	261.0	3.8	259.5					
						#	8.90	272.12	0.04	263.22

West		Center		East							
Rod	Elev	Rod	Elev	Rod	Elev	Sta	+	HI	−	Elev
		(272.1)						272.12		
9.6	262.5	10.8	261.3	11.8	260.3	1+50				
9.9	262.2	10.1	262.0	11.0	261.1	2				
8.8	263.3	9.1	263.0	9.6	262.5	+50				
6.7	265.4	6.9	265.2	7.7	264.4	3				
5.3	266.8	5.5	266.6	6.5	265.6	+40	Olive St			
4.7	267.4	4.6	267.5	5.9	266.2	0				
3.4	268.7	3.2	268.9	3.9	268.2	+50				
2.5	269.6	2.6	269.5	2.5	269.6	1				
1.3	270.8	2.0	270.1	1.5	270.6	+50				
2.2	271.9	1.3	270.8	1.0	271.1	2				
		(279.6)								
						4	7.61	279.61	0.12	272.00
6.5	273.1	7.9	271.7	7.8	271.8	+50				
5.3	274.3	5.4	274.2	6.2	273.4	5	S Line of Palm St			
						BM	5th & Palm. Sts		2.36	277.25

West		Center		East						
Rod	Elev	Rod	Elev	Rod	Elev	Sta	+	H.I.	−	Elev

Finishing grades on East bet 4th & 5th on center E. St

Feb 13 1890 Hamlin { Aiton / Williams

Sta	+	HO	Grade	Rod		
B.M.	4.09	42.50			38.41	
0			36.17	6.33 ✓		East Line of 4th St
+50			37.09	5.41 ✓	.92	
1+0			38.02	4.48 ✓	.93	
+50			38.95	3.55 ✓	.93	
2			39.87	2.65 lowered. 2.63 ✓	.92	W Line of 5th St
B.M.				0.86	41.64	5th & E St
Gutter on S side of St check levels						
2			3.51	39.99		West of 5th St
+50			4.45	38.05		
1			5.33	37.17		
+50			6.23	36.27		
0			7.03	35.47		East of 4th St
(Curb.)			6.45	36.05		
"			6.50	36.00		at cor S.E. 4th & E St

Sta	Dist	Defl	Index	Tang	Curve	Remarks
0		16° 0 R				
47.33	47.33					F.S. cor 4th St
56.828	9.498	5° 0'	5° 0'			P.C. curve Rail 54.5
66.326	9.498	5° 0'	10° 0'			
75.824	9.498	5° 0'	15° 0'			
85.322	9.498	5° 0'	20° 0'			
94.820	9.498	5° 0'	25° 0'			
102.420	7.602	4° 0'	29° 0'			PT

Wrot	Per lin ft ¢		
1	7.18	Prices given by Story, Isham Co Feby 13th Nett. Bottom prices	They state that prices in pipe have recently advanced. Present prices are probably higher than when laid or than will be in future.
1¼	9.59		
1½	11.88		
2	15.61		
2½	24.59		
3	32.34		
Rio #14			
5	$.37	including laying etc Company did ditching & backfill	Confidential
15	.98		
16	1.03		

Calif St N of H

Sta	+	HI	−	Elev	check
B.M.	2.950	13.244		10.294	
B.M.			5.735	7.509	
#	3.265	11.330	5.179	8.065	
#	4.210	11.613	3.927	7.403	
B.M.			2.665	8.948	
#	3.898	12.223	3.278	8.325	
B.M.			2.800	9.423	0.019 9.404
#	7.030	15.915	3.338	8.885	
B.M.			4.560	11.355	0.031 11.324
#	5.240	18.720	2.435	13.480	
B.M.			3.552	15.168	0.049 15.119
B.M.			2.698	16.022	0.03 15.992
#	4.880	20.440	3.160	15.560	
B.M.			3.450	16.990	0.048 16.942
#	5.868	22.888	3.420	17.020	
B.M.			5.118	17.770	0.04 17.721
#	3.958	22.466	4.380	18.508	
B.M.			5.605	16.861	0.05 16.811
B.M.			0.817	21.649	0.06 21.574
#	1.950	19.397	4.969	17.497	
B.M.			1.825	17.572	0.06 17.507

Feb 19 1890 Hamlin Level
Williams Sub

Arctic & H N.W. spk tel
S.E. spk tel Pole

Calif & B St S.E. spk cor sign po St

A & Calif

Ash Street

Beech Street

Cedar St

Gate St

Fir St

Grape St

Hawthorn St

Ivy St

B.M. on Calif St N of Hb.

Sta	+	-	HO	-	Elev	check	
			19.397				
#	4.235		20.572	3.060	16.337		
B.M.				2.560	18.012	0.055 17.957	Juniper St
#	4.820		19.882	5.510	15.062		
B.M.				5.38	14.502	0.05 14.457	Kalmia St
B.M.				6.60	13.282	0.03 13.245	Laurel St
#				5.091	14.791		

B.M. on Cofil St N of H. Feb 24 1890 Hamilton Williams

Sta	+	HI	−	Elev	Chek	
B.M.	2.435	12.729		10.294	✓	Arctic & B St
#	3.390	11.444	4.675	8.054		
#	4.913	11.925	4.432	7.012		
B.M.			2.983	8.942	✓ 8.948 .006	Calif & B Sts S.E. sph sign post
#	5.660	13.165	4.420	7.505		
B.M.			3.760	9.405	✓ 9.423 .018	Cofil & A Street
#	5.450	15.895	2.720	10.445		
B.M.			4.560	11.335	✓ 11.355 .020	Calif & Ash
#	5.715	18.630	2.980	12.915		
B.M.			3.477	15.153	✓ 15.168 .015	Calif & Beech Street
#	3.135	18.172	3.593	15.037		
B.M.			2.170	16.002	✓ 16.022 .020	Calif & Cedar St
#	3.800	19.660	2.312	15.860		
B.M.			2.680	16.980	✓ 16.990 .010	Calif & Dote
B.M.			1.915	17.745	✓ 17.770 .025	Calif & Fir St
#	4.580	22.535	1.705	17.955		
B.M.			5.700	16.835	✓ 16.861 .026	Calif & Grape St
#	3.743	22.033	4.245	18.290		
B.M.			0.410	21.623	✓ 21.649 .026	Calif & Hawthorn St
#	2.205	19.391	4.847	17.186		
B.M.			1.840	17.551	✓ 17.572 .021	Calif & Ivy St

B.M. on Calif St

14.502
14.499
.013

Sta	+	HI	−	Elev	Chec	
		19.391				
#	3.013	18.809	3.595	15.796		Juniper & Calif
B.M.			0.810	17.999	.013 ✓18.012	
B.M.#	5.091	19.580	4.320	14.489	.013 ✓14.502	Kalmia & Calif
B.M.#	2.923	16.187	6.316	13.264	.018 ✓13.282	Laurel & Calif
B.M.			7.240	8.947	.004 ✓8.943	Calif & Maple
#	7.422	21.987	1.622	14.565		
B.M.			2.810	19.177	✓	Nutmeg & Calif S.E. spk tel pole
#	11.593	32.880	0.700	21.287		
#	7.916	39.556	1.240	31.640		
B.M.			4.475	35.081	.003 ✓35.078	Olive & Calif. Sts
#	4.150	42.711	0.995	38.561		
B.M.			2.943	39.768	.004 ✓39.764	Dunne St
#	4.565	41.767	5.509	37.202		
B.M.			42.711 2.566	40.145	.004 ✓40.151	Palm St
B.M.			1.810	39.957	.011 ✓39.969	Redwood St
#	3.998	40.883	4.882	36.885		
B.M.			4.999	35.884	.109 ✓35.793	Spruce
#	2.107	33.337	9.653	31.230		
B.M.			5.698	27.639	.014 ✓27.653	Passafore
#	0.884	24.241	9.980	23.357		
B.M.			3.585	20.656	✓	Thom & Calif spk in east end of cut of North Bent of RR Bridge

Skip one page

B.M.'s Cofil & Juniper to

Feb 25 1890 Hamlin Level
Williams Rod.

Sta	+	HI	−	Elev	Check	
B.M.	11.100	29.099		17.999	✓	B.M. Cofil & Juniper
#	11.770	40.321	0.548	28.551		
B.M.			9.160	31.161	✓31.102 .059	Juniper & Arctic St
#	10.805	50.944	0.182	40.139		
B.M.			4.445	46.499	✓46.457 .04	Juniper & India St
#	11.233	61.857	0.320	50.624		
#	11.195	72.172	0.880	60.977		
B.M.			4.310	67.862	✓67.784 .07	Juniper & Columbia
#	11.912	83.181	0.903	71.269		
B.M.			3.828	79.353	✓79.28 .06	Juniper & State St
#	11.788	94.139	0.830	82.351		
B.M.			5.994	88.145	✓88.069 .07	Juniper & Union St
#	11.805	105.231	0.713	93.426		
#	11.218	115.589	0.860	104.371		
#	11.737	126.512	0.814	114.775		
B.M. #	11.995	137.743	0.764	125.748	✓125.68 .06	Brant & Juniper St
#	11.268	148.001	1.010	136.733		
#	11.953	159.253	0.701	147.300		
#	11.670	170.778	0.145	159.108		
#	11.985	181.851	0.912	169.866		
			0.730	181.121	181.130 .00	checked on Point set By Acton

B.M's on Calif and Upas Sts

Sta	+	H O	−	Elev		
		24.241				
#	11.743	32.514	3.470	20.771		
B.M.			10.910	21.604	√21.594 (0.00)	Upas & Calif
#	11.297	42.984	0.827	31.687		
#	11.348	53.580	0.752	42.232		
B.M.			5.280	48.300	√48.281 (0.01)	Acacia and Upas Sts
#	11.453	64.321	0.712	52.868		
#	11.736	75.347	0.710	63.611		
B.M.			4.956	70.391	√70.389 (0.00)	India & Upas Sts
#	11.503	86.163	0.687	74.660		
#	11.788	97.219	0.732	85.431		
#	11.147	107.492	0.874	96.345		
#	11.842	118.592	0.742	106.750		
#	11.943	129.659	0.876	117.716		
B.M.			6.723	122.936	√122.884 (0.05)	Columbia & Upas Sts.
#	11.922	140.801	0.780	128.879		
#	11.431	151.573	0.659	140.142		
#	11.914	162.481	1.006	150.567		
#	11.835	173.553	0.763	161.718		
B.M.			0.480	173.073	√173.120 (0.01)	State & Upas St.
#	11.456	184.389	0.720	172.833		
#	11.332	194.955	0.666	183.623		

BM2. on Alpas St

Sta	+	HI	−	Elev	Adjusted	
		194.955				
#	12.000	206.043	0.912	194.043		
#	11.960	217.287	0.716	205.327		
B.M.			10.412	206.875	✓206.86	Arvin St & Alpas
#	11.587	228.228	0.646	216.641		
#	5.060	229.983	3.305	224.923		
B.M			1.740	228.243	✓	Hontine Ave & Alpas St on St centre
#	1.123	219.221	11.885	218.098		
#	0.820	208.134	11.907	207.314		
#	0.125	196.491	11.768	196.366		
#	2.123	184.685	11.929	184.562		
#	3.495	176.247	11.933	172.752		
B.M			11.215	165.032	✓	Jack-draw St centre.
#	10.815	186.582	0.780	175.767		
#	2.757	188.474	0.865	185.717		
B.M.			1.147	187.327	✓187.32	Ibis St
#	11.627	195.311	4.790	183.684		
#	11.962	206.353	0.920	194.391		
#	11.999	217.639	0.713	205.640		
#	11.631	228.634	0.636	217.003		
#	11.725	239.602	0.757	227.877		
B.M.			3.320	236.282	✓236.26	Hawk St

BMs on Mass St

Sta	+	HI	−	Elev	Chk	
		239.602				
#	7.690	246.627	0.665	238.937		
#	0.828	235.754	11.701	234.926		
#	0.330	224.161	11.923	223.831		
B.M.			0.490	223.671	√223.65 .01	Goldfinch Street
#	0.445	212.664	11.942	212.219		
#	0.804	201.468	12.000	200.664		
#	0.960	190.567	11.861	189.607		
#	11.290	190.007	11.850	178.717		
B.M.			3.270	186.737	√186.71 .02	Falcon Street
#	0.736	179.453	11.290	178.717		
#	0.903	168.389	11.967	167.486		
#	3.722	171.208	0.903	167.486		
B.M.			9.150	162.058	√	Eagle Street sp at SW corner
#	0.696	160.226	11.678	159.530		
#	0.140	148.475	11.891	148.335		
#	5.635	142.170	11.940	136.535		
B.M.			7.673	134.497	√134.49 .01	Hove St
#	11.970	153.282	0.858	141.312		
#	10.960	163.475	0.767	152.515		
#	11.926	174.598	0.802	162.673		
B.M.	10.934	184.166	1.366	173.232	173.20 .03	Curlew Street

234.434 .497 .63

B Ms on Upas St

Sta	+	HI	−	Elev		
		184.166				
#	~~11.808~~	~~195.261~~	0.703	~~183.463~~		
#	~~11.397~~	~~206.498~~	0.160	~~195.101~~		
#	~~11.518~~	~~217.627~~	0.389	~~206.109~~		
#			1.835	215.792	215.72[illegible]	checked with Acton
B.M.	11.915	146.412		134.497		Hove St
#	11.227	156.852	0.787	145.625		
#	10.914	167.019	0.747	156.105		
#	11.553	177.793	0.779	166.240		
B.M.			4.575	173.218	✓173.201	Curlew Street
#	11.735	188.828	0.700	177.093		
#	10.930	198.928	0.830	187.998		
#	11.670	209.890	0.708	198.220		
#	11.960	221.111	0.739	209.151	209.114	Checked with Acton again
#	11.015	231.476	0.650	220.461		
#	11.648	242.389	0.735	230.741		
#	8.058	249.422	1.025	241.364		
BM			6.890	242.532	✓242.5[illegible]	Brunt St
#	1.208	250.392	0.238	249.184		
BM			10.425	239.967	✓239.93[illegible]	Albatross
#	1.440	245.050	6.782	243.610		

Sta	+	HI	−	Elev		
		245.050				
B.M.			2.260	242.790	✓242.754 .03	Front.
#	11.165	255.497	0.718	244.332		
#	11.255	265.927	0.825	254.672		
B.M.			9.161	256.766	✓256.751 .01	1st St
#	11.946	277.140	0.733	265.194		
#	8.675	285.030	0.785	276.355		
B.M.			7.568	277.462	✓277.42[illegible] .03	2nd St
#	6.895	290.098	1.827	283.203		
			corrected	283.361	✓	
B.M.			6.735	283.363	✗283.341 .02	3rd St
			correct	285.187	✓	
B.M.#	5.490	290.680	4.908	285.190	285.171 .019	4th St
			correct	287.961	✓	
B.M.			2.714	287.966	287.956 .01	5th St
B.M.	1.880	285.243		283.363		3rd & Upper St
			11.075	274.168	274.147 .2[illegible]	

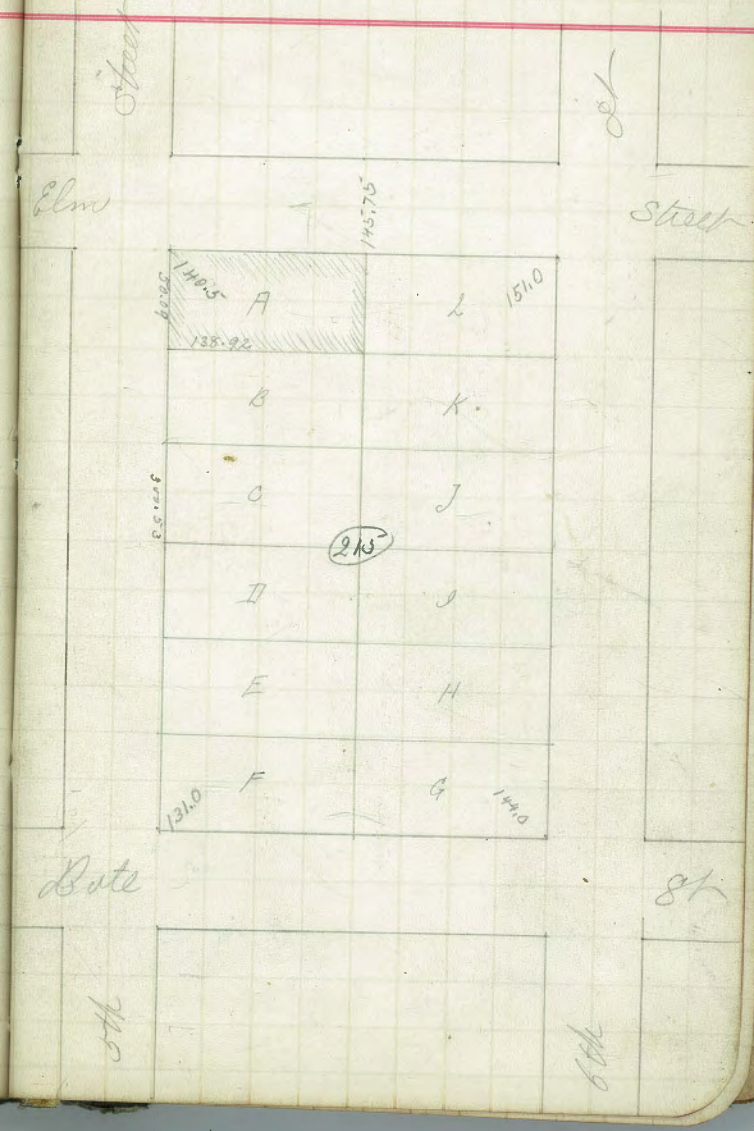
1st - 257.38
2nd -
3rd - 283.341
4th - 285.171
5th 287.956

Feb 28 1890 Hamlin { Arton Williams Hemsley

Sta	+	-	HI	Grade	Rod	B M

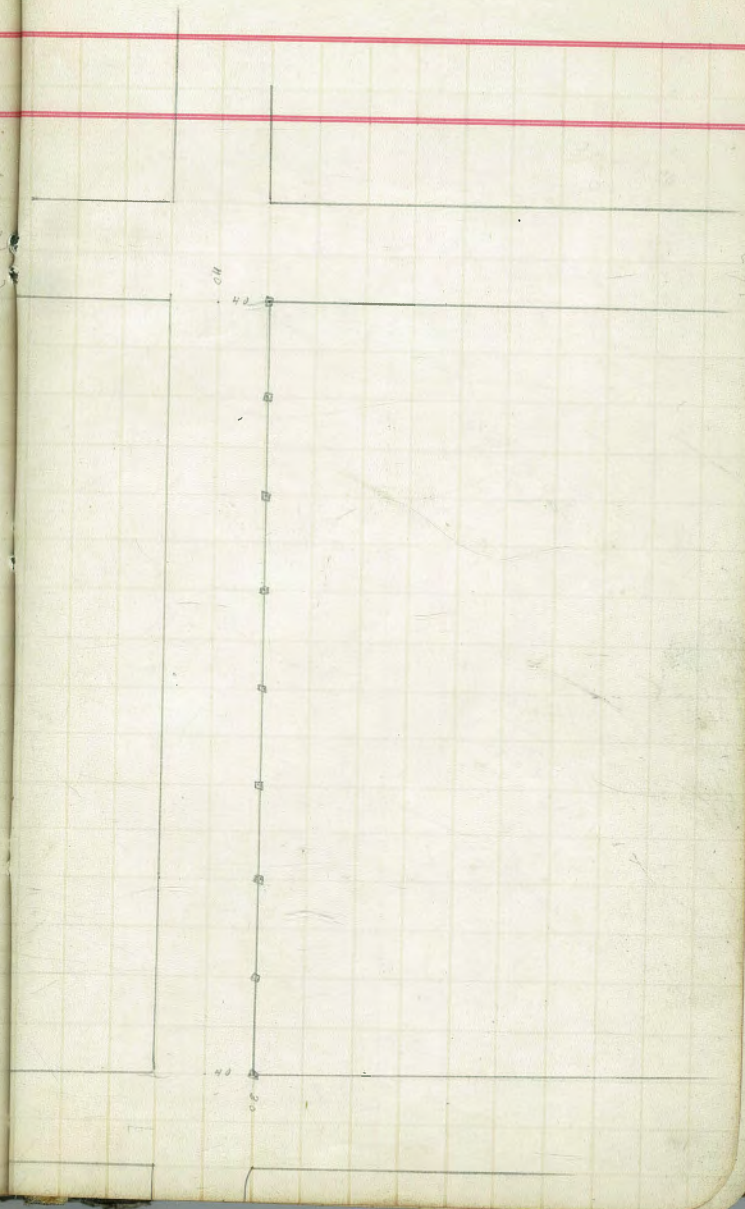
Curb lines and grades for Lot A Blk 215 cor 5th & Elm Sts For E Roebuck & Beaton

	6.86	146.95			140.09
			145.75	1.20 ✓	
			140.50	6.45 ✓	
			138.92	8.03 ✓	
				8.79	138.1



Set line for fence front of Sherman Heights school-house set plugs at S.E & S.W cor of blk on beginning at S.E. cor put in 50' stakes.

Hamlin { Carter
Williams
Hemsley



242.751

5.25
140.50
145.75
3.25
151.00

151.00
140.50
210.50
5.25

~~143.03~~

380
14
3+66

143.0
22
140.8 elev on centre of Blk

Albatross
sph BE 239.931

140.8

269.8
36
264.2

143.0
140.8
2.2

269.8
14
268.4

269.8
71
262.7

269.8
1.6
268.2

269.8
87
261.1

45.25
0.35
45.00

39.5
33.8
5.7

Fri & Colum

269.8
94
260.4

269.8
4.3
265.3

269.8
6.2
261.6

380
8
372

6.300
10.294
16.594
2.986
13.608

269.8
42
265.6

Lot 7 Blk 43

N.W. cor. bet Fri & G.

6.54
34

260.9
6.7
254.2

206.9
6.7

159
7
152

200.20
132
48.2

192.93
7
185.93

10 to E	380			
E to F	380			
F to G	380			
G to	174			
	1314			

180.52
36 × 2.75
25
5

36
1.1
36
36
39.6

380
3
1140
180.52
1320.52

E 196.98 ✓
F 201.03 ✓
G 205.08 ✓
S Line 207.00

14.07000 (.01.06
132052
864800
2

4/50 × 2.75
50) 19.00 (.2
1009

380
.0106
2280
380
4.02.80

192.93
4.026
196.956 = E
4026
200.972 = F
4.026
204.998 = G
191
206.908

G Sp = 198.09
F Sp 194.06
E Sp 190.03

~~200.~~

Spruce
Q
4th.

300.145

207.0
192.93
14.07

799
6.69
1.25

300.53

192.93
4028
196.958 = E
4028
200.986

1320) 19.070 (.0106
1320
8700

180.52
.0106
108312
18052
191.35.12

9.01.06
380
8480
328
4.02.80

2.00
+ 1.91
198.09
4.028
194.062
4028
190.034
4028
196.006

192.93
197.9580 = E
4028
201.986 = F
4028
205.114 = G
191
207.024

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

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

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

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

Published by Edward Denny & Co., Stationers, Drawing Materials, Mathematical Instruments, Etc., San Francisco.