

cb. cuts on Wilson Ave Adams Ave
 To Collier

BM. S.E.	x	-	Elev
Adams + Wilson	5.29		390.07
to Top		5.15	
Topaving		5.79	
W. Trench		7.83	
Top paving		5.52	
Top	6.80	3.89	
Shelton	W.S. side	5.52	
W. end		5.58	
End	E. side on Return	5.59	
W. end		5.58	

Bliss Paving stakes on front from S line
of Island to edge of RR. right of No 4

B.N. S.N.				
Front 6	2.83	19.26	16.43	
T.P.	0.82	10.92	9.16	10.10
Set B.M. on pole SE of No 4		9.82	6.10	

Note Set Gutter Grades on this job only

10.92
2.60
8.32
10.92
9.82
6.10

10.92
5.75
5.00
5.75

16.43
2.83 3
19.26
9.16
10.10
0.82
10.92
5.70
5.22

1760
Elev. gutter 2.60

1725 Elev 2.60

1740 Elev. gutter 5.00

1720 Brook in
gutter grade
elev 4.90

Bliss
 Xsabel
 Morgan
 12/7/77

Grade Univ Hts
 +

Stakes Alley
 T -

Block 21
 Elev

B.M. SE
 Alabama reference

864 - 333.25 329.61

T.P. 8.00 390.00 1.30 331.95

0700 Spring Madison
 E. side E. side
 335.7 C

W side 335.3 40

0190

E. side 338.5 336.5 Toddy 2.00

T.P. 6.20 392.79 3.91 336.59

W side 337.12 336.12 Toddy 0.100

E side 11.00 337.62 337.30 0.32

W side 336.79 336.94 F.O. 15

1450

E side 338.10

W side 337.76

VOID
 See Next Page

Bliss
Isabel
Morison
1911
B.M. 5E
Monroe Alley

Grade Stakes Alley Block 21
units

C. F

E 69 333.25 329.61
T.P. 8.05 340.00 1.30 331.95

0+00 = S. Side Madison
Elev. Stake Elev. Grade
- 7.30 - 335.3 00

W Side - 4.70 - 335.7 00

0+50

E Side 1.30 338.50 336.50 2.00

T.P. 6.20 342.79 341 336.59

W Side 5.67 337.12 336.12 1.00

1+00

E Side 5.17 337.62 337.30 0.32

W Side 6.00 336.79 336.74 0.15

1+50

E Side 4.25 338.54 338.10 0.044

W Side 4.96 337.83 337.76 0.007

2+00

E Side 3.01 339.78 338.90 0.088

W Side 4.03 338.76 338.60 0.016

T.P. 5.77 345.24 2.32 339.47

2+50

E Side 4.36 340.88 339.87 1.01

W Side 4.67 340.57 339.57 1.00

3+00

W Side 3.69 341.55 340.55 1.00

T.P. 6.51 347.87 3.88 341.36

E Side 6.20 341.67 340.85 0.82

+
39787

Elev Stone

Elev Grade

C

F

6

3750

E Side 4.05 343.82 341.82 2.00

W Side 5.35 342.52 341.52 1.00

900

W Side 4.37 343.50 342.50 1.00

E Side 4.07 343.80 342.80 1.00

T.P. 5.92 348.86 4.93 342.94

E Side 4.50 5.30 343.56 343.30 0.26

W 5.80 343.06 343.02 0.04

5200

E Side 4.50 344.36 343.20 0.56

W 4.31 344.55 343.55 1.00

5750

T.P. 5.51 349.71 4.66 344.20

E Side 4.79 344.92 344.65 0.27

W. 6 5.51 344.20 344.07 0.13

6200

E Side 4.21 345.50 345.50 - 0.00

W Side 5.08 343.62 344.60 1.00

14767 13153
 256 611 Morgan
 Grade stakes Alley Block
 Normal Hts⁺ Elev

BM SW Adams 7.93 397.18 389.25 C F

0+00 = W Lms of 39th Elev Stake Elev Grade
 Shine 6.28 390.90 00

N Line 6.94 390.80 00

0+50

S 4.56 392.62 391.19 1.43

N 5.18 392.00 391.06 0.94

T.P. 5.08 392.00 5.26 391.92

1+00

S 4.52 392.98 391.98 1.00

N 4.68 392.32 391.32 1.00

133

N B.K. 5.00 392.00 391.50 0.50

S 9.66 392.14 391.67 0.47

141

S B.K. 4.93 392.07 391.70 0.37

148

N 5.00 391.98 391.5 0.48

200

S 9.65 392.35 391.22 1.13

N 4.91 392.09 391.22 0.87

212

S 4.74 392.26 391.10 1.16

N 4.59 392.41 391.10 1.31

2191

N 4.70 392.30 390.90 1.40

T

397.00

Elevations 260

C F

8

2791

S 9.72 392.28 390.98 1.38

2761

S 9.06 392.04 390.90

N 4.60 392.40 390.30 2.10

2781

on facing

S 7.37 389.63 389.65 0.02

N 7.50 389.50 389.33 0.17

50° N of the North Line of 3/4

W 4.23 392.77 391.77 1.00

E 4.28 392.22 391.72 1.00

100 North

W 4.73 392.27 392.05 0.24

E 4.80 392.20 391.94 0.26

TP 542 397.59 483 392.57

1750

W 9.72 392.87 392.32 0.55

E 4.41 393.19 392.18 1.00

2700 P 10

W 4.07 392.52 392.60 0.02

E 5.05 392.59 392.40 0.14

2720

N 3.92 393.67 392.60 1.07

E 3.96 393.63 392.40 1.23

2740

W 3.98 393.61 392.40 1.21

386 393.73 392.30 1.43

39759

Elevations

Elevations

C

F

9

2460

393.74

385

~~392.0~~

392.0

1.74

4.01

393.52

391.90

1.68

2780

4.27

393.32

391.30

2.02

4.38

393.21

391.40

1.81

300 - Prep. Collier

7.10

397.50

390.6

00

6.75

390.24

390.7

0.14

3.92

396.01

5.30

392.09

BM ^{50'} Adams 25

6.75

389.26

1/19/27
 BMSW
 H. W. Walnut

Grade stakes on Walnut Street
 from the W. line of Ibis to 100' West from 670 N

	+	x	-	Elev Stake	Elev Cr. 4.
11.57	299.75	4.50	295.25	238.18	
0725		5.06	294.69	246.25	
0725		1.59	293.10	245.10	
0725		2.99	290.11	244.75	
0795 N		1.91	291.84	245.10	
0715 ♀		3.66	292.09	243.70	
0765 N		2.83	296.82	299.6	
0765 ♀		4.50	295.25	299.15	
0785 N		4.21	295.54	292.70	
0785 ♀		5.56	294.15	293.10	
1400 N		5.00	294.75	292.7	
1400 ♀		7.16	292.59	291.85	

C

F

0.7

0.4

3.1

2.1

2.7

2.4

2.3

1.1

2.8

1.2

2.0

0.7

3/105
200 Ball Block 6 1/2 City Annex #1
Morgan
12/1/27
Grade Stakes in alley for Water line
elev store 6 1/2 grade

				elev store	6 1/2 grade	
B.M. ^{N.W.} ₉₅ ^W ₁₁ ^W ₁₁	5.75	353.12			397.37	C
T.P.	4.38	353.39	4.12	399.00		
Nline of alley			1.70	350.68	398.97	2.71
2			1.84	350.54	398.68	2.86
Sline of alley			1.80	357.58	348.96	3.18
0+50			3.37	349.01	347.54	2.47
1+00			4.98	347.90	346.68	1.72
1+40			5.47	346.71	346.00	1.91
2+00			4.52	347.86	345.90	2.95
2+50			4.79	347.59	345.82	2.74
3+00			4.50	347.88	345.74	3.10
3+50 ^{T.P.}	5.60	354.71	4.27	349.11	345.66	3.40
4+00			3.58	350.13	345.58	5.5
4+50			2.76	350.45	345.50	6.5
5+00			3.77	349.92	345.42	5.5
5+50			5.63	348.05	345.34	3.7
6+00			6.74	346.97	345.26	2.7
6+35			7.00	346.71	345.19	2.5
B.M. ^{N.W.} _{chau} ^W ₁₁ ^W ₁₁			6.77	347.94		

Bliss Grade Stakes for paving Alley
 1/27-7. M. Gurwells subdivision. Between Redwood catthous
 Date and 307

B.M. 87
 Thorne. Date 6 22 329.61
 Elev Stakes Elev Grade
 318.39

0+00 = S line of Thorne

W side on paving 5.52 319.09 319.10

E side on paving 5.91 319.20 319.20

0+20

K side 4.97 319.64 319.30 0.34

W side 5.00 319.61 319.30 0.31

0+40

N side 5.02 319.59 319.40 0.19

E side 5.05 319.56 319.40 0.16

0+60

E side 5.04 319.57 319.30 0.27

W 5.22 319.39 319.20 0.19

1+00

W side 5.99 318.62 318.60 0.02

E side 6.06 318.55 319.00 0.45

1+40

E side 5.21 319.40 318.40 1.00

W side 6.61 318.00 318.00 0.00

1+80

W side 7.47 317.14 317.40 0.26

E side 6.70 317.91 317.80 0.11

Top 480 322.53 6.88 317.73

2+00

E side 5.77 316.76 317.3 0.54

W side 6.52 316.01 317.0 1.00

Redon Garage at 1400 9.75 317.78 ✓

Grade	Stakes	Mens	North of El-Cajon	El-Cajon	C	F
+	+	-	15' to Stake	Elev Grade		
7.99	357.99		353.00			

RM
S.W.P.
El-Cajon
9/24

00 = N. line of El-Cajon

W. Side				352.1		
E. Side				351.3		

0750

W. Side	1.6	355.9	352.35	3.6		
E. Side	6.2	351.3	351.6		0.3	

17.00

W. Side	1.3	356.2	350.60	3.6		
E. Side	1.8	355.7	351.90	3.8		

1750

W. Side	1.00	356.5	350.80	3.7		
E. Side	1.6	355.9	352.20	3.7		

2700 Break

W. Side	0.8	356.7	353.00	3.7		
E. Side	2.5	355.00	352.5	2.5		

2750

W. Side	1.1	356.4	352.55	3.8		
E. Side	4.3	353.2	351.96	1.2		

3700

W. Side	2.1	355.4	352.10	3.3		
E. Side	4.54	356.09	5.7	351.8	351.42	0.38

T.P.	4.54	356.09	5.94	351.55		
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W.		3750	2.6	353.5	351.65	1.8
----	--	------	-----	-------	--------	-----

E.			4.8	351.3	350.80	0.4
----	--	--	-----	-------	--------	-----

	+	-	Elev. Sta.	Elev. Grade	C.	F.	
	356.09						356.09 671 399.38 4.51 353.87
		3+75.2					350.30
W side		3.9	352.2	351.4	0.8		349.5 160 350.735
E		5.10	351.00	350.6	0.4		349.3 165 349.70
		N. line of Meads					405 0.8 349.05 165 349.640
W		4.9	351.2	351.0	0.2		349.975 165 349.475
E		5.6	350.5	350.3	0.2		349.640 165 349.475
		50' N. 71					349.475 165 349.310
W		5.5	350.6	350.55	0.0		349.310 165 349.145
E		6.3	349.8	350.13		0.3	349.145 165 349.600
		100 N.					349.600 14.2 349.456
W		5.6	350.5	350.10	0.4		349.456 14.2 349.312
E		6.8	349.3	349.97		0.7	349.312 14.4 349.168
		Break on West					349.168 14.4 349.024
		150 North					
W		6.3	349.8	349.6	0.2		
E		7.2	348.9	349.80		0.9	
T.P.	4.51	353.89	6.71	349.38			
		200 N. 71					
W		4.5	349.4	349.45	0.0		
E		5.3	348.6	349.69		1.00	
		250 N. 74					
W		4.6	349.3	349.31	0.0		
E		5.1	348.8	349.47		0.7	
		300 North					
W		4.8	349.1	349.17		0.1	
E		5.9	348.5	349.31		0.8	

+
35389

Elevs E1. Grade

0

E

16

350' North

W 5.2 348.7 399.02

E 5.8 348.1 399.19

400' North

W 5.1 348.8 398.88

E 5.8 348.1 398.96

450' North

W 4.6 349.3 398.73

E 5.3 348.6 398.81

500' North

W 4.4 349.5 398.59 0.9

E 4.7 349.2 398.65 0.6

550' North

W 4.0 349.9 398.44 1.5

E 4.6 349.3 398.48 0.8

600' North

W 5.60 348.30 348.30

E 5.60 348.30 348.30

349.05

14.4

348.876

14.4

348.732

14.4

348.588

14.4

348.444

14.4

348.300

349.145

16.5

348.980

16.5

348.815

16.5

348.650

16.5

348.485

16.5

348.320

cb stakes on Menjo. North of E/Cajon

	+	"	-	Re-Grade	Grade Rod
BM SW BP 46 D v E Cajon Dec 21, 1927	3.65	356.65		353.00	
cb. of E/Cajon N			4.51	352.19	
Ecb. of E/Cajon Break of line W side		5.27		351.38	
Break of line E side				353.00	3.65
Break of line E side				352.5	4.15
Prop. S side of Meade E. Side				350.6	6.05
Prop. E. Ref. on				350.6	6.05
Prop. on W side S side Meade				351.40	5.25
T.P.	4.38	355.78	5.25	351.90	
Prop. N side of Meade W side				351.00	4.78
Prop. N side of Meade E side of Street				350.3	5.48
B.M. Pole NW Meade	1.39	353.95	3.22	350.56	
3.00 K 1750 on Mt				399.6	4.35
cb. on W. end of job				348.3	5.65
cb. on East N end of job				348.3	5.65

* Note. Raked intermediate stakes.

3.7	0.0	
4.3	1.6	1.1
		355.05
		352.5
		2.5
		5.7
		356.65
		5.70
		350.95
		350.6
		0.3
353.84		
399.6		52.56
4.22		1.39
		353.95
		349.6
		4.35
		353.95
		348.3
		5.65
		353.95

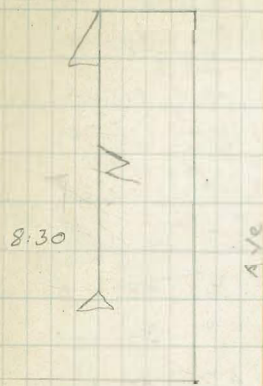
	π	π	-	Elev	
		335.97			ch. grade
T.P.	13.03	348.32	0.18	335.29	
T.P.	4.11	350.92	1.51	346.81	
church steps B.M. Orange S.E.			2.43	348.99	
T.P.	1.29	339.44	12.77	338.15	
0+00 culvert			10.72	328.72	328.90
0+39			10.92	328.52	328.05
0+68 Δ			8.54	330.90	327.70
0+68 Δ To Topch			8.54	330.90	339.20
0+93			9.84	329.60	327.40
1+08			11.54	327.60	327.11
1+32			12.44	327.00	326.80
cb m/let ^{side} 2.91	335.55	6.80	332.64		
cb m/let ^{side} To Topch		5.18	330.37	339.70	
				330.27	
				9.33	

Ties on Estrella

C. E

Trojan

Ave 25 25



□ □ □

67' of 30"

13' of 9" Full of Dirt

8.30

AVE

50 50

□ □ □

Orange
933

Ave



Estrella

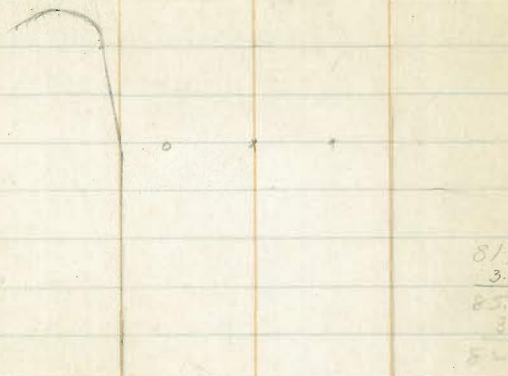
Grade Stakes Along Ditch to Fairmount
 Block 1. Mountain View

Dist	+	-	Elev
	8.96	359.69	351.23
T.P.	5.85	354.84	10.70 348.99
T.P.	4.00	350.76	8.08 346.76
T.P.	6.21	351.96	5.01 345.75
T.P.			4.93 347.03
			<u>347.03</u>

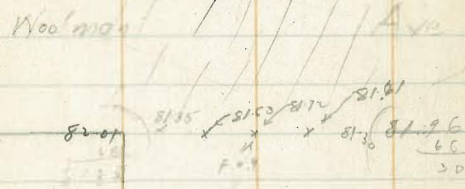
Turn E side

W	E
0+00 W 0+20 0+40 0+60 0+80 0+100 0+120 0+140 0+160	0+20 0+40 0+60
7.99 00 6.98 0.19 6.09 5.58 0.51 7.64 00 6.89 0.22 5.69 9.91 5.59	4.77 7.16 7.10 0.18
7.75 0.18 5.08 5.19 0.00 5.58 0.51 7.64	4.77 7.16 7.10 0.18
0+180 PVC 0+200 0+220 0+240 0+260 0+280 0+300 0+320 0+340 0+360	0+200 0+220 0+240 0+260 0+280 0+300 0+320 0+340 0+360
6.99 0.41 7.83 8.50 6.09 7.59 0.15 4.45 7.44 4.18 0.27	7.59 0.15 4.45 7.44 4.18 0.27
6.04 7.77 2.79 0.06 9.73 0.23 5.67 0.07 7.44 4.18 0.27	7.59 0.15 4.45 7.44 4.18 0.27
2+100 PVC 2+120 2+140 2+160 2+180 2+200 2+220 2+240 2+260 2+280 2+300	2+200 2+220 2+240 2+260 2+280 2+300
11.18 0.48 6.93 0.56 6.23 0.18 5.83 7.77 7.33 0.19 7.60 2.06 8.15 8.18	6.23 0.18 5.83 7.77 7.33 0.19 7.60 2.06 8.15 8.18
10.70 6.37 6.05 2.80 7.63 0.50 7.73 0.45 7.37 0.19 7.60 2.06 8.15 8.18	6.23 0.18 5.83 7.77 7.33 0.19 7.60 2.06 8.15 8.18
3+00 3+50 3+75 3+77 3.77 4.57 0.80 4+00 4.00 5.08 1.14 4+50 5.00 4+75 5.39 00 5+00 5.30 5+25 5.55 0.24 5+50 5.70 6+00 5.66 00 5.66 0.84 5.52 5.66	3+50 3.77 4.57 0.80 4+00 4.00 5.08 1.14 4+50 5.00 4+75 5.39 00 5+00 5.30 5+25 5.55 0.24 5+50 5.70 6+00 5.66 00 5.66 0.84 5.52 5.66

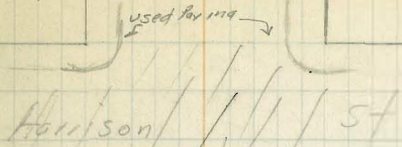
Gutter Grades on Dewey



8199
3.70
85.19
313
8201



3.22
3.43
3.77
22



used for inq



used for inq

used for inq

150

Brk 150' 50T
Irving
Elev Curb
W side 66.36
65.89 66.11 66.28 66.17
Elev. cb. E Side 66.59
65.98

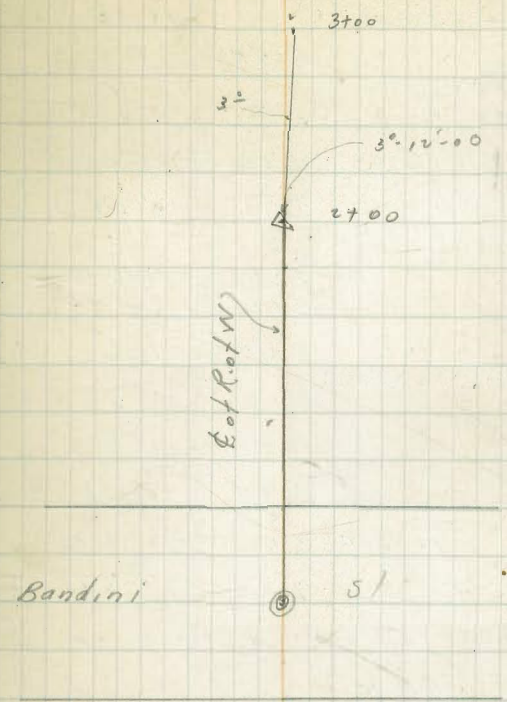
Feb 10/8 Grade Stakes for light Islands

	Lorno Portal	x	-	Elev. stakes	Elev. Grade	C	F
B.M. SW B.P.							
Locusts to Cuts	2.10	71.43		69.33			
Stake set 10' W of Stake &			4.60	66.83	66.67	10' W of Stake	0.16
B.M. S.W. B.P.							
Curtis to Englem	2.20	97.61		95.91	92.67		
Top 36 W. 10' W. of Stake			4.86	92.75	92.67		0.08
B.M. SW B.P.							
Willow to Cuts	3.52	122.70		119.18			
Stake 10' W of Stake			4.64	118.01	118.67	118.01	F 0.66
B.M. S.W. Cuts + plum stake	3.97	135.31		131.39			3.70
			4.52	130.79	130.67		0.12
B.M. S.E. B.P.							
Curtis to Close	2.29	136.89		134.60			
			2.13	134.76	134.67		0.09
B.M. SW B.P.							
Locusts to Cuts	1.11	70.44		69.33			
T.P.	2.77	60.18	13.03	57.41			
			7.05	53.13	53.59		0.41
T.P.	7.82	67.14	0.86	59.32			
T.P.	12.77	71.43	8.48	58.66			
Stake 36 W. Locust			3.44	67.99	68.17		0.48
T.P.	5.39	67.30	9.52	61.91			
Stake James to Locust			3.33	63.97	69.92		0.45
T.P.	2.31	57.10	12.51	54.79			
Stake 10' W of Kingsley Locust			3.83	53.27	53.67		0.40
T.P.	3.05	49.51	10.64	46.46			
B.M. SW Rosecrans			7.65	41.86			

2/23/28 Sewer stakes for Sewer across Public
Right of Way West of Jefferson

B.M. Not	+	x	-	Elev
E of Estudillo				
Danrepon Notes	0.97	104.30		103.33
T.P.	8.01	100.36	11.95	92.35
T.P.			11.09	89.27

11.09 16.32
52.4
55 100.36
16.33
87.03 5.5 26



Sewer Stakes for Sewer on Public
 Pt. No. 1 West of Jefferson

	+	π	-	Elev. Stake	Elev. Grade	
M B P x e Couts & La Jolla	10.55	90.60		80.05		
B.M. N. E. B.P. Bardini La Jolla			4.99			
T.P.	12.93	103.51	0.02	90.58		
T.P. Mn Hole & of Bardini	13.04	116.95	0.10	103.91		
			3.98	112.02	Line A. 2012. 105.08	7.89
T.P.	8.88	121.93	3.90	113.05	Line B. Not B. 106.58	6.39
0+20			9.23	112.70	106.98	5.76
0+50			5.12	116.81	107.78	9.33
1+00			3.29	118.69	108.39	10.30
1+50			3.16	118.77	109.28	9.99
2+00			7.90	119.03	110.19	8.84
2+50			3.93	118.50	111.09	8.49
T.P.	5.04	123.54	3.93	118.50	119	7.41
3+00			7.20	116.34	112.00	6.04
check on B.M. & couts Line A. Dot Bardini				111.90		4.34
B.M.	4.35	117.90		113.05	111.89	
0+20			5.72	111.68	105.41	6.27
0+50			9.58	107.82	105.90	1.92
1+00			7.00	110.90	106.72	
T.P.	11.19	123.92	5.17	112.23		
1+50			4.08	119.34	107.59	11.80
2+00			2.97	120.95	108.36	12.59
2+50			6.02	117.40	109.18	8.22
3+00			7.19	116.23	110.00	6.23
B.M.			11.81	111.61		
T.P.	1.93	111.80	13.05	110.37		
0+00 = D.E			2.93	109.37	102.00	7.37

112.90
 107.84
 4.86

110.90
 106.72
 5.62
 110.90 117.40
 5.17
 112.23
 11.19
 123.92

3.70 +
 2.62 -
 1.08

7.91
 10.8
 8.49

118.50
 1.08
 119.58

3.29 +
 116.34
 119.63
 112.00
 7.63

3.70
 117.40
 3.70 +
 121.10
 2.62

119.63
 1.59
 118.04
 112.00
 3.584
 1.59
 1.70

9.34 S
 1.70
 6.84

			Elev Stake	Elev Grade	
0154		5.61	106.19	97.34	8.85
1108		10.66	101.14	94.30 95.68	8.96
T.P.	2.12	102.58	113.41	100.46	
1158		9.73	97.85	88.37	9.98
2100	Mn. Hole	13.23	89.35	89.06	5.29
T.P.	7.10	106.60	3.08	99.50	
Check BM		89.35	3.20	103.40	
		11.60	6.56		
		102.95			
0125		12.23	94.37	86.55	7.86
		9.96	93.89	93.37	8.27
0150			101.64	90.04	11.60
T.O.			103.95	97.36	
1400	10.43	115.62	105.19	95.02	10.17
		11.60	105.19	95.02	6.09
1450		9.97	105.19	98.93	8.73
1440		3.50	106.36	100.00	5.85
1460		6.70	108.92	100.97	7.95
		2.32	107.80	101.00	6.80
1480		5.68	109.94	102.00	8.21 - 7.99
2100	5.40	9.98	110.64	102.99	8.15
2150		5.45	110.17	103.72	6.45
3100		3.50	112.12	104.95	7.17
3150		2.07	113.55	106.19	7.36
3180		4.01	111.61	107.00	9.61
T.P.	0.58	103.60	12.60	103.02	
T.P.	0.89	92.02	12.47	91.13	01.00 =
BM		9.85	52.17		
0100			109.37	84.73	0.00
0130			95.47	88.09	7.38
0160	B.K.		98.90	91.95	6.95
1100			101.14	94.30	6.84
1159			106.19	98.15	8.04
1100 DE			109.37	102.00	7.37

				89.35	10.114
				5.29	90.26
				59.11	6.90
				86.25	102.58
					9.77
					7.785
				3.07	59.35
				89.35	
				11.60 +	
				100.95	
				3.07 -	
				97.88	
				12.31 +	9.58
				107.66	
				5.79	
				113.95	
				107.66	
				100.97	
				7.95 -	
				100.02	
				5.79	115.62
					6.89
					108.73
				110.60	
				4.88	
				115.62	
					100.00
					115.62
					4.98
					110.64
					102.99
					8.13
				113.55	
				106.19	
				7.36	
					112.12
					104.95
					7.17
					112.12

2/9/28

Stakes for Sewer Main East of Jefferson
between Coats & Witherby

	+	x	-	Elev. Stake	Elev. Grade	
B.M. R. Hub Coats P. Roway	13.20	125.10		111.90		C
T.P.	13.10	138.15	0.05	125.05		
T.P.	5.58	142.03	1.70	136.45		
ELINE 0+00 W/therby			6.29	135.74	129.06	6.68
0+50			5.89	136.14	130.94	5.70
1+00			9.99	137.04	131.82	5.22
1+50			3.89	138.14	133.20	9.94
2+00			2.92	139.11	134.58	9.53
2+14.8			2.92	139.61	135.00	9.61
T.P.	6.73	148.13	0.63	141.90		
Set B.M. Tie out Hub N side of W/therby at 2+14.8			1.28	146.85		

Sewer Laterals

	9.00	144.74		135.74		
#11			7.60	137.14	132.10	65.04 N
#10			7.29	137.50	132.90	C 4.60
#9			5.82	138.92	133.60	C 5.32
#8			5.24	139.50	134.70	C 4.80
#7			4.07	140.67	138.00	C 2.67
	8.26	148.93		140.67		
#1			3.72	145.21	140.80	C 4.41
#2			3.01	145.92	140.50	C 5.42
#3			3.12	145.81	140.20	C 5.61
#4			4.00	144.93	139.90	C 5.03
#5			4.00	144.93	139.60	C 5.33
#6			5.50	143.43	139.30	C 4.13
T.P.	1.57	138.50	12.00	136.93		
	0.74	126.66	12.58	125.92		
check on B.M. & Pot May Coffs			14.80	111.86		(27) 111.00

11190
13.20
125.10
111.90
29

142.03	125.05
5.89	13.10
136.14	138.15
130.94	1.70
0+50 1.70	136.45
135.74	5.58
	142.03

142.03	125.05
6.29	135.74
129.06	6.68
136.45	5.70
137.04	5.22
138.14	9.94
139.11	9.53
139.61	9.61
141.90	
146.85	

142.03	125.05
4.99	5.94
137.04	1400
31.82	15.599
5.22	4.20
141.03	16.40
3.59	15.05
135.74	13.50
33.20	1.5
4.94	12.50
139.11	2.76
34.53	41.90
4.53	27.6
142.03	50
2.92	135.00
139.61	119.06
	122
	130.44
	13.5
	13.15
	13.1
	133.20
	12.35
	134.58
	41
	139.99

Grade stakes on 49th Street Imperial to Woolman

	+	x	-	elev	Elev Grade
BM Bolt	3.61	151.92		148.31	
TP	7.44	156.51	2.48	149.44	
					122.73 31.6 119.57
					121.73 31.6 118.57
3+30			4.9		
3+60			6.1	150.8	151.1

31.42
92.4
122.19
7.53
119.69

NE

Water stakes on Jefferson Calif to N. 11th by

	528	141.02		135.74
0+00 Alameda	1.00	140.00	136.84	
0+60	2.6	138.4	135.34	
1+20	4.00	137.00	133.84	
2+20	5.67	135.35	132.31	
2+60	7.17	133.85	131.84	
TP	8.95	148.92	100.5	139.97
0+00 N. Line Bondini				137.84
0+60	6.05	142.4	139.34	
1+30	5.9	143.0	139.84	
2+00	5.5	143.4	140.34	
S Line Coats	7.00	141.9	138.3	

12273 W. Side	142.48	137.68	E Side	30
316			0+50	1700
41.9	0+50	1700	5.7	61
61	4.1	82	3.8	33
42	5.6	52	1.9	7.2.8
F 1.9	F 1.6	F 3.0	1750	2100
2400	2450	3100	3.4	2.5
44	3.75	6.3	2.91	0.1
42	3.5	6.9	F 0.5	62.9
F 0.2	0.1.25	F 0.6	3700	3730
3730	3760	PVC	578	552
			41	400
			C.1.7	C.1.5
			193	139.2
			148.92	151.15
			894	894
			139.98	

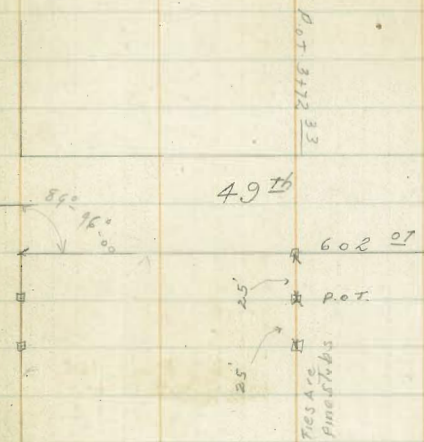
0+00 S Line Bondini				
1400	73	143.8	140.59	3.1
2400	3.4	147.5	144.34	3.2
2450	2.6	148.5	145.04	3.9
3700	1.9	149.2	145.84	3.9
3760	1.8	144.3		0.35
3800	2.0	149.1		0.32
C3.2	4.2	146.9	143.34	3.1
C3.1	7+20			
3.2	TP 2.03	142.48	140.45	136.8
3.04	TP		129.8	129.8
2.01	TP 1.08	131.42	126.0	122.8
	PVC		108.1	118.57
TP	1.255	129.69	120.0	116.9
check on	#1		118.9	115.2
1107	#2		118.8	115.2/25
C3.1	#3		120.0	116.6
C3.1	#4		122.0	118.4
C3.1	#5		126.1	122.4
C3.1	TP 1.91	140.92	133.1	129.8
C3.6			14	135.5
TP	12.65	151.47	139.5	135.5
check on	#1		129	

Tie Points on 49th Street

Get p.c. disc
5000 Ave
6-12-57

Get p.c. disc
5000 Ave
6-12-57

Imperial



UN 0054

City disc and P.K.

Banking Ave

Alley

GLORIA

Street

602 31

POT 4100 93

F.I. PK. 40
129 A.C. Paving
30

F.I. CONC.
Mon.
6-12-57

Ocean View

6-12-57
Get Add'd City disc

2/29/18

D.M. 0011m
P. 10 N.W.
49 13 Imperial

Grade Stakes on 49th
Imperial to Woolman Elev

	+	x	-	Elev
	3.61	151.92		148.31
TP	7.44	156.88	2.98	149.44
TP	2.89	149.76	10.01	146.87
TP	0.37	147.47	2.66	147.10
TP	0.08	134.51	13.04	134.43
TP	3.04	128.39	9.21	125.30
BM			3.11	125.23

147.92
125.63

Elev Grade N side of 9 on West 146.55

" " S " " " West 145.50

Elev Grade N side of 9 on E 147.05

" " S " " " 9 on E 146.00

W Side			E Side		
0.10	0.50	1.00	0.00	0.50	1.00
4.2	3.75	2.28	3.42	2.99	2.56
6.1	7.2	8.2	3.5	5.7	6.1
F.0.1	F.3.4	F.4.9	F.0.1	F.2.7	F.3.5
1.50	2.00	2.50	1.50	2.00	2.50
8.2	4.4	2.5	3.4	1.70	1.27
2.81	2.34	1.87	2.13	0.1	0.4
0.59	F.2.1	E.0.6	F.1.3	0.1.6	0.0.9
3.00	3.30	3.60 P.V.C	3.00	3.30	3.60 P.V.C
6.35	6.07	5.79 2.570	5.79	5.53	5.27
7.00	4.9	6.1	9.1	9.0	3.9
F.0.6	0.1.2	F.0.3	0.1.7	0.1.5	0.1.5
9.100	9.740	4.770	9.100	9.790	4.770
5.7	6.3 2.570	6.93	5.2	5.8 2.50%	6.53
5.7	5.2	7.1	3.4	5.0	4.0
0.0	0.1.1	F.0.2	0.1.8	0.0.8	0.2.5
5.700	5.750	6.102	5.700	5.750	6.102
7.68	8.93	10.23	7.28	8.53	2.71
7.4	6.7	10.9	6.0	8.0	2.5
0.0.3	0.2.2	F.0.7	0.1.3	0.0.5	0.0.2
0.00 S. Line of 9	0.50	1.00	0.00 S. Line of 9	0.50	1.00
4.26	4.55	4.83	3.76	4.03	4.29
9.9	5.4	6.00	3.00	3.3	3.5
F.0.1	F.0.9	F.1.2	0.08	0.7	0.5
1.50	2.00	2.50	1.50	2.00	2.50
5.11	5.90	5.68	4.56 C.1.5	4.22	5.09
3.7	2.5	3.2	3.1	2.1	0.7
0.1.4	0.2.9	0.2.5	2.77 12 P.V.C	0.2.7	0.4.7
2.77 12 P.V.C	4.47	6.37	5.34	0.4.0	0.5.0 E.V.C
5.95	1.7	3.3	1.2	3.77	3.97
3.0	0.2.8	0.3.1	0.9	0.8	0.8
0.50	0.2.8	0.3.1	0.4.1	0.2.9	9.3.17 C.2.2
1.20 E.V.C	8.99%		1.20 E.V.C	0.1.50	1.00
9.37	0.50	1.00	9.17	13.82	5.5
4.9	9.2	1.5	8.5	13.0	8.0
0.4.5	0.4.6	3.9	0.0.7	0.0.8	F.2.0
1.50	1.50 6 A. Line Woolman		1.50	1.842	N. Line of Woolman
9.9	13.2		10.2	7.39	
5.6	8.9		10.8	9.2	
0.4.1	0.4.3		F.2.6	F.2.1	

145.31
13.10
121.00

4/29/28 Grade stakes on Myrtle between Texas & Mississippi.

BM B.P. NE Mj. H. Louisiana	4.47	280.97	276.50
TP	8.43	284.93	276.50
BM SE Texas Myrtle		2.57	282.36
0084	66 95 0.21 1/1		2.97
			2.97
	276.50 4.81 281.31 279.50	279.50 66 278.84	281.31 278.84 2.47
	279.50		105 7/10

BM REFOP	3.21	279.71	276.50
00 =		451	272.20 C 3.00
0425		4.27	275.46 271.87 C 3.57
0450		4.03	275.68 271.54 C 4.14
0475 = Prop.		3.78	275.93 271.21 C 4.72

N. Line of Louisiana Rod 526

South	North
0700 5.47	0700 6.98 4.97
0750 6.97 5.00 1.80	0750 6.98 4.2 0.12
0800 8.97 7.2 0.18	0800 9.97 9.97 0.10
0850 6.97 5.00 1.80	0850 6.98 4.2 0.12
0900 7.97 6.3 0.17	0900 7.97 6.3 0.17
0950 6.97 5.00 1.80	0950 6.98 4.2 0.12
1000 8.97 7.2 0.18	1000 9.97 9.97 0.10

1100	1100
8.93	8.93
9.03	8.58
0.10	0.07
1400	1400
7.35	6.55
6.8	5.5
0.5	0.13
1490 Break.	1490 Break
5.93	5.43
5.5	4.8
0.4	0.6

2781.64	2781.69
3.97	2.93
3.57	3.20
0.10	0.17

Water stakes in Alley Block IV City H/S

B.M. NW
45th + Thorn 805 334.62 326.57

0+00 485 326.11 329.3

0+30 4.50 329.06 324.3

T.P. 316 333.30 4.48 330.14

0+70

T.P. 195 322.25 13.00 320.30
314.30

T.P. 11.77 332.07 1.95 320.30

T.P. 460 335.82 0.85 331.22

NW
B.M. Chamouette
+ Thorn 2.71 333.11 330.96
332.96
(1.5)

121.89
314.30

67.5
62.5
5.30.0

312.3
307.8
4.5

332.24 333.56
328.10 9.50
329.00

34

C4.41

C4.8

0+70 1+17.5
9.40 9.9
26 4.0
C6.5 C5.9

1+67.5 2+17.5
11.0 21
5.6 6.7
C5.4 C5.4

1+67.5 3+17.5
13.0 19.3
7.8 7.5
C5.4 C4.8

3+67.5 4+17.5
15.4 16.5
10.9 11.7
C4.5 C4.8

4+67.5 5+30
17.6 7.9
13.0 3.5
C4.6 C4.4

6+0 6+30 N Line
7.9 13.4
5.5 8.4
C3.4 C5.0

6+70

14.1

10.7

C3.4

332.24 329.1
323.54 9.3
19.8

8.40 733.56
5.4 4.98
8.96 329.08

8.9 1.7
1.00 332.24 332.24
5.4

10.0
11.1
11.1
12.2
11.1
15.3
11.1
14.4
11.1
15.5

333.56
9.55
328.71
328.2

334.62 325.51
44.50 8.05
330.12 333.56
329.3

5.8

334.62
4.85
329.77
324.3
5.47

331.00
4.60 320.30
335.82 1.00
7.1 322.25
333.11

Paving Stakes in Alley Block 164
 University H.F. Between 30th & Ohio Polk & Lincoln

B.M. 5 E B.P. Ohio & Lincoln	+	x	-	Elev
	5.37	367.81		362.44
T.P.	5.30	368.89	9.22	363.59
T.P.	4.49	369.29	4.09	364.80
T.P.	4.31	368.58	5.02	364.27
check on 30th & Ohio			2.63	365.95

0400 P.V.C	0420	0405 P.V.C	0420
5.91 - grade	5.31 c.d. 75	5.71 - grade	5.21
5.91	9.56	5.71	9.29
			c.d. 97
0490	0460	0490	0460
4.81	4.51	4.81	4.51
4.51	9.81	3.81	4.11
0.26	5.0.30	c. 1.00	0.40
11.00	0.39 27	0.41 70	
4.34	1.50	1.50	2.00
3.36	4.17	4.35	5.01
c. 1.00	3.17	2.35	7.88
	c. 1.00	62.00	c.d. 13
2.50	3.00	2.50	3.50
4.87	4.68	4.81	4.39
3.87	3.68	4.20	4.28
c. 1.00	c. 1.00	0.61	0.11
4.00	4.50	4.00	5.00
4.59	4.91	4.59	5.03
3.69	3.91	4.52	5.05
c. 1.00	c. 1.00	0.07	4.00
5.50	6.00	5.50	
4.65	4.89	4.55	
4.21	4.89	3.55	
c.d. 44	00	c. 1.00	

Raving Stakes Alley Block 11, UNIV #15
 Between 30th Ohio-Adams + Madison

B.M. S.E.
 B.P. Boundary
 Adams

	+	+	-	Elev
Adams	4.5	395.97		390.95
T.P.	4.00	393.55	5.92	389.55
T.P.	4.97	393.73	4.79	388.76
T.P.	5.57	394.70	4.60	389.13
T.P.	5.02	395.95	4.27	390.93
T.P.	4.75	395.10	5.60	390.35
Checked on Starting B.M.			4.15	390.95

W. Side 0.51670

0.00	0.50	1.00
6.25	5.79	5.72
6.25	5.25	5.23
0.00	0.54	0.49
	2.00	2.50
1.50	5.20	4.95
5.46	5.27	4.49
5.21	5.07	5.04
0.25		0.31
3.00	3.50	4.00
5.65	5.90	5.16
5.70	4.77	4.63
0.05	0.63	0.53
4.50	5.00	5.30
4.90	5.37	5.21
3.90	5.50	5.22
0.100	0.13	0.01
5.60	6.00	5.60
5.00	5.65	5.05
4.90		4.50
0.16		0.23

E. Side 0.48270 36

0.00	0.50	1.00
6.05	5.61	5.55
6.05	4.73	5.16
0.00	0.88	0.39
2.50	2.00	1.50
1.50	5.07	4.83
5.31	5.05	4.87
5.00	0.07	0.01
0.31	3.50	4.00
3.00	5.32	5.02
5.50	4.85	4.02
5.35	0.47	0.00
0.21	5.00	5.30
4.50	4.50	5.20
4.74	4.34	5.05
4.54	0.16	0.15
0.14	6.00	
5.60	5.65	
5.05		
4.50		
0.23		

C.C. cuts on E St between 36th & 27th

	+	-	Elev		
3/23/28 BM B.P. NW 26 th + E	1.81	189.81	188.00		
T.P.	0.61	177.26	13.16	176.65	
T.P.	0.19	169.20	13.25	164.01	
T.P.	0.61	151.71	13.10	151.10	Grade Rod
3+00 P.V.C.	6.98	144.73	144.43	N side C 0.30	7.79 ✓
	8.90	143.31	143.93	S F 0.1	8.96 ✓
3+25	9.80	141.91	141.70	E 0.21	10.56 ✓
	11.13	140.58	140.70	S 1.01	11.69 X
3+50	10.48	141.23	141.05	N 0.16	11.29 ✓
	11.68	140.03	140.05	S F 0.02	12.24 X
3+75	9.00	142.71	142.90	N 0.31	9.76 ✓
	10.12	141.59	141.40	S 0.19	10.76 X
4+00 E.V.C.	5.65	146.06	145.80	N 0.26	6.91 ✓
	6.81	144.83	144.80	S. 0.03	7.91 X
set BM	5.92	592			

13
Isbell
Lowden
9/8/28
BMNK BP
24th N

Paving stakes in Alley Block 63
Sherman Addition Between 24th + 22nd
Imperial and N

10.9~ 59.90 48.98
TP 5.65 59.78 5.77
TP 4.39 60.00 4.17 55.61

0700
517
5.20
8.25
7.005

N Side

0720 526
7.80
513
07.17

0790 53.4
6.50
5.15
21.35

0700 514
8.50
8.42
40.04

S Side

39

0720 52.4
7.50
533
02.77

0740 53.3
6.60
9.60
02.00

0760
538
6.78
4.10
02.00

0750 P.V.C
54.00
5.78
4.71
01.00

0760 538
6.10
5.10
01.00

0790 54.00
5.90
4.90
01.00

1530 54.21
5.57
4.77
00.80

1130
59.4
5.57
4.77
0.80

1190 59.46
5.32
5.32
4.52
00.80

1190 59.46
5.32
6.17
F0.85

2130 59.63
5.15
4.37
00.80

2180 59.84
4.92
5.35
F0.41

2130 59.63
5.15
4.71
0.024
3.10
55.00 P.V.C
9.78
9.17
00.61

2180 59.84
4.92
5.14
01.80

3120 P.V.C 55.00
4.78
3.90
01.38

3140 59.90
5.10
5.10
00

3160 59.6
5.40
4.12
1.08

3180 59.0
6.00
4.42
1.38

4100 52.80
7.20
5.42
1.98

4109.7 52.20
7.80
7.73
00.07

4100 53.2
6.80
5.44
1.36

4149.7 52.6
7.90

9/14/61

Construction Notes on Lincoln St Culverts

BM SEBT
Ground only
+ UNIV

	10.55	348.99		333.99
TP	3.32	346.41	0.90	343.09
	11.90	345.34		338.90

Culvert #1

Culvert #

40

0400	0726	0452	0400	0725	0470
333.76	331.96	330.16	336.16	328.26	326.36
12.65	14.45	16.25	16.25	18.15	
7.53	20.2	7.83	6.97		
05.14	21.43	08.42	59.18		
			0475		
			329.96		

Construction Notes on Lincoln St
Culverts.

BMSWBP 322946.12	+			
TP	4.22	356.13		351.91
TP	3.15	347.15	12.13	349.00
TP	1.85	337.03	11.97	335.18

0400	0426	0452	0400	0425
333.76	331.96	330.16	330.16	328.26
13.39	15.19	16.99	16.99	18.89
16.45	9.95	10.73	10.73	9.89
2.94	5.24	6.26	6.26	6.00
#3				
0400	0438	0450		0475
328.8	325	326.36		329.96
8.1	7.78	7.93	20.79	12.57
00.50	#2	4.3	11.97	8.3
329.63	329.26	09.10	8.82	9.25
12.90	12.77			
7.70	6.70			
09.70	06.07			
#3				
323.9				
13.13				
9.80				
03.33				

Cut & Fill stakes. Lincoln. 33.54 to Boundary

BM 544 BP 32 20 Univ	4.22	356.13		351.91
TP	3.15	347.15	12.13	344.00
TP	10.40	395.58	11.97	335.18
TP	9.11	337.41	12.28	333.30
TP	9.44	391.30	5.55	331.86
TP			4.33	336.97
Cb. stakes	5.97	342.94		336.97
			6.57 grade	336.37
			6.95 on Prop F1.00	
			6.70	336.29
	5.28	342.25		336.97
H 95 35			9.89 Rod	337.36
H 69 25			9.96 6 Rod	337.29
	4.00	340.97		336.97

N Side

S. Side

40

0700	0740	0780 PVC	0700	0720	6460 PVC Lost out.
341.3	339.89	338.47	341.00	340	
9.28	5.69	7.1	9.58	5.58	
9.28	6.2	8.4	4.7	~1	
9.0	F.0.5	8.4	F.0.1	0.3.5	
		F.9.5	0780	11.00	
1100	1120	1140	337.29	336.52	
338	337.5	337.9	0.2	-0.9	
0.6	0.1	0.0	10.4	7.7	
6.1	4.3	F.1.8	F.10.2	F.6.8	
F.6.7	4.4				
1160			1120	1190	210
F.V.C			336.33	336.16	
337.26			1.1	5.10	
9.00			10.0	13.2	
5.2			F.8.9	F.8.1	
F.17			14.66	14.87	
			336.27	338.36	
			5.00	9.9	
			9.7	8.1	
			F.9.7	F.3.2	
			2732.55	2732.55	
			336.55	336.76	
			4.7	9.5	
			7.6	6.6	
			F.2.9	F.2.1	
			3732.55		
			337.00		
			4.30		

Curb Grades on Lincoln 33rd to Wabash

DM SW Top of curb 33rd to Wabash
 + 7 - 1/2
 9.80 346.77 336.97

4.61 341.58 336.97
 337.26

DM SW Top of curb 33rd to Lincoln
 6.17 343.14 336.97

N S, do

0700 0438.25
 3000 340.83
 6.77
 9.5 6.35
 0000

0145.6
 340.53
 6.24

S 40 43
 0711.93
 339.13
 7.77 69.2 482
 7.73 07.60
 0000

07.87
 339.21 341.2
 6.84 9.83

337.21
 338.01

(337.21) 0.74

2.25
 1726 10.2000
 6902
 4060
 3952
 5080
 17002

0.42

N

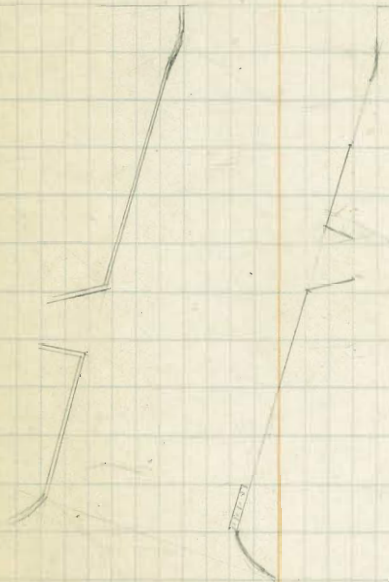
PVC	#1	#3	PVC	#2
337.26	337.36	337.97	336.16	336.83
5.88	5.78	5.67	6.98	6.51

#4	#5	#3	#4
337.97	338.97	336.52	337.24
5.17	9.67	6.62	5.90

#6
 339.89
 3.25

E Line Bdry
 342.30
 1.84

#5	#4	E Line Bdry
337.98	339.99	341.00
5.16	3.65	2.14



Sewer Construction - Sassafras
Columbia, Thorn, & State Streets

BM, S.E. BP			Elev.	Elev Grade	Cuts
12.50	97.38		84.88		95.8
at 00 2-27.50		7.99	84.39	79.81	
#1	12.92	109.13	1.17	96.21	83.90
Drop Mn Hole #2			5.68	103.45	87.00
#2			0.90	108.73	95.00
3-95 53 T.P.	13.10	121.83		9.64	112.19
#1			1.01	120.82	101.66
#2	12.93	183.75		108.32	105.3
Mn Hole #1			7.66	126.09	115.00
#3			6.33	127.42	118.86
7-54 20					
#1			6.33	127.42	118.86
#2	10.95	142.98	1.72	132.03	122.71
#3			6.72	136.24	126.57
#4			2.34	140.60	130.43
T.P.	11.31	153.83	0.96	142.52	130.43
#5			8.81	145.02	134.28
#6			4.55	149.28	138.14
Mn Hole #2					
#7	12.92	169.37	2.38	151.45	142.00
5-555 set BM on corner			12.75	151.62	142.00
#1			5.84	158.53	150.38
T.P.	12.76	176.69	0.99	163.88	150.38
#2			7.63	169.01	158.76
T.P.	13.19	189.51	0.27	176.37	158.76
#3			12.22	177.29	166.32
#4			7.34	182.17	172.66
Mn Hole #3					
#5			5.93	186.08	179.00
5-97.50	12.89	200.88	1.57	188.32	179.00
#1			0.72	188.79	182.11
#2			7.98	190.90	185.22
T.P.	13.00	209.67	3.95	196.33	185.22
#3			1.21	199.67	188.33
#4			8.62	201.05	191.44
T & E W Line					
#5 of Union			4.12	205.55	194.55
Set BM. & Mn. on intersection	213.34		1.55	208.12	194.55
Sewer Construction to State from					
Existing ManHole to 160' N of the N line of Thorn					
5-92	6.41	199.93	3.21	183.32	185.00
#3			6.20	188.73	177.66
#3	0.96	189.04	11.35	183.58	172.06

4/18/29

Bench Level 49th St from Orange
St South to Univ West on Univ to 48th Non
48th to El Cajon

48

BM	13.03	345.95		332.95	SE BP Orange + 99 th
T.P.	3.04	348.47	0.55	345.43	
TP	0.41	335.70	13.18	335.29	
Set BM			1.55	334.15	SE BP Polk + 99 th
TP	0.39	323.45	12.64	323.06	
Set BM			1.09	312.36	N.E BP Univ + 49 th
TP	12.78	329.52	6.71	316.74	
Check BM			2.83	326.69	SW BP Univ Estrella.
T.P.	12.77	341.89	0.40	329.12	
TP	9.95	350.61	0.73	341.16	
TP	0.99	339.04	12.56	338.05	
TP	12.64	341.19	10.49	328.55	
TP	3.62	343.98	0.83	340.36	
Set BM			0.71	343.27	NW BP Polk + 45 th
	9.80	348.73	5.05	338.93	
Set BM			5.77	342.96	SE BP Orange + 48 th SE Church steps
Check BM			0.25	348.48	Orange + Estrella
TP	1.39	348.79	1.33	347.40	
Set BM	9.43	353.71	4.51	344.28	NE BP 48 th + Trojan
T.P.	6.31	357.97	2.05	351.66	
Check out on BM			2.56	355.41	49 th + El Cajon
				355.39	Record
				0.02	error

Note these
 BM's run the
 No Juana Money
 Bands shot up
 car on N. City
 of PKR

Bench Levels Division St from Main to
 Highland North on Highland to Highland Square

BM	11.75	20.63		898 888	NWBP	Main Division
TP	11.84	31.81	0.86	19.97		TP 188
check BM			2.905	28.905	NE Toply	Delberia
TP	12.51	90.835	3.485	28.325		TP 1.915
TP	7.67	98.073	0.93	40.405	NWBP And	Long Drive
TP	9.255	55.660	1.67	46.405		Set BM NW Keeler & Highland BP
TP	13.055	68.235	0.98	55.18		TP 197
Set BM			10.965	57.270	BM BP NW	41 st
TP	9.625	77.690	0.17	68.065		check BM SE Toply Newton & Highland
Set BM			3.95	73.74	NW 7 th side Marine Vista	
TP	1.48	67.10	12.07	65.62		
TP	2.325	56.750	12.675	54.425		
TP	0.895	45.165	12.98	44.27		
Set BM			2.815	42.350	NE Toply	4 th
Set BM	1.235	34.600	11.80	33.365	NW BP BM Highland D	Division
TP	12.385	95.095	1.89	32.71		
TP	9.77	54.405	0.96	44.635		
Set BM	1.91	53.67	2.145	52.260	on the line of Explan product entirely about	as a modern edge of Boring B.P.
TP	11.72	65.275	0.115	53.553		
Set BM			8.76	54.515	B.P. in corner of road NW	This BM is at Delta St. Miller
TP	12.71	77.120	0.805	64.470		
TP	12.305	88.820	0.665	76.515		
Set BM			9.423	83.895		
TP	6.92	94.02	1.72	87.10		
TP	2.91	92.24	3.79	90.23		

Charge BMs .10 as shown

Bill Bliss Notes
 Joe Duermit T
 J. Jacobs 2000 Rod
 P. Kiernan "

H.I. -
 92.60

Elev

49

70.58

~~70.58~~

70.68 Recorded

0.10 error

Construction Notes on Culverts

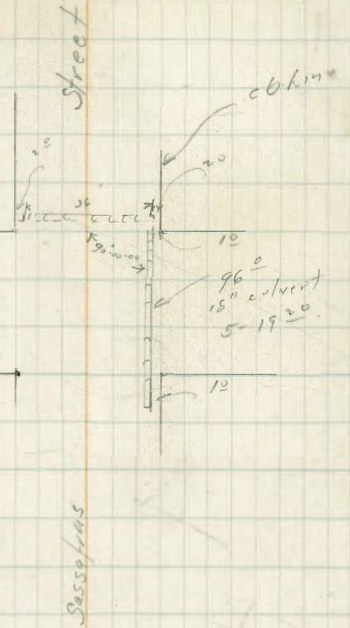
BM 588P.
India + Sassafras
3.08 87.96 Elev 84.88

Culvert #1 3 stakes length 36' cuts

0400 NSide of Sassafras	0.59	87.37	81.84	55.3
0418	0.39	87.62	80.84	6.78
0436 End	1.60	86.36	79.84	6.52

Culvert #2 6 stakes length 96'

0400 S.E. Sassafras Stake set 5 10'	2.90	85.06	79.34	+5.72
#1 0414 on Sassafras in paving	3.34	84.62	77.87	+6.75 X India
#2 0435 do shiver 10'	3.80	84.16	76.90	+7.76
#3 0457 do shiver 10'	5.02	82.94	74.93	+8.01
#4 0476 do on SW side 10'	5.26	82.70	73.46	+9.24
#5 0496 stake 10'	16.14	71.82	72.00	Fo. 18



Catch Basin stakes

E line of India = 00 =	84.88	85.00
Sh " " " Sassafras		85.00
Elev W end of cb inlet on N		85.38
Elev E " " " " " N		87.45
Elev W end of cb inlet on S		85.38
" E " " " " " S		87.45

#1 N 9010 8538 4.74 50 Fo. 30	#-N 9010 8795 265 65 00	#1 S 9010 8538 47 47 00	#-S 9010 8795 265 65 00
--	--	--	--

9/18/28

Construction Notes Peterbaugh +
Clark St Culverts

51

BM SE Top Cb. Clark + Peterbaugh	3.93	189.93	Culvert #1	186.50		cuts
0+00			406	185.87	180.50	5.37
0+20			501	184.92	177.93	6.99
0+40			642	183.51	175.36	8.15
0+60			824	181.69	172.79	8.90
0+80	553	183.62	1184	178.09	170.22	7.87
11.01			1298	170.64	167.50	3.14
TP check on BM	8.76	190.44	1.94	181.68		
	394	190.44	3.94	186.50		
			Culvert #2			
BM	394	190.44		186.50		
TP	1.70	179.21	12.93	177.51		
T.P.	0.39	166.61	12.99	166.22		
TP	2.91	158.00	11.52	155.09		
0+00 3 stakes			4.98	153.02	147.00	6.02
#1			5.19	152.81	145.83	6.98
#2			5.75	152.25	144.66	7.59
#3 End			8.27	149.73	143.50	6.23

1/2 Paving Grade Stakes Alley Block 65 Park
 Villas + T - 5/16 5/16 the Grade

B.M. S.E. of	10.18	334.19		329.01		
0700 E. Side						329.60
0700 W. Side						329.30
0750 W. Side			470	329.99	329.99	00 Teddy
0750 E. Side			3.91	330.78	329.78	1.00 Teddy
1100 W. Side						329.69
1100 E. Side			4.23	329.96	329.96	00 Teddy
1150 E. Side			4.05	330.14	330.14	00 Teddy
T.P.	525	335.01	4.43	329.76		
1750 W. Side			5.13			329.86
2100 W. Side			4.94			330.08
2400 E. Side			4.69			330.32
2450 W. Side			4.93			330.27
2750 E. Side			3.51			330.50
3100 W. Side			3.54	331.47	330.47	1.00 Teddy
3400 E. Side			3.33	331.68	330.68	1.00 Teddy
T.P.	481	336.13	3.69	331.32		
3730 E. Side			5.27	330.86	330.79	0.07
3730 W. Side			4.55	331.58	330.58	1.00 Teddy
3760 W. Side			5.37	330.76	330.70	0.06
3760 E. Side			4.96	331.17	330.90	0.27
4100 W. Side			6.13	330.60	330.50	
T.P.	474	335.69	5.18	330.95		
4400 E. Side			5.97	331.72	330.72	0.100
4750 E. Side			4.24	331.45	330.49	0.96
4750 W. Side			5.73	329.96	330.25	

1.15

0.50

0.50

F 0.29

T
335.69

Elev. Sta. Elev. Grad.

C

F

53

5100 E			5.10	330.59	330.26	0.33
5100 W			5.66	330.03	330.00	0.03
T.P.	480	335.73	4.76	330.93		
5150 W			5.55	330.18	329.75	0.43
5150 E			4.50	331.53	330.03	1.50 Teddy
6100 W			5.78	329.95	329.84	0.11
6100 E			5.93	330.20	330.15	0.05
T.P.	1.67	331.62	5.78	329.95		
T.P.	380	329.35	6.07	325.55		
B.M.			5.33	329.02		

Ob. cuts on Alameda Adams to ElCajon

BMSE 8P Madison Alameda Adams	9.58	340.50	330.92
Cutler E		1.60	338.90
" W		2.57	
Madison		8.59	
N. W		8.75	
BMSE 8P Madison	9.77	329.38	324.61
BMSE 8P Meaders	4.96	323.83	318.87
TP		12.90	3
BM	4.02	322.89	318.87
TP	5.22	315.22	12.89 310.00

332.5 }
337.93 } 338.20 } 339.6

332 } 332

331 } 330.32

329.53 }
329.3 }
326.21 }
326.61 }
325.68 }
325.38 }

322.93 }
322.7 }
322.59 }
323.2 }
323.55 }
323.9 }
329.64 }

BM SWBP
175 Broadway

17th St. Improvements Broadway to

		Sewer Laterals		Elev Stake	Elev Grade	
# 1	12.16	75.71		63.55		
T.P.	4.70	86.99	0.42	75.29		
			9.88	77.11	#1	70.00
						C 7.11
T.P.	11.30	98.01	0.28	86.71	#2	66.00
			7.14	93.87	#3	85.00
			4.01	99.00	#4	79.00
			4.00	99.00	#5	78.00
						73.60
						#3 k
			6.70	91.51		84.70
						70.16
			11.18	86.83	#2 k	65.00
						64.29
Set BM	Top Wall on E Side 2.5 from Bridge	0.32	97.69			
T.P.	0.93	86.10	12.84	85.17		
			12.67	73.43	69.70	C 3.73
					55.96	17.47
T.P.	1.49	74.76	12.83	73.27		
check on starting 9M		11.23	63.53			

Ob. stakes

BM SWBP 172 1/2 Bdwy	12.09	75.59		63.55
T.P.	12.13	86.90	0.82	74.77
T.P.	11.61	95.85	2.56	84.34
T.P.	7.35	100.99	2.21	93.64

VV Line 17th

0100 S. Line 13dwy.

1750 Bk
87.00
8.85

96.45

Ob. cuts on 40th Meade to Monroe

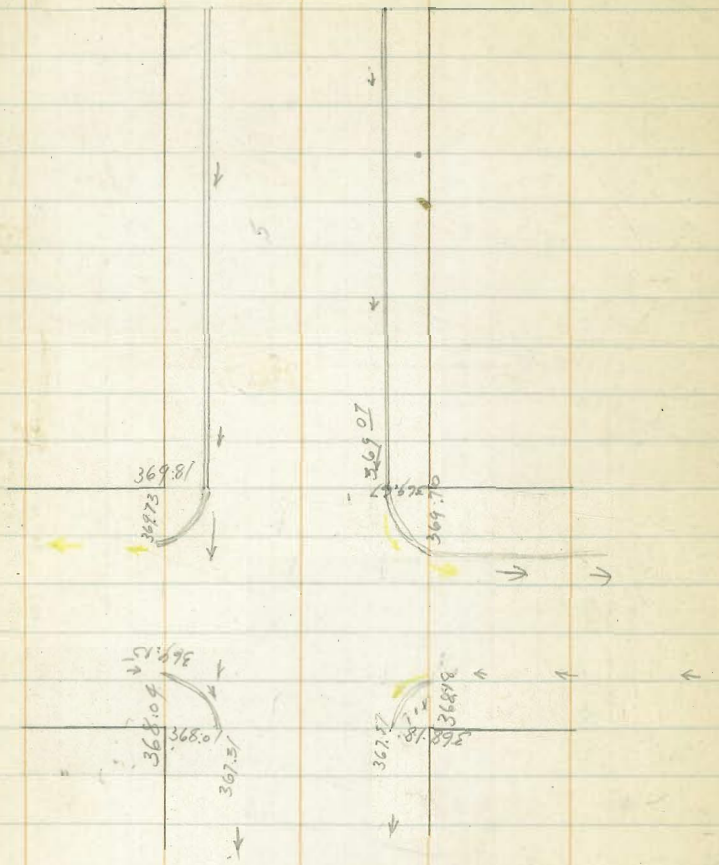
B.M. N.W. Meade = Charokoa

369.85

$$\begin{array}{r} 367.56 \\ 8 \\ \hline 367.54 \\ 369.31 \\ \hline 736.85 \end{array}$$

$$\begin{array}{r} 368.04 \\ 5 \\ \hline 367.570 \end{array}$$

$$\begin{array}{r} 367.56 \\ 8 \\ \hline 367.54 \\ 369.31 \\ \hline 736.85 \end{array}$$



Ob stake on Jefferson

	x	x	-	Elev
BM - center of Witherby	11.55	147.29		135.74
	1.14	141.99		146.85
	5.10	142.67	10.92	137.57
	8.27	148.27		190.00
BM	10.70	151.70		141.00
TP	15.1	141.11	12.10	139.60
TP	20.1	130.72	12.90	128.71
BM - BP copy of Wade				118.62

2750 S Line Witherby	14.00	0400 N Line Cuts	140.00
	138.00		137.00
	9.29		5.67

0400 N Line + Bend	142.00
	5.29

0400 BxK	2400 BxK	2457 S Line Witherby
143.50	199.50	135.00
3.79	2.77	7.67

3400 BxK & Line Cuts	0400 Shire Cuts	1400 BxK
143.00	142.00	143.50
9.29	6.27	4.77

2490 BxK	3400 N Line
148.50	727 141.00
5.77	7.27

N Line W	Shire W	0400 S Line Ben	2400 BxK
150.50	150.00	140.00	147.50
1.20	1.20	11.70	4.00

0490	2720 PVC	3700 N Line Wright	0400 S Line
148.00	122.73	149.50	149.00
3.70	8.00	2.20	2.70
	7.61		
	0.41		

0490 BxK	2720 PVC
147.0	121.73
9.70	9.00

Paving stakes Alley Block 63. City Hb
36th + Cherokee Wightman + Landis

B.M. NW 36 th Wightman	4.49	352.17		347.68
TP	4.59	351.38	538	346.79
TP	4.26	350.29	535	346.03
TP	3.80	345.64	8.45	341.84
TP	2.95	342.30	579	339.85
TP	12.55	348.32	6.53	335.77
- on B.M. NW 36 th + Landis			13.03	335.29
check on starting B.M.			0.62	347.70

W. Side

0100	0750	400
347.00	346.57	346.15
5.17	5.60	5.23
5.03	5.05	5.10
C0.14	C0.55	C0.13
1450	2100	
345.72	345.30	
5.65	4.99	
5.41	4.64	
C0.24	C0.35	
2140	2180	
344.80	344.30	
5.49	5.99	
4.85	5.25	
C0.64	C0.74	
3120 BIK	3160	
343.80	342.97	
6.49	7.32	
6.13	6.39	
C0.26	C0.93	
4100	4140	
342.14	341.30	
8.15	8.98	
4.57	5.50	
C1.58	C0.43	
4170	5160	
340.53	339.76	
5.11	5.88	
4.60	5.70	
C0.51	C0.18	
5150	6100	
338.98	337.60	
7.16	5.10	
5.64	4.42	
C1.50	C0.62	

E Side

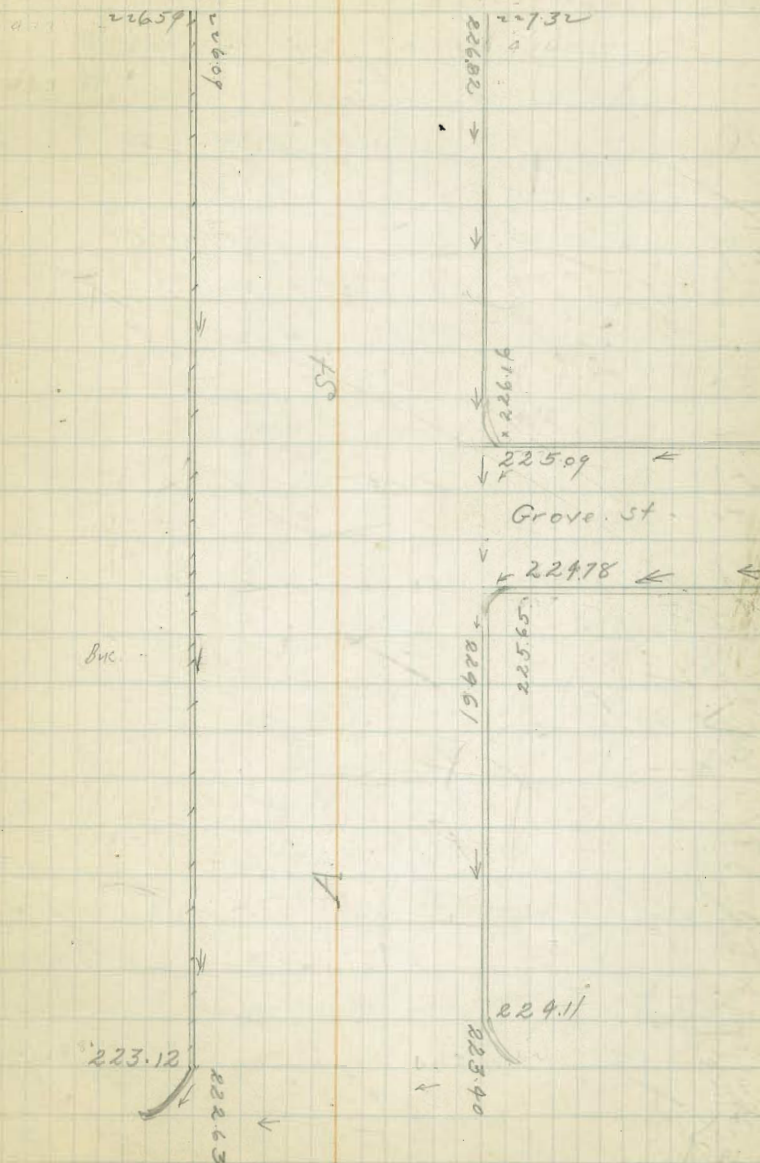
58

0700 S Line Wightman	0750
346.8	346.47
5.37	5.70
5.00	5.12
C0.37	C0.58
1400	1750
346.15	345.82
5.23	5.56
4.73	4.93
C0.50	0.63
2100	2180
345.50	345.00
5.88	5.29
4.88	4.29
C1.00	C1.00
2180	3120 BIK
344.50	344.00
5.79	6.29
5.25	6.20
C0.54	C0.09
4100	4140 BIK
342.34	341.50
7.32	8.78
6.39	7.78
C0.93	C1.00
4140	5150
341.30	338.68
8.98	6.96
5.50	5.37
C0.43	1.59
5160	6100
339.76	337.40
5.88	8.24
5.70	5.79
C0.18	C2.45
6100	
337.40	
8.24	
5.79	
C2.45	

B.M. B.P.
to Curve
S.L. No. 1A

	+	+	-	Elev
	6.26	230.92		229.66
TP	9.77	239.93	6.26	229.66

Fern Street



Curb Elevations on Jefferson St.

BM B.P. S
and 66 in 1st
Est. edillo. Jeff
W side

8.07	126.69		118.6~
T.P	11.84	137.24	129 125.40
T.P	9.52	145.62	114 136.10
Kadotcb		1238	133.24
BM S.E. B.P. Harrisville	1.18	152.76	151.58

W

0+00 PVC Not E.S. dillo	0+20	0+40	0+20
121.73	119.95	122.73	120.95
4.96	7.24	3.96	6.24
0+90	0+60	0+90	0+60
118.38	118.27	119.38	119.97
8.31	8.22	7.31	7.22

0+80 E.V.C.	1+00 N. Line	0+80	1+00 N. Line
119.98	121.60		
4.91	5.09	120.78 E.V.C.	
		5.91	
0+00 S. Line E.	0+80		
125.90	133.00		
1.29	7.24		

0+96 PVC #1	805 S. Line E.S. dillo	136 E.V.C.
134.5~	139.00	139.1
2.72	6.05	6.52

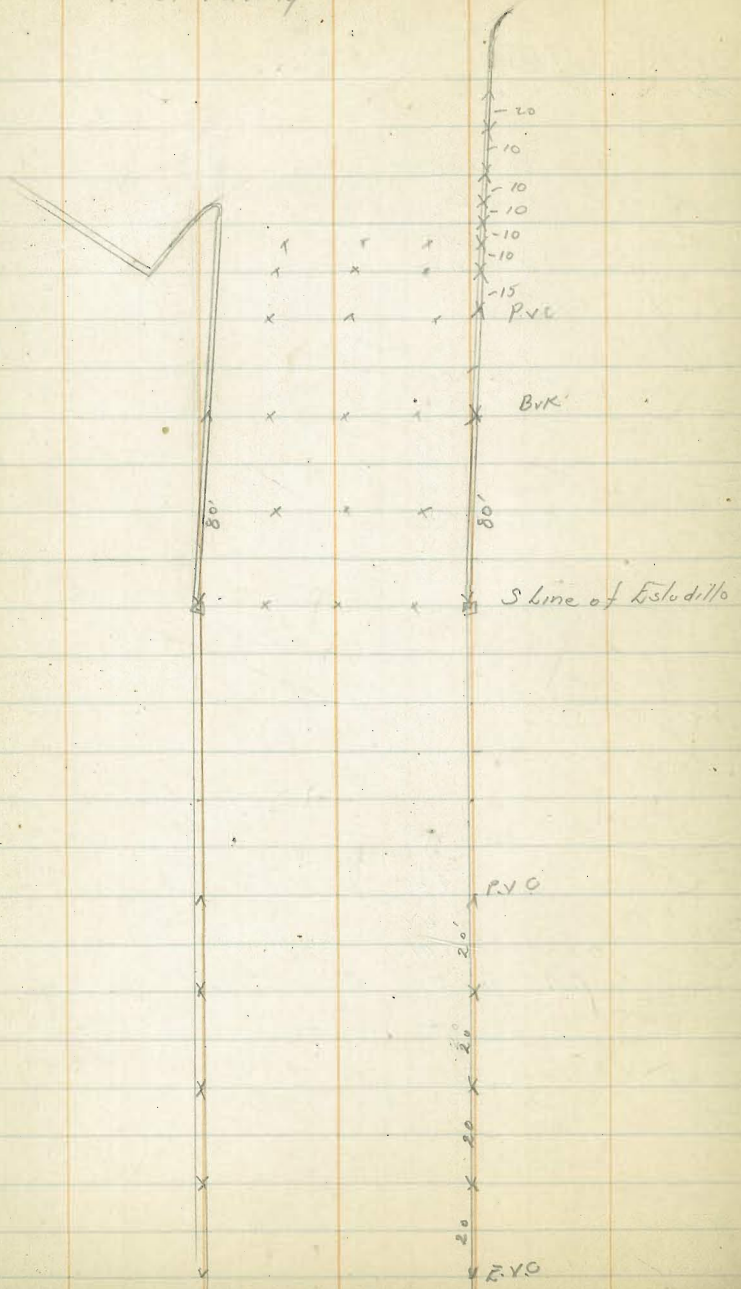
#2	#3	1+56 PVC	20.	1+76 E.V.C.
14.09	141.35	142.~	142.~	143.94
9.95	4.50	9.6~	3.4~	1.58

#4	#5	#6	#1 PC	I~
141.50	141.4	141.00	147.14	145.94
9.35	4.45	4.85	5.62	6.52

#7	#8 E.V.C.	#3	#4
140.50	138.50	144.94	143.94
5.85	0.85	7.82	8.82

133.24	0+40	E.V.C.
12.61	140.00	141.00
	10.56	11.76

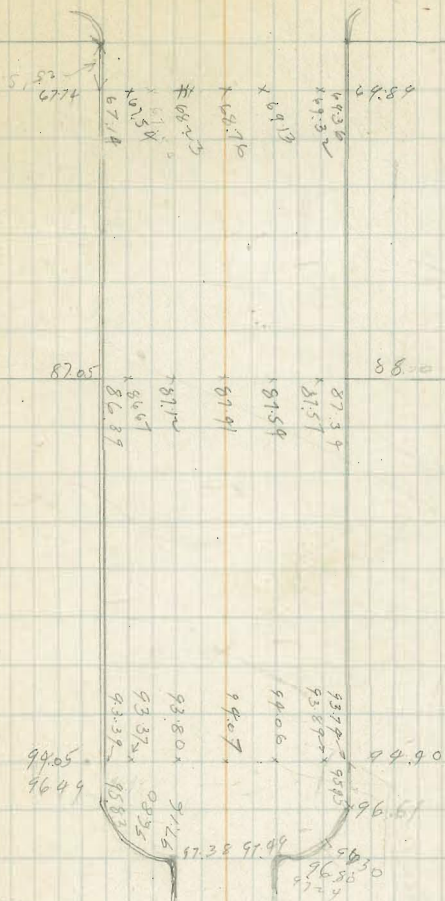
Construction Notes on Jefferson
Street Paving





Construction Notes on 17th St Paving
From Broadway to E

BMSWB				
Broadway to E	11.73	75.28		63.55
T.P	11.98	87.08	0.18	75.10
T.T	9.84	96.89	0.03	87.05



Construction Notes Newton Ave
Sewer

BMS. E. 79
Fire Hydrant
New York Head

0.58	71.26		70.68
TP 1.11	61.19	11.18	60.01
TP 0.99	49.03	12.65	48.54
TP 1.24	38.32	11.95	37.08
TP 0.56	25.19	13.09	25.23
TP 12.92	30.94	7.27	18.52
observation stop & set station bench		6.07	129.87

0+00	380%	0+80	1+075	Mn. Hole 64
4.23	0+90	58.10	57.15	9.79
10.03	59.71	13.07	14.11	6.00
5.11	11.55	8.17	9.10	10.30
C 4.89	6.93	+4.90	C 5.01	
0+50	1+00	1+50	2+00	
55.25	53.35	51.45	49.55	
16.01	17.91	19.81	21.71	
10.37	11.53	11.95	11.30	
C 5.64	C 6.33	C 8.36	C 10.41	
2+50	3+00	3+50	4+00	
48.30	93.55	38.80	34.05	
22.96	17.61	22.39	27.12	
11.18	1.20	4.71	9.55	
C 1.78	16.44	17.68	17.59	
2+00	2+50	2+84.05	Drop Mn. Hole	
29.30	24.55	21.30	19.92	
19.73	24.43	17.04	18.90	
4.93	11.45	5.31	5.31	
C 14.80	C 12.53	C 11.71	C 13.09	
Drop Mn. Hole 19.92				
0+30	18.50	0+60	Bent #1	
19.82	8.60	19.71	19.69 Elev. 17.2	Footings
19.82	C 9.90	13.06	6.10	C 5.23
Bent #2		C 5.51	3.56	# 4
19.06 Elev. 17.00		19.63	16.00	19.60
6.18	8.74	6.16	9.79	6.19
5.31	5.31	5.91	5.91	9.79
C 0.82	C 3.48	C 0.75	C 4.38	C 1.40
#5	#6	#7	#8	
19.57	16.00	19.54	15.00	19.57
6.20	9.79	6.25	10.70	15.00
5.63	5.63	6.50	6.50	10.19
C 0.59	C 4.16	10.65	C 9.29	5.34
				5.34
				C 0.86
				5.34

Steps 8

Paving Stakes Alley Block 26
University Heights

S.W. Co. Mission
City Engineers

B.P.	5.89	359.13		353.24	
TP	3.94	358.56	4.51	354.62	
TP	4.99	358.21	4.84	353.72	
TP	4.79	357.69	5.31	352.90	
TP	5.34	357.91	5.12	352.57	
check on B.M. S.W. Madison + North		6.39	351.52	351.90	"

5322
539
359.13

E

24

W

60

0.43540

*100 S Line of Adams	0100	0150
354.79	354.54	354.31
4.34	4.59	4.80
4.50	4.58	4.44
F0.16	4.81	0.36
	F0.23	

1100	1150	1100	1150
354.30	354.06	354.10	353.88
4.82	4.50	4.96	4.67
4.51	4.18	4.83	5.99
0.31	0.32	F0.37	F1.32

2100	2150	2100	2150
353.81	353.57	353.67	353.96
4.74	4.64	4.54	4.75
4.83	2.79	5.64	5.18
F0.09	01.85	F1.10	F0.43

3100	3150	3100	3150
353.33	353.08	353.44	353.02
4.26	4.60	4.97	4.67
4.93	4.51	4.96	4.57
F0.57	00.09	0.06	00.70

4100	4150	4100	4150
352.84	352.59	352.82	352.60
4.85	5.09	4.88	5.10
4.85	4.35	4.56	4.50
00	00.74	00.32	00.60

4165 B.A.L. Madison

352.50	4162.18
5.33	352.50

5.33

5/29/28

Paving Stakes Alley Blocks D +
16. Estadio & Caprons. Between Washinton
& University 9:30 & 10:45

	6.95	288.97		282.02
TP	5.31	289.26	5.00	283.95
TP	5.59	290.52	4.33	289.93

N

S

67

0700 E Line 0710	15	0700 E Line 0715	15
283.92	0740	283.86	0740
5.34	284.05	5.40	283.99
5.29	5.21	5.90	5.27
	3.21		4.27
	C2.00		C1.00

0780	1720	0750	1720 Bx
284.18	284.30	284.13	284.26
5.18	5.06	5.14	5.00
5.58	5.32	4.14	5.14
F 0.40	F 0.26	C 1.00	F 0.14

1740	1780	1740	1780
284.40	284.50	284.34	284.47
4.86	6.02	4.92	6.05
5.06	6.09	4.65	6.16
F 0.20	F 0.07	C 0.27	F 0.11

2720 Bx	2160	2720 Bx	2140
284.60	284.06	284.60	284.05
5.92	6.46	5.92	6.27
4.03	6.47	5.26	6.50
C 1.89	00	C 0.66	0.00

Sewer Stakes Catalog BIVG Between
 Point Loma Ave Dead End and Mn Hole #19 &
 Coronado

1302	219.40		201.38
TP	9.34	220.24	3.50 210.90
Elev 0000 D.E	212.00	045.4	170.8
	82.4	208.7	205.44
	277	11.52	14.80
	65.47	6.23	9.73
		65.24	65.07
1762	2208	Mn Hole #20	0440
26216	209.04	198.88	198.36
18.08	10.3		108.4
12.5	3.00		40.1
65.56	67.32		66.83
0490	1790	1790	2740 Mn Hole #26
197.71	197.06	196.91	195.76
11.99	12.14	12.79	13.44
4.67	5.67	6.95	7.56
66.82	66.47	65.84	65.88
0440	0490	1790	1790
195.36	194.86	194.36	193.86
9.17	9.67	10.17	10.67
3.54	4.34	4.96	5.25
65.63	65.33	65.21	65.42
2790 Mn Hole #25	0440	0490	1790
193.36	192.96	192.46	191.96
11.17	11.57	12.07	12.57
5.89	6.61	6.75	6.29
65.28	65.56	65.32	66.28
1790	2740	Mn Hole #29	0440
191.46	190.96		190.50
13.07	13.57		10.98
6.97	7.34		7.24
66.10	66.23		66.27
0496	1746		
190.00	189.50		
10.98	11.48		
5.07	5.40		
65.91	66.08		
1796	Drop Mn Hole #22		
189.00	185.97		
11.98	15.01		
5.17	5.10		
66.79	69.82		

Mn Hole #23 Forchard 200 68

22029 H2			
12.5			
207.7	185.97	0490	0490
1.48		185.57	185.07
200.20 H2		12.80	12.80
7.56		4.17	5.13
201.64		68.13	67.67
2.89		1790	Mn Hole #22 = 00
204.53 H2	1740	184.07	186.55
7.33		13.80	11.32
197.20 TP		7.23	7.23
3.78		66.57	64.09
200.98			
3.20			
197.78 TP	0440	0490	1790
0.09		181.10	179.95
197.87 H2	182.75	16.77	18.92
12.41	15.12	10.77	10.61
185.26 TP	8.70	66.00	65.51
0.18	66.42		
185.44 H2	62.11		
1790 Mn Hole #21	0440	0490	
177.80	176.20	174.20	
7.64	9.24	11.24	
1.21	3.21	5.00	
66.43	66.03	66.20	
1740	1790 Mn Hole #20	0490	0490
172.20	170.20	169.29	168.64
13.24	15.24	16.20	6.94
7.72	10.18	11.50	2.90
65.52	65.06	64.70	64.09
1740	1790 Mn Hole #19 Coronado		
166.84	165.64		
8.14	9.34		
40.2	55.1		
6.12	3.83		
185.44 H2			
11.47			
173.97 TP			
1.01			
174.98			
7.55			
167.43			

Sewer Stakes. Catalina Blvd. Point
Loma. Between Mn Hole #19 & Coronado to
Mn Hole # 11. N of Niagara St.

Mn Hole # 19 = 00	0750	1100	1750
165.64	167.92	163.24	162.04
934		7.00	8.20
551	580	300	4.35
C 3.83	04.02	C 9.00	C 3.85
			1750
1790 Mn Hole #19 = 00	0750	1100	1750
161.03	160.13	159.18	158.23
9.16	10.11	11.06	12.01
5.11	5.83	6.26	6.62
C 9.25	C 4.28	C 9.80	C 5.39
			1750
1790 Mn Hole #17 & Santa Cruz	0750	1100	1750
157.97	156.52	155.57	154.62
12.77	13.72	14.67	15.62
7.36	8.20	8.43	9.39
C 5.41	C 5.52	C 6.24	C 6.23
			1750
1790 Mn Hole #16 Santa Cruz	0750	1100	1750
153.84	153.27	152.68	152.09
16.38	10.60	11.19	11.78
9.88	4.24	4.80	5.34
C 6.50	C 6.34	C 6.39	C 6.44
			1750
2700	2720 Mn Hole #15 = 00	0750	1100
151.50	151.26	150.67	150.08
12.37	12.61	11.73	12.32
5.69	5.96	4.40	5.21
C 6.68	C 6.65	C 6.83	C 7.05
			1750
1750	1770 Mn Hole #14	0750	1100
149.49	148.64	148.04	147.44
10.91	13.76	14.36	14.96
5.46	6.47	7.02	7.64
C 7.45	C 7.29	C 7.34	C 7.32
			1750
1791 Mn Hole #13 N. of Niagara	0750	1100	1750
146.94	146.34	145.74	145.14
15.46	16.06	16.66	17.26
7.93	9.37	10.98	11.98
C 7.53	C 6.69	C 6.18	C 5.28
			1750
1791 Mn Hole #12	0750	1100	1750
144.64	143.17	141.70	140.23
17.76	9.22	10.69	12.16
12.81	9.29	5.72	6.88
C 4.85	C 4.93	C 4.97	C 5.28

167.43 BM
2.81 +
170.24
9.88 -
160.36 TP
3.51 +
163.87
161 -
162.26 JM
0.12 +
162.40 MZ
12.81 -
149.59 TP
2.80 +
152.39 -
6.91
145.48

ch. Rod
BM. NYW
Niagara

1791.20 Mn Hole #11
N. of Niagara St.
139.00
13.38
8.18
65.20

BM 30.67 SW PTH
4.87 SD. AN. Hwy
35.54
11.80 -
23.74
2.82 +
26.56 MZ
3.31 -
23.25 = 23.26

BM SW PTH in file
7/19/25 Niagara
26.56 MZ
5.37
21.19

Set BM SW 7/21/25
Harcney.

0140 26.56
21.63
4.93 -

0750 26.56
21.67
4.89 -

Grades for the Improvement of
25th St. Broadway to C.

BM SW BP
30 44 C

TP
TP
TP
T.P

Set BM 9 nails
in pole & check
check on
BM SW BP

	+	NZ	-	Elev
	3.52	198.94		194.96
TP	0.87	193.28	6.93	192.91
TP	0.33	181.19	12.47	180.81
TP	11.87	190.22	2.79	178.35
T.P	7.79	196.64	1.37	188.55
			5.88	190.76
			12.90	183.74

1944.67

1811.6	1809.9	0.5	0.3	993	179.31	179.98
1850.8	1846.0	4.61	4.30	197	181.33	181.0
1851.4	1844.6	4.47	4.2	380	183.15	183.30
1864.6	1859.9	5.80	5.57	513	184.48	184.74
1874.0	1867.3	6.98	6.61	661	185.61	185.60

190.0	1893.0	9.39	9.25	889	182.31	182.98
190.9	1891.1	9.61	9.50	916	183.61	183.98
1893.2	1890.7	9.03	8.67	182.08	183.74	
1884.4	1877.7	7.78	7.00	720	184.89	187.26
1865.6	1858.6	5.94	5.76	638	174.78	185.51

183.64

185.55

E

West

70

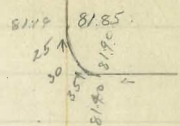
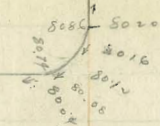
0700	0742 EVC	0700	0742.9 P.V.C
175.00	180.00	176.00	181.10
6.19	1.14	5.19	9.12
6.05	5.32	5.05	11
00.09	F.418	0.009	0.009
		0762.9	0752.9 C.S.O
0762.9	0782.4	1702.2	183.20
182.10	183.90	185.20	13.34
8.12	6.32	5.0	6.4
11.9	8.75	4.80	C6.9
F.3	F.2.4	C0.20	1402.9
			186.90
			187.40
1422.9 EVC	1462.9	2402.9 P.V.C	10.24
186.30	187.65	189.00	6.0
3.92	9.00	7.60	1462.9
9.35	8.30	6.30	188.70
F0.9	C0.70	C1.30	7.94
			3.1
			C9.8
2422.9	2442.4	2462.40	2422.9
189.30	188.80	187.30	190.20
7.30	7.84	9.34	6.44
5.40	5.70	5.8	3.3
C1.40	C1.10	C3.5	C3.1
			2462.9
			2452.9 EVC
2452.9 EVC	3402.9 N Line Bdry	188.50	186.60
185.40	183.00	8.14	10.00
11.24	9.3	4.3	4.70
6.25	13.64	C3.8	C5.30
C5.00	13.45	3402.9 N Line Bdry	
	C0.19		
		184.00	
		12.64	
		12.97	
		C0.17	

530

101
3/7

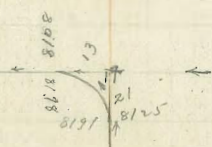
410

Meade Ave
Paving Boundary
to Utah
7/8/19

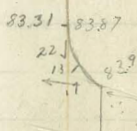
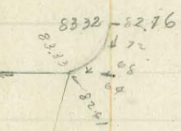


Illinois

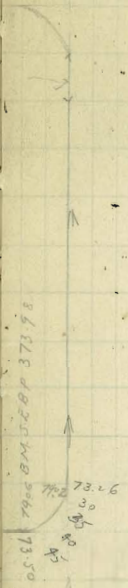
St



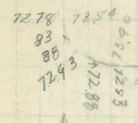
Meade



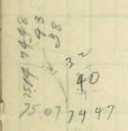
El Cajon Blvd



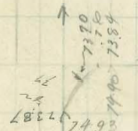
Street



Meade Ave



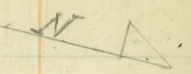
OHIO



8272 8190

8810 8165

Utah



368.17 367.96 367.54 367.90



Ave

367.05 366.40

366.98 366.93

Kansas

Street

366.73 365.97

365.98 366.80



Meads

365.69 365.19

365.39 366.02

30th

st

7/18/28 Paving Grades for Alley Block 19
Tervalta Between Polk and Orange

B.M. N.V.V. B.P. 93 Orange	4.95	365.96		361.01
TP	5.93	368.56	3.33	362.63
TP	5.32	367.97	6.47	362.09
TP	5.79	367.36	5.90	361.57
TP	9.17	366.36	5.17	362.19
		366.70 + 26	9.95	

366.36
360.96
5.46

Walk on East 5.46

5.43

E Side Slope of 0.389%			W Side Slope of 0.389%		
0.70	0.20	0.70	0.100	0.20	0.70
360.70	361.10	361.29	360.70	361.10	361.29
5.26	4.86	7.27	5.26	7.96	7.27
4.48	3.33	6.87	4.81	7.17	7.26
0.78	0.53	0.60	0.45	0.29	0.00
1.70	1.70	2.70	1.70	1.70	2.70
361.98	361.67	361.56	361.98	361.67	361.86
7.08	5.80	5.61	7.08	6.89	6.70
6.41	4.80	4.91	7.02	6.57	6.47
0.67	0.100 Teddy	0.00	0.006	0.32	0.23

2150	2180	3130	2150	2180	3130
361.97	362.10	361.87	361.97	362.10	361.90
5.99	5.37	5.99	5.99	5.37	5.46
4.74	4.37	5.68	5.1	4.37	5.90
0.75	0.00	0.19	0.28	0.00	0.99

3180	4130	4175	3180	4130	4175
361.69	361.91	361.21	361.71	361.5	361.84
5.76	5.95	6.15	5.65	5.84	6.02
5.11	4.95	4.15	4.65	5.17	5.17
0.61	0.100	0.00	0.100 Teddy	0.07	0.05

5130	5183.40	5130	5183.40
360.95	360.70	361.11	360.90
6.40	5.66	6.25	5.96
5.52	5.47	4.25	5.08
0.88	0.19	0.00	0.38

Notes Paving States Alley Block 22
 Normal H/S Between 36th + Cherokee, Adams
 + My View Drive

BM 5 E.B.P.
 Cherokee + Adams

7.70	393.98		385.78
5.12	396.13	2.97	391.01
		6.08	390.05

TP

TP

N. East West Alleys 74

0+00 W. Line of Cherokee

385.80		
7.65		
7.90		
Co.18		
0+20	0+40	0+60
386.90	387.70	388.20
6.58	5.78	5.28
9.53	9.54	9.18
Co.05	Co.22	Co.10

0+00 W. Line of Cherokee

385.80	0+20
7.68	387.00
6.01	6.98
Co.67	5.05
	Co.43

0+80 E.V.C	1+25	
388.60	389.10	
4.88	4.38	
3.97	3.43	
Co.95	Co.95	

0+40	0+60	0+80 E.V.C
387.90	388.50	388.90
5.58	4.98	4.58
9.81	3.98	4.31
Co.77	Co.100 E.V.C	Co.27

1+25	
389.10	
4.38	
3.43	
Co.95	

1+25	1+40
389.41	389.58
4.07	3.90
3.65	3.23
Co.42	Co.67

1+40	1+85
389.30	389.80
4.18	6.33
3.95	5.97
0.23	0.36

1+85 P.V.C	2+05
390.1	390.20
3.38	3.28
2.49	2.20
Co.89	1.08

2+05	2+25	2+95
389.90	389.70	389.20
6.23	6.43	6.93
5.89	5.99	5.75
Co.34	Co.44	Co.18

2+25	2+95
389.90	389.30
3.58	4.18
2.23	2.37
Co.25	Co.81

2+25	
389.70	
6.43	
5.99	
Co.44	

2+95	
389.20	
6.93	
5.75	
Co.18	

2+65	
388.40	
7.73	
6.88	
Co.85	

2+65 E. Line of 36th	
388.40	
5.08	
4.27	
Co.81	

2+95	
389.20	
6.93	
5.75	
Co.18	

2+95	
389.30	
4.18	
2.37	
Co.81	

2+65	
388.40	
7.73	
6.88	
Co.85	

2+65 E. Line of 36th	
388.40	
5.08	
4.27	
Co.81	

2+95	
389.20	
6.93	
5.75	
Co.18	

2+95	
389.30	
4.18	
2.37	
Co.81	

2+65	
388.40	
7.73	
6.88	
Co.85	

2+65 E. Line of 36th	
388.40	
5.08	
4.27	
Co.81	

2+95	
389.20	
6.93	
5.75	
Co.18	

2+95	
389.30	
4.18	
2.37	
Co.81	

2+65	
388.40	
7.73	
6.88	
Co.85	

2+65 E. Line of 36th	
388.40	
5.08	
4.27	
Co.81	

2+95	
389.20	
6.93	
5.75	
Co.18	

2+95	
389.30	
4.18	
2.37	
Co.81	

2+65	
388.40	
7.73	
6.88	
Co.85	

2+65 E. Line of 36th	
388.40	
5.08	
4.27	
Co.81	

7/18/18

North and South Alley

E. 0.33% Grade to
 Break
 0700 = N. Line of East West Alley
 389.10
 0750
388.93
 6.61
 5.97
 01.14

W. 0.388%
 To B. - 6K
 0700
 389.30
 6.25

1700

388.77

6.78
 5.18
 01.60

1752

388.60

6.95
 5.96
 01.99

1780 BK 0750

388.50

7.05
 5.69
 01.41
 02.00

1700

388.92

6.63
 4.67
 02.00

1752

388.73

6.82
 5.43
 01.39

1780 BK

2100

2100

388.30

7.25
 6.10
 01.15

2120

388.00

7.55
 6.81
 00.74

388.60

6.95
 5.61
 01.34

388.90

7.15
 5.55
 01.60

2120

388.10

7.45
 5.71
 01.74

2155 E

387.90

8.15
 6.78
 01.37

2161 W

387.30

8.25
 7.20
 01.05

End on West

2155 E London East

387.10

6.09
 5.85
 00.19

29005 - Curved N. & S. Alley

5.57
 395.55
 7.20
387.35
 4.76
 393.14
 5.57 - Roll in Ward
387.27

75

Paving Grades Mechanic St N
of E/Cajon

BM SWBP
2/Cajon 12329

4.14 378.39 374.25

0700	E	4.85	5.29	
0700	W	5.18	5.63	
0780	E	3.67		
0780	W	3.96		
1100	W	3.71		
TP	4.92	3.71	374.28	
1400	E	4.61		
1120	E	4.50		
1420	W	4.80		
	E	3.75		
	W	3.75		

3180
- 6.66

Congress St
Javier Lopez
N 88 P 8M
Juan St
15.044

29.18
4.14
23.04
7.0 RT SD 5.4
1.16
2.00
2.31

76
4.72
+ 5.95
10.67
1200
9.47 TP
11.78
21.25
2.03
19.19
9.29
29.18
3.79
20.39 TP
6.55

330
40
21320

Seton SW
7th Congress

2150
13
21.63

33
2150
165
21.665

269.41
21.68
5.28

26.94
5.06
21.88

Paving Stakes, E 1/4 Alley Block 63
 Resubdivision of Block 39156 Normal Heights

BMSWB
 Adams 189

738	396.63		389.25
TP	580	399.07	336
TP	513	399.38	482
			394.25

S. Side

North Side 77

0100	0120 ⁰⁹⁰	0140 ⁰⁸⁰	0100	0120	0140
38990	39080	39160	38990	39080	39160
675	585	505	675	585	505
680	452	402	553	417	359
0.05 low	C1.33	C1.03 ^{Brk}	0.88 low	C1.68	C1.51
0160	0180 ^{EXC}	14335	0160	0180	14335
39210	39290	39290	39210	39250	39316
697	667	617	455	657	591
632	639	503	336	579	506
Co.25	Co.28	C1.14 ^{Brk}	C1.19	Co.78	Co.85 ^{Brk}
1498 ^{50 Brk}	1760 ^{80 Brk}	14985	1160 ^{Brk}	1180	1180
39310	39318	39320	39335	39350	39360
597	589	577	572	557	547
497	489	508	372	500	502
C1.00 Teddy	C1.00	Co.69	Co.007-dolly	Co.57	Co.25

2100 ^{Brk}	2190	2180 ²⁰	2100	2140	2180 ²⁰
39320	3930	39290	39350	39330	3920
587	635	698	588	608	738
482	545	701	546	602	746
C1.05	Co.90	003	Co.42	Co.06	0.08

Paving stakes Alley Between BIK
 6. Tervalto and Block 18 Boyers
 35th + Swift, P. IK + Orange

BMNWBP	+	H.I.	-	Elev
Orange	355			
o 355	365	381.67		378.12
T.P.	433	378.63	7.37	374.30
T.P.	449	376.05	7.07	371.56

	0.491		0.471	78.
	East		West	
SLINE 9499	IK			
0700	0750	1700	0700	0750
376.70	376.01	375.52	376.50	375.83
4.37	5.66	6.15	5.17	5.84
4.84	4.66	6.33	5.09	5.84
Co. 13	C1.00	C0.18	00.00	00.00
1450	2100	2150	1450	2100
375.03	374.54	374.09	374.89	374.4~
6.64	7.13	4.59	6.78	7.25
6.13	6.99	3.97	6.85	7.37
Co. 51	00.14	0.62	00.07	00.07
3700	3750	4100	3700	3750
373.55	373.06	372.57	373.48	372.01
5.08	5.57	6.06	5.15	5.62
4.72	5.14	4.98	5.19	5.99
Co. 36	Co. 43	C1.08	00.03	Co. 13
4750	5100	5120	4750	5100
372.08	371.59	371.40	372.07	371.60
6.55	7.09	7.24	6.56	7.03
6.55	6.83	6.24	6.33	6.79
Co. 0.00	00.21	C1.00	00.23	Co. 24
5740	5760	5790	5740	5760
371.10	370.40	371.10	370.40	370.40
4.95	5.65	7.54	5.65	5.65
4.36	4.83	7.07	4.79	4.79
Co. 59	Co. 82	Co. 47	Co. 86	Co. 86

54 N Line of P. IK

6/10/12

Grades for Sewer Center St. La Jolla

From ManHok & 0'E of & Fay to & Alley West

BM SW
Center Fay

2.50

Flow Line

7.28

Fay St. ManHok

15.24

Flow Alley

3.82640

Flow Mainline

15.90

0+00

140.00

0+30

138.85

0+60

137.70

0+75

137.13

1+00

136.17

1+25

135.21

1+50

134.25

1+75

133.26

2+08

132.03

79

0+00

140

7.28

7.28

0

0+30

138.85

8.93

2.89

65.57

0+60

137.70

9.58

3.52

66.06

0+75

137.13

10.15

4.90

65.75

1+00

136.17

11.11

5.98

65.63

1+25

135.21

12.07

6.75

65.32

1+50

134.25

13.03

8.01

65.02

1+75

133.26

13.99

9.00

69.99

2+08 ManHok

132.03

15.25

15.25 Flow Line

Seven Sakes North of Madison & Co.
 Block on easement from Mt. Hole & of Madison
 to 213 North
 + X
 1258 11258

Elev. Sake Elev. Grade
 100.00

0700				100.00
0725		2.56	109.02	98.79
0750		2.37	110.21	98.58
0775		2.71	109.87	98.36
0800		2.98	110.10	98.15
T.P.	4.97	114.57	2.98	109.60
1125		6.03	108.56	97.94
1150		6.01	108.56	97.73
1175		5.78	108.79	97.52
1200		5.53	109.04	97.30
1213		5.44	109.13	97.19

0700				100
0725		3.56	109.02	100.21
0750		2.37	110.21	100.4
0775		2.71	109.87	100.63
0800		2.48	110.10	100.84
T.P.	4.97	114.57	2.98	109.60
1125		6.03	108.56	101.05
1150		6.01	108.56	101.27
1175		5.78	108.79	101.48
1200		5.53	109.04	101.69
1213		5.44	109.13	101.80

C assumed

10.23
11.63
11.51
11.95
10.60
10.83
11.27
11.74
11.94

Adams Av

Dead End



o Mt. Hole & of Madison

Line of Bench levels on 49th St
Between Imperial & Woolman

B.M. Concrete
base of fence
N 49th
Woolman
Pass by B.M.
Spring Pole
S.W. 49th

	+	-	Elev
	11.85	137.22	125.37
		11.92	125.30
T.P.	12.41	149.59	0.04 137.18
T.P.	5.78	152.97	2.40 147.19
B.M. ^{2nd} tie out Hub. at station 49 th		5.26	147.71
T.P.	2.37	151.86	3.48 149.99
B.M. N.W. Telephone at Imperial - 49 th		3.55	148.31

Grade stakes for drain N end of 49th
Elev Grade

E end	151.86	5.29	146.57	146.00
℄		6.15	146.71	145.00
W end		7.35		144.00

910	39.12	1192	125.37
	4.81	1185	118.5
59.285		61°-18'-00"	137.22
		59°-05'-40"	0.04
7/380	2.405	3.89 = 46	59.05 40 137.18
35			8°-12'-20"
			12.41
			149.59
			2.40
			152.97
			147.19
			5.78
			149.45
			152.97
			2.37
			5.26
			147.71
			3.48
			149.99
			3.55
			148.31

IMPROVED TABLES

AND

INFORMATION

151.86
7.35
144.51

195.6
197.815
9.79
148.902
39.12
39.124

Distance of curve with a given L and found
divided by degree of curve
To find tangent and External distance of
any other curve divide degree of curve and
add correction found in table of corrections

Given tangent (or external) (or external) N59°-05'-40" W
divided by (or tangent) 42
591.8
N 61°-18'-W

the curve is very nearly the square of the tangent
distance from a point on the tangent to
the center of the curve

300
Honey
Congress

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope $1\frac{1}{2}$ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

TABLE No. 9.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections.

Degree of curve with a given I may be found by dividing tangent, (or external), opposite I by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

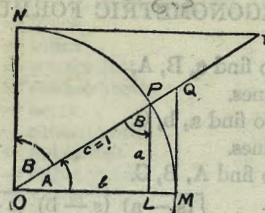


TABLE II

TRIGONOMETRIC FORMULÆ

$$\angle A = \angle MOP \quad \angle B = \angle PON = \angle OPL$$

$$R = OB = c = 1$$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \frac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}} \quad \cos \frac{1}{2} A = \sqrt{\frac{1 + \cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos A \quad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Lines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + b^2 - 2ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$$

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

Given a, b, C; to find c, B, A.

Use Law of Lines.

Given A, B, c; to find a, b, C.

Use Law of Lines.

Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)(s-b)(s-c)}{s}} = r$$

$$\cos \frac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \frac{1}{2} A = \frac{r}{s-a}$$

$$\tan \frac{1}{2} B = \frac{r}{s-b}$$

$$\tan \frac{1}{2} C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

PRISMOIDAL FORMULA.

$$\text{Vol.} = \frac{h}{6} (B+b+4M)$$

h = altitude; b, B = bases; M = midsection

TABLE III
INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219
$\frac{1}{8}$	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271
$\frac{3}{16}$	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323
$\frac{1}{4}$	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375
$\frac{5}{16}$	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427
$\frac{3}{8}$	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479
$\frac{7}{16}$	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531
$\frac{1}{2}$	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583
$\frac{9}{16}$	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635
$\frac{5}{8}$	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688
$\frac{11}{16}$	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740
$\frac{3}{4}$	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792
$\frac{7}{8}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844
$\frac{15}{16}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896
$\frac{1}{1}$	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948
	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.000
	0	1	2	3	4	5	6	7	8	9	10	11

TABLE IV
USEFUL RELATIONS.

Lineal feet	×.00019	= miles
Lineal yards	×.0006	= miles
Square inches	×.007	= square feet
Square feet	×.111	= square yards
Square yards	×.0002067	= acres
Acres	×4840	= square yards
Cubic inches	×.00058	= cubic feet
Cubic feet	×.03704	= cubic yards
Links	×.22	= yards
Links	×.66	= feet
Feet	×1.5	= links

$$360^\circ = 21600' = 1296000''$$

$$\text{Radius} = \text{arc of } 57.2957790^\circ$$

$$\text{Arc of } 1^\circ (\text{radius} = 1) = .017453292$$

$$\text{Arc of } 1' (\text{radius} = 1) = .000290888$$

$$\text{Arc of } 1'' (\text{radius} = 1) = .000004848$$

$$\pi = 3.141592654 \quad \sqrt{\frac{1}{4}} = 0.564190$$

$$\frac{\pi}{4} = 0.785398163 \quad \sqrt[3]{\frac{6}{\pi}} = 1.240700982$$

$$\frac{\pi}{6} = 0.523598776 \quad \pi^2 = 9.869604401$$

$$\sqrt{\frac{4}{\pi}} = 1.128379167 \quad \frac{1}{\pi^2} = 0.101321184$$

$$\frac{\pi}{6} = 0.523598776 \quad \sqrt{\pi} = 1.772453851$$

$$\frac{4\pi}{3} = 4.188790205 \quad \frac{1}{\pi} = 0.3183099$$

Curvature of Earth's surface = about 0.7 feet in 1 mile

Curvature in feet = 0.667 (Dist. in miles)²

Difference between arc and chord length, 0.05 feet in 11½ miles

$$\text{Probable error of a single observation} = 0.6754 \sqrt{\frac{\sum v^2}{n-1}}$$

Error in chaining of 0.01 feet in 100 feet:

Due to—

1. Length of tape error of 0.01 feet
2. Alignment. One end 1.4 feet out of line
3. Sag of tape at centre of 0.61 feet.
4. Temperature difference of 15°
5. Difference of pull of 15 lbs.

STADIA REDUCTION FORMULAE.

$$\text{Horizontal Distance} = R - R \sin^2 a + C \cos a$$

$$\text{Vertical Distance} = R \frac{1}{2} \sin 2a + C \sin a$$

$$R = \text{Reading} \times \frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$$

C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.

a = angle of elevation for mid Reading

488
42447

6/96
6
36

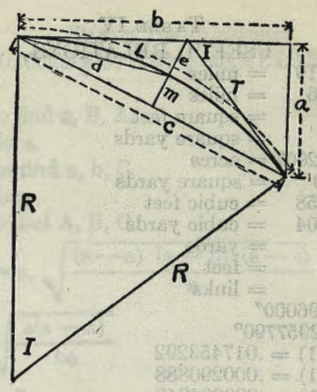


TABLE V
CURVE FORMULAE FOR SIMPLE CURVES
COMPILED BY J. CALVIN LOCKE, C.E.

- (1) $c = \sqrt{2Ra}$ (2) $c = \sqrt{a^2 + b^2}$
 (3) $c = \sqrt{2R(R - \sqrt{(R+b)(R-b)})} = \sqrt{2R(R - \sqrt{R^2 - b^2})}$
 (4) $c = 2\sqrt{m(2R - m)}$ (6) $c = 2T \cos \frac{1}{2} I$
 (5) $c = 2R \sin \frac{1}{2} I$ (7) $e = R \operatorname{exsec} \frac{1}{2} I$
 (8) $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$ (9) $e = T \tan \frac{1}{4} I$
 (10) $b = \sqrt{a(2R - a)}$
 (11) $b = \sqrt{\left(c + \frac{c^2}{2R}\right)\left(c - \frac{c^2}{2R}\right)} = \sqrt{c^2 - \frac{c^4}{4R^2}}$
 (12) $b = R \sin I$ (13) $b = a \cot \frac{1}{2} I$
 (14) $R = \frac{a^2 + b^2}{2a} = \frac{c^2}{2a}$ (15) $R = \frac{d^2}{2m} = \frac{c^2 + 4m^2}{8m}$
 (16) $d = \sqrt{R(2R - \sqrt{(2R+c)(2R-c)})} = \sqrt{R(2R - \sqrt{4R^2 - c^2})}$
 (17) $d = \sqrt{2Rm}$ (18) $d = 2R \sin \frac{1}{4} I$ (19) $m = \frac{d^2}{2R}$
 (20) $m = R \mp \sqrt{\left(R + \frac{c}{2}\right)\left(R - \frac{c}{2}\right)} = R \mp \sqrt{R^2 - \frac{c^2}{4}}$
 (21) $m = R \operatorname{vers} \frac{1}{2} I$ (22) $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$ (23) $m = \frac{1}{2} c \tan \frac{1}{4} I$
 (24) $a = \frac{c^2}{2R}$ (25) $a = R - \sqrt{(R+b)(R-b)} = R - \sqrt{R^2 - b^2}$
 (26) $a = 2R(\sin^2 \frac{1}{2} I)^2$ (27) $a = R \operatorname{vers} I$ (28) $a = R \sin I \tan \frac{1}{2} I$
 (29) $a = b \tan \frac{1}{2} I$ (30) $a = T \sin I$ (31) $T = R \tan \frac{1}{2} I$
 (32) $I = \frac{L}{R} \times 57.295780$ (33) $R = \frac{L}{I} \times 57.295780$
 (34) $L = IR \times 0.01745329$ (35) $L = \frac{8d - c}{3}$
 (36) $\text{Area Seg.} = \frac{LR - R^2 \sin I}{2} = \frac{LR - Rb}{2}$

22781.12
39.12
23720.24

TABLE VI
SINES, COSINES, TANGENTS, COTANGENTS

deg.	sin 0'	tan 0'	sin 10'	tan 10'	sin 20'	tan 20'	sin 30'	tan 30'	sin 40'	tan 40'	sin 50'	tan 50'	sin 60'	tan 60'
0	0000	0000	0029	0029	0058	0058	0087	0087	0116	0116	0145	0145	0174	0174
1	175	0375	0204	0204	0233	0233	0262	0262	0291	0291	0320	0320	0349	0349
2	349	349	378	378	407	407	436	436	465	465	494	494	523	523
3	523	524	552	553	581	582	610	612	640	641	669	669	698	698
4	698	699	727	729	756	758	785	787	814	816	843	843	872	872
5	872	875	901	904	929	934	958	963	987	992	1016	1022	1045	1045
6	1045	1051	1074	1080	1103	1110	1132	1139	1161	1169	1190	1198	1219	1219
7	1219	1228	1248	1257	1279	1287	1305	1317	1334	1346	1363	1376	1392	1392
8	1392	1405	1421	1435	1449	1465	1478	1495	1507	1524	1536	1554	1564	1564
9	1564	1584	1593	1614	1622	1644	1650	1673	1679	1703	1708	1733	1738	1738
10	1738	1763	1765	1793	1794	1823	1822	1853	1851	1883	1880	1914	1917	1917
11	1917	1944	1937	1974	1965	2004	1994	2035	2022	2065	2051	2095	2095	2095
12	2095	2126	2108	2156	2136	186	2164	217	193	247	221	278	277	277
13	250	309	278	339	306	370	334	401	363	432	391	462	462	462
14	419	493	447	524	476	555	504	586	532	617	560	648	648	648
15	588	679	616	711	644	742	672	773	700	805	728	836	836	836
16	756	867	784	899	812	931	840	962	868	994	896	1026	1026	1026
17	924	1057	952	1089	939	1121	1007	1153	1035	1185	1062	1212	1212	1212
18	1092	1249	1118	1281	1145	1314	1173	1346	1201	1378	1228	1371	1371	1371
19	1256	1443	1283	1476	1311	1508	1338	1541	1365	1574	1393	1507	1507	1507
20	1420	1640	1448	1673	1475	1706	1502	1739	1529	1772	1557	1606	1606	1606
21	1584	1839	1611	1872	1638	1906	1665	1939	1692	1973	1719	1738	1738	1738
22	1746	2040	1773	2074	1800	2108	1827	2142	1854	2176	1881	1896	1896	1896
23	1907	2245	1934	2279	1961	2314	1987	2348	2014	2383	2041	2056	2056	2056
24	2067	2452	2094	2487	2120	2522	2147	2557	2173	2592	2200	2215	2215	2215
25	2226	2663	2253	2699	2279	2734	2305	2770	2331	2806	2358	2373	2373	2373
26	2384	2877	2410	2913	2436	2950	2462	2986	2488	3022	2514	2529	2529	2529
27	2540	3095	2566	3132	2592	3169	2617	3206	2643	3243	2669	2684	2684	2684
28	2695	3317	2720	3354	2746	3392	2772	3430	2797	3467	2823	2838	2838	2838
29	2848	3543	2874	3581	2899	3619	2924	3658	2950	3696	2975	2990	2990	2990
30	3000	3774	3025	3812	3050	3851	3075	3890	3100	3930	3125	3150	3150	3150
31	3150	4009	3175	4048	3200	4088	3225	4128	3250	4168	3275	3290	3290	3290
32	3299	4249	3324	4289	3348	4330	3373	4371	3398	4412	3422	3437	3437	3437
33	3446	4494	3471	4536	3495	4577	3519	4619	3544	4661	3568	3583	3583	3583
34	3592	4745	3516	4787	3540	4830	3564	4873	3588	4916	3612	3627	3627	3627
35	3736	5002	3560	5046	3583	5089	3607	5133	3631	5177	3654	3669	3669	3669
36	3878	5265	3601	5310	3625	5355	3648	5400	3672	5445	3695	3710	3710	3710
37	4018	5536	3641	5361	3665	5402	3688	5453	3711	5504	3734	3749	3749	3749
38	4157	5813	3680	5412	3702	5453	3725	5504	3748	5555	3767	3782	3782	3782
39	4293	6098	3716	5463	3738	5504	3748	5555	3767	5606	3786	3801	3801	3801
40	4428	6391	3750	5514	3762	5555	3767	5606	3786	5657	3805	3820	3820	3820
41	4561	6693	3783	5565	3786	5606	3786	5657	3805	5708	3824	3839	3839	3839
42	4691	7004	3813	5616	3810	5657	3810	5708	3824	5759	3843	3858	3858	3858
43	4820	7325	3841	5667	3834	5708	3834	5759	3843	5810	3862	3877	3877	3877
44	4947	7657	3867	5718	3858	5759	3858	5810	3862	5861	3881	3896	3896	3896
45	5071	8000	3892	5769	3882	5810	3882	5861	3881	5912	3900	3915	3915	3915
46	5192	8353	3916	5820	3906	5861	3906	5912	3890	5963	3919	3934	3934	3934
47	5311	8717	3939	5871	3930	5912	3930	5963	3900	6014	3938	3953	3953	3953
48	5428	9092	3961	5922	3954	5963	3954	6014	3900	6065	3957	3972	3972	3972
49	5543	9478	3983	5973	3978	6014	3978	6065	3900	6116	3966	3981	3981	3981
50	5656	9875	4005	6024	4002	6065	4002	6116	3900	6167	3975	3990	3990	3990
51	5767	10283	4026	6075	4026	6116	4026	6167	3900	6218	3984	4000	4000	4000
52	5876	10702	4046	6126	4050	6167	4050	6218	3900	6269	3993	4010	4010	4010
53	5983	11133	4065	6177	4074	6218	4074	6269	3900	6320	4002	4020	4020	4020
54	6088	11575	4084	6228	4098	6269	4098	6320	3900	6371	4011	4030	4030	4030
55	6191	12028	4102	6279	4122	6320	4122	6371	3900	6422	4020	4040	4040	4040
56	6292	12492	4119	6330	4146	6371	4146	6422	3900	6473	4029	4050	4050	4050
57	6391	12967	4136	6381	4170	6422	4170	6473	3900	6524	4038	4060	4060	4060
58	6488	13453	4152	6432	4194	6473	4194	6524	3900	6575	4047	4070	4070	4070
59	6583	13950	4168	6483	4218	6524	4218	6575	3900	6626	4056	4080	4080	4080
60	6676	14458	4183	6534	4242	6575	4242	6626	3900	6677	4065	4090	4090	4090

College + Pres. N E B P. 187.83
 Exchange SKV 13P 185.01

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2	+	71°	4086.9	1308.2	+	81°	4893.6	1805.3	+
10'	3386.3	925.9	5° C.	10'	4099.5	1315.6	5° C.	10'	4908.0	1814.7	5° C.
20'	3397.5	931.6	T	20'	4112.1	1322.9	T	20'	4922.5	1824.1	T
30'	3408.8	937.3	.25	30'	4124.8	1330.3	.30	30'	4937.0	1833.6	.36
40'	3420.1	943.1	E	40'	4137.4	1337.7	E	40'	4951.5	1843.1	E
50'	3431.4	948.9	.080	50'	4150.1	1345.1	.110	50'	4966.1	1852.6	.140
62°	3442.7	954.8	10° C.	72°	4162.8	1352.6	10° C.	82°	4980.7	1862.2	10° C.
10'	3454.1	960.6	T	10'	4175.6	1360.1	T	10'	4995.4	1871.8	T
20'	3465.4	966.5	.51	20'	4188.5	1367.6	.61	20'	5010.0	1881.5	.72
30'	3476.8	972.4	E	30'	4201.2	1375.2	E	30'	5024.8	1891.2	E
40'	3488.3	978.3	.159	40'	4214.0	1382.8	.220	40'	5039.5	1900.9	.299
50'	3499.7	984.3	15° C.	50'	4226.8	1390.4	15° C.	50'	5054.3	1910.7	15° C.
63°	3511.1	990.2	T	73°	4239.7	1398.0	T	83°	5069.2	1920.5	T
10'	3522.6	996.2	.76	10'	4252.6	1405.7	.91	10'	5084.0	1930.4	1.09
20'	3534.1	1002.3	E	20'	4265.6	1413.5	E	20'	5099.0	1940.3	E
30'	3545.6	1008.3	.240	30'	4278.5	1421.2	.332	30'	5113.9	1950.3	.450
40'	3557.2	1014.4	15° C.	40'	4291.5	1429.0	15° C.	40'	5128.9	1960.2	15° C.
50'	3568.7	1020.5	T	50'	4304.6	1436.8	T	50'	5143.9	1970.3	T
64°	3580.3	1026.6	.102	74°	4317.6	1444.6	.122	84°	5159.0	1980.4	.145
10'	3591.9	1032.8	.200	10'	4330.7	1452.5	.250	10'	5174.1	1990.5	.250
20'	3603.5	1039.0	E	20'	4343.8	1460.4	E	20'	5189.3	2000.6	E
30'	3615.1	1045.2	.159	30'	4356.9	1468.4	.220	30'	5204.4	2010.8	.220
40'	3626.8	1051.4	15° C.	40'	4370.1	1476.4	15° C.	40'	5219.7	2021.1	15° C.
50'	3638.5	1057.7	T	50'	4383.3	1484.4	T	50'	5234.9	2031.4	T
65°	3650.2	1063.9	.76	75°	4396.5	1492.4	.91	85°	5250.3	2041.7	.91
10'	3661.9	1070.2	E	10'	4409.8	1500.5	E	10'	5265.6	2052.1	E
20'	3673.7	1076.6	.240	20'	4423.1	1508.6	.332	20'	5281.0	2062.5	.332
30'	3685.4	1082.9	15° C.	30'	4436.4	1516.7	15° C.	30'	5296.4	2073.0	15° C.
40'	3697.2	1089.3	T	40'	4449.7	1524.9	T	40'	5311.9	2083.5	T
50'	3709.0	1095.7	.102	50'	4463.1	1533.1	.122	50'	5327.4	2094.1	.145
66°	3720.9	1102.2	.200	76°	4476.5	1541.4	.250	86°	5343.0	2104.7	.250
10'	3732.7	1108.6	.300	10'	4489.9	1549.7	.332	10'	5358.5	2115.3	.332
20'	3744.6	1115.1	E	20'	4503.4	1558.0	E	20'	5374.2	2126.0	E
30'	3756.5	1121.7	.159	30'	4516.9	1566.3	.220	30'	5389.9	2136.7	.220
40'	3768.5	1128.2	15° C.	40'	4530.4	1574.7	15° C.	40'	5405.6	2147.5	15° C.
50'	3780.4	1134.8	T	50'	4544.0	1583.1	T	50'	5421.4	2158.4	T
67°	3792.4	1141.4	.76	77°	4557.6	1591.6	.91	87°	5437.2	2169.2	.91
10'	3804.4	1148.0	E	10'	4571.2	1600.1	E	10'	5453.1	2180.2	E
20'	3816.4	1154.7	.240	20'	4584.8	1608.6	.332	20'	5469.0	2191.1	.332
30'	3828.4	1161.3	15° C.	30'	4598.5	1617.1	15° C.	30'	5484.9	2202.2	15° C.
40'	3840.5	1168.1	T	40'	4612.2	1625.7	T	40'	5500.9	2213.2	T
50'	3852.6	1174.8	.102	50'	4626.0	1634.4	.122	50'	5517.0	2224.3	.145
68°	3864.7	1181.6	.200	78°	4639.8	1643.0	.250	88°	5533.1	2235.5	.250
10'	3876.8	1188.4	.300	10'	4653.6	1651.7	.332	10'	5549.2	2246.7	.332
20'	3889.0	1195.2	E	20'	4667.4	1660.5	E	20'	5565.4	2258.0	E
30'	3901.2	1202.0	.159	30'	4681.3	1669.2	.220	30'	5581.6	2269.3	.220
40'	3913.4	1208.9	15° C.	40'	4695.2	1678.1	15° C.	40'	5597.8	2280.6	15° C.
50'	3925.6	1215.8	T	50'	4709.2	1686.9	T	50'	5614.2	2292.0	T
69°	3937.7	1222.7	.76	79°	4723.2	1695.8	.91	89°	5630.5	2303.5	.91
10'	3950.2	1229.7	E	10'	4737.2	1704.7	E	10'	5646.9	2315.0	E
20'	3962.5	1236.7	.240	20'	4751.2	1713.7	.332	20'	5663.4	2326.6	.332
30'	3974.8	1243.7	15° C.	30'	4765.3	1722.7	15° C.	30'	5679.9	2338.2	15° C.
40'	3987.2	1250.8	T	40'	4779.4	1731.7	T	40'	5696.4	2349.8	T
50'	3999.5	1257.9	.102	50'	4793.6	1740.8	.122	50'	5713.0	2361.5	.145
70°	4011.9	1265.0	.200	80°	4807.7	1749.9	.250	90°	5729.7	2373.3	.250
10'	4024.4	1272.1	.300	10'	4822.0	1759.0	.332	10'	5746.3	2385.1	.332
20'	4036.8	1279.3	E	20'	4836.2	1768.2	E	20'	5763.1	2397.0	E
30'	4049.3	1286.5	.159	30'	4850.5	1777.4	.220	30'	5779.9	2408.9	.220
40'	4061.8	1293.6	15° C.	40'	4864.8	1786.7	15° C.	40'	5796.7	2420.9	15° C.
50'	4074.4	1300.9	T	50'	4879.2	1796.0	T	50'	5813.6	2432.9	T

T = R tan 1/2 I E = R exsec 1/2 I

Center + to 1/16 Blvd N E B P 69.83 Fay SK 764/47
 Draper SW B P 106.48 Eads SK 764/41/13266
 19819

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5830.5	2444.9	+	101°	6950.6	3278.1	+	111°	8336.7	4386.1	+
10'	5847.5	2457.1	5° C.	10'	6971.3	3294.1	5° C.	10'	8362.7	4407.6	5° C.
20'	5864.6	2469.3	T	20'	6992.0	3310.1	T	20'	8388.9	4429.2	T
30'	5881.7	2481.5	.36	30'	7012.7	3326.1	.51	30'	8415.1	4450.9	.62
40'	5898.8	2493.8	E	40'	7033.6	3342.3	E	40'	8441.5	4472.7	E
50'	5916.0	2506.1	.200	50'	7054.5	3358.5	.268	50'	8468.0	4494.6	.360
92°	5933.2	2518.5	10° C.	102°	7075.5	3374.9	10° C.	112°	8494.6	4516.6	10° C.
10'	5950.5	2531.0	T	10'	7096.6	3391.2	T	10'	8521.3	4538.8	T
20'	5967.7	2543.5	.72	20'	7117.8	3407.7	.103	20'	8548.1	4561.1	.125
30'	5985.3	2556.0	E	30'	7139.0	3424.3	E	30'	8575.0	4583.4	E
40'	6002.7	2568.6	.401	40'	7160.3	3440.9	.536	40'	8602.1	4606.0	.621
50'	6020.2	2581.3	15° C.	50'	7181.7	3457.6	15° C.	50'	8629.3	4628.6	15° C.
93°	6037.8	2594.0	T	103°	7203.2	3474.4	T	113°	8656.6	4651.3	T
10'	6055.4	2606.8	.86	10'	7224.7	3491.3	.103	10'	8684.0	4674.2	.125
20'	6073.1	2619.7	E	20'	7246.3	3508.2	E	20'	8711.5	4697.2	E
30'	6090.8	2632.6	.401	30'	7268.0	3525.2	.536	30'	8739.2	4720.3	.621
40'	6108.6	2645.5	15° C.	40'	7289.8	3542.4	15° C.	40'	8767.0	4743.6	15° C.
50'	6126.4	2658.5	T	50'	7311.7	3559.6	T	50'	8794.9	4766.9	T
94°	6144.3	2671.6	.86	104°	7333.6	3576.8	.86	114°	8822.9	4790.4	.86
10'	6162.2	2684.7	E	10'	7355.6	3594.2	E	10'	8851.0	4814.1	E
20'	6180.2	2697.9	.401	20'	7377.8	3611.7	.536	20'	8879.3	4837.8	.621
30'	6198.3	2711.2	15° C.	30'	7399.9	3629.2	15° C.	30'	8907.7	4861.7	15° C.
40'	6216.4	2724.5	T	40'	7422.2	3646.8	T	40'	8936.3	4885.7	T
50'	6234.6	2737.9	.86	50'	7444.6	3664.5	.86	50'	8965.0	4909.9	.86
95°	6252.8	2751.3	1.30	105°	7467.0	3682.3	1.30	115°	8993.8	4934.1	1.30
10'	6271.1	2764.8	E	10'	7489.6	3700.2	E	10'	9022.7	4958.6	E
20'	6289.4	2778.3	.401	20'	7512.2	3718.2	.536	20'	9051.7	4983.1	.621
30'	6307.9	2792.0	15° C.	30'	7534.9	3736.2	15° C.	30'	9080.9	5007.8	15° C.
40'	6326.3	2805.6	T	40'	7557.7	3754.4	T	40'	9110.3	5032.6	T
50'	6344.8	2819.4	.86	50'	7580.5	3772.6	.86	50'	9139.8	5057.6	.86
96°	6363.4	2833.2	1.45	106°	7603.5	3791.0	1.45	116°	9169.4	5082.7	1.45
10'	6382.1	2847.0	E	10'	7626.6	3809.4	E	10'	9199.1	5107.9	E
20'	6400.8	2861.0	.401	20'	7649.7	3827.9	.536	20'	9229.0	5133.3	.621
30'	6419.5	2875.0	15° C.	30'	7672.9	3846.5	15° C.	30'	9259.0	5158.8	15° C.
40'	6438.4	2889.0	T	40'	7696.3	3865.2	T	40'	9289.2	5184.5	T
50'	6457.3	2903.1	.86	50'	7719.7	3884.0	.86	50'	9319.5	5210.3	.86
97°	6476.2	2917.3	1.74	107°	7743.2	3902.9	1.74	117°	9349.9	5236.2	1.74
10'	6495.2	2931.6	E	10'	7766.8	3921.9	E	10'	9380.5	5262.3	E
20'	6514.3	2945.9	.401	20'	7790.5	3940.9	.536	20'	9411.3	5288.6	.621
30'	6533.4	2960.3	15° C.	30'	7814.3	3960.1	15° C.	30'	9442.2	5315.0	15° C.
40'	6552.6	2974.7	T	40'	7838.1	3979.4	T	40'	9473.2	5341.5	T
50'	6571.9	2989.2</									

15798 16
36 1/2 x Vignettes
NWBP 347.68

TABLE X.
MIDDLE ORDINATES OF RAILS
Length of Rail (feet)

C	R	30	28	26	24	22	20	C	R	30	28	26	24	22	20
o	Feet	Inch	Inch	Inch	Inch	Inch	Inch	o	Feet	Inch	Inch	Inch	Inch	Inch	Inch
0-20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0-40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
0-60	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
0-80	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
0-100	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.83	3.47	2.15	1.81	1.54	1.26
0-120	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
0-140	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.80	3.27	2.48	2.10	1.78	1.46
0-160	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
0-180	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
0-200	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
0-220	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
0-240	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
0-260	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
0-280	1228	1.10	.96	.83	.70	.59	.48	22	262.0	5.16	4.44	3.84	3.30	2.80	2.29
0-300	1146	1.18	1.03	.89	.75	.63	.52	24	240.5	5.64	4.92	4.20	3.59	3.04	2.50
0-320	955.3	1.41	1.23	1.06	.90	.76	.62	26	222.3	6.07	5.29	4.58	3.88	3.29	2.70
0-340	819.0	1.65	1.44	1.24	1.05	.89	.73								

TABLE XI.
SHORT RADIUS CURVES

Radius Feet	Chord Feet	Central Angle	Deflection Angle	Deflection for 1 Foot
35	10	16-26	8-13	49.3
45	10	12-46	6-23	38.3
50	15	17-16	8-38	34.5
60	15	14-22	7-11	28.8
75	15	11-30	5-45	23.0
100	20	11-30	5-45	17.3
120	20	9-34	4-47	14.3
150	20	7-39	3-49	11.5
190	25	7-32	3-46	9.15
200	25	7-10	3-35	8.6
225	25	6-25	3-12	7.7
240	25	5-58	2-59	7.2
250	25	5-44	2-52	6.9
275	25	5-12	2-36	6.2
288	50	9-58	4-59	6.0
300	50	9-32	4-46	5.7
350	50	8-12	4-06	4.9
376	50	7-40	3-50	4.6
400	50	7-10	3-35	4.3
410	50	7-00	3-30	4.2

To find length of curve divide angle from P. C. to P. T. by central angle of chord, and multiply by length of chord.

TABLE XII.
INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

Slope	Horizontal Distance	Correction	Rise Per Foot	Slope	Horizontal Distance	Correction	Rise Per Foot
0°00'	100.000	0.000	0.000	8°00'	99.027	0.973	0.139
15'	99.999	0.001	0.004	15'	98.965	1.035	0.143
30'	99.996	0.004	0.009	30'	98.902	1.098	0.148
45'	99.991	0.009	0.013	45'	98.836	1.164	0.152
1 00	99.985	0.015	0.017	9 00	98.769	1.231	0.156
15	99.976	0.024	0.022	15	98.700	1.300	0.161
30	99.966	0.034	0.026	30	98.629	1.371	0.165
45	99.953	0.047	0.031	45	98.556	1.444	0.169
2 00	99.939	0.061	0.035	10 00	98.481	1.519	0.174
15	99.923	0.077	0.039	15	98.404	1.596	0.178
30	99.905	0.095	0.044	30	98.325	1.675	0.182
45	99.885	0.115	0.048	45	98.245	1.755	0.187
3 00	99.863	0.137	0.052	11 00	98.163	1.837	0.191
15	99.839	0.161	0.057	15	98.079	1.921	0.195
30	99.813	0.187	0.061	30	97.992	2.008	0.199
45	99.786	0.214	0.065	45	97.905	2.095	0.204
4 00	99.756	0.244	0.070	12 00	97.815	2.185	0.208
15	99.725	0.275	0.074	15	97.723	2.277	0.212
30	99.692	0.308	0.078	30	97.630	2.370	0.216
45	99.657	0.343	0.083	45	97.534	2.466	0.221
5 00	99.619	0.381	0.087	13 00	97.437	2.563	0.225
15	99.580	0.420	0.092	15	97.338	2.662	0.229
30	99.540	0.460	0.096	30	97.237	2.763	0.233
45	99.497	0.503	0.100	45	97.134	2.866	0.238
6 00	99.452	0.548	0.105	14 00	97.030	2.970	0.242
15	99.406	0.594	0.109	15	96.923	3.077	0.246
30	99.357	0.643	0.113	30	96.815	3.185	0.250
45	99.307	0.693	0.118	45	96.705	3.295	0.255
7 00	99.255	0.745	0.122	15 00	96.593	3.407	0.259
15	99.200	0.800	0.126	15	96.479	3.521	0.263
30	99.144	0.856	0.131	30	96.363	3.637	0.267
45	99.087	0.913	0.135	45	96.246	3.754	0.271

TABLE XIII.
MINUTES IN DECIMALS OF A DEGREE.

0 30"	.00833	10 30"	.17500	20 30"	.34167	30 10"	.50833	40 30"	.67500	50 10"	.84167
1 00	.01667	11 00	.18333	21 00	.35000	31 00	.51667	41 00	.68333	51 00	.85000
30	.02500	30	.19167	30	.35833	30	.52500	30	.69167	30	.85833
2 00	.03333	12 00	.20000	22 00	.36667	32 00	.53333	42 00	.70000	52 00	.86667
30	.04167	30	.20833	30	.37500	30	.54167	30	.70833	30	.87500
3 00	.05000	18 00	.21667	23 00	.38333	33 00	.55000	43 00	.71667	53 00	.88333
30	.05833	30	.22500	30	.39167	30	.55833	30	.72500	30	.89167
4 00	.06667	14 00	.23333	24 00	.40000	34 00	.56667	44 00	.73333	54 00	.90000
30	.07500	30	.24167	30	.40833	30	.57500	30	.74167	30	.90833
5 00	.08333	15 00	.25000	25 00	.41667	35 00	.58333	45 00	.75000	55 00	.91667
30	.09167	30	.25833	30	.42500	30	.59167	30	.75833	30	.92500
6 00	.10000	16 00	.26667	26 00	.43333	36 00	.60000	46 00	.76667	56 00	.93333
30	.10833	30	.27500	30	.44167	30	.60833	30	.77500	30	.94167
7 00	.11667	17 00	.28333	27 00	.45000	37 00	.61667	47 00	.78333	57 00	.95000
30	.12500	30	.29167	30	.45833	30	.62500	30	.79167	30	.95833
8 00	.13333	18 00	.30000	28 00	.46667	38 00	.63333	48 00	.80000	58 00	.96667
30	.14167	30	.30833	30	.47500	30	.64167	30	.80833	30	.97500
9 00	.15000	19 00	.31667	29 00	.48333	39 00	.65000	49 00	.81667	59 00	.98333
30	.15833	30	.32500	30	.49167	30	.65833	30	.82500	30	.99167
10 00	.16667	20 00	.33333	30 00	.50000	40 00	.66667	50 00	.83333	60 00	1.00000

Narragansett & Catalina Blvd Phone

N.E. B.P. 157.37

Santa Cruz SW B.P. 1679

Niagara NW Spine Pole

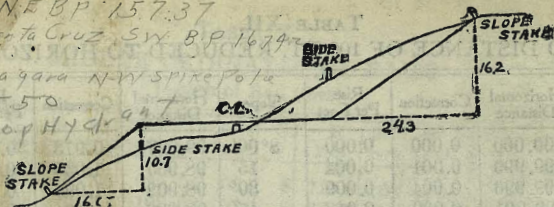
195.50

SE Top Hydrant

Alicia

Catalina

109.09



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.25	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

Euclid = 39 1/4 S.E. 357.05

Orange Church St. S.E. 348.95

Univ and Catalina S.W. B.P. 326.68

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99.12

22+33.12

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51

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78.61

51

22+32.61

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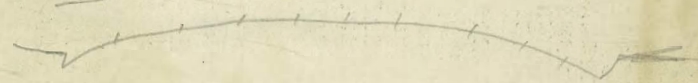
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7.83

0

24+18.40



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