518

F.B. 518

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

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MICROFILMED
DEC 21 1962

Campbell
Engineer

5.725

By.....

518

Alonzo A. Gillelen
Pres. Hollingsworth & Gillelen
Engineers

ENGINEERING DEPARTMENT,
CITY OF SAN DIEGO.
CALIFORNIA.

Louis A Bartlett
326 S. Pasadena ave
Pasadena Cal

ADOLF FRESE OPTICAL CO.
Engineering and Drafting Supplies
Scientific Instruments and Repairing
716-718 SOUTH HILL STREET
LOS ANGELES, CAL.

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EAST SAN DIEGO SEWER

June 1921 Part 1st.

Sta

0 = 6+68.9 – Existing M/H alley S of Market

2+39.95 = 9+08.85 – M.H. Cutting Market St.

6+45.83 = 13+14.73 M.H. " Allen N of Market

9+63.33 = 16+32.23 M.H. S of F. St.

12+65.75 = 19+34.65 M.H. Cutting F. St.

14+94.75 = 21+63.65 M.H. " Lemon Grove

17+55.13 = 24+24.03 M.H. " Benesch

20+29.16 = 26+98.06 M.H. " Broadway

22+19.16 = 28+88.06 M.H. " alley S of C

25+98.46 = 32+67.36 M.H. " " N of C.

= 26+76.10 M.H.

29+38.07 = 30+15.7 M.H.

30+83.57 = 31+61.2 M.H.

33+71.56 = 34+49.2 M.H.

37+13.66 = 37+91.3 M.H. & Pennell Tank

38+53.66 = 39+31.3 M.H.

39+90.66 = 40+68.3 M.H. & 36" tank

43+70.66 = 44+48.3 M.H.

47+58.66 = 48+26.3 M.H.

49+46.66 = 50+24.3 M.H.

51+27.66 = 52+05.3 M.H.

53+12.96 = 53+90.6 M.H.

54+98.96 = 55+76 M.H.

56+78.96 = 57+56.6 M.H.

57+42.66 = 58+20.3 M.H. = Sta 0, ESD.

Ang R 31°29' from M.H. 1 Blk Dist (34.8)

Ang R 21°12'

Ang L 35°12' (37.0)

Ang L " to Cutting line 35th St

288

4637

Angle R. about 46°12' (59.7)

Ang L 41°31' (63.9)

Ang R 9°02' 9°14' (64.3)

Ang L 12°34' 12°11' (71.15)

Ang R 90° 54°12' 42°24' (76.23)

Ang L 90° (91.58)

Ang R 48°19' (93.03)

4351.3
3 60
4761.3

Ang L 30°34' (102.3)

(103.11)

Revised Stationing —
East San Diego Outfall

B.M. 35.08
0
2+65
6+57.5
9+65.5 on extension Center 35th St.
12+72.4
15+01.4
17+61.8
20+37.3
22+27.3
26+06.6 = 26+10.6
29+49.1
30+94.6
33+82.4
37+24.7
38+64.7
40+01.7
43+81.7
47+61.7
49+57.7
51+38.7
53+24.0
55+69.5
56+90
57+54 = Sta 0 East San Diego Sec
57+50 length San Diego Sec.

30 a 56
29 49.1
1 26.5

Bartell & Wittman

2

City Monument S.C. cor. 33rd + I S.D. 8961 P37
M.H. Int Market & I ang R. 29° 35'
M.H. Market St ang R. 28° 07'
M.H. center alley " L 37° 13'
M.H. " L 33° 28'
M.H. Center F St
M.H. Center Lemon Grove Ave
M.H. Center Beacon St
M.H. " Broadway
M.H. " Alley bet C & Broadway
M.H. " alley bet B & C
M.H. ang L. 40° 37'
M.H. ang R. 9° 02'
M.H. " L. 12° 34
M.H. " R. 89° 40'
M.H.
M.H. ang L. 89° 40'
M.H.
M.H.
M.H. ang R. 48° 19'
M.H.
M.H.
M.H.
M.H. ang L. 3° 31'

Outfall in San Diego. Section
16" Pipe

B.M.		37.39	2.31	35.08	
T.P.	2.56	38.70	3.78	34.83	
0	4.37			34.33	27.00
+50	5.16			33.54	27.36
1	5.98			32.72	27.72
+50	6.04			32.66	28.08
2	5.31			33.39	28.45
+50	5.72			32.98	28.81
+65	5.72			32.98	28.91
3	4.84			33.86	29.17
+50	2.77			35.93	29.53
4	2.90			35.80	29.90
+50	3.70			35.00	30.26
5	4.10			34.60	30.62
+50	2.12			36.58	30.98
T.P.	2.12	48.23	11.65	36.58	—
6	11.10			37.13	31.35
+51.5	11.87			36.36	31.73
7	9.96			38.27	32.07
+50	5.20			43.03	32.43
8	4.56			43.67	32.80
+50	5.80			42.43	33.16
9	8.87			39.36	33.52
+50	7.92			40.31	33.88
+65.5	7.68			40.55	34.00

June 11th 1921 Bartlett & Wittman 3

Stakes on 6' offset West to Sta 9+65.5

Cement Mon. S.E. Cor. 33rd & I. Book 961 S.D. city P. 37

Top M.H. Sta 0. – 7.6' deep.

7.33 – 27.00 –	3 Manhole Set Marker & I	
6.18		
5.00		
4.58		
4.94		
4.17		
4.07	M.H. Ang R.	25°07'
4.69		
6.40		
5.90		
4.74		
3.98		
5.60		
—		
5.78		
4.63	M.H. Ang L	37°13'
6.20		
10.60		
10.87		
9.27		
5.84		
6.43		
6.55	offset 6' west M.H. Ang L.	33°28'

Outfall - Continued

San Diego Section

4823

9+65.5	8.77			39.46	34.05	5.41	Stakes on 6' offset East from Sta. 9+65.5 6' offset East. M.H. Aug L. 3328
10	6.08			42.15	34.37	7.78	
T.P.	6.08	51.98	9.83	42.15	—	—	
B.M.	3.37			48.61	—		Nail & tin in V of Olive Tree 25' Wy bmk 10+75
+50	9.30			42.68	34.83	7.85	
11	9.47			42.51	35.29	7.22	
+50	6.02			45.96	35.75	10.21	
12	5.73			46.25	36.21	10.04	
+50	5.34			46.64	36.67	9.97	
+72.4	5.08			46.90	36.88	10.02	M.H. Center F. St.
13	4.93			47.05	37.13	9.92	
+50	4.48			47.50	37.59	9.91	3.71
	526	5294					
14	4.30			47.68	38.05	9.63	
	458						
+50	3.51			48.47	38.51	9.96	
T.P.	3.51	5728	8.81	48.47	—		
15+01.4	4.15			53.13	39.00	14.13	~~M.H. Center Lemon Grove~~
15+11.4				53.82	39.09	14.28	
+50	7.02			50.26	39.93	10.33	M.H. 10th N. Center Lemon Grove
16	6.27			51.01	40.89	10.12	
+50	5.60			51.68	41.85	9.83	
17	5.26			52.02	42.81	9.21	
+50	4.90			52.38	43.77	8.61	
+61.8	4.95			52.33	44.00	8.33	M.H. E. Bunesch
18	4.54			52.74	44.55	8.19	
+50	4.36			52.92	45.27	7.65	
19	3.82			53.46	46.00	7.46	

Outfall San Diego Section

		57.28			
19+50	2.01			55.27	46.72
T.P.	2.01	62.39	7.12	55.27	—
20	6.97			55.42	47.45
+37.3	7.01			55.38	48.00
+50	6.20			56.19	48.13
B.M.	6.23			56.16	—
21	5.71			56.68	48.65
+50	5.59			56.80	49.18
22	5.22			57.17	49.70
+27.3	5.11			57.28	50.00
+50	4.24			58.15	50.24
23	3.17			59.22	50.77
+50	2.59			59.80	51.30
24	3.90			58.49	51.83
T.P.	3.90	65.52	7.03	58.49	—
+50	4.06			61.46	52.35
25	2.37			58.15	52.88
+50	6.12			59.40	53.40
26+06.6	5.67			59.85	54.00
B.M.	2.09	69.68	6.25	63.43	—
+50	7.93				
27	7.34				
+50	7.60				
28	6.64				
+50	6.98				

	8.55	
X	7.97	
	7.38	M.H. ℄ Broadway
	8.06	
1.05 X		Lot stake N.E. Cor. Broadway & 35th
	8.03	
	7.62	
X	7.47	
	7.28	M.H. ℄ alley Bet Bdy & C
	7.91	
	8.45	
	8.50	← Grade sheet to here.
1.05	6.66	
	9.11	
	5.27	
	6.00 ✓	
	5.85	← 26+06.6 M.H. ℄ alley Bet B & C, Aug R 45.48
		Cap stone in fence post opp Sta 26+06.6

Outfall. San Diego Section

			69.68			
29.		6.32				
	+49.1					
	+50	5.68				
30		5.01				
	+50	5.63				
	+94.6					
	+95	3.32				
31	+50	3.62				
32		0.44				
	TP.	0.44	78.86	9.62	69.24	—
	+50	8.83				
33		8.48				
	+50	8.74				
	+82.6	8.88				
34		9.08				
	+50	6.78				
35		4.34				
	+50	6.00				
36		6.02				
	+50	4.14				
37.		1.15				
	TP.	0.88	83.78	5.77	78.01	—
	B.M.	5.64			78.14	—
37	+24.7	5.75			78.03	71.2
37	+24.7	5.52			78.26	71.00
	+50	5.73			78.05	71.36
38.		6.08			77.70	72.07

M.H. Ang L 40° 37'

M.H. Ang R. 9° 02'

33+82.4
2.14
3 0 9 4.5
1 4 5.5
2 9 4 9.1

M.H. Ang L. 12° 34'

Old Stake 7.03
7.26
6.69
5.63

Y1.42275%

39+31.3 78.23 5 ch.
6' offset Right
6' " Left.

Outfall, San Diego Section

		83.78				
38 + 50	5.23			78.55	72.79	5.76
+ 64	5.38			78.40	73.0	5.40
39.	5.55			78.23	74.29	3.94
+ 50	2.50			81.28	76.11	5.17
T.P.	2.50	93.95	12.67	81.28	—	
B.M.	2.45			91.50	—	
40 + 01	1.20			92.75	78.4	14.75
~~+ 50~~	~~7.78~~					
41.	9.44					
+ 50	9.17					
42.	10.23					
+ 50	9.80					
43	8.48					
+ 50	6.35					
~~+ 81.7~~	~~8.70~~					
T.P.		91.16	9.88	81.28		
40 + 50	4.96			86.20	78.25	7.95
41	6.65			84.51	78.52	5.99
+ 50	6.38			84.78	78.78	6.00
42.	7.35			83.81	79.04	4.77
+ 50	6.97			84.19	79.31	4.88
B.M.	6.81			84.35	—	
43	5.60			85.56	79.57	5.99
+ 50	3.47			87.69	79.83	7.86

M.H.

Y 3.64440

Y 5.52630

S.D. city 961.

Old stake sta 40 + 68.3 91.58 to check.
6' offset to Right.

Sp. stin in crotch of pepper tree 2.5' W of 42 + 50

Outfall Dam Diego Ruiter

				Elev.				
		91.16						
43+81.7	2.50			88.66	80.9	8.66		M.H.
44.	2.57			88.59	80.10	8.49		
+50	3.16			88.00	80.36	7.64		91.16 / 88.90
45.	3.93			87.23	80.62	6.61		
+50	3.48			87.73	80.89	6.84		
46.	2.26			88.90	81.15	7.75		
T.P.	2.26	96.49	7.59	88.90	—			
+50	6.24			90.25	81.41	8.84	D.526 3%	
47	5.89			90.60	81.67	8.93		
+50	4.70			91.79	81.94	9.85		
+61.7	3.66			92.83	82.2	10.33		M.H.
48.	10.45			86.04	82.29	3.75		
+50	8.95			87.54	82.67	4.87		
49	5.33			91.16	83.06	8.10	D.765 3%	
+57.7	3.77			92.72	83.50	9.22		M.H. aug R. 48° 19'
BM.	3.56			92.93	—		old state	
	3.32			93.17	83.50	9.67		6' offset west
		101.03	8.10	92.93				
50	7.92			93.11	83.85	9.26		
+50	8.04			92.99	84.26	8.73	D.828 7%	
51	7.26			93.77	84.68	9.09		
+38.7	6.42			94.61	85.0	9.61		M.H.
+50	6.30			94.73	85.12	9.61		
52	5.66			95.37	85.66	9.71		
+50	4.62			96.41	86.20	10.21	D.1.0793	

Outfall San Diego Section

		101.03						
53	4.45			96.58	86.74	9.84		
+24	4.65			96.38	87.00	9.38	M.H.	
+50	5.18			95.85	87.42	8.43		
54+00	3.17			97.86	88.23	9.63		
+50	2.22			98.81	89.04	9.77		
T.P.	2.22	106.38	7.57	98.81				
55	6.96			99.42	89.85	9.57		
+095	6.62			99.76	90.0	9.76	M.H.	
+50	5.64			100.74	90.67	10.07		
56	5.24			101.14	91.50	9.64		
+50	4.61			101.77	92.33	9.44		
+90	4.57			101.81	93.00	8.81	M.H.	Ang L. 3°31'
57	4.68			101.70	93.31	8.39		
+54	3.18			103.20	95.0	8.20	M.H.	
BM.	3.21			103.07				

= 5750

old stake 103.11 to ck R.D. City Book 961

Sta 16		57.72	3.71	51.01				
15+11.4	4.40			50.32	39.09	11.23	11-2¾	
					39.19	11.13	11-1½	Manhole 10' N.E. Lantern

14+00		55.17	7.49	47.68			
14+85	2.07			53.10	38.83	14.27	
	3.57			51.61	38.83	12.78	pipe

092
35
460
276
327

5750.–

Outfall
San Diego Dic.

Copied from Book 961 p 46-47 by Wittman

	—	HI	+	Elev		
B.M.		69.72	6.29	63.43		
26+06 = 26+10				59.85	54.0	5.85
26+50	8.20			61.52	54.46	7.06
27+00	7.29			62.43	55.05	7.38
+50	6.85			62.87	55.64	7.23
28	6.12			63.60	56.23	737
+50	7.09			62.63	56.82	5.81
29	5.96			63.76	57.41	6.35
+49	625			63.47	58.0	5.47
30	5.61			64.11	58.70	5.41
T.P. +50	5.55	74.61	10.44	64.17	59.39	4.78
+94	8.55			66.06	60.0	6.06
31+50	7.70			66.91	60.96	5.95
32	6.22			68.39	61.83	656
+50	4.50			70.11	62.70	7.41
33	4.43			70.18	63.56	662
+50	4.29			70.32	64.43	589
+82	4.44			70.17	65.0	5.17
34+10	2.76			71.85	65.48	637
T.P.	2.76	82.95	11.10	71.85	—	
+50	10.64			72.31	66.18	6.13
35	10.58			72.37	67.06	531
+50	10.05			72.90	67.93	4.97
36	9.88			73.07	68.8	426
+50	8.10			74.85	69.69	5.16

Spike & Tin in Fence Post about 30' West of Station 26+06

Avg. R-M.H.

@ 1.8816%

M.H. 43

M.H. Angle L. 40°37'

@ 1.37458%

M.H. Angle R. 9°02'

@ 1.7361%

M.H Angle L 12°34'

@ 1.7530%

Outfall San Diego Section

	—	H.I.	+	Elev.	
37+00	5.22	82.95		77.73	70.56
+24.7	4.80			78.15	—
37+24.7		from ℄ 6	→	78.03	71.0
37+24.7			→	78.26	71.0

7.17

Old Cen. Hub M.H. Angle R Elev. 78.23

7.03 6' Offset to Right

7.26 6' Offset to Left

Outfall - East Sem Diego Reclam

Sta 0 = Sta 57+54				103.20	96.00	7.20	23 Aug L. 250 31 from line in San Diego Sec.
BM		110.13	7.06	103.07		old stake	
0+50	6.12			104.01	96.95	7.10	
BM.	4.15			105.98		Pail stake in Sunset tree about 75' E of Sta 1+00	
1+00	5.42			104.71	97.52	6.89	
+50	5.00			105.13	98.73	6.40	
2	3.40			106.73	99.64	7.09	
+50	2.57			107.56	100.55	7.01	
3	1.48	116.88	8.23	108.65	101.42	7.19	
+50	7.27			109.61	102.37	7.24	550
4	6.67			110.21	103.28	6.93	
+50	6.66			110.22	104.19	6.03	
5	7.75			109.13	105.10	4.03	
+50	7.22			109.66	106.05	3.66	M.H. 24
6	4.95			111.93	106.99	5.34	
+50	4.73			112.15	07.18	4.97	
7	5.41			111.47	07.77	3.70	
+50	2.48			114.40	08.36	6.04	
8	1.71	122.91	7.74	115.17	08.95	6.22	550
+50	7.28			115.63	09.55	6.10	
9	7.05			115.86	10.12	5.74	
+50	8.34			114.57	10.71	3.86	
10	8.02			114.89	11.30	3.59	

Outfall E. S. D. Section

		122.91			112.00	5.36		
10+60	5.55			117.36	113.00	4.36	M.H	25
11	4.39			118.52	113.70	4.82		
+50	5.85			117.06	114.57	2.49		
12 +8	1.77	130.19	8.55	121.64	115.44	6.20		
+50	7.76			122.43	116.32	6.11		
13	6.58			123.61	117.19	6.42		
+50	6.46			123.73	118.06	5.67	509	
14	6.20			123.99	118.94	5.05		
+50	5.43			124.76	119.81	4.95		
	4.29			125.90	120.65	5.22		
+50	3.50			126.69	121.56	5.13	26	
16 +09	3.65			126.54	122.60	3.94	M.H. Aug 2 12°21'	
	2.45			127.74		old hub center pt		
M.H.	2.98	37.33	10.04	127.29		hub 2.71 E at R.A. to line from South.		
16+50	8.87			28.46	23.22	5.24		
17	7.96			29.37	23.98	5.39		
+50	7.25			30.08	24.74	5.34		
18	6.60			30.73	25.49	5.24		
+50	5.85			31.48	26.25	5.23	396	
19	4.53			32.80	27.01	5.79	g. 1.51 66%	
+50	4.04			31.29	27.77	3.52		
20 +05	4.03			33.30	128.53	4.70	M. H. 27	
+50	4.62			32.71	129.03	3.68		
21	3.82			33.51	29.51	4.00	g. 96 18%	
+50	3.42	42.58	8.67	33.91	29.99	3.92	353	

Outfall E. A. D. Section

		42.58					
22	7.66			34.92	30.47	4.45	30.85.5
+50	6.98			35.60	30.95	4.65	
23	4.68			37.90	31.43	6.47	28
+58.5	6.50			36.03	132.0	4.03	M.H avg R 24°11'
24	5.63			36.95	132.65	4.30	
+50	3.31			39.27	33.44	5.83	
25	5.45			37.13	34.22	2.91	29
+50	2.39			40.19	35.01	5.18	
26. TP	0.99	49.81	8.22	41.59	35.79	5.80	29
+57.2	7.15			42.66	136.70	5.96	M.H. avg L. (BISS 20°09-30')
27	6.81			43.00	137.65	5.35	
+50	8.04			41.77	38.75	3.02	
28	4.60			45.21	39.86	5.35	
TP, +50	4.12	58.16	12.47	45.69	40.96	4.73	
29	8.72			49.44	42.07	7.37	28
+50	7.09			51.07	43.17	7.90	
30	4.71			53.45	44.28	9.17	
+50	4.60			53.56	45.38	9.18	30
+85.5	4.74			53.40	146.17	7.23	M.H. Interior - Intersection
B.M.	5.01			53.15	146.5	7.06	Old lock Intersection Outfall + Eastern Wisconsin
							153.18 k chart
BM,	2.66			55.50			1x2 Stake 50' E of 30+85.5

16" Pipe

Eastern Intersector

BM.		162.58	9.41	153.17		706	M.H. Sta 30+85'. Outfall.
0	9.18			53.40	146.34	556	
+50	9.32			53.26	147.70	526	
1	8.25			54.33	149.07	265	
+50	9.50			53.08	150.43	467	
2	6.14			56.44	151.80	486	
+50	4.87			58.02	153.16	285	
3	5.21			57.37	154.52	403	
+50	2.44			59.92	55.89	465	
4	0.68	72.03	10.13	61.90	57.25	491	M.H. Ang R. 15°27'
+27.3	9.12			62.91	158.2	496	
+50	8.56			63.47	58.51	459	
5	7.80			64.23	59.64	461	
+50	6.65			65.38	60.77	473	
6	5.40			66.63	61.90	535	
+50	3.75			68.28	63.03	331	
7	4.56			67.47	64.16	504	
TP.+50	1.71	81.87	11.55	70.32	65.28	523	
~~8~~ 7+98	10.27			71.60	66.37	411	
8+50	10.22			71.65	67.54	451	
9	8.69			73.18	68.67	524	M.H. Ang R. 7°53'
+58.5	6.63			75.24	170.00	Old stake	
B.M.	6.71			75.16	—		

14" Pipe

135 1/63

30

31

34

Eastern 14"

		81.87					
10	6.43			75.44	171.04	4.40	
+50	4.58			77.29	72.29	5.00	
11	3.16			78.71	73.55	5.16	
T.P. +50	1.15	90.12	9.40	80.72	74.80	5.92	
12	7.88			82.24	76.05	6.19	
+50	9.11			81.01	77.31	3.70	
13	6.24			83.88	78.56	5.32	
+50	5.69			84.43	79.81	4.62	
14	4.20			85.92	81.06	4.86	
+25	2.84			87.28	81.69	5.59	M.H. 35
+50	3.86			86.26	82.32	3.94	
15 78	2.48	100.64	13.00	87.64	83.57	4.07	
+50	10.20			90.44	84.82	5.62	
16	8.88			91.76	86.08	5.58	
+50	9.52			91.12	87.33	3.79	
17	7.28			93.36	88.58	4.78	
+50	5.87			95.07	89.84	5.23	
18	2.82			97.82	91.09	6.73	36
+57	1.49			99.15	192.53	6.63	M.H. ang R. 12 04 4 Blue intersects
	2.05	207.94	9.35	198.59	1.052 B 19.42 Drop	6.19 5.19	
	4.71			203.74			Old stake for Blue
							" " ang pt 205.30 to check.

B. Line deflects L 92° 17'
" " Length 4+21.7
C " ang L 67° 25' Sta 24+24.8

2 + 3 Blk cor. Pearl & Hugo
from Sta 2 on 6' offset line
ang A.W. 96° 40' – 13.6'

B Line 8" Sewer

BM1		211.98	12.83	199.15		
0	12.83			199.15	193.	
0 + 50	4.25			207.73	96.91	
1	7.35			204.63	200.82	
+ 50	3.42			208.56	64.74	
TP	0.95	23.73	12.70	11.03	—	
2	9.85			13.88	08.65	
+ 50	5.52			18.21	12.56	
3	2.12			21.61	16.47	
TP	0.40	32.95	9.62	23.33	—	
+ 50	8.42			24.53	20.38	
3 + 65	7.69			31.26	23.12	
BM	3.10	35.11	5.26	29.85	—	
4 + 21.7	1.06			34.05	22.60	
				+ 4	22.62	

38

Sta 18+57. E.I. Drop 11.74.

Taken off Sta 18+57. E I

615	
1082	
381	
382	
5235	254
5658	225
5145	
415	
814	
805	
435	

old stake City elev. 229.9

37

6" Lateral from North

C, Line 8" Sewer

		227.47	11.85	215.59	
0+00	11.85			15.59	205.5
0+50	6.29			21.15	13.05
1,	6.11			21.33	16.31
T.P. +50	2.92	34.92	10.40	24.52	19.56
2	8.09			26.83	22.32
4+50	3.68			31.24	26.07
+70					27.60
+73.4	3.89			31.03	27.60
3, T.P.	2.64	44.86	12.58	32.28	29.14
+50	7.94			36.92	32.05
4	6.36			38.50	34.95
+50	2.90			41.96	37.85
T.P.	0.53	56.33	12.00	44.33	
5 +35	10.28			46.05	40.75
+38.7	8.30			48.03	43.0
+50	7.43			48.90	43.61
6 T.P.	0.85	65.10	9.62	55.48	46.32
+50	8.97			56.13	49.02
7	6.94			58.16	51.73
+50	6.23			58.87	54.44
+97.4	1.13			63.97	57.00
8M	3.76			61.34	
					57.20

Ang 69° 33' from Eastern

579	38	
810		
502		
496		
401		
517		
343	39	8" Lateral from North M.H. Ang ∠ 31° 15'
314		
487		
355		
411		
530		
503		40 M.H. Ang ∠ 20° 26'
529		
916		
711		
643		
443		
697		M.H. 41
677		6" Lateral from North

@ 6.5106

@ 5.8047

@ 5.4116

Eastern Continued

18+57 BM.		210.18	11.03	199.15	93.00	6.15		M.H. Inlet. 36
19	12.22			197.96	94.25	3.71		
+50	8.01			202.17	95.70	6.47		
20,	7.24			02.94	97.16	5.78		
+50	7.38			02.80	98.61	4.19		
21	3.52			06.66	00.07	6.59		
+50	1.35			08.83	01.52	7.31		
22	3.10			07.08	02.98	4.10		
T.P.	0.79	21.07	11.68	09.39	—	—		
+50	11.00			10.07	04.43	5.64	Rate + 2.91	
23,	10.62			10.45	05.89	4.56		
+50	8.09			12.98	07.34	5.64		
24, +17.45 (38)	6.31			14.76	08.80	5.96		38
+24.8	5.48			15.59	09.50	6.09	X	M.H. Intersec C. Line ang R 2°di
BM.	7.29			13.78	—	old hub C. Line		
+50	5.46			15.61	10.04	5.57		
25	4.40			16.67	11.10	5.57		
+50	3.22			17.85	12.16	5.69		
26. T.P.	1.78	31.35	12.06	19.29	13.33	6.06		
+48	13.3			18.0	—	creek bottom No stake 42		
+60	9.92			21.43	14.50	6.93		M.H. ang L 16°14' Grade sheet Line
27	6.72			24.63	16.28	8.35		
+50	4.42			26.93	18.51	8.42	+4.45	
28	5.96			25.39	20.73	4.66		6" Lateral from M.
+50	3.10			28.25	23.00	5.25		M.H. ang L 1°58'
	3.18			28.17	—	old hub.		43

Eastern – Continued

28+50		40.85	12.60	28.25	23.00
29.	11.85			29.00	24.17
+50	9.63			31.22	25.36
30	7.47			33.38	26.55
+50	6.02			34.83	27.74
31	5.01			35.84	28.92
+50	7.21			33.64	30.11
32.	4.40			36.45	31.30
+50	5.08	48.42	12.65	35.77	32.49
33	8.00			40.42	33.68
+50	4.69			43.73	34.87
+77.6	4.30			44.12	35.50
PM +77.6	5.13			43.29	
					237.8
					236.0
					237.0
		57.14	13.85	43.29	
34	14.05			43.09	36.45
+50	11.33			45.81	38.57
35.	9.50			47.64	40.69
+60.8	8.30			48.84	43.28
36	5.67			51.47	44.94
+50	3.05			54.09	47.06
37. TP.	1.18	69.52	13.56	55.96	49.18

Continued on P. 23.

6" from Nat. 224.70 3.55
M.H. ang L. 43

5.25
4.83
5.86
6.83
7.09
6.92
3.53
5.15
3.28
6.74
8.86
8.63

+2.375

M.H. ang R. 10°17' 44
Old hub D line. D line intersects ang L 67°
8" Lateral from TP 237.8
Branch "D" joins 8" Sewer 6.32
E. I.

6.64
7.24
6.95
5.56
6.53
7.03
6.78

+4.44

M.H. ang L. 23°51'

D. Line = 8" Pipe

0 = 33+77.6	Eastern	59.05	15.76 N	43.39 N	36.00
0 +50	8.81			50.24	38.00
1	5.97			53.08	40.00
+50	13.76			45.29	41.99
2	7.23			47.82	43.99
+50	9.62			49.43	45.99
3	7.83			51.22	47.98
+50	5.73			53.32	49.98
4 T.P.	2.09	73.85	16.89	56.96	51.98
+50	17.25			56.60	53.97
5.	12.43			61.42	55.97
+50	10.86			62.99	57.97
6.	9.85			64.00	59.96
T.P.	0.55	88.57	15.27	73.30	—
T.P.	0.38	99.84	11.65	88.19	—
6 +67	1.00			98.84	62.64
7 +44	1.34			98.50	65.71
T.P.	16.44	83.40	0.00	83.40	
Flow line Culvert	10.90			72.50	—
8.	9.73			73.67	67.95
+50	8.30			75.10	69.95
9	7.74			75.66	71.95
+50	3.93			79.47	73.94
10+01.6	2.82			80.58	27600
old stake	3.26			80.14	—

6' Offset Right.

→ Angle L. 67° from Eastern 44

9.29 old hub (D. line Intersec with Eastern 8" from North 237.8

12.24
13.08
3.30
3.83
3.44
3.24
3.54
4.98
2.63
5.45 M.H. 45
5.02
4.04

307.5
522
13

36.20
32.79
—
21" pipe
5.72
5.15
3.71 — 8" from N. 27600
5.53 — 6" from N. 27620
4.58 M.H. End. 46

E. Line

		check level on Dlin.			
MM.		304.67	2.78	301.89	
7+44. D.	6.10			98.52	
42+30? Eastern =		89.68	15.70	73.98	70.30
Sta 0.=					
0+50	11.03			78.65	74.43
1	5.42			84.26	78.57
+47.5	1.38			88.30	82.50
old hub,	2.10			87.58	—
		Eastern Continued			
45+49?		16.98	11.46	05.52	99.80
+75	8.27			08.71	99.85
46 –	5.75			11.23	99.90
+25	3.59			13.39	99.95
T.P. +50	1.93	22.24	7.19	15.05	00.00
+75	5.45			16.79	00.05
47	4.09			18.15	00.10
+25	4.07			18.17	00.15
+50	3.23			19.01	00.20
+75	2.56			19.68	00.25
48.	3.59			18.65	00.30
+25	6.81			15.43	00.35
+50	9.59			12.65	00.40
+75 ?	10.72			11.52	00.45

curb NW. cor. Stockton Hunter

3.68	8.27	M.H. angles L. 129° 08' from Eastern.
4.22		
5.69		
5.80		M.H. – End, 8" intersects 282.50 from North
5.72		MH 51
8.86		
11.33		
13.44		
15.05		
16.74		
18.05		
18.02		
18.81		
19.43		
18.35		
15.08		
12.20		
11.07		MH 52

Eastern — Continued. from P. 20

		69.52						
37+50	9.11			60.41	57.30	9.11		
38.	5.84			63.68	53.42	10.26	4.24	
+50	8.72			60.80	55.54	5.26		
39.	3.58			65.94	57.67	8.27		
+40.8	3.57			66.01	59.40.4	6.61	X	M.H. 47 Aug R. 6° 42'
40.	2.05	83.67	16.20	67.47	61.53	5.94		
+50	6.06			77.61	63.32	14.29		
41.	5.60			78.07	65.11	12.96		
+ 45	9.00			74.67	66.72	7.95		
42.	11.10			72.57	68.69	3.88	3.58	E line intersect. 70.30
+30?	9.69.			73.98	69.80	4.18	X	Manhole Intersect E line
+50	8.53			75.14	71.11	4.03		48
T.P.	1.06	97.16	14.55	82.61	—			
43.	10.57			86.59	74.51	12.08		
+50	10.58			86.58	77.91	8.67	6.50	→ 8" pipe N.E. 285.00 – 7.44
44+01.5	9.20.			87.96	81.40	6.56	X	M.H. 50 Aug R. 89° 05'
" L.	8.31			88.85	—			
BM.	8.32			88.84	—	old hub. 44+03 old stationing		
TP. +50	1.08	310.78	14.70	96.08	87.40	8.68		
45	8.72			02.06	93.61	8.45	12.42	
+49?	5.26			05.52	99.80	5.72	X	M.H. 51 Aug L. 29° 01'
T.P.	2.69	20.58	12.49	08.09		—		
46	9.35			11.23	99.90	11.33		
+50	5.53			15.05	00.00	15.05	0.20	
47	2.43			18.15	00.10	18.05		

Grade Sheet from line

Eastern Continued

		20,58			
BM.	1,30			19,28	—
47+50	1,57			19,01	00,20
48.	1,93			18,65	00,30
+ 50	7,93			12,65	00,40
+ 75	9,06	15,38	3,86	11,52	00,45
49	5,19			10,19	00,47
+ 25	6,45			08,93	00,50
+ 50	7,78			07,60	00,53
+ 75	9,01			06,37	00,55
50.	10,17			05,21	00,58
+ 25	10,65			04,73	00,61
+ 50	11,29			04,09	00,63
+ 75	11,00			04,38	00,64
51	9,82			05,56	00,68
+ 25	7,82			07,56	00,71
+ 50	6,54			08,84	00,74
+ 75	4,65			10,73	00,76
52	3,02			12,36	00,79
+ 10	2,09			13,29	00,80
+ 25	0,87	27,13	12,62	14,51	00,96
+ 50	10,90			16,23	10,00
+ 75	9,21			17,92	10,63
53	7,80			19,33	11,26
+ 25	6,16			20,97	11,89
+ 50	4,94			22,19	12,52

cont. Fairmount check.			272
18,81			
18,35	0,20		BM - 332.07 - N.W. Fairmount + Clark - Brass plug. B82 P6
12,25		MH #52	
11,07			M.H. alley. E. of Fairmount Ang 28°12'
9,72			8" from North 308,0 cut 3,52
8,43			6" " South 301,2 cut 10,32
			St. Grade M.H. 311.45 - 5.2%
7,07			
5,82			
4,63			
4,12			
3,46	0,1044		
3,72			
5,88			
6,85			
8,10			
9,97			
11,57			St. Grade - MH. 313.35 Grade - 6.5%
{12,49 / 4,29}		MH #53	Drop Manhole
			8" Stub pro N. 06,00 cut 7'-3½"
5,15			
6,23			
7,29			
8,07			
9,08	2,526		
9,67			

Eastern.

			27.13						
53	+75	4.22			22.91	13.15	9.76		
54		4.23			22.90	13.78	9.12		
	+25	4.05			23.08	14.41	8.67		
	+50	3.77			23.36	15.04	8.32		Grade shot to here
	+75	3.45			23.68	15.68	8.00	2.526	
55		3.31			23.82	16.31	7.51		
	+25	3.05			24.08	16.94	7.14		St. Grade - 324.2 - 1.170
	+45.6	2.74			24.39	17.46	6.93	MH#54	Stub from N 84 X M.H. 321.00
TP	+75	2.30	33.70	8.87	24.83	17.49	7.34		Left Highland & Cabrillo
56		8.60			25.10	17.51	7.59		45th
	+25	8.49			25.21	17.54	7.67		
	+50	8.16			25.54	17.56	7.98		
	+75	7.83			25.87	17.59	8.28		24.39 / 321 / 3.39
57		7.34			26.36	17.61	8.75		
	+25	6.91			26.79	17.64	9.15		
	+50	6.50			27.20	17.66	9.54		
	+75	6.15			27.55	17.69	9.86		
58		5.75			27.95	17.71	10.24	0.10	
	+25	5.20			28.50	17.74	10.76		
	+50	4.72			28.98	17.76	11.22		(45th) Bet. Cabrillo & Chauncey
	+75.4	3.98			29.72	17.79	11.93	MH#55	M.H. - 6" from N. 325.00
59		3.72			29.98	17.81	12.17		
	+25	3.23			30.47	17.84	12.63		
	+50	2.57			31.13	17.86	13.27		
	+75	2.11			31.59	17.89	13.70		

Eastern.

		33.70					
60	1,56			32,14	17.91	14.23	0/0
+25	1.08			32,62	17,94	14.68	
+55.4	0.95			32,75	17.97	14.78	
BM.	0.65	38,75	5.70	33,05	—	Brass Plug MO, cor. Chamomile & Center, city notes	56
+56.4	5.82			32,93	17.97	~~14.96~~ Offset East.	
+75	6,05			32.70	17.99	14.71	
61	5.95			32,80	18.01	14.79	
+25	5.96			32,79	18.04	14.75	
+50	5.96			32,79	18.06	14.73	
~~X thru.~~ +75	5.95			32,80	18.09	14.71	
62	5.84			32,91	18.11	14.80	
+25	5.80			32,95	18.14	14.81	
+50	5.67			33,08	18.16	14.92	
to here +75	5.64			33,11	18.19	14.92	
63	5.65			33,10	18.21	14.89	
+25	5.46			33.29	18.24	15.05	
+50	5.47			33,28	18.26	15.02	
+75	5.24			33,51	18.29	15.22	
64	5.21			33,54	18.31	15.23	
+25	5.23			33,52	18.34	15.18	
+50	5.15			33.60	18.36	15.24	
+75	5.13			33.62	18.39	15.23	
65 +05	4.94			33,81	18.42	15.39	M.H. 57
+25	5.04			33,71	18.44	15.27	
+50	4.74			34.01	18.46	15.55	

Eastern—

		38.75					
65 +75	4.67			34.08	1849	15.59	
66.	4.68	40.36	6.33	34.07	1857	15.56	
+25	6.30			34.06	1854	15.52	
+50	6.30			34.06	1856	15.50	
+75	6.20			34.16	1859	15.57	
67.	5.89			34.47	1861	15.86	
+25	5.31			35.05	1864	16.41	0.10
+50	5.06			35.30	1866	16.64	
+75	5.08			35.28	1869	16.59	
BM.	4.41			35.95	—	—	Clack. N.W. cor. in curb,
68.	5.35			35.01	1871	16.30	
+25	5.49			34.87	1874	16.13	
+50	5.65			34.71	1876	15.95	
+75	5.76			34.60	1879	15.81	
69	6.05			34.31	1881	15.50	
+25	6.12			34.24	1884	15.40	
+50	6.36			34.00	1886	15.14	M.H. 58
+75	6.40			33.96	1889	15.07	
70	6.46			33.90	1891	14.99	
+25	6.52			33.84	1894	14.90	
+50	6.70	35.09	1.43	33.66	1896	14.70	
+75	1.96			33.13	1899	14.14	
71	2.50			32.59	1901	13.58	
+25	3.12			31.97	1904	12.93	
+50	3.95			31.14	1906	12.08	

Eastern.

		35.09					
71+75	4.93			30.16	19.09		11.07
72	5.92			29.17	19.11		10.06
+25	6.73			28.36	19.14		9.22
+50	7.58			27.51	19.16		8.35
+75	8.50			26.59	19.19		7.40
73	9.35			25.74	19.21		6.53
+25	10.03			25.06	19.24		5.82
+50	10.95			24.14	19.26		4.88
+75	11.60			23.49	19.29		4.20
74	11.72			23.37	19.31		4.06
+16.3	11.52		H.I.	23.57	19.33		4.24
BM.	11.04	+(7.00)	31.05	24.05	—		
+16.3	7.97			23.57	319.50		
+50	7.75			23.08	319.88		
+75	6.93			23.30	20.16		
75	6.35			24.12	20.45		
+25	5.95			24.70	20.73		
+50				25.10	21.01		
+75	5.45			25.60	21.29		
76	5.00			26.05	21.58		
+25	4.61			26.44	21.86		
+50	4.18			26.87	22.14		
+75	3.66			27.39	22.42		
77	3.07			27.98	22.71		
+06.3	2.98			28.07	22.78		

Grade Sheet to here

Pause 0.6

Howard St = Dwight St
(Old No. - 74+13.24 Dwight)
M.H. Center Howard, 59
City Bm.
Brass plug in curb. NW cor Howard & Chamoune

	Revised	Grade 9-6-21	
	320.10	3.47	Smalc Richards 8-31-21
3.20	20.48	2.60	
3.14	20.76	2.54	
3.87	21.05	3.07	
3.97	21.33	3.37	1.131 %
4.09	21.61	3.49	Grade Sheet #1
4.31	21.89	3.71	
4.47	22.18	3.87	
4.58	22.46	3.98	
4.73	22.74	4.03	
4.97	23.02	4.27	
5.27	23.31	4.67	Pause 0.6
5.29	23.38	4.69	M.H. 60

Smole
Richards
9-1-21

℄ Chamoune - E.I

Sta	+	HI	-	Elev.	Grade
77 +06.3	7.72	35.79		328.07	322.78
+25			7.31	28.48	22.98
+50			6.60	29.19	23.27
+75			5.88	29.91	23.56
78			5.00	30.79	23.84
+25			4.15	31.64	24.12
+50			3.43	32.36	24.40
+75			2.52	33.27	24.69
79		"	1.62	34.17	24.97
+25 TP.			0.73	35.06	25.25
+50	8.29	43.35	7.36	35.99	25.53
+75			6.41	36.94	25.82
80			5.46	37.89	26.10
+25			4.56	38.79	26.38
+50			3.66	39.69	26.66
+75			2.64	40.71	26.95
81			2.04	41.31	27.23
+13.2			1.79	41.56	27.88
BM.			2.32	341.03 (340.99)	

Raise 0.6

Revised Grades - 9-6-21

529	23.38	4.69	M.H. 60
550	23.56	4.92	
592	23.81	5.38	
635	24.05	5.86	
695	24.30	6.49	
752	24.54	7.10	
796	24.79	7.57	
858	25.04	8.23	Grade Sheet # 2
920	25.28	9.89	
981	25.53	9.53	
10.46	25.77	10.22	
11.12	26.02	10.92	
11.79	26.26	11.63	
12.41	26.51	12.28	
13.03	26.75	12.94	
13.76	27.00	13.71	
14.08	27.24	14.07	
14.18	27.38	14.18 N.H. ℄ Castle east 61	

Brass plug - NW-Cham

Lambis Chamoune + Castle

Smale
Richards
9-2-21

Sta	℄ Castle (+	H I	E.I. −	Elev	Gradient .2% Grade
BM-	5.505			340.99	340.99
81+13 I	P.I. 6' offset	346.495	4.96	41.53	327.38
+ 31			5.13	41.36	27.41
+ 56			5.33	41.16	27.46
+ 81			4.90	41.59	27.51
82			4.69	41.80	27.55
+ 31			4.02	42.47	27.61
+ 56			3.63	42.86	27.65
+ 78 58			3.33	43.16	27.71
Alley R.P.-N25' M.H. 82+78 58			3.34	43.15	
83	7.49	50.65	7.60	43.05	27.75
+ 25			7.05	43.60	27.80
+ 50			6.52	44.13	27.85
+ 75			6.01	44.64	27.90
84			5.30	45.35	27.95
+ 25			4.51	46.14	28.00
+ 50			4.02	46.63	28.05
+ 75			3.28	47.37	28.10
85			2.73	47.92	28.15
+ 25			2.26	48.39	28.20
+ 50			1.97	48.68	28.25
+ 75			1.98	48.67	28.30
86			2.52	48.13	28.35
+ 08 55			2.64	48.01	28.37
			1.75	48.90	
P 86+08 55	3.04	51.05		348.01	

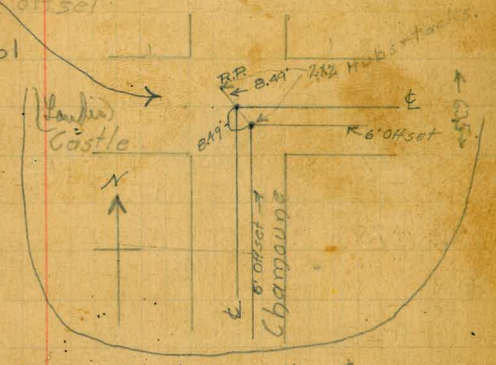
NW cor Chamoune - (Brass plug)

14.15 grades on offset

Stub W. 8"
Elev. 328.80
Cut 12.73

61

13.75
13.70
14.08
14.25
14.86
15.20
15.45
15.30
15.80
16.28
16.74
17.40
18.14
18.58
19.27
19.77
20.19
20.43
20.37
19.79
19.4



R.P. 25' N. on alley ℄
(82+76 #3)
M.H. #62 Alley Chamoune

Levels run to
Grade Sheet #4 issued 9-15-21
V.M.S.

8" Stub north
4th (86+06 #3)
MH #63 Alley Mentone-Merola
R.P. 25' N. on ℄ alley

Iron pipe Mon 3 at 3rd cor. Castle.

9-21-21

Smale } Levels
Chisholm } 9-21-21
Line staked 9-2-21

Station	℄ Castle BS	H.I. +351.05	E I FS	Elev.	.2% Grade	Cut
86+25			3.61	47.44	28.40	19.04
+50			5.06	45.99	28.45	17.54
+75			6.28	44.77	28.50	16.27
87			7.70	43.35	28.55	14.80
+25			9.86	41.19	28.60	12.59
TP-87+25	0.95	+42.14				
+50			2.53	39.61	28.65	10.96
+75			3.91	38.23	28.70	9.53
88			5.04	37.10	28.75	8.35
+25			5.75	36.39	28.80	7.59
+50			6.28	35.86	28.85	7.01
+75			5.83	36.31	28.90	7.41
89			5.52	36.62	28.95	7.67
+25			5.04	37.10	29.00	8.10
+38.6			4.87	337.27	329.03	X 8.24
TP-89+38.6	5.04	342.31		337.27		
+50			4.88	37.43	329.05	8.38
+75			4.10	38.21	329.10	9.11
90			3.63	38.68	329.15	9.53
+25			3.06	39.25	329.20	10.05
+50			2.81	39.50	29.25	10.25
+75			2.93	39.38	29.30	10.08
91			2.55	39.76	29.35	10.41
+25			2.67	39.64	29.40	10.24
+50			2.10	40.21	29.45	10.76
TP-91+50	6.84	47.05		40.21		
+75			6.24	40.81	29.50	11.31
92			5.56	41.49	29.55	11.94

Grade Sheet #5-Issued-9-21-21

Grade Sheet #8
10-10-21

Levels to here 9-21-21

8' stub north (189+36.43)

M.H. #64-Alley Menlo-Sierra
R.P. 25' N. on ℄ alley

All levels must be tied in to a Bench for a check

Friday Aug 11, 1922
9:25 AM

Eastern Interceptor

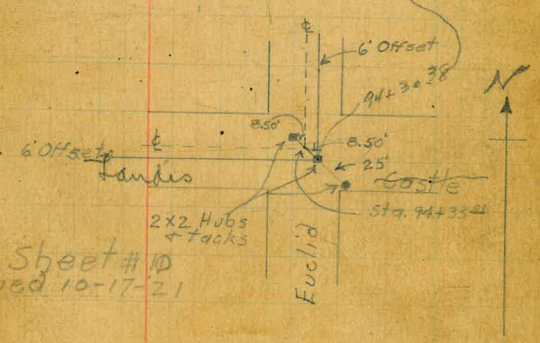
Sta	+	HI	−	Elev	Grade .2%
		347.05			
92 + 25			5.17	341.88	329.60
+ 50			5.32	41.73	29.65
+ 68 6			5.63	41.42	329.61
				41.42	329.86
93			5.14	41.91	329.92
+ 25			4.73	42.32	29.97
+ 50			4.21	42.84	30.02
+ 75			3.78	43.27	30.07
94			3.12	43.93	30.12
+ 33 21	Landes & Euclid		2.54	44.51	30.17
TP - 94 + 33 21	3.02	47.53		344.51	
BM -			7.56	39.87	340.01
+ 50			2.63	44.90	30.22
+ 75			2.53	45.00	30.27
95			2.35	45.18	30.32
TP - 95 + 00	3.575	48.755		345.18	
+ 25			3.17	45.58	30.37
+ 50			2.70	46.15	30.42
+ 75			2.81	45.94	30.47
96			2.66	46.09	30.52
+ 25			2.87	45.88	30.57
+ 50			3.48	45.27	30.62
+ 75			4.21	44.54	30.67
97			5.00	43.75	30.72
+ 21 65			6.31	42.44	30.76

Smale } 9-23-21
Chisholm } Staked
Levels run with transit.

Cut	
12.28	Grade Sheet #8 10-10-21
12.08	
11.73	
11.56	12" to 10" Grades from M.H. # 71
11.99	
12.35	Grade Sheet #9 10-10-21
12.82	
13.20	
13.81	Smale & Chisholm Levels taken 10-5-21
14.32	
Pipe	Roselawn S. of Castle (Book 78-Page 4)
14.68	
14.73	
14.86	
15.21	
15.73	
15.47	Grade Sheet #10 Issued 10-17-21
15.57	
15.31	
14.65	
13.87	
13.03	
12.68	

6" Stub north - El 330.20
(Sta 92+66 43)
M.H. #65 Sierra-Euclid alley

(Sta. 94+30 22) OK
M.H. # 66 ℄ Euclid



97 21 65
94.3301
2.869

M.H # 67 - RP (2x2) E 10' - (1x2) W 25' from offset.

Eastern Interceptor

Smale } 10-10-21
Chisholm } Staked.
Levels run with transit-10-13

Station	+	HI	—	Elev.	Grade .29	Cut
		48.755				
97 + 50			9.25	39.50	30.82	8.68
+ 75			11.47	37.285	30.87	6.40
TP-97+75	8.72	46.005		37.285		
98			10.37	35.63	30.92	4.71
+ 25			11.78	34.25	30.97	3.28
+ 50			12.74	33.26	31.02	2.24
+ 75			11.31	34.69	31.07	3.62
99			9.10	36.90	31.12	5.78
+ 25 (33 MH			7.48	38.52	31.17	7.35
+ 50			6.61	39.39	31.22	8.17
+ 82 MH			5.68	40.32	31.28	9.04
100			5.57	40.43	31.32	9.11
+ 25			4.97	41.03	31.37	9.66
+ 50			4.10	41.90	31.42	10.48
+ 75			3.50	42.50	31.47	11.03
101			3.15	42.85	31.52	11.33
+ 25			2.88	43.12	31.57	11.55
+ 50			2.66	43.34	31.62	11.72
+ 75			2.09	43.91	31.67	12.24
102			1.85	44.15	31.72	12.43
+ 25			1.68	44.32	31.77	12.55
+ 50			1.98	44.025	31.82	12.20
TP-102+50	1.34	45.365		44.025		
+ 75			1.54	43.82	31.87	11.95
103			2.10	43.26	31.92	11.34
+ 25			2.66	42.70	31.97	10.73
+ 50			3.07	42.29	32.02	10.27
+ 73 18 M.H.			3.67	41.69	32.07	9.62

Staked to here 9-24-21

Grade Sheet #11
Issued 10-17-21

RP-(2x2)E16'-(1x2)W19' from ℄
+ 82 - M.H # 67 1/2

M.H. 67 99+35
68 104+35
68 1/2 107+26

Grade Sheet #12 - Issued 10-19-21

Staked to here 10-10-21

RP (2x2) E ~~16~~ 25 - (1x2) W ~~19'~~ 45' from ℄
MH #68

Smale } staked 10-11-21
Chisholm }
Levels run with transit - 10-13

Eastern Interceptor

Sta.	+	HI 46.365	−	Elev.	Grade .290	Cut
104 -			4.59	40.77	32.12	8.65
+25			5.73	39.63	32.17	7.46
+50			7.39	37.97	32.22	5.75
+75			8.78	36.68	32.27	4.41
105			11.15	334.215	32.32	C 1.89
IP 105	8.68	42.895	—	334.215	—	
+25			10.65	32.24	32.37	F 0.13
+50			11.90	30.99	32.42	F 1.43
+75			11.34	31.55	32.47	F 0.92
106			11.49	31.40	32.52	F 1.12
+25			10.58	32.31	32.57	F 0.26
+50			9.16	33.73	32.62	C 1.11
			6.90	35.99	32.67	3.32
107			4.21	38.68	32.72	5.96
+24.15			2.01	40.88	32.77	8.11
BM	Finish	10-13-21	2.35	340.545	340.63 (S.B.)	Brass plug N.W. cor Univ. + Euclid (Book 82-Page 2)
BM				340.63	340.63	Grade Sheet #
108+14.82	2.95	343.58	3.54	40.04	32.95	7.09
+50			3.99	39.59	33.02	6.57
+75			4.13	39.45	33.07	6.38
109			4.25	39.33	33.12	6.21
+25			4.60	38.98	33.17	5.81
+50			4.84	38.74	33.22	5.52
+75			5.07	38.51	33.27	5.24

2 x 2 Hubs + tacks on ℄ + 6' offset E.
1 x 2 ✓ ✓ ✓ R.R. E 10' + W 15' from ℄.

MH #68½ 5'5 of S.L. Univ.

M.H. #69 - 11' E of ℄ Euclid - 5' N of N.L. Univ. Ave.

3 9
3 2 3
6 2

Smale
Chisholm } 11-23-21
Levels with transit

Eastern Interceptor ctd.

Sta.	+	HI 343.58	−	Elev.	Grade	Cut.	
110			5.31	338.27	333.32	4.95	
+25			5.56	38.02	33.37	4.65	Grade Sheet #15 issued 11-19-21
+50			5.82	37.76	33.42	4.34	
+75			5.97	37.61	33.47	4.14	
111			6.32	37.26	33.52	3.74	
TP +25			6.48	337.10	33.57	3.53	MH #70 No RP.
+50	8.95	346.05	7.03	37.02	33.62	3.40	
+75			8.80	37.25	33.67	3.58	
112			8.27	37.78	33.72	4.06	
+25			7.45	38.60	33.77	4.83	
+50			6.60	39.45	33.82	5.63	
+75			5.71	40.34	33.87	6.47	Grade Sheet #16 issued 11-19-21
113			4.98	41.07	33.92	7.15	Stakes on 3' offset W.
+25			4.22	41.83	33.97	7.86	
+50			3.39	42.66	34.02	8.64	
+75			2.72	43.33	34.07	9.26	
114			1.75	44.30	34.12	10.18	
TP	Polk St. Encl'd		0.99	345.06	—		
+28.99	3.65	48.71	2.72	45.97	34.18	11.79	MH #71 2x2 Hub & tack 5' E & 6' S of M.H. center
							Angle to East
BM-	2.94	343.57			340.63		Brass plug Univ. & Euclid.
	9.37	346.54	6.40	337.17			
~~114+28.99~~	9.47	354.32	1.69	344.85			MH #71 2x2 on 10' offset at ℄ Anna.

Eastern Interceptor – ctd.

Gradient – .2%

Smale } 10-31
Chisholm }

Levels with transit.
Rods reduced by V.M.S.

Sta.	+	H.I. 354.32	–	Elev.	Grade	Cut	
114+29.31			8.35	45.97	334.18	11.79	— MH #71 – on 10' offset Euclid
+50			7.07	47.25	34.22	13.03	~~Pollat & Pyra.~~ 2x2 on P.I. 6' S + 5½' E
+75			4.48	49.84	34.27	15.57	+ on pavement P.I. 6 N + W. of M.H.C. 6½
115			3.41	50.91	34.32	16.59	Grade Sheet #17 – issued 11-2-'21
+25			3.57	50.75	34.37	16.38	
+50			4.27	50.05	34.42	15.63	
+75			5.56	48.76	34.47	14.29	Alley E of Euclid
115+80.38			6.12	348.20	34.48	13.72	M.H. #72 – 2x2 Hub + tack on P.I. 6' offset S. + E. also N. + W. – 17' across C.
TP	4.22	352.42		348.20	—	—	
116			4.53	47.89	34.52	13.37	
+25			4.72	47.70	34.57	13.13	
+50			4.85	47.57	34.62	12.95	
+75			5.29	47.13	34.67	12.46	
117			5.75	46.67	34.72	11.95	
+25			6.42	46.00	34.77	11.23	Grade Sheet #18 issued 11-3-'21
+50			7.21	45.21	34.82	10.39	
+75			8.69	43.73	34.87	8.86	
118			10.67	41.75	34.92	6.83	
+25			12.32	340.10	34.97	5.13	
TP	5.18	345.28		340.10	—	—	
+50			5.74	39.54	35.02	4.52	
+75			5.92	39.36	35.07	4.29	
+88.88			5.77	339.51	35.10	4.41	M.H. #73 – 2x2 Hubs + tacks 15' E + 13' W of ℄.

Smale } 11-1-21
Chisholm }
Levels with transit.

Eastern Interceptor - ctd.

Sta.	+	H.I.	−	Elev.	Grade -2%	Cut.	
118+88.88	6.35	345.86		339.51	35.10	4.41	MH#73
119 -			6.77	39.19	35.12	4.07	
+25			7.11	38.75	35.17	3.58	
+50			6.70	39.16	35.22	3.94	
+75			6.59	39.27	35.27	4.00	
120			6.19	39.67	35.32	4.35	Grade Sheet #19 - issued 11-3-21
+25			5.02	40.84	35.37	5.47	
+50			3.70	42.16	35.42	6.74	
+75			2.41	43.45	35.47	7.98	
121			2.37	43.49	35.52	7.97	
+25			1.97	43.89	35.57	8.32	
+50			2.11	43.75	35.62	8.13	
+75			1.47	44.39	35.67	8.72	
122			1.14	44.72	35.72	9.00	
+18.59			0.32	345.54	35.76	9.78	ORANGE AVE. At Alley Between Euclid & 48th
TP 122+18.59	7.75	353.29		345.54	——	——	M.H. 7A - 2x2 Hub + tack - E15' & W15' from ℄ - 2x2 Hub + tack on 6' offset.
BM -			2.66	350.63	350.60		Brass plug - N.W. Euclid + Orange - Book 82 Page 2
BM-122+18.59	6.17	51.71		345.54	——		
122 + 50			6.24	45.47	35.82	9.65	
+75			5.93	45.78	35.87	9.91	
123			5.63	46.08	35.92	10.16	Grade Sheet #20 - issued 11-8-21
+25			5.47	46.24	35.97	10.27	
+50			4.96	46.75	36.02	10.73	
+75			4.62	47.09	36.07	11.02	

Eastern Interceptor - Ctd.

Sta.	+	HI 351.71	—	Elev.	Grade -2%
124			4.70	47.01	36.12
+25			4.45	47.26	36.17
+50			4.55	47.16	36.22
+75			4.31	47.40	36.27
125			4.35	47.36	36.32
TP	4.21	51.57		47.36	
+25			4.38	47.19	36.37
+58.59			4.13	47.44	36.43
+75			4.53	47.04	36.47
126			4.70	46.87	36.52
+25			5.24	46.33	36.57
+50			5.28	46.29	36.62
+75			5.78	45.79	36.67
127			6.12	45.45	36.72
+25			6.34	45.23	36.77
+50			7.20	44.37	36.82
+75			8.45	43.12	36.87
TP	4.96	48.08		43.12	
128			5.49	42.59	36.92
+25			6.66	41.42	36.97
+50			6.77	41.31	37.02
+88.78			6.22	41.86	37.10
TP			2.14	45.94	—
	7.62	53.56		45.94	—
BM			2.93	50.63	S.B. 350.60

Smale } 11-7-21
Chisholm }
Levels with transit.

Cut.	
10.89	
11.09	
10.94	
11.13	Grade Sheet #20 - issued 11-8-21
11.04	
10.82	
11.01	(TROJAN) M.H. #75 - Bet. Orange + Florence 2x2 Hub + tack on 6' offset E. 2x2 - R.P. W 10' + E 15' ✓
10.57	
10.35	In Alley Blk 33, City Hts.
9.76	
9.67	
9.12	
8.73	Grade Sheet #21 - issued 11-8-21
8.46	
7.55	
6.25	
5.67	
4.45	
4.29	
4.16	Now TROJAN AVE M.H. 75½ - @ ℄ Florence - 2x2 Hub + tack on 6' offset E. 2x2 RP - W 15' + E 15' from ℄.

Brass plug - NW Euclid + Orange.
Book 82 Page 2

Smale } 11-15-21
Chisholm }
Levels with transit.
Rods red. by Y.M.S.

Eastern Interceptor ctd.

Sta.	+	HI	−	Elev.	Grade .2%	Cut
128+88 78				341.86	337.10	4.76
129	6.82	48.68	7.15	41.53	337.12	4.41
+25			6.62	42.06	37.17	4.89
+50			6.10	42.58	37.22	5.36
+75			5.61	43.07	37.27	5.80
130			4.87	43.81	37.32	6.49
+25			4.26	44.42	37.37	7.05
+50			3.82	44.86	37.42	7.44
+75			3.08	45.60	37.47	8.13
131			2.47	46.21	37.52	8.69
+25			0.80	47.88	37.57	10.31
TP ↑	6.90	54.78		—	—	
+50			6.78	48.00	37.62	10.38
+75			6.22	48.56	37.67	10.89
132			5.61	49.17	37.72	11.45
+25			5.05	49.73	37.77	11.96
+50			4.86	49.92	37.82	12.10
+75			6.76	48.02	37.87	10.15
133			5.59	49.19	37.92	11.27
+12 54 S/S Pavement			6.66	48.12	37.94	10.18 ← ℄ El Cajon Ave. - Sta. 133+17 62
+27 75 N/S ✓			6.55	48.23	37.98	10.25
+37 78			6.23	48.55	37.99	10.56 MH 76 - ℄ Alky E of Euclid - 10' N of pavement on El Cajon Ave. (20.13' N of ℄ El Cajon Ave.)
TP ↑	4.37	52.54		—	—	
BM			7.62	344.92	344.98 SB	

BP - S.W. curb El Cajon at Euclid 3/72

Grade Sheet #22 - issued 11-16-21

2X2 Hubs + tacks at MH center - at P.I. 6' offset E of line S + 6' N. of line W (9.64' to M.H. center) - also 15' SW on line with P.I. + M.H center.
6" Stub N - Elev. 341.0 1X2 for stub 6'

Smale } 11-18-21
Chisholm }
Levels with transit.

Eastern Interceptor ctd.

Sta.	+	HI	−	Elev.	Grade 2%	Cut.
TP(133)				349.19	—	
133 + 50	2.98	352.17	3.52	48.65	338.02	10.63
+75			3.72	48.45	38.07	10.38
134			3.88	48.29	38.12	10.17
+25			4.05	48.12	38.17	9.95
+50			4.40	47.77	38.22	9.55
+75			4.97	47.20	38.27	8.93
135			5.54	46.63	38.32	8.31
+25			5.65	46.52	38.37	8.15 Grade Sheet #23
TP 1				346.52	—	
	4.28	350.80				
135+50			4.34	46.46	38.42	8.04
+75			4.75	46.05	38.47	7.58
136			4.58	46.22	38.52	7.70
+25			4.25	46.55	38.57	7.98
+50			4.05	46.75	38.62	8.13
+76 3			3.99	46.81	38.67	8.14 M.H. #77 – RP stub S. – 2X2 Hubs + tacks 25' N + S on alley ℄.
137			4.12	46.68	38.72	7.96 M.H. – RP – 2X2 Hubs + tacks 6' N + S at right angle ℄ of sewer.
+35.54			3.93	46.87	338.79 S.B.	8.08 (St. Grade 346.02)
BM			5.88	344.92	344.79	MH #78 – Stub N on Granada – 2X2 Hubs + tacks 50' N + 33.5' S on ℄ Granada. 2X2 Hubs + tacks – at PI 6' offsets N. (St. Grade – 346.53
TP(137+35.54)				46.87	—	
137+50	5.32	52.19	5.17	47.02	38.82	8.20
+75			5.08	47.11	38.87	8.24 BP – On S. curb El Cajon – W/S Euclid – B72 P3.
138			4.79	47.40	38.92	8.48

136 + 76
133 + 38
3 38

38.67
37.99
.68

Eastern Interceptor ctd.

Sta	+	H.I.	—	Elev.	Grade (.2%)
138+25		352.19	4.62	47.57	338.97
+50			4.41	47.78	39.02
+75			4.23	47.96	39.07
139			4.09	48.10	39.12
+25			4.00	48.19	39.17
+50			3.77	48.42	39.22
+75			3.62	48.57	39.27
140 TP			3.35	48.84	39.32
+10.2	5.71	54.55	5.50	49.05	39.34
+25			5.40	49.15	39.37
+50			5.17	49.38	39.42
+75			4.89	49.66	39.47
141			4.78	49.77	39.52
+25			4.55	50.00	39.57
+50			4.23	50.32	39.62
TP +79.38			3.91	50.66	39.67
BM-	6.30	56.95	1.42	55.53	S.B. 55.60
TP 141+79.38				50.66	—
142	5.49	56.15	5.30	50.85	39.72
+25			5.10	51.05	39.77
+50			4.97	51.18	39.82
+75			4.71	51.44	39.87
143			4.32	51.83	39.92
+25			3.97	52.18	39.97
+50			3.70	52.45	40.02

Smale / Chisholm } 12-3-21

Levels with transit.

Cut.	
8.60	
8.76	
8.89	140+10.2 - #79
8.98	
9.02	141+79.38 #[illegible]
9.20	
9.30	
9.52	
9.71	
9.78	MH #79 - ℄ Menlo - Sierra alley. 2x2 Hub & tack on 6' offset N. at 90° to ℄ E.I. Stub south - R.P. (2x2 hub & tack) on alley ℄ 25' N & 25' S from M.H. center. (Sta. 140+10.2) (St. Grade 349.35)
9.96	
10.19	
10.25	
10.43	
10.70	
10.99	M.H. #80 - ℄ Menlo - Stub N. - R.P. (2x2 Hub & tack on ℄ Menlo (north) 25' N & S from M.H. c. - 2x2 Hub & tack at M.H. center & on 6' offset N. at 90° to ℄. (St. Gr. 351.22)
11.13	
11.28	B.P. - S.W. Menlo & E/Cajon - B82 - P4
11.36	
11.57	Grade Sheet #27
11.91	
12.21	
12.43	

check chaining Sta 140+10.9

Eastern Interceptor ctd.

Sta.	+	HI 56.15	—	Elev.	Grade
143+75			3.48	52.67	40.07
144 TP			3.12	53.03	40.12
+25	5.39	58.42	5.17	53.25	40.17
+50			5.13	53.29	40.22
+75			4.91	53.51	40.27
145			4.72	53.70	40.32
+25			4.66	53.76	40.37
+50			4.40	54.02	40.42
+75			4.18	54.24	40.47
146			4.01	54.41	40.52
+29.21			3.63	54.79	40.58
BM			5.51	352.91	S.B. 352.97
TP 146+29.21				354.79	—
+50	5.32	360.11	5.05	55.06	40.62
+75			4.81	55.30	40.67
147			4.58	55.53	40.72
+25			4.25	55.86	40.77
+50			3.93	56.18	40.82
+75			3.62	56.49	40.87
148			3.32	56.79	40.92
+25			3.10	57.01	40.97
+50			2.78	57.33	41.02
TP +75			2.45	357.66	41.07
149	5.36	363.02	4.96	58.06	41.12

Smade
Chisholm } 12-3-21
Levels with transit.

Cut	
12.60	
12.97	
13.08	
13.07	Grade Sheet #27
13.24	
13.38	
13.39	
13.60	
13.77	
13.89	
14.21	M.H. #81 – ℄ Monte Vista. 2x2 Hub & tack at center & 0.9 6' offset N. at 90° to ℄. Stub N. 2x2 Hub & tack 25' N. & S. from center. (St. Grade – 354.17) Set M.H. cover .6 below grade stake.
	B.P. – S.W. Mentone & El Cajon – B82 P4.
14.44	
14.63	
14.81	
15.09	Grade Sheet #28
15.36	
15.62	
15.87	
16.04	
16.21	
16.59	
16.94	

Eastern Interceptor - ctd.

Sta	+	HI	−	Elev.	Grade -2%
		363.02			SB
BM-			6.52	356.50	356.56
149 +25			4.89	58.13	341.17
+50			4.72	58.30	41.22
+79			4.44	58.58	41.27
150			4.25	58.77	41.32
+25			4.38	58.64	41.37
+50			4.42	58.60	41.42
+75			4.61	58.41	41.47
151			4.60	58.42	41.52
+25			4.68	58.34	41.57
+50			4.79	58.23	41.62
+75			4.80	58.22	41.67
152 TP			4.80	358.22	41.72
+25	3.93	362.15	3.88	58.27	41.77
+50			4.01	58.14	41.82
+25			4.01	5814	41.87
153			4.04	3 58.11	41.92
+29			3.90	58.25	41.98
					S.E
BM-			4.97	357.18	357.30

Continued on Page 71.

Single Chisholm 12-8
Levels with transit.

Cut

BP- S.W. El Cajon & Chamoune - B82 P4

16.96 Grade Sheet #28
17.08
17.31 X MH #82 — 2x2 Hubs & tacks at M.H. center & on 6' offset N. at 90° to ℄ E.I.
17.45 St. Grade - 357.6
17.27
17.18
16.94
16.90
16.77
16.61 Grade Sheet #29
16.55
16.50
16.50
16.32
16.27
16.19 2x2 Hub & tack at center & 6'N at 90° to ℄
16.27 MH #83-

BP- S.W. El Cajon & Cabrillo - B82 P4

56+78.87 High N

Bench Marks E.S.D.

Brass Plug, 347.95
341.01
324.01
335.97
333.05
331.99 332.07

344.98
347.15
355.60
352.97
356.56 56.53
357.30
356.12
354.70
352.00
343.54
352.00

NW. cor. Chaparral & Klamath
" & Castle
" & Howard
" & Clark
" & Cutler
NW. " Fairmont & Clark

BP - S.W. Euclid & El Cajon
" " Sierra " "
" " Menlo " "
" " Mentone " "
" " Chapoune " "
" " Cabrillo " "
" " Highland " "
" " Colonial " "
" " Fairmount " "
Book 82 - P 4.

Central & Castle. B32 - P18.
" " Univ. B61 - P52

30+85.5 =									
0		58.64	5.24	53.40	46.50	6.90		Revised Cuts — Smale 10-4-21 Chisholm	
	+50	5.65		52.99	46.66	6.33		30	Avg from Outfall L. 29°12'
1		9.79		48.85	46.81	2.04			
	+50	5.07		53.57	46.97	6.60			
2		5.62		53.02	47.12	5.90			
	+50	4.87		53.77	47.28	6.49	0.3125		
3		4.41		54.23	47.44	6.79		87	
	+20	5.42		53.22	47.50 ✓	5.72			
	+50	6.36		52.28	48.17 ✓	4.11	X	M.H.	
4		4.21		54.43	49.29 ✓	5.14			
	+50	3.43		55.21	50.41 ✓	4.80			
5	T.P.	3.43	67.75	12.54	55.21	51.53 ✓	3.68		
	+50	8.94		58.81	52.65 ✓	6.16			
6	+05	10.10		57.65	53.88 ✓	4.77	2.24		
	+50	9.10		58.65	54.89 ✓	3.76			
7		5.48		62.27	56.01 ✓	6.26		88	
	+62.2	5.85		61.90	57.40 ✓	4.50	X	M.H. Avg L. 4°01'	
8		5.11		62.64	58.03	4.61			
	+50	3.53		64.22	58.86	5.36			
9		4.43		63.32	59.69	3.63			
	+50	4.25		63.50	60.52	2.98			
10	T.P.	1.28	78.04	11.57	66.47	61.35	5.12	1.66	
	+50	10.68			67.36	62.18	5.18		
11		9.50			68.54	63.01	5.53		
	+50	8.40			69.64	63.84	5.80		

Western Continued 124

		78.04						
12	7.11			70.93	64.67	6.26		
+50	6.25			71.79	65.50	6.29		M.H. 89 Grade sheet there
+80	8.91			69.13	66.05	3.08		
13.	8.70			69.34	66.42	2.92		
+50	4.62			73.42	67.34	6.08		
14	3.85			74.19	68.26	5.93		
+50	2.70			75.34	69.18	6.16	1.44	
15 T.P.	2.30	88.82	13.08	75.74	70.11	5.63		
+50	10.50			78.32	71.03	7.29		
16.	8.80			80.02	71.95	8.07		
+50	6.32			82.50	72.87	9.63		
17	5.19			83.63	73.80	9.83	X	M.H. 90
(16+96.3)	5.90			82.92	—	old line		
17 +50	11.08			77.74	74.97	2.77		
18	9.99			78.83	76.15	2.68		
+50	8.60			80.22	77.32	2.90		
19	8.28			80.54	78.50	2.04		
T.P. +50	3.14	93.13	7.45	85.68	79.67	6.01	2.35	
20	6.06			87.07	80.85	6.22		
+50	6.09			87.04	82.02	5.02		
21	5.07			88.06	83.20	4.86		
+213	4.56			88.57	83.70	4.87	X	M.H. 91 avg R. 15°23'
old line	4.13	99.57	10.59	89.00	—	—		
21+50	10.28			89.31	84.28	5.03		

Western. Continued

8" from Sta 26+20²

		99.59						
22.	9.40			90.19	85.30	4.89		
+50	8.30			91.29	86.32	4.97		
23.	9.15			90.44	87.34	3.10		
+50	7.89			91.70	88.36	3.34		
24.	6.10			93.49	89.38	4.11		
+50	4.35			95.24	90.40	4.84	2.04	
25.	4.61			94.98	91.42	3.56		
+50	2.70			96.89	92.44	4.45		#92
26.	1.07	09.82	11.30	98.52	93.46	5.06		194.2 — 8" Interior Centerline
+20²	11.78			98.04	93.87	4.17	X	← M.H. ang L. 34°47'
+50	10.23			99.59	94.59	5.00		8" River
27.	11.32			98.50	95.79	2.71		
+50	8.41			01.41	96.99	4.42		
28.	8.42			01.40	98.20	3.20		
+50	5.07			04.75	99.40	5.35	2.404	
29	3.87			05.95	00.60	5.35		
+50	3.10			06.72	01.80	4.92		
30	2.49			07.33	03.00	4.33	X	M.H. 93
+50	2.32			07.50	03.76	3.74		
31	1.94			07.88	04.52	3.36		
+50	2.37	19.06	11.61	07.45	05.28	2.17		
32	1.67			08.39	06.03	2.36	1.517	
+50	6.86			12.20	06.79	5.41		
33.	7.11			11.95	07.55	4.40		

Western Continued 8.2

		19.06						
33+55	5.08			13.98	08.38	5.60	#94	
34+08.7	3.03			16.03	209.20	6.83		
old line,	3.48	27.97	12.39	15.58	212.60	3.43	Drop M.H. avg R. 20 15.	
+50	11.14			16.83	13.19	3.64		
35	9.80			18.17	13.90	4.27		
+50	8.69			19.28	14.61	4.67		
36	9.90			18.07	15.31	2.76		
+50	6.77			21.20	16.02	5.18	1.416	
37	5.15			22.82	16.73	6.09		
+50	3.86			24.11	17.43	6.68		
37+90	2.80			25.17	18.00	7.17	X M.H. 95	
38	3.25			24.72	18.30	6.42		
+50	3.54			24.43	19.81	4.62		
39	1.04	38.46	11.55	26.91	21.32	5.59		
+50	10.04			28.42	22.84	5.58		
40	10.60			27.86	24.35	3.51		
+50	9.17			29.29	25.86	3.43	3.022	to here
41	5.73			32.73	27.38	5.35		
+50	4.50			33.96	28.89	5.07		
+93.3	4.09			34.37	30.20	4.17	X M.H. 96	
old line	4.45			34.01	—	—		
42+50	2.58			35.88	31.35	4.53		
43	0.59	47.84	9.97	37.87	32.36	5.51		
+50	9.49			38.15	33.38	4.77		

Western - Continued

		4784						
44	8.87			38.97	34.40	4.57		
+50	7.64			40.20	35.41	4.79		97
45	6.12			41.72	36.43	5.29	2.033	M.H. ang L. 2°.00'
+50	3.33	53.97	9.46	44.51	37.45	7.06		
46	6.00			47.97	38.46	9.57		
+50	4.76			49.21	39.48	9.73		
47	5.00			48.97	40.50	8.47		
+50	4.71			49.26	41.51	7.75		98
+93.3	4.70			49.27	42.40	6.87 } outlet		(Drop M.H.) ang R. 24°.12'
old hub	4.60	59.81	10.44	49.37	45.40	3.87 } Inlet		
48+50	8.69			51.12	46.79	4.33		
49	7.82			51.99	48.02	3.97		
+50	6.81			53.00	49.25	3.75		
50 T.P.	2.57	69.21	11.97	57.24	50.48	6.76	2.46	
+50	10.80			58.41	51.70	6.71		
51	10.41			58.80	52.93	5.87		
+50	9.14			60.07	54.16	5.91		
52	9.57			59.64	55.39	4.25		101
+25	8.67			60.54	56.00	4.54	X	Manhole
+50	7.89			61.32	56.67	4.65		
53	6.79			62.42	58.01	4.41		
+20	6.95			~~62.26~~				
+50	4.62			64.59	59.36	5.23	2.69	
54	3.75			65.46	60.70	4.76		
T.P. +50	1.57	79.60	11.96	67.64	62.05	5.59		
55	10.62			68.98	63.39	5.59		

Western - Cont'd

		79.60			
55 +50	10.38			69.22	64.74
56.	9.42			70.18	66.08
+38	8.10			71.50	67.10
+50	7.85			71.75	67.43
57	7.04			72.56	68.77
+50	3.71			75.89	70.12
58 T.P.	1.80	89.30	11.50	77.80	71.46
+42	8.06			81.24	72.60 / 74.80
old hub.	8.10			81.20	—
59.	7.63			81.67	75.55
+50	7.81			81.49	76.20
60.	6.75			82.55	76.85
+50	6.01			83.29	77.50
61	4.04			85.26	78.15
+18.8	5.07			84.23	78.40 / 78.57
old hub	5.47			83.83	—
+50	4.59			84.71	79.83
T.P.	1.17	00.78	12.65	88.13	—
62.	12.45			88.33	81.85
+50	9.85			90.93	83.87
63.	12.34			88.44	85.89
+50	7.38			93.40	87.90
64.	7.70			93.08	89.92
+50	2.05			98.73	91.94
+76.3	0.40			00.38	93.00 / 94.50
old hub.	0.55	12.11	11.88	00.23	—

306.5

4.48				
4.10	219	101½		
4.40		Manhole E. Castle		6" line from E. 267.30 cub. 4.20'
4.32				
5.79				
5.77				
6.34		102		
8.64		MH.		ang L 26° 18'
6.44	X			6" line from North
6.12				
5.29	130			
5.70				
5.79				
7.11		103		ang R 7°
5.83 outlet		MH		T line joins ang L 55° 58'
5.66 inlet				278.4' cut 5.83
4.88 ✓				
6.48	404			
7.06				
2.55				
5.50				
3.16				
6.79		106		ang L 9° 35'
7.38 outlet	X	MH.		
5.88 inlet				

End of 8" pipe

Western Cont'd

6" Pipe begins 64+763

312.11

65	10.95			301.16	95.31	5.85			
+50	8.23			03.88	97.01	6.87			
66.	11.42			00.69	98.72	1.97			
+50	8.15			03.96	00.42	3.54	341		
67. T.P.	1.85	16.88	6.62	10.26	02.18	8.13			
+58	8.20			08.68	03.83	4.85		107	Ang R 14° 19' Inlet 2.8' above outlet
684+13.4.	7.47			09.41	06.00 08.80	3.41			
old line	7.67			09.21	—	0.61		X drop M.H.	12' iron pipe to culvert.
Flow line Cut	7.95			08.93	—				
T.P.	0.79	27.87	11.78	16.09	—		67.95		
Flow line North	12.48			15.39	—		12.48		
72+12.8	10.43			17.44	16.00			108	Ang L 11°33'
old line	11.14			16.73	—	1.44		M.H.	24' iron pipe to culvert
+50	9.62			18.25	16.33				
73. T.P.	9.00	27.42	8.55	18.87	16.77	1.92			
+50	6.55			20.87	17.21	2.10			
74	5.09			22.33	17.64	3.66			
+50	5.84			21.58	18.08	4.69			
+87.5	4.36			23.06	18.40	3.50		109	6" stub North
old line	4.88			22.54	—	4.66		X M.H. End	6" stub South.

Culvert + 0.877

Grade checks.

37+90		27.97	2.80	25.17
38	3.24			24.73
	3.85			24.17
41+93		38.29	3.92	34.37
	4.05			37.20
47+93		54.65	5.38	49.27
Board	2.25			52.40
47+50	5.46			49.25
Board	3.20			51.45
45		47.52	5.60	41.72
	4.09			43.43

717

27.97
2.50
25.47
1 & ov
7.47

3.24
2.65
6.59
6.42
7.01

4.17
2.83
7.00

2.50.52
2.50
7.30

3.77

J Line

8th line

BM.		94.45	10.62	83.83	
0	10.70			83.75	78.40
+50	10.37			84.08	80.01
1	6.15			88.30	81.62
+22.2	5.06			89.39	82.33
+50	4.40			90.05	83.24
2	3.31			91.14	84.85
T.P. +50	0.62	02.38	8.85	93.83	86.46
3	9.66			92.72	88.07
+50	8.59			93.79	89.68
4	5.61			96.77	91.30
+60	6.02			96.36	93.23
5 +14.7	2.26			00.12	95.00
old hub.	2.00			00.38	

103 Def ang from Western 55°58'

61+18.8 old hub. to so.

5.35

4.07

cut 6.85

6.68 104 6" from A. 252.54

7.06 MH ang R. 0° 55'

6.81

6.29

7.37

4.65

4.11

5.47

3.13 105

5.12 MH

6" – 295.20. MHS.

cut 4.92 = 4'–11"

I Line 8" Pipe

old hub		59.81	10.44	49.37	—
0	10.56			49.25	42.40
+50	8.52			51.29	45.12
1	8.18			51.63	47.48
+50	4.47	68.40	13.06	55.34	50.56
2	7.10			61.30	53.29
+50	8.17			60.23	56.01
3 TP	2.41	76.74	10.75	65.99	58.73
+50	9.05			67.69	61.45
4	7.88			68.86	64.18
T.P. +50	2.06	84.83	10.15	74.68	66.90
5	9.15			75.68	69.62
+50	7.33			77.50	73.35
+84.3	6.03			78.80	74.20
old hub	5.20	92.69	13.06	79.63	—
6	11.92			80.77	75.10
+50	7.05			85.64	77.98
7	6.88			85.81	80.86
TP +50	1.58	03.69	12.58	91.11	83.75
8	5.00			98.69	86.63
+50	9.94			93.75	89.51
9	6.18			97.51	92.39
T.P. +50	3.31	11.47	11.09	00.38	95.28
10	7.98			03.49	98.16
+50	1.78			09.69	01.04
+87.4	5.32			06.15	03.20

47+93.3	Western		
6.85		M.H. same grade as vacuum outlet	
6.17		98	
4.15			
4.78			
8.01			
4.22	5.74.5		
7.26			
6.24			
4.68			
7.78			
6.06			
4.15		99	
4.60		X M.H. any R 2°	6" line from North 274.4 cut 4.40
—			
5.67			
7.66			
4.95	5.76.5		
7.36			
12.06			
4.24			
5.12			
5.10			
5.33			
8.65		#100	6" N.B. 303.4 cut 2.75
2.95		M.H. End.	

Central Interceptor

8" line.

B.M.	11+20	10.94	12.90	98.04	
0+00	13.20			97.74	94.20
+50	11.94			99.00	95.30
1	10.10			00.84	96.39
+50	9.02			01.92	97.49
2	7.07			03.87	98.58
+50	7.94			03.00	99.69
3	4.62			06.32	00.78
+50	3.46			07.48	01.88
4	2.24			08.68	02.97
+47.7	0.89	21.88	11.83	10.05	04.00
5	10.70			11.18	05.42
+50	10.18			11.70	06.78
6	9.04			12.84	08.14
+50	8.31			13.57	09.49
7	6.25			15.63	10.85
+50	4.42			17.46	12.21
8	3.47			18.41	13.56
T.P. +50	1.25	32.91	12.28	20.63	14.93
9	10.92			21.99	16.28
+50	9.58			23.33	17.64
10	7.56			25.35	19.00
old hub	7.63			25.28	—
+50	6.63			26.28	20.25
11	5.83			27.08	21.50

See page 60

Sta 26+20 Western Interceptor.

	3.54		Ang 63°57' from Wabash line
	3.70		#92
	4.45		
	4.43		
	5.29		
	3.31	2.19	
	5.54		
	5.60		
	5.71		110
	6.05		x M.H. ang R. 160 (F line ang L 64°30')
	5.76		
	4.92		
	4.70		
	4.08		
	4.78	2.72	
	5.25		
	4.85		See page 60
	5.70		
	5.71		
	5.69		113
	6.35		x M.H. ang L 7°
Sta 10 —			
	6.03		
	5.58	2.72	

Central Continued

		32.91					
11 + 50	5.07			27.84	22.75	5.09	
12,	3.05			29.86	24.00	5.86	
T.P. + 50	0.81	44.19	12.09	32.10	25.25	6.85	
13	10.83			33.36	26.50	6.86	
+ 50	9.56			34.63	27.75	6.88	
14	8.40			35.79	29.00	6.79	
+ 50	6.52			37.67	30.25	7.42	See Page 60
15	4.25			39.94	31.50	8.44	Note 6" Drop in M.H. Sta. 41.6+20.
+ 50	3.28			40.91	32.75	8.16	
16	2.57			41.63	34.00	7.63	
+ 50	1.84			42.35	35.00	7.35	
Field Book	2.13	54.75	12.69	42.06	—	—	
+ 50	11.07			43.68	35.92	7.76	
17	9.23			47.52	37.46	10.06	
+ 50	7.50			47.25	38.99	8.26	
18	7.39			47.86	40.53	6.83	
+ 50	7.34			47.41	42.06	5.35	
19 T.P.	3.63	61.22	10.10	51.12	43.60	7.52	
+ 50	8.37			52.85	45.14	7.71	
20,	7.27		54.11	53.95	46.67	7.28	
+ 50	7.66			53.56	48.21	5.35	
21	6.75			54.47	49.74	4.73	
T.P. + 50	1.92	68.25	8.95	59.30	51.28	8.02	
22	8.03			60.22	52.82	7.40	
+ 50	6.50			61.75	54.35	7.40	

See Page 60

114 X M.H. Ang L. 9° { Gline ang L. 94°07'

3.072 116 M.H. Ang L. 11°56'

38	4.98	4725
		511
		5236
		4141
		4.95

Central Continued

		68.25			
23	5.40			62.85	55.89
+36	4.68			63.57	57.00
old hub	4.90			63.35	—
+50	4.34			63.91	57.52
24	2.32			65.93	59.36
T.P. +50	0.98	79.67	12.40	67.27	61.20
25	9.62			70.05	63.05
+50	9.02			70.65	64.89
26.	6.64			73.01	66.73
+50	4.70			74.97	68.58
27. T.P.	2.25	87.88	10.46	77.42	70.42
+50	9.29			78.59	72.26
+70	8.47			79.41	73.00
28	6.74			81.12	75.11
+50	5.37			82.51	78.62
29	2.25			85.63	82.13
T.P.	0.30	99.24	11.66	87.58	—
T.P. +50	0.90	02.66	4.32	98.34	85.64
30.	4.98			97.68	89.15
+547	5.30			97.36	93.00
Center Stake	4.95	10.75	13.04	97.71	—
+75	5.75			05.00	93.30
T.P.	0.12	23.17	12.54	10.63	—
T.P.	0.08	31.44	8.35	23.09	—

6.96		117	
6.57		X M.H. ang R. 53°15'	H line ang L 38°07'
—			
6.39			
6.57			
6.07			
7.00			
5.76	3.686		
6.28			
6.39			
7.00			
6.33		125	
6.41		X MH ang L. 6°21'	
6.01			
3.89			
3.50	7.02		
—			
12.70			
8.53			
4.36		X MH ang 126 Ang L. 7°-36'	6" Nail 293.20 crk. 4'-1 7/8"
		456' D. Silvi Castle	
11.70			
Tunnel	1.49		

547
2
93

75
547
203

3025
2770
235

3305.6
3054.7
250.9

Central, Continued

				33.05	
				4.20	
		31.44			
31+37	5.07			26.37	
33+05	4.54			26.90	96.74
0 — Y	4.54			26.90	21.80
0+30 Y	3.74	(At MH 126½)		27.68	21.10
33+50	3.52			27.92	
BM,	4.61			26.83	—
T.P.	12.95	21.10	2.41	18.49	—
34 T.P.	10.94	12.03	1.89	10.14	98.15
+50	8.97			03.06	98.90
35	8.97			03.06	99.64
1 +50	7.73			04.30	00.38
+91.5	5.95			06.08	01.00
old hub.	6.25			05.78	
Check levels.					
19+50		58.83	5.96	52.85	
20.	4.70			54.11	
+50	5.25			53.56	
21	4.34	62.57	8.10	54.47	
+50	3.25			59.32	
BM.		38.33	11.50	26.83	
	1.15			37.18	

M.H. # 126½
St. Grade
Soo E - 326.83
" W - 326.73
M.H. cover at
Elev. 326.67
per G.P.B. 2-2-22

30.16	327.17 / Hub 6.5 / 50+		
5.10	Extra sewer to be built	L = 33	Drop. 126½ M.H. C.L. Central ang L 90°05'
6.58			

34.3 N.J. N. line Castle
6" line to be built
30" Wall
Elev. 321.8

Set at 321.6

Tap, culvert N.E. cor Central & Castle

35+01.5
33+05.6
285.9

11.99			
4.16	3.67	1.14	
3.42			
3.92			127
5.08			M.H. In Alley

8" from N. 301.0
250' N. N. line Castle
6" from S. 301.20

Raise 1" at Sta 33+05.6.
Sta. 30+54.1 + 35+91.5 remain same.

Culvert N.E. cor Central & Castle
Mw. cor. Franklin & Castle - 337.26 to check.

BM-MH10	1.17	126.52		125.35
7			10.9	115.62
			9.1	117.42
			8.1	118.41
			5.89	120.63
			4.53	121.99
			3.19	23.33
			1.17	25.35
	12.73	138.08 ~~12.73~~	138.08	125.35
10+50			11.83	5
11			11.51	
11+50			10.24	27.84
12			8.22	29.86
+50			5.98	32.10
13 TP	10.77	44.13	4.72 / 3.45	33.86
			2.36	39.72
			2.16	46.29
			1.89	42.24
			2.38	41.55
			3.20	40.83

126.52
118.41
8.11

26.52
20.63
5.89

26.52
3.33
3.19

26.52
21.99
4.53

38.09
138.08
27.84
10.24

39.08
29.86
8.22

Central Interceptor —

New grade stakes — 8-27-'21
Smale + Richards

BM- ↓

℄ Sta 16+20	2.60	44.66		142.06		Sta 16+20 - Old center hub		
16+20			2.33	42.33	35.00	7.33	6' offset E.	MH 114
16			3.00	41.66	34.00	7.66		
15+50			3.72	40.94	32.75	8.19		
15			4.72	39.94	31.50	8.44		
14+50			6.98	37.68	30.25	7.43		
14			8.83	35.83	29.00	6.83		
13+50			10.00	34.66	27.75	6.91		
13 TP	1.87	35.23	11.30	33.36	26.50	6.86	See Page 55	
12+50			3.12	32.11	25.25	6.86		
12			5.30	29.93	24.00	5.93		
11+50			7.27	27.96	22.75	5.21		
11			8.13	27.10	21.50	5.60		
10+50			8.92	26.31	20.25	6.06		
10 TP	1.11	26.53	9.81	25.42	19.00	6.42	MH 113	
9+50			3.00	23.53	17.64	5.89		
9			4.48	22.05	16.28	5.77		
8+50			5.77	20.76	14.93	5.83		
8			8.13	18.40	13.56	4.84		
7+50			9.02	17.51	12.21	5.30		
7+00			10.85	15.68	10.85	4.83		

F. Line

8" Sewer

4+47.7		22.99	12.94	10.05	—
0	12.65			10.34	04.20
+50	10.14			12.85	07.80
1	5.73			17.26	11.40
T.P.	2.23	33.71	12.95	20.76	—
+50	8.48			25.03	15.00
2	4.25			29.46	18.60
+19.4	4.27			29.44	20.00
old hub,	7.40			26.31	—
T.P	0.68	44.58	11.55	33.03	—
+50	8.73			35.85	30.52
T.P.	0.20	56.83	12.45	44.38	—
3.	2.74			54.09	47.71
T.P.	0.83	67.51	11.51	56.00	—
T.P.	1.18	76.60	10.27	66.33	—
3+50.3	5.01			71.59	65.00
old hub	4.97			71.63	—

111.0

ang ∠ from Central Line 64°30'

6.14

5.05

5.86

7.20

10.03

10.86

111

9.44

X M.H. ang R. 20°03'

5.33

34.377

6.38

112

6.59

M.H. { 8" Sewer North 265.00

ang 36°40' to Cherokee pt

G. Line — 6" line

Old Hub 16+20	Central	52.49	10.43	42.06	
0	10.24			42.25	35.20
+50	12.01			40.48	36.70
+65				43.79	37.15
1	3.20			48.79	41.03
T.P.	0.95	63.65	12.11	51.54	—
+50	10.34			53.31	46.58
2 T.P.	0.60	74.40	11.35	63.05	52.13
+50	8.67			65.73	57.68
3	6.20			68.20	63.23
+34	1.95			72.45	67.00
Old hub.	2.15			72.25	
		53.92	11.84	42.06	
0+65	10.13			43.79	37.15

		114	0.2 3/8" above Central line 16+20
7.05	300	M.H.	
3.78			
6.64		× Manhole.	
7.76			
6.73			
10.92			
8.05	10.10		
4.97		115	6" N. & S. 26800 1' above Glen
5.45		M.H.	
6.64		M.H	

H. Line 8"

ang L. 38° 07' from Central line

23+36=0		74,63	11,28	63,35	57,00
0+50	11,00			63,63	58,39
1	11,88			62,75	59,78
+50	8,70			65,93	61,17
2	7,56			67,07	62,56
+50	6,13			68,50	63,95
3	3,60			71,03	65,34
+50	2,45			72,18	66,73
T.P. +95,7	0,78	86,81	12,96	73,85	68,00
4+50	12,25			74,56	70,08
5	11,45			75,36	72,00
+50	7,24			79,57	73,91
T.P. +90	3,48	90,70	7,37	83,33	75,43

ψ Line 6"		86,81	12,96	73,85	
0=3+97,5 H.					68,20
T.P. +50.	0,27	97,04	10,50	86,54	83,04
T.P.	0,47	04,26	7,69	96,57	—
0+92,4	0,65			03,61	96,00
		90,70			
6+31	10,70			80,00	77,00
BM.	8,52			82,18	—
+50	7,86			82,84	77,53
7	6,43			84,27	78,94
+50	5,43			85,27	80,34

old hub, Central line p. 57 } Same grade as Central.

5,24	#117	
2,97		
4,76		
4,57	2,78	
4,55		
5,69		
5,45	118	
5,85	X M.H. ang L 31° 12'	X line joins ang R 63° 56' 6" line 0'-2 3/8" above
4,48		
3,36		
5,66	X 3,825	
7,90		

0'-2 3/8" above grade of 3+97,5 H. line

3,50	#118	
	X 3,009	
7,61	M.H. #268	6" line from N. same Elev.
3,60	X M.H. ang R. 48° 55'	
old hub	119	
5,31		
5,33	2,813	
4,93		

H, line Continued

		90.70			
8,	4.47			86.23	81.75
T.P. + 45	3.35	98.25	10.90	87.35	83.02
9	8.42			89.83	84.56
+ 33.2	7.39			90.86	85.50
old hub -	7.33			90.92	—
+ 50	7.40			90.85	86.03
10	5.86			92.39	87.60
TP + 50	2.68	07.55	11.98	95.57	89.17
K line —	6"	98.25			
0					85.50
T.P.	0.70	09.77	12.22	97.55	
0 + 34.7	0.90			08.87	04.00
center	0.85			08.92	—
		07.55	11.98	95.57	
11.	11.34			96.19	90.74
+ 40	7.64			99.91	92.00
T.P.	0.40	19.56	12.41	07.15	—
12.	4.65			14.91	98.36
TP. + 50	1.49	26.56	8.49	18.07	03.66
13 + 09.8	6.95			19.61	10.00
BM.	7.00			19.56	—
+ 50	6.55			20.01	10.17

4.48	2.813		
4.33			
5.27		120	K line joins 6" line same elev, ang 75° 20:2 from H line
5.36	X	M.H. ang R. 42°	
4.82	3.144		
4.79			
6.40			
	X		
Same Elev. at 9 + 33.2 H. line			
	X	121	6" N + S
4.87		M.H.	304.00
	X		Same as K line.
	3.144		
5.45			
7.91	X	M.H. 122	
16.55			
14.41	10.60	123	6" N. 310.40
9.61	X	M.H.	cut 9.21
Brass plug in curb. NW cor Klauber + Fleman			
9.84			
	0.482		

H, Line Continued

2652

14 –	5.82	20.74	10.39	10.35	
+ 50	4.93	21.63	10.60	11.03	
+ 90	5.86	20.70	10.77	9.93	
15 + 41.3	9.32	17.24	11.00	6.24	
old hub.	11.95	14.61			

1432

124 M.H. { 8" N. 311.0
cut 6.24
6" A. 311.20
cut 6.04

Aug 6-1921
Ford-Smale

Western Interceptor

Sta	+	HI	−	Elev	Grade	Cut	
47+93.3				49.27			
47+93.3	8.98	58.18	8.98	49.20	45.40	3.80	3-9½
48+50			7.05	51.13	46.79	4.34	4-4⅛
49			6.18	52.00	48.02	3.98	3-11¾
+50 P.O.P.			5.16	53.02	49.25	3.77	3-9¼
50			0.94	57.24	50.47	6.77	6-9¼
+50	7.13	64.37	5.96	58.41	51.70	6.71	6-8⅜
51			5.51	58.86	52.93	5.93	5-11⅛
+50			4.32	60.05	54.16	5.89	5-10⅝
52			4.74	59.63	55.39	4.24	4-2⅞
+25			3.84	60.53	56.00	4.53	4-6⅜

Central Interceptor—
New Grade—9-6-'21

BM—	11.22			254.11	46.67
20+50		65.33	11.75	53.58	48.21
21			10.89	54.44	49.74
+50			6.00	59.33	51.28
22			5.09	60.24	52.82
+50			3.53	61.80	54.36
23			2.40	62.93	55.89
+36			1.95	63.38	57.00

Smale-Richards — 9-6-'21

Sta. 20+00 M.H. Hub 6" offset.

5.37	5' 4½"
4.70	4' 8½"
8.05	8' 5/8"
7.42	7' 5⅛"
7.44	7' 5¼"
7.04	7' ½"
6.38	6' 4⅝" M.H.

Grade Sheet
Issued 9-6

Western Interceptor – Revised Grades –

Smale } 10-4-21
Chisholm

Sta	+	HI	–	Elev	Grade –	Cut	
BM-Sta-0+50	5.70	58.69		152.99			
0+00			5.06	53.63	46.50	7.13	M.H. #30
+50			5.70	52.99	46.66	6.33	
1			8.43	50.26	46.81	3.45	Grade Sheet Issued 10-5
+50			5.15	53.54	46.97	6.57	
2			5.54	53.15	47.12	6.03	
+50			4.95	53.74	47.28	6.46	
3			4.48	54.21	47.44	6.77	
+20			5.48	53.21	47.50	5.71	Levels-10-4-21 M.H. #87
TP	9.03	62.24		53.21			
+50			9.50	52.74	48.17	4.57	
4			7.75	54.49	49.29	5.20	
+50			7.06	55.18	50.41	4.77	Grade Sheet Issued-10-6
5			7.01	55.23	51.53	3.70	
+50			3.47	58.77	52.65	6.12	
6+05			4.71	57.53	53.88	3.65	
+50			3.63	58.61	54.89	3.72	
TP			3.76	58.48	—		
✓	8.51	67.09		58.42	—		
7			4.77	62.32	56.01	6.31	
+62²			5.12	61.97	57.40	4.57	M.H. #88 Levels 10-5-21
					—		
TP 7+62²	9.86	71.83		61.97	—		1.6670
8			9.11	62.72	58.03	4.69	
+50			7.54	64.29	58.86	5.43	
9			8.44	63.39	59.69	3.70	

Western Interceptor - ctd.

Sta.	+	HI 171.83	−	Elev.	Grade
9+50			8.50	163.33	60.52
10			5.32	66.51	61.35
+50			4.30	67.53	62.18
11			3.24	68.59	63.01
+50			2.11	69.72	63.84
TP 11+50	5.91	75.63		69.72	—
12			4.62	71.01	64.67
+50			3.70	71.93	165.50
					—
TP 12+50	9.50	81.43		71.93	—
13			11.78	69.65	66.42
13+50			7.91	73.52	67.34
14			7.14	74.29	68.27
+50			5.98	75.45	69.19
15			5.58	75.85	70.11
+50			3.00	78.43	71.03
16			1.30	80.13	71.95
TP-16+00	6.82	86.95		80.13	—
+50			4.33	82.62	72.88
17			3.18	83.77	173.8
TP 17+00	6.84	90.61		83.77	—
+50			12.37	78.24	74.98
18			11.42	79.19	76.15
+50			9.99	80.62	77.33

Revised Grades

Smale / Chisholm } 10-6-21

Cut	
2.32	
6.16	
5.35	
5.58	Grade Sheet issued 10-12-21
5.88	
6.34	
6.48	MH #89
	1.844%
3.29	
6.18	
5.02	Grade Sheet issued 10-11-21
6.26	
5.74	
7.40	
8.18	
9.74	
9.92	2.351% MH 90
3.26	
3.04	Grade Sheet issued 10-11-21
3.29	

Western Interceptor.

Sta.	+	HI 190.61	−	Elev.	Grade
19+00			9.73	180.88	78.50
+50			4.80	85.81	79.68
20			3.42	87.19	80.85
+50			3.45	87.16	82.03
21			2.42	88.19	88.20
+21.3			1.90	88.71	183.7
TP 21+21.3	10.03	198.74		188.71	—
+50			9.20	89.54	84.28
22			8.44	90.30	85.30
+50			7.31	91.43	86.32
23			8.16	90.58	87.34
+50			6.92	91.82	88.36
24			5.22	93.52	89.38
+50			3.15	95.59	90.40
25			3.54	95.20	91.42
+50			1.33	97.01	92.44
TP 25+50	5.28	202.29		197.01	—
26			3.69	198.60	93.45
26+20.2			4.13	198.16	193.87

Revised Grades — Smale, Chisholm } 10-7-21

Cut

2.38
6.13
6.24
5.13
4.99
5.01

Grade Sheet # Issued 10-11-21

2038% MH #91

5.26
5.00
5.11
3.24
3.46
4.14
5.19
3.78
4.57

Grade Sheet Issued 10-11-21

5.15
4.29

MH #92
Intersection with Central Int.
Relined + levels - 10-7-21 to here

Smale } 12-12-21
Chisholm }
Levels with transit.

Eastern Interceptor -

continued from Page 43

Sta.	+	H.I.	—	Elev.	Grade .2%	Cut.	
152 - TP				358.22		—	
153+29	3.53	61.75	3.50	358.25	341.98	16.27	M.H. #83
+50			3.51	58.24	42.02	16.22	
+75			3.64	58.11	42.07	16.04	
154			3.66	58.09	42.12	15.97	
+25			3.82	57.93	42.17	15.76	
+50			3.98	57.77	42.22	15.55	
+75			3.97	57.78	42.27	15.51	
155			4.11	57.64	42.32	15.32	Grade Sheet #30
BM -	3.39	61.03	5.01	56.02	SB 356.12	—	B.P. S.W. El Cajon & Highland B 82 P4
+25			3.43	57.60	42.37	15.23	
+56			3.50	57.53	42.42	15.11	
+75			3.71	57.32	42.47	14.85	
156			3.73	57.30	42.52	14.78	
+25			3.91	57.12	42.57	14.55	
+50			4.08	56.95	42.62	14.33	
+78.62		Center	4.25	56.78	42.68	14.10	MH #84 ℄ Highland Ave. N. 2X2 Hub & tack at P.C. of 6' offsets N. & S. 2X2 - Hub & tack on ℄ Highland Ave. N - 25' N. & S. of M.H. center - for 6" stub N.
TP 156+50				56.95	—		
157	3.26	60.21	3.58	56.83	42.72	14.11	
+25			3.80	56.41	42.77	13.64	
+50			4.14	56.07	42.82	13.25	
+75			4.39	55.82	42.87	12.95	160+00± MH 85 Orange'd
158			4.62	355.59	342.92	12.67	163+46.33 ± 86 - alley

Eastern Interceptor - c'd from Page 71

Smale / Chisholm 12-12-21 72
Levels with transit.

Sta.	+	H.I. 60.21	−	Elev.	Grade	Cut
158+25			4.89	355.32	342.97	12.35
+50			5.28	54.93	43.02	11.91
+75			5.55	54.66	43.07	11.59
159			5.71	54.50	43.12	11.38
BM			5.56	54.65	S.B. 354.70	
+25 TP			6.11	54.10	43.17	10.93
+50	2.96	57.06	3.38	53.68	43.22	10.46
+75			3.72	53.34	43.27	10.07
160+00±	MH		4.00	53.06	43.32	9.74
+25			4.33	52.73	43.37	9.36
+50			4.68	52.38	43.42	8.96
+75			4.94	52.12	43.47	8.65
161			5.09	51.97	43.52	8.45
+25			5.04	52.02	43.57	8.45
+50			5.13	51.93	43.62	8.31
TP +75			4.99	52.07	43.67	8.40
162	4.75	56.82	4.86	51.96	43.72	8.24
BM			4.91	51.91	S.B. 352.00	
+25			4.88	51.94	43.77	8.17
+50			5.05	51.77	43.82	7.95
+75			4.81	52.01	43.87	8.14
163			4.77	52.05	43.92	8.13
+25			4.54	52.28	43.97	8.31
+46.33 +50	exist sewer 163+33±		4.36	352.46	344.01	8.45

BP S.W. El Cajon & Colonial - B82 P4

Grade Sheet #31 - 1-3-22

MH #85 - E Orangewood N. 2x2 Hub & tack at center & at P.I.s. 6 offsets N. & S. 2x2 Hubs & tacks for stub - 25' N. & S. from M.H. center.
St. Gr. 353.24.

50.11
46.33
3.78

Grade Sheet #32 - 1-3-22

BP - S.W. curb El Cajon & Fairmount - B82 P4

163 50.11
16 00.01
35 0.01

M.H. #86 - E Fairmount - Pauly alley at ℄ - El Cajon.

MH 155 to 156 - for Kennedy
5th - Stockton alley.

	6.11	69.10		62.99	57.97
	0.76	63.41	6.45	62.65	
6+00					59.96
+25					60.96
+50					61.96
	4.43	207.49		203.06	
					98.90
			1.50	205.99	98.53

7.46

10 − 4

5. − 2

2.5 − 1

4)2.5(52

600
562
.38

63.41
59.96
3.45

59.96
.39
60.25

.073
4
.292

63.41
60.96
2.45

63.41
60.25
3.16

607.3

98.99
.5
.75
99
37
53

17.3
4
.692

9.96
60.65

63.45
60.65
2.80

	7.75	353.29		345.54	
			2.66	.63	
	3.26	96.26		93.00	
+23	~~2.63~~	94.56	3.33	92.93	93.34
+48			2.68	93.58	93.72
+10			3.29	92.97	93.15
+90					94.34
1+000					94.49
+25					94.86
+50					95.23

1.49
.1
.149

.41

1.49
.23
447
298
.3427

.16

1.49
.48
.1197
596
.7157

96.26
93.15
3.11

96.26
93.34
2.92

1.49
.25
745
298
.3725

4.49
4.86
37
5.23

94.34

M 14	Depth			
No 1	5.5			
2	5.5			
3	6.5			
4	10.0			
5	12.0			
6	8.5			
7	8.0			
8	7.5			
9	7.0			
10	6.0			
11	6.5			
12	6.5			
13	7.5			
14	5.5			
	4.16	97.02		92.86
0+00			4.02	93.00
+10			3.87	93.15
+23			3.68	93.34
+48			3.39	93.72
+75			3.00	94.02
+90			2.68	94.34

94.39
.15
4.09

149
90
13410

Tunnel.

	1.95	334.02		332.07		
	2.97	327.94	9.05	324.97		
	2.40	322.48	7.86	320.08		
			11.09	311.39	311.45	F- .06.
	C-Line					
TP-6	7.37	62.85		55.48	46.32	9.16
6+50			6.73	56.12	49.02	7.10
7			4.75	58.10	51.73	7.37
+50			4.33	58.52	54.44	4.08
TP	3.94	65.26	1.53	61.32		
7+97.4			1.41	63.85	57.00	6.85
	E I.					
33+50	7.03	50.76		43.73		
+77.4			6.65	44.11	35.50	8.61
34			7.67	43.09	36.45	6.54
+50			5.04	45.72	38.57	7.15
35			3.31	47.45	40.69	6.76
+60.8			1.63	49.13	43.28	5.85
	6.90	333.41		326.51		BP-NW-Cabrillo & Center
			3.71	329.70		

Estimate No 1

To July 9"

5265' of 16" pipe @ 1.79 = $9424.35

75% due Kennedy 7068.26

Bal to be paid when job Complete 2356.09

BM —			334.78	
	3.20	346.30	343.10	
	0.48	40.77	40.29	
		6.01	30.54	
		10.23	30.63	
		10.14	30.54	
	2.04	32.58	26.35	26.37
		6.23		
	1.47	22.38	20.91	
	1.75	12.21	10.46	
	1.60	301.65	300.05	
	4.12	96.81	292.69	
+10		3.66	292.77	93.15
+23		4.03		93.34
		3.47		

49+57

3.07

52.60

12+60 300

57 50

96.81
4.02
2.79

1.49
75
745
943
1.017 5

96.74
93
3.74

33 05.6
3054.7
250.9

1.49

96.81
3.34
3.47

93.15

1.49
48
1.92
596
71 52

1.49
.23
447
298
342

96.81
93.15
3.66

3.74
251
1280
1004
2.60
2259

96.81
4.16
92.65

Spike NW Sisson & Castle. 61/12

BT. N.W. Sisson & Klauber.

96.81

+48	3.09	93.72
+75	2.79	94.02
+90	2.47	94.34

Prices

6" Concrete	1.04
8" "	1.30
10" "	1.74
12" "	1.65
14" "	1.76
16" "	1.79
Manholes	60.00 each + $3.50 per ft.
6" Cast Iron Pipe	2.00
1-3-6 Concrete	14.00 per yd.

Check levels to ref. hub at M.H. # 126½ - Central + Castle.

	0.42	43.96	34	343.54	B.M. Central + Klauber
TP	1.38	34.86	10.48	33.48	
			8.03	26.83	6'5
			8.13	26.73	10'5.
S.W. cor. culvert N.E. cor. Central + Castle.			7.94	26.92	
	5.70	32.62	5.8	26.82	
			5.12	27.50	
			11.12	21.50	

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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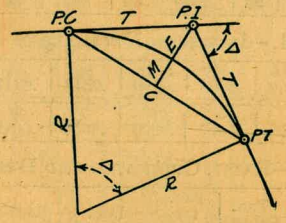

CURVE FORMULAS

Radius $=R=\frac{50}{\sin. D/2}$ (1) Degree of Curve $=D$ and $\sin. \frac{D}{2}=\frac{50}{R}$ (2)

Tangent $=T=R\tan\frac{\Delta}{2}$ (3) Length of Curve $=L=100\frac{\Delta}{D}$ (4)

Middle ordinate $=M=R(1-\cos.\frac{\Delta}{2})$ (5) $=R\,\text{vers}\,\frac{\Delta}{2}$ (6)

External $=E=T\tan\frac{\Delta}{4}$ (7) $=R\cos\frac{\Delta}{2}(1-\cos.\frac{\Delta}{2})$ (8) $=R\,\text{exsec}\frac{\Delta}{2}$ (9)

Long Chord $=C=2\,R\sin.\frac{\Delta}{2}$ (10) Δ = Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta=62°\ 10'$ $D=8°\ 20'$. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157+45.50. Also from (4) L=746.00 and P. T.=Sta. P. C.+L=164+91.50.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50\div100)^2$=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2\div(2\times688.26)$=2.16 ft.

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′+8° 20′÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6÷8⅓=91.27 and from Table V correction=.10 or E=91.37 ft. Or suppose $\Delta=32°$ and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30′.

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
° ′						° ′					
0	0	0	00	1	**90**	**8**	.1392	.1405	7.115	.99027	**82**
10	.0029	.0029	343.8	1	50	10	.1421	.1435	6.968	.98986	50
20	.0058	.0058	171.9	.99998	40	20	.1449	.1465	6.827	.98944	40
30	.0087	.0087	114.6	.99996	30	30	.1478	.1495	6.691	.98902	30
40	.0116	.0116	85.94	.99993	20	40	.1507	.1524	6.561	.98858	20
50	.0145	.0145	68.75	.99989	10	50	.1536	.1554	6.435	.98814	10
1	.0175	.0175	57.29	.99985	**89**	**9**	.1564	.1584	6.314	.98769	**81**
10	.0204	.0204	49.10	.99979	50	10	.1593	.1614	6.197	.98723	50
20	.0233	.0233	42.96	.99973	40	20	.1622	.1644	6.084	.98676	40
30	.0262	.0262	38.19	.99966	30	30	.1650	.1673	5.976	.98629	30
40	.0291	.0291	34.37	.99958	20	40	.1679	.1703	5.871	.98580	20
50	.0320	.0320	31.24	.99949	10	50	.1708	.1733	5.769	.98531	10
2	.0349	.0349	28.64	.99939	**88**	**10**	.1736	.1763	5.671	.98481	**80**
10	.0378	.0378	26.43	.99929	50	10	.1765	.1793	5.576	.98430	50
20	.0407	.0407	24.54	.99917	40	20	.1794	.1823	5.485	.98378	40
30	.0436	.0437	22.90	.99905	30	30	.1822	.1853	5.396	.98325	30
40	.0465	.0466	21.47	.99892	20	40	.1851	.1883	5.309	.98272	20
50	.0494	.0495	20.21	.99878	10	50	.1880	.1914	5.226	.98218	10
3	.0523	.0524	19.08	.99863	**87**	**11**	.1908	.1944	5.145	.98163	**79**
10	.0552	.0553	18.07	.99847	50	10	.1937	.1974	5.066	.98107	50
20	.0581	.0582	17.17	.99831	40	20	.1965	.2004	4.989	.98050	40
30	.0610	.0612	16.35	.99813	30	30	.1994	.2035	4.915	.97992	30
40	.0640	.0641	15.60	.99795	20	40	.2022	.2065	4.843	.97934	20
50	.0669	.0670	14.92	.99776	10	50	.2051	.2095	4.773	.97875	10
4	.0698	.0699	14.30	.99756	**86**	**12**	.2079	.2126	4.705	.97815	**78**
10	.0727	.0729	13.73	.99736	50	10	.2108	.2156	4.638	.97754	50
20	.0756	.0758	13.20	.99714	40	20	.2136	.2186	4.574	.97692	40
30	.0785	.0787	12.71	.99692	30	30	.2164	.2217	4.511	.97630	30
40	.0814	.0816	12.25	.99668	20	40	.2193	.2247	4.449	.97566	20
50	.0843	.0846	11.83	.99644	10	50	.2221	.2278	4.390	.97502	10
5	.0872	.0875	11.43	.99619	**85**	**13**	.2250	.2309	4.331	.97437	**77**
10	.0901	.0904	11.06	.99594	50	10	.2278	.2339	4.275	.97371	50
20	.0929	.0934	10.71	.99567	40	20	.2306	.2370	4.219	.97304	40
30	.0958	.0963	10.39	.99540	30	30	.2334	.2401	4.165	.97237	30
40	.0987	.0992	10.08	.99511	20	40	.2363	.2432	4.113	.97169	20
50	.1016	.1022	9.788	.99482	10	50	.2391	.2462	4.061	.97100	10
6	.1045	.1051	9.514	.99452	**84**	**14**	.2419	.2493	4.011	.97030	**76**
10	.1074	.1080	9.255	.99421	50	10	.2447	.2524	3.962	.96959	50
20	.1103	.1110	9.010	.99390	40	20	.2476	.2555	3.914	.96887	40
30	.1132	.1139	8.777	.99357	30	30	.2504	.2586	3.867	.96815	30
40	.1161	.1169	8.556	.99324	20	40	.2532	.2617	3.821	.96742	20
50	.1190	.1198	8.345	.99290	10	50	.2560	.2648	3.776	.96667	10
7	.1219	.1228	8.144	.99255	**83**	**15**	.2588	.2679	3.732	.96593	**75**
10	.1248	.1257	7.953	.99219	50	10	.2616	.2711	3.689	.96517	50
20	.1276	.1287	7.770	.99182	40	20	.2644	.2742	3.647	.96440	40
30	.1305	.1317	7.596	.99144	30	30	.2672	.2773	3.606	.96363	30
40	.1334	.1346	7.429	.99106	20	40	.2700	.2805	3.566	.96285	20
50	.1363	.1376	7.269	.99067	10	50	.2728	.2836	3.526	.96206	10
					82						**74**
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

966 924 (956
8694 6300
5460 5796
4830 504
630

924. 1 time

R 630561

Table VIII.—Natural Trigonometrical Functions.

Angle	Sine.	Tan.	Cotg.	Cosin.		Angle	Sine.	Tan.	Cotg.	Cosin.	
° ′						° ′					
16	.2756	.2867	3.487	.96126	**74**	**24**	.4067	.4452	2.246	.91355	**66**
10	.2784	.2899	3.450	.96046	50	10	.4094	.4487	2.229	.91236	50
20	.2812	.2931	3.412	.95964	40	20	.4120	.4522	2.211	.91116	40
30	.2840	.2962	3.376	.95882	30	30	.4147	.4557	2.194	.90996	30
40	.2868	.2994	3.340	.95799	20	40	.4173	.4592	2.177	.90875	20
50	.2896	.3026	3.305	.95715	10	50	.4200	.4628	2.161	.90753	10
17	.2924	.3057	3.271	.95615	**73**	**25**	.4226	.4663	2.145	.90631	**65**
10	.2952	.3089	3.237	.95545	50	10	.4253	.4699	2.128	.90507	50
20	.2979	.3121	3.204	.95459	40	20	.4279	.4734	2.112	.90383	40
30	.3007	.3153	3.172	.95372	30	30	.4305	.4770	2.097	.90259	30
40	.3035	.3185	3.140	.95284	20	40	.4331	.4806	2.081	.90133	20
50	.3062	.3217	3.108	.95195	10	50	.4358	.4841	2.066	.90007	10
18	.3090	.3249	3.078	.95106	**72**	**26**	.4384	.4877	2.050	.89879	**64**
10	.3118	.3281	3.048	.95015	50	10	.4410	.4913	2.035	.89752	50
20	.3145	.3314	3.018	.94924	40	20	.4436	.4950	2.020	.89623	40
30	.3173	.3346	2.989	.94832	30	30	.4462	.4986	2.006	.89493	30
40	.3201	.3378	2.960	.94740	20	40	.4488	.5022	1.991	.89363	20
50	.3228	.3411	2.932	.94646	10	50	.4514	.5059	1.977	.89232	10
19	.3256	.3443	2.904	.94552	**71**	**27**	.4540	.5095	1.963	.89101	**63**
10	.3283	.3476	2.877	.94457	50	10	.4566	.5132	1.949	.88968	50
20	.3311	.3508	2.850	.94361	40	20	.4592	.5169	1.935	.88835	40
30	.3338	.3541	2.824	.94264	30	30	.4617	.5206	1.921	.88701	30
40	.3365	.3574	2.798	.94167	20	40	.4643	.5243	1.907	.88566	20
50	.3393	.3607	2.773	.94068	10	50	.4669	.5280	1.894	.88431	10
20	.3420	.3640	2.747	.93969	**70**	**28**	.4695	.5317	1.881	.88295	**62**
10	.3448	.3673	2.723	.93869	50	10	.4720	.5354	1.868	.88158	50
20	.3475	.3706	2.669	.93769	40	20	.4746	.5392	1.855	.88020	40
30	.3502	.3739	2.675	.93667	30	30	.4772	.5430	1.842	.87882	30
40	.3529	.3772	2.651	.93565	20	40	.4797	.5467	1.829	.87743	20
50	.3557	.3805	2.628	.93462	10	50	.4823	.5505	1.816	.87603	10
21	.3584	.3839	2.605	.93358	**69**	**29**	.4848	.5543	1.804	.87462	**61**
10	.3611	.3872	2.583	.93253	50	10	.4874	.5581	1.792	.87321	50
20	.3638	.3906	2.560	.93148	40	20	.4899	.5619	1.780	.87178	40
30	.3665	.3939	2.539	.93042	30	30	.4924	.5658	1.767	.87036	30
40	.3692	.3973	2.517	.92935	20	40	.4950	.5696	1.756	.86892	20
50	.3719	.4006	2.496	.92827	10	50	.4975	.5735	1.744	.86748	10
22	.3746	.4040	2.475	.92718	**68**	**30**	.5000	.5774	1.732	.86603	**60**
10	.3773	.4074	2.455	.92609	50	10	.5025	.5812	1.720	.86457	50
20	.3800	.4108	2.434	.92499	40	20	.5050	.5851	1.709	.86310	40
30	.3827	.4142	2.414	.92388	30	30	.5075	.5890	1.698	.86163	30
40	.3854	.4176	2.394	.92276	20	40	.5100	.5930	1.686	.86015	20
50	.3881	.4210	2.375	.92164	10	50	.5125	.5969	1.675	.85866	10
23	.3907	.4245	2.356	.92050	**67**	**31**	.5150	.6009	1.664	.85717	**59**
10	.3934	.4279	2.337	.91936	50	10	.5175	.6048	1.653	.85567	50
20	.3961	.4314	2.318	.91822	40	20	.5200	.6088	1.643	.85416	40
30	.3987	.4348	2.300	.91706	30	30	.5225	.6128	1.632	.85264	30
40	.4014	.4383	2.282	.91590	20	40	.5250	.6168	1.621	.85112	20
50	.4041	.4417	2.264	.91472	10	50	.5275	.6208	1.611	.84959	10
					66						**58**
	Cosin.	Cotg.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Tan.	Sine.	Angle.

3.085 52.31 3.085 48.925

3.81 58.165

3.81 41.77 13.05 38.96 348.90

1.98 350.88

2.78 4.13

4.09 42.32 12.65 38.23

5.04 37.28

47° 3.085 16

2.30 48.925

33+05'

2.81 41.77

41.77

2.81

38.96

L 7°36'

Ang L 9°05'

Central

4+47.5

10

16+20

20

23+36

28

30+54.7

35+49.5

H

3+95.75

6+31 — 48°55'

9+33.2 R 0+34.7

11+46

13+09.8 R 30°45'

15+41.3

G

3450.3

R 4+04' 63°50' x line

I

5+84.3

10+87.6

24+24.8

at C. line Ang R. 2°06'

C line 2+73.4 ang pt.

5+38.7

7+97.4

Hammer .55

Bat .50

26+60 ang L 16°14'

28+50.9 mH ang R

33+77.4 " D ang L 67'

35+60.8 ang L 23°51'

39+40.8 " R 6°42'

42+30.7 " L 129°08' E line

.50

44+01.5 — R 89°05'

45+49.7 L 29°01'

L 8°12'

48+75.3

1+47.5 E

61+18.8 J

64+76.3 77

68+15.6

72+12.8

74+87.8 L

2°08'

Western

3+20

7+62.2 Δ

12+80

17+25

21+21.3

26+20.2 Central

30+00

34+08.7

38+00

41+93.3

45+00

47+95.5 I

53+20

58+42

E. PAUL FORD
CITY ENGINEER

HILLCREST 1544-J

ENGINEERING DEPARTMENT
CITY OF EAST SAN DIEGO

EAST SAN DIEGO, CALIFORNIA.

November 4, 1921.

Mr. V. M. Smale,
City Engineer's Office,
East San Diego, Calif.

Dear Sir:-

Reference to change in allignment in the Branch D on Kennedy's job, please be advised that the following change has been authorized.

Instead of a manhole at station 5, there will be a manhole located at station 4 plus 00 and one at station 8 plus 00. (8+0 The location of the manhole at station 4 will be on the same line as originally staked by Mr. Bartlett. The location of the manhole at station 8 will be ten feet easterly from the line located by Mr. Bartlett.

The location of the manhole 46 at the end of the line will be the same as originally located. Sta. 1003.2

I have given Mr. Kennedy the offsets from the stakes now in and he states that he comtemplates no trouble in constructing the work without additional stakes at the present time.

Yours Truly,

E Paul Ford

City Engineer

EPF/csk

cc to
J. V. Smale.

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ENGINEERING DEPARTMENT,
CITY OF SAN DIEGO.
CALIFORNIA.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	25.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9+(20—16)÷2 or 2 ft. added to 41.9 =43.9. For slopes of 1 on 1 see inside of front cover.

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