1070 B

LA JOLLA DEL MAR PIPELINE

DIETZGEN

ENGINEERS

FIELD BOOK

No. 403

W153

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.

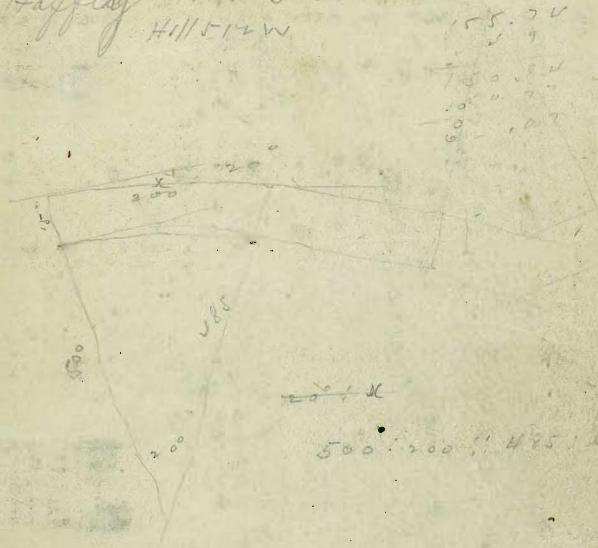
H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	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.

1070 B.

LaJolla Del Mar Pipe Line

G.K. Hafflay 4145-3rd [illegible]
Hill 5124 W



Ch

H
0
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to b
of r
exa
30.6

INDEX

Sta.	Gr.	Elev.			
				H.I	
				167.31	
				165.1	2.2 5E
0+00		[illegible]		164.9	2.4 ℄
Prop Line			+50	+ 164.6	2.7 ℄
+30		164.9		164.5	2.8 5E
				163.4	3.9 ℄
1-		163.2		163.3	4.0 5E
				162.0	5.3 ℄
+50				161.9	5.4 5E
				160.5	6.8 5E
2-		160.6		160.5	6.8 ℄
				159.0	8.3 5E
+50				159.1	8.2 ℄
				157.7	9.6 5E
3-		157.7		157.8	9.5 ℄
				156.3	11.0 5E
+50				156.2	11.1 ℄
				155.1	12.2 5E
4-		154.85	0.67	154.9	12.4 ℄
				155.74 153.7	2.0 5E
+50				153.6	2.1 ℄
				152.2	3.5 5E
5-		152.0		152.1	3.6 ℄
				151.4	4.3 5E
+30		151.3		151.4	4.3 ℄
approx ℄ Prospect				151.4	4.3 5E
+70		151.1		151.2	4.5 ℄
				151.0	4.7 5E
6+08.04 =		149.9		150.8	4.9 ℄

	+	H.I	−	Elev.
	0.80	150.77		
			℄ 0.4	150.3
0+00 PC			5E -0.07	150.8
			℄ 2.7	148.0
+25			5E 2.2	148.5
			℄ 4.5	146.2
+50			5E 4.1	146.6
			℄ 6.4	144.3
+75			5E 5.9	144.8
			℄ 8.5	142.2
1-			5E 8.3	142.4
			℄ 10.5	140.2
+25			5E 10.8	139.9
			℄ 11.6	139.1
+3926 EC			5E 12.1	138.6
			℄ 12.5	138.2
+50			5E 12.9	137.8

B. M. Brass Plug. S.W. Cor. State & Prospect (149.975)

(149.975)
12.63 +
162.60
0.59 −
162.01
5.30
167.31
1.34

0+00 = 10' south and 15' [illegible] ℄ Torrey Road & Exchange Place

	Grade	Cut
	161.5	3.6
	161.5	3.1
	159.5	3.9
	158.1	3.8
	156.7	3.8
	155.3	3.7
	153.9	3.8
	152.5	3.8
Hub 5'E. T.P. 12.22 155.07 .67 .74	151.1	4.0
	149.7	4.0
	148.3	3.9
	147.5	3.9
	146.4	5.0
	145.4	5.6

= 15' East of Int. ℄ Torrey Road and North line State

Equ.
BM Brass Plug SW Cor State & Prospect
(149.975)

5 East = 20' East of ℄ of Road & 5 East of ℄ of Ditch

Grade	Cut
145.4	5.6
143.6	4.9
141.8	4.8
140.0	4.8
138.1	4.3
136.3	3.6
134.5	3.3

See Book 1017
Page 3

Sta	[illegible]	Elev.			Grade	Cut.
T.P. on Hub +50	0.36	138.24	12.89	137.88		
+75			℄ 1.8	136.4	132.7	3.5
			SE 2.0	136.2		
2—			℄ 3.9	134.3	130.8	3.7
			SE 3.7	134.5		
+09.42 B.C.			℄ 4.5	133.7		
			SE 4.4	133.8		
+25			℄ 5.6	132.6	129.0	3.7
			SE 5.5	132.7		
+50			℄ 7.5	130.7	127.2	3.7
			SE 7.3	130.9		
+75			℄ 9.3	128.9	125.4	3.5
			SE 9.3	128.9		
3—			℄ 11.3	126.9	123.5	3.6
			SE 11.1	127.1		
+25			℄ 13.0	125.2	122.0	3.4
			SE 12.8	125.4		
T.P.	0.79	126.13	12.90	125.34		
+50			℄ 2.2	123.9	120.5	3.5
			SE 2.1	124.0		
+75			℄ 3.8	122.3	119.0	3.7
			SE 3.4	122.7		
4—			℄ 5.1	121.0	117.5	3.9
			SE 4.7	121.4		
+25			℄ 6.2	119.9	116.6	3.2
			SE 6.3	119.8		
+50			℄ 7.2	118.9	115.6	3.1
			SE 7.4	118.7		
+75.53 P.C.			℄ 8.4	117.7	114.7	2.9
			SE 8.5	117.6		
5—			℄ 9.2	116.9	113.7	3.0
			SE 9.4	116.7		
+09.83 E.C.			℄ 9.5	116.6		
			SE 9.8	116.3		
+50			℄ 11.0	115.1	111.8	3.5
			SE 10.8	115.3		
6—			℄ 12.8	113.3	109.9	3.3
			SE 12.9	113.2		
T.P. on Hub. 6+00	1.13	114.36	12.90	113.23		
+35.68 P.C.			℄ 2.4	111.9	108.5	2.9
			SE 3.0	111.4		
+50			℄ 3.0	111.4	108.0	3.3
			SE 3.1	111.3		
+75 E.C.			℄ 3.8	110.6	107.0	3.3
			SE 4.1	110.3		
7—.07 P.C.			℄ 4.7	109.7	106.1	3.8
			SE 4.5	909.9		
+25			℄ 5.2	109.2	105.3 1093	3.7
			SE 5.4	109.0		

						Grade		Cut.
		114.36						
7+50			℄ 5.9 SE 6.4	108.5 108.0		104.5	1073	3.5
+75			℄ 6.8 SE 7.3	107.6 107.1		103.7		3.4
7+75.07 = 15'E ℄ Ditch			℄ 7.0	107.2				
7+80.77 = 7+77.63 Davis ℄			SE 7.4	107.0				
T.P. on Hub P.C.C.	0.29	107.20	7.45	106.91				
8+00			℄ 1.4 SE 1.3	105.8 105.9		102.7	1060	3.2
+25			℄ 2.1 SE 2.0	105.1 105.2		101.6		3.6
+50			℄ 3.2 SE 3.2	104.0 104.0		100.5	1047	3.5
+75			℄ 4.8 SE 4.6	102.4 102.6		98.8		3.8
9+00			℄ 6.3 SE 6.4	100.9 100.8		97.2	1035	3.6
+25			℄ 7.9 SE 8.2	99.3 99.0		95.5		3.5
+50			℄ 9.4 SE 10.1	97.8 97.1		93.8	100.3	3.3
+72.48 E.C.			℄ 10.9 SE 11.9	96.3 95.3		92.1		3.2
T.P. on Hub E.C.	0.13	95.45	11.88	95.32				
10—			℄ 1.4 SE 2.0	94.0 93.4		90.5	973	2.9
+50			℄ 5.1 SE 5.0	90.3 90.4		87.1	93.90	3.3
11—			℄ 7.7 SE 7.9	87.7 87.5		83.7	90.50	3.8
+50			℄ 10.0 SE 10.2	85.4 85.2		81.4	86.60	3.8
12—			℄ 11.8 SE 11.9	83.6 83.5		79.8 ✓	84.10	3.7
+50			℄ 12.8 SE 13.0	82.6 82.4	T.P.	79.0	~~79.0~~ 82.0	3.4
TP on Hub 12+50	6.80	89.20	13.05	82.40				
13—			℄ 6.5 SE 7.0	82.7 82.2		~~79.0~~	789	3.2
+50			℄ 6.4 SE 6.3	82.8 82.9		79.3 ✓		3.6
14+			℄ 5.8 SE 5.5	83.4 83.7		79.7 ✓		4.0
+25.27 E.C.			℄ 5.4 SE 5.3	83.8 83.9		799		4.0
+50			℄ 5.1 SE 5.0	84.1 84.2		80.1	80.1	4.1
+75			℄ 4.9 SE 4.7	84.3 84.5		~~80.3~~		4.2

100.64
2.17
102.81

~~93.90~~
18.77

1093
7970

109

390
11070
1073
3.40
3.33
70

89.35
1055
7880
1183
9063
009
9054
1213
102.67

801
926

797
965

793
1005

37

789
11.72

793
1133

09.7
50
4600

1093
7970

863

072
660

1025
1210
11460

989
377

1447
790 .04

1057
870

87
3.40
8

1086
600

109.3

		89.20			
15—			¢	5.0	84.2
			SE	4.8	84.4
+25			¢	5.0	84.2
			SE	5.2	84.0
+50			¢	4.9	84.3
			SE	5.1	84.1
+75			¢	4.8	84.4
			SE	4.9	84.3
16—			¢	4.5	84.7
			SE	4.4	84.8
+25			¢	4.1	85.1
			SE	4.0	85.2
+50			¢	3.6	85.6
			SE	3.7	85.5
+75			¢	2.9	86.3
			SE	3.3	85.9
17—			¢	2.1	87.1
			SE	2.5	86.7
+25			¢	1.0	88.2
			SE	5.2	84.0
T.P.	12.68	101.54		0.34	88.86
+50			¢	12.0	89.5
			SE	8.1	93.4
+80.46 E.C.			¢	10.0	91.5
			SE	9.0	92.5
18—			¢	9.0	92.5
			SE	7.6	93.9
+50			¢	6.5	95.0
			SE	5.4	96.1
19—			¢	4.3	97.2
			SE	3.7	97.8
+50			¢	1.9	99.6
			SE	1.7	99.8
TP on Hub 19+50	6.77	106.59		1.72	99.82
20—			¢	5.4	101.2
			SE	4.5	102.1
+05.27 P.C.			¢	5.3	101.3
			SE	4.3	102.3
+25			¢	5.3	101.3
			SE	3.7	102.9
+50			¢	5.8	100.8
			SE	2.8	103.8
+75			¢	6.8	99.8
			SE	2.9	103.7
21—			¢	8.4	98.2
			SE	3.3	103.3
+25			¢	9.9	96.7
			SE	4.5	102.1
+50			¢	11.5	95.1
			SE	6.9	99.7

Grade		Cut.			
80.5	80.45	3.9			
80.6		3.4			
~~80.7~~	80.80	3.4			
80.8		3.5			
~~81.0~~	81.15	3.8			
81.5		3.7			
82.0	81.50	3.5			
82.5	8	3.4			
83.0	82.3	3.7			
84.7	~~84~~ Fill	.4	1.4 ¢ Ditch on top		
~~85.8~~	83.25	7.6			
~~87.2~~	86	5.3			
~~88.5~~	88.75	5.4			
~~91.3~~	91.50	4.8			
93.8	94.25	4.0			
~~96.0~~	96.12	3.8			
98.0		4.1			
			Bottom ditch	98.4	8.2
~~99.7~~		3.7	"	99.2	7.4
~~100.4~~	99.9	3.4	"	100.4	6.2
~~100.3~~	99.7	3.4	"	100.3	6.3
~~99.8~~	99.2	3.5	"	99.8	6.8
~~98.6~~	98.0	3.5	"	98.6	8.0
96.7	96.10	3.0	"	96.7	9.9

275/75

97.37

106.56

78.5 / 81.50 980 / 8.56 992 / 7.36 997 / 6.86 999 / 6.66

82.5 / 81.10 98 / 856 96.12 / 10.44 94.25 / 12.31

93.87 / 3.44 / 97.31 79.0 / 81.48 12.69 / 93.87

91.5 / 5.81 88.75 / 8.56 86 / 11.31

13.06 / 84.25 / 5.10 / 89.35 81.15 / 8.20 80.80 / 8.56 80.45 / 8.90

						Grade	Cut.	
		106.59						
21+75			℄ 12.5 SE 5.4	94.1 101.2		93.0	93.6	8.2
22 —			℄ 13.5 SE 7.3	93.1 99.3		90.1	90.46	9.2
+25 ×			℄ 14.3 SE 8.3	92.3 98.3		~~87.0~~	89.75	9.3
+44.01 EC			℄ 14.8 SE 12.9	91.8 93.7				
T.P. on E.C.R.P. 10' So.	0.98	99.13	8.44	98.15				
+50			℄ 7.4 SE 5.2	91.7 93.9		88.2	88.17	5.7
23 —			℄ 7.6 SE 3.4	91.5 95.7	Equ.	87.8	88.04	7.9
+50			℄ 7.7 SE 3.0	91.4 96.1		87.5	87.92	8.6
+57.22 PC			℄ 8.0 SE 3.3	91.1 95.8				
+75			℄ 8.1 SE 4.6	91.0 94.5		~~87.3~~	87.80	7.2
24 —			℄ 8.5 SE 4.8	90.6 94.3	✓	~~87.2~~	87.67	7.1
+25			℄ 8.8 SE 6.2	90.3 92.9		87.0		5.9
+50			℄ 8.8 SE 8.2	90.3 90.9		~~86.9~~ 87.27		4.0
+75			℄ 8.5 SE 8.0	90.6 91.1		87.1		4.0
25 —			℄ 8.3 SE 7.3	90.8 91.8		~~87.3~~ 87.55		4.5

25+25 Page 12

					−Grade−	
	2.61	84.16				
31+15.92 PC			6.3	77.9		73.50
+50			4.9	79.3	72.5	72.47
+75			5.2	79.0		
32			5.3	78.9	70.6	70.56
+25			8.6	75.6		
+50			8.0	76.2	68.50	68.66
+75			11.0	73.1		
			T.P. 12.23	71.93		
	2.90	74.83				
33			5.1	69.7	67.75	67.48
+25			5.7	69.1		

B.M. 81.55 Pole (2240) spk

TopRail of fence opposite 33+00

95.42

2.5 87.6 86.4 87.6

13.10 89.21

87.67 7.75 87.8 7.62 7.50 7.38 88.04

7.25 88.17

4.30 91.12 11.19 102.31 2.57 99.74 5.94 105.68

99.74 6.82 106.56

96.10 10.46

22+50 11.44 90.87

22. 6.19 96.12 —

21.75 98.04 2.98

21.50 99.33 1.87 5.92

21+25 99.81

89.25 13.06 90.45 11.86

21.00 99.86

.0368 60 2208

20.5 98.07

20 96.23 1.84

19+40 93.66

19 92.14

30+50 83.70 75.4

7699 4.72 72.27 12.50 84.77

67.75 9.24 68.50 8.49

70.50 6.49 72.50 12.27

83.70 12.29 70.91 5.89 76.80

Sta	Gr	Elev						
		74.83						
33+50			5.3	69.5	67.00			66.97
+75			5.0	69.8				
+86.44 EC.			5.61	69.22				
34-			5.0	69.8	66.25			66.70
+15			5.0	69.8				
+50			2.8	72.0	65.50			65.60
+75			1.2	73.6				
35			4.7	70.1	64.00			63.80
+12			6.6	68.2				
+50			9.0	65.8	61.5			61.50
36			11.2	63.6	59.0			59.00
			10.60 T.P.	64.23				
	0.07	64.30						
+50			4.6	59.7	56.50			56.46
37-			6.3	58.0	55.00			54.90
+50			6.9	57.4	54.33			54.10
38+05.98 PC. Hub right			4.48	59.82			38	53.80
38+05.98 R.P. Hub Left side Road			7.53	56.77	38.00 53.67	Left B.M 56.77		
38+50			4.9	59.4	53.00	<u>Air valve</u>		53.20
39-			11.13 T.P	53.17	50.00	C 3.2		
	2.04	55.21						
+50			4.7	50.5	47.8	C 2.7		
40-			6.0	49.2	46.6	C 2.6		
+50			6.8	48.4	45.3	C 3.1		
41			7.9	47.3	44.0	C 3.3		
+50			9.3	45.9	42.7	C 3.2		
42			10.7	44.5	41.2	C 3.3		
+50			12.5	42.9	39.8	C 2.9		
	To p 42+50		12.01 T.P	43.20				
	0.44	43.64						
43			2.3	41.3	38.4	C 2.9		
on Hydrant Post			1.93	41.71				
+50			3.60	40.0	37.0	C 3.0		
44			4.7	38.9	35.5	C 3.4		

475
474

355 / 12.0 37 / 10.5 384 / 9.1 398 / 7.6

412 / 6.2 427 / 4.7

427
12.73
55.43

44 / 11.43 453 / 10.13 466 / 8.83 478 / 7.63 50 TP / 5.43

50
12.49
62.49

65.79
.97
66.82
12.17
76.99

53 / 12.79 5367 / 12.12 5433 / 11.46

5600 / 10.75 5650 / 10.29 59 / 6.79 6150 / 4.29

64 / 1.79 6550 / 11.49 6625 / 10.74

47 / 9.99

Machine can start Here

Sta	Gr.	Elev			Grade	
		43.64				
44+50			5.7	37.9	34.7	C 3.2
45			6.4	37.2	33.8	C 3.4
EC. +19.57 Hub			6.70	36.94	33.5	C 3.4
+50			7.3	36.3	33.3	C 3.0
46			7.7	35.9	33.1	C 2.8
P.C. +05.96 Hub			7.73	35.91	33.0	C 2.9
+50			7.6	36.0	32.8	C 3.2
47			7.9	35.7	32.4	C 3.3
+50			8.6	35.0	31.5	C 3.5
48			9.7	33.9	30.5	C 3.4
+50			11.1	32.5	29.5	C 3.0
EC. +76.09 =			11.7	31.94	29.0	C 2.9
0+00						
48+76.09 ℄ Road on 2"x2" Hub.			11.53	32.11		

3943

30 50
8.93

315
7.92

324
7.03

328
6.63

9
TP

331
6.33

333
6.13

338
5.63

347
4.73

347
128
4.73

Levels For Surge Line From Pump House

	+	*	—	=
270	1.4	243.08		
		T.P.	12.4	230.68
	0.0	230.68		
		T.P.	11.29	219.39
	1.14	220.53		
			10.41	210.12

El. - To [illegible] 211.1

8

B.M. 241.68 = Sta 272
1.4
243.08

				✓	Grade	Cut	Fill
136+01.65= P.I.	10.14	394.37		384.23	Hub P.I. Curve on Pipeline		
134+81.85 P.C.			7.80	386.57	382.86	3.7	
135			9.6	384.8	382.5	2.3	
+25			10.5	383.9	382.0	1.9	
+50			11.2	383.2	381.5	1.7	
+75			11.6	382.8	381.1	1.7	
136			11.2	383.2	380.7	2.5	
+10			10.1				
+25			10.3	384.1	380.4	3.4	
+50			10.1	384.3	380.7	3.6	
+75			10.4	384.0	380.7	3.3	
137			10.7	383.7	380.7	3.0	
137+18.35 137+21.45= E.C.	on hub		10.72	383.7	380.7	3.0	
138			10.8	383.6	380.7	2.9	137+90 2" Blow off
+50			9.5	384.9	381.7	3.2	
139			7.5	386.9	383.45	3.45	
+50			5.5	388.9	385.20	3.7	
140			3.9	390.5	386.50	4.0	
+50			3.3	391.1	387.2	3.9	
141			3.4	391.0	387.2	3.8	
+50			3.9	390.5	386.6	3.9	
142			4.5	389.9	385.73	4.17	
+50			5.2	389.2	384.84	4.36	
143			4.2	387.2	384.00	3.2	
+50			8.3	386.1	383.20	2.9	
T.P. on Stake	5.96 143+50	392.70	7.63	386.74			

					Grade	Cut	Fill
		392.70					
144			6.3	386.4	383.2	3.2	
+50			5.5	387.2	384.0	3.2	
145			4.3	388.4	385.0	3.4	
+ 38.59 on hub.			3.19	389.5	385.77	3.73	
on Mon. off hub. ctr. pipe line			2.08	390.62			
146			2.5	390.2	386.5	3.7	
147			3.2	389.5	386.0	3.5	
148			5.1	387.6	384.0	3.6	
149			7.7	385.0	381.5	3.5	
150			8.7	384.0	380.5	3.5	
151			9.4	383.3	379.5	3.8	
152			11.2	381.5	378.0	3.5	
T.P. on Stake Sta 152	0.71	382.96	10.45	382.25			
153			3.3	379.6	376.5	3.1	
154			5.4	377.5	374.0	3.5	
155			7.0	375.9	373.0	2.9	
156			8.0	374.9	372.0	2.9	
157			8.7	374.2	371.0	3.2	
158			9.5	373.4	370.0	3.4	
T.P. on Stake Sta 158	0.70	374.79	8.87	374.09			
159			2.7	372.1	368.25	3.85	
160			4.6	370.2	366.5	3.7	
161			6.3	368.5	364.7	3.8	
162			8.4	366.4	363.0	3.4	
163			10.1	364.7	361.0	3.7	
164			12.8	362.0	359.0	3.0	
T.P. on Stake Sta 164	0.10	362.92	11.97	362.82			

					Grade		Cut	Fill
		362.92						
165			3.7	359.2	356.0		3.2	
166			6.3	356.6	353.0		3.6	
167			7.8	355.1	352.25		2.85	
168			8.4	354.5	351.5		3.0	
169			8.5	354.4	351.25		3.15	
170			8.6	354.3	351.0		3.3	
T.P. on Stake sta 170	4.70	359.17	8.45	354.47				
171			4.5	354.7	350.84		3.86	
+77.49 on hub			4.52	354.7	350.71		3.99	
ON Mon. off hub			3.62	355.55				

						Gade	Cut.
		99.13					
25+25			℄ 8.3 SE 5.1	90.8 94.0		87.5	6.5
+51.22 EC			℄ 7.9 SE 4.5	91.2 94.6		87.6 87.42	7.0
26—			℄ 7.3 SE 6.5	91.8 92.6	stopped here	87.3 ✓	5.3
+50			℄ 9.5 SE 5.7	89.6 93.4		86.2 ✓	7.2
+61.21 P.C.			℄ 10.0 SE 5.7	89.1 93.4			
+75			℄ 10.6 SE 6.7	88.5 92.4		85.2	7.2
27—			℄ 11.2 SE 7.8	87.9 91.3	84.2	~~84.1~~ ✓	6.9
+25			℄ 12.1 SE 10.8	87.0 88.3		83.6	4.7
T.P. on Hub 27+25	0.50	88.91	10.72	88.41			
+50			℄ 2.7 SE 1.5	86.2 87.4	82.3 a/c sewer lateral.	82.8 ✓	4.6
+75			℄ 3.0 SE 2.4	85.9 86.5		82.2	4.3
+84.86 EC			℄ 3.1 SE 2.5	85.8 86.4			
28—			℄ 3.4 SE 2.7	85.5 86.2		81.7 ✓	4.5
+25			℄ 3.7 SE 2.2	85.2 86.7		81.2	5.5
+41.12 PC			℄ 4.0 SE 2.3	84.9 86.6		80.8	5.8
+50			℄ 4.2 SE 2.8	84.7 86.1		80.6 ✓	5.5
+75			℄ 4.8 SE 4.0	84.1 84.9		80.0	4.9
29—			℄ 5.8 SE 5.1	83.1 83.8		79.5 x	4.3
+25			℄ 6.2 SE 5.3	82.7 83.6		79.0	4.6
+50			℄ 6.7 SE 5.6	82.2 83.3		78.4 ✓	4.9
+75			℄ 6.9 SE 5.4	82.0 83.5		77.8	5.7
30—			℄ 7.7 SE 6.2	81.2 82.7	77.5	~~77.3~~	5.4
+13.91 E.C.			℄ 8.3 SE 6.5	80.6 82.4		~~76.0~~	5.5
B.M. spike pole #2240 (Elev 81.55)			7.40	81.51			
+50						75.83	
31—						74.17	

25.50 87.2
25.0
88.12

99.2
8232

8151
169
8320

8477
547
7930
1294
9224
464
8760
939
9699

7417
1060

7583
8.94

775
7.29

776
1274

806
11.64

817
1054

828
9.44

842
8.04

862
6.04

873
9.69

873
812
95.42

8742
8.00

782
7.60

902
640

8754
7.88

776
8766

26	87.3		
2550	88.12	87.2	
25	87.6	87.7	87.54
2450	86.2		87.66
24	87.66	87.8	

Alignment La Jolla to Biological Flats

Sta		Def.	Bearing	Curve
125.85				
+69.83	EC	11°28'30"		
5		11°05'30"		
+75		10°08'15"		
+50		9°11'00"		
+25		8°13'45"		$\Delta=22°57'$ Rt
4		7°16'30"		R= 750
+75		6°19'15"		$T=152.^{25}$
+50		5°22'00"		$L=300.^{41}$
+25		4°24'45"		
3		3°27'30"		
+75		2°30'15"		
+50		1°33'00"		
+25		0°35'45"		
2+09.^{42}	BC	0°0'0"		
70.16				
1 +39.^{26}	E.C.	7°13'00"		
+25		6°28'45"		$\Delta=14°26'$ Rt.
1 +00		5°11'00"		$R=552.^{81}$
+75		3°53'15"		T=70.0
+50		2°35'30"		L=139.26
+25		1°17'45"		
0+00	B.C	0°0'		
6+08.^{04}				

Sta		Def	Bearing	Curve.
7+72.96	old location			
7+80.77	E.C.	8°00'00"		
+75		7°41'15"		Δ=16°00 L+.
+50		6°18'25"		R=519.56
+25		4°55'40"		T=73.02
7		3°32'55"		L=145.09
+75		2°10'10"		
+50		0°47'25"		
6+35.68	B.C	0°0'		

Final Levels on Pipe ℄

May 6 - 1920
Williams
Moore
Keeler

355.64 B.M. on Mon, High Cor.

	+	⊼	−	Elev.	Grade	Cut
171+77.49	4.40	360.04				
171+77.49 ℄ Pipeline.			5.3	354.7	350.71	6.01
172			5.5	354.5	350.66	3.84
173			5.8	354.2	350.5	3.7
174			5.7	354.3	351.16	3.14
175			4.9	355.1	351.87	3.23
176			3.7	356.3	352.50	3.8
177			1.7	358.3	354.23	4.07
		T.P.	1.05	358.99		
	7.86	366.85				
178			6.9	360.0	355.96	4.04
179			5.5	361.4	357.7	3.7
180			5.1	361.8	357.96	3.84
181			4.7	362.2	358.23	3.97
182			4.6	362.3	358.50	3.8
183			4.1	362.8	359.25	3.55
184			3.3	363.6	360.0	3.6
		T.P.	2.67	364.18		
	6.76	370.94				
185			6.6	364.3	360.75	3.55
186			5.8	365.1	361.50	3.6
187			5.1	365.8	361.83	3.97
188			5.4	365.5	362.16	3.34
189			4.6	366.3	362.50	3.8
190			4.0	366.9	363.5	3.4
191			3.0	367.9	364.5	3.4
191+64 - 9' W. of Line on Lath. - T.P.			2.47	368.47		

355.64 B.M. on Mon.
3.62 +
359.26 H.I.
.26 −
359.00
7.97 +
366.97 H.I.
2.80 −
364.17
6.76 +
370.93 H.I.
2.46
368.47
11.45 +
379.92 H.I.
7.72
372.20

Fill

	+	⊼	—	368.47		Grade	cut	Fill
	10.99	379.46						
192			10.1	369.4		365.75	3.65	
193			8.4	371.1		366.6	4.5	
194			9.3	370.2		367.0	3.2	
195			6.9	372.6		369.0	3.6	
					+50	371.0		
196			2.8	376.7		372.3	4.4	
					+50	372.5		
197			3.7	375.8		372.0	3.8	
198			6.3	373.1		369.75	3.35	
198+17.49 on ℄ Hub			7.16	372.30		369.37	2.93	
198+17.49 on Mon. High Cor.		T.P.	7.27	372.19				
	6.92	379.11						
199			8.5	370.6		367.5	3.1	
200			8.7	370.4		367.0	3.4	
201			9.6	369.5		366.5	3.0	
202			12.5	366.6		363.75	2.85	
203			14.9	364.2		361.00	3.2	
204			14.1	365.0		361.5	3.5	
205			11.2	367.9		364.5	3.4	
206			8.0	371.1		367.5	3.6	
B.M. 13.5' S.W. of Power Pole (#60070) (Lath Hub)		T.P.	4.95	374.16				
	8.80	382.96						
207			11.0	372.0		369.75	2.25	
208			7.6	375.4		372.0	3.4	
209			6.2	376.8		373.375	3.43	
210			5.0	377.9		374.75	3.15	
211			3.3	379.6		376.125	3.48	

May 7 - 1920
Williams
Moore
Keeler

	+	π	−			Grade	Cut	Fill
212		382.96	2.1	380.8		377.5	3.3	
On lath stake		T.P.	2.69	~~380.27~~	381.27	add one foot to all elev. from here ahead		
	12.31	393.58 ~~392.58~~						
213			10.6	383.0 ~~382.0~~		379.625	3.38	
214			8.0	385.6		381.75	3.85	
215			5.5	388.1		383.875	4.23	
216			3.9	389.7		386.0	3.7	
217			3.3	390.3		386.25	4.05	
218			3.6	390.0		386.5	3.5	
219			4.7	388.9		385.2	3.7	
220			5.8	387.8		384.5	3.3	
On lath stake		T.P.	5.40	388.18 ~~387.18~~				
	11.24	399.42 ~~398.42~~						
220+40			11.9	387.5		For 384.7 plug	2.8	
221			10.7	388.7		385.0	3.7	
222			9.5	389.9		386.5	3.4	
223			7.0	392.4		389.0	3.4	
224			3.8	395.6		392.5	3.1	
+56.49 on Hub			2.60	396.8		393.509	3.3	
+56.49 On ctr. of Mon.		T.P.	2.09	397.33 ~~396.33~~				
	10.12	407.45 ~~406.45~~						
225			9.6	396.8	397.8	394.5	3.3	
226			7.5	398.9	399.9	396.5	3.4	
227			5.3	401.1	402.1	398.5	3.6	
228			3.1	403.3	404.3	400.5	3.8	

		+	⊼	−	Elev	New Elev. Corrected		Grade	Cut	Fill
			407.25 ~~406.45~~							
229				2.7	403.7	404.7		401.0	3.7	
230				4.4	402.0	403.0		399.75	3.25	
231				5.9	400.5	401.5		398.5	3.0	
	Lath T.P. 12' West of Sta. 231	5.42	T.P. ~~405.27~~ 406.27	6.60	~~399.85~~ 400.85					
232				7.1	398.2	399.2		396.0	3.2	
							+80	394.0		
+90				11.4	393.9	394.9		393.75	1.15	
233				11.0	394.3	395.3		393.50	1.8	
							+20	393.0		
+24	Blowoff			11.6	393.7	394.7		393.1	1.6	
							+60	394.0		
234				7.2	398.1	399.1		395.0	4.1	
235				5.1	400.2	401.2		397.5	3.7	
236				4.2	401.1	402.1		398.5	3.6	
on Hub 237	Air Valve			3.02	402.25	403.25		399.5	3.75	
238				4.6	401.7	401.7		398.0	3.7	
239				8.2	397.1	398.1		395.25	2.85	
240	Blowoff			11.6	393.7	394.7		392.5	2.2	
	Lath Hub 15' West 240+00 T.P.	6.98	~~399.92~~ 400.92	12.33	~~392.94~~ 393.94					
241				5.6	394.3	395.3		392.5	2.8	
242				4.7		396.2		392.5	3.7	
243				3.9	396.0	397.0		392.5	4.5	
244				4.4	395.5	396.5		392.5	4.0	
245				5.3	394.6	395.6		392.5	3.1	
246				5.4	394.5	395.5		392.5	3.0	
247	℄ Paving			5.0	394.9	395.9		392.5	3.4	
248				5.3	394.6	395.6		392.5	3.1	
249				2.6	397.3	398.3		395.25	3.05	
	Lath Hub 12' East 249+09	12.74	T.P. 410.78 ~~409.78~~	2.88	~~397.04~~ 398.04					

423.90
1.20
H.I. 425.10

	+	⊼	−		New Elev. Corrected		Grade	Cut	Fill	
		410.78 ~~409.78~~								
249+95.94 Granite Mon. P.L. Cor.			7.52	402.26	403.26					
250			9.1	400.7	401.7		398.0	3.7		
251			5.4	404.4	405.4		401.75	3.65		
252			1.5	408.3	409.3		405.5	3.8		
Lath Hub 15' East 252+00	10.68	~~418.19~~ 419.19	2.27	~~407.51~~ 408.51						
253			6.8	411.4	412.4		408.25	4.15		
254			5.2	413.0	414.0		410.00	4.0		
255			4.8	413.4	414.4		411.25	3.15		
256			4.2	414.0	415.0		412.5	2.5		
257			2.5	415.7	416.7		413.75	2.95		
258			0.9	417.3	418.3		415.0	3.3		
Lath Hub 12' East 258+00	8.83	~~414.99~~ 425.99	2.03	~~416.16~~ 417.16						
259			6.0	419.0	420.0		416.5	3.5		
+50			5.3		420.7		417.25	3.45		
260			4.3	420.7	421.7		418.0	3.7		
+50			3.5		422.5	+40	~~420.0~~ 418.7	3.8		
B.M. in Tel. Pole			1.71	423.28	424.28	(423.90) 261+00	419.5		419.5	5.6
						261+40	420.1		420.1	5.1
		T.P	883	417.16 ~~416.160~~						
	2.275	~~418.435~~ 419.435								
			10.950	408.485 ~~407.485~~	on T.P.					
	1.190	~~408.675~~ 409.675								
249+95.94			6.44	403.235 ~~402.235~~	Granite Mon					
	0.27	~~402.51~~ 403.51		398.02						
			5.49	~~397.02~~	on T.P.					
	7.64		7.64	394.87		397.04				
	5.33	400.20	2.57	397.63						
	7.24	404.87								

June 14-1940
Williams
Moore
Keeler

Check levels on ditch bottom

Blankenburg Contract

One foot High on bank

					423.90		
	1.20	425.10					
~~261+50~~			~~6.4~~				
~~260+50~~			~~7.1~~				
~~260.+00~~			~~7.9~~				
~~259~~			~~9.0~~				
260+90			5.9	419.2	419.35	420.35	4.75
260+50			6.4	418.7	418.70	419.70	5.4
260+00			7.1	418.0	418.00	419.00	6.1
259+50			7.9	417.2	417.25	418.25	6.9
259+00			9.0	416.1	416.50	417.50	7.6
258+50			9.7	415.4	415.75	416.75	8.35
258+00			10.5	414.6	415.0	416.0	9.1
257+00			12.1	413.0	413.75	414.75	10.35
256+00			13.5	411.6			
			10.23 T.P.	414.87			
255+	3.28	418.15					
255+00			7.4				
254+00			8.1				
253+00			10.1				
252+00			13.2				
			10.03 T.P.	408.12			
	1.01	409.13					
251+00			7.7				
250+00			11.4				
			11.48 T.P.	397.65			
T.P. opp. Sta 249+00	2.41	400.06					

				Bottom Ditch	Gr.		one foot High				
		400.06									
249+00			5.8								
248+25			7.6								
246+90			4.5							Ctr line paving	
245+85			8.3								
245+00			7.9								
244+00			7.6								
243+00			7.6								
	7.76	404.88	2.94 TP	397.12							
242+00			12.5	392.4	392.5						
241+00			13.1	391.8	392.5						
240+10			13.6	391.3						Blowoff	
240+00			13.2	391.7	392.50						
239+00			10.0	394.9	395.25						
238+00			6.1	398.8	398.0						
237+00			5.6	399.3	399.5						
236+00			6.8	398.1	398.5						
235+00			7.8	397.1	397.5						
	4.54	405.61	3.81 T.P.	401.07							
234+00			11.1	394.5	395.0		396.0		11.2		404.6
233+25			13.2	392.4	393.1		394.1		13.1		2.6 407.2
233+00			14.2	381.4	393.5		394.5		12.7	Blowoff	Cut stake Marked 1.8
232+00			10.0	395.6	396.0		397.0		10.2		
231+00			7.6	398.0	398.5		399.5		7.7		
230+00			5.9	399.7	399.75	0.	400.75		6.75		
229+00			4.8	400.8	401.0		401.00		5.2		
228+00			5.3	400.3	400.5		401.5	407.2	5.7		

			1.01 TP	404.60	
T.P. opp 228+00	0.96	405.56			
227+00			7.2		
226+00			8.8		
225+00			11.0		
Ctr. Mon. B.M.			8.66	396.90	
		H.I.			
					390.60
	11.31	401.91			
			0.84	400.07	
	6.17	406.24			

406.24
4.10
410.34

9.5

410.34 Bottom Tank –
9.5
419.84 Top Tank –

18.5 from ground to top Ogans Tank

411
429.5

Grades from Reservoir To Pumping Plant

Cuts.

	+	π	−	Elev.	Gr.	Cuts.
	7.46	431.36				
on Res. Hub.		3.3	1.36	430.0		
						423.90 B.M in Tel Pole Near NE Cor. Corral
263+75			3.0	428.4		
264			4.3	427.1	424.1	3.0
+50			6.8	424.6	421.2	3.4
265			9.4	422.0	418.3	3.7
+50			12.8	418.6	415.4	3.2
		Top Lath T.P.	12.19	419.17		
	0.52 + 419.17	= 419.69				
266			4.1	415.6	412.5	3.1
+50			5.6	414.1	411.0	3.1
267			7.0	412.7	409.5	3.2
+50			8.2	411.5	408.0	3.5
268			9.8	409.9	406.5	3.4
+50			11.3	408.4	405.0	3.4
269			13.4	406.3	403.5	2.8
		Top lath T.P	12.64	407.05		
	0.22	407.27				
+25			2.3	405.0	402.5	2.5
+54.17 Hub.			5.14	402.13	399.3	2.7 — — —
+75			10.0	397.27	394.2	3.1
		Rock T.P.	13.04	394.23		
	0.61	394.84				
270			5.5	389.3	387.0	22½° ∆ 2.3
+05. Hub			8.9	385.9		
+10			11.2	383.6	379.3	4.3
		Rock T.P.	12.50	382.34		
	1.10	383.44				
+15			3.2	380.2		
+20			6.7	376.7	371.8	
+25			9.7	374.7		
+30			12.7	370.7	364.3	
		Top Stake T.P.	12.61	370.83		
	0.48	371.31				
+35			6.7	364.6		
+40			10.4	360.9	356.8	
		Rock T.P.	11.57	359.74		
	0.55	360.29				
+45			4.4	355.9		
+50			9.7	350.6	349.3	
		Rock T.P.	12.99	347.30		
	0.22	347.52				
+55			1.4	346.1		
+60			5.2	342.3	341.8	
+65			9.0	338.5		
+70			13.0	334.5	334.3	0.2
		Top Lath T.P.	12.55	334.97		
	0.52	335.49				
+80			7.6	327.9	327.2	0.7
+85			10.7	324.8		

Williams
C. Moore
R. Keeler

July 29 1910

419.96
4.4
415.56

419.17
0.79
419.96

419.96
7.3
412.66

419.96
5.0
414.06

546

419.96
8.5
411.46

419.96
10.1
409.86

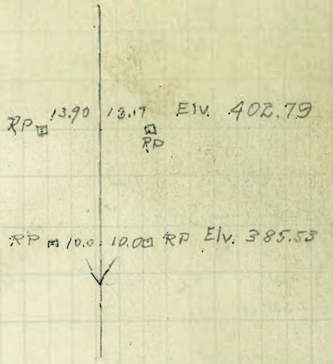
419.96
11.6
408.36

419.96
13.6
406.36

419.69
11.3
408.39

402.13
6.12
408.25
5.46
402.79

385.9
5.11
391.01
5.48
385.53



273+52.5 = Toe of bank
½ to 1 slope

314.67
5.02
319.69
4.16
315.53

241.68
4.94
246.62
5.05
241.57

		+	⊼	−	El.	Gr.	Cuts	New Gr.	
			335.49						
			T.P. Stump,	13.04	322.45				
		1.10	323.55						
270+90				2.0	321.6	320.1			
271	Hub.			8.88	314.67	313.0			Elv. 315.53 ⊡ RP 10' ⊡ RP 10'
			Staub. T.P.	12.58	310.97				
		0.64	311.61						
+10				3.3	308.3	305.9	2.4		
+20				10.8	300.8	298.8	2.0		
			Lath — T.P.	12.20	299.41				
		0.02	299.43						
+30				5.5	293.9	291.7	2.2		
+40				12.3	287.1	284.6	2.5		
			Lath T.P.	12.87	286.56				
		0.67	287.23						
+50				7.4	279.8	277.5	2.3		
			Lath T.P.	12.72	274.51				
		0.0	274.51						
+60				2.0	272.5	270.4	2.1		
+70				10.2	264.3	263.3	1.0		
			Lath T.P.	12.83	261.68				
		0.75	262.43						
+80				5.4	257.0	256.2	0.8		
+90				13.1	249.3	249.1	0.2		
			Top lath T.P.	12.68	249.75				
		1.40	251.15						
272+00	Hub.			9.47	241.68	241.5	0.2		Elv. 241.57 ⊡ RP 10' ⊡ RP 10'
			T.P.	12.70	238.45				
		1.13	239.58						
+10				5.1	234.5	234.3	0.2	New Gr.	
+20				11.8	227.8	227.8	0.0	227.6	
			Lath T.P.	12.66	226.92				
		0.64	227.56						
+30				4.6	223.0	221.8	1.2	220.55	
+40				9.6	218.0	215.8	2.2	213.50	
			Lath. T.P.	12.73	214.83				
		0.81	215.64						
+50				3.3	212.3	209.8	2.5	206.45	
+60				9.9	205.7	203.8	1.9	199.4	
			Lath T.P.	12.87	202.77				
		0.72	203.49						
+70				4.3	199.2	197.8	1.4	192.35	
+80				11.7	191.8	191.8	0.0	185.30	
			Top Lath	11.47	192.02				
		0.56	192.58						
+90				8.1	184.5			178.25	
			Lath T.P.	11.60	180.98				
		0.70	181.68						
273	Hub			4.65	177.03	177.0	0.0	171.20	
+10				10.90	170.8			164.15	
			Lath T.P.	12.73	168.95				
		0.04	168.99						
+20				5.0	164.0	162.0	2.0	157.10	

1' 1½" = 1.12'

274+51.81
64.65
275+1.646

							Grade	Cuts	New Gr
		168.99							
273+30			11.0	158.0			154.0	4.0	150.05
		Lath T.P.	12.63	156.36					
	0.14	156.50							
+40			4.4	152.1			146.0	6.1	143.00
+50			10.3	146.2			137.0	9.8	135.95
		Lath T.P.	12.21	144.29					
	0.15	144.44				Marked B.M			
+60		.94	4.0	140.4	140.9		127.1	13.2	128.90
+70			9.7	134.7	135.2				
+75 Hub			13.10	131.34	131.84	℄ Coming down Hill ℄ Intake 15.12' North	126.8	5.0	
	1.63	132.97							
		3.47	1.88	131.09	131.59	on Hub set 63.88 North of 273+75 Intake Line (offset of 1.12' north for ℄ intake)			
+80			4.3	128.6	129.2	also East Line of foundation pump House	R.P. is 63.88 ℄ of Inlake		
+90			10.3	122.6	123.2				
		Lath T.P.	12.61	120.36	120.86	about 10' south of ℄ El. 120.36 ✓			
	0.71	121.07							
274+02.71 = Equ.		121.57					116.4	0.0	
274+51.81 P.C.			5.14		116.43				
+65			12.2		109.4		108.75	0.65	P.C.
		Lath T.P.	12.50	108.57		about 10' south of ℄ El. 108.57 ✓			
	0.31	108.88							
+80		9.30	7.8		101.5		101.1	0.4	
		Lath T.P.	12.59	96.29		About 10' south of ℄ El. 96.29			
	0.52	96.81							
		7.31					93.45	0.55	
+95			3.2		94.1				
275+10			11.3		86.0				
		Lath T.P.	12.88	83.93		about 2' west of P.I. EL. 83.93			Δ = 22°30
	0.95	84.88							
on P.I		5.38	2.33	82.55	83.05	El. on 2"x2" R.W Hub P.I. 275+16.46			R = 325.0
+25			6.7		78.70		78.15	0.55	T = 64.65
		Lath T.P	12.77	72.11		about 10' south ℄ El. 72.11			
	1.11	73.22							
		.72							
+40			2.8		70.9				
+55			10.9		62.8		62.85	0.0	
		Lath T.P.	12.90	60.32		about 10' south ℄ El. 60.32			
	0.24	60.56							
+70		1.06	5.5		55.6				
275+79.44 E.C. Hub			9.86		51.20				
		Lath T.P.	12.67	47.89		about 10 south ℄ El. 47.89			
	0.13	48.02							
+85		.52	0.0		48.5		47.55	1.0	
276+00			5.8		42.7		39.9	2.8	
275+70 Hub on old ℄			11.63	36.39	36.89				

See page 62

140.03
9.67
149.60 ⊼

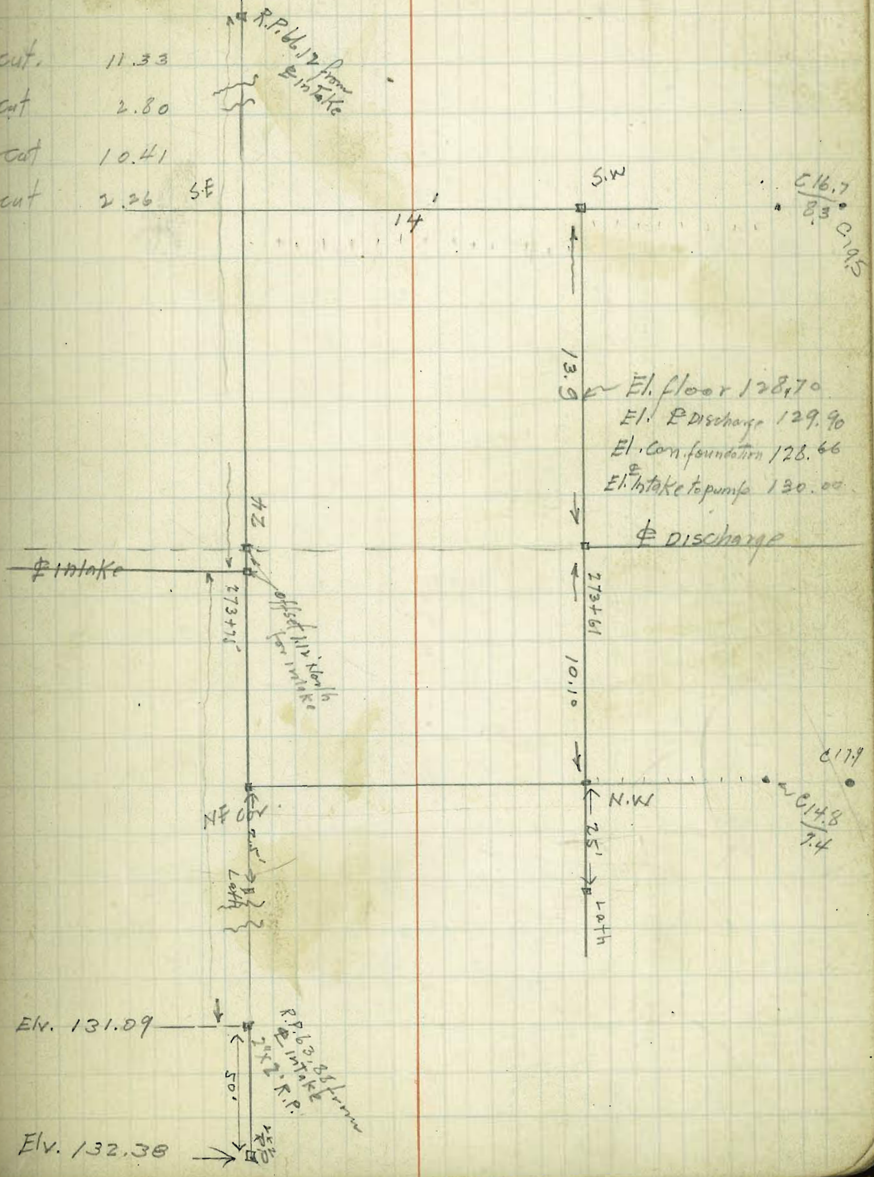
145.4
128.7
16.7
8.3

131.50
8.28
139.78 ⊼
8.82
130.96

130.7
131.09
144.16
11.78
132.38

					Grade		
				144.29			
	0.505	144.80					
					Finish floor		
S.W Cor 1"x1" Hub			4.77	140.03	128.70	cut.	11.33
S.E Cor 2"x2" RW Hub			13.30	131.50	128.70	cut	2.80
N.W Cor 1"x1" Hub			5.69	139.11	128.70	cut	10.41
NE Cor 1"x1" Hub				130.96	128.70	cut	2.26

144.29
B.M Rundown from reservoir B.M. which is 0.50 Lower Than orig. BM.



Grades betw. 270 V△ + 271

	1.81	387.34		385.53	Elv RR Gr	sta 270+05.
270+00 22½° △			0.34	387.	387.0	
+10			4.6	382.7	379.3	3.5
+20			10.2	377.1	371.8	5.8
TP	1.80	376.49	12.65	374.69		
+30			7.0	369.49	364.3	5.2
TP	0.15	364.54	12.1	364.39		
+40			3.5	361.0	356.8	4.2
+50			13.1	351.44	349.3	2.1
TP	0.25	351.66	13.13	351.41		
+60			8.8	342.86	341.8	1.0
TP	0.45	339.98	12.13	339.53		
+70			5.3	334.68	334.3	0.4
+80			11.80	328.18	327.2	1.0
	1.14	329.31	11.81	328.17		
+90			7.4	321.9	320.1	1.8
271–			14.0	315.31	313.0	2.4

Levels on Gauge Line from Reserv

	+	∧	—	Elv	
	11.50	435.40			
0+00			1.64	433.76	
0+50			5.05	430.50	
		T.P.	12.66		422.74
	0.21	422.95			
1+00			7.44		
1+50 ✓			9.01		
2+00 ✓			10.96		
2+50 ✓	1.38	T.P.	12.33	410.62	
		412.00			
3+00			2.70		
3+50			4.26		
4+00			6.00		
4+50		T.P.	10.98		401.02
~~5+00~~	.05	401.07			
5+00			6.41		
5+50	—	T.P	10.86		390.21
	2.63	392.84			
6+00			8.11		

423.90 BM. Tel. Pole South Res

	+	⊼	−	El	
	11.8	435.70			
0+00			1.95	433.75	
0+50			5.35	430.35	
		T.P.	13.00		422.70
	.77	423.47			
1+00			8.01	415.46	
1+50			9.56	413.91	
2+00			11.52	411.95	
		T.P.	11.52		411.95
	1.30	413.25			
2+50			2.65	410.60	
3+00			3.96	409.29	
3+50			5.52	407.73	
4+00			7.28	403.97	
4+50			12.27	400.98	
		T.P	12.27		400.98
	.46	401.44			
5+00			6.83	394.61	
5+50			11.27	390.17	
		T.P.	11.27		390.17
	1.10	391.27			
6+00			6.58	384.68	
Gauge	12.64		12.64		

423.90

64
68
132

9/19/21 Gregory
Millet
Shaw.

Survey of 2" Water Main from La Jolla Del Mar Pipe Line to Sorrento

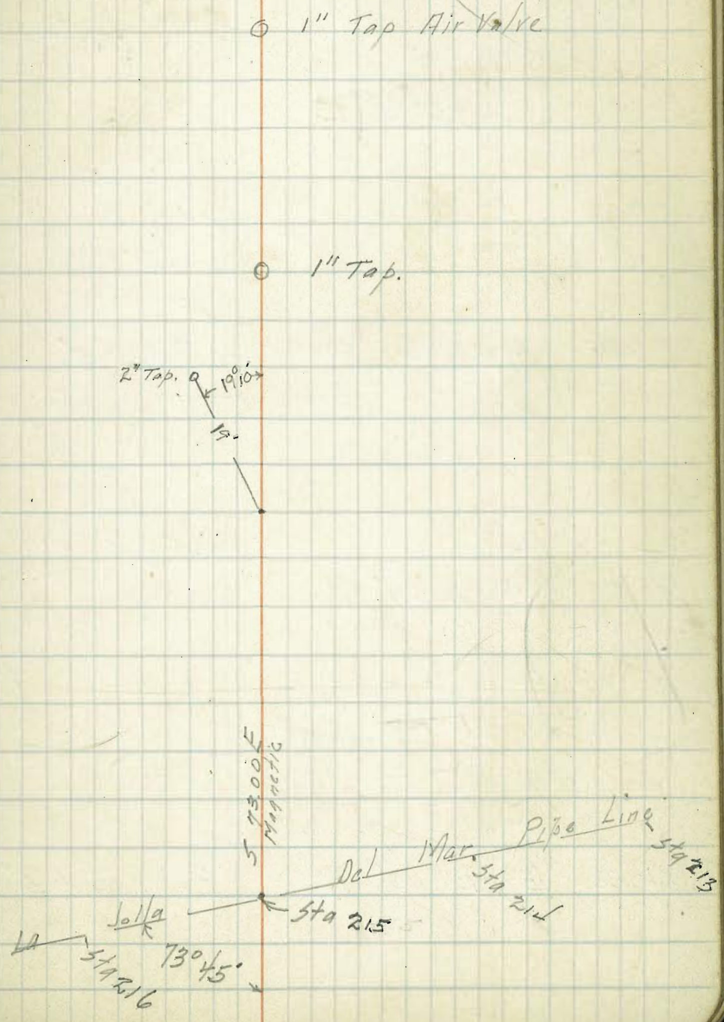
15+16.8

8+48.2

6+31.7 = Edge of Paving on Highway

6+00 △ 36°50′ L. External = 12.5′

0+00 = Sta 215+00 on La Jolla Del Mar Pipe Line
According to Carroll.



23+40	Δ 7°35'	R.		
22+11.0	Δ 25°15'	L		
20+38	Δ 24°44'	R.	Ext. = 5'	
18+78	Δ 4°44'	R.		
15+53	Δ 13°00'	R.	External = 5'	

410
953
16

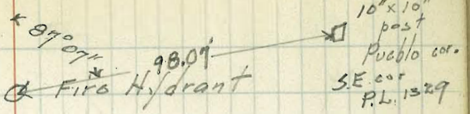
50+34.63	Δ 32°20′	R.
41+55	Δ 2°22′	L
33+09.55	Δ 4°01	R.
29+56.65	Δ 15°55′	L
27+14		
26+65	Δ 21°51	L
26+60		
24+80′	Δ 3°11′	L

○ 1" Tap + Valve.

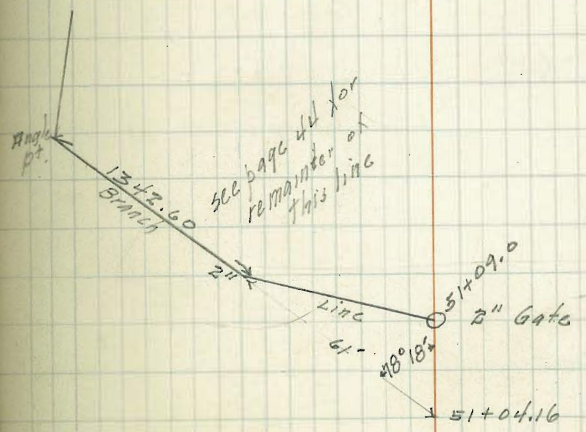
⊖┤ Gate.

⊙ 1" Tap + Valve

65+22.7		
61+70	Δ 24°57' R.	6' External.
61+16.7		
60+70	Δ 14°52' R.	
59+20.0	Δ 6°47'30" R	
53+06.10	Δ 5°14' R.	
51+09.0		
51+04.16		



⊙ 1" Tap-Valve



25+08.6 = End of pipe
25+04

17+22.2

17+19.5

16+02.7

15+28.7 △ 88°14' L.

14+03.60 △ 40°29' R.

0+61.0

0+00

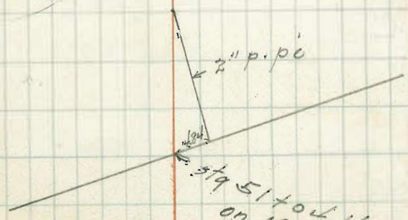
5/8" service

N end Bridge

5/8" service

S End of Bridge

○ Gate Valve

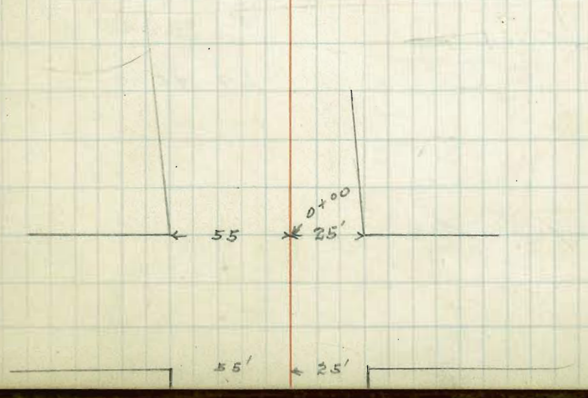


sta 51+04.16
on Main Line
see page 43

10/14 21
Gregory
Moore
Miller
Moore

Survey of La Jolla - Del Mar Pipe Line showing fittings

5+75			N 79°23' E 351.12	3	⊖ Crispen and McCracken Valves + shut off
5+66.30					Beginning of Wooden Pipe ↑ End of Cast Iron ↓
5+09.83	EC.	Δ 22°57' Rt R = 750 T = 152.25 L = 300.41	×		
2+09.42	PC.				
1+77.50			N 56° 26' E 292.41	2	× 1/2" Service
1+39.26	EC.				
		Δ 14°26' Rt R = 552.81 T = 70' L = 139.26	×		
0+00			N 42°00' E	1	



12+50.9						⊖ 4" Blow Off + Screw gate
				N 71°33'E 731.09	5	
11+29.50						⊖— 2" sprinkler Stand. + shut off.
9+78.17	E.C.					
		✓	Δ8°10 R R=1385 T=9887 L=197.40	X		
7+80.77	P.R.C.			N 63 23 E 171.89	4	
		✓	Δ=16°00'L R=519.56 T=73.02	X		
6+35.68	P.C.		L=145.09			
				N 79°23'E	3	
6+30						⊖⊣ 4" connection w/ screw gate on connection Right side

N 85°00'E 263.15 8

1 25+56.91 E.C.

Δ 7°20' L
R = 1515
T = 90.44 97.09
L = 193.90

23+63.01 P.C.

S. 87°40'E 328.45 7

1 22+49.70 E.C.

Δ 40°50 R.
R = 335
T = 124.7
L = 238.74

20+59.30

9 20+10.96 P.C.

N 51°30'E 528.94 6

7 17+86.15 E.C.

Δ 20°03' L
R = 101.5
T = 179.43
L = 355.19

6 16+18.20

N 71°33'E 5

6 14+30.96 P.C.

17
787
788
54 50
61 3

⊙ 2" Air valves @ Crispen and McCracken.
+ shut off

⊙ 2" air valves @ Crispen and Brooks + shut off.

215
79
13.62

33+92.13	EC			N73°34'E	940.47	11	
			Δ 41°20' L	X			
		√	R=375				
			T=141.45				
			L=270.52				
31+21.61	PC			S65°06'E	336.06	10	
30+19.60	EC						
29+77.3			Δ 53°31 R	X			o Brookes and Crispen + shut off Air valves
		√	R=185				
			T=92.6				
			L=172.79				
28+46.81	PC			N61°23'E	211.58	9	
27+90.55	EC						
			Δ 23°37' L	X			
27+28.0		√	R=300				o 4" Connection + screw Gate in Connection Left side of Main
			T=62.72				
			L=123.65				
26+66.90	PC						
25+73.3				N85°00'E		8	o A. Crispen and A McCracken Airvalves + shut off

100.00
81.78
18.22

48+81.78 E.C.

△ 20°30' L
R = 755'
T = 136.53
L = 270.13

N 2°54'E
4184.75
13

46+11.65 P.C.

N.23°24'E.
602.40
12

45+25.26 E.C.

△ 50°10'L

41+43.20

R = 815.0
T = 379.48
L = 713.59

38+48.6

38+11.67 P.C.

N 73°34'E
11

2" Sprinkler Stand, + shut off

Crispen Valve + shut off
Brookes

86+24.50	⊙ 4" Blow Off + Flange Gate.
82+82.5	⊙ Brookes and Crispen Air Valve ✓ + shut off. ✓
75+46.20	⊙ 2" Sprinkler Stand, + Shut off (not yet in 10/14/21)
73+26.5	⊙ Crispen and Brookes } Air Valves + shut off
59+92.3	⊙ 2" Crispen Air Valve and Pressure Guage. + shut off
59+80.5	⊙ 4" Blow Off. + screw gate
50+25.7	✓ ⊙ Crispen and Brookes Valves + shut off

N 2° 54' E
2184.75

13

94+78 = 86+53.84 on Williams Survey Book 1070-52

94+48.50

93+91.98 E.C. = 85+67.82 Book 1070-52

N 48°24'E

15

Δ 13°06' R

R = 1000'

92+04.7

T = 114.82

L = 228.64.

91+63.34 P.C.

N. 35°18'E

353.62

14

90+26.23 E.C.

Δ 32°24' R

R = 350

st = 101.69

88+28.31 P.C.

lc = 197.92

N. 2°54'E

13

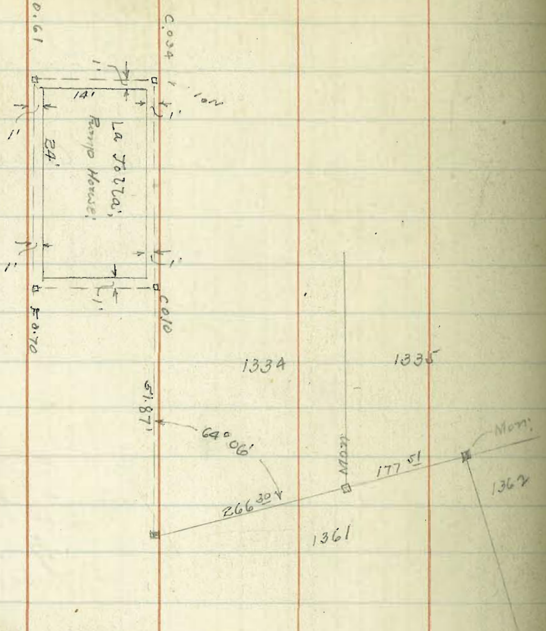
— End of Renewed Wood pipe

⊙ Crispen and Brookes Airvalves shut off

× ← 4x4 Nipple
4" Flange Gate
4"x3" Reducer
Biological Tap.
Left Side

Bissell
Donnan
Miller
Shaw.
Walbreck.

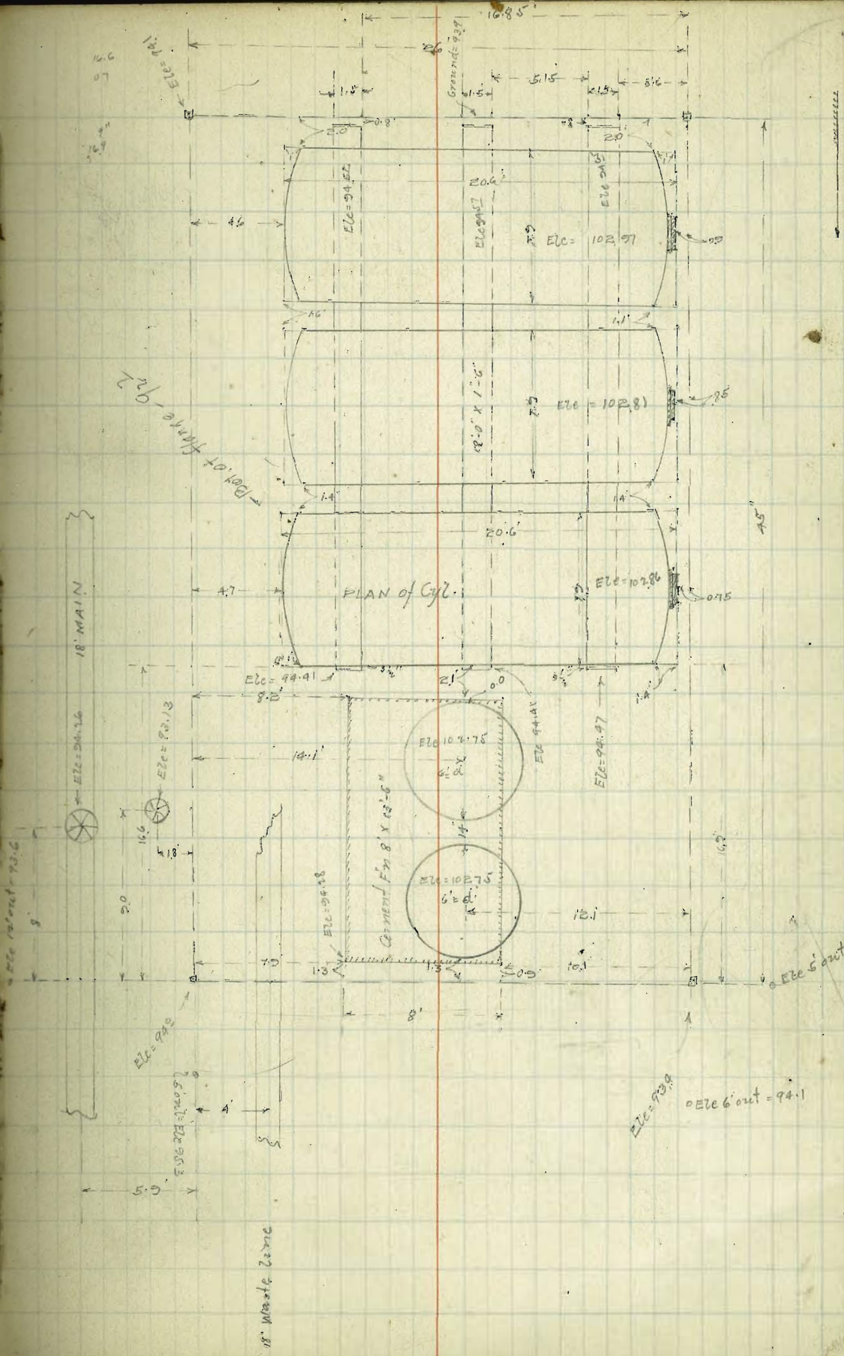
Nov-20-22;

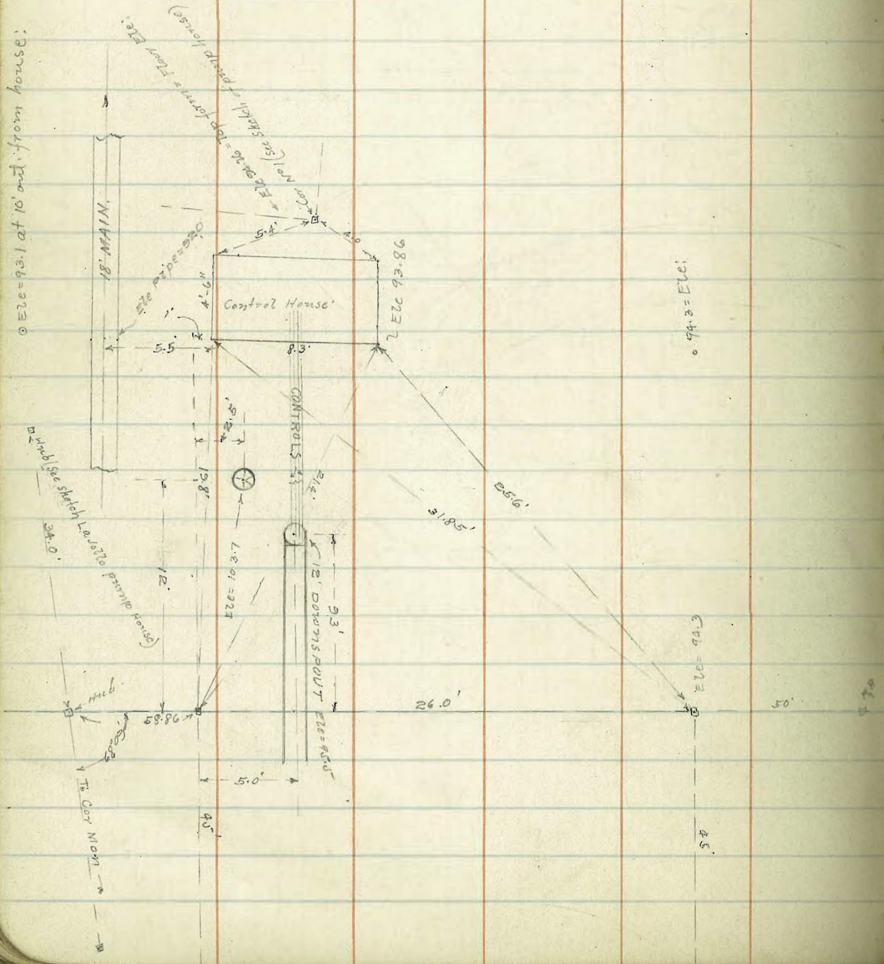


Location of La Jolla Pump House

11-19-22 Donnan;

LA. JOLLA FILTER PLANT.





ASSUMED ELE=100.00' Sph Fence Post: Cornet.

$$\begin{array}{r} 3.98 \\ \hline 103.98 \end{array} = \pi$$

Final location of Conc. pipe bridge btw. 124 + 125 Moore Control 8/4/20

	0.76	374.43		373.67	Hub 20'W. 125+42
124+00			4.2	370.2	Elv. bottom ditch
+11			4.6	369.8	" " "
+23			6.5	367.9	
+36 Hub So. End butment			7.9	366.5	
+42			9.8	364.6	
+47			14.0	360.4	
+50			15.4	359.0	
+55			12.9	361.5	
+56			9.3	365.1	
+66 Hub No. end butment			8.8	365.6	
+76			8.4	366.0	
+86			6.8	367.6	
125+00			5.0	369.4	
+33			4.5	369.9	Elv. bottom ditch
+73			3.8	370.6	" " "

See Page 59

662 Joints pipe onground

South End of Ditch 102+60

102+90 to 103+35 1.8 left to Blast

260+90 End finished ditch at reservoir

134+60 To 135+10 total left to blast

47+36 to 47+86 left in for canyon road

JUNE 28, 20 (Moore)

End of paving Prospect & Torrey R.

0+00 - 0+65	Left to Pick	✓0+65 - 5+00	Mach. Excav.
5+00 - 5+75	" "	✓5+75 - 6+35	"
6+35 - 6+45	" "	6+45 - 7+00	"
7+00 - 7+05	" "	7+05 - 8+95	"
8+95 - 9+25	" "	9+25 - 17+18	"
17+18 - 19+35	" "	19+35 - 21+50	"
21+50 - 27+85	" "	27+85 - 39+30	"
39+30 - 39+60	" "	39+60 - 47+35	"
47+35 - 47+85	Cañon Road "	47+85 - 48+76.09 E.C. 0+00	"
35+35 - 38+40	Biological Creek approx. grade " "	0+00 48+76.09 E.C. 35+35	"
		38+40 - 15' So. of P.I. on Curve at Biological Station Sta. 4381.56	"

102+60 - 108 = 540
7850.56
8390.56 Total

Excavated
1422 lineal ft. to pick
excepting block So. of paving
at Prospect + Torrey Road and
short section on Biological Hill

(15)

Total Excav. to sta 35+35 =
7294 lineal feet
15 in block so. of Prospect.
7309

3840 to 4381.56: 7309.
541.56
7850.56

Relocation line below Pumping Plant

July 28

See page 35

	+	H.I.	−	Williams Keeler Elev	Moore			
old T.P.: old Line 275+70.0	12.06	48.45		36.39				
New Line 275+85			0.20	48.3	48.8			
276−			6.40	42.1	42.6			
~~+15~~ +13 Break			9.8	38.7	39.2	34.6	4.6	22½° Δ
P.C. +35.94 Hub.			11.47	36.98	37.48	34.2	3.2	
+50.			11.70	36.8	37.3	34.1	3.2	
+75			11.4	37.1	37.6	34.2	3.4	
277			11.6	36.9	37.4	34.1	3.3	
F.C. +12.52 Hub.			11.47	36.98	37.48	34.0	3.6	
+50			11.80	36.7	37.2	33.6	3.6	
P.C +72.37 Hub.			11.47	36.98	37.48	33.7	3.78	
278			11.5	37.0	37.5	33.5	4.0	
+25			12.0	36.5	37.0	33.0	4.0	
+50			12.4	36.1	36.6	32.5	4.1	
+75			13.3	35.2	35.7	32.0	3.7	
		T.P.	12.77 −	35.68				
	+1.40	37.08						
F.C. 279+00 Hub			2.83	34.25	34.75	31.5	3.2	
+50			4.0	33.1	33.6	30.0	3.6	
280			5.8	31.3	31.8	28.2	3.6	
Δ +14.0 Hub.			6.69	30.39	30.9	27.5	3.4	
+50			7.8	29.3	29.8	26.5	3.3	
281			9.8	27.3	27.8	24.6	3.2	
+50			11.3	25.8	26.3	23.1	3.2	
282 Hub Pot.	+1.23	T.P. 26.39	11.92 −	25.16	25.66	21.6	4.1	
+50			2.7	23.7	24.2	19.6	4.6	
283			5.9 ?	20.5	21.0	17.2	3.8	

	+	⊼	−	Elev.			
		26.39					
283+50			8.4	18.0	18.5	14.9	3.6
284			11.1	15.3	15.8	12.5	3.3
		T.P.	10.57 −	15.82			
	+0.65	16.47					
+50			4.1	12.4	12.9	9.1	3.8
285			7.5	9.0	9.5	5.8	3.7
+50			11.4	5.1	5.6	2.9	2.7
		T.P.	10.67 −	5.80			
	+1.90	7.70					
286 on Hub Gr bot Pipe (to be lowered) Edge bean field			6.46	1.24	1.74	1.7	
+50 on Hub Gr. bot. Pipe (O.K.			6.42	1.28	1.78		

2.92
Sin .38268) 117000
76536
384640
344412
402280
765360

7+75.07 ↑ = 15' E ℄ Ditch
7+80.77 ↓ = 7+77.63 Davis ℄
3.1

Δ=16°00' L
R=519.56
T=73.02
L=145.09

P.C. 6+35.68

EC. 5+09.83

Δ= 22°57' Rt
31° to outer edge brush R= 750.°
T=152.45
L=300.41

2+09.42 P.C.

1+39.76 EC.

0+70 P.I.

Δ=14°26' Rt
R=557.81
T=70
L=139.26

0+00 P.C

0+00 P.C.

2547½
1135
1412½

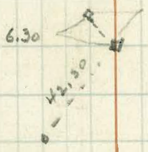
3722½
16
2122½

37.23
16
21 23

279.59
12.82
292.41
351.12
643.53

1430.96
978.17
552.79

18' ahead
of 6+87.60
old P.I.



279.59 to old P.I

279.59
To old P.I.

7+[illegible] P.C.

Δ = [illegible]
R = 615.[illegible]
T = 86.[illegible]
L = 171.[illegible]

5+[illegible] P.C.

5+07.01 E

Δ = [illegible] 30″
R = 75.5
T = [illegible]36
L = 33.[illegible]

1+9[illegible]

9 +[illegible] = [illegible]
+50 = [illegible] 30
+25 = [illegible]
7 — = [illegible]
+75 = [illegible] 30
+50 = [illegible]
6+[illegible] = [illegible]
7+16.[illegible] P.C. = [illegible]

[illegible]
4 — = [illegible] 45″
+75 = 7° 45′ 15″
+50 = [illegible]
+25 = 5 [illegible]
3 — = [illegible]
+75 = 3 [illegible]
+50 = [illegible]
+25 = 1° 5[illegible] 1[illegible]″
2 — = 0° 55′ 4[illegible]″
1+76.15 = 0 [illegible]

P.C. 5+07.01 = 12° 53′ 45″
5+00 = 12° [illegible]″
+75 = 11° 34′ 5″
4+50 = 10° [illegible] 45″

LaJolla

22+44.01 EC.
5 6 9

Δ=40°50
R=335
T=124.7
L=238.74

20+05.27 PC.

17+80.46 EC.
5 6 4
-8615

Δ 20°03' Lt
R=1015'
T=179.43
L=355.19

14+25.27 PC.
5 4"

78 17
9+72.48 EC.
5.70

Δ 8°10' Rt
R=1385
T=98.87
L=197.40

7+75.07 P.C.

EC +44.01 = 20°25
+25 = 18°47'20
22 16° 39 -
+75 = 14° 30 50
+50 = 12° 22 30
+25 = 10° 14'10"
21 - = 8° 06'
+75 = 5° 57' 40
+50 = 3° 49' 30'
+25 = 1° 41' 10"
20+05.27 PC. 0°00

E.C. 17 +80.46 = 10° 01' 30"
+50 = 9° 09' 30"
17 = 7° 45' 00"
+50 = 6° 20' 30"
16 = 4° 55' 40"
+50 = 3° 31' ~~16~~"
15 - = 2° 06' 30"
+50 - = 0 41' 50"
14+25.27 PC. = 0°00

9 +72.48 EC = 4°05
+50 = 3°35
9+00 = 2° 35
+50 = 1° 33'
8+00 = 0° 31
7+75.07 PC = 0°00

Location Grade of Del Mar Pipe Line 192+00.63 to 215

Williams
Moore
Koeler

May, 1920

192+00.00 P.C.	1.16	115.16		114.00	111.0 ✓	3.0
+25						
+50			2.0	113.1	110.1 ✓	3.0
+87.88 P.C.						
193+00.63	P.O.T.					
+25			3.0	112.1	108.8 ✓	3.3
+50			3.5	111.6	108.3 ✓	3.3
+75			4.0	111.1	107.9 ✓	3.2
194			4.4	110.7	107.4 ✓	3.3
+25			4.7	110.4	107.0 ✓	3.4
+50			5.1	110.0	106.5 ✓	3.5
+68.94 Hub E.C.			5.54	109.53	106.3 ✓	3.2
195			6.3	108.8	105.6 ✓	3.2
+50			7.2	107.9	104.7 ✓	3.2
196			8.2	106.9	103.8 ✓	3.1
+50			9.0	106.1	102.9 ✓	3.2
197			9.9	105.2	102.0 ✓	3.2
+50			10.7	104.4	101.1 ✓	3.3
T.P.	0.32	105.33 Lath	10.06	105.01		
198			1.9	103.4	100.2 ✓	3.2
+50			2.9	102.4	99.3 ✓	3.1
199			3.7	101.6	98.4	3.2
+18.77 Hub P.C.			4.0	101.3	98.1	3.2
+25			4.1	101.2	98.1	3.1
+50			4.5	100.8	97.5	3.3
+75			5.0	100.3	97.1	3.2

1.51	115.43	12.43	103.00
3.01	106.01	12.01	94.0
3.01	97.01	12.31	84.70
2.90	87.60	12.40	75.20
1.77	76.97	12.17	64.80

BM. 113.92

115.43
109.8
5.63

115.43
111.1
4.33

115.43
112
3.43

115.43
109.3
6.13

.75
5.08

115.43
108.9
6.53

115.43
108.4
7.03

115.43
108
7.43

115.43
107.5
7.93

115.43
107.3
8.13

115.43
106.6
8.83

115.43
105.7
9.73

115.43
104.8
10.63

115.43
103.9
11.53

115.43
103
12.43

106.01
102.1
3.91

106.01
101.2
4.81

106.01
100.3
5.71

106.01
99.4
6.61

106.01
99.1
6.91

106.01
98.5
7.51

106.01
98.1
7.91

		H.I. 105.33				
200			5.6	99.7	96.6	3.1
+25			5.9	99.4	96.2	3.2
+50			6.5	98.8	95.7	3.1
+75			7.0	98.3	95.3	3.0
201			7.4	97.9	94.8	3.1
+25			7.8	97.5	94.4	3.1
+50			8.3	97.0	93.9	3.1
+75			8.6	96.7	93.5	3.2
202			9.2	96.1	93.0	3.1
+25			9.8	95.5	92.5	3.0
+50			10.4	94.9	92.0	2.9
T.P. Lath	1.43	97.08	9.68	95.65		
+75			2.7	94.4	91.5	2.9
+92.49 Hub E.C.			2.92	94.16	91.15	3.0
203			3.2	93.9	91.0	2.9
+50			4.2	92.9	90.0	2.9
204			5.2	91.9	89.0	2.9
+50			6.2	90.9	88.0	2.9
+56.53 Hub P.C.	T.P. 1.1	91.95	6.24	90.84	87.87	3.0
+75			1.6	90.4	87.5	2.9
205			2.0	90.0	87.0	3.0
+25			2.6	89.4	86.5	2.9
+50			3.2	88.8	85.9	2.9
+75			3.7	88.3	85.4	2.9
206			4.2	87.8	84.8	3.0
+25			4.6	87.4	84.3	3.1
+50			5.2	86.8	83.7	3.1

10601 97.6 8.41	10601 97.2 8.81	10601 96.7 9.31	10601 96.3 9.71	10601 95.8 10.21		
10601 95.4 10.61	10601 94.9 11.11	10601 94.5 11.51	10601 94 12.01	97.01 93.5 3.51		
9701 93 4.01	9701 92.5 4.51	9701 92 5.01	9701 91 6.01	9701 90 7.01	9701 88.5 8.51	9701 88 9.01
9701 87.5 9.51	9701 86.9 10.11	9701 86.4 10.61	9701 85.8 11.21	9701 85.3 11.71	9701 84.7 12.31	

		H. I. 91.95				
+75			5.8	86.2	83.2	3.0
207			6.3	85.7	82.6	3.1
+25			6.8	85.2	82.1	3.1
+50			7.5	84.5	81.5	3.0
+75			8.0	84.0	81.0	3.0
208			8.5	83.5	80.4	3.1
+25			8.9	83.1	79.9	3.2
Hub +44.93 E.C.	T.P. 0.37	83.09	9.23	82.72	79.5	3.2
+50			0.5	82.6	79.4	3.2
209			1.6	81.5	78.4	3.2
+50			2.6	80.5	77.4	3.1
210			3.7	79.4	76.4	3.0
+50			5.0	78.1	75.3	2.8
211			6.1	77.0	74.2	2.8
+50			7.2	75.9	73.1	2.8
212			8.4	74.7	72.0	2.7
+50			9.5	73.6	70.8	2.8
213			10.5	72.6	69.6	3.0
+50			11.8	71.3	68.4	2.9
T.P. on Lath (214)	1.00	71.46	12.63	70.46		
214			1.5	70.0	67.2	2.8
+50			2.4	69.1	66.0	3.1
Set B.M.	10' East. 215+90		5.55	65.91		

Note— Find sta. 215 Bottom Page 69 1/2

87.60
84.2
3.40

87.60
83.6
4.00

87.6
83.1
4.5

87.6
82.5
5.1

87.6
82
5.6

87.6
81.4
6.2

87.6
80.4
6.7

87.6
80.4
7.2

87.6
79.4
8.2

87.6
78.4
9.2

10.2

87.6
76.3
11.3

87.6
75.2
12.4

76.97
74.1
2.87

76.97
73
3.97

76.97
71.8
5.17

76.97
70.6
6.37

76.97
69.4
7.57

76.97
68.2
8.77

76.97
67
9.97

Final Grade Pipe Line 122+00 to 134+81.85 BC.

	+	⊼	−	Elev.	Grade	cut
					381.01	
122+00 Hub	3.93	384.94				
124+00			11.8	373.1	370.2	2.9
		T.P.	11.30	373.64		
	0.87	374.51				
+11			3.1	371.4	370.0	1.4
+23			6.6	367.9	369.8	
+36 So. end butment						
+41			8.8	365.7	369.6	
+47			13.9	360.6	369.5	
+50			15.2	359.3	369.4	
+55			12.9	361.6	369.5	
+56			9.5	365.0	369.5	
+66 No. end butment						
+69			8.7	365.8	369.4	
+89			6.1	368.4	369.5	
125+00			4.8	369.7	369.5	
+04			2.4	372.1	369.5	
+33			0.4	374.1	370.0	4.1
Hub 20 west 125+42		T.P.	0.84	373.67		
	8.18	381.85				
+50			7.3	374.6	370.2	4.4
126 −			8.4	373.5	370.9	2.6
+50			7.8	374.1	371.7	2.4
127			5.8	376.1	372.4	3.7
+50			5.1	376.8	373.3	3.5
128			4.5	377.4	374.0	3.4
+50			2.7	379.2	374.5	4.7
215			3.3	68.2	64.8	

See Page 59.

See page 70½ for continuance

Williams
C Moore
Keeler

May 1930

Sta	+	⊼	−			
3.4						
BM. 122+00 Hub -		381.85				
129			2.9	379.0	375.00	C 4.0
+50			2.4	379.5	375.5	C 4.0
130			2.1	379.8	376.0	C 3.8
		T.P.	3.05	378.80	Hub 30 W. of 130+00	
	12.22	391.02				
+50			11.1	379.9	376.7	C 3.2
131			9.4	381.6	377.5	C 4.1
+50			9.2	381.8	378.0	C 3.8
132			8.5	382.5	379.3	C 3.2
+50			7.2	383.8	381.1	C 2.7
133			4.2	386.8	383.0	C 3.8
+50			3.2	387.8	384.0	C 3.4
134			3.1	387.9	384.0	C 3.9
+50			3.1	387.9	383.5	C 4.4
134+81.85			4.45	386.57	382.86	C 374

124+36 to 129+65

See Page 59.

7697
.658
11.17

70 1/4

	+	U.S.G.S. Datum. π	−	Elev.	Grade	cut
+50		71.46	4.5	67.0	63.8	3.2
		T.P.	5.55	65.91		
	1.81	67.72				
216			1.80	65.9	62.7	3.2
+50			2.90	64.8	61.7	3.1
217			4.0	63.7	60.6	3.1
+50 N.S Road			5.2	62.5	59.5	3.0
218 S.S. Road			5.2	62.5	58.4	4.1
+50			7.3	60.4	57.3	3.1
219			8.5	59.2	56.2	3.0
+50			9.8	57.9	55.1	2.8
+75 Drain					54.3	
220			11.3	56.4	53.50	2.4
+25					53.2	
+50			11.8	55.9	52.9	3.0
221			12.7	55.0	51.8	3.2
		T.P.	12.07	55.65		
	0.82	56.47				
+50			2.6	53.9	50.7	3.2
222			3.6	53.1	49.6	3.5
+30 Road			3.8	52.7	49.0	3.7
+40			2.5	54.0	48.8	5.2
+50			2.5	54.0	48.6	5.4
+60			3.3	53.2	48.9	4.3
+70 Road			4.9	51.6	48.7	2.9
223			5.5	51.0	47.6	3.4
+50			6.5	50.0	46.6	3.4
224			7.7	48.8	45.6	3.2
+50			8.7	47.8	44.6	3.2
225			9.5	47.0	43.6	3.4

Williams
C. Moore
Keeler
May 21-1920

71

10 East of 215+90
B.M 65.91

323 6803 13.03 55.0
2.80 57.80 1220 45.60
2.0 47.60 10.30 37.30

7697
648
12.17

6.37

6803
627
533

6803
616
643

6803
605
757

Elv 64.80
323
68.03
637
4.33

6803
594
863

6803
5830
973

6803
578
1073

6803
561
1193

6803
55.
13.03

551
54
54.1
53.5
53.2
52.9

55.
28
578

57.80
54.5
3.30

57.80
553
2.50

219+75
220
220+25

5780
542
360

5780
339
397

5780
5280
500

5780
517
610

5780
506
720

45.60
2
47.60

57.80
50
780

57.80
496
820

57.80
48.6
920

57.80
4760
1020

5780
4660
1120

5780
4560
1220

5780
1220
4560

47.60
4460
3.00

4760
1130
3730

	+	U.S.G.S. ⊼	−	Elev.	Grade	
		56.47				
+15			9.6	46.9		
+30			9.0	47.5		
+40			9.1	47.4		
+50			10.4	46.1	42.6	3.5
225+68.23 P.C.			10.9	45.6	42.2	3.4
+75			11.0	45.5	x 42.1	3.4
		T.P.	10.43	46.04		
	0.76	46.80				
226			1.8	45.0	41.6	3.4
+25			2.8	44.0	x 41.1	2.9 ✓
+50			3.5	43.3	x 40.4	3.2 ✓
+75			4.2	42.6	39.6	3.0 ✓
227			4.8	42.0	39.1	2.9 ✓
+25			5.4	41.4	38.6	2.8 ✓
+50			5.9	40.9	x 38.1	2.8 ✓
+75			6.5	40.3	37.5	2.8 ✓
228			6.8	40.0	36.5	3.5
+25			7.4	39.4	35.9	3.5
228+50.68 EC.			8.6	38.2	x 35.2	2.5
+75			9.2	37.6	34.5	
229			10.5	36.3	33.3	3.0
+25			12.1	34.7	32.4	
+50			12.4	34.4	31.8	3.1
+75		T.P.	11.65	35.15	31.4	
	2.91	38.06				
230			3.5	34.6	31.3	3.3
+50 +75			3.5	34.6	31.3	3.3
231			3.8	34.3	31.2 31.0	3.0

47.60 − 4.80 = 4.00; 47.60 − 4.31 = 4.50; 47.80 − 42.80 = 5.00; 47.60 − 421 = 5.50; 4760 − 411 = 6.50

47.60 − 406 = 7.00; 4760 − 401 = 750; 4760 − 396 = 8.00; 4760 − 391 = 850; 4760 − 385 = 9.10

4760 − 379 = 970; 4760 − 373 = 10.30

	+	U.S.G.S. ⊼	—	Elev.			
+25		38.06			30.8		
231+50			5.2	32.9	30.2		.2.7
232			6.3	31.8	29.0		2.9
+50			7.2	30.9	28.0		2.9
233			8.3	29.8	26.9		2.9
+50			8.3	29.8	25.8		4.0
234			10.2	27.9	24.7		3.2
234+20.95	BC Hub.	T.P.	10.62	27.44	24.3		3.1
	0.77	28.21					
+25			0.9	27.3	24.2		3.1
+50			1.4	26.8	23.6		3.2
+75			2.1	26.1	22.9	0.3	3.2
235			2.9	25.3	22.2		3.1
+25			4.0	24.2	21.2	-0.4	3.0
+50			4.3	23.9	20.2		3.7
+75			4.7	23.5	19.2		4.3
236			6.4	21.8	17.8		4.0
+25			8.7	19.5	15.9		3.8
+50			11.2	17.0	13.2		3.8
		T.P.	10.60	17.61		1.0%	
	0.31	17.92					
+75			3.2	14.7	10.7		4.0
237			5.8	12.1	8.2		3.9
+25			8.3	9.6	5.9	-1.0%	3.6
+50			10.7	7.2	4.3		2.9
+60			11.6	6.3			
+70			13.5	4.4			
+75			13.9	4.0	3.0		1.0

38.70 97 29.0

3.57 32.57 12.37 20.20

2.47 22.67 12.47 10.20

2.06 12.26

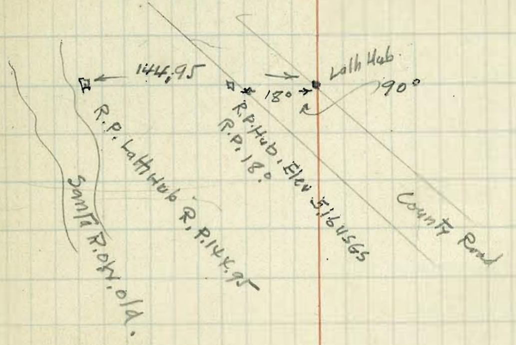
38.7 29. 9.7	38.70 97 29.00 3.57 32.57 2.79 4.6	32.57 2.68 5.77 12.26 6.97 5.29	32.57 257 687 5.67 5.39 28	10.20 2.06 12.26
32.57 2.52 7.37	32.57 2.46 7.97	32.57 2.39 8.67	32.57 2.32 9.57	32.57 2.22 10.37
32.57 2.12 11.37	32.57 2.02 12.37	32.57 12.37 20.20	20.20 2.47 22.67	22.67 1.88 3.87
22.67 1.67 5.97 9.38	22.67 1.42 8.47	22.67 1.17 10.97	22.67 92 12.47	22.67 92 13.47

22.67
12.47
10.20

1447
64
13.11

	+	U.S.G.S. ⊼ 17.92	–		Gr.	cut
237+85			11.6	6.3		
+90 E Road			11.6	6.3		
238			11.9	6.0	2.8	3.2
238+04.05	Hub E.C.		12.25	5.67	2.8	
on old P.I.			13.11	4.81		

5.67
5.93
11.60
6.44
5.16 USGS.



Williams Sept 30 1930
Carpenter

Levels for Height of Stand Pipes

				396.90	ok. ~~397.33~~		
	316	400.06					
			8.01	392.05			
	1.92	393.97					
217+50			2.39		391.58	Inside bell 392.0	39' – (2" pipe)
217+50			4.05	389.92		ground	
219+00			5.6	388.4		ground	
					396.90		
	9.77	406.67					
			0.72	405.95		Inside bell	25' – (4" pipe)
229+00			2.22	404.45 405.95 T.P.			
	0.46	406.41					
			3.94	402.47			
	3.38	405.85					
			1.55	404.30		inside bell	26.70 (2" Pipe)

58
43
01

430.0
391.6
38.4

430.00
406.00
24.00

(26.70
20.85
5.85)

430.00
404.30
25.70

26.10
.40
26.50

30+13.91 E.C.
5 29
19 60

Δ 53°31′
R 185.
T 92.6
L=172.79

28+41.12 PC
5 69
26 81

27+84.86 EC.
5 69
27 90 55

Δ=23°37
R= 300
T= 62.72
L=123.65

26+61.21 P.C.
5 69
66 90

25+57.22

Δ=7°20′
R=1515.
T=90.44
L=193.90

23+57.32 P.C.
5 69
63 01

+13.91 = 26°45′30″
30+00 - 24 37′
+75 - 20°45′
+50 - 16°52′ 30
+25 = 13°00
29+00 - 9°07′40
+75 = 5°15 10
28 +50 = 1°22′ 30

EC. +84.86 = 11°48′30″
+75 = 10° 51 40″
+50 = 8° 28 25
+25 = 6° 05 10″
27 — = 3°41 55
+75 = 1°18 40
26+61.21 = 0°00

+57.22 3°40′
+25 = 3°11′ 00″
25 - = 2° 42′ 30″
+75 = 2° 14′ 00
+50 = 1°45 30
+25 = 1°17′ 00
24 — = 0°48 30
+75 = 0°20
23+57.32 PC. 0°00

7609
48+~~68.69~~ EC.
6178

1165
569
05.96
46+~~01.46~~ P.C.
19.57
45+~~18.05~~ EC.
569
13.26

8068
1068
12217
12085

38+05.98 P.C.
569
1167

33+86.44 EC
569
9213

31+15.92. P.C
569
12161

27052

Δ=20°30'
R=755.0
T=136.53
L=270.13

Δ=50°10'
R=815.0
T=379.48
L=713.59

Δ=41°20' Lt
R=395.0
T=141.45
L=

05.96
19.57
16.60

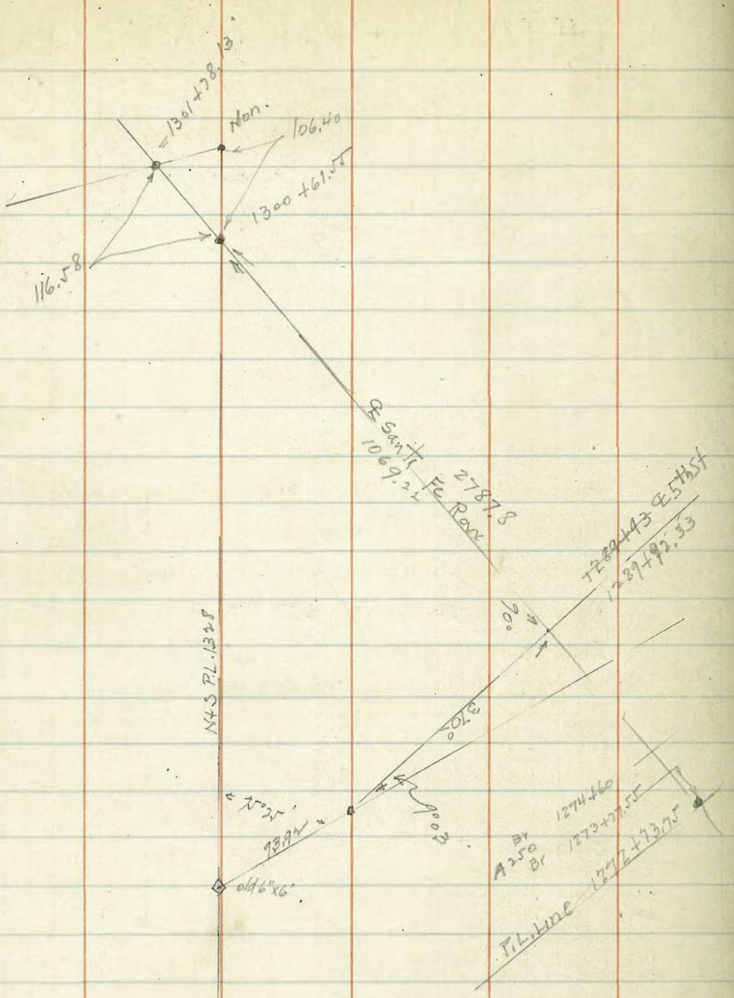
EC. +76.09	10° 15'
+50	9°16'
48 –	7°22'
+50	5°28'
47 –	3°34'
+50°	1°40
P.C. 46+05.96	0°00

375 : 360 :: x : 25971
375
L 270.5 129855
181797
77913
360) 9739125
720
2539
2520
1910
1800
1102

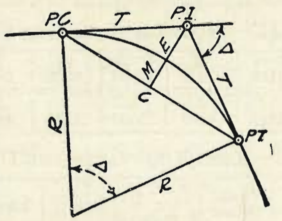
EC. +19.57	25°05'
45	24°24' 30"
+50	22°39' 00"
44	20°53' 30"

+50	19°08
43	17°22' 30"
+50	15°37
42	13°51' 30"
+50	12°06'
41 –	10°20' 30"
+50	8°35'
40	6°49' 30"
+50	5°04
39 –	3°18' 30"
+50	1°33'
38+05.98	0°00

+86.44 EC.	20°40'
+75	19° 47' 30"
+50	17° 52' 55"
+25	15° 58' 20"
33	14° 03' 45"
+75	12° 09' 10"
+50	10° 14' 35"
+25	8° 20' 00
32 –	6° 25' 25"
+75	4° 30' 50"
+50	2° 36' 15"
31+15.92 P.C.	0°00



DIETZGEN'S RAILROAD CURVE
AND
REDUCTION TABLES



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) $=R\,\mathrm{vers}\,\frac{\Delta}{2}$ (6)

External=$E=T\tan\frac{\Delta}{4}$ (7) $=R\div\cos\frac{\Delta}{2}-R$ (8)$=R\,\mathrm{exsec}\frac{\Delta}{2}$ (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 115.37 For from Table IV for 1° curve E=960.6 for 8° 20′=960.6÷8⅓=115.27 and from Table V correction=.10 or E=115.37 Or suppose Δ=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′.

0029
470
2030
116
1363

470
0029
4230
340
13630

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	I	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.

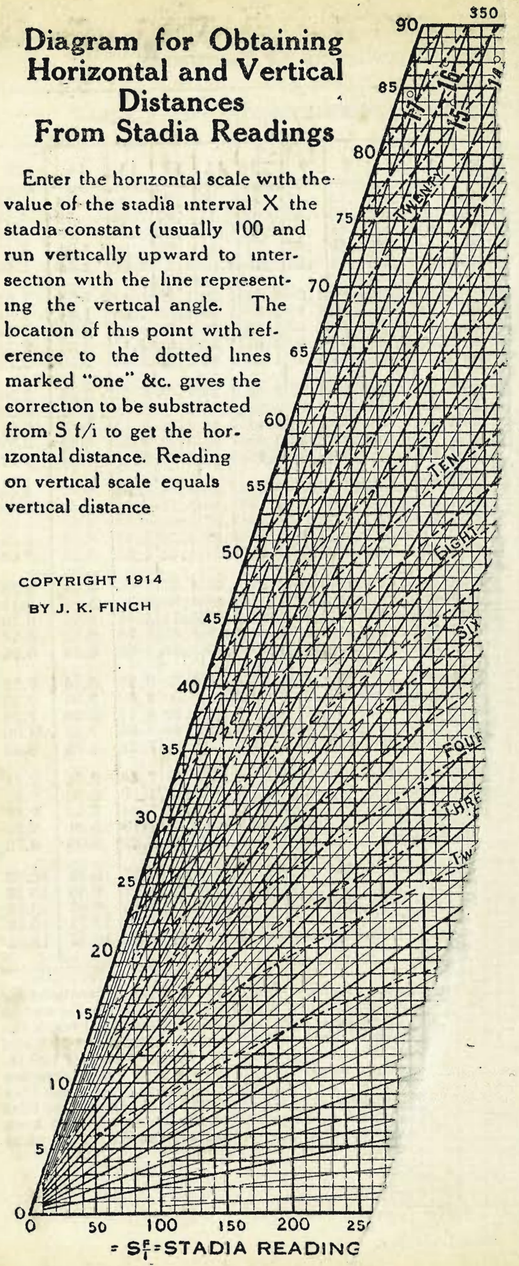
560
356
595.5

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.

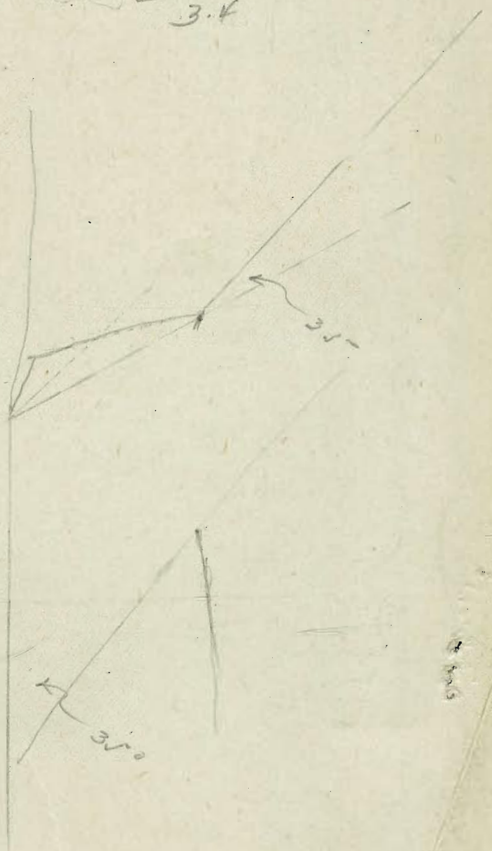
Diagram for Obtaining Horizontal and Vertical Distances From Stadia Readings

Enter the horizontal scale with the value of the stadia interval X the stadia constant (usually 100 and run vertically upward to intersection with the line representing the vertical angle. The location of this point with reference to the dotted lines marked "one" &c. gives the correction to be substracted from S f/i to get the horizontal distance. Reading on vertical scale equals vertical distance



Main 3073
— Bob Green —

125.8
.7
125.0
128.4
3.4



(Bottom pipe less 8" = .66)

.00029

.0641
1500
0500
× 8

320213
3.5

5.05
415
113
15.45
45
10.95

369.8
361.9
1.9

.016811.5
.0001454
.0170164
750
8508450

1.434 .01
1302

.0600

23 + 57.32
22 + 44.01
1 3.31

11 91 13
127 0750
2
25.524

11
1
75 9
25 490
470

.7854
2.21
37270
15708
15707
1.767150

2.26
13.2
15.46
12.
3.46

20 25

3°40
1500

14.8
6.8
21.6
3.7
17.9

.3722
350
18610 0 37
11166 14.8
130.2 18.5

1.77
144
708
708
177
254.88
130
7650
255
33150

16.7
5.0
21.7
2.2
19.5

50
22

261+50
145+10
116 00
x
232

103.98
9.72
94.26

3013.91
2841.58
172.33

3706
.6
3722

1154.15
55.41
58.30

3748
347
278

373.67
76
37443

366.5
365.6
.9

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.