

W

546

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.

No 546

MICROFILMED

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 1 1/2 see inside of back cover.

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This Field Book is manufactured of a high grade 50% Rag Paper having a WATER RESISTING surface.

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UNIVERSITY HEIGHTS
RESERVOIR

&

FILTER PLANT

ELEVATIONS -

Sept. 1/1937

Beermann
Coote - Notes

City Datum -

Berger Transit #

See Also FB 307/80

B.M. 375.05

11.50 386.55

0.78 85.77

T.P.#1

0.76 385.79

10.90 396.69

14.3 82.4

2.60 294.09

2.30 394.39

4.77 399.16

4.99 394.17

TP#1

0.05 385.84

385.79

10.8 75.0

TP#2

10.32 375.52

387 379.39

3.8 75.6

TP#3

6.45 372.94

7.92 380.86

5.1 75.8

1
Brass Plug In Lead In Walk
N.E. Cor El Cajon & Oregon -

Top of Wall Small Res. at Gateway N.E. Cor.

Edge Slope W. from Small Tank

Base of Small Tank - W. Side

{ Ctr. Outlet Same El. as Hll. } 3962

Base of tank E. Side -

At Base of Slope S. Side Tank

Base of Slope E. Side of tank
At North Angle Point in Curb W Side Idaho St.

Ground at base of Stand Pipe - High tank

380.86

12.71 392.98

0.59 380.27

1.18 391.80

7.20 85.78

391.80

12.64 404.44

8.00 396.44

2

Top of Wall S.E. Cor Small Reservoir

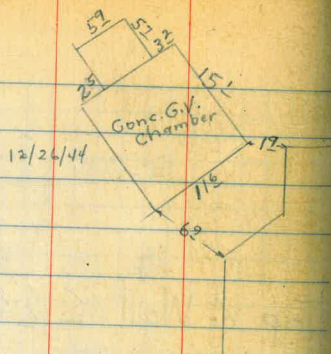
Bottom of trough at Filter Inlet
(Influent Flume)

391.80

+ 4.60

396.40

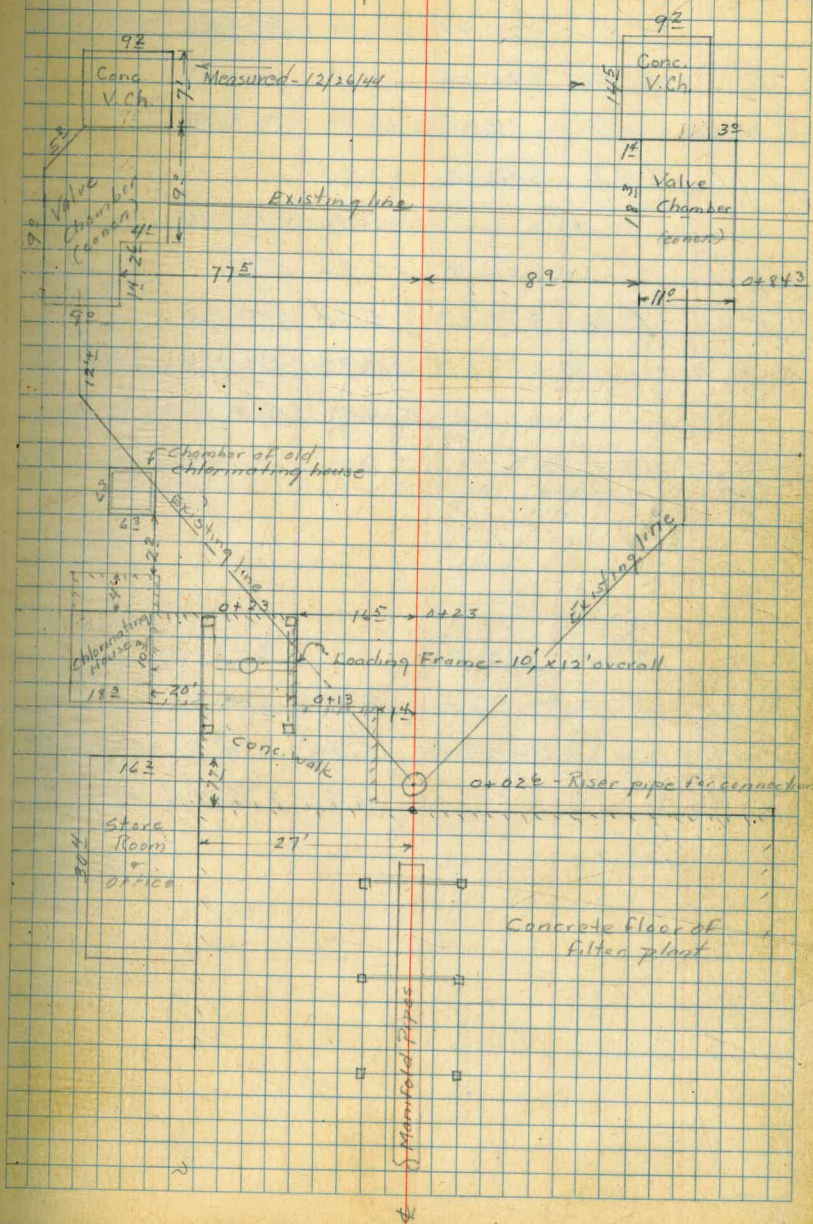
Top Outlet Aerating Table



2/10/41
Hill
Soper
B-rooks
Hedgcock

3

Details - University Hts. Filter Plant



0+00 = inside face of curbing of foundation of existing filter plant foundation

11/22/41 4
 Soper
 Hodgson
 Davis.

	5.81	375.77		369.96
TP	6.52	378.04	4.25	371.52
B.M.			0.91	377.13
	3.47	380.60		
			5.86	374.74
			5.82	374.78
TP	4.36	379.26	5.70	374.90
			4.32	374.94
			4.17	375.09

B.M.	3.58	380.71		377.13
			5.95	374.74
			5.95	374.76
			4.61	376.10
				374.34

B.P. S.E. Cor. Park & Idaho

Set B.M. S.E. Cor. of G.V. Chamber (El Cajon line)

On conc. floor, filter plant S.E. Cor.

" " " " " N.E. "

Small copper plug in curb N.E. Cor. Oregon & El Cajon

Lead & tack (offset point) " " " "

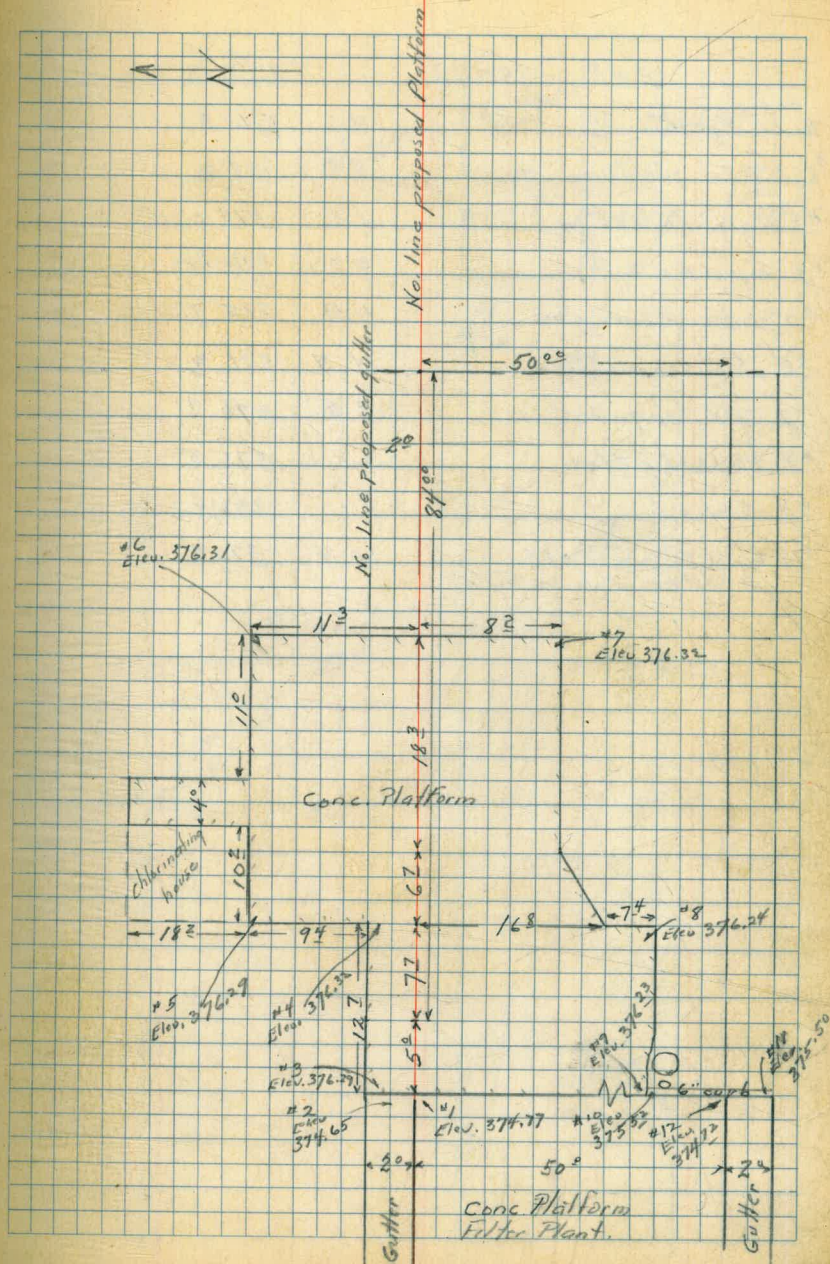
Note: page 1 this book shows B.P. in walls, N.E. Cor. of Oregon & El Cajon, elev. 375.05

on concrete floor filter plant N.E. Cor.

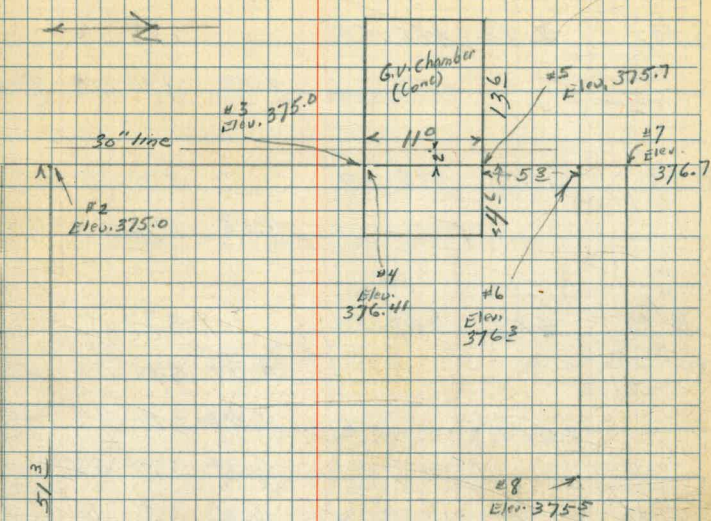
C. 0.42 (5") On 10' off. hub to E. (N.E. Cor)

C. 1.76 (1' 9 1/8") " " " " " E. (S.E. Cor)

B.M.	4.29	381.42	377.13
#1 Conc. floor filter plant N.E. Cor.	6.65	374.77	
#2 in gutter " " "	6.77	74.65	
#3 leading platform N.W. Cor.	5.13	76.29	
#4 " " "	5.10	76.32	
#5 " " "	5.13	76.29	
#6 " " N.E. Cor.	5.11	76.31	
#7 " " "	5.10	76.32	
#8 " " "	5.18	76.24	
#9 " " S.W. Cor.	5.19	76.23	
#10 on curbing N. end.	5.90	75.52	
#11 " " S. end	5.92	75.50	
#12 conc. floor filter plant S.E. Cor.	6.70	74.72	



	9.48	380.61	377.13
#1 N.e. line of platform	4.3	376.3	
#2 N.E. Cor. platform	5.6	375.0	
#3 on ground N of G.V. box	5.6	375.0	
#4 top of G.V. box	4.20	376.41	
#5 on ground S of G.V. box	4.9	375.7	
#6 S.E. Cor. platform	4.3	376.3	
#7 S.E. Cor. gutter line	3.9	376.7	
#8 40' W. of S.E. Cor.	5.1	375.5	
#9 S.W. Cor.	5.1	375.5	
#10 Top of 30" pipe 2' East of East line of plant extension	10.4	370.2	



Proposed filter plant extension

20' ← 50' → 20'

#11 Elev. 376.3
edge conc. platform

#9 Elev. 375.5

Revised grades for platform, Univ. Hts. Res.

B.M. 3.42 380.55 377.13
 4.55 376.00 Grade

center of slab 20' west of East end.

B.M. 3.26 380.39 377.13
 4.19 376.20 Grade

center of slab 49' West of East end.

B.M. 4.07 381.20 377.13

5.47 375.73 375.8

Fill 0.02 R.P. to N. line, 20' West of East end.

6.42 374.78 375.0

Fill 0.22 R.P. to N.E. Cor. (to East)

6.34 374.86 375.6

F 0.74 R.P. to center of slab

5.09 376.11 375.0

C - 1.11 R.P. to SE Cor. (to East)

5.63 375.57 376.0

F 0.43 R.P. to SW Cor. (to West)

B.M. 3.75 380.88 377.13

5.29 375.59 375.60

R.P. (2.0 FT) for point 49' West of East end (on side platform)
 Fill 0.01

12/22/41
 Supd
 Hodgson
 Davis

Dulzura Conduit - Flum 17

Station	627	10627	10000
0+00			
+00			2.19 104.08 ✓
+112			6.43 99.84 ✓
+122			2.51 103.76 ✓
+122			6.9 99.7 ✓
+134.7			7.3 99.0 ✓
+143.5			6.6 99.7 ✓
+143.5			2.53 103.74 ✓
+144.6			6.47 99.80 ✓
+153.7			2.21 104.06 ✓
+153.7			6.33 99.94 ✓
+122			4.8 101.5 ✓
+15.3			6.2 100.1 ✓
+29.1			6.6 99.7 ✓
+43.1			6.1 100.2 ✓
+46.3			4.3 92.0 ✓
0+00			2.17 104.10 ✓
+122			2.53 103.74 ✓
+122			6.6 99.7 ✓
+15.6			7.5 98.8 ✓
+28.4			7.6 98.7 ✓
+29.2			8.7 97.6 ✓
+32.6			7.6 98.7 ✓
+43.5			6.9 99.4 ✓
+122			5.0 101.3 ✓
+15.9			6.7 99.6 ✓

1/10/44

8

Assumed Elev
 Floor Conduit
 Top Rt Corb
 Floor Upper End Flume
 Top Upper Rt Abutment
 Xsect @ do do base
 Xsect Rt side flume
 Xsect base lower Rt abutment
 Top Lower Rt abut
 Floor Lower End Flume
 Top Rt Corb
 Floor Conduit
 Xsect 5' Rt
 do
 do
 do
 do
 Top Lt Corb
 Top Lt Abutment
 Xsect @ do do base
 Xsect Lt side
 Xsect do
 do
 do
 Lower Lt Abut base
 Xsect 5' Lt offset
 do

R.C. Woeste
 T.V. Hoff
 A.C. Keenan

9/18/44

Hill

Remmen

10

Elev of gauges on El Cap. & Otay P.L.s at Univ Hts. Res.

B.M.	595	375.91		369.96
	685	379.78	2.98	372.93
			2.61	377.17
			2.77	377.01
			2.67	377.11
			3.94	375.84

B.P. S.E. cor. Polk & Idaho - City Datum

Check on Super B.M. S.E. cor. El Cap. Gate Chamber. ^{EL 377.13}

Gauge on El Cap. Line (Note center of gauges)

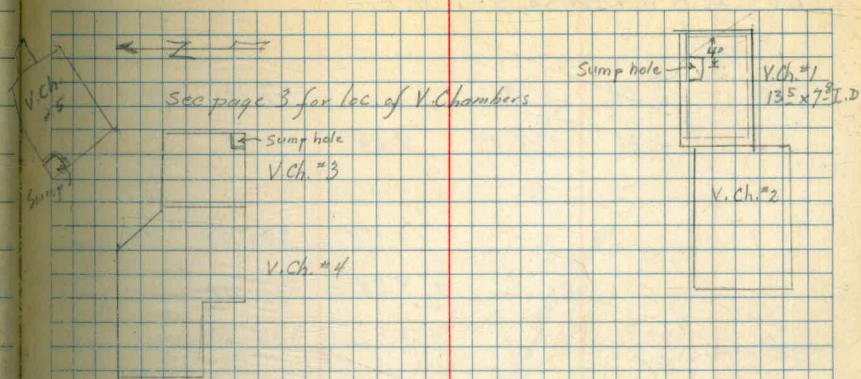
" " Otay " (Note center of gauges)
Check on B.M. stenciled Elev 381.8, on rim of gate chamber where recording gauge is set.

Elevs. of G.V. Chambers - U.H.F.P.

B.M	2.52	379.65	377.13	(Page 4)
		3.92	375.73	
		17.40	362.25	
		18.80	360.85	
		3.28	376.37	
		17.28	362.37	
		3.90	375.75	
		12.70	366.95	
		13.60	366.85	
		2.50	377.15	
		13.05	366.60	
		3.92	375.73	
		14.46	365.19	
		15.36	364.29	

Dec 26, 1944
Super
King
Stephens

11



Top of V. Chamber #1

Floor - " #1 by sump hole

Bottom of sump hole Ch. #1

Top of V. Ch. #2

W.E. Cor. - on floor. - No sump hole

Top of V. Ch. #3

Floor - " #3

Bottom of sump hole

Top of V. Ch. #4

Floor - no sump hole

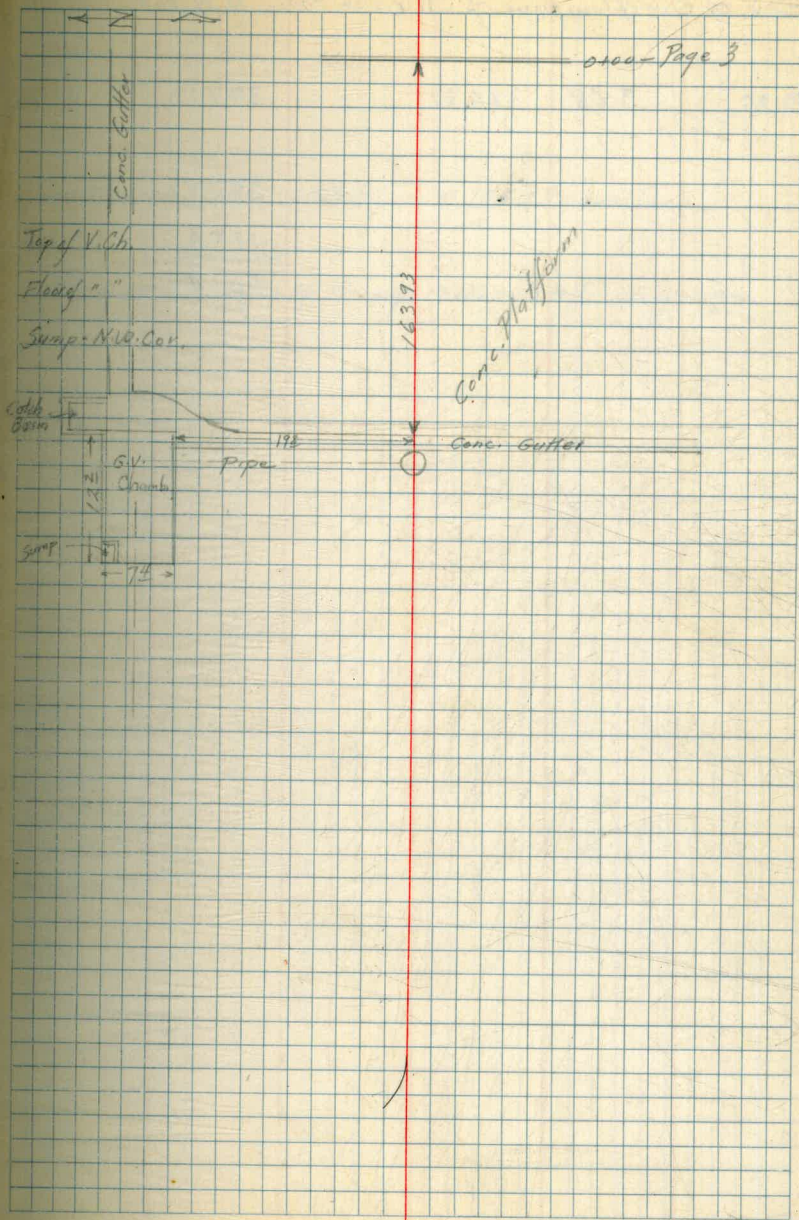
Top of V. Ch. #5

Floor - " #5

Sump - " - "

Elev's. of G.V. Chambers - U.H.F.P.

B.M.	2.68	379.81		377.13
	4.21	379.19	4.83	374.98
			3.44	375.75
			9.79	369.40
			10.32	368.87
	3.84	379.32	3.71	375.48
ck on B.M.			2.20	377.12



Jan 22, 1946 13
Soper
Stephens

Elev. of Overflow pipe of Storage Res. U.H.F.P.

B.M. 3.68 380.81 377.13

470 376.11

125.3

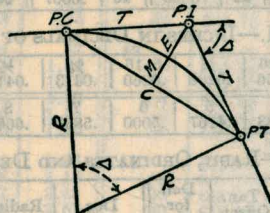
501.4

On concrete, below overflow pipe + 125.3 to overflow

Elev of overflow pipe of storage reservoir = 1' on gauge

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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CURVE FORMULAS

Radius= $R = \frac{50}{\sin \frac{D}{2}}$ (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) = $R \div \cos \frac{\Delta}{2} - R$ (8) = $R \text{exsec} \frac{\Delta}{2}$ (9)

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

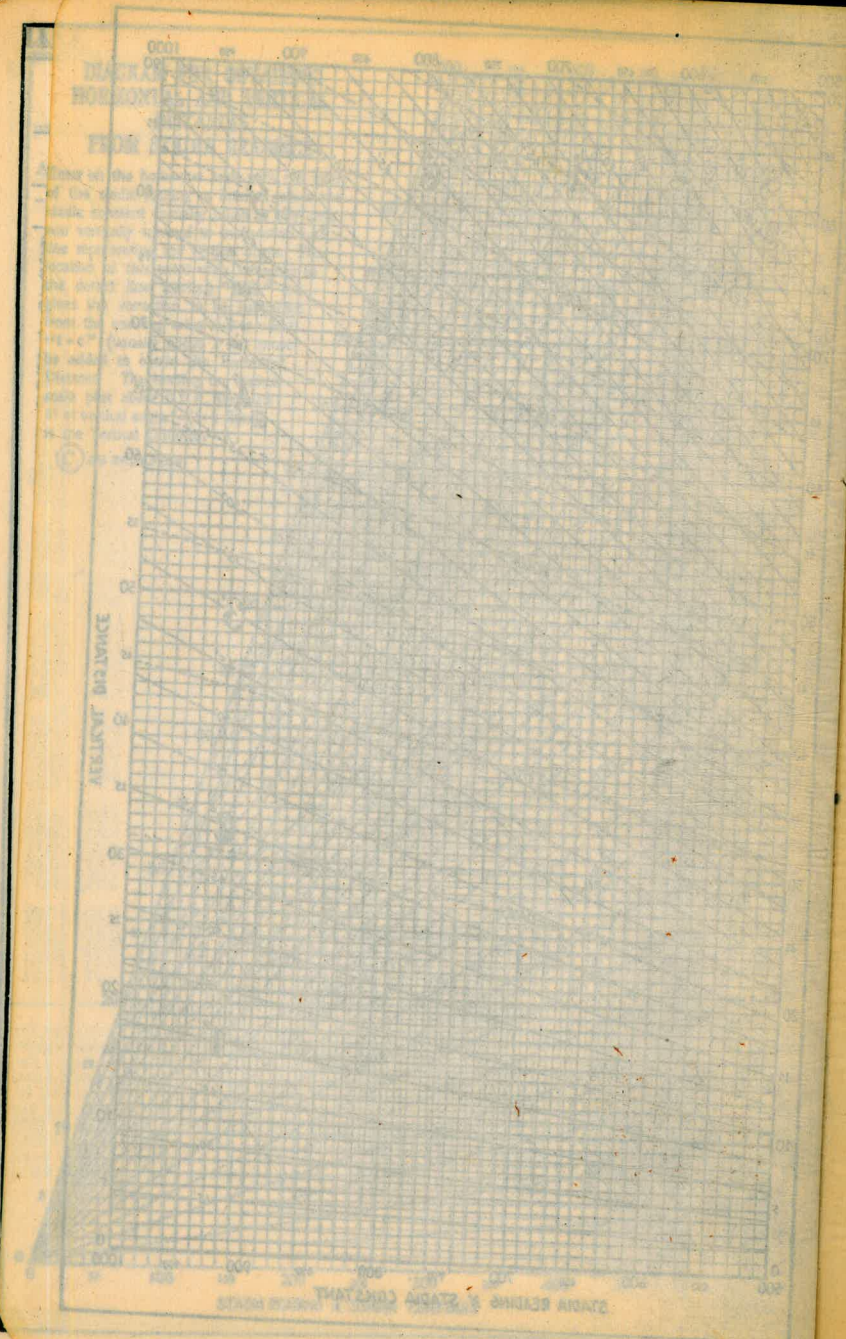
EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta=62^\circ 10'$ $D=8^\circ 20'$. From Table IV for 1° curve $T=3454.1$ and $\div 8\frac{1}{3}=414.49$ 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= $7.27 (54.50 \div 100)^2=2.16$ ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26)=2.16$ ft.

Deflections.—Deflection angle= $\frac{1}{2} D$ for 100 ft., $\frac{1}{4} D$ for 50 ft., etc. For c ft.=(in minutes) $.3 \times C \times D^\circ$ or=defl. for 1 ft. from Table III $\times C$. For Sta. 158 of above curve=.3 $\times 54.5 \times 8\frac{1}{3}=136.2'$ or $2^\circ 16.2'$, or= $2.50 \times 54.5=136.2'$ from Table III. For Sta. 159 deflection angle= $2^\circ 16.2' + 8^\circ 20' \div 2=6^\circ 26.2'$, 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 $8^\circ 20'=960.6 \div 8\frac{1}{3}=91.27$ and from Table V correction=.10 or $E=91.37$ ft. Or suppose $\Delta=32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E=230.9$ and $\div 42=5.5$ or $D=5^\circ 30'$.



0
 +11.2 W.E.F.
 +12.7 W.E.F. (sketch)
 11.2
 12.7

W.E.F.	W.E.F.
17.7	12.2
34.7	15.0
44.6	29.2
51.5	45.8
62.2	59.1
71.1	72.2
83.1	85.9
86.3	90.6
	92.4
	92.6
	93.2
	93.7

17.7 W.E.F. (sketch)
 34.7 W.E.F. (sketch)
 44.6 W.E.F. (sketch)

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	26.2	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 $41.9 + (20 - 16) \div 2$ or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.

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