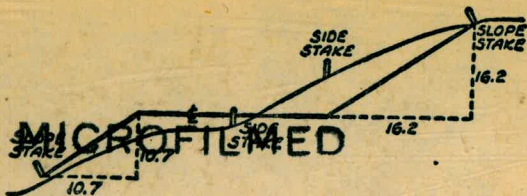


758



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING
SLOPE 1 TO 1. ROADWAY OF ANY WIDTH

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0
1	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	1
2	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2
3	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	3
4	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	4
5	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	5
6	6.00	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	6
7	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	7
8	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	8
9	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	9
10	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	10
11	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	11
12	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	12
13	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	13
14	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	14
15	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	15
16	16.00	16.10	16.20	16.30	16.40	16.50	16.60	16.70	16.80	16.90	16
17	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90	17
18	18.00	18.10	18.20	18.30	18.40	18.50	18.60	18.70	18.80	18.90	18
19	19.00	19.10	19.20	19.30	19.40	19.50	19.60	19.70	19.80	19.90	19
20	20.00	20.10	20.20	20.30	20.40	20.50	20.60	20.70	20.80	20.90	20
21	21.00	21.10	21.20	21.30	21.40	21.50	21.60	21.70	21.80	21.90	21
22	22.00	22.10	22.20	22.30	22.40	22.50	22.60	22.70	22.80	22.90	22
23	23.00	23.10	23.20	23.30	23.40	23.50	23.60	23.70	23.80	23.90	23
24	24.00	24.10	24.20	24.30	24.40	24.50	24.60	24.70	24.80	24.90	24
25	25.00	25.10	25.20	25.30	25.40	25.50	25.60	25.70	25.80	25.90	25
26	26.00	26.10	26.20	26.30	26.40	26.50	26.60	26.70	26.80	26.90	26
27	27.00	27.10	27.20	27.30	27.40	27.50	27.60	27.70	27.80	27.90	27
28	28.00	28.10	28.20	28.30	28.40	28.50	28.60	28.70	28.80	28.90	28
29	29.00	29.10	29.20	29.30	29.40	29.50	29.60	29.70	29.80	29.90	29
30	30.00	30.10	30.20	30.30	30.40	30.50	30.60	30.70	30.80	30.90	30
31	31.00	31.10	31.20	31.30	31.40	31.50	31.60	31.70	31.80	31.90	31
32	32.00	32.10	32.20	32.30	32.40	32.50	32.60	32.70	32.80	32.90	32
33	33.00	33.10	33.20	33.30	33.40	33.50	33.60	33.70	33.80	33.90	33
34	34.00	34.10	34.20	34.30	34.40	34.50	34.60	34.70	34.80	34.90	34
35	35.00	35.10	35.20	35.30	35.40	35.50	35.60	35.70	35.80	35.90	35
36	36.00	36.10	36.20	36.30	36.40	36.50	36.60	36.70	36.80	36.90	36
37	37.00	37.10	37.20	37.30	37.40	37.50	37.60	37.70	37.80	37.90	37
38	38.00	38.10	38.20	38.30	38.40	38.50	38.60	38.70	38.80	38.90	38
39	39.00	39.10	39.20	39.30	39.40	39.50	39.60	39.70	39.80	39.90	39
40	40.00	40.10	40.20	40.30	40.40	40.50	40.60	40.70	40.80	40.90	40
41	41.00	41.10	41.20	41.30	41.40	41.50	41.60	41.70	41.80	41.90	41
42	42.00	42.10	42.20	42.30	42.40	42.50	42.60	42.70	42.80	42.90	42
43	43.00	43.10	43.20	43.30	43.40	43.50	43.60	43.70	43.80	43.90	43
44	44.00	44.10	44.20	44.30	44.40	44.50	44.60	44.70	44.80	44.90	44
45	45.00	45.10	45.20	45.30	45.40	45.50	45.60	45.70	45.80	45.90	45
46	46.00	46.10	46.20	46.30	46.40	46.50	46.60	46.70	46.80	46.90	46
47	47.00	47.10	47.20	47.30	47.40	47.50	47.60	47.70	47.80	47.90	47
48	48.00	48.10	48.20	48.30	48.40	48.50	48.60	48.70	48.80	48.90	48
49	49.00	49.10	49.20	49.30	49.40	49.50	49.60	49.70	49.80	49.90	49
50	50.00	50.10	50.20	50.30	50.40	50.50	50.60	50.70	50.80	50.90	50

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

422.01 above road

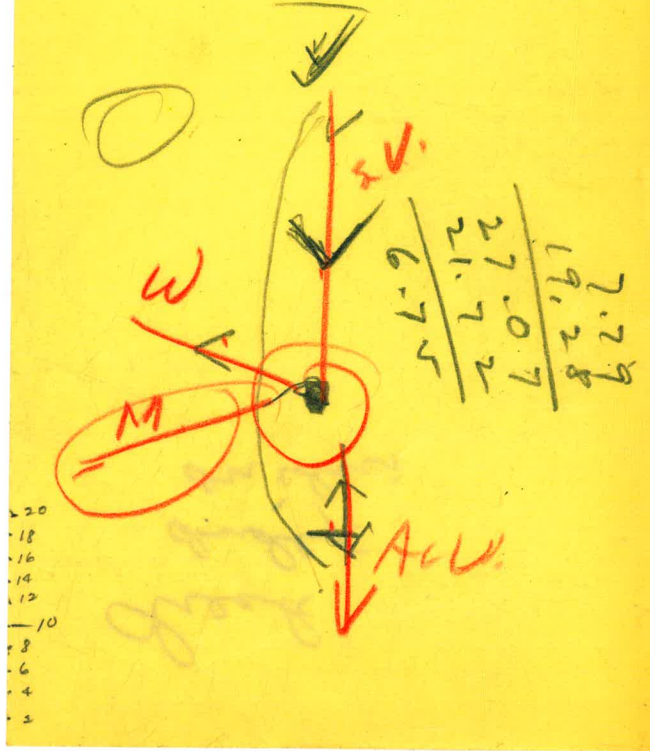
315.00

314.72

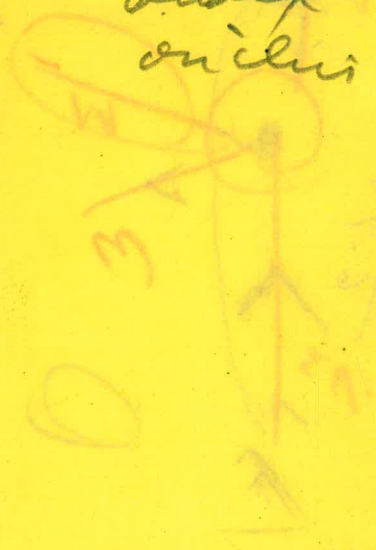
Hodges Res.
Notes by Finney

Collected
many in f

Scale
Rainfall Chart



Check
and
on this



Small
group

Small
group

TABLE XIII—CORRECTIONS FOR TANGENTS AND EXTERNALS

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table VIII) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.79	.81	.92	1.04	1.29	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	.43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22

FOR EXTERNALS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.032	.037	.043	.049	.053	.057	.061
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.127	.135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.771	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.266	.353	.440	.528	.617	.707	.797	.877	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.76	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.885	1.06	1.25	1.43	1.62	1.80	1.99	2.18	2.38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2.06	2.28	2.50	2.73	2.96
110°	.268	.536	.806	1.08	1.35	1.63	1.91	2.20	2.48	2.76	3.05	3.35	3.66	3.96
120°	.360	.721	1.08	1.45	1.82	2.19	2.57	2.95	3.33	3.72	4.11	4.50	4.91	5.32

INDEX OF

HODGES SILT

SURVEY

BY

F. B. FINNEY

D. ELLIOTT

R. GRANSTEDT

P. SMITH

LEVEL NOTES, STADIA SHOTS, LAKE DEPTH
pages -

Pages 4-50

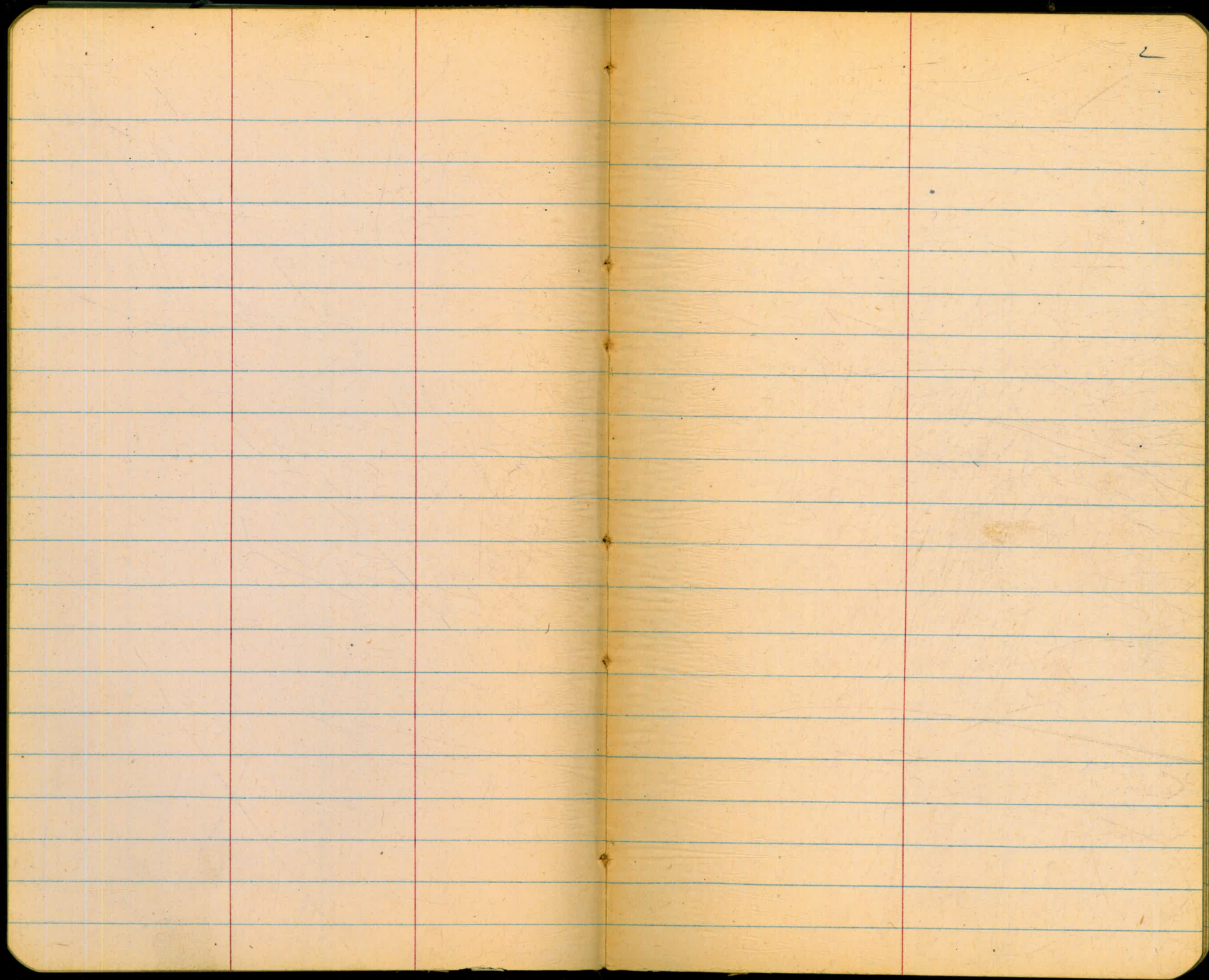
TRIANGULATION NET OF RANGE POINTS
pages 51-54

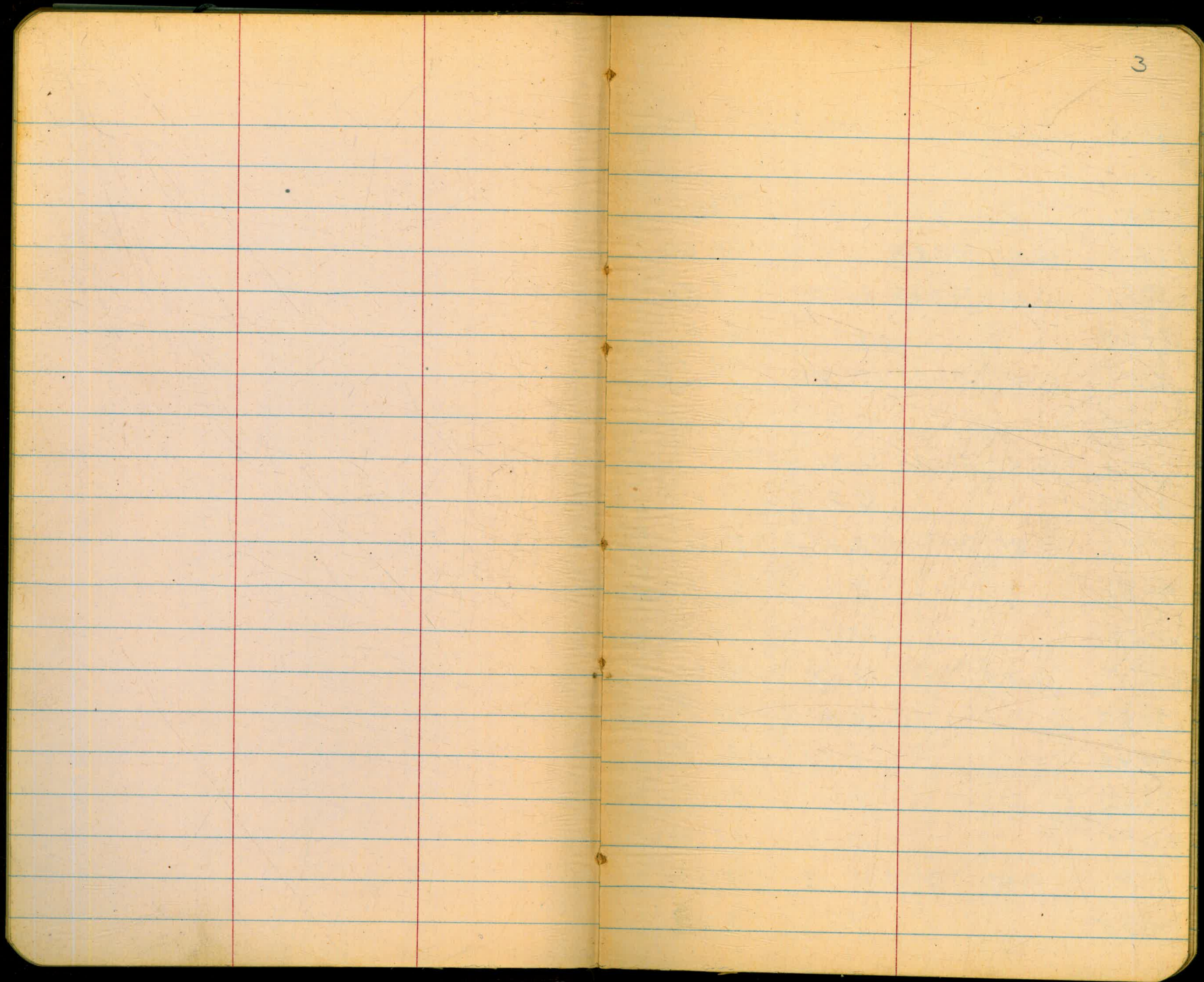
Reference Points for R029, R030, R04 -
page - 56

Indexed

RANGE

①





RANGE 026-025

Diff. Leveling - Station 26 to 25

4
Aug 17 '48

Sta	B.S.	H.I	FS	Elev.
R026	0.64	398.64		398.00
0+00			1.5	397.1
TP	0.21	387.13	11.72	386.92
1+00			6.7	380.4
TP	0.92	375.48	12.57	374.56
2+00			10.4	365.1
TP	0.47	363.74	12.21	363.27
2+80			12.2	351.5
TP	3.86	356.73	10.87	352.87
2+82			9.7	347.0
3+20			10.6	346.1
TP	0.78	344.60	12.91	343.82
3+40			6.4	338.2
3+42			8.7	335.9
3+52			9.5	335.1
3+57			12.4	332.2
TP	0.42	332.59	12.43	332.17
4+35			3.7	328.9

TOP-BOP 0.9

72.71

7.30

374.56
 .92
 375.48
 12.21
 363.27
 .47
 363.74
 10.87
 352.87
 286
 356.73
 12.91
 343.82
 .78
 344.60
 12.43
 332.17
 .42
 332.59

Sta	BS	HI	F.S.	EI
TP	0.02	320.57 ✓	12.04	320.55
4+50			1.1	319.5
5+00			7.8	312.8
TP	1.41	309.01 ✓	12.97	307.60
6+00			12.6	296.4
TP	2.42	298.51 ✓	12.92	296.09
7+00			6.1	292.4
8+00			6.6	291.9
TP				
9+00	8.15	300.25 ✓	6.41	292.10
10+00			8.6	291.7
11+00			8.5	291.8
12+00			5.1	295.2
13+00			4.9	295.4
TP	10.57	307.78 ✓	3.04	297.21
13+50			4.4	303.4
TP	11.47	318.96 ✓	0.29	307.49
TP	12.77	331.50 ✓	0.23	318.73
13+95			9.1	327.4
14+09			4.1	327.4

BS
46.81
6
FS
47.90

332.59
120.4
320.59
12.92
307.60
1.41
309.01
12.92
296.09
2.42
298.51
6.41
292.10
8.15
292.10
8.15
300.25
304
297.21
10.57
307.78
2.9
307.49
11.47
318.96
2.9
318.73
12.77
331.50

Sta	BS	HI	FS	EI
TP	12.02	341.55	1.97	329.53
14+12			8.9	332.7
TP	11.13	352.19	0.49	341.06
TP	12.20	363.82	0.57	351.62
TP	12.40	375.82	0.40	363.42
TP	12.07	387.57	0.32	375.50
TP	11.38	398.80	0.15	387.42
15+40			7.8	391.0
TP	8.26	405.63	1.43	397.37
R025			7.63	(.7) 398.0
15+52 ^B			8.3	397.3

BS	FS
71.20	5.33
8.26	47.90
45.81	7.2.71
7.30	<u>125.94</u>
132.57	
	5.3.3
79.46	
46.81	
7.30	
<u>133.57</u>	
<u>125.99</u>	
7.63	
	331.50
	<u>1.43</u>
	329.53
	<u>12.02</u>
	341.55
	49
	<u>341.06</u>
	11.13
	<u>352.19</u>
	52
	351.62
	<u>12.20</u>
	363.82

Diff. leveling BM₂ to sta 023

Sta	BS	HI	FS	ELEV
BM ₂	11.62	331.96		320.34
TP #1	12.91	344.90	0.47	331.49
TP #2	11.82	356.13	0.09	344.31
TP #3	12.73	368.57	0.29	355.84
TP #4	12.11	380.44	0.24	368.33
#5	12.69	392.65	0.48	379.96
#6	11.91	404.49	0.07	392.58
R 023			6.79	398.00

3 85.79

1.64

87.15

320.34

404.49

RANGE 023-024

8

STI	B.S	HI	FS	EL.	
R-023	0.73	398.73		398.00	1.2
0+00			1.9	396.8	
0+25			7.7	391.0	
TP	0.80	387.79	11.74	386.99	
0+65			5.1	382.7	
TP	1.16	376.10	12.85	374.94	
1+00			2.7	373.4	
TP	1.14	364.49	12.75	363.35	
TP	1.32	353.14	12.67	351.82	
2+00			11.7	341.4	
TP _M	0.18	340.90	12.62	340.52	
TP	0.82	328.93	12.59	328.11	
2+68			8.6	320.3	
TP	1.56	317.55	12.94	315.99	
3+00			9.9	307.7	
TP	0.73	306.19	12.09	305.46	
3+25			6.4	299.8	
TP _M	1.12	295.92	11.39	294.80	
4+00			9.4	286.5	
5+00			10.2	285.7	
	9.56		11.64		

9.56	111.64
98.26	7.64
12.62	0.25
120.44	119.53
119.53	
91	

ST	BS	HI	FS	EL.	
6+00		295.92	9.3	286.6	
6+88			8.3	287.6	
7+15			4.8	291.1	
8+00			4.6	291.3	
TP	12.99	304.26	4.65	291.27	
9+00			12.3	292.0	
10+00			6.3	298.0	
TP	12.58	315.45	1.39	302.87	
11+00			9.9	305.6	
TP _M	12.88	328.10	0.23	315.22	
11+75			10.9	317.2	} read
11+91			10.9	317.2	
12+00			7.4	320.7	
TP _M	10.45	338.34	0.21	327.89	
TP	12.36	350.34	0.36	337.98	
TP	11.91	361.82	0.43	349.91	
13+00			5.3	356.5	
TP	12.95	374.65	0.12	361.70	
13+40					
TP	12.04	386.54	0.15	374.50	
	98.26		7.64		

STA	BS	HI	FS	ELEV.
TP	12.62	398.91	0.25	386.29
13+66			12.6	386.3
13+82			6.7	392.2
14+45			4.0	394.9
15+00			7.0	391.9
R024			0.91	398.00
15+51 ²			0.9	397.1
R024	5.22	403.22	5.40	398.00
R026			5.40	397.82

328.97

9.56 111.64
 98.26 7.64
 12.62 .25
 120.44 119.53
 119.53
 .91

RANGE 023-022

ST.	B.S.	HI	FS	EL.	
RD23	0.55	398.55		398.00	1.1
0+00			1.7	396.9	
TP	1.43	387.50	12.48	386.07	
1+00			7.4	380.1	
TP	1.92	376.66	12.76	374.74	
2+00			12.2	364.5	
TP	1.77	366.18	12.25	364.41	
3+00			14.1	352.1	
3+60			14.0	352.2	
4+00			11.9	354.3	
4+30			11.1	355.1	
TP	0.89	354.17	12.90	353.28	
5+00			4.1	350.1	
TP	0.97	342.12	13.02	341.15	
TP	1.15	330.23	13.04	329.08	
6+00			7.1	323.1	
TP	0.01	318.23	12.01	318.22	
6+55			12.5	305.7	
TP	0.55	306.30	12.48	305.75	
TP	4.81	299.89	11.22	295.08	

12.4
12.9
3.9

ST.	B.S.	HI	FS	EL
7+00		299.9	7.9	292.0
8+00			11.0	288.9
9+00			11.3	288.6
10+00			12.9	287.0
11+00			15.9	284.0
12+00			16.3	283.6
13+00			16.6	283.3
14+00			16.3	283.6
15+00		299.89	10.3	289.6
TP	13.06	309.05	3.90	295.99
16+00			9.6	299.5
TP	13.01	321.89	0.17	308.88
17+00			10.3	311.6
TP	12.72	334.21	0.40	321.49
TP	12.87	346.91	0.17	334.04
18+00			10.14	336.5
TP	12.70	359.47	0.14	346.77
19+00			0.3	359.2
TP	13.11	372.49	0.09	359.38

ST.	B.S.	^{372.49} HI	FS	EL	
TP	12.66	384.79	0.36	372.13	
TP	12.87	397.07	0.59	384.20	
20+00			12.1	385.0	
TP	6.62	402.65	1.04	396.03	
R022			4.65	398.0	
20+53.6			5.3	397.3	.7

RANGE 020-021

14

ST.	D.S.	HI	FS	EL	
R 020	0.53	398.53		398.0	.8
0+00			1.3	397.2	
TP	0.89	386.42	13.00	385.53	
TP	0.83	374.66	12.59	373.83	
1+00			3.6	371.1	
TP	1.48	363.86	12.28	362.38	
TP	0.51	351.80	12.57	351.29	
2+00			6.4	345.4	
2+35			11.2	340.6	
2+65			13.0	338.8	
TP	1.23	340.60	12.43	339.37	
3+00			7.5	333.1	
TP	0.85	328.47	12.98	327.62	
TP	0.66	316.80	12.33	316.14	
4+00			10.6	306.2	
TP	0.71	304.52	12.99	303.81	
TP	1.15	292.65	13.02	291.50	
5+00			6.6	286.1	
6+00			12.7	280.0	
7+00			12.9	279.8	

8.84

119.19

ST	BS	HI	FS	EL
8+00		292.65	12.6	280.1
9+00			12.0	280.7
10+00		292.65	11.9	280.8
TP	12.54	304.53	0.66	291.99
10+60			15.7	288.8
11+00			3.7	300.8
TP	12.65	316.54	0.64	303.89
TP	12.77	328.86	0.45	316.09
TP	12.82	341.58	0.10	328.76
12+00			9.6	332.0
TP	12.78	353.83	0.53	341.05
TP	12.14	366.81	0.16	353.67
TP	12.73	379.18	0.36	366.45
TP	12.61	391.61	0.18	379.00
13+50			3.3	388.3
TP	7.91	398.03	1.49	390.12
13+76 ⁶			0.8	397.2 .8
R021			0.03	398.00

4.57
 114.19
 118.96

109.95
 8.84
 118.79

HI FS EL
 398.03
 7.84 400.97 4.90 393.13
 2.48 401.76 6.69 394.28
 398.74
 3.76

RANGE 019-018

16

Sta	BS	HI	FS	EI
# 019	3.76	401.76		398.00
0+00			4.7	397.1
TP	0.41	389.45	12.72	389.04
TP	0.31	378.71	11.05	378.40
TP	0.56	366.83	12.44	366.27
1+00			4.6	362.2
TP	0.85	354.90	12.78	354.05
TP	0.76	343.70	11.96	342.94
TP	0.45	331.92	12.23	331.47
2+00			5.1	326.8
2+40				
TP	1.16	320.49	12.59	319.33
TP	0.55	308.74	12.30	308.19
3+00			7.6	301.1
TP	1.43	297.72	12.45	296.29
4+00			9.1	288.6
5+00			11.0	286.7
6+00			11.0	286.7
7+00			11.3	286.4
8+00			10.3	287.4
9+00			6.3	291.4

10.24

110.52

TOP - BOP 0.9

10.24

110.52

	BS	HI	FS	EL
TP	10.59	297.72 304.75	3.56	294.16
10+00			11.7	293.1
11+00			8.5	296.3
12+00			6.4	298.4
13+00			5.2	299.6
14+00			4.5	300.3
15+00			1.0	303.8
TP	12.00	316.19	0.56	304.19
16+00			4.9	311.3
TP	12.84	328.28	0.75	315.44
17+10			4.8	323.5
TP	12.09	340.01	0.36	327.92
18+30			5.1	334.9
TP	12.28	351.80	0.49	339.52
19+00			4.0	347.8
TP	12.82	364.37	0.25	351.55
19+32			5.5	358.9
T.P.	12.85	376.73	0.49	363.88
20+00			10.2	366.5

85.47

17
#8.50

85.47
1 0.24
24.43
12 0 14

F
6.46
110.52
1.64
118.62
120.14
118.62
1.52

376.73

STP.	B.S.	H.I	F.S.	ELEV.
T.P.	12.33	389.92	0.14	376.59
21400			6.7	383.2
T.P.	12.10	399.52	1.50	388.42
Bo18			1.52	398.00
21+72 ^E			2.1	397.4

10.24
85.47
12.33

104
TOP OF PIPE
BOTTOM OF PIPE

18 ~
110.52

18.40

1.64

130.62

120.14

10.48

38.99

37.71

1.28

Bo18	10.45	408.45		398.00
TP	8.39	405.30	11.54	396.91
TP	4.13	403.68	5.75	399.55
TP	9.60	409.09	9.19	394.49
TP	6.42	405.80	4.71	399.38
TP	7.28	6.56	6.52	399.28
			8.56	398.00
	38.99		37.71	

SHOT	VERT. \angle	INT.	HOR. DIST.	VERT. DIST.	DEPTH	STA.	ELEV.	REMARKS
1	8° 28'	8.74	855.0	127.25		R016	398.00	SHOT @ 10' - .7 = BOP
						0100	397.3	
2	8° 00'	8.10	794.3	111.6		0461	382.3	" @ 10'
3	7° 02'	6.70	660.0	81.4		1495	352.1	" @ 10'
4	6° 58'	5.80	571.5	69.8		2483	340.5	" @ 10' 12.79
5	6° 38'	4.40	434.1	50.5		4421	321.2	" 5.37 8.24
6	6° 05'	3.50	346.1	36.9		5409	307.6	"
7	5° 16'	2.45	242.9	22.4		6412	293.1	" (GUN IS @ 8+55
8	4° 00'	1.64	163.2	11.4		6492	282.1	" + 270.75)
9	3° 34'	.92	91.7	5.7		7463	276.4	" PL. GUN
10	5° 02'	.45	44.7	3.9		9400	274.6	" ← Mud depresses
11	0° 40'	2.57	257.0	3.0		11412	273.7	" approx 1.0' midway
12	1° 35'	2.68	267.8	7.4		11423	278.1	" between pts 10 & 11
13	3° 54'	5.40	537.5	36.6		13493	307.3	"
14	4° 22'	5.70	566.7	43.3		14422	314.0	"
15	5° 26'	7.35	728.4	69.3		15483	340.0	"
16	6° 16'	8.70	859.6	94.4		17415	365.1	"
17	7° 06'	9.15	901.0	112.2		17456	382.9	"
18	7° 36'	9.70	953.0	127.17		18+08	397.2	"
						R017	398.0	" - .8 = BOP

STA	BS	HI	FS	ELEV
R016	0.38	398.88		398.00
TP #1	0.57	385.95	13.00	385.38
#2	0.48	375.19	11.24	374.71
#3	1.03	363.47	12.75	362.44
#4	1.01	352.10	12.38	351.09
#5	0.50	339.94	12.66	339.44
#6	0.76	328.37	12.33	327.61
#7	0.26	318.32 318.22	10.41	317.96
#8	3.74	314.86	7.10	311.42
#9	1.84	312.24	4.56	310.30
#10	0.92	308.07	4.39	307.85
#11	2.01	305.95	4.73	303.94
BM			6.01	299.94
#12	11.93	317.46	0.42	305.53
#13	11.36	328.46	0.36	317.10
#14	11.30	338.34	1.42	327.04
#15	12.44	350.53	0.25	338.09
#16	11.85	360.11	2.27	348.26
#17	11.36	369.63	1.84	358.27

FS
105.55
11.49
44.86
398.00
97.06
303.94

BS
8

72.25

303.94

6.56

369.63

STA	BS	HI	FS	ELEV.
18	12.65	381.41	0.87	368.76
19	11.05	391.85	0.59	380.82
20	7.69	388.56	10.98	380.87
21	12.42	399.01	1.91	386.59
R 12			0.90	398.11
BM	3.21	303.15		299.94
TP	10.96 11.96	309.82	5.29	297.86
TP (M)			5.98	303.84
TP	10.17	318.99	1.00	308.82
TP	10.81	329.66	0.14	318.85
TP	11.65	340.88	0.43	329.23
TP	12.73	353.53	0.08	340.80
TP	12.25	365.08	0.70	352.83
TP	12.67	375.24	2.51	362.57
TP	11.72	386.62	0.34	374.90
TP	11.96	398.50	0.08	386.54
R 14			.50	398.00
	97.17		10.57	

72.25
 23.68
 95.93
 8.02
 87.91
 303.94
 391.85

6.56
 1.46
 8.02

96.87
 10.57
 86.30
 299.94
 386.14

Range 13-12

Aug 24²²

SHOT	VERT. L	INT.	H. DIST.	V. DIST.	DEPTH	STA.	ELE.	REMARKS
1	+12° 09'	5.95	568.6	122.4		RO13	398.00	T.O.P. TARGET AT 5'
2		4.75				0400	397.1	-9'
3	+11° 40'	4.45	426.8	88.1		1442	363.7	
4	-0° 40'	3.35	335.0	-3.9	0	2434	271.7	WATER LINE
5		3.15	315.0		4.5	2454	267.2	S.A. 2.05
6		2.95	295.0		5.6	2474	266.1	3.2
7		2.30	230.0		7.1	3439	264.6	(GUN IS @ 5468.6
8		1.50	150.0		7.8	4419	263.9	+ 275.6)
9		.85	85.0		4.5	4484	267.2	
10	-5° 22'	.45	44.6	-4.2	0	5424	271.4	WATER LINE
11	-0° 28'	.21	21.0	-0.2		5440	275.4	Plunge Gun
12	+6° 10'	1.08	106.8	11.5		6475	287.1	
13	+12° 12'	2.30	219.7	47.5		7488	323.1	
14	18° 8'	4.13	373.0	122.2		9442 RO12	396.6 398.00	T.O.P. - BOP 1.4

4

Sta	BS.	HI	FS	El.
R 14	11.23	409.23		398.00
BM			2.37	406.86
TP	10.58	418.52	1.29	407.94
TP	10.73	420.06	9.19	409.33
TP	3.80	412.99	11.09	408.97
TP	4.68	406.13	11.32	401.45
R 8			8.13	398.00
BM #7	4.57			303.84
TP	4.30		4.71	
TP	4.76		8.89	
TP	3.18		5.89	
TP	8.63		11.08	
TP	8.06		2.85	
BM #8			6.15	297.77

417.17
 10.38
 406.75

406.13

36.24
 22.97
 14.77
 398
 1.2

39.59
 33.50
 13
 6.07
 3.84

03.84
 6.07
 4.77

RANGE 015-014

24

SHOT	VERT. L	INT	HOR. D	VERT. DIST.	DEPTH	STA	ELEV.		
1	7° 18'	6.30	619.9	79.38		015	398.00	.7'	SHOTS AT 5'
2	6° 06'	5.37	530.9	56.8		0400	397.3		- 1.5' fr. dist El. 398.6 before correction
3	5° 44'	4.58	453.4	45.5		0487.5	374.0		
4	5° 10'	3.31	328.3	29.7		1465	362.7		(GUN IS @ 618.4 + 317.22)
5	4° 56'	2.85	282.9	24.4		2+90	346.9		
6	4° 47'	1.63	161.9	13.5		3+35.5	341.6		CENTER DIRT ROAD
7	0	0	0.0	0.0		4+56.5	330.7		
8	-2° 55'	1.04	103.7	-5.3		6+18	317.2		BREAK AT GUN PLUNGED GUN
9	-3° 10'	1.55	154.5	-8.6		7+22	306.9		SHOT AT 10'
10	-2° 57'	3.80	379.0	-19.5		7+73	303.6		SHOT AT 10'
11	-3° 00'	5.80	578.4	-30.3		9+97	292.7		SHOT AT 10'
T.P. ₁	-3° 04'	5.49	547.4	-29.32		11+97	286.9		
12	+1° 39'	4.27	426.7	12.30		(11+66)	287.90		F.S.
13	1° 43'	2.22	221.8	6.6		(11+66)			m.T.P. (B.S.)
14	1° 33'	0.79	78.9	2.1		13+71	282.2		(GUN IS @ 15+92.5 + 275.60)
15	-1° 30'	0.98	97.9	-2.6		15+14	277.7		PLUNGED GUN
16	-1° 15'	2.35	239.9	-5.1	0	16+90	273.0		
17		3.55	355		3.4	18+27	270.5		SHORE LINE
18		3.60	360		4.0	19+48	267.2		
						19+53	266.6		

SHOT	VERT. \angle	INJ.	H. DIST.	V. DIST.	DEPTH	STA.	F.
19		4.40	440		14.9	20+33	255.7
20		5.90	590		13.6	21+83	257.0
21		4.50	450				
22		6.40	640		13.6	22+33	257.0
23		7.00	700		13.2	22+93	257.4
24		7.60	760		14.2	23+53	256.4
25		8.45	845		10.6	24+38	260.0
26		9.45	945		8.5	25+38	262.1
27	-0° 17'	10.10	1010.0	-5.0	0	26+03	270.6
28	1° 10'	10.80	1079.6	22.0		26+73	297.4
29	5° 32'	12.75	1263.1	+122.40		28+56	397.2
						274	398.0

* ~~Old net as brought down from bridge~~
 U.S. bench reads .6' lower
 on rock is wrong than U.S. bench on rock
 R015 was corrected hence note according to U.S. bench
 on dist. change as previous page R014 is not.

STA	BS	HI	FS	ELEV.
		399.40		
R15	6.43	404.13		398.00
TP	1.77	399.85	6.35	398.08
TP	0.54	388.07	12.35	387.50
TP	1.35	378.10	11.29	376.15
TP	0.62	365.90	12.82	365.28
TP	0.94	355.24	11.60	354.30
TP	0.65	343.02	12.87	342.37
R09			6.00	337.02 *
TP	6.21	336.53	12.70	330.32
TP	5.06	341.35	0.24	336.29
TP	3.80	336.98	8.17	333.18
TP	5.85	339.51	3.32	333.66
R07			3.78	335.73 *

26

73.28	
12.30	98.00
60.98	60.98
98	37.02

RANGE 09-08

27

SHOT	VERT. L	INT.	H. DIST.	V. DIST.	DEPTH	STA.	ELEV.	REMARKS	8-27-48
1	1° 56'	8.42	841.1	+28.4		R09	337.02		
2						0+00	335.9	-1.1'	
3	1° 26'	7.27	726.6	18.2		1+14 ^S	326.8		
4	1° 30'	6.26	625.6	16.4		2+35 ^S	325.0		42,
5	1° 30'	5.25	524.6	13.8		3+16 ^S	322.4		
6	1° 10'	4.26	425.8	8.7		4+15	317.3		
7	1° 32'	2.15	214.8	5.7		6+26	312.3	SHOT @ 7.00'	
8	0° 14'	1.05	105.0	0.4		7+36	309.0	PLUNGED GUN	(GUN IS @ 308.6
9	-2° 47'	0.56	55.9	-2.7		8+97	305.9		+ 8 + 41 ±)
10	-4° 53'	1.08	107.2	-9.2		9+98	299.4		
11	-3° 00'	2.55	254.3	-13.3		10+95	295.3		
12	-3° 03'	3.96	394.9	-21.0		12+36	287.6		
¹³ TP	-1° 50'	5.15	514.5	-16.5		13+56	292.X	F.S.	
¹⁴ TP	0° 59'	10.03	1002.7	+17.2		13+56	—	B.S.	
15	0° 54'	8.97	896.8	14.1		14+61 ^S	289.0		
16	0° 52'	7.77	776.8	11.7		15+81 ^S	286.6		
17	0° 48'	6.68	667.9	9.4		16+90	284.3		
18	0° 32'	5.35	534.9	5.0		18+23	279.9		
19	0° 27'	4.17	417.0	3.3		19+41	278.2		

SHOT	VERT. \angle	INT.	H DIST.	V. DIST.	DEPTH	STA.	ELEV.	REMARKS
20	0° 35'	3.09	309.0	3.2		20+49	278.1	
21	0° 54'	1.88	188.0	3.0		21+70	277.9	PLUNGED GUN
22	0	0	0.0	0.0		23+58	279.9	BREAK @ GUN
23	-2° 32'	0.17	17.0	-0.8		23+75	279.1	
24	-3° 51'	0.58	57.7	-3.9	0	24+16	271.0	SHORE LINE
25		1.19	119		4.3	24+77	266.7	
26	-1° 36'	1.47	147		0	25+05	271.0	SHORE
27		1.67	167		-1.0	25+25	272.0	+1.0 to previous elev.
28		2.38	238		0	25+96	271.0	shore
29		3.00	300		17.8	26+58	253.2	
30		3.45	345		18.5	27+03	252.5	
31		3.94	394		17.6	27+52	253.4	
32		4.43	443		17.1	28+01	253.9	
33		5.30	530		10.0	28+88	261.0	
34		6.05	605		6.4	29+63	264.6	
35		6.61	661		6.7	30+19	264.3	
36		7.45	745		5.8	31+03	265.2	
37		8.26	826		5.1	31+84	265.9	
38		9.10	910		8.5	32+68	262.5	

(GUN IS @ 279.9
+ 23+58)

SHOT	VERT \angle	TNT	H DIST	V DIST	DEPTH	STA	ELEV.	REMARKS
39		9.70	970		11.0	33+28	260.0	
40		10.30	1030		10.5	33+88	260.5	
41		10.80	1080		12.5	34+38	258.5	
42		11.25	1125		10.5	34+83	260.5	
43		11.80	1180		8.8	35+38	262.2	
44		12.10	1210		8.6	35+68	262.4	
45		12.60	1260		7.0	36+18	269.0	
46	-0° 11'	12.80	1280.0	-4.1	0	36+38	270.8	SHORE
47	+1° 24'	13.40	1339.2	32.7		36+97	307.6	
48	+2° 30'	13.90	1387.4	60.6		37+46	335.5	
49	+4° 19'	15.00	1491.5	112.6		38+50	387.5	
50	+4° 43'	15.10	1499.8	123.7		R08	398.0	
51						38+58	397.1	-.9

RANGE 08-07

30

SHOT	VERT. \angle	INT	H DIST	V DIST	DEPTH	STA	ELEV	REMARKS
1	+5° 49'	12.13	1200.6	122.27		R-08	398.00	TOP PIPE R 08
						0+00	397.1	
2	+5° 17'	11.77	1167.1	107.9		0+33E	383.6	
3	+4° 00'	11.24	1118.5	78.2		0+82	353.9	
4	+2° 31'	10.74	1071.9	47.1		1+29	322.8	
5	+1° 55'	10.58	1056.8	35.3		1+44	311.0	
6	-0° 17'	9.76	976.0	-4.8	0	2+25	270.9	SHORE
7		9.45	945		8.5	2+56	262.4	(GUNISE @ 275.73
8		8.90	890		10.1	3+11	260.8	4 12+04)
9		8.54	854		10.8	3+47	260.1	
10		7.56	756		11.0	4+45	259.9	
11		6.64	664		12.2	5+37	258.7	
12		5.84	584		17.1	6+17	253.8	
13		5.66	566		17.5	6+35	253.4	
14		5.00	500		17.8	7+01	253.1	
15		4.60	460		18.3	7+41	252.6	
16		4.04	404		19.6	7+97	251.3	
17		3.90	390		20.4	8+11	250.5	
18		3.55	355		22.2	8+46	248.7	
19		3.23	323		22.0	8+78	248.9	

SHOT	VEERT. S	INT	H DIST	V. DIST	DEPTH	STA	ELEV
20		2.76	276		22.0	9+25	298.9
21		2.26	226		7.9	9+75	263.0
22		2.01	201		6.6	10+00	264.3
23		1.62	162		2.2	10+39	268.7
24	-2°13'	1.25	124.8	-4.8	0	10+76	270.9
25	-4°42'	0.45	44.7	-3.7		11+56	272.0
26	6°05'	0.28	27.7	3.0		11+73	278.7.
27	5°04'	1.62	160.7	14.3		12+28	290.0
28	6°10'	3.02	298.5	32.3		14+99	305.0
29	6°08'	3.75	370.7	39.8		15+71	315.5
30	6°28'	4.27	421.6	47.8		16+22	323.5
31	6°36'	4.97	490.4	56.8		16+91	332.5
32	6°49'	5.15	507.7	60.7		17+07	335.73
33						17+08	334.6

SHORE

PLUNGED GUN

SHOT @
8.00'

T.O.P.

-1.1'

ST.	D.S.	HI	FS	EL	
R07	6.69	342.42		330.73	
TP	1.76	340.22	3.96	338.46	
TP	10.87	343.05	8.04	332.98	
TP	3.60	341.28	5.37	337.68	
R05	1.61	334.01	8.88	332.40	x
TP	11.90	345.04	0.87	333.94	
TP	10.20	354.31	0.93	344.71	
5M#10 TP	12.23	364.20	2.34	351.97	
TP	11.93	375.34	0.79	363.21	
	12.94	388.05	0.23	375.91	
	12.32	399.06	0.51	387.54	
R03			1.66	398.20	x

SHOT	VERT L	INT.	H. DIST	V DIST	DEPTH	STA	ELEV.	REM.
1	6° 13'	11.45	1131.5	123.30		R06	398.0	
2						0+00	397.1	-1.9
3	2° 06'	9.23	921.8	33.8		2+08	308.5	10.85 10.25
4	-0° 19'	8.12	812.0	-4.5	0	3+19 ^S	270.4	SHORE
5	-	7.85	785		8.2	3+47	262.2	
6	-	6.75	675		14.1	4+57	256.3	
7	-	5.55	555		21.3	5+77	249.1	
8	-	5.88	588		18.5	5+44	251.9	
9	-	4.25	425		23.0	7+07	247.4	
10	-	3.40	340		22.8	7+92	247.6	
11	-	2.50	250		8.1	8+82	262.3	
12	-	2.85	285		8.5	8+47	261.9	
13	-	1.65	165		3.7	9+67	266.7	
14	-3° 14'	0.76	75.8	-4.3	0	10+56	270.4	SHORE PLUNGED SUN
15	3° 44'	0.26	27.9	1.8		11+59	276.5	(GUN IS @ 274.7 + 11+31 ^S)
16	3° 10'	1.26	125.6	7.0		12+57	281.7	
17	3° 06'	3.04	303.1	16.4		14+35	291.1	
18	3° 44'	4.55	453.1	29.6		15+85	304.3	
19	4° 26'	5.32	528.8	41.0		16+60	315.7	
20	5° 11'	6.45	639.7	58.05		R05	332.40	
21						17+71	331.2	-1.2'

8-30-48

Range		R04 - R.03							
Shot	Vert L	INT	# DIST.	√ DIST	Depth	STA	ELEV		
R04	+6°44'	1002	988.3	116.63		R04	298.00	-7	Skipped at 0.7'
1	+5°59'	898	888.3	93.1		0400	397.3		" " 5'
						1400	370.2		
2	+3°56'	775	771.4	53.0		2417	330.1		
3	+3°09'	746	743.7	41.0		2445	318.1		
4	+1°02'	666	665.8	12.0		3423	289.1		
5	-0°28'	636	635.9	-5.2	0	3452	271.9		Water Edge
6	3°20'	570	570.0		15.6	4418	256.3		
		542							
7		575	575.0		15.7	4413	256.2		(GUN IS @ 277.1
8		473	473.0		27.0	5415	244.9		+ 94882)
9		417	417.0		29.7	5471	242.2		
10		366	366.0		29.7	6422	242.2		
11		303	303.0		24.8	6485	247.1		
12		210	210.0		11.0	7478	260.9		
13		148	148.0		5.2	8441	266.7		
14		122	122.0		2.9	8466	269.0		
15	-3°20'	80	79.7	-4.64	0	9409	271.9		Water Edge
16	+2°02'	94	93.9	3.3		10482	280.4		PLUNGED Gun

SHOT	LS	INT	H. DIST.	V. DIST.	STR.	ELEV.
17	+ 0°59'	1.26	126.0	2.2	11+14	279.3
18	+ 4°34'	2.14	212.7	17.0	12+01	294.1
19	+ 6°40'	3.94	388.7	45.4	13+77	322.5
20	+ 7°00'	4.76	468.9	57.6	14+57	334.7
21	+ 8°42'	6.38	623.4	95.4	16+12	372.5
22	+ 9°18'	7.04	685.6	112.3	16+74	389.4
23	+ 9°02'	7.92	762.7	121.29	R-03	398.20
					17+51	397.3

TOP OF PIPE
B.O.P. - .9

STA.	B.S.	I.I.	F.S.	EL.	
BM ₁	12.08	326.80		314.72	U.S.G.S. BENCH @ GAGING STATION
TP ₁	11.60	337.75	0.65	326.15	
TP ₂	12.94	349.87	0.82	336.93	
TP ₃	9.34	359.00	0.21	349.66	
TP ₄	11.43	369.86	0.57	358.43	
TP ₅	12.63	382.18	0.31	369.55	
TP ₆	12.49	394.29	0.38	381.80	
TP ₇	12.93	407.03	0.19	394.10	
TP ₈	12.38	418.33	1.08	405.95	
TP ₉	11.82	426.48	3.67	414.66	*
BM ₂			4.46	422.02	U.S.C.G.S. ABOVE ROAD

426.48
422.02
447

SHOT	VERT. L.	INT.	H. DIST.	V. DIST.	DEPTH	STA.	ELEV.	REMARKS
1	+9°26'	767	746.4	+124.02		R02	398.20	TOP-BOP 0.7
						0+00	397.5	Sighted at 5'
2	+7°19'	715	703.4	90.3		0+43	364.5	
3	+4°04'	645	641.8	45.6		1+05	319.8	
4	-0°27'	565	565.0	-4.4	0	1+81	269.8	Water Edge
5	-	5.10	510		29.8	2+36	240.0	
6	-	4.85	485		38.0	2+61	231.8	
7	-	4.20	420		38.2	3+26	231.6	
8	-	3.75	375		37.0	3+71	232.8	
9	-	3.20	320		36.3	4+26	233.5	
10	-	2.30	230		29.6	5+16	240.2	(GUN IS @ 274.2
11	-	2.60	260		31.3	4+86	238.5	& 7+46 [±])
12	-	1.55	155		26.7	5+91	243.1	
13	-	0.80	80		19.0	6+66	250.8	
14	-	0.35	35		6.1	7+11	262.7	
15	-2°20'	0.17	17.0	-1.7	0	7+29	269.8	PLUNGED GUN WATER EDGE
16	+19°12'	146	130.2	+45.35		8+77	319.6	
17	FB +19°48'	285	208.0	74.89		9+54	348.1	F.S. Sighted at 6'
18	-9°34'	155	150.7	25.40		—	—	B.S. Sighted at 9'

SHOT.	VERT. L	INT.	H. DIST.	V. DIST.	DEPTH	STR.	ELEV.	
19	-9°13'	.78	76.00	-12.3		10+29	365.2	
	0	0	0	-0.5		11+05	377.0	H.I. of Gun 5.5'
20	+6°32'	.37	36.5	4.2		11+42	381.7	Plunge Gun
21	+5°40'	.87	86.2	8.6		11+91	386.1	(GUN IS @ 377.5
22	+4°06'	1.37	136.3	9.8		12+41	387.3	+ 11+05')
23	+3°26'	1.90	189.3	11.4		12+94	385.9	Sighted at 8'
24	+2°28'	3.10	309.4	13.3		14+15	387.8	" " 8'
25	+3°04'	3.45	349.0	18.4		14+49	389.9	" " 11'
26	+3°05'	3.52	351.0	18.9		14+56	396.4	" " 5'
27	+3°23'	3.65	363.7	21.50		R-01	398.20	TOP
						14+69	397.4	BOP .8'

STA	B.S.	H.I.	F.S.	ELEV.
R 032	6.77	404.77		398.00
0+00			9.7	395.1
0+16			12.30	392.5
TP	0.18	392.71	12.24	392.53
TP	1.12	381.79	12.04	380.67
1+00			5.0	376.8
TP	0.39	369.23	12.95	368.84
2+00			3.6	365.6
2+85			12.3	356.9
TP	0.34	357.63	11.94	357.29
2+90			3.8	353.8
3+00			3.5	354.1
3+20			2.9	354.7
4+00			11.8	345.8
TP	0.91	345.78	12.76	344.87
5+00			9.9	335.9
TP	1.75	335.22	12.31	333.47
6+00			7.1	328.1
7+00			13.10	322.1

STA.	B.S.	H.I.	F.S.	ELEV.
R TP	1.25	323.39	13.08	322.14
8+00			5.7	317.7
9+00			9.9	313.5
10+00			12.6	310.8
TP	4.62	315.03	12.98	310.41
11+00			4.3	310.7
11+50			3.6	311.4
12+00			8.1	306.9
12+50			11.6	303.4
13+00			10.8	304.2
14+00			9.10	305.9
TP	3.93	309.66	9.30	305.73
15+00			3.3	306.4
16+00			4.5	305.2
17+00			5.2	304.5
18+00			6.0	303.7
TP	4.74	308.26	6.14	303.52
19+00			5.2	303.1
20+00			5.2	303.1

STA.	B.S.	H.I.	F.S.	ELEV.
21+00		308.26	5.0	303.3
22+00			5.2	303.1
23+00			5.7	302.6
TP	12.27	314.78	5.75	302.51
24+00			12.7	302.1
25+00			12.6	302.2
25+50			11.9	302.9
26+00			4.2	310.6
TP	13.02	327.18	0.62	314.16
TP	5.52	332.16	0.54	326.64
26+60			9.7	322.5
27+00			10.6	321.6
27+20			11.1	321.1
TP	4.35	325.43	11.08	321.08
27+30			9.5	315.9
28+00			16.3	309.1
28+35			18.1	307.3
29+00			1.4	324.0
TP	11.20	336.41	0.22	325.21

STA.	B.S.	H.I.	F.S.	ELEV.	
29+60		336.41	4.9	331.5	
30+00			7.9	328.5	
30+40			13.0	323.4	
30+70			14.8	321.6	
31+00			13.6	322.8	
32+00			7.9	328.5	
33+00			0.3	336.1	
TP	12.62	348.93	0.10	336.31	
34+00			4.9	344.0	
TP	12.67	361.57	0.03	348.90	
35+00			7.0	354.6	
TP	12.62	373.89	0.30	361.27	
36+00			2.1	371.8	
TP	13.09	386.83	0.15	373.74	
TP	12.97	399.63	0.17	386.66	
37+00			11.8	388.8	
R-031			1.63	398.00	T.P.
37+47 ³			2.6	397.0	B.P.

RANGE 027-028

43

STA.	B.S.	H.I.	F.S.	ELEV.	
R027	2.13	400.13		398.00	T.O.P.
0+00			2.9	397.2	B.O.P.
0+35			7.2	392.9	
TP	0.44	387.81	12.76	387.37	
1+00			9.4	378.4	
TP	0.40	375.34	12.87	374.94	
TP	0.56	369.45	11.45	363.89	
2+00			2.6	361.9	
TP	0.86	352.78	12.53	351.92	
3+00			7.4	345.4	
TP	0.53	340.68	12.63	340.15	
3+90			6.2	334.5	
3+92			12.2	328.5	
4+42			9.4	331.3	
4+47			12.0	328.7	
TP	0.72	329.73	11.67	329.01	
5+00			6.5	323.2	
TP	1.04	318.04	12.73	317.00	
6+00			3.5	314.5	

STA.	B.S.	H.I.	F.S.	ELEV.
7+00		318.04	7.5	310.5
8+00			7.8	310.2
9+00			9.3	308.7
10+00			10.7	307.3
11+00			10.6	307.4
12+00			10.8	307.2
TP	10.66	318.09	10.61	307.43
13+00			11.1	307.0
14+00			11.4	306.7
15+00			11.4	306.7
16+00			12.0	306.1
17+00			11.8	306.3
18+00			8.0	310.1
19+00			0.3	317.8
TP	12.92	330.71	0.30	317.79
20+00			2.9	327.8
20+21			2.2	328.5
TP	12.45	342.86	0.30	330.41
21+00			4.0	338.9

STA.	B.S.	H.I.	F.S.	ELEV.	
TP	12.95	355.63	0.18	342.68	
TP	12.20	367.51	0.32	355.31	
22+00			10.7	356.8	
TP	12.76	380.26	0.01	367.50	
22+55			6.2	374.1	
TP	11.59	391.97	0.38	379.88	
TP	10.42	400.27	1.62	389.85	
R028			2.27	398.00	T.O.P.
23+26 ⁻			3.0	397.3	B.O.P.

STR.	B.S.	H.I.	F.S.	ELEV.	
R029	1.27	399.27		398.00	T.O.P.
0+00			2.0	397.3	B.O.P.
1+00			6.9	392.4	
2+00			11.3	388.0	
TP	1.26	389.00	11.53	387.74	
3+00			3.2	385.8	
4+00			6.1	382.9	
4+90			8.8	380.2	
5+00			11.2	378.8	
6+00			13.5	375.5	
6+15			11.4	377.6	
7+00			10.3	378.7	
TP	0.68	381.20	7.98	381.02	
8+00			2.4	379.3	
9+00			5.5	376.2	
10+00			7.0	374.7	
11+00			8.8	372.9	
12+00			11.0	370.7	
TP	1.75	370.99	12.46	369.24	

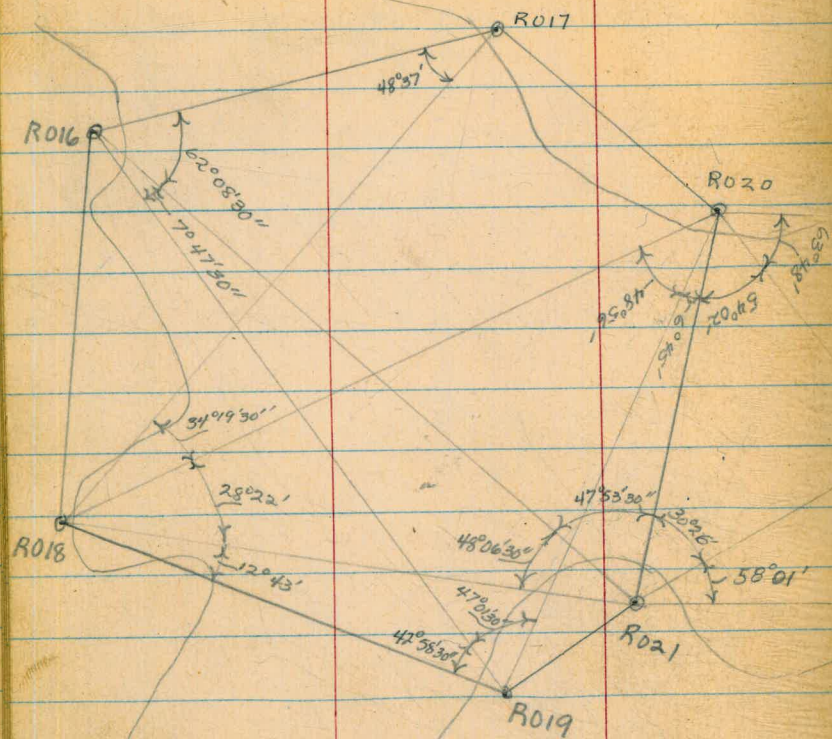
STA.	B.S.	H.I.	F.S.	ELEV.	
13+00		370.99	3.8	367.2	
14+00			7.0	364.0	
15+00			10.3	360.7	
16+00			13.5	357.5	
17+00			15.9	355.1	
17+20			16.9	354.1	ROAD
17+60			16.9	354.1	ROAD
18+00			17.3	353.7	
19+00			11.4	359.6	
20+00			6.9	364.1	
TP	2.22	360.25	12.96	358.03	
21+00			3.1	357.2	
22+00			11.8	348.5	
TP	2.58	351.27	11.56	348.69	
23+00			8.5	342.8	
24+00			9.3	342.0	
25+00			9.9	341.4	
26+00			6.0	345.3	
27+00			7.3	344.0	

STH.	B.S.	H.I. 351.3	F.S.	ELEV.
28+00			11.1	340.2
TP	3.35	343.28	11.34	339.93
28+25			7.1	336.2
28+85			16.5	326.8
29+05			7.0	336.3
TP	12.52	349.87	5.93	337.35
30+00			12.8	337.1
31+00			12.7	337.2
32+00			12.2	337.7
33+00			2.1	347.8
33+30			0.3	349.6
34+00			3.0	346.9
35+00			9.0	340.9
36+00			10.9	339.0
37+00			10.5	339.4
TP	12.55	352.78	9.64	340.23
38+00			5.6	347.2
39+00			3.1	349.7
40+00			3.4	349.4

STA.	B.S.	H.I.	F.S.	ELEV.
41+00		352.8	12.5	340.3
42+00			15.5	337.3
43+00			10.5	342.3
TP	1.77	346.80	7.75	345.03
43+50			2.6	344.2
43+85			2.1	344.7
44+00			2.9	343.9
44+40			7.1	339.7
45+00			7.3	339.5
46+00			6.8	340.0
TP	12.72	353.54	5.98	340.82
47+00			12.2	341.3
48+00			11.1	342.4
49+00			9.9	343.6
50+00			8.5	345.0
51+00			3.6	349.9
TP	12.07	364.96	0.65	352.89
52+00			10.4	354.6
53+00			6.6	358.4

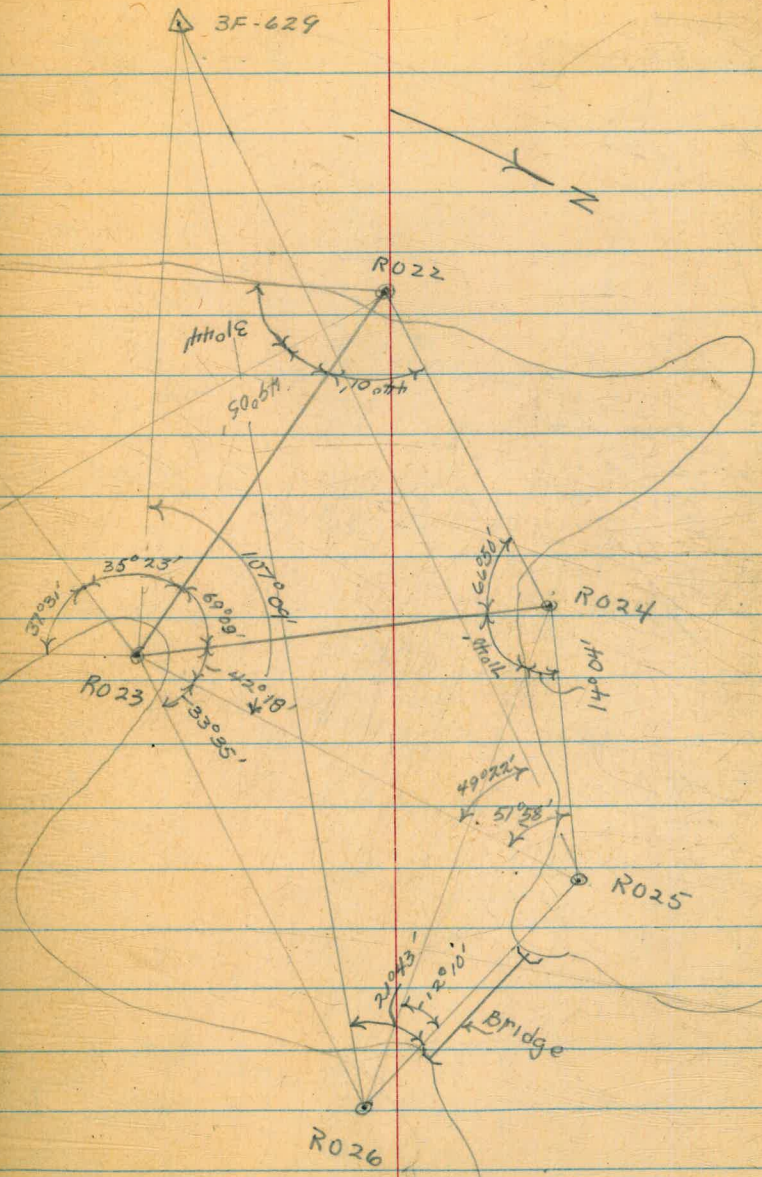
STA.	B.S.	H.I.	F.S.	ELEV.	
54+00			1.9	363.1	
TP	12.87	377.56	0.27	364.69	
55+00			8.3	369.3	
55+30			7.3	370.3	
55+45			10.3	367.3	
55+75			6.4	371.2	
56+00			5.4	372.2	
TP	12.72	389.80	0.48	377.08	
57+00			12.6	377.2	
58+00			6.9	382.9	
59+00			0.7	389.1	
TP	12.94	402.29	0.45	389.35	
60+00			5.7	396.6	
R-30			4.29	398.00	T.O.P.
60+08 ²			4.8	397.5	B.O.P.

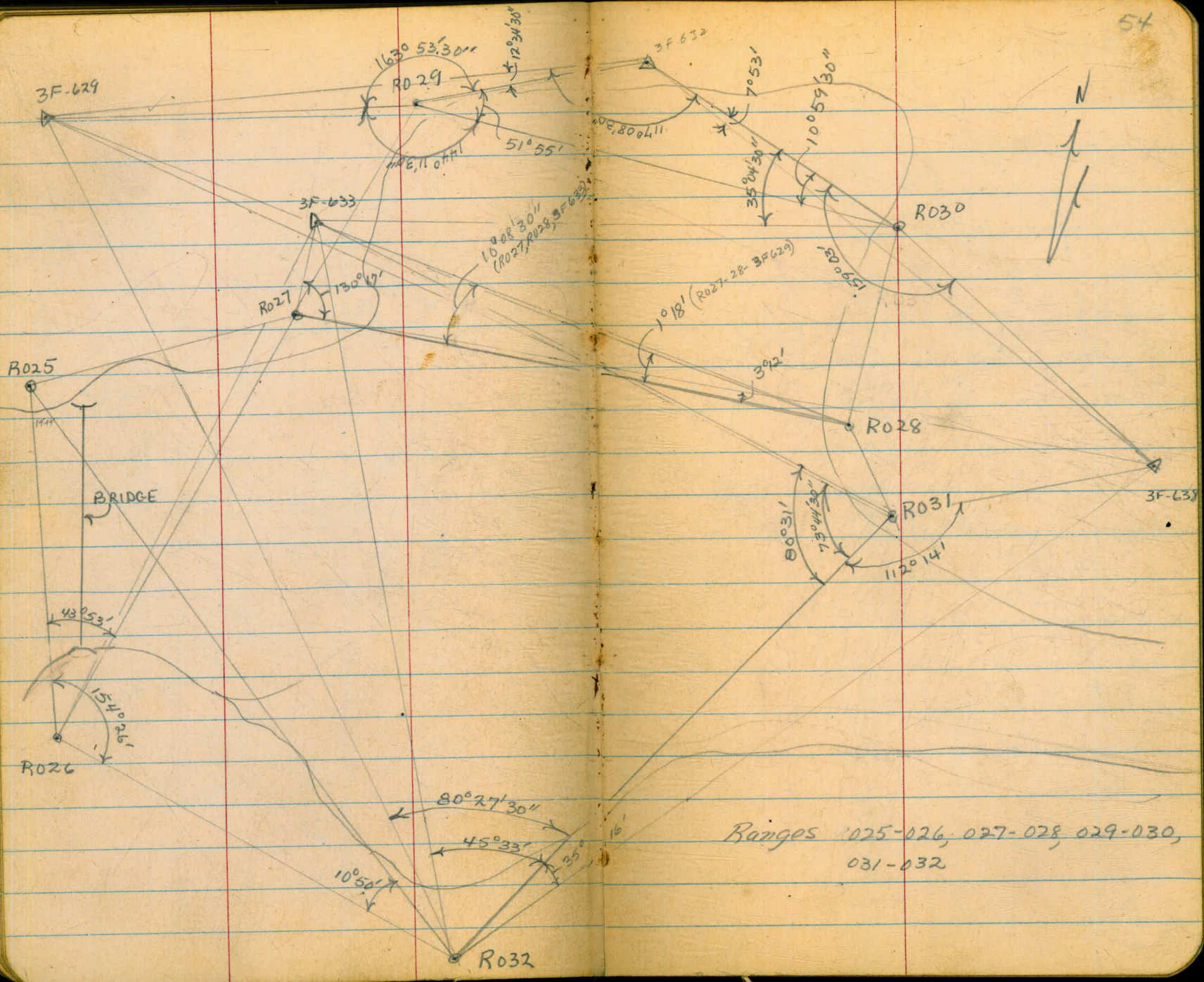
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warm-hazy

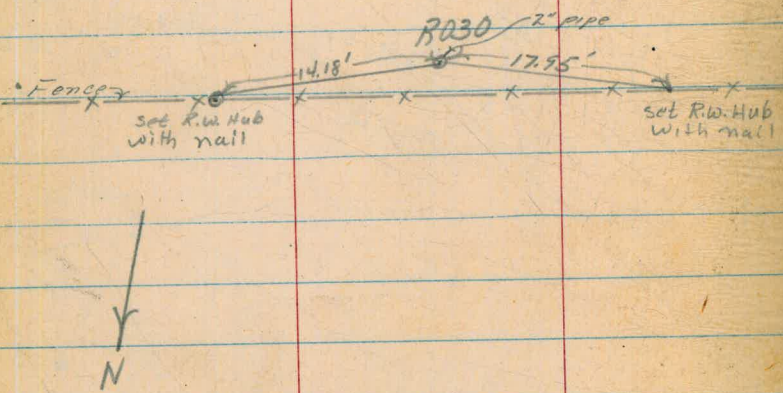
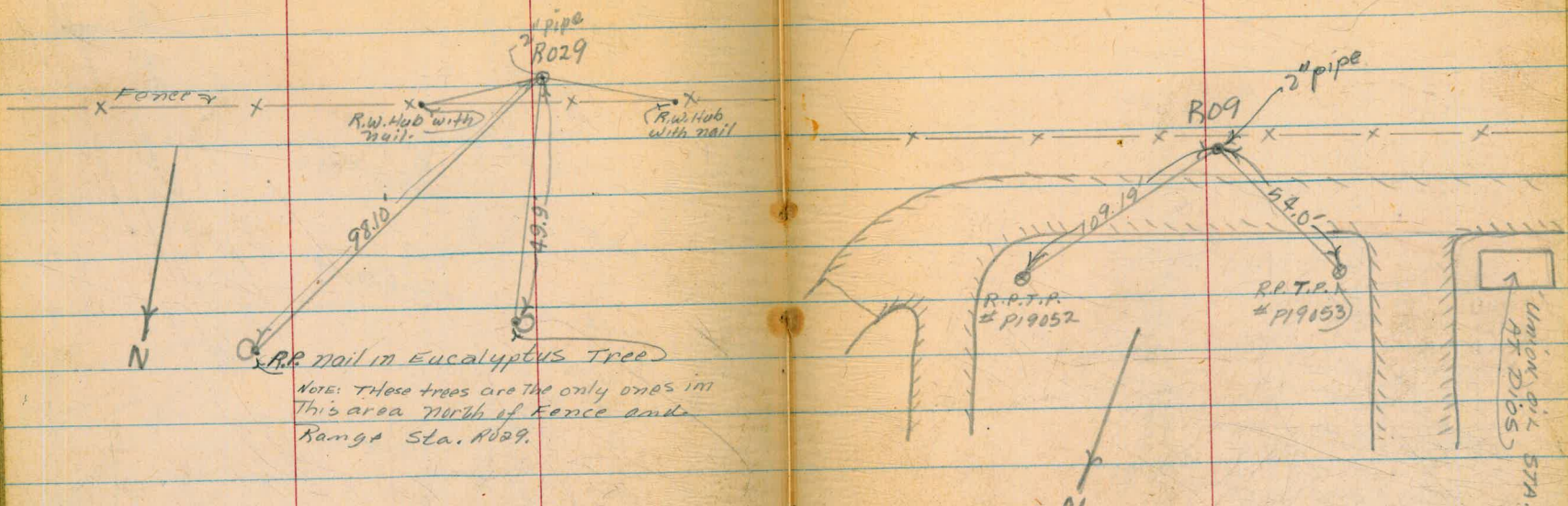
53





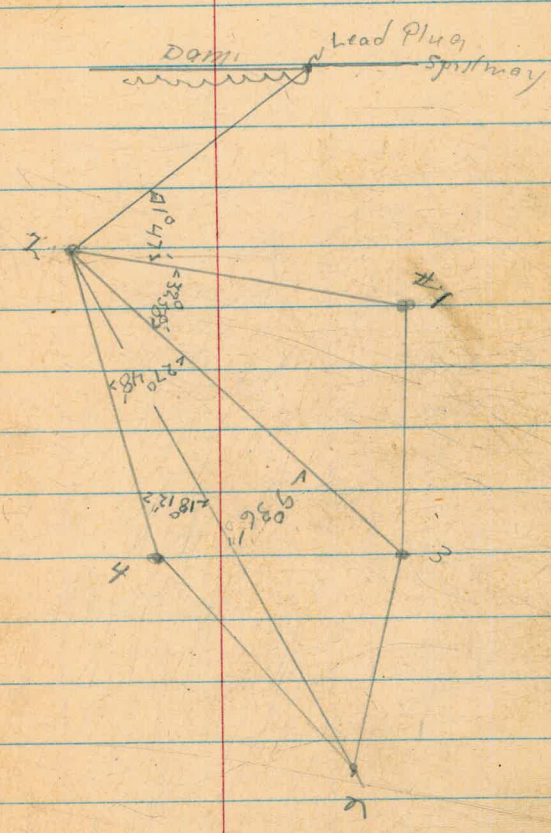
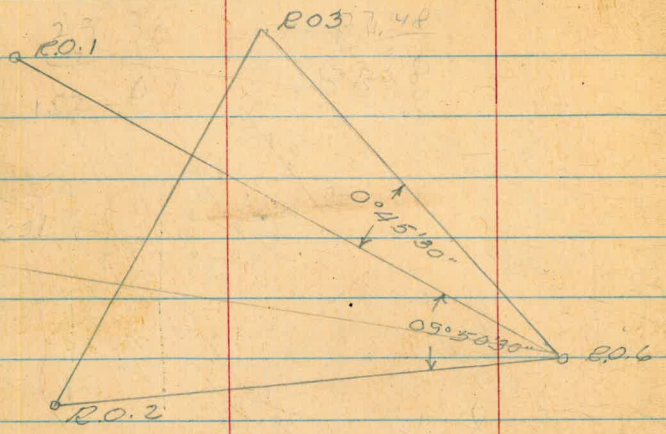
Ranges 025-026, 027-028, 029-030,
031-032

Reference Points For Ranges R029, R030, R09



72.51 77.01

95.4 75.09



18°25'
32°54'
95°41'
32°58'
179°58"

27°48'
51°39'
23°30'
77°01'
179°58"

32°54'

22°48'

9°36'
10°36'
77°01'
82°46'
179°59"

22°43'15"

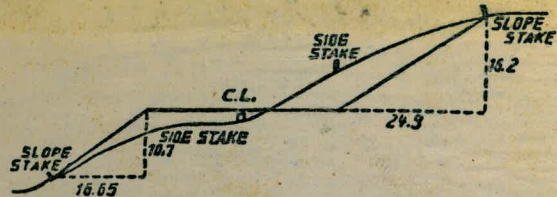
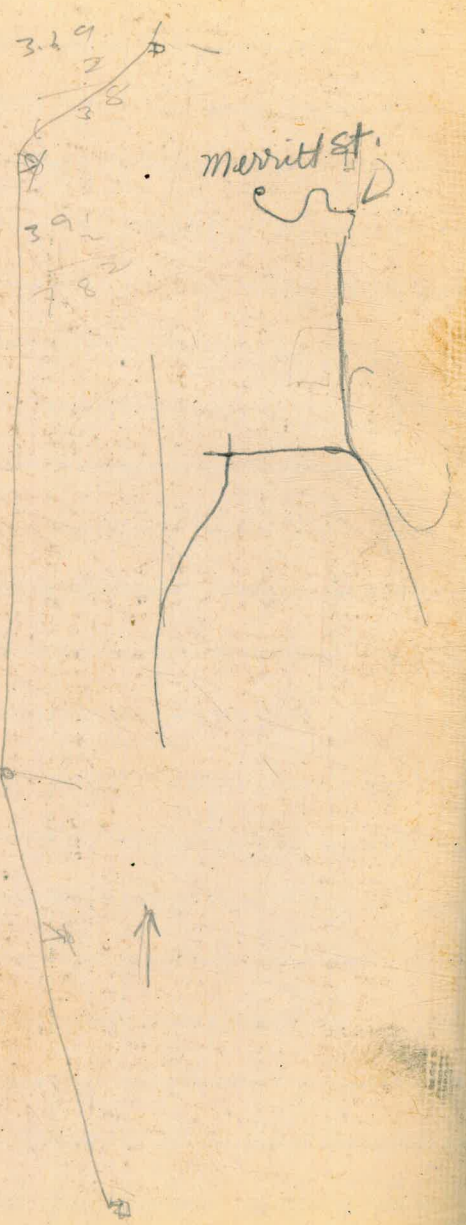
top water 277.3
water ends Arches #4 + 22

elevs taken 50' upstream
in center of
from ^N arches - Arches Numbered
from north to south starting
at south end of spillway sect
23 arches in all

#20	240.0
#19	228
17	226.0
#14	218.0
#10	223.0
#7	239.0

2.38
1.9774
85

27 48
57 36



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.
SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

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

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