

W

420

DIETZGEN
1851

ENGINEERS'
LEVEL BOOK

No. 420

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 $30.6 + (20 - 16) \div 2$ or 2 ft. added to $30.6 = 32.6$. For slopes of 1 on 1½ see inside of back cover.

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420

0+00 - 1
 +24 - 2
 +48 - 3
 +72 - 4
 0+96 - 5
 1+20 - 6
 +44 - 7
 +68 - 8
 1+92 - 9
 2+16 - 10
 +40 - 11
 +64

MICROFILMED

JAN 12 1965

Index

Spillway Const Jan to Oct 1933. 2-79

Index Continued.

Spillway

Excavation Grades on D-G Line

E 10+80 ⁰²	= 579.00 ✓	2+40	
10+60	584.22	2+20	
10+50	586.83 ✓	2+00	
10+40	589.44	1+80	726.87
10+20	594.65	1+60	
10+00	599.86 ✓	1+50	728.15
9+80	605.07	1+40	
9+60	610.28	1+20	
9+50	612.89 ✓	1+00	729.43
9+40	615.49	0+80	
9+20	620.70	0+60	
9+00	625.92 ✓	0+40	730.71
8+80	631.13	0+20	
8+60	636.34	0+00	
8+50	638.95 ✓		Y = 732.00
8+40	641.56		
8+20	646.77		
8+00	651.98 ✓		
7+80	657.19		
7+60	662.40		
7+50	665.01 ✓		
7+40			
7+20			
7+00	678.04 ✓		
6+80			
6+60			
6+50	691.07 ✓		
6+40			
6+20			
6+00	704.09		
EC 5+9331	705.83 ✓		
5+80			
5+60			
Grade Summit 5+460	= 718.00 ✓		
5+40			
5+20			
B.C. 5+0125	= 719.16 ✓		
4+80			
4+60			
4+50	720.47 ✓		
4+40			
4+20			
4+00	721.75 ✓		
3+80			
3+60			
3+50	723.03 ✓		
3+40			
3+20			
3+00	724.31 ✓		
2+80			
2+60			
2+50	725.59 ✓		

Slope = 0.260572

Slope = 0.02561

Excavation grades on I-H Line

10+39 ⁵²	579.00
10+00	589.40
9+50	602.54
9+00	615.68
8+50	628.82
8+00	641.96
7+50	655.10
7+00	668.24
6+50	681.38
6+00	694.53
5+50	707.67
5+10 ²¹	718.00

Slope = 0.267829

Cuts & Slope Stakes
on D.to G Line

Jan 21 - 1933 - P.M. 3
Elliott
Soper
Remmen
Cloudy - showers

				Grade	
B.M.	1.46	668.74		667.28	
	0.51	656.36	12.89	655.85	
	0.47	644.00	12.83	643.53	
	0.31	631.19	13.12	630.88	
Point G 10+80 ⁰²			9.1	622.1	579.00 Cut 43.1
T.P. 50' So. of 10+80 ⁰² along lp	0.49	619.49	12.19	619.00	
			12.3	607.2	579.0 Cut 28.2
T.P. 100' So. of 10+80 ⁰² along lp	3.18	610.19	12.48	607.01	
			8.9	601.3	579.0 Cut 27.3
Point I			9.0	601.2	579.0 Cut 22.3
B.M.	11.94	630.94		619.00	
10+80 ⁰²				579.0	Cut 43.1
10+80 ⁰² Slope Stake			2.1	622.8	579.0 C. 49.8 out 24.9
T.P.	12.75	643.63		630.88	
10+00			13.5	630.1	599.9 Cut 30.2
10+00 Slope Stake					C. 34.6 out 17.3
T.P.	12.76	656.28	0.11	643.52	
9+50			11.7	644.6	612.9 Cut 31.7
9+50 Slope Stake				612.9	C. 34.6 out 17.3
T.P.		0.71		655.57	

End Jan 21 - 1933

Cuts + slope stakes on D-G. Line
Grade

Jan 24, 1933
Elliott
Simpson
Soper
Kammen

4

B.M.	1.26	668.54		667.28	
9+00			15.1	53.4	625.0 Cut 27.5
9+00	Slope Stake		10.4	58.1	625.9 Cut 32 ³ out 16 ¹
T.P.	12.82	681.01	0.35	668.19	
8+50			16.3	564.7	639.0 Cut 25.7
8+50	Slope Stake		9.2	671.8	639.0 Cut 32.8 out 16 ⁴
T.P.	12.72	693.19	0.54	680.47	
8+00			11.2	682.0	652.0 Cut 30.0
8+00	Slope Stake		2.7	690.5	652.0 Cut 38.5 out 19 ²
T.P.	12.57	705.15	0.61	692.58	
T.P.	12.37	717.38	0.14	705.01	
7+50			11.1	706.3	665.0 Cut 41.3
7+50	Slope Stake		7.4	710.0	665.0 Cut 45.0 out 22.5
T.P.	13.11	729.67	0.82	716.56	
7+00			1.1	728.6	678.0 Cut 50.6
7+00	Slope Stake		10.6	730.3	678.0 Cut 52.3 out 26 ¹
T.P.	12.49	741.99	0.17	729.50	
T.P.	12.84	754.67	0.16	741.83	
T.P.	12.74	767.37	0.04	754.63	

Cut + Slope Stakes on D-G line

	767.37			Grade	
6+50		8.7	758.7	691.1	Cut 676
6+50 Slope Stake		10.0	757.4	691.1	Cut 663 out 331
T.P. B.M. 11.19	767.35	11.19	756.18	756.16	
T.P. 12.44	777.77	0.02	767.33		
T.P. 12.84	792.25	0.36	779.41		
5+91 ^{3/4} E.C.		10.8	781.4	705.8	Cut 756
5+91 ^{3/4} Slope Stake		4.6	787.7	705.8	Cut 819 out 412
T.P. 12.12	804.37	0.0	792.25		
T.P. 12.29	816.83	0.43	803.94		
5+46 ⁶		5.8	811.0	718.00	Cut 930
5+46 ⁶ Slope Stake		+5.1	821.9	718.0	Cut 1032 out 52

Cut + Slope Stakes on H-I Line

Jan 26 - 1933
Elliott
Simpson
Soper

6

Grade

B.M.	2.91	621.91		619.00		
Point "I"						
10+39 ⁵⁷ &			20.7	601.2	579.0	C. 22.2
10+39 ⁵⁷ Slope stake			20.3	601.6	579.0	C. 22.6 out 11.3
10+00 &			4.2	617.7	589.4	C. 28.3
10+00 Slope stake			5.3	616.6	589.4	C. 27.2 out 13.5
T.P.	12.62	634.25	0.28	621.63		
9+75 &			0.0	634.2	596.0	C. 38.2
9+70 Slope stake			+0.2	634.4	597.3	C. 37.1 out 18.5
T.P.	12.16	646.08	0.33	633.92		
9+30 &			10.1	636.0	607.8	C. 28.2
9+30 Slope stake			9.5	636.6	607.8	C. 28.8 out 14.4
T.P.	13.12	658.89	0.31	645.77		
9+00 &			8.2	650.7	615.7	C. 35.0
9+00 Slope Stake			5.6	653.3	615.7	C. 37.6 out 18.8
T.P. B.M.	12.84	668.41	3.26	655.63	655.57	
	13.13	681.36	0.18	668.23		
8+50 &			6.6	674.8	628.8	C. 46.0
8+50 Slope stake			1.3	680.1	628.8	C. 51.3 out 25.6

Cut & Slope Stakes on H-I Line Cont.

7

681.36

T. P.	12.85	694.21	0.00	681.36		
	12.77	706.72	0.26	693.95		
8+10	6		10.8	695.7	639.3	656.6
8+10	Slope Stake		4.3	702.4	639.3	663.1 out 31.5
T. P.	12.56	719.26	0.02	706.70		
T. P.	12.91	731.48	0.69	718.57		
T. P.	12.64	743.22	0.90	730.58		
7+50	6		10.7	732.5	655.1	677.4
7+50	Slope Stake		0.1	743.1	655.1	688.0 out 44.0
T. P.	13.10	756.12	0.20	743.02		
T. P.	12.00	767.75	0.37	755.75		
7+00	6		5.4	762.4	668.2	694.2
7+00	Slope Stake		4.1	763.7	668.2	695.5 out 47.8
T. P.	13.03	780.08	0.70	767.05		
T. P.	13.14	792.56	0.66	779.42		
6+50	6		40.2	772.8	681.4	691.4
6+50	Slope Stake		1.8	770.8	681.4	699.4 out 54.7
	13.07	805.62	0.01	792.55		

Cut & Slope Stakes on H.I. Line

	805.62			Grade	
6+00 \pm		4.6	801.0	694.5	C. 106.5
6+00 Slope Stake		12.7	792.9	694.5	C. 98.4 out 49.7
5+50 \pm		5.4	800.2	707.7	C. 92.5
5+50 Slope Stake		19.6	86.0	707.7	C. 78.3 out 39.2
B.M.		7.22	798.40	798.395	Record Point on Axis
	7.22	805.62			
Check on D.G. Line Levels	10.80	815.00	1.42	804.20	
			11.01	803.99	803.94 Record from D-G line

Cut & Slope Stakes on C-D Line

Jan 28 - 1933

Elliott
Simpson
Gottschling
Kemmer

9

Grade

B.M.	12.99	864.33		851.34		
5+01.25	4		24.5	839.8	719.2	C. 120.6
5+01.25	Slope Stake		12.0	852.3	719.2	C. 133.1 out 66.5
4+50	4		10.1	854.2	720.5	C. 133.7
T.P.	12.92	874.14	3.11	861.22		
4+50	Slope Stake		+13.4	887.5	720.5	C. 167.0 out 83.5
4+00	4		13.8	860.3	721.8	C. 138.5
3+50	4		12.4	861.7	723.0	C. 138.7
T.P.	13.09	886.74	2.49	873.65		
T.P.	13.08	899.01	0.81	885.93		
T.P.	13.01	911.54	0.48	898.53		
T.P.	12.97	924.50	0.01	911.53		
4+00	Slope Stake		11.8	912.7	721.8	C. 190.9 out 95.5
3+50	Slope Stake		1.0	923.5	723.0	C. 200.5 out 100.2
3+10	Slope Stake		6.1	918.4	724.0	C. 199.4 out 97.2
T.P.	1.19	912.57	13.12	911.38		
2+50	Slope Stake		4.1	908.5	725.6	C. 182.9 out 91.5
T.P.	0.96	900.65	12.88	899.69		
T.P.			12.38	888.27		

Cut & Slope Stakes on C-D line

10

Grade

	0.65	888.92		888.27		
2+00	Slope stake		7.8	881.1	726.87	C-159.2 out 77.1 ✓
T.P.	0.56	876.94	12.54	876.38		
3+10	£		21.0	855.9	729.0	C-131.9 ✓
T.P.	0.73	865.01	12.66	864.28		
2+50	£		13.2	851.8	725.6	C-126.2 ✓
T.P.	1.54	853.49	13.06	851.95		
1+50	Slope stake		7.0	846.5	728.15	C-118 ³ out 59 ² ✓
2+00	£		17.2	836.3	726.9	C-109.4 ✓
1+00	Slope stake		11.9	841.6	729.4	C-112.2 out 56 ² ✓
0+50	Slope stake		4.3	857.8	730.7	C-127.1 out 63.6 ✓
T.P.	4.97	845.77	12.69	840.80		
0+50	£		16.3	829.5	730.7	C-98.8 ✓
1+00	£		27.5	818.3	729.4	C-88.9 ✓
1+50	£		34.3	811.5	728.2	C-83.3 ✓
"C" 0+00	Slope stake		6.8	839.0	732.0	C-107.0 out 53.5 ✓
T.P.	13.20	858.54	0.43	845.34		70° from C-D line
B.M. Check			0.04	858.50		Flux 858.50

Cut & Slope Stakes on B-C Line

				Grade		
B.M.	10.43	822.40		811.97		
0+00 "B" slope stake		7.5	814.9	732.0	B-82.9 out 41.5	90° From B-C line
0+00 "C" slope stake		2.6	819.2	732.0	C-97.8 out 43.9	90° From B-C line
0+00 "C" \perp		12.5	809.9	732.0	C-77.9	N.E. corner
0+00 "B" \perp		36.5	785.9	732.0	C-53.9	S.E. corner

Cuts on Tail Race or what is it

B.M.	0.51	619.51		619.00	
N.W. Cor.			4.3	615.5	574.0 Cut 41 ⁵
Slope Stake from N.W. Cor.			1.4	618.1	574.0 cut 49.4 ⁴ out 22 ⁰
T.P.	1.23	608.19	12.55	606.96	
S.W. Cor.			9.3	598.9	574.0 cut 24 ⁹
Slope stake South from S.W. Cor.			10.7	597.5	574.0 cut 23 ⁵ out 21 ⁷

Line & Slope Cuts on No. Side of
Spillway Mar 7 - 1933

Elliott - Level Notes
Simpson - T
Seper
Remmen

15

Grade

B.M.	0.08	667.36		667.28	
	6.56	660.73	13.19	654.17	
Set B.M.			4.93	655.80	
T.P.	1.01	648.99	12.75	647.78	
			12.38	636.61	
	1.49	638.10			
Set BM			5.46	632.64	
9+9929 B.V.C.			8.0	630.1	586.6 C. 43.5
9+9929 Slope Stake			8.2	29.9	586.6 C. 43.3 out 21.7
9+75			8.3	29.8	594.2 C. 35.6
9+75 Sl. Stk.			7.9	30.2	594.2 C. 36.0 out 18.0
9+50			7.9	30.2	602.0 C. 28.2
9+50			5.1	33.0	602.0 C. 31.0 out 15.5
9+25			6.5	631.6	609.8 C. 21.8
9+00			6.0	32.1	617.7 C. 14.4
9+00 Slope Stake			10.0	38.1	617.7 C. 20.4 out 10.2
T.P.	8.16	656.14		647.98	
9+25 Slope Stake			12.1	44.0	609.8 C. 34.2 out 17.1

No. Side
Mar. 7, 1933
656.14

Elev Grade

8+75			11.7	644.4	625.6	C. 18.8
B.M.	12.55	668.35		655.80		
8+75	Slope Stake		14.8	53.6	625.6	C. 28.0 out 14.0
8+50			14.2	54.15	633.45	C. 20.7
8+50	Slope Stake		14.2	54.15	633.45	C. 20.7 out 10.4
8+25			0.3	68.0	641.3	C. 26.7
8+25	Slope Stake		1.75	66.6	641.3	C. 25.3 out 12.7
T.P.	13.25	681.27	0.33	668.02		
8+00			10.7	70.5	649.15	C. 21.4
8+00	Slope Stake		10.8	70.4	649.1	C. 21.3 out 10.7
7+75			8.8	72.5	657.0	C. 15.5
7+75	Slope Stake		5.6	75.7	657.0	C. 18.7 out 9.4
7+50			3.8	677.5	664.9	C. 12.6
T.P.	13.09	693.96	0.40	680.87		
7+50	Slope Stake		0.3	73.7	664.9	C. 28.8 out 14.4
T.P.	13.10	707.06	0.0	693.96		
Check B.M.			10.70	696.36	696.36	
7+25			2.0	705.1	672.7	C. 32.4
7+25	Slope Stake		3.4	703.7	672.7	C. 31.0 out 15.5

No. Side
Mar. 7, 1933

707.06

Elev. Grade

T.P.	12.75	719.45	0.36	706.70	
T.P.	12.69	732.13	0.01	719.44	
7+00	Slope Stake	12.3	719.8	680.6	G. 39.2 out 19.6
7+00		9.5	722.6	680.6	G. 42.0
6+87.29	E.Y.G.	10.2	721.9	684.6	G. 37.3
6+87.29	E.Y.G. Slope Stake	6.3	725.8	684.6	G. 41.2 out 20.6
Set T.P.	6.19	737.51	0.81	731.32	End Mar 7-1933
6+80		14.4	723.1	686.8	G. 36.3 Start Mar 8-1933
6+80	Slope Stake	12.7	724.2	686.8	G. 38.0 out 19.0
6+60		12.3	25.2	692.6	G. 32.6
6+60	Slope Stake	12.4	25.1	692.6	G. 32.5 out 16.3
6+40		9.9	27.6	697.8	G. 29.8
6+40	Slope Stake	7.7	29.8	697.8	G. 32.0 out 16.0
T.P.	12.52	749.92	0.11	737.40	
6+20		8.0	41.9	702.4	G. 39.5
6+20	Slope Stake	2.1	47.8	702.4	G. 45.4 out 22.7
T.P.	12.49	762.03	0.38	749.54	
6+00		0.5	61.5	706.5	G. 55.0
6+0 ⁰	Slope Stake	1.5	60.5	706.5	G. 54.0 out 27.0 (in about 6° from orig. line)

No. Side
Mar 8 - 1933

18

762.03

T.P.	11.84	773.38	0.49	761.54		
B.M.	6.93	773.31	6.93	766.45	766.38	
5+80			4.0	769.3	710.0	C. 59.3
5+80	Slope Stake		6.8	766.5	710.0	C. 56.5 out 28.3 (about 10' in from or. stake)
T.P.	11.92	784.36	0.87	772.44		
5+60	No. Side		5.4	79.0	712.9	C. 66.1
5+60			2.5	86.9	712.9	C. 74.0 out 37.2 (about 5' in from or. stake) ^{Shot out}
B.M.	12.62	779.00		766.38		
T.P.	12.49	791.07	0.42	778.58		
5+60	Slope Stake		10.0	86.1	712.9	C. 68.2 out 34.1 O.K.
T.P.	12.31	803.26	0.12	790.95		
5+40	No. side		11.9	791.35	715.25	C. 76.1
5+40	Slope stake		8.2	95.05	715.25	C. 83.8 out 41.9 C. 79.8 out 39.9
5+60	⊕		10.4	92.9	712.9	C. 80.0
T.P.	13.02	816.12	0.16	803.10		
5+20	No. Side		11.0	805.1	717.0	C. 88.1
5+20	Slope Stake		4.7	811.4	717.0	C. 92.2 out 49.2 C. 94.4 out 47.2
T.P.	12.81	828.00	0.93	815.17		

No. Side
Mar 8 - 1933

19

828.00

5+00	Side		10.8	817.2	718.2	699.0	
5+00	Slope Stake		7.0	827.4 821.0	718.2	6109.2 602.8	out 54.6 out 51.4
4+87.29	Side		2.5	825.5	718.6	6106.9	
T.P.	12.56	840.10	0.46	827.54			
4+87.29	Slope Stake		11.8	835.3 828.3	718.6	6116.7 6109.7	out 58.4 out 54.9
T.P.	0.20	827.25	13.05	827.05			
T.P.	0.80	815.17	12.88	814.37			
Previous T.P.			11.15	804.02			Record 803.74

Mar. 9 - 1933

B.M.	7.07	639.71		632.64			
	0.55	627.50	12.76	626.95			
9+9929	℄		11.3	616.2	586.6	629.6	
9+9929	So. side		12.9	614.6	586.6	628.0	
9+9929	Slope Stake		13.0	614.5	586.6	627.9	out 14.0
9+75	So. side		3.2	624.3	594.2	630.4	
9+75	Slope Stake		3.3	624.2		630.0	out 15.0
B.M.	7.32	639.96		632.64			
9+80	℄		8.7	631.3	592.6	638.7	
9+66	So. side		5.9	634.1	597.0	637.1	
9+66			5.4	634.6	597.0	637.6	out 18.8

Mar. 9 - 1923

20

637.96

9+50	⊥		8.3	31.7	602.0	C. 29.7
9+25	So. side		4.1	635.9	609.8	C. 26.1
9+25	Slope Stake		2.0	38.0	609.8	C. 28.2 out 14.1
9+00	So. side		4.4	35.6	617.7	C. 17.9
9+00	Slope Stake		+0.7	40.7	617.7	623.0 out 11.5
8+75	So. Side		+5.6	645.6	625.6	C. 20.0
9+25	⊥		7.6	32.4	609.8	C. 22.6
9+00	⊥		7.0	33.0	617.7	C. 18.3
8+75	⊥		1.4	38.6	625.6	C. 13.0
T.P.	12.82	652.00	0.78	637.18		
T.P.	12.81	664.51	0.30	651.70		
8+50	⊥		7.0	57.5	633.4	C. 24.1
8+25	⊥		1.6	62.9	641.3	C. 21.6
	12.45	676.72	0.24	664.27		
8+75	Slope Stake		7.9	68.8	625.6	C. 43.2 out 21.6
T.P.	12.78	688.87	0.63	676.09		
8+50	Slope Stake		2.9	686.0	633.4	C. 52.6 out 26.3
8+15	⊥		7.0	79.9	644.4	C. 35.5
T.P.	11.82	700.32	0.37	688.50		

700.32

8+25	So. side		7.7	692.6	641.3	C. 51.3
8+25	Slope Stake		4.8	695.5	641.3	C. 54.2 out 27.1
			+6.2	706.5	641.3	C. 65.2 (on offset 35' from slope stake)
Check B.M.			3.93	696.39	696.36	
		0.04	688.42	11.94	688.38	
7+75	41		8.5	79.9	657.0	C. 22.9
B.M.	13.07	769.23		756.16		
Check B.M.			3.85	766.38	766.38	End Mar 9-1933

Mar 13-1933

B.M.	12.42	803.17		790.75		
5+40	So. side		4.2	799.0	715.2	C. 83.8
5+60	So. side		1.0	802.2	712.9	C. 89.3
T.P.	6.33	808.97	0.52	802.64		
5+80	So. side		5.8	803.2	710.0	C. 93.2
6+00	So. side		7.6	801.4	706.5	C. 94.9
6+20	So. side		9.0	800.0	702.4	C. 97.6
6+40	So. side		16.7	791.3	697.8	C. 93.5

		808.97				
5+20	⊕		0.8	808.2	717.0	C. 91.2
+40	⊕		9.5	799.5	715.2	C. 84.3
+60	⊕		16.1	792.9	712.7	C. 80.0
T.P.	0.33	796.59	12.71	796.26		
6+60	So. side		13.0	783.6	692.6	C. 91.0
T.P.	0.32	783.84	13.07	783.52		
6+80	So. side		10.4	773.4	686.8	C. 86.6
6+87.29	So. side		14.7	769.1	684.6	C. 84.5

Reset on No. Side

		1.8	727.6		725.8	
6+60			+0.6	728.2	692.6	C. 35.6 out 17.8
6+40			+1.6	729.2	677.8	C. 31.4 out 15.7
6+20	7.3	734.7	0.2	727.4		
			4.5	730.2	702.5	C. 27.7 out 13.8

Daylight States on Spillway Lip
24A Mar 14 - 1933



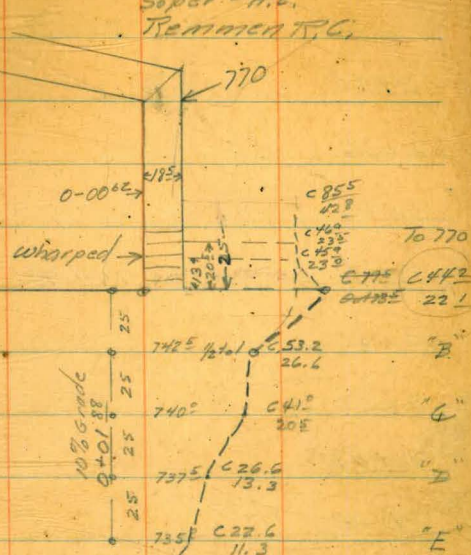
B.M.	0.95	763.87	762.92
	1.29	752.81	751.52
	1.98	742.06	740.08
0+00		11.7	730.4 out 140
0+25		4.5	737.6 out 245
0+50		5.6	736.5 out 854
0+75		7.2	734.9 out 101
1+00		6.7	735.4 out 96
	8.65	740.76	732.11
1+25		3.9	736.8 out 81
T.P.	12.87	744.98	732.11
1+50		4.65	740.3 out 141
2+00		0.1	744.9 out 1
2+25		1.7	743.3 out 17

Continued Next Page

Mar 15 - 1933

Elliott, Ueiel-Notes 24
Simpson - T
Soper - H.C.
Kremmer R.C.

Plan



B.M.	3.47	815.46	811.97	Grade Stake
0+00 A		11.0	829.5	750.00 C 77.5
T.P.	1.61	804.50	12.57	802.89 out 735
0+01.88 B		8.8	795.7	742.5 C 53.2
T.P.	0.71	792.37	13.04	791.46 26.6
0+01.88 C		11.4	781.0	740.0 C 41.0
T.P.	0.28	780.01	12.64	779.73 20.5
T.P.	1.03	768.87	12.17	767.84
0+01.88 D		4.8	764.1	737.5 C 26.6
0+01.88 E		11.3	757.6	735.0 C 22.6
				11.3
B.M.	12.03	824.00	811.97	
0+00 A				770.00 C 44.2
B.M.	12.94	824.91		22.1
			811.97	C 45.9
			9.0	815.9
			8.0	816.9
				23.0
				C 46.9
				23.5

June 20 - 1933

Daylight Stakes Continued from 24A

Mar 15 - 1933

744.98

25

2+50			2.8	742.2	28 out
2+75			3.2	41.8	32 out
3+00			3.4	41.6	34 out
T.P.	8.15	744.99	8.14	736.84	
3+25			3.0	742.0	30 out
3+50			2.65	742.35	26.5 out
3+75			3.1	741.9	31 out
4+00			1.45	743.55	14.5 out
4+25			2.9	742.1	29 out
4+50			4.8	740.2	48 out
4+75			6.05	738.95	60.5 out
Check on AXIS			1.44	743.55	743.56

Reset of Daylight Stakes

B.M.	2.42	745.98		743.56
	4.18	744.58	5.58	740.40
T.P.	3.94	745.91	2.61	741.97
	6.20	745.35	6.76	739.15

Profile of Spillway Crest

Mar 15-1933

Elliott Notes

Simpson level

Soper - Rod

Crest
Grade

Floor
Subgrade Cuts

B.M.	0.83	776.28	775.45			
4+75		2.9	773.4	745.0	718.98	Cut 28.4 54.4 ✓
4+50		11.1	765.2	"	19.67	C. 20.2 45.5 ✓
T.P.	2.48	765.70	13.06	763.22		
4+25		8.7	757.0	"	20.35	C. 12.0 36.6 ✓
4+00		15.3	750.7	"	21.04	C. 5.7 29.7 ✓
3+75		6.6	759.1	"	21.72	C. 14.1 37.4 ✓
+50		9.2	756.5	"	22.41	" 11.5 34.1 ✓
+25		4.0	761.7	"	23.09	16.7 38.6 ✓
3+00		4.9	760.8	"	23.78	15.8 37.0 ✓
2+75		4.5	761.2	"	24.46	16.2 36.7 ✓
2+50		6.5	759.2	"	25.15	14.2 34.0 ✓
2+25		10.5	755.2	"	25.83	10.2 29.4 ✓
2+00		19.8	745.9	"	26.52	0.9 19.4 ✓
1+75		17.9	747.8	"	27.20	2.8 20.6 ✓
+68				"	27.40	11.6 ✓
1+50		9.1	756.6	"	27.89	28.7 ✓

Grade = 0273964

0274
16
1644
274
1384

0274
5
1370

(Toe of core finish out 27.89)

Profile of spillway Crest Cont.

				Elev.	Crest Grade	Floor Subgrade	Cuts	
				765.70				
T.P.	12.66	778.05	0.31	765.39				
1+25			7.0	771.0	745.0	728.57	26.0 42.4 ✓	
T.P.	11.87	788.35	1.57	776.48				
1+00			5.0	783.4	"	29.76	38.4 51.1 ✓	03 4
T.P.	7.08	794.52	0.91	787.44				12
0+75			2.4	792.1	"	29.94	47.1 62.7 ✓	
0+50			4.2	790.3	"	30.63	45.3 59.7 ✓	
0+25			10.9	783.6	"	31.31	38.6 52.3 ✓	
0-00 ⁶²			8.7	785.8	"	732.0	C. 40.8 C. 53.8 ✓	

(Toe of Case 25.25)

Slope Stakes No. Side
Mar 27-1933

Elliott
Simpson
Super
Kemmen

28

0.35

B.M.	11.73	823.70		811.97		
0-00 ⁶² at Ogee Slope Stake	6.2		817.5	732.0	C 85.5 out 42.8 Slope 1/2 to 1	(10° offset C 93.8)
0-00 ⁶² N.E. cor. of floor	13.7		810.0	732.0		0.78°
0+25	4		822.6	731.31		C. 91 ³
T.P.	12.15	835.58	0.27	823.43		
0+50	4		829.1	730.6		C 98.5
0+75	4		825.2	729.9		C 95.3
1+00	4		816.1	729.3		C 86.8
1+25	4		807.5	728.6		C 78.9
1+50	4		820.1	727.9		C 92.2
1+75	4		833.5	727.2		C 106.3
T.P.	13.27	848.47	0.38	835.20		
0-00 ⁶² Slope Stake at 90° from N. line	9.5		839.0	732.0	C. 107.0 out 53.5 Slope 1/2 to 1	(10° offset C. 111.5)
T.P.	8.57	856.98	0.06	848.41		
0-00 ⁶² Slope Stake on split of angle	0.0		857.0	732.0	C. 125.0 out 75.9 Slope .607 to 1	(10° offset C. 128.5)
0+25 Slope stake	3.9		853.1	731.3	C. 121.3 out 60.9 Slope 1/2 to 1	(10° offset C. 127.0)
0+50 "	4.3		857.3	730.6	C. 126.7 out 63.4	(12° offset C. 132.0)
0+75 "	5.7		851.3	729.9	C. 121.4 out 60.7	(10° offset C. 123.2)
T.P.	1.42	850.13	8.27	848.71		

116
25.2
34.6

No. side

850.13

1+00	Slope Stake	12.8	837.3	729.3	C 108.0	out 54.0
1+25	Slope Stake	9.8	840.3	728.6	C 111.7	out 55.9
T.P.	12.74	861.45	1.42	848.71		
1+50	Slope Stake	5.1	856.4	727.9	C 128.5	out 64.3
T.P. + B.M.	12.71	872.02	2.14	859.31		
1+75	Slope Stake	+6.0	878.0	727.2	C 150.8	out 75.4

(10° offset
C. 108.0)
(10° offset
C. 117.4)

(10° offset
C. 136.5)

(10° offset
C. 155.9)

Mar 28-1933

B.M.	6.54	857.88		851.34		
4+75	Slope Stake	12.1	845.8	719.0	C 126.8	out 63.4
T.P.	12.88	870.55	0.21	857.67		
4+50			5.2	865.4	719.7	C 145.7 out 72.9
T.P.	12.53	882.77	0.31	870.24		
T.P.	12.84	895.28	0.33	882.44		
4+25			10.3	885.0	720.35	C 164.7 out 82.4
T.P.	12.52	907.01	0.79	894.49		
4+00			7.8	899.2	721.0	C 178.2 out 89.1
T.P.	12.52	918.98	0.55	906.46		
3+75			7.4	911.6	721.7	C 189.9 out 95.0
Set B.M.			0.30	918.68		

(10° offset
C. 131.2)

(10° offset
C. 149.0)

(10° offset
C. 167.3)

(10° offset
C. 182.2)

(10° offset
C. 194.2)

No. 5. de Slope Stakes Cont.

Mch. 29, 1933

30

Simpson
Super
Rammer

	7.34	926.02		918.68			
3+50			3.6	922.4	722.4	c. 200°	out 100°
3+25			2.9	923.1	723.1	c. 200°	out 100°
3+00			5.8	920.2	723.8	c. 196°	out 98°
T.P.	0.48	914.04	12.46	913.56			
2+75			3.6	910.4	724.5	c. 185°	out 93°
2+50			3.4	910.6	725.2	c. 185°	out 92°
2+25			12.0	902.0	725.8	c. 176°	out 88°
T.P.	0.81	902.11	12.74	901.30			
2+00			9.2	892.9	726.5	c. 166°	out 83°
T.P.	0.69	890.23	12.57	889.54			
			12.3	877.9		= check	on slope stake sta. 1+75 (Elev. 878.0)
T.P.	0.35	877.65	12.93	877.30			
T.P.	0.39	865.35	12.69	864.96			
B.M.			6.05	859.30		= check	on B.M. Elev. 859.31

(10° offset
C. 205.3)

(10° offset
C. 205.4)

(10° offset
C. 204.8)

(10° offset
C. 189.2)

(10° offset
C. 183.0)

(10° offset
C. 171.0)

Profile of North line of spillway

Mch. 29, 1933

31

Simpson
Super
Remmer

B.M.					Floor Subgrade	
	0.64	859.95		859.31		
2+00			16.1	843.9	726.5	c-117 ¹ ✓
+25			9.6	850.4	725.8	c-124 ⁶ ✓
+50			6.9	853.1	725.2	c-127 ² ✓
T.P.	11.98	863.23	8.70	851.25		
+75			13.0	850.2	724.5	c-125 ⁷ ✓
3+00			6.3	856.9	723.8	c-132 ¹ ✓
+25			1.7	861.5	723.1	c-138 ⁴ ✓
T.P.	2.56	864.11	1.68	861.55		
+50			3.4	860.7	722.4	c-138 ³ ✓
+75			4.6	859.5	721.7	c-137 ⁸ ✓
4+00			7.2	856.9	721.0	c-135 ⁹ ✓
+25			10.9	853.2	720.4	c-132 ⁸ ✓
T.P.	0.23	851.50	12.84	851.27		
+50			4.1	847.4	719.7	c-127 ⁷ ✓
+75			17.0	834.5	719.0	c-115 ⁵ ✓
B.M.			0.12	851.38		check on B.M. Elev. 851.34

LINE & SLOPE STAKES
SOUTH LINE

April 24 - 1933
Elliott
Simpson
Soper

5+10

32

B.M.	12.62	770.96		758.34	
T.P.	13.28	783.95	0.29	770.67	
Set B.M.			12.65	771.30	
6+40 Side			3.8	780.2	697.8
					682.4
T.P.	12.97	796.64	0.28	783.67	
6+20 Side			1.1	795.5	702.4
					C. 93.1
6+00 Side			4.7	791.9	706.5
					C. 85.4
5+80 Side			3.6	793.0	710.0
					C. 83.0
5+60 Side			2.0	794.6	712.9
					C. 81.7
5+40 Side			3.4	793.2	715.2
					C. 78.0
B.M.	13.04	796.71		783.67	
5+40 Slope St.			10.5	786.2	715.2
					C. 71.0 out 35.5
5+60 Slope St.			6.6	790.1	712.9
					C. 77.2 out 38.6
5+80 Slope St.			2.5	794.2	710.0
					C. 84.2 out 42.1
6+00 Slope St.			7.0	789.7	706.5
					C. 83.2 out 41.6
	0.45	784.12		783.67	
6+20 Slope St.			1.9	782.2	702.4
					C. 79.8 out 39.9
6+40 Slope St.			7.0	777.1	697.8
					C. 79.3 out 39.7
6+60 Slope St.			13.9	770.2	692.6
					C. 77.6 out 38.8

718.65

733
719.65
13.35

784.12

B.M.	0.58	771.88	12.82	771.30	771.30	
6+60	Side		9.3	762.6	692.6	670.0
6+80	Side		8.2	763.7	686.8	676.9
Set B.M.			7.43	764.45	on 4	at 6+76.16
6+80	Slope St.		1.6	770.3	686.8	683.5 out 41.8
		End April 24 - 1933				
		Start April 25 - 1933				

Elliott
Simpson
Soper - Remmedo

B.M.	9.70	774.15		764.45		
6+87.29	Slope St.		3.3	770.8	684.5	686.3 out 43.2
7+00	Slope St.		7.3	766.8	680.6	686.2 out 43.1
T.P.	1.16	762.30	13.01	761.14		
6+87.29	Side		6.1	756.2	684.5	671.7
7+00	Side		15.8	746.5	680.6	675.9
T.P.	0.31	749.71	12.90	749.40		
T.P.	1.51	738.34	12.88	736.83		
7+25	Side		15.9	722.4	672.7	649.7
7+25	Slope St.		3.2	735.1	672.7	662.4 out 31.2 (cut about 10' wide)
T.P.	0.45	726.06	12.73	725.61		
T.P.	0.19	713.43	12.82	713.24		

713.43

7+50	side		8.1	705.3	664.9	640.4	
7+50	Slope St.		6.3	707.1	664.9	642.2	out 21.1 (Cut about 28' wide)
7+75	side		10.3	703.1	657.0	646.1	
7+75	Slope St.		12.0	701.4	657.0	644.4	out 22.2 (Cut about 27' wide)
T.P.	1.04	702.03	12.44	700.99			
8+00	side		9.1	692.7	649.1	643.8	
8+00	Slope St.		4.6	697.4	649.1	648.3	out 24.2 (Cut about 32' wide)
8+25	side		8.79	693.24			
			8.8	693.2	646.3	651.9	
8+25	Slope St.		5.8	696.2	641.3	654.9	out 27.5 (Cut about 30' wide)
check					Record		
B.M.			5.67	696.36	696.36		

770 Contour

B.M.	9.86	781.16		771.30	
		11.16		770.0	

Reset Stakes on No. Side
 May 11 - 1933
 Elliott
 Simpson
 Soper
 Remmen

35

B.M. 12.09 824.06 811.97

T.P. 12.84 836.47 0.43 823.63

T.P. 12.93 846.49 2.91 833.56

1+00 9.2 837.3 729.3

$\frac{1080}{540}$ (10° offset)
 C.109.7

1+25 5.8 840.7 728.6

$\frac{1120}{560}$ (10° offset)
 C.1172

1+50 in and O.K.

T.P. 12.82 859.22 0.09 846.40

T.P. 13.09 871.55 0.76 858.46

T.P. 13.17 883.52 1.20 870.35

1+75 6.6 876.9 727.2

$\frac{149.7}{74.8}$ (10° offset)
 C.1555

T.P. 13.02 895.75 0.79 882.73

2+00 2.5 893.3 726.5

$\frac{1663}{332}$ (10° offset)
 C.1712

110.0
 93.4
 16.6

T.P. 13.02 908.11 0.66 895.09

2+25 5.4 902.7 725.8

$\frac{1769}{89.5}$ (10° offset)
 C.1829

13.23 920.84 0.50 907.61

2+50 11.2 909.6 725.2

$\frac{1844}{92}$ (102 offset)
 C.1922

2+75 724.5

$\frac{1944}{97}$ (112 offset)
 C.2028

T.P. 13.17 933.91 0.10 920.74

3+00 11.8 822.1 723.1

$\frac{1983}{99.2}$ ()

933.91

3+25	10.6	923.3	723.1	C 200.2 100.1	(11° offset) C. 208.5
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Set B.M.	3.67	930.24			
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May 14 - 1933 - Same Crew

B.M.	2.41	932.65	930.24		
------	------	--------	--------	--	--

3+50	10	and	O.K.		
------	----	-----	------	--	--

T.P.	1.14	921.56	12.23	920.42	
------	------	--------	-------	--------	--

3+75	7.6	912.0	721.7	C 190.3 95.1	(12° offset) C. 194.2
------	-----	-------	-------	-----------------	--------------------------

T.P.	0.95	909.59	12.92	908.64	
------	------	--------	-------	--------	--

4+00	10.9	898.7	721.0	C 177.2 88.2	(10° offset) C 178.5
------	------	-------	-------	-----------------	-------------------------

T.P.	0.35	897.02	12.92	896.67	
------	------	--------	-------	--------	--

4+25	12.6	884.4	720.35	C 164.2 82.2	(10° offset) C. 166.5
------	------	-------	--------	-----------------	--------------------------

T.P.	0.32	884.40	12.94	884.08	
------	------	--------	-------	--------	--

T.P.	3.75	876.65	11.50	872.90	
------	------	--------	-------	--------	--

Check on
slope st.

8.1	868.6	868.7			
-----	-------	-------	--	--	--

4+50	11.9	864.8	719.7	C 144.2 72.5	(10° offset)
------	------	-------	-------	-----------------	--------------

10.2	864.97	12.70	863.95		
------	--------	-------	--------	--	--

0.63	852.77	12.83	852.14		
------	--------	-------	--------	--	--

4+75	7.8	845.0	719.0	C 126.2 63.2	(10° offset) C 131.2
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Reset cut stakes on North side
line.

37

May 15, 1933

Simpson
Super
Rammson

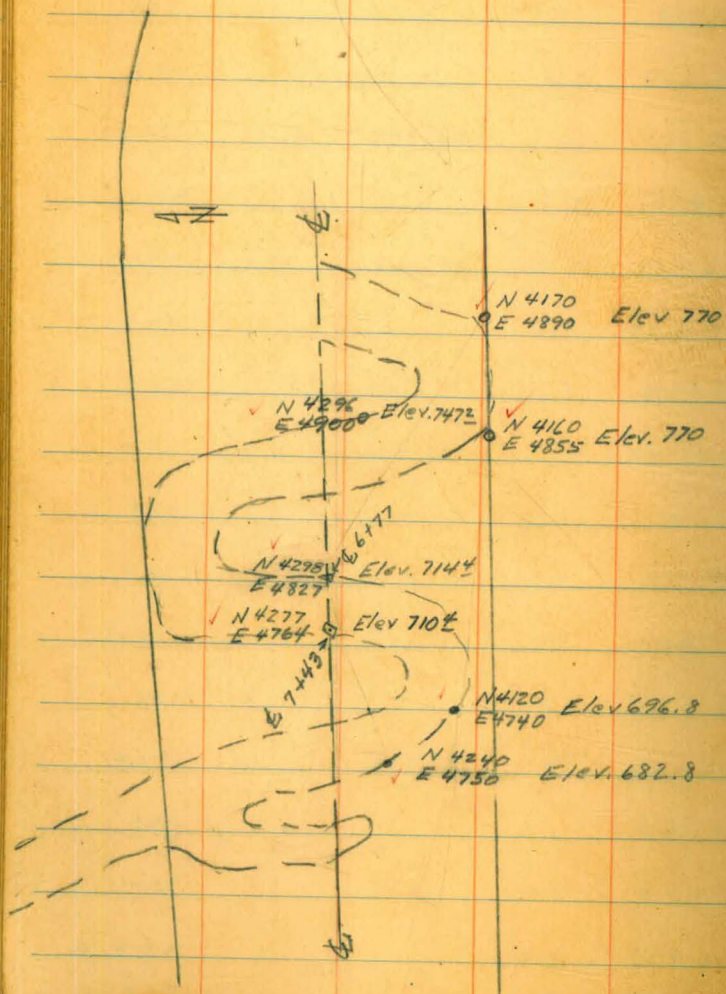
B.M.	10.54	822.51		811.97	
	5.34	827.00	0.85	821.66	
1+00			11.0	816.0	729.3 cut 81 ² MKD c. 86 ²
+25			15.1	811.9	728.6 cut 83 ²
+50			6.7	820.3	727.9 cut 92 ²
T.P.	13.03	839.99	0.04	826.96	
+75			5.9	834.1	727.2 106 ⁹ cut
T.P.	12.90	852.75	0.14	839.85	
2+00			3.9	848.9	726.5 cut 122 ⁴
+25			3.1	849.7	725.8 cut 123 ⁹
T.P.	12.18	864.81	0.12	852.63	
+50			13.2	851.6	725.2 cut 126 ²
+75			12.9	851.9	724.5 cut 127 ²
3+00			9.6	855.2	723.8 cut 131 ²
+25			4.4	860.4	723.1 cut 137 ³
T.P.	5.51	867.36	2.96	861.85	
+50			6.3	861.1	722.4 cut 138 ²
+75			6.3	861.1	721.7 cut 139 ⁴
4+00			7.9	859.5	721.0 cut 138 ²
+25			17.0	850.4	720.4 cut 130 ²

Elliott K
Simpson
Seper

May 24-1933

Elevs. and Coords. of points in spillway
located by H.W.

38



Slope Stakes

June 26-1933

B.M.	5.88	580.94		575.06	
15+52 ²⁹	So. Side	11.2	69.7	541.0	C 282 1461
+25	"	9.6	71.3	541.1	C 303
15+00	"	7.6	73.3	541.2	C 321
14+75	"	5.8	75.1	541.2	C 339
14+50	"	4.0	76.3	541.3	C 352
+25	"	4.3	76.6	541.4	C 352
14+00	"	4.7	76.2	541.5	C 342
13+75	"	4.1	76.8	541.5	C 353
+50	"	2.5	78.4	541.6	C 368
+25	So. Side	10.1	81.0	541.7	C 393
15+52 ²⁹	⊕	12.2	68.7	541.0	C 277
+25	"	14.9	66.0	541.1	C 249
15+00	"	12.7	68.2	541.2	C 270
14+75	"	8.7	72.2	541.2	C 310
14+50	"	6.3	74.6	541.3	C 333
+25	"	4.6	76.3	541.4	C 349
14+00	"	3.7	77.2	541.5	C 357
13+75	⊕	0.7	80.2	541.5	C 387
		0.11	580.83		

	12.31	593.14	580.83			
13+50	⊕		11.3	81.8	541.6	640.2
+25	"		4.0	89.1	541.7	647.4
13+00	"		11.7	81.4	541.8	639.6
12+75	"		12.7	80.4	541.9	638.5
+50	"		13.8	79.3	541.9	637.4
+30 ²⁹	"		14.1	79.0	541.0	638.0
					542.0	637.0
12+00	"		14.6	78.5	541.1	637.4
11+80 ²⁹	E.V.C		13.9	79.2	541.2	638.0
+60	"		14.6	78.5	542.0	636.5
+40	"		13.9	79.2	544.4	634.8
+20	"		14.2	78.9	548.4	630.5
11+00 ²⁹	⊕		5.7	87.4	553.8	633.6
13+00	So. Side		9.4	83.7	541.8	641.9
12+75	"		7.5	85.6	541.9	643.7
12+50	"		6.7	86 H	541.9	644.5
+30.29	"	✓	5.4	87.7	542.00	645.2
12+00	"	✓	3.2	89.9	542.11	642.8

20' Floor

1.901 slope

593.14

11+80 ²⁹ ✓	E.V.C. So. Side	1.8	91.3	542.1	C. 49 ² Slope 1 to 1
B.M.	So. Side	5.98	587.16	587.14	
B.M.	3.20	607.02	603.82		
11+60 ✓	"	14.2	92.8	543.02	C 49.3 / out 43.5 / 7/8 to 1 /
+40 ✓	"	13.1	93.9	545.4	C 48.5 / out 36.4 / 3/4 to 1 /
+20	"	14.5	92.5	549.4	C 43.2 / out 26.9 / 7/8 to 1 /
11+00 ²⁹	B.V.C. So. Side	15.7	91.3	554.8	C 36.5 / out 18.2 / 1/2 to 1 /
10+80 ²⁹	So. Side	10.6	96.4	561.13	C 35.9 / out 17.2 / 1/2 to 1 /
10+50	"	8.6	98.4	570.6	C 27.8
10+39 ²⁹	"	4.8	602.2	574.0	C 28.2
10+80 ²⁹ ϕ_1	(2 nd floor)	1.4	560.1	561.1	C. 45.5 C. 44.5
10+50 ϕ_1		0.5	06.5	570.6	C 35.9

June 27 - 1933

B.M.	6.67	576.62	569.95		Slope 1 to 1
15+52 ²⁹	No. Side	+0.1	76.7	541.0	C 35.7
15+25	"	+1.0	77.6	541.1	C 36.5
15+00	"	8.3	68.3	541.2	C 27.1
14+75	"	9.2	67.4	541.2	C 26.2
14+50	"	3.6	73.0	541.3	C 31.7

		576.62					
14+25	No. Side		0.7	575.9	541.4	634.5	Slope 1/101
T.P.	9.02	584.99	0.65	575.97			
14+00			6.0	579.0	541.5	637.5	"
13+75			5.4	79.6	541.5	638.1	"
13+50			+0.7	85.7	541.6	644.1	"
T.P.	12.78	597.61	0.16	584.83			
13+25			11.4	93.2	541.7	651.5	"
13+00			4.8	92.8	541.8	651.0	"
12+75			3.9	93.7	541.9	651.8	"
12+50			2.2	95.4	541.9	653.5	"
12+30 ²⁹	2 ^o floor		2.3	95.3	542.0	653.3	"
12+00			0.0	92.6	542.1	655.5	"
T.P.	8.88	606.15	0.34	597.27			
11+80 ²⁹			6.9	99.3	542.2	657.1	1701
Check on H.I.			12.24	593.9	593.9		(So slope stake at 11+40)

Spillway Cuts June 28 - 1933

0.31

B.M.	12.73	616.55		603.82		
T.P.	7.92	624.16	0.31	616.24		
11+60	No. Side		9.8	614.4	543.0	C 71.4 - out 62.5 - $\frac{7}{8}$ to 1 slope
11+40	"		4.8	619.4	545.4	C 74.0 - out 55.5 - $\frac{3}{4}$ to 1
11+20	"		4.5	619.7	549.4	C 70.3 - out 43.9 - $\frac{5}{8}$ to 1
11+00 ²⁹	B.V.C. "		6.1	618.1	554.8	C 63.3 - out 31.7 - $\frac{1}{2}$ to 1
10+80 ²⁹	No. Side		7.0	617.2	561.1	C 56.1 - out 28.1 - $\frac{1}{2}$ to 1
10+37 ²⁹	¢		12.3	611.9	574.0	C 37.9
10+25	¢		9.9	614.3	578.9	C 35.8
10+00	¢		8.4	615.8	586.3	C 29.5
T.P.	10.74	633.82	1.08	623.08		
10+50	No. Side		4.6	629.2	570.6	C 58.6 - out 29.3 - $\frac{1}{2}$ to 1
B.M.	3.03	635.67	1.18	632.64		
10+39 ²⁹	No. Side		6.0	629.7	574.0	C 55.7 - out 27.8 - $\frac{1}{2}$ to 1
10+00	"		5.7	630.0	586.3	C 43.7 - out 21.8 - $\frac{1}{2}$ to 1
9+75	"		6.2	629.5	594.7	C 35.3 - out 17.7 - $\frac{1}{2}$ to 1
9+50	"		5.0	630.7	602.0	C 28.7 - out 14.4

B.M.	3.02	635.66		632.64	
9+80	±		4.4	631.3	592.6 C 38.7
9+50	±		3.6	632.1	603.0 C 30.1
B.M.	8.23	640.87		632.64	
9+25	±		8.5	632.4	609.8 C 22.6
9+00	±		7.8	633.1	617.7 C 15.4
8+75	±		8.1	632.8	625.6 C 7.2
9+25	So. Side		2.7	638.2	609.8 C 28.4 out 14.2 - 1/2 to 1
9+00	"		+0.2	641.1	617.7 C 23.4 out 11.7 - 1/2 to 1
B.M.	12.68	616.50		603.82	
10+25	So. Side		3.5	613.0	578.5 C 34.5 out 17.3 - 1/2 to 1
10+00	" "		0.9	615.6	586.3 C 29.3 out 14.7 - 1/2 to 1

Reset Slope Stakes on N. Side

- 0.60 45

B.M. +0.07
 924.40
 - 42.08
 12.53 942.32

0.44
 12.61

0.83
 13.23

4.06

Set B.M. 7.11 942.32
 + 5.40 47.48

B.M. 12.05 863.39 851.34

0.60 862.79

13.06 875.85
 0.17 875.66

11.06 886.72

Set B.M. 0.58 886.14

12.48 898.62
 0.22 898.40

11.78 910.18

3+75 13.1 897.1 721.7 61754
 87.2

		910.18				
	12.59	721.86	0.91	909.27		
3+50			18.5	903.4	722.4	C 181 ⁰ 90 ⁵
3+25			6.8	915.1	723.1	C 192 ⁰ 96 ⁰
T.P.	13.11	933.86	1.11	920.75		
Set T.P.			0.73	933.13		
	12.77	945.90				
Checks			3.57	942.33	942.32	
T.P.	2.03	935.16		933.13		
	1.14	923.93	12.87	922.29		
	1.24	912.80	11.87	911.56		
3+00			5.4	907.4	723.8	C 183 ⁰ 91 ²
2+75			12.6	895.2	724.5	C 170.7 85.4
T.P.	2.54	902.08	13.26	899.54		
2+50			11.8	890.3	725.5	C 164.8 82.4
T.P.	3.17	892.37	12.88	889.20		
	3.11	882.79	12.69	879.68		
2+25			10.1	872.7	725.8	C 146.9 73.5
T.P.	12.65	882.61	12.83	869.96		
T.P.			11.71	870.90		

July 20 - 1933

47

B.M.	1.59	872.49		870.90	
	0.32	859.89	12.92	857.57	
	7.98	854.65	13.22	846.67	
1+25			15.3	839.4	728.4 1108
1+50			15.1	839.6	727.9 554 611.7
1+75			4.1	850.4	727.2 55.9 612.34
2+00			4.1	853.6	726.5 61.7 612.71
T.P.	0.95	842.56	13.04	841.61	63.6
1+00			9.5	833.1	729.3 1038 519
T.P.	0.22	829.82	12.96	829.60	
0+75			8.8	821.0	729.9 691.1 45.6
0+50			15.9	813.9	730.6 683.3
0+25			20.0	809.8	731.3 41.7 678.5
0-0062 on split of angle			0.7	829.1	732.0 39.3 697.1
B.M.			17.9	811.9	811.97 out 58.8 (.606 to 1)

July 20 - 1933

48

B.M. 11.72 863.06 851.34

4450 16.3 846.8 719.7 C 1271
63.9

4425 11.6 851.5 720.4 C 1314
65.6

T.P. 12.26 875.23 0.09 862.97

4400 2.0 873.2 721.0 C 1522
76.2

B.M.	11.96	823.93	811.97	
O.G.		2.4	821.5	770.0
				6.515 252
1/2 way		2.4	821.5	778.6
				6.429 215
Whangdoo		5.6	818.3	787.3
				6.312 155

Aug 9 - 1933

		6.0	817.9	754.75	632 316
		11.7	812.2	740.98	6712 352
B.M.	0.53	812.50	811.97		
		12.89	799.61		
	+(-0.10)	799.51			
		12.23	787.28	17.34 of 0.6	
B.M.	+(-0.03)	799.58	799.61		
Bottom of Creek		16.5	783.1	732.0	6512 256
N.E. Cor.		8.2	791.4	732.0	6594 362 (606 = 0.1)

10% Slope from Cone
 1/2 to 1 Slope Stakes
 Aug 10 - 1933

50

B.M.	0.87	812.84		811.97	
End of cone					742.5
5' from cone			5.8	807.0	742.0 665° 32°
T.P.	2.37	801.98		799.61	
30' from cone			9.5	792.45	737.5 653° 26°
T.P.	0.78	789.67	13.09	788.89	
T.P.	0.60	777.46	12.81	776.86	
50' from cone			+0.2	777.7	732.5 640° 20°
70' from cone			11.3	766.2	735.5 630° 15°
T.P.	0.88	765.37	12.97	764.49	
85' from cone			8.0	757.4	734.0 623° 11°
B.M.	12.40	742.76		730.36	
90' from cone			5.0	737.8	733.5 643° 21°
145' from cone			9.8	733.0	728.0 652° 25°
151' from cone			15.4	727.4	727.4 640°

Aug 11 - 1933
Slope stakes No. side

B.M.	1.07	789.96		788.89	
0+25			12.7	777.3	731.3 646 ⁰
0+50			8.1	781.9	730.0 651 ³
0+75			10.4	790.4	729.9 660 ⁵
B.M.	0.41	812.38		811.97	
1+00			11.2	801.2	729.3 671 ²

Slope Stakes So. Side

Aug 14 - 1933

B.M.	3.75	783.72		779.97	
5+40 &			5.1	778.6	715.3 663.3
" Slope			4.8	778.9	663 ⁰
B.M.	2.57	782.54		779.97	
5+60 &			7.2	776.5	712.9 663.6
" Slope			5.2	777.3	664 ⁴
5+80 &			7.5	776.2	710.0 666.2
" Slope			8.0	774.5	664 ⁵
6+00 &			6.0	777.7	706.5 671.2
" Slope			8.3	774.2	667 ²
6+20 &			8.7	775.0	702.5 672.5
" Slope			8.7	773.8	671 ³
6+40 &			7.7	776.0	697.2 678.2
" Slope			9.8	772.7	674 ³ + 37 ⁵

Slope Stakes on No. Side
Aug 17-1923

52

B.M.	1.69	853.03		851.34	
Set B.M.			8.03	845.0	
T.P.			12.63	840.40	
	0.24	840.64			
4+70 ²² B.C.			22.8	817.8	719.1
4+50			11.9	828.7	719.7
4+00			3.1	837.5	721.0
B.M.	0.0	845.0		845.0	
3+75			+8.0	853.0	721.7
3+50			-11.6	856.6	722.4
B.M.	10.49	855.49		845.00	
Set B.M.	10.01	861.07	4.43	851.06	
3+00			10.9	862.0	723.8
T.P.	1.36	849.48	12.95	848.12	
T.P.	1.44	837.94	12.98	836.50	
2+50			6.5	831.4	725.2
Set B.M.			13.16	824.78	

End Aug 17 Start Aug 18

698.2
494
6109.2
545
6116.5
58.3
6131.3
65.7
6134.2
67.1
6138.2
69.1
6106.2
53.2

Continued Aug 18-1933

53

B.M.			811.97		
	11.87	823.84			
check on B.M. bottom p. 52			70.98	824.82	824.78
2+25			0.8	823.0	725.8
					C 973
2+00			6.3	817.5	726.5
					C 912
1+75			4.5	819.3	727.2
					C 458
1+50			5.2	818.6	727.9
					C 921
B.M.	4.04	816.01		811.97	
					C 461
1+25			7.6	808.4	728.6
					C 907
					C 454

Aug 21-1933

B.M.	389	783.86		779.97	
5+1371 on O.G.			4.3	779.6	715.4
					C 642
5+1371			5.0	778.9	715.4
					C 635
5+1371			4.1	779.8	715.4
					C 644

Grade stakes at toe of
O-gee section

Aug. 29, 1933

B.M.	12.35	742.71		730.36
T.P.	10.97	752.60	1.08	741.63
T.P.	1.89	745.07	9.42	743.18
T.P.	2.73	735.30	12.50	732.57

Floor
Subgrade

1+50		7.7	727.6	727.9	F ₀ ² -	cut 12 ^o ✓
+75		8.5	26.8	727.2	F ₀ ² -	cut 16 ^o ✓
2+00		8.8	26.5	726.5	F ₀ ² -	cut 20 ^o ✓
+25		9.7	25.6	725.8	F ₀ ² -	cut 18 ^o ✓
+50		10.3	25.0	725.2	F ₀ ² -	cut 18 ^o ✓
+75		7.3	28.0	724.5	C-35	C-55 ✓
3+00		6.4	28.9	723.8	C-35	C-75 ✓
+25		6.2	29.1	723.1	C-6	C-8 ^o ✓
+50		3.5	31.8	722.4	C-9 ^o	C-11 ^o ✓

Floor & O.G. Cuts in Spillway
Sept 9 - 1933

B.M. 7.64 750.37 742.73

0+48 4.4 746.0

T.P. 12.73 737.64

2.30 739.94

0+72 8.3 731.6

0+96 10.7 729.2

1+20 11.5 728.4

1+44 12.34 727.6

1+68 12.9 727.0

1+92 12.4 727.5

731.47

2+16 5.71 725.76

B.M. 2.01 Sept 21-1933 729.34 727.33

2+40 4.33 725.01

3.92 725.42

2+64 4.95 724.39

4.57 724.77

Floor. O.G.
Sub. Sub.

730.68 728.68 C. 15³ & 17³

730.02 728.02 C. 15⁵ & 36⁵

729.37 727.37 F 0² C. 18⁵

728.71 726.71 F 0³ C. 12⁵

728.05 726.05 F 0⁴ C. 15⁵

727.40 725.40 F 0⁴ C. 14⁶
F 0⁵ C. 14⁶

726.74 724.74 C. 0⁸ C. 2⁸

726.08 724.08 F 0³² C. 1⁶⁸
0'4" 1'8"

725.42 723.42 F 0.41 C. 1.59
0'5" C. 1'7"

724.77 722.77 F 0.38 C. 1.62
0'4 1/2" C. 1'7 1/2"

Slope Stakes So. Side

Sept 12, 1933

Elliot
Simpson
Solgado
Osborne

56

B.M.	10.15	768.49		758.34	
			2.88	765.61	
	8.73	774.34			
				715.6	
5+35 ²⁵			4.3	770.0	716.4 C 534 262
5+60			4.0	770.3	712.9 C 574 287
5+80			2.9	71.4	710.0 C 614 307
6+00			3.8	70.5	706.5 C 640 320
6+20			4.6	69.7	702.5 C 672 336
6+40			5.1	69.2	697.8 C 714 352
6+60			5.1	69.2	692.6 C 760 382
6+80			4.7	69.6	686.82 C 828 414

Concrete Grades Set on So. Side
of Spillway Cut off Trench.

Sept 16-1933

Elliott-Simpson
Salgado-Roman

(Grades Set 1^o below finish grade of floor)

B.M.	7.61	751.17		743.56	
T.P.	0.42	739.57	12.02	739.15	
Set B.M.	2.38	729.71	12.24	727.33	
1+92 cut stake			2.2	727.5	Check 727.5
0+96			0.33	729.38	✓
+25			1.14	728.57	✓
+55			1.96	727.75	✓
+75			2.51	727.20	
2+00			3.19	726.52	✓
+25			3.88	725.83	✓
+50			4.56	725.15	✓

Profile of Trench

Sept 16-1933

729.71

57

1+00	13.4
+20	12.9
+40	13.3
+60	13.2
+78	13.5

Grades on Toe form

B.M.	4.10	731.43	727.33
0+96		2.06	729.37
1+08		2.39	729.07
1+20		2.72	728.71
1+32		3.05	728.38
1+44		3.38	728.05
1+56		3.70	727.73
1+68		4.03	727.40
1+92			
2+16			
2+40			
2+64			

Sept 20 - 1933
Grades on O.G.

59

B.M.	5.48	732.81	727.33	Floor Sub.	
1+44		3.01	729.80	728.05 -1.75 729.80	back 11.03 from offset (R.P. out 31.45) 20.42
1+68		3.66	729.15	727.40 -1.75 729.15	back 11.47 from offset (R.P. out 31.89)
20.42 from face		+ 6.65	739.46		
B.M.	9.09	736.42	727.33		
0+96		5.30	731.12	729.37 -1.75 731.12	back 10.14 from R.P. (R.P. out 30.56) 20.42 10.14
1+20		5.96	730.46	728.71 -1.75 730.46	back 10.58 from R.P. (R.P. out 31.00) 20.42 10.58
20.42 from face		+ 3.04	739.46		

Floor Subgrade Sept 21
on S. bank of trench

B.M.	2.07	729.40	727.33
2+16		3.32	726.08
2+40		3.98	725.42
2+64		4.63	724.77

Grades on Toe Forms

Sept 22-1933

			Floor	Subgrade
B.M.	1.98	729.31	727.33	
1+68			1.91	727.40
			2.24	727.07
1+92			2.57	726.74
				726.41
2+16			3.23	726.08
				725.75
2+40			3.89	725.42
				725.09
2+64			4.54	724.77

Final X Sections

Sta 1+92	145 E	82 33	68 63	43 78	42 155	52 178	51 185	42 274
Sta 2+16	152 E	82 33	50 61	48 92	51 15	62 18	55 18	51 272
Sta 2+40	164 E	62 5	53 7	60 15	66 174	61 174	59 283	
Sta 2+64	182 E	74 35	55 55	52 10	62 15	72 175	65 175	67 287

Grades for Toc of O.G.

				Toc	20.42 from		
B.M.	2.57	729.90		727.33			
2+64			3.38	726.52			
B.M.	2.35	729.68		727.33			
			+ 9.78	739.46	(13.25 from R.P.)	33.67 20.42 13.25	739.46 729.68 9.78
2+40		729.90	2.73	727.17			739.46 730.48 8.98
		729.68	9.78	739.46	(12.80 from R.P.)	33.22 20.42 12.80	
2+16		729.90	2.07	727.83			
B.M.	3.15	730.48		727.53			
			+ 8.98	739.46	(12.36 from R.P.)	32.78 20.42 12.36	
1+92		729.90	1.41	728.49			
			+ 8.98	739.46	(11.91 from R.P.)	32.33 20.42 11.91	

Cuts on toe of paving

31.45	745.24
20.42	740.93
11.03	+4.31

B.M.	12.36	755.92		743.56	
N. 4148			13.5	742.4	741.8 60 ⁶
4160			7.1	748.8	741.8 67 ⁰
4170			2.4	753.5	741.8 112
4180			1.3	754.6	741.8 128
4190			4.6	751.3	741.8 69.5
4199 ⁰⁴			5.1	750.8	741.8 69.2
4210			7.5	748.4	742.6 58
4219 ⁵⁹			9.4	746.5	744.0 25

Sept. 27-1933 Toe grades

Sept 26 -1933

B.M.	12.62	739.95		727.33
Set B.M.			1.61	738.34
	2.59	740.93		
1+44 to 1+68			1.47	739.46
			+4.31	745.24
B.M.	2.67	741.01		738.34
0+96 to 1+20			1.55	739.46
			+4.23	745.24

B.M.	11.08	738.41		727.33
0+96			9.04	729.37
0+72			8.38	730.03
0+48			7.73	730.68
B.M.	11.89	739.22		727.33
0+96			9.85	729.37
0+72			9.19	730.03
0+48			8.54	730.68

Sept 28-1933

B.M.	5.16	743.50	738.34
T.P.		6.46	737.04
	1.16	738.20	
		+ 1.26	739.46 Check
1+92 to 2+16		+ 7.04	745.24

B.M.	5.16	743.50	738.34
T.P.		8.29	735.21
	1.16	736.37	
2+40 to 2+64		+ 3.09	739.46
		+ 8.87	745.24

B.M.	2.88	730.21	727.33
2+64		5.44	724.77
+ 88		6.10	724.11
3+12		6.76	723.45
3+36		7.42	722.79

Sept 28 on Toe

B.M.	4.79	732.12	727.33
2+64		7.74	724.38 724.77
2+88		6.90	725.22 722.77 C161
3+12		7.33	724.79 724.11 C311
3+36			723.45 721.45 C334

Sept 29 on Start of Batter

B.M.	2.51	740.85	738.34
0+48		8.42	732.43
		1.39	739.46
0+72		7.12	731.78
		1.39	739.46

Sept 30-1933

B.M.	8.87	736.20	727.33
2+64		11.43	724.77
2+88		12.09	724.11
3+12		12.75	723.45
Set B.M.		12.74	723.46 (on 22 offset)
	1.72	725.18	
3+36		2.39	722.79
3+60		3.04	722.14

725.18

Subgrade
under O.G.

3+72

2.20 722.98 719.81

03'2" on 2° offset

"

2.57 722.61 719.81

02'9 1/2" on 4° offset from trench

B.M.

14.13

752.47

738.34

0+48 to 0+72

13.0 737.06
7.23 745.24

(24.49 from 10° offset)

B.M.

122

724.68

723.46

2+88

4.9
29.1

4.8
2.4

7.4
17

7.4
13

8.5
5.3

9.3
3

32.1

2+93

5.5
29.2

5.0
2.2

7.5
16

7.2
10

7.6
4.2

9.5
3

32.31

32.5

3+00

11.3
3.0

9.4
4.8

7.6
10

5.6
1.4

5.4
2.1

6.3
2.5

4.7
29.3

3+12

10.3
3.5

9.5
4.5

4.5
7

6.3
1.4

4.2
2.3

4.6
29.5

Oct 2 - 1933

B.M.	8.71	747.05	738.34
First Panel (T.P.)	1.83	745.22	745.24 ^{check}
2 nd Panel (sect. 0+96 to 1+20)	+2.20	749.25	
	1.92	747.14	745.22
Crest	+ 2.86	750.00	
Radius Point	- 1.14	746.00	

B.M.	8.59	746.93	738.34
Set T.P.	10.57	736.36	
T.P.	0.0	746.93	
	+ (-0.51)	746.42	

1st Panel	-1.18	745.24	check
2nd Panel	+2.83	749.25	

T.P.	+ (-1.50)	745.43	746.93
Crest	+4.57	750.00	
Radius	+0.57	746.00	

B.M.	10.46	746.82	736.36
1st panel	- 1.61	745.21	745.24
2nd "	+ 2.43	749.25	
T.P.	0.00	746.82	
	+ (-1.07)	745.75	
Crest	+ 4.25	750.00	
Radius Point	+ 0.25	746.00	

Oct 3 - 1933

B.M.	5.25	728.71	723.46
3+12	Top of O.G.	3.51	725.20
2+88	" "	4.59	724.12 725.86 ^{F 174}
2+64	" "	2.18	726.53 726.52 ^{check}

3+12	To top stit. batter	-1.25	727.46 739.46 ^{F 120}
2+88	" "	-4.21	724.50 739.46 ^{F 1476}
2+64		+10.81	739.52 739.46 ^{chk.}

Elliott - Soper - Remmen
Oct 4 - 1933

B.M.	11.33	749.67		738.34
			5.59 1/2	744.07 1/2
	9.01 1/2	753.09		
1+20			3.19	749.90
			3.20	749.89
0+96			3.11	749.98
1+92			3.09	750.00 Check
1+44			3.09	750.00 "
1+68			3.09	750.00 "
0+48 to 0+72			3.09	750.00
0+48 to 0+72			3.84	749.25
T.P.	2.72	749.45	6.36	746.73
2+40 to 2+64			+0.55	750.00
"		Radius 746	-3.45	746.0
	3.03	749.76		746.73
"			-0.51	749.25
T.P.	4.86	751.59		746.73
			1.60	749.99 Check
B.M. Sta 2+28 (10' offset)			5.22	746.37

Oct 4 - Floor Subgrade

B.M.	1.95	725.41		723.46
3+36			2.62	722.79
3+60			3.27	722.14
3+84			3.93	721.48
4+08			4.59	720.82
				36.33
				35.8
				5
B.M.	3.55	753.55		750.00
1+44			3.55	750.00 Red Hd
center			3.60	749.95
1+68			3.59	749.96

Oct 5 - 1933

B.M.	10.05	733.51		723.46
T.P.	7.59	739.29	1.81	731.70
2+80 to 3+12			+0.17	739.46 Top of St. post
T.P.	7.58	739.28		731.70
2+80 to 3+12			+5.96	745.24 E. of 31' radius

	Slope	Stakes	No.	side	Grade	
B.M.	12.98	771.32			758.34	
			1.38		769.94	
	9.16	779.10				
4+50			10.6		768.5	719.7
					648 ⁸	at 20 ¹ / ₈ (3 ⁵ tight)
4+00			+2.9		782.0	721.0
					661 ⁹	at 26 ⁵ / ₂ (3 ³ tight)
B.M.	12.55	736.01			723.46	
T.P.	10.46	745.36	1.11		734.90	
3+00			0.8		744.6	723.8
					620 ⁸	out 9 ⁰ (1 [±] tight)
2+50	779.10		+1.2		780.2	725.2
					655.0	out 27 ⁵ O.K.
2+00			6.5		772.6	726.5
					646 ⁴	out 23 [±] O.K.
		745.4				
2+50			+0.8		746.2	725.2
					621 ²	out 14 ⁰ (6 ⁵ tight)
3+50			1.5		743.9	722.4
					621 ⁵	out 6 ⁰ (4 ⁸ tight)
4+00			2.0		743.4	721.0
					622 ⁴	out 3 ⁰ (8 ² tight)
4+50			+0.7		746.1	719.7
					626 ⁴	out 4 ⁰ (9 ³ tight)

Oct 6 - 1933

B.M.	1.43	724.89	723.46
3+12		1.44	723.45
3+36		4.07	720.82
3+60		0.79	724.10
3+84			
4+08			

F. 1.97

722.79

C 1.96

722.14

36.00 meas.
35.00

1.0 wide

36.75 meas.
35.75

0.9 wide

36.3 meas

35.7

0.4 wide

36.3

35.7 meas.

0.6 tight

Profile

B.M.	1.60	725.06	723.46
3+20		13 ⁵ 6	11 ⁵ 4
+30		13 ² 6	11 ⁵ 5
+40		14 ² 6	11 ⁵ 3
+50		14 ² 6	11 ⁵ 2
+60		15 ⁵ 6	11 ⁵ 2

Final sections
Oct 7-1933

Elliott
Soper
McHugh

69

B.M. 1.83 725.29 723.46
5.41 719.88
3.05 722.93

3+19	$\frac{32}{292}$	$\frac{42}{26}$	$\frac{42}{21}$	$\frac{62}{19}$	$\frac{23}{9}$	$\frac{21}{6}$	$\frac{42}{4}$	$\frac{118}{\text{E}}$			
3+23	$\frac{112}{2}$	$\frac{112}{3}$	$\frac{21}{5}$	$\frac{24}{7}$	$\frac{62}{14}$	$\frac{42}{22}$	$\frac{22}{24}$	$\frac{32}{298}$			
3+27	$\frac{14}{292}$	$\frac{14}{25}$	$\frac{61}{21}$	$\frac{54}{15}$	$\frac{32}{8}$	$\frac{32}{6}$	$\frac{71}{4}$	$\frac{115}{\text{E}}$			
3+31	$\frac{116}{\text{E}}$	$\frac{65}{4}$	$\frac{12}{8}$	$\frac{62}{11}$	$\frac{52}{15}$	$\frac{25}{24}$	$\frac{24}{292}$				
3+40	$\frac{40}{302}$	$\frac{35}{25}$	$\frac{34}{15}$	$\frac{51}{11}$	$\frac{41}{5}$	$\frac{71}{3}$	$\frac{122}{\text{E}}$				
3+46	$\frac{123}{\text{E}}$	$\frac{72}{3}$	$\frac{48}{5}$	$\frac{44}{10}$	$\frac{33}{20}$	$\frac{48}{24}$	$\frac{31}{302}$				
3+50	$\frac{25}{302}$	$\frac{32}{23}$	$\frac{34}{20}$	$\frac{42}{15}$	$\frac{38}{12}$	$\frac{46}{9}$	$\frac{52}{4}$	$\frac{80}{25}$	$\frac{122}{25}$	$\frac{122}{\text{E}}$	
3+60	$\frac{130}{\text{E}}$	$\frac{72}{3}$	$\frac{55}{6}$	$\frac{34}{12}$	$\frac{38}{15}$	$\frac{24}{23}$	$\frac{18}{305}$				
3+30			0.1	6	722.8	722.1	check				

Elliot-Saper-Mc Hugh
Oct 7-1933

Levels

70

B.M.	5.26 1/2	751.63		746.37
T.P.	4.74	747.02	9.35 1/2	742.28
2+88 to 3+12			+ 2.23	749.25
T.P.	3.34	745.62		742.28
			+ 4.38	750.00
<u>Red. Hd. in</u> <u>forms .5 low Sta. 3+12</u>			- 0.40	745.22
Sta. 3+12			- 4.62	741.00

Oct 9-1933

B.M.	5.03	728.49		723.46
3+60 Top			- 4.60	723.89
3+36			- 5.82	722.67
3+12			- 3.29	725.20
			- 5.00	723.49
			- 3.03	725.46

B.M.	11.91 1/2	739.24 1/2		727.33
			0.90 1/2	738.34
			12.87 1/2	751.21 1/2
			1.34 1/2	749.87
			1.33	751.20
			4.84 1/2	746.35 1/2
			5.22	755.07
			5.09	750.00
B.M.	5.34	728.80		723.46
Shovel #6			8.9	719.9
T.P.	3.11	723.13	8.78	720.02
3+84			- 1.65	721.48
4+08			- 2.31	720.82
4+32			- 2.97	720.16

Toe of Ogce

B.M.	6.30 1/2	733.63 1/2		727.33
T.P. on 3+12			10.19 1/2	723.44
	6.33	729.77		

			Elev.	Grade
3+60	5.73	724.04	722.14	C. 1.90 ✓
+84	10.37	719.40	721.48	F 2.08
4+08	8.84	720.93	720.82	C. 0.11
4+32	9.00	720.77	720.16	C. 0.61

Form Points

B.M.	3.58 1/2	741.92 1/2		738.34
T.P.	4.25 1/2	739.00	7.18	734.74
3+36 to 3+60			+0.46	739.46
T.P.	3.81	738.55		734.74
			4.31	734.24
				745.20

724.04

3+60		1.90	722.14
+84		2.56	721.48
4+08		3.22	720.82

Final X sections

B.M.	6.95	730.39		723.44					
T.P.	2.48	724.04	8.83	721.56					
3+62	$\frac{147}{\cancel{4}}$	$\frac{72}{3}$	$\frac{62}{6}$	$\frac{51}{17}$	$\frac{24}{22}$	$\frac{30}{3045}$			
3+68	$\frac{31}{306}$	$\frac{39}{22}$	$\frac{42}{16}$	$\frac{58}{8}$	$\frac{70}{25}$	$\frac{141}{25}$	$\frac{141}{4}$		
3+74	$\frac{146}{\cancel{4}}$	$\frac{146}{23}$	$\frac{93}{23}$	$\frac{55}{5}$	$\frac{53}{11}$	$\frac{41}{17}$	$\frac{40}{25}$	$\frac{41}{302}$	
3+78	$\frac{48}{308}$	$\frac{48}{25}$	$\frac{44}{17}$	$\frac{50}{13}$	$\frac{42}{9}$	$\frac{55}{6}$	$\frac{123}{25}$	$\frac{143}{25}$	$\frac{143}{\cancel{4}}$
3+83	$\frac{145}{\cancel{4}}$	$\frac{145}{3}$	$\frac{80}{30}$	$\frac{54}{6}$	$\frac{30}{13}$	$\frac{41}{16}$	$\frac{22}{20}$	$\frac{58}{23}$	$\frac{49}{309}$
3+88	$\frac{65}{310}$	$\frac{62}{29}$	$\frac{42}{28}$	$\frac{26}{21}$	$\frac{33}{12}$	$\frac{72}{5}$	$\frac{143}{3}$	$\frac{143}{\cancel{4}}$	
3+99	$\frac{53}{311}$	$\frac{55}{28}$	$\frac{35}{23}$	$\frac{48}{16}$	$\frac{57}{11}$	$\frac{76}{6}$	$\frac{102}{35}$	$\frac{142}{35}$	$\frac{147}{\cancel{4}}$
4+04	$\frac{153}{\cancel{4}}$	$\frac{153}{3}$	$\frac{66}{35}$	$\frac{55}{7}$	$\frac{22}{11}$	$\frac{59}{14}$	$\frac{59}{18}$	$\frac{43}{23}$	$\frac{54}{26}$ $\frac{51}{313}$
4+08	$\frac{52}{313}$	$\frac{50}{25}$	$\frac{59}{17}$	$\frac{54}{13}$	$\frac{57}{6}$	$\frac{63}{35}$	$\frac{140}{25}$	$\frac{144}{\cancel{4}}$	

Oct 11 - 1933

T.P.	2.89	723.66	720.77
4+32		3.50	720.16
4+56		4.15	719.51
4+80		4.81	718.85

Oct 12 - 1933

B.M.	5.02	725.8	720.82
------	------	-------	--------

4+87 ²⁹	3.0	722.8	718.6 ^{C42}
5+00	3.8	722.0	718.2 ^{C32}
5+40	6.8	719.0	715.3 ^{C37}
5+80	7.7	718.1	710.0 ^{C81}
6+20	7.4	718.4	702.5 ^{C159}
6+60	7.8	718.0	692.6 ^{C251}

Oct 12 - 1933

B.M. (offset 4 to 8)	4.01	724.94	720.93
4+32	4.07	720.87	720.16 ^{C71}
4+56	5.14	719.80	719.51 ^{C129}
4+32 $\frac{1}{2}$ to eye face	6.0	718.94	717.16 ^{C18}
4+32 9' from face	5.6	719.34	715.16 ^{C42}
4+68 2° offset	3.69	721.25	719.18 ^{C207}
4+68 $\frac{1}{2}$ to eye face	5.4	719.5	716.18 ^{C32}
4+68 9' from face	5.06	719.88	715.18 ^{C470}
4+80 $\frac{1}{2}$ to eye	4.5	720.4	715.8 ^{C46}
4+80 9' from face	4.9	720.0	714.8 ^{C52}

Oct 13 - 1933

Stake at 4+08

B.M. 5.55 726.48 720.93

4+08 Toc 3.91 722.57 F 180

3+84 Toc 5.05 721.43 723.23

739.46
 - 733.46
 6.00°
 x .676
 4.056 31.61
 20.42 24.48
 24.48 7.13
 4.05

B.M. 6.46 727.39 720.93

3+84 -5.38 722.01 F 11.45 733.46

4+08 -3.93 723.46 F 10.0 733.46

B.M. 6.42 727.35 720.93

+ 12.11 739.46

Oct 14 - 1933

B.M. 2.76 741.10 738.34

12.93 728.17

2.08 730.25

Set B.M. 9.31 720.94

1.16 722.10

4+32 2.31 719.79 720.16 E.O.37

4+56 4.51 717.59 719.51 F.192

4+80 3.26 718.84 check 718.85

B.M. 1.91 751.78 749.87

3+60 - 3+36 5.62 748.16 9.24 742.54

3+36 - 3+60 +1.09 749.25

T.P. 4.86 747.40 742.54

+2.60 750.00

-3.98 743.42

8.78 752.20

B.M. 2.34 749.86 749.87

Oct 16 - 1933

B.M.	10.02 $\frac{1}{2}$	730.96 $\frac{1}{2}$		720.94
T.P.			2.70 $\frac{1}{2}$	728.26
	7.96	736.22		
3+84			+1.02	737.24 ^{F. 8$\frac{1}{2}$} 745.24
4+08			- 1.98	734.24 ^{F. 11$\frac{1}{2}$} 745.24
	9.42	737.68		728.26
4+08			+ 1.78	739.46
3+84			+ 1.78	739.46

B.M.	12.87	733.81		720.94
5+40			2.5	731.3 ^{216$\frac{1}{2}$ at 8$\frac{1}{2}$} 715.3
5+60			+ 3.4	737.2 ^{C24$\frac{1}{2}$ at 2$\frac{1}{2}$} 712.9

B.M.	11.36	722.30		720.94
4+56			2.79	719.51 ✓
4+44			2.47	719.83 ✓
4+32			2.14	720.16 ✓
4+20			1.81	720.49 ✓
4+08			1.48	720.82

Oct 18 - 1933

B.M.	2.62	752.49		749.87
T.P.	0.84	748.07	5.26	747.23
3+84+04+08			+1.18	749.25
T.P.	1.10	748.33		747.23
			+1.67	750.00
B.M.	4.15	725.09		720.94
4+56			3.83	721.26 ^{F. 1.71}
4+32			5.09	720.00 721.91

Oct 19

B.M.	2.51	723.45		720.94
4+32			3.29	720.16 ^{Check} 720.16
	2.24	724.05	1.64	721.81
			+ 0.41	724.46 ^{F. 11.92} 733.46

Oct 19-1933

B. M.	6.7	745.0	738.34	
3+00			7.1	737.9 723.8 C14
2+75			6.0	739.0 724.5 C14
2+50			5.4	739.6 725.2 C14
2+25			4.9	740.1 725.8 C14
1+75			5.2	739.8 727.2 C12
1+50			4.5	740.5 727.9 C12
1+25			3.3	741.7 728.6 C12
B. M.	2.55	752.42	749.87	
			19.44	732.98
	0.54	733.52	+0.94	734.46 F. 1150
4+32 to 4+56			+5.94	739.46

Oct 23-1933

76

B. M.	5.31	755.18	749.87	76 1.8 0.2"
T. P.			11.55	743.63
	11.65	755.28		
Crest 4+32 to 4+56			5.28	750.00
T. P.	7.42	751.05		743.63
4+32			7.47	743.58 748.33 F. 4.75
4+56			10.22	740.83 748.33 F. 7.50

Oct 24-1933

B. M.	2.45	752.32	749.87	
			12.31	740.01
1st panel	4.30	744.31	+0.93	745.24
T. P.	3.31	743.32		740.01
2nd panel			+5.93	749.25
T. P.	2.62	742.63		740.01
		40.83	+7.37	750.00
			2.62	740.01

Slope stakes No. side

Oct 24-1933

B.M.	6.88	745.22	738.34
3+00		+1.0	746.2 723.8
+25		-6.6	738.6 723.1
+50		3.9	741.3 722.4
+75		0.0	745.2 721.7
4+00		1.6	743.6 721.0
+25		6.6	738.6 720.4
+50		7.7	737.5 719.7
B.M.	5.14	755.01	749.87
0+50		1.6	753.4 730.63
1+00		1.1	753.9 729.3
1+25		4.5	750.5 728.6
1+75		4.0	751.0 727.2
2+25		4.5	750.5 725.8

B.M.

720.94

77

Oct 25-1933

B.M.	4.98	725.92	720.94
4+56		6.55	719.37 719.51
4+80		8.10	717.82 718.85 F.103

14
Tight

5- Tight

04- Tight

Final X sections
Oct 25-1933
Elliott-Soper McHugh

B.M. 3.56 724.50 720.94

T.P. 3.13 719.85 8.48 716.02

4+60 $\frac{13^6}{4}$ $\frac{13^E}{2}$ $\frac{5^6}{25}$ $\frac{4^6}{4}$ $\frac{3^E}{8}$ $\frac{3^8}{19}$ $\frac{3^L}{21}$ $\frac{3^3}{26}$ $\frac{4^4}{29}$ $\frac{2^6}{32^3}$

4+66 $\frac{13^E}{4}$ $\frac{13^E}{2}$ $\frac{5^6}{3}$ $\frac{4^6}{6}$ $\frac{5^E}{8}$ $\frac{4^E}{11}$ $\frac{4^L}{17}$ $\frac{4^2}{21}$ $\frac{3^8}{27}$ $\frac{4^0}{30}$ $\frac{2^2}{32^2}$

4+70 $\frac{13^2}{4}$ $\frac{13^2}{2}$ $\frac{5^4}{3}$ $\frac{4^2}{7}$ $\frac{4^2}{12}$ $\frac{5^3}{13}$ $\frac{5^L}{16}$ $\frac{5^L}{23}$ $\frac{3^8}{32^5}$

4+75 $\frac{13^0}{4}$ $\frac{13^0}{2}$ $\frac{6^0}{3}$ $\frac{5^2}{4}$ $\frac{4^4}{18}$ $\frac{5^2}{28}$ $\frac{3^8}{32^E}$

4+80 $\frac{12^6}{4}$ $\frac{12^6}{2}$ $\frac{6^L}{3^E}$ $\frac{5^0}{4^E}$ $\frac{4^2}{14}$ $\frac{5^2}{26}$ $\frac{3^8}{32^2}$

Check on 4+80 form 1.0 718.85 718.85

Final X sections
Nov. 4, 1933.

B.M. 2.37 726.49 724.12

4+85 $\frac{20^3}{4}$ $\frac{20^3}{2}$ $\frac{12^L}{3^E}$ $\frac{11^3}{15}$ $\frac{11^E}{25}$ $\frac{11^3}{30}$ $\frac{10^3}{32^E}$

726.49

4+95 $\frac{20^L}{4}$ $\frac{20^L}{15}$ $\frac{14^0}{3}$ $\frac{12^3}{5}$ $\frac{12^L}{15}$ $\frac{11^3}{21}$ $\frac{11^3}{29}$ $\frac{10^3}{32^E}$

Grout Holes

4+95 S 5+00 N

20 N 405 S

25 S 410 N

30 N

35 S

40 N

45 S

50 N

55 S -

60 N -

65 S -

70 N -

75 S -

80 N -

85 S -

90 N -

4+95 S -

Grout Holes in Spillway

0+00 N	1+05 S ✓	2+10 N	3+10 N
+05 S	+10 N ✓	15 S	15 S
+10 N	+15 S ✓	20 N	20 N
+15 S	+20 N ✓	25 S	25 S
+20 N	+25 S ✓	30 N	30 N
+25 S	+30 N ✓	35 S	35 S
+30 N	+35 S ✓	40 N	40 N
+35 S	+40 N ✓	45 S	45 S
+40 N	+45 S ✓	50 N	50 N
+45 S	+50 N ✓	55 S	55 S
+50 N	+55 S ✓	60 N	60 N
+55 S	+60 N ✓	65 S	65 S
+60 N	+65 S ✓	70 N	70 N
+65 S	+70 N ✓	75 S	75 S
+70 N	+75 S ✓	80 N	80 N
+75 S	+80 N ✓	85 S	85 S
+80 N	+85 S ✓	90 N	90 N
+85 S	+90 N	2+95 S	3+95 S
+90 N	+95 S	3+00 N	4+00 N
+95 S	2+00 N	+05 S	4+05 S
1+00 N	+05 S		4+10 N

34°16'
128.0

5+10
3+60
150

4+08 —
4+56 —
10
5+04 —

Cont. Previous Page

TABLE IX.—CALCULATION OF EARTHWORK.

Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if $w=16.2$ and $h=5.3$, cu. yds. $=1.48+.028+.089=1.597$ cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one half and multiply result by 2, if both w and h are large use one half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) $=h$, and $\frac{1}{2}$ the roadbed $=w$, add the triangles formed by taking the distance out to each break in turn ($=w$'s) by the difference between the cuts (or fills) on each side of it ($=h$'s) always subtracting the outer from the inner.

24/192
192

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1 1/2
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	II
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 $41.9+(20-16)+2$ or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.