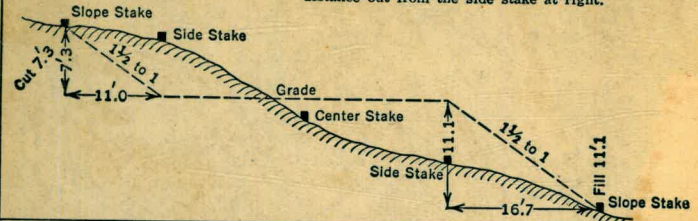


W887

CROSS-SECTIONS

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING
Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake										Cut or Fill
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

MICROFILMED

KEUFFEL & ESSER CO., N. Y.
 For Curve Tables see end of book.

1940
 7.25 E
 6.28 E
 7.10 W
 9-10

Book #1

SPILLWAY X-SECTIONS



The paper in this book No. F364A
 is made of 50% high grade rag stock
 with a WATER RESISTING surface sizing.

883

1-2	X-Sections on #15 Buttress		
13-18	X-Sections on #5 Buttress		
22-23	Spillway Slab X-Sections	L-890 - L-920.5 D-1012 - D-1042	
24-25	Spillway Slab X-Sections	L-890 - L-920.5 D-952 - D-982	
26-29	Spillway Slab X-Sections	L-890 - L-920.5 D-892 - D-952	
30-31	Spillway Slab X-Sections	L-890 - L-920.5 D-982 - D-1012	
32-35	Spillway X-Sections	L-993.5 - L-1043.5 D-991 - D-1051	+
36-37	Spillway X-Sections	L-800 - L-830 D-1012 - D-1042	
38	Spillway X-Sections	L-890 - L-920.5 D-882 - D-892	
39	Spillway X-Sections	L-890 - L-920.5 D-1042 - D-1052	
40-43	Spillway X-Sections	L-920.5 - L-950.5 D-892 - D-1002	
44	Spillway X-Sections	L-993.5 - L-1043.5 D-963.5 - D-991	+
45-49	Spillway X-Sections	L-993.5 - L-1026 D-883 - D-955	
50-57	Spillway X-Sections	L-980 - L-993.5 D-1051 - D-883	
58-59	Spillway X-Sections	L-920.5 - L-950.5 D-1002 - D-1052	
60	Spillway X-Sections	L-920.5 - L-950.5 D-882 - D-892	
61-66	Spillway X-Sections	L-950.5 - L-980 D-882 - D-1052	
67	Spillway X-Sections	L-800 - L-890 D-1042 - D-1052	
68	Spillway X-Sections	L-802.5 - L-803.5 D-1052 - D-1063.5	
69	Future Piers #2 & #3 in Spillway X-Sections		
71	X-SECTION AREA SOUTH	11-10	
74	PROGRESS OUT LET WORKS		ARCH

①
Sta. + π - Elev.
[] 3.60 2017.82 2014.22

L-988⁹
91

Dist
Rod
Elev.

L-998

L-1012

L-1030

L-1039³

L-1039²

L-1043⁶

X-Sections on # 15 Buttress
24-March 1953
Soyster - π & Tape
Locker - π & Notes

Pk. on West side of # 14 Buttress @ L-1010⁺
East or left $\frac{\pi}{2}$ West or Rt.

^{2.5} 0
5.75 5.75 5.70 ✓ AVEN
2012⁰⁸ 2012⁰⁸ 2012⁰⁸ 2012⁰⁸

^{5.5} 0
5.86 5.86 5.86 ✓ 96
2011⁹⁶ 2011⁹⁶ 2011⁹⁶ 2011⁹⁶

^{2.5} 0
6.31 6.32 6.27 ✓ 52
2011⁵¹ 2011⁵⁰ 2011⁵⁵ 2011⁵²

^{2.5} 0
8.21 8.20 8.27 ✓ 59
2009⁶¹ 2009⁶² 2009⁵⁵ 2009⁵⁹

^{2.5} 0
8.31 8.33 8.35 ✓ 49
2009⁵¹ 2009⁴⁹ 2009⁴⁷ 2009⁴⁹

^{3.0} 0
9.13 9.13 9.27 ✓ 50
2008⁶² 2008⁶² 2008⁵⁵ 2008⁵⁰

^{3.0} 0
9.68 9.72 9.90 ✓ 06
2008¹⁴ 2008¹⁰ 2007⁹² 2008⁰⁰

Continued on page 2

② X-sections on # 15 Buttress

Sta. + π - Elev.

2017.82

L-1053⁵

L-1056⁵

L-1058

1061

□

3.60 2014.22 (2014.22)

24-March 1954
Continued from page 1

③

East

West

5.2
9.80

0
9.86

5.2
9.60

2008⁰²

2007⁹⁶

2008²²

2008¹⁰⁰⁴

6.42
9.65
2008¹⁷

0
9.52
2008³⁰

6.42
9.64
2008¹⁸

2008²⁰²⁴

0
9.50
2008³²

2008³²

0
9.26
2008⁵⁶

2008⁵⁶

P.K. on West side # 14 Buttress

5535¹⁹ CF
70 + 2024
= 205 CYS
203.65 C.Y.

③

Sta. + π - Elev.

④

The right page of the notebook features a large grid of 20 columns and 20 rows. A vertical red margin line is positioned on the left side of the grid, approximately one-fifth of the way across the page. The grid is otherwise empty.

④

Suth Dgm
Y-Septs Abt. Excav. #2

T.B.M	12.73	2021.75		2009.02
T.P	12.38	2033.91	0.22	2021.53
T.P	8.05	2039.73	2.23	2031.66

L974
D1140 X-septs. taken West to East - D-1140 Baseline

L984

2

Axis



L1000

L1030

L1040

L1050

0.47	2027.90	12.30	2027.43
7.81	2022.84	12.87	2015.03
11.47	2033.01	12.30	2010.54
	13.06	2008.95	= 2009.02

Front 1055 So. Drag Line Working

King 3-30-52

④

		20341	20334	20341		
		5.3	6.3	5.2		
		D-1114	D-1124	D-1140		
20346	2008Z	2008Z	2022I	20345	20352	
5.1	31.0	31.0	17.0	5.2	4.5	
D-1108	D-1116	1124	D-1125	D-1132	D-1140	
20345	20045	20049	2029Z	20353	20362	
5.2	35.2	34.8	10.0	4.4	2.8	
D-1107	D-1116	D-1122	D-1129	D-1135	D-1140	
2031Z	2005Z	2005Z	2021Z	2032Z	2034Z	
8.0	34.6	34.0	18.5	7.0	5.0	
D-1160	D-1113	D-1122	D-1125	D-1135	D-1140	
	2027Z	2009Z	2009Z	2026Z	2028Z	
	12.7	30.5	30.0	13.7	11.7	
	D-1112	D-1114	D-1126	D-1132	D-1140	
	2024Z	2007Z	2007Z	2027Z	2026Z	
	15.0	32.4	32.0	17.5	13.2	
	D-1107	D-1110	D-1128	D-1131	D-1140	

(5)

South Dam x sect

Abt Ex #3

+ Hi - Elev

5.08 2014.10 2009.02

L 960
D 1200

L 975
D 1200

L 990
D 1200

L 1010
D 1200

L 1030
D 1200

L 1050
D 1200

L 1060
D 1200

5.08 2009.02 = 2009.02

Franklin Co - South - Excavation still going on

Kings
West
Williams
Kemp
Karonafakis

March 30, 53

(5)

♀ Butt - D 1180

2008 ^E 5.3 D 1177	2003 ^E 11.1 D 1178	2003 ^L 11.0 D 1185.5	2008 ^L 5.4 D 1178	2008 ^L 5.4 D 1200	
2008 ^L 6.0 D 1173	1986 ^E 37.2 D 1177	1987 ^L 37.0 D 1183.6	2002 ^L 13.0 D 1186	2008 ^E 5.9 D 1191	2009 ^E 4.9 D 1200
2008 ^E 5.5 D 1168	1981 ^E 32.6 D 1176	1981 ^L 33.0 D 1184	2003 ^L 11.0 D 1186	2008 ^E 5.9 D 1190	2009 ^L 4.7 D 1200
2009 ^E 4.9 D 1172	1982 ^E 31.2 D 1176.5	1982 ^E 31.2 D 1185	2006 ^L 8.0 D 1186.5	2008 ^E 5.2 D 1190	2009 ^E 4.9 D 1200
2009 ^L 4.7 D 1171	1983 ^E 30.5 D 1177	1983 ^L 31.0 D 1183	1999 ^L 15.0 D 1185.5	2009 ^E 4.9 D 1190	2008 ^E 5.5 D 1200
2007 ^L 7.0 D 1169	1981 ^E 32.3 D 1175	1981 ^E 32.5 D 1186	2002 ^E 11.5 D 1187	2006 ^L 7.2 D 1192.5	2006 ^L 7.2 D 1200
2006 ^E 7.6 D 1165	2000 ^L 14.0 D 1173	1985 ^L 28.0 D 1177	1985 ^L 28.0 D 1186	2006 ^L 8.0 D 1188	2005 ^E 8.3 D 1200

6

Suth. Dam.

Rough

X-sections - Plot # 4

TBM 5.18 1994.66

1989.48

L945
D1257

L960

D1258
L995

D1255
~~L1012~~

D1251
L1045

D1250
L1073

5.18 1989.48

From L1025 - So. Dragline working

3-31-82

6

19864 9.3 D1231	19856 9.1 D1240	19853 8.0 D1258
-----------------------	-----------------------	-----------------------

19887 6.0 D1222	19625 32.2 D1237	19627 32.0 D1245	19727 22.0 D1245	19848 9.9 D1250
-----------------------	------------------------	------------------------	------------------------	-----------------------

19897 5.0 D1229	19557 39.8 D1234	19566 38.1 D1244	19872 7.5 D1252
-----------------------	------------------------	------------------------	-----------------------

19896 5.4 D1232	19637 31.0 D1236	19633 31.4 D1244	19887 6.0 D1250
-----------------------	------------------------	------------------------	-----------------------

19947 0.0 D1220	19597 35.0 D1235	19592 35.5 D1246	19906 4.1 D1245	19917 3.9 D1250
-----------------------	------------------------	------------------------	-----------------------	-----------------------

(7)

S4th. D9m.
x-sec - Hgt. # 5

T.B.M. 4.4/ 1974.02

1969.61

L-942
1315-D

L955

L962.7

L978

L994.8

CONC. APPROX - 17' DEEP

L1025

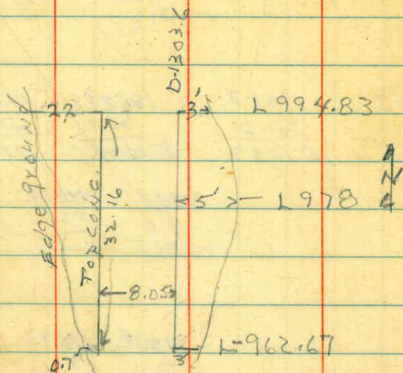
L1040

L-1061

L1100

CKB/M

4.11 1969.61



3-3-83

(7)

1967⁵ 1966³ 1966⁴

6.4	7.7	7.6
D-7291	D-1307	D-1315

1968 ⁹	1937 ²	1936 ⁵	1966 ²	1966 ⁴
6.0	37.0	37.5	8.0	7.6
D-1297	D-1297	D-1307	D-1310	D-1315

1968 ⁹	1954 ⁷	1936 ⁵	1936 ⁵	1938 ²	1954 ⁷	1954 ⁷	1966 ²	1967 ⁶
6.0	19.3	37.5	37.5	36.0	19.3	19.3	7.2	6.4
D-1297	D-1297	D-1297	D-1297	D-1307	D-1307	D-1307	D-1310	D-1315
	Top CONC.		G.H.	Bottom CONC.		Top CONC.		

1968 ⁹	1954 ⁷	1954 ⁷	1928 ¹	1928 ⁴	1954 ⁷	1954 ⁷	1968 ¹	1969 ²
6.0	19.3	19.3	45.9	45.6	19.3	19.3	5.9	5.0
D-1297	D-1297	D-1297	D-1307	D-1307	D-1307	D-1307	D-1310	D-1315
	Top CONC.		G.H.	G.H.	Top CONC.			

1968 ⁹	1954 ⁷	1954 ⁷	1937 ²	1937 ²	1954 ⁷	1954 ⁷	1969 ³	1969 ³
6.0	19.3	19.3	36.3	36.3	19.3	19.3	4.7	4.7
D-1297	D-1297	D-1297	D-1297	D-1307	D-1307	D-1307	D-1314	D-1315
	Top CONC.			Top CONC.	Top CONC.			

1968 ⁸	1944 ⁶	1945 ²	1967 ²	1968 ⁷
6.2	29.4	29.0	7.0	5.3
D-1295	D-1298	D-1306	D-1309	D-1315

1974 ²	1948 ²	1948 ⁵	1969 ⁶	1969 ²
0.0	26.0	25.5	4.4	5.0
D-1293	D-1297	D-1305	D-1308	D-1315

1973 ²	1942 ⁵	1942 ²	1968 ⁴	1969 ³
1.0	31.5	32.0	5.6	4.7
D-1292	D-1297	D-1306	D-1311	D-1315

1974 ²	1942 ²	1942 ²	1970 ⁴	1970 ³
0.0	32.0	31.1	3.6	3.7
D-1297	D-1296	D-1307	D-1311	D-1315

8

9

A grid of 20 columns and 20 rows on a graph paper page. The grid is formed by light blue lines. A vertical red margin line is located on the left side of the grid, approximately one-fifth of the way across the page. The grid is otherwise empty.

9

9

Party

Soyster

Locker

Trash Rack

Walls

Halsted

X Sections

2-19-53

⑪

X Sections Batt. # 7

3-2-53

⑪

Party:
Locker
Wells
Hulstad

Sta.	+	X	-	Elev.
112	6.32	1922.88		1916.56
1120.8				
1123				
1124.5				
1126.7				
1126.7				
1130				

East	±	West			
	(1922.88)				
4.25	0	4.25			
2.14	2.14	2.15			
1920.74	1920.74	1920.73			
4.3	0	4.3			
1.89	1.91	1.97			
1920.99	1920.97	1920.91			
4.3	0	4.3			
2.12	2.15	2.24			
1920.76	1920.73	1920.64			
4.3	0	4.3			
2.12	2.15	2.19			
1920.76	1920.73	1920.69			
4.3	0	4.3	1	3	4.3
2.79	3.63	4.63	4.63	4.64	4.42
4.3	1.6	0	1.3	3.5	4.3
2.79	3.64	3.55	3.57	4.50	4.21
1920.09	1919.24	1919.33	1919.31	1918.38	1918.67

(12)

Sta.	+	-	Elev.
1132		1922.88	
1135			
1136.5			
1143			
1145			
1149			

(12)

East		±	West	
4.3	2	0	2.4	3
3.90	4.15	4.90	4.93	4.21
1919.49	1918.73	1917.98	1917.95	1918.67
				1918.94
	4.4	0	2	38
	4.49	4.85	5.14	5.62
	1918.39	1918.03	1917.74	4.4
				4.44

13 X-Sections on # 5 Buttress
Sta. + \wedge - Elev.

□	2.4	1972.0		1969.61
Top Bank				
943 ^h ₃ ^l	Zero	Section		
□	4.45	1974.06		1969.61
□	3.2	1937.2		1934.0
□	16.0	(1962.0)		1946.0
954 ^h ₃ ^l				(1967.0) + 6 8 + 2.0 1967.0 } 1964.0
960.4	Cut in point for North Toy			(1967.0) (1962.0) (1974.1) } 8.4 14.8 + 4.8 10 59.3 42.0 0.0 + 2.0 1967.0 } 1964.0
968				(1967.0) (1962.0) } 1.0 } 6.3 5.5 0.0 } 0.0 2.3 67.0 } 62.0 59.7
971	0.0	1934.0	3.2	1934.0 } (1974.1) 8 11.3 62.8
□	12.0	1967.0		1955.0

16-April 1953
Weather - Fair

S
E + W
N
Locker
Halstead
Ingersoll
Murphy

13

0 = # 5 Buttress = D - 1300

				(1972.0)
				5.6
				1971.5 1966.4
				(1962.0) (1937.2) (1962.0) (1967.0)
				4 } + 5.2 4.3 0 4.5 4.8 } 4 } 9 0.0 } + 6.9 2.2 2.6 2.4 + 5.8 } 0.0 } 0.0 1962.0 } 41.1 35.0 1933.6 34.8 43.0 } 1962.0 } 67.0
				(1937.2)
				5.9 4.7 4.3 2.5 0 4.4 5.2 5.4 5.8 } + 2.2 + 1.0 2.5 3.6 3.2 2.1 0.9 + 2.1 + 8.0 } 39.4 38.2 34.7 33.6 1934.0 35.1 36.3 39.3 45.2 } 1937.2 } (1974.1) } 7.4 18.6 } 66.7 62.5 }
				(1937.2)
				5.3 } + 4.5 3.4 0 4 6.2 } (1962.0) 7.0 } + 0.3 5.7 6.0 6.5 + 0.5 } 8 10 1955.0 } 37.5 31.5 1931.2 30.7 37.7 } 7.0 + 5.0 } 55.0 67.0 }
				(1934.0) (1974.1)
				4.4 3.7 2.7 1.1 0 4.2 5.5 } 9 12 + 3.5 3.7 4.0 6.6 6.7 5.5 + 3.6 } 7.7 5.5 } 37.5 30.3 30.0 27.4 1927.3 28.5 37.6 } 66.4 68.6 }

(14) Sta. +

1934.0

1967.0

Elev.

(1967.0)

974

11	8.3
+2.0	11.0
69.0	66.0

982

(1967.0)	(1974.1)
12	9
0.0	10.8
67.0	63.3

984.8

(1967.0)	(1967.0)
13	9
0.0	6.2
67.0	63.0
	55.0

990.5

(1967.0)	(1974.1)
13	8
0.0	13.3
67.0	60.8

0.0 1941.4

1941.35

992.8

(1967.0)	(1967.0)
14	10
0.0	4.0
67.0	63.0

995

(1959.2)	(1959.2)
9.6	9.6
+4.0	
63.2	

8.2 1959.2

1951.0

#5 Buttress
Page 13 for party

E	S	W
	N	

16-April 1953

(14)

(1934.0)	(1967.0)
6.4	4.5
12.0	4.0
55.0	0
	3.9
	5.8
	+3.5
	37.5
	28.0
	1927.2
	27.2
	8.4
	10.5
	12.0
	+2.0
	55.0
	69.0

(1934.0)	(1974.1)
5.5	4.3
+3.5	5.4
37.5	3
	10.2
	10.6
	10.3
	+3.5
	37.5
	1923.4
	23.7
	10.5
	15
	5.9
	4.9
	68.2
	69.2

(1934.0)	(1967.0)
6.2	5.1
+3.5	5.9
37.5	3
	2.8
	10.3
	10.8
	10.7
	10.0
	+3.5
	37.5
	1923.3
	24.0
	7.6
	8.1
	12.0
	4.0
	55.0
	63.0

(1934.0)	(1974.1)
5.7	5
+3.0	5
37.0	7.7
	7.8
	5.2
	+3.5
	37.5
	1926.2
	28.8
	10
	13
	10.0
	4.9
	64.1
	69.2

(1941.4)	(1967.0)
8	5.2
12.0	3.9
55.0	2.3
	0
	3
	4.3
	4.3
	4.2
	0.0
	4.4
	4.1
	1934.4
	34.1
	37.2
	6.4
	12.0
	55.0

(1941.4)	(1959.2)
9.6	9.6
13.7	6.1
45.5	4.8
	0
	4.3
	4.4
	10.6
	2.2
	1.1
	39.2
	40.3
	1935.8
	35.4
	9.8
	9.8
	13.7
	+4.0
	45.5
	63.3

(15)

Sta. +

1941.4

1959.2

Elev.

1000.6

1003.5

1008

T.P. 6.2 1947.6 0.0 1941.4

1009.7

1020

1021.5

T.P. 5.2 1952.8 0.0 1947.6

(1959.2)

7.7	8.6
+2.1	7.3
61.3	51.9

(1959.2)

8.0	5.8
+3.5	4.2
62.7	63.4

(1974.1)

8
10.3
63.8

(1959.2)

8
+10.6
69.8

#5 Buttress Page 13 for party

E S W N

16-April '53

(15)

(1974.1) (1941.4) 1974.1

10	9.8	7.9	5.3	0	3.1	3.9	9.8	9	11.5
12.1	0.0	0.0	4.5	4.5	4.7	2.0	2.2	10.2	8.6
62.0	41.4	41.4	36.9	1936.9	36.7	39.4	39.2	63.9	65.5

(1941.4) (1959.2)

6.4	6.4	6.4	4.9	0	3.9	5.5	6.5	8.5
13.7	+5.4	+0.4	3.3	3.1	3.3	+1.0	+9.0	+2.8
45.5	46.8	41.8	38.1	1938.3	38.1	42.4	50.4	63.0

(1941.4) (1959.2)

5.8	5.1	4.5	0	4.5	5.2	6.9	7.5
+5.8	+0.5	2.8	2.9	2.7	+5.4	8.9	0.0
47.2	41.9	38.6	1938.5	38.7	46.8	50.3	59.2

(1947.6) (1974.1)

4.8	4.8	0.9	0	4.2	5.3	5.7	7.5
+0.9	5.0	6.2	6.2	5.5	2.6	0.0	10.5
48.5	42.6	41.4	1941.4	42.1	45.0	47.6	63.6

(1974.1) (1947.6) (1974.1)

8	5.3	4.1	0	4.3	4.5	6.5	13.5
4.5	3.2	5.0	5.0	4.5	0.0	10.4	5.5
169.6	44.4	42.6	1942.6	43.1	47.6	63.7	68.6

1947.6 (1959.2)

4.5	5.2	3.9	0	3.5	4.3	4.5	7.5
+4.7	1.9	5.0	4.7	4.6	1.7	+2.3	+6.0
52.3	45.7	42.6	1942.9	43.0	45.9	49.9	65.2

13.5
4.8
69.3

8.5
+2.8
63.0

+4.0
63.2

14.5 12.5
4.8 7.4
67.3 66.7

(1974.1)
6.5 13.5
10.4 5.5
63.7 68.6

(16)

1952.8

Sta. +

+

-

Elev.

1959.2

1023

(1959.2)

8
+10.0
69.8

BULKHEAD @ 1023

1030

1040

1050

1055 G

1060

T.P. 6.0 1946.0 12.8 1940.0

□ 4.0 1946.0 4.0 1942.0

5 Buttress

Page 13 for party

E S
N W

16-April 1953

(16)

		(1952.8)					(1959.2)	
		4.3	5.1	0	3.6	4.5	7.5	
		1.0	7.0	8.0	7.3	0.0	+6.0	
		51.8	45.8	944.8	45.5	52.8	65.2	

	(1974.1)	(1952.8)						(1974.1)
	6	4.1	4.4	0	1.7	3.4	4.0	8.5 12
	1.7	0.0	5.5	5.9	6.0	4.9	0.0	6.6 5.2
	72.4	52.8	47.3	1946.9	46.8	47.9	52.8	67.5 68.9

	(1974.1)	(1952.8)					(1974.1)
	7.5	5.4	4.3	0	4.3	4.6	7 15
	1.0	0.0	4.7	5.0	5.6	+1.0	4.4 5.0
	73.1	52.8	48.1	1947.8	47.2	53.8	69.7 69.1

	(1974.1)	(1952.8)								(1974.1)		
	12	10.6	10.4	8.5	5.5	4.6	0	4.5	4.8	8.0	8.0	8.0
	2.6	+2.0	3.6	5.5	5.1	5.8	6.4	5.8	4.9	4.6	+2.0	2.0
	71.5	57.8	49.2	47.3	47.7	47.0	1946.4	47.0	47.9	48.2	52.8	69.3
												15 8.8
												4.8 5.4
												69.3 68.7

	(1974.1)	(1952.8)								(1974.1)
	10.5	10	9.6	7	0	5	8	8	9.3	1974
	9.1	0.0	5.0	6.8	7.8	7.5	4.0	1.0	1.8	8.7
	65.0	52.8	47.8	46.0	1945.0	45.3	48.8	51.8	51.5	9.1
										65.0

	(1974.1)	(1952.8)					(1974.1)	
	8	6	3.4	0	5	5	8.5 10.3	
	3.2	0.0	7.5	10.0	9.7	9.0	6.6 5.2	
	70.9	52.8	45.3	42.8	94 3.1	43.8	49.8	67.5 68.9

15
4.7
69.4

(17)

1946.0

Sta. + \uparrow - Elev.h
1063h
10685h
1070h
1080h
1090h
1100# 5 Buttress
page 13 for partyS
E — W
N

16-April 1953

(17)

(1946.0)				
G.5	4.5	0	3.3	4.7
0.0	6.0	6.0	5.4	0.0
46.0	40.0	1940.0	40.6	46.0

(1946.0)					
6.3	4.3	0	3.8	5.0	5.2
0.0	5.3	5.5	5.3	2.2	0.0
46.0	40.7	1940.5	40.7	43.8	46.0

(1946.0)							(1974.1)
6.4	4.8	4	0	3.3	4.6	5.7	11.7
+0.2	0.4	3.5	4.1	4.5	3.5	0.0	2.0
46.2	45.6	42.5	1941.9	41.5	42.5	46.0	67.1
							15 5.0 69.1

(1946.0)								(1974.1)
5.4	5.2	4	0	4.5	5.5	8	8.5	13
0.0	1.7	4.4	5.0	4.8	0.5	+0.9	8.6	4.8
46.0	44.3	41.6	1941.0	41.2	45.5	46.9	65.5	69.3

(1946.0)							
5	4.5	1	0	3	4.6	4.8	6
0.0	2.4	4.0	4.2	5.2	4.4	1.3	0.0
46.0	43.0	42.0	1941.8	40.8	41.6	44.7	46.0

(1946.0)							
5	4.8	3.8	0	4.3	4.5	6.2	6.2
0.0	1.2	4.2	4.0	4.0	2.0	1.6	0.0
46.0	44.8	41.8	1942.0	42.0	44.0	44.4	46.0

(1974.1)		
15	11	7
3.1	3.8	9.2
71.1	70.3	64.9

(1974.1)
9
1.5
72.6

(1974.1)
11
0.0
74.1

(1974.1)
11
3.0
71.1

(1974.1)
10
5.4
68.7

(18)

1946.0

Sta. + Δ - Elev.h
1105.4h
1110h
1110_G h-1110_G same as h-1110h
1120

Note Will finish X-Sections on South
When excavation in 4-5 ring is complete.

Note see Book #2
for remaining sections

5 Buttress
page 13 for partyS
E | W
N

16-April 1953

(18)

(1974.1)				(1946.0)				(1974.1)
11.2	10.0	5.3	3.3	0	4.6	6.2	9.4	10.3
9.1	+2.5	1.1	4.0	4.5	3.8	0.4	+2.0	3.6
65.0	48.5	44.9	42.0	1941.5	42.2	45.6	48.0	70.5

				(1946.0)				(1974.1)
	9.8	6.7	5	0	4.8	4.8	9.4	10.5
	+1.9	1.1	4.0	4.9	4.0	+0.5	+0.2	3.4
	47.9	44.9	42.0	1942.4	42.0	46.5	46.2	70.7
				(41.4)				15
								2.5
								71.6

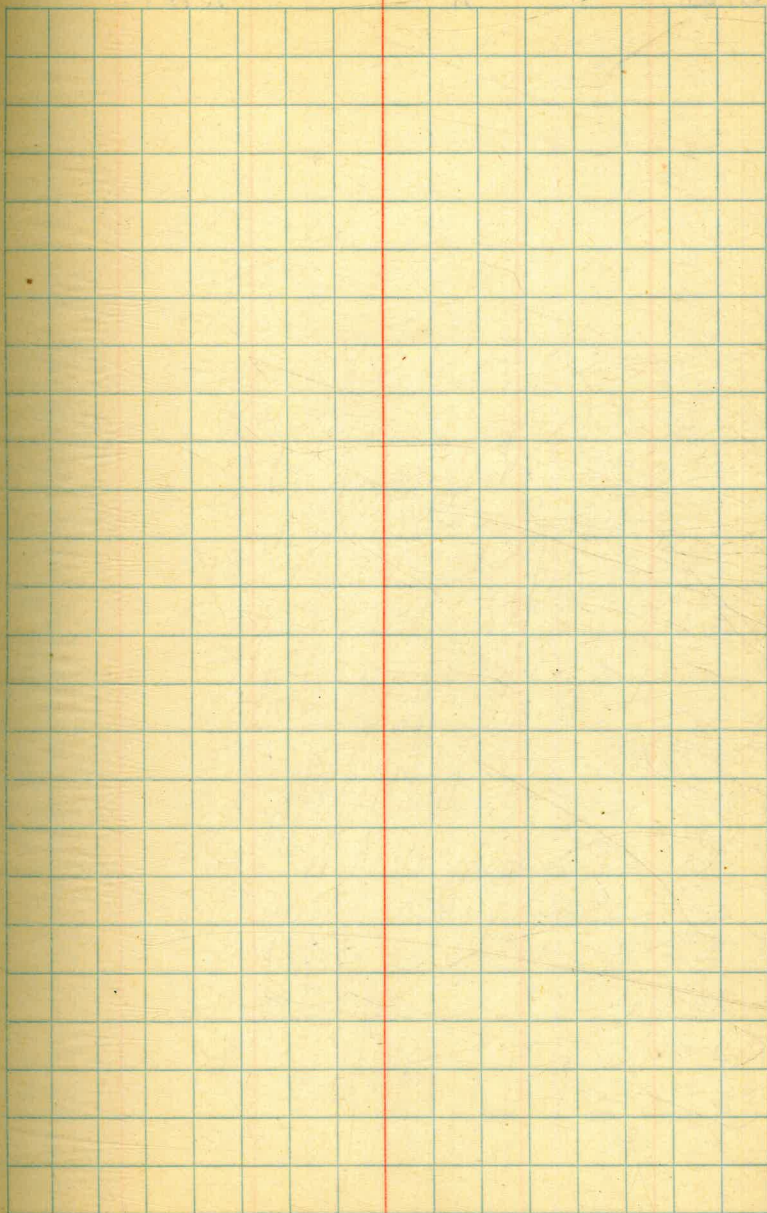
				(1946.0)				(1974.1)
	7.2	6.5	3.3	0	5.6	5.7	10	15
	+2.1	1.1	4.6	4.9	4.6	0.0	13.0	10.0
	48.1	44.9	41.4	1941.1	41.4	46.0	63.1	64.1

Plotted 5-15-53
JJB

(20)

Sta. + ∇ - Elev.

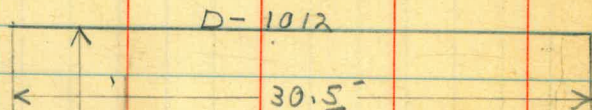
(20)



(22) X-Sections on Spillway Slab.
Sta. + π - Elev.

D 1.15 2045.55 2044.40

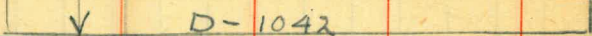
D
1012



D
1017



D
1022



D
1027

Continued on page 23

L-890 = 0 E Working South (22)
to L-920.5 = 30.5

17-April 1953 - Locker, Ingersoll & Murphy

N — S
E — W

(2045.55)

0	3.9	5.9	8.5	10.0	12	15.5	20	22
9.5	8.3	9.8	8.7	9.0	8.2	7.3	7.4	7.8
36.0	37.7	35.7	36.8	36.5	37.3	38.2	38.1	37.7

30.5 20.6
6.0 6.3
39.5 39.2

(2045.55)

0	4	8.8	12.4	16.7	21.4	24.7	28
8.6	9.4	9.7	7.7	7.7	7.1	6.4	6.0
36.9	36.1	35.8	32.8	32.8	38.9	38.1	39.5

30.5
6.1
39.9

(2045.55)

0	2.1	6	10	13	15.6	20.5	23.8
8.7	9.3	9.0	9.4	7.2	8.2	6.8	6.4
36.8	36.2	36.5	36.1	38.3	32.3	38.7	39.1

30.5 28.4
6.1 6.8
39.7 38.7

(2045.55)

0	4.3	7.4	9	12	17.3	20
9.2	8.7	8.8	9.3	7.4	6.9	7.6
36.3	36.8	36.7	36.2	38.1	38.1	37.9

30.5 27.5 23.7
6.3 6.3 6.5
39.2 39.2 39.0

(23) Continued from page 22

Sta. + Δ - Elev.
D
1032 2045.55

D
1037

D
1042

Cont'd page 24

(23)

(2045.55)

0	3.4	5.8	9.8	10.5	15	18.6
9.9	9.9	9.1	8.6	7.5	7.7	6.8
35.7	35.7	36.5	37.0	38.1	37.9	37.7
				30.5	26.8	23
				6.1	6.0	7.1
				37.7	37.5	38.4

(2045.55)

0	5.4	10	13.2	14.8	19.2	23.2
9.5	9.1	8.7	8.3	6.9	7.0	6.5
36.1	36.5	36.9	37.3	38.7	38.6	39.1

30.5	26.4
5.8	6.1
37.8	37.5

(2045.55)

0	5.5	9.5	13.5	19.4	23
10.0	9.1	8.9	7.2	6.6	6.6
35.5	36.5	36.1	38.3	39.0	39.0

30.5	26.2
6.5	6.0
2039.1	37.6

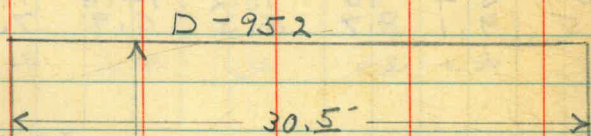
(24) X-Sections on Spillway Slab.

Sta. + ∇ - Elev

2045.55

D
952

9. D
955



D
957

L-890

30'

L-920.5

D
962

D
967

V D-982

Continued on page 25

L-890 = 0 & working South to L-920.5 = 30.5

Page 22 for party (24)

E
N — S
W

(2045.55)

0	2.5	5.8	10.6	15.7	21	26	30.5
9.9	8.2	8.3	7.4	8.8	6.1	5.8	6.2
38.6	37.3	37.2	38.1	36.7	39.4	39.7	39.3

(2045.55)

0	2.9	6.5	8.4	11.5	16.7	18.6	23
9.4	8.1	7.7	8.5	7.9	9.4	6.5	6.3
38.1	37.4	37.8	37.0	37.6	36.1	39.0	39.2

30.5 27
6.7 5.6
39.8 39.9

(2045.55)

0	2.5	6.3	9.8	14.3	17.5	20.5
9.8	8.6	8.0	8.0	6.7	6.7	6.0
38.7	36.9	37.5	37.5	38.8	38.8	39.5

30.5 26
7.1 5.7
38.4 38.8

(2045.55)

0	4.9	8.7	10.7	16.3	21.4	26.6	30.5
9.3	8.9	9.5	7.1	7.2	6.8	6.3	7.3
38.7	38.6	38.0	38.8	38.3	38.7	39.2	38.2

(2045.55)

0	4	8	12	18	25	30.5
10.0	8.1	8.7	7.0	6.6	6.9	6.5
38.3	37.8	38.0	38.5	38.9	38.6	39.0

(25)

Continued from page 24

Sta.	+	∧	-	Elev.
D 972		2045.55		

D
977

D
982

(25)

(2045.55)

0	2.3	8.5	11.5	15.8	20.4	24
9.8	8.4	8.6	7.1	6.5	6.1	6.7
35.7	37.1	36.9	38.2	38.0	38.4	38.8

30.5	27
6.3	5.8
39.2	39.7

(2045.55)

0	2.6	3.8	8.6	12.3	18.7	26.1
8.7	9.2	9.6	8.0	7.5	6.6	5.6
35.8	36.3	36.9	37.5	38.0	38.9	39.9

30.5
6.3
39.2

(2045.55)

0	4.7	8.7	11.5	18.7	26	30.5
8.4	8.5	8.2	6.9	6.4	5.7	6.5
37.1	37.0	37.3	38.6	39.1	39.8	39.0

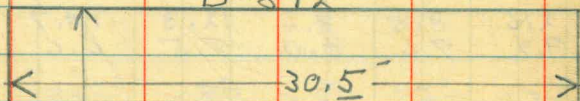
(26) X-Sections on Spillway Slab

Sta. + π - Elev.

D 0.77 2045.17 2044.40

D
892

D-892



D
897

L-890

30

L-920.5

D
902

D-922

D
907

L-890 = 0.8 working South to L-920.5 = 30.5 (26)

N
E
S
W

22-April '53 Lecker, Halstead, Murphy & Ingersoll

(2045.2)

0	1.2	2.0	4.0	6.0	11.0	15.0	16.0	20.0
7.9	8.5	7.9	7.8	8.8	6.9	6.9	6.1	6.1
37.3	36.7	37.3	37.4	36.4	38.3	38.3	38.1	2039.1

30.5
5.6
2039.6

(2045.2)

0	5.0	9.0	11.5	16.5	18.5	25	30.5
8.4	7.9	8.4	6.7	7.1	6.0	5.8	5.5
36.8	37.3	36.8	38.5	38.1	39.2	38.4	38.7

(2045.2)

0	2.0	9.5	10.0	15.0	16.5	17.5	21.0
8.3	7.7	7.6	6.9	7.0	6.2	6.6	6.5
36.9	37.5	37.6	38.3	38.2	38.0	38.6	38.7

30.5 21.5
6.0 5.8
38.2 38.4

(2045.2)

0	2.5	3.5	8.5	11.5	14.0	22.5	27.0
8.1	8.5	7.7	7.6	6.7	7.2	5.8	5.5
37.1	36.7	37.5	37.6	38.5	38.0	38.4	38.7

30.5
5.8
38.4

Continued on page 27

(27)

Continued from page 26

Sta. + \wedge - Elev.D
912 2045.17D
917D
922

(27)

(2045.2)								
0	3.0	4.0	5.5	8.5	9.5	15.0	17.0	
8.2	8.2	7.4	8.1	8.0	7.0	6.5	7.3	
37.0	37.0	37.8	37.1	37.2	38.2	38.7	37.9	

30.5	25.5	21.5	
6.3	6.0	6.1	
38.9	39.2	39.1	

(2045.2)

0	1.0	2.0	4.0	8.5	10.0	14.0	15.5	
8.1	8.4	7.9	7.6	8.8	7.4	7.3	6.2	
37.1	36.8	37.3	37.6	37.4	37.8	37.9	39.0	

30.5	22.0	17.5	
5.9	6.7	6.9	
39.3	38.5	38.3	

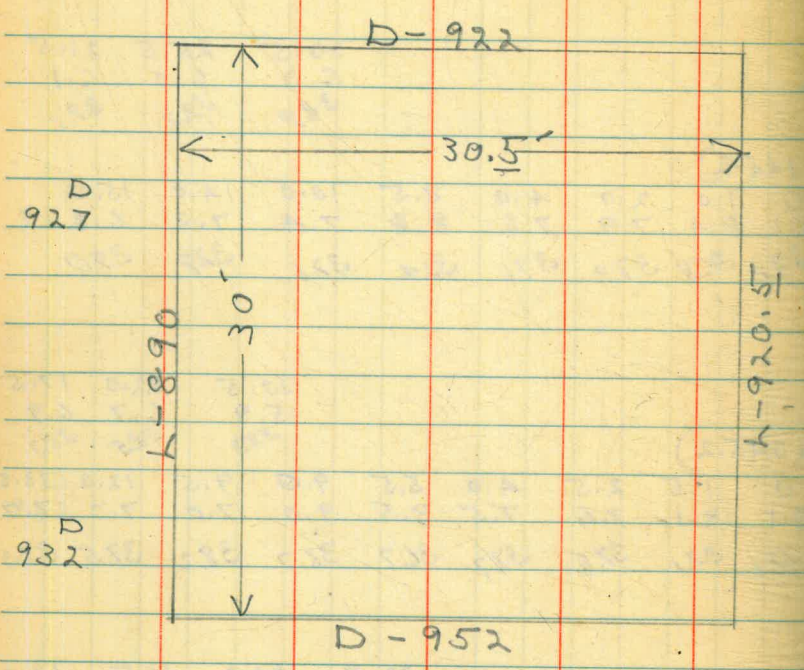
(2045.2)

0	1.5	2.5	4.0	5.5	9.0	9.5	12.0	13.5
8.1	8.1	7.6	7.5	8.5	9.0	7.0	7.7	7.7
37.1	37.1	37.6	37.7	36.7	36.2	38.2	37.5	37.5

30.5	22.0	16.5	14.0
5.8	6.0	7.2	6.7
39.4	39.2	38.0	38.5

Cont'd page 28

Sta. + ∇ - Elev.
 2045.17
 D
 922 See page 27 for this section



D
 927

D
 932

D
 937

Cont'd page 29

(2045.2)								
0	1.5	5.0	7.5	10.0	15.0	20.0	21.0	
7.8	8.4	9.2	8.6	7.0	6.7	6.6	6.0	
37.2	36.8	36.6	36.6	38.2	38.5	38.6	39.2	
						30.5	25.0	
						6.8	5.5	
						39.2	39.2	
(2045.2)								
0	0.5	1.5	2.0	3.5	4.0	9.5	11.5	19.5
7.9	8.6	8.6	7.5	7.4	8.4	7.7	6.5	6.7
37.3	36.6	36.6	37.7	37.8	36.8	37.5	38.7	38.5
						30.5	29.0	23.0
						6.1	6.3	5.7
						39.1	38.9	39.5
(2045.2)								
0	2.4	2.7	5.0	9.0	10.0	17.5	21.0	
8.3	8.6	7.5	7.3	8.2	6.9	6.8	6.5	
36.9	36.6	37.7	37.9	37.0	38.3	38.2	38.7	
						30.5	27.5	22.0
						6.5	5.7	6.0
						38.7	38.5	39.2

(29)

Contd from page 28

Sta.	+	∧	-	Elev.
D 942		2045.17		

D
947

D
952

See page 24 for section

Contd on page 30

(29)

(2045.2)

0	3.0	3.5	5.5	8.3	9.5	14.5	16.5
9.2	9.2	7.8	7.5	8.8	6.9	6.5	7.0
36.0	36.0	37.4	37.7	38.4	38.3	38.7	38.2
		30.5	27.0	24.0	22.5	18.0	
		6.8	6.3	5.5	6.5	6.3	
		38.4	38.9	39.7	38.7	38.9	

(2045.2)

0	2.0	3.0	7.0	9.0	10.0	13.5	16.5
9.3	9.7	8.9	9.5	8.2	6.9	6.6	7.6
38.9	38.5	36.3	35.2	37.0	38.3	38.6	37.6
		30.5	29.0	27.5	20.0	18.5	
		6.4	6.3	5.4	6.1	7.5	
		38.8	38.9	39.8	39.1	37.7	

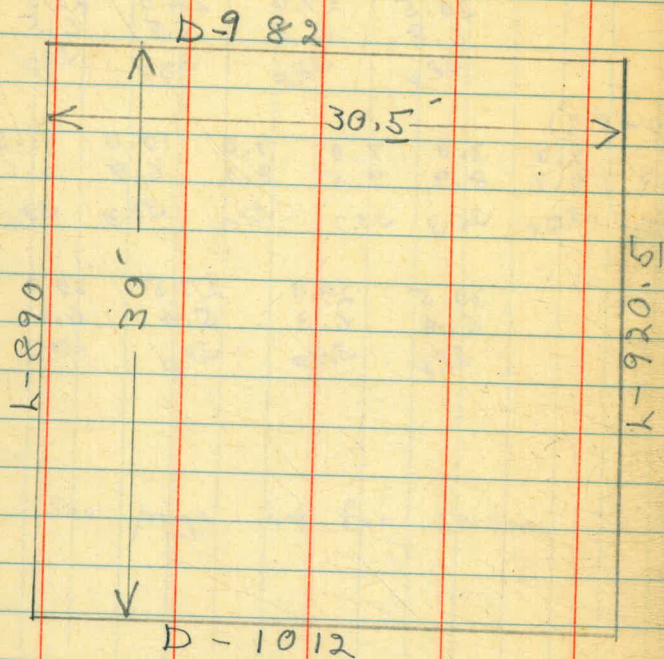
(30)

Cont'd from page 29

Sta. + π - Elev.

2045.17

D
982 See page 25 for this section



Cont'd on page 31

(30)

(2045.2)

0

(2045.2)

0	2.5	4.5	5.5	8.5	11.0	17.5	19.0
8.1	8.1	7.4	8.0	8.0	6.9	6.2	6.4
37.3	37.3	37.8	37.2	37.2	38.3	39.0	38.8

30.5	24.0
6.0	6.7
37.2	37.5

(2045.2)

0	1.5	2.0	9.0	12.5	19.0	24.0	28.0
8.9	9.4	7.6	7.7	6.8	6.3	6.5	6.2
34.3	35.8	37.6	37.5	38.4	38.7	38.7	39.0

30.5
6.5
37.7

(31)

Cont'd from page 30

Sta. + ▴ - Elev.

D
9.97

2045.17

D
1002D
1007D
1012

See page 22 for this section

□

6.78 2038.39 (2038.44)

(31)

(2045.2)

0	8.0	10.0	12.0	15.0	18.0	21.0
9.0	8.7	7.4	6.8	7.3	6.3	7.1
37.7	36.5	37.2	38.7	37.9	38.9	38.1
				30.5	28.5	25.5
				6.5	6.4	5.8
				38.7	38.8	38.2
						21.5
						6.2
						39.0

(2045.2)

0	7.5	9.5	14.0	16.5	20.0	20.5	27.0
9.1	8.4	7.2	6.7	7.7	7.2	6.3	5.5
36.1	37.7	35.7	38.5	37.5	38.0	38.9	37.7
						30.5	29.0
						6.3	6.3
						38.9	38.9

(2045.2)

0	1.5	9.0	10.0	12.5	15.8	16.3
8.8	9.4	8.0	6.9	7.8	7.7	6.7
36.4	36.8	37.2	38.3	37.2	37.5	38.5
					30.5	25.5
					5.9	6.7
					39.3	38.5
						20.0
						6.7
						38.5

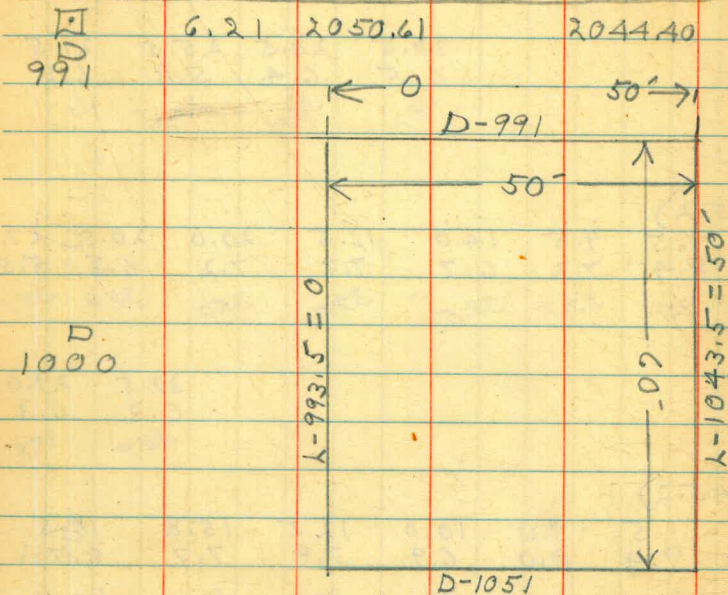
Grade nail @ D-1012 & L-890

32 X-Section Spillway

Sta. + Δ - Elev.

D-991 to D-1051 - 9' East of R#1 But.

Sections run between L-993.5 and L-1043.5



D 1000

D 1008.5

Continued on page 33

0 = L-993.5 + 50 = L-1043.5

23-April 1953

N
W

Locker
Halstead
Ingersoll
Murphy

(2050.6)

0	3.0	4.0	9.5	15.5	22	27	29
4.5	4.4	2.9	2.2	1.8	1.3	2.3	7.0

W

50	42.5	40.5	38.5	37.5	32.5
1.5	0.8	2.8	3.4	9.4	8.3

(2050.6)

0	10	12.3	14	19.5	21.5	22.5	29.7
4.1	2.3	2.7	1.6	1.5	1.6	1.3	1.0

W

50	42	40.8	38	35.5	33	32
2.2	1.8	5.3	11.8	9.1	9.0	1.2

(2050.6)

0	9	17	18	22.5	24	32.5	32.5	36
4.0	2.7	2.4	3.1	2.5	1.8	4.9	8.2	10.8

W

50	42	39
2.0	1.8	10.0

(2050.6)

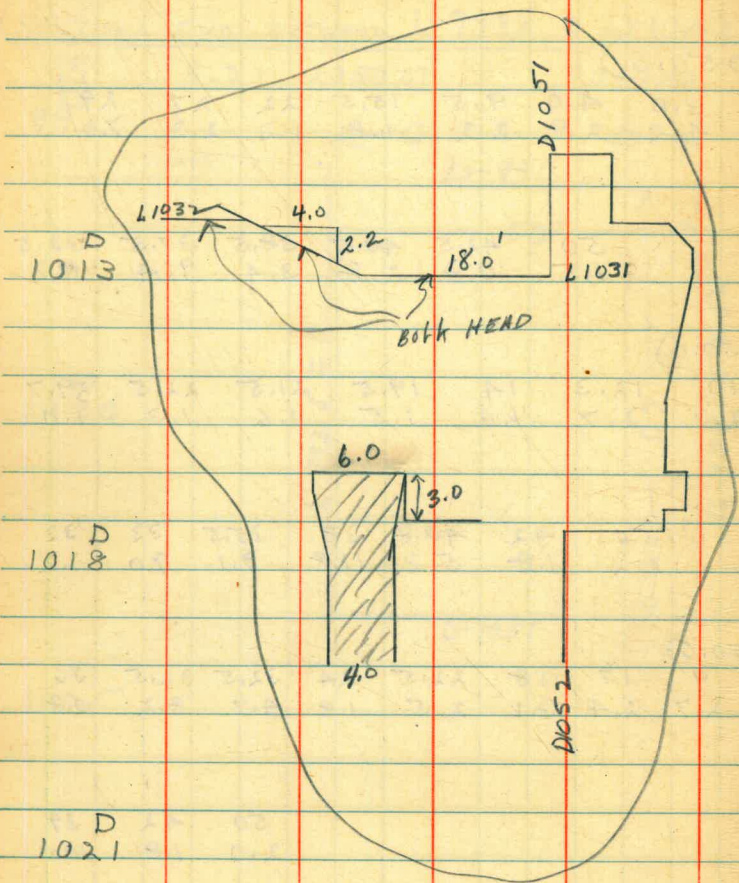
0	2	2.5	12.5	14	18	25.5	32.5
3.9	3.6	2.8	2.8	1.8	1.7	5.4	7.0

W

50	44	42	35.5
2.0	1.7	10.3	9.8

33 X-Section Spillway

Sta. + ∇ - Elev.
 D
 1011 2050.61



Cont'd page 34

23-April '53

Cont'd from page 32 33

(2050.6)

	N	W	S					
0	1.5	3.0	9	13	18	23.5	28	33
4.0	4.1	3.3	3.2	2.0	2.0	6.0	6.0	10.1
Area								
				50	44	43	42	35
				1.7	2.0	9.2	10.9	11.4

(2050.6)

0	1.5	2.5	8	15	17.5	19	22.5	27
4.3	4.1	3.0	3.3	1.5	2.4	4.3	5.6	4.3
Area								
				50	44.5	42	41	40
				1.7	1.6	6.4	10.6	11.9
							34.5	31.5
							30.5	29
							5.5	5.6

(2050.6)

0	5	6.5	12.5	15.5	16.5	20.5	24	29.5
4.3	3.4	2.5	3.5	1.8	1.7	4.9	5.3	5.0
Area								
				50	44.5	42.5	39	36.5
				1.7	1.7	9.6	10.5	9.9
							35.5	31.5
							7.7	7.7

(2050.6)

0	8	10.5	16.5	21	29	31.5	31.5	39.5
4.2	3.6	2.9	1.9	5.1	6.1	8.4	12.4	12.5
Area								
						50	44.5	41
						1.8	2.2	9.8

(34) X-Section Spillway

Sta.	+	-	Elev.
D 1028			2050.61
T.P.	4.0	2042.5	12.10 2038.51

D
1032

D
1036.5
1036.2

D
1039.5

D
1042.5

Cont'd page 35

23-April '53

cont'd from page 33

(34)

(2050.6)

0	6.5	15	20	23	32.5	33	37	40.5
5.4	2.6	2.0	4.5	7.8	8.9	12.1	12.3	9.9

45.2

50
59

43.5
6.3

(2050.6)

0	20	24	31.3	33.5	37	41.5	50
4.5	4.7	9.0	10.8	13.3	14.1	11.2	10.4

46.1

(2042.5)

0	13	24	32.5	33	40	41	50
4.5	0.2	3.2	6.0	8.4	8.1	5.5	5.8

44.0

(2042.5)

0	5	11	26.5	32	32	35.5	35.5	37.2
1.8	3.2	3.8	7.8	8.3	9.5	10.2	13.0	12.7

40.7

50
8.0

43
8.7

39
9.8

(2042.5)

0	1.5	7.5	21.5	32.5	32.5	40.5	41
3.1	4.1	4.4	9.0	9.8	12.1	12.6	10.9

39.8

50
11.5

(35) X-section Spillway

Sta.	+	△	-	Elev
1044 ⁵		2042.5		

0.0	2038.5	4.0	2038.5
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D 1047			
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□		14.0	2024.5	(2024.37)
---	--	------	--------	-----------

D 1049			
-----------	--	--	--

□	7.0	2025.5		
D ^D 1051	6.2	2024.7	2018.5	

See page 44

23 April '53.

E cont'd from page 34

(35)

(2042.5)		N — S W — E						
0	2	5	22.5	28.5	31.5	32.5	37.3	
3.8	4.8	5.3	10.4	12.0	11.8	15.3	16.0	

38.5

50	41	37.5
14.2	12.2	13.2

(2038.5)

0	2.5	7	12.5	22.5	29	33.5	34.5
0.0	2.3	3.1	6.3	8.8	10.0	10.8	12.4

38.5

50	39.5	39
11.6	10.9	14.6

(2038.5)

0	2.5	8.5	18	22	22.5	25.5	27	33
0.7	3.1	6.0	8.3	10.3	12.1	12.0	15.5	17.5

38.5

50	42.5	39.5	38.5	37	33
12.4	12.6	15.0	15.0	19.3	19.1

(2024.7)

(2025.5)

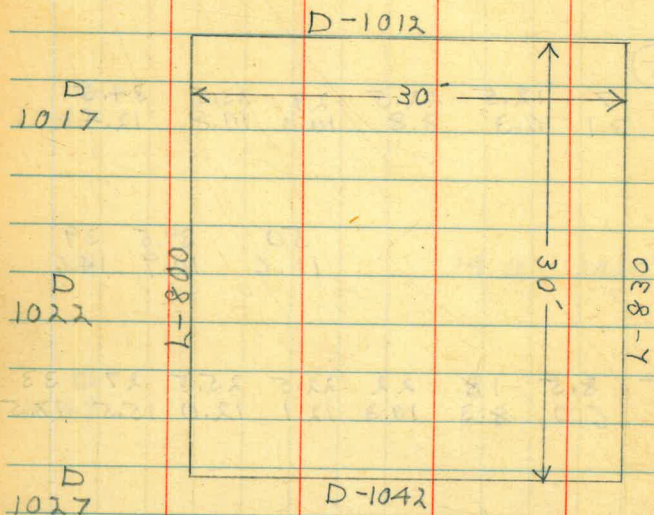
0	6.5	6.5	10	14	17	22	25	25
3.8	5.4	7.6	9.1	8.5	7.9	9.0	9.6	10.7

21.7

50	49.5	47	41	36.5
6.3	10.0	12.1	11.2	12.5

36. X-Section Spillway Slab

Sta.	+	∩	-	Elev.
D 1012	1.00	2045.40		2044.40
T.P. D 1012	2.29	2037.71	9.98	2035.42



D
1032

Cont'd page 37

L-800 = 0 @ Working South to L-830 = 30'
5-May 1953 Locker, Halstead & Murphy

36

N
|
E
|
W
|
S

(2037.7)

0	7	11	12	13.7	16	21	26	29	30
10.2	8.7	8.3	9.0	9.0	7.9	7.3	7.1	7.2	6.6
27.5	29.0	29.4	28.7	26.7	29.4	30.9	30.6	30.5	31.1

(2037.7)

0	1	7	10	15	20	24	27	28.5	30
10.2	10.4	8.9	9.2	8.4	7.8	7.7	8.0	6.9	6.7
27.5	27.3	28.5	28.0	29.3	29.9	30.0	29.7	30.8	31.0

(2037.7)

0	2.5	3.5	9.5	10.5	14.5	17	23	24	30
10.3	10.4	9.5	8.8	9.4	9.0	8.0	8.0	8.5	7.2
27.4	27.3	28.2	28.9	28.3	28.7	29.7	29.7	29.2	30.5

(2037.7)

0	6.5	8	12.5	14.5	18.5	24.5	30
11.0	10.8	9.9	9.0	9.4	7.9	7.6	7.6
25.3	25.9	25.8	25.1	28.3	29.8	30.1	30.1

(2037.7)

0	2.5	6	8.5	16	20	22	30
11.1	11.1	10.5	9.6	9.2	7.5	8.0	7.6
24.6	24.6	26.2	28.1	28.5	30.2	29.7	30.1

(37) Cont'd from page 36

Sta.	+	∧	-	Elev.
D				
1037				2037.71

D
1042

□

6.74 2030.97 (2030.98)

(2037.7)

0	3	4	9	14.5	16	22.5	30
11.2	11.1	10.6	10.1	9.3	8.4	8.2	6.9
26.5	26.6	27.1	27.6	28.2	29.3	29.5	30.8

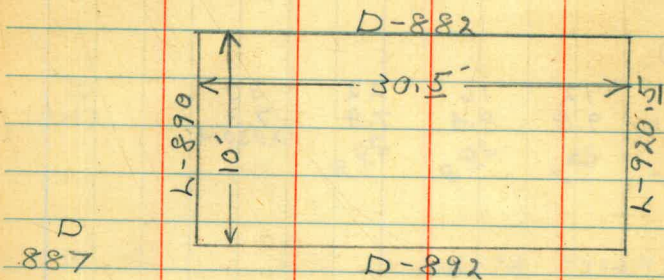
(2037.7)

0	4	12	16	22	30
11.0	11.1	9.8	8.4	7.8	7.3
26.7	26.6	27.9	29.3	29.9	2030.4

(38) X-Section Spillway Slab

Sta.	+	⌈	-	Elev.
D	0.50	2044.90		2044.40

882 & 883 The Same Ground Elev.



D
887

D
892 Note See first section @ top of page 26. This section was run 22-April 1953. Took check shot @ 30.5' & got elev. 2039.6

L-890 = 0 & working south to L-920.5 = 30.5

5-May 53

N
E
S
W
Page 36 for party

(2044.90)

0	2.5	7	10.5	12	17.5	21.5
7.7	8.1	7.9	7.7	7.0	7.1	6.1
37.2	36.8	37.0	37.2	37.9	37.8	38.8

30.5 23.5
6.7 6.7
38.2 38.2

(2044.9)

0	6.5	9	10	17	21	22.5
7.8	8.2	7.7	6.8	6.1	6.3	5.4
37.1	34.7	37.2	38.1	38.8	38.6	39.5

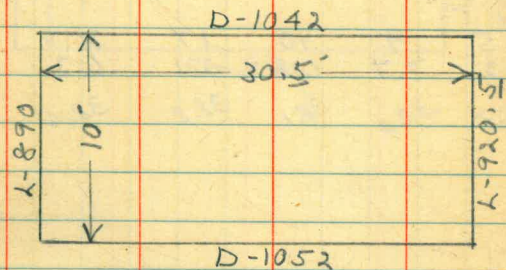
30.5
5.5
39.4

(39) X-Section Spillway Slab

Sta.	+	⌈	—	Elev.
D 1042				2044.90

Note See page 23 for this section. It was run on 17-April 1953 - See page 22 for party. Checked 30.5 shot & got elev. 2039.1

D
1047



D
1052 & 1051 The Same Ground Elev.

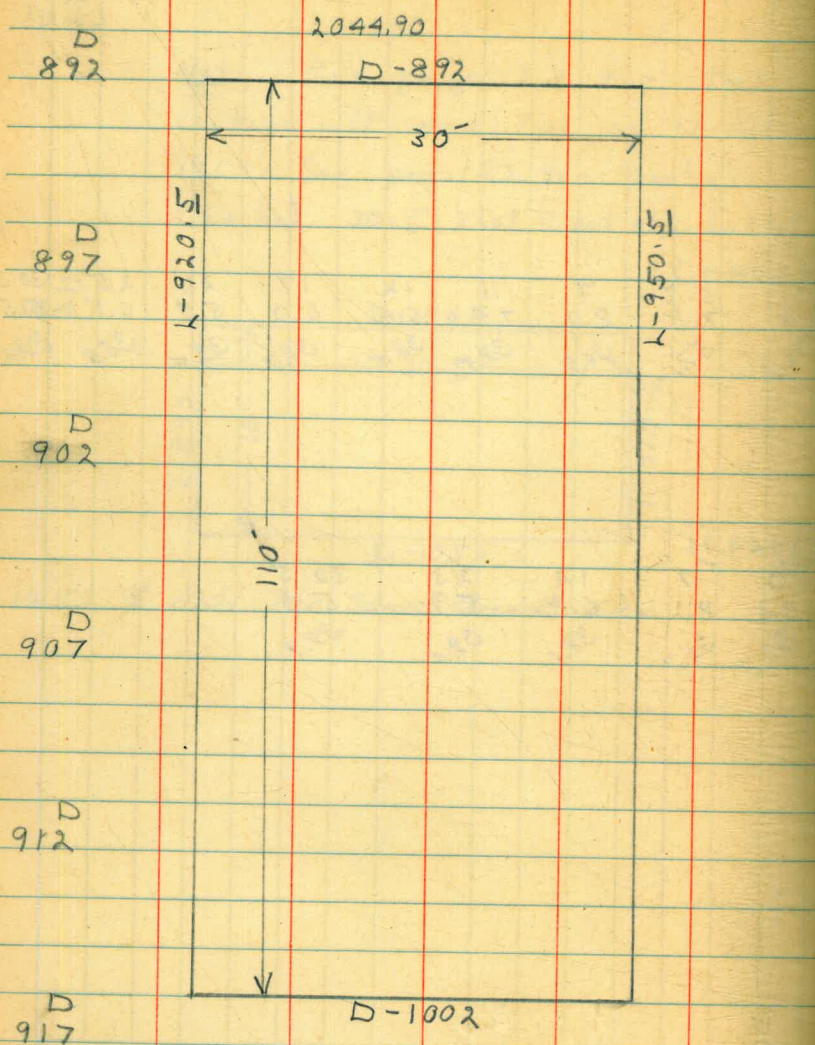
L-890 = 0 & working South 30.5 = L-920.5 (39)
5-May 1953 N $\frac{E}{W}$ S Page 36 for party

(2044.9)	9	11	12	17	22	25	30.5
0	5.5	8.0	7.4	6.4	6.0	5.5	5.5
8.8	7.8	8.0	7.4	6.4	6.0	5.5	5.5
36.1	37.1	36.9	37.5	38.5	38.9	39.7	38.8

(2044.9)	7	14	23	30.5
0	8.2	6.8	5.9	5.0
8.6	8.2	6.8	5.9	5.0
36.3	36.7	38.1	39.0	39.9

(40) X-Section Spillway Slab

Sta. + ∇ - Elev.



0.10 2044.50 0.50 2044.40 (2044.40)

1002
892
110

L-920.5 = 0 ft working South 30' = L-950.5

5-May 1953

N \uparrow E
W \leftarrow S Page 36 for party (40)

(2044.9)								
0	1.5	2.5	9	22.5	25	27	30	
	5.2	4.6	3.7	2.7	3.8	2.5	2.4	
	5.7	4.3	4.2	4.2	4.1	4.2	4.5	
(2044.9)								
0	1.5	2.8	7.9	12	20	27	30	
	5.2	4.5	4.4	3.8	2.9	2.4	3.0	
	5.7	4.2	4.5	4.1	4.0	4.5	4.9	
(2044.9)								
0	3.5	4.5	11	16	22	27.5	28.5	30
	5.4	4.3	4.4	3.3	3.0	2.3	3.1	3.1
	5.9	4.0	4.0	4.6	4.9	4.6	4.8	4.8
(2044.9)								
0	4.5	6.5	11	19	22	25	27	28.5
	5.6	4.1	4.6	4.4	3.2	2.9	2.1	2.5
	5.3	4.8	4.3	4.5	4.7	4.0	4.0	4.2
(2044.9)								
0	8	9	14	16	21	26	29	30
	4.7	3.9	5.0	3.5	3.1	2.1	2.8	2.6
	4.7	4.0	5.9	4.4	4.0	4.2	4.2	4.6
(2044.9)								
0	2	3.5	6.5	7	14.5	17	23	30
	6.0	4.6	5.5	4.1	4.5	2.9	3.2	2.7
	3.9	4.3	4.4	4.8	4.4	4.2	4.1	4.2

(41)

Cont'd from page 40

Sta.	+	-	Elev.
D 922		2044.50	

D 927			
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D 932			
----------	--	--	--

D 937			
----------	--	--	--

D 942			
----------	--	--	--

(2044.5)

0	1.5	3.5	9	11	14	17
	5.0	4.4	4.4	3.7	4.5	3.0
	39.5	40.1	40.1	40.8	40.0	41.5
			30	28.5	25	23
			3.1	3.1	1.9	2.5
			4.4	4.4	5.6	4.0

(2044.5)

0	4	8	9.5	11.5	13	16	18.5
	5.2	4.5	3.2	3.3	4.7	5.0	2.7
	39.3	40.0	41.3	41.2	39.8	39.5	41.8
					30	27	25
					2.9	2.8	2.3
					4.6	4.7	4.2

(2044.5)

0	5	12	12.5	16.5	20	26	30
	4.6	3.9	4.7	4.2	2.5	2.1	2.1
	39.9	40.6	39.8	40.3	42.0	42.4	42.4

(2044.5)

0	4	8.5	14	14.5	19	21.5
	6.1	4.6	3.3	3.9	4.3	3.3
	38.4	39.9	41.2	40.6	40.2	41.2

	30	29	26.5
	2.3	2.1	3.0
	4.2	4.2	4.5

(2044.5)

0	7	9	11.5	15	21	22	28	30
	5.6	5.0	4.2	2.8	3.0	2.4	2.6	2.0
	38.9	39.0	40.3	41.7	41.5	42.1	41.9	42.5

(42)

Cont'd from page 41

Sta. + π - Elev.
D
947 2044.50

D
952

D
957

D
962

D
967

(42)

(2044.5)

0	5	10	11.5	14	15.5	21
	5.6	5.2	4.5	4.3	3.4	3.3
	38.9	39.3	40.0	40.2	41.1	41.2
					30	24
					2.3	1.9
					42.7	42.6

(2044.5)

0	5	8	13.5	19.5	21.5	25.5	28	30
	6.0	5.6	4.2	4.4	2.5	2.0	3.3	3.1
	38.5	38.9	40.3	40.1	42.0	42.5	41.2	41.4

(2044.5)

0	5	8	12	20	22.5	24.5	26
	6.4	4.0	3.9	4.4	2.1	1.7	3.2
	38.1	40.5	40.6	40.1	42.4	42.8	41.3
						30	29
						1.9	2.9
						42.6	41.6

(2044.5)

0	2.5	3	12	21.5	23	26	30
	7.1	4.7	4.2	4.2	3.0	2.0	2.1
	37.4	39.8	40.3	40.3	41.5	42.5	42.4

(2044.5)

0	1.5	4	8.5	14	19	25	27	30
	5.4	3.9	4.6	3.9	3.8	3.4	1.8	1.3
	39.1	40.6	39.9	40.6	40.7	41.1	42.7	40.2

(43)

Cont'd from page 42

Sta.	+	∩	-	Elev.
D 972		2044.50		

D
977D
982D
987D
992D
997D
1002

□

0.10 2044.40 (2044.40)

(43)

(2044.5)

0	1.5	2.0	10	18	26	30
	5.0	4.2	3.3	2.6	2.2	1.6
	39.5	40.3	41.2	41.9	42.3	42.9

(2044.5)

0	1	3	11.5	15.5	23	27	28	30
	5.2	4.0	4.2	2.7	2.5	2.1	2.7	2.5
	39.3	40.5	40.3	41.8	42.0	42.4	41.8	42.0

(2044.5)

0	2.5	6.5	12	21	29	30
	4.0	4.5	3.8	3.6	2.0	2.3
	40.5	40.0	40.2	40.9	42.5	42.2

(2044.5)

0	1.5	3.5	6	10	13	19	25	30
	4.9	5.7	5.8	4.5	4.9	4.3	3.1	2.0
	39.6	38.8	38.7	40.0	39.6	40.2	41.4	42.5

(2044.5)

0	8.5	15	18	18.5	24	30
	6.1	4.4	4.4	3.6	3.4	2.7
	38.4	40.1	40.4	40.9	41.1	41.8

(2044.5)

0	3.5	5.5	11	17	27	29	30
	5.1	6.1	5.6	4.0	3.8	2.4	2.2
	38.4	38.4	38.9	40.5	40.7	42.1	42.3

(2044.5)

0	3	10	14	23	26.5	28.5	30
	4.7	4.6	3.5	2.2	2.8	2.2	2.1
	39.8	39.9	41.0	42.3	41.7	42.3	42.4

44 Continwood from page 35

Sta. + π - Elev.

Spillway X-Sections

□ 4.44 2053.32 2048.88

D-9835

6.27

□ 6.25 2055.15 2048.88

✓ D
9745

(2055.75)
0 7 9 13.5 18
8.8 8.1 7.3 6.6 7.3
46.7

✓ D
9735

(2055.2)
0 2.5 7.5 10 15
8.7 8.0 8.0 7.1 6.9
2046.5

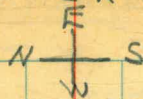
✓ D
9635

(2055.2)
0 1.5 4 7.0 8 11 17.5 22.5 24.5
8.5 8.1 7.5 7.3 7.3 6.5 6.8 6.0 6.3
46.7 47.1

□ 6.27 2048.88 (2048.88)

0 = L-9935 of 50' = L-1043.5

27-May 1953



44
Soyster
Locker
Halstead

(2053.3)
0 12.7 14 23 30.3 31.6 37 40.5
6.7 6.2 5.2 4.6 4.2 15.8 16.2 7.9

46.6

50 43.4
4.2 4.0

(2053.3)

8.19 26.5 30 33.7 34.8 37.3
5.4 6.7 8.1 9.1 12.0 12.6
47.9

50 45 42.8 41.1 39.4 38.5
4.2 3.8 4.5 9.3 9.7 11.1

(2053.3)

19 26.5 32 34 38.5 39.3
4.8 6.4 8.2 9.8 10.7 9.5

50 46 42 40.3
4.1 3.6 4.2 9.3

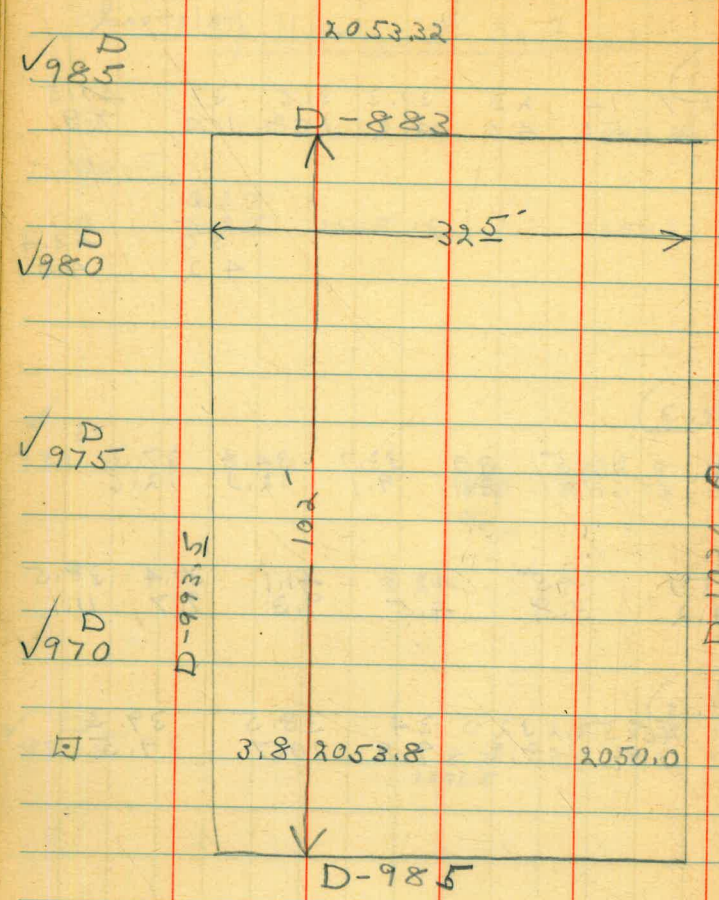
(2053.3)

25.5 29.3 31 32 34.7 37.1 38.6 40.5
3.8 4.6 4.7 7.8 10.2 10.2 8.0 8.0

50 46 41.8
3.7 3.0 4.0

(45) Spillway X-SECTIONS

Sta. + π - Elev.



√ D 985

√ D 980

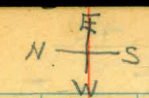
√ D 975

√ D 970

√ D 965

50	42	40.7	38.5
4.1	4.2	8.7	9.1
20	49.7		

17-May 1953



Soyeter
Locker
Halstead

0 = L-993.5

(2053.3)	0	6.5	9.7	11	19	24.5	29	30.3	31.6
	7.0	6.5	6.0	4.7	4.7	4.5	5.1	6.5	6.8
							48.2	46.8	
		50	43.5	40.6	38.5	37.8	(2053.8)	36	35.0
		4.7	4.5	8.0	11.3	13.5		13.8	14.9
							49.0	38.9	
(2053.3)	0	7	14	17.5	20	24.5	28.5	29.5	
	6.6	6.0	6.0	5.0	4.9	4.5	5.6	6.8	
						48.8		46.5	
		50	45.5	40	38.5	37.5	(2053.8)	32.5	31.5
		4.4	4.2	11.3	14.0	14.8		12.6	12.1
		49.4	49.2	42.5	39.8	39.0		40.7	41.2
(2053.3)	0	8.5	13.5	20	26.5	29.5	32.5	31.5	31.5
	7.1	6.1	5.0	5.6	6.6	8.1	8.5	12.1	7.7
							44.8	43.4	
			50	43	41.5	39.5	38.5	37.7	34.9
			4.4	5.0	9.8	10.3	12.0	13.1	12.5
(2053.3)		49.4	48.8	44.0	43.5	41.8		41.3	
(2053.8)	0	4.5	9	9.3	16.5	17.5	20	27	
	7.2	5.2	5.8	4.9	5.1	4.0	5.7	6.0	
								47.3	
(2053.8)									
	42.7	40	38.5	37.9	35.1	33.7	32.5	29.5	28
	4.5	10.1	10.2	10.4	10.6	9.8	8.2	7.3	6.8
							45.1		46.5
(2053.3)	0	2	4.5	8.5	10	13.7	17.7	21	
	6.6	6.7	4.7	5.6	4.2	4.7	4.3	3.1	
(2053.8)									
	38	37.6	35		32.5	31.5	31.5	29.5	25
	9.1	10.5	11.2		8.6	8.0	5.8	5.1	4.3

(46)

See page 45

Sta.
D
960

+

N

-

Elev.

2053.32

D
955D
950D
945

STOP (D)
 SECTION 5
 61023

O = 1-993.5

F

27-May 1953

(46)

(2053.3)

N

S

W

0	2	3	8	12	18	23	28.5
6.5	6.2	5.5	5.8	5.5	5.5	5.0	6.2

Avg
8

32.5	30.5	29.5
4.5	4.5	4.2

(2053.3)

0	2	2.5	11.5	16.5	22	28.5	30.5
6.8	6.4	5.1	5.2	3.7	3.5	5.3	4.5

Avg
9

32.5
4.6

(2053.3)

0	2	2.7	7	7.5	15	20.5	27
7.0	6.9	5.5	4.9	5.6	5.5	5.1	4.3

Avg
9

32.5	30	29
4.6	4.6	5.0

(2053.3)

0	4	4.5	7	19	21.4	24	27	30
7.3	6.7	6.1	5.8	7.1	5.3	4.7	5.5	4.8

Avg
10

32.5
4.6

(47)

See page 46

Sta.	+	∩	-	Elev.
D 940				2053.32

D
935D
930D
925D
920

SECTION 3
L1023
STOP @

0=h-993 S

27-May 1953

(47)

		2053.3		N		S		
0	7.1	7.5	6.7	7.5	9.7	12.5	19	21
		2.4	8.0	6.0	5.9	4.4	6.4	6.4

A₅
W

32.5	29	22.5
4.6	4.6	5.0

(2053.3)

0	5.7	11	20	22.8	23	28	30	32.5
6.9	8.2	6.0	5.7	6.1	4.7	5.2	4.5	4.5

A₅
W

(2053.3)

0	7	15	18	23.5	29.5	31	32.5
27	7.8	7.7	6.5	5.4	5.1	4.6	4.6

A₅
W

(2053.3)

0	2.5	7	15.5	16.8	24	30	32.5
7.5	6.7	7.4	7.3	4.7	5.9	4.6	4.6

A₅
W

(2053.3)

0	5	6.5	7	14	15	20	22	29
7.0	7.7	7.6	6.5	7.0	4.9	4.5	6.0	4.7

A₅
W

32.5
4.6

(48)

See page 47

Sta. + π - Elev.D
915 2053.32D
910D
905D
900D
895

SECTION 5
L1023

Top

O-h-993.5

N — E
|
W — S

27-May 1953

(48)

(2053.3)

0	1	8	17	24	28	29.5	32.5
9.5	9.4	5.8	6.3	6.4	5.5	4.6	4.5
45.9	47.5	47.0	46.9	47.8	48.7	48.8	

(2053.3)

0	8	11.5	12	19	27	29	32.5
8.3	8.0	6.5	5.2	4.8	4.9	4.5	4.4
45.0	45.3	46.8	48.1	48.5	48.4	48.8	48.9

(2053.3)

0	8	9.5	21	29	32.5		
7.4	7.6	6.3	4.2	4.7	4.4		
45.9	45.7	47.0	49.1	48.6	48.9		

(2053.3)

0	1.5	9	11	18	23	25	31	32
7.6	7.6	7.1	5.6	5.3	4.3	5.6	5.2	4.1
45.1	45.7	46.2	47.7	48.0	49.0			

32.5
4.1

(2053.3)

0	2	7	17	20	28	32.5	
7.7	8.0	6.5	6.0	5.0	4.8	4.0	
45.9							

(49)

See page 48

Sta. + π - Elev.D
890

2053.32

D
885STOP @
SECTION 11023D
883

Same as D-885.

□

4.44 2048.88 (2048.88)

0 = h-993.5

	E	
N	+	S
	W	

27-May 1953

(49)

(2053.3)

0	5	13	20	21.5	27.5	29	32.5
8.1	8.4	6.8	6.8	5.3	6.1	4.2	5.0
	44.9	46.5	46.5	48.0	47.2	49.1	48.3

0	7	12.5	18	19.5	25	28.5
8.6	8.6	7.6	7.2	5.3	5.1	6.0
	44.7	45.7	46.1	48.0	48.2	47.3

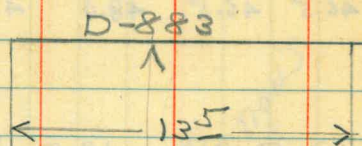
32.5	31.5	31
7.5	7.5	5.5
45.8	45.8	47.8

50

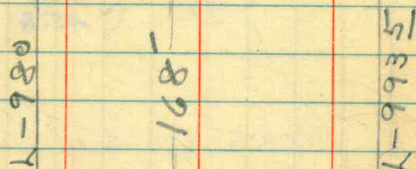
Spillway X-Sections

Sta.	+	π	-	Elev.
1051	4.69	2049.09		2044.40

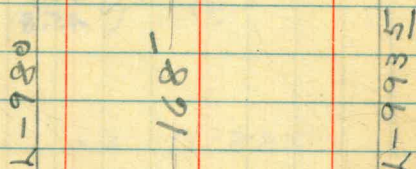
D
1051



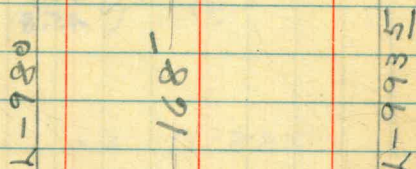
D
1049



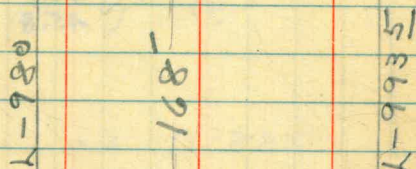
D
1047



D
10445



D
10425



0 = 1-980 B
135 = 1-993.5

F 4-June '53

50

N
W

Soyester
Hoeker
Halstead

(2049.1)

0	7.5	10.0	9.3	9.5	12.9
3.9	3.5	5.6	5.9	7.9	8.6
x5.2	x5.6	x5.5	x5.2	x4.2	x0.5

(2049.1)

0	11.1	12.2		
3.6	4.6	7.6		
x5.5	x4.0	x1.5		

(2049.1)

0	9.5	10.8	12
3.8	3.9	4.9	8.2
x5.3	x5.2	x4.2	x0.9

(2049.1)

0	9.5	10	10.8
4.3	3.5	4.1	6.6
x4.8	x5.6	x5.0	x2.5

(2049.1)

0	5	5.5	9	9.6	11.8
3.7	3.9	3.1	2.5	6.0	9.0
x5.5	x5.2	x6.0	x6.6	x5.1	x0.1

(51)

2049.09

Sta.

+

N

-

Elev.

D
10395D
10365D
1032D
1028D
1021

E 4.02 2048.42 4.69 2044.40 (2044.40)

0=R-980

E
N + S
W

4-June 53

(51)

(2049.1)

0	4	8.7	11.3
3.9	3.1	3.1	7.1
45.2	45.0	45.0	42.0

(2049.1)

0	5.8	9.4	10.2
3.9	2.8	4.1	4.7
45.2	46.3	45.0	44.4

(2049.1)

0	8.5	12.8
3.3	3.7	3.3
45.0	45.4	45.8

(2049.1)

0	2	4.5	8	12.5
4.1	4.1	3.1	4.1	4.0
45.0	45.0	46.0	45.0	45.1

(2049.1)

0	4.3	4.6	12.2
4.7	3.5	4.7	2.6
44.4	45.6	44.4	46.5

(52)

1048.42

Sta. + \nearrow - Elev.D
1018D
1013D
1011D
10085D
1005D
1000

0 = 1-980

E 5-June '53
N + S
W Soyster
Hoeker
Halstead

(52)

(2048.4)				
0	3.5	6	10.5	12.2
3.5	2.9	3.0	2.8	2.0
*4.9	*4.5	*5.2	*5.6	*6.2

(2048.4)			
0	2	4.5	8
3.4	3.2	2.2	2.6
*4.0	*4.2	*4.2	*5.8

(2048.4)				
0	3	6	10	11
3.2	2.9	2.2	2.6	1.8
*4.2	*4.5	*4.2	*5.8	*6.6

0	1.7	3.5	7.5	8	11
3.4	3.7	2.1	2.8	*1.6	2.0
*4.0	*4.7	*6.3	*5.6	*6.8	*6.4

(2048.4)			
0	1.5	3.5	7.5
3.0	3.0	2.0	2.0
*4.4	*4.4	*6.4	*6.4

(2048.4)			
0	2.5	7	11.5
3.2	2.4	1.6	1.4
*4.1	*4.0	*4.8	*7.0

(53)

Sta.

+

⌈

-

Elev.

2048.42

D
991D
985D
983.5D
980D
975D
974.5

0 = L-980

E
N + S
W

5-June '53

Soyster
hooker
Halstead

(53)

(2048.4)

0	2.5	10.5
3.0	2.5	2.7
7.5	7.5	7.5

(2048.4)

0	2	3	7	11.5
3.0	3.4	2.4	1.6	1.9
7.5	7.5	7.5	7.5	7.5

(2048.4)

0	3.5	4.3	9
2.7	3.0	1.9	1.6
7.5	7.5	7.5	7.5

(2048.4)

0	3.5	8	11
3.1	3.0	1.4	2.0
7.5	7.5	7.5	7.5

(2048.4)

0	5	7.7	11	13
3.3	1.7	2.3	1.7	2.3
7.5	7.5	7.5	7.5	7.5

(2048.4)

0	5	7.7	11	13
3.3	1.7	2.3	1.7	2.3
7.5	7.5	7.5	7.5	7.5

(54)

Sta.

+

⌈

-

Elev.

2048.42

D
973.5D
970D
965D
963.5D
960D
955

0 = 2-980

	E	
N	+	S
	W	

5-June '53

(54)

(2048.4)

0	3	6	9	12			
3.2	2.8	1.7	5.6	2.8	5	11	13
1.6	1.6	2.1	2.5	1.4	2.0		
1.5	1.5	1.7	1.8	1.1	1.0	1.6	1.4

(2048.4)

0	2	5	7	9	12.5	
2.8	2.8	1.9	5.5	3	1.6	2.5
1.7	1.7	1.7	3.3	1.6	2.5	
1.5	1.5	1.6	1.7	1.5	1.8	1.9

(2048.4)

0	6	8
2.2	1.9	2.4
1.5	1.1	1.0

(2048.4)

0	7	9	10.8
3.2	1.5	2.5	1.8
1.5	1.5	1.5	1.5

(2048.4)

0	2.3	4.3	8.5
2.1	2.9	1.9	1.9
1.5	1.5	1.5	1.5

(2048.4)

0	1.3	2	6	9
3.5	3.1	2.7	1.6	1.6
1.5	1.5	1.5	1.5	1.5

(55)

Sta.

+

⌈

-

Elev.

2048.42

D
950D
945D
940D
935D
930D
925

0 = 1-980

N E
W S

5-June 53

(55)

(2048.4)

0	3.5	8	10.3	11.5	12
3.3	2.6	2.5	3.0	3.0	2.3
45.1	45.8	45.9	45.7	45.4	45.1

(2048.4)

0	5	10
3.1	2.7	2.7
45.3	45.7	45.7

(2048.4)

0	8	12.5
2.8	2.3	2.6
45.6	46.1	45.8

(2048.4)

0	7	10
3.3	3.0	2.0
45.1	45.4	46.7

(2048.4)

0	4	8.5	12.5
3.3	4.0	3.0	2.7
45.1	44.7	45.7	45.7

(2048.4)

0	8	9	12
3.5	3.4	2.0	2.3
44.9	45.0	46.7	46.1

(56)

Sta.

+

N

-

Elev.

2048.42

D
920D
915D
910D
905D
900D
895

0 = L-980

N
W

5-June '53

(56)

(2048.4)

0	4	10	13
4.5	3.6	3.6	2.1
4.9	4.8	4.5	4.8

(2048.4)

0	5	9
3.8	4.1	4.5
4.6	4.3	4.9

(2048.4)

0	7.5	11
3.3	3.8	3.4
4.1	4.2	4.0

(2048.4)

0	3.5	7.5	9.5	12.5
3.4	3.4	2.6	3.2	2.4
4.0	4.5	4.8	4.2	4.0

(2048.4)

0	7	10	12.5
3.3	2.9	3.0	2.6
4.1	4.5	4.4	4.8

(2048.4)

0	5	7
3.2	2.6	2.8
4.2	4.8	4.6

(57)

Sta. + ∇ - Elev.

^D
890

2048.42

^D
885

^D
883 same as D-885

\square 2.35 2046.75 4.02 2044.40

0 = L-890

N E
+
W S

5-June '53

(57)

(2048.4)

0 6 11
2.0 2.7 3.0
 $\times 5.4$ $\times 5.7$ $\times 5.4$

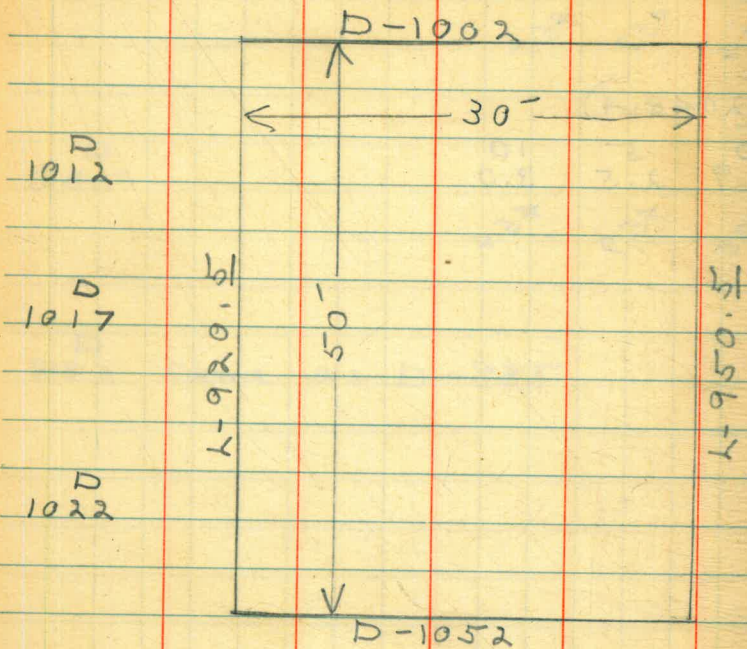
(2048.4)

0 5 10
2.9 2.5 3.0
 $\times 5.5$ $\times 5.0$ $\times 5.4$

(58)

Spillway X-Sections

Sta.	+	⋈	-	Elev.
D 1007		2046.75		2044.40

D
1027

O = L-920.5 @ 30' E
 = L-950.5

N-S
W

5-June 1953 (58)

Soyester
Hoeker
Halstead

(2046.8)							
0	5	10	15	20	24	25.5	30
	6.7	6.0	5.5	4.9	4.6	5.2	5.0
	40.1	40.8	41.3	41.9	42.2	41.6	41.8

(2046.8)							
0	6	11	13	17	21	27	30
	6.7	5.6	5.6	5.6	4.3	5.0	5.0
	40.1	41.2	41.2	42.0	42.5	41.8	41.8

(2046.8)								
0	1	3	7.5	12	18	26	28.5	30
	7.4	6.2	6.9	5.4	4.5	4.1	4.7	4.7
	39.4	40.6	39.9	41.4	42.3	42.7	42.1	42.1

(2046.8)								
0	2	4	3	4	5	9.5	13	19
	7.2	6.0	6.0	5.9	6.9	6.6	5.0	5.0
	39.6		40.8	40.9	39.9	40.2	41.8	41.8

30
4.2
42.6

24.5
3.9
42.9

(2046.8)						
0	3	8	15	21	25	30
	7.5	5.7	5.1	5.0	3.9	4.5
	39.3	41.1	41.7	41.8	42.9	42.3

(59)

Sta.

+

π

-

Elev.

2046.75

D
1032D
1037D
1042D
1047D
1052 #D-1051 Same Ground Elev.

0 = 1-9205

	E	
N	+	S
	W	

5-June '53

(59)

(2046.8)

0	4	8.5	13.5	16.5	22	25
	7.0	6.2	6.5	5.0	5.2	5.1
	39.8	40.6	40.3	41.8	41.6	41.7

	30	27
	4.3	4.4
	42.5	42.2

(2046.8)

0	5.5	7	9.5	12.5	20.5	25
	7.3	6.0	5.6	6.5	6.8	5.6
	39.5	40.8	41.2	40.3	40.0	41.2

	30	28
	4.4	4.7
	42.2	42.1

(2046.8)

0	2	9	15	21	26	30
	6.8	6.8	6.6	6.9	5.1	4.7
	40.0	40.0	40.2	39.9	41.2	42.1

(2046.8)

0	5	10	15	20	25	30
	6.8	6.7	7.2	7.2	5.5	4.7
	40.0	40.1	39.6	39.6	41.3	42.1

(2046.8)

0	5	10	15	21	25	28	30
	7.0	7.0	6.9	6.3	5.6	5.7	5.3
	39.8	39.8	39.9	40.5	41.2	41.1	41.5

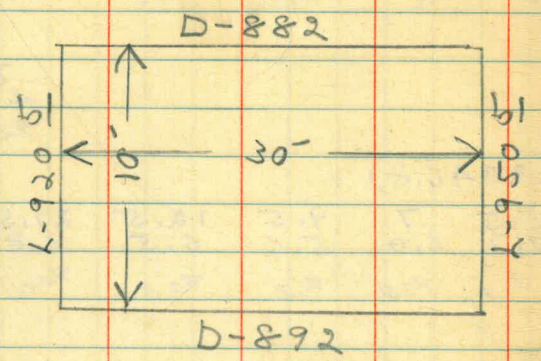
(60)
Sta.

Spillway X-Sections

+  - Elev.

2046.75

D
882 & D-883 Same Ground Elev.



D
887

H

2.35 2044.40 (2044.40)

O = L-920.5 @ 30 E 5-June '53 (60)
= L-950.5 N-S
W


(2046.8)

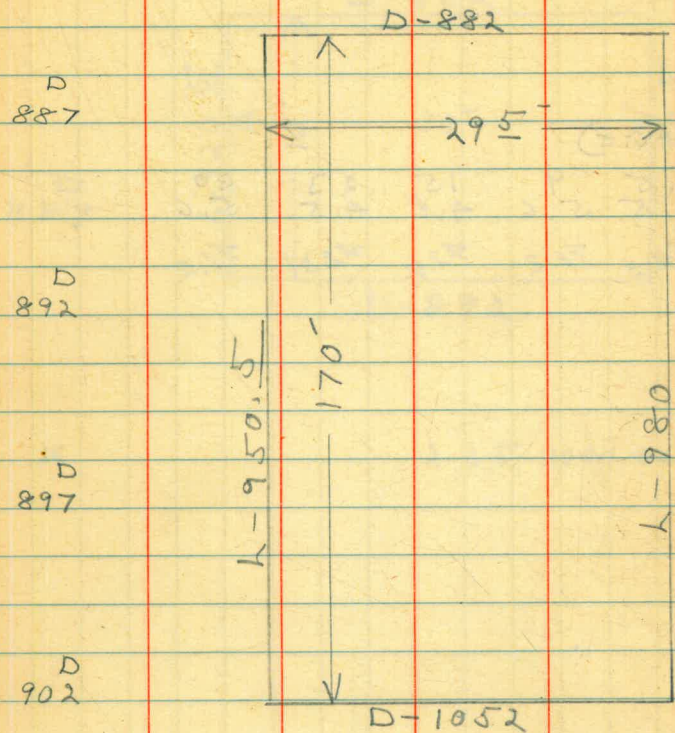
0	3.5	10	15	20	25	30
	7.8	7.6	7.0	5.6	5.3	5.6
	39.0	39.2	39.8	41.2	41.5	41.2

(2046.8)

0	3.5	9	15	23	30
	6.5	5.6	4.8	4.5	5.6
	40.3	41.2	42.0	42.3	41.2

(61) Spillway X-sections

Sta. +  - Elev.
 3.88 2048.28 2044.40
 882 #D-883 Same Ground Elev.



0 = L 950.5 of F 9-June '53 (61)
 29.5 = L-980 N + S Locker
 W Halstead

(2048.3)									
0	6.5	13.5	18	21.5	24.5	26	29.5		
	6.0	5.5	4.2	4.4	3.9	2.8	2.8		
	43.3	42.8	42.1	42.9	42.2	45.5	45.5		
(2048.3)									
0	2	11	12	18	21	26	29.5		
	5.2	4.8	4.0	3.9	4.4	3.1	2.8		
	42.1	43.5	44.3	44.4	43.9	45.2	45.5		
(2048.3)									
0	4.5	5.5	12	17.5	22	29.5			
	5.2	4.6	4.4	3.9	3.4	3.0			
	42.1	43.7	43.9	44.4	44.9	45.3			
(2048.3)									
0	1.5	3	10	20	23	29.5			
	6.1	5.2	4.1	3.7	3.4	3.3			
	42.2	43.1	44.2	44.6	44.9	45.0			
(2048.3)									
0	1	7.5	8.5	15	16	26	29.5		
	5.8	5.3	4.5	4.5	3.6	4.0	3.0		
	42.5	43.0	43.8	43.8	44.7	44.3	45.3		
(2048.3)									
0	3	6	12.5	16	19.5	21	24	25	29.5
	5.6	4.3	4.0	3.6	3.2	4.4	4.1	2.8	3.4
	42.7	44.0	43.7	44.1	45.1	43.9	44.2	45.3	44.9

(62)

2048.28

Sta. + ∇ - Elev.D
912D
917D
922D
927D
932D
937D
942

0 = 1-950 E

9-June '53

(62)

N
S
W
E

(2048.3)

0	2	3.5	6.5	9.5	17.5	19.5	22.5	27.5	29.5
	6.6	5.5	5.6	4.2	4.0	3.0	4.0	4.4	3.1
	$\nabla 1.7$	$\nabla 2.8$	$\nabla 2.2$	$\nabla 4.0$	$\nabla 4.3$	$\nabla 5.0$	$\nabla 4.3$	$\nabla 3.9$	$\nabla 5.2$

(2048.3)

0	1	2	10	12.5	21.5	24	29.5
	6.0	4.9	4.5	3.7	3.1	4.0	4.1
	$\nabla 3.0$	$\nabla 4.4$	$\nabla 3.8$	$\nabla 4.4$	$\nabla 5.2$	$\nabla 4.3$	$\nabla 4.2$

(2048.3)

0	3.5	5	9.8	10.5	16.5	18.5	23	28	29	29.5
	6.3	4.7	5.2	4.2	4.0	3.2	5.0	5.0	4.2	4.2
	$\nabla 2.0$	$\nabla 3.6$	$\nabla 2.1$	$\nabla 4.1$	$\nabla 4.3$	$\nabla 5.0$	$\nabla 3.9$	$\nabla 3.3$	$\nabla 4.1$	$\nabla 4.1$

(2048.3)

0	1	2.5	5.5	6	14.5	21	22	25	26	29.5
	6.5	5.6	5.4	4.9	3.8	5.8	4.6	5.2	3.3	3.5
	$\nabla 1.8$	$\nabla 2.7$	$\nabla 2.9$	$\nabla 3.4$	$\nabla 4.5$	$\nabla 2.5$	$\nabla 3.7$	$\nabla 3.0$	$\nabla 5.0$	$\nabla 4.8$

(2048.3)

0	4	9.5	15	18.5	19.5	26.5	29.5
	4.9	4.7	6.5	6.5	4.8	3.1	3.0
	$\nabla 3.4$	$\nabla 3.6$	$\nabla 1.8$	$\nabla 1.8$	$\nabla 3.5$	$\nabla 5.2$	$\nabla 5.3$

(2048.3)

0	5	6	15	17	25.5	29.5
	6.2	5.0	5.0	3.3	2.8	3.1
	$\nabla 2.1$	$\nabla 3.3$	$\nabla 3.3$	$\nabla 5.0$	$\nabla 5.5$	$\nabla 5.2$

(2048.2)

0	2	9	13	18	19.5	25	29.5
	5.3	5.2	3.8	3.8	3.0	2.7	2.8
	$\nabla 3.0$	$\nabla 3.1$	$\nabla 4.5$	$\nabla 4.5$	$\nabla 5.3$	$\nabla 5.6$	$\nabla 5.5$

(63)

2048.28

Sta. + π - Elev.D
947D
952D
957D
962D
967D
972D
977

0 = h - 950.5

N — S
W — E

9-June '53

(63)

(2048.3)

0	3	8.5	10	11.5	19	24	29.5
	5.3	5.0	5.8	3.9	3.7	3.1	3.0
	3.0	3.3	4.5	4.4	4.6	4.7	4.5

(2048.3)

0	1	11.5	10.5	13	15	24	29.5
	6.7	5.3	4.3	5.7	4.2	2.7	3.6
	4.6	4.0	4.0	4.6	4.1	4.6	4.7

(2048.3)

0	3	4.3	8	11	15.5	23	26.5	29.5
	6.3	4.9	4.3	5.6	4.0	3.6	4.1	3.4
	4.0	4.4	4.0	4.7	4.3	4.7	4.2	4.9

(2048.3)

0	5	11	13.5	21	26	29.5
	5.1	5.0	4.0	3.6	3.3	3.3
	4.2	4.3	4.3	4.7	4.0	4.0

(2048.3)

0	7	10.5	11.5	15.5	17	23	28	29.5
	4.7	4.8	3.8	4.9	3.4	3.1	2.9	3.2
	4.6	4.5	4.5	4.4	4.9	4.2	4.4	4.1

(2048.3)

0	6	15	20.5	25	29.5
	4.7	4.2	3.1	2.4	2.7
	4.6	4.1	4.2	4.9	4.6

(2048.3)

0	1.5	3	8	13.5	21	25	29.5
	6.3	5.3	4.7	3.6	3.0	2.8	3.2
	4.0	4.0	4.6	4.7	4.3	4.5	4.1

(64)

Sta. + ∇ - Elev.

2048.28

T.P.	3.90	2046.93	5.25	2943.03
D				
982				

D	
987	

D	
992	

D	
997	

D	
1002	

D	
1007	

0 = 1-950.5

E	
N	S
W	

9-June '53

(64)

(2046.9)

0	2	2.5	5.5	7.5	10	13	24	27	29.5
	5.2	4.0	3.8	3.0	3.5	2.2	1.2	1.2	1.6
	4.7	42.9	43.1	43.9	43.4	44.2	45.2	45.2	45.3

(2046.9)

0	9	13	20.5	26.5	28	29.5
	2.8	2.1	2.3	1.1	1.7	1.8
	44.1	43.8	44.6	45.8	45.2	45.1

(2046.9)

0	5.5	13	15	18	23	23.2	29.5
	3.6	3.3	2.4	2.3	2.0	1.5	1.7
	43.3	43.1	44.5	44.6	43.9	45.4	45.2

(2046.9)

0	2.5	10	17.5	26	28.5	29.5
	4.7	2.6	2.5	1.5	2.7	2.2
	42.2	44.3	44.9	45.4	44.2	44.7

(2046.9)

0	4.5	9.5	16.5	26	29.5
	4.3	2.8	2.9	1.8	1.7
	42.6	44.1	44.0	45.1	45.2

(2046.9)

0	9	10.5	18	24	29.5
	4.0	3.0	2.6	1.5	1.9
	42.9	43.9	44.3	45.4	45.0

(65)

2046.93

Sta. + π - Elev.D
1012D
1017D
1022D
1027D
1032D
1037

0 = 1-950.5

N
E
S
W

9-June '53

(65)

(2046.9)

8.5	11	18.5	19.5	25	29.5
4.1	3.0	3.1	2.1	2.2	1.9
72.8	73.9	73.8	73.8	74.7	75.0

(2046.9)

9	14	17	18	27	29.5
4.5	3.8	2.8	2.0	1.1	1.7
72.2	73.1	74.1	74.9	75.8	75.2

(2046.9)

3	13.5	19.5	24	26	29.5
4.5	4.2	2.8	2.9	2.1	2.6
72.2	72.7	74.1	74.0	74.8	74.3

(2046.9)

12	17.5	26	29.5
4.8	4.1	1.6	2.1
72.1	72.8	75.3	74.8

(2046.9)

12	17	22	29.5
5.0	4.2	2.6	1.6
71.9	72.7	74.3	75.3

(2046.9)

6	15	23	27	29.5
4.8	4.5	3.1	2.5	1.8
72.1	72.2	73.8	74.4	75.1

(66)

Sta.

+

⋈

-

Elev.

2046.93

D

1042

D

1047

D

1052 & D-1051 Same Ground Elev.

□

2.52

2044.41

(2044.40)

0 = L-9505

N — S
W — E

9-June '53

(66)

(2046.9)

0	2.5	10	18.5	26	29.5
	4.2	4.1	4.0	3.0	1.5
	2.2	2.8	2.9	3.9	2.5

(2046.9)

0	7	13	19	24	28	29.5
	4.1	3.7	3.2	2.3	2.2	1.7
	2.8	3.7	3.7	4.0	4.1	4.2

(2046.9)

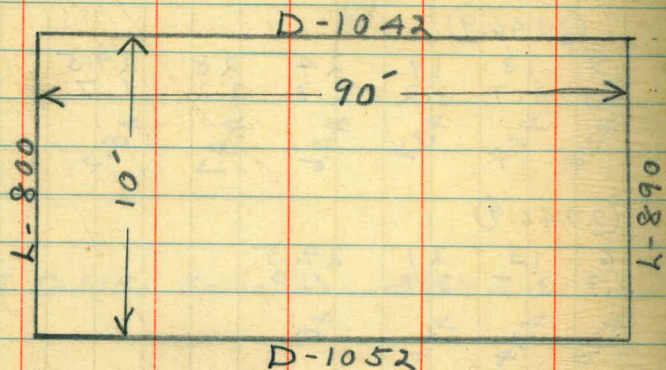
0	6	12	21	29.5
	3.9	3.5	2.9	1.8
	3.0	3.4	4.0	4.1

(67) Spillway X-Sections

Sta. + ∇ - Elev.

9.18 2040.16 2030.98

D
1042



D
1047

D
1052

1.76 2038.40 (2038.40)

0 = L-800 @ 90' = L-890 (67)

3-August 1953 N ∇ S
W

Locher
Halstead

B.M.

(2040.2)

30	38	45	52	58	60	68
9.8	9.0	9.0	7.9	8.0	7.5	6.1
2030.4	31.2	31.2	32.3	32.2	32.7	34.1

90	86	81	75
4.6	4.4	4.8	5.1
2035.6	35.8	35.4	35.1

(2040.2)

0	9	18	23	26	30	33.5	37.5
13.0	12.3	10.9	10.1	10.8	10.4	10.3	9.0
27.2	27.9	29.3	30.1	29.4	29.8	29.9	31.2

76	71	65	60	56.5	52	46	45
5.5	5.8	6.7	7.6	8.5	8.6	7.9	8.8
34.7	34.4	33.5	32.6	31.7	31.6	32.3	31.4

79	79.5	85	90
6.1	4.4	4.5	4.1
34.1	35.8	35.7	36.1

(2040.2)

0	9	19	24	30	36	43	48	53
12.9	12.3	10.9	10.3	9.8	9.7	8.8	9.3	9.5
27.3	27.9	29.3	29.9	30.4	30.5	31.4	30.9	30.7

90	87	85	78	73	63	60	57
3.9	4.2	5.4	5.2	6.8	8.0	8.2	8.3
36.3	36.0	34.8	35.0	33.4	32.2	32.0	31.9

Check concrete slab @ L-890 @ 1050

(68)
Sta.

Spillway X-Section

+ ∇ - Elev.

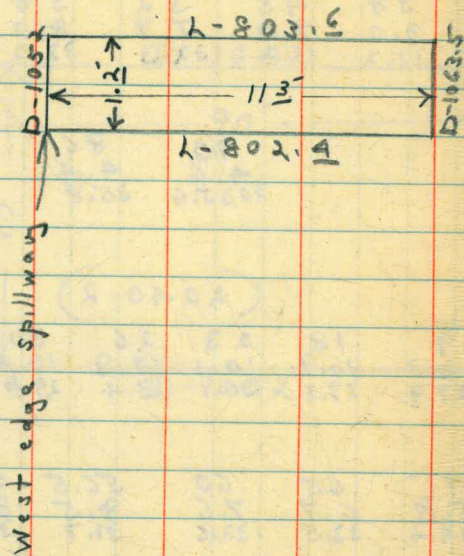
2040.16

h
802 4

h
802 5

h
803 5

h
803 5



0 = D-1052 E Increase going West
 11.3 = D-1063.3 F $\frac{S}{N}$ W
 3-August 1953

(2040.2)

0.0	1.5	3.3	5.8	11.3
12.8	10.8	6.8	4.8	0.0
2027.4	29.4	33.4	35.4	2040.2

(2040.2)

0.0	1.5	5.7	5.8	11.3
12.8	12.2	11.8	4.8	0.0
27.4	28.0	28.4	35.4	40.2

(2040.2)

0.0	1.5	5.7	5.8	11.3
12.8	12.2	11.8	4.8	0.0
27.4	28.0	28.4	35.4	40.2

(2040.2)

0.0	1.8	3.3	5.8	11.3
12.8	11.3	6.8	4.8	0.0
27.4	28.9	33.4	35.4	40.2

(69)

Sta.

+

⌒

-

Elev

□

4.01

2052.89

2048.88

B.M.

D
940

D
991

D
1000

□

8.50 2044.39 (2044.40)

X-Sections were taken under
future Piers #2 & #3 in Spillway (69)

O = 29935 d

Increase going South N

E

S

W

Soyster
Locker

14-August 1953

(2052.9)

(See page 47)

9.7
5.5
2047.4

13.4
5.2
47.7

16.5
5.4
47.5

(2052.9)

(See page 32 for
6991 d D-1000)

0
6.8
46.1

1.5
6.8
46.1

13.2
4.8
48.1

16.5
5.6
47.3

22
3.6
49.3

(2052.9)

0
6.4
46.5

4.2
5.8
47.1

7
5.4
47.5

9.5
5.7
47.2

16.5
4.7
48.2

19.5
3.8
49.1

(71)

X-SECTION OF AREA

Sta.



Elev.

BASE LINE = D 1675⁰

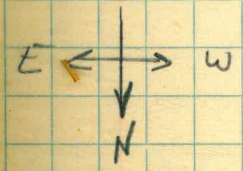
IN FRONT MARCH 10-11

(71)

SOYSTER
WALSTED

9-10-53

= 0



D 1675

L1175

L1170

L1165

L1160

L1155

L1150

L1145

ZERO

(72)
Sta. + π - Elev.

L1145

L1150

L1155

L1160

L1165

L1170

L1175

L1180

L1185

L1190

ORIG. GROUND
EAST 0 WEST (72)

(1976)

(HI 1950.7) (HI 1970)

$\frac{27.0}{7.2} \frac{22.5}{7.2} \left\| \frac{19.0}{14.0} \frac{16}{8.2} \frac{6}{4.6} \frac{0}{4.8} \right\| \frac{6.0}{10.0}$

(H.I. 1950.7) (HI 1970)

$\frac{29.5}{9.4} \frac{25}{7.8} \frac{23}{7.0} \left\| \frac{21}{16.5} \frac{12.5}{7.4} \frac{8}{4.5} \frac{0}{3.4} \right\| \frac{10}{7.5} \frac{20}{6.5}$

(HI 1950.7)

(HI 1970)

$\frac{32.5}{10.0} \frac{32}{9.8} \frac{26}{6.0} \left\| \frac{20}{13.8} \frac{16.5}{10.3} \frac{12}{9.0} \frac{7}{3.2} \frac{0}{1.7} \right\| \frac{10}{6.0} \frac{20}{5.5}$

(H.I. 1952)

(HI 1970)

$\frac{36.5}{12.3} \frac{32.5}{11.0} \frac{28}{7.3} \left\| \frac{21.5}{13.0} \frac{13}{7.0} \frac{5}{2.0} \frac{0}{1.0} \right\| \frac{10}{5.0} \frac{16}{5.0}$

(HI 1952)

(HI 1970)

$\frac{36.5}{14.0} \frac{32.5}{11.8} \left\| \frac{23.5}{16.4} \frac{16}{11.4} \frac{11}{5.0} \frac{4}{1.6} \frac{0}{1.0} \right\| \frac{4.0}{5.4} \frac{14}{5.0}$

(HI 1952)

(HI 1970)

$\frac{36.5}{14.0} \frac{35}{14.0} \left\| \frac{26.5}{19.0} \frac{17}{13.0} \frac{13}{6.7} \frac{5}{1.7} \frac{0}{0.7} \right\| \frac{6.0}{5.2} \frac{16}{5.0}$

(HI 1952)

(HI 1970)

$\frac{45}{13.0} \frac{35.5}{12.0} \left\| \frac{25}{16.7} \frac{20}{10.3} \frac{13}{8.1} \frac{8.5}{4.5} \frac{0}{0.7} \right\| \frac{6.0}{5.2} \frac{16}{5.4}$

(HI 1952)

(HI 1970)

$\frac{45}{12.0} \frac{40.5}{11.0} \left\| \frac{29}{17.0} \frac{23}{13.0} \frac{10}{7.1} \frac{0}{1.0} \right\| \frac{5}{5.0} \frac{16}{5.3}$

(HI 1952)

(HI 1970)

$\frac{45}{13} \frac{41.5}{12} \left\| \frac{27.5}{16} \frac{22}{14} \frac{13}{10.6} \frac{0}{2.4} \right\| \frac{7}{4.5} \frac{17}{5.4}$

(HI 1952)

(HI 1970)

$\frac{45}{14.0} \frac{38}{5.5} \left\| \frac{26}{17.0} \frac{17}{13.0} \frac{12.5}{11.0} \frac{2}{4.5} \frac{0}{3.1} \right\| \frac{8.5}{4.0} \frac{15}{5.3}$

(73)

Sta. + ∇ - Elev.

L1195

L1200

L1205

(73)

EAST

R W

(HI 1952)	(HI 1970)			(1976)
$\frac{45.5}{15.0}$	$\frac{26}{19.0}$ $\frac{15}{14.0}$ $\frac{9}{10.0}$ $\frac{0}{3.0}$			$\frac{11.5}{2.4}$ $\frac{17}{5.0}$
$\frac{45.5}{15.7}$ $\frac{40.5}{16.0}$	(HI 1970)			(1976)
$\frac{45.5}{16.5}$ $\frac{41.5}{16.0}$			$\frac{15.5}{16.0}$ $\frac{0}{3.4}$	$\frac{12.5}{2.4}$ $\frac{23.5}{5.0}$
			(HI 1970)	(1976)
			$\frac{14}{16.0}$ $\frac{0}{5.2}$	$\frac{16}{3.0}$ $\frac{29}{4.5}$

(74)

Sta.

+

π

-

INTERMEDIATE

Elev.

BASE LINE = 0 = D1630 =

φ ARCH 10-11

END PIPE @ L1141

L1140

L1130

L1120

L1110

L1100

L1090

L1080

L1070

L1060

L1050

L1040

SHOTS

IN OUTLET

WORKS

(74)

(NOT FINALS)

SOYSTER

HALSTED

9-17-53

E ← → W

D1630

(H1 1946)									
	19.	0	10.5	16.5	DIST				
	7.4	8.0	5.0	3.8	ROD				
(H1 1946)									
	22	9	8	0	9	11.5	21		
	8.0	8.0	13.5	11.0	12.2	3.8	1.5		
(H1 1946)									
	25	12	7	0	7.5	10.5	17.5	23.5	
	7.0	7.0	13.0	11.6	13.0	9.5	0.5	7.0	
(H1 1946)									
	21.8	9	6	0	8	16	24.5		
	8.6	8.0	10	8.6	7.1	2.0	75.0		
(H1 1946)									
	26.5	11	7	0	8	14.5	18	22	27
	8.0	9.0	11.0	11.3	9.3	3.5	2.3	75.5	7.0
(H1 1946)									
	26.5	13	10	0	11	21.5	28.5		
	9.5	9.5	11.0	12.5	11.5	72.0	46.3		
(H1 1946)									
	26.5	13.5	10	0		10	13.5	28.5	
	8.5	8.5	10.8	11.5		11.5	42.4	46.3	
(H1 1946)									
	26.5	10.5	8.0	0	5.5	10	15	26.5	
	8.8	8.8	11.5	11.3	10.5	7.5	11.1	4.0	
(H1 1946)									
	26.5	11	8.5	0	8.5	15.5	26.5		
	7.8	7.8	10.0	10.4	9.3	3.7	7.0		
(H1 1946)									
	26.5	10	7	0	8	14	21	26.5	
	7.8	7.8	9.5	9.5	9.0	5.2	2.7	0.5	
(H1 1946)									
	26.5	8.5	7.0	0	9.5	14.5	20.5	26.5	
	7.0	7.0	9.6	9.5	9.5	7.0	3.0	2.0	

(75)
Sta.

+ π - Elev.

L1030

L1020

L1010

L1000

H1 (1946)
 $\frac{26.5}{5.5} \quad \frac{7.0}{5.5} \quad \frac{6.5}{9.4} \quad \frac{0}{9.3} \quad \frac{10}{9.0}$ } }

H1 (1946)
 $\frac{26.5}{4.3} \quad \frac{6.0}{4.3} \quad \frac{5.5}{7.3} \quad \frac{0}{7.0} \quad \frac{8}{7.0}$ } }

H1 (1946)
 $\frac{26.5}{3.0} \quad \frac{6.5}{3.0} \quad \frac{6.0}{6.7} \quad \frac{0}{6.5} \quad \frac{6.5}{6.0}$ } }

H1 (1946)
 $\frac{28.5}{1.0} \quad \frac{6.0}{1.0} \quad \frac{5.5}{6.0} \quad \frac{0}{7.0} \quad \frac{6.0}{7.0}$ } }

H1 1952
 $\frac{19.5}{2.4} \quad \frac{26.5}{2.4}$

H1 1952
 $\frac{16}{5.5} \quad \frac{18.5}{5.5} \quad \frac{21.5}{3.0} \quad \frac{26.5}{3.0}$

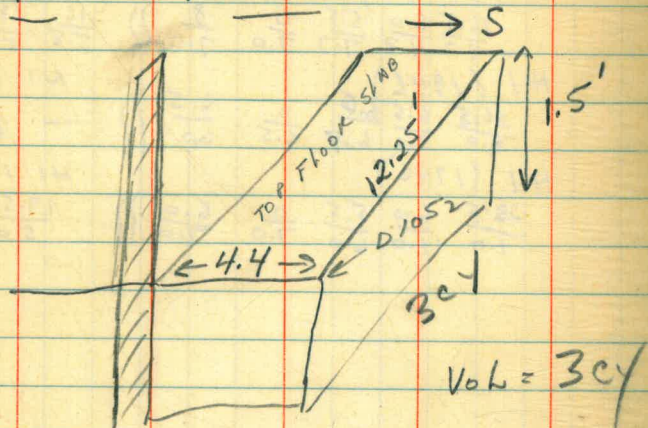
H1 1952
 $\frac{17}{6.0} \quad \frac{26.5}{5.5}$

H1 1952
 $\frac{19.5}{5.0} \quad \frac{26.5}{5.0}$

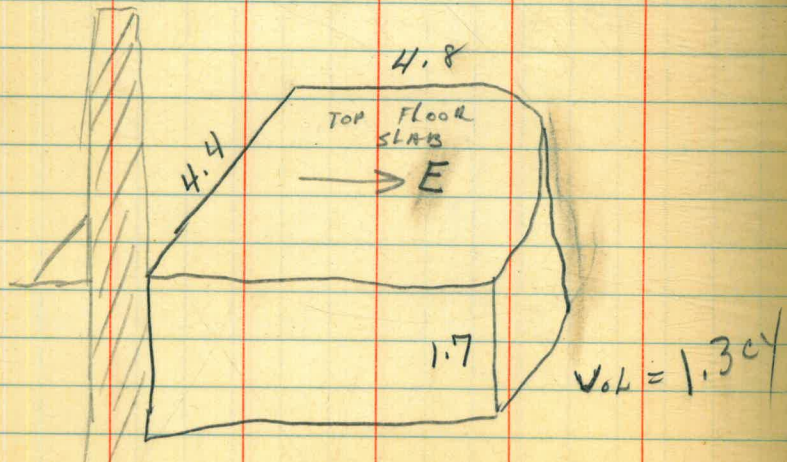
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9-22-53 SOYSTER
FINAL X-SECTIONS HALSTED
WING WALLS

WEST FOOTING



EAST FOOTING



76

Natural Trigonometrical Functions

Angle.	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle.	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.		
32	.5299	.6249	1.1792	1.887	1.600	.84805	58	39	.6293	.8098	1.2868	1.589	1.235	.77715	51
10	.5324	.6289	1.1813	1.878	1.590	.84650	50	10	.6316	.8146	1.2898	1.583	1.228	.77531	50
20	.5348	.6330	1.1835	1.870	1.580	.84495	40	20	.6338	.8195	1.2929	1.578	1.220	.77347	40
30	.5373	.6371	1.1857	1.861	1.570	.84339	30	30	.6361	.8243	1.2959	1.572	1.213	.77162	30
40	.5398	.6412	1.1879	1.853	1.560	.84182	20	40	.6383	.8292	1.2991	1.567	1.206	.76977	20
50	.5422	.6453	1.1901	1.844	1.550	.84025	10	50	.6406	.8342	1.3022	1.561	1.199	.76791	10
33	.5446	.6494	1.1924	1.836	1.540	.83867	57	40	.6428	.8391	1.3054	1.556	1.192	.76604	50
10	.5471	.6536	1.1946	1.828	1.530	.83708	50	10	.6450	.8441	1.3086	1.550	1.185	.76417	50
20	.5495	.6577	1.1969	1.820	1.520	.83549	40	20	.6472	.8491	1.3118	1.545	1.178	.76229	40
30	.5519	.6619	1.1992	1.812	1.511	.83389	30	30	.6494	.8541	1.3151	1.540	1.171	.76041	30
40	.5544	.6661	1.2015	1.804	1.501	.83228	20	40	.6517	.8591	1.3184	1.535	1.164	.75851	20
50	.5568	.6703	1.2039	1.796	1.492	.83066	10	50	.6539	.8642	1.3217	1.529	1.157	.75661	10
34	.5592	.6745	1.2062	1.788	1.483	.82904	56	41	.6561	.8693	1.3251	1.524	1.150	.75471	49
10	.5616	.6787	1.2086	1.781	1.473	.82741	50	10	.6583	.8744	1.3284	1.519	1.144	.75280	50
20	.5640	.6830	1.2110	1.773	1.464	.82577	40	20	.6604	.8796	1.3318	1.514	1.137	.75088	40
30	.5664	.6873	1.2134	1.766	1.455	.82413	30	30	.6626	.8847	1.3352	1.509	1.130	.74896	30
40	.5688	.6916	1.2158	1.758	1.446	.82248	20	40	.6648	.8899	1.3386	1.504	1.124	.74703	20
50	.5712	.6959	1.2183	1.751	1.437	.82082	10	50	.6670	.8952	1.3421	1.499	1.117	.74509	10
35	.5736	.7002	1.2208	1.743	1.428	.81915	55	42	.6691	.9004	1.3456	1.494	1.111	.74314	48
10	.5760	.7046	1.2233	1.736	1.419	.81748	50	10	.6713	.9057	1.3492	1.490	1.104	.74120	50
20	.5783	.7089	1.2258	1.729	1.411	.81580	40	20	.6734	.9110	1.3527	1.485	1.098	.73924	40
30	.5807	.7133	1.2283	1.722	1.402	.81412	30	30	.6756	.9163	1.3563	1.480	1.091	.73728	30
40	.5831	.7177	1.2309	1.715	1.393	.81242	20	40	.6777	.9217	1.3600	1.476	1.085	.73531	20
50	.5854	.7221	1.2335	1.708	1.385	.81072	10	50	.6799	.9271	1.3636	1.471	1.079	.73333	10
36	.5878	.7265	1.2361	1.701	1.376	.80902	54	43	.6820	.9325	1.3673	1.466	1.072	.73135	47
10	.5901	.7310	1.2387	1.695	1.368	.80730	50	10	.6841	.9380	1.3711	1.462	1.066	.72937	50
20	.5925	.7355	1.2413	1.688	1.360	.80558	40	20	.6862	.9435	1.3748	1.457	1.060	.72737	40
30	.5948	.7400	1.2440	1.681	1.351	.80386	30	30	.6884	.9490	1.3786	1.453	1.054	.72537	30
40	.5972	.7445	1.2466	1.675	1.343	.80212	20	40	.6905	.9545	1.3824	1.448	1.048	.72337	20
50	.5995	.7490	1.2494	1.668	1.335	.80038	10	50	.6926	.9601	1.3863	1.444	1.042	.72136	10
37	.6018	.7536	1.2521	1.662	1.327	.79864	53	44	.6947	.9657	1.3902	1.440	1.036	.71934	46
10	.6041	.7581	1.2549	1.655	1.319	.79688	50	10	.6967	.9713	1.3941	1.435	1.030	.71732	50
20	.6065	.7627	1.2577	1.649	1.311	.79512	40	20	.6988	.9770	1.3980	1.431	1.024	.71529	40
30	.6088	.7673	1.2605	1.643	1.303	.79335	30	30	.7009	.9827	1.4020	1.427	1.018	.71325	30
40	.6111	.7720	1.2633	1.636	1.295	.79158	20	40	.7030	.9884	1.4061	1.422	1.012	.71121	20
50	.6134	.7766	1.2661	1.630	1.288	.78980	10	50	.7050	.9942	1.4101	1.418	1.006	.70916	10
38	.6157	.7813	1.2690	1.624	1.280	.78801	52		.7071	1.	1.414	1.414	1.	.70711	45
10	.6180	.7860	1.2719	1.618	1.272	.78622	50								
20	.6202	.7907	1.2748	1.612	1.265	.78442	40								
30	.6225	.7954	1.2778	1.606	1.257	.78261	30								
40	.6248	.8002	1.2808	1.601	1.250	.78079	20								
50	.6271	.8050	1.2838	1.595	1.242	.77897	10								

Cosin. Cotg. Cosec. Sec. Tan. Sin. Angle

Cosin. Cotg. Cosec. Sec. Tan. Sin. Angle

2051.0 @ 10.16
0.6 9.50
 2049.4 6.6

2043.4

1.1
2.6 2.6 1.1
 3.7 3.6

10.74

2050 @ 1016
6.6 950
2043.4 6.6

+ 1946 = Top of pour
#5 Butt. 16-April 1953

2002.32 @ L-987.73
1946.00 22.53

L-965.20

34.6
93.5

22.528

11.1

1016
890

12.6

2051.00
12.6

2038.90
Ord.

890
756

1016
993.5

2051
226

13.4

22.5

2045.55
987.5

2025

2038.9

2038.1

7.15 rd

2025 @ 756 3.85

890

2038.4
890
756

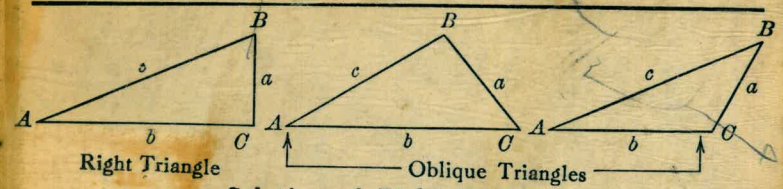
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1016 = 2051
890

12.6

2038.4 @ 1-890

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{a}$, $\operatorname{cosec} = \frac{c}{a}$

Given	Required	Formulas
a, b	A, B, c	$\tan A = \frac{a}{b} = \cot B$, $c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B$, $b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90^\circ - A$, $b = a \cot A$, $c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90^\circ - A$, $a = b \tan A$, $c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90^\circ - A$, $a = c \sin A$, $b = c \cos A$

Solution of Oblique Triangles

Given	Required	Formulas
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$, $C = 180^\circ - (A + B)$, $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180^\circ - C$, $\tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$ $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a + b + c}{2}$, $\sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$ $\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}$, $C = 180^\circ - (A + B)$
a, b, c	Area	$s = \frac{a + b + c}{2}$, $\text{area} = \sqrt{s(s - a)(s - b)(s - c)}$
A, b, c	Area	$\text{area} = \frac{bc \sin A}{2}$
A, B, C, a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL

Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10'. From Table, Page IX. $\cos 5^\circ 10' = .9959$. Horizontal distance = 319.4 × .9959 = 318.09 ft.

Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

When the rise is known, the horizontal distance is approximately: — the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.

