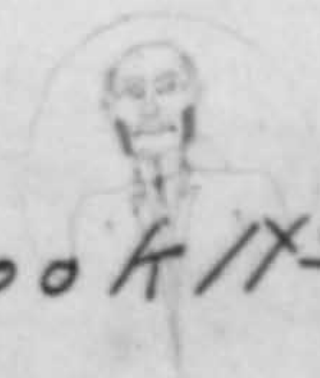


Diverting Dam
Alignment

Diverting

774
Dam

Copied from Book IX^o 107



DIVERTING DAM.

3+68.2

P.O.T.

E+846

P.O.T.

1+75.3

P.O.T.

0+00

Diverting Dam Levels.

9+97.7

7+13.0

POT

Levels

B.M.				868.27
	0.21	868.48		
0+00			3.4	865.1
			9.95	858.53
	0.47	859.00		
0+50			3.0	856.0
0+75			7.0	852.0
			9.64	849.36
	0.50	849.86		
0+90			5.7	844.2
1+00			2.8	847.1
+10			7.0	842.9
+50			8.5	841.4
			9.61	840.25
	0.04	840.29		
1+75.3			5.0	835.3
2+00			4.6	835.7
+50			7.5	832.8
			9.37	830.92
	0.75	831.67		
2+84.6			2.1	829.6
offset 2+84.6			2.4	829.3
3+00			3.9	827.8
+50			8.3	823.4
			9.75	821.92
	0.19	822.11		
3+68.2			0.5	821.6
4+00			4.3	817.8

12

Levels

		82211		
4+50			5.7	816.4
5+00			5.8	816.3
+50			6.1	816.0
+79.4			5.8	816.3
+81.4			4.0	818.1
6+00			3.8	818.3
+05			3.9	818.2
+07			5.7	816.4
+24			5.4	816.7
+43.7			5.79	816.32
			9.04	813.07
	H.16	817.23		
STARS				
+43.7			5.2	815.0
+50			5.2	815.0
7+00			5.2	815.0
+13			5.2	815.0
B.M.			5.21	812.02
+17.5			5.2	815.0
+17.6			10.0	807.2
+17.6			14.0	803.2
+50			10.0	807.2
+94			10.0	807.2
8+00			9.0	808.2
750			6.0	811.2
+60			4.1	813.1
			0.43	816.74

Levels

				816.74
	8.99	825.73		
			0.30	825.43
	9.80	835.23		
9+00			5.5	829.7
			0.24	834.99
	9.95	844.94		
			0.58	844.36
	9.78	854.14		
+50			6.4	847.7
			0.10	853.74
	9.27	863.01		
			0.85	862.16
	7.99	870.15		
9+97.7			4.6	865.6
B.M.			3.65	866.50

-100-53 10 120 +101+53 9+00
183 164 150 132 122 77

200
-175-83 -86 +11 9+50
163 136 122 77

-100-75-107-107-15 +97+11+25 +977
156 75 137 135 117 105 77
B.M. on Boulder +12+ 9+90.

-80	-47	-38	-50	0.0	4+50
100	50	15	26	14	
-92	-45	-42	-115	-0	5+00
120	27	17	28	13	
-167	-187	-163	-197	-141	5+50
141	41	13	9	22	

-232	-254	-228	0.0	6+00
101	72	26	28	

-214	-207	-182	0.0	6+50	
121	91	77	24		
-198	-185	-201	-206	-171	7+00
125	83	55	21	25	

On top of DAM. So edge 20' Lt 7+30

W.S.

BOTTOM OF DAM

W.S. 20-177-21-22 +40 +40 W.S. 7+50 W.S.

104 113 74 27 27 16 140

W.S. 102 101

-260	-247	-213	-205	+20	+30	-1.0	8+00
175	151	72	27	50	26	46	

-256	-226	-153	-145	+45	+45	8+50
156	113	112	75	68	65	65

BM Elev 868.27 - 26' Lt Sta 0+00 on top Backdr.

Note
All distances are from
0+00 & unless otherwise stated
Elevations are from
Stakes + 4 -

+77 +27 -33 -0 0+50
50 32 16 16

+121 +107 +53 1+00
79 50 20

+77 +108 +100 +53 1+50
78 70 57 22

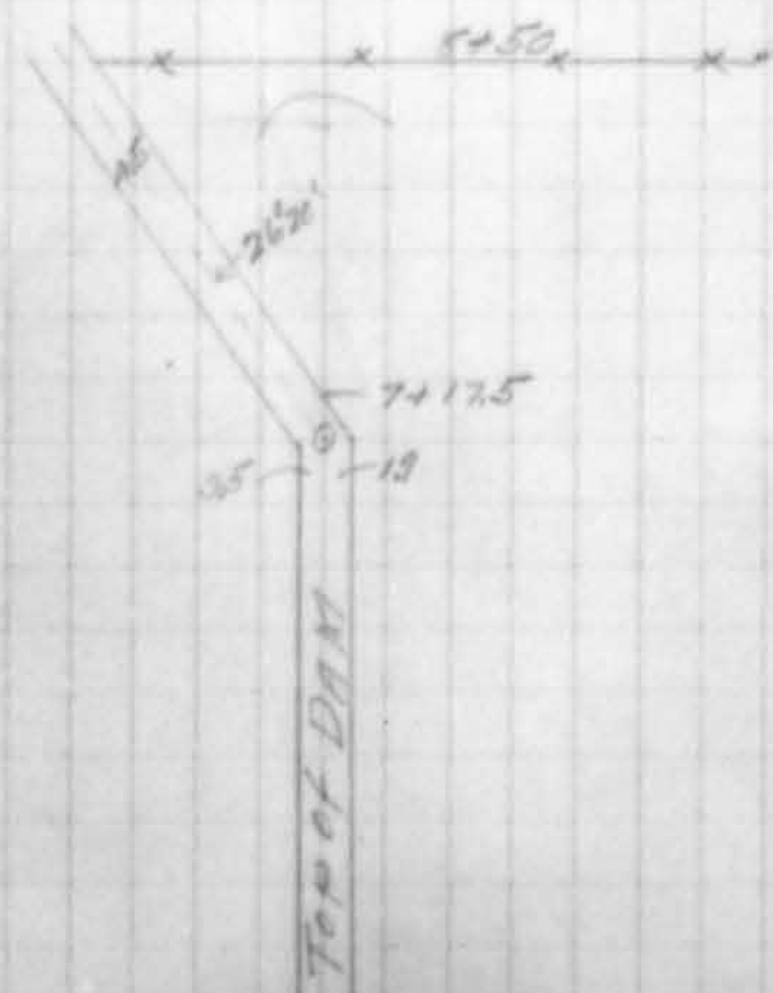
+88 -20 00 +43 -68 2+00
112 76 62 47 15

+37 +05 -42 -17 -17 -29 2+50
100 75 66 51 42 30

+36 -03 -45 3+00 from offset line +30'
100 50 35

00 +10 -37 -45 00 3+50 " " "
100 71 50 37 29

-26 -53 -24 -10 4+00
114 84 71 40



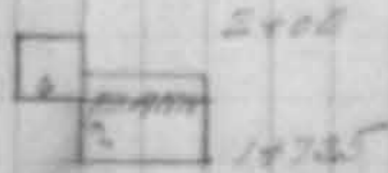
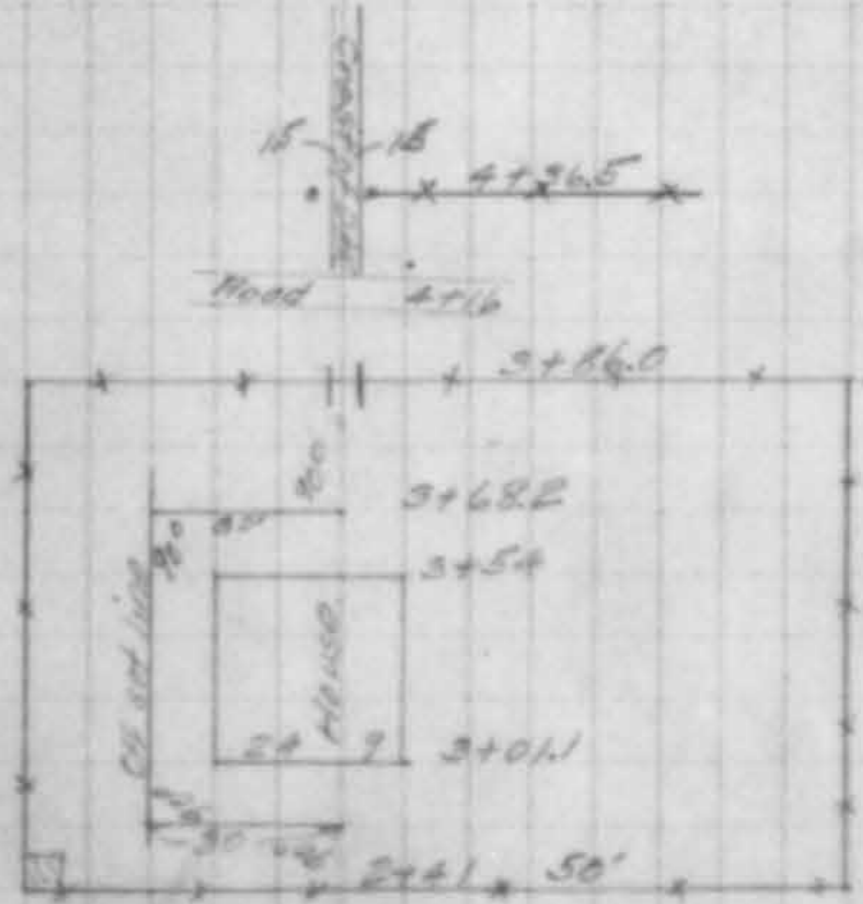
Topog. Profile.
at.

Div. Dam.

Cuxomaco Water Co.

Topography & Profile.
dft

Directing Dam.



Quantities for Diverting Dam - Cellular Type

Scale 1/4"=1' Planimeter Constant .9670

Sta.	Planimeter Reading	Area of Section sq. ft.	Area of Average Section sq. ft.	Length bet. Sects. ft.	Volume bet. sects. cu. ft.
0+00	0000	0000			
0+50	42	41	205	273	5678
1+00	125	121	812	50	40502
1+50	214	207	1642	50	82002
2+00	400	387	2972	50	148502
2+50	460	445	4162	50	208002
3+00	595	575	5102	50	255002
3+50	765	740	6572	50	328752
4+00	947	916	8282	50	414002
4+50	1155	1117	10162	50	508252
5+00	1330	1286	12012	50	600752
5+40	1700	1644	14652	40	586002
5+50	1800	1741	16922	10	169252
6+00	2020	1973	18572	50	928502
6+50	1970	1905	19392	50	969752
7+00	1975	1910	19072	50	953752
7+20	2060	1992	19512	20	390202
7+50	2325	2248	21202	30	636002
8+00	1350	1305	17762	50	888252
8+40	1205	1165	12352	40	494002
8+50	500	484	8242	60	494702
9+00	140	135	3092	50	154752
9+14 1/2	0000	0000	672	346	23352
					<u>927,992</u> = cu. yds.

Figure 60% of Total Yardage.
 Then from spillway subtract 3899 from Total yardage.
 " " " " 1782 " Concrete.
 For dist. from ground surface down to rock add 72695 yds.

Quantity above Ground	34370 1/2 yds.
Bot. Surface to Rock	72695 yds.
Total Yardage	416392
34% of 41,639 1/2 =	14,157 1/2 yds.
Subt. for Spillway	1782
Gravel	13,979 1/2
Concrete	27,271 1/2
Total G.C.	41,250 1/2

Concrete	13,979 1/2 yds.
Gravel	27,271 1/2 yds.

Sta.	Area	Dist. Rein.	Area				
0+22 3/4	11	55	273	47.3	0	0	
0+50	11	155	50	775	3	15	75
1	20	225	50	1125	9	6.0	300
+50	28	28	50	1400	19	14	700
2	31	325	50	1625	20	20	1000
+50	34	36.5	50	1825	26	23	1150
3	39	42	50	2100	32	29	1450
+50	45	47	50	2350	36	34	1700
4	49	48	50	2400	41	39	1950
+50	47	47	50	2350	46	43	2150
5	47	47	40	1880	54	50	2000
+40	47	52	40	2080	60	57	2640
7+20	53	56	50	2800	68	64	2560
8	55	55	40	2200	44	56	2800
8+40	55	46	60	2760	43	43	1720
9	37	28.5	50	1425	23	33	1980
+50	20	10	346	346	0	12	600
9+14 1/2	0	10	346	346	0		
				<u>37528</u>			
				973			

$37528 \text{ sq. ft.} \times \frac{4}{3} = 50037 \text{ cu. yds. of } \frac{3}{4} \text{ rods.}$

$31825 \text{ sq. ft.} \times 1 = 31825 \text{ cu. yds. of } \frac{1}{2} \text{ rods.}$

Reinforcing

Cellular type

Div. Dam

Calculation of
Quantities - Diverting Dam
Cellular Type.

Sta.	Depth	Area	Width	Int. floors
0+22	0	1179	0	4.5
+50	13	800	9	
1	19	1100	9	9
+50	25	1550	20	15
2	37	1950	36	28
+50	41	2200	60	48
3	47	2475	60	60
+50	52	2775	88	74
4	59	3100	88	88
+50	65	3450	122	105
5	73	3120	122	122
+40	83	5280	160	141
6	93	4600	205	183
+50	91	4550	205	205
7	91	5100	205	205
+50	113	4600	260	232
8	75	2800	122	196
+40	70	3420	122	122
9	44	1700	60	91
+50	24	415	20	40
+846	0		10	
			55164	100640

For water cushion $5 \times 200 = 1000$ sq ft
 sq ft. mesh for lower face $\rightarrow 5664$ sq ft.

Area of Int. floors = 100640 sq ft.
 mesh reinf.

Cellular Type
 Div Dam

20.5	1	205
81	2 1/2	2025
164	2 1/2	420
247	2 1/2	7425
416	2 1/2	1040
510	2 1/2	1275
657	2 1/2	16425
828	2 1/2	2070
1016.5	2 1/2	254125
1205.5	2 1/2	300375
1465.5	2	2930
1692.5	1/2	84625
1857	2 1/2	46425
1939.5	2 1/2	484875
1907.5	2 1/2	476875
1951	1	1951
2120	1 1/2	3180
1776.5	2 1/2	444125
1235	2	2470
824.5	3	24735
309.5	2 1/2	77375
67.5	2	1350
		<u>4641875</u>

sq ft. in Parabolic walls
every 20' across Dam

46418 + 1/2 Reinf.
cellular tube
in Dam

Quantities for Diverting Dam. Rock Fill Type.

Scale - 1/8" = 1'. Planimeter Const. .9670 (To Ground Surface.)

Sta.	Planimeter reading	Area of section, sq. ft.	Area Area	Length bet. sections	Volume cu. ft.	Vol. yds.
0+37.2	0000	0000		0.5	128	6.4
0+50	1	1		11	50	550
1+00	22	21		60	50	3000
1+50	102	99		225	50	11250
2+00	363	351		448	50	22400
2+50	564	545		627	50	31350
3+00	733	709		803	50	40150
3+50	928	897		1056.5	50	52825
4+00	1257	1216		1362.5	50	68125
4+50	1560	1509		1649	50	82450
5+00	1850	1789		2032.5	40	81300
5+40	2354	2276		2335	10	46700
5+50	2476	2394		2550	50	127500
6+00	2798	2706		2658.5	50	132925
6+50	2700	2611		2606.5	50	130325
7+00	2691	2602		2660.5	20	53210
7+20	2812	2719		2858	30	85740
7+50	3099	2997		2514.5	50	125725
8+00	2101	2032		1820	40	72800
8+40	1663	1608		1057.5	60	63450
9+00	524	507		299.5	50	14975
9+50	95	92		46	305	1403.0
9+80.5	0000	0000				

subtract x sect. of 17 sq. ft. for spillway sections.
or 5100 cu. ft. for entire spillway.

1248159.4
5100
1243059.4 = 46,039.2 yds.

46,039.2 yds. above ground surface.

from ground to rock taken to be 5' below surface.

Planimeter = 8750.
603 = 44,762.2 sq. ft.
x 5' = 223,812.5 cu. ft.
+ 27 = 8,289.2 yds.
Correct for slope + 450 yds.
8739.4 yds

Rock Fill
Above Ground = 46,039.2 yds.
Below Ground = 8,739.4 yds.
Total = 54,778.6 yds.

Sir Dan
Cell Fyke

Quantities for Diverting Dam

Rock Fill Type. Surface Area to 5' below ground

Sta.	Sum of Lengths	Sum	Area	Dist.	Surface Area	Beam Yds.	Plank Bd. Ft.	Bolt	
0+37.2	0	0							
0+50	9	8	17	85	128	1088			
1+00	15	13	28	225	50	11250			
1+50	24	20	44	360	50	18000			
2+00	38	31	69	565	50	28250			
2+50	40	42	82	755	50	37750			
3+00	46	50	96	890	50	44500			
3+50	53	51	104	1000	50	50000			
4+00	58	60	118	1110	50	55500			
4+00				1190	50	59500			
4+50	54	66	120	1235	50	61750			
5+00	54	73	127	1305	40	52200			
5+40	54 52	80 78	134 130	1325	10	13250			
5+50	52	83	135	1350	50	67500			
6+00	52	83	135	1350	50	67500			
6+50	52	83	135	1350	50	67500			
7+00	52	83	135	1460	50	73000			
7+50	74	83	157	1565	50	78250			
8+00	73	85	156	1430	40	57200			
8+40	52 65	78 82	130 147	1140	60	68400			
9+00	42	39	81	620	50	31000			
9+50	22	21	43	215	305	6558			
9+80.5	0	0	0						
Totals.					9509.4	293.4	47,547.3	285,283.8	4,436

293.4 yds. Concrete

47,547.3 Board ft.

285,283.8 Board ft.

Diverting Dam Rock Fill Type.

- Rock Fill - - - - - 54,778⁴ yds.
- Concrete in Beams - - - - - 293⁴ yds.
- Concrete in water cushion - - - 1267⁰ yds.
- Stringers on Dam Faces and Top 47,547³ Board ft.
- Planking " " " " 285,283⁸ Board ft.
- Bolts. 1"x18" 4,436.
- Reinforcing Rods - 1" round. 38 - - - ft.

August 25, 1913.

1/2 Bolt = .04 x surf area
 = 3804. +
 top of hill 120
 top of dam 135
 all over dam 377
 Total 4436

Calculation of
Quantities for Diverting Dam
Rock Fill Type.

Aug. 25, 1913.

Quantities in
Diverting Dam.
Rock Fill Type.

Ed Fletcher Papers

1870-1955

MSS.81

Box: 56 Folder: 11

**Business Records - Water Companies -
Cuyamaca Water Company - Diverting
Dam: calculation of supply quantities needed**



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