

W 494 A

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# 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  $1\frac{1}{2}$  see inside of back cover.

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W.E. Roberts, Insp.

Private Notes - 1918. 1+2, 5, 8, 19, 24,  
70-72  
Sketch of Top of Dam 4

Gen. Insp Notes 5-7, 9-15, 28-31  
Concrete - Tunnel - Spillway 37-46

Blank, 3, 16-18, 20-23, 25-27, 33-36  
47-69

of Preliminary notes  
W.E. Roberts



Use of templates at entrance  
to determine if truck will go  
thru tunnel?

Try one loaded car thru + get  
clearance + bad places in track.

$$\begin{array}{r} 4 \times 770 \times 24 = 770 \\ \quad \quad \quad \quad \quad 96 \\ \quad \quad \quad \quad \quad 4620 \\ \quad \quad \quad \quad \quad 6930 \\ \quad \quad \quad \quad \quad \hline \quad \quad \quad \quad \quad 75870 \end{array}$$

30' discharges

get air temp + Humidity in furnace  
pit after Arch is fired.





DATA  
DIME 31

Data on Tunnel Driven from  
figures of March, 24. 1918.

Length 200 ft.  
Width 42 inches.  
Height 61 inches.

Divided into 20 sections, 20 feet long.

Exhauster - A.B. C. No. 80.

Diam - Rotor 50"

Width " 16 1/2"

Speed " 480-510 R.P.M.

Diam Case 70"

Width " 27.5"

Inlet opening 29" diameter

Outlet " 27.5" square.

From Kent:	Speed	Cu. ft. Min.	Pressure dif
	328	10,050	1/2 of 1/2 in
	402	12,100	3/4 " "
	464	13,980	1 " "
Calculated:	490	14,520	?



cornel  
dimensions

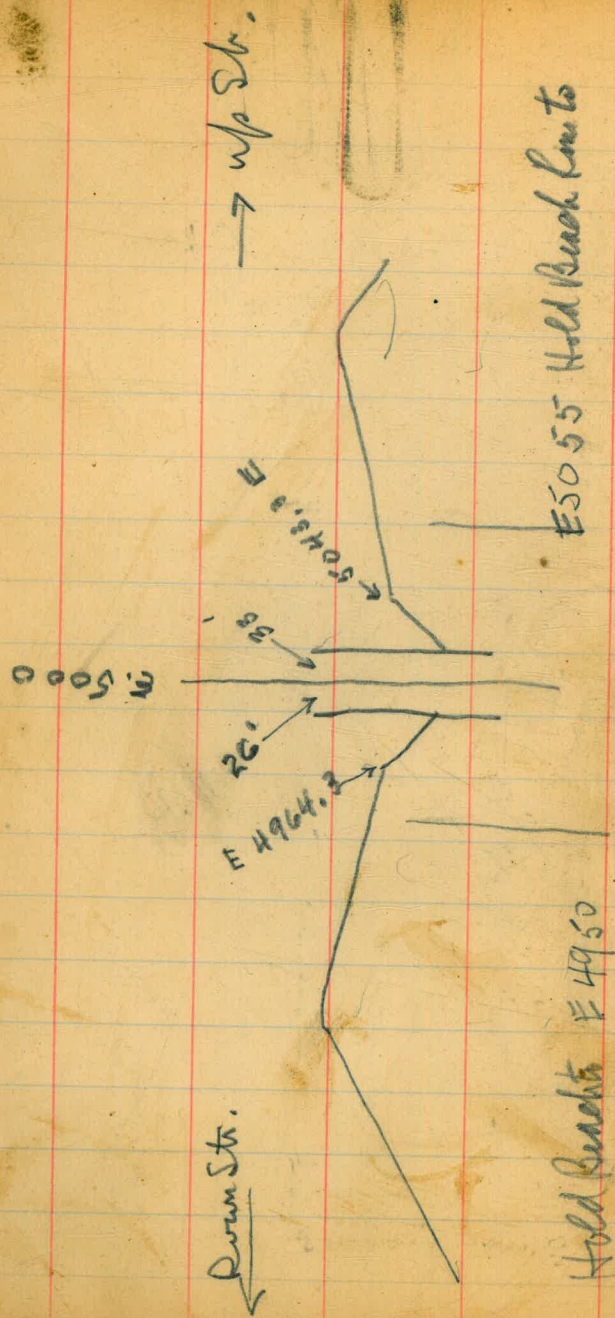
	March 20-21 1918.	March 21-22 1918.	March 22-23 1918	March 23-24 1918.	March 24-25 1918	March 25-26 1918.
Material wet.	86,000 lb 45% moisture	84,557 lb 30%	127,600 lb 44%	129,500 lb 40%	71,100 lb 35%	113,100 lb 35%
Material dry.	47,300 lb 7% moisture	59,400 lb 3%	71,400 lb 6%	77,700 lb 7%	46,200 lb 10%	73,500 lb 8%
Oil consumed	6737.5 lb. 875 gal.	4858.7 lb. 631 gal.	6745.7 lb. 876 gal.	53744 lb. 698 gal.	47047 lb. 611 gal.	6429.5 lb. 835 gal.
Evaporators fuel lb. of oil.	486 lb	524 lb.	72 lb.	795 lb.	378 lb.	475 lb.

2



March. 21. 1918





3750

3850

Upstream	Down Stream
5:6	5:0
7:3	6:0
7:5	6:6
7:5	7:6
8:2	8:0
8:4	8:0
8:4	8:0
8:5	8:0
8:8	7:0
10:6	8:0
8:0	9:3
9:0	10:6
9:6	11:0
10:0	10:0
11:0	8:0
10:0	9:0
10:0	11:0
9:0	10:0
7:6	8:0
5:0	7:6
	5:0



Chicago gal. oil per car for Dec. 1920  
 14. gal.  
 .. for January. 13.8 gal.

*Ill. J.*

~~Feb. 1. Buckhead Oil and~~

Date.	Brick dried	oil used.	rate	Brick dried	oil used.
Feb. 1.	31668	868	<sup>46%</sup> Jan 19	38,440	730 gal.
" 2	24,468	583	<sup>40%</sup> " 15	37,040	710 gal.
" 3	25,044	355	<sup>40%</sup> " 14	50,160	673 gal.
" 4	25,500	760	<sup>33%</sup> " 13	45,000	710 gal.
" 5	15,522	678	<sup>41%</sup> " 11	51,532	710 gal.
" 6	12,908	399	<sup>41%</sup> " 8	49,700	730 gal.
" 7	16,522	509	<sup>41%</sup> " 7	46,899	731 gal.
" 8	13,488	647	<sup>45%</sup> " 5	48,900	818 gal.

4 - 30

4 -

4 - 15

4-5 - 85

4 - 32

4-4 18

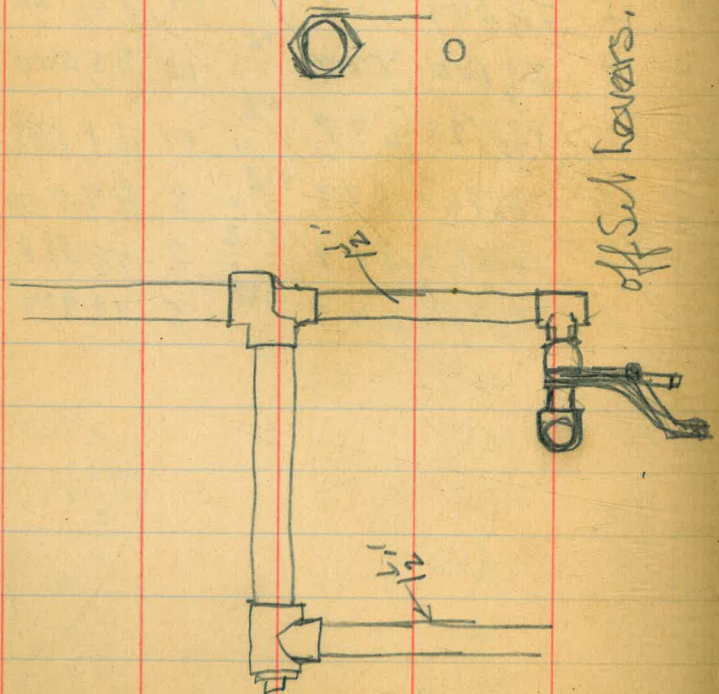
5 2

Rockferry Road shaft  
 #1  
 2 gal  
 5

Spillway  
 Rocker  
 Dam  
 #8 shaft  
 Truck #23  
 Est. #1  
 2 gal  
 2 gal  
 2 gal



Date.	Pit & Men.	Dam Craw	Pit Eqmnt	Dam Eqmnt.	Wells 4-P.M. P.S. U.S. 692.5 689.0	Wells, 8-P.M. O.S. U.S.	Semin Hyd. Full Hyd. Fall Co. Ord. Co. Ord.	Remarks.
July 9 2 and Shifts								all pumps down 3 P.M. to





Sat. - Sept 30

Pool 749.0

Beaches 750.0

#8 + 7 - Rent on  
Red slit

2 - Loads Rock

Rock Trucks 7.

Rock down at 12<sup>30</sup>

#8 down @ 3<sup>00</sup> AM.

etc.

Oct 3rd

7

P.G. - N 3400 - So About. V.S.

N About to So About D.S.

Once across - V.S.

Rock - "random" lump - V.S. } 3 news  
(med + 7 inch Rock)

Water line - down - 11 PM started 2 am

Pool 753 - VS - 751.5 DS - 752

7+11 - 3 Co - (8 Ld Rock)

8 Rent Trucks

Down Shears Waste Pile

Rock - V.S. Random lump

between N 3800 to N 3200

8 - Rock Trucks







Oct 4<sup>th</sup> - 3rd Shift.

Puddle Core - 755.0

Downstream. 753.5

Upstream 753.0

D-G from Downstream Waste.  
once across - each side + N-4000 to N-3500 - U.S.

Red Earth from Pit L.  
once across ~~D.S. side~~ & across U.S.

No rock from Quarry.  
Spillway Rock from D.G. Waste 8 Loads 20 yds

#11 Shovel on D.G. 3 Co Trucks 3 Rent Tr

8 Shovel on Red Earth - 7 Rent Trucks

Water - 1-Stream 7 hrs. 1 Str. 3 hrs.

Rolls. 1-Set. 7 hrs.

No lakeside this shift.

No Rock Placement

One Hose 7 hrs 1 hose 3 hrs 1-Rolls 7 hrs

all materials rolled-watered + dumped  
+ left in place -

Oct 5<sup>th</sup> 3rd. <sup>9</sup>

D.G. - N-3500 to So Abut. 10 S.

D.G. - N Abut to So Abut U.S.

" " N-3500 to So Abut U.S.

Red Earth - N. 3200 to So Abut U.S.

" " N. Abut to So Abut D.S.

" " " " N-3400 U.S.

N End - U.S. 754 D.S. 755 } 754.5

S " U.S. 753.5 D.S. 753.5 }

± Dam U.S. D.S. 755 }

#6 + #11 - 3 Co - 2 Rent

Rock - 6-Co Trucks

Red Earth #8 - 6 Rent Trucks

Spillway Rock 5 Load



Oct 6th 1934

D.G. - Downstream <sup>mainly</sup> N-4100 to N 3650  
Upstream - once across

Red Earth Upstream - N. 3300 to N 3050  
Downstream - once across

Yatch - game beaches - 756.0

#11 - 4 hrs #6 - 4 hrs - 3 Co + 2 Rent.

#8 - 4 hrs - 6 - Rent Trucks.

Quarry Rock - 7 Co Trucks

Spillway Rock - none.

#10 Dragline - 5A in on Ramp

Rock - N - 3600 to N 3400  
Random dumped - upstr.

10

Oct 9th -

D.G. - D.S. once across -

~~But~~

Red - US - N, 3600 to So Abut. + 1 across  
Down stream - 2 trucks

Rock to 1<sup>20</sup> N 3300 to N 3050 - Upstream  
Random Dumping - 10 - Co Trucks.

#8 - 8 Rent

#6 + 7. 2 - Rent. 1 Co - Spillway

8 - Load Spillway

756.5 - 7 ft

759.5 - core height



Oct 10 - (Wed.)

Rock - N-3650 - N-3680 - upstream  
Red Earth D.S. - N-3400 to So Abut.  
U.S. No Abut to So Abut

N. Abut to N 3500 U.S.  
D.G. - U.S. N. 3500 to So Abut  
N. Abut to So Abut. - D.S.

8 - Rock Trucks

Co Trucks - 3 - Rent Trucks - 8

Pool - 760.0 - U.S. 757.5 D.S. 758.0

Flume Level - 756.0

Oct 11<sup>th</sup>

11

D-G - N abut to So abut. downstream  
(fill widened out N 3400 to So Abut.)

Red Earth N. 3500 to So abut upstream  
once across downstream  
" " upstream  
N. abut to N. 3400 downstream

Rock - upstream - N-3500 - N-3400 5 Co Trucks

Spillway - #7 Shovel 2 Co 1 Rent  
Pick A - #8 Shovel 8 Rent

Roller Fill average Ele. 758.5

Condition of Equipment prevented  
placement of D.G. necessary to "fill"  
too many "lefts" of select material  
placed -

#6 Shovel being repaired +  
#11 Shovel in bad condition.



Oct 12<sup>th</sup> -

Rock - Upstream - In 3700 - 3400  
Downstream once across  
D.G. - Upstream N 3500 to 5000  
Red Earth - Downstream once across

All Trucks on DG to 3 A.M.  
" " " Red Earth 3 to 7 A.M.  
4 - Co Trucks on Rock  
8 - Rent Trucks in Pit "A":  
Rolled Fill - Ele - 759.0 Average

2-8  
50  
18  
25

Oct - 13<sup>th</sup> 12

Red Dirt -  
Once across Downstream  
N-3500 to 5000 Abt. Upstream  
Once across Upstream

Heavy Rock N 3800 Hand N 3200  
7 - Co Trucks on Rock  
Ele. Fill.  
Upstream Downstream  
#8 Shovel + 7 - Rent Trucks



Oct 15<sup>th</sup> 1934

Rock - Heavy 7-mish m 3600 to 2900

D.G. - once across downstream

Rock - Once across upstream

Twice across downstream  
" " upstream

Rent Trucks — 4

Rock to RAM 9-Co Trucks

El. - Fill - 760.0

Check Tunnel Portal  
for washing of loose dirt  
in case of heavy rains

13

Oct 16 - Absent

Oct 17 - Rain - (no work)

Oct 18 - 3rd shift.

Rock - (7-mish size) N-3800-N 3900 DS  
N-3400 to N-3500 CS

8-Co Trucks - Rock dirty - excavating  
Trucks operated to 2-AM. average fields

Shift started on D.G. - once across D.S.

6-Rent Trucks - #11 shovel -

Down stream waste Pile material

Once across U.S.

Once across D.S.

Rollled Fill El. - 762.0

McCullan	4 hrs	4 stages 8 hrs
Road-Scaper	2 hrs	
1 Steam	8 hrs	
1 Bulldozer	8 hrs	
1 " "	3 hrs	
1 Roll	6 hrs	

Rock U.S. at N400 - badly needed

Concrete Curb in spillway off 2 AM



Oct 19th 3rd

No Rolled Fill Placement.

11 Co Trucks on Quarry Rock to 2 AM.

#11 Shovel operated in N.S. waste Pile "cleaning up" until 2:30 AM. Then crew operated #9 Shovel in Quarry until 7 AM.

Crew + Foreman working on Spillway floor + Side entire Shift - using 160 Cat + Mc Millan.

1 - Cat Operator + 1 - Blumpman - "Buckling + placing Rock on Dam. Placement on N.S. side - "Finish" at N-3600 M-3650 "Big" at North End. Weather clear + Cold.

After 2 AM. 5 Co Trucks operated from Quarry delivering approx. 40 loads to 7 AM. Rock Clean. (320 Yds)

3 Loads Spillway Rock Delivered at start of Shift, from N.S. waste Dump.

#15-11.28

#17-11.32

39-11.33

24-11.39

40-11.42

18-11.45

34-11.45

26-11.46

25-11.50

23-11.52

17-11.55

39-11.55

24-11.58

40-12.04

26-12.10

34-12.12

25-12.12

17-12.13

23-12.20

18-12.25

24-12.27

31-12.28

39-12.30

Off at 12:30

Monday Night - Oct 22nd 14

Spillway Concrete Crew off 12:30  
" Excavating " " " "  
Quarry Shooting 12:45-9 AM.

Est 300 Cuffs for 8 hr Shift

Big Rock - M - 3200

Finish N - 3700 - PE 8800

Rock Clean -

Little Rock after 2 AM - Slide in Quarry + Trucks used to Clean up.

10 - Trucks - 11 to 12:30

6 " 1 to 7

Wednesday Oct 23rd  
Anchor Swab in Spillway - 9 Sax.



3 to 11 AM ~~Thurs~~ - Oct 25th.

" Concrete in Spillway "

Anchor Groot - None

Tile. 56 - ln. Ft.















## Production #9. Calciner

Month	Ground	<del>C-3</del> <del>C-4</del>	Oil used.
Sept.	132.93 tons	Plastic mixture	234.3 bbl.
Oct.	343.07 tons	<del>8045.5 lbs</del> <del>32250 lbs</del>	175.24 bbl.
Nov.	244.03 tons	<del>126650 lbs</del>	225.4 bbl.
Dec.	38.50 tons	<del>54705 lbs</del>	13.9 bbl.

 Calciner  
 data















Packin  
Spec



- Remarks -

Exp. to determine best Packing Speed for Scrolls.

Material - reg. mill run Powder - 9 to 10% moisture.

First Run made Feb. 1922 by Kitchin & Roberts - 10 Bags were packed at a scroll speed of 26-R.P.M.

Results -

1st Bag  
2nd "  
3rd "  
4th "  
5th "  
6th "  
7th "  
8th "  
9th "  
10th "  
Average

Speed of Scroll Time of Packing Wt of Bag. Deep. Screw Cu. Ft. 96 Slip. Pitch screw <sup>24</sup>

Wt of Counter weights + Spacers of arrangement for Sax.?

Deep. Ser per Min 11.5 cu ft.  
Loose weight 9.999 # per cu ft.

11 7/8" dia.

9 3/4" Pitch Sei

26 R.P.M.	14 min	123	161.0
"	10 "	111	115.0
"	11 "	111	126.5
"	9 "	110	103.5
"	10 "	121	115.0
"	11 "	125	126.5
"	12 "	125	138.0
"	12 "	116	138.0
"	11 "	120	126.5
"	12 "	122	138.0
"	11.2		
11.2		118.4	128.90

Replacement of Screw 104.00"

.59 cu ft per R.P.M.







Redondo - Earth  
Data. 2/5/23

26

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Name + Address

29  
Well #3 - Down Stream } H-3620  
Well #4 - Upstream }



Date	Men on Dam.	Men at Pit	Material from -	Truck Co.	Truck Rent	Tree	Eqmt at Pit.	Eq at Dam.	Semi-Hyd. Co Ord.	Full Hyd. Co Ord.	up str Reachline Devon Str	Wells <sup>30</sup> water + Els. Up-S. Down S.
July 9th 2nd Shift	1-Foreman 1-Checker 3-Jetmen 2-Sluicemen 1-Control Man 1-Laborer	2-Shovel 2-Oilers					2-Shovels 1-Cat McMillan	1-Bulldozer #4+6-Monitor Mod Pump #1+2-Unit #3+5-Unit	#5055	#4955		4-P.M. 189.0 692.5 8 P.M.

Remarks: Semi Hyd. Material dumped. H 3700 to H-4000.

Full Hyd. Placement H 3000 to H.

July 11.

Remarks. -Core- Stake set on #6 Monitor dep. down str. N. Abnd.

Time Run by Co Eng. { E-4964.3  
- Hyd Fall. H-3500 to N. 3300 + 3800 to H 3500  
LE-5043.3

Summit Pool  
Els.  
4-P.M.  
#4 708.9  
9.8  
Water Ele. 699.1  
#3. 709.0  
9.0  
Water Ele. 700.0

July 14.

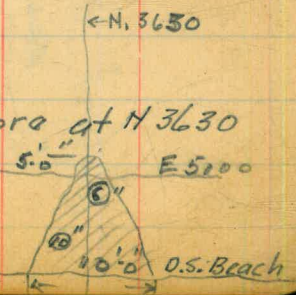
1-Foreman	2-Shovelmen			
3-Jetmen	2-Oilers	Kawaside	2	19
2-Cat Men	Truckmen	Pit. A.		
2-Sluicemen				
1-Control man				
1-Checker				

Rock Placmt. H-3780 to H 3700  
Semi Hyd. #6 - H 3650 to  
Full Hyd. H-11-3780 to  
#4 - washing Down str. for Rock Placmt.

7-Shovels  
1-bo Cat McMillan  
#1+2-Unit  
#3+5-Circ. Unit  
Mod Pump  
#4+6-Monitor  
#1-Bulldozer  
#10-Boom Drag  
E 5045  
E 4955

Well # 3 - 697.0  
Well # 4 - 700.4  
Pool Ele 704.2  
OK  
df

Sand worked approx. to & Cora at H 3630 from Down stream Beach.





Water Ele. Pool 707.8

Report. discharge of muzzles - occasionally

" discharge from muzzles - maintenance - Purchase - Receipt

July - 21st -

also - Hours on Sheep Foot. Speed - + Conditions

Estimates weight of Rolls.

Aug - 27 - 3rd Shift.

- Pool - 723.0 - D.S. Beach - 726.0 - U.S. Beach - 725.5
- U.S. Beach - N - 3700 to H - Abut + S. Abut to H - 3250
- D.S. " S. Abut to H. Abut. -
- Dam - 3 - 60 Cat Bulldozers. -
- 2 - 30 Cat BC Rolls
- 1 - 4 Stage - Pumping Unit.
- 1 - Supt. 2 - Foremen. 3 - Hoseman - 1 - Checker - 5 - Catman.
- Lakeside. #11 - Drag - + operator - 12 - Rent Trucks (+ 34)
- Up Str. Vast (D.G.) #6 Shovel - 6 - Co. Trucks.
- R+A - 13 - Rent Tr. #9 Shovel.
- R+C - #8 Shovel. 6 - Co Trucks. (11 PM to 2 AM)

Remarks. All Placement made satisfactorily on this shift. 3rd Hoses man - providing enough water to thoroughly wet Beaches. #6 Shovel moved to up stream lower Pile + D.G. from there - is also being placed on upstream B



Aug-29<sup>th</sup> - 3rd Shift.

Elev. Pool 725.0 D.S. Fill 727.5 U.S. Fill. 727.5

8" Lift. N. 3400 to N. 4100 + N. 3100 to N. 3400 - up stream.  
8" Lift. N. 3100 to N. 4100 - (once across) - Down stream.  
Water pressure - 100# gage at Pump. abt 20# at Nozzles.  
fall stream not available at nozzles - if 3 working, due to too  
Small Supply line on Dam (2") However sufficient water  
is available for wetting + tamping of fills.

Amount of large Rock in D.G. from Waste Piles is  
excessive. making tamping + Blading difficult.

"Cross-over" at North Abut. should be scarified + new  
raise of Core Material spread on.

"Hand Rock" placed Down Stream - N. 3800 to N. 4000.

Lakeside Mat.	- Waste Pile-DG	- Pit "A".
#11 - Dragline	#6 - Shovel	#9 - Shovel.
12 - Rent Trucks.	7 - Co. Trucks.	12 - Rent Trucks
(50 - loads)		

at Dam.

1 - 4 Stage Pumping Unit.  
3 - 60 Cat Bulldozers  
2 - 30 " " and Rolls.

44 32  
Aug-30- 3rd shift

Elev. Pool - 726.5 U.S. Beach 728.5 - D.S. Beach - 728.0

Upstream - lakeside + "A" silt - along Core Edge + start on  
dumping Material for 8" Rise.  
Down Stream - 8" Rise - Once across - with extra fill of  
lakeside + "A" at Core Edge.  
Rolls - operated 6 1/2 hrs + Water sprays - 5 hrs. (2 Hose)  
#6 shovel - down 2 hrs. +  
Excess of water all shift. 60' Streams obtained.  
Lakeside  
#11 + Operator. - 14 - Rent trucks - ( yds.)

#6 Shovel - 7 - Co Trucks.

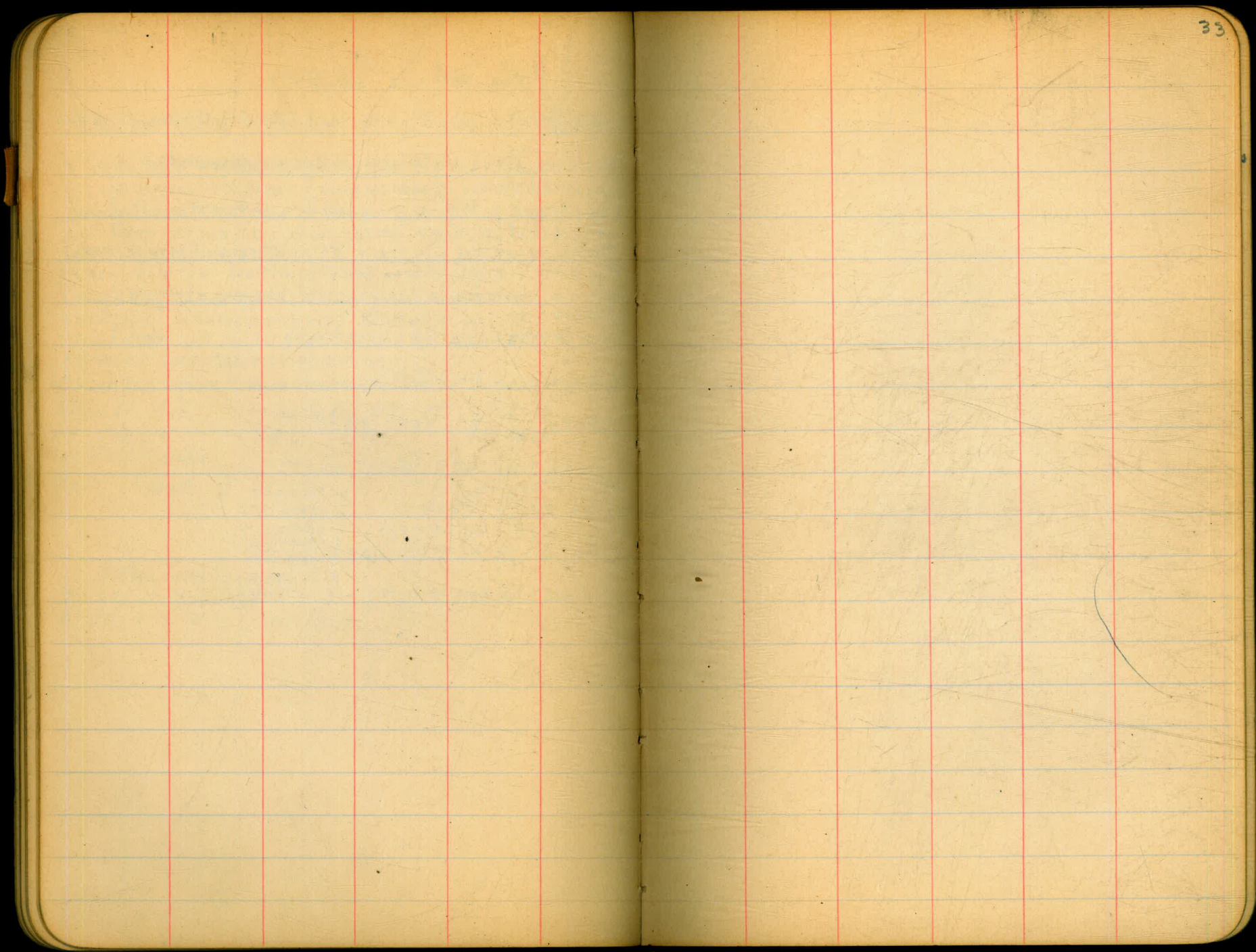
#9 Shovel - 9 - Rent Trucks

At Dam.

4 Stage Pumping Unit	2 - Foremen
2 - 30 Cat + Rolls.	2 operators
3 - 60 Cat - Bulldozers	2 operators
1 - 60 Cat & Mc Millan Drag.	2 operators
	3 Hose men
	2 Dumpmen.
	2 Chackers

(one checker at gate)





33















~~Typed~~

Saturday - Nov-10 -

In Tunnel - Pipe Pedestals.

7-Batch Tunnel Mix - (6/1-2-5) 42 Sacks

5-Batch Groat	{ Sec-19-2 Batch " 20 " " " 21 " " }	255 Sack
16 - " 6/1-2-4	{ Sec-19-6 " " 20 10 " " 21 " "	72 "

7th Lift Sec- 19 - 6x24

6th " " 20+21 - (6x24) 8c (6x12)

850 Sack CI + Bailed.

Cement used for Patching Wall - 2 Sack.

Sec- 22 - (6x24) 5th Lift

8-Batch - 7/1-2-4	} overbreak
6 " " 6/1-2-5	

13 Sack Reclaimed Cement



Sunday - Nov 11<sup>th</sup>.

6<sup>th</sup> lift Sect 22 - (6x24) overbreak.

2 - Batch Grout (5 sack)

13 - " 4/1-2-5 - Wall Mix.

2nd lift - Sect 24 + 25 (6x24) overbreak

2 - Batch Grout (5 sack)

17 - " 4/1-2-5 - Wall Mix.

Plant Crew - Same as yesterday

Concrete Crew - 2 Transit Mixers + Operator

#10 Crane + Operator - 1 - Bucket Man.

3 - Tampons - 1 - Carpenter - 2 Laborers

38

Monday - Nov - 12<sup>th</sup>.

7<sup>th</sup> lift - Sect. 22 - (6x24) (overbreak)

2 - Batch Grout - (5 sack each) 10 - Sacks

16 - " 4/1-2-5 - Concrete 96 - "

3rd lift Sect. 24 + 25 - (6x32) (overbreak)

2 - Batch Grout (5 sack) 10 Sacks

14 - " 4/1-2-5 Concrete 84 - "

200 - Sack Cl + Bagged. Total Cement 200 - "

Concrete Crew

1 - Foreman  
1 - Crane Operator  
2 - Transit Mixer Operators  
1 - Bucket Man  
2 - Tampons  
2 - Carpenters

Plant Crew

1 - Foreman  
2 - Laborers  
1 - Truck Man

Equipment

1 - Mixing Plant  
2 - Transit Mixers  
1 - Truck Serving Bunkers  
1 - Crane #10

Time - 4 to 9:30 PM



Tuesday - Nov. 13<sup>th</sup>.

Sec. 23 - Bottom lift (6x10) OVERBREAK  
4 Batch. 7/1-2-4 - Bottom Mix 28  
5 " 6/1-2-4 30

Sec. 24 & 25 - 4th lift. (6x32)  
12 Batch - 6/1-2-4 - 72  
1 - Batch Grout in each load. 15

Sec. 22 - Top lift. (2x24)  
3 - Loads - 6/1-2-5. 72  
1 - Batch Grout in first two 10

Sec. 19 - Top lift - (2x24) 18  
3 Batch 6/1-2-4 with 1 - Batch Grout

Concrete  
1 - Foreman - 2 - Transit Mixer operators  
1 - Bucketman - 1 #10 Hoist Operator 3 Tampers  
2 - Carpenters - 2 - Laborers.  
Mixing Plant - 1 - Foreman - 2 - laborers - 1 - Truckman  
Total Cement 250

250 Sack Cl + Bailed.  
5 " Wall Patch + Wall Anchor Grout.

Note. abt 35 Sacks used on Day Shift  
for patching - Oct 25 to Nov 12<sup>th</sup>

Wed - Nov 14<sup>th</sup> - (4PM to Midnight)

Sec. 24 & 25 - (6x32') 5th lift - OVERBREAK <sup>39</sup>  
2 - Batch Grout 10  
7 " 6/1-2-5 42

Sec. 23 - (6x10) 2nd lift. OVERBREAK. 5  
1 - Batch Grout. 78  
13 " 6/1-2-5

Sec. 20 & 21. (7 1/2 x 36) 96  
16 Batch 6/1-2-4 OVERBREAK. 10  
2 " Grout. 241

250 Sack Cl + Bailed { Plant Crew - Same  
" Egg " " Concrete Crew "

5 Sacks - Cement - 5  
Patching + Anchor Grouting 246 Sack



# TUNNEL PLUG.

Nov-15- Thursday.

Time - 8<sup>PM</sup> to

1st Shift  
(4PM to Midnight)

Thursday - Nov - 15<sup>th</sup>

40

(Midnight to 5AM) overtime

SPKWAY - Ho. Wall & Floor

3rd Lift - Sec. 23 - (6'x10') Overbreak.

2- Batch GROUT - (5sax ea.)

10

7- 1-2-5- Wall Mix

42

Floor. (4+58 to 5+05) completing Floor - 0+00 to 5+05

124 Batches - 1/2 Tunnel Mix.

744

Loads.  $\frac{1}{2} + \text{||||} \text{||||} \text{||||} \text{||||} \text{||||} \text{||||} + \frac{1}{2}$

Total Cement used - 796

Anchor GROUT

3  
799

4PM to 12PM Shift Concrete in Tunnel.

6 Batches - 1/2 Tunnel Mix. (Two loads)

Crews.

Mixing Plant - 1-Foreman - 2-laborers - 1-Truck man

Concrete 1-Foreman - 1-Crane Operator - 1-Bucket-man

2-Transit Mixer Operators - 3-Tampers. 1-Carpenter

2-Finishers 2-Laborers.

Equipment.

1-Buldo #10

2-Transit Mixers

1-Barbar Groun loader

1-Truck Serving Bunkers.

799  
30  
835



Friday - Nov - 16 - 2nd Shift.  
(4 PM to Midnight - ~~Midnight to~~)

Final Spillway Floor Pour (5+05 to 5+85 abt)

1st Batch - 6/Tunnel Mix.

Note "Cut off" at 5+10 included with Floor.

(Tie laying finished also. to base of Wall)

Loads. ~~XXX~~ ~~XXX~~ ~~XXX~~

Anchor Grouting -

3 Sacks

Total Cement 387 Sacks

10:30 PM. Slide occurred in spillway cut over wall - Sta 4+75 to 5+75 - at this time 5th Batch of Concrete had been placed & 2 loads were in transit mixers to place. Floor had been poured 5+05 to 5+20 - from old floor toward base of wall to within 20 ft of Base. All work was stopped. Dirt & Rock continued to come into Spillway until 11:30 in large amount estimated 700 to 100 yards rock covers Spillway Floor & Wall between Stations given. Falling Material damaged Forms set up but apparently did no harm to concrete wall in place. We did lose materials reach or block roadway up Spillway. Contractor Night Super. was on job & assisted in getting equipment out of path of falling material.

(Continued)

41

at 11 PM. was able to place the two loads of mixed concrete in Transit mixer in Floor. at a point under Roadway & joining old Floor on South + West - an area of about 200 sq ft. this was worked & finished between major slides from bluff. Before Slide occurred.

Laying of 4" tile in floor & finishing of placing of reinforcing steel delayed concrete placing until 6 P.M. Contractor had no red tile & used vitrified sewer tile to complete the work.

After concreting started. Barber Green loader broke down & a shovel was used to remove Barbers at mixing plant. Section of floor worked on included "Cut off" which was being poured at same time & with floor.

No work done in Tunnel.



Sat. Nov-17- 2nd Shift  
(4 PM to Midnight)

APRON above O.G. Section.

Sta. 1+35 (previous pour) to 3+65

94 Batches - 6/ Tunnel Mix 504 Sacks

Concrete Crew.

1-Foreman  
1-Bucket-man  
1-Crane Operator  
2-Finishers  
1-Carpenter  
3-Tampers  
1-Laborer  
2-Transit Mixer Operators

Mixing Plant Crew

1-Foreman  
2-Laborers  
1-Shovel Runner  
Equipment  
1-Mixing Plant  
1-Shovel  
1-Truck serving Bunkers  
1-Crane #10  
2-Transit Mixers.

loads- ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ |  
Hoo Sat Cl + Bailed.

Shovel down @ 10:30 - Run out of  
aggregates @ 11 PM.

Tunnel Keys, 6' x 24" - (2)  
Cover flanges with Concrete.

42

Nov. 19- 2nd Shift, 4 PM to 9 PM.

Bottom lift - Sec. 28 - (6x23') 27 - (6x24) 26 (6x36)

38 Batches - 7/1-2-4. 266 Sacks

4th lift Sec. 23 - (6x8') overbreak.

82 Batches - 6/1-2-4. 48 Sacks

Spillway Floor - 15x20 Damaged Sec.

2- Batches - 7/1-2-4- 14 Sacks

2- " 6/1-2-5 12 "

5th lift - Sec. 23 - (6x8) overbreak

6 Batches - 6/1-2-5 36 Sacks

all but strip at base of wall  
Final Spillway Floor Section.

14 Batches 6/ Tunnel Mix 84 Sacks

6 Cement - Patching + Grouting 6

Crews:

1-Mixer Plant Foreman  
2-Laborers  
1-Shovel Runner  
1-Truckman

1-Mixing Plant  
1-Shovel at Bunkers  
1-Truck " "  
2-Transit Mixers  
1-Crane #10

Concrete Crew

1-Foreman  
1-Crane Operator 12  
1-Bucket-man  
2-Carpenters  
3-Tampers  
2-Laborers  
2-Transit Mixer Operators

Note Wall Panels - 6' High @ shallow ends



Started Concrete 9 P.M.  
finished "

Nov-19- 2nd Shift,  
Tunnel Plug.

1-Batch GROUT 5 Saz  
2- " 6/Tunnel Mix 12 Saz

Loads - (3 Batch each) 6/Tunnel Mix

Mixing Plant Crew - { 1- Foreman  
1- Shovel Runner  
1- Truck man  
2- laborers

Concrete Crew { 1- Foreman  
2- Transit Mixer Operators  
7- laborers,  
(one Cabover - 4PM to  
3 " 8PM to  
3 " 9:30 PM to )

Equipment- 1-Mixing Plant  
1- shovel at Bunkers  
1- Truck at Bunkers  
2- Transit Mixers

Tuesday - Nov-20-1934.

43

SPILLWAY- North Wall & Floor.

6th lift Sec. 24. + 2nd lift. Sec. 26-27-28.

36 Batches - 6/1-2-4 21 L Sacks.  
(no GROUT Reported)

Final Pour of Spillway Floor (6' Wall Base strip)

11 Batches - 6/Tunnel Mix 66 Sacks.

500 Sex Cl + Briled.

Note. Concreting started abt. 1 PM, + amounts  
given include pours for both Afternoon &  
Evening shifts. spillway Concreting finished P.M.  
←—————→



Wed - Nov - 21st - 1934  
(2nd Shift - 4PM to 12M)

final lift. Sec. 23+24 - (2' x 24') overbreak  
T-Batch - 6/1-2-4 - 42 Sack

Completion of 3rd lift - Sec. 26 - (6x12)  
5 Batch 6/1-2-4 - 30 Sack

1 " Groot (5 sack) 5

Total Cement - 77 Sack

(above placements made - 11PM to 12M.)

#8 Shovel - 3 Co Trucks - 1 Bulldozer -  
used removing ramp in Spillway + placing  
above O.G. Sec. adj to N. Wall. 6PM to 11PM  
Concrete Crew & Equipment.

1 Crane #10; 1 Transit mixer #9;

1 mixing Plant;

Concrete Crew

1 Foreman

1 Crane Operator

1 Bucket man

3 Tampons

2 Carpenters

2 Laborers

1 Transit Mixer Operator

Plant Crew

1 Foreman } 10<sup>30</sup> to 12

2 Laborers }

10<sup>30</sup> to 12M.

otherwise Concrete + Mixing Plant Crew  
used on Steel + Panelling in Spillway.

Samples Thursday - Nov - 22 - 1934 44

3405 } Sec 26 - 5th lift - 6/1-2-4  
3406 }  
3407 } no Pour.

2nd Shift. 4PM to midnight.

Both Crews - (Mixing Plant + Concrete)  
worked on N. Spillway wall - on Steel +  
Panels. No men. 1 Foreman 3 Carpenter  
1 #10 Crane Operator - 8 Laborers.

#8 Shovel - 1 Bulldozer - 3 Co Truck  
used in Spillway - on Hub Cushion Road  
at base of wall - 1 Shovel Runner + Chain  
1 Bulldozer Operator - 3 Truckmen.



Friday - Nov. 23rd - 2nd Shift (4PM to 12M)  
Spillway North Wall.

Setting Steel Trimming Embankment for Sec. 27.  
5th lift. (6x5') & 6th lift. (6x31)

Setting Panel for 6th lift Sec. 28 - 2 Carp. 2 laborers.

" " for 6th lift. Sec. 26 (6x31) 3 laborers

#10 Crane & Operator assisting.

2 Trans + Mixers & operators.

#8 Shovel - Shovel Runner & Oiler }  
3 - Rent Trucks + Drivers } 4PM to  
1 - Bulldozer & Operator }  
1 - Dumper. }

Removing Old Ramp in Spillway + Building  
new one. Spreading Dirt Cushion 6'x50'  
on Spillway Floor under N. Wall.

Concrete Placed.

5th lift Sec. 28 - (2'x7'x24'1q)

1 - Batch - Groot (5sack)

5 - " 4/1-2-4

5 Sacks

30 "

Total 35 "

Sat. Nov. 24th - 2nd Shift (4PM to Midnight)<sup>45</sup>

6th lift - Sec. 26 - 25 + (12' of) 24. total - (6x47')  
(5' of Sec. 26 not included) All OVERTIME

Note - did not stay on job for this shift  
but left at 5<sup>30</sup> PM + Returned at Midnight.  
" Grave Yard Shift " (Midnight to 7 AM)

Crew on Spillway - North Wall.

1 - Foreman - 3 - laborers on Trimming Wall  
1 - Carpenter - 3 - " " Steel & Panels.  
1 - Compressor - 2 - Jack Hammers used.

Work consisted of placing steel + setting forms  
for special Reinforced Sections - 27 & 28.  
Trimming Dirt for Sections. 25 & 26.

Placing of 6'x50' Dirt Cushion in  
spillway - 11 PM to 7 AM.

Equipment & labor

1 - Shovel #8 - Shovel Runner + Oiler

1 - 60 Cat. Bulldozer + Operator

3 - Rent Trucks with Drivers.



## North Spillway Wall.

Sunday - Nov. 26th - 3rd Shift - (11 PM to 7 AM)

1 Foreman - 2 Carpenters & 4 Laborers - worked on Panells + Stripping of, full shift. work principally on section 28.

No Concrete placed this shift.

No Equipment other than hand Tools used.

### Spillway.

#8 Shovel - (1) 60 Cat. Bulldozer & (2) Rent Trucks includes equipment used for spreading Dirt Cushion on Spillway Floor. This work has practically reached completion & old Ramp has been removed. Shovel operated 6 hrs. + was "down" for Repairs 2 hrs.

Labor included -

1 Shovel Runner 1 Oiler 1 Cat. Operator

2 Truck-men.

Monday Nov. 27 - 3rd Shift.

Spill way -

North Wall & Dirt Cushion finished.

1 Foreman + 6 Laborers - Stripping Panells.

2 Co. Trucks on dirt for Backfill behind Sections - 28 + 29

#8 Shovel - 1 Rent truck - 1 Bulldozer cleaning up Spill way Floor.

Labor - 1 Shovel Runner

1 Oiler

3 Truck-man

1 60 Cat. Bulldozer Operator.



























































































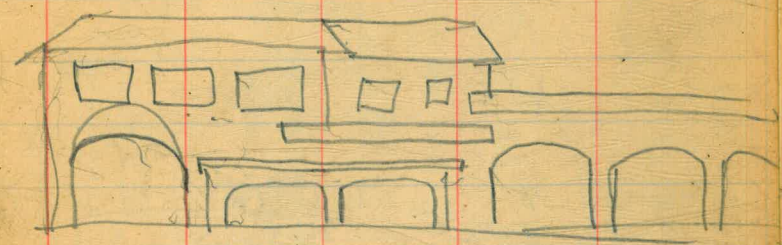




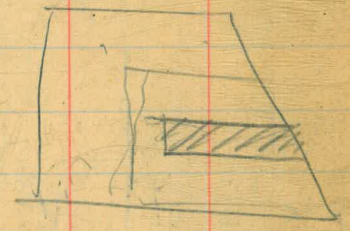




#3689+91 - Hancock St.  
~~1 Story + Part 2 Story~~  
 No Living Quarters over - 2 Story  
 Bldg - <sup>SE</sup> Corner Winder + Hancock



front Elevation



Moisture content of COATSC	Moisture of Fines	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #	Vol. Air	Temp. in. Cut.	Temp. per. Min.	Temp. in. Cut.	Temp. per. Min.
0.88	0.38	0.90	0.21	112	390° F	35	0.813	0.35
0.88	0.38	0.90	0.21	112	390° F	35	0.813	0.35
0.88	0.38	0.90	0.21	112	390° F	35	0.813	0.35
0.88	0.38	0.90	0.21	112	390° F	35	0.813	0.35

Wt	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #
0.88	0.38	0.90	0.21	112	390° F	35
0.88	0.38	0.90	0.21	112	390° F	35
0.88	0.38	0.90	0.21	112	390° F	35
0.88	0.38	0.90	0.21	112	390° F	35

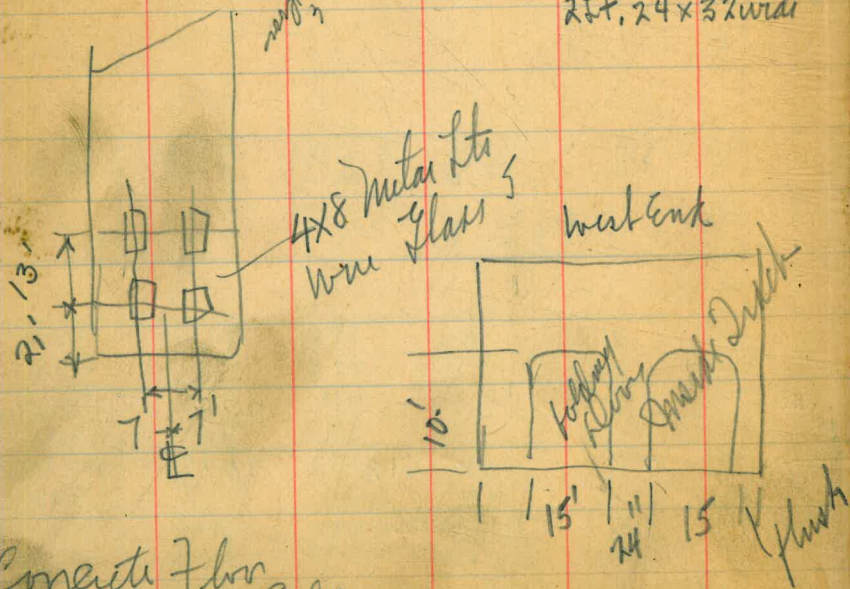
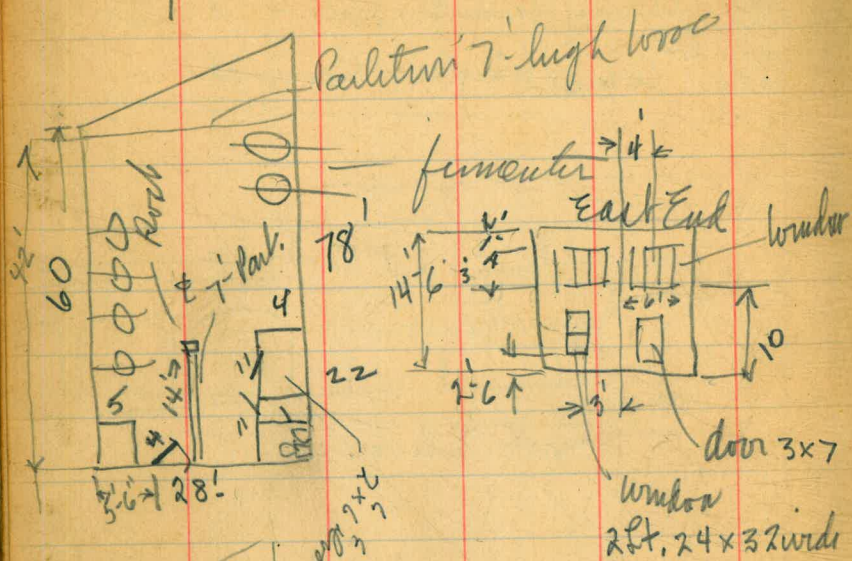
Moist. over 10 Mesh in 25sa	10 Mesh Fines in #	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #	Moist. over 10 Mesh in 25sa	10 Mesh Fines in #
0.88	0.38	0.90	0.21	112	390° F	35	0.813
0.88	0.38	0.90	0.21	112	390° F	35	0.813
0.88	0.38	0.90	0.21	112	390° F	35	0.813
0.88	0.38	0.90	0.21	112	390° F	35	0.813

John C. Allen  
 Data



Tanks - 5'-3" x 8' - (4) Storage  
 " 6'-4" x 6' - (2) Ferment

↑ N  
 → N.



Concrete floor  
 Sheetrock & Ceiling

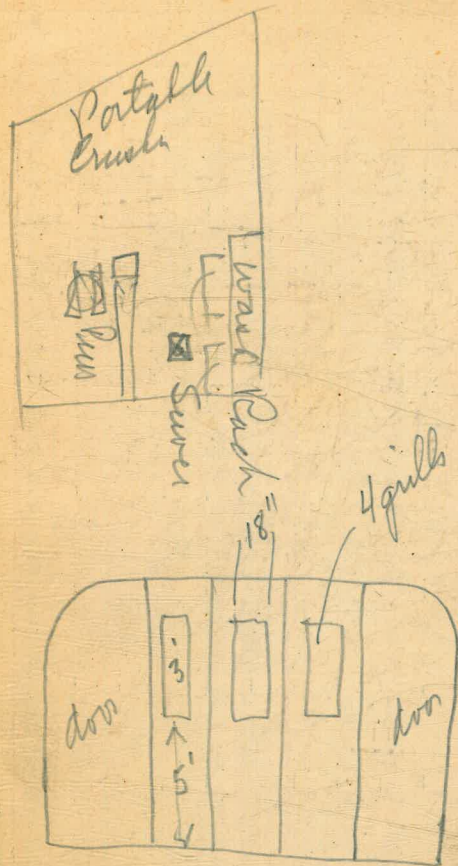




TABLE IX.—CALCULATION OF EARTHWORK.

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.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on  $1\frac{1}{2}$ .  
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be  $41.9 + (20 - 16) \div 2$  or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.