

W  
374

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	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9		0
1	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9		1
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	2
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	3
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	4
5	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	5
6	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	6
7	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	7
8	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	8
9	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	9
10	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	10
11	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	11
12	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	12
13	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	13
14	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	14
15	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	15
16	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	16
17	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	17
18	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	18
19	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	19
20	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	20
21	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	21
22	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	22
23	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	23
24	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	24
25	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	25
26	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	26
27	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	27
28	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	28
29	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	29
30	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	30
31	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	31
32	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	32
33	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	33
34	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	34
35	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	35
36	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	36
37	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	37
38	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	38
39	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	39
40											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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374



H. Y. Newcomb notes on El  
Capitan Dam Const.

5/23/32. Reported to Mr. H. D.

Mead, Resident Engr. at  
field office about 10 AM.  
Contn. Unit #9. N. N. 1 1/2 3d  
shovel began operating  
on 570 Eer. of Outlet to  
Tunnel. 3 trucks spilling  
material South of river below  
Outlet. Mr. Courser, Mr. Stenes  
and I take up <sup>boulders</sup> Stone fudge  
at Unit #9 and same at  
Temporary road crossing  
<sup>of River</sup> near axis of Dam.

Contn. Unit #6 = N. N. 1 1/2 3d  
dragline excavating for  
upstream toe wall. 3 trucks  
spilling material upstream  
about 250 ft. Down at right

account of lights. Water  
in pit about 5 or 6 feet.

Blasting and grading on  
road, Engro Camp to Center  
Camp.

5/24/32 Contn. Unit #9 continues  
excavation of tunnel  
Outlet at Ee. 570. Same as on  
23<sup>rd</sup>. Material is dark brown  
decomposed granite and  
disintegrated granite with  
large granite boulders. Judged  
of boulders taken up by Courser  
and Stenes, Newcomb.

Temporary road being Const  
crossing river near axis  
of Dam. Material being taken from  
Area C below Spillway. Flow 1 1/2  
3d Shovel + Mr. Miller, grader on job



Unit #6 continue by  
face upstream toe wall  
Cont. spiling material up-  
stream 250 ft above toe  
wall - fill about 15 ft  
high + slopes toward toe  
wall.

5/25/32. Contn. Unit #9.  
moved to Elev. 554 at  
outlet to tunnel and  
continue with same  
crew. Material same,  
crossing is made of  
piles just below outlet  
and pile mat below  
this King on S. side of  
river.

See Daily Report Sheets



Date 9/6/32.

Cylinder No 3.

Location U.S.T.W Sec F. Elev. 562-567.

Cement - Colton.

Aggregate From Gravel Plant + <sup>Choc Creek</sup> San Diego R.

Mix 1: 2  $\frac{1}{2}$ : 5.

Water Ratio 27  $\pm$  Gal. to Batch.

How Cured Dry Cured.

Date Made 9/6/32

Inspector R. W. Carter

Remarks.

Water Variable in Sand + Aggregate.



Cylinders \*A

#116, 117, 118

9/13/32

Downstream Toe Wall Sec A Eas. 542

Cotton Cement

Green Gravel Bed E of Choc Creek

1:2½:5

24 Gal 1:2½:5

Moist

~

9/13/32

R. W. Carter

At 7 PM

Cylinder 3

Lab Test \* 125, 126, 127

9/17/32

upstream Toe Wall Sec A Sta 4+70 E 574

Cotton Cement

Ag. from Gravel Bed near

mouth of Chocolate Creek

1:2½:5 - 23 Gal Water to Bot

moist

9/17/32 3 PM

R. W. Carter

Moisture in Ag. variable

Sept 20<sup>th</sup> 1932

Downstream Toe Wall Sec F Sta 0+20  
E 1562

Cotton Cement

Ag. from Choc Cr. mouth gravel part

1:2½:5 mine

25 Gal add to 1:2½:5 mine

covered moist

9/20/32

R. W. Carter

moisture in Ag. variable



Sept 16 1932. 7 AM.

Unit #6 on Sec. B D.S.T.W.

operator + Oiler.

3 Men Placing.

5 Camp + 2 helpers Sec C + Foreman

3 Men Clean Sec D (Water Main)

3 " Ev N. End D.S.T.W.

Puddle Care 6 French Ev

Unit #1 + 2 tracks <sup>of</sup> <sub>2</sub> tank divisions

New foreman, Labor foreman + Camp

11 Labor

4 Oilers Bewdenman + helper

W.S. J.W. 1 Camp + keeper at 78.

1 man cleaning Sec A. 4 AM.

1 " watering

1 " dressing

4 " stripping form

B.M. Miller + helper on D.S.T.W. Sec

from Sec Ev at 9 AM

3 muckers 2 End D.S.T.W.

3 " 5 " "

1 Bewdenman

1 Dickhamer man

6 muckers P.C.

2 Drillers "

Truck Drivers "

operator

Oiler

Foreman

1 man at Camp

✓  
14/7/32



Sept 17<sup>th</sup> 1932

Downstream Toe Wall.  
South End.

1 Driller  
1 " Helper  
1 Carpenter F. Craig  
1 Mucker.

Unit # 6. 3 Men Placing Seco.

Carp 4 Men + 6 Carp on Forms  
1 Steel Man on Wiring " Helper "  
1 Man watering Conc-  
oiling forms  
1 " at top carp helper  
3 Men Ex N. end. 6' of grade.

Puddle Core 6' Trench (2 Shifts)

Unit # 11 + 2 Truck (1 Driver)

✓ Operator  
✓ Oiler.  
✓ Truck driver.  
✓ Foreman (Ray) Mahan.  
✓ Powderman. (to 2)  
3 - 4 Drillers  
8 - 10 Muckers. *Each man 1/2 day  
repairing sec. water  
in camp.*

Upstream Toe Wall

1 Man watering Conc.  
1 " Dress "  
5 " + Truck Strip forms

	8 AM 17 <sup>th</sup>	Elev. Ref.	Bottom 6' Trench. Elev.	
-17	N 3470.	528.0	513.	on Boulder.
-18	N 3480	"	511.	
-20	N 3520	"	510	At Pump.
-19	N 3580	528.6	511.6	
-14.5	N 3640	527.9	517.0	Shot Not Mucked
-10.5	N 3680	528.6	520.0	
-10.5	N 3700	531.6	522.0	
-6.0	3750	537.4		} Same as 13 <sup>th</sup> Shot not out
	3770			

1 Carp at Mx Plant Yard.  
3 Trans Mx Trucks.

Foreman + 6 Carp Sec O. PM. 1 Carp Sec P  
8 Labor help 1 Carp + helper at yard.  
1 Oiling 3 men Strip to ST W.  
1 water Aug 1 Dress  
3 piece.  
2 on #6.

3 Pumpmen



Sept 19<sup>th</sup> 1932.

Downstream Toe Wall

Unit # 6 on Sec. B. <sup>2 Men Placing</sup>  
 1 " Keys etc.  
 1 - Waterman & STW <sup>3 Trans Mix.</sup>  
 operator  
 Oiler.  
 (Foreman) <sup>8 Carp. 1+2d.</sup>  
 4 Helper.  
 2 Strip vSTW.  
 1 Water "  
 1 Dress "

Puddle Core 6' Trench Ex <sup>Sta</sup> #3470  
<sub>#3770.</sub>

Gen Foreman (Mahan) Foreman (Ray)

4 Drillers + Helper. 1 Powderman  
 labor Foreman.  
 Operator + Oiler on Unit # 11  
 1 Truck Driver -  
 1 Carpenter  
 12 Muckers  
 1 Jackhammerman

Night Shift

Send DSTW.

Unit # 6 operator

1 Truck + driver

Foreman + 4 Muckers

Night

Puddle Core Trench

Foreman Kennedy

Unit # 11 - 2 Trucks (1 man)

3 Drillers Powderman

5 muckers

1 man clean conc.

Sept 20 1932.

Down stream T. Wall at S end

Unit-6 1 Operator 3 hrs.  
1 Oiler "  
1 Powderman part time  
(night unit #6 - operator oiled) BSTW. S. end  
4 muckers

6' Puddle Core Trench

Unit #11 + 1 Truck (no truck night) Same

Gen Foreman (Mahard) Kennedy  
" (Ray)

1 Jackhammer man 8

8 - Muckers. 3

3 - Drillers.

1 " helper.

2 - Laborers on Timbers.

1 - Water man USTW.

1 - Rigger + 4 men dismantle -  
Hi line.

1 Powderman 1 Powderman

1 Cleanup man conc night

3 Pumpmen (3 shifts)

D  
Tunnel Ex from Entrance End  
being placed in Rock Embankment West  
of USTW + S. of Road at El. 580.

Sept. 21, 1932.

1 - Water man USTW.  
4 - Hi line Dismantle. + Rigger.  
2 - Strip forms USTW.  
1 Carp + 1 Man at Shop Yd.  
7 men at Mx Plant

Puddle Core Trench. No Truck.

Unit #11 Operator + Oiler - Day.

2 Men Block + bracing. + one Carpenter.

7 Muckers.  
3 Drillers  
1 Helper.

3 Men Ex Head D.S.T.W. at Road - El 575.

Driller + Mucker + Powderman Send BSTW

night 7 PM

3 men 2 end BSTW

3 Jackhammer

1 Truck Driver

1 operator unit #11

1 oiler " "

9 men mucking

3 Pumpmen

1 Powderman

2 Trucks

1 man ceiling Conc



Sept 22, 1932 H. V. Newcomb

3 Men Ex N. end of D.S.T. W. King Road.

Placing Conc. Dec D

6 Puddle Core Trench. Day.

Unit # 11 + 1 Truck (Driver)

Gen Foreman. Mahan

operator " unit # 11 Ray

Oiler " "

Carpenter

8- Muckers

4 Drillers. + 1 helper

1- Powderman

1- Jack H. Man

Upstream Toe Wall

1 Water man

1- Rigger Dismantle

4 " Helpers Hi Line

1 Man with Pumpman

1 Carpenter at Yard.

352 bags Cement on hand

9/19/32 (late PM) per Anderson.

1 man clearing conc night

Sta	Elev. Top	Elev. Bottom	9/24 8 AM	9/27/32 8 AM	9/29/32 8:30 AM
N 3470	528.0	508.0	507.5	505.	-23.5 504.5
N 3480	528.0	508.5	507.5	505	504.5
N 3520	528.0	507.0	505.5	504	-24.5 503.5
N 3580	528.6	508.0	506.0	505	-24.6 504.0
N 3640	527.9	509.0	507.4	506.9	-24.9 506.0
N 3680	528.5	517.3	515.0	511.5	-18.0 510.5
N 3700	537.6	520.3	518.0	514.0	-19.0 514.6
N 3740	535.4	527.0	525.4	522.4	-14.0 521.4
N 3760	537.4	531.4	531.0	529.4	-9.0 528.4
			10/5		
N 3470	528.0	504.5			
N 3480	528.0	504.5			
N 3520	528.0	504.0 Pump			
N 3580	528.6	502.6			
N 3640	527.9	503.5			
N 3680	528.4	507.2			
N 3700	533.6	512.6			
N 3740	535.4	521.3			
N 3760	537.4	529.0			

Sept 23<sup>rd</sup> 1932

Puddle Core 6' Trench. Day

Gen. Foreman (Mahan) night

Unit #11 + 1 Truck (Driver) <sup>Ray operato</sup> <sub>oiler.</sub> ✓ ~~Truck~~

1 Carpenter + 2 Helpers. ~~##~~

4 Drillers + 1 Helper. ~~###~~

7 Muckers. - 6 hrs ~~###~~

1 Powderman. 1

1 Jackhammerman

Man Water Conc. VSTW

Rigger + 3 men Diam. Machine

1 Carp at Yard Shop

3 Men Ex in end DSTW 2 hrs each

2 men at house night

Sept 24<sup>th</sup> 1932.

Puddle Core 6' Trench. Day. night

Unit #11

Operator 1

Oiler 1

Carpenter 11

Muckers. 8 9

Gen Foreman 1 Mahan

Foreman 1 (Ray)

Carp Helper. 11

One Eau Pump operating

Water down to 505 ±

Drillers. 111

Help " 1

Jackhammer 1

Day

1 Mucker / Exit Puddle 4 Men Ex at night

1 Oiler

Night 5pm to 2 AM Sunday  
Puddle Core Trench Ex

1 Foreman

7 Muckers

3 Drillers

1 Powderman

1 Dragline operator

1 " Oiler

1 Truck Driver

3 Pumpmen



Sept 26 1932

JTN

Puddle Core Trench.

Drillers 11

Jack & M 1

Carpenter Helpers 2

Unit # 11 - Operator Truck + Driver  
Oiler

Foreman - Ray

Muckers 9

Carpenters 2

1 Corp + 1 helper at yard

Night - P.D. Trench.

Foreman

Unit # 11 operator  
Oiler

11 Muckers 6-8 hrs  
5-4 " + \*

3 Drillers.

19

(A new timbering incl in muckers)

1 P. man

1 Truck

1 man of Conc.

\* 5 laborers + unit # 6 - 4 hrs Ex + road w  
end. D.S.T.W. Night

Sept. 27, 1932

11

Core Foreman + 5 men Ex

End of D.S.T.W. + 3 muckers <sup>came</sup> straight

Puddle Core 6 Trench ✓

Unit # 11 + 1 Truck ✓

Operator ✓

Oiler ✓

Truck Driver ✓

Gen Foreman

Mahan ✓

Ray ✓

Drillers. 111

Muckers 111

Jack h. men 1

Carpenter 11

Foreman

17x150

= 2550.

640

3190

10x150

64 per inside

213

2130

1065

3195

1500

A 700.

30

1200.

200

1000

960

4x4

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

2x2

Form  
Bress floor

20

3070

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

360

Sept. 28, 1932.

Puddle Core 6' Trench

Unit #11 + 1 Truck

sp. night  
Glen ✓  
Tr. Dr.

Gen Foreman

night

Labor "

✓

2 S Jack H.

1

8 S Muckers

11

1 Driller

1 Powderman 2 day

2 1/2 hrs

3 Pumpmen

4 men Ex OSTR New X rd

4 Men Mix Plant

1 Carp + helper at Shop

Mr Gibbs

State Safety Insp 11 hrs

" Osgood

o.c. trench

3 men off at night

5 Laborers + #6 - 4 hrs  
night 26 on OSTR

3 men night 27

4 " Day 28



Sept. 29<sup>th</sup> 1932

Puddle Core Trench 6 Wide

Unit #11 + 1 Truck - South of #3470

- 1 Operator
- 1 Oiler
- 1 Truck Driver
- 2 Jack hammer men
- 9 Mockers
- Labor Foreman

Gen " "  
 1 Driller + Helper 1/2 day  
 3 " " 2 hrs.

1 Man 1/2 day on Concr placing

2 Drillers + Powderman 1/2 at  
on puddle core

Moving off 55' = 2 Blks

27	3 men + truck	4
28	"	2
	"	6 1/2

1 man el Conc:  
 night 29. Exit Puddle  
 Unit #6 of  
 truck + driver  
 1 Driller  
 10 Mockers

Sept 30 1932

Puddle Core Trench

3 Drillers

1 " Helper

N3340 586.1

N3380 559.7

N3400 553.0

N3440 546.5

Rock Fill Embankment to Top

of U.S.T.W. to S end of Sec

E with no fill on Upstream

face of this part of wall

Exit Portal - right

1 Powderman

1 Driller

2 Jackhammers

8 Muckers

Mut # 11

1 man @ Conc



Oct 1 1932

Puddle Core 6' Trench

2 Drillers on Pipe line

4 Carp. helpers Ent

Portal Steel.

1 Carp at Shop

night  $\frac{2}{2}$  men  $\frac{8}{4}$  hrs } washing down & up.

10 men at night

Oct 2, Sunday.

" 3 Puddle Core

Night

Unit #11 + 1 Truck

truck  
✓

Gen. Foreman

Labor "

✓

9 Muckers

9

1 Powderman

✓

4 Drillers

3

1 " helper

-

2 men on pipe

Carpenter

" help

2 Steel Men  $\frac{3}{2}$  Carp on Steel Ent Portal

1 Carp at Shop

1 Man Cl Core at night.

Oct 4 1932.

loads of D.G. fresh on  
Rock Embankment

15 Loads. 8 AM.

1 Carp at Shop

2 Steel Men } Ent Poles  
4 Carp. Help. etc } Stone Bending

Puddle Core Trench N 3470 to 500+  
N 3770 Night

Unit # 11 + 1 Truck (Driver) ✓  
2 night

Gen Foreman

Labor " ✓

9 Muckers 8

2 Jack H 2

2 Drillers 3.

1 " helper

1 Carpenter

1 " helper

1 Powderman ✓

1 shift Unit # 6 + 2 Truck on DSTW  
Trench.

E. side water 3555-3570 16

Oct 5<sup>th</sup> 1932

Talked over with Mr Wells

Covering of #2 Drain  
Strippin + fill West of DSTW

Puddle Core 6' Trench N 3470 to  
N 3770 500+  
night

Unit # 11 1 operator ✓

1 Truck 1 Driver ✓

1 Gen Foreman ✓

1 Labor ✓

" Driller 2

1 " helper ✓

1 Powderman ✓

9 Muckers 11 12

Fill extended 10 S along W side  
DSTW since 10/4 A.M.

3 Pumpmen



Oct 6 1932.  
 #3770 Puddle Core 6' Trench  
 #3470

Unit #11 + 1 Truck + Driver ✓  
 Operator + Oilers ✓  
 Gen Foreman ✓  
 Labor " ✓  
 Drillers (2) 1 ✓  
 " helper  
 1 Powderman ✓  
 12 Muckers 7  
 1 Jackhammer  
 3 Pumpmen ✓

Sta	8 Am. Ref Elev	Bottom 6' Trench Elev
#3480	526.5	23.5 ✓ 503.0
#3500	526.0	24.0 ✓ 502.0
#3520	526.0	24.4 ✓ 501.6
#3540	526.2	23.8 ✓ 502.4
#3560	525.8	25 ✓ 502.8
#3580	526.4	24.4 ✓ 502.0
#3600	526.5	24.7 ✓ 501.8
#3620	527.4	24.4 ✓ 503.0
#3640	527.8	25.0 ✓ 502.8
#3660	528.1	24.3 ✓ 503.8
#3680	528.4	23.0 ✓ 505.4
#3700	530.3	19.0 ✓ 511.3
#3720	530.8	15.0 ✓ 515.8
#3740	533.6	12.4 ✓ 521.2
#3760	537.4	9.0 ✓ 528.4

Oct 7<sup>th</sup> 1932.

Puddle Core 6 Trench.

Unit #11 ✓	operator ✓	oilman ✓
2 Truck + Driver		
5 Mockers.	7	
1 Jackhammer		
2 Drillers.	3	
1 Labor Foreman.		
1 Powderman.		
3 Camp Bulkhead + Chutes		
4 men Clean up Trench.		

N3470  
N3770

N3565  
N3576

N3597

N3618

Place Great Hole near  
East Side

N3528 - Place Great Hole East

of \$

N3480 F. 11 to 519

" 3560 " " 511

" 3640+ " " 510

509.6 Gr at 3645

510.0 " " 3610

17.6 down

510.1 526.5 - 3595

510.2  $\frac{10.1}{16.4}$  3580

510.1 3560

510.0 3540

509.9 3520

509.8 3500

509.7 3480



10/7/32 8:30 PM ATM

Sta 3544.5 Place  
Squirt Hole on  
E side in line  
of Bulkhead 2' high

3535 was Pump Sump

Oct 8th 1932.

19

PM. 3 Men Dressing Top Drain #3  
1 " Watering DST W.

Puddle Core Trench (6") #3640 #3770

unit #11 + 1 Truck

operator ✓

Oiler. ✓

Truck Driver ✓

6 Muckers 7

3 Drillers 2

2 Powderman ✓

9<sup>pm</sup> Foreman

M.

Hassell + 6 DST W. + Strip #3

Drain

+ 3 new Port Portal PM  
Steel

2 men carry lumber & all my stuff  
at night. (cc)

Oct. 10<sup>th</sup> 1932

Ruddle Core Trench  
Unit # 11

Operator  
Oiler

at 3470  
at 3770

Gen Foreman  
Labor

2 Ex Driller + 1 helper

380

6 \* Muckers

48

1 Powderman

1 \* Jackhammer

1 Sullivan

1 I.R.

Pont Comp.

2 Drillers on Great Hole

4 Men helping.

night to 9 Pm

5 men

Elec. + helper

Welder

Pumpman

man

2 Trucks

Core Foreman  
Water Man  
Oil Form man

Housing Pump  
Motor 3 Hrs.

1 Carp at Shop

5 Men on Steel for Inlet to Tunnel

1 Mix man clip Mix Plant to

Water West side. USTW

547.30

Mark 10' above water at 4:30 Pm

549.0

" 8'-2' "

8:30 Am

"

549.5 2:30 Pm

1 Man waters Concrete

Cat + oper. + Grader + 1 man

on Road -

\* 562.5 E of wall at 2:30 Pm

565.5 " " " 8:30 Am



Oct. 11, 1932

Puddle Core 6 Trench

Grout Holes

# 3645

South

Tunnel Crew

Foreman part time

7 Men. vsm

2 Compressors.

Excavation Unit

Gen Foreman

3 Drillers.

1 helper

11 Muckers dm

Foreman

3 muckers pm

# 11 - No trucks  
\* Included tree forms  
+ 2 mat Pump made  
lost 2

Operator  
Oiler.

3

10

(Steve & Helper General)

10/11/32

21

Install Pump above Ent. Portal

Gen Foreman

Flec + 2 Helpers

7 Men (Gravel Plant men)

Propagating + 5 of these men to Gravel plant 9:05

3 Men on 8" Pump Inst. 8" - Byron &

Andersons + 4 Men PM on Pump Inst

# Side DSTW

Ray + 7 Men on Pump Inst. + more

5 Men Inst 3" Cent Pump W. of WSTW

Camp Gen Foreman

1 Camp Strip mill man

1 " Band sawyer

3 Pumpmen

Foreman + 9 men (Tunnel) on Flume No. 1 9:05

4 " " " " 2:05

See

See + helpers

8 men West leading 3 PM

Cal + shovel work in 6:30 PM  
4 men

Oct. 12 1932

Elec + helper on Pump W. of DSTW  
2 men lowering 200 "

Puddle Core Grout Holes.

3 Shifts 2 Drills - No Port Comp.  
7 Men.

Puddle Core Trench Exc.

2 of N3470 <sup>+</sup>	3 Drillers	- 1/2	2
	1 " helper.	1-N of 3645	1
	1 Powderman.		1
N3645-370	1 Unit * 11	operator	1
		offer.	1
	1 Truck	2 truck nite	1 driver
	1 Foreman		1
	1 Jack W.		1
	8 Muckers		7

All S of 3470 9M.

2 Men Ex Exit Portal Night

N 3515 S. Toe Rock Emb. 22

Mr Hill + I observe that fill  
on Upstream side of Upstream  
Toe Wall 100 S of N. end of wall  
is being made very largely  
of Quarry Waste - largely dirt.

20' of 24" Pipe at N 3500 - 100 W of USTW.

2 Flume -

Reported by Mr. Thurston	}	2 Carpenters on Trestles
		2 Surveyors
		11 Men Ex (6 of these Tunnel)

Cat + Trailer haul 24 Con I  
Driver,  
Foreman  
7 men.

1 Man Signal on Road at night  
from Puddle Core Trench Exc.



Oct 13 1932 8 AM.

Loads

" Rock from Tunnel  
being Spoiled West of West  
Toe of Dam

1 Rock from Core Wall Ex  
being Spoiled on Spoil  
dump West of Dam  
South of Cont. Camp along

River.

Foreman Part time.

6 Men Drill Grout

#3300 to #3770 Core Trench Ex

Unit #11 + 1 Truck  
Foreman

3 Muckers

operator

Oiler

Gen Foreman.

2 Drillers

1 helper

1 Powderman

✓ 1 driver

✓

✓

✓

✓

✓

✓

3

✓

✓

8:30 AM. 13th Oct

2420 E of V-ET W 508. ±

" " " 549.5

Oct 13 Elev. Riser  
#3650 528.1 25.6 502.5

3660 " " 26.0 502.1

3670 " " " "

3680 528.8 26.0 502.8

3690 529.6 27.0 502.6

3700 531.6 ± 28.6 504.0

3740 534.0 22.9 512.0

3760 537.4 21.5 515.9

6 Men at Stop P.M. Carpenters

Timbers for Large Pump.

State Dump of Core Ex 3650 to 3770. ±

Mr. McQuinley

23

7' below Top Wall.

Oct 14<sup>th</sup> 1932.

Core Trench Excavation 3 of N3475

Unit #11, 1 Truck + Driver  
Operator  
Oiler

Gen Foreman  
Labor " 1 Powderman  
4 Muckers  
1 Driller  
1 Jack Helper

Core Grout Holes #3480 to #3645

2 Drills

1 shift 7 Men incl foreman.

4 Men moving 24" Pipe 830 ft

Right PC trench

Unit #11 1 truck

Operator Foreman

Oiler

Powderman

3 Muckers

5 muckers

G-E 3 phase 60 cycle 400 x P 24

Motor

Payson J 1140 P.P.M.

Model #18314

Type I-E 156 2200 Volt

Form K

No 4402383

89 Amp

400 x P

40% overload

1175 P.P.M motor F head

Starting Compensator No 2094412

Gr 1034 Type NR 3139 Form # 3 P. 1

17-18" Inc Pump No 82722  
Date 12-1-24

14" Diesel 7000 Gal M  
1140 R.P.M

14 Crane-125 Valve

Carp + helper at Shop 830 AM

2 Steel Men Exit Portal

Elev. 220 above V ST W 568.5±

Caldwell + 2 Men on Pump + dam 220

5 men on Pump piping W. side of ST W

5 " " " etc dam E of PC P.M.



	Depth	
3560	33	W
65	24	E
70.5	29	W
76	33	E
X 81.5	14.5	W
82.5	29.5	W
86.5	29.0	E
X 91	7.5	W
92	33.0	W
97	32.0	E
3602.5	33.0	W
07.5	30.0	E
12.5	27.0	W
18.	31.5	E
23.	33.0	W
28	25.0	E
34	28.0	W
40	33.0	E

Oct 15th 1932

4 1/2 mi. upstream  
Water 568.0' below top  
25

Core Wall Trench Ex.

Unit # 11. <sup>night</sup> oiler ✓ 1 Truck Driver  
2 " " at night

Gen Foreman

Labor " ✓

2 Drillers + helper 3 Drillers night

5 Muckers 9

1 Powderman ✓

1/2 of night shift Clean out Core Wall  
trench for concrete See N 3480 - N 3560  
Night 3 Muckers - 3 Drillers + Powderman  
from above list on Exit Portal Ex part time

Oct 16 1932

Grout Hole N 3484-1  
W of # Core Hall Not  
Drilled - Missed.  
marker still in 230 PM  
concreted over at 240"

Oct 17th

1 Foreman P.C. Ex  
7 Labl  
2 Drillers  
1 Jack H  
9 Carpenters AM. P.C.  
4 " P.M.  
Steel Man + 3 Men " Stee  
6 Men + Foreman Part time  
ex P.C. Drilling.  
1 Truck + 1 Labor haul Steel to P.C.  
4 laborers + Rigger Loaded Pump  
+ 3 set. = 2 x P.M.  
3 Pumpmen -

Oct 18th 1932 7 AM

Water man } Strip forms  
Dresser Concrete man } 23.7 m.  
6 Men + Part Time Foreman  
from Tunnel on Drill Grout  
Holes N 3640 to 3760

Steel Man + Helper Calc etc TC  
Carp Helper Mend P.C. 3670 Shelter  
1 man clean See 3560-3640  
6 Carp on See 3480-3560 r/c helper  
1 Gen Carp Foreman

Puddle Core Ex 3480 - 3320 ±  
Unit # 11 + 1 Truck. Oiler.  
Truck Driver  
1 Powderman  
2 Drillers + 1 Helper  
4 Muckers  
1 Foreman  
1 Gen " part-time

Driller, helper + 4 Muckers grading for  
flume.





night 19th

Unit # 14 4 muck

1 operator

1 oiler

1 welder

1 Powderman

3 muckers

7 men & Foreman on Pipe Line

20<sup>th</sup> Steel Sub Centre

Mr Day + 4 Men on Portal Steel

Oct 20 AM

28

Pipe Line

Rigger } <sup>4 on Dumps</sup> ✓

Driller } -

4 Men } 2

Waterman + Cone Finisher } <sup>DST 20</sup> Send.

No. 34 Tower

3 Carpenters

2 " helpers.

Welder one hour AM

Sec 3480 to 3640 forms + Strip

Carp Foreman

3 Carp + 3 helpers

1 Carp at Shop ✓ 3 Purrap men

Sec 3480 to 3320.

Unit # 11 operator ✓  
Oilerv ✓ 1 Truck + Driver ✓  
Gen. P. ✓  
Foreman ✓

1 Driller + 1 helper

1 Powderman

4 Muckers

Carp + helper on Timbers.

4 Men move Ent Portal Steel.

1 Carp Tunnel Timbers.

*Handwritten notes:*  
DST 20  
1 hour at  
5 carp + foreman  
10



Oct 21, 1932

Tower + Trestle Sta 3770. Core Wall

✓ 1 Carp. Foreman -

8 " 6 pm

4 " helpers 8pm

3 " " 8pm

Core Wall Steel N3480 to N3640

✓ 1 Steel Man

✓ 1 " " helper. 8pm

2 " " " 8pm

Core Wall Excavation N3320 N3480

✓ Unit #11 + 1 Truck

✓ 1 Gen Foreman

✓ 1 operator

✓ 1 oiler

✓ 1 Truck Driver

✓ 1 Foreman.

✓ 1 Driller

✓ 1 " helpers

✓ 1 Powderman

✓ 9 to Muckers. (one to Tunnel)  
✓ 2 Timber man (Craig) 8pm only to tunnel

✓ Steel for Portals Sub Concs

✓ Mr Day + 4 Men (Ent Portal)

Pumps Piper etc

✓ Rigger + 2 Helpers

DET. W.

✓ water man 2 Strip forms

✓ Concrete Finisher

3:20 pm. Brazing not done

Called to Mr Ellisons attention 8pm

no one on job to take up with

Oct 22, 1932

5" Vert Elev.

Stopped at Exit Portal +

1 Welder

F.M. Co

Spoke to Day about Dowels

Ind Motor

Ser. No 104876 Frame V120

Survey crew check up Ex.

UH Type

40 HP

1800 Speed.

3 Phase.

60 Cycle.

440 Volts

40 HP Con Duty 40°C

125% Load 2 hrs 55°C.

FL Amp 47.5

" Speed 1732

3<sup>PM</sup>

5 Carpenters Forms Drain #1

✓ 3 " help (Cement Finisher) Water Man

2 Truck + Driver Haul forms. 2 hrs

✓ 1 Powderman } Core Trench Ex

✓ 1 Driller } Sta 3520-3480

1 Carp Gen Foreman.

33770-1<sup>1<sup>PM</sup></sup> Carpenter on Hoist Tower

✓ 3 men " helper" " " Inst. Cent Pump No 5

100 F of Tug Inlet.

2 Carp at Shop } Frame for

4 " " " " PM } Tunnel Work

1 Load of 66 Col rec'd 7 AM

<sup>1/2 day on Ent Por.</sup>

Steel Man + 3 helpers unload Col

+ Sta 3480-3640



Oct 24 - 1932

31

Steel Ent Portal - 4 Men

2 men Set Hoist for PC N377a

1 hr Truck Steel for Grout Hole drilling

Unit \* 10 Road + filling over <sup>#10</sup>

✓ Carp Gen F }  
✓ " F } \* Drain forms

✓ 6 Helpers (Steel mantz helper)

✓ 5 Carp.

✓ 2 " to Tunnel.

3pm to 11pm shift  
3 Men Drill Grout Holes N364a  
N376a

2 Carp & 4 Men Ent Portal forms <sup>330 PM</sup>

3 Pumpmen.

1 Carp & 1 Helper at Shop.

2 Men Ex N end DST-W.

8 men placing rock along Drain <sup>2</sup>

Oct 28 - 1932.

Into Tunnel Prep to  
Concrete Invert West 300'  
Drilling Wedge near Anglet W

AM

1  
2 Camp + 3 Helpers Drain #1

✓ Unit #10 OP + Oil Cover Drain #3  
3 Trucks Spare to r. of Dam. + supply

2 Men Chain rock on Jarner

✓ 3 " Drill Grout Holes #36601

none  
PM

Camp Foreman + 2 Camp

Ent Por  
Towers  
+ Steel  
Support

none  
PM

" + Helper at Shop.

1 PM

No work on Core except  
Grout Hole Drilling #3470 + 3650  
Water over Ex + Concrete

Foreman

PC

Unit #11 + 1 Truck

EH

1 Mockers

PM

3 Men Remove Truss Pipe Line

PM

Rigger + 2 Men on Hot Stacks 3770 PC

PM

Camp + Helper Tower " " "

total 225 to Box

#9691

32

Box	Size	Machine	Nuts
5-Box	2-200	1x1 1/2"	Machine Bolts Hex
	1-192	"	"
	1-200	1x2"	"
9691 150"	1-100	1x1 1/2"	"
	25-	1x2"	"

Elev. Cor 524.0

Depth Stole 42  
482.



Oct 26<sup>th</sup> 1932

- 1 Gen Foreman
- 1 Foreman
- 1 Steel Man
- 10-men Place Conc
- 2 Carp place Bulkhead Ex For
- 3 Trans mix Trucks.
- 7 men Op. Mx Plant
- 2 Dress Conc Place bolts (Carpenter)

- 1 Carp at Shop
- 2 " " " 11 Am
- 4 " " " " "

Core Trench Ex

- ✓ 1 - Foreman
- ✓ Unit 11 - Op + Oil + 1 Truck
- ✓ 1 Powderman
- ✓ 1 Driller
- ✓ 1 " Helper

3 Muckets. 2 shift

Drain #1

- 1-Gen F
- 1 Carp. <sup>in</sup> Am. A Pkw 3 on Sac 453.77
- 1 " F
- 6 " H. A of these incl Hasset on Steel
- 1 Carp Dis Form 3 Well

11+53.6 Extender

6 box

33

1370 sand

1220 1/2"

1030 3/4"

33 Gal.

→ 263. x 6 15.18 - 7 men 1 shift  
4 " 4 " 7 " 6 hrs

4 Steel Men + Foreman Ent Portal

Claims could not put steel in as bent. No clearance. Told Mr Day

place front bent against form and if steel was bent according to plans & feet outside of wall City would set form back.

3 men @ 3770 - 5800 P Core Ex

3 Drillers off 11 Am 3650 - 3690 G Holes

Oct 26th

#1 Drain

5- Long Intrade Steel  $\frac{5}{8}$ "  $\phi$

7- " Extrado " "

$\frac{3}{4}$ " Radial Intrade  
Extrado

$\frac{3}{4}$ " Vert Outside of Wall to above hammer

2- men  $1\frac{1}{2}$  hrs each removing form  
+ dirt for Rim on Ent Portal  
Steel for back face of mass

3:50 Pm Eelison sent all men  
home that same sent  
at 2 Pm. Drain #1 not  
clean.

5 men + Freeman start at 3 Pm on  
placing steel Ent portal  
Ray says looks much wrong as City  
Binding irregular



Oct 27 1932.

9 Carp

1 "

1 "

F.

G.F.

N. Ret W Footing

Exit Portal

7 Am.

Steel Ent Por. footing.

✓ Day Steel Foreman. ✓

✓ 3 Men Place ✓

✓ 2 " Carry on grade ✓

✓ 2 " " " " +15. ✓

✓ 2 Carp + helper at Shop.

P.C. Ex ✓ 1 Gen Foreman

3320-3480 ✓ 1 Powderman

✓ 1 Drill Helper

P.C. ✓ 1 Foreman part time.

3 Men Prep for Ex Tower #3770

PM 1 Carp found P.C. loc 3640-3730

Steel Col Rigger

for P.C. (Truck + Driver

PM. 3 Men - Steel Col

P.C. 2 + helper pumps part time

P.C. 1 Hoist man

Oct 28 1932.

1025 Am 35

Start placing  
w. footing

3 Carp. + 2 Help

Drain

10+0

150.

Unit # 11 + 1 Truck.

N 3320

X 3480

1 Powderman

8 Muckers.

1 Driller.

P.C. Conc. Col. Sta 3640-3760

Rigger + 5 Men

# Tower 3770. Am

Foreman

Driller

Hoist man

1 Mucker.

Cone Dresser + 1 man on grade

1 Carp on P.C. 3640-3960

night shift. Equip same

1 Foreman

1 operator

1 chum

1 - dust op. n 3990.

1 - Lab on west Portal

3 - " on west P.C. trench 20

6 " " " " " "

Oct 29, 1932

Carters Dept

5 Carp & 2 Helpers Drain

8 Carp. per Foreman.

36

Core Wall 3640-3770.

Labor Foreman

A+ Tower 1 Driller

1 Hoist Man

2 Muckers

Carp Foreman } Forms

2 "

3 Men Clean up.

Rigger & 4 men on Steel.

2 Driller + Powderman

1 " Helper (on water stop)

2 Carpat Ex Portland

5 Muckers Ex "



Oct 31, 1932

Exit Portal. Ex

- 1 Gen Foreman.
- 1 Foreman.
- 2 Muckers.
- 1 Driller

Forms

- 1 Gen Carp. F.
- 4 Carp Helpers.
- 5 " "
- 1 " F

D.T.W. + Drain #1

Hassell  
Cone F + 8 Men +

1 Carp Tunnel Timbers

Cat + Bull Dozer fill

between Drains + around

1 Carp at Shop.

Core Tr. Ex

- 1 Powderman
- Drillers - 1 Drill helper
- 8-Muckers

Unit #11 + 1 Truck.

23770  
P.C. Hoist Man  
Driller  
2 Muckers.

Unit #10 + 2 Trucks  
Strip + Cover Dr. #3

Night Shift <sup>10/31</sup> 5PM to 2 AM "1

Core Wall Trench Ex

- 1 Foreman
- 1 Operator } 1
- 1 Oiler }
- 5 Laborers. send.

3 " Help Elec Blower Motor  
Tunnel Adit.

5 " Mend.

1 Hoist Man "

Per H.K. Harper.





Nov. 2 1932

8 Men on Cut off Tr  
Exit Portal

26 Trench Unit \* 10 <sup>op.</sup> <sub>aler</sub>  
2 Drillers  
Foreman

P.C. Tr & Ex Foreman  
N of #3720. Hoist man  
1 Driller  
3 Laborers

S of #3480 Unit \* 11 - no Truck <sup>op.</sup> <sub>aler</sub>  
4 Mockers Clean up Slide #3480

Conc Fr 2 men Ci. up #3480 - #3380

#3670 105 Cuts .39  
3706 Last granite

Nov 3 Exit Portal + 26 Tr Ax

1 Gen F.  
1 Lab F  
1 Pow Man.  
1 Drill help.  
2 Lab.

Steel S Ret Wall 5 Men

Forms N " " Carp F

2 "

3 Steel Men Well #1

7 men clean up around beam

5 Carp { Well 2 + 1  
2 helpers }

Unit # 11 + Trans Power Well 3.

n En # 3770 Harst Man

1 Miller

2 muckers

P.C.

3 men clean up concrete

Unit # 10 + 3 Trucks Clean up  
along Sky Rail line in S N 1/4

5 Carp ent Portal forms & ribs



Nov. 4 1932

Ex Portal

Ex. 1 - Foreman ✓

+ City 8 Laborer ✓ (2 Pm only) ✓

1 Driller ✓

Steel 3 Men. to Ent Por 9 AM

Forms. 2 Carp. ✓

1 water man Oil + Wells

Mail to Dr \* 3 if 2 men Strip form.  
DST + Ex Por. 1/2

P.C. Ex No 4 N 3770 -

Hoist man

Driller

3 Men

Forms N 3480 - 3640

1 Foreman Carp. ✓

3 Carp.

1 " Helpers

Clean Mx man + 4 men + put in Steel 1/2

Ex E of P.C. 2 men

1 Carp + Camp.

41

2 Trucks Pm.

Repairs Unit \* 11 Op + Oiler Pm at Ex Por Ex

Ramp 3 side Rock Emb 5 1/2 1 Driller 8 1/2  
1 P. in 1/2

Level E of U.S.F.W. Unit \* 10 Op + Oiler. ✓

(only 3 carp Pm) only

Ent Portal 6 Carp.

1 Steel Foreman + 3 Men. 2 hrs

Ex Por 1st Am

Tun Pm

Tunnel Fram 1 Carp. ✓

Rock Bl. 650 ± 1 Driller + 1 Foreman (Pm)

Tunnel arch Steel F + 6 men Pm

1 Carp at Shop Pm -

Welder Pm Tent

Nov. 5 1932

26 Tr E SW edge Rock W of DSTW

- ✓ Unit #11 + 2 Trucks Spoil to W
- ✓ Operator, Oiler + Tr Drivers
- To Ray not along River Side of

Portal Struc. Ex 10' Cut off rock

- ✓ 1 Foreman + 10 men
- ✓ 2 Carp.

Tunnel 2 Steel Men inside Tunnel.

- 1 Carp on " Tim.
- 1 water man + Strip DSTW

Ex P.C. #3770 (Drift) Hoistman  
1 Driller  
3 Men.

Steel P.C. #3640-3760 6 men +

Forms " 3480-3640 1 Carp F.  
4 " "  
1 " Helper  
1 Conc Finisher.

Ramp S Side Rock Emb SE<sup>1</sup>/<sub>4</sub> 1 Driller

Unit #10 (opt oiler) Ram SE<sup>1</sup>/<sub>4</sub> E of TW

Called Mahans attention to  
Completing Slope of Rock off  
of DSTW ahead of dirt fill  
for ramps.

Portal Foreman + 5 Steel Men. AM only

- ✓ 1 Men C. v. p. + help Carp.
- ✓ 5 Carp. Ret wall forming.

✓ Rigger + 2 men house pumps  
+ select same

✓ 3 Pumpmen.

✓ 2 Drillers Port Concr.  
✓ Powderman



Nov. 7th 1932

Gen Foreman ✓  
Ex Portal Ex. Foreman ✓

9 Men

(A Monly) 2 Camp Form Ret Wall  
Foreman + 3 Steel Men Tunnel

Cement Finisher on Well ✓

Cat + Road along #1.

P.C.

# of #3770 Hoist man.  
Driller.  
3 Men.

Steel #3640-3760 4 Men.

Forms #3600 ✓ 1 Carp Foreman.  
- #3700 ✓ A "  
Batter Sec. ✓ 1 " Helper.

Unit # 11 Place Coy. P.C. #3580-#3548 Batter

2 Trans Mix Tr

3 Men Lamp  
1 Com Cr. F.  
1 Clean up.

Bridge

C. Trench Rigger + 2 men + Truck  
#3700

Ramp #1 1 Driller  
Unit # 10 Op + oiler - Drumper  
2 Truck + Drivers.

Ent Portal P.C. #3700  
Forms 1 2 Carpenters  
" " + Helper Tie Rods.

Steel 6 Steel men

Road #1650 2 Drillers - Powder man  
Unit # 8 - P.M.

3 Driller P.C. Grout Sof #3480

#1528-533

Nov. 8<sup>th</sup> 1932

Ex Portal

- 1 Gen F
- 10 Steel men. to 9 AM
- 2 Carpenters to Re at 9 AM
- 1 " Helper.
- 1 Conc Finisher
- 5 " men.

Began Placing Conc 9 AM

Read E1650 Unit # 5  
NW 1/4

~~Full~~ ~~opt oiler~~  
~~2 Driller~~  
~~3 Air line men~~  
~~1 Powder man~~

P.C Ex #3770 5 Men

Unit # 11 Repairs today.

P.C 3480  
3514

- 1 Carp Foreman
- 4 Carp.
- 1 Steel man - Bolt & tie

N3480-3400

- 4 men Drill Groot Holes
- Water man
- 1 Clean up man

Int

- Por. form 4 Carp
- 1 " Helper
- 1 Driller Range 2E 1/2 W. of USTW

Unit # 10 opt oiler 3:1 Slope Rock Emb.

Night

- P.C. Ex 1 Hoist man.
- Neg #3770. 4 Laborers.
- 1 Foreman.



Nov. 9th 1932

Bill Reports

Road E 1650 Unit #8 - 1 Truck Port Com  
NW 1/4 Op. Tr Dr. 1 T.M.  
Oil. 2 Drillers.

Ex Portal  
Forms 1 Carp. F  
3 " Helpers Am (1-Pm)  
4 " " (1-Pm)  
1 Cement Finisher Cl. up.  
+ remove forms 2STW.  
2 Steel men Am  
3 " " Pm

Ex Steel N. Tim  
Tunnel Sec 4 Steel men.

Ent Por. ✓ 6 Carpenters  
✓ 2 " Helpers  
5 Steel men. (AM)

P.C. forms  
1 Gen F.  
1 Carp F  
4 Carp  
1 Helper  
1 Conc F  
5 Men place Conc

Ex C. Tr  
N 3770.  
5 Men #  
3 Dr H Grout Holes.  
1 Ex Sump. F of # 3455.  
Unit #11 op & oiler place Conc  
1 Water man  
1 Rem fr

Nov. 10

Steel Steel Foreman & 10 men

8 Tunnel Steel

2 " Ent Por.  
1 " EX "

26' Trench 1 Driller + 1 Powderman.  
unit # 11 + 2 Trucks.

Ex Portal 1 Gen Carp. F.

Forms 1 Carp. F  
2 " Helper.  
7 "

C. Tr Ex 1 Hoist man  
1 Driller.  
# of K3770 3 Men.

E of 3480 3 men set Pump here Am  
1 man on Sump B

of  
Drill 53480  
Grout Holes 3 men ✓

Ent Por 3 men clean up 10 Am to -  
2 men Clean Conc & form  
2 Carp. who set  
1 "

Tunnel Framing 1. Carp

Cat + Mc M. Road SE + Sof Rock

Core Wall E. 532+ 4 Carp  
Forms of 3480-3640 1 " Helper } P.M.  
1 water man

Steel Forms Unit # 11 op & oiler.  
TUNNEL



Nov. 11 1932.

1- Truck

Unit # 11 Ex Rock Toe Trench 5' x 4' 1/2  
1-op + boiler spoil To W.  
Gen Labor F

Tunnel Steel forms P.M.  
Gen F + 5 men.

Ex Portal Corp F

4 "

4 " Helpers. Tie Rods etc.

Lumber  
to Ex Por.

1- Conc F

5- men

1- Mix man

} 1 hr.

Riggers + 2 men + Truck  
Take out pumps etc Pipe etc

Core Wall

Mix. man +

1 Water man

N3480  
3600 Foms.

5 Camp

4 " sleep

Ex # 3770

5 Men day Shift.

Steel

4 "

9-3/4-9

7-5/8-13-6"

Mixing Wall Ent. Por. 4'

7 1/2' Deep Wall Ex. 18"

10' Long - wide at Bottom

Grout Holes No Drilling Am-

P.M. Mix man + 2

Ent Por.

1 Clean up man

2 Steel men A.M. only.

2 men Cu for Core Wall.

5 " Tunnel Steel.

5 men from quarry drill  
grout holes 2 shifts at  
night.

Nov. 12 1932.

Stop in office See Mr. Wood

To Dam. Carter & Thurston at W

Portal of Tunnel. Over Work

with Carter.

Called Carp. F on Ent Por  
attention to cleaning steel in  
forms.

Ent Por. 5 Carp + 1 Carp Helper  
2 Steel men 2 hrs. P.M.  
(Water man 3 P.M.)

C.Tr. No 370 No work open road Const at

Elev. 650 N.W. 1/4 near Axis of Dam. same  
2 Drillers Unit # 8 2 Trucks.  
1 P.M. Spoil to W. along road.

C.N 3480-3640! Carp. F.  
4 Carp + 2 Helpers (1 helper & drilling)

2 Drills (water liners) 9  
C.Tr. Drill Grout Holes 5 men A.M. + 1 Concrete helper

1 Water man.

Hand Turn 3/4" # 9 19 long Ex. track steel  
In trade  
1" # Radial 12" cc  
Rigger + 3 men take out Pipe  
Remove stamps 5 P.M.  
+ etc. with light Truck & Cat

Ex Por Forms. 1 Carp., Conc Finisher + 1 man  
2 men place Steel. Ex Por Struc.  
3 men place Steel in Tunnel  
2 " Clean up Tunnel  
1 light truck -

Unit # Ex Top Trench Rock Emb No. 1  
2 Trucks - 1 Driller P.M.

Unit # 10 Place Rock 3:1 Slope. N end  
op. oiler + 2 men. N of DST-W



Nov. 14<sup>th</sup> 1932

TUNNEL Steel - N 300 - Foreman + 7 men

Ent. Por.  
2 Truc + 2 Ex. P.

2 men

Grout Holes - (+ Clean up)  
- Cement Finisher + Water man

Set Pipe.

N 335<sup>0</sup> pm ✓

C. N. N 348<sup>0</sup> 1 Carp F

3700<sup>0</sup>  
El. 533±

9 " (1 emp pm)  
2. Helper.

Rigger + 2 men on Cl. up  
1 Light Truck.

(Cone C. N.

N 348<sup>0</sup> El. 533±  
3512

Unit # 11 - op railer.

2 T. M. Tr. 2 Drivers.

Cone F + 5 men placing

South Wing Wall

Ent. Portal

10 - 5/8" x 7. Vert +

10 - 3/4" x 4. "

9 - 5/8" x 13.6" Hor.

18" Bottom

12" Top

49

Fit to extend top

1 Camp at Shop.

2 " " " Ex Portal pm

Unit # 8 on 65<sup>0</sup> El. Road in NE 1/4 just

E of Axis of Dam. 2 Dr  
1 P.M.  
3 Trucks

Unit # 10 - op. + 1 man Place Rock

Nest 3/4 slope N. W 1/4 N of

DSTW.

Rigger + gang with Unit 10

+ Cat Set Steel Forms W

end Tunnel.

Nov. 15<sup>th</sup> 1932

Unit #10 + 1 Ex man placing  
Rock on 3:1 slope W of DST #4

2 Carp on Ex Portal forms  
Rigger + 3 men on Tunnel 8 ft  
+ clean up general

Core Wall  
Forms

1 Gen F  
1 Carp F  
7 "  
1 Conc F.  
4 men Cleanup S of 3480  
2 " " " N " "

Unit #11 Place Conc 9 AM

2 T.M. Trucks.

Conc F + 5 men Place Conc

1 Water man.

1 Carp at Shop.

50

Unit #8 in NE  $\frac{1}{4}$  on Const  
of Road at Elev. 650  
2 Driller. - P.M. 3 Trucks

1 Gen Camp.

1 Carp F

8 "

2 " Helpers

1 " Tunnel Framing Men

} Exit P.M.



Nov. 16 1932

Unit #10 At 111 Slope SW Top  
of D<sup>o</sup> Emb. N. of DST. W  
No inst. to me-

Ex Portal

- 1 - Gen Carp F
- 1 - Carp F.
- 8 ± " "
- 4 " Helperst Cl. up
- 6 Steel men.

1 Carp Frame Ton Tim.

1 Water man

3 Pumpmen.

Ex for Core Wall No of N 3270

Unit #11 + 2 Truck Clean  
up along 580 ft Road & load  
Ex.

- 1 - Foreman Ray Sears
- 1 - Operator # 11
- 1 - Oiler
- Truck driver.
- 1 - Driller.
- 10 - men

Unit #8 on 650 ft. Road. <sup>NE 1/2</sup> 3 Trucks

Nov. 17 1932

Ex Portal Steel 6 men  
" " Clean Conc 2 "

Unit # 10 Operator, Oiler + 1 man  
Rock Emb (W. of D.S.T.W.)

Unit # 11  
Core Trench Ex + Clean up  
No. N 3770

- ✓ 1 - Gen F
- ✓ 1 - Lab F.
- ✓ 1 - Operator
- ✓ 1 - Oiler
- ✓ 1 - Driller
- ✓ 6 - Muckers.

Core Wall Strip forms

- ✓ 1 Water man.
- ✓ 1 Cement Fin.
- 3 Carp. Help. + 1 man.

52

Ent Por	1	Carpenter	Gen F
forms	1	"	"
comp	1	"	at Shop
3-PM	1	"	Helper.
5	9	"	"

(5 of the above Carpenters  
out at 3 AM)

Unit # 10 + Trucks Strip below  
El. 650 in NE<sup>2</sup> from Road.  
2 Drillers + P.M. on Road.

Rigger + 3 men with light  
Truck on Clean up

1 Conc F. } place Conc bit and  
4 men } S of 3480  
6 " } mix plant  
3 Trains mix trucks + drivers



Nov. 18<sup>th</sup> 1932

Ent Por Rt trail & Head trail to Ee.

1 Cond F.

2 " placers

Unit # 11

1 operator

1 oiler

2 T. M Trucks

10 Camp 3 Am to

1 " F

1 " G. F.

3 " Helpers

3 Steel men

3 " " Wells to Drains

Core Mill 1 Water man (Part-time)

1 Cement Finisher.

3 Men remove forms

3 " with light Truck Clup.

6 men drill grant holes

N33A0 - 3A80

1 Gen F.

1 Lab F + Driller Core Tr Ex N3300<sup>+</sup>

Unit # 10 on Road Const + Strip

in NE  $\frac{1}{4}$  at Elev 650 $\pm$

2 Drillers + 1 Powderman

2 Trucks

1 Ex. man Cable Rock

Unit # 8 on Ramp Const +

Strip El 650 - 625 $\pm$  in NE  $\frac{1}{4}$

2 Trucks

Tunnel Rock r. Muck into Rack

Emb. El. 580 $\pm$  in E  $\frac{1}{2}$  Sec.

Nov. 19 1932

Exit Pass 1 Carp P

Structure 10 " forms

1 Trucks haul lumber etc)  
Riggers 3 men on Clear

up at Ex. Portal. + Sump  
No of cone wall at 3480.

2 Steel men on West

per of Tunnel + Tun.

Ex P.C. ✓ Unit # 11 - 2 Trucks.

No of K3770 ✓ Foreman

✓ 1 Driller  
✓ 5 men.

✓ 1 Water man ✓

✓ 1 Cement finisher 4 hrs

Exit Per 5 Carp Helpers (2 all day)

Strip forms

Trip NE 1/2 El 580-650.

Unit # 10 ✓ operator ✓  
Oiler ✓

Truck 71 ✓  
70 ✓  
69 ✓

Road 650 E of NE 1/2 ✓

✓ Unit # 8 Oiler

Truck 41 1 Powderman  
44 2 Drillers

Cat + Scarifier on Rock

Emb at El 580 ± Try to

break up Surface on Rock

dump at this El.

Tunnel muck being

dumped on Scarified area



Nov 21 1934 Monday

Ex Por 1 Gen Camp F

Steno 1 Camp F  
5 " H

2 Steel men Ex Por 1 & Tun

4 " " Tunnel

1 Conc F

5 men place Conc.

mint # 10 oil & oiler

Core Tr.	Ex	Unit	#	Truck
"	"	Comp F	11	1 Truck
"	"	"	10	A to
"	"	"	3	"
"	"	"	1	"
Dr. Wells	"	"	2	"
"	"	"	3	"
"	"	"	1	"
"	"	"	1	"

1 Foreman  
1 P.M.  
1 Drill  
# hab

1 Water Man

Sof N3480 Ft Truck  
Rigger # 3 men erect St. Col

night shift. Core trench Ex N of N3990.

Unit # 11 + crew.

1 truck + driver

2 Jackhammers - 2 Drillers

1 Foreman - G. L. L. L.

3 Pumping

Clear Cool.

Nov. 2 - 1932

6 Steel men Drain Wells.

1 Gen Foreman

Drain Wells } 6 Carp.  
                  } 1 Helper

DST. W. Unit #10 - 2 Trucks  
last Sec. 1 Cone F  
5 Men.

3:15 P.M. on Rock pile in NE 1/4  
at Elev. 625± Dump very dirt  
on Roadway Dumping Rock on  
same

Core Trench Ex #1 Shift

Unit #11 + 1 Truck

- ✓ 1 Gen Foreman
- ✓ 1 Lab Foreman
- ✓ 1 Operator
- ✓ 1 Oiler
- ✓ 1 Truck Driver
- ✓ 2 Drillers
- ✓ 4 Muckers

Am Clean up ✓ Pm Strip at Se Portal

Core Trench Rigger + 3 men + 1 Truck

✓ 1 Water man

Core Trench } 3 Pumpmen

Rock #1 } 1 Carp Foreman

etc } 4 " Helpers

✓ 1 Clean out man

✓ 1 Cone Finisher on DST W. Dr. Well  
1 W

1 Carp F } 2:30 to 4 Pm Ex Pan  
1 " " }  
1 " Helper



Nov. 23, 1932.

Ex Por ✓ 1 Gen Carp F.  
1 Carp T

✓ 6 "

✓ 1 " H.

✓ 6 Steel men on Tunnel.

✓ 4 men Ex Exit end at Port  
+ fill along C. Ports F+G. (strip)

✓ 1 Cement finisher + Strip  
Walls

✓ 1 Water man.

57  
3850

✓ 1 Foreman.  
Core Tr. 2 men CI up N 3770-  
3795  
✓ 1 operator } on base case pen  
Unit 11 Rep ✓ 1 Oiler }

+ Four Conc  
Core Tr. Conc F + 7 men on CI up

✓ 2 Carp

✓ C.W. Steel Rigger + Truck + 3 men

Steel, Col + Steel Rods

Nov. 24 1932 Thanksgiving

Nov. 25 1932

Exit Portal

Lumber light Truck + 2 men

Strip forms 3 men

Rect " ✓ 1 Gen Camp F

1 Camp F

7 5

2

(2 Camp Core Wall P.M.)

"

"

night

Core Tr. Ex # of #3762

✓ Day Unit # 11 + 1 Truck

✓ 1 Operator

✓ 1 Oiler

✓ 1 Tr Driver

✓ 2 Drillers

✓ 1 Lab.

Tunnel Gen Lab F } in vent E

1 Truck + Driver

5 men

2 to Tunnel 8 AM

9 men in P.M.

1 Water man

1 man Rigger Cat + 2 Truck

Remove 24 Pipe

2 men Strip forms Exit Portal  
to Ex Por Am. - Core Wall Cl up P.M.

Stripping NE 1/4 Elev 580 to 625

Unit # 8 + 4 Trucks

Spoil in NE 1/4 E of U. STW

+ E of 3rd Rock Emp

10 yards Rock Classification

1 man dress conc. P.M.



Nov. 26<sup>th</sup> 1932.

Exit Portal

- ✓ 1 Gen Carp. F
- ✓ 1 " " F
- ✓ 6 " " "
- ✓ 4 " " Helpers
- ✓ 1 + Truck haul 1 hr.
- " " + Welder 1 hr.

- ✓ 1 Water man.
- 1 Conc Finisher.

Core Tr. Unit #11 + 1 Truck.

- ✓ 4 men Ex (P.M. + Driller)
- 1 P.M. (P.M.)

Night Tunnel Drilled thru by Taylor.  
1 Foreman + 9 men. 4 Laborers clean up.

Unit #8 Strip in 3 E 1/4 - crew + 2 trucks

Core Trace Ex Unit #11 + 1 Truck, 12:31  
1 Driller, 1 Foreman + 4 Laborers

Tunnel Ingress Ex.

- 1 Gen Lab. Foreman
- 1 " " "
- 1 Powderman
- 2 Drillers.
- 1 Truck + Driver
- 8 Lab.

Concrete in Core Wall

- 2 T. M. Tr.
- 1 Con F.
- 5 men.

Strip #8<sup>1</sup> to E. 1.580-625 top of Dam  
Unit #8 + 2 Trucks

Entirely  
too much  
cut face  
per

Spoil to E of Dam.

Mr Wood on job with me. He inst  
Operator to come up with cut  
by signal to him.

Scarifier on 580 level. I do  
not think satisfactory

PM Tunnel 26\*

2 Carp.

6 Lab

1 Drill

1 Conc Foreman

1 Powderman

1 Driller

1 Foreman Ray

1 Truck guard

1 Gen F.

1 mx man

1 Conc man

2 mx plant men

1 Tank foreman

4 Lin men

2 Conc in Carp F.

2 Conc men

8 Laborers

Nov 28 1932 -

60

Strip SE 1/4 below 575 E. Unit # 8 + 2 Trucks

Cat - Port Comp - 2 Drillers Powderman <sup>3 hrs.</sup>

4 - Carpenters on Core Wall forms <sup>5 of N. 3 + 80.</sup>

1 - " " " " " "

Core Tr Ex. No of N 376 Unit # 11 + 1 Truck

2 Drillers

1 Powderman

3 Laborers

Ex Portal

1 Carp F

4 "

2 " "

4 Steel men

Nov 29 PM. Tunnel down by Super.

1 F + 9 men. 1 Cement finisher 2 Stone men

E1640.

Strip N. West side. Unit # 11 + 1 Truck.

Unit # 8 Steel Strip SE 1/4 below 575 +  
Repairing



11/29/32

Unit #10 op & sider at Ex  
Portal Rep. forms Steel

Rigger + 3 men (PM)

1 water man

Camp F } Core Wall forms

4 " } 2 hrs then T.  
+ Ex Por.

Unit #11 + 1 truck Core Wall Ex #37

✓ 1 Powderman

✓ 1 Miller

✓ 2 Helpers

2 Camp. } Strip Ex Por PM  
3 Help

Strip SE 1/4 1 Port Comp

2 Drillers

1 Powderman

Nov. 30 - 32

61

4 Steel Men Ton Inv. w Truck

Unit #10 at West Portal. Rep & S. forms

Rigger + 3 men. Steel F. + C. up

3 Camp Adf timbers in Tun Well

3 men cut down Con in Inv.

Inv. } Mahan. Ray. + Steve (T)

Ex } 16 men

at Tan } 1 Truck haul gravel

of Road

1 water man

1 Con Finisher

1 Camp at Shop

Unit #8 + 2 Trucks very heavy stripping

in SE 1/4 of DG. + Rock just to

get tiller red DG seems

2 Drillers + 1 Powderman

Spoil Dirt F. of Dam + Rock

direct to Rock Comb

4 Camp + 1 Helper Core Wall forms

Nov. 30 + 31.

Unit #11 + 1 Truck

Ex Core Tr No. #3660-

1 Tr Driver

1 operator

1 oiler

2 Drillers (P.M.)

4 Muckers

Estimate 60 cu yds shot & place

Direct in Rock Emb from Stripping

operations in 2 1/4 below E57

to E.L. 540 ±

Dec, 1<sup>st</sup> 1 Carp. House Pump  
2 Carp. Core Wall forms 5 ft x 3 ft

1 " keeper  
Core Trench Ex #3764-3795

Unit #10 + 4 Men (Drill + P.M.  
+ Lab)

No Truck

1 Water man Clean Cone in Core Trench

1 Powderman + 1 Bulow

Cloudy Rain (light)

Dec 1 1932.

62

2 Carp. Housing Pump

Unit #11 - Tunnel Steel forms.

1 white Truck

Rigger + 2 men.

3 men Clean up Tunnel

back along Steel forms

Ton Ex

1 F Gen

1 F Lab

1 Truck + Driver

6 Lab.

Ton F

6 Miners.

Carp at. 14" Pump House.

1 Man on 14" Pipe line.

3 Pumpmen.

Unit #8 + 2 Trucks Clean up truck in

AC area E of Core Wall. Ex from

Core trench 1 Ex man on road home

Appar to E of Dam



Dec 2 1932

✓ 1 Water Man

3 Carpenters at Shop

3 " + 1 Helper on Core Mill  
All on head wall 6 AM

✓ 3 Drillers from Quarry Grout Hole  
3-27' holes  
1- to 20' ±  
No 3762

✓ Unit #8 Excavating stripping  
and very excessive amt.

of P.G. in S E 1/4 below E 600

2 Trucks - 2 Drivers

2 Drillers, 1 Powderman

Spoil E of U.S.T.W. near toe  
of Rock Emb.

2 men strip forms Ex Postas

Unit #11 at Ex Por on Rep.

Dec 3<sup>rd</sup> 1932

3 men Drill grout Holes # of  
N 3780 with Water Liner

Unit #8 Strips in S E 1/4  
2 Truck.

2 Drillers + Powderman Rock

in P.C. Sec # of Road 580 + 5  
of 600 ft

5 Steel men on Exit Portal

3 " " Tannell Street

8 " " floor " " "

4 Camp on tunnel





Dec 7th 1932.

Ex Portal 1 water man Dress Cond.  
 Tunnel - 1 Carp F  
 3 " " H.  
 1 Gen F  
 1 Carp in T on jumbo + 1 H.  
 2 helpers.  
 Rigger + 4 men  
 6 Steel men from Steel  
 2 F + 9 men tin plug E

Unit # 8 + 2 trucks strip  $SE \frac{1}{4}$  E5320  
 N3340  
 Spill Rd dirt + 1/2 of steel down  
 in River bed. abt to 3:1 Rock  
 slope of WSW. Rock to E Rock  
 End at E 580  
 1 Driller.

night shift 1/2/32 5pm to 2 am

Unit # 7 + Crew } NW  $\frac{1}{4}$  strip E 605  
 2 trucks - 2 Drillers } Rock cut here  
 2 Jackhammers }  
 1 Powderman }  
 1 Driller }  
 22. Taylor

Gen F } team  
 5 Camp }  
 3 help } , camp day pm  
 65

Part Camp + Part Mine for  
 granting cone benches S of  
 N 3400.  
 5 men + Ext. man

N 3720 - N 3792.  
 4 Camp Cone base  $\rightarrow$  3 lbs  
 Tunnel  
 6 men + cone F put in steel  
 + help camp

Unit # 7 + 2 trucks strip + Rock  
 in NW  $\frac{1}{4}$  Sec. 6 to the Rock End  
 1 Driller  
 Very rocky Side cast large rock  
 down hill + space dirt + Rock to  
 West in Road fill thru area "B"

3 Drillers  
 3 Drillers + 1 Powderman  
 1 man lining blocks on Rock  
 Tank from Tunnel timber

Dec 8 1932.

✓ Unit #7 + 2 Trucks Strip  
SE 1/4 Rock E. Sec R1. 575 to 625.  
Strip too deep told to lead to Red Clay  
Unit #8 back to Quarry

✓ 1 man runs belches from the R.E.

✓ 1 Carp. at Shop.

2 Steel man E end T.

✓ 1 Driller + 1 P.M. SE 1/4

2 " " NW 1/4 1/2 (18 1/2 ft)

Welder + Helper 1 hr Rep Waterline

3 Carp. } Gene Trace from P.M.  
3 " " }

Water man Dress Cone.

1 Gen of Labor

1 " " + 1 man strip from 60

Truck + 1 Ex man cl up lumber to front

Dec 9. 1932.

✓ 4 Carp. ?

✓ 1 Water man

3/4 Carp. 2 AM  
2 " " PM

3 Carp. at place

1 Driller in NW 1/4

} Exit Por.

in 3700 ft

Place Gene Trace  
+ cc P.M.

Unit #7 + 2 Trucks Strip

Rock Emb. Sec SE 1/4

Spore & dam. Rock to S R. Emb.

1 Driller  
1 P.M.

T. + 8 men cl up Exit Por  
+ replace 14" pipe of line

1 Carp shop P.M.



Dec 10 1932 8 AM Water Elev. 573.7  
at 15" Pump S of Dam

Pump not running

2 trucks 2 Drivers

4 Ex men clean up  
Lumber at Ent Por

Cat  
Unit #10 Dragline Ex outlet  
for water down river below  
Tunnel outlet

10 men & 1 foreman 1 truck & 1 driver  
Clean up E end, tunnel  
1 foreman & 16 men West end  
on prep conc.

Rain.

27

Dec 12<sup>th</sup> 1932

AM Unit #10 moved to ent Por

+ Removed Timber from "

Mix man

operator

Oiler

1 Truck Driver

John Connely

Unit #7 moved to R Emb El 58.0

+ moved rock for Temp Dam  
O.P.  
oiler.

Miss Ellison hurt in TUNNEL

Cloudy  
Dec 13<sup>th</sup> 1932 Rain Water Thru  
TUNNEL 15 at 5:00 Unit #10 moved from  
Ent Por to Conist Culvert River at

City Camp. Washed out on 12<sup>th</sup>  
& Trucks km Unit on Road on River side  
Cat. etc. side of dam

Dec 14th 1932. Rain

Dec 15th 1932 Clear Cool

Unit # 10 clear out  
river channel & fill at  
N end of tunnel

Clean up tunnel { 2 Foremen 1 on bank  
2 Trucks 1 Driver  
9 men (3 on bank)

3 Camp { East Box frame  
3 helpers

Dam { Bulldozer & operator  
Unit # 8 2 trucks 2 drivers  
1 Foreman  
3 Pumpmen

Refuse  
night  
Jew & Bar  
Unit 10  
Cat 60-AS  
me in tunnel  
1  
6 men  
1 Truck

Unit # 7 on Road 1/2 mi  
E of Dam & N of river

night  
clean up dam  
1 Truck  
6 men

Dec 16 1932 Clear Cool. 68

Unit # 10 remove sand  
West end tunnel. 20 m more  
to be removed

Bygones 2 men remove forms OSTM  
at tunnel  
1 Foreman & 10 men at tunnel  
60-Cat Bulldozer.

3 Pumpmen  
5 men on pipe apron tunnel  
1 Camp 9 AM

Unit # 8 moved to Road Ee 625  
Part Camp (2 trucks 2 m)  
clean up same Mr plant West  
2 Drivers 1 PM  
1 Camp & helper at shop

✓ 3 Camp + 3 st - Tunnel form  
✓ 1 foreman + 1 man on East  
Ret mail case.

night

Unit # 8 1 truck, 1 Driver  
Shop N.W. 1/4, Part Camp 2 J.H.  
1 PM + 2 Drillers in N.W. 1/4



Dec 17 8 AM

- 1 Foreman } steel form  
14 men } for T.
- 1 " clean up on E end T.

Store in chg.

- 2 Cam finisher } Ent  
1 " " helper } on

3 Camp

- 1 Elev. operator } Sta 5+50 T.  
3 Camp H. } Form & bar  
1 " at shop & on my plant. } seed
- 1 mech at " "
- 1 my man " "

water at 15" Pump Ee 574.1 Pump

operating

6 pipe thru temp down not working

4 days at  
 night to  
 4 hrs at  
 1 day  
 Unit # 8 Fuel around Ee Paster &  
 but not shot fire in/on area  
 Shop with 2 trucks N N 1/4 R Ent  
 Powder man & 2 Drillers N N 1/4

1245 Hour 17

69.

47 Batches

1:22:5

235 day

12/4/32

11 50

11 bar cement

12/7/32

16 50

11 bar recover

12/8/32

25 50

12 " "

11/28/32

55 00

42 " "

5 hrs 14 bar used granting in tunnel

Strip N N 1/4

Sunday 18

Day - & night

Unit # 8 & 2 trucks

2 Drillers & 2 m.





Dec 20 Clear

Called Rigger attention to  
Cutting of Col. (irregular)

4 Carp } Core Wall forms  
3 " " }

Strip forms + etc.

2 men Clean up lumber

2 men on Pipe line

4 men dice grant hds  
n end Core mound.

Unit # 7 on Road Ee 625:

West of me plant + E down

N 3704 to N 3736<sup>543</sup><sub>536</sub>

1.45 Begun pouring in concrete

Spencer 3 men placing

welder 1 hr

19 patches @ 7 day

6 " @ .6 "

2 " 6 "

133

36

12

181 day

71

n 3704 Ee 534 to 543  
to n 3728

n 3728 Ee 536 to 543  
to n 3736.

Batter Area 3704 to 3728<sup>539</sup><sub>534</sub>

" " 3728 to 3736<sup>541</sup><sub>536</sub>

Day Unit # 7 in P.M. moved  
shift to Entrance Portal and  
only fixed dirt from cut  
n of n Ret Wall (above  
top wall) against n  
side n Ret Wall.

Dec 21 1932

1 Gen F.

4 men dismantle pipe  
Line (Air line to tunnel)

2 Camp on Core Wall

3 Ammynen

One  
Shift Unit # 8 Strip + material  
in N. W. 1/4  
2 Drillers, 1 Prim  
2 Trucks

One  
Shift Unit # 7 Backfill S of S. Port. Wall  
at Ent. portal. of S. side

One Shift  
Core Wall 4 men drill in of 3810 <sup>great</sup> hole

72  
Dec. 22, 1932.

Went over with Mr Wood  
and Cameron the question  
of Red Rocks on Vertical  
timber sets in Tunnel  
They are <sup>"back of"</sup> 8" heat line of tunnel  
lining. Asked Mr. Gen  
McC Carpenter foreman McGinnis  
Core Foreman & finally Mr  
Roll that forms were being  
placed without cutting  
vertical timbers so as to  
have the 8" clearance  
He says, (Mr Roll) that they will  
go ahead and concrete where  
forms are on & cut out for the  
8" clearance prior to putting  
tunnel lining. This reported to  
Mr Wood and he & I go to



Mr Rohl after Mr Wood had  
talk with Mr Pyle. Mr Rohl  
assured Mr Wood that they  
would get the required  
8" clearance and to tell Mr  
Pyle it was none of his  
dam business if they want  
ed to go to the expense of  
trimming that off rather than  
more forms & trim off prior  
to pour.

11:15 Orders given direct to Truck  
Drivers not to dump on un-  
scarified area N. R. F. at <sup>575</sup> E.

73  
Dec 22<sup>nd</sup> 1932. 1 Paulmann  
3 Steel men Tunnel Steel.  
Spoil dirt N. of Dam.  
one shift Unit # 8 + 2 Truck Strip on  
Rock being placed in Rock Emb N. of old N  
Bench E. 1600 + in N. W. 1/4 1000 + N. of  
Core Wall. Cut on North  
Side about 12 to 14' + Operator  
says cannot cut any  
less as bank is loose on  
South side of Bench.  
All rock except DG in  
top 4'

A man once Great Hole in Core trench  
South of N 38.35.

Unit # 7 + 1 trucks clean up fly fee  
one shift area in N. E. 1/4 at Elen 550 ±  
Place Rock into Rock Emb & Spoil dirt

night shift Unit # 10 Escarade River  
channel N. of Exit Portal.  
op + allen sfly

Dec. 23, 1932.

- ✓ Unit #8 at Quarry
- ✓ " #7 Clean up in NE  $\frac{1}{4}$  + SE  $\frac{1}{4}$  of N $\frac{1}{2}$  fill Sec at E.L. 550 $\pm$  Rock direct to E.R. Emb.

- ✓ Unit #10 Deepen River Ch N. of Ex Por. A new Dr. H. grant Holes No 3810

Camp being covered with Rock in SE  $\frac{1}{4}$  E.L. 550-575 by E Rock Emb. Advised Mr. Wood

2 Camp at S. end Core Trace. Pen St

Dec 24 1932

74

- ✓ Unit #10 Dragliner & Truck on Stripping SE  $\frac{1}{4}$  along

Ramp Road W. 550-575. + clean up  $\frac{1}{4}$  Area. Rock to N. into rock Emb. Dirt Spoiled E of Dam.

Extra man cable rock. 1 m.

- 1 m only Unit #7 Clean up SE  $\frac{1}{4}$  near Core Trace at E.L. 550 $\pm$

- 1 Truck spare dirt N. dam. Rock to W + E Rock Emb. 1 m N $\frac{1}{2}$  N $\frac{1}{2}$  fill Sec P m ca up Rock
- ✓ 1 Tex man on shooting rock etc

- ✓ 4 men drive grant Holes N of m 3810.



Dec. 25, 1932, CHRISTMAS Eve

" 26 1932. Clear Cool to Warm

✓ Unit #7 + 2 Trucks Cleanup

Rock in NW 1/4 in Hy fill Sec.

at El. 555± Rock to W. R. Emb. <sup>El. 575</sup>

Scarifying not satisfactory

from line 15' S of S edge

of Drain Well #3 to N Pt. of

Mt E of Chocolate Creek.

Has been Scarified about

15' N. of this line but truck

practically obliterate the mark

my wells. Supt on work in Tunnel

1 Gen Foreman

AM 1 Truck + Driver

Ray + Tony + 1 man bridge

Core Trench on Road N side E 575±

PM 3

2 Carpenters on Core Well forms

N of 1534 50. to N 3775.

✓ 3 men <sup>Yott</sup> <sup>Hot</sup> Steel Core Well N 3400 N.

A men drill Grant holes

Dec 27 1932, Clear Cool.

2 Trucks

✓ Unit #7 Cleanup Rock + Strip

1 Powderman (etc)

Hy. fill Sec in NW 1/4 El. 560-575

Rock to W. R. Emb El. 575±

Dirt N. of Dam

Scarifier operating E 575 W. R. Emb

✓ 4 Carp + 3 Help. Steel Col

+ forms Core Wall. <sup>S of 3400</sup>

+ Scaffold + forms N of "

✓ 2 man Cleanup N 3700± <sup>AM</sup>

355 PM begin forming core

Sta 3736-3768 to Elev. 543.

39' Copper 12" water stop

from 3200± to 541 at

3768.

In. Fe.  
L  
355  
414  
442  
510  
536

from 3200± to 541 at 3768.

Clear. Cool.

Dec 28 1932

1 - Foreman

3 men Ci up Core Tr 3776-N.

2 Carp form B.H. " " " "

4 men place Steel Core Wall

5 men 3 Carp. Core W B.H. 3 of N 3420.

Unit #11 Clean up Hy F. Sec NEA

1 ~~Truck~~ Trucks. Part time +

1 Truck + 1 Driver Ci up lumber  
along Core Wall.

1 Camp F.

3 Carp

3 " "

} East Por. Tr. Sec.

1 man Overhaul Conv. Elev.

EvE. Ring Sec Tunnel

1 - Foreman

Truck

10 men. X 1 of these truck driver

8 men on Steel Rem Tunnel

1 man cut Rep in Tunnel - July

Rigger welder Rem Tunnel

1 man help welder on the track

2 Camp

Cent jumbo Jumbo Lumber Truck tunnel

Night

76

Unit #7 + 2 Trucks

Leveling off for Beach

West Sec of Hy F. Sec

E1. 550 - 560 ±

Loaded steel box with 1  
truck to be hauled out of  
dam area 1 extra man.



12/29/32

12 empty Cement boxes  
used for road Ent Por  
stump keep holes

✓ 6 men (2 Foreman)  
move steel forms

✓ 3 men clean up

Steel ✓ 1 Jumbo on White Truck

form ✓ 1 Cat.

Sec ✓ 4 men clean up + etc

1 Camp

out dip of holes N 3823  
3824

1 Foreman } 2nd Ring  
7 men } Ex  
1 Truck

1 mech + 1 man overhaul Elec. Com  
Truck Light + driver at Ent Por

3795 Great H on W vent pipe

3799 " " " E " "

then 4 Flaring pipes to 3818

dept

N 3803 25.5 " S incline  
N 3804 25.0 " " "  
" 16 " E

blown out of  
" " " "

Copper 3792 - Copper box 3784 - 3819  
30' nond. right 29

77

Ent Por 7 Camp  
2 " Helper

1 Gen Foreman

1 Foreman

4 men take up 15" hole  
170

Unit #10 Strip 5 1/4 Fe 575  
600.1

2 bunch Spine E of Dam  
+ in of 2nd wall Ent Por

1 man Tenny dump

8 steel men on Core Wall

5 Camp

4 men steel Core Wall

1 man clean up Core

Dec 30 1937

5 men put 4" Pipe line into tunnel

1 man clean up N end

2 men Conformer chip Cone

N. end tunnel

Foreman 6 men Slice forms

2 Camp 3 scaffold

Foreman & 9 men with West <sup>Smith</sup> Gun Pump  
1 Truck & Driver

Ent  
Por. 5 Camp & 2 Helpers

Unit #10 & 2 trucks Strip & etc  
SE & Spine dirt to dam & at Ent Por  
1 man on dump

> Approved Cone trench N 3340±

78

3 men same to bore wall

7 Camp cone wall

1 " helper

1 man substitute Ebor Carr.

4 men R. the cone wall to

8 " " " Tunnel P

N 3800 - 8' vert cu N. top

E 5360 N 3410 Strip approx  
2887±

1 Foreman & 7 men replace

15" Pipe line & hys.

Accident - Explosion in  
tunnel 8:45 A.M. Simpson & I  
going into tunnel at time. We were in  
about 200 and accident occurred  
at 5787± 3 men hurt 2 seriously.  
See report on same to Mr Wood. These men  
were roughly knocked down  
" Indian Joe Simon for information



12/31/32

- ✓ 2 Cement for Tunnel
- Tunnel 7 Camp + 1 helper
- See ✓ 1 Foreman Mac
- ✓ 1 operator on E bar
- ✓ 1 " " " "
- ✓ 1 Truck <sup>help</sup> up + dump

Cat pulling ahead at

720 Start dumping Coal 745

- ✓ 2 men on top
- ✓ 2 men on top

Bag keepers looking for blood marks on tunnel from accident of 30<sup>th</sup>

AM 1 melder

1 Gen F Maham

- ✓ 8 steel men tunnel

- ✓ Foreman + 6 men <sup>Phy Ex</sup>

AM 3 Camp Ent Por - + 1 helper

4 men of the plant

3 men trucks

See left on lights

mid 12/18/32 2<sup>nd</sup>

1440 Sand

1150 1/2"

1030 3/4" Rock

35-7 gal water

12/31/32

mid

cut 60' to Beach grading  
 1159m to Beach grading  
 N of line trace.  
 10 + 1 Truck Strip 52 1/2  
 → 2 "

4 men on Pipe Lines

AM 3 Camp trip Tunnel

- ✓ 1 Foreman

- ✓ 3 men

See there at 2 PM

Backfill

\* 5 Tunnel

80' Long

4x6'

AM

1 Camp } 1 end coal N of N 3340

AM

1 man on top strip etc

AM

1 Corp #3500

✓

6 " + 1 " } N end Core Wall

2 PM

3 steel men N of N 3700

AM

2 men blow holes etc

3 Pumpmen



3349 - 53 ~~8.91~~

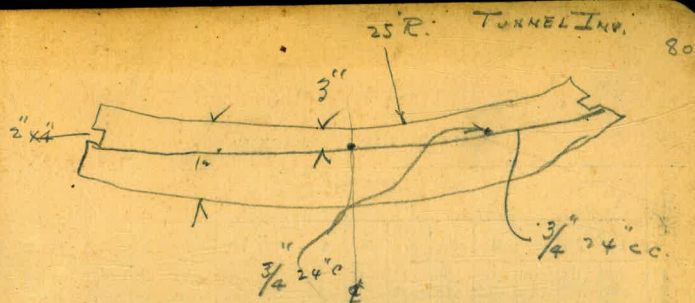
3360 clear

OK to 3340.

Ex. Lence on N. End to  
Clear. 517.

	WT per Cuft
36% 2 1/2"	97.5
36% 1 1/2"	96.
28% 3/4"	95.5

12:4 "  
57 - 1 1/2"  
43 - 3/4"



Tunnel Plug Sta  
0+56-0+72 - 1+03-1+29

ING.

II

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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	3.27	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.05	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  $(= w)$  by the difference between the cuts (or fills) on each side of it  $(= h)$  always subtracting the outer from the inner.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.  
Roadway 16 feet wide. Side Slopes 1 on 1 1/2.  
For Single Track Embankment.

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

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