

W
440

WILZGBA
1840

WILZGBA

ENGINEER'S

LEVEL BOOK

4402

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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440

FIELD NOTES.

by

Concrete Inspector Pg 1-122

R. W. Carter

MICROFILMED

JAN 12 1965

400-122-122

MONDAY - MAY 8 - 1933.

- 1- #10-DRAGLINE
 2- Compressors
 2- Jackhammers
 1-truck #42
 1-Truck #39 12:30 P.M. to
 1- Dragline operator Core trench excav.
 1- " " oiler } SOUTH Abutment.
 4 muckers }
 1-truck driver }
 1-truck driver 12:30 P.M. } NORTH & SOUTH Abutments
 2-drillers }
 1-powderman }
 3-muckers North Abut. }
 1-Carp. foreman } 2-hrs. Timbering Core trench
 1-Steel man } off duty 8: A.M.
 } timbering core trench-
 } North abutment - 2-hrs.
 } 6-hrs. removing cones from
 } core wall & pointing hole with
 } mortar
 1-laborer. } wetting concrete and
 } cleaning lumber from
 } core wall - 2-hrs.
 } 6-hrs core trench excav
 2- SKS. cement used to point cone holes
 in Core Wall-South abutment.
 1#-11 shovel & crew } clean up muck from
 1-truck #3 & driver } core trench excav.
 2-laborers } North abutment

Note: Contractor should be given a
 letter requesting that more care be
 taken in cleaning form lumber which is
 being used more than once, also to be
 more careful to get forms water tight.

(2)

MONDAY MAY 8

Rock from Core trench to upstream rock embankment

#42 - 12:45 - 4 cu yds

#39 - 1:20 P.M. ~~4~~ cu yds

#42 - 2:25 " 4 " "

12

#3 - 1:50 P.M. - 2 cu yds. ^{Rock} To Downst. Emb.

Tuesday - MAY 9 1933

3 muckers } Core trench excav.
1 driller } North abutment
1 jackhammer }
1 compressor }

1 Compressor - 1 jackhammer
1 #10 dragline - 7:15 A.M. - 10:15 A.M.

1 #42 truck
1 #34 " }
1 dragline operator

1 " " oiler
2 truck drivers
1 powderman
1 driller
2 muckers

1 #11 shovel & crew } Core trench excav.
1 #3 truck & driver } North Abutment

#3 - 3 cu yds. rock from core trench to U.S. Rock Emb. ^{North}
#3 - 5 cu yds. rock " " " " " "

1 steelman } pointing cone holes in Core Wall
From south abutment
#42 - 2 cu yds. rock to U.S. rock embankment
#42 - 2 " " " " " " " "

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to E
of r
exa
30.6

Wednesday - MAY-10-

{ 1 - powderman (foreman)
6 - men
Core trench excav. 3-hrs
1 - Driller

Stopped at 10: A.M. - RAIN

Thursday - MAY-11-1933

{ 1 Compressor } Drilling grout holes in
1 water liner
4 - men } Core trench - South abutment

{ 1 Compressor } excavating core trench
1 Jackhammer } North abutment
4 - men

FRIDAY - MAY-12-1933

{ 1 compressor } Drilling grout holes in
1 water liner
4 - men } Core trench - South Abut.

{ Wetting concrete, & Core wall forms
1 - carp. foreman - timbering core trench - 6-hrs
2 - men excav. core trench. 6-hr -
helping electrician - 2-hrs

SAT. MAY. 13. 1933

1- Carp. foreman } Core wall forms.
 1- Carpenter } South abutment
 1- steel man }
 2- helpers }

1- Compressor } Drilling grout
 1- Waterliner + drills } holes in Core
 3 men } trench. South
 abutment

Sunday. MAY. 14. 1933.

1- Compressor
 1- waterliner + drills
 3- men } 5-hrs. cleaning & measuring grout holes
 } 3-hrs. setting grout pipe &
 } cleaning Core trench & wetting
 } concrete

Coord.	Depth	Length of pipe	Cu. ft. Grout.
N312E	26'-0"	21'-0"	
N3126W	26'-0"	" "	
N3130E	26'-0"	" "	
N3135W	25'-6"	" "	
N3140E	25'-6"	" "	
N3145W	24'-6"	" "	
N3150E	25'-6"	" "	
N3155W	26'-0"	" "	
N3160E	26'-0"	" "	
N3165W	25'-6"	" "	
N3170E	26'-6"	" "	
N3175W	26'-0"	" "	
N3180E	26'-0"	" "	
N3184E W	26'-0"	" "	
	<u>361'-0"</u>		

294-lin. ft
 New 2" pipe

MONDAY. MAY-15-1933.

Placed concrete in Core wall:

N 3192 to N 3176 to elev. 648'

N 3176 to N 3168 Rock to elev. 654'

N 3168 to N 3152 " " " 656'

N 3152 to N 3132 " " " 660'

1-steel column

78-lin. ft. copper

10-7/8" ϕ -8'-6"

32-13/16" ϕ -4'-0"

2-13/16" ϕ -8'-0"

Mix: 7-5ks. Cement } 60-Batches concrete
 1300 # sand }
 1290 # 1 1/2" Rock } 3-batches grout- 15-5ks
 1030 # 3/4" Rock }
 35- Gals. Ho. } Total-435-5ks. Cement

1-set of 3-Test cylinders - 9:00 A.M.

Sta. N 3176 to N 3192. Elev 648' to 648'
 A.M.

Concrete labor:

1-Foreman } Placing concrete - 4-hrs.
 1-Steel man } Core Wall forms. 4-hrs.
 3-men }

1-mixer man } MIXING PLANT CREW - 4-hrs.
 3-men } MIXERMAN - 4-hrs drilling
 grout holes

2-Transit mix drivers - 4-hrs.

Equipment:

1-Mixing plant }
 2-Transit mix trucks } 4-hrs

1-Carpenter - core wall forms - 8-hrs.

Hole
 GROUT LABOR + Equipment:

1-compressor }
 1-waterliner + drills } Drilling grout
 3-men } holes in Core
 } trench - North
 } abutment.

→ One of these men MR. HAYES
 received a scalp injury at
 10:30 A.M. caused by coupling an
 air hose coming loose with air
 pressure. Returned to work at 2: P.M.

Tuesday - MAY-16-1933

1-foreman } Bldg Core wall forms and
 1-Carpenter } erecting Core wall steel
 1-steel man }
 3-laborers }

1-compressor } Drilling grout holes
 1-water liner + drills } in Core trench
 3 men } North embankment

GROUT HOLES & Pipe - North abutment

Sta.	Depth of hole	Length of pipe
N3935W	26'-6"	21'-0"
N3940E	26'-6"	21'-0"
N3943 ⁵ W	26'-0"	21'-0"

McKinley

MAY-17-1933

N3192 to N3176 - Elev. 648' to 654'

N3176 to N3168 - Elev. 654' - 660'

N3168 to N3152 " 656' - 662'

N3152 to N3132 " 660' to 666'

N3132 to N3121⁵ " Rock " 666'

5-steel columns.

92-lin. ft. 12" copper

12-1 1/2" ϕ - 8'-0"

2-1 1/2" ϕ - 8'-0"

4-1 1/2" ϕ - 16'-0"

126-7/8" ϕ - 6'-0"

N3932 to N3944 - Rock to elev. 637'

12-lin. ft. copper

23-Concrete

1-Grout

Start concrete - 8:15 A.M.

MIX: 7-Sks. cement

1300#-sand

1290#-1 1/2" Rock

1030#-3/4" Rock

35 gals. H₂O

99-batches Conc.

1-batch grout @ 5-Sks.

698-Sks. cement

MAY-17-1933.

1-foreman { Placing concrete - 8-hrs.
 1-steel man { Core wall forms - 2-hrs.
 3-laborers }

2-Carpenters { Core wall forms - 8-hrs.
 1-helper { " " " 2-hrs.

{ 1-mixer man { cleaning core trench - 2-hrs.
 Concrete mixing - 7 1/2 hrs.
 3-laborers { mixing plant - 7 1/2-hrs.

2-Transitmix drivers { 7 1/2-hrs.

1-Crane operator { 3:P.M. to 6:00 P.M. } 3-hrs.
 1- " oiler { Placing concrete }

1-mixing plant { 8-hrs

2-Transitmix trucks

1-Crane #10 - 3:P.M. to 6:P.M.

2-drillers - 6 hrs drilling - 2 hrs cleaning core trench.

1- " - 5-hrs

1-compressor
 1-water liner + drills

MAY 18-Thursday

1-Carp. foreman { Bldg. Core wall forms.
 1-steel man { North abutment
 2-Carpenters }
 3-laborers }

1-Compressor { Drilling grout
 1-water liner + drills { holes - core trench
 3-men { North abutment
 7:AM. to 9:AM.
 Finished grout holes.

FRIDAY - MAY 19 -

GROUT HOLES:

Coordinate	Depth	Length of Pipe
N3950 E	26'-6"	18'-0"
N3955 W	26'-6"	21'-0"
N3960 E	26'-6"	21'-0"
N3965 W	23'-6"	21'-0"
N3970 E	26'-6"	21'-0"
N3974 W	26'-6"	21'-0"

7:00 A.M. to 9:15 A.M.

3-men
1-compressor

Placed concrete in Core wall

Note: This
was not placed
to-day. Forms
ready too late

N3928 to N3945 - Elev. 637⁵ to elev. 645²N3945 to N3952⁵⁷ Rock to elev. 650⁰N3952⁶⁷ to N3975 - Rock to elev. 658²

3-steel columns 44-13/16"Ø - 6'-0"

71- 1in. Ft. 12" copper

20- 7/8"Ø - 8'-0"

10- 7/8"Ø - 6'-0"

42- 13/16"Ø - 16'-0"

2- 3/16"Ø - 8'-0"

MIX: 7-5Ks. Cement

1300# Sand

1290# 1 1/2" Rock

1030# - 3/4" Rock

9als. H₂O

No concrete

to-day:

1-foreman - 8-hrs

2-Carpenters 8-hrs

1-Steelman - 8-hrs

2-laborers 5-hrs

3- " " 6-hrs

Bldg. Core wall
forms and placing
steel & chutes
North abutment

1-Compressor

1-Jackhammer

Drilling holes in
rock to anchor
Core wall forms

SAT. MAY-20-1933

Placed Concrete in Core Walls:

N3928 to N3945 - elev. 637⁵ to elev. 645⁰N3945 to N3952⁶² - Rock to elev. 650⁰N3952⁶⁷ to N3975⁰ - Rock to elev. 658⁰

9:15 A.M. to 3 P.M.

3- steel columns

71- 1 in. ft. 12" copper

20- 7/8" ϕ bars - 8'-0"10- 7/8" ϕ " - 6'-0"20- 13/16" ϕ " - 16'-0"42- 13/16" ϕ " - 6'-0"2- 13/16" ϕ - 8'-0"

MIX: 7 sacks cement

1300# sand

1290# - 1 1/2" Rock

1030# - 3/4" Rock

Gals. H₂O

79 batches @ 7 sks. = 553

2 " Grout @ 5 sks. = 10

Total = 563 - sks. Cement

Equipment:

1- mixing plant

2- Transitmix trucks

1- aggregate truck

1- aggregate loader

Labor:

1- foreman { 6-hrs. concrete

1- steelman { 2-hrs. forms.

3- laborers {

1- mixerman { Concrete - 5-hrs.

Clean sks - 1-hr.

3- men { Forms - 2-hrs.

2- Carpenters { Forms - 8-hrs

2- Transitmix drivers { 5-hrs.

1- Truck driver { 6-hrs.

Sunday - MAY-21 - NO WORK

MONDAY MAY 22 1933.

- | | |
|----------------------|------------------------------|
| 1- Carpenter foreman | } Core Wall
forms - 8-hrs |
| 2- Carpenters | |
| 2- helpers | |
| 1- steelman | } Core Wall steel |
| 3- helpers | |

Tuesday MAY 23 1933

Placed concrete in Core Wall:

N 3952⁶⁷ to N 3975 - elev. 658° to elev. 664°

N 3928 to N 3945 - elev. 645° to elev. 652°

N 3945 to N 3952⁶⁷ elev. 650° to elev. 655°

66-ft. copper.

28-7/8" ϕ - 6'-0"

10-7/8" ϕ - 6'-0"

20-7/8" ϕ - 7'-0"

28-13/16" ϕ - 19'-0"

24-13/16" ϕ - 11'-0"

2-13/16" ϕ - 26'-0"

3- stub columns - 10'-0"

Tuesday - MAY 23 - Continued.

MIX: 7.5 sks. Cement
 1390# Sand
 1200# - 1 1/2" Rock
 1030# - 3/4" Rock
 35 gals H₂O (23 batches)
 37 " " (11 batches)

34 batches @ 7.5 sks. = 258
 3 " Grout @ 5 sks. = 15

Equipment:

253.5 sks.
 Cement.

1 - mixing plant
 2 - Transit mix trucks
 1 - Aggregate loader
 1 - Aggregate truck

Labor: 1 - foreman { Placing Concrete
 1 - steel man } 3-hrs.
 3 - laborers { Forms - 5-hrs

1 - mixer man { mixing plant - 3-hrs.
 3 - laborers { setting up grouting equip.
 cleaning core trench

2 - Transit mix drivers
 1 - Truck driver } 3-hrs.

2 - carpenters { Core Wall forms
 8-hrs

15 - sks. cement recovered.
 1000 sks. cleaned.

Wednesday MAY 24 - 1933

1 - Carpenter foreman { Bldg. Core Wall
 2 - Carpenters } forms.
 1 - steel man { stripping forms on Core
 1 - helper } Wall - South abutment - 2-hrs.
 Forms - 4-hrs. steel - 2-hrs.

Grouting crew reported in
 book # 440

22
MAY 25-1933

Start 9 A.M. Finish 3:45 P.M.

Placed concrete in Core Wall:

N3192 to N3176 - elev. 654° to 662°

N3176 to N3168 " 660° to 666°

N3168 to N3160 " 662° to 668°

N3152 to N3125 " 666° to 672°

28 - 13/16" ϕ - 19'-0"

20 - 7/8" ϕ - 6'-0"

48 - 13/16" ϕ - 8'-0"

20 - 7/8" ϕ - 6'-0"

24 - 13/16" ϕ - 16'-0"

80 - ft. copper

1 - Steel column,

N3928 to N3945 - elev. 652° to elev. 660°

30 - 13/16" ϕ - 19'-0"

30 - 7/8" ϕ - 7'-6"

17 ft. copper

→ N3945 to N3952⁶⁷ - elev. 656° to elev. 660°

1 - set of three test cylinders at 3 P.M.

23
MIX: 7 sxs. Cement } 64 Batches Concrete
1390# Sand } 3 Batches Grout @ 5 sxs
1200# 1 1/2" Rock }
1030# 3/4" Rock }
40 gals. H₂O } Total sacks cement = 463
6" to 7" slump
in 18" mats.

(2 - 6-sack batches to dike east of.
Entrance Portal 3 P.M. - Rohl & Connelly)

Sand & gravel dry & dusty.

Equipment:

1 - #10 dragline (Crane)
2 - Transit mix trucks
1 - mixing plant
1 - aggregate loader
1 - dump truck on aggregate.

Labor: 1 - dragline operator { 6-hrs. concrete
1 - dragline oiler }
1 - foreman { Concrete - 6-hrs
1 - steelman { Forms & cleanup - 2-hrs
3 - laborers }
1 - mixer man { Cleanup concrete surface
2-hrs.
3 - laborers { Concrete - 6-hrs.
2 - Transit mix drivers - 6-hrs
1 - dump truck driver - 6-hrs
3 - Carpenters 8-hrs. Core wall forms.

24
FRIDAY. MAY-26-1933

1-Carpenter foreman } Bldg. Core Wall
3-Carpenters }
1 helper } forms
1-Steel man } 8-hrs.

Sat. MAY-27-1933

Start 9:30 A.M. - Finish 2:30 P.M.

Placed Concrete in Core Wall.

N3192 to N3186 elev. 662° to 668°

N3186 to N3168 - elev. 666° to 674°

N3168 to N360 - elev. 668° to 674°

N3152° to N3121° elev. 672° to 678°

N3152° to N3160° elev. 662° to 668°

2-Steel Columns

84 ft. copper

48-13/16" φ - 16'0"

24-13/16" φ - 8'0"

24-13/16" φ - 27'0"

86-7/8" φ - 6'0"

250
25
MIX: 7-sacks cement { 40-75K. Batches
1390#-Sand { 1-4-sk. Batch
1200#- 1 1/2" Rock { 2-5-sk. Batches Grout
1030#- 3/4" Rock { 294-5ks. Cement
1500-5ks. Cleaned

Equipment:

1-#10. Dragline
2-Transitmix trucks
1-Dump truck
1-Aggregate loader
1-mixing plant

Labor: 1-Foreman { Concrete - 4-hrs.
1-Steel man { Forms. 4-hrs.
3-laborers }

1-mixerman { mixing plant
3-laborers }

2-Transitmix drivers { 4-hrs.
1-Dump truck driver }

1-dragline operator { 4-hrs.
1- " " oiler }

2-Carpenters { 4 1/2-hrs.
1-Carpenter }

Sunday - MAY - 28 - 1933

No men at work.

Monday - May - 29 - 1933

1 - man wetting concrete on Core Wall

Inspector worked on Survey Party.

Tuesday - MAY - 30 - 1933

1 - man wetting core wall
concrete.

Wednesday - MAY - 31 - 1933

1 - Carpenter foreman } Bldg. Core Wall
2 - Carpenters } forms + placing
1 - steel man } steel
3 - laborers }

Thursday - June 1st

1 - Carp. foreman } Core wall forms
3 - Carpenters }
1 - steel man } and steel.
1 - laborer }

Friday - June - 2 - 1933

Placed concrete in Core Wall:

N3184 to N3176 - elev. 668° to 674°

N3176 to N3168 - elev. 674° to 680°

N3168 to N3160 - elev. 674° to 682°

N3152° to N3160 - elev. 668° to 674°

N3152 to N3128 - elev. 678° to 686°

N3888 to N3896 - elev. 636° to 644°

N3936 to N3952⁶⁷ - elev. 660° to 666°

60 ft. copper

1 - 6-ft. length of steel column - sta. N3948

98 - 1 3/8" φ - 8'-0"

24 - 1 3/16" φ - 28'-0"

90 - 7/8" φ - 6'-0"

10 - 7/8" φ - 7'-6"

Mix: 7.5 sks Cement } 30 - batches @ 7.5 sks.
1390# Sand } 1 - Grout @ 5.5 sks.
1200# - 1 1/2" Rock }
1030# - 3/4" Rock } 2 15 - sks Cement
40 - gals. H₂O }

Aggregate dry & dusty.

1 - set of three test cylinders at 8: A.M.
N3176 to N3168 - elev. 674° to elev. 680°

361 - sacks cement left in warehouse - 11: A.M.

FRIDAY - June 2 -

Equipment: 1- #10. Crana
 2- Transit mix trucks
 1- Mixing plant
 1- Aggregate loader
 1- dump truck (aggregate)

Labor: 1- foreman } 4-hrs,
 1- Steelman }
 3- laborers }

 1- Crane operator } 4-hrs
 1- " oiler }

 1- mixerman } 4-hrs
 3- laborers }

 2- Transit mix drivers } 4-hrs.
 1- Dump Truck driver }

Sat. June 3-1933

1- Carpenter foreman } Core Wall- Bldg.
 2- Carpenters { 1- 8-hrs }
 1- steelman } and stripping forms.
 2- laborers }

1- light truck
 1- tractor-60
 1- Compressor (Cleaning old concrete
 2- Jackhammers } from tunnel floor.
 5- men { 4- 3-hrs }
 1- foreman { 1- 4-hrs }

1- Compressor } outlet tower excav.
 1- Jackhammer: }
 1- small air pump }
 1- foreman
 1- Dragline #10- with clamshell bucket
 1- " " operator } Outlet tower
 1- " " oiler } excavation 8:30 AM-
 1- mucker 4-hrs } to -

Sunday - June 4 -

1- dragline operator } timbering Tower
 1- " oiler } excav
 1- foreman }
 2- men }
 1- man - 2-hrs - hurt by falling
 from broken ladder - at 9:AM.

MONDAY June 5-1933

Outlet Tower Excavations:

- 1- #10- Dragline (Clamshell bucket)
- 1- air pump
- 1- Portable compressor
- 1- Sackhammer & drills
- 1- Foreman
- 4- muckers
- 1- Dragline operator
- 1- Dragline oiler
- 1- mucker - 6 1/2-hrs.

} 5 1/2-hrs,

Tunnel Work

- 2- laborers
- 1- foreman
- 3- laborers
- 1- Compressor
- 2- Sackhammers
- 1- 60 H.P. Tractor
- 1- Cement finisher
- 1- helper
- 1- Jumbo on truck

} 3 1/2-hrs.

} Chipping spilled
concrete from tunnel
invert} Hand chipping
raised seams from
tunnel lining

Core wall:

- 1- foreman
- 1- steelman
- 1- laborers
- 1- mixerman
- 2- laborers

} 1 1/2-hrs on concrete

} 6 1/2-hrs building bulkheads

} near core wall at the
abutments near roads.

} 1 1/2-hrs - concrete

} 3-hrs cleanup lumber
near core wall

Janur 5-1933-

10:15 A.M. to 11:45 A.M.

Placed concrete in core wall.

Sta. N3152 to N3160 - elev. 679^o to 682^oSta. N3144 to N3128 - elev 686^o to 692^o24-13 1/16" ϕ - 16'-0"20-7 1/8" ϕ - 6'-0"28-13 1/16" ϕ - 8'-0"10-7 1/8" ϕ - 7'-6"

14-ft. Copper

MIX: 7 SKS. Cement

1390# - Sand

1200# - 1 1/2" Rock

1030# - 3/4" Rock

40-gals. H₂O

} 8-batches concrete

} 1-batch grout

} @ 5-SKS.

} 61-sacks Cement.

- 1- dragline (Crane) operator
- 1- " " oiler
- 1- Transit mix driver

} 2 1/2 hrs. including

} moving time

} 1 1/2-hrs

- 1- Transit mix truck
- 1- Mixing plant
- 1- Crane #10

} 1 1/2-hrs

} 2 1/2-hrs

Tuesday June - 6 - 1933

1-foreman } Cleanup lumber from area
 1-steel man } Near core wall and
 Point up cone holes in
 Core wall with 1:2-
 cement mortar.

1-sack May-27th - used by man wetting
 2-sacks cement used for concrete

pointing cone holes in Core wall

Wednesday - June - 7 - 1933

1-steel man } Pointing Cone holes
 in Core wall with
 cement mortar 1:2-mixture

June - 8 to 14th Inc. no men
 at work on Core trench or
 other work assigned to
 concrete inspector.

Thursday - June - 15 - 1933

Rock above surface before stripping
 and excav. for core trench. N 3975 to N 4050

This rock not moved to-day

$$1-3\frac{1}{2} \times 6 \times 10 = 210 \text{ cu ft}$$

$$1-2\frac{1}{2} \times 5 \times 15 = 187.5$$

$$1-4 \times 2\frac{1}{2} \times 9 = 90.0$$

$$1-4 \times 6 \times 2 = 48.0$$

$$1-6 \times 3\frac{1}{2} \times 12 = 252.0$$

$$1-3 \times 2 \times 2 = 12.0$$

$$1-4 \times 2 \times 3 = 24.0$$

$$1-2 \times 4 \times 2 = 16.0$$

$$1-6 \times 2 \times 2 = 24.0$$

$$1-4 \times 2 \times 2 = 16.0$$

$$1-9 \times 2\frac{1}{2} \times 3 = 67.5$$

$$1-10 \times 3 \times 7 = 210.0$$

$$1-6 \times 2 \times 4 = 48.0$$

$$1-8 \times 6 \times 3 = 144.0$$

$$1-5 \times 7 \times 3 = 105.0$$

$$1454 \text{ cu. ft}$$

+ 3-cy. from Spillway rock

1-truck #39

3 men - 8 hrs

1 man 4-hrs

Core trench excavation
 North-3975 to N4050
 Overburden not all
 removed to-day.

Thursday June-16-1933

5: P.M. to 9:45 P.M.

Placed concrete in tower

footing - rock to elev. 555'

Mix: 5-sacks cement

1340# Sand

760# - 2 1/2" Rock } 58 Batches

970# - 1 1/2" Rock

770# - 3/4" Rock } 290-sacks Cement

34-gals. H₂O

1- #10- Crane + Concrete bucket

1- mixing plant

1- Barber greer - aggregate loader

2- Transit mix trucks

1- Dump truck - aggregate

1- Foreman

4 men

Placing concrete

1- Crane operator

1- Crane oiler

1- mixerman } Mixing plant

3- men

2- Transit mix drivers

1- Dump truck driver

FRIDAY- June-16-1933.

7: A.M. to 4: P.M. shift.

CORE TRENCH Excavation:

N3975 to N4050

1- dump truck

1- Portable compressor

2- Jackhammers & drills

1- foreman - 8-hrs

7- men - 8-hrs

2- men - 2-hrs.

1- Carp. foreman } Bldg. bulkhead adjacent

1- steel man } to Core wall at road

1- laborer } level - North Abutment

} to keep dirt from
the puddle Core area.

Also stripping forms

1- Carpenter sharpening band

Saws and making wedges for
future form work.

No blasting this shift. No rocks into
puddle Core area.

SAT. JUNE - 17-1933

Core trench excavation

N3975 to N4050.

1- Portable compressor

1- truck #39.

2- Jack hammers & drills

1- foreman - 8 hrs

5- men - 8 hrs

2- men - 5- hrs (3 hrs. outlet tower)

1- Carp. foreman } MAKING
 1- Carpenter } wedges and
 } panel forms
 1- Steelman } for future Core
 } wall work

Sunday June - 18-1933

142 - 2^{1/2}" Bars steel in bottom mat
 42 - " 1 1/4" " Vert. Bars - 35 ft long.

1- Steel foreman } Placing reinforcing
 2- steel men } steel in outlet tower
 1- Truck } footing.

1- Carp. foreman } Pumping water &
 6: A.M. to 3: P.M. } cleaning outlet
 } tower footing

1- Compressor } Patching
 1- Jumbo on truck } tunnel lining
 1- Cement finisher }
 1- helper } 7: A.M. to 4: P.M.

No work on Core trench excav.
 { 2- men cleanup adjacent to Core wall.
 { 4- hrs

1- Dragline & Crew bldg. road to outlet

Tower works, also lowering steel into tower shaft.

Spillway rock to Rock Embankment:
 #7 shovel & three trucks - #25 - #X #13
 P.M.
 1:43 - - 6- cu yds. loose
 1:48 - - 7. " " #25
 1:53 - - 6 " " X
 2:00 - - 6 " " 13
 2:05 - - 5 " " #25
 2:12 - - 6 " " #X

Sunday - June - 18

Rock from spillway to rock
embankment, ^{upstream} continued:

25 2:20 P.M. - 5 cu. yds.

13 2:23 P.M. 8 cu. yds.

Rock this day reported to

MR. Newcomb 6.20.33

MONDAY, June - 19 - 1933

5: A.M. to 2-P.M. Shift

Core Trench excavation:

1- Compressor

1- Sack hammer

1- dump truck

1- foreman - 2 hrs

5- laborers - 8 hrs.

3- laborer - 2 hrs

Shooting 2: P.M. - A few small rocks went
into puddle core area.

Outlet Tower:

1- steel foreman } Placing steel

3- steel men } in footing.

1- truck

2- 7" x 4" - 36' 0" long, extra, used as
spacer pair horizontally at elev. 559'

Concreting - outlet tower footing

elev. 555' to elev. 560'

1- foreman

4- men

} Rigging chutes & Cleanout ^{4 1/2 hrs.}
Placing concrete

1- Carpenter - on chutes

June 19th continued:

1-mixer man } Mixing plant crew
3 men }

2-Transit mix drivers
1-Dump truck ^{2 P.M.}

Equipment: 12:30 P.M. to

1-Mixing plant
2-Transit mix trucks
steel & wood chutes
1-Barber Green loader
1-Dump truck

MIXERMAN said
load of 3/4" rock
was dumped in
sand bin.

MIX: 5-sacks cement } 30 - Batches
1340# Sand } used to cover bottom
1420# 1 1/2" Rock }
1080# - 3/4" Rock } steel mat
34 gals. H₂O }

NOTE:
7:20 - 3 cu. yds.
wasted; apparently
mixed without sand.

5-sacks cement } 1 set 2 cylinders - 1 P.M.
1340# Sand } 109 Batches
760# 2 1/2" Rock } used above the steel
970# 1 1/2" Rock } mat
770# - 3/4" Rock } 3 yds. wasted included
34 gals. H₂O } in above.

200-yds. Cleanout

Total 6925 cu. yds. concrete

TUESDAY - JUNE 20 - 1933

CORE TRENCH EXCAVATION:

1-Compressor
1-Jackhammer
1-Truck #31

1-foreman
1-Truck driver
9 laborers

Rock from Core trench to Upstream rock Emb.

#31- 6:30 P.M. - 3-cu. yds. 100sc.
#36- 1:00 P.M. - 3-cu. yds. "

TOWER WORK.

1-Carp. foreman } Bldg. chutes + ~~key~~ way forms
1-Carp. } elev. 561±
1-helper }
1-Steel foreman
steel men

June 19th continued:

1-mixer man } Mixing plant crew

3 men }

2-Transit mix drivers

1-Dump truck ^{2 P.M.}

Equipment: 12:30 P.M. to

1-Mixing plant

2-Transit mix trucks

steel & wood chutes

1-Barber Green loader

1-Dump truck

MIXERMAN SAID
load of 3/4" rock
was dumped in
sand bin.

200 yds. Cleared

MIX: 5-sacks cement } 30 - Batches
 1340# Sand }
 1420# 1 1/2" Rock } used to cover bottom
 1080# - 3/4" Rock } steel mat
 34 gals. H₂O }

NOTE:
7:20 - 3-cu. yds.
wasted; apparently
mixed without sand.

5-sacks cement } 1 set 2 cylinders - 1 P.M.
 1340# Sand } 109 Batches
 760# 2 1/2" Rock }
 970# 1 1/2" Rock } used above the steel
 770# - 3/4" Rock } mat
 34 gals. H₂O } 3 yds. wasted included
 in above.

Total 695 cu. yds. cement

TUESDAY - JUNE 20 - 1933

CORE TRENCH EXCAVATION:

1-Compressor

1-Jackhammer

1-Truck #31

1-foreman

1-Truck driver

9 laborers

Rock from Core trench to Upstream rock Emb.

#31- 6:30 P.M. - 3-cu. yds. loose.

#36- 1:00 P.M. - 3-cu. yds. "

TOWER WORK.

1-Carp. foreman

1-Carp.

1-helper

1-Steel foreman

steel men

Bldg. chutes + ~~key~~ way forms
elev. 561 ±

Wednesday - June - 21 - 1933

Placed concrete in Outlet

tower foundation - elev. 560' to 561'

Also in inlet adit - rock to elev. 568'

Start concreting - 6: A.M. - Finish 12: Noon

Equipment:

1. mixing plant - 4 1/2 hrs

2. Transit mix trucks 4 1/2 hrs

1 barbor green loader 6 hrs

1 dump truck. 6 hrs

steel & wood chutes

Labor: 1. foreman { placing concrete 6-hrs
4-men { cleanup chutes &
around tower excav. 2 hrs

1-mixerman { Mixing plant crew
3-men { 5 1/2 hrs. - Core trench - 2 1/2 hrs

2-Transit mix drivers - 4 1/2 hrs

1-Truck driver - 6 hrs

1-Carpenter - 8 hrs

MIX: 5-sacks cement } 73-batches
1340# Sand } 2-Crout.
760# 2 1/2" Rock } 375-5ks. Cement
970# 1 1/2" Rock }
770# 3/4" Rock }
34-Gals. H₂O. Average }

~~46~~ 46 batches of the above in tower
base - 27-batches in inlet adit

Core trench excavation.

1-mixerman } 2 1/2-hrs.
3-men }

1-truck driver } 8-hrs
7-men }

1-truck
1-Jackhammer
1-compressor

NO Rock in Core wall area

Thursday - June - 22 - 1933

5 A.M. to 2 P.M. Shift

- 1- Carpenter foreman, Bldg. forms for
 - 1- Carpenter } Inlet adit of
 - 2 helpers. } tower - Helpers
- Stripping keyway forms
& cleaning concrete
surface for next pour.

CORE TRENCH EXCAVATION

North abutment

1- #10 dragline

1 Truck

1- Compressor

1- foreman

1- Dragline operator

1- " " oiler

1 truck driver

5 laborers (1-labourer only 4 1/2 hrs)

Core trench blasted at 5:20 A.M.

" " " at 7:30 A.M.

A few small rocks into puddle core

Rock from Core trench to U.S. Rock Emb.

Truck #	Time	Cu. Yds. Rock (Loose)
#34	5:50 A.M.	5
#34	6:25 A.M.	3
#25	6:50 " "	3
#34	7:07	2
#25	7:15 " "	5
"	7:38 " "	5
#25	7:55 " "	5
"	8:30 " "	7
"	9:05 " "	6
"	9:30 " "	1
"	10:45 " "	6
"	11:17 " "	6
"	11:35 " "	5
"	11:55 " "	3
"	12:20 P.M. P.M.	6
"	12:45 " "	5
"	1:07 " "	4
"	1:35 " "	5
"	1:55 " "	4
		<hr/> 88 cu. yds

Truck # Time Cu. Yds. Rock (Loose)

Broke down 13th load

#34 5:50 A.M. 5

#34 6:25 A.M. 3

left after 2 loads

#25 6:50 " " 3

#34 7:07 2

#25 7:15 " " 5

" 7:38 " " 5

#25 7:55 " " 5

" 8:30 " " 7

" 9:05 " " 6

" 9:30 " " 1

" 10:45 " " 6

" 11:17 " " 6

" 11:35 " " 5

" 11:55 " " 3

" 12:20 P.M. P.M. 6

" 12:45 " " 5

" 1:07 " " 4

" 1:35 " " 5

" 1:55 " " 4

Distribution:

25 yds. Above Surface

30 yds. Stripping Area

33 yds. Core trench Area

88 cu. yds

FRIDAY - June - 23 - 1933

Core trench excav. N3975 to N4035

Rock from Core trench to Dis. Rock Emb.

Shot at 6: A.M.

Truck NO.	TIME	cu. yds. (loose)
#26	5:32	5 cu. yds. - loose
#26	6:10 A.M.	5 cu. yds. "
#26	6:35 "	6 cu. yds. "
#26	6:55 "	5 cu. yds. "
#26	7:14 "	4 cu. yds. "
#26	8:00 "	3 cu. yds. "
#26	8:30 "	5 cu. yds. "
#26	9:10 "	5 "
#26	9:30 "	4 cu. yds. "
#26	11:05 "	6 " " "
#26	11:30 "	3 " " "
#26	11:50 "	7 " " "
#26	12:25 P.M.	7 " " "
#26	1:20 P.M.	4 " " "
#26	1:15 "	5 " " "
#26	1:57 "	4 " " "

78 yds
 1 - #10 Dragline (CRANE)
 1 - Compressor
 1 - Jack hammer
 1 - Truck #26

Labor: 1 - foreman
 1 - Dragline operator
 1 - " oiler
 1 - truck driver
 3 - laborers - 8 hrs.
 1 - " 5 hrs.

Rock Distribution:
 23 cu. yds. above surface
 35 cu. yds. - 3 ft. stripping surface
 20 cu. yds. in Core trench - proper

Work on Outlet tower:

1 - Carpenter foreman INLET ADIT
 1 - Carpenter } FORMS
 1 - helper }
 1 - helper (steelman) 5 hrs. forms
 3 hrs. steel
 1 - laborer - 3 hrs. on steel

SAT. June - 24-1933

Core trench excavation:

- 1-Truck #7 - 8-hrs
- 1- foreman - 6-hrs
- 1- Truck driver - 8-hrs.
- 5- laborers (1-lab: 6-hrs) all others 8-hrs

Outlet Tower-Inlet Adit.

- 1- Carp. foreman } 6-hrs. steel +
forms.
- 1- Carpenter } 2-hrs. concrete.
- 1- steel man }
- 3- laborers }
- 1- Transit mix driver - 2-hrs
- 1- mixer man } 2-hrs.
- 2- men } mixing plant crew

SAT. June - 24-Continued:

Placed concrete in Gate well
^{2 floor}
 Footing - Elev. 5615 to elev. 569°

Inlet adit floor - elev. 568° to
 569° from tunnel lining face to
 Vert. const. joint.

Start: 11:15 A.M. - Finish 1:15 P.M.

Mix: 6-sks Cement } 6-Batches
 1300# Sand } 36-sks. Cement
 1290# 1 1/2" rock } used in Inlet
 1030# 3/4" rock } adit floor
 36-gals. H₂O }

Mix: 5-sacks cement } 11 - Batches
 1340# Sand } 55-sks. cement
 760# - 2 1/2" rock } Used in Gate well
 970# - 1 1/2" rock } footing & floor
 770# - 3/4" rock }
 34-gals. H₂O }
 Total - 91-sks. cement

1" #4-bars used in floor steel in
 inlet adit - in place of 5/8" #4 as shown
 on plans.

24- 1" #4 bars - 7'0" long (dowels for
 gate well walls.

MONDAY - June - 26 - 1933

Core trench excavation:

3 - laborers - hand mucking trimming
trench to neat lines.

No truck to-day

Outlet Tower 1x10x8.

1 - Carpenter foreman Inlet adit forms

1 - Carpenter } 8-hrs.
1 - helper } Concrete hours

3 - laborers

1 - mixer man { Mixing plant crew
2 - laborers }

1 - Transitmix driver

1 - Steel foreman { Inlet adit steel
1 - Steel man } 4-hrs.

1 - Transitmix truck

1 - mixing plant

steel & wood chutes

Mix: 6-sacks cement, 13 - Batches @ 6-sks.

1400# sand

1190# 1 1/2" rock

1030# 3/4" rock

37-gals. H₂O

2 - batches Grout @ 5-sks

88-sks Cement

1 - set of three test cylinders @ 3:15 P.M.

2: P.M. To

Placed concrete in Inlet Adit
from Const. joint to face of
main tunnel lining, sidewalls
& arch complete.

3/4" ϕ bars used wherever. 5/8" ϕ

bars are shown on drawings

Tuesday June 27 1933

Core trench excav. N3975 to N4024

3 men hand mucking & shovelling
material back out of the way. NO
hauling of material.

Outlet Tower Work.

- 1- Carpenter foreman stripping
- 1- helper { forms from INLET ADIT
- 1- Carp. helper { Finishing concrete on Tunnel face.
2-513 cement
- 1- Carpenter { Building forms for Gate well

MINING CREW

1- Compressor { Outlet adit excav.
1- Waterliner }
1- #33 Truck }

1- compressor { Trimming tunnel section
2- Waterliners } Sta 9768 to 7400

1- foreman { Time divided between
7 men } outlet adit and tunnel trim.

Wednesday June 28-1933

1-Carp. foreman } Finishing inlet
1-Carp. helper. } adit with
 } carborundum stone
 } & cement wash-

1-foreman } Excavation
5-men } outlet adit and
1-truck } trimming tunnel
2-compressors } section 9+68 to 7+00
2-drills }

Core trench excavation

North abutment:

1-Truck
3-laborers
1-Truck driver

1-man stripping Core wall forms. North abut.

Thursday June 29-1933

Outlet tower work: 5:AM to 9:30AM

1-Carp. foreman } Bldg. forms for outlet
1-Carpenter } tower to elev. 5685.
2-Carp. helpers } 4 1/2-hrs. off work

after 9:30 to report for
work on Core wall
bridge at midnight.

Core trench excavation - N. Abut.

3-laborers hand mucking. No
material hauled away today

Tunnel Mining crew.

1-foreman } loading & shooting
3-men } holes for tunnel section
 } trim-

3-men } Excav. outlet adit
1-compressor } to outlet tower
1-truck }

Friday - June 30 - 1933

Core Trench:

1- Truck } Excavating core
 1- Truck driver } trench - North abut.
 3 laborers } 8-hrs.

1- Carpenter foreman } 5-hrs -
 12-midnight to 5 A.M.
 1- Carpenter } Bldg. bridge over
 core wall at elev.
 1- helper } 640' lower road.
 & clean up adjacent
 to core wall.
 3 laborers } 3 1/2-hrs on outlet
 tower forms except
 two of the laborers.

Outlet Tower works:

1- Carpenter } Setting Tower
 forms to elev. 568±
 1- Carp. foreman }
 1- helper } 3 1/2-hrs.
 1- laborers }

Outlet adit excavation:

1- Compressor } Excav. outlet adit
 1- #33 Truck }
 1- Jackhammer }
 1- 80# P. Tractor }
 3 men }

1- foreman } Trimming rock
 4 men - 8-hrs } section of tunnel.

1-load - 5-cu yds. rock (loose)
 at 3:15 P.M. to D stream
 rock embankment

Labor chargeable to Tunnel

lining concrete:

1- foreman } Hauling 4" pipe
 1- laborer } to west portal of
 1- light truck } tunnel to be used
 4-hrs. } for air line for
 lining tunnel with
 concrete

Sat. July 1-1933

Core trench excav. N-abut.

1 truck #12

3-laborers.

Outlet tower work: Forms.

1 Carp. foreman

1 Carpenter

2-helpers

Charge to

Tunnel
W.C.1-foreman
1-truck
1-driver

Work on:

4" pipe line for air line into
tunnel for concreting

Tunnel Crew:

1-foreman } Excav. and timbering outlet
2-men } adit1-truck #33 } loading rock from
6-men } tunnel excav.

From Outlet Tunnel to D-stream rock emb.

1-load- 5:15^{A.M.} Truck #33 5-cu yds. loose

1 " 6:30 " 33 5 " "

3-loads. P.M. " 33 3 1/2 " "

} truck would get stuck with larger load.

Sunday - July 2 - 1933

Tunnel Excav. 7400 to 9468

1 - foreman

9 - men

1 - Truck #33

Rock to Rock embankment

6: A.M. - #33 - 3 1/2 cu yds. loose

8:30 " #33 5 - cu yds. "

4 loads - 8:30 to 2:00 @ 5 - cu yds

1 - mcmillan tractor with driver } Excav.
channel
tunnel exit

Outlet Tower:

Setting - 42" pipe - 1 - 42" valve
2 - 42" x 5' 0"
2 - 42" x 8' 0"

2 - steel men

1 - Crane #10 -

1 - Tractor - Bulldozer - 4 hrs

1 - compressor & air pump

8 hrs

1 - Cap. foreman

1 - Cap.

2 - helpers

1 - Crane operator

1 - " oiler

1 - rigger foreman

1 - " helper

Bldg. ramp road for stripping

South abutment:

1 #7 - shovel

1 #43 - Truck

1 #42 - Truck

1 - shovel operator

1 - " oiler

2 - truck drivers

Bldg. ramp from spillway road to
main road near mixing plant

1 #8 - shovel

1 #60 - Truck

1 #34 - Truck

1 - Shovel operator

1 - " oiler

2 - Truck drivers

1 #12 - Shovel crew on repairs

1 #9 " " " "

10 - men - drilling & shooting in
spillway.

Monday - July - 3 - 1933

Core trench excav: 5:30 P.M. to 7:00 A.M.

3 men -
1 #12 truck

Tunnel Work:

1 foreman { excavating in
9 men { tunnel - sta. 7400 to 9468
1 #33 truck }

Outlet tower.

1 Carp. foreman
1 Carp.
2 Carp. helpers

Wednesday - July - 5 - 1933

Placed concrete in Core Wall:

N3896 to N3904 - elev. 634' to 640'

N3904 to N3912 - elev. 636' to 640'

24 - 13/16" ϕ - 8'-0" 9:15 - 4:15 P.M.16 - 13/16" ϕ - 12'-0" to 10:15 A.M.10 - 3/8" ϕ - 6'-0"10 - 7/8" ϕ - 4'-0"

20 - ft. Copper.

1 steel column - sta. N3908 96 - sks

Mix: 7 - sks. Cement { 13 - batches @ 7 - sks.
1390# sand { 1 - Evout @ 5 - sks
1200# 1 1/2" rock { 1 - 7 - sk. Batch wasted
1030# 3/4" rock { (Too much mixed)
9 gals. H₂O

Equipment:

1 - mixing plant
2 - Transit mix trucksLabor: 1 - Carp. foreman / 4 - hrs. on forms
1 - Carpenter - 4 steel
4 - helpers. / 1 - hr. concrete

July 5 - continued

- 2 - transit mix truck drivers - 1-hr.
 1 - mixer man } Mixing plant crew -
 3 - men } 1-hr.

Note: Dirt accumulation adjacent to
 Core Wall on this pour length, removed.

Core Trench excav - North Abut:

- 1 - Compressor
 1 - Jackhammer
 1 - Truck #12
 1 - foreman - 7 hrs. (1-hr. on concrete mixer)
 1 - man - 3 hrs. (Concrete + forms - 5 hrs)
 4 - men - 4 hrs (hyd. fill - 4 hrs)

Tunnel work.

- 1 - foreman } Cleaning tunnel
 8 - men }
 1 - #88 Truck } muck - sta. 7+00 to 9+68

5¹/₂ N-1 - load - 5 mi ds. to U-stream rock emb.

All other rock piled in overbreak
 areas of tunnel

Spillway work (concrete forms)

- 1 - Carpenter foreman } Spillway
 1 - Carpenter } crest panel
 2 - helpers } forms -
 3-hrs.

Tunnel Concrete air line:

- 1 - rigger } Gathering 4" pipe for
 1 - helper } air line into tunnel - 8 hrs.
 1 - light truck } for use in concreting
 1 - steel foreman } Bending steel for
 2 - steel men } tunnel lining - 8 hrs

Thursday - July - 6 - 1933

Outlet Tower work

- | | |
|-------------------|---------------------|
| 1 - #10. Crane | } 12 midnight to |
| 1 - " " operator | |
| 1 - " " oiler | } 5: A.M. - setting |
| 1 - Carp. foreman | |
| 1 - Carp. | } saucer valves 42" |
| 2 - Carp. helpers | |
| 1 - Rigger | } and pipe 42" in |
| 1 - Rigger helper | |

Note (Night Crane crew worked
5 - hrs. overtime on Tower pipe.)

Tunnel Work - 5: A.M. to 2: P.M.

- | | |
|--------------------------|-----------------------|
| 1 - Compressor | } Drilling + shooting |
| 1 - Tractor (Cletrac 40) | |
| 1 - Jumbo on truck | |
| 2 - Jackhammers | } for tunnel trim |
| 1 - foreman | |
| 4 - men | } mucking on |
| 4 - men | |
| 1 - #33 truck | |
| | } tunnel cleanup |

Core trench Excav. North Abut.

- 1 - 4 1/2 cu. yd. load loose rock
to U. stream rock Emb. 5:45 AM
- | | |
|----------------|--------------------------------------|
| 1 - #12 Truck | - |
| 1 - Compressor | - |
| 1 - Jackhammer | - |
| 1 - foreman | - 7 hrs (1-hr. Tower Conc) |
| 2 - men | - 8 hrs |
| 1 - man | - 4 hrs (4-hrs. Trench forms + conc) |
| 2 - men | - 7-hr |

(Tunnel - Concrete work)

- | | |
|-------------------|------------------------|
| 1 - Rigger | } work on 4" air line |
| 1 - Rigger helper | |
| 1 - light truck | |
| | } into tunnel for work |
| | } of concrete lining |

- | | |
|-------------------|------------------------|
| 1 - steel foreman | } work on bending |
| 2 - steel man | |
| 1 - truck-pickup | |
| | } tunnel steel and |
| | } buildg. scaffold for |
| | } placing steel |

SPILLWAY Concrete

- | | |
|-------------------|------------------------|
| 1 - Carp. foreman | } 3-hrs. on Spillway |
| 1 - Carp. | |
| 2 - helpers | |
| | } 6' x 12' panel forms |
| | } bldg. and oiling |

OUTLET TOWER

- Placed Concrete in saddle piers
- 2 - under each of the 42" saucer valves
- The valves shored in place while
piers are poured and setting up.

- 2 - batches - 7-sack (core wall mix) concrete
1.03-cu yds. per batch

12:45 - 2:00 P.M.

- | | |
|---|-----------------------------|
| 1 - mixer man - also truck driver (transit mix) | } 1-hrs |
| 1 - Cement & loader man | |
| 1 - Carp. foreman | } 3-hrs - saddle pier forms |
| 1 - Carp. | |
| 2 - helpers | |
| 2 - lab | } + concrete |

Friday - July - 7 - 1933

Outlet Tower Work:

1 - Carp. foreman } 12 midnight to 6: A.M.
 1 - Carpenter }
 1 - Carp. helper } setting 42" outlet pipe
 1 - Rigger } in base of tower
 1 - " helper }

To sprinkler
system at
6: A.M.

1 - #10. Dragline & Crew } 12 MIDNIGHT
 } to 4: A.M.
 } setting pipe.

Tunnel Work:

1 - Compressor
 1 - Jumbo on truck
 1 - Sackhammer & drills
 1 - #12. Truck }
 1 - Foreman } Drilling anchor holes for steel } 4-hrs.
 3 - men } }
 } Drilling & shooting in tunnel }
 } for final trim to line. 4-hrs.
 3 - men } { mucking in tunnel - 4-hrs.
 } { 4" air line into tunnel - 4-hr.
 1 - steel man setting anchors in rock.

Outlet Tower

1 - Transit mix truck - 35 min
 1 - mixing plant - 15 minutes
 1 - Carp. foreman } Forms & concrete
 2 - Carpenters } 6: A.M. to 9: 45 A.M.
 1 - Carp. helper }
 } Concrete - 9:10 A.M. to 9:45

1 - 7 sack batch - 1.25 cu yds.
 7.5 cu Cement 142 cu 1/2" rock
 134 cu Sand 108 cu 3/4" rock

Core Trench Excav. North Abut.

1 - #12 - Truck

1 - Compressor

1 - Sackhammer

1 - foreman

2 - men - 7-hrs. (1-hr. on concrete)

2 - men - 5-hrs. (3-hrs. - sandbags in bulkhead
core wall)

All material hauled to hydraulic fill.

Spillway: 1 - Carpenter - 4-hrs. - panel forms.

Core Wall:

1 - laborer } Stripping Core wall forms & wetting
 } concrete - 4-hrs.
 } 4-hrs. bdy. Sandbag bulkhead at
 } N3912 to prevent water from
 } Summit pool from topping the
 } core wall at elev. 8363, the level
 } of the concrete under the road.

1 - Carp. foreman on bulkhead.

1 - sack batch concrete used between
 Sand bags & form to form bulkhead. Mr. Albert told
 Mr. Steves at 11:30 A.M. this would be O.K.
 charge concrete & cement to contractor.

SAT. July - 8. 1933.

Tunnel work:

- 1- Compressor
- 1- Cletrac 40 Tractor
- 1- Sumbo or truck
- 1- Jackhammer & drills

1 foreman { Drilling holes in tunnel walls
 3- men { & arch for anchor steel
 to hang reinforcing steel

4- men { Running 4" pipe line into
 tunnel for air supply for
 concrete lining work.
 4-hrs.
 4-hrs. mucking dirt & rock

I told John Erickson and
 at 8: A.M.
 Supt. Steves, that steel forms
 must be thoroughly cleaned & oiled.

Spillway forms:

1- Carp. foreman { Making 6'x12'
 2- Carpenters { panel forms +
 2- Carp. helpers { oiling same.
 4-hrs

Core trench Excav. North Abut.

1- foreman

4- men

- 1- compressor
- 1- Jackhammer
- 1- #12- Truck

City survey party set out
 stakes this A.M. at request of
 Supt Steves.

Outlet Tower Work:

1- Carp. Foreman { Making up form
 1- Carpenter { segments for circular
 1- helper { inside of tower. elev. 568[±]
 4-hrs { to 573- 1/2 circle.
 & Cleanup trash
 in tower case.

2
Sunday - July 9 - 193

Core trench excav.

- 1- #12 Truck } Excav. Core
- 1- Compressor } trench N2975
- 1- Jackhammer to N4024.
- 1- foreman } No rock
- 5- men }

Spillway forms:

- 1- Carp. foreman } Building panel
- 2- Carpenters } forms for
- 1- helper } Spillway concrete.

Tunnel steel:

- 1- foreman } placing tunnel steel
- 7- men } Sta. 9468 to 8788
- 1- truck }

Tunnel Excav.

- 1- tractor
- 1- Compressor
- 1- Jackhammer & drills
- 1- Jumbo on truck,
- 1- foreman
- 8- men

Monday July 10 1933

Core trench Excav. North Abut.

1 #12 Truck

1 Compressor

1 Jackhammer

1 foreman } 8-hrs.

2 laborers } No rock

Supt. Steve said at 12:00 noon to see Mr. Inland for approval of excav. & to have survey crew spot grout holes

Spillway forms:

1 Carp. Foreman

2 Carpenters } 4-hrs.

2 helpers

Core wall forms.

1 Carp. Foreman } 4-hrs. making

2 Carp. } panels

1 helper

6:15 A.M. I noticed carpenters using lumber not serviceable for forms. I told the foreman that the forms were not O.K. I removed the old lumber & replaced it with new.

Tunnel steel:

1 Compressor

1 drill machine & drills } Drilling holes

3 men - 8-hrs. } in tunnel walls

1 truck (placing steel } & arch for

1 foreman } 8:55 to 8:05

8 men } 8-hrs.

anchor steel to

hang reinforcing steel.

Tunnel Excav.

1 #33 truck } Cleanup tunnel

1 foreman } muck

3 men } 8-hrs.

2 men - chipping concrete invert for setting of steel forms. - 8-hrs.

Outlet Tower

1 laborer - 4-hrs. cleanout muck & loose lumber from outlet tower base.

Tuesday: July 11, 1933

Core Wall: N3896 to N3912 Elev. 640'
to 646'
N3912 to N3928 Elev. 636'
to 645'

- 1- Carp. Foreman Building forms
2- Carpenters and cleaning road
2- helpers muck from Core
Wall area - 8-hrs
2- helpers { Core wall steel
8-hrs

Placed concrete in core wall as

listed above: 2: P.M. to 5: P.M.

MIX: 7-sks. cement

1390 # sand
1200 # 1 1/2" rock
1030 # 3/4" rock
9 gals H₂O

{ 28-Batches Conc.
2-Batches grout
206-sks. cement

24-13/16" Ø - 32' Ø

20-7/8" Ø - 10' Ø

20-7/8" Ø - 6' Ø

32-1/2 in. Ft. copper.

1- Foreman { Placing conc.
Carp. } 3-hrs overtime
4- men

1- #10- Crane oper
1- #10- " Oiler

1- mixer man { mixing plant conc
3- men }
2- Transit mix drivers

15- sacks cement recovered from sack cleaning

Tunnel steel:

- 1- Lumber on truck
1- Jackhammer & drills
1- foreman { Drilling holes for anchor
3- men { steel for Tunnel lining
4-hrs steel
1- steel foreman { Placing reinforcing
8- steel men { steel for tunnel
lining - Sta. 8+08 to
7+50

Tunnel Cleanup:

- 1- #33- Truck
1- foreman - 4-hrs
3- men 4-hrs
3- men - 8-hrs

Grout holes in Core trench:

- 1- compressor
1- water liner
1- water tank on truck
1- foreman { Grout holes N3982 to N4024
2- men { 6-hrs. assembling equipment
2-hrs. drilling

Wednesday July 12-1933

Core Wall work:

1 Compressor } 8-hrs on
 1- Water liner }
~~1- Water tank on truck~~ } grout holes
 1 foreman } N3992 to N4024
 2 men }

1-Carp. foreman } Core Wall forms
 2-Carpenters } + steel -
 4 helpers } 6-hrs.
 2-hrs. on spillway
 forms.

Placed concrete in Core Wall

N3896 to N3928 - to Elev. 653'

30- 1 3/16" Φ - 32'-0"
 40- 7/8" Φ - 7 1/2 ft.
 24- ft. copper.

NOTE: Power
 went off at 1:00
 P.M. could not
 run mixing plant
 No Concrete

MIX: 7-565. Cement
 1390# Sand
 1200# 1 1/2" rock
 1030# 3/4" rock
 gals. H₂O

Batches Concrete
 2 Batches Grout

Tunnel work:

1 foreman } Repairing Jumbo and
 4 men } installing rigging to
 handle steel forms

1 truck
 1- Steel foreman } Placing reinforcing
 8- steelmen } steel in tunnel.

2 laborers } Trimming rock from
 1- #33-truck } walls where clearance
 to steel is insufficient.

Outlet Tower:

Calking - 42" pipe with yarn

1-calker
 1-helper } 4 1/2-hrs

Thursday - July - 13. 1933.

Placed concrete in Core wall:

N3896 to N3912 - elev. 646° to 653°

N3912 to N3928 - elev. 645° to 653°

30 - 13 1/8" d - 32' 0"

40 - 7 1/8" d - 7' 6"

24 - 44 copper

Mix: 7-sacks cement

1390# Sand

1200# 1 1/2" rock

1030# 3/4" rock

38-gals. H₂O

1 - batch grout @ 5-sks.

13 - batches concrete @ 7-sks.

96 - Sacks cement

250 - Sks cleaned

5 A.M. to 7 A.M.

Equipment:

1 - mixing plant

2 - Transitmix trucks

1 # 10 - Crane - 3 1/2 - hrs

also 5 A.M. to 7 A.M. 12:30 P.M. to 2 P.M.

Labor: 1 - mixer man

2 - hrs. mixer man also drove on transit mix truck.

3 - men

1 - Transitmix truck driver

1 - # 10 - Crane operator (2 - hrs. on concrete)

1 - " 10 " oiler { 1 1/2 hrs. "

5 A.M. to 7 A.M.
12:30 P.M. to 2 P.M.

1 - Carp. foreman { Placing conc.

4 - men { 3 1/2 hrs. - 3 - hrs. on forms

2 - Carpenters { Core Wall forms
7 A.M. to 9:30 A.M.

Drilling grout holes, Core trenches
North Abut.

1 - Compressor

1 - Jackhammer & drills { 8 - hrs

1 - foreman -

3 - men

Outlet Tower:

1 - Calker { Calking 42" pipe - (4 joints)

1 - helper { with lead - 4 - hrs. pouring

lead - 4 - hrs. calking with
pneumatic tools. 430# lead
4 - joints

1 - Carp. foreman { Hanging chutes for concrete

4 - helpers { and cleaning concrete
surface - 1 1/2 - hrs.

Outlet tower
chutes & bulkhead.

1 - Carpenters 5 1/2 - hrs.

1 - Carp. - 3 - hrs.

July 13 - Continued

Tunnel Work

1-Jumbo on truck

1 foreman	} Moving, cleaning & oiling steel forms
4 men	

2 men	} Cleaning muck from Area between outside edge of invert and Wall.
1#33 truck	

1-Truck	} Placing reinforcing steel in tunnel
1-Steel foreman	
8-Steel men	

91- 1" ϕ - 3'0" for anchor steel/extra,N 3904 to N 3928 - elev. 653' to 660'.
12:30 P.M. to 2: P.M.26- 13/16 ϕ - 24'
30- 7/8 ϕ - 6'6"
No copper

8- batches conc. @ 7-5ks

1 " Grout @ 5-5ks

FRIDAY - July - 14 - 1933.

Core Hall:

1-Compressor
1-Jackhammer + drills
1-foreman
3-men

Tunnel Work:

1-Jumbo on truck

1-foreman	} Cleaning, oiling & moving steel forms and setting
6-men	

July-14

Outlet Tower Work

1- Steel foreman } 5-hrs. placing steel
 2- steel men } in outlet tower ring
 2- 3/4" - 12" } extra } and around 42"
 4- 3/4" - 9" } spacers } pipes

Placed concrete in outlet tower

from elev. 5615 to 567° from

const. joint at end of 8 ft. length

of pipe to ϕ of tower and from5615 to 5685 from ϕ of towerto outside ^{North} face of tower wall.

MIX: 6 sacks cement } 69- batches concrete
 1390# - sand }
 1200# - 1 1/2" rock } 2 " Grout @ 8 sks
 1030# - 3/4" rock }
 33- gals. H₂O } 493- sks. cement
 26-ft. Copper }

1- set of three test cylinders at
 11: A.M.

Equipment: 1- mixing plant
 2- Transit mix trucks
 steel & wood chutes
 1- Barber green
 1- Truck #42

labor: 2- carpenters { Bldg. bulkhead
 at const. joint in
 tower - 4-hrs.

1- Carpenter foreman { Cleanout tower
 base - 4-hrs.
 5- men } Place concrete

1- mixer man { Mixing plant crew
 3- men }

2- Transit mix truck drivers

1- aggregate truck driver

Spillway forms-

2- Carpenters - 4-hrs

Sat. July-15-1933

Outlet Tower work:

1 Carpenter foreman Building forms
 4 Carpenters } and pouring
 5 helpers. } 4 concrete saddle
 1 steel foreman } piers under
 1 steel man } 36" outlet pipe

Concrete mixed by hand.

4-sacks cement used - 1:2:4 mix

2/3-cu yd. concrete.

Core wall:

2 laborers } stripping forms and cleaning
 up lumber
 1 foreman }
 1 laborer } Excav. Core trench

Tunnel-

1-Jambes on truck
 1-foreman } setting steel forms
 7-men } for tunnel lining.

Sunday July 16-1923

Core Wall:

- 1- Water tank on truck
- 1- Compressor + air hose

- 1- foreman { 5: A.M. - Blowing grout holes
- 2- men { setting grout pipe - 2 hrs
- { 2- hrs. cleaning and setting
- { core trench for concrete:

Grout holes:

Sta.	Depth of hole	Length of pipe
N3982E	24'-0"	21'-9"
*N3990W	27'-0" ^{Drill dropped 4-ft. 23.7027' into cavity}	21'-3"
N3998E	25'-0"	21'-8"
N4006W	26'-0"	21'-7"
N4014E	26'-0"	21'-4"
N4022W	26'-0"	20'-5"

3- Carpenters { 8: A.M. to 12: Noon Building 2- bulkheads in
Core wall. N3975 and N3983
3- hrs.

Placed concrete in Core Wall - N3975

to N3983 - rock to elev. 670⁰ ~~667~~N3983 - to N4010 - Rock to elev. 676⁵

* when the air was blown into this hole, no much was blown out, all air was lost in the hole, no air coming out of hole with pressure on.

48-ft. Copper.

1- #10- Crane - 12:30 P.M. to 4: A.M.

1- mixing plant

2- Transit mix trucks

1- Barber green loader

1- Truck on aggregate

1- foreman Placing conc.

4- men

1- mixer + mixing plant

2- men

1- Transit driver

Mix: 7- sacks cement

1390⁰ sand1200⁰ 1 1/2" rock103⁰ 3/4" rock52⁰ 3/4" shells

42- batches concrete

294- sacks cement

Cleared - 800- sacks.

Outlet Tunnel Work.

1- foreman

6- men

Setting steel forms and
assembling equipment
for ~~concrete~~ concreting the
lining - 8- hrs.

2- Carpenters Building bulkhead at end

1- helper { of steel forms.

Outlet tower Work

10- hrs

1- Carp. foreman

6- hrs 2- helpers

3- hrs 3- Carpenters

4- hrs 1- steelman

4- hrs 1- " foreman

6- hrs 1- rigger

8- hrs 1- helper

8- hrs 1- #10 crane oper.

8- hrs 1- #10 " oiler

1- Calker 8- hrs.

1- helper 8 to 5

Setting - 2- 36" saucer
valves and 2- 36" X 8'-0"
outlet pipes. Blq. forms.

2- saddle piers under
36" valves at heel of

el 600 - 5- sacks cement.

5/6- cu. yd. Conc.

Monday July 17 1933.

5: A.M. to 2: P.M. shift

Tunnel lining concrete:

1st concrete: 5:30 A.M.

Equipment:

- 1- mixing plant
- 1- Barber green
- 1- truck
- 1- Belt Conveyor
- 1- Jumbo on truck
- 1- Pressweld gun on truck
- 1- Central Comp. plant
- 2- portable compressors (Boosters)
- 2- Transit mix trucks

Labor:

- 1- mixer man
- 3 men

} Mixing plant
} Crew

2- Transit mix drivers

1- foreman
1- gun man
1- helper
1- conveyor man
5 men placing

2- Carpenters

1- Carp. foreman
1- Carpenter
5- laborers

} 2-hrs. Bldg. ramp
} by-pass for trucks
} in tunnel

Mix: 6-sacks cement } 102-Batches
1390# Sand } to 2: P.M.
1200# 1/2" rock } 612-SKS. cement
1030# 3/4" rock } 1400 SKS. Cleaned
36 to 42-gals. H₂O } 13-SKS. recovered

1-set 3-Test Cylinders - 12: Noon - 38-gals. H₂O

Placed concrete Sta. 9+58 to 9+70

Delays

6:30 A.M. to 7:15 A.M. Fix hopper on conveyor belt.

Remarks: 7:15 I told foreman concrete was filled to inspection holes on North side, No concrete on South side, He changed discharge pipe to get concrete on South side.
Concrete was placed without segregation
90# air

July-17-1933
Outlet Tower

1. Carp. foreman - 6-hrs

2. Carpenters - 8-hrs

1 - 6-hrs.

5 helpers 6-hrs.

1 Carpenter foreman 3-hrs. over time

1 Carpenter

1 Helper

on forms for
gate opening &
outlet.

Gate setting and setting of 36" pipes
valves checked by City Survey Party.
Core wall:

1 man stripping forms

& setting Conc.

July-17-1933-

Lining tunnel with concrete

Sta. 9+58 to 9+30 - continued

from 2: P.M. shift - 2: P.M. to 8: P.M.
on line

Shift

Same equipment and labor except
personnel changed at 2: P.M.

40. batches concrete - 240-cu ft.

About 3-cu yds. wasted, spilling off
The conveyor belt and spill out of
inspection hole when filled too close
to the opening.

^{3:00}
Delay to 3:30 P.M. - elevator trouble

" 5:30 to 6: P.M. " Burned out bearing
on motor.

4 - 15-minute delays moving ahead.

Cleaned - 400 sacks.

Tuesday - July 18 - 1933

Placed concrete in Outlet

Tower - 7:00 A.M. To ^{9:30 A.M.} complete to elev. 570'
to Const. joint at bell end of 8" ^{3/8"} pipe, also
walls of gate well to elev. 570' and
2 ft. of inlet adit wall to 570'

Equipment: 1 mixing plant
3 Transit mix trucks
Steel & wood chutes

1 - foreman } placing concrete
6 - men } 2 1/2 - hrs - 2 - hrs.
 } cleaning up for conc.

1 - mixer man } mixing plant crew
3 - Men } 2 1/2 hrs.

3 - Transit mix truck drivers - 2 1/2 hrs

3 - Carpenters - 2 hrs. Forms

Mix: 6 - sks Cement
1390# sand
1200# 1 1/2" rock
1030# 3/4" rock
86 gals. H₂O } 55 - Batches concrete
 } 3 " Grout @ 3 sks

330
15
345 - sks

16 - 3/8" x 6'-0" Dowels for gate well walls
52 - ft - copper

Johnson Crew on Tower:

1 - sup't. } Bldg. tool shed
1 - Carp. }
2 - men }

Outlet Tunnel:

1 - Jumbo on trucks } setting steel
1 - foreman } forms.
7 - men }

Core Wall:

1 - mixer man } setting up grouting
3 - men } equip.
1 - tractor }

1 - Carp. foreman } Bldg. Cor wall
2 - Carpenters } forms + steel-
4 - helpers }

July-18-

Outlet Tunnel

1- foreman } Cleaning & setting
 steel }
 7- men } forms for concrete
 1-Jumbo on truck } lining

Wednesday - July-19th
 Core Wall work -
 4-men } hand mucking Core
 } trench excav.
 } south abut.

July-19-1933 - 5:AM to 2:PM.

Outlet Towers
 1-truck (small) Ford.
 1-foreman } Stripping forms & chipping
 4-men } (assistance)

Johnson's Crew:

1-supt. } Building forms.
 2-Carpenters }
 2-helpers }

Spillway forms

1-Carpenter - 8-hrs
 1- " " 4-hrs
 1-helper - 8 "

Outlet Tunnel - 5:AM to 5:PM.

1-Jumbo on truck } Setting forms.
 1-foreman }
 9-men }
 1-Carp. 8-hrs }
 1-Carp. 12-hrs }
 1-helper 12 }
 2 men } Chipping concrete 4-hrs.

Night crane set the forms without top bracing, did not get clearance between steel & forms, did not clean out at edge of invert and did not provide the pipe to take water leakage through forms from exploration tunnel

July 19- continued:

Started placing concrete in tunnel lining Sta. 9+30 to 8+80 at 2: P.M.

- 1- Barber green
- 1- Truck
- 1- mixing plant
- 1- Jumbal on truck

2- Transit mix trucks.

- 1- Pressweld concrete gun
- 1- Belt conveyor elevator

- 1- mixer man } mixing plant
- 3- men }

2- Transit mix drivers

1- aggregate truck driver

- 1- foreman
- 1- Gun man
- 1- helper
- 1- elevator man
- 5- laborers

MIX: 6 sacks cement

- 1390 # Sand
- 1200 # 1 1/2" rock
- 1030 # 3/4" rock

49- batches to 5: P.M.
 4- grout
 314- sacks

Placing concrete

2-batches grout in each of 12 two loads mixed with 2-cu yds. concrete, to try to get mortar in the concrete at the start of the pour where

rock pockets have occurred on previous pours. The inspection holes were left open to provide space for tampers to work.

Steel was moved to provide clearance between forms and steel. The area at edge of invert was cleaned and

bracing of forms from roof to steel form completed. Drain pipe was placed to carry water leakage through steel form from exploration tunnel.

5: P.M. to 5: A.M. - 37- batches conc.

Same labor & equipment as previous shift except no carpenters.

Delay - 11: P.M. to 3:30 A.M. - Repair to gun. 4 men only worked on repairs all others slept on job.

5- cu yds. wasted - mixed & could not use it.

229
1374
2

Thursday - July - 20

Outlet tunnel concrete work

continued - 5: A.M. to 5: P.M. shift
except only 1 carp.

Same equipment and labor as
on previous shift.

Same mix concrete

Shut down at 7:30 A.M. to 12:30 P.M.

to move discharge pipe. The night

crew left the discharge pipe

embedded in concrete during

the 6-hr. delay and the concrete

set-up around the pipe making

difficult to move the pipe. It

was necessary to move the pipe

because area ahead was not

filled & could not be filled with

The pipe in its position before

moving, 2 cu. yds. wasted

dumped.

119 1/2 batches @ 7:30 A.M. change mixer man
950-3 hrs. cleaned - 5: A.M. to 5: A.M.
14-5 krs. cement

5-5 krs. 20th recovered

45

4-hrs-1 man } 9 to 4 placing
2" - 4' 2" pipe. } drain pipe -
John Erickson foreman

Spillway forms - 5: A.M. to

1 Carp. foreman

4 Carpenters

1 helper

Core Wall Work: 5: A.M. to 2: P.M.

10 men } Hand mucking core trench

Excavation South abutment

1 man } removing cones from concrete
& pointing cone holes with mortar
North Abutment.

Outlet Tower

Johnson Crew:

1 Supt.

2 Carpenters

2 helpers

} Tower forms

FRIDAY - July - 21 - 1933.

Spillway forms.

3. Carpenters, 8-hrs. making panel
 1-helper. } forms - for future use
 1-foreman }

Outlet Tower

1-Supt. } Buildings setting
 3. Carpenters } wood forms
 2-helpers. } 8-hrs.

Friday - July - 21 - 1933.

Cove Wall Work:

1-Truck } Core trench
 1-Compressor & Jackhammer } EXCAV.
 3-lab ... 4 1/2-hrs }
 1-laborer - 8 hrs. } North abut.
 1-Driller }
 1-Truck driver }

1-cement finisher } removing cones
 + pointing cone
 holes with mortar }

Outlet Tunnel

1-foreman } Removing bolts from
 7-men } steel forms and
 1-truck #33 } cleanup muck from
 area between edge of
 invert & rock wall, also
 cleanup spilled
 concrete & strip wood bulkhead }

July-21-1933.

Measurement of Water Leakage
in Tunnel Lining. 9:00 A.M. to
10: A.M.

Sta.	Time	Gallons
6+30	10-min $5/13 \times 5$	0.192 gals per min.
	10-min $1/13 \times 5$	0.04 gals per min.
	10-min $1/13 \times 5$	0.04 gals per min.
5+15	10-min $2/13 \times 5$	0.071 gals per min.
5+00	10-min $11/13 \times 5$	0.05 gals per min.

No leak at sta. 5+80.

Contractor drilling hole & inserting pipe
at sta. 7+70 to bring water to a
stream flow for measurement.

July-22-1933

Core Wall Concrete - 12 M. to 4: A.M.

Placed concrete in Core Wall

N3976 to N3984 elev. 670' to 676'

N3984 to N4010 - elev. 676' to 682'

N4010 to N4025 - rock to elev. 682'

3- steel columns

62-ft copper.

30- $7\frac{1}{2}$ " ϕ 6'-0"

6- $13\frac{1}{16}$ " ϕ 24'-0"

1- #10- Crane & bucket.
1- mixing plant
2- Transit mix trucks
1- barber green
1- truck

1- foreman
4- men
1- crane operator
1- crane oiler

1- mixer man
3- men

2- Transit mix truck drivers
1- aggregate truck driver

Mix: 7-sacks Cement
1390 # 3 and
1200 # $1\frac{1}{2}$ " rock
1030 # $3\frac{1}{4}$ " rock
36- gals. H₂O

371

376

53- Batches concrete
1- batches gravel
376- sacks
Cement

July 22-1933 - 5: A.M. to 2: P.M.

Core Wall: Excav South Abut.

1- Compressor

~~1- Truck~~

1- Jack hammer

1- Foreman

5- men - 4 1/2 hrs. all fired at noon.

2- laborers - 4 hrs.

1- laborer - 8 hrs.

Core Wall forms: South Abut

1- Carp. foreman - 4 hrs

1- helper 4-hrs.

4- laborers 4-hrs.

1- laborer 8-hrs.

4- Carpenters 8-hrs.

Outlet Tower: 7:30 A.M. to 4: P.M.

1- Supt.

2- Carps.

2- helpers

July 22 1933 -

Outlet Tunnel work: 5: A.M. to 2: P.M.

1- Jumbo on truck

1- Truck # 33

1- foreman { Cleaning up muck,
7- men { and moving steel
 { forms for next concrete

Pressure grouting core trench
reported in Book # 381

July 23

Core install - 5:15 A.M. to 2:15 A.M.

- 1. foreman
- 1. Carpenter
- 3. helper

Outlet tower

3 laborers

7:30 A.M. to 4⁰⁰ P.M.

placing tee rods in forms

Outlet Tunnel - 5:15 A.M. to 5:15 P.M.

2. cap. Building bulkhead

1. helper 8-hrs - 5:15 A.M. to 2:15 P.M.

1. foreman Setting steel forms

7 men and assembly equipment to concrete the lining

Outlet Tunnel. sta- 8780 to 8730

5:15 P.M. July 23 to 5:15 A.M. July 24

2 Transit mix trucks

1- Truck on aggregate

1- Hackley pneumatic concrete gun mounted on 6-wheel steering truck

1- Barber green

1- Jumbo on truck

1- compressor plant

4- portable compressors

1- mixing plant

1- foreman 5:15 P.M. to 8:45 P.M. mounting

7 men Hackley gun on truck and rigging equipment & compressors

8:45 P.M. to 5:15 A.M. on conc.

34 batches - 8:45 P.M. to 5:15 A.M. - 20 4-5k Cement

MIX. 6 sacks cement 1 cu. yd. wasted included in batch count.

1390 #5 sand

1200 # 1 1/2" rock

1030 # 3/4" rock

39 1/2 gal. oil

Delays: 11:15 P.M. to 1:10 A.M. Transit mix

truck #12 while backing up to chute to dump last of load, locked gears, could not

move or raise barrel. A tractor was procured and moved the truck

2:45 A.M. to 4:15 A.M. elbow into forms blew out.

P.O.G. Inspector

MONDAY July 24-1933-

Continued

Outlet tunnel - 5: A.M. to 5: P.M.

Same equipment as on previous shift

1-foreman } Placing concrete
1- Hockley operator }
5- men }
1- Sterling truck driver }
1- Transit mix driver }
1- mixer man } Mixing plant crew
3- men }

1 man { Chipping concrete wetting
concrete.

Same mix as previous shift.

1- Carpenter - making segments for tunnel

lining forms - at angle point in tunnel

1- set of three cylinders at 2: P.M.
37- gals. H₂O

Riverside cement

1000- sacks cleaned.

101- Batches concrete to 5: P.M.
- 34

67- batches this shift - 5: A.M. to 5: P.M.

July-24-1933.

100

Outlet Tower - 7:30 A.M. to 4: P.M.

1- Sup't. }
1- Carpenter } work on forms and steel
4- laborers } also setting ladder rungs
and valve stem bracket bolts.

Spillway forms - 5: A.M. to 2: P.M.
2- carpenters

Core Wall: 5: A.M. to 2: P.M.
2 1/2- hrs. cleanup + setting chutes
Start concrete - 7:30 A.M.

Placed concrete in Core Wall:

Sta. N3992 to N4025⁵ elev. 682⁵ - 688⁵

3- Steel columns
47- ft. copper
40- 7/8" 6'
28- 13/16" φ - 24'

July 24 - Core Wall continued.

1-foreman
4-men } placing concrete
7:30 A.M. to 1: P.M.
1-transit mix truck
Driver

1-Transit mix truck
1-mixer

1-mixer man mixing plant
3-men } 1-mixer to tunnel
1-mixer to Core Wall

Mix: 7-sacks cement } 42 Batches Concrete
1390# sand
1200# 1 1/2" rock } 1 batches Grout @ 5-sks
1030# 3/4" rock
37-Gals. H₂O } 299-sks. Riverside Cement

Truck #12 - Transit mix broke down - 2
cu. yds. concrete - 1 batch grout - 19-sks.
cement wasted,

1-set-3-test cylinders at 9: A.M.

Core trench excav. South Abut.
5: A.M. to 2: P.M.

1-foreman
4-men

July 25 -

8:30 to
Outlet Tunnel - Concrete 8:30 Continued

5: P.M. July 24th to 5: A.M. July 25.

189-batches to 5: A.M. Total

88-batches this shift.

" No delay except one move and
much patching of air and discharge

1/2" P.O.G. 12:30 P.M. 1/2 cu. yd. wasted

Same crew as previous shift.

5: A.M. to 5: P.M. - Same equip. & crew.

Delay - 12:15 P.M. to 1:30 P.M. water
line to mixing plant broke.

234-batches total

45-batches this shift

1-man - 3-hrs wetting lining concrete.

Finished concrete at 5: P.M.

July-25-1933

Outlet Tower work.

7:30 A.M. to 4 P.M.

1 mixing plant

2 Transit mix trucks

1-supt. 4 hrs. setting forms & chutes

1-Carp. 4 hrs. placing concrete.

4 laborers

1-rigger - 4-hrs. only.

1-man. laying 2" water line to tower & setting concrete - 5 hrs

1-mixer man

3 men

2 Transit mix driver { 9: A.M. to 2 P.M.

water off in mixing plant 12:15 to 1:15

Placed concrete -

Tower Wall - elev. 573' to 579'

Mix: 6-sacks cement

1390# Sand

1200# - 1 1/2" rock

1030# - 3/4" rock

48 ft. Copper

5-ladder rungs - 1" stock

4- 3/4" x 9" Bass anchor bolts for

valve stem bracket at 578'

July-25-1933

102

Core Wall work - 5: A.M. to 2: P.M.

1-foreman } Core Wall forms

3-Carpenters } + steel - North Abut.

5-laborers }

1-foreman } excavating core

4-men } trench - South Abut.

650-Riverside sacks cleaned

300 Colton " "

14-sks cement recovered

July 26-1933

5: A.M. to 2: P.M.

Placed concrete in Core Wall:

N3976 to N3984 - elev. 676[±] to elev. 684[±]

N3984 to N3992 elev. 682[±] to elev. 688[±]

N3992 to N4024^e elev. 688[±] to elev. 695[±]

32 1 3/16" Ø - 10'-0"

20 1 3/16" Ø - 10'-0"

14 1 3/16" Ø 36'-0"

70 3/4" Ø 7'-0"

76-ft. copper

Start - 6:45 A.M. finish 9:45 A.M.

Water tank filled with water and
surface of concrete inside forms washed
before ordering concrete.

Equipment:

1- #10-Drayline

Transit mix trucks

Chutes

1 mixing plant

1- Barber green

1- Truck #34 aggregate

Labor: 1-foreman

4 laborers

1- Crane operator

1- Crane oiler

3- carpenters

2- helpers - 1 1/2-hrs. laid off - 6:30 A.M.

1- mixerman } mixing plant

3- men }

1- aggregate truck driver

1- Transit mix drivers

Mix: 7-sks. Cement

1390# sand

1200# 1 1/2" rock

1030# 3/4" rock

37-gals. H₂O

30 Batches concrete

3 batches grout @ 5-sks

8:20 AM 3 cu yds. wasted - no sand
in the concrete - could not get
sand for grout 3/4" rock in sand bin

225-Jacks Cement.

Note: Expansion joint at sta. N3976 - making
one extra expansion joint between
N3960 and N3992-

July-26-1933

Outlet Tunnel

5: A.M. to 2: P.M.

- 1-foreman } moving steel forms
- 6-men } to 8+30 to 7+84
- 1-jumbo on truck
- 1-man wetting concrete 5 hrs.

- 3-laborers- } 5 hrs hauling lumber
- 1-truck } to tunnel for forms at
- 1-Corp. foreman } angle point.

2-men } chipping rock pockets in tunnel lining
Outlet Tower - 2:30 A.M. to 4: P.M.

- 1-Supt. } Tower forms.
- 1-Carp. } = steel
- 4-laborers }
- 1-rigger }

7+84 to 8+30 ¹⁰⁴

July-27-1933

Outlet Tunnel

- 1-Carpenter foreman } 3: A.M. to
- 3-Carpenters } Building forms for
- 2-helpers } lining at angle point
- 2-laborers }

- 1-foreman } setting steel forms
- 3-men }

1-gunman } Repairing Bresswell Gun.

- 1-Cement Finisher } Patching tunnel
- 1-helper } lining concrete
- 4-sacks Cement

2:17 P.M. Stop order delivered to

Supt. Steves demanding that concrete work be stopped in tunnel until the method of placing will produce "Concrete" instead of rock pockets.

July-27-1933

Outlet Tower

- 1-foreman forms & steel 6-hrs.
 - 1-Rigger
 - 1-Carpenter
 - 4-laborers
- Placing Concrete 2-hrs. 10-min.

Placed concrete in tower wall:

elev. 579° to 585°

1:30 P.M. - start 4¹⁰ P.M.

4-ladder guard steps

6-ladder rungs

47 ft. Copper

- 1-mixing plant
 - 2-Transit mix trucks
 - " " Drivers
 - 1-mixerman (MIXING plant)
 - 3-men (Crew)
 - 1-barber green, iron
 - 1-truck & driver
 - MIX: 6-sacks cement
 - 1370# sand
 - 1200# 1/2" rock
 - 1030# 3/4" rock
 - 38-gals. H₂O
- 33 - Batches concrete
- 2 batches grout
- 208 - Sks. Cement

4-sks. cement for cement wash on tower

7:30 A.M. I saw Supt. Steves about the

Finishing of the tower concrete. 8 A.M. Steves took Johnson in my presence to take care of the cement brush coat & carbonatum work, when required.

Core Wall- July-27-1933

- 1 #10 Crane
 - 1 Portable Compressor & Jackhammer
 - 1 Truck
 - 1-foreman
 - 3-men
 - 1-Crane Oper
 - 1-Crane driver
 - 1-truck driver 8 hrs
- Excavating Core trench - South Abut.

7:30 A.M. I spoke to Supt. Steves about providing a water supply to wet Core Wall concrete - North Abut. The water tank was taken away during the night and no water is available otherwise.

July - 28-1933

Outlet Tunnel Lining

Sta. 8+30 to 7+84 - continued. Started
 at 6 P.M. July 27th Thurston + Gottschling
 inspectors 5 P.M. to 5 A.M. -
 126 batches - 5 P.M. 27th to 5 A.M. 28th
 Mix set up by Connolly:
 6 Sacks cement
 1490 # sand
 1200 # - 1 1/2
 930 # - 3/4 rock
 48 to 51 gals.

5 A.M. to 5 P.M.

Equipment: 1 mixing plant

- 1-barber green (aggregate loader)
- 1-truck on aggregate
- 1-Pressweld gun on truck
- 1-Jumbo on truck
- 2-Transitmix trucks
- 1-belt conveyor elevator
- 1-Compressor plant - 2-portable compressors.

Labor:

- 1-man - patching tunnel - 8-hrs - 4-SKS Cement
- 1-mixer man { MIXING Plant
- 3-men {
- 1-man - { cleaning up around mixers.
- 1-foreman { Placing concrete
- 1-gun man {
- 6-men {
- 2-Transitmix { delivering concrete truck drivers { to tunnel

1-set-3 Test Cylinders at:

7 A.M. 50-gals. H₂O - added water

8 A.M. to 9:30. relay. aggregate loader broke.

Possibility of thin lining

Sta. 8+80 to 8+70 - south side about midway between center crown + springline.

Finish at 3 P.M. - Total 204 Batches
 78-batches this shift 1-Batch GROUT
 468-sacks cement.
 750-SKS Cleaned

July-28-1933-

Outlet Tower Works.

Rahl & Connolly Crew 5:30 A.M. to

1-Carp. foreman	} Building gate Well forms & finishing inlet adit forms to gate Well. and placing concrete
2-Carpenters	
2-helpers	
4-hrs	

Johnson's Crew- 7:15 A.M. to 4:10 P.M.

1-Sup ^y	} Building forms for wall elev. 583 to 591°
1-Carpenter	
1-rigger	
4-laborers	

Johnson was told at 8:15 A.M. to point up core holes and finish the concrete according to specifications.

6 SKS. Cement	} 2 - Batches concrete { 17 SKS. Cement
1390# Sand-	
2200# - 1 1/2" rock	
1030# 3/4" rock	
37 gals. H ₂ O	1 " Grout @ 5 SKS
	start
	finish

Gate Well & inlet adit to elev. 576°

July-28-1933
Core Wall Work:

5:15 A.M. to 2:15 P.M.

1-#10-Crane
1-Truck
1-compressor & Jackhammer
1-foreman
4-laborers - 8-hrs
2-laborers - 4-hrs.
1-#10-crane operator
1- " " oiler
1-man stripping forms & wetting
Core Wall Concrete North abutment

} Excav. Core	} trench - South

July-29-1933-

Outlet Tunnel work

1-foreman } cleaning up for next
8-men } section and moving
 } forms

1-cement finisher } patching concrete.
1-helper }

Core Wall:

1-#10 dragline } Excavating Core
1-compressor } trench South
1-jack hammer }
1-foreman } Abutment
5-men }
1-dragline operator }

1-foreman } Core Wall forms and
2-Carpenters } steel - North abut.
3-laborers }

July-29-1933-

Outlet Tower - 7: A.M. - 4: P.M.

1-Carpenter (foreman) } Tower forms.
1-Rigger }
4-laborers }

10: A.M. Mr. Wood told Supt Steves in
my presence that paragraph
7b of spec. be complied with
before the next lift of concrete
is placed in the tower, also
to furnish all iron bolts, ladder
rungs etc. with shop visit of
red lead.

47 instead of 43 - 1 1/4" bars
place 385° to 605° instead of
43 as shown. I ordered the four
extra taken out & respacing of
remaining 49.

Sunday - July - 30 - 1933

Placed concrete in Core Wall,

N 3976 to N 3984 - elev. 684° to elev. 696°

N 3984 to N 3992 elev. 688° to " 696°

N 3992° to N 4024 elev. 695° to " 703°

26 - 13/16" - 16'

24 - 13/16" - 8'

32 - 13/16" - 32'

10 - 7/8" - 10'

10 - 7/8" - 6'

40 - 7/8" - 7'

70-ft. copper

Start - 6⁰⁰ A.M. - finish - 8¹⁵ A.M.

1 - mixing plant

2 - Transit mix trucks

Wooden chutes

1 - #10. Crane

Labor: 1 foreman

5 - men

1 - Crane Oper.

1 - " oiler

1 - mixerman

3 - men

2 - Transit mix

truck drivers

Mix: 7 - sacks cement

1390 # sand

1200 # 1/2" rock

1030 # 3/4" rock

37 - gals. H₂O

1 - batch of 7 - sacks wasted - too

much concrete mixed.

Placing concrete

2 - hrs.

3 - laborers - 6 hrs.

stripping forms

& wetting concrete

mixing plant crew

2 - hrs.

126

18 - batches concrete

1 batch grout

131 - sacks. Riverside

Sunday - July 30 - 1933

Outlet Tower work.

Placed concrete in Tower
elev. 584' to 589'

Start 2:30 P.M. finish - 5: P.M.

1-mixing plant

2-Transit mix trucks
steel & wood chutes

1-Sup't	} Setting forms, reinforcing Steel-Bracket Bolts, ladder rungs & guards. 6-hrs Placing concrete 2-hrs.
1-Carpenter	
1-Rigger	
5-laborers	

2-Transit mix drivers
1-mixer man -
3-men

1-Cement finisher	} Finishing inside of Tower as per paragraph 76-spec, 2-hrs
1-helper	

Mix: 6-sacks cement	} 33-batches concrete 198-sks
1390# sand	
1200# 1 1/2" rock	
1030# 3/4" rock	
36-gal. H ₂ O	} 2" grout @ 5-sks
	208-sks
	Total

5-ladder rungs
3-ladder guards
4- 3/4" x 9" brass bolts

Outlet Tunnel Sunday July 30 -
5: A.M. to 5: P.M.

Started placing concrete in
tunnel lining Sta. 7+84 to 7+94
at 5- P.M.

1-mixing plant

2-Transit mix trucks

1-Jumbo on truck
1-Belt conveyor elevator
1-Pressweld gun
1-Compression plant

labor: 1-foreman	} Placing forms hrs.
7-men	
	} Placing concrete hrs.

1-mixer man	} mixing plant crew
3-men	

2-Transit mix
drivers

1-carp. foreman	5-hrs.	} Building bulkhead at end of steel forms
2-carpenters	8-hrs.	
2-helpers	6-hrs.	

July 30-1933

Tunnel lining data continued

1-Cement finisher } Patching tunnel
1-helper } lining - 10-5ks. Cement

MIX: 6-sacks cement

1490# sand

1200# 1 1/2" rock

930# 3/4" rock

51-gals. H₂O

} No batches

} on this shift

Night crew - 5: P.M. to 5: A.M.

reported by Thurston + Gottschling

5: P.M. to 5: A.M. - 144-batches

July 31-1933

Outlet Tunnel - 7+84 to 7+44 - continued

Same labor & equipment except no

carpenters on duty. also 1-Barber

Green - Tractor #34 + driver starting

at 5: P.M. 30th

1-Cement finisher } Patching tunnel
} lining

Total - 203-batches concrete
144- to 5: A.M. 31st

59-batches this shift

354- sacks cement

2-batches - 12- sacks wasted - too

much concrete mixed - could use only

1-yard of last 3 yd. load.

850- sacks - Riverside, cleaned.

Outlet Tower: July-31-1933.

1- Cap. foreman } stripping forms & finishing
1- helper }
5: A.M. to 7: P.M. } concrete gate well & inlet adit
2-hrs.

7: A.M. to 4: P.M.
1- Supt. } Setting forms for next lift
1- Carpenter }
1- rigger } & removing laitance &
5- laborers } roughening concrete surface.

12: Noon - I spoke to supt. steves about red lead paint for ladder rungs, guards, & hooked belts. He said Connolly we could not paint until job finishes.

Core Wall: July 31 1933

1 #10 - Crane

1- Compressor & Jackhammer

1- foreman } Excav. Core trench
5- laborers } South Abutment
1- Crane operator } Material wasted outside
1- " oiler } Core wall area to be removed later

1- Carpenter with power saw, sawing wedges.

1- Cap. foreman - 6-hrs } stripping Core Wall
1- laborers - 6-hrs }
1- Carpenter - 8 " } forms.
1- helper - 8 " }
1- laborer - 8 " }

Tuesday Aug-1-1933

Spillway - forms - 5: A.M. to 2: P.M.

1- foreman } Building 6'x12'-panel
2- Carpenters } forms for future use
1- helper }

Core Wall Work - 5: A.M. to 2: P.M. -

1- #10 Crane
1- Compressor
1- Jackhammer

1- foreman } Excavating Core trench
5- laborers } South abutment
1- Crane operator }
1- Crane oiler }

2- Carp. helpers } Pointing cone holes in
1- truck } Core Wall - North abutment
} & hauling form lumber from
} the site

Outlet Tunnel - 5: A.M. to 2: P.M.

1- Jumbo on truck - 1 #33 truck
1- foreman } moving & cleaning steel
7- men } forms.
1- cement finisher } Patching outlet tunnel
1- " " helper } lining
} 2-5 k. cement
} 7-hrs.

Rock pockets packed
within 2 hrs. after
stripping forms 5:1

Forms stripped from
7:30 to 2:00 PM
at 2:00 PM

Outlet Tower - ~~July~~ Aug 1-1933.

- 1- Supt. } 6 1/2 hrs. on forms + steel
- 1- Carpenter } 2 1/2 hrs. on concrete
- 1- Rigger
- 4- laborers
- 1- Cement finisher } 1- hr. brush coating +
- 1- helper } finishing inside of tower
- 1- laborer } Painting ladder rungs, hooked rods, and ladder guards
- 6- ladder rungs.
- 4 " guards
- 8- hooked rods - 1" ϕ .
- 54- ft. Copper
- 4- 3/4" x 9" brass bolts for valve stem bracket

I told Supt steves at 5:30 A.M. that the tower contractor could not pour concrete until the rungs, guards + hooked bolts have a coat of red lead. At 7 A.M. steves sent amon out with a pot of red lead + a brush to paint the iron appurtenances.

Outlet Tower continued:

Started pouring concrete 2:30 P.M.

Finish - 4:30 P.M.

Mix: 6-SKS. Cement
1390# Sand } 36-batches - 216SKS.
1200# 1 1/2" rock } 2-grout - 10-SKS
1030# 3/4" rock } 228-SKS
36-gal. H₂O } Riverside

1- set-3-Test Cylinders } 2-batches - 12-SKS. KASTOL
3:30 P.M.

Elev - 589.67 to 595.67

1- mixing plant } 2-hrs.
2- transit mix trucks }

1- mixer man } mixing plant crew
3 men }

2- Transit mix drivers. 2 1/2-hrs.

Wednesday - Aug 2 - 1933

Outlet Tower - 7:15 A.M. to 4: P.M.

1-Carpenter foreman } work on
1-Carpenter } raising forms
1-rigger } for next lift
3-laborers } of concrete
1-laborer } (Pointing cone holes on
outside of tower

Spillway - 5:15 A.M. to 2: P.M.

1-Carp. foreman } building forms
2-Carpenters } for future use
2-laborers - 4 hrs. } on spillway

Core Wall Excavation - South abut

1-#10-cane
1-Compressor -
1-Jackhammer
1-foreman }
5-laborers } 8-hrs. excav. core trench &
cleaning up muck adjacent
to core wall

114
Core Wall-continued:

1-#10-crane operator }
1- " " oiler } 4-hrs.
1-man } Pointing cone holes and
wetting concrete with about

Outlet Tunnel - 5:15 A.M. to 5: P.M.

1-Jumbo on truck.
1-Compressor Plant - 4-compressors
1-Belt conveyor elevator
1-Pressurized gun
2-Transit mix trucks
1-mixing plant
1-Barber green
1-Truck
1-foreman } setting up steel forms and
7-men } equipment. - hrs.
Placing conc. hrs.
2-Transit mix drivers
1-mixerman
1-Truck driver

Start Concrete - 7:00 to 7:44-at

Mix: 6-sks. cement
1800# sand
1200# 1 1/2" rock
920# 3/4" rock
31-gals. H₂O } 33-batches - 2:45 P.M.
to 5: P.M.
198-sks cement

Aug. 3, 1933. - Tunnel lining

5:00 to 7:00 to 7:44 - continued

5: P.M. to 5: A.M. reported by Thurstin

2 Gottschling - 180 - batches to 5: A.M.

or 147 - batches 5: P.M. to 5: A.M.

5: A.M. to 2: P.M. shift.

Equipment: 1-Jumbo

1-Pumweld gun

1-belt conveyor elevator

1-Compression plant.

(1-stationary - 4-Portables)

2-Transit mix trucks

1-Truck #44

1-Barber green

1-mixing plant

Labor:

1-foreman (Placing concrete - 7 1/2 hrs.)

7-men

2-Transit mix drivers - 7 1/2-hrs

1-Truck #44 driver 8-hrs.

1-mixer man { mixing plant - 7 1/2 hrs

3-men { clean sacks -

7-hrs

1-Cement finisher (Patching tunnel lining)

1- " helper

3-sks. Cement

MIX: 6-sks. Cement

1500# sand

1200# 1 1/2" rock

920# 3/4" rock

50-gals. #20

83-batches

498-sks. Colton.

Total - 263-batches

for Sect. 5th. 7100 to 7144

Finish concrete at 1: P.M.

1-set of three test cylinders at

7: A.M. - Colton Cement.

3900-sks. cleaned.

Spillway forms - 5: A.M. to 2: P.M.

1-Carp. Foreman

2-Carpenters

1-helper

1-Power saw.

Core Wall.

Aug. 3, 1933 - 5: A.M. to 2: P.M.

1- #10-Crane

1-foreman

5 men

1- Crane operator

1- Crane tender

Cleaning up muck
outside core trench
area + adjacent to
Core wall - South Abut.

Outlet Tower: 7: A.M. to 4: P.M.

1- Cap. Foreman

1- Carpenter

1- rigger

4- laborers

1- Cement finisher

1 " " helper

6- ladder rungs

4 " Guards

53 ft. Copper

Brush coating inside
of tower - 1-hr.

Aug. 3-1933- Outlet Tower Continued.

Placed concrete: Elev. 595⁶⁷ to 601⁶⁷

started

finished

R. A. Thurston, inspector

Mix: 6- sks. cement

1390 #5 sand

1200 # 1 1/2" rock

1030 # 3/4" rock

36- gals H₂O

33 Batches concrete

2 batches grout

208 sks. Cement
Colton + Riverside.

4:10 P.M. to - 6:05 P.M.

1- mixing plant

2- Transit mix trucks

1- mixer man } Mixing plant crew

3- men }

2- Transit mix drivers

Friday - Aug 4 - 1933.

Core Wall work; 5: A.M. to 2: P.M.

1- #10. Crane -

1- Crane operator	} Excav. core trench South abutment. 4-hrs.
1- Crane oiler	
1- foreman	
5- laborers	

Outlet Tunnel - 5: A.M. to 2: P.M.

1- foreman

2- men

1- Jumbo on truck

1- #33- Truck.

}	5-hrs moving steel forms
	3-hrs - clean up + move equipment

1- Cement finisher - 8 hrs.

117

Aug. 4 1933.

Spillway Forms; - 5: A.M. to 2: P.M.

1- Carp. foreman

2- Carpenters

1- helper

1- power saw.

Outlet Tower Work.

7: A.M. to 4: P.M.

1- Supt.

1- Carp. Foreman

1- Carpenter

1- Rigger

4- Laborers

Building forms

+ placing steel

1- laborer - 4-hrs painting ladder rungs + girders with red lead paint

2- Steel men } placing steel - 3-hrs

1- Carp. helper } 4-hrs delivering

1- truck -

1- laborer

+ bending steel

Aug 5 - 1933

Outlet Tower:

1-Supt.	} Building forms + placing steel for tower walls & valve bracket.
1-Carp. foreman	
1-Carpenter	
1-Rigger	
4-helpers	

Core Wall:

1-foreman	} Setting up equipment to pressure grout core trench. south abutment
3-men	
} 5 1/2-hrs.	

Outlet Tunnel:

1-foreman	} Excav outlet adit
6-men	

1-Cement finisher	} Patching tunnel
1- " " helper	

Core Wall forms

1-Carp. foreman	} Building panel forms for core wall concrete
2-Carp.	
1-helper	

13982 E

90 W

98 E

4006 W

14 E

22 W

9.6

9.6

3.

36
3 1/2

576

108

864

113

92.46

3.

276.48

12.9

289.38

113

176.38

6

27) 1078.23 138

81

168

162

5353

105

3600

3255

2670

Steel count as of July 15/1937

On hand in stock piles

1" #33	1" #36	1" #12	3/4" #40	1" #22	1" #24
	2				5
11	76	2	128	46	
73	40		165		
40	40		74	6	
90	100		50		
40	30		1		
30	8			52	5
70	1		418 ✓		
47	6				
	2				
402-bars	305	2-			
13,266-ft ✓	10,980	24-ft ✓	16,720	11,444-ft	12,000-ft ✓

1" #16	2 1/2" # PL	13/16" #40	7-ft.	22'
				7/8" φ
8	15	64	21	100
		72		102
		72		102
		70		9
		31		100
		72		95
		29		100
		72		97
128-ft ✓	315-ft ✓	66		96
		548- ✓	21 ✓	28
		21,920-ft	147-ft	13
				842

Outlet Tower inlet & outlet

1 1/4" #39	1 1/4" #15	1 1/4" #13	1" #13	1" #15
2	38	38	6	8
78-ft	570-ft ✓	494-ft ✓	78-ft ✓	120-ft ✓

1 1/4" #24	1 1/4" #26	1 1/4" #20	1 1/4" #22
6	6	6	6
144-ft ✓	156-ft ✓	120-ft ✓	132-ft ✓
1 1/2" #25	1 1/4" #21		

Recap:

1" #	3/4" #	13/16" φ	7/8" φ
24,570-ft	16,720-ft	22,382-ft	18,524-ft

1 1/4" #	1" #
130-ft ✓	126-ft ✓

Outlet Tower recap:

1 1/4" # 78-ft

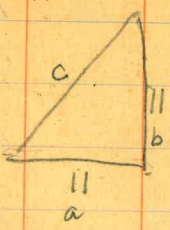
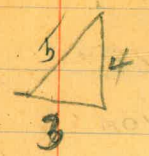
1 1/4" # 1892-ft, 1" # 198-ft

18,524-ft ✓

263
180
83

11
3
77

7 days - 3 hrs



9
16
25

11
11
121
121
242

$a^2 + b^2 = c^2$

15 = 7"

$c = \sqrt{a^2 + b^2}$
1555

$c = \sqrt{2420.0}$

~~250~~

305

3105

142
125

1700
1525
17500

25
29

148
8/181
15

168
47
121
15 1/8 days

Class 1 - MASS

120

12800 - cu. yds. Spillway

2050 - " - Class 2

5700 - " - Floor 4

2230 - Class 6 - Cut off walls

25,500 Bbls.

Inspector's Time

Accum. To	June	7 th	0 vertime + 5 sundays 92-hrs	Time off
June	16 th	0 Time 6	4 hrs. June-7 8-hrs. " 8 6-hrs. " 9	
June	18 th	8 8	8 " " " 10 8 " " " 13	
June	19-		Conc. Tower 5 Sunday	47
July	2	2	Conc Wall	
July	11-	11-	3-hrs. Aug-5 10-hrs Sunday	8
"	16	16	6-hrs.	55
"	17	17	10-hrs 3-hrs.	
"	22- 23-Sunday 25-	22- 25-	2	
"	27-	27-	2	
"	28-	28-	1	
"	30-	30-	9 Sunday	
Aug-1	1-	1-	3.	
			168-hrs	
			55	
			113	

76
92
168

June 11-

About 20-1" \times 40'-0" bars left
Camp on Calaveras Rock Trucks
observed by MR. WOOD.

1:2:4 - 6-sks. cement
1240# Sand
1350# - 1 1/2" Rock
1030# - 3/4" Rock

#1
1:2 1/2:5 - 5-sks. cement
1340# Sand
760# - 2 1/2" stone
970# - 1 1/2" stone
970# - 3/4" stone
33-gals. H₂O

1:2 1/2:5 - #2
5-sacks cement
1340# Sand
1420# - 1 1/2" Rock
1080# - 3/4" Rock

See letter of Feb. 9. from Mr. Wood
to Mr. Savage: Outlet tunnel drilled
holes for inspection

less than 8" thickness

2+77 to 2+85 - 4 1/4" - Springline

Tunnel lining thin sections

2+07 to 2+17

Letter April 7-
1933

2+98 to 3+04

Outlet tunnel
lining

3+48 to 3+51

4+60 to 4+70

4+96 to 5+04

6+30 to 7+00

11+47 to 11+57 and at such

other locations as may be

disclosed as the work progresses

steel exposed: (in Crown)

2+47 to 2+57

4+20 to 4+24

weep holes. 1 1/4" @ 8-ft. intervals

1+31 to 3+55

8+19 and exit portal

(Through concrete floor of tunnel - 1-ft

from sidewall intersection with

floor. See letter of Jan 3. 1933

relative to drilling holes in lining
inspection

Cement sacks cleaned.

Date	Cleaned	Sks. Cement
5-23-33	1000	15
5-27-33	1500	-
6-19-33	200	-
7-11-33		15
7-13-33	250	
7-15-33	800	
7-17-33	1400	13
7-17-33	400	
7-19-33	950	14
7-20-33		5
7-24-33	1000	
	650 Riv.	
7-25-	300. Galtn.	14
7-28-	750	
8-1	850	
8-3	3900	

10.
24
420
210
2520 17.3
243
90

3121^s - end of trench

3144^s W
 3180 - E
 3174^s W
 3170 - E
 3165 W
 3160 - E
 3155 W
 3150 - E
 3145 W
 3140 E
 3135 W
 3130 E
 3126 W
 3122 E

3192

3122

70

16

96

144

27) 240 12
243



4 cu yds per Batche grant.

1731 7

St 19 and

(through conc)

from sidewalk

floor

relative to drive
inspection

N 3152 - to N 3160 - 674° to 682°
 N 3144 to N 3138 - 686° to 692°
 N 3136 to N 3128 - 686° to 698°

60
5
512

121

121

242 115.5

26 182
128

170

35 175

1 1/2

47
99
1.467

5.477

.039

27) 1.000

3-batches

27) 2520 19.3
243
90

Roy - 94
4577 Acacia St.
La Mesa

15' 6"

48
17
336
45
816
120
512
1448
1358
94

99
24
1.03

16.5
24

420
210

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	3.54	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	3.23	3.75	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	4.01	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	4.14	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	5.03	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 ($=h$'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 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.

Made in Germany.