

UTAH POWER AND LIGHT COMPANY
GRACE DAM RECONSTRUCTION 1949-1950
CONSTRUCTION PHOTOGRAPHS

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



10-13-49 39035

#1

Shows nature of formation at
contact with west cliff.
White line indicates original
position of upstream face of
dam - later moved downstream
10 ft. to avoid endangering
old ice chute crib supports
during construction.



10-13-49 39036

#2

Closeup of west abutment.
White line is upstream face

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



Shows nature of formation at
contact with west cliff.
White line indicates original
position of upstream face of
dam- later moved downstream
10+ ft. to avoid endangering
old ice chute crib supports
during construction.

10-13-49 39037

#3



10-13-49 39038

#4

General view of west abutment area.
White line indicates originally intended
upstream face.
Utah Construction Co. compressor house
and tool shed in upper center.



8-11-48

5

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Note exposed reinforcing of tie-beams between bases. Base 198 south.

38789



8-11-48

6

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939.

38790



8-11-48

7

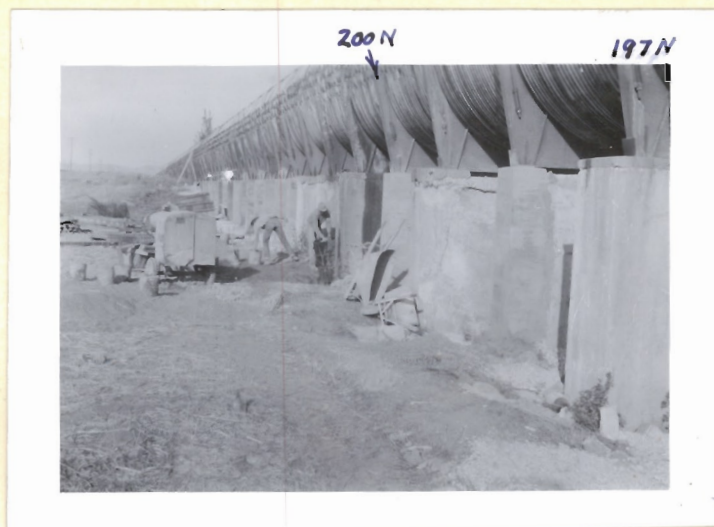
Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Bases 198 to 201 North. 38791



8-11-48

8

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Bases 774 to 783 south. 38792

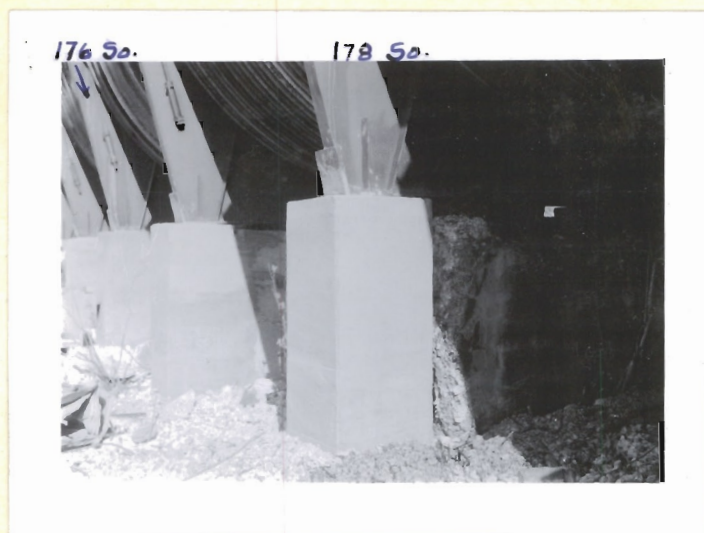


9-9-48

9

View looking Southeast- shows Bases
198-200 N restoration completed

38793



9-14-48

10

Bases 176 to 178 South rehabilitated.
View Northwest

38794



9-14-48

11

View showing bases 193 and 194 South
completed

38795



9-14-48

12

Saddle bases 196 So. repaired, 197 So.
chipped ready for forms, 198 poured.
View north.

38796

213 North



9-14-48

13

Worker chipping away soft concrete preparatory to forming and re-casting base, #213 N. View southerly.

38797

207 N

203 N

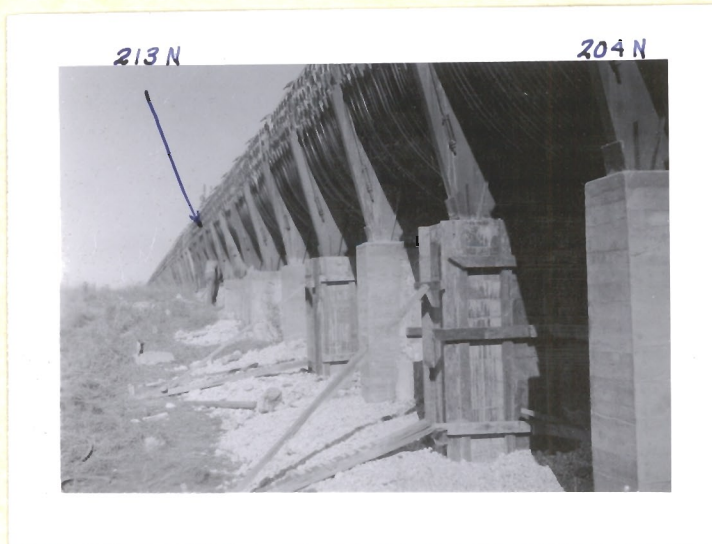


9-15-48

14

Concrete cured by hanging wet burlap around bases as shown on Base 203 N. Bases 204, 206 restored. Bases 205, 207 formed and poured. View S.E.

38798

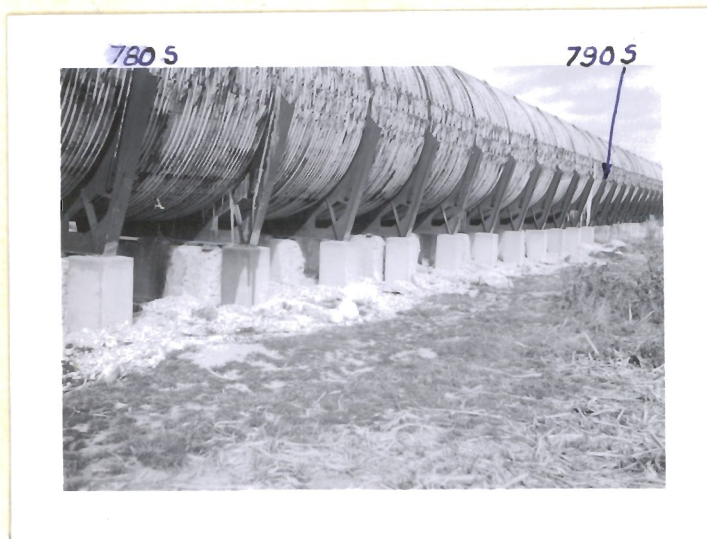


9-15-48

15

North side bases 204, 206, 208 restored
Bases 205, 207 formed and poured.
Worker chipping base 213 preparatory
to rehabilitation.

38785

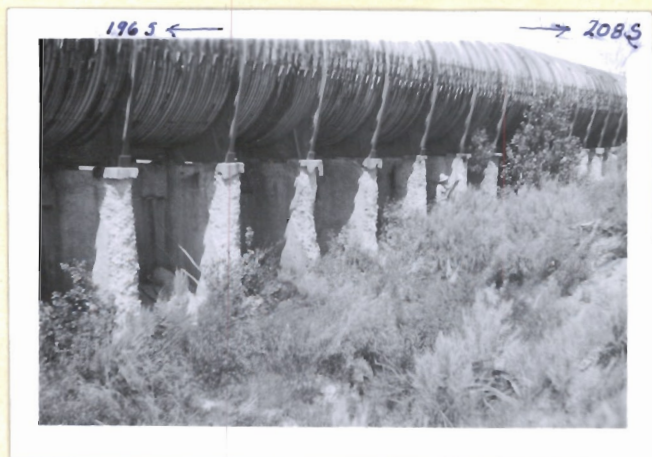


9-24-48

16

Bases 780 to 790 south completely
rehabilitated. View N.E.

38799



8-11-48

1

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Bases 196 south to 208 south.

38784



8-11-48

2

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Note exposed reinforcing in tie-beams. Concrete completely gone from tie-beam in extreme left section. Bases 197 south to 200 south.

38786



8-11-48

3

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Bases 200 and 201 south. 38787



8-11-48

4

Condition of old saddle bases in sections rebuilt with steel saddles in 1937 and 1939. Bases 208 to 213 south

38788

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



10-21-49 First unwatering pump set in place at
lower right. Dragline excavating
loose material and placing in lower
doffer dam. 39039
View west.

#5



10-25-49 39040
Shows 12" pump installed at lower right.
Crane setting 10" - 2 stage pump under
old dam to pump water over dam into fore-
bay.

#6

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



10-31-49 Shows progress to date. 6" and 10" #11
high head pumps are on crib below old dam apron
and discharge over dam into reservoir.

Two unwatering pumps in lower right. Man
in white shirt on coffer dam is by discharge pipe
of 14" pump. Note small discharge. On following
date 11-1-49 one man was kept busy pouring oil into
hot bearing and water over hot bearing housing on
this pump and one other was busy applying belt dress-
ing to belt. Bottom of sump for these two pumps too
high to permit unwatering of construction area.

39041



11-4-49 39042

12
Excavating sump to depth to permit unwater-
ing of construction area. Sump where
pumps now located too high.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



11-4-49

#13

Shows excavation at base of west cliff
after cliff blasted off.

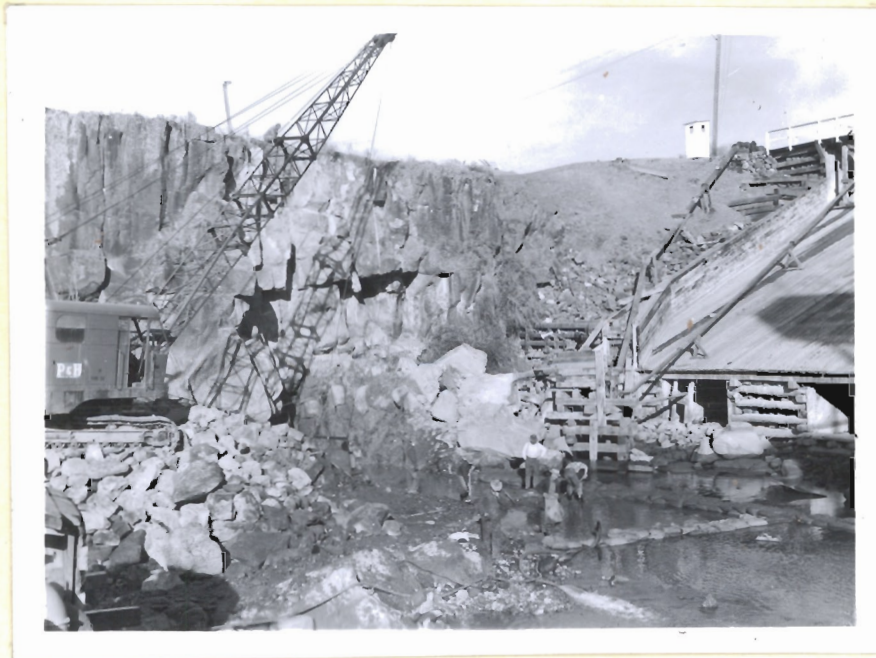


11-4-49

#14

Shows temporary installation of unwater-
ing pumps. Excavating for permanent sump
in right foreground, view of which is

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1950 ROCK FILLED CRIB DAM



11-7-49 39045

#15

Shows upstream coffer dam construction
for unwatering west end for cutoff trench
excavation.



11-7-49 39046

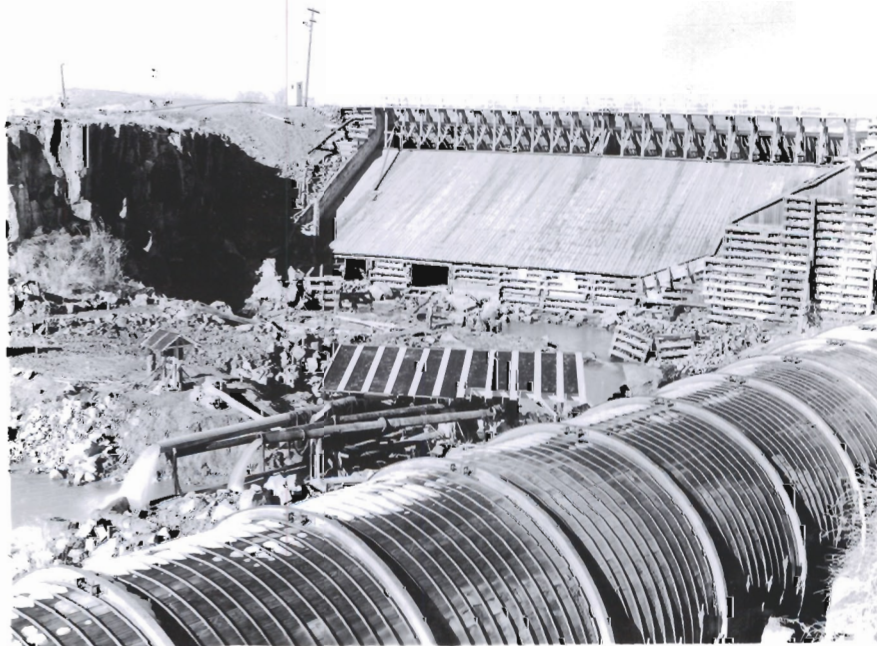
#16

Shows upstream coffer dam and ledge rock
exposed in cutoff wall excavation.

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1950 ROCK FILLED CRIB DAM

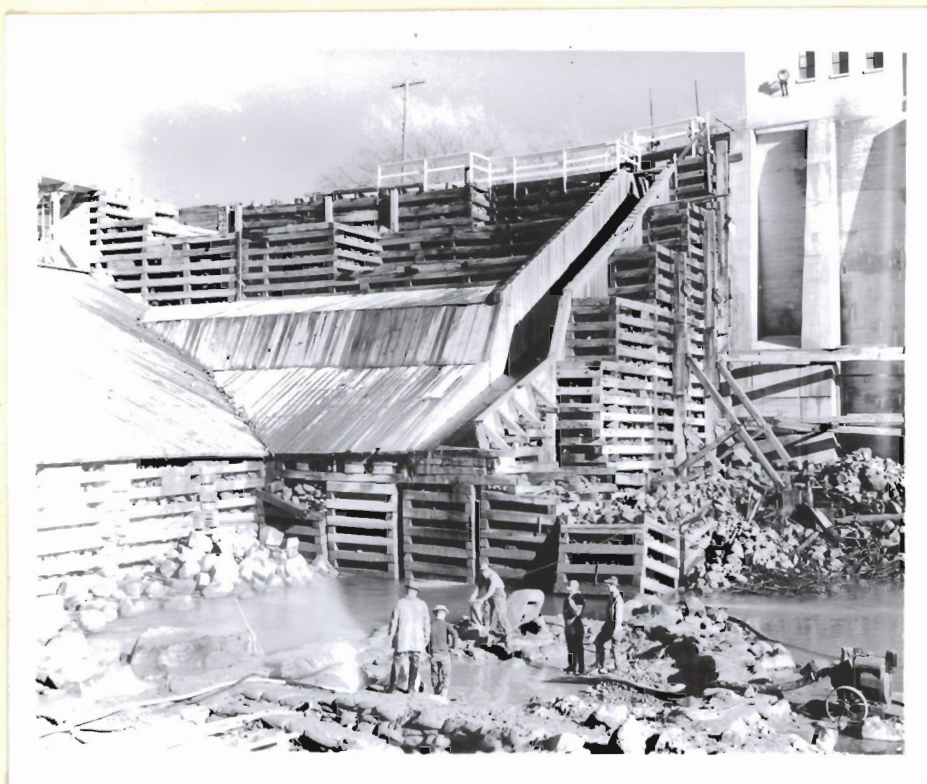


11-11-49 39047 #17
Cutoff wall excavation and
channeling in west cliff.



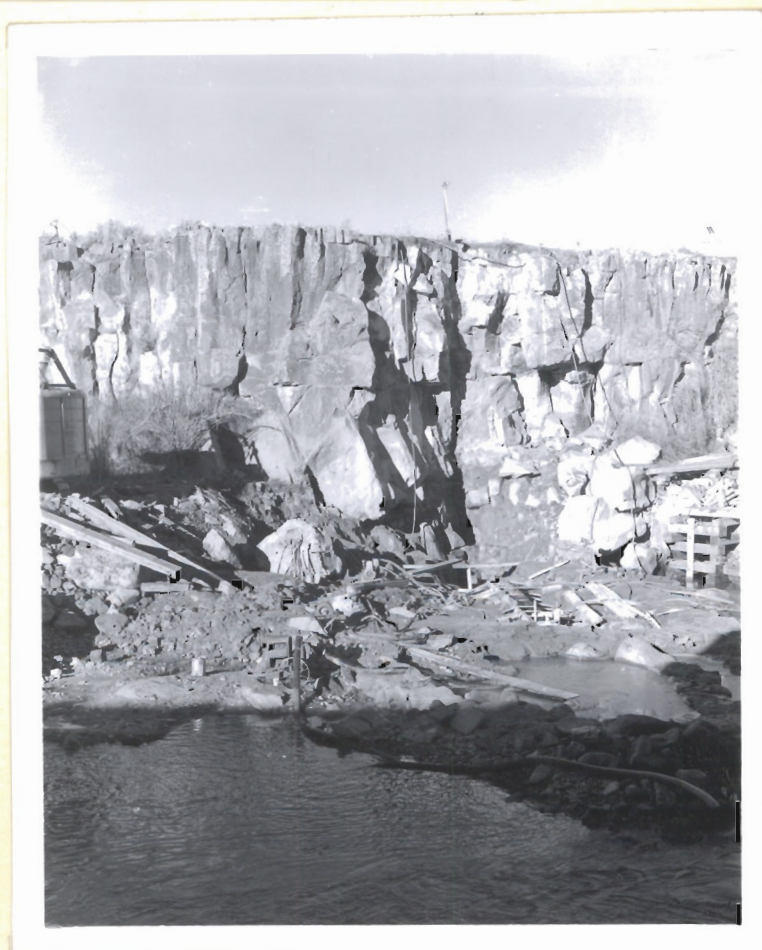
11-12-49 39048 #18
Unwatering pumps in foreground just beyond
13' 6" wood stave pipe. Old dam in back-
ground.
View northwesterly.

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 1950 ROCK FILLED CRIB DAM



Constructing
 sand bag dam for
 diverting water
 from west side of
 new construction.
 No.3 intake house
 and old ice chute
 in background.

11-12-49 39049



11-12-49 39050

Shows solid rock excavation
 on west cliff abutment immediately

#20

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GRACE HYDRO-ELECTRIC STATION

CROSSOVER CONNECTION

FLOWLINES THREE TO ONE.

GRACE PLANT - AUTO TRANSFORMER

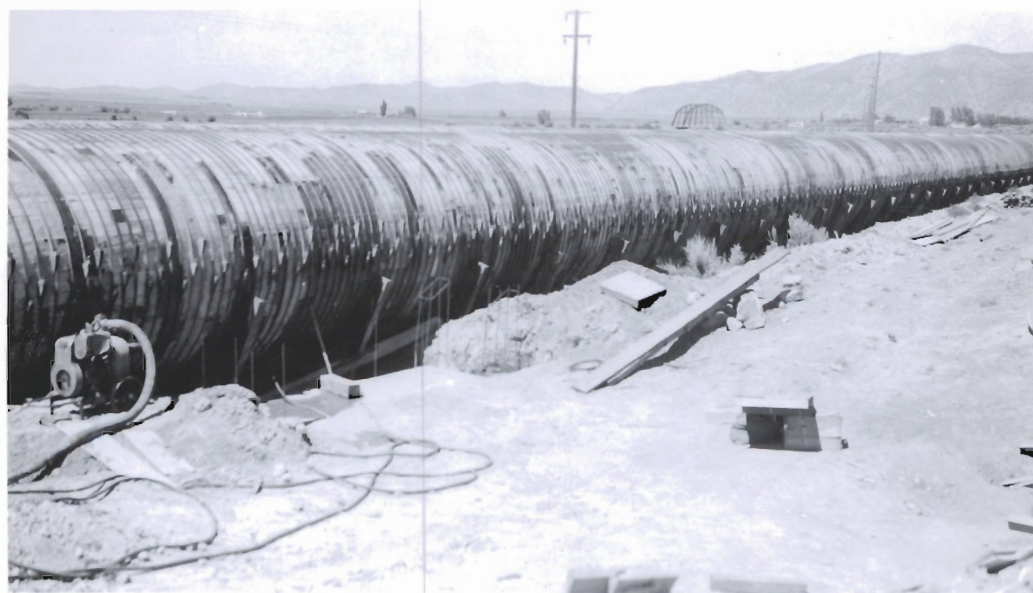
GRACE H. E. STATION
CROSSOVER CONNECTION FLOWLINES THREE TO ONE



7-10-48

1

General view of construction area. New 8'6" wood stave pipe in center from left to right, steel bend sections at right, town of Grace in background.



7-10-48

2

Flowline 3 with foundation for valve pedestals in left center.

GRACE H. E. STATION
CROSSOVER CONNECTION FLOWLINES THREE TO ONE



7-10-48

Flowline 3 with foundation for valve pedestals in center.

3



7-10-48

Butterfly valve, relief valves and manhole at upper end
Flowline 1 as seen from southwest.

4

2

GRACE H. E. STATION
CROSSOVER CONNECTION FLOWLINES THREE TO ONE



7-10-48

5

Butterfly valve, relief valves and manhole at upper end
Flowline 1, as seen from Flowline 3, at left.



7-10-48

6

Steel tee in position where branch was fitted and welded
on. Transition section at left.

GRACE H. E. STATION
CROSSOVER CONNECTION FLOWLINES THREE TO ONE



7-10-48

Steel tee and transition section Flowline 3 in foreground.

7



7-10-48

Steel tee and transition section.

8

3

GRACE H. E. STATION
CROSSOVER CONNECTION FLOWLINES THREE TO ONE



7-11-48

9

Collapsed old wood stave section of flowline 1 a short distance downstream from original valve position. Collapsed condition observed at 9:00 A.M.



7-11-48

10

Looking southerly along new 8'6" wood stave pipe. Irrigation flume crossing in center.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

11

Placing 1st section of steel bend in south end of 8'6" wood stave connection.



7-11-48

12

Upper end old flowline 1. Removing staves, bands, etc. from in front of Butterfly valve preparatory to removing valve to new location.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

13

Lifting butterfly valve from old location.

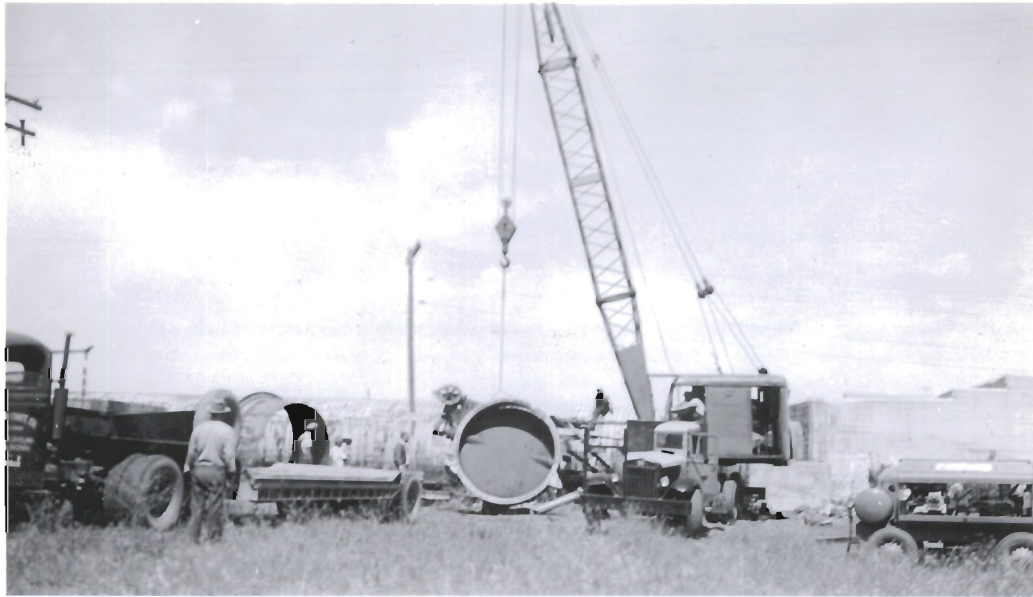


7-11-48

14

First hitch on valve to remove same to new location.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

15

Setting butterfly valve on ground in order to re-hitch to place on low-boy in flat position. Nipple removed from valve is behind low-boy.



7-11-48

16

Placing butterfly valve in flat position on low-boy for transfer to new location.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

17

Looking from Flowline 2 through cut in Flowline 3 at footing for butterfly pedestals. North end of wood stave construction in right background.

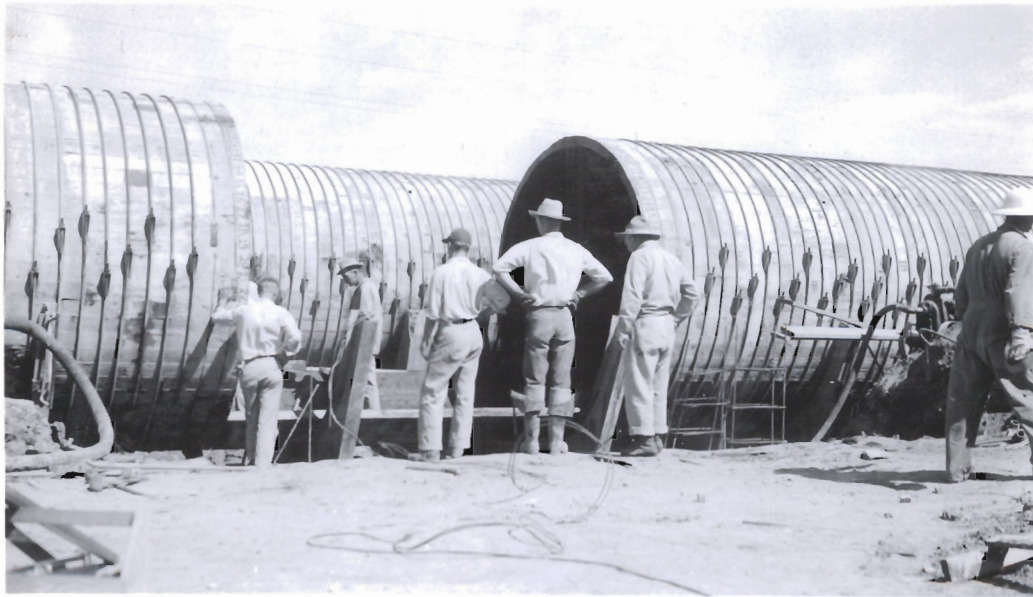


7-11-48

18

Starting cut in Flowline 3 for insertion of steel tee.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

19

Cut in Flowline 3, for insertion of steel tee almost complete. A few uncut staves are still in bottom of pipe.



7-11-48

20

Moving steel tee down grade to be in position for installation. Transition section behind tee on gravel pile.

6

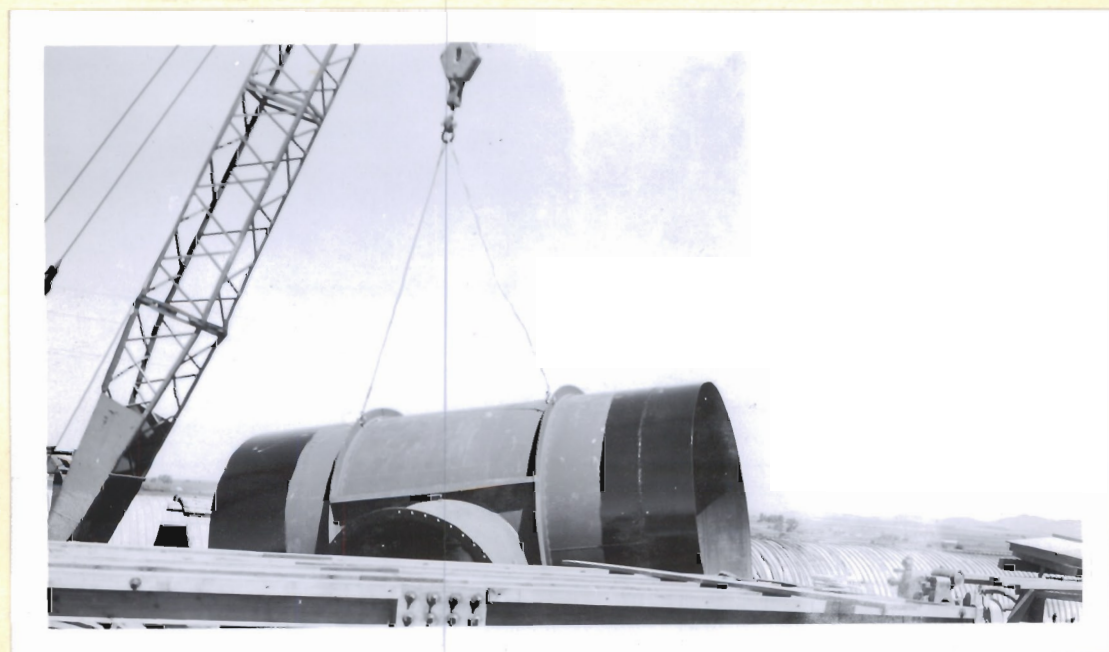
GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

21

Moving steel tee toward final position in Flowline 3.
Transition section behind tee.



7-11-48

22

Placing steel tee near final position preparatory to
inserting in Flowline 3.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-11-48

23

Looking southerly from Flowline 2 toward unfinished end of new 8' 6" wood stave pipe, wagon bridge and irrigation flume crossing. One side of form for tee anchor block in center foreground.

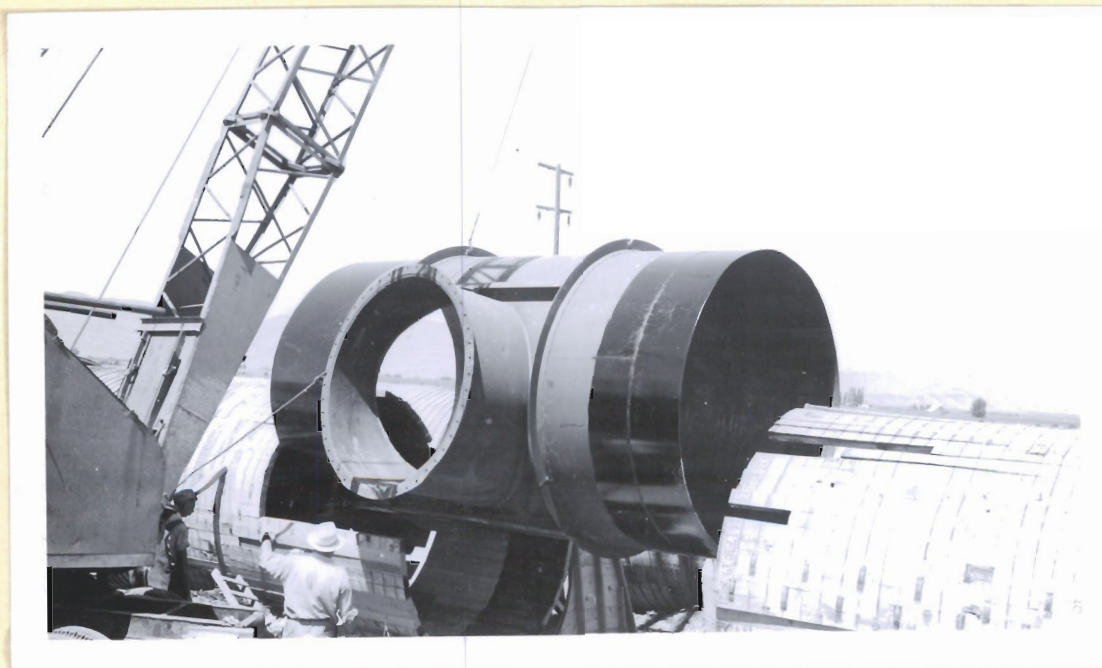


7-12-48

24

Placing tee in flowline 3.

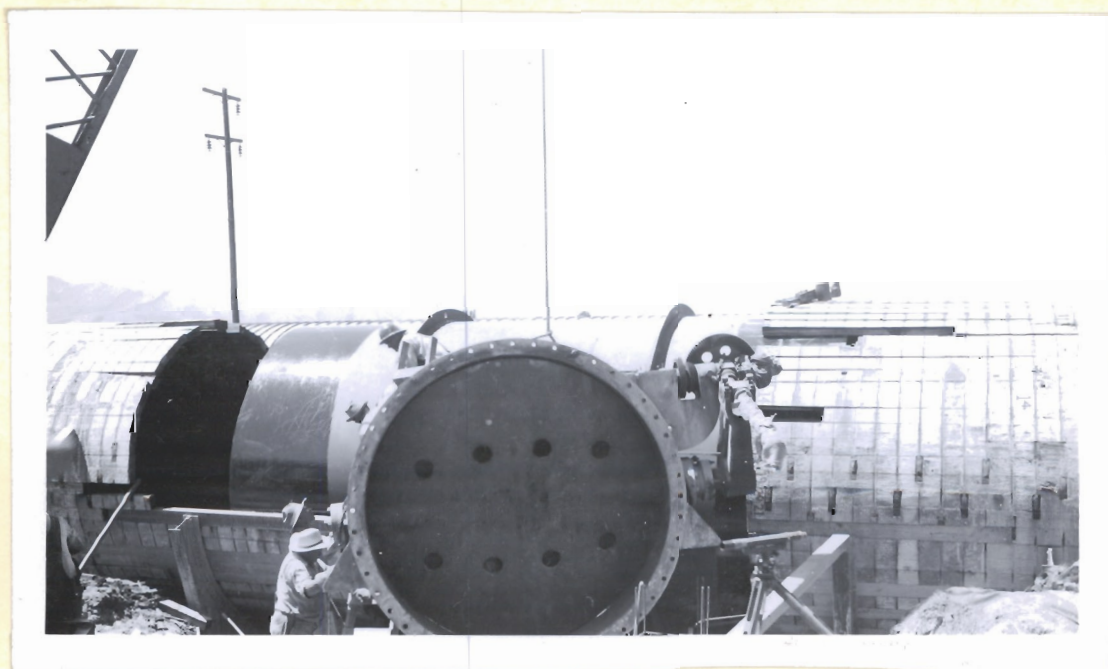
GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-12-48

Placing tee in Flowline 3.

25

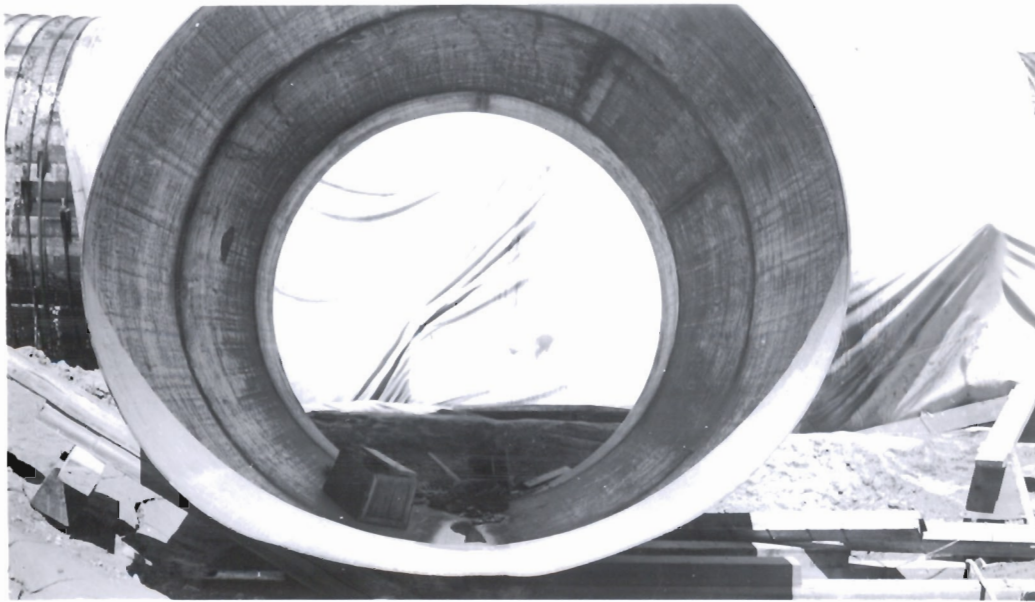


7-12-48

Steel tee in place in Flowline 3. Butterfly valve, removed from old position in Flowline 1, being attached to tee.

26

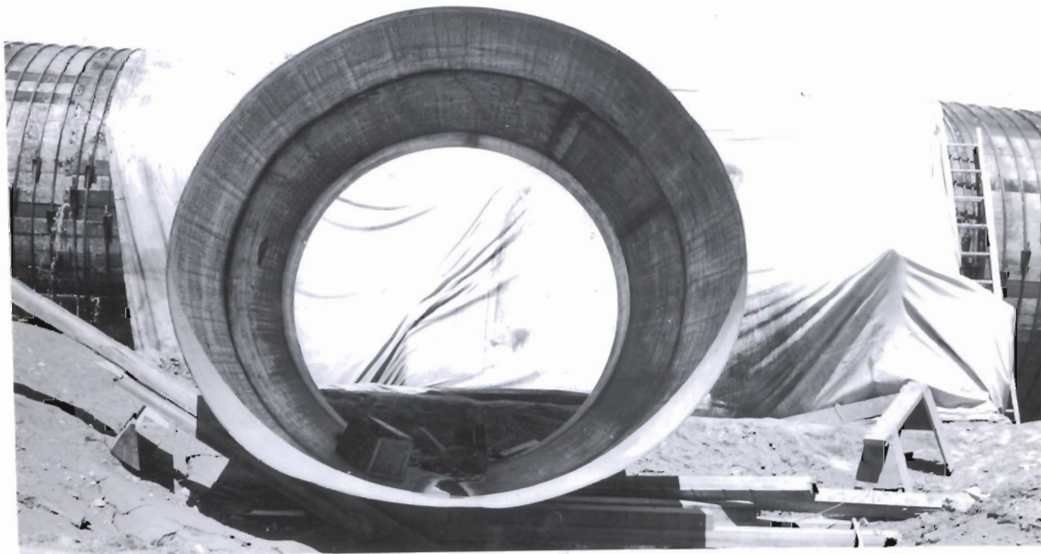
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CROSS CONNECTION FLOWLINES THREE TO ONE



7-16-48

27

Transition section - showing flat side as received from Olson Manufacturing Company. Later rounded out.



7-16-48

28

Transition section- showing flat side as received from Olson Manufacturing Company - later rounded out.

8

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE



7-27-48

29

View from railroad track east of crossover. Irrigation flume on left. Flowline #3 on right. Bands of collapsed wood section of Flowline 1 in right foreground. Crossover takeout from Flowline #3 in left background.



7-27-48

30

View from railroad track east of crossover. Steel bend connection to old steel section of Flowline 1 at left. Collapsed wood section of Flowline 1, replaced by crossover, in foreground.

GRACE H. E. STATION
CROSS CONNECTION FLOWLINES THREE TO ONE

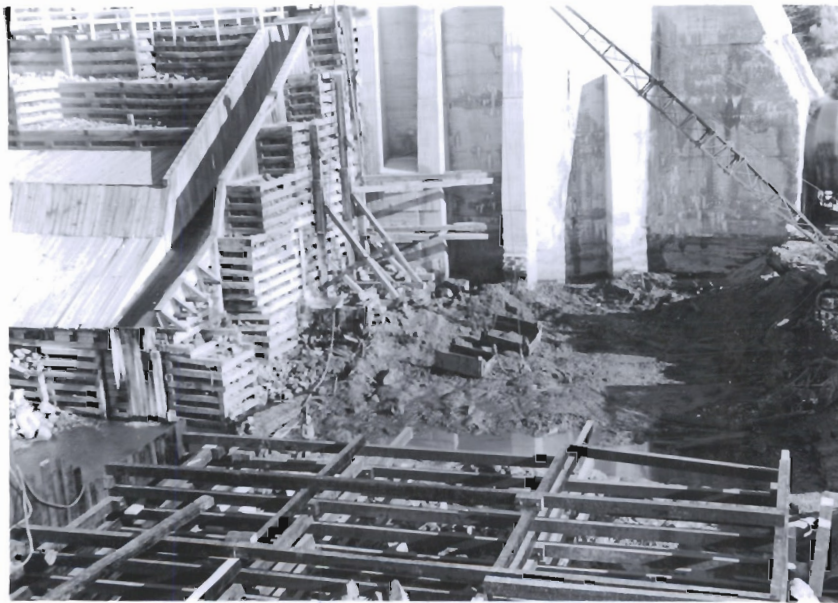


7-27-48

31

Tee, valve and transition section at takeoff from
Flowline #3.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-8-49 39071

#38

Excavation in progress at approach to old
ice chute crib bracing.



12-10-49 39072

#39

Upstream double sheathing facing
at west abutment.

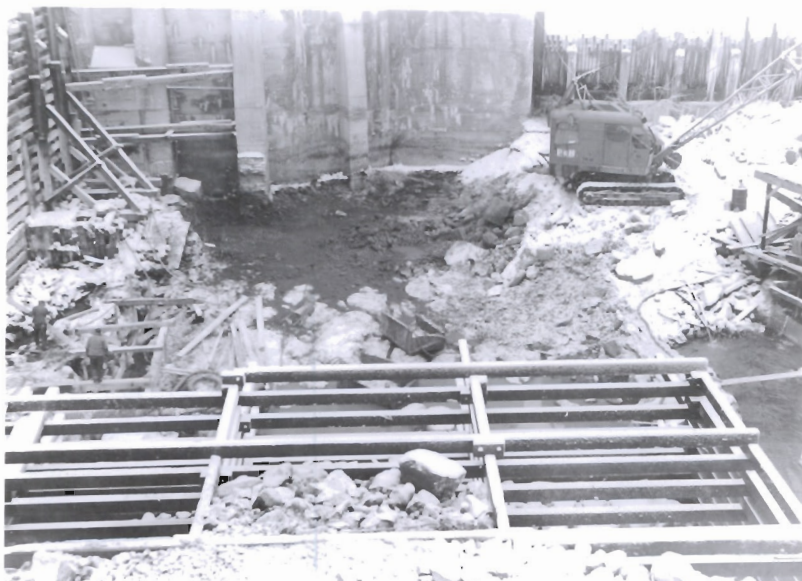
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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-10-49 39073

#40

Excavation at east side under old ice chute crib bracing. Note stulls from crib to buttress No. 3 intake structure replacing diagonal bracing removed.

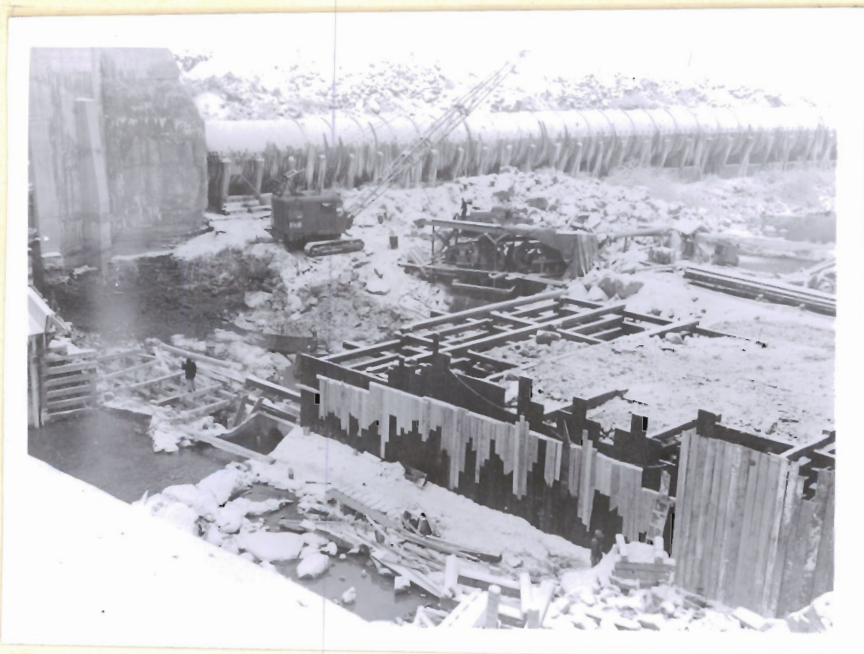


12-10-49 39074

#41

Looking easterly along dam construction area toward excavation at east end.
Note forming for cutoff wall in trench at left center.

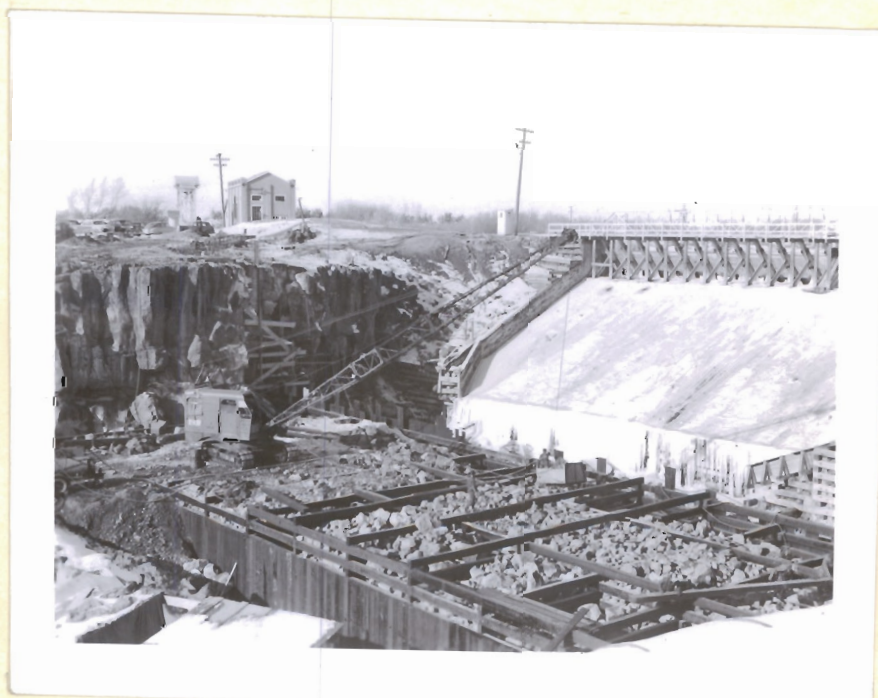
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GRACE HYDRO- ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-10-49 39075

#42

General view southeast shows progress to date.
Man in left center is standing on cutoff wall
form support spanning cutoff trench.



12-31-49 39076

#43

General view shows progress to date.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-31-49 39077

#44

Shows method of handling rock for fill. Dumped from trucks over cliff to storage pile, hand loaded into skips and placed in cribs by crane.

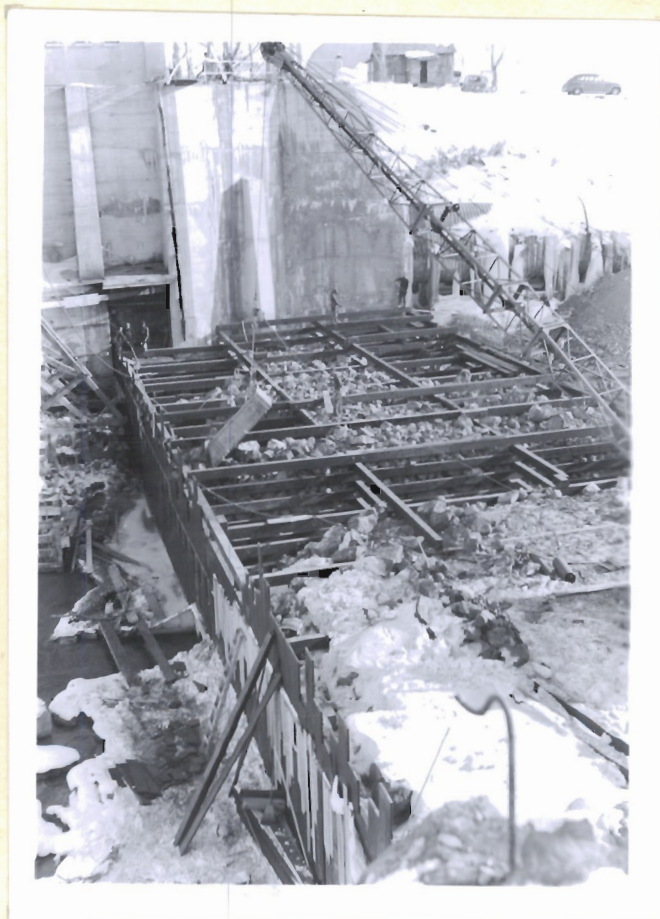


12-31-49 39078

#45

Shows wagon drill in use drilling grout holes on west dike line.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-31-49 39079

#46

General view easterly shows
progress to date.



12-31-49 39080

#47

Shows downstream facing.
View easterly.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-31-49 39081

#48

Shows bracing of old cribwork to
new dam face.

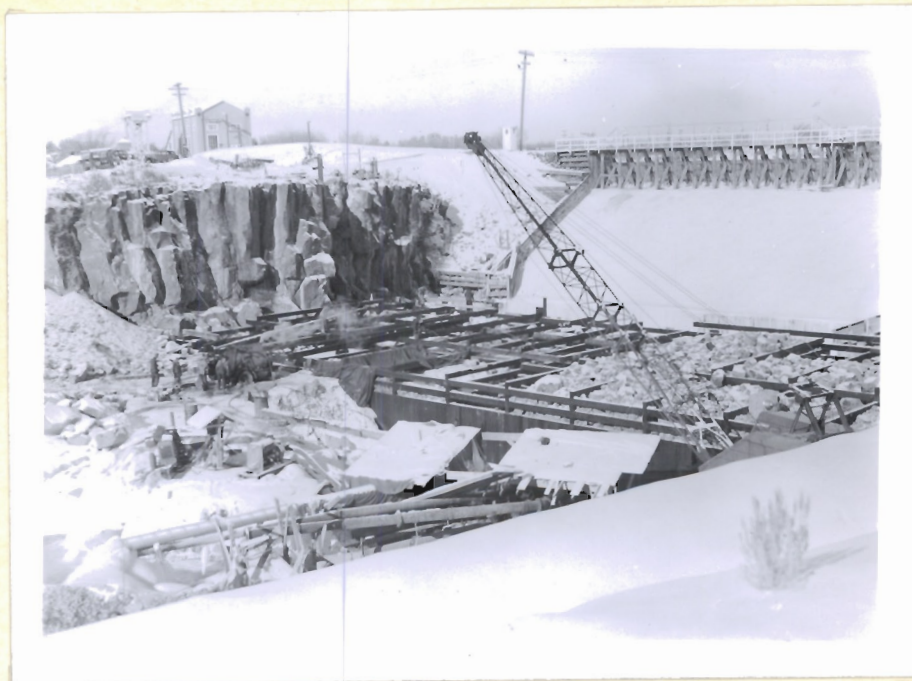


12-31-49 39082

#49

Shows nature of formation uncovered
upstream at base of west cliff.

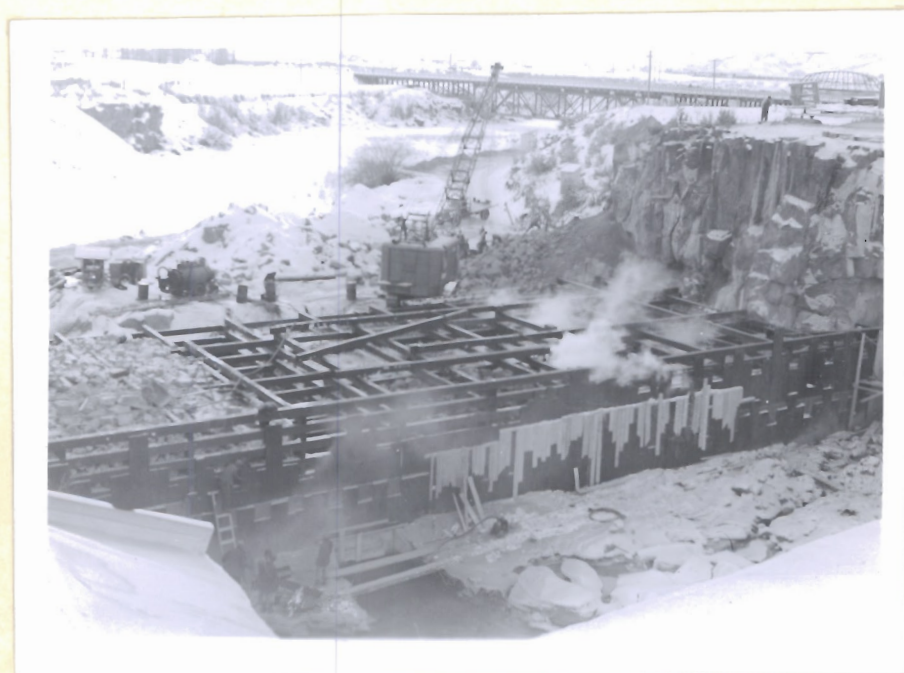
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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



1-5-50 39083

#50

General view shows progress to date.



1-6-50 39084

#51

View downstream shows progress to date.

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 GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



1-6-50 39085

#52

View downstream shows rock filling in progress.



4-13-50 39086

#53

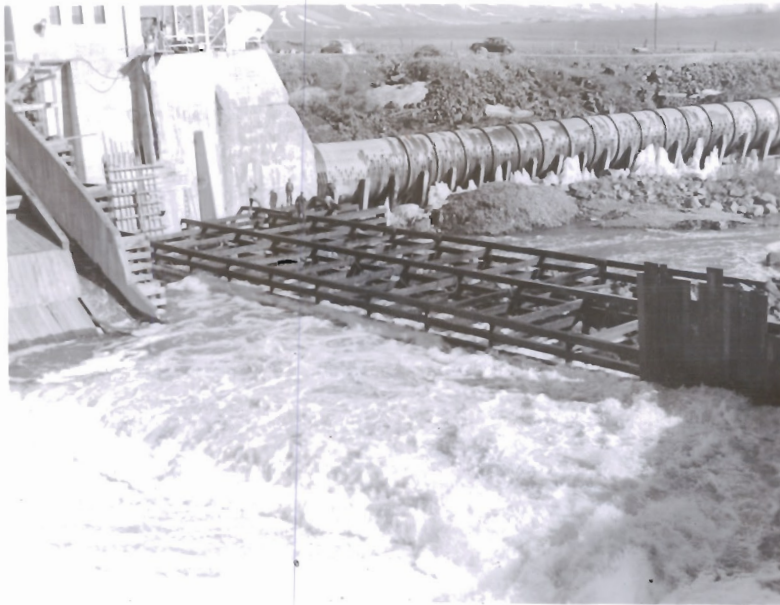
630 cfs spill water passing through new construction. Spring runoff handled through new dam without interrupting crib erection or filling.

Top upstream timber at approx. elev. 1019; water elev. at face of new structure approx. 1016. Water spilling at lower face at approx. elev. 1010.

Grizzly for cleaning rock being installed on top of cliff at extreme upper left.

View northwesterly.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



4-15-50 39087

#54

Passing approximately 900 cfs through new construction. 22nd tier of crib timbers in place at approx. elev. 1021. Water entering upstream cribs at approx. elev. 1016.

View southeasterly.



4-15-50 39088

#55

Looking easterly along dam construction now at approx. elev. 1021. Water on upstream side at approx. elev. 1016. Approximately 900 cfs passing through cribs

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



4-19-50 39089

#56

Shows rock handling facilities with vibrating grizzly set up on west cliff. Small northwest shovel filling skips which in turn were picked up and dumped into cribs with the larger P&H Crane.



4-19-50 39091

56-A

Top timbers in cribbing are at elev. 1025.78-
top of second lift.
Passing approximately 900 cfs through new structure.
View northwesterly.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



4-19-50 39090

#56-B

Dumping rock, hauled from spoil banks
along flowline, over cliff where it can be
used for filling cribs.



5-5-50 39092

#57

Removing old dam structure cribs west of
Intake No. 3 Flume down to Elev. 1038.
View easterly.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



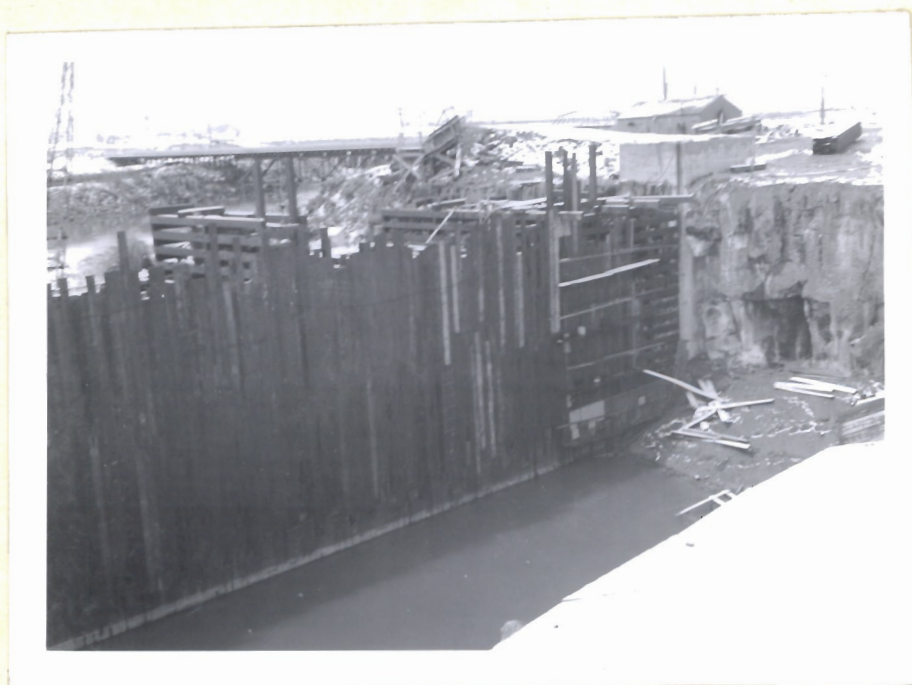
5-8-50 39093

#57-A

Marion shovel loading skips and P&H sitting on top of lower step, approx. elev. 1014, lifting and dumping skips into higher cribs.

Light snow covering, about 3" on level.

View northwesterly.



5-8-50 39094

#58

Looking southwesterly toward west abutment and showing status of sheathing on upstream face of dam.

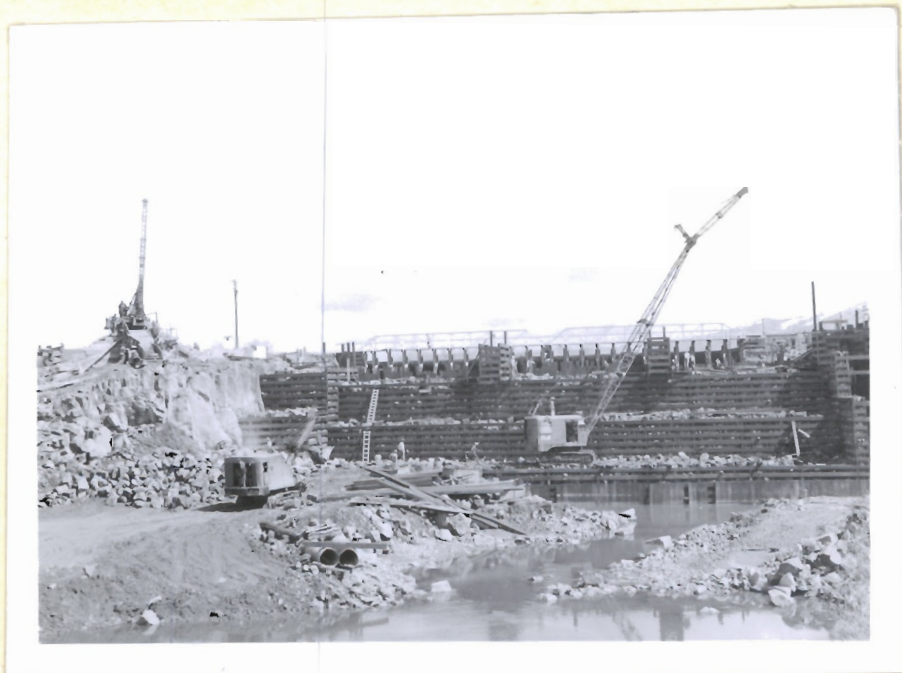
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1950 ROCK FILLED CRIB DAM



Looking northerly along
east side of Intake No. 3
Flume.
Rock rip-rap place east
of flume.

5-8-50 39095

#59



5-10-50 39096

#60

General view shows equipment engaged in rock
filling. Crane on cliff at left dismantling grizzly
equipment.

View northerly.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-10-50 39097

#61

General view showing equipment engaged in filling cribs with rock. Crane on cliff in background dismantling grizzly. View northwesterly.



5-11-50 39098

#62

Shows dozer with beam removing section of structural steel foot bridge from old dam.

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1950 ROCK FILLED CRIB DAM

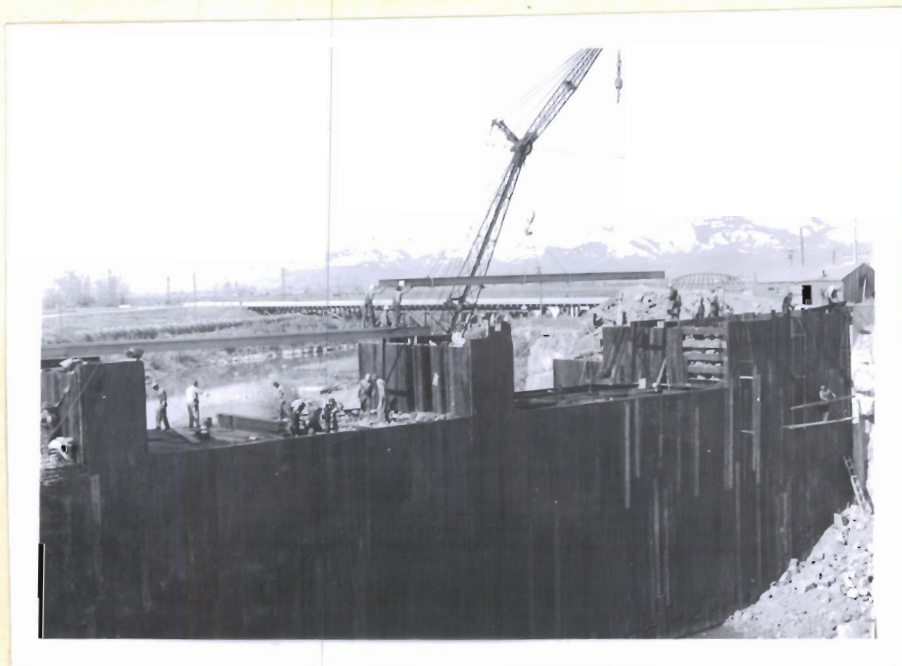


5-13-50

#63

P&H crane erecting structural steel foot
bridge on new dam. Eastern span beams in
place.

View northwesterly.



5-13-50 39/00

#64

Upstream sheathing on face of dam. Crane
on downstream side of dam swinging footbridge
center span beam into place.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-14-50 39/02

#65

Placing downstream sheathing and decking.
View northeasterly.

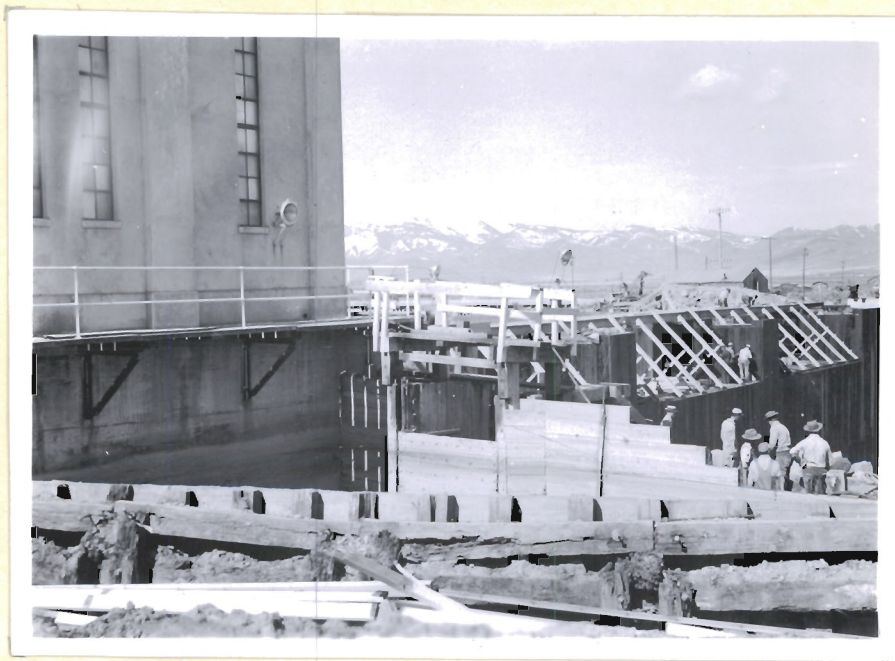


5-14-50 39/02

#66

Flashboard steel supports can be seen in
nearest spill section,- right foreground.
View northwesterly.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-15-50 39103

#67

Looking southwesterly from point north of No. 3 Intake and east of old flume. Note condition of crib timbers along east side of flume in foreground, also old ice gate structure in center prior to dismantling. Steel flashboard supports are seen on spilldeck of new dam. Men in right just beyond flume are dismantling old flume supporting cribs.

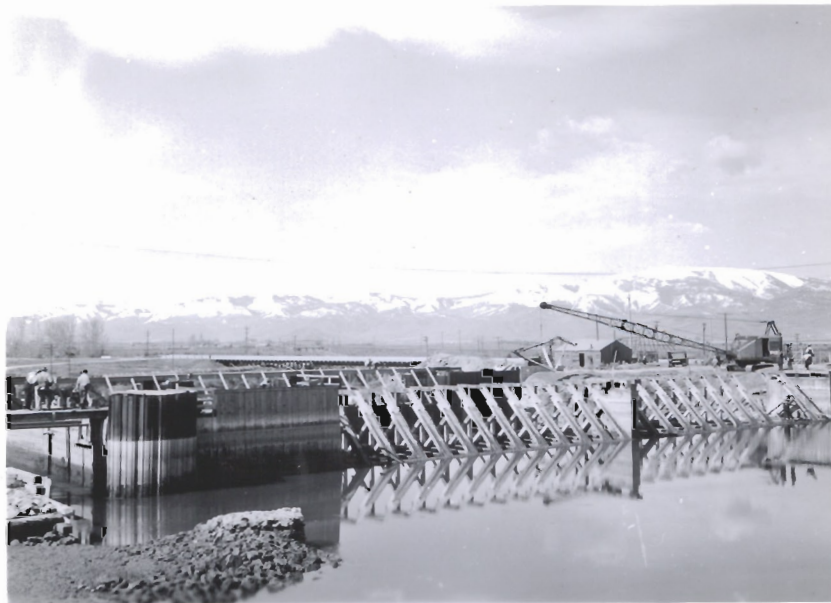


5-15-50 39104

#68

Shows demolition of old flashboard structure in progress.

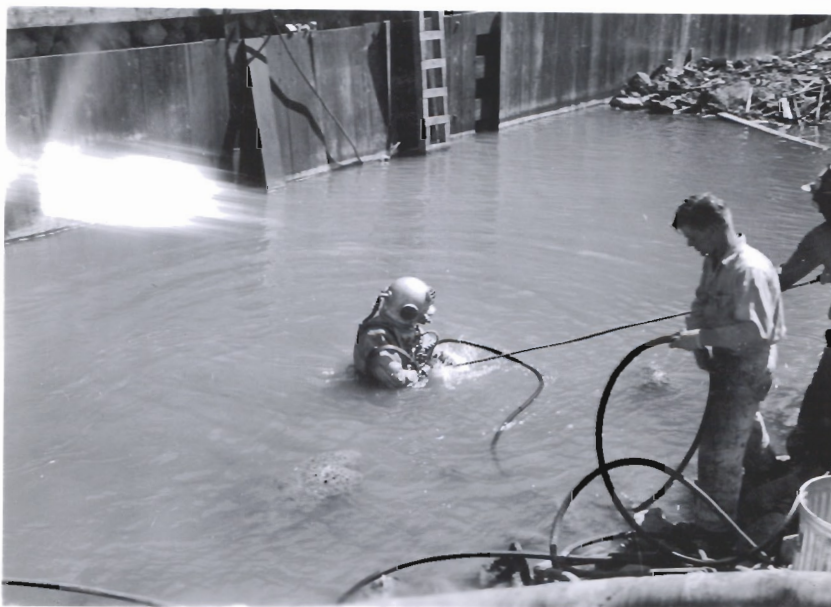
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1950 ROCK FILLED CRIB DAM



5-15-50 39105

#69

Shows old dam with water drawn down to
elevation 1036.6. Demolition in progress.
View southwesterly.



5-16-50 39106

#70

Diver making attempt at cleaning sluice gate
without unwatering. This was not successful due
to deposit of rock and gravel around gate.
View northeasterly at downstream face.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-17-50 39/07 #71
Demolition of old dam down to elev. 1038
in progress.
View easterly.



5-17-50 39/08 #72
Closing sluice gate on downstream face
of dam.
View northwesterly.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-17-50 39109 #73
Closing sluice gate on downstream face of dam.
View northwesterly.



5-17-50 39110 #74
General view shows dam nearing completion.
Sluice gate being bolted in place- lower right.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-20-50 39111

#75

Looking westerly from point north of and east of Intake No. 3.

Shows demolition complete in old ice gate area and water equalized between the two dams at elev. 1036.- 1037.



5-20-50 39112

#76

Demolition of old dam complete to elevation 1038 - water at 1036 - 1037.

View northwesterly.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-22-50 39113

#77

Shows completed work east side of flume.

Top of east wall of flume approx. elevation
1041. Water elevation 1038+.



5-22-50 39114

#78

Shows completed work east side of flume.

Top of east wall of flume approximate elevation
1041. Water elevation 1038+.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-27-50 39115

#79

Shows temporary raising of old dam in order
to supply water to irrigators from old forebay.

View southwesterly.



5-27-50 39116

#80

Lowering 2 eastern spillway decks approximately
2 ft. Lowering undertaken to reduce head against
new dam in case it becomes necessary to spill water
over it. Note 12" syphon discharging water in back-
ground.

UTAH POWER & LIGHT COMPANY
 GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-27-50 39117

#81

Lowering 2 eastern spillway decks approximately 2 ft. Lowering undertaken to reduce head against new dam in case it becomes necessary to spill water over it. Note 12" syphon in foreground. View easterly.

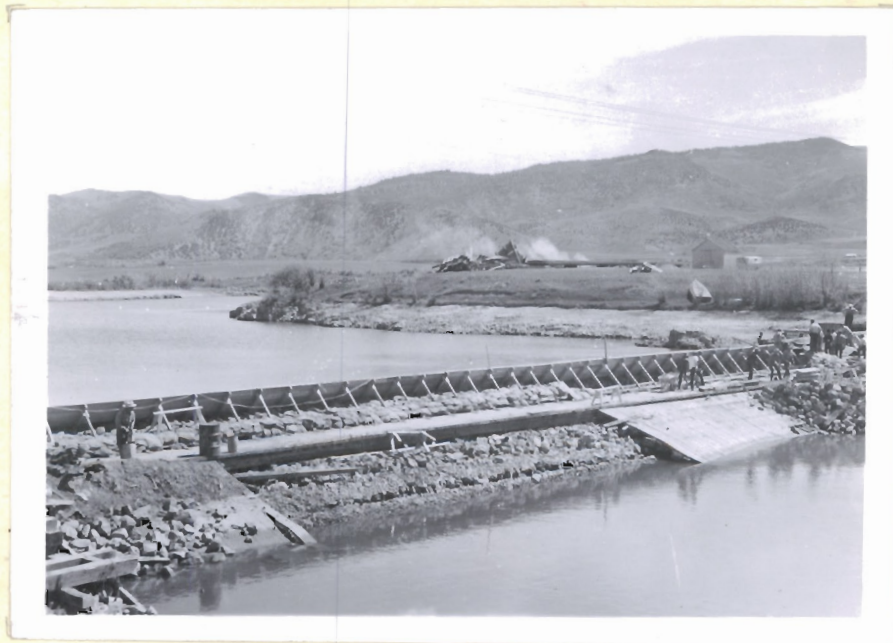


5-27-50 39118

#82

Lowering 2 eastern spillway decks approximately 2 ft. Lowering undertaken to reduce head against new dam in case it becomes necessary to spill water over it. Note 12" syphon in left spillway section of dam. View northeasterly.

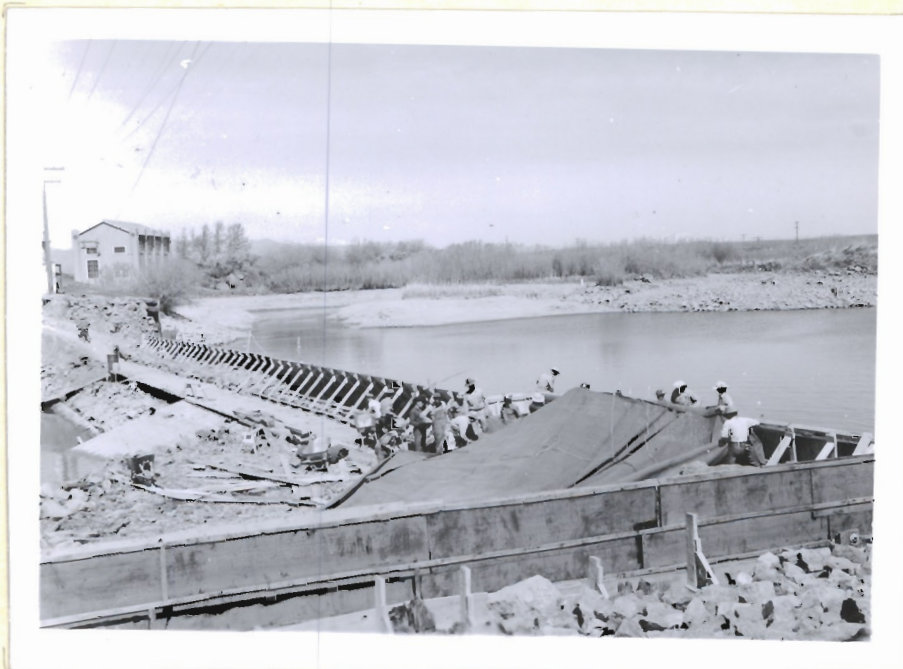
UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



5-27-50 39119

#83

Temporary structure on top of old dam to
raise water in old forebay for irrigation.
Looking northeasterly.



5-27-50 39120

#84

Temporary structure on top of old dam to raise water
in old forebay for irrigation pending changes in new dam.
Preparing to put heavy duck covering over sheathing between
old spillway and #3 Intake flume to reduce leakage between
elev. 1030 and 1037.

Looking northwesterly.

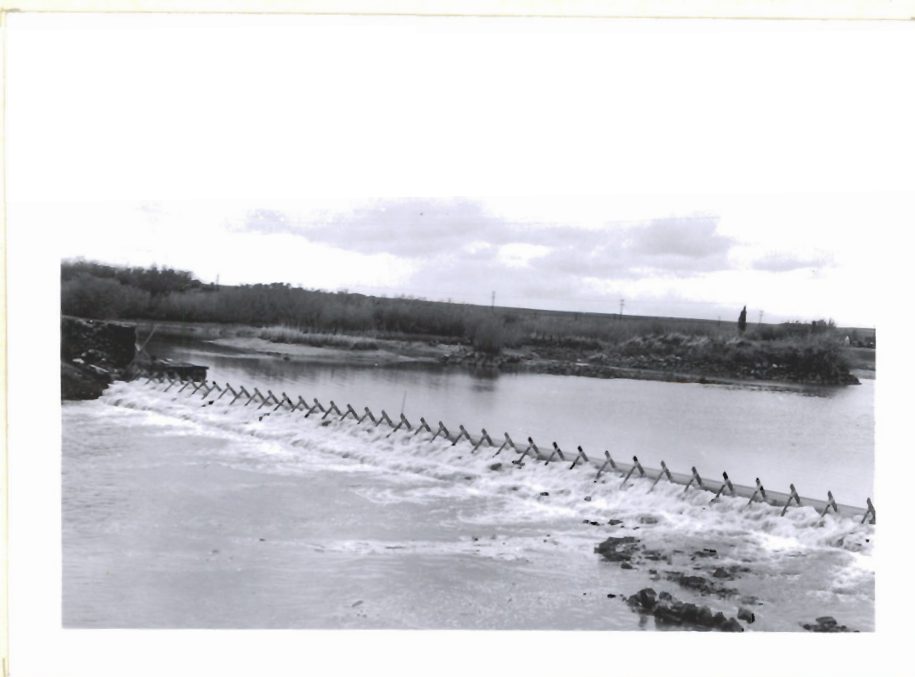
UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-8-50 39121

#85

Temporary flashboard structure across old dam.
Water down to facilitate removal of flashboard pre-
paratory to spilling 1000 cfs. Approximate eleva-
tion upper forebay 1040.25.
View northwest.

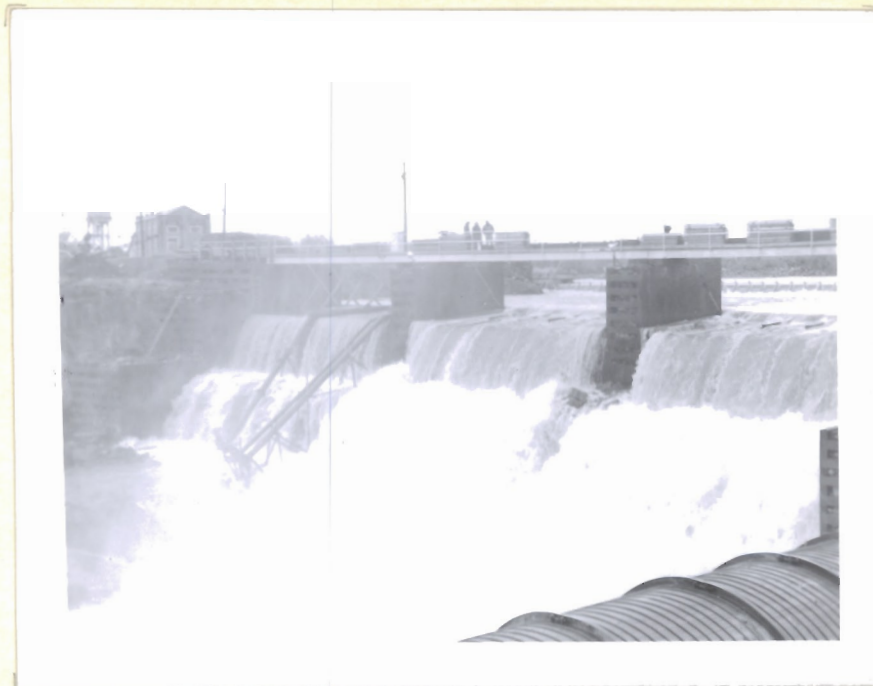


6-8-50 39122

#86

200 cfs spilling over temporary flashboard structure
across old dam.
View northwest.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM

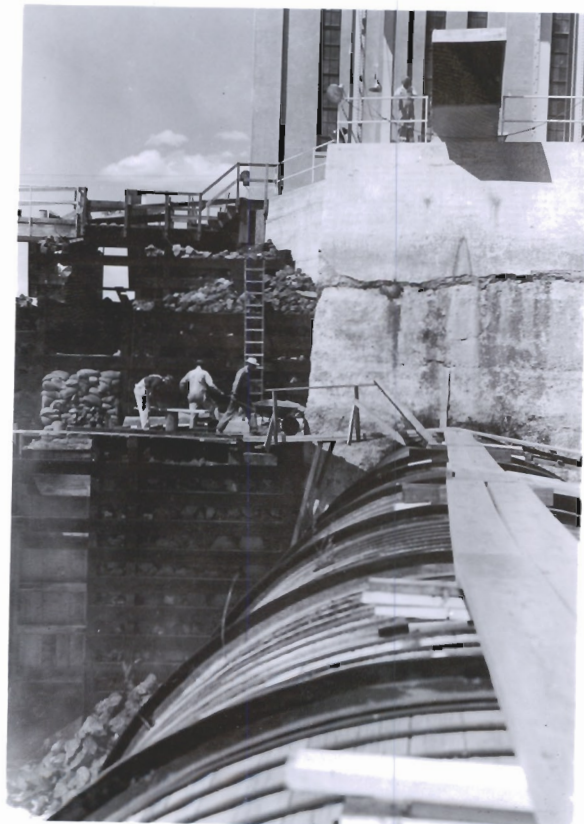


6-8-50

#87

950 cfs spilling over new dam.

View northwest.



Ice chute loaded with sand
bags for additional weight.
Workmen are dumping rock in
downstream toe of dam on the
east side.
View north.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-11-50

#89

Dam spilling 750 cfs center and east bays lowered
to approximate elevation 1036.
View north.



6-11-50 3 9/24

#90

Truck unloading rock over east bank south of
No. 3 Intake structure for backfill at downstream
toe of dam on east end.
View northeast.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-19-50 39/25

#91

Shows excavation for concrete block in progress.
Northwest $1\frac{1}{2}$ yd. shovel has been withdrawn to
permit final hand mucking.
Looking westerly.



6-19-50 39/26

#92

General view of excavation activity. Shows equip-
ment used. Hand mucking in progress. Elevation at
this point is approximately at 1000.0.
Looking westerly along downstream toe of dam.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-20-50 39/27

#93

Shows hand excavation for concrete thrust block in progress. It was later found that the formation at this elevation (1000.0) was not satisfactory for developing a key in solid rock for the block.

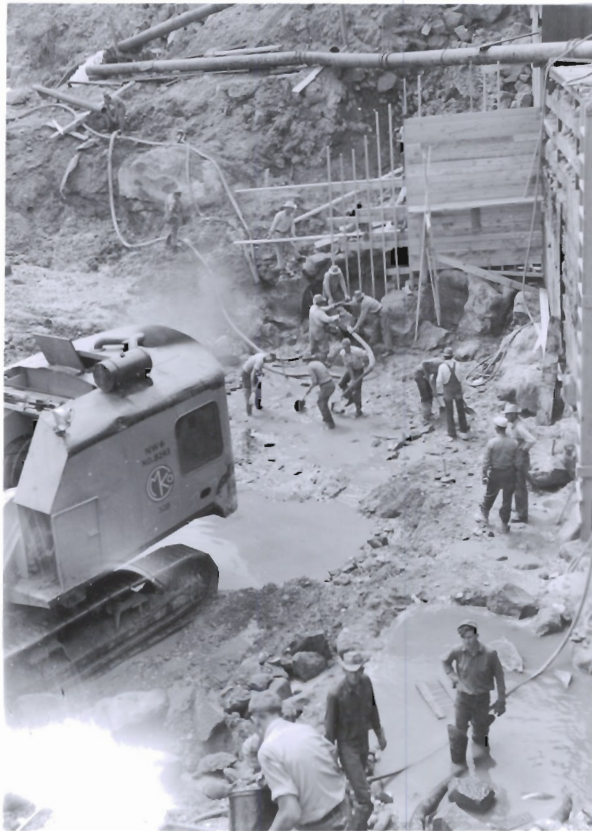


6-22-50 39/28

#94

Power shovel again cleaning out excavation after it was found that formation could not be developed into a solid rock key for the concrete thrust block.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-22-50 39/29 #95

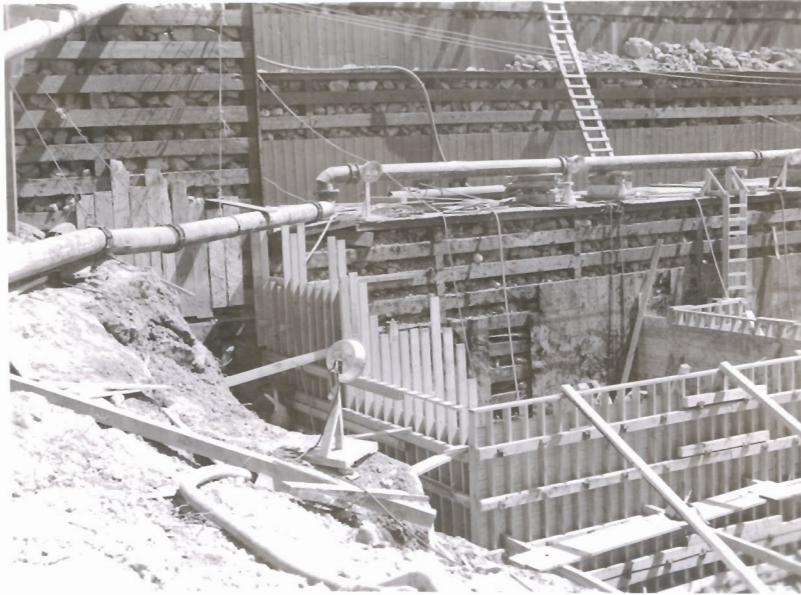
Shows final excavation for
first 30 ft. section of concrete
block - average elevation 995,

6-22-50 39/30 #96

Tie rods and bracing being installed on forming for first 30 ft. section of concrete thrust block. Tie rods were welded to 1 1/4" sq. reinforcing drilled into rocks. East wall of form at top is at sta. 1+21.6.



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 GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-23-50 39131

#97

General view of forming for first 30 ft. section of concrete thrust block. At left is extreme west end sta. 151.6.



Shows nature of formation at final excavation for first section of thrust block.

View westerly - forms are the west end panel - sta. 151.6.

6-23-50 39132

#98

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-24-50 39/33

#99

General view looking westerly. Area downstream from dam. Shows progress to date.



6-24-50 39/34

#100

General view shows concrete mixing and placing facilities. 3-4 yd. truck mixers were used. Looking downstream along right bank of river.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



6-29-50 39/35

#101

Shows new dam spilling 750 cfs flood water.
Spill decks temporarily lowered 2 ft. below
final elevation.



6-30-50 39/36

#102

Rock quarry 2 miles east of Grace, Idaho.
Looking southwesterly.

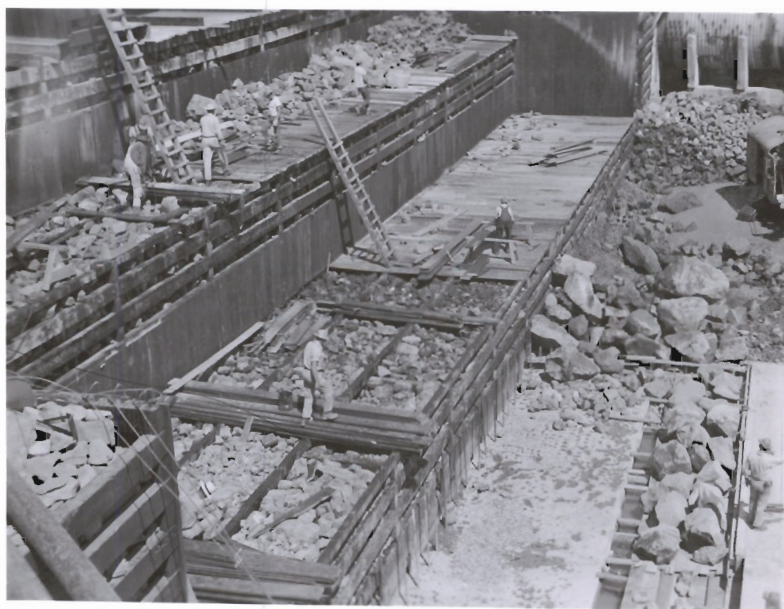
UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-5-50 39/37

#103

General view looking westerly shows resumption of work after period of spilling flood water June 27 to July 5.



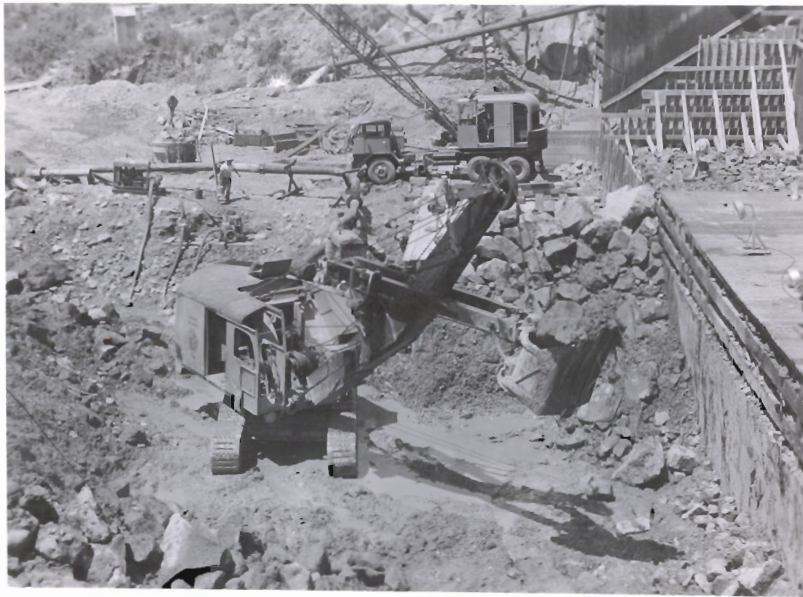
7-5-50 39/38

#104

Removing horizontal decking in preparation for rubble concrete.

Recently poured sections of concrete thrust block at lower right.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-6-50 31939

#105

Excavation for 3rd section of concrete thrust
block. Shows nature of fill place against toe of dam.



7-6--50 39190

#106

General view shows progress to date- note forms
for rubble concrete.
Looking northwesterly.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-6-50 3941

#107

Applying seal in preparation for placing rubble concrete.

Looking down downstream face of dam from above.



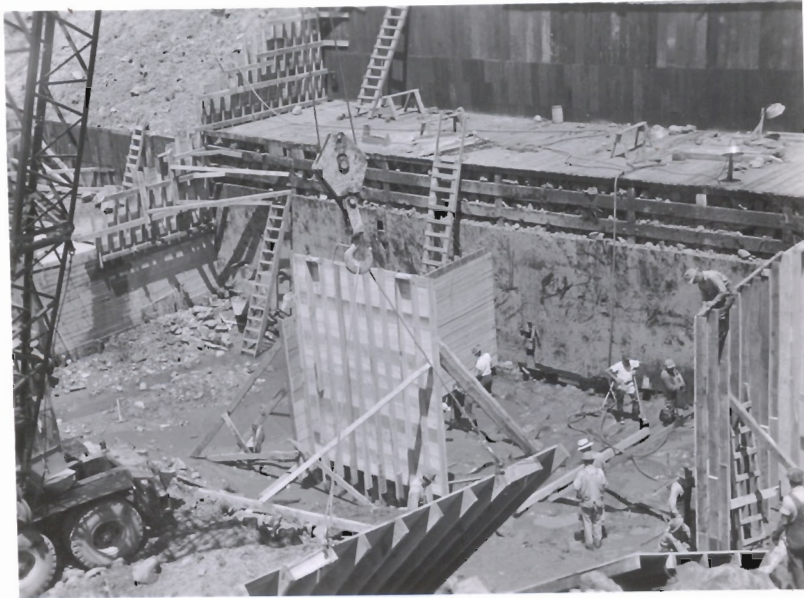
7-8-50 3942

#108

Shows rubble in place in 2 -30 ft. sections on the 1014 and 1026 levels. Excavation for 3rd and 4th sections of thrust block nearing completion.

Note progress since resumption of work July 5.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-8-50 39/43

#109

Forming for 4th section of thrust block.



7-11-50 39/44

#110

General view shows progress to date. Rubble concrete at left and lower right. Rock piled preparatory to concreting in center.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-11-50 39/45

#111

Forming for sluice valve chamber in progress.



7-13-50 39/46

#112

Shows solid ledge rock at east end excavation.
for thrust block east of ice chute.
Note footings of flowline structure.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-13-50 39/47

#113

Excavation down to solid
ledge rock at east end of
thrust block under ice chute.

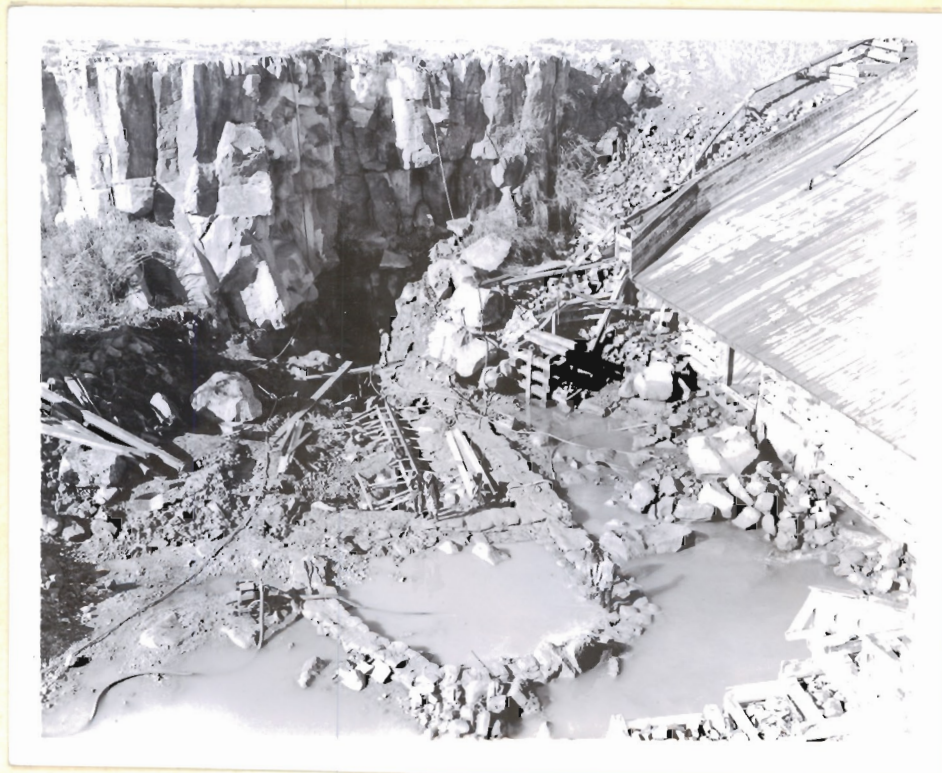


7-17-50 39/48

#114

Shows general progress to date.

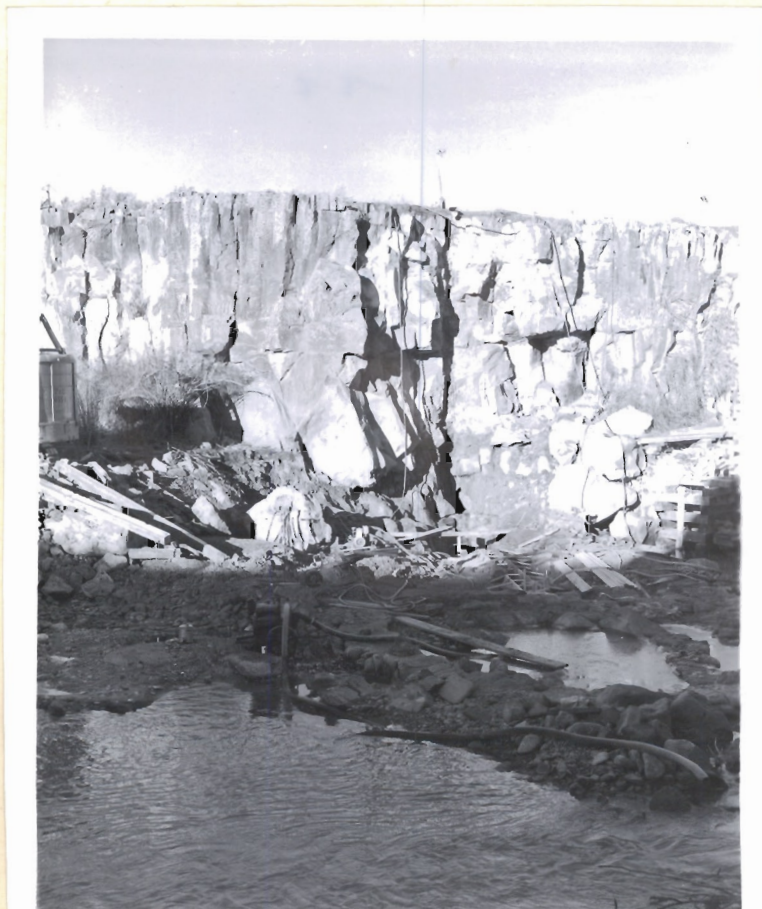
UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



11-12-49 39051

#21

Shows forms for concrete cutoff wall surrounded by sand bag diversion dam.
View west.



11-12-49 39052 #22

Shows solid rock excavation on west cliff abutment immediately below flag on pole top center.

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM

11-12-49 39053 #23

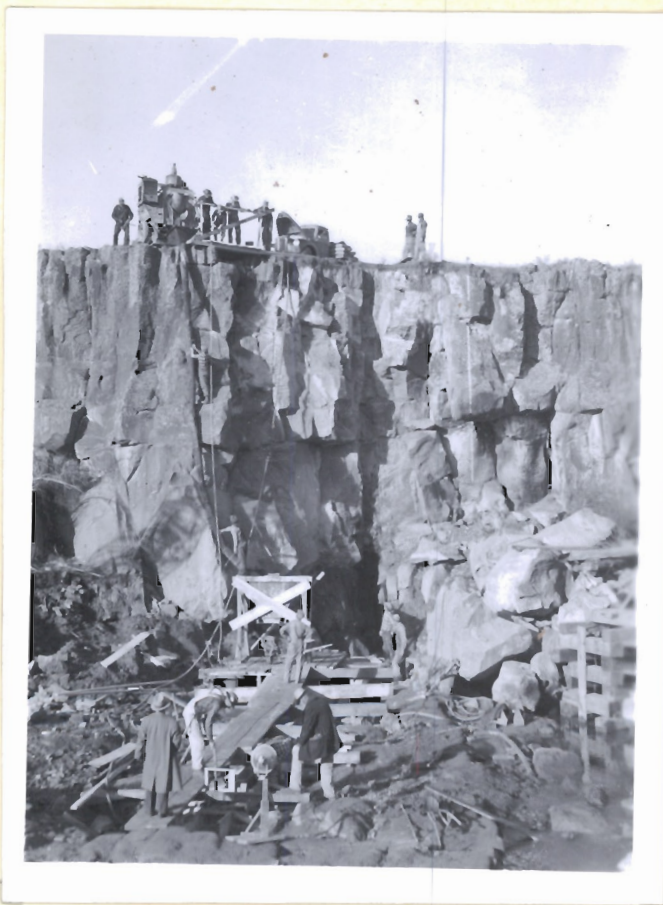
Contact point of west
cliff abutment shows
broken up lava and
wet volcanic cinder
and clay seam. Approx.
elev. at bottom of
picture 1001.



11-12-49 39054

Unwatering pumps housed by temporary shed

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



11-15-49 39055

#25

Center foreground- preparing forms for bottom cutoff wall.

Hopper for receiving concrete at base of cliff. Mixing plant on top- 2 men on face of cliff hanging "elephant trunk" to convey concrete from mixer on top to hopper at bottom.

View westerly.

11-18-49 39056 #26

Shows completed excavation for cutoff wall- sta. 0+80 to 1+15.



UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



11-18-49 39057

#27

Sand bag coffer dam in foreground.
Cutoff trench and western portion of
concrete cutoff wall toward back.
Scaffolding up face of cliff for
forming and pouring west abutment seal.
View westerly.

11-18-49 39058

#27-A

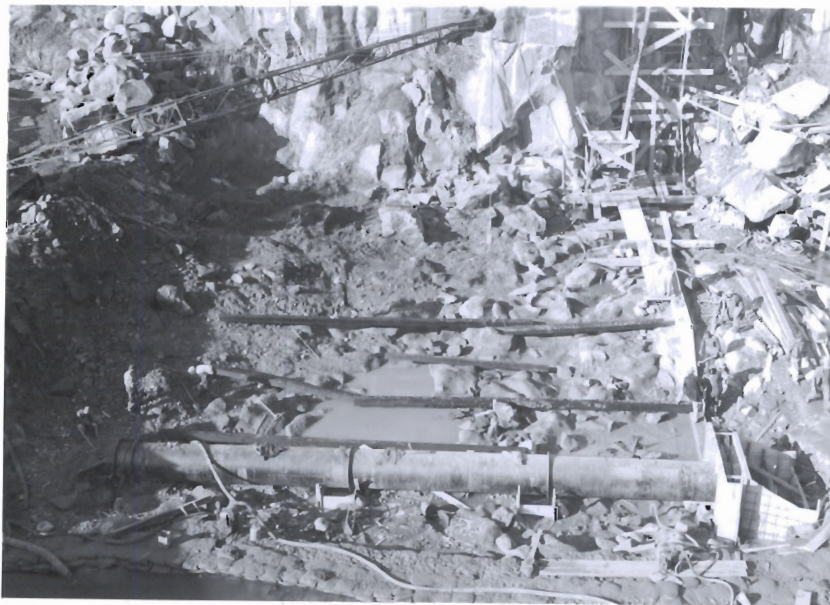
Forming and preparing sluiceway
section of cutoff wall. Note steel
cutoff plate running down from elev.
approx. 1000 to elev. 996. Forms,
reinforcing and embedded plate sus-
pended from heavy timbers spanning
trench in solid rock.



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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



11-18-49 39059 #28
Shows finished excavation for cutoff
wall to sta. 1+15 with end of poured
wall to sta. 0+80.
View east.



11-26-49 39060 #29
General view shows sluice pipe in place and
starting placement of cribbing timbers.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



11-28-49 3906/

#30

Shows commencement of crib erection and nature of
rock formation at final excavation.
Looking upstream toward old dam.



11-28-49 39062

#31

Shows crib erection in progress. Nature of
final excavation in river bottom at west end.
Looking upstream.

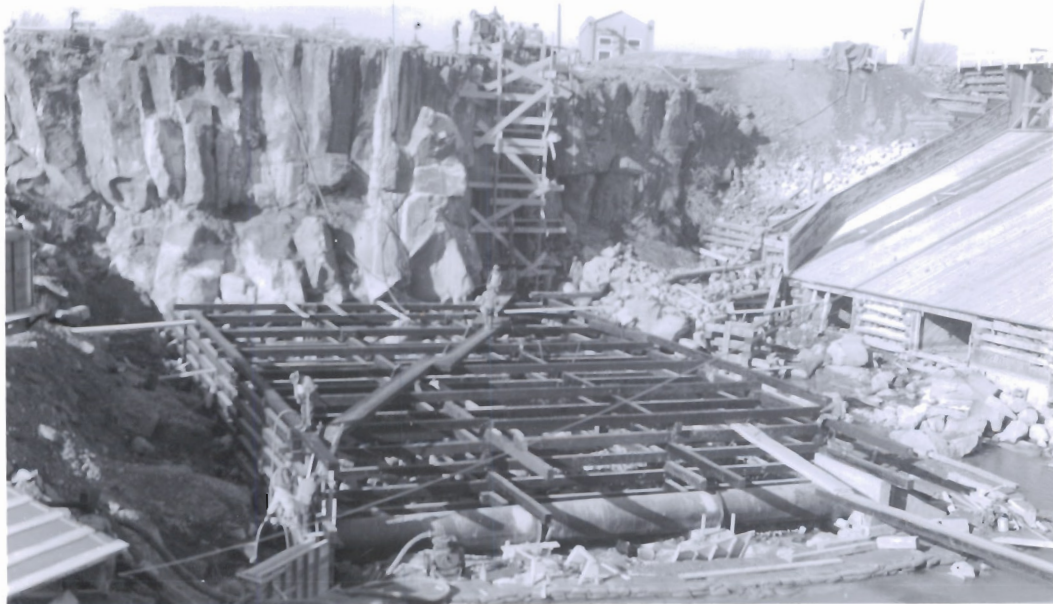
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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-2-49 39063

#31-A

Scaffold west abutment cutoff in right background.
Cribbing timbers at elevation 1007.6 at right center.
Unwatering pumps under shed in right foreground.



12-2-49 39067

#31-B

Sluice pipe in foreground- bottom of sluice pipe at upstream
end at elev. 996.7. Note concrete headwall upstream & unstripped wing-
wall downstream (left end). Crib timbers west of sluiceway at elev.
1007.6. Center back is scaffolding for excavation forming and placing
vertical concrete cutoff wall in solid rock of west abutment. At this
date poured to elev. 1030. Grouting plant on top of bank in upper right.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-3-49 39065

#32

Shows small shovel in approach to east
bank excavation.

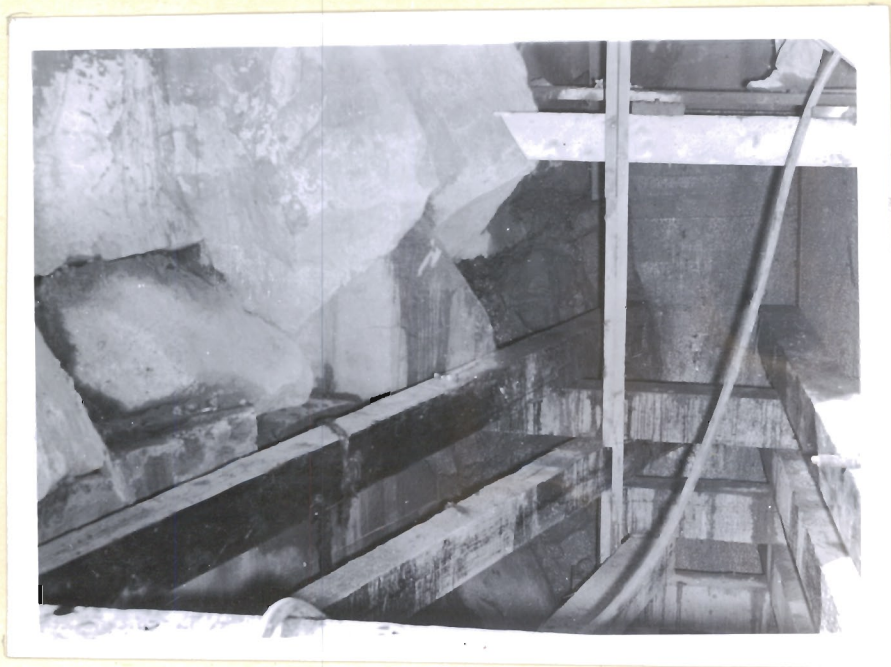


123-49 39066

#33

Shows construction at sluice pipe tail wall.
Wing at right was added to aid in subsequent diver-
sion of water.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-3-49 39067

#34

Shows timbering at west cliff contact.
Top of timber approximate elev. 1007.6.



12-3-49 39068

#35

Shows crib construction along west cliff
near bottom.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



12-8-49 39069

#36

General view shows progress to date. East side unwatering complete and excavation in progress.



12-8-49 39070

#37

Shows excavation in progress at east side. Bedrock exposed left center where men are working. Looking into pit from above.

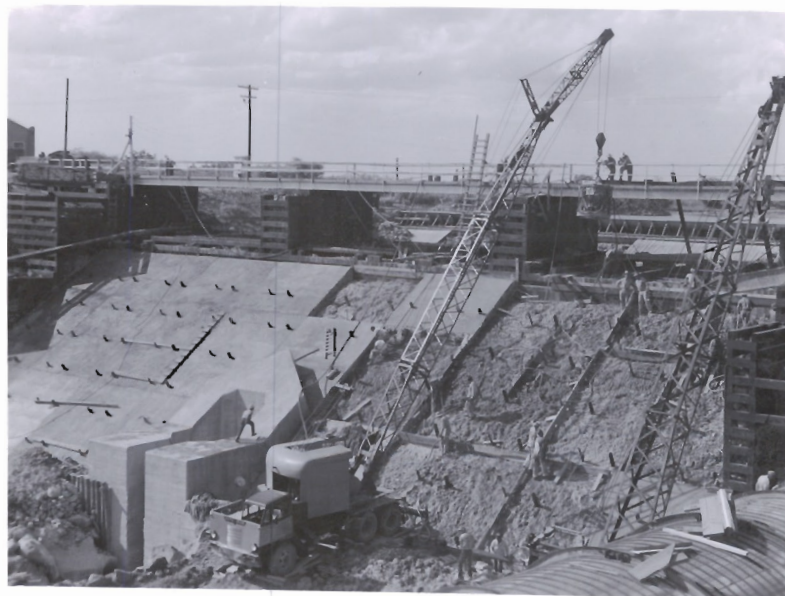
UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-17-50 39149

#115

Pouring finish slab over rubble concrete on
downstream face of dam.



7-20-50 31950

#116

General view shows progress to date.
Rubble concrete on downstream face of dam to
add weight, topped by 1 ft. thick concrete slab.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM.



7-20-50 39151

#117

Pouring finish slab over rubble concrete on
downstream face of dam.
Looking northeasterly.



Shows timbering under spill
deck restored after cut down 2
ft. to pass flood water.
Looking easterly across dam.

7-20-50 39152

#118

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM

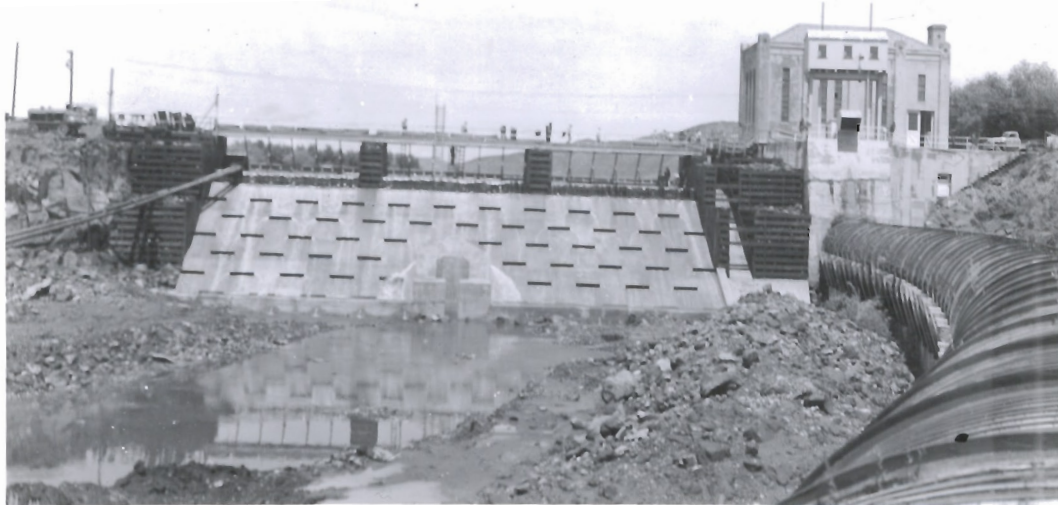


7-26-50 3/953 #119
Shows downstream channel excavation in progress.



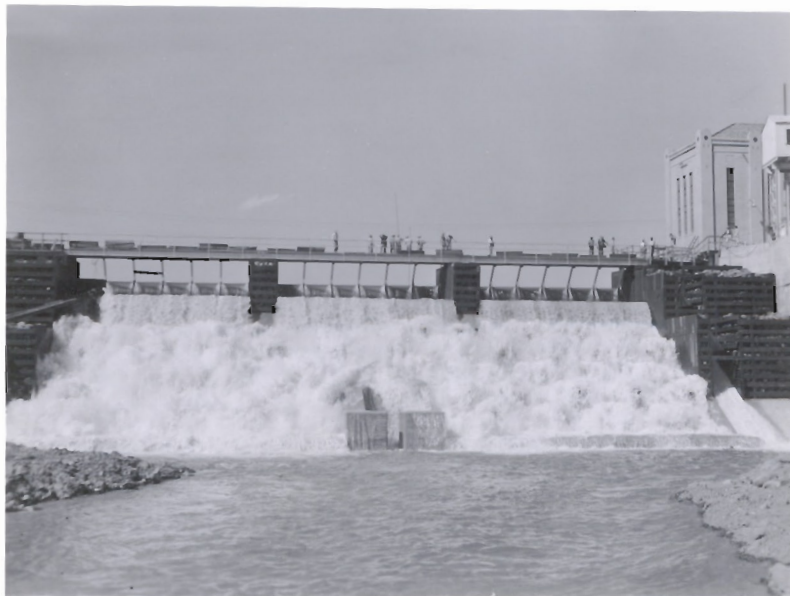
7-29-50 39157 #119-A
View northeast of completed dam. Water just beginning to spill due to gates closed on pipes preparatory to taking No.2 flowline out for reconstruction.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-29-50 39154
Spilling approximately 20 cfs.

#120



7-29-50 39155
Shows about 300 cfs spilling over new dam.

#121

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GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-29-50 39156

#122

Spilling approximately 500 cfs. Spill occasioned by closing intake #2 gate preparatory to draining #2 flow-line for 1950 reconstruction.



7-30-50 39158

#123

Shows action of baffleboards with spill of approximately 950 cfs. Velocity of water was such as to bypass the first two tiers of baffles.

UTAH POWER & LIGHT COMPANY
GRACE HYDRO-ELECTRIC STATION
1950 ROCK FILLED CRIB DAM



7-29-50 39159

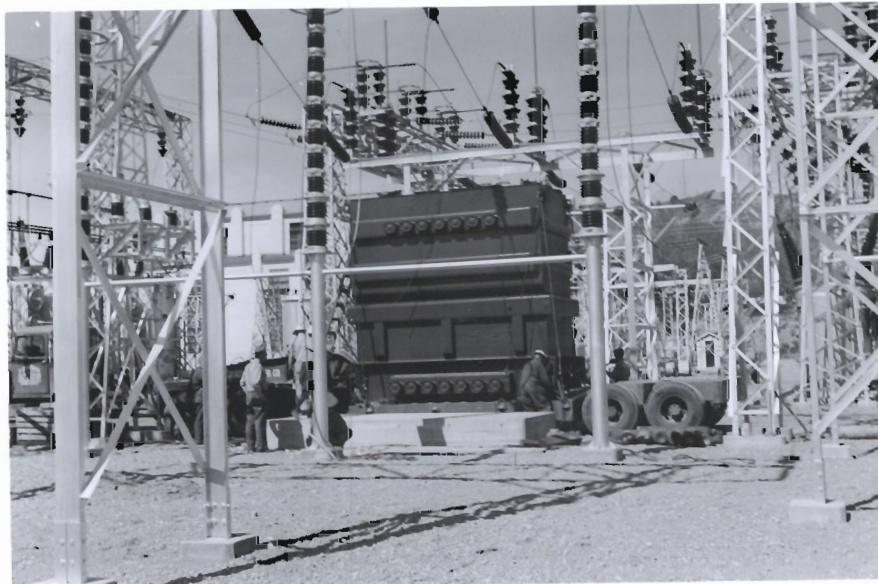
#124

Spilling approximately 1000 cfs. Spill due to closing
#2 intake gate preparatory to draining #2 flowline for 1950
reconstruction.

UTAH POWER & LIGHT COMPANY
GRACE PLANT - AUTOTRANSFORMER



#5 - 132-161 Kv auto transformer starting down dugway with A.C.H.D.15 in rear as safety hold-back. Speed down dugway about 100 ft. per minute.



#6 - 132-161 auto transformer in Grace Switchyard alongside concrete base ready for unloading from transport. 3:55 P.M. 5-10-55

UTAH POWER & LIGHT COMPANY
GRACE PLANT - AUTOTRANSFORMER



#1 - 132-161 Kv auto transformer loaded on transport ready to
leave railroad yard at Grace, Idaho 12:50 P.M.
Left yard 12:52 P.M. 5-10-55



#2 - 132-161 Kv auto transformer loaded on transport ready to
leave railroad yard at Grace, Idaho 12:50 P.M.
Left yard 12:52 P.M. 5-10-55

UTAH POWER & LIGHT COMPANY
GRACE PLANT - AUTOTRANSFORMER



#3 - 132-161 Kv auto transformer stopped at top of dugway to attach A.C.H.D. 15 Dozer as safety hold-back for trip down dugway to Grace Switchyard. 5-10-55



#4 - 132-161 auto transformer starting down dugway with A.C.H.D. 15 in rear as safety hold-back. Speed down dugway about 100 ft. per minute. 5-10-55