S T A T E  O F  I D A H O

DEPARTMENT OF RECLAMATION

---

WHEREAS, Permit No. R-905 of the Idaho Power Company requires proof of completion of works to be made on or before April 2, 1958; and,

WHEREAS, Said Permit Holder has been unable to proceed with construction pending allowance of a License by the Federal Power Commission;

NOW, THEREFORE, In accordance with the provisions of Section 42-204, Idaho Code, extension of time is allowed for construction of works under Permit No. R-905 until June 24, 1960, and a similar extension is allowed for each and every action required under the terms and conditions of Permit No. R-905.

Signed at Boise, Idaho, this 29th day of June, 1955.

MARK R. KULP
State Reclamation Engineer

---

Permit No. R-905
CERTIFICATE OF COMPLETION OF WORKS

TO ALL WHOM IT MAY CONCERN:

This is to certify that the IDAHO POWER COMPANY of Boise, County of Ada and State of Idaho, the holder of Permit No. R-905, issued upon Application No. R-30948, bearing date of priority of October 17, 1952, authorizing the construction of a reservoir, with the right to appropriate and store 1,400,000 acre feet per annum of the waters of Snake River, a tributary of Columbia River, in the County of Washington, State of Idaho, for electric power generation purposes, has fully complied with the provisions of the laws of the State of Idaho relating to the proof of completion of the works set out and described in said Permit; that said works include a dam and reservoir adequate for the storage of 1,400,000 acre feet of water per annum, with adequate diversion works and conduit to the reservoir, and a conduit capable of conducting said water to the place of intended use; that the point of outlet of said reservoir is located in Lot 3, Section 2, Township 17 N., Range 5 W., B. M., and that the place of use, or the lands proposed to be irrigated by the use of said water are described as follows,to-wit:

Lot 3, Section 2, Twp. 17 N., R. 5 W., B. M.

Witness my hand this 29 day of July, 1959

s/ GEO. N. CARTER
State Reclamation Engineer

Proof of Completion of Works Made: June 17, 1959.

LICENSE ISSUED FOR 1,400,000 acre SEC. FT.
Page 6707

6707+

# State of Idaho
# License and Certificate of Water Right

Water License No. R-905 Amount 1,400,000 acre feet

Water District No. Priority October 17, 1952

THIS IS TO CERTIFY that IDAHO POWER COMPANY

of Boise, Idaho , made application for a permit to appropriate the public waters of the State of Idaho, dated October 17 , 19 52 ; that Permit No. R-905 was issued under said application; that Certificate of Completion of works, with a ~~carrying~~ holding capacity of 1,400,000 ~~second~~ acre feet, was issued thereunder on July 29 , 19 59 , showing that said works were completed on the 17 day of June , 1959 ; and that on the 17 day of June , 19 59 ,

IDAHO POWER COMPANY

of Boise , State of Idaho , made proof to the satisfaction of the State Reclamation Engineer of Idaho, of the right to use the waters of Snake River , a tributary of Columbia River , for the purpose of electric power generation , under Use Permit No. R-905 of the Department of Reclamation and that said right to the use of said waters has been perfected in accordance with the laws of Idaho, and is hereby confirmed by the State Reclamation Engineer of Idaho and entered of record in Volume 11 of Licenses at page 6707 , on the 29 day of July , 1959 ;

The right hereby confirmed dates from October 17 , 19 52 ;

The Point of Diversion is located Lot 3

in the ¼ ¼, Sec. 2 , Tp. 17 N , R. 5 W. , B. M. County Washington

That the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually needed and beneficially used for said purposes, and shall not exceed 1,400,000 ~~cubic~~ acre feet per ~~second~~ annum.

Description and location of use:

| Twp. | Range | Sec. | Forty-acre Tract | No. Acres Described in Permit | No. Acres Actually Irrigated |
|---|---|---|---|---|---|
| 17 N | 5 W. | 2 | Lot 3 for Electric Power Generation | | |

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, as provided by the laws of Idaho.

WITNESS the seal and signature of the State Reclamation Engineer, affixed at Boise, Idaho, this 29 day of July , 19 59 .

GEO. N. CARTER
State Reclamation Engineer.

(SEAL)

3 2018

6708+

# State of Idaho
# License and Certificate of Water Right

Water License No. 23925 Amount 20,000 c.f.s.

Water District No. Priority Oct. 17, 1952

THIS IS TO CERTIFY that IDAHO POWER COMPANY

of Boise, Idaho , made application for a permit to appropriate the public waters of the State of Idaho, dated October 17 , 1952 ; that Permit No. 23925 was issued under said application; that Certificate of Completion of works, with a carrying capacity of 29,000 second feet, was issued thereunder on July 29 , 1959 , showing that said works were completed on the 17 day of June , 1959 ; and that on the 17 day of June , 1959 ,

IDAHO POWER COMPANY

of Boise , State of Idaho , made proof to the satisfaction of the State Reclamation Engineer of Idaho, of the right to use the waters of Snake River , a tributary of Columbia River , for the purpose of electric power generation , under Use Permit No. # 23925 of the Department of Reclamation and that said right to the use of said waters has been perfected in accordance with the laws of Idaho, and is hereby confirmed by the State Reclamation Engineer of Idaho and entered of record in Volume 11 of Licenses at page 6708 , on the 29 day of July , 1959 ;

The right hereby confirmed dates from October 17 , 1952 ;

The Point of Diversion is located Lot 3,

in the ¼ ¼, Sec. 2 , Tp. 17 N., R. 5 W. , B. M. County Washington

That the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually needed and beneficially used for said purposes, and shall not exceed 20,000 cubic feet per second.

Description and location of use:

| Twp. | Range | Sec. | Forty-acre Tract | No. Acres Described in Permit | No. Acres Actually Irrigated |
|---|---|---|---|---|---|
| 17 N | 5 W. | 2 | Lot 3 for Electric | Power Generation | |

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, as provided by the laws of Idaho.

WITNESS the seal and signature of the State Reclamation Engineer, affixed at Boise, Idaho, this 29 day of July , 19 59.

GEO. N. CARTER
State Reclamation Engineer.

(SEAL)

41-203 IDAHO CODE ANNOTATED

Date of notice 1-24 ..... 1953
Date of Publication or Posting 2-16 to 3-2 ..... 1953
Last Date for Protest 3-9 ..... 1953

IF PROTESTED

Date of Notice of Hearing ..... 19____
Date of Hearing ..... 19____
Notice of Appeal Filed ..... 19____

R-90

02-2413

# APPLICATION FOR PERMIT

To Construct a Reservoir and Appropriate and Store
The Public Waters of the State of Idaho

Application No. R 30948
Permit No. R 905

1. Name of Applicant: IDAHO POWER COMPANY

Postoffice address: 1220 Idaho St., Boise County Ada State Idaho

I. If applicant is a corporation, give:

(a) Date and place of incorporation: Maine- May 6, 1915 (b) Amount of authorized Capital Stock: $ 76,000,000

(c) Amount paid in: $ 40,500,000 (d) Names and addresses of directors: C.C.Anderson,Boise,Idaho; J.G.Conley,Caldwell,Idaho; R.E.Gale, Boise,Idaho; B.Glavin,Twin Falls,Idaho; A.C.Inman,Boise,Idaho; W.J.Lloyd,Nampa,Idaho; A.L.Merrill,Pocatello,Idaho; C.E.Palmer,Ontario,Oregon; T.E.Roach,Boise,Idaho; J.H.Rogers,Boise,Idaho; B.C.Russell,Boise,Idaho; J.R.Simplot,Boise,Idaho; Nathan Sommer,Boise,Idaho; and E.T.Waters, Weiser,Idaho

II. The financial resources of the corporation are: See balance sheet attached

(a) Cash on hand: $ (b) Treasury Stock: $

(c) Bonds to be issued: $ (d) Other resources:

2. Quantity of water to be stored: 1,400,000 acre feet, of which 1,000,000 acre feet are usable acre feet per annum.

3. Source of water supply is Snake River (Creek) (River) (Spring), a tributary of Columbia River.

4. The outlet of the proposed reservoir is located 1080 (bearing) northwesterly feet, distant from the S E corner of Section 2, Township 17 N., Range 5 W., B. M. and is in ~~the~~ Lot 3¼ of ¼ of Section 2, Township 17 N., Range 5 W., B.M. County of Washington

5. Fill out either (a) or (b).

(a) The reservoir is located in the channel of Snake River (Creek) (River).

(b) The reservoir is to be filled through a feeder canal, the point of diversion for which is located feet distant from the corner of Section, Township, Range, B. M., and is in the ¼ of ¼ of Section, Township, Range B. M.; width at bottom feet, width at top feet, depth of water feet; average grade per mile feet; Capacity cubic feet per second.

6. (a) The area of the high water line of the reservoir is 13,250 acres.

(b) The reservoir capacity is approximately 1,400,000 acre feet total; approximately 1,000,000 active storage acre feet.

7. Height of reservoir dam 340 feet, length at top 1765 approximately feet, length at bottom 1950 approximately feet, size of outlet Not yet determined by feet. The dam is to be constructed of materials as follows: Rock fill with upstream face of concrete. Concrete spillway with tainter gate control of flood water
(If height will exceed 10 feet, plans must be approved by Department of Reclamation, before beginning construction.)

8. (a) Will water stored in reservoir be diverted to canal or acqueduct, ~~to be conducted to be irrigated without commingling with natural flow of~~ tunnel (Creek) (River)?

(b) Water stored in reservoir will be carried in the channel of Not applicable (Creek,) (River,) a distance of miles to point of diversion located (bearing) feet, distant from the corner of Section Township, Range, B. M., and in the ¼ of ¼ of Section Township, Range B. M.

9. (a) Area of watershed above dam site square miles

(b) Estimated maximum flow of stream cubic feet per second.

10. Water is to be used for Electric power generation purposes.

11. If for mining, milling, power or manufacturing purposes give:

(a) Point of use of water 1760 (bearing) feet, distant from S E Corner of Section 2, Township 17 N., Range 5 W. B. M. and is in ~~the~~ Lot 3¼ of ¼ of Section 2, Township 17 N., Range 5 W., B. M.

(b) Amount of power generated: 500,000 H. P., under 277 (static) feet head.

(c) Water is to be returned to Snake River (Creek) (River) (Spring) at a point 1760 (bearing) feet distant from the S E corner of Section 2, Township 17 N., Range 5 W., B. M. in ~~the~~ Lot 3 ¼ of ¼ of Section 2, Township 17 N., Range 5 W., B.M.

12. Water stored in accordance with this Permit will be carried to place of use through a ~~canal~~ tunnel heretofore constructed under the terms of Permit No. , which is hereby referred to and made a part hereof.

13. Kind of diversion works: Concrete faced rock fill dam- Concrete lined tunnel (Dam, canal, flume, pipe, etc.)

14. Height of diversion dam: 340 feet, length at top 1765 feet, length at bottom 1950 feet. The dam is to be constructed of materials as follows: Earth fill, concrete upstream face

(If height will exceed 10 feet, plans must be approved by Department of Reclamation, before beginning construction.)

15. Size of headgate: Width feet, Height feet.

16. Diversion Canal: Width at bottom None feet, width at water line feet, depth of water feet, Dimensions of Flume

Diameter of Pipe inches; Length of Conduit miles. Average grade per mile feet.

17. Estimated cost of Works: Storage Works: $ 61,084,000/ including power plant and dam- Tunnel approximately 48 foot diameter. Diversion Works: $

18. Time required for completion of work Five (5) years.

19. Time required for complete application of water to proposed beneficial use is Six (6) years.

20. The land to be irrigated is described in the following tabulation:

(Give Irrigable acreage in each 40-acre subdivision.)

| Twp. | Range | Sec. | NE¼ | | | | NW¼ | | | | SW¼ | | | | SE¼ | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | |
| | | | | | | | | | | | | | | | | | | | |

Total Number of Acres to be Irrigated

21. Existing rights and/or valid permits appurtenant to lands described in Sec. 20 are

Remarks: Reference is made to companion application No. 30947(Permit No. 23925) filed October 17, 1952, for use of 20,000 cubic feet per second of water for electric power generation.
The rights for the use of the waters, stream bed and other lands of the State of Idaho, necessary for the construction and operation of the dam and reservoir are subject to the condition that the project shall be operated in such manner as will not conflict with the future depletion in flow of the waters of Snake River and its tributaries, or prevent or interfere with the future upstream diversion and use of such waters above the back water created by said dam, for the irrigation of lands or other beneficial consumptive uses in the Snake River watershed.

BE IT KNOWN That the undersigned hereby makes application for permit to construct a reservoir and appropriate and store the public waters of Idaho as herein set forth, and that the enclosed map is hereby made a part of this application.

IDAHO POWER COMPANY Applicant.

By T. E. Roach Agent.

President

Date of first receipt at Department of Reclamation: 4:00 P. M. October 17, 1952

Returned to applicant for correction November 17, 1952

Corrected application received January 14, 1953

## APPROVAL OF STATE RECLAMATION ENGINEER

The number of this permit is R 905

Recorded in book R 4, page 905 Approved April 2, 1953

This is to certify that I have examined the within application for a permit to construct a reservoir and appropriate and store the public waters of the State of Idaho, and hereby approve the same, subject to the following limitations and conditions:

Bond in the sum of $ 1,000, to be filed on or before June 2, 1953

Work to begin on or before and to continue diligently and uninterruptedly to completion, unless temporarily interrupted by circumstances over which the permit holder has no control.

One fifth of the work above specified to be completed on or before October 2, 1955

The whole of said work to be completed on or before April 2, 1958

Beneficial use of water stored in accordance herewith, to be made on or before April 2, 1964

Witness my hand this 2nd day of April, 19 53

MARK R. KULP
State Reclamation Engineer.

IN TESTIMONY WHEREOF, We, LEN JORDAN, Governor of the State of Idaho, and IRA H. MASTERS, Secretary of State of the State of Idaho, have caused this instrument to be executed in the name of the State of Idaho, and caused the Great Seal of the State of Idaho to be hereunto affixed, this 2nd day of April, 1953.

Countersigned:

(SEAL) IRA H. MASTERS
Secretary of State.

STATE OF IDAHO

By LEN JORDAN
Governor.

LETTER.RFL

IDAHO POWER COMPANY
P.O. BOX 70
BOISE, IDAHO 83707

RECEIVED
JUN 21 1995
Department of Water Resources

(208) 388-2424
(208) 388-6905 (Fax)

ROGER J. FUHRMAN
DIRECTOR, WATER MANAGEMENT

June 19, 1995

Wayne Haas
Administrator Planning & Policy Division
Idaho Department Water Resources
1301 North Orchard
Boise, Idaho 83706

Re: Idaho Water Resource Board Application

Dear Wayne,

I apologize for not getting this Water Supply Bank Application sent last summer before the water was released. We had a misunderstanding regarding who was going to take care of this application.

Sincerely,

Roger Fuhrman

RJF:clh

BEFORE THE IDAHO WATER RESOURCE BOARD OF THE
STATE OF IDAHO

APPLICATION TO USE WATER THROUGH THE WATER SUPPLY BANK FOR
POWER AND FISH FLOW AUGMENTATION PURPOSES

APPLICANT: Idaho Power Company

ADDRESS: P.O. Box 70, Boise, Idaho 83703

A. DESCRIPTION OF RIGHT TO BE USED

1. Source of Water Supply: Snake River

2. Water Right No: 03-2018

3. Location of Point of Diversion: Brownlee Dam

B. DESCRIPTION OF USE PROPOSED BY APPLICANT

To release 332,000 AF (acre feet) from Brownlee Dam for power generation purposes and to augment flows in and out of the state of Idaho for fish migration consistent with HB 796 enacted by the Second Regular Session of the Fifty-first Idaho Legislature codified at I.C. Section 42-1763A.*

Releases to begin on May 6, 1994.

June 16, 1995
Date

Idaho Power Company
Applicant

By: James M Callingwood

FOR DEPARTMENT USE ONLY

Rec'd by: _____ Date: _____ Time: _____

Preliminary check by: _____ Date: _____

Action of the Director:

Approve: _____ Deny: _____ Date: _____

Conditions of approval (if applicable):

_____

_____

_____

June 27, 1995
Date

Director

*This application is being submitted pursuant to, and subject to the provisions of, that certain Memorandum of Understanding dated July 1, 1992, and Addendum to Memorandum of Understanding executed by IPC and IDWR.

— Wayne —
Phil —

**MEMORANDUM**

Who have we talked to @ IPCo in previous years on this matter? NLY

To: Norman C. Young

From: L. Glen Saxton GLS

**RE: IDAHO POWER COMPANY'S USE OF THE WATER SUPPLY BANK FOR POWER AND FISH FLOW AUGMENTATION PURPOSES**

Date: September 8, 1994

You asked that I check to determine if Idaho Power Company (IPCO) has executed an Agreement or Addendum to the existing Memorandum of Understanding between IPCO and the department authorizing IPCO to use water from the Water Supply Bank for power and fish flow purposes during 1994.

There is not a copy of such an agreement or addendum to the MOU for 1994 in the Brownlee water right file where I would expect to find the document if it existed. Is there somewhere else to look or should Debbie Cline go ahead and prepare a 1994 addendum and pursue signatures for it?

Please advise if I can further assist in this matter.

BEFORE THE IDAHO WATER RESOURCE BOARD OF THE
STATE OF IDAHO

APPLICATION TO USE WATER THROUGH THE WATER SUPPLY BANK FOR
POWER AND FISH FLOW AUGMENTATION PURPOSES

APPLICANT: Idaho Power Company

ADDRESS: P. O. Box 70, Boise, Idaho 83703

A. DESCRIPTION OF RIGHT TO BE USED

1. Source of Water Supply: Snake River

2. Water Right No.: 03-2018

3. Location of Point of Diversion: Brownlee Dam

B. DESCRIPTION OF USE PROPOSED BY APPLICANT

To release 140,000 AF (acre feet) from Brownlee Dam for power generation purposes and to augment flows in and out of the state of Idaho for fish migration consistent with HB 796 enacted by the Second Regular Session of the Fifty-first Idaho Legislature codified at I.C. Section 42-1763A.*

Releases to begin on August 1, 1993, and continuing through August 12, 1993.

_____ IDAHO POWER COMPANY
Date Applicant

By: J M Collingwood

FOR DEPARTMENT USE ONLY

Rec'd by: _____ Date: _____ Time: _____

Preliminary check by: _____ Date: _____

Action of the Director:

Approve: _____ Deny: _____ Date: _____

Conditions of approval (if applicable):

_____

_____

_____

_____ _____
Date Director

*This application is being submitted pursuant to, and subject to the provisions of, that certain Memorandum of Understanding dated July 1, 1993, and Addendum to Memorandum of Understanding executed by IPC and IDWR.

BEFORE THE IDAHO WATER RESOURCE BOARD OF THE
STATE OF IDAHO

APPLICATION TO USE WATER THROUGH THE WATER SUPPLY BANK FOR
POWER AND FISH FLOW AUGMENTATION PURPOSES

APPLICANT: Idaho Power Company

ADDRESS: P. O. Box 70, Boise, Idaho 83703

A. DESCRIPTION OF RIGHT TO BE USED

1. Source of Water Supply: Snake River

2. Water Right No.: 03-2018

3. Location of Point of Diversion: Brownlee Dam

B. DESCRIPTION OF USE PROPOSED BY APPLICANT

To release 300,000 AF (acre feet) from Brownlee Dam for power generation purposes and to augment flows in and out of the state of Idaho for fish migration consistent with HB 796 enacted by the Second Regular Session of the Fifty-first Idaho Legislature codified at I.C. Section 42-1763A.*

Releases to begin on July 12, 1993,

July 14, 1993
Date

IDAHO POWER COMPANY
Applicant

By: James M Callingwood

FOR DEPARTMENT USE ONLY

Rec'd by: VVS Date: 7/14/92 Time: 2:15 pm

Preliminary check by: VVS Date: 7/14/92

Action of the Director:

Approve: X Deny: _____ Date: _____

Conditions of approval (if applicable):

_____

_____

_____

7/14/93
Date

for the Norman C Young
Director

*This application is being submitted pursuant to, and subject to the provisions of, that certain Memorandum of Understanding dated July 1, 1992, and Addendum to Memorandum of Understanding executed by IPC and IDWR.

07139305.JCT.93

# ADDENDUM TO MEMORANDUM OF UNDERSTANDING

This Addendum to Memorandum of Understanding (Addendum), entered into this 14 day of July, 1993, by and between the Idaho Power Company, hereinafter the "Company," a corporation organized and existing under and by virtue of the laws of the State of Idaho, and the State of Idaho, by and through the Idaho Department of Water Resources, hereinafter the "IDWR;"

1. This is an Addendum to the Memorandum of Understanding (MOU) entered into by the Company and IDWR on July 1, 1992, a copy of which is attached as Exhibit A, relative to the "Controversy" referred to therein and the Company's operation and release of waters from Brownlee Reservoir during July of 1992, for the purpose of augmenting flows in and out of Idaho for fish migration consistent H.B. 796 (I.C. § 42-1763A).

2. The Parties agree that the terms and provisions of the MOU shall apply to the Company's operations of the Hells Canyon Complex during 1993 relative to the cooperation of the Company in addressing the Snake River salmon migration issue through the implementation of the procedures under I.C. § 42-1763A and that each Party retains all rights, claims, defenses, or other positions that may relate to the Controversy referred to therein.

3. This Addendum shall apply to the Company's cooperation and/or participation during 1993 in procedures, programs or plans authorized or contemplated by the above-referenced legislation/code provision designed or intended to facilitate the migration of the Snake River salmon. To the extent that such cooperation or participation is contemplated in 1994, further addendums will be executed.

4. This Addendum constitutes the entire agreement of the Parties with regard to the subject matter herein, and merges all prior negotiations and understandings, whether written or oral, between the Parties. No amendment or modification to this Addendum shall be effective unless it is in writing and signed by an authorized representative of the respective Parties.

5. This Addendum shall be executed in triplicate, with each executed copy to constitute an original.

IDAHO POWER COMPANY

By: James M Collingwood
James M. Collingwood, General Manager Power Production

STATE OF IDAHO, by and through the IDAHO DEPARTMENT OF WATER RESOURCES

By: Norman C Young

# MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU), entered into this 1st day of July, 1992, by and between the IDAHO POWER COMPANY, hereinafter referred to as "the Company", a corporation organized and existing under and by virtue of the laws of the State of Idaho, and the STATE OF IDAHO, by and through the IDAHO DEPARTMENT OF WATER RESOURCES, hereinafter "the IDWR";

1. This MOU is intended to address the pending controversy, hereinafter the "Controversy," between the Company and the IDWR relating to the Company's operation of the Hells Canyon Complex, the nature of the Controversy being more specifically described and defined by prior correspondence between the Company and the IDWR, copies of which are attached hereto as Exhibits A through F.

2. While each of the parties to this MOU recognize and acknowledge the position of the other with regard to the Controversy, each party likewise acknowledges that an expedient resolution of the Controversy is unlikely and that further discussions and negotiations with regard to the issues involved will therefore be necessary. Due to the likelihood that a resolution to the controversy will not occur in the near future, and the desire of the Company to cooperate with the State of Idaho and other Idaho interests in addressing the Snake River salmon migration issue through the implementation of I.C. 42-1763A, as recently amended by H. 796, hereinafter the "Legislation," the Company and the IDWR agree as follows:

a. Each party specifically reserves the right to seek clarification and/or enforcement of (i) their respective rights, duties and/or responsibilities or (ii) any other issues that may in any manner relate to the Controversy, before any court or administrative agency having the jurisdiction and authority to adjudicate the issues, and in any such action neither the Company's nor the IDWR's participation and/or cooperation in, or with, the Legislation, or any program or plan authorized or contemplated by the Legislation, shall in any way affect or limit their respective rights, defenses or claims relating to the Controversy. In any such action, Rule 403 of the Idaho, or Federal, Rules of Evidence, whichever may be applicable, shall apply to this MOU, its provisions and contents, and all discussions and negotiations leading to the execution thereof.

b. To the extent that the Company cooperates and/or participates in any procedures, programs or plans authorized or contemplated by the Legislation, either through the rental of water pursuant to the terms of the legislation, or otherwise, such cooperation and/or participation shall not constitute a waiver or

relinquishment of, nor shall the Company be estopped from asserting:

i. any claims, rights, or defenses, whether legal or factual in nature, that may in anyway relate to the Controversy; or

ii. any of the Company's rights, duties, or responsibilities to operate any of its hydroelectric facilities in a manner approved by, or in conformance with, a Federal Energy Regulatory Commission license, as now or hereafter amended, or any other applicable law, rule, or regulation, which may be applicable to any such hydroelectric facility; or

iii. any right to enforce or seek clarification of its rights, duties and responsibilities that in any manner may be related to the Controversy before any court, or other administrative agency, having the jurisdiction and authority to settle or adjudicate all or any of the issues involved in the Controversy.

3. This MOU constitutes the entire agreement of the parties with regard to the subject matter herein, and merges all prior negotiations and understandings, whether oral or written, between the parties. No amendment or modification to this MOU shall be effective unless it is in writing and signed by authorized representaives of the respective parties.

4. This MOU shall be executed in triplicate, with each executed copy to constitute an original.

IDAHO POWER COMANY

By: _____
Jan Packwood, Vice President,
Power Supply

STATE OF IDAHO by and through
the IDAHO DEPARTMENT OF WATER
RESOURCES

By: _____
Keith Higginson, Director

STATE OF IDAHO )
)ss.
County of Ada )

On this 2nd day of July, 1992, before me, a Notary Public, in and for said County and State, personally appeared Jan Packwood, known or identified to me to be the Vice President of the IDAHO POWER COMPANY, the corporation that executed the foregoing instrument; and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Sharon R. Hill
NOTARY PUBLIC FOR IDAHO
Residing at: Boise, Idaho
My commission expires: 5-9-95

STATE OF IDAHO )
)ss.
County of Ada )

On this 1st day of July, 1992, before me, a Notary Public, in and for said County and State, personally appeared Keith Higginson, known or identified to me to be the Director of the Idaho Department of Water Resource, the corporation that executed the foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Sharla R. Curtis
NOTARY PUBLIC FOR IDAHO
Residing at: Boise
My commission expires: 10-6-96

Norm Rec Glen WK
Jan 97
Wyn

BEFORE THE IDAHO WATER RESOURCE BOARD OF THE
STATE OF IDAHO

APPLICATION TO USE WATER THROUGH THE WATER SUPPLY BANK FOR
POWER AND FISH FLOW AUGMENTATION PURPOSES

APPLICANT: Idaho Power Company

ADDRESS: P. O. Box 70, Boise, Idaho 83703

A. DESCRIPTION OF RIGHT TO BE USED

1. Source of Water Supply: Snake River

2. Water Right No.: 03-2018

3. Location of Point of Diversion: Brownlee Dam

B. DESCRIPTION OF USE PROPOSED BY APPLICANT

To release 140,000 AF (acre feet) from Brownlee Dam for power generation purposes and to augment flows in and out of the state of Idaho for fish migration consistent with HB 796 enacted by the Second Regular Session of the Fifty-first Idaho Legislature codified at I.C. Section 42-1763A.*

Releases to begin on August 1, 1993, and continuing through August 12, 1993.

_____
Date

IDAHO POWER COMPANY
Applicant

By: J M Collingwood

FOR DEPARTMENT USE ONLY

Rec'd by: _____ Date: _____ Time: _____

Preliminary check by: _____ Date: _____

Action of the Director:

Approve: X Deny: _____ Date: _____

Conditions of approval (if applicable):

_____

_____

_____

8/17/93
Date

L. Kent Higginson
Director

*This application is being submitted pursuant to, and subject to the provisions of, that certain Memorandum of Understanding dated July 1, 1993, and Addendum to Memorandum of Understanding executed by IPC and IDWR.

07139305.JCT.93

BEFORE THE IDAHO WATER RESOURCE BOARD OF THE
STATE OF IDAHO

APPLICATION TO USE WATER THROUGH THE WATER SUPPLY BANK FOR
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APPLICANT: Idaho Power Company

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2. Water Right No.: 03-2018

3. Location of Point of Diversion: Brownlee Dam

B. DESCRIPTION OF USE PROPOSED BY APPLICANT

To release 300,000 AF (acre feet) from Brownlee Dam for power generation purposes and to augment flows in and out of the state of Idaho for fish migration consistent with HB 796 enacted by the Second Regular Session of the Fifty-first Idaho Legislature codified at I.C. Section 42-1763A.*

Releases to begin on July 12, 1993,

July 14, 1993
Date

IDAHO POWER COMPANY
Applicant

By: James M Callingwood

FOR DEPARTMENT USE ONLY

Rec'd by: VVS Date: 7/14/92 Time: 2:15 pm

Preliminary check by: VVS Date: 7/14/92

Action of the Director:

Approve: X Deny: _____ Date: _____

Conditions of approval (if applicable):

_____

_____

_____

7/14/93
Date

for the Norman C Young
Director

*This application is being submitted pursuant to, and subject to the provisions of, that certain Memorandum of Understanding dated July 1, 1992, and Addendum to Memorandum of Understanding executed by IPC and IDWR.

07139305.JCT.93

ADDENDUM TO MEMORANDUM OF UNDERSTANDING

This Addendum to Memorandum of Understanding (Addendum), entered into this 14 day of July, 1993, by and between the Idaho Power Company, hereinafter the "Company," a corporation organized and existing under and by virtue of the laws of the State of Idaho, and the State of Idaho, by and through the Idaho Department of Water Resources, hereinafter the "IDWR;"

1. This is an Addendum to the Memorandum of Understanding (MOU) entered into by the Company and IDWR on July 1, 1992, a copy of which is attached as Exhibit A, relative to the "Controversy" referred to therein and the Company's operation and release of waters from Brownlee Reservoir during July of 1992, for the purpose of augmenting flows in and out of Idaho for fish migration consistent H.B. 796 (I.C. § 42-1763A).

2. The Parties agree that the terms and provisions of the MOU shall apply to the Company's operations of the Hells Canyon Complex during 1993 relative to the cooperation of the Company in addressing the Snake River salmon migration issue through the implementation of the procedures under I.C. § 42-1763A and that each Party retains all rights, claims, defenses, or other positions that may relate to the Controversy referred to therein.

3. This Addendum shall apply to the Company's cooperation and/or participation during 1993 in procedures, programs or plans authorized or contemplated by the above-referenced legislation/code provision designed or intended to facilitate the migration of the Snake River salmon. To the extent that such cooperation or participation is contemplated in 1994, further addendums will be executed.

4. This Addendum constitutes the entire agreement of the Parties with regard to the subject matter herein, and merges all prior negotiations and understandings, whether written or oral, between the Parties. No amendment or modification to this Addendum shall be effective unless it is in writing and signed by an authorized representative of the respective Parties.

5. This Addendum shall be executed in triplicate, with each executed copy to constitute an original.

IDAHO POWER COMPANY

By: James M Collingwood
James M. Collingwood, General Manager Power Production

STATE OF IDAHO, by and through the IDAHO DEPARTMENT OF WATER RESOURCES

By: Norman C Young

Exhibit A

# MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU), entered into this 1st day of July, 1992, by and between the IDAHO POWER COMPANY, hereinafter referred to as "the Company", a corporation organized and existing under and by virtue of the laws of the State of Idaho, and the STATE OF IDAHO, by and through the IDAHO DEPARTMENT OF WATER RESOURCES, hereinafter "the IDWR";

1. This MOU is intended to address the pending controversy, hereinafter the "Controversy," between the Company and the IDWR relating to the Company's operation of the Hells Canyon Complex, the nature of the Controversy being more specifically described and defined by prior correspondence between the Company and the IDWR, copies of which are attached hereto as Exhibits A through F.

2. While each of the parties to this MOU recognize and acknowledge the position of the other with regard to the Controversy, each party likewise acknowledges that an expedient resolution of the Controversy is unlikely and that further discussions and negotiations with regard to the issues involved will therefore be necessary. Due to the likelihood that a resolution to the controversy will not occur in the near future, and the desire of the Company to cooperate with the State of Idaho and other Idaho interests in addressing the Snake River salmon migration issue through the implementation of I.C. 42-1763A, as recently amended by H. 796, hereinafter the "Legislation," the Company and the IDWR agree as follows:

a. Each party specifically reserves the right to seek clarification and/or enforcement of (i) their respective rights, duties and/or responsibilities or (ii) any other issues that may in any manner relate to the Controversy, before any court or administrative agency having the jurisdiction and authority to adjudicate the issues, and in any such action neither the Company's nor the IDWR's participation and/or cooperation in, or with, the Legislation, or any program or plan authorized or contemplated by the Legislation, shall in any way affect or limit their respective rights, defenses or claims relating to the Controversy. In any such action, Rule 403 of the Idaho, or Federal, Rules of Evidence, whichever may be applicable, shall apply to this MOU, its provisions and contents, and all discussions and negotiations leading to the execution thereof.

b. To the extent that the Company cooperates and/or participates in any procedures, programs or plans authorized or contemplated by the Legislation, either through the rental of water pursuant to the terms of the legislation, or otherwise, such cooperation and/or participation shall not constitute a waiver or

relinquishment of, nor shall the Company be estopped from asserting:

i. any claims, rights, or defenses, whether legal or factual in nature, that may in anyway relate to the Controversy; or

ii. any of the Company's rights, duties, or responsibilities to operate any of its hydroelectric facilities in a manner approved by, or in conformance with, a Federal Energy Regulatory Commission license, as now or hereafter amended, or any other applicable law, rule, or regulation, which may be applicable to any such hydroelectric facility; or

iii. any right to enforce or seek clarification of its rights, duties and responsibilities that in any manner may be related to the Controversy before any court, or other administrative agency, having the jurisdiction and authority to settle or adjudicate all or any of the issues involved in the Controversy.

3. This MOU constitutes the entire agreement of the parties with regard to the subject matter herein, and merges all prior negotiations and understandings, whether oral or written, between the parties. No amendment or modification to this MOU shall be effective unless it is in writing and signed by authorized representaives of the respective parties.

4. This MOU shall be executed in triplicate, with each executed copy to constitute an original.

IDAHO POWER COMANY

By: _____
Dan Packwood, Vice President,
Power Supply

STATE OF IDAHO by and through
the IDAHO DEPARTMENT OF WATER
RESOURCES

By: _____
Keith Higginson, Director

STATE OF IDAHO )
)ss.
County of Ada )

On this 2nd day of July, 1992, before me, a Notary Public, in and for said County and State, personally appeared Jan Packwood, known or identified to me to be the Vice President of the IDAHO POWER COMPANY, the corporation that executed the foregoing instrument; and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Sharon R. Hill
NOTARY PUBLIC FOR IDAHO
Residing at: Boise, Idaho
My commission expires: 5-9-95

STATE OF IDAHO )
)ss.
County of Ada )

On this 1st day of July, 1992, before me, a Notary Public, in and for said County and State, personally appeared Keith Higginson, known or identified to me to be the Director of the Idaho Department of Water Resource, the corporation that executed the foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Sharla R. Curtis
NOTARY PUBLIC FOR IDAHO
Residing at: Boise
My commission expires: 10-6-96

# Idaho Power
## NEWS BRIEFS

May 4, 1992

*Informing policymakers about Idaho Power and the industry*

**For more information: Larry Taylor 383-2261**

## Idaho Power's Power Mostly From Outside Idaho

Nearly 70 percent of the electricity Idaho Power generated last year came from its plants located outside of Idaho.

Increased reliance on the company's coal-fired power plants due to the drought's impact on hydroelectric generating conditions is only part of the explanation, according to the company's statistical reports.

Last year, generation from the company's coal-fired plants—Jim Bridger in Wyoming, Valmy in Nevada and Boardman in Oregon—accounted for 5.8 million megawatt-hours, or 50 percent of the company's generation. In a normal year, almost two-thirds of the power would have come from the company's hydroelectric plants.

Even in years with normal water conditions, more than half of the company's electricity usually is generated outside Idaho since two of its three largest hydro facilities are in Oregon. Oxbow and Hells Canyon dams straddle the Snake River, but their generating plants are located in Oregon.

## 1992 Conservation Plan Available

Idaho Power's fourth annual conservation plan, detailing its energy conservation achievements during the past year as well as plans and goals for future energy savings programs, is available to interested parties.

In addition to detailing the company's programs for residential, commercial, industrial and agricultural customers, the 49-page plan and accompanying technical appendix include discussions of issues, opportunities and barriers related to demand side, or conservation, programs and resources.

To obtain a copy either write the Idaho Power Energy Services Department, P.O. Box 70, Boise, Id., 83707 or call the department at (208) 383-2662.

**IDAHO POWER COMMON STOCK NEWS**

| Friday Market Closing | Previous Friday Market Closing | Book Value | Indicated Annual Dividend Per Share | Earnings Per Share 12 Mo. End March 31 | Current Yield |
|---|---|---|---|---|---|
| 25 7/8 | 25 3/4 | $16.55 | $1.86 | $1.48 | 7.2% |

## Water Released For Salmon

Idaho Power's contribution to the regional "fish flush" is scheduled to end Wednesday (May 6). The company last week began releasing 110,000 acre-feet of water from Brownlee Reservoir on the Snake River to help push migrating salmon smolts downstream through the Lower Snake and Columbia rivers to the ocean.

At the request of the Northwest Fish Passage Center, the company began boosting the average release rate from Hells Canyon Dam—the most downstream of the company's three hydroelectric projects fueled with water stored in Brownlee—at midnight Thursday, April 30. The release rates were increased by approximately 10,000 cubic feet per second to about 20,000 c.f.s.

Brownlee Reservoir will have dropped about eight feet by the end of the release period. Recreationists can call Idaho Power's toll-free numbers for the latest information on water levels, boat ramp access and release rates. From within Idaho the number is 1-800-422-3143; from adjacent states it's 1-800-521-9102.

## Earliest Chinook Return On Record

The first returning adult spring chinook salmon of the year arrived at Idaho Power's Rapid River Hatchery near Riggins April 27, seven days before the previous earliest arrival date recorded since the anadromous fish began returning there in 1967.

The advanced arrival reflects similar activity observed in other parts of the Snake and Columbia river systems. Counts at Lower Granite Dam on the lower Snake River and Bonneville Dam on the Columbia are well above the 10-year average.

"I'm hesitant to interpret this as a sure sign of a bountiful return run this year," said the company's hatchery biologist, Paul Abbott. "The activity is most likely being triggered prematurely by below-normal spring runoff and warmer-than-normal water temperatures. If true, an early end to the run would be likely."

## Shareholders Meeting This Week

Idaho Power's annual shareowners meeting will be held in Pocatello this Wednesday (May 6) in the convention center of the Quality Inn at 2:00 p.m.

Chairman and Chief Executive Officer Joe Marshall will be available to address any company-related questions from the news media at 11:15 a.m. Reporters and photographers are welcome to attend the meeting but are asked not to participate in the speaker's question and answer session since that time is allocated for the shareholders.

RECEIVED
JUL 2 1992
Department of Water Resources

BEFORE THE IDAHO WATER RESOURCE BOARD
OF THE
STATE OF IDAHO

APPLICATION TO USE WATER THROUGH THE WATER SUPPLY BANK
FOR
POWER AND FISH FLOW AUGMENTATION PURPOSES

APPLICANT: Idaho Power Company

ADDRESS: P.O. Box 70, Boise, Idaho 83703

A. DESCRIPTION OF RIGHT TO BE USED

1. Source of Water Supply: Snake River

2. Water Right No.: 03-2018

3. Location of Point of Diversion: Brownlee Dam

B. DESCRIPTION OF USE PROPOSED BY APPLICANT

To release 137,000 AF (acre feet) from Brownlee Dam for power generation purposes and to augment flows in and out of the state of Idaho for fish migration consistent with HB 796 enacted by the Second Regular Session of the Fifty-first Idaho Legislature codified at I.C. Section 42-1763A.*

Releases to begin on July 3, 1992.

July 2, 1992
Date

Idaho Power Company
Applicant
By: Jim Callingwood

FOR DEPARTMENT USE ONLY

Rec'd by [signature] Date 7-2-92 Time 3:45 pm

Preliminary check by [signature] Date 7-2-92

Action of the Director:

Approve: X Deny: _____ Date _____

Conditions of approval (if applicable) _____

7/02/92
Date

[signature]
Director

*This application is being submitted pursuant to, and subject to the provisions of, that certain Memorandum of Understanding of even date herewith.

**MEMORANDUM OF UNDERSTANDING**

This Memorandum of Understanding (MOU), entered into this 1st day of July, 1992, by and between the IDAHO POWER COMPANY, hereinafter referred to as "the Company", a corporation organized and existing under and by virtue of the laws of the State of Idaho, and the STATE OF IDAHO, by and through the IDAHO DEPARTMENT OF WATER RESOURCES, hereinafter "the IDWR";

1. This MOU is intended to address the pending controversy, hereinafter the "Controversy," between the Company and the IDWR relating to the Company's operation of the Hells Canyon Complex, the nature of the Controversy being more specifically described and defined by prior correspondence between the Company and the IDWR, copies of which are attached hereto as Exhibits A through F.

2. While each of the parties to this MOU recognize and acknowledge the position of the other with regard to the Controversy, each party likewise acknowledges that an expedient resolution of the Controversy is unlikely and that further discussions and negotiations with regard to the issues involved will therefore be necessary. Due to the likelihood that a resolution to the controversy will not occur in the near future, and the desire of the Company to cooperate with the State of Idaho and other Idaho interests in addressing the Snake River salmon migration issue through the implementation of I.C. 42-1763A, as recently amended by H. 796, hereinafter the "Legislation," the Company and the IDWR agree as follows:

a. Each party specifically reserves the right to seek clarification and/or enforcement of (i) their respective rights, duties and/or responsibilities or (ii) any other issues that may in any manner relate to the Controversy, before any court or administrative agency having the jurisdiction and authority to adjudicate the issues, and in any such action neither the Company's nor the IDWR's participation and/or cooperation in, or with, the Legislation, or any program or plan authorized or contemplated by the Legislation, shall in any way affect or limit their respective rights, defenses or claims relating to the Controversy. In any such action, Rule 403 of the Idaho, or Federal, Rules of Evidence, whichever may be applicable, shall apply to this MOU, its provisions and contents, and all discussions and negotiations leading to the execution thereof.

b. To the extent that the Company cooperates and/or participates in any procedures, programs or plans authorized or contemplated by the Legislation, either through the rental of water pursuant to the terms of the legislation, or otherwise, such cooperation and/or participation shall not constitute a waiver or

relinquishment of, nor shall the Company be estopped from asserting:

i. any claims, rights, or defenses, whether legal or factual in nature, that may in anyway relate to the Controversy; or

ii. any of the Company's rights, duties, or responsibilities to operate any of its hydroelectric facilities in a manner approved by, or in conformance with, a Federal Energy Regulatory Commission license, as now or hereafter amended, or any other applicable law, rule, or regulation, which may be applicable to any such hydroelectric facility; or

iii. any right to enforce or seek clarification of its rights, duties and responsibilities that in any manner may be related to the Controversy before any court, or other administrative agency, having the jurisdiction and authority to settle or adjudicate all or any of the issues involved in the Controversy.

3. This MOU constitutes the entire agreement of the parties with regard to the subject matter herein, and merges all prior negotiations and understandings, whether oral or written, between the parties. No amendment or modification to this MOU shall be effective unless it is in writing and signed by authorized representaives of the respective parties.

4. This MOU shall be executed in triplicate, with each executed copy to constitute an original.

IDAHO POWER COMANY

By: _____
Jan Packwood, Vice President,
Power Supply

STATE OF IDAHO by and through
the IDAHO DEPARTMENT OF WATER
RESOURCES

By: _____
Keith Higginson, Director

STATE OF IDAHO )
)ss.
County of Ada )

On this 2nd day of July, 1992, before me, a Notary Public, in and for said County and State, personally appeared Jan Packwood, known or identified to me to be the Vice President of the IDAHO POWER COMPANY, the corporation that executed the foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Sharon R. Hill
NOTARY PUBLIC FOR IDAHO
Residing at: Boise, Idaho
My commission expires: 5-9-95

STATE OF IDAHO )
)ss.
County of Ada )

On this 1st day of July, 1992, before me, a Notary Public, in and for said County and State, personally appeared Keith Higginson, known or identified to me to be the Director of the Idaho Department of Water Resource, the corporation that executed the foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Sharla R. Curtis
NOTARY PUBLIC FOR IDAHO
Residing at: Boise
My commission expires: 10-6-96

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

September 5, 1991

TO: DISTRIBUTION LIST

Gentlemen:

Recently, initiatives have developed for water bank rentals as a result of the Non-Treaty Storage Agreement, or as part of flow augmentation proposals resulting from the Endangered Species Act petitions involving Snake River sockeye and chinook salmon. These proposals have discussed rentals of 100,000 acre feet or more per year from the Water District 01 and 65 rental pools. The intended use is for flow augmentation through the Snake and Columbia River main-stem dams and reservoirs downstream from Lewiston, Idaho.

The Director of the Department of Water Resources is charged under §42-1763, Idaho Code, with responsibility to approve the terms and conditions of any rental of water from Idaho water supply banks. Among the matters the law requires to be considered in connection with such approval are whether:

- the proposed use is such that it will reduce the quantity of water available under existing water rights,
- the water supply involved is sufficient for the purpose for which it is sought,
- the rental would cause the use of water to be enlarged beyond that authorized under the water right to be rented, or
- it will conflict with the local public interest.

One further provision of this section is that the water rentals may be "... approved only for uses within the state of Idaho."

We have generally taken a "hands-off" attitude toward water bank rentals, particularly where the water rented was still being used within the designated service area of the federal reservoir projects from which the water is supplied. We felt that moving the water around among project beneficiaries promoted conservation and water use efficiency.



EXHIBIT A

I recognize that the water bank lease agreement executed by Idaho Power Company for 80,000 acre feet of water from the Water District 01 rental pool for 1991 specifies that the use is for "All hydroelectric generating facilities of Idaho Power Company located on the Snake River from American Falls Dam through Hells Canyon Dam." However, it is no secret that the real purpose is for use elsewhere. A typical Idaho Power Company "News Briefs" dated August 19, 1991, for example, described this rental thus:

> That water was rented from irrigators by Idaho Power acting as agent for the Bonneville Power Administration to help anadromous fish in the lower Snake and Columbia rivers.

While these matters were being discussed at the Salmon Summit and at subsequent meetings of the Power Planning Council and elsewhere, I had indicated a willingness to cooperate in seeking an overall solution. But I have cautioned that I could not ignore the provisions of state law and allow rentals for this purpose to continue beyond the current year without more formal proceedings. The Idaho water bank law was never intended to allow the kind of uses being proposed in connection with endangered species survival outside the state.

I further wish to advise all parties that the use of water stored in Bureau of Reclamation (USBR) and Idaho Power Company (IPCo) reservoirs for fish flow enhancement purposes (water budget) is not authorized by the Idaho water rights held by the USBR or the IPCo. The storage and use of water in Brownlee Reservoir, for example, is limited by water right licenses 03-2018 and 03-2023 to the single purpose of "electric power generation." The water rights held by the USBR for its various project reservoirs in Idaho have similar limited specific purposes and authorized project service areas.

If water from Idaho reservoirs is proposed to be used in the future for flow augmentation purposes through the slack-water pools created by the eight federal projects on the lower Snake and Columbia Rivers, then the holder of the water rights for such reservoirs (USBR and IPCo as the case may be) needs to file applications for transfer with this office pursuant to §42-222, Idaho Code, to change the place and nature of use of the water rights involved. Such proposed change can then be advertised and considered pursuant to the appropriate provisions of Idaho water law including §42-401, Idaho Code, governing procedures for approval of use of water outside the state.

Given the limitations on use of water bank water contained within the statutes quoted, I hereby advise that, without a formal review, I cannot approve the lease of water from Idaho water banks beyond 1991 for fish passage purposes for the following reasons:

1) Rental of water from the banks may cause impairment of other water rights. This may result from use of water contained within reservoir space which would otherwise remain filled during a refill period during which other, subsequent priority storage rights would be entitled to receive the water.

2) The rental and use of water from federal reservoirs in the upper Snake, Boise and Payette rivers for fish flow enhancement purposes downstream from Lewiston, Idaho may cause an enlargement in the authorized uses of the water pursuant to the state water rights held by the U.S. Bureau of Reclamation. The extent of the congressionally authorized purposes of the various Bureau projects could be a factor in this.

3) Use of water from Idaho reservoirs which might otherwise be available to satisfy present and future needs within the state without a cooperative effort on the part of downstream federal and other interests to modify conditions affecting fish mortality appears not to be in the public interest. Given the recommendations of the Columbia Basin Fish and Wildlife Authority, there is no evidence, to date, that flow augmentation from upstream reservoirs is sufficient to provide any positive fish benefits in the lower Snake River.

4) Rental of water from Idaho water banks is restricted by §42-1763, Idaho Code, for uses within the state of Idaho.

All interests are advised that there is a need for early consideration of these matters if any water is to be made available during 1992. An application for transfer of a water right would need to be advertised statewide for two weeks after which 10 days is allowed for the filing of any protests. If protests are received, a hearing or hearings will need to be held. In any event, the criteria of §42-203A and §42-401, Idaho Code, will be considered before approval can be given. You should also understand that any reallocation of water from federal reservoirs in quantities in excess of 500 acre feet will be subject to review by the Idaho Water Resource Board as provided by Policy 4C of the adopted Idaho State Water Plan.

Sincerely,

R. KEITH HIGGINSON
Director

RKH:de

cc: Hon. Cecil D. Andrus, Governor
Hon. Larry EchoHawk, Attorney General

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

October 4, 1991

Steve Herndon
Idaho Power Company
P.O. Box 70
Boise, Idaho 83707

Dear Steve:

This is a follow-up to our telephone conversation regarding my letter of September 5, 1991, relative to water bank rentals and water rights.

As I indicated, I have taken no action subject to appeal or judicial review since no application has yet been filed with this Department under various provision of state law. If the Idaho Power Company desires to change the use of the water it stores in Brownlee Reservoir or if others wish to have Idaho Power re-regulate or "shape" water released from other reservoirs, then an appropriate application needs to be filed and processed pursuant to state law. Upon receipt of such application we will publish required legal notices, conduct hearings and investigations which will, hopefully, build a record to establish the basis for decision and then issue a decision. Approval or denial of the application will then be subject to appeal and review by the court.

In the absence of an application filed to amend existing rights, the water user modifying use of water stored in its reservoir under Idaho water right permits and licenses will be subject to the penalty provision of the Idaho Code.

I have cautioned the parties to the salmon discussions on several occasions that compliance with water law was a necessary requisite to change in the use of water from Idaho reservoirs. My comments have largely been ignored to this point, nevertheless, I am required to enforce the provisions of state law. There may be time for this matter to be given proper consideration before the 1992 runoff season, but only if appropriate applications are filed soon. We will be happy to assist the Company in this matter.

Sincerely,

R. KEITH HIGGINSON
Director

RKH:dc
cc: Andy Brunelle

EXHIBIT B



Idaho Power Company

BOX 70 ★ BOISE, IDAHO 83707

JAN PACKWOOD
Vice President
Power Supply

(208) 383-2200
(208) 383-2336 (Fax)

October 15, 1991

Keith Higginson
Idaho Department of Water Resources
1301 North Orchard Street
Statehouse Mail
Boise, Idaho 83720-9000

Re: Idaho Department of Water Resources (Department) Letters Regarding the Operation of the Hells Canyon Project by Idaho Power Company (Company)

Dear Mr. Higginson:

We have your letter of October 4, 1991, and appreciate you confirming that the position set forth in your September 5, 1991, letter does not constitute final action by the Department.

There are, however, issues raised by both your September 5 and October 4 letters that we believe merit, and in fact require, a response. While the primary focus of your September 5, 1991, letter centered on the use of water bank rentals for flow augmentation proposals developed in response to petitions filed under the Endangered Species Act, brief comments in that letter, and similar comments in your October 4 letter, raise questions and concerns as to the intent and position of the Department relative to the ongoing operations of the Company.

The principal concern of the company regards those comments directed to the operation and management of the Company's Hells Canyon complex. Specifically, your comments that (i) "the use of water stored . . . Idaho Power (IPCO) reservoirs for fish flow enhancement purposes (water budgeting) is not authorized by the Idaho water right held by the . . . IPCO." (Letter of September 5, 1991) and (ii) "If the Idaho Power Company desires to change the use of the water it stores in Brownlee Reservoir or if others wish to have Idaho Power re-regulate or 'shape' water released from other reservoirs, then an appropriate application(s) needs to be filed and processed pursuant to state law" (Letter of October 4, 1991) and (iii) your later reference that a water user modifying the use of water stored in its reservoir will be subject to the

penalty provisions of the Idaho Code all suggest that the Company has in the past used its water rights for purposes that are not consistent with, or authorized by, its state and federal project licenses.

The purpose of this letter is to advise you that the Company feels that the suggestions contained in your recent letters relative to the Company's unauthorized use of its water rights is not only in direct conflict with the Company's previous, and ongoing, operations, but with the authorizations and conditions contained in the Company's FERC licenses for the referenced projects. While the statement in your September 5 letter that the Company's state licenses at Brownlee refer to the single purpose of "electric power generation," is correct, the intended scope of that use is governed by both economic and legal criteria. As to the former, the business judgment of the Company, as tempered and regulated by the Idaho Public Utilities Commission and other regulators as appropriate must control, and as to the latter, the United States Supreme Court's decision in California v. FERC, 110 Sup. Ct. 2024, would indicate that license authorizations and conditions imposed by the FERC must take precedence over conflicting limitations or conditions imposed at the state level.

As you are well aware, the Company has developed and has commenced implementation of its "Fall Chinook Interim Recovery Plan and Study" ("Plan"). This Plan does contemplate a change in the timing of releases of stored water from the Hells Canyon complex as well as the reservation of some storage space for "shaping" downstream releases for fish. The Company believes that the plan is within the scope of its operational authority from the Federal Energy Regulatory Commission and with the water licenses it has received from the Department or its predecessor. An additional copy of the Plan is enclosed for your reference.

The Company maintains the position that its use of the water rights appurtenant to its respective projects, have been and are consistent with the conditions of its FERC licenses and, correspondingly, the state issued water licenses. Consistent with that position, the Company intends to continue to operate its project facilities in the same manner and objects to any suggestion by the Department that the Company's current, or future operations, including, without limitation, the use of water in connection with the Plan, have or will be violative of its state issued water licenses. If the Department has information, or is of the belief, that the Company's past, current or future operations have not conformed, or will not conform, to the authorizations and conditions of its respective licenses, we would be happy to discuss those specific instances with you. In the absence of such specifics, we will assume that the statements in your previous letters were in error and not directed at those operations, including any operations contemplated by the Plan.

Sincerely,

Jim Packwood

JBP:slc

cc: J W Marshall
L R Ginnoe
R W Stahman
J M Collingwood
S L Herndon

File copy



**State of Idaho**
**DEPARTMENT OF WATER RESOURCES**
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

October 31, 1991

Jan Packwood
Vice President Power Supply
Idaho Power Company
Box 70
Boise, Idaho 83707

Dear Mr. Packwood:

Thank you for your letter of October 15, 1991, offering to meet and discuss the Company's proposed changes in the use of its Snake River water rights to implement its "Fall Chinook Interim Recovery Plan and Study." I appreciate the fact that it is the Company's view that it may make these significant changes in the operation of its Snake River facilities without State approval. I, however, am compelled by my official responsibilities to consider whether such changes are consistent with the Company's present water rights or whether state law requires some further approval.

Your letter expresses a concern that I have placed in question the validity of the Company's past use of water under its Snake River water rights. My purpose is to make sure that any significant and permanent change that the Company wishes to make in its use of water on the Snake River is accomplished in compliance with state law.

It is a fundamental precept of the appropriation doctrine of water rights followed in Idaho that the beneficial use to which a water right is put over time defines the legal limits of that right. In the Company's case, the mode of operating the Snake River facilities has over time defined the limits of the Company's water rights. As your letter states, the Company now plans "a change in the timing of releases of stored water from the Hells Canyon complex as well as the reservation of some storage space for 'shaping' downstream releases for fish." This purpose is not among the purposes identified in the Company's water right licenses and it represents a change from past uses under the Company's water rights.

The changes in operation proposed by the Company cannot be fairly characterized as insignificant. The appropriate question at this point is not whether the Company's licensed water rights would have allowed the Company to follow initially the mode of operation now proposed. The relevant question is whether the Company's proposed change in operation is a significant change from past beneficial uses such that other existing water rights potentially may be affected by the change.



EXHIBIT D

I reiterate my concern that if the Company's normal operations are to be significantly changed during 1992 for fish flow enhancement purposes it is important that steps be taken soon to ensure compliance with state law. Please contact me soon if you wish to suggest a date for further discussion of these matters.

Sincerely,

R. KEITH HIGGINSON
Director

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

April 15, 1992

Idaho Power Company
U. S. Army Corps of Engineers
U. S. Bureau of Reclamation
Bonneville Power Administration
Northwest Power Planning Council

RE: Idaho Bills H 796 and HJM 17

To Entities Addressed:

Enclosed are copies of H 796 and HJM 17, each of which became Idaho law during the recently-concluded session of the Idaho Legislature. These bills have as their purpose the temporary setting aside of certain provisions of state law with regard to use of water from Idaho reservoirs out of state and for purposes inconsistent with the water rights under which such reservoirs presently store and release water.

The bills also have as their purpose the conditioning of state cooperation in allowing interim use of water for flow augmentation upon a serious examination of the drawdown and new storage alternatives and a proportional contribution by other entities to solving the salmon migration problem.

You will note that paragraph (4) of H 796 provides "The Board may make water available from the water bank or through local rental pool committees ...in accordance with an annual water flow augmentation plan prepared by those entities proposing the rental of water and approved by the Director." The purpose of this letter is to advise you of this provision and to request a 1992 plan of flow augmentation. The Plan should cover all storage water proposed from Idaho reservoirs for salmon flow enhancement and should describe the volumes and periods of such proposed releases. I would further like to know if the Corps Record of Decision (ROD) dated April 10, 1992 is intended to cover 1992 operations only or whether another ROD is planned for 1993 and thereafter.

The ROD indicates plans to use a minimum of 900 thousand acre feet of water plus any flood control shift plus minimum flow releases (estimated to be 242 thousand acre feet) from Dworshak before August 30. Release of an additional 200 thousand acre feet from Dworshak after Labor Day is also, apparently, planned. In addition, reference is made to further releases of 400 thousand acre feet "...from Dworshak and the upper Snake River Basin." No information is provided as to the source of such upper Snake River Basin water. The ROD includes the statement that the selected plan for 1992 "...



EXHIBIT E

reduces water particle travel time for the benefit of migrating fish ..." Please provide copies on any studies which show the magnitude of the anticipated decrease in water particle travel time.

I also need to understand whether the Corps plans to utilize the Idaho Water Resource Board water bank for these and other releases so as to take advantage of the state's waiver of other statutory limitations on use of Idaho water out of state and for purposes contrary to those for which the reservoir was authorized and constructed.

If the entities to which this letter is addressed plan to use water from other reservoirs; Brownlee, Cascade/Deadwood, or the upper Snake then I need a proposed plan for approval before I can authorize such use through the Idaho Water Bank program.

I will be happy to discuss this matter with you if you desire; you should understand that without an approved plan there is no legislative waiver of provisions of Idaho Law which would prohibit uses of water from Idaho reservoirs for flow enhancement purposes and out of state.

Sincerely,

R. KEITH HIGGINSON
Director

RKH:dc

cc: Governor Andrus
Enclosure: H 796, HIM 17

received 5/6/92

c: Marshall
Gunnoe
Stahman
ESA Committee
Jim Tucker

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

April 30, 1992

Jan Packwood
Vice President, Power Supply
Idaho Power Company
P.O. Box 70, Boise, ID 83707

Dear Mr. Packwood:

Once again it is apparent that the Idaho Power Company is attempting to add an unauthorized use of water stored in Brownlee Reservoir without following appropriate provisions of Idaho law. I had thought that this matter was fully reviewed and agreed to by the Company when it participated in the Idaho Caucus discussions during the drafting of bills considered by the 1992 Legislature.

You will recall that early drafts of House Bill 796 specifically referred to "...reservoirs within the state of Idaho, including Dworshak and Brownlee...". The gentlemen's agreement that resulted from those discussions was that it was not necessary to include specific reference to Dworshak and Brownlee since other reservoirs (particularly those operated by the Bureau of Reclamation) from which water was proposed to be obtained for flow enhancement were not mentioned. John Keys of the Bureau raised strong objection to caucus support of legislation unless it was applicable to the fish flow enhancement operations of all entities. It was with this specific understanding that the Department of Water Resources agreed not to oppose the bill.

You suggest that you are operating pursuant to FERC licenses and state water rights. I hereby advise you that any release of water for fish flow enhancement purposes except as authorized by House Bill No. 796 is contrary to Idaho law and a violation of water right licenses held by the Company.

I call your attention to the following section from Page 48 of the biological opinion issued on April 10 by NMFS which was used as the basis for the Corps Record of Decision approving 1992 planned operations.

EXHIBIT F

**1992 IPCO Planned Operations**

> All flood control requirements at Brownlee reservoir have been waived by the COE for 1992. Proposed operations at Brownlee are (Tim Brewer, IPCo, pers. comm. to NMFS, March 5, 1992): fill by mid-April; pass inflow through April; draft up to 110 kaf in May for flow augmentation; refill on or before July 1 as possible. A draft of up to 137 kaf is scheduled in July in response to the Northwest Power Planning Council's Phase Two Amendments to the Fish and Wildlife Program. The Northwest Power Planning Council has also requested that, in September, IPCo provide 100 kaf of its own and pass 100 kaf of upper Snake River water. (emphasis added)

That sounds very much like as much as 347 kaf of Brownlee Reservoir water stored for the Company's ordinary power operations will be "drafted" for "flow augmentation" purposes. I believe it is safe to assume that the reservoir would not otherwise be drafted during the periods indicated in the normal power operations of the Company. The Idaho Power Company holds no water right to store water in Brownlee and then release such water for the purpose of downstream flow augmentation even though it may be also used incidentally for authorized power generation as it is being released. The only way this office would consider such released water to be a part of the normal operations of the Company would be that there was no arrangement made with BPA or other entity for replacement power or other compensation. If replacement energy or compensation is provided to the Company, then we would consider that evidence that a new purpose of use has been proposed for water stored under the Brownlee water right. That can only be authorized through approval of a transfer application filed pursuant to Section 42-222, Idaho Code or by following the provisions of House Bill 796.

The Idaho Legislature reluctantly agreed that, for a three year period, provisions of Idaho Law be set aside to show good faith in the Region in the effort to protect anadromous fish. The mechanism to allow this to happen was use of the Idaho Water Resource Board water bank and local rental pools. Approval of out-of-state use of water, enlargement of authorized water right purposes of use under transfer laws, and considerations of beneficial use and public interest were waived until January 1995. Idaho Power was one of the entities which most strongly expressed its desire that no finding concerning these matters be made by this office for the interim period. The only way I can now assure that present law is followed is for the Company to propose rental of Brownlee Reservoir water through the Board's water bank. If this is not done and the Company announces that it is commencing drafting of Brownlee for fish flow purposes, I will have no choice but to issue a cease and desist order and to seek enforcement through the courts.

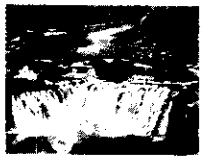
I had hoped that it would not come to this. I have repeatedly offered to meet with Company officials to discuss the matter without response. I hope now that reason will prevail and that you will agree to follow state law.

Sincerely,

R. KEITH HIGGINSON
Director

RKH:dc

cc: Governor Andrus
Idaho Public Utilities Commission
John Keys, USBR

SNAKE RIVER

HYDRO POWER

L E GARLINGHOUSE
ASSISTANT VICE PRESIDENT
POWER OPERATIONS

# IDAHO POWER COMPANY

BOX 70 • BOISE, IDAHO 83721

21 June 1977

RECEIVED
JUN 1977
Department of Water Resources

Mr Kenneth H Foit, P E
Western District Engineer
Idaho Department of Water Administration
Statehouse - Annex 2
Boise, Idaho 83707

SUBJECT: FPC Projects 1971 and 2055
Dam Settlement & Deflection
Tabulations

Dear Mr Foit:

Enclosed are the prints showing the dam deflection and settlement of the Brownlee, Oxbow, Hells Canyon and C J Strike dams.

If you have any questions, please contact me.

Very truly yours,

F E Myers, Superintendent
Power Plants

FEM/bac
Encl.

1 Brought up to 2-24-65 10-26-66 G.F.J

2 7-9-73 DES Brought up to date

# ELEVATIONS AND DISPLACEMENTS OF DAM SETTLEMENT MONUMENTS

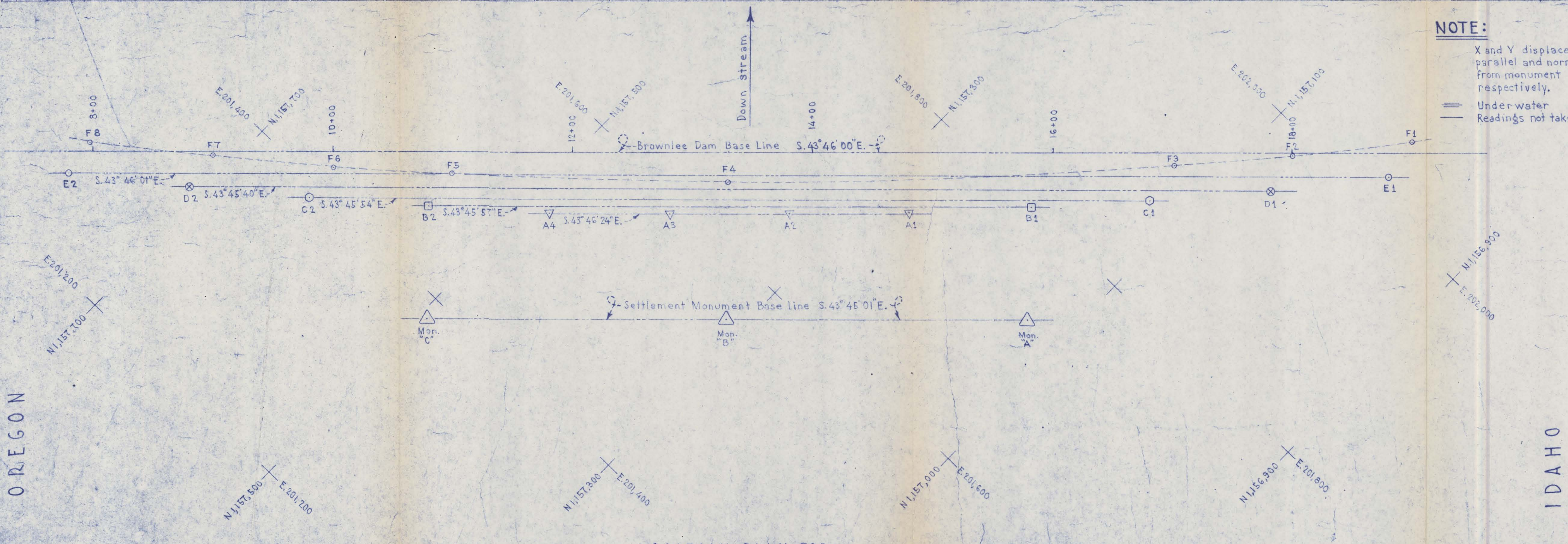
## ELEVATIONS

| OBS | DATE | Mon.A | Mon.B | Mon.C | A-1 | A2 | A3 | A4 | B1 | B2 | C1 | C2 | D1 | D2 | E1 | E2 | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9-25-58 | 48.159 | 49.025 | 49.593 | | | | | | | | | | | | | | | | | | | | |
| 2 | 10-17-58 | 48.011 | 48.852 | 49.501 | | | | | | | | | | | | | | | | | | | | |
| 3 | 11-20-58 | 47.888 | 48.712 | 49.412 | | | | | | | | | | | | | | | | | | | | |
| 4 | 12-29-58 | 47.808 | 48.625 | 49.352 | | | | | | | | | | | | | | | | | | | | |
| 5 | 1-22-59 | 47.780 | 48.592 | 49.329 | 96.931 | 96.916 | 96.979 | 96.793 | 96.534 | 96.260 | 95.863 | 95.462 | 94.588 | 94.211 | 92.827 | 92.543 | 92.134 | 93.957 | 95.267 | 96.584 | 95.990 | 95.185 | 93.961 | 92.373 |
| 6 | 2-25-59 | 47.758 | 48.564 | 49.308 | 96.893 | 96.877 | 96.942 | 96.752 | 96.501 | 96.220 | 95.835 | 95.423 | 94.562 | 94.178 | 92.813 | 92.528 | 92.181 | 93.932 | 95.238 | 96.542 | 95.945 | 95.142 | 93.922 | 92.353 |
| 7 | 3-30-59 | 47.745 | 48.545 | 49.293 | 96.868 | 96.847 | 96.910 | 96.719 | 96.481 | 96.189 | 95.819 | 95.393 | 94.549 | 94.153 | 92.809 | 92.514 | 92.180 | 93.919 | 95.221 | 96.508 | 95.911 | 95.108 | 93.893 | 92.334 |
| 8 | 4-22-59 | 47.736 | 48.528 | 49.277 | 96.860 | 96.833 | 96.896 | 96.704 | 96.474 | 96.177 | 95.812 | 95.383 | 94.543 | 94.146 | 92.810 | 92.515 | 92.183 | 93.916 | 95.218 | 96.493 | 95.898 | 95.095 | 93.887 | 92.334 |
| 9 | 5-26-59 | ═ | ═ | ═ | 96.834 | 96.804 | 96.864 | 96.677 | 96.455 | 96.154 | 95.797 | 95.364 | 94.535 | 94.132 | 92.804 | 92.509 | 92.176 | 93.908 | 95.204 | 96.460 | 95.871 | 95.074 | 93.867 | 92.325 |
| 10 | 6-21-59 | ═ | ═ | ═ | 96.722 | 96.687 | 96.757 | 96.587 | 96.354 | 96.086 | 95.722 | 95.311 | 94.495 | 94.094 | 92.799 | 92.464 | 92.176 | 93.880 | 95.138 | 96.347 | 95.793 | 95.014 | 93.826 | 92.300 |
| 11 | 7-21-59 | ═ | ═ | ═ | 96.559 | 96.518 | 96.601 | 96.449 | 96.208 | 95.976 | 95.609 | 95.220 | 94.423 | 94.025 | 92.769 | 92.407 | 92.155 | 93.818 | 95.036 | 96.181 | 95.670 | 94.909 | 93.747 | 92.250 |
| 12 | 8-18-59 | ═ | ═ | ═ | 96.478 | 96.439 | 96.517 | 96.381 | 96.144 | 95.915 | 95.554 | 95.177 | 94.396 | 93.986 | 92.759 | 92.384 | 92.150 | 93.797 | 94.988 | 96.097 | 95.603 | 94.862 | 93.704 | 92.228 |
| 13 | 9-2-59 | ═ | ═ | ═ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 14 | 9-15-59 | ═ | ═ | ═ | 96.422 | 96.381 | 96.459 | 96.330 | 96.099 | 95.873 | 95.519 | 95.144 | 94.377 | 93.958 | 92.754 | 92.363 | 92.149 | 93.784 | 94.958 | 96.038 | 95.555 | 94.829 | 93.672 | 92.207 |
| 15 | 10-14-59 | ═ | ═ | ═ | 96.385 | 96.339 | 96.414 | 96.279 | 96.058 | 95.837 | 95.496 | 95.114 | 94.354 | 93.931 | 92.742 | 92.341 | 92.148 | 93.771 | 94.937 | 95.989 | 95.515 | 94.787 | 93.641 | 92.186 |
| 16 | 11-16-59 | ═ | ═ | ═ | 96.362 | 96.309 | 96.389 | 96.261 | 96.042 | 95.816 | 95.473 | 95.091 | 94.344 | 93.916 | 92.735 | 92.327 | 92.138 | 93.758 | 94.918 | 95.966 | 95.493 | 94.767 | 93.626 | 92.173 |
| 17 | 12-16-59 | ═ | ═ | ═ | 96.345 | 96.292 | 96.368 | 96.246 | 96.034 | 95.801 | 95.467 | 95.080 | 94.341 | 93.909 | 92.735 | 92.320 | 92.137 | 93.756 | 94.915 | 95.950 | 95.470 | 94.758 | 93.613 | 92.170 |
| 18 | 1-15-60 | ═ | ═ | ═ | 96.340 | 96.288 | 96.361 | 96.235 | 96.023 | 95.791 | 95.460 | 95.070 | 94.332 | 93.893 | 92.729 | 92.312 | 92.136 | 93.752 | 94.909 | 95.940 | 95.467 | 94.742 | 93.602 | 92.158 |
| 19 | 2-15-60 | 47.322 | 48.053 | 48.983 | 96.356 | 96.277 | 96.351 | 96.225 | 96.023 | 95.781 | 95.460 | 95.058 | 94.334 | 93.881 | 92.738 | 92.306 | 92.148 | 93.758 | 94.911 | 95.936 | 95.458 | 94.734 | 93.593 | 92.152 |
| 20 | 2-29-60 | ═ | ═ | ═ | — | 96.273 | — | 96.220 | 96.017 | — | — | 95.051 | 94.329 | — | — | 92.303 | — | — | — | — | — | — | — | — |
| 21 | 3-22-60 | 47.309 | 48.034 | 48.963 | 96.326 | 96.267 | 96.342 | 96.213 | 96.012 | 95.765 | 95.449 | 95.041 | 94.324 | 93.865 | 92.730 | 92.300 | 92.142 | 93.748 | 94.901 | 95.925 | 95.444 | 94.719 | 93.578 | 92.146 |
| 22 | 4-5-60 | 47.308 | 48.035 | 48.965 | 96.321 | 96.263 | 96.338 | 96.208 | 96.007 | 95.763 | 95.444 | 95.039 | 94.321 | 93.867 | 92.726 | 92.299 | 92.138 | 93.744 | 94.897 | 95.919 | 95.440 | 94.716 | 93.577 | 92.145 |
| 23 | 4-18-60 | ═ | ═ | ═ | 96.316 | 96.257 | 96.332 | 96.202 | 96.004 | 95.757 | 95.442 | 95.034 | 94.319 | 93.864 | 92.729 | 92.297 | 92.141 | 93.745 | 94.896 | 95.914 | 95.433 | 94.709 | 93.573 | 92.143 |
| 24 | 5-6-60 | ═ | ═ | ═ | 96.309 | 96.247 | 96.324 | 96.191 | 95.995 | 95.747 | 95.435 | 95.026 | 94.312 | 93.859 | 92.725 | 92.294 | 92.136 | 93.739 | 94.888 | 95.904 | 95.424 | 94.699 | 93.565 | 92.137 |
| 25 | 6-15-60 | ═ | ═ | ═ | 96.299 | 96.235 | 96.311 | 96.178 | 95.985 | 95.739 | 95.428 | 95.015 | 94.308 | 93.850 | 92.727 | 92.285 | 92.138 | 93.737 | 94.883 | 95.889 | 95.411 | 94.686 | 93.555 | 92.129 |
| 26 | 8-10-60 | ═ | ═ | ═ | 96.291 | 96.221 | 96.298 | 96.166 | 95.979 | 95.731 | 95.423 | 95.011 | 94.304 | 93.846 | 92.725 | 92.283 | 92.138 | 93.740 | 94.881 | 95.880 | 95.404 | 94.683 | 93.550 | 92.128 |
| 27 | 10-31-60 | ═ | ═ | ═ | 96.270 | 96.205 | 96.280 | 96.151 | 95.962 | 95.711 | 95.407 | 94.995 | 94.297 | 93.830 | 92.723 | 92.275 | 92.138 | 93.746 | 94.874 | 95.863 | 95.381 | 94.664 | 93.534 | 92.120 |
| 28 | 2-1-61 | 47.251 | 47.973 | 48.912 | .251 | .183 | .252 | .132 | .950 | .689 | .391 | .977 | .288 | .806 | .715 | 92.262 | .135 | .734 | .867 | .843 | .360 | .645 | .511 | 92.108 |
| 29 | 12-22-64 | ═ | ═ | ═ | 96.080 | 95.999 | 96.053 | 95.932 | 95.808 | 95.493 | 95.258 | 94.796 | 94.195 | 93.649 | 92.671 | 92.181 | 92.110 | 93.700 | 94.781 | 95.654 | 95.163 | 94.456 | 93.342 | 92.014 |
| 30 | 2-24-65 | 47.105 | 47.790 | 48.766 | 96.087 | 95.988 | 96.051 | 95.920 | 95.799 | 95.493 | 95.264 | 94.782 | 94.189 | 93.647 | 92.684 | 92.172 | 92.128 | 93.701 | 94.788 | 95.654 | 95.163 | 94.447 | 93.339 | 92.009 |
| 31 | 3-4-68 | | | | 96.003 | 95.894 | 95.951 | 95.820 | 95.728 | 95.397 | 95.200 | 94.693 | 94.143 | 93.572 | 92.667 | 92.135 | 92.121 | 93.672 | 94.738 | 95.567 | 95.072 | 94.356 | 93.257 | 91.967 |
| 32 | 3-7-70 | 46.992 | 47.638 | 48.657 | 95.967 | 95.848 | 95.899 | 95.765 | 95.694 | 95.349 | 95.170 | 94.465 | 94.119 | 93.526 | 92.659 | 92.112 | 92.115 | 93.652 | 94.711 | 95.517 | 95.020 | 94.305 | 93.209 | 91.941 |
| 33 | 6-28-73 | ═ | ═ | ═ | 95.862 | 95.742 | 95.772 | 95.654 | 95.616 | 95.230 | 95.095 | 94.545 | 94.075 | 93.428 | 92.625 | 92.068 | 92.088 | 94.608 | 94.645 | 95.411 | 94.902 | 94.195 | 93.099 | 91.882 |
| 34 | 3-19-75 | 46.870 | 47.475 | 48.530 | 95.835 | 95.699 | 95.737 | 95.611 | 95.583 | 95.203 | 95.079 | 94.504 | 94.054 | 93.403 | 92.629 | 92.044 | 92.097 | 94.600 | 94.636 | 95.373 | 94.869 | 94.158 | 93.068 | 91.864 |
| 35 | 5-25-76 | ═ | ═ | ═ | 95.828 | 95.679 | 95.717 | 95.587 | 95.572 | 95.174 | 95.063 | 94.477 | 94.036 | 93.373 | 92.625 | 92.022 | 92.100 | 93.595 | 94.622 | 95.351 | 94.841 | 94.126 | 93.036 | 91.844 |
| 36 | 6-7-77 | ═ | ═ | ═ | 95.802 | 95.664 | 96.701 | 95.262 | 95.557 | 95.160 | 95.052 | 94.458 | 94.031 | 93.365 | 92.614 | 91.662 | 92.085 | 93.581 | 94.603 | 95.337 | 94.821 | 94.112 | 93.020 | 91.838 |
| 37 | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | |

## DISPLACEMT FROM ORIGINAL POSITIONS

| OBS | DATE | Mon.A | | Mon.B | | Mon.C | | A1 | | A2 | | A3 | | A4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| 1 | 9-25-58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 2 | 10-17-58 | — | +0.14 | — | +0.21 | — | +0.13 | | | | | | | | |
| 3 | 11-20-58 | — | +0.27 | — | +0.26 | — | +0.17 | | | | | | | | |
| 4 | 12-29-58 | — | +0.36 | — | +0.35 | — | +0.24 | | | | | | | | |
| 5 | 1-22-59 | — | +0.33 | — | +0.37 | — | +0.265 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 2-25-59 | — | +0.325 | — | +0.41 | — | +0.265 | — | 0.00 | — | 0.015 | — | 0.00 | — | 0.020 |
| 7 | 3-30-59 | — | +0.33 | — | +0.43 | — | +0.27 | — | -0.02 | — | 0.02 | — | 0.03 | — | 0.04 |
| 8 | 4-22-59 | — | +0.28 | — | +0.36 | — | +0.21 | — | 0.00 | — | 0.00 | — | -0.01 | — | +0.02 |
| 9 | 5-26-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | -0.015 | — | +0.02 | — | +0.01 | — | +0.045 |
| 10 | 6-21-59 | ═ | ═ | ═ | ═ | ═ | ═ | | 0.090 | | 0.08 | — | 0.11 | — | 0.150 |
| 11 | 7-21-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.15 | — | 0.23 | — | 0.20 | — | 0.23 |
| 12 | 8-18-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.19 | — | 0.26 | — | 0.30 | — | 0.31 |
| 13 | 9-2-59 | ═ | ═ | ═ | ═ | ═ | ═ | -.085 | 0.24 | -.055 | 0.28 | +0.03 | 0.30 | +0.06 | 0.34 |
| 14 | 9-15-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.26 | — | 0.33 | — | 0.31 | — | 0.39 |
| 15 | 10-14-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.32 | — | 0.40 | — | 0.455 | — | 0.405 |
| 16 | 11-16-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.27 | — | 0.36 | — | 0.42 | — | 0.44 |
| 17 | 12-16-59 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.31 | — | 0.40 | — | 0.44 | — | 0.46 |
| 18 | 1-15-60 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.29 | — | 0.35 | — | 0.41 | — | 0.37 |
| 19 | 2-15-60 | ═ | +0.62 | ═ | +0.79 | ═ | +0.57 | — | 0.26 | — | 0.33 | — | 0.38 | — | 0.44 |
| 20 | 2-29-60 | ═ | +0.62 | ═ | +0.79 | ═ | +0.56 | — | 0.26 | — | 0.30 | — | 0.34 | — | 0.425 |
| 21 | 3-22-60 | ═ | +0.62 | ═ | +0.79 | ═ | +0.55 | — | 0.25 | — | 0.33 | — | 0.355 | — | 0.405 |
| 22 | 4-5-60 | ═ | +0.60 | ═ | +0.78 | ═ | +0.535 | — | 0.265 | — | 0.33 | — | 0.355 | — | 0.415 |
| 23 | 4-18-60 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.265 | — | 0.34 | — | 0.38 | — | 0.425 |
| 24 | 5-6-60 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.25 | — | 0.305 | — | 0.355 | — | 0.415 |
| 25 | 6-15-60 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.30 | — | 0.36 | — | 0.41 | — | 0.44 |
| 26 | 8-10-60 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.25 | — | 0.36 | — | 0.51 | — | 0.45 |
| 27 | 10-31-60 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.31 | — | 0.37 | — | 0.40 | — | 0.50 |
| 28 | 2-1-61 | ═ | +0.65 | ═ | +0.84 | ═ | +0.59 | — | 0.29 | — | 0.34 | — | 0.42 | — | 0.47 |
| 29 | 12-22-64 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.33 | — | 0.48 | — | 0.56 | — | 0.68 |
| 30 | 2-24-65 | | +0.65 | | +0.89 | | +0.63 | — | 0.32 | — | 0.37 | — | 0.47 | — | 0.56 |
| 31 | 3-4-68 | | | | | | | — | 0.29 | — | 0.38 | — | 0.43 | — | 0.59 |
| 32 | 3-7-70 | | 0.70 | | 0.92 | | 0.65 | — | 0.30 | — | 0.35 | — | 0.46 | — | 0.63 |
| 33 | 6-28-73 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.25 | — | 0.36 | — | 0.53 | — | 0.66 |
| 34 | 3-19-75 | ═ | 0.69 | ═ | 0.95 | ═ | 0.70 | — | 0.29 | — | 0.40 | — | 0.55 | — | 0.69 |
| 35 | 5-25-76 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.23 | — | 0.42 | — | 0.51 | — | 0.46 |
| 36 | 6-7-77 | ═ | ═ | ═ | ═ | ═ | ═ | — | 0.33 | — | 0.47 | — | 0.58 | — | 0.75 |
| 37 | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | |

| OBS | DATE | B1 | | B2 | | C1 | | C2 | | D1 | | D2 | | E1 | | E2 | | ELEVATIONS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | H.W. | T.W. |
| 1 | 9-25-58 | | | | | | | | | | | | | | | | | 2023.9 | 1803.3 |
| 2 | 10-17-58 | | | | | | | | | | | | | | | | | 2028.0 | 1808.8 |
| 3 | 11-20-58 | | | | | | | | | | | | | | | | | 2034.9 | 1804.3 |
| 4 | 12-29-58 | | | | | | | | | | | | | | | | | 2044.6 | 1802.9 |
| 5 | 1-22-59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2043.7 | 1804.7 |
| 6 | 2-25-59 | — | 0.00 | — | 0.030 | — | 0.00 | — | 0.00 | — | 0.00 | — | 0.035 | — | 0.00 | — | 0.015 | 2034.7 | 1801.3 |
| 7 | 3-30-59 | — | 0.01 | — | 0.06 | — | 0.01 | — | 0.00 | — | 0.03 | — | 0.03 | — | 0.00 | — | 0.00 | 2020.3 | 1801.2 |
| 8 | 4-22-59 | — | -0.04 | — | +0.02 | — | 0.00 | — | 0.00 | — | 0.00 | — | +0.02 | — | 0.00 | — | -0.02 | 2018.2 | 1799.5 |
| 9 | 5-26-59 | — | -0.005 | — | +0.04 | — | 0.00 | — | +0.03 | — | 0.00 | — | +0.065 | — | 0.00 | — | +0.01 | 2057.0 | 1799.8 |
| 10 | 6-21-59 | — | 0.030 | — | 0.170 | — | 0.06 | — | 0.07 | — | 0.04 | — | 0.10 | — | 0.04 | — | 0.01 | 2076.1 | 1799.0 |
| 11 | 7-21-59 | — | 0.12 | — | 0.29 | — | 0.15 | — | 0.19 | — | 0.08 | — | 0.16 | — | 0.00 | — | 0.05 | 2076.2 | 1800.1 |
| 12 | 8-18-59 | — | 0.20 | — | 0.33 | — | 0.15 | — | 0.23 | — | 0.09 | — | 0.21 | — | -0.02 | — | 0.04 | 2076.5 | 1798.8 |
| 13 | 9-2-59 | -.105 | 0.20 | +.165 | 0.34 | -.17 | 0.15 | +.06 | 0.24 | -0.29 | 0.09 | +0.12 | 0.21 | -0.145 | +0.01 | 0.00 | 0.05 | 2076.5 | 1799.8 |
| 14 | 9-15-59 | — | 0.20 | — | 0.35 | — | 0.15 | — | 0.24 | — | 0.12 | — | 0.22 | — | +0.02 | — | 0.05 | 2076.3 | 1800.5 |
| 15 | 10-14-59 | — | 0.21 | 0.205 | 0.39 | -.25 | 0.185 | +.07 | 0.315 | -0.32 | 0.115 | — | 0.22 | — | -0.07 | — | 0.09 | 2074.7 | 1800.4 |
| 16 | 11-16-59 | — | 0.16 | — | 0.42 | — | 0.15 | — | 0.30 | — | 0.125 | — | 0.265 | — | +0.055 | — | 0.07 | 2068.6 | 1800.2 |
| 17 | 12-16-59 | — | 0.22 | — | 0.42 | — | 0.18 | — | 0.31 | — | 0.09 | — | 0.27 | — | +0.06 | — | 0.07 | 2062.9 | 1799.3 |
| 18 | 1-15-60 | — | 0.19 | — | 0.41 | — | 0.14 | — | 0.32 | — | 0.09 | — | 0.25 | — | +0.04 | — | 0.09 | 2052.1 | 1800.0 |
| 19 | 2-15-60 | — | 0.20 | — | 0.41 | — | 0.15 | — | 0.32 | — | 0.085 | — | 0.32 | — | -0.04 | — | 0.06 | 2042.1 | 1800.3 |
| 20 | 2-29-60 | — | 0.21 | — | 0.51 | — | 0.13 | — | 0.305 | — | 0.085 | — | 0.23 | — | -0.055 | — | 0.06 | 2026.6 | 1799.9 |
| 21 | 3-22-60 | — | 0.21 | — | 0.405 | — | 0.13 | — | 0.30 | — | 0.05 | — | 0.225 | — | +0.05 | — | 0.125 | 2026.7 | 1799.1 |
| 22 | 4-5-60 | — | 0.215 | — | 0.41 | — | 0.11 | — | 0.30 | — | 0.05 | — | 0.225 | — | +0.07 | — | 0.11 | 2047.4 | 1800.4 |
| 23 | 4-18-60 | — | 0.20 | — | 0.425 | — | 0.10 | — | 0.305 | — | 0.035 | — | 0.225 | — | +0.025 | — | 0.12 | 2070.0 | 1800.9 |
| 24 | 5-6-60 | — | 0.18 | — | 0.44 | — | 0.12 | — | 0.33 | — | 0.06 | — | 0.27 | — | -0.02 | — | 0.08 | 2071.7 | 1799.9 |
| 25 | 6-15-60 | — | 0.19 | — | 0.44 | — | 0.18 | — | 0.33 | — | 0.09 | — | 0.28 | — | -0.05 | — | 0.08 | 2076.0 | 1800.8 |
| 26 | 8-10-60 | — | 0.19 | — | 0.53 | — | 0.12 | — | 0.33 | — | 0.07 | — | 0.35 | — | -0.01 | — | 0.12 | 2076.9 | 1798.9 |
| 27 | 10-31-60 | — | 0.20 | — | 0.48 | — | 0.15 | — | 0.37 | — | 0.02 | — | 0.27 | — | 0.00 | — | 0.11 | 2074.5 | 1800.1 |
| 28 | 2-1-61 | — | 0.19 | — | 0.46 | — | 0.13 | — | 0.35 | — | 0.06 | — | 0.28 | — | +0.02 | — | 0.09 | 2025.9 | 1800.7 |
| 29 | 12-22-64 | — | 0.19 | — | 0.72 | — | 0.09 | — | 0.55 | — | 0.00 | — | 0.50 | — | 0.00 | — | 0.19 | 2073.2 | 1802.4 |
| 30 | 2-24-65 | — | 0.17 | — | 0.58 | — | 0.08 | — | 0.45 | — | 0.00 | — | 0.41 | — | 0.00 | — | 0.16 | 2026.6 | 1805.1 |
| 31 | 3-4-68 | — | 0.16 | — | 0.66 | — | 0.09 | — | 0.53 | — | 0.04 | — | 0.45 | — | +0.08 | — | 0.20 | 2047.4 | 1805.0 |
| 32 | 3-7-70 | — | 0.21 | — | 0.68 | — | 0.11 | — | 0.56 | — | 0.04 | — | 0.48 | — | +0.02 | — | 0.18 | 2034.9 | 1803.4 |
| 33 | 6-28-73 | — | 0.16 | — | 0.73 | — | 0.10 | — | 0.66 | — | 0.00 | — | 0.54 | — | +0.05 | — | 0.26 | 2074.8 | 1800.6 |
| 34 | 3-19-75 | — | 0.19 | — | 0.75 | — | 0.10 | — | 0.66 | — | 0.00 | — | 0.58 | — | +0.09 | — | 0.28 | 2023.3 | 1804.6 |
| 35 | 5-25-76 | — | 0.17 | — | 0.79 | — | 0.10 | — | 0.67 | — | 0.05 | — | 0.58 | — | +0.05 | — | 0.30 | 2065.9 | 1805.6 |
| 36 | 6-7-77 | — | 0.19 | — | 0.79 | — | 0.11 | — | 0.73 | — | 0.02 | — | 0.62 | — | -0.06 | — | 0.30 | 2070.10 | 1803.38 |
| 37 | | | | | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | |



## LOCATION PLAN FOR DAM SETTLEMENT MONUMENTS

Scale: 1"= 50'

**NOTE:**

X and Y displacements measured parallel and normal to base line from monument original position respectively.

═ Underwater

— Readings not taken or calculaled

### COORDINATES OF DAM SETTLEMENT MONUMENTS

| MON. Nº | COORDINATES LAT. | COORDINATES DEP. |
|---|---|---|
| A | 1,157,132.259 | 201,728.291 |
| B | 1,157,312.746 | 201,555.510 |
| C | 1,157,492.753 | 201,383.194 |
| A1 | 1,157,265.37 | 201,725.41 |
| A2 | 1,157,337.57 | 201,656.24 |
| A3 | 1,157,409.83 | 201,587.01 |
| A4 | 1,157,481.91 | 201,517.96 |
| B1 | 1,157,196.65 | 201,798.12 |
| B2 | 1,157,557.67 | 201,452.33 |
| C1 | 1,157,128.95 | 201,872.09 |
| C2 | 1,157,634.35 | 201,388.02 |
| D1 | 1,157,062.78 | 201,947.56 |
| D2 | 1,157,712.70 | 201,325.17 |
| E1 | 1,156,998.23 | 202,024.56 |
| E2 | 1,157,792.27 | 201,263.99 |
| F1 | 1,157,003.70 | 202,059.50 |
| F2 | 1,157,068.49 | 201,981.73 |
| F3 | 1,157,133.75 | 201,907.01 |
| F4 | 1,157,392.54 | 201,639.38 |
| F5 | 1,157,562.05 | 201,484.83 |
| F6 | 1,157,637.54 | 201,419.76 |
| F7 | 1,157,716.87 | 201,357.11 |
| F8 | 1,157,797.37 | 201,294.07 |

JUN 16 1977

This dwg. supersedes D-BR-147

BROWNLEE H.E. DEVELOPMENT

DAM SETTLEMENT

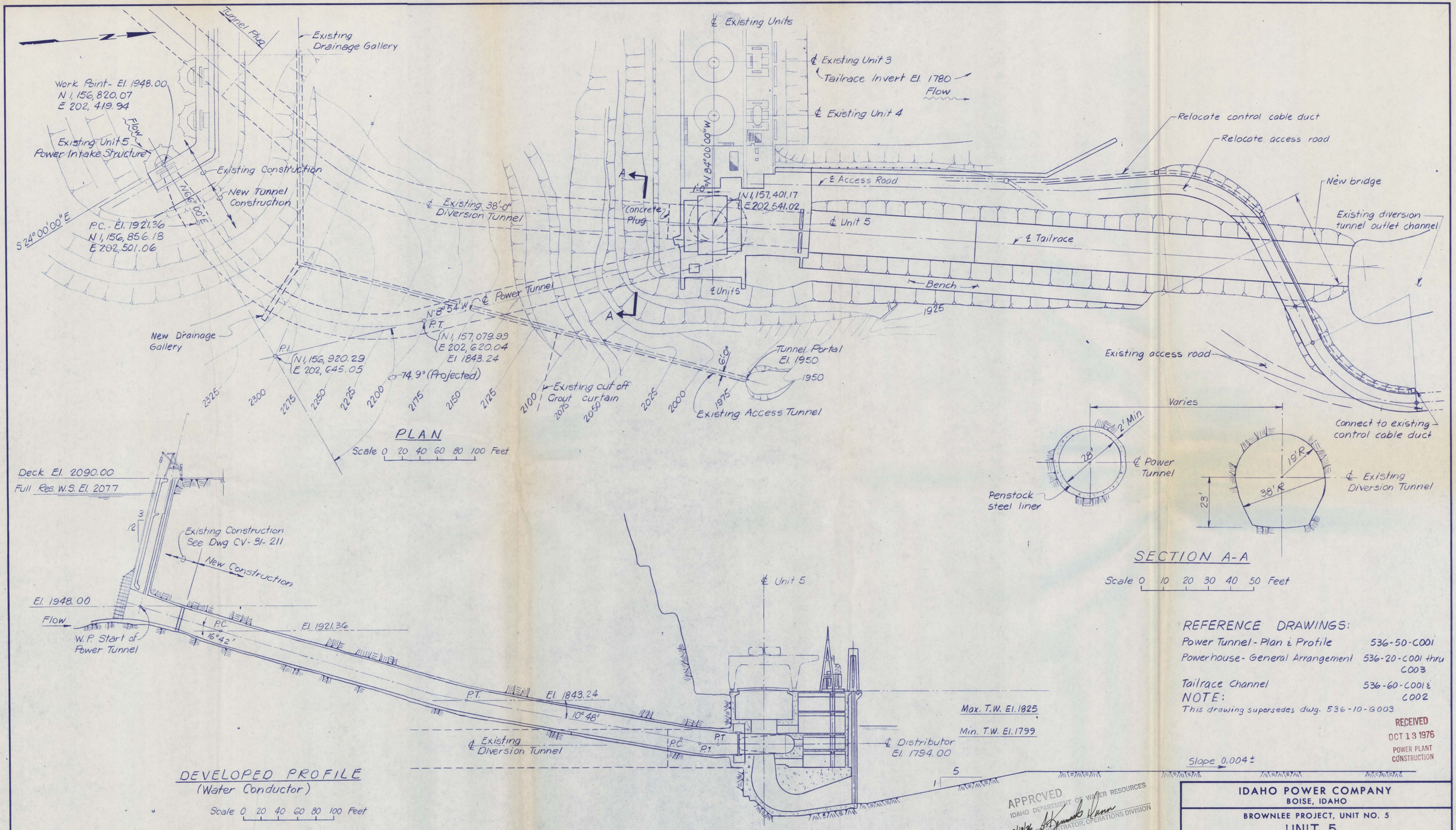
IDAHO POWER CO.
BOISE, IDAHO

SCALE: As Shown DATE Feb. 6, 1959

| REV. | | | | |
|---|---|---|---|---|
| 1 | DR. R.M.T. | APPROVED A.A.H. | | D-BR-155 |
| | TR. R.M.T. | | | |
| | CH. R.F.S. | | | |

5-207

20R-20015 1 F6-21




REFERENCE DRAWINGS:

| | |
|---|---|
| Power Tunnel - Plan & Profile | 536-50-C001 |
| Powerhouse - General Arrangement | 536-20-C001 thru C003 |
| Tailrace Channel | 536-60-C001 & C002 |

NOTE:
This drawing supersedes dwg. 536-10-G003

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|---|---|---|---|---|
| REVISIONS | | | | |

9-29-76

IDAHO POWER COMPANY
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

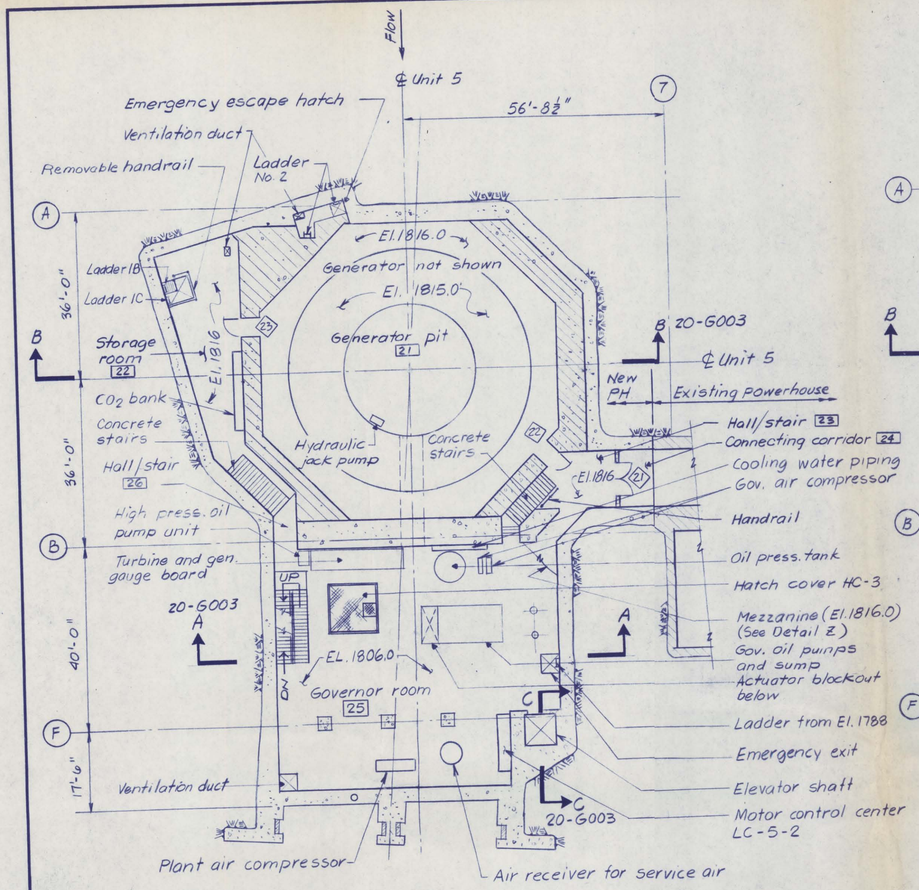
# UNIT 5
# PLAN, PROFILE & SECTIONS

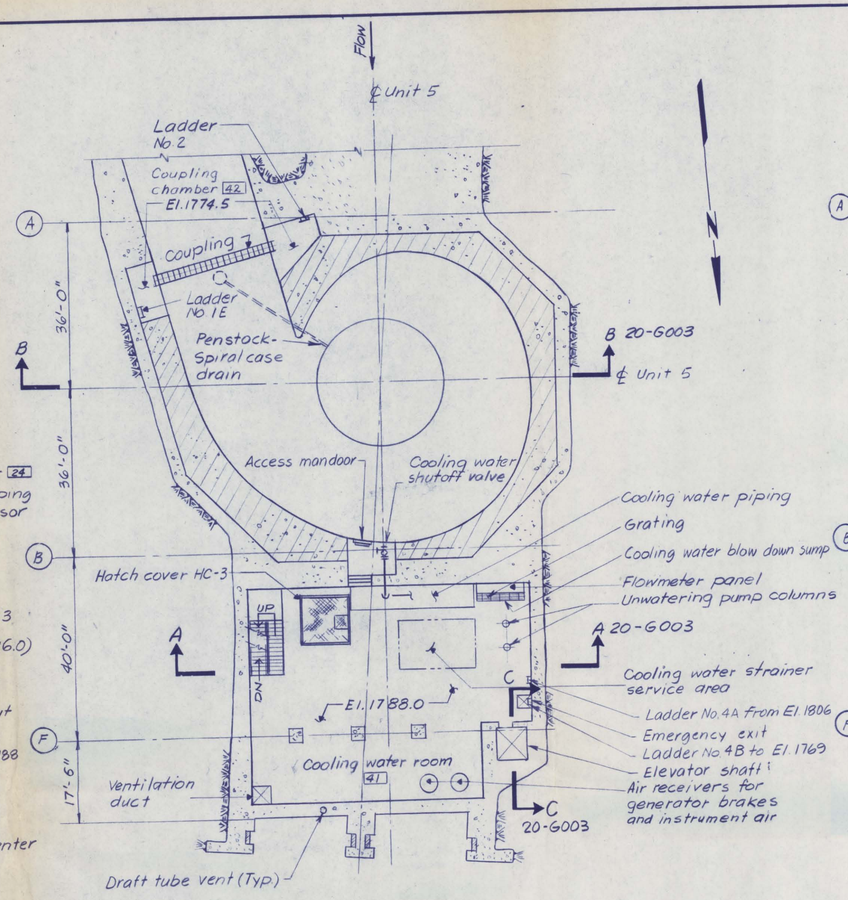
INTERNATIONAL ENGINEERING COMPANY, INC.

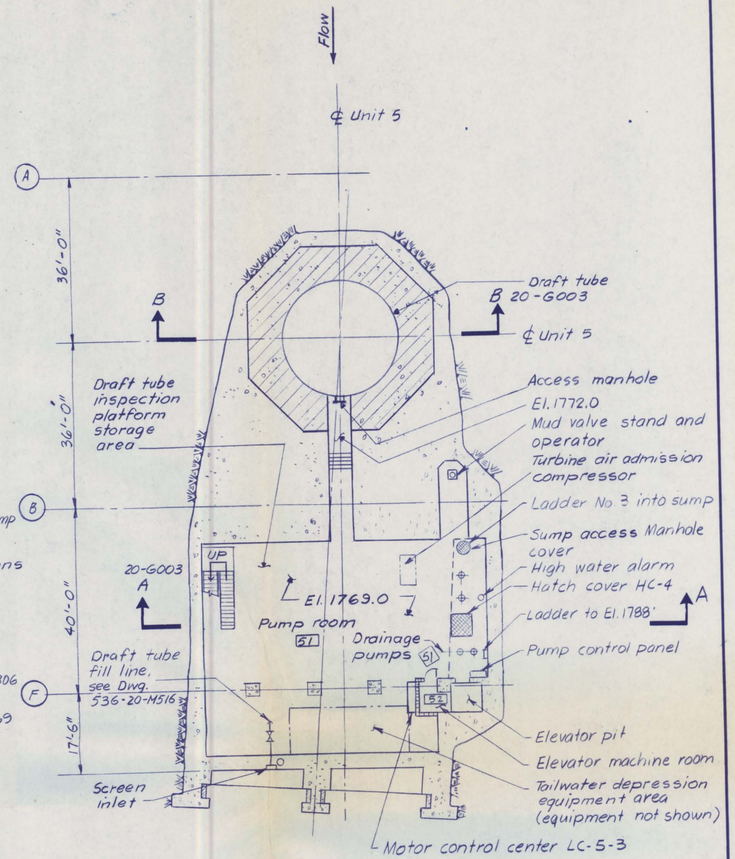
| | | |
|---|---|---|
| DESIGNED C E H | CHECKED A L S | APPROVED |
| DRAWN B T C | INSPECT H E J | RECOMMENDED S E Hall |
| | | DATE 29 Sept. 1976 |

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

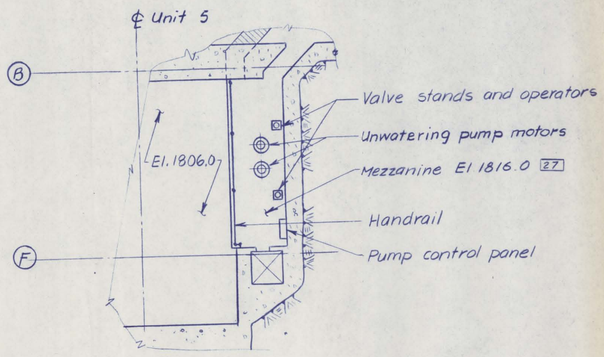
DRAWING NO.
536 - 10 - G005




## MECHANICAL FLOOR - EL. 1816.0 AND 1806.0




## PUMP MOTOR MEZZ. FLOOR EL. 1816.0
## DETAIL Z

## COOLING WATER FLOOR - EL. 1788.0

## DRAFT TUBE FLOOR - EL. 1769.0

NOTE:

1. For reference drawings and legend see Dwg. 536-20-G001.

Scale 0 10 20 30 40 50 60 70 80 FT.

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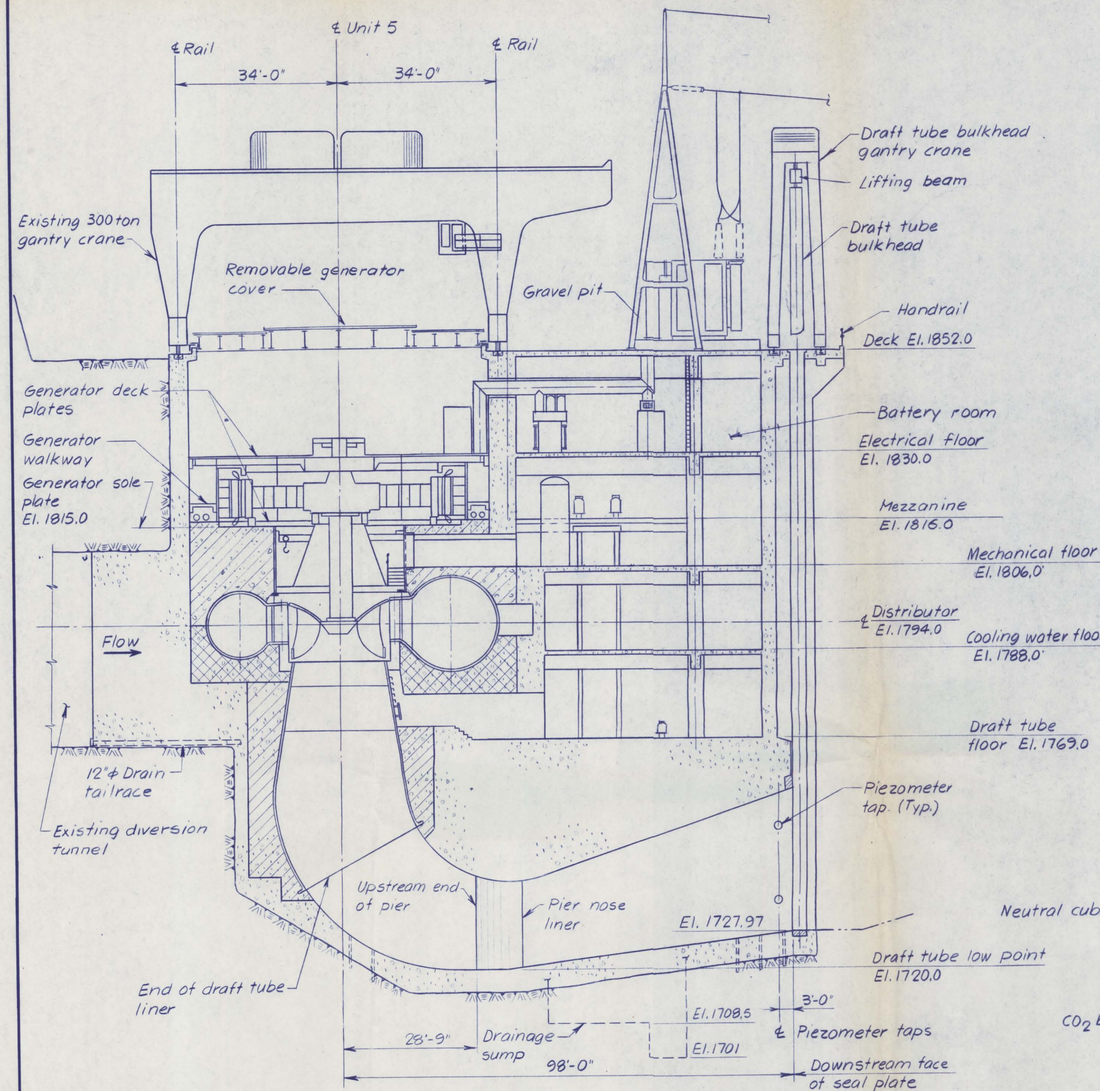
# POWERHOUSE GENERAL ARRANGEMENT PLANS - SHEET 2 OF 2

INTERNATIONAL ENGINEERING COMPANY, INC.

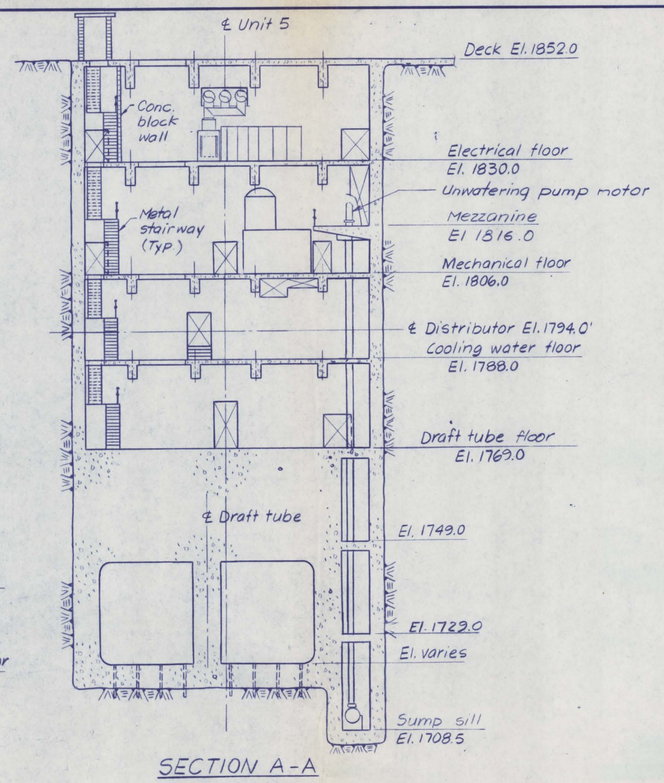
DESIGNED CEH|IT|FGE
DRAWN A.M.W.
CHECKED W.E.J.
INSPECT T.F.C.M.
APPROVED
RECOMMENDED C. E. Hamm
DATE 29 Sept. 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

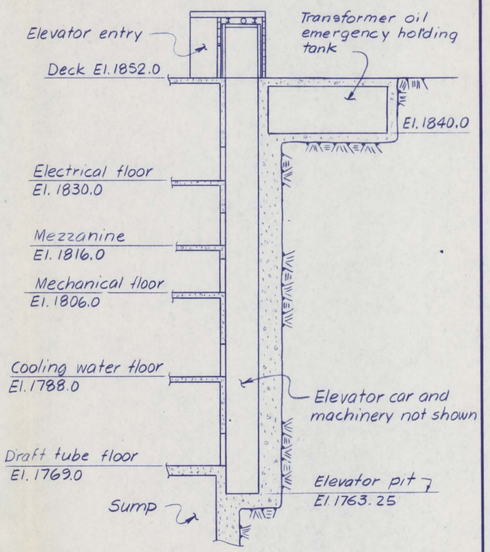
DRAWING NO.
536-20-G002



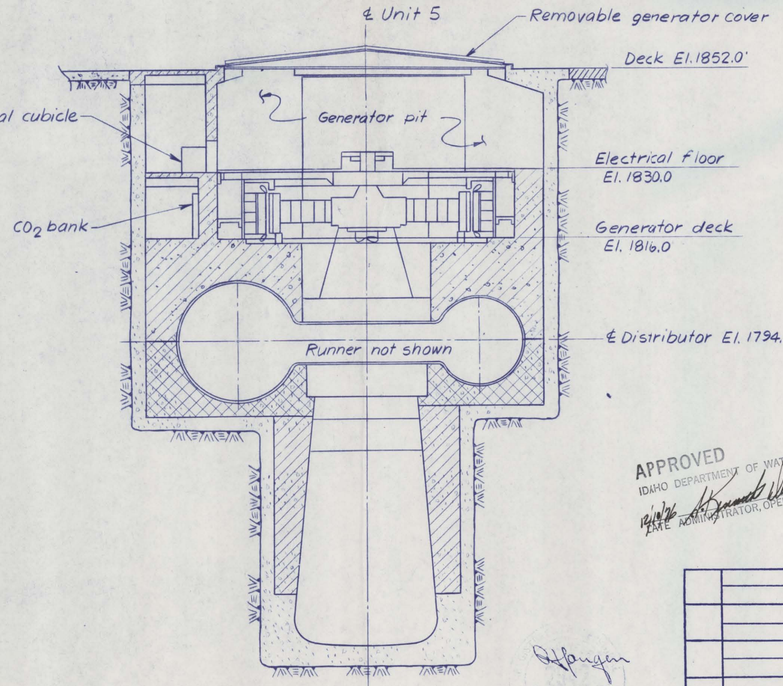

TRANSVERSE SECTION THROUGH ℄ UNIT




SECTION A-A
20-G001 or G002




SECTION C-C




SECTION B-B
20-G001 or G002

NOTE:
1. For reference drawings and legend see Dwg. 536-20-G001

Scale 0 10 20 30 40 50 60 70 80 FT.

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ADMINISTRATOR, OPERATIONS DIVISION

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BOISE, IDAHO

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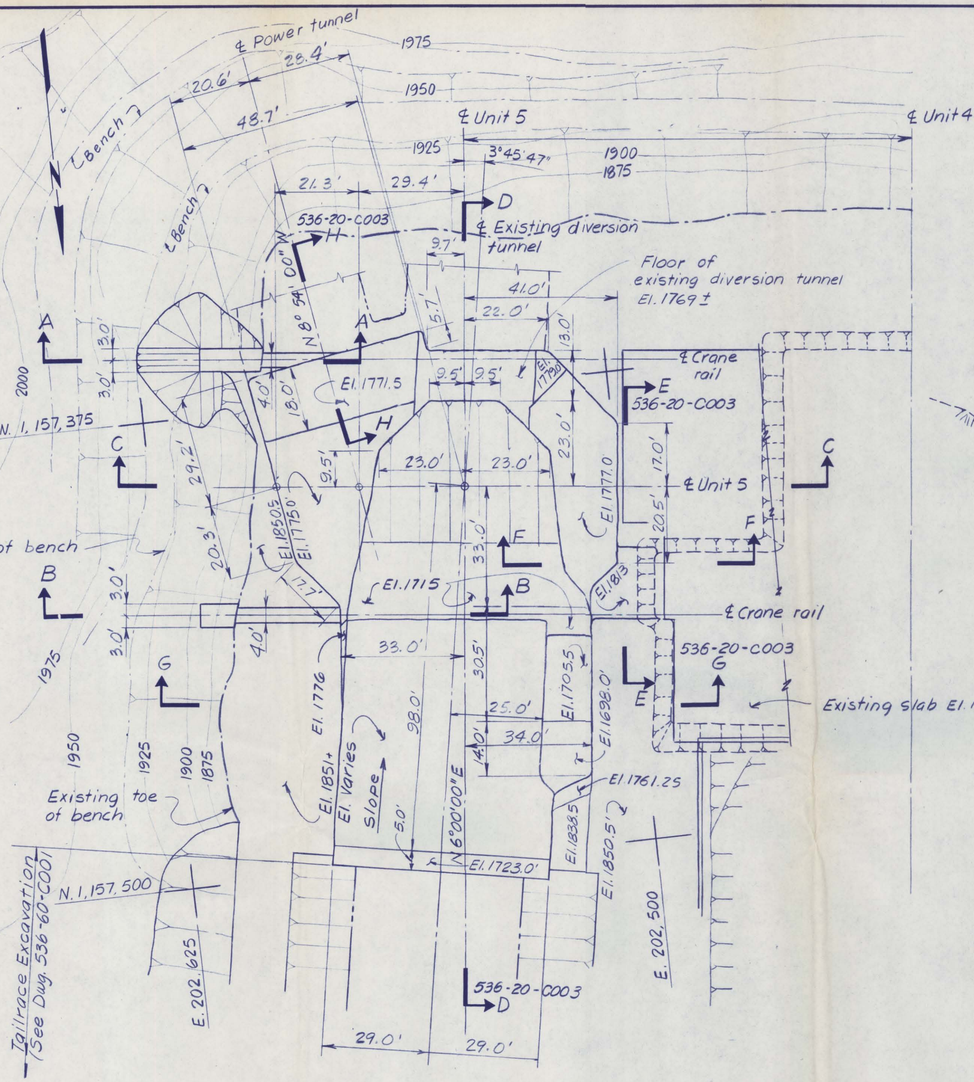
# POWERHOUSE GENERAL ARRANGEMENT SECTIONS

INTERNATIONAL ENGINEERING COMPANY, INC.

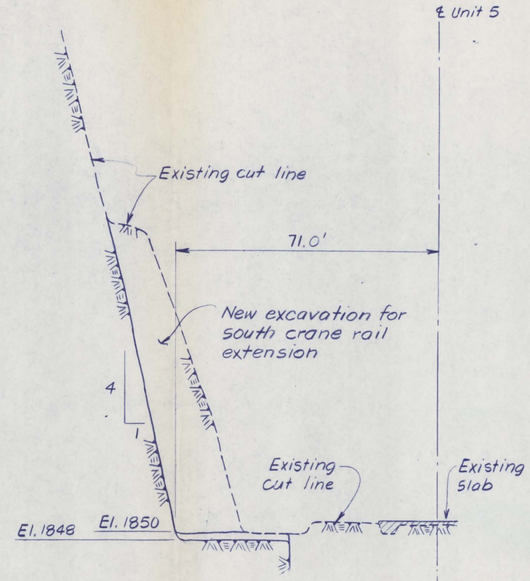
DESIGNED CEH/JT/FGE CHECKED
DRAWN B.T.C. INSPECT
APPROVED
RECOMMENDED
DATE 29 Sept. 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

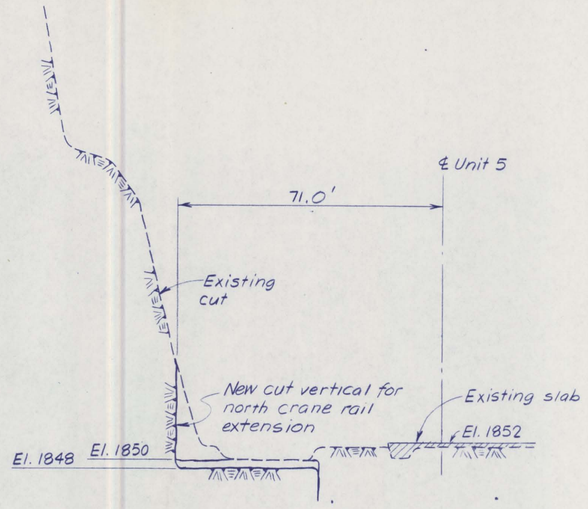
DRAWING NO. 536-20-G003




EXCAVATION PLAN




SECTION A-A



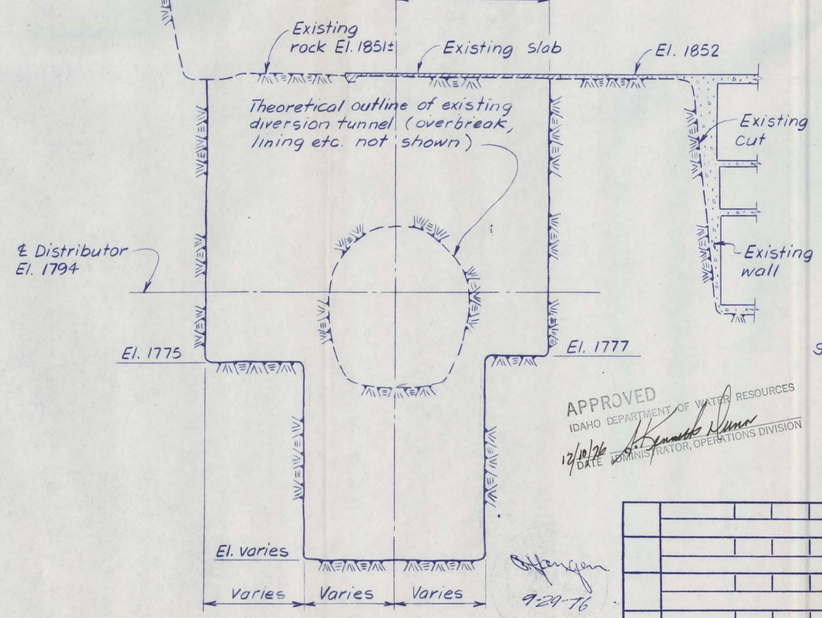

SECTION B-B

LEGEND

- Existing limit of excavation
- New limit of excavation
- Existing concrete slab to be removed

NOTES

1 For reference drawings, see drawing 536-20-C001




SECTION C-C

Scale 0 10 20 30 40 50 60 70 80 90 100 FT.

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IDAHO POWER COMPANY
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

# POWERHOUSE EXCAVATION PLAN & SECTIONS

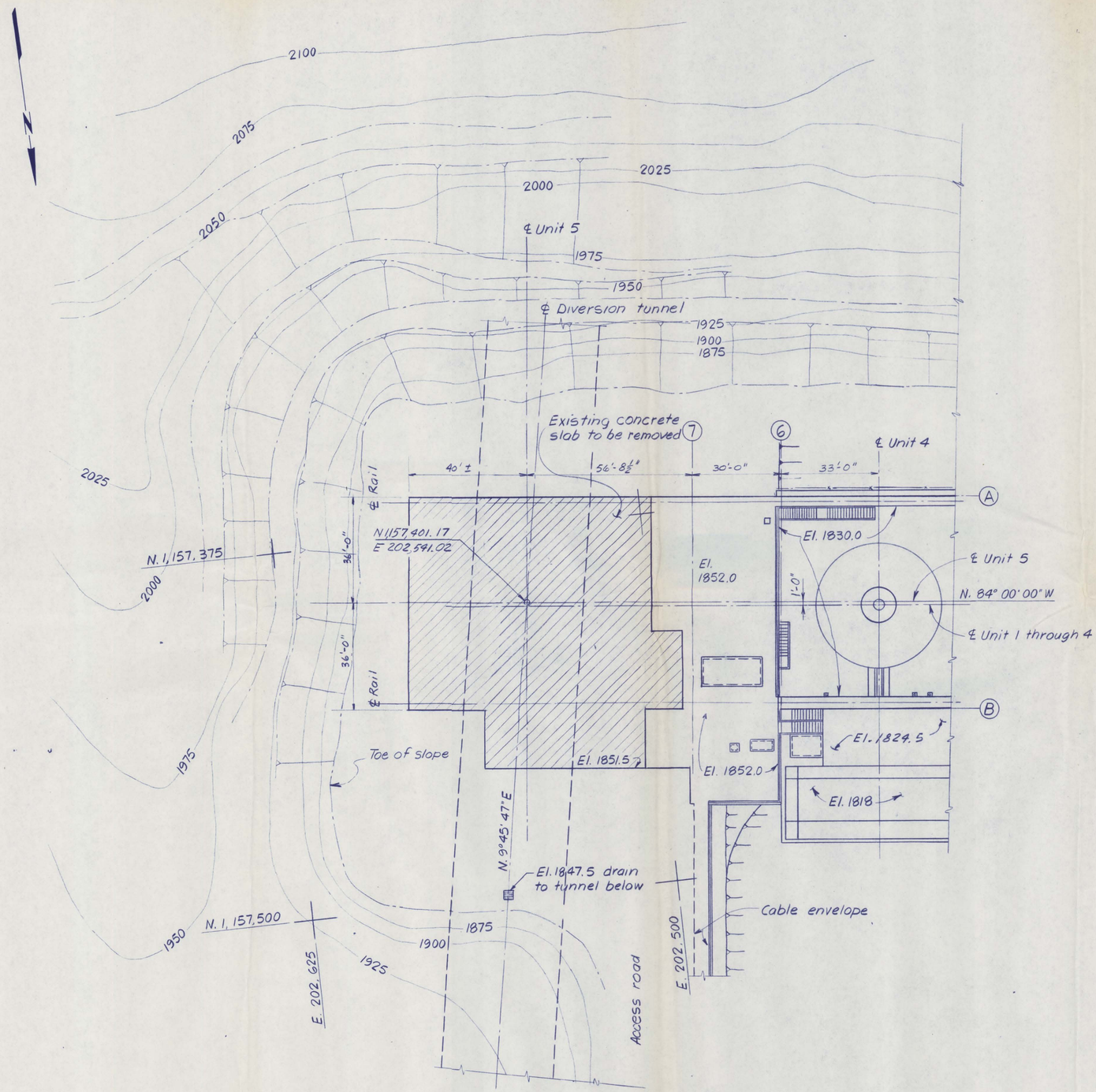
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POWER PLANT CONSTRUCTION

INTERNATIONAL ENGINEERING COMPANY, INC.

DESIGNED SZ | CHECKED LEJ | APPROVED
DRAWN BTC/AM IV | INSPECT C.E.H. | RECOMMENDED C.E. Hall

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DATE 29 Sept. 1976
DRAWING NO. 536-20-C002




PLAN EL. 1852 ±

SHOWING EXISTING FEATURES

LEGEND

(A)(C) Wall lines projected from existing powerhouse

REFERENCE DRAWINGS:

| | |
|---|---|
| Excavation Plan & Sections | 536-20-C002 |
| Excavation Sections | 536-20-C003 |
| Concrete Outline | 536-20-C004 thru C013 |
| Geologic Plan | 536-20-GT01 |
| Geologic Sections | 536-20-GT02 |
| Rock Reinforcement Plan | 536-20-GT03 |

Scale 0 10 20 30 40 50 60 70 80 90 100 FT.

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IDAHO DEPARTMENT OF WATER RESOURCES
12/10/76
DATE ADMINISTRATOR, OPERATIONS DIVISION

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
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IDAHO POWER COMPANY
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

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# POWERHOUSE AREA EXISTING TOPOGRAPHY

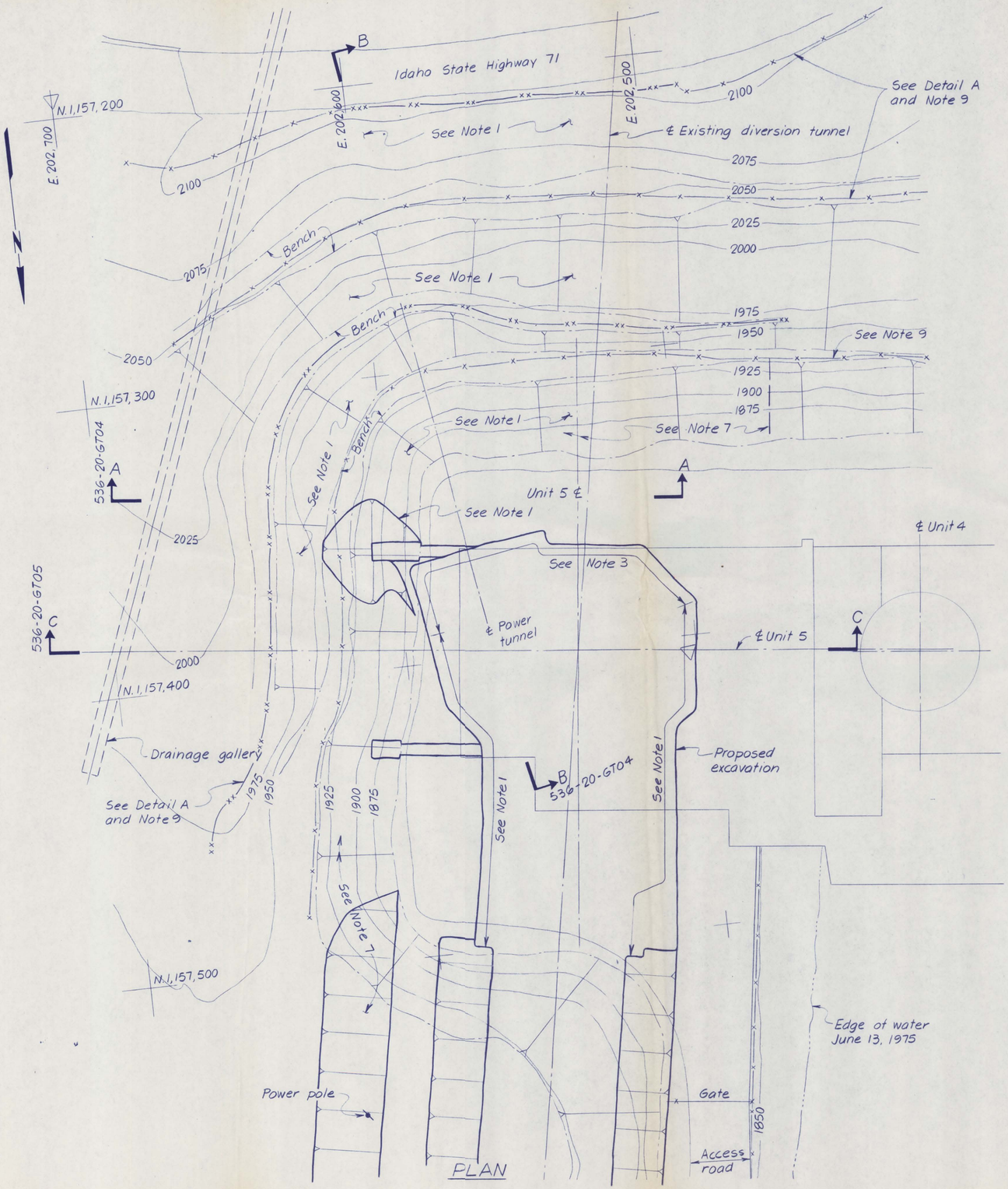
INTERNATIONAL ENGINEERING COMPANY, INC.

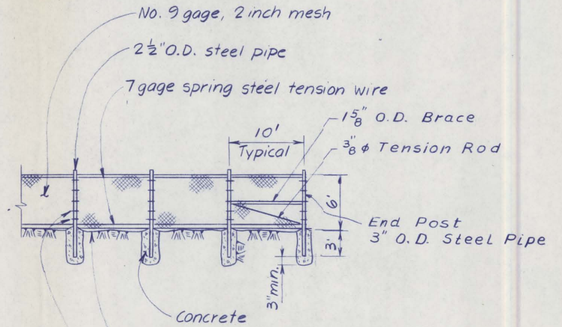
DESIGNED SZ CHECKED
DRAWN GTC INSPECT

APPROVED
RECOMMENDED C. E. Hall
DATE 29 Sept. 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DRAWING NO.
536-20-C001




DETAIL A
TYPICAL FENCE
Not to scale

EXPLANATION:

x——x Existing fence

xx——xx New fence

△ Survey point

NOTES:

1. Existing cut slopes and proposed cuts to be rock bolted as shown or as directed by the Engineer.
2. Dywidag bolts will be anchored with 2 capsules of fast setting Celtite grout. Remainder of hole to be filled with slow setting Celtite grout. Bolts will be torqued with 300 ft-lbs.
3. Dywidag bolts 1" ϕ x 20' long on 12' staggered pattern shall be used as indicated. For installation details see Dwg. 536-20-GT05.
4. Dywidag bolts 1" ϕ x 15' long on 6' centers shall be used as indicated. For installation details see Dwg. 536-20-GT05.
5. Dywidag bolts 1" ϕ x 10' long on 5' centers shall be used around perimeter of all tunnel portals and similar openings. For typical installation and details see Dwg. 536-20-GT05.
6. Steel rib supports to be installed only in ground that cannot be supported by rock bolts.
7. Wire mesh consisting of 2 x 2 inch galvanized chain link steel wire fabric to be installed on existing slopes between El 1930 and El 1852 and all new excavations. Mesh to be attached by 1' inch diameter Dywidag rock bolts.
8. Extensometers to be spaced 3 feet in vertical alignment; access by steel ladder with cage.
9. Existing fences will be repaired or removed and replaced with new fence as directed by the Engineer. New fences will be constructed according to drawings and specifications.
10. Variations from the typical layout of rock reinforcement may be required by the Engineer as excavation proceeds and may include modifications in pattern, spacing length of bolt and bolt accessories.

REFERENCE DRAWINGS:

| | |
|---|---|
| Powerhouse, Rock Reinforcement Typical Sections | 536-20-GT04 |
| Powerhouse & Power Tunnel Rock Reinforcement | 536-20-GT05 |
| Powerhouse, Miscellaneous Metal Sheet 3. | 536-20-S003 |

Scale 0 10 20 30 40 50 60 70 80 90 100 Ft

Except as noted

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/8/76
OPERATIONS DIVISION

9-29-76

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
| REVISIONS | | | | |

IDAHO POWER COMPANY
BOISE, IDAHO

RECEIVED
OCT 4 1976
POWER PLANT CONSTRUCTION

BROWNLEE PROJECT, UNIT NO. 5

# POWERHOUSE
# ROCK REINFORCEMENT PLAN

INTERNATIONAL ENGINEERING COMPANY, INC.

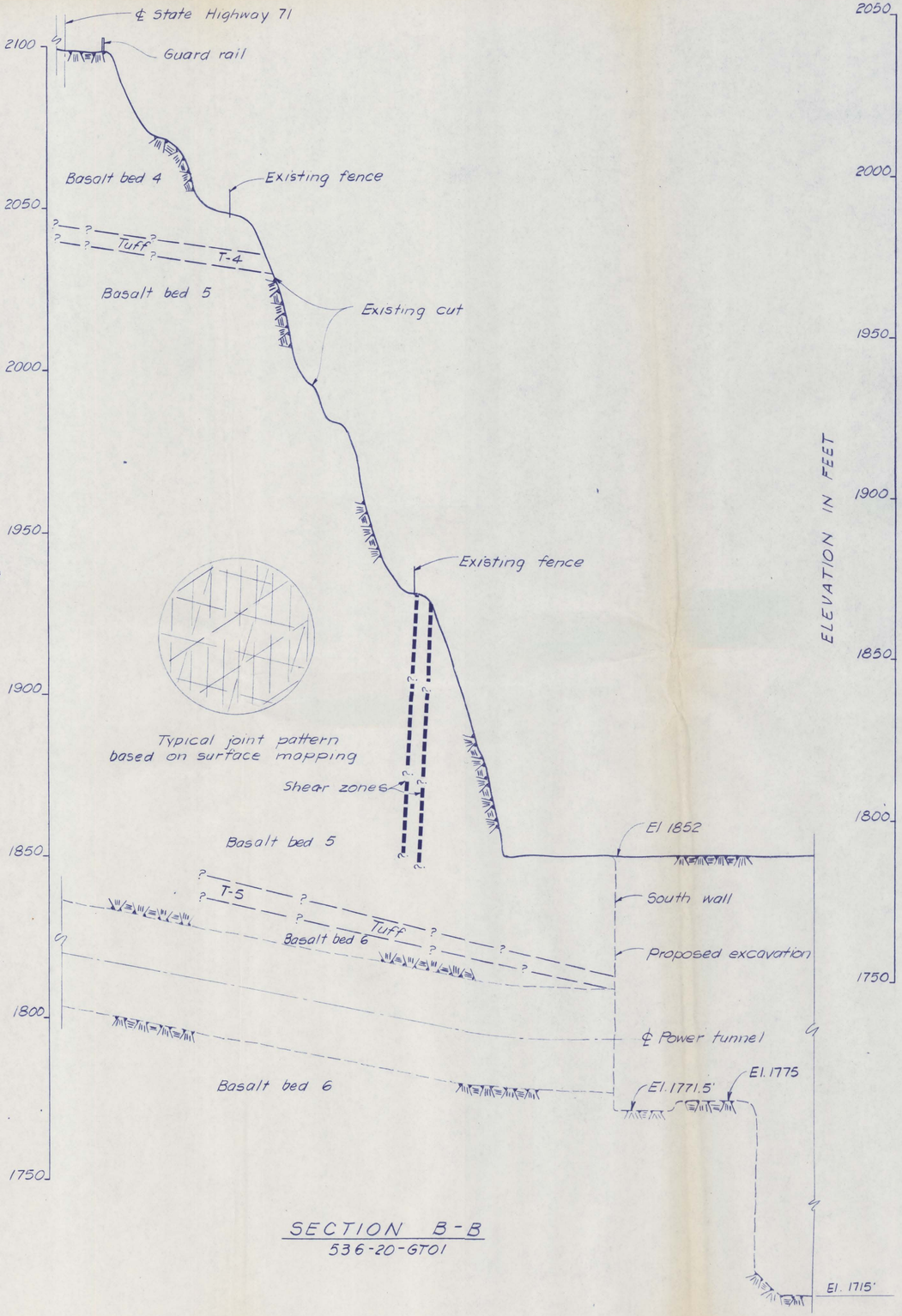
DESIGNED NTH/GRM CHECKED
DRAWN B.T.C. INSPECT

APPROVED E.S. Smith
RECOMMENDED

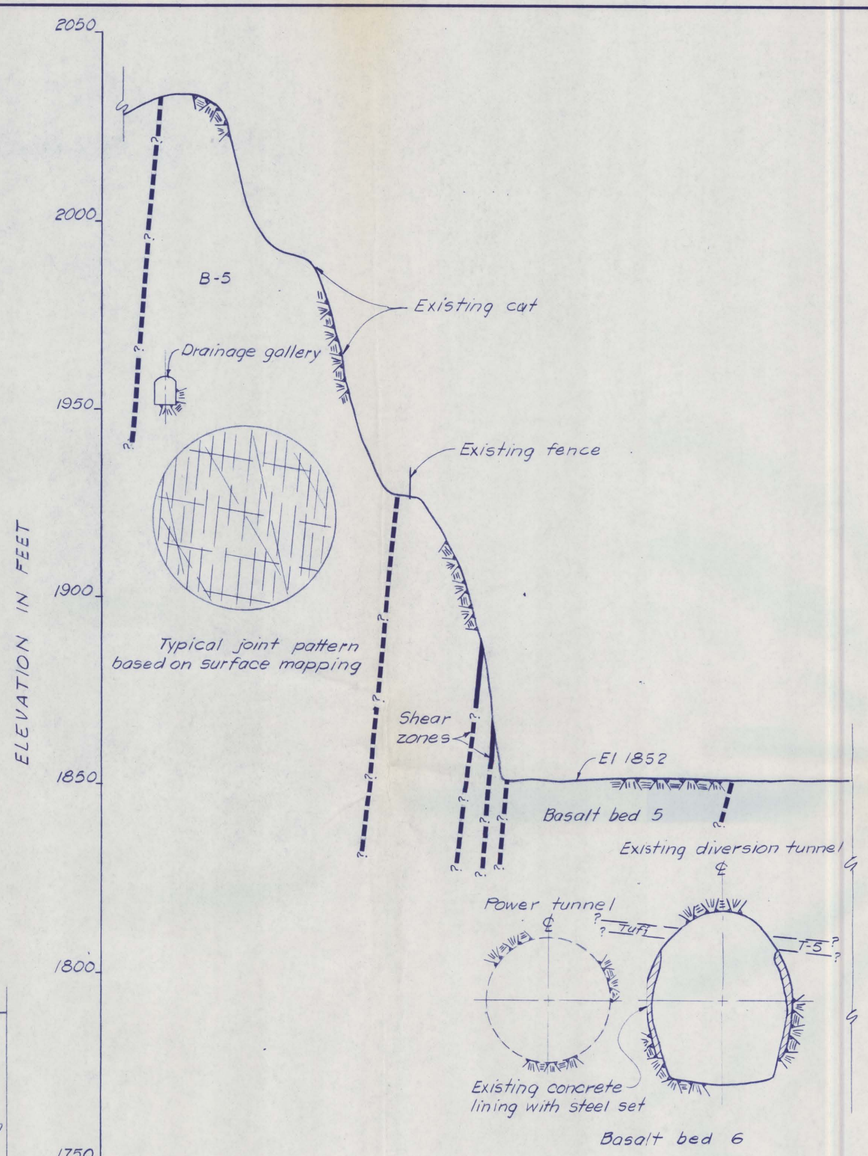
DATE 29 Sept. 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DRAWING NO.
536-20-GT03




SECTION B-B
536-20-GT01




SECTION A-A
536-20-GT01

NOTES:
For explanation, notes and reference drawings see Dwg 536-20-GT01.

Scale 0 10 20 30 40 50 60 70 80 90 100 Ft

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/10/76
DATE ADMINISTRATOR, OPERATIONS DIVISION

9-29-76

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|---|---|---|---|---|
| | | | | |

REVISIONS

IDAHO POWER COMPANY
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

# POWERHOUSE GEOLOGIC SECTIONS

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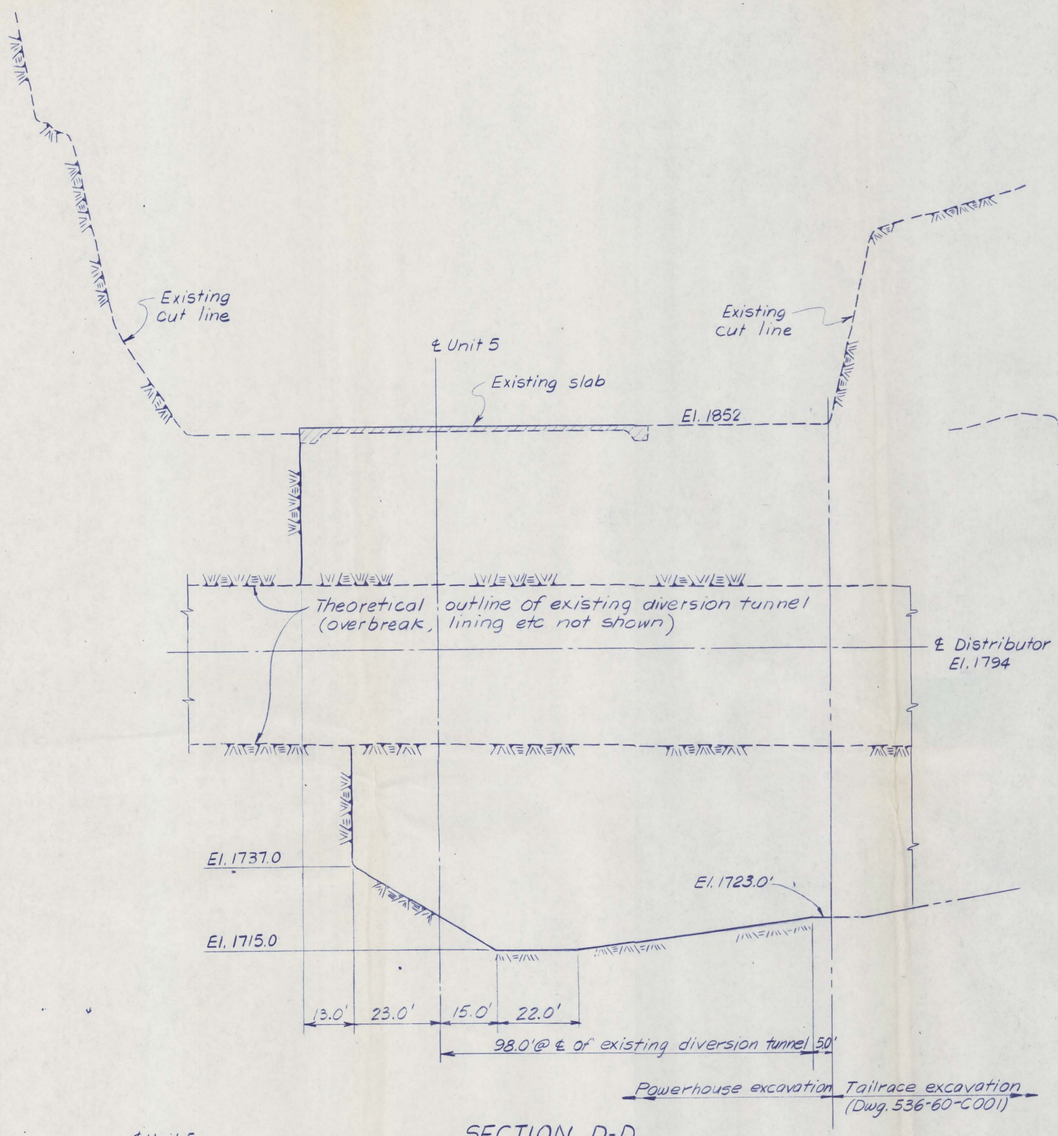
INTERNATIONAL ENGINEERING COMPANY, INC.

DESIGNED CCP DRAWN AMW CHECKED CCP INSPECT E.E.S. APPROVED E. E. Smith RECOMMENDED C. C. Smith

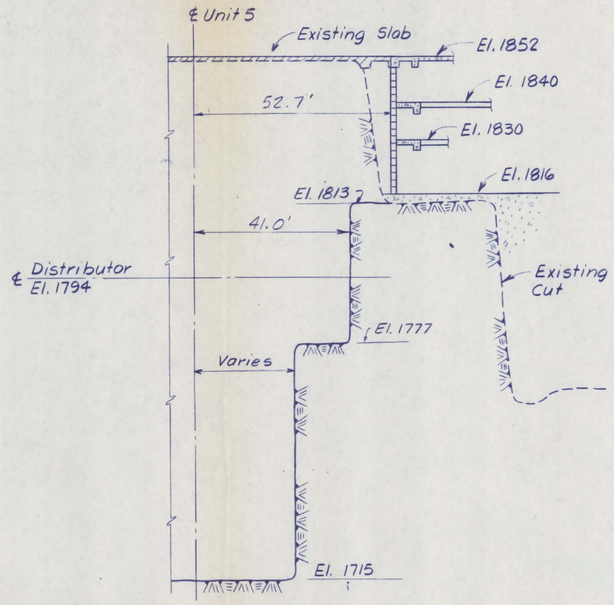
IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DATE 29 Sept 1976

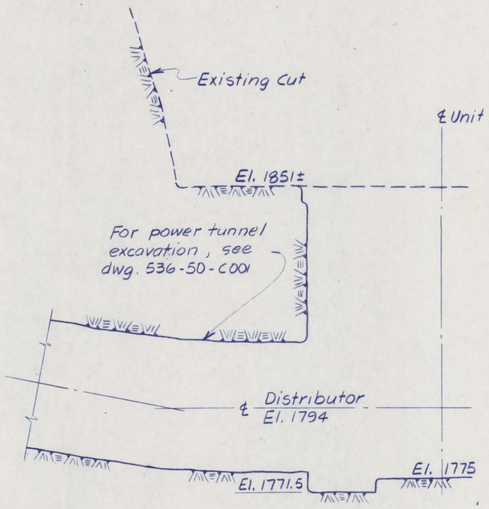
DRAWING NO.
536-20-GT02



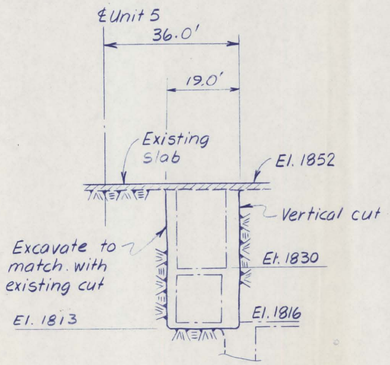

SECTION D-D
536-20-C002



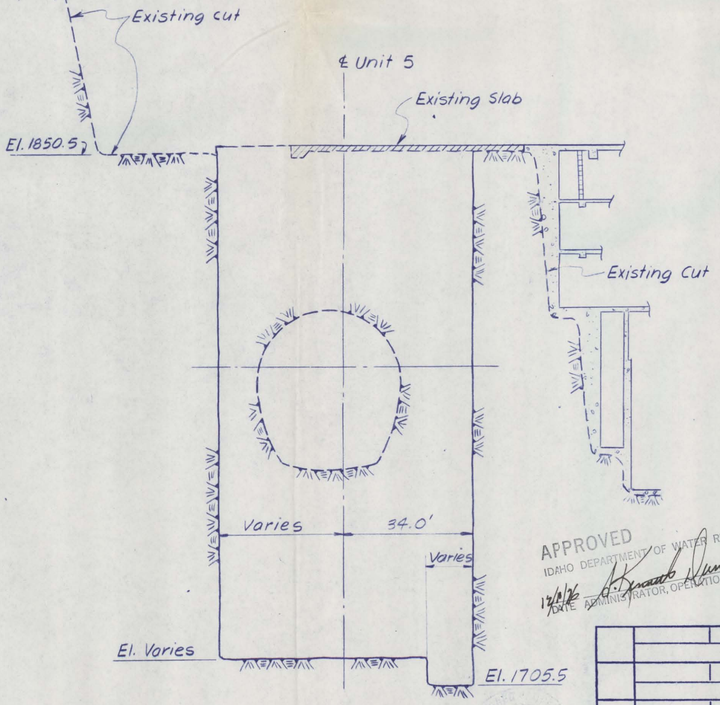

SECTION F-F
536-20-C002




SECTION H-H
536-20-C002




SECTION E-E
536-20-C002




SECTION G-G
536-20-C002

LEGEND:
- Existing limit of excavation
- New limit of excavation
- Existing concrete slab to be removed

NOTES:
1. For reference drawings, see drawing 536-20-C001

Scale 0 10 20 30 40 50 60 70 80 90 100FT.

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/8/76
DATE ADMINISTRATOR, OPERATIONS DIVISION

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
| | | | | |

REVISIONS

IDAHO POWER COMPANY
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

# POWERHOUSE EXCAVATION SECTIONS

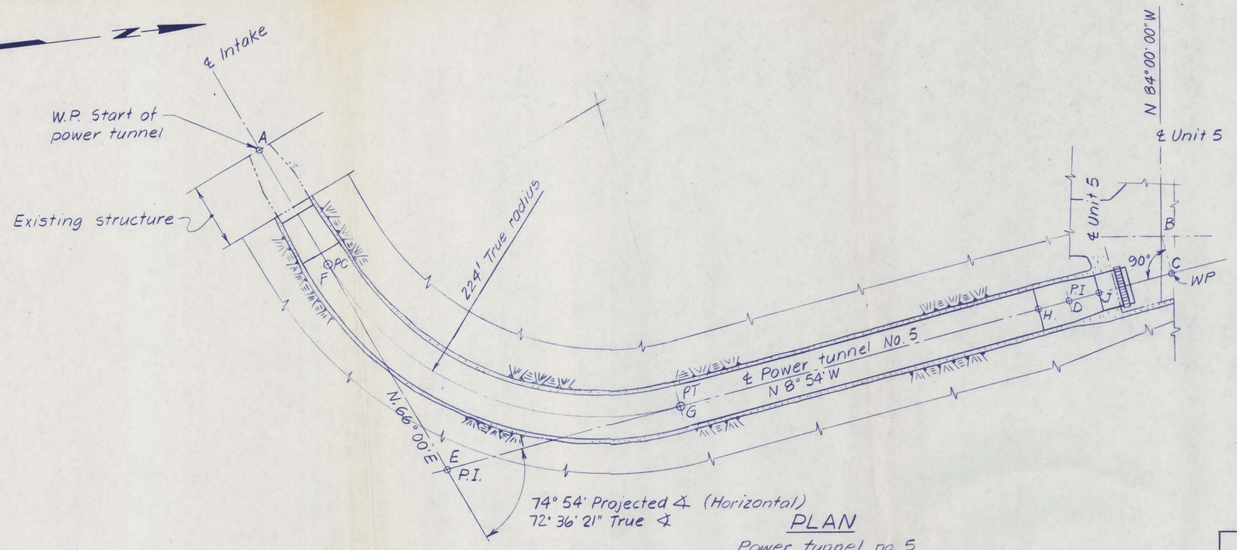
RECEIVED
OCT 4 1976
POWER PLANT CONSTRUCTION

INTERNATIONAL ENGINEERING COMPANY, INC.

DESIGNED SZ | CHECKED WEO | APPROVED
DRAWN BTC | INSPECT C.E.H. | RECOMMENDED C. E. Stehly

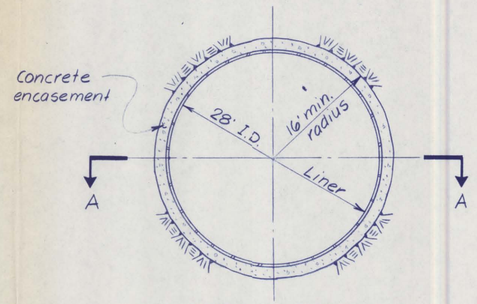
IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DATE 29 Sept. 1976
DRAWING NO. 536-20-C003



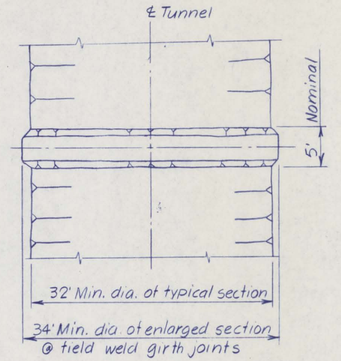

PLAN

Power tunnel no. 5
Section is along ℄ of tunnel




TYPICAL SECTION

Scale 0 5 10 Feet




SECTION A-A

(Steel liner and concrete not shown)

Scale 0 5 10 Feet

| COORDINATES AND ELEVATIONS | | | |
|---|---|---|---|
| Pt. | N | E | El. |
| A | 1,156,820.07 | 202,419.94 | 1948.00 |
| F | 1,156,856.18 | 202,501.06 | 1921.36 |
| E | 1,156,920.29 | 202,645.05 | 1874.07 |
| G | 1,157,079.99 | 202,620.04 | 1843.24 |
| D | 1,157,334.99 | 202,580.11 | 1794.00 |
| H | 1,157,314.44 | 202,583.33 | 1797.97 |
| J | 1,157,355.91 | 202,576.83 | 1794.00 |
| C | 1,157,405.56 | 202,569.06 | 1794.00 |
| B | 1,157,401.17 | 202,541.02 | 1794.00 |

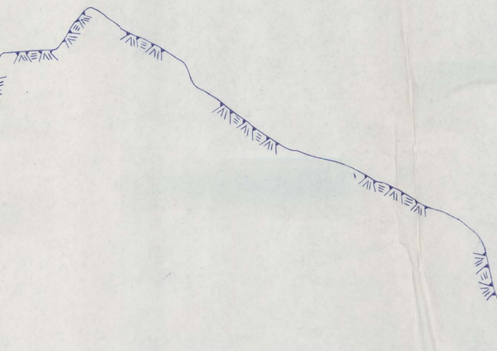
NOTES:

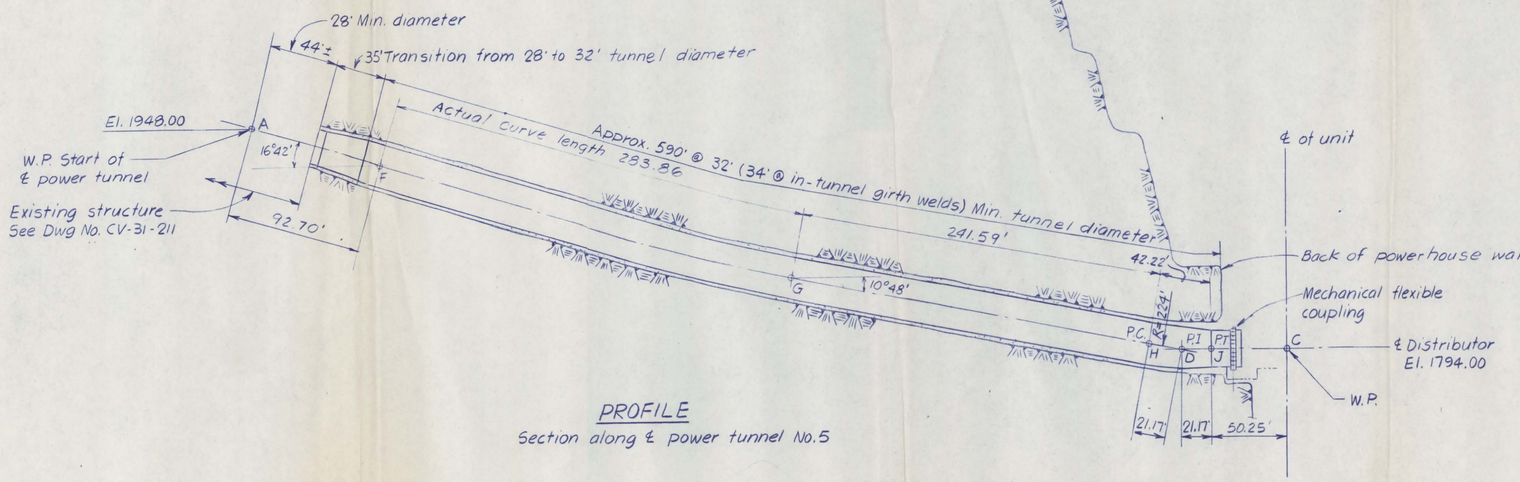
1. Tunnel excavated dimensions shown are minimum.
2. Concrete shall be placed evenly around penstock, maintaining constant level on both sides to prevent distortion of steel liner.

REFERENCE DRAWINGS:

Power Tunnel
- Drainage and Grouting ___ 536-50-C002
- Drainage Gallery Extension and Modification _____ 536-50-C003
- Penstock Steel Liner Plan and Profile _____ 536-50-5001
- Penstock Steel Liner Design Criteria _____ 536-50-5002

Powerhouse and Power Tunnel
- Rock Reinforcement ____ 536-20-GT05




PROFILE

Section along ℄ power tunnel No.5

Scale 0 50 100 150 200 250 Feet

Except as noted

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
10/4/76 DATE ADMINISTRATOR, OPERATIONS DIVISION

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
| REVISIONS | | | | |

REGISTERED PROFESSIONAL ENGINEER
9-29-76
DONALD B. MANGER
IDAHO

IDAHO POWER COMPANY
BOISE, IDAHO

RECEIVED
OCT 4 1976
POWER PLANT CONSTRUCTION

BROWNLEE PROJECT, UNIT NO. 5

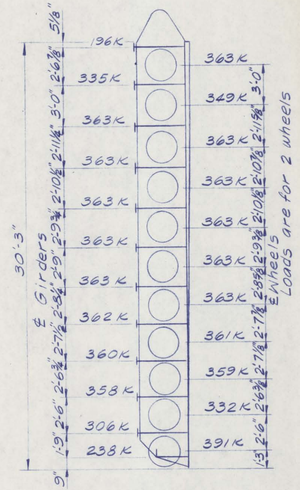
# POWER TUNNEL PLAN & PROFILE EXCAVATION & CONCRETE

INTERNATIONAL ENGINEERING COMPANY, INC.

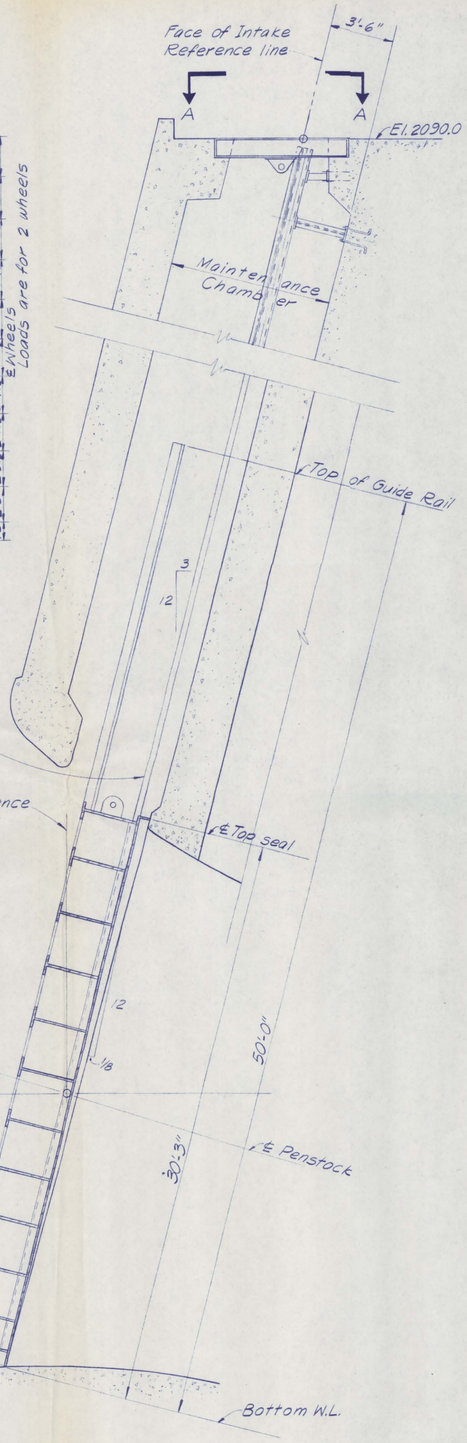
DESIGNED A.L.S. CHECKED M.S.E. APPROVED
DRAWN B.T.C. INSPECT C.E.H. RECOMMENDED
DATE Sept 29, 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

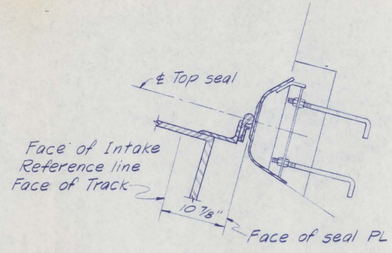
DRAWING NO.
536-50-C001



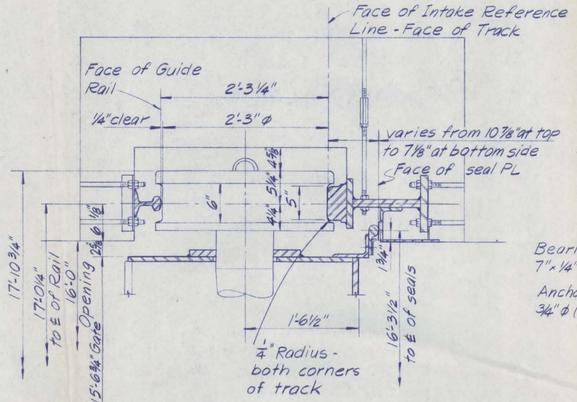

LOAD DIAGRAM



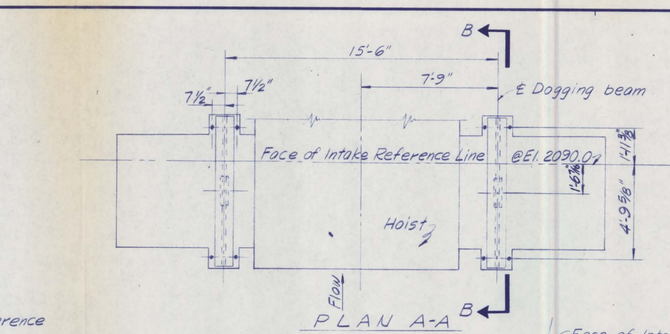

SECTIONAL ELEVATION
on ℄ of Intake Structure



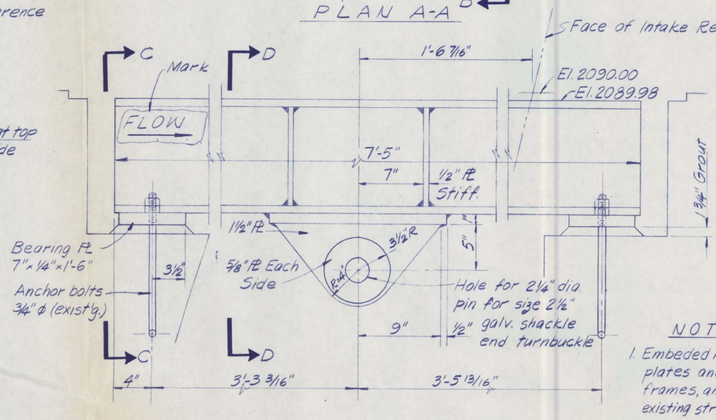

TOP SEAL PLATE DETAIL




TRACK AND GUIDE DETAIL




PLAN A-A




SECTION B-B

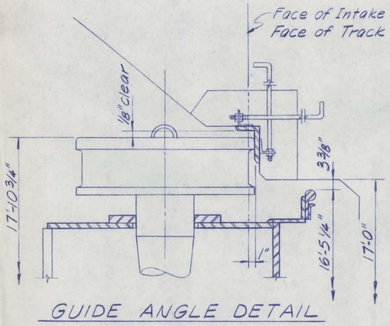
NOTES:

1. Embeded metal (tracks, girders, seal bearing plates and beams, maintenance chamber support frames, and dogging beam anchor bolts) are in place in the existing structure and are not to be furnished or installed.
2. Gate Frame (skin PL, girders & side PL) are designed for a basic allowable stress of 22,000 psi in accordance with latest A.I.S.C. specifications.
3. Weights (approximate dry weight)

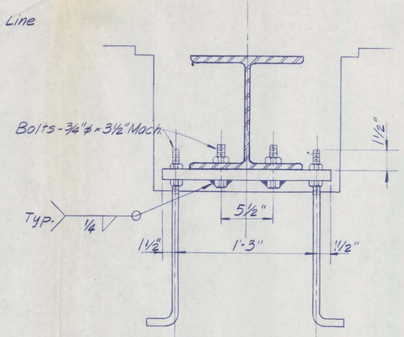
| | |
|---|---|
| Fixed Wheel Gate | |
| Frame and Seals | 53,500 lbs. |
| Wheels and Axles | 44,500 lbs. |
| | 98,000 lbs. |
| Dogging Beams (@ 700 lbs. ea.) | 1,400 lbs. |
| Total | 99,400 lbs. |

REFERENCE DRAWINGS:

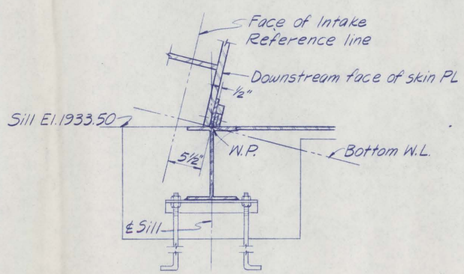
Power Intake -
Gate, Stoplogs & Trashrack
General Arrangement _____ 536-40-5001
Fixed Wheel Gate 16'x30' -
Framing Details _____ 536-40-5003
Wheel and Seal Details _____ 536-40-5004



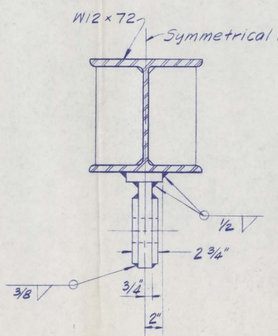

GUIDE ANGLE DETAIL




SECTION C-C




SILL DETAIL




SECTION D-D

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/10/76
DATE
ADMINISTRATOR, OPERATIONS DIVISION

Scale 0 1 2 3 4 5 6 7 8 FEET
Sectional El. ℄ Section A-A
Scale 0 1 2 FEET
Seal Plate, Track, Guide, Sill Details
Scale 0 1 2 FEET
Section B-B, C-C & D-D

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
| REVISIONS | | | | |

RECEIVED OCT 4 1976 POWER PLANT CONSTRUCTION

IDAHO POWER COMPANY
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

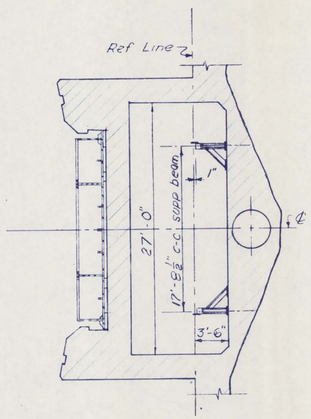
# POWER INTAKE
# FIXED WHEEL GATE 16' x 30'
# GATE ASSEMBLY & DOGGING BEAMS

INTERNATIONAL ENGINEERING COMPANY, INC.

DESIGNED RER/ALS CHECKED
DRAWN EF INSPECT
APPROVED
RECOMMENDED
DATE 29 Sept. 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

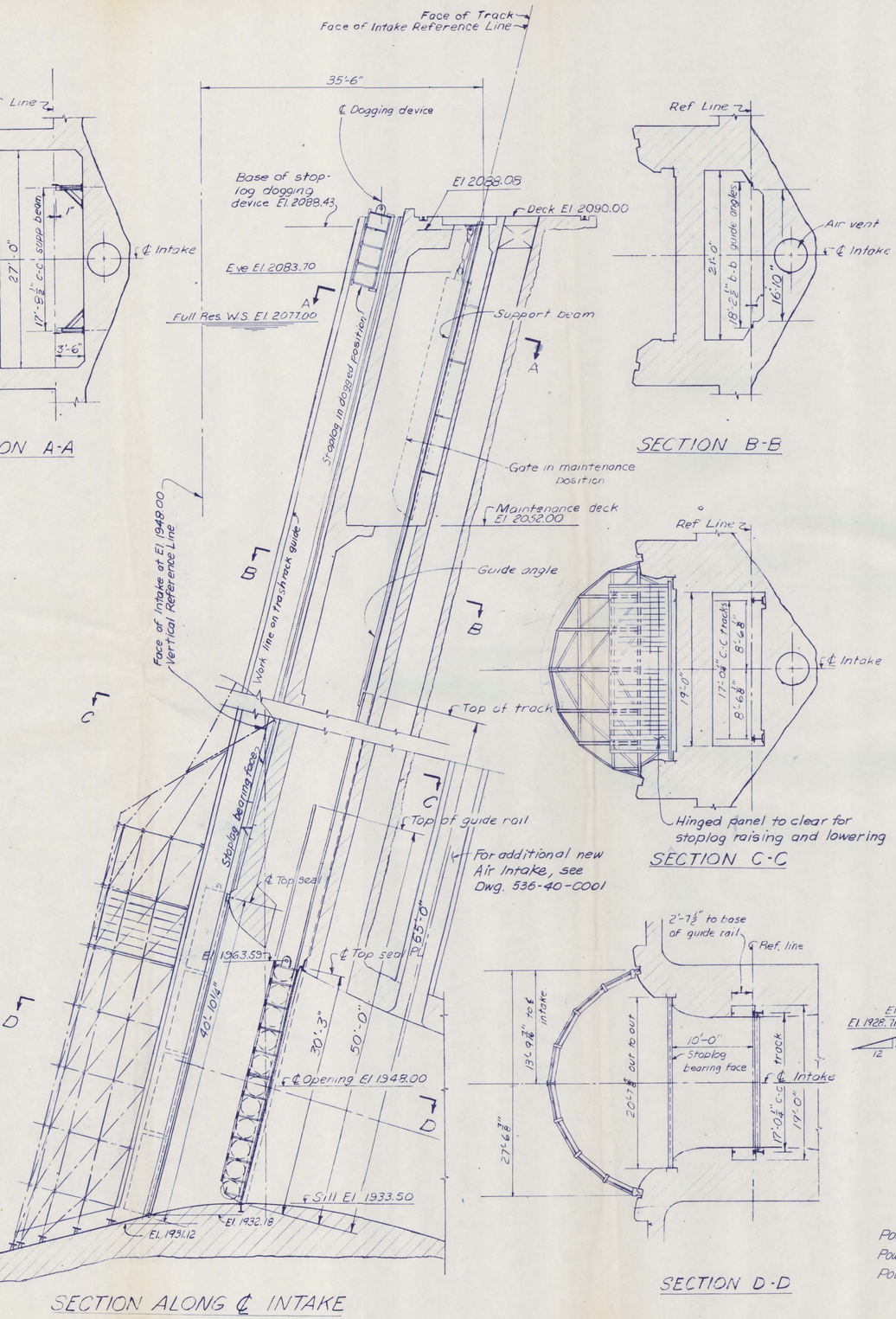
DRAWING NO.
536-40-S002




SECTION A-A




SECTION B-B



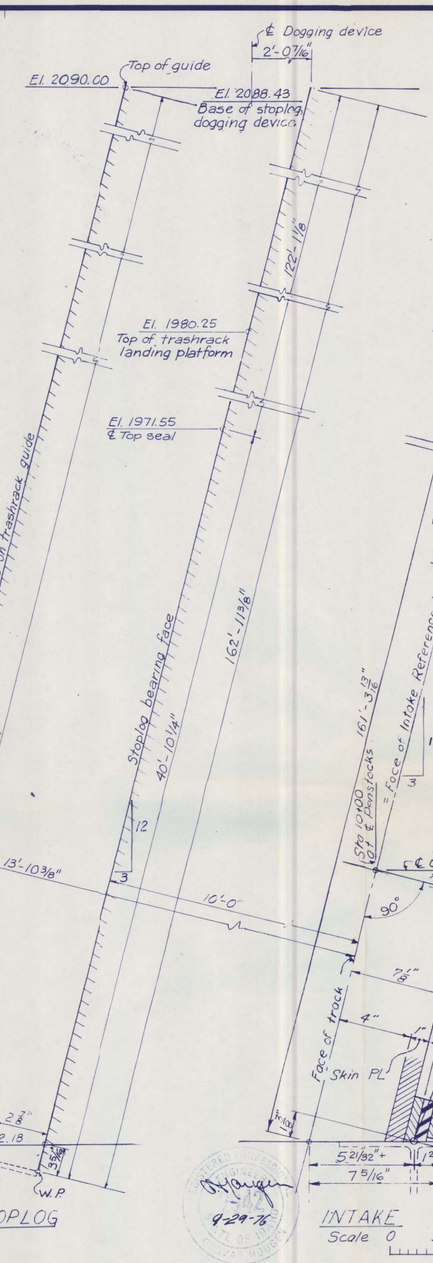

SECTION ALONG ℄ INTAKE




SECTION C-C

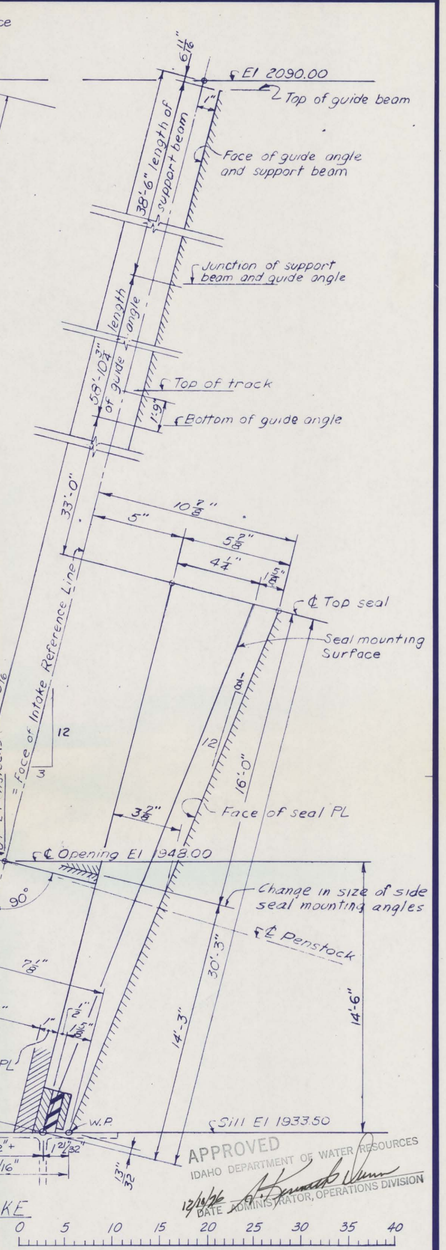



SECTION D-D




TRASHRACK

STOPLOG




INTAKE

Scale 0 5 10 15 20 25 30 35 40

Except as noted

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/29/76
DATE ADMINISTRATOR, OPERATIONS DIVISION

9-29-76

LINE DIAGRAM - WORKING POINTS

Scales Horiz. 0 4 Inches

Vert. 0 4 Feet

REFERENCE DRAWINGS:

Power Intake-Fixed Wheel Gate 16'-30'-Assembly 536-40-5002

Power Intake-Stoplog Seal Replacement 536-40-5005

Power Intake-Trashrack-General Arrangement 536-40-5006

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
| | | | | |

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IDAHO POWER COMPANY
BOISE, IDAHO

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OCT 4 1976
POWER PLANT CONSTRUCTION

BROWNLEE PROJECT, UNIT NO. 5

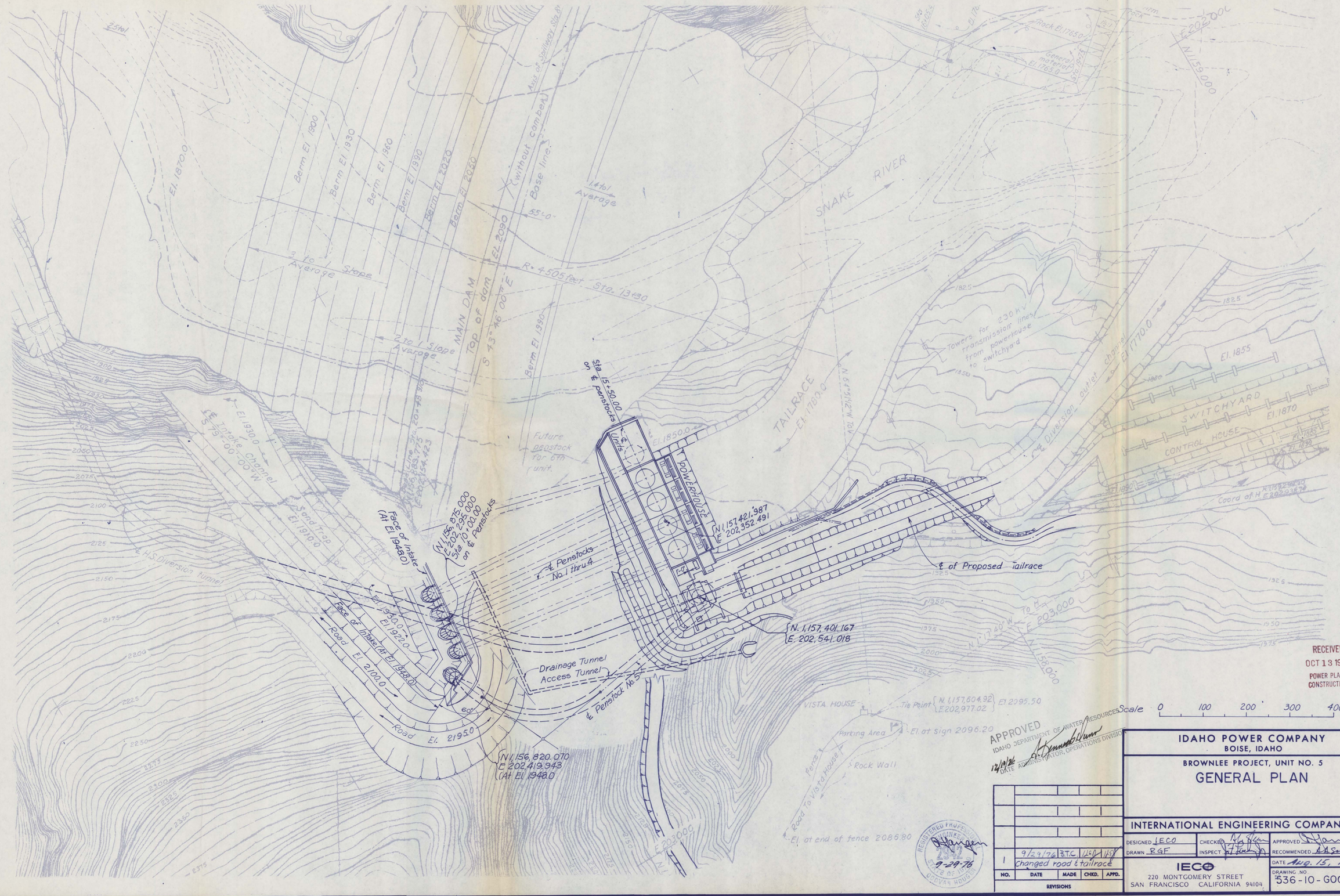
# POWER INTAKE GATE, STOPLOGS AND TRASHRACK GENERAL ARRANGEMENT

INTERNATIONAL ENGINEERING COMPANY, INC.

DESIGNED JRC/ALS CHECKED M. Flum APPROVED
DRAWN ET/RF INSPECT RECOMMENDED
DATE 29 Sept 1976

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DRAWING NO. 536-40-S001




RECEIVED
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POWER PLANT CONSTRUCTION

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
ADMINISTRATION, OPERATIONS DIVISION
12/19/76
DATE

| NO. | DATE | MADE | CHKD. | APPD. |
|---|---|---|---|---|
| 1 | 9/29/76 | BTC | | |

Changed road & tailrace

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
STATE OF IDAHO
DEVAN HOUGH
9-29-76

**IDAHO POWER COMPANY**
BOISE, IDAHO

BROWNLEE PROJECT, UNIT NO. 5

# GENERAL PLAN

**INTERNATIONAL ENGINEERING COMPANY, INC.**

DESIGNED IECO
DRAWN RGF
CHECKED
INSPECT
APPROVED
RECOMMENDED A.A. Schilly jr.
DATE Aug. 15, 1975

IECO
220 MONTGOMERY STREET
SAN FRANCISCO CALIFORNIA 94104

DRAWING NO.
536-10-G002-R1

PLAN

SECTION ON ℄ INTAKE

SECTION A-A

DEVELOPED UPSTREAM ELEVATION

SECTIONAL PLAN AT EL. 1948.00

SECTION F-F

SECTION B-B

SECTION C-C

SECTION D-D

SECTION E-E

NOTES:
Assumed average stable rock slope 3/4:1; rock excavation and concrete slope facing on 1/4:1 slope.
Fifth Unit intake structure shall be completed to a point including transition and one section of penstock liner fitted with a temporary bulkhead. Tunnel and penstock downstream of bulkhead shall be completed in the future.

REFERENCE DRAWINGS:
General Layout - Plan ..... CV-10-901
General Layout - Sections ..... CV-10-902
Power Intake
Gates, Stoplogs and Trashracks - General Arrangement ..... CV-15-501
Intake Gate Hoists - General Arrangement ..... CV-15-531

Scale: 1/16" = 1'-0"

| NO. | DATE | MADE | CHKD. | APP'D. | REVISIONS |
|---|---|---|---|---|---|
| 4 | 7-2-1958 | GC | WLS | | Moved trs. port. crane conc. line |
| 3 | 12-30-57 | GC | WLS | | Added load center, Crane anchor etc. |
| 2 | 11-25-57 | REM | WLS | | 4 units, Pressure air chamber, Beams |
| 1 | 6-7-57 | JRF | WLS | | Deck piers, Constr ℄ Constr. jts |

JUN 18 1976

IDAHO POWER CO.
Date May 3, 1957 Approved Signed F.R. McCormick
BROWNLEE PROJECT
POWER INTAKE
GENERAL ARRANGEMENT

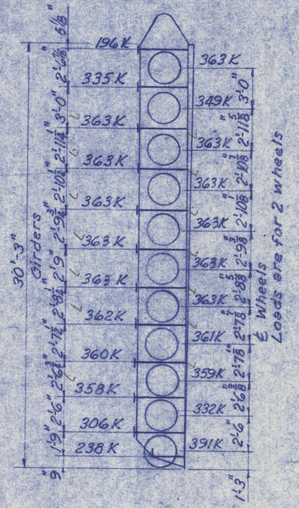
INTERNATIONAL ENGINEERING COMPANY, INC.
FOR
MORRISON-KNUDSEN COMPANY, INC.

DESIGNED WLS | CHECKED WLS | SUBMITTED
DRAWN JRF | INSP. HYM EJ RAM CSM | RECOMMENDED
APPROVED

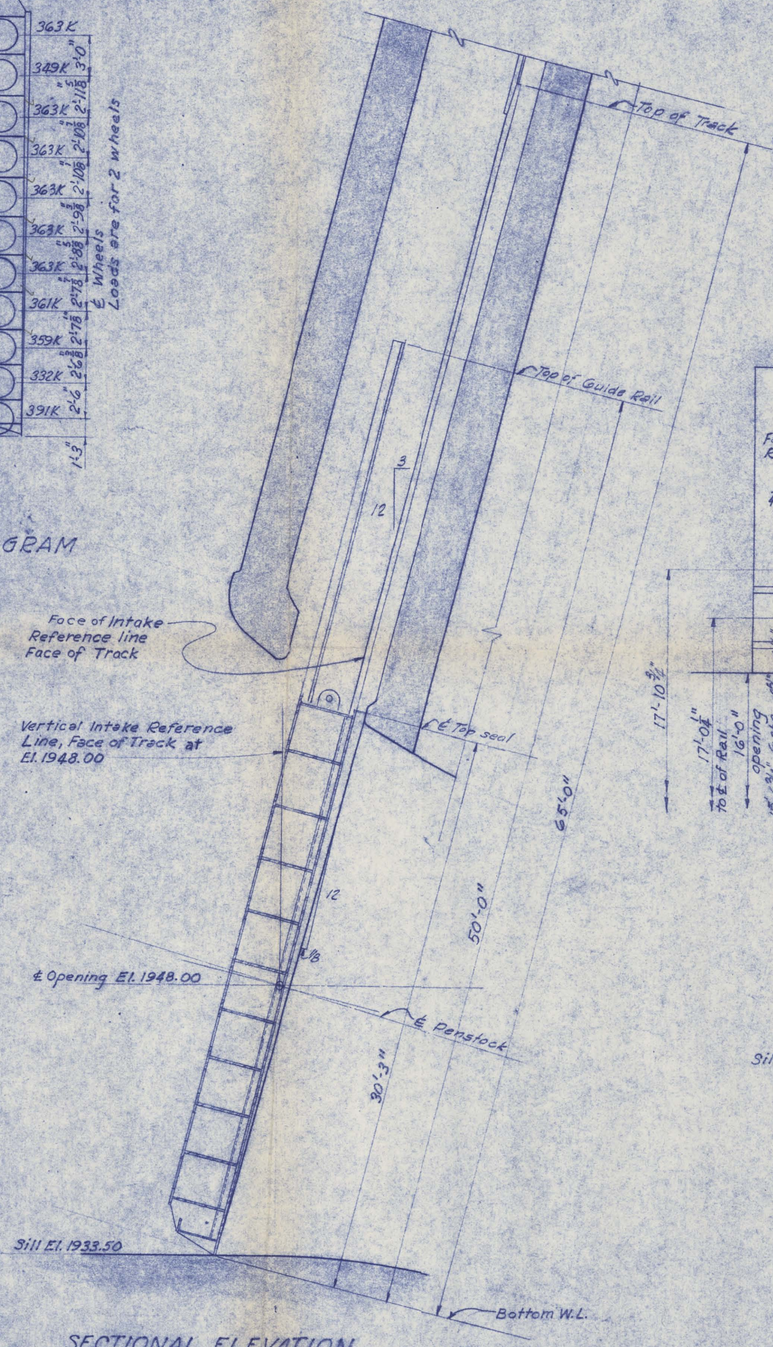
SAN FRANCISCO, CALIF.
DATE Apr. 23, 1957

CV-31-201R4

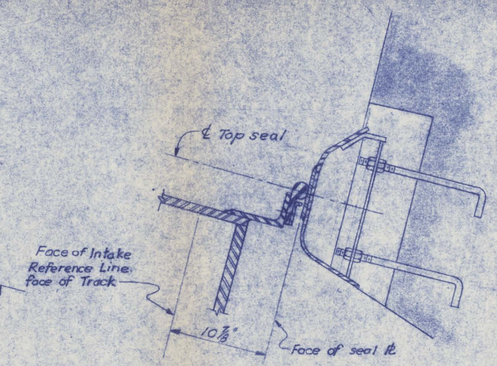
19E-233844-31-2



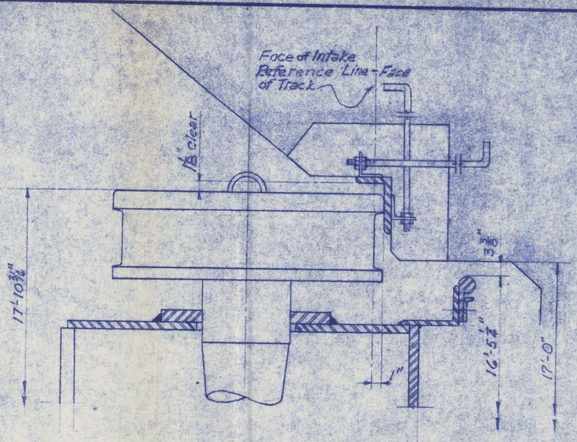

LOAD DIAGRAM



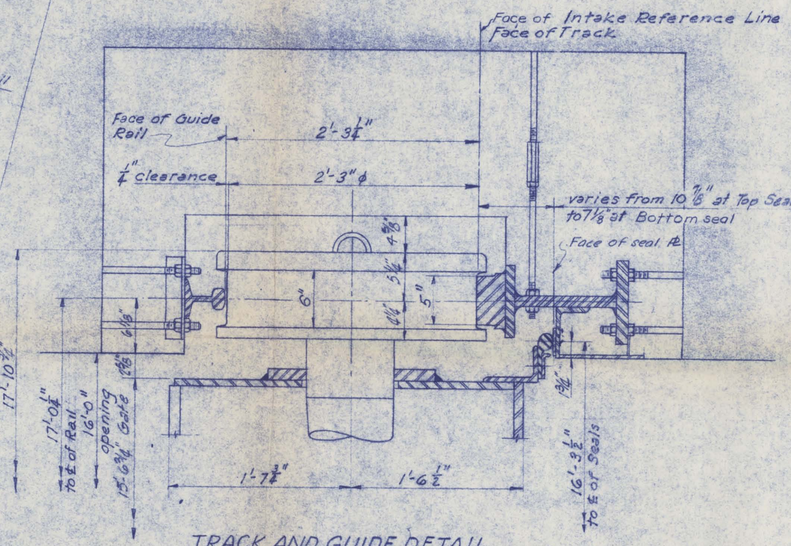

SECTIONAL ELEVATION
on ℄ of Intake Structure
Scale: 1/4"=1'-0"



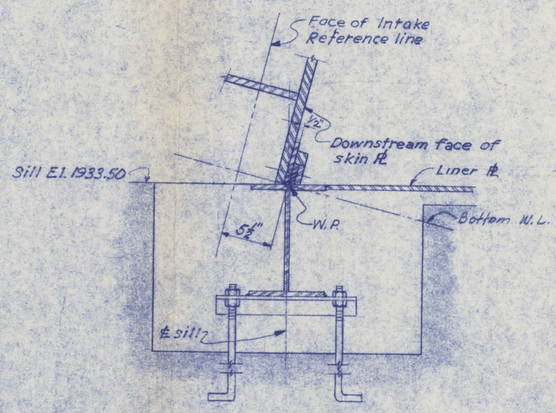

TOP SEAL PLATE DETAIL




GUIDE ANGLE DETAIL




TRACK AND GUIDE DETAIL




SILL DETAIL

NOTES:

Gates designed for steel stresses of 16,000 psi

Weights (approximate)

| | |
|---|---|
| Fixed Wheel Gate | |
| Frame and Seals | 61,700 # |
| Wheels and Axles | 44,500 # |
| Embedded Metal | 37,700 # |
| Total - 1 Gate Assembly | 143,900 # |
| Total - 4 required Assemblies | 575,600 # |

REFERENCE DRAWINGS:

POWER INTAKE

| | |
|---|---|
| Gates, Stoplogs, and Trashracks, General Arrangement | C.V. 15-501 |
| Fixed Wheel Gates 16'x30' | |
| Framing Details | C.V. 15-503 |
| Wheel and Seal Details | C.V. 15-504 |
| Track and Guides - Sheet 1 | C.V. 15-505 |
| Track and Guides - Sheet 2 | C.V. 15-506 |

Scale 1½"=1'-0" unless otherwise noted

| NO. | DATE | MADE | CHKD | APPD |
|---|---|---|---|---|
| 4 | | | | |
| 3 | | | | |
| 2 | | | | |
| 1 | | | | |

REVISIONS

JUN 18 1976

IDAHO POWER CO.

Date May 3, 1957 Approved Signed F.R. McCormick

BROWNLEE PROJECT

POWER INTAKE

FIXED WHEEL GATES 16'x30'

ASSEMBLY

INTERNATIONAL ENGINEERING COMPANY, INC.

FOR

MORRISON - KNUDSEN COMPANY, INC.

DESIGNED R.E.R. DRAWN C.E.H. CHKD C.C.H.T. INSP. S.J. W.L.S. SUBMITTED R.E. Nelson Jr. RECOMMENDED Chief Engr. APPROVED

SAN FRANCISCO, CALIF.

DATE April 23, 1957

C.V-15-502

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION ALONG ℄ INTAKE

STOPLOG

TRASHRACK

INTAKE

LINE DIAGRAM - WORKING POINTS
Scales: Horizontal 3"=1'-0"
Vertical 1/8"=1'-0"

REFERENCE DRAWINGS
Power Intake - Fixed Wheel Gates, 16'x30' - Assembly CV-15-502
Power Intake - Stoplogs - Framing and Details CV-15-511
Power Intake - Trashracks - Framing and Details, Sh I CV-15-521

JUN 18 1976

Scale 1/8"=1'-0" unless otherwise noted

| NO. | DATE | MADE | CHKD | APPD |
|---|---|---|---|---|
| 4 | | | | |
| 3 | | | | |
| 2 | | | | |
| 1 | Aug 8, 1957 | L.S.S. | WGH | |
| | Added Stoplogs & Trashracks | | | |

REVISIONS

IDAHO POWER CO.
Date May 3, 1957 Approved Signed F.R. McCormick

BROWNLEE PROJECT
POWER INTAKE
GATES, STOPLOGS AND TRASHRACKS
GENERAL ARRANGEMENT

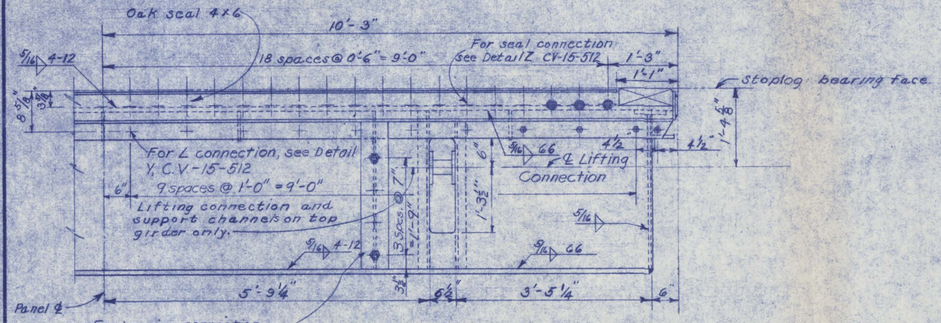
INTERNATIONAL ENGINEERING COMPANY, INC.
FOR
MORRISON - KNUDSEN COMPANY, INC.

| | | |
|---|---|---|
| DESIGNED IECO | CHKD C.C.H.T. | SUBMITTED R.C. Hollick |
| DRAWN JRC | INSP R.W.S. | RECOMMENDED |
| | | APPROVED |

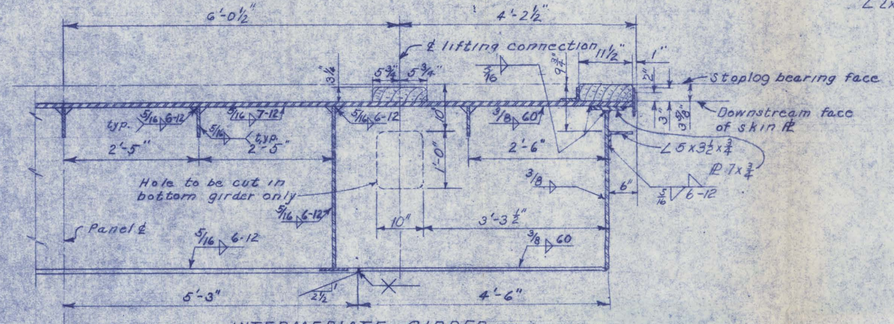
SAN FRANCISCO, CALIF.
DATE April 23, 1957

CV-15-501 R1

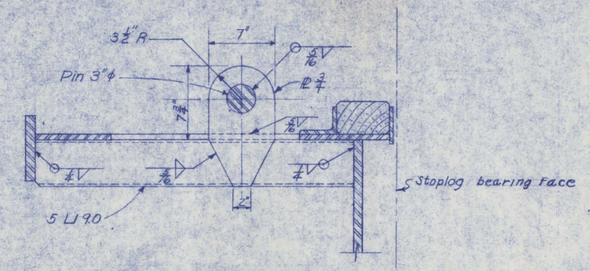
19D-2346)-1-15-2



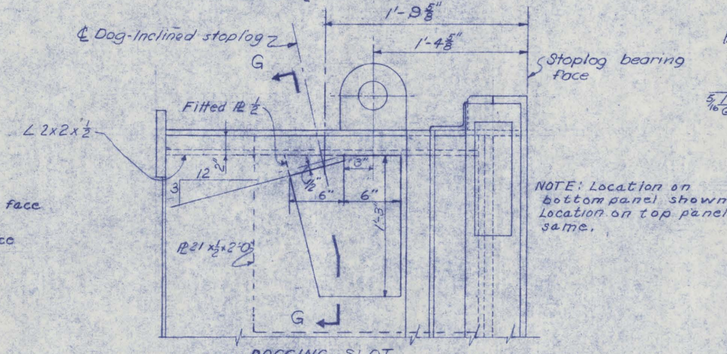

PLAN VIEW
BOTTOM PANELS
Bottom View ~ opposite hand except as noted



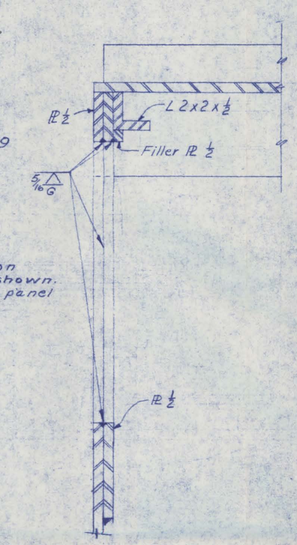

INTERMEDIATE GIRDER
SECTION B-B

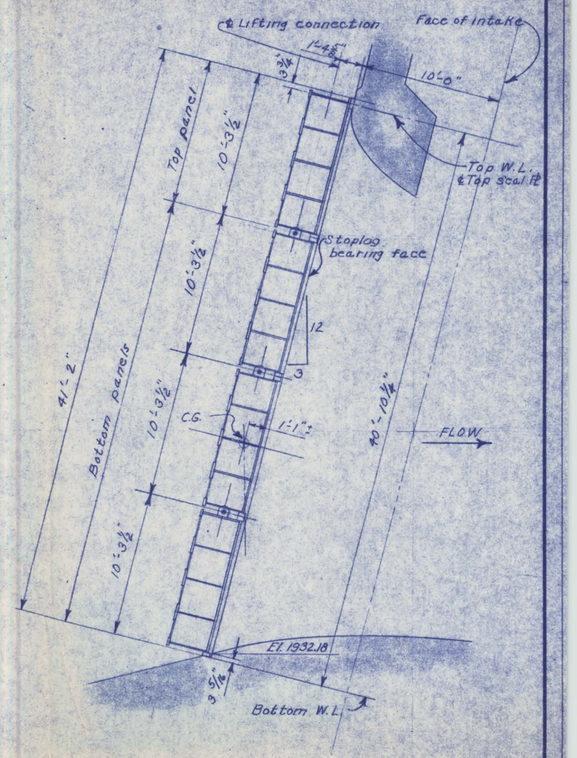



LIFTING CONNECTION
SECTION E-E
Scale: 1 1/2" = 1'-0"

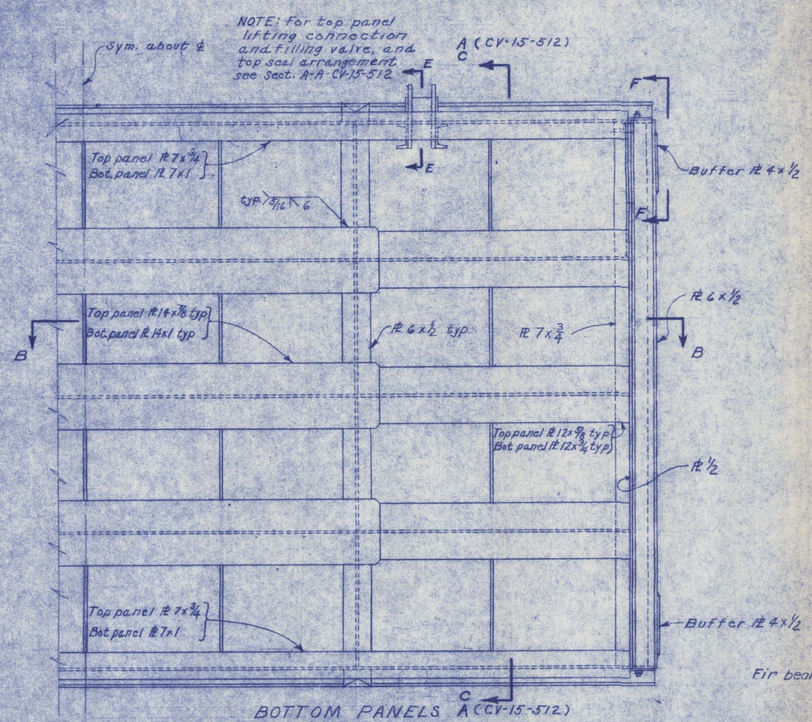



DOGGING SLOT
ELEVATION F-F
Scale: 1 1/2" = 1'-0"

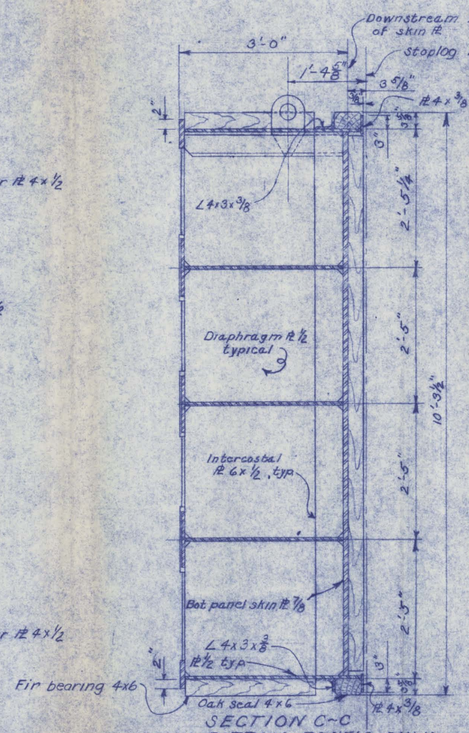


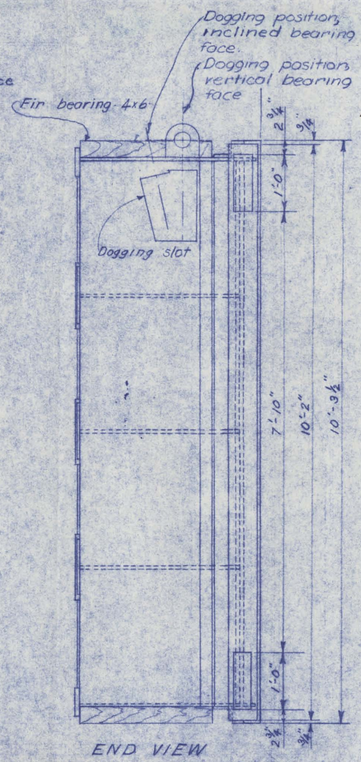

STOPLOG PANEL ARRANGEMENT
Scale: 3/16" = 1'-0"




BOTTOM PANELS A (CV-15-512)
UPSTREAM ELEVATION
TOP PANEL - same except as noted
see Sect A-A CV-15-512




SECTION C-C
BOTTOM PANELS ONLY




END VIEW

SECTION G-G
Scale: 3" = 1'-0"

NOTES:
All welds are 5/16" continuous welds unless otherwise noted.

Weights (estimated)

| | |
|---|---|
| Top Panel (each) | 20,000 lbs |
| Bottom Panel (each) | 22,000 " |
| Total 1~assembly | 84,000 lbs |
| Embedded Metal 1~assembly | 31,600 lbs |
| Total 5~assemblies | 158,000 lbs |
| Total | 244,000 lbs |

REFERENCE DRAWINGS

POWER INTAKE GATES, STOPLOGS & TRASHRACK
General Arrangement — CV-15-501
STOPLOGS
Embedded Frames — CV-15-514
Panel Details - Sheet 2 — CV-15-512

Scale: 3/4" = 1'-0" except as noted

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/16/76
DATE ADMINISTRATION, OPERATIONS DIVISION

JUN 18 1976

| NO. | DATE | MADE | CHKD | APPD |
|---|---|---|---|---|
| 4 | | | | |
| 3 | | | | |
| 2 | | | | |
| 1 | | | | |

REVISIONS

IDAHO POWER CO.
Date Aug. 26, 1957 Approved Signed by F.R. McCormick

BROWNLEE PROJECT
POWER INTAKE
STOPLOGS
PANEL DETAILS
SHEET 2

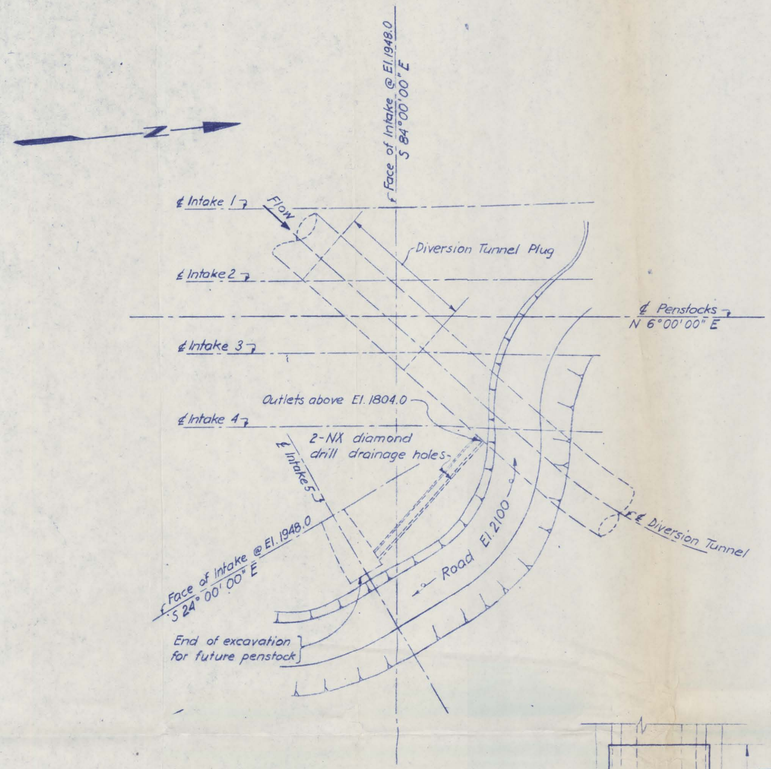
INTERNATIONAL ENGINEERING COMPANY, INC.
FOR
MORRISON - KNUDSEN COMPANY, INC.

| | | | |
|---|---|---|---|
| DESIGNED RER | CHKD W.G.H. | SUBMITTED R.C. Kelly Jr. | |
| DRAWN RER | INSP [illegible] | RECOMMENDED [illegible] | |
| | | APPROVED [illegible] | |

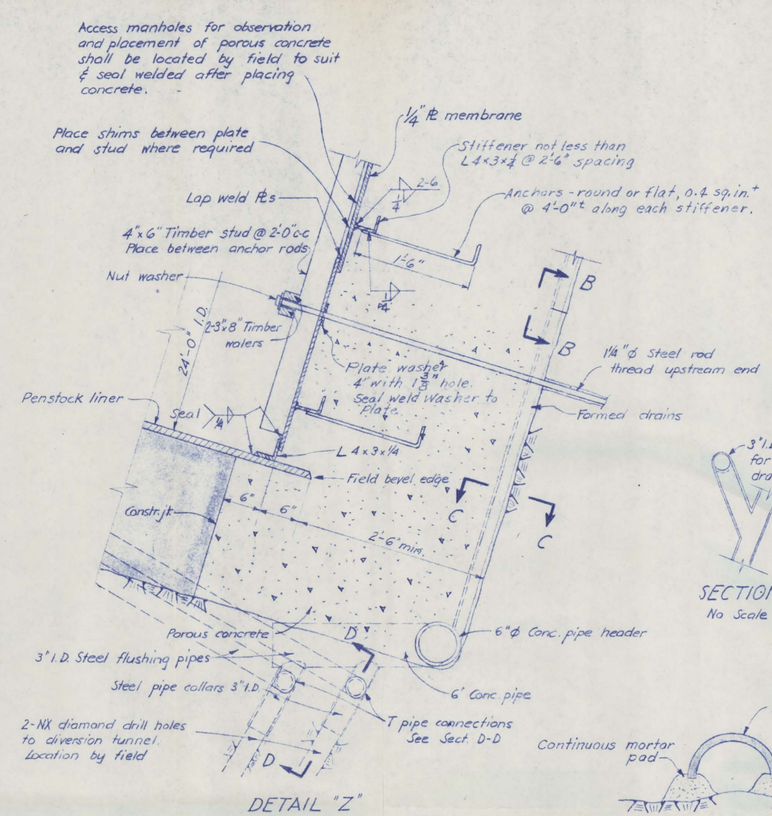
SAN FRANCISCO, CALIF.
DATE August 8, 1957

CV-15-511

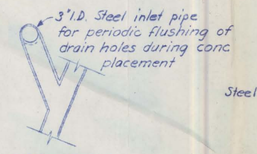
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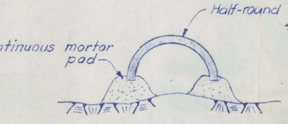

PLAN
Scale 1" = 50'



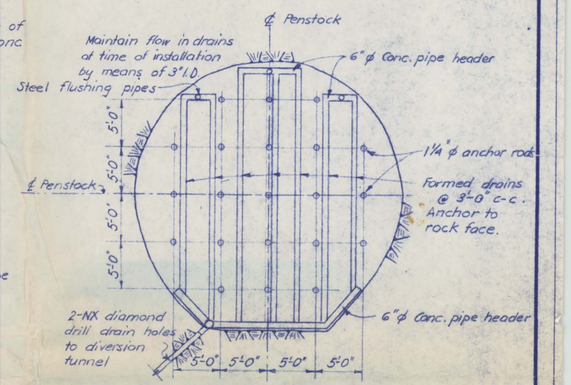

DETAIL "Z"
Scale 1" = 1'-0"



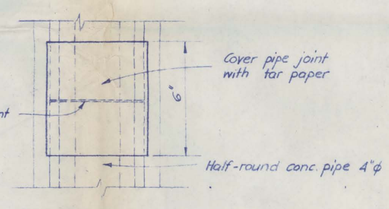

SECTION D-D
No Scale



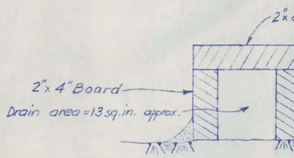

SECTION C-C
Scale 3" = 1'-0"
See Alternate Detail



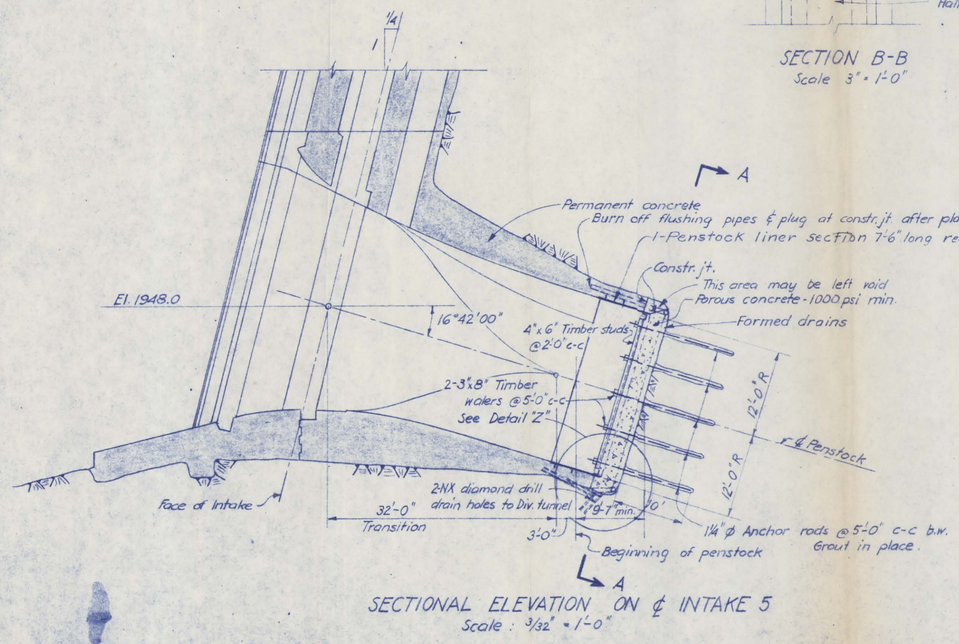

SECTION A-A
Scale 1/8" = 1'-0"
Showing drainage piping & anchor rods



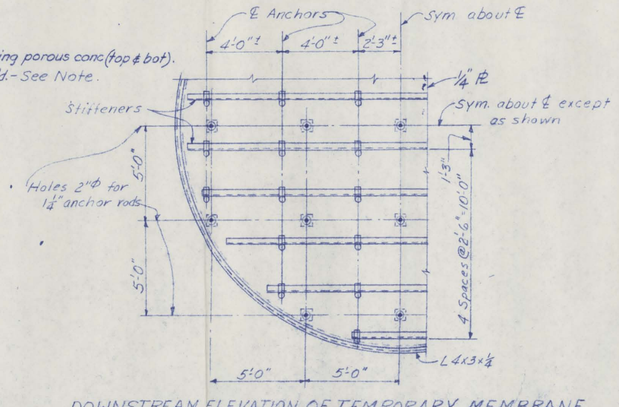

SECTION B-B
Scale 3" = 1'-0"




SECTION C-C
Alternate Detail
Not to Scale




SECTIONAL ELEVATION ON ℄ INTAKE 5
Scale : 3/32" = 1'-0"




DOWNSTREAM ELEVATION OF TEMPORARY MEMBRANE
Scale 1/4" = 1'-0"

BILL OF MATERIAL
For Penstock Liner Section 7'-6" Long

| ITEM | NO. REQ'D | DESCRIPTION | REMARKS |
|---|---|---|---|
| 1 | 3 | Plates - 90" x 3/8" x 25'-6" rolled to 144" inside radius. ASTM A 285, Grade B Firebox. | Field to bevel. |
| 2 | 16 | Segments - Percolation Ring. Steel plate as per detail shown on dwg. CV-31-804. Cut and bevel. | |

All other material shown required is to be Furnished by the Field

NOTE:
The penstock liner section 7'-6" long shall be the same as ring 20H as shown on dwg. CV-31-803 with percolation rings as per Section A-A.
Permanent features of Intake 5 shall be identical to Intakes 1-4.
Porous concrete shall be placed before permanent concrete.

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/18/76
DATE
ADMINISTRATOR, OPERATIONS DIVISION

Scale as noted

JUN 18 1976

| NO. | DATE | MADE | CHK'D | APP'D |
|---|---|---|---|---|
| 4 | | | | |
| 3 | | | | |
| 2 | | | | |
| 1 | | | | |

REVISIONS

**IDAHO POWER CO.**
Date January 7, 1958 Approved Signed: F.R. McCormick

**BROWNLEE PROJECT**
POWER INTAKE
FIFTH UNIT
PROVISIONS FOR FUTURE CONSTRUCTION

INTERNATIONAL ENGINEERING COMPANY, INC.
FOR
MORRISON - KNUDSEN COMPANY, INC.

| | | |
|---|---|---|
| DESIGNED WLS/EREH | CHK'D WLS | SUBMITTED |
| DRAWN I.J.O. | INSP. R.E.H. W.L.S. | RECOMMENDED |
| | | APPROVED |

SAN FRANCISCO, CALIF.
DATE December 19, 1957

CV-31-211

19D-2349G-1-31-2

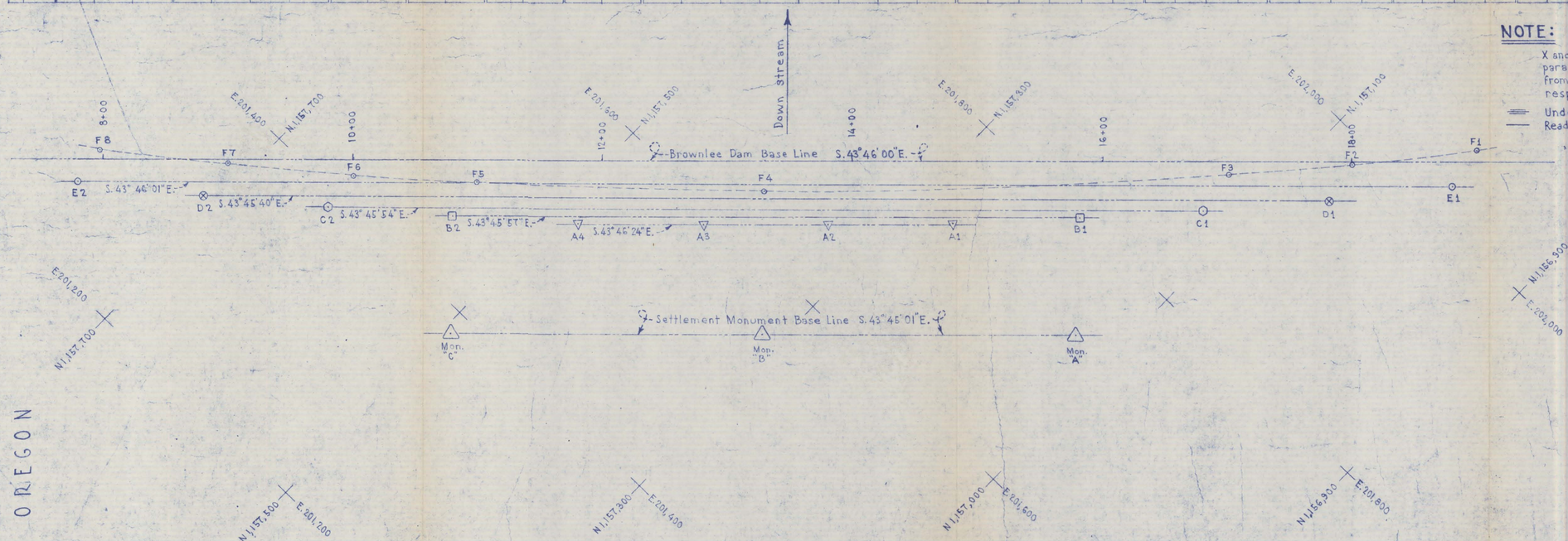
1 Brought up to 2-24-65 10-26-66 J.F.U.

2 7-9-73 OES Brought up to date

# ELEVATIONS AND DISPLACEMENTS OF DAM SETTLEMENT MONUMENTS

| OBS | DATE | ELEVATIONS Mon. A | Mon. B | Mon. C | A-1 | A2 | A3 | A4 | B1 | B2 | C1 | C2 | D1 | D2 | E1 | E2 | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | ELEVATIONS H.W. | ELEVATIONS T.W. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9-25-58 | 48.159 | 48.026 | 49.533 | | | | | | | | | | | | | | | | | | | | | 2023.9 | 1803.3 |
| 2 | 10-17-58 | 48.011 | 48.852 | 49.501 | | | | | | | | | | | | | | | | | | | | | 2028.0 | 1808.6 |
| 3 | 11-20-58 | 47.888 | 48.712 | 49.412 | | | | | | | | | | | | | | | | | | | | | 2034.9 | 1804.3 |
| 4 | 12-29-58 | 47.808 | 48.625 | 49.352 | | | | | | | | | | | | | | | | | | | | | 2044.6 | 1802.8 |
| 5 | 1-23-59 | 47.780 | 48.592 | 49.329 | 96.931 | 96.916 | 96.919 | 96.793 | 96.534 | 96.760 | 95.863 | 95.462 | 94.588 | 94.211 | 92.827 | 92.543 | 92.194 | 93.357 | 95.267 | 96.584 | 95.990 | 95.185 | 93.361 | 92.373 | 2043.7 | 1804.7 |
| 6 | 2-25-59 | 47.758 | 48.564 | 49.308 | 96.893 | 96.877 | 96.942 | 96.752 | 96.501 | 96.720 | 95.835 | 95.423 | 94.562 | 94.178 | 92.813 | 92.528 | 92.181 | 93.332 | 95.238 | 96.542 | 95.945 | 95.142 | 93.322 | 92.353 | 2034.7 | 1801.3 |
| 7 | 3-30-59 | 47.745 | 48.545 | 49.293 | 96.868 | 96.847 | 96.910 | 96.719 | 96.481 | 96.189 | 95.819 | 95.393 | 94.549 | 94.158 | 92.809 | 92.514 | 92.180 | 93.319 | 95.221 | 96.508 | 95.911 | 95.108 | 93.893 | 92.334 | 2026.3 | 1801.2 |
| 8 | 4-22-59 | 47.736 | 48.528 | 49.277 | 96.860 | 96.833 | 96.896 | 96.704 | 96.474 | 96.177 | 95.812 | 95.383 | 94.543 | 94.146 | 92.810 | 92.515 | 92.183 | 93.316 | 95.218 | 96.493 | 95.838 | 95.095 | 93.887 | 92.334 | 2018.2 | 1799.5 |
| 9 | 5-26-59 | — | — | — | 96.834 | 96.804 | 96.864 | 96.677 | 96.465 | 96.154 | 95.797 | 95.364 | 94.545 | 94.182 | 92.804 | 92.508 | 92.176 | 93.908 | 95.204 | 96.490 | 95.871 | 95.074 | 93.867 | 92.325 | 2020.7 | 1799.8 |
| 10 | 6-21-59 | — | — | — | 96.722 | 96.687 | 96.757 | 96.587 | 96.354 | 96.086 | 95.722 | 95.311 | 94.495 | 94.094 | 92.799 | 92.464 | 92.176 | 93.880 | 95.138 | 96.347 | 95.793 | 95.014 | 93.826 | 92.300 | 2076.1 | 1799.6 |
| 11 | 7-21-59 | — | — | — | 96.559 | 96.518 | 96.601 | 96.448 | 96.208 | 95.976 | 95.609 | 95.220 | 94.423 | 94.025 | 92.769 | 92.407 | 92.155 | 93.818 | 95.036 | 96.181 | 95.670 | 94.909 | 93.747 | 92.250 | 2076.1 | 1800.1 |
| 12 | 8-18-59 | — | — | — | 96.478 | 96.439 | 96.517 | 96.381 | 96.144 | 95.915 | 95.554 | 95.177 | 94.396 | 93.986 | 92.759 | 92.384 | 92.150 | 93.797 | 94.988 | 96.097 | 95.603 | 94.862 | 93.704 | 92.228 | 2076.5 | 1798.8 |
| 13 | 9-2-59 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 14 | 9-15-59 | — | — | — | 96.422 | 96.381 | 96.459 | 96.330 | 96.099 | 95.873 | 95.519 | 95.144 | 94.377 | 93.958 | 92.754 | 92.363 | 92.148 | 93.784 | 94.958 | 96.038 | 95.555 | 94.829 | 93.672 | 92.207 | 2076.3 | 1800.5 |
| 15 | 10-14-59 | — | — | — | 96.385 | 96.339 | 96.414 | 96.279 | 96.058 | 95.837 | 95.496 | 95.114 | 94.354 | 93.931 | 92.742 | 92.341 | 92.148 | 93.771 | 94.937 | 95.989 | 95.515 | 94.787 | 93.641 | 92.186 | 2074.7 | 1800.4 |
| 16 | 11-16-59 | — | — | — | 96.362 | 96.309 | 96.389 | 96.261 | 96.042 | 95.816 | 95.473 | 95.091 | 94.344 | 93.916 | 92.735 | 92.327 | 92.138 | 93.758 | 94.918 | 95.966 | 95.493 | 94.767 | 93.626 | 92.173 | 2068.6 | 1800.2 |
| 17 | 12-16-59 | — | — | — | 96.345 | 96.292 | 96.368 | 96.246 | 96.024 | 95.801 | 95.467 | 95.080 | 94.341 | 93.909 | 92.735 | 92.320 | 92.137 | 93.750 | 94.915 | 95.950 | 95.478 | 94.758 | 93.613 | 92.170 | 2062.9 | 1799.3 |
| 18 | 1-15-60 | — | — | — | 96.340 | 96.280 | 96.361 | 96.235 | 96.023 | 95.791 | 95.460 | 95.070 | 94.332 | 93.899 | 92.729 | 92.312 | 92.136 | 93.752 | 94.909 | 95.940 | 95.467 | 94.742 | 93.602 | 92.158 | 2052.1 | 1800.0 |
| 19 | 2-15-60 | 47.822 | 48.053 | 48.983 | 96.336 | 96.277 | 96.351 | 96.225 | 96.023 | 95.781 | 95.460 | 95.058 | 94.324 | 93.881 | 92.738 | 92.306 | 92.148 | 93.758 | 94.911 | 95.936 | 95.466 | 94.734 | 93.593 | 92.152 | 2042.1 | 1800.3 |
| 20 | 2-29-60 | — | — | — | — | 96.273 | — | 96.220 | 96.017 | — | — | 95.051 | 94.329 | — | — | 92.303 | — | — | — | — | — | — | — | — | — | — |
| 21 | 3-12-60 | 47.809 | 48.034 | 48.963 | 96.326 | 96.267 | 96.342 | 96.213 | 96.012 | 95.765 | 95.449 | 95.041 | 94.309 | 93.865 | 92.730 | 92.300 | 92.142 | 93.748 | 94.901 | 95.925 | 95.444 | 94.719 | 93.578 | 92.146 | 2026.6 | 1799.2 |
| 22 | 4-5-60 | 47.808 | 48.035 | 48.968 | 96.321 | 96.263 | 96.338 | 96.208 | 96.007 | 95.763 | 95.444 | 95.039 | 94.321 | 93.867 | 92.726 | 92.299 | 92.138 | 93.744 | 94.897 | 95.919 | 95.440 | 94.716 | 93.577 | 92.145 | 2047.4 | 1800.4 |
| 23 | 4-18-60 | — | — | — | 96.316 | 96.257 | 96.332 | 96.202 | 96.004 | 95.757 | 95.442 | 95.034 | 94.319 | 93.864 | 92.729 | 92.297 | 92.141 | 93.745 | 94.896 | 95.914 | 95.439 | 94.709 | 93.573 | 92.143 | 2070.0 | 1800.2 |
| 24 | 5-6-60 | — | — | — | 96.309 | 96.247 | 96.324 | 96.191 | 95.995 | 95.747 | 95.435 | 95.026 | 94.312 | 93.859 | 92.725 | 92.294 | 92.136 | 93.739 | 94.888 | 95.904 | 95.424 | 94.699 | 93.565 | 92.137 | 2071.7 | 1799.9 |
| 25 | 5-15-60 | — | — | — | 96.299 | 96.235 | 96.311 | 96.178 | 95.985 | 95.739 | 95.428 | 95.015 | 94.306 | 93.850 | 92.727 | 92.285 | 92.138 | 93.737 | 94.883 | 95.889 | 95.411 | 94.686 | 93.555 | 92.129 | 2076.0 | 1800.8 |
| 26 | 5-30-60 | — | — | — | 96.291 | 96.221 | 96.298 | 96.166 | 95.979 | 95.731 | 95.425 | 95.011 | 94.304 | 93.846 | 92.725 | 92.283 | 92.138 | 93.740 | 94.881 | 95.880 | 95.406 | 94.683 | 93.550 | 92.128 | 2076.9 | 1799.9 |
| 27 | 10-31-60 | — | — | — | 96.270 | 96.205 | 96.280 | 96.151 | 95.962 | 95.711 | 95.407 | 94.995 | 94.297 | 93.830 | 92.723 | 92.275 | 92.136 | 93.740 | 94.874 | 95.863 | 95.381 | 94.664 | 93.534 | 92.130 | 2074.5 | 1800.1 |
| 28 | 12-1-61 | 47.251 | 47.973 | 48.912 | .251 | .183 | .252 | .182 | .950 | .689 | .351 | .977 | .288 | .806 | .715 | 92.262 | .135 | .734 | .867 | .843 | .820 | .645 | .511 | 92.108 | 2075.9 | 1800.7 |
| 29 | 12-22-64 | — | — | — | 96.080 | 95.999 | 96.053 | 95.932 | 95.808 | 95.693 | 95.258 | 94.796 | 94.195 | 93.849 | 92.671 | 92.181 | 92.110 | 93.700 | 94.781 | 95.654 | 95.163 | 94.456 | 93.342 | 92.014 | 2073.2 | 1802.4 |
| 30 | 2-24-65 | 47.105 | 47.790 | 48.706 | 96.087 | 95.988 | 96.051 | 95.920 | 95.799 | 95.693 | 95.264 | 94.782 | 94.189 | 93.847 | 92.684 | 92.172 | 92.128 | 93.701 | 94.788 | 95.654 | 95.163 | 94.447 | 93.339 | 92.009 | 2084.6 | 1805.1 |
| 31 | 3-4-66 | — | — | — | 96.003 | 95.894 | 95.951 | 95.820 | 95.728 | 95.597 | 95.200 | 94.693 | 94.143 | 93.572 | 92.667 | 92.135 | 92.121 | 93.672 | 94.738 | 95.647 | 95.072 | 94.354 | 93.257 | 91.967 | 2047.4 | 1805.0 |
| 32 | 3-2-70 | 46.992 | 47.688 | 48.657 | 95.967 | 95.848 | 95.893 | 95.765 | 95.694 | 95.349 | 95.170 | 94.465 | 94.110 | 93.526 | 92.659 | 92.112 | 92.115 | 93.652 | 94.711 | 95.517 | 95.020 | 94.305 | 93.209 | 91.941 | 2034.9 | 1804.4 |
| 33 | 6-28-73 | — | — | — | 95.862 | 95.742 | 95.772 | 95.654 | 95.616 | 95.230 | 95.005 | 94.545 | 94.075 | 93.428 | 92.625 | 92.068 | 92.088 | 94.608 | 94.645 | 95.411 | 94.902 | 94.195 | 93.099 | 91.882 | 2074.8 | 1800.6 |
| 34 | 3-19-75 | 46.870 | 47.415 | 48.530 | 95.835 | 95.699 | 95.737 | 95.611 | 95.583 | 95.203 | 95.079 | 94.504 | 94.054 | 93.403 | 92.629 | 92.044 | 92.097 | 94.600 | 94.636 | 95.373 | 94.869 | 94.158 | 93.068 | 91.864 | 2023.3 | 1804.6 |
| 35 | 5-26-76 | — | — | — | 95.828 | 95.679 | 95.717 | 95.587 | 95.572 | 95.174 | 95.063 | 94.477 | 94.036 | 93.373 | 92.625 | 92.022 | 92.100 | 93.595 | 94.622 | 95.351 | 94.841 | 94.126 | 93.036 | 91.844 | 2065.7 | 1805.6 |
| 36 | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| OBS | DATE | DISPLACEMT FROM ORIGINAL POSITIONS Mon. A X | Mon. A Y | Mon. B X | Mon. B Y | Mon. C X | Mon. C Y | A1 X | A1 Y | A2 X | A2 Y | A3 X | A3 Y | A4 X | A4 Y | B1 X | B1 Y | B2 X | B2 Y | C1 X | C1 Y | C2 X | C2 Y | D1 X | D1 Y | D2 X | D2 Y | E1 X | E1 Y | E2 X | E2 Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9-25-58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 10-17-58 | — | +0.14 | — | +0.21 | — | +0.13 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 11-20-58 | — | +0.27 | — | +0.26 | — | +0.17 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 12-29-58 | — | +0.36 | — | +0.35 | — | +0.24 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 1-23-59 | — | +0.33 | — | +0.37 | — | +0.265 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 2-25-59 | — | +0.325 | — | +0.41 | — | +0.265 | — | 0.00 | — | 0.020 | — | 0.00 | — | 0.030 | — | 0.00 | — | 0.00 | — | 0.00 | — | 0.035 | — | 0.00 | — | 0.015 | — | 0.00 | — | 0.00 |
| 7 | 3-30-59 | — | +0.33 | — | +0.43 | — | +0.27 | — | -0.02 | — | 0.02 | — | 0.03 | — | 0.04 | — | 0.01 | — | 0.06 | — | 0.01 | — | 0.00 | — | 0.03 | — | 0.03 | — | 0.00 | — | 0.00 |
| 8 | 4-22-59 | — | +0.28 | — | +0.36 | — | +0.21 | — | 0.00 | — | 0.00 | — | -0.01 | — | +0.02 | — | -0.04 | — | +0.02 | — | 0.00 | — | 0.00 | — | 0.00 | — | +0.02 | — | 0.00 | — | -0.02 |
| 9 | 5-26-59 | — | — | — | — | — | — | — | -0.015 | — | +0.02 | — | +0.01 | — | +0.045 | — | -0.005 | — | +0.04 | — | 0.00 | — | +0.03 | — | 0.00 | — | +0.065 | — | 0.00 | — | +0.01 |
| 10 | 6-21-59 | — | — | — | — | — | — | — | 0.090 | — | 0.08 | — | 0.11 | — | 0.150 | — | 0.030 | — | 0.170 | — | 0.06 | — | 0.07 | — | 0.04 | — | 0.10 | — | 0.04 | — | 0.01 |
| 11 | 7-21-59 | — | — | — | — | — | — | — | 0.15 | — | 0.23 | — | 0.20 | — | 0.23 | — | 0.12 | — | 0.29 | — | 0.15 | — | 0.19 | — | 0.08 | — | 0.16 | — | 0.09 | — | 0.05 |
| 12 | 8-18-59 | — | — | — | — | — | — | — | 0.19 | — | 0.26 | — | 0.30 | — | 0.31 | — | 0.20 | — | 0.38 | — | 0.15 | — | 0.23 | — | 0.09 | — | 0.21 | — | 0.09 | — | 0.04 |
| 13 | 9-2-59 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 14 | 9-15-59 | — | — | — | — | — | — | -.085 | 0.24 | -.055 | 0.28 | +0.03 | 0.30 | +0.06 | 0.34 | -.105 | 0.20 | +.165 | 0.34 | -.17 | 0.15 | +.06 | 0.24 | -0.29 | 0.09 | +0.12 | 0.21 | -0.45 | +0.01 | 0.00 | 0.05 |
| 15 | 10-14-59 | — | — | — | — | — | — | — | 0.26 | — | 0.33 | — | 0.31 | — | 0.38 | — | 0.20 | — | 0.35 | — | 0.15 | — | 0.24 | — | 0.12 | — | 0.22 | — | +0.02 | — | 0.05 |
| 16 | 11-16-59 | — | — | — | — | — | — | — | 0.32 | — | 0.40 | — | 0.455 | — | 0.405 | — | 0.21 | 0.205 | 0.39 | -.25 | 0.185 | +.07 | 0.315 | -0.32 | 0.115 | — | 0.22 | — | 0.07 | — | 0.09 |
| 17 | 12-16-59 | — | — | — | — | — | — | — | 0.27 | — | 0.36 | — | 0.42 | — | 0.44 | — | 0.16 | — | 0.42 | — | 0.15 | — | 0.30 | — | 0.125 | — | 0.265 | — | +0.055 | — | 0.07 |
| 18 | 1-15-60 | — | — | — | — | — | — | — | 0.31 | — | 0.40 | — | 0.44 | — | 0.46 | — | 0.22 | — | 0.42 | — | 0.18 | — | 0.31 | — | 0.09 | — | 0.27 | — | +0.08 | — | 0.07 |
| 19 | 2-15-60 | — | — | — | — | — | — | — | 0.29 | — | 0.35 | — | 0.41 | — | 0.37 | — | 0.19 | — | 0.41 | — | 0.14 | — | 0.32 | — | 0.09 | — | 0.25 | — | +0.08 | — | 0.06 |
| 20 | 2-29-60 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 21 | 3-12-60 | — | +0.62 | — | +0.79 | — | +0.57 | — | 0.26 | — | 0.33 | — | 0.36 | — | 0.44 | — | 0.20 | — | 0.41 | — | 0.16 | — | 0.32 | — | 0.085 | — | 0.32 | — | -0.04 | — | 0.06 |
| 22 | 4-5-60 | — | +0.62 | — | +0.79 | — | +0.55 | — | 0.25 | — | 0.33 | — | 0.355 | — | 0.405 | — | 0.21 | — | 0.405 | — | 0.13 | — | 0.30 | — | 0.05 | — | 0.225 | — | +0.05 | — | 0.05 |
| 23 | 4-18-60 | — | +0.60 | — | +0.78 | — | +0.535 | — | 0.265 | — | 0.33 | — | 0.355 | — | 0.415 | — | 0.215 | — | 0.41 | — | 0.11 | — | 0.30 | — | 0.05 | — | 0.225 | — | +0.07 | — | 0.11 |
| 24 | 5-6-60 | — | — | — | — | — | — | — | 0.265 | — | 0.34 | — | 0.38 | — | 0.425 | — | 0.20 | — | 0.425 | — | 0.10 | — | 0.305 | — | 0.085 | — | 0.225 | — | +0.025 | — | 0.12 |
| 25 | 5-15-60 | — | — | — | — | — | — | — | 0.25 | — | 0.305 | — | 0.355 | — | 0.415 | — | 0.18 | — | 0.44 | — | 0.12 | — | 0.33 | — | 0.06 | — | 0.27 | — | -0.02 | — | 0.06 |
| 26 | 5-30-60 | — | — | — | — | — | — | — | 0.30 | — | 0.36 | — | 0.41 | — | 0.44 | — | 0.19 | — | 0.44 | — | 0.18 | — | 0.33 | — | 0.09 | — | 0.28 | — | -0.05 | — | 0.08 |
| 27 | 10-31-60 | — | — | — | — | — | — | — | 0.25 | — | 0.36 | — | 0.51 | — | 0.45 | — | 0.19 | — | 0.53 | — | 0.12 | — | 0.33 | — | 0.07 | — | 0.35 | — | -.001 | — | 0.12 |
| 28 | 12-1-61 | — | +0.65 | — | +0.84 | — | +0.59 | — | 0.31 | — | 0.37 | — | 0.40 | — | 0.50 | — | 0.20 | — | 0.48 | — | 0.15 | — | 0.37 | — | 0.07 | — | 0.27 | — | 0.00 | — | 0.11 |
| 29 | 12-22-64 | — | — | — | — | — | — | — | 0.29 | — | 0.34 | — | 0.42 | — | 0.47 | — | 0.19 | — | 0.46 | — | 0.13 | — | 0.35 | — | 0.06 | — | 0.28 | — | +0.02 | — | 0.09 |
| 30 | 2-24-65 | — | +0.65 | — | +0.89 | — | +0.63 | — | 0.32 | — | 0.37 | — | 0.47 | — | 0.56 | — | 0.17 | — | 0.58 | — | 0.08 | — | 0.45 | — | 0.00 | — | 0.41 | — | 0.00 | — | 0.16 |
| 31 | 3-4-66 | — | — | — | — | — | — | — | 0.29 | — | 0.38 | — | 0.43 | — | 0.53 | — | 0.16 | — | 0.66 | — | 0.09 | — | 0.53 | — | 0.04 | — | 0.45 | — | +0.08 | — | 0.20 |
| 32 | 3-2-70 | — | 0.70 | — | 0.92 | — | 0.65 | — | 0.30 | — | 0.35 | — | 0.46 | — | 0.63 | — | 0.21 | — | 0.68 | — | 0.11 | — | 0.56 | — | 0.04 | — | 0.48 | — | +0.02 | — | 0.18 |
| 33 | 6-28-73 | — | — | — | — | — | — | — | 0.25 | — | 0.36 | — | 0.53 | — | 0.66 | — | 0.16 | — | 0.73 | — | 0.10 | — | 0.66 | — | 0.00 | — | 0.54 | — | +0.05 | — | 0.26 |
| 34 | 3-19-75 | — | 0.69 | — | 0.95 | — | 0.70 | — | 0.29 | — | 0.40 | — | 0.55 | — | 0.69 | — | 0.19 | — | 0.75 | — | 0.10 | — | 0.66 | — | 0.00 | — | 0.58 | — | +0.09 | — | 0.28 |
| 35 | 5-26-76 | — | — | — | — | — | — | — | 0.23 | — | 0.42 | — | 0.51 | — | 0.46 | — | 0.17 | — | 0.79 | — | 0.10 | — | 0.67 | — | 0.05 | — | 0.58 | — | +0.05 | — | 0.30 |
| 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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LOCATION PLAN FOR
DAM SETTLEMENT MONUMENTS
Scale: 1" = 50'

NOTE:

X and Y displacements measured parallel and normal to base line from monument original position respectively.

— Under water
— Readings not taken or calculated

COORDINATES OF DAM SETTLEMENT MONUMENTS

| MON. Nº | COORDINATES LAT. | DEP. |
|---|---|---|
| A | 1,157,132.259 | 201,728.281 |
| B | 1,157,312.746 | 201,555.510 |
| C | 1,157,492.753 | 201,382.194 |
| A1 | 1,157,265.31 | 201,725.41 |
| A2 | 1,157,337.57 | 201,656.24 |
| A3 | 1,157,409.88 | 201,587.01 |
| A4 | 1,157,481.91 | 201,517.56 |
| B1 | 1,157,196.65 | 201,798.12 |
| B2 | 1,157,557.67 | 201,452.33 |
| C1 | 1,157,128.95 | 201,872.09 |
| C2 | 1,157,034.35 | 201,388.02 |
| D1 | 1,157,062.78 | 201,947.56 |
| D2 | 1,157,742.70 | 201,325.17 |
| E1 | 1,156,998.23 | 202,024.56 |
| E2 | 1,157,792.27 | 201,263.99 |
| F1 | 1,157,003.70 | 202,058.50 |
| F2 | 1,157,068.49 | 201,981.78 |
| F3 | 1,157,133.75 | 201,907.01 |
| F4 | 1,157,397.54 | 201,639.58 |
| F5 | 1,157,562.05 | 201,484.88 |
| F6 | 1,157,687.54 | 201,419.76 |
| F7 | 1,157,716.81 | 201,357.11 |
| F8 | 1,157,797.37 | 201,294.07 |

JUN 1 1976

This dwg. supersedes D-BR-147

BROWNLEE H.E. DEVELORMENT
DAM SETTLEMENT

IDAHO POWER CO.
BOISE, IDAHO

SCALE: As Shown DATE: Feb. 6, 1959

DR. R.M.T. APPROVED
TR. R.M.T.
1 REV. CH. R.F.C.

D-BR-155

208-2005 1 12-2

BEFORE THE

FEDERAL POWER COMMISSION

APPLICATION FOR

ORDER DIRECTING INSTALLATION

OF FIFTH GENERATING UNIT

IN

BROWNLEE HYDROELECTRIC UNIT

LICENSED UNDER PROJECT NO 1971

FILED
OFFICE OF THE SECRETARY
JAN 2 10 23 AM '76
FEDERAL POWER COMMISSION

By Idaho Power Company

BEFORE THE FEDERAL POWER COMMISSION
APPLICATION FOR ORDER DIRECTING INSTALLATION
OF FIFTH GENERATING UNIT
IN BROWNLEE HYDROELECTRIC UNIT
LICENSED UNDER PROJECT NO 1971

By order adopted July 27, 1955, and issued August 4, 1955, the Federal Power Commission licensed to applicant the Brownlee Hydroelectric Unit, a part of a project designated by the Commission as Project No 1971. Such order provided for the installation of four turbines connected to four 90,100 kilowatt generators at the Brownlee Unit with a provision for future installations of two similar units. Article 40 of the license provides that "At such time as the Commission may direct and to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing, the licensee shall install additional generating units at the Brownlee, Oxbow, and/or low Hells Canyon units."

Pursuant to license issued for Project No 1971 and Article 40 thereof, licensee files the following application.

1. The Idaho Power Company, a corporation organized and existing under the laws of the State of Maine, licensee for a power project, designated as Project No 1971 in the records of the Federal Power Commission, issued on the 5th day of August, 1955, hereby makes application to said Commission for an Order Directing the Installation of a Fifth Generating Unit with a nameplate rating of 225,000 kilowatts in the Brownlee Hydro-electric Unit licensed under Project No 1971, in the manner and to the extent described herein.

2. The name, title and post office address of the person to whom correspondence in regard to this application shall be addressed is as follows:

Lee S Sherline
Leighton & Sherline
Suite 406
1701 K Street N W
Washington, D C 20006

The Commission is also respectfully requested to mail copies of all correspondence in regard to this application directly to:

William R Fleming
General Counsel
Idaho Power Company
1220 Idaho Street
P O Box 70
Boise, Idaho 83721

3. Applicant desires to install a fifth turbine and generator together with associated equipment and lines to operate said turbine and generator and to connect the generator to the substation and switchyard at the Brownlee Hydroelectric Unit on the Snake River licensed as a part of Federal Power Commission Project No 1971. Said turbine, generator, associated equipment and lines are to be installed in the Counties of Washington and Adams, State of Idaho.

4. The proposed installation is now economically feasible and its installation is in the public interest. The additional generating unit will provide additional energy for distribution by applicant for residential, farm, commercial, industrial, municipal, public utility and interchange uses and purposes on and through the interconnected system of applicant.

In addition, said unit will provide additional peaking power for applicant and the Northwest region.

5. The following exhibits are filed herewith and are hereby made a part of this application:

| | |
|---|---|
| EXHIBIT A | - Certified copy of Restated Articles of Incorporation, Certified copy of By-laws, and Certificate of Good Standing in Idaho. |
| EXHIBIT B | - Certified copy of resolution of Board of Directors, supplementing original Exhibit B. |
| EXHIBITS C, D and E | - Statement Pertaining to Water Rights, supplementing original Exhibits C, D and E. |
| EXHIBIT G | - Statement of Applicant's Financial Ability, supplementing original Exhibit G. |
| EXHIBIT H | - Statement of Proposed Operation, supplementing original Exhibit H. |
| EXHIBIT I | - Estimate of Dependable Capacity and Average Annual Energy Output, supplementing original Exhibit I, together with Sheet 1 of 1 of Exhibit I drawing. |
| EXHIBIT L | - General Design Drawings, Revised Sheet 1 of original Exhibit L and supplemental Sheets 1 through 3, supplementing original Exhibit L. |
| EXHIBIT M | - General Description of Equipment, supplementing original Exhibit M. |
| EXHIBIT N | - Cost Estimate, supplementing original Exhibit N. |
| EXHIBIT O | - Statement of Time Desired for Beginning and Completing Construction, supplementing original Exhibit O. |
| EXHIBIT U | - Statement of Utilization of Power and Energy, supplementing original Exhibit U. |

| | |
|---|---|
| EXHIBIT W | - A Report on Environmental Factors. |
| Economic Feasibility Study | - Cost Comparison - Peak Resources |

IN WITNESS WHEREOF, the applicant has caused its name to be hereunto signed by James E Bruce, its President and its corporate seal to be hereunto affixed by Paul L Jauregui, its Secretary, thereunto duly authorized this 8th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

(CORPORATE SEAL)

ATTEST:

/s/ Paul L Jauregui
Secretary

VERIFICATION

STATE OF IDAHO )
) ss
County of Ada )

JAMES E BRUCE, being first duly sworn, deposes and says: That he is the President of the Idaho Power Company, the applicant for Order Directing Installation of Fifth Generating Unit in Brownlee Hydroelectric Unit of Project No 1971, that he has read the foregoing application and knows the contents thereof; that the same are true to the best of his knowledge and belief.

/s/ James E Bruce
President

Subscribed and sworn to before me this 7th day of October 1975.

/s/ Sally Cantrall
Notary Public for the State of Idaho
Residing at: Boise, Idaho
My Commission expires: 1/6/79

(NOTARIAL SEAL)

A copy of applicant's Restated Articles of Incorporation, with amendment to date, bearing Certificate of the Secretary of the State of Maine, and a certified copy of the applicant's By-laws are filed herewith.

A Certificate of Good Standing in Idaho is filed herewith.

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 7th day of October, 1975.

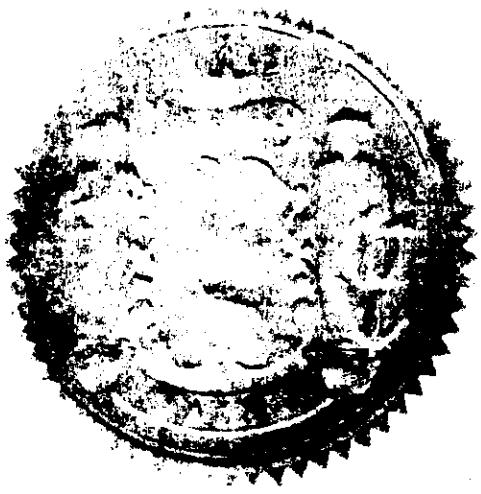
IDAHO POWER COMPANY

By /s/ James E Bruce
President

# State of Maine

## Department of State

*I, the Secretary of State of the State of Maine, do hereby Certify that the paper to which this is attached is a true copy from the records of this office,*
of the Restated Articles of Idaho Power Company filed May 21, 1975.



**In Testimony Whereof,** I have caused the Great Seal of the State to be hereunto affixed. GIVEN under my hand at Augusta, this fourth day of June in the year of our Lord one thousand nine hundred and seventy-five and in the one hundred and ninety-ninth year of the Independence of the United States of America.

Markham L. Gartley *Secretary of State*

SS-C7-72

* 25.00

Filing ~~$10.00~~ (See Sec.)

For Use By The Secretary of State

File No. 88-85

Fee Paid $4,590 - $25

C. B. 595

Date 5-21-75

STATE OF MAINE

# RESTATED ARTICLES OF INCORPORATION

(Restatement by Shareholders Voting as Separate Class)

OF

IDAHO POWER COMPANY

This Space For Use By Secretary of State

MAINE
SECRETARY OF STATE
FILED

May 21, 19 75

Doris Fraser
Secretary of State
AGENT

Pursuant to 13--A MRSA §809, the undersigned corporation adopts these Articles of Restatement.

FIRST: As set out in detail in "THIRD", one or more classes of shares of the corporation were entitled to vote as a separate class on the restatement of its articles of incorporation set forth in Exhibit A attached hereto.

SECOND: The said restatement was adopted by the shareholders thereof at a meeting legally called and held on May 7, , 1975.

THIRD: On said date, the number of shares of each class outstanding and entitled to vote on said restatement (whether or not entitled to vote as a separate class), the manner in which each such class was entitled to vote (whether or not as a separate class), and the number of shares voted for and against said restatement, respectively, were as follows:

| Designation of Each Class However Entitled To Vote | Manner In Which Entitled To Vote | No. of Shares Outstanding And Entitled To Vote | Voted For | Voted Against |
|---|---|---|---|---|
| (SEE ATTACHED SHEET) | | | | |
| Totals of All Classes | | | | |

FOURTH: If said restatement provides for exchange, reclassification or cancellation of issued shares the manner in which the same shall be effected is contained in Exhibit B attached hereto, if it is not set forth in the restatement itself.

*FIFTH: If said restatement effects a change in the number or par values of authorized shares the number of shares which the corporation has authority to issue after giving effect to said restatement, is as follows:

| Class | Series (If Any) | Number of Shares | Par Value (If Any) |
|---|---|---|---|
| Common Stock | | 12,000,000 | $ 5. |
| 4% Preferred Stock | | 215,000 | $100. |
| Serial Preferred Stock, $100. par value | | 150,000 | $100. |
| Serial Preferred Stock without par value | | 3,000,000 | None |

The aggregate par value of all such shares (of all classes and series) *having par value* is $ 96,500,000

The total number of all such shares (of all classes and series) *without par value* is 3,000,000 shares.

SIXTH: The address of the registered office of the corporation in the State of Maine is

128 State Street, Augusta, Maine 04330
(street, city and zip code)

Dated: May 20, 1975

Legibly print or type name and capacity of all signers 13-A MRSA §104.

IDAHO POWER COMPANY
(name of corporation)

By [signature]

Frank E. Southard, Jr., Clerk
(type or print name and capacity)

I certify that I have custody of the minutes showing the above action by the shareholders.

[signature]
(clerk)

By

(type or print name and capacity)

NOTE: Shares may be entitled to vote as a separate class for any of the reasons stated in §806, or if so provided in the Articles. For vote necessary for adoption, see §805.

*To be completed only if Exhibit A or B do not give this required information.

** The name of the corporation should be typed, and the document must be signed by (1) the Clerk or (2) by the President or a vice-president and by the Secretary or an assistant secretary or such other officer as the bylaws may designate as a second certifying officer or (3) if there are no such officers, then by a majority of the directors or by such directors as may be designated by a majority of directors then in office or (4) if there are no such directors, then by the holders, or such of them as may be designated by the holders, of record of a majority of all outstanding shares entitled to vote thereon or (5) by the holders of all of the outstanding shares of the corporation.

THIRD:

| Designation of Each Class However Entitled To Vote | Manner In Which Entitled To Vote | No. of Shares Outstanding And Entitled To Vote | No. of Votes Per Share | Total Number of Votes | Voted For | Voted Against |
|---|---|---|---|---|---|---|
| Common Stock | Majority as a class | 7,350,000 | 1 | 7,350,000 | 5,602,204 | 118,13 |
| 4% Preferred Stock | | 215,000 | 20 | 4,300,000 | 3,069,880 | 242,48 |
| Serial Preferred Stock | | 150,000 | 1 | 150,000 | 105,920 | 17,42 |
| | | 7,715,000 | | 11,800,000 | 8,778,004 | 378,03 |
| Common Stock | Majority as a class | 7,350,000 | 1 | 7,350,000 | 5,602,204 | 118,13 |
| 4% Preferred Stock | | 215,000 | 20 | 4,300,000 | 3,069,880 | 242,48 |
| | | 7,565,000 | | 11,650,000 | 8,672,084 | 360,61 |
| 4% Preferred Stock | 2/3 as a class | 215,000 | 20 | 4,300,000 | 3,069,880 | 242,48 |
| Serial Preferred Stock | Majority as a class | 150,000 | 1 | 150,000 | 105,920 | 17,42 |

RESTATED
ARTICLES OF INCORPORATION
OF
IDAHO POWER COMPANY

ARTICLE 1. NAME. The name of the Corporation is Idaho Power Company.

ARTICLE 2. PURPOSES. The purposes of the Corporation are to:

1. buy, sell, lease and use machinery, generators, motors, lamps, apparatus, devices, supplies and articles of every kind pertaining to or in any wise connected with the production, use, distribution, regulation, control or application of electricity or electrical apparatus for light, heat, power, telegraph, telephone, railway, manufacturing and any and all other purposes; to construct, acquire, purchase, use, sell or lease any works, construction or plants or parts thereof connected with or involving the production, use, distribution, regulation, control or application of electricity or electrical apparatus for any of such purposes; to buy, acquire, lease, use, produce, furnish and supply electricity or any other power or force, in any form and for any purpose whatsoever;

2. acquire, build, construct, own, lease and operate railway properties of all kinds and descriptions (including parks, places of amusement and other usual or useful adjuncts to said railway property and business) and with any kind of motive power, and to sell and lease the same;

3. manufacture, purchase, sell and distribute, for light, heat and power and all other purposes, natural and artificial gas, and to acquire, construct, purchase, own, maintain, operate, sell and lease all necessary and convenient works, conduits, plants, apparatus and connections for holding, receiving, purifying, manufacturing, selling, utilizing and distributing natural or artificial gas; to manufacture and sell or otherwise dispose of chemicals or other products derived wholly or in part from gas or gas works;

4. manufacture, purchase, sell and distribute steam and hot water for heating and other purposes, and to acquire, construct, purchase, own, maintain, operate, sell and lease all necessary and convenient works, plants, apparatus and connections for manufacturing, selling and distributing steam and hot water;

5. construct and acquire by purchase, lease or otherwise, reservoirs, dams, canals, ditches, flumes, pipe lines and such other works, plants, equipments, appliances and appurtenances as may be necessary, useful or appropriate for impounding, storing, conveying, distributing and utilizing water for power, irrigation, fire, sanitary, domestic, manufacturing and other uses, and to use, apply, sell and otherwise dispose of water for such uses; to construct and to acquire by purchase, lease or otherwise, and to operate hydraulic and other works, transmission plants, transmission lines, transforming and distributing stations and distributing circuits and any and all rights of way connected therewith or useful therefor; to transform the power generated by hydraulic or other plants into electrical or other energy, and transmit, use or otherwise dispose of the said electrical or other energy for any and all purposes; to acquire any and all rights or other property necessary or useful in connection with acquiring, owning and operating any or all of said plants; and

6. acquire, buy, operate, lease and sell ice and refrigerating plants; and to acquire, lease, hold, use and otherwise avail of such real and personal estate, property, rights, privileges, grants, consents and franchises, including inventions, patents, processes, stocks, bonds and other evidences of indebtedness of persons, firms or corporations, and franchises or special grants or privileges from cities, towns or other municipalities, as the company shall deem requisite or advantageous in pursuance of any of its corporate purposes above stated; and to mortgage, pledge, sell, convey or otherwise dispose of any or all of the foregoing; and to undertake, contract for or carry on any business or operation deemed by the company incidental to, or in aid of, or advantageous in pursuance of, any of its corporate purposes.

Nothing herein shall be deemed to limit or exclude any power, right or privilege given to the Corporation by law, but the business of construction and operation of railroads and aiding in the construction thereof, the business of telegraph and telephone companies, and the business of gas and electric companies are to be carried on only in states and jurisdictions other than the State of Maine, and only in such other states and jurisdictions when and where and as permissible under the laws thereof; and it is not intended that the Corporation shall exercise in any state any powers not permitted to it under the law of such state.

ARTICLE 3. LOCATION. The Corporation is located at Augusta, Maine, in the County of Kennebec.

ARTICLE 4. DIRECTORS. The number of directors constituting the Board of Directors of the Corporation is 14.

ARTICLE 5. MEETINGS OF SHAREHOLDERS. Meetings of the shareholders of the Corporation may be held within or without the State of Maine.

ARTICLE 6. AUTHORIZED STOCK.

A. The authorized stock of the Corporation is divided into four classes which are designated (i) 4% Preferred Stock, (ii) Serial Preferred Stock, $100 par value, (iii) Serial Preferred Stock, without par value, and (iv) Common Stock. The Corporation has the authority to issue 215,000 shares of 4% Preferred Stock; 150,000 shares of Serial Preferred Stock, $100 par value; 3,000,000 shares of Serial Preferred Stock, without par value; and 12,000,000 shares of Common Stock. Each share of 4% Preferred Stock and each share of Serial Preferred Stock, $100 par value, has a par value of one hundred dollars ($100). Each share of Common Stock has a par value of five dollars ($5). The aggregate par value of all shares of stock having par value which the Corporation has authority to issue is $96,500,000. The total number of shares without par value which the Corporation has authority to issue is 3,000,000.

B. No shareholder of the Corporation shall have any preemptive rights, except, if the Board of Directors shall determine to offer any shares of the Common Stock to the shareholders, it shall first be offered, pro rata, to the holders of the then outstanding shares of the Common Stock.

C. The relative rights, preferences and limitations of each class are as follows:

1. 4% Preferred Stock.

The 4% Preferred Stock, pari passu with the Serial Preferred Stock, $100 par value, and the Serial Preferred Stock, without par value, is entitled to the payment of dividends and to the distribution of assets in liquidation, and has the following relative rights and preferences:

(a) Dividend. The 4% Preferred Stock is entitled in preference to the Common Stock to dividends at the rate of four per cent (4%) per annum, payable quarterly, semi-annually or annually, as the Board of Directors may determine, and such

dividends are cumulative from and after August 1, 1944, or from the date of issue if issued after August 1, 1944. The 4% Preferred Stock shall not receive any dividends from profits in excess of its stated dividend rate of four per cent (4%) per annum.

(b) Redemption.

(1) The 4% Preferred Stock is subject to redemption at the option of the Corporation in whole or in part at any time at one hundred and four per cent (104%) of par plus any dividends unpaid to the date of redemption, upon the vote of not less than a majority in interest of the outstanding shares of the Common Stock at any corporate meeting or any meeting of the holders of the Common Stock called for such purpose.

(2) Notice of the intention of the Corporation to redeem the 4% Preferred Stock shall be mailed 30 days before the date of redemption to each holder of the 4% Preferred Stock of record at his last known post office address. From and after any such call for redemption of the 4% Preferred Stock and deposit by the Corporation of the moneys required for such purpose, the shares so to be redeemed shall no longer be considered as outstanding, and shall not be entitled to vote or to be included in determining the total voting power of the issued and outstanding shares of stock of the Corporation.

(c) Liquidation. The 4% Preferred Stock shall have a preference over the Common Stock in any distribution of assets, other than profits, until the full par value thereof and the stated dividend rate per annum thereon from August 1, 1944, or from the date of issue thereof if issued after August 1, 1944, shall have been paid by dividends or distribution. The 4% Preferred Stock shall not receive any share in the distribution of assets in excess of said par value and the amount of such accumulated dividends.

2. Serial Preferred Stock, $100 par value.

(a) The Serial Preferred Stock, $100 par value, in preference to the Common Stock and pari passu with the 4% Preferred Stock and the Serial Preferred Stock, without par value, is entitled to the payment of dividends and to the distribution of assets in liquidation. Shares of the Serial Preferred Stock, $100 par value, may be divided into and issued in series. Each series shall be so designated as to distinguish the shares thereof from the shares of all other series and classes. All shares of the same series shall be identical and all shares of the Serial Preferred Stock, $100 par value, shall be identical except as to the following relative rights and preferences, as to which there may be variations between different series:

(1) Dividends. The rate of dividend and whether it is to be cumulative, non-cumulative or partially-cumulative;

(2) Redemption. Whether shares may be redeemed and, if so, the redemption prices and the terms and conditions of redemption;

(3) Liquidation. The amount payable upon shares in the event of voluntary liquidation;

(4) Sinking Fund. Sinking fund provisions, if any, for the redemption or purchase of shares;

(5) Conversion. The terms and conditions, if any, on which shares may be converted into shares of any other class or into shares of any series of the same or any other class, except a class having prior or superior rights and preferences as to the payment of dividends or the distribution of assets in liquidation; and

(6) Voting Rights. The voting rights, if any.

The Board of Directors hereby is expressly vested with authority to divide any or all of the Serial Preferred Stock, $100 par value (other than the 7.68% Series, the designation and relative rights and preferences of which are set forth below), into series, to establish and designate each such series, and within the limits set forth above and in accordance with law, to fix and determine the relative rights and preferences of the shares of any series so established.

(b) The following provisions shall apply to the Serial Preferred Stock, $100 par value, of all series:

(1) Dividends. The holders of shares of the Serial Preferred Stock, $100 par value, of each series, pari passu with the holders of shares of the 4% Preferred Stock and the Serial Preferred Stock, without par value, shall be entitled to receive dividends, payable when and as declared by the Board of Directors, on such dates and at such rates as shall be determined for the respective series, from the first day of the dividend period for the respective series within which such shares shall have been originally issued or from such other date as the Board of Directors may have determined for such shares, before any dividends shall be declared or paid upon or set apart for the Common Stock or any other class of stock over which the Serial Preferred Stock, $100 par value, shall have preference as to the payment of dividends. Such dividends shall be cumulative so that if, for any dividend period or periods, dividends shall not have been paid or declared and set apart for

payment upon all of the then outstanding shares of Serial Preferred Stock, $100 par value, at the rates and from the dates determined for the respective series, the deficiency shall be fully paid, or declared and set apart for payment, before any dividends shall be declared or paid upon the Common Stock or any other class of stock over which the Serial Preferred Stock, $100 par value, shall have preference as to the payment of dividends. Dividends shall be declared and set apart for payment, or paid, on the Serial Preferred Stock, $100 par value, for each dividend period during or for which dividends shall have been declared and set apart for payment, or paid, on the 4% Preferred Stock. Dividends shall not be declared and set apart for payment, or paid, on the Serial Preferred Stock, $100 par value, of any one series for any dividend period, unless dividends shall have been paid, or contemporaneously, shall have been declared and set apart for payment, or paid, upon all of the then outstanding shares of the Serial Preferred Stock, $100 par value, the Serial Preferred Stock, without par value, and the 4% Preferred Stock for all dividend periods terminating on the same or an earlier date.

(2) Redemption.

(A) At the option of its Board of Directors, the Corporation may redeem any series of the Serial Preferred Stock, $100 par value, and each such series may be redeemed, as a whole or in part, at any time (subject to such restrictions, if any, as may be set forth in the resolution of the Board of Directors establishing such series) at the redemption price specified for such series; provided, however, that not less than thirty nor more than sixty days prior to the date fixed for redemption, a notice of the time and place thereof shall be given to the holders of record of the shares of the Serial Preferred Stock, $100 par value, so to be redeemed, by mail or publication, in such manner as may be prescribed by resolution of the Board of Directors; and provided further, that, in every case of redemption of less than all of the outstanding shares of any one series of Serial Preferred Stock, $100 par value, the shares of such series to be redeemed shall be chosen by lot in such manner as may be prescribed by resolution of the Board of Directors. At any time after notice of redemption has been given, the Corporation may deposit the aggregate redemption price with some bank or trust company in The City of New York or in Boise, Idaho, named in such notice, payable on the date fixed for redemption as aforesaid and in the amounts aforesaid to the respective orders of the holders of the shares so to be redeemed, upon endorsement to the Corporation or as otherwise may be required and surrender of the certificates for such shares. Upon the deposit of such money as aforesaid, or, if no such deposit is made, upon such redemption date (unless the Corporation defaults in making payment of the redemption price as set forth in such notice), such holders shall cease to be shareholders with respect to such shares, and from and after the making

of such deposit, or if no such deposit is made, after the redemption date (the Corporation not having defaulted in making payment of the redemption price as set forth in such notice), such holders shall have no interest in or claim against the Corporation with respect to such shares, but shall be entitled only to receive such moneys on the date fixed for redemption as aforesaid from such bank or trust company, or, if no such deposit is made, from the Corporation, without interest thereon, upon endorsement and surrender of the certificates as aforesaid.

(B) In case the holder of any shares of the Serial Preferred Stock, $100 par value, so redeemed shall not, within six years after such deposit, claim the amount deposited as above stated for the redemption thereof, the depositary shall upon demand pay over to the Corporation such amounts so deposited, and the depositary, thereupon, shall be relieved from all responsibility to the holder thereof. No interest on such deposit shall be payable to any such holder.

(C) Shares of the Serial Preferred Stock, $100 par value, which have been redeemed by the Corporation shall be restored to the status of authorized but unissued shares of the Serial Preferred Stock, $100 par value, without designation or relative rights, preferences or limitations as to series.

(D) Nothing herein contained shall limit any legal right of the Corporation to purchase or otherwise acquire any of the shares of the Serial Preferred Stock, $100 par value.

(3) Liquidation. Upon any dissolution, liquidation or winding up of the Corporation, whether voluntary or involuntary, the holders of the then outstanding shares of the Serial Preferred Stock, $100 par value, of each series, pari passu with the holders of the then outstanding shares of all other series of the Serial Preferred Stock, $100 par value, the Serial Preferred Stock, without par value, and the 4% Preferred Stock, shall be entitled to receive out of the assets of the Corporation, whether capital, surplus or other, before any distribution of such assets shall be made to the holders of shares of the Common Stock or of any other class of stock as to which the Serial Preferred Stock, $100 par value, has preference as to the distribution of assets in liquidation, an amount per share (i) in the case of voluntary liquidation, as specified in the resolution of the Board of Directors fixing and determining the relative rights and preferences of the shares of such series, or (ii) in the case of involuntary liquidation, equal to the par value thereof. If the assets to be distributed in respect of the Serial Preferred Stock, $100 par value, shall not be sufficient to pay the full amounts that shall be determined to

be payable on all the shares of the Serial Preferred Stock, $100 par value, upon voluntary or involuntary liquidation, such assets shall be distributed, to the extent available, as follows: first, to the payment, pro rata, of $100 per share on each share of the Serial Preferred Stock, $100 par value, outstanding irrespective of series; second, to the payment of the accumulated dividends on such shares, such payment to be made pro rata in accordance with the amount of accumulated dividends on each such share; and, third, to the payment of any amounts in excess of $100 per share plus accumulated dividends which may be payable on the shares of any series in the event of voluntary liquidation, such payment also to be made pro rata in accordance with the amounts, if any, so payable on each such share. After full payment to the holders of the Serial Preferred Stock, $100 par value, of such preferential amounts, the holders of the Serial Preferred Stock, $100 par value, as such, shall have no right or claim to any of the remaining assets of the Corporation. Without limiting the right of the Corporation to distribute its assets or to dissolve, liquidate or wind up in connection with any sale, merger or consolidation, the sale of all the property of the Corporation to, or the merger or consolidation of the Corporation into or with, any other corporation shall not be deemed to be a distribution of assets or a dissolution, liquidation or winding up for the purposes of this paragraph.

(c) The 7.68% Series. The following provisions shall apply only to the first series of the Serial Preferred Stock, $100 par value, which is designated as the 7.68% Series and consists of 150,000 shares. The relative rights and preferences of the shares of the 7.68% Series, in those respects as to which there are variations between different series of the Serial Preferred Stock, $100 par value, are as follows:

(1) Dividends. The rate of dividends on shares of the 7.68% Series shall be 7.68% of par value per annum. Dividends shall be cumulative from September 27, 1972. The initial dividend will be payable on February 15, 1973, for the period commencing with September 27, 1972, and ending January 31, 1973. Thereafter, dividends shall be payable on the 15th day of February, May, August and November of each year or otherwise as the Board of Directors may determine.

(2) Redemption. Shares of the 7.68% Series shall be redeemable at any time in whole or in part at the per share redemption prices of $108.73 through November 15, 1977, $106.81 thereafter through November 15, 1982, $104.89 thereafter through November 15, 1987, and $102.97 thereafter, plus in each case, unpaid accumulated dividends, if any, to the date of redemption; provided, however, that no shares of the 7.68% Series shall be redeemed prior to November 15, 1977, if such redemption is for the purpose or in

anticipation of refunding such shares through the use, directly or indirectly, of funds borrowed by the Corporation, or through the use, directly or indirectly, of funds derived through the issuance by the Company of stock ranking prior to or on a parity with the 7.68% Series if such borrowed funds or such stock have an effective interest or dividend cost (computed in accordance with generally accepted financial practice) to the Corporation of less than 7.68% per annum.

(3) Liquidation. The amount payable upon shares of the 7.68% Series in the event of voluntary liquidation is $100 per share plus accumulated dividends, if any. In the event of any preferential payments, the 7.68% Series shall be entitled pro rata to such preferential payments.

(4) Sinking Fund. There is no sinking fund for the redemption or purchase of shares of the 7.68% Series.

(5) Conversion. Shares of the 7.68% Series are not, by their terms, convertible or exchangeable.

(6) Voting Rights. At all meetings of the shareholders, each holder of shares of the 7.68% Series shall be entitled to one vote for each share held by him.

3. Serial Preferred Stock, Without Par Value.

(a) The Serial Preferred Stock, without par value, in preference to the Common Stock and pari passu with the 4% Preferred Stock, and the Serial Preferred Stock, $100 par value, is entitled to the payment of dividends and to the distribution of assets in liquidation. Shares of the Serial Preferred Stock, without par value, may be divided into and issued in series. Each series shall be so designated as to distinguish the shares thereof from the shares of all other series and classes. All shares of the same series shall be identical and all shares of the Serial Preferred Stock, without par value, shall be identical except as to the following relative rights and preferences, as to which there may be variations between different series:

(1) Dividends. The rate of dividend and whether it is to be cumulative, non-cumulative or partially-cumulative;

(2) Redemption. Whether shares may be redeemed and, if so, the redemption price and the terms and conditions of redemption;

(3) Liquidation. The amount payable upon shares in the event of voluntary or involuntary liquidation;

(4) Sinking Fund. Sinking fund provisions, if any, for the redemption or purchase of shares;

(5) Conversion. The terms and conditions, if any, on which shares may be converted into shares of any other class or into shares of any series of the same or any other class, except a class having prior or superior rights and preferences as to the payment of dividends or the distribution of assets in liquidation; and

(6) Voting Rights. The voting rights, if any, in addition to those specifically set forth in subsection D. 1. of this Article.

The Board of Directors hereby is expressly vested with authority to divide any or all of the Serial Preferred Stock, without par value, into series, to establish and designate each such series, and within the limits set forth above and in accordance with law, to fix and determine the relative rights and preferences of the shares of any series so established.

(b) The following provisions shall apply to the Serial Preferred Stock, without par value, of all series:

(1) Dividends. The holders of shares of the Serial Preferred Stock, without par value, of each series, pari passu with the holders of shares of the 4% Preferred Stock and the Serial Preferred Stock, $100 par value, shall be entitled to receive dividends, payable when and as declared by the Board of Directors, on such dates and at such rates as shall be determined for the respective series, from the first day of the dividend period for the respective series within which such shares shall have been originally issued or from such other date as the Board of Directors may have determined for such shares, before any dividends shall be declared or paid upon or set apart for the Common Stock or any other class of stock over which the Serial Preferred Stock, without par value, shall have preference as to the payment of dividends. Such dividends shall be cumulative so that if, for any dividend period or periods, dividends shall not have been paid or declared and set apart for payment upon all of the then outstanding shares of Serial Preferred Stock, without par value, at the rates and from the dates determined for the respective series, the deficiency shall be fully paid, or declared and set apart for payment, before any dividends shall be declared or paid upon the Common Stock or any other class of stock over which the Serial Preferred Stock, without par value, shall have preference as to the payment of dividends. Dividends shall be declared and set apart for payment, or paid, on the Serial Preferred Stock, without par value, for each dividend period during or for which dividends shall have been declared and set apart for payment, or paid, on the 4% Preferred Stock. Dividends shall not be

declared and set apart for payment, or paid, on the Serial Preferred Stock, without par value, of any one series for any dividend period, unless dividends shall have been paid, or contemporaneously, shall have been declared and set apart for payment, or paid, upon all of the then outstanding shares of the Serial Preferred Stock, without par value, the Serial Preferred Stock, $100 par value, and the 4% Preferred Stock for all dividend periods terminating on the same or an earlier date.

(2) Redemption.

(A) At the option of its Board of Directors, the Corporation may redeem any series of the Serial Preferred Stock, without par value, and each such series may be redeemed, as a whole or in part, at any time (subject to such restrictions, if any, as may be set forth in the resolution of the Board of Directors establishing such series) at the redemption price specified for such series; provided, however, that not less than thirty nor more than sixty days prior to the date fixed for redemption, a notice of the time and place thereof shall be given to the holders of record of the shares of the Serial Preferred Stock, without par value, so to be redeemed, by mail or publication, in such manner as may be prescribed by resolution of the Board of Directors; and provided further, that, in every case of redemption of less than all of the outstanding shares of any one series of Serial Preferred Stock, without par value, the shares of such series to be redeemed shall be chosen by lot in such manner as may be prescribed by resolution of the Board of Directors. At any time after notice of redemption has been given, the Corporation may deposit the aggregate redemption price with some bank or trust company in The City of New York or in Boise, Idaho, named in such notice, payable on the date fixed for redemption as aforesaid and in the amounts aforesaid to the respective orders of the holders of the shares so to be redeemed, upon endorsement to the Corporation or as otherwise may be required and surrender of the certificates for such shares. Upon the deposit of such money as aforesaid, or, if no such deposit is made, upon such redemption date (unless the Corporation defaults in making payment of the redemption price as set forth in such notice), such holders shall cease to be shareholders with respect to such shares, and from and after the making of such deposit, or if no such deposit is made, after the redemption date (the Corporation not having defaulted in making payment of the redemption price as set forth in such notice), such holders shall have no interest in or claim against the Corporation with respect to such shares, but shall be entitled only to receive such moneys on the date fixed for redemption as aforesaid from such bank or trust company, or, if no such deposit is made, from the Corporation, without interest thereon, upon endorsement and surrender of the certificates as aforesaid.

(B) In case the holder of any shares of the Serial Preferred Stock, without par value, so redeemed shall not, within six years after such deposit, claim the amount deposited as above stated for the redemption thereof, the depositary shall upon demand pay over to the Corporation such amounts so deposited, and depositary, thereupon, shall be relieved from all responsibility to the holder thereof. No interest on such deposit shall be payable to any such holder.

(C) Shares of the Serial Preferred Stock, without par value, which have been redeemed by the Corporation shall be restored to the status of authorized but unissued shares of the Serial Preferred Stock, without par value, without designation or relative rights, preferences or limitations as to series.

(D) Nothing herein contained shall limit any legal right of the Corporation to purchase or otherwise acquire any of the shares of the Serial Preferred Stock, without par value.

(3) Liquidation. Upon any dissolution, liquidation or winding up of the Corporation, whether voluntary or involuntary, the holders of the then outstanding shares of the Serial Preferred Stock, without par value, of each series, pari passu with the holders of the then outstanding shares of all other series of the Serial Preferred Stock, without par value, the Serial Preferred Stock, $100 par value, and the 4% Preferred Stock, shall be entitled to receive out of the assets of the Corporation, whether capital, surplus or other, before any distribution of such assets shall be made to the holders of the shares of the Common Stock or any other class of stock, as to which the Serial Preferred Stock, without par value, has preference as to the distribution of assets in liquidation, the amount per share in the case of voluntary liquidation and the amount per share in the case of involuntary liquidation as specified in the resolution of the Board of Directors fixing and determining the relative rights and preferences of the shares of such series. If the assets to be distributed in respect of the Serial Preferred Stock, without par value, shall not be sufficient to pay the full amounts that shall be determined to be payable on all of the shares of the Serial Preferred Stock, without par value, upon voluntary or involuntary liquidation, such assets shall be distributed, to the extent available, as follows: first, to the payment, pro rata on each share of the Serial Preferred Stock, without par value, irrespective of series, of the amount (exclusive of accumulated dividends, if any) specified by the Board of Directors in its resolution establishing each such series as payable on each such share in the event of involuntary liquidation; second, to the payment of the accumulated dividends on each such share, such payment to be made pro rata in accordance with the amount of such accumulated dividends; and third, to the payment of any amounts, in excess of the amount fixed by the

Board of Directors to be payable on each such share in the event of involuntary liquidation, which may be payable on the shares of any series in the event of voluntary liquidation, such payments also to be made pro rata in accordance with the amounts, if any, so payable on each such share. After full payment to the holders of the Serial Preferred Stock, without par value, of such preferential amounts, the holders of the Serial Preferred Stock, without par value, as such, shall have no right or claim to any of the remaining assets of the Corporation. Without limiting the right of the Corporation to distribute its assets or to dissolve, liquidate or wind up in connection with any sale, merger or consolidation, the sale of all the property of the Corporation to, or the merger or consolidation of the Corporation into or with, any other corporation shall not be deemed to be a distribution of assets or a dissolution, liquidation or winding up for the purposes of this paragraph.

4. Common Stock.

Each share of Common Stock is equal to every other share of Common Stock in every respect. Subject to the rights of the holders of the 4% Preferred Stock, the Serial Preferred Stock, $100 par value, the Serial Preferred Stock, without par value, and any other class of stock of the Corporation having preferential rights as to the payment of dividends or to the distribution of assets in liquidation and in subordination thereto, the holders of shares of the Common Stock alone shall receive all further dividends and shares in distribution of assets.

D. Certain Voting Rights and Restrictions upon Corporate Action. Subject to the requirements of law, the voting rights of the shareholders are as follows:

1. At all meetings of the shareholders (a) each holder of shares of the 4% Preferred Stock shall be entitled to 20 votes for each such share held by him, (b) each holder of shares of the Serial Preferred Stock, $100 par value, and the Serial Preferred Stock, without par value, shall be entitled to such vote, if any, for each such share held by him as shall have been granted to the shareholders of the respective series by the resolution of the Board of Directors establishing that series, and (c) each holder of shares of the Common Stock shall be entitled to one vote for each such share held by him, and each such shareholder may vote or otherwise act either in person or by proxy; provided, that (x) whenever and as often as dividends payable on the 4% Preferred Stock shall be accumulated and unpaid in an amount equivalent to or exceeding four quarterly dividends, the holders of shares of the 4% Preferred Stock shall be entitled thereafter at each succeeding annual meeting of the shareholders to elect the smallest number of directors necessary to constitute a majority of the Board of Directors, and the remaining directors, subject to the rights of the holders of the Serial Preferred

Stock, without par value, set forth in clause (z) below, shall be elected, as usual, by the holders of shares of the voting stock of the Corporation without distinction as to class, until all such accumulated unpaid dividends shall have been eliminated, (y) if and when the profits available for dividends are in excess of such accumulated and unpaid dividends on the 4% Preferred Stock, the declaration and payment of such dividends shall not be unreasonably withheld, and (z) whenever and as often as dividends payable on the Serial Preferred Stock, without par value, shall be accumulated and unpaid in an amount equivalent to or exceeding six quarterly dividends, the holders of the shares thereof shall be entitled thereafter, at such succeeding annual meeting of the shareholders at which the holders of a majority of the Serial Preferred Stock, without par value, are present and voting in person or by proxy, to elect two directors from among those directors who would otherwise be elected by the holders of shares of the voting stock of the Corporation without distinction as to class, and the remaining directors, subject to the rights of the holders of the 4% Preferred Stock set forth in clause (x) above, shall be elected as usual by the holders of the voting shares of the Corporation without distinction as to class, until all such accumulated and unpaid dividends shall have been eliminated.

2. The Corporation shall not mortgage any of its fixed assets without the approval of the holders of a majority of the shares of the Common Stock and the holders of a majority of the shares of the 4% Preferred Stock as are present at an annual or special meeting of the shareholders at which a quorum is present, the notice of which meeting shall have contained a statement of such proposal; provided, that such approval shall not be required in connection with anything required or permitted to be done under the Corporation's Mortgage and Deed of Trust, dated as of October 1, 1937.

3. The authorized stock of the Corporation shall not be increased except as follows: (i) the authorized Common Stock may be increased at any time upon the affirmative vote of the holders of shares of the 4% Preferred Stock and the Common Stock entitling them to exercise a majority of the voting power; (ii) the authorized 4% Preferred Stock may be increased, and any additional class of stock ranking pari passu with the 4% Preferred Stock may be authorized, at any time, upon the affirmative vote of the holders of shares of the 4% Preferred Stock and the Common Stock entitling them to exercise a majority of the voting power, provided, that such vote shall include the affirmative vote of the holders of a majority of the voting power of the outstanding shares of the 4% Preferred Stock; (iii) and any class of stock having preference over the 4% Preferred Stock as to dividends or distribution of assets may be authorized upon the affirmative vote of the holders of shares of the 4% Preferred Stock and Common Stock entitling them to exercise a majority of the

voting power, provided that such vote shall include the affirmative vote of the holders of two-thirds of the voting power of the outstanding shares of the 4% Preferred Stock.

4. So long as any shares of the 4% Preferred Stock shall remain outstanding, no shares of the 4% Preferred Stock in excess of 60,587 shares and no shares of stock of any class having relative rights and preferences equal or superior to the relative rights and preferences of the 4% Preferred Stock with respect to the payment of dividends or the distribution of assets in liquidation shall be issued without the affirmantive vote of the holders of a majority of the voting power of the outstanding shares of the 4% Preferred Stock, unless the earnings of the Corporation, for any twelve consecutive months within the fifteen calendar months next preceding any such proposed transaction, available for payment of interest on the Corporation's indebtedness (after deduction of depreciation and all taxes) shall equal or exceed one and three-quarters (1-3/4) times the aggregate of the Corporation's annual interest and preferred dividend requirements after the proposed transaction. In making such calculations, there may be included the earnings prior to the acquisition of any electric utility property to be acquired from the proceeds of such shares to be issued.

5. So long as any shares of the Serial Preferred Stock, $100 par value, shall remain outstanding, no shares of the Serial Preferred Stock, $100 par value, or of any class of stock having relative rights and preferences equal or superior to the relative rights and preferences of the Serial Preferred Stock, $100 par value, with respect to the payment of dividends or the distribution of assets in liquidation shall be issued without the affirmative vote of the holders of a majority of the then outstanding shares of the Serial Preferred Stock, $100 par value, other than to refinance an equal par amount or stated value of shares of the Serial Preferred Stock, $100 par value, and any other class of stock having relative rights and preferences equal or superior to the aforesaid relative rights and preferences of the Serial Preferred Stock, $100 par value, unless the gross income of the Corporation for a period of twelve (12) consecutive calendar months within the fifteen (15) calendar months immediately preceding such issuance, determined in accordance with generally accepted accounting practices (but in any event after deducting all taxes and depreciation) shall have been at least at one and one-half (1-½) times the sum of (i) the annual interest charges on all interest bearing indebtedness of the Corporation outstanding in the hands of the public, and (ii) the annual dividend requirements on all outstanding shares of the Serial Preferred Stock, $100 par value, and any other class of stock of the Corporation having relative rights and preferences equal or superior to the aforesaid relative rights and preferences of the Serial

Preferred Stock, $100 par value, including the shares proposed to be issued; provided, that there shall be excluded from the foregoing computation interest charges on all indebtedness and dividends on all shares of the Serial Preferred Stock, $100 par value, or any other class of stock of the Corporation having relative rights and preferences equal or superior to the aforesaid relative rights and preferences of the Serial Preferred Stock, $100 par value, which are to be retired in connection with the issue of such additional shares; and provided further, that in any case where such additional shares of the Serial Preferred Stock, $100 par value, or any other class of stock of the Corporation having relative rights and preferences equal or superior to the aforesaid relative rights and preferences of the Serial Preferred Stock, $100 par value, are to be issued in connection with the acquisition of additional public utility property, the gross income of the property to be so acquired, computed on the same basis as the gross income of the Corporation, may be included on a pro forma basis in making the foregoing computation.

6. No amendment of the provisions of subsections D. 1. or 2. of this Article shall be made without the consent of the holders of at least two-thirds of the outstanding shares of the 4% Preferred Stock, which consent may be expressed by each such shareholder either in writing or by vote at an annual or special shareholders' meeting.

7. No amendment of the provisions of (i) subsections C. 1. (a), (b) or (c), (ii) the second sentence of subsection C. 4., or (iii) subsections D. 3. and 4., of this Article, which shall adversely affect the rights of the holders of outstanding shares of the 4% Preferred Stock or Common Stock as set forth in such provisions, shall be made without the consent of the holders of all of the outstanding shares of the 4% Preferred Stock and Common Stock outstanding at the time of such amendment, which consent may be expressed by each shareholder either in writing or by vote at an annual or special shareholders' meeting.

8. The holders of shares of the Serial Preferred Stock, $100 par value, or of the Serial Preferred Stock, without par value, are not entitled to vote as such shareholders, on any matter, except (i) as expressly provided herein, (ii) as shall be provided by the Board of Directors in its resolutions establishing each series thereof, and (iii) as expressly required by law.

ARTICLE 7. CONVERTIBLE BONDS AND DEBENTURES. The Corporation may issue bonds and debentures convertible into other bonds, other debentures or shares of stock of the Corporation within such period and upon such terms and conditions as shall be fixed by the Board of Directors.

STATE OF IDAHO )
COUNTY OF ADA ) ss
CITY OF BOISE )

I, PAUL L JAUREGUI, the undersigned, Secretary of Idaho Power Company, do hereby certify that the attached and following consisting of six pages constitutes a full, true and correct copy of the By-laws of Idaho Power Company as amended to, and in full force and effect on, the date hereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of Idaho Power Company this 25th day of September, 1975.

(CORPORATE SEAL)

/s/ Paul L Jauregui
Secretary.

# B Y - L A W S

of

# IDAHO POWER COMPANY

As amended May 3, 1972

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SECTION 1. The annual meeting of the stockholders of the Company for the election of directors and Clerk and the transaction of such other corporate business as may properly come before such meeting, shall be held at Boise, Idaho, or at such other place as the Board of Directors may designate, such place to be stated in the notice of meeting, on the first Wednesday in May in each year, unless such day is a legal holiday, in which case such meeting shall be held on the day following.

SECTION 2. Special meetings of the stockholders of the Company may be held upon call of the Board of Directors or of stockholders holding shares of the capital stock entitling them to exercise one-fourth of the voting power, at such time, and at Boise, Idaho, or such other place, as may be stated in the call and notice.

SECTION 3. Notice of the time and place of every meeting of stockholders shall be mailed by the Secretary at least ten days previous thereto, to each stockholder of record at his last known post office address, but meetings may be held without notice if all stockholders are present, or if notice is waived before or after the meeting by those not present.

The Board of Directors are hereby authorized to fix a day, not more than forty days prior to the day of holding any meeting of stockholders, as the day as of which stockholders entitled to notice and to vote at such meeting shall be determined and only stockholders of record at the close of business on such day shall be entitled to notice of or to vote at such meeting.

SECTION 4. The holders of shares of the capital stock entitling them to exercise a majority of the voting power must be present in person or by proxy at each meeting of the stockholders to constitute a quorum, less than a quorum having power to adjourn.

SECTION 5. Certificates of stock shall be of such form and device as the Board of Directors may elect, and shall be signed by the President or a Vice President and by the Treasurer or an Assistant Treasurer, but where any such certificate is signed by a transfer agent or transfer clerk and by a registrar, the signatures of any such officer or officers and the seal of the Company upon such certificate may be facsimiles, engraved or printed. The stock of the Company shall be transferable or assignable on the books of the Company by the holders in person or by attorney on surrender of the certificates therefor. The Board of Directors may appoint one or more transfer agents and registrars of the stock. The books for the transfer of the stock of the Company may be closed for such periods before and during the payment of dividends, not to exceed thirty days, and the holding of meetings of stockholders, not to exceed forty days, as the Board of Directors may from time to time determine, and no transfer of stock made during such a period shall be binding upon the Company.

SECTION 6. The affairs of this Company shall be managed by a Board of Directors consisting of fourteen members. Six members of the Board of Directors shall constitute a quorum for the transaction of all business except the election of members of the Executive Committee and the filling of vacancies in the Board of Directors, for which purpose a majority of all of the Directors shall constitute a quorum.

Vacancies in the office of President or in the Board of Directors, except vacancies in the Board of Directors caused by an increase in the number of Directors, may be filled by the Board at any meeting at which a majority of the Directors shall be present. Vacancies in the Board of Directors arising from an increase of the number of Directors shall be filled at a meeting of the Stockholders called for the purpose of filling such vacancies. Any or all of the Directors (except Directors elected solely by the holders of the Preferred Stock as provided in Section 4) may at any time be removed, whether cause shall be assigned for such removal or not, by the vote of the holders of shares of the capital stock entitling them to exercise a majority of the voting power, given at a meeting of stockholders either called for the purpose of considering such action or the notice of which shall specify that such action will be considered at such meeting.

Each officer and each director of the Company, and his heirs, executors, administrators, or other legal representatives, shall be indemnified against and reimbursed for liabilities and

expenses actually imposed upon or necessarily or reasonably incurred by him, arising out of, or in connection with the defense of, any action, suit or proceeding (of any character and before any judicial or other body, including any appeal) in which he is made a party by reason of his being or having been an officer or director of the Company, or by reason of any alleged act or omission by him in such capacity (whether or not he is or continues to be a director or officer at the time of such action, suit or proceeding or of incurring such liabilities or expenses), except in relation to matters as to which he shall be adjudged in such action, suit or proceeding to be liable for negligence or misconduct in the performance of his duties as such officer or director. The term expenses shall include attorney's fees, and amounts paid in satisfaction of judgments or in compromise or settlement if any issue (other than to the Company itself), provided that if a compromise or settlement is made without court approval it shall be approved either by a majority in number of the directors of the Company not parties to the case, or by any two or more disinterested persons to whom the question may be referred by the Board of Directors. The provisions of this paragraph shall be separable, and if any provision or portion thereof shall for any reason be inapplicable, invalid or ineffective, this shall not affect any other provision or portion or the application, validity or effectiveness thereof. The provisions of this paragraph shall not be deemed exclusive of any other rights to which such officer or director may be entitled; and the indemnification herein provided shall not be in restriction or limitation of any other privilege or power which the Company may lawfully exercise with respect to the indemnification or reimbursement of officers, directors or employes.

SECTION 7. Meetings of the Board of Directors shall be held at the time fixed by resolution of the Board or upon call of the President or Vice President or Chairman of the Board. The Secretary or officer performing his duties shall give five days' notice of all meetings of Directors, provided that a meeting may be held without notice immediately after the annual election, and notice need not be given of regular meetings held at times fixed by resolution of the Board. Meetings may be held at any time without notice if all the Directors are present, or if those not present waive notice, either before or after the meeting.

SECTION 8. The Board of Directors, as soon as may be after the election in each year, shall appoint one of their number Chairman of the Board, and one of their number President of the

Company, and shall also appoint one or more Vice Presidents, a Secretary and a Treasurer, and shall, from time to time, appoint such other officers as they may deem proper. The same person may be appointed to more than one office.

SECTION 9. The Board of Directors, as soon as may be after the election in each year, shall appoint an Executive Committee to consist of the Chairman of the Board, the President and such number of directors as the Board may from time to time determine. Such Committee shall have and may exercise all of the powers of the Board during the intervals between its meetings, which may be lawfully delegated, subject to such limitations as may be provided by resolution of the Board. The Board shall have the power at any time to change the membership of such Committee and to fill vacancies in it. The Executive Committee may make rules for the conduct of its business and may appoint such Committees and assistants as it may deem necessary. The Board may from time to time determine by resolution the number of members of such Committee required to constitute a quorum. The Chairman of the Board shall be the Chairman of the Executive Committee.

During the intervals between the meetings of the Executive Committee, the Chairman of the Board shall possess and may exercise such of the powers vested in the Executive Committee as from time to time may be conferred upon him by resolution of the Board of Directors or the Executive Committee.

SECTION 10. A director of this Company shall not be disqualified by his office from dealing or contracting with the Company, either as vendor, purchaser or otherwise, nor shall any transactions or contract of this Company be void or voidable by reason of the fact that any director, or any firm of which any Director is a member, or any corporation of which any Director is a shareholder or Director, is in any way interested in such transaction or contract, PROVIDED that such transaction or contract is or shall be authorized, ratified or approved either (1) by vote of a majority of a quorum of the Board of Directors or of the Executive Committee, without counting in such majority or quorum any director so interested, or being a member of a firm so interested or a shareholder or a director of a corporation so interested, or (2) by vote at a stockholders' meeting of the holders of shares of the capital stock entitling them to exercise a majority of the voting power, or by a writing or writings signed by such holders; nor shall any Director be liable to account to the Company for any profit realized by him from or through any transaction or contract of this Company, authorized, ratified or approved as aforesaid, by

reason of the fact that he, or any firm of which he is a member, or any corporation of which he is a shareholder or director, was interested in such transaction or contract. Nothing herein contained shall create any liability in the events above described or prevent the authorization, ratification or approval of such contracts or transactions in any other manner provided by law.

SECTION 11. The term of office of all officers shall be one year, or until their respective successors are chosen and qualified, but any officer may be removed from office at any time by the Board of Directors.

SECTION 12. The officers of the Company shall have such duties as usually pertain to their offices respectively, as well as such power and duties as may from time to time be conferred by the Board of Directors.

SECTION 13. The stockholders may alter or amend these by-laws by affirmative vote of the holders of shares of the capital stock entitling them to exercise a majority of the voting power irrespective of class, at any annual meeting or upon notice at any special meeting.

SECTION 14. In the event of emergency conditions following a catastrophe or disaster, the following provisions shall apply, other provisions of these by-laws notwithstanding: In the case of any vacancy or vacancies in the Board of Directors, the remaining Directors, although less than a majority or a quorum, by affirmative majority vote, may elect a successor or successors to hold office until the next annual meeting of the stockholders of the company and until his or their successors shall be elected and qualified. If only one Director remains, he shall forthwith appoint two additional directors, and the three shall thereupon fill the remaining vacancies. The Directors so appointed and elected shall fill any vacancies which may exist among the officers of the company, including the President, a Vice President, Treasurer, Secretary and Clerk, and shall also fill any vacancies which may exist on the Executive Committee. When deemed necessary during any such emergency conditions, notices may be given and Directors and members of the Executive Committee may vote and act by telephone, mail or other means of direct communication, but meetings shall be held and Directors and the Executive Committee shall vote and act in the regular manner if reasonably practicable. In the event that a quorum of either the Board of Directors or the Executive Committee cannot readily be convened, then all the powers and duties of the Board of Directors shall vest in an Emergency Management Committee

which shall consist of all readily available members of the Board of Directors and the officers of the company who are not Directors, but the Emergency Management Committee shall act only when necessary, at times when the Board of Directors or Executive Committee cannot readily be convened or act as hereinabove set forth; provided, however, that if the Emergency Management Committee shall take action in good faith, such action shall be valid as if taken by the Board of Directors or Executive Committee although it may subsequently develop that at the time such action was taken the conditions requisite for action by the Emergency Management Committee did not in fact exist.

# State of Idaho

## Department of State.

## Certificate

*I, PETE T. CENARRUSA, Secretary of State of the State of Idaho, hereby certify that I am the legal custodian of the records of said State pertaining to all corporations, both foreign and domestic, which have qualified to do business under the general laws of the State of Idaho and pertaining to the present status and the right of such corporations to transact business in the State of Idaho.*

*I FURTHER CERTIFY That the records of this office show that*

IDAHO POWER COMPANY

incorporated under the laws of the State of Maine, qualified to do business in Idaho on the 31st day of July, 1916, with its principal place of business at Boise, Ada County, Idaho

*I FURTHER CERTIFY That said corporation has filed an annual statement and paid the corporation license tax for the fiscal year ending June 30, 19 76 and that its permit to do business in this State has not been forfeited or cancelled at the date hereof.*

*IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the Great Seal of the State of Idaho. Done at Boise, the Capital of Idaho, this 17th day of September, in the Year of Our Lord One Thousand Nine Hundred and Seventy-five*

Pete T. Cenarrusa
*Secretary of State*

Margaret Lawrence

CERTIFICATE OF CORPORATE STATUS

RESOLUTION OF BOARD OF DIRECTORS

"RESOLVED, That the officers of the Company be, and they are hereby authorized to proceed with International Engineering, to enter into contracts for the procurement and installation of a fifth turbine-generator unit at the Company's Brownlee unit of the T E Roach Hydroelectric Development, Federal Power Commission License No 1971, together with accessories and equipment required, and to take all other action necessary to install such unit; and be it

"FURTHER RESOLVED, That the officers are hereby authorized to determine the appropriate size, design, suppliers and all other matters necessary for the selection of engineers, contractors and suppliers; and be it

"FURTHER RESOLVED, That the officers are authorized to file such application request or other documents with the Federal Power Commission, all other regulatory commissions or other governmental agencies as they deem necessary or advisable, and to secure such authorization or approval as may be required to proceed with the installation of such turbine and generator and associated accessories and equipment, and as part of any application, to proceed to any further revisions of the existing licenses as the officers deem advisable; and be it

"FURTHER RESOLVED, That the officers are authorized to execute applications, contracts or other documents and do and perform all other acts necessary to carry out the purposes of the foregoing resolutions."

STATE OF IDAHO )
) ss
County of Ada )

I, PAUL L JAUREGUI, Secretary of Idaho Power Company, do hereby certify that the above and foregoing is a full, true and correct copy of the resolutions passed and adopted by the Board of Directors of said Company at a meeting duly called and held July 10, 1975, that a quorum of Directors was present and voting at all times during the meeting, and that said resolutions are in full force and effect as of the date of this certificate.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of said Company this 25th day of September, 1975.

/s/ Paul L Jauregui
Secretary

(CORPORATE SEAL)

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 5th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

STATEMENT PERTAINING TO
WATER RIGHTS AND COMPLIANCE WITH STATUTES

Prior to commencement of construction of the fifth unit of the Brownlee Hydroelectric Development, applicant will make application for an additional 5,000 cubic feet per second of water from the Snake River for hydroelectric generation at the development. Applicant now holds license certificates for water for the development from the Snake River totaling 30,000 cubic feet per second. Proof of water rights for the additional 5,000 cubic feet per second will be furnished upon receipt of license certificate from the State of Idaho.

Applicant intends to comply with any other requirements of the State of Idaho as provided under the Idaho statutes.

Applicant intends to promptly file an application with the State of Idaho for a water quality certificate for the fifth unit pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972, P L 92-500. Proof of certification will be furnished upon receipt of State of Idaho certificate.

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

By s/ James E Bruce
President

EXHIBIT G
Supplementing Original
Exhibit G
Sheet 1 of 1

# STATEMENT OF APPLICANT'S FINANCIAL ABILITY

The proposed method of financing the construction and installation of the fifth unit at the Brownlee Hydroelectric Development is by short-term bank loans, internally generated cash and issuance of additional stocks and bonds.

A copy of applicant's balance sheet as of August 31, 1975, is filed herewith as a part of this Exhibit G.

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

Idaho Power Company
BALANCE SHEET
As of August 31, 1975
(Subject to Approval of Independent Auditors)

## Assets

| | |
|---|---|
| **Electric Utility Plant:** | |
| Electric plant in service (at original cost) | $777,938,221 |
| Less accumulated provision for depreciation (Note 1) | 118,236,411 |
| Electric plant in service (net) | 659,701,810 |
| Electric plant held for future use | 520,191 |
| Construction work in progress | 26,547,887 |
| Electric utility plant less accumulated provision for depreciation | 686,769,888 |
| **Other Property and Investments:** | |
| Nonutility property | 169,828 |
| Investment in subsidiary (Note 4) | 3,111,728 |
| Sinking funds | 208,549 |
| Other | 2,752,972 |
| Total other property and investments | 6,243,077 |
| **Current Assets:** | |
| Cash | 5,687,262 |
| Special deposits | 1,463 |
| Accounts receivable (less allowance for uncollectible accounts - $233,644) | 10,273,451 |
| Income tax refund receivable | 2,690,200 |
| Materials and supplies (at average cost) | 8,173,497 |
| Prepayments | 825,754 |
| Total current assets | 27,651,627 |
| **Deferred Debits:** | |
| Unamortized debt expense | 2,332,379 |
| Research and development expenditures | 137,989 |
| Other | 5,861,833 |
| Total deferred debits | 8,332,201 |
| Total | $728,996,793 |

## Liabilities

| | Shares Authorized | Shares Outstanding | |
|---|---|---|---|
| **Proprietary Capital:** | | | |
| Common Stock, $5 par value | 12,000,000 | 7,350,000 | $ 36,750,000 |
| 4% preferred stock, cumulative, $100 par value | 215,000 | 215,000 | 21,500,000 |
| 7.68% series, serial preferred stock, cumulative, $100 par value | 150,000 | 150,000 | 15,000,000 |
| Serial preferred stock, without par value | 3,000,000 | None | |
| Premium on capital stock | | | 68,333,101 |
| Capital stock expense | | | (946,285) |
| Retained earnings | | | 95,915,494 |
| Undistributed subsidiary earnings | | | 1,266,179 |
| Total proprietary capital | | | 237,818,489 |
| **Long-Term Debt:** | | | |
| Long-term debt | | | 341,026,000 |
| Unamortized premium on long-term debt | | | 1,262,500 |
| Unamortized discount on long-term debt - Debit | | | 176,400 |
| Total long-term debt | | | 342,112,100 |
| **Current Liabilities:** | | | |
| Notes payable (Note 5 and Exhibit H, Page 3 of 5) | | | 73,700,000 |
| Accounts payable | | | 1,477,224 |
| Taxes accrued | | | 8,806,846 |
| Interest accrued | | | 6,693,412 |
| Dividends declared | | | 215,000 |
| Other | | | 2,519,581 |
| Total current liabilities | | | 93,412,063 |
| **Deferred Credits:** | | | |
| Customer advances for construction | | | 2,712,818 |
| Irrigation service advances | | | 3,070,317 |
| Accumulated deferred investment tax credits (Note 3) | | | 8,949,400 |
| Accumulated deferred income taxes (Note 2): | | | |
| Accelerated amortization property | | | 2,167,600 |
| Other property | | | 32,515,639 |
| Other | | | 5,871,200 |
| Other | | | 190,019 |
| Total deferred credits | | | 55,476,993 |
| Operating Reserves | | | 177,148 |
| Total | | | $728,996,793 |

The accompanying Notes to Financial Statements are an integral part of this Balance Sheet.

Idaho Power Company

NOTES TO FINANCIAL STATEMENTS
August 31, 1975
(Subject to Approval of Independent Auditors)

1. Depreciation is based on the straight-line method except for the T E Roach Hells Canyon Development (Consisting of Brownlee, Oxbow and Hells Canyon hydroelectric projects) for which depreciation is based on the five per cent present-worth method.

2. Deferred income taxes (commonly referred to as normalized accounting) are provided for timing differences with respect to depreciation of thermal generation facilities, certain other costs of such facilities and certain capitalized improvements to all properties. These items enter into the determination of taxable income in periods different than for the determination of financial income. Deferred income taxes are also provided generally for the timing differences resulting from the use, for income tax purposes, of accelerated depreciation methods and the "class" life system for properties other than thermal generation facilities rather than the straight-line method and lives formerly allowable for income tax purposes. This acounting is consistent with the indicated rate making policy of the state regulatory authority having principal jurisdiction.

3. The Company accounts for the investment tax credit, restored under the Revenue Act of 1971, by charging operating expenses with an amount equal to the reductions in income taxes and amortizing the tax credit to income over the estimated service lives of the related property giving rise to such credit.

Notes to Financial Statements Continued

4. The Company uses the equity method of accounting for its investment in Idaho Energy Resources Company, a wholly owned subsidiary. This subsidiary is a joint venturer in the operation of a mine supplying coal for the Jim Bridger steam generating plant.

5. Unsecured bank loans outstanding at August 31, 1975:

| | | |
|---|---|---|
| Line of Credit: | | |
| 8.525% notes dated August 1, 1975 due October 29, 1975 | | $41,100,000 |
| Bank Borrowings: | | |
| 7.75% note dated March 6, 1975 due September 8, 1975 | $ 1,400,000 | |
| 7.75% note dated March 24, 1975 due September 24, 1975 | 700,000 | |
| 7.75% note dated April 7, 1975 due October 7, 1975 | 2,100,000 | |
| 7.75% note dated April 17, 1975 due October 17, 1975 | 1,000,000 | |
| 7.75% note dated May 5, 1975 due November 6, 1975 | 900,000 | |
| 7.75% note dated June 17, 1975 due December 17, 1975 | 500,000 | |
| 7.75% note dated June 18, 1975 due December 18, 1975 | 500,000 | |
| 7.75% note dated July 28, 1975 due January 28, 1975 | 1,000,000 | |
| 7.75% note dated August 18, 1975 due November 17, 1975 | 1,500,000 | 9,600,000 |
| Commercial Paper: | | |
| 6.5% note dated July 29, 1975 due September 2, 1975 | 1,125,000 | |
| 6.425% note dated August 1, 1975 due September 2, 1975 | 700,000 | |
| 6.5% note dated August 1, 1975 due September 4, 1975 | 700,000 | |
| 6.5% note dated August 11, 1975 due September 10, 1975 | 500,000 | |
| 6.5% note dated August 11, 1975 due September 12, 1975 | 500,000 | |
| 6.25% note dated July 15, 1975 due September 15, 1975 | 4,100,000 | |
| 6.5% note dated August 15, 1975 due September 16,1975 | 1,500,000 | |
| 6.5% note dated August 15, 1975 due September 17, 1975 | 200,000 | |
| 6.5% note dated August 13, 1975 due September 17, 1975 | 1,925,000 | |
| 6.5% note dated August 18, 1975 due September 17, 1975 | 1,100,000 | |
| 6.5% note dated August 26, 1975 due September 26, 1975 | 150,000 | |
| 6.5% note dated August 14, 1975 due September 29, 1975 | 500,000 | |
| 6.5% note dated August 13, 1975 due September 30, 1975 | 1,500,000 | |
| 6.5% note dated August 20, 1975 due September 30, 1975 | 500,000 | |
| 6.625% note dated August 19, 1975 due October 3, 1975 | 3,400,000 | |
| 6.625% note dated August 20, 1975 due October 6, 1975 | 750,000 | |
| 6.625% note dated August 20, 1975 due October 15, 1975 | 750,000 | |
| 6.625% note dated August 19, 1975 due October 17, 1975 | 500,000 | |
| 6.625% note dated August 15, 1975 due October 20, 1975 | 2,100,000 | |
| 6.625% note dated August 21, 1975 due October 6, 1975 | 500,000 | 23,000,000 |
| | | $73,700,000 |

Interest on line of credit agreement is 110% of prime rate.

# PROPOSED OPERATION OF BROWNLEE HYDROELECTRIC DEVELOPMENT

The Brownlee Hydroelectric Development of Project No 1971 presently consists of four units which are operated to supply energy to the applicant's system. In addition, the Brownlee Development supplies both regulating and reserve capacity for the applicant's system. Operation of the Brownlee Development is coordinated with the Northwest Power Pool in accordance with Article 39 of the license. Seasonal preflood drawdown and refill periods of the Brownlee Reservoir are made in conformance with Article 42 of the license in cooperation with and in accordance with instructions from the United States Corps of Engineers. River flows below the Hells Canyon Development of Project No 1971 are regulated in accordance with Article 34 of the license. The operation of the proposed fifth unit of the Brownlee Development will not change the seasonal operation of the Brownlee Reservoir or alter the present flow conditions below the Hells Canyon Development. In addition, the operation of a fifth unit will not change the Brownlee Reservoir fluctuation appreciably.

The fifth unit is being added to provide additional generating capacity for peak loads, for outage of other generating units and to increase energy production during periods of high river flow. The addition of the fifth unit, at rated head, will increase the powerhouse discharge capability at the Brownlee Development by approximately 11,000 cfs. The total powerhouse discharge capability of the development would be approximately

35,000 cfs at maximum capability. The increase in the turbine flow will provide a more flexible and coordinated operation of and a more efficient utilization of water through the three power plants of Project No 1971 by more nearly equalizing their discharge capacities. At present, the Brownlee Development has the highest head but has the smallest plant discharge capacity.

The additional power capacity of the fifth unit will also provide greater flexibility in increasing the range or enlarging the scope of possible operation by the amount of peaking power it will provide.

For river flow exceeding the hydraulic capacity of the existing Brownlee Development, up to about 225 megawatts could be generated with the proposed fifth unit at the Brownlee Development from water which may otherwise be spilled. During periods of high flow, all units could be run at full gate opening, and during low flows, the maximum draft of the Brownlee Reservoir is limited by the ability to refill the reservoir and still matinain the flow requirements below the Hells Canyon Development. In general, with the operation of the proposed fifth unit in the Brownlee Development, the need to fluctuate the Oxbow and Hells Canyon Reservoirs will be less than the present operation because the hydraulic capacity of the Brownlee Development will be more nearly equalized with the capacity of the Oxbow and Hells Canyon power plants. The operation will have no more effect on the aquatic environments or recreational activities than the current operation.

Each company in the interconenncted power system is responsible for the regulation of its generation to meet the needs of its load requirements and its interchanges to or from other companies in the system. The applicant utilizes an automatic computer load control system in which the Brownlee, Oxbow and Hells Canyon Developments serve as the generation-regulation stations. The largest portion of regulation, especially large load fluctuations, is assigned to the Brownlee units due to the flow restrictions below the Hells Canyon Development and the smaller generating capacity at Oxbow. In order to maintain an adequate power supply at all times for the applicant's load, the regulating stations must have sufficient reserve capacity, even during peak load hours, to meet this need. Generation from various generating sources may be interrupted at any time due to equipment failure or transmission line faults. In such event, the regulating stations must compensate as soon as possible to meet the resultant change. The proposed fifth unit at the Brownlee Development will provide needed reserve capacity to meet such emergencies and being larger will improve the regulating ability of the station.

---

This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

# DEPENDABLE CAPACITY AND AVERAGE ANNUAL ENERGY OUTPUT

With the installation of the proposed fifth unit at the Brownlee Hydroelectric Development of Project No 1971, it is estimated that the dependable capacity of the fifth unit will be 225 megawatts. This estimate is based on the net plant capability at the time of the most probable occurrence of the applicant's peak load in the summer months of July and August. During these months, the reservoir is scheduled to be at full capacity with an elevation of 2,077 feet for all years. The size of this reservoir when full (14,000 acres with approximately 1,000,000 acre-feet of usable storage) will add dependable generating capacity. The graph exhibit set forth in the Exhibit I drawing indicates the estimated increase of capability based upon performance of the existing units and the expected performance of the fifth unit. The graph also indicates that the increase in plant capability will be approximately 140 megawatts when the effective head is reduced by 90 feet, which is near maximum drawdown of the Brownlee Reservoir.

The increase in the average annual energy output from the Brownlee Development with the addition of the fifth unit is estimated to be approximately 215,000 MWH. The increase would be obtained by utilizing water normally spilled during periods of high water flow. The increase in average annual energy is based upon historical flows for a period of 40 years (1928-1968) with depletion allowance for irrigation at the 1970 level.

The flow duration curve set forth in the Exhibit I drawing is based upon the same 40-year adjusted historical flows. Monthly average flows were used rather than daily average flows. Therefore, the maximum peak flow which occurred during the period is not indicated.

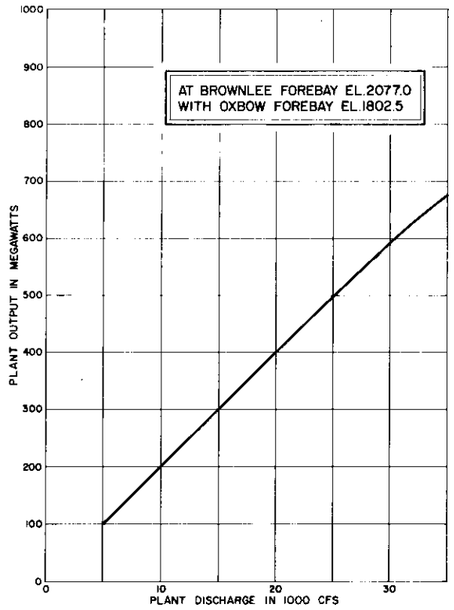
The tailwater rating curve set forth in drawing Exhibit I is based on maintaining the forebay at Oxbow Power Plant at an elevation of 1,802.5 feet. Actual water level of the Oxbow forebay is normally varied between elevations of 1,800 feet and 1,805 feet. The average of 1,802.5 feet was utilized to obtain a single curve for tailwater rating purposes.

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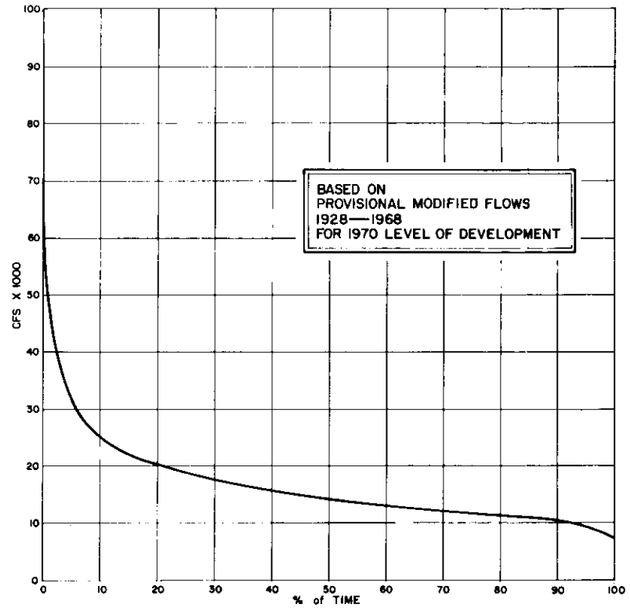
This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

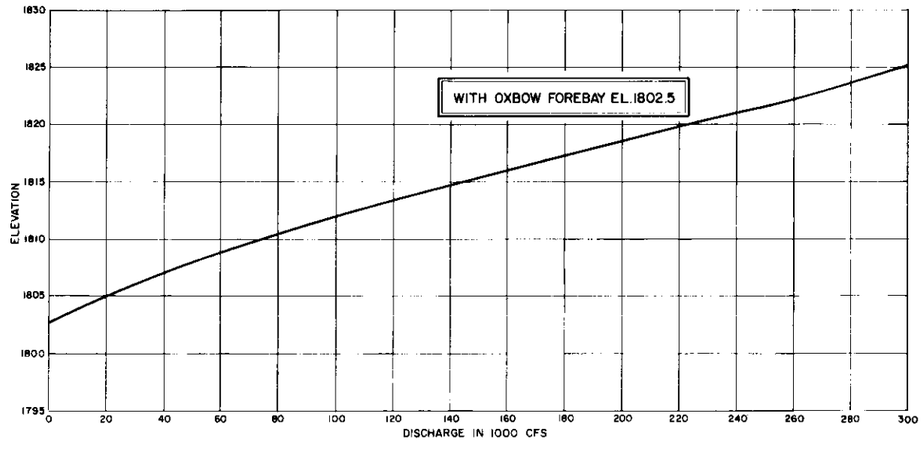
By /s/ James E Bruce
President



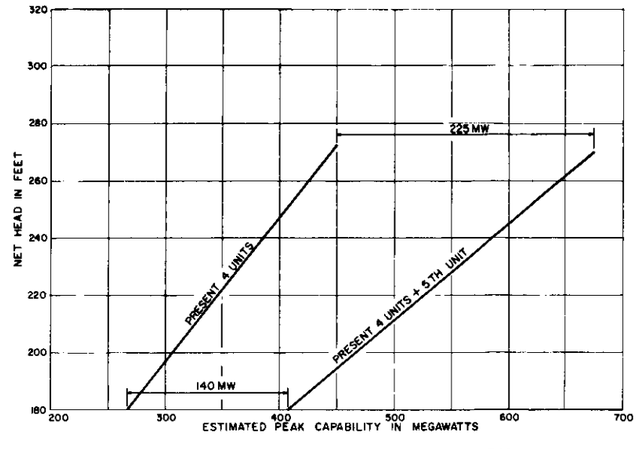

POWER DISCHARGE CURVE




BROWNLEE INFLOW DURATION CURVE




TAILWATER RATING CURVE




ESTIMATED PEAK CAPABILITY VS NET HEAD

THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955.

IDAHO POWER COMPANY

By _____ PRESIDENT

DATED OCTOBER 8, 1975

PROJECT 1971 EXHIBIT I

**BROWNLEE H.E. DEVELOPMENT**

UNIT NO. 5

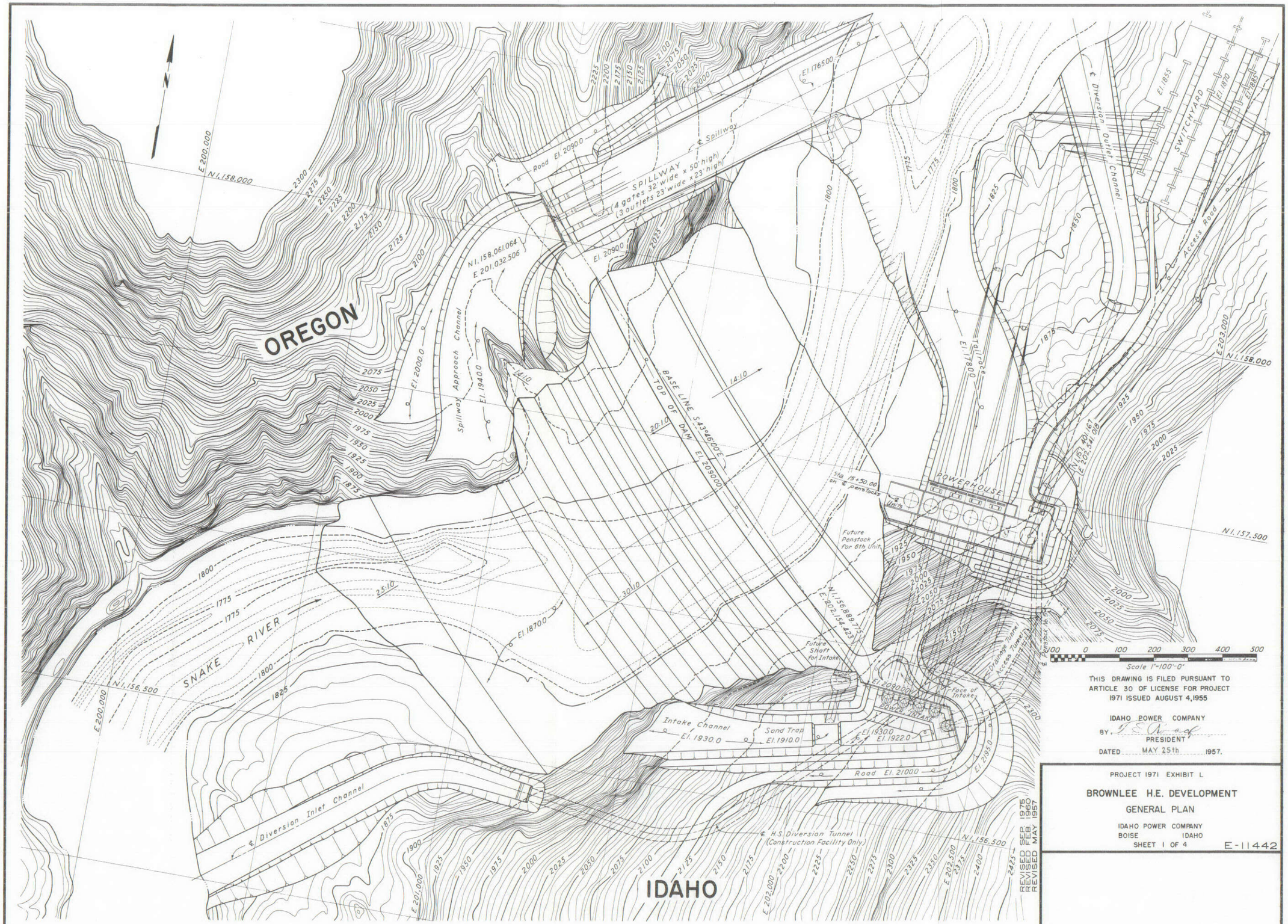
HYDRAULIC & POWER DATA

IDAHO POWER COMPANY
BOISE, IDAHO

NO SCALE

E-36177

FPC-1971-266 38-3




THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955

IDAHO POWER COMPANY

BY _____
PRESIDENT

DATED MAY 25th 1957.

PROJECT 1971 EXHIBIT L

# BROWNLEE H.E. DEVELOPMENT

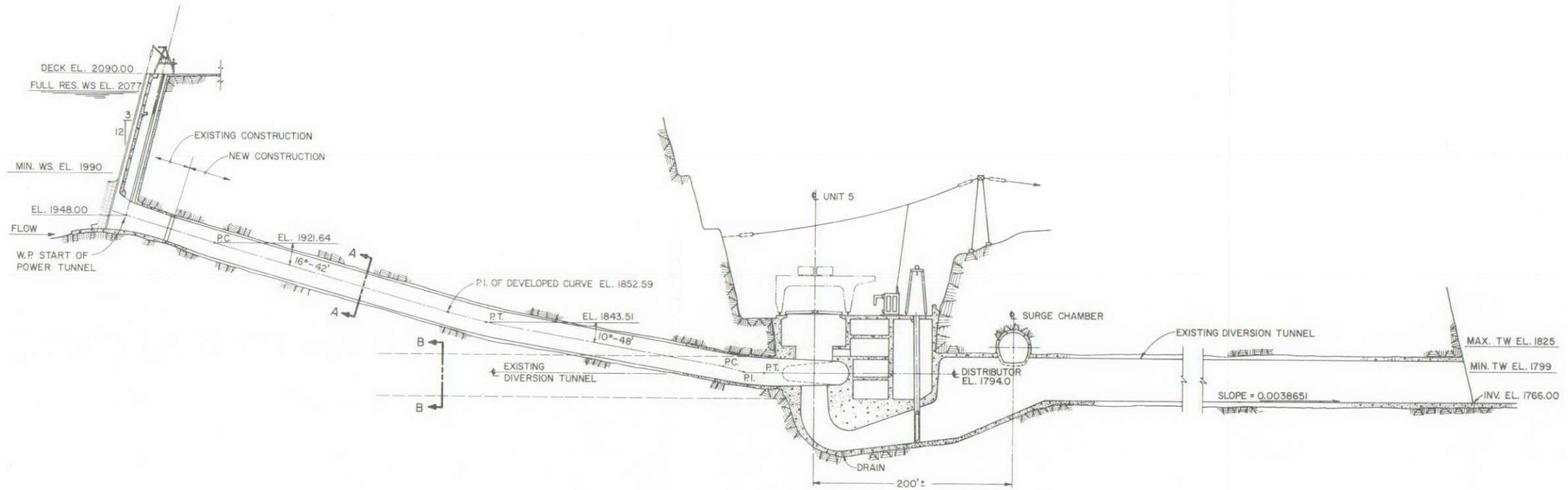
## GENERAL PLAN

IDAHO POWER COMPANY
BOISE IDAHO
SHEET 1 OF 4

E-11442

REVISED SEP 1975
REVISED MAY 1957

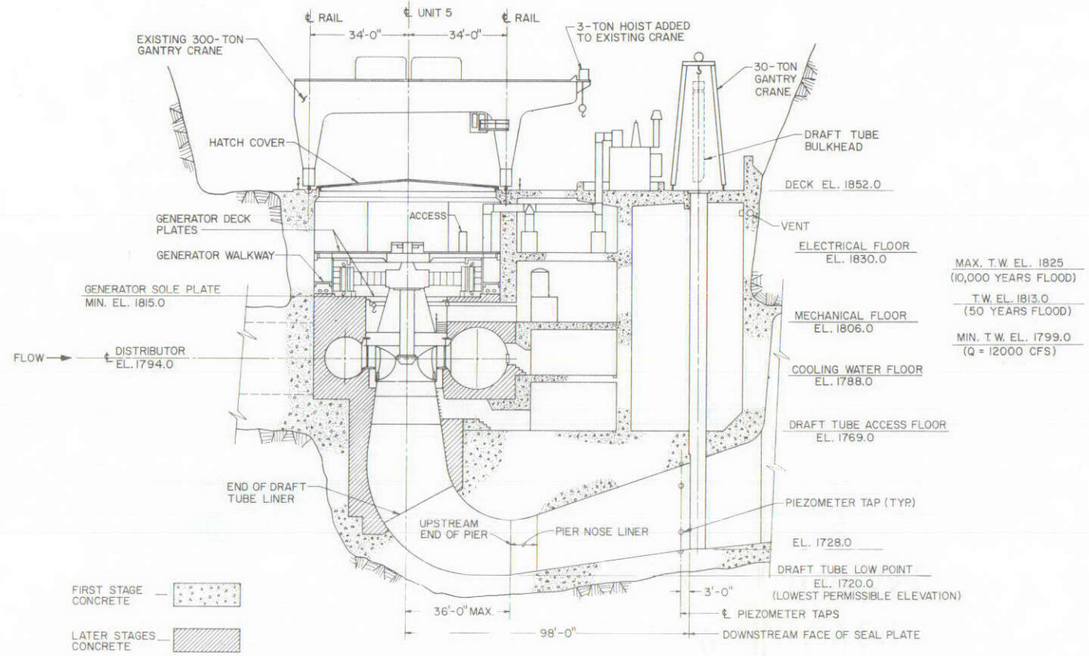
FPC-1971-367




## DEVELOPED PROFILE
( WATER CONDUCTOR)

SCALE: 1"= 50'

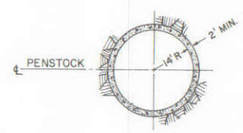
50 0 50 100 150 200 250
SCALE IN FEET




## TRANSVERSE SECTION THROUGH ℄ UNIT

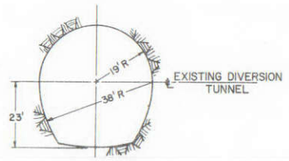
SCALE: 1"= 20'

20 10 0 20 40 60 80 100
SCALE IN FEET




## PENSTOCK
SECTION A-A

SCALE: 1"= 20'




## EXISTING DIVERSION TUNNEL
SECTION B-B

SCALE: 1"= 20'

20 10 0 20 40 60 80 100
SCALE IN FEET

THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955.

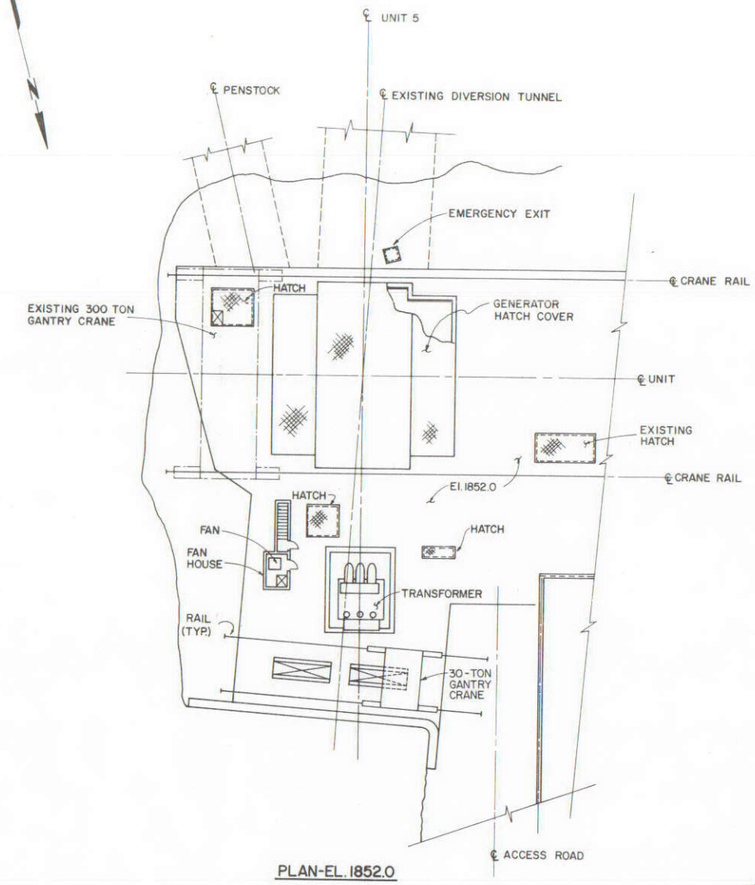
IDAHO POWER COMPANY
By James E Bruce
PRESIDENT

DATED OCTOBER 8, 1975

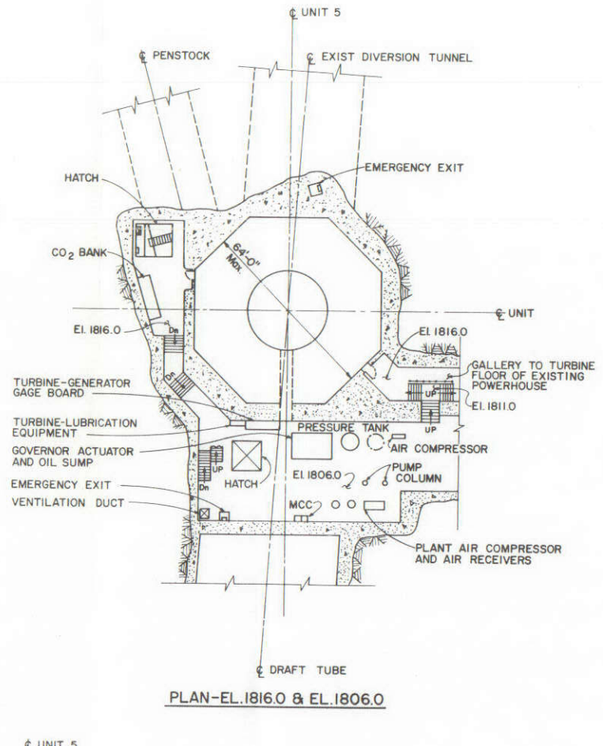
SUPPLEMENTAL SHEET 1 OF 3

PROJECT 1971 EXHIBIT L
**BROWNLEE H.E. DEVELOPMENT**
UNIT NO. 5
POWER HOUSE PLANS
GENERAL ARRANGEMENT
IDAHO POWER COMPANY
BOISE, IDAHO
SCALE: AS SHOWN
E-11442

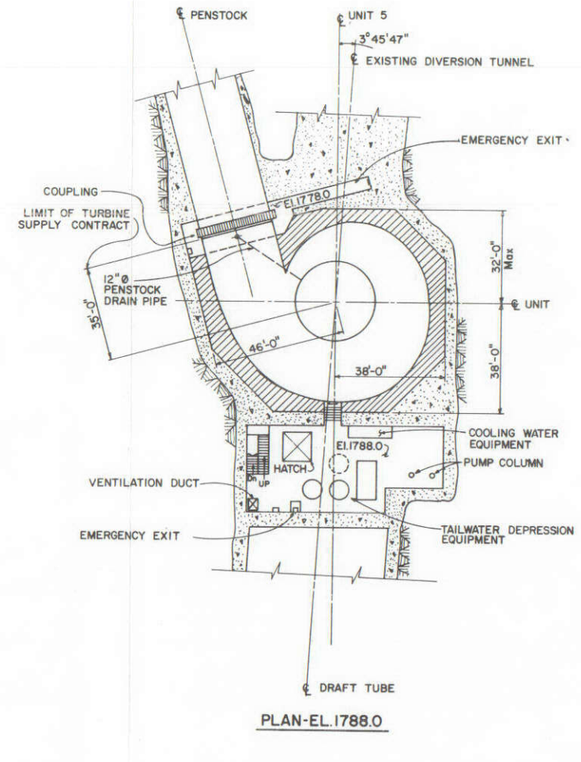
FPC-1971-268



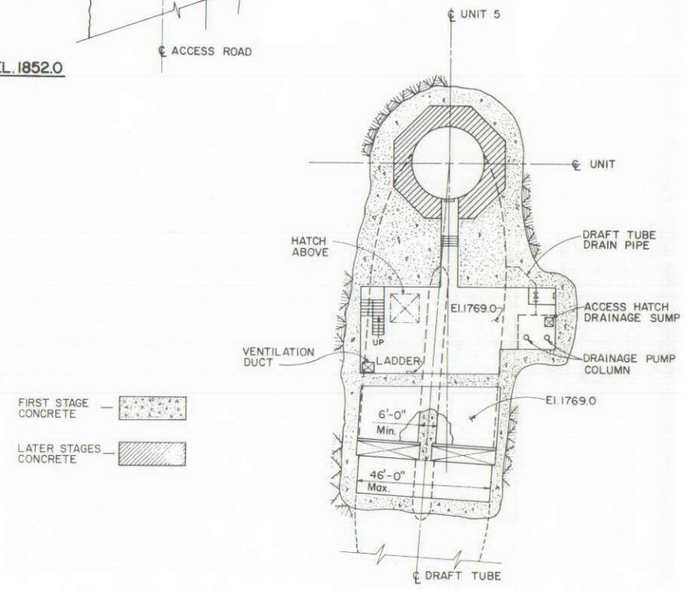

PLAN-EL. 1852.0




PLAN-EL. 1816.0 & EL. 1806.0




PLAN-EL. 1788.0




PLAN-EL. 1769.0

20 10 0 20 40 60 80 100
SCALE IN FEET

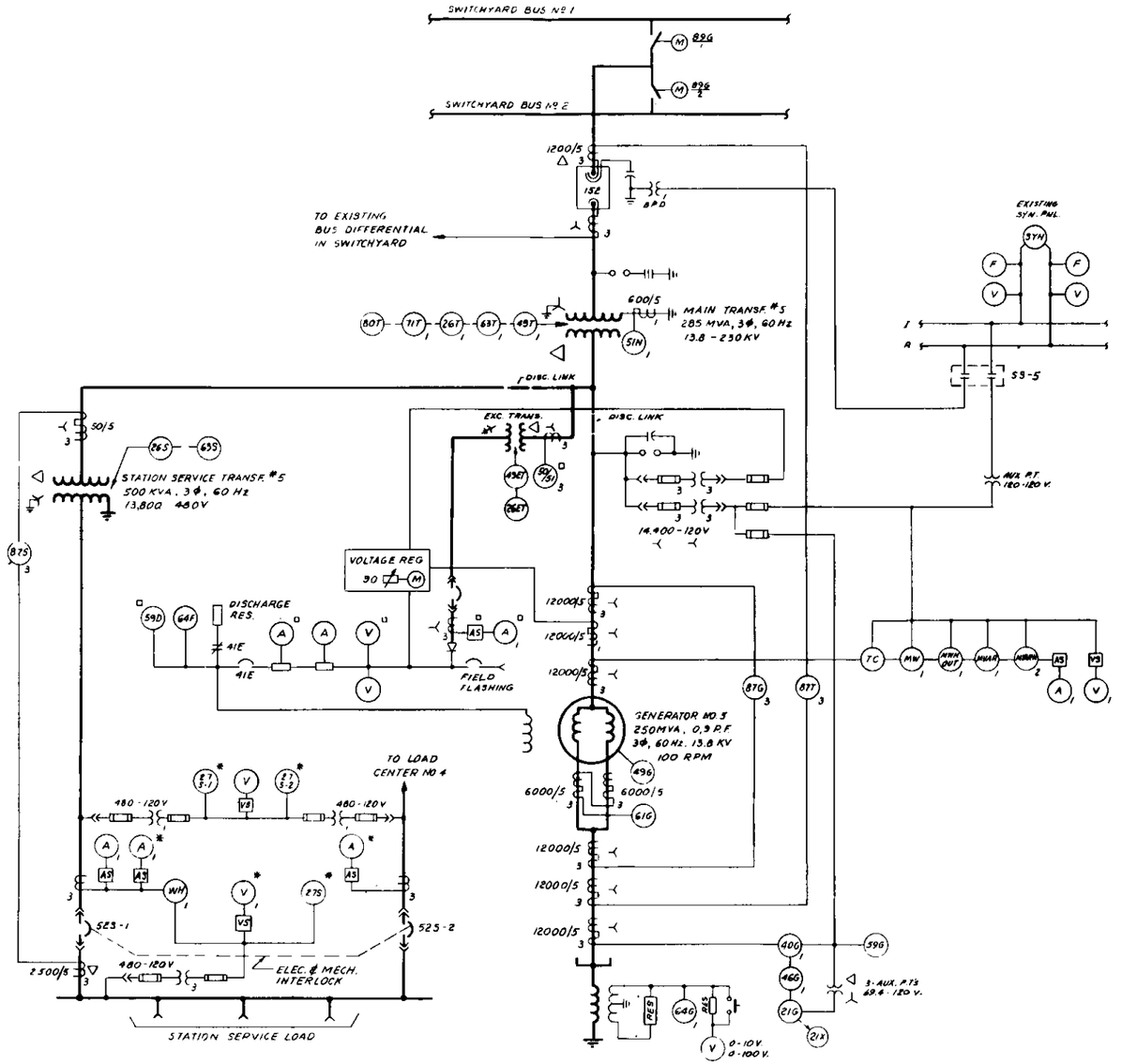
SUPPLEMENTAL SHEET 2 OF 3

THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955.

IDAHO POWER COMPANY
By _____ PRESIDENT
DATED OCTOBER 8, 1975

PROJECT 1971 EXHIBIT L
**BROWNLEE H.E. DEVELOPMENT**
UNIT NO. 5
POWER HOUSE PLANS
GENERAL ARRANGEMENT
IDAHO POWER COMPANY
BOISE, IDAHO
SCALE: 1" = 20' E-11442

FPC-1971-269




LEGEND

| | |
|---|---|
| A | AMMETER |
| AS | AMMETER SWITCH |
| F | FREQUENCY METER |
| MVAR | MEGAVARMETER |
| MVARH | MEGAVARHOUR METER |
| MW | MEGAWATT METER |
| MWH | MEGAWATTHOUR METER |
| SS | SYNCHRONIZING SWITCH |
| SYN | SYNCHROSCOPE |
| TC | THERMAL CONVERTER |
| V | VOLTMETER |
| VS | VOLTMETER SWITCH |
| WH | WATTHOURMETER |
| 27G | EXTERNAL FAULT BACK-UP RELAY |
| 27X | TIME RELAY AUXILIARY TO 87G |
| 26S | LIQUID TEMPERATURE RELAY FOR STATION TRANS |
| 26T | LIQUID TEMPERATURE RELAY FOR MAIN TRANS |
| 27S | STATION SERVICE BUS UNDERVOLTAGE RELAY |
| 27S-1 | STATION SERVICE TRANS. UNDERVOLTAGE RELAY |
| 27S-2 | AUX. STATION TRANS. UNDERVOLTAGE RELAY |
| 40G | GENERATOR LOSS OF FIELD RELAY |
| 41E | EXCITER FIELD BREAKER |
| 46G | NEGATIVE PHASE RELAY |
| 49G | GENERATOR OVERTEMPERATURE RELAY |
| 49ET | EXCITATION TRANS. OVERTEMPERATURE RELAY |
| 49T | MAIN TRANSFORMER OVERTEMPERATURE RELAY |
| 50/51 | EXCITATION TRANS. OVERCURRENT RELAY |
| 51N | MAIN TRANS. NEUT. GROUNDING OVERCURRENT RELAY |
| 59D | EXCITER OVERVOLTAGE RELAY |
| 59G | GENERATOR OVERVOLTAGE RELAY |
| 61G | CURRENT BALANCE RELAY |
| 63S | STATION SERVICE TRANS SUDDEN PRESSURE RELAY |
| 63T | MAIN TRANS. SUDDEN PRESSURE RELAY |
| 64F | GENERATOR FIELD GROUND RELAY |
| 64G | GENERATOR NEUTRAL GROUND RELAY |
| 71T | MAIN TRANS OIL LEVEL INDICATOR WITH ALARM CONTACT |
| 80T | TRANS LIQUID FLOW GAUGE WITH ALARM CONTACT |

□ MOUNTED ON EXCITATION CUBICLE

* MOUNTED ON POWER CENTER NO. 5

ALL UNMARKED DEVICES ARE MOUNTED ON DUPLEX SWITCHBOARD

THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955.

IDAHO POWER COMPANY

By _____ PRESIDENT

DATED OCTOBER 8, 1975

SUPPLEMENTAL SHEET 3 OF 3

PROJECT 1971 EXHIBIT L

# BROWNLEE H.E. DEVELOPMENT

## UNIT NO. 5

POWER HOUSE

MAIN SINGLE LINE DIAGRAM

IDAHO POWER COMPANY
BOISE, IDAHO

NO SCALE

E-11442

FPC-1971-270

# GENERAL DESCRIPTION OF EQUIPMENT

The principal features of major items of equipment to be installed as part of the proposed project modification are as follows:

## Turbine

| | |
|---|---|
| Rated net head | 250 feet |
| Power output at rated generating head | 322,000 horsepower |
| Rated speed | 100 rpm |
| Generating direction of rotation | counterclockwise |

## Generator

| | |
|---|---|
| Generating rating, nominal at 0.9 pf | 250 MVA |
| Voltage | 13.8 KV |

## Main Transformer

| | |
|---|---|
| Rating | 285 MVA |
| Voltage ratio | 13.8/230 KV |

## Transmission Line

| | |
|---|---|
| 230 KV steel tower transmission line from powerhouse to switchyard | 1,500 feet |

## Switchyard

| | |
|---|---|
| Circuit breaker | 230 KV |

This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 5th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

EXHIBIT N
Supplementing Original
Exhibit N
Sheet 1 of 1

COST ESTIMATE

| | | |
|---|---|---|
| 331 | Structures & Improvements | $ 6,625,000 |
| 332 | Reservoirs, Dams & Waterways | 8,145,000 |
| 333 | Water Wheels, Turbines, Generators | 11,572,000 |
| 334 | Accessory Electrical Equipment | 1,266,000 |
| 335 | Miscellaneous Power Plant Equipment | 362,000 |
| 352 | Switchyard & Substation Structures & Improvements | 170,000 |
| 353 | Station Equipment | 530,000 |
| | Total Direct Costs | $28,670,000 |
| | Escalation | $ 4,901,000 |
| | Contingency | $ 3,347,000 |
| | Engineering & Supervision | $ 2,500,000 |
| | Total Project Costs* | $39,418.000 |

*Does not include interest during construction or taxes.

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 5th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

EXHIBIT O
Supplementing Original
Exhibit O
Sheet 1 of 1

TIME DESIRED FOR BEGINNING AND
COMPLETING CONSTRUCTION

Because of long delivery schedules on hydraulic equipment, applicant proposes to order hydraulic and generating equipment prior to receiving the Commission's order to complete the Brownlee Hydroelectric Unit.

Contracts to furnish the turbine and generator are expected to be let in December of 1975. It is desired that site construction be started as soon as possible and is now scheduled to start in March of 1976. Unit 5 is scheduled to be on line in April of 1979.

---

This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 1st day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

EXHIBIT U
Supplementing Original
Exhibit U
Sheet 1 of 1

STATEMENT OF UTILIZATION OF POWER AND ENERGY

The increased capacity of the Brownlee Hydroelectric Unit will be utilized to meet power load requirements on applicant's system and for generation during periods of high water flow. As shown on the Attachment to Exhibit U, the annual peak load requirements exceed available and proposed capacity for eight of the ten years. The fifth unit will assist in reducing the anticipated peak deficiencies.

Since energy generation will not be increased under median and critical water conditions, the increase in average annual generation will not be relied upon to meet system firm energy loads. The energy, however, will reduce the use of high incremental cost resources to serve applicant's load.

---

This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

ESTIMATED LOADS AND RESOURCES AT TIME OF
SYSTEM PEAK LOAD (JULY) IN MEGAWATTS

| | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|---|---|---|---|---|---|
| Net System Load | 2137 | 2175 | 2334 | 2381 | 2549 | 2606 | 2784 | 2854 | 3044 | 3123 |
| Forced Outage Reserve | 207 | 222 | 233 | 250 | 263 | 281 | 295 | 315 | 331 | 353 |
| Resources | 2257 | 1982(1) | 2133(2) | 2371(3) | 2529 | 3029(3) | 3029 | 3029 | 3029 | 3529(4) |
| Surplus (Deficiency) | (87) | (415) | (434) | (260) | (283) | 142 | (50) | (140) | (346) | 53 |
| Brownlee Unit #5 | | 258 | 258 | 258 | 258 | 258 | 258 | 258 | 258 | 258 |
| Surplus (Deficiency) | (87) | (157) | (176) | (2) | (25) | 400 | 208 | 118 | (88) | 311 |

(1) New American Falls Power Plant (Project No 2736) Added November 1979.

(2) Applicant's Share of Jim Bridger Unit #4 (167 MW) Added June 1980.

(3) Proposed Pioneer Plant (2-500 MW Units) Added April 1981 and April 1983.

(4) Additional 500 MW Unit Added in May 1987.

Note: Applications have been filed for the Jim Bridger Unit #4 and for the Pioneer Plant, but approvals have not yet been obtained.

# REPORT ON ENVIRONMENTAL FACTORS

The Brownlee Hydroelectric Development was licensed by the Federal Power Commission as a part of Project No 1971 by order issued August 4, 1955. The dam of the Brownlee Development creates a reservoir with a top elevation of 2,077 feet, with usable storage capacity of about 1,000,000 acre-feet at a drawdown of 101 feet. The reservoir extends approximately 57½ miles upstream. Pursuant to Federal Power Commission license, applicant installed four generators in the Brownlee Hydroelectric Development and constructed a fifth penstock intake structure for future installation of a fifth unit. The following is a statement on the environmental effects of the proposed action. The proposed action, the issuance by the Commission of an Order Directing the Installation of a Fifth Unit at the Brownlee Hydroelectric Unit licensed under Project No 1971, will authorize the applicant to install said fifth unit as contemplated in Article 40 of said License No 1971. The fifth unit's rated capacity will be 225 megawatts.

This report is in accordance with the guidelines contained in Appendix A of the Commission's Order Number 485. This project involved only the construction and installation of an additional generating unit contemplated at the time of the issuance of the Commission's order for Project No 1971. It is judged not to involve major federal actions, and we believe will not significantly affect the existing quality of the environment.

## PURPOSE

The purpose of the proposed action is to authorize applicant to increase its generating capacity at the Brownlee

Hydroelectric Development by the construction and installation of a fifth generating unit with appurtenant facilities to provide additional generating capacity for peak loads, for outage hours of other generating units, and to increase energy production during periods of high river flow. It will provide additional energy for distribution by applicant for residential, farm, commercial, industrial, municipal, public utility and interchange uses and purposes on and through the interconnected system of applicant. In addition, said unit will provide additional peaking power for applicant and the Northwest region. It is estimated that the addition of a 225 megawatt unit will produce approximately 215,000 MWH per year.

LOCATION

The site of the proposed action is the existing Brownlee Hydroelectric Development plant site on the Snake River in the counties of Washington and Adams, State of Idaho.

LAND REQUIREMENTS

The original plans for the Brownlee Dam and development anticipated the future construction of a fifth unit. Consequently, no new land requirements will be necessary.

PROPOSED FACILITIES

The proposed facilities to be installed for the fifth unit are as follows:

| | |
|---|---|
| Turbines | - One Francis Turbine rated at 322,000 horsepower at 250 feet net head and 100 rpm will be provided. |

| | |
|---|---|
| Generators | - One 250 MVA, 0.9 pf, 13.8 KV vertical shaft generator will be provided. |
| Transformer | - One transformer connected to the generating unit, of 285 MVA capacity which will step up the voltage from 13,800 to 230,000 volts for transmission. |
| Transmission Line | - The fifth unit will be connected to the existing Brownlee Switchyard by a 230 KV steel tower transmission line approximately 1,500 feet in length. |
| Switchyard Facilities | - A 230 KV circuit breaker and appurtenant equipment will be provided in the existing Brownlee switchyard. |

CONSTRUCTION WORK

Preparatory work would consist of placement of stoplogs for closure of the existing unit five untake, placement of a cofferdam at the extremity of the existing diversion outlet, construction of a ramp from the top of the cofferdam to the existing diversion outlet channel, and to pump out and clean up the existing diversion tunnel for approximately 800 feet. Primarily construction for the powerhouse would consist of excavation of substructure for unit five, driving the power tunnel to the existing unit five intake gate, placing the steel penstock liner, placing the concrete penstock encasement, constructing the concrete powerhouse and installing the powerhouse equipment. The aggregate for concrete will be obtained at or near the source site from which aggregate was obtained for the concrete for the existing Brownlee Power Plant. The final construction stage would be the removal of the cofferdam, the construction of the 230 KV steel transmission line from the

powerhouse to the existing Brownlee switchyard and the installation of switching equipment in the existing Brownlee switchyard.

OPERATIONAL EFFECTS

The operational plan with the proposed unit installed is described in Exhibit H. For river flows exceeding the hydraulic capacity of the existing Brownlee Development, up to about 225 megawatts could be generated with the fifth unit utilizing water which may be otherwise be spilled. During periods of high flow, all units could be run at full gate opening. In general, with the operation of the proposed fifth unit in the Brownlee Development, the need to fluctuate the Oxbow and Hells Canyon Reservoirs will be less than the present operation because the hydraulic capacity of the Brownlee Development will be more nearly equalized with the capacity of the Oxbow and Hells Canyon power plants. Reservoir elevation changes at Brownlee will be similar to present operation. The operation will not affect the recreational use, nor will it change any other environmental condition in any measureable degree. In addition, the operation will have no more effect on the aquatic environment than the current operation.

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

## Economic Feasibility Study

### Cost Comparison - Peak Resources
### (1975 Price Levels)

| | Brownlee Fifth Unit | *Combustion Turbine |
|---|---|---|
| Installed Capacity | 225 MW | 250 MW |
| Maximum Capability | 258 MW | 250 MW |
| Total Project Capital Cost | $34,517,000 | $42,467,000 |
| Allowance for Funds Used During Construction (AFDC) | 5,043,000 | 1,286,000 |
| Total Project Cost With AFDC | $39,560,000 | $43,753,000 |
| **Annual Costs** | | |
| Levelized Annual Capital Factor | 11.70% | 12.15% |
| Levelized Annual Capital Cost | $ 4,629,000 | $ 5,316,000 |
| Operation, Maintenance and Fuel | 75,000 | 2,192,000 |
| Credit for Firm Energy Generated | | (453,600) |
| Credit for Secondary Energy Generated | (645,000) | |
| Net Annual Cost for Capacity | $ 4,059,000 | $ 7,054,400 |
| | $15.73/kw | $28.22/kw |

*Note: With the projected deficiencies of firm power in the Northwest, combustion turbines are the only currently existing feasible alternate to the Brownlee Fifth Unit for supplying the peaking capacity required to supply the Applicant's load in the operating year 1979.

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This statement is a part of the application for Order Directing Installation of a Fifth Generating Unit made by the undersigned this 8th day of October, 1975.

IDAHO POWER COMPANY

By /s/ James E Bruce
President

PART CI - CIVIL AND ARCHITECTURAL

SECTION VIII

CONCRETE

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/10/76
DATE ADMINISTRATOR, OPERATIONS DIVISION

8.1 SCOPE

This section includes furnishing all materials, except portland cement, pozzolan, and aggregate which will be furnished by the Owner, and production, transportation, placing, finishing, curing, repair and protection of all concrete, preplaced aggregate concrete, grout used in connection with the concrete work, blockout concrete, and grout, mortar or concrete used for setting machinery or equipment which is a part of this contract.

8.2 CONCRETE PRODUCTION AND PLACEMENT

A. General

This section covers the proportioning, mixing, placing, finishing, repair and curing of concrete to be incorporated in the work. Concrete shall be composed of portland cement, pozzolan, sand, coarse aggregate, water and admixtures as specified or approved, all well mixed and brought to the proper consistency.

B. Contractors Schedule and Plant

The Contractor shall furnish to the Owner within 30 days after award of the contract, his anticipated construction schedule for the concrete work showing requirements for portland cement and pozzolan, his sources of materials, and description of his construction plant, equipment and procedures for the concrete work for review by the Owner.

C. Tests of Concrete Ingredients and Concrete

The Owner will sample and test the concrete ingredients and concrete as specified and the Contractor shall provide the facilities necessary to obtain and handle representative samples. Test procedures are referenced in the various paragraphs of this section for materials to which the tests pertain.

Facilities shall be provided to obtain samples of aggregate from the discharge gates of the batching equipment and of the concrete mix from the discharge gate of the mixing equipment. Aggregate samples shall drop directly onto roller-mounted trays. Routine sampling will be done once

each shift. However, the Owner may require additional samples at any time.

Samples of sand for tests of moisture content and of concrete for tests of slump and air content shall be furnished several times each shift as requested by the Owner.

D. Materials for Concrete

1. Portland Cement - Portland cement will be furnished by the Owner and will be delivered to the Contractor's batch plant silo or storage warehouse at no cost to the Contractor. Portland cement will be Type II meeting ASTM C150 requirements including the requirements for freedom from false set when delivered to the job, limitation on alkalies and heat of hydration limitation.

2. Pozzolan - Pozzolan will be furnished by the Owner and will be delivered to the Contractor's batch plant silo or storage warehouse at no cost to the Contractor. Pozzolan will be Class N or S meeting the requirements of ASTM C618.

The Contractor shall coordinate his requirements for cement and pozzolan deliveries with the Owner and shall have adequate weathertight facilities for storing the bulk cement and pozzolan and sack cement and pozzolan. Cement and pozzolan shall be used in the order in which it is received. Sack cement and pozzolan shall be stored in a weathertight warehouse and cement shall not be stacked more than 7 sacks high.

The Contractor shall deliver to the Owner a copy of the bill of lading accompanying each shipment of cement and pozzolan received.

3. Aggregate

Aggregate for concrete will be furnished by the Owner from stockpiles located adjacent to the concrete batch plant. The aggregate will be produced from a natural sand and gravel deposit. The following nominal sizes will be stockpiled and furnished:

| Size Designation | Size |
|---|---|
| 3 inch | 3 to 1-1/2 inch |
| 1-1/2 inch | 1-1/2 to 3/4 inch |
| 3/4 inch | 3/4 to 3/16 inch (No. 4 mesh) |
| Concrete Sand | Minus 3/16 inch (No. 4 mesh) |

The Contractor shall remove aggregate from the stockpiles in an orderly and systematic manner and in such a

way as to minimize segregation in that removed and in that remaining and to minimize contamination with foreign material.

The Contractor may use sand and coarse aggregate from these stockpiles for other job related purposes such as sandblast, grout, mortar or preplaced aggregate concrete. Any further processing necessary to make the aggregate suitable for these purposes shall be done by the Contractor.

Coarse aggregate shall be rewashed on rinsing screens with sprays on each deck immediately prior to elevation to the finish screening equipment. Rewashing shall not be performed on finish screens.

Coarse aggregate shall be finish screened at the batching plant, with the screened material passing directly to the bins over the batching equipment. Finish screens shall be horizontally operating vibrating screens. There shall be no intermediate storage of finish screened material. Finish screens shall be installed in such a manner that vibrating of the screens will not affect the accuracy of the batching equipment.

Feed to the finish screens shall be a combination or alternation of aggregate sizes such that there will be no noticeable accumulation in any batch plant bin of material not having the full range within the nominal sizes specified. Aggregate larger than 1-1/2 inches shall be lowered into the bins by means of rock ladders which shall operate effectively to keep breakage at a minimum.

Coarse aggregate in the specified sizes, after final screening, shall be such that when the batched aggregate is tested by screening on the sieves designated in the following tabulation, the material passing the undersize test sieve (significant undersize) shall not exceed 2 percent by weight, and all material may be required to pass the oversize test sieve.

| Designation of Size | Size of Square Opening in Sieve | |
|---|---|---|
| | Undersize Test | Oversize Test |
| 3/4 inch aggregate | No. 5 mesh | 1 inch |
| 1-1/2 inch aggregate | 5/8 inch | 2 inch |
| 3 inch aggregate | 1-1/4 inch | 4 inch |

4. Water - The water used in concrete, mortar, and grout shall be free from objectionable quantities of silt, organic matter, alkali, acid, salts and other

impurities. Water shall not contain impurities in amounts that will cause a change in the setting of portland cement of more than 25 percent nor a reduction in the compressive strength of mortar of more than 5 percent compared with results obtained with distilled water.

5. Air Entraining Admixture - Air entraining admixture meeting the requirements of ASTM C260 shall be used. Acceptance will be based upon the manufacturer's certificate of compliance. The amount of air entraining admixture will be the amount needed to entrain air within the specified limits.

6. Water-Reducing Admixture - The Contractor shall use an approved water-reducing admixture in all concrete. The water-reducing admixture shall meet the requirements of ASTM C618, Type D and shall be a lignin base material. The admixture shall be furnished in liquid form and with a solids content of 40 percent. The quantity of water-reducing admixture to be added to each batch of concrete with the mixing water shall be as directed by the Owner.

7. Aluminum Powder - Aluminum powder when used shall be unpolished and a minimum of 90 percent shall pass a No. 325 U.S. Standard Sieve. The powder shall be Alcoa Standard unpolished Aluminum Powder No. 606, Reynolds Aluminum Powder 3XD, or equivalent. The amount used will be determined in each case from tests with the materials to be used, at the temperature and under the conditions of placement.

8. Other Admixtures - Other admixtures will not be allowed unless approved by the Owner.

9. Curing Compound - Curing compounds shall be of the chlorinated rubber base type, white pigmented and clear, meeting California Division of Highways Specs 721-80-100, 721-80-101 (Type I) or 722-80-102. The curing compound shall be compatible with paints which may be applied later. A certificate of compliance shall be furnished by the manufacturer.

10. Polyvinyl Chloride Waterstop - Polyvinyl chloride waterstop shall conform to the Corps of Engineers Specification No. CRDC572. The waterstop shall be dense, homogeneous, free from holes and other imperfections and shall be uniform and symmetrical in its section. The waterstop shall be stored out of the sun, protected from contamination from oil, grease, dirt, and protected from physical damage. A certificate of compliance shall be furnished by the manufacturer.

11. Metal Waterstop - Metal waterstop shall be 9 inches wide by 1/8 inch thick, steel strip complying with ASTM A506. Metal waterstop shall be clean and free from rust or other coatings.

12. Expansion Joint Filler - Expansion joint filler shall meet the requirements of ASTM D1752, Type I or II. The filler shall be stored flat, out of the sun. An adhesive suitable for fastening the filler to concrete shall also be furnished. A certificate of compliance shall be furnished by the manufacturer.

13. Reinforcing Steel - Reinforcing steel bars shall conform to the requirements of ASTM A615, A616 or A617, Grade 60. Only Grade 60 reinforcing bars will be permitted on the jobsite. Welded steel wire fabric shall conform to the requirements of ASTM A185.

14. Joint Sealant - Joint sealant shall be used in locations as shown in the drawings. The sealant shall be a two-component elastomeric type sealant meeting the requirements of ANSI A116.1-1967. The sealant shall be placed following the manufacturer's recommendations including cleanness of joint, use of primer, use of back up and bond breaker material and mixing and application instructions.

E. Composition

1. Mix Proportions - Concrete shall be proportioned by the Owner to produce concrete having the required strength, workability, impermeability and durability without the use of excessive quantities of cement, water and sand and excessive temperature rise. The design strength, f'c, of the concrete is 3,000 psi at 28 days. For this design strength requirement, the average strength of the concrete shall be such that at least 4 out of 5 strength tests of the concrete exceed the design strength. Concrete exposed to freezing and thawing conditions shall have a water - portland cement plus pozzolan ratio less than 0.50 by weight. Concrete in the freezing and thawing environment and in the range of fluctuating water levels or spray shall have a water -portland cement plus pozzolan ratio less than 0.45 by weight. Usually, the amount of pozzolan used will be between 15 and 30 percent by weight of the cementing material (portland cement plus pozzolan).

A zone of concrete over the draft tube, as shown on the Drawings will have a reduced cement content to reduce the temperature rise in this concrete. The strength of this concrete shall be 2,000 psi at 28 days.

2. Maximum Size of Aggregate - The nominal maximum size of coarse aggregate used in each part of the work will be the largest specified size which is practical to place and consolidate, as determined by the Owner. In general, aggregate of 3 inch maximum size will be used for massive sections greater than 18 inches in thickness. The maximum size of aggregate for pumped tunnel lining and steel liner backfill concrete will be 1-1/2 inches.

3. Concrete Consistency - The quantity of mixing water used in the concrete mix shall be determined by the Contractor, except that the Owner will reduce such quantity of water when the slump of the concrete exceeds the specified slump. The quantity of mixing water shall be determined on the basis of the limits on slump specified in this paragraph. Concrete consistency shall be uniform from batch to batch. The quantity of mixing water shall be varied from batch to batch if necessary to compensate for variation in moisture content or grading of the aggregates. Water shall not be added to compensate for stiffening of the concrete before placing.

The slump of concrete as placed shall conform to the following limits, measured in inches:

| Type of Concrete | Working Limit | Inadvertency Margin | Rejection Limit |
|---|---|---|---|
| Structure | 3-1/2 | 1-1/2 | 5 |
| Flatwork | 3 | 1-1/2 | 4-1/2 |
| Lower 1/3 of walls less than 12 inches thick | 4 | 2 | 6 |
| Tunnel Crown and Walls | 5 | 2 | 7 |
| Tunnel & Draft Tube Invert | 2-1/2 | 2 | 4-1/2 |

The "Working Limit" is the maximum slump for estimating the quantity of mixing water to be used in the concrete. The average slump shall be less than the "Working Limit". The "Inadvertency Margin" is the allowable deviation from the "Working Limit" for such occasional batches of concrete as may inadvertently exceed the "Working Limit". Batches of concrete with slumps in the inadvertency margin will be rejected if the frequency of their occurrence is excessive.

Concrete that has been rejected for failure to meet slump limits shall not be salvaged for use in the work.

Increased mixing time, addition of dry materials, or similar modifications of a rejected batch for the purpose of conforming to slump limits will not be permitted.

Slump tests will be performed in accordance with ASTM Designation C143, except that aggregate larger than 1-1/2 inches will be removed before testing.

4. Air Content of Concrete - Air entrainment shall be used in all concrete. Concrete exposed to freezing and thawing conditions shall have air content within the following ranges:

| Max. Size Aggregate Concrete | Air Content, % by Volume |
|---|---|
| 3 inch | 4 ± 1 |
| 1-1/2 inch | 5 ± 1 |
| 3/4 inch | 6 ± 1 |

Concrete which will not be exposed to freezing and thawing conditions may have less air entrainment when directed by the Owner.

F. Concrete Batching and Mixing

1. The Contractor shall provide a central concrete batching and mixing plant having capacity of not less than 50 cubic yards per hour and of sufficient capacity to satisfactorily supply the job.

2. Batching of Concrete

a. General - The Contractor shall provide equipment and shall maintain and operate the equipment as required to accurately determine and control the quantity of each separate ingredient entering the concrete. The quantities of bulk cement, pozzolan, sand, and each size of coarse aggregate entering each batch of concrete shall be determined by automatic or semiautomatic weighing. The quantity of water shall be determined by weighing or volumetric measurement. Where sacked cement is used, the concrete shall be proportioned on the basis of integral sacks of cement unless each material is weighed. Charging of weigh hoppers direct from aggregate handling equipment such as front-end loaders will not be permitted.

b. Equipment - The weighing equipment for aggregates shall be capable of ready adjustment to compensate for variation in moisture content of the aggregates

and for effecting changes in concrete mix proportions. The batch plant shall contain an instrument for measuring the moisture content of the sand in the weigh batcher. Concrete mixes of different proportions or slump shall not be batched and mixed in alternate batches for concurrent placement at two or more locations, unless the batching equipment is capable of instant automatic selection of at least five previously set mixes.

Scales may be either the springless dial type or the multiple beam type. If the dial type is used, the dial shall be of such size and so arranged that it may be read easily from the operating platform. If the multiple beam type is used, the scales shall be provided with an indicator which will give positive evidence of the amount of over or under weight easily visible to the operator. The indicator shall be so designed that it will operate during addition of the last 400 pounds weighed by each beam. The overtravel of the indicator hand shall operate during overload up to 150 pounds. Indicators shall be enclosed against moisture and dust.

Bulk cement and pozzolan shall be weighed in an individual hopper and shall be kept separate from the aggregates until the batch ingredients are discharged from the batching hopper. The hopper may be attached to a separate scale for individual weighing or may be attached to the aggregate scale for automatic cumulative weighing. If the materials are weighed cumulatively, the cement and pozzolan shall be weighed before the other ingredients. If the materials are weighed cumulatively by beam scales, a separate beam shall be provided for weighing each material.

The capacity of scales for weighing cement, pozzolan, and aggregate shall not exceed one and one-half times the total amount of material to be weighed by such scales in one operation. Each scale graduation shall be approximately 1/1,000 of the total capacity of the scale.

Weighing equipment shall be sufficiently insulated against vibration or movement of other operating equipment about the plant that the accuracy of delivered quantities of materials will not be impaired. The batching equipment shall be constructed and operated so that when the entire plant is running, the combined inaccuracies in feeding and measuring the material will not exceed 1 percent for water, cement, and pozzolan; 2 percent

for any size of aggregate; and 1-1/2 percent for the total aggregate in any batch.

Before weighing equipment is placed in operation, it shall be tested for accuracy by the State Bureau of Weights and Measures, a scale service company, or by use of contractor owned test weights. A certificate of inspection shall be provided stating the degree of accuracy of the scales. At intervals not to exceed two months thereafter, or at any time the accuracy of the scales may be in question, the Contractor shall make tests, in the presence of the Owner, of the operating performance of each scale or other measuring device, over the ranges of measurements involved in the batching operations. The Contractor shall provide standard test weights totaling at least one-tenth of the batch scale capacity, and any other auxiliary testing equipment required. The Contractor shall make such adjustments, repairs, or replacements as may be necessary to meet the specified requirements for accuracy of measurement performance.

All automatic or semiautomatic weighing batching equipment shall be interlocked so that a new weighing cycle cannot be started until all batchers are completely emptied, and the batcher discharge gates and valves are closed; the batcher discharge gate cannot be opened until the correct weights of materials are in the batching hoppers and the scales in balance; and the discharge gates cannot be closed until all materials are entirely discharged from the hopper and the scales are back in balance. If the water is batched by weight, the water valves shall be interlocked so that the water batcher discharge valve cannot be opened until the filling valve is closed.

The sequence of discharging all materials from their weigh hoppers into the mixer shall be such that the blending and mixing of the concrete is facilitated.

Equipment for volumetric water measurement shall be designed for convenient confirmation of the accuracy of the measurement. The water measuring device shall be arranged at the control console in full view of the operator for quick visual confirmation of the accuracy of the measurement for each batch, unless the operation of this device is completely interlocked with the batching of the other concrete materials. The operating mechanism in the water measuring device shall be such that leakage will not occur when the valves are closed. Water tanks on portable mixers shall be constructed so that the

indicating device will register, within the specified limit of accuracy, the quantity of water discharged, regardless of the inclination of the mixer.

Dispensers for air entraining and water reducing admixtures shall have sufficient capacity to measure at one time the full quantity of the properly diluted solution required for each batch. Admixture dispensers will be arranged so as to discharge automatically and uniformly and at different places into the water batch tank, the mixing water discharge line or onto the sand as may be necessary to achieve uniform distribution and to eliminate difficulties of incompatibility of admixtures if added together at the same place. Dosages of admixtures shall not vary from required dosages more than 5 percent. Equipment for measuring these materials shall be arranged at the control console in full view of the operator for quick visual confirmation of the measurement for each batch.

The dispensing equipment shall be maintained in a clean and operable condition at all times.

The Contractor shall provide facilities for obtaining samples of cement, pozzolan, aggregates, and concrete as required. The facilities shall be provided at the batching plant or at the batching and mixing plant.

c. Recorders - A graphic recorder or digital printout device shall be provided which will provide a record of each mix used and of the batch quantity of each concrete ingredient and the time of day. Each recorder shall be housed in a cabinet and shall be capable of being readily observed by the batch plant operator and inspector. The cabinet shall be capable of being locked. The recorded information shall become the property of the Owner.

d. Facilities For Batch Plant Inspector - At the batch or batch and mixing plant, the Contractor shall furnish a suitable building or room for use by the inspectors. The building or room shall have an area of at least 150 square feet and adequate lighting, electrical outlets, heat and water. One side of the room shall have a work bench including sink and water supply. The Contractor shall provide a suitable trash container and shall dispose of all samples after their use.

3. Mixing

Mixers shall not be loaded in excess of their rated capacity unless authorized by the Owner.

Variations in consistency during discharge of a single batch shall not exceed 1 inch slump, except that a greater variation will be permitted if the slump of concrete decreases and no water is added. Variations in mix and grading in different parts of the delivered batch shall be within the limits stated in ASTM C94.

The Owner may increase the mixing time when the charging and mixing operations fail to produce a delivered batch in which variations of consistency, mix or grading are within the limits specified above.

Each mixer shall be equipped with a mechanically operated timing and signaling device which will indicate and assure the completion of the required mixing period. Each mixer shall also be equipped with a consistency meter for indicating the consistency of the concrete being mixed.

Effective telephone or two-way radio communication shall be provided by the Contractor between the point of placement and the batching plant or batching and mixing plant, including the materials control building, and shall be available to the Owner at all times. Telephones shall be equipped with call bells, horns, or flashing colored lights which can be easily distinguished from other signals in the proximity. The communication system shall be maintained in proper working condition at all times during placement of concrete.

Centralized batching and mixing plants shall be arranged so that each batch of concrete can be observed conveniently from the plant operator's station.

Concrete ingredients shall be mixed for not less than 1-1/2 minutes after all the ingredients are in the mixer. The minimum mixing time shall be increased 1/2 minute for each cubic yard of concrete in excess of two cubic yards, unless mixer performance tests demonstrate to the satisfaction of the Owner, that variations in mix and grading are reduced to within specified limits in less time.

Water shall be admitted prior to, and during mixer-charging operations and shall not be admitted following mixer-charging operations except for minor amounts to adjust slump.

G. Forms

1. General - Forms shall be used wherever necessary to confine the concrete during vibration and to shape it to the specified lines. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete, and shall be maintained rigidly in position. The strength and rigidity of the forms shall be such that formed surfaces of the concrete will conform to requirements for surface irregularities and tolerances. Forms shall be tight enough to prevent loss of mortar from the concrete. Forms for beams and slabs shall be cambered as specified by the Owner.

One-inch chamfer strips shall be placed in the corners of forms for exposed exterior corners so as to produce beveled edges. Interior corners and edges at formed joints shall be beveled unless the requirement therefor is waived by the Owner.

The tolerance limits and the surface irregularity limits specified below are the maximum permissive limits of occasional slight misalignment or irregularity of surface which may occur despite a serious effort to build and maintain the forms accurately and securely to specified surfaces. These limits will be applied only to inadvertent or relatively infrequent surface irregularities, and the use of forming practices and form materials which will result in irregularities, even though these would be within the permissive maximum limits, will be prohibited. These limits shall not be construed to be tolerances for checking form alignment or determining acceptability of used form materials.

Depressed keys shall not be used.

Forms for surfaces for which finishes F2 and F3 are designated shall be constructed with grade strips at horizontal construction joints, unless the use of groove strips is specified on the Drawings. Such forms shall be removed after concrete in a lift has hardened and reset for the next lift; they shall not be constructed continuous lift to lift. Sheathing of reset forms shall overlap the hardened concrete by not more than 1 inch. Forms shall be tightened against the hardened concrete so that the forms will not spread and permit abrupt irregularities or loss of mortar. Supplementary bolts or form ties shall be used as necessary to hold the reset forms tight against the hardened concrete. An opening shall be provided in the bottom of wall forms to facilitate cleaning. Forms for wall openings shall be constructed so as to facilitate loosening.

2. Form Sheathing - Wood sheathing shall be of such kind and quality or shall be so treated or coated that there will be no chemical deterioration or discoloration of the formed concrete surfaces. The type and condition of form sheathing, and the fabrication of forms for finish F2 shall be such that the form surface will be even and uniform.

Wood sheathing shall be Douglas fir lumber or Douglas fir plywood. Douglas fir lumber shall conform to the Standard Grading and Dressing rules No. 15 of the West Coast Lumber Inspection Bureas and shall be construction grade or better, dressed and center matched, tongue and groove. Plywood shall conform to U.S. Product Standard PS-1 and shall be Grade B-B exterior.

3. Uniformity of Forming Material - Forms for F2 finish shall be constructed so as to produce a uniform and consistent texture and pattern on the face of the concrete. Metal patches on wood forms for these surfaces will not be permitted. Wood slivers resulting from drilling or cutting or from damage to the form surface shall be removed before concrete is placed. The form sheathing shall be placed so that all horizontal form marks are continuous across the entire surface. If forms are constructed of lumber and are not paneled, the sheathing shall be cut square and the vertical joints in the sheathing shall be staggered and made only at studs. The Contractor shall use one type of form lumber for all F2 surfaces and one type of form lumber or steel form for all F2 tunnel surfaces. All lumber used for sheathing shall be 6 inches or 8 inches in width.

4. Form Ties - Embedded ties for holding forms shall remain embedded and, except where F1 finish is permitted, shall terminate within the concrete approximately two diameters or twice the minimum dimension of the tie from the formed faces of the concrete. Where F1 finish is permitted, ties shall be terminated within the concrete or cut flush with the formed surfaces, at the Contractor's option.

The ties shall be constructed so that removal of the ends or end fasteners can be accomplished readily by unskilled workmen, without causing spalling at the faces of the concrete. Recesses shall be filled as specified in Paragraph 8.2 N.

5. Cleaning and Oiling of Forms - At the time the concrete is placed in the forms, the surfaces of the forms in contact with the concrete shall be free from encrustations of mortar, grout, or other foreign material. The surfaces of the forms to be in contact with the concrete shall be coated with an approved

coating that will effectively prevent sticking and will not stain or soften the concrete surfaces. Any form oils or form release agents shall be compatible with the paint which is to be applied later.

6. Forms For Warped Surfaces - Forms for warped surfaces shall conform accurately to the specified curved surfaces. Curved surfaces have been dimensioned at several sections. The Contractor shall interpolate intermediate sections as necessary and shall construct the forms so that the curvature will be continuous between sections. Where necessary to meet requirements for curvature, the forms shall be built to make tight, smooth form surfaces and constructed so that the joint marks on the concrete surfaces, will, in general, follow the line of water flow. After the forms have been constructed, all surface imperfections shall be corrected, and all surface irregularities repaired.

7. Forms For Tunnel Lining - The steel liner for the Power Tunnel shall serve as the forms for the tunnel lining or liner encasement in this area. The steel liner shall be satisfactorily supported and tied down so that it does not shift or become distorted during placement of the concrete.

8. Removal of Forms - Forms supporting slabs, girders and beams shall be left in place until the concrete has attained sufficient strength to support its dead weight and any loads placed on it. The Owner will designate the earliest time that such forms may be removed. However, this does not relieve the Contractor of his responsibility for damage caused by too early form removal.

Other forms shall be loosened and removed as soon as the concrete has hardened sufficiently to prevent damage by form removal. Forms for sloping faces shall be removed as soon as the concrete has attained sufficient stiffness to prevent sagging. Any required repairs or finish treatment required on such surfaces shall be performed at once and shall be following immediately by the specified curing.

Forms shall be removed carefully so as to prevent damage to the concrete. Wooden wedges only shall be used between the concrete surface and the form where force is necessary to separate the form and the concrete; metal wedges, bars, or tools shall not be used for this purpose. Any concrete damaged in the process of removing the forms shall be repaired.

H. Reinforcing Steel

The position, size and shape of reinforcing steel and welded wire fabric are shown on the Drawings. Working drawings shall be furnished by the Contractor and reinforcing bars shall be detailed to conform to the current Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI 315) and Building Code Requirements for Reinforced Concrete (ACI 318) of the American Concrete Institute unless otherwise shown on the Drawings or specified herein.

The CRSI-WCRSI "Recommended Practice for Placing Reinforcing Bars," 1974 Edition, shall be used as a guide for placing, supporting and tying the reinforcing steel.

Certified copies of mill tests on each heat or melt of steel shall be available to the Owner at the time of inspection or sampling. In addition each bundle of steel shall be tagged at the mill with a mill tag showing the name of the mill, melt or heat number, and type or grade of steel.

All reinforcing steel shall be stored off the ground and shall be kept in a clean condition. Bars shall not be bent or straightened in a manner that will injure the material. Bars for the various contract items shall be stockpiled separately and shall not be used interchangeably. Only Grade 60 bars will be permitted on the jobsite.

All reinforcing steel shall be placed accurately in the positions shown on the Drawings and held firmly during the placing and setting of concrete. When placed in the work, reinforcing shall be free from dirt, grease, paint or other foreign substances, loose mill scale, and heavy flaky rust that can be removed by firm rubbing with burlap or equivalent treatment. After being placed, the reinforcing shall be maintained clean until completely embedded in the concrete. Care shall be exercised to prevent any disturbance of the reinforcing in concrete that has already been placed.

Welded wire fabric shipped in rolls shall be straightened into flat sheets before being placed.

Reinforcing shall be supported in position by means of concrete, metal or plastic chairs, metal hangers, metal spacers or other satisfactory metal supports. Concrete blocks used for support purposes shall have a strength level and quality comparable to the concrete in which they are used. The use of broken stone, metal pipe and wooden blocks will not be permitted. Galvanized metal chairs or concrete blocks shall be used for supporting reinforcing on subgrade. Galvanized metal, concrete, plastic coated or plastic supports, as approved, shall be used for supporting

reinforcing against surfaces which will be exposed to view in the finished structure. The use of nails driven into the forms to support the reinforcing steel will not be permitted. Reinforcing shall be placed so that there will be a clear distance of at least 1 inch between the reinforcing and any anchor bolts or other embedded metalwork.

Unless otherwise specified, measurements made in placing bars shall be to the centerline of the bars, except that cover shall be measured to the outside surface of the bar. Concrete shall not be placed until reinforcing has been inspected in place.

All laps, hooks and bends in reinforcing bars shall conform to the requirements of ACI 315 and ACI 318 unless otherwise shown on the Drawings. Bars in lapped splices shall be in contact and tied in such manner as to maintain at least the specified minimum clearances to adjacent bars and the specified minimum covers. Lap splices of closely spaced bars shall be staggered when possible and where required by or permitted by the Owner. All welding of reinforcement shall conform to "Recommended Practices for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction", AWS D12.1. Welding of reinforcing steel shall be done only with the permission of the Owner.

Welded wire fabric shall be lapped sufficiently to maintain uniform strength and shall be securely fastened at the ends and edges. The edge lap shall be not less than one mesh in width.

I. Preparation for Placing Concrete

1. General - Concrete shall not be placed until all formwork, embedded parts, steel reinforcement, foundation surfaces, and joints involved in the placing have been approved, and until facilities acceptable to the Owner have been provided and made ready for accomplishment of the work as specified. The Contractor shall provide a container at each placement for a "Placement Checkout List". Each item shall be approved by the Foreman after completing the work and by the Owner after inspecting and approving the item. Concrete may not be ordered for the placement until all items have been approved and the Owner has made a final inspection and approved start of the placement.

   Concrete shall not be placed in water except with the written permission of the Owner, and the method of depositing the concrete shall be subject to his approval. Concrete shall not be placed in running water

and shall not be subjected to the action of running water until after concrete has hardened.

Water in the tunnel shall be controlled so that at no time during placement or hardening of the concrete will water wash, mix with, or seep into the unhardened concrete. Water shall be excluded by caulking; or diverted by sheet metal pans and metal drain pipes, and pumped from sumps, or controlled by other effective means.

All surfaces of embedded materials that have become encrusted with dried mortar or grout shall be cleaned of all such mortar or grout before the surrounding concrete is placed.

2. Surface Preparation - Immediately before placing concrete, all surfaces upon or against which concrete is to be placed shall be free from standing water, mud and debris, and shall be clean and free from oil, coatings, and loose, semi-detached or unsound fragments. Surfaces shall be cleaned by sandblasting, high velocity air or air and water jets, or other approved means as appropriate for the surface being prepared.

Surfaces shall be free from frost, ice or snow when concrete is placed against them. If the surface is absorptive, it shall be moistened to a minimum depth of at least 1 inch.

3. Joints In Concrete - Construction, contraction and expansion joints shall be placed at locations, and in accordance with the details, shown on the Drawings. At other locations, as necessary, the work shall be divided into placements of acceptable size. Prior to the start of concrete placing, the Contractor shall submit to the Owner, for approval, drawings showing his schedule of concrete placements and location of construction joints.

Construction joints are concrete surfaces to which new concrete is to adhere and which have become so rigid that the new concrete cannot be made monolithic by vibration with concrete previously placed. Construction joints shall be clean and damp, but not wet, when covered with fresh concrete. Cleaning shall consist of the removal of all laitance, loose or defective concrete, coatings, sand, curing compound, and other foreign material. Joints shall be cleaned and washed thoroughly with air-water jets immediately before the new concrete is placed. Cleaning shall be accomplished by the use of wet sandblast or by any other method which will produce results equivalent to wet sandblast.

Formed surfaces of contraction or expansion joints shall be cleaned thoroughly of accretions of concrete or other foreign material by scraping, chipping, or other effective means. Contraction joints shall be coated with form oil, curing compound or other approved bond breaker prior to placement of adjoining concrete.

J. Concrete Operations During Cold and Hot Weather

During periods of hot or cold weather, the concrete work shall be conducted so as to obtain acceptable concrete and in accordance with the applicable procedures outlined in ACI Standard 305, "Recommended Practice for Hot Weather Concreting" and ACI Standard 306, "Recommended Practice for Cold Weather Concreting."

K. Transporting and Placing Concrete

1. General - The Contractor shall notify the Owner several hours in advance of the start of concrete placing. Unless inspection is waived in each specific case, placing of concrete shall be performed only in the presence of the Owner.

   The equipment used in placing the concrete shall be capable of satisfactorily handling specification concrete of the maximum aggregate size and slump considered suitable for the location and without demands for additional workability or limitations on the concrete.

2. Transporting Concrete - The methods and equipment used for transporting concrete from the point of mixing and the time that elapses during transportation shall be such as will not cause appreciable segregation of coarse aggregate, or slump loss in excess of 1 inch, in the concrete as it is delivered into the work. Only approved agitating transporting equipment shall be used to transport concrete on roads or rails. Any transporting equipment used shall be capable of handling and discharging concrete of the maximum aggregate size and slump as specified without undue delay and segregation. Pneumatic construction equipment for transport or placement of concrete by pipeline shall not be used. Continuous agitation of the concrete during transportation in the tunnel will not be required but agitating equipment shall be operated as necessary to restore the uniformity of the concrete, at intervals of time of not more than 20 minutes. Uniformity of the concrete shall have been restored when it is delivered to the placing equipment.

3. Placing Structural Concrete - Structural concrete placements in forms shall be started with an oversanded (an

increase in sand content of approximately 4% of the total aggregate) mix, an extra sack of cement per cubic yard, and a 5 inch slump. This mix shall be placed approximately 6 inches deep on the construction joint. A mortar layer shall not be used. This starting mix shall be omitted in open work in which the regular mix can be readily placed on the construction joint without loss of mortar, and be thoroughly vibrated.

Concrete shall be deposited as nearly as practicable directly in its final position and shall not be caused to flow such that the lateral movement will permit or cause segregation of the coarse aggregate or mortar from the concrete mass. Methods and equipment employed in depositing concrete in forms shall be such as will not result in clusters or groups of coarse aggregate being separated from the concrete mass, but if clusters do occur they shall be scattered before the concrete is vibrated. A few scattered individual pieces of coarse aggregate that can be restored into the mass by vibration will not be objectionable. When concrete is placed through a drop-chute, one or more vibrators shall be used where concrete is falling to prevent stacking and separation.

Formed concrete except in tunnel lining shall be placed in continuous approximately horizontal layers, the depths of which generally shall not exceed 20 inches. The Owner will require lesser depths where necessary to ensure that each new layer can be made monolithic with the previous layer by penetration of the vibrators.

If concrete is placed monolithically around openings having vertical dimensions greater than 2 feet, or if concrete in decks, floor slabs, or other similar parts of structures is placed monolithically with supporting concrete, the following requirements shall be observed:

a. Placing of concrete shall be delayed at the top of openings and at the bottoms of bevels under decks, floor slabs, beams, or other similar parts of structures when bevels are not specified, until the concrete is no longer plastic and if much longer delayed will not respond to vibration. When consolidating concrete placed after the delay, the vibrating unit shall penetrate and revibrate the concrete placed before the delay.

b. The last 2 feet or more of concrete placed immediately before the delay shall be placed with as low a slump as practicable, and special care shall be exercised to effect thorough consolidation of the concrete.

c. The surfaces of concrete shall be clean and free from loose and foreign material when concrete is placed after the delay.

d. Concrete over openings and in decks and other similar parts of structures shall be placed with as low a slump as practicable, and special care shall be exercised to effect thorough consolidation of the concrete.

e. Concrete in the top 2 feet of exposed walls shall be placed with as low a slump as practicable and special care shall be exercised to thoroughly consolidate the concrete.

4. Placing Concrete Behind Power Tunnel Steel Liner - Concrete encasement of the power tunnel steel liner shall be by a positive displacement concrete pump or other approved methods.

The concrete pump shall be capable of pumping a properly proportional concrete mix made with 1-1/2 inch maximum size aggregate and at the specified slump and at a satisfactory pumping rate.

Use of an air slugger with a concrete pump shall be kept to the minimum recommended by the manufacturer of the concrete pump. The equipment used in placing the concrete and the method of its operation shall be such as will permit introduction of the concrete into the forms without high velocity until the end of the discharge line is embedded in concrete. After the concrete has been built up to the crown, the end of the discharge line shall be kept well buried in the concrete during placement to assure complete filling. The end of the discharge line shall be marked so as to indicate the depth of burial at any time. Special care shall be taken to force concrete into all irregularities in the rock surfaces and to completely fill the tunnel walls and tunnel crown. Placing equipment shall be operated only by experienced operators.

Cold joints in tunnel lining shall be avoided. In the event a cold joint is made necessary by an unavoidable interruption in concrete placement, the Contractor shall consolidate the concrete thoroughly to a uniform and stable joint surface while the concrete is still plastic. The concrete at the surface of cold joints shall be cleaned and dampened as specified for construction joints before being covered with fresh concrete.

5. Placing Second Stage Concrete Around Draft Tube Steel Liner and Spiral Case

a. General - Conventional concrete shall be used between elevation 1735 and approximately 1778 and between elevation 1794 and 1816. Encasement of the spiral case between approximately elevations 1778 and 1794 shall be done by the preplaced aggregate method. The draft tube steel liner and the spiral case shall be adequately tied down, supported and braced as required by the manufacturer, as shown on the Drawings, or as required to satisfactorily support and maintain these parts in their proper position during encasement with concrete. During the work their position shall be monitored to determine that they remain in their proper position. Concrete procedures shall be such that forces on them are balanced.

b. Draft Tube Steel Liner - Conventional concrete placements between elevations 1735 and approximately 1782 shall be made in lifts which do not exceed 5 feet and with a delay of at least 72 hours between lifts. Three inch maximum size aggregate shall be used. During placing of concrete the height differential of the concrete against the liner shall not exceed one foot.

c. Spiral Case - The Contractor shall construct concrete piers and cradles as shown on the Drawings. Encasement of the spiral case from approximately elevations 1778 to elevation 1794 shall be done by the preplaced aggregate concrete method. The work shall be planned and supervised by personnel having experience in the use of preplaced aggregate concrete for encasement of spiral cases. The Contractor shall submit to the Owner, for review and approval, complete procedures for doing this work.

Preplaced aggregate concrete work shall be done in accordance with the applicable procedures of Chapter 7 of ACI Standard 304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete". Particular attention shall be paid to the following points:

- The Contractor shall supply a modern and dependable batch-type grout plant including high speed mixer, agitator and pumps and supervisory personnel skilled and experienced in this type of work.

- Grout pipe shall be satisfactorily located so that the aggregate mass is completely grouted.

- The grout mix shall be proportioned so that the required strength is attained in the concrete without the use of excess cement.

- The portland cement and pozzolan used shall be that used in the remainder of the job and will be furnished by the Owner. An approved grout fluidifying admixture shall be used.

- The sand shall be specially graded by the Contractor. The grading used will depend upon the coarse aggregate grading used.

- The coarse aggregate used shall be the nominal 3 by 1-1/2 inch size or a suitable blend of 3 by 1-1/2 inch and 1-1/2 by 3/4 inch sizes. The coarse aggregate shall be rewashed and resieved before being used. The coarse aggregate shall be damp but well drained when placed.

- The coarse aggregate shall be placed using procedures which will minimize breakage and segregation. The coarse aggregate will be placed so as to fill the space around the lower stay ring.

- During grouting the spiral case shall be filled with water to the level of the lower ring.

- During grouting, vent holes in the stay ring shall be open. The rate of grouting will be such that the spiral case is not moved or distorted.

- The construction joint between the preplaced aggregate concrete placements at approximately elevation 1794 shall be cleaned satisfactorily.

Any unfilled space remaining under the lower stay ring after encasing the spiral case with preplaced aggregate concrete shall be filled with a suitable grout depending upon the conditions present as determined by the Owner. Cored holes will be provided in the discharge and stay rings for this purpose and the stay rings will be provided with weep holes. The grout will be placed through pipe risers connected to the cored holes. The length of pipe shall give a head of about 6 feet. Placing the grout shall be done simultaneously at several points around the stay ring and the grout rodded through the pipe risers, allowing the grout to escape through the vent holes leaving the area under metal well filled with grout. After the grout has set but before it becomes hard, the pipe risers shall be

removed from the cored holes and metal plugs or inserts shall be inserted in the cored and weep holes, then later welded in and ground flush.

6. Placing Tunnel Plug Concrete - Concrete shall be placed in the tunnel plug in lifts which do not exceed 8 feet in height and with a time of at least 4 days between lifts. Concrete shall contain 3 inch maximum aggregate size except for the top lift. The top lift may be placed by pumping, using 1-1/2 inch maximum size aggregate concrete.

7. Air Vent Shaft Concrete Pipe Lining - The air vent shaft excavation is described in Section II. Following the excavation, the shaft shall be lined using concrete pipe as shown on the Drawings. The concrete ring shown at the junction of the air vent shaft and the power tunnel shall be formed and cast in place using structural concrete. This concrete ring shall be doweled into the rock and into the existing concrete as discussed in paragraph 13 below. The concrete pipe shown shall be ASTM C76, Class II, reinforced, Wall B, tongue and groove joint, having an internal diameter of 42 inches. Placing the concrete pipe shall not proceed until the concrete in the support ring has developed a compressive strength of 2500 psi. The concrete pipe shall be laid tongue up and shall be blocked in place. The space between the pipe and the rock shall be filled with concrete. The fill concrete mix shall be one using 3/8, 1/2, or 3/4 inch coarse aggregate, a cement content (portland cement plus pozzolan) of not less than 600 pounds per cubic yard, a water reducing admixture and a slump not exceeding 6 inches or as approved by the Owner. This fill concrete shall be rodded or puddled in place. Not more than two pipe lengths shall be laid and filled at one time except as approved by the Owner. The rock surface shall be cleaned of any dirt before placing the pipe and concrete.

8. Air Vent Surface Structure - The air vent surface structure located at the surface end of the air vent shaft, shall be constructed using structural concrete as shown on the Drawings.

9. Floor Topping - Floor slabs at El. 1830 and El. 1806 shall have bonded two-course floors in the areas shown on the Drawings. The top (second) course is to be placed at a later time after equipment has been installed and there is less danger of damage to the floor, and at as appropriate time as approved by the Owner. The thickness of the topping shall be 2 inches or as shown on the Drawings. Construction of these floors shall follow the applicable procedures for bonded two-course Class 6 floors of ACI Standard 302,

"Recommended Practice for Concrete Floor and Slab Construction." Special attention shall be paid to construction of the base (first course) to accommodate the topping of the designated thickness, preparation and cleaning the base course, use of a bonding medium, the concrete mix used for the topping, finishing, and curing of the topping. The concrete mix used shall be as approved by the Owner. The topping shall be separated to form a grid pattern by 1/16 inch thick by 2-inch wide commercial brass strips placed on 4-foot centers both directions. Furnishing and installing the brass strips will be deemed to be included in the unit price for floor topping. The topping shall be water cured for at least 7 days. Any topping which disbonds from the base course within 60 days, as determined by tapping with a steel rod, shall be removed and replaced.

10. Electrical Pullboxes - The electrical pullboxes of the relocated portion of the cable duct bank to the switchyard shall be constructed using structural concrete as shown on the Drawings.

11. Joining New Concrete to Rock and Existing Concrete - At the junction of the air vent shaft with the power tunnel the new concrete shall be tied to the existing concrete and rock by means of anchors grouted into the existing concrete and rock as shown on the Drawings.

The concrete of the new addition to the electrical pullboxes shall be tied to the existing concrete by means of anchors grouted into the existing concrete as shown on the Drawings. The existing concrete must be clean and damp at the time fresh concrete is placed against it. The new concrete shall be thoroughly vibrated and consolidated against the existing concrete. The Contractor shall waterproof the joint between the existing and new concrete. The method of waterproofing shall be approved by the Owner prior to start of this portion of the work.

For drilling and grouting anchors see SECTION VI, DRILLING AND GROUTING.

L. Consolidation of Concrete

All concrete shall be consolidated by vibration to the maximum practicable density, so that it is free from pockets of coarse aggregate and entrapped air, and closes snugly against the subgrade and all surfaces of forms and embedded materials.

In consolidating each layer of concrete, the vibrator shall be operated at regular and frequent intervals, and in a near vertical position. The vibrating head shall be allowed to

penetrate deeply and revibrate concrete in the underlying layers. The top layer of each placement shall be revibrated systematically at the latest time the concrete can be made plastic by means of vibration. Layers of concrete shall not be placed until the layers previously placed have been vibrated thoroughly as specified. Care shall be exercised to avoid contact of the vibrating head with surfaces of the forms.

Consolidation of concrete shall be by electric or pneumatic drive vibrators of sufficient power and capacity to consolidate the concrete effectively and quickly. Concrete placed in structures shall be consolidated with air driven immersion-type vibrators such as 3-1/2 inch Malan or Chicago Pneumatic. Smaller vibrators shall be used only when these larger sizes cannot be used. Concrete vibrators shall be operated at speeds of at least 7,000 vpm when immersed in the concrete. Standby vibrators in good condition shall be readily available if needed during concrete placement. Such equipment shall be fully capable of obtaining results and operating reliably and effectively with a concrete mix that is not excessively oversanded or high in slump and may occasionally be of lower slump than intended.

Consolidation of concrete in tunnel lining shall be by immersion type vibrators and by form vibrators. Form vibrators shall be rigidly attached to the forms and shall operate at speeds of at least 8,000 vpm when vibrating concrete. Form vibrators shall be operated at successive locations not more than 4 feet apart, closely behind the advancing slope of concrete in the sidewalls and shoulders of the arch. The location of form vibrators at the crown, position of the end of the discharge line, operation of vibrators, discharge of concrete, and withdrawal of the discharge line shall be coordinated so as to obtain maximum filling of the crown with concrete and so as to avoid settlement and flow of concrete from the filled crown due to improperly positioned and timed vibration.

Concrete in the longitudinal construction joints of the tunnel invert shall be consolidated to the face of the excavated surface.

Where concrete is placed using slipforms, the concrete shall be vibrated immediately ahead of the form.

M. Repair of Concrete

Imperfections in concrete shall be repaired where directed. The Contractor shall notify the Owner of the start of repair work at least 4 hours in advance thereof and shall repair concrete only in the presence of the Owner, unless inspection of such repair work is waived.

Workmanship methods, preparation of concrete for repair, materials, and curing shall be as approved. Only workmen skilled in the repair of concrete shall perform such work. Procedures of the Bureau of Reclamation Concrete Manual, 7th Edition, Chapter VII, shall be followed, except that edges shall be prepared by sawing and except that epoxy shall be used as a bonding medium. The use of epoxy mortar will be permitted only upon specific approval of the Owner. Surfaces against which repairs are to be made shall be clean.

Epoxy shall conform to and be used in accordance with Specification 681-80-43 of the California Division of Highways or Federal Specification MMM-G-650 a, Type I or II, Grade B. Surfaces to which concrete is to be bonded shall be clean and dry when coated with epoxy.

Surfaces of repairs which will be exposed to view shall blend inconspicuously with surrounding concrete surfaces.

Fins and encrustations shall be removed from surfaces which will be exposed to view.

All repairs shall be cured in the manner specified for the concrete and shall be sound and free from shrinkage cracks and drummy areas after they have been cured and have dried 30 days.

N. Finishes and Finishing

1. General - Allowable deviations from established lines, grades, and dimensions are set forth below. These allowable deviations are defined as "tolerances" and are to be distinguished from surface irregularities in finish as described herein. The classes of finish and the requirements for finishing concrete surfaces shall be as specified in this paragraph and as shown in the Finish Schedule below.

Finish Schedule

| Location | Finish |
|---|---|
| Powerhouse and Elevator Shaft | |
| Exposed Walls, Beams, Girders & Ceilings | F2 |
| Floors, Inside | U3 |
| Deck, Outside | U2 |
| Tops of Walls, Outside | U2 |
| Draft Tube | F3 & U3 |
| Surfaces Covered By Second Stage Concrete | F1 & U1 |
| Air Vent Shaft Junction Lining and Air Vent Surface Structure | F2 & U2 |
| Pullboxes | F2 & U2 |
| Switchyard Footings | F2 & U2 |
| Stair Treads | U3 Plus Brooming |

Finishing of concrete surfaces shall be performed only by skilled workmen. Unless inspection is waived in each specific case, finishing of concrete shall be performed only in the presence of the Owner. Concrete surfaces will be tested by the Owner to determine that surface irregularities are within the limits hereinafter specified.

Surface irregularities are classified as "abrupt" or "gradual". Offsets caused by displaced or misplaced form sheathing or lining or form sections, or by loose knots in forms or otherwise defective form lumber will be considered abrupt irregularities, and will be tested by direct measurements. All other irregularities will be considered to be gradual irregularities, and will be measured as the departure from the testing edge of an approved 10 foot template held parallel to and in contact with the surface. The template shall consist of a straightedge or the equivalent thereof for curved surfaces.

2. Formed Surfaces - The classes of finish for formed concrete surfaces are referred to by symbols F1, F2 or F3. No sack rubbing or sandblasting will be required on formed surfaces. No grinding will be required on formed

surfaces other than that necessary to reduce protrusions to specified limits, except for F3 finish.

If the removal of the ends of form ties results in recesses larger than 1/4 inch in diameter or in the minimum dimension, the recesses shall be filled with drypack or epoxy mortar, except that filling recesses in Finish F1 surfaces will be required only where the recesses are deeper than 1 inch in walls less than 12 inches thick or if unfilled recesses could reduce the required cover over reinforcement. Materials and methods used in filling recesses shall be in accordance with the procedures described in Chapter VII of the Bureau of Reclamation Concrete Manual, 7th Edition. Form tie holes shall be cleaned before they are filled. The filled recesses shall blend inconspicuously with the surrounding concrete surfaces on concrete that will be exposed to view. The classes of finish and their applications are as follows:

Finish F1 - Finish F1 applies to formed surfaces against which fill material or concrete is to be placed and unexposed concrete. Treatment of surfaces will not be required after form removal except for repair of defective concrete, filling of tie holes in unexposed concrete, and the specified curing. Correction of surface irregularities will be required for depressions which exceed 1 inch when measured as described above. Abrupt surface irregularities to which premolded joint filler is to be applied shall not exceed 1/8 inch.

Finish F2 - Finish F2 applies to all formed surfaces not permanently concealed by fill material or concrete or not required to receive Finish F3. Surface irregularities, measured as described above shall not exceed 1/4 inch for abrupt irregularities and 1/2 inch for gradual irregularities.

Finish F3 - Finish F3 applies to all surfaces of the draft tube. "Pits" in the invert of the draft tube shall be filled. Any irregularities transverse to the direction of the flow of water either gradual or abrupt which exceeds 1/8 inch shall be ground smooth such that the slope of the lining measured parallel to the longitudinal centerline of the tunnel shall not exceed 1 inch in 12 inches. Gradual irregularities parallel to the flow of water shall not exceed 1/4 inch and the slope of any such irregularity shall not exceed 1 inch in 12 inches. Abrupt irregularities parallel to the flow of water shall not exceed 1/8 inch. Any abrupt irregularity which exceeds 1/8 inch shall be reduced to not more than 1/8 inch by grinding the surface uniformly at a rate of 1 inch in 12 inches. Holes caused by

removal of form ties shall be filled with drypack flush with the surrounding surfaces.

3. Unformed Surfaces - The classes of finish for unformed concrete surfaces are referred to by Symbols U1, U2, or U3. Exterior surfaces shall be sloped for drainage where shown on the Drawings or directed. Exterior surfaces which otherwise would be level shall be sloped for drainage. Unless the use of other slopes or level surfaces is indicated on the Drawings or directed, narrow surfaces, such as tops of walls and curbs, shall be sloped at least 1/2 inch per foot of width; broader surfaces, such as walks, platforms, and decks shall be sloped approximately 1/4 inch per foot. These classes of finish and their applications are as follows:

Finish U1 - Finish U1 (screeded finish) applies to unformed surfaces that will be covered by fill material or by concrete. Finish U1 is also used as the first stage of finishes U2 and U3. Finishing operations shall consist of sufficient leveling and screeding to produce even uniform surfaces. Surface irregularities, measured as described above shall not exceed 3/8 inch.

Finish U2 - Finish U2 (floated finish) applies to unformed surfaces not permanently concealed by fill material or concrete, or not required to receive finished U1 or U3. Finish U2 is also used as the second stage of finish U3. Floating may be performed by use of hand or power-driven equipment. Floating shall be started as soon as the screeded surface has stiffened sufficiently, and shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture. If finish U3 is to be applied, floating shall be continued until a small amount of mortar without excess water is brought to the surface, so as to permit effective troweling. Surface irregularities, measured as described above shall not exceed 1/4 inch.

Finish U3 - Finish U3 (troweled finish) applies to inside floors. When the floated surface has hardened sufficiently to prevent excess of fine material from being drawn to the surface, steel troweling shall be started. Steel troweling shall be performed with firm pressure, such as will flatten the sandy texture of the floated surface and produce a dense uniform surface, free from blemishes and trowel marks. Brooming shall be applied when required by the Owner. Surface irregularities, measured as described above shall not exceed 1/4 inch.

4. Moisture Control Provisions For Unformed Surfaces - During or immediately following finishing operations in

warm, dry or windy weather the surface of the concrete shall be fog sprayed, covered tightly with white polyethylene sheet, or otherwise treated as approved to inhibit loss of moisture. Fog spraying shall maintain a sheen of moisture on the concrete surface without displacement of cement and without causing a wet surface where floating or troweling is being done. Interruption of moisture control provisions for the work of the finishers shall be only for short periods of time and in the immediate area in which they are working. As the concrete hardens, usual water curing methods may be substituted but the surface shall be kept wet during the change in curing methods.

Any plastic shrinkage cracks appearing before the concrete hardens shall be closed immediately by proper working of the concrete. Covering cracks by troweling only will not be permitted.

O. Protection

Fresh concrete shall be protected from any injurious action of sun, wind, rain, flowing water or freezing. When placed during cold weather the concrete temperature shall be maintained at 45°F or more for not less than 72 hours after placement. Thereafter the concrete shall be protected against freezing until the end of the specified curing period. Where artificial heat is employed, special care shall be taken to prevent the concrete from drying.

P. Curing

1. All newly placed concrete shall be cured as described below. All floors, including the base course of two-course floors and topping shall be cured by the water curing method for at least 7 days. Horizontal construction joints shall be cured by the water curing method for at least 7 days.

Formed concrete may be cured by the form curing method for a minimum of 5 days or by the curing compound method.

Concrete which is to be painted later and which is to be cured by the curing compound method shall have the "bug-holes" and other defects filled before application of the curing compound. The curing compound which is used shall be compatible with the paint which is to be applied later.

Concrete which is not to be painted and which is to be cured by the curing compound method shall be coated with white pigmented or clear curing compound. Concrete which will be exposed to the sun shall be coated with

white pigmented curing compound unless the Owner directs the use of clear curing compound in locations where the appearance of the white pigmented curing compound might be objectionable later. At other locations, the Owner may direct the use of either compound.

2. Water Curing Method - The concrete shall be kept continuously and completely wet by the application of water for a minimum period of 7 days after the concrete has been placed. Cotton mats, rugs, carpets, burlap or sand or earth blankets or plastic or Sisalkraft coverings may be used to retain the moisture during the curing period. Water shall be applied so that the surface is kept continuously wet and not washed or damaged by the application of the water.

3. Form Curing Method - Formed surfaces of concrete may be cured by leaving the forms in place a minimum of 5 days. The forms shall not be loosened during this period. Exposed concrete in the same placement, such as the tops of walls, shall be cured by other methods.

4. Curing Compound Method - Surfaces shall be sprayed with a curing compound. The curing compound shall be applied to damp but not wet concrete. Application shall be made after the water sheen disappears. The concrete shall be kept damp between finishing or removal of forms and application of the curing compound. The curing compounds shall be applied by spray equipment at the rate of not more than 200 square feet per gallon to provide a uniform, continuous film without runs, sags, thin areas, skips or holidays. Curing compounds containing pigments shall be thoroughly mixed before application and thinning of curing compounds will not be permitted. Any repairs to the concrete or filling of "bugholes," where required, shall be done before the application of the curing compound, however, the concrete shall be kept damp during this period. Any areas of damaged curing compound shall be recoated after wetting the concrete.

Q. Tolerances For Concrete Construction

Permissible surface irregularities for the various classes of concrete surface finish, specified above, are defined as "finishes", and are to be distinguished from tolerances as described herein. The intent of this Article is to establish tolerances that are consistent with modern construction practice, yet governed by the effect that permissible deviations will have upon the structural action or operational function of the structure. Deviations from the established lines, grades, and dimensions will be permitted to the extent set forth herein.

Where tolerances are not stated in the specifications or drawings for any individual structure or feature thereof, permissible deviations will be interpreted in conformity with the provisions of this article. Concrete work that exceeds the tolerance limits specified herein will be subject to rejection and shall be corrected or removed and replaced, as ordered.

1. Thickness of Tunnel Lining - The thickness of the tunnel lining measured between the face of the tunnel lining and pay line shall not be more than 1/2 inch less than the thickness shown on the Drawings.

2. Tolerances for Powerhouse, Draft Tube, Tailrace Tunnel and Surge Chamber, Air Vent Surface Structure, Tunnel Portal and Elevator Shaft.

Variation from the plumb:

In the lines and surfaces of columns, piers, walls and in arrises:

| | |
|---|---|
| In 10 feet | 1/4 inch |
| In any story or 20 foot maximum | 3/8 inch |
| In 40 feet or more | 3/4 inch |

For exposed corner columns, lintels, sills, parapets and other conspicuous lines:

| | |
|---|---|
| In any bay or 20 foot maximum | 1/4 inch |
| In 40 feet or more | 1/2 inch |

Variation from the level or from the grades indicated on the drawings:

In floors, ceilings, beam soffits, and in arrises:

| | |
|---|---|
| In 10 feet | 1/4 inch |
| In any bay or 20 foot maximum | 3/8 inch |
| In 40 feet or more | 3/4 inch |

Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions:

| | |
|---|---|
| In any bay or 20 foot maximum | 1/2 inch |
| In 40 feet or more | 1 inch |

Variation in the sizes and locations of sleeves, floor openings, and wall openings 1/4 inch

Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:

| | |
|---|---|
| Minus | 1/4 inch |
| Plus | 1/2 inch |

Footings:

Variation in dimensions in plan:

| | |
|---|---|
| Minus | 1/2 inch |
| Plus | 2 inches |

Misplacement or eccentricity:

2 percent of the footing width in the direction of misplacement but not more than 2 inches

Variation in steps:

In a flight of stairs:

| | |
|---|---|
| Rise | 1/8 inch |
| Tread | 1/4 inch |

In consecutive steps:

| | |
|---|---|
| Rise | 1/16 inch |
| Tread | 1/8 inch |

3. Tolerances for Placing Reinforcement Steel

Variation from indicated protective cover:

| | |
|---|---|
| For 2-inch cover | 1/4 inch |
| For 3-inch cover | 1/2 inch |

Variation from indicated spacing 1 inch

8.3 MISCELLANEOUS REQUIREMENTS

A. Grout, Drypack Mortar or Concrete

Miscellaneous grout, mortar or concrete used for repairs, grouting unfilled space in the crown of tunnel lining, fill under base and sole plates, fill around gate guides and at other similar and comparable locations shall be proportioned suitably for the intended use and as approved by the Owner. When directed by the Owner expansive grout, mortar, or concrete containing aluminum powder or proprietary "non-shrink grouts" such as "Embeco 636" or "5-Star Grout" or equivalent grouts shall be used. The Owner will determine the equivalency of proposed grouts by test. Such proprietary materials shall be used in accordance with the

manufacturer's and Owner's directions. When aluminum powder is used in grout, mortar or concrete, the grout, mortar or concrete shall be confined to prevent free expansion. The amount of aluminum powder shall be determined by trial mixes using the materials and at the conditions to be encountered in the work and shall be the amount necessary to produce 3 to 5 percent free expansion. The material shall be in place within 45 minutes after it is mixed when aluminum powder is used. Aluminum powder shall not be used in dry pack or dry tamp mortar.

Drypack mortar shall consist of a mixture (by volume) of 1 part cement to 2-1/2 parts of sand with gradation such that 200 percent shall pass the No. 16 sieve. Only enough water shall be used to produce a mortar, which when used, shall stick together on being molded into a ball by a slight pressure of the hands, and shall not exude water but leave the hands damp. The proper amount of mixing water and the proper consistency shall be that which produces a filling which is at the point of becoming rubbery when the material is solidly packed. Any less water will not make a sound, solid pack; any more will result in excessive shrinkage and a loose repair. Drypack shall be packed in layers. Each layer shall be solidly compacted over its entire surface by the use of a hardwood stick and a hammer. Drypack shall have a minimum 28 day crushing strength of 4,000 pounds per square inch. Before incorporating drypack in the work, test cubes shall be submitted for test by Owner.

B. Embedded Items

Anchor bolts, inserts, metal frames, stair nosings, parts of equipment, drains, conduit, form anchors, and all other embedded items shall be accurately positioned and firmly and securely fastened in place before placement of concrete. All such items shall be free from oil, paint, dirt and loose coatings or rust. Threads of bolts shall be protected. Particular care shall be taken to observe the degree of accuracy required for proper embedment of all members connecting to gate frames, gate structures, turbine parts and other equipment.

C. Polyvinyl Chloride Waterstop

Polyvinyl chloride waterstop shall be installed at the locations shown on the Drawings. Special splice joint fittings shall be used where these are available from the manufacturer of the waterstop used. Splicing shall be performed by heat sealing the adjacent surfaces in accordance with the manufacturer's recommendations. A thermostatically controlled electrical heat source sufficient to melt but not char the plastic shall be used to make all splices. The waterstop shall be installed with approximately one half the width installed on each side of

the joint. Care shall be taken in placing and vibrating the concrete to insure complete filling around the waterstop. If waterstops are out of position or shape or incompletely embedded, they shall be considered defective and the surrounding concrete shall be removed, the waterstop reset, and the concrete replaced as directed. After embedding one half the waterstop, the exposed half shall be covered to protect it from the sun and the elements. Reinforcing bars if used to support the waterstop, shall be secured in position by the use of spacers, supporting wires or other supporting devices.

D. Metal Waterstops

Metal waterstops shall be installed in the horizontal construction joints of the powerhouse. Metal waterstops shall be set straight and continuous. All joints shall be welded the full width of metal strip. Adequate provisions shall be made to support and protect the waterstops during progress of the work. The Contractor shall replace or repair damaged metal waterstops.

E. Expansion Joint Filler

Expansion joint filler shall be used at locations shown on the Drawings. The filler shall be cut to completely cover the joint and to fit around all openings. All joints in the filler material shall be tight so that mortar will not seep through to the opposite surface. The filler shall be fastened to the concrete surface with a suitable adhesive recommended by the manufacturer. The use of nails will not be permitted.

F. Blockout Concrete

Blockouts for embedded metal for draft tube bulkheads and at other locations shown on the Drawings shall be filled with concrete as required. Forms for the blockout concrete shall be substantially built to confine the concrete to the required lines and grade. Concrete mixes used shall be appropriate for the placing conditions encountered and as approved by the Owner. Where appropriate and where the contrete can be confined, aluminum powder shall be used in an amount to produce 3 to 5 percent free expansion in the concrete. Concrete surfaces against which blockout concrete is to be applied shall be clean as outlined in paragraph 8.2K. Where blockout concrete is to be applied to horizontal construction joints and at other locations where possible, epoxy shall be used as a bonding medium as outlined above.

G. Backfill Concrete

In overexcavated areas outside the work lines, the use of backfill concrete may be required by the Owner where this can be appropriately done. Backfill concrete shall be used for encasing the electrical cable ducts in the relocated trench. Backfill concrete will be proportioned by the Owner for a strength of 2000 psi at 28 days. Backfill concrete shall be cured with water where other concrete is expected to bond to it.

+ + + END OF PART CI, SECTION VIII + + +

# PART CI - CIVIL AND ARCHITECTURAL

## SECTION II

## EXCAVATION

APPROVED
IDAHO DEPARTMENT OF WATER RESOURCES
12/16/76
DATE ADMINISTRATOR, OPERATIONS DIVISION

### 2.1 SCOPE

The work covered by this section consists of furnishing all plant, labor, materials, equipment and performing all operations necessary to accomplish the required excavation for the Project. Excavation for non-permanent features, such as aggregate borrow or excavation for temporary access, are included in other sections.

Excavation includes all related work such as safety, demolition, protection of existing facilities, scaling, removal, hauling, dumping, clean-up, and dressing disposal areas.

### 2.2 LINES, SLOPES AND GRADES

Excavation shall be performed to the lines described on the Drawings or as modified in writing by the Owner. The Owner may direct that excavation be carried to suitable foundation material.

Excavation techniques used shall produce sound rock surfaces, when in contact with concrete, and neat appearing surfaces when permanently exposed. The review of proposed excavation techniques by the Owner does not release the responsibility of the Contractor to achieve sound rock surfaces.

### 2.3 EXPLOSIVES & BLASTING

The Contractor shall maintain a record for storage and withdrawal of explosive stocks and detonators. The inventory record shall be subject to inspection at all times. The Contractor shall provide such reasonable and adequate protective facilities as may be necessary to prevent loss and theft of explosives and to minimize hazards of subversive action or sabotage. Loss or theft of explosives shall be reported to the Owner immediately. Overnight storage of explosives and detonators outside of the magazine will not be permitted. Only qualified personnel shall be permitted to handle explosives.

Because of the close proximity of existing operating electrical units, the Contractor shall use non-electric blasting techniques for all blasting.

Explosives shall be used in such quantity and strength that the blasting will minimize opening of seams and disturbance to the rock outside the prescribed limits of excavation. As the powerhouse excavation approaches its final limits, the depths of holes for blasting and the amount of explosive used for each hole shall be reduced so that the underlying or adjacent rock will not be disturbed or shattered. The final excavations shall be by means of pneumatic tools, barring and wedging or other methods exclusive of blasting.

## 2.4 VIBRATION CONTROL

The required excavation is immediately adjacent to an operating hydroelectric powerplant and any work by the Contractor shall not affect the operation of the existing facility. Ground motion from any activity by the Contractor shall be limited to values described below.

The Contractor shall submit for review and exceptions his proposed methods and sequence of blasting for all excavation. Additionally, the Contractor shall furnish information on date, time, amount and type of explosives, number and depth of drill holes, stemming and number of delays, distance of shot to nearest critical structure, and the corresponding seismograms.

The Owner's review and exceptions shall not be construed to relieve the Contractor of his responsibility to protect existing facilities and guarantee the continuous operation of the plant. Any damage done to the existing facilities by the Contractor's operations shall be repaired.

The Owner will install sensing devices at each of the existing generating units for the purpose of detecting malfunction of the units due to excessive vibration from blasting operations.

The Contractor shall provide five SPRENGNETHER VS-1200 recording seismographs or approved equal and shall install them at locations as directed. It is expected that two seismographs will be installed in the existing Unit No. 4 bay during all blasting operations near this bay. A third shall be installed at the Power Intake. The remaining seismographs shall be installed at other places as directed by the Owner. The Owner will operate and monitor the seismographs and will make observations of the ambient vibration level prior to blasting operations by the Contractor.

The Contractor shall develop by trial a blasting technique which limits the vibrations at the existing units to an acceptable value. For this purpose, the Contractor shall perform trial rounds varying the burden, drill pattern, hole

depth, explosive type and quantity, blasting sequence and delay pattern.

This blasting technique shall be developed during the early phases of excavation and shall then be applied, and improved upon if required, to maintain vibration control throughout the balance of the excavation under this Contract.

The Contractor shall initially limit the vibrations to a peak particle velocity of two (2) inches per second as measured by the seismograph closest to the blast. If the Owner determines in the course of excavation that a higher peak particle velocity can be tolerated without undue influence upon the existing units or damage to the rock or concrete structures, a higher limit will be specified.

## 2.5 EXCAVATION CLASSIFICATION

Excavation is classified by location and does not carry a specific designation as to rock or soil type.

## 2.6 POWERHOUSE AND SLOPE EXCAVATION

The Contractor shall plan all excavation operations so that truck traffic by the Owner can be maintained at all times across the deck at El. 1852 between Unit No. 4 and the excavated face for Unit No. 5.

The following paragraphs are indicative of the degree of care necessary to protect existing facilities from direct damage by flying rock and direct damage from vibration. In addition, the Contractor is responsible to reduce dust generated by his operations to a level that will leave the existing generating facilities unaffected.

### A. Flying Rock Barrier

A 2-inch, No. 11 gage chain link mesh steel protective net shall be strung over the area on cables so that flying rock or pebble sized fragments are prevented from damaging the existing facilities. This barrier shall act as a redundant safety feature only, as blasts shall be planned to thoroughly minimize or delete the possibility of flying fragments.

### B. Line Drilling

The periphery of the powerhouse and draft tube excavation shall be accurately line drilled with closely spaced holes. The size and spacing of drill holes to yield optimum results shall be developed in early stages of excavation and shall be adjusted as required to obtain satisfactory excavated faces throughout the remainder of the work.

C. Blast-Energy Direction

In general, blasts shall be directed away from the existing facility by sequencing the excavation process and by the proper use of timed delays in the blast circuit.

Prior to excavation of the powerhouse block, the Contractor shall raise a small shaft from the existing diversion tunnel to provide energy relief for successive blasts.

D. Other Techniques

None of the general criteria mentioned above shall operate to restrict the ingenuity of the Contractor in effectively preventing damage to existing facilities. Alternative methods will be given consideration when they are supported by previous experience and can be demonstrated to yield equal or superior performance.

2.7 SLOPE EXCAVATION

The excavation along the existing slopes above El. 1852 shall be performed to the lines and grades shown on the Drawings and these slopes shall then be cleaned and stabilized as specified in SECTION III, SLOPE STABILIZATION AND PROTECTION, prior to performing any excavation for the powerhouse below El. 1852.

2.8 REMOVAL OF EXISTING CONSTRUCTION

A. Demolition of Adjacent Powerhouse Concrete

The plans show access areas connecting the new unit No. 5 bay with the existing unit No. 4 bay. Work under this section shall include the removal of concrete to the lines specified together with any other materials embedded in or attached to the concrete and disposal of the removed material at designated areas.

Materials removal and clean-up of the area shall be in strict accordance with the general protection provisions for the existing units, including dust control. However, no blasting will be permitted for this work and removal shall be by drills, hydraulic tools, wedges, jackhammer impact, or torches. Care shall be exercised to prevent damage of surfaces beyond the designated lines.

At both El. 1830 and El. 1816 the Contractor shall provide two temporary barrier walls between the existing structure and the new structure. The walls shall be of stud and exterior plywood grade sheeting construction and shall be separated to provide a chamber. Each wall shall be equipped with a pair of solid core flush doors set in a 6 foot wide by 7 foot high opening. The walls nearest the new structure

shall be calked and sealed as required to be dust and weather tight. The temporary barriers shall be removed when directed.

B. Removal of Other Materials

The existing concrete deck at El. 1852 shall be removed to the lines shown on the Drawings or as directed. Concrete to be removed shall be separated from the concrete which is to remain by sawing through the section with a concrete saw. Where this cannot be done, the concrete to be removed shall be outlined by sawing to the maximum depth possible with a concrete saw and removed by the use of pneumatic tools or other means which will not damage the remaining concrete. Concrete which is removed shall be disposed of in designated areas.

Existing tunnel concrete lining and supports shall be demolished where required. The intake area also requires removal of the existing membrane construction to permit the tie-in with the new power tunnel.

A portion of the concrete in designated electrical cable pullboxes shall be removed by concrete saw and pneumatic tools which will not damage the remaining concrete. Concrete which is removed shall be disposed of in designated areas.

Removal shall include disposal to areas designated on the Drawings and clean-up. Care shall be exercised to avoid demolition beyond designated lines.

2.0 POWER TUNNEL EXCAVATION

Excavation of the power tunnel shall not begin before completion of the diversion tunnel plug immediately upstream of the powerhouse.

The Contractor shall install stop logs in the stoplog slots of the intake structure, shall lower the intake gate to the closed position and shall dewater the intake by pumping prior to holing through of the power tunnel. See SECTION XII for requirements of modification of Owner-furnished stoplogs.

As the power tunnel excavation approaches the existing intake structure, the depth of blast holes and the amount of explosive used shall be reduced to protect the intake structure and its vicinity from excessive vibrations and damage. The final excavation shall be by pneumatic tools or similar methods exclusive of blasting.

## 2.10 TAILRACE CHANNEL EXCAVATION

This item includes the excavation and removal of all material within the lines of the tailrace channel between Station 33+19.98 and Station 39+40.

The requirements of Paragraph 2.6 regarding a rock barrier, line drilling, and blast energy direction shall apply for tailrace channel excavation.

Care shall be taken in the excavation of the tailrace channel to prevent damage to the existing cable duct bank. Excavation in the immediate area of the existing duct bank shall be deferred until completion of the new duct bank and until notification by the Owner that excavation can proceed.

## 2.11 EXISTING DIVERSION CHANNEL CLEANUP

Work under this item, which is downstream of Station 39+40, includes removal of an existing pump stand and fish trap; removal of all material from the channel walls which the Owner determines to be potentially unstable; and removal of all gravel and boulders from the channel invert larger than 3 inches.

## 2.12 DRAINAGE ADIT EXCAVATION

The plans show the location and dimensions for an extension adit to the existing grouting and drainage gallery. Lining and special invert clean-up are not required.

## 2.13 POWER INTAKE AIR VENT EXCAVATION

The Contractor shall excavate the power intake air vent on an incline as shown on the Drawings by the raise-boring method. The excavated diameter shall be no larger than 60 inches. The pilot hole of the raise bore shall intersect the top of the power tunnel within a tolerance of one foot either way. At the intersection of the inclined air vent and tunnel, the Contractor shall excavate the existing concrete lining by pneumatic hammer and shall cut the reinforcing by burning as required from within the tunnel.

## 2.14 CABLE DUCT TRENCH AND PULLBOX EXCAVATION

All excavation for the relocated cable duct trench and pullboxes shall be as shown on the Drawings or as directed.

## 2.15 SCALING OF EXCAVATED SURFACES

All excavated surfaces shall be scaled of all material that is loose or will not safely stand. Periodic checking of previously excavated areas shall be made and scaling shall

be performed as required or directed to remove loose or unsafe pieces of rock which may develop.

## 2.16 STABILIZATION OF EXCAVATED SURFACES

A. General

The stabilization of existing and newly excavated surfaces above El. 1852 and those of the tailrace channel are described in SECTION III, SLOPE STABILIZATION AND PROTECTION. All other support of excavated surfaces shall be as described in this paragraph.

The Contractor shall stabilize excavations and support excavated surfaces by post-tensioned rockbolts, rock reinforcement, wire mesh, shotcrete, steel rib supports and other means as required during progress of the work.

Typical layouts of rock bolts and steel rib supports are shown on the Drawings, but variations from the typical layouts may be required by the Owner as excavation proceeds. Steel rib supports shall be used only where rock bolts cannot be used.

B. Materials

1. Post-Tensioned Rock Bolts - The rock bolts shall be the DYWIDAG single bar tendon and accessory parts including bearing plate, washers, and nuts as recommended by the manufacturer, Dyckerhoff and Widmann, Inc., 11526 Sorrento Valley Road, San Diego, Calif. 92121, or approved equal.

The Dywidag bolts shall have a minimum yield strength of 120 ksi and a minimum ultimate strength of 150 ksi. Bolt diameters shall be 1-inch. The length of bolts (uncoupled) will range from 4 to 20 feet.

The rock bolts shall be anchored and grouted using a polyester resin manufactured by CELTITE, Inc., P.O. Box 33024, Cleveland, Ohio 44133.

Lubricants and rust preventative coatings for rock bolts and accessories shall be as recommended and approved by both the bolt and grout manufacturer.

2. Rock Reinforcement and Accessories - Reinforcement bars shall be No. 11 size and shall conform to ASTM A615, Grade 60. Channel straps and plates shall be of steel conforming to ASTM A36 with holes for installation over tie-back reinforcement or for connection of chain link fabric. Hex nuts shall conform to ASTM A307, Grade B, heavy duty. Washers shall conform to ASTM A325,

quenched and tempered to a Rockwell hardness of C38 to C45.

Rock reinforcement shall be grouted using polyester resin manufactured by CELTITE, Inc.

3. Chain Link Fabric (Wire Mesh) - The chain-link steel wire fabric shall conform to the requirements of ASTM A392 "Zinc Coated Steel Chain Link Fence Fabric," 2 inch mesh, No. 9 gage. Woven wire mesh of the heavy duty type approved by the Owner as equivalent to the specified chain-link fabric will be acceptable.

4. Shotcrete - Portland cement, pozzolan, water, aggregate and admixtures used in the manufacture of shotcrete shall be as specified in SECTION VIII, CONCRETE.

5. Tunnel Steel Rib Supports - The Contractor shall furnish all structural steel supports consisting of steel ribs, lagging, collar braces or other spacers and other approved structural steel members, complete with bolts, clips, nuts, wedges, tie rods and other accessories required for assembling the structural steel support and for supporting them in place. Structural steel shape designations, weights and properties shall be in accordance with the Manual of Steel Construction AISC, Seventh Edition. The minimum size rolled shape for steel supports in the tunnel shall be a W shape section of 8 inch nominal depth and weighing not less than 28 lbs. per foot. Curved portions of the steel supports and invert struts shall be cold formed. Typical structural steel supports for the tunnel are shown on the Drawings.

The Contractor shall have on reserve on the site at all times at least ten complete sets of structural steel supports during tunnel construction unless otherwise directed.

All timber shall be grade stamped and be of No. 1 construction grade Douglas or Red Fir, Coast Region, or better, and conforming to the Standard Grading and Dressing Rules of the West Coast Lumber Inspection Bureau.

6. Additional Support - Nothing in these specifications shall prevent the Contractor from providing additional support he may consider necessary.

C. Installation

1. Post-Tensioned Rock Bolts

a. General - Unless approved otherwise, rock bolts shall be installed prior to drilling the next round of blast holes. Prior to ordering any rock bolts and accessories, the Contractor shall review with the Owner, the quantities and sizes of rock bolts to be ordered at any one time to assure adequate availability of bolts when required and to try to avoid a surplus of rock bolts and accessories upon completion of excavation. Unless otherwise required, the installation of rock bolts shall be in accordance with written recommendations of the bolt manufacturer, submitted to the Owner in advance of rock bolting.

b. Drilling Holes - The holes for rock bolt installation may be drilled with percussion drills. The diameter shall be 1-5/8" for holes 10 feet or less in depth. For holes greater than 10 feet in depth the diameter shall be 1-3/4". The length of holes shall be as required by the length of the bolt to be installed. Each hole shall be cleaned of all drill cuttings, sludge (particularly oily or bituminous substances), and debris by water or air and water immediately before CELTITE is inserted into the hole.

c. Inserting CELTITE - After the hole is cleaned and approved by the Owner, the CELTITE primary grout cartridge or cartridges used for the anchor shall be carefully inserted into the hole and pushed to the extremity of the hole. The secondary grout cartridges will be inserted behind the primary until the hole is filled according to manufacturer's recommendation.

d. Inserting Bolt - After the CELTITE has been properly placed in the hole, the rock bolt shall be inserted by rotating or spinning in order to break the cartridges and mix the contents. The primary grout cartridge or cartridges used to anchor the bolt at the end of the hole has a faster set time than the secondary grout cartridges used to firmly grout the remaining entire bolt length after the bolt has been stressed. The installation procedure shall cause no damage to the thread on the projecting end of the rock bolt. The threads shall project from the hole approximately 6 inches, sufficient for installing accessories and anchoring wire mesh. Only bolts which are clean of mill scale, loose rust, dirt and

other foreign materials shall be installed in the holes.

e. Installing Accessories - The bearing plate shall be placed over the projecting end of the bolt. Beveled washers shall then be placed as necessary to assure that the succeeding flat washer is at right angles to the axis of the bolt. A flat, hard steel washer shall be placed over the beveled washers, where used, and shall immediately precede the nut. The accessories should be compatible with the manufacturers' recommendation for the bolt used.

f. Greasing - Before installation, the threads of the rock bolts, the nuts and the washers shall be coated with grease or lubricant as recommended by the bolt manufacturer.

g. Torque - The nut shall then be placed on the projecting end of the bolt. It shall be free running on the threads of the bolt and shall be tightened by a controlled torque impact wrench to a maximum torque of 300 foot pounds, unless otherwise directed. Other methods of applying axial load or tensioning the bolt shall be as approved. The Contractor shall test the torque wrenches weekly or as directed to assure the accuracy of the applied torques. The torque shall be applied after the cartridges forming the anchor (primary grout) have set and before the slower setting cartridges (secondary grout) have hardened.

Any bolt which has been damaged or cannot be tensioned to the torque specified shall be replaced by and at the expense of the Contractor.

h. Protection - The Contractor shall ensure that grouted rock bolts are not loosened or disturbed in any way until the grout has set sufficiently to retain the stress in each bolt.

i. Embedment of Bearing Plates - Prior to placing concrete or shotcrete against rock surfaces supported with rock bolts, the exposed ends of the bolts, the bearing plates, nuts and other exposed metal surfaces shall be cleaned of all mill scale, loose rust, dirt, grease and other foreign materials as specified.

j. Painting - The surfaces of bevel washers, machine washers, nuts, bearing plates and headers for rock bolts which are not to be encased in concrete or mortar shall be painted with 2 coats of red lead priming paint before installation. Upon completion

of the installation of the rock bolts, any damage to the priming paint shall be repaired and 1 coat of semi-gloss enamel applied to the primed surfaces. The colors of paint used shall be as designated by the Owner to identify the lengths of bolt installed. A maximum of 6 different colors of semi-gloss enamel shall be supplied by the Contractor.

k. Pullout Test - For pullout tests, see Paragraph 2.d below.

2. Rock Reinforcement

a. General - Unless otherwise approved, rock reinforcement shall be installed prior to drilling the next round of blast holes. *

b. Drilling Holes - Holes shall be 2-1/4 inches in diameter and shall be drilled with percussion drills. Length, orientation and inclination shall be as shown on the Drawings or as directed by the Owner. Each hole shall be cleaned of all drill cuttings, sludge, and debris by water or air and water immediately before CELTITE is inserted into the hole.

c. Installing CELTITE and Reinforcement Bars - After the drill hole is cleaned, a sufficient number of cartridges to fully encapsulate the rebar shall be carefully inserted in the hole. Where voids are encountered in the rock, extra cartridges shall be added to provide additional resin to fill the voids. *

The rebar shall then be inserted in the hole at the rate of rotation and travel as recommended by the resin manufacturer. The Contractor shall promptly clean up any excess resin.

A rebar is unacceptable if after the end of the initial installation and spinning, the resin does not encapsulate the rebar to the hole collar. The Contractor shall use whatever means are necessary to fully encapsulate the remainder of the rebar. If the rebar is still unacceptable, an additional rebar will be placed in the immediate vicinity as directed by the Owner.

Resin-grouted reinforcement used as tie-backs shall be extended through the wall plate, channel straps or plates as shown on the plans. Beveled washers shall be placed as needed between the bearing surface and the nut to insure uniform bearing on the channel or plate. The nuts shall be tightened to approximately 75 ft. lbs. torque to provide an *

active tie-back force. If any tie-back nut becomes * 518
loose, it shall be re-tightened immediately. * 518

d. Testing of Rock Reinforcement - The Contractor shall 520
perform all testing of rock reinforcement as 521
specified and as required for the safe prosecution 522
of the work. The Contractor shall furnish at least 523
two sets of approved pull-out test equipment for use 524
in making these tests. Each set shall include a 525
hole gauge, a suitable hydraulic jack, means of 526
attaching the jack to the end of the rebar, an 526
extensometer, and all other required accessories. 526

Trial Test for Resin Grouted Rock Reinforcement - 528
Before the required rock reinforcement installations * 529
are begun, the Contractor shall make trial pull-out * 530
tests. The tests shall be performed in the Pilot 531
Bore using the Contractor's proposed rock 532
reinforcement bar and grouting material. There 533
shall be a minimum of two tests in each rock type. 533
The location and number of tests will be determined 534
by the Owner. The intent of this test is to 535
determine the bond strength of the resin anchor 535
within one hour after installation. Therefore, the 537
anchorage developed must be less than the yield 537
strength of the rebar. The rebar length shall be 8 538
feet. The tests shall be performed in the presence 539
of the Owner and the Contractor shall submit records 540
of each test to the Owner within 24 hours of the 540
test. 540

The proposed resin grout material for rock rein- 542
forcement must develop a minimum of 1875 pounds per 543
inch of anchorage to be acceptable. Anchor failure 545
will be determined to have occurred when the end of 545
the rebar has extended 0.6 inches. 545

In-Situ Rock Reinforcement Testing - The Contractor 547
shall conduct, throughout the course of the work, a 548
testing program, for testing the actual rock 549
reinforcement installations, while they are being 549
installed. The Owner will select 5 percent or 2 550
rock reinforcement bars, whichever is greater, from 550
the first group of bars installed in each type of 551
rock. The first group will be designated by the 552
Owner. The Contractor will conduct the required 553
pull tests on the selected bars. If the anchorage 554
of any bar fails to develop 3/4 of the yield 554
strength of the bar before the end of the rebar has 555
extended 0.3 inches, five additional bars shall be 555
selected by the Owner, from the same group for 556
testing. The five bars shall be tested to a maximum 557
of 3/4 yield strength of the bar. If the average of 558
the five test results is less than 2/3 the yield 558

strength of the bar, the Owner may reject the entire group of rock reinforcement bars and direct installation of additional bars as required. The Contractor may elect to test the remaining bars in the group to determine the acceptability of each bar. The additional bars installed shall be tested as a new group. During the installation of rock reinforcement, the Owner will select additional groups for testing, as described above, however, the number of groups selected for testing will not exceed one out of six providing satisfactory installation procedures are being achieved. The definition of a group, as used in this Specification, is those rock reinforcement bars installed in a localized area during an eight hour shift.

3. Chain Link Fabric (Wire Mesh)

a. Installation on Open Excavations - Chain-link steel wire fabric shall be draped over open excavations as shown on the Drawings and as directed. The chain-link fabric shall be attached to the top of the excavations by rock bolts or other approved methods. Sections shall be overlapped at least 6 inches and joined by hog rings or other approved methods.

b. Installation in Underground Excavations - In areas shown or as directed by the Owner, the Contractor shall attach chain-link fabric to the rock bolts. The fabric shall be placed over the installed rock bolts and drawn up tight against the rock surface by means of the nut and bearing plate. If fabric is added to previously placed rock bolts a second plate washer and nut shall be added on the outer thread of the rock bolts. Post-tensioned rock bolts shall not be relieved in stress for the purpose of adding fabric. The Contractor shall lap sections a minimum of 4 inches or one cross wire, whichever is the greater distance.

4. Shotcrete

Shotcrete work shall be done by the wet or dry process following ACI Standard 506, "Recommended Practice for Shotcreting." Shotcrete shall consist of portland cement, pozzolan, sand, coarse aggregate, water and admixtures. Wet shotcrete shall include a water reducing admixture. The Contractor shall provide any processing of aggregates or other materials to make them suitable for the equipment to be used. Where required, a non-chloride, non-caustic accelerator shall be used. At least 30 days prior to any shotcrete work, the Contractor shall make test panels using the equipment

and personnel who will be engaged in the work and with a range of trial mixes to determine the properties of the shotcrete from which the mixes to be used will be selected. Specimens for strength and other tests shall be cut by the Contractor from the test panels by sawing or coring as required by the Owner, for testing by the Owner. The average compressive strength of the mix selected shall be in excess of 3500 psi at 28 days. Where acceleration is required, the 8 hour compressive strength shall be in excess of 600 psi. Shotcrete shall be proportioned and batched by weight.

Shotcrete shall not be applied in any area until all blasting in or adjacent to the area has been completed unless otherwise approved by the Owner.

Surfaces that are to receive shotcrete shall be thoroughly cleaned of all loose material, mud and debris with an air-water jet operated at not less than 50 psi air pressure. Where satisfactory cleaning cannot be accomplished using the air-water jet, sand blasting shall be used. Large irregularities may be removed by blasting if required by the Owner. Seams of sand, clay or other soft or incompetent material shall be cut back to a depth at least equal to the width of the seams before shotcrete is applied.

Where steel mesh fabric has been installed on rock surfaces as specified above, the Contractor shall remove all loose material from the rock surfaces by removing and replacing the fabric as required by the Owner before any shotcrete is applied.

Immediately prior to applying shotcrete to surfaces, they shall be wetted and the surplus water drained off. Water on or emerging from surfaces to be covered with shotcrete shall be so controlled that at no time during the placement or setting of the shotcrete will such water mix with or wash or seep into the shotcrete.

Shotcrete shall be placed as soon as practicable after the excavation at any location has been completed. No shotcrete shall be placed when the ambient temperature is less than 40°F, or in the opinion of the Owner is likely to fall below this temperature, except when measures approved by the Owner have been taken by the Contractor to protect it against freezing.

The required amounts of materials for shotcrete used in dry mix equipment shall be thoroughly mixed for a period of at least 1-1/2 minutes and until the mixture is of uniform consistency, as determined by the Owner. Shotcrete used in wet mix equipment shall be thoroughly mixed for a period of at least 1-1/2 minutes prior to

use and any shotcrete which is not used within 40 minutes after initial mixing shall be wasted and the mixer washed out with clean water. Wet mix shotcrete shall not be retempered.

Shotcrete shall be applied to provide a dense, firmly adhering coating which shall be at no point less than the thickness specified. Each new layer shall be applied before the shotcrete in the preceding layer has set completely. Provided that no sloughing occurs, the Contractor will be permitted to build up the shotcrete layer to a maximum thickness of 2 inches in one continuous application, except that on near-vertical surfaces and on overhead surfaces the shotcrete shall be built up in separate layers thin enough that sloughing or sagging does not occur.

Rebound shall be kept clear of the shotcrete being placed and an air jet shall be provided for this purpose. The re-use of rebound materials will not be permitted. The Contractor shall take care at all times to prevent the shotcrete spray from coming into contact with any part of the Work not required to be covered with shotcrete.

Care shall be taken to avoid the formation of sand pockets in the placed shotcrete and any such pockets shall be cut out and replaced with new shotcrete.

Shotcrete will not be considered complete until the shotcrete layer has been built up to the thickness specified and until the fabric and supporting bolts or structural steel support is completely covered with shotcrete to a depth of at least 1 inch.

Shotcrete which fails to bond with rock surfaces or to conform to any of the specified requirements or which is damaged at any time during the performance of the Work shall be removed and replaced by and at the expense of the Contractor and to the satisfaction of the Owner. Hand patching will not be permitted.

Where shown on the Drawings or required by the Owner, the Contractor shall drill weep holes through the hardened shotcrete and into rock to relieve water pressure behind the layer of shotcrete. Such holes shall be drilled as soon as practicable after shotcreting.

Wherever drainage holes have been drilled into rock on which shotcrete is to be applied, the Contractor shall take all necessary measures to prevent such holes from being plugged by shotcrete. In the event that such a hole becomes plugged it shall be opened up by and at the expense of the Contractor, and if any hole cannot be

located after completion of shotcreting, it shall be replaced by another hole drilled by and at the expense of the Contractor in approximately the same location.

Construction joints, or day's work joints, shall be sloped off to a thin, clean, regular edge, at a 45 degree slope. Before continuing the adjoining work, the sloped portion of the existing shotcrete shall be thoroughly cleaned as necessary, wetted, and then scoured with an air jet.

Immediately after application of the final coat of shotcrete, curing compound shall be applied as specified in SECTION VIII, CONCRETE. Additional curing compound may be required to provide a complete and continuous membrane as determined by the Owner.

4. Tunnel Steel Rib Supports

Although typical layouts for the steel supports are shown on the Drawings, these are not to be construed as indicating exact dimensions or other details. Working drawings and manufacturer's data showing the support systems to be used in the tunnel shall be provided by the Contractor and approved by the Owner. No loaded tunnel support shall be allowed to deflect more than 2 inches inside the work line. Structural steel supports shall be installed true to the required lines and grades, blocked, braced, and wedged against the excavated tunnel surface, and shall be maintained by the Contractor in proper condition and alignment. Ribs shall be secured against movement or distortion by adequate steel tie members and compression struts. Any steel support placed improperly or damaged due to the Contractor's operation shall be repaired or replaced, by and at the expense of the Contractor, within 48 hours after notification by the Owner.

Steel supports shall be adequately blocked against firm or undisturbed ground in accordance with the best tunnel practice. The distance between adjacent centers of blocking points on a support shall not be more than 42 inches. Lagging shall be timber, or structural steel conforming to ASTM Designation A36. Sufficient timber, or steel lagging, shall be employed to prevent caving, runs or fall out of the ground. Adequate foot blocks shall be installed to minimize movement or settlement of the supports. In soft ground, or ground which becomes soft after exposure to air or water, blocking, lagging and foot blocks shall be checked often to limit any movement or settlement of supports. If invert struts are not required, the rib shall be anchored to the tunnel wall by rock bolting.

All timber for blocking and lagging that is to remain in place shall be well seasoned Douglas Fir, Standard (No. 1 Mining) in accordance with Standard Grading Rules of the WWPA. The amount of blocking and lagging used with the steel supports shall be that necessary to support safely the excavated surface of the tunnel. Lagging and blocking installed that is not necessary for direct support of excavated surfaces during the time of concrete placement shall be removed. All timber lagging and blocking within the work line shall be removed prior to concreting.

2.17 DRAINAGE, LIGHTING AND VENTILATION

The Contractor shall drain the underground areas of water as necessary to obtain satisfactory working conditions. He shall also light and ventilate the area during all construction operations to the approval of the Owner, and in conformance with the regulations of the State of Idaho or other governing agencies.

2.18 DISPOSAL OF EXCAVATED MATERIALS

Materials excavated by the Contractor and not required for other purposes shall be disposed of at locations designated on the plans or as approved. Spoil areas shall be left in a neat condition and graded to drain satisfactorily.

2.19 WORK LINES AND TOLERANCES

Excavation shall be performed as close as practicable to the work lines shown on the Drawings or established by the Owner. All necessary precautions shall be taken to preserve the material outside the work lines in the soundest possible condition. Excavation beyond the work lines performed by the Contractor for any purpose or reason, except as may be ordered in writing by the Owner shall be at the expense of the Contractor.

All material inside the work lines shall be removed by the Contractor except that:

1. Fillets of undisturbed rock, maximum dimension 6 inches, may be left in place at re-entrant corners of work lines.

2. Occasional projections of undisturbed rock will be permitted to extend within the work lines, provided that each individual projection does not exceed 5 inches in tunnels and shafts and 3 inches elsewhere. Rock projections are defined as occasional projections, when their cross section area as measured at the work line does not exceed 10 square feet in any 10 foot square area.

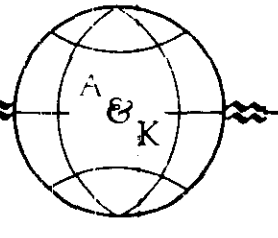
Should it be found necessary or advisable, during the progress of the work, to change the work lines of the excavations from those shown on the Drawings or established by the Owner, such changes shall be carried out.

+ + + END OF PART CI, SECTION II + + +

CONSULTING ENGINEER'S REPORT
on

# INSPECTION TO INSURE SAFE OPERATION

# PURSUANT TO FPC ORDER NO. 315




ANDERSON & KELLY
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Idaho Power Company

# BROWNLEE HYDROELECTRIC DEVELOPMENT

Project No. 1971

Prepared For
Idaho Power Company
Boise, Idaho




August 1968

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AREA CODE 208

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BOISE, IDAHO 83701

August 16, 1968

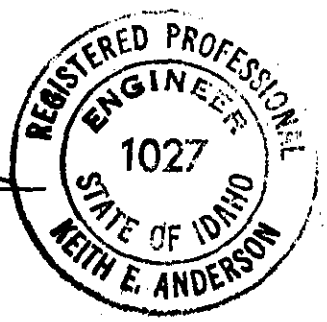
# C E R T I F I C A T E

The undersigned do hereby certify that they have prepared and are responsible for the consultant's report "Idaho Power Company, Brownlee Hydroelectric Development, Project No. 1971" dated August 1968; that the complete inspection and report were made pursuant to Federal Power Commission Order No. 315; that they personally prepared the report and performed, or were in direct charge of, the field inspections, studies, and other parts of the work; and they do further certify that the report has their approval.

ANDERSON & KELLY

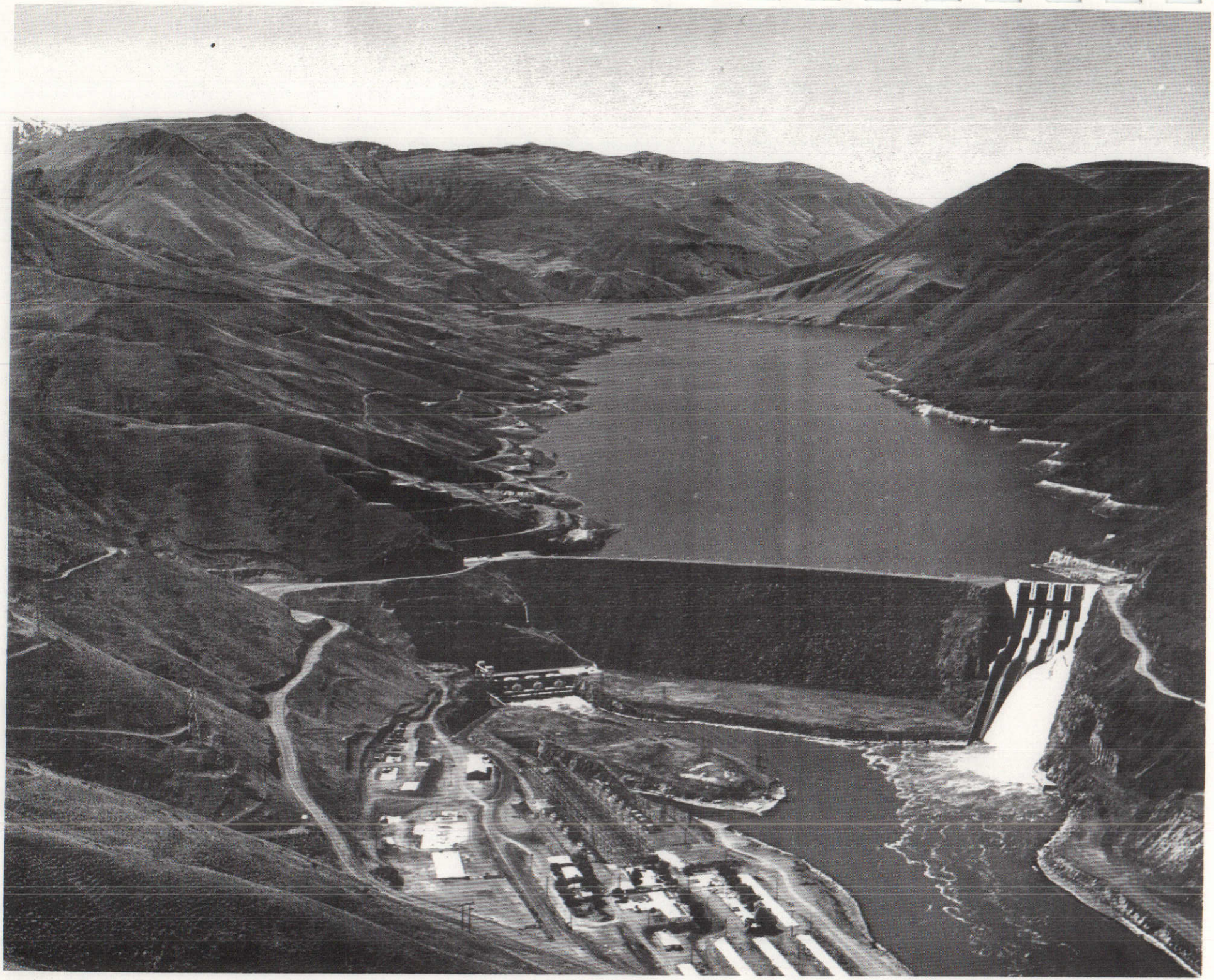
Keith E. Anderson

Keith E. Anderson, Partner
Consulting Engineer




Jack E. Kelly

Jack E. Kelly, Partner
Consulting Geologist



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# I

# DESCRIPTION OF PROJECT

## General

The Brownlee hydroelectric development of Idaho Power Company is part of the Hells Canyon development that consists of Brownlee, Oxbow and Hells Canyon Dams. The three projects are under Federal Power Commission License No. 1971, issued August 4, 1955. Brownlee Dam is located about 43 miles north of Huntington, Oregon and about 12 miles south of Oxbow Dam. It is the primary storage reservoir for the two downstream dams, containing about 1,000,000 acre-feet of usable storage. The Idaho (right) abutment is in Washington County and the Oregon (left) abutment is in Baker County. The project comprises a rockfill dam 395 feet high, a spillway with four gates at the crest and three low level gates, intake structure, four penstocks and powerhouse.

Full reservoir level is elevation 2077.0 feet and minimum water surface elevation is 1976.0 feet. Normal and maximum tailwater elevations below the powerhouse are 1800.0 and 1825.5 feet respectively. Four S. Morgan Smith reaction type turbines (128.6 rpm - 142,000 hp at 235 feet head) drive four Westinghouse umbrella-type outdoor generators each rated at 100,111 kva.

Significant physical data on the project are shown on the following table and the general arrangement of the project features are shown on the drawings in the Appendix.

## History

The Federal Power Commission approved the design drawings on November 3, 1955 and construction was started one week later. The construction proceeded at an accelerated rate and within 32 months the first unit went into operation. International Engineering Company, Inc. were the design engineers and Idaho Power Company supervised the construction. Construction of the dam and related works was by Morrison-Knudsen Company. The plant began operation in August 1958 and all units were in operation by January 1959. It has been in continuous service since that time.

## BROWNLEE HYDROELECTRIC DEVELOPMENT

### Tabulation of Significant Data

| | |
|---|---|
| Drainage Area | Approx. 72,800 sq. mi. |
| Rockfill Dam | |
| Length | 1380 ft. |
| Height | 395 ft. |
| Base width | 1650 ft. |
| Crest width | 35 ft. |
| Volume | 6,000,000 cu. yds. |
| Crest Elevation | 2090.0 ft. |
| Spillway | |
| Gates (32 ft. wide x 50 ft. high) | 4 |
| Low level gates (23 ft. x 23 ft.) | 3 |
| Maximum discharge capacity | 307,000 cfs |
| Intake and Penstocks | |
| Intake gates and penstocks | 4 |
| Penstock diameter | 24 ft. |
| Penstock length | 512 ft. |
| Maximum Headwater Elevation | 2077.0 ft. |
| Normal Tailwater Elevation | 1800.0 ft. |
| Maximum Gross Head | 277 ft. |
| Turbines (4) | |
| Rated Head | 235 ft. |
| Rated Capacity | 142,000 hp |
| Generators (4) | |
| Rated Capacity | 100,111 kva |
| Speed | 128.6 rpm |
| Maximum Generating Capacity | 450,000 kw |
| Transmission Lines | |
| Voltage | 230 kv |

II

# PROJECT GEOLOGY

## General

Brownlee Dam is located in an area of the Snake River Canyon where the flatlying basalt flows, which form the spectacular canyon walls, are well exposed. The geologic structure at the site is relatively simple, consisting of five thick Miocene Columbia River basaltic lava flows dipping about $13^{o}$W which form the easterly limb of a large syncline. Beds of fine-grained tuff a few inches to several feet thick are interbedded with the basalt. A few faults of small displacement, which are considered inactive, and a few igneous dikes cut through the basalt flows. Exploration drilling for the project started in 1952 and continued for several years.

## Dam Foundation

The left (Oregon) abutment of the dam is in fresh strongly jointed basalt that has been cut by one of the dikes. The rock is an excellent foundation and grouting during construction successfully sealed the joint system. The channel area consists of basalt overlain by about 100 feet of sand, gravel and boulders. The sloping clay core of the dam was placed on the basalt bedrock, while the main portion of the rockfill dam is founded on the river deposits. The artesian water encountered




Aerial view of Brownlee damsite showing geologic formations and earliest drill holes.

in the basalt beds during exploration and construction was successfully controlled by grouting. The right (Idaho) abutment also consists of strongly jointed basalt of excellent foundation characteristics.

Intake, Penstock Tunnels and Powerhouse

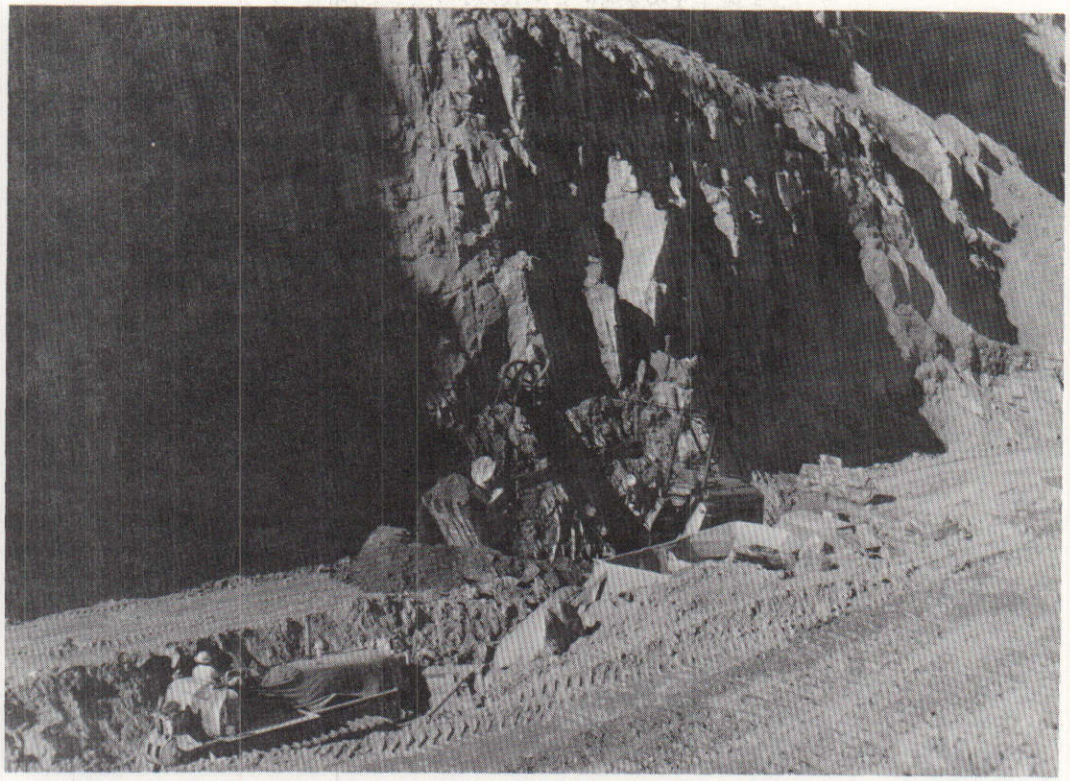
The construction of the power intake facilities required the excavation of massive quantities of rock for the intake channel. The basalt in this area is massive hard and of excellent quality for foundation, tunneling and the 1/4:1 slopes provided. The cut above the powerhouse, which has experienced only minor rockfalls, and the tailrace channel excavation attest to the excellent character of the rock.

Spillway

The spillway was excavated in a massive rock projection on the left (Oregon) side of the river. This required a cut more than 200 feet wide and 150 feet deep in the basalt. Photographs of the excavation during construction indicate the rock has excellent foundation characteristics for the concrete spillway structure.

Reservoir

The Brownlee reservoir extends 57.5 miles upstream to within 9 miles of Weiser, Idaho. This area of the Snake River Canyon has steep slopes, although not the spectacular nearly vertical



Excavation of unsuitable material along Oregon abutment in November 1956.



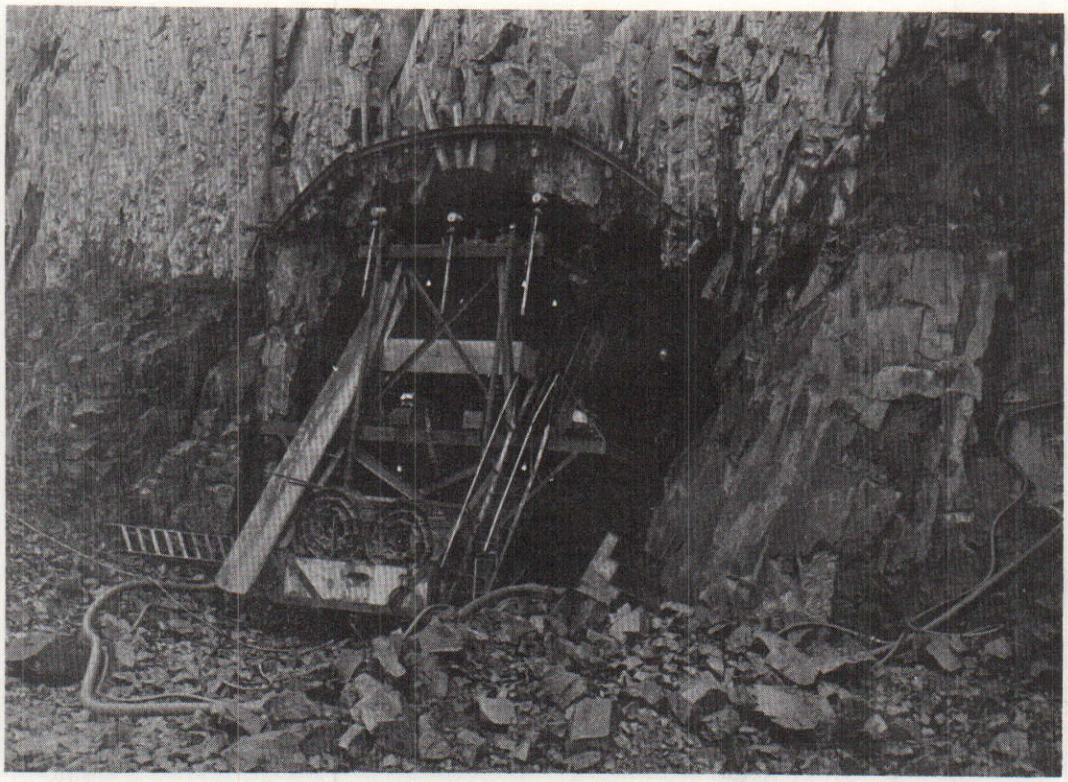
Core excavation and drilling of grout holes in November 1956.

walls of the lower reaches. The geology of the reservoir area consists of two general rock types; the massive nearly horizontal basalt flows and underlying older metamorphic or sedimentary rocks.

An aerial inspection of the reservoir indicates generally stable slope conditions, although three landslide areas were observed. The slide furthest upstream and the Powder River slides are both in the sedimentary-metamorphic rocks, which are more susceptible to landslides because of their deep weathering and composition. The slide nearest the dam is in an area of basalt. Slides in this geologic environment can be expected to be minor or shallow because of the massive horizontal bedding and general competent character of the rock. None of these slides represent a potential hazard to the project and are discussed under PROJECT INSPECTION.



Powerhouse excavation in February 1957.



Driving penstock tunnel in March 1957.

# III

# PROJECT HYDROLOGY

## General

The drainage area of the Snake River above the project is approximately 72,800 square miles with headwater tributaries in the higher mountainous areas of eastern and southeastern Idaho, western Wyoming and parts of northern Utah and Nevada. Thirteen major storage projects, as well as many smaller ones, are located upstream with a total storage capacity of about 8,500,000 acre-feet.

Annual maximum flows generally occur in the months of May and June but have occurred in the past during almost all months except late summer or early fall. The late spring and summer maximum flows result from snowmelt and the instantaneous peak discharge in usually very little more than flows of several days duration. Peak discharges from fall and winter rainstorms are often abrupt but usually of lesser magnitude than spring or summer snowmelt floods.

The reservoir created by the dam is 57.5 miles long, extending to about nine miles north of Weiser, Idaho. The total storage capacity is 1,470,000 acre-feet and contains 1,000,000 acre-feet usable storage.

The river in this reach is entrenched in a deep canyon and all significantly developed land areas are well above the elevation of the reservoir except in the uppermost reaches below Weiser.

Maximum Flows

Maximum historical flow of the Snake River in the vicinity of the project for the period 1910-1966 was about 120,000 cfs on March 3, 1910 at Weiser. The June 1894 flood is considered to have been considerably greater. Most annual peak discharges are smaller, usually less than 60,000 cfs (see tabulation). The maximum observed flow at Weiser for the period 1911-1966 was 84,500 cfs on April 29, 1952.

Construction of upstream projects over the past 50 years, which provide river regulation, has reduced flood potential and future planned projects, when built, will further reduce the flood potential.

The water right associated with the Brownlee power plant is for 30,000 cfs under priority dates of October 17, 1952 for 20,000 cfs and February 11, 1964 for 10,000 cfs.

MAXIMUM RIVER FLOWS
Brownlee Hydroelectric Development

(From U.S. Geological Survey Gaging Records)

| Water Year | Date | Peak Discharge | Water Year | Date | Peak Discharge |
|---|---|---|---|---|---|
| 1911 | June 21 | 67,200 cfs | 1946 | Apr 18 | 57,300 |
| 12 | June 15 | 73,800 | 47 | June 11 | 44,600 |
| 13 | May 31-June 4 | 66,500 | 48 | June 14 | 48,300 |
| 14 | May 25-26 | 51,000 | 49 | Mar 19 | 34,300 |
| 15 | Nov 11 | 28,600 | 50 | Apr 14 | 40,400 |
| 1916 | Mar 22 | 58,400 | 1951 | May 17 | 45,900 |
| 17 | May 28-29 | 69,400 | 52 | Apr 29 | 84,500 |
| 18 | June 24 | 62,400 | 53 | June 14 | 56,900 |
| 19 | Apr 5 | 53,800 | 54 | Apr 15 | 30,000 |
| 20 | May 24 | 36,800 | 55 | Apr 23 | 28,000 |
| 1921 | May 23 | 83,100 | 1956 | June 6 | 56,400 |
| 22 | May 27 | 67,100 | 57 | May 24 | 66,400 |
| 23 | June 13 | 41,500 | 58 | Apr 19 | 43,100 |
| 24 | Feb 19 | 28,900 | 59 | Sept 16 | 21,600 |
| 25 | Feb 6 | 63,100 | 60 | Apr 10 | 31,100 |
| 1926 | Feb 7 | 34,700 | 1961 | Feb 1 | 22,200 |
| 27 | June 17 | 56,300 | 62 | Feb 14 | 33,100 |
| 28 | May 12 | 62,300 | 63 | Feb 3 | 51,000 |
| 29 | Apr 15 | 31,300 | 64 | June 21 | 51,300 |
| 30 | Dec 17 | 21,100 | 65 | Dec 25 | 72,400 |
| 1931 | Mar 19 | 19,000 | 1966 | Mar 9 | 24,200 |
| 32 | Mar 20 | 53,300 | | | |
| 33 | June 13 | 39,500 | | | |
| 34 | Jan 3 | 20,500 | | | |
| 35 | June 3 | 24,300 | | | |
| 1936 | Apr 25 | 60,700 | | | |
| 37 | Apr 16 | 36,900 | | | |
| 38 | May 3 | 67,200 | | | |
| 39 | Mar 26 | 39,500 | | | |
| 40 | Apr 1 | 49,600 | | | |
| 1941 | June 9 | 28,000 | | | |
| 42 | June 1 | 44,300 | | | |
| 43 | Apr 21 | 69,300 | | | |
| 44 | June 17 | 37,000 | | | |
| 45 | June 14 | 44,100 | | | |

NOTE: Snake River gage at Weiser (about 66.5 miles upstream from dam near head of reservoir).

# IV

# PROJECT DESIGN

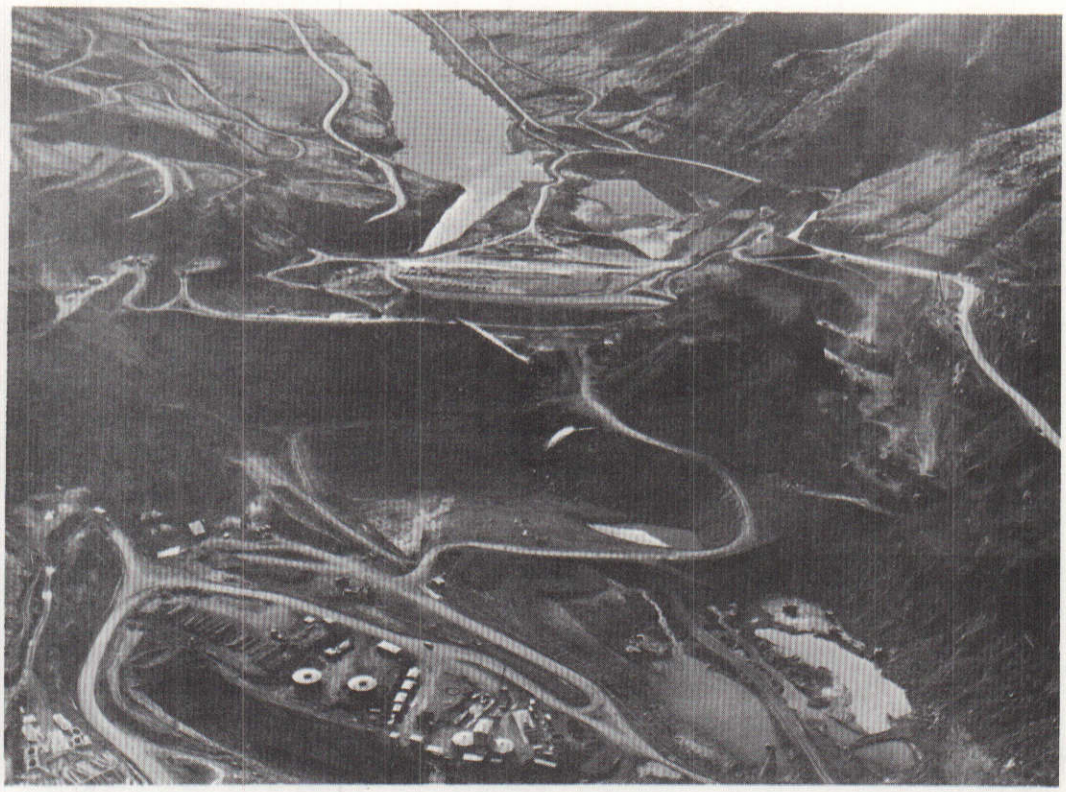
## General

The Brownlee Hydroelectric Development consists of a rock fill dam and associated power generating facilities. The dam is 395 feet high above the bedrock foundation and 1,380 feet long. The reservoir area, at full pool, has an area of 15,000 acres, extending about 57½ miles up the Snake River. The intake structure, penstocks, and powerhouse are located on the right side of the river in Idaho and the spillway structure is located at the left end of the dam in Oregon. The general orientation of the dam, spillway and powerhouse are shown on the attached drawings.

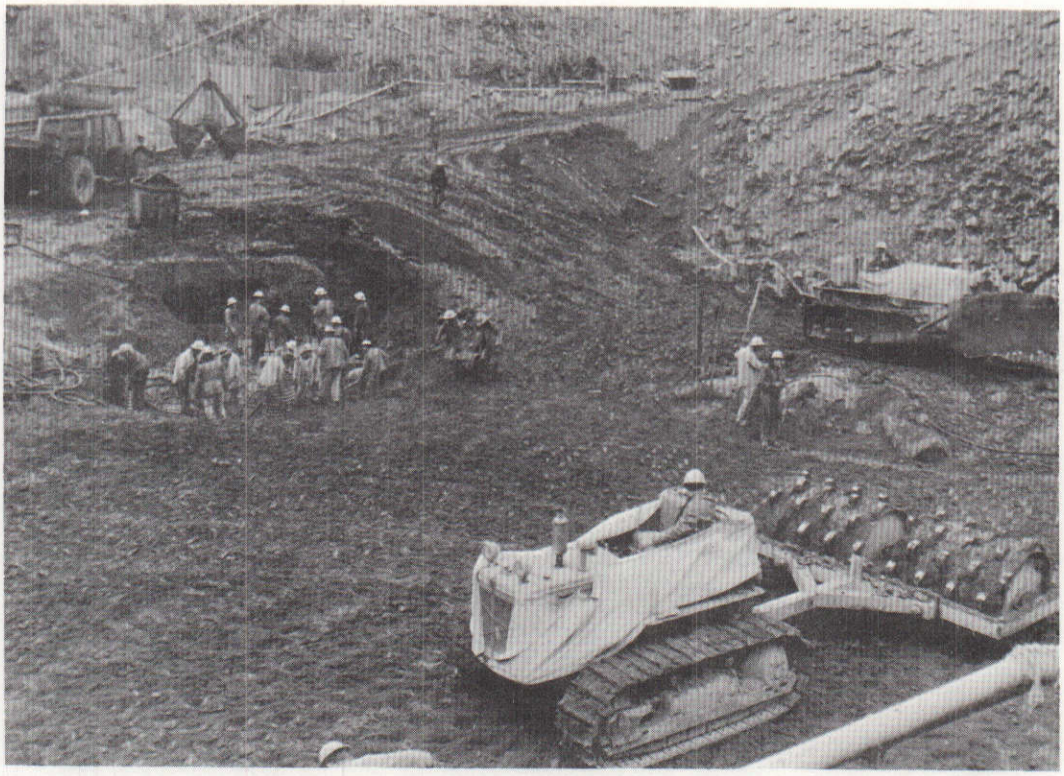
## Dam

The dam was constructed with a core trench excavated to bedrock under the sloping impervious clay core, with the adjacent filter materials and rock fill placed upon the original stream bed. The core trench was excavated to sound basalt bedrock and the rock beneath the core was grouted to form a grout curtain 150 feet deep.

Grout pressures of 200 to 300 pounds per square inch provided an effective grout curtain and at the same time stopped most



Aerial view of dam construction in October 1957, looking upstream.



Compacting clay core in January 1957

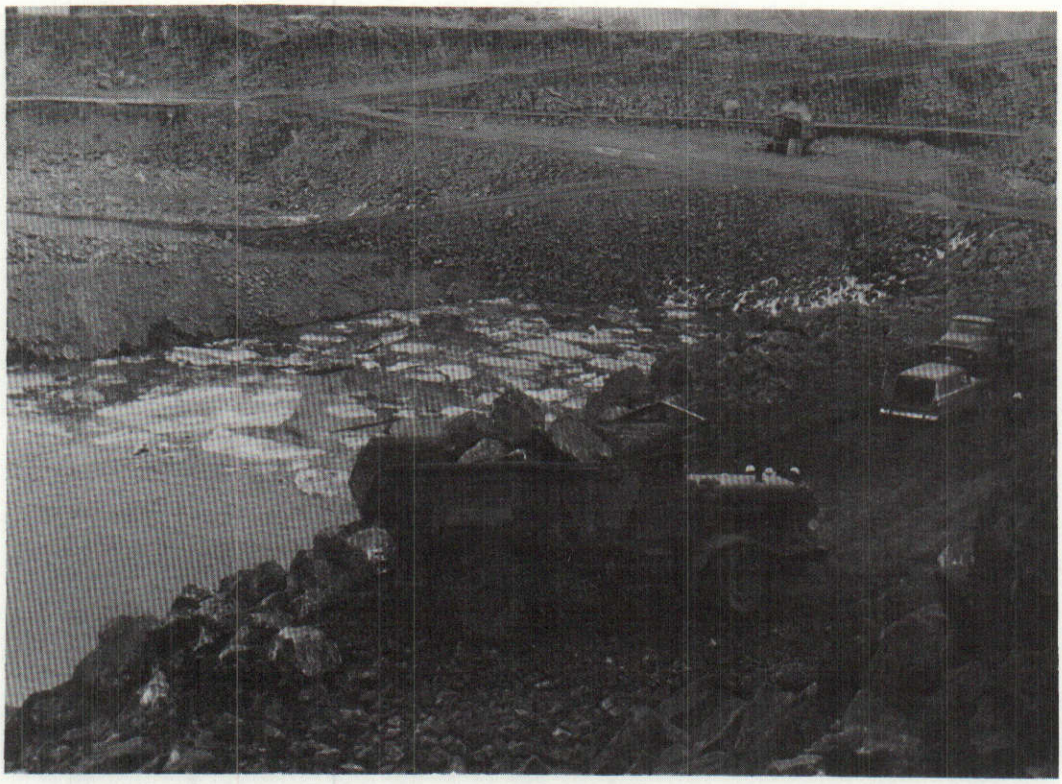
of the artesian groundwater flow which had been encountered in the lower part of the core trench. The balance of the artesian water was sealed by placement and compaction of the clay core.

The sloping impermeable clay core has a thickness at the bottom elevation of 100 feet and at the top of 12 feet. The clay for the core is a weathered basalt soil which was available approximately 2½ miles from the dam site. Clay was spread in 8-inch layers and compacted by specially designed sheeps foot rollers and conventional rubber-tired rollers to a density of 90% or more of maximum.

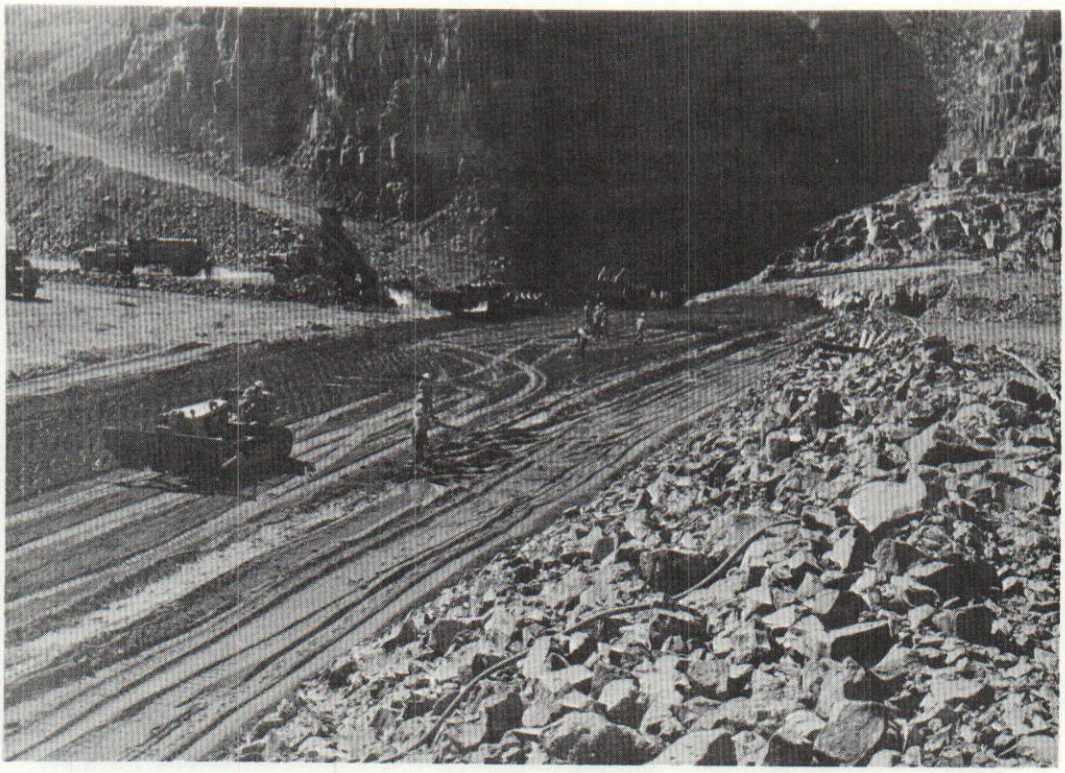
Gravel filter zones were placed on either side of the core to prevent migration of core material into the more permeable rock fill. Immediately downstream from and beneath the downstream filter the rock fill was compacted, followed by a coarse rock fill which was heavily sluiced during placement. An upstream rock fill protects the core from sliding.

The downstream slope of the rock fill embankment averages 1.4:1. The upstream slope varies from 2.0:1 at higher elevations to 3.0:1 near the base. A total of nearly 6 million cubic yards of fill were placed in the dam.

In order to provide for future settlement, the top of the dam was given a 7-foot camber and the fill was placed on a



Placing large rocks in toe trench in February 1957.



Construction in August 1957, showing clay core, filter and rockfill zones.

curve with a radius of 4,505 feet. Any downstream horizontal settlement would tend to further compact the impermeable clay core. A total of 23 permanent monuments or reference points were established on the dam in order to check settlement or displacement that occurred after the original filling of the reservoir.

Spillway

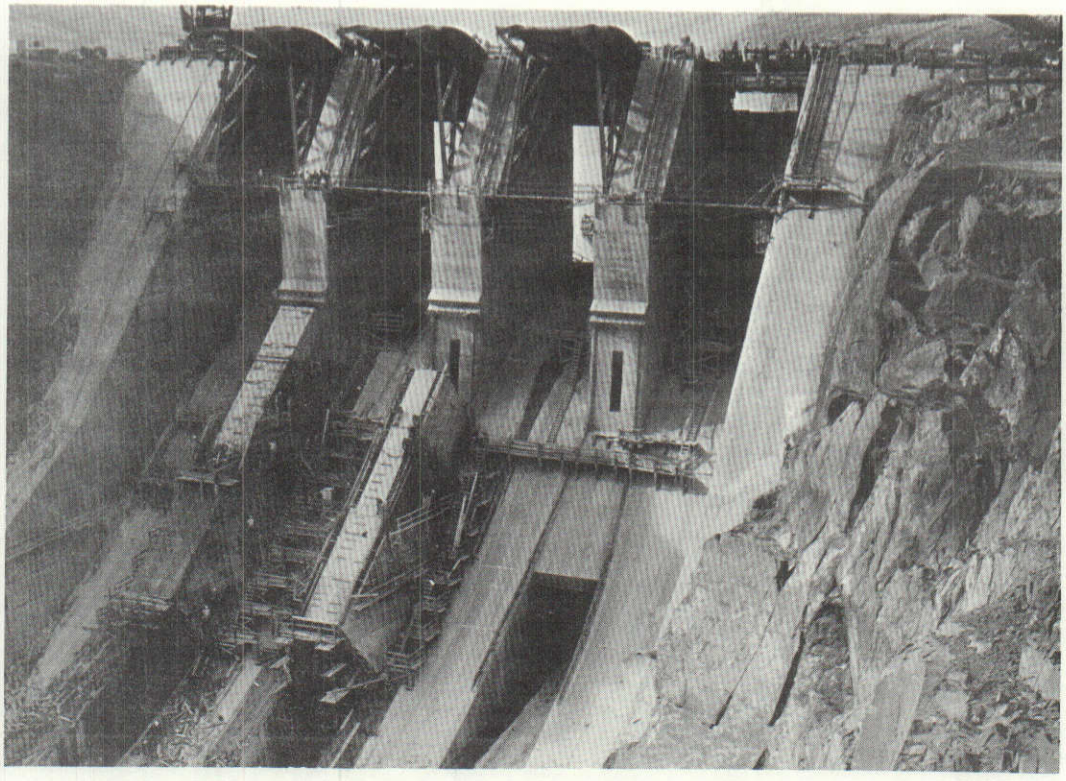
The spillway, located at the left end of the dam, has a design capacity of 300,000 cubic feet per second which was the design flood flow requirement specified for the project by the Department of the Army, Corps of Engineers. The spillway is located in a rock projection on the left abutment through which a cut more than 200 feet wide and 150 feet deep was excavated.

The structure is a concrete gravity dam with four radial crest gates, each 32 feet wide and 50 feet high, and with the crest elevation at 2077. Three low-level gates, each 23 feet wide and 23 feet high, provide for additional outlet capacity and to achieve the flood control provisions of the project license which require a discharge capacity of 65,000 cubic feet per second with a minimum reservoir elevation of 1976.

Water passing through the spillway gates follows a concrete-lined chute with a bottom width of 173 feet which returns the water to the river channel below the dam. Model test



Spillway excavation in October 1957.



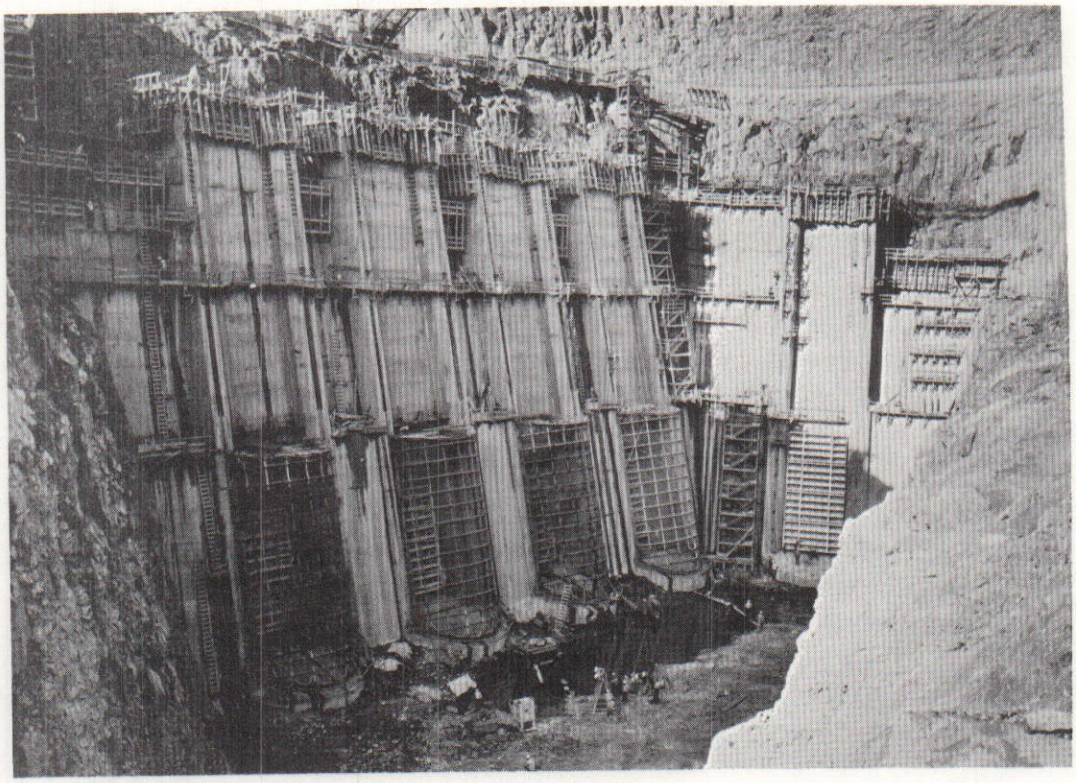
Spillway construction in October 1958, showing three gates raised and low level outlet hoods.

showed that the energy of the water flowing down the chute would be largely dissipated by hydraulic jump in the river channel. Further model tests of the spillway design, in advance of construction, showed that with the reservoir water surface at elevation 2077 the combined capacity of both the crest and low-level radial gates would be approximately 307,000 cubic feet per second.

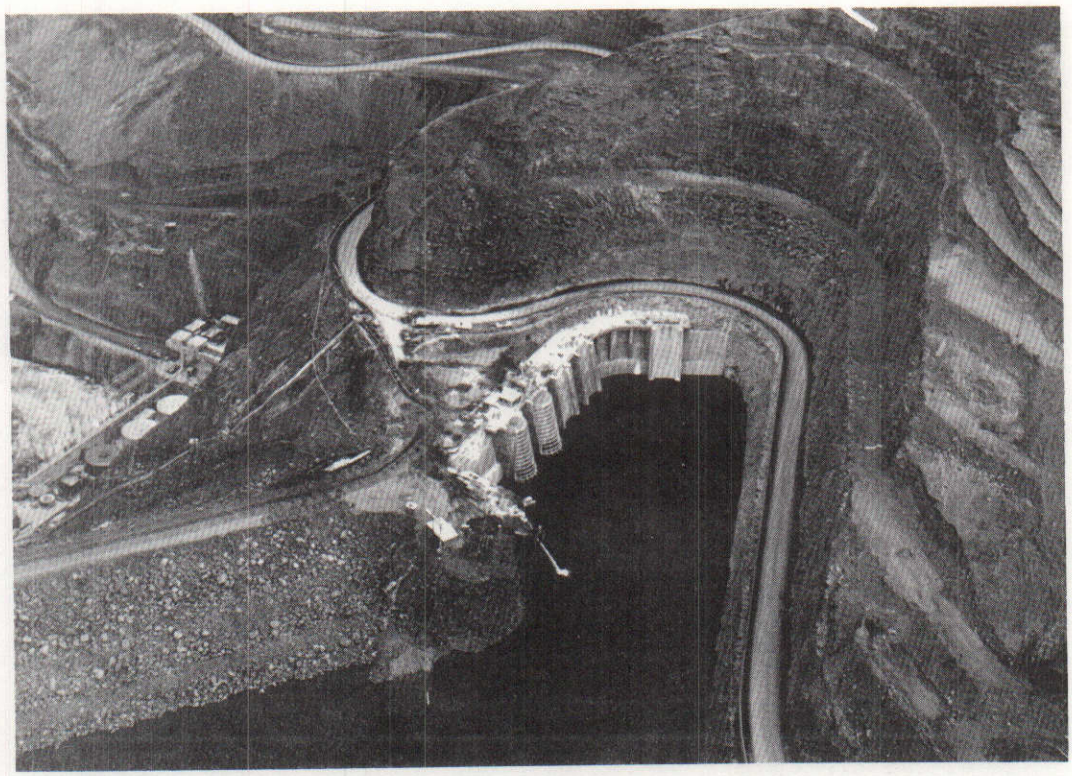
A drainage tunnel extends across the length of the concrete spillway structure beneath the gates and also provides access for inspection or maintenance of the low-level outlet gates. The elevation of the sill of the low-level gates is at 1938 feet.

Intake Works

The intake structure for the penstocks to convey water to the powerhouse is a reinforced concrete structure built on the face of a channel excavated in solid rock at the right abutment. This intake channel excavation is 900 feet long, 210 feet wide at normal reservoir level, and a maximum of 450 feet deep. The rock walls of the channel excavation have a slope of 1/4:1 with berms provided at various levels to prevent rock falls from entering the intake channel. With a full reservoir, the water depth at the intake structure is 144 feet which allows operation of the power plant with the maximum drawdown of 101 feet.



Intake structure in June 1958, showing trash racks and intake gates on four units and stoplogs installed at intake for future fifth unit.



Aerial view of intake structure and powerhouse in December 1958

The sloping intake structure contains individual wheeled gates, 16 feet wide and 3 feet high, for each of the four penstocks. An additional opening was constructed for a future fifth unit at the right end of the channel and structure. This future intake is closed with steel stop logs which would permit driving the penstock tunnel and installing the penstock without unwatering the intake channel.

Each of the penstock openings is provided with a trash screen which was constructed in a semi-circular steel cage form out of 3/8-inch round bars. To prevent trash which accumulates from sliding off the cage when it is raised, a basket or shelf is provided at the bottom of each cage. Guides in the face of the intake piers permit the cages to be raised with the 40-ton gantry crane. The crane is also used for handling stop logs and gate stems.

Each penstock gate is operated by an individual 100-ton hoist. The hoisting cable is connected to a sectional steel stem so that the cable is never submerged. Normally the gates are just clear of the penstock opening. If it is necessary to pull the gate above water for maintenance or inspection, the stem is removed one section at a time. A maintenance area was provided below the upper deck level so that gates do not have to be raised above the deck for inspection or maintenance but this can instead be performed at a time when the reservoir level is low.

Stop log slots are provided above the gate slots so that individual gates can be unwatered independently if required.

Penstocks

Water is conveyed from the intake structure to the powerhouse through four steel pipe penstocks, each with an inside diameter of 24 feet and a length of approximately 512 feet. The penstock tunnels were driven from the bottom of the intake channel on a 16-degree angle. The penstock liners are of steel plate 3/4-inch thick at the upper end and 1-5/16 inches thick at the lower end. The individual plates were cut and rolled to shape at the mill and field welded into 60-foot sections. Individual 60-foot sections were hauled into place from the lower end of the tunnels and welded in place with x-ray inspection of all wells.

After all welding was performed satisfactorily, concrete was placed around the penstock liners and further grouted after time had been allowed for concrete shrinkage.

A drainage tunnel is constructed in the basalt rock above the penstocks where observation can be made both of drainage flow from the tunnel and also of water pressure in piezometer holes down to the penstock elevation.

## Powerhouse

The powerhouse, located on the right bank of the river, is in a rock excavation over 300 feet deep. The powerhouse is a reinforced concrete structure approximately 240 feet long and 104 feet wide.

As constructed, it contains 4 units with provision for a possible future fifth unit at the right hand end. A sixth unit could be constructed and installed at a later date at the left end.

The powerhouse is of the outdoor-type with a generator deck at elevation 1830, the turbine floor at elevation 1816, an electrical gallery at elevation 1810, and a mechanical gallery at elevation 1796.

The four hydraulic turbines were manufactured by the S. Morgan Smith Company with each turbine rated at 142,000 HP at a 235-foot gross head and operating at 128.6 rpm.

The generators are Westinghouse, umbrella-type, vertical machines suitable for outdoor operation. Each unit has a continuous rating of 100,111 kva, 3-phase, 60 cycles, 13,800 volts, at 128.6 rpm.

The transformers are installed on the powerhouse deck approximately 20 feet from the generators and are connected with a 230 kv

transmission line to the switchyard immediately downstream from the dam on the right bank of the river.

Transmission lines extend downstream to the Oxbow Hydroelectric Development and to the southeast to Boise.

Miscellaneous Features

Public recreation or park areas have been built by Idaho Power Company in the vicinity of the Brownlee Project to provide access to the reservoir.

At the time of initial construction of the project, a unique feature was the installation of the fish barrier as a long net upstream from the dam. This barrier was originally intended for the collection of downstream migrating anadramous fish and the transporting of such migrants below the project. The original requirement in the project license for this fish barrier no longer is applicable and it has been removed from the reservoir.

V

# PROJECT INSPECTION

## General

The project was inspected in the field on several occasions during July 1968 to evaluate conditions which might affect the safety of the structure, in compliance with the Federal Power Commission Order No. 315. Mr. Anderson has also had occasion to inspect the project during the latter stages of construction of the dam and the filling of the reservoir, and also participated as a witness to the operation of the power plant at full capacity during proof of beneficial use for the Idaho water right.

In addition to the field inspections, project drawings and reports of previous consultants and correspondence relating to construction and operation were reviewed. Both the operating and management personnel of Idaho Power Company were interviewed regarding the history of the project and its operation. Available reports by previous consultants included: "Geology of the Brownlee Damsite, Snake River Idaho-Oregon" by Harold T. Stearns (1954); and periodic reports of the Board of Consultants for Brownlee Dam composed of James P. Growdon, Consulting Engineer, I. C. Steele, Consulting Engineer, and Harold T. Stearns, Consulting Geologist.

Previous records of measurement of settlement or displacement at the dam were reviewed.

The cooperation and assistance of the Idaho Power Company personnel in aiding the inspection are gratefully appreciated.

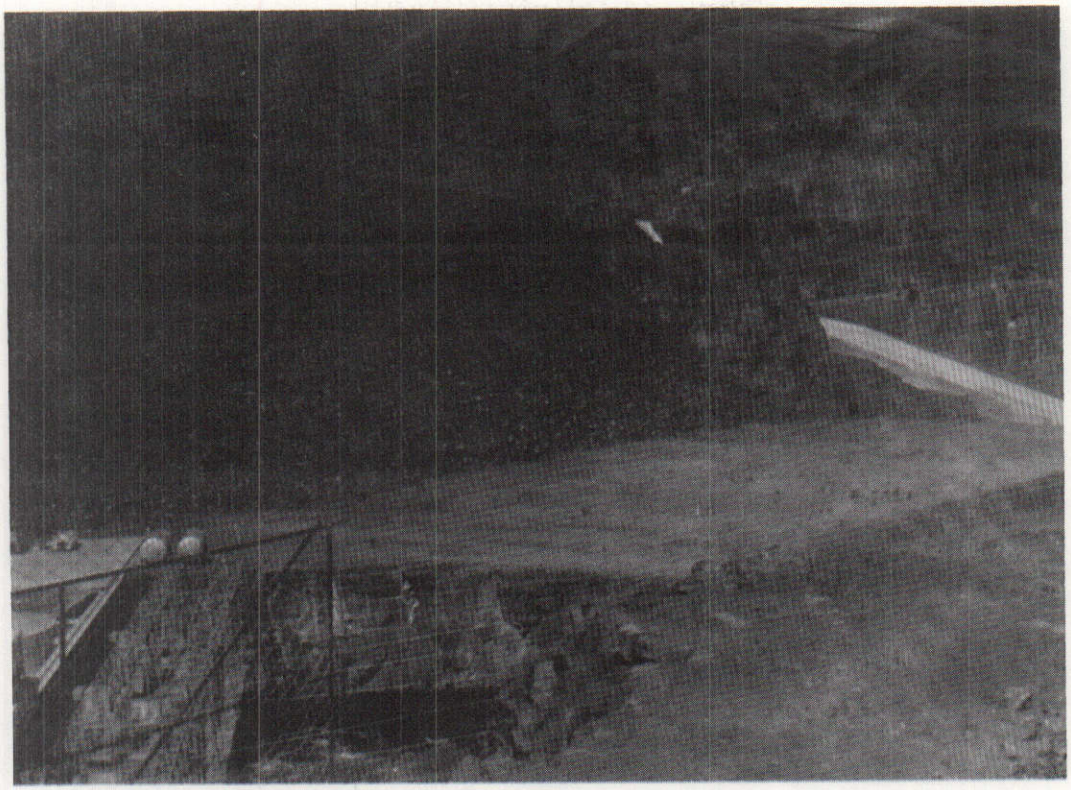
Embankment

The over-all condition of the dam embankment is good. There is no seepage or leakage evident through the embankment and embankment slopes in the crest of the dam show no signs of settlement, cracking or erosion.

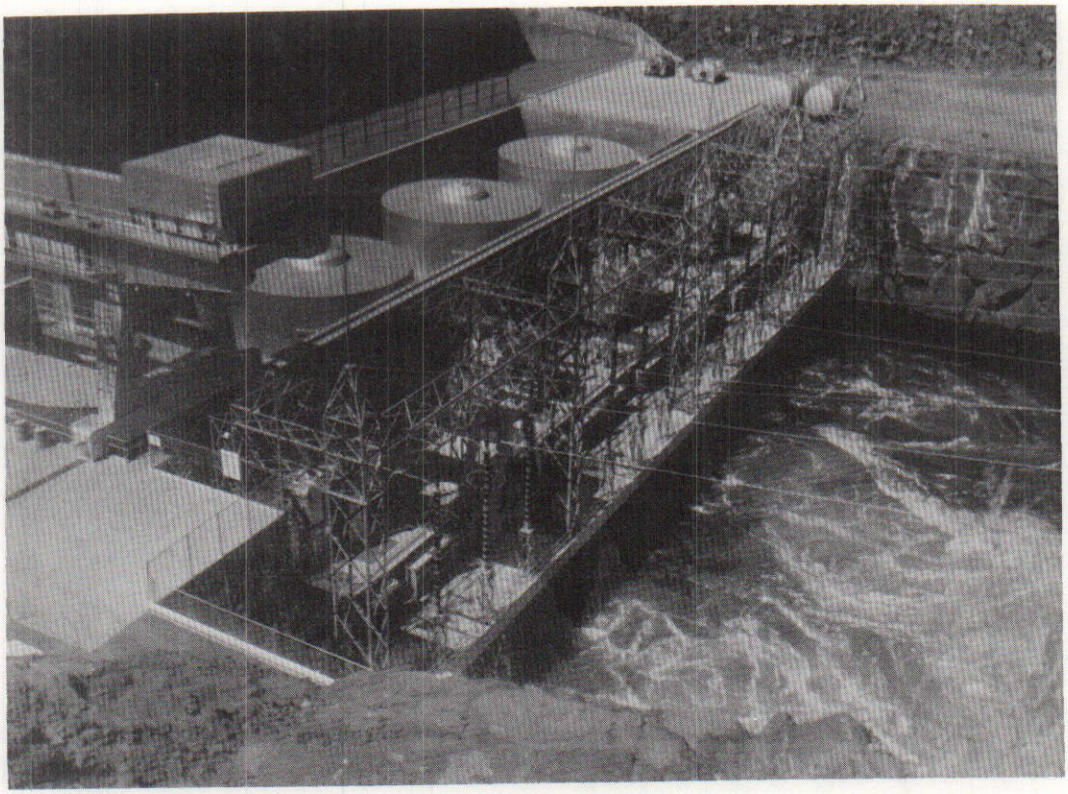
The rock fill on the upstream face of the dam, at reservoir level, provides adequate protection against erosion from wave action in the reservoir. The condition of the rock fill surface on the downstream face of the embankment is good.

Settlement and displacement measuring points or monuments were established at 23 locations at the time of construction of the dam. Twenty of these are located on the crest of the dam and 3 monuments are situated near the center of the dam on the upstream face approximately 100 feet from the axis. Measurements have been taken at these reference points prior to the filling of the reservoir and periodically since filling.

These observations show that the settlement (generally less than 1 foot) or the displacement (generally less than 1/2 foot) has not been excessive.



Downstream face of dam showing spillway in background and powerhouse tailrace in foreground.



Brownlee powerhouse showing rock excavation for tailrace.

The condition of all concrete in minor structures associated with the embankment is good. Access roads to or on top of the embankment are adequate and are well maintained.

Spillway

The appearance and condition of concrete throughout all of the spillway structure, including retaining walls and the floor of the chute, is good.

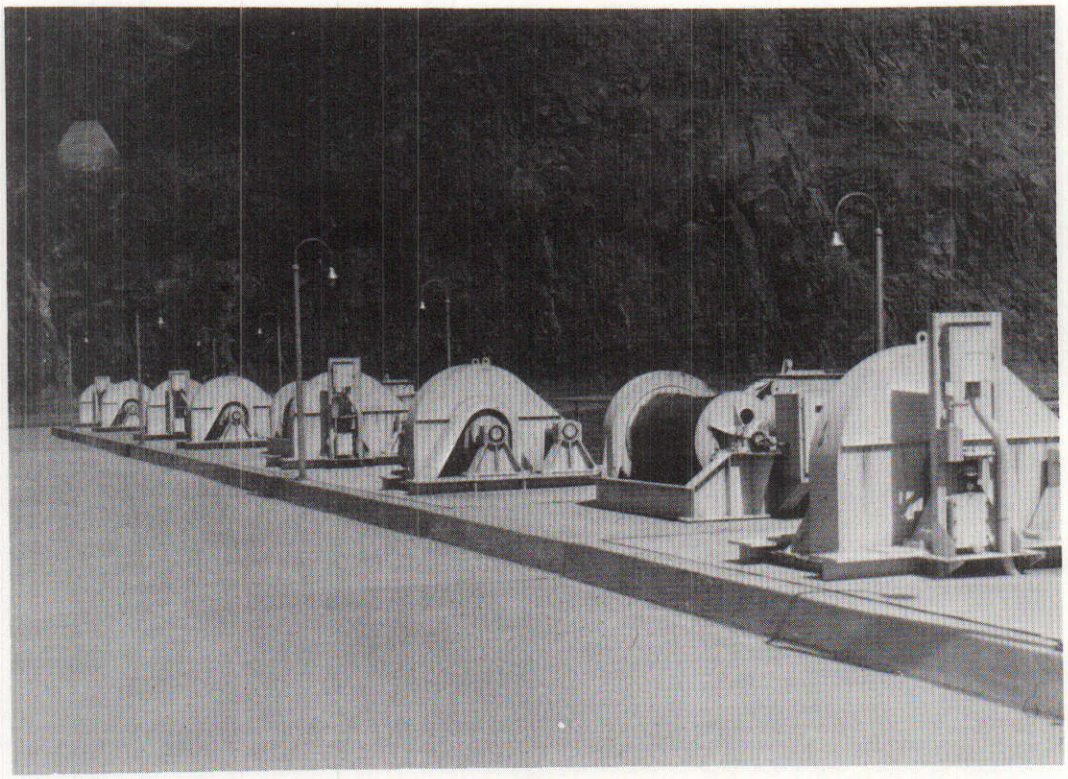
Examination of the drainage gallery beneath the spillway and of the drain effluent at the right retaining wall indicates that drains are operating properly and that the flow is not unusual or abnormal.

Inspection of both the low-level radial gates and the four upper gates indicate that all are in good condition and capable of satisfactory operation. All gates can be operated locally with individual electric motor driven hoists. Two sources of power are available to operate gate hoisting equipment. Two of the upper gates (Nos. 3 and 4) can be operated remotely from the power plant operating position. All four upper spill gates are used equally during periods of flood run-off and the low-level spill gates are checked annually in early spring of each year.

There is no evidence of erosion or scour below the spillway chute in the river channel and discharges from the spillway



Brownlee spillway chute looking downstream.



Spillway gate hoists; hoist with cable is for low level gate.

have had no effect upon the toe of the dam embankment. The maximum quantity of water that has been spilled since construction of the project has been approximately 70,000 to 90,000 cubic feet per second.

Intake structure

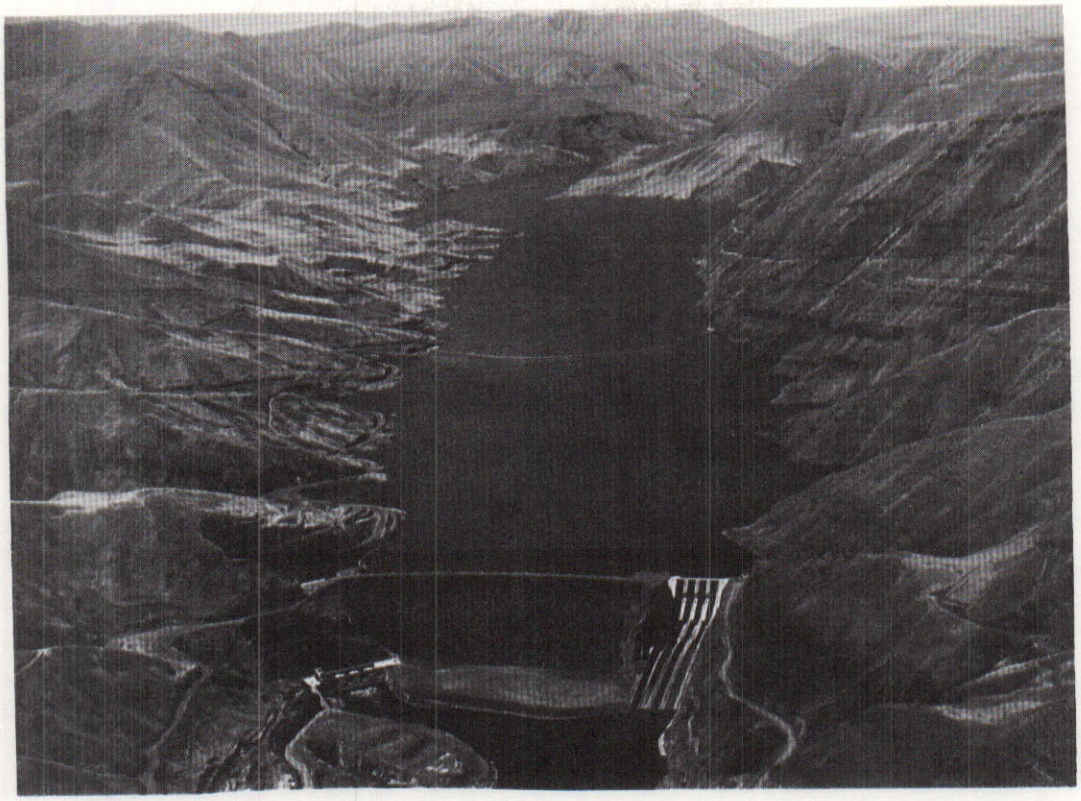
The appearance of all concrete in the intake structure is good. An inspection of the gates, gate hoisting equipment, and gate slots indicate that the features are in good operating condition and no difficulty has been experienced with the gates during project operation.

The trash screen on the No. 1 (left) unit is not fully seated and it is probable that some trash has lodged underneath the screen. The Idaho Power Company plans to inspect the screen with divers at a time when the reservoir level is low to determine the cause of the failure of the screen to seat properly and to remove any obstruction.

Penstocks

It was not possible to inspect the penstocks but no reported difficulties or problems have been encountered with their operation since construction.

The access tunnel and drainage gallery above the penstocks was inspected in the field. The flow of water in the drainage



Aerial view of project in early 1960's showing slide scarp in center background.



Closeup of slide shown above in July 1968 showing thin character of slide mass.

tunnel is not unusual and periodic observations have indicated that there is little change in this flow.

The entrance gate to the access tunnel has been partially damaged by vandalism and should be repaired so as to keep the public from the tunnel. The lighting circuit which was installed in the tunnel following construction should be removed from the tunnel.

Powerhouse

The appearance and condition of all concrete in the powerhouse structure is good. Maintenance practices throughout the powerhouse are excellent and all mechanical and electrical equipment are in good condition.

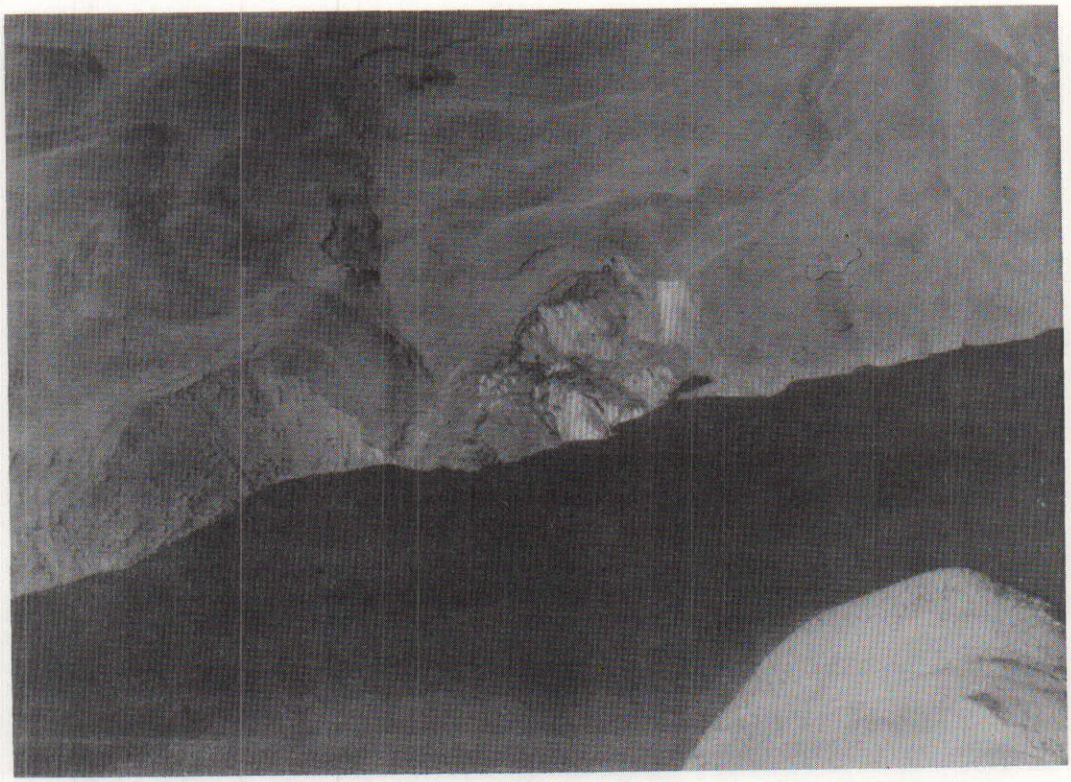
Abutments

There is no visible seepage or indication of seepage or leakage around either of the dam abutments.

A very small amount of seepage can be seen on the face of the basalt cliff immediately above the powerhouse. It is reported, however, that this seepage seems to fluctuate somewhat with local rainfall and probably a large part if not all of it is normal groundwater.



Powder River slide in December 1958.



Powder River slide in July 1968, note general settlement of slide without major change.

Reservoir

The reservoir generally lies within the deep valley or canyon of the Snake River with the exception of some of the headwater areas where low-lying agricultural lands border the pool.

The entire reservoir area, including the arm or extension up the Powder River in Oregon, has been inspected from the air as well as portions of it from the ground. Mr. Anderson also had numerous occasions to inspect the reservoir immediately after filling--particularly in the vicinity of agricultural lands--and also on several occasions during the winter periods when ice formation was heavy.

The reservoir and its operation offer no hazard to adjacent areas.

Several landslide areas exist within the reservoir. One of these, an old slide of pre-reservoir age, is on the right bank (Idaho) of the reservoir at about the location of Eagle Rapids (approximately river mile 324). This old slide area is quite large but inactive and their has apparently been no movement of the slide since filling of the reservoir. The slide area is situated toward the upper end of the reservoir and even if movement should occur it should offer no hazard to the project.

A second major landslide area is on the right bank of the Powder River in Oregon, a short distance upstream from the Snake River. Observation of the slide in 1968 and comparison of photographs at that time with those taken after filling of the reservoir indicates that there has been very little recent movement. If additional movement or sudden sliding should occur, the wave in the reservoir would be dampened by the large expanse of reservoir upstream on the Powder River as well as on the Snake River and it should offer no problem to the operation or safety of the project.

A third slide area is on the right bank of the Snake River a short distance upstream from the dam and visible from the dam. This slide, although of fairly large extent, is in an area of nearly horizontally bedded basalt rock and the slide mass is quite thin. There appears to have been no recent movement of the slide and even if it should move into the reservoir it should not create a hazard to the operation or safety of the project.

It is recommended, however, that at least annual inspection be made of these three slide areas as well as the remainder of the reservoir to detect any new or potential landslides.

Miscellaneous Features

The Brownlee Project is visited by many of the public each year--both the dam and powerhouse as well as park or picnic

areas in the vicinity that have been constructed by Idaho Power Company. The reservoir is a popular location for fishing and boating. Facilities provided for the public by the Idaho Power Company are considered adequate and are well maintained. Adequate fencing has been provided downstream from the dam and powerhouse to protect fishermen.

Operating Facilities

At the present time the project has in residence a superintendent of operations, chief operator, four powerhouse operators plus one relief operator, and three auxiliary equipment operators. One powerhouse operator is on duty continuously at Brownlee both for the operation of that plant and for the supervisory operation at the downstream Oxbow Hydraulic Development. In addition one auxiliary equipment operator is on duty from 8 a.m. to midnight.

Communications from the project include a closed circuit television between Brownlee and Oxbow, commercial telephone lines, a company microwave telephone system, and a carrier telephone circuit, all of which connect to the company headquarters and central dispatcher in Boise. Company radio facilities are also available on the project.

Unit Inspection

All four of the generating units at the Brownlee Project are

inspected by Company personnel on a regular schedule. The last shutdown for such inspection was in May-June 1968 at which time all units were found to be in good condition.

A small crack in the steel adjacent to the draft tube access door on unit No. 1 should be repaired by welding at the next maintenance period.

# VI

## SUMMARY AND RECOMMENDATIONS

The Brownlee Hydroelectric Development has been inspected at the request of the Idaho Power Company in conformance with Order No. 315 of the Federal Power Commission.

The project, which has been in operation continuously since January 1959, is in good condition and is being operated and maintained by the Owner in a manner consistent with public safety. No conditions were found that would require emergency or immediate action to insure the safety of the structures.

Certain features were observed, however, that should receive the attention of the owner or certain procedures should be adopted. These recommendations are as follows:

1) A small crack in the draft tube at the right side of the draft tube access door on unit #1 (left unit) should be repaired at the next regularly scheduled shutdown for maintenance.

2) The program of annual observation of the entire reservoir, particularly with reference to existing landslide areas, should be maintained. This should include inspection of the old slides, which are not considered hazardous to the reservoir, as well

as aerial inspection of the entire reservoir shoreline to detect any new or potential slide zones.

3) The left intake trash rack should be checked during low water conditions in the fall-winter of 1968-69 to determine why the trash rack will not seat properly and for removal of any obstruction. This has been programmed by the owner for early accomplishment.

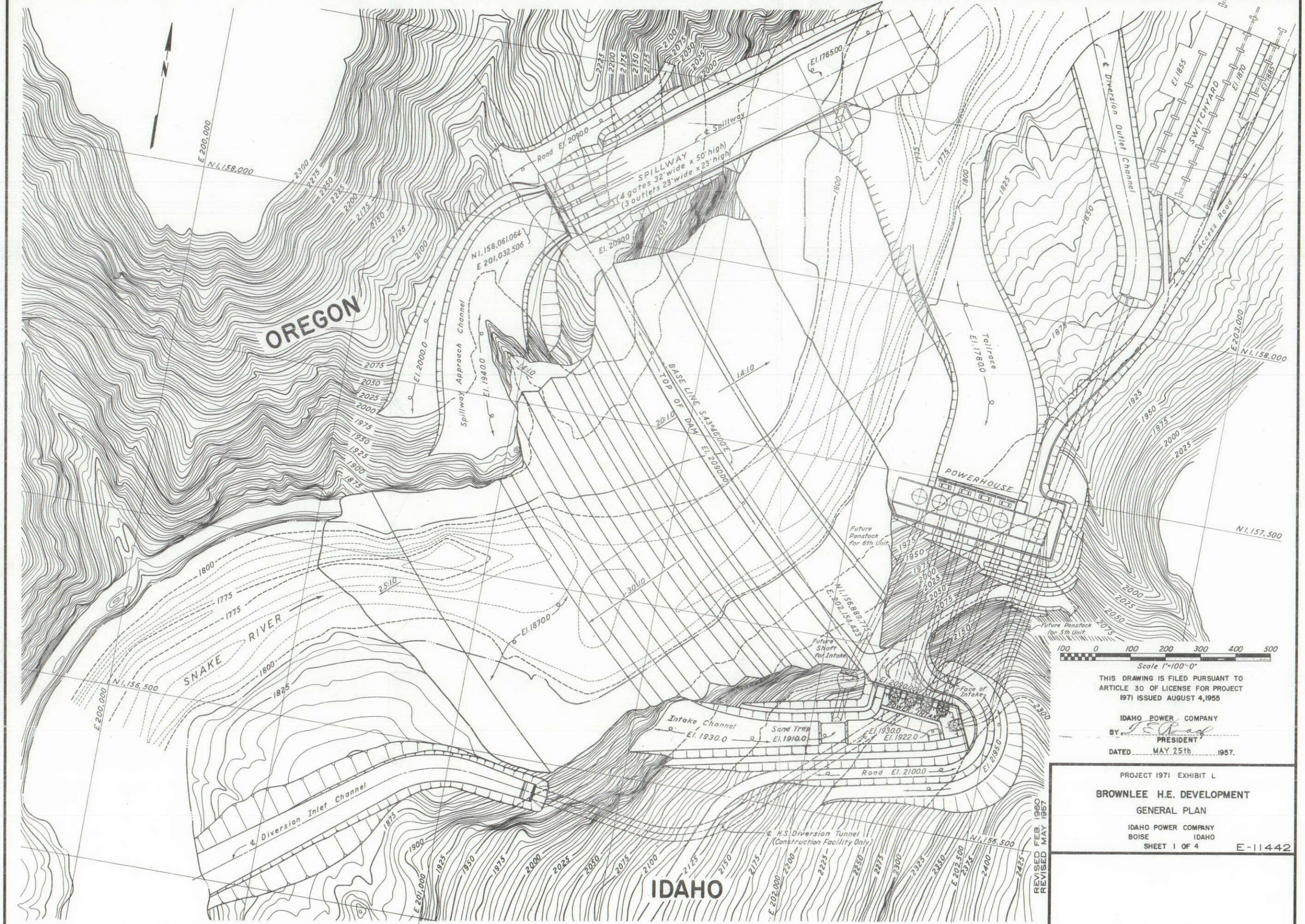
4) The plank decking on the bridge across the Snake River below Brownlee Dam should be replaced.

5) The discharge from the drainage tunnels under the spillway should continue to be observed to detect any significant variation in flow or character of the drain water.

6) The program of observation of settlement and displacement of monuments on Brownlee Dam should be continued with field measurements made and properly recorded at least once each year.

7) The program of observing the flows from the drainage tunnel above the penstocks should be continued to note any significant variation which might occur. The access gate to the tunnel portal should be repaired to prevent unauthorized entry by the public and power service to the lighting circuit in the tunnel removed.

# A P P E N D I X




THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955

IDAHO POWER COMPANY

BY J. E. Bond
PRESIDENT

DATED MAY 25th 1957.

PROJECT 1971 EXHIBIT L

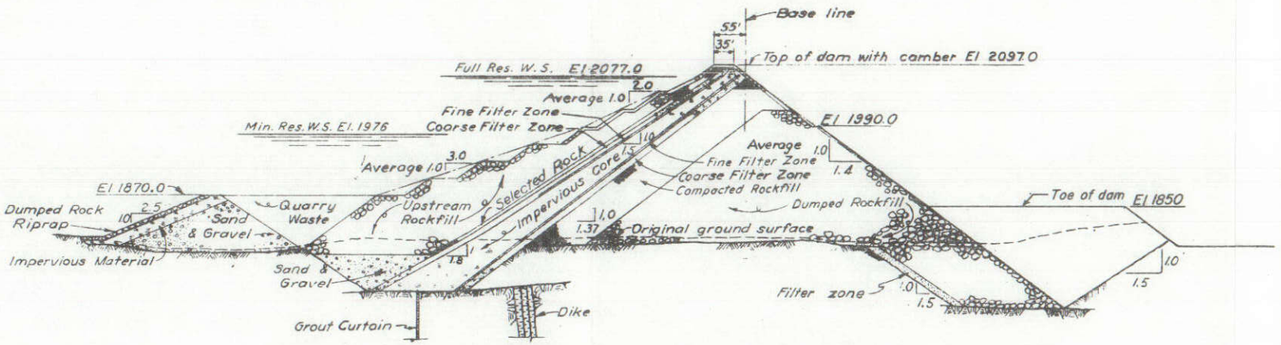
# BROWNLEE H.E. DEVELOPMENT

## GENERAL PLAN

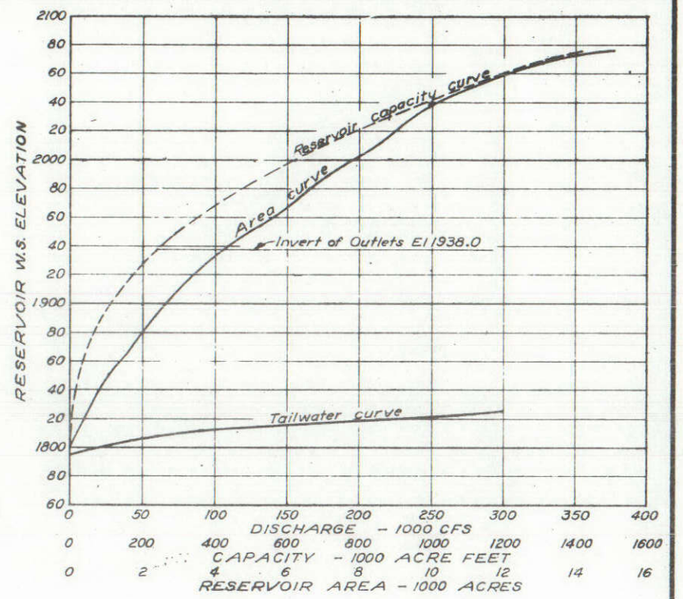
IDAHO POWER COMPANY
BOISE IDAHO
SHEET 1 OF 4

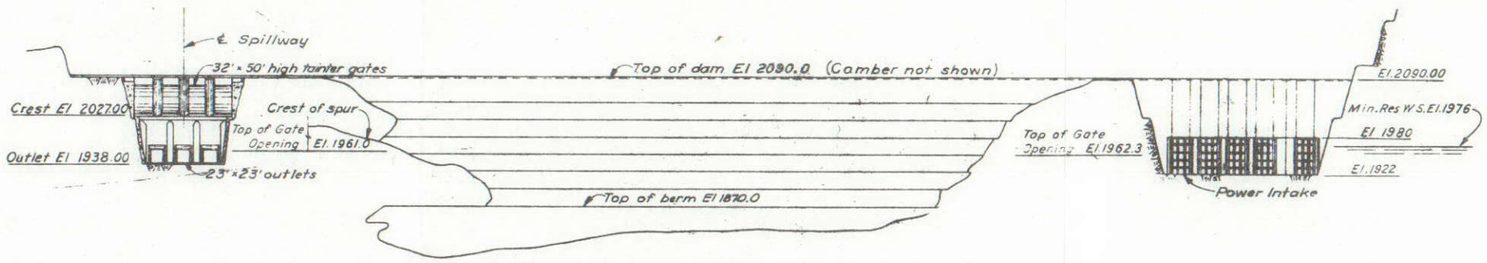
E-11442

REVISED FEB. 1980
REVISED MAY 1957




MAXIMUM SECTION THROUGH DAM
Scale 1" = 100'




DEVELOPED UPSTREAM ELEVATION
OF SPILLWAY, DAM, AND POWER INTAKE
Scale 1" = 100'

THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955

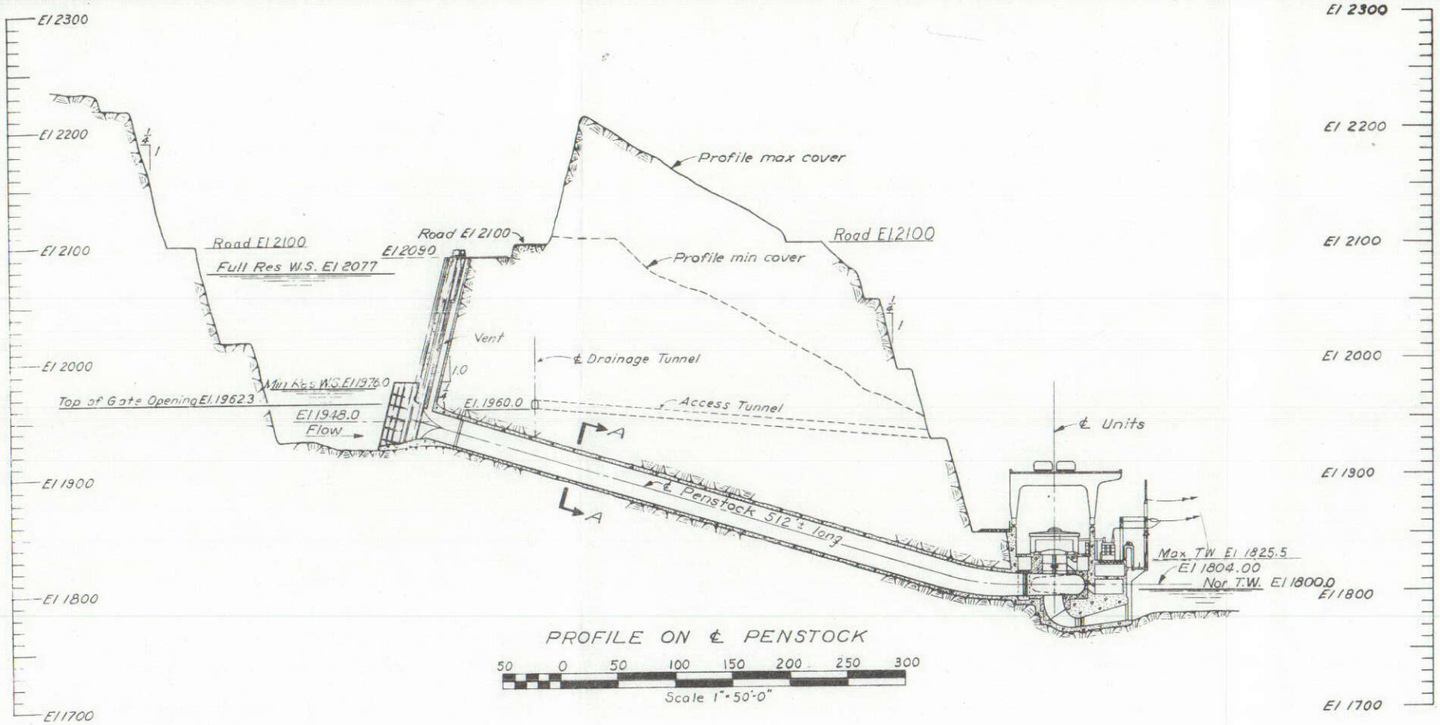
IDAHO POWER COMPANY
BY _____
PRESIDENT
DATED MAY 25th 1957

PROJECT 1971 EXHIBIT L
BROWNLEE H.E. DEVELOPMENT
DAM - SECTION AND ELEVATION

IDAHO POWER COMPANY
BOISE, IDAHO
SHEET 2 OF 4 E-11442

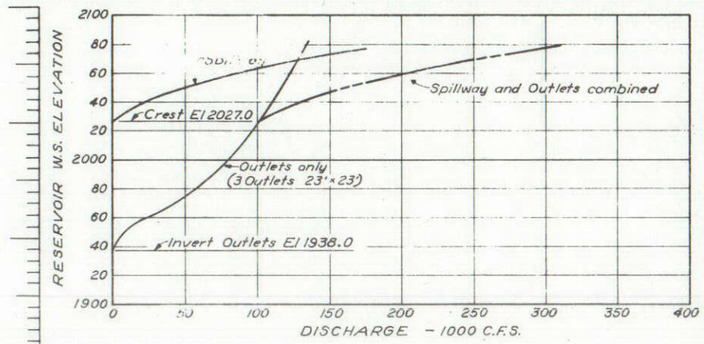
REVISED FEB. 1959
REVISED MAY 1959

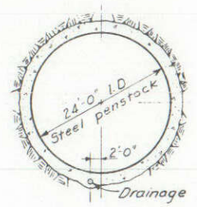
ORIGINAL




PROFILE ON ℄ PENSTOCK

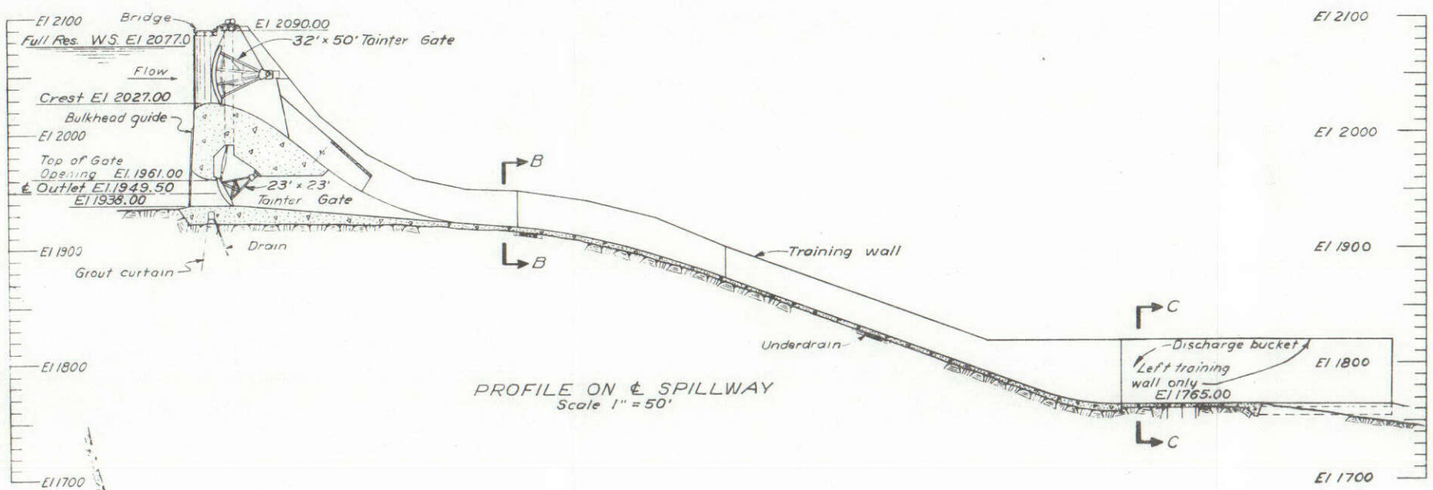
Scale 1"=50'-0"



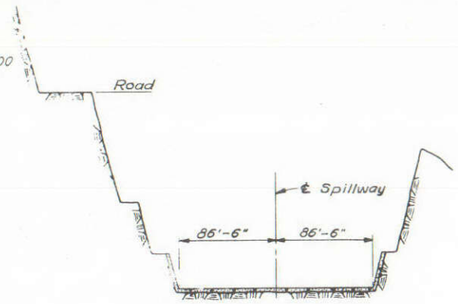

SECTION A-A

Scale 1"=10'-0"



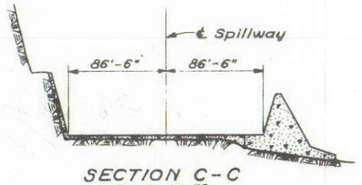

PROFILE ON ℄ SPILLWAY

Scale 1" = 50'




SECTION B-B

Scale 1"=50'




SECTION C-C

Scale 1"=50'

THIS DRAWING IS FILED PURSUANT TO ARTICLE 33 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955

IDAHO POWER COMPANY

BY J. E. Parsons

PRESIDENT

DATED MAY 25th 1957

PROJECT 1971 EXHIBIT L

BROWNLEE H.E. DEVELOPMENT

PENSTOCK SECTION

SPILLWAY SECTION

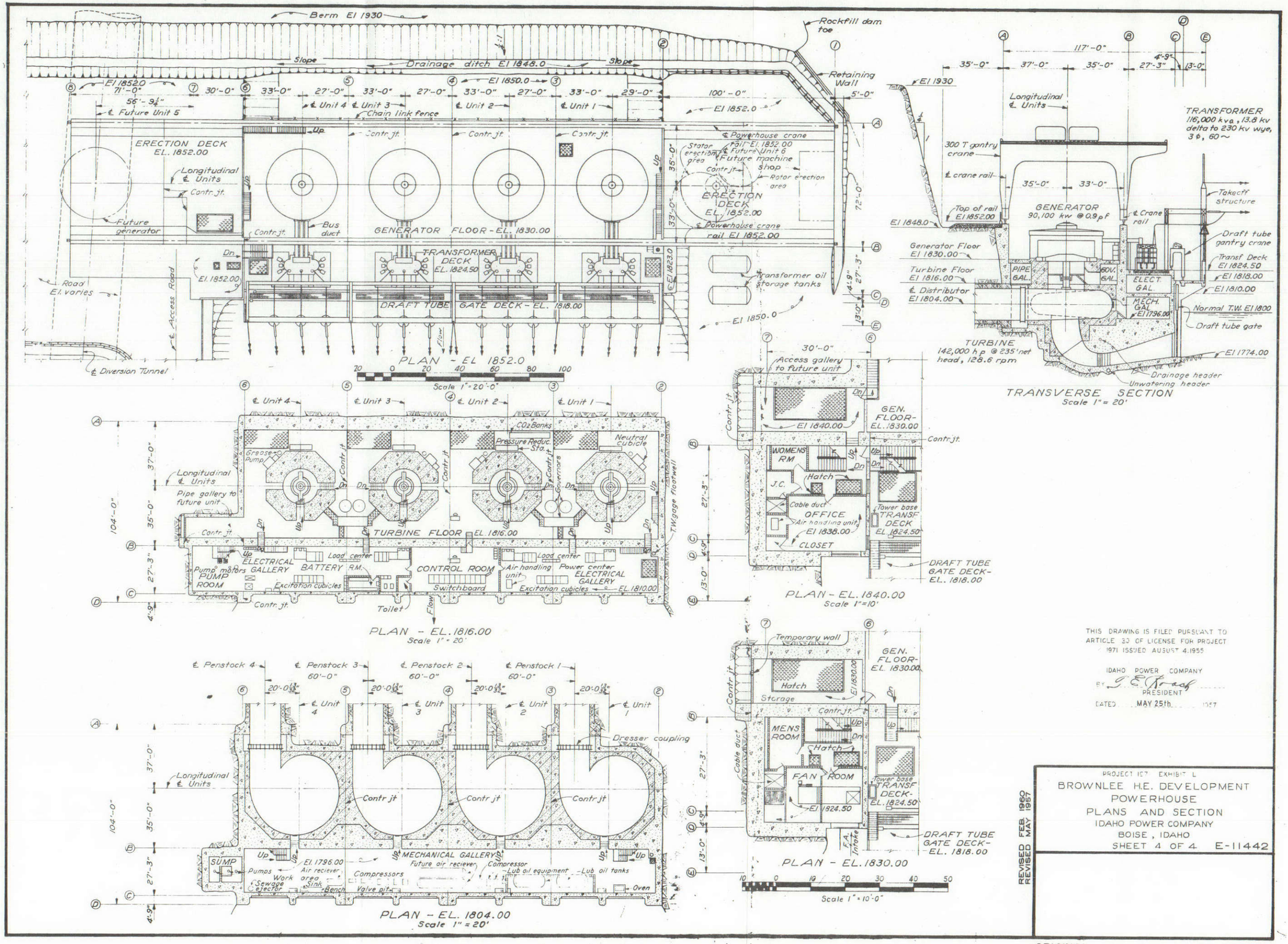
IDAHO POWER COMPANY

BOISE, IDAHO

SHEET 3 OF 4 E-11442

REVISED FEB 1960
REVISED MAY 1957

ORIGINAL




THIS DRAWING IS FILED PURSUANT TO ARTICLE 30 OF LICENSE FOR PROJECT 1971 ISSUED AUGUST 4, 1955

IDAHO POWER COMPANY

BY J. E. Bradley

PRESIDENT

DATED MAY 25th 1957

PROJECT NO. EXHIBIT L

# BROWNLEE H.E. DEVELOPMENT POWERHOUSE PLANS AND SECTION

IDAHO POWER COMPANY

BOISE, IDAHO

SHEET 4 OF 4 E-11442

REVISED FEB 1960
REVISED MAY 1957

ORIGINAL

May
~~March~~ 1967

NOT E

Plans, specifications, and drawings have been withdrawn from this file and entered into the Records of Dams file.

Permit No. R-905
ND

R-905

April 18, 1960

Re: License R-905 & 23925
Idaho Power Company

Stein-McMurray Insurance Co.
Box 1698
Boise, Idaho

Attn: L. S. McCurry

Dear Mr. McCurry:

Bond No. 261963 in regard to Permit No. R-905 and Bond No. 261964 in regard to Permit 23925 are hereby released as proof of completion of works has been proven under each of the permits.

Very truly yours,

W. N. CARTER
State Reclamation Engineer

WNC:RT:ew

See letter in 23925

R-905

April 18, 1960

Re: License R-905 & 23925
Idaho Power Company

Stein-McMurray Insurance Co.
Box 1698
Boise, Idaho

Attn: L.S. McCurry

Dear Mr. McCurry:

Bond No. 261963 in regard to Permit No. R-905 and Bond No. 261964 in regard to Permit 23925 are hereby released as proof of completion of works has been proven under each of the permits.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

GNC:RT:ew

R905

23925

R-905

July 29, 1959

Re: Permit No. R-905
" No. 23925

Idaho Power Company
1210 Idaho Street
Boise, Idaho

Attn: Mr. Gale C. Farley

Dear Mr. Farley:

We enclose Certificates of Completion of Works and Licenses and Certificates of Water Right issued on Permit No. R-905 and Permit No. 23925.

We also enclose departmental receipt No. 29692 in the amount of $6007.00 covering fees.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

By

(Mrs.) Edna P. Rutledge
Chief Clerk

EPR:ew
Enc. certificates (2)
licensed (2)
receipt (1)

23925

R905

R-905

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State Reclamation Engineer

By:

(Mrs.) Edna P. Rutledge
Chief Clerk

EPR:ew
Enc. certificates (2)
licenses (2)
receipt (1)

R-905 FJ

# IDAHO POWER COMPANY

BOISE, IDAHO

July 16, 1959

RECEIVED
JUL 27 1959
Department of Reclamation

Mr George N Carter
State Reclamation Engineer
State House
Boise, Idaho

Dear Mr Carter:

Enclosed is Idaho Power Company check for $6,007, covering payment of statutory fees for Certificate of Completion of Works and License and Certificate of Water Right in connection with State of Idaho Permit Nos R-905 and 23925, Brownlee.

Very truly yours,

Gale C. Farley

Gale C Farley, Agent

GCF:mw

Enclosure

R-905

July 10, 1959

Re: Permit Nos. R-905 & 23925

Idaho Power Company
1210 Idaho Street
Boise, Idaho

Atten: Mr. Gale C. Farley

Gentlemen:

Our inspection report of proof of completion of works and application of water to beneficial use under the terms of the above permits shows the dam is capable of conveying to the place of use 20,000 second feet of water.

Upon receipt of the statutory fees totaling $6007.00, we will issue the Certificate of Completion of Works (fee $6002.00) and the License and Certificate of Water Right (fee $5.00), confirming the right with priority of October 17, 1952 to the use of 20,000 second feet for electric power generation.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

GNC:ew

23925

R905

R-905

July 10,1959

Re: Permit Nos. R-905 & 23925

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Boise, Idaho

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Gentlemen:

Our inspection report of proof of completio of works and application of water to beneficial use under the terms of the above permits shows the dam is capable of conveying to the place of use 20,000 second feet of water.

Upon receipt of the statutory fees totaling $6007.00, we will issue the Certificate of Completion of Works (fee $6002.00) and the License and Certificate of Water Right (fee $5.00), confirming the right with priority of October 17, 1952 to the use of 20,000 second feet for electric power generation.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

GNC:ew

R-905

Dave,
Please check out
list as AF all power
we have debbit with has been
ops. Am wondering if this could be
Power storage.

Returned to Debbie 2-12-79

WATER RIGHT NO. 03-2018
CLA

PROBLEMS OR MISSING DATA

FOUND IN DATA ENTRY

| | |
|---|---|
| ENTIRE WATER RIGHT NEEDS REVIEW | ✓ |
| BAD LAND LIST - POINT OF DIVERSION | ---- |
| CODE WATER USES AND PLACE OF USL | ____ |
| BAD LAND LIST - PLACE OF USE | ____ |
| TRANSFER/AMENDMENT | ____ |
| MISC. _____ | ____ |

Caroline:
Note that all "R" LICENSES
ARE STORAGE ETS
ONLY (NO
DIRECT FLOW)
This one is in fact
STOR & FROM STOR
DET

Form 23

STATE OF IDAHO

DEPARTMENT OF RECLAMATION

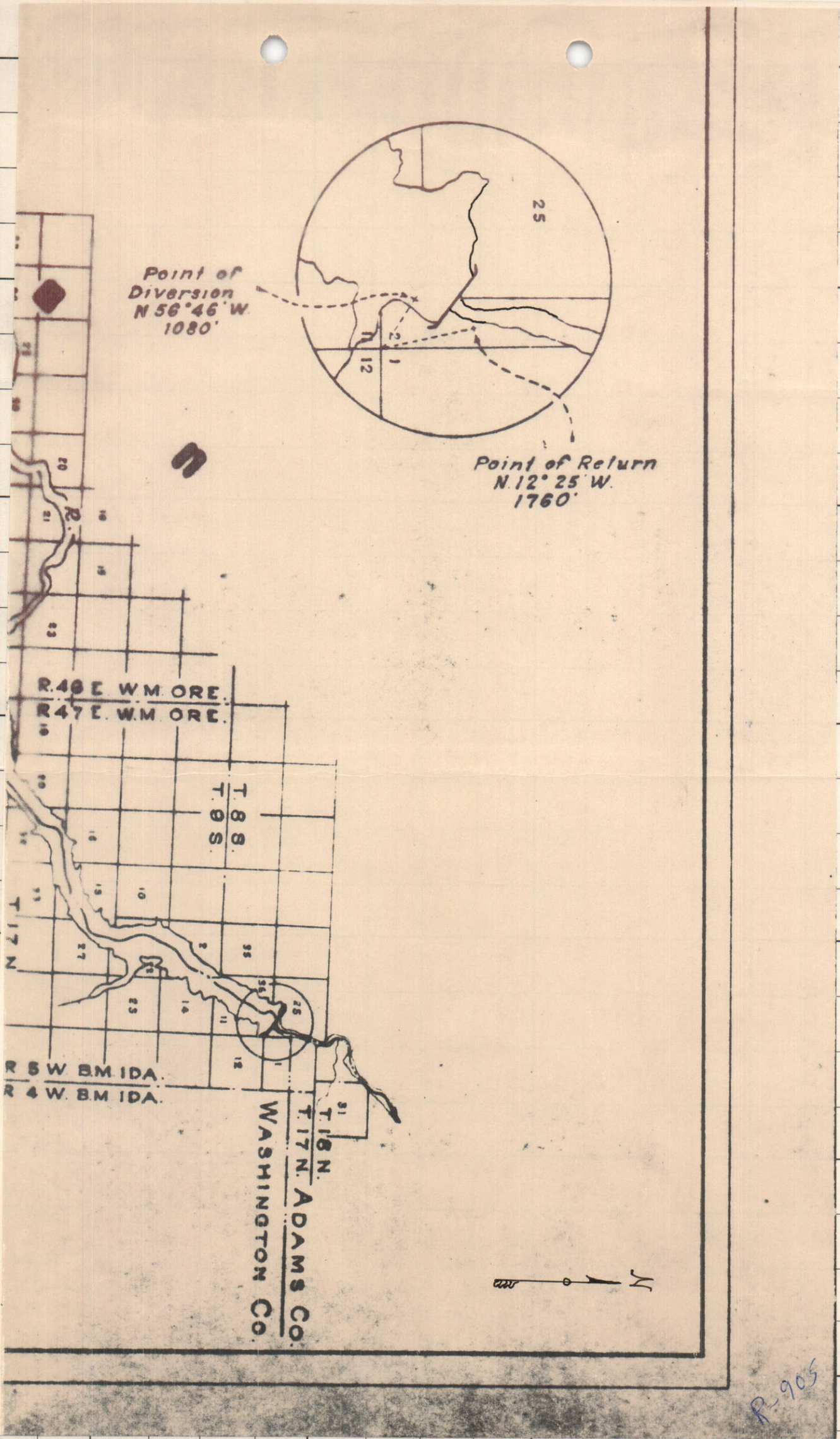
BOISE

# REPORT OF ENGINEER

PERMIT NO. R-905

REPORT ON PROOF OF Completion of Works & Beneficial Use

Idaho Power Company, 1220 Idaho St., Boise, Idaho




R-905

Scale: 2 Inches Equals 1 Mile. Draw Map In Ink.

Form 23

STATE OF IDAHO

# DEPARTMENT OF RECLAMATION

BOISE, IDAHO

# REPORT OF ENGINEER

Permit No. R-905

This proof is for Completion of Works & Beneficial Use In Water District No.

1. Name of applicant Idaho Power Company

2. Source of water supply: Snake River

3. Location of point of diversion: Is in the Lot 3 of Section 2

T. 17 N R. 5 W.B.M. County of Washington

4. Describe works as they exist, giving dimensions and capacities of same: The storage dam has a hydraulic height of 297 ft. and structural height of 395 ft.; is 1320 ft. long on the crest which is 35 feet wide. Dam as constructed is of the rock fill type with sloping imperviousclay core adequately protected against erosion and piping by sand & gravel filters bands and selected rock. A gated control spillway has a capacity of 175,000 second feet at full reservoir level and lower level outlets have additional release capacity of 125,000 sec. ft. Reservoir capacity is 1,427,000 acre feet. Beneficial Use (Power) outlets through the right abutment of the dam were observed discharging at least 25,000 sec. ft.

5. Water is used for: Electric power generation

6. State whether or not water has been turned into works of diversion: Yes

7. List legal subdivisions of lands to be irrigated. If proof is for beneficial use, give exact number of acres under cultivation in each forty-acre tract. (Describe manner and place of use if other than irrigation):

Place of use: Lot 3, Sec. 2., Twp. 17 N., Rge. 5 W.B.M.

(Submit map on attached plat, showing location and details of above description.)

8. What large stream would the water here appropriated finally reach? Columbia River

Remarks: The dam is well designed and constructed and exhibits no leaks, seepage or other indications of faulty design or faulty construction.

This examination was made on the 15th and 16th day of June, 1959

(Signed) Geo. N. Carter

Examiner.

R-905

## INSTRUCTIONS TO EXAMINERS

1. Always carefully note the location of the point of diversion and accurately plat same.
2. When proof is for beneficial use, carefully check up the number of acres actually irrigated in each forty and accurately plat same.
3. Make a map showing the correct location of streams and ditches, and the irrigated lands, and any adjacent permanent landmarks, such as towns, lakes, large streams and public roads.
4. If any unusual conditions are discovered, make plain statement of them under remarks.
5. Always see the holder, if possible, and go over the whole ground with him and make your report only upon actual existing facts and conditions.
6. Give general characteristics of soils, topography, and crops raised.

RECEIVED
JUL 10 1959
Department of Reclamation

Idaho Power Company ATT: Gale Farley
1220 Idaho Street
Boise, Idaho
Permit No. R-205

Examination for Completion of Works & Beneficial Use

County Washington

2-17N.-5W.

Q = 1,400,000 acre feet

S = Snake River

P.D. = Lot 3, Sec. 2, T.17N.-R.5W.

Use = Electric power generation

Filed = Oct. 17, 1952

Due = April 2, 1964

23925 companion permit

No 1101

# AFFIDAVIT OF PUBLICATION

RECEIVED
JUN 19 1959
Department of Reclamation

STATE OF IDAHO, }
County of Washington } ss.

Ellen Kiser, being duly sworn, deposes and says:

That he is the Chief Clerk of THE WEISER AMERICAN, a weekly newspaper published at Weiser, in the County of Washington and State of Idaho; that said paper has been and is in general circulation in the county aforesaid, and in the vicinity of Weiser; that the advertisement, a copy of which is attached hereto, was published in said newspaper once a week for four consecutive weeks in the regular and entire issue of said paper during the period and time of publication, and was published in the newspaper proper and not in a supplement; that said paper has been established and regularly published for more than seventy-eight consecutive weeks prior to the date of first publication of said advertisement.

Such notice was published in the issue beginning with April 20, 1959, and ending with the issue of May 11, 1959.

Ellen Kiser

Fees, $ 27 95

Subscribed and sworn to before me this 28 day of May, 1959.

Notary Public, Residing at Weiser, Idaho.

My Commission Expires 4-1-, 1962

No. 1101

**NOTICE OF PROOF OF COMPLETION OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE**

Notice is hereby given that at 10:00 o'clock A. M., on Wednesday, June 17, 1959, at 1220 Idaho Street, Boise, County of Ada, State of Idaho, before Gale C. Farley, Notary Public, proof will be submitted of the completion of work for the diversion in excess of 20,000 cubic feet per second of the water of the Snake River and the storage of 1,400,000 acre feet of the waters of the Snake River and of the Application to Beneficial Use of said waters, in accordance with the terms and conditions of Permits No. 23925 and R-905 heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and post office address of the person or corporation holding said permits is Idaho Power Company, 1220 Idaho Street, Boise, Idaho.

2. Said works of diversion and of storage will be fully completed on the date set for such completion, and the amount of water which said works are capable of conveying to the place of use, in accordance with the plans accompanying the application for such permits, is in excess of 20,000 cubic feet per second and the amount of water which such works are capable of storing is 1,400,000 acre feet.

3. The use to which said water has been applied is for generation of electric power, the amount applied to beneficial use is in excess of 20,000 cubic feet per second, and the amount capable of being stored is 1,400,000 acre feet.

4. The place where said water is used is in Section 2, Township 17 North, Range 5 West, Boise Meridian approximately 1,760 feet in a northwesterly direction from the southeast corner of Section 2, said Township and Range, Boise Meridian.

5. The date of priority which said user is prepared to establish is October 17, 1952, under Permits No. 23925 and R 905.

GEO. N. CARTER,
State Reclamation Engineer
7-4a

R-905

June 25, 1959

RE: Permit Nos. R-905 and 23925

Idaho Power Company
1220 Idaho Street
Boise, Idaho

ATTENTION: Mr. Gale C. Farley

Gentlemen:

We acknowledge receipt of the Deposition of Holder and two witnesses, also affidavit of publication in The Weiser American, all submitted in proof of complation of works and beneficial use on Permit Nos. R-905 and 23925.

The field examination has been made by an engineer from this department, the report of which will be on hand in a few days. At that time the information regarding fees for Certificates and Licenses will be forwarded to you.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer
By

(Mrs) Edna P. Rutledge
Chief Clerk

EPR

Form 16.

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

RECEIVED
JUN 19 1959
Department of Reclamation

Permit No. R-905

# Proof of Application of Water to Beneficial Use

## Deposition of Holder

Ques. 1. State your name, residence, occupation and postoffice address.

Ans. Idaho Power Company, 1220 Idaho Street, Boise, Idaho

Occupation: Generation and sale of electric energy

Ques. 2. If acting in behalf of corporation, state its name, principal place of business (if a foreign corporation, give name of postoffice of statutory agent), your position with reference to same, and your authority for appearing in its behalf. Idaho Power Company, 1220 Idaho Street, Boise, Idaho.

Ans. T E Roach, President, duly elected by Board of Directors of Idaho Power Company.

Ques. 3. State number and date of permit, and date of priority you propose to establish under the permit.

Ans. Permit No R-905, dated 4/2/53. Date of priority: 10/17/52

Ques. 4. State source of water supply and give exact location of point of diversion.

Ans. Source of water - Snake River. Point of diversion - 1080 feet Northwesterly from SE corner Section 2, T17N, R5W, BM and is in Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho.

Ques. 5. Describe your works of diversion, and state amount of water they are capable of conveying from point of diversion to place of use, and give name of canal or ditch or other works by which water is conducted to such place of use. If a well, state depth of well, depth and size of casing and depth to water. If pump is used, state discharge of pump and tell how it was measured or determined. If sprinkler irrigation, give number and size of nozzles and operating pressure.

Ans. Reservoir, dam and hydroelectric plant having 4 generators of 90,100 Kw each or a total name plate rating of 360,400 Kw; actual maximum capacity in excess of 500,000 KW. Plant capable of using estimated 30,000 cfs of water. Total reservoir storage capacity 1,426,700 acre feet, estimated; active storage - estimated 1,000,000 acre feet.

Ques. 6. State for what purpose water is used and describe place of use. (If for irrigation, name each subdivision in which used, and number of acres in each subdivision that have actually been irrigated with said water.) State whether cultivated or natural meadow land and the nature of all improvements which have been made as a direct result of said use.

Ans. Water used for generation of electric energy within Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho.

R-905

Ques. 7. If for other than irrigation purposes; state how applied, amount of horse power generated, etc.

Ans. Water used to operate 4 generators to produce a total of approximately 675,000 HP, maximum, of electric energy.

Ques. 8. What is the minimum amount of water required for the purpose specified above?

Ans. Approximately 26,000 cfs

Ques. 9. If you are not the person or representative of the corporation to whom above mentioned permit was originally issued, please state how ownership was acquired by present holder.

Ans. Not applicable.

Ques. 10. State when, how, in what amount and to what extent the water diverted under above mentioned permit has been used.

Ans. As of January 1959, all 4 generators were in operation and approximately 26,000 cfs of water were utilized to produce electric energy. (First generator in operation, August 1958)

Ques. 11. State when, how, in what amount and to what extent waters other than those diverted under the above mentioned permit have been diverted and applied to beneficial use upon the lands herein described. Give full particulars regarding such other appropriations and rights claimed thereunder.

Ans. Not applicable.

(Sign) T E Roach

T E Roach, President, Idaho Power Company

I hereby certify that the foregoing testimony was read to the above subscribed before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in Boise, County of Ada, State of Idaho, on this 17th day of June, A. D. 19 59.

Dale C. Farley

My commission expires May 15, 1962

Form 17

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

RECEIVED
JUN 19 1959
...ment of Reclamation

PERMIT NO. R-905

# Proof of Application of Water to Beneficial Use

## Deposition of Witness

The deposition of two witnesses, on this form, taken separately, required in each case.

Ques. 1. State your name, age, residence, occupation and postoffice address.

Ans. Myron Swendsen, Age 67, 5010 Bel Air, Boise, Idaho; Occupation Engineer

Ques. 2. Are you acquainted with Idaho Power Company, the holder of Permit No. R-905? How long have you known him and where does he reside?

Ans. Yes; more than 40 years. Principal place of business: 1220 Idaho Street, Boise, Idaho.

Ques. 3. Have you read or heard read said Permit No. R-905, and are you familiar with its provisions and conditions?

Ans. Yes

Ques. 4. State source of water supply, place of diversion, and describe works for conveying water from point of diversion to place of use.

Ans. Source: Snake River. Place of Diversion: At Brownlee Dam located in Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho. Water conveyed to 4 turbines in power house by means of 4 penstocks equipped with control gates, trash racks, etc.

Ques. 5. How many second feet of water do you estimate said works will safely conduct to place of use, and how much water have you seen being so conveyed?

Ans. Estimated 30,000 cfs; Witnessed 25,000 cfs (with av. machine gate openings - .765; reservoir elevation - 2074.35)

Ques. 6. State for what purpose water is used and at what place. (If for irrigation, give each subdivision in which water has been used and number of acres irrigated in each subdivision.) State whether cultivated or natural meadow land and the nature of all improvements which have been made as a direct result of said use.

Ans. Water used for generation of electric energy at Brownlee Dam located within Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho.

R-905

Ques. 7. If for power or other purposes than irrigation, state how water has been applied and to what extent.

Ans. Water has been used from Snake River to operate 4 generators, each capable of producing 127,500 Kw of power for a total of 510,000 Kw.

Ques. 8. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation.

Ans. Not Applicable

Ques. 9. Have you any interest in the works, water or lands above mentioned? If so, in what way and to what extent?

Ans. Not Applicable

Ques. 10. State when, how, in what amount and to what extent you have witnessed the application to beneficial use of water diverted under said permit.

Ans. On June 16, 1959, I visited Brownlee Dam and its power plant and witnessed the operation of the project producing power and utilizing approximately 25,000 cfs of water beneficially.

(Signed) Myron Swendsen
C9 Lic 153

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise, County of Ada, State of Idaho, on this 17th day of June, A. D. 19 59.

Dale C. Farley
Notary Public.

My commission expires May 15, 1962.

Form 17

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

RECEIVED
JUN 1 9 1959

PERMIT NO. R-905

# Proof of Application of Water to Beneficial Use

## Deposition of Witness

The deposition of two witnesses, on this form, taken separately, required in each case.

Ques. 1. State your name, age, residence, occupation and postoffice address.

Ans. Keith E Anderson, age 39, 6932 Westfield Place, Boise, Idaho; Occupation - Consulting Engineer

Ques. 2. Are you acquainted with Idaho Power Company, the holder of Permit No. R-905? How long have you known him and where does he reside?

Ans. Yes; more than 20 years. Principal place of business: 1220 Idaho Street, Boise, Idaho.

Ques. 3. Have you read or heard read said Permit No. R-905, and are you familiar with its provisions and conditions?

Ans. Yes

Ques. 4. State source of water supply, place of diversion, and describe works for conveying water from point of diversion to place of use.

Ans. Source: Snake River. Place of Diversion: At Brownlee Dam located in Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho. Water conveyed to 4 turbines in power house by means of 4 penstocks equipped with control gates, trash racks, etc.

Ques. 5. How many second feet of water do you estimate said works will safely conduct to place of use, and how much water have you seen being so conveyed?

Ans. Estimated 30,000 cfs; Witnessed 25,000 cfs (with av. machine gate openings - .765; reservoir elevation - 2074.35)

Ques. 6. State for what purpose water is used and at what place. (If for irrigation, give each subdivision in which water has been used and number of acres irrigated in each subdivision.) State whether cultivated or natural meadow land and the nature of all improvements which have been made as a direct result of said use.

Ans. Water used for generation of electric energy at Brownlee Dam located within Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho.

Ques. 7. If for power or other purposes than irrigation, state how water has been applied and to what extent.

Ans. Water has been used from Snake River to operate 4 generators, each capable of producing 127,500 Kw of power for a total of 510,000 Kw.

Ques. 8. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation.

Ans. Not Applicable

Ques. 9. Have you any interest in the works, water or lands above mentioned? If so, in what way and to what extent?

Ans. Not Applicable

Ques. 10. State when, how, in what amount and to what extent you have witnessed the application to beneficial use of water diverted under said permit.

Ans. On June 16, 1959, I visited Brownlee Dam and its power plant and witnessed the operation of the project producing power and utilizing approximately 25,000 cfs of water beneficially.

(Signed) Keith E. Anderson

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise, County of Ada, State of Idaho, on this 17th day of June, A. D. 19 59.

Dale C. Farley
Notary Public.

My commission expires May 15, 1962.

Form 15-R

RECEIVED
JUN 19 1959
Department of Reclamation

Permit No. R-905

# Proof of Completion of Works

## DEPOSITION OF HOLDER

Ques. 1. State your name, residence, occupation and postoffice address.

Ans. Idaho Power Company, 1220 Idaho Street, Boise, Idaho

Occupation: Generation and sale of electric energy

Ques. 2. If acting on behalf of a corporation, state its name, principal place of business, your position with reference to same, and your authority for appearing in its behalf.

Ans. Idaho Power Company, 1220 Idaho Street, Boise, Idaho, T E Roach, President, duly elected by the Board of Directors of Idaho Power Company

Ques. 3. State number and date of permit, acre feet of water you claim for storage, and source of same.

Ans. Permit No R-905, dated 4/2/53. Storage: 1,400,000 acre feet of which 1,000,000 are usable. Source: Snake River

Ques. 4. Under terms of permit construction was required to be completed by June 24, 1960.

Ques. 5. Construction (including power plant) was actually completed on the date of January 1959. First turbine and generator in operation August 1958.

Ques. 6. Does the construction fully comply with the specifications? Yes

Ques. 7. Of what material was the dam built? Sloping clay core enclosed in rock fill.

Ques. 8. State whether or not the water has been turned into your reservoir, and if so, when and to what extent.

Ans. Yes. Diversion tunnel gates closed July 1, 1958.

Ques. 9. The capacity of the reservoir is 1,426,700 acre feet.

Ques. 10. The area of the high water line of the reservoir is 15,100 acres.

Ques. 11. The height of the dam above bottom of reservoir is 297 feet, above low water is 121 feet.

Ques. 12. The dimensions of the spillway are 3 - 23' x 23' gates with sills 139' below reservoir surface elevation and 4 - 32' wide by 50' high gates with sills 50' below reservoir surface elevation and the bottom of the spillway is 152 feet below the top of the dam.

Ques. 13. Dimensions of the reservoir outlet are 4 penstocks 22' in diameter each approximately 500' long

Ques. 14. Describe the gate and control unit.

Ans. Steel headgates with conventional wicket gates on each generator unit.

Ques. 15. The reservoir outlet is made of Concrete and steel

Ques. 16. Is the reservoir filled through a feeder canal? No

Ques. 17. If so, where is the point of diversion for same?

Ans. Not Applicable ¼ Section, Twp. Range

R-905

Ques. 18. Does the feeder canal comply with the specifications in the permit? Not Applicable

Ques. 19. If not, explain .....

.....

Ques. 20. Cost of constructing feeder canal? $ Not Applicable Cost of reservoir? $ 40 million (approx) Acct 322 - Reservoir, Dam & Waterways:

Ques. 21. State whether or not the works from reservoir outlet to place of use are fully completed, and whether or not they comply with the specifications in permit. If not, explain.

Ans. Works completed in accordance with specifications

Ques. 22. Water has (~~XXXXXX~~)been delivered to place of intended use? Yes

Ques. 23. Give description of dam, state dimensions, and give slope of face both upstream and downstream. Also method and material for protecting against wave action.

Ans. Sloping impervious clay core with downstream rock fill with average slope of 1 to 1.4. Upstream rock fill with slope varying between 1 to 2 and 1 to 3. Total height 395'. Length of crest 1320'. Width of crest 35'.

Ques. 24. State the purpose for which the water is to be used and give the place of use, and if for irrigation, state the number of acres, and give the legal description of same.

Ans. Water used for generation of electric energy within Lot 3, Section 2, T17N, R5W, BM, Washington County, Idaho.

.....

(Sign here) T E Roach

T E Roach, President, Idaho Power Company

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise, County of Ada, State of Idaho, on this 17th day of June A.D. 1959.

Dale C. Farley

Notary Public

My commission expires May 15, 1962

Form 14-R

RECEIVED
JUN 19 1959
Department of Reclamation

The Depositions of two Witnesses, in this form, taken separately, required in each case.

Permit No. R-905

# Proof of Completion of Works

## DEPOSITION OF WITNESS

Ques.1. State your name, residence, occupation and postoffice address.

Ans. Keith E Anderson, 6932 Westfield Place, Boise, Idaho, Consulting Engineer.

Ques. 2. Are you acquainted with Idaho Power Company, the holder of Permit No. R-905, authorizing the storage of 1,400,000 acre feet of the waters of Snake River which is tributary to ---, in the County of Washington, State of Idaho? How long have you known him, and where does he reside?

Ans. Yes; more than 20 years. Principal place of business: 1220 Idaho Street, Boise, Idaho

Ques. 3. Have you read or heard read said Permit? Yes Are you familiar with its terms and conditions? Yes

Ques. 4. Of what material and how has the dam been constructed?

Ans. Rock-filled dam with sloping, impervious, clay core.

Ques. 5. Is the reservoir fully constructed? Yes Has water been turned into it? Yes And to what extent? Entire river flow

Ques. 6. Where is the point of diversion of the feeder canal?

Ans. Not Applicable ¼ Section ....., Township ..... Range .....

Ques. 7. The outlet of the reservoir is located in the Lot 3 ¼ ¼ Section 2 Twp. 17N Range 5W

Ques. 8. Describe the spillway.

Ans. Constructed of steel-reinforced concrete on Oregon side of Snake River and having 3 - 23'x23' gates with sills 139' below reservoir surface elevation and 4 - 32' wide by 50' high gates with sills 50' below reservoir surface elevation. Spillway design capacity - 300,000 cfs.

Ques. 9. How much below the top of the dam is the bottom of the spillway? 152 Ft.

Ques. 10. State the dimensions of the outlet for the reservoir. 4 penstocks 22' in diameter and each approximately 500' long.

Ques. 11. Of what material is the outlet made? Concrete and steel

Ques. 12. How is the outlet gate operated? Electric power-driven hoists

Ques. 13. Of what material has the dam been constructed? Rock-fill clay core

Ques. 14. Are the works from the reservoir to place of use fully completed? Yes

Ques. 15. Describe these works as they now exist, and give your estimate of their capacity.

Ans. Reservoir, dam and hydroelectric plant completed. Reservoir capacity approximately 1,426,700 acre feet. Spillway located on Oregon side of Snake River. Power house and switchyard on Idaho side. Penstock and plant water use capacity approximately 30,000 cfs.

Ques. 16. For what purpose is the water to be used?

Ans. Generation of Electric energy.

R-905

Ques. 17. If for irrigation purposes, are you acquainted with the land to be irrigated?.....
How much water is required for its profitable cultivation?

Ans Not Applicable

Ques. 18. Give the legal description of the land to be irrigated, or the place of use.

Ans. Not Applicable

(Sign here) Keith E. Anderson

---

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in Boise, County of Ada, State of Idaho, on this 17th day of June 1959.

Dale C. Farley
Notary Public

My commission expires May 15, 1962

Form 14-R

RECEIVED
JUN 19 1959

The Depositions of two Witnesses, in this form, taken separately, required in each case.

Permit No. R-905

# Proof of Completion of Works

## DEPOSITION OF WITNESS

Ques.1. State your name, residence, occupation and postoffice address.

Ans. Myron Swendsen, 5010 Bel Air, Boise, Idaho, Engineer.

Ques. 2. Are you acquainted with Idaho Power Company, the holder of Permit No. R-905, authorizing the storage of 1,400,000 acre feet of the waters of Snake River which is tributary to ---, in the County of Washington, State of Idaho? How long have you known him, and where does he reside?

Ans. Yes; more than 40 years. Principal place of business: 1220 Idaho Street, Boise, Idaho.

Ques. 3. Have you read or heard read said Permit? Yes Are you familiar with its terms and conditions? Yes

Ques. 4. Of what material and how has the dam been constructed?

Ans. Rock-filled dam with sloping, impervious, clay core.

Ques. 5. Is the reservoir fully constructed? Yes Has water been turned into it? Yes And to what extent? Entire river flow

Ques. 6. Where is the point of diversion of the feeder canal?

Ans. Not Applicable ¼ Section ---, Township --- Range ---

Ques. 7. The outlet of the reservoir is located in ~~the~~ Lot 3 ¼ ¼ Section 2 Twp. 17N Range 5W

Ques. 8. Describe the spillway.

Ans. Constructed of steel-reinforced concrete on Oregon side of Snake River and having 3 - 23'x23' gates with sills 139' below reservoir surface elevation and 4 - 32' wide by 50' high gates with sills 50' below reservoir surface elevation. Spillway design capacity - 300,000 cfs.

Ques. 9. How much below the top of the dam is the bottom of the spillway? 152 Ft.

Ques. 10. State the dimensions of the outlet for the reservoir 4 penstocks 22' in diameter and each approximately 500' long.

Ques. 11. Of what material is the outlet made? Concrete and steel

Ques. 12. How is the outlet gate operated? Electric power-driven hoists

Ques. 13. Of what material has the dam been constructed? Rock-fill clay core

Ques. 14. Are the works from the reservoir to place of use fully completed? Yes

Ques. 15. Describe these works as they now exist, and give your estimate of their capacity.

Ans. Reservoir, dam and hydroelectric plant completed. Reservoir capacity approximately 1,426,700 acre feet. Spillway located on Oregon side of Snake River. Power house and switchyard on Idaho side. Penstock and plant water use capacity in excess of 30,000 cfs.

Ques. 16. For what purpose is the water to be used?

Ans. Generation of electric energy.

R-905

Ques. 17. If for irrigation purposes, are you acquainted with the land to be irrigated?.....
How much water is required for its profitable cultivation?

Ans Not Applicable.

Ques. 18. Give the legal description of the land to be irrigated, or the place of use.

Ans. Not Applicable

(Sign here) Myron Swanson
C & Lic 153

---

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in Boise, County of Ada, State of Idaho, on this 17th day of June 19 59.

Dale C. Farley
Notary Public

My commission expires May 15, 1962

STATE OF IDAHO

DEPARTMENT OF RECLAMATION
Boise, Idaho

Date: April 16, 1959

Re: Permit Numbers R-905, 23985
Idaho Power Company

Weiser American
Weiser, Idaho

Gentlemen:

Enclosed you will find notice for publication, once a week for four consecutive weeks prior to June 17, 1959 the date set for proof; the expense of the publication is to be paid by the applicant

Idaho Power Company of 1220 Idaho Street, Boise, Idaho
Attention James E. Bruce, Attorney
to whom you should furnish proof of publication on or prior to the date set for proof.

Please acknowledge receipt of this notice and furnish this office with a copy or tear-sheet of the first publication.**

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer
By

** If the first copy is not received in this office for checking purposes and errors appear in subsequent issues, it is possible that re-publication of corrected copy will be at your own expense.

cc: Idaho Power Company

R-905

April 16, 1959

Re: Permits No. 23925 and R-905
Idaho Power Company

Idaho Power Company
1220 Idaho Street
Boise, Idaho

Attention: James E. Bruce
Attorney

Dear Mr. Bruce:

This acknowledges the Notice of Proof of Completion of Works and Application of Water to Beneficial Use in connection with Permits No. 23925 and R-905. The proofs are to be made at 10:00 A. M. on June 17, 1959, at 1220 Idaho Street, Boise, Idaho, before Gale C. Farley, Notary Public.

As of this date we have mailed the Notice to the Weiser American, with instructions to publish it once a week for four consecutive weeks prior to the date set for final proof and then mail the Affidavit of Publication and statement of costs to you.

It is important that the enclosed depositions be executed on behalf of the permit holder and two disinterested witnesses who are familiar with the terms of the permit and the work done thereunder, at the place, on the date, and at the time, and before the Notary, as advertised.

In returning the depositions to this office, be sure that all copies have been signed, the Notary's seal has been placed on each and that all depositions (Holders and Witnesses) are being returned. Also be sure to enclose the Affidavit of Publication.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

GNC/lw
Encls. (12)
cc: Gale C. Farley
Notary Public
1220 Idaho Street
Boise, Idaho

See copy of "Notice for Publication" in File # 23925. also Publ. Lee. of Notice and a affidavit R-905

Wrong form used.

If S.N.C. approves publication and making of proof for both R-23925 and R-905 (one is a flow permit, the other a reservoir permit) then the entire text would have to reflect c.f.s. in the one case and Acre Feet in the other.

Our records show Q as "20,000 c.f.s." - "in excess" is not mentioned.

Points of Diversion should also be included. (Not required on printed forms for Publication of Notice) SNS

Otherwise checks & 4-15-59

Henry: See revised notice, specifying the 1,400,000 ac.ft. of storage. SNS

R-905

Due - Both permits = S/W: 6/24/60 ; B/U: 6/24/66

January 23, 1959

Mr. A. C. Inman, Attorney
% Idaho Power Company
Boise, Idaho

Re: Permit No's
R-905 and 23925

Dear Mr. Inman:

Following your yesterday's phone call regarding procedure in making Proofs of Completion of Works and Application of Water to Beneficial Use on the above numbered permits, forms are enclosed for that purpose.

In the case of these two permits, one for storage of water and the other for diversion and use and where both proofs are being made simultaneously, it seems to me that as a practical or logical matter, the notice for publication can be combined. The state's printed forms for publication of notices will need some adaptation for a combined notice inasmuch as they are designed for either the Completion of Works Proof or Beneficial Use Proof. This I am sure you can satisfactorily prepare.

Two sets of forms for making these proofs are enclosed. Form 8 is the Notice For Publication on a Completion of Works Proof. This office requires only the originals of proof papers.

Sincerely yours,

GEO. N. CARTER
State Reclamation Engineer

GNC/lw
Enclosures:
(2) Form 8
(1) Form 11
(1) Form 15-R
(2) Form 14-R
(2) Form 16
(4) Form 17
(1) - Complete set for Applicant's File

R-905

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Before Commissioners: Jerome K. Kuykendall, Chairman; William R. Connole and John B. Hussey.

In the Matter of )
) Project No. 1971
Idaho Power Company )

ORDER AMENDING ORDER AUTHORIZING FILLING OF BROWNLEE RESERVOIR

(Issued August 26, 1958)

On August 14, 1958, Idaho Power Company (licensee) filed a request for amendment of the Commission's order issued April 10, 1958, to authorize operation of the first turbine at the Brownlee development of Project No. 1971 prior to completion of the Brownlee net barrier for the downstream passage of fish.

Subparagraph (vi) of Paragraph (A) of the order of April 10, 1958 prohibits the operation of any turbines at the Brownlee development until after the forebay net barrier and appurtenant facilities for downstream passage of fish are completed and in operation. This provision was required in connection with modification of the license for Project No. 1971 and was included in the order of April 10, 1958 upon recommendations of the Idaho Department of Fish and Game, the Fish and Game Commissions of the State of Oregon, and the United States Fish and Wildlife Service through the Secretary of the Interior.

The licensee has reported that the first generating unit at Brownlee will be ready to go on the line about August 30, 1958 and that due to circumstances beyond its control the Brownlee forebay net barrier will not be completed and placed in operation until about September 15, 1958. The State and Federal fishery agencies involved have advised that they do not object to the operation of the first turbine without the net barrier until September 15, 1958, subject to conditions substantially as hereinafter provided.

The Commission finds:

It is consistent with the public interest to amend the aforesaid order of April 10, 1958, as hereinafter provided.

The Commission orders:

(A) Subparagraph (vi) of Paragraph (A) of the aforesaid order issued April 10, 1958 is amended by adding the following:

> Provided, however, That operation of the first turbine is authorized until September 15, 1958, without the forebay net barrier in position on the condition that the Licensee finance a program of observation to determine the effects of such operation on downstream migration of salmonoids, and

this program shall be initiated concurrently with activating the first turbine and shall be in accordance with a plan devised cooperatively by the Licensee, the Idaho Fish and Game Department, the Oregon Fish Commission, the Oregon Game Commission, and the United States Fish and Wildlife Service; provided, further, That the Commission may rescind this amendment of subparagraph (vi) of paragraph (A) of its order issued April 10, 1958 immediately upon receipt of a written report from the aforesaid fishery agencies that significant losses are occurring to young salmonoids.

(B) Paragraph (A) of the aforesaid order issued April 10, 1958 is amended by adding subparagraph (ix) reading as follows:

(ix) The Licensee shall finance and, in cooperation with the State fishery agencies and the U.S. Fish and Wildlife Service, shall carry out a program of observation to determine the best positions for the mobile collection traps in the Brownlee forebay, such program to be carried out during the initial stages of the operation of each of the turbines at the Brownlee development.

(C) This order shall become final 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313 (a) of the Federal Power Act, and failure to file such an application shall constitute acceptance of this order.

By the Commission.

Joseph H. Gutride,
Secretary.

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Before Commissioners: Jerome K. Kuykendall, Chairman; Seaborn L. Digby, Frederick Stueck and Arthur Kline.

In the Matter of )
) Project No. 1971
Idaho Power Company )

SEP 30 1957
Department of Reclamation

ORDER APPROVING REVISED EXHIBIT

(Issued September 27, 1957)

Idaho Power Company, licensee for Project No. 1971, filed with the Commission on May 27, 1957, revised Exhibit L drawings for the Brownlee Development of Project No. 1971, together with a report on the hydraulic model studies for the spillway and outlets for the Brownlee Development in compliance with Article 30 of the license, showing certain changes to the project structures and their hydraulic performance.

The changes to the project structures consist principally in (1) changing the upstream slope of the rock-fill dam from $2\frac{1}{2}$ to 1 to a combination of 2 to 1 and 3 to 1 with intermediate berms; (2) providing a heavy compacted layer of rock-fill below the impervious core filter zone; (3) providing curtain grouting in the rock foundation below the impervious core; (4) providing a filter zone and rock toe on the downstream side of the dam to prevent the possibility of piping through the earthen foundation and to prevent possible erosion of the toe of the dam from spillway discharge; (5) relocation of the unwatering sluices from the end of the diversion tunnel to a position underneath the spillway; and (6) changes to the size and number of spillway gates. The change in location of the unwatering sluices will result in savings in cost and the sluices will have essentially the same hydraulic performance as the original design in the capability of handling the maximum flood of 300,000 c.f.s. and in the passing of 65,000 c.f.s. at time of maximum drawdown as required in Article 42, part (e) of the license. The discharge capacity of the spillway gates and the action of the spillway has been determined by testing a hydraulic model of the entire spillway section.

The Secretary of the Army and the Chief of Engineers have approved the revised plans in accordance with Section 4 (e) of the Federal Power Act.

The Commission finds:

The revised Exhibit L drawings (FPC No. 1971-49) "General Plan",

(FPC No. 1971-50) "Dam-Section and Elevation", (FPC No. 1971-51) "Penstock Section, Spillway Section", and (FPC No. 1971-52) "Powerhouse, Plans and Section", conform to the Commission's Rules and Regulations and should be approved as part of the license for Project No. 1971, and superseded Exhibit L drawings FPC Nos. 1971-41, -42, -43, and -44, now part of the license should be eliminated therefrom as hereinafter provided.

The Commission orders:

(A) Revised Exhibit L, drawings (FPC Nos. 1971-49 through 1971-52) are approved as part of the license for Project No. 1971, and the superseded Exhibit L drawing (FPC Nos. 1971-41 through 1971-44) are eliminated from the license.

(B) This order shall become final thirty (30) days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313 (a) of the Federal Power Act, and filure to file such an application shall constitute acceptance of this order.

By the Commission.

Joseph H. Gutrido,
Secretary.

R-905

June 18, 1957

Mr. A. C. Inman
Secretary
Idaho Power Company
Boise, Idaho

Dear Mr. Inman:

+ I am returning white line prints both large and small of Brownlee hydroelectric development drawing E-11442 as approved of this date.

I will return the report on the hydraulic studies at an early date.

Very truly yours,

MARK R. KULP
State Reclamation Engineer

MRK:lw

+ - Tracings in Map file

R-905

# IDAHO POWER COMPANY

BOISE, IDAHO

June 1, 1957

RECEIVED
JUN 1 1 1957
Department of Reclamation

Mr Mark R Kulp
State Reclamation Engineer
State House
Boise, Idaho

Dear Mr Kulp:

Reference is made to my letter of June 11, 1956, copy of which is enclosed, with particular reference to the approval of plans for our Brownlee hydroelectric development.

For the purpose of obtaining the approval contemplated by Section 42-1707, Idaho Code, I am transmitting herewith one set of tracings and one set of white line prints, Sheets 1-5 of 5 of our Drawing E-11442 (as revised May 1957), together with two sets of reduced size photostats thereof, showing the general project plans for the Brownlee development as recently submitted to the Federal Power Commission.

Upon approval thereof it will be appreciated if you will indicate such approval on both copies of both the large and small drawings involved, and return to us for our permanent files the set of large white line prints, together with one set of the reduced size drawings, with such approval indicated thereon.

If any further information or details are desired in connection with this application, please advise, and the same will be promptly furnished.

You will recall that in our Federal Power Commission license issued August 4, 1955, copy of which has previously been furnished to you, Article 30 required that final spillway designs "shall be based on model tests". These tests, which have now been completed, were made at the Hydraulic Research Laboratory of Washington State College, Pullman, Washington. I am enclosing one copy of the bound volume comprising the report on the model tests for Brownlee. As the number of these copies is somewhat limited, it will be appreciated if you can return this volume for our permanent files when it has served your purpose, although, of course, it may be retained for your own files if you so desire.

Very truly yours,

A C Inman
Secretary

ACI:mb
Encl

R-905

IDAHO POWER COMPANY
BOISE, IDAHO

June 11, 1956

Mr Mark R Kulp
State Reclamation Engineer
State House
Boise, Idaho

COPY

Dear Mr Kulp:

We have heretofore furnished you with copies of our Federal Power Commission license issued August 4, 1955, together with subsequent order of the Commission issued November 3, 1955, approving plans (Exhibit L drawings) showing the general design of the Oxbow and Brownlee units of FPC Project No 1971, the drawings involved being our Nos F-140647-50 for the Brownlee development, and F-140697-99 for the Oxbow development.

Reference is also made to Article 30 (page 11) of the license, providing that "The final design of the spillways at the dams of the proposed project shall be based on model tests." As the result of these tests, the filing of amended drawings may be necessary or desired, to reflect such changes as may eventually be decided upon. The model tests are now under way, and we will, of course, be glad to have you, or any representative of your office, attend or participate, should you so desire.

I am transmitting herewith two sets of white-line prints of the drawings referred to above, together with two sets of reduced-size photostatic copies thereof. For your further information, I also enclose various data (which were also furnished to the Federal Power Commission) with respect to core and filter materials, dam and spillway stability analyses, tailwater rating curves and geology reports, for both the Brownlee and Oxbow developments. If it is not necessary to retain these, it will be appreciated if you can return them for our project records.

If the enclosures meet with your approval, it will be appreciated if you will so indicate thereon and return one copy of both the large and small size drawings for our files.

Very truly yours,

A C Inman
Secretary

ACI:mb
Encl

RECEIVED
DEC 27 1956
Department of Reclamation

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Before Commissioners: Jerome K. Kuykendall, Chairman; Seaborn L. Digby, Frederick Stueck, William R. Connole and Arthur Kline.

In the Matter of )
)
Idaho Power Company ) Project No. 1971

Order extending time for filing exhibits

(Issued December 17, 1956)

On October 19, 1956, Idaho Power Company, licensee for major Project No. 1971, filed a request for extension of time to December 31, 1957, for the filing of Exhibits F and K with respect to the Brownlee unit of the project.

The license for the project provides that the licensee shall file Exhibits F and K within one year from the date of commencement of construction of each unit of the project and construction on the Brownlee unit was started in November 1955.

Licensee states that it is in the process of obtaining the necessary land rights for the Brownlee reservoir, and, due to the size of the development and the probable necessity of acquiring some of the lands by condemnation, the data required for preparation of the exhibits will not be available in time to file the required exhibits within the time originally specified.

The Commission finds:

An extension of time as hereinafter provided is not incompatible with the public interest.

The Commission orders:

The time for the filing of Exhibits F and K for the Brownlee unit of Project No. 1971 is extended to and including December 31, 1957.

By the Commission.

Leon M. Fuquay,
Secretary.

R-905

June 30, 1955

RE: Permits Nos. 22442 - 23925 - 24393 - R-905

Idaho Power Company
Boise
Idaho

ATTENTION: Mr. A. C. Inman

Gentlemen:

We enclose herewith Approval of the State Reclamation Engineer of Extension of Time for Completion of Works on the above numbered Permits to June 24, 1960.

These should be attached to the original Permits of which they now form a part.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:cu
Enc.

R 905 24393

R-905

June 30, 1955

RE: Permits Nos. 22442 - 23925 - 24593 - 24905

Idaho Power Company
Boise
Idaho

ATTENTION: Mr. A. C. Inman

Gentlemen:

We enclose herewith Approval of the State Reclamation Engineer of Extension of Time for Completion of Works on the above numbered Permits to June 24, 1960.

These should be attached to the original permits of which they now form a part.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:cu
Enc.

S T A T E  O F  I D A H O

DEPARTMENT OF RECLAMATION

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WHEREAS, Permit No. R-905 of the Idaho Power Company requires proof of completion of works to be made on or before April 2, 1958; and,

WHEREAS, Said Permit Holder has been unable to proceed with construction pending allowance of a License by the Federal Power Commission;

NOW, THEREFORE, In accordance with the provisions of Section 42-204, Idaho Code, extension of time is allowed for construction of works under Permit No. R-905 until June 24, 1960 and a similar extension is allowed for each and every action required under the terms and conditions of Permit No. R-905.

Signed at Boise, Idaho, this 29th day of June, 1955.

Mark R Kulp

MARK R. KULP
State Reclamation Engineer

R-905

May 7, 1953

RE: Permits Nos. 23925 and R-905

Idaho Power Company
1220 Idaho Street
Boise, Idaho

ATT: Mr. James E. Bruce

Dear Mr. Bruce:

We acknowledge receipt of your letter of May 6, 1953, enclosing bonds in connection with the above numbered permits, which have been placed on file.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg

R-905

# GENERAL CASUALTY COMPANY OF AMERICA

SEATTLE, WASHINGTON

#261963

KNOW ALL MEN BY THESE PRESENTS,

THAT WE, THE IDAHO POWER COMPANY, A CORPORATION, OF BOISE, IDAHO (HEREINAFTER CALLED THE PRINCIPAL), AS PRINCIPAL AND GENERAL CASUALTY COMPANY OF AMERICA, (HEREINAFTER CALLED THE SURETY), AS SURETY, ARE HELD AND FIRMLY BOUND UNTO STATE OF IDAHO (HEREINAFTER CALLED THE OBLIGEE) IN THE PENAL SUM OF ONE THOUSAND AND NO/100 DOLLARS ($1,000.00) FOR THE PAYMENT OF WHICH THE PRINCIPAL AND THE SURETY BIND THEMSELVES, THEIR HEIRS, EXECUTORS, ADMINISTRATORS, SUCCESSORS AND ASSIGNS, JOINTLY AND SEVERALLY, FIRMLY BY THESE PRESENTS.

SIGNED AND SEALED THIS THIRTIETH DAY OF APRIL, 1953.

THE TERMS OF THIS OBLIGATION ARE SUCH THAT, WHEREAS THE ABOVE NAMED PRINCIPAL ON THE 17TH DAY OF OCTOBER, 1952, FILED IN THE OFFICE OF THE STATE RECLAMATION ENGINEER IN BOISE, IDAHO, A CERTAIN APPLICATION FOR PERMIT TO STORE THE PUBLIC WATERS OF THE STATE OF IDAHO, THE SAID APPLICATION BEING THEREUPON NUMBERED No R 30948, IN ACCORDANCE WITH WHICH SAID APPLICATION THE STATE RECLAMATION ENGINEER GRANTED AND ISSUED TO THE SAID PRINCIPAL HEREIN A CERTAIN PERMIT NUMBERED No R 905, A FULL, TRUE AND COMPLETE COPY OF WHICH APPLICATION No R 30948 AND PERMIT No R 905 IS OF RECORD IN THE OFFICE OF THE STATE RECLAMATION ENGINEER IN BOOK R4 OF RESERVOIR PERMITS AT PAGE 905.

NOW, IF THE ABOVE BOUNDEN PRINCIPAL SHALL FAITHFULLY CARRY TO COMPLETION THE SAID WORKS OF DIVERSION AS SPECIFIED IN SAID APPLICATION No R 30948 AND PERMIT No R 905, IN THE MANNER AND FORM PRESCRIBED THEREIN AND WITHIN THE TIME ALLOWED, THEN THE ABOVE OBLIGATION TO BE VOID, OTHERWISE TO REMAIN IN FULL FORCE AND EFFECT.

ATTEST

James E. Bruce
Asst. SECRETARY

THE IDAHO POWER COMPANY

BY A. E. Inman
Vice President

GENERAL CASUALTY COMPANY OF AMERICA

BY John M'Murray
ATTORNEY-IN-FACT

John M'Murray
RESIDENT AGENT

R-905

April 20, 1953

RE: Permits Nos. 23925 and R-905

Idaho Power Company
1220 Idaho Street
Boise, Idaho

ATT: Mr. James E. Bruce

Dear Mr. Bruce:

We enclose Permits Nos. 23925 and R-905, and direct your attention to the limitations and conditions as given on the fourth page under approval of the State Reclamation Engineer.

Your special attention is directed to the requirement that a bond in the amount of $1,000.00 by filed with this department on or before June 2, 1953,

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg
Enc.

R905

23925

R-905

April 20, 1953

RE: Permits Nos. 23925 and R-905

Idaho Power Company
1220 Idaho Street
Boise, Idaho

ATT: Mr. James E. Bruce

Dear Mr. Bruce:

We enclose Permits Nos. 23925 and R-905, and direct your attention to the limitations and conditions as given on the fourth page under approval of the State Reclamation Engineer.

Your special attention is directed to the requirement that a bond in the amount of $1,000.00 by filed with this department on or before June 2, 1953.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg
Enc.

R-905

# Affidavit of Publication

STATE OF IDAHO,
County of Washington. } ss.

Harry N. Nelson, being duly sworn, deposes and says: That he is the publisher of WEISER AMERICAN, a weekly newspaper published at Weiser, in the County of Washington and State of Idaho; that said paper has been and is in general circulation in the county aforesaid, and in the vicinity of Weiser; that the advertisement, a copy of which is hereto attached, was published in said news-

paper once a week for three consecutive weeks in the regular and entire issue of every number of said paper during the period and time of publication, and was published in the newspaper proper and not in a supplement; that said paper has been established and regularly and continuously published for more than seventy-eight weeks past previous to the first publication of this notice. Such notice was published in the issues beginning with

February 16, 1953 and ending

with the issue of March 2, 1953

Fees $ 15.87 ~~20.70~~

Harry N Nelson

Subscribed and sworn to before me this 14

day of March, 1953

Elmer Laird

Notary Public Residing at Weiser, Idaho

My Commission Expires April 1 -, 1954

No. 2177
**NOTICE OF MEETING**

The Sunnyside Ditch Co. will hold their annual meeting Friday, February 20, 1953, at the home of Wallace Laird, Route No. 4 at 8 p. m.

SIGNED
Wallace Laird
Secretary

sa 92-3

No. 539
STATE OF IDAHO
DEPARTMENT OF
RECLAMATION

**NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF IDAHO IN ACCORDANCE WITH THE PROVISIONS OF SECTION 42-203, IDAHO CODE.**

NOTICE IS HEREBY GIVEN, That the Idaho Power Company, of Boise, Idaho, has made application on the 17th day of October, 1952, to store and appropriate One million, four hundred thousand (1,400,000) acre feet per annum of the waters of Snake River for the development of electric power, subject to future depletion and diversions of water for upstream irrigation and consumptive uses in the Snake River watershed.

That the point of outlet of said reservoir is described as being 1,080 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B. M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B. M.

That the point of use of said water is described as being 1,760 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B. M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B. M.

That any protests against the approval of this application must be filed in the Department of Reclamation, at Boise, Idaho, within forty (40) days from the date of this notice, and such protest shall state the name and address of the protestant, and shall clearly set forth his objections to the approval of said application.

Dated this 28th day of January, 1953.

MARK R. KULP
State Reclamation Engineer

Date of first publication February 16.

Date of last publication March 2.

Last date for protest March 9, 1953.

SERVICE OF THE FOREGOING, by copy, is hereby admitted, this 2nd day of February, 1953.

IDAHO POWER COMPANY
Applicant
By Its Assistant Secretary
JAMES E. BRUCE

93-3a

R-905

# Proof of Publication

## WEISER AMERICAN

## Weiser, Idaho

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**CHARACTER OF NOTICE**

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**DATES OF PUBLICATION**

First Publication ....., 194.....

Last Publication ....., 194.....

No. of weekly publications .....

February 12, 1953

RE: Applications Nos. 30947 and R-30948

Idaho Power Company
1220 Idaho Street
Boise, Idaho

ATT: Mr. James E. Bruce

Dear Mr. Bruce:

We have sent to the Weiser American copy of notices in connection with the above numbered applications, with instructions to publish them once a week for three weeks beginning with their next issue, and to send you the affidavits of publication together with statement of costs.

If no protests are filed, these applications will be approved and permits issued upon receipt from you of the affidavits of publication.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg

February 11, 1953

RE: Applications Nos. 30947 and R-30948

Weiser American
Weiser
Idaho

Gentlemen:

We enclose two notices which we will ask you to publish once a week for 3 consecutive weeks, beginning with your next issue.

The cost of publication is to be paid by the Idaho Power Company, 1220 Idaho Street, Boise, Idaho, to whom please send affidavits of publication together with statement of costs.

Please acknowledge receipt of these notices and furnish this department with a copy of your first issue containing same.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg
Enc.

5-905

Form No. 11

**NOTICE TO ACCOMPANY THIS LETTER MUST BE MADE IN DUPLICATE**

(Date) February 2, 1953

(P. O.) 1220 Idaho Street, Boise, Idaho

**TO THE STATE RECLAMATION ENGINEER:**

Boise, Idaho.

Dear Sir:

You are hereby authorized to have the attached notice published at my expense in the Weiser American of Weiser, Idaho published in the county in which the works are situated.

IDAHO POWER COMPANY

By: [signature]
Assistant Secretary

(In case of canals or other works designed to divert and carry more than 50 cubic feet of water per second, the following certificate must be signed by a well-known and competent engineer.)

I hereby certify that the facts set forth in the attached notice are true.

.....
Engineer.

R-9005

January 28, 1953

RE: Applications Nos. 30947 and R-30948

Mr. A. C. Inman
C/o Idaho Power Company
1220 Idaho Street
Boise, Idaho

Dear Mr. Inman:

We enclose two copies of notices in connection with Applications Nos. 30947 and R-30948, of the Idaho Power Company.

You will note that one of these describes the point of diversion or location of the outlet of the reservoir as being in Lot 2, Section 2, Township 17 North, Range 5 West, B.M., whereas the other describes it as in Lot 3.

Doubtless this should be Lot 3 in each instance, but we hesitate to change it without your authorization.

Please acknowledge service on the original of these notices and return to this department together with Form 11 which is authorization for us to have the notices published at your expense in the designated county newspaper.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg
Enc.

STATE OF IDAHO

DEPARTMENT OF RECLAMATION

NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF IDAHO IN ACCORDANCE WITH THE PROVISIONS OF SECTION 42-203, IDAHO CODE.

NOTICE IS HEREBY GIVEN, That the Idaho Power Company, of Boise, Idaho, has made application on the 17th day of October, 1952, to store and appropriate One million, four hundred thousand (1,400,000) acre feet per annum of the waters of Snake River for the development of electric power, subject to future depletion and diversions of water for upstream irrigation and consumptive uses in the Snake River watershed.

That the point of outlet of said reservoir is described as being 1080 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B.M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B.M.

That the point of use of said water is described as being 1760 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B.M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B.M.

That any protests against the approval of this application must be filed in the Department of Reclamation, at Boise, Idaho, within forty (40) days from the date of this notice, and such protest shall state the name and address of the protestant, and shall clearly set forth his objections to the approval of said application.

Dated this 28th day of January, 1953.

Mark R Kulp

MARK R. KULP
State Reclamation Engineer

Date of first publication _____
Date of last publication _____
Last date for protest March 9, 1953.

SERVICE OF THE FOREGOING, by copy, is hereby admitted, this _____ day of _____, 1953.

IDAHO POWER COMPANY
Applicant

By _____
Its

No. 539

STATE OF IDAHO
DEPARTMENT OF
RECLAMATION

**NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF IDAHO IN ACCORDANCE WITH THE PROVISIONS OF SECTION 42-203, IDAHO CODE.**

NOTICE IS HEREBY GIVEN, That the Idaho Power Company, of Boise, Idaho, has made application on the 17th day of October, 1952, to store and appropriate One million, four hundred thousand (1,400,000) acre feet per annum of the waters of Snake River for the development of electric power, subject to future depletion and diversions of water for upstream irrigation and consumptive uses in the Snake River watershed.

That the point of outlet of said reservoir is described as being 1,080 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B. M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B. M.

That the point of use of said water is described as being 1,760 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B. M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B. M.

That any protests against the approval of this application must be filed in the Department of Reclamation, at Boise, Idaho, within forty (40) days from the date of this notice, and such protest shall state the name and address of the protestant, and shall clearly set forth his objections to the approval of said application.

Dated this 28th day of January, 1953.

MARK R. KULP
State Reclamation Engineer

Date of first publication February 16.

Date of last publication March 2.

Last date for protest March 9, 1953.

SERVICE OF THE FOREGOING, by copy, is hereby admitted, this 2nd day of February, 1953.

IDAHO POWER COMPANY
Applicant
By Its Assistant Secretary
JAMES E. BRUCE

2-16 93-3a

IDAHO POWER COMPANY
BALANCE SHEET, JUNE 30, 1952
(Subject to Approval of Independent Auditors)

## ASSETS AND OTHER DEBITS

| | | |
|---|---|---|
| **ELECTRIC PLANT (see Note 1):** | | |
| Electric plant in service | $113,546,808.66 | |
| Construction work in progress | 13,327,620.95 | |
| Electric plant acquisition adjustments | 2,242,569.18 | |
| Total electric plant | | $129,116,998.79 |
| **INVESTMENT AND FUND ACCOUNTS:** | | |
| Other physical property | $ 155,706.23 | |
| Miscellaneous investments | 42,375.00 | |
| Miscellaneous special funds | 1,181.25 | |
| Total investment and fund accounts | | 199,262.48 |
| **CURRENT AND ACCRUED ASSETS:** | | |
| Cash in banks - On demand | $ 3,280,733.83 | |
| Special deposits | 3,720.50 | |
| Working funds | 46,452.52 | |
| Notes receivable | 3,771.08 | |
| Accounts receivable: | | |
| Customers (less allowance for uncollectible accounts - $38,531.95) | 1,090,826.16 | |
| Other | 54,310.96 | |
| Materials and supplies (at average cost) | 1,205,836.54 | |
| Prepayments | 53,713.24 | |
| Total current and accrued assets | | 5,739,364.83 |
| **DEFERRED DEBITS:** | | |
| Preliminary survey and investigation charges | $ 207,198.30 | |
| Other | 86,417.27 | |
| Total deferred debits | | 293,615.57 |
| CAPITAL STOCK EXPENSE | | 458,975.13 |
| TOTAL | | $135,808,216.80 |

The accompanying Notes to Financial Statements are an integral part of this balance sheet.

R-905

IDAHO POWER COMPANY
BALANCE SHEET, JUNE 30, 1952
(Subject to Approval of Independent Auditors)

## LIABILITIES AND OTHER CREDITS

| | | |
|---|---|---|
| **CAPITAL STOCK:** | | |
| 4% Preferred, cumulative, $100 par; authorized, 400,000 shares; outstanding, 179,000 shares (see Note 3) | $17,900,000.00 | |
| Premium on 4% Preferred Stock | 278,826.00 | |
| Common, $20 par; authorized, 1,800,000 shares; outstanding, 900,000 shares | 18,000,000.00 | |
| Premium on Common Stock | 4,940,000.00 | |
| Total capital stock | | $ 41,118,826.00 |
| **LONG-TERM DEBT - First Mortgage Bonds:** | | |
| 3 1/8% Series due 1973 | $18,000,000.00 | |
| 2 3/4% Series due 1977 | 5,000,000.00 | |
| 3% Series due 1978 | 10,000,000.00 | |
| 2 3/4% Series due 1979 | 12,000,000.00 | |
| 3 1/4% Series due 1981 | 15,000,000.00 | |
| Total long-term debt | | 60,000,000.00 |
| **CURRENT AND ACCRUED LIABILITIES:** | | |
| Notes payable - Banks | $ 7,700,000.00 | |
| Accounts payable | 1,009,567.59 | |
| Liability for preferred stocks and bonds called for redemption (cash in special deposits) | 2,320.50 | |
| Customers' deposits | 123,899.58 | |
| Taxes accrued | 3,388,874.50 | |
| Interest accrued | 437,070.33 | |
| Preferred dividends accrued | 119,333.33 | |
| Other current and accrued liabilities | 168,504.21 | |
| Total current and accrued liabilities | | 12,949,570.04 |
| **DEFERRED CREDITS:** | | |
| Unamortized premium on debt (see Note 4) | $ 443,896.92 | |
| Customers' advances for construction | 72,700.59 | |
| Other | 805,271.00 | |
| Total deferred credits | | 1,321,868.51 |
| **RESERVES:** | | |
| Property retirement (see Note 2) | $12,028,331.49 | |
| Amortization of electric plant acquisition adjustments (see Note 1) | 1,409,168.13 | |
| Injuries and damages | 32,028.61 | |
| Total reserves | | 13,469,528.23 |
| CONTRIBUTIONS IN AID OF CONSTRUCTION | | 422,128.93 |
| EARNED SURPLUS | | 6,526,295.09 |
| TOTAL | | $135,808,216.80 |

The accompanying Notes to Financial Statements are an integral part of this balance sheet.

R-905

STATE OF IDAHO

DEPARTMENT OF RECLAMATION

NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF IDAHO IN ACCORDANCE WITH THE PROVISIONS OF SECTION 42-203, IDAHO CODE.

NOTICE IS HEREBY GIVEN, That the Idaho Power Company, of Boise, Idaho, has made application on the 17th day of October, 1952, to store and appropriate One million, four hundred thousand (1,400,000) acre feet per annum of the waters of Snake River for the development of electric power, subject to future depletion and diversions of water for upstream irrigation and consumptive uses in the Snake River watershed.

That the point of outlet of said reservoir is described as being 1080 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B.M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B.M.

That the point of use of said water is described as being 1760 feet distant Northwesterly from the Southeast corner of Section 2, Township 17 North, Range 5 West, B.M., and in Lot 3, Section 2, Township 17 North, Range 5 West, B.M.

That any protests against the approval of this application must be filed in the Department of Reclamation, at Boise, Idaho, within forty (40) days from the date of this notice, and such protest shall state the name and address of the protestant, and shall clearly set forth his objections to the approval of said application.

Dated this 28th day of January, 1953.

Mark R Kulp

MARK R. KULP
State Reclamation Engineer

Date of first publication _____
Date of last publication _____
Last date for protest March 9, 1953.

SERVICE OF THE FOREGOING, by copy, is hereby admitted, this 2nd day of February, 1953.

IDAHO POWER COMPANY
Applicant

By James E. Bruce
Its Asst. Secretary

R-905

(Form No. 2)

Address all communications to

P. O. _____

# APPLICATION FOR PERMIT

## To Construct a Reservoir and Appropriate and Store the Public Waters of the State of Idaho

Application No. R 30948

Permit No. R 905

1. Name of Applicant: IDAHO POWER COMPANY

Postoffice address: 1220 Idaho St. Boise County Ada State Idaho

I. If applicant is a corporation, give:

(a) Date and place of incorporation: Maine-May 6, 1915

(b) Amount of authorized Capital Stock: $ 76,000,000

(c) Amount paid in: $ 40,500,000

(d) Names and addresses of directors: C.C. Anderson, Boise, Idaho; J.C. Conley, Caldwell, Idaho; R.E. Cale, Boise, Idaho; B. Clavin, Twin Falls, Idaho; A.C. Inman, Boise, Idaho; W.J. Lloyd, Nampa, Idaho; A.L. Merrill, Pocatello, Idaho; G.E. Palmer, Ontario, Oregon; T.E. Roach, Boise, Idaho; J.H. Rogers, Boise, Idaho; B.C. Russell, Boise, Idaho; J.R. Simplot, Boise, Idaho; Nathan Sommer, Boise, Idaho; and E.T. Waters, Weiser, Idaho.

II. The financial resources of the corporation are: See balance sheet attached

(a) Cash on hand: $ _____

(b) Treasury Stock: $ _____

(c) Bonds to be issued: $ _____

(d) Other resources: _____

2. Quantity of water to be stored: 1,400,000 acre feet, of which 1,000,000 acre feet are usable acre feet per annum

3. Source of water supply is Snake River (Creek) (River) (Spring), a tributary of Columbia River.

4. The outlet of the proposed reservoir is located 1080 feet northwesterly (bearing) distant from the SW corner of Section 2, Township 17 N., Range 5 W., B. M., and is in the Lot 3 ¼ of ¼ of Section 2, Township 17 N., Range 5 W., B. M. County of Washington

5. Fill out either (a) or (b).

(a) The reservoir is located in the channel of Snake River (Creek) (River)

(b) The reservoir is to be filled through a feeder canal, the point of diversion for which is located _____ (bearing) _____ feet, distant from the _____ corner of Section _____, Township _____, Range _____, B. M., and is in the _____ ¼ of _____ ¼ of Section _____, Township _____, Range _____ B. M width at bottom _____ feet, width at top _____ feet, depth of water _____ feet; average grade per mile _____ feet; Capacity _____ cubic feet per second.

6. (a) The area of the high water line of the reservoir is 13,250 acres.

(b) The reservoir capacity is approximately 1,400,000 acre feet total approximately 1,000,000 active storage acre feet.

7. Height of reservoir dam 340 feet, length at top 1765 approximately feet length at bottom 1950 approximately feet size of outlet not yet determined feet by _____ feet. The dam is to be constructed of materials as follows: Rock fill with upstream face of concrete. Concrete spillway with tainter gate control of flood water.

(If height of dam will exceed 10 feet or capacity of reservoir will exceed 100 acre feet, plans must be approved by Department of Reclamation, before beginning construction.)

8. (a) Will water stored in reservoir be diverted to canal or aqueduct, ~~thence to land to be irrigated without commingling with natural flow or~~ tunnel (Creek) River? _____.

R-905

(b) Water stored in reservoir will be carried in the channel of Not applicable (Creek,) (River,) a distance of _____ miles to point of diversion located _____ (bearing), _____ feet, distant from the _____ corner of Section _____ Township _____, Range _____, B. M., and in the _____ ¼ of _____ ¼ of Section _____, Township _____, Range _____ B. M.

9. (a) Area of watershed above dam site _____ square miles

(b) Estimated maximum flow of stream _____ cubic feet per second.

10. Water is to be used for Electric power generation purposes.

11. If for mining, milling, power or manufacturing purposes give:

(a) Point of use of water 1760 (bearing) feet, distant from SE Corner of Section 2, Township 17 N., Range 5 W. B. M. and is in the Lot 3 ¼ of _____ ¼ of Section 2, Township 17 N., Range 5 W., B. M.

(b) Amount of power generated: 500,000 H. P., under 277 (static) feet head.

(c) Water is to be returned to Snake River (Creek) (River) (Spring) at a point 1760 (bearing) feet distant from the SE corner of Section 2, Township 17 N., Range 5 W., B. M., in the Lot 3 ¼ of _____ ¼ of Section 2, Township 17 N. tunnel, Range 5 W., B. M.

12. Water stored in accordance with this Permit will be carried to place of use through a ~~canal~~ heretofore constructed under the terms of Permit No. _____, which is hereby referred to and made a part hereof.

13. Kind of diversion works: Concrete faced rock fill dam-Concrete lined tunnel (Dam, canal, flume, pipe, etc.)

14. Height of diversion dam: 340 feet, length at top 1765 feet, length at bottom 1950 feet. The dam is to be constructed of materials as follows: Earth fill, concrete upstream face

(If height will exceed 10 feet, plans must be approved by Department of Reclamation, before beginning construction.)

15. Size of headgate: Width _____, feet, Height _____ feet.

16. Diversion Canal: Width at bottom None feet, width at water line _____ feet, depth of water _____ feet, Dimension of Flume _____

Diameter of Pipe _____ inches; Length of Conduit _____ Miles. Average grade per mile _____ feet.

17. Estimated cost of Works: Storage Works: $ 61,084,000/ including power plant and dam-Tunnel approximately 48 foot diameter. Diversion Works: $ _____

18. Time required for completion of work Five (5) years.

19. Time required for complete application of water to proposed beneficial use is Six (6) years.

20. The land to be irrigated is described in the following tabulation:

(Give Irrigable acreage in each 40-acre subdivision.)

| TWP. | RANGE | SEC. | NE¼ | | | | NW¼ | | | | SW¼ | | | | SE¼ | | | | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | |
| | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

Total Number of Acres to be Irrigated _____

21. ~~Existing rights and/or valid permits appurtenant to lands described in Section XXX~~ (REMARKS)

Reference is made to companion application No. 30947 (Permit No. 23925) filed October 17, 1952, for use of 20,000 cubic feet per second of water for electric power generation. The rights for the use of the waters, stream bed and other lands of the State of Idaho, necessary for the construction and operation of the dam and reservoir are subject to the condition that the project shall be operated in such manner as will not conflict with the future depletion in flow of the waters of Snake River and its tributaries, or prevent or interfere with the future upstream diversion and use of such waters above the back water created by said dam, for the irrigation of lands or other beneficial consumptive uses in the Snake River watershed.

Remarks:

BE IT KNOWN That the undersigned hereby makes application for permit to construct a reservoir and store and appropriate the public waters of Idaho as herein set forth, and that the enclosed map is hereby made a part of this application.

IDAHO POWER COMPANY

Applicant.

By T. E. Roach President Agent.

# Affidavit of Permission to Store and Appropriate the Water of Springs

(Not to be used when spring is situated on lands owned by applicant)

I, _____ of _____, County of _____ State of _____, do hereby certify that I am the owner or lessee of the land on which the spring mentioned in the application of _____ is located, to-wit: _____ and that I do hereby grant unto the said _____ _____ permission to file on the said spring as set forth in the foregoing application for permit to construct reservoir and store and appropriate the water from said spring.

_____

STATE OF IDAHO,
County of _____ } ss.

On this _____ day of _____, 19____, before me, a Notary Public for the State of Idaho, residing at _____, personally appeared _____ known to me to be the person__ whose name__, _____ subscribed to the foregoing certificate, and acknowledged to me that __he__ executed the same.

Witness my hand and seal, the day and year in this certificate first above written.

_____
Notary Public.

My commission expires: _____

P-905

# Approval of State Reclamation Engineer

The number of this permit is R 905.

Recorded in book R 4, page 905 Approved April 2, 1953

This is to certify that I have examined the within application for a permit to construct a reservoir and store and appropriate the public waters of the State of Idaho, and hereby approve the same, subject to the following limitation and conditions:

Bond in the sum of $ 1,000, to be filed on or before. June 2, 1953

Work to begin on or before _____ and to continue diligently and uninterruptedly to completion, unless temporarily interrupted by circumstances over which the permit holder has no control.

One-fifth of the work above specified to be completed on or before October 2, 1955.

The whole of said work to be completed on or before April 2, 1958

Beneficial use of water stored in accordance herewith, to be made on or before April 2, 1964.

Witness my hand this 2nd day of April, 19 53.

MARK R. KULP
State Reclamation Engineer.

IN TESTIMONY WHEREOF, We, LEN JORDAN, Governor of the State of Idaho, and IRA H. MASTERS, Secretary of State of the State of Idaho, have caused this instrument to be executed in the name of the State of Idaho and caused the Great Seal of the State of Idaho to be hereunto affixed, this 2nd day of April, 19 53.

Countersigned:

By IRA H. MASTERS, Secretary of State.

STATE OF IDAHO

By LEN JORDAN, Governor.

(SEAL)

No. R 905

**STORAGE PERMIT**

Date of first receipt at office of State Reclamation Engineer 4:00 P. M. October 17, 1952

Returned to applicant for correction November 17, 1952

Corrected application received January 14, 1953

Fees, $ _____ Paid.

FILING FEES FOR STORAGE PERMITS:

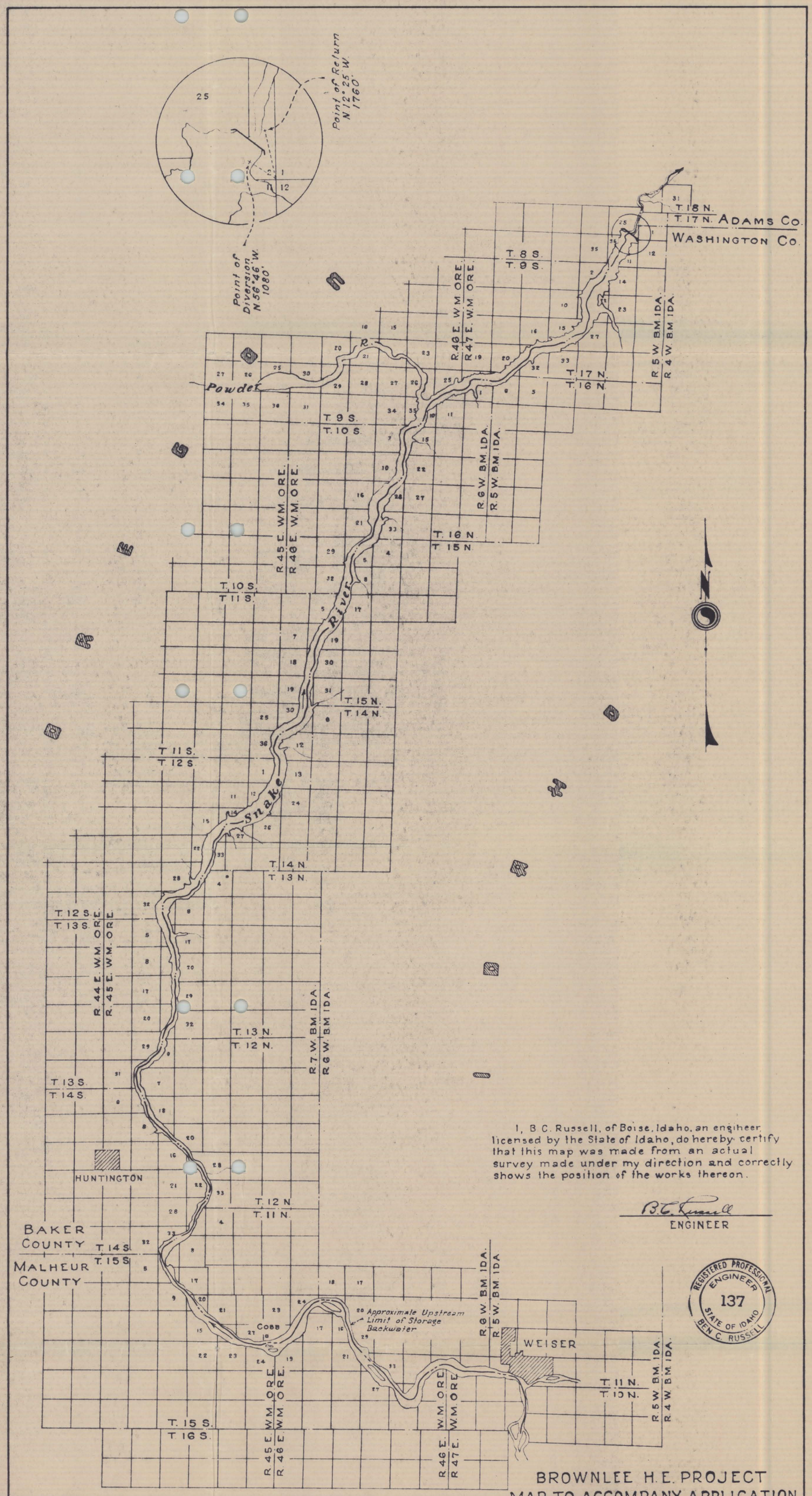
For the first 250 acre-feet $5.00

For each additional 250 acre-feet or fraction thereof $0.25

FOR NORMAL FLOW PERMITS:

For the first Second foot $5.00

For each additional Second foot or fraction thereof $0.25




I, B C. Russell, of Boise, Idaho, an engineer licensed by the State of Idaho, do hereby certify that this map was made from an actual survey made under my direction and correctly shows the position of the works thereon.

B.C. Russell
ENGINEER

REGISTERED PROFESSIONAL ENGINEER 137 STATE OF IDAHO BEN C. RUSSELL

# BROWNLEE H.E. PROJECT
## MAP TO ACCOMPANY APPLICATION FOR RESERVOIR & WATER STORAGE PERMIT
UNDER SEC. 42-202 IDAHO CODE

IDAHO POWER CO.
BOISE IDAHO
OCT 17, 1952

D-11087

BROWNLEE H.E. DEVELOPMENT
MAP TO ACCOMPANY APPLICATION
FOR RESERVOIR & WATER STORAGE PERMIT
UNDER SEC. 42-202 IDAHO CODE

IDAHO POWER CO.
BOISE, IDAHO

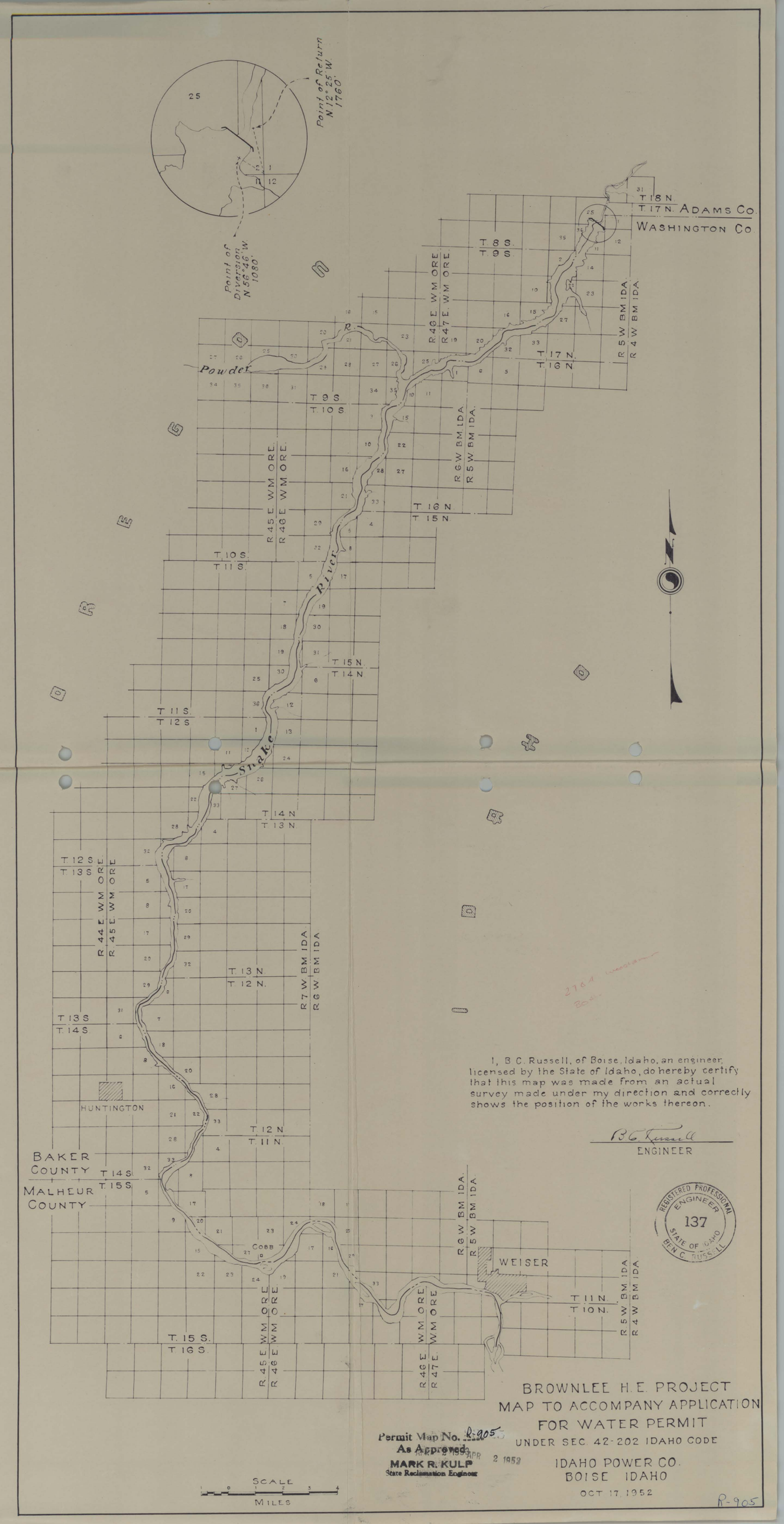
SCALE: 1" = 2 MI. DATE: OCT. 16, 1952

APPROVED

D-11087

Permit Map No. R-905
As Approved
Oct. 2, 1953
MARK R. KULP
State Reclamation Engineer

R-905




I, B C. Russell, of Boise, Idaho, an engineer, licensed by the State of Idaho, do hereby certify that this map was made from an actual survey made under my direction and correctly shows the position of the works thereon.

B C. Russell
ENGINEER

REGISTERED PROFESSIONAL ENGINEER 137 STATE OF IDAHO BEN C. RUSSELL

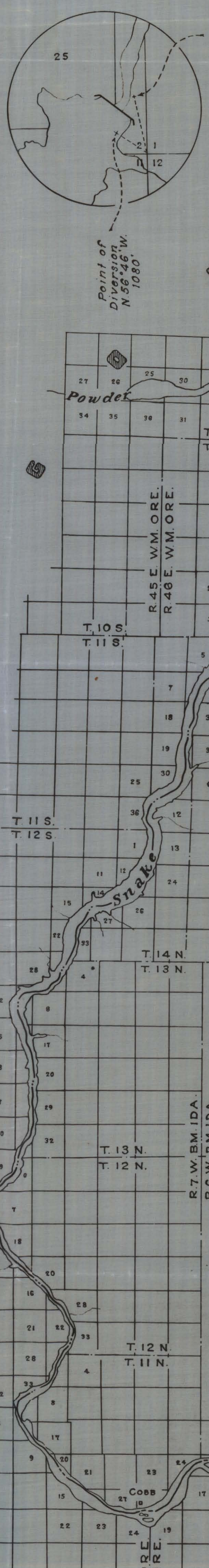
Permit Map No. R-905
As Approved
APR 2 1953
MARK R. KULP
State Reclamation Engineer

# BROWNLEE H. E. PROJECT
## MAP TO ACCOMPANY APPLICATION FOR WATER PERMIT
UNDER SEC. 42-202 IDAHO CODE

IDAHO POWER CO.
BOISE IDAHO
OCT 17 1952

R-905

R-905




I, B. C. Russell, of Boise, Idaho, an engineer, licensed by the State of Idaho, do hereby certify that this map was made from an actual survey made under my direction and correctly shows the position of the works thereon.

B. C. Russell
ENGINEER

REGISTERED PROFESSIONAL ENGINEER 137 STATE OF IDAHO BEN C. RUSSELL

Scale
1 0 1 2 3 4
Miles

Permit Map No. 905
As Approved APR 2 1953
MARK R. [illegible]
State Reclamation Engineer

D03-2018

# BROWNLEE H. E. PROJECT
## MAP TO ACCOMPANY APPLICATION FOR WATER PERMIT
UNDER SEC 42-202 IDAHO CODE

IDAHO POWER CO.
BOISE IDAHO
OCT. 17, 1952

D03-2018

D-11086

R-905