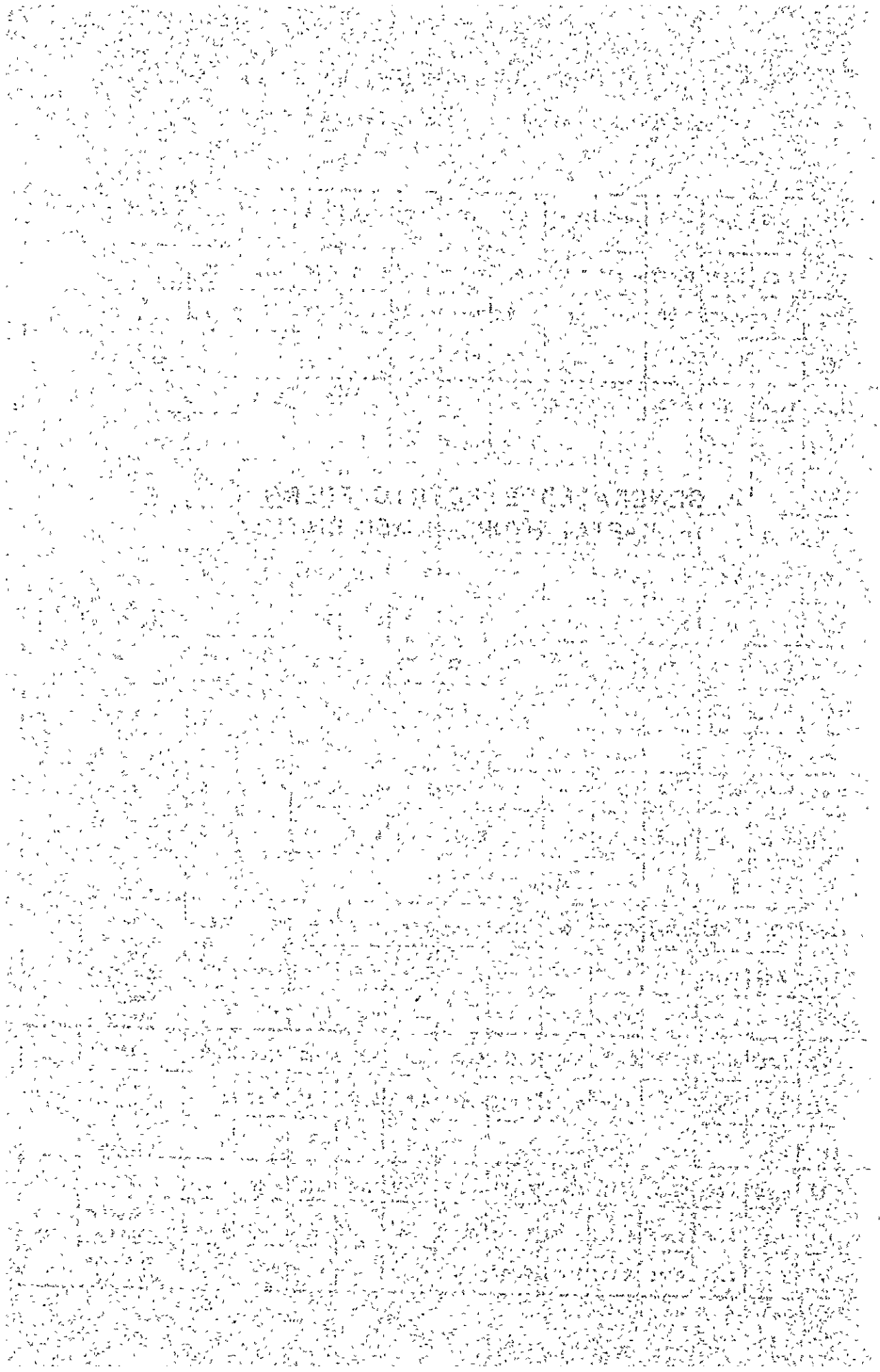
# 4. GENERATED EIECTRIC ENERGY in KAPTAI HYDRO-POWER STATION



Generated Electric Energy in Kaptai Hydro-Power Station

(Case 1: 3 units operated without upper limit of water level)

($\times 10^6$ kWh)

| Year | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | 49.4 | 68.9 | 68.1 | 56.1 | 68.3 | 66.4 | 40.7 | 81.2 | 29.7 | 52.2 | 87.6 | 76.0 | 744.6 |
| 1974 | 66.0 | 82.7 | 78.3 | 71.6 | 69.1 | 65.8 | 70.8 | 58.4 | 81.0 | 80.4 | 38.1 | 64.3 | 826.5 |
| 1975 | 71.7 | 77.8 | 72.0 | 62.8 | 64.1 | 57.7 | 39.0 | 45.6 | 77.1 | 73.5 | 68.2 | 67.0 | 776.5 |
| 1976 | 56.4 | 78.2 | 68.9 | 65.3 | 65.7 | 63.8 | 67.6 | 80.4 | 46.0 | 19.0 | 40.4 | 62.7 | 714.4 |
| 1977 | 56.8 | 77.9 | 60.1 | 73.9 | 73.5 | 57.6 | 45.5 | 61.3 | 53.7 | 12.5 | 21.5 | 47.8 | 642.1 |
| 1978 | 50.1 | 67.2 | 61.2 | 50.5 | 62.8 | 66.6 | 56.2 | 37.8 | 79.1 | 51.7 | 76.0 | 59.6 | 718.8 |
| 1979 | 55.0 | 71.6 | 68.9 | 55.5 | 53.2 | 27.0 | 26.2 | 45.7 | 63.5 | 14.7 | 18.1 | 57.6 | 557.0 |
| Average | 57.9 | 74.9 | 68.2 | 62.2 | 65.2 | 57.8 | 49.6 | 58.6 | 61.4 | 43.4 | 50.0 | 62.1 | 711.1 |

Genarated Electric Energy in Kaptai Hydro-Power Station

(Case 2: 3 units operated without upper limit of water level )

(x $10^6$ kWh)

| Year | Description | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | Existing (3 units) | 49.4 | 68.9 | 68.1 | 56.1 | 68.3 | 66.4 | 40.7 | 81.2 | 29.7 | 52.3 | 87.9 | 76.1 | 745.1 |
| | Extension (2 units) | 0 | 0 | 0 | 0 | 21.7 | 38.6 | 19.7 | 37.8 | 0.6 | 15.7 | 32.7 | 7.9 | 174.0 |
| | Total | 49.4 | 68.9 | 68.1 | 56.1 | 90.0 | 105.0 | 60.4 | 119.0 | 30.3 | 68.0 | 120.6 | 83.3 | 919.1 |
| 1974 | Existing (3 units) | 66.0 | 82.8 | 78.3 | 71.6 | 69.1 | 65.8 | 70.8 | 58.5 | 81.4 | 80.7 | 38.2 | 64.4 | 827.6 |
| | Extension (2 units) | 0 | 1.3 | 2.4 | 5.4 | 16.1 | 40.7 | 42.6 | 22.3 | 38.8 | 21.3 | 4.4 | 1.3 | 196.1 |
| | Total | 66.0 | 84.2 | 80.7 | 77.0 | 85.2 | 106.0 | 113.4 | 80.8 | 120.0 | 102.0 | 42.6 | 65.7 | 1,023.7 |
| 1975 | Existing (3 units) | 71.7 | 77.8 | 72.0 | 62.8 | 64.1 | 57.7 | 39.0 | 45.6 | 77.3 | 73.8 | 68.4 | 67.0 | 777.2 |
| | Extension (2 units) | 0 | 0.3 | 0 | 0.9 | 4.7 | 17.0 | 26.2 | 14.3 | 24.3 | 35.3 | 13.9 | 0 | 136.9 |
| | Total | 71.7 | 78.1 | 72.0 | 63.7 | 68.8 | 74.7 | 65.2 | 59.9 | 101.6 | 109.1 | 82.3 | 67.0 | 914.1 |
| 1976 | Existing (3 units) | 56.4 | 78.4 | 68.9 | 65.3 | 65.7 | 63.8 | 67.6 | 80.5 | 46.1 | 19.0 | 40.4 | 62.7 | 714.8 |
| | Extension (2 units) | 0 | 7.3 | 0 | 4.6 | 17.5 | 41.1 | 46.0 | 34.6 | 18.6 | 4.9 | 4.2 | 0 | 178.8 |
| | Total | 56.4 | 85.7 | 68.9 | 69.9 | 83.2 | 104.9 | 113.6 | 115.1 | 64.7 | 23.9 | 44.6 | 62.7 | 893.6 |
| 1977 | Existing (3 units) | 56.8 | 78.1 | 60.1 | 73.9 | 73.5 | 57.6 | 45.5 | 61.3 | 53.9 | 12.5 | 21.5 | 47.8 | 642.5 |
| | Extension (2 units) | 0 | 2.9 | 0 | 26.7 | 33.4 | 20.0 | 12.0 | 24.7 | 10.9 | 2.4 | 0 | 0.7 | 133.7 |
| | Total | 56.8 | 81.0 | 60.1 | 100.6 | 106.9 | 77.6 | 57.5 | 86.0 | 64.8 | 14.9 | 21.5 | 48.5 | 776.2 |
| 1978 | Existing (3 units) | 50.1 | 67.2 | 61.2 | 50.5 | 62.8 | 66.6 | 56.2 | 37.9 | 79.4 | 51.7 | 76.3 | 59.6 | 719.5 |
| | Extension (2 units) | 0 | 0 | 0 | 0 | 24.3 | 47.1 | 21.4 | 17.6 | 40.1 | 0 | 37.1 | 0 | 187.6 |
| | Total | 50.1 | 67.2 | 61.2 | 50.5 | 87.1 | 113.7 | 77.6 | 55.5 | 119.5 | 51.7 | 113.4 | 59.6 | 907.1 |
| 1979 | Existing (3 units) | 55.0 | 71.6 | 68.9 | 55.5 | 53.2 | 27.0 | 26.2 | 45.7 | 63.7 | 14.7 | 18.1 | 57.6 | 557.2 |
| | Extension (2 units) | 0 | 0 | 0 | 0 | 0.4 | 1.6 | 12.7 | 18.0 | 19.3 | 0 | 0.3 | 0.9 | 53.2 |
| | Total | 55.0 | 71.6 | 68.9 | 55.5 | 53.6 | 28.6 | 38.9 | 63.7 | 83.0 | 14.7 | 18.4 | 58.5 | 610.4 |
| Aver-age | Existing (3 units) | 57.9 | 75.0 | 68.2 | 62.2 | 65.2 | 57.8 | 49.4 | 58.7 | 61.6 | 43.5 | 50.1 | 62.2 | 711.8 |
| | Extension (2 units) | 0 | 1.7 | 0.3 | 5.4 | 16.9 | 29.4 | 25.8 | 24.2 | 21.8 | 11.4 | 13.2 | 1.4 | 151.5 |
| | Total | 57.9 | 76.7 | 68.5 | 67.6 | 82.1 | 87.2 | 75.2 | 82.9 | 83.4 | 54.9 | 63.3 | 63.6 | 863.3 |

Generated Electric Energy in Kaptai Hydro-Power Station
(Case 3: 5 units operated with upper limit of water level)

(x $10^4$ kWh)

| Year | Description | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | Existing (3 units) | 49.4 | 68.9 | 68.1 | 56.1 | 69.8 | 70.3 | 61.8 | 96.9 | 53.8 | 53.1 | 94.7 | 82.6 | 825.5 |
| | Extension (2 units) | 0 | 0 | 0 | 0 | 29.1 | 44.5 | 45.0 | 74.7 | 26.4 | 23.5 | 73.0 | 26.1 | 342.3 |
| | Total | 49.4 | 68.9 | 68.1 | 56.1 | 98.9 | 114.8 | 106.8 | 171.6 | 80.2 | 76.6 | 167.7 | 108.7 | 1167.8 |
| 1974 | Existing (3 units) | 66.0 | 82.8 | 78.3 | 71.6 | 69.1 | 72.3 | 94.5 | 98.2 | 90.2 | 81.4 | 38.2 | 64.4 | 909.0 |
| | Extension (2 units) | 0 | 1.3 | 2.4 | 7.0 | 16.3 | 55.3 | 72.9 | 75.7 | 68.0 | 28.5 | 4.4 | 1.3 | 333.1 |
| | Total | 66.0 | 84.1 | 80.7 | 78.6 | 85.4 | 127.6 | 167.4 | 173.9 | 158.2 | 109.0 | 42.6 | 65.7 | 1242.1 |
| 1975 | Existing (3 units) | 71.7 | 77.8 | 72.0 | 62.8 | 64.1 | 57.7 | 46.1 | 98.0 | 89.4 | 85.2 | 68.8 | 67.0 | 860.6 |
| | Extension (2 units) | 0 | 0.3 | 0 | 0.9 | 4.7 | 17.3 | 35.5 | 75.5 | 48.0 | 51.4 | 20.3 | 0 | 253.9 |
| | Total | 71.7 | 78.1 | 72.0 | 63.7 | 68.8 | 75.0 | 81.6 | 173.5 | 137.4 | 136.6 | 89.1 | 67.0 | 1114.5 |
| 1976 | Existing (3 units) | 56.4 | 78.4 | 68.9 | 65.3 | 65.7 | 83.8 | 98.2 | 98.2 | 71.3 | 25.8 | 40.4 | 62.7 | 815.1 |
| | Extension (2 units) | 0 | 7.3 | 0 | 4.6 | 21.1 | 56.5 | 75.7 | 75.7 | 46.4 | 13.4 | 6.6 | 0 | 307.3 |
| | Total | 56.4 | 85.7 | 68.9 | 69.9 | 86.8 | 140.3 | 173.9 | 173.9 | 117.7 | 39.2 | 47.0 | 62.7 | 1122.4 |
| 1977 | Existing (3 units) | 56.8 | 78.1 | 60.1 | 77.5 | 75.5 | 65.3 | 71.5 | 65.6 | 57.8 | 12.7 | 21.5 | 47.8 | 690.2 |
| | Extension (2 units) | 0 | 2.9 | 0 | 39.8 | 43.1 | 36.4 | 49.8 | 42.2 | 24.4 | 2.4 | 0 | 0.7 | 241.7 |
| | Total | 56.8 | 81.0 | 60.1 | 117.3 | 118.6 | 101.7 | 121.3 | 107.8 | 82.2 | 15.1 | 21.5 | 48.5 | 931.9 |
| 1978 | Existing (3 units) | 50.1 | 67.2 | 61.2 | 50.5 | 66.4 | 82.5 | 96.4 | 97.6 | 86.8 | 51.7 | 91.5 | 59.6 | 861.5 |
| | Extension (2 units) | 0 | 0 | 0 | 0 | 26.1 | 63.6 | 74.4 | 75.2 | 57.0 | 0 | 68.2 | 0 | 364.5 |
| | Total | 50.1 | 67.2 | 61.2 | 50.5 | 92.5 | 146.1 | 170.8 | 172.8 | 143.8 | 51.7 | 159.7 | 59.6 | 1226.0 |
| 1979 | Existing (3 units) | 55.0 | 71.6 | 68.9 | 55.5 | 53.2 | 27.0 | 90.7 | 64.4 | 80.0 | 14.7 | 18.1 | 57.6 | 656.7 |
| | Extension (2 units) | 0 | 0 | 0 | 0 | 0.4 | 1.6 | 70.0 | 47.4 | 41.8 | 0 | 0.4 | 0.9 | 162.5 |
| | Total | 55.0 | 71.6 | 68.9 | 55.5 | 53.6 | 28.6 | 160.7 | 111.8 | 121.8 | 14.7 | 18.5 | 58.5 | 819.2 |
| Aver-age | Existing (3 units) | 57.9 | 75.0 | 68.3 | 62.7 | 66.3 | 65.6 | 79.9 | 88.4 | 75.6 | 46.4 | 53.3 | 63.1 | 802.5 |
| | Extension (2 units) | 0 | 1.7 | 0.3 | 7.5 | 20.1 | 39.3 | 60.5 | 66.6 | 44.6 | 17.0 | 24.7 | 4.1 | 286.4 |
| | Total | 57.9 | 76.7 | 68.6 | 70.2 | 86.4 | 104.9 | 140.4 | 155.0 | 120.2 | 63.4 | 78.0 | 67.2 | 1088.9 |

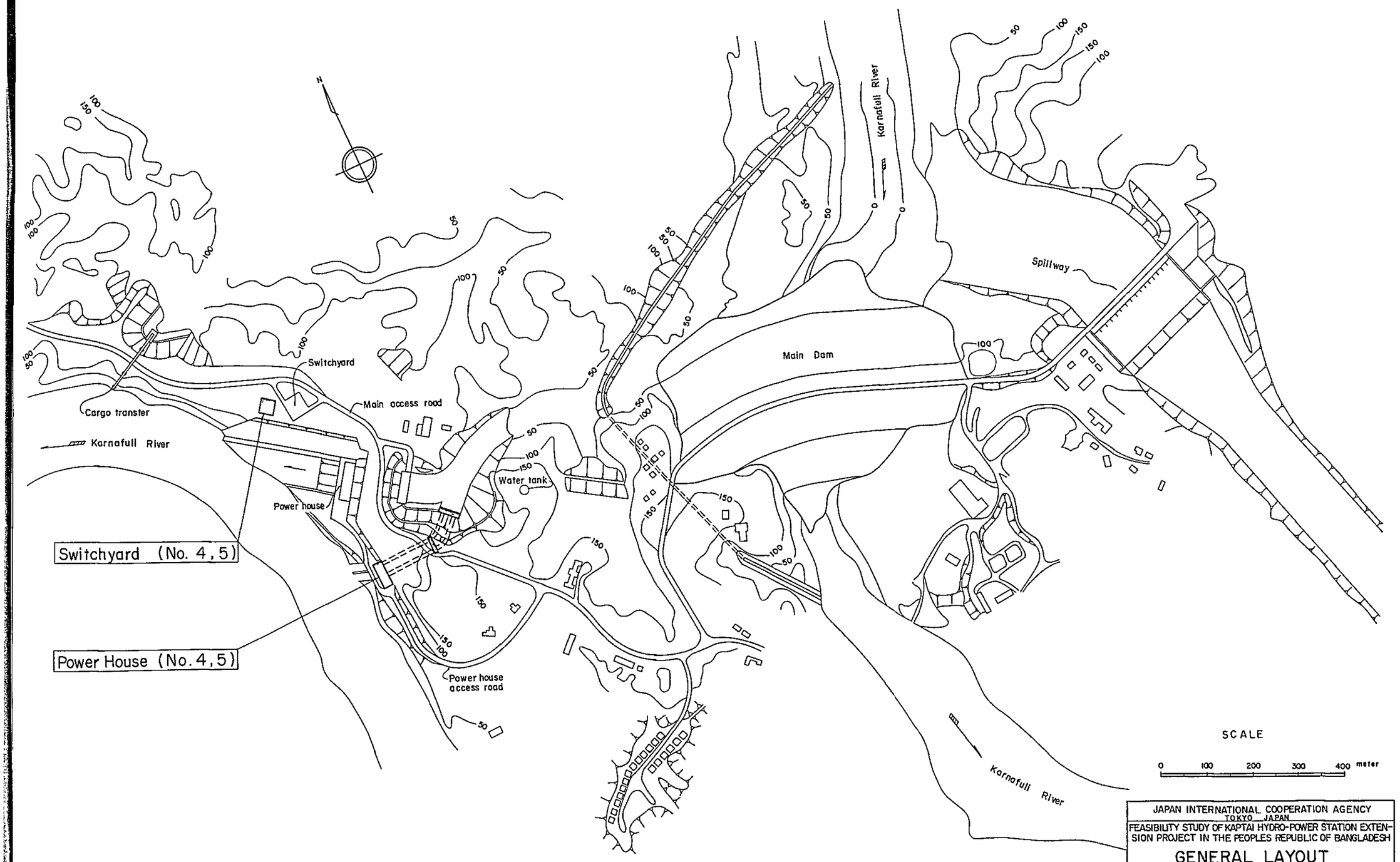
Generated Electric Energy in Kaptai Hydro-Power Station

(Case 4: 3 units operated with upper limit of water level)

($\times 10^6$ kWh)

| Year | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | 49.4 | 68.9 | 68.2 | 56.1 | 75.1 | 78.6 | 90.1 | 97.6 | 94.6 | 57.2 | 94.2 | 97.5 | 927.5 |
| 1974 | 66.0 | 82.8 | 82.3 | 79.9 | 76.1 | 78.6 | 97.1 | 97.8 | 94.6 | 97.7 | 47.5 | 70.7 | 971.1 |
| 1975 | 71.7 | 78.0 | 72.2 | 63.8 | 65.5 | 66.3 | 54.9 | 97.8 | 94.6 | 97.7 | 93.8 | 67.0 | 923.3 |
| 1976 | 56.4 | 86.4 | 68.9 | 67.3 | 73.8 | 87.7 | 97.8 | 97.8 | 91.0 | 40.3 | 40.4 | 69.6 | 877.4 |
| 1977 | 56.9 | 81.5 | 60.1 | 83.9 | 88.4 | 88.8 | 97.3 | 97.8 | 90.0 | 15.7 | 21.5 | 48.6 | 830.5 |
| 1978 | 50.1 | 67.2 | 61.2 | 50.5 | 65.7 | 88.2 | 97.7 | 97.8 | 94.6 | 51.5 | 94.2 | 87.7 | 906.8 |
| 1979 | 55.0 | 71.7 | 68.9 | 55.5 | 53.6 | 28.2 | 93.4 | 96.5 | 94.3 | 14.7 | 18.6 | 58.5 | 708.9 |
| Average | 57.9 | 76.6 | 68.8 | 65.3 | 71.2 | 73.8 | 89.8 | 97.6 | 93.4 | 53.6 | 58.6 | 71.4 | 878.0 |

# 5. PLANS



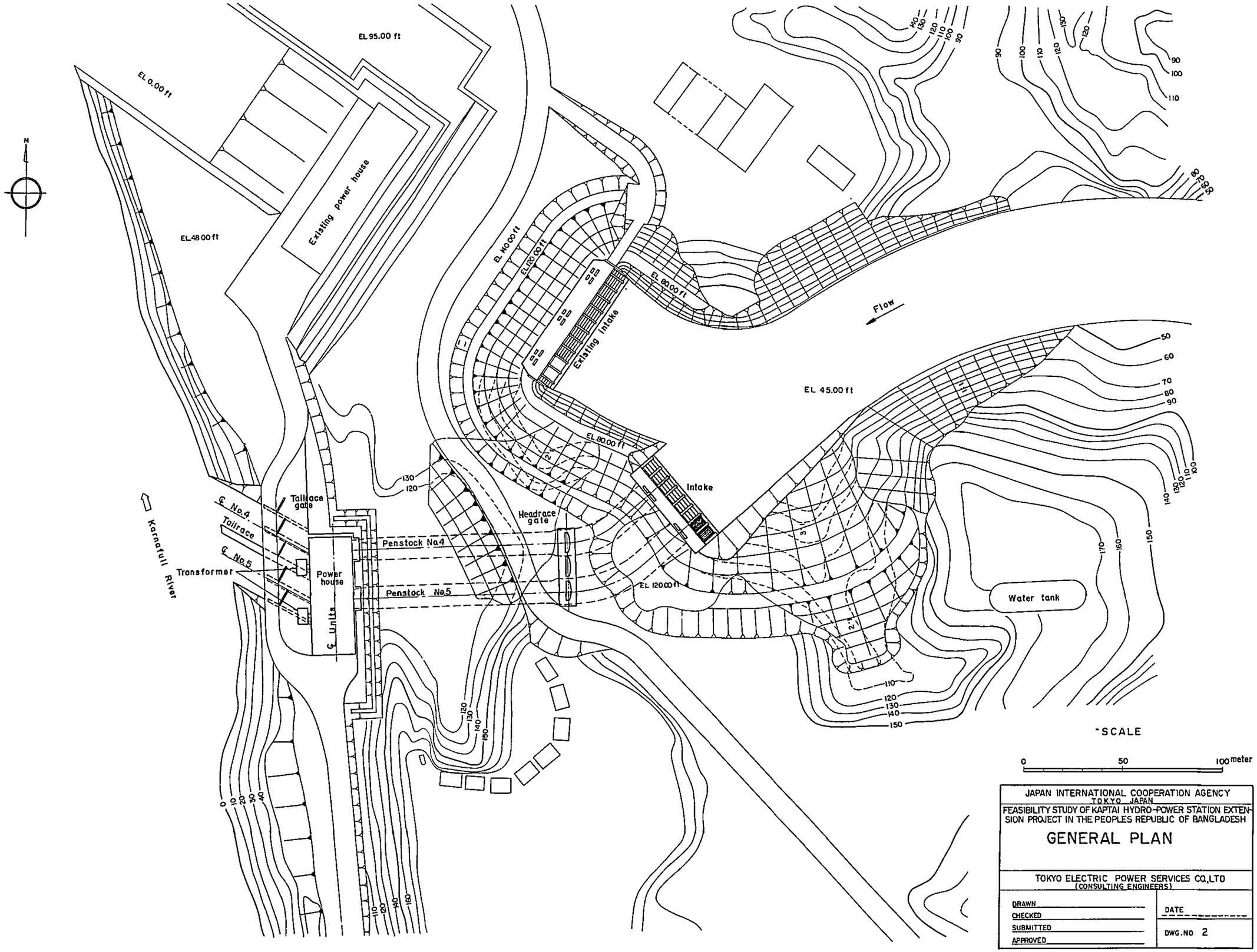

JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

# GENERAL LAYOUT

TOKYO ELECTRIC POWER SERVICES CO.,LTD
(CONSULTING ENGINEERS)

| | |
|---|---|
| DRAWN | DATE |
| CHECKED | |
| SUBMITTED | |
| APPROVED | DWG. NO 1 |




JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

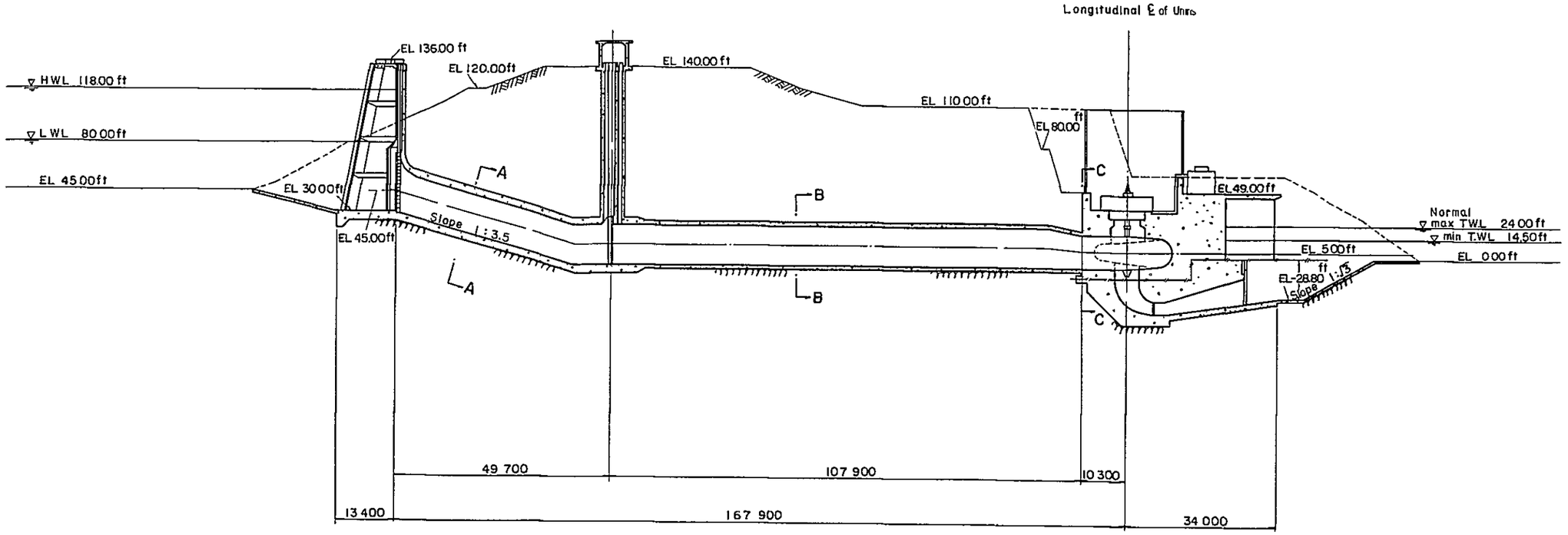
# GENERAL PLAN

TOKYO ELECTRIC POWER SERVICES CO,LTD
(CONSULTING ENGINEERS)

DRAWN
CHECKED
SUBMITTED
APPROVED

DATE

DWG.NO 2

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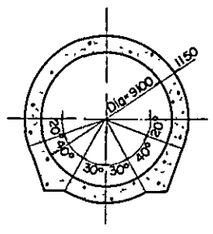
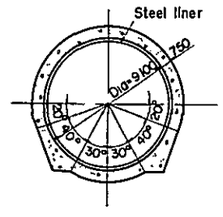
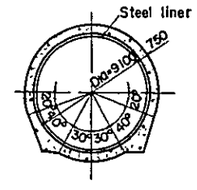



SECTION A-A




SECTION B-B




SECTION C-C

SCALE

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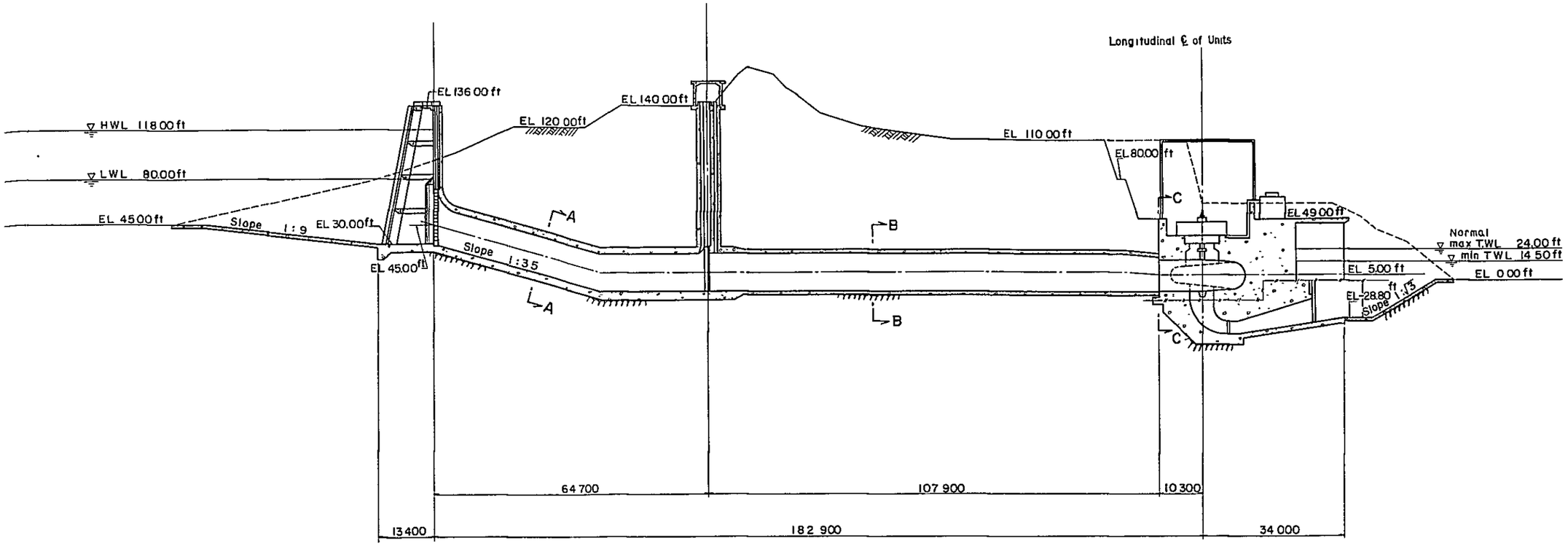
| JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO JAPAN |
| FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH |
| PROFILE OF WATERWAY NO.4 |
| TOKYO ELECTRIC POWER SERVICES CO., LTD. (CONSULTING ENGINEERS) |
| DRAWN / CHECKED / SUBMITTED / APPROVED — DATE — DWG. NO. 3 |

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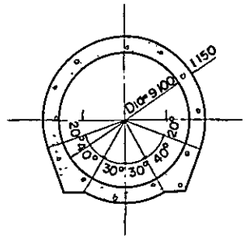
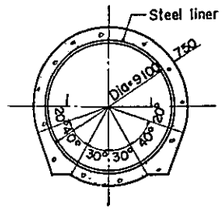
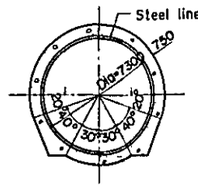



SECTION A-A




SECTION B-B




SECTION C-C

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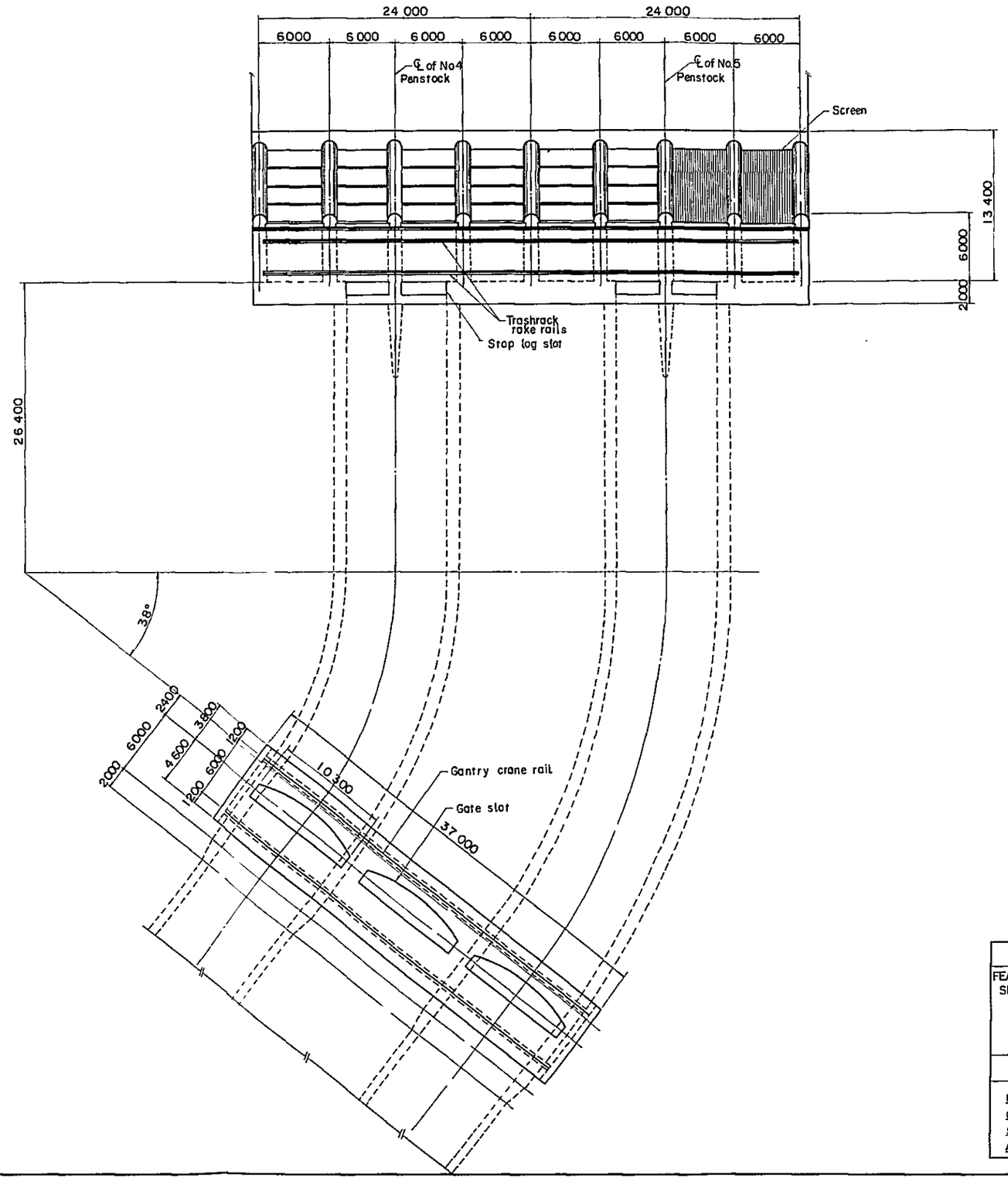
| JAPAN INTERNATIONAL COOPERATION AGENCY<br>TOKYO JAPAN |
| FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH |
| PROFILE OF WATERWAY<br>NO. 5 |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.<br>( CONSULTING ENGINEERS ) |
| DRAWN / CHECKED / SUBMITTED / APPROVED — DATE — DWG. NO. 4 |

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JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

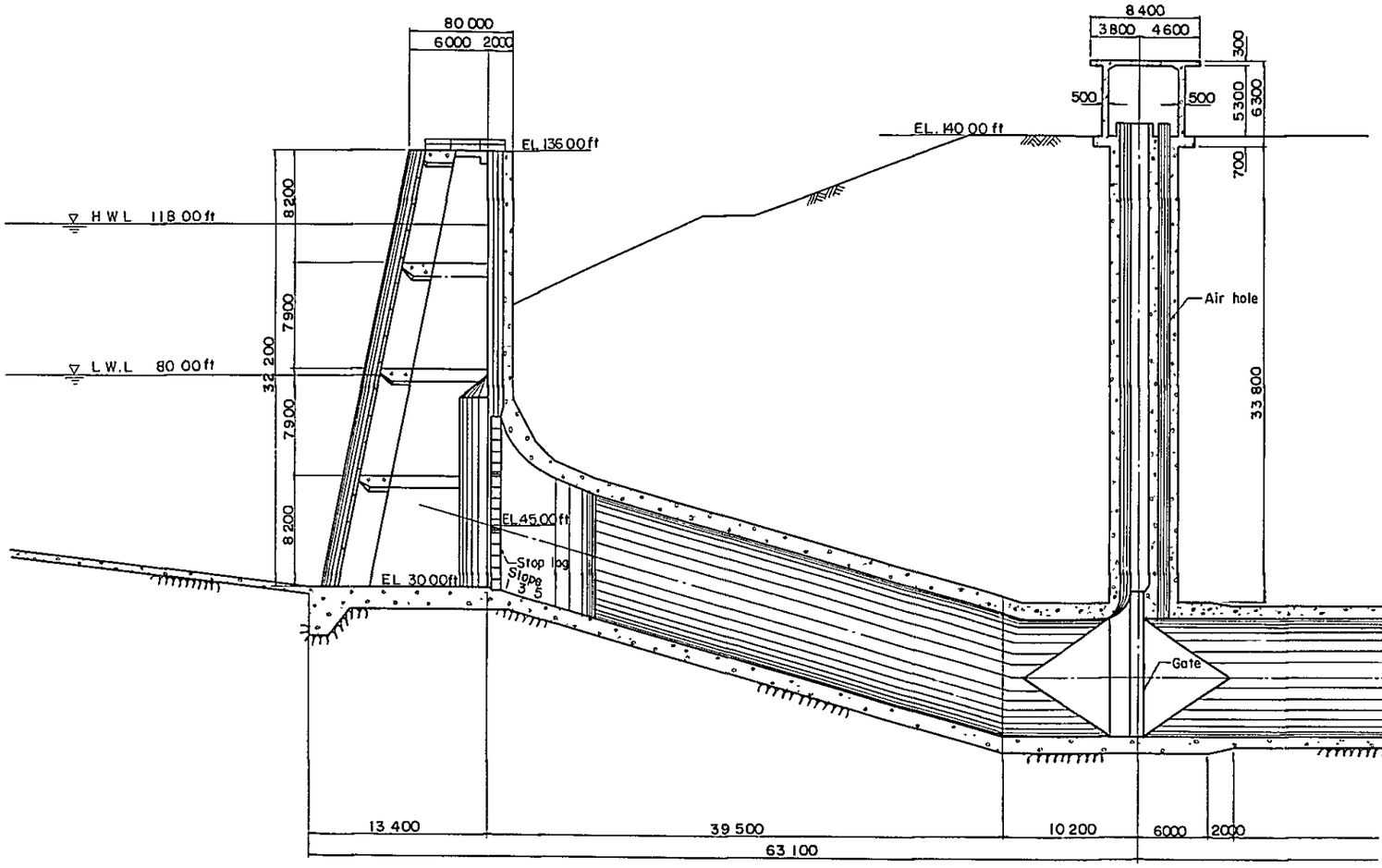
# INTAKE PLAN

TOKYO ELECTRIC POWER SERVICES CO., LTD.
(CONSULTING ENGINEERS)

DRAWN
CHECKED
SUBMITTED
APPROVED

DATE

DWG NO 5

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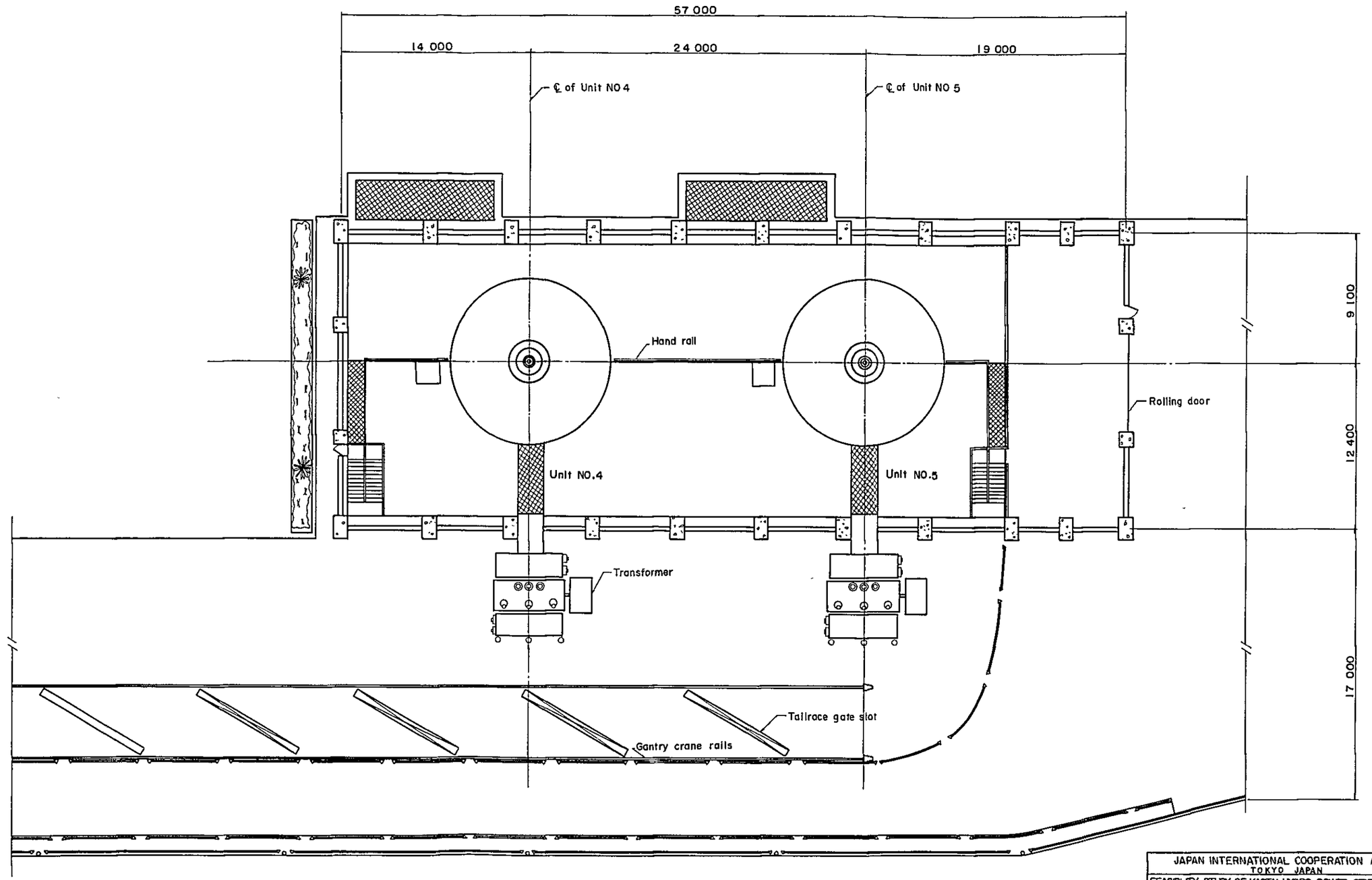
| JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO JAPAN |
| FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH |
| INTAKE SECTION (LONGITUDNAL) |
| TOKYO ELECTRIC POWER SERVICES CO., LTD. (CONSULTING ENGINEERS) |
| DRAWN / CHECKED / SUBMITTED / APPROVED — DATE — DWG NO. 6 |

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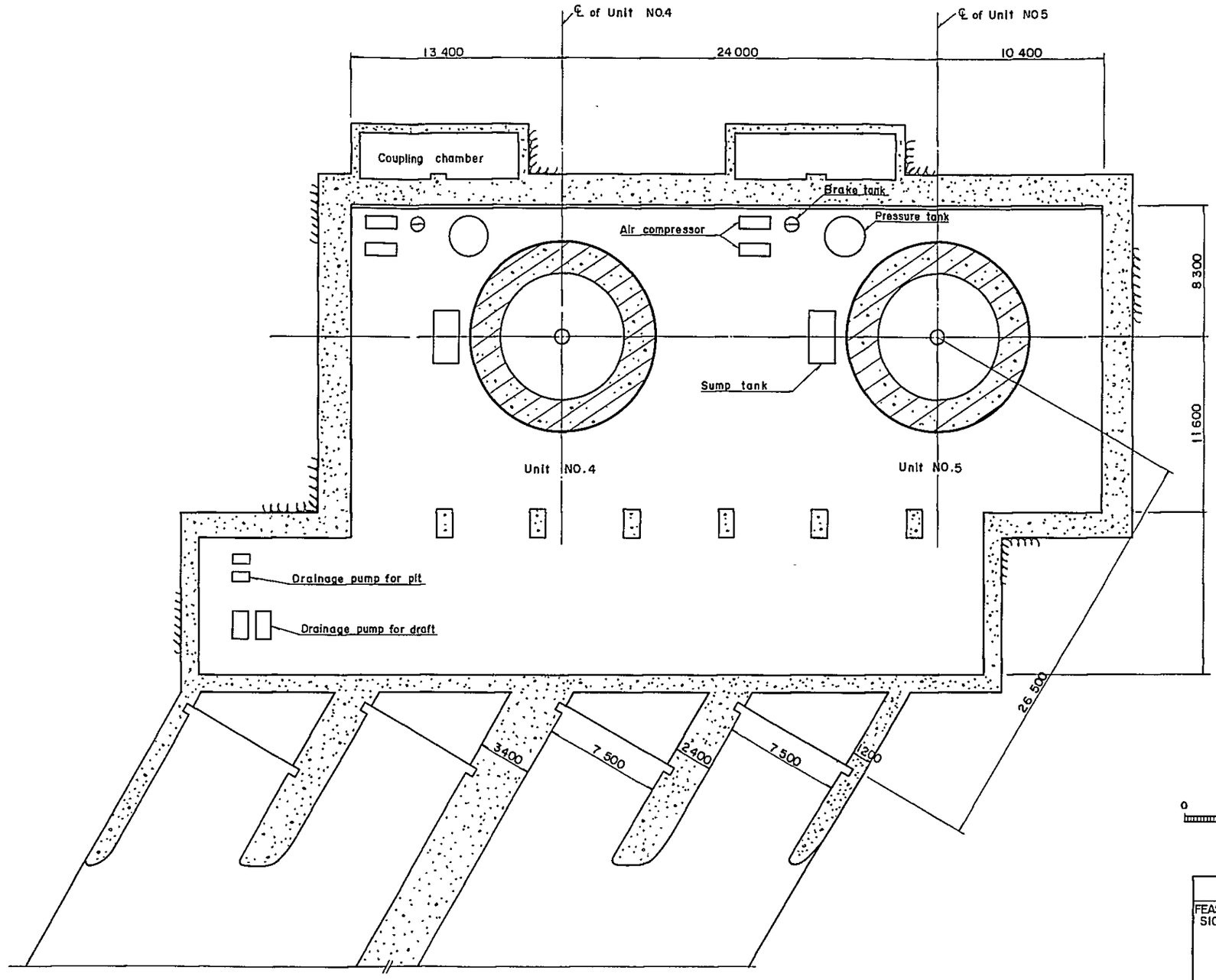
| JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO JAPAN | |
| FEASIBLITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH | |
| POWERHOUSE FLOOR PLAN EL. 49.00 | |
| TOKYO ELECTRIC POWER SERVICES CO., LTD. (CONSULTING ENGINEERS) | |
| DRAWN / CHECKED / SUBMITTED / APPROVED | DATE / DWG NO. 7 |




SCALE

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JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

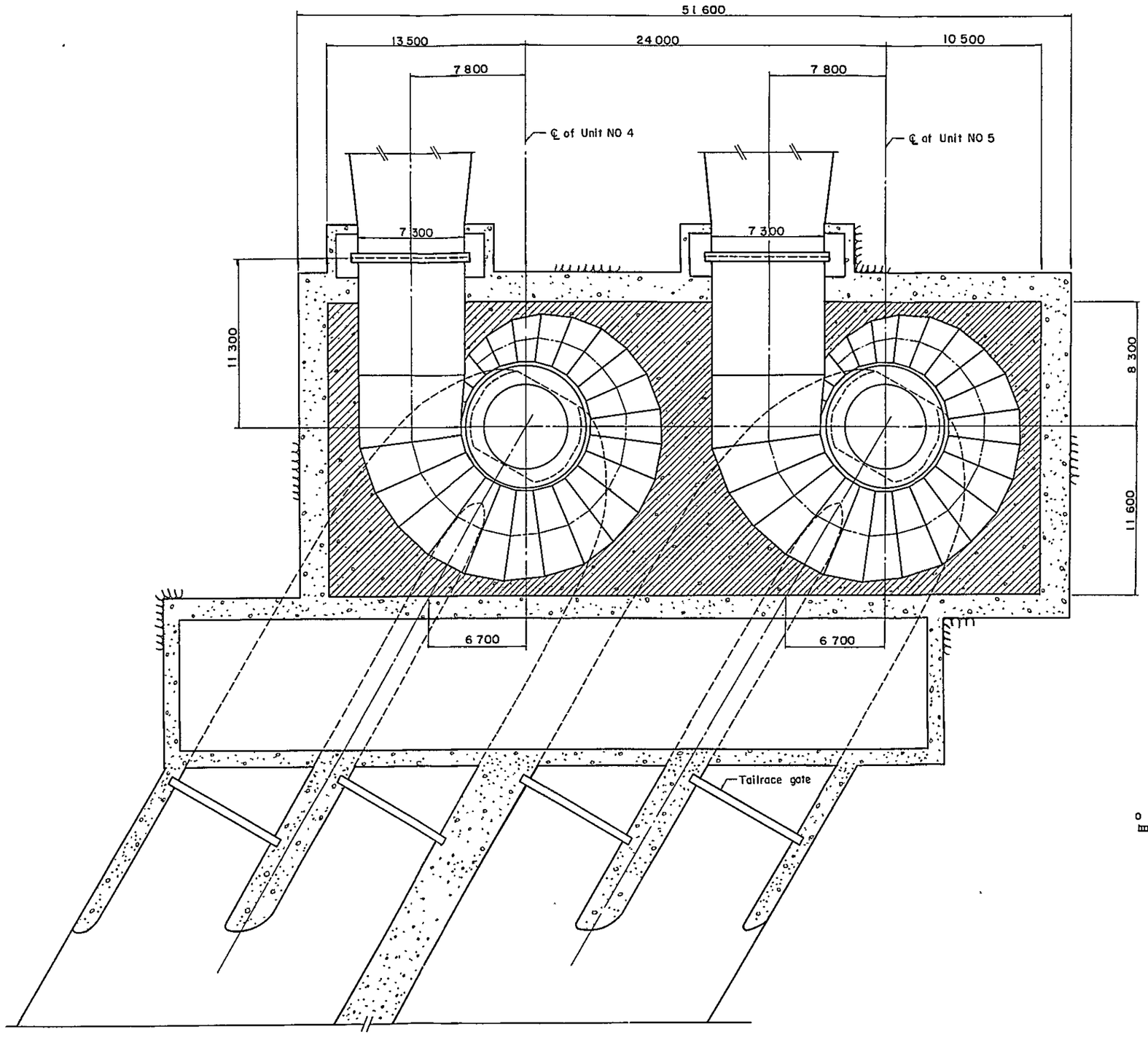
# POWERHOUSE
# FLOOR PLAN EL. 22.50

TOKYO ELECTRIC POWER SERVICES CO,LTD.
( CONSULTING ENGINEERS )

DRAWN
CHECKED
SUBMITTED
APPROVED

DATE

DWG.NO. 8




SCALE

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JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

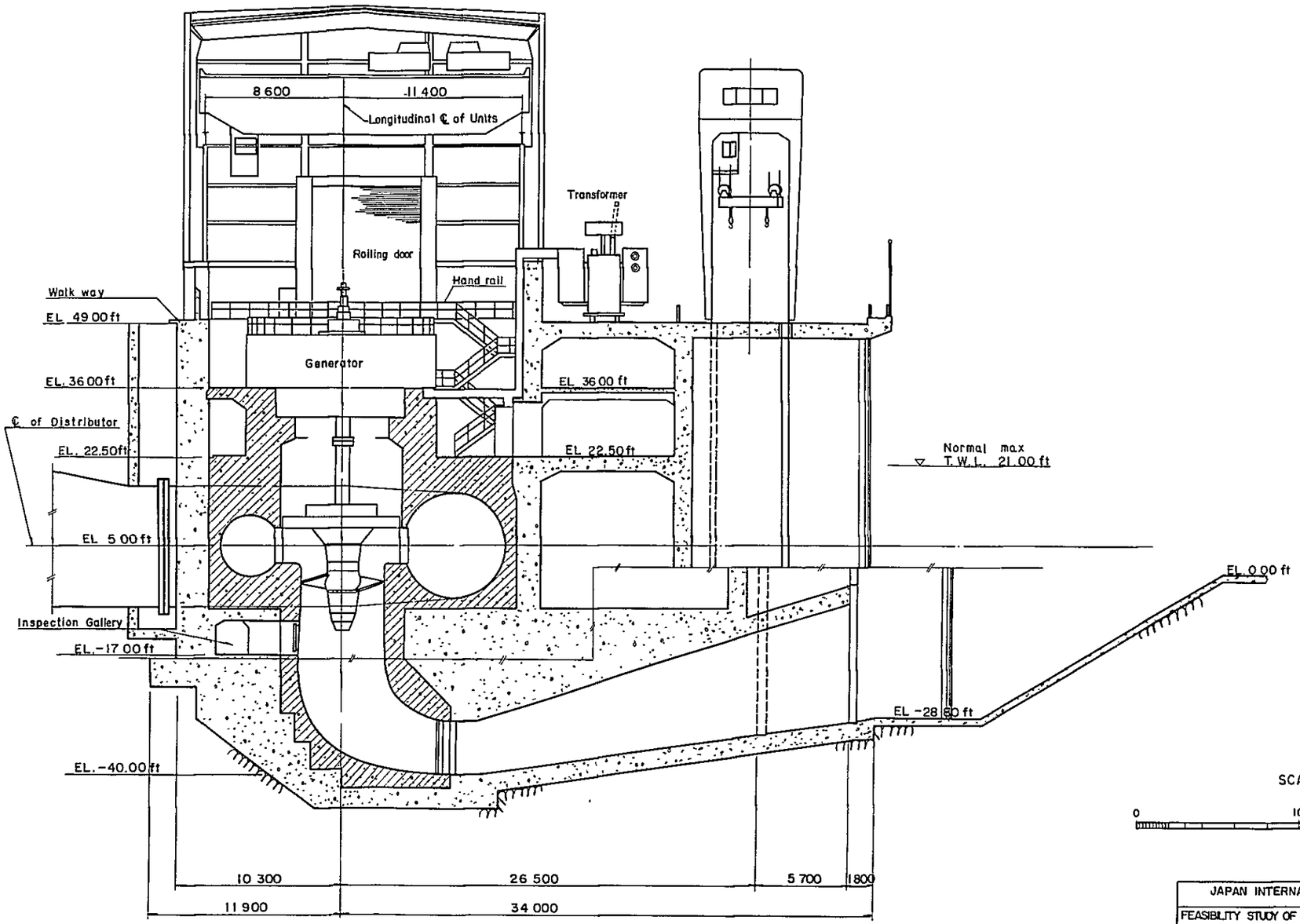
# POWERHOUSE
# FLOOR PLAN EL. 5.00

TOKYO ELECTRIC POWER SERVICES CO,LTD.
(CONSULTING ENGINEERS)

DRAWN
CHECKED
SUBMITTED
APPROVED

DATE

DWG NO. 9

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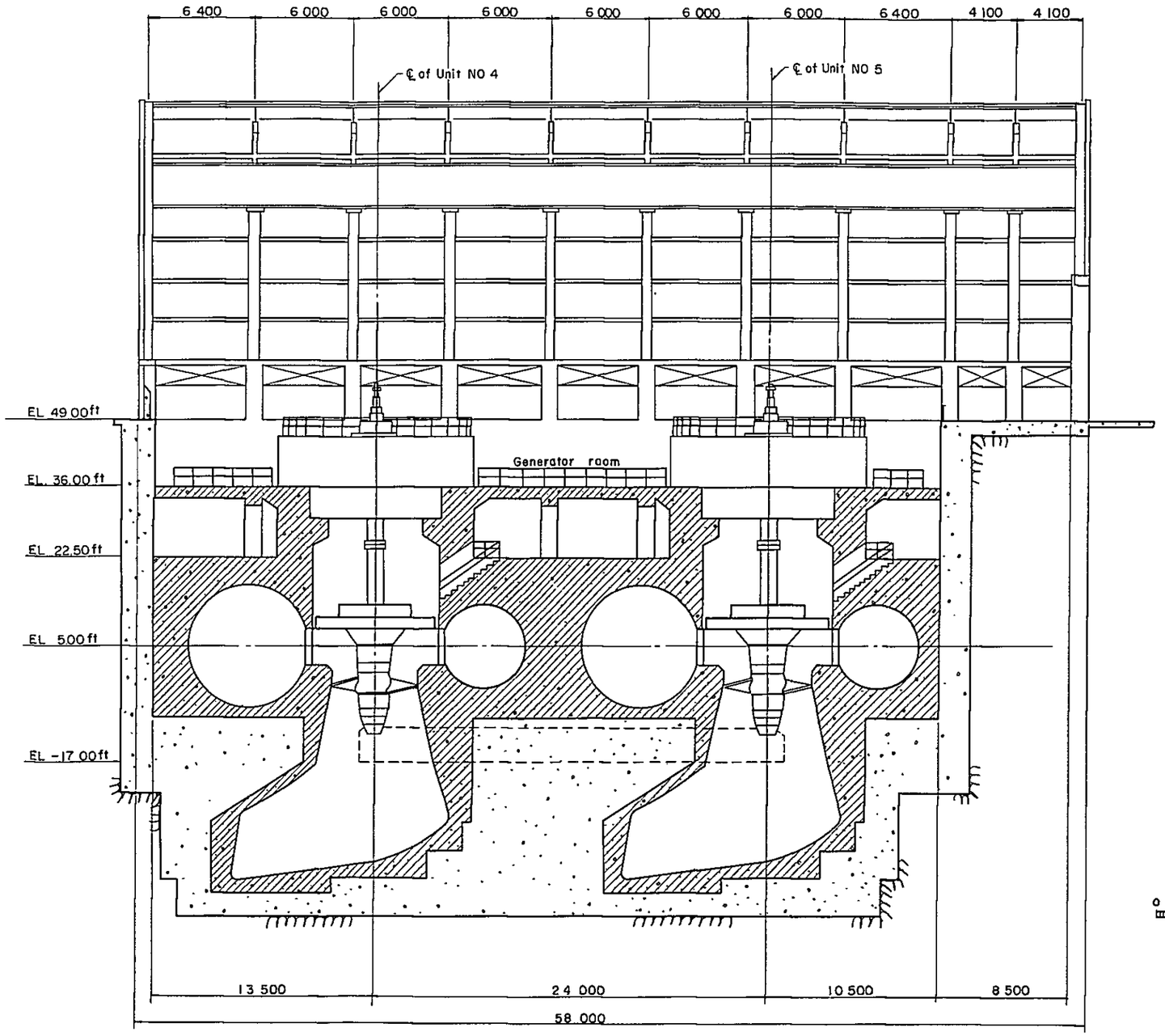
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

# POWERHOUSE TRANSVERSE SECTION

TOKYO ELECTRIC POWER SERVICES CO., LTD.
(CONSULTING ENGINEERS)

| | |
|---|---|
| DRAWN | DATE |
| CHECKED | |
| SUBMITTED | DWG. NO 10 |
| APPROVED | |




SCALE

0 10 20 meter

JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

# POWERHOUSE LONGITUDINAL SECTION

TOKYO ELECTRIC POWER SERVICES CO.,LTD.
(CONSULTING ENGINEERS)

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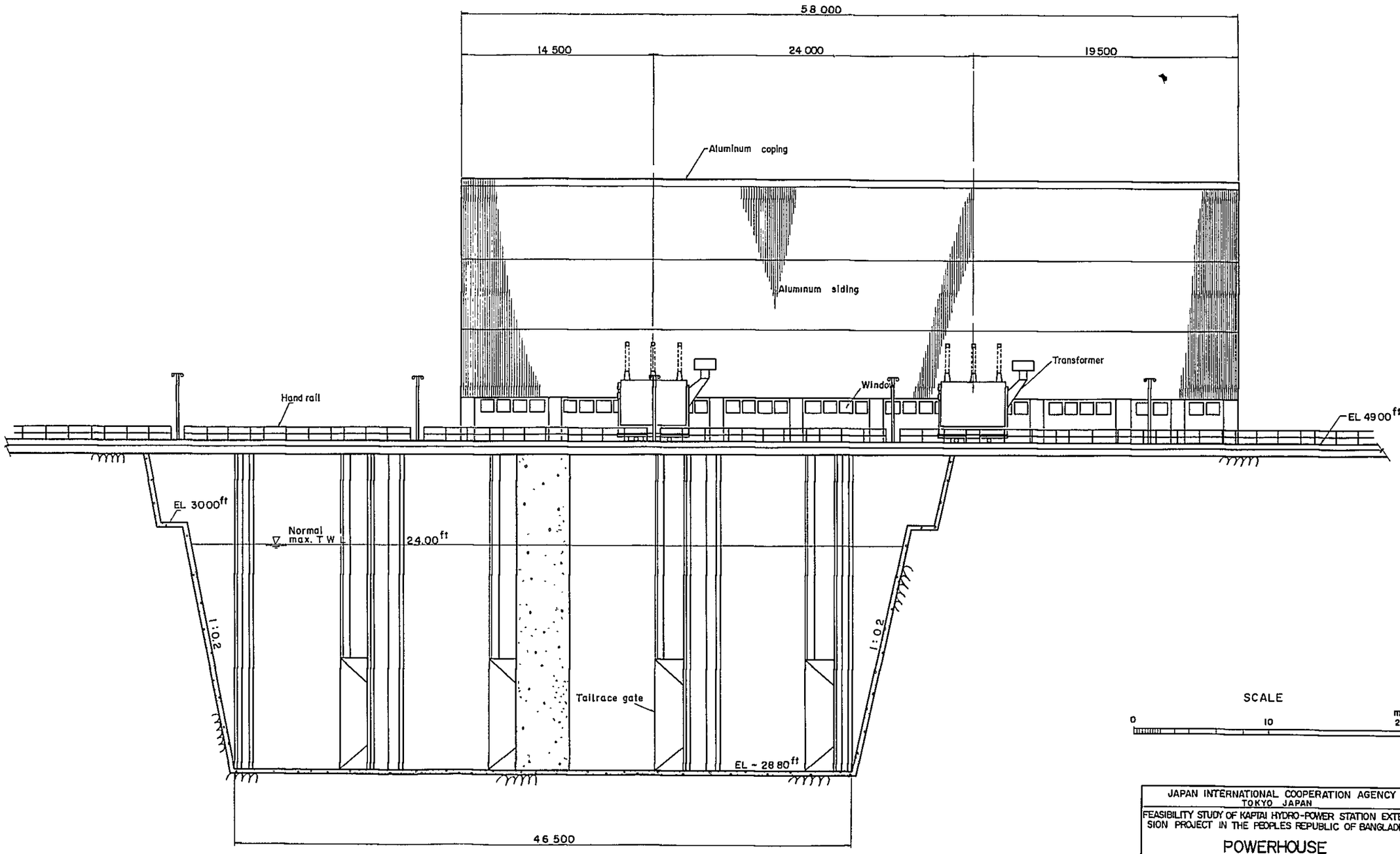
|---|---|
| DRAWN | DATE |
| CHECKED | |
| SUPMITTED | DWG NO 11 |
| APPROVED | |




DOWNSTREAM ELEVATION

SCALE

0 10 meter 20

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TOKYO JAPAN

FEASIBILITY STUDY OF KAPTAI HYDRO-POWER STATION EXTENSION PROJECT IN THE PEOPLES REPUBLIC OF BANGLADESH

# POWERHOUSE
# DOWNSTREAM ELEVATION

TOKYO ELECTRIC POWER SERVICES CO., LTD.
(CONSULTING ENGINEERS)

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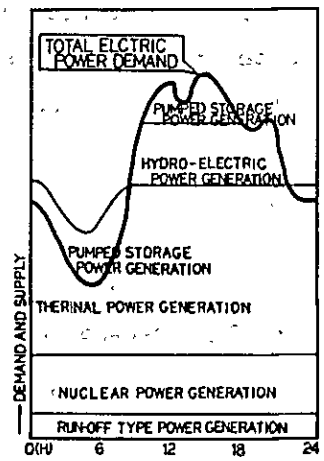
# 6. FEASIBILITY of KAPTAI HYDRO-POWER EXTENSION PROJECT by PUMPED STORAGE POWER PLANT

Feasibility of Kaptai Hydro-Power Extension
Project by Pumped Storage Power Plant

1. Regarding the Pumped Storage Power Plant

Generally, electricity tends to be consumed more in the daytime than in midnight during a day, and, sometimes, electric power consumption in midnight becomes half of that in the daytime. (See Fig. 1)

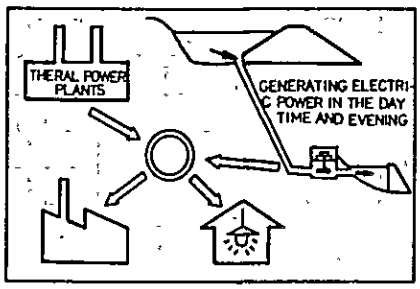
Fig. 1

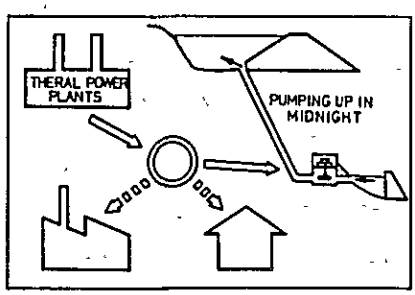



In case of a pumped storage power plant, water is pumped up into an upper dam by making use of surplus electric power in midnight, etc. as electric power source, and the water stored in this way is used for power generation in the daytime and evening when demand of electric power is large.

This is a reasonable system of combinedly utilizing thermal and hydro-power plants to meet the electric power demand fluctuating largely in a day or a week. Illustrates in Fig. 2 how the pumped storage power plant is operated among the entire electric power generating plants.

Fig. 2



Generally speaking, there is about 20 to 30% of loss between energy used for pumping up and energy generated by pumped up water. Therefore, it is necessary to effectively operate a pumped-up power plant in view of both utilizing surplus electric power and power supply in peak hours in compliance with electric power demand.

## 2. Problematical Points in Case of Adopting Pumped Storage Power Plant for Kaptai Hydro-Power Extension Project

When a pumped storage power plant is adopted for the Kaptai Hydro-Power Extension Project, it should be studied if electric power for pumping up is available while taking into account the electric power demand and particularly a pattern of fluctuation in demand in consuming areas.

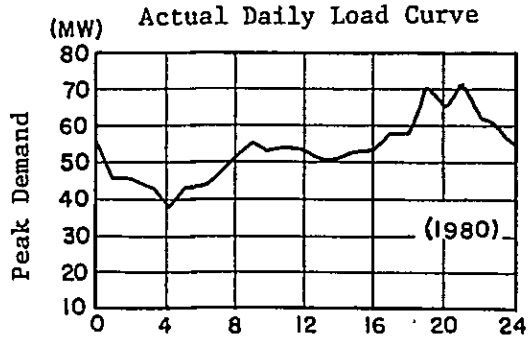
### 2-1 Load Factor in Chittagong Area*

The load factor in Chittagong area is about 74% at present, and electric power demand does not fluctuate so largely.

Fig.3 and Fig.4 show the load curve in the Chittagong area.

The load factor is expected to show a similar trend in the future, and it is estimated that the load factor in 1993 will be about 76% as shown in the daily load curve in Fig. 4.

Fig. 3

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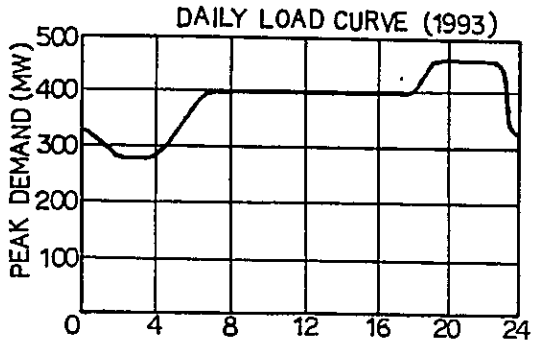
* Load factor = (Daily average electric power ÷ Daily maximum electric power) x 100

Fig. 4




In principle, a pumped storage power plant is adopted in many cases when the load factor is about 40% or less in view of economical stand point. However, judging from the electric power demand forecast in this district, this high load factor is estimated to be maintained at least until 1995, and it can be said that adoption of a pumped storage power plant for the Kaptai Hydro-Power Extension Project is inappropriate.

2-2 Pumping-up Power Source

Generally, surplus electric power source from other thermal power plants, etc. is utilized for pumping-up power source. In case a 100 MW pumped storage power plant is extended at the Kaptai Hydro-Power Station, surplus electric power required for pumping up at this power plant is not available in the Chittagong District in the foreseeable future.

2-3 Transmission System

As transmission line connecting the Chittagong District and other districts, there is now only one 132 kV transmission system of around 40 MW capacity between Chittagong and Dacca. Therefore, this transmission system does not have a sufficient capacity to supply pumping up power source from the Dacca District..

## 2-4 Reregulating Reservoir

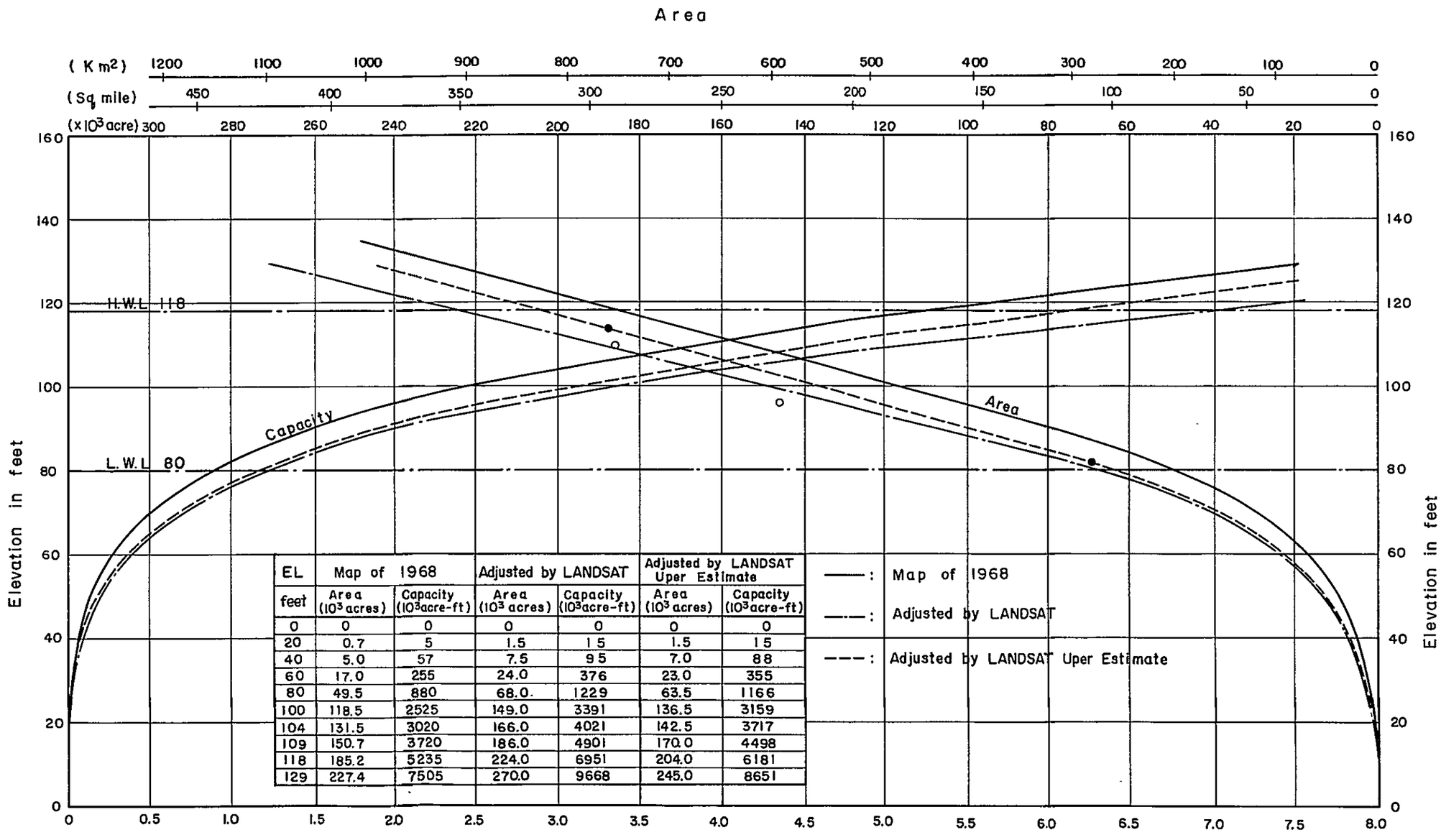
As a matter of fact, water is not discharged from the dam and the power station during pumping-up operation. Therefore, it is necessary to construct a reservoir, so-called a reregulating reservoir downstream from the power station not only for storing pumping-up water but also for navigation and irrigation in the downstream area.

However, the river slope is gentle as ($i \fallingdotseq 1/10{,}000$) in the downstream area from the Kaptai Hydro-Power Station, and the land form is comparatively flat. As a result, it is very difficult to construct a reservoir in this area.

## 3. Summary

Judging from the above stand points, it can be said that there is almost no feasibility for the execution of the Kaptai Hydro-Power Extension Project by pumped-up power generation system until about 1995 when a pattern of electric power demand and supply similar to the present one is estimated to continue.

Fig. – 5 Area and Capacity Curves of Karnaful Reservoir




| EL | Map of 1968 | | Adjusted by LANDSAT | | Adjusted by LANDSAT Uper Estimate | |
|---|---|---|---|---|---|---|
| feet | Area ($10^3$ acres) | Capacity ($10^3$acre-ft) | Area ($10^3$ acres) | Capacity ($10^3$acre-ft) | Area ($10^3$ acres) | Capacity ($10^3$acre-ft) |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0.7 | 5 | 1.5 | 15 | 1.5 | 15 |
| 40 | 5.0 | 57 | 7.5 | 95 | 7.0 | 88 |
| 60 | 17.0 | 255 | 24.0 | 376 | 23.0 | 355 |
| 80 | 49.5 | 880 | 68.0 | 1229 | 63.5 | 1166 |
| 100 | 118.5 | 2525 | 149.0 | 3391 | 136.5 | 3159 |
| 104 | 131.5 | 3020 | 166.0 | 4021 | 142.5 | 3717 |
| 109 | 150.7 | 3720 | 186.0 | 4901 | 170.0 | 4498 |
| 118 | 185.2 | 5235 | 224.0 | 6951 | 204.0 | 6181 |
| 129 | 227.4 | 7505 | 270.0 | 9668 | 245.0 | 8651 |

——: Map of 1968
—·—: Adjusted by LANDSAT
– – –: Adjusted by LANDSAT Uper Estimate

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