



**DIRECTORATE GENERAL OF WATER RESOURCES,
MINISTRY OF PUBLIC WORKS**



PUBLIC WORKS SERVICE, BALI PROVINCE

**THE COMPREHENSIVE STUDY
ON WATER RESOURCES DEVELOPMENT
AND MANAGEMENT
IN BALI PROVINCE**

**IN
THE REPUBLIC OF INDONESIA**

**FINAL REPORT
DATA BOOK**

AUGUST, 2006



JAPAN INTERNATIONAL COOPERATION AGENCY

**YACHIYO ENGINEERING CO., LTD.
NIPPON KOEI CO., LTD.**

Exchange Rate

<Master Plan Study>

**US\$1.00 = RP9,260 = ¥106.97 Average of May 2004
- April 2005**

<Feasibility Study>

US\$1.00 = RP9,750 = ¥110.75 Average of Year 2005

PREFACE

In response to a request from the Government of Indonesia, the Government of Japan decided to conduct the comprehensive study on water resources development and management in Bali Province, and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Masatomo Watanabe of Yachiyo Engineering Co., Ltd. between September 2004 to June 2006.

The team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Indonesia for their close cooperation extended to the study.

August 2006

Akiyuki Matsumoto,
Vice President
Japan International Cooperation Agency

August 2006

Mr. Ariyuki Matsumoto
Vice President
Japan International Cooperation Agency
Tokyo, Japan

Dear Mr. Matsumoto

LETTER OF TRANSMITTAL

We are pleased to submit to you the final report of the Comprehensive Study on Water Resources Development and Management in Bali Province. The report has been prepared, taking into account the advices and suggestions of your Agency. Also included are the comments made by Directorate General of Water Resources (DGWR) under the Ministry of Public Works, and the Provincial Government of Bali.

In Indonesia, structural reform of the water resources sector (WATSAL) is being advanced, and a new water resources law has been established in 2004 in accordance with the principle of democracy, decentralization and transparency. The provinces and cities/regencies have been taking the initiative in implementing water resources development and management.

The Study was being implemented to compile a master plan for the comprehensive water resources development and management in Bali Province up to the target year of 2025 which consisted of Ayung Dam project, water supply project, flood control project, structural reform and capacity building, intending to achieve the sustainable development of local society and economy through the stable supply of safe water and reduction of flood damage. In the process of compilation of the master plan, stake holders' meetings were held, and opinions from stake holders' were incorporated widely.

The feasibility study of the priority project, consisting of Ayung dam project, water supply project (western system, central system and eastern system) in southern Bali Area and river improvement project selected in the master plan, has been implemented. Meanwhile, for the operation and maintenance of multiple Ayung dam and water supply facilities, the arrangement program for Dinas-PSDA (Water Resources Management Service Office) and Balai-PSDA (Water Resources Management Unit) including capacity building program have been proposed. It is expected that the stable water supply, mitigation of flood damage and management improvement and institutional strengthening shall be enhanced by implementing the above-mentioned project components.

We wish to take this opportunity to express our sincere gratitude to your Agency and the Ministry of Foreign Affairs. We also wish to express our deep gratitude to DGWR and the related organizations for the close cooperation and assistance extended to us during our study.

Very truly yours,



Masatomo Watanabe

Team Leader

The Comprehensive Study on Water Resources
Development and Management in Bali Province.

LIST OF REPORT

MAIN REPORT (ENGLISH)

MAIN REPORT (INDONESIAN)

SUMMARY (ENGLISH)

SUMMARY (INDONESIAN)

SUMMARY (JAPANESE)

SUPPORTING REPORT (ENGLISH)

- A. SOCIO-ECONOMY
- B. GEOLOGY.....
- C. HYDROGEOLOGY AND GROUNDWATER.....
- D. HYDROLOGY.....
- E. WATER QUALITY AND ENVIRONMENT
- F. AGRICULTURE AND IRRIGATION.....
- G. DEMAND PROJECTION FOR WATER SUPPLY.....
- H. WATER SUPPLY
- I. INSTITUTION.....
- J. GIS DATABASE.....
- K. COST ESTIMATE
- L. ENVIRONMENTAL STUDY
- M. ECONOMIC ANALYSIS (ECONOMIC, FINANCIAL AND SOCIAL).....
- N. SOCIAL EVALUATION.....
- O. PCM-TRAINING.....
- P. STAKEHOLDER MEETING

DATA BOOK (ENGLISH)

A. Drawing Data

A1 Ayung Dam

A2 Water Supply System

A3 Flood Control Facility of Badung River and Mati River

Drawing Data

Drawing List

1. Drawing List of Design for Ayung Dam

【Drawing NO.】	【Title】	【Page】
Ayung Dam (With-Gate)-1.1	Dam Overall Plan (With-Gate)	A1-1
Ayung Dam (With-Gate)-1.2	Dam Plan (With-Gate)	A1-2
Ayung Dam (With-Gate)-1.3	Dam Cross Section at Upstream-Side and Downstream-Side g(With-Gate)	A1-3
Ayung Dam (With-Gate)-1.4	Dam Longitudinal Standard Section (With-Gate)	A1-4
Ayung Dam (With-Gate)-1.5	Location Scheme of Dam Outlets and Power station g(With-Gate)	A1-5
Ayung Dam (Non-Gate)-1.6	Dam Overall Plan (Non-Gate)	A1-6
Ayung Dam (Non-Gate)-1.7	Dam Plan (Non-Gate)	A1-7
Ayung Dam (Non-Gate)-1.8	Dam Cross Section at Upstream-Side and Downstream-Side (Non-Gate)	A1-8
Ayung Dam (Non-Gate)-1.9	Dam Longitudinal Standard Section (Non-Gate)	A1-9
Ayung Dam (Non-Gate)-1.10	Location Scheme of Dam Outlets and Power station (Non-Gate)	A1-10
Ayung Dam (Non-Gate)-1.11	Temporary Road Overall Location Scheme (Non-Gate)	A1-11
Ayung Dam (Non-Gate)-1.12	Temporary Road Location Scheme (Non-Gate)	A1-12
Ayung Dam (Non-Gate)-1.13	Temporary Crane Location Scheme (Non-Gate)	A1-13
Ayung Dam (Non-Gate)-1.14	Sabo Facility(1) (Ayung Main River: Right Bank Tributary)	A1-14
Ayung Dam (Non-Gate)-1.15	Sabo Facility(2) (Ayung Branch River: Left Bank Tributary)	A1-15

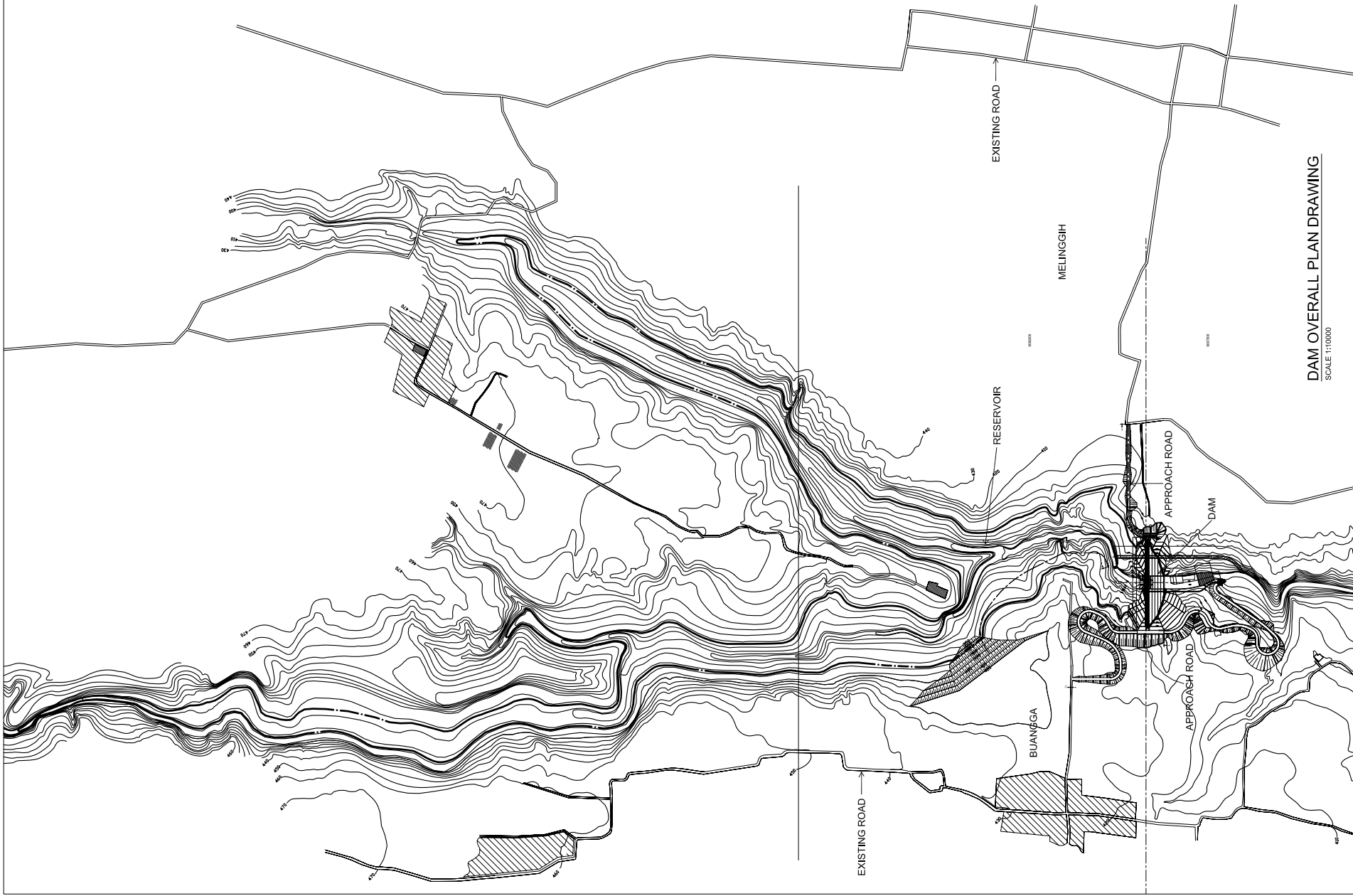
2. Drawing List of Design for Water Supply System

【Drawing NO.】	【Title】	【Page】
Water Supply System (WTP-Penet)-2.1	Overall Plan of WTP-Penet	A2-1
Water Supply System (WTP-Penet)-2.2	Plan of WTP-Penet	A2-2
Water Supply System (WTP-Penet)-2.3	Structural Drawing of WTP-Penet Intake	A2-3
Water Supply System (WTP-Ayung)-2.4	Plan of WTP-Ayung	A2-4
Water Supply System (WTP-Ayung)-2.5	Structural Drawing of WTP-Ayung Intake	A2-5
Water Supply System (WTP-Petanu)-2.6	Plan of WTP-Petanu	A2-6
Water Supply System (WTP-Petanu)-2.7	Structural Drawing of WTP-Petanu Intake	A2-7

3. Drawing List of Design for Flood Control Facility of Badung River and Mati River

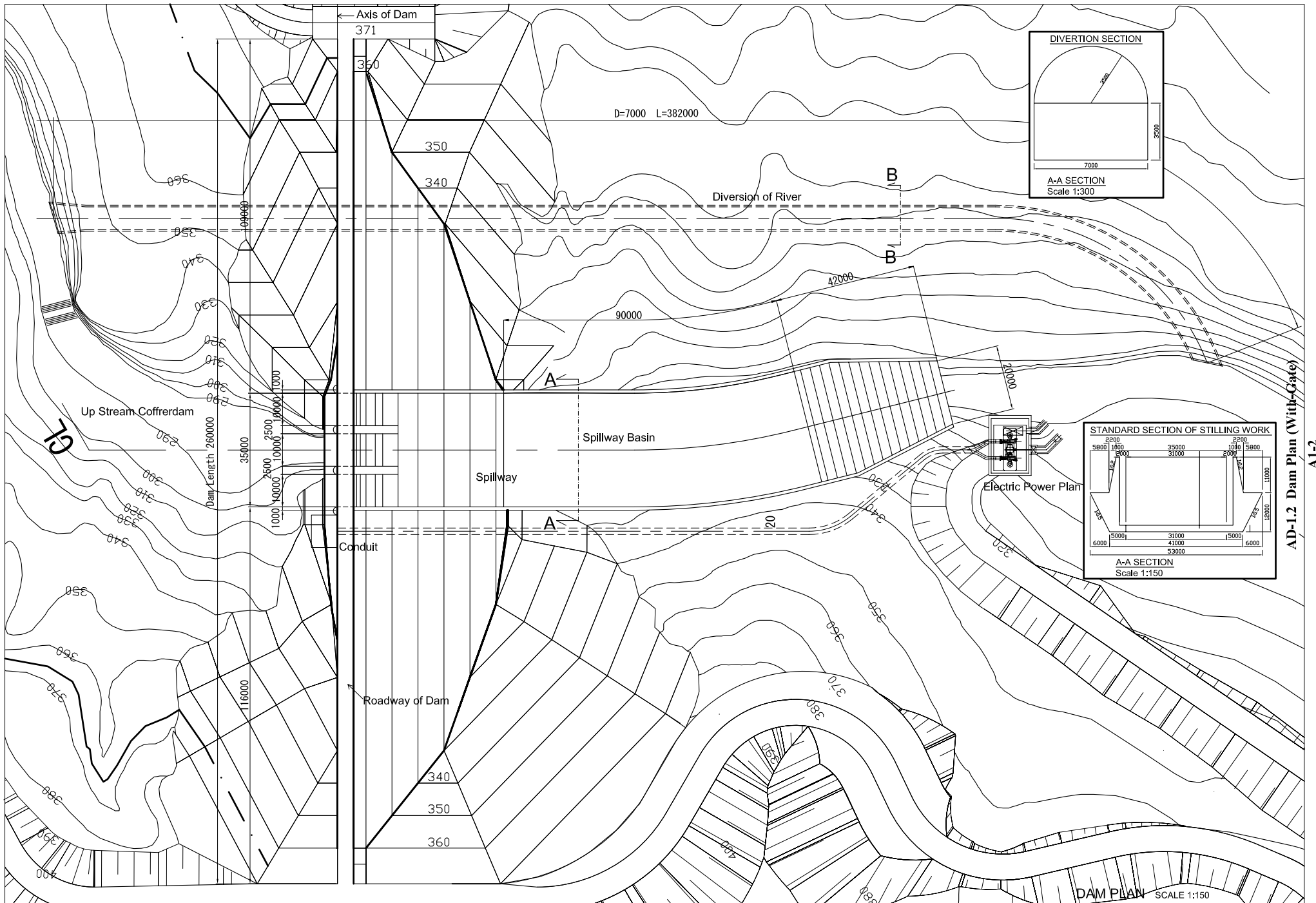
【Drawing NO.】	【Title】	【Page】
Flood Control Facility (Badung River)-3.1	River Improvement Overall Plan of Badung River	A3-1
Flood Control Facility (Badung River)-3.2	River Improvement Plan of Badung River	A3-2
Flood Control Facility (Badung River)-3.3	Longitudinal Section(1) of Badung River	A3-3
Flood Control Facility (Badung River)-3.4	Longitudinal Section(2) of Badung River	A3-4
Flood Control Facility (Badung River)-3.5	Longitudinal Section(3) of Badung River	A3-5
Flood Control Facility (Badung River)-3.6	Main Cross Section(1) of Badung River	A3-6
Flood Control Facility (Badung River)-3.7	Main Cross Section(2) of Badung River	A3-7
Flood Control Facility (Badung River)-3.8	Main Cross Section(3) of Badung River	A3-8
Flood Control Facility (Badung River)-3.9	New Ground Sill of Badung River	A3-9
Flood Control Facility (Mati River)-3.10	River Improvement Overall Plan of Mati River	A3-10
Flood Control Facility (Mati River)-3.11	River Improvement Plan of Mati River	A3-11
Flood Control Facility (Mati River)-3.12	Longitudinal Section(1) of Mati River	A3-12
Flood Control Facility (Mati River)-3.13	Longitudinal Section(2) of Mati River	A3-13
Flood Control Facility (Mati River)-3.14	Longitudinal Section(3) of Mati River	A3-14
Flood Control Facility (Mati River)-3.15	Main Cross Section(1) of Mati River	A3-15
Flood Control Facility (Mati River)-3.16	Main Cross Section(2) of Mati River	A3-16
Flood Control Facility (Mati River)-3.17	Main Cross Section(3) of Mati River	A3-17

A1 Ayung Dam



DAM OVERALL PLAN DRAWING
SCALE 1:10000

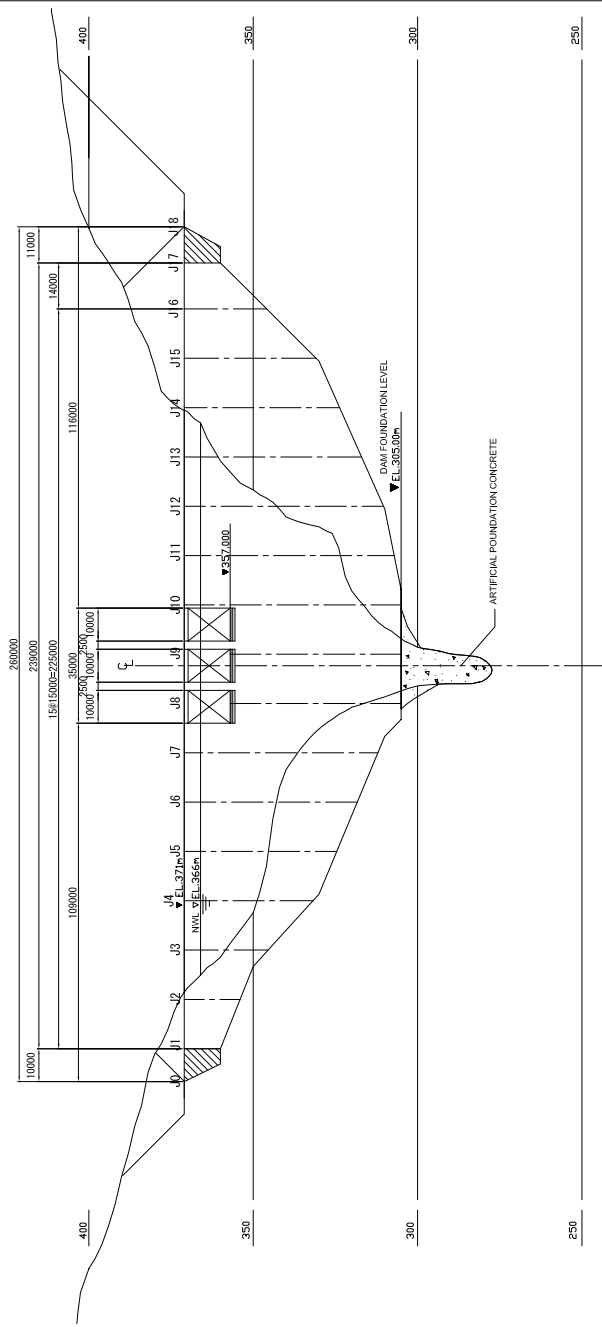
AD-1.1 Dam Overall Plan (With-Gate)
AI-1



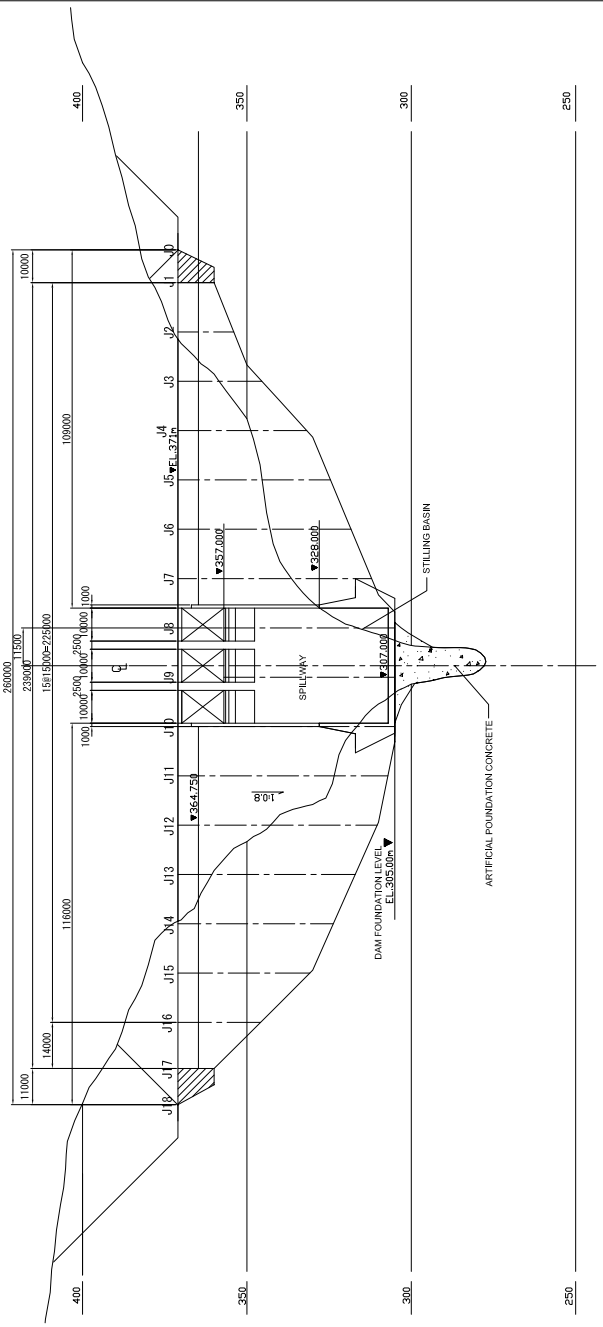
AD-1.2 Dam Plan (With-Gate)

AI-2

UPSTREAM VIEW



DOWNSTREAM VIEW



AD-1-3 Dam Cross Section at Upstream Side and Downstream Side (With-Gate)

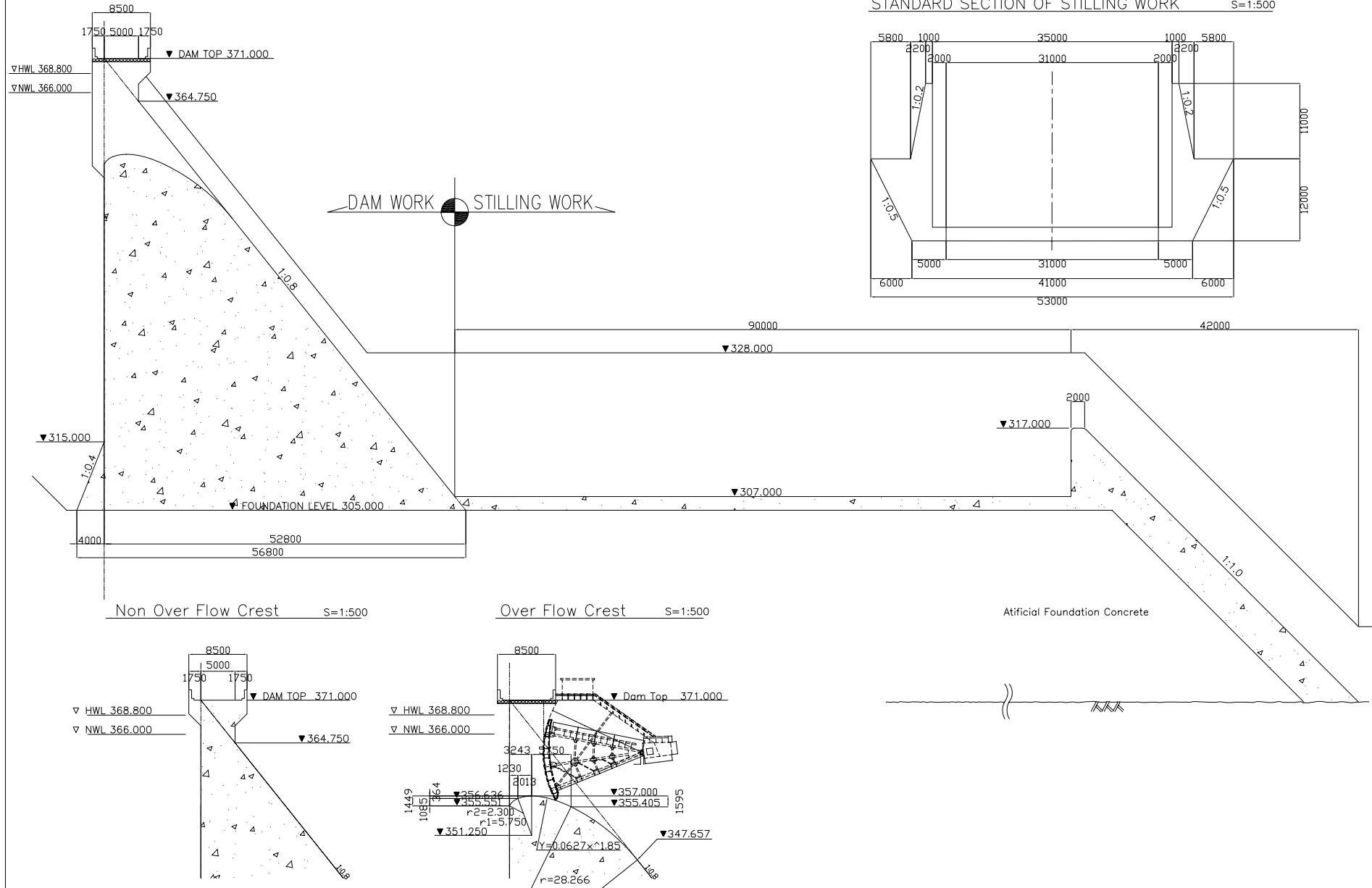
SCALE 1:1500

STANDARD SECTION DRAWING

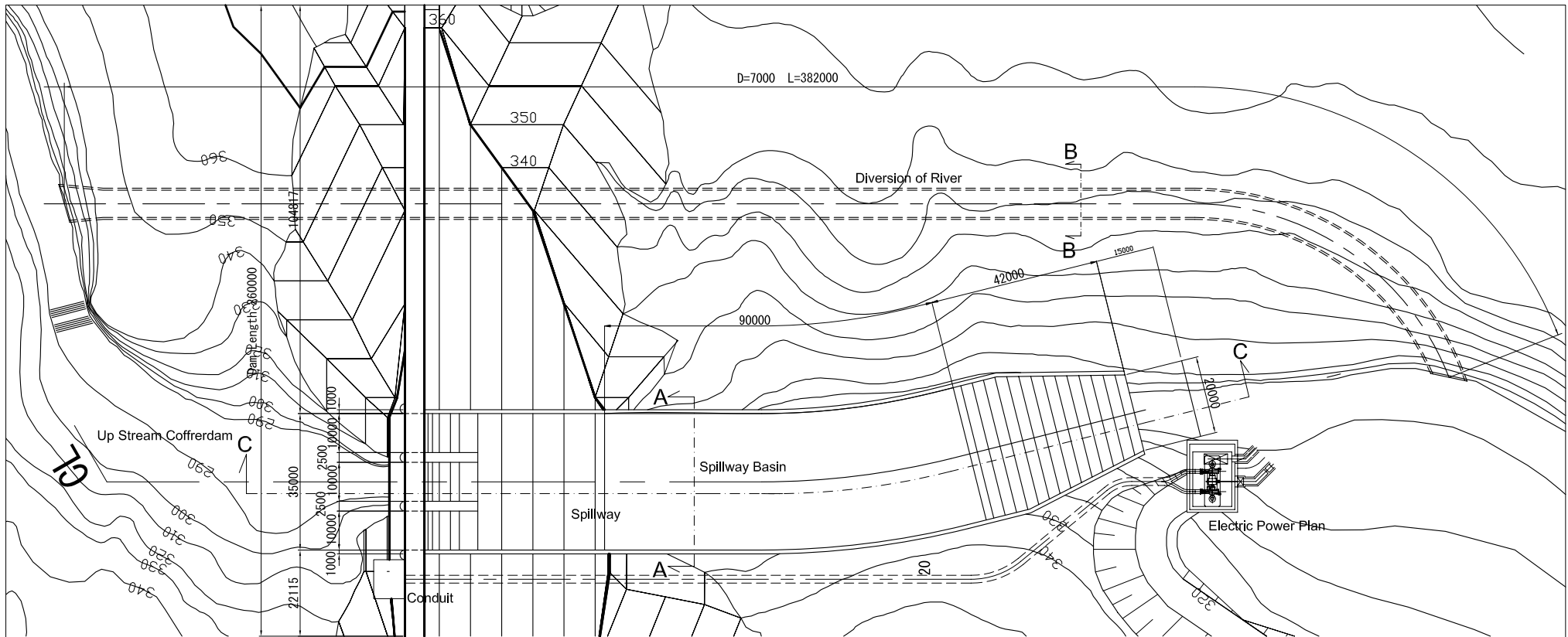
S=1:500

STANDARD SECTION OF STILLING WORK

S=1:500



AD-1-4 Dam Longitudinal Standard Section (With-Gate)
A1-4



D=7000 L=382000

Diversion of River

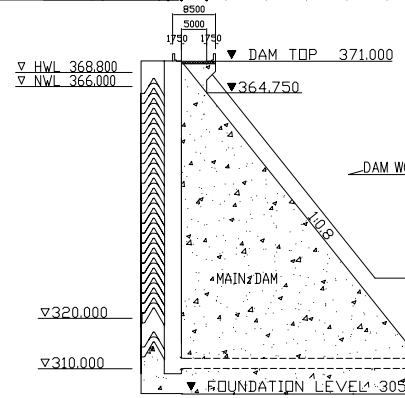
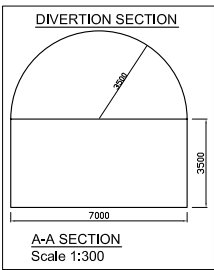
Up Stream Cofferdam

Spillway Basin

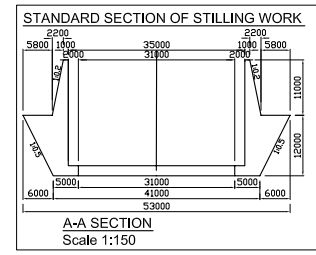
Spillway

Conduit

Electric Power Plant



STANDARD C-C SECTION

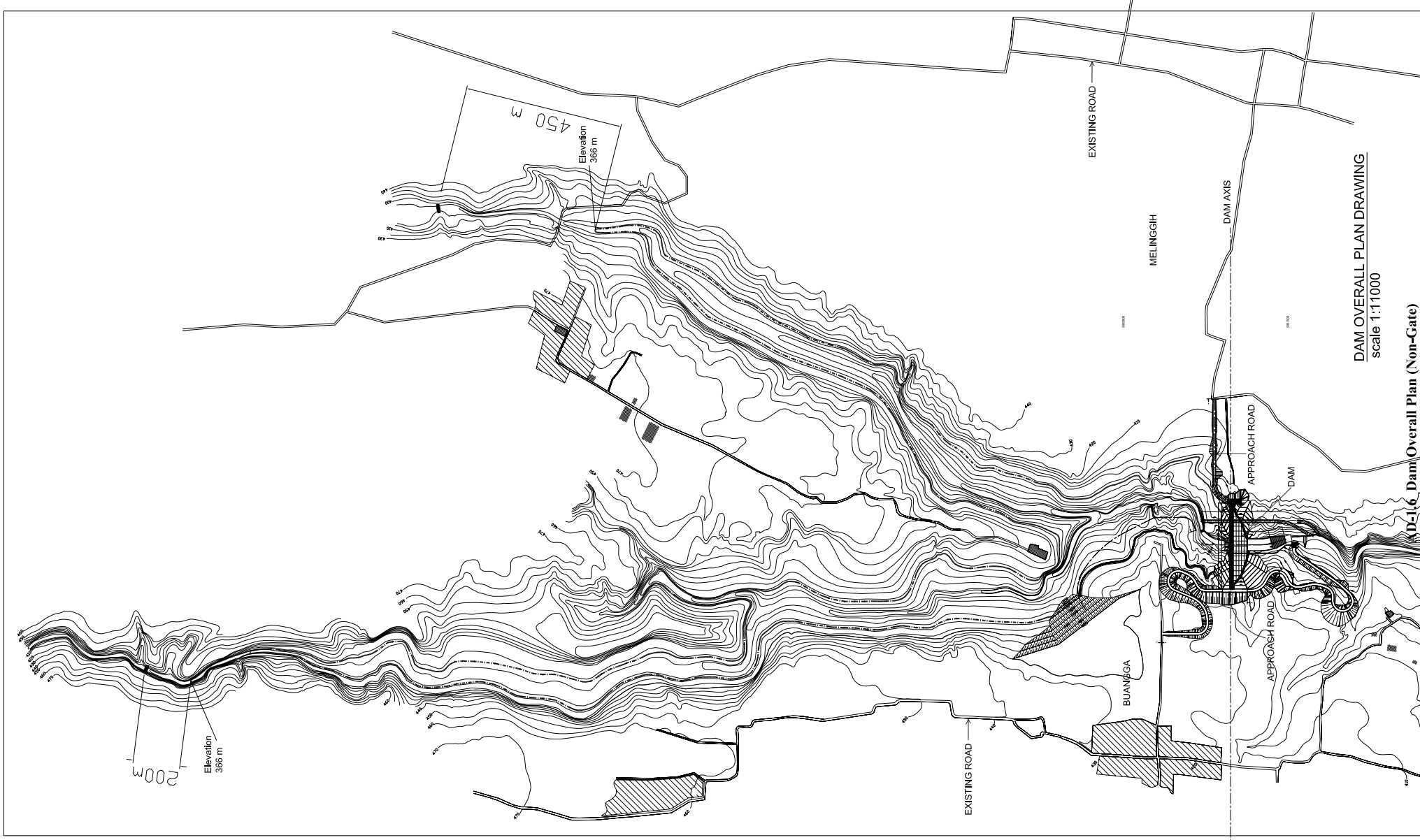


A-A SECTION Scale 1:150

POWER FACILITIES SECTION
 SCALE 1:100

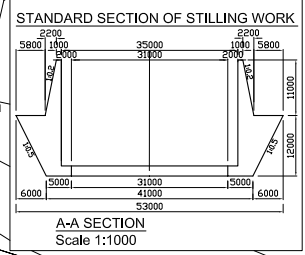
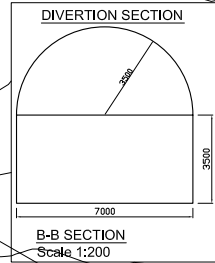
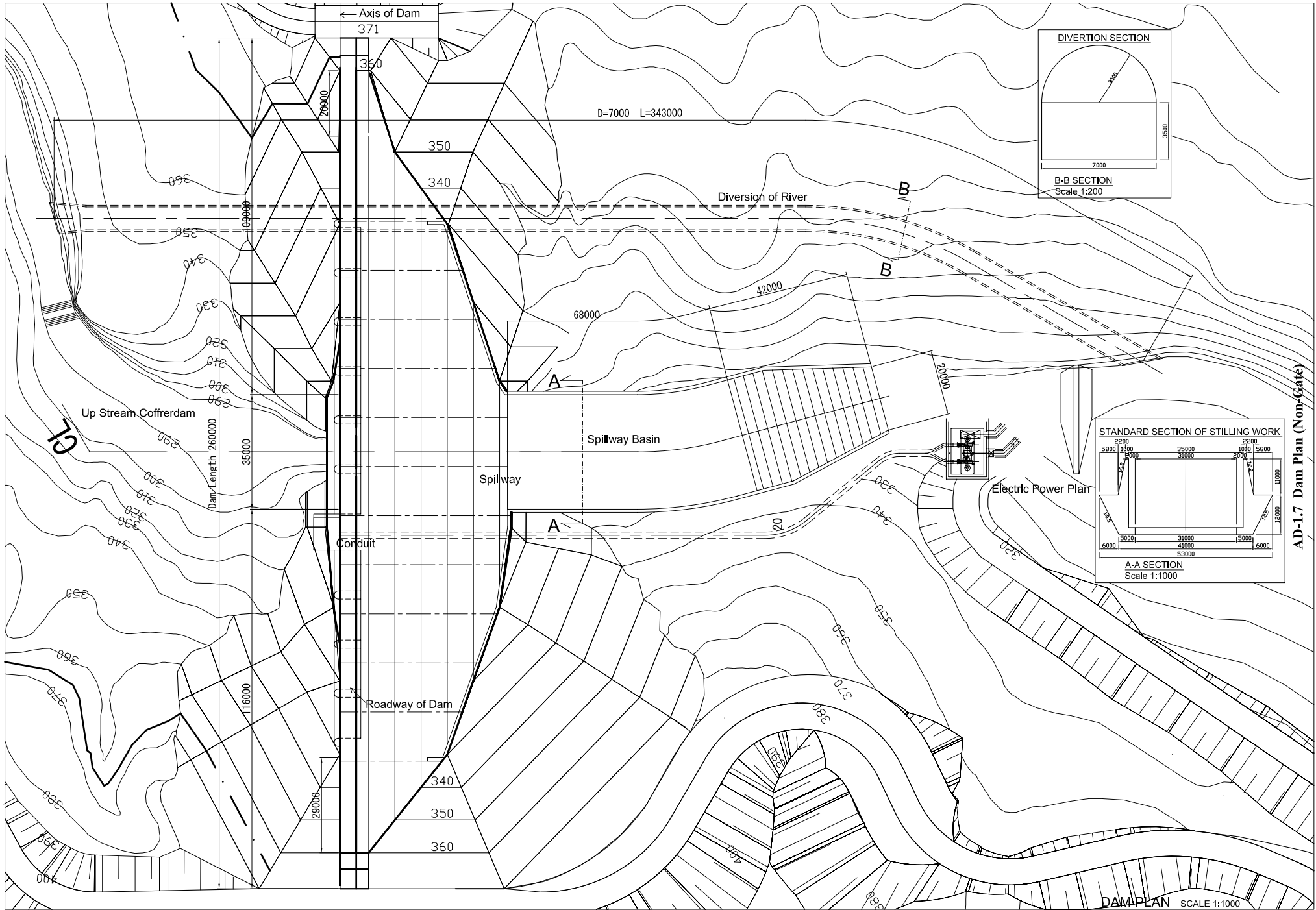
ARTIFICIAL FOUNDATION CONCRETE

ELECTIC POWER PLANT



DAM OVERALL PLAN DRAWING
scale 1:11000

AD-1-6 Dam Overall Plan (Non-Gate)

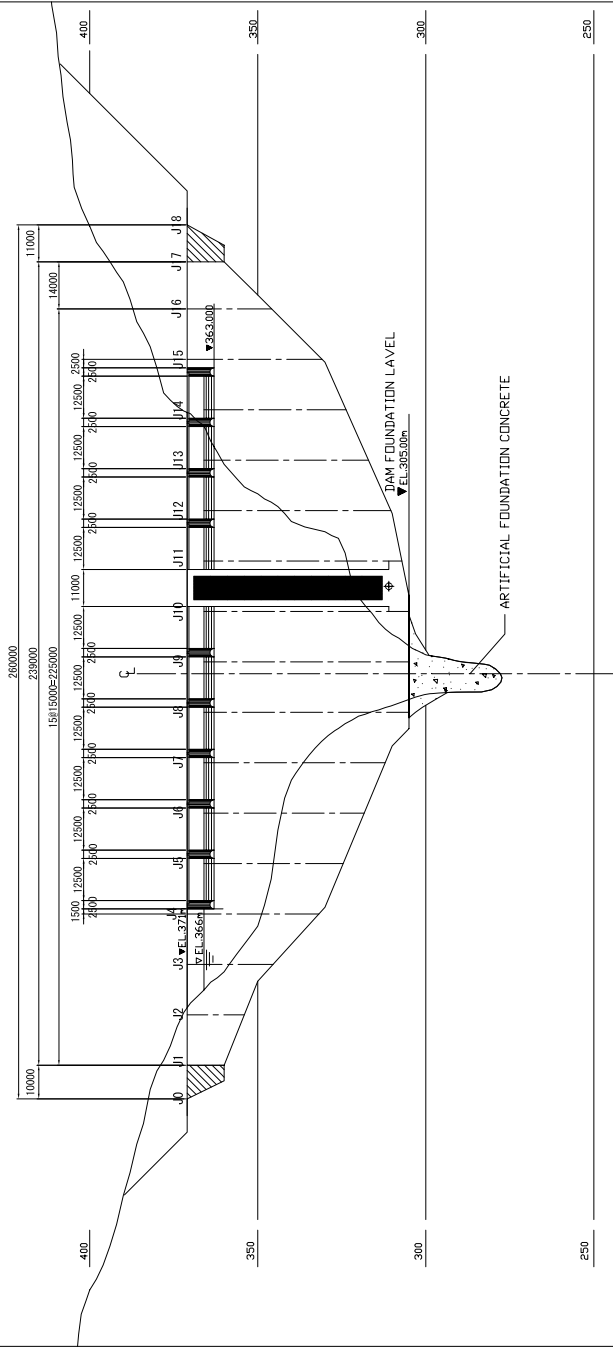


AD-1.7 Dam Plan (Non-Gate)

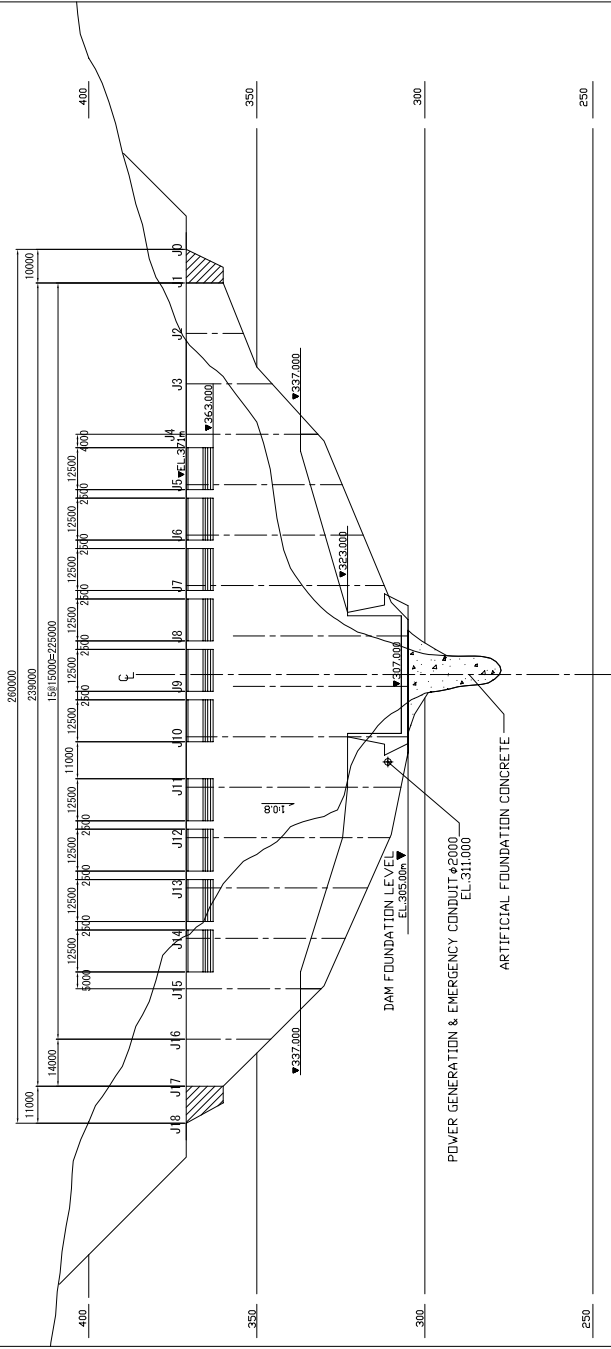
A1-7

DAMP PLAN SCALE 1:1000

UPSTREAM



DOWNSTREAM

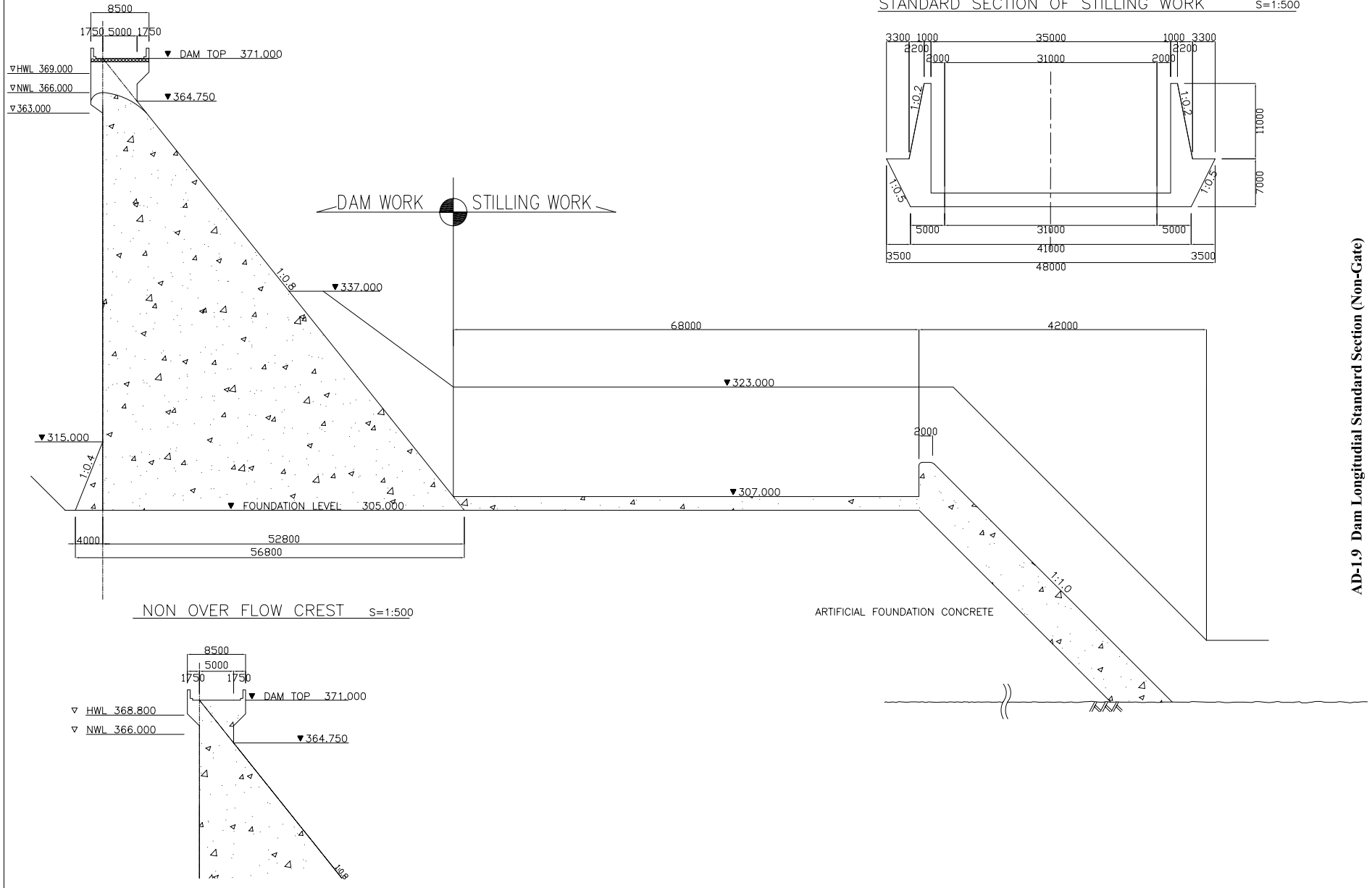


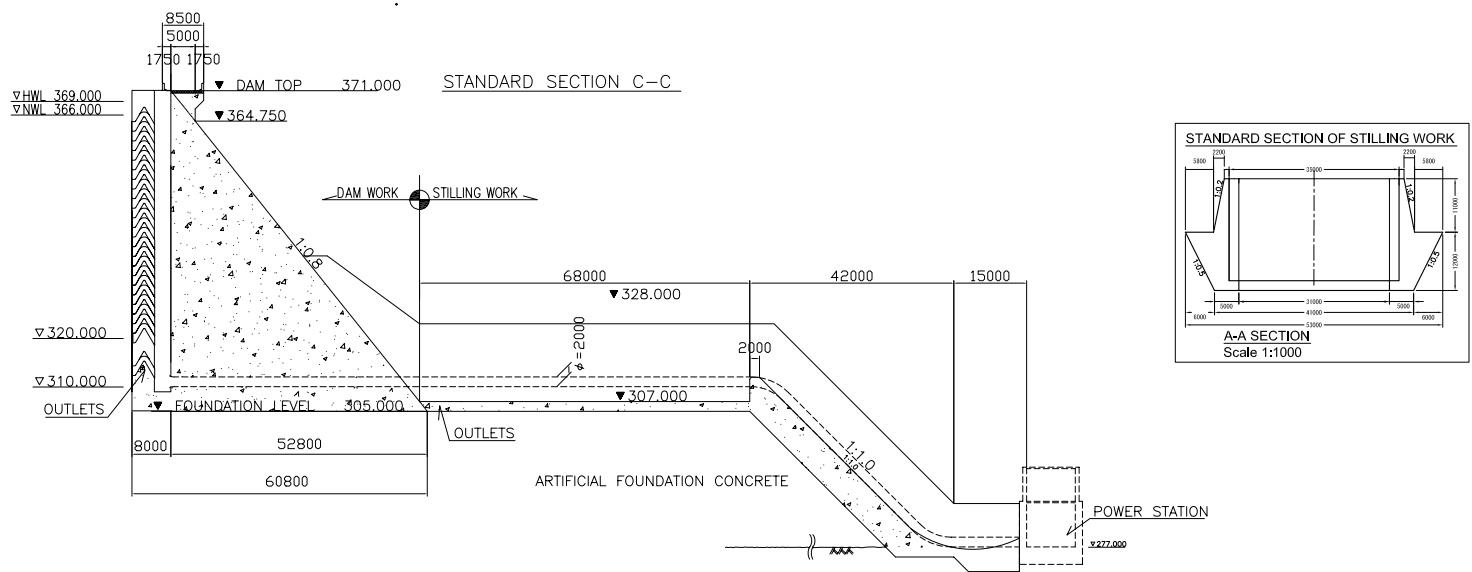
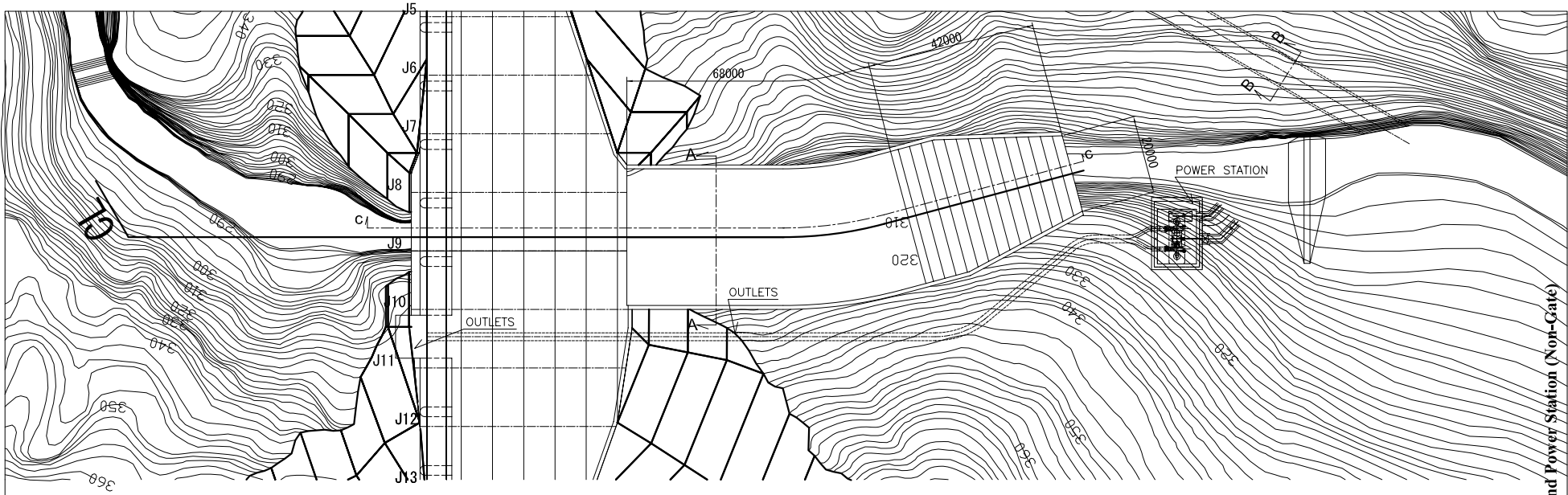
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AD-1.8 Dam CrossSection at Upstream Side and Downstream Side (Non-Gate)

STANDARD SECTION S=1:500

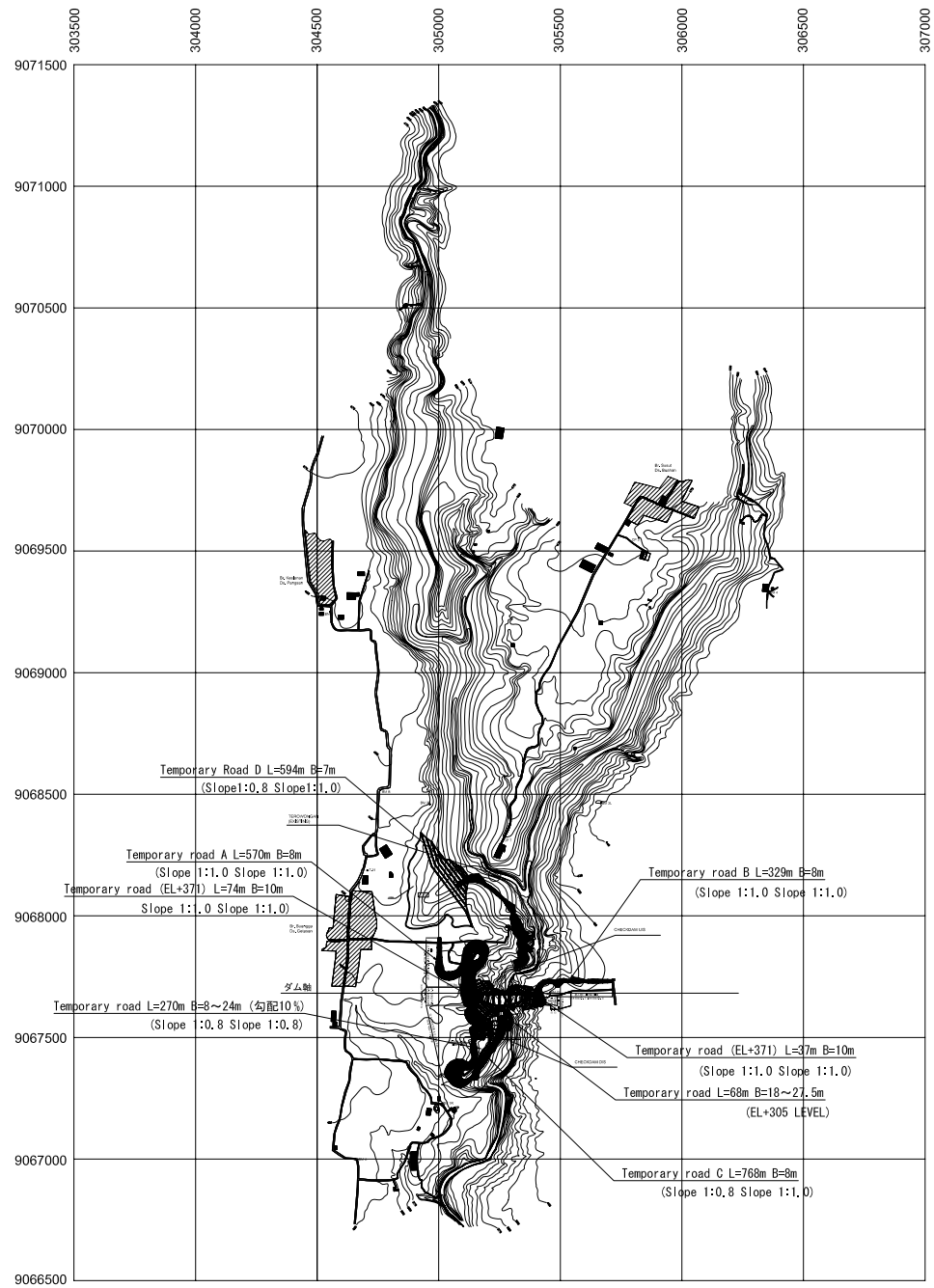
STANDARD SECTION OF STILLING WORK S=1:500





SCALE 1:1000

AD-1.10 Location Scheme of Dam Outlets and Power Station (Non-Gate) A1-10



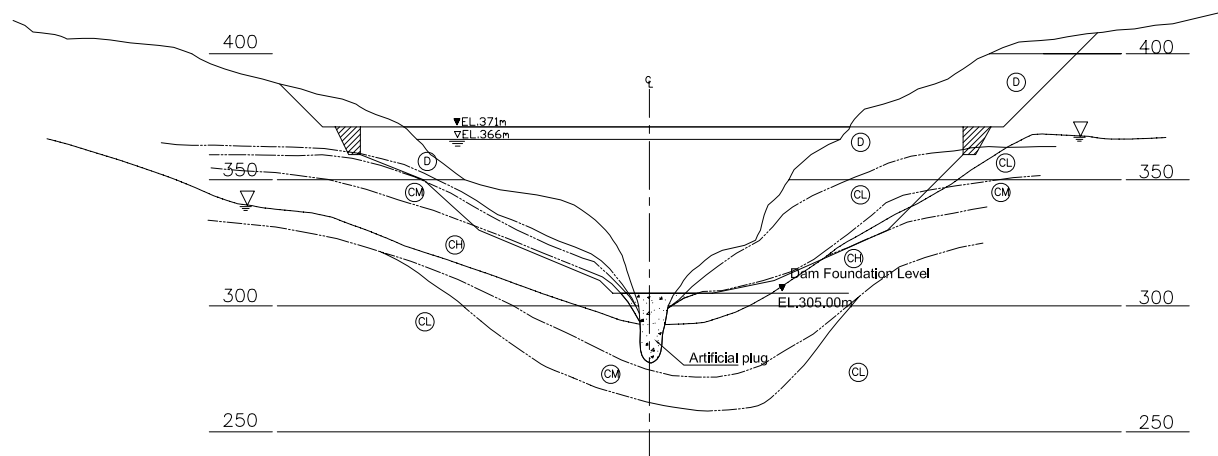
AD-1.11 Temporary Road Overall Location Scheme (Non-Gate)

A1-11

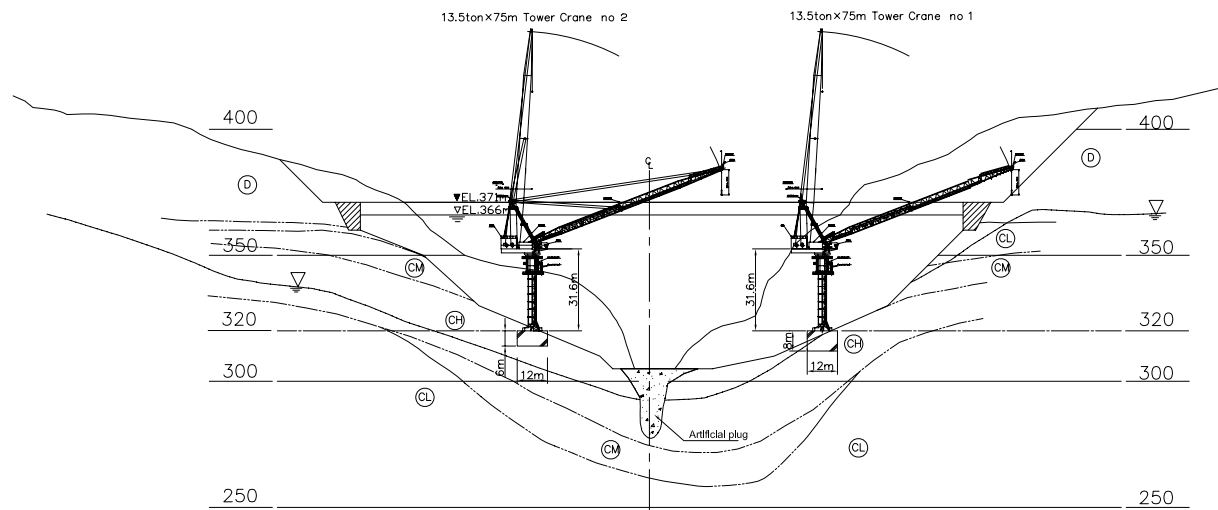
S=1/10000



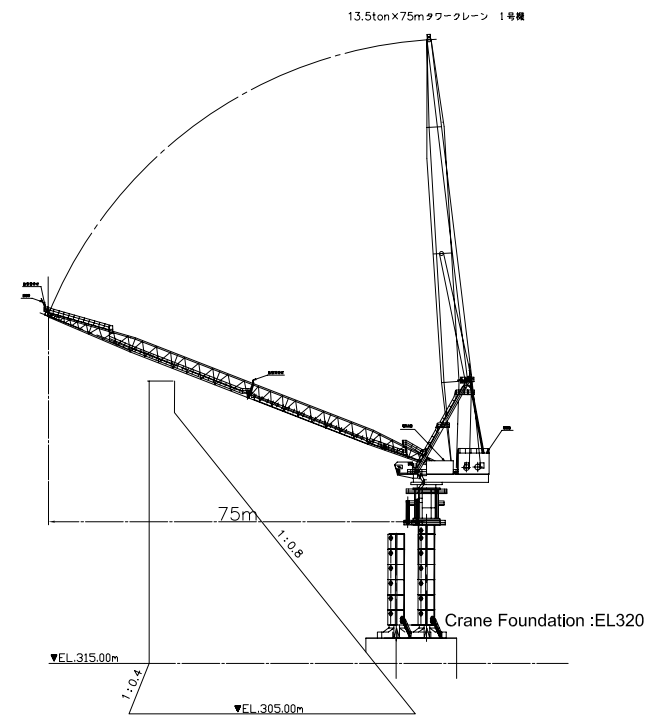
AD-1.12 Temporary Road Location Scheme (Non-Gate)



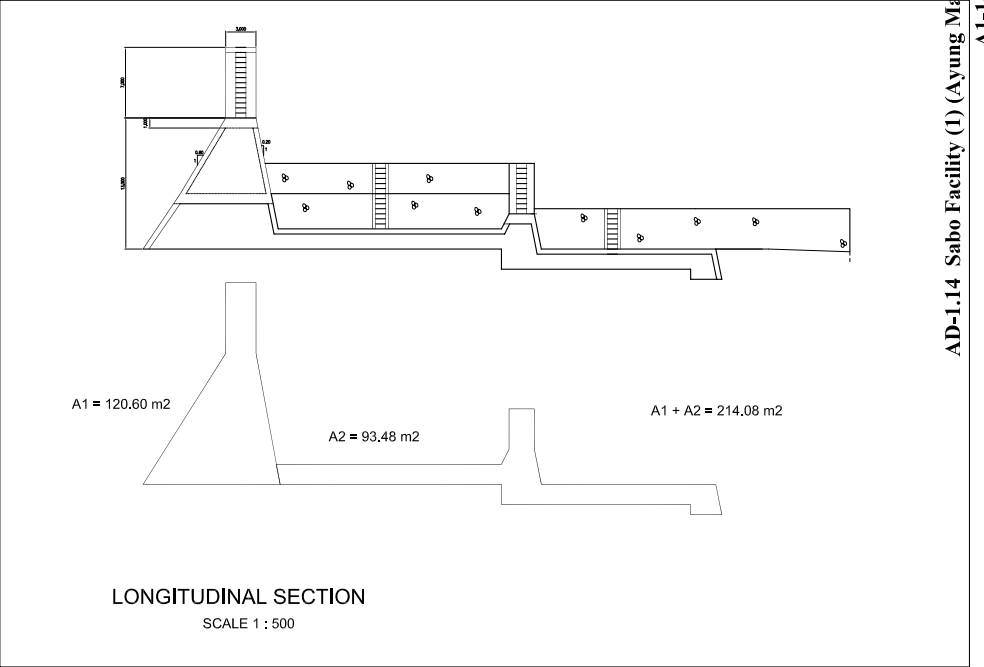
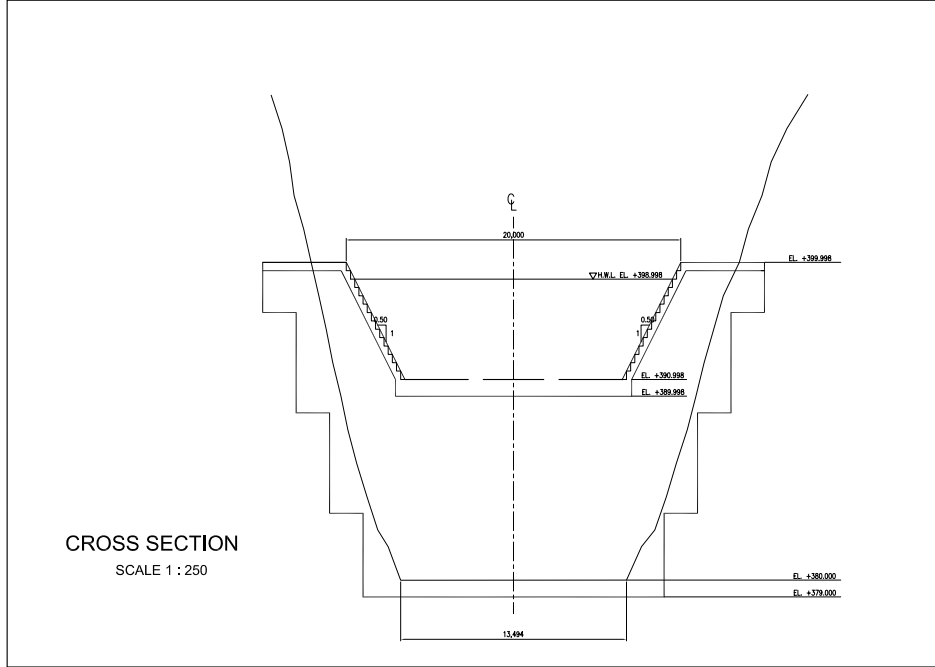
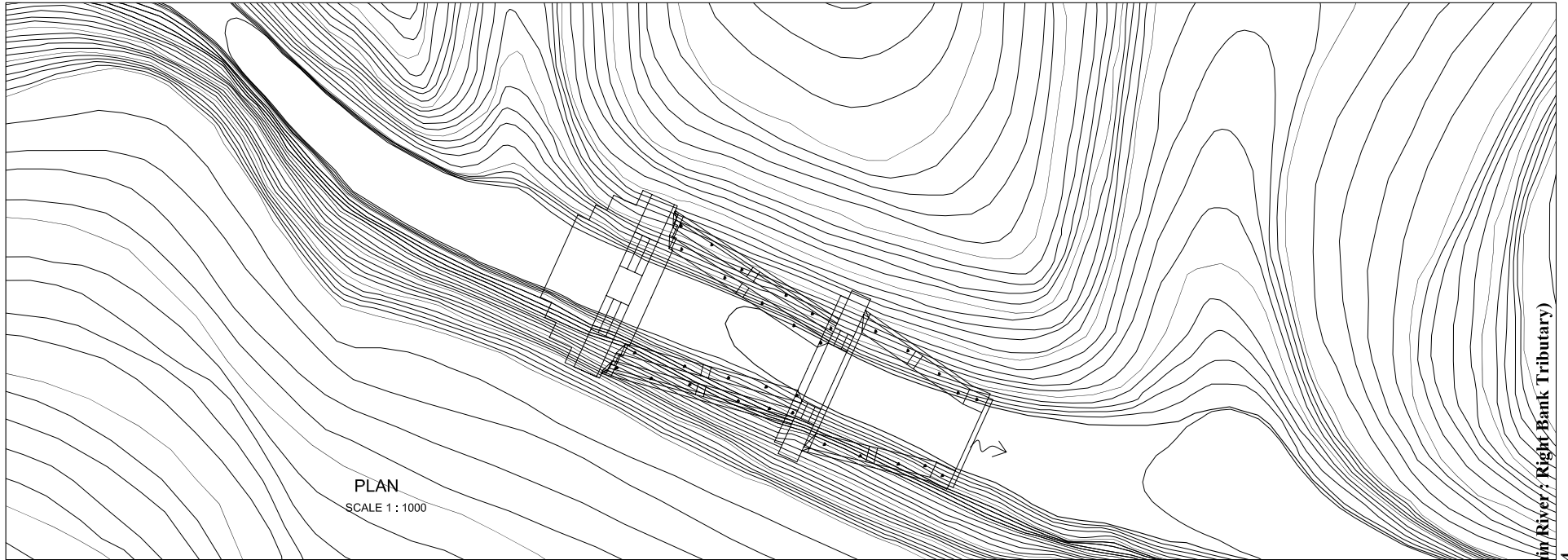
STANDARD SECTION S=1:500



STANDARD SECTION S=1:500

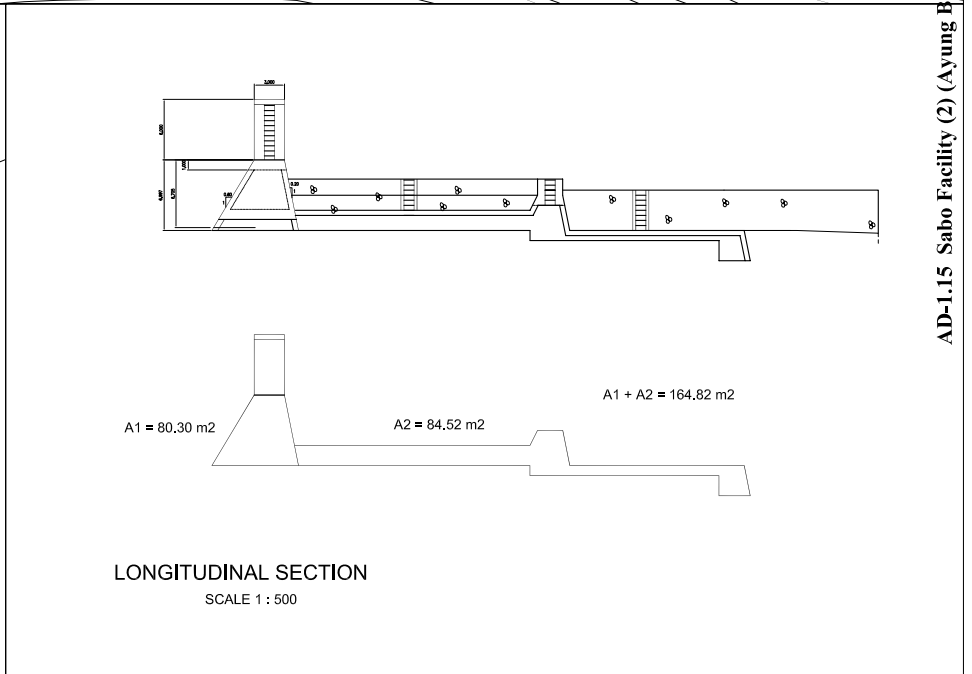
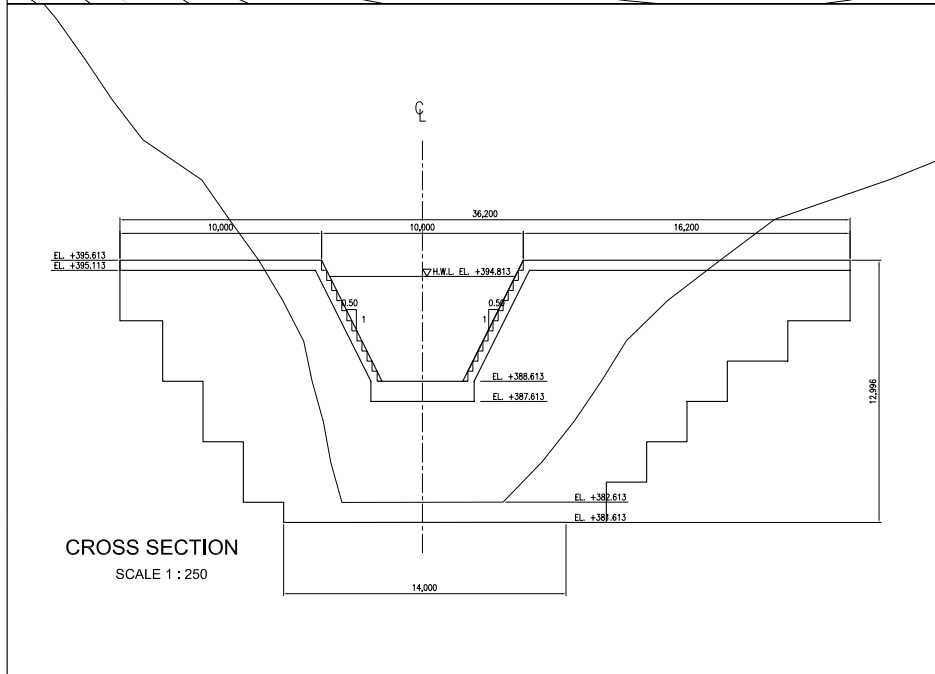
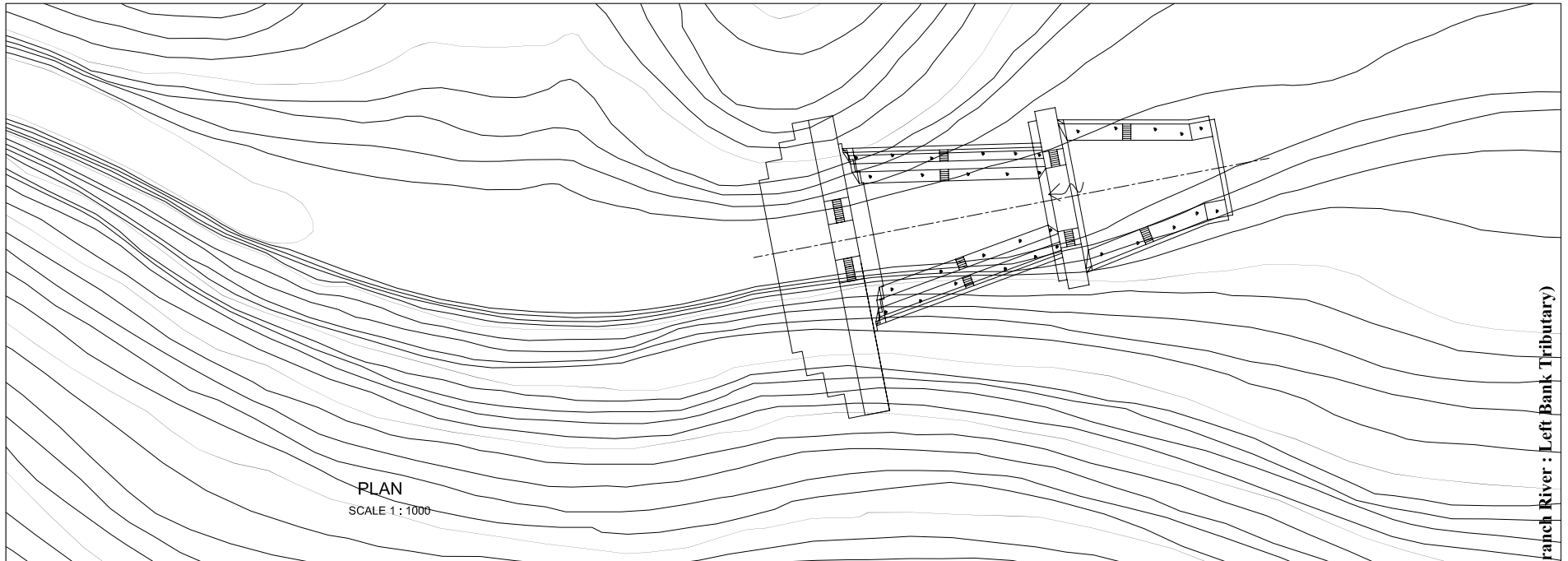


DAM UPSTREAM SECTION S=1:1000



AD-1.14 Sabo Facility (1) (Ayung Main River / Right Bank Tributary)

A1-14



AD-1.15 Sabo Facility (2) (Ayung Branch River : Left Bank Tributary)

A1-15