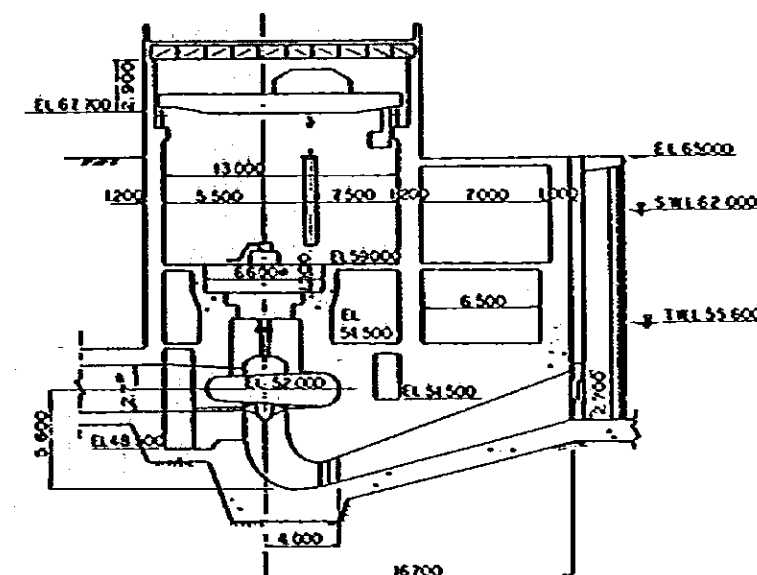


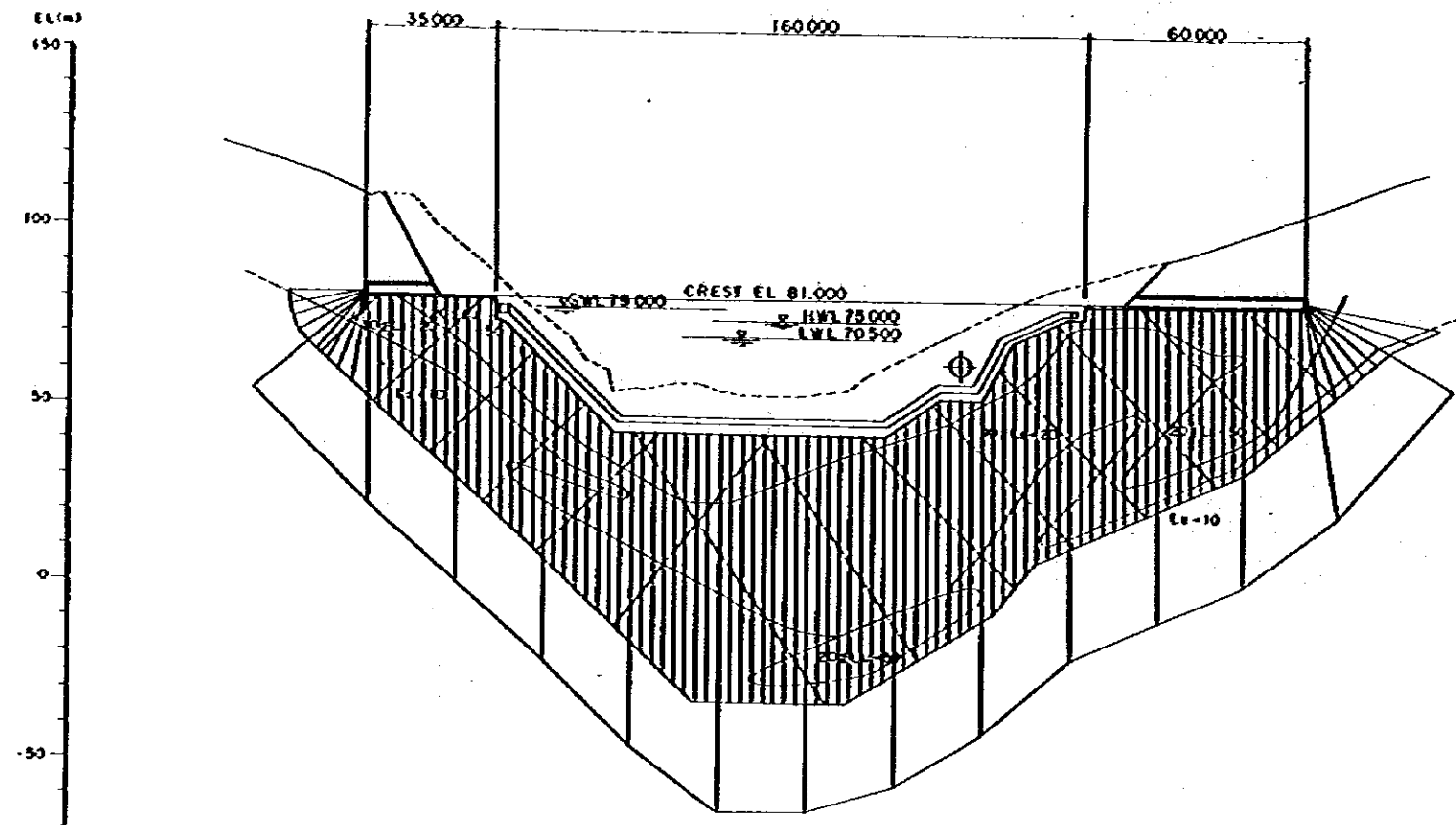
SECTION



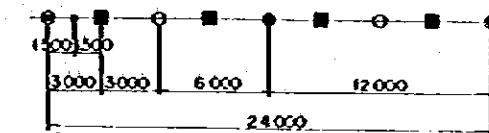
SCALE  
1:100

JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN  
FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
LOWER TEKAI  
POWER STATION  
FIGURE - 14

# GROUTING PLAN OF LOWER TEKAI DAM



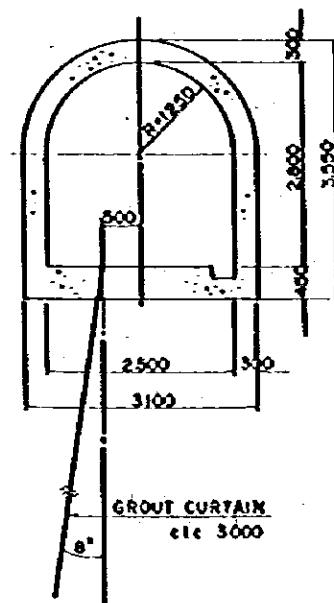
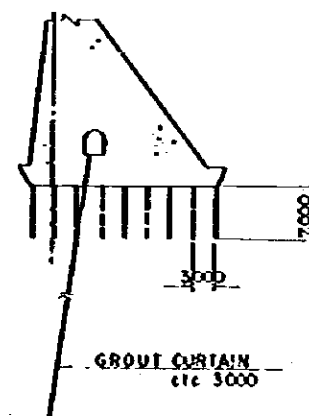
## CURTAIN GROUTING PATTERN (STANDARD)



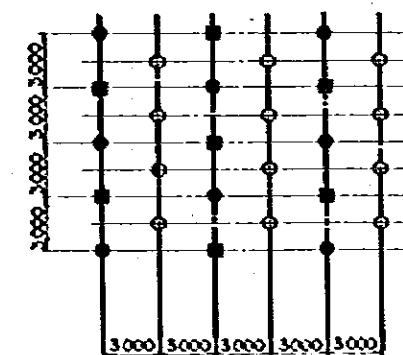
- PILOT GROUTING
- FIRST GROUTING
- SECOND GROUTING
- THIRD GROUTING
- FOURTH GROUTING
- ADDITIONAL GROUTING

## GROUTING GALLERY

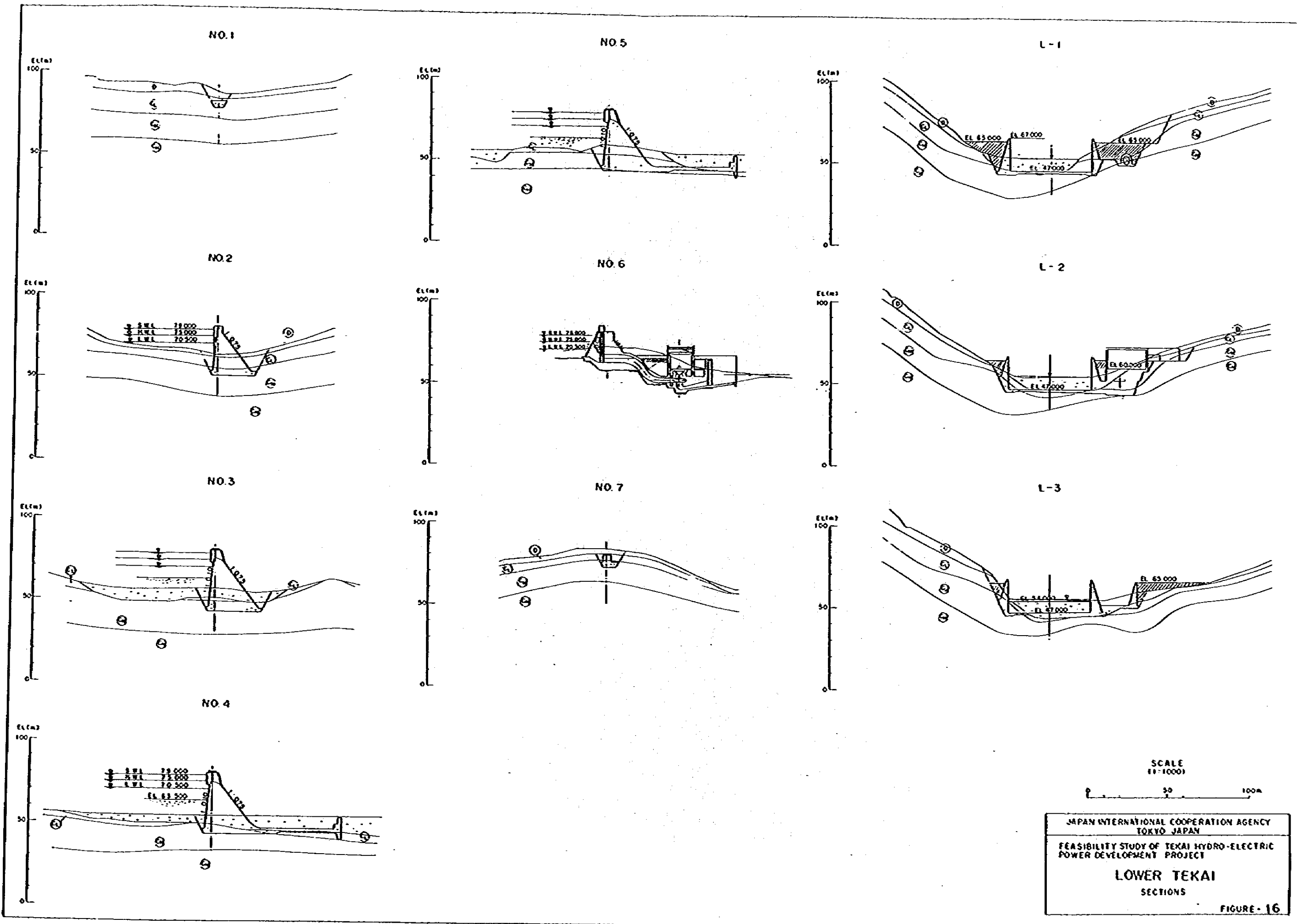
### GROUTING HOLES

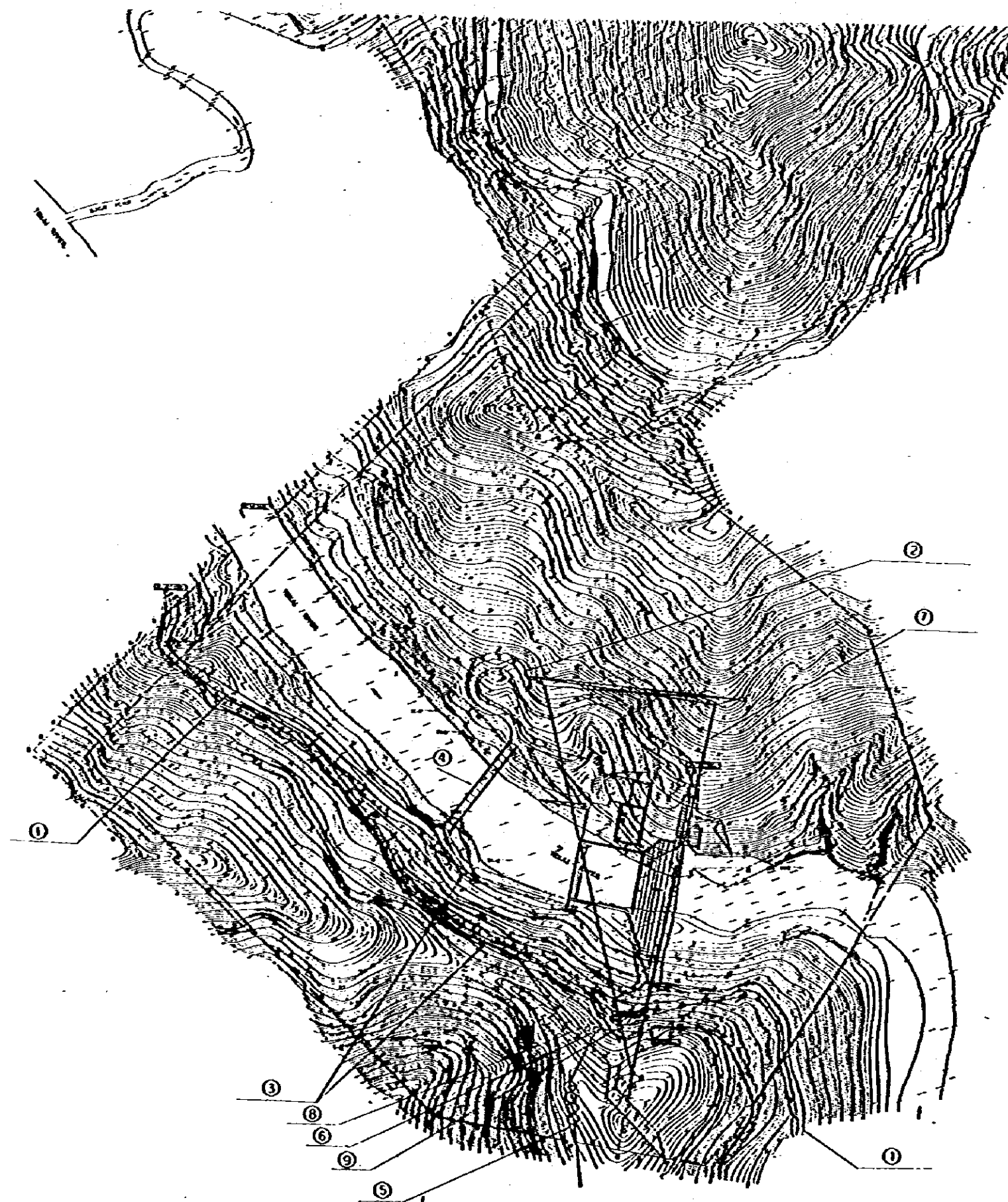


## CONSOLIDATION GROUTING PATTERN



- FIRST GROUTING
- SECOND GROUTING
- THIRD GROUTING





# LIST of TEMPORARY FACILITIES

No	Appellation	Specification	Quantity
①	Access Road (steep Bank)	Width = 6 m	1
②	Access Road (level Bank)	-	1
③	Temporary Road	-	1
④	Temporary Bridge	-	96 m
⑤	Aggregate Stock Pile	-	1
⑥	Batching Plant	30 m <sup>2</sup> /H	1
⑦	Cable Crane	See Site Plan	1
⑧	Cooling Plant	120 HP	1
⑨	Shuttle Train line	-	1

1:2,000

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 POWER DEVELOPMENT PROJECT

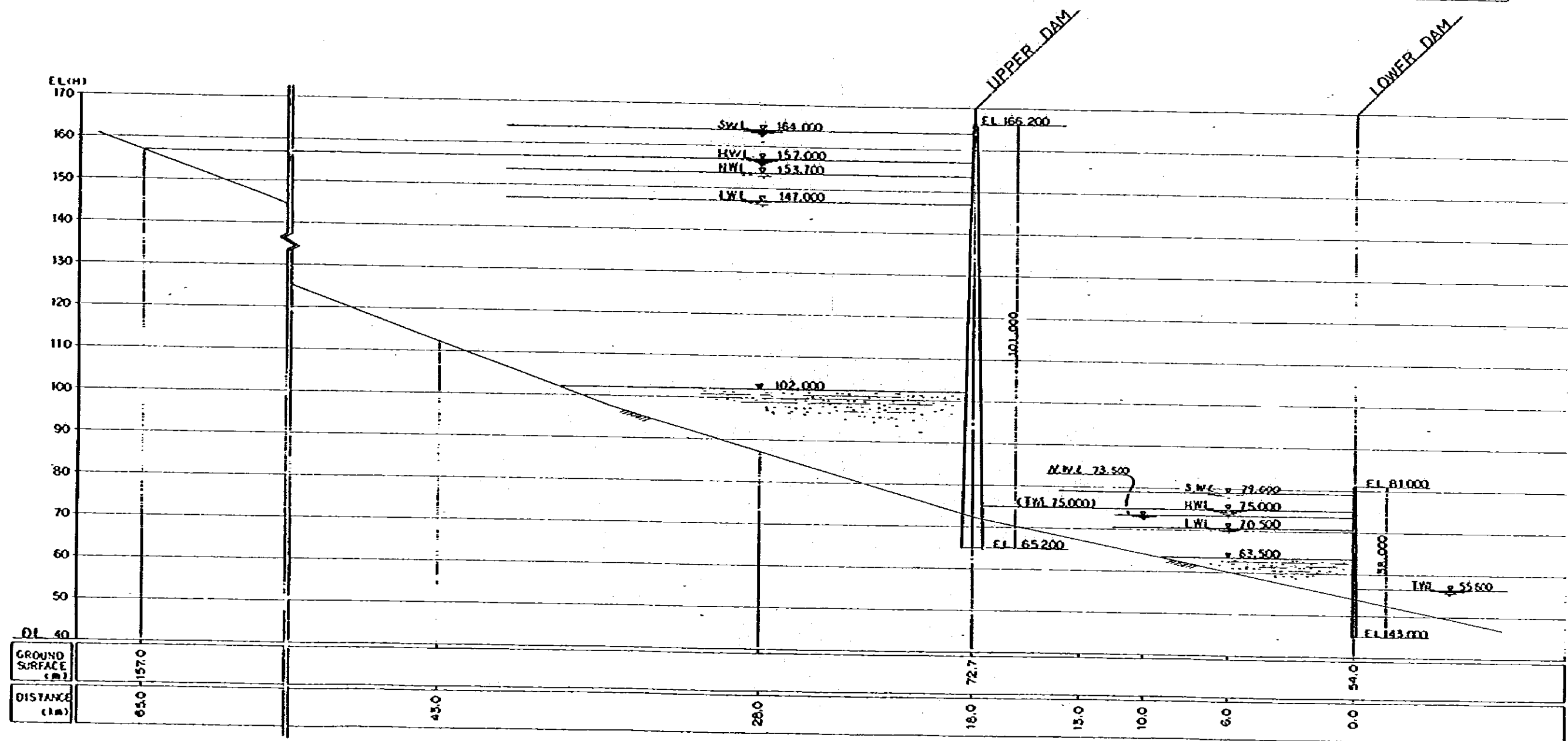
LOWER TEKAI  
 CONSTRUCTION PLANNING

FIGURE - 17

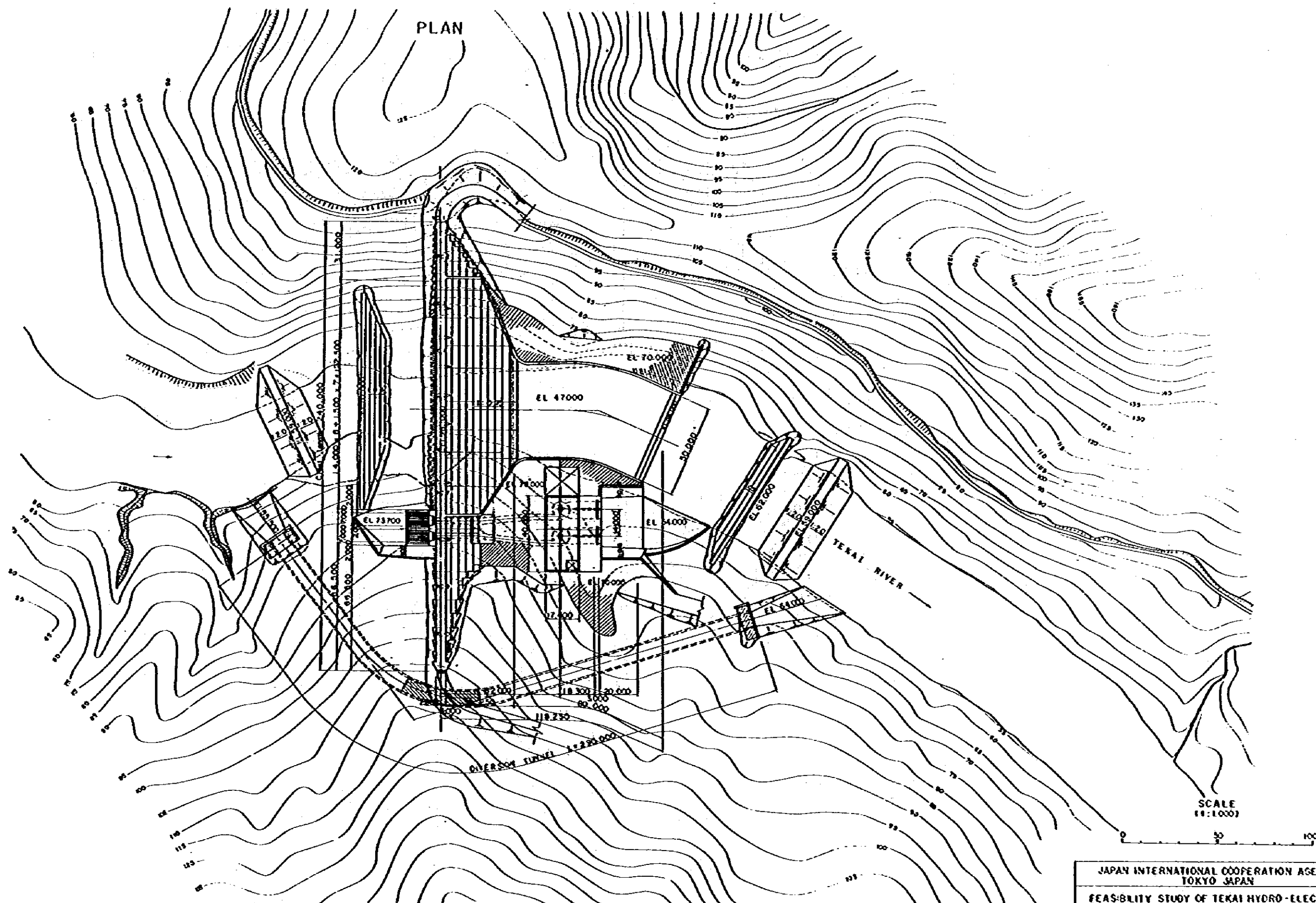
# PROFILE

SH : 1:100,000  
SV : 1: 500

Item		UPPER DAM	LOWER DAM
Catchment Area	km <sup>2</sup>	1,200	1,380
High	m	101	38
Volume	m <sup>3</sup>	3,125,000	57,000
Reservoir Area	km <sup>2</sup>	76	6 <sup>1</sup>
Gross Capacity	m <sup>3</sup>	2,040	415
Effective Capacity	m <sup>3</sup>	680	215
Maximum Discharge	m <sup>3</sup> /s	235	40
Maximum O.A.P.R.	m <sup>3</sup> /s	150	58
Annual Energy	kWh	194 <sup>1</sup>	40 <sup>3</sup>
Gross Head	m	78.7	17 <sup>1</sup>



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FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
**TEKAI DAM**  
PROFILE  
FIGURE-18

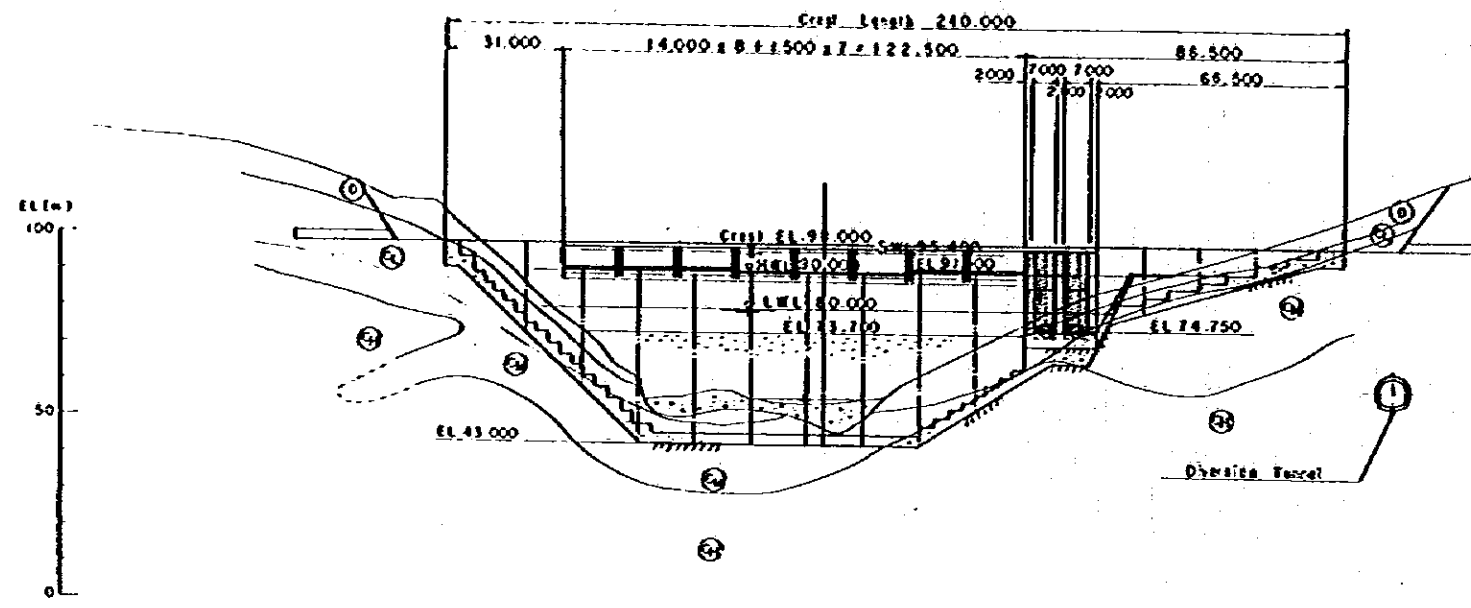


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TOKYO JAPAN

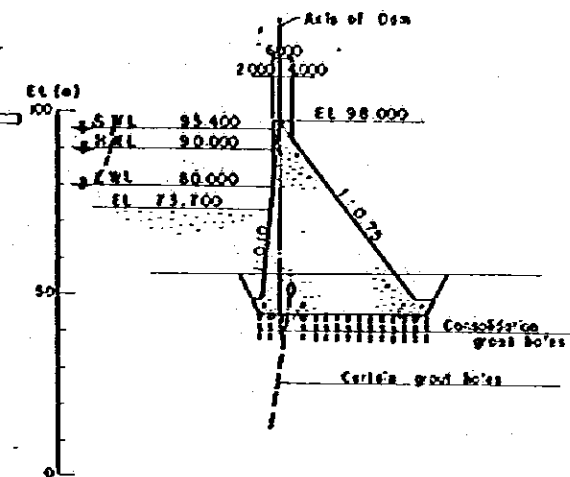
FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT

**LOWER TEKAI**  
GENERAL ARRANGEMENT PLAN  
(Single Development)  
FIGURE - 19

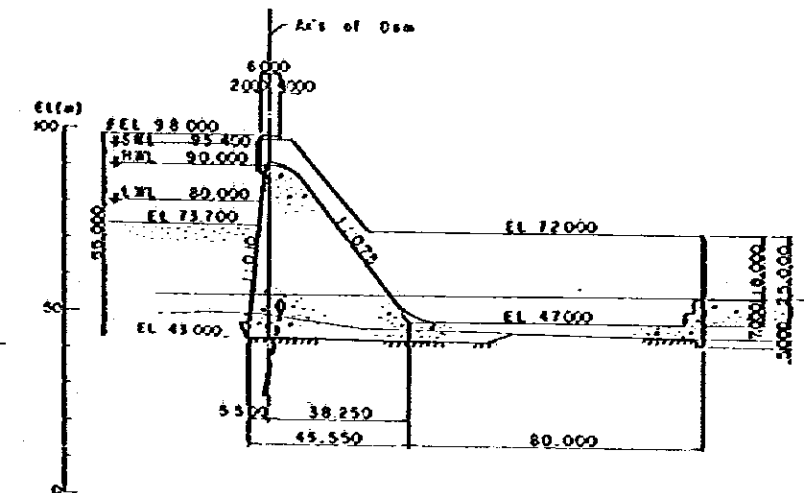
# UPSTREAM ELEVATION



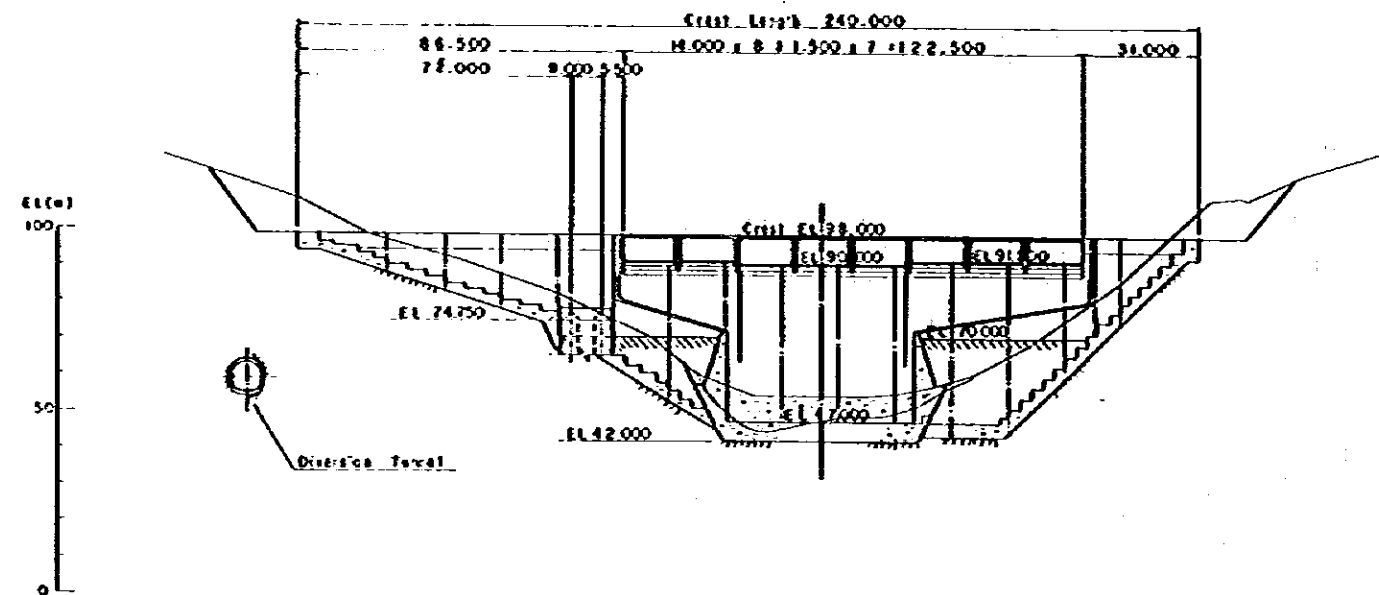
# NON-OVERFLOW SECTION



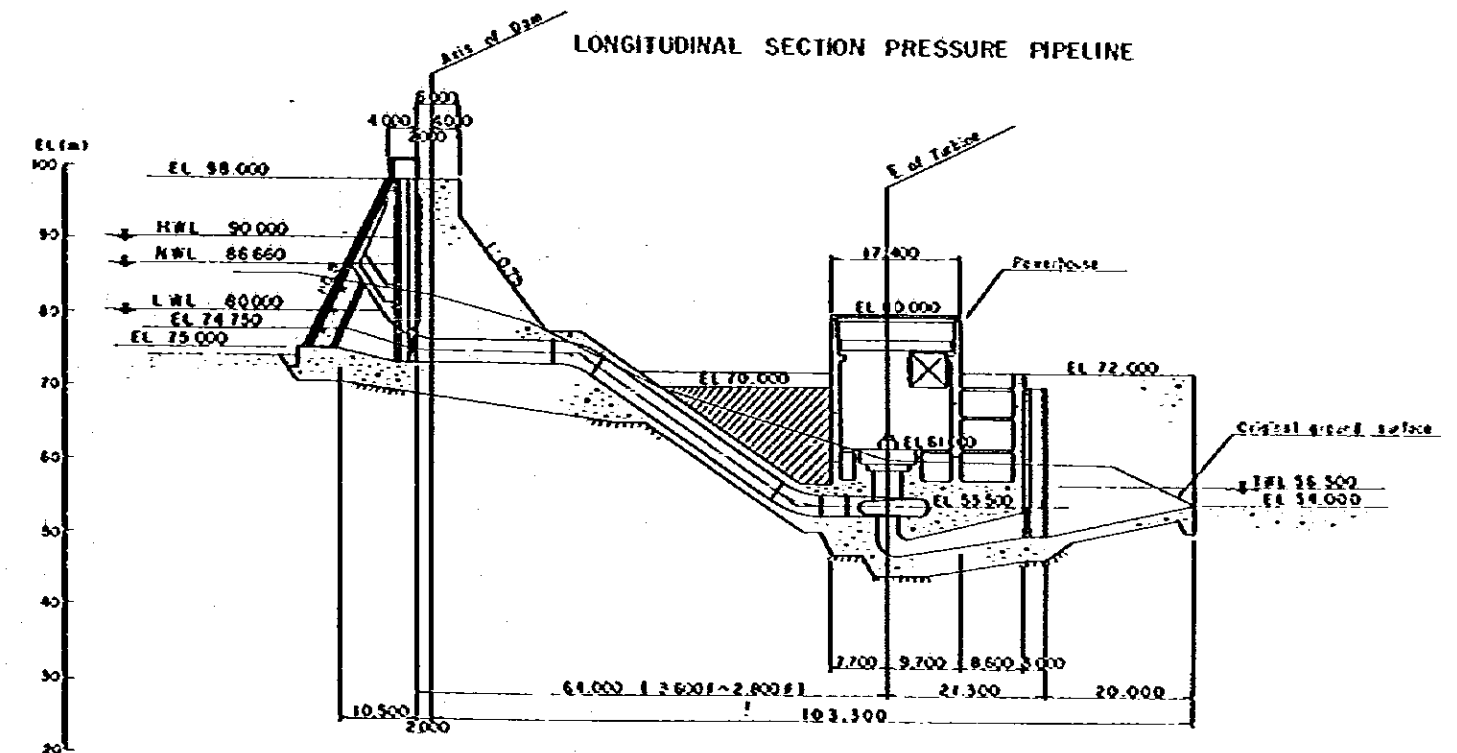
# OVERFLOW SECTION



# DOWNSTREAM ELEVATION



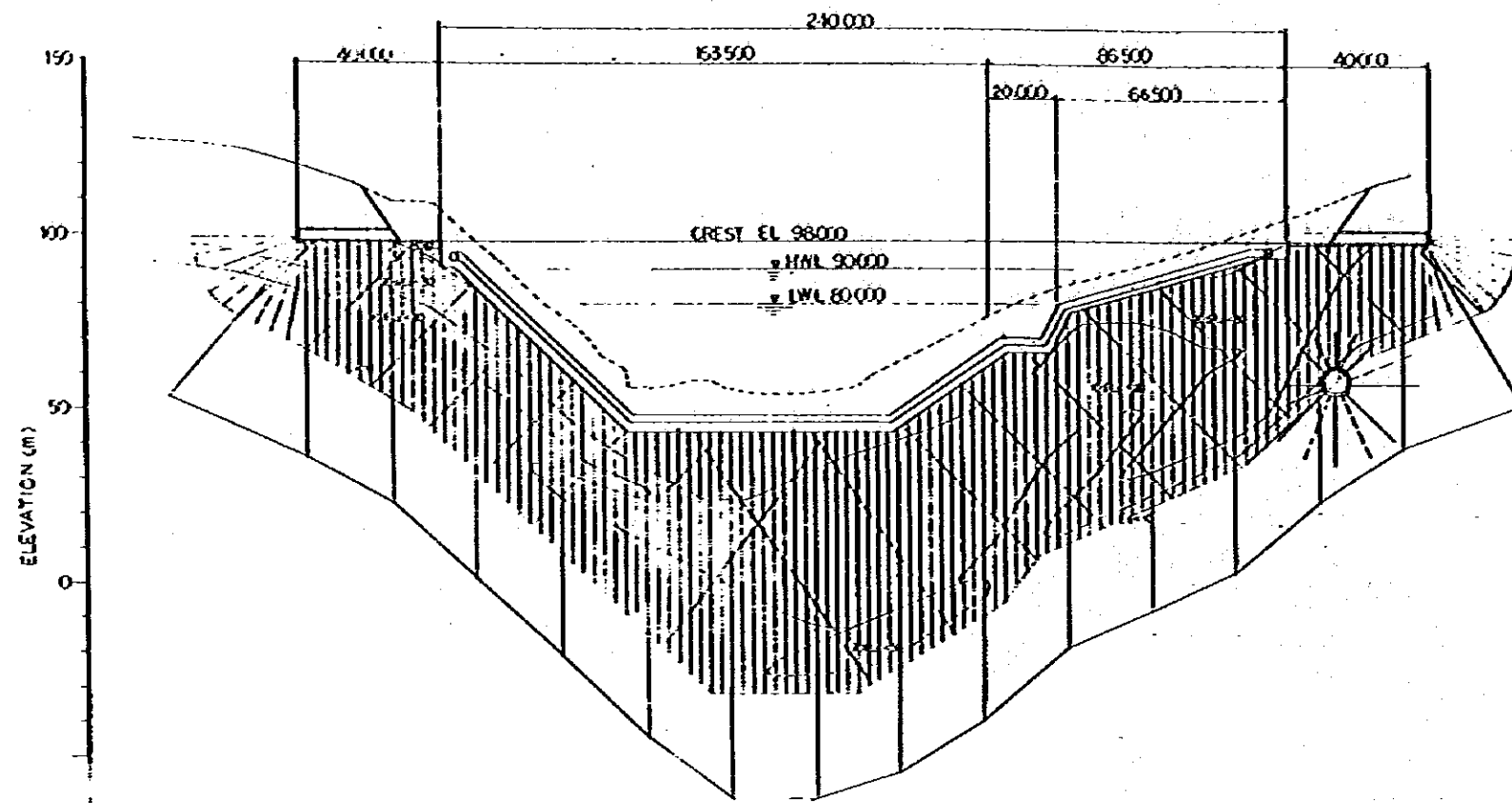
# LONGITUDINAL SECTION PRESSURE PIPELINE



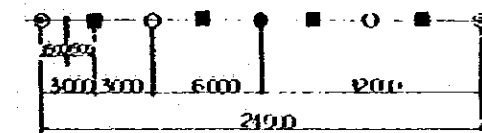
SCALE  
(1:1,000)

0 50 100m

# GROUTING PLAN OF LOWER TEKAI DAM (single)

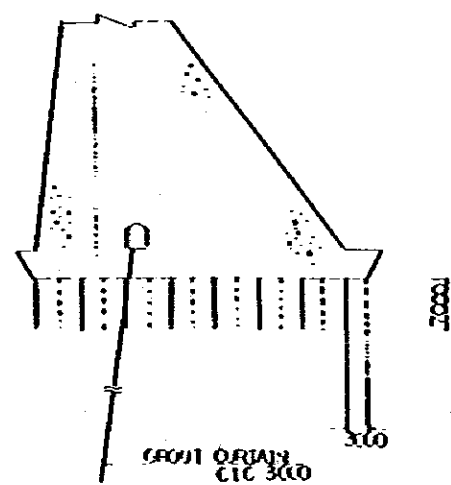


## CURTAIN GROUTING PATTERN (STANDARD)

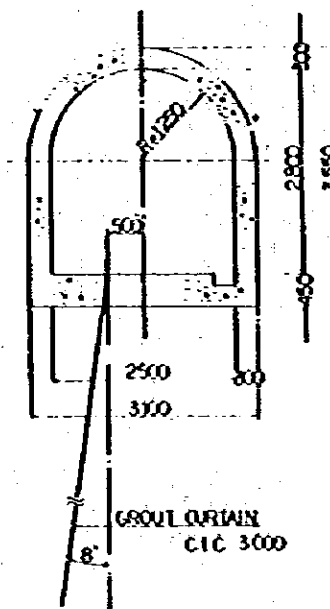


- ⊙ PILOT GROUTING
- FIRST GROUTING
- SECOND GROUTING
- THIRD GROUTING
- FOURTH GROUTING
- ADDITIONAL GROUTING

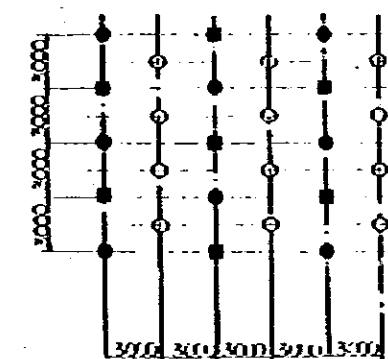
## GROUTING HOLES



## GROUTING GALLERY



## CONSOLIDATION GROUTING PATTERN



- FIRST GROUTING
- SECOND GROUTING
- THIRD GROUTING

SCALE  
(1:1,000)

0 10 20 30 40 50 60 70 80 90 100

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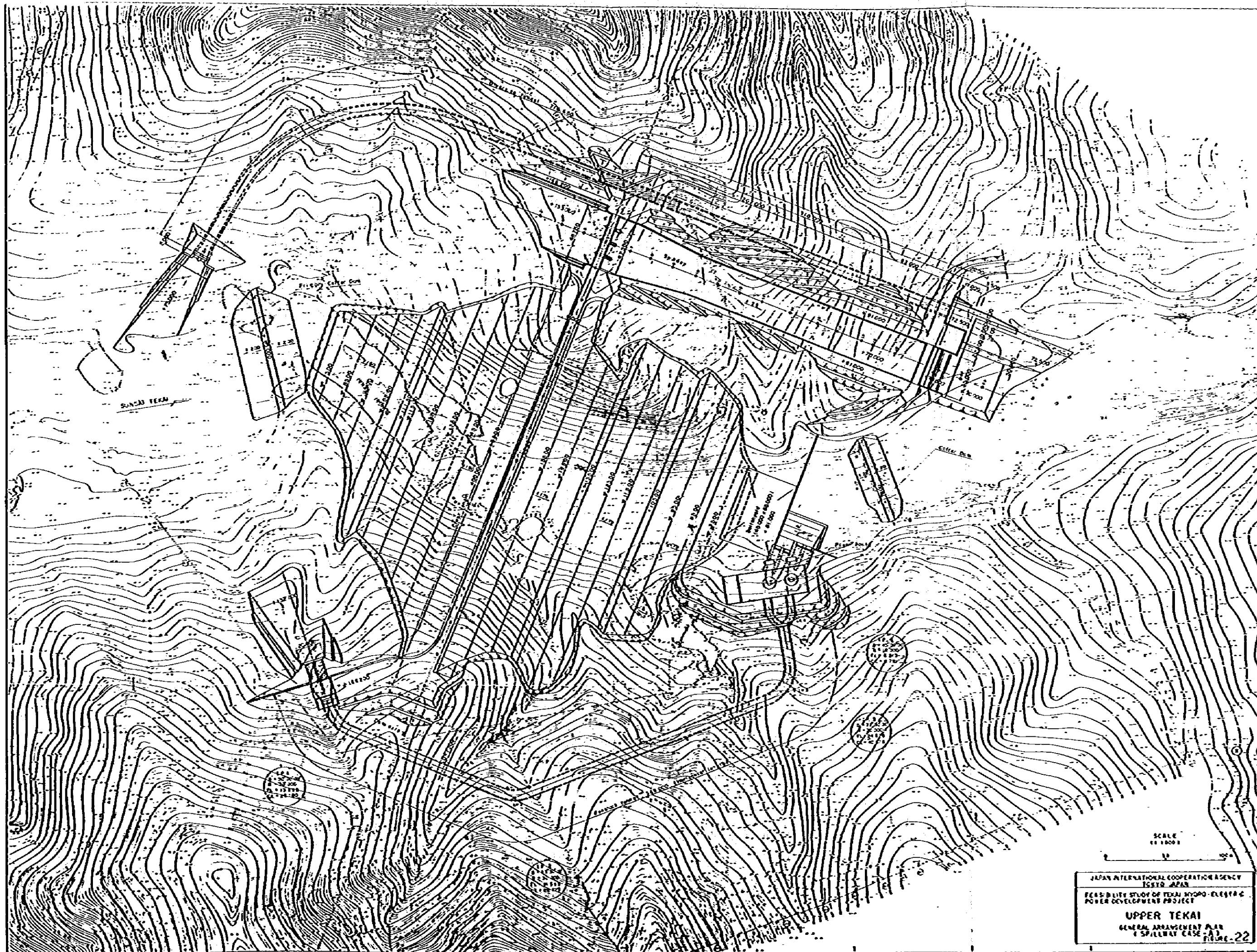
FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT

LOWER TEKAI

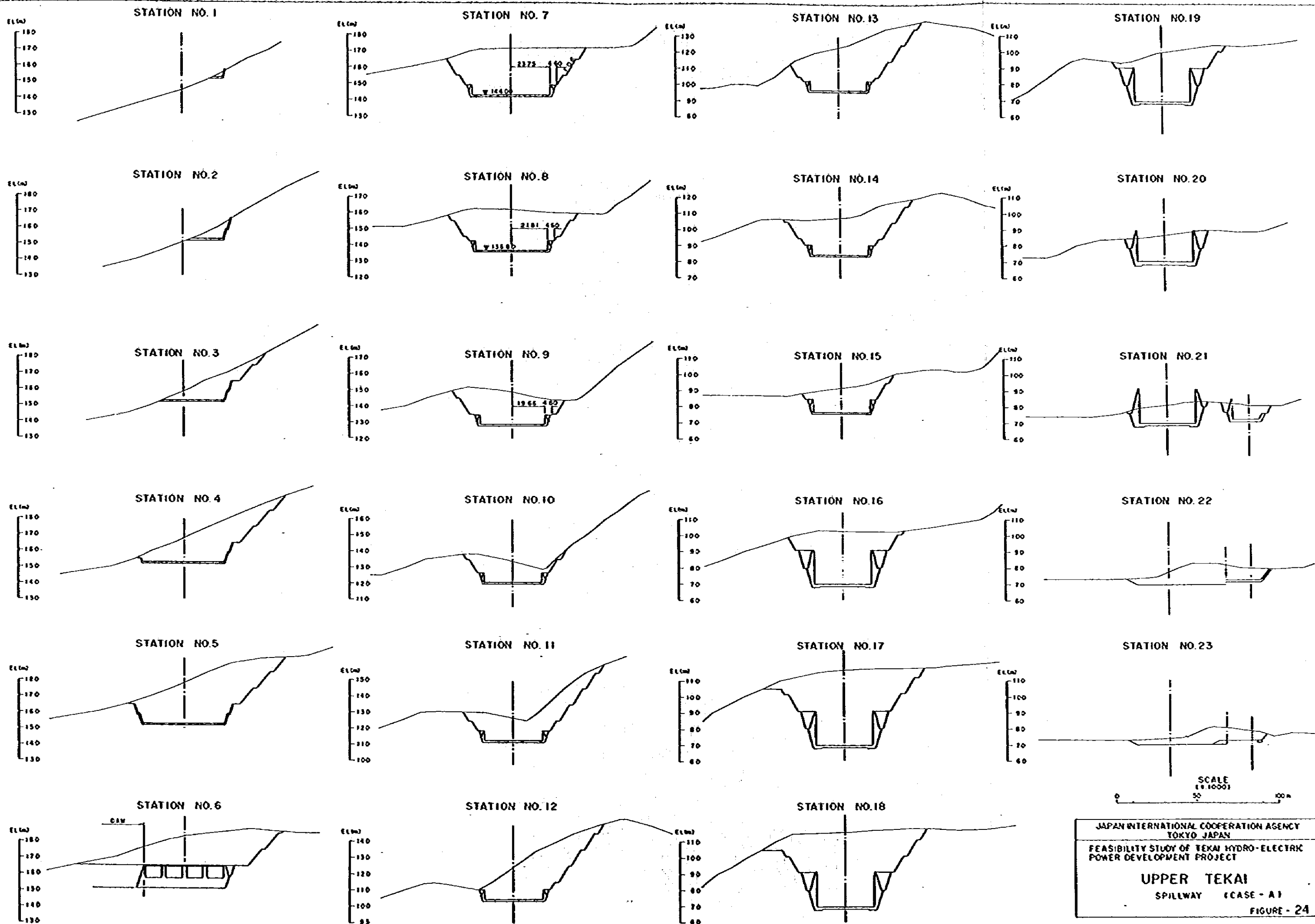
GROUTING PLAN (Single Development)

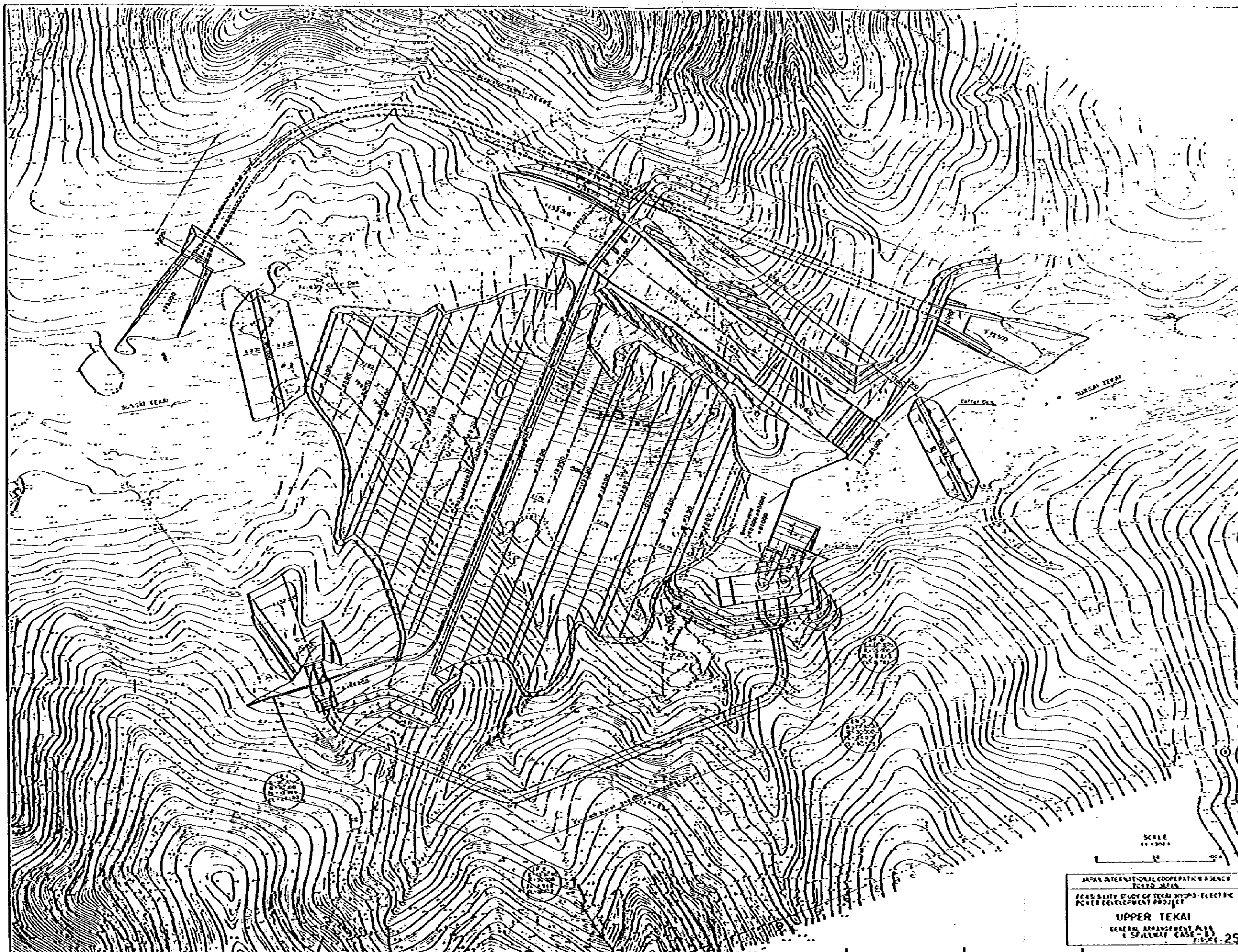
FIGURE 21









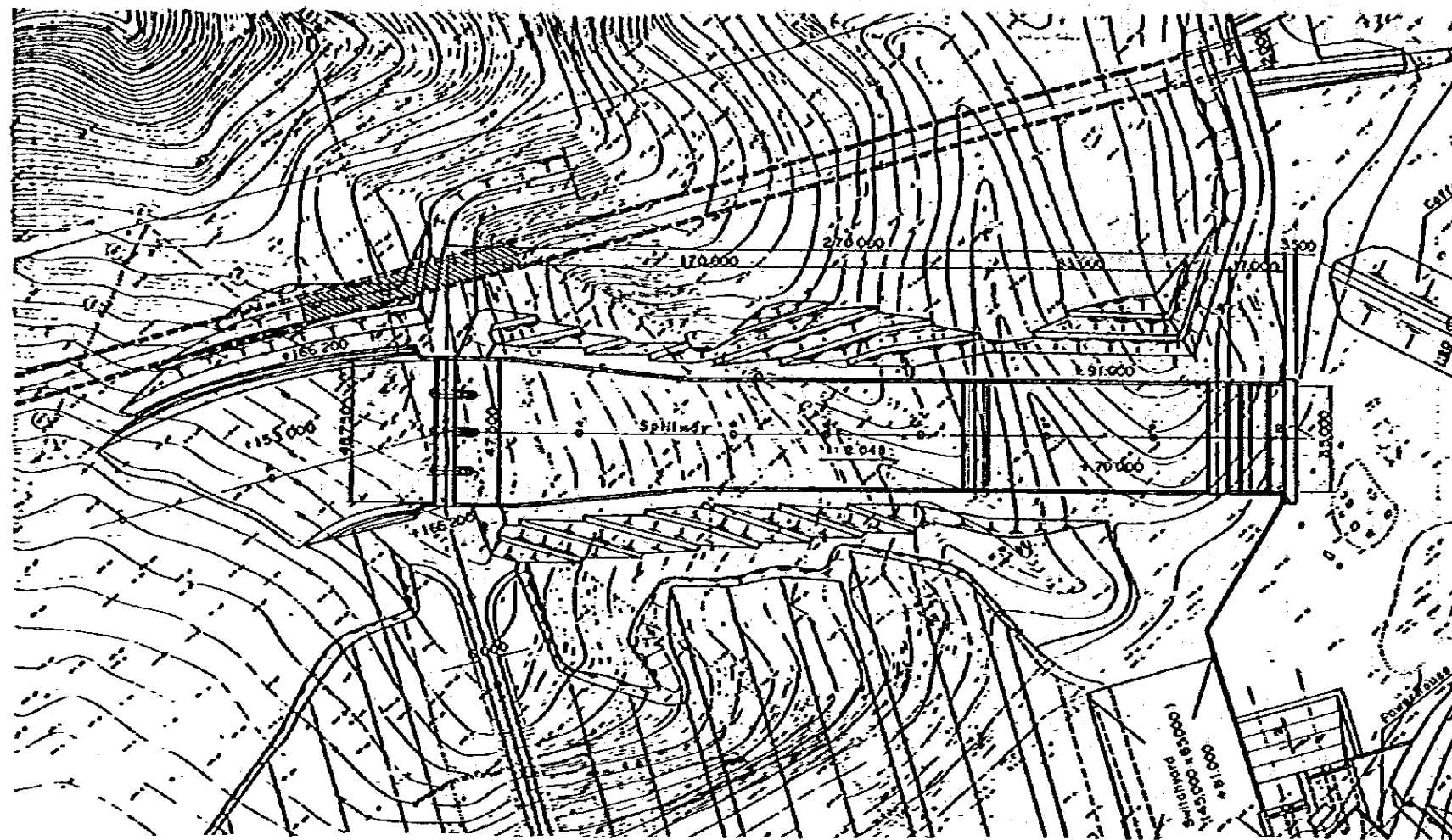


SCALE  
1:1000

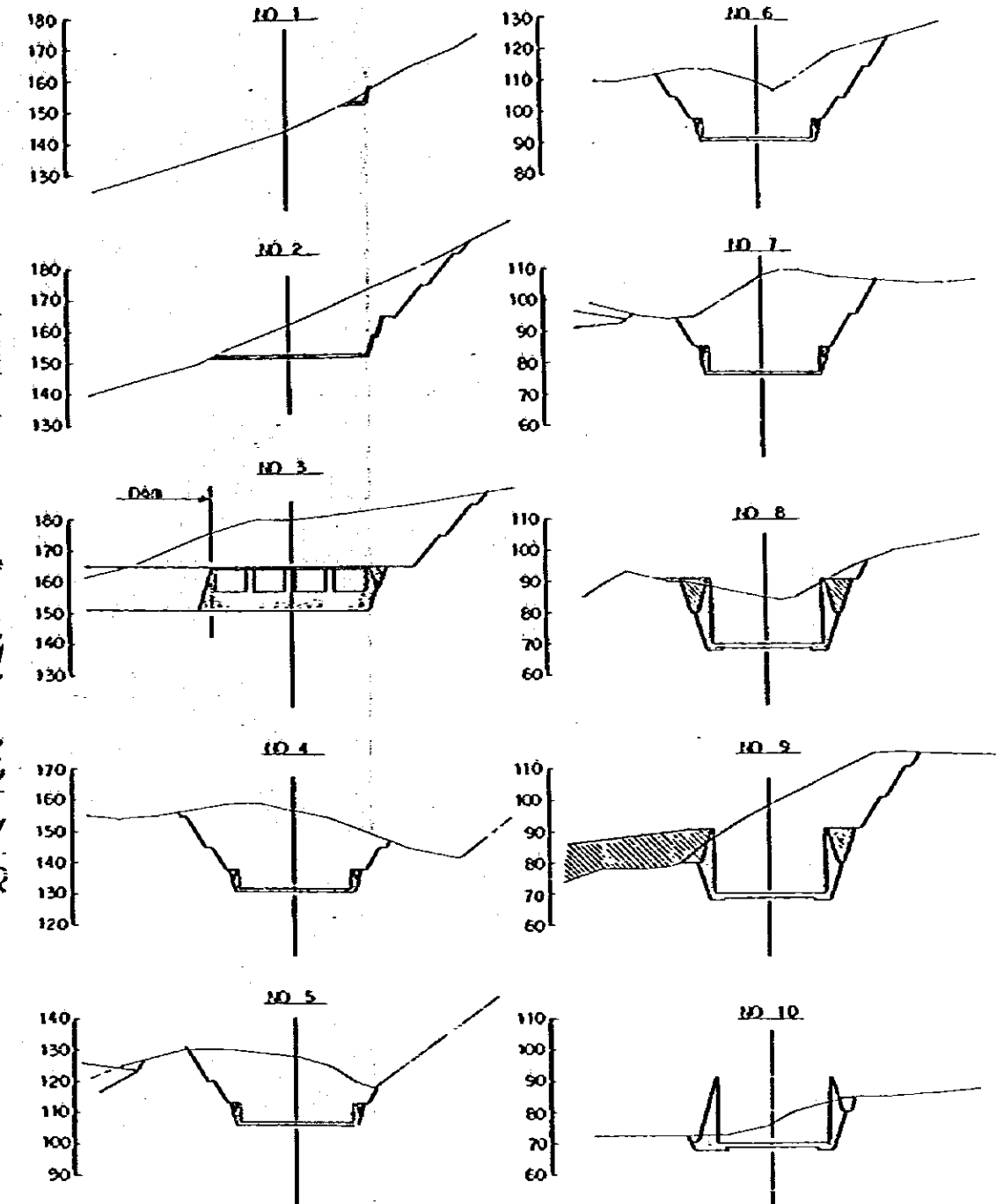
JAPAN INTERNATIONAL COOPERATION AGENCY  
TEKAI, 1963  
FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
UPPER TEKI  
GENERAL ARRANGEMENT PLAN  
1. SPILLWAY CASE - B  
FIGURE-25



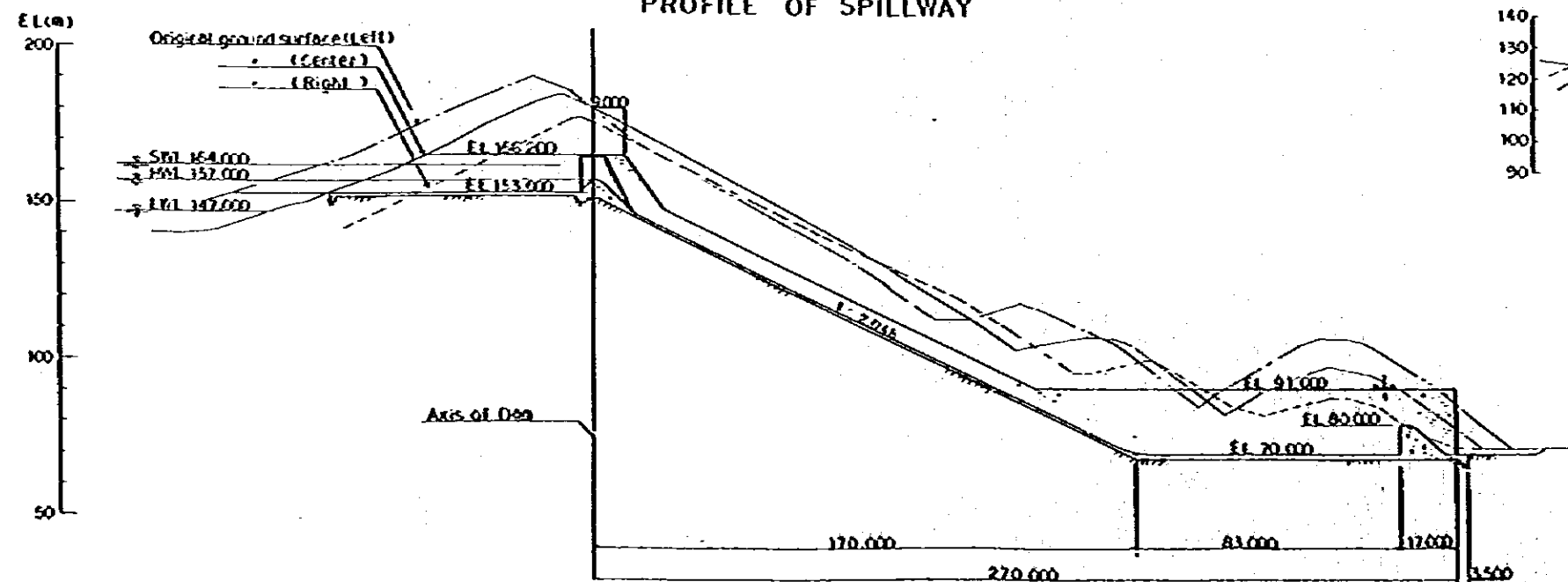
# PLAN



# SECTIONS



# PROFILE OF SPILLWAY

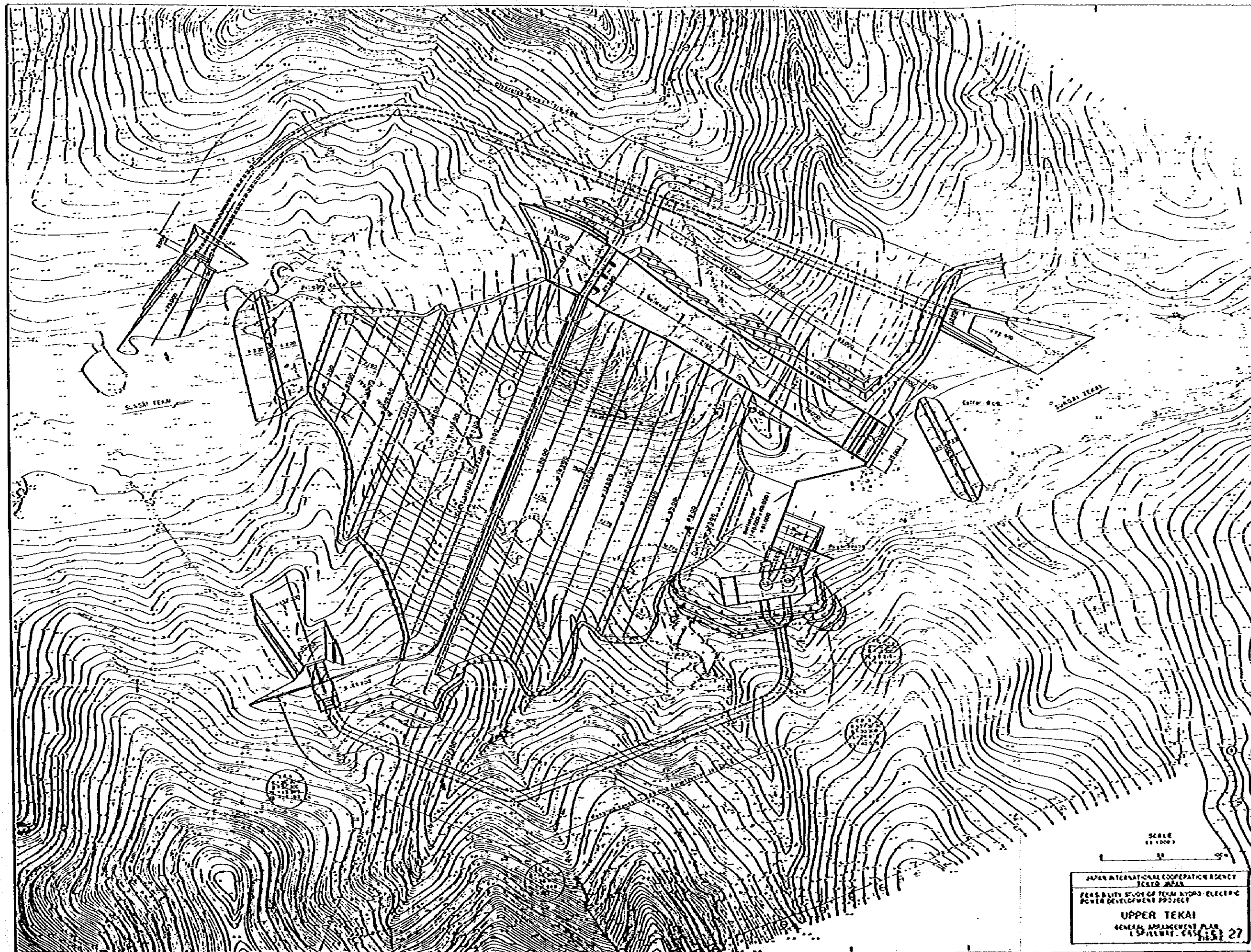


SCALE  
(1:1000)

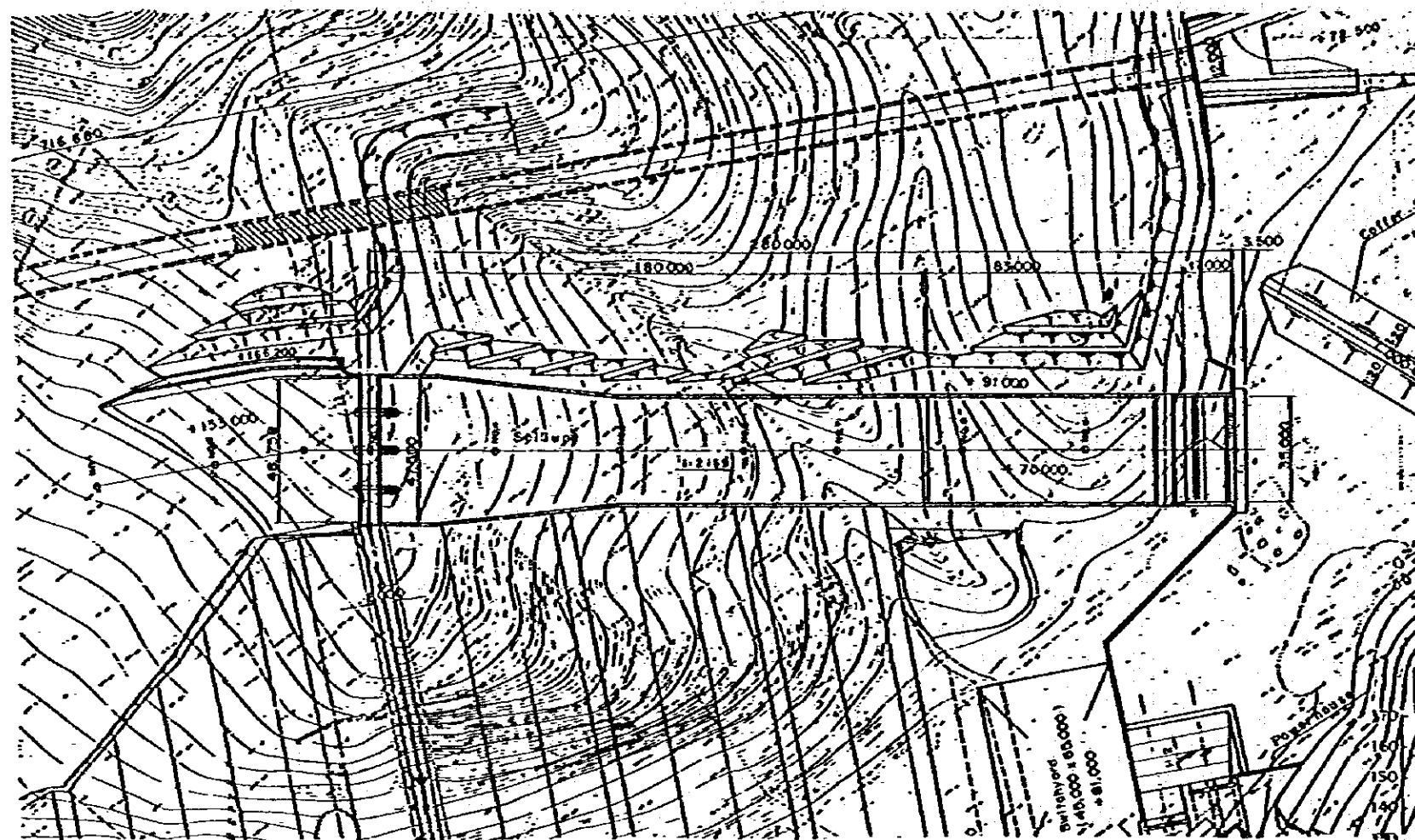
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN  
FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT

UPPER TEKAI  
SPILLWAY (CASE - 8)

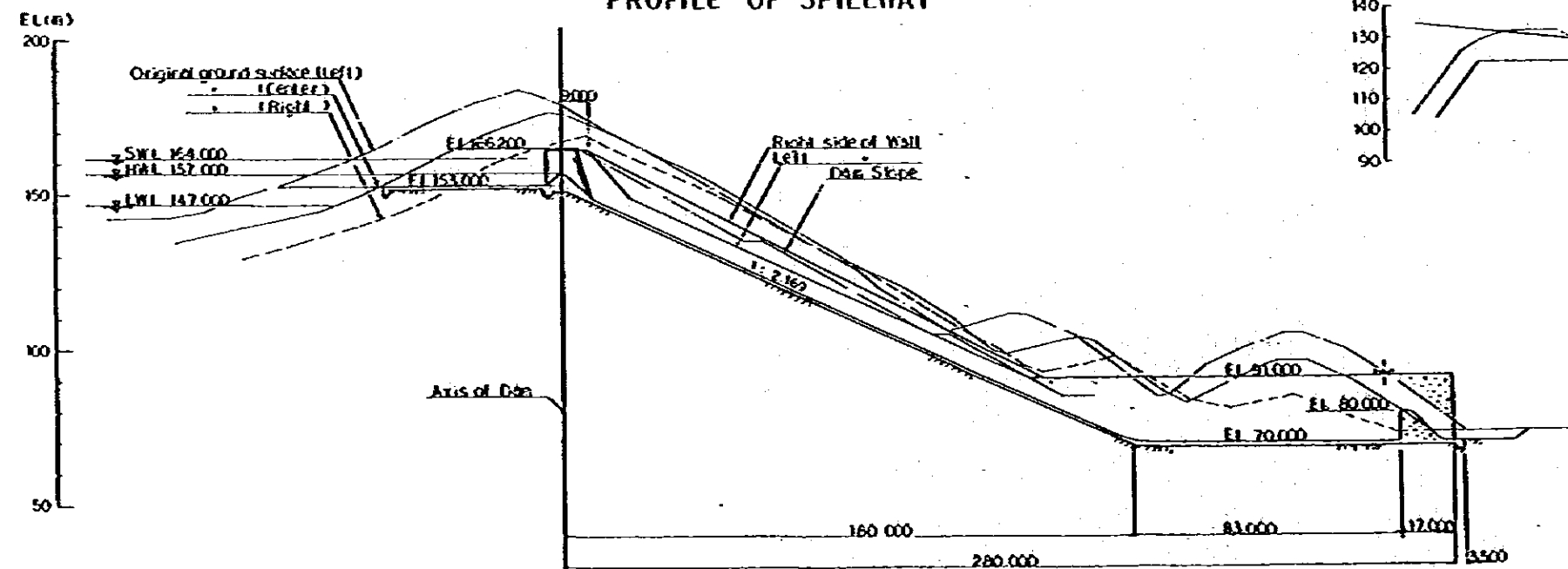
FIGURE - 26



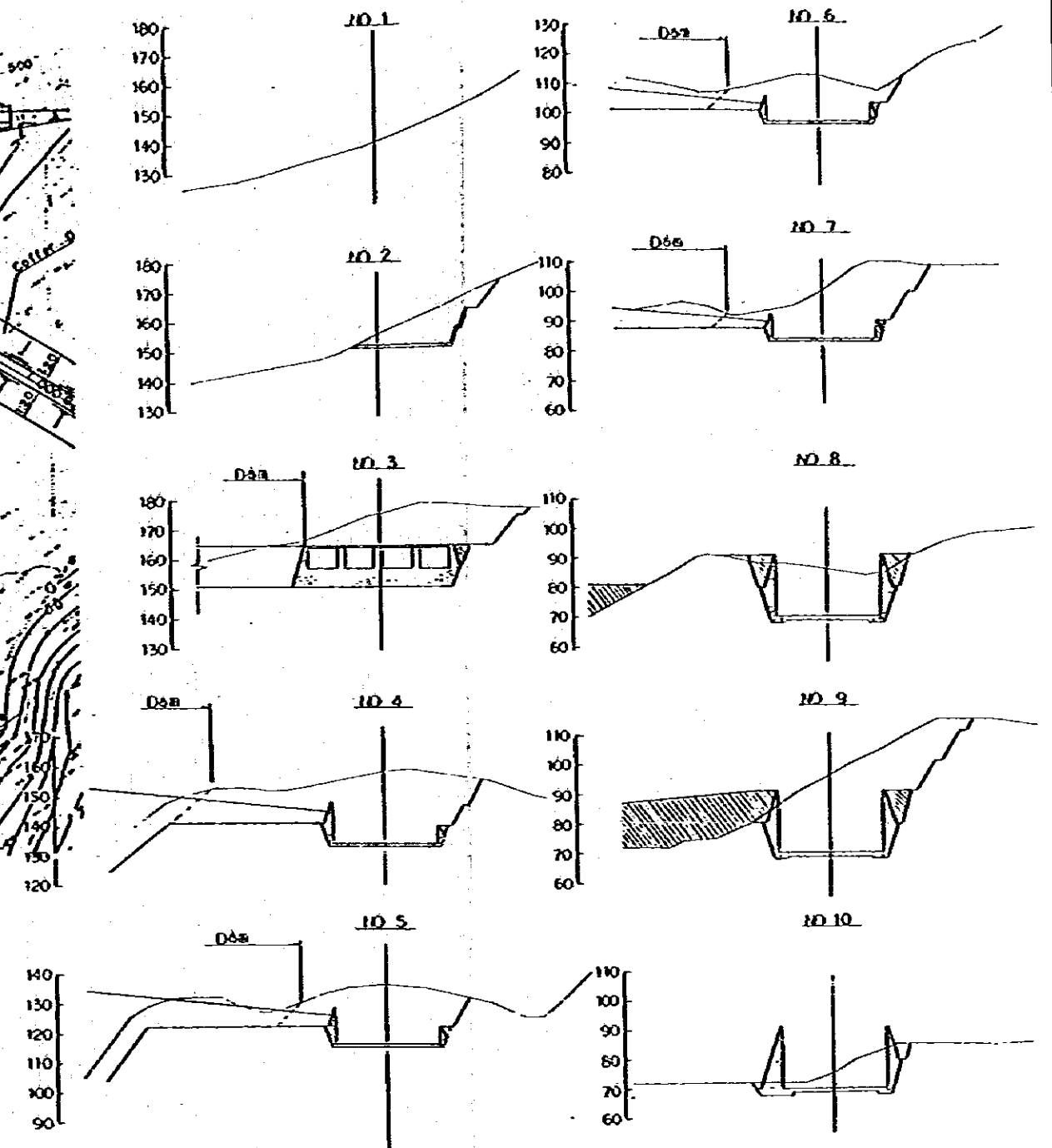
# PLAN



# PROFILE OF SPILLWAY



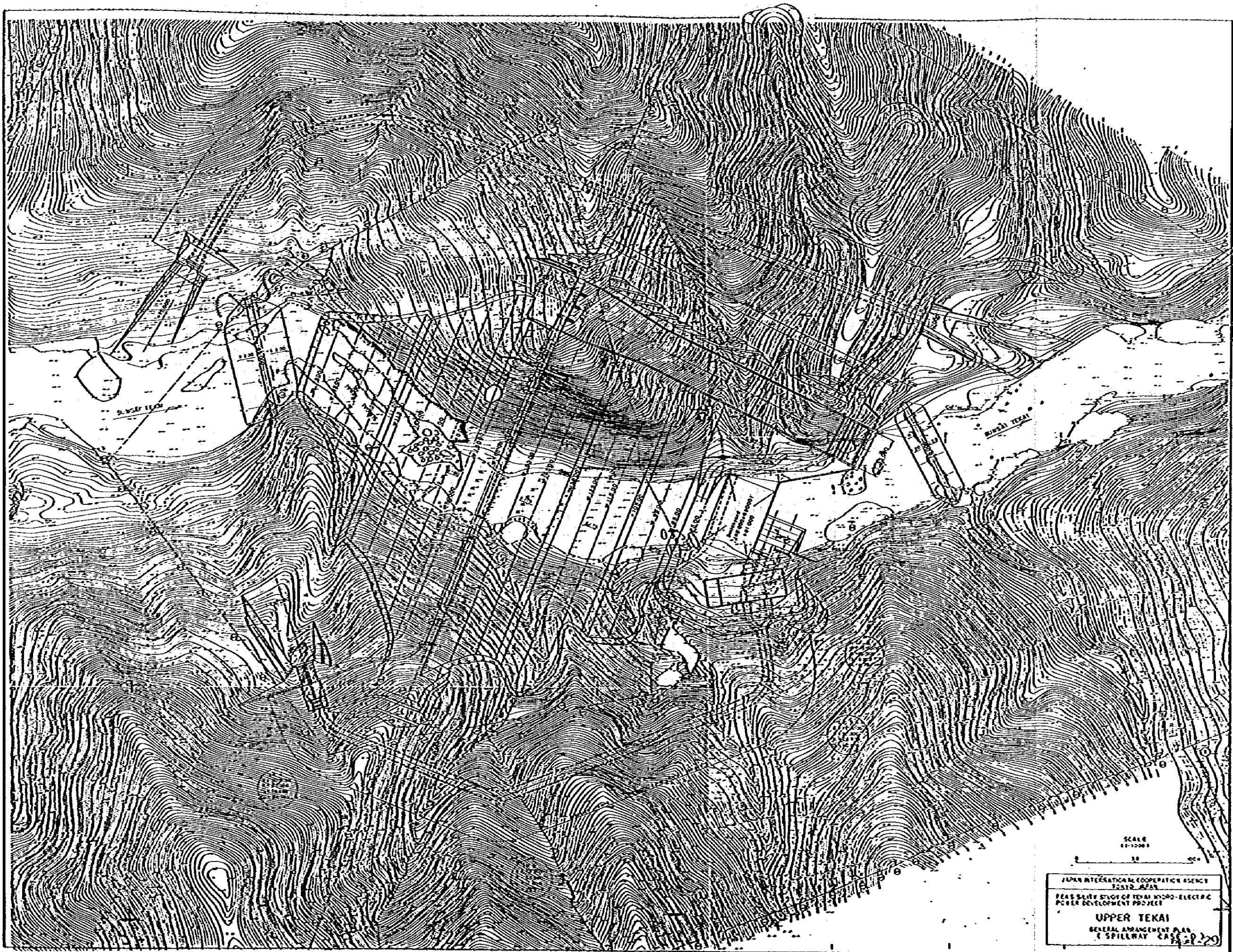
# SECTIONS



SCALE  
(1:1000)

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FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
UPPER TEKAI  
SPILLWAY (CASE - C )  
FIGURE - 28

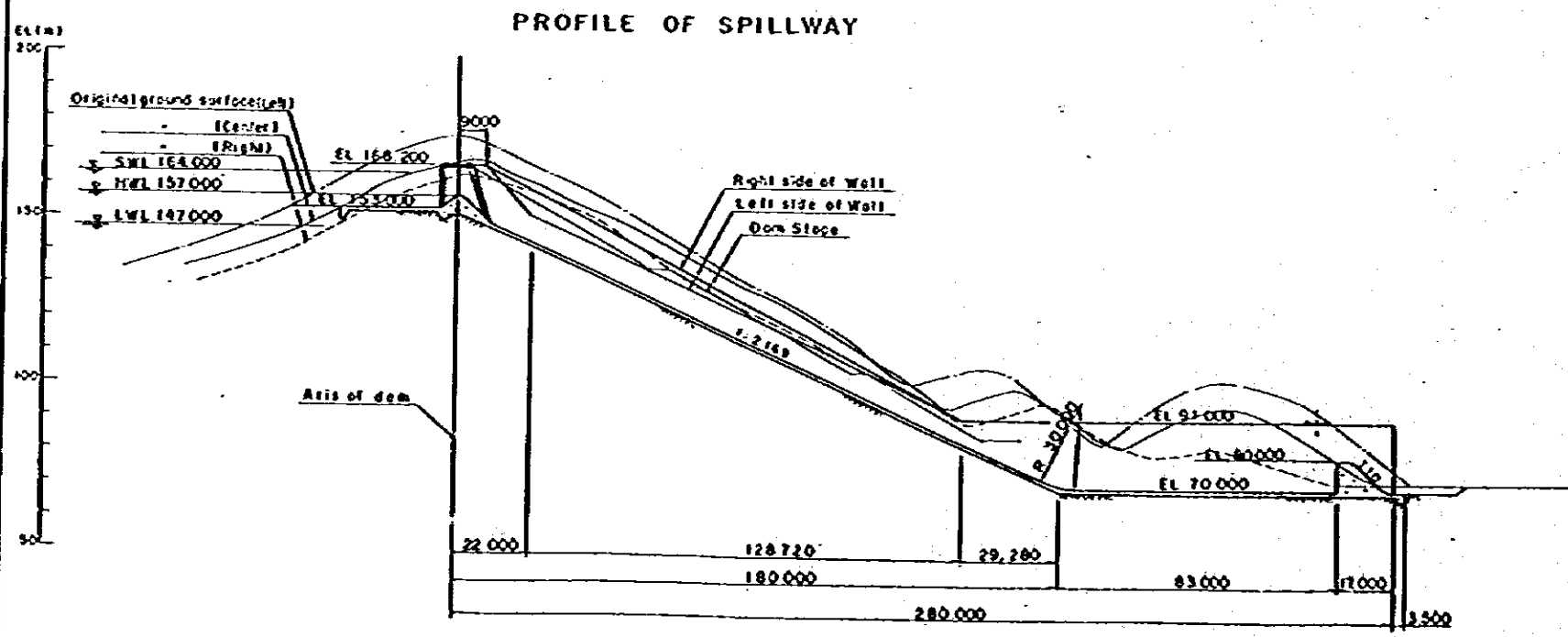
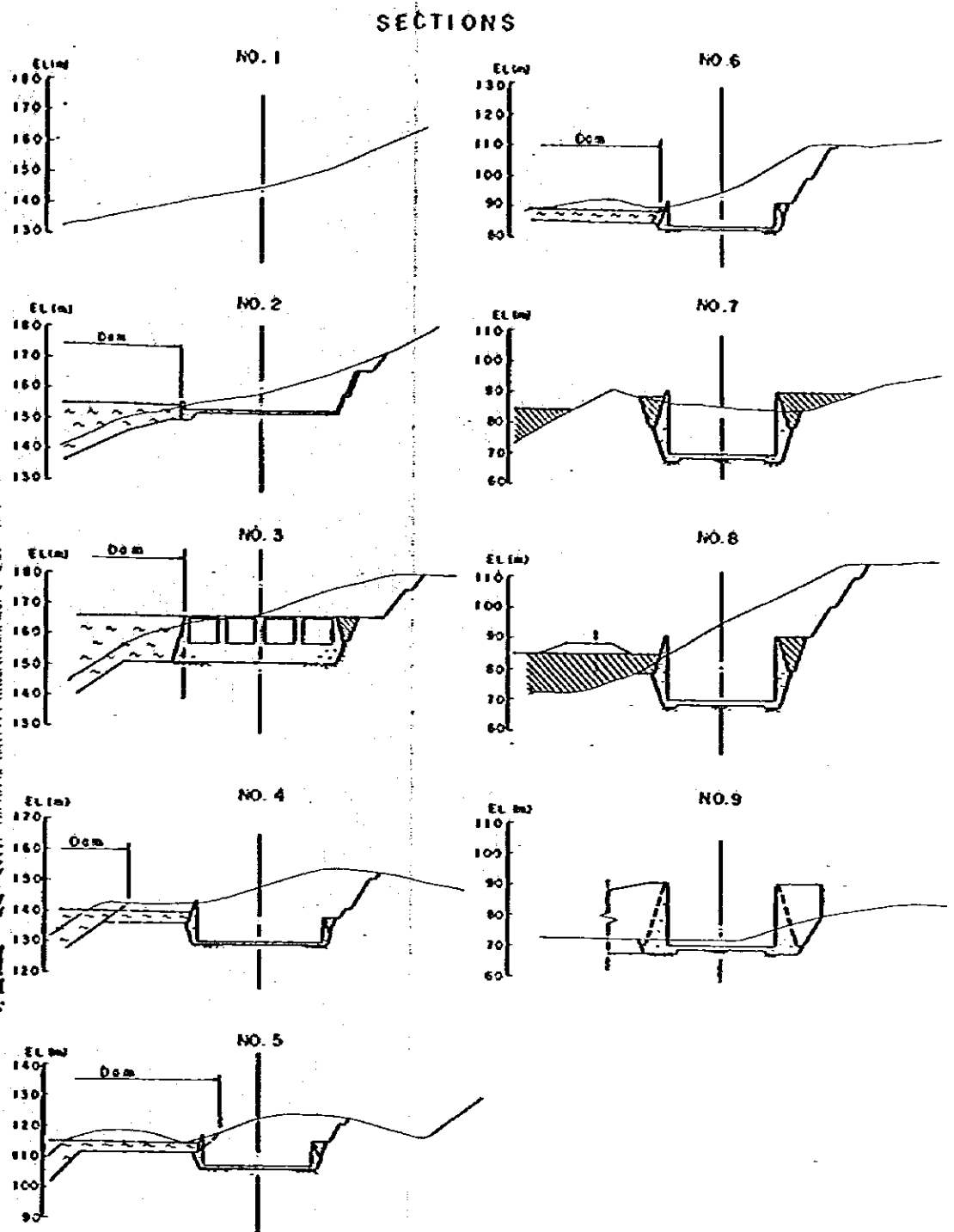
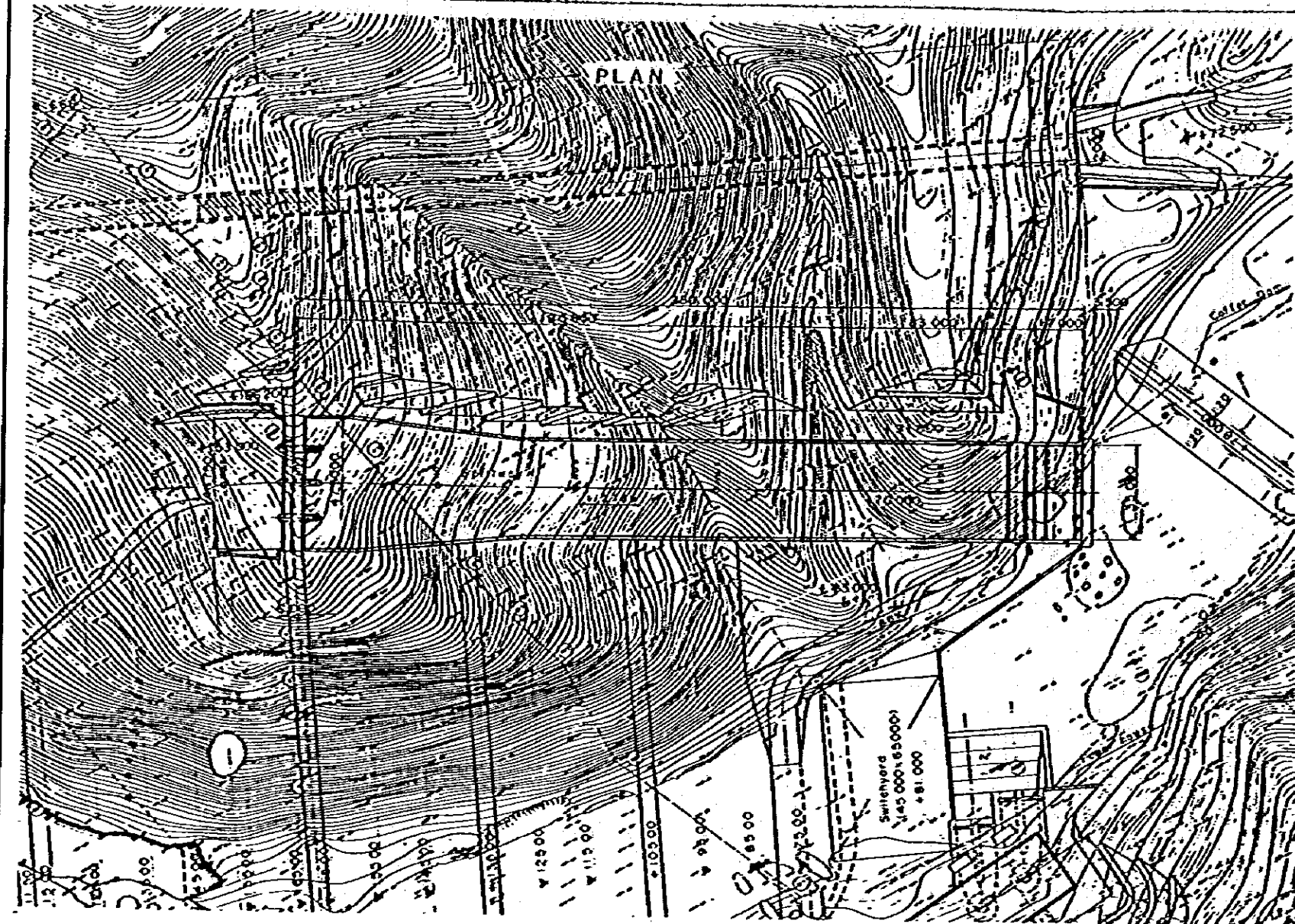




SCALE  
1:10000

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TEKAI AREA  
FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
UPPER TEKAI  
GENERAL ARRANGEMENT PLAN  
(SPILLWAY CASE) P. 20





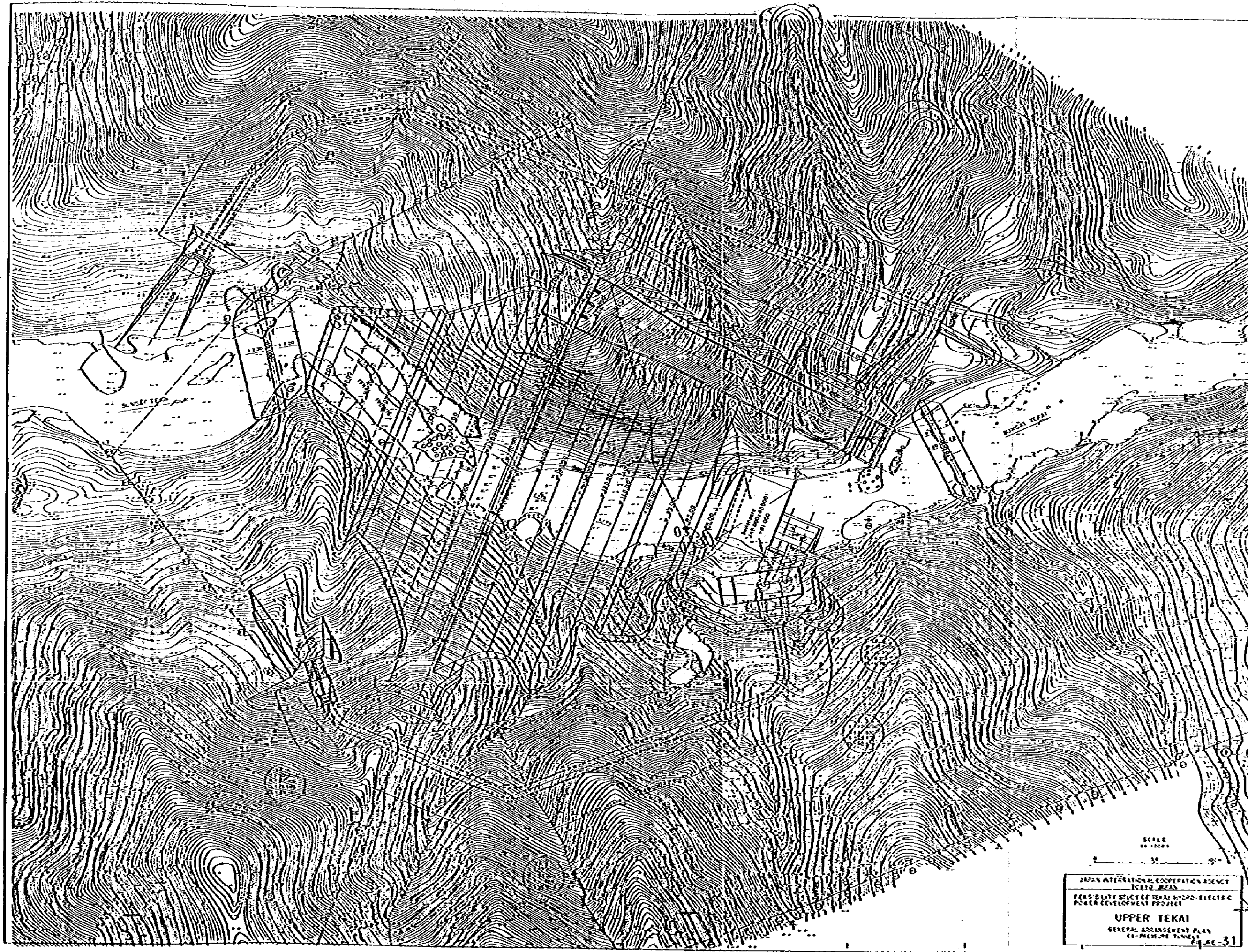
SCALE  
(1:1000)

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TOKYO, JAPAN

FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT

UPPER TEKAI  
SPILLWAY (CASE - 01)

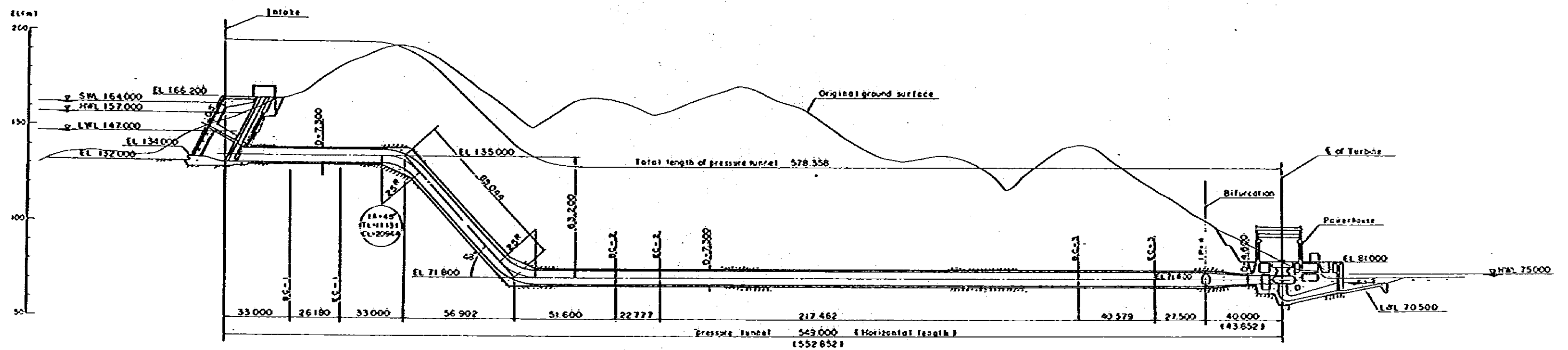
FIGURE - 30



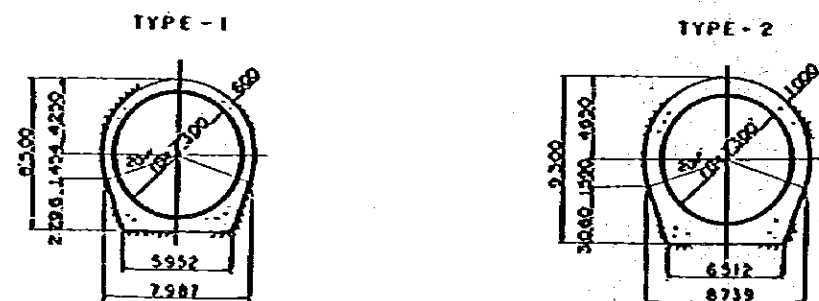
SCALE  
1:50,000

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JICA  
FEASIBILITY STUDY OF UPPER TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
**UPPER TEKAI**  
GENERAL ARRANGEMENT PLAN  
11-11-1984  
Figure 31

# PROFILE OF TUNNEL



## SECTION OF PRESSURE TUNNEL

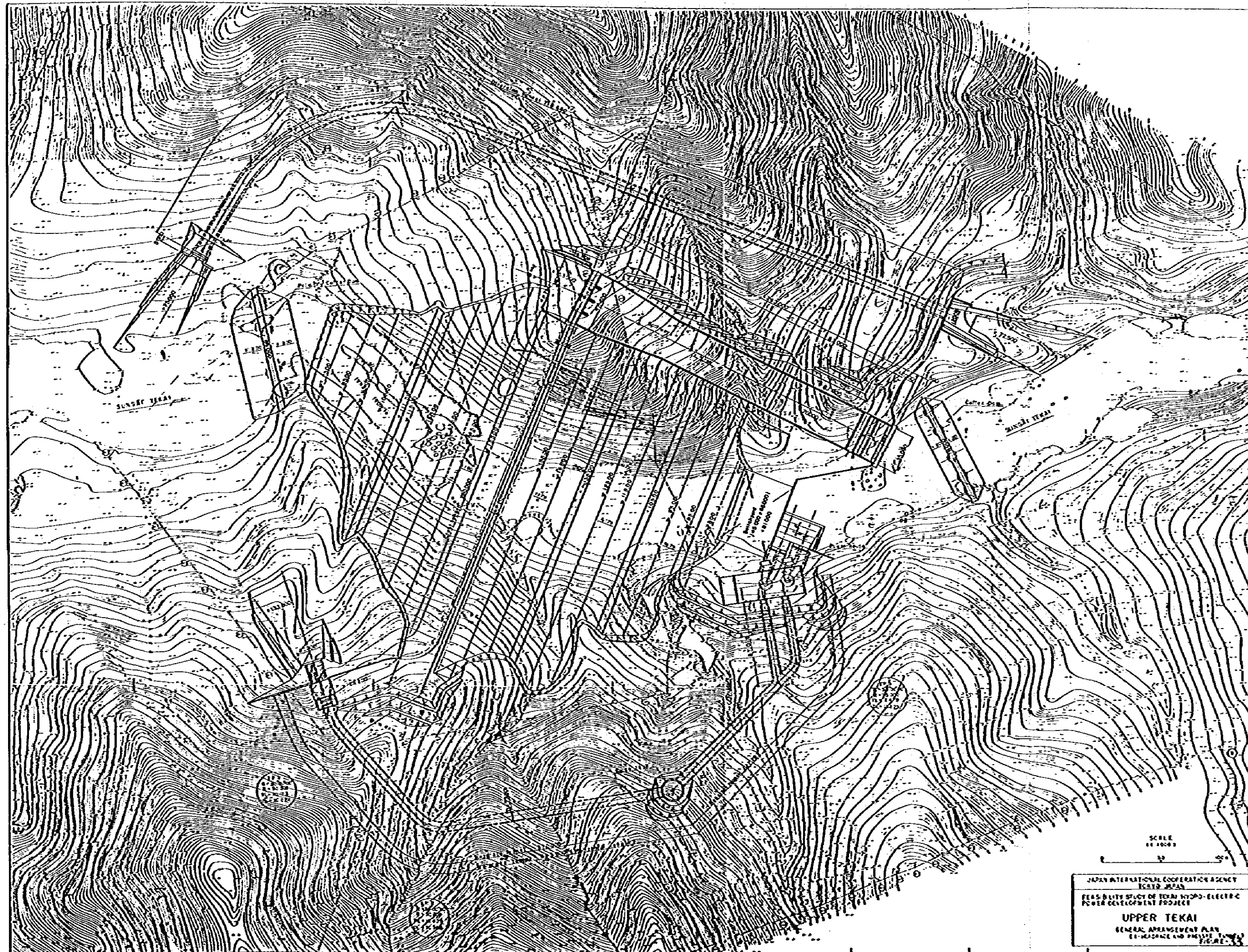


SCALE  
1:1000  
0 50 100m

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FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
UPPER TEKAI  
1 - PRESSURE TUNNEL

FIGURE - 32



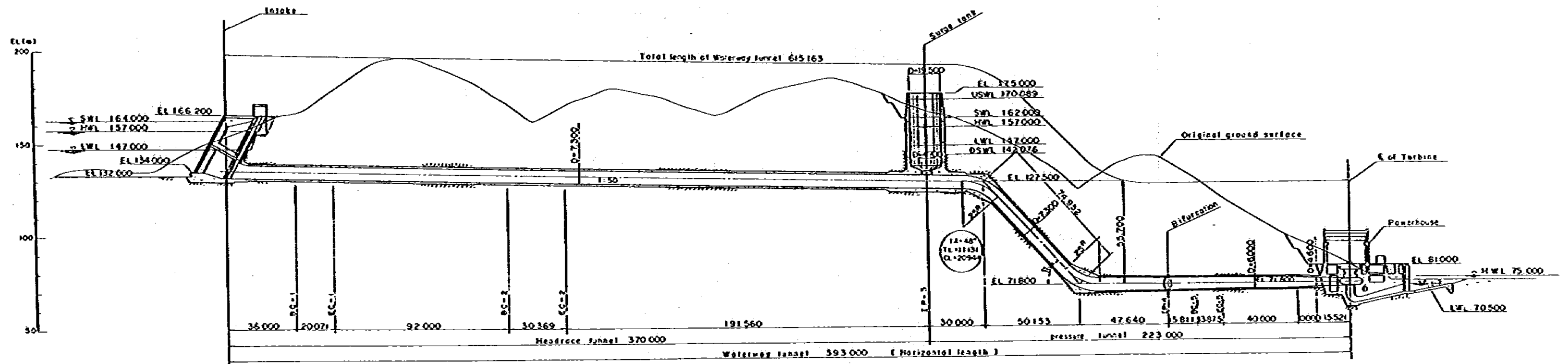


SCALE  
1:10000

JAPAN INTERNATIONAL COOPERATION AGENCY  
JICA  
FEASIBILITY STUDY OF TOHOKU HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT

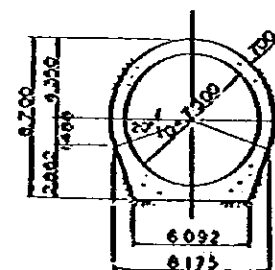
UPPER TEKAI  
GENERAL ARRANGEMENT PLAN  
ELEVATION AND PROPOSED  
FIGURE 33

# PROFILE OF TUNNEL

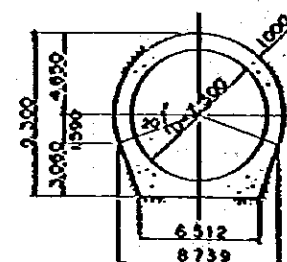


## HEADRACE TUNNEL

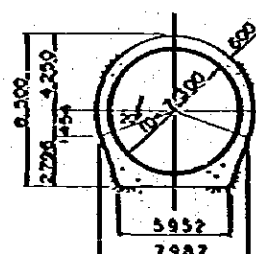
TYPE - 1



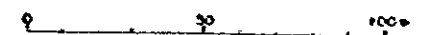
TYPE - 2



## PRESSURE TUNNEL



SCALE  
1:10000

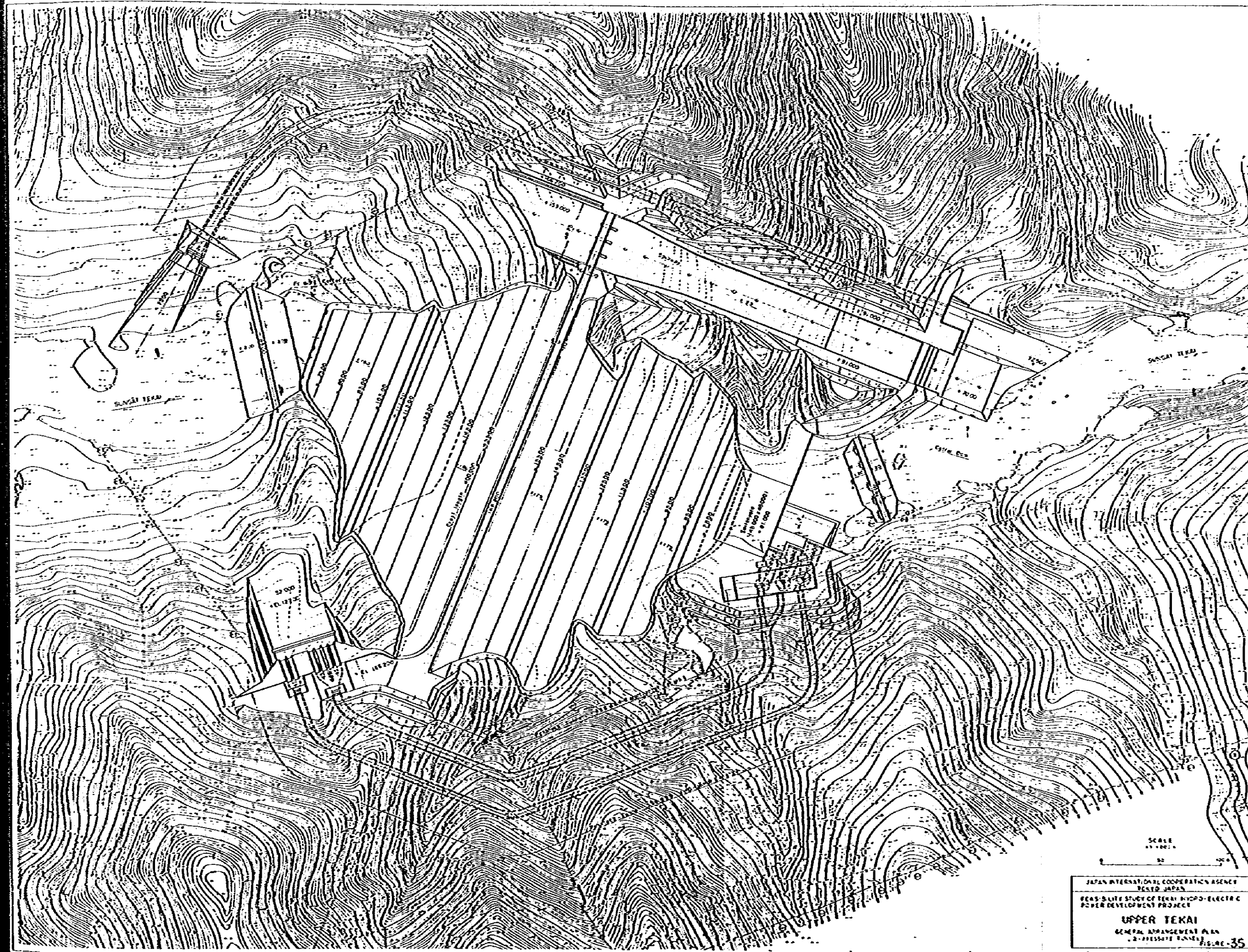


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FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT

UPPER TEKAI

1 - HEADRACE TUNNEL AND PRESSURE TUNNEL

FIGURE - 34

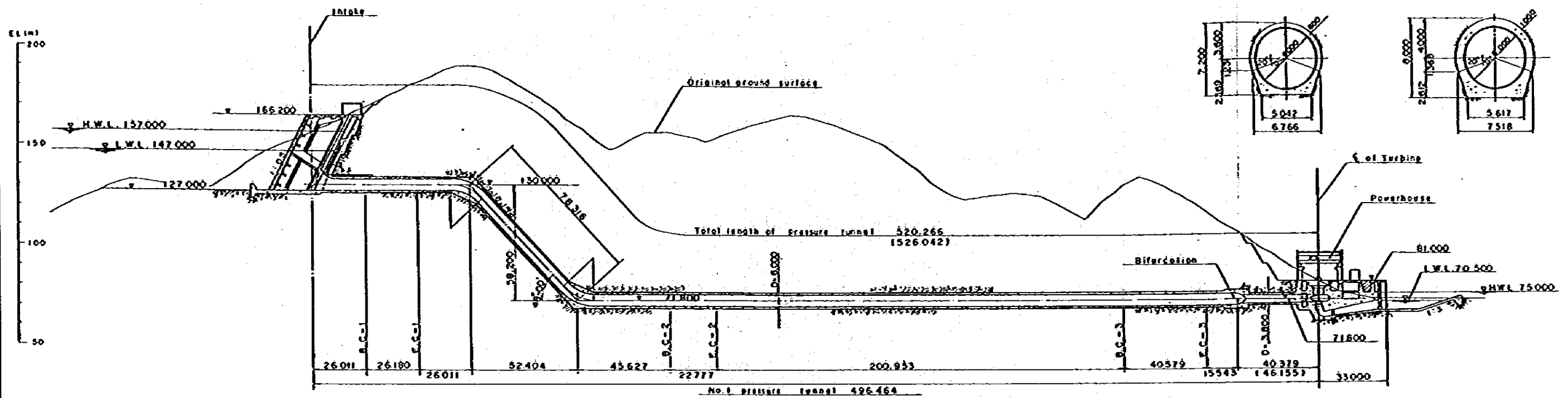


SCALE  
1:50,000

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FEASIBILITY STUDY OF TEKAI HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
UPPER TEKAI  
GENERAL ARRANGEMENT PLAN  
A-1 (SHEET 1 OF 1) 35



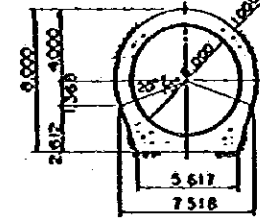
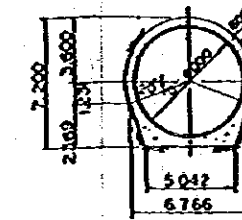
PROFILE OF NO.1 TUNNEL



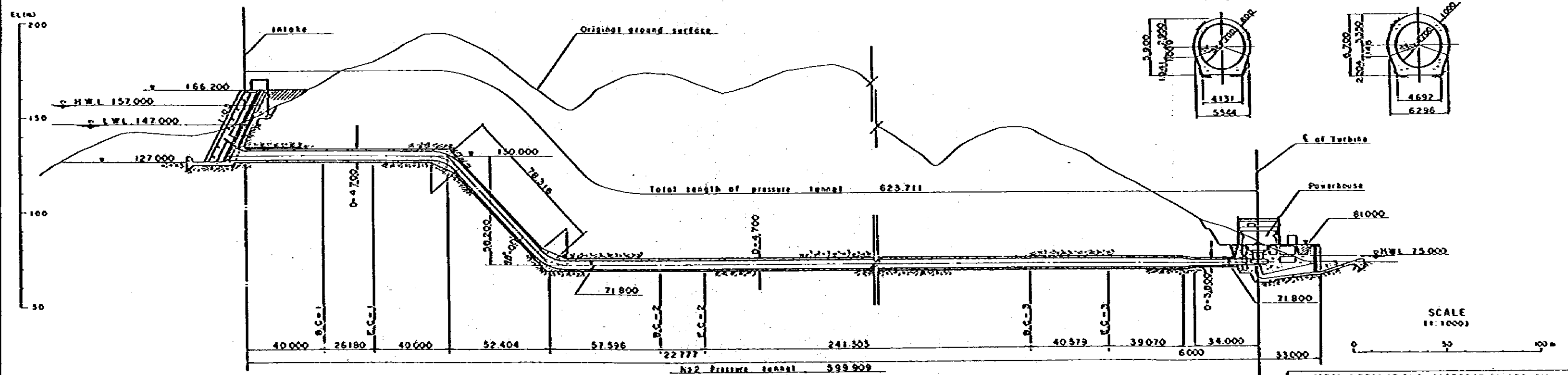
NO.1 PRESSURE TUNNEL

TYPE - 1

TYPE - 2



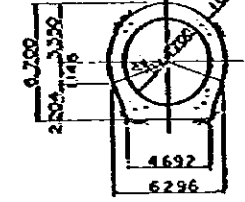
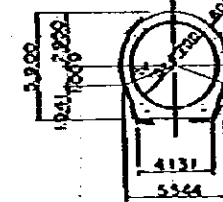
PROFILE OF NO.2 TUNNEL



NO.2 PRESSURE TUNNEL

TYPE - 1

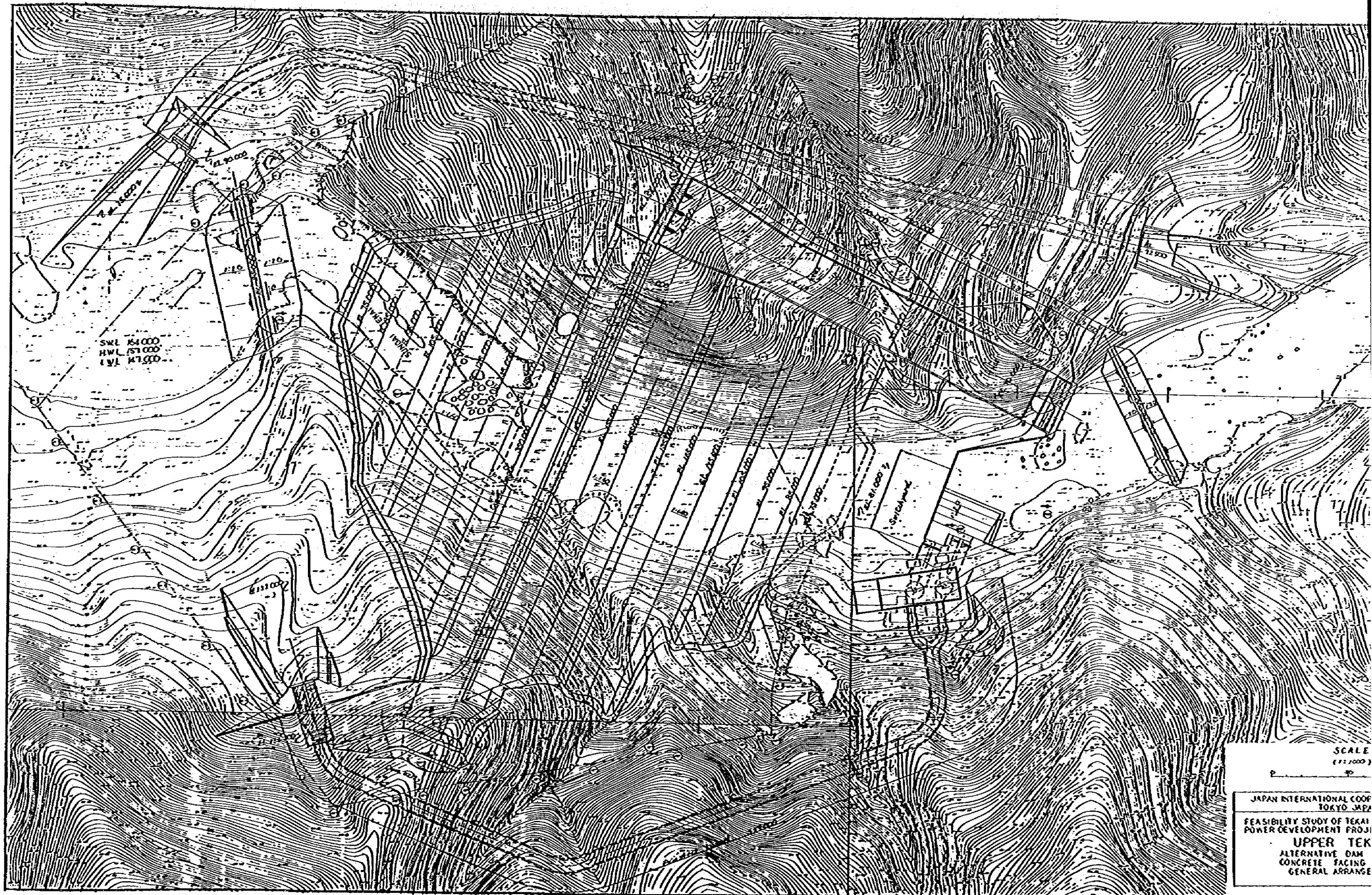
TYPE - 2



SCALE  
1:1000

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TOKYO JAPAN  
FEASIBILITY STUDY OF TEKA HYDRO-ELECTRIC  
POWER DEVELOPMENT PROJECT  
UPPER TEKA  
1 - PRESSURE TUNNEL

FIGURE - 36



SCALE  
(1:10000)

JAPAN INTERNATIONAL COOP  
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FEASIBILITY STUDY OF TEKAI  
POWER DEVELOPMENT PROJ  
UPPER TEK  
ALTERNATIVE DAM  
CONCRETE FACING  
GENERAL ARRANGE