

ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF SINDH

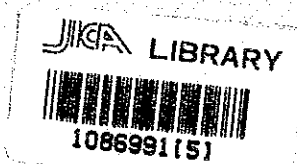
FEASIBILITY STUDY
ON
WATER RESOURCES DEVELOPMENT PROJECT
IN
MALIR BASIN

VOLUME III
DRAWINGS

NOVEMBER 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

AFT
90-62



21841

**ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF SINDH**

**FEASIBILITY STUDY
ON
WATER RESOURCES DEVELOPMENT PROJECT
IN
MALIR BASIN**

**VOLUME III
DRAWINGS**

NOVEMBER 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

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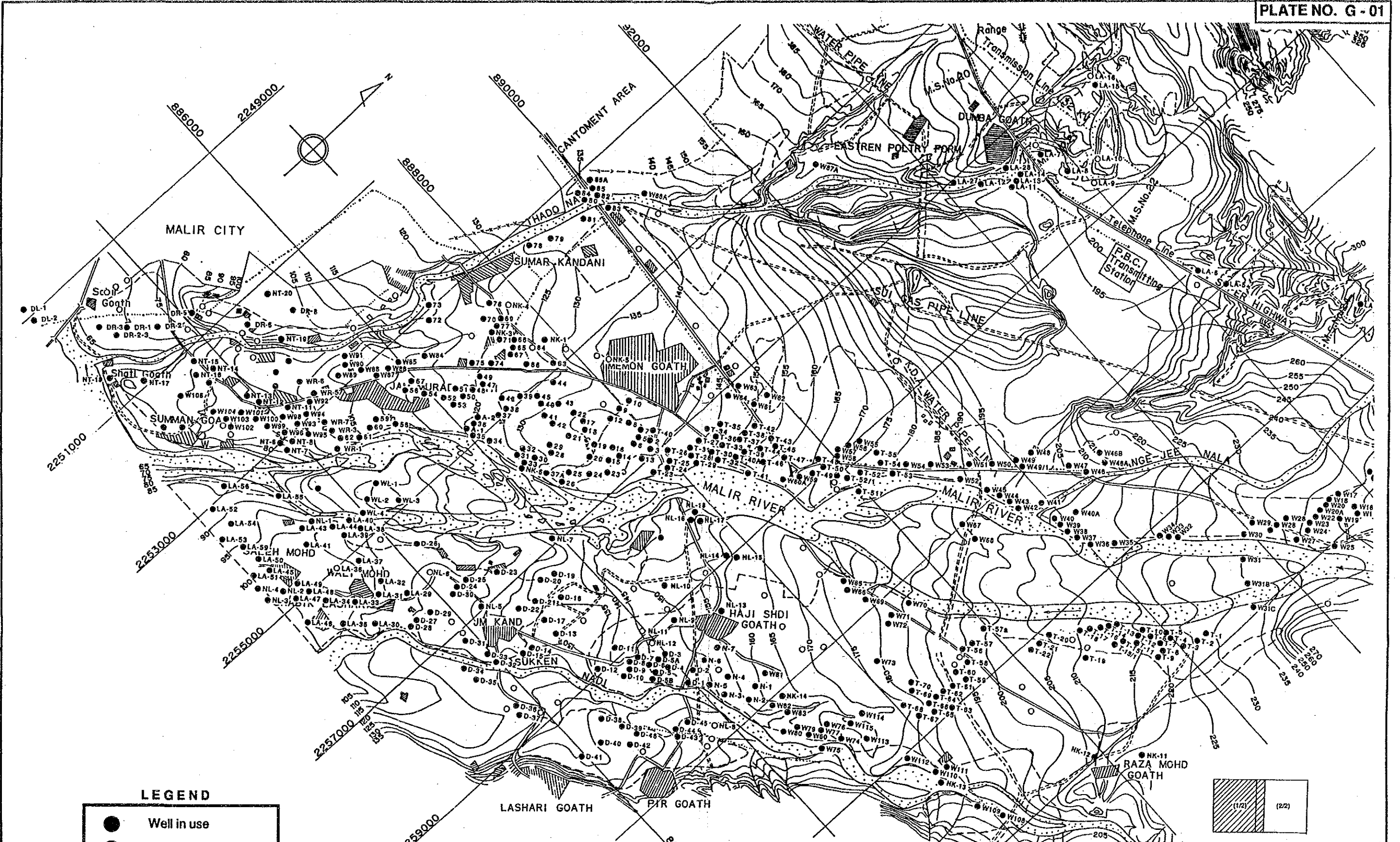
VOLUME III DRAWINGS



FEASIBILITY STUDY ON
WATER RESOURCES DEVELOPMENT PROJECT
IN MALIR BASIN

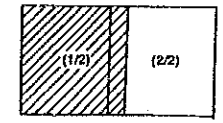
LIST OF DRAWINGS

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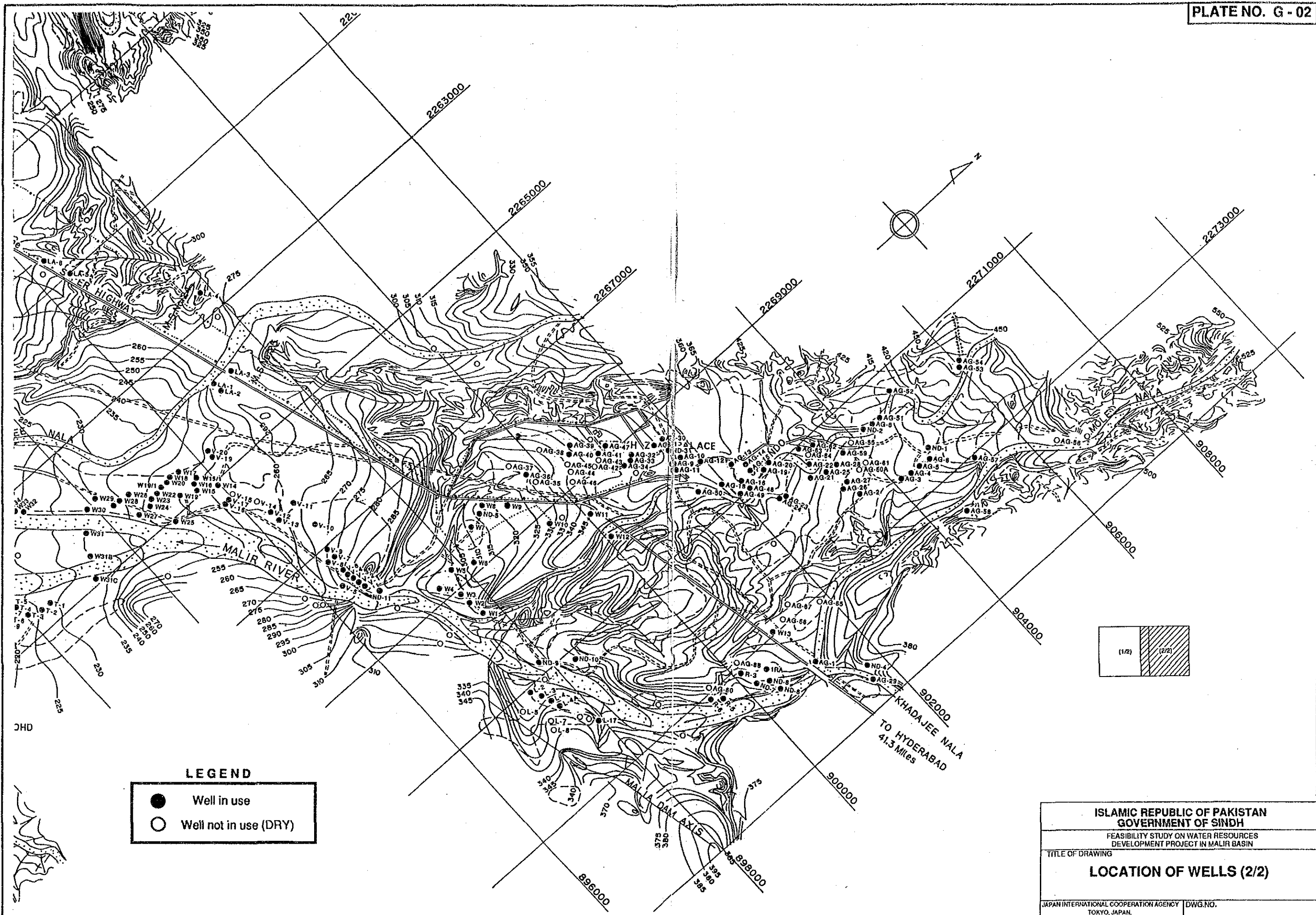


LEGEND

- Well in use
- Well not in use (DRY)



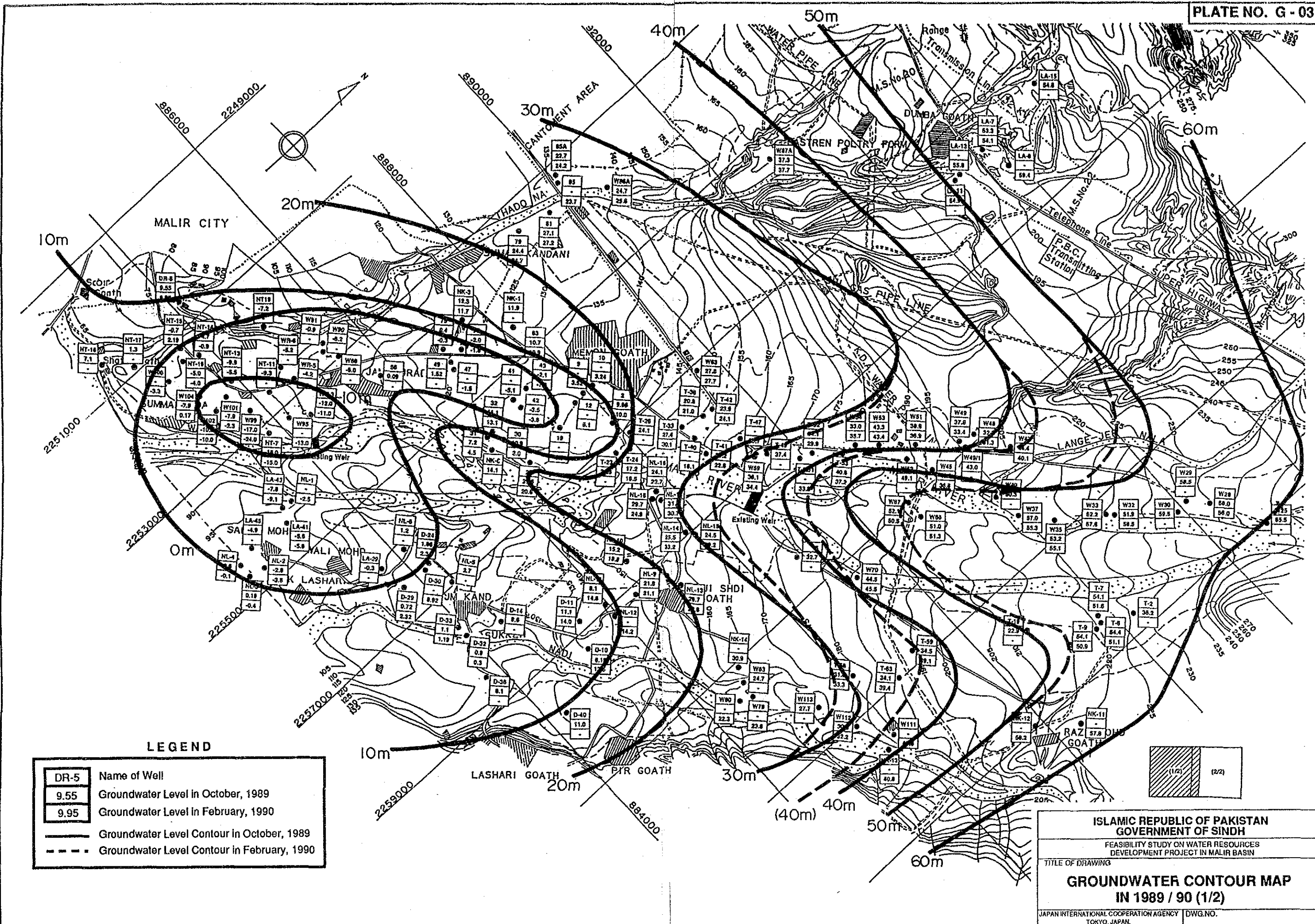
ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF SINDH
 FEASIBILITY STUDY ON WATER RESOURCES
 DEVELOPMENT PROJECT IN MALIR BASIN
 TITLE OF DRAWING
LOCATION OF WELLS (1/2)
 JAPAN INTERNATIONAL COOPERATION AGENCY | DWG. NO.
 TOKYO, JAPAN.



LEGEND

- Well in use
- Well not in use (DRY)

ISLAMIC REPUBLIC OF PAKISTAN GOVERNMENT OF SINDH	
FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING	
LOCATION OF WELLS (2/2)	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN,	DWG.NO.



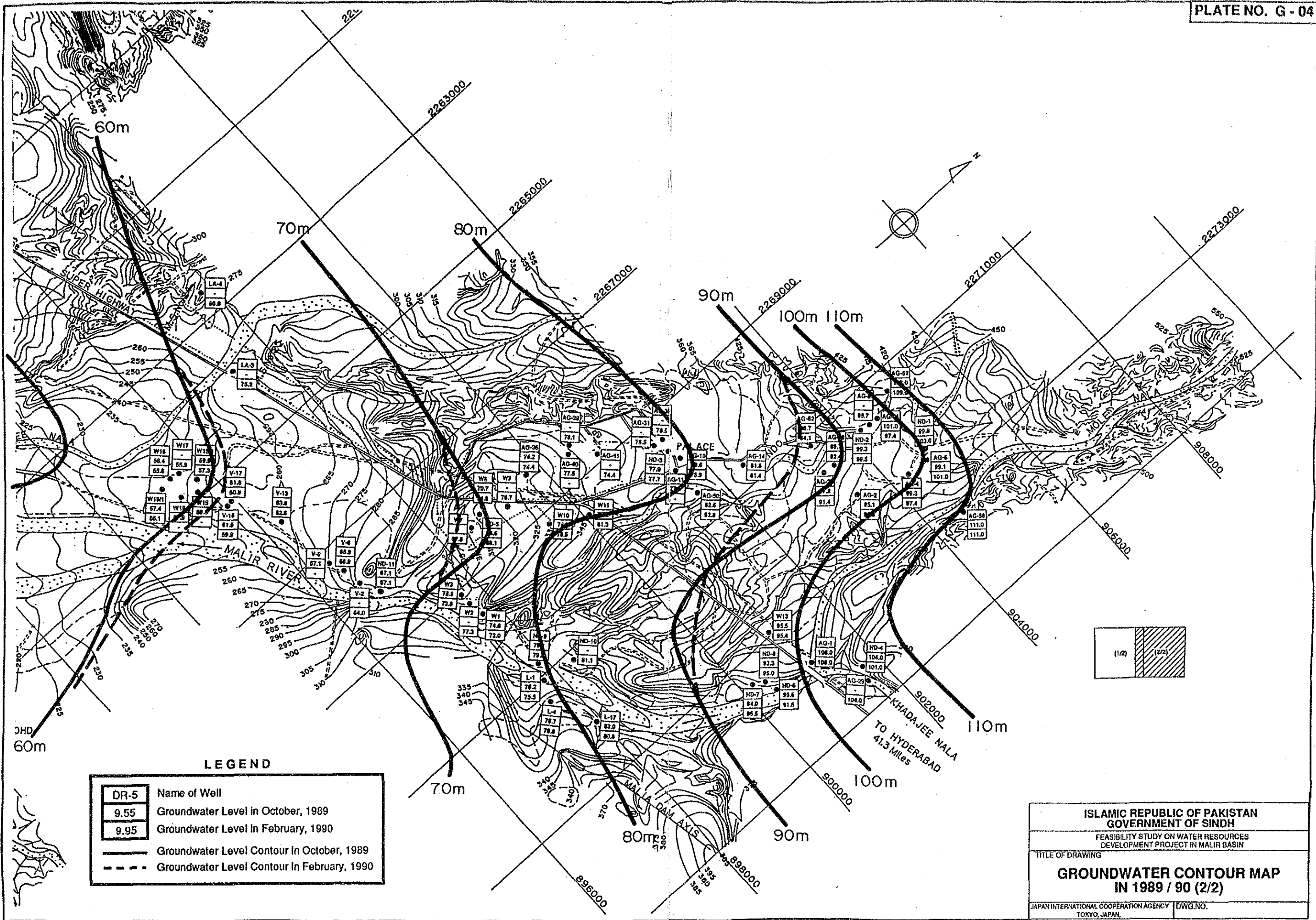
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DR-5	Name of Well
9.55	Groundwater Level in October, 1989
9.95	Groundwater Level in February, 1990
	Groundwater Level Contour in October, 1989
	Groundwater Level Contour in February, 1990

ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF SINDH
 FEASIBILITY STUDY ON WATER RESOURCES
 DEVELOPMENT PROJECT IN MALIR BASIN

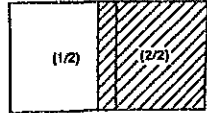
TITLE OF DRAWING
**GROUNDWATER CONTOUR MAP
 IN 1989 / 90 (1/2)**

JAPAN INTERNATIONAL COOPERATION AGENCY DWG.NO.
 TOKYO, JAPAN

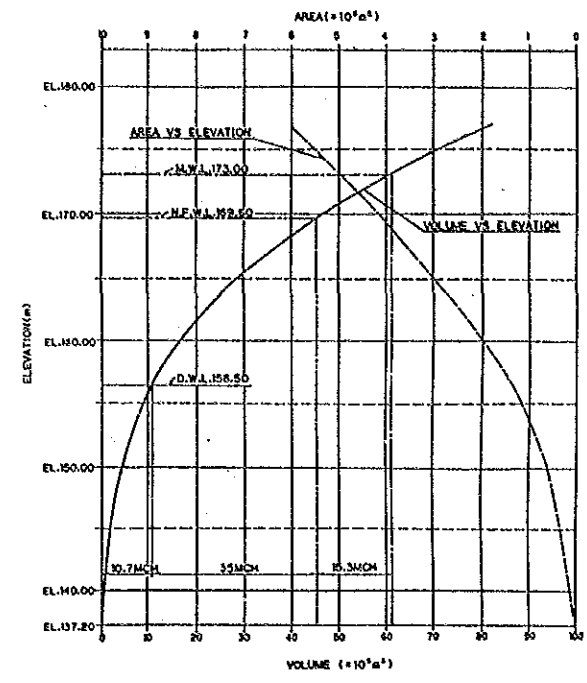
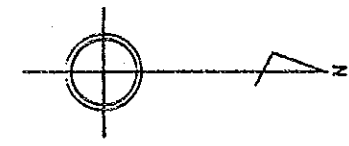
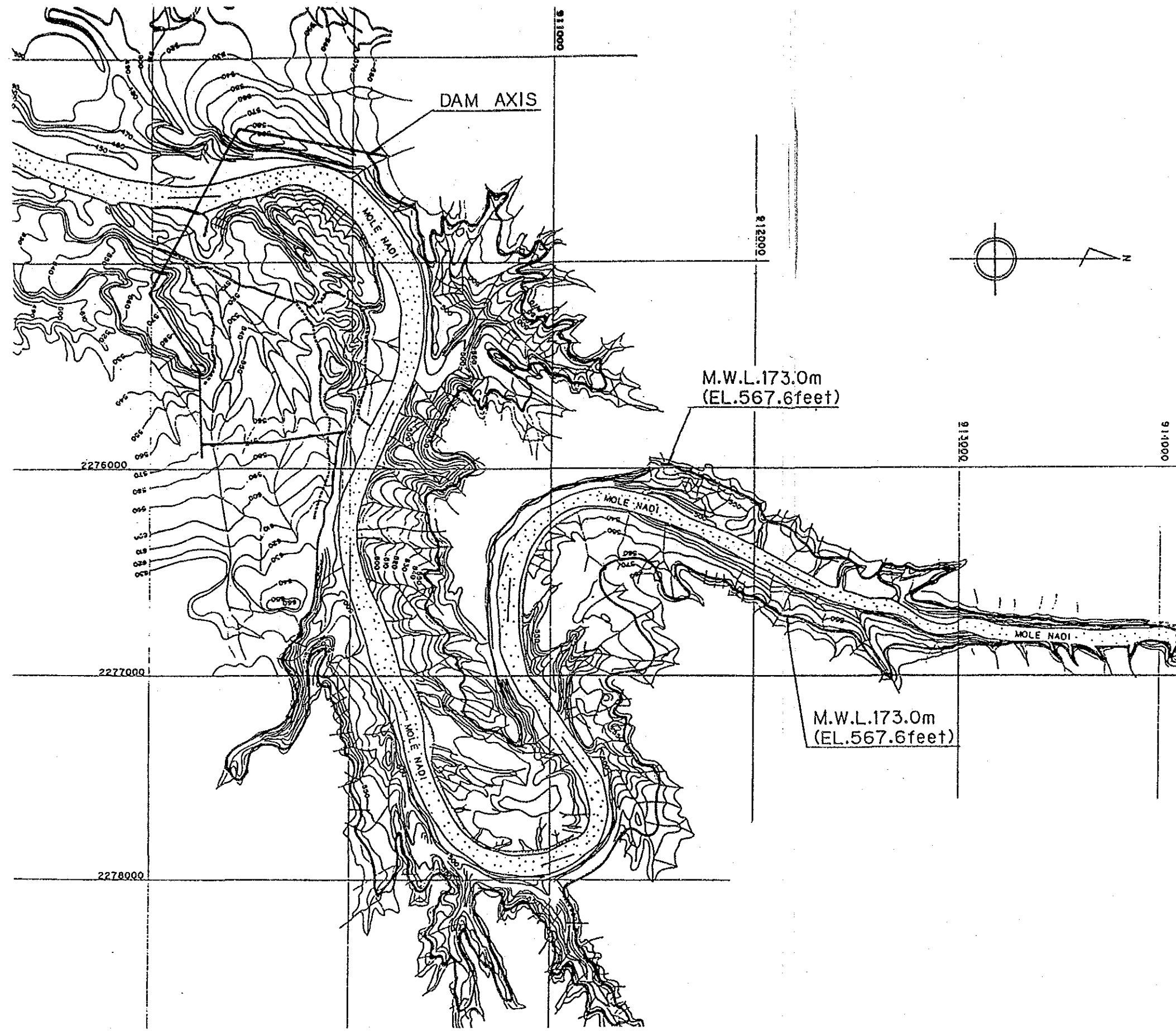


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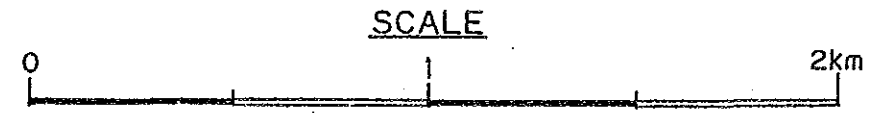
DR-5	Name of Well
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9.95	Groundwater Level in February, 1990
—	Groundwater Level Contour In October, 1989
- - -	Groundwater Level Contour In February, 1990



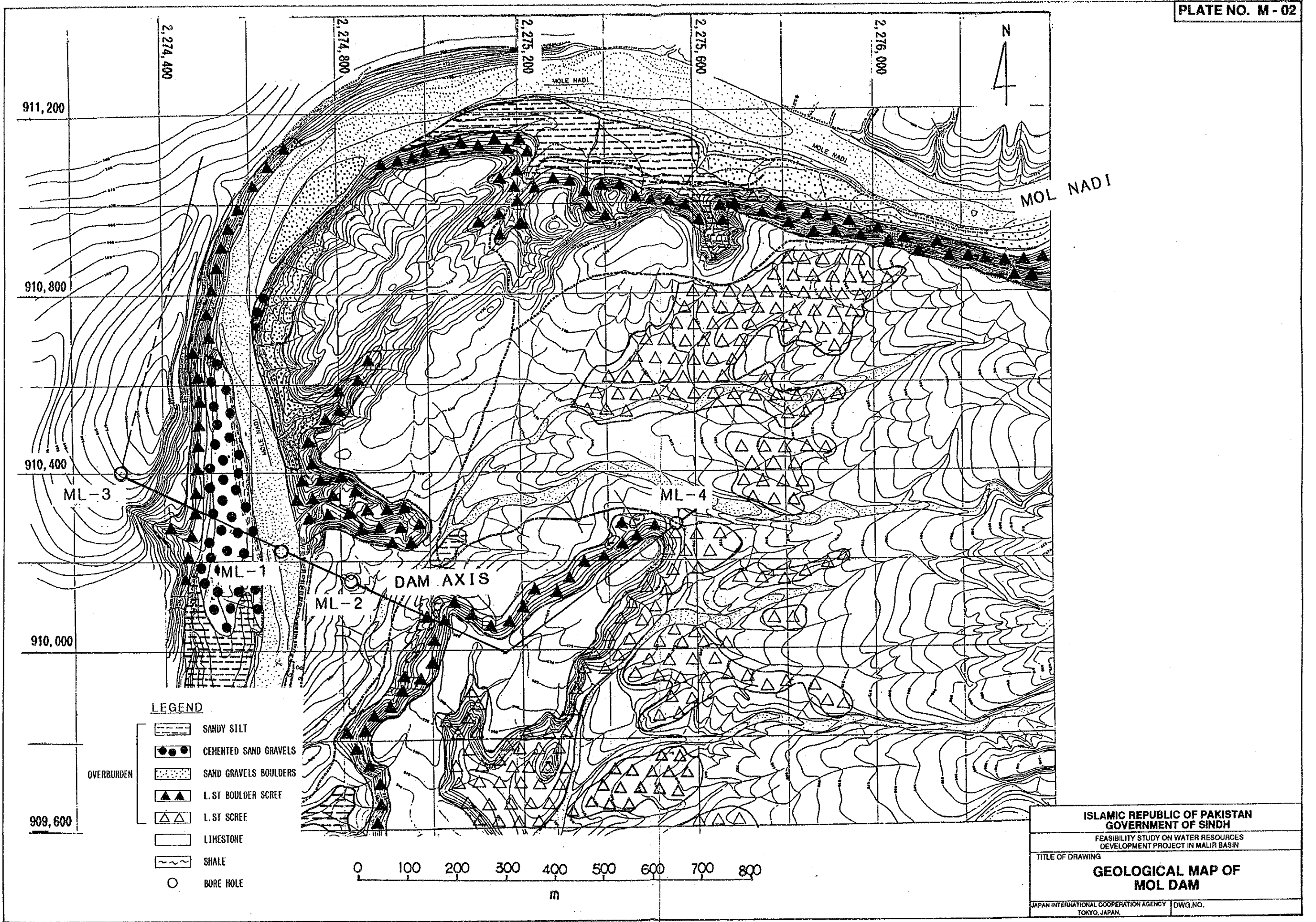
ISLAMIC REPUBLIC OF PAKISTAN GOVERNMENT OF SINDH	
FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING GROUNDWATER CONTOUR MAP IN 1989 / 90 (2/2)	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN.	DWG. NO.



ELEVATION (m)	AREA (1,000 m ²)	VOLUME (1,000 m ³)
EL. 137.2	0	0
EL. 143.3	303	920
EL. 149.4	596	3,660
EL. 154.4	1,232	9,150
EL. 161.5	2,295	19,900
EL. 167.6	3,565	37,780
EL. 173.7	5,212	64,540
EL. 176.8	5,958	81,860



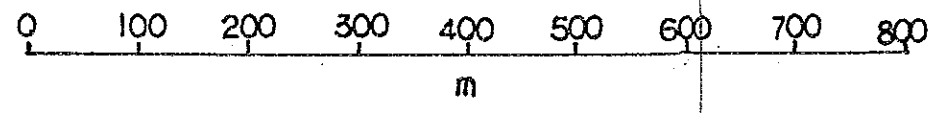
ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF SINDH
 FEASIBILITY STUDY ON WATER RESOURCES
 DEVELOPMENT PROJECT IN MALIR BASIN
 TITLE OF DRAWING
RESERVOIR AREA OF MOL DAM
 JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN. DWG.NO.



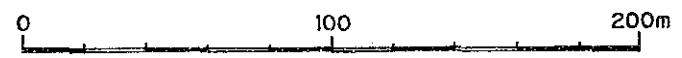
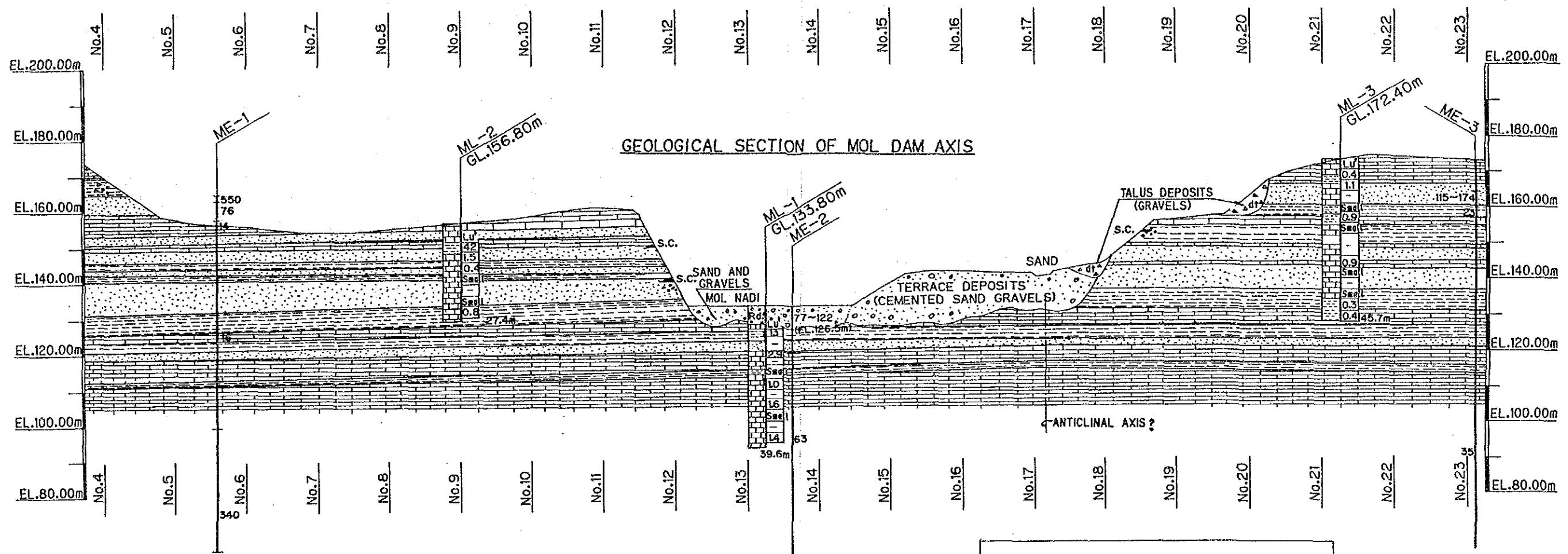
LEGEND

- SANDY SILT
- CEMENTED SAND GRAVELS
- SAND GRAVELS BOULDERS
- L. ST BOULDER SCREE
- L. ST SCREE
- LIMESTONE
- SHALE
- BORE HOLE

OVERBURDEN

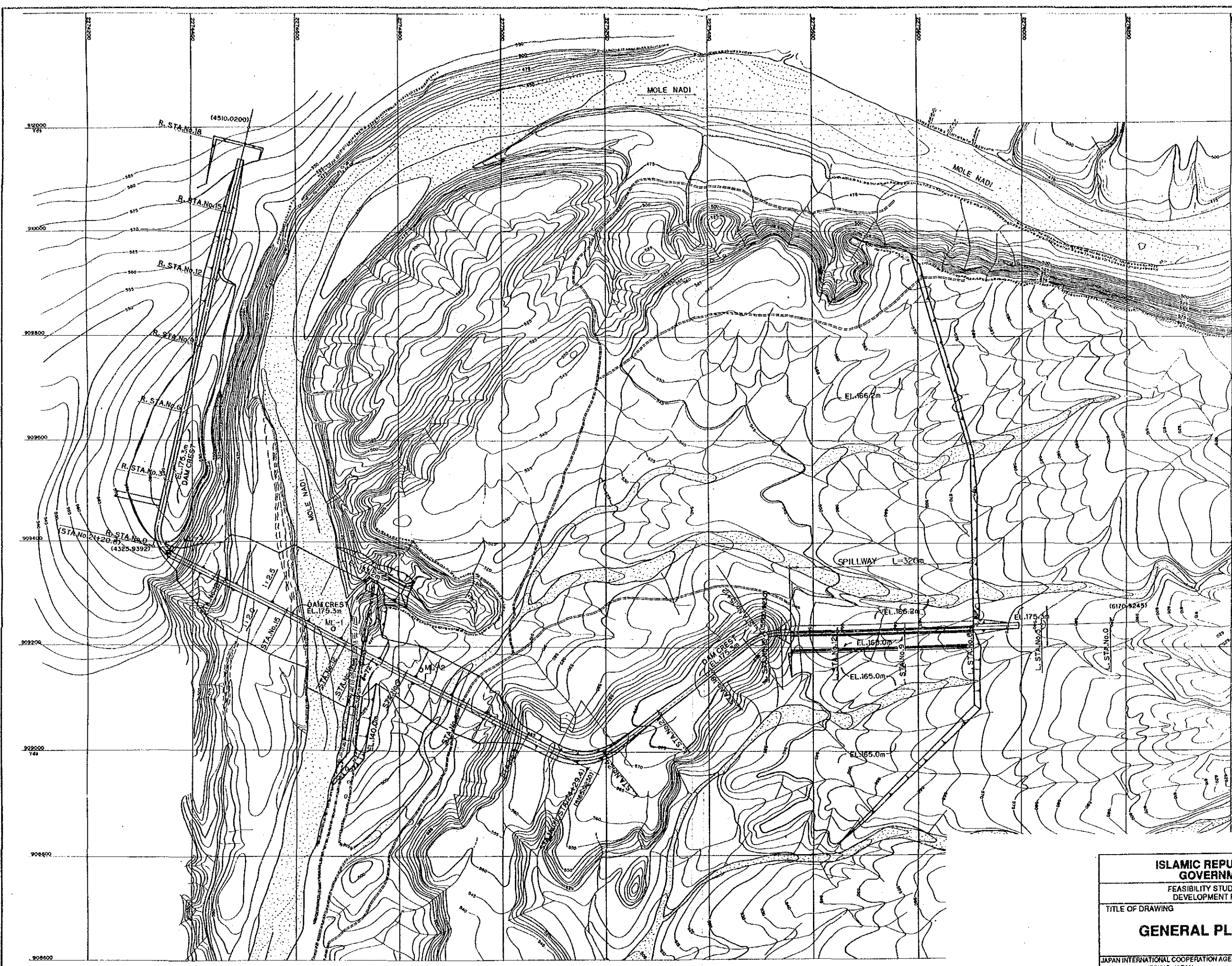
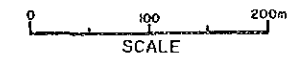
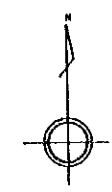


ISLAMIC REPUBLIC OF PAKISTAN GOVERNMENT OF SINDH	
FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING GEOLOGICAL MAP OF MOL DAM	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN.	DWG. NO.

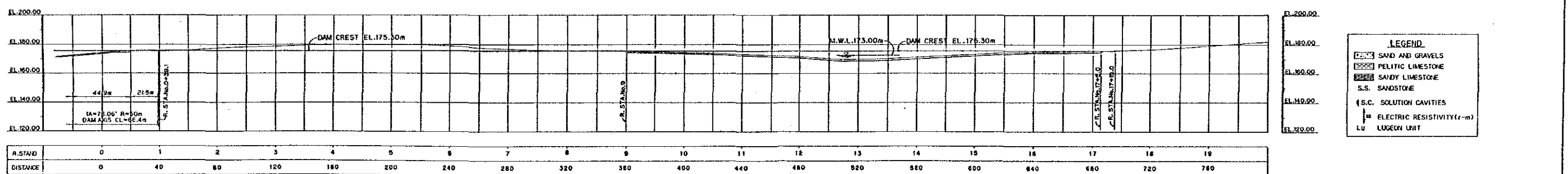
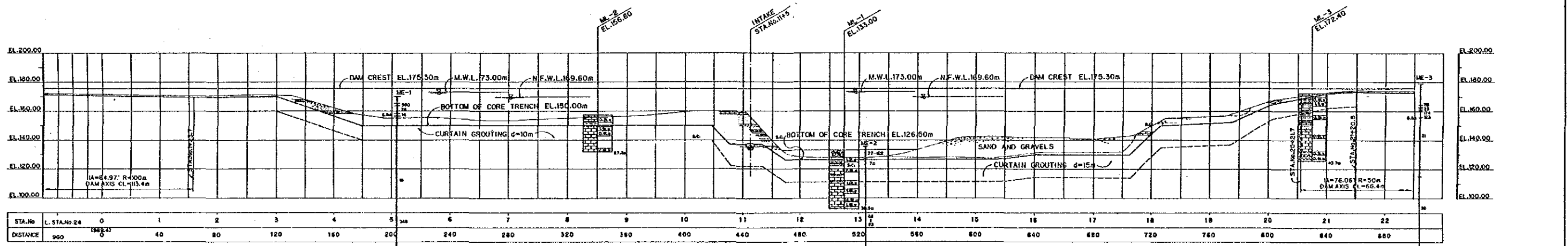
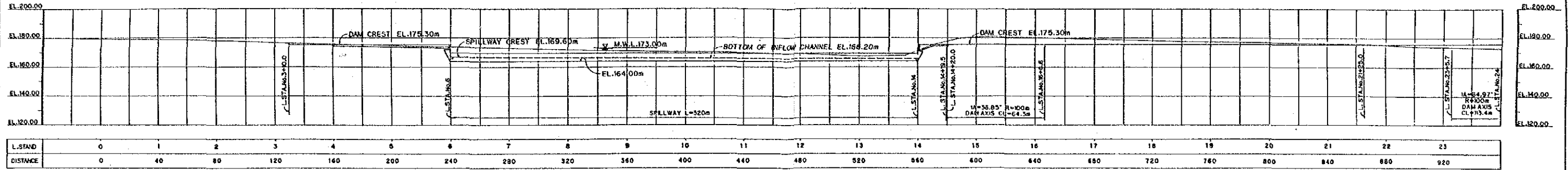


LEGEND	
	SAND AND GRAVELS
	PELITIC LIMESTONE
	SANDY LIMESTONE
	CRYSTALLINE LIMESTONE
S.S.	SANDSTONE
S.C.	SOLUTION CAVITIES
	ELECTRIC RESISTIVITY (Ω -m)
Lu'	LUGEON UNIT

ISLAMIC REPUBLIC OF PAKISTAN GOVERNMENT OF SINDH	
FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING GEOLOGICAL SECTION OF MOL DAM AXIS (LOOKING DOWNSTREAM)	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN.	DWG. NO.



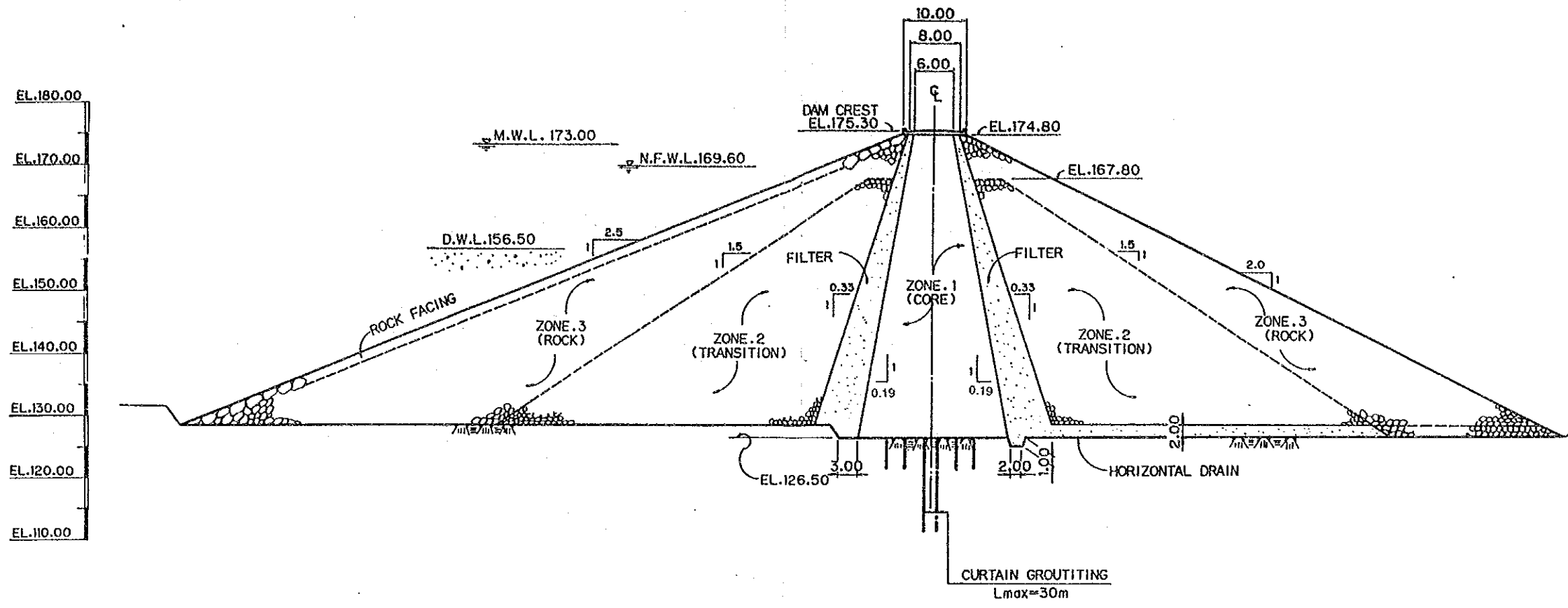
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FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING	
GENERAL PLAN OF MOL DAM	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN.	DWG. NO.



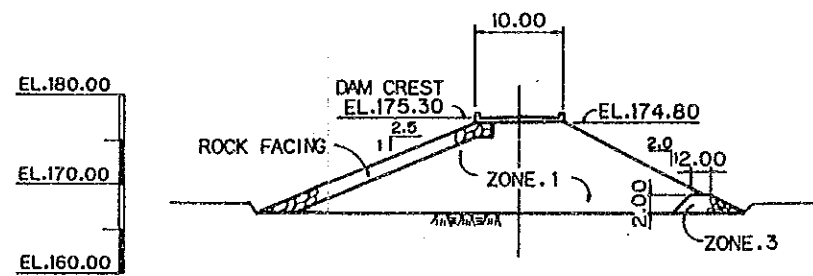
LEGEND

- SAND AND GRAVELS
- PELITIC LIMESTONE
- SANDY LIMESTONE
- SANDSTONE
- S.S. SANDSTONE
- S.C. SOLUTION CAVITIES
- ELECTRIC RESISTIVITY (r-m)
- LUGON UNIT

ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF SINDH
 FEASIBILITY STUDY ON WATER RESOURCES
 DEVELOPMENT PROJECT IN MALIR BASIN
 TITLE OF DRAWING
PROFILE OF MOL DAM
 JAPAN INTERNATIONAL COOPERATION AGENCY | DWG. NO.
 TOKYO, JAPAN.



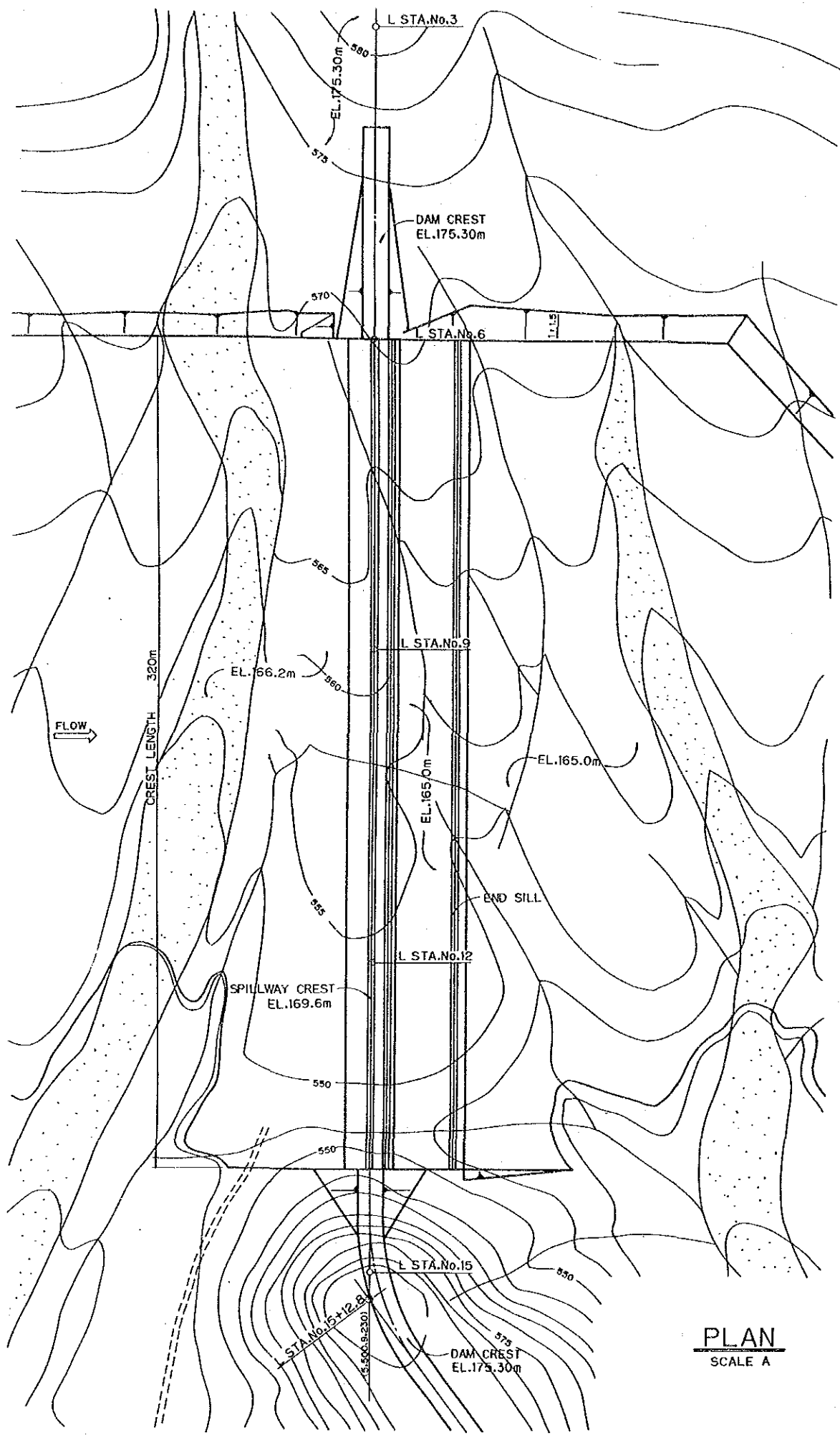
MAIN DAM



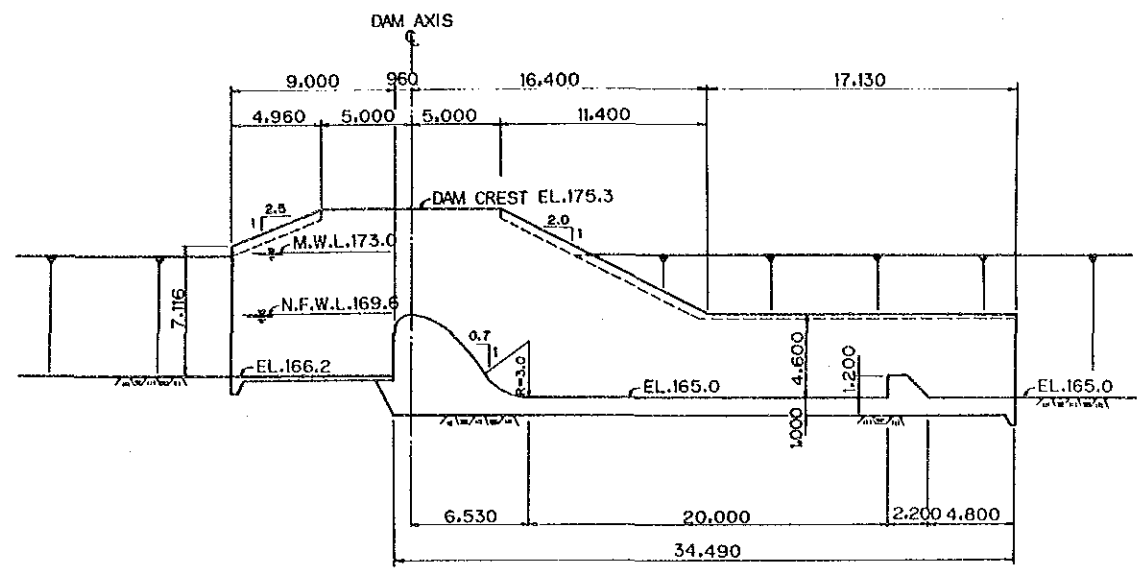
SADDLE DAM



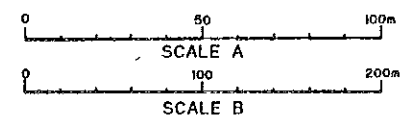
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FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING STANDARD CROSS - SECTION OF MOL DAM	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN	DWG.NO.



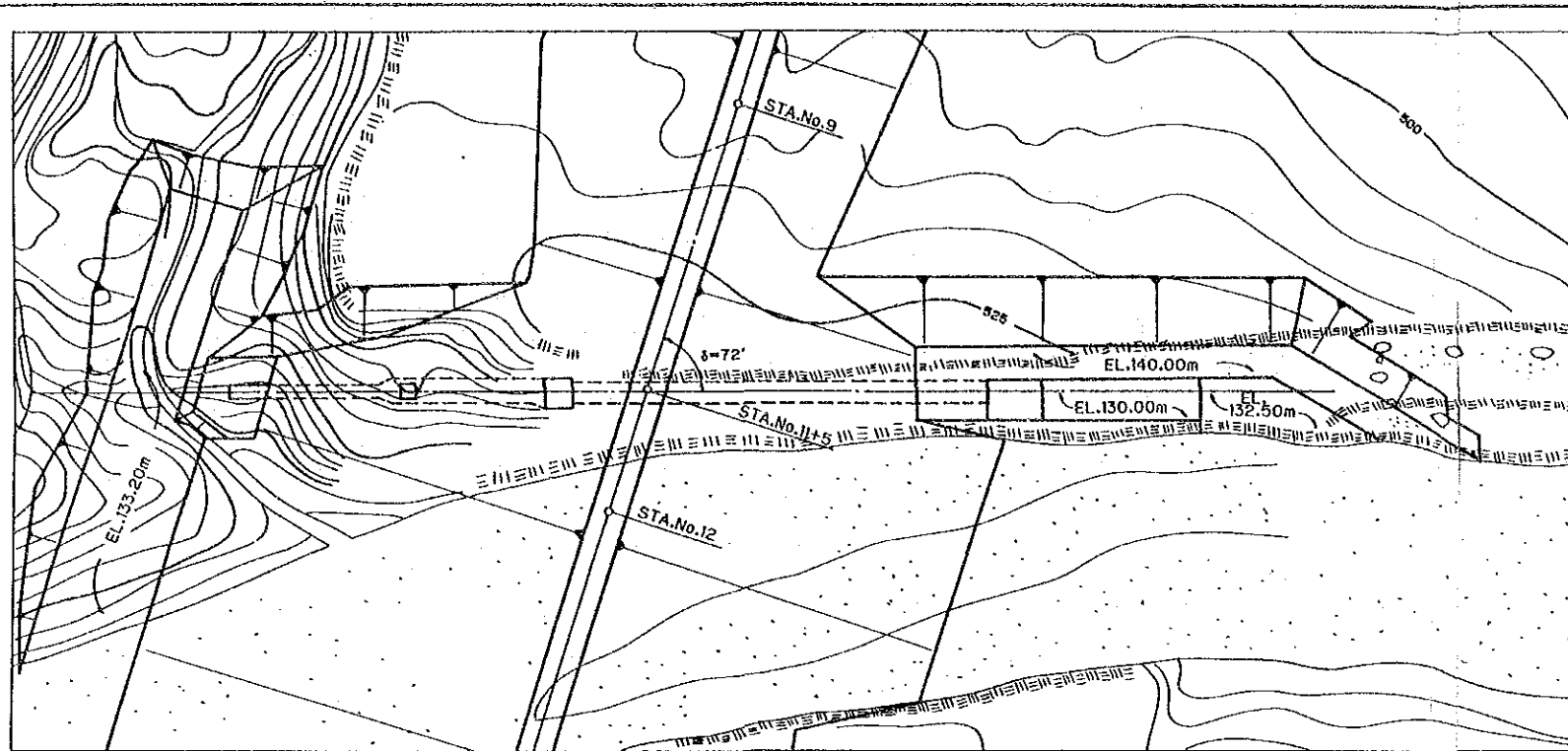
PLAN
SCALE A



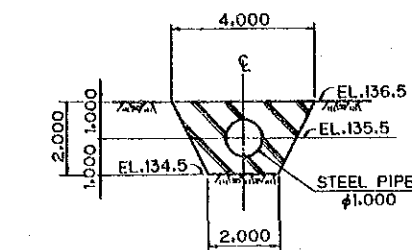
PROFILE
SCALE B



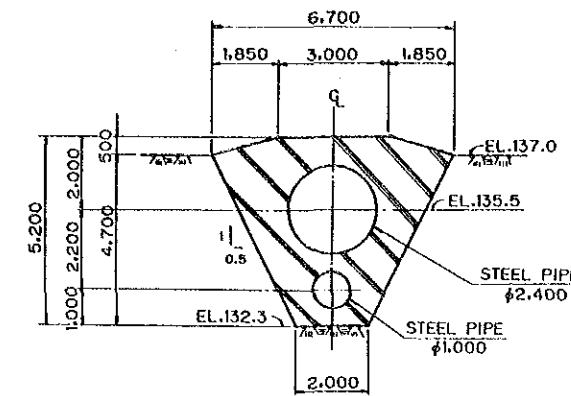
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FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING	
SPILLWAY OF MOL DAM	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN	DWG.NO.



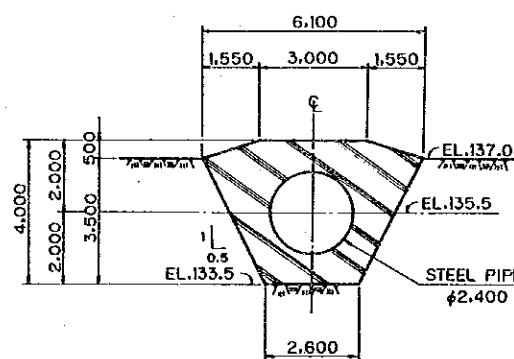
PLAN
SCALE A



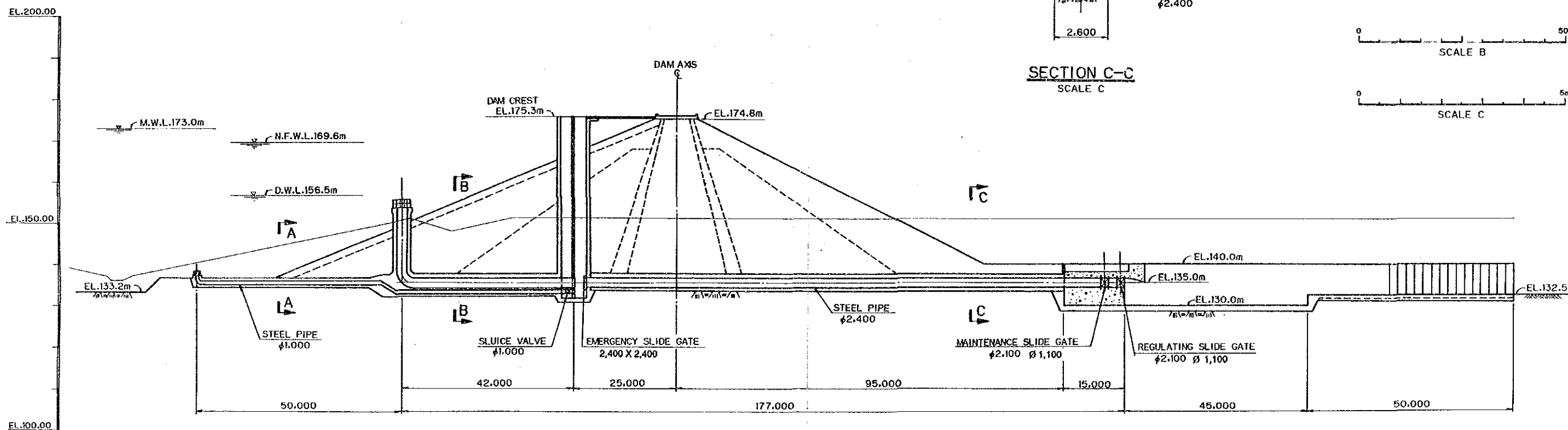
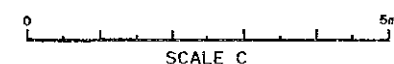
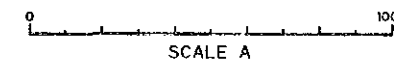
SECTION A-A
SCALE C



SECTION B-B
SCALE C



SECTION C-C
SCALE C



PROFILE
SCALE B

ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF SINDH

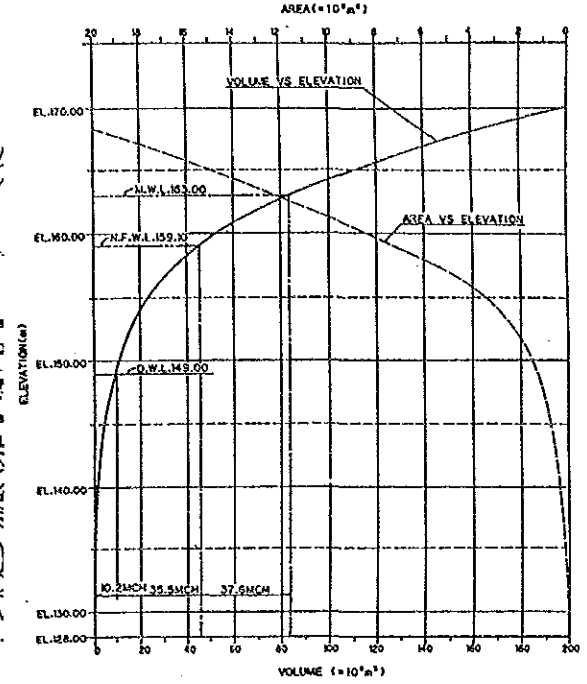
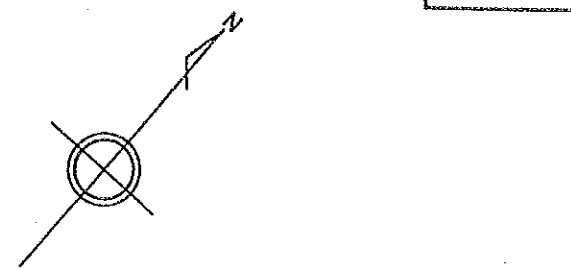
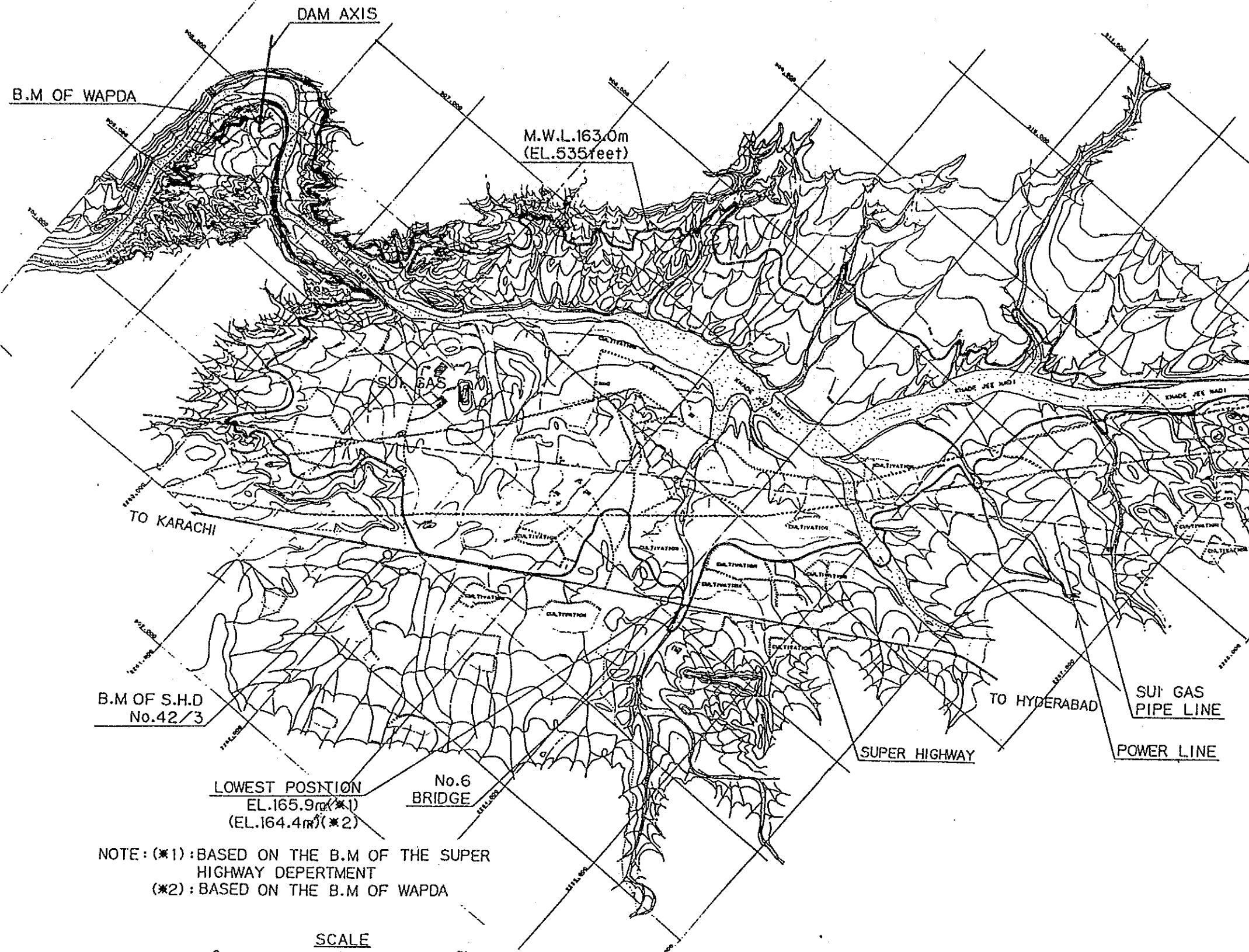
FEASIBILITY STUDY ON WATER RESOURCES
DEVELOPMENT PROJECT IN MALIR BASIN

TITLE OF DRAWING

INTAKE FACILITY OF MOL DAM

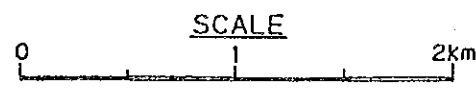
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO, JAPAN.

DWG. NO.



ELEVATION (m)	AREA (1,000 m ²)	VOLUME (1,000 m ³)
EL. 128.0	0	
EL. 140.2	382	2,330
EL. 146.3	843	6,070
EL. 152.4	2,119	15,100
EL. 158.5	6,477	41,320
EL. 164.6	14,354	104,550
EL. 170.7	23,230	218,880

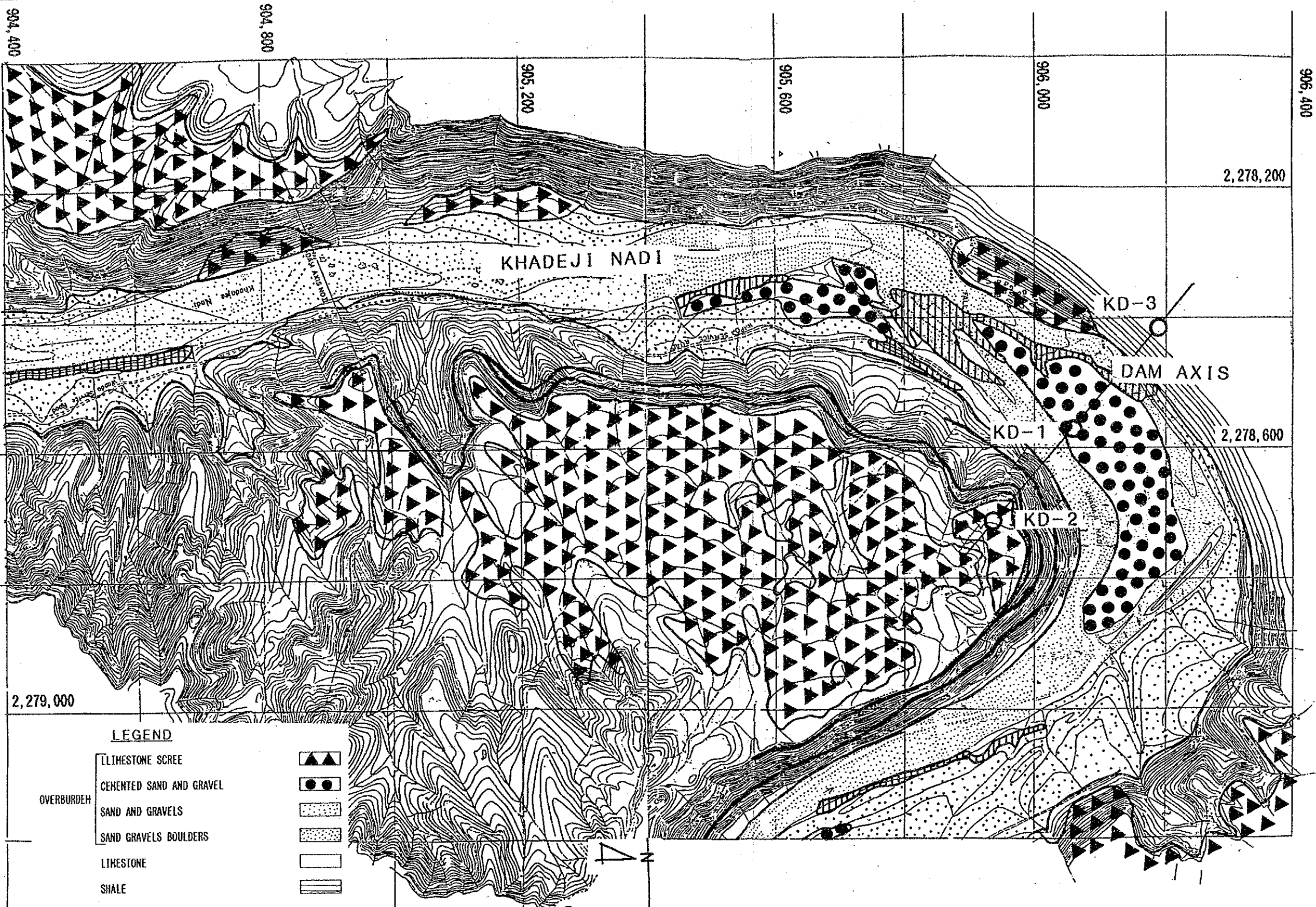
NOTE: (*1): BASED ON THE B.M OF THE SUPER HIGHWAY DEPARTMENT
 (*2): BASED ON THE B.M OF WAPDA



ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF SINDH
 FEASIBILITY STUDY ON WATER RESOURCES
 DEVELOPMENT PROJECT IN MALIR BASIN

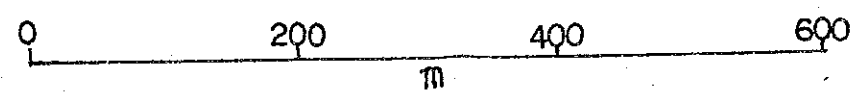
TITLE OF DRAWING
RESERVOIR AREA OF KHADEJI DAM

JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO, JAPAN. DWG.NO.

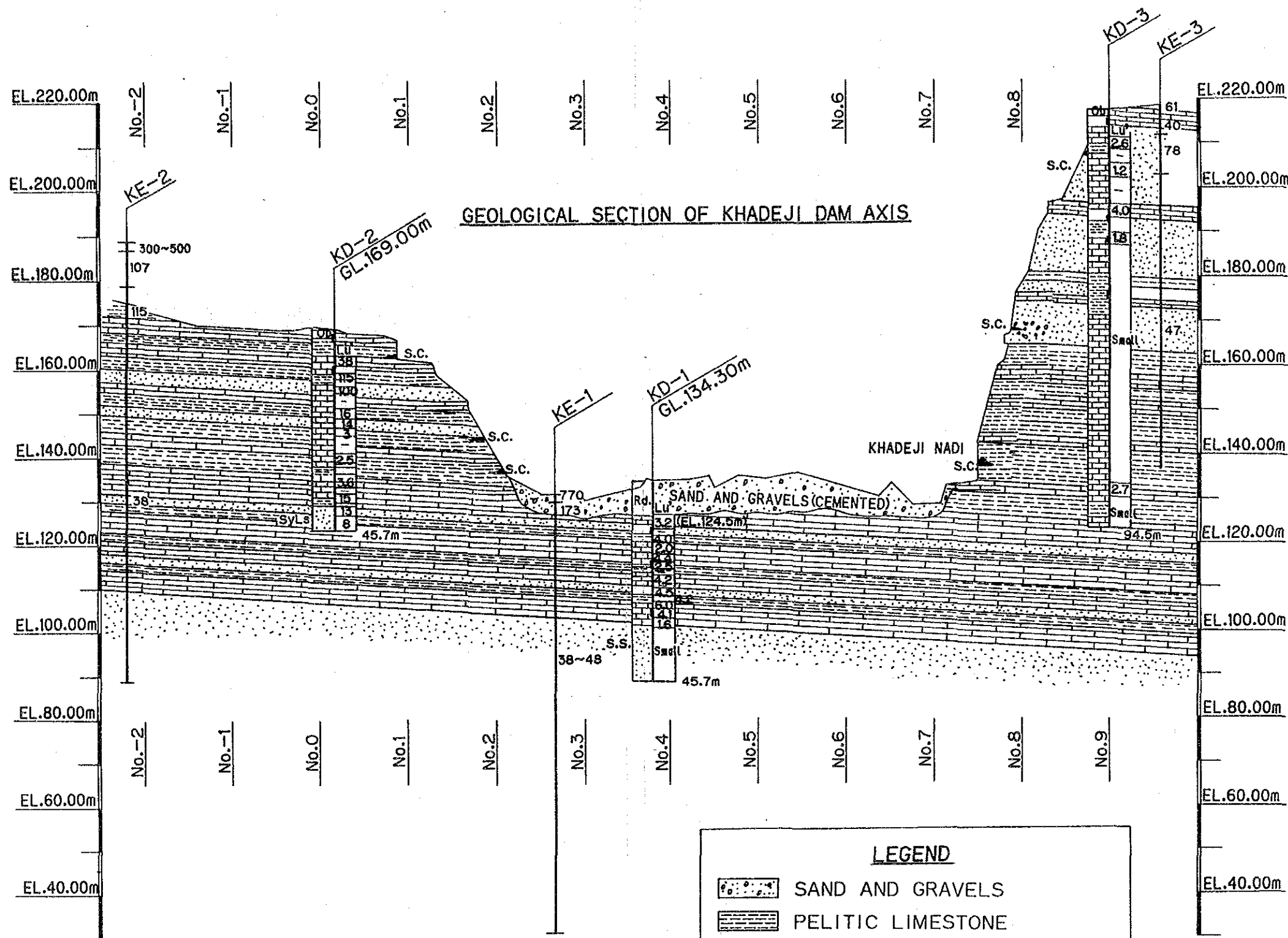


LEGEND

- OVERBURDEN
 - LIHSTONE SCREE
 - CEMENTED SAND AND GRAVEL
 - SAND AND GRAVELS
 - SAND GRAVELS BOULDERS
 - LIHSTONE
 - SHALE
- SOLUTION CAVITIES ZONE IN LIHSTONE
- BORE HOLE



ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF SINDH
 FEASIBILITY STUDY ON WATER RESOURCES
 DEVELOPMENT PROJECT IN MALIR BASIN
 TITLE OF DRAWING
**GEOLOGICAL MAP OF
 KHAEJI DAM**
 JAPAN INTERNATIONAL COOPERATION AGENCY DWG. NO.
 TOKYO, JAPAN.



LEGEND

- SAND AND GRAVELS
- PELITIC LIMESTONE
- SANDY LIMESTONE
- CRYSTALLINE LIMESTONE
- S.S. SANDSTONE
- S.C. SOLUTION CAVITIES
- \perp 32 ELECTRIC RESISTIVITY (Ω -m)
- Lu' LUGEON UNIT

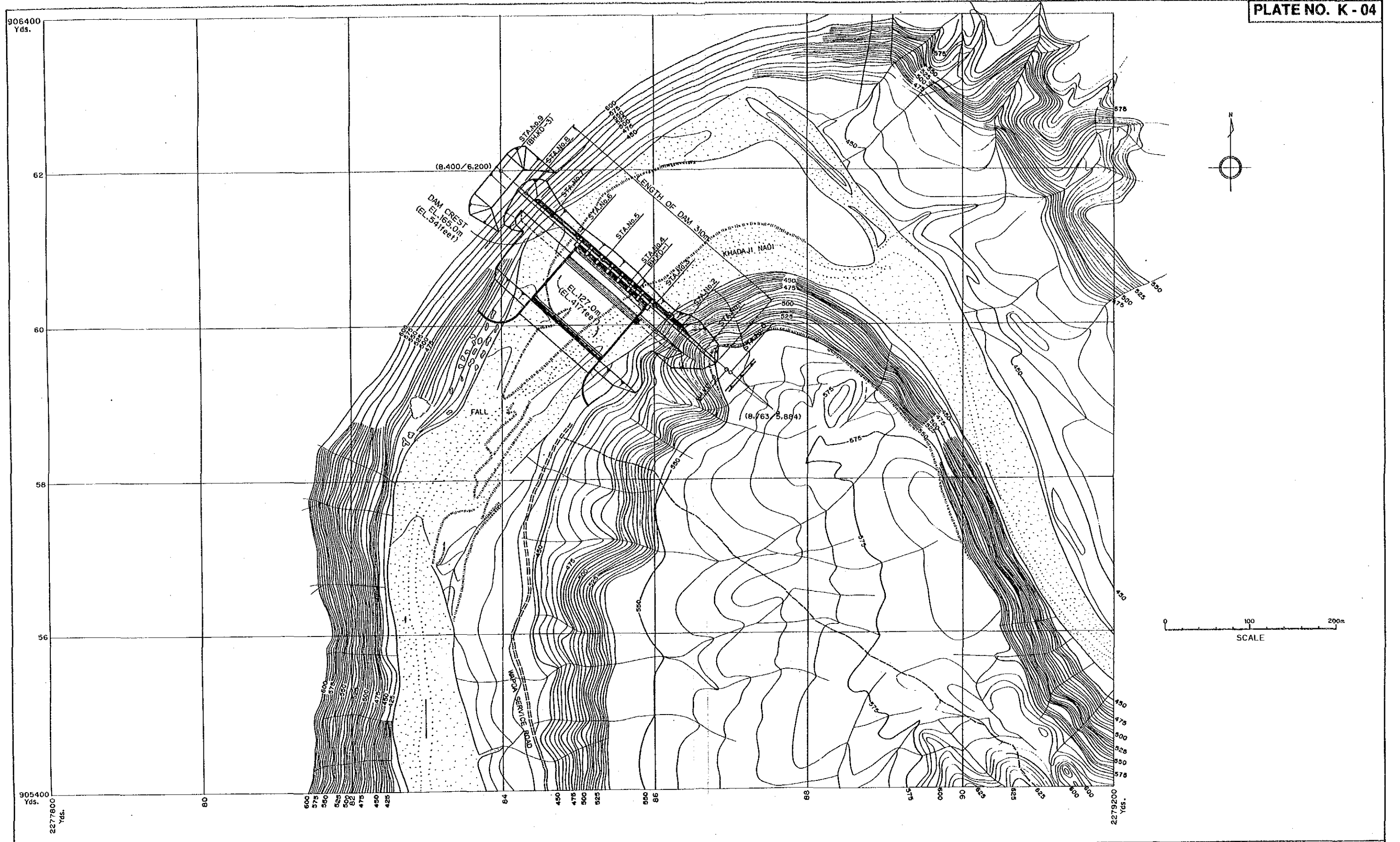
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF SINDH

FEASIBILITY STUDY ON WATER RESOURCES
DEVELOPMENT PROJECT IN MALIR BASIN

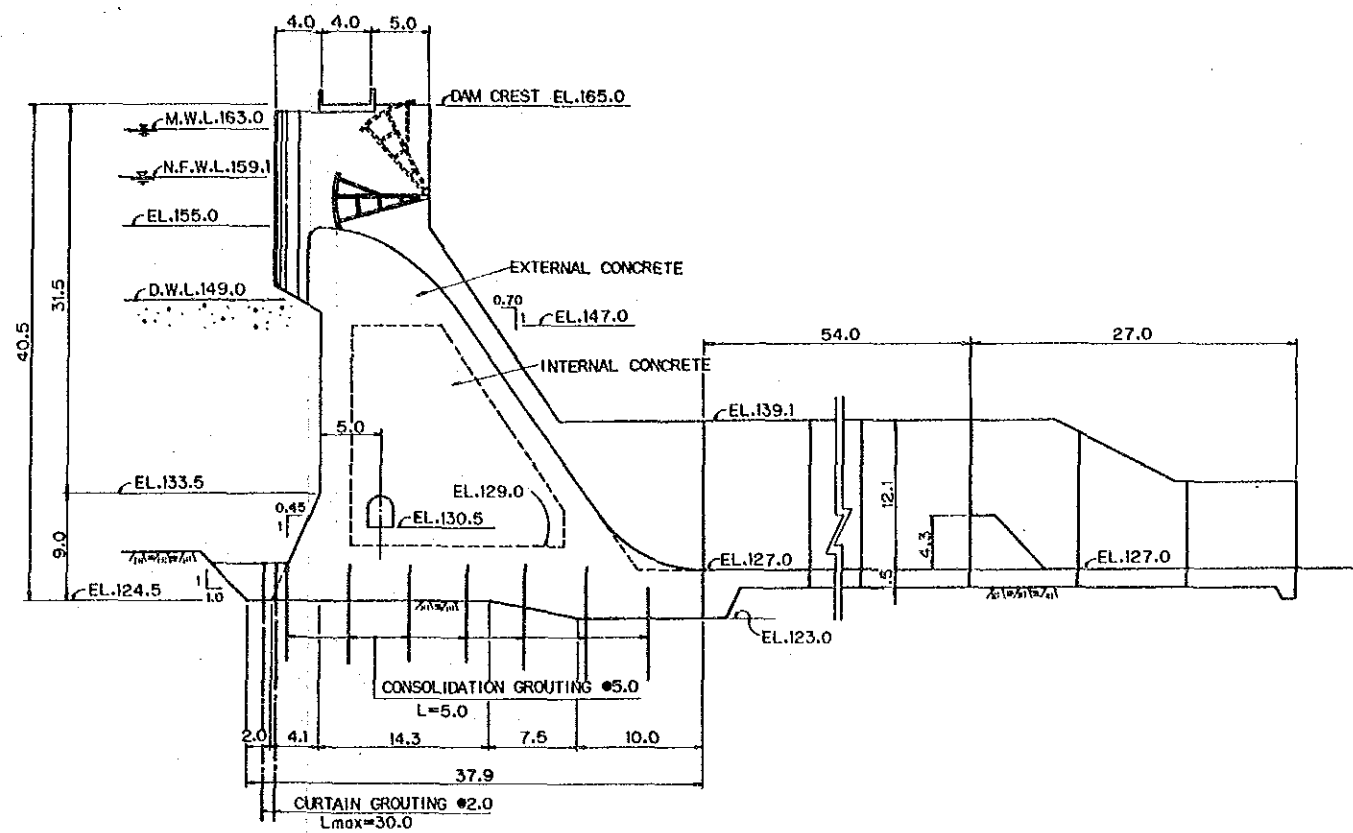
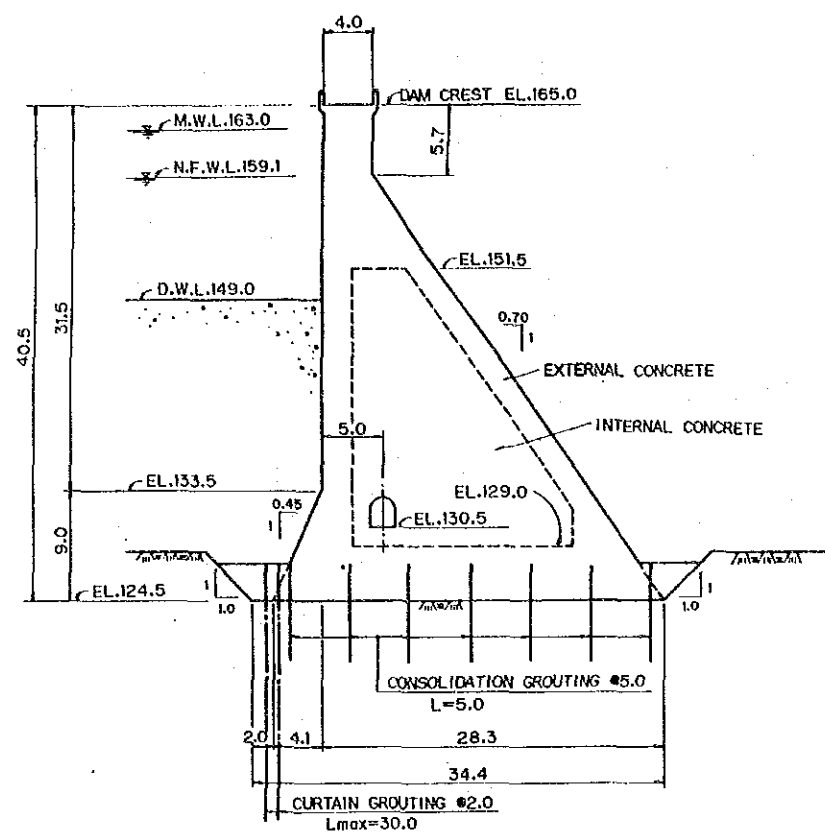
TITLE OF DRAWING
**GEOLOGICAL SECTION OF
KHADEJI DAM AXIS
(LOOKING DOWNSTREAM)**

JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO, JAPAN

DWG. NO.



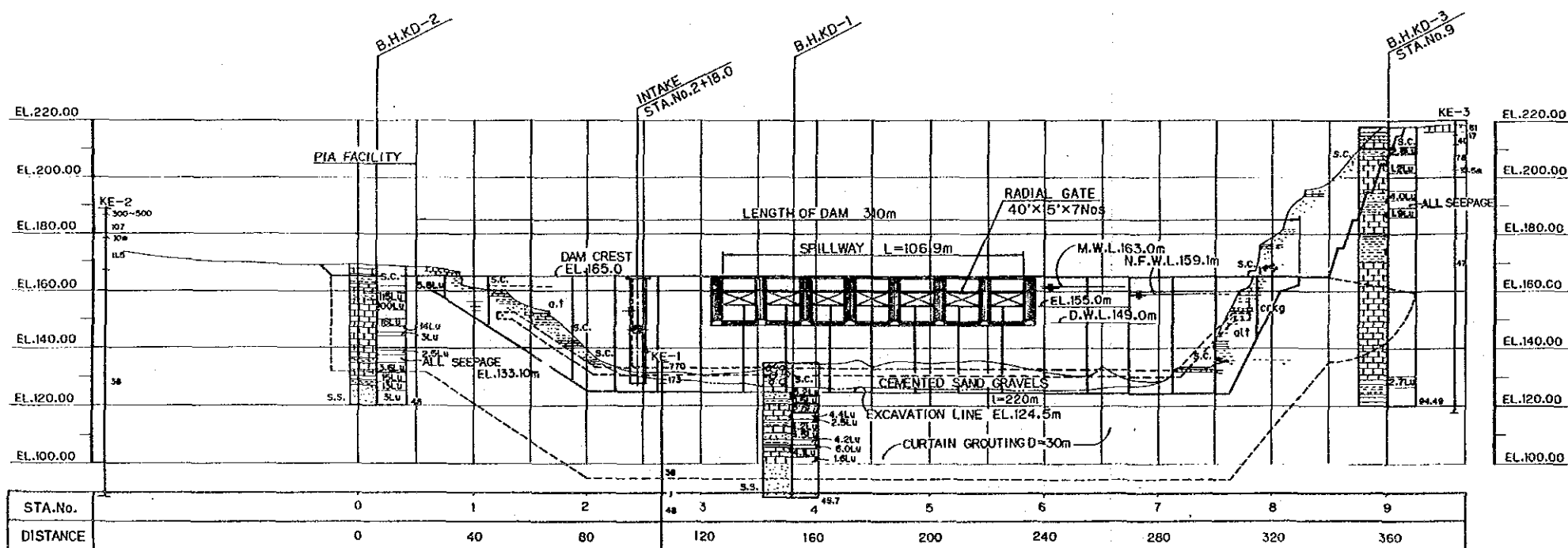
ISLAMIC REPUBLIC OF PAKISTAN GOVERNMENT OF SINDH	
FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING	
GENERAL PLAN OF KHADEJI DAM	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN.	DWG. NO.



NON-OVERFLOW SECTION

OVERFLOW SECTION

STANDARD SECTION
SCALE A

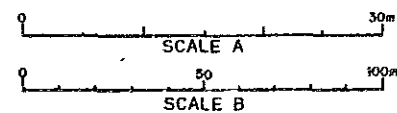


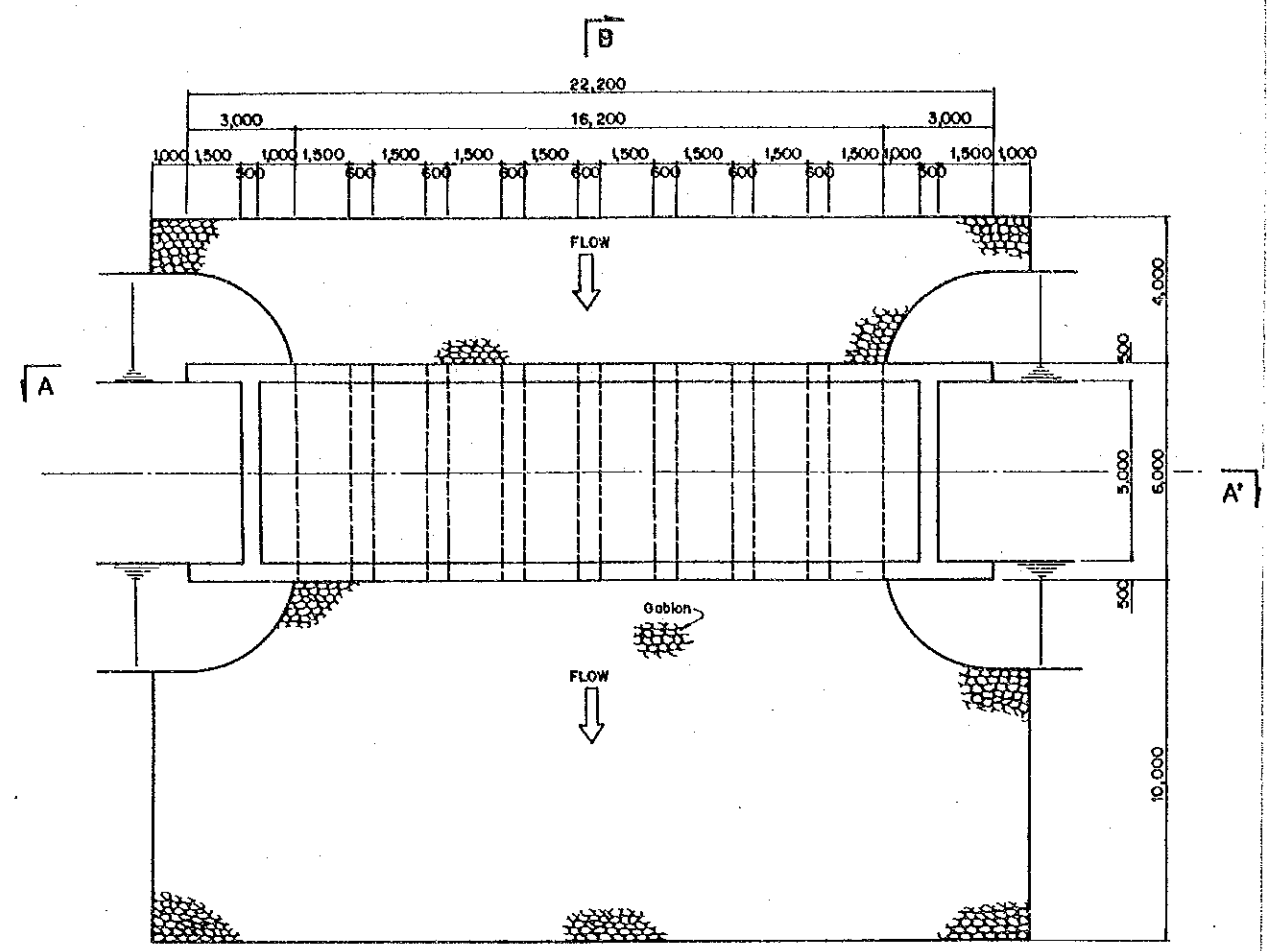
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF SINDH

FEASIBILITY STUDY ON WATER RESOURCES
DEVELOPMENT PROJECT IN MALIR BASIN

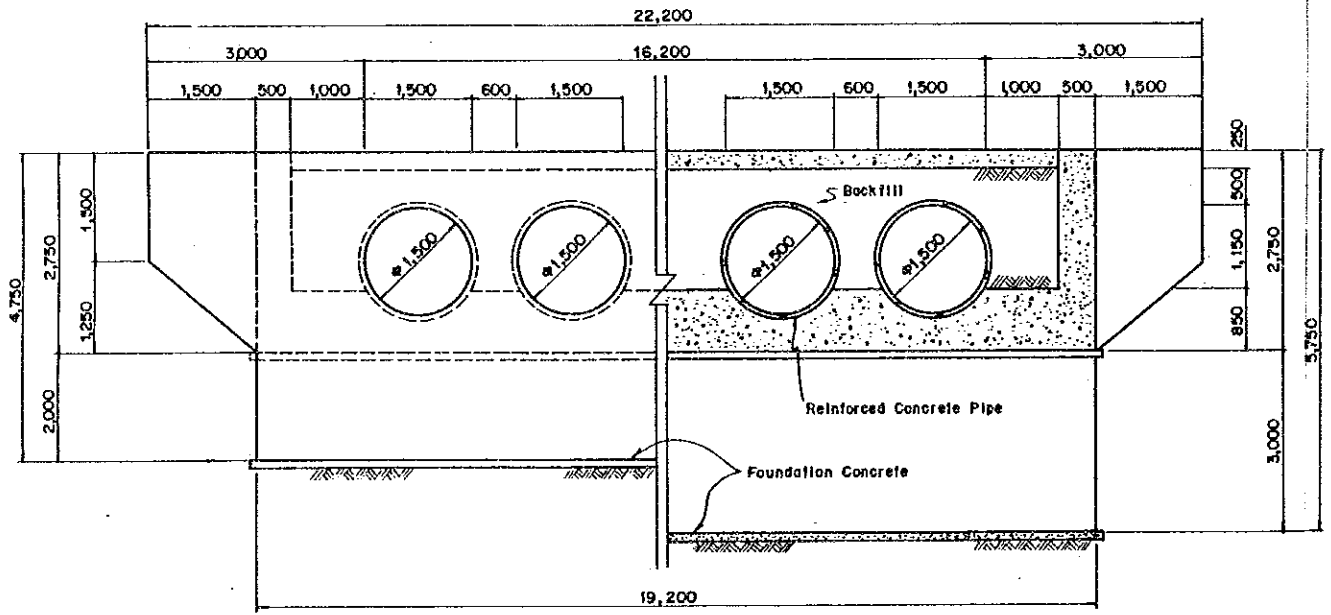
TITLE OF DRAWING
**STANDARD CROSS - SECTION AND
PROFILE OF KHADEJI DAM**

JAPAN INTERNATIONAL COOPERATION AGENCY DWG. NO.
TOKYO, JAPAN.

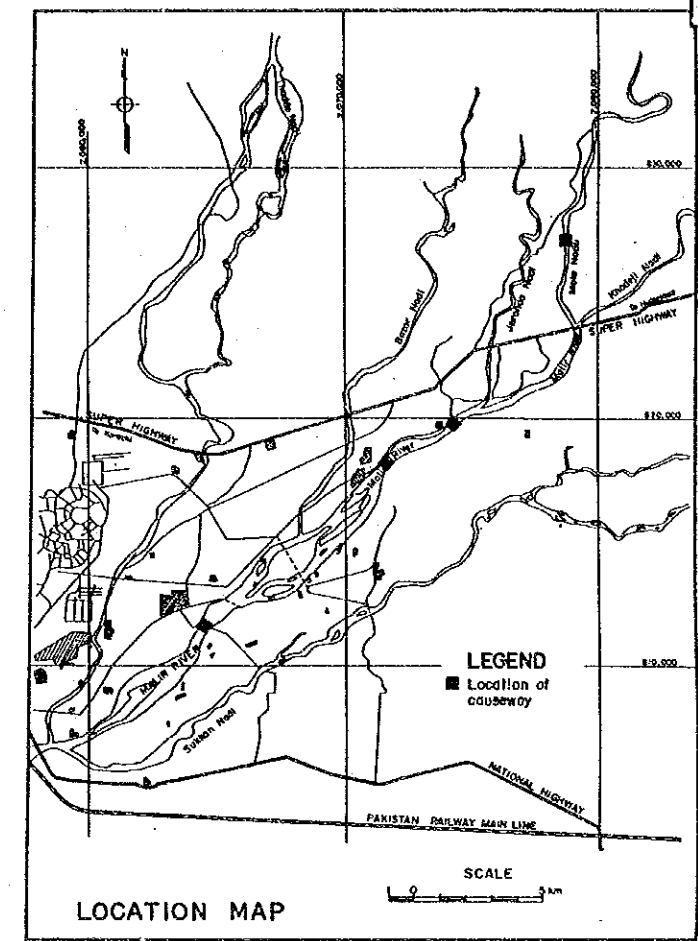




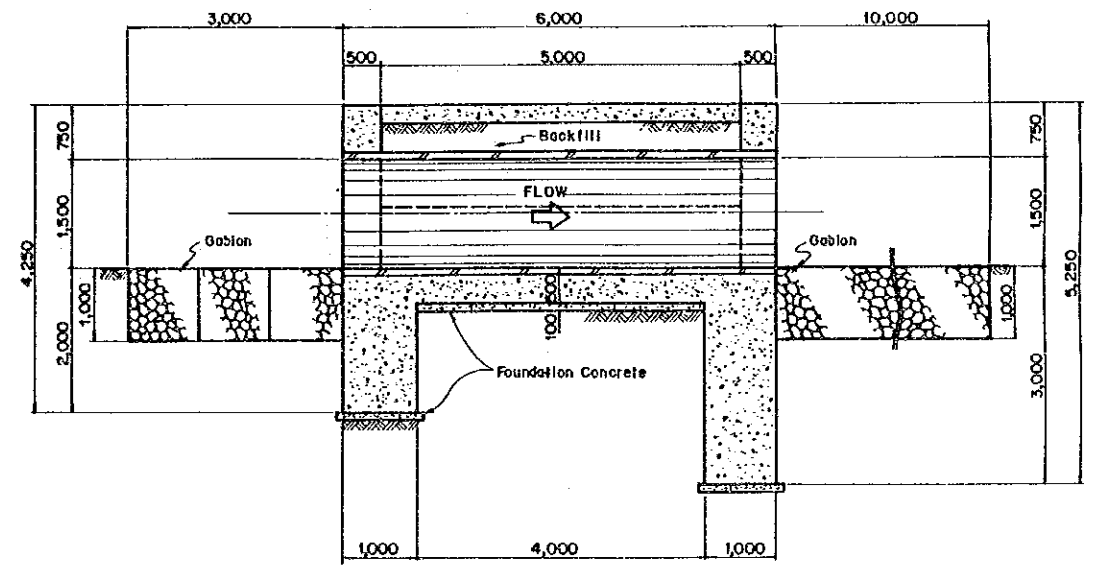
PLAN SCALE A



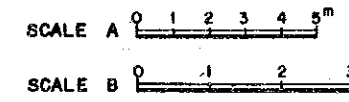
SECTION A - A'
SCALE B



LOCATION MAP



SECTION B - B'
SCALE B



ISLAMIC REPUBLIC OF PAKISTAN GOVERNMENT OF SINDH	
FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT PROJECT IN MALIR BASIN	
TITLE OF DRAWING	
CAUSEWAY	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO, JAPAN.	DWG. NO.

JICA