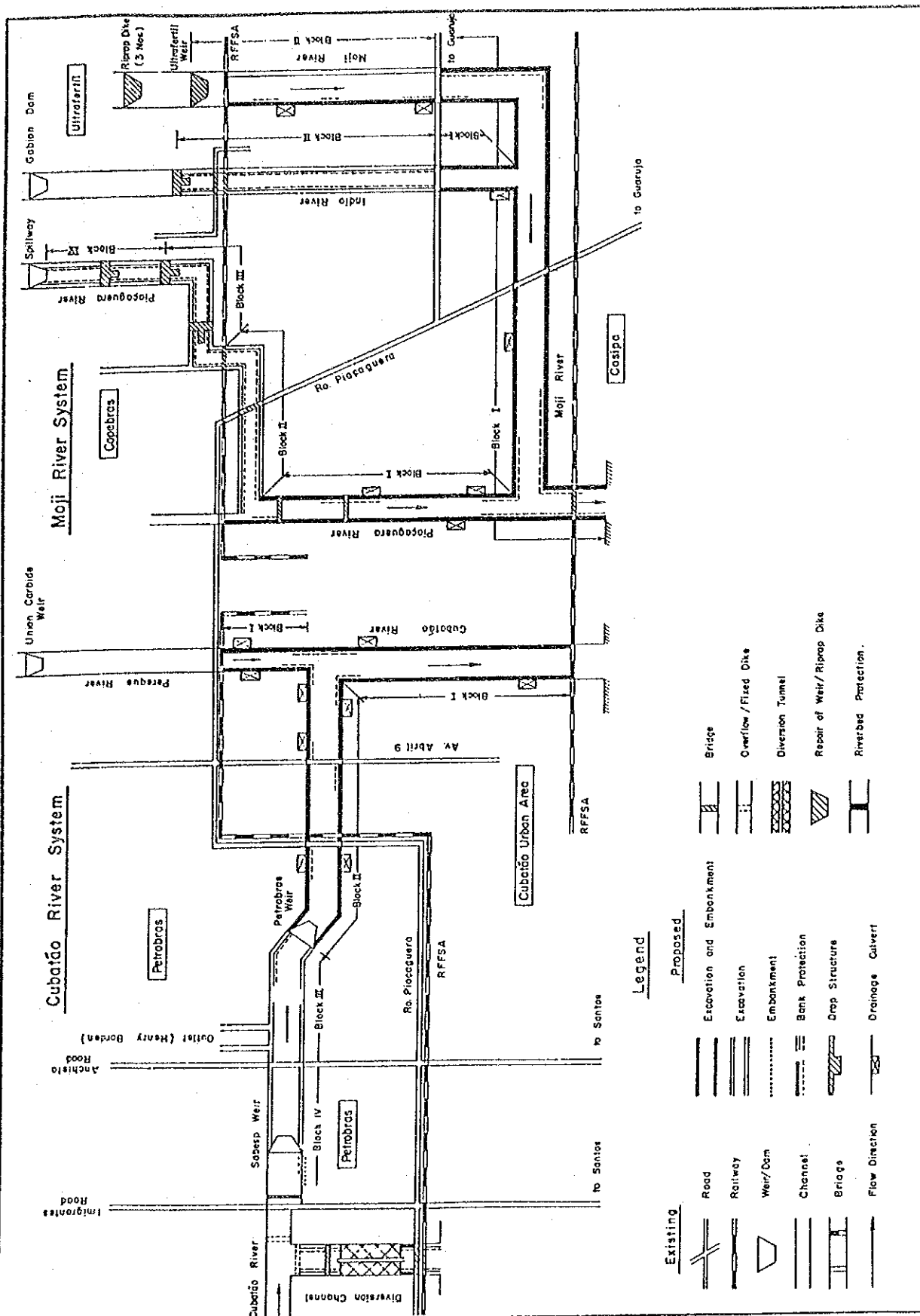


**FIG. 33**  
**DESIGN DISCHARGE DISTRIBUTION**  
**OF ALTERNATIVE SCHEMES**

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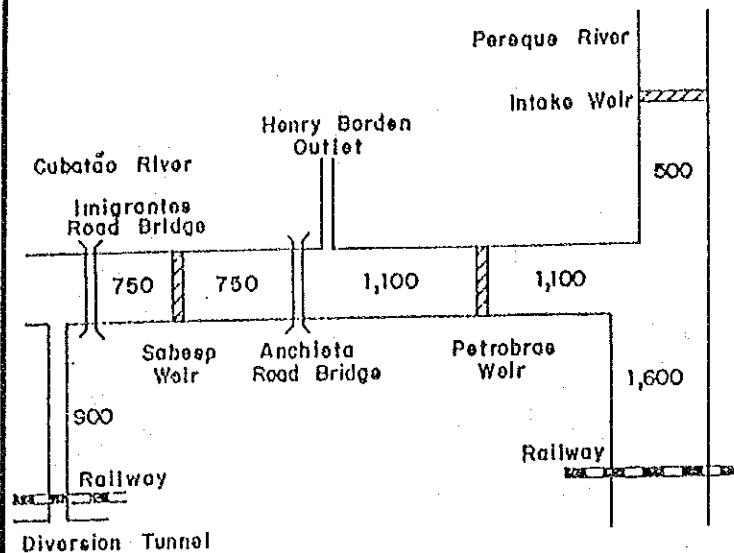


**FIG. 34**  
**OUTLINE OF FLOOD DISASTER**  
**PREVENTION MASTER PLAN**

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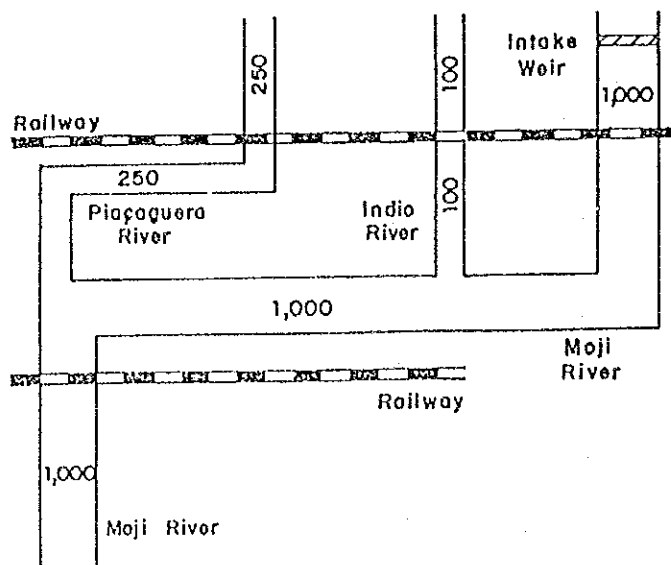
## Cubatão and Pereque Rivers



Probable Discharge				unit: m <sup>3</sup> /s
Return Period	Cubatão		Pereque	
	Before Pereque	River Mouth		
1/100	1200 (2000)	1800 (2600)	700	
1/ 50	1100 (1800)	1600 (2300)	600	
1/ 25	1000 (1650)	1400 (2000)	500	
1/ 10	900 (1300)	1200 (1650)	400	
1/ 5	700 (1100)	1000 (1350)	350	
1/ 2	500 (750)	700 (950)	250	

Note: ( ) indicate discharge without tunnel

## Moji River and Their Tributaries



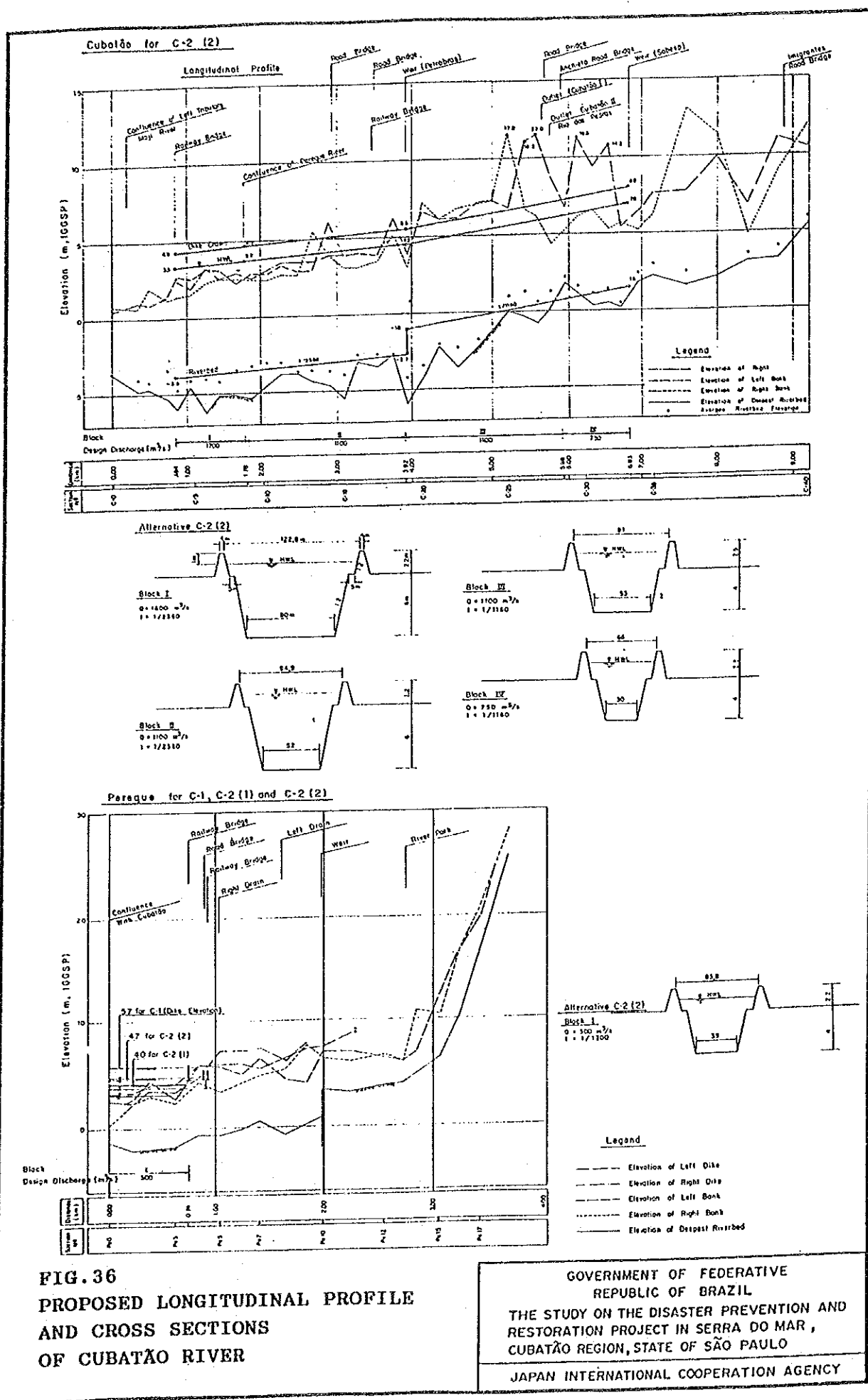
Probable Discharge				unit: m <sup>3</sup> /s
Return Period	Mojí		Piaçaguera Indio	
	Ultrafertil Weir			
1/100	1100	300	-	
1/ 50	1000	280	-	
1/ 25	800	250	100	
1/ 10	600	200	60	
1/ 5	500	150	50	
1/ 2	300	100	30	

Note: Return Period of Design Discharge  
 Cubatão and Moji Rivers:  $W = 1/50$   
 Pereque, Piaçaguera and Indio Rivers:  $W = 1/25$   
 Unit = m<sup>3</sup>/s

FIG. 35  
 DESIGN DISCHARGE DISTRIBUTION  
 OF MASTER PLAN

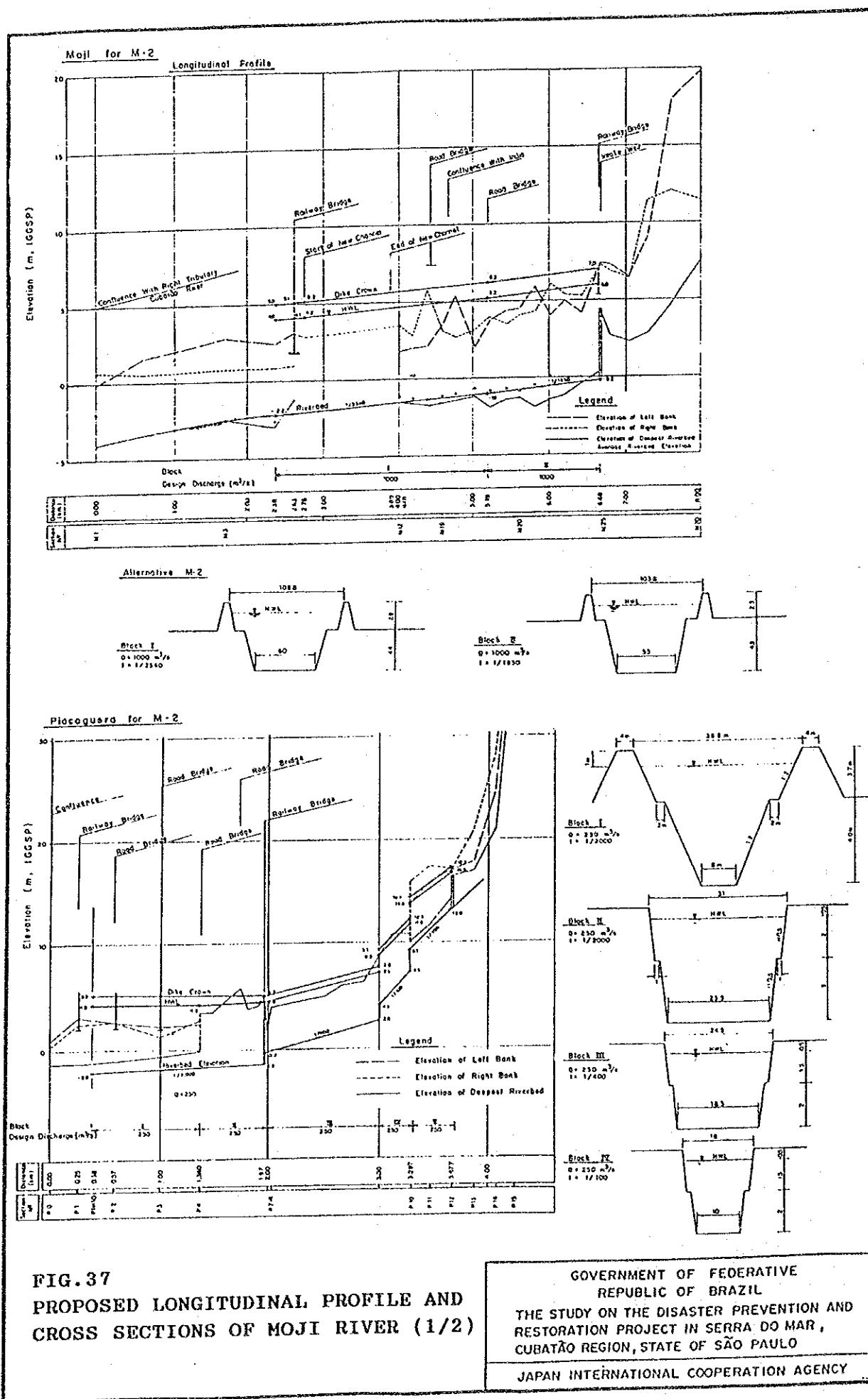
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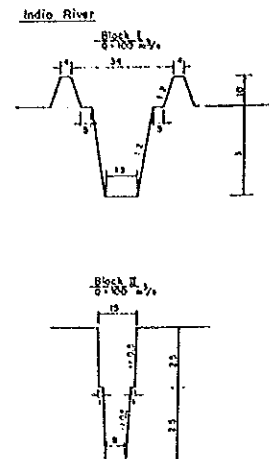
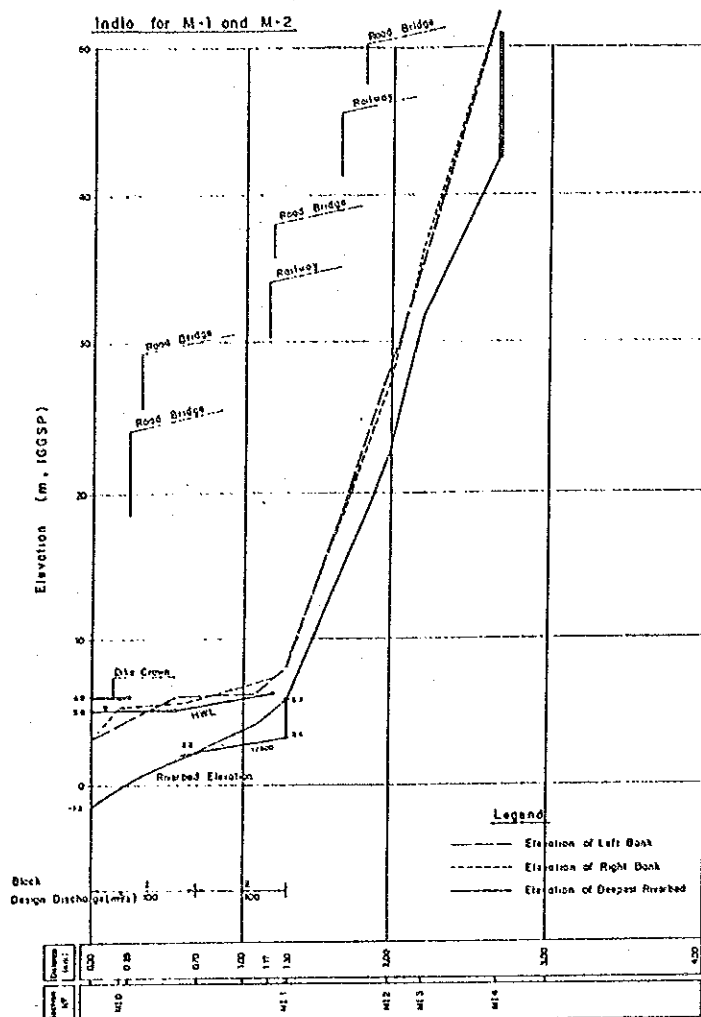
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**FIG. 36**  
**PROPOSED LONGITUDINAL PROFILE**  
**AND CROSS SECTIONS**  
**OF CUBATÃO RIVER**

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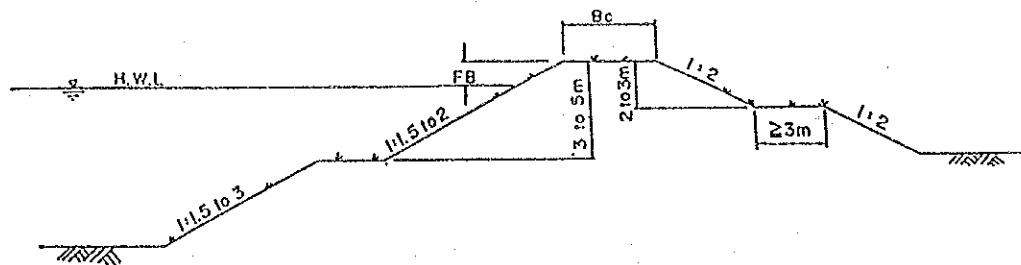




**FIG. 37**  
**PROPOSED LONGITUDINAL PROFILE AND**  
**CROSS SECTIONS OF MOJI RIVER (2/2)**

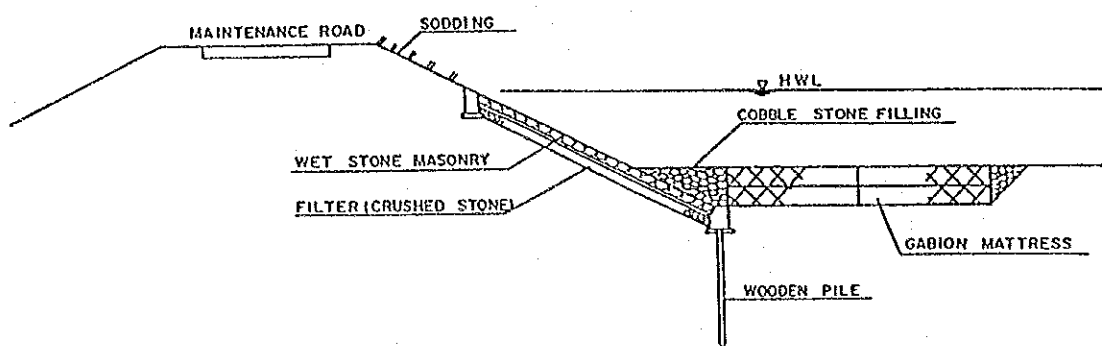
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### (1) Dike



Designed Discharge $Q$ ( $m^3/s$ )	Free-board FB (m)	Crownwidth $B_c$ (m)
less than 200	not less than 0.6	not less than 3
200 to 500	0.8	3
500 to 2000	1.0	4

### (2) Revetment



### (3) Diversion Tunnel

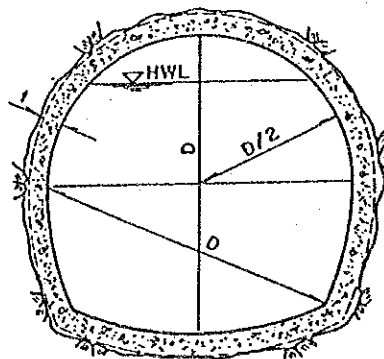
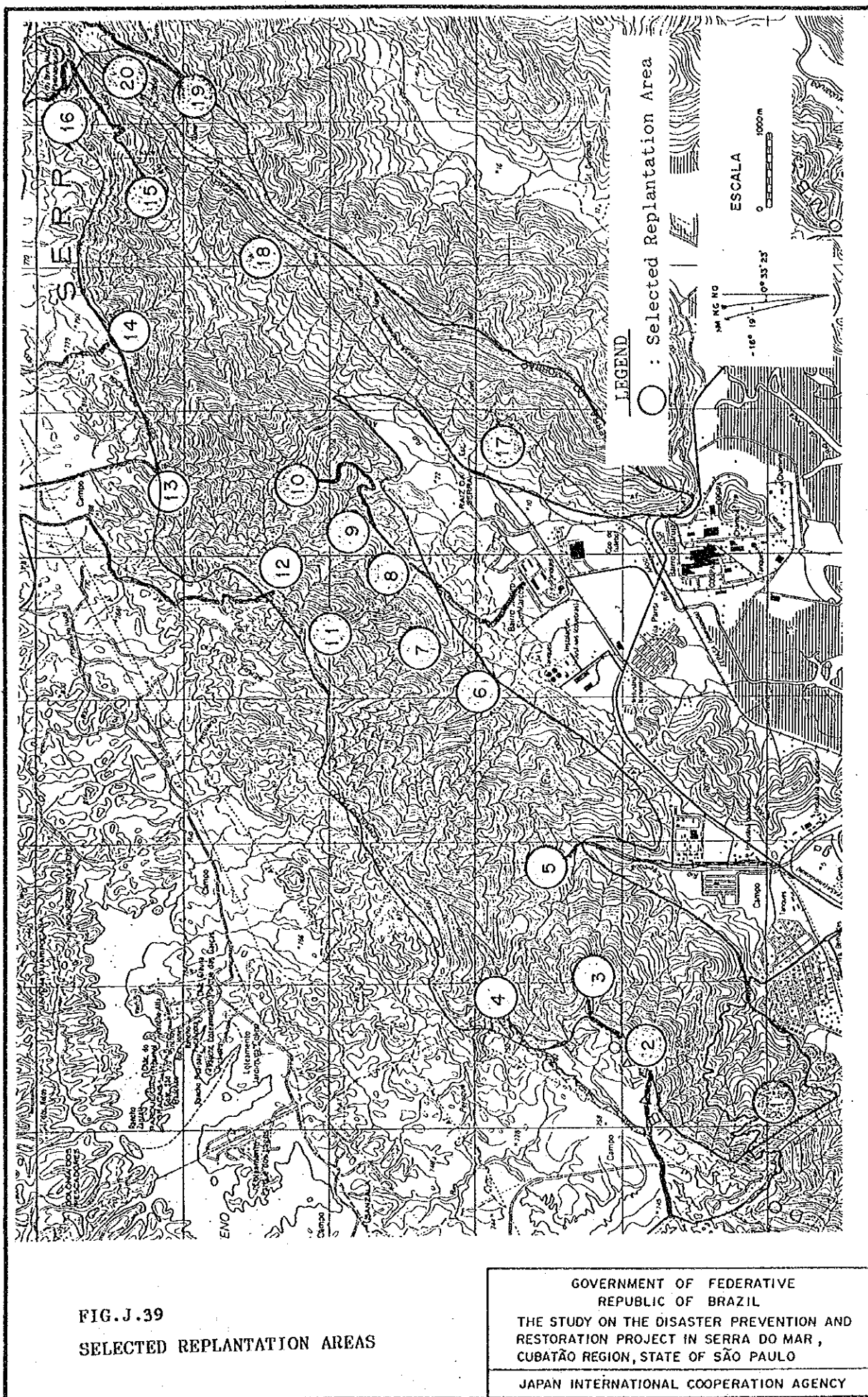


FIG. 38  
TYPICAL DESIGN OF STRUCTURES FOR  
FLOOD DISASTER PREVENTION WORKS

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	1990	1st Year 1991	2nd Year 1992	3rd Year 1993	4th Year 1994	5th Year 1995	6th Year 1996	7th Year 1997	8th Year 1998	9th Year 1999	10th Year 2000
1. STAGE-I (Priority Project)	F/S	I/P Appraisal E/N	D/D	Contract Tendering	Construction						
2. STAGE-II				Review I/P Appraisal E/N	D/D	Contract Tendering	Construction				

F/S : Feasibility Study      E/N : Exchange of Note  
I/P : Implementation Program      D/D : Detailed Design

FIG M.40  
IMPLEMENTATION SCHEDULE

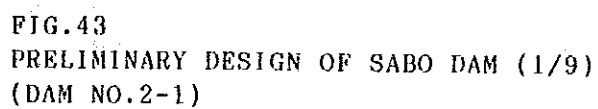
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work items	years	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Selection of 20 wood areas		▨										
Selection of tree species		▨	▨									
Seedlings production			▨	▨	▨							
Service road restoration				▨	▨							
Topographic works				▨	▨							
Planting works				▨	▨							
Maintenance works				▨	▨							
Management works		▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
Monitoring in field				▨	▨	▨	▨	▨	▨	▨	▨	▨
Monitoring by aerophotos							▨	▨			▨	▨

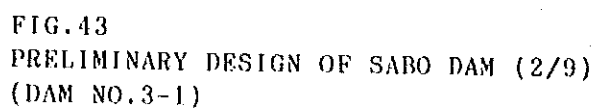
FIG.J.41  
 IMPEMETATION PROGRAM  
 OF THE MASTER PLAN

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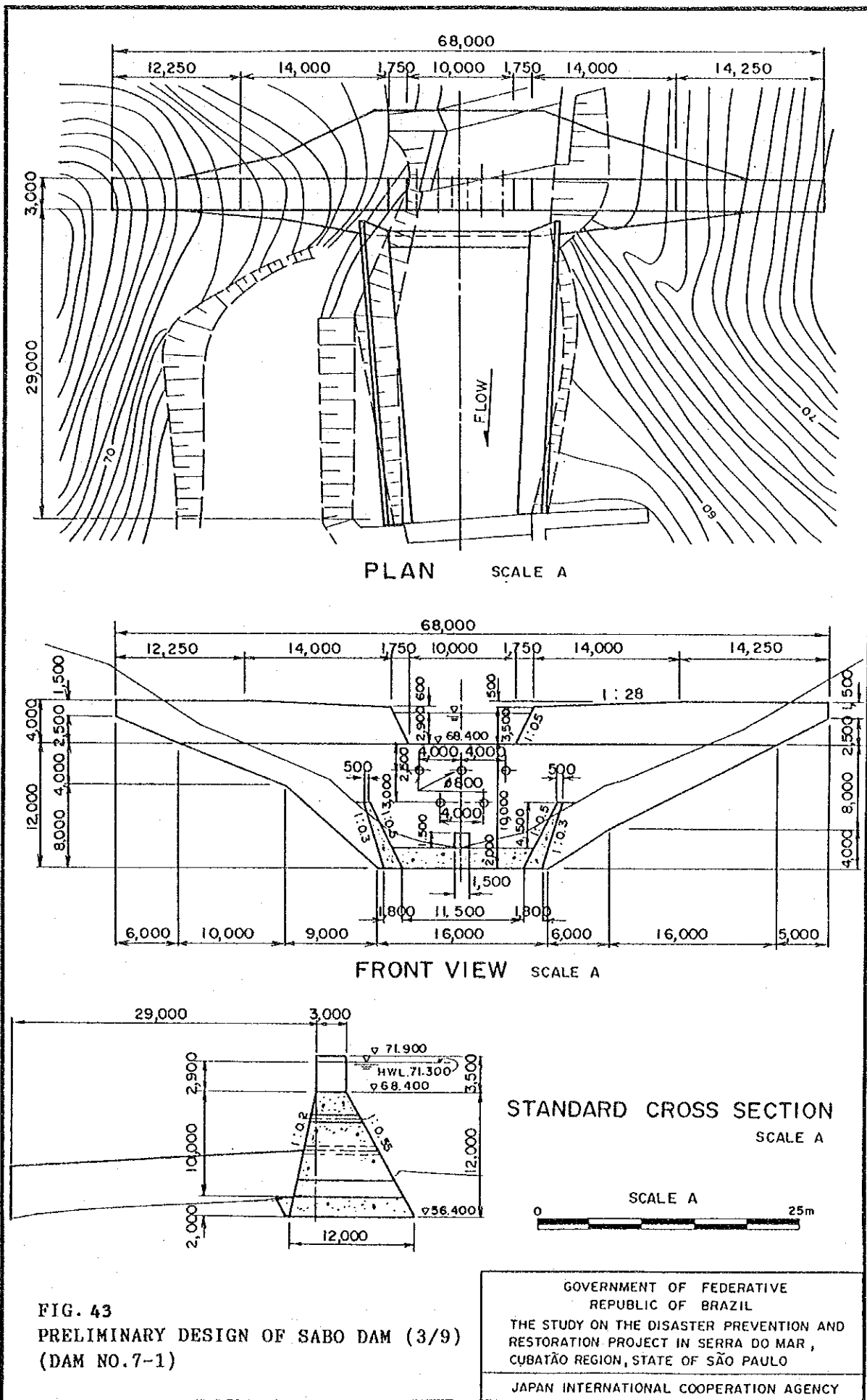


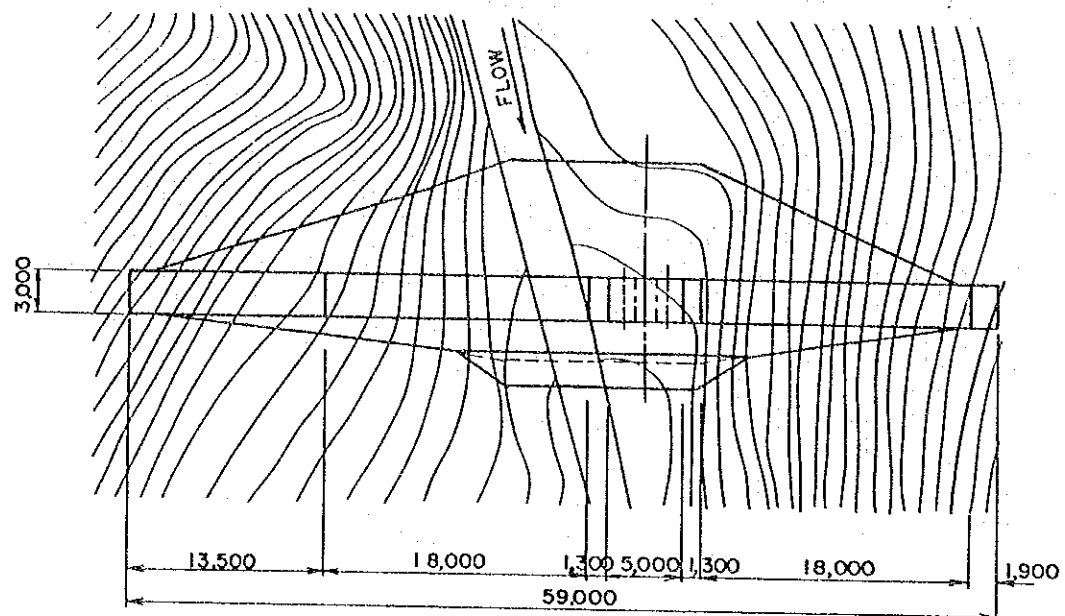


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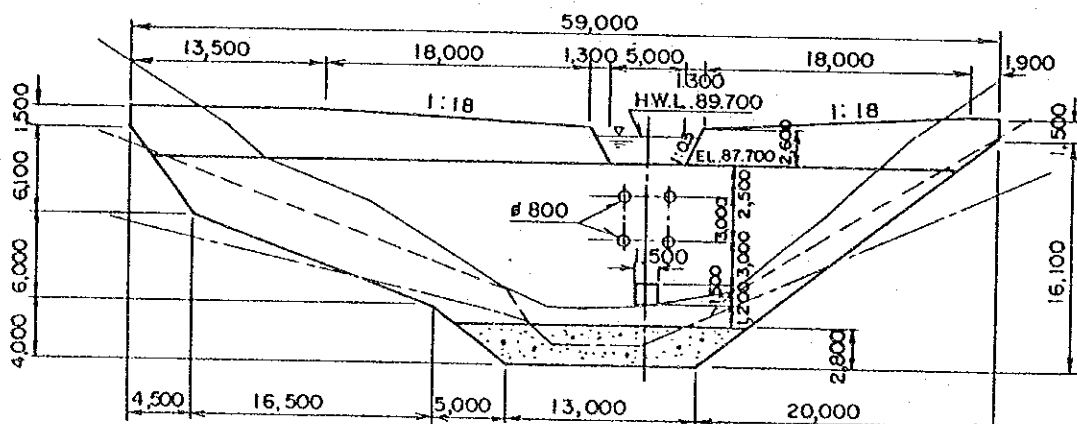


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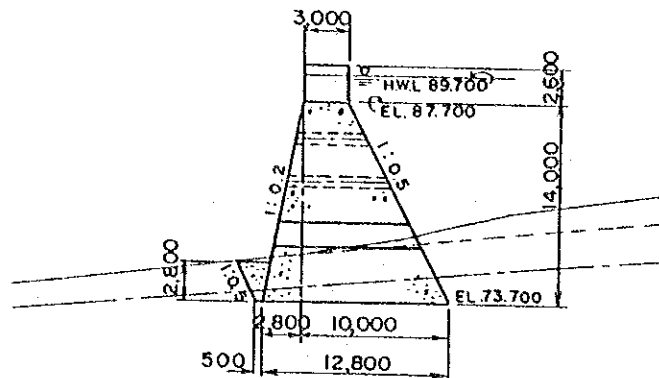




PLAN SCALE A



FRONT VIEW SCALE A



STANDARD CROSS SECTION SCALE A

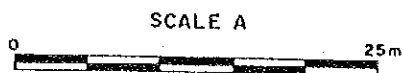
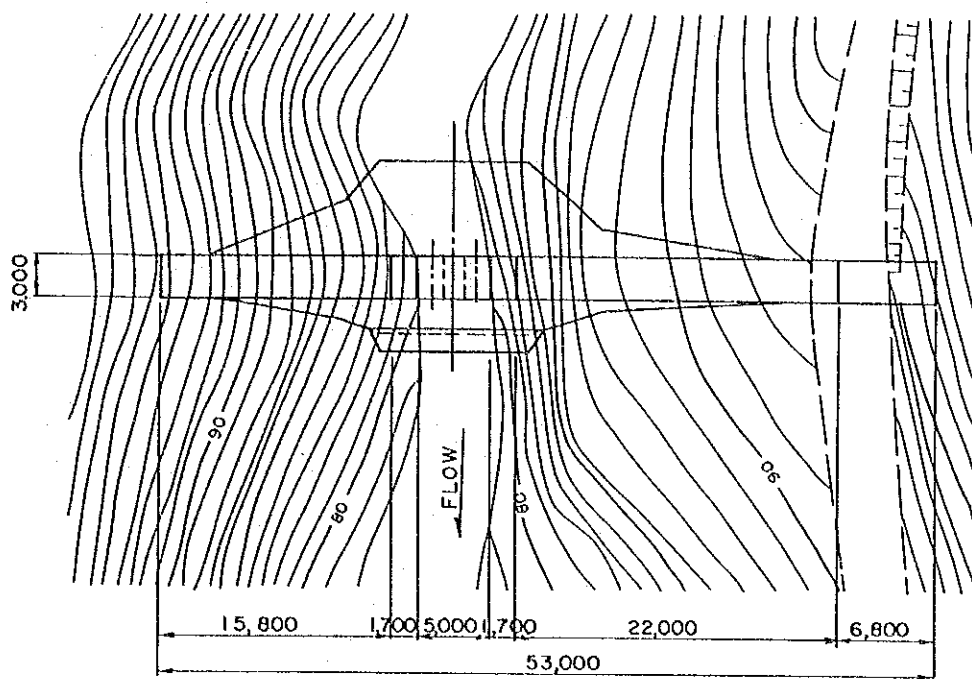
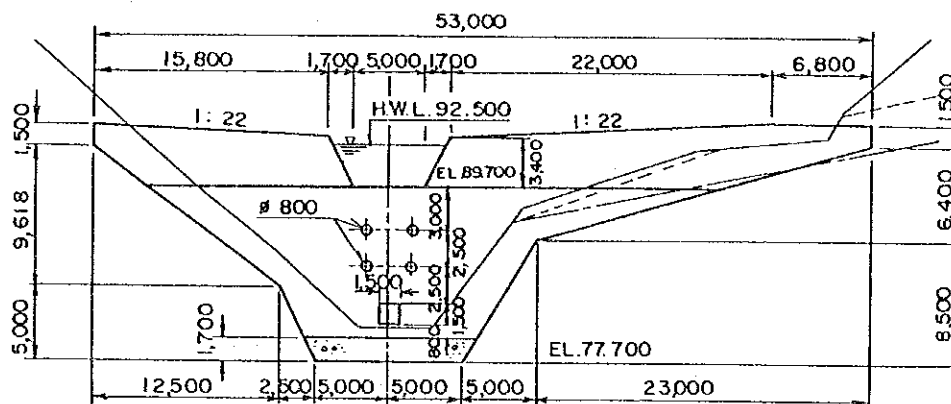


FIG. 43  
PRELIMINARY DESIGN OF SABO DAM (4/9)  
(DAM NO.7-3)

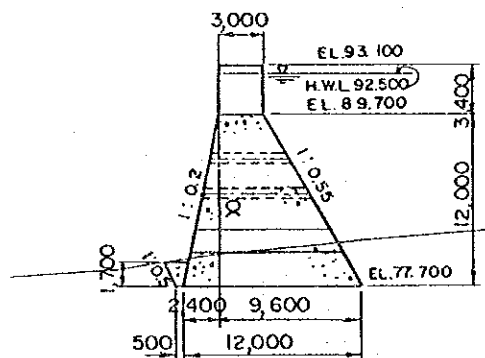
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PLAN SCALE A



FRONT VIEW SCALE A



STANDARD CROSS SECTION SCALE A



FIG. 43  
PRELIMINARY DESIGN OF SABO DAM (5/9)  
(DAM NO. 7-4)

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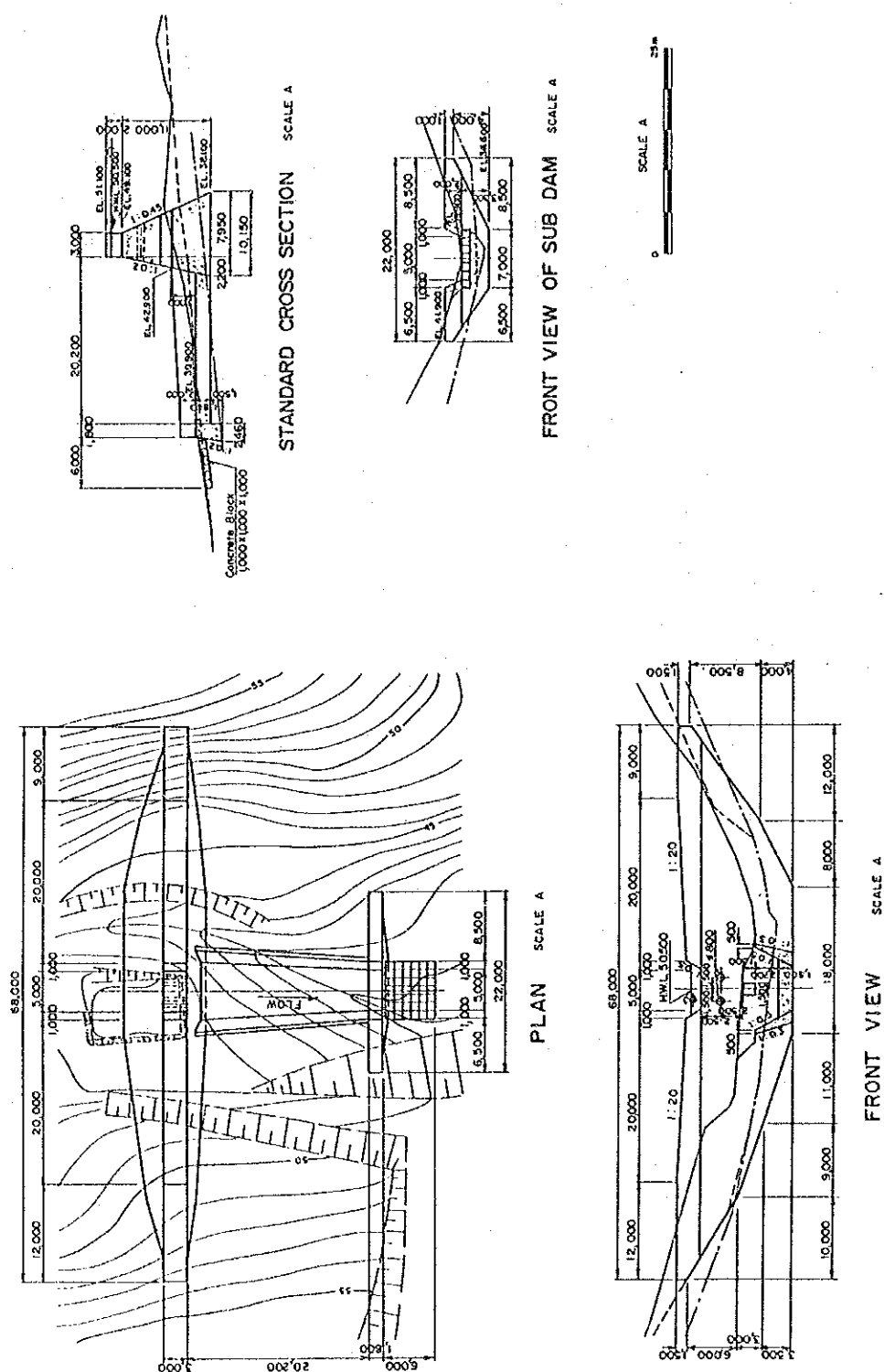
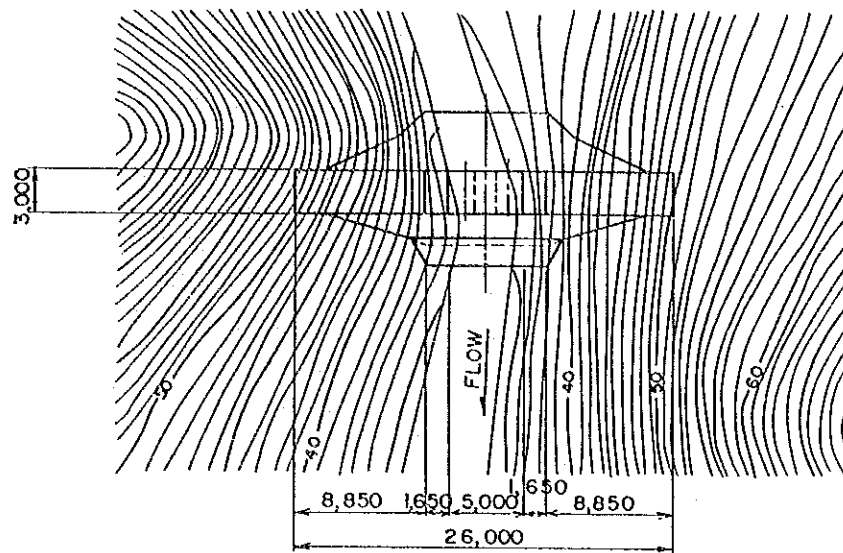
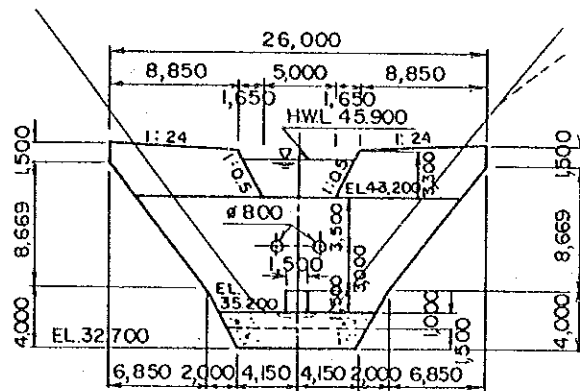


FIG.43  
PRELIMINARY DESIGN OF SABO DAM (6/9)  
(DAM NO.8-1)

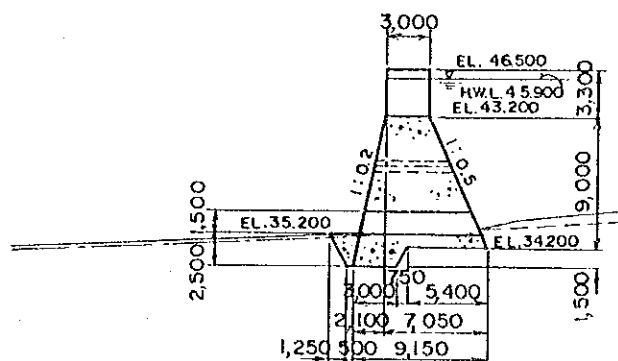
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PLAN SCALE A



FRONT VIEW SCALE A



STANDARD CROSS SECTION SCALE A

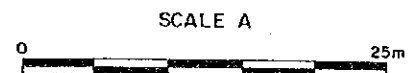


FIG. 43  
PRELIMINARY DESIGN OF SABO DAM (7/9)  
(DAM NO.10-1)

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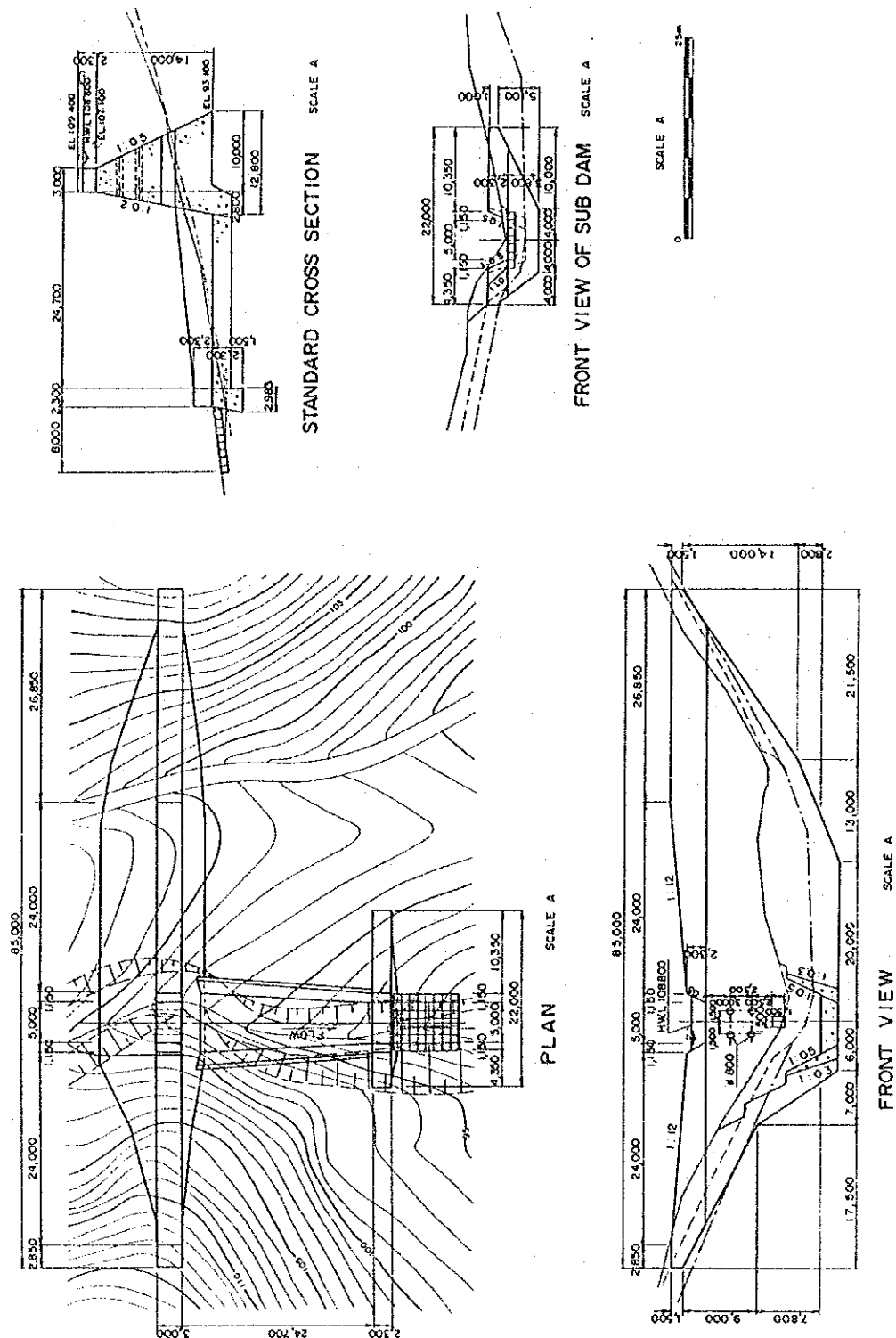


FIG.43  
PRELIMINARY DESIGN OF SABO DAM (8/9)  
(DAM NO.11-1)

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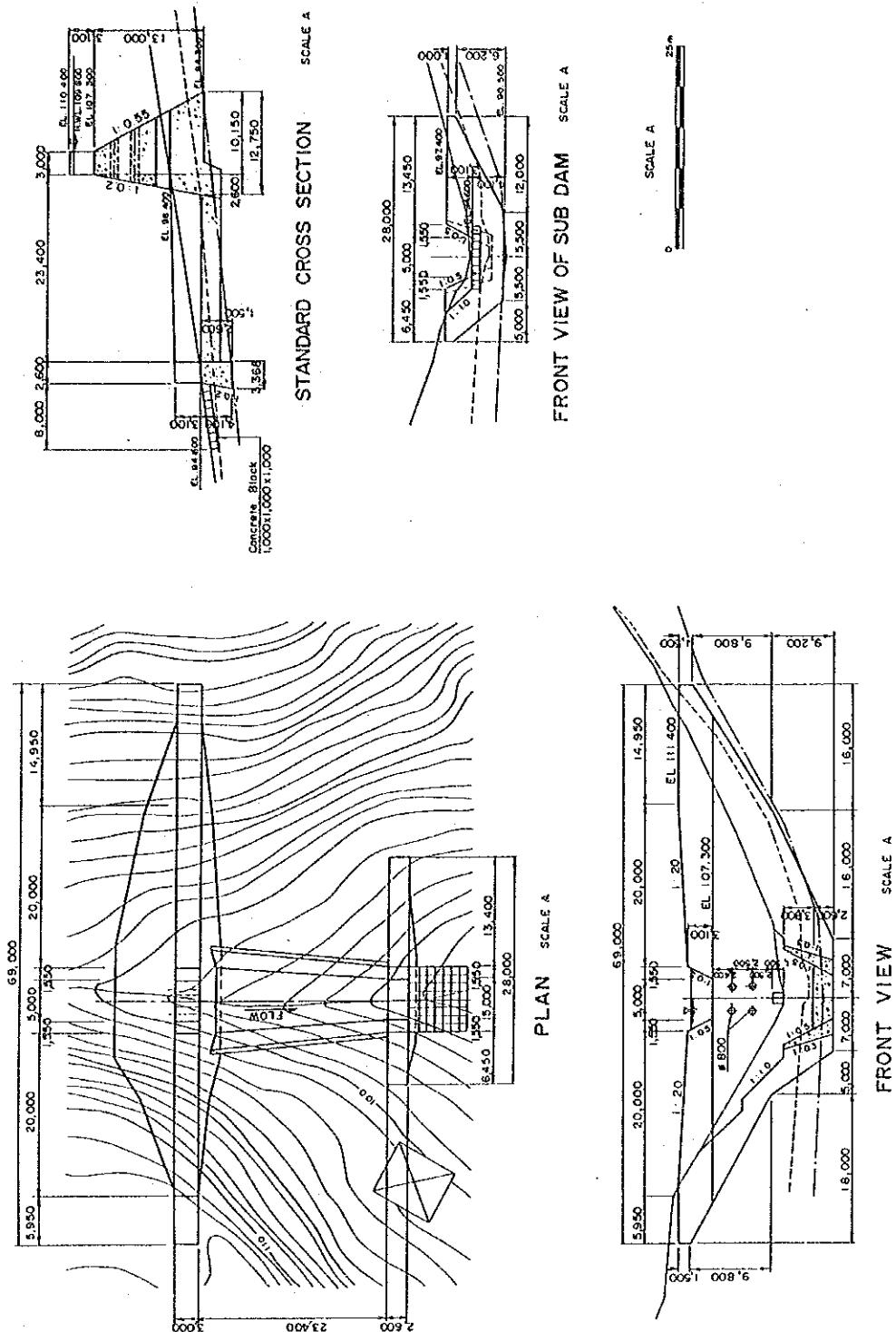


FIG.43  
PRELIMINARY DESIGN OF SABO DAM (9/9)  
(DAM NO.12-1)

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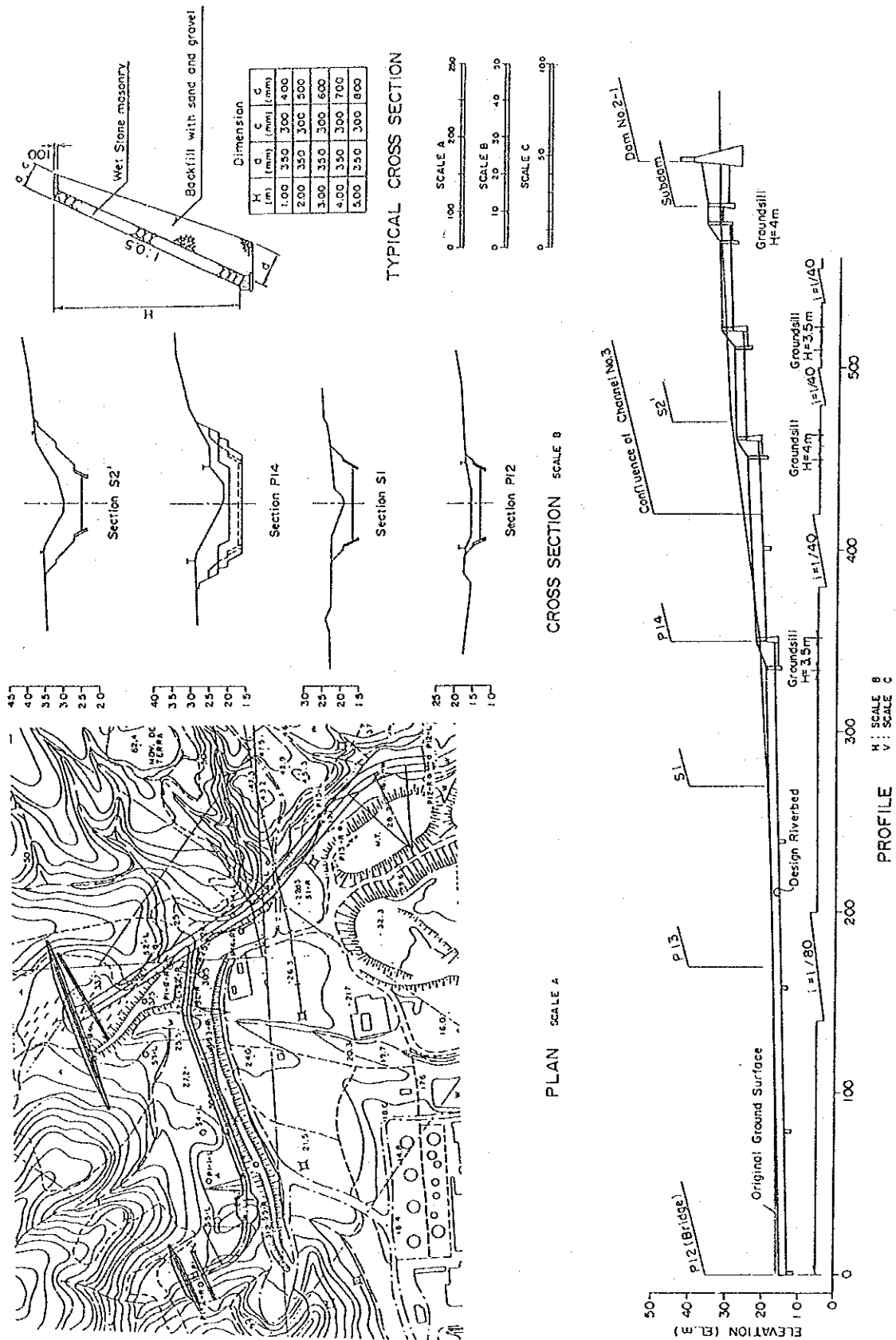
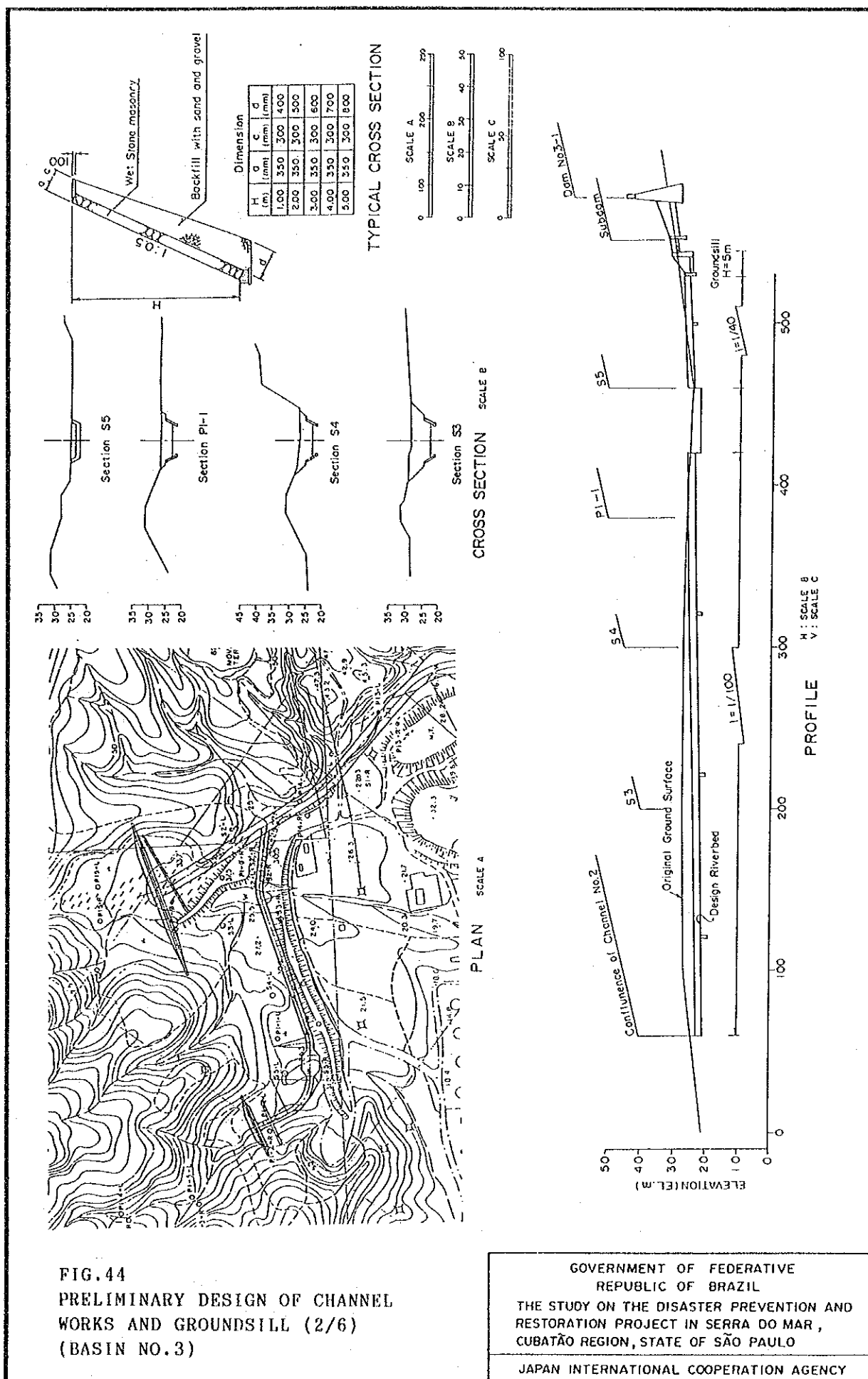


FIG.44  
PRELIMINARY DESIGN OF CHANNEL  
WORKS AND GROUND SILL (1/6)  
(BASIN NO.2)

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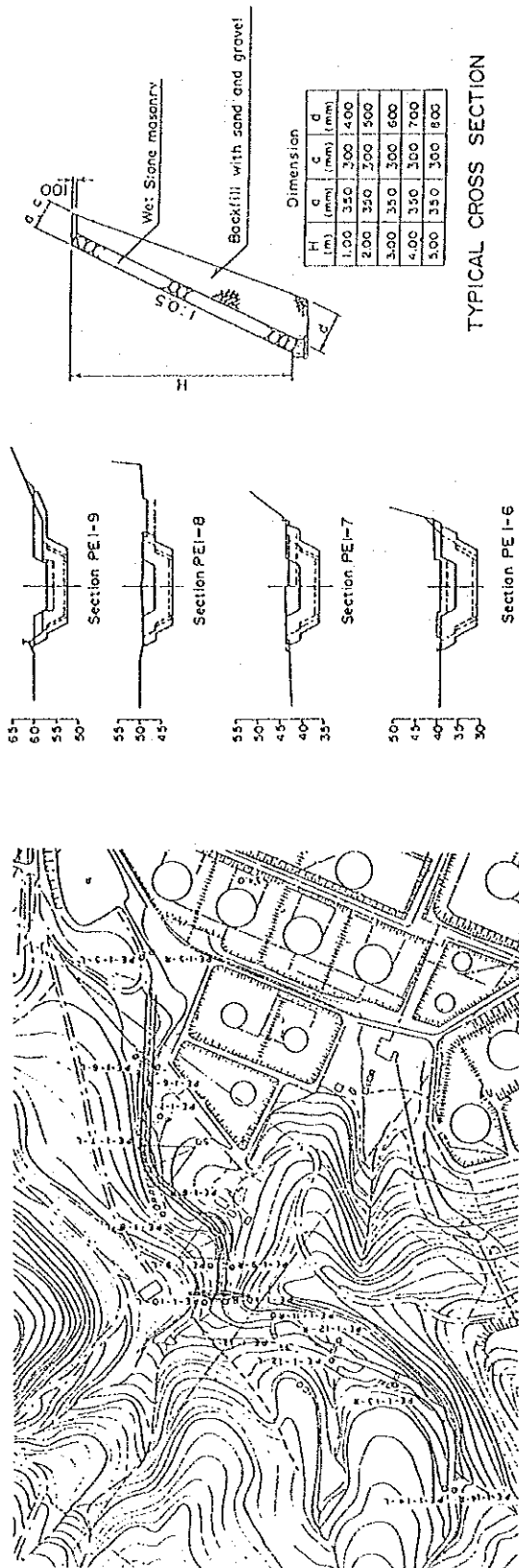
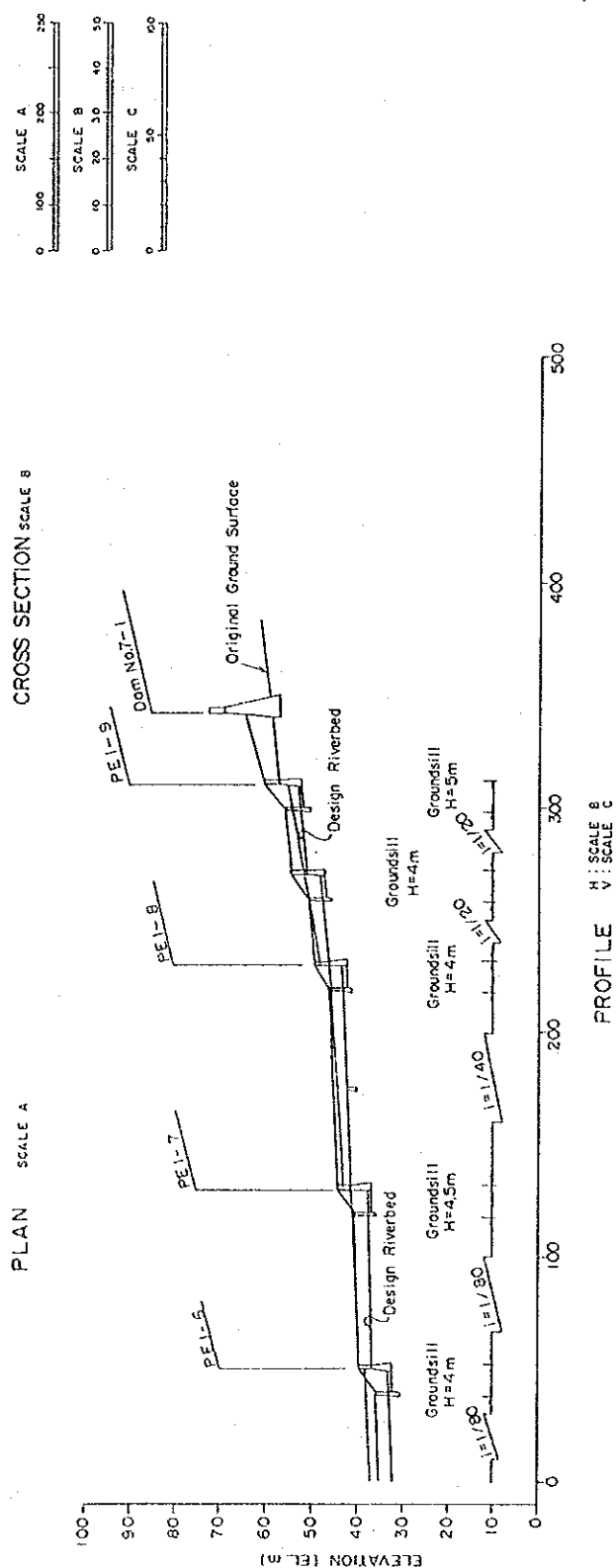


FIG.44  
PRELIMINARY DESIGN OF CHANNEL  
WORKS AND GROUNDSILL (3/6)  
(BASIN NO.7)



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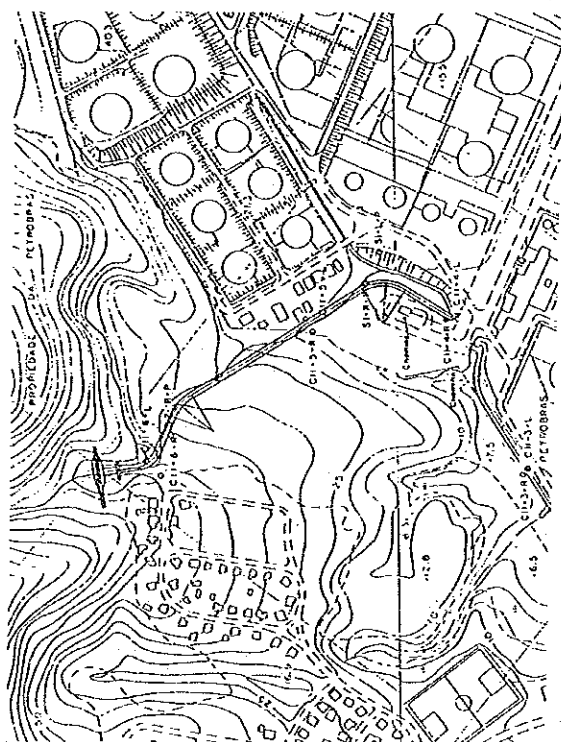
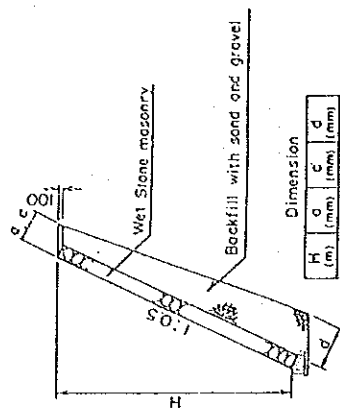
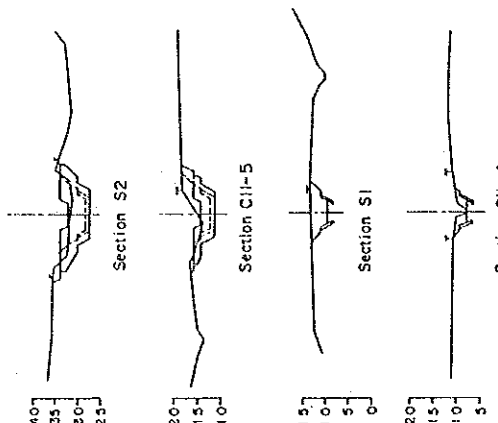


FIG.44  
PRELIMINARY DESIGN OF CHANNEL  
WORKS AND GROUNDSILL (4/6)  
(BASIN NO.8)



Dimension	b	c	d
(mm)	(mm)	(mm)	(mm)
1.00	350	300	400
2.00	350	300	500
3.00	350	300	600
4.00	350	300	700
5.00	350	300	800

TYPICAL CROSS SECTION



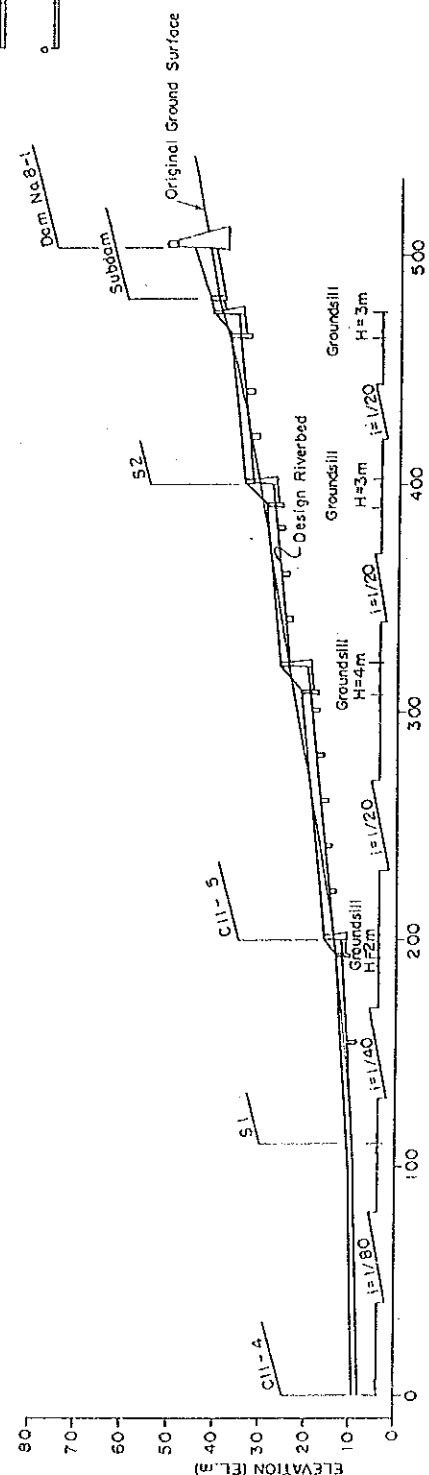
PLAN SCALE A

CROSS SECTION SCALE B

SCALE A

SCALE B

SCALE C



PROFILE  
H : SCALE B  
V : SCALE C

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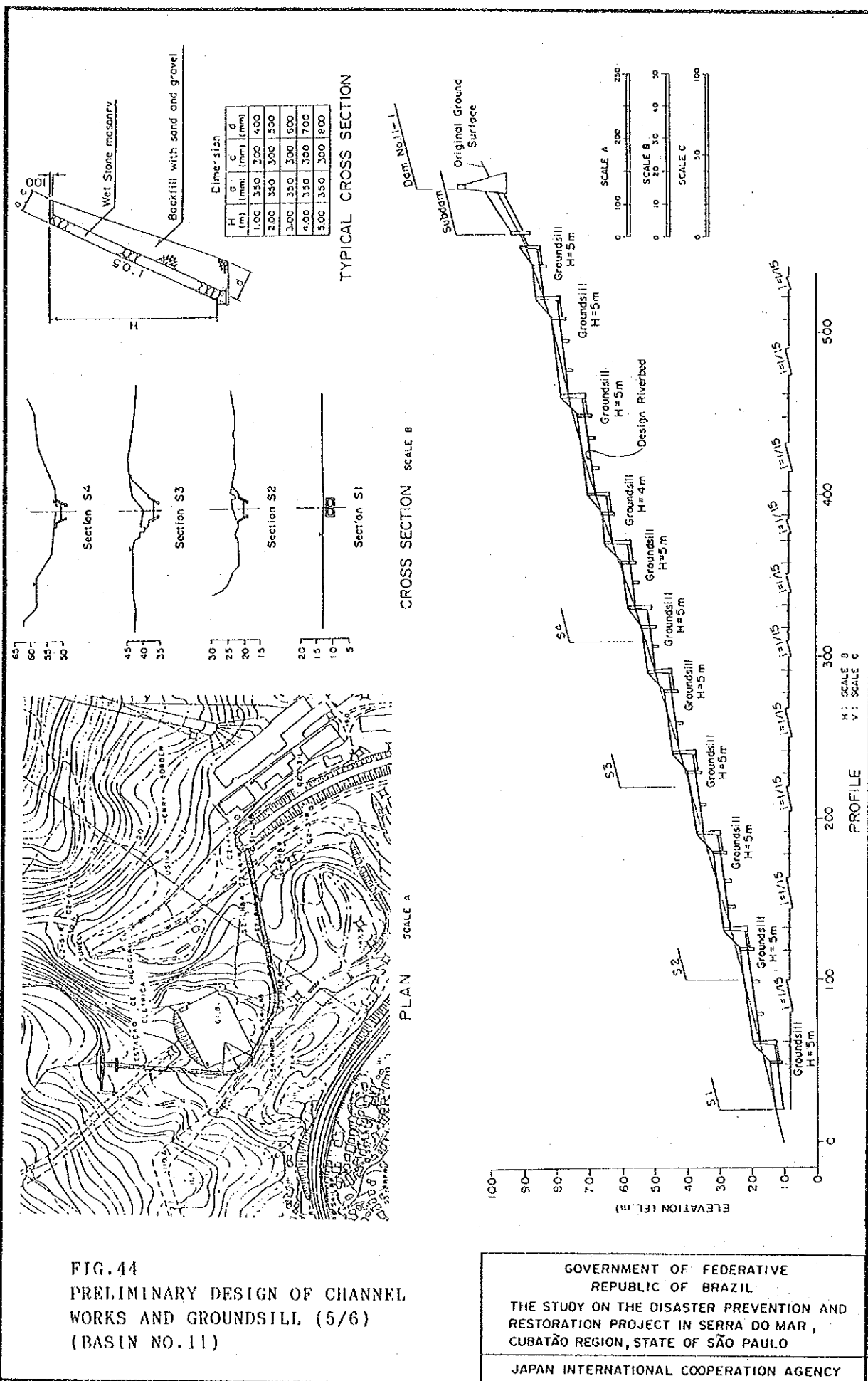
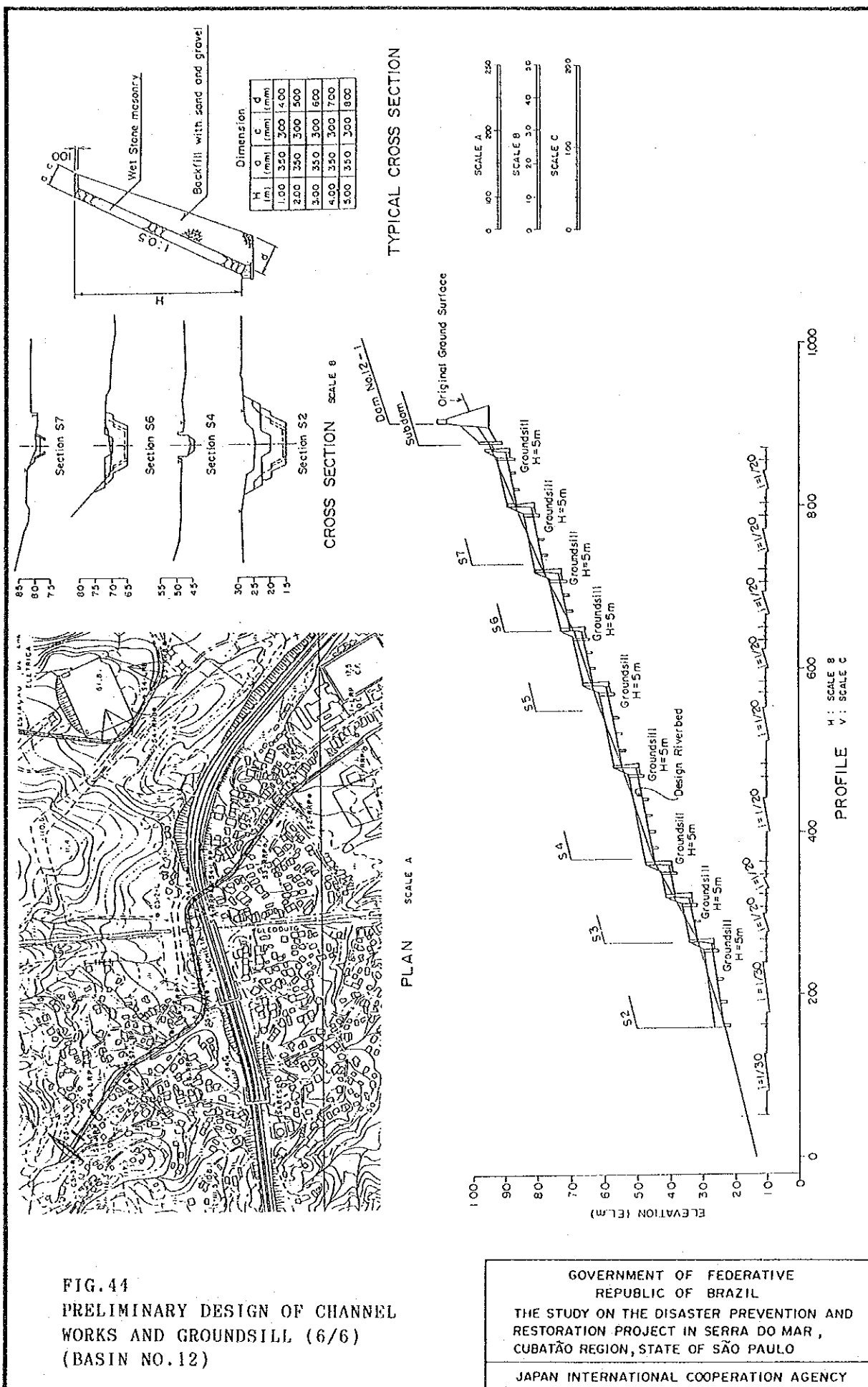


FIG. 44  
PRELIMINARY DESIGN OF CHANNEL  
WORKS AND GROUNDSTILL (5/6)  
(BASIN NO. 11)



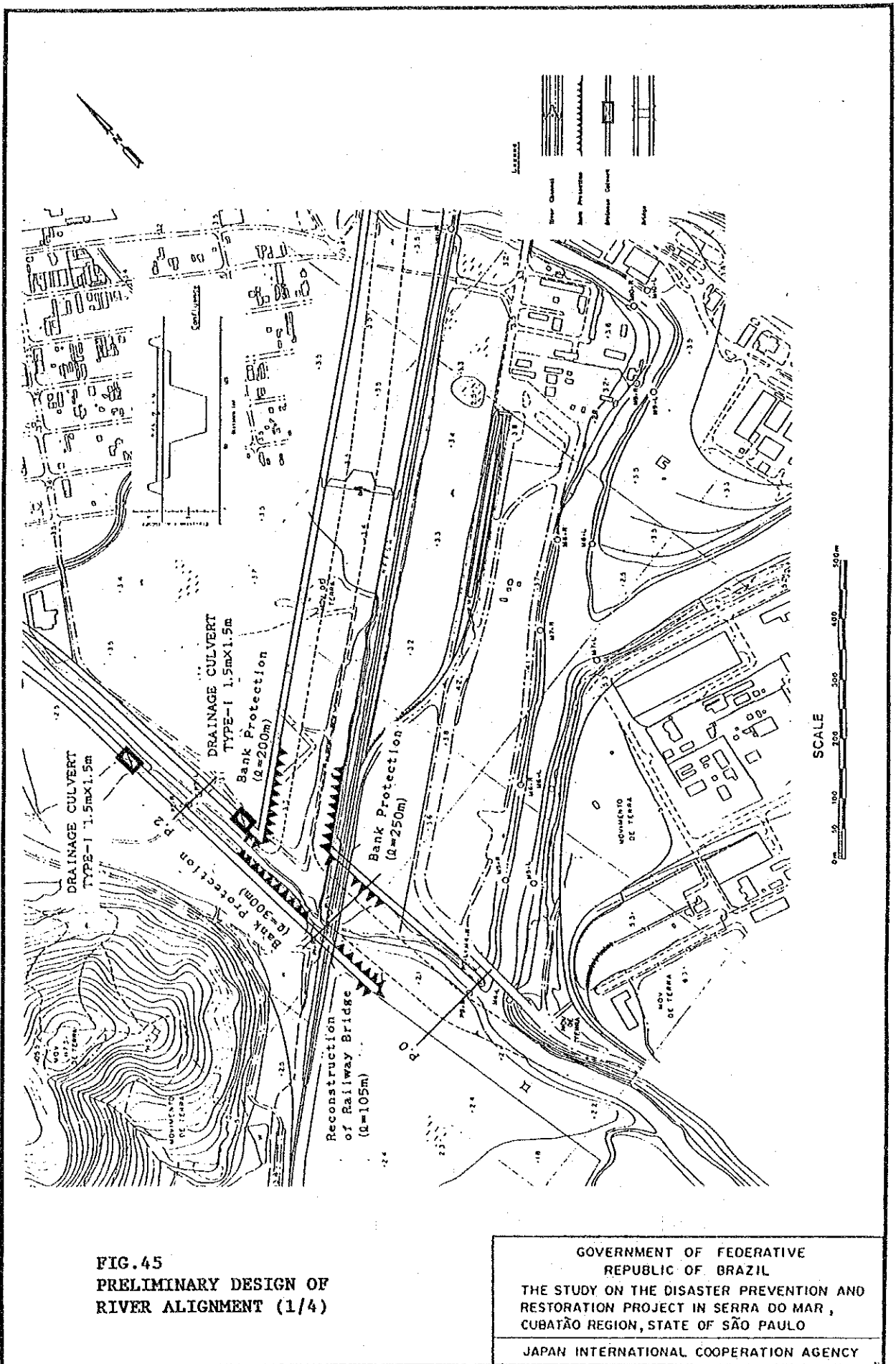


FIG.45  
PRELIMINARY DESIGN OF  
RIVER ALIGNMENT (1/4)

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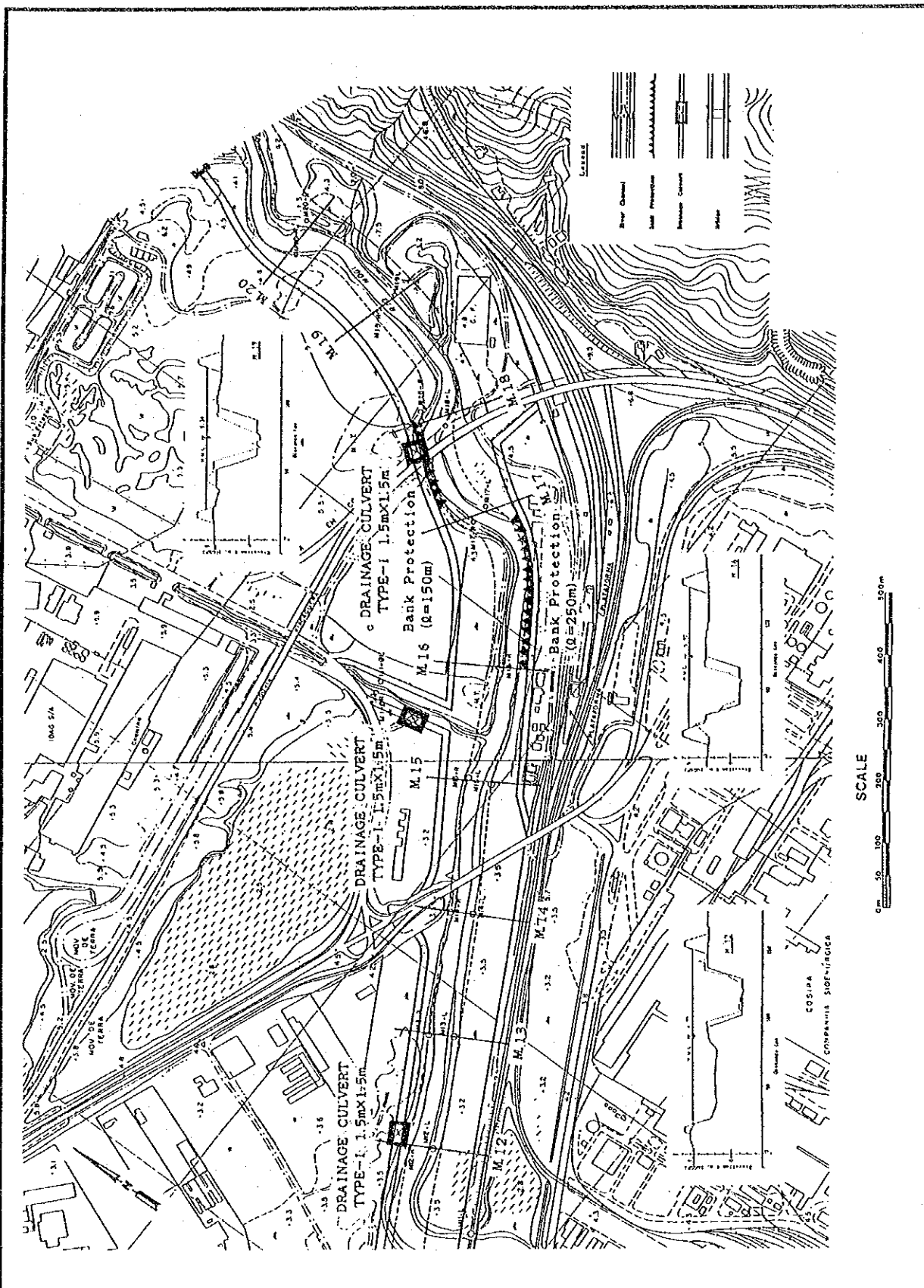


FIG.45  
PRELIMINARY DESIGN OF  
RIVER ALIGNMENT (2/4)

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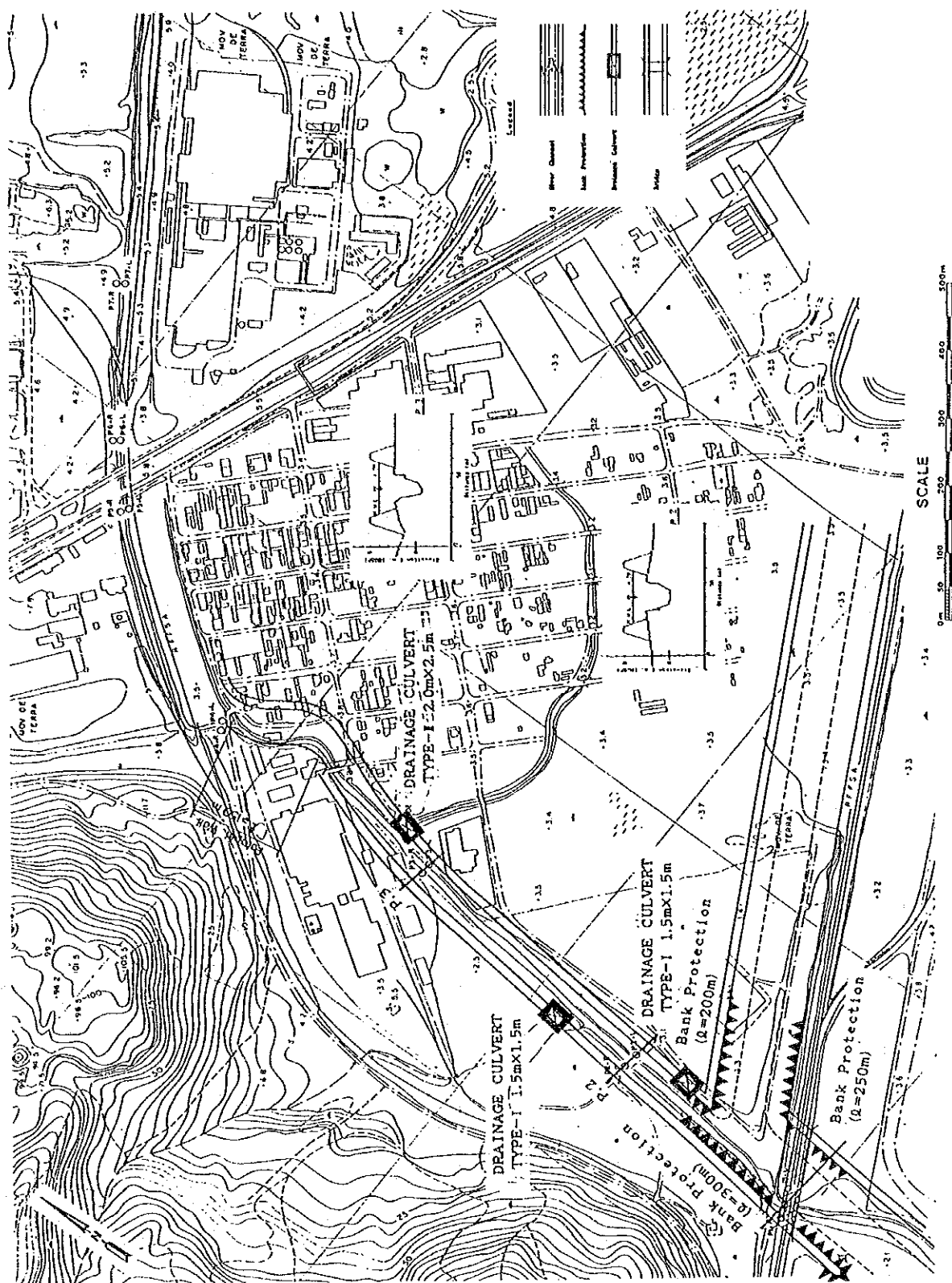
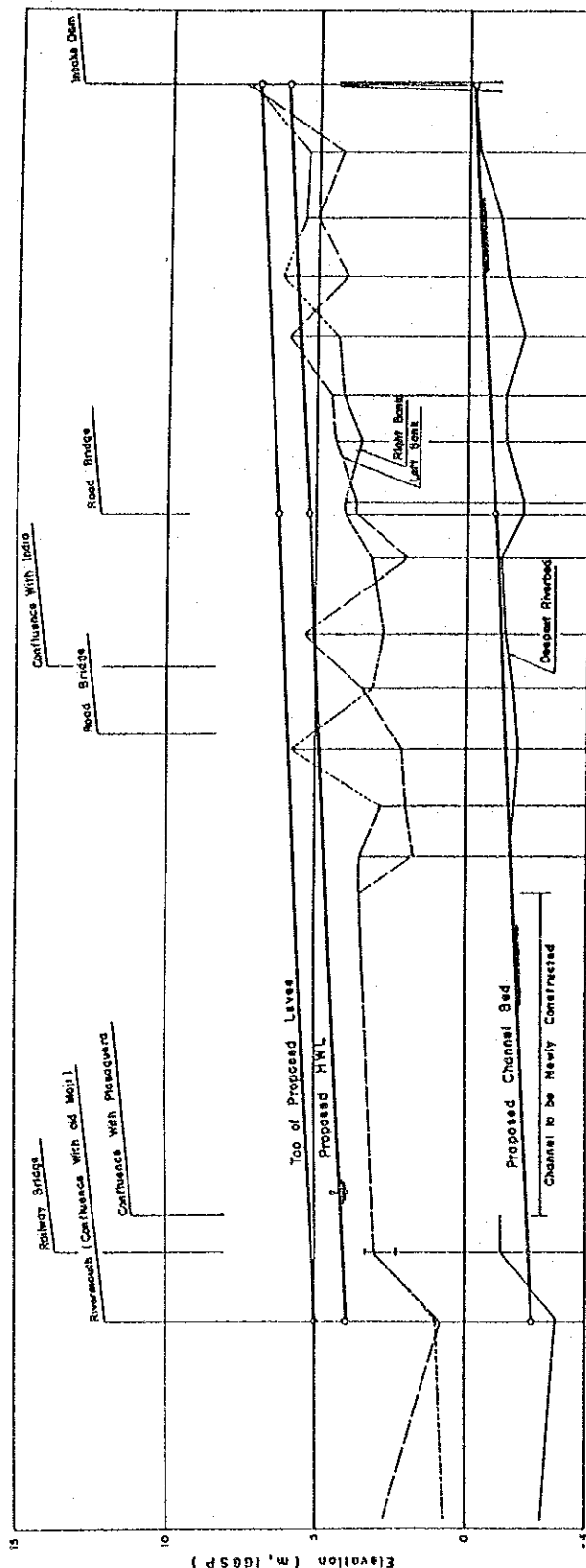


FIG.45  
PRELIMINARY DESIGN OF  
RIVER ALIGNMENT (4/4)

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# MOJI RIVER



Design Flood Discharge (m³/s)	Gradient of H.W.L.	Gradient of Channel Bed	Top of Proposed Laves (m, 1985 P)	Proposed H.W.L. (m, 1985 P)	Proposed Channel Bed (m, 1985 P)	Distances (m)	Section No.
1000	1/1850	1/1850	10.00	9.90	9.80	0	0.0
900	1/1850	1/1850	9.90	9.80	9.70	100	1.0
800	1/1850	1/1850	9.80	9.70	9.60	200	2.0
700	1/1850	1/1850	9.70	9.60	9.50	300	3.0
600	1/1850	1/1850	9.60	9.50	9.40	400	4.0
500	1/1850	1/1850	9.50	9.40	9.30	500	5.0
400	1/1850	1/1850	9.40	9.30	9.20	600	6.0
300	1/1850	1/1850	9.30	9.20	9.10	700	7.0
200	1/1850	1/1850	9.20	9.10	9.00	800	8.0
100	1/1850	1/1850	9.10	9.00	8.90	900	9.0
0	1/1850	1/1850	9.00	8.90	8.80	1000	10.0

FIG.46  
PRELIMINARY DESIGN OF  
RIVER PROFILE

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