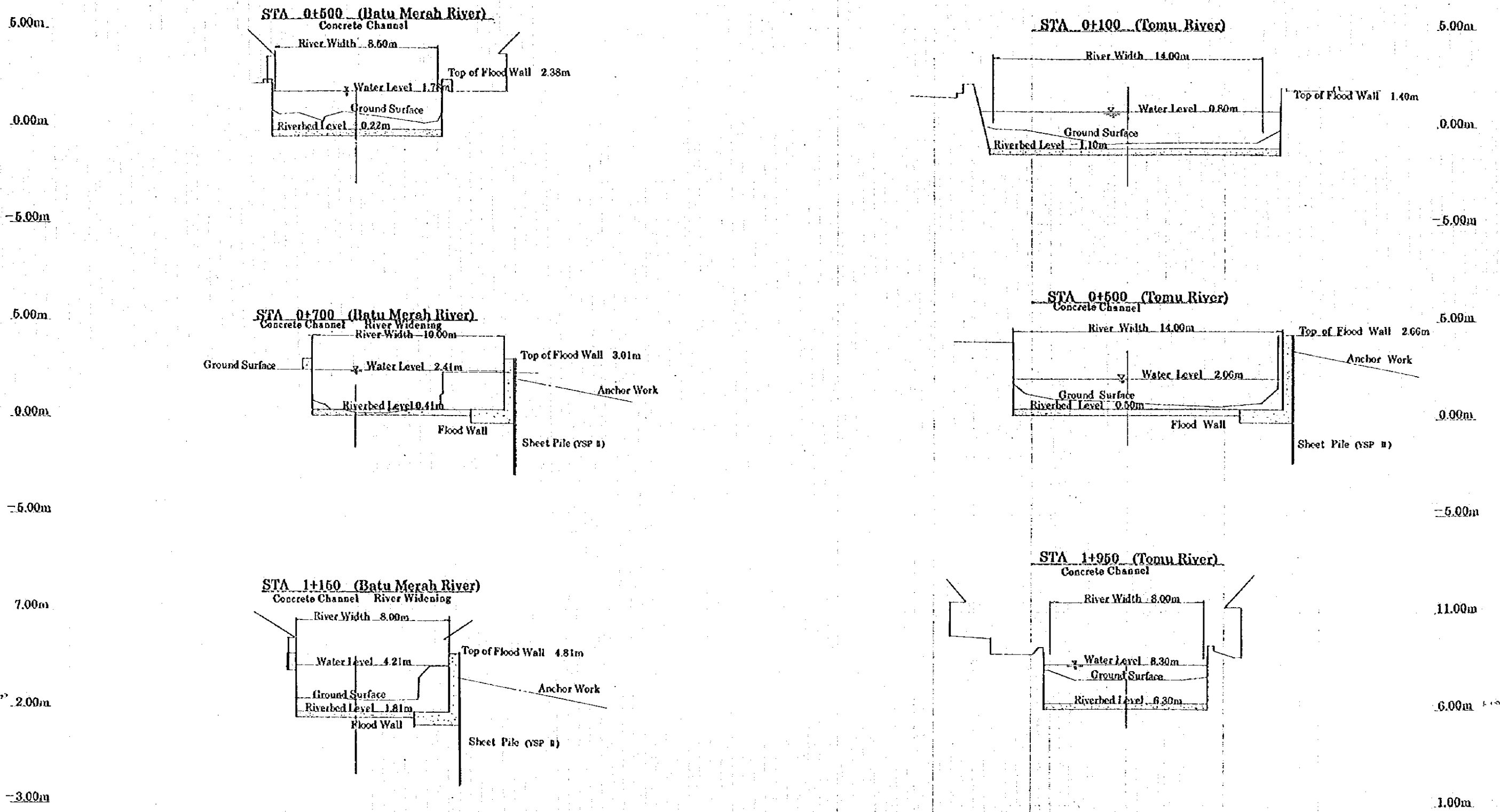
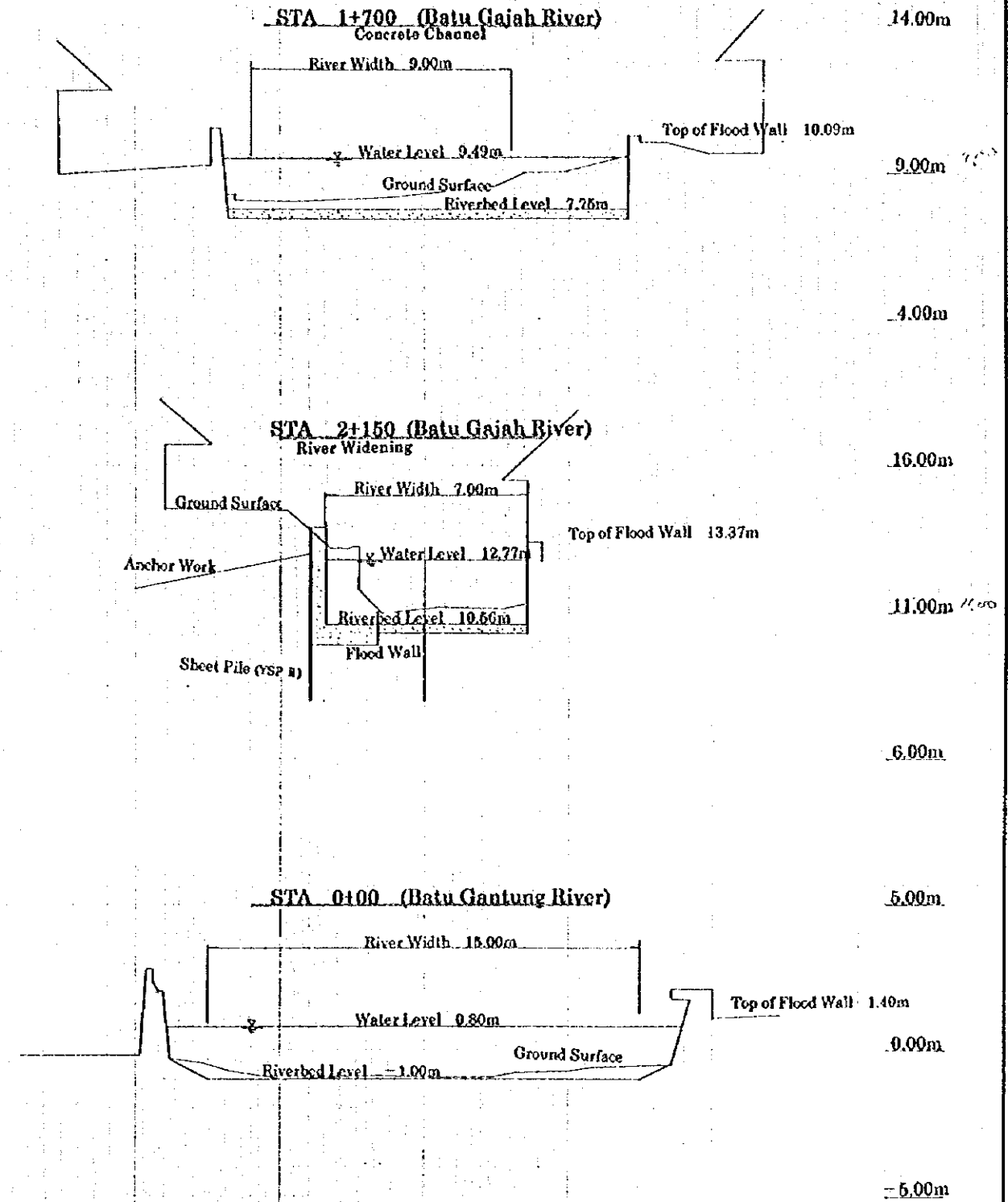
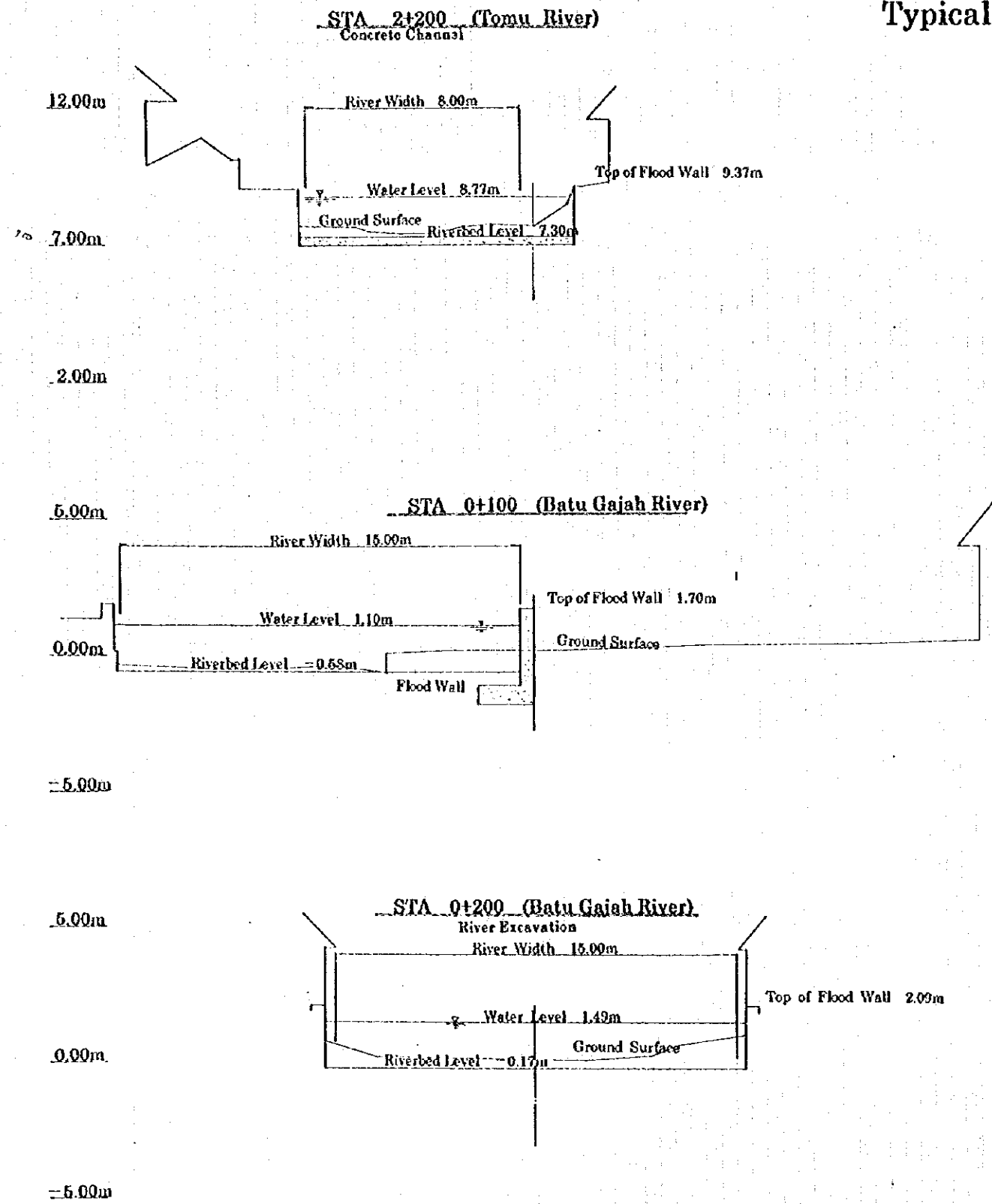


Typical Cross Section (II)



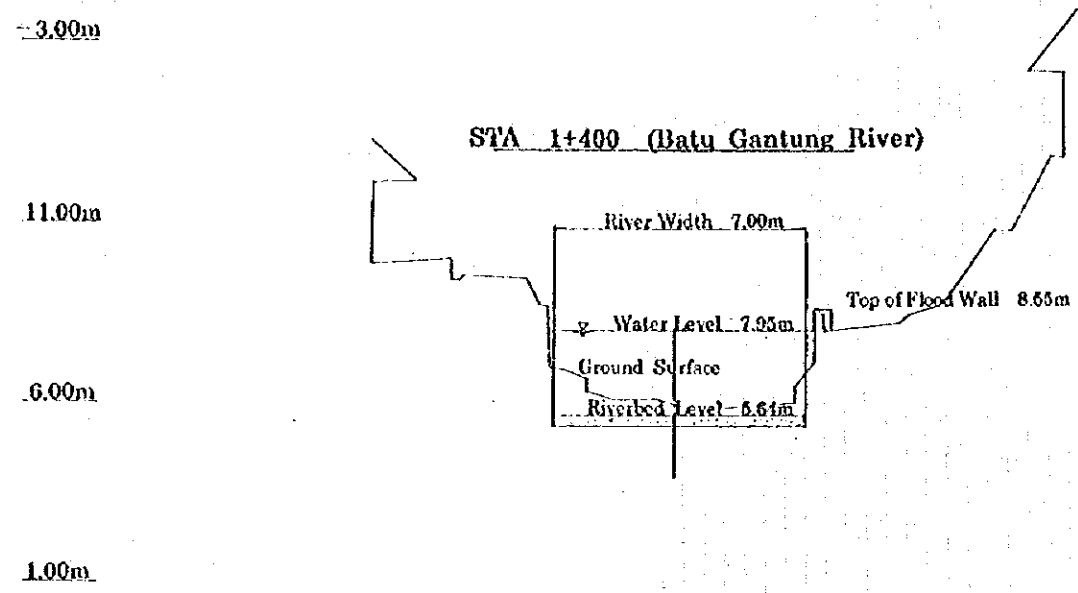
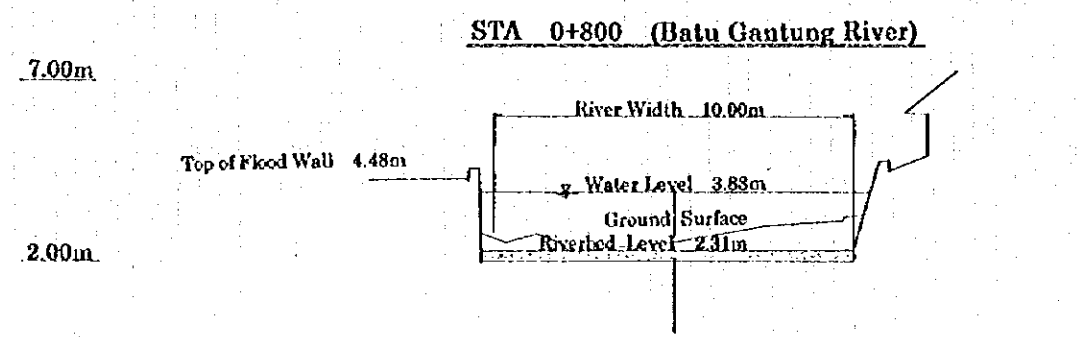
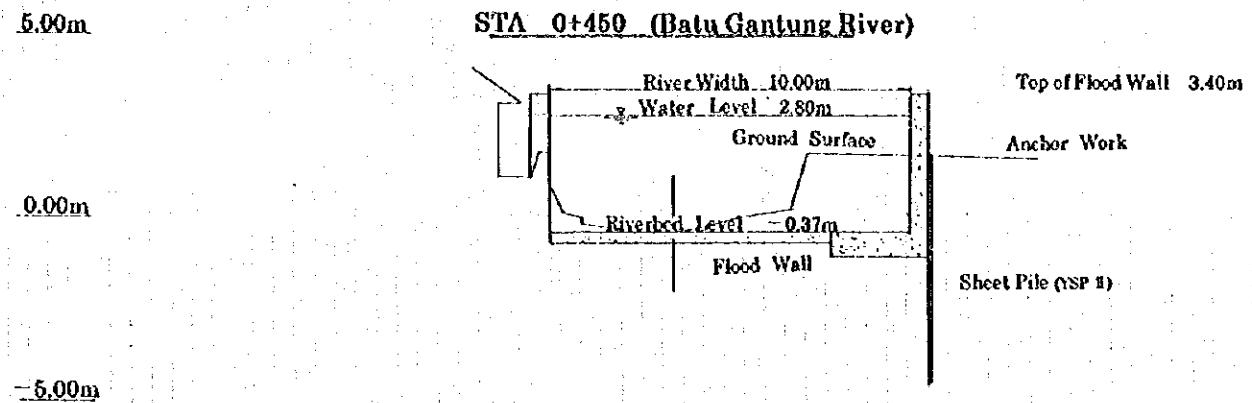
JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/100
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 12
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA		DATE: October 1997
River Improvement Works Typical Cross Section II		
DESIGNED BY:	APPROVED BY:	PLOTTED BY:


Typical Cross Section (III)

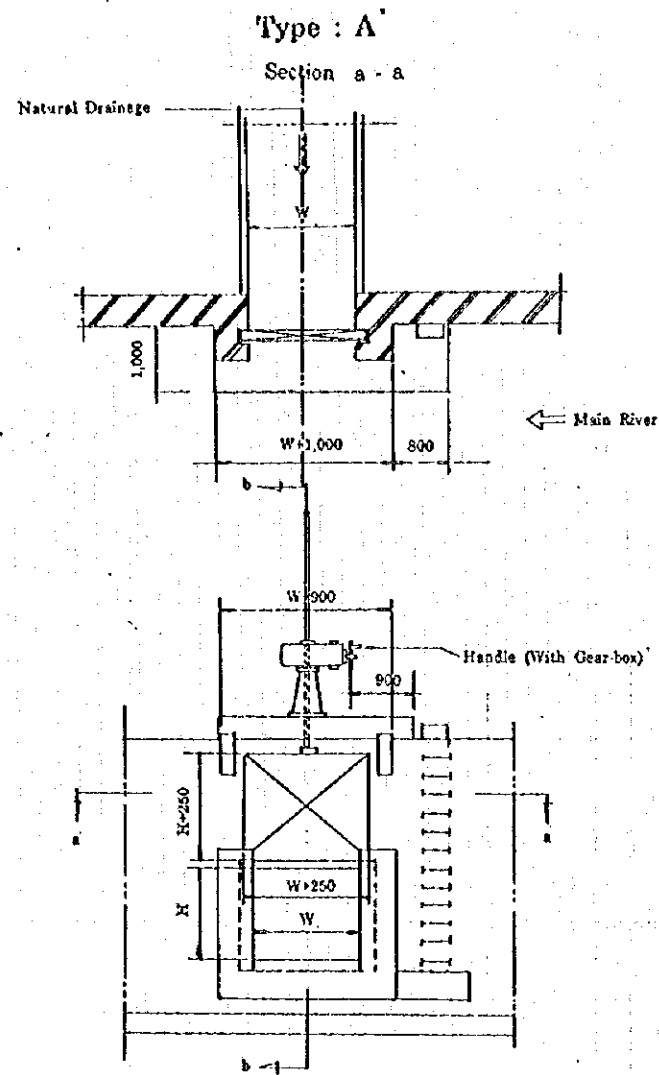


JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE:
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		1/100
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA		DRAWING 13
River Improvement Works Typical Cross Section III		DATE: October 1997
CHECKED BY:	APPROVED BY:	PLOTTED BY:

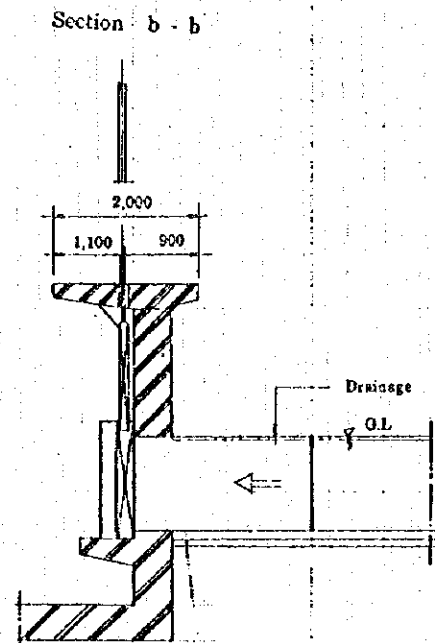
Typical Cross Section (IV)



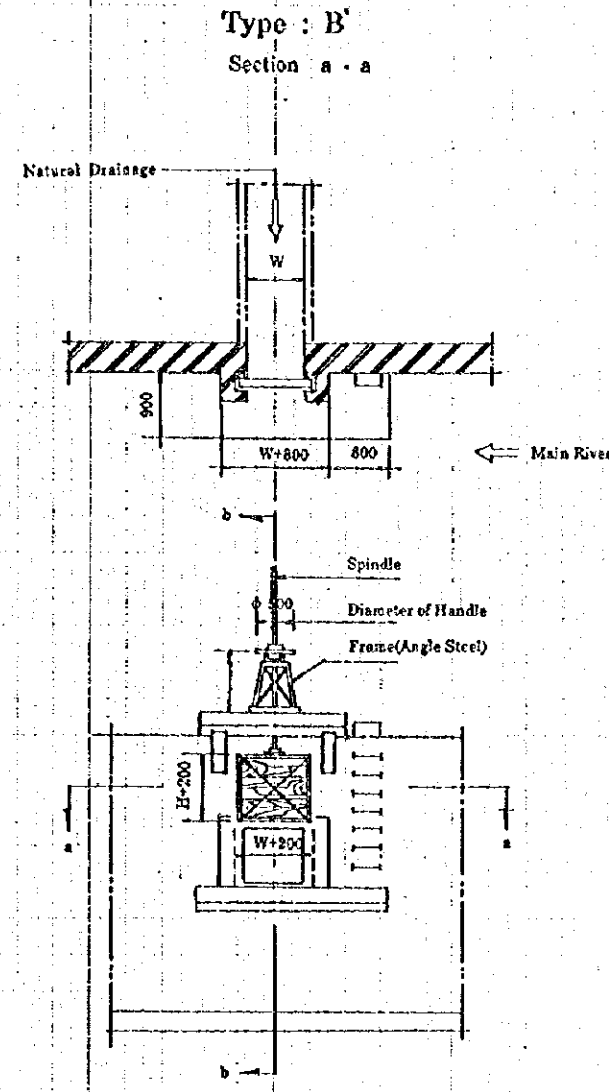
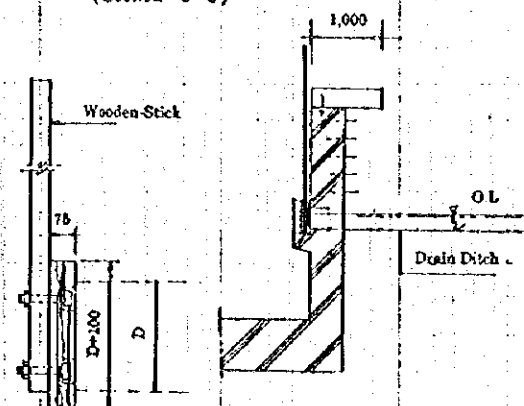
JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/100
	DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS	
	DRAWING 14	
THE STUDY ON FLOOD CONTROL FOR ANBON AND PASAHARI AREA		DATE: October 1997
River Improvement Works Typical Cross Section IV		
CHECKED BY:	APPROVED BY:	PLOTTED BY:



Typical Drawing
(Drainage Backflow-Prevention Gate)
S = 1/50



Type : C
(Section b - b)



Type of Drainage Backflow-Prevention Gate

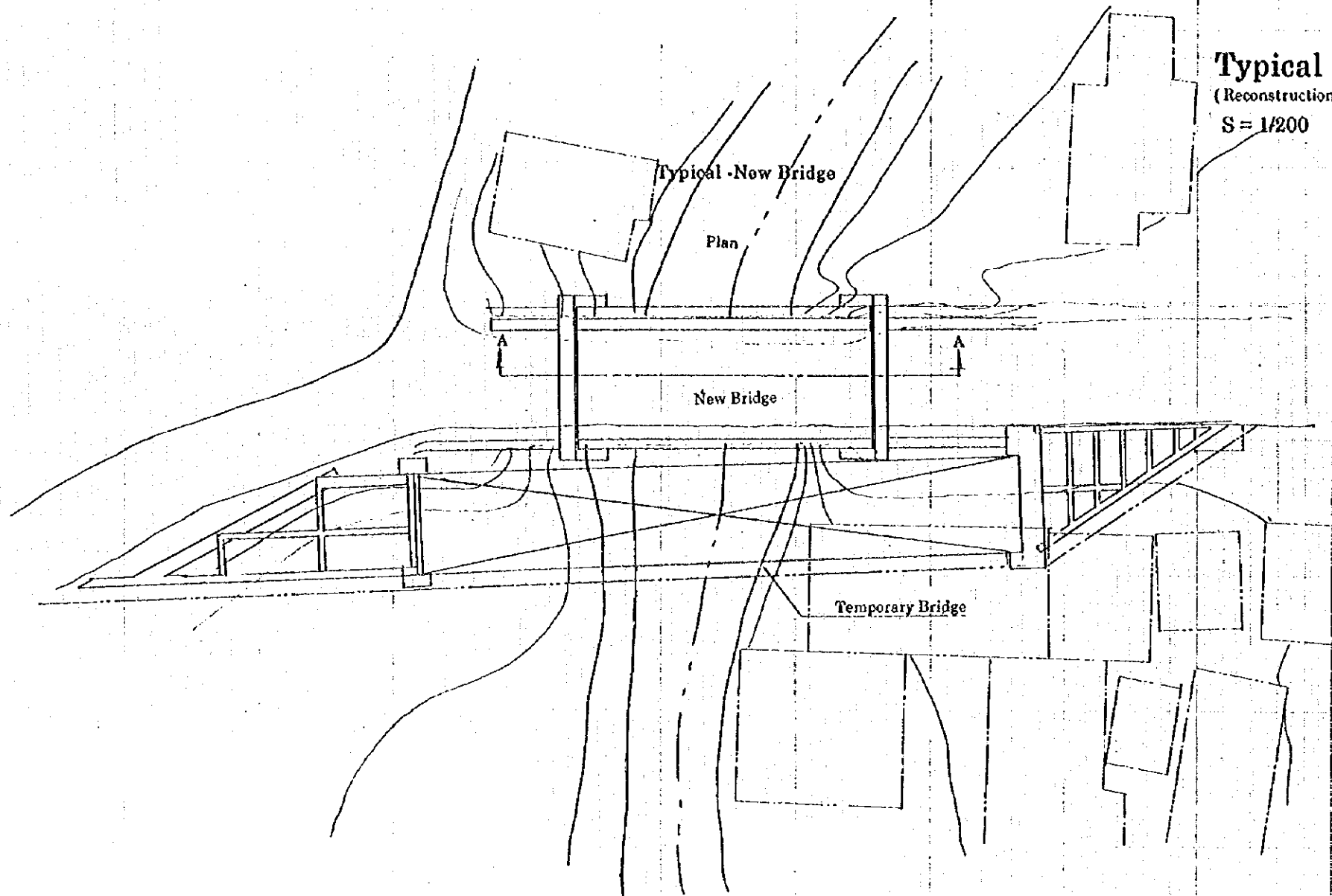
No	Batu River			Tera Merah River			Tana Ruar			Batu Cokoh River			Batu Gantung River		
	Distance	Site	Type	Distance	Site	Type	Distance	Site	Type	Distance	Site	Type	Distance	Site	Type
1	0+42.8	L	B	0+130	L	B	0+216	L	B	0+105.14	L	C	0+140	R	B
2	0+430.1	L	B	0+130	R	A	0+227.6	R	B	0+114	L	C	0+188	R	B
3	0+532.5	L	A	0+130	L	A	0+259	L	B	0+145.55	L	B	0+230	R	B
4	0+637.5	L	B	0+221	L	B	0+107.8	L	B	0+192.56	L	B	0+429	R	B
5	0+642.5	L	B	0+304	L	B	0+118.5	L	B	0+411.40	R	B	0+33.5	R	A
6	0+1413	R	B	0+334	R	B	0+113.2	R	B	0+328.10	L	B	0+370	L	A
7	0+291.5	R	B	0+439	L	A	0+638	R	B	0+338.15	L	B	1+261	L	B
8	0+298.1	R	B	0+474.8	L	A	0+771	R	B	0+201.19	L	A	1+006	L	B
9	0+285.5	R	B	0+548	L	B	0+816	R	B	0+292.13	L	A	1+253	R	A
10	1+054.0	R	B	0+648.75	L	B	1+122.5	L	R	1+000	R	B			
11	1+108.4	R	B	0+654.25	L	B	1+122.5	R	B	1+105.4	L	B			
12	1+151.6	R	B	0+756.1	L	D	1+158.9	L	B	1+485.40	L	A			
13	1+211.0	R	B	1+433.9	R	B	1+276.5	L	B	1+490.20	R	B			
14	1+304.9	R	B	1+442.1	L	B	1+427.6	R	B	1+524.20	R	B			
15	1+361.0	R	CxJ				1+430	L	B	1+536.30	L	B			
16	1+452.4	L	A				2+050	L	B	1+935.30	R	B			
17							2+130	L	B	1+742.8	L	B			
18							2+130	R	B	1+563	L	A			
19							2+427	L	A	2+063.6	L	B			
20									2+027.75	L	B				
21									2+154.25	L	B				
22									2+194.52	R	B				
23									2+280.30	R	B				
24									2+011.40	L	B				
25									2+251.90	L	B				

Type A : 10m < Drainage Width, Type B : 0.5m < Drainage Width < 10m, Type C : 0.5m > Drainage Width

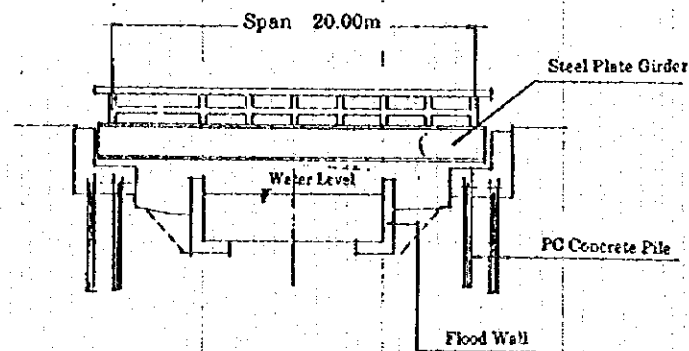
Material ; Type A: Steel
Type B: Wood
Type C: Wood

JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE :
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 15
THE STUDY ON FLOOD CONTROL FOR ANSON AND PASAHARI AREA River Improvement Works Drainage Back-flow Prevention Gate		DATE : October 1957
DESIGNED BY :	APPROVED BY :	PLOTTED BY :

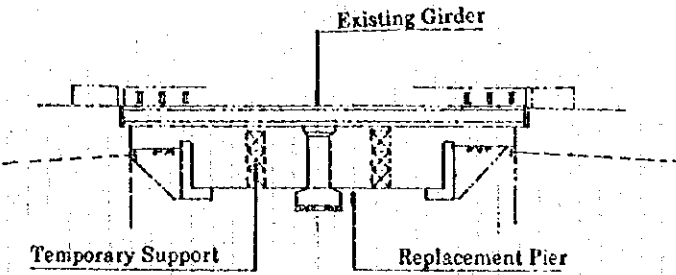
Typical Drawing
(Reconstruction of Main Bridge)
S = 1/200



Section of New Bridge
Section A-A



Typical Bridge Reconstruction
(A-A)

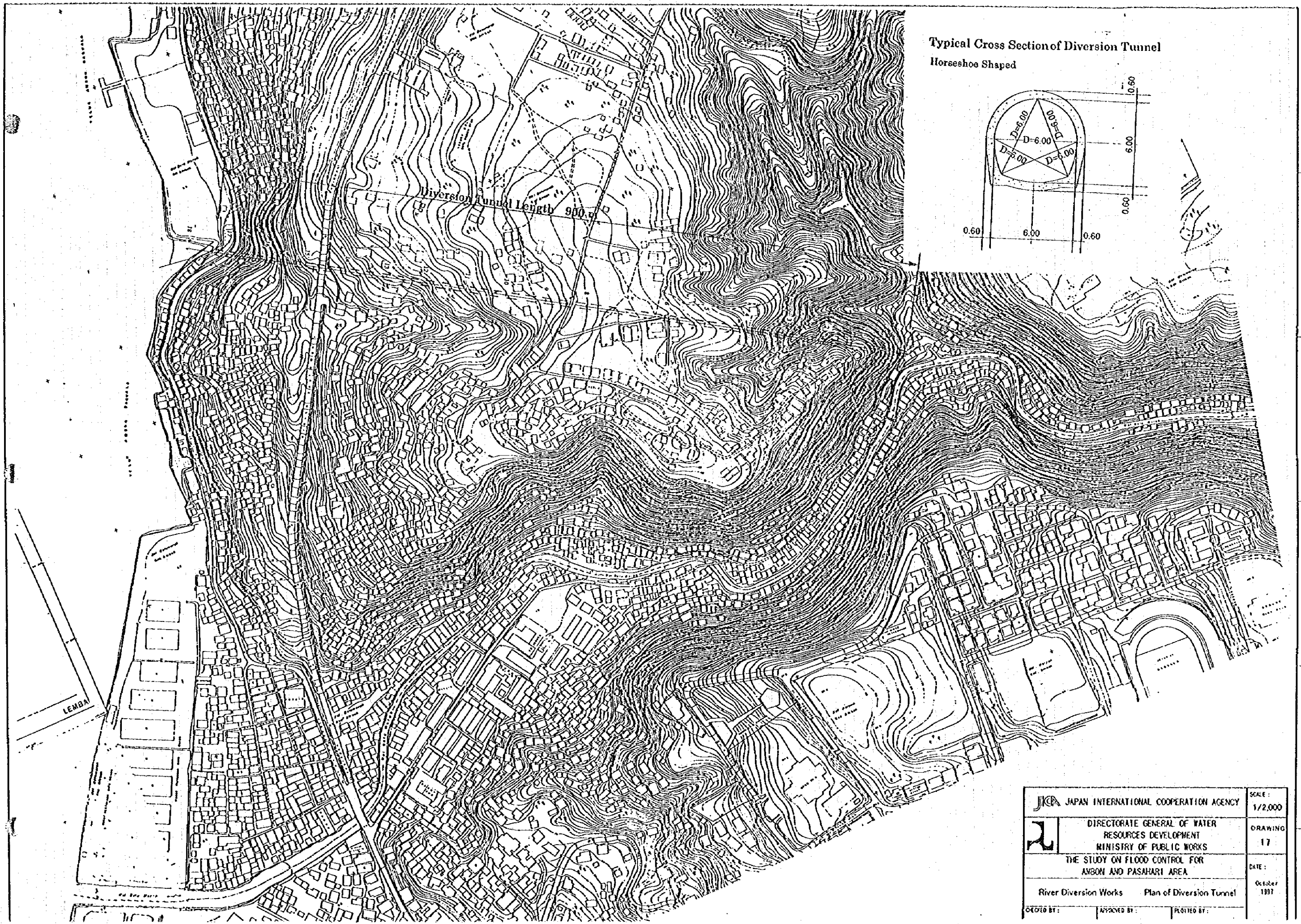


Main Bridges in AMBON Streets

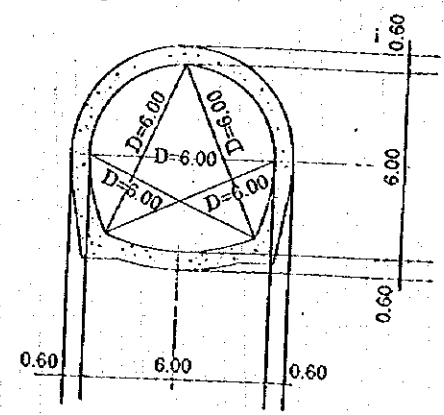
River Name	Distance	Existing Bridge Condition			Type	Note
		Width(m)	Length(m)	Pier		
Raha	1+553.6	4	21	1	New	Excavation of Abutment Site
Bata Merah	0+386	9 (7+1x2)	19	1	Reconstruction	Temporary Support is possibility
	0+406.1	9 (7+1x2)	22	1	Reconstruction	Temporary Support is possibility
Toma	1+033.1	10 (8+1x2)	16	1	New	Can not use Temporary Support because Bridge is 2 span/2 Girder
	1+403.6	9 (7+1x2)	34	2	Reconstruction	Temporary Support is possibility
Bata Gajah	0+750	6.5 (6.6+1x2)	28.6	1	New	Can not use Temporary Support because Bridge is 2 span/2 Girder
Bata Gantung	0+400	9 (7+1x2)	22.6	2	New	Can not use Temporary Support because Bridge is 3 span/3 Girder
	0+769	8 (6+1x2)	17	1	New	Can not use Temporary Support because Bridge is 2 span/2 Girder

Total: 8 Bridges



JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE:
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 16
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA		DATE:
River Improvement Works Reconstruction of Main Bridge		October 1997
CHECKED BY:	APPROVED BY:	PLOTTED BY:



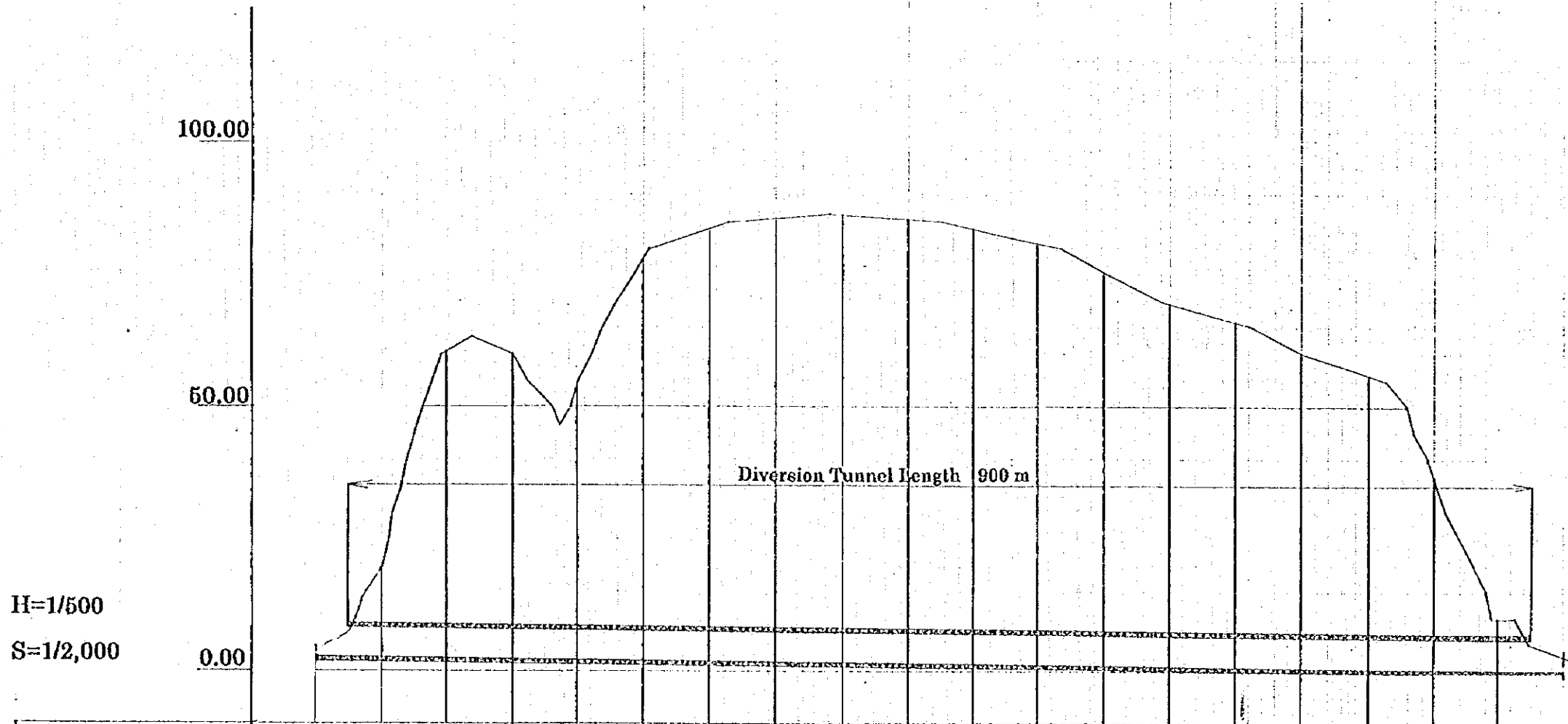
Typical Cross Section of Diversion Tunnel
Horseshoe Shaped



LEMBA

 JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE:
 DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		1/2,000
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA		DRAWING 17
River Diversion Works Plan of Diversion Tunnel		DATE: October 1997
DESIGNED BY:	APPROVED BY:	PLOTTED BY:

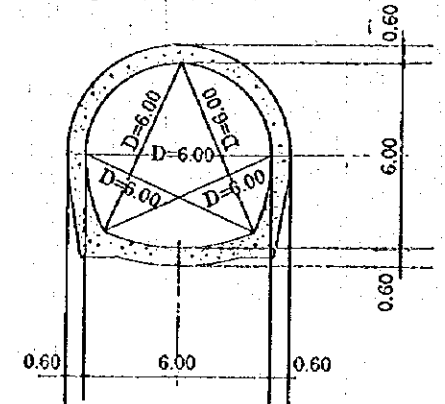
Longitudinal Section of Diversion Tunnel



H=1/500
S=1/2,000

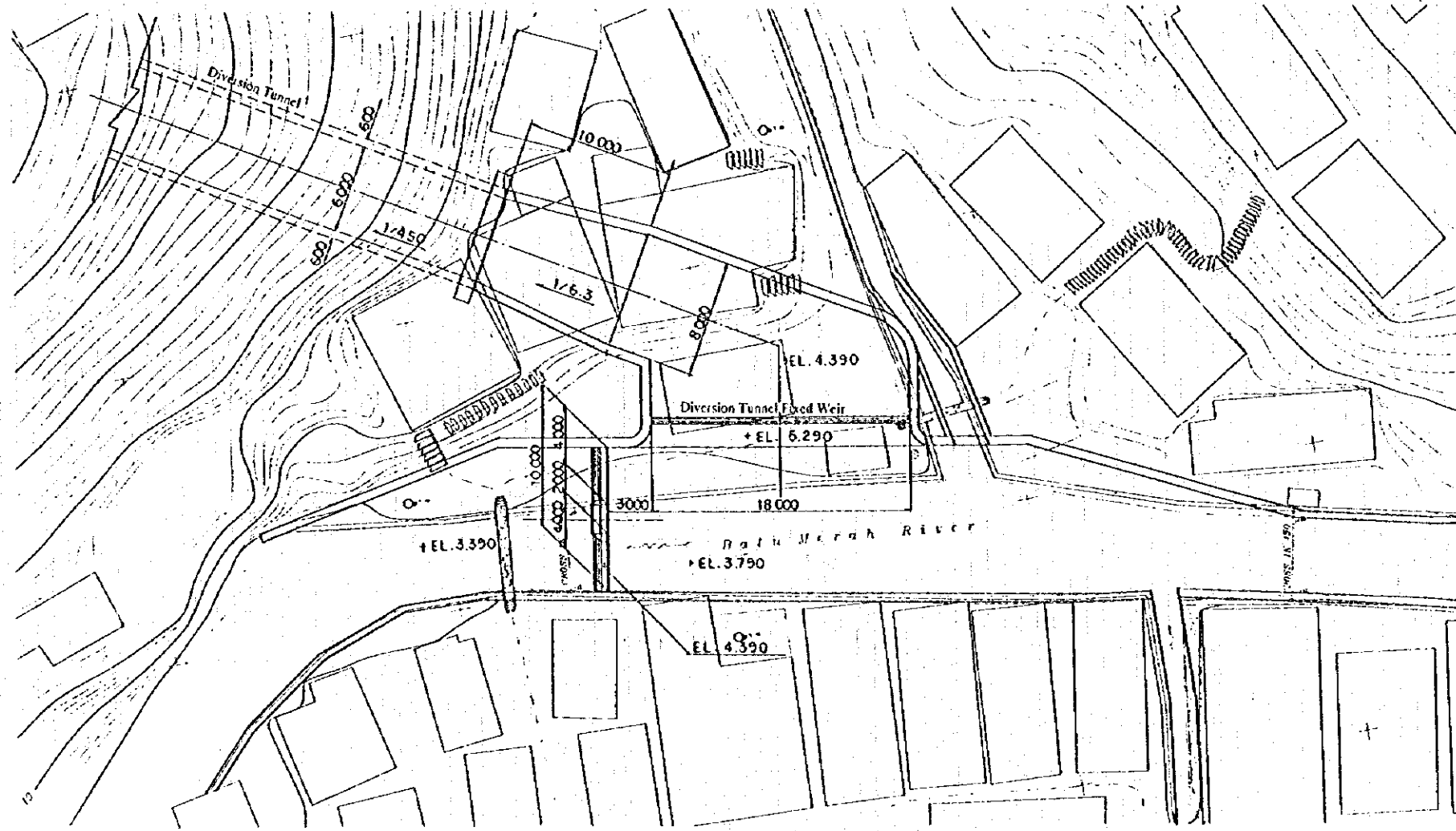
Gradient	1/450																			
Energy Gradient																				
Water Surface Elevation																				
River Bed Elevation		2.80	2.69	2.58	2.47	2.36	2.24	2.13	2.02	1.91	1.80	1.69	1.58	1.47	1.36	1.24	1.13	1.02	0.91	0.80
Ground Surface Elevation	5.20	20.00	60.50	60.00	54.00	77.70	83.50	85.60	86.90	85.40	83.70	81.00	75.40	69.40	65.90	60.10	55.90	56.90	10.10	5.20
Depth of Cover		17.20	57.81	57.42	51.53	75.34	81.24	83.47	84.18	83.49	81.90	79.31	73.82	67.93	64.54	58.86	54.77	35.88	9.19	4.40
Accumulative Distance	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00
Distance		50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Station			NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16	NO. 17	NO. 18

Typical Cross Section of Diversion Tunnel
Horseshoe Shaped

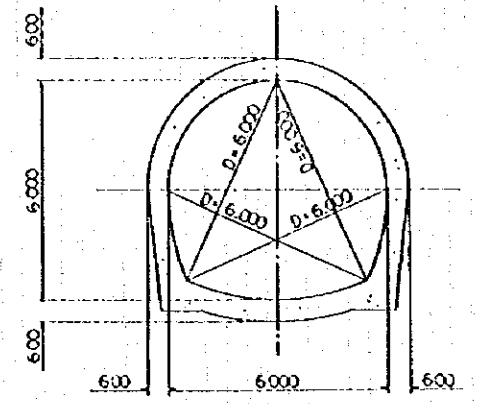


	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	SCALE: 1/2,000
	DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS	DRAWING 18
THE STUDY ON FLOOD CONTROL FOR ANBON AND PASAHARI AREA		DATE: October 1997
River Diversion Works Longitudinal Profile of Diversion Tunnel		
DESIGNED BY:	APPROVED BY:	PLOTTED BY:

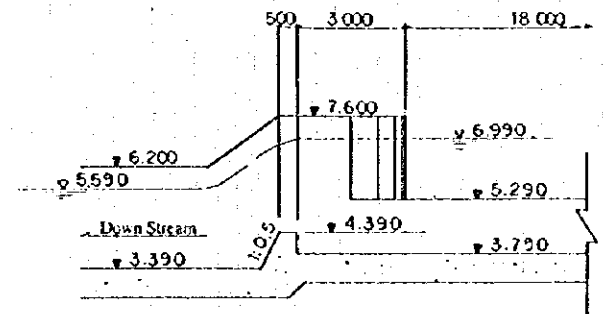
Plan S=1/200



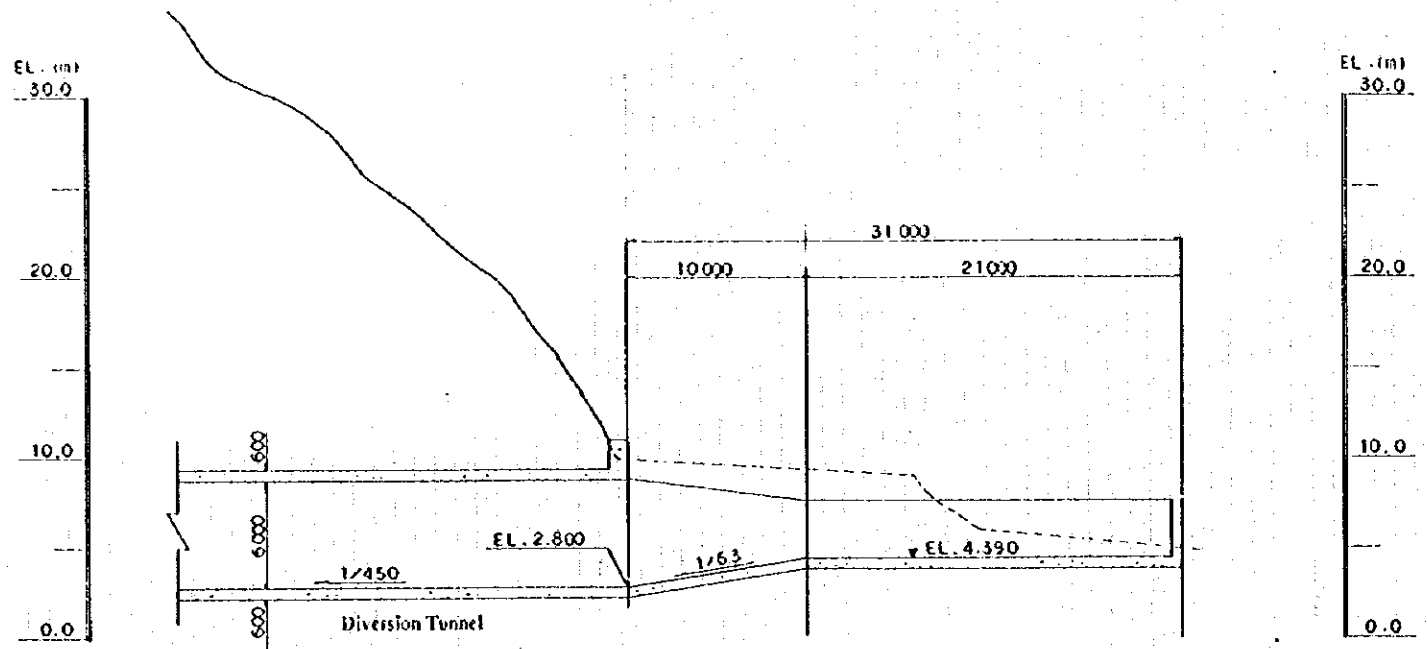
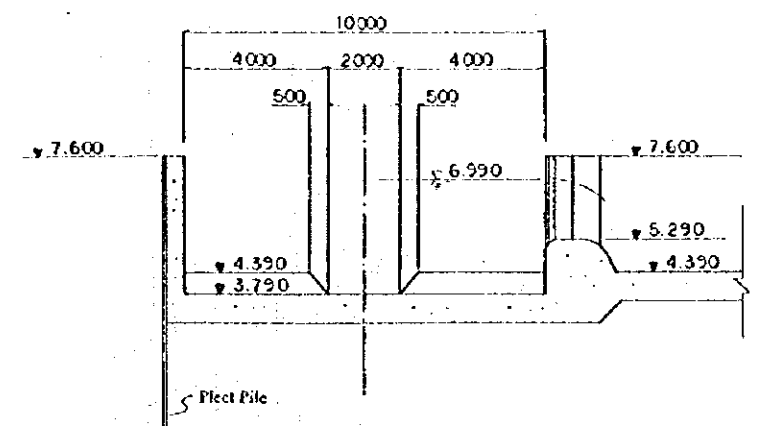
Typical Cross Section of Diversion Tunnel
Horseshoe Shaped S=1/100



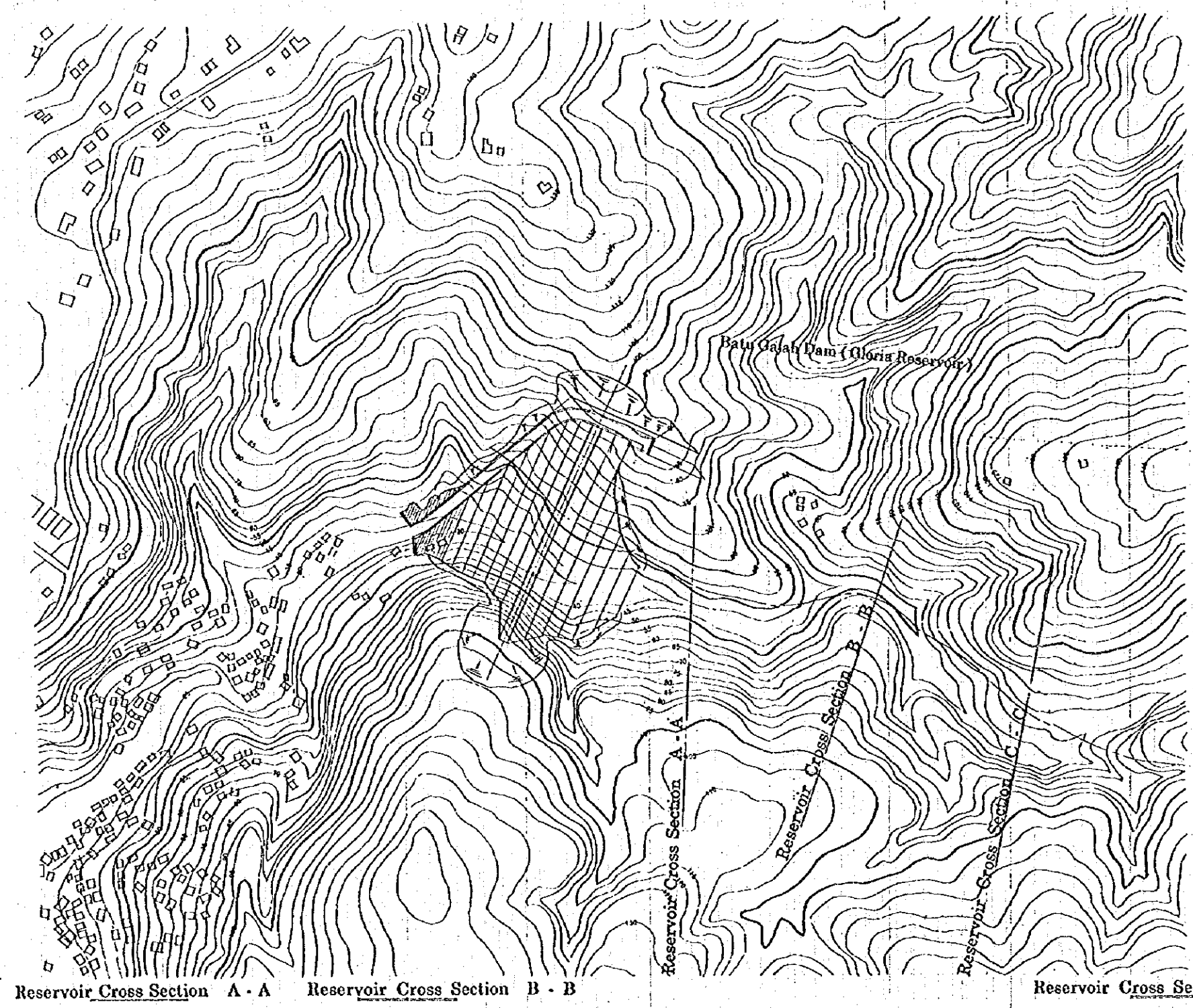
Typical Section for Main Fixed Weir



Typical Section for Diversion Channel Fixed Weir

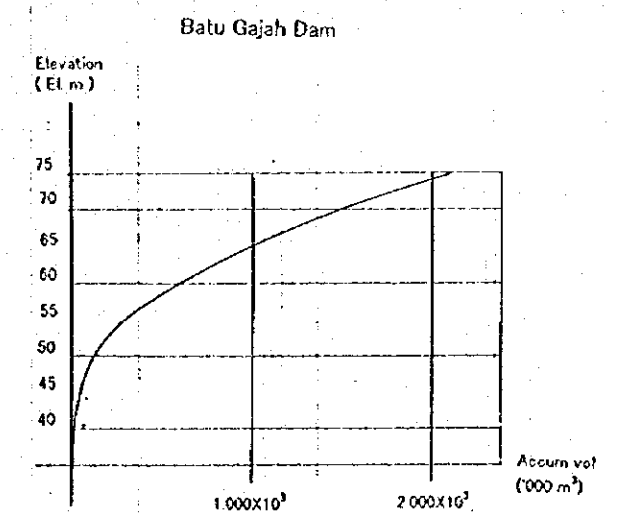


JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE:	1/200
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING	19
THE STUDY ON FLOOD CONTROL FOR ANSON AND PASAHARI AREA River Diversion Works		DATE:	October 1997
DESIGNED BY:	APPROVED BY:	PLOTTED BY:	

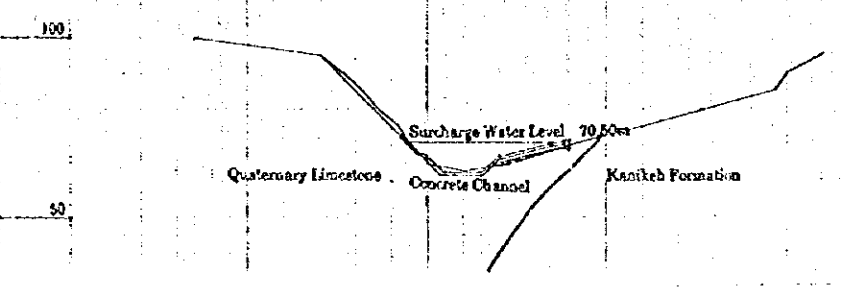
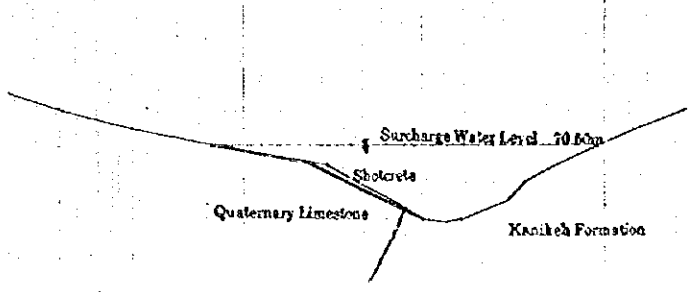
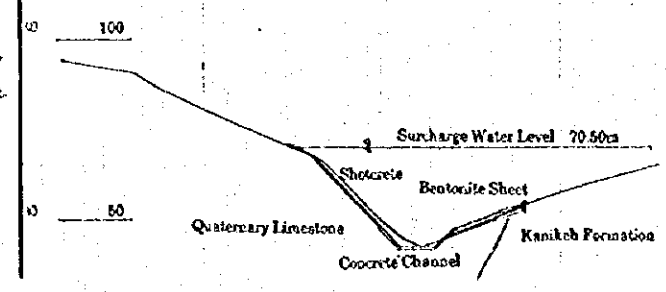


Batu Gajah Dam

Elevation (EL.m)	Height (m)	Area (000m ²)	Volume (000m ³)	Accum Vol. (000m ³)
35		0.000	0.000	0.000
40	5	3.236	8.090	8.090
45	5	7.465	26.753	34.843
50	5	24.073	78.845	113.688
55	5	47.367	178.600	292.288
60	5	66.847	285.535	577.823
65	5	89.178	390.063	967.885
70	5	114.865	509.958	1,477.843
75	5	147.265	655.175	2,133.018





Reservoir Cross Section A - A Reservoir Cross Section B - B Reservoir Cross Section C - C

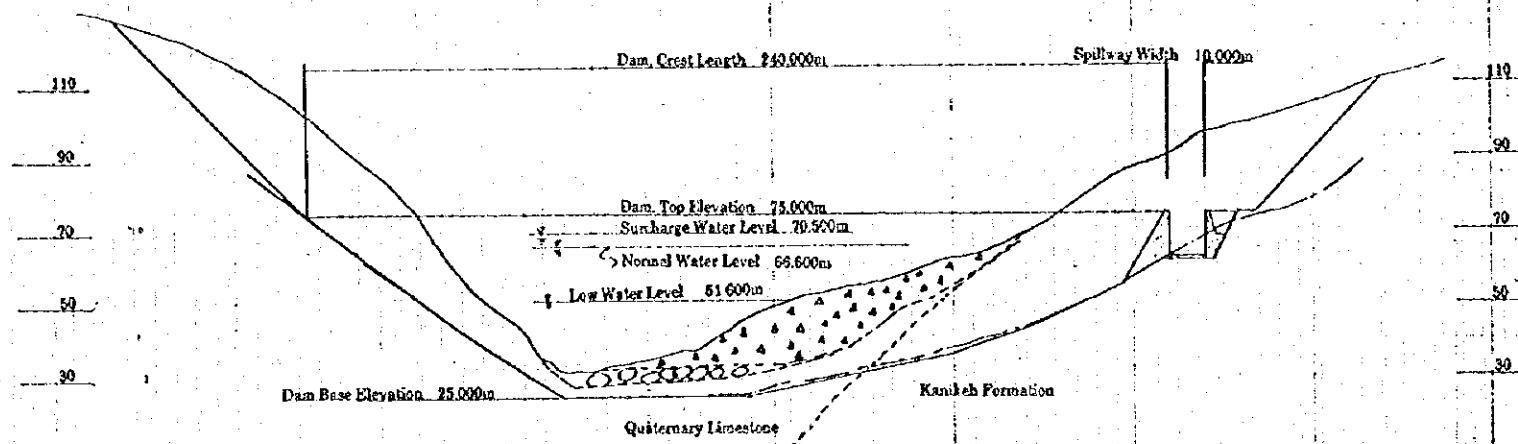


JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/2,500
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 20
THE STUDY ON FLOOD CONTROL FOR ANBON AND PASAHARI AREA		
Construction of Dams Location of Batu Gajah Dam Reservoirs		
DESIGNED BY:	APPROVED BY:	DATE: October 1997
		PROFIT BY:

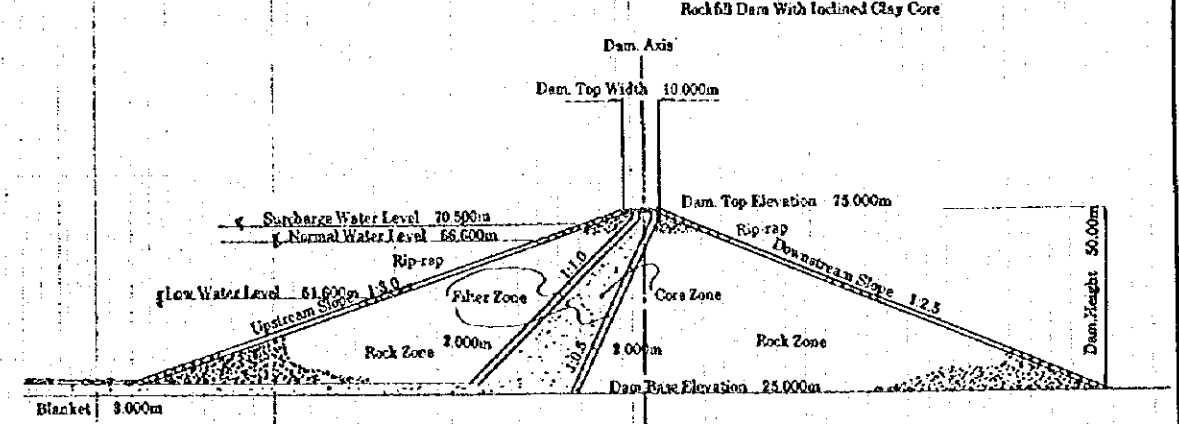


 JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE:
		1/1,000
	DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS	
	DRAWING 21	
THE STUDY ON FLOOD CONTROL FOR ARSON AND PASAHARI AREA		DATE:
Construction of Dams General Plan of Batu Gajah Dam		October 1957
DESIGNED BY:	DRAWN BY:	CHECKED BY:

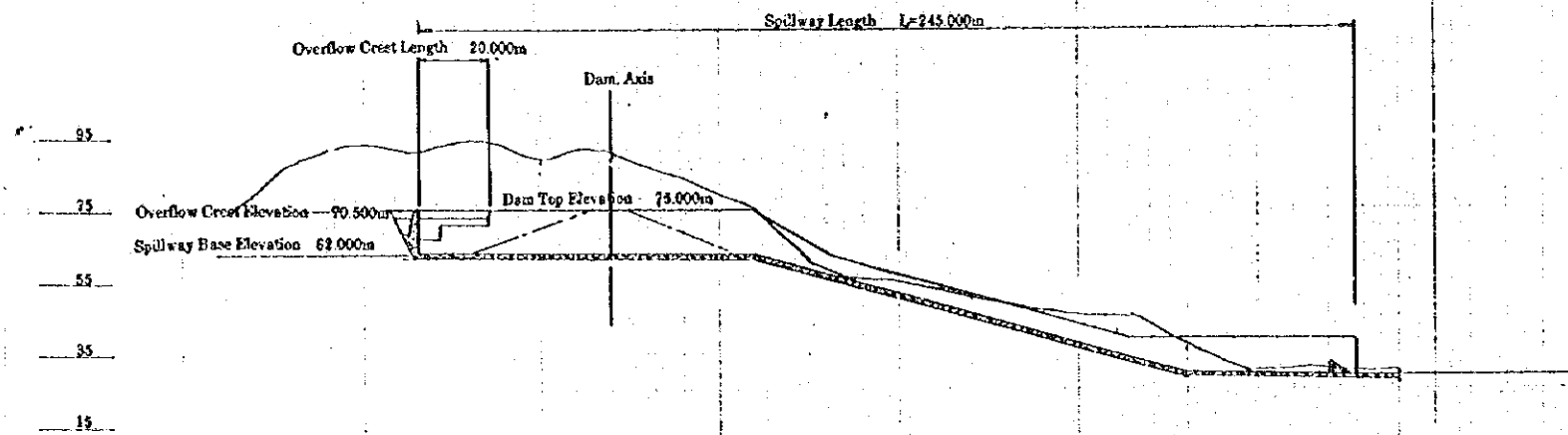
Cross Section of Dam Axis



Typical Cross Section of Dam (S=1/1,000)

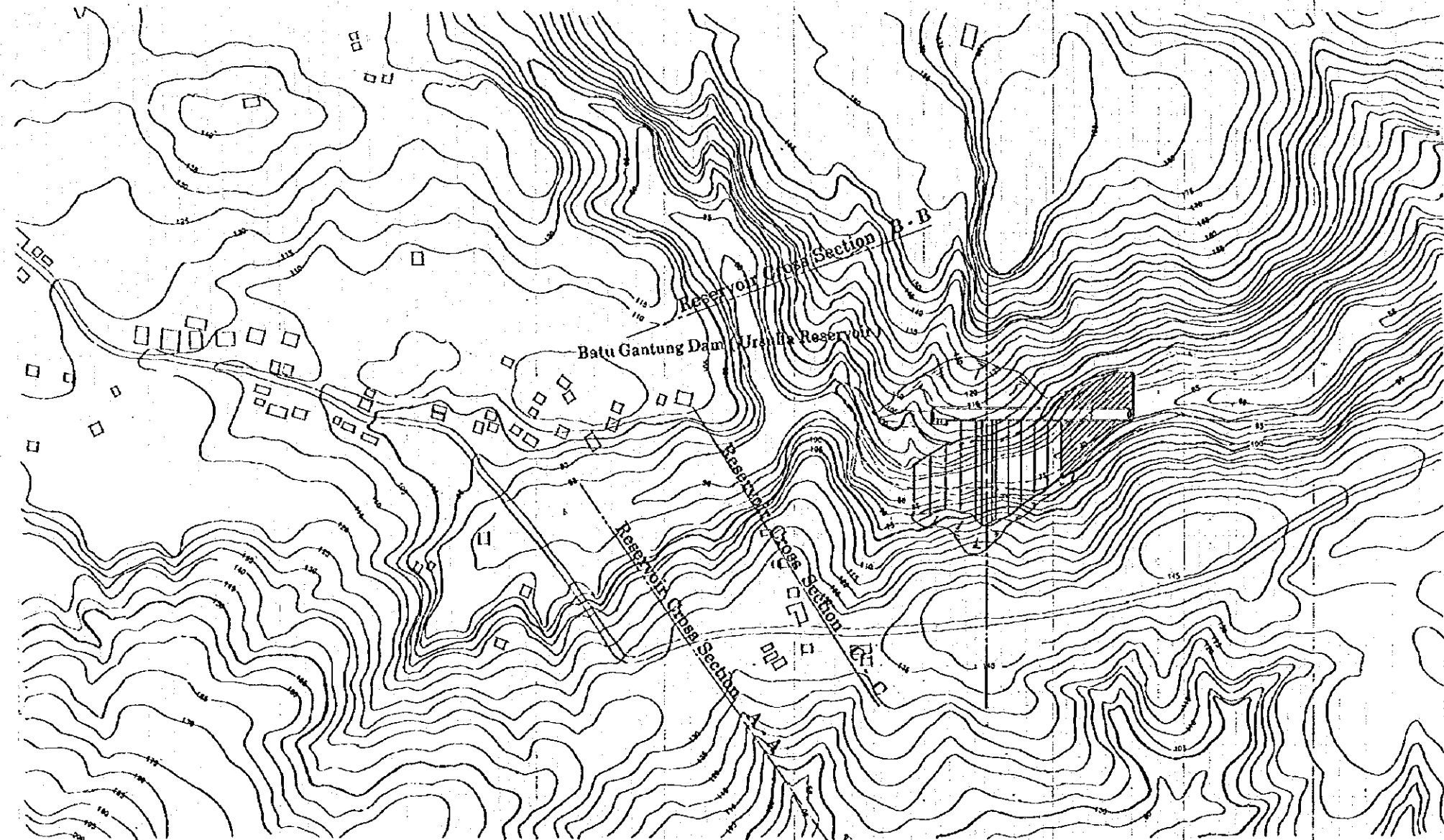


Profile of Spillway



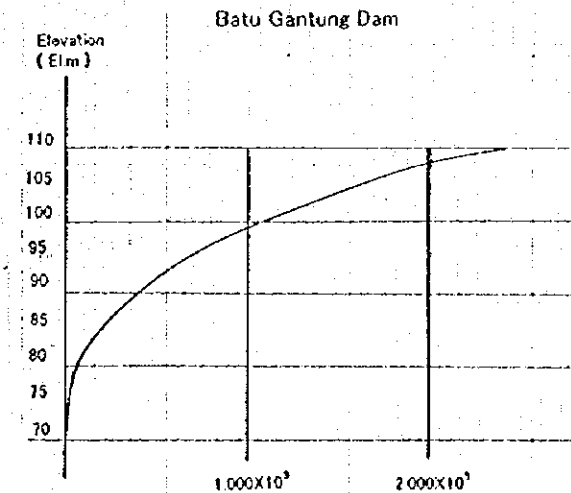
Batu Gajah (4.27km)	Design Condition
Dam Top Elevation	EL.75,00m
Surcharge Water Level	EL.70,50m
Normal Water Level	EL.66,60m
Dam Base Elevation	EL.25,00m, H=50,00m
Dam Design Discharge	190m ³ /s, 1/2,000
Unregulated Peak Discharge	88m ³ /s
Regulated Peak Discharge	64m ³ /s, Maximum Discharge 90m ³ /s
Outlet Conduit	B 6.6m x H 3.9m
Emergency Spillway	B 19.0m x 1.6m 126.9m ³ /s + 63.1m ³ /s = 190m ³ /s

JICA JAPAN INTERNATIONAL COOPERATION AGENCY	SCALE : 1/1,000
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS	DRAWING 22
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA Construction of Dams Structural Layout Plan of Batu Gajah Dam	DATE : October 1997
DESIGNED BY :	APPROVED BY :
	PLACED BY :

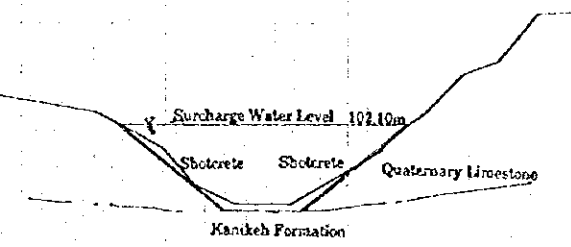


Batu Gantung Dam

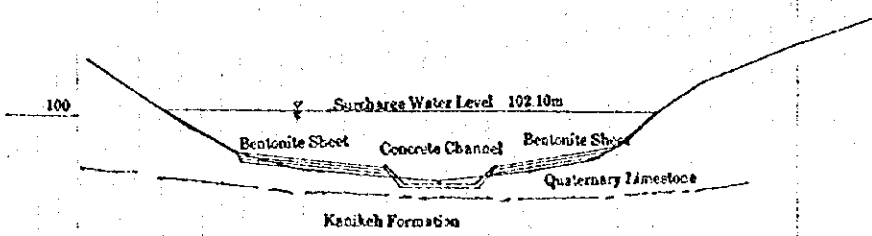
Elevation (EL.m)	Hight (m)	Area (000m ²)	Volume (000m ³)	Accum.Vol. (000m ³)
70		0.000	0.000	0.000
75	5	4.580	11.450	11.450
80	5	11.678	40.645	52.095
85	5	30.202	104.700	156.795
90	5	51.457	209.148	365.943
95	5	72.782	315.598	681.540
100	5	97.454	425.590	1,107.130
105	5	122.383	549.593	1,656.723
110	5	195.927	795.775	2,452.498



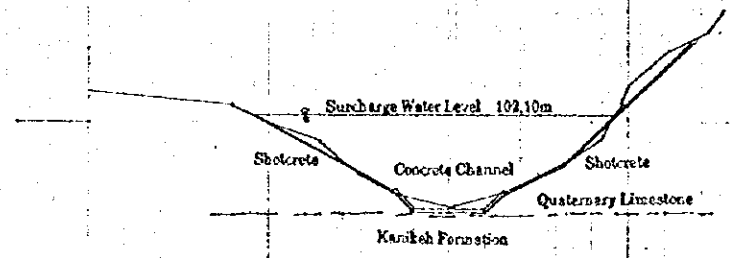
Reservoir Cross Section B - B



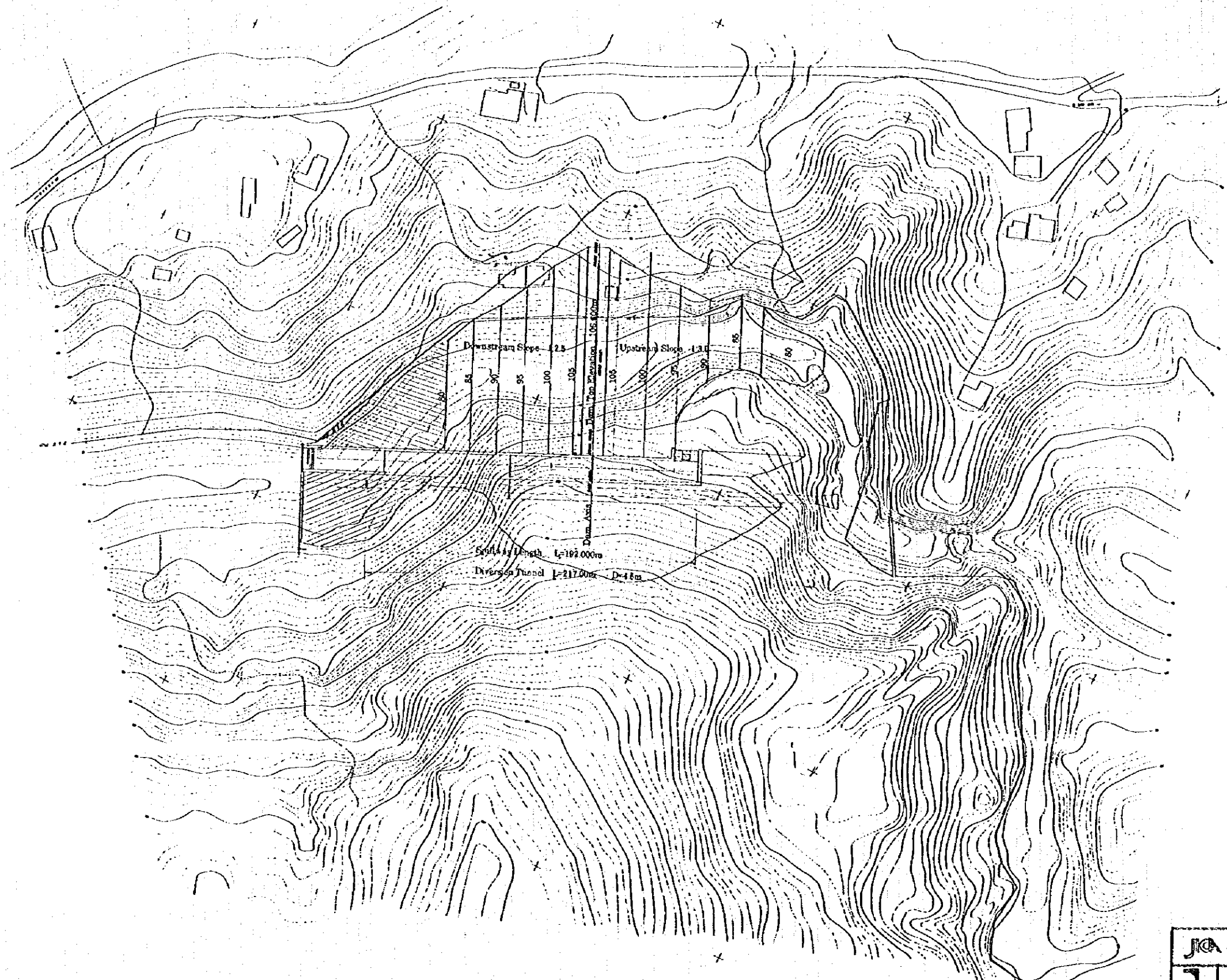
Reservoir Cross Section A - A





Reservoir Cross Section C - C

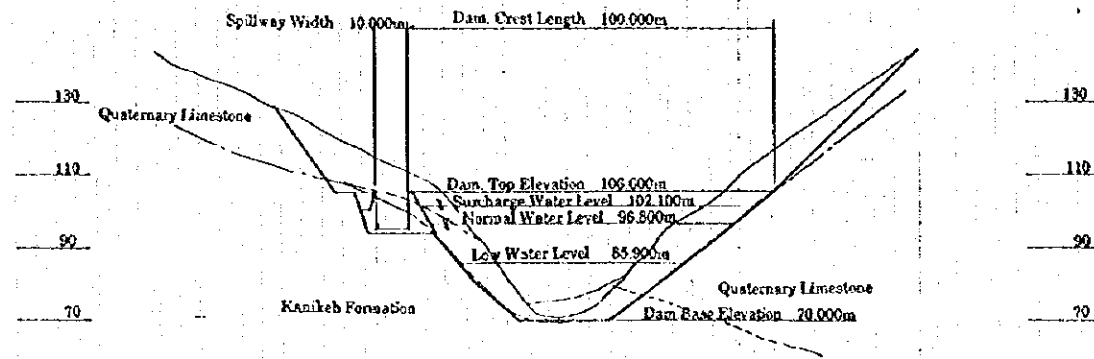


JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/2,500
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING: 23
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAWARI AREA		DATE: October 1997
Construction of Dams Location of Batu Gantung Dam Reservoirs		
DESIGNED BY:	APPROVED BY:	PLOTTED BY:

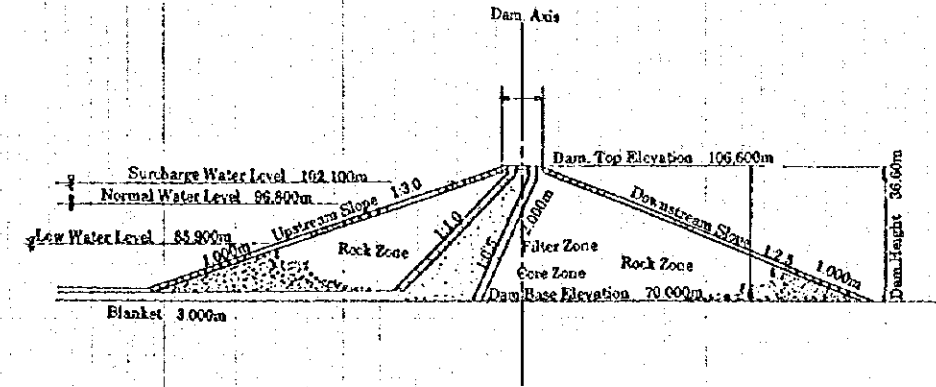


 JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/1,000
 DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 24
THE STUDY ON FLOOD CONTROL FOR ANSON AND PASAHARI AREA		DATE: October 1997
Construction of Dams General Plan of Batu Gantung Dam		
DRAWN BY:	APPROVED BY:	PLOTTED BY:

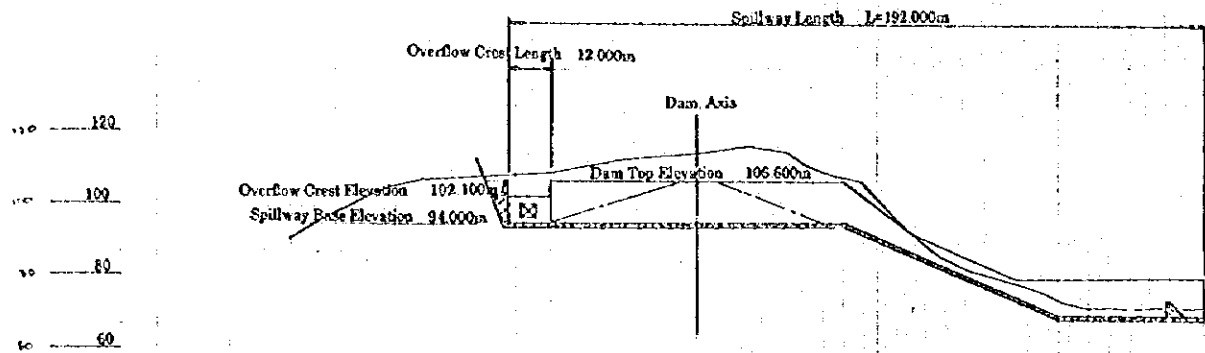
Cross Section of Dam Axis



Typical Cross Section of Dam (S=1/1,000)
Rockfill Dam With Inclined Clay Core

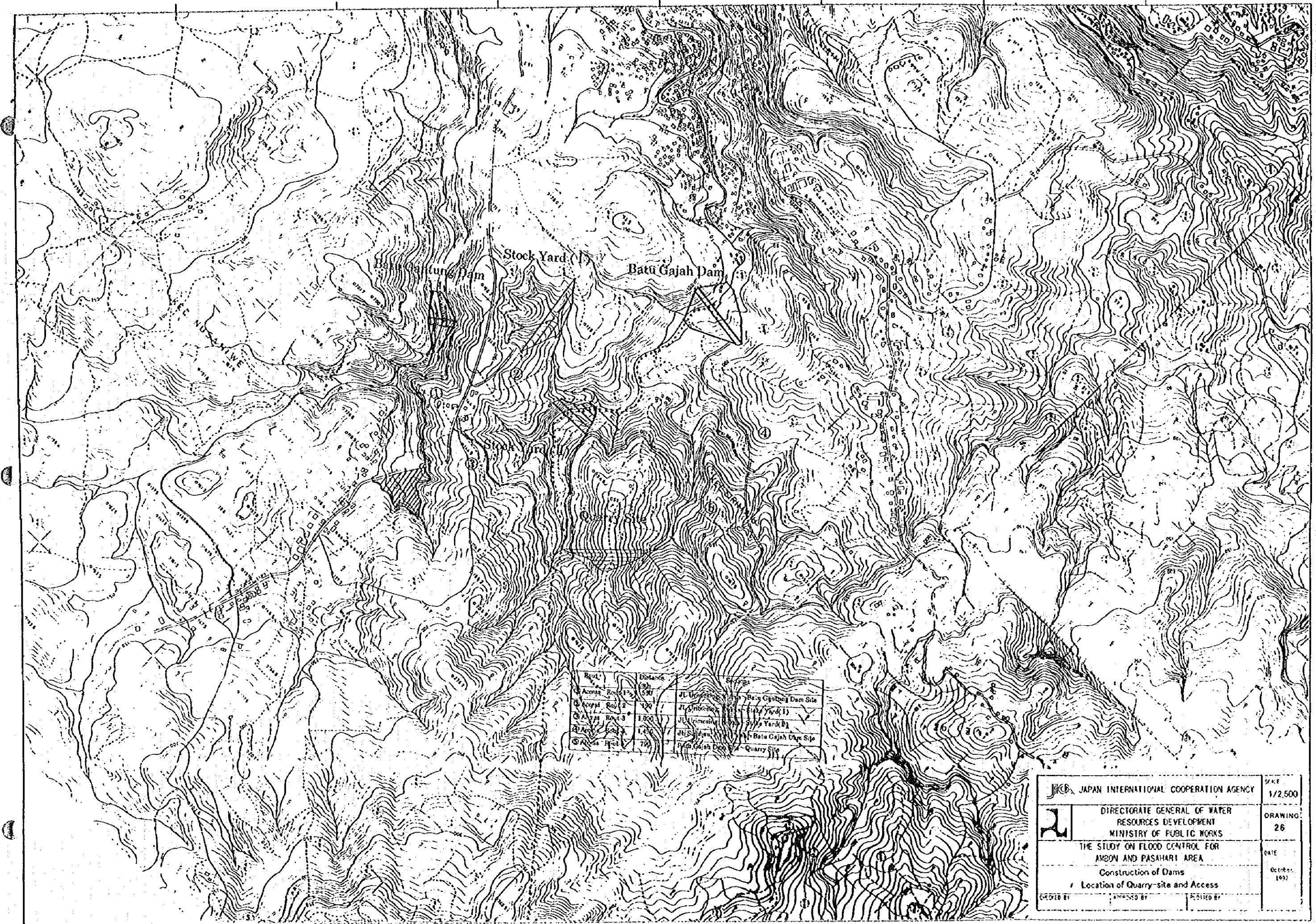


Profile of Spillway




Batu Gantung (4.76kva)	Design Condition
Dam Top Elevation	EL.106.60m
Surcharged Water Level	EL.102.10m
Normal Water Level	EL.96.80m
Dam Base Elevation	EL.70.00m, H=36.60m
Dam Design Discharge	220m ³ /s, 1/2,000
Unregulated Peak Discharge	99m ³ /s
Regulated Peak Discharge	67m ³ /s, Maximum Discharge 92m ³ /s
Outlet Conduit	B 4.2m x H 4.20m
Emergency Spillway	B 12.0m x 1.5m 183m ³ /s + 37m ³ /s = 220m ³ /s

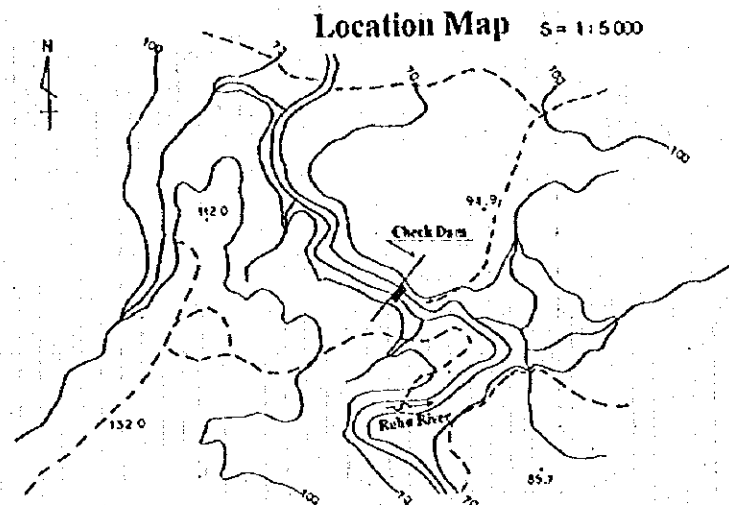
JICA JAPAN INTERNATIONAL COOPERATION AGENCY	SCALE: 1/1,000
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS	DRAWING 25
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA	DATE: October 1997
Construction of Dams Structural Layout Plan of Batu Gantung Dam	
CHECKED BY:	APPROVED BY:
	PLOTTED BY:



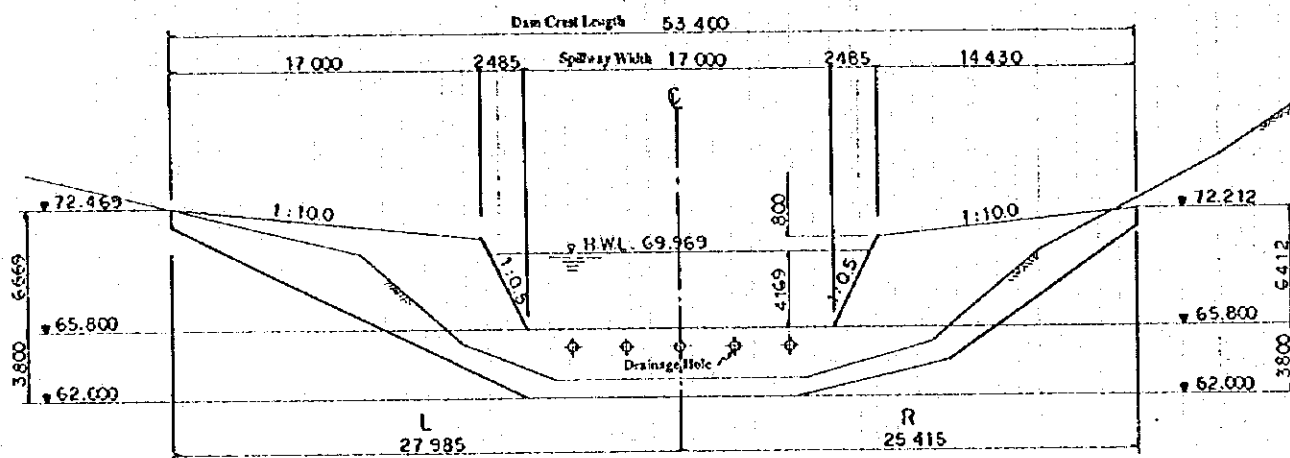
Route	Distance (m)	Location
Access Route 1	590	Jl. Ulu Gajah - Batu Gajah Dam Site
Access Route 2	730	Jl. Ulu Gajah - Stock Yard (I)
Access Route 3	1,000	Jl. Ulu Gajah - Stock Yard (II)
Access Route 4	1,450	Jl. Ulu Gajah - Batu Gajah Dam Site
Access Route 5	790	Batu Gajah Dam - Quarry Site

 JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		1/2,500
THE STUDY ON FLOOD CONTROL FOR AMON AND PASAHARI AREA Construction of Dams Location of Quarry-site and Access		DRAWING
		26
		DATE
		October 1977
CREATED BY	APPROVED BY	REVISION BY

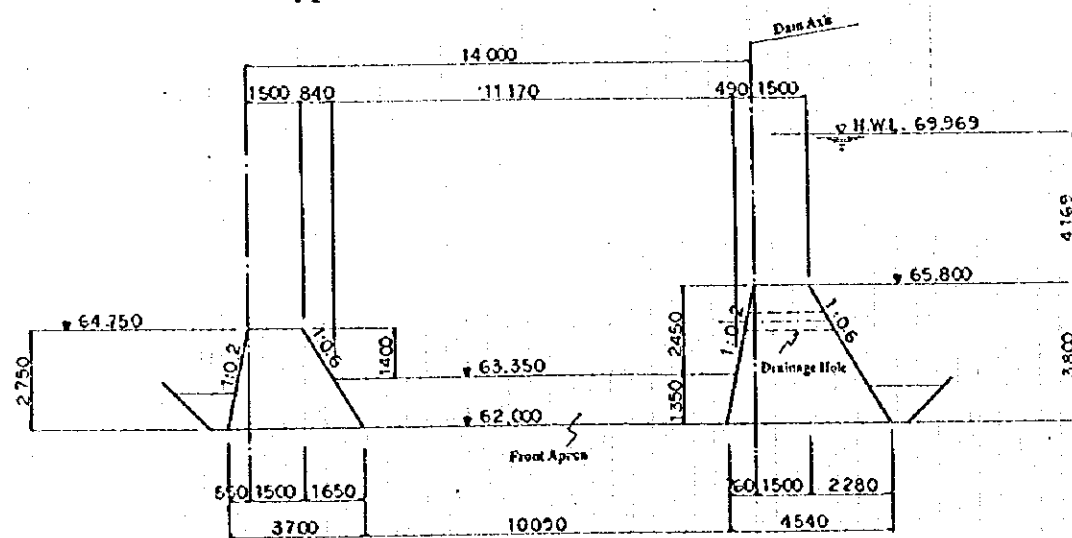
Ruhu River Check Dam



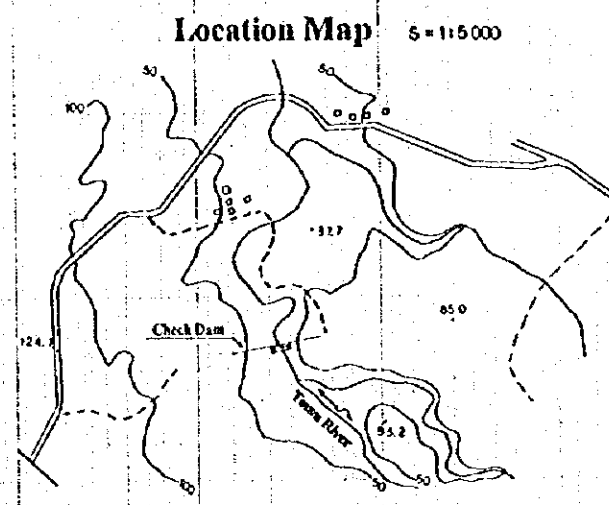
Cross Section of Dam Axis S=1:200



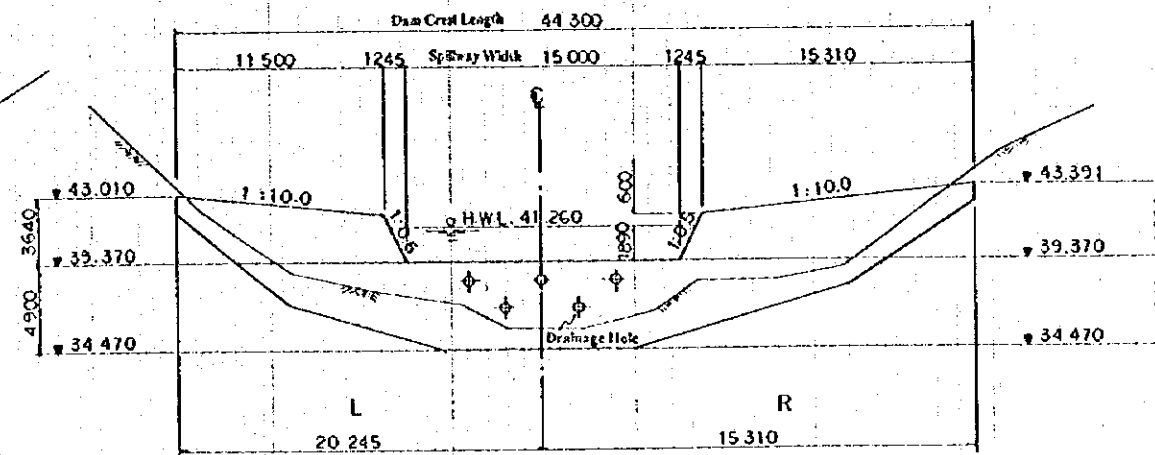
Typical Cross Section of Check Dam S=1:100



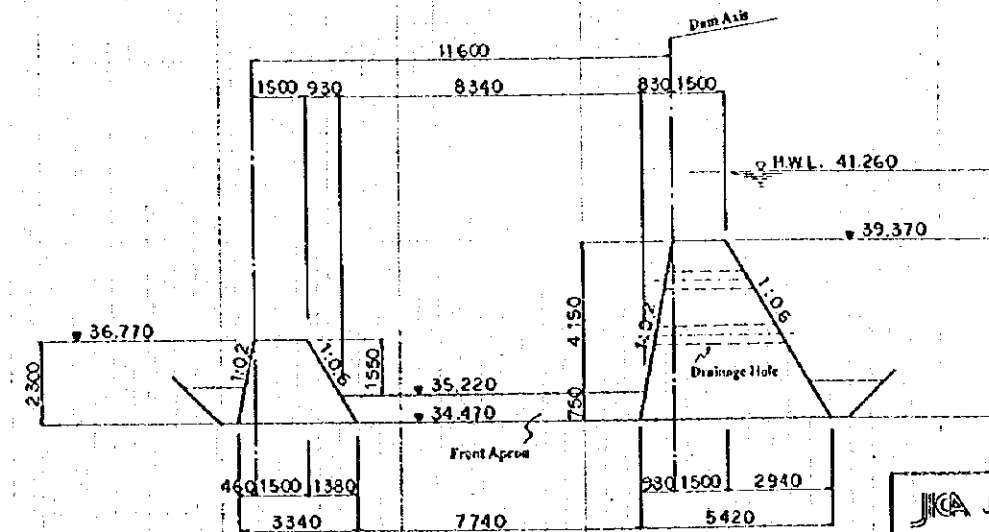
Tomu River Check Dam



Cross Section of Dam Axis S=1:200



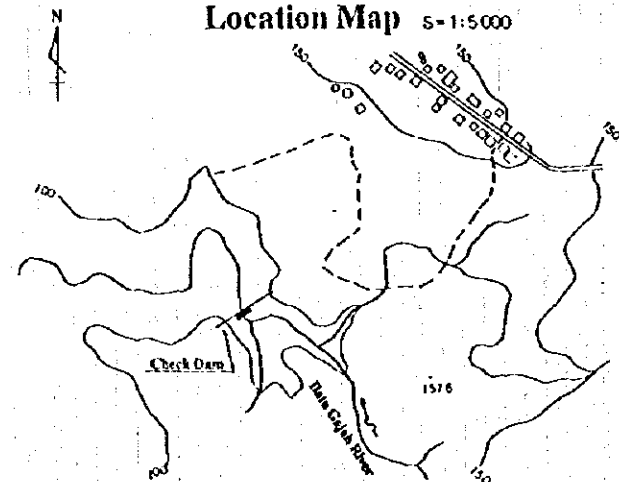
Typical Cross Section of Check Dam S=1:100



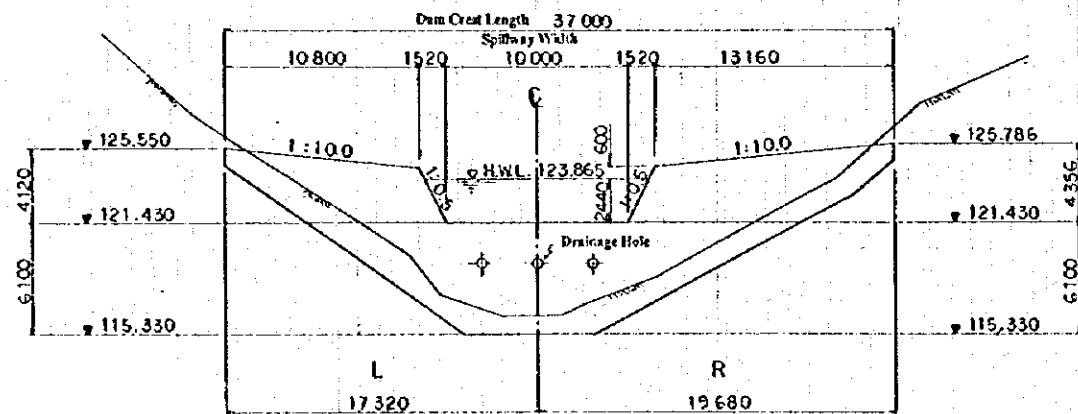
JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/100 1/200
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 27
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA		DATE: October 1987
Check Dam Works - General Plan of Check Dam (Ruhu River, Tomu River)		
DESIGNED BY:	APPROVED BY:	PLOTTED BY:

Batu Gajah River Check Dam

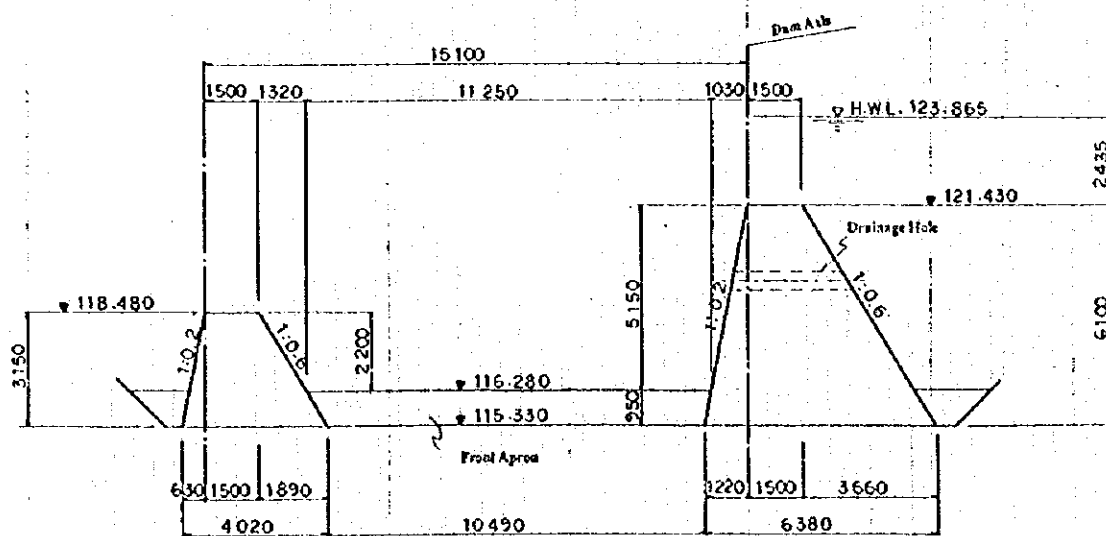
Location Map S=1:5000



Cross Section of Dam Axis S=1:200

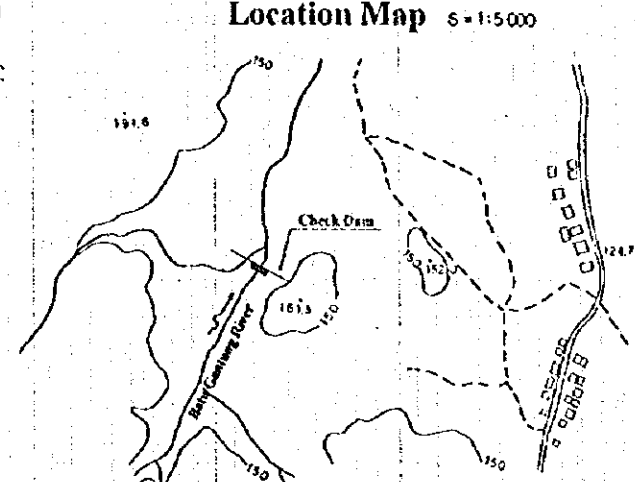


Typical Cross Section of Check Dam S=1:100

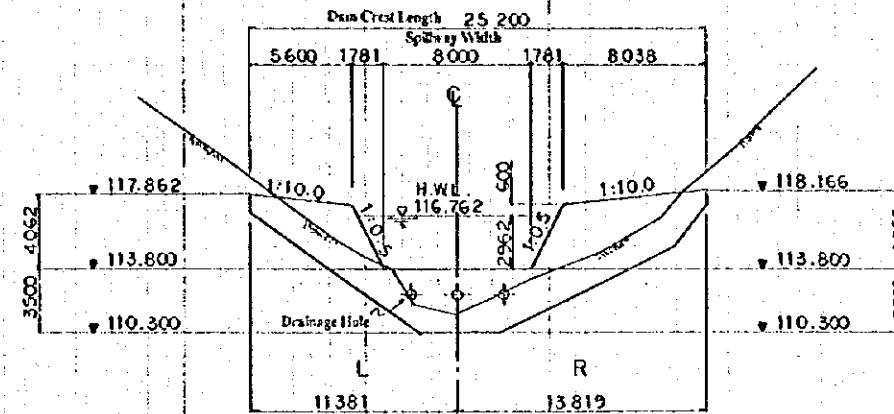


Batu Gantung River Check Dam

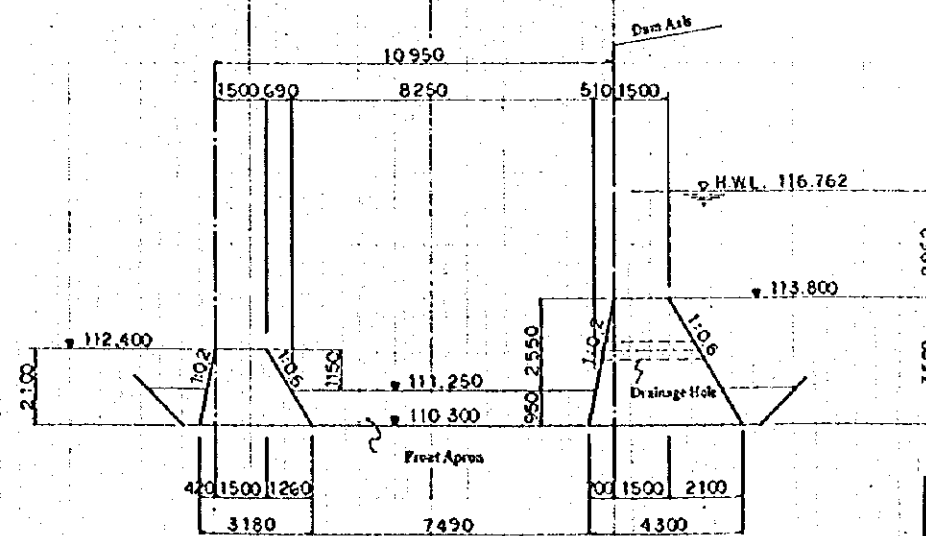
Location Map S=1:5000



Cross Section of Dam Axis S=1:200

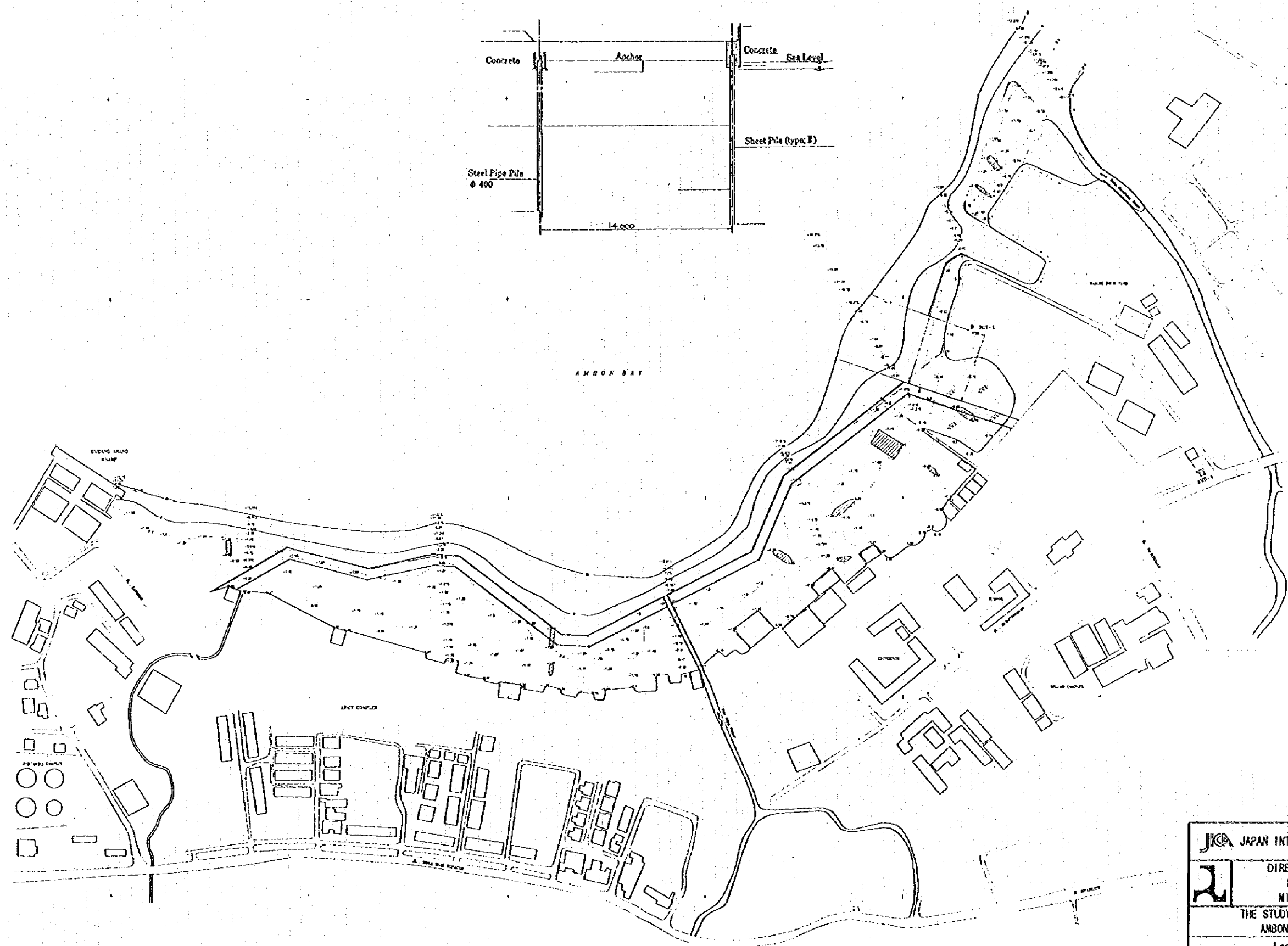
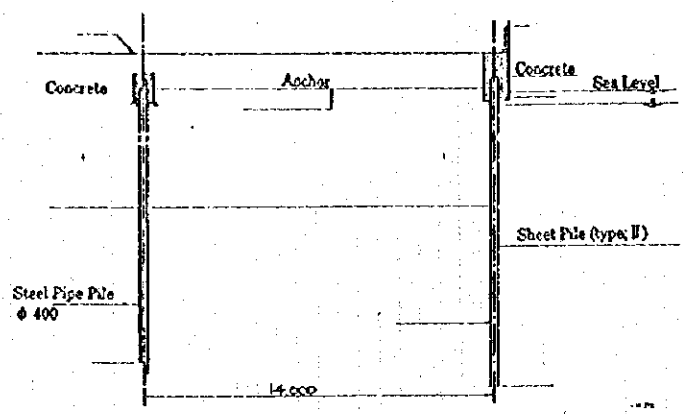


Typical Cross Section of Check Dam S=1:100



JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE:
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		1/100
		1/200
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA		DRAWING:
Check Dam Works General Plan of Check Dam (Batu Gajah River, Batu Gantung River)		28
OCTOBER 1997		DATE:
ORDERED BY:	APPROVED BY:	PLOTTED BY:

Typical Cross Section of Sea Wall



JICA JAPAN INTERNATIONAL COOPERATION AGENCY		SCALE: 1/2,000
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT MINISTRY OF PUBLIC WORKS		DRAWING 29
THE STUDY ON FLOOD CONTROL FOR AMBON AND PASAHARI AREA Land Reclamation Works Land Reclamation Plan of Nitu River		DATE: October 1997
DESIGNED BY:	APPROVED BY:	PLOTTED BY: