

フィリピン共和国  
フィリピン開発銀行  
イフガオ州政府

フィリピン共和国  
環境開発事業実施促進調査  
(小水力発電分野)

ファイナルレポート  
LIKUD 小水力発電開発計画ケース・スタディ  
(フィジビリティ調査)  
APPENDIX-VI 設備図面



平成 23 年 9 月  
(2011 年)

独立行政法人  
国際協力機構 (JICA)

東電設計株式会社

フピ事
JR
11-006

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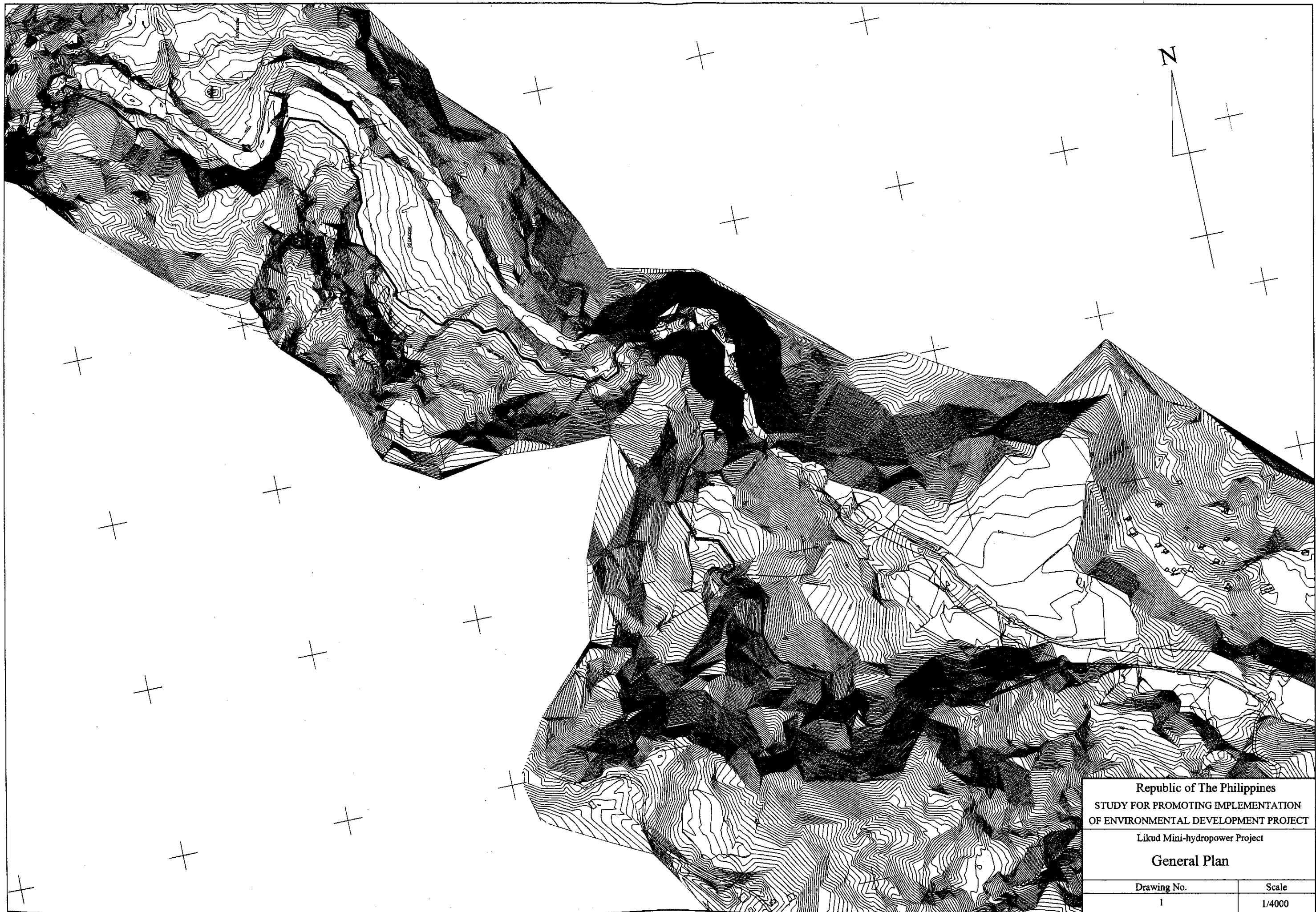
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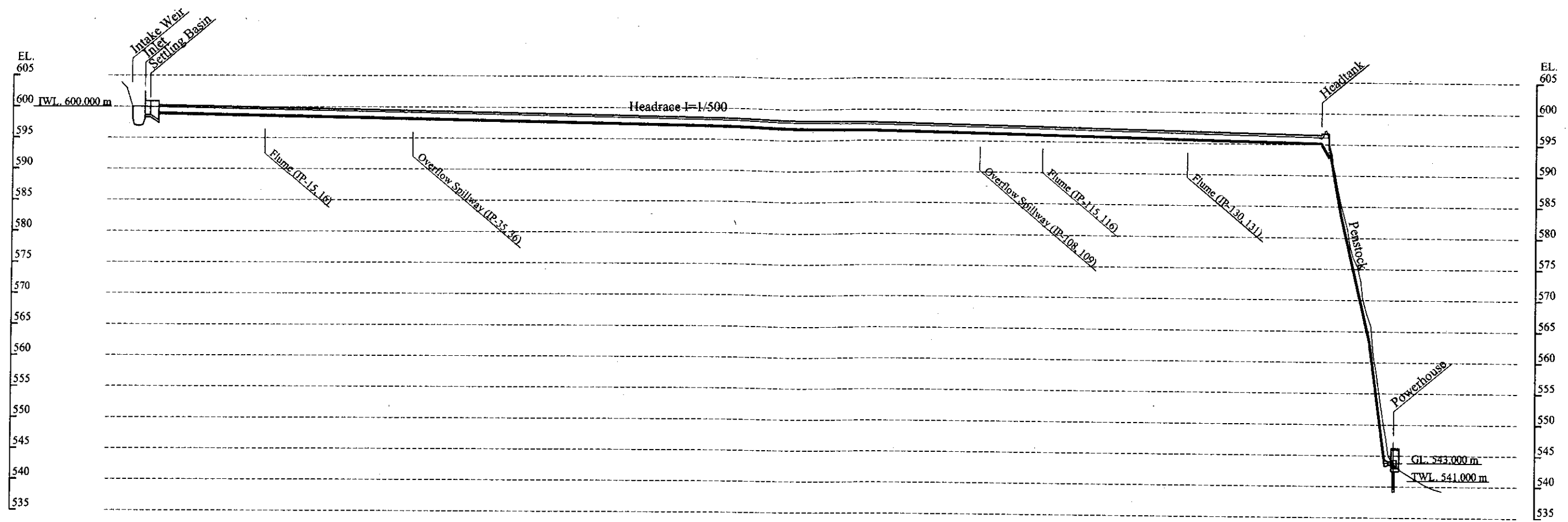
Likud Mini-hydropower Project Drawing List

No.	Drawing Title	Scale
1	General Plan	1/4,000
2	Longitudinal Profile	VS=1/700 VH=1/7,000
3	Waterway (1/11)	1/500
4	Waterway (2/11)	1/500
5	Waterway (3/11)	1/500
6	Waterway (4/11)	1/500
7	Waterway (5/11)	1/500
8	Waterway (6/11)	1/500
9	Waterway (7/11)	1/500
10	Waterway (8/11)	1/500
11	Waterway (9/11)	1/500
12	Waterway (10/11)	1/500
13	Waterway (11/11)	1/500
14	Intake Weir and Settling Basin	1/200
15	Intake Weir	1/100
16	Settling Basin	1/100
17	Cross Section of Settling Basin	1/100
18	General Cross Section of Headrace	1/50
19	Cross Section of Headrace (1/11)	1/100
20	Cross Section of Headrace (2/11)	1/100
21	Cross Section of Headrace (3/11)	1/100
22	Cross Section of Headrace (4/11)	1/100
23	Cross Section of Headrace (5/11)	1/100
24	Cross Section of Headrace (6/11)	1/100
25	Cross Section of Headrace (7/11)	1/100
26	Cross Section of Headrace (8/11)	1/100
27	Cross Section of Headrace (9/11)	1/100

No.	Drawing Title	Scale
28	Cross Section of Headrace (10/11)	1/100
29	Cross Section of Headrace (11/11)	1/100
30	Discharge Control Spillway at Headrace	1/100
31	Flume at Headrace (IP-15, 16)	1/100
32	Flume at Headrace (IP-115, 116)	1/100
33	Flume at Headrace (IP-130, 131)	1/100
34	Overflow Spillway at Headrace	1/100
35	Plan from Headtank to Powerhouse	1/400
36	Headtank	1/100
37	Cross Section of Headtank	1/100
38	Penstock Profile	1/400
39	Spillway Profile	1/400
40	General Cross Section of Penstock and Spillway	1/100
41	Cross Section of Penstock and Spillway	1/100
42	Anchor Block of Penstock (1/2)	1/100
43	Anchor Block of Penstock (2/2)	1/100
44	Energy Dissipater of Spillway	1/100
45	Powerhouse	1/100
46	Cross Section of Powerhouse	1/100
47	Cross Section of Access Road	1/100
48	Single-line Diagram	-
49	Topographical Map (1/3)	1/4,000
50	Topographical Map (2/3)	1/4,000
51	Topographical Map (3/3)	1/4,000
52	Parcellary Survey Map (1/2)	1/4,000
53	Parcellary Survey Map (2/2)	1/4,000
54	Parcellary List	-



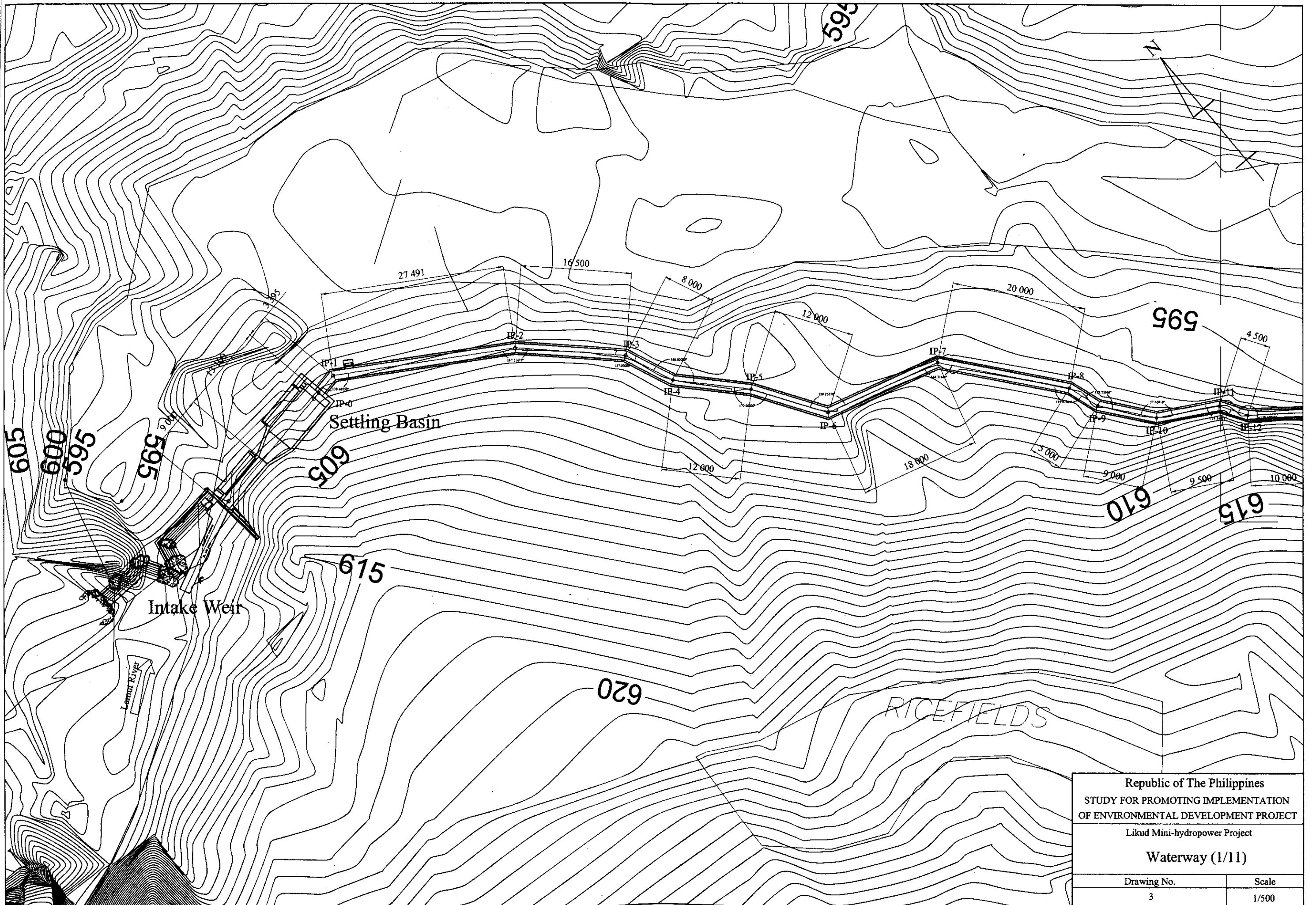
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
<b>General Plan</b>	
Drawing No.	Scale
1	1/4000



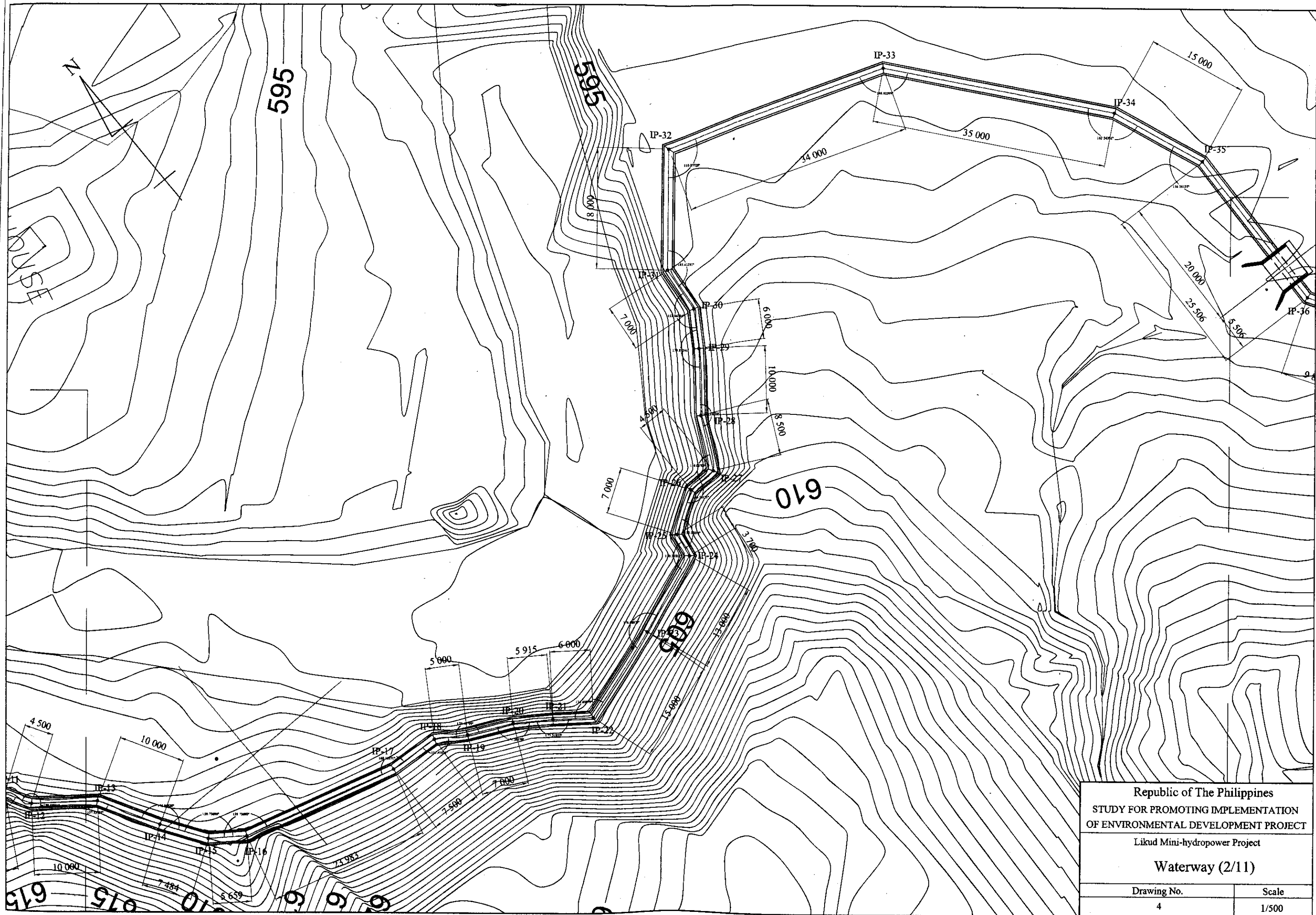
Altitude (EL. m)	Accumulated Distance	Distance (m)	Location
600.000	0.000	0.000	Intake Weir
599.976	9.000	9.000	Inlet Settling Basin
599.911	22.100	13.100	IP-0
599.777	89.486	67.386	IP-5
599.649	153.486	64.000	IP-10
599.566	194.970	41.484	IP-15
599.467	244.112	49.142	IP-20
599.380	287.726	43.615	IP-25
599.308	323.726	36.000	IP-30
599.090	432.726	109.000	IP-35
598.899	528.051	95.325	IP-40
598.698	628.533	100.481	IP-45
598.548	703.533	75.000	IP-50
598.427	764.154	60.622	IP-55
598.329	813.154	49.000	IP-60
598.211	872.154	59.000	IP-65
598.110	922.644	50.490	IP-70
597.986	984.644	62.000	IP-75
597.867	1,044.144	59.500	IP-80
597.795	1,080.144	36.000	IP-85
597.709	1,123.144	43.000	IP-90
597.626	1,164.644	41.500	IP-95
597.557	1,199.144	34.500	IP-100
597.386	1,284.944	85.800	IP-105
597.179	1,388.444	103.500	IP-110
597.058	1,448.944	60.500	IP-115
596.986	1,484.844	35.900	IP-120
596.803	1,576.044	91.200	IP-125
596.594	1,680.544	104.500	IP-130
596.475	1,740.304	59.760	IP-135
596.318	1,818.804	78.500	IP-140
596.196	1,897.704	60.900	IP-145
596.161	1,907.404	10.700	Headtank
593.792	1,908.504	1.100	Penstock IP-1
593.792	1,910.504	2.000	IP-2
583.848	1,931.374	20.870	
563.362	1,982.164	50.790	IP-3
543.800	2,015.042	32.878	IP-4
543.800	2,025.322	10.280	Powerhouse
543.000	2,038.022	12.700	

Republic of The Philippines  
 STUDY FOR PROMOTING IMPLEMENTATION  
 OF ENVIRONMENTAL DEVELOPMENT PROJECT  
 Likud Mini-hydropower Project  
**Longitudinal Profile**

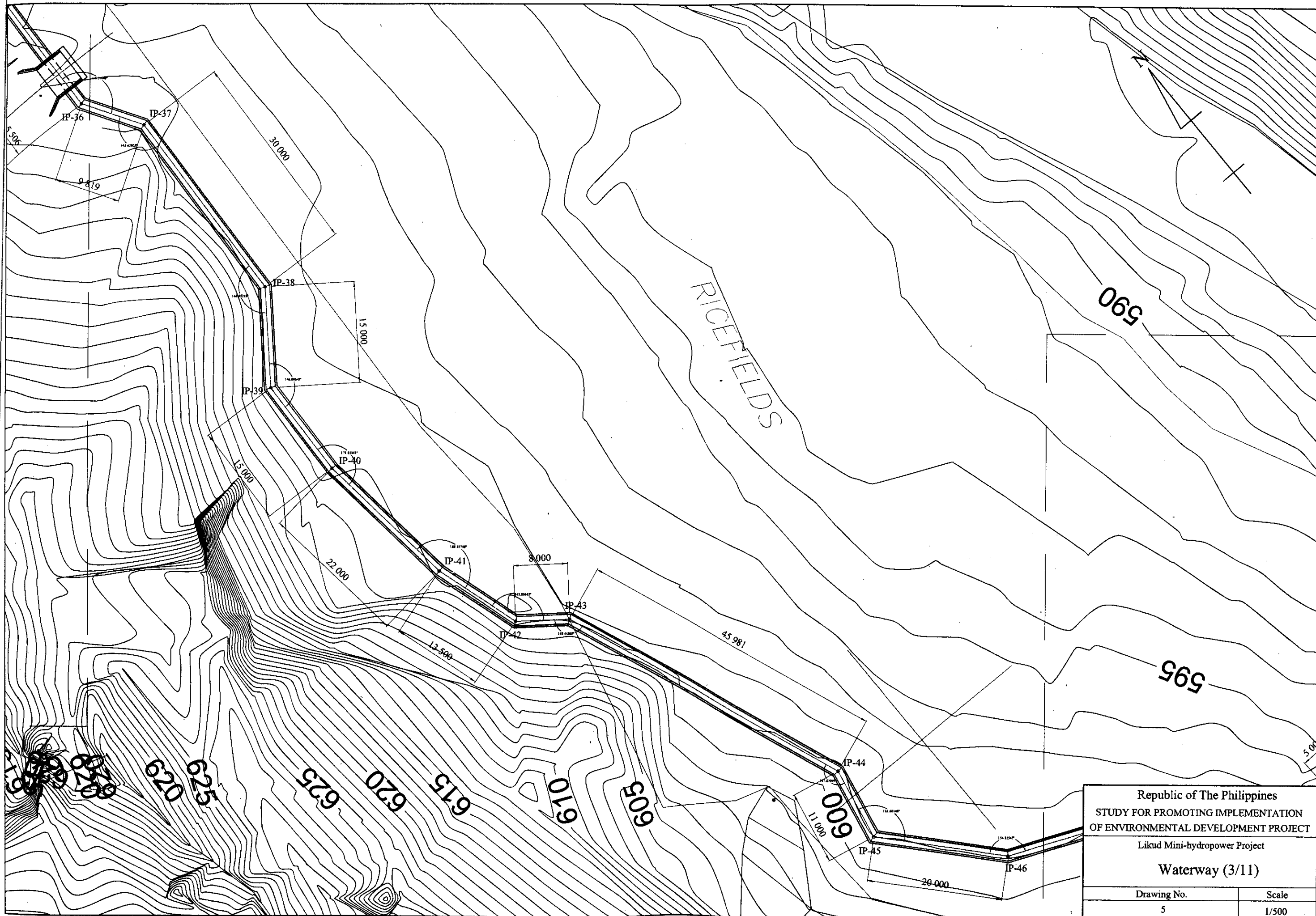
Drawing No.	Scale
2	VS=1/700 VH=1/7,000



Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project	
<b>Waterway (1/11)</b>	
Drawing No.	Scale
3	1/500

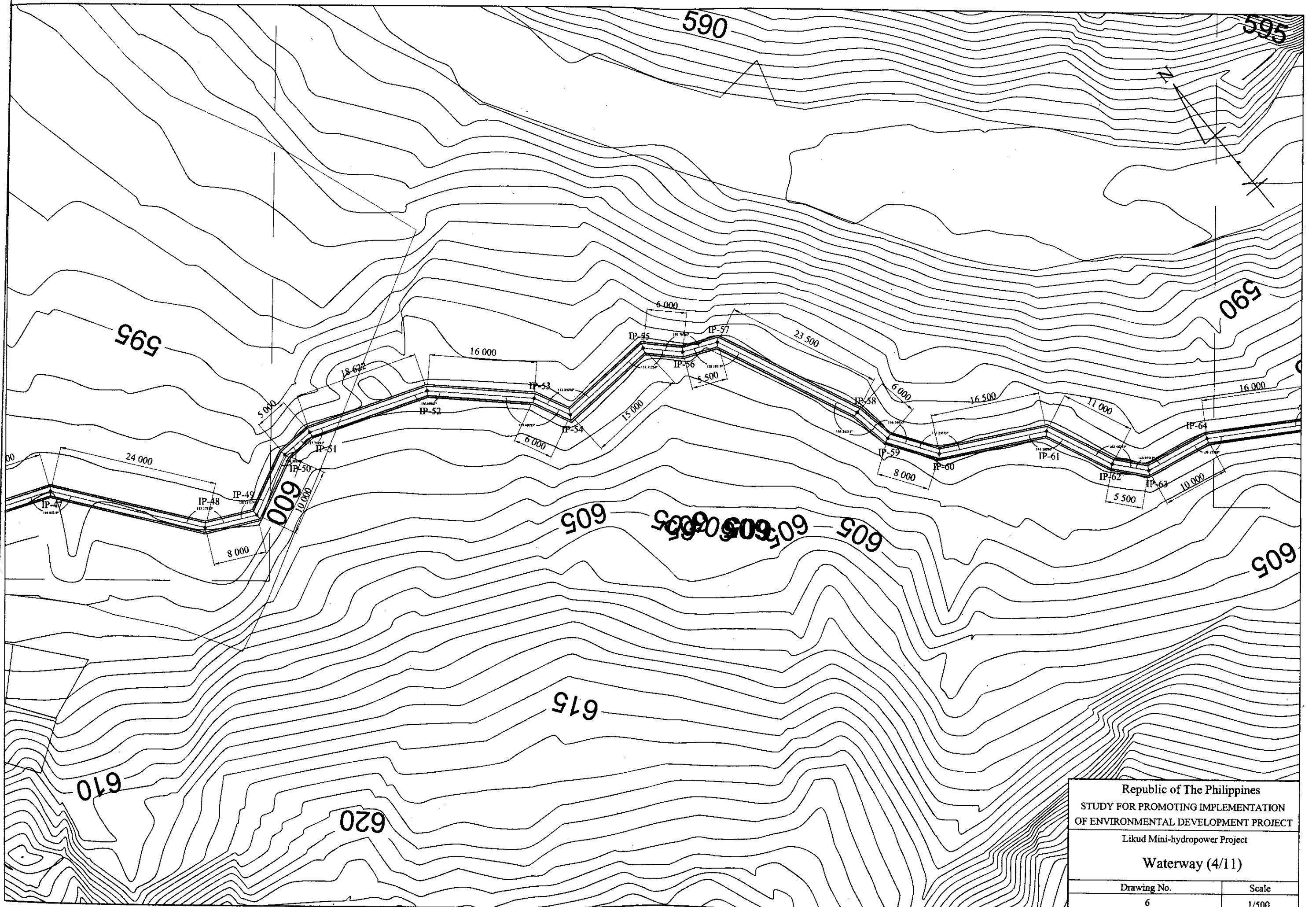


Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project Waterway (2/11)	
Drawing No.	Scale
4	1/500



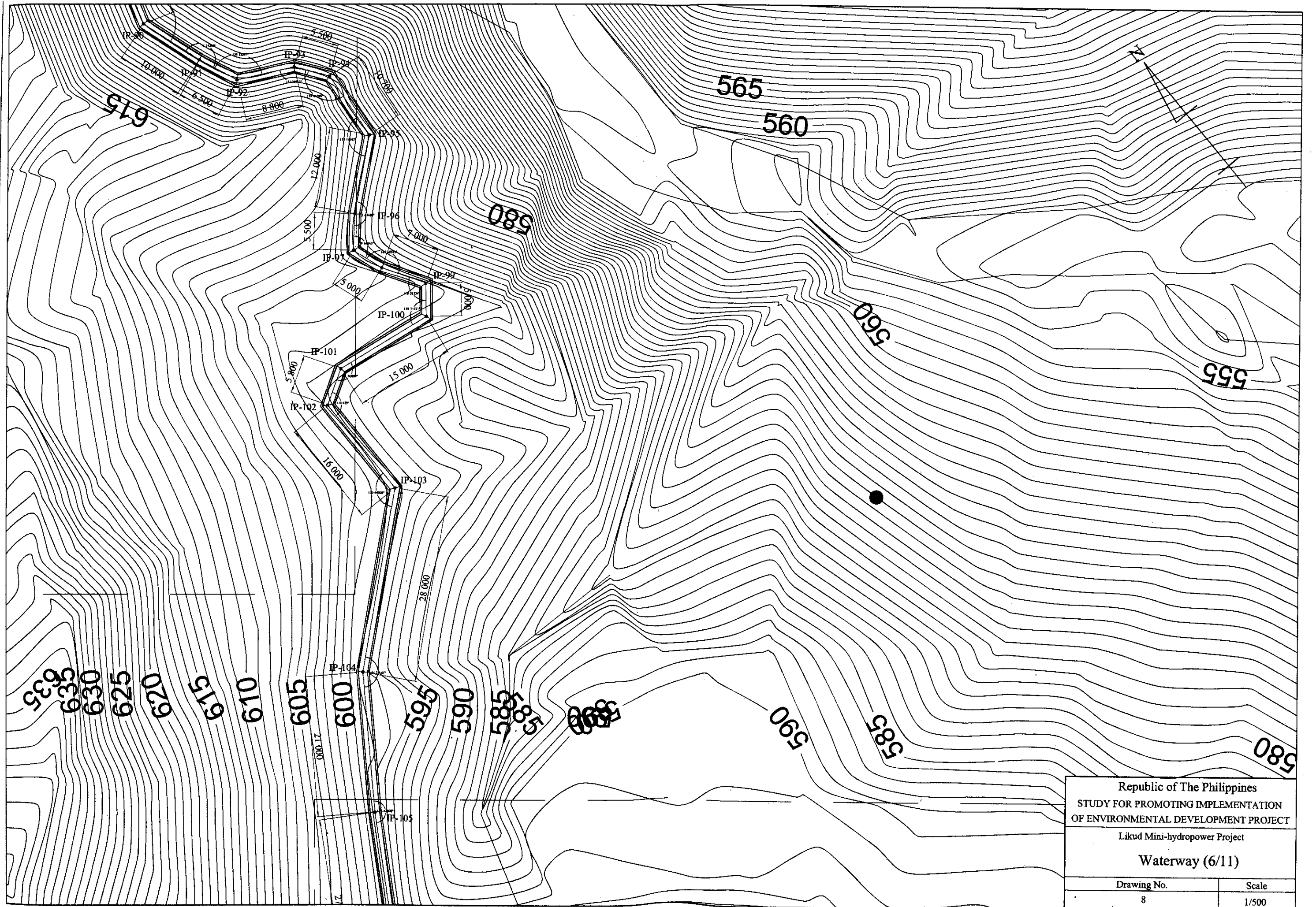
Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project	
<b>Waterway (3/11)</b>	
Drawing No.	Scale
5	1/500





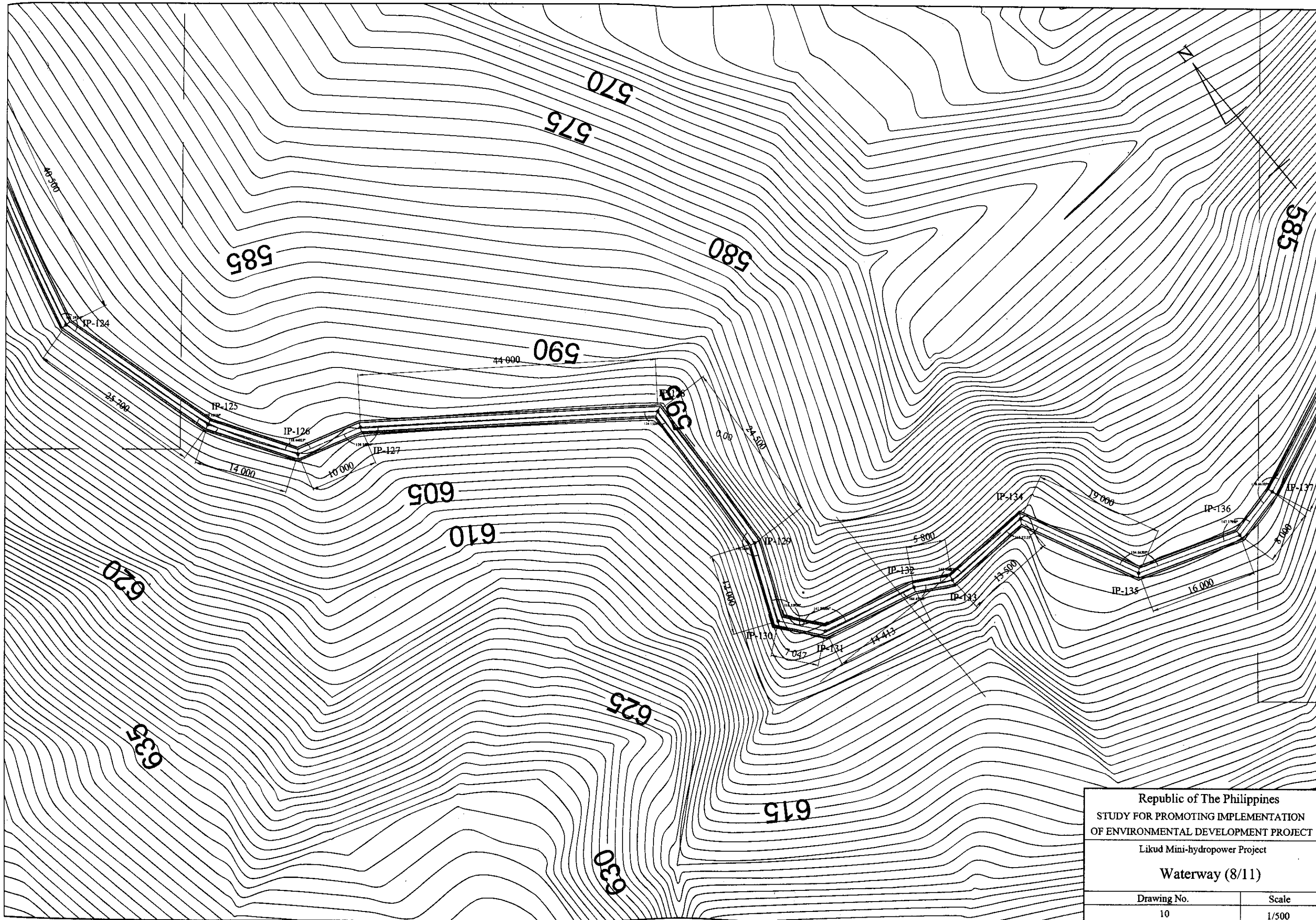
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Waterway (4/11)	
Drawing No.	Scale
6	1/500



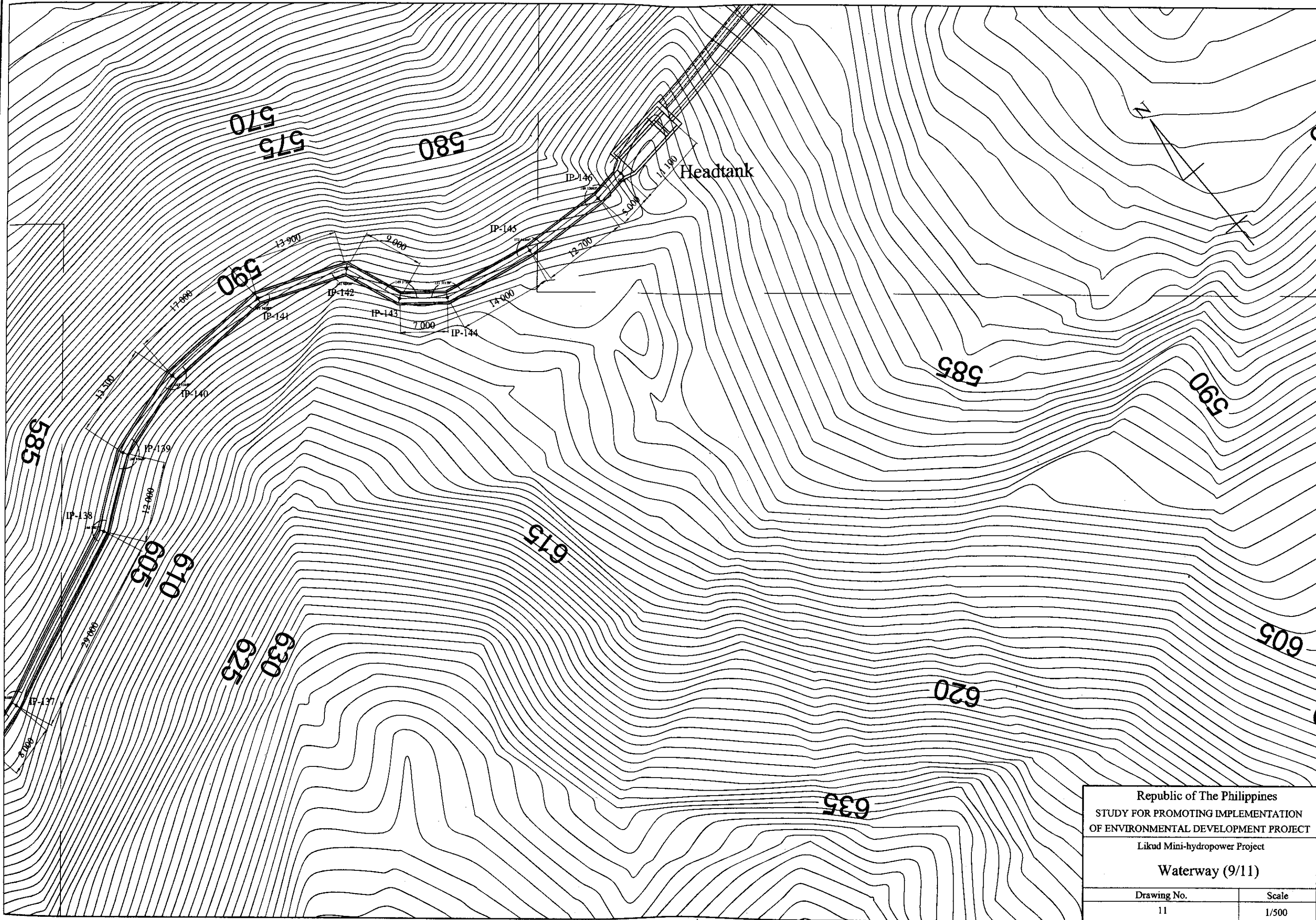


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Waterway (6/11)	
Drawing No.	Scale
8	1/500

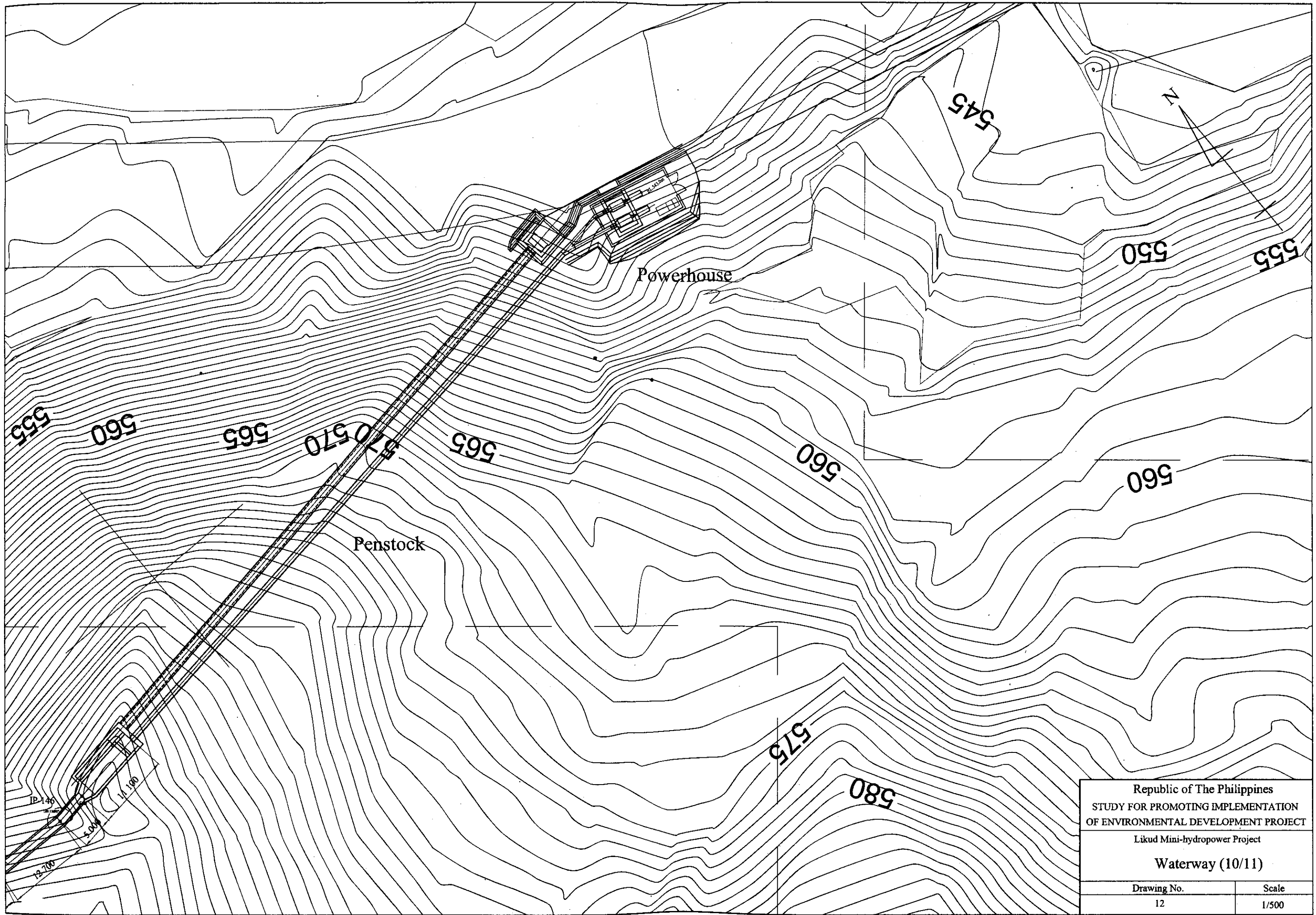




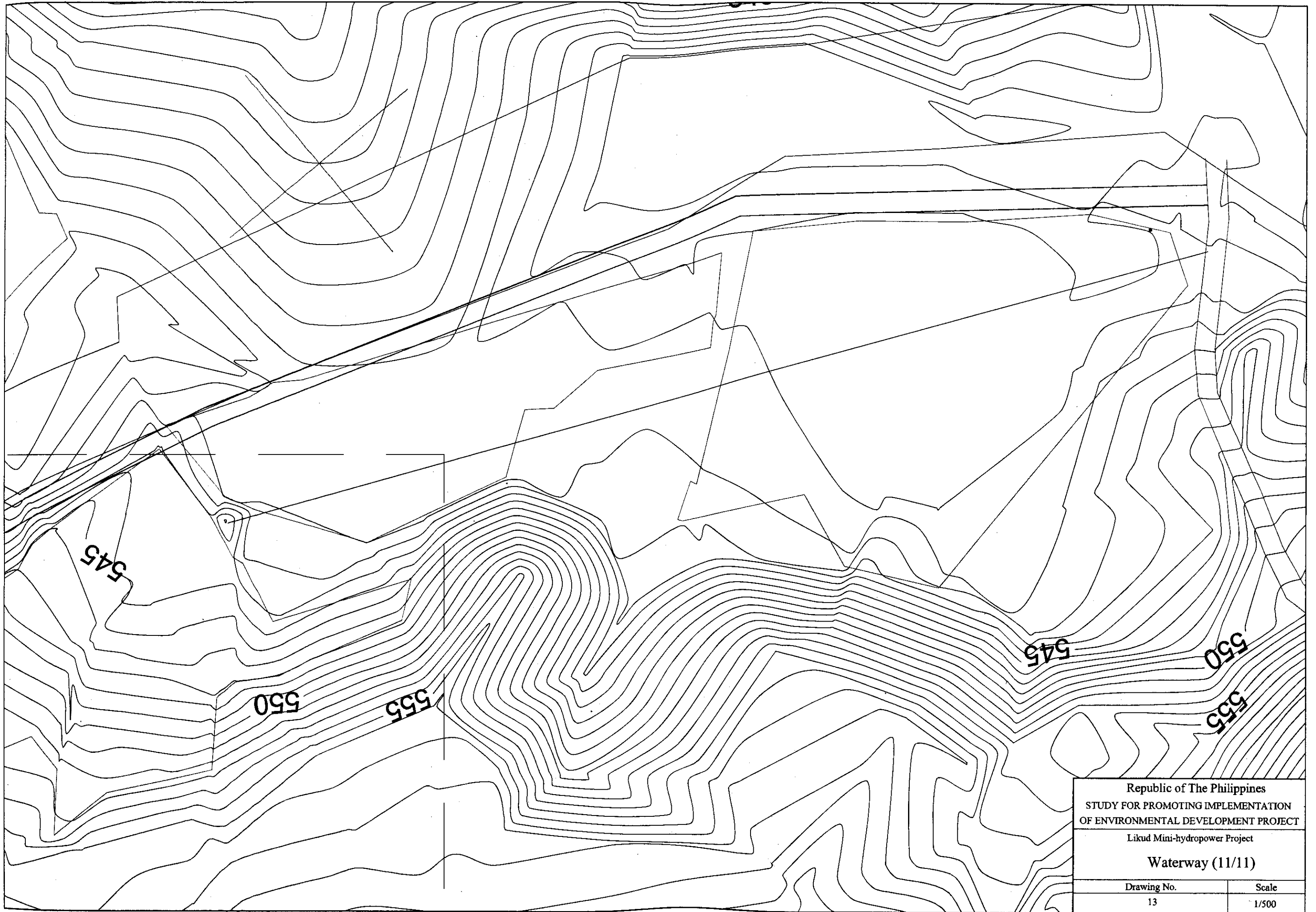
Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project Waterway (8/11)	
Drawing No.	Scale
10	1/500



Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project <b>Waterway (9/11)</b>	
Drawing No.	Scale
11	1/500

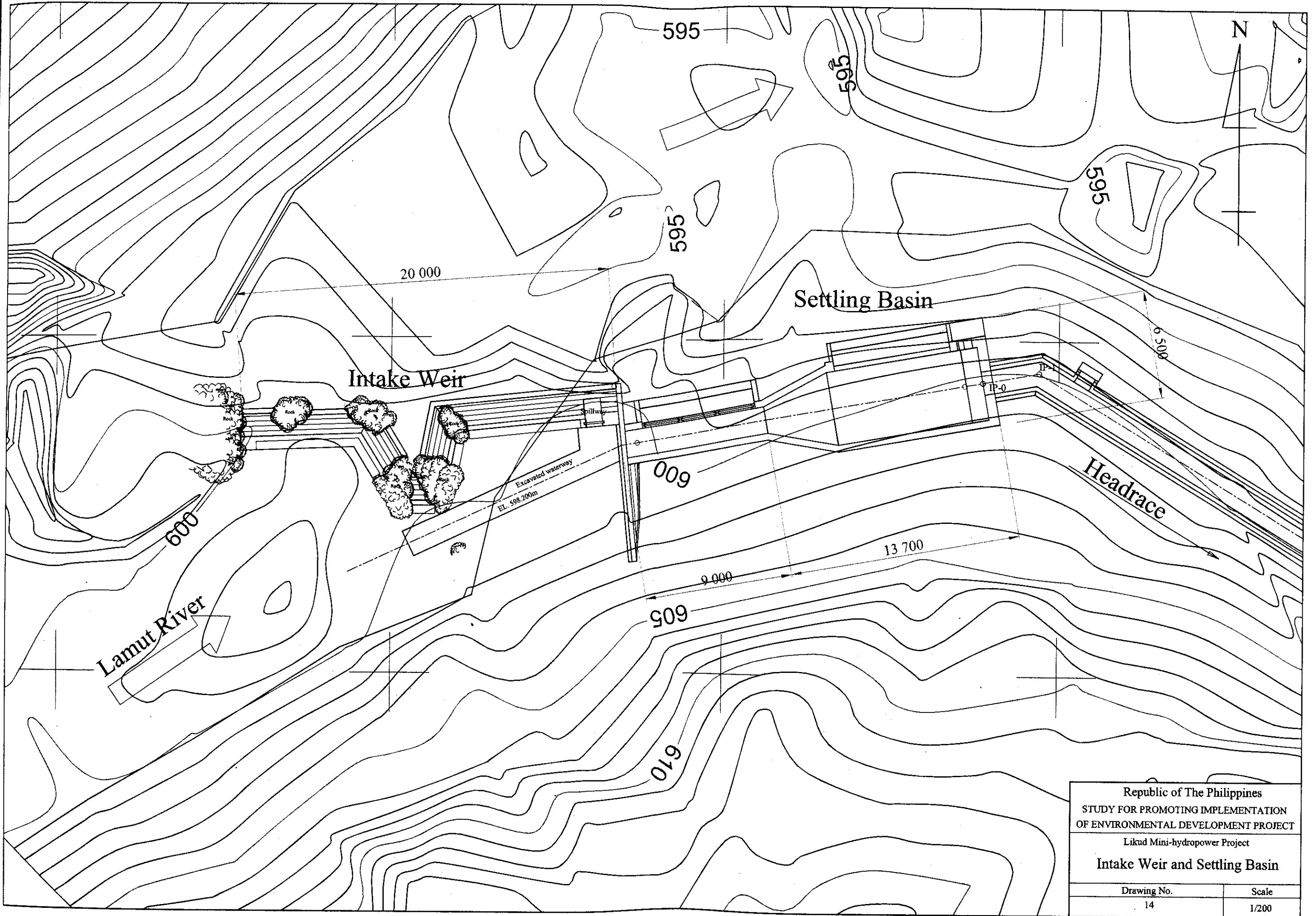


Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project <b>Waterway (10/11)</b>	
Drawing No.	Scale
12	1/500

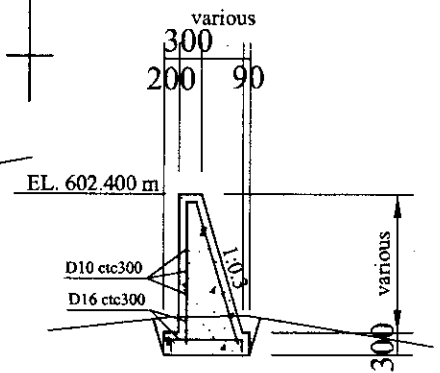
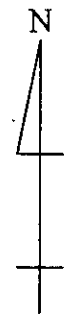
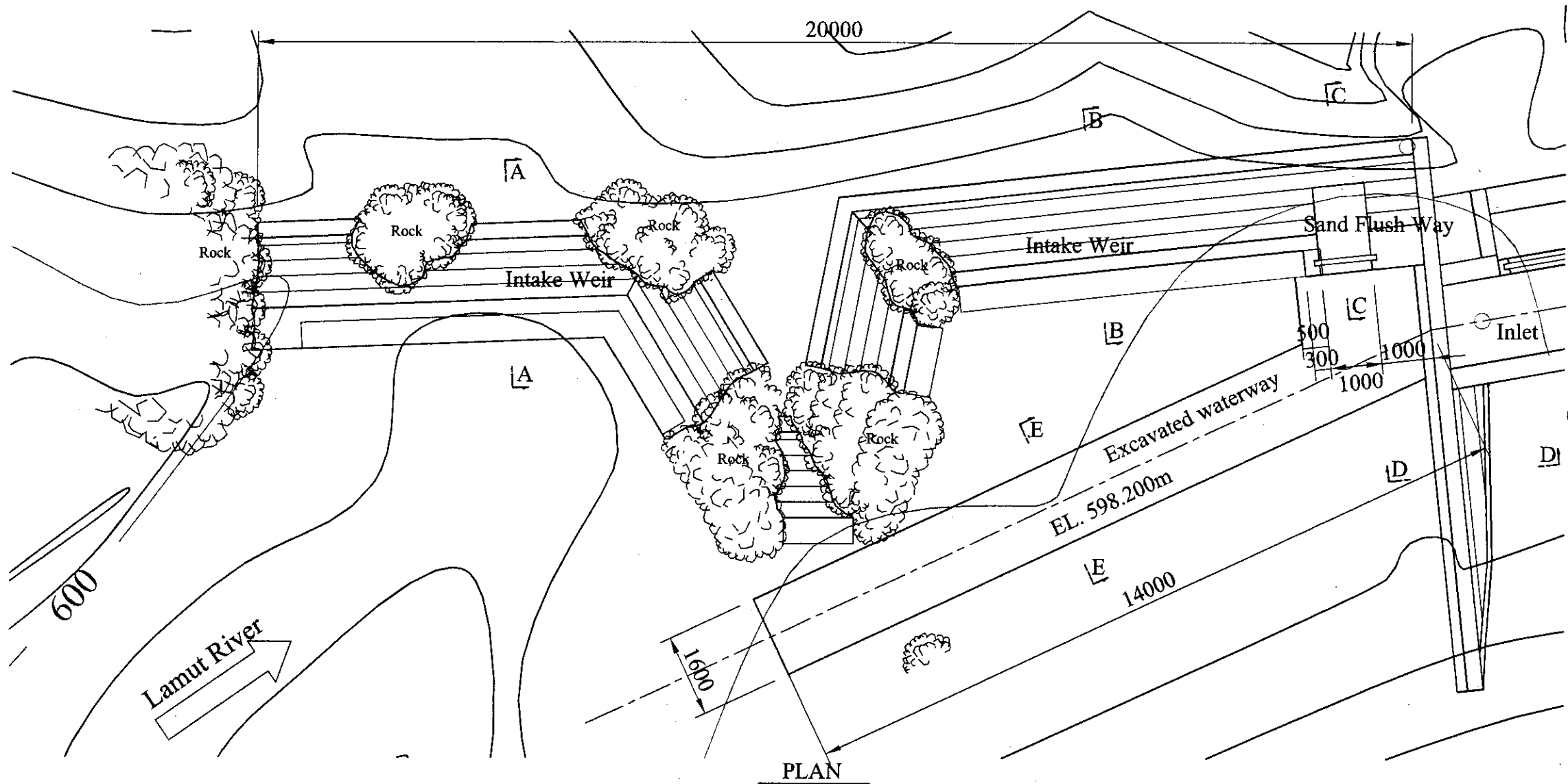


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Waterway (11/11)	
Drawing No.	Scale
13	1/500

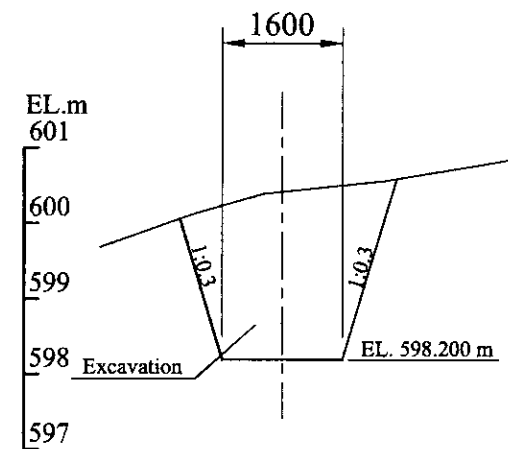




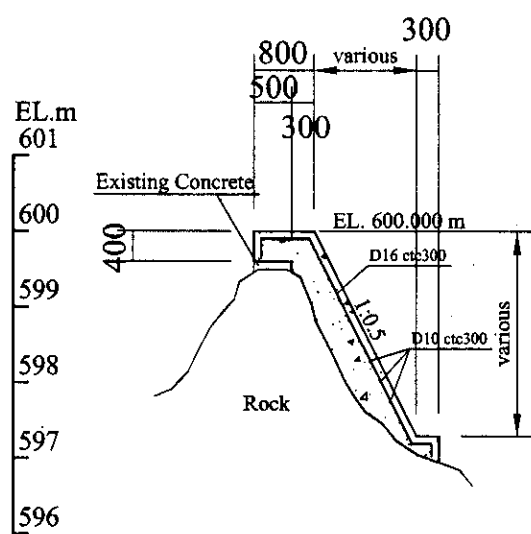
Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project <b>Intake Weir and Settling Basin</b>	
Drawing No.	Scale
14	1/200



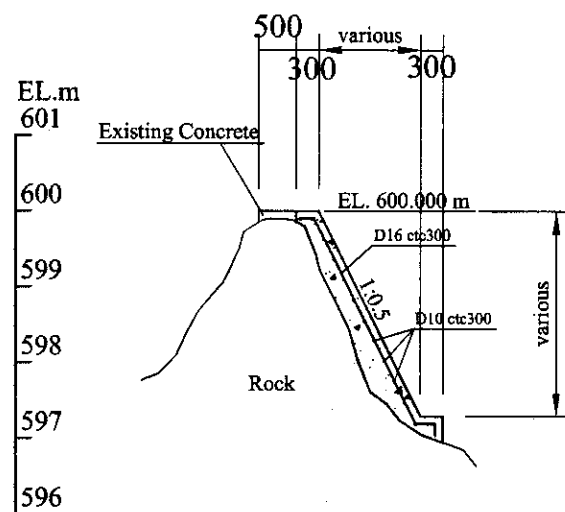
D-D  
Retaining wall



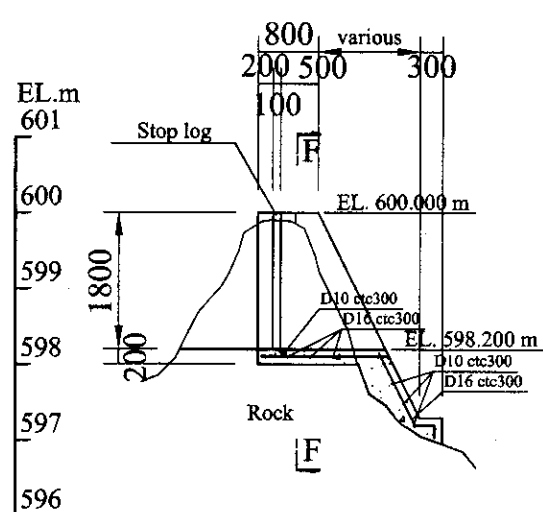
E-E



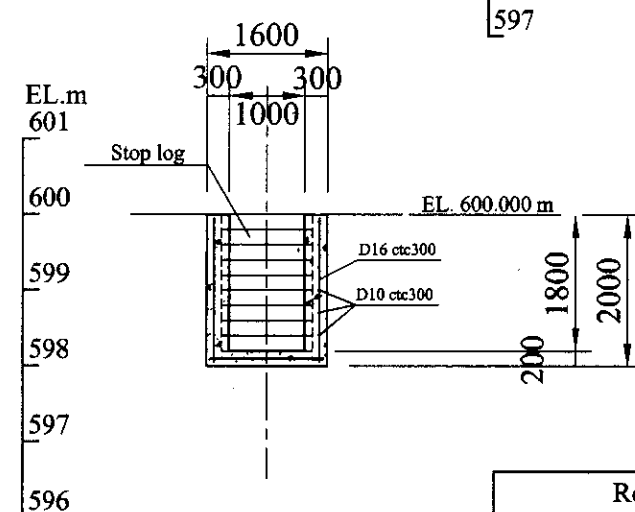
A-A



B-B

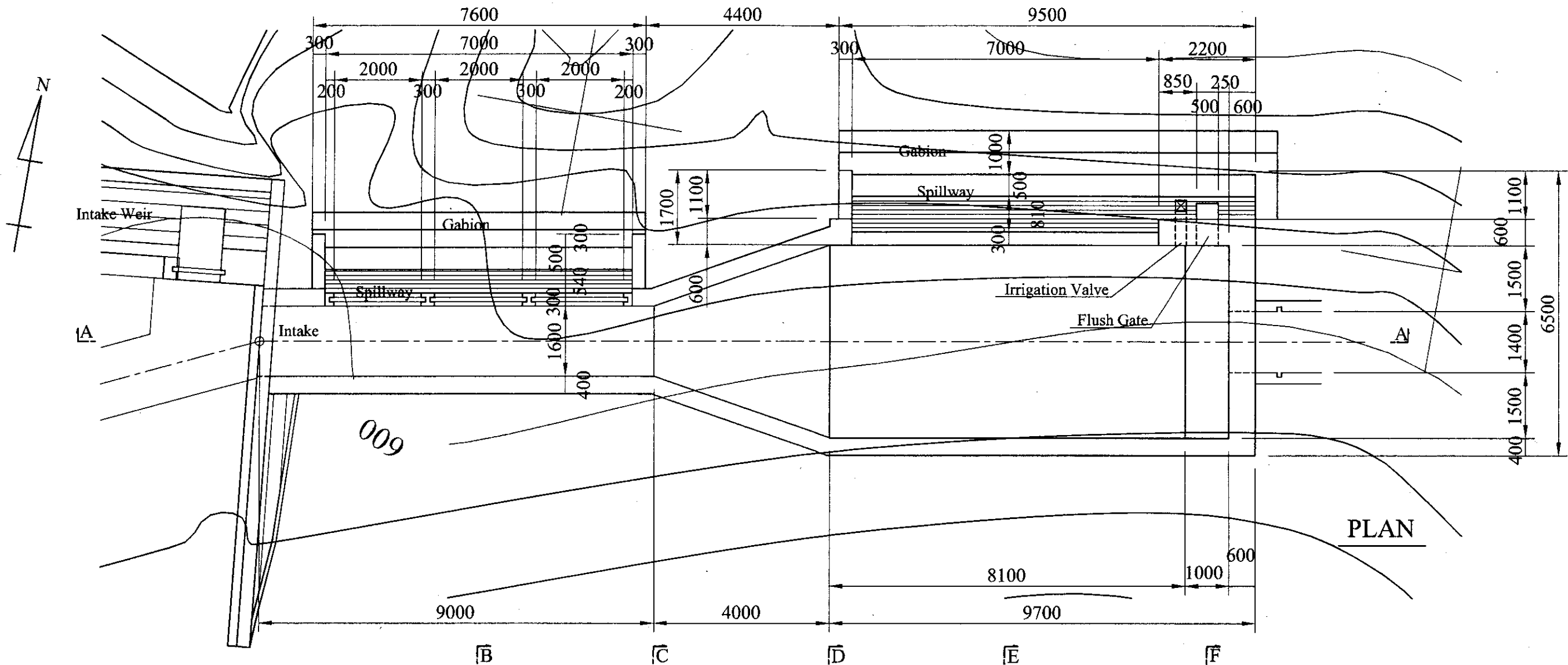


C-C  
Sand Flush Way

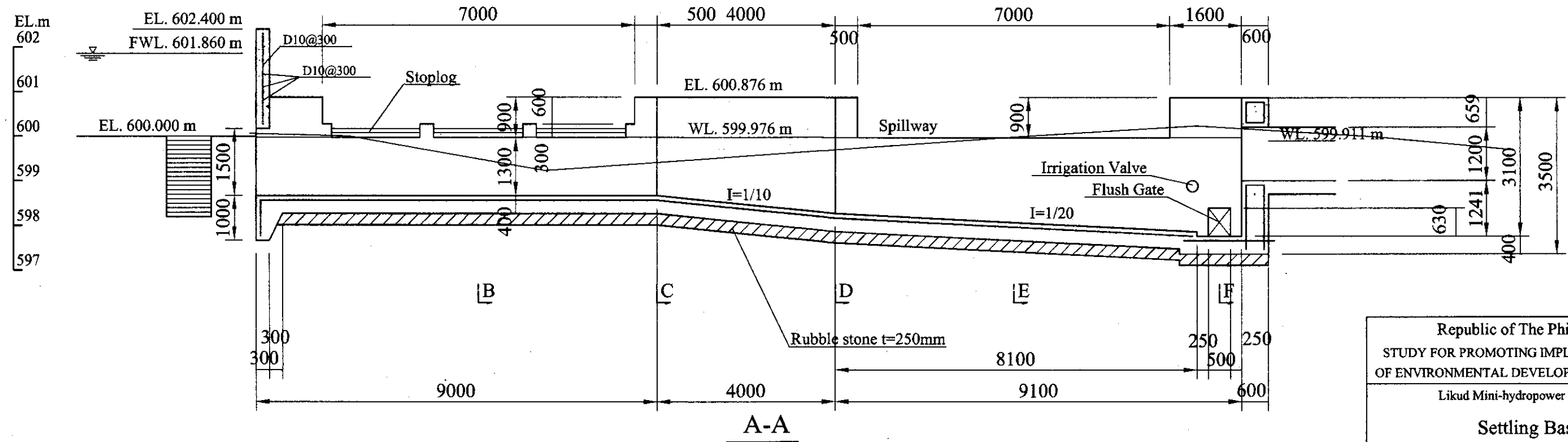


F-F  
Sand Flush Way

Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Intake Weir	
Drawing No.	Scale
15	1/100

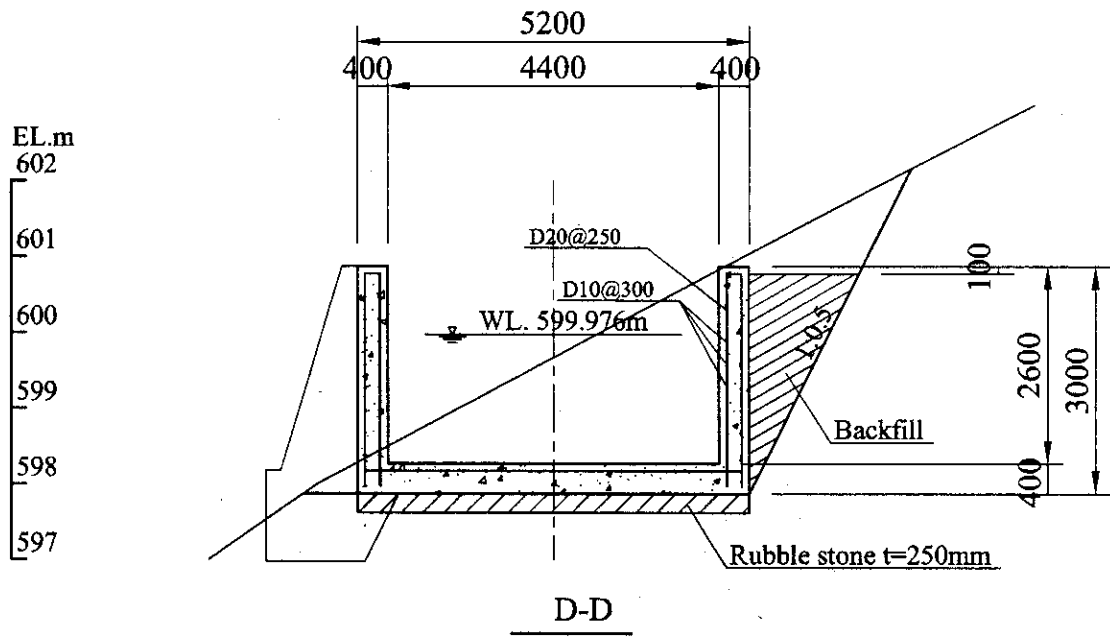
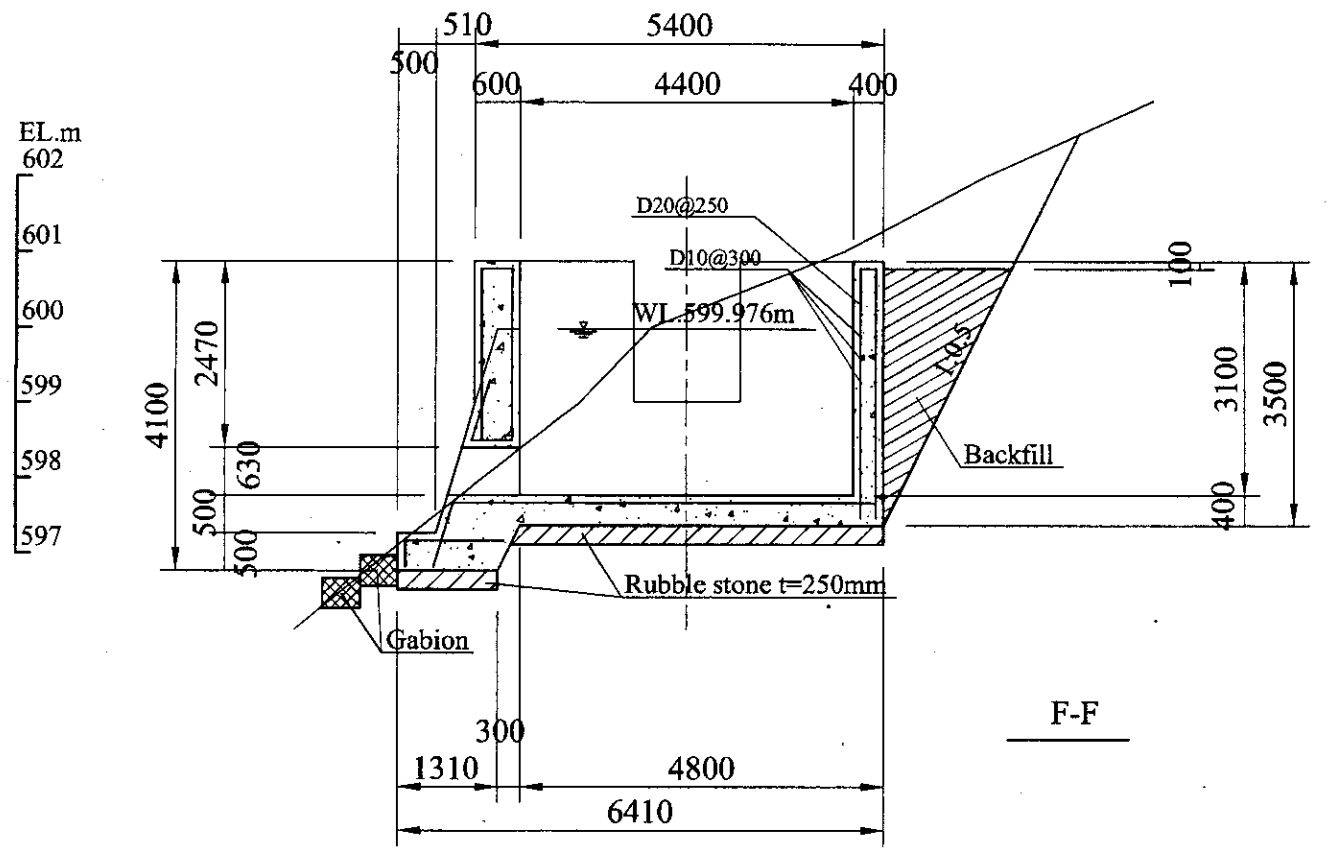
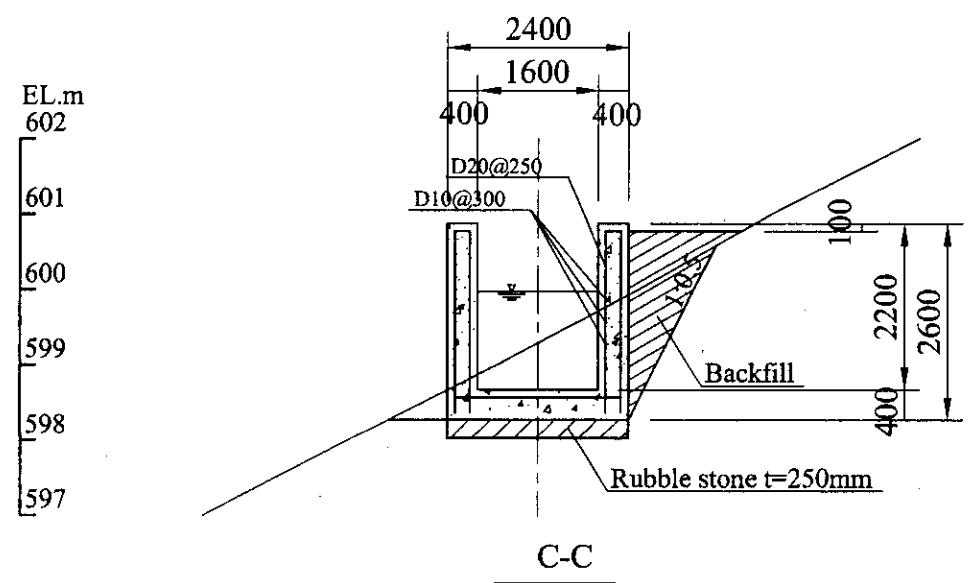
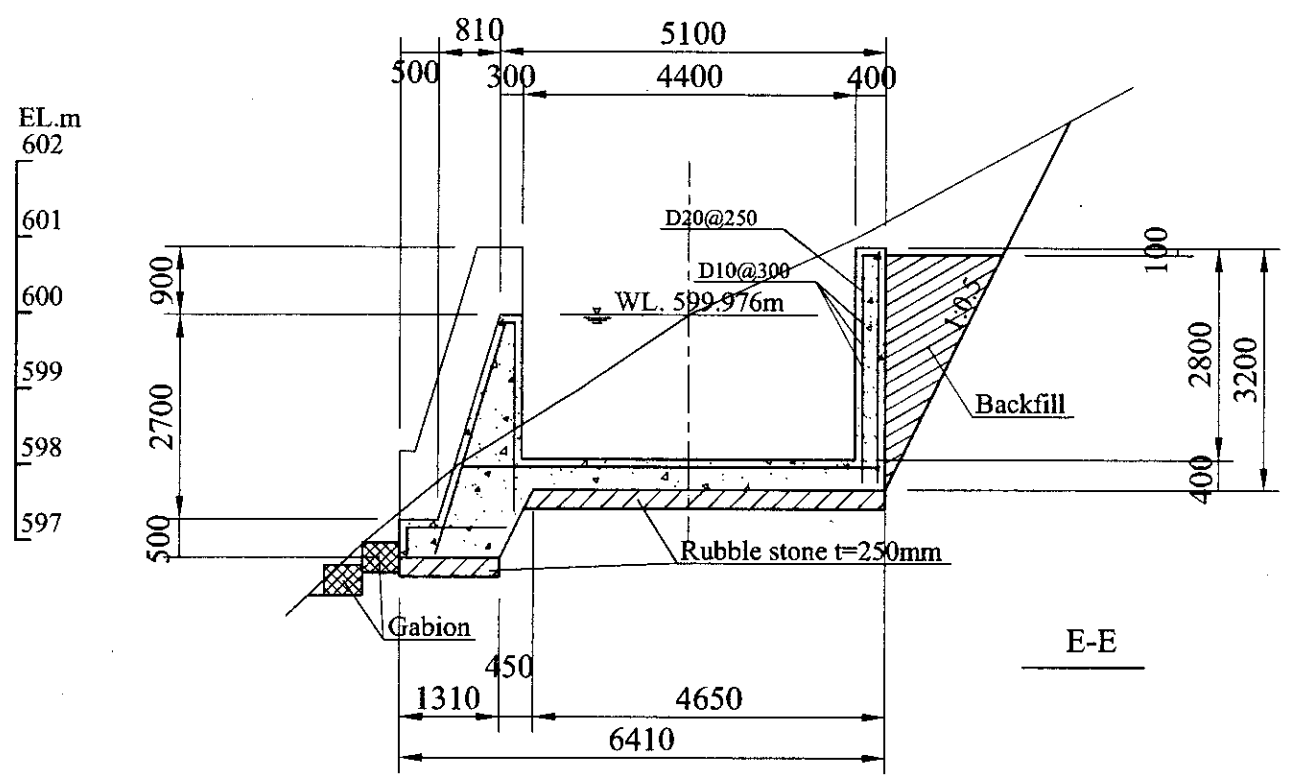
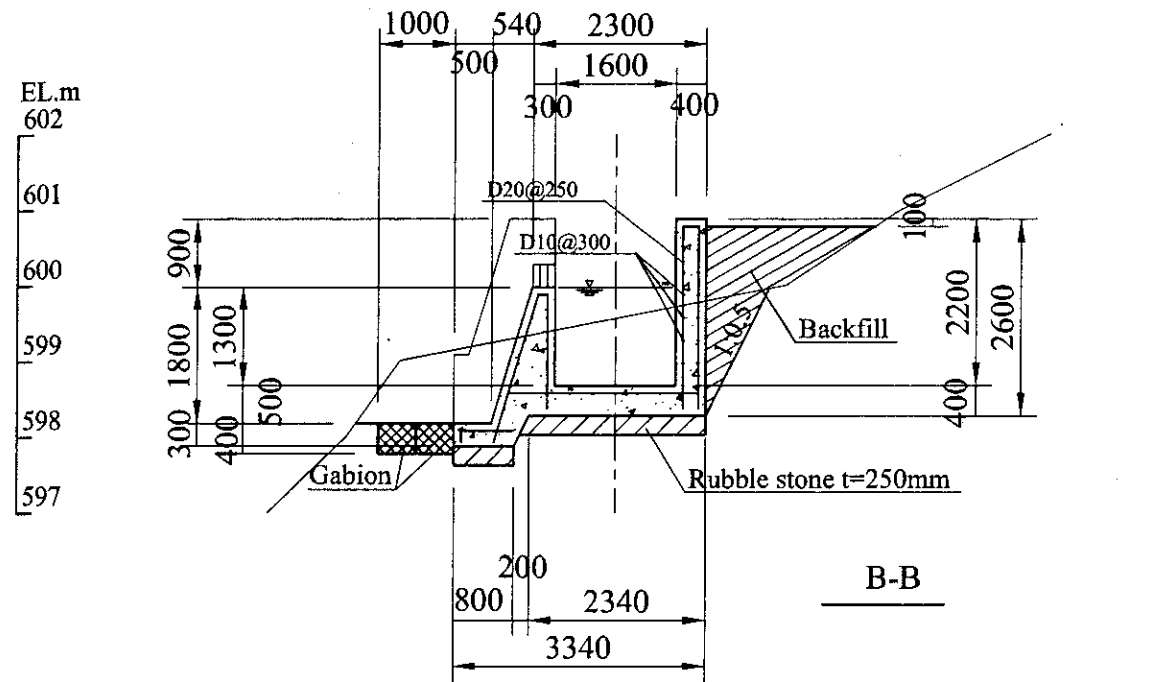


PLAN

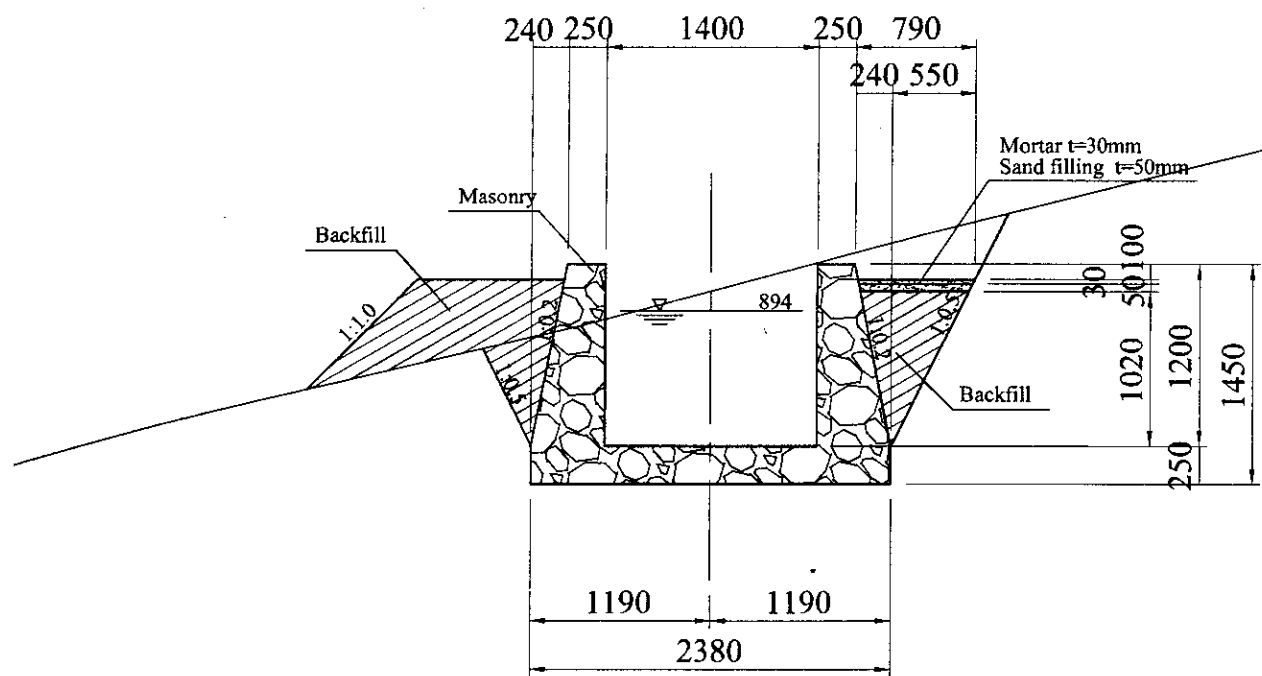


A-A

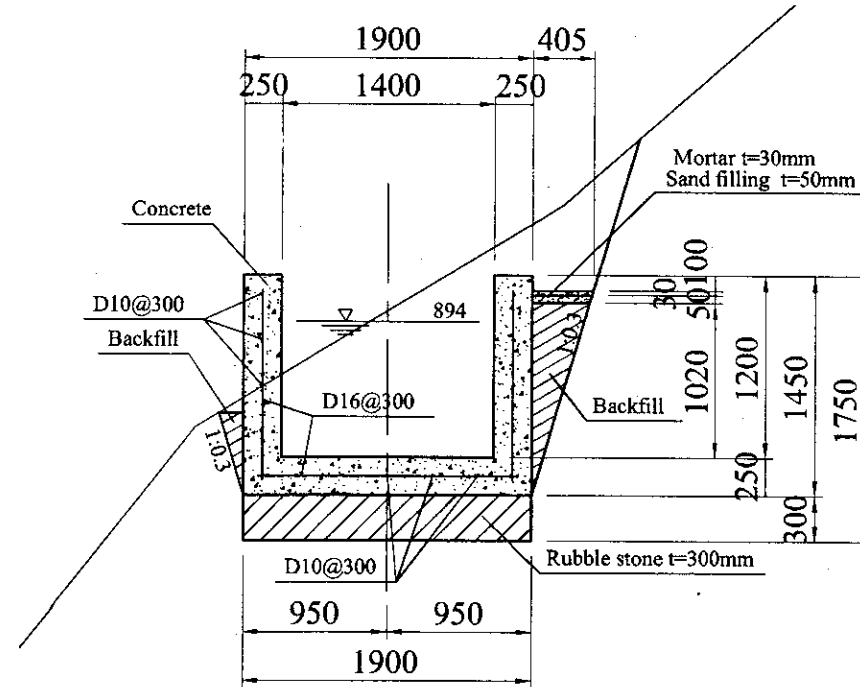
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
<b>Settling Basin</b>	
Drawing No.	Scale
16	1/100



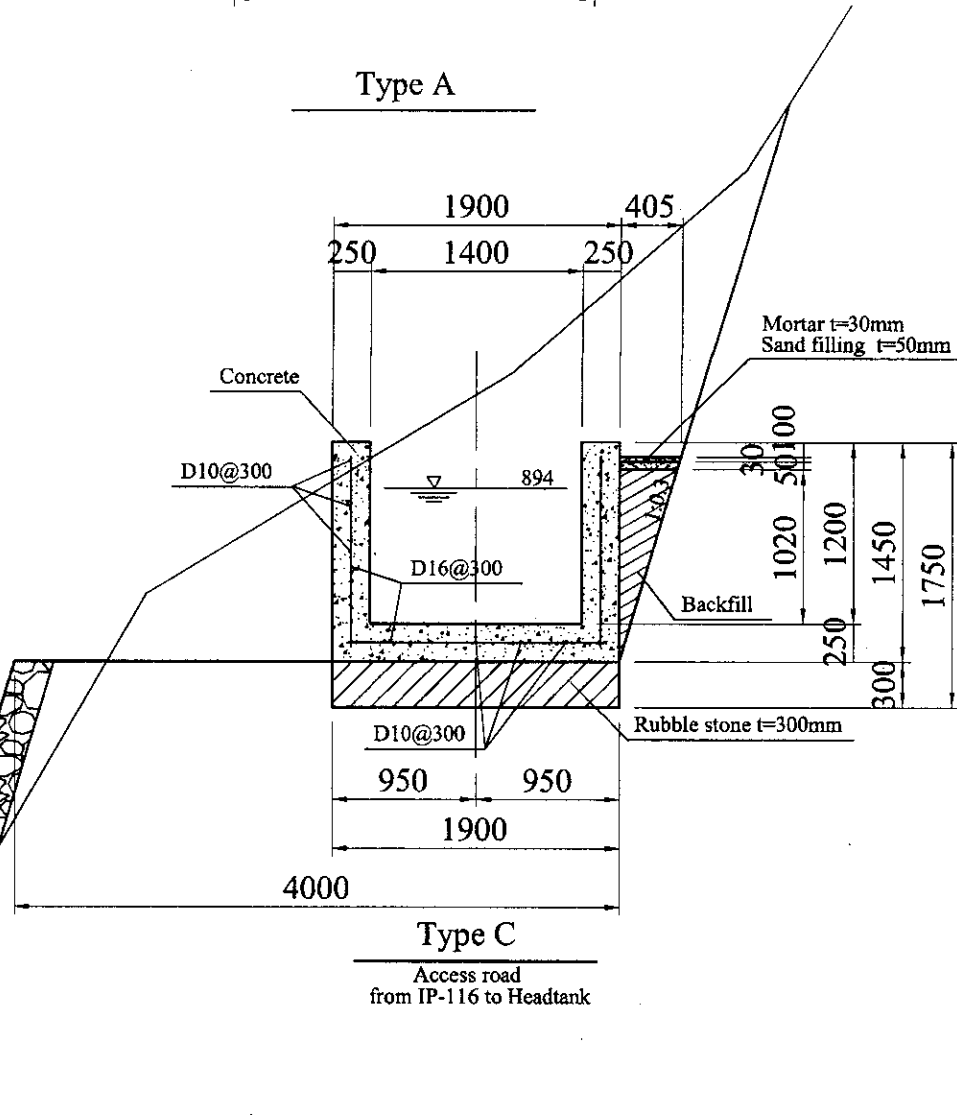
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Settling Basin	
Drawing No.	Scale
17	1/100



Type A

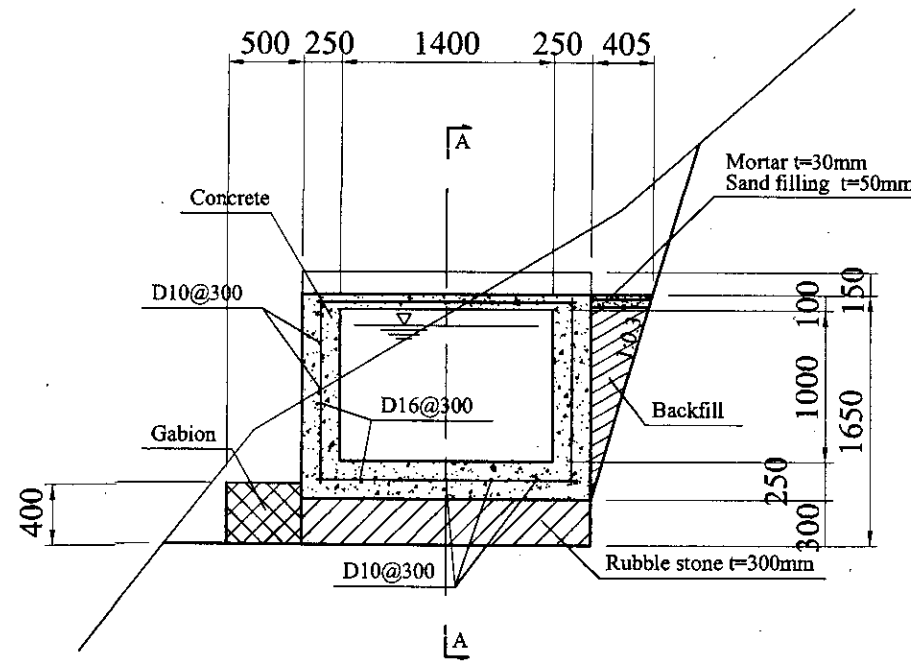


Type B



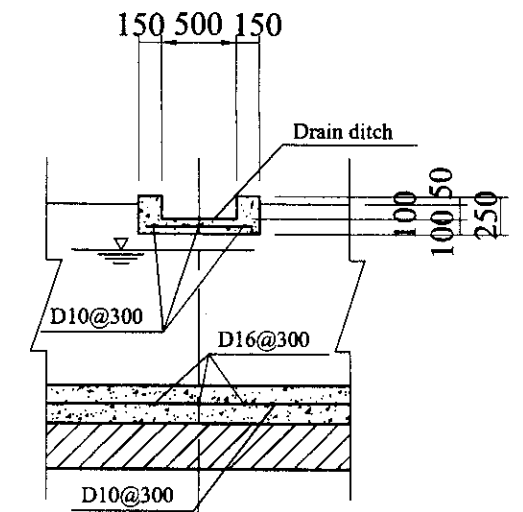
Type C

Access road  
from IP-116 to Headtank



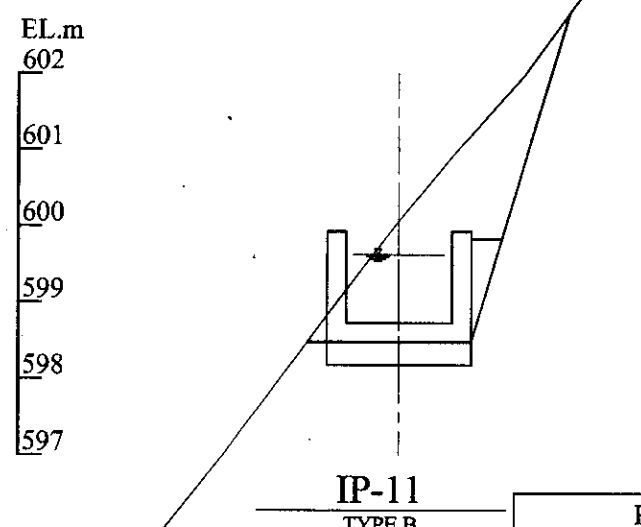
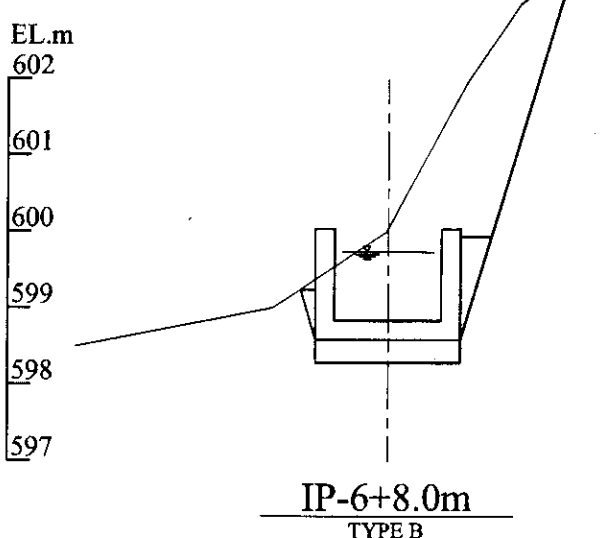
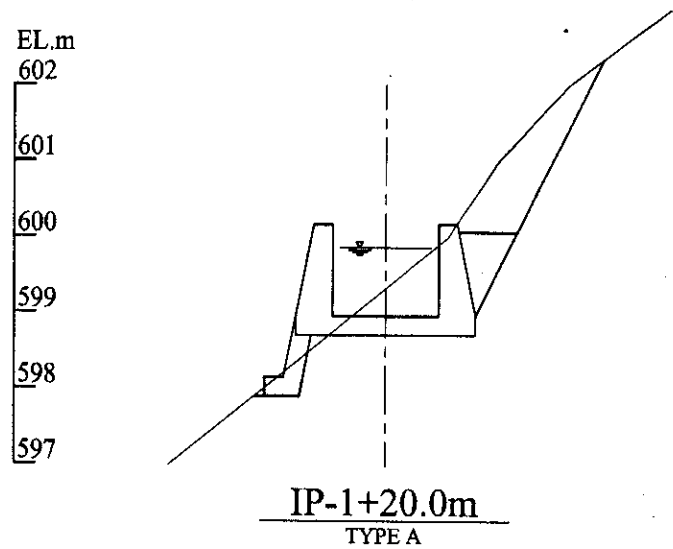
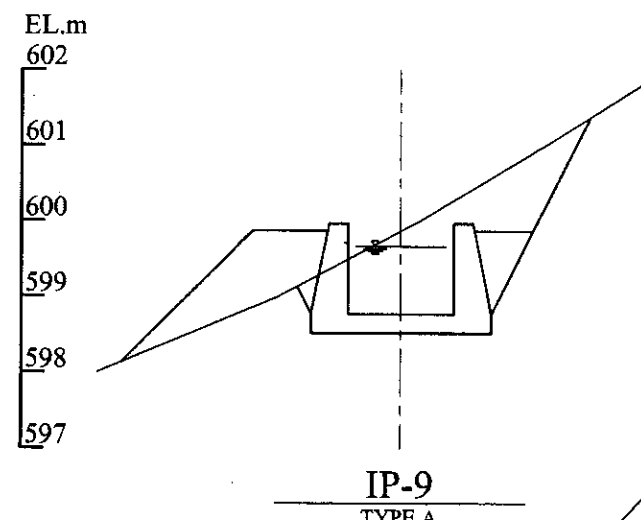
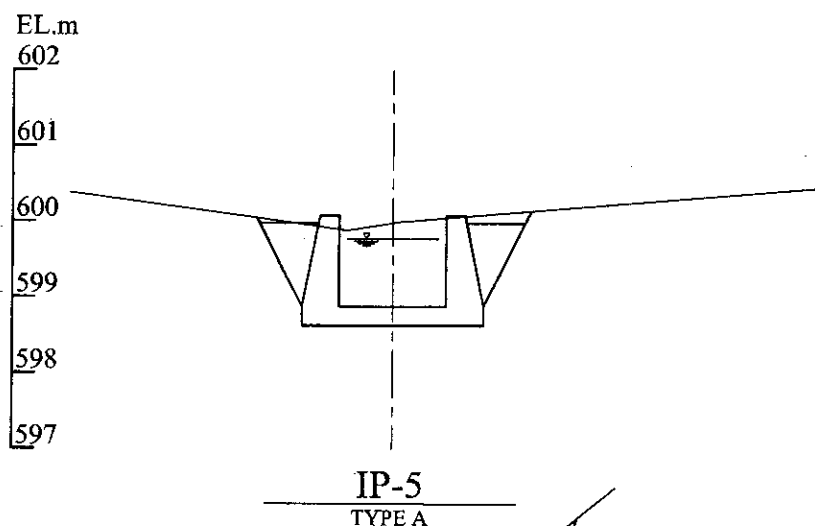
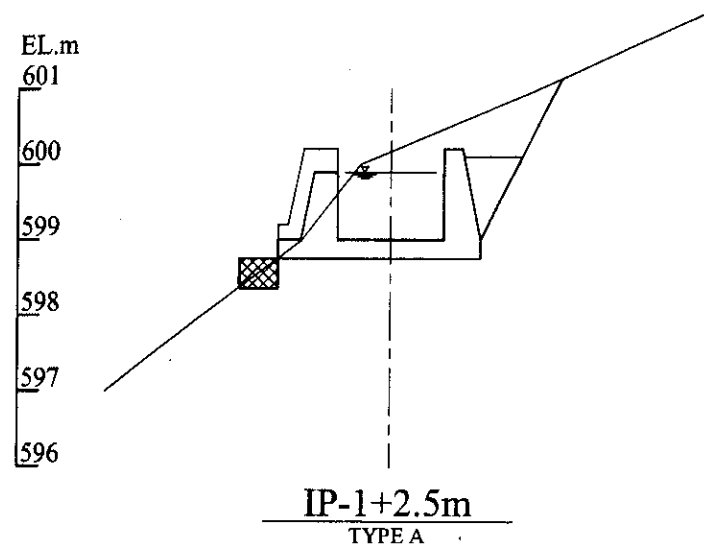
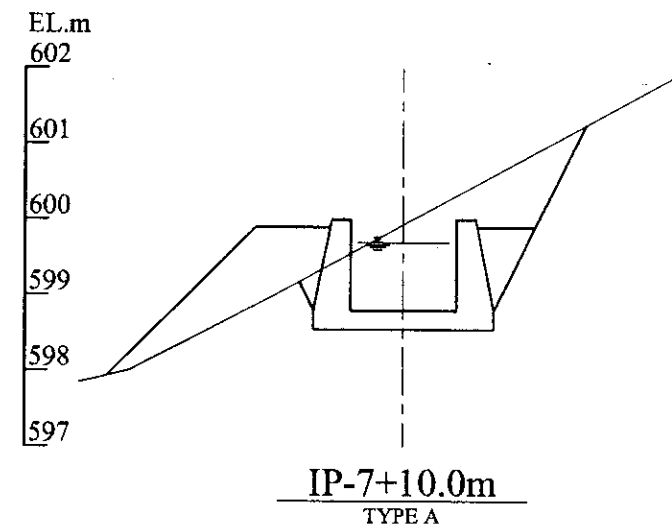
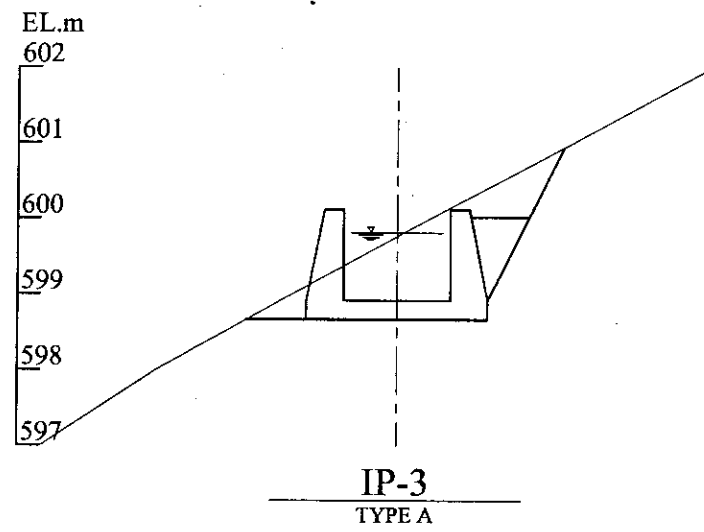
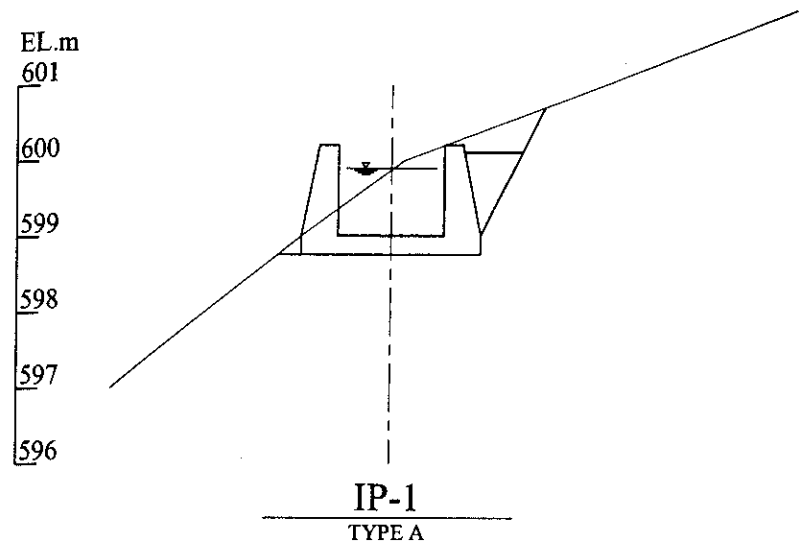
Drain ditch

Type B

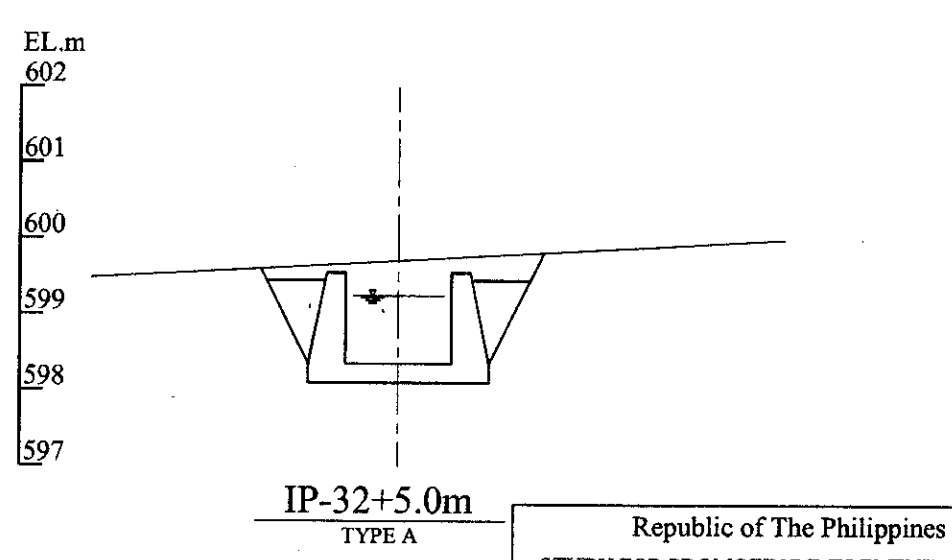
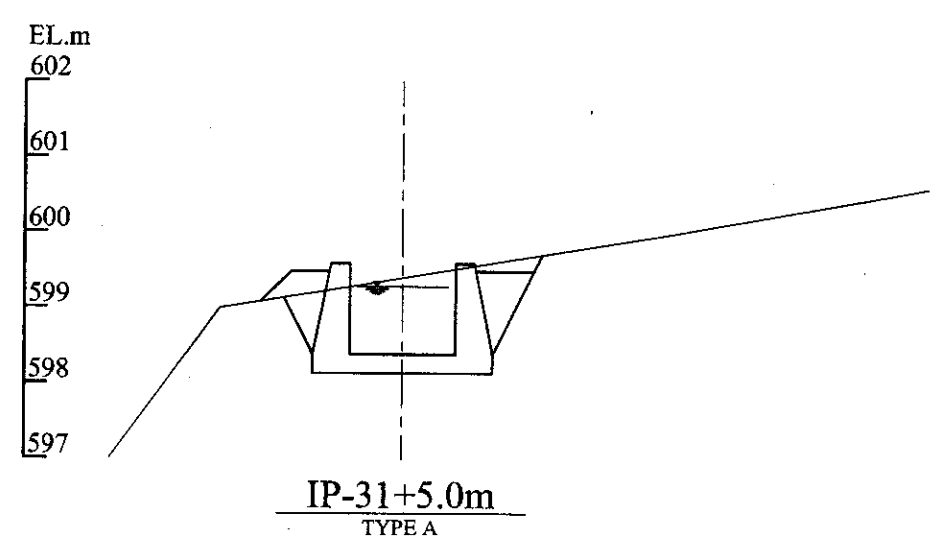
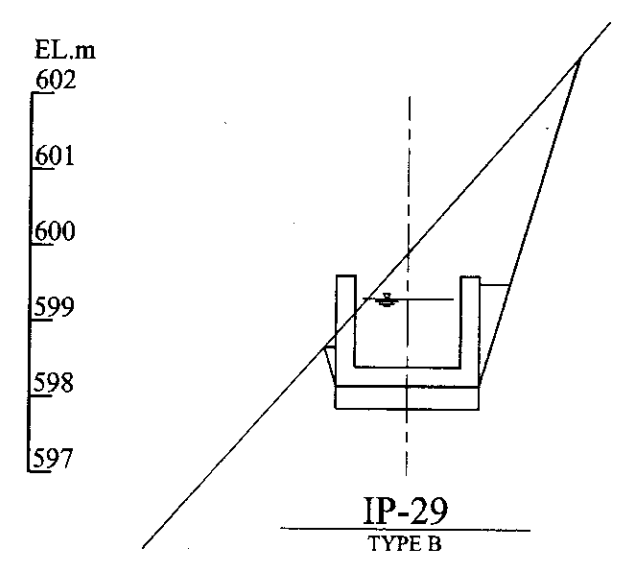
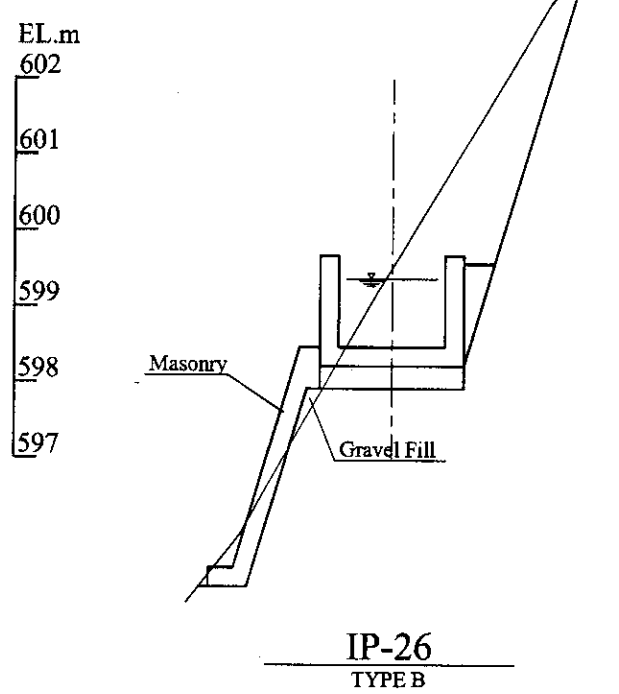
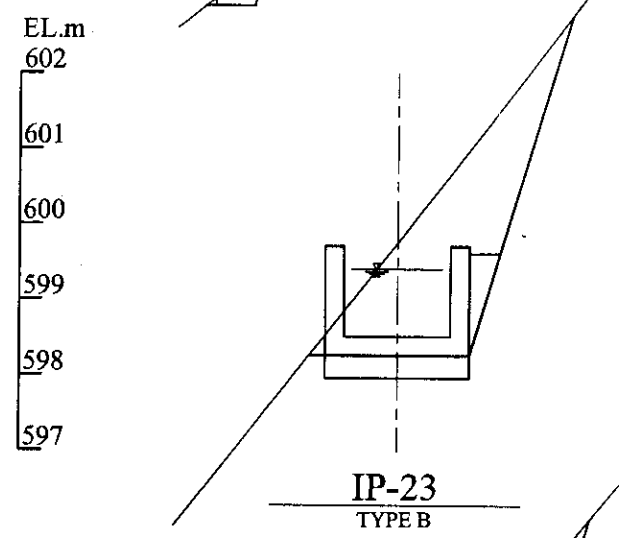
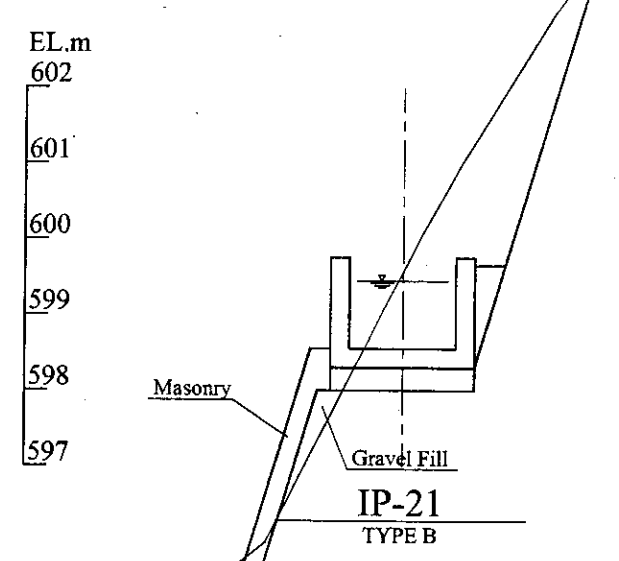
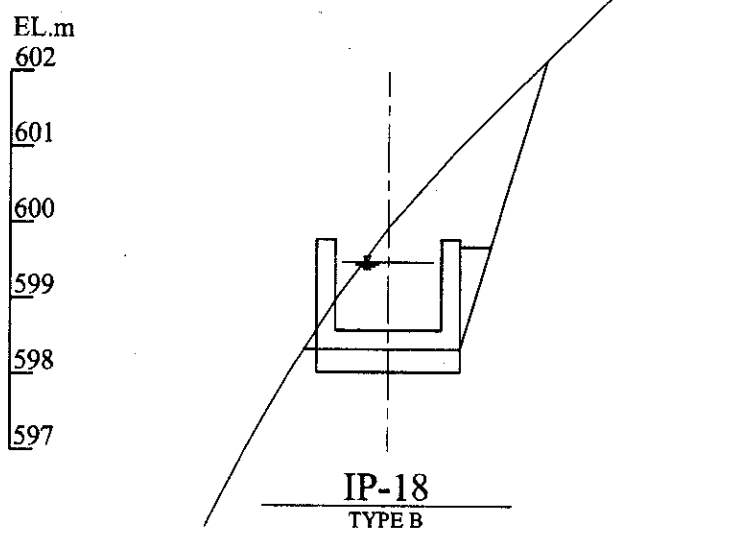
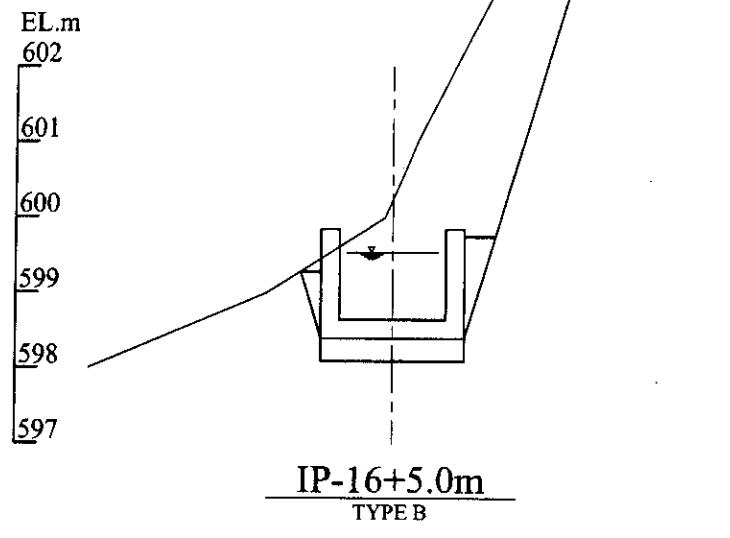
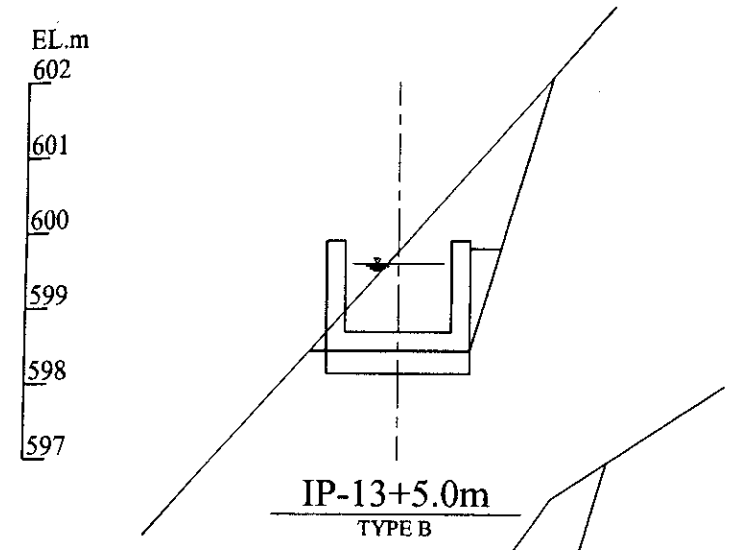


A-A  
Drain ditch

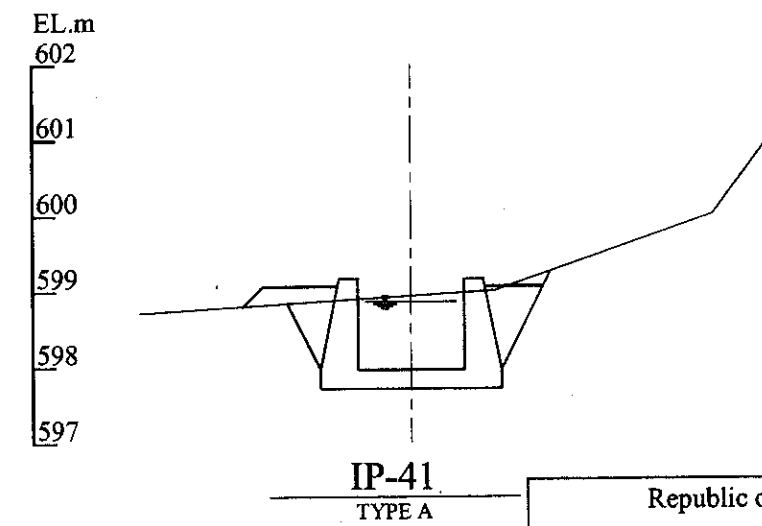
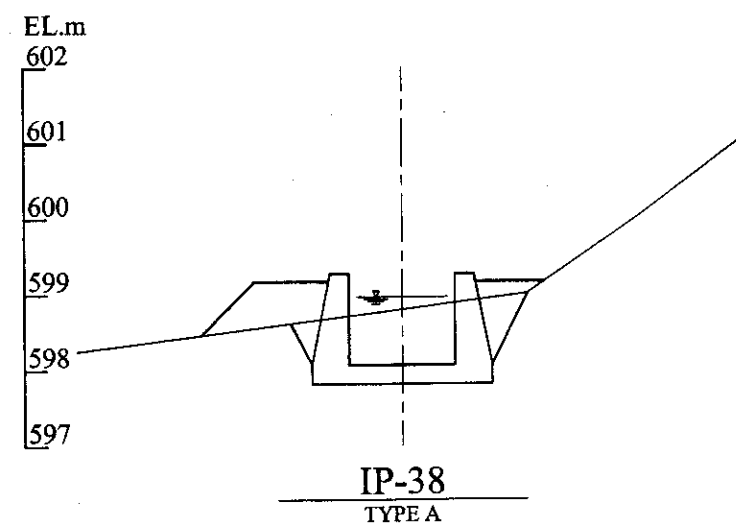
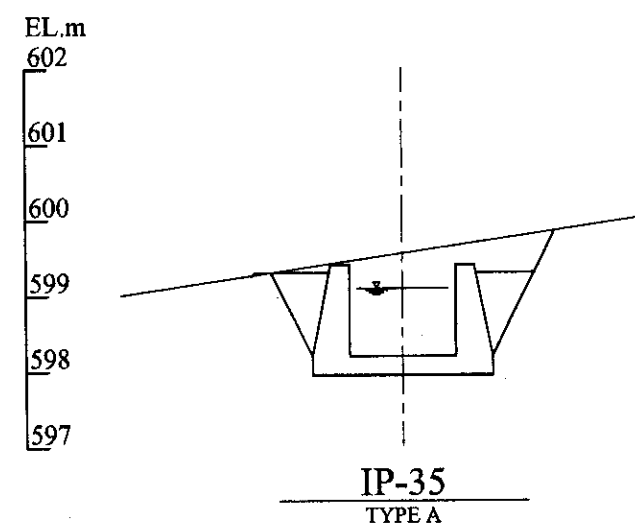
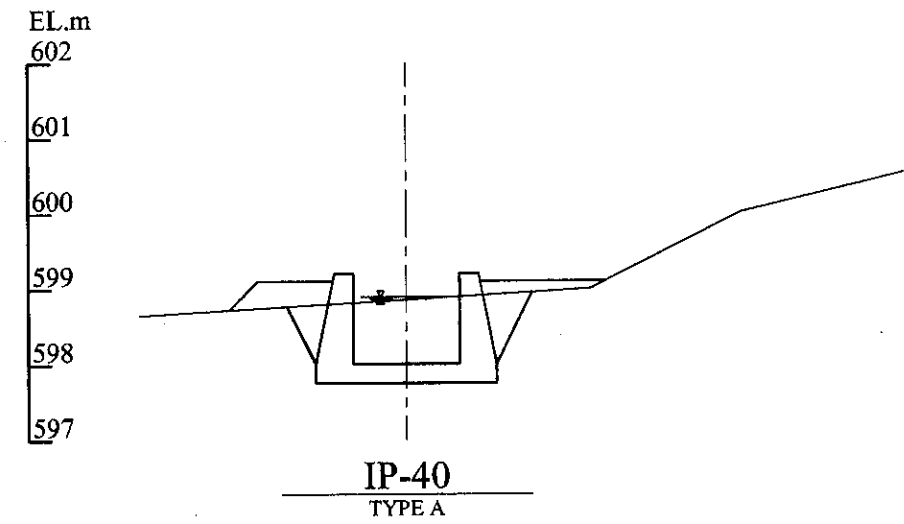
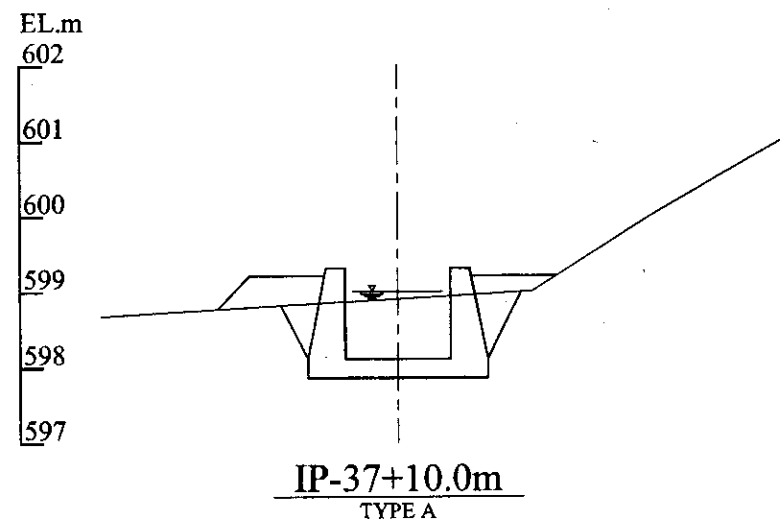
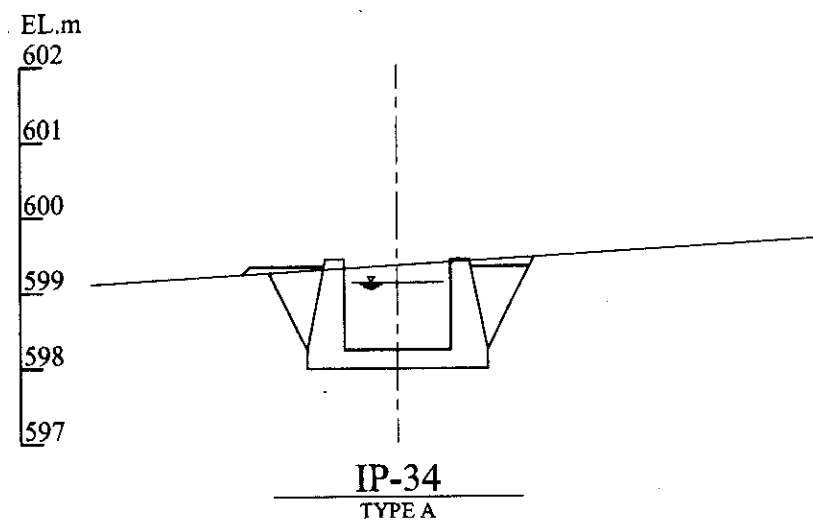
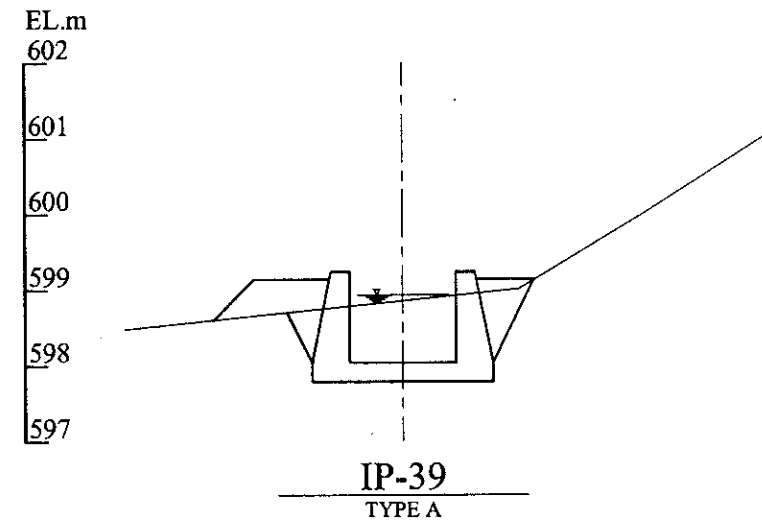
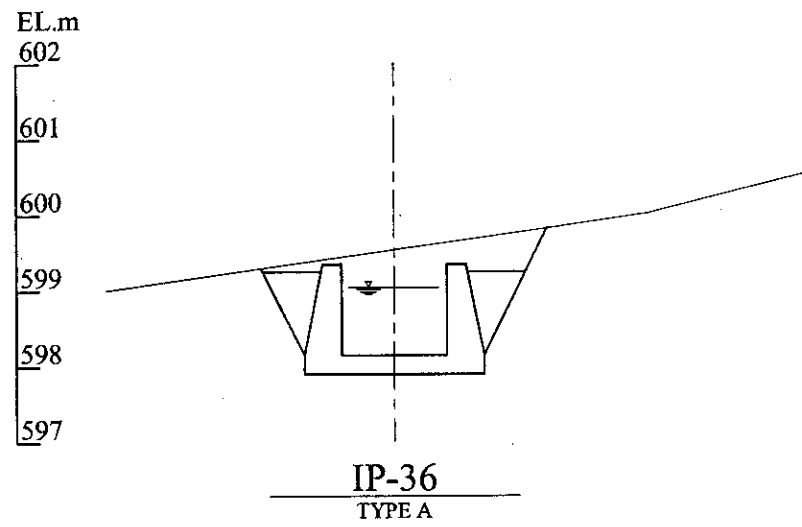
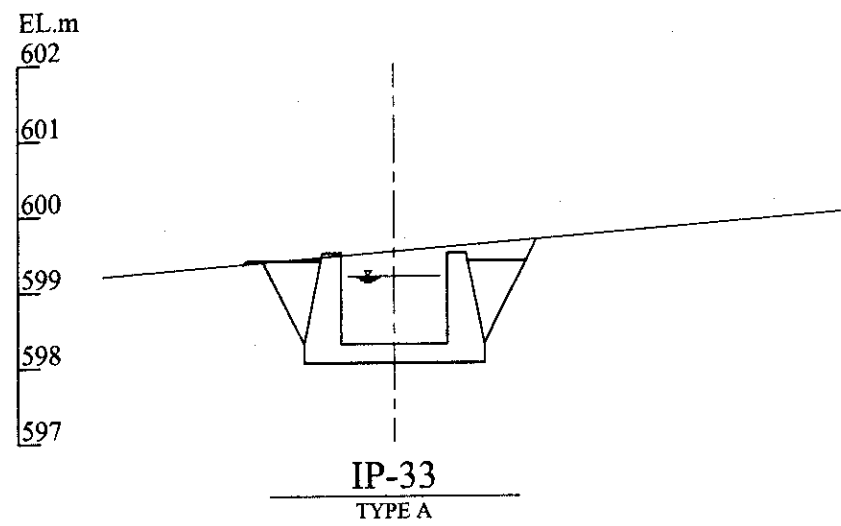
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
General Cross Section of Headrace	
Drawing No.	Scale
18	1/50



Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (1/11)	
Drawing No.	Scale
19	1/100

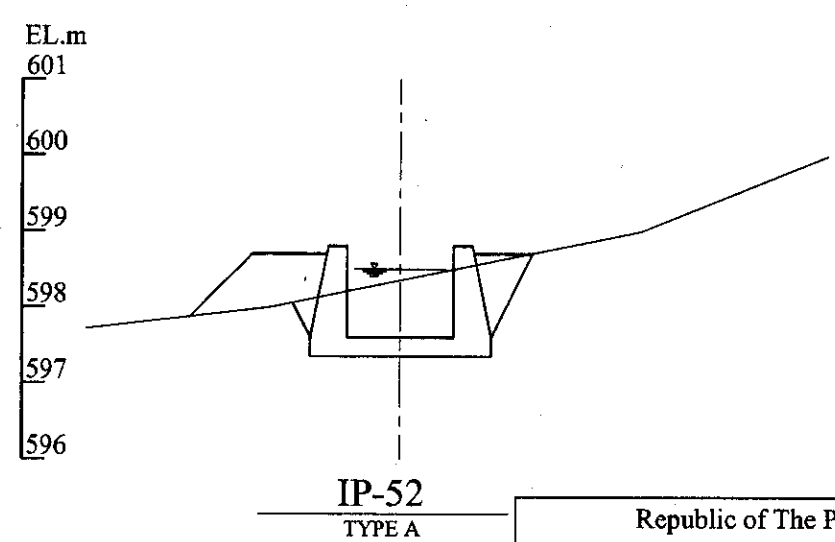
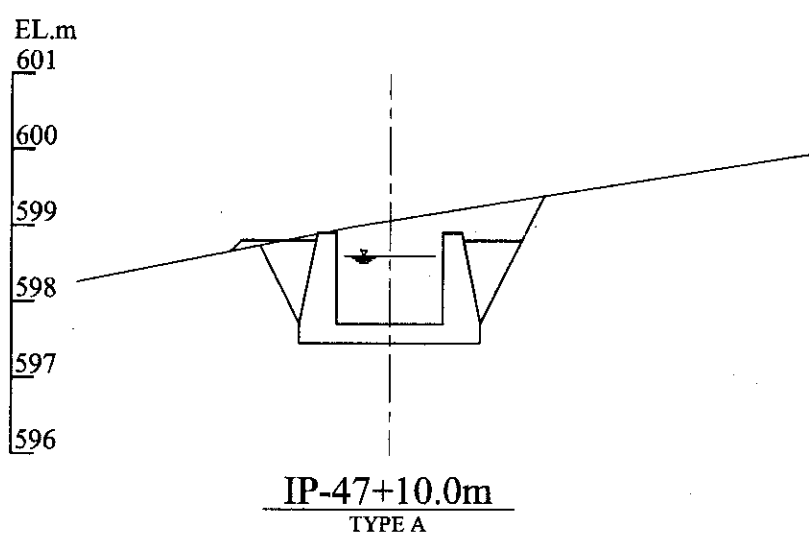
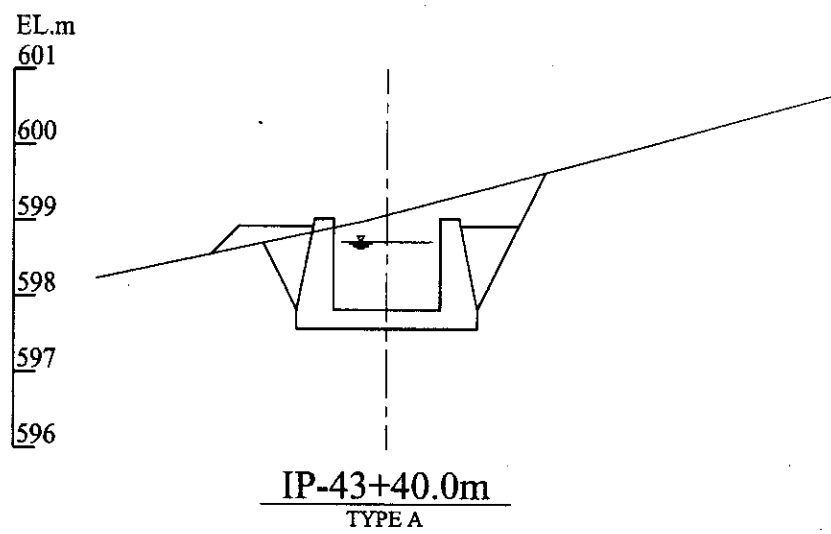
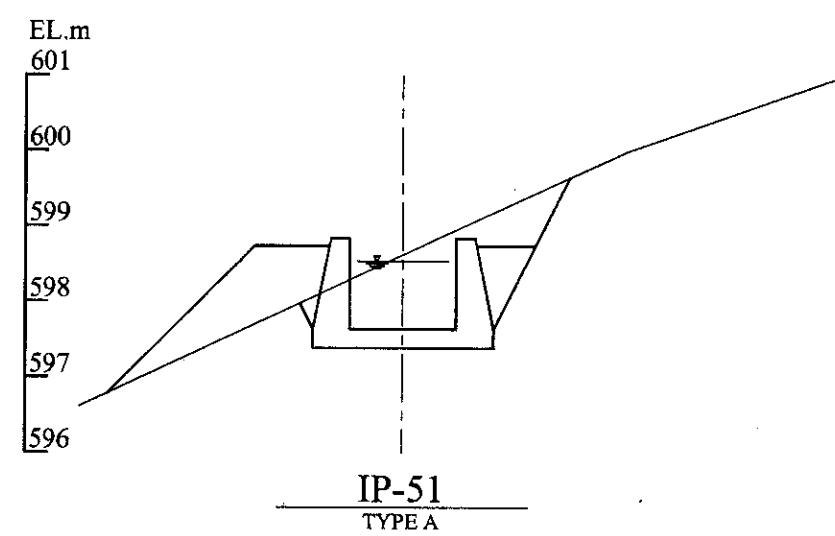
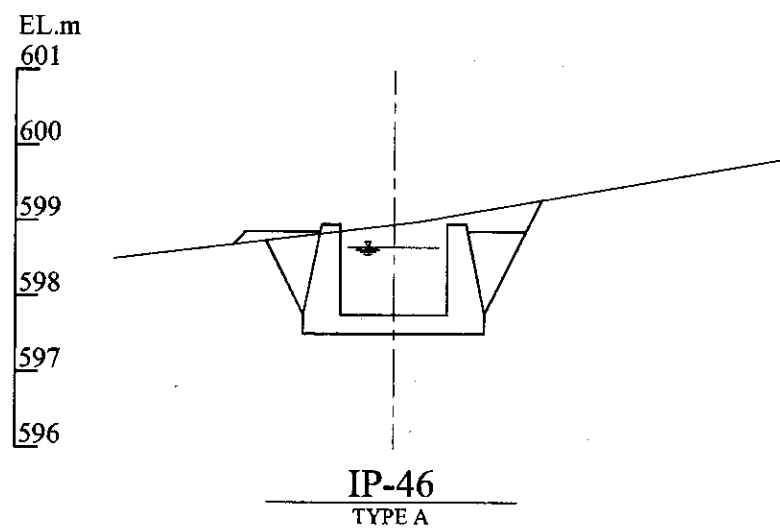
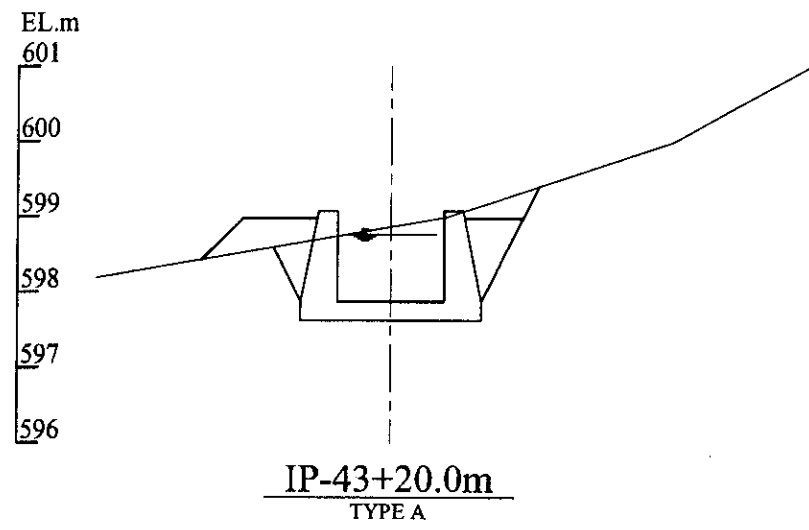
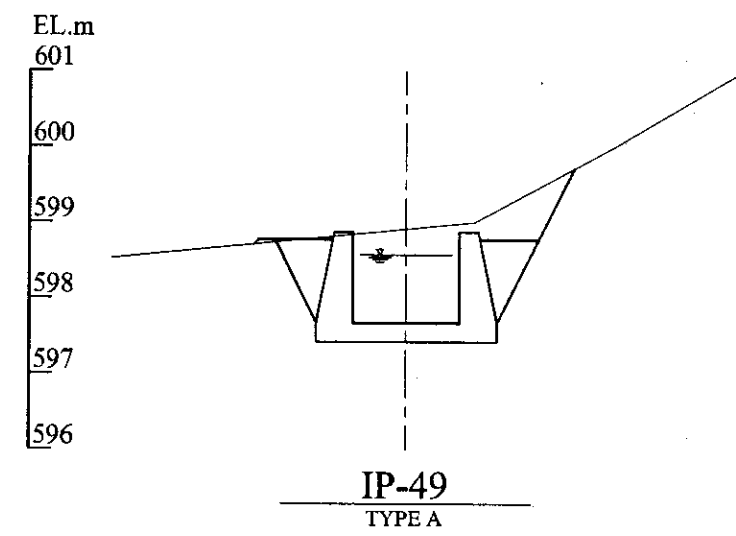
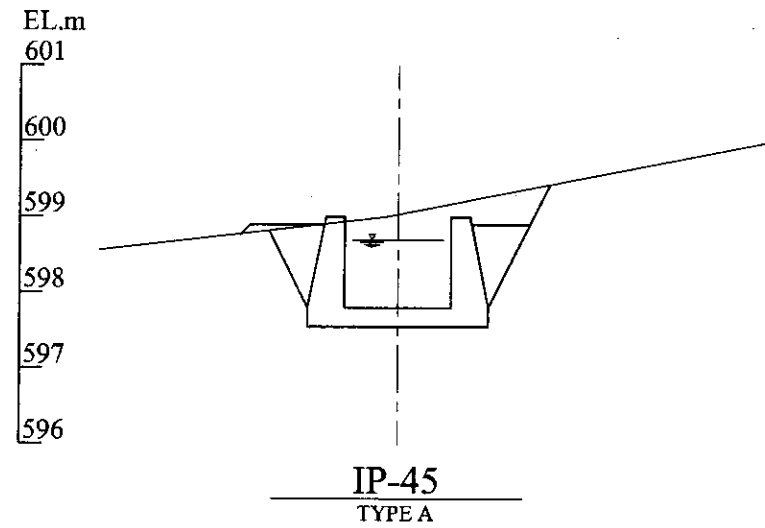
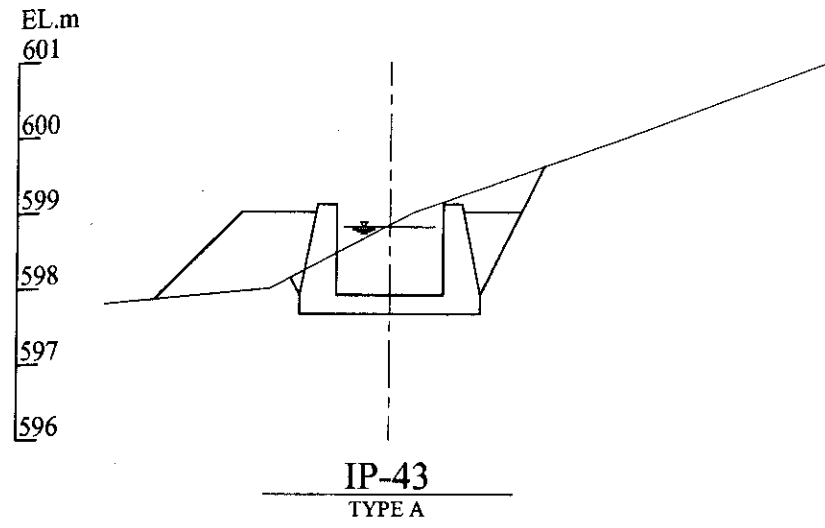


Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (2/11)	
Drawing No.	Scale
20	1/100

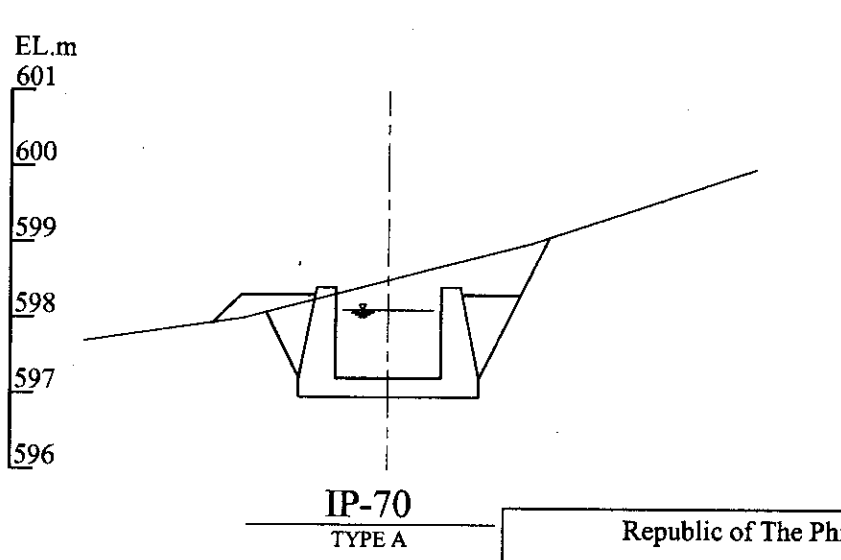
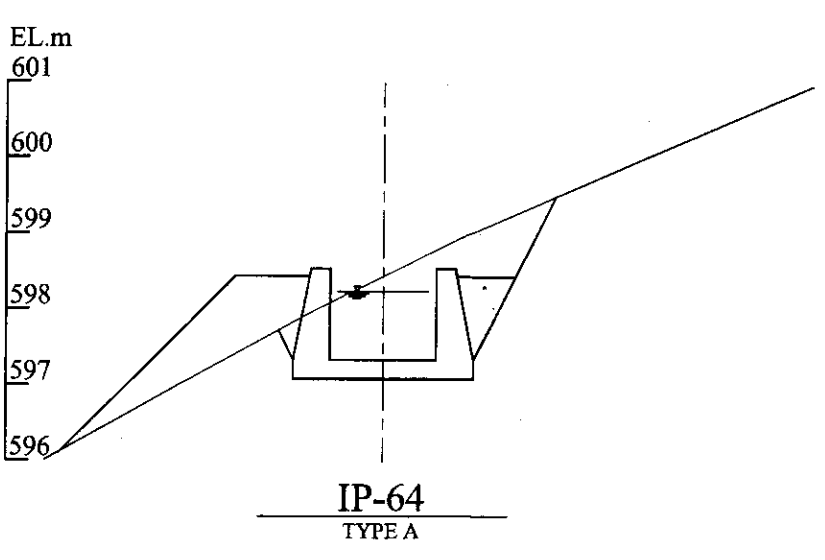
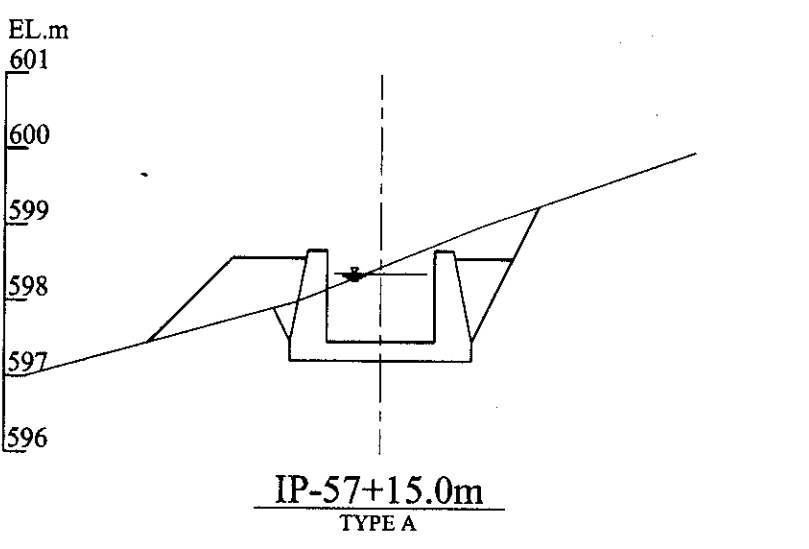
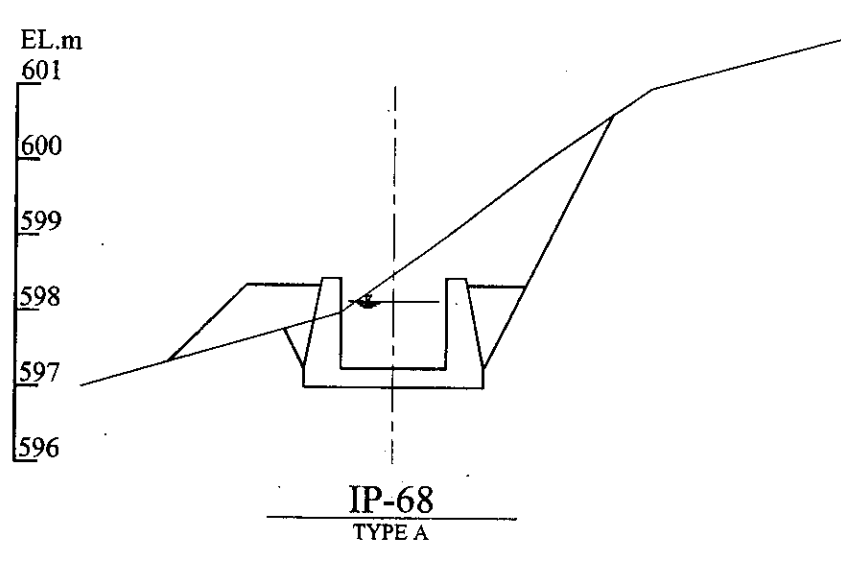
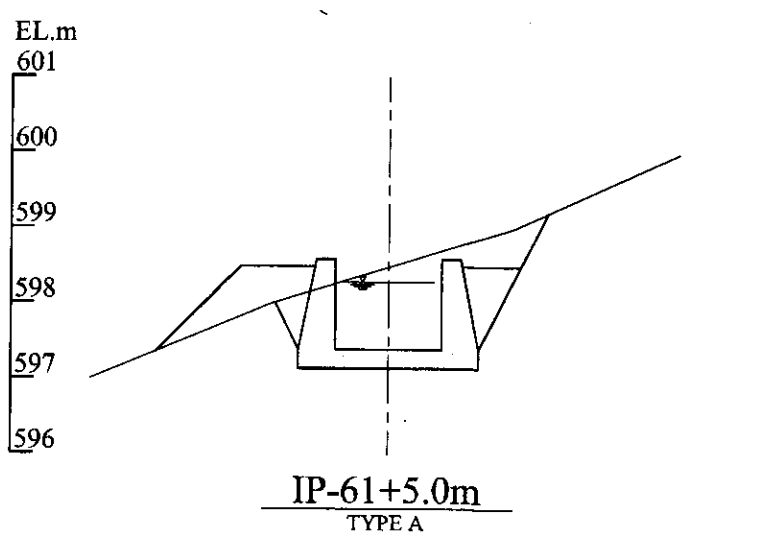
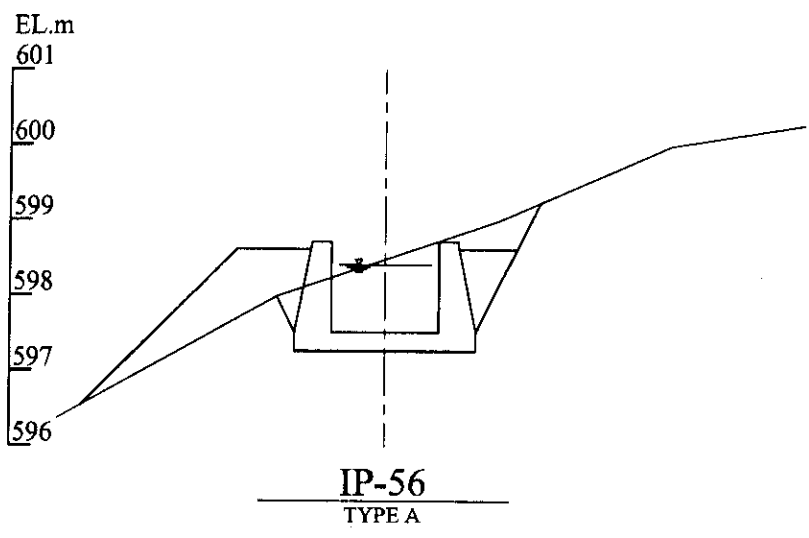
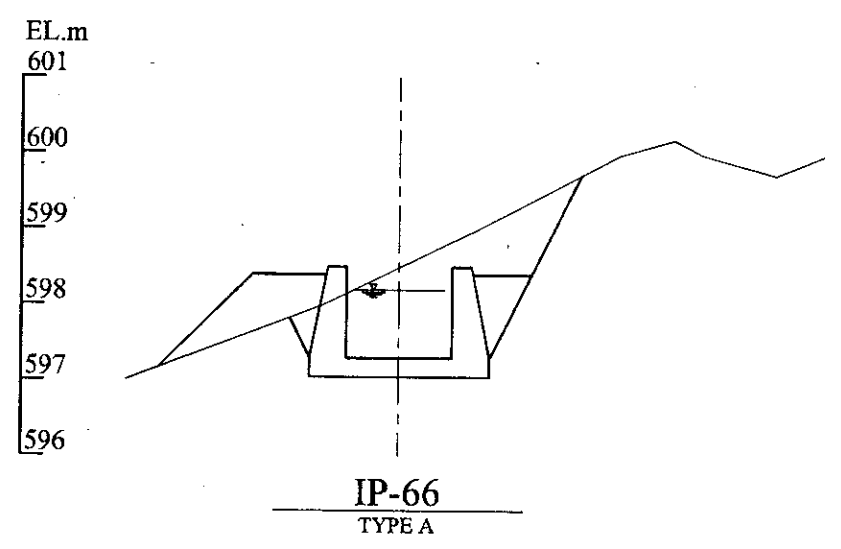
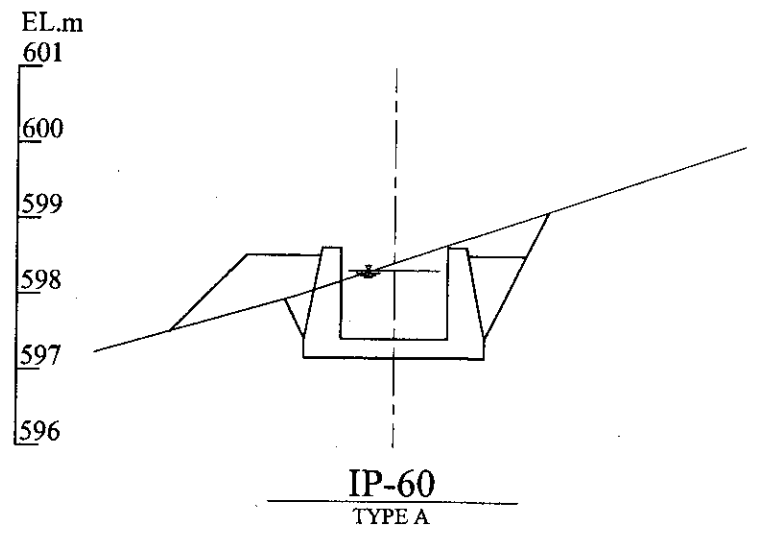
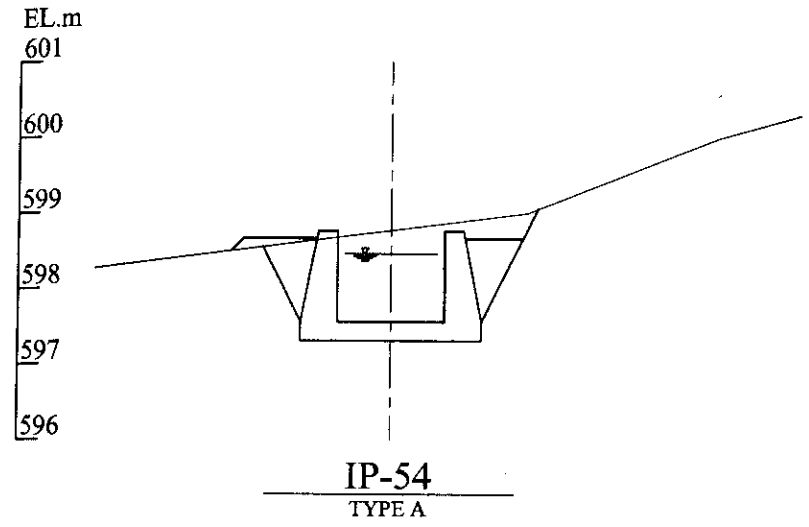


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (3/11)	
Drawing No.	Scale
21	1/100

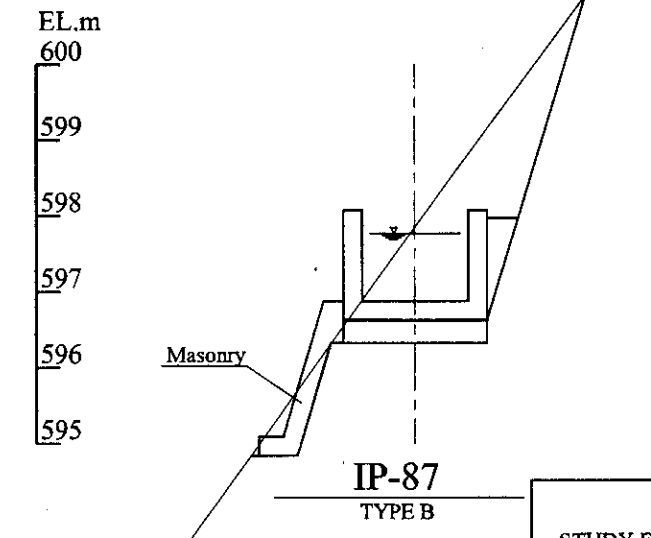
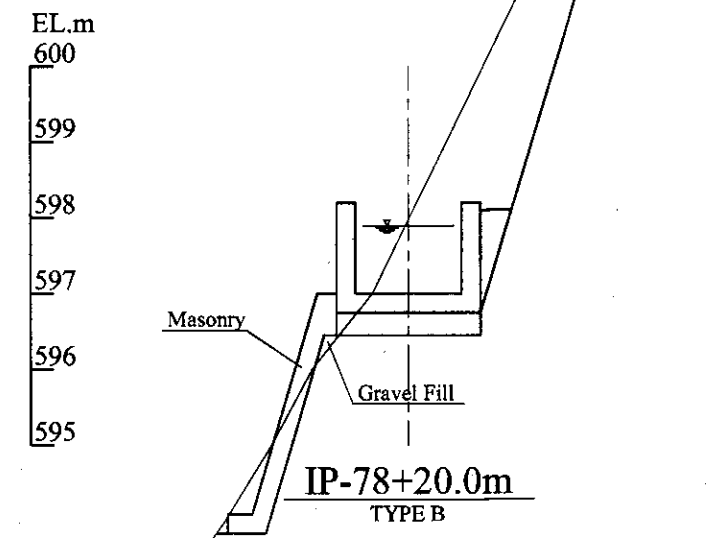
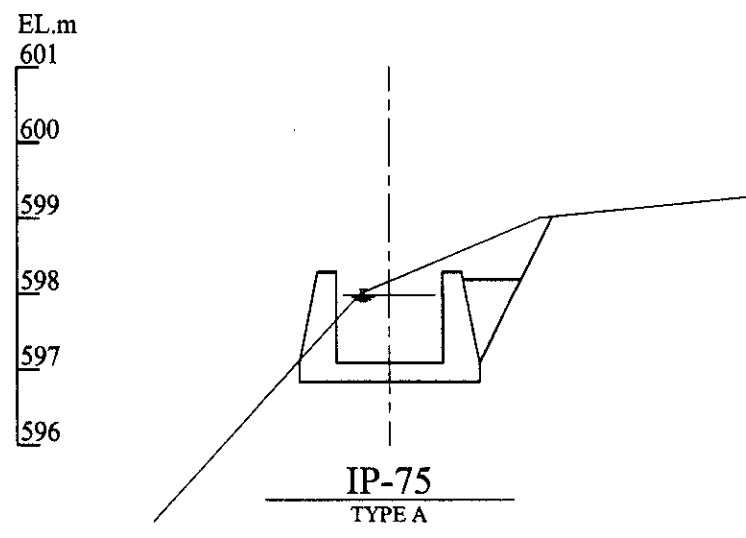
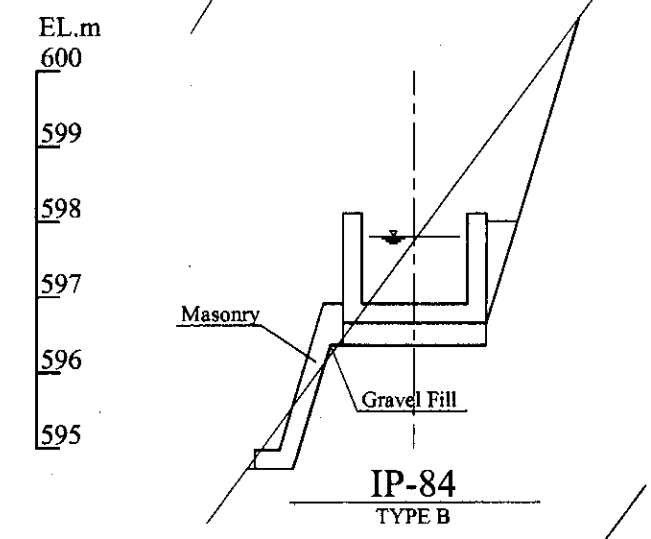
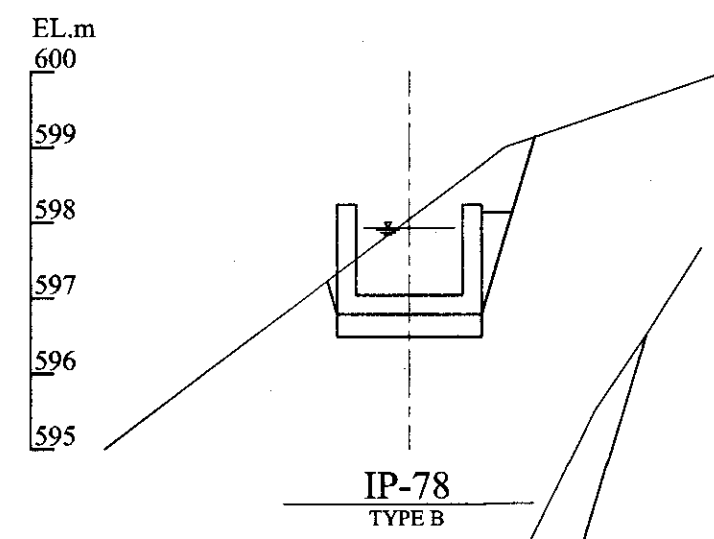
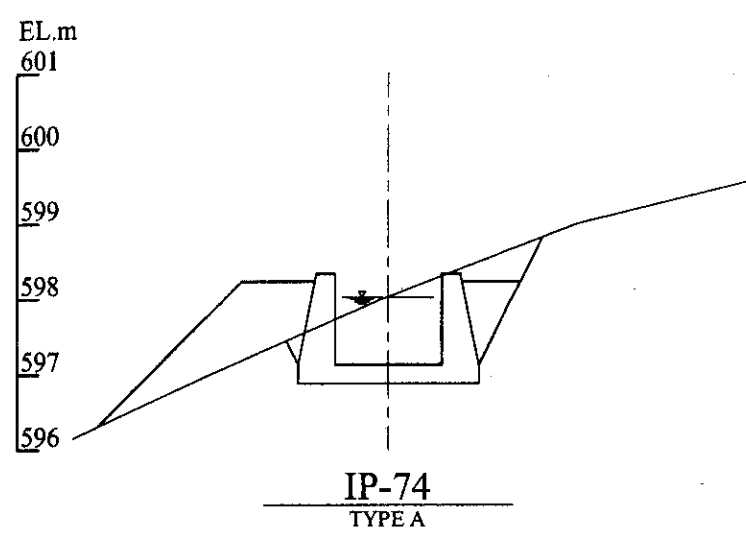
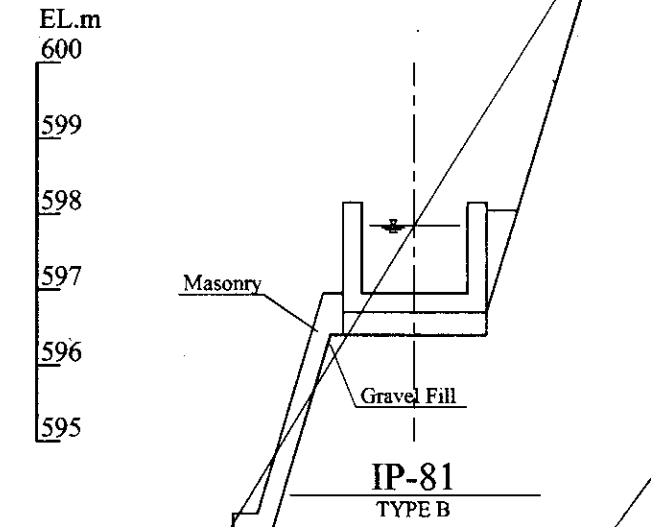
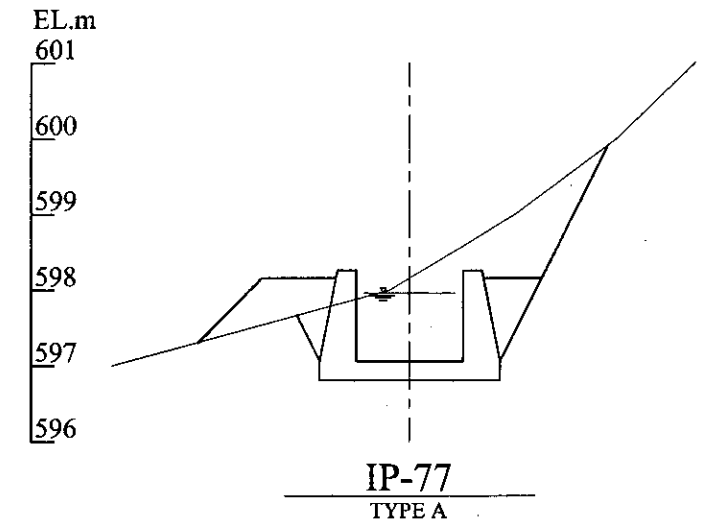
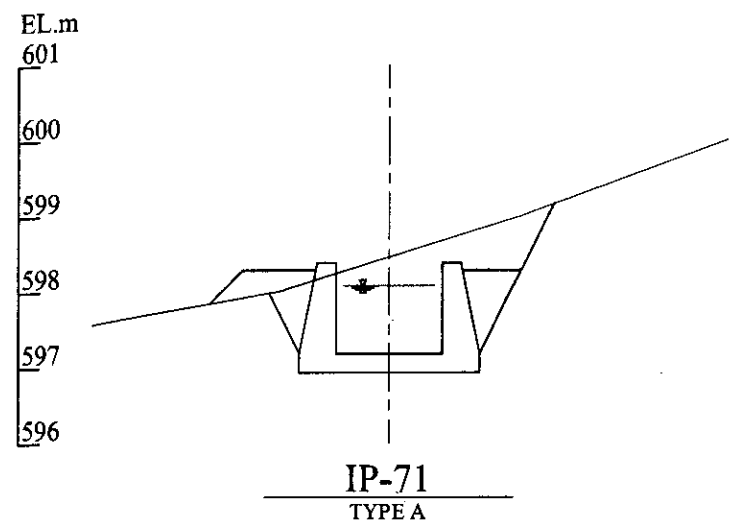




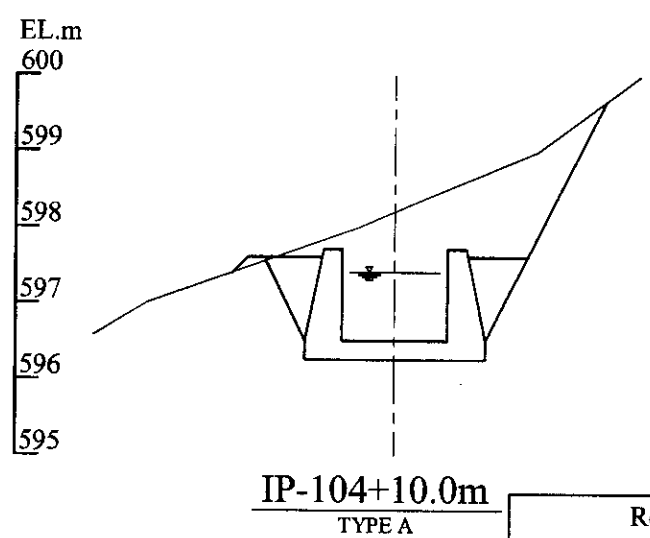
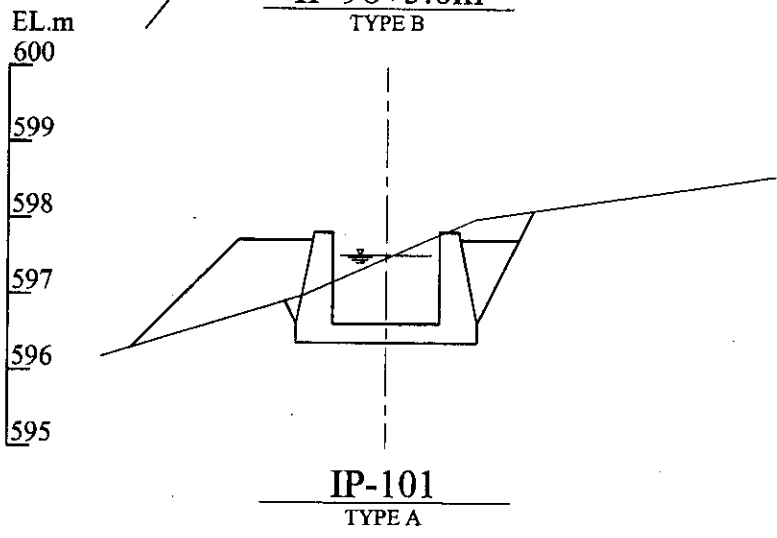
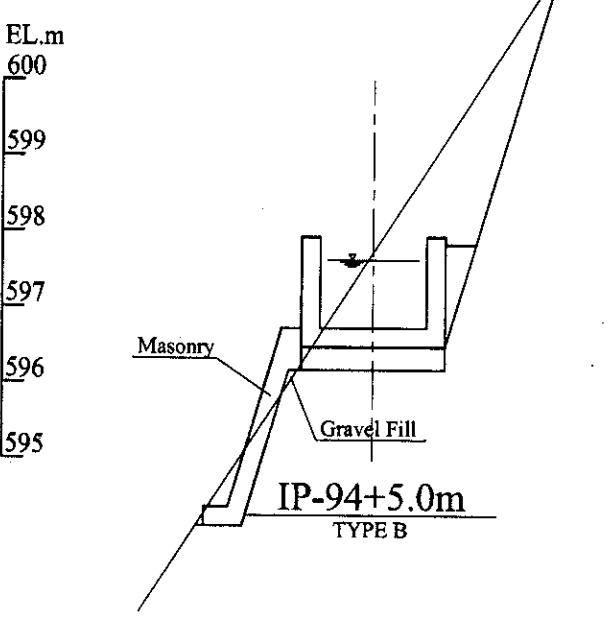
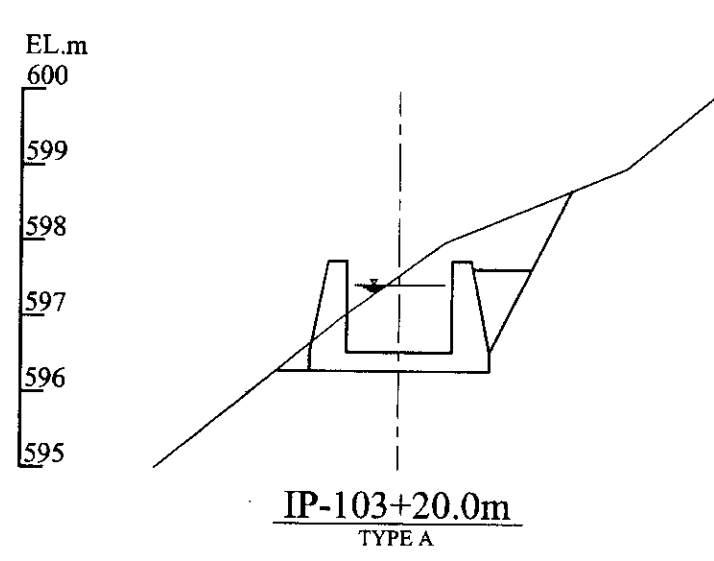
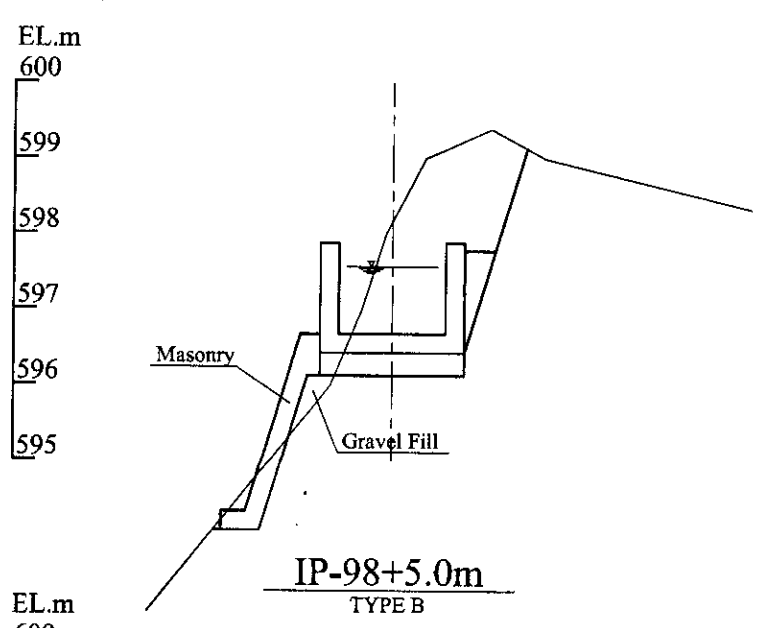
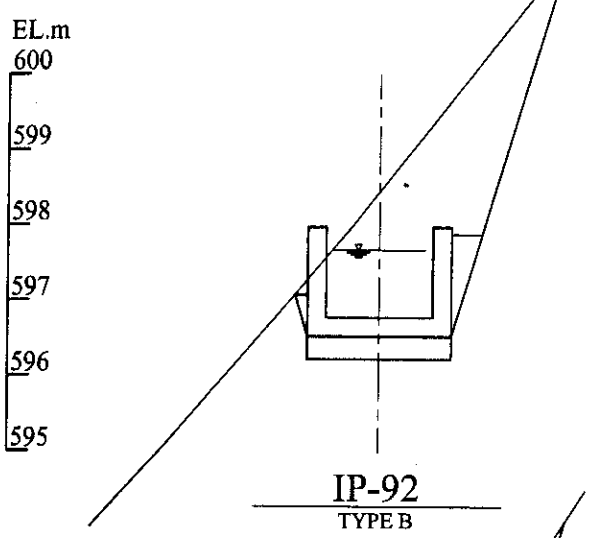
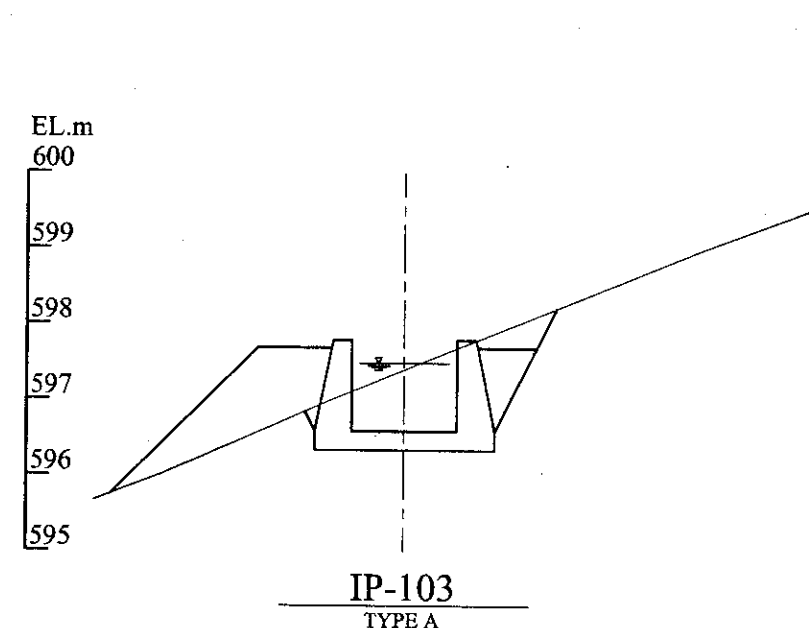
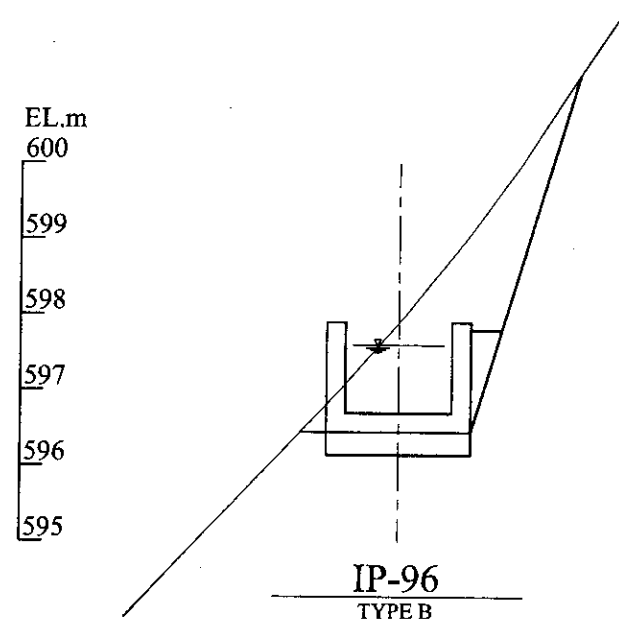
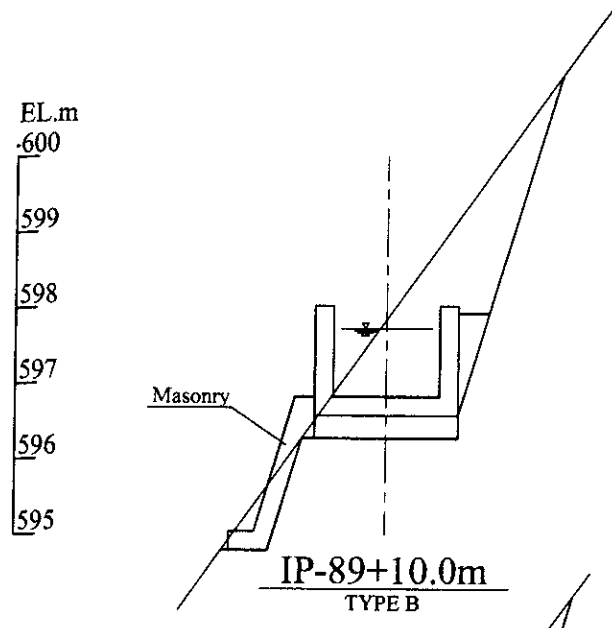
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
<b>Cross Section of Headrace (4/11)</b>	
Drawing No.	Scale
22	1/100



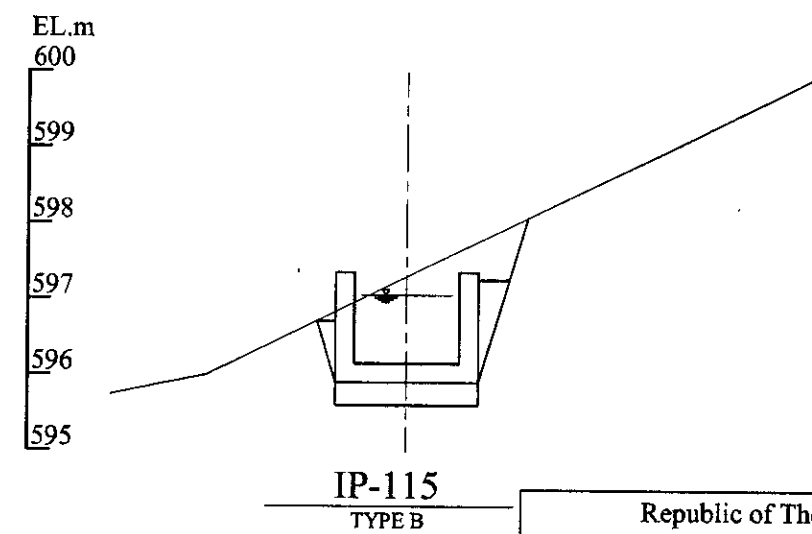
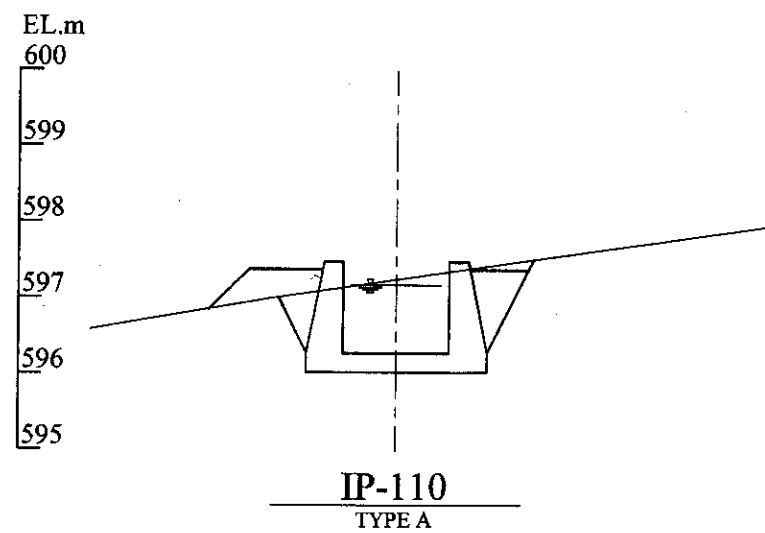
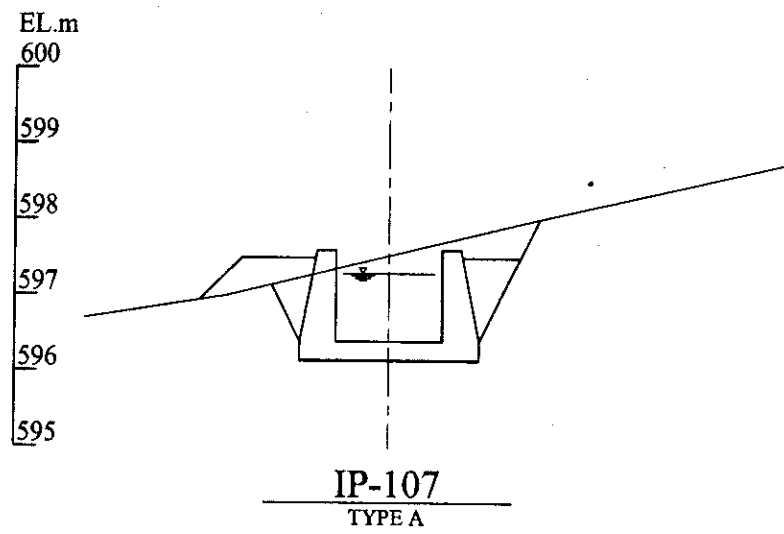
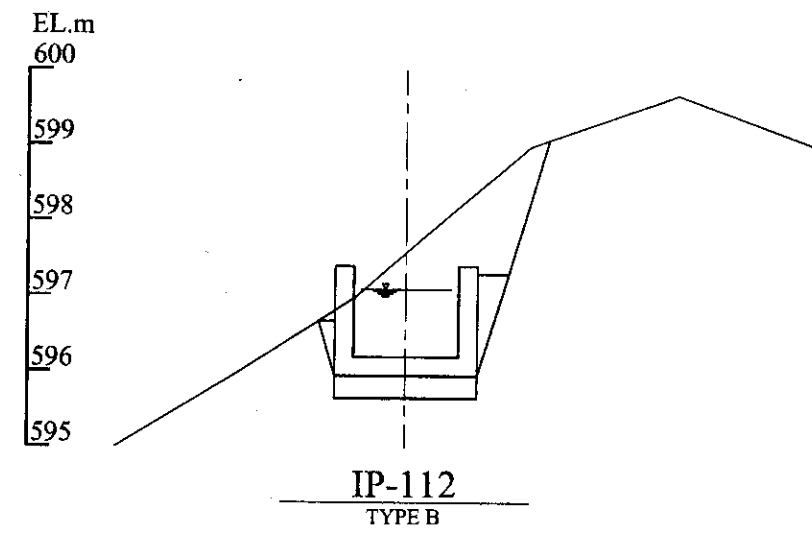
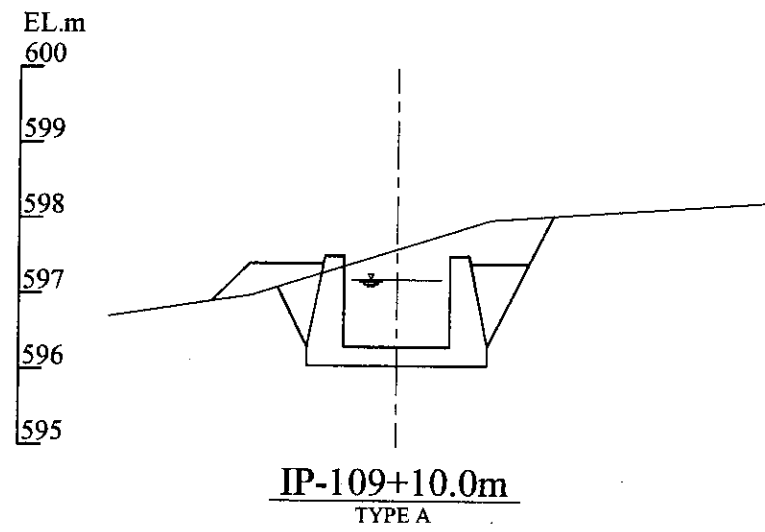
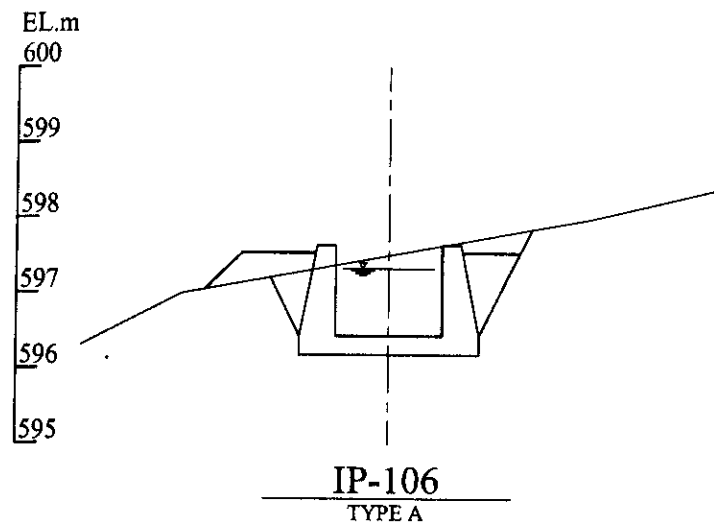
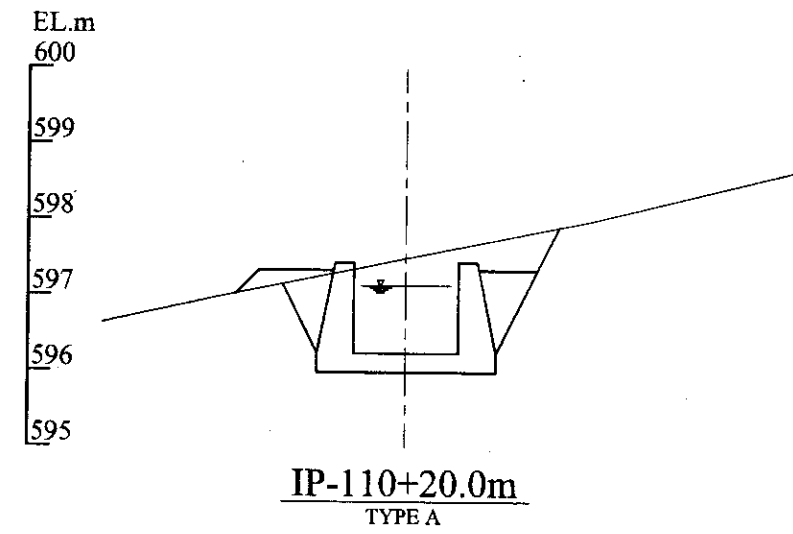
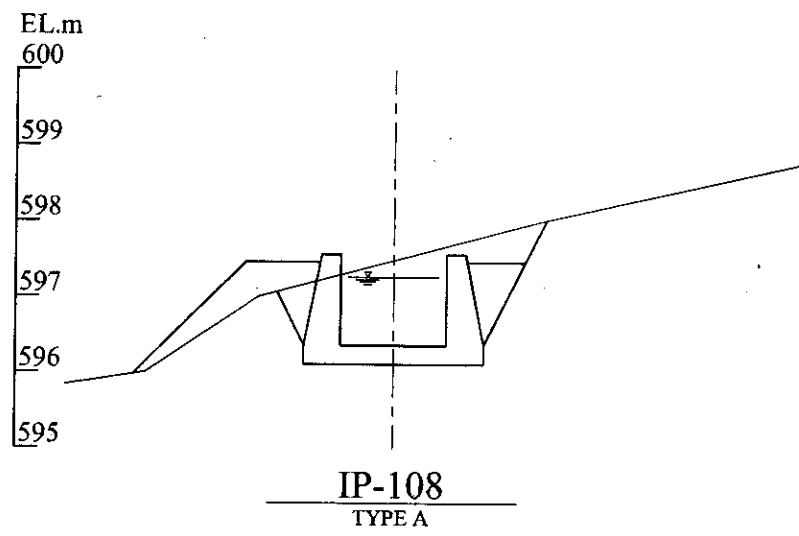
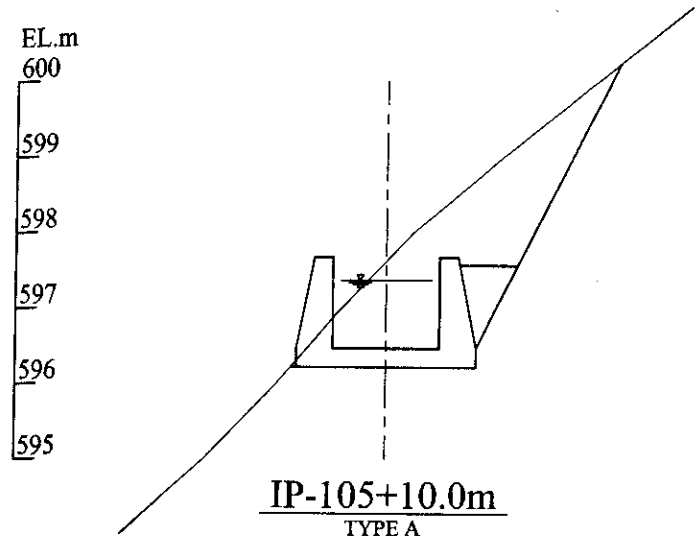
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (5/11)	
Drawing No.	Scale
23	1/100



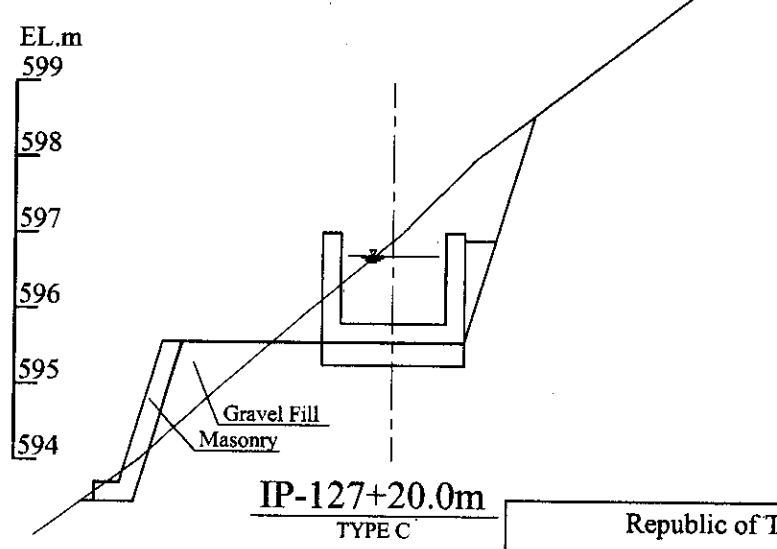
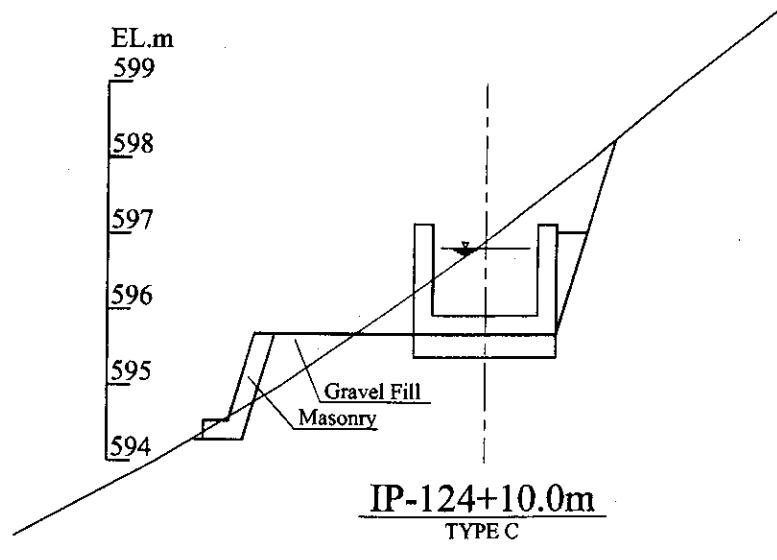
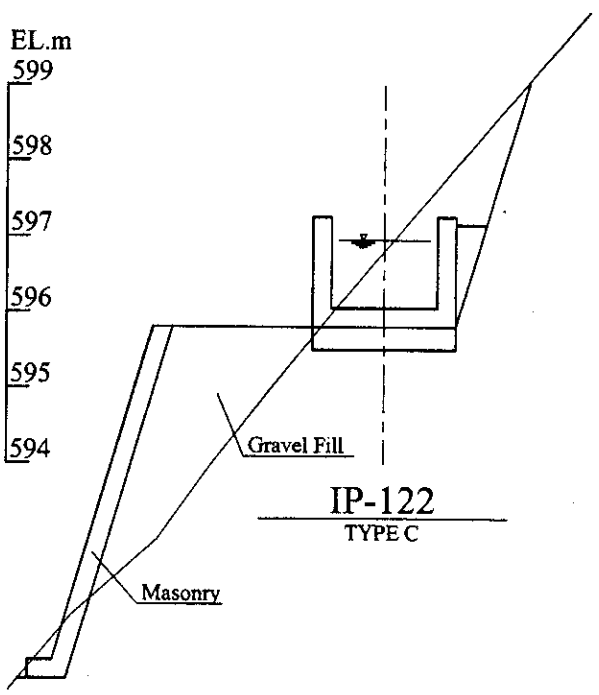
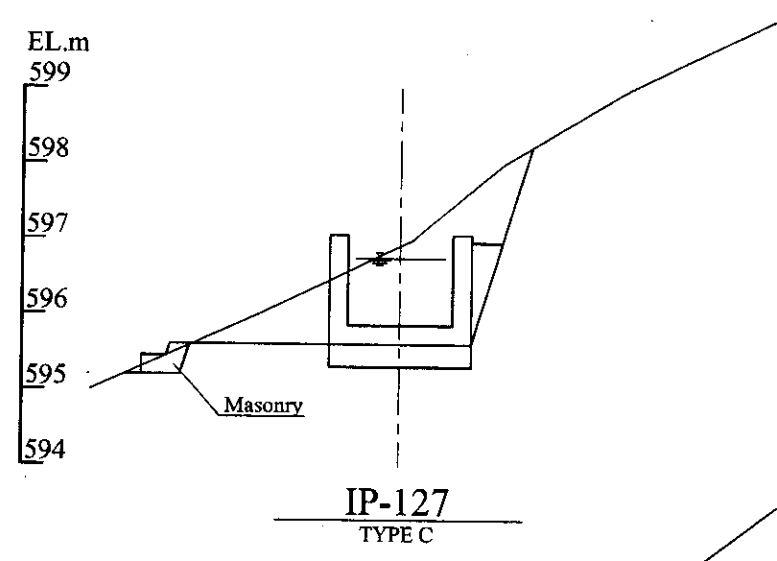
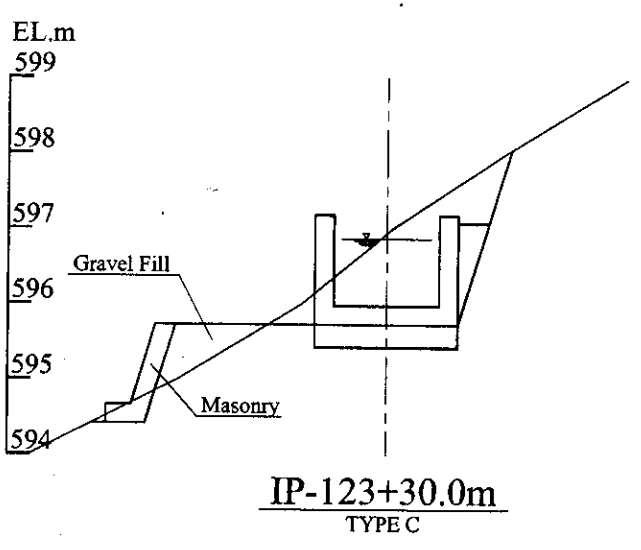
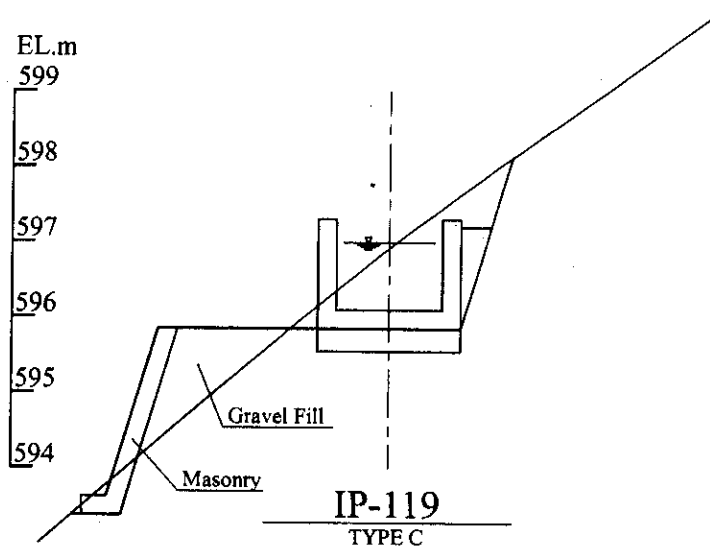
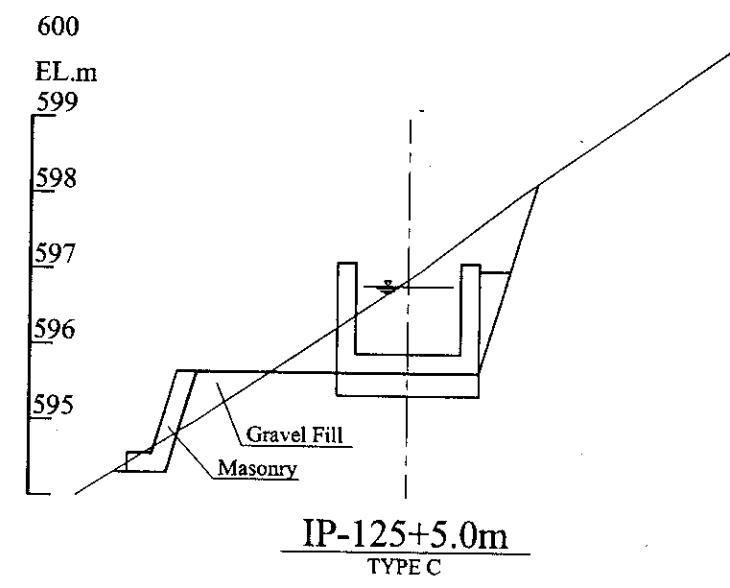
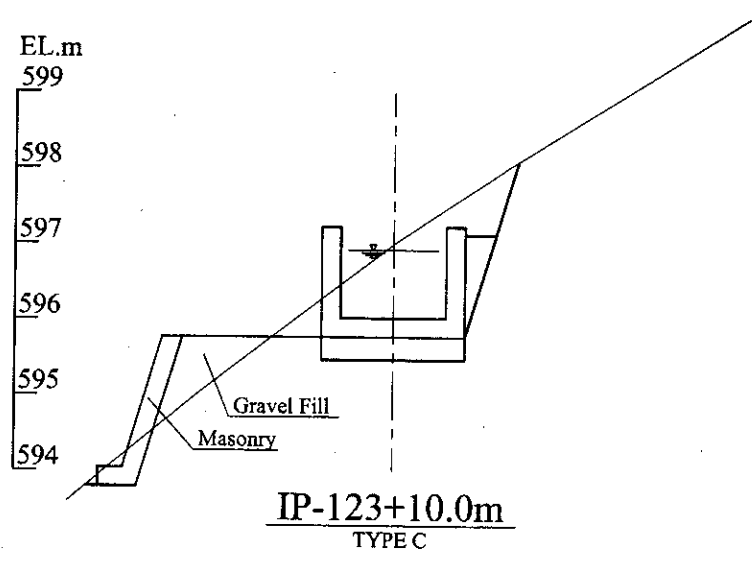
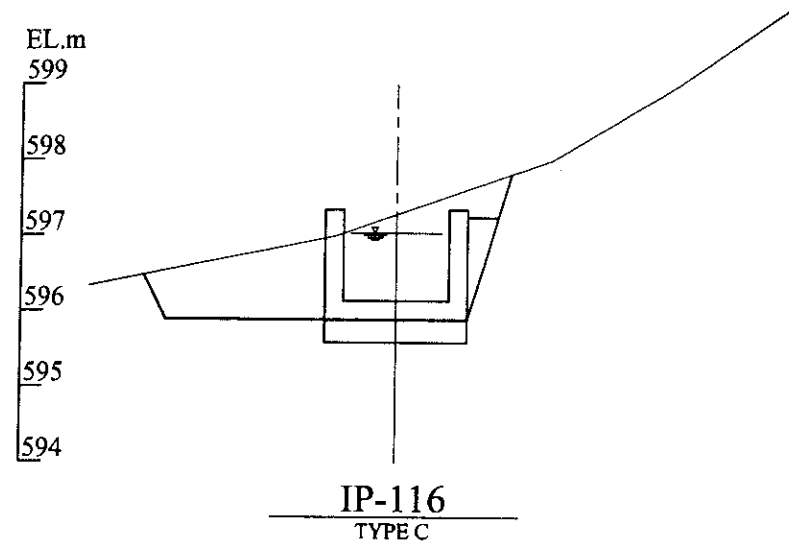
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (6/11)	
Drawing No.	Scale
24	1/100



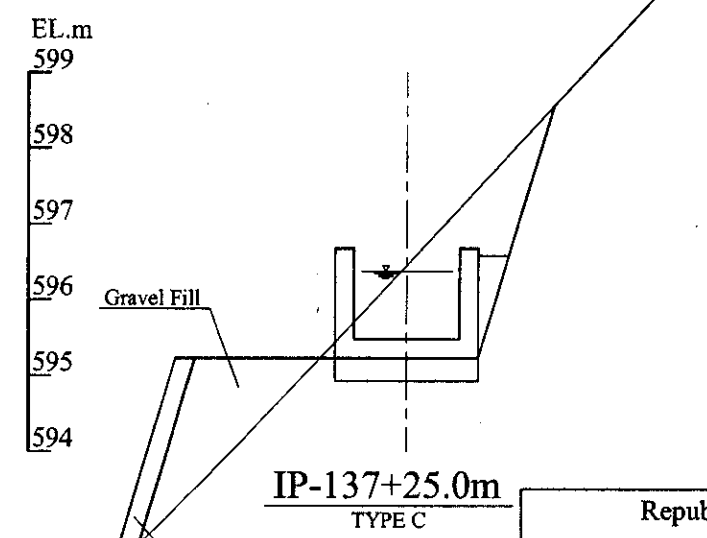
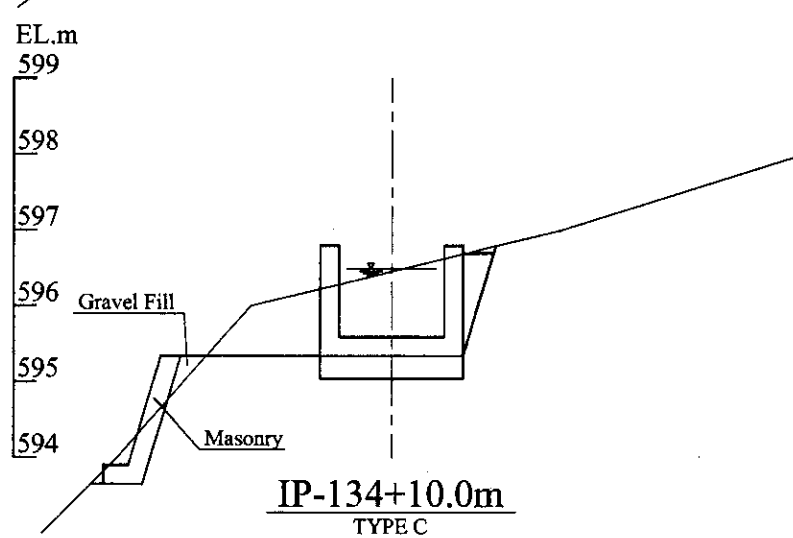
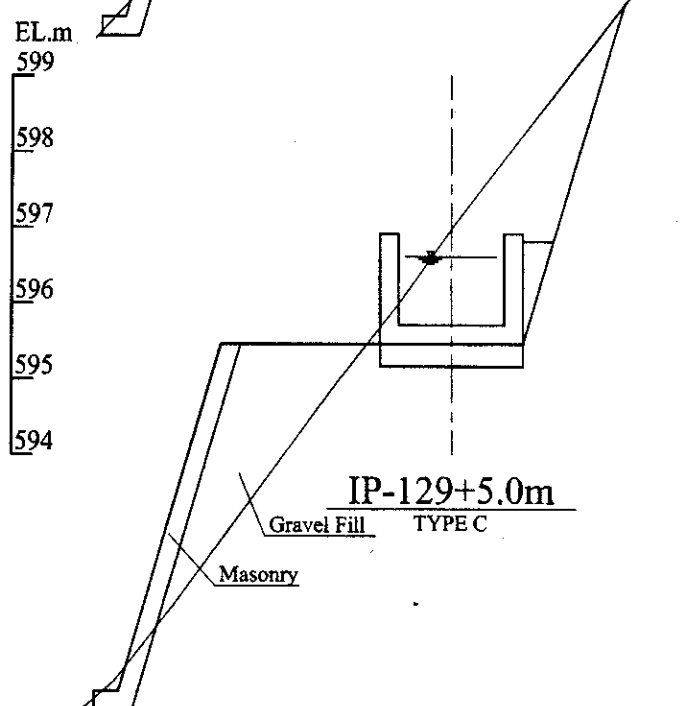
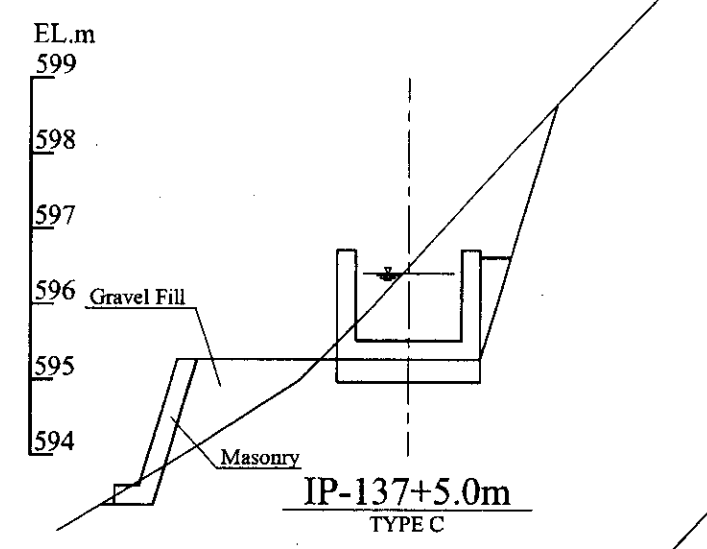
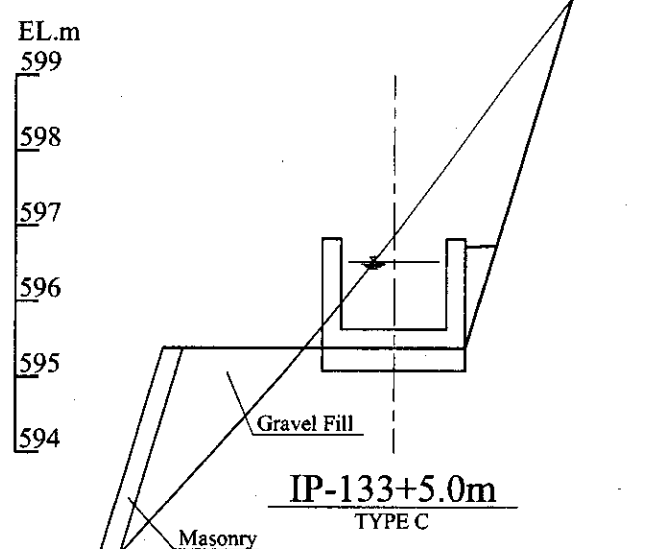
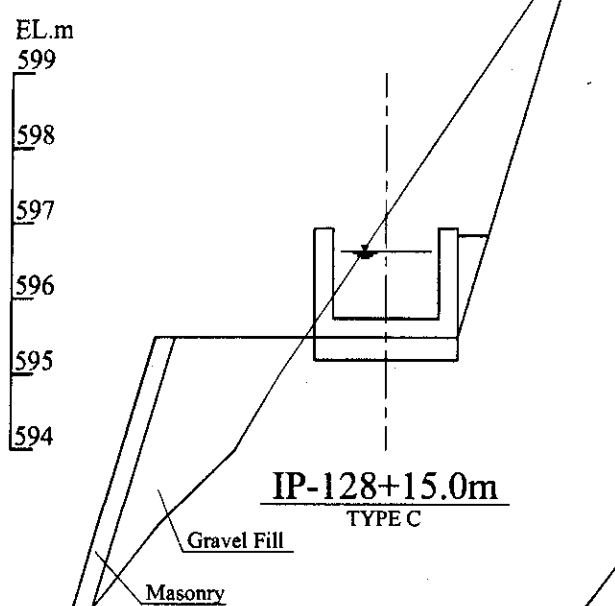
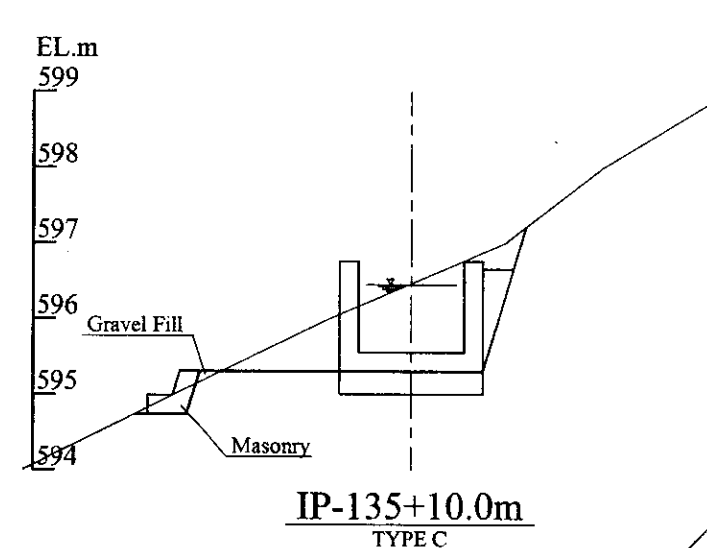
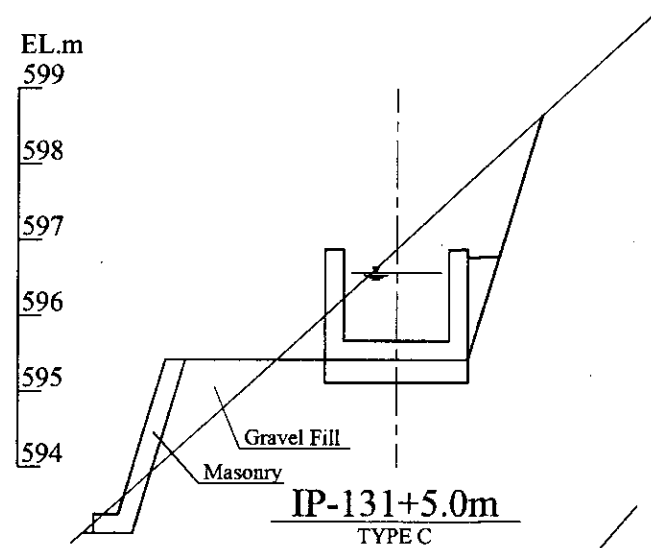
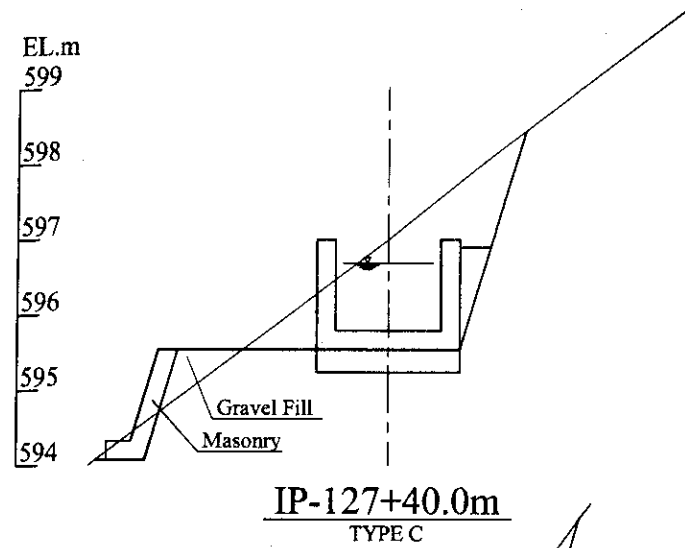
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (7/11)	
Drawing No.	Scale
25	1/100



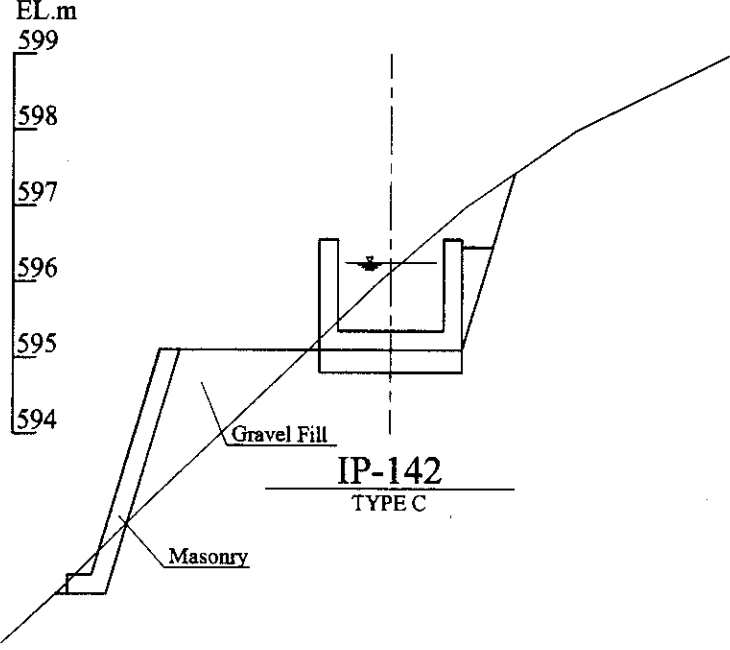
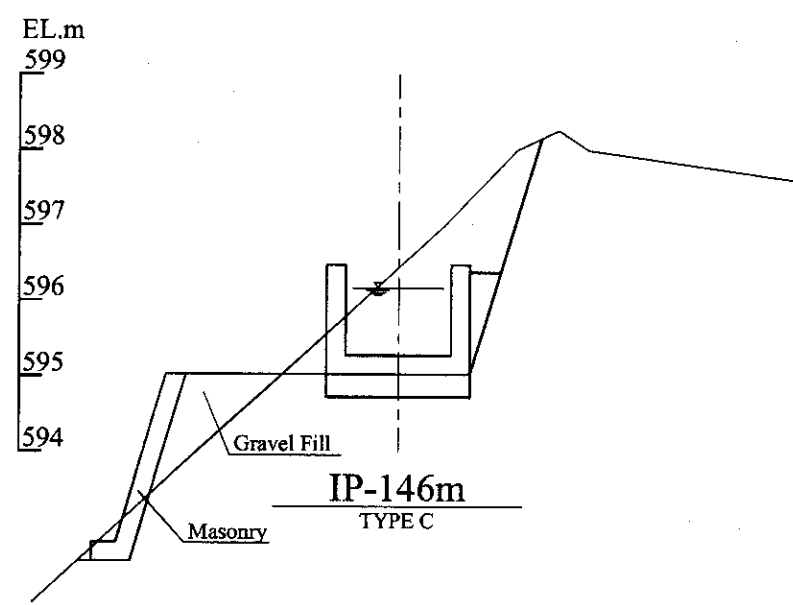
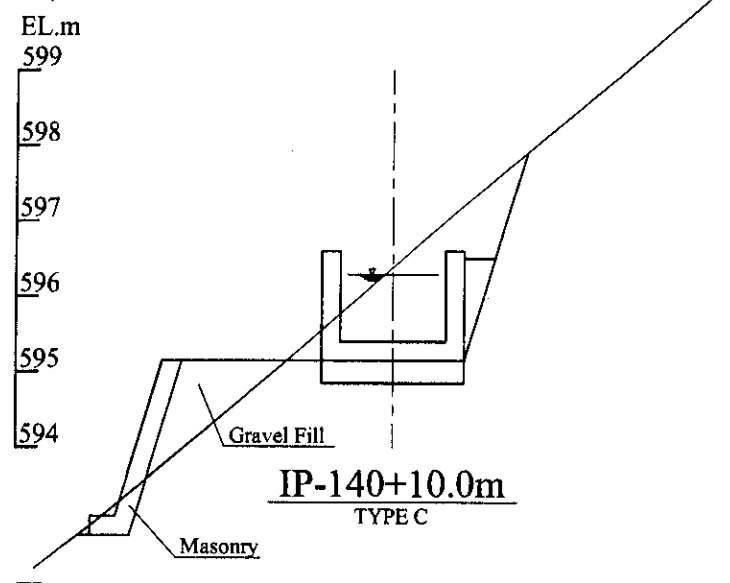
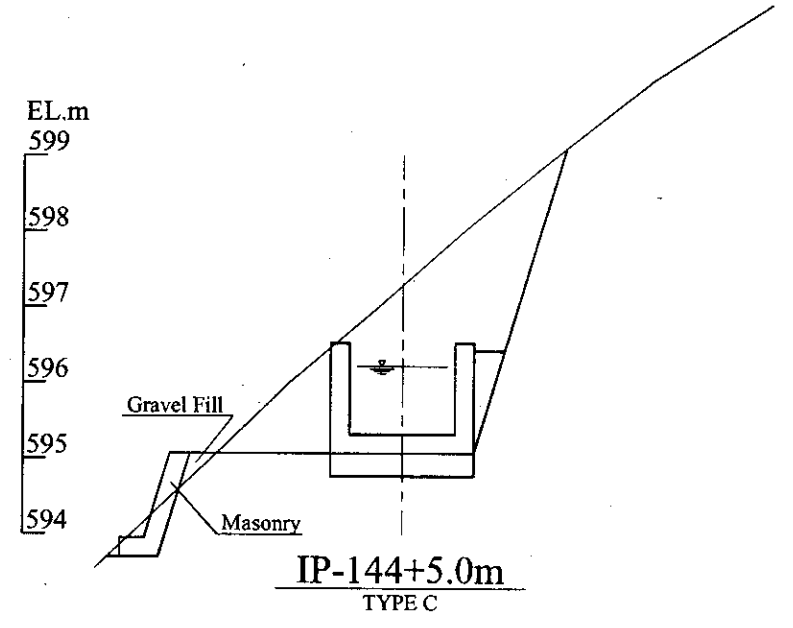
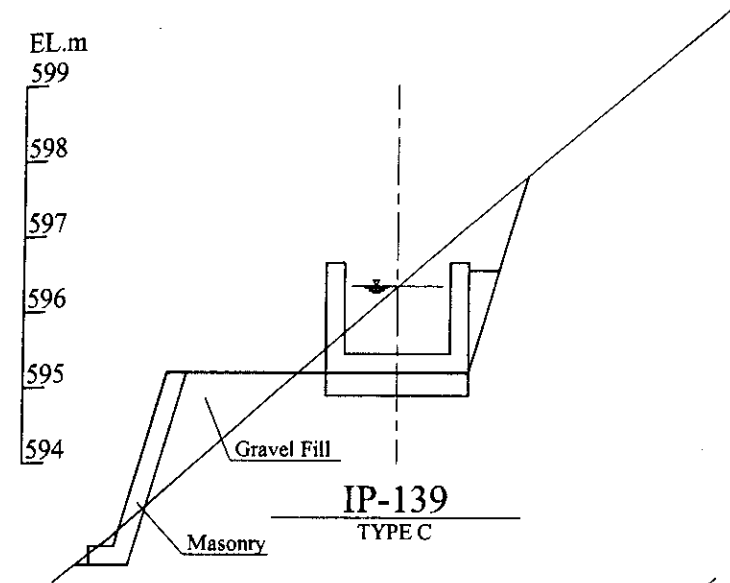
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
<b>Cross Section of Headrace (8/11)</b>	
Drawing No.	Scale
26	1/100



Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (9/11)	
Drawing No.	Scale
27	1/100

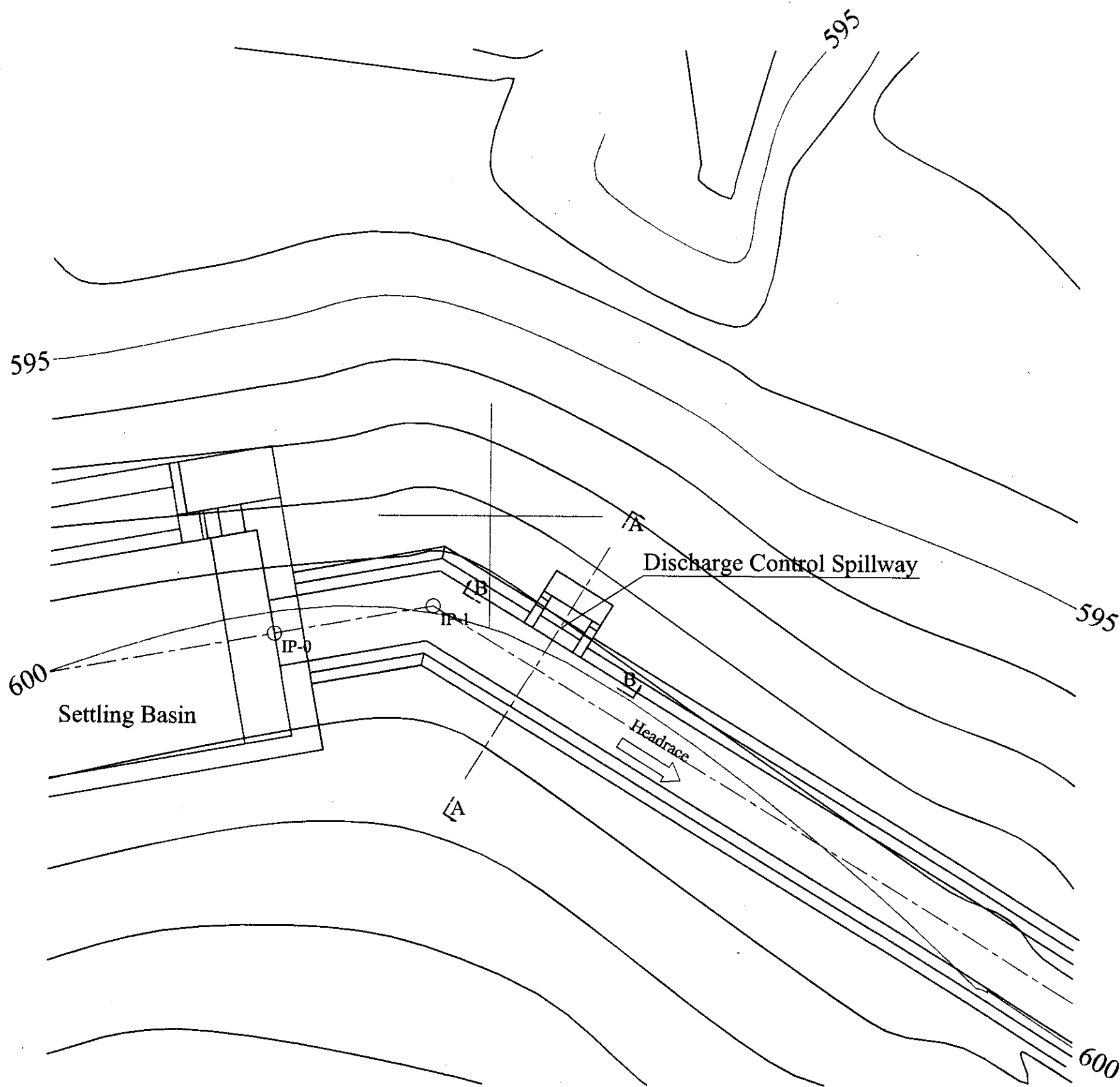


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
<b>Cross Section of Headrace (10/11)</b>	
Drawing No.	Scale
28	1/100

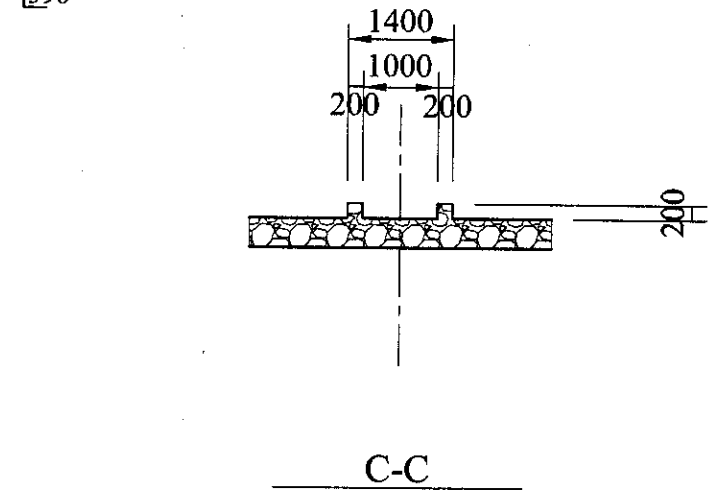
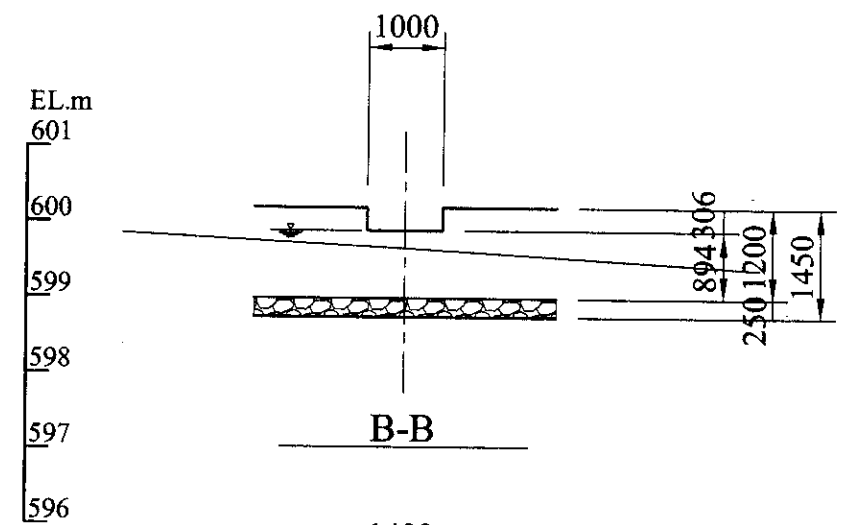
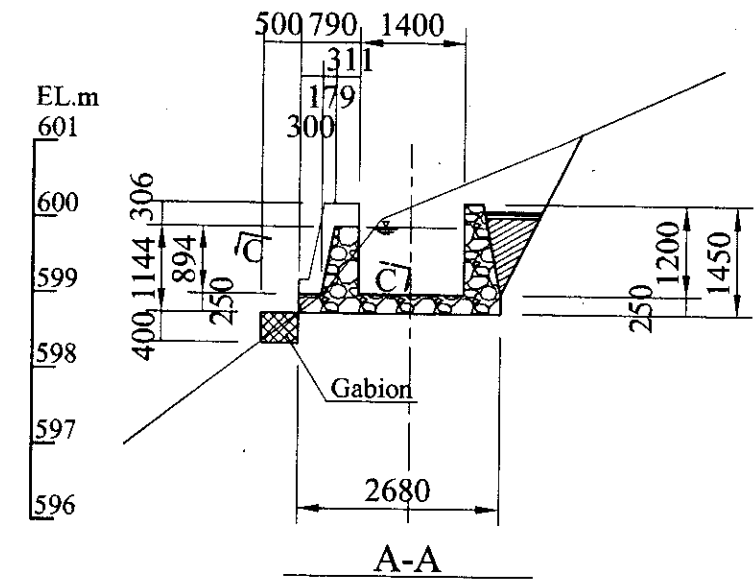


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headrace (11/11)	
Drawing No.	Scale
29	1/100



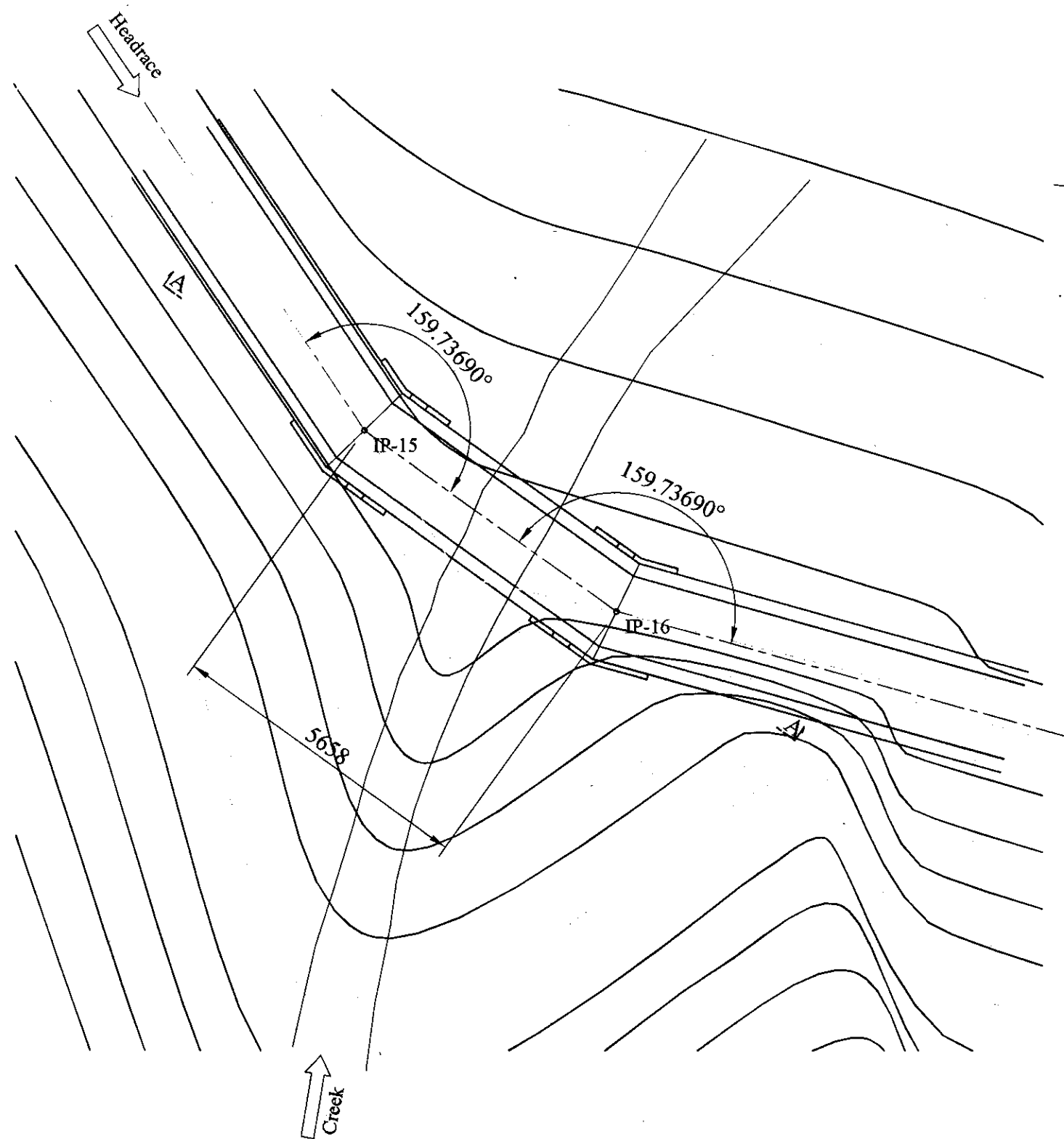


PLAN

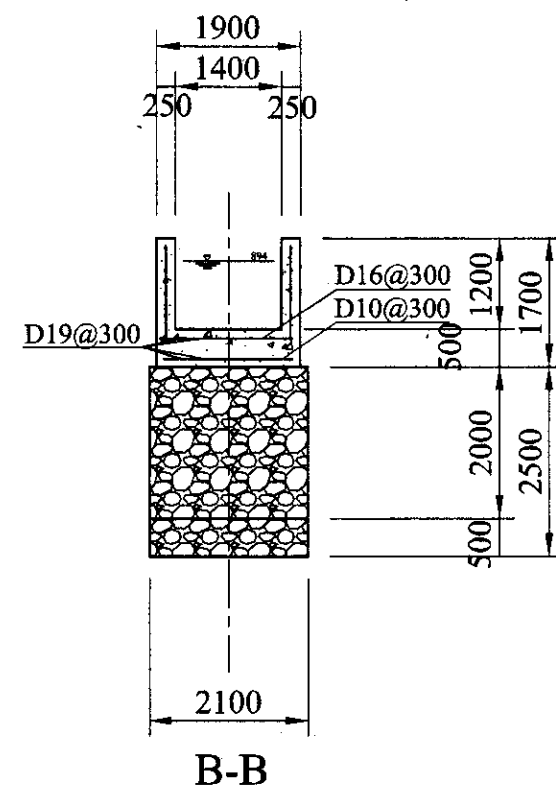
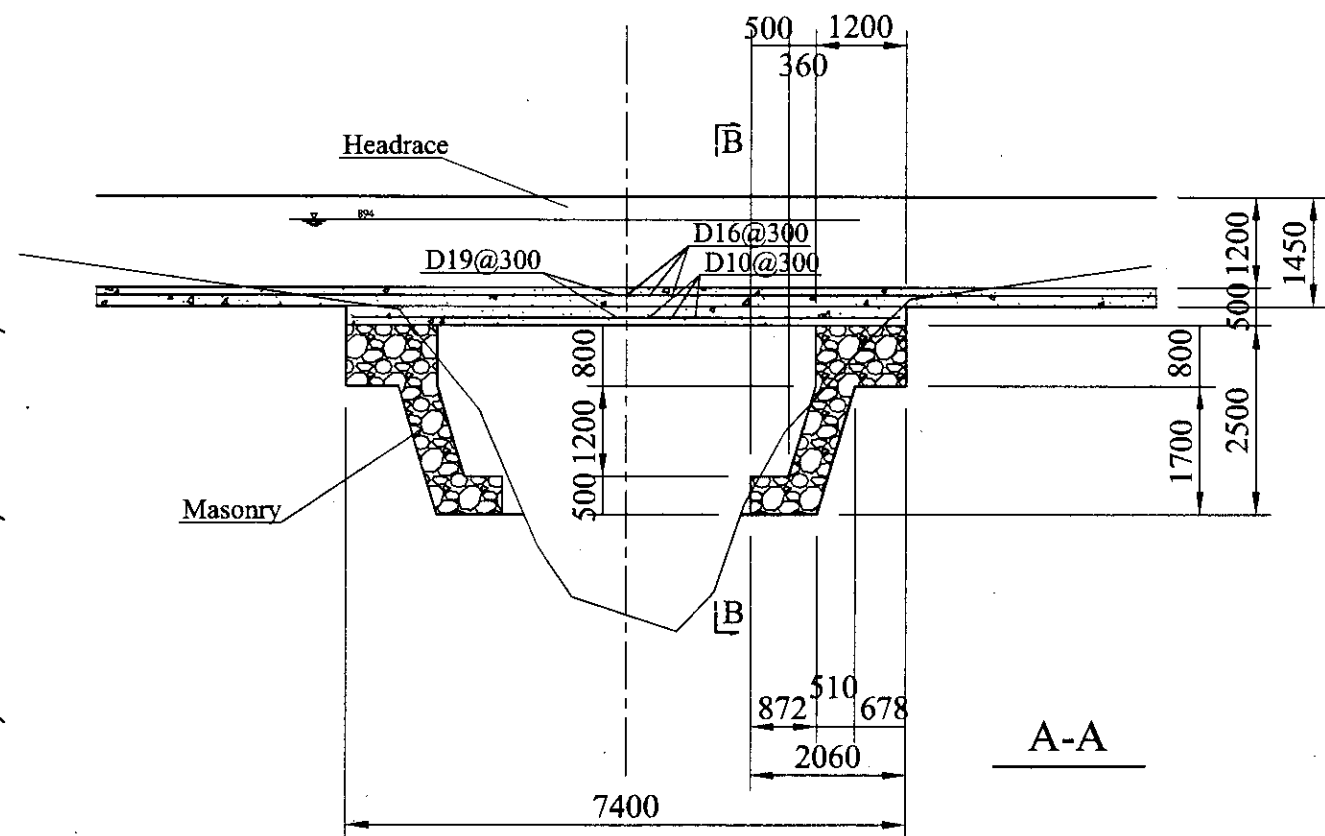


IP-1+2.50m

Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Discharge Control Spillway at Headrace	
Drawing No.	Scale
30	1/100

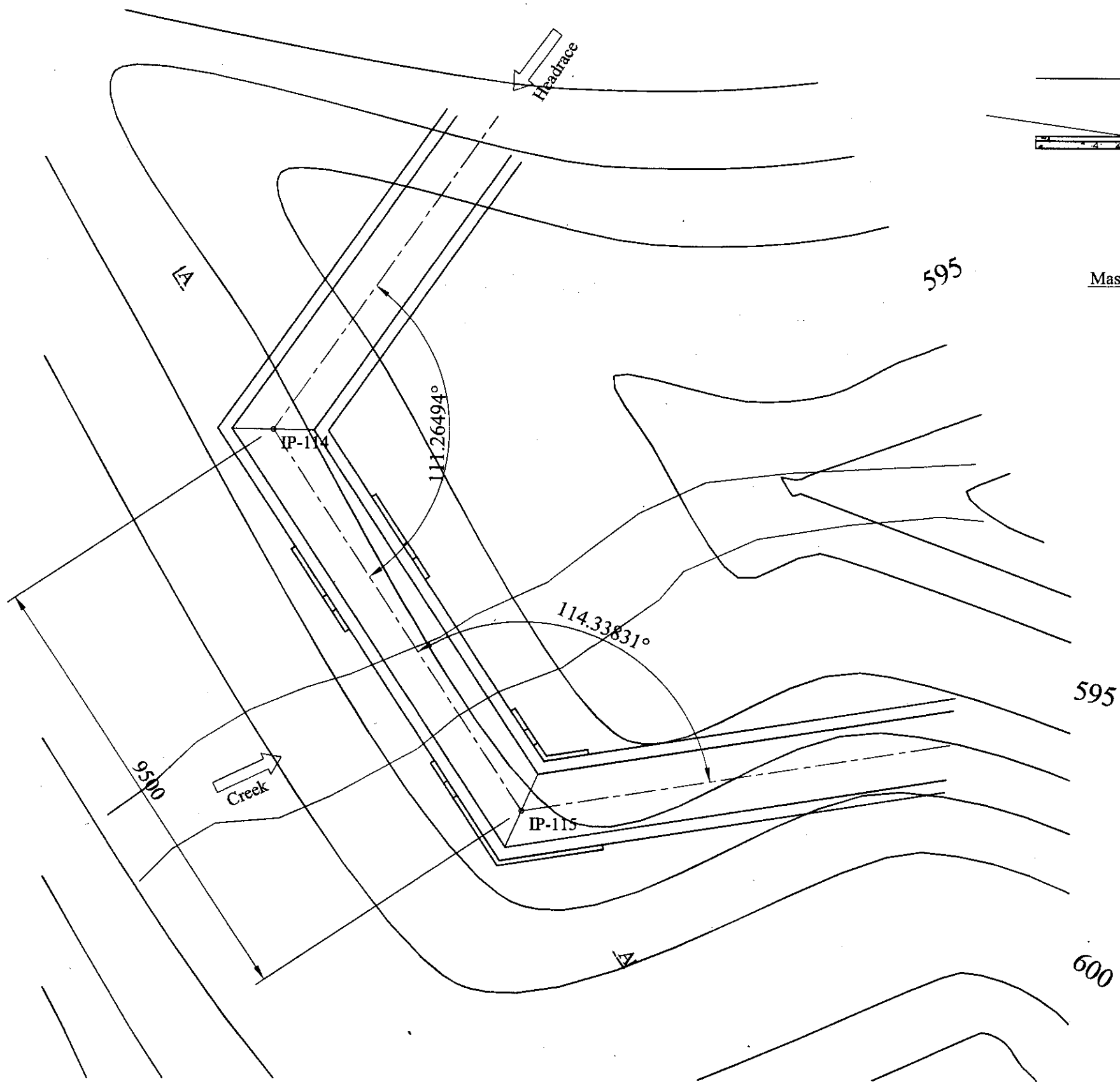


PLAN

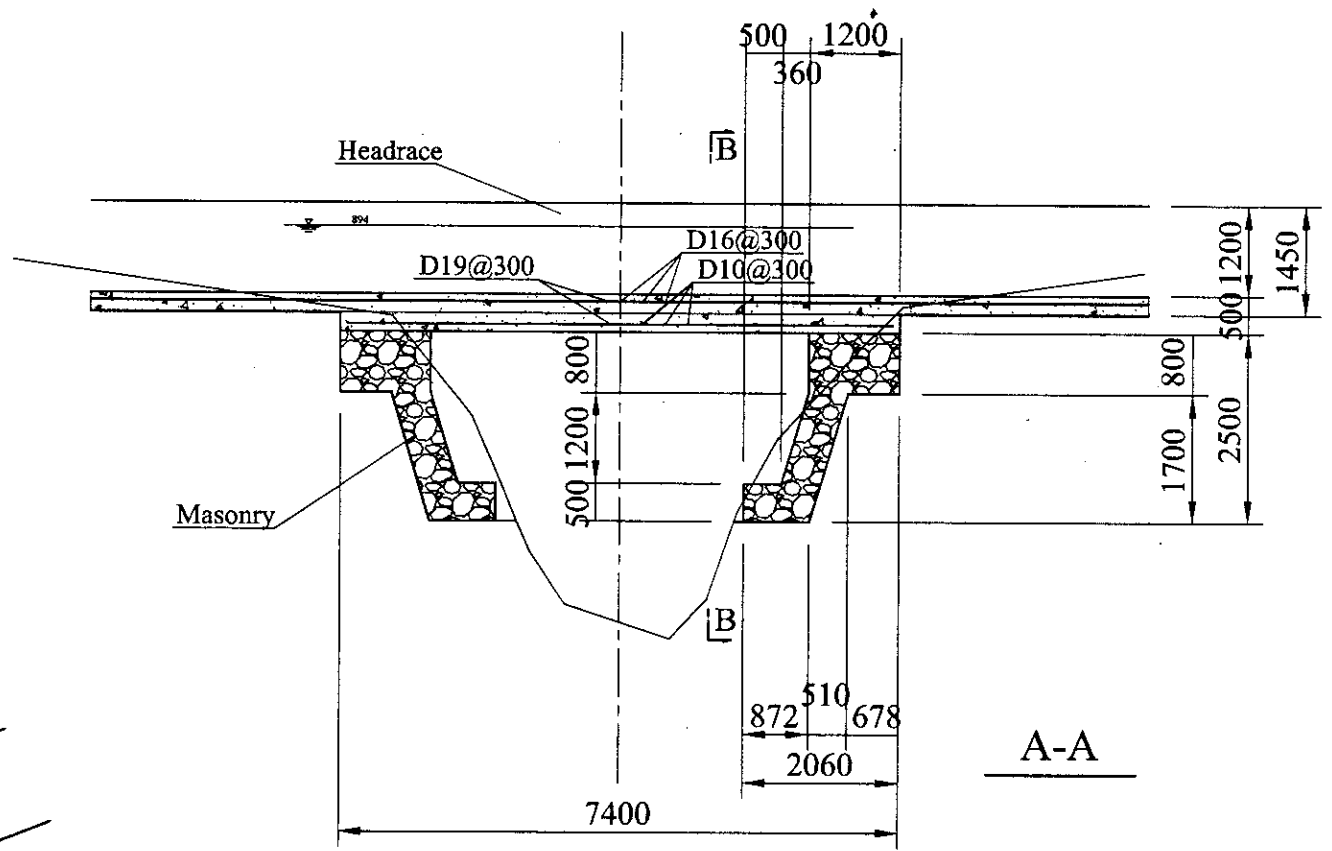


IP-15, 16

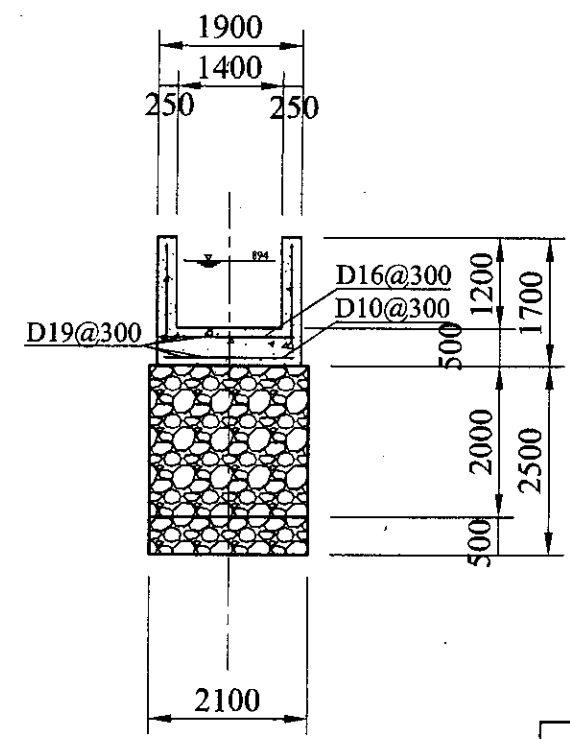
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Flume at Headrace (IP-15, 16)	
Drawing No.	Scale
31	1/100



PLAN



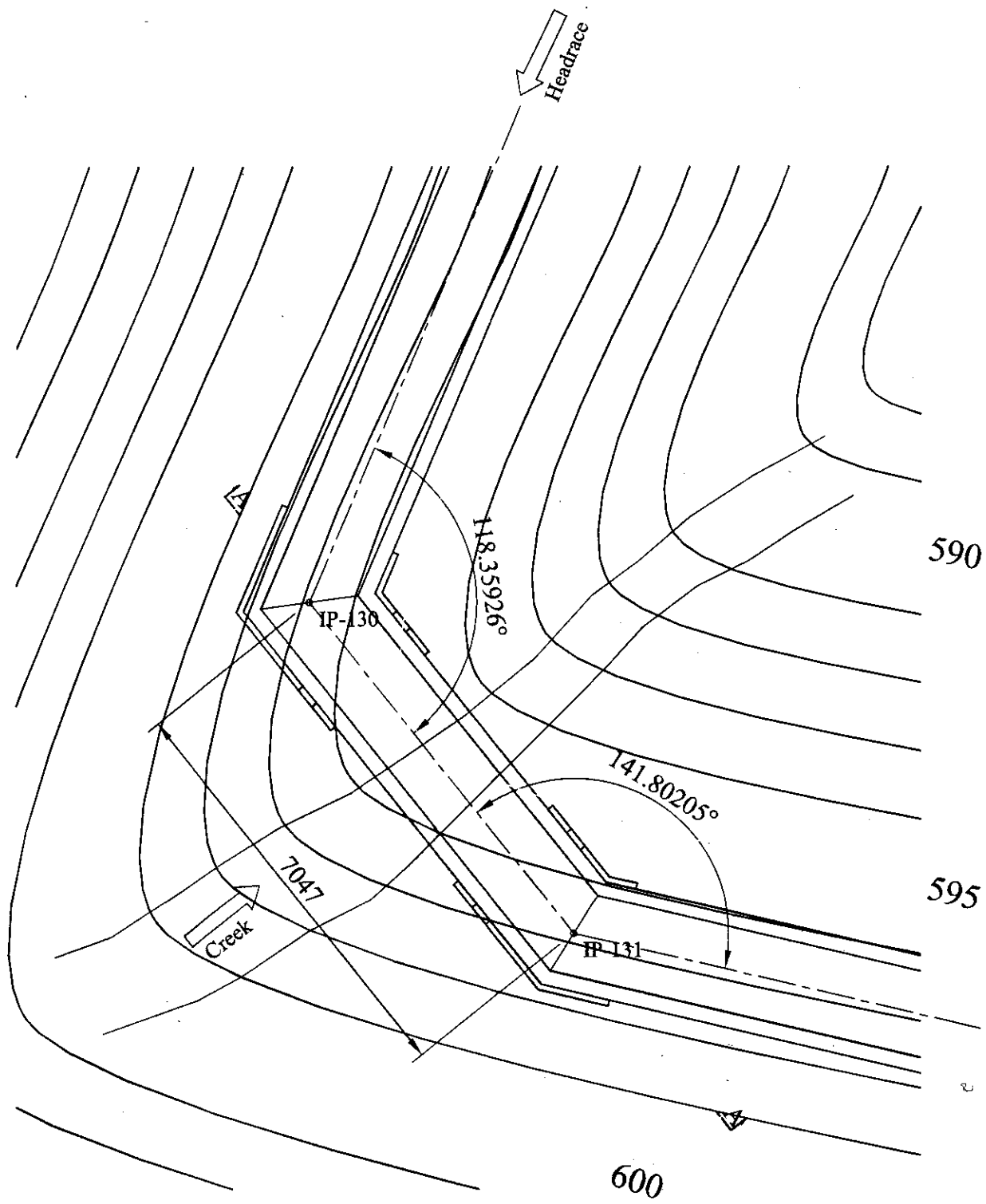
A-A



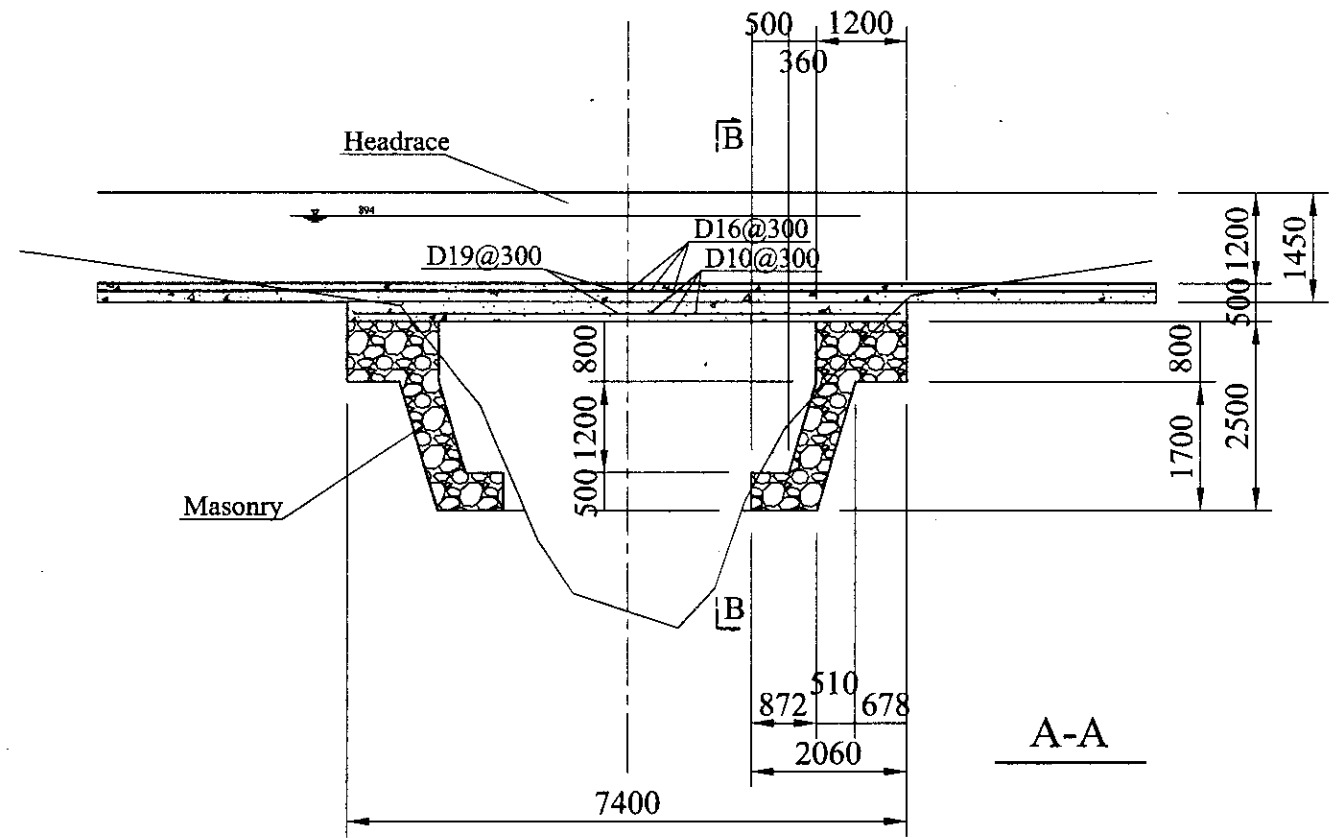
B-B

IP-115, 116

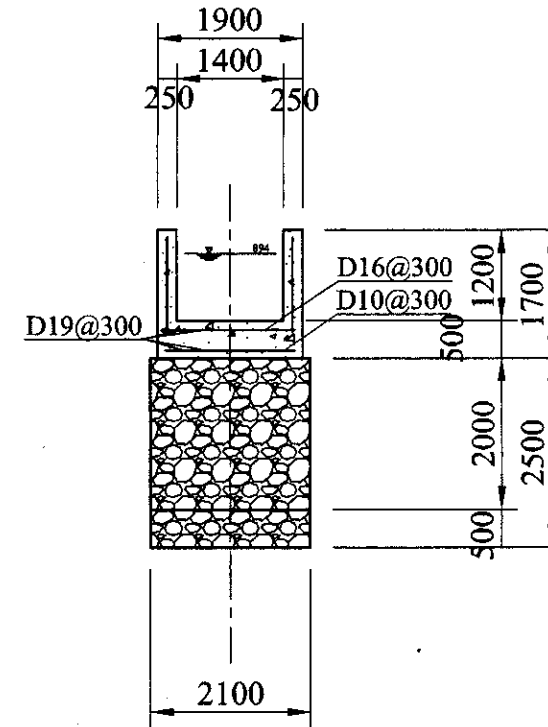
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Flume at Headrace (IP-115, 116)	
Drawing No.	Scale
32	1/100



PLAN



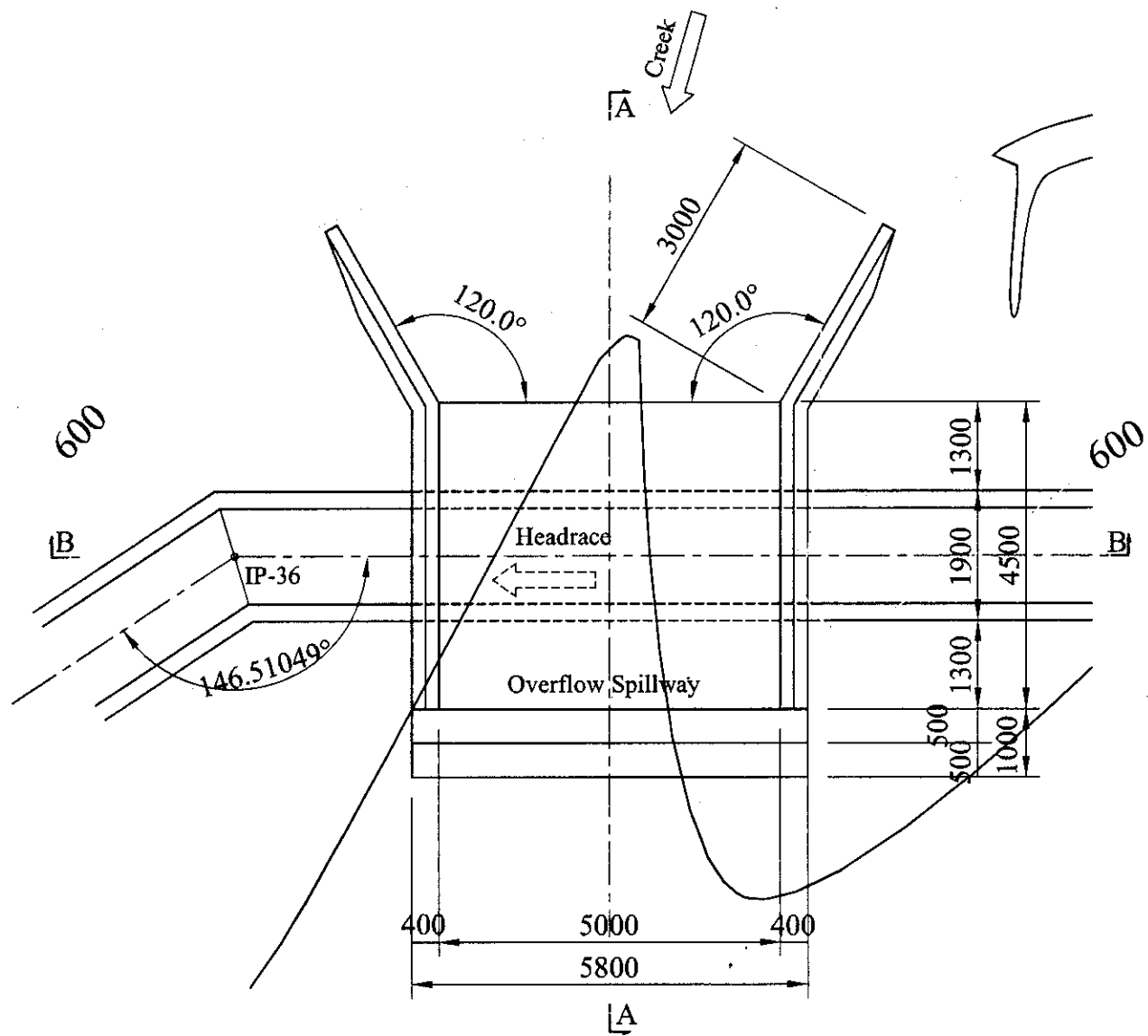
A-A



B-B

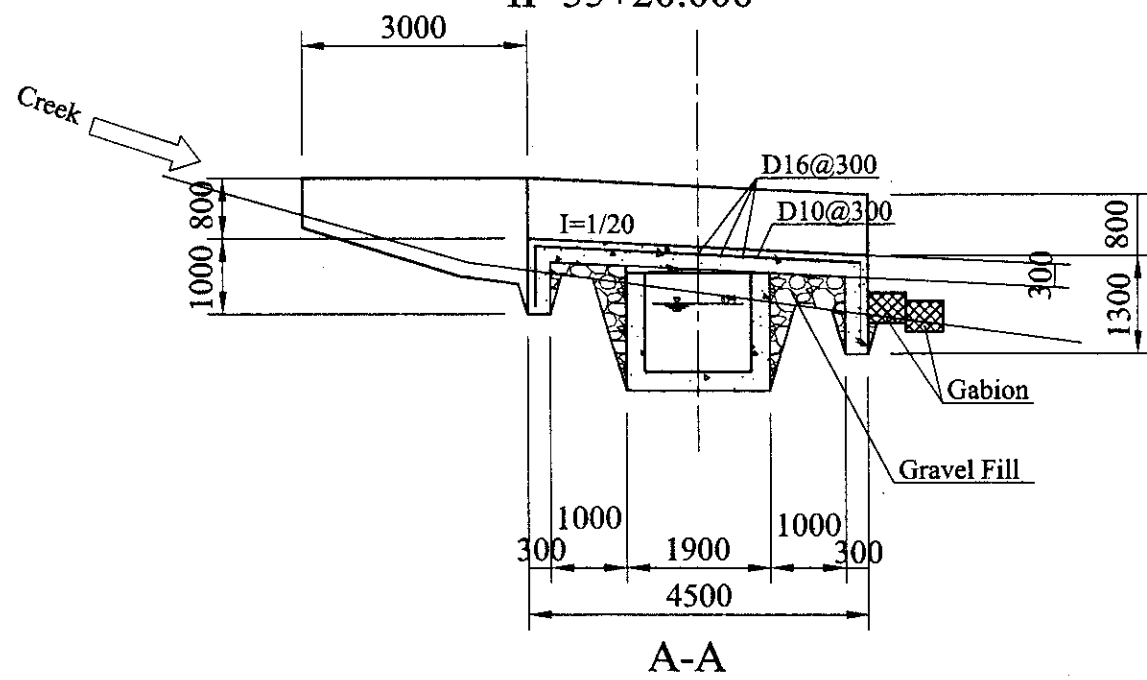
IP-130, 131

Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Flume at Headrace (IP-130, 131)	
Drawing No.	Scale
33	1/100

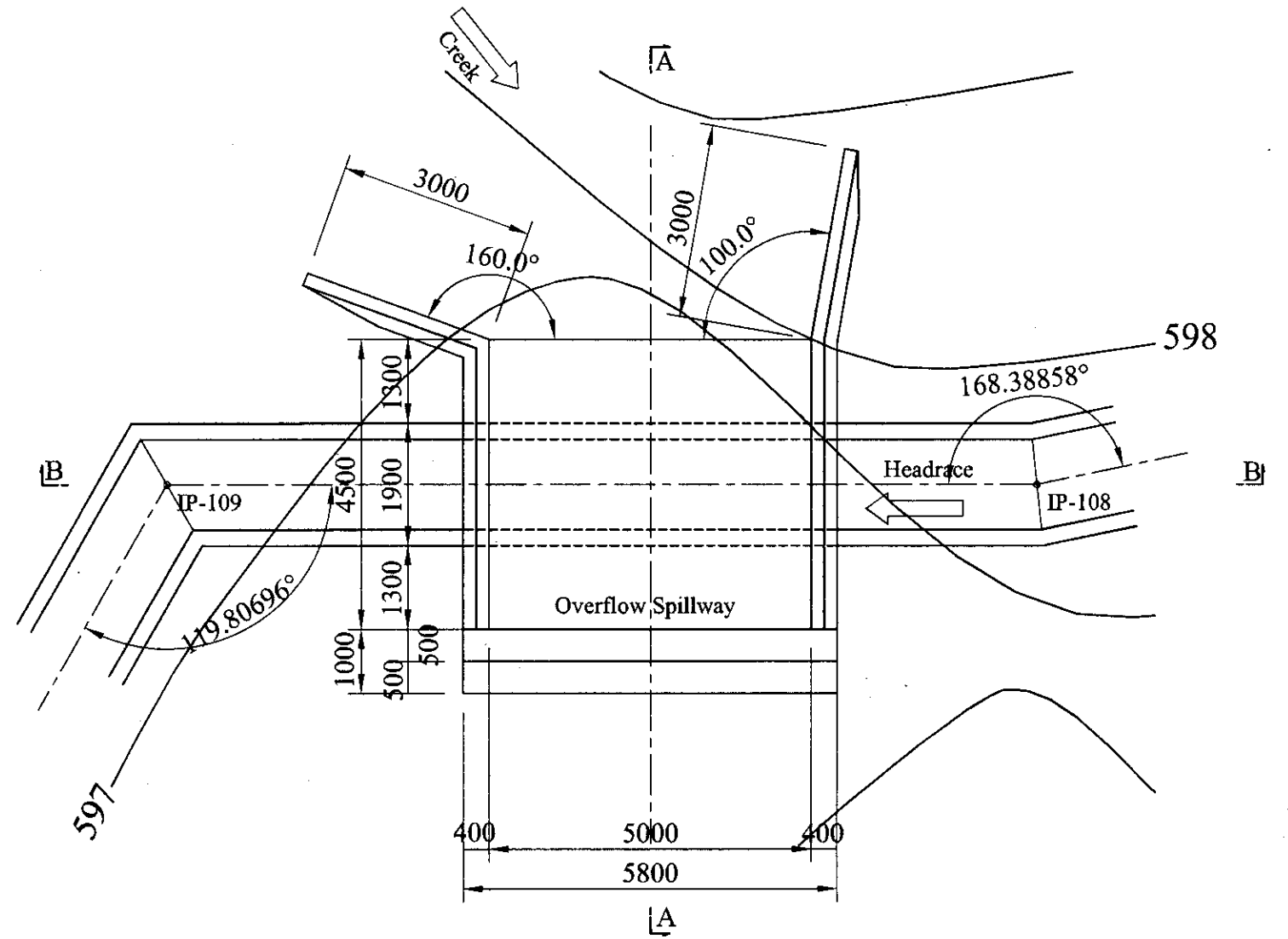


PLAN

IP-35+20.000

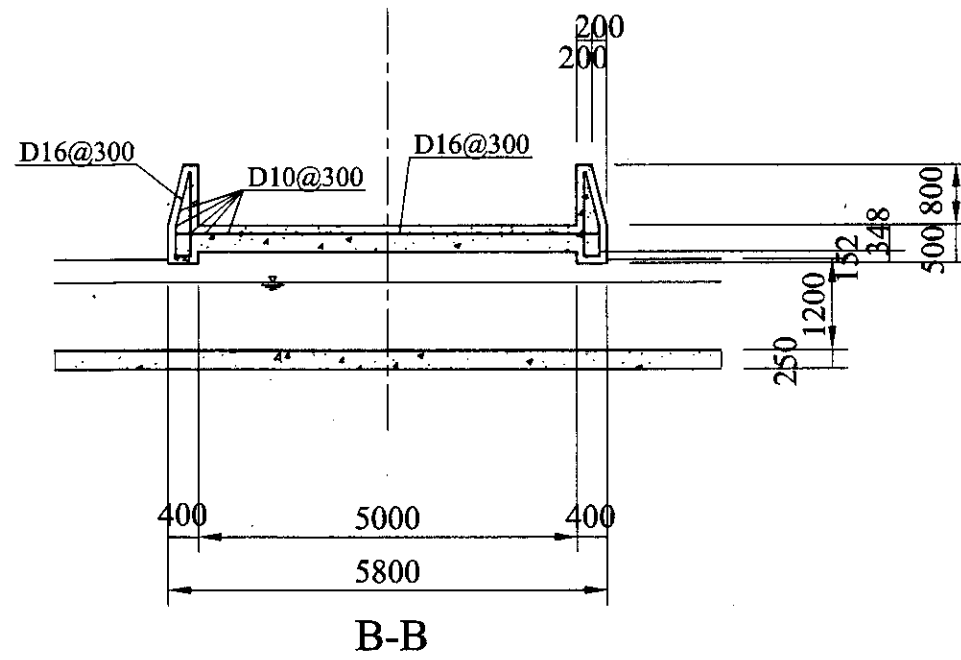


A-A



PLAN

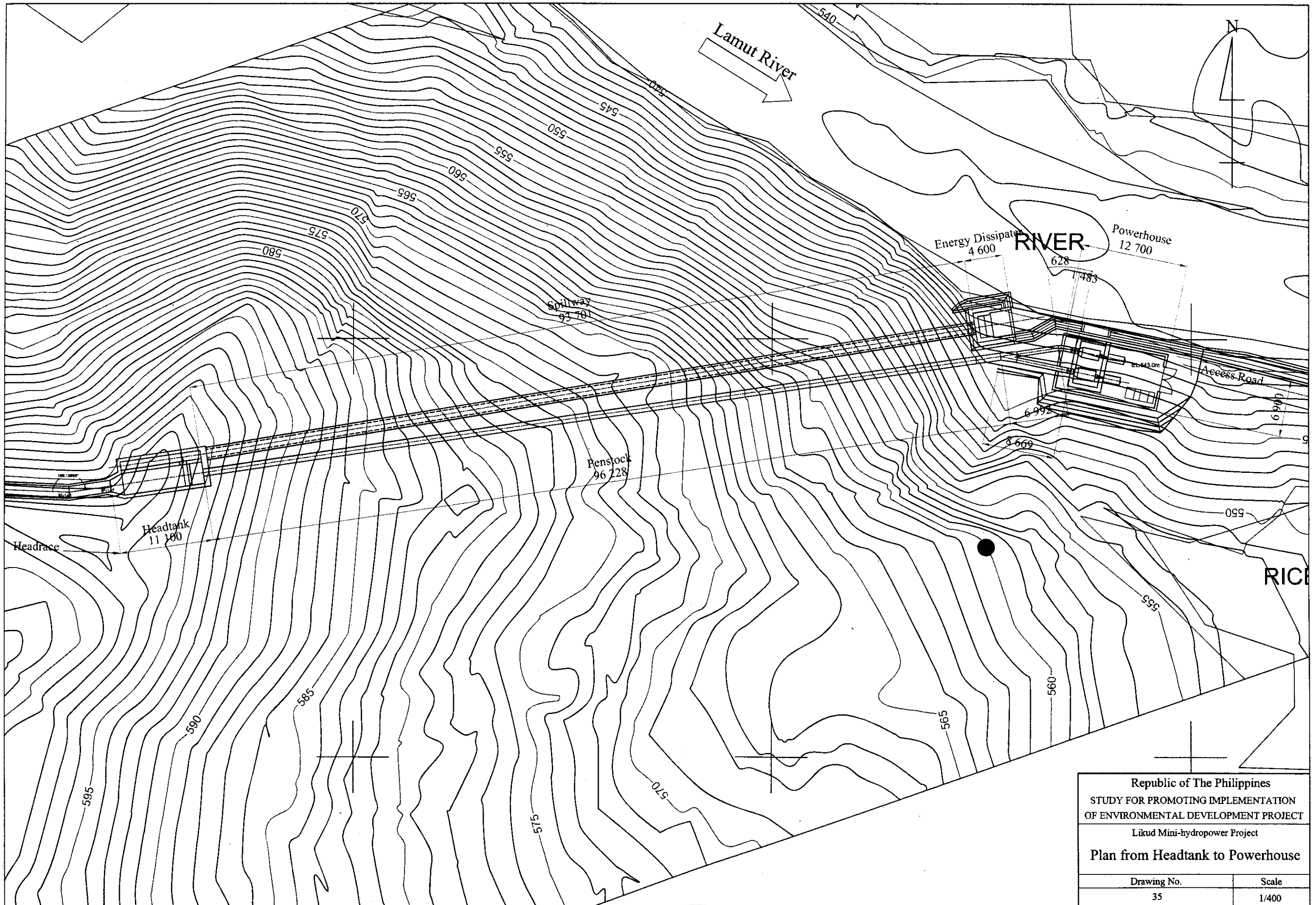
IP-108+6.000



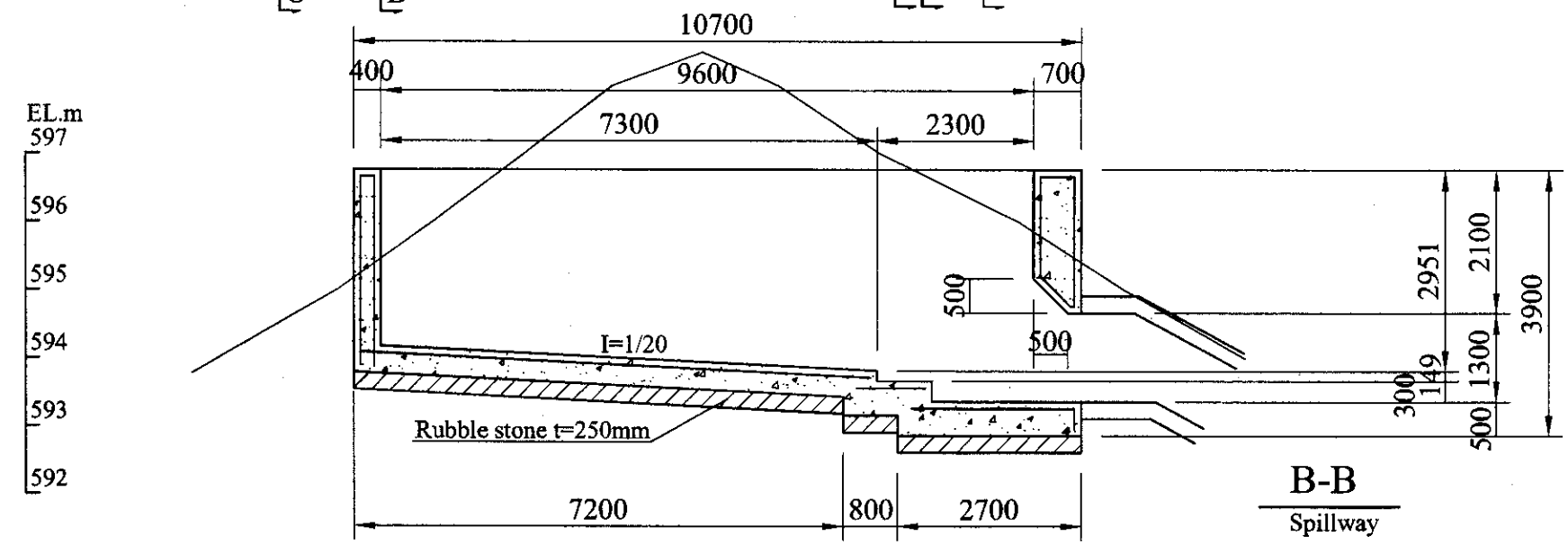
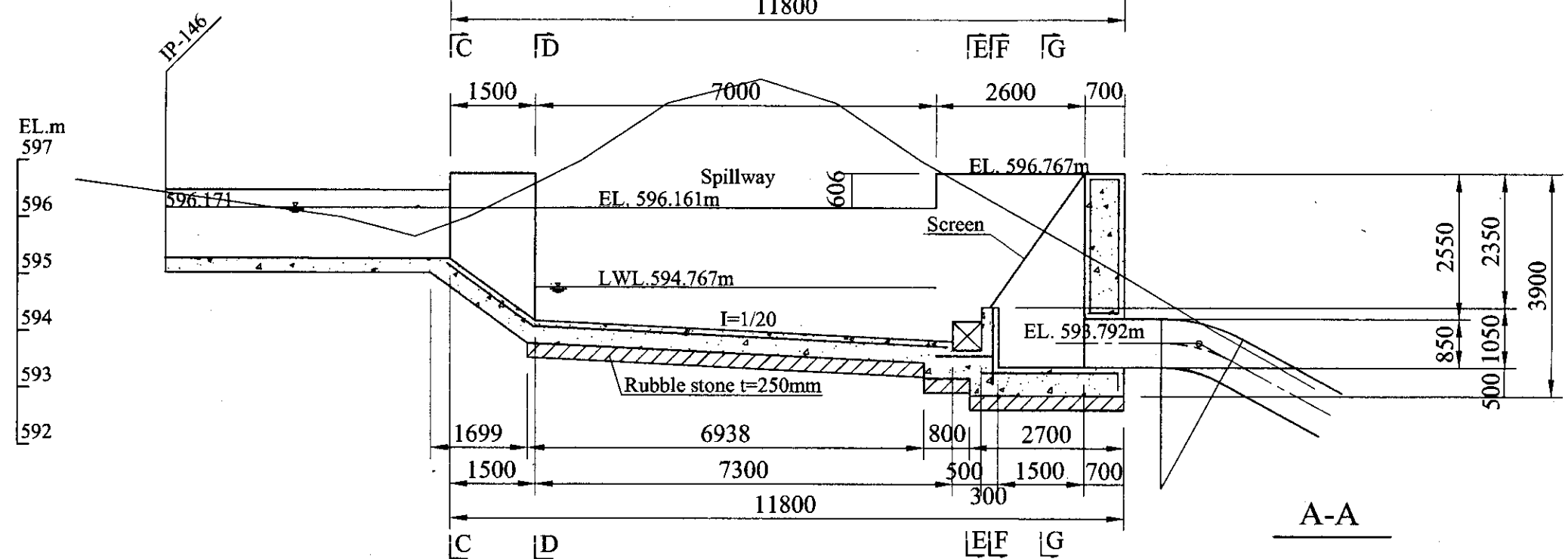
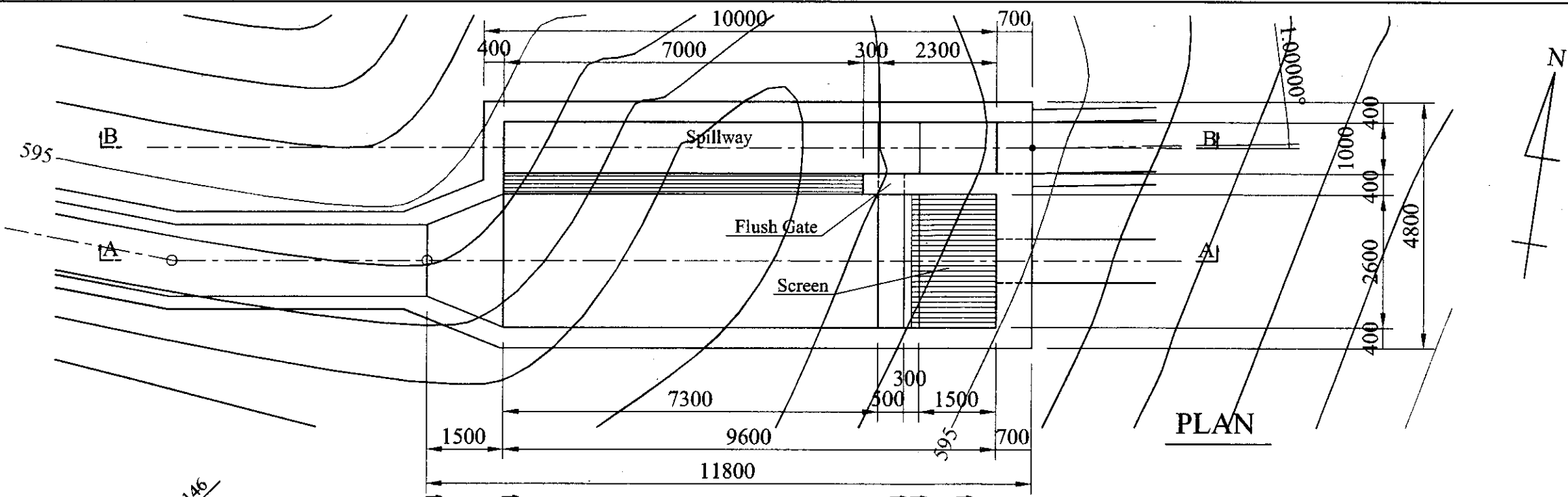
B-B

IP-35+20.0m  
IP-108+6.0m

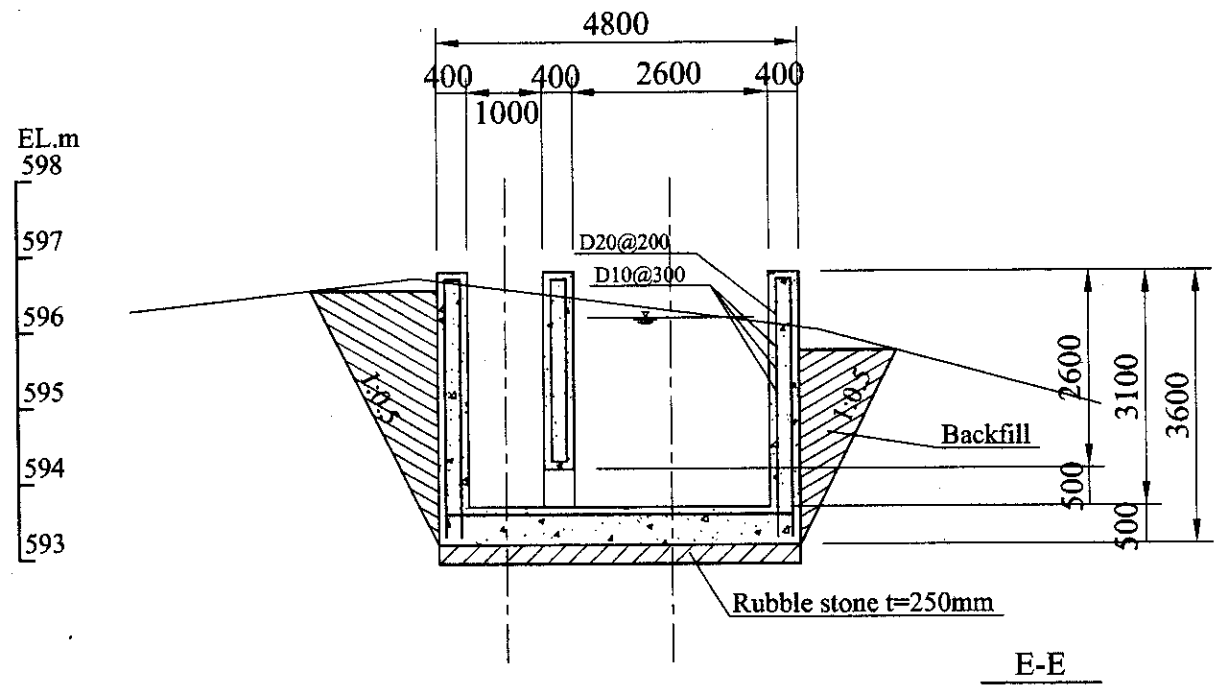
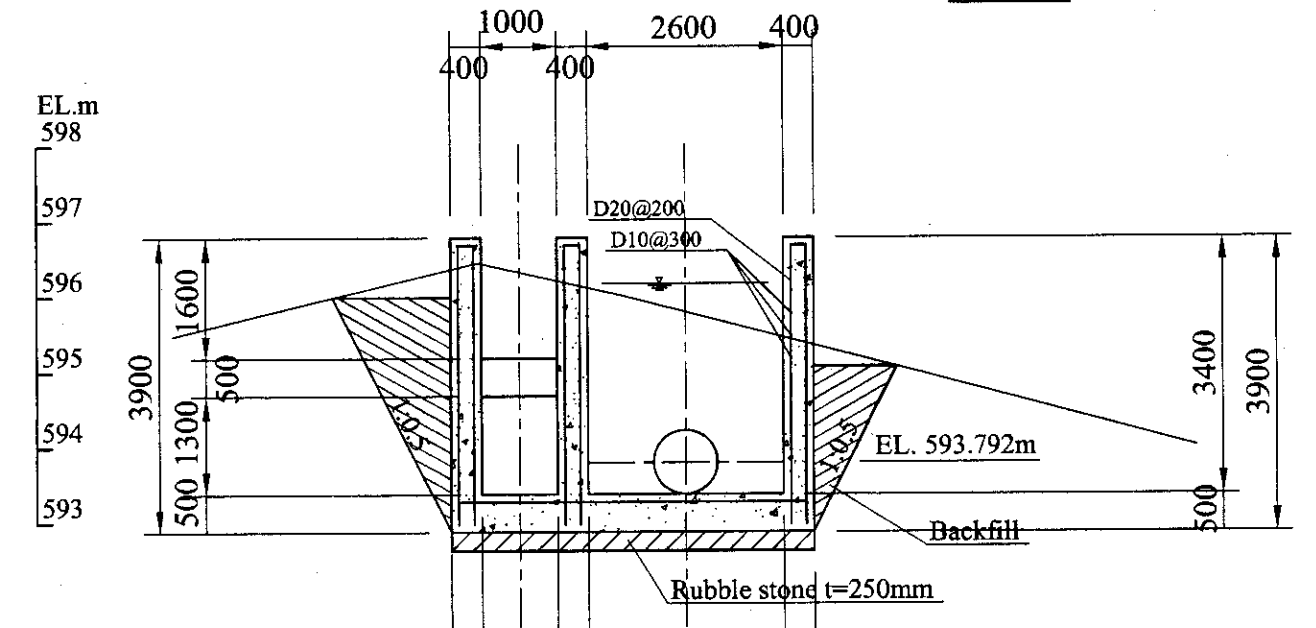
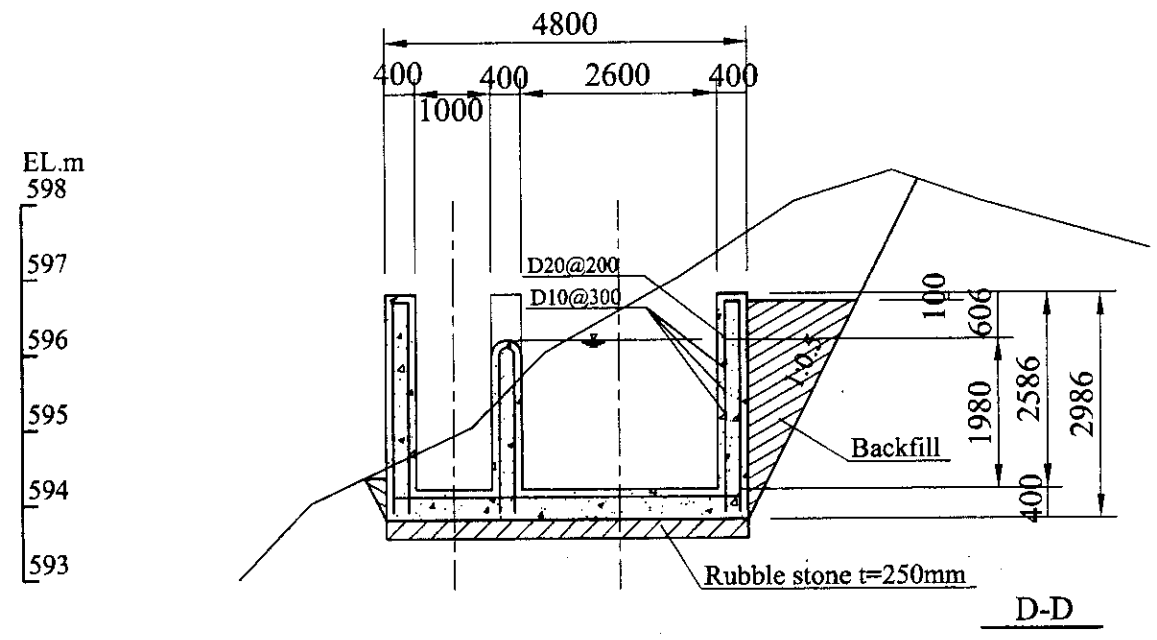
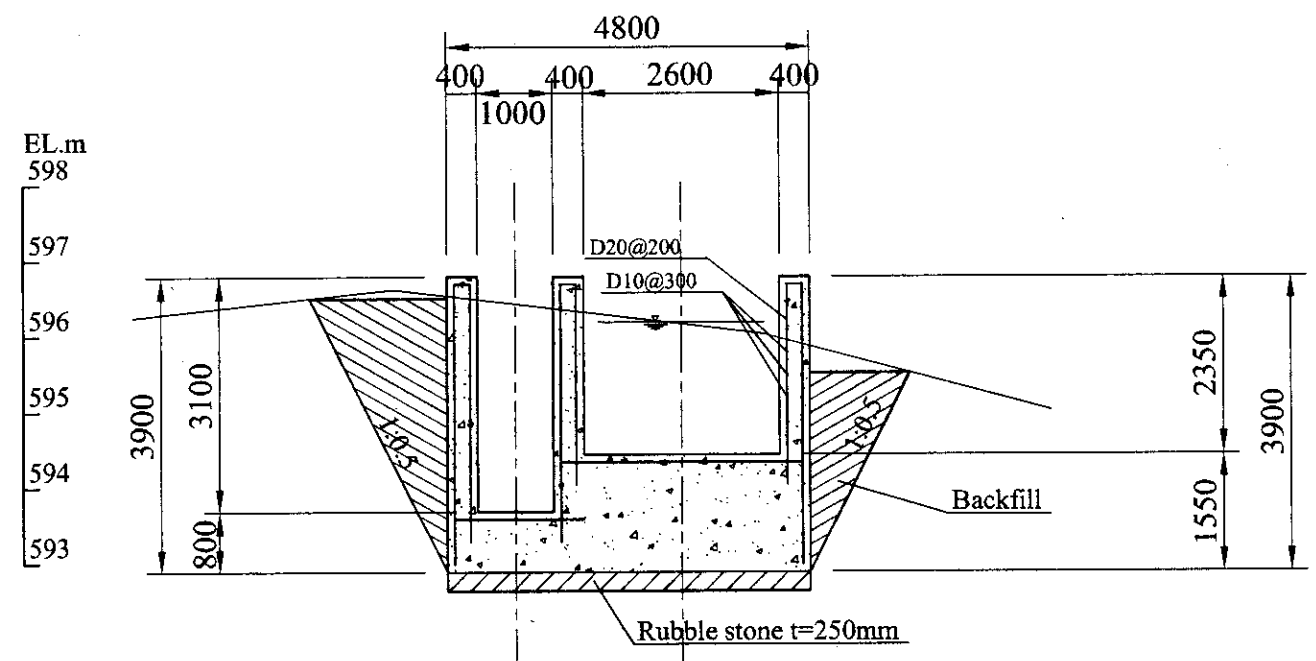
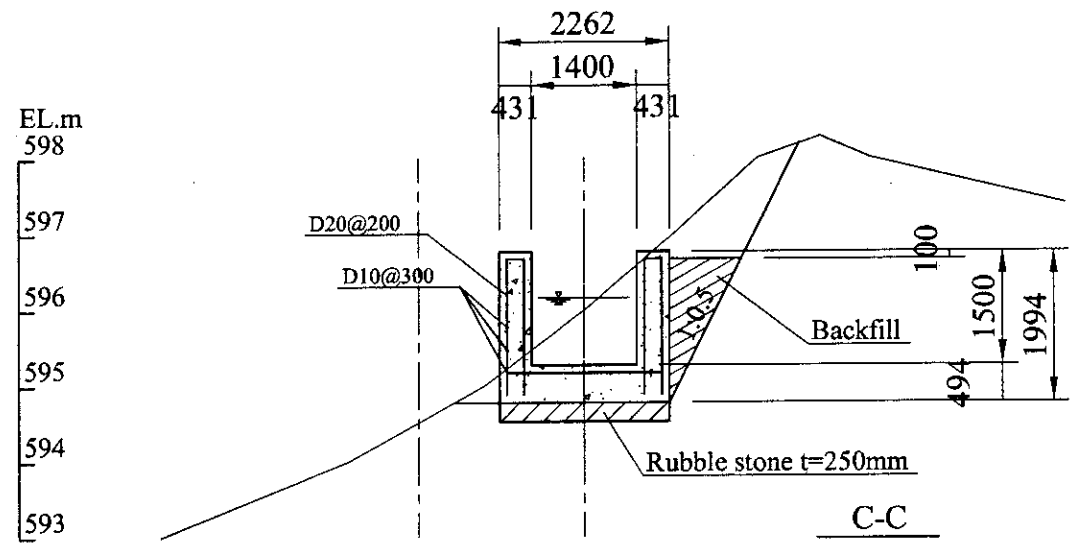
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Overflow Spillway at Headrace	
Drawing No.	Scale
34	1/100



Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Plan from Headtank to Powerhouse	
Drawing No.	Scale
35	1/400

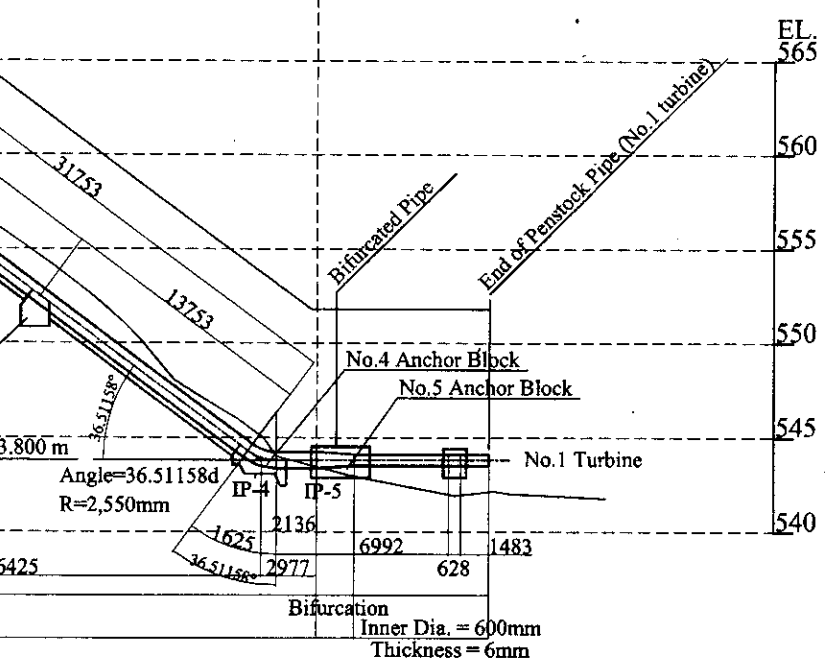
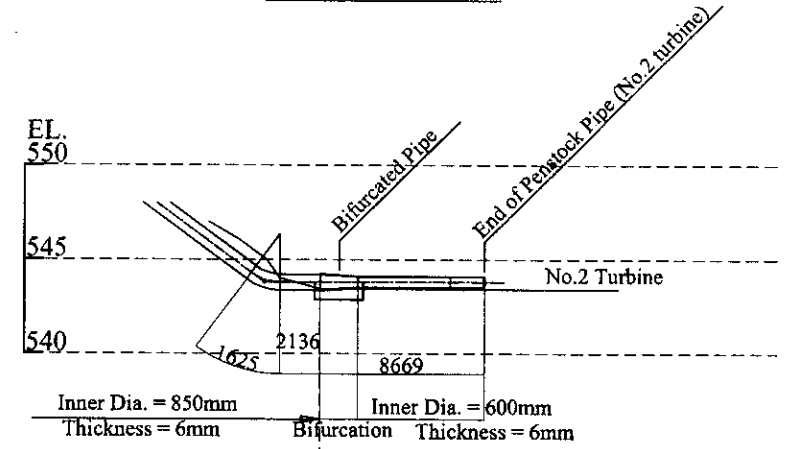
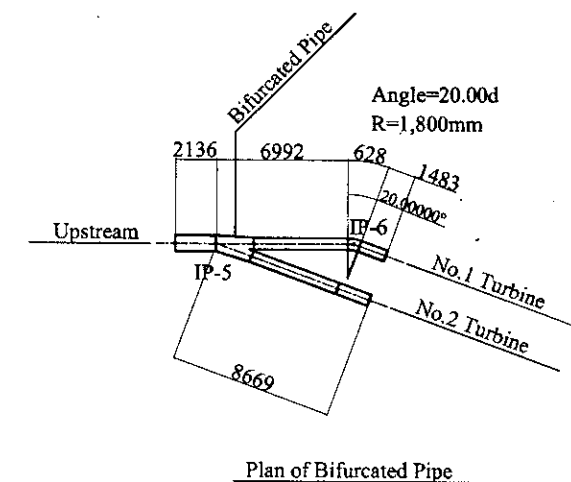
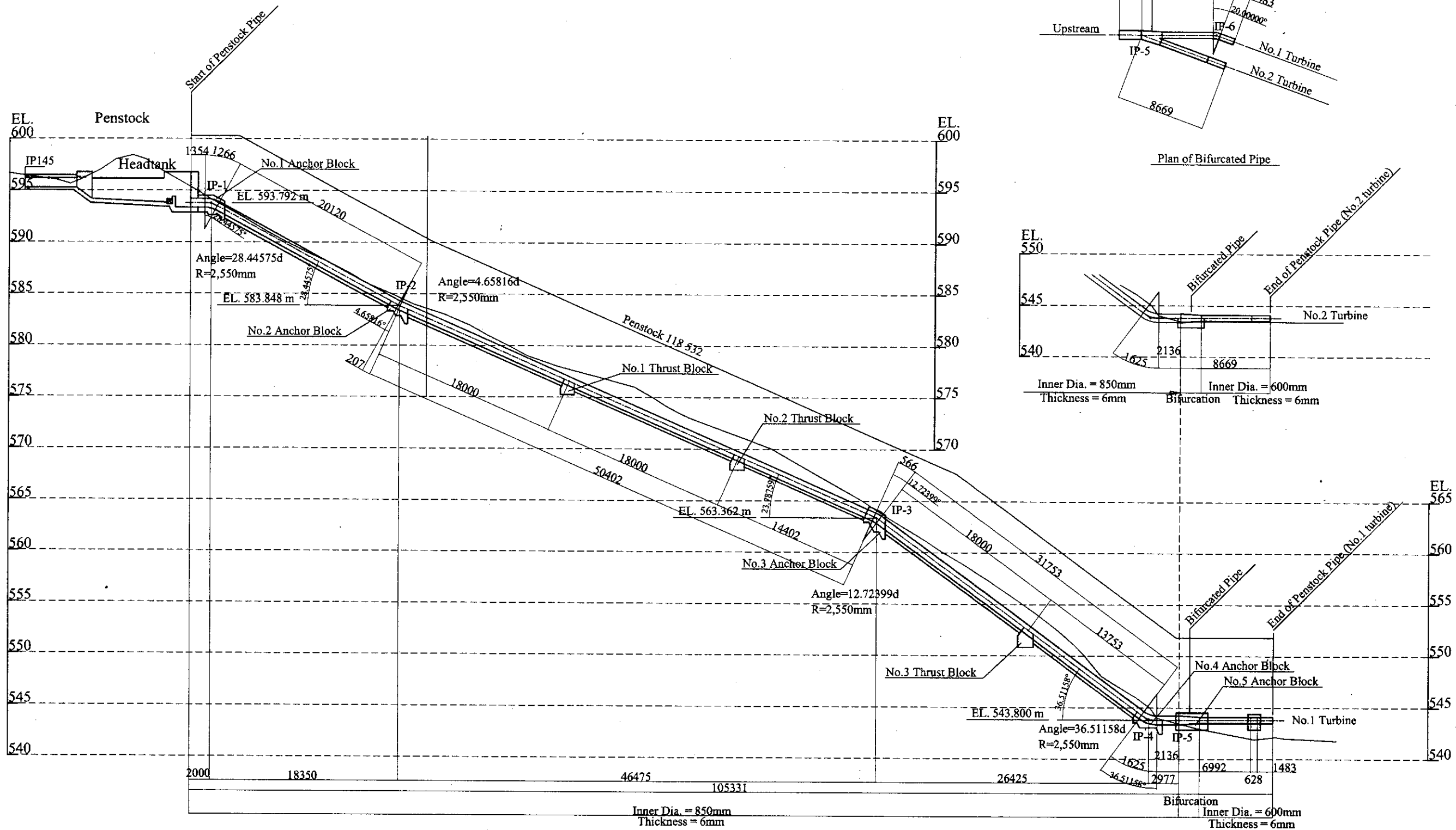


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
<b>Headtank</b>	
Drawing No.	Scale
36	1/100

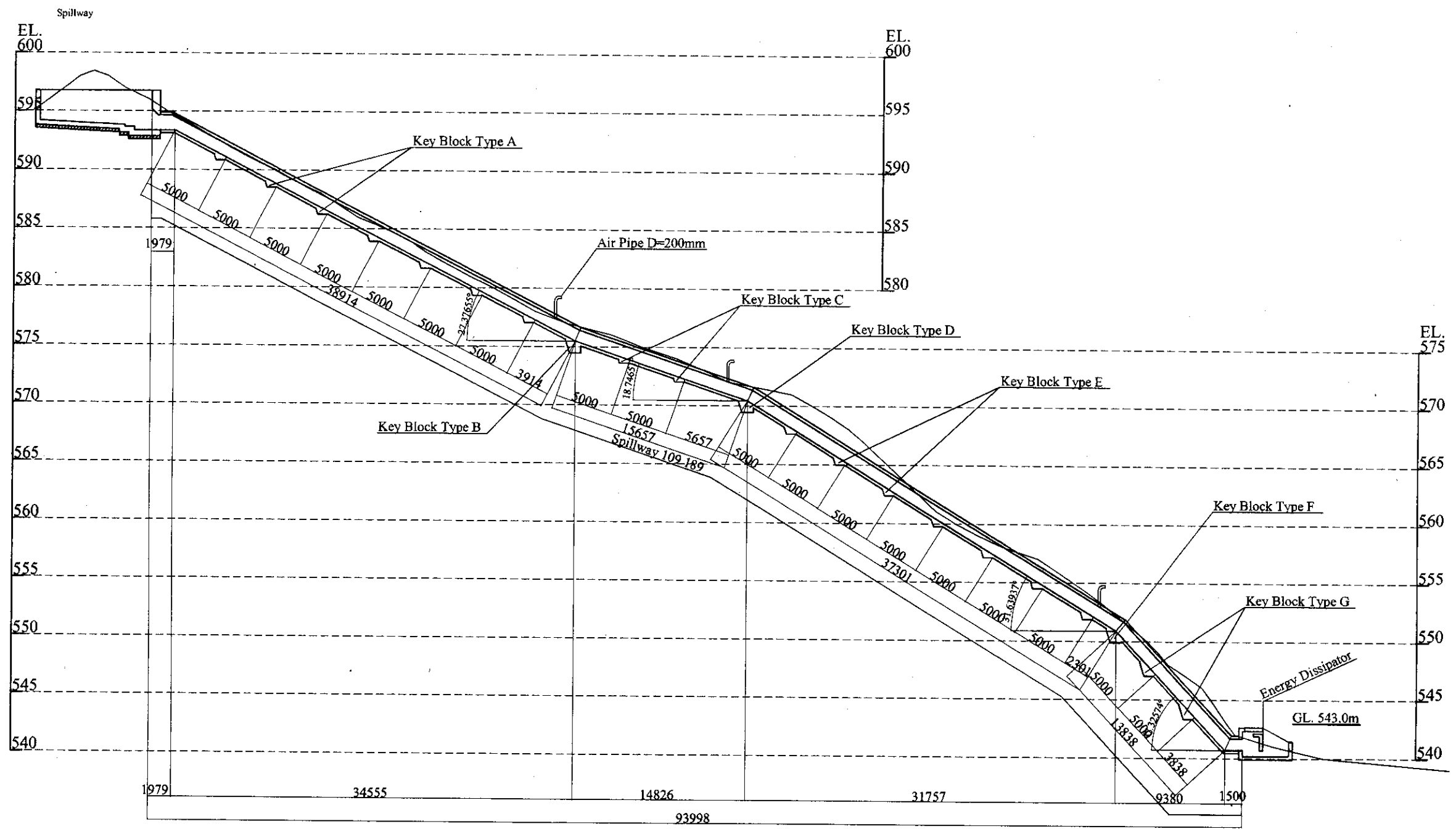


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Headtank	
Drawing No.	Scale
37	1/100



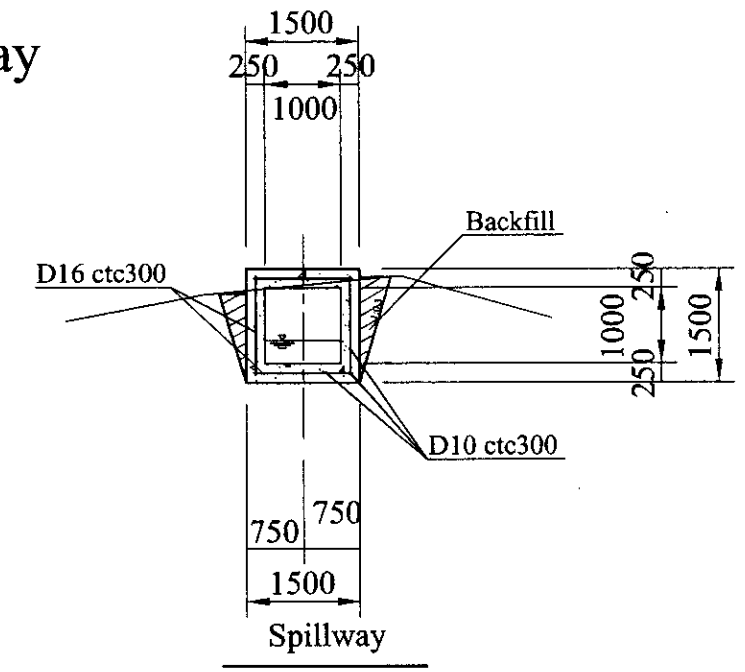
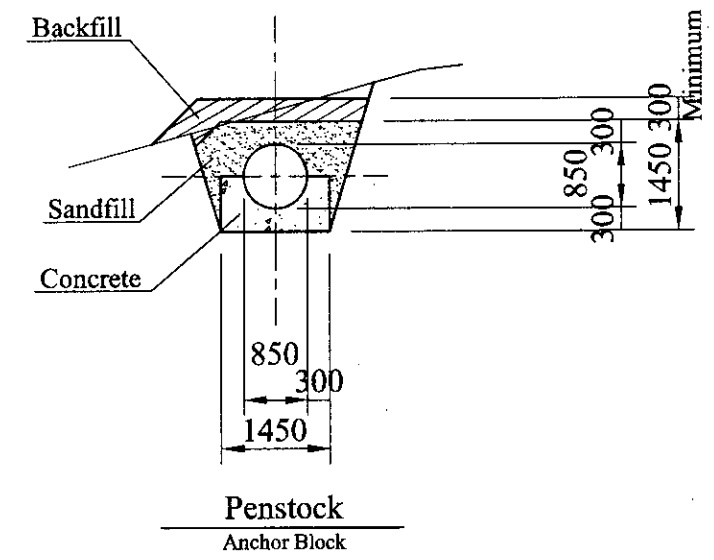
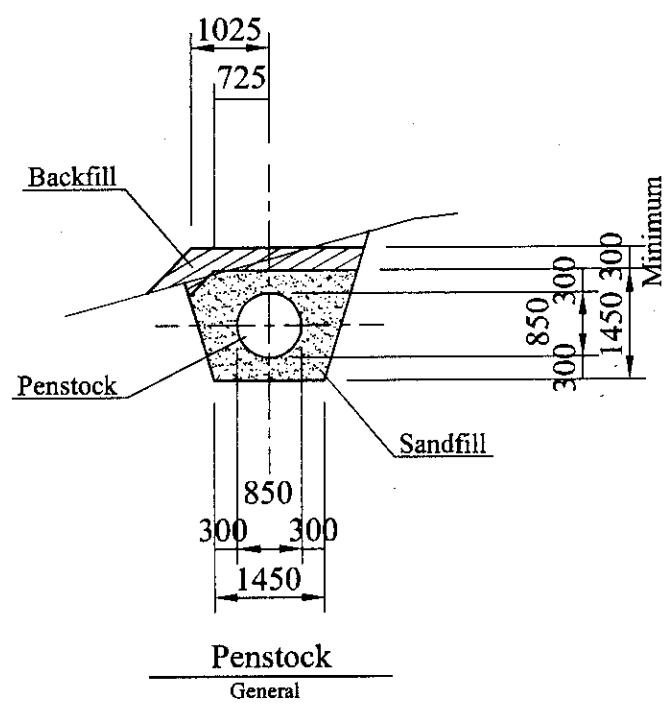


Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project <b>Penstock Profile</b>	
Drawing No.	Scale
38	1/400

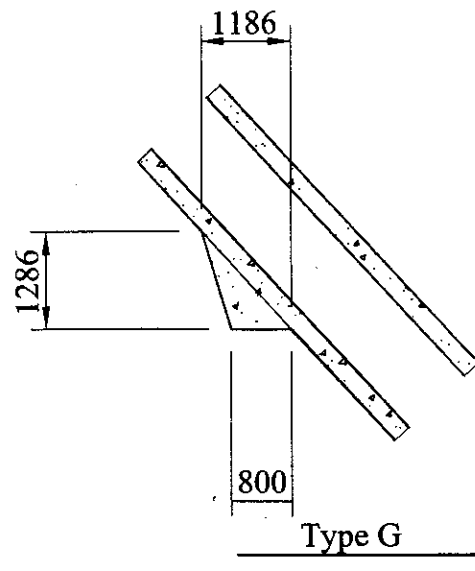
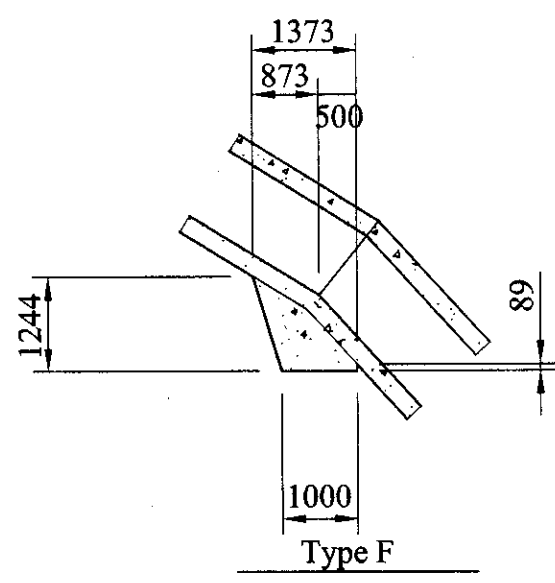
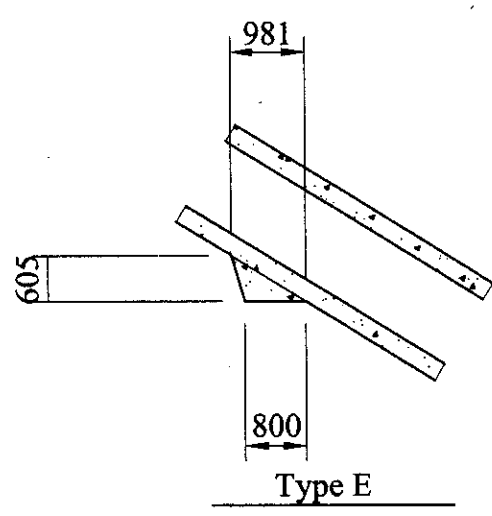
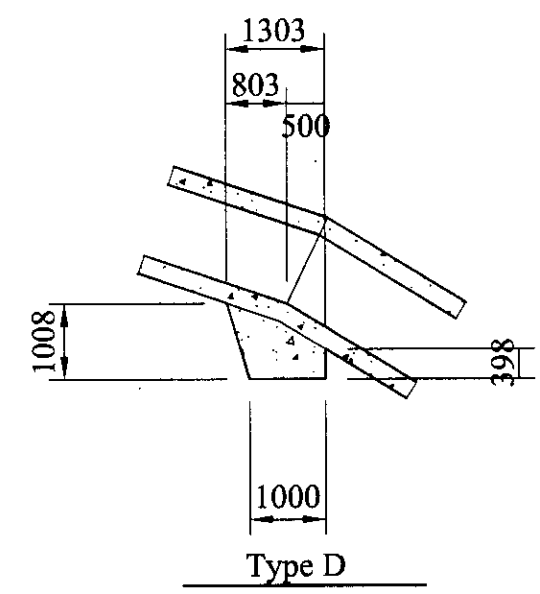
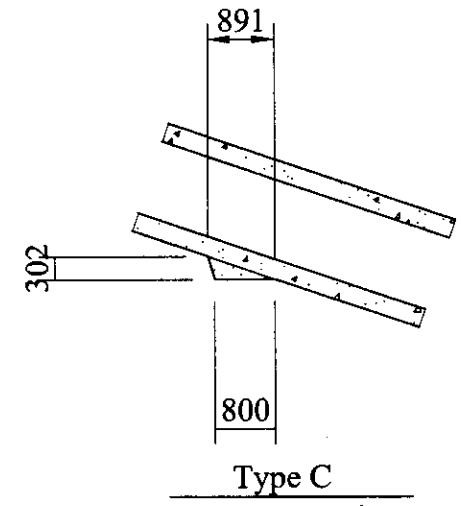
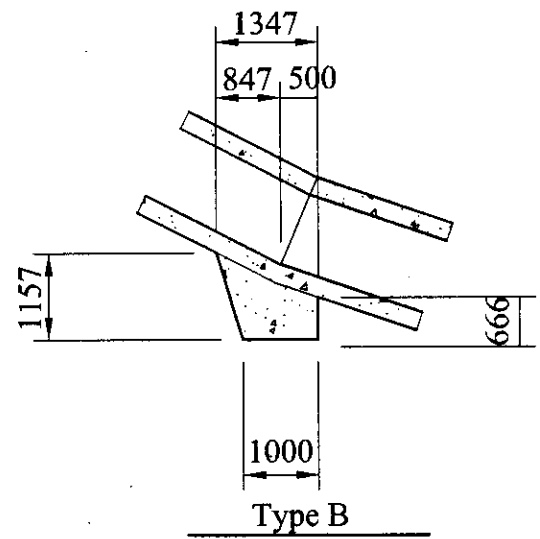
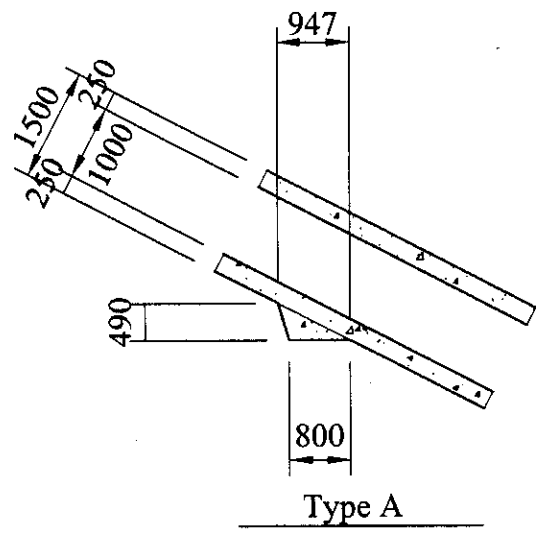


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Spillway Profile	
Drawing No.	Scale
39	1/400

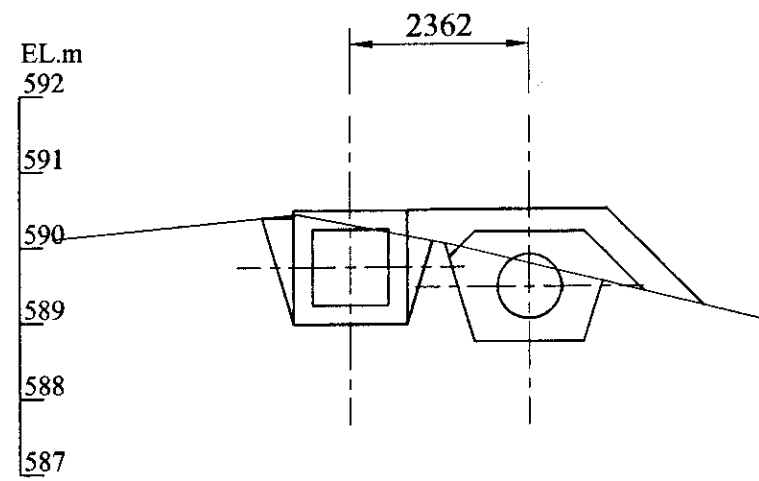
# General Section of Penstock and Spillway



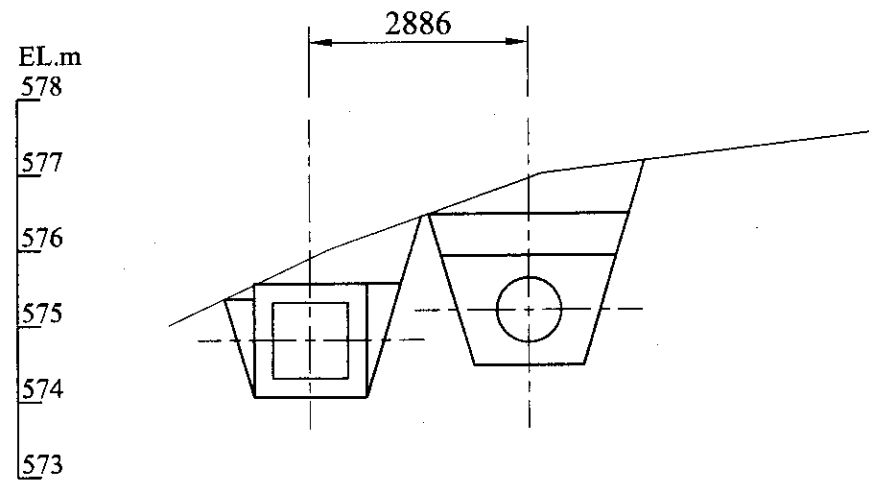
# Section of Key Block at Spillway



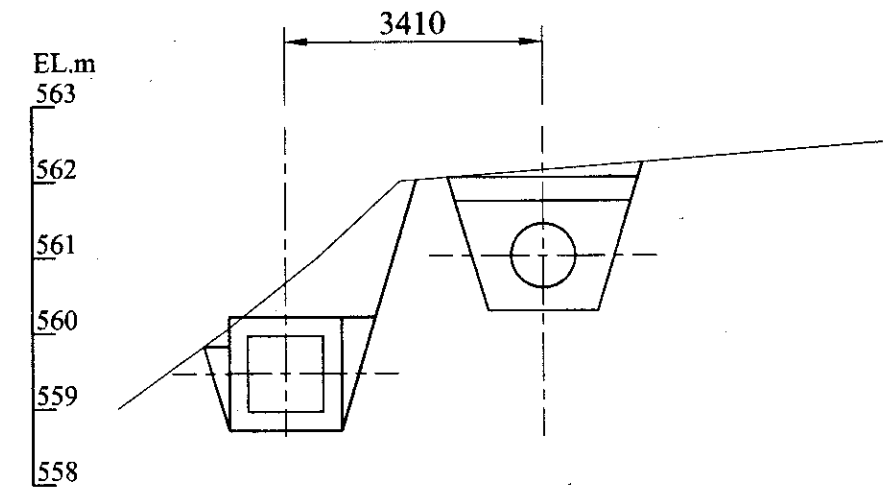
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
General Cross Section of Penstock and Spillway	
Drawing No.	Scale
40	1/100



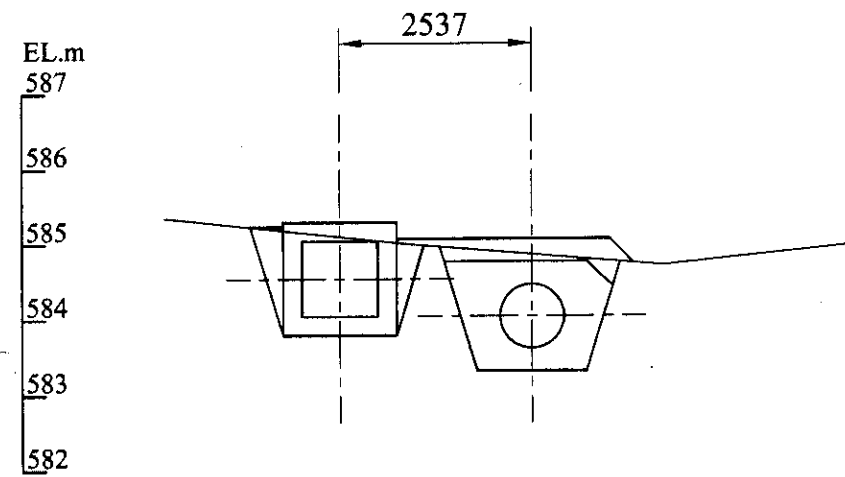
ST+10m



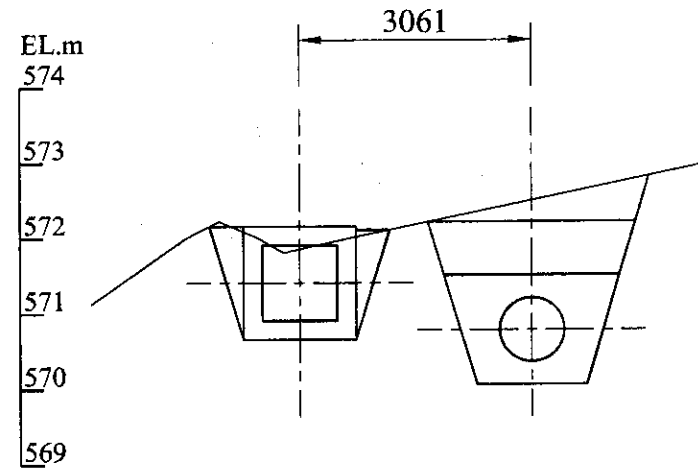
ST+40m



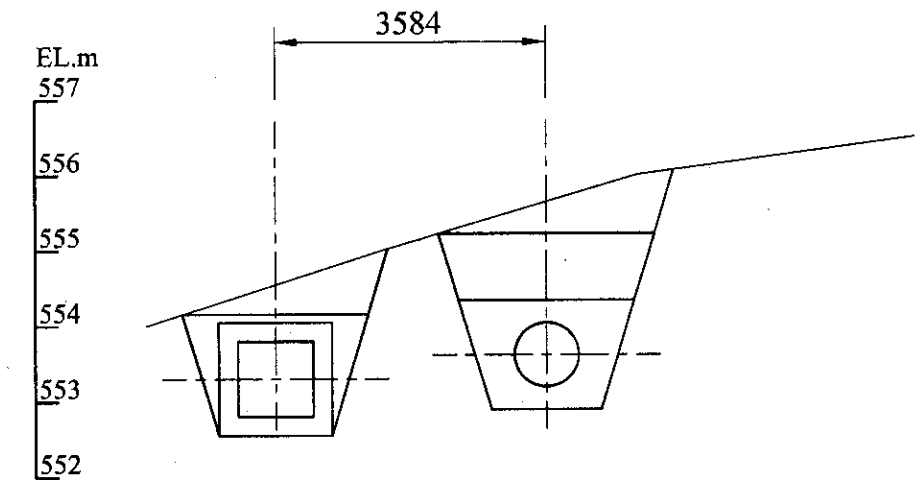
ST+70m



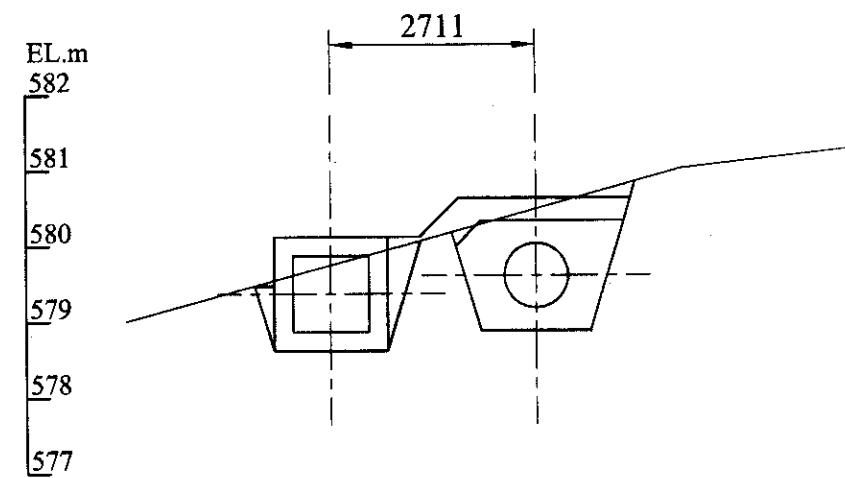
ST+20m



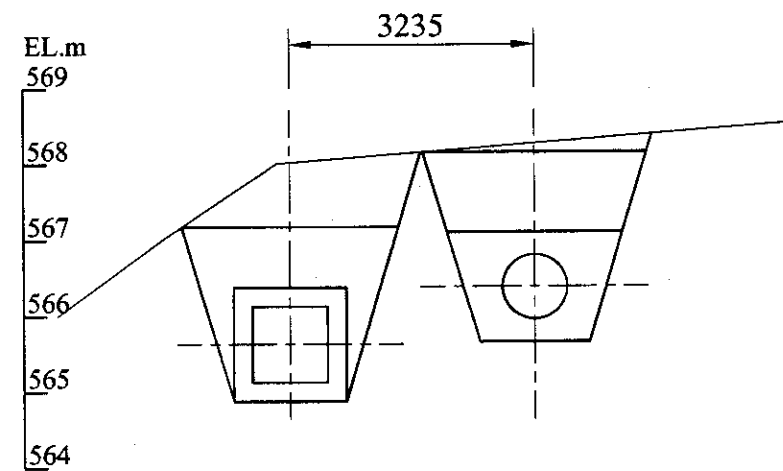
ST+50m



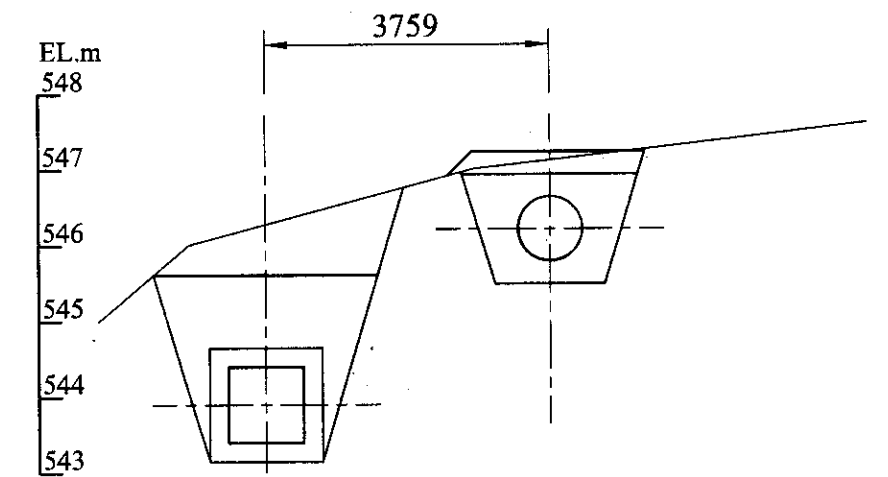
ST+80m



ST+30m

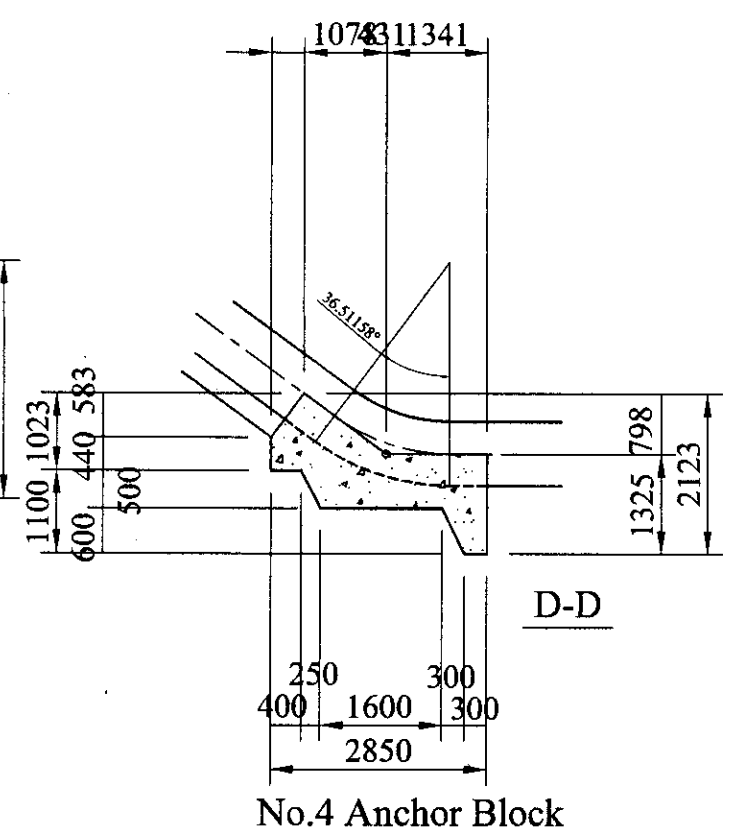
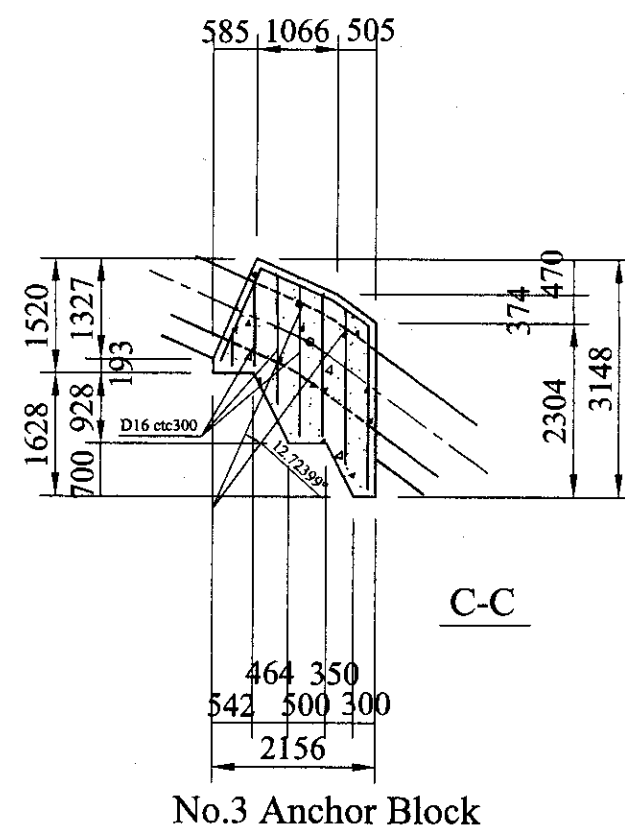
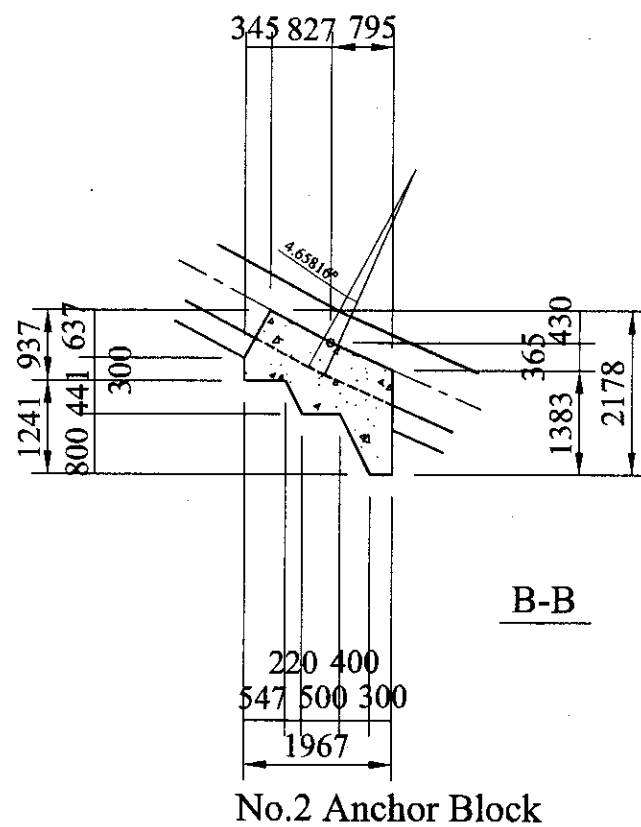
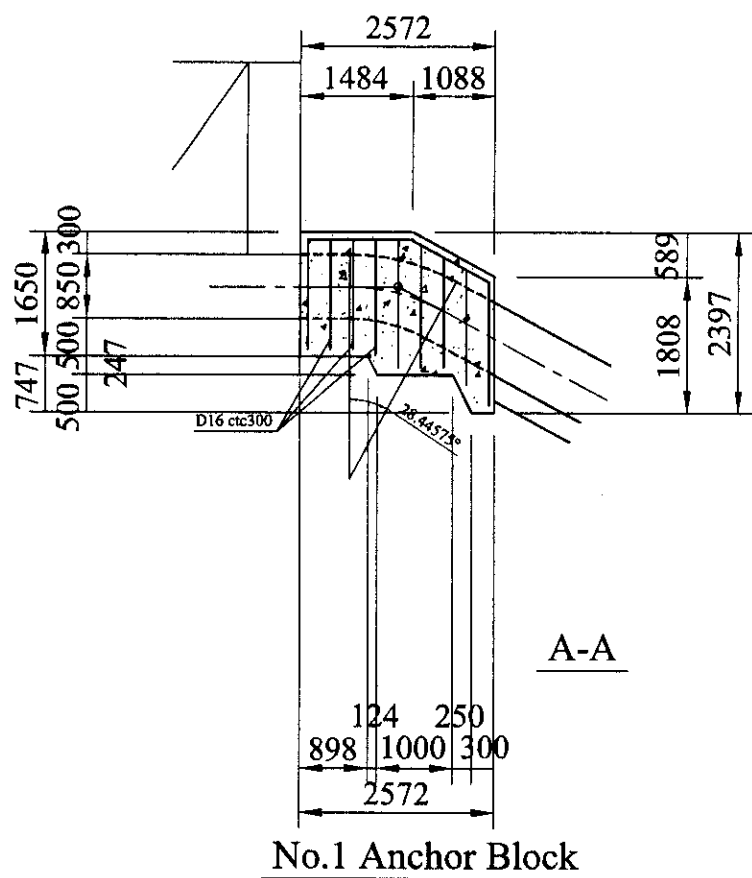
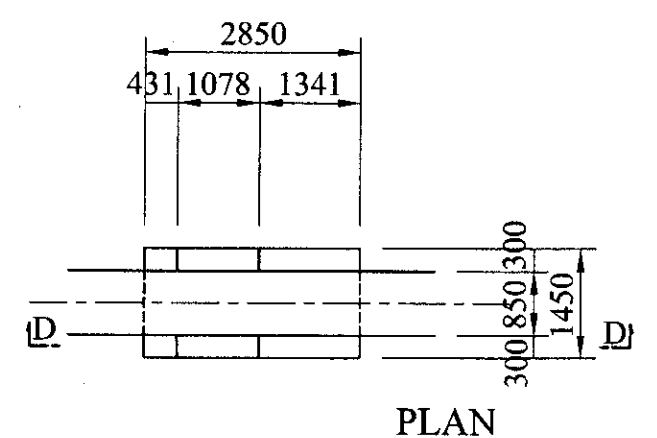
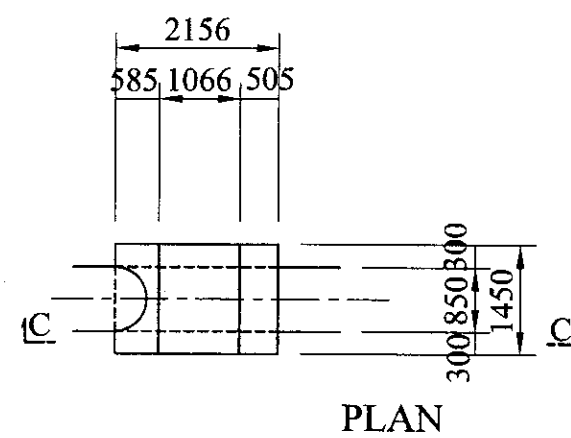
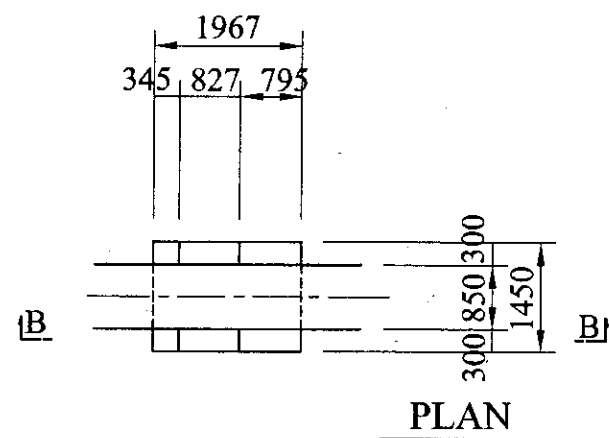
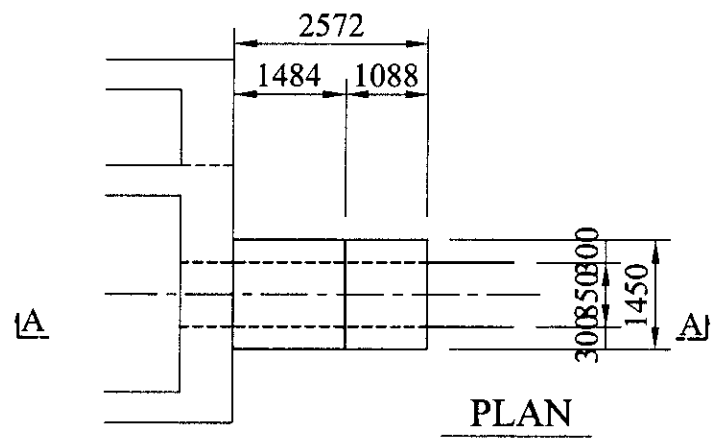


ST+60m



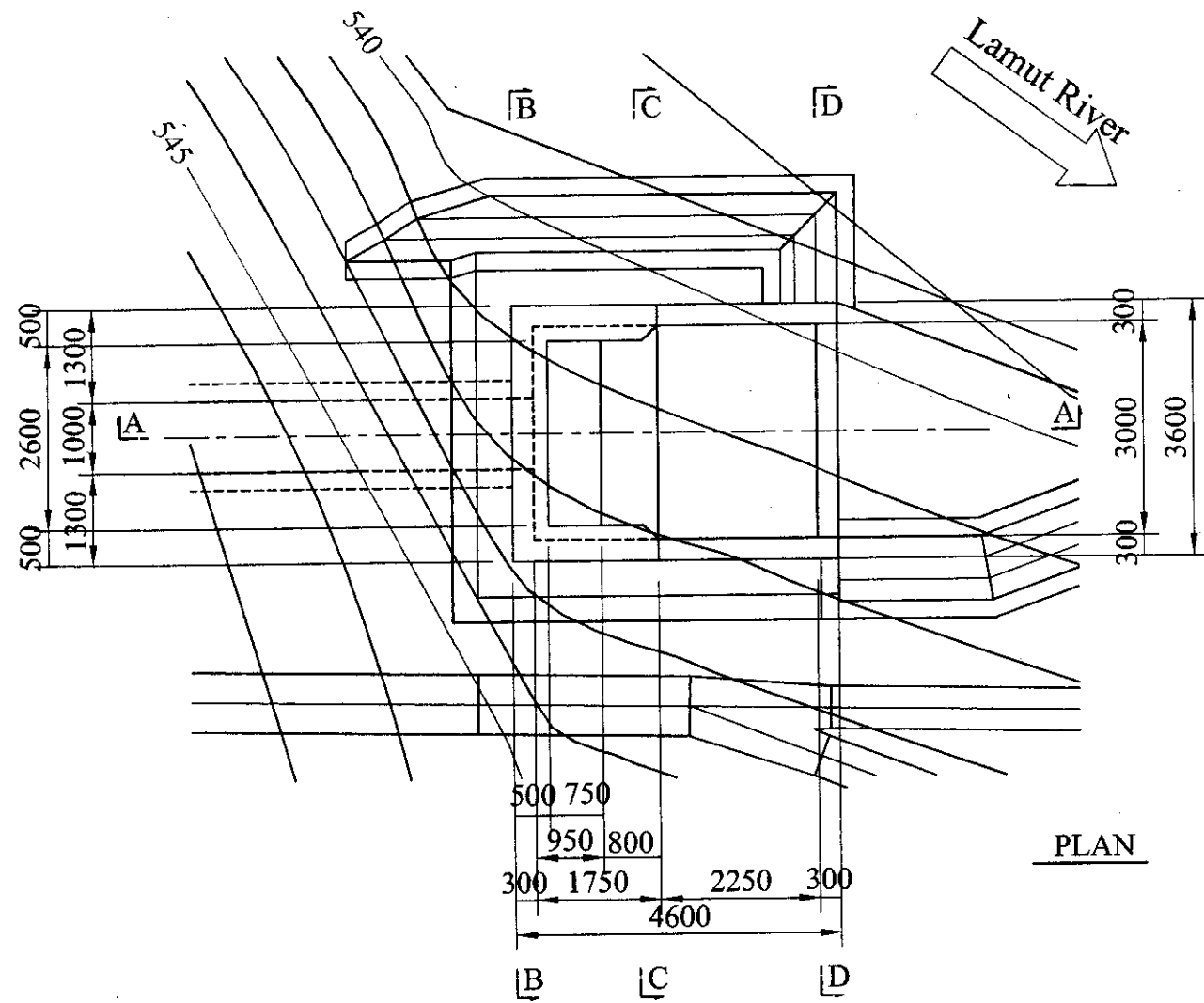
ST+90m

Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Penstock and Spillway	
Drawing No.	Scale
41	1/100

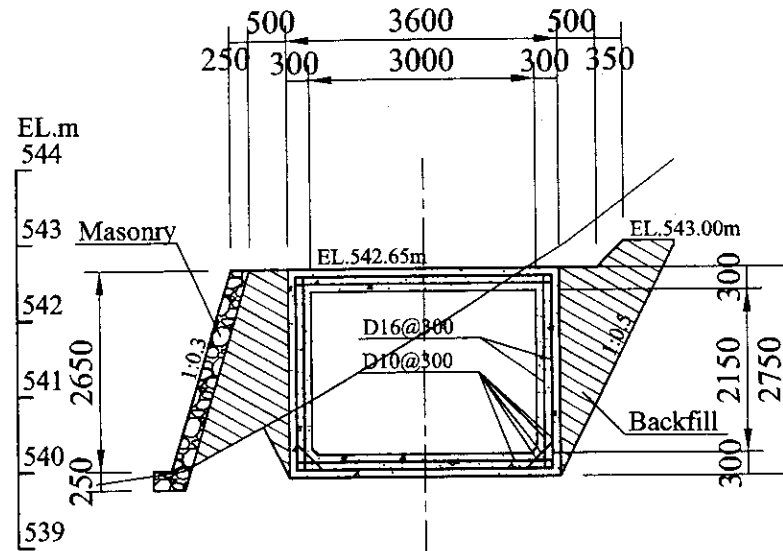


Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Anchor Block of Penstock (1/2)	
Drawing No.	Scale
42	1/100

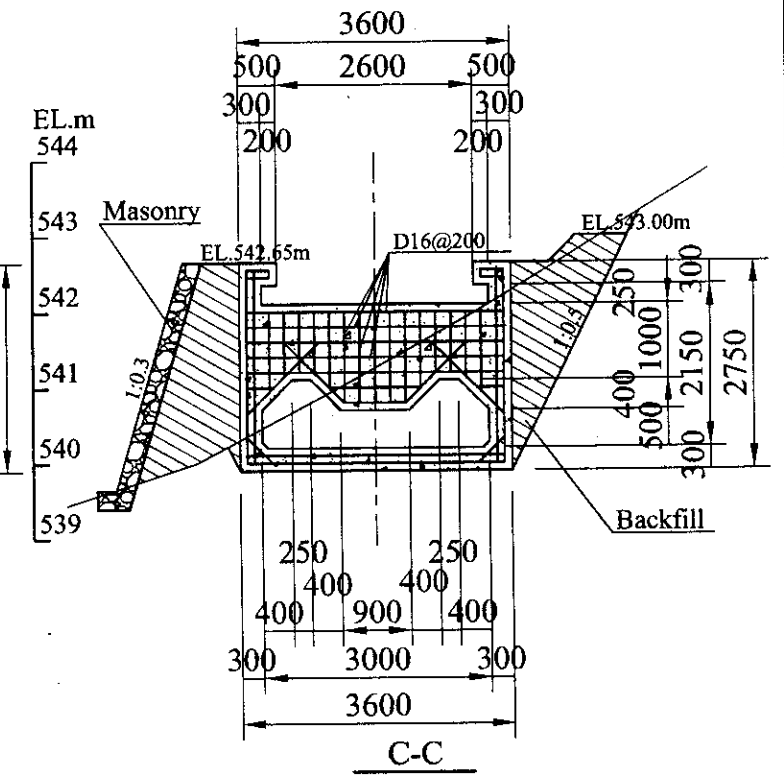




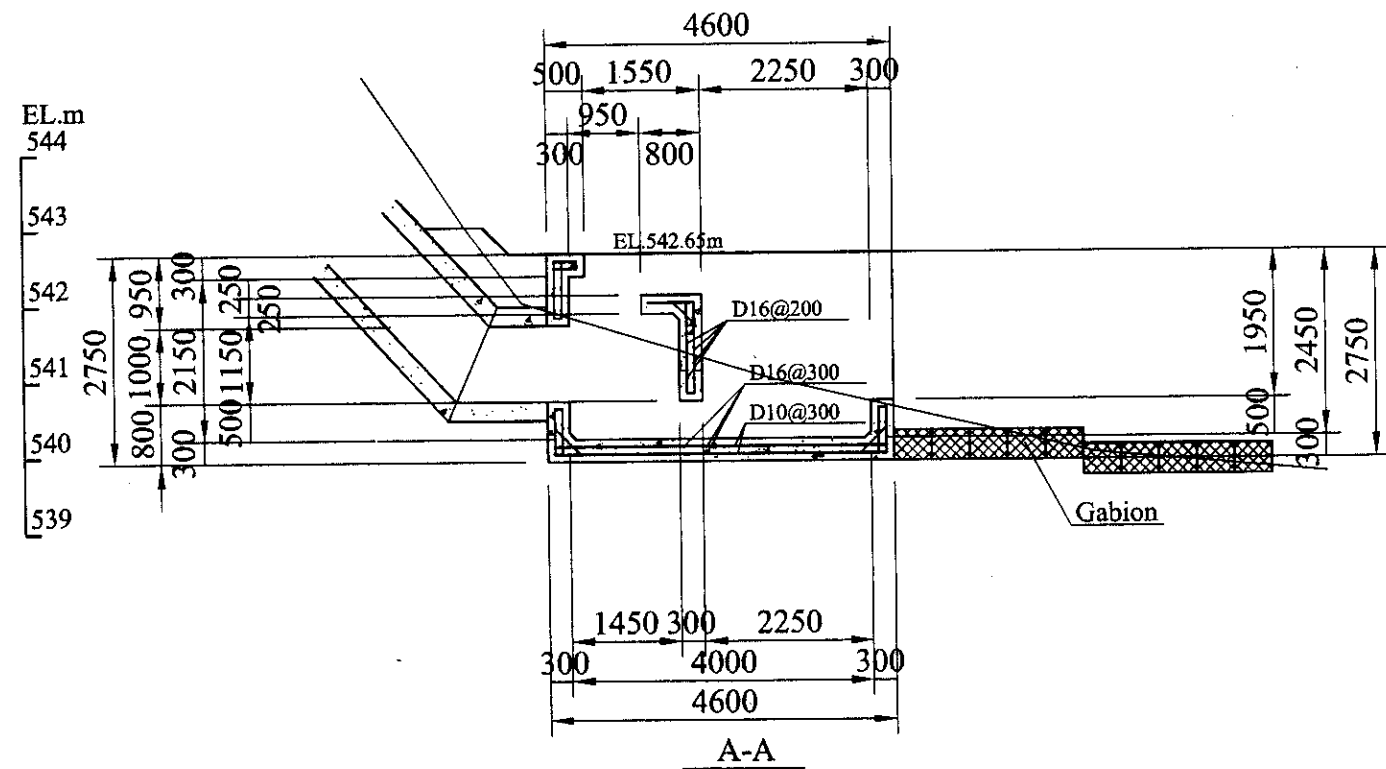
PLAN



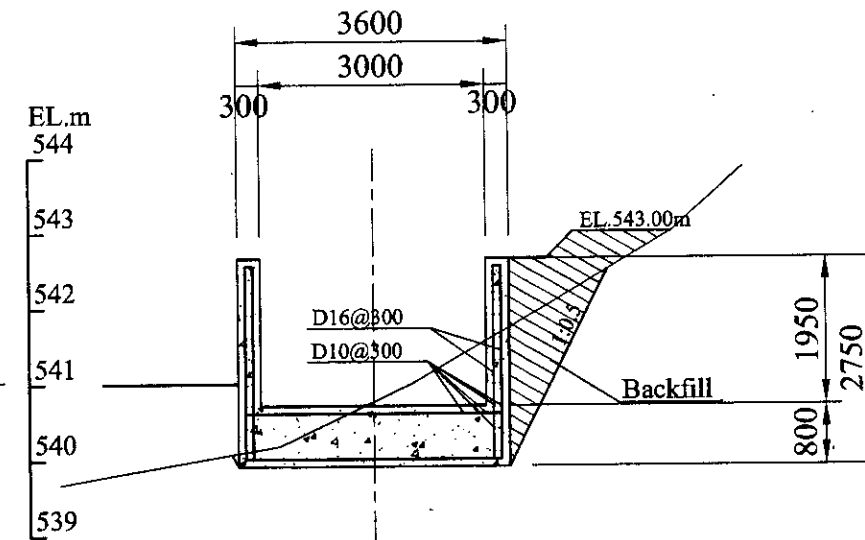
B-B



C-C



A-A



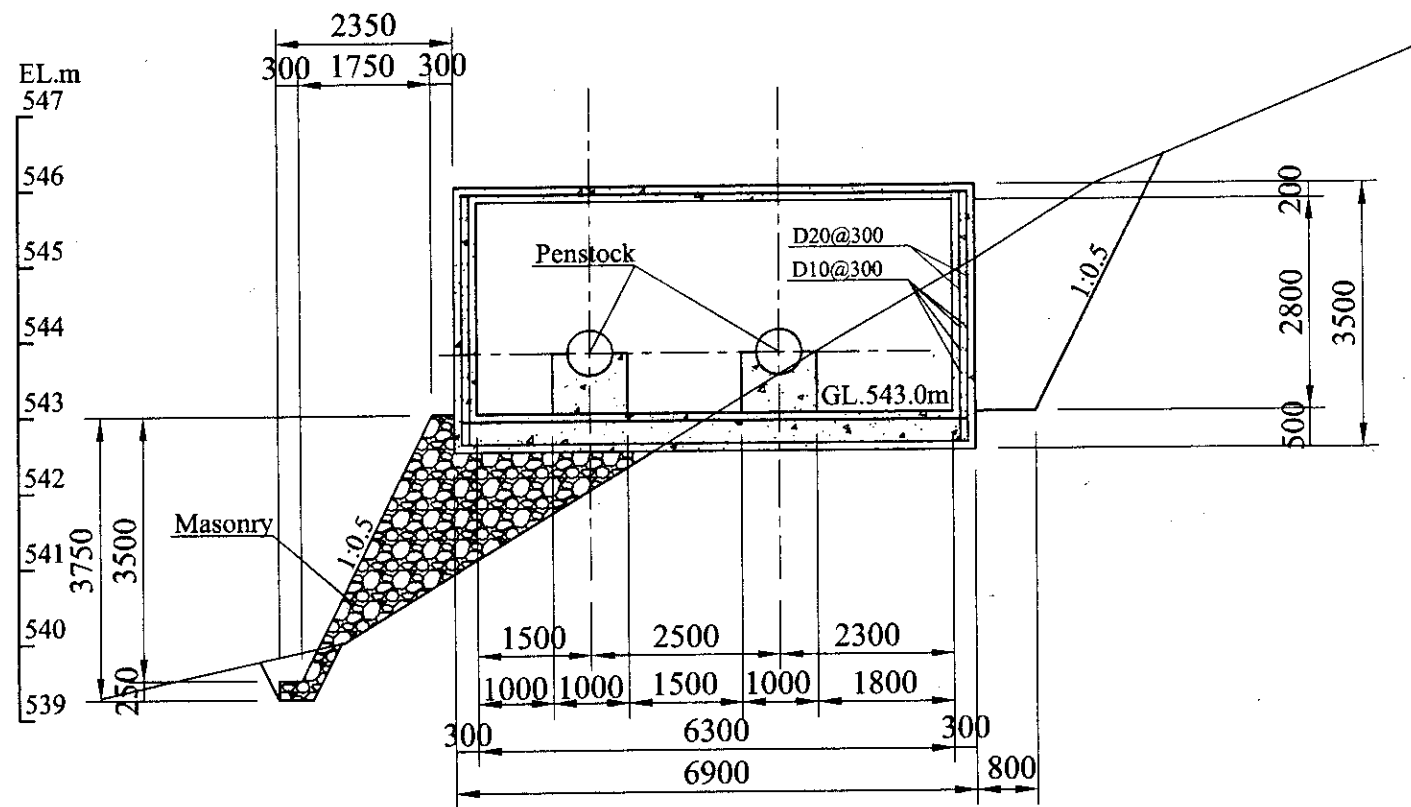
D-D

W= 3.000m

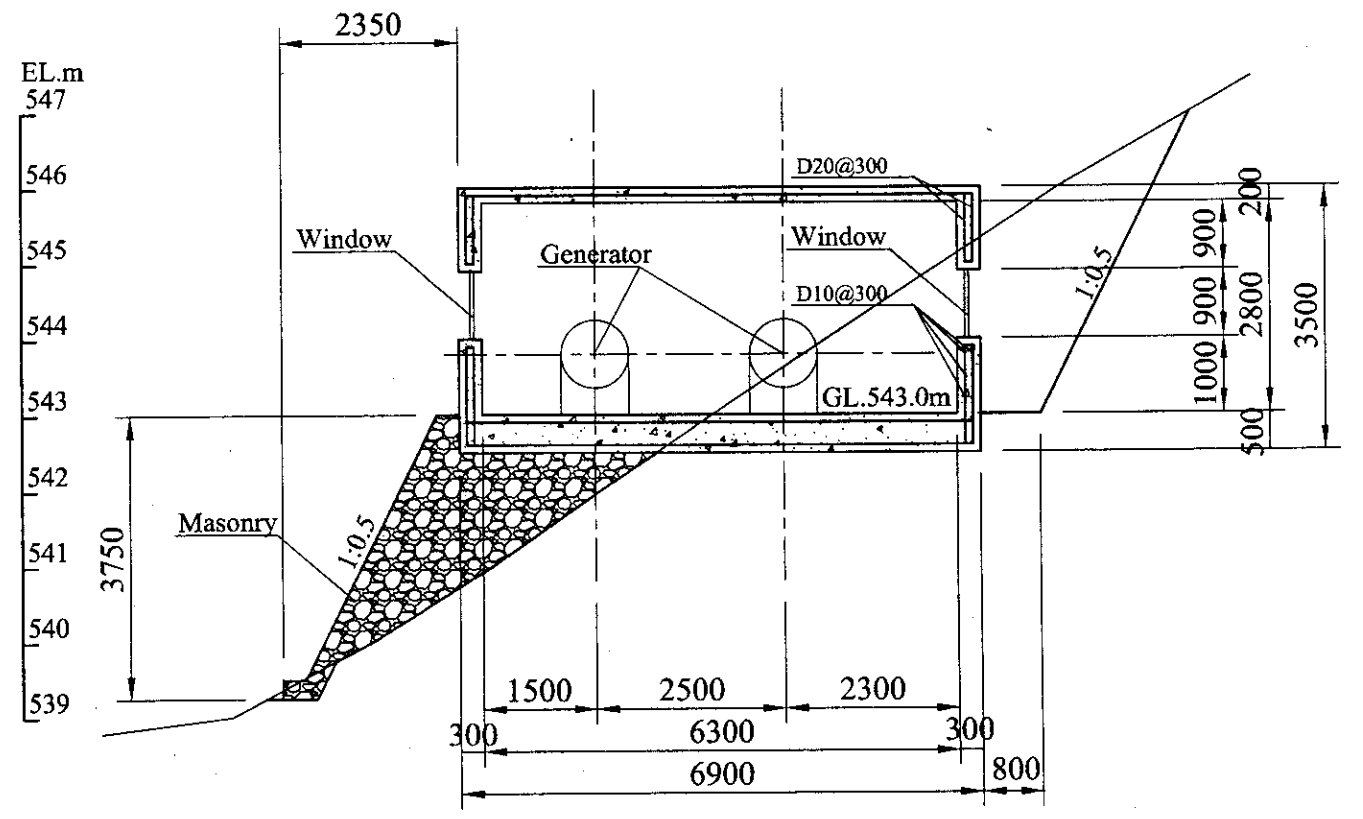
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Energy Dissipater of Spillway	
Drawing No.	Scale
44	1/100



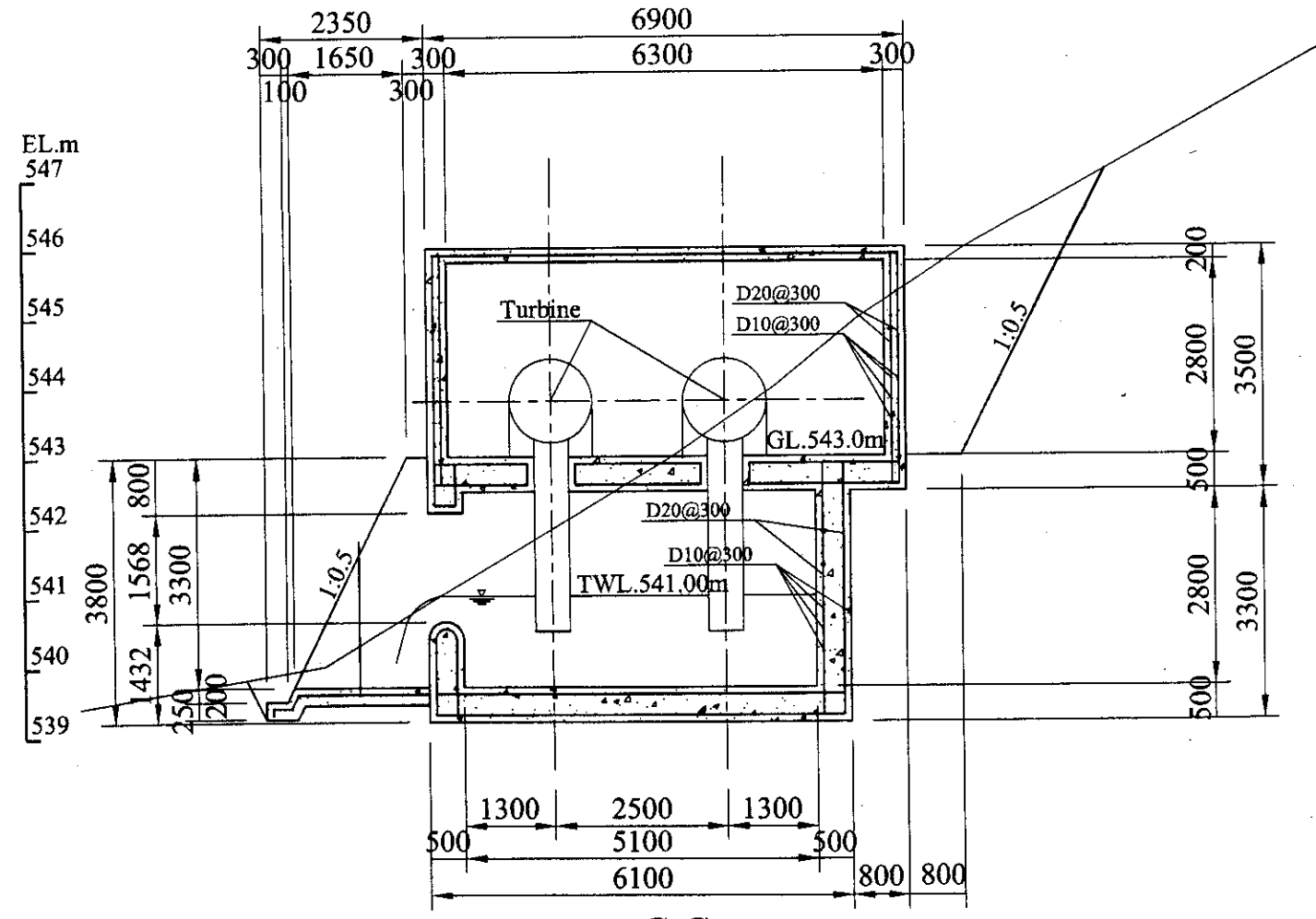




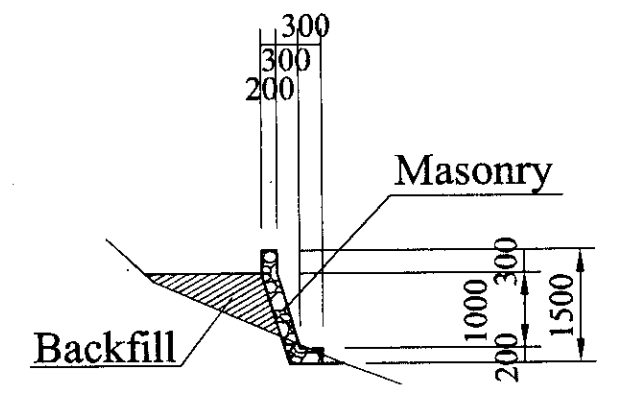
**B-B**



**D-D**

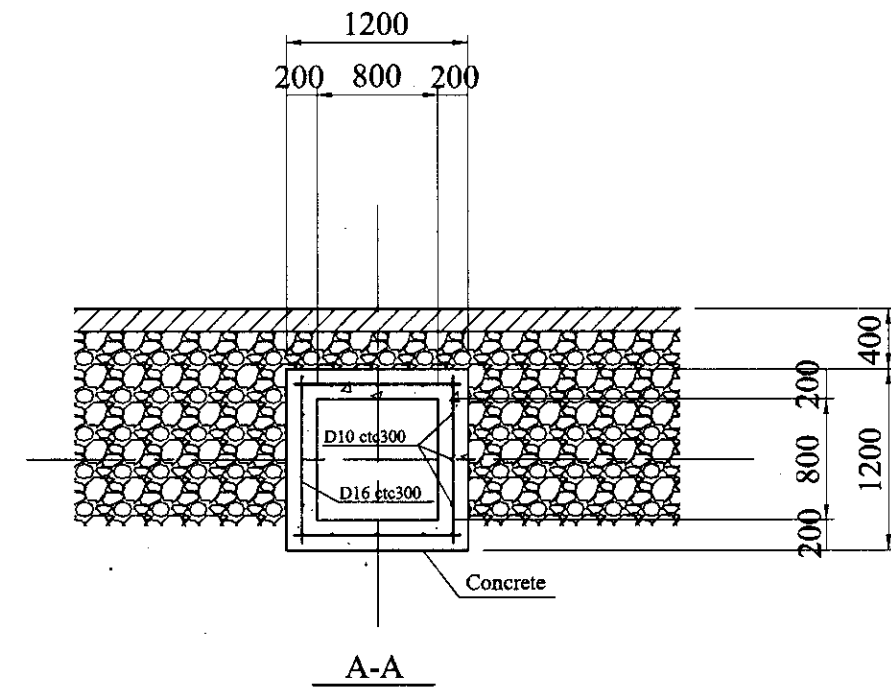
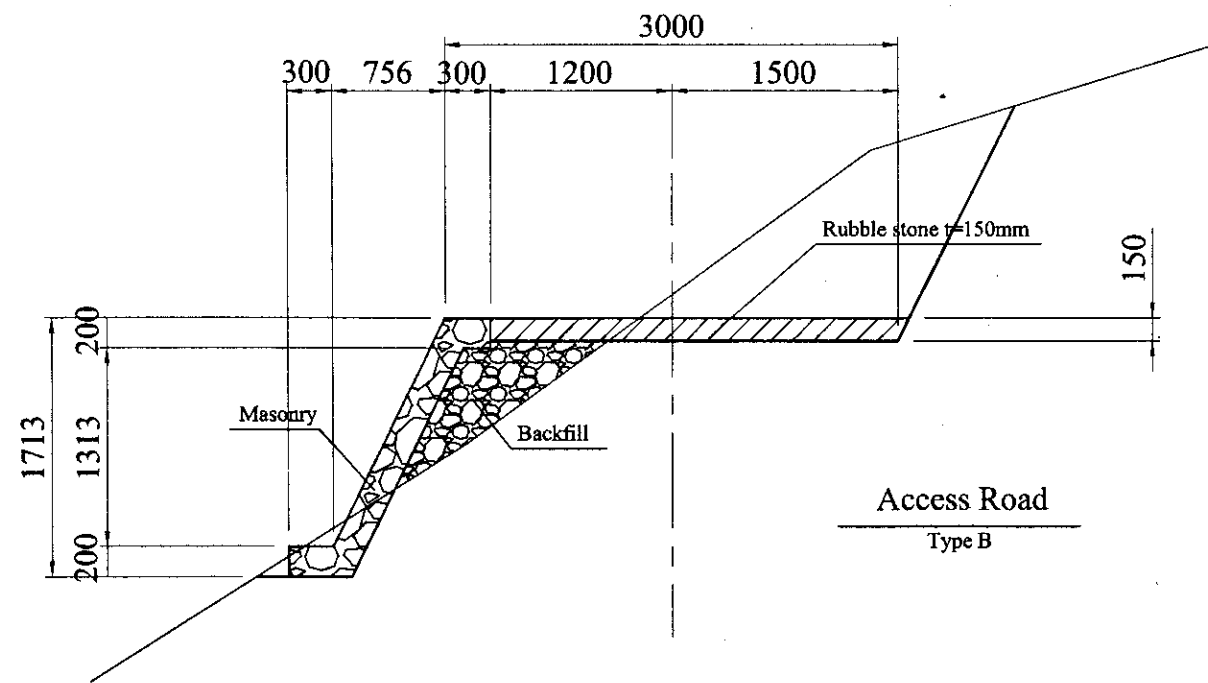
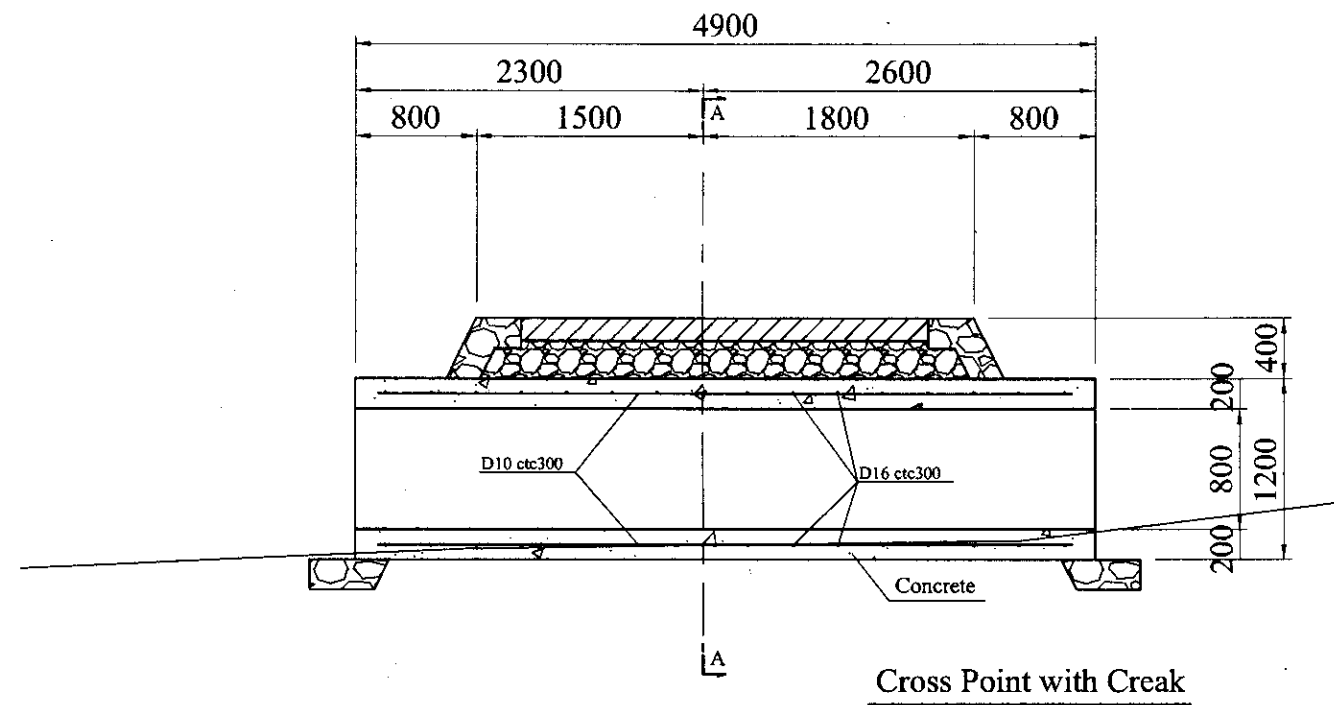
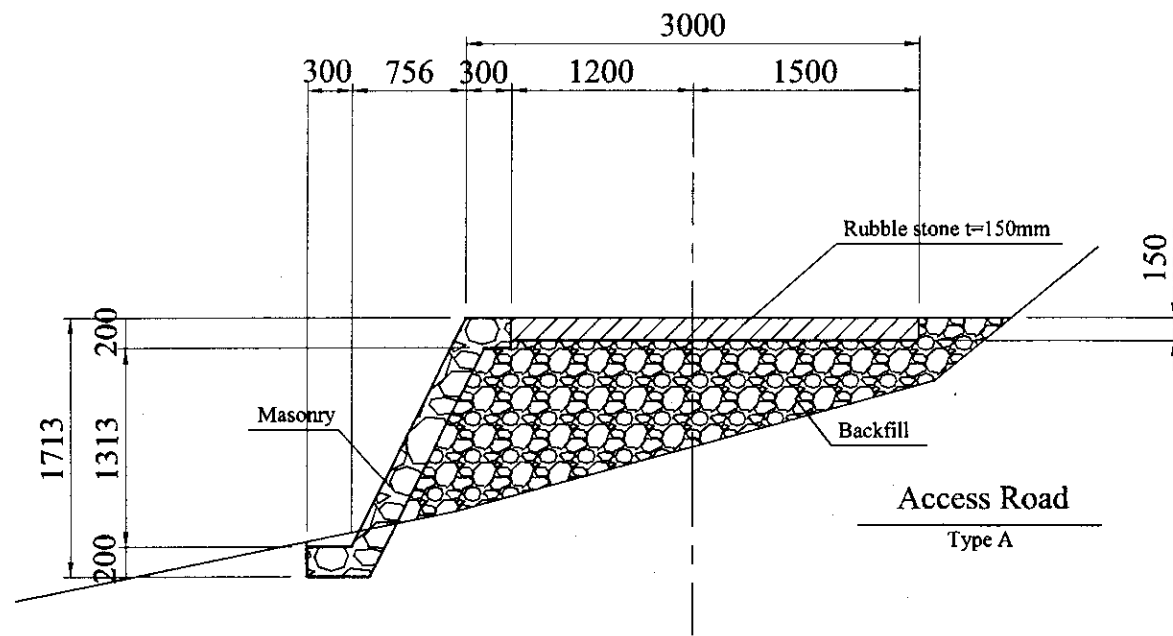


**C-C**

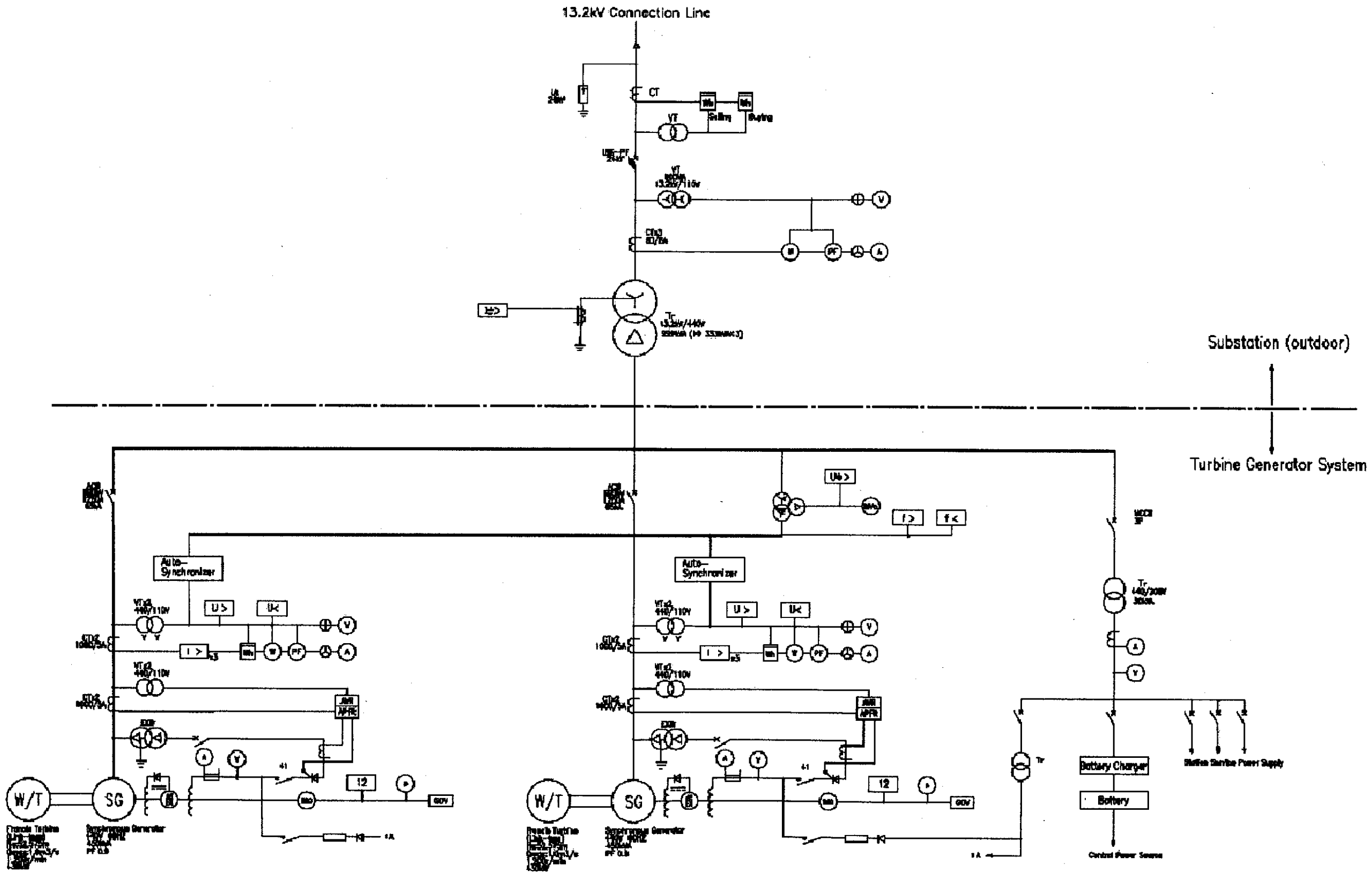


**Opposite Bank Protection  
L=150m**

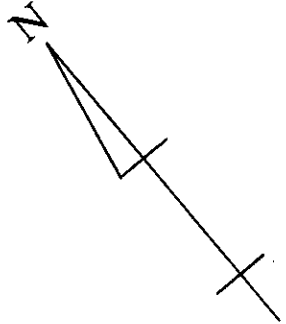
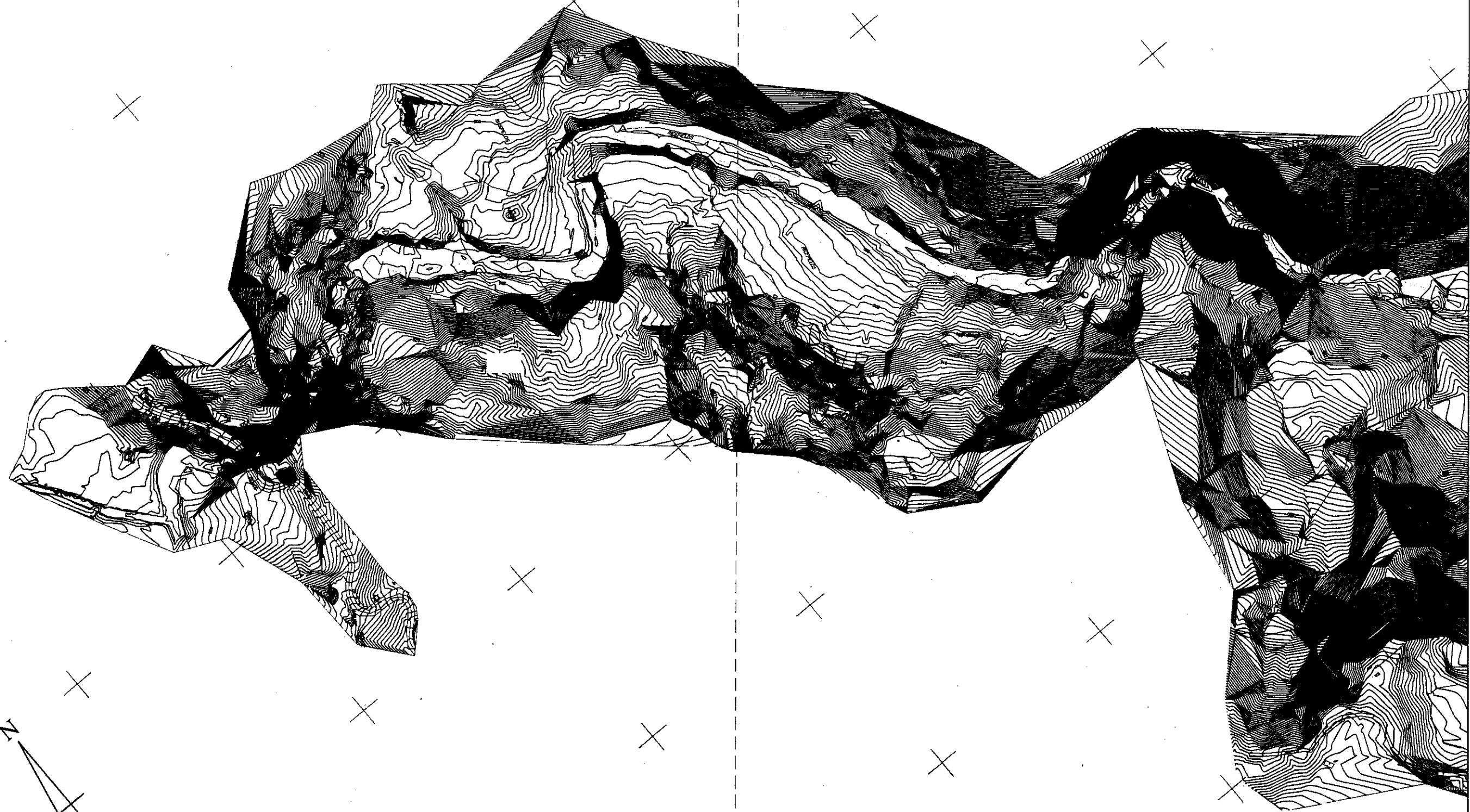
Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project <b>Cross Section of Powerhouse</b>	
Drawing No.	Scale
46	1/100



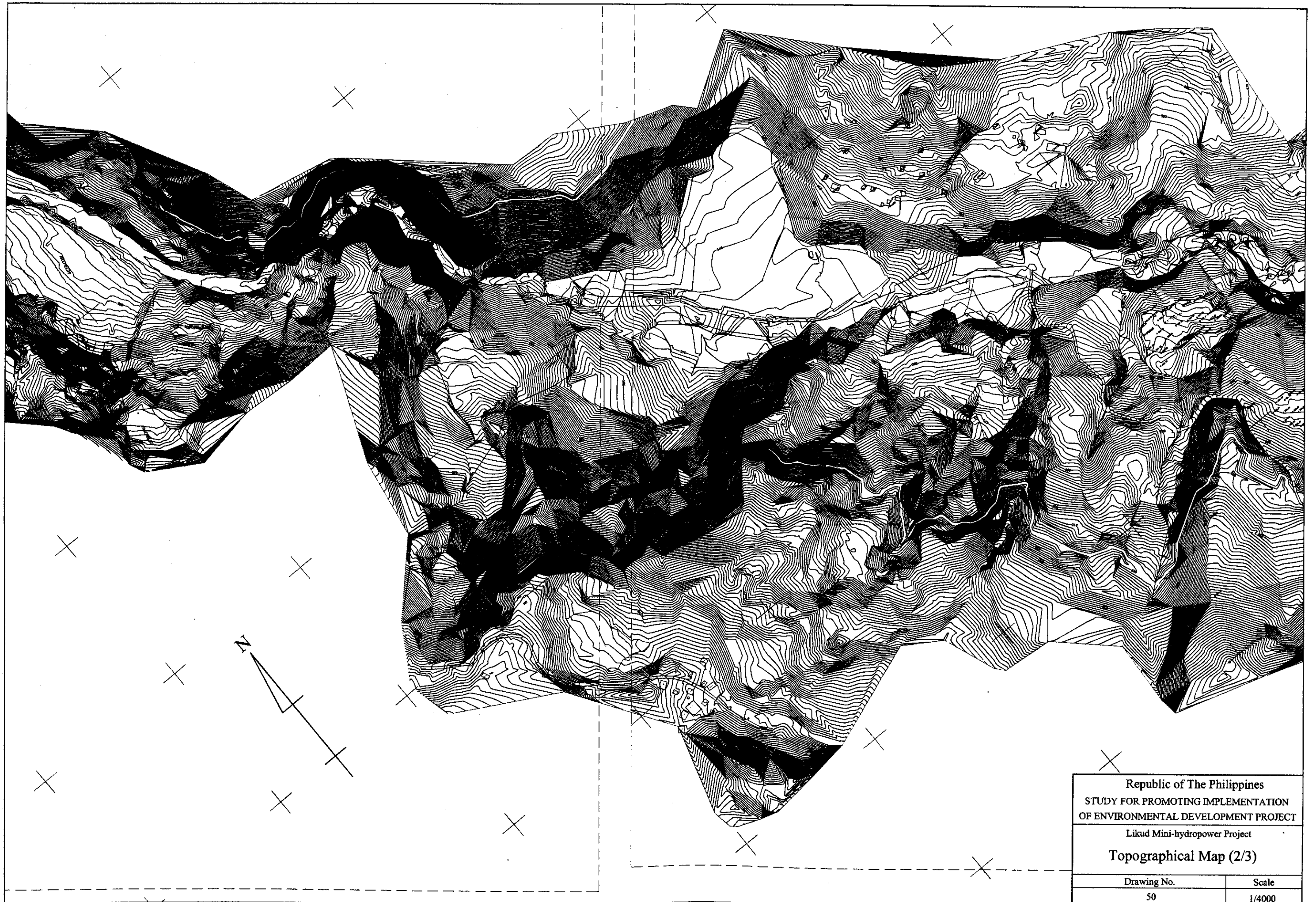
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Cross Section of Access Road	
Drawing No.	Scale
47	1/50



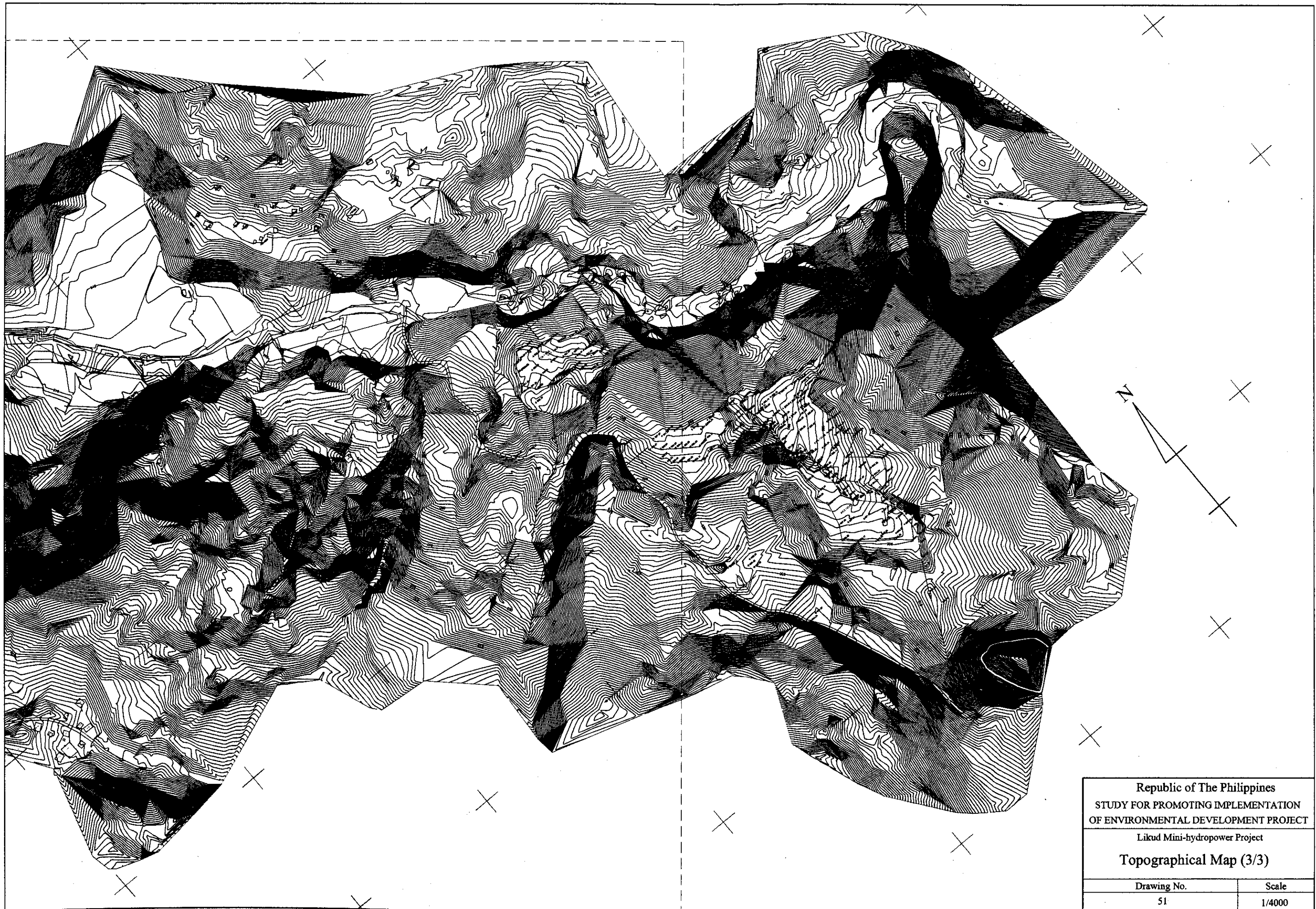
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Single-line Diagram	
Drawing No.	Scale
48	-



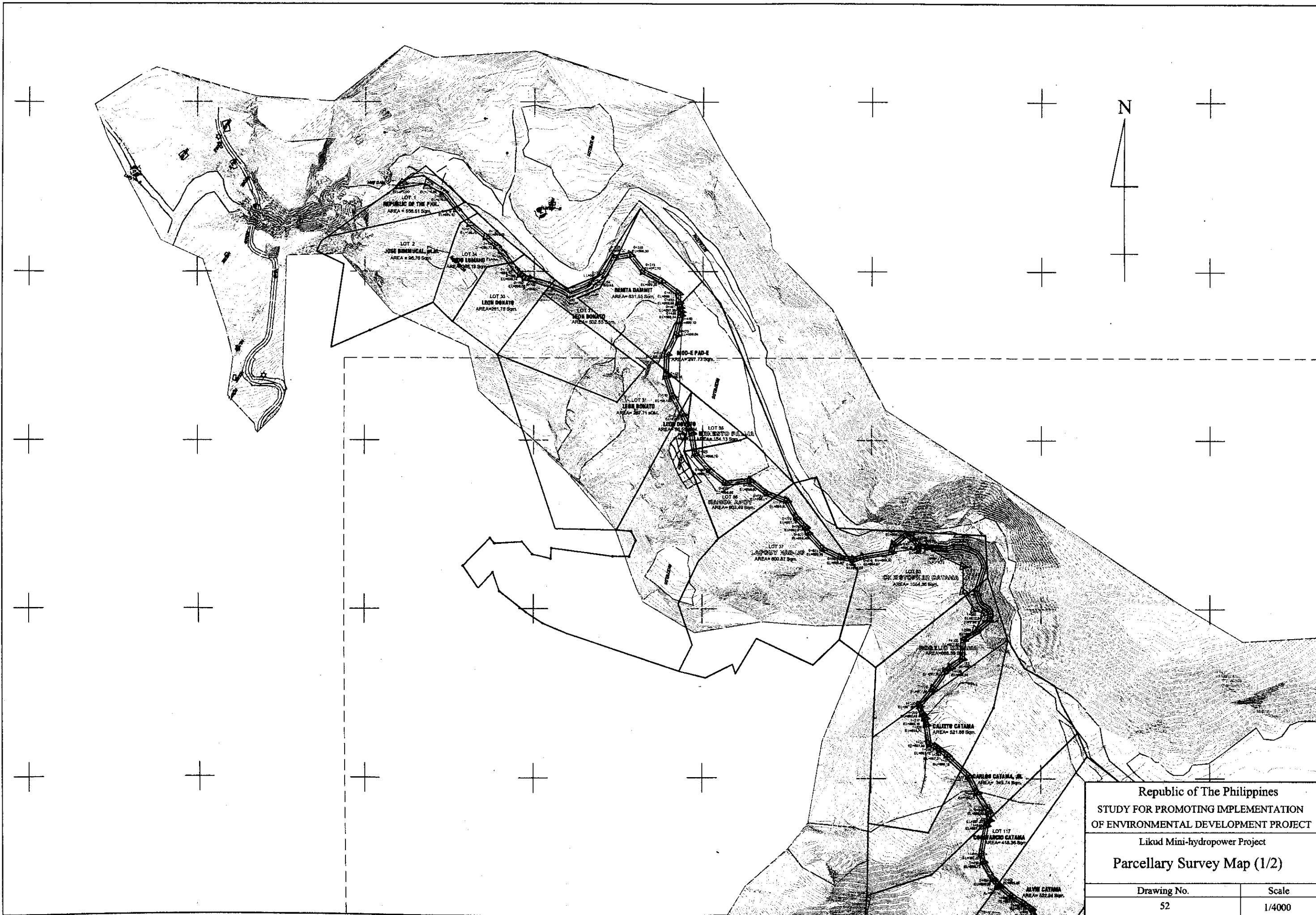
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Topographical Map (1/3)	
Drawing No.	Scale
49	1/4000



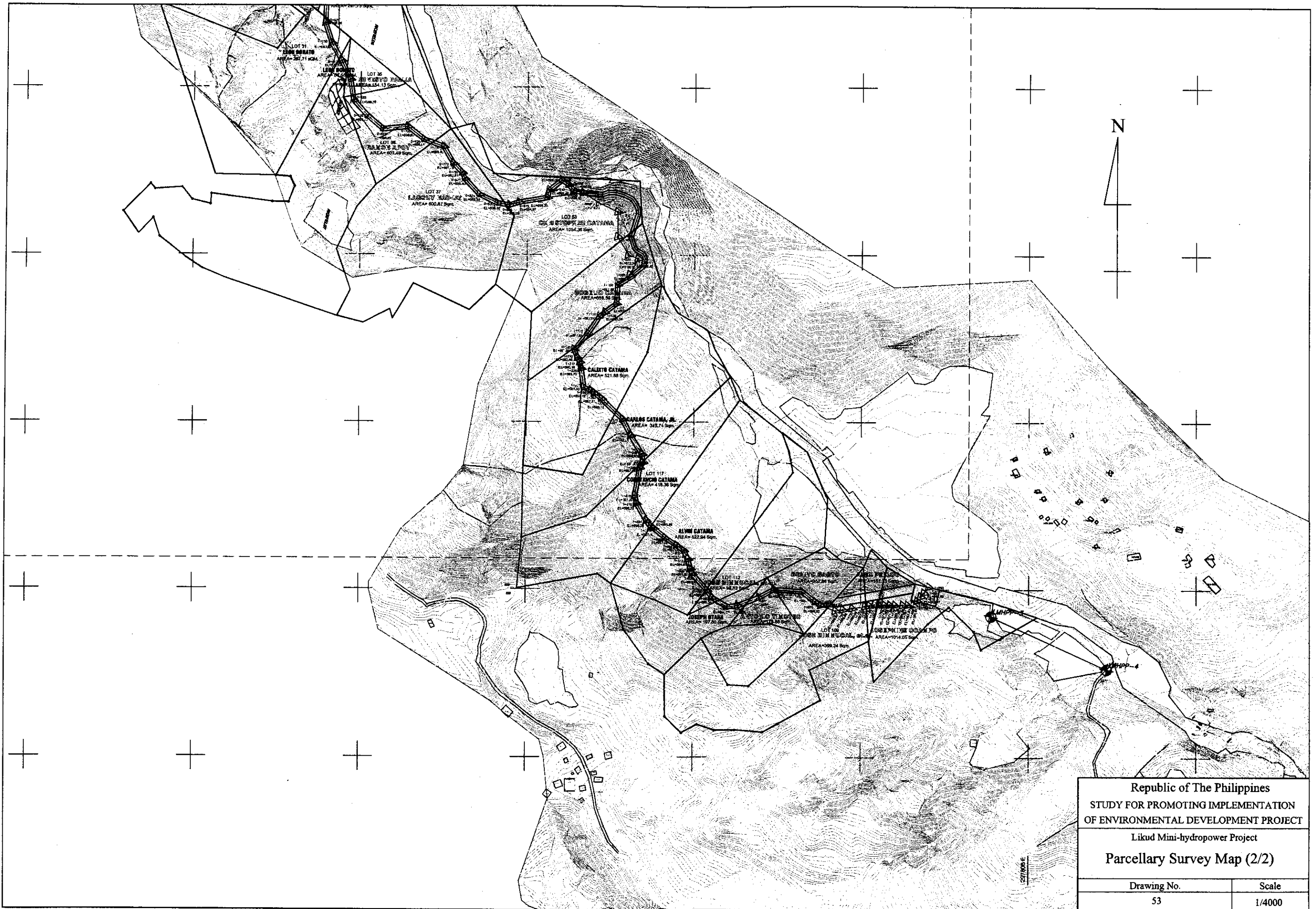
Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Topographical Map (2/3)	
Drawing No.	Scale
50	1/4000



Republic of The Philippines	
STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT	
Likud Mini-hydropower Project	
Topographical Map (3/3)	
Drawing No.	Scale
51	1/4000



Republic of The Philippines STUDY FOR PROMOTING IMPLEMENTATION OF ENVIRONMENTAL DEVELOPMENT PROJECT Likud Mini-hydropower Project <b>Parcellary Survey Map (1/2)</b>	
Drawing No.	Scale
52	1/4000



Republic of The Philippines  
 STUDY FOR PROMOTING IMPLEMENTATION  
 OF ENVIRONMENTAL DEVELOPMENT PROJECT  
 Likud Mini-hydropower Project  
 Parcellary Survey Map (2/2)

Drawing No.	Scale
53	1/4000



LOT DESCRIPTIONS

HALIAP RURBAN CODE BARANGAY ASIPULO MUN/CITY IFUGAO PROVINCE

LOT NO.	CLAIMANT	NE COORDINATES COR. 1	BEARINGS AND DISTANCES					AREA IN SQ. METERS	LOT NO.	CLAIMANT	NE COORDINATES COR. 1	BEARINGS AND DISTANCES					AREA IN SQ. METERS
			TP-COR. 1	LINE 1-2	LINE 2-3	LINE 3-4	LINE 4-5					TP-COR. 1	LINE 1-2	LINE 2-3	LINE 3-4	LINE 4-5	
1	REPUBLIC OF THE PHILIPPINES	1851774.1129 296704.1577	N 32° 39' E 1396.99	N 37° 53' W 22.91	N 61° 46' W 22.87	S 80° 19' W 37.28	N 54° 12' E 22.72	556.51				N 62° 04' E 1553.05	N 51° 08' E 9.07	S 17° 43' W 10.49	S 17° 53' E 12.19	S 40° 37' E 3.51	
2	JOSE BIMMUCAL, et. al.	1851774.1129 296704.1577	N 80° 19' E 16.87	S 56° 15' E 30.27	S 37° 53' E 24.69	S 60° 58' W 5.06		96.76	ROGELIO CATAMA	1851325.5532 297322.4947	S 33° 03' W 3.77	S 58° 14' W 20.59	S 03° 12' W 22.20	S 53° 04' W 18.47	S 51° 44' W 7.97		
34	NIDO LUMAHO	1851709.343 296769.139	N 32° 39' E 1396.99	N 60° 58' E 5.06	S 37° 53' E 1.86	S 41° 53' E 17.51	S 60° 52' W 5.12	368.18			S 34° 13' W 24.26	S 40° 07' W 9.38	S 54° 03' W 18.64	N 38° 58' E 25.54	N 34° 35' E 26.44		
33	LEON DONATO	1851709.343 296769.139	N 36° 22' E 1380.22	N 38° 25' W 15.79	N 40° 00' W 8.56	N 50° 13' W 15.81	N 51° 36' W 25.11	281.76	CALIXTO CATAMA	1851108.9128 297305.3097	N 51° 44' E 8.80	N 53° 04' E 16.20	N 03° 12' E 22.48	N 58° 14' E 22.07	N 34° 50' E 3.79		
31	LEON DONATO	1851719.4963 296899.0761	N 40° 13' E 1468.98	S 28° 58' W 28.22	S 53° 26' W 15.44	S 41° 13' W 7.35	S 67° 14' W 27.96	502.55			N 50° 23' E 12.99	N 10° 49' E 7.04	N 13° 06' W 2.01	N 36° 07' W 3.04	N 61° 06' W 7.88		
	BENITA DAMMIT	1851719.4963 296899.0761	N 40° 13' E 1468.98	S 28° 58' W 28.22	S 53° 26' W 15.44	S 41° 13' W 7.35	S 67° 14' W 27.96	631.55	CARLOS CATAMA JR.	1851108.9128 297305.3097	N 53° 32' W 7.99	N 43° 33' W 10.43	N 38° 25' W 9.23				
	MOD-E PAD-E	1851584.037 296954.3976	N 40° 13' E 1468.98	S 28° 58' W 28.22	S 53° 26' W 15.44	S 41° 13' W 7.35	S 67° 14' W 27.96	297.73	CONSTANCIO CATAMA	1850972.7602 297347.8121	N 69° 20' E 1448.01	N 46° 33' W 15.75	N 43° 05' W 8.53	N 53° 53' W 10.53	N 50° 04' W 5.02		
31	LEON DONATO	1851584.037 296954.3976	N 43° 31' E 1407.26	S 50° 43' E 6.28	S 02° 06' W 21.53	S 18° 02' E 24.40	S 29° 28' E 18.44	257.71	ALVIN CATAMA	1850972.7602 297347.8121	N 70° 43' W 10.02	N 08° 40' W 24.91	N 11° 34' W 7.59	N 28° 55' W 5.31	N 24° 23' W 11.61		
	LEON DONATO	1851513.8945 296981.6739	N 48° 23' E 1379.3	N 25° 35' W 17.31	N 29° 28' W 2.60	N 28° 27' E 5.90	S 29° 28' E 5.82	86.55			N 54° 03' E 18.64	S 40° 07' W 14.70	S 24° 21' E 8.72	S 28° 55' E 5.98	S 11° 34' E 8.48		
35	ERNESTO PALIJA	1851513.8945 296981.6739	N 48° 23' E 1379.3	N 25° 35' W 17.31	N 29° 28' W 2.60	N 28° 27' E 5.90	S 29° 28' E 5.82	154.13			S 08° 40' E 22.03	S 70° 43' E 7.92	S 50° 04' E 5.77	S 53° 53' E 10.83	S 43° 05' E 8.85		
36	RAMON APOY	1851431.2971 297083.6233	N 48° 23' E 1379.3	N 25° 35' W 17.31	N 29° 28' W 2.60	N 28° 27' E 5.90	S 29° 28' E 5.82	603.49			N 69° 20' E 1448.01	N 27° 30' E 5.20	S 46° 33' E 12.58	S 26° 20' E 22.36	S 31° 12' E 26.50		
37	LAGGUY NAD-UG	1851431.2971 297083.6233	N 53° 40' E 1406.63	N 53° 19' E 5.97	S 69° 50' E 13.42	S 30° 11' E 23.75	S 44° 31' E 15.37	600.87	ANTONIO TIMOTEO	1850896.9609 297499.8698	S 07° 38' E 7.68	S 45° 50' W 10.52	N 30° 28' E 5.59	N 07° 38' W 8.50	N 31° 11' W 25.77		
53	CHRISTOPHER CATAMA	1851325.5532 297322.4947	N 62° 04' E 1553.05	N 17° 31' E 24.74	N 00° 03' W 3.75	N 23° 31' W 6.15	N 35° 01' W 7.53	1054.36	JOSE BIMMUCAL, et. al.	1850884.6392 297426.9677	N 74° 59' E 1446.75	N 38° 20' W 9.58	N 30° 03' W 24.49	N 11° 45' W 10.8	N 09° 39' E 34.28		
			N 63° 46' W 9.47	N 74° 27' W 9.48	N 89° 08' W 8.45	S 72° 15' W 7.54	N 86° 02' W 23.70		JOSEPH OTAHA	1850884.6392 297426.9677	N 79° 01' E 1504.08	N 64° 33' E 5.98	S 58° 42' E 10.88	N 83° 38' E 11.58	N 68° 51' E 17.20		
			N 76° 09' W 13.03	N 40° 30' W 9.86	N 55° 54' W 7.11	S 52° 05' W 16.78	S 14° 38' W 9.90		BENITO BAGTO	1850896.9609 297499.8698	S 37° 50' W 9.70	S 68° 51' W 9.54	S 83° 38' W 13.94	N 58° 42' W 15.86			
			S 80° 30' W 35.42	S 73° 23' W 12.42	N 80° 45' W 2.75	N 36° 27' W 7.16	S 80° 45' E 6.73				N 79° 04' E 1578.00	N 85° 52' W 2.63	S 61° 47' W 19.83	S 68° 51' W 17.70	N 37° 50' E 9.70		
			N 73° 23' E 11.59	N 80° 37' E 32.46	N 14° 38' E 8.42	N 52° 05' E 22.11	S 55° 54' E 11.42				N 68° 51' E 9.23						
			S 40° 30' E 8.94	S 75° 59' E 10.78	S 86° 02' E 22.54	N 73° 09' E 7.77	S 88° 40' E 9.82				N 79° 04' E 1578.00	N 33° 33' W 6.43	S 85° 43' E 34.98	S 52° 53' E 20.73	S 55° 33' E 7.36		
			S 74° 13' E 10.50	S 63° 46' E 10.98	S 34° 43' E 9.56	S 23° 31' E 7.44	S 00° 03' E 5.56				N 84° 03' E 12.61	S 41° 34' W 6.76	S 86° 00' W 10.39	N 55° 32' W 8.10	N 52° 53' W 19.37		
			S 17° 27' W 17.96	S 51° 08' W 9.07							N 80° 08' E 1680.76	S 79° 39' W 32.46	S 86° 00' W 12.61	N 41° 34' E 13.95	N 79° 39' E 35.07		

Common Tie Point : All tie lines are from IFU-3072, Mun. of Asipulo

Republic of The Philippines  
 STUDY FOR PROMOTING IMPLEMENTATION  
 OF ENVIRONMENTAL DEVELOPMENT PROJECT  
 Likud Mini-hydropower Project  
 Parcellary List  
 Drawing No. 54  
 Scale

