

REPUBLIC OF INDONESIA

MINISTRY OF PUBLIC WORKS  
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT

FEASIBILITY STUDY  
ON  
THE BILA IRRIGATION PROJECT

DRAWINGS

JUNE 1982

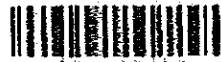
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO, JAPAN

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**REPUBLIC OF INDONESIA**

**MINISTRY OF PUBLIC WORKS**

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**THE BILA IRRIGATION PROJECT**

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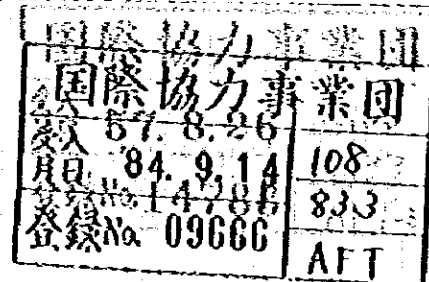
**JAPAN INTERNATIONAL COOPERATION AGENCY**

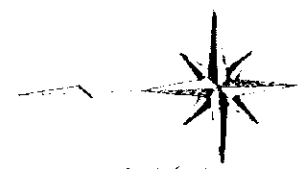
**TOKYO, JAPAN**

BILA IRRIGATION PROJECT

LIST OF DRAWING

SERIAL NO.	DWG. NO.	TITLE	SERIAL NO.	DWG. NO.	TITLE
		- GENERAL -			- STRUCTURES -
1	100-01	GENERAL LAYOUT OF THE IRRIGATION PROJECT	20	500-01	TYPICAL DRAWING OF TURNOUT AND MEASURING DEVICE
2	100-02	IRRIGATION, DRAINAGE AND ROAD SYSTEM (1/3)	21	500-02	TYPICAL DRAWING OF SYPHON AND DROP
3	100-03	IRRIGATION, DRAINAGE AND ROAD SYSTEM (2/3)	22	500-03	TYPICAL DRAWING OF CULVERT AND CROSS DRAIN
4	100-04	IRRIGATION, DRAINAGE AND ROAD SYSTEM (3/3)	23	500-04	TYPICAL DRAWING OF SPILLWAY
5	100-05	IRRIGATION DIAGRAM			
		- BILA INTAKE -			- RIVER PLANNING -
6	200-01	BILA INTAKE, GENERAL	24	600-01	LOCATION OF SURVEY
7	200-02	BILA INTAKE, PROFILE	25	600-02	PROFILE OF THE EXISTING RIVER CHANNEL (1/3)
			26	600-03	PROFILE OF THE EXISTING RIVER CHANNEL (2/3)
			27	600-04	PROFILE OF THE EXISTING RIVER CHANNEL (3/3)
		- KALOLA DAM -	28	600-05	CROSS-SECTION OF BILA RIVER (1/7)
8	300-01	PLAN OF KALOLA DAM	29	600-06	CROSS-SECTION OF BILA RIVER (2/7)
9	300-02	PROFILE AND TYPICAL CROSS SECTION OF KALOLA DAM	30	600-07	CROSS-SECTION OF BILA RIVER (3/7)
10	300-03	KALOLA DAM DIVERSION AND INTAKE STRUCTURE	31	600-08	CROSS-SECTION OF BILA RIVER (4/7)
11	300-04	SPILLWAY OF KALOLA DAM	32	600-09	CROSS-SECTION OF BILA RIVER (5/7)
			33	600-10	CROSS-SECTION OF BILA RIVER (6/7)
		- CANAL -	34	600-11	CROSS-SECTION OF BILA RIVER (7/7)
12	400-01	PROFILE OF SAL. INDUK BILA KIRI (1/5)			
13	400-02	PROFILE OF SAL. INDUK BILA KIRI (2/5)			
14	400-03	PROFILE OF SAL. INDUK BILA KIRI (3/5)			
15	400-04	PROFILE OF SAL. INDUK BILA KIRI (4/5)			
16	400-05	PROFILE OF SAL. INDUK BILA KIRI (5/5)			
17	400-06	PROFILE OF SAL. INDUK BILA KANAN (1/2)			
18	400-07	PROFILE OF SAL. INDUK BILA KANAN (2/2)			
19	400-08	KALOLA CONNECTING CANAL			





KALOLA DAM

BILA INTAKE WEIR

SAL. INDIK BILA KIRI  
(BILA LEFT MAIN CANAL)

SAL. INDIK BILA KANAN  
(BILA RIGHT MAIN CANAL)

PROPOSED SITE OF  
PILOT DEMONSTRATION SCHEME

LEGEND

- Main Irrigation Canal
- - - Secondary Irrigation Canal
- - - Major Drainage Canal
- Turcot
- == Existing Road
- - - Construction Road
- ~ River
- Village
- ▭ Project Area
- ☼ Reservoir of Kalola Dam and Bila Intake

To Pare P.6

Bola Malimpong

Lokotang

Bulce

Asuloroe

Sappense

Lokurong

Bortouse

To Song Kang

Ujuge

L. Buaya

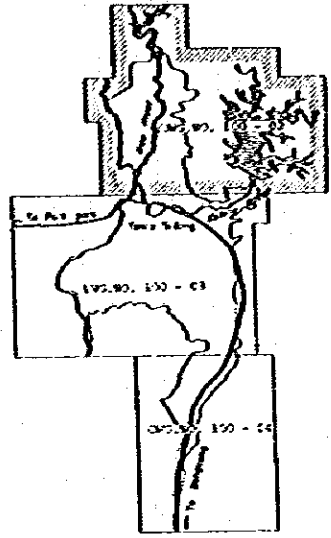
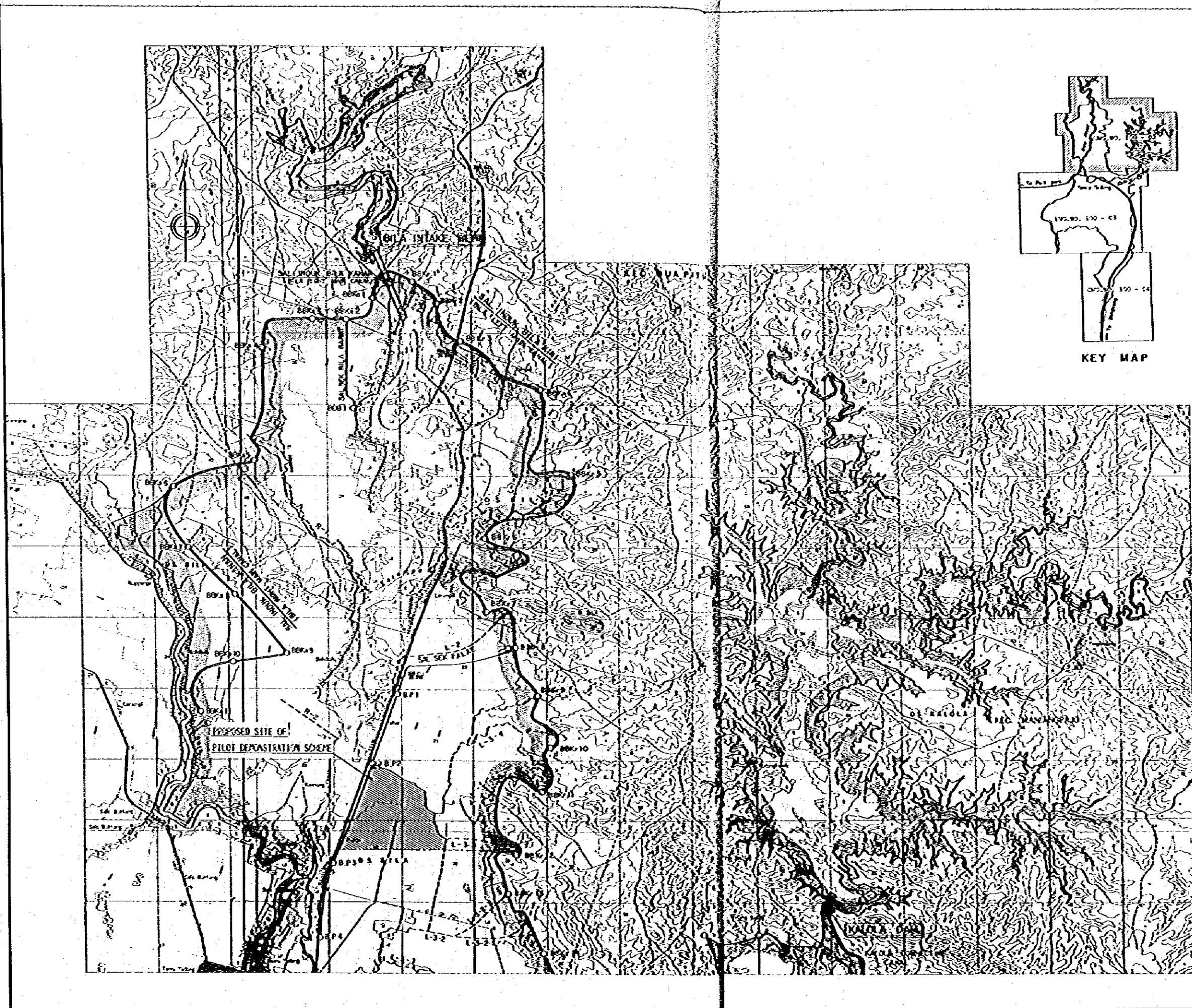
Tanru Tedong

Wete

L. Tempe

R. Bila

EFFECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
GENERAL LAYOUT OF THE IRRIGATION PROJECT	
JAPAN INTERNATIONAL COOPERATION AGENCY	ORG. NO.
TOKYO	100-01



KEY MAP

LEGEND

- Main Irrigation Canal
- Secondary Irrigation Canal
- - - Major Drainage Canal
- Turnout
- ▬ Existing Road
- ▬ Construction Road
- ◡ Project Area
- ◡ Reservoir of Kalia Dam and Bila Intake

SCALE



DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT

BILA IRRIGATION PROJECT

TITLE OF DRAWING

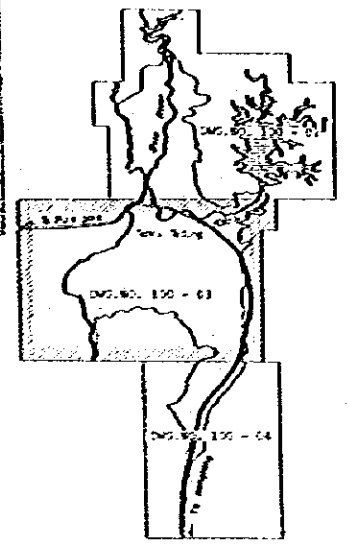
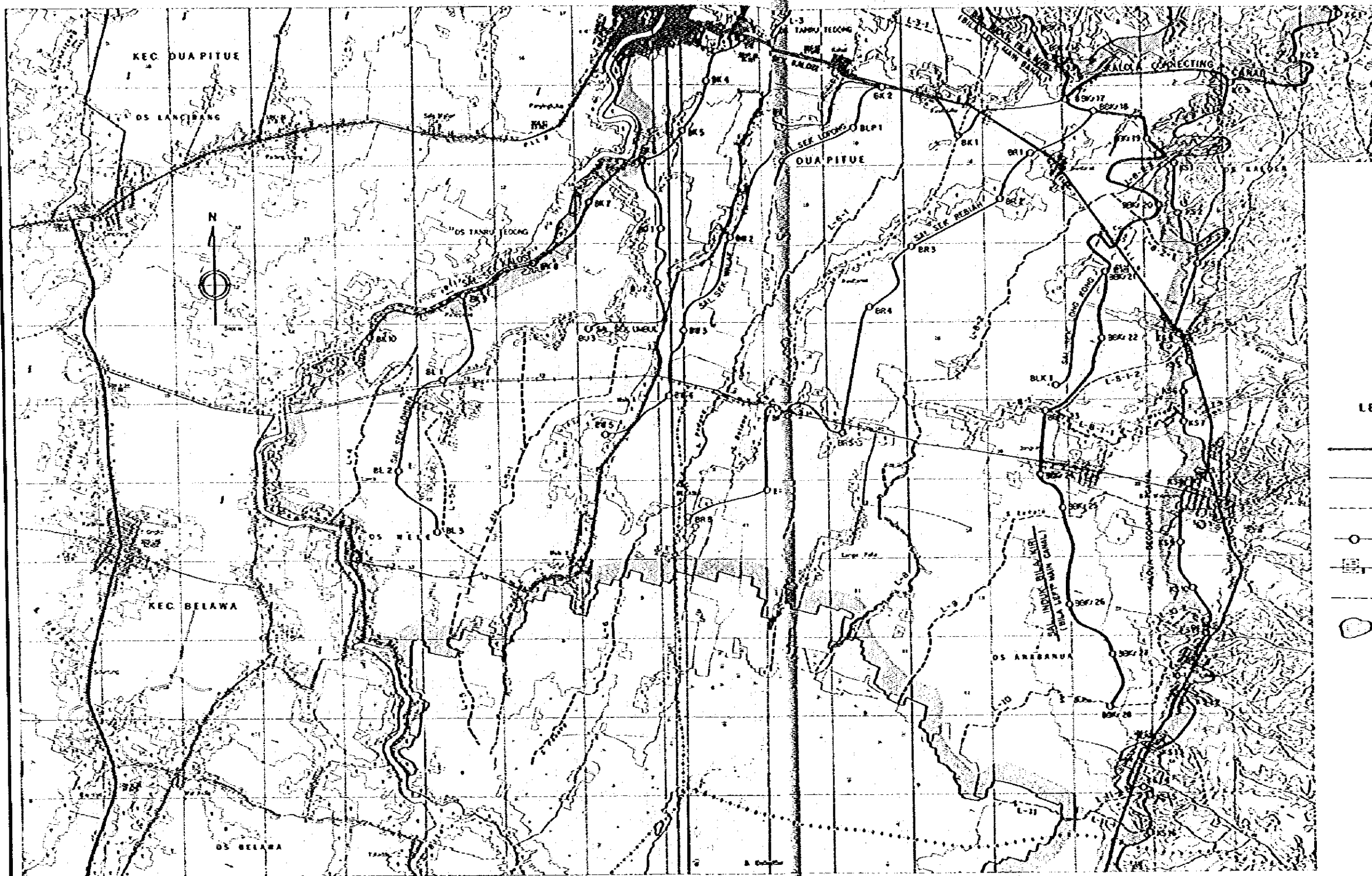
IRRIGATION, DRAINAGE AND ROAD SYSTEM (1/3)

JAPAN INTERNATIONAL COOPERATION AGENCY DWG. NO.

100 - 02

100 - 02





KEY MAP

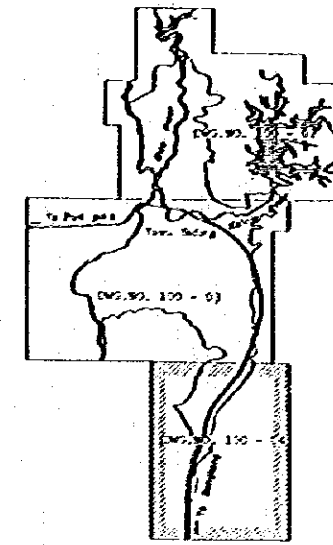
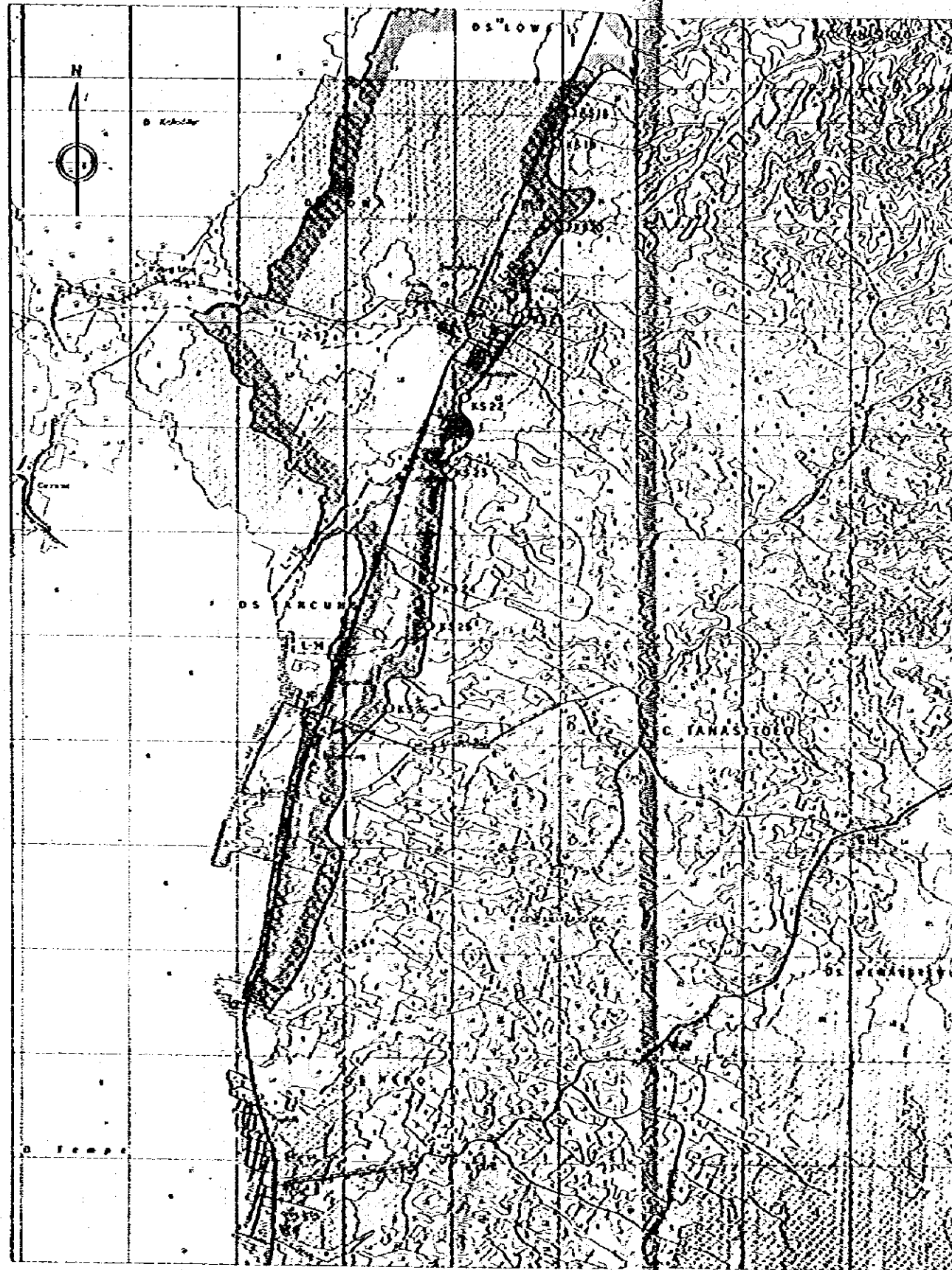
LEGEND

- Main Irrigation Canal
- Secondary Irrigation Canal
- - - Major Drainage Canal
- Tunnel
- ▬ Existing Road
- - - Construction Road
- Project Area

SCALE



DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
 BELAWA IRRIGATION PROJECT  
 TITLE OF DRAWING  
**IRRIGATION, DRAINAGE AND ROAD SYSTEM (2/3)**  
 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NO. 1100-63  
 TOKYO



KEY MAP

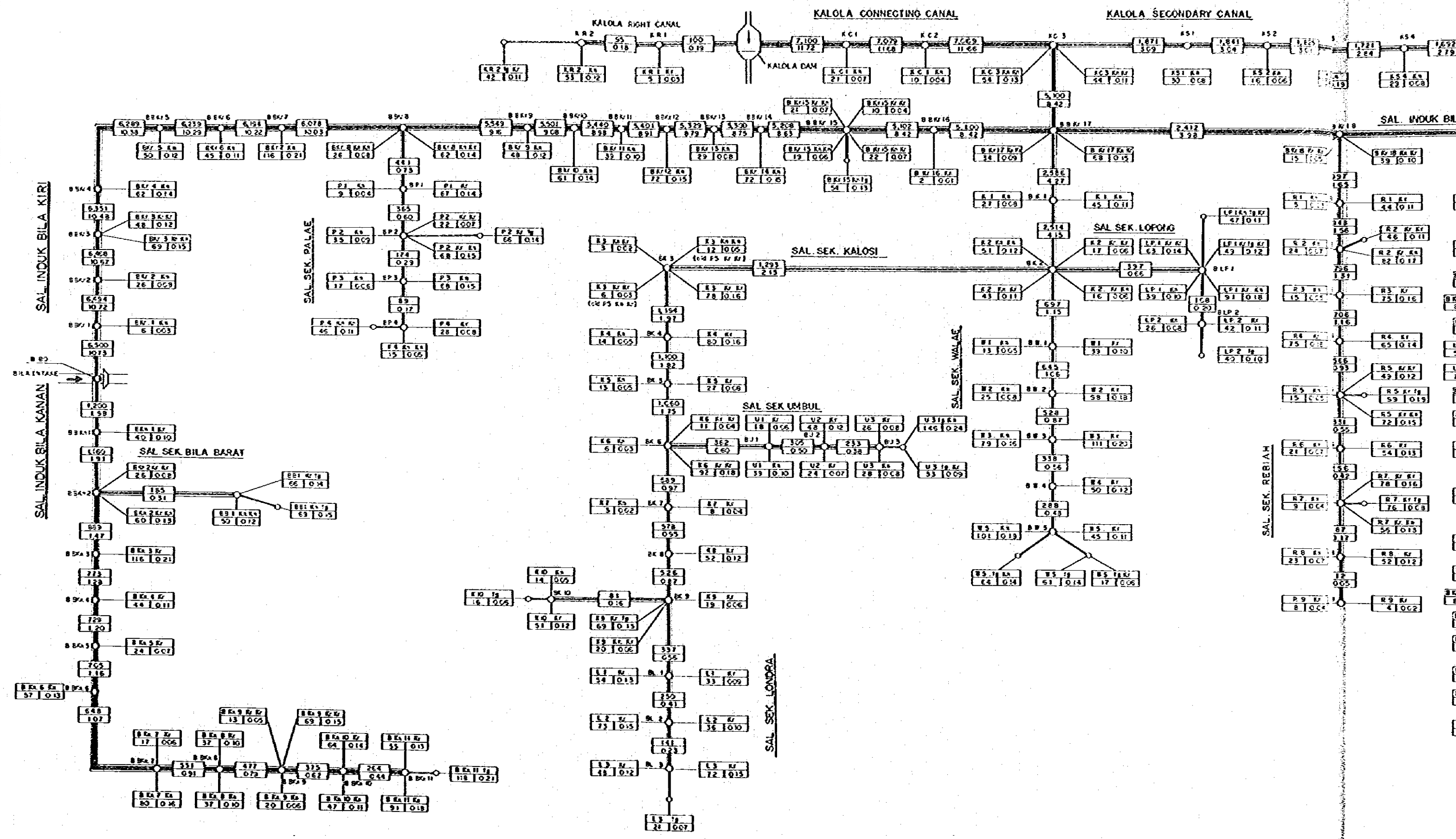
LEGEND

- Secondary Irrigation Canal
- - - Major Drainage Canal
- Turnout
- ▨ Existing Road
- Construction Road
- ◊ Project Area

SCALE



DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
IRRIGATION, DRAINAGE AND ROAD SYSTEM (3/3)	
JAPAN INTERNATIONAL COOPERATION AGENCY	CAS. NO.
TOYO	1100 - 09



SAL INDUK BILA KIRI

SAL INDUK BILA KANAN

SAL SEK. BILA BARAT

SAL SEK. PALAE

SAL SEK. KALOSI

SAL SEK. UMBUL

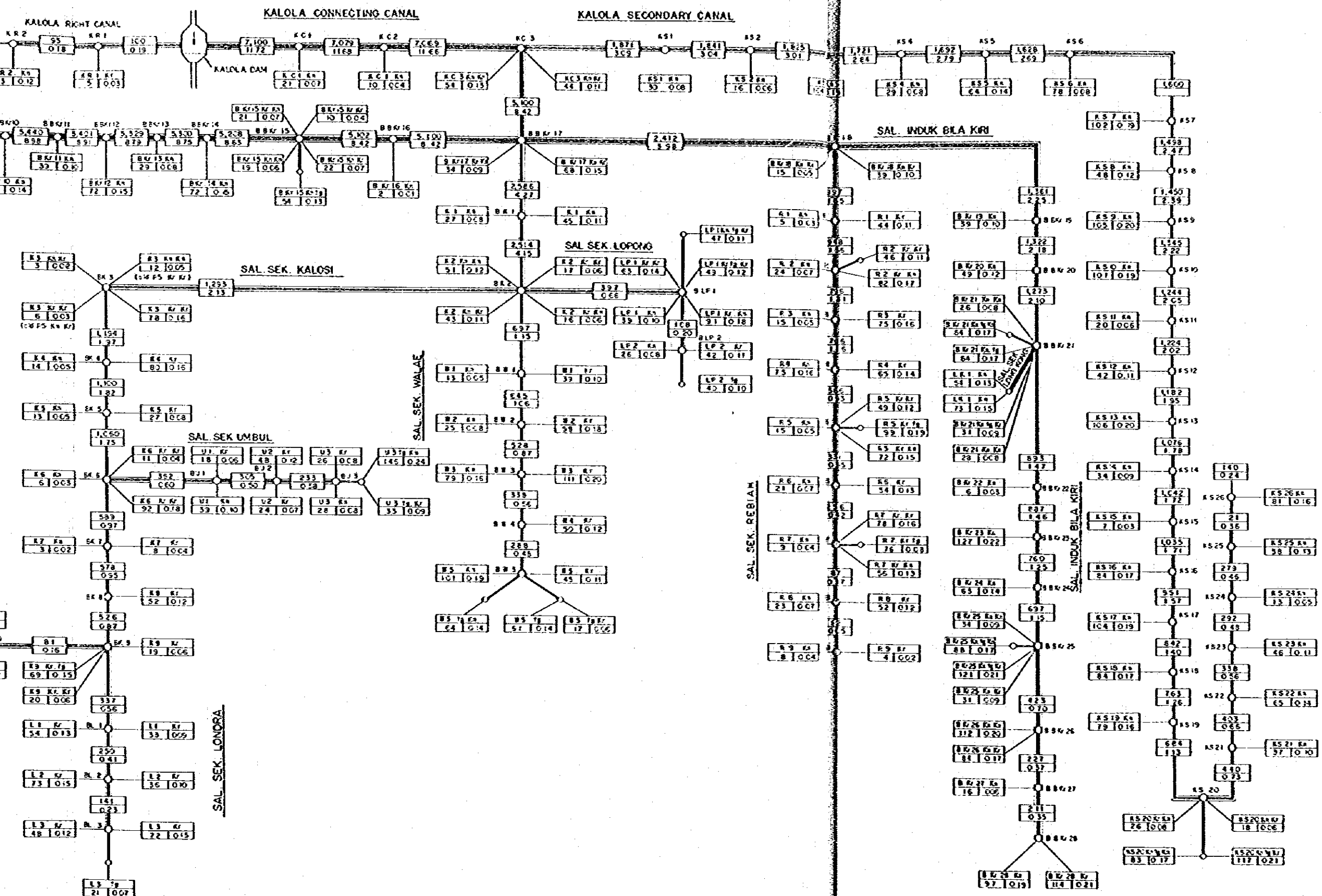
SAL SEK. LONDRA

SAL SEK. WALAE

SAL SEK. LOPONG

SAL SEK. REBIAN

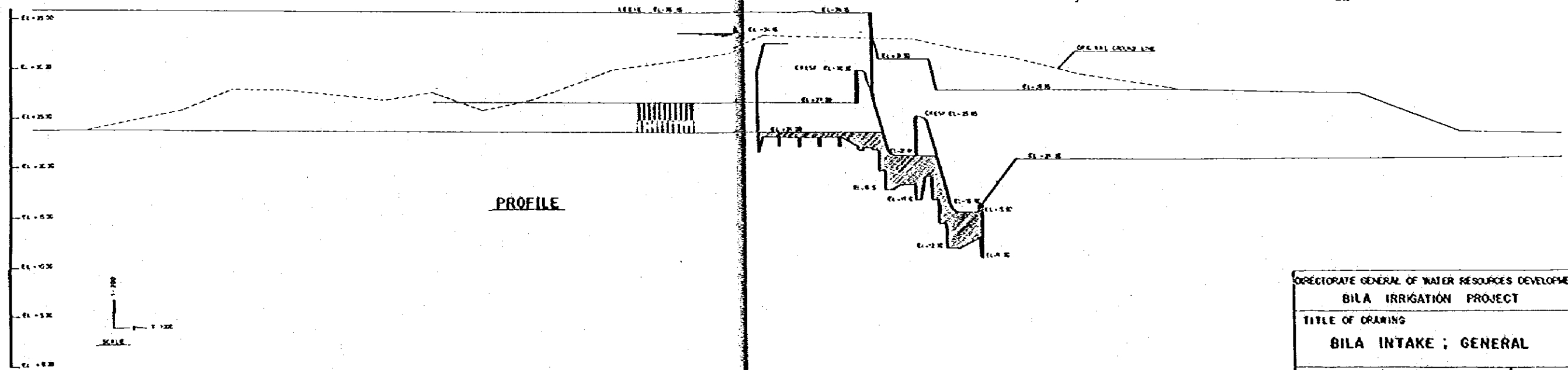
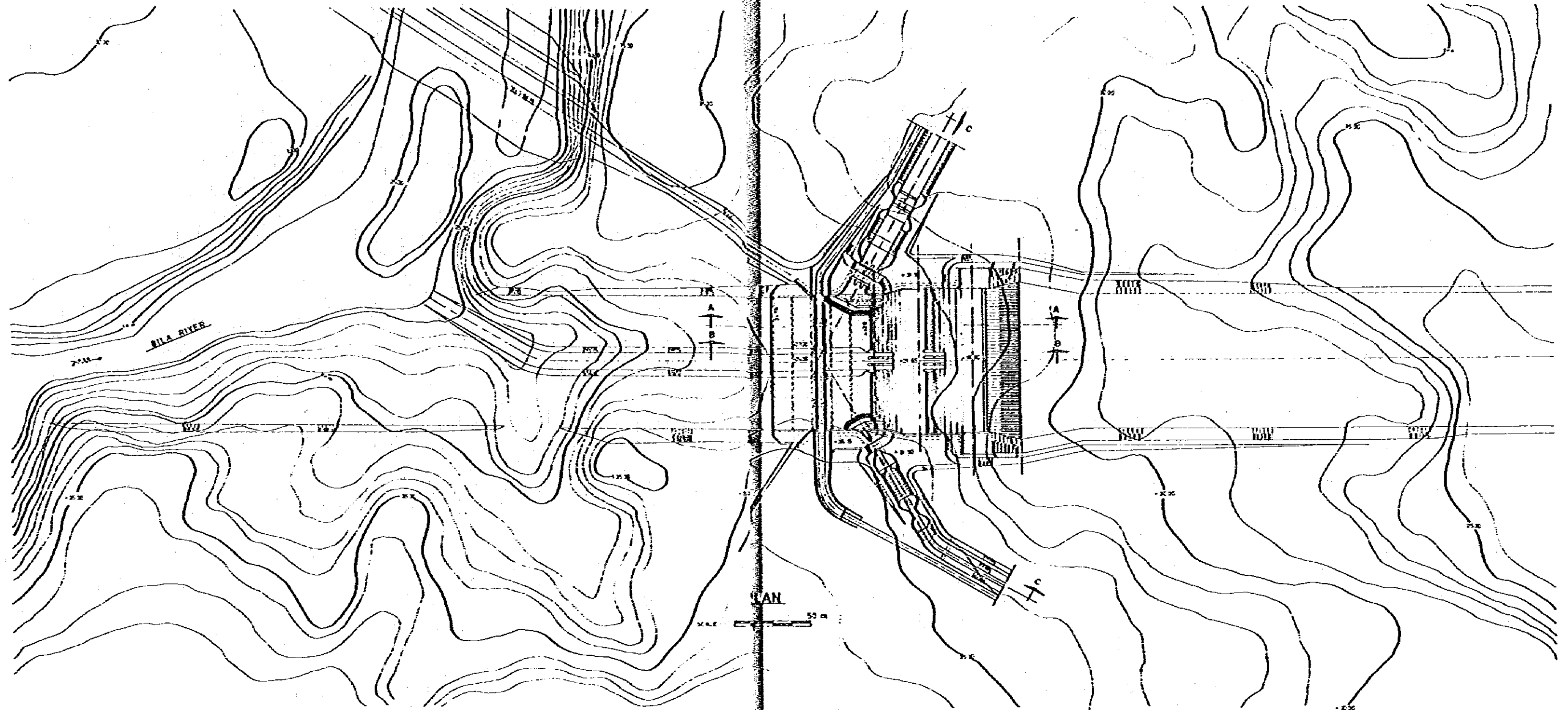
SAL INDUK BILA



**LEGEND**

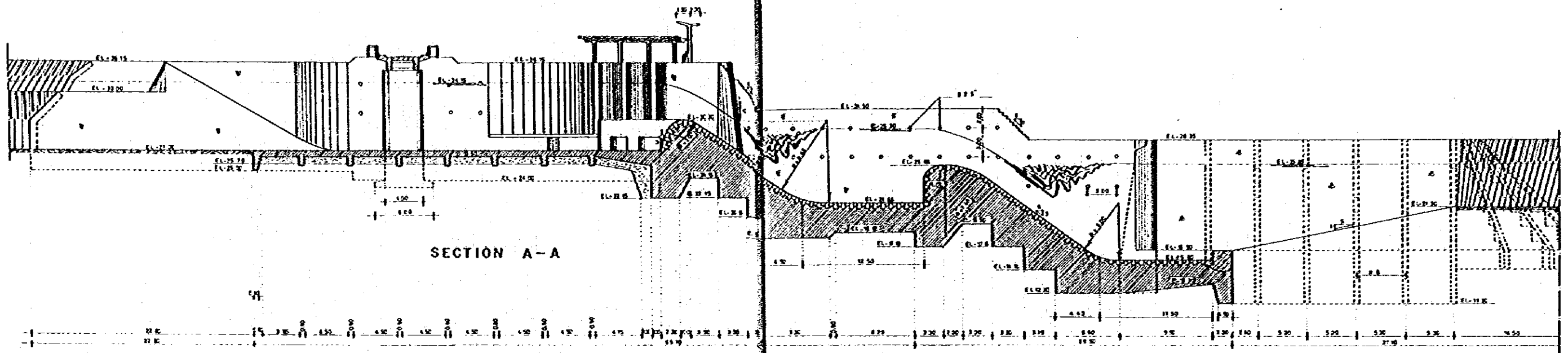
- Main Canal
- Secondary Canal
- Sub-Secondary Canal
- Turnout
- 6,500  
10.75  
Cumm (sec)  
Discharge (m<sup>3</sup>/sec)
- 8.5 m<sup>3</sup>  
111.025  
Area (ha)  
Irrigated Area (ha)

DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
**BILA IRRIGATION PROJECT**  
 TITLE OF DRAWING  
**IRRIGATION DIAGRAM**  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO  
 ODS NO  
 100-05

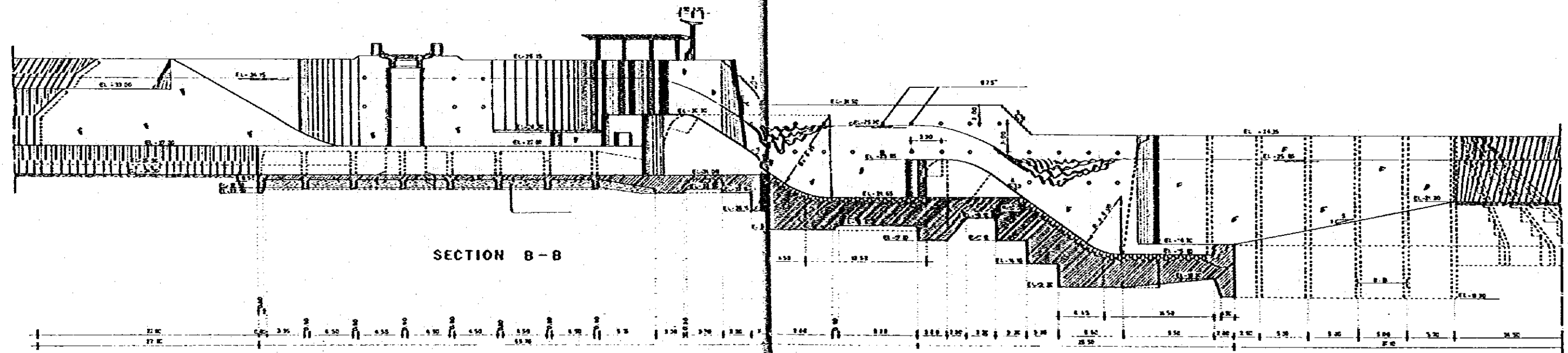


DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
BILA INTAKE ; GENERAL	
JAPAN INTERNATIONAL COOPERATION AGENCY	DMG. NO.
TOKYO	200 - 01

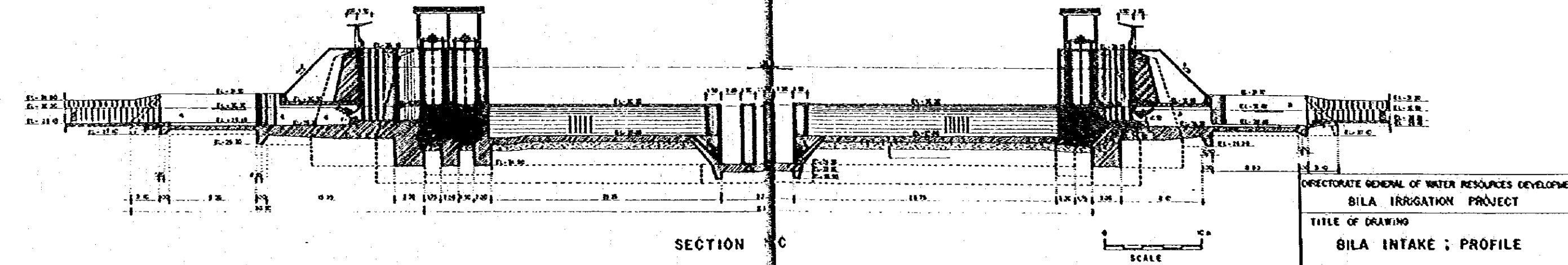




SECTION A-A



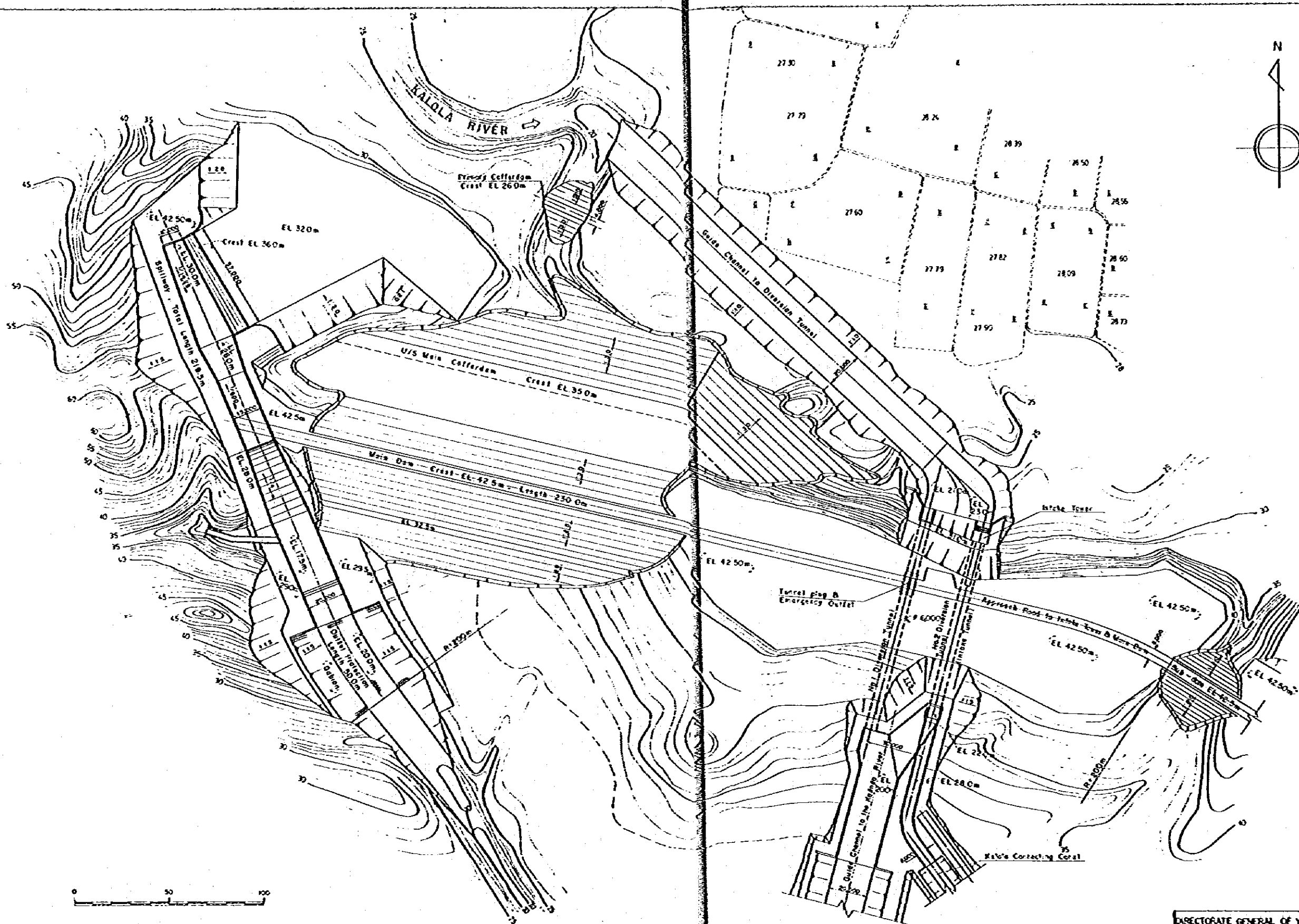
SECTION B-B



SECTION C

SCALE

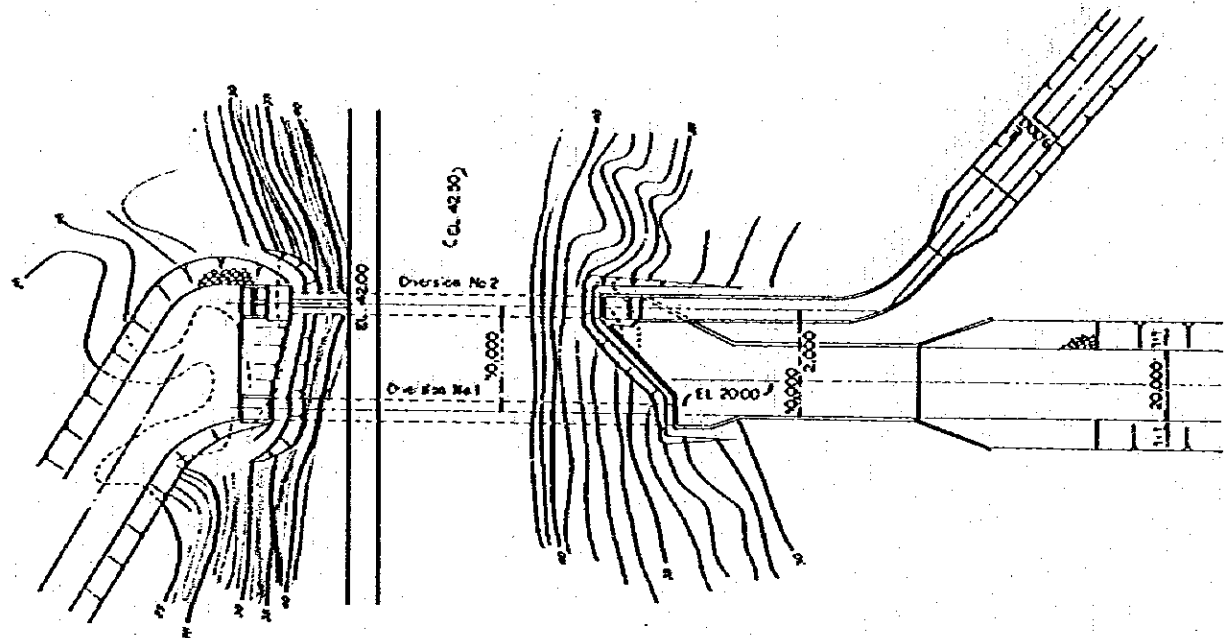
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
BILA INTAKE ; PROFILE	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWG. NO.
TOKYO	200 - 02



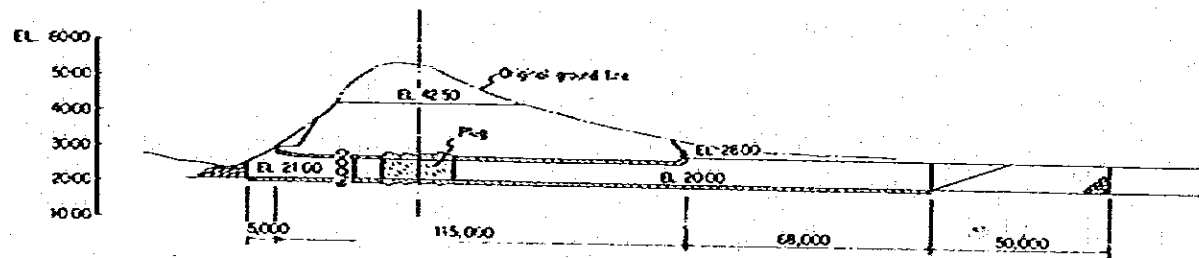
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
PLAN OF KALOLA DAM	
JAPAN INTERNATIONAL COOPERATION AGENCY	OWG. NO.
TOKYO	330 - 01



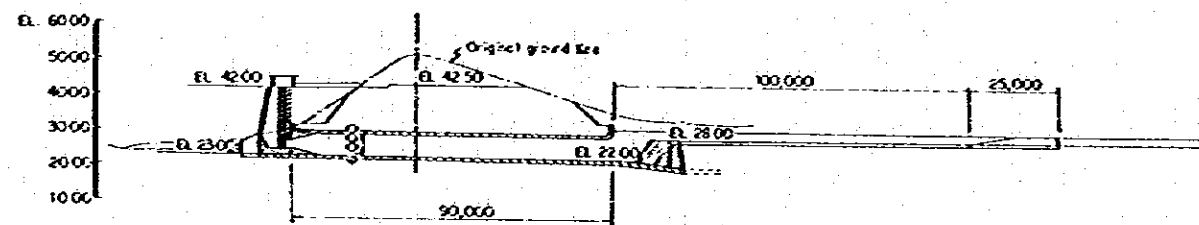




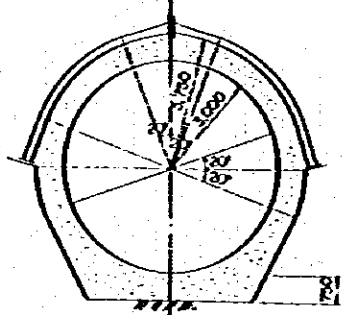
PLAN OF DIVERSION TUNNEL



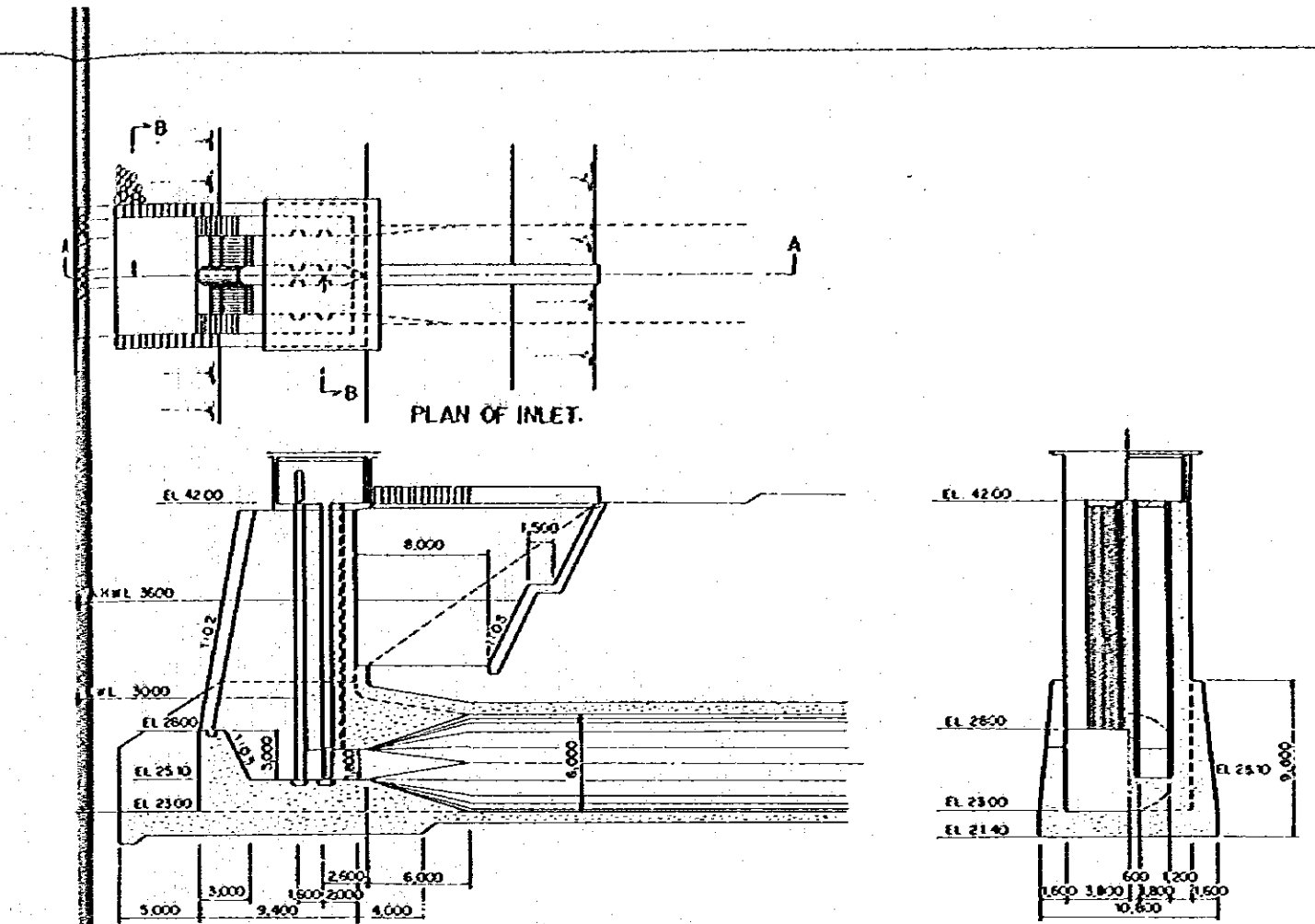
PROFILE OF DIVERSION TUNNEL No. 1



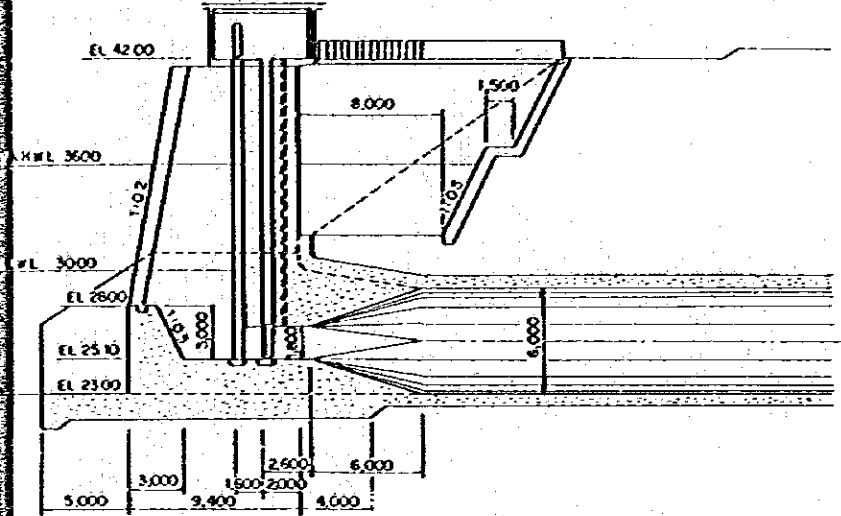
PROFILE OF DIVERSION TUNNEL No. 2



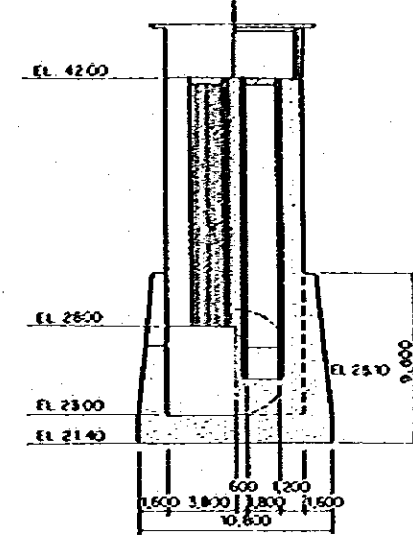
TYPICAL CROSS SECTION OF DIVERSION TUNNEL



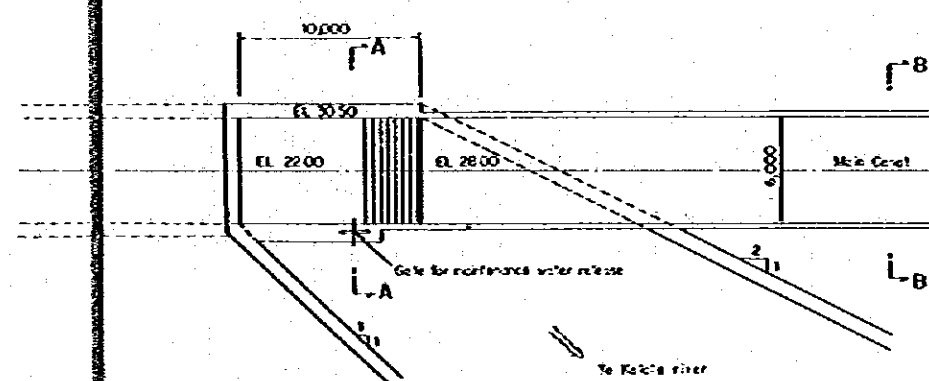
PLAN OF INLET



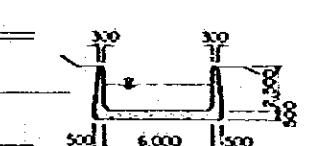
SECTION A-A



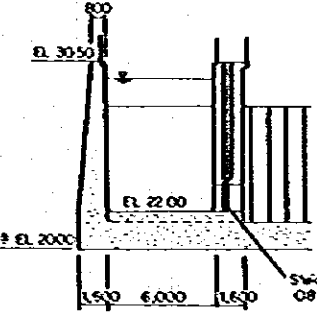
SECTION B-B



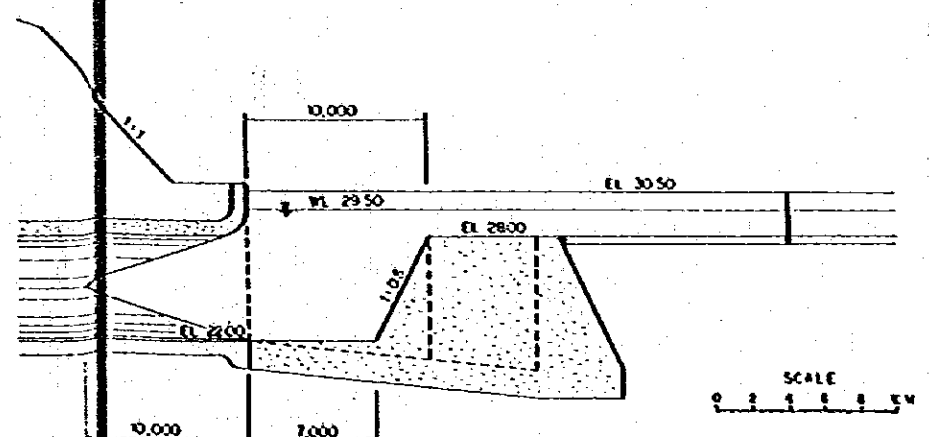
PLAN OF OUTLET (Division Tunnel 1b2)



SECTION B-B

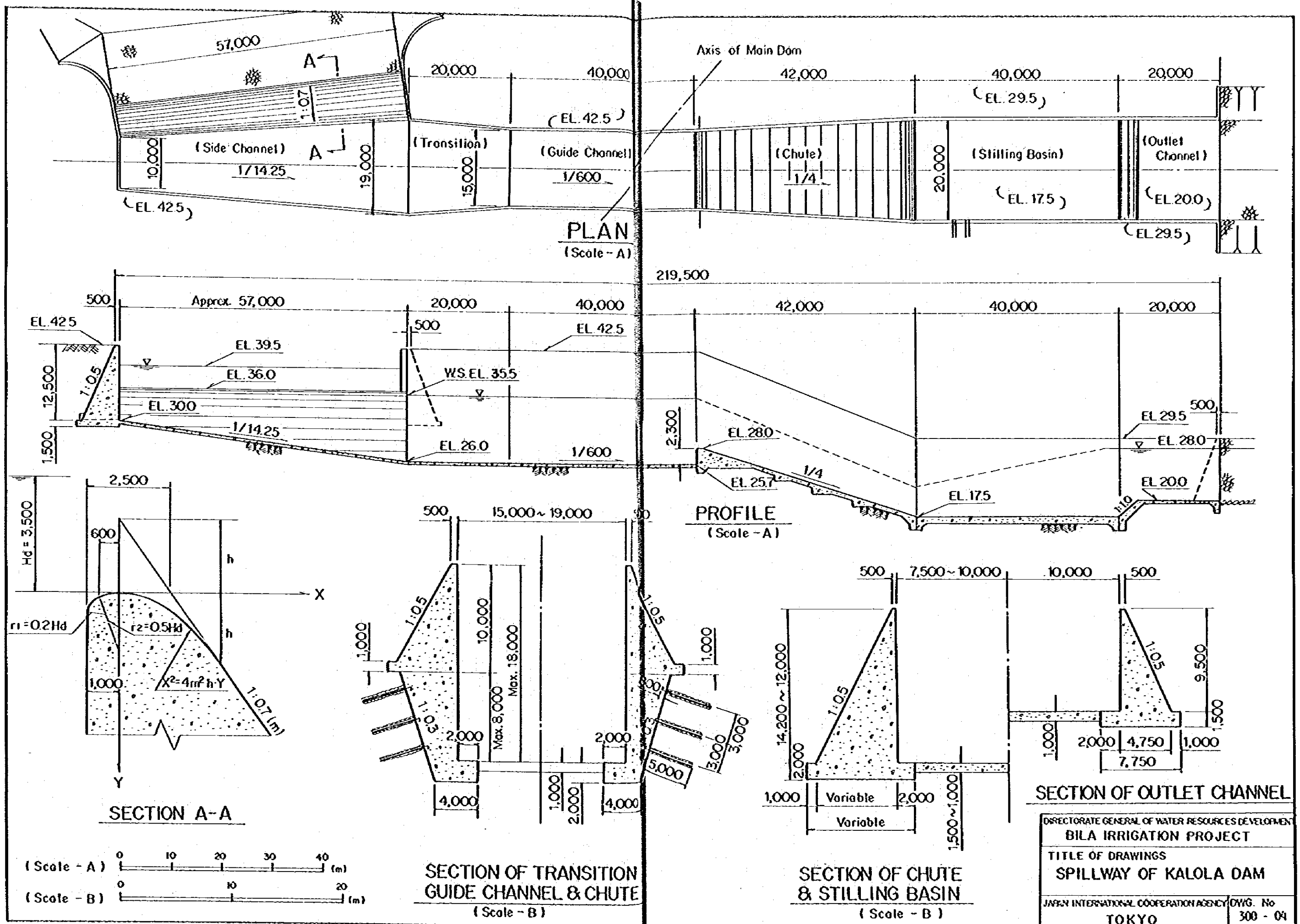


SECTION A-A



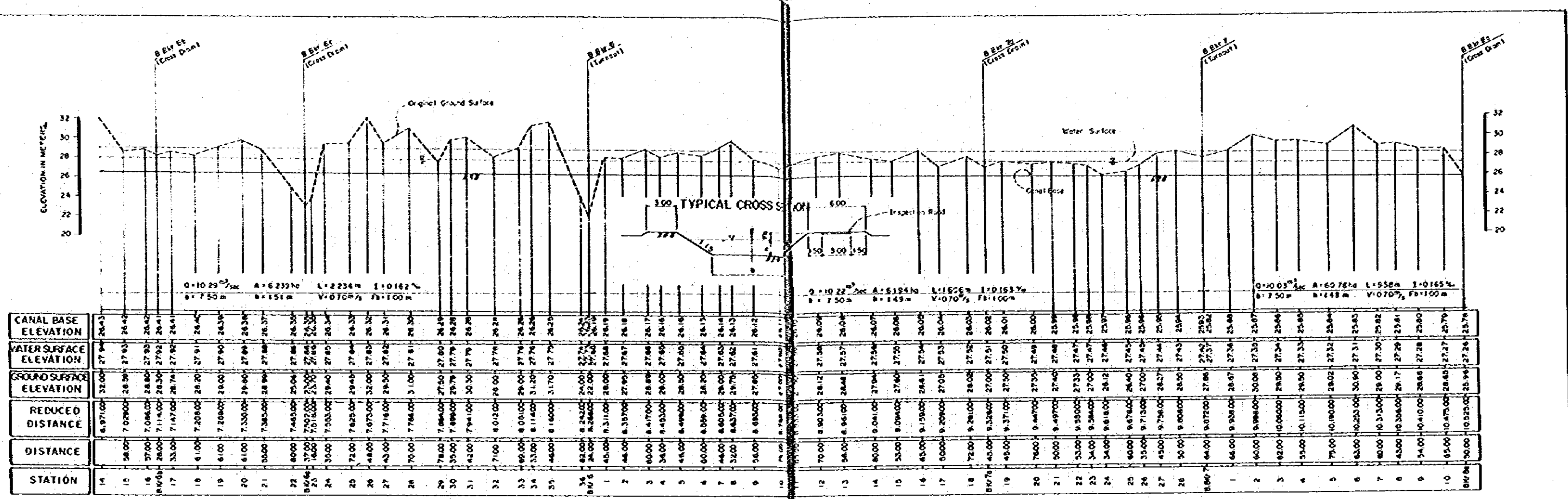
PROFILE OF OUTLET (Division No. 2)

DISSECTATE GENERAL OF WATER RESOURCES DEVELOPMENT BILA IRRIGATION PROJECT	
TITLE OF DRAWING KALOLA DAM DIVERSION AND INTAKE STRUCTURE	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DWG. NO. 300-63

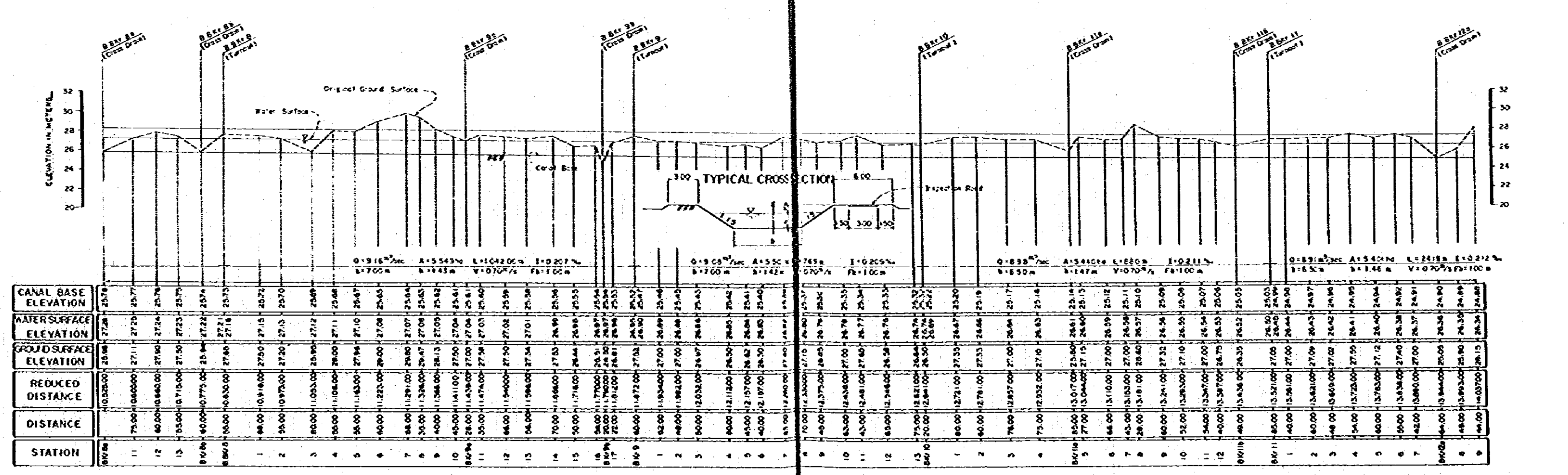


DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
 BILA IRRIGATION PROJECT  
 TITLE OF DRAWINGS  
 SPILLWAY OF KALOLA DAM  
 JAPAN INTERNATIONAL COOPERATION AGENCY (O.V.G. No. 300 - 04)  
 TOKYO



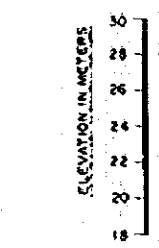


STATION	DISTANCE	REDUCED DISTANCE	GROUND SURFACE ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION
14	0.00	0.00	28.00	27.80	26.50
15	34.00	7.0290	28.50	27.93	26.42
16	37.00	7.0860	28.80	27.93	26.42
17	33.00	7.1470	28.70	27.92	26.41
18	1.00	7.2080	28.20	27.91	26.42
19	6.00	7.2690	29.00	27.90	26.39
20	4.00	7.3300	29.40	27.89	26.38
21	30.00	7.3910	28.90	27.88	26.37
22	8.00	7.4520	29.00	27.88	26.35
23	16.00	7.5130	29.00	27.88	26.35
24	30.00	7.5740	29.40	27.85	26.34
25	72.00	7.6350	29.40	27.84	26.33
26	48.00	7.6960	32.00	27.83	26.32
27	43.00	7.7570	29.50	27.82	26.31
28	70.00	7.8180	31.00	27.81	26.30
29	78.00	7.8790	27.50	27.80	26.29
30	35.00	7.9400	29.70	27.79	26.28
31	43.00	7.9410	30.30	27.79	26.28
32	71.00	8.0020	29.00	27.78	26.27
33	90.00	8.0630	29.00	27.78	26.27
34	33.00	8.1240	31.20	27.76	26.26
35	44.00	8.1850	31.70	27.75	26.25
36	82.00	8.2460	24.00	27.74	26.24
37	24.00	8.3070	22.00	27.73	26.23
38	45.00	8.3680	26.00	27.68	26.19
39	44.00	8.4290	27.90	27.67	26.18
40	90.00	8.4900	28.80	27.66	26.17
41	34.00	8.5510	28.00	27.65	26.16
42	44.00	8.6120	28.30	27.64	26.15
43	44.00	8.6730	28.30	27.64	26.15
44	32.00	8.7340	29.70	27.62	26.13
45	36.00	8.7950	27.60	27.61	26.12
46	70.00	8.8560	27.00	27.60	26.11
47	30.00	8.9170	27.00	27.59	26.10
48	70.00	8.9780	28.12	27.58	26.09
49	34.00	9.0390	28.40	27.57	26.08
50	80.00	9.1000	27.00	27.56	26.07
51	33.00	9.1610	27.60	27.55	26.06
52	45.00	9.2220	28.40	27.54	26.05
53	45.00	9.2830	27.00	27.53	26.04
54	45.00	9.3440	27.50	27.52	26.03
55	80.00	9.4050	27.00	27.51	26.02
56	45.00	9.4660	27.00	27.50	26.01
57	76.00	9.5270	27.30	27.49	26.00
58	90.00	9.5880	27.40	27.48	25.99
59	33.00	9.6490	27.33	27.47	25.98
60	34.00	9.7100	27.00	27.46	25.97
61	34.00	9.7710	26.12	27.45	25.96
62	60.00	9.8320	26.40	27.44	25.95
63	35.00	9.8930	27.00	27.43	25.94
64	43.00	9.9540	26.27	27.42	25.93
65	30.00	10.0150	26.50	27.41	25.92
66	44.00	10.0760	28.02	27.40	25.91
67	75.00	10.1370	30.90	27.39	25.90
68	63.00	10.1980	30.90	27.38	25.89
69	80.00	10.2590	29.00	27.37	25.88
70	43.00	10.3200	28.63	27.36	25.87
71	65.00	10.3810	28.63	27.35	25.86
72	30.00	10.4420	28.94	27.34	25.85
73	30.00	10.5030	28.94	27.33	25.84
74	30.00	10.5640	28.94	27.32	25.83
75	43.00	10.6250	29.00	27.31	25.82
76	43.00	10.6860	29.17	27.29	25.81
77	34.00	10.7470	28.68	27.28	25.80
78	65.00	10.8080	28.43	27.27	25.79
79	30.00	10.8690	28.94	27.26	25.78

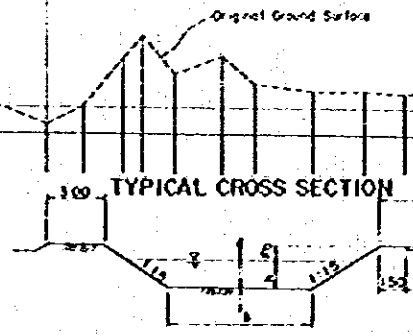


STATION	DISTANCE	REDUCED DISTANCE	GROUND SURFACE ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION
80/8	0.00	0.00	25.98	27.28	25.78
81/8	75.00	1.0400	27.11	27.25	25.77
82/8	60.00	1.0800	27.50	27.24	25.76
83/8	55.00	1.1200	27.50	27.23	25.75
84/8	60.00	1.1600	25.84	27.22	25.74
85/8	55.00	1.2000	27.45	27.21	25.73
86/8	60.00	1.2400	27.50	27.20	25.72
87/8	60.00	1.2800	27.30	27.19	25.71
88/8	60.00	1.3200	25.90	27.18	25.70
89/8	30.00	1.3600	28.47	27.08	25.63
90/8	40.00	1.4000	28.13	27.05	25.62
91/8	45.00	1.4400	27.00	27.04	25.61
92/8	35.00	1.4800	27.58	27.03	25.60
93/8	35.00	1.5200	27.58	27.01	25.60
94/8	68.00	1.5600	27.00	27.00	25.59
95/8	54.00	1.6000	27.34	27.01	25.58
96/8	70.00	1.6400	27.53	26.99	25.56
97/8	50.00	1.6800	28.44	26.98	25.55
98/8	34.00	1.7200	28.51	26.97	25.54
99/8	20.00	1.7600	28.50	26.97	25.54
100/8	22.00	1.8000	28.81	26.94	25.53
101/8	46.00	1.8400	27.53	26.93	25.52
102/8	62.00	1.8800	27.00	26.92	25.51
103/8	49.00	1.9200	27.00	26.89	25.49
104/8	50.00	1.9600	26.97	26.88	25.48
105/8	80.00	2.0000	26.50	26.85	25.43
106/8	42.00	2.0400	26.50	26.85	25.43
107/8	45.00	2.0800	26.82	26.84	25.42
108/8	40.00	2.1200	26.30	26.80	25.40
109/8	63.00	2.1600	27.80	26.79	25.39
110/8	70.00	2.2000	27.80	26.78	25.38
111/8	40.00	2.2400	27.15	26.76	25.37
112/8	40.00	2.2800	28.85	26.74	25.35
113/8	65.00	2.3200	27.00	26.73	25.34
114/8	45.00	2.3600	27.00	26.72	25.33
115/8	45.00	2.4000	27.60	26.71	25.32
116/8	65.00	2.4400	26.58	26.70	25.31
117/8	75.00	2.4800	26.44	26.70	25.30
118/8	20.00	2.5200	26.50	26.69	25.29
119/8	80.00	2.5600	27.35	26.67	25.27
120/8	60.00	2.6000	27.33	26.66	25.26
121/8	78.00	2.6400	27.00	26.64	25.17
122/8	75.00	2.6800	27.10	26.63	25.16
123/8	85.00	2.7200	25.80	26.61	25.14
124/8	77.00	2.7600	27.15	26.60	25.13
125/8	66.00	2.8000	27.00	26.59	25.12
126/8	45.00	2.8400	27.00	26.58	25.11
127/8	28.00	2.8800	29.80	26.57	25.10
128/8	60.00	2.9200	27.35	26.56	25.09
129/8	52.00	2.9600	27.10	26.55	25.08
130/8	54.00	3.0000	27.00	26.54	25.07
131/8	40.00	3.0400	26.70	26.53	25.06
132/8	48.00	3.0800	26.35	26.52	25.05
133/8	85.00	3.1200	27.00	26.50	25.03
134/8	40.00	3.1600	27.00	26.49	25.02
135/8	40.00	3.2000	27.00	26.48	25.01
136/8	60.00	3.2400	27.00	26.47	25.00
137/8	48.00	3.2800	27.02	26.46	24.99
138/8	54.00	3.3200	27.50	26.45	24.98
139/8	60.00	3.3600	27.12	26.44	24.94
140/8	50.00	3.4000	27.40	26.38	24.92
141/8	42.00	3.4400	27.00	26.37	24.91
142/8	60.00	3.4800	25.00	26.36	24.90
143/8	48.00	3.5200	25.90	26.35	24.89
144/8	48.00	3.5600	26.15	26.34	24.88

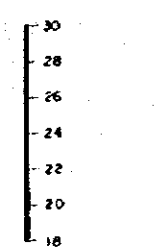
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
 BILA IRRIGATION PROJECT  
 TITLE OF DRAWING  
 PROFILE OF SAL INDUK BILA KIRI (P2)  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO  
 DWG NO.  
 100 - 02



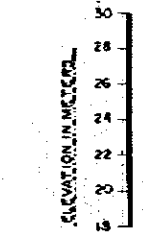
STATION	DISTANCE	REDUCED DISTANCE	GROUND SURFACE ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION
9	14075.00	14075.00	28.13	28.34	24.88
10	42.00	14117.00	28.40	28.53	24.87
11	84.00	14159.00	27.00	28.32	24.88
12	126.00	14201.00	28.18	28.31	24.89
13	168.00	14243.00	27.00	28.30	24.84
14	210.00	14285.00	27.07	28.28	24.82
15	252.00	14327.00	27.00	28.27	24.81
16	294.00	14369.00	27.29	28.26	24.80
17	336.00	14411.00	28.42	28.20	24.79
18	378.00	14453.00	27.00	28.24	24.78
19	420.00	14495.00	27.00	28.23	24.77
20	462.00	14537.00	28.13	28.22	24.76
21	504.00	14579.00	27.00	28.20	24.74
22	546.00	14621.00	27.00	28.19	24.73
23	588.00	14663.00	27.33	28.17	24.71
24	630.00	14705.00	27.10	28.16	24.70
25	672.00	14747.00	27.00	28.15	24.69
26	714.00	14789.00	26.90	28.13	24.67
27	756.00	14831.00	26.50	28.11	24.65
28	798.00	14873.00	26.36	28.11	24.63
29	840.00	14915.00	26.19	28.09	24.63
30	882.00	14957.00	26.20	28.08	24.62
31	924.00	14999.00	26.10	28.07	24.61
32	966.00	15041.00	26.00	28.06	24.60
33	1008.00	15083.00	26.00	28.04	24.58
34	1050.00	15125.00	27.40	28.03	24.57
35	1092.00	15167.00	27.00	28.02	24.56
36	1134.00	15209.00	27.00	28.00	24.54
37	1176.00	15251.00	26.99	28.00	24.53
38	1218.00	15293.00	27.10	28.00	24.52



0+8.91% Sec A=5.40156 L=2.41860m I=0.212%  
 B=6.50m B=1.45m V=0.70% FS=100m

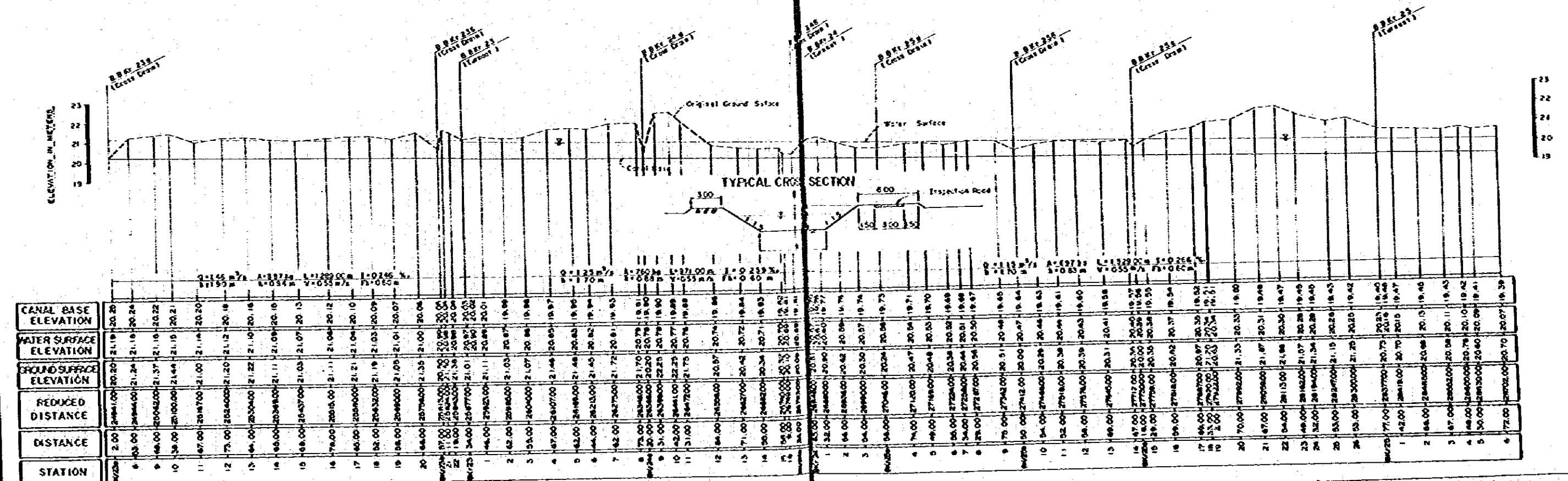
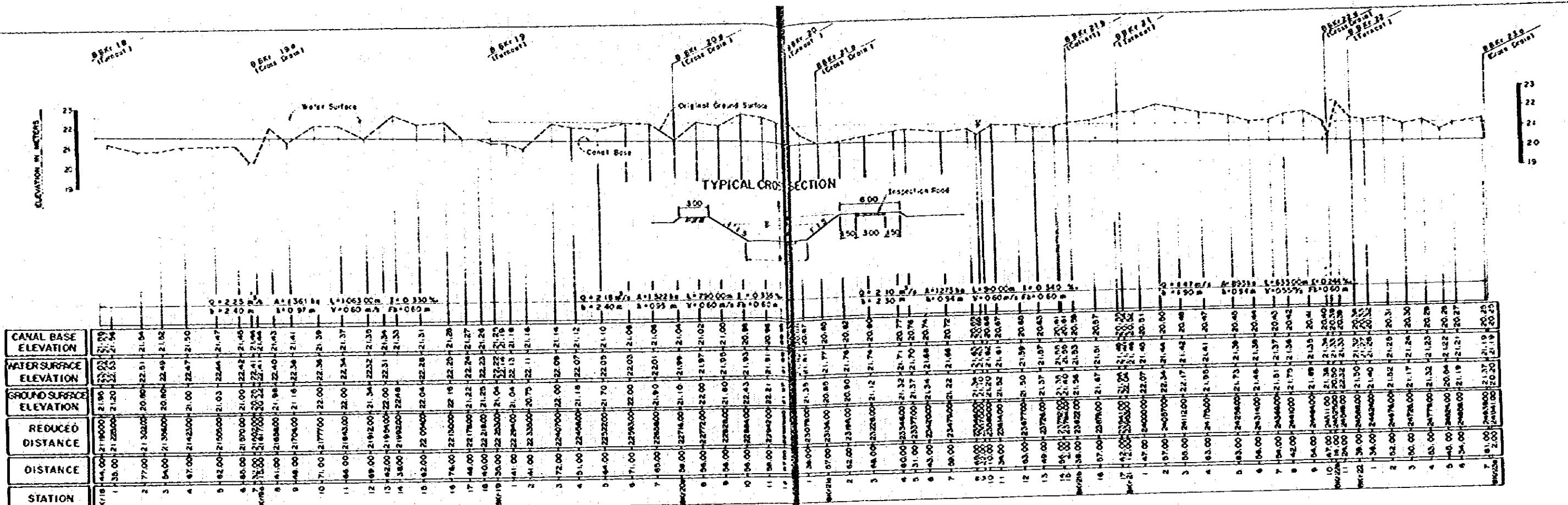


STATION	DISTANCE	REDUCED DISTANCE	GROUND SURFACE ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION
39	1260.00	15335.00	28.00	28.00	24.50
40	1302.00	15377.00	28.00	28.00	24.50
41	1344.00	15419.00	28.00	28.00	24.50
42	1386.00	15461.00	28.00	28.00	24.50
43	1428.00	15503.00	28.00	28.00	24.50
44	1470.00	15545.00	28.00	28.00	24.50
45	1512.00	15587.00	28.00	28.00	24.50
46	1554.00	15629.00	28.00	28.00	24.50
47	1596.00	15671.00	28.00	28.00	24.50
48	1638.00	15713.00	28.00	28.00	24.50
49	1680.00	15755.00	28.00	28.00	24.50
50	1722.00	15797.00	28.00	28.00	24.50
51	1764.00	15839.00	28.00	28.00	24.50
52	1806.00	15881.00	28.00	28.00	24.50
53	1848.00	15923.00	28.00	28.00	24.50
54	1890.00	15965.00	28.00	28.00	24.50
55	1932.00	16007.00	28.00	28.00	24.50
56	1974.00	16049.00	28.00	28.00	24.50
57	2016.00	16091.00	28.00	28.00	24.50
58	2058.00	16133.00	28.00	28.00	24.50
59	2100.00	16175.00	28.00	28.00	24.50
60	2142.00	16217.00	28.00	28.00	24.50
61	2184.00	16259.00	28.00	28.00	24.50
62	2226.00	16301.00	28.00	28.00	24.50
63	2268.00	16343.00	28.00	28.00	24.50
64	2310.00	16385.00	28.00	28.00	24.50
65	2352.00	16427.00	28.00	28.00	24.50
66	2394.00	16469.00	28.00	28.00	24.50
67	2436.00	16511.00	28.00	28.00	24.50
68	2478.00	16553.00	28.00	28.00	24.50
69	2520.00	16595.00	28.00	28.00	24.50
70	2562.00	16637.00	28.00	28.00	24.50
71	2604.00	16679.00	28.00	28.00	24.50
72	2646.00	16721.00	28.00	28.00	24.50
73	2688.00	16763.00	28.00	28.00	24.50
74	2730.00	16805.00	28.00	28.00	24.50
75	2772.00	16847.00	28.00	28.00	24.50
76	2814.00	16889.00	28.00	28.00	24.50
77	2856.00	16931.00	28.00	28.00	24.50
78	2898.00	16973.00	28.00	28.00	24.50
79	2940.00	17015.00	28.00	28.00	24.50
80	2982.00	17057.00	28.00	28.00	24.50
81	3024.00	17099.00	28.00	28.00	24.50
82	3066.00	17141.00	28.00	28.00	24.50
83	3108.00	17183.00	28.00	28.00	24.50
84	3150.00	17225.00	28.00	28.00	24.50
85	3192.00	17267.00	28.00	28.00	24.50
86	3234.00	17309.00	28.00	28.00	24.50
87	3276.00	17351.00	28.00	28.00	24.50
88	3318.00	17393.00	28.00	28.00	24.50
89	3360.00	17435.00	28.00	28.00	24.50
90	3402.00	17477.00	28.00	28.00	24.50
91	3444.00	17519.00	28.00	28.00	24.50
92	3486.00	17561.00	28.00	28.00	24.50
93	3528.00	17603.00	28.00	28.00	24.50
94	3570.00	17645.00	28.00	28.00	24.50
95	3612.00	17687.00	28.00	28.00	24.50
96	3654.00	17729.00	28.00	28.00	24.50
97	3696.00	17771.00	28.00	28.00	24.50
98	3738.00	17813.00	28.00	28.00	24.50
99	3780.00	17855.00	28.00	28.00	24.50
100	3822.00	17897.00	28.00	28.00	24.50



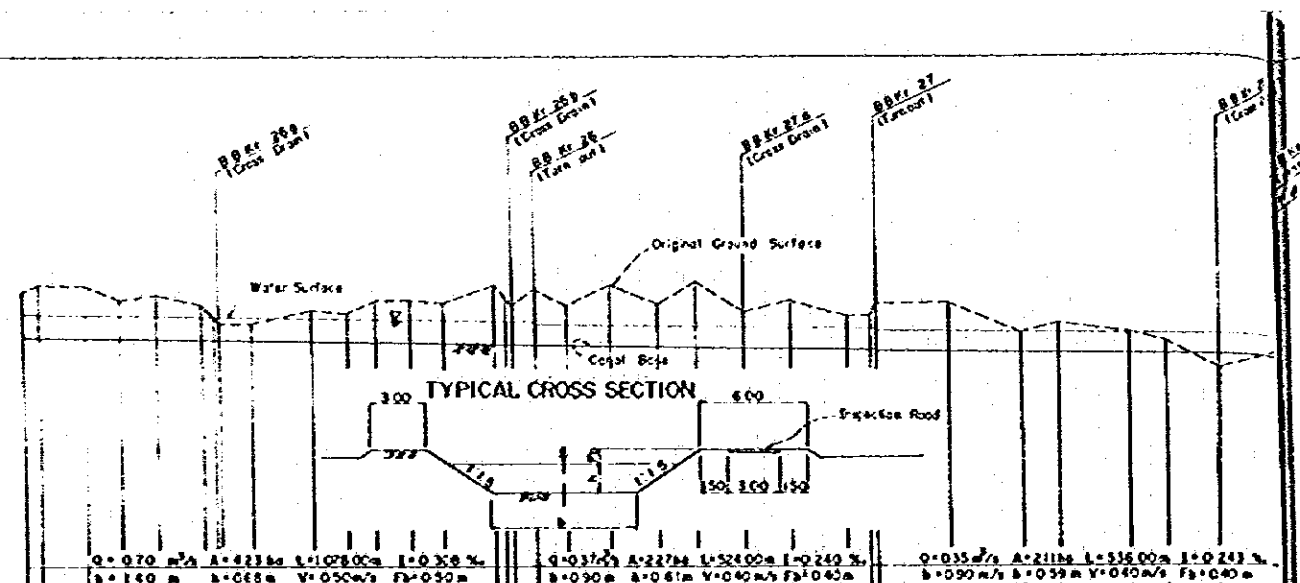
STATION	DISTANCE	REDUCED DISTANCE	GROUND SURFACE ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION
10	17358.00	17358.00	28.00	28.00	24.00
11	17800.00	17800.00	28.00	28.00	24.00
12	18242.00	18242.00	28.00	28.00	24.00
13	18684.00	18684.00	28.00	28.00	24.00
14	19126.00	19126.00	28.00	28.00	24.00
15	19568.00	19568.00	28.00	28.00	24.00
16	20010.00	20010.00	28.00	28.00	24.00
17	20452.00	20452.00	28.00	28.00	24.00
18	20894.00	20894.00	28.00	28.00	24.00
19	21336.00	21336.00	28.00	28.00	24.00
20	21778.00	21778.00	28.00	28.00	24.00
21	22220.00	22220.00	28.00	28.00	24.00
22	22662.00	22662.00	28.00	28.00	24.00
23	23104.00	23104.00	28.00	28.00	24.00
24	23546.00	23546.00	28.00	28.00	24.00
25	23988.00	23988.00	28.00	28.00	24.00
26	24430.00	24430.00	28.00	28.00	24.00
27	24872.00	24872.00	28.00	28.00	24.00
28	25314.00	25314.00	28.00	28.00	24.00
29	25756.00	25756.00	28.00	28.00	24.00
30	26198.00	26198.00	28.00	28.00	24.00
31	26640.00	26640.00	28.00	28.00	24.00
32	27082.00	27082.00	28.00	28.00	24.00
33	27524.00	27524.00	28.00	28.00	24.00
34	27966.00	27966.00	28.00	28.00	24.00
35	28408.00	28408.00	28.00	28.00	24.00
36	28850.00	28850.00	28.00	28.00	24.00
37	29292.00	29292.00	28.00	28.00	24.00
38	29734.00	29734.00	28.00	28.00	24.00
39	30176.00	30176.00	28.00	28.00	24.00
40	30618.00	30618.00	28.00	28.00	24.00
41	31060.00	31060.00	28.00	28.00	24.00
42	31502.00	31502.00	28.00	28.00	24.00
43	31944.00	31944.00	28.00	28.00	24.00
44	32386.00	32386.00	28.00	28.00	24.00
45	32828.00	32828.00	28.00	28.00	24.00
46	33270.00	33270.00	28.00	28.00	24.00
47	33712.00	33712.00	28.00	28.00	24.00
48	34154.00	34154.00	28.00	28.00	24.00
49	34596.00	34596.00	28.00	28.00	24.00
50	35038.00	35038.00	28.00	28.00	24.00
51	35480.00	35480.00	28.00	28.00	24.00
52	35922.00	35922.00	28.00	28.00	24.00
53	36364.00	36364.00	28.00	28.00	24.00
54	36806.00	36806.00	28.00	28.00	24.00
55	37248.00	37248.00	28.00	28.00	24.00
56	37690.00	37690.00	28.00	28.00	24.00
57	38132.00	38132.00	28.00	28.00	24.00
58	38574.00	38574.00	28.00	28.00	24.00
59	39016.00	39016.00	28.00	28.00	24.00
60	39458.00	39458.00	28.00	28.00	24.00
61	39900.00	39900.00	28.00	28.00	24.00
62	40342.00	40342.00	28.00	28.00	24.00
63	40784.00	40784.00	28.00	28.00	24.00
64	41226.00	41226.00	28.00	28.00	24.00
65	41668.00	41668.00	28.00	28.00	24.00
66	42110.00	42110.00	28.00	28.00	24.00
67	42552.00	42552.00	28.00	28.00	24.00
68	42994.00	42994.00	28.00	28.00	24.00
69	43436.00	43436.00	28.00	28.00	24.00
70	43878.00	43878.00	28.00	28.00	24.00
71	44320.00	44320.00	28.00	28.00	24.00
72	44762.00	44762.00	28.00	28.00	24.00
73	45204.00	45204.00	28.00	28.00	24.00
74	45646.00	45646.00	28.00	28.00	24.00
75	46088.00	46088.00	28.00	28.00	24.00
76	46530.00	46530.00	28.00	28.00	24.00
77	46972.00	46972.00	28.00	28.00	24.00
78	47414.00	47414.00	28.00	28.00	24.00
79	47856.00	47856.00	28.00	28.00	24.00
80	48298.00	48298.00	28.00	28.00	24.00
81	48740.00	48740.00	28.00	28.00	24.00
82	49182.00	49182.00	28.00	28.00	24.00
83	49624.00	49624.00	28.00	28.00	24.00
84	50066.00	50066.00	28.00	28.00	24.00
85	50508.00	50508.00	28.00	28.00	24.00
86	50950.00	50950.00	28.00	28.00	24.00
87	51392.00	51392.00	28.00	28.00	24.00
88	51834.00	51834.00	28.00	28.00	24.00
89	52276.00	52276.00	28.00	28.00	24.00
90	52718.00	52718.00	28.00	28.00	24.00
91	53160.00	53160.00	28.00</		





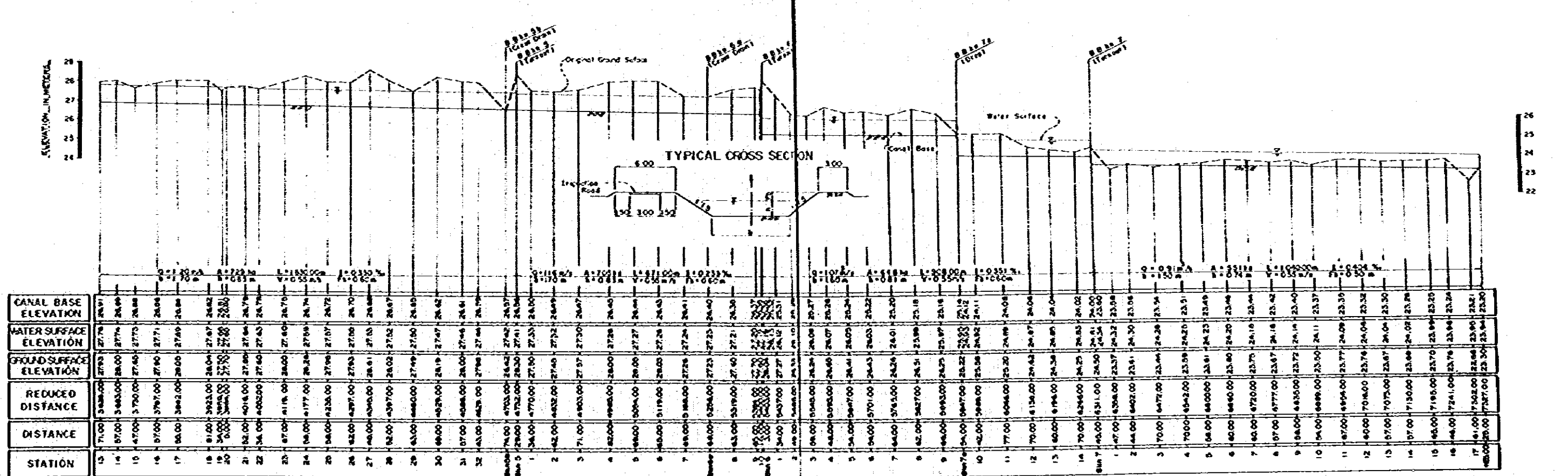
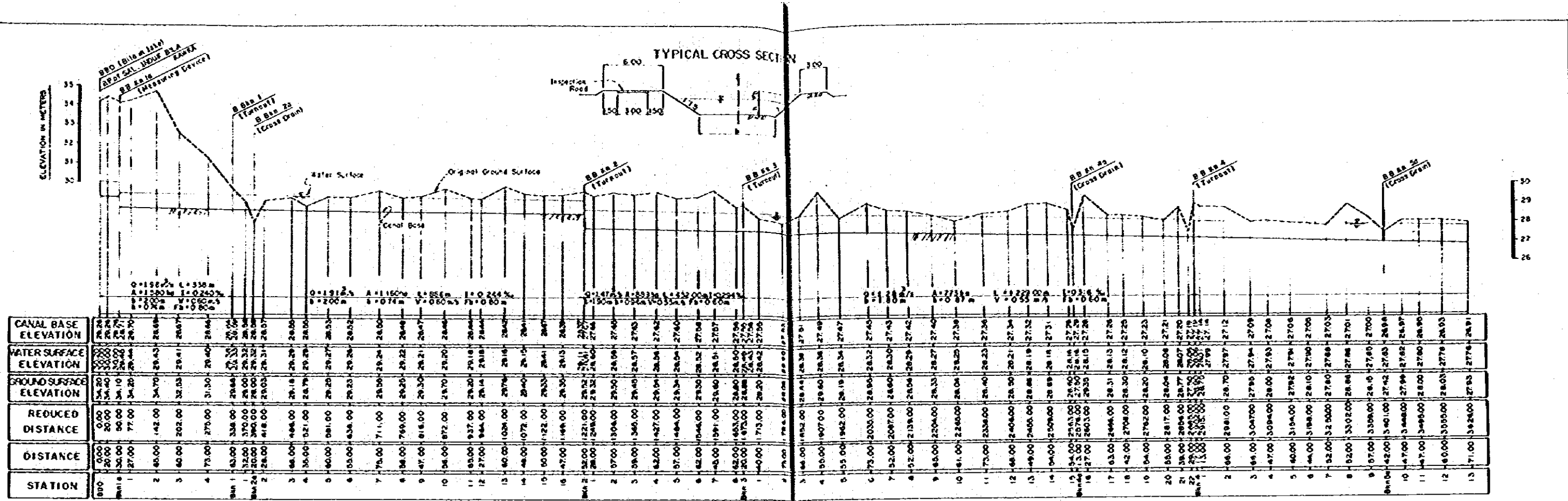
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
 BILA IRRIGATION PROJECT  
 TITLE OF DRAWING  
**PROFILE OF SAL. INDUK BILA KIRI (4/5)**  
 JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO  
 Dwg. NO.  
**400-04**

ELEVATION - METERS



CANAL BASE ELEVATION	WATER SURFACE ELEVATION	GROUND SURFACE ELEVATION	REDUCED DISTANCE	DISTANCE	STATION
19.25	20.07	20.70	28702.00	72.00	6
19.25	20.04	20.80	28728.00	28.00	7
19.25	20.03	20.88	28843.00	115.00	8
19.33	20.01	20.61	28897.00	54.00	9
19.33	19.99	20.60	28951.00	54.00	10
19.33	19.97	20.60	29005.00	54.00	11
19.28	19.97	20.60	29059.00	54.00	12
19.27	19.96	20.20	29113.00	54.00	13
19.25	19.93	20.13	29167.00	54.00	14
19.25	19.92	20.45	29221.00	54.00	15
19.22	19.90	20.44	29275.00	54.00	16
19.21	19.89	20.37	29329.00	54.00	17
19.19	19.87	20.20	29383.00	54.00	18
19.18	19.85	20.20	29437.00	54.00	19
19.17	19.84	20.19	29491.00	54.00	20
19.16	19.83	20.18	29545.00	54.00	21
19.15	19.82	20.17	29599.00	54.00	22
19.14	19.81	20.16	29653.00	54.00	23
19.13	19.80	20.15	29707.00	54.00	24
19.11	19.78	20.31	29761.00	54.00	25
19.10	19.77	21.00	29815.00	54.00	26
19.08	19.69	20.10	29869.00	54.00	27
19.07	19.68	20.44	29923.00	54.00	28
19.05	19.66	20.00	29977.00	54.00	29
19.04	19.65	20.00	30031.00	54.00	30
19.03	19.64	20.33	30085.00	54.00	31
19.01	19.62	20.33	30139.00	54.00	32
18.99	19.60	19.50	30193.00	54.00	33
18.98	19.59	19.70	30247.00	54.00	34
18.96	19.57	19.50	30301.00	54.00	35
18.95	19.56	19.00	30355.00	54.00	36
18.93	19.54	19.23	30409.00	54.00	37
18.92	19.53	19.20	30463.00	54.00	38
18.90	19.51	19.20	30517.00	54.00	39
18.89	19.50	18.50	30571.00	54.00	40

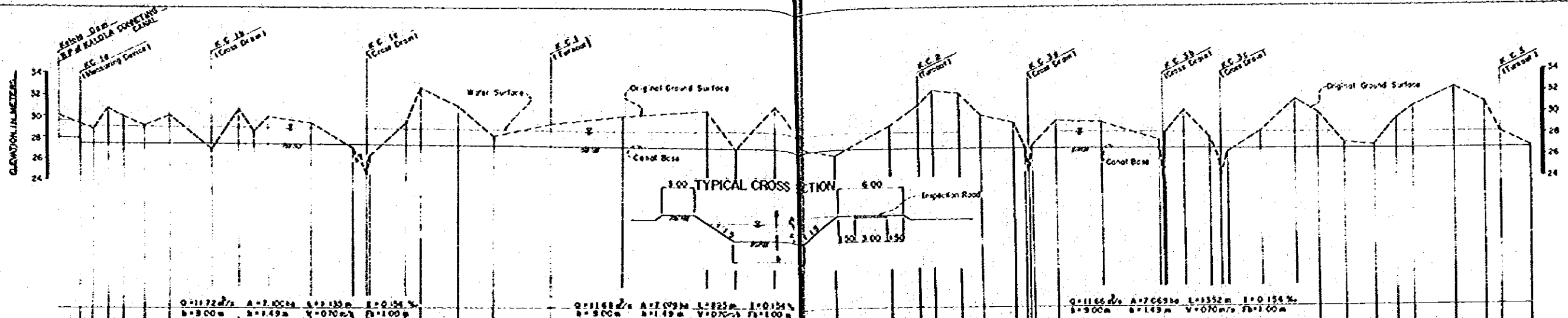
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
 BILA IRRIGATION PROJECT  
 TITLE OF DRAWING  
 PROFILE OF SAL INDUK BILA KIRI (5/5)  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO  
 DWG NO.  
 400-05



DIRECTORATE GENERAL OF WATER RESOURCES (DEVELOPMENT)  
 BILA IRRIGATION PROJECT  
 TITLE OF DRAWING  
 PROFILE OF SAL. INDUK BILA (1/2)  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO  
 DRG NO  
 400-06

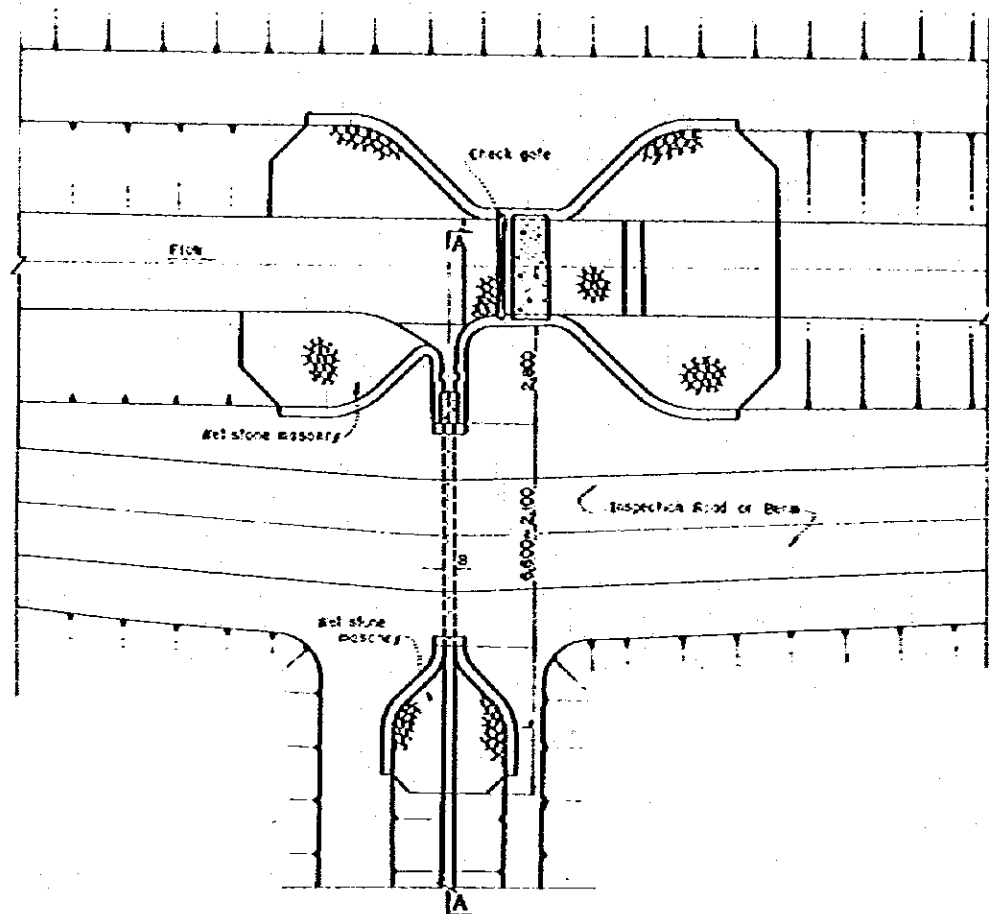




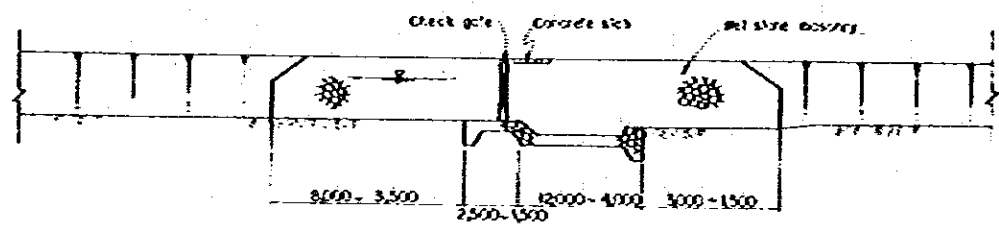


STATION	DISTANCE	REDUCED DISTANCE	GROUND SURFACE ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION
14+25	0.00	0.00	30.01	29.00	28.01
14+30	5.00	5.00	29.20	28.19	27.20
14+35	10.00	10.00	29.91	28.90	27.91
14+40	15.00	15.00	30.78	29.77	27.78
14+45	20.00	20.00	29.87	28.86	27.87
14+50	25.00	25.00	29.14	28.13	27.14
14+55	30.00	30.00	30.08	29.07	28.08
14+60	35.00	35.00	28.89	27.88	27.89
14+65	40.00	40.00	30.70	29.69	27.60
14+70	45.00	45.00	28.49	27.48	27.49
14+75	50.00	50.00	28.67	27.66	27.67
14+80	55.00	55.00	29.29	28.28	27.29
14+85	60.00	60.00	31.13	30.12	29.13
14+90	65.00	65.00	28.28	27.27	27.28
14+95	70.00	70.00	28.27	27.26	27.27
15+00	75.00	75.00	29.37	28.36	27.37
15+05	80.00	80.00	28.76	27.75	27.76
15+10	85.00	85.00	30.01	29.00	28.01
15+15	90.00	90.00	30.70	29.69	28.70
15+20	95.00	95.00	28.78	27.77	27.78
15+25	100.00	100.00	28.71	27.70	27.71
15+30	105.00	105.00	28.98	28.07	27.98
15+35	110.00	110.00	31.20	30.19	29.20
15+40	115.00	115.00	28.40	27.39	27.40
15+45	120.00	120.00	28.40	27.39	27.40
15+50	125.00	125.00	28.40	27.39	27.40
15+55	130.00	130.00	28.40	27.39	27.40
15+60	135.00	135.00	28.40	27.39	27.40
15+65	140.00	140.00	28.40	27.39	27.40
15+70	145.00	145.00	28.40	27.39	27.40
15+75	150.00	150.00	28.40	27.39	27.40
15+80	155.00	155.00	28.40	27.39	27.40
15+85	160.00	160.00	28.40	27.39	27.40
15+90	165.00	165.00	28.40	27.39	27.40
15+95	170.00	170.00	28.40	27.39	27.40
16+00	175.00	175.00	28.40	27.39	27.40
16+05	180.00	180.00	28.40	27.39	27.40
16+10	185.00	185.00	28.40	27.39	27.40
16+15	190.00	190.00	28.40	27.39	27.40
16+20	195.00	195.00	28.40	27.39	27.40
16+25	200.00	200.00	28.40	27.39	27.40
16+30	205.00	205.00	28.40	27.39	27.40
16+35	210.00	210.00	28.40	27.39	27.40
16+40	215.00	215.00	28.40	27.39	27.40
16+45	220.00	220.00	28.40	27.39	27.40
16+50	225.00	225.00	28.40	27.39	27.40
16+55	230.00	230.00	28.40	27.39	27.40
16+60	235.00	235.00	28.40	27.39	27.40
16+65	240.00	240.00	28.40	27.39	27.40
16+70	245.00	245.00	28.40	27.39	27.40
16+75	250.00	250.00	28.40	27.39	27.40
16+80	255.00	255.00	28.40	27.39	27.40
16+85	260.00	260.00	28.40	27.39	27.40
16+90	265.00	265.00	28.40	27.39	27.40
16+95	270.00	270.00	28.40	27.39	27.40
17+00	275.00	275.00	28.40	27.39	27.40
17+05	280.00	280.00	28.40	27.39	27.40
17+10	285.00	285.00	28.40	27.39	27.40
17+15	290.00	290.00	28.40	27.39	27.40
17+20	295.00	295.00	28.40	27.39	27.40
17+25	300.00	300.00	28.40	27.39	27.40
17+30	305.00	305.00	28.40	27.39	27.40
17+35	310.00	310.00	28.40	27.39	27.40
17+40	315.00	315.00	28.40	27.39	27.40
17+45	320.00	320.00	28.40	27.39	27.40
17+50	325.00	325.00	28.40	27.39	27.40
17+55	330.00	330.00	28.40	27.39	27.40
17+60	335.00	335.00	28.40	27.39	27.40
17+65	340.00	340.00	28.40	27.39	27.40
17+70	345.00	345.00	28.40	27.39	27.40
17+75	350.00	350.00	28.40	27.39	27.40
17+80	355.00	355.00	28.40	27.39	27.40
17+85	360.00	360.00	28.40	27.39	27.40
17+90	365.00	365.00	28.40	27.39	27.40
17+95	370.00	370.00	28.40	27.39	27.40
18+00	375.00	375.00	28.40	27.39	27.40
18+05	380.00	380.00	28.40	27.39	27.40
18+10	385.00	385.00	28.40	27.39	27.40
18+15	390.00	390.00	28.40	27.39	27.40
18+20	395.00	395.00	28.40	27.39	27.40
18+25	400.00	400.00	28.40	27.39	27.40
18+30	405.00	405.00	28.40	27.39	27.40
18+35	410.00	410.00	28.40	27.39	27.40
18+40	415.00	415.00	28.40	27.39	27.40
18+45	420.00	420.00	28.40	27.39	27.40
18+50	425.00	425.00	28.40	27.39	27.40
18+55	430.00	430.00	28.40	27.39	27.40
18+60	435.00	435.00	28.40	27.39	27.40
18+65	440.00	440.00	28.40	27.39	27.40
18+70	445.00	445.00	28.40	27.39	27.40
18+75	450.00	450.00	28.40	27.39	27.40
18+80	455.00	455.00	28.40	27.39	27.40
18+85	460.00	460.00	28.40	27.39	27.40
18+90	465.00	465.00	28.40	27.39	27.40
18+95	470.00	470.00	28.40	27.39	27.40
19+00	475.00	475.00	28.40	27.39	27.40
19+05	480.00	480.00	28.40	27.39	27.40
19+10	485.00	485.00	28.40	27.39	27.40
19+15	490.00	490.00	28.40	27.39	27.40
19+20	495.00	495.00	28.40	27.39	27.40
19+25	500.00	500.00	28.40	27.39	27.40
19+30	505.00	505.00	28.40	27.39	27.40
19+35	510.00	510.00	28.40	27.39	27.40
19+40	515.00	515.00	28.40	27.39	27.40
19+45	520.00	520.00	28.40	27.39	27.40
19+50	525.00	525.00	28.40	27.39	27.40
19+55	530.00	530.00	28.40	27.39	27.40
19+60	535.00	535.00	28.40	27.39	27.40
19+65	540.00	540.00	28.40	27.39	27.40
19+70	545.00	545.00	28.40	27.39	27.40
19+75	550.00	550.00	28.40	27.39	27.40
19+80	555.00	555.00	28.40	27.39	27.40
19+85	560.00	560.00	28.40	27.39	27.40
19+90	565.00	565.00	28.40	27.39	27.40
19+95	570.00	570.00	28.40	27.39	27.40
20+00	575.00	575.00	28.40	27.39	27.40
20+05	580.00	580.00	28.40	27.39	27.40
20+10	585.00	585.00	28.40	27.39	27.40
20+15	590.00	590.00	28.40	27.39	27.40
20+20	595.00	595.00	28.40	27.39	27.40
20+25	600.00	600.00	28.40	27.39	27.40
20+30	605.00	605.00	28.40	27.39	27.40
20+35	610.00	610.00	28.40	27.39	27.40
20+40	615.00	615.00	28.40	27.39	27.40
20+45	620.00	620.00	28.40	27.39	27.40
20+50	625.00	625.00	28.40	27.39	27.40
20+55	630.00	630.00	28.40	27.39	27.40
20+60	635.00	635.00	28.40	27.39	27.40
20+65	640.00	640.00	28.40	27.39	27.40
20+70	645.00	645.00	28.40	27.39	27.40
20+75	650.00	650.00	28.40	27.39	27.40
20+80	655.00	655.00	28.40	27.39	27.40
20+85	660.00	660.00	28.40	27.39	27.40
20+90	665.00	665.00	28.40	27.39	27.40
20+95	670.00	670.00	28.40	27.39	27.40
21+00	675.00	675.00	28.40	27.39	27.40
21+05	680.00	680.00	28.40	27.39	27.40
21+10	685.00	685.00	28.40	27.39	27.40
21+15	690.00	690.00	28.40	27.39	27.40
21+20	695.00	695.00	28.40	27.39	27.40
21+25	700.00	700.00	28.40	27.39	27.40
21+30	705.00	705.00	28.40	27.39	27.40
21+35	710.00	710.00	28.40	27.39	27.40
21+40	715.00	715.00	28.40	27.39	27.40
21+45	720.00	720.00	28.40	27.39	27.40
21+50	725.00	725.00	28.40	27.39	27.40
21+55	730.00	730.00	28.40	27.39	27.40
21+60	735.00	735.00	28.40	27.39	27.40
21+65	740.00	740.00	28.40	27.39	27.40
21+70	745.00	745.00	28.40	27.39	27.40
21+75	750.00	750.00	28.40	27.39	27.40
21+80	755.00	755.00	28.40	27.39	27.40
21+85	760.00	760.00	28.40	27.39	27.40
21+90	765.00	765.00	28.40	27.39	27.40
21+95	770.00	770.00	28.40	27.39	27.40
22+00	775.00	775.00	28.40	27.39	27.40
22+05	780.00	780.00	28.40	27.39	27.40
22+10	785.00	785.00	28.40	27.39	27.40
22+15	790.00	790.00	28.40	27.39	27.40
22+20	795.00	795.00	28.40	27.39	27.40
22+25	800.00	800.00	28.40	27.39	27.40
22+30	805.00	805.00	28.40	27.39	27.40
22+35	810.00	810.00	28.40	27.39	27.40
22+40	815.00	815.00	28.40	27.39	27.40
22+45	820.00	820.00	28.40	27.39	27.40
22+50	825.00	825.00	28.40	27.39	27.40
22+55	830.00	830.00	28.40	27.39	27.40
22+60	835.00	835.00	28.40	27.39	27.40
22+65	840.00	840.00	28.40	27.39	27.40
22+70	845.00	845.00	28.40	27.39	27.40
22+75	850.00	850.00	28.40	27.39	27.40
22+80	855.00	855.00	28.40	27.39	27.40
22+85	860.00	860.00	28.40	27.39	27.40
22+90	865.00	865.00	28.40	27.39	27.40
22+95	870.00	870.00	28.40	27.39	27.40
23+00	875.00	875.00	28.40	27.39	27.40
23+05	880.00	880.00	28.40	27.39	27.40
23+10	885.00	885.00	28.40	27.39	27.40
23+15	890.00	890.00	28.40	27.39	27.40
23+20	895.00	895.00	28.40	27.39	27.40
23+2					

### TURNOUT



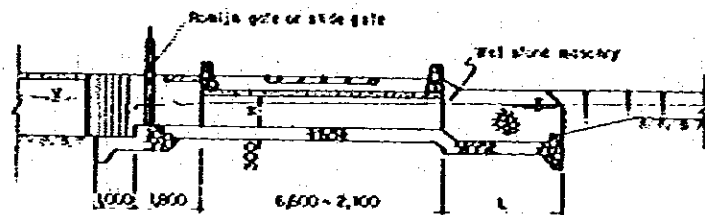
PLAN



PROFILE

DIMENSION TABLE OF TURNOUT

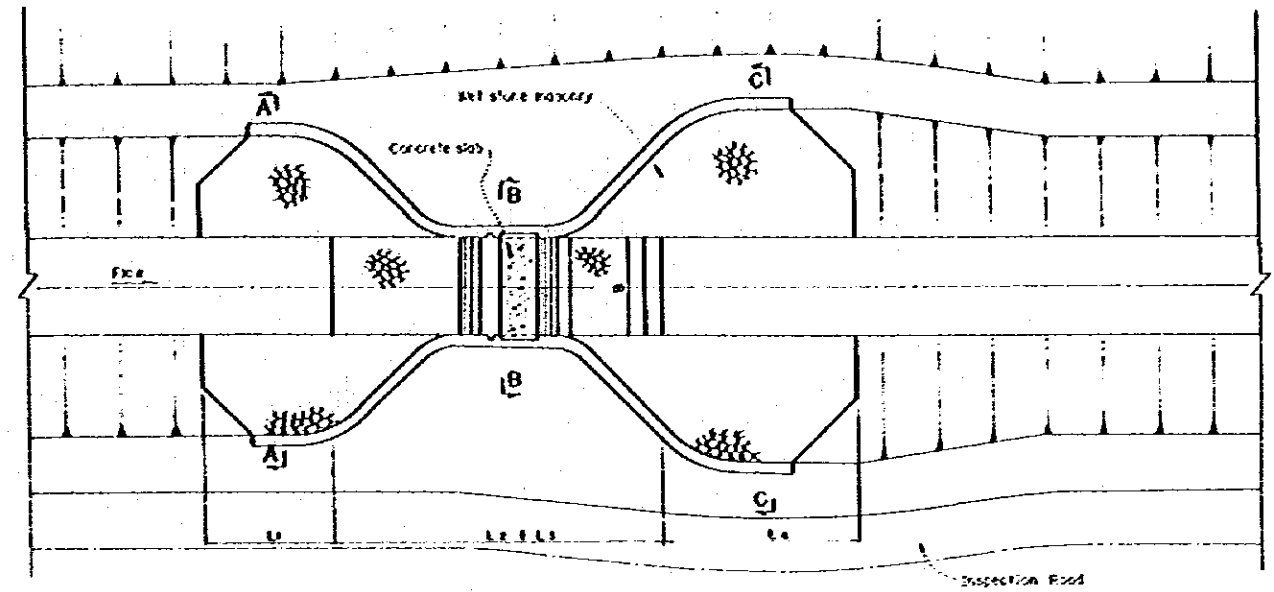
Discharge (Q) (m <sup>3</sup> /sec)	L (mm)	B (mm)	H (mm)	Type of gate
350 ≤ Q < 450	5,000	2,500	2,000	Slide gate
300 ≤ Q < 350	5,000	2,000	2,000	-
250 ≤ Q < 300	5,000	2,000	1,800	-
200 ≤ Q < 250	5,000	1,500	1,800	-
150 ≤ Q < 200	5,000	1,500	1,500	-
100 ≤ Q < 150	5,000	1,300	1,300	-
050 ≤ Q < 100	4,500	1,300	1,500	Roller gate
030 ≤ Q < 050	4,500	1,000	1,400	-
020 ≤ Q < 030	4,000	800	1,400	-
0.8 ≤ Q < 020	4,000	600	1,300	-
0.4 ≤ Q < 0.8	4,000	500	1,200	-
0.08 ≤ Q < 0.4	3,000	400	1,000	-
0 < Q < 0.08	3,000	300	1,000	-



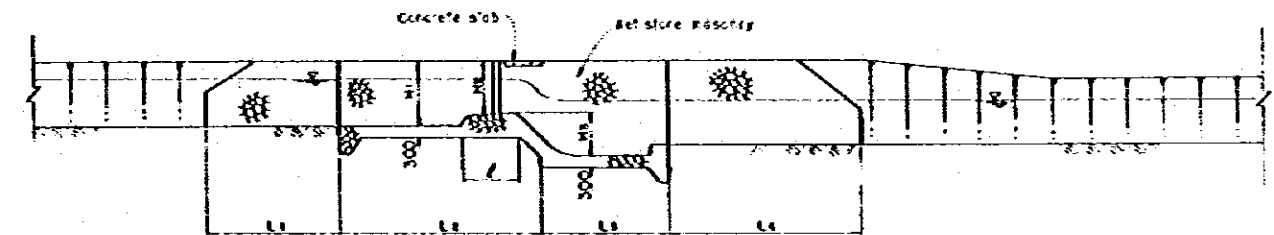
SECTION A-A

SCALE  
0 1 2 3 4 5

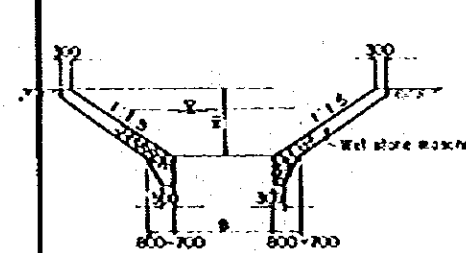
### MEASURING DEVICE



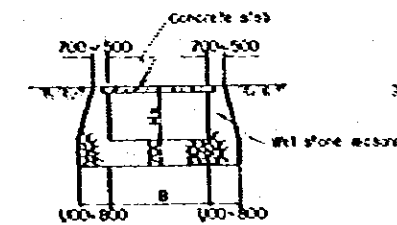
PLAN



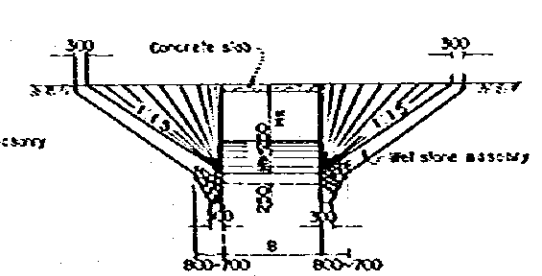
PROFILE



SECTION A-A



SECTION B-B



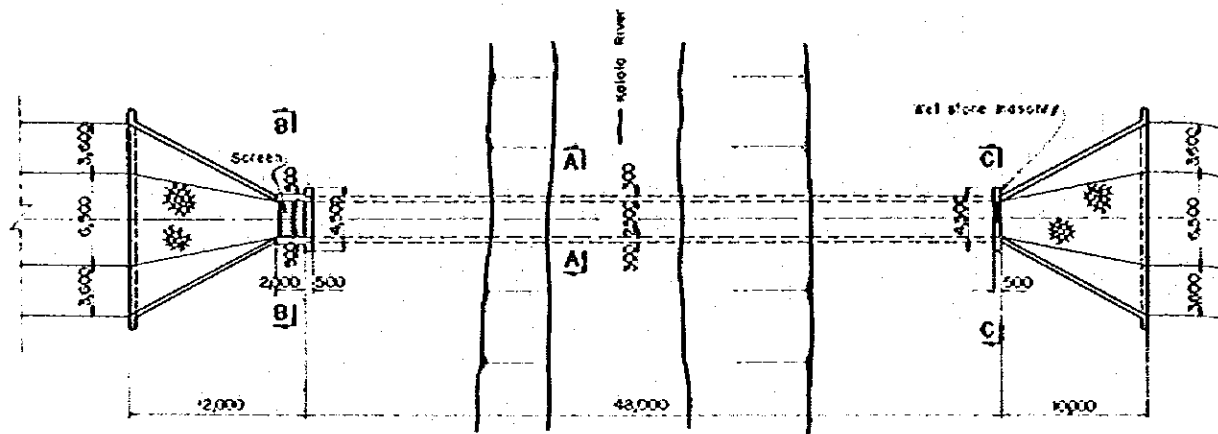
SECTION C-C

DIMENSION TABLE OF MEASURING DEVICE

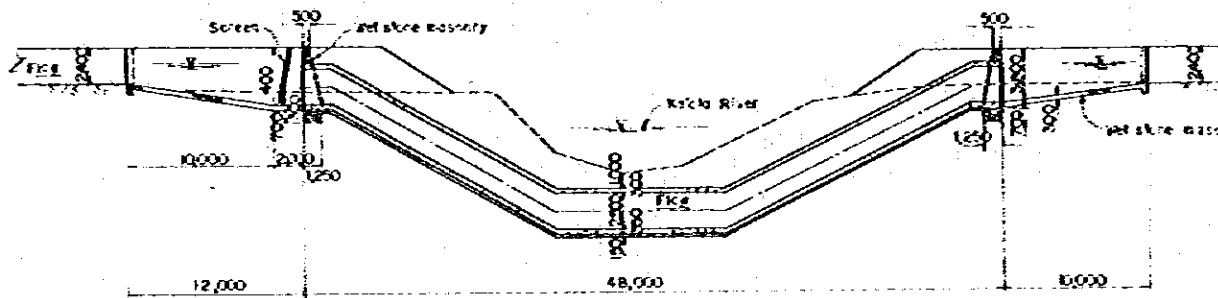
Type of MD	L <sub>1</sub> (mm)	L <sub>2</sub> (mm)	L <sub>3</sub> (mm)	L <sub>4</sub> (mm)	H <sub>1</sub> (mm)	H <sub>2</sub> (mm)	H <sub>3</sub> (mm)	H <sub>4</sub> (mm)	B (mm)
BBW1a	4,500	4,500	5,700	5,000	2,800	2,500	2,100	1,400	7,500
BBW1b	5,500	5,500	3,000	5,500	1,300	1,350	1,250	1,200	2,000
Bc1a	5,000	6,000	6,000	5,500	3,000	2,500	2,000	1,500	9,000

SECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
**BILA IRRIGATION PROJECT**  
 TITLE OF DRAWING  
**TYPICAL DRAWING OF TURNOUT  
 AND MEASURING DEVICE**  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO  
 CWS NO.  
 500-01

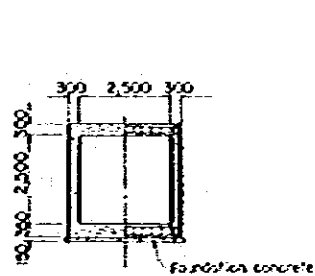
**SYPHON**



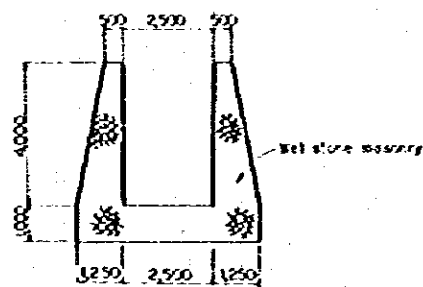
**PLAN**  
SCALE : A



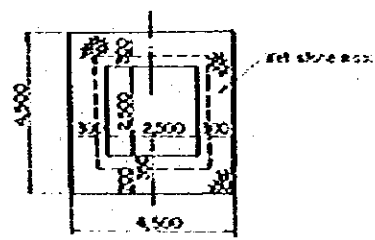
**PROFILE**  
SCALE : A



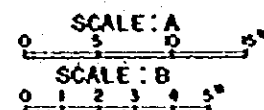
**SECTION A-A**  
SCALE : B



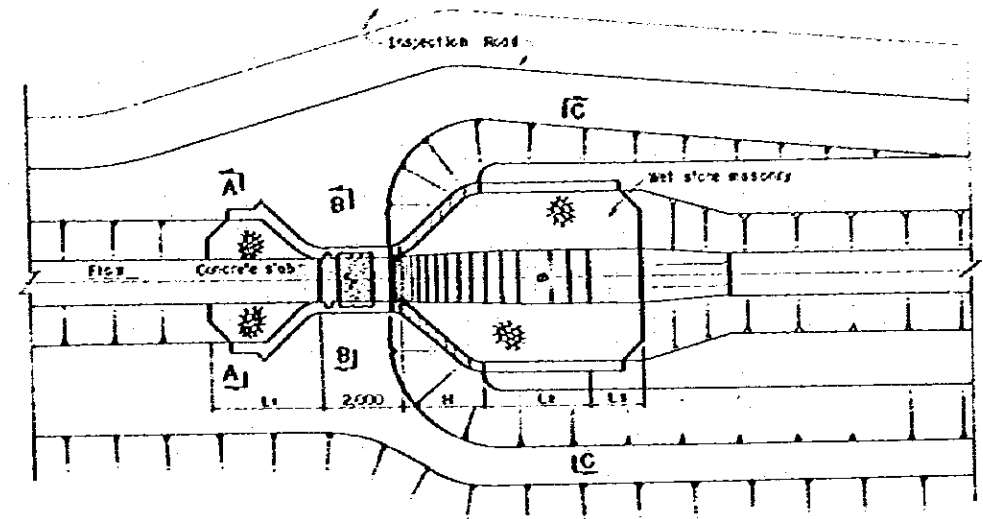
**SECTION B-B**  
SCALE : B



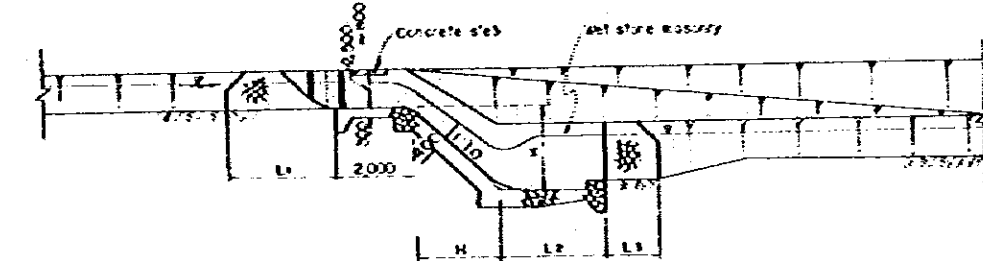
**SECTION C-C**  
SCALE : B



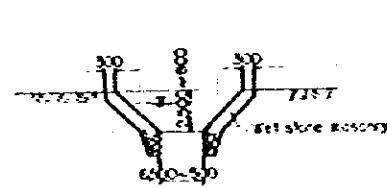
**DROP**



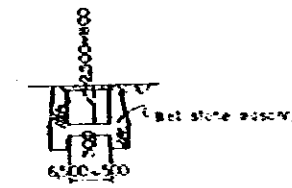
**PLAN**  
SCALE : B



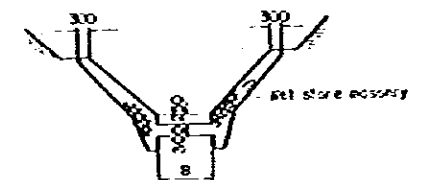
**PROFILE**  
SCALE : B



**SECTION A-A**  
SCALE : B



**SECTION B-B**  
SCALE : B



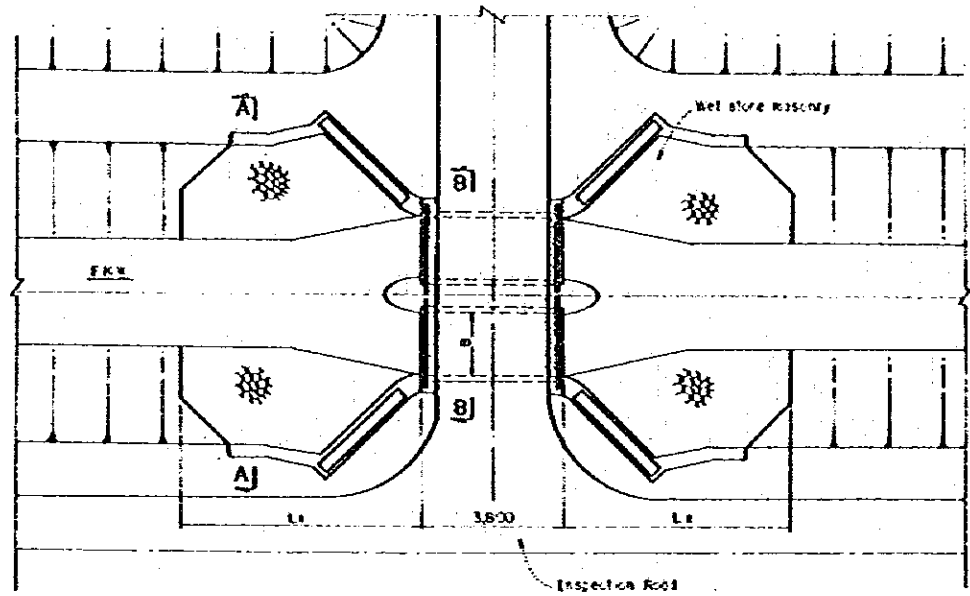
**SECTION C-C**  
SCALE : B

**DIMENSION TABLE OF DROP**

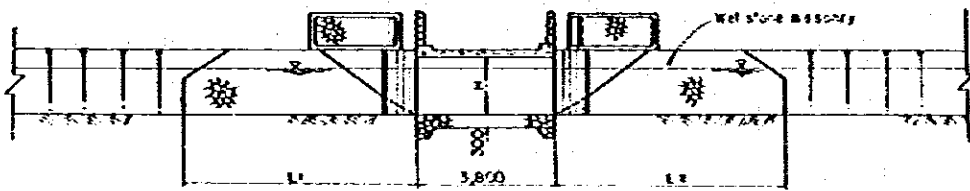
Discharge (l/s)	Flow depth (m)	L1 (cm)	L2 (cm)	L3 (cm)	H (cm)	B (cm)
800 ≤ Q < 900	2.00	8,000	3,500	6,000	3,000	7,500
150 ≤ Q < 200	1.00	4,000	2,500	3,000	2,000	2,500
100 ≤ Q < 150	1.00	4,000	2,500	3,000	2,000	2,000
750 ≤ Q < 1000	2.00	3,500	3,500	1,500	3,000	1,700
350 ≤ Q < 100	1.00	3,500	2,500	1,500	2,000	1,700
200 ≤ Q < 350	2.00	3,000	3,500	1,500	3,000	1,000
0.50 ≤ Q < 0.75	1.00	3,000	2,500	1,500	2,000	1,000
0 < Q < 0.50	2.00	3,000	3,500	1,500	3,000	500
0 < Q < 0.25	1.00	3,000	2,500	1,500	2,000	500

DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
**BILA IRRIGATION PROJECT**  
 TITLE OF DRAWING  
**TYPICAL DRAWING OF SYPHON AND DROP**  
 JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO  
 Dwg No. 500-02

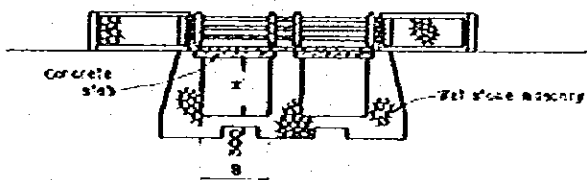
**CULVERT**



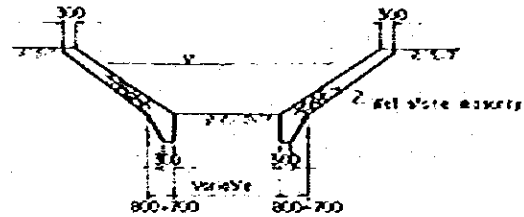
**PLAN**



**PROFILE**



**SECTION B-B**

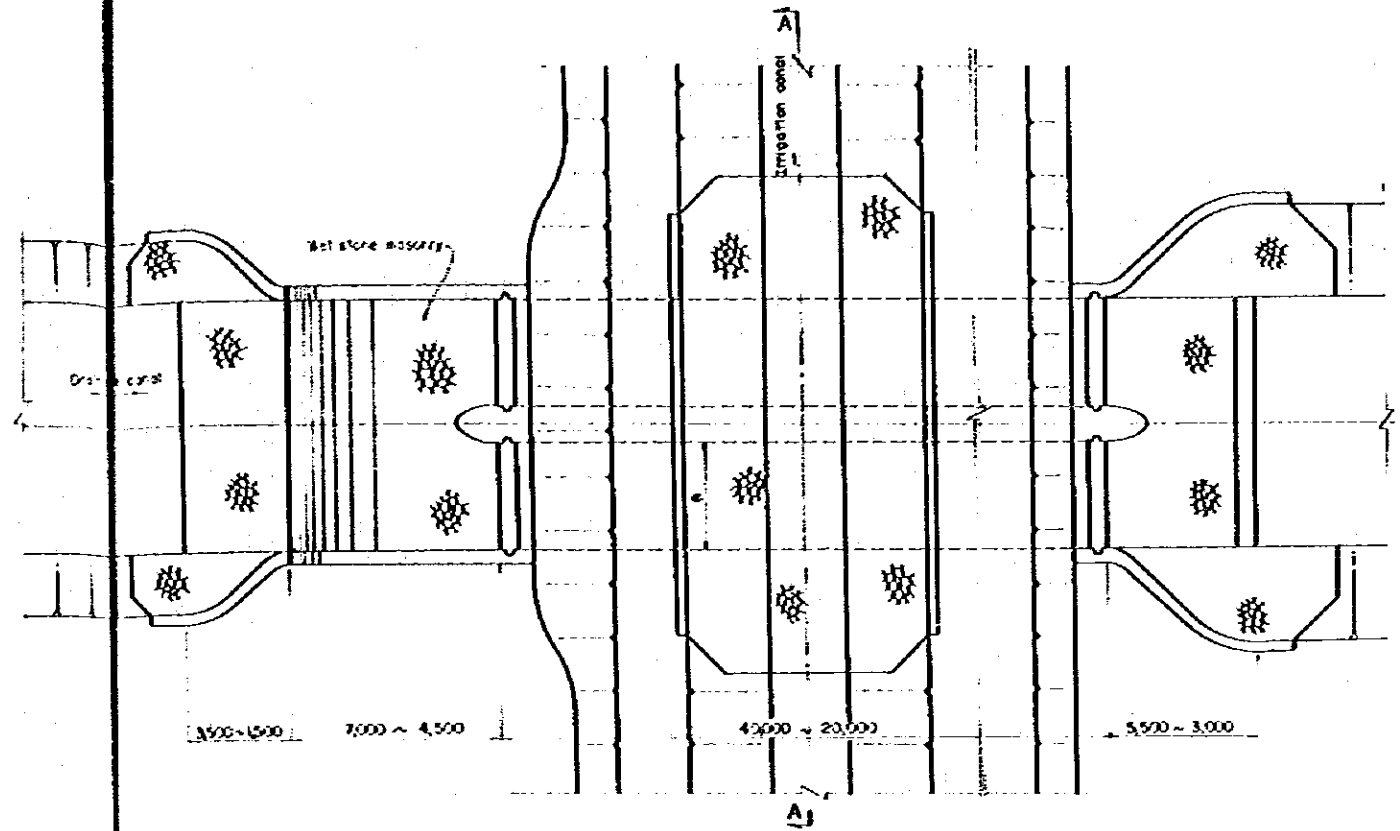


**SECTION A-A**

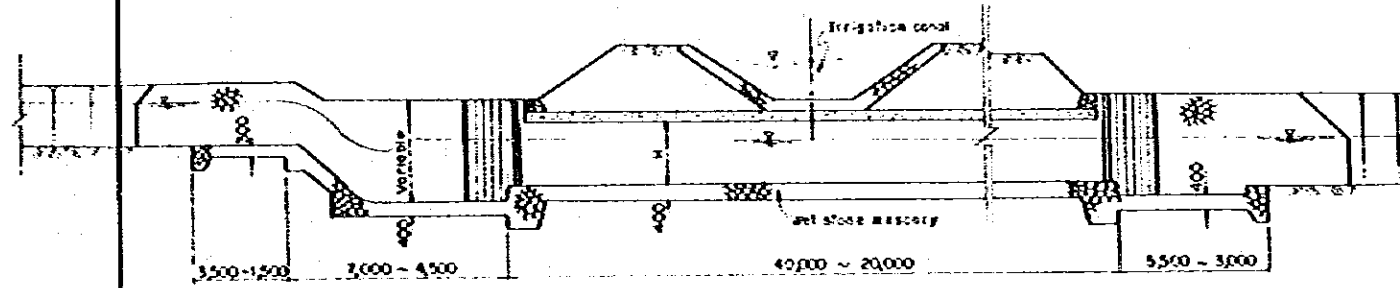
**DIMENSION TABLE OF CULVERT**

Discharge Q <sub>10</sub> (m <sup>3</sup> /sec)	L <sub>1</sub> (m)	L <sub>2</sub> (m)	H (m)	B (m)	Barrel
200 ≤ Q <sub>10</sub> < 300	6,500	6,500	2,000	2,000	Double
100 ≤ Q <sub>10</sub> < 200	5,500	5,500	1,500	1,500	Double
050 ≤ Q <sub>10</sub> < 100	4,000	4,000	1,500	2,000	Single
Q <sub>10</sub> < 050	3,500	3,500	1,200	1,200	Single

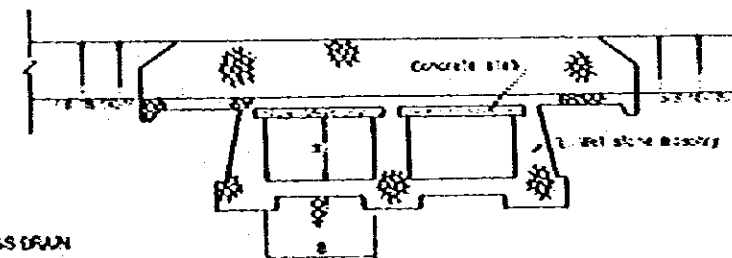
**CROSS DRAIN**



**PLAN**



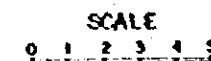
**PROFILE**



**SECTION A-A**

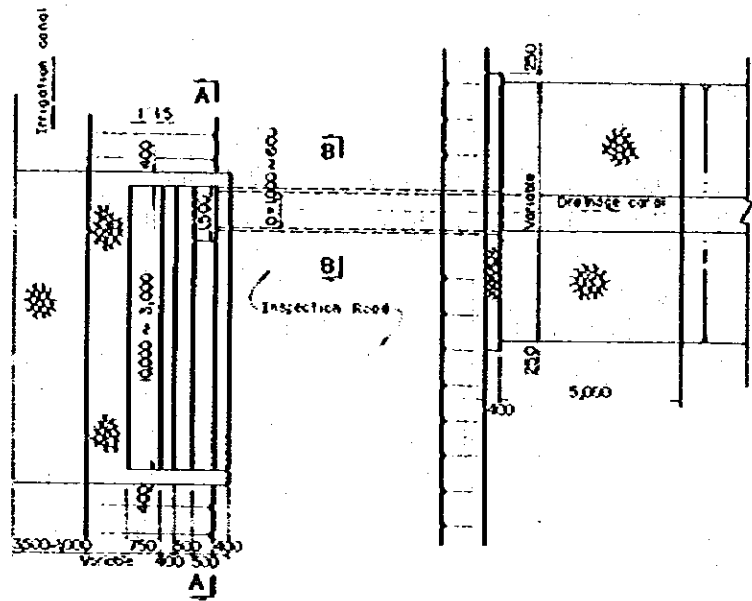
**DIMENSION TABLE OF CROSS DRAIN**

Discharge Q <sub>10</sub> (m <sup>3</sup> /sec)	B (m)	H (m)	Barrel
Q <sub>10</sub> < 050	3,000	2,500	Double
050 ≤ Q <sub>10</sub> < 100	3,000	2,000	Single
100 ≤ Q <sub>10</sub> < 200	2,000	2,000	•
200 ≤ Q <sub>10</sub> < 300	1,500	2,000	•
300 ≤ Q <sub>10</sub> < 400	1,000	1,500	•
Q <sub>10</sub> < 150	800	1,500	•

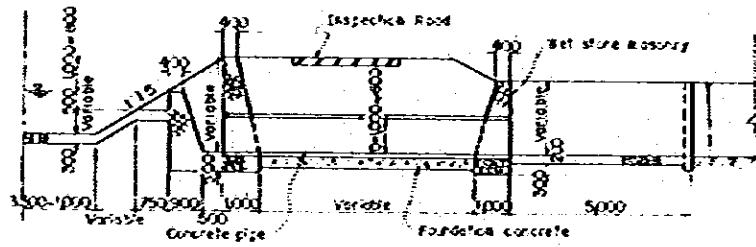


INSPECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT  
**BILA IRRIGATION PROJECT**  
 TITLE OF OFFICE  
**TYPICAL DRAWING OF CULVERT AND CROSS DRAIN**  
 JAPAN INTERNATIONAL COOPERATION AGENCY DES. NO. 500-05  
 TOKYO

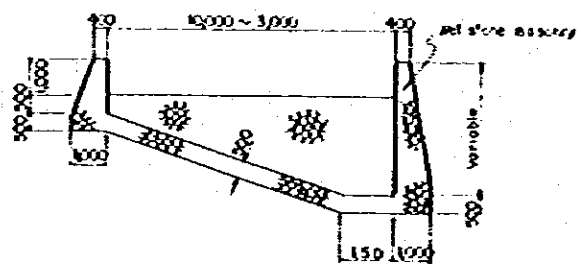
TYPE - A



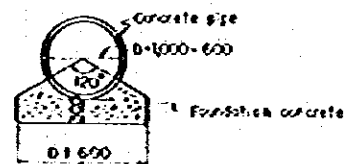
PLAN  
SCALE : A



PROFILE  
SCALE : A

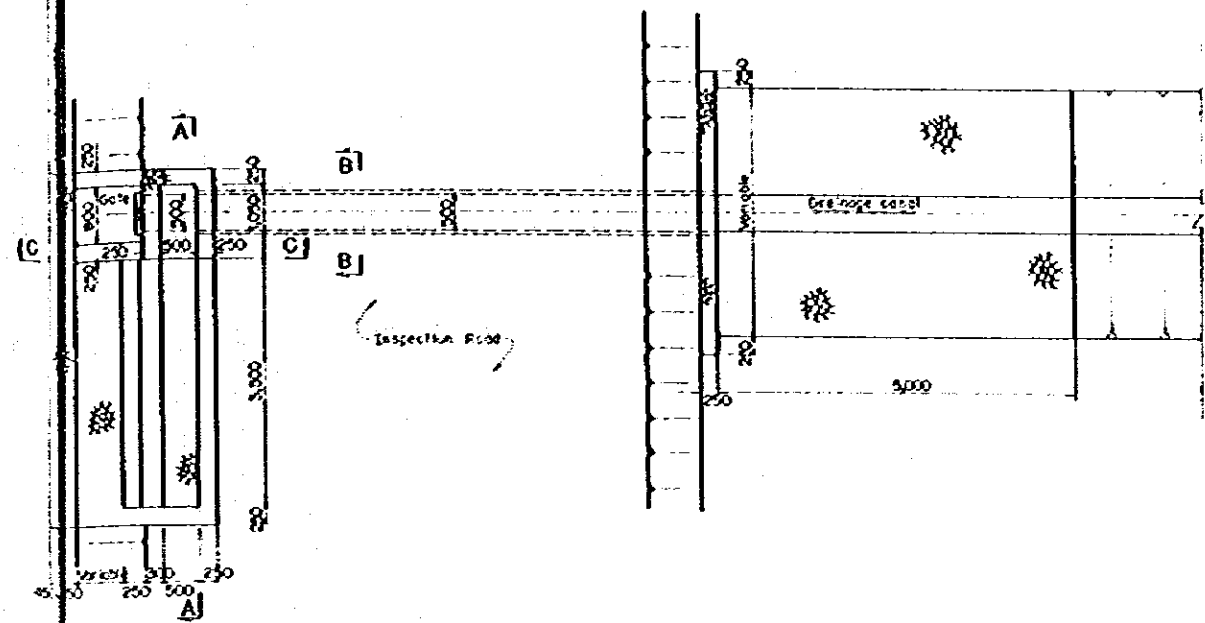


SECTION A-A  
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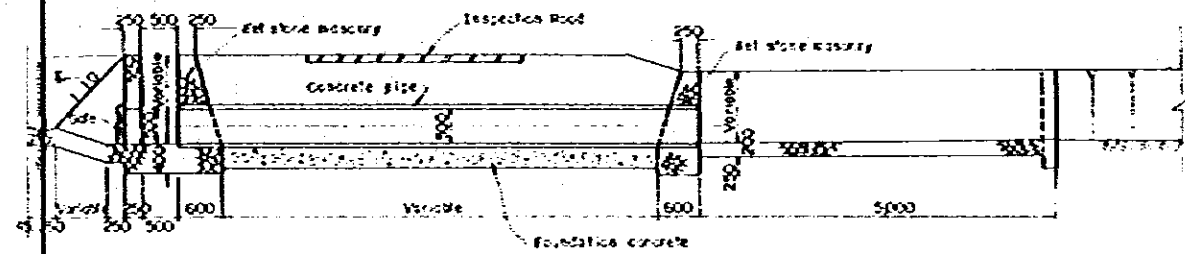


SECTION B-B  
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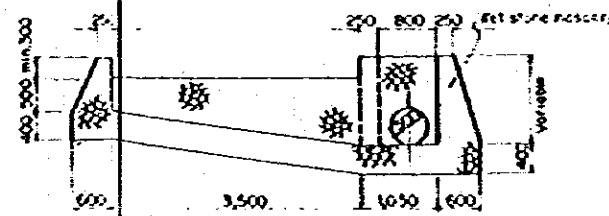
TYPE - B



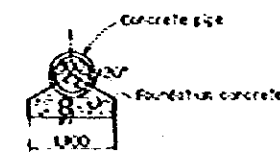
PLAN  
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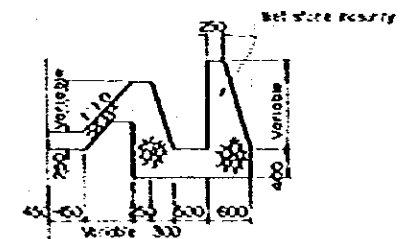
PROFILE  
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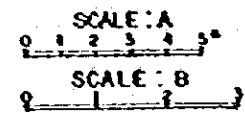
SECTION A-A  
SCALE : B



SECTION B-B  
SCALE : B



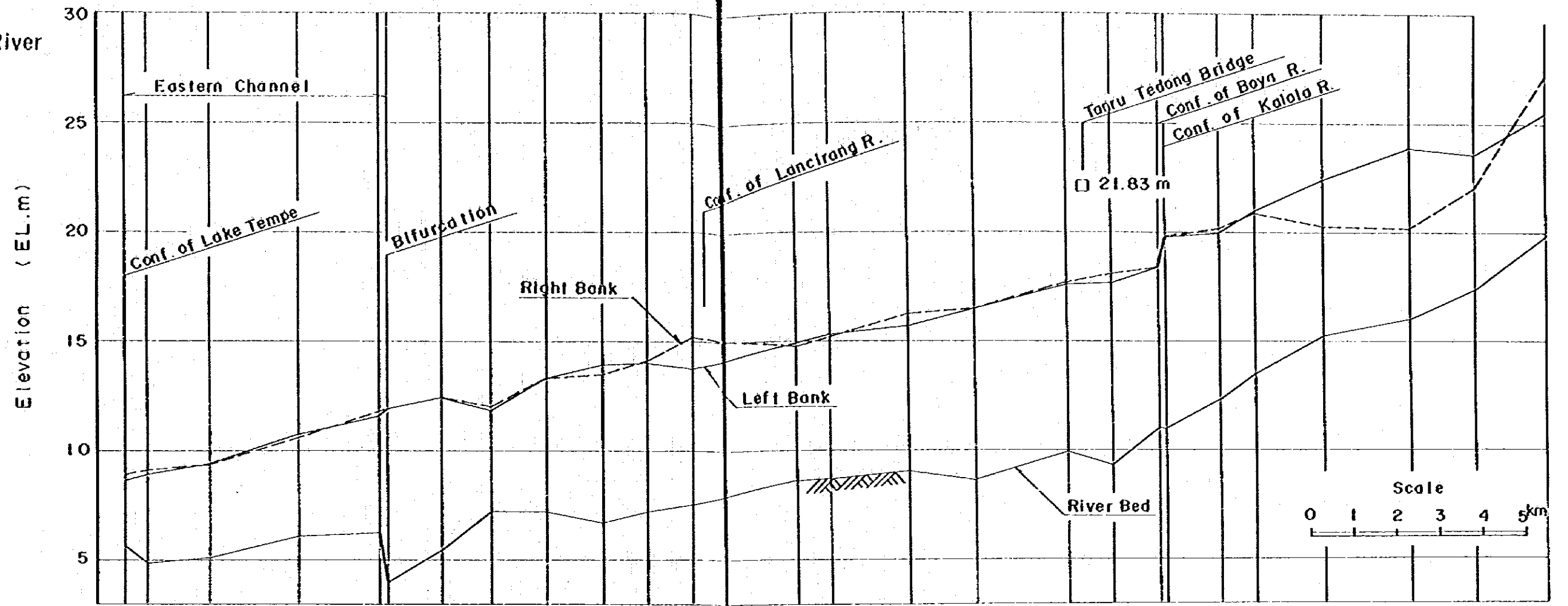
SECTION C-C  
SCALE : B



DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
TYPICAL DRAWING OF SPILLWAY	
JAPAN INTERNATIONAL COOPERATION AGENCY	DES. NO.
TOKYO	500-04



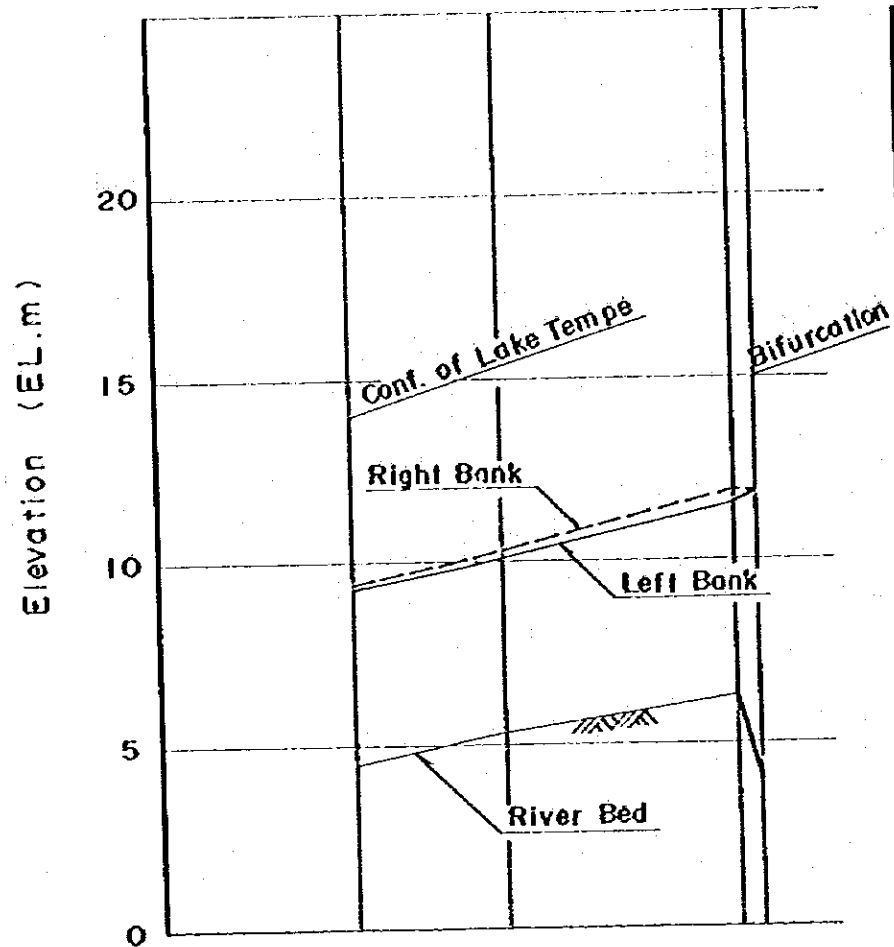
Bilo River



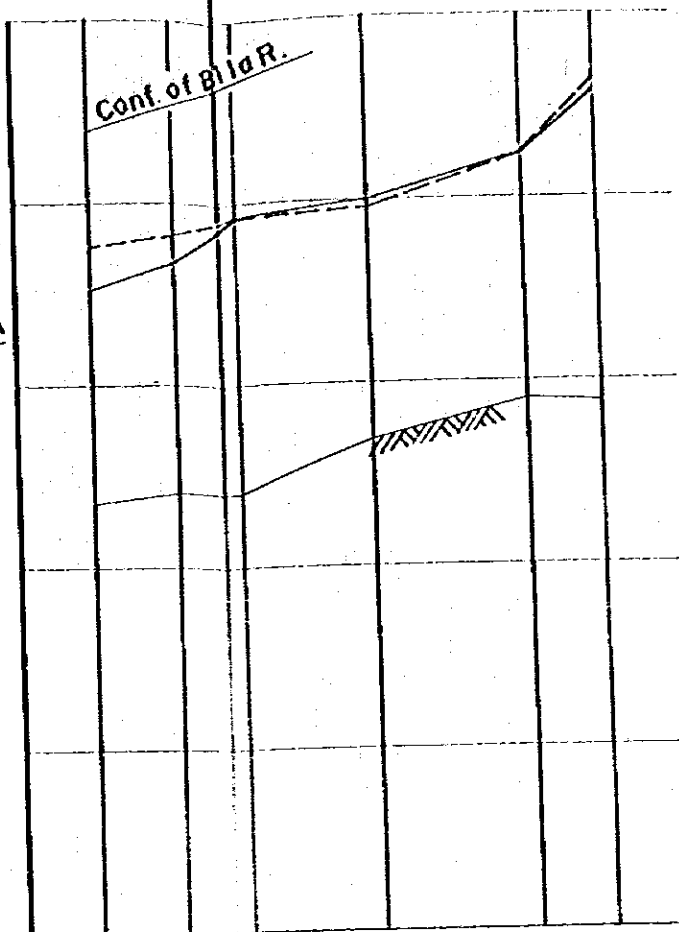
Section NO.	Distance (m)		Lowest River Bed (EL.m)	El. of Bank	
	Between Two Sections	Accumulative		Left (EL.m)	Right (EL.m)
BL-6.0	500	5,900	5.61	8.9	8.9
BL-5.7	1,400	5,400	4.86	8.9	9.1
BL-4.0	2,000	4,000	5.06	9.4	9.4
BL-2.0	1,800	2,000	6.07	10.7	10.6
BL-0.2	200	200	6.27	11.6	11.7
BI 0.0	0	0	3.98	11.9	11.9
BI 1.2	1,200	1,200	5.40	12.4	12.4
BI 2.3	1,100	2,300	7.25	11.8	11.9
BI 3.6	1,250	3,550	7.20	13.3	13.3
BI 4.8	1,250	4,800	6.74	13.9	13.5
BI 5.8	1,000	5,800	7.26	14.0	14.1
BI 6.8	1,000	6,800	7.54	13.8	15.2
BI 9.4	2,550	9,350	8.60	14.9	14.8
BI 10.1	750	10,100	8.71	15.3	15.2
BI 11.7	1,750	11,850	9.06	15.7	16.2
BI 13.4	1,500	13,350	8.66	16.5	16.5
BI 15.4	2,100	15,450	9.98	17.6	17.7
BI 16.4	1,000	16,450	9.35	17.7	18.1
BI 17.6	1,100	17,550	11.07	18.4	18.4
BI 17.7	150	17,700	11.02	19.8	19.8
BI 19.0	1,250	18,950	12.37	20.0	20.2
BI 20.0	800	19,750	13.53	21.0	20.9
BI 21.4	1,600	21,350	15.29	22.4	20.3
BI 23.4	2,000	23,350	16.05	23.9	20.2
BI 24.4	1,500	24,850	17.41	23.6	22.0
BI 26.5	1,650	26,500	19.93	25.5	27.2



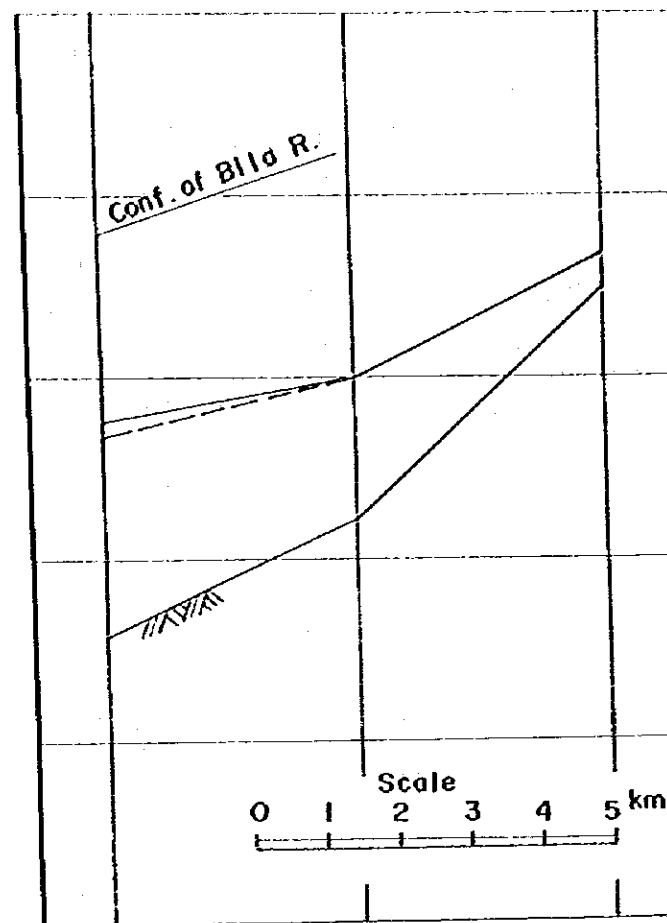
Bila River (Western Channel)



Boya River



Lancirang River

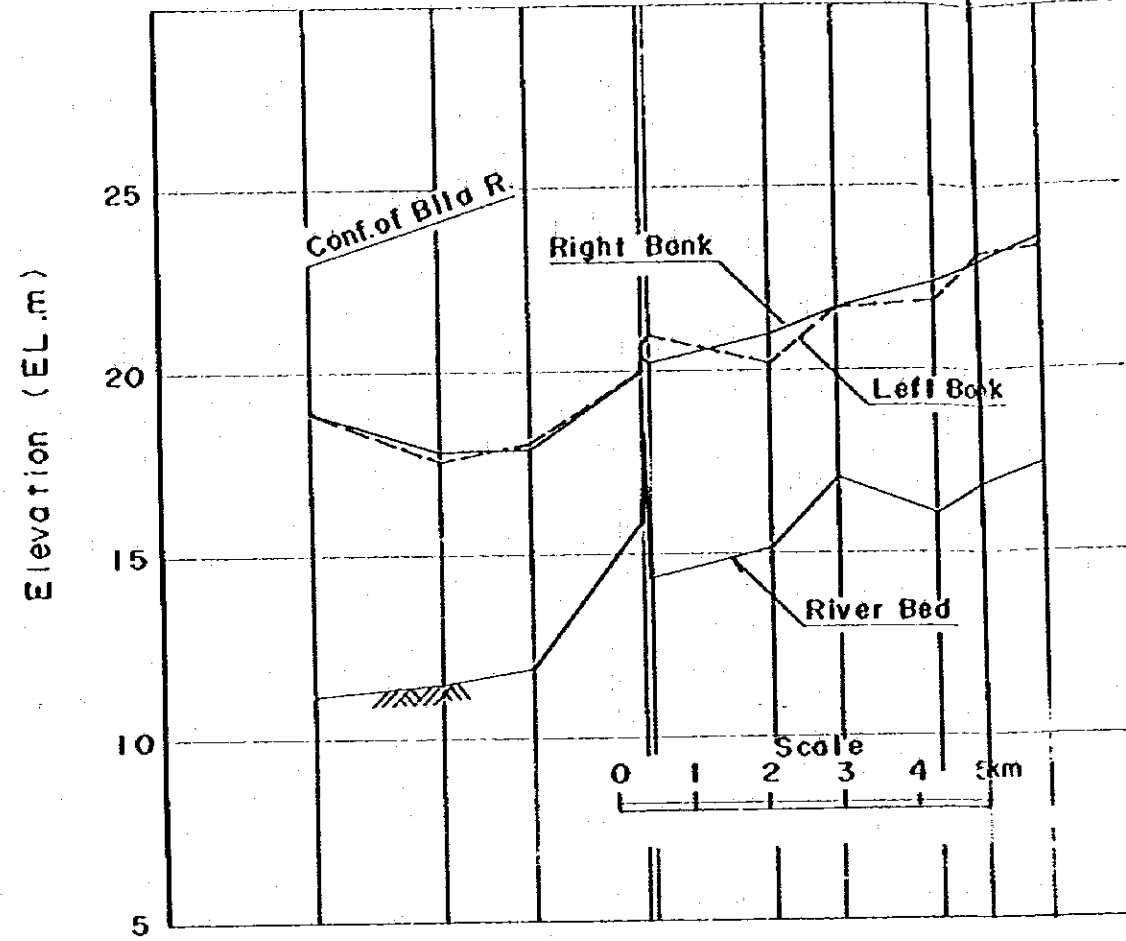


Section NO.	Distance (m)	Ei. of Bank		Lowest River Bed (El.m)
		Right (El.m)	Left (El.m)	
BR-54	Between Two Sections	2,000	2,000	4.48
	Accumulative	-5,400	-5,400	4.48
BR-34	Between Two Sections	3,100	3,100	5.35
	Accumulative	-3,400	-3,400	5.35
BR-03 B: 00	Between Two Sections	300	300	6.34 3.98
	Accumulative	0	0	6.34 3.98

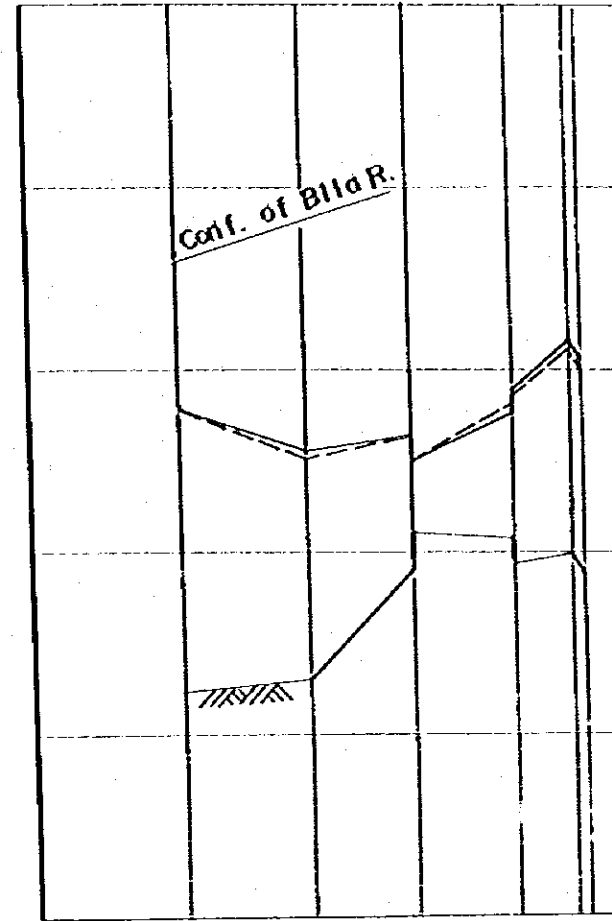
80 00	0	11.77	17.6	18.6
80 11	1,100	12.02	18.4	19.1
80 21	2,100	12.02	19.6	19.6
80 39	3,900	13.43	20.0	19.8
80 60	6,000	14.49	21.2	21.2
80 70	7,000	14.44	22.9	23.2

LA 00	0	7.90	13.8	13.4
LA 35	3,500	11.10	15.0	15.0
LA 70	7,000	17.50	18.4	18.4

Kalolo River (Northern Channel)

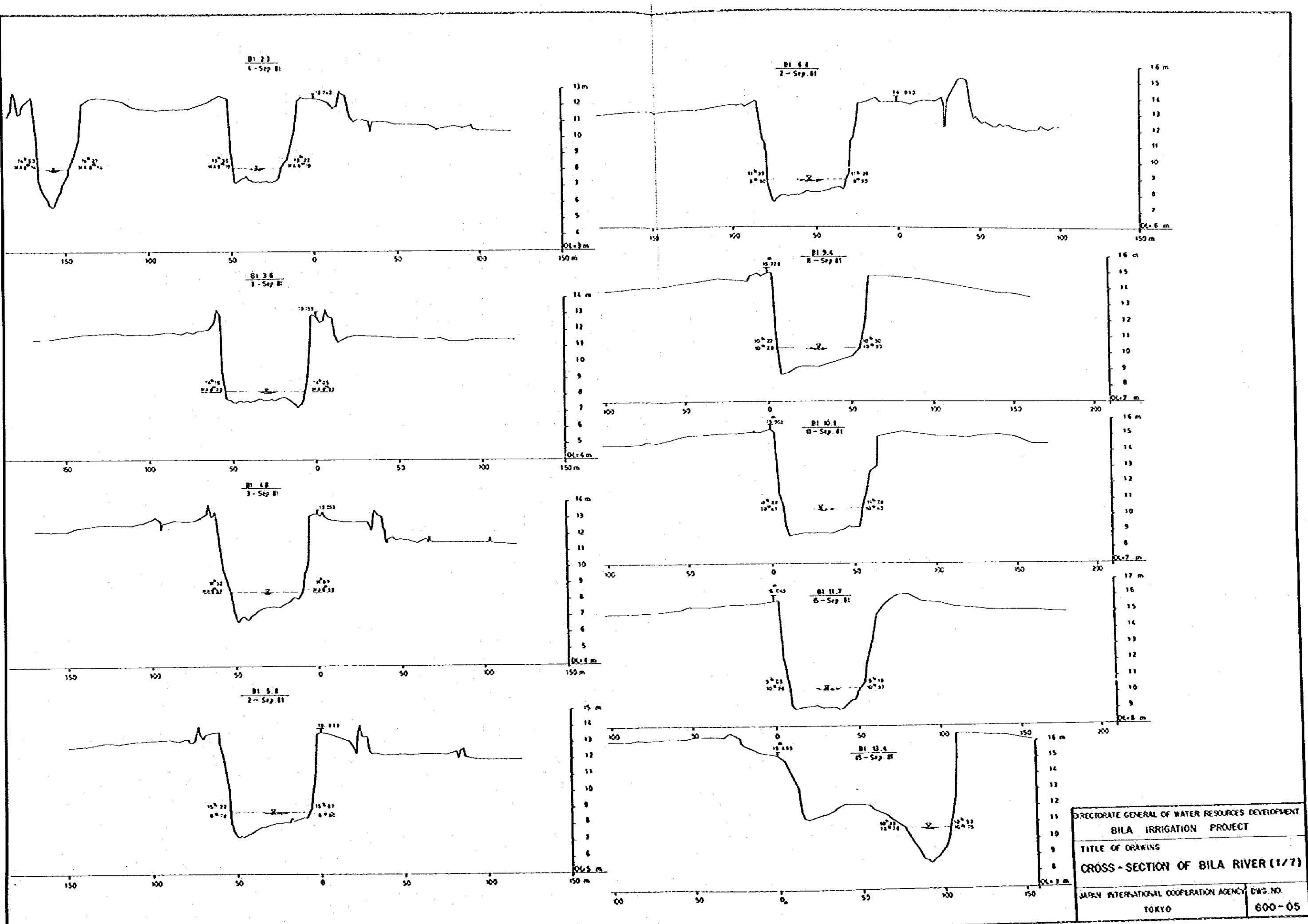


Kalolo River (Southern Channel)

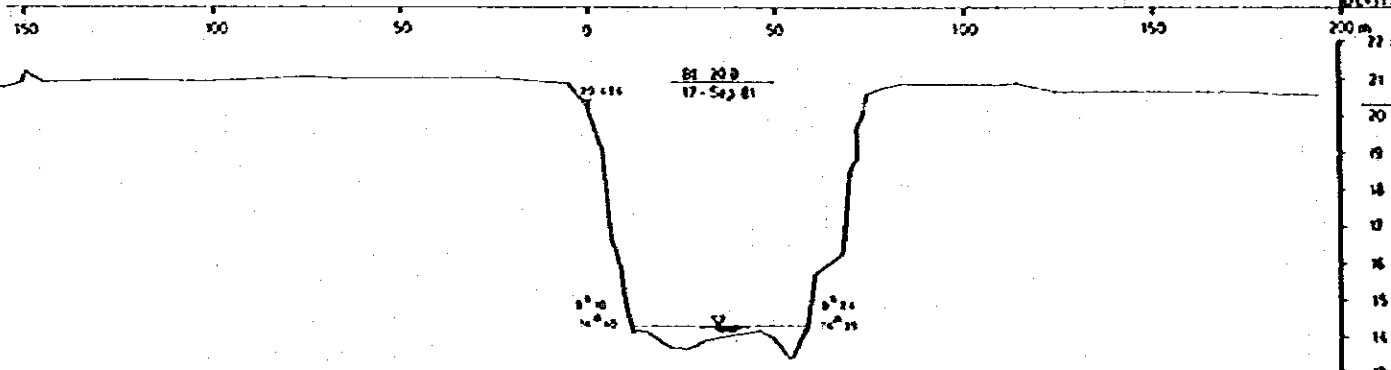
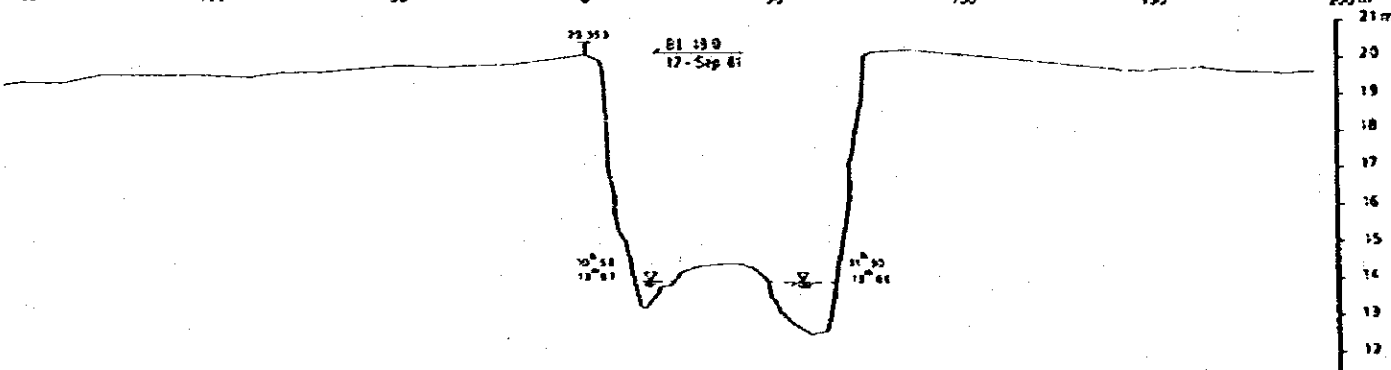
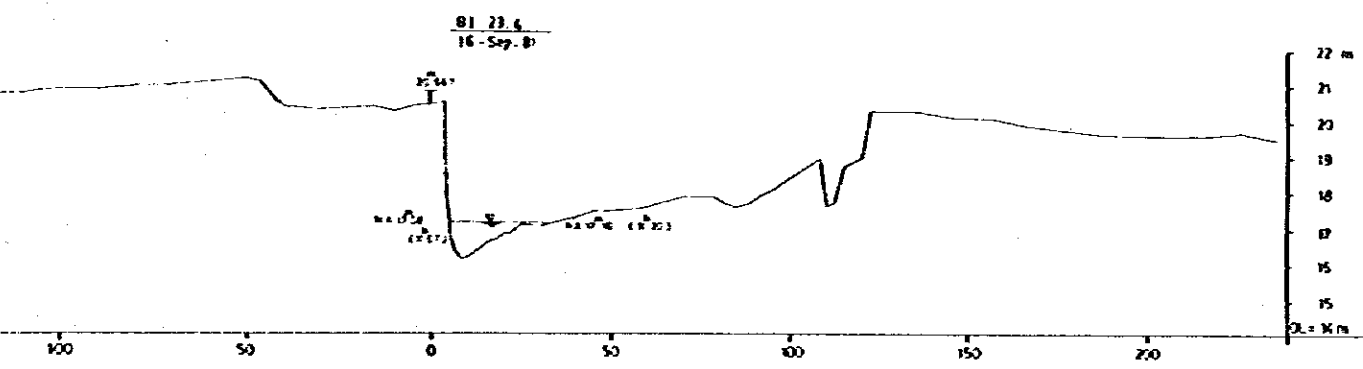
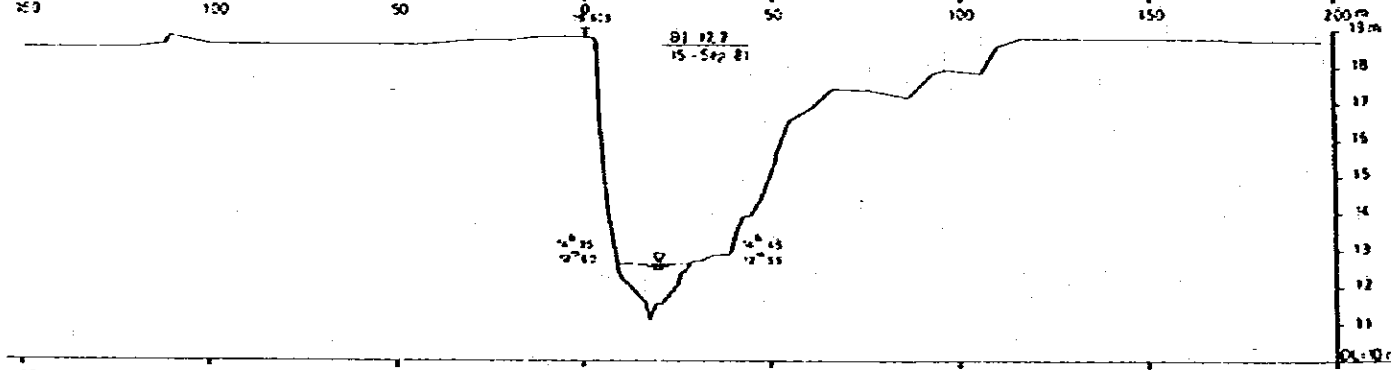
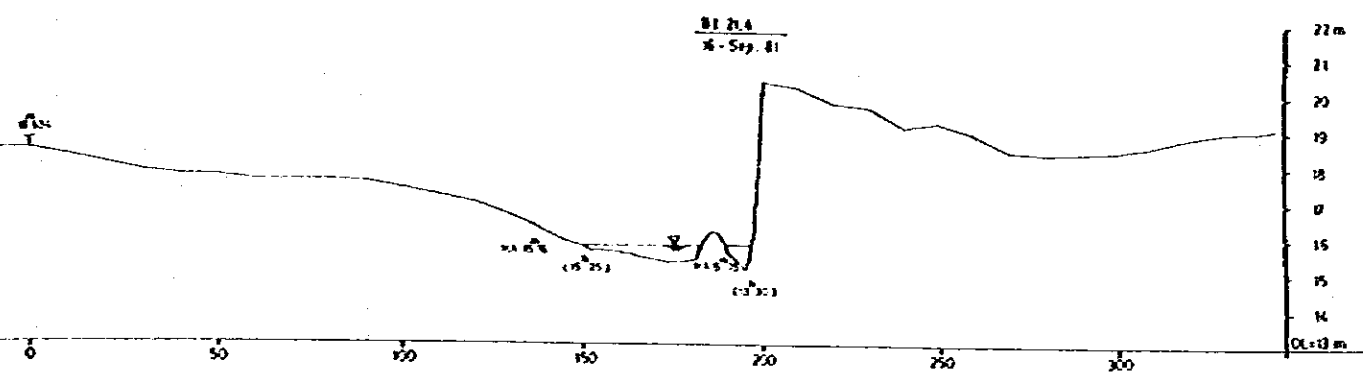
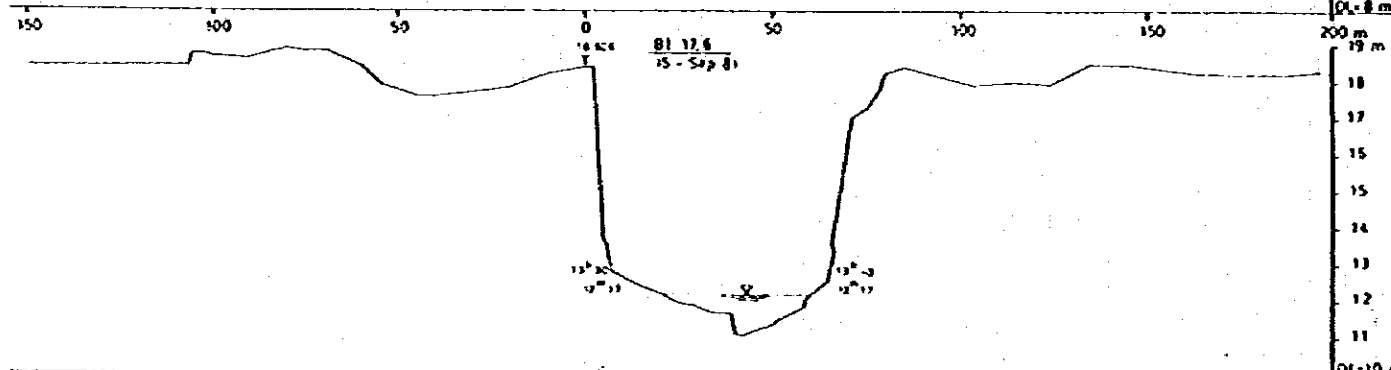
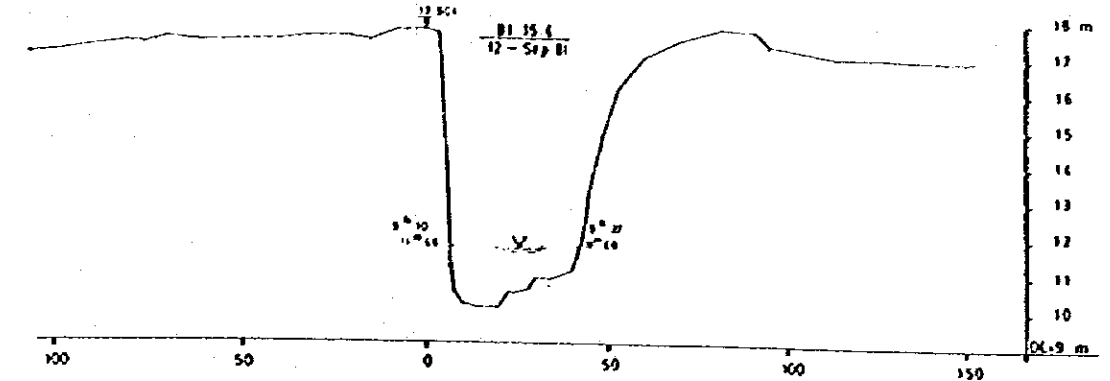
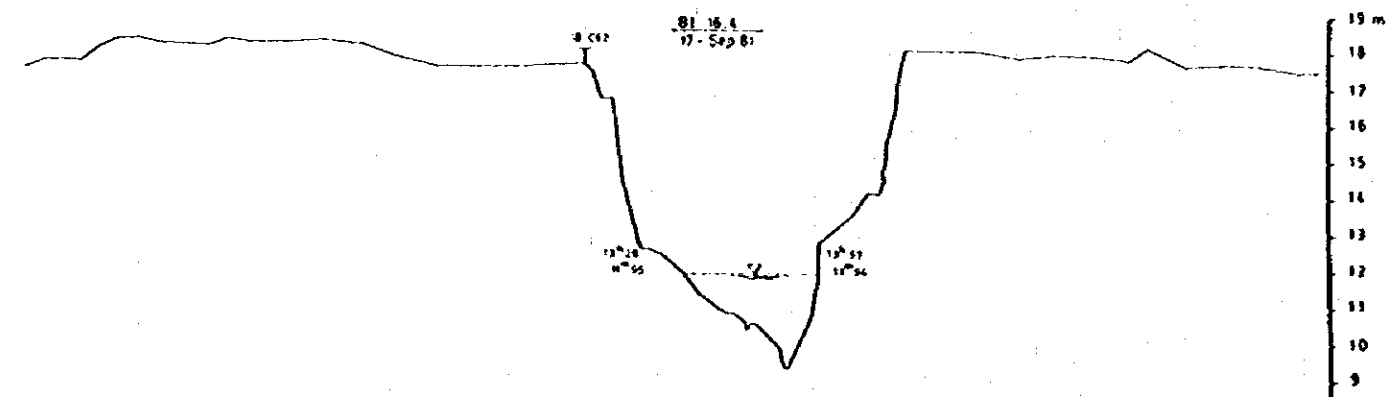


Section No.	Distance (m)		Lowest River Bed (Elm)	El. of Bank	
	Between Two Sections	Accunulative		Left (Elm)	Right (El.m)
KA 0.0	0	0	11.19	18.9	18.9
KA 1.7	1,700	1,700	11.46	17.6	17.6
KA 2.9	1,200	2,900	11.84	18.0	18.0
KA 4.40	1,500	4,400	15.86	20.0	20.0
KA 4.41	2	4,402	18.37	20.4	20.7
KA 4.50	98	4,500	14.37	20.2	21.0
KA 6.1	1,600	6,100	15.14	21.0	20.2
KA 7.0	900	7,000	17.07	21.7	21.7
KA 8.3	1,300	8,300	16.04	22.4	21.9
KA 9.0	700	9,000	16.86	23.0	23.2
KA 9.9	900	9,900	17.41	23.6	23.4

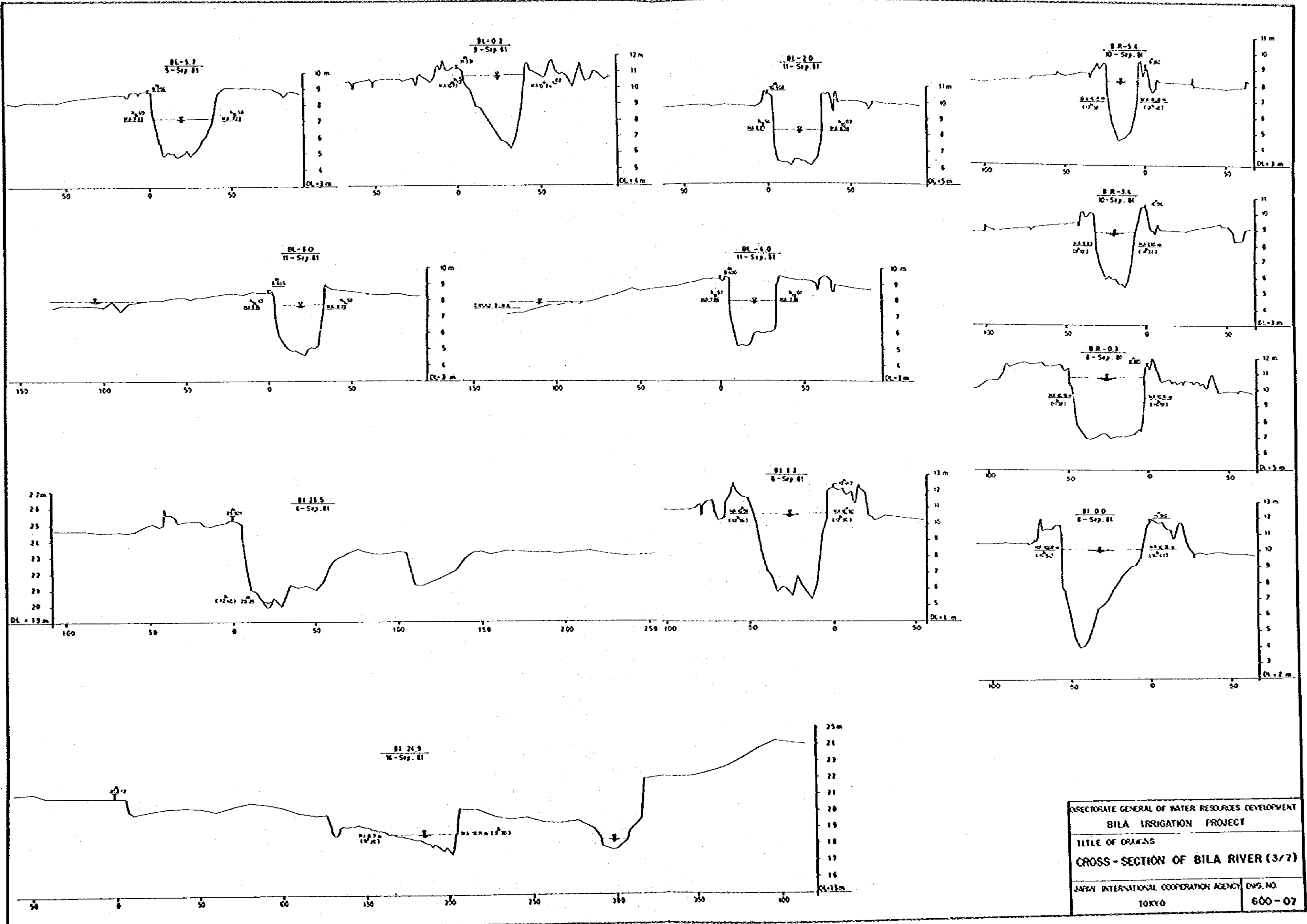
KA 0.0	0	0	11.19	18.9	18.9
KA 1.7	1,700	1,700	11.46	17.6	17.6
KAL 3.10	1,400	3,100	14.50	18.2	18.2
KAL 3.11	2	3,102	15.53	17.5	17.5
KAL 4.50	1,398	4,500	15.40	18.6	19.1
KAL 4.51	10	4,510	14.68	19.4	19.3
KAL 5.3	795	5,300	14.98	20.8	20.6
KA 4.5	150	5,450	14.37	20.2	21.0



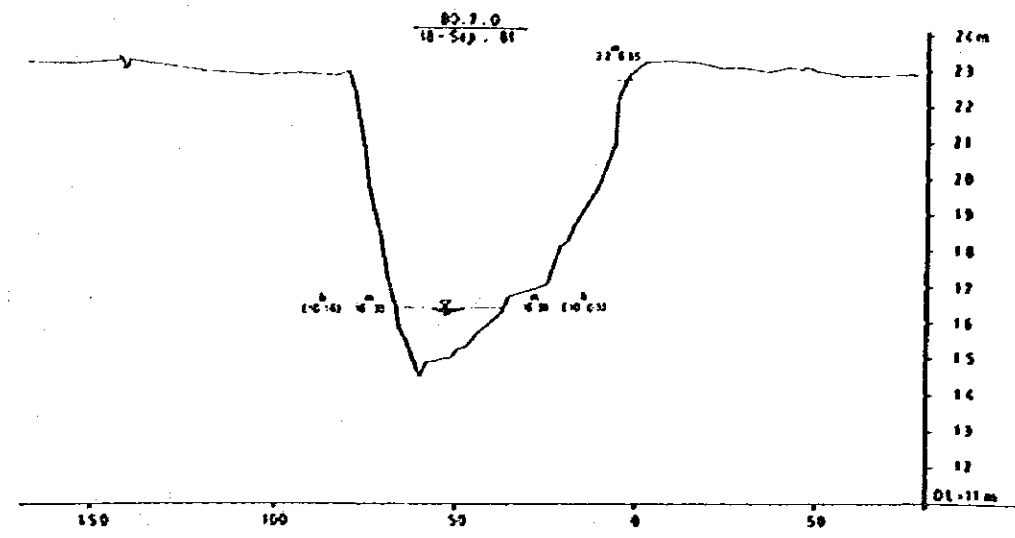
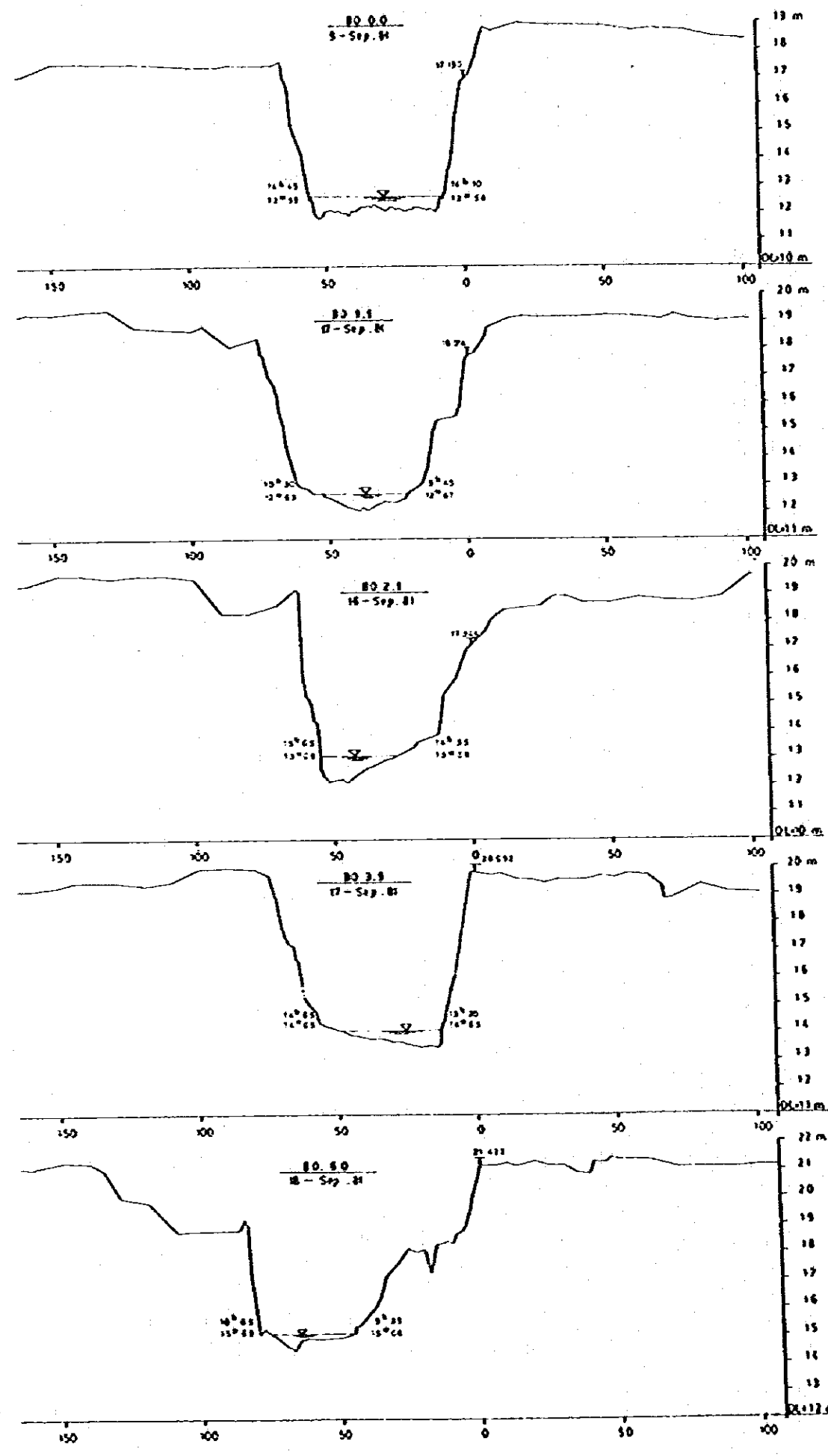
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (1/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWG. NO.
TOKYO	600-05



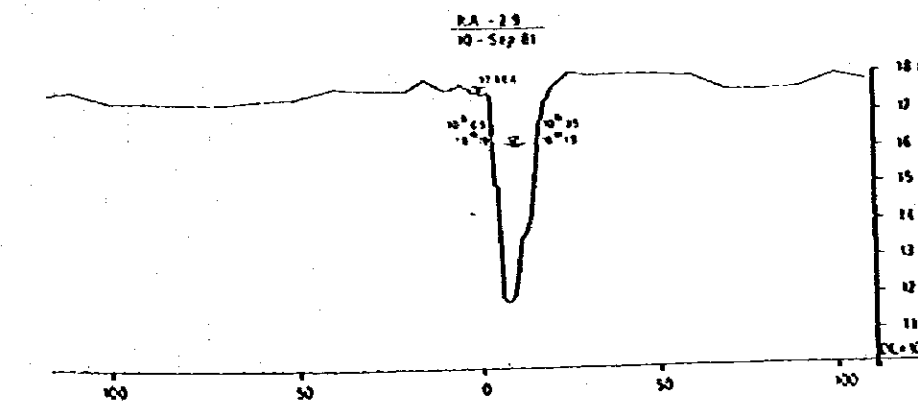
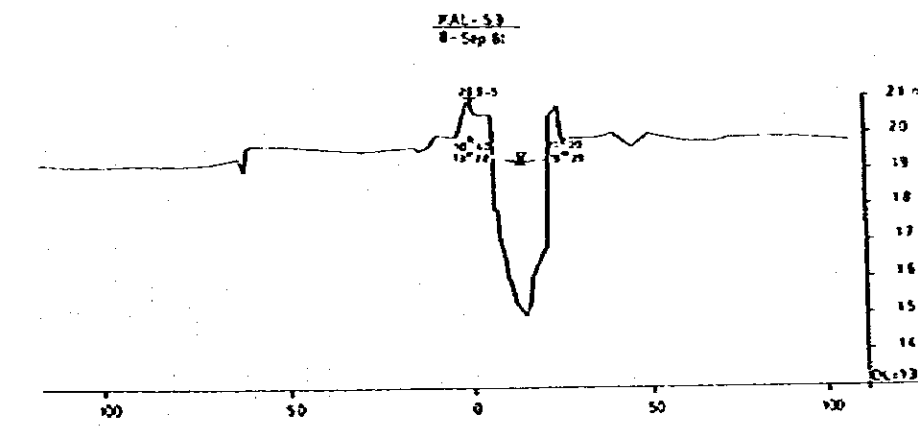
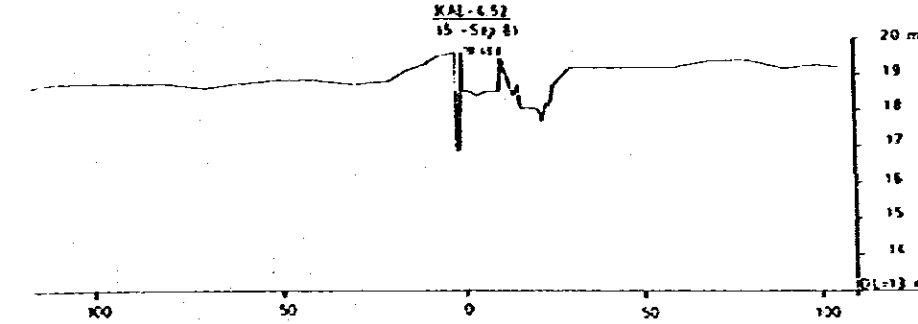
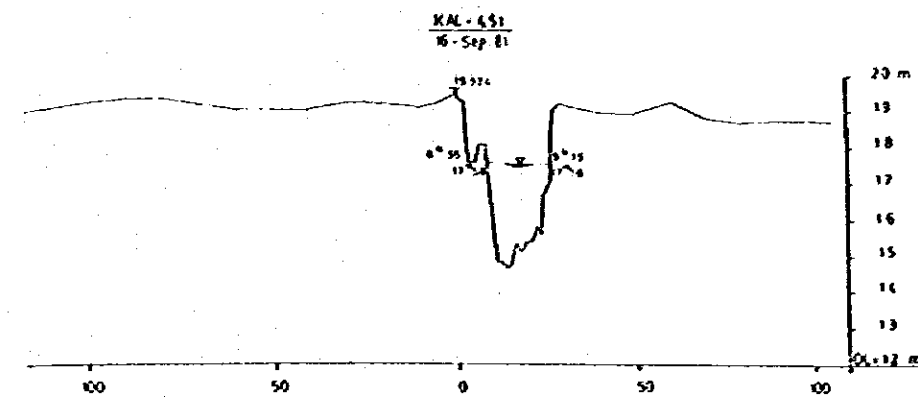
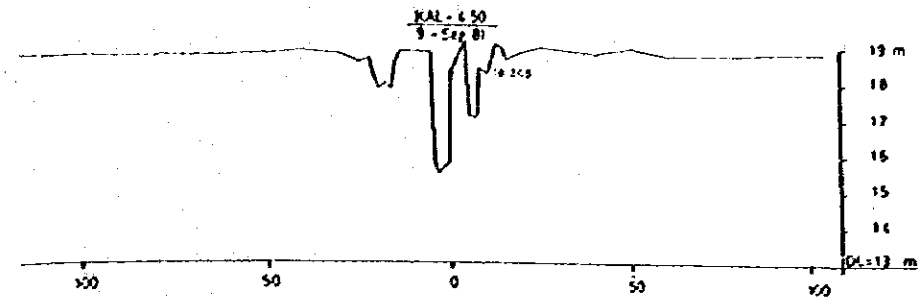
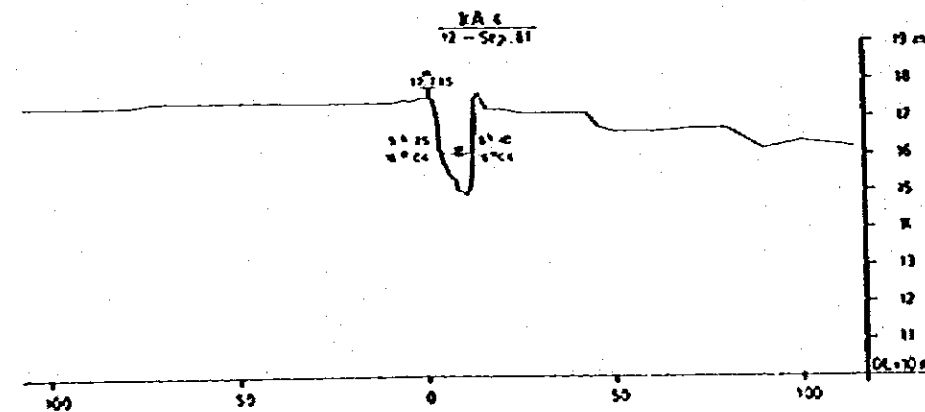
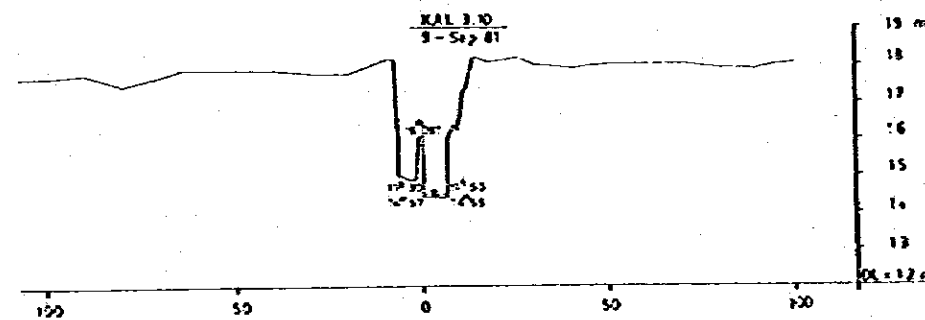
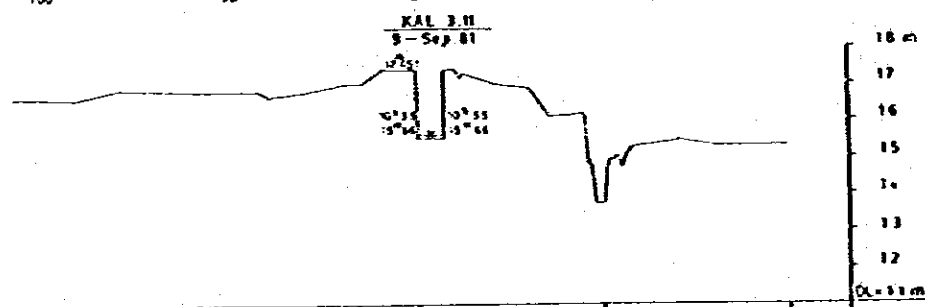
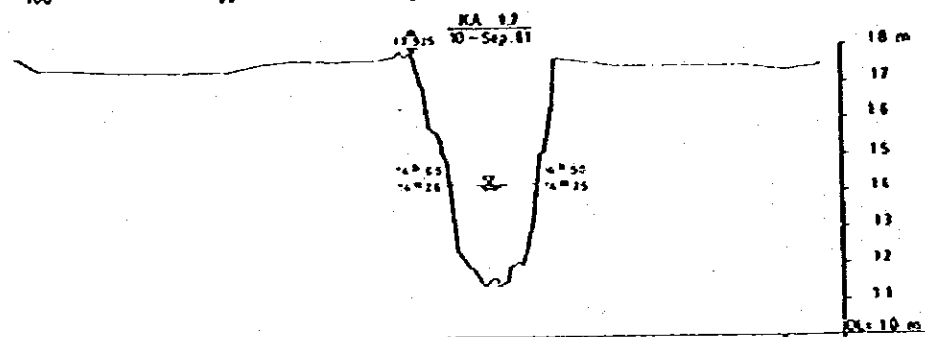
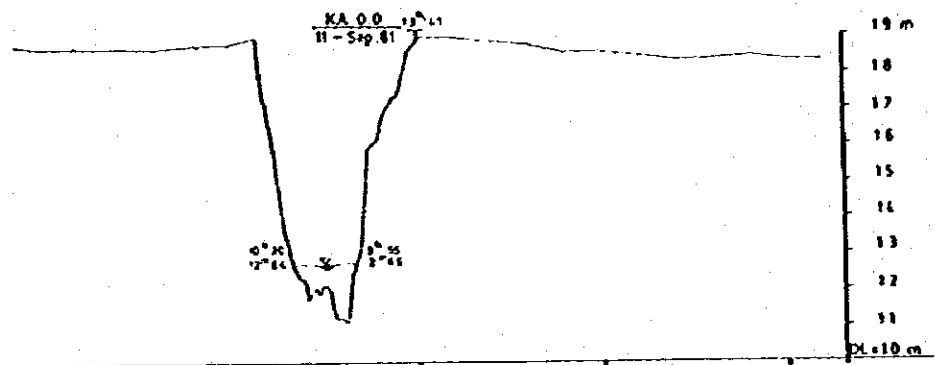
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (2/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWG. NO.
TOKYO	600-06



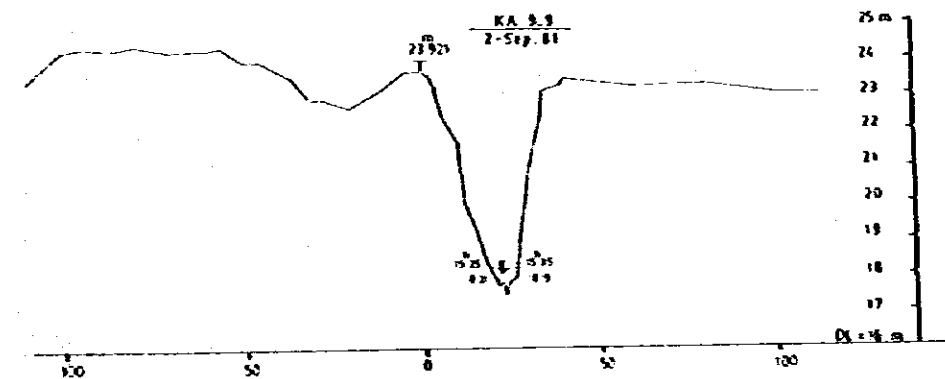
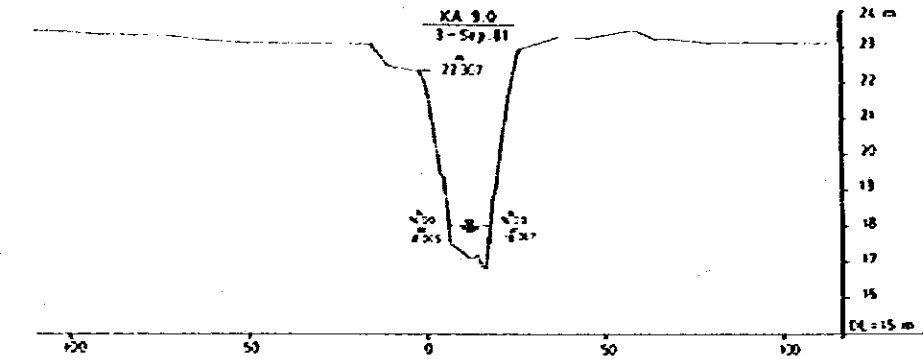
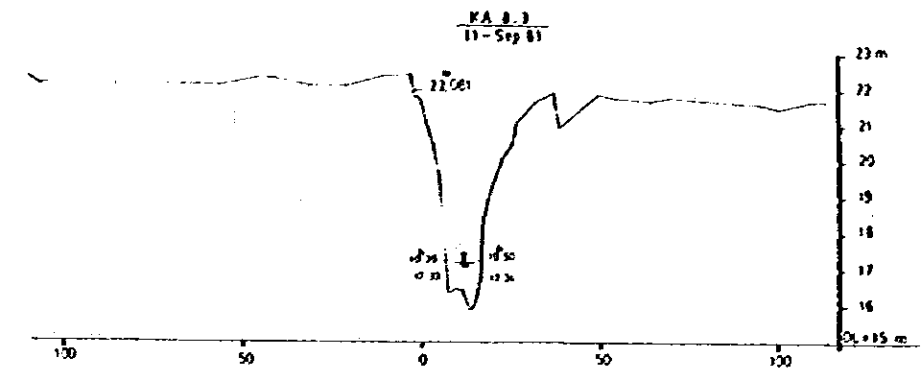
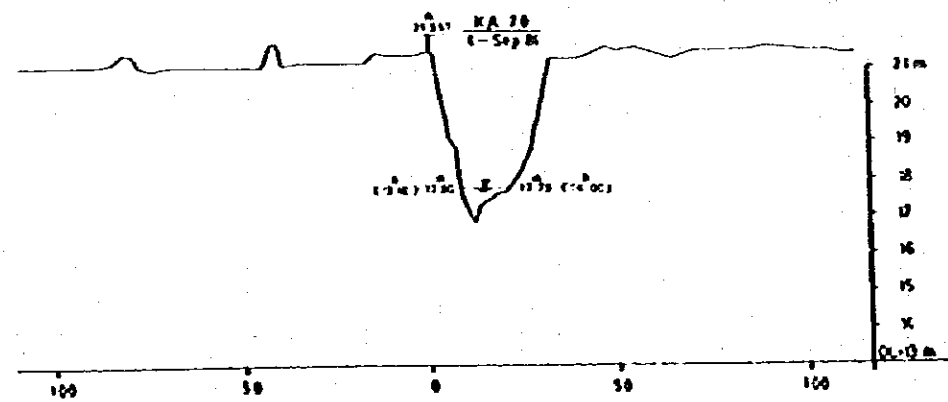
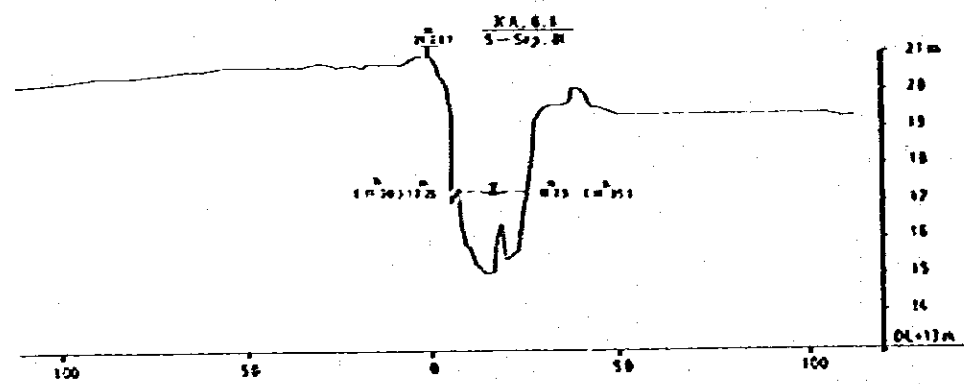
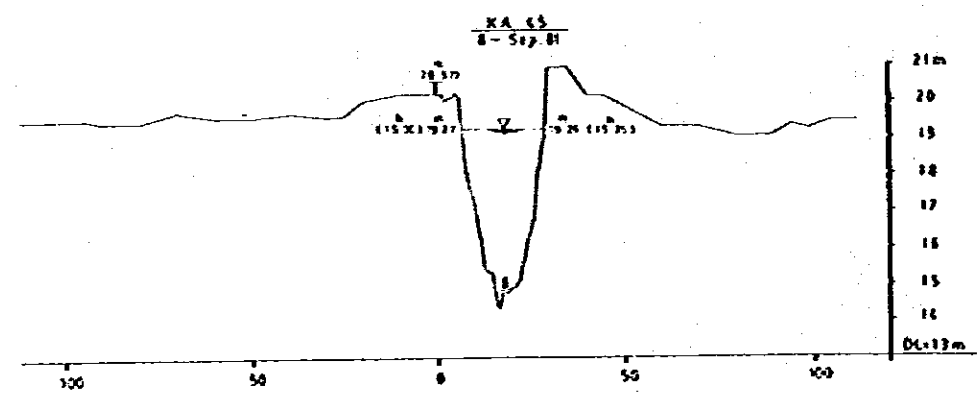
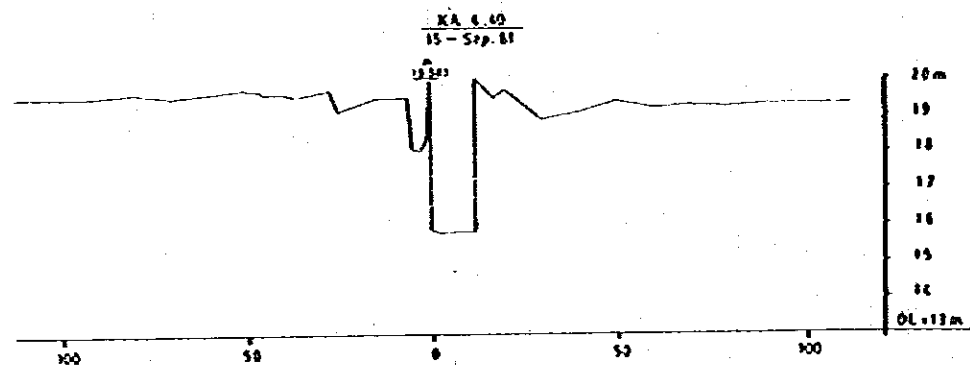
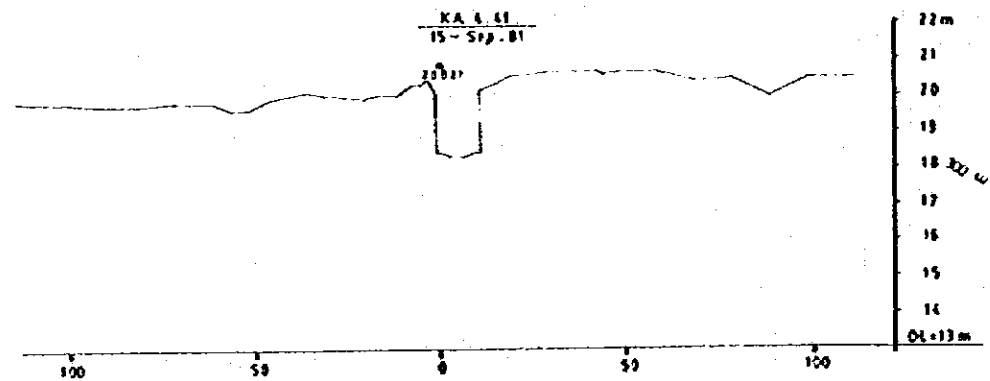
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (3/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	ENG. NO.
TOKYO	600-07



DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (4-7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWG. NO.
TOKYO	800-08

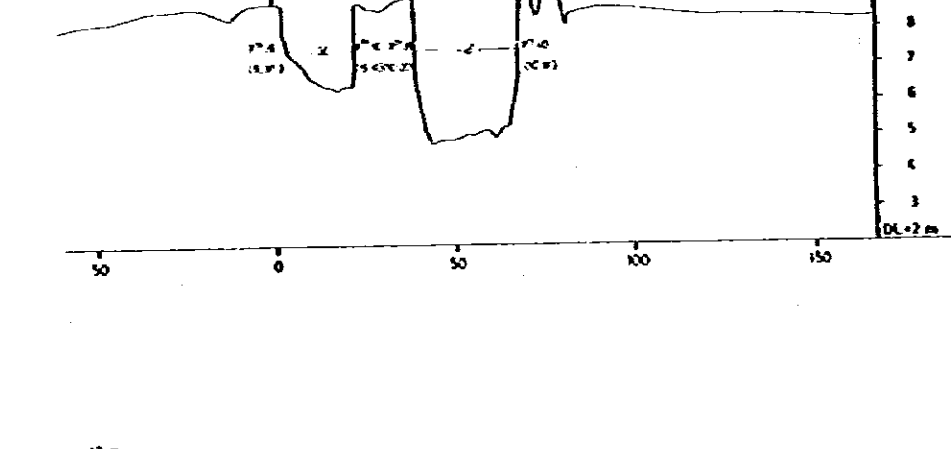
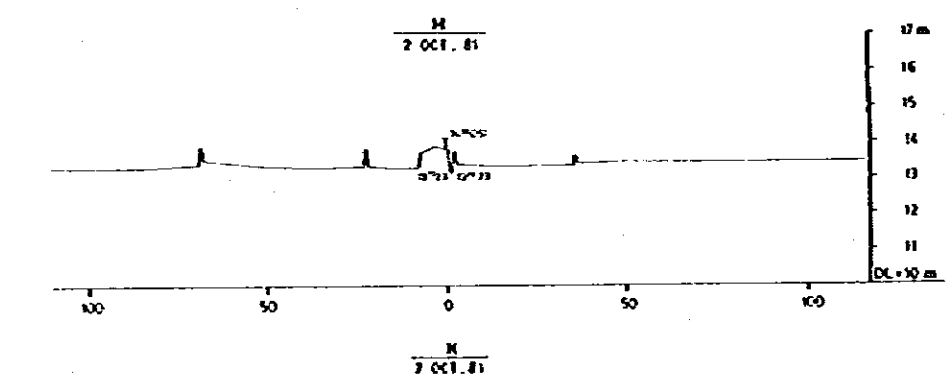
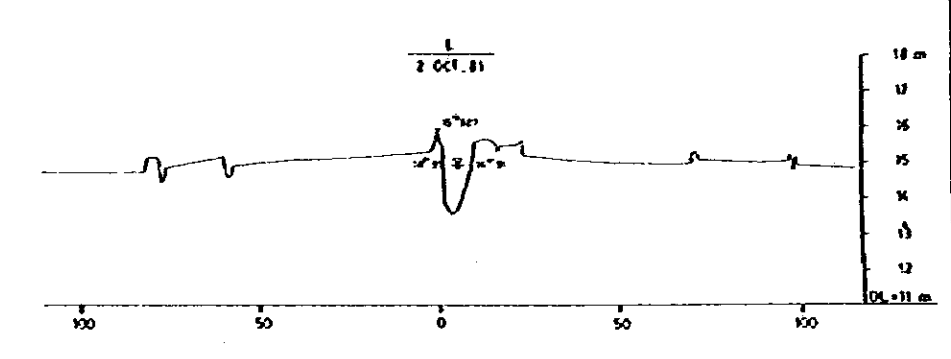
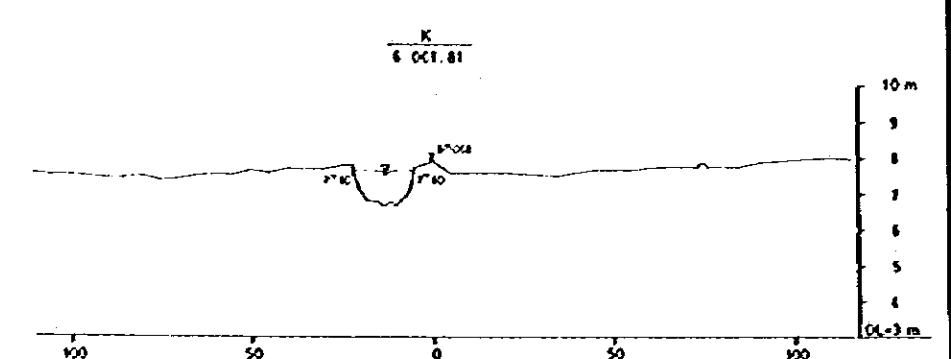
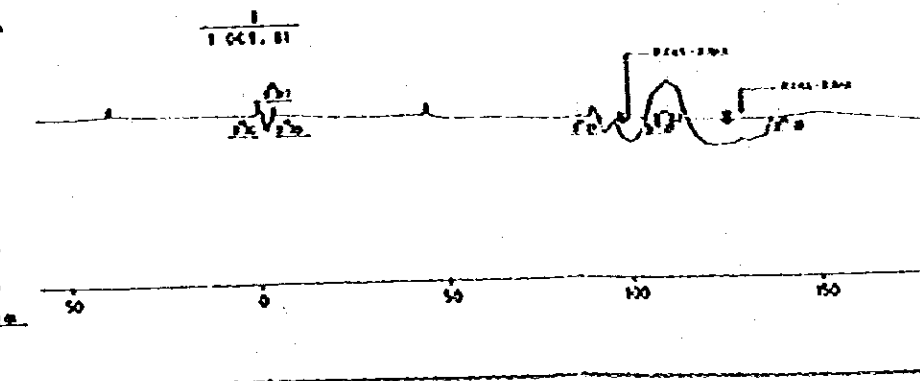
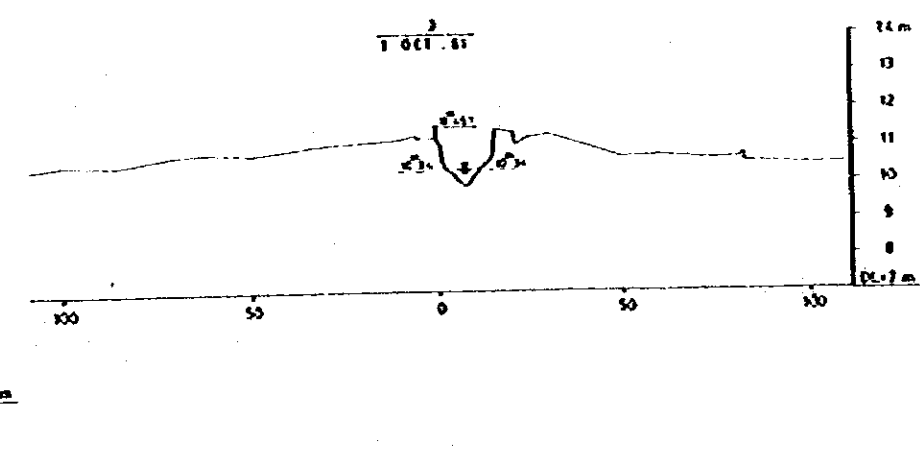
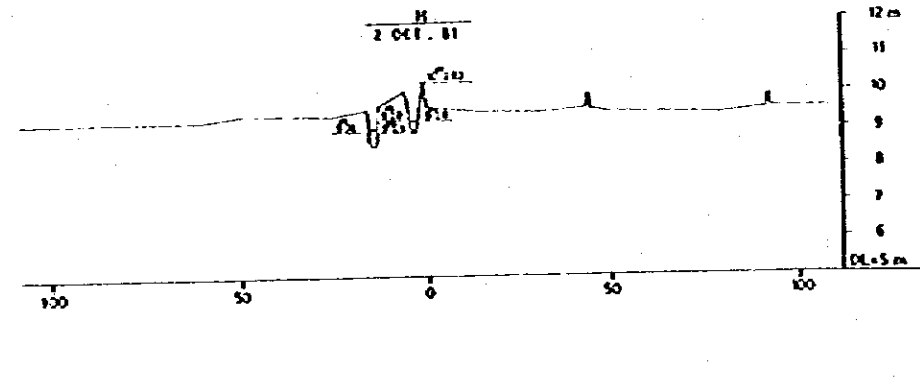
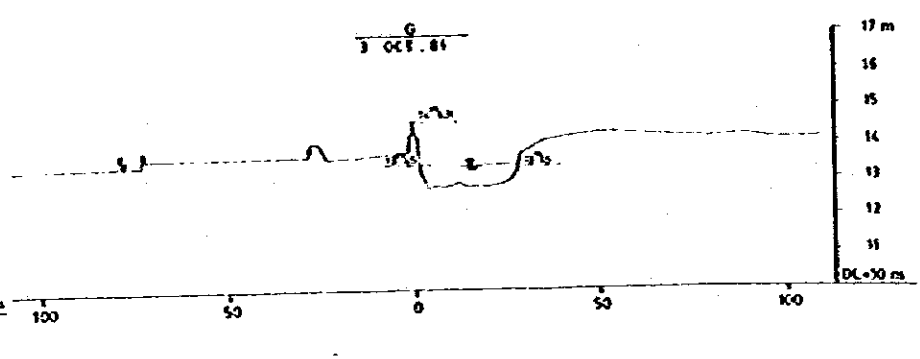
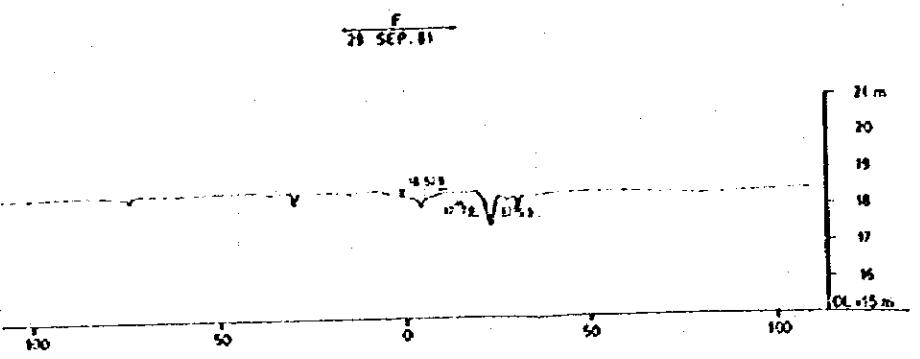
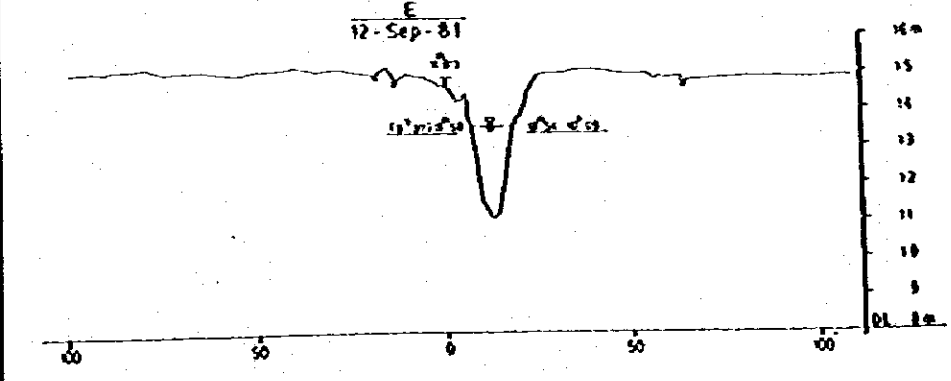
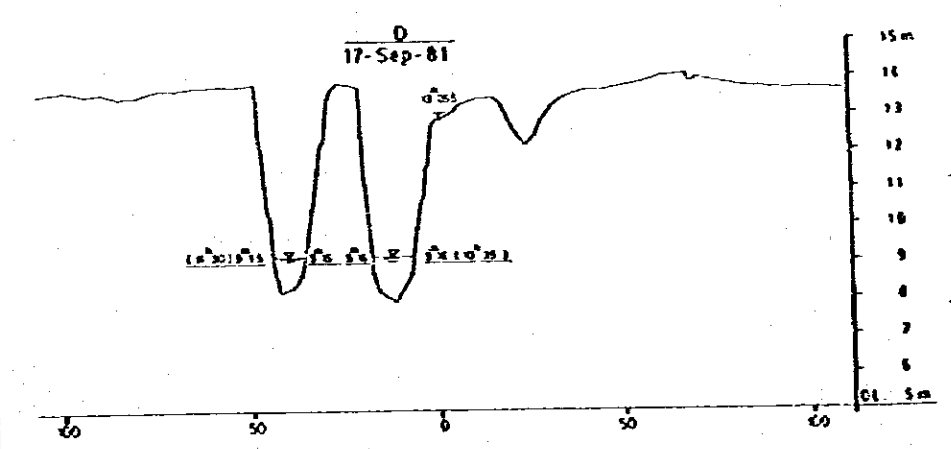
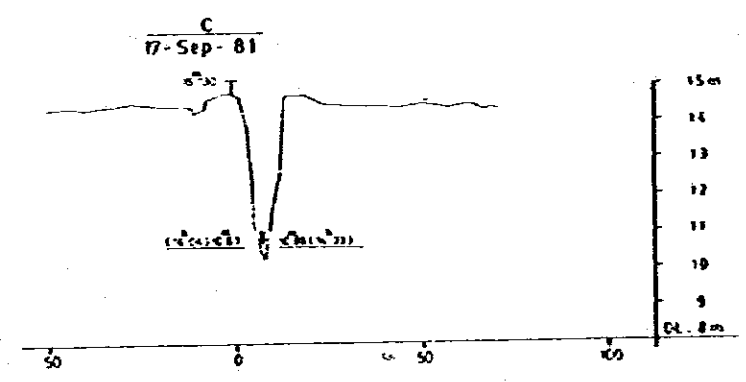
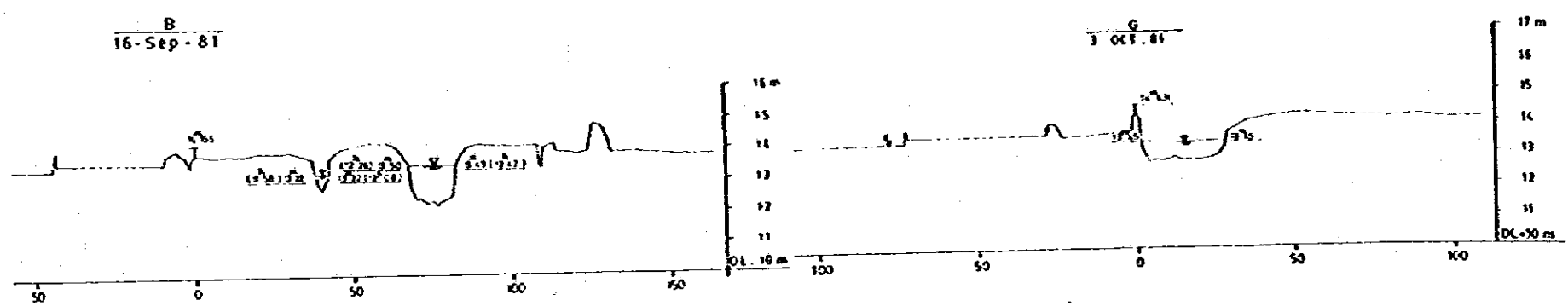
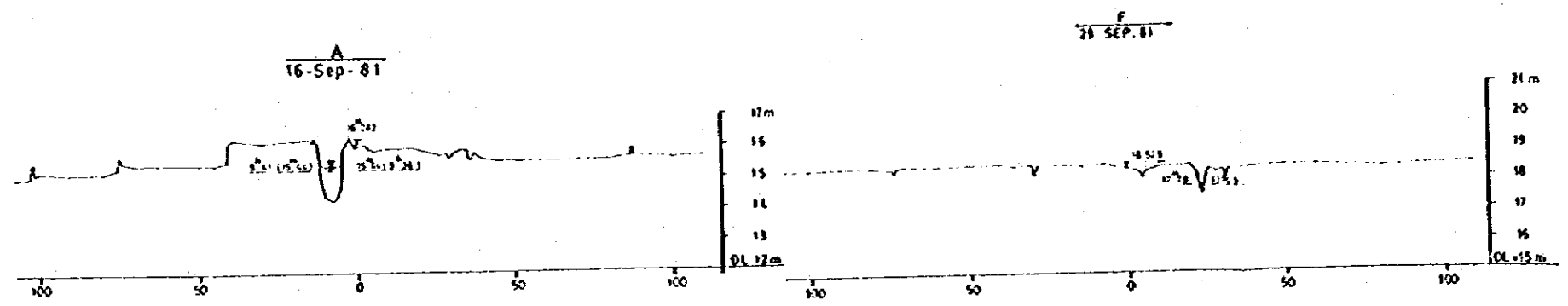


DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (6/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWG. NO.
TOKYO	600-09



DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (6/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	ORG. NO.
TOKYO	600-10





DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT	
BILA IRRIGATION PROJECT	
TITLE OF DRAWING	
CROSS-SECTION OF BILA RIVER (7/7)	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWS NO.
TOKYO	600-11





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