

THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

**FEASIBILITY STUDY
ON
THE NORTH RAJSHAHI
IRRIGATION PROJECT**

**VOLUME 4
DRAWINGS**

AUGUST 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

AFT

88-40

LIST OF REPORTS

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 II . Meteorology, Hydrology and River Morphology
 III . Topography, Geology and Soil Mechanics
 IV . Socioeconomy
 V . Agriculture and Farm Economy

VOLUME 3 APPENDIX VI . Project Development Plan
 VII . Irrigation and Drainage
 VIII . Pumping Station and Desilting Basin
 IX . Organization and Management
 X . Implementation Schedule and Cost Estimate
 X I . Project Evaluation
 X II . Stage Development

VOLUME 4 DRAWINGS

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THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

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ON
THE NORTH RAJSHAHI
IRRIGATION PROJECT**

**VOLUME 4
DRAWINGS**

AUGUST 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

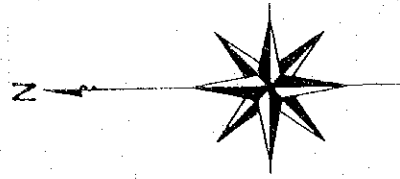
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NORTH RAJSHAHI IRRIGATION PROJECT PROJECT MAP



MINURA



SCALE 1 : 200,000

DWG.No.

Title

Serial No.

= PUMPING STATION =

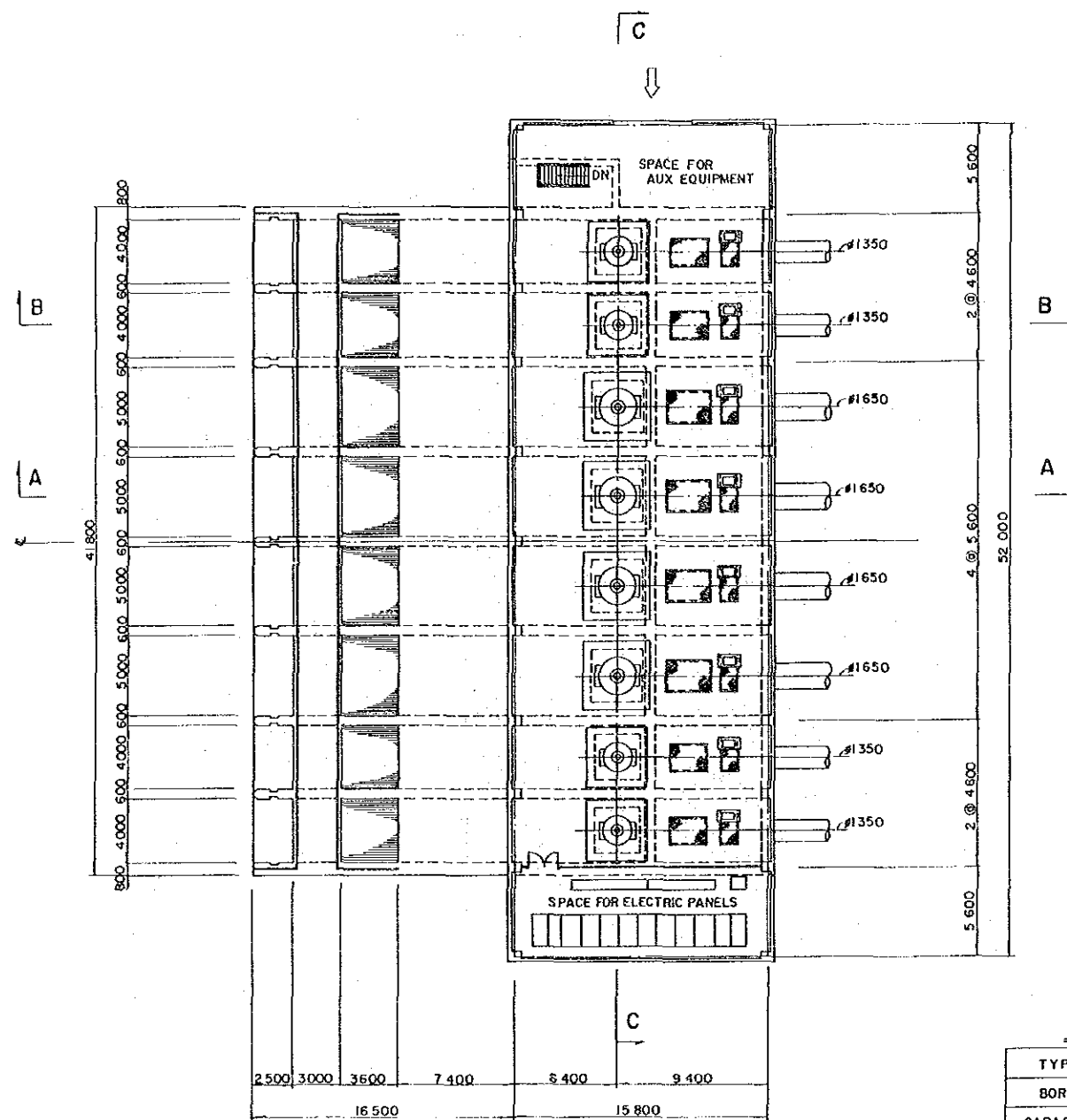
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= IRRIGATION CANAL =

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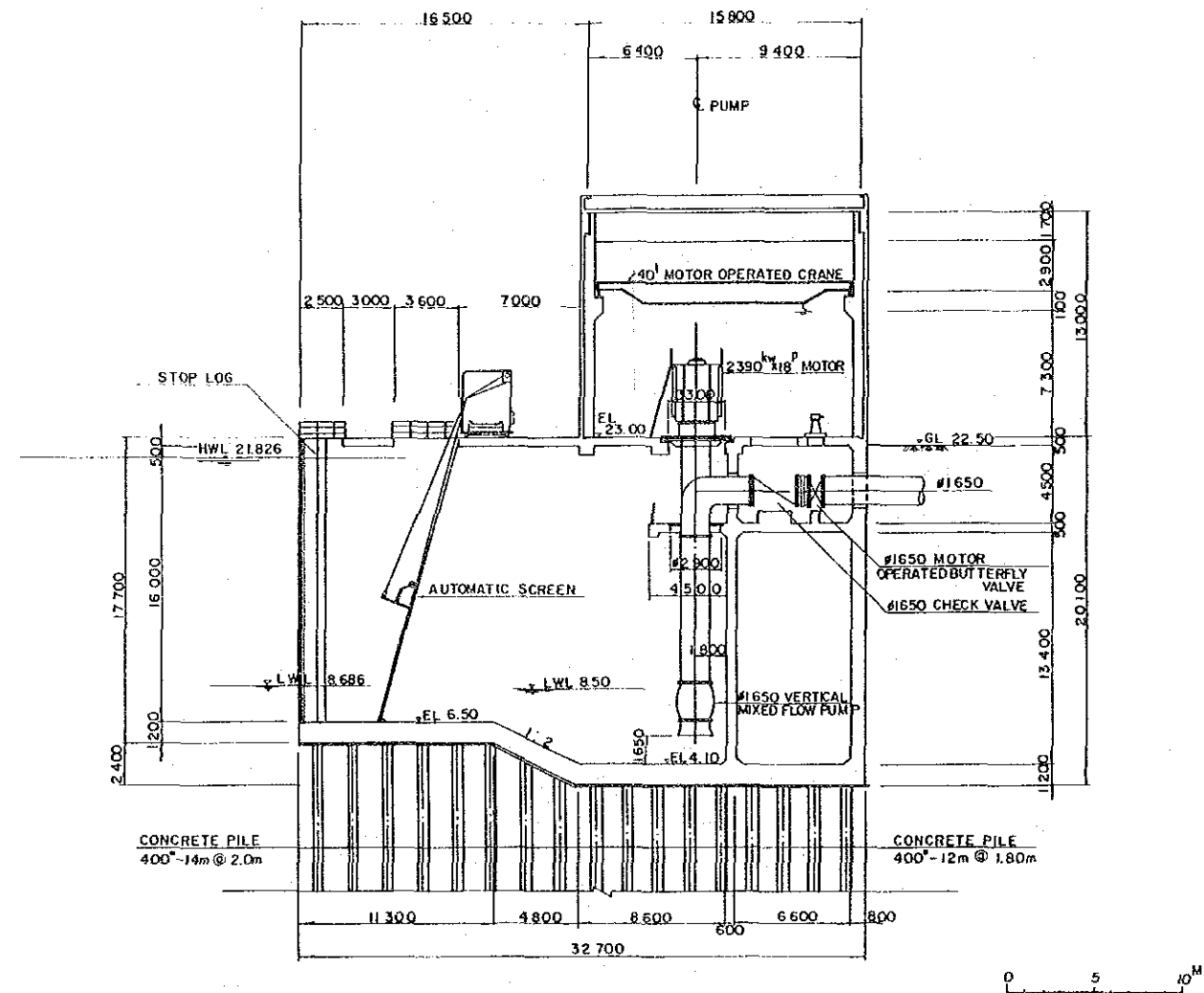
DWG.No.	Title	Serial No.
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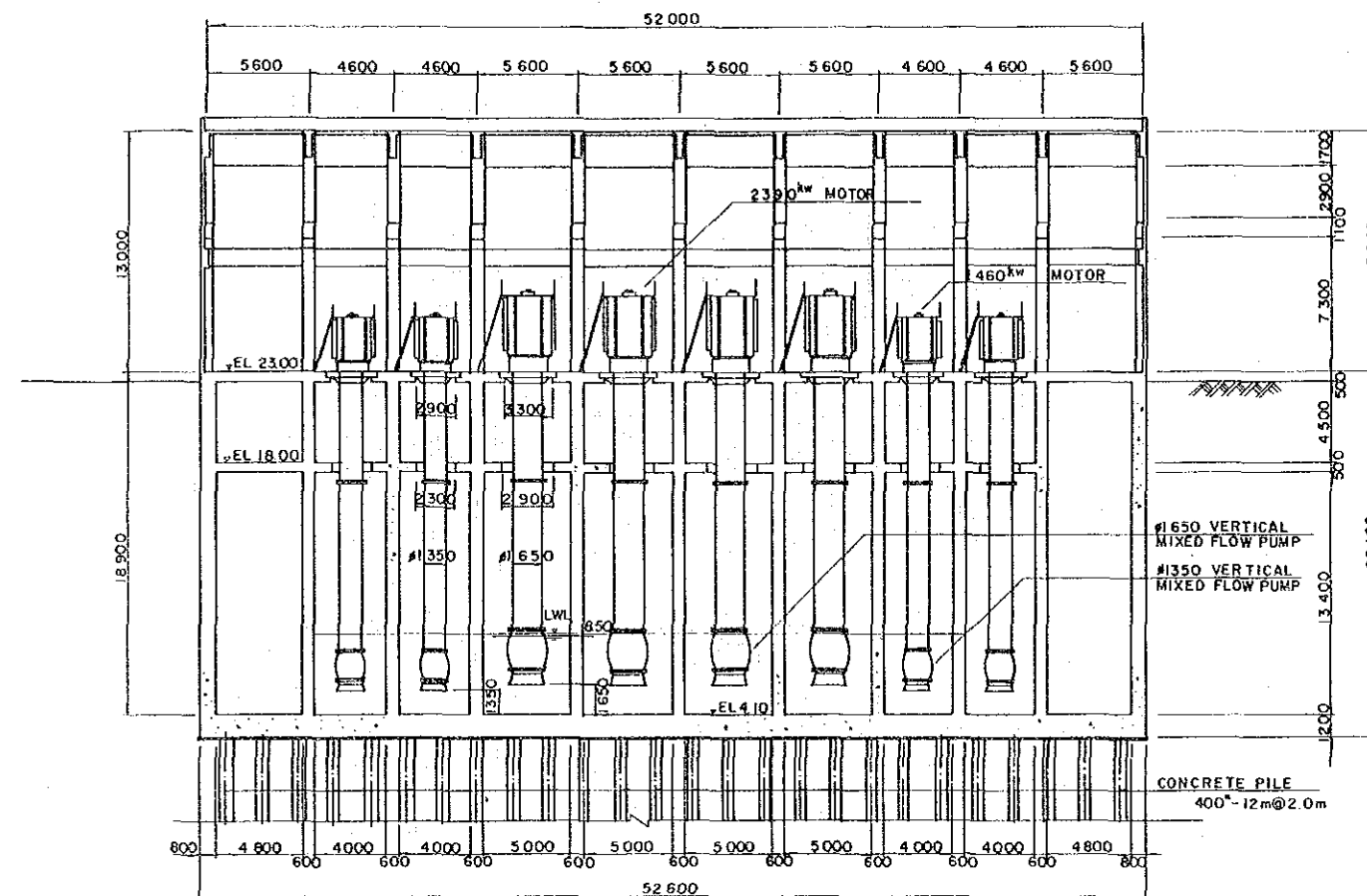
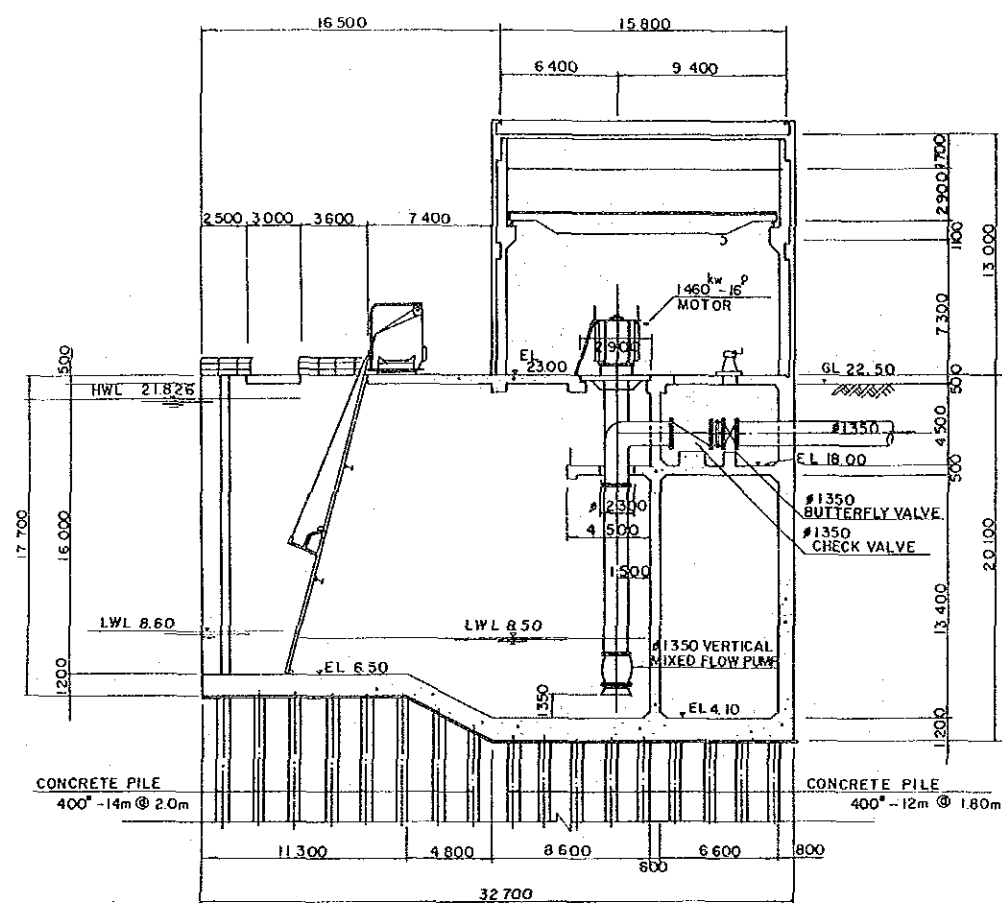
DRAWINGS



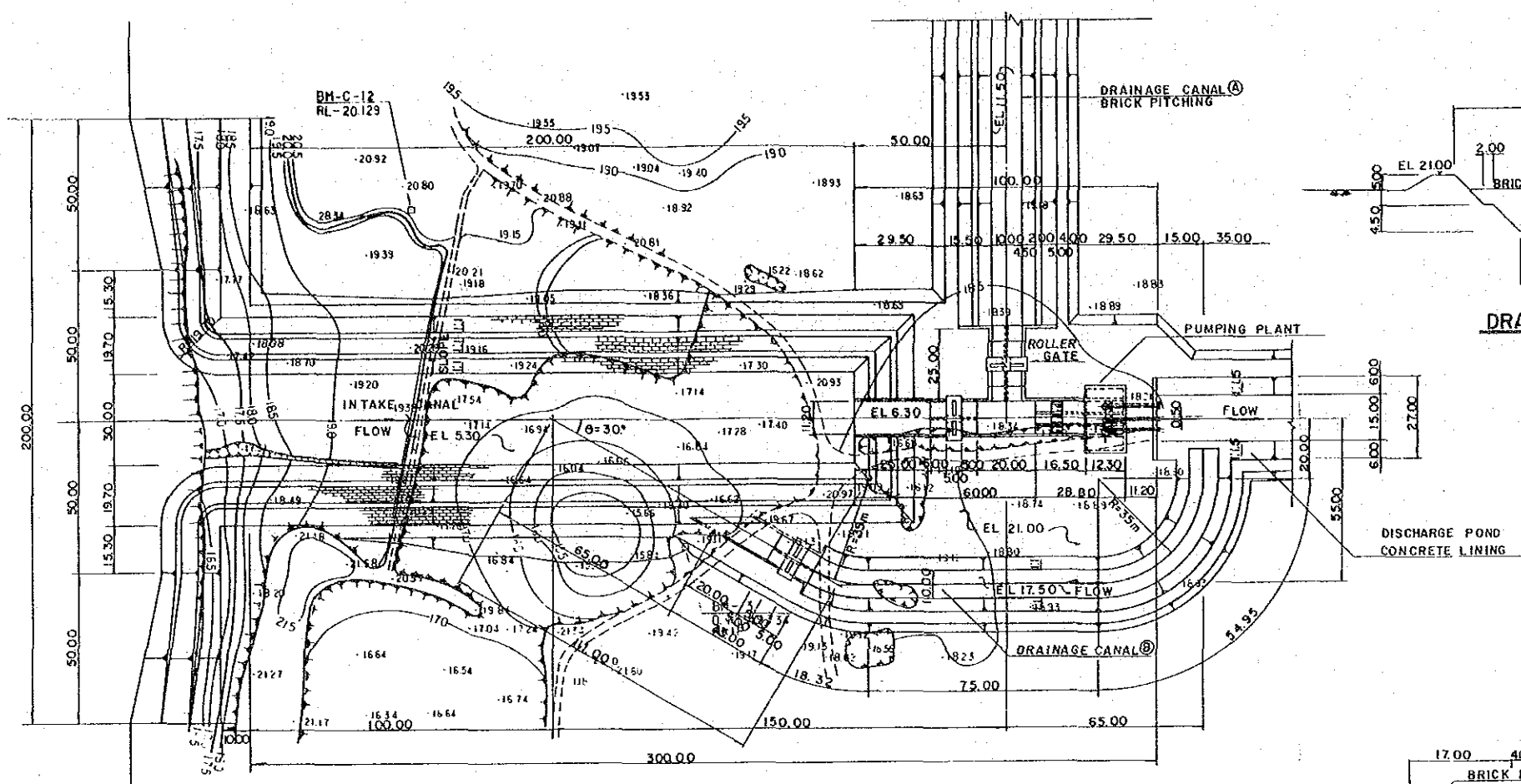
PUMP DIMENSION

TYPE	VERTICAL MIXED FLOW PUMP	
BORE	1650 mm	1350 mm
CAPACITY	399 m ³ /h	240 m ³ /h
TOTAL HEAD	27 m	27 m
PUMP SPEED	290 rpm	360 rpm
MOTOR POWER	2390 kw	1460 kw
UNIT	4	4

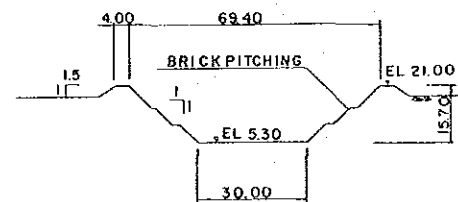




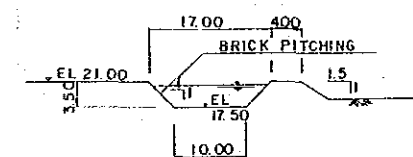
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
PLAN AND PROFILE OF BARAIPARA PUMPING STATION	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 103	SHEET 3 OF 3



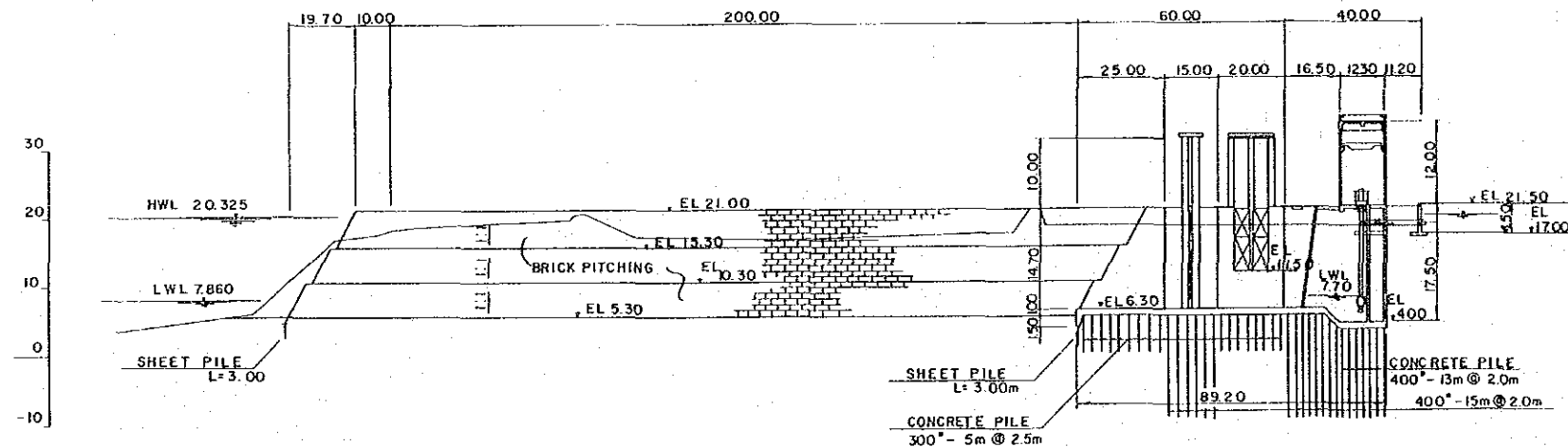
PLAN



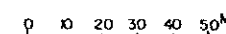
INTAKE CANAL



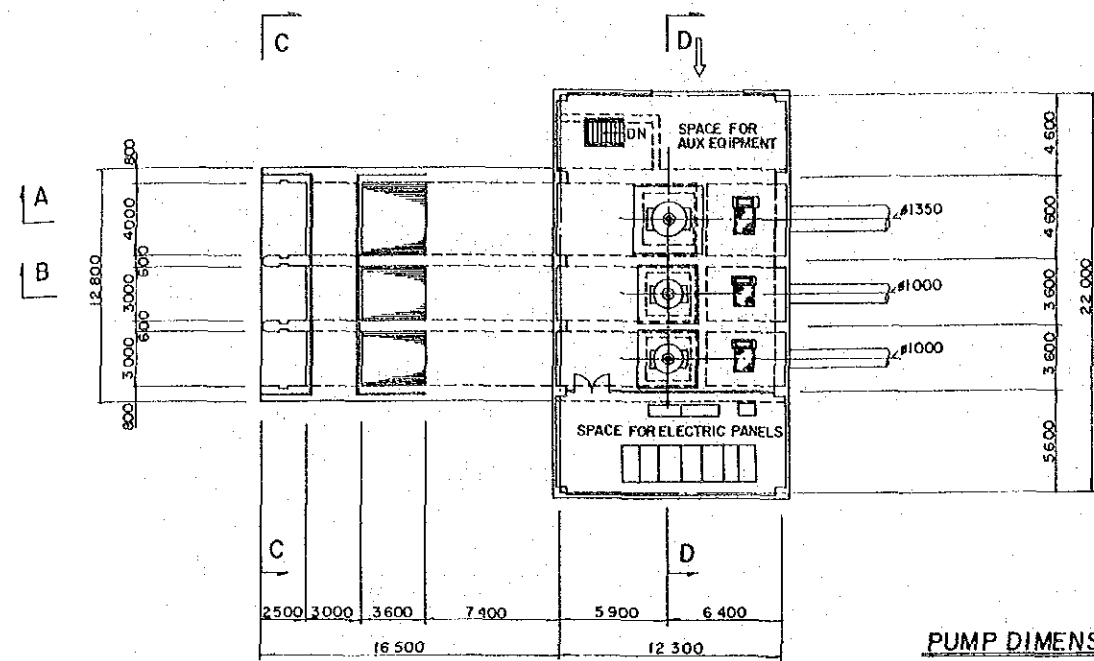
DRAINAGE CANAL (B)



CROSS SECTION

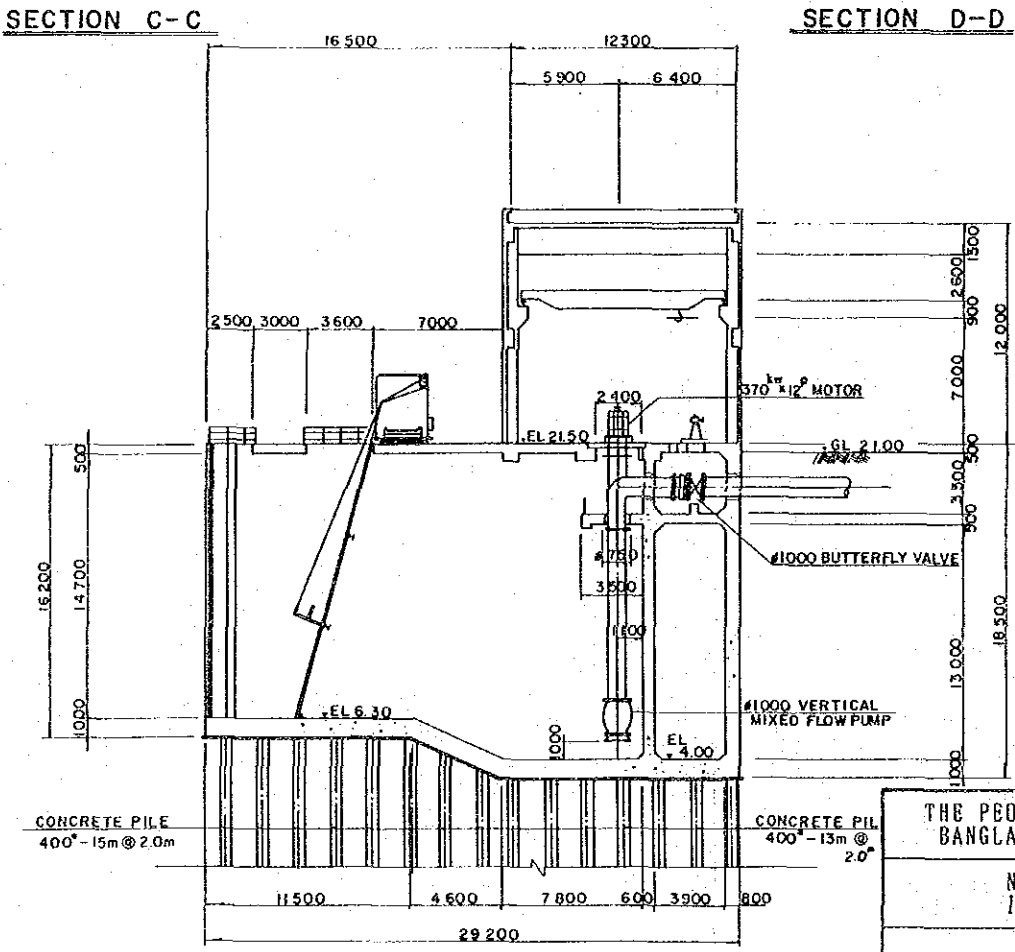
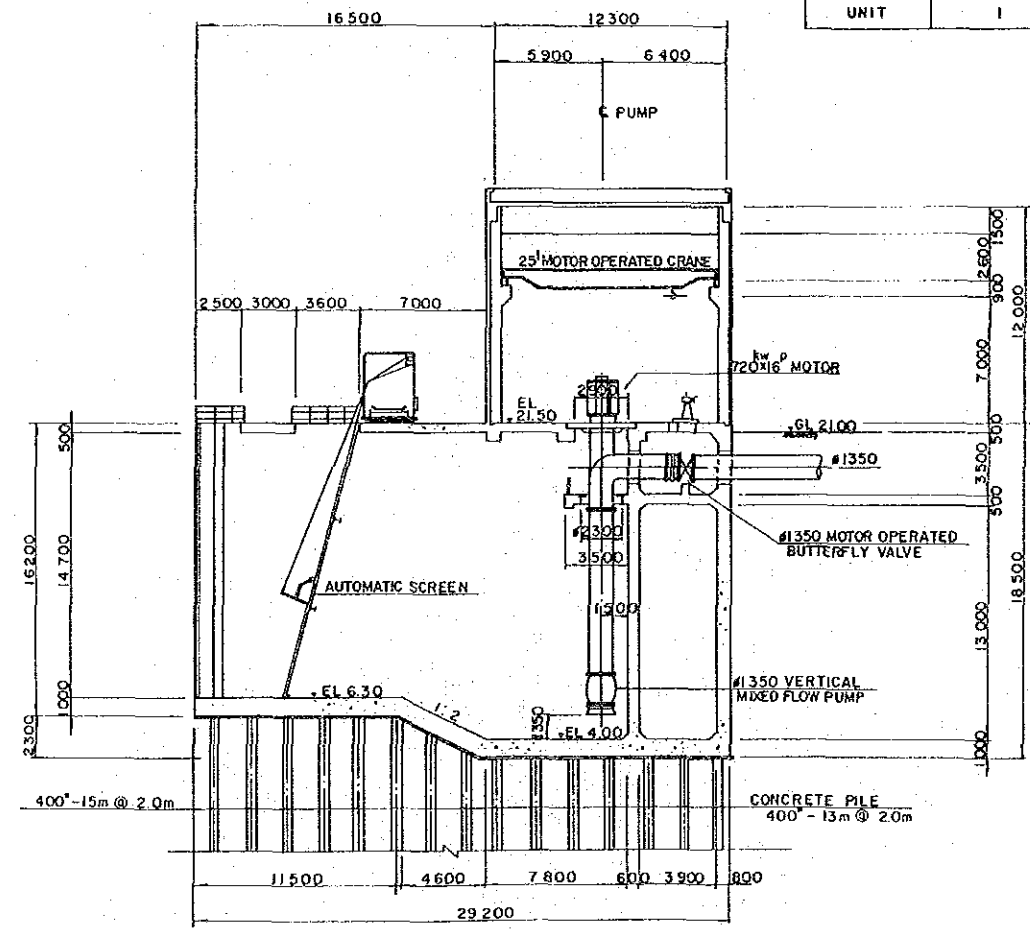
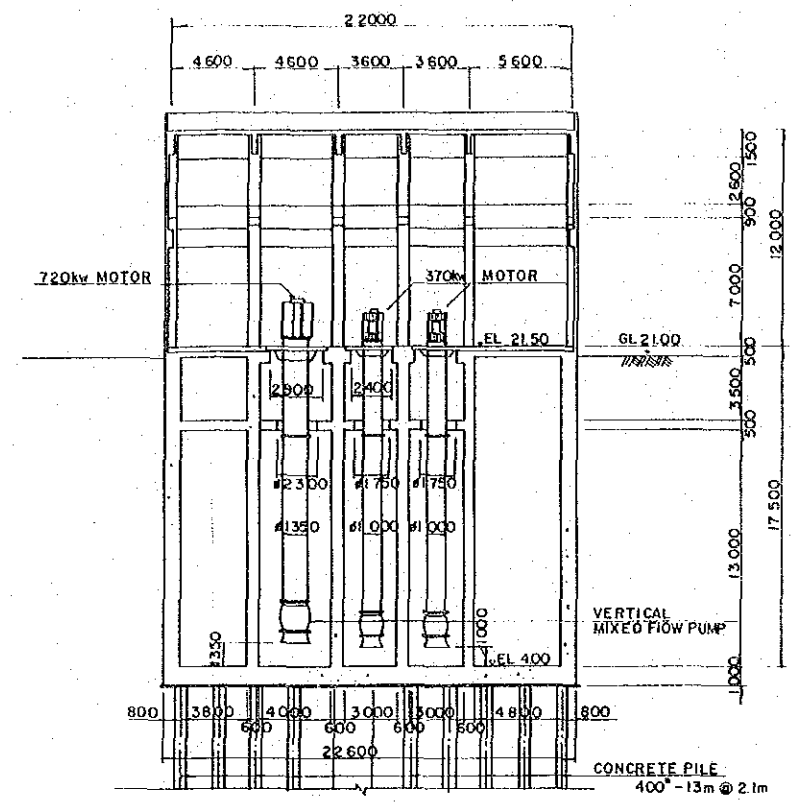
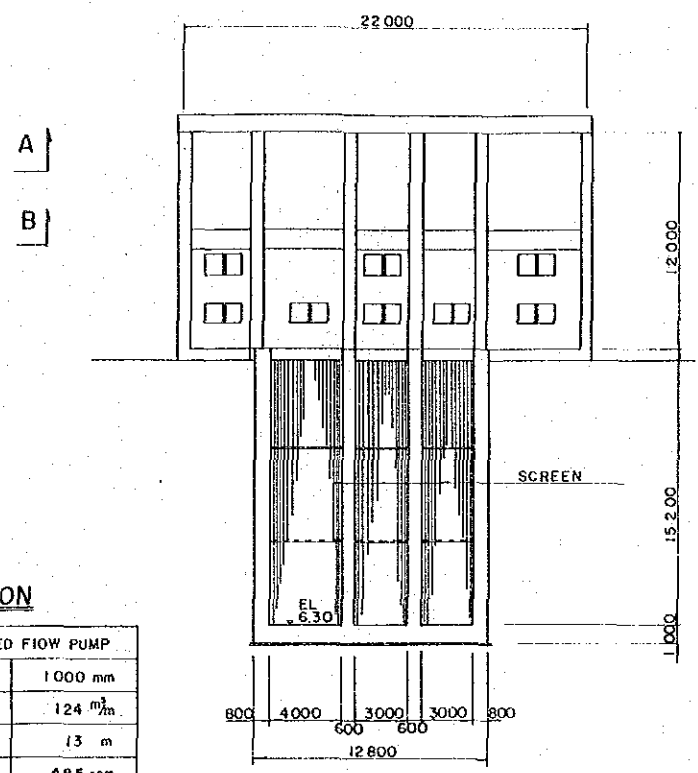


THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
PLAN AND PROFILE OF KASBA PUMPING STATION	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 104	SHEET 1 OF 2



PUMP DIMENSION

TYPE	VERTICAL MIXED FLOW PUMP	
BORE	1350 mm	1000 mm
CAPACITY	247 m ³ /m	124 m ³ /m
TOTAL HEAD	13 m	13 m
PUMP SPEED	360 rpm	485 rpm
MOTOR POWER	720 kw	370 kw
UNIT	1	2



THE PEOPLE'S REPUBLIC OF BANGLADESH
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NORTH RAJSHAHI
IRRIGATION PROJECT

PLAN AND PROFILE OF KASBA
PUMPING STATION

JAPAN INTERNATIONAL COOPERATION AGENCY

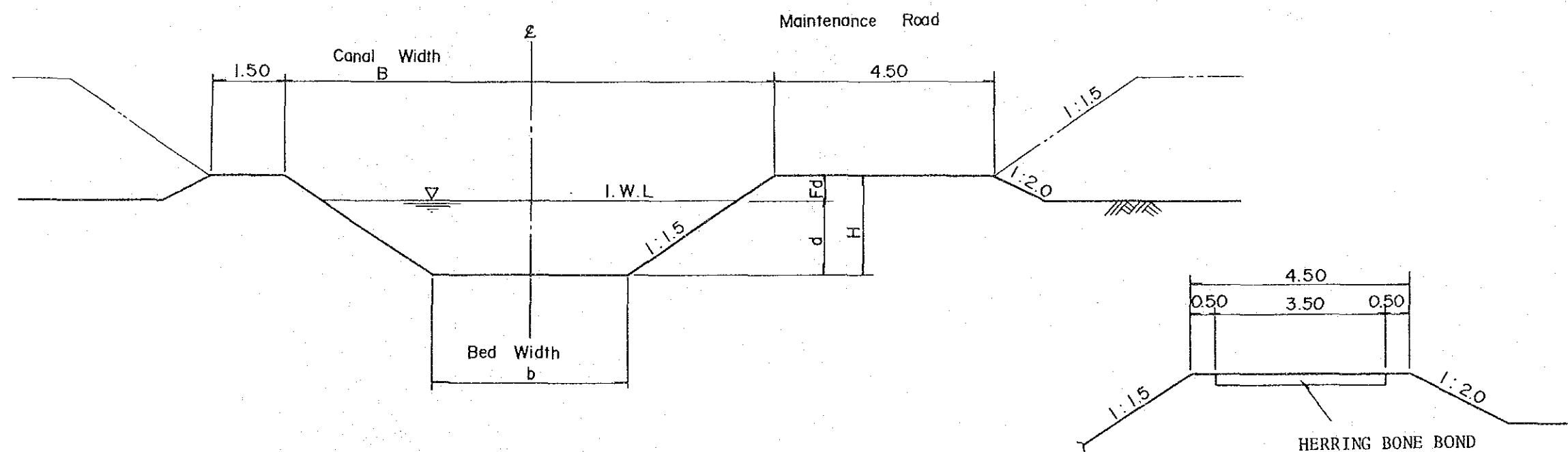
DWG. NO. 105 SHEET 2 OF 2

Dimension : m

TYPE	Q (m/s)	b	B	d	Fb	H	Total Length
M - I	36.00	14.5	26.20	2.88	1.02	3.90	10,800
M - II	30.60	13.5	24.90	2.78	1.02	3.80	21,600
M - III	17.85	11.0	20.30	2.22	0.88	3.10	10,200
M - IV	12.65	9.5	17.75	1.96	0.79	2.75	6,170
M - V	8.15	8.0	14.60	1.52	0.68	2.20	1,380
M - VI	7.50	7.5	14.10	1.50	0.70	2.20	6,020
M - VII	4.00	4.5	10.95	1.47	0.68	2.15	3,860
M - VIII	2.10	3.0	8.25	1.14	0.61	1.75	2,640

Note ;

I. Slope M - I~IV 1/7,000
M - V~VIII 1/5,000



TYPICAL CROSS SECTION OF
MAIN IRRIGATION CANAL

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NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL CROSS SECTION OF MAIN CANAL	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 201	SHEET OF

Barind Area

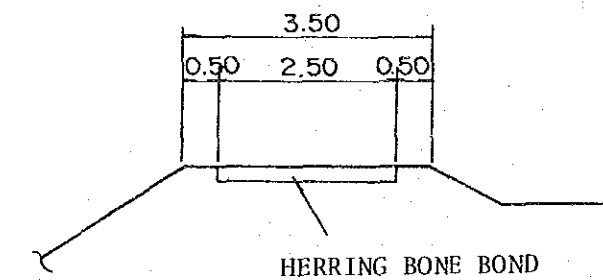
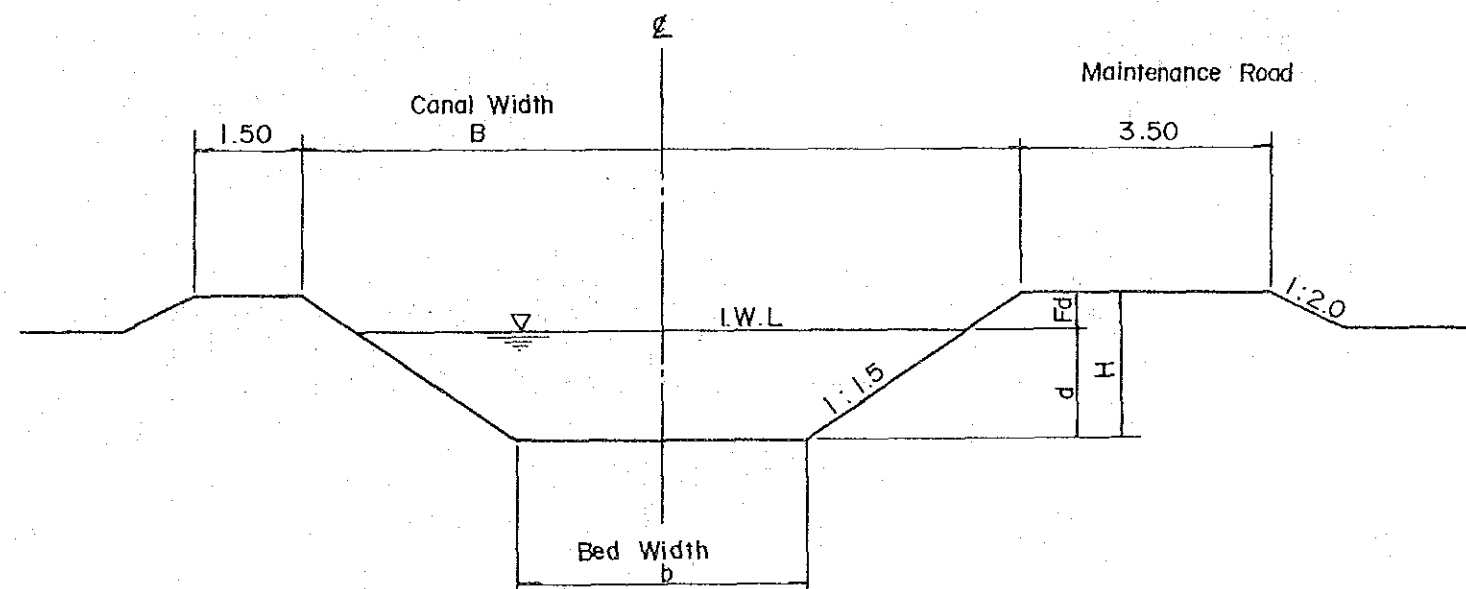
Dimension : m

TYPE	b	TYPE	b
BS - 1	9.0	BS - 8	3.5
- 2	8.5	- 9	3.0
- 3	7.0	- 10	2.5
- 4	6.0	- 11	2.0
- 5	5.5	- 12	1.5
- 6	4.5	- 13	1.0
- 7	4.0	- 14	0.5

Flood Plain Paba Area

Dimension ; m

TYPE	b
PS - 1	3.0
- 2	2.5
- 3	2.0
- 4	1.5
- 5	1.0
- 6	0.5



TYPICAL CROSS SECTION OF
SECONDARY & SUB-SECONDARY CANAL

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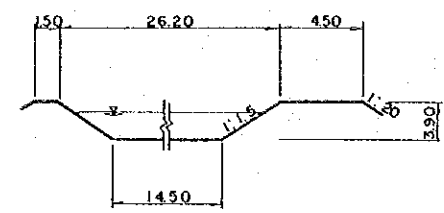
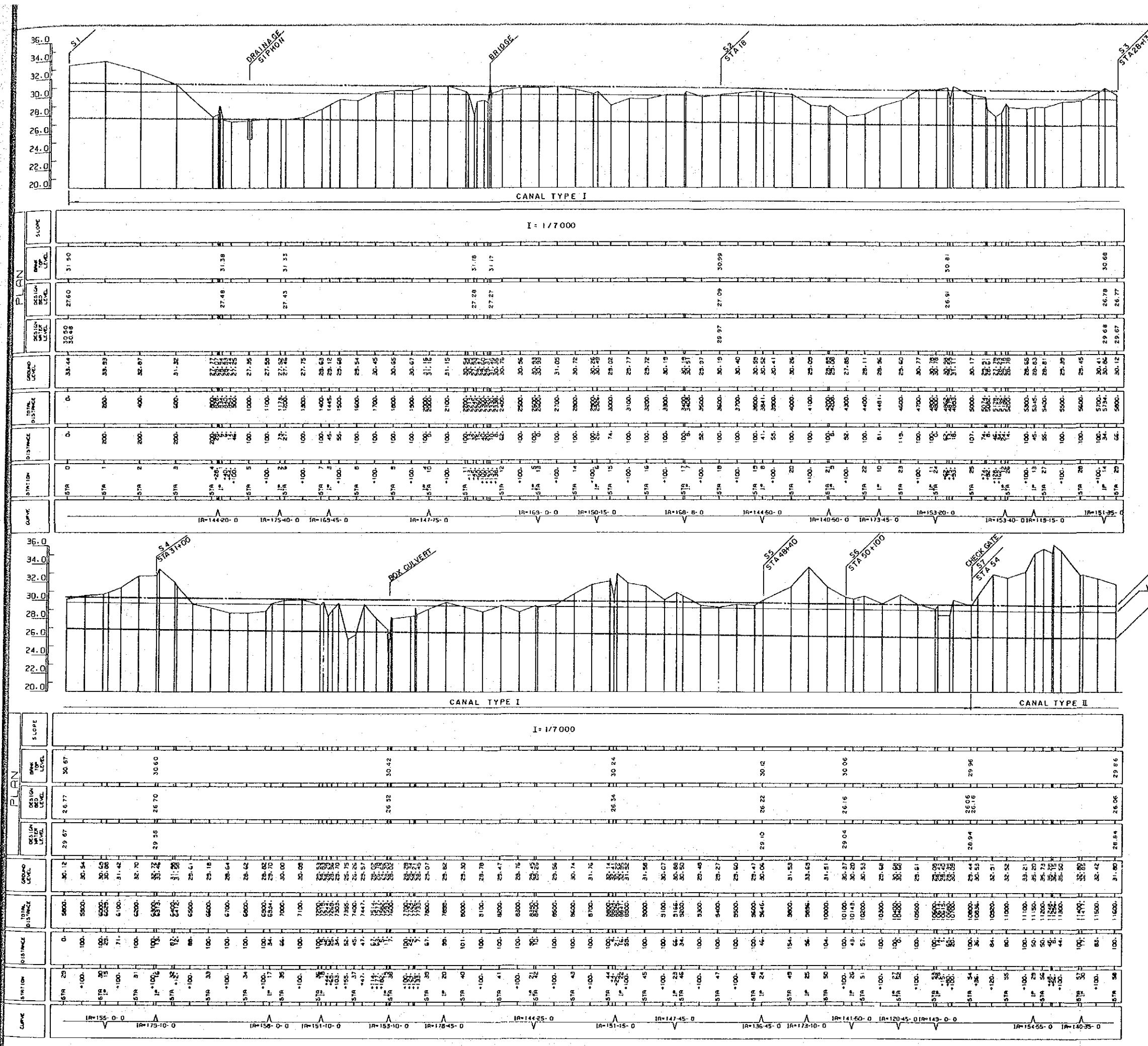
NORTH RAJSHAHI
IRRIGATION PROJECT

TYPICAL CROSS SECTION OF
SECONDARY CANAL

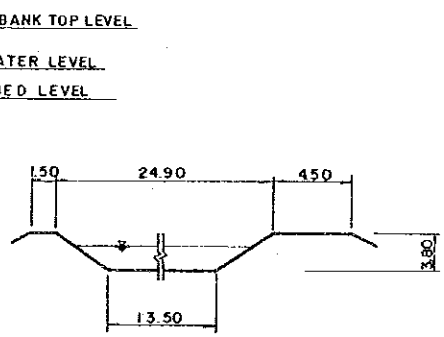
JAPAN INTERNATIONAL COOPERATION AGENCY

DWG. NO. 202

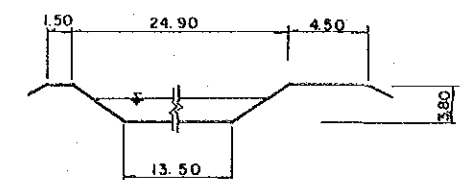
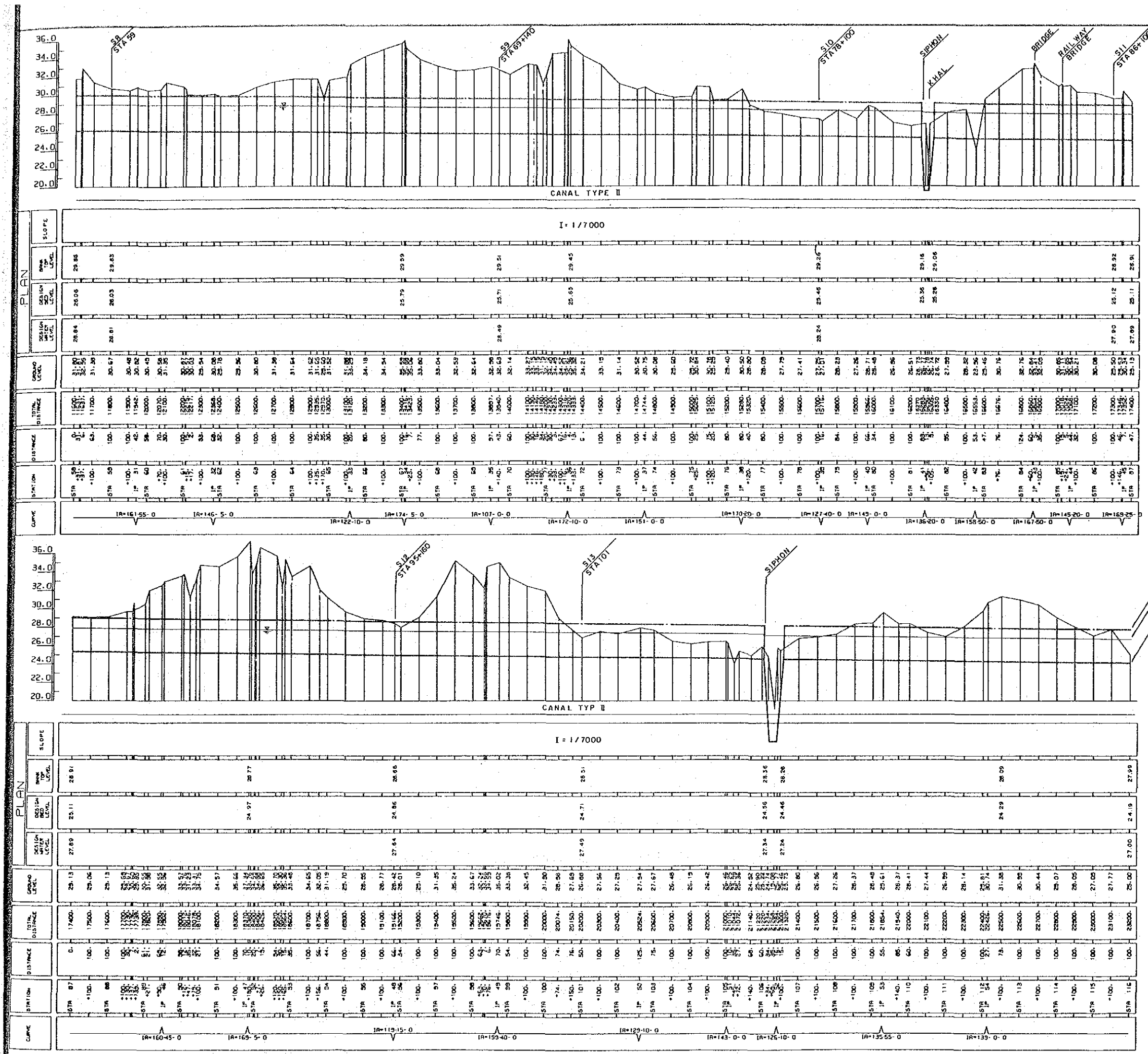
SHEET OF



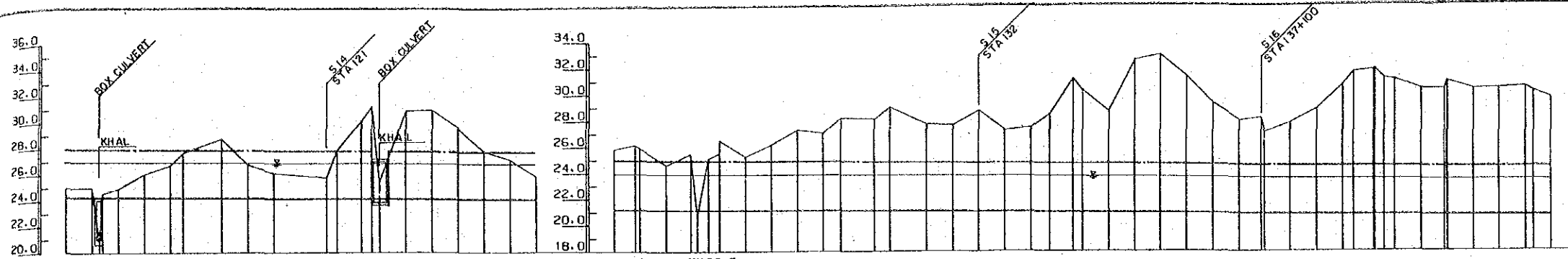
CANAL TYPE I



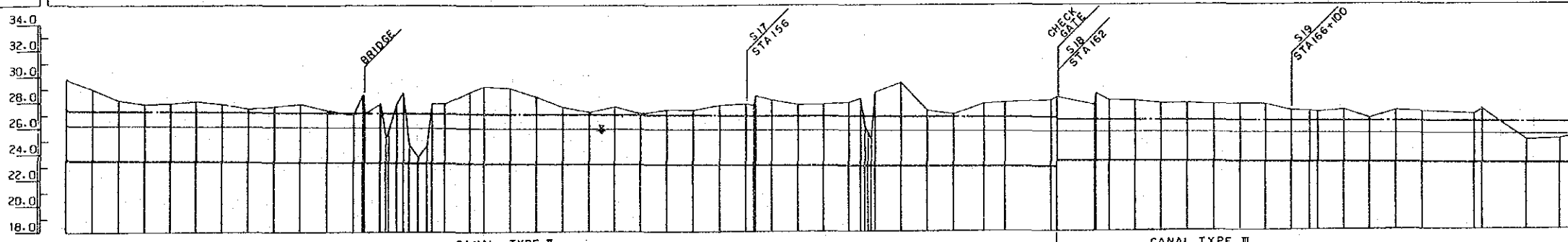
CANAL TYPE II



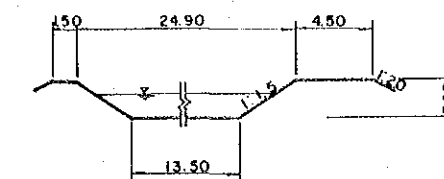
CANAL TYPE II



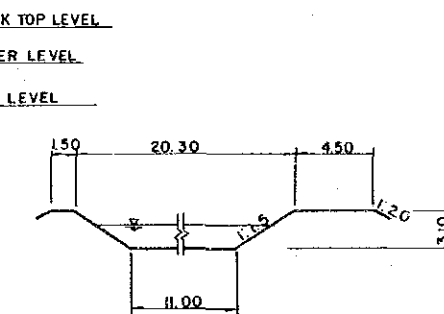
STATION	CURVE	DIVISION	DISTANCE	TOTAL DISTANCE	GROUND LEVEL	DESIGN LEVEL	WATER LEVEL	SLOPE
STA 116	1R=123-50-0	116	0	23000	25.00	27.00	27.99	1:17000
STA 117		117	100	23100	24.91	26.83	27.97	
STA 118		118	200	23200	24.81	26.75		
STA 119		119	300	23300	24.71	26.67		
STA 120		120	400	23400	24.61	26.59		
STA 121		121	500	23500	24.51	26.51		
STA 122		122	600	23600	24.41	26.43		
STA 123		123	700	23700	24.31	26.35		
STA 124		124	800	23800	24.21	26.27		
STA 125		125	900	23900	24.11	26.19		
STA 126		126	1000	24000	24.01	26.11		
STA 127		127	1100	24100	23.91	26.03		
STA 128		128	1200	24200	23.81	25.95		
STA 129		129	1300	24300	23.71	25.87		
STA 130		130	1400	24400	23.61	25.79		
STA 131		131	1500	24500	23.51	25.71		
STA 132		132	1600	24600	23.41	25.63		
STA 133		133	1700	24700	23.31	25.55		
STA 134		134	1800	24800	23.21	25.47		
STA 135		135	1900	24900	23.11	25.39		
STA 136		136	2000	25000	23.01	25.31		
STA 137		137	2100	25100	22.91	25.23		
STA 138		138	2200	25200	22.81	25.15		
STA 139		139	2300	25300	22.71	25.07		
STA 140		140	2400	25400	22.61	24.99		
STA 141		141	2500	25500	22.51	24.91		
STA 142		142	2600	25600	22.41	24.83		
STA 143		143	2700	25700	22.31	24.75		
STA 144		144	2800	25800	22.21	24.67		
STA 145		145	2900	25900	22.11	24.59		
STA 146		146	3000	26000	22.01	24.51		
STA 147		147	3100	26100	21.91	24.43		
STA 148		148	3200	26200	21.81	24.35		
STA 149		149	3300	26300	21.71	24.27		
STA 150		150	3400	26400	21.61	24.19		
STA 151		151	3500	26500	21.51	24.11		
STA 152		152	3600	26600	21.41	24.03		
STA 153		153	3700	26700	21.31	23.95		
STA 154		154	3800	26800	21.21	23.87		
STA 155		155	3900	26900	21.11	23.79		
STA 156		156	4000	27000	21.01	23.71		
STA 157		157	4100	27100	20.91	23.63		
STA 158		158	4200	27200	20.81	23.55		
STA 159		159	4300	27300	20.71	23.47		
STA 160		160	4400	27400	20.61	23.39		
STA 161		161	4500	27500	20.51	23.31		
STA 162		162	4600	27600	20.41	23.23		
STA 163		163	4700	27700	20.31	23.15		
STA 164		164	4800	27800	20.21	23.07		
STA 165		165	4900	27900	20.11	22.99		
STA 166		166	5000	28000	20.01	22.91		
STA 167		167	5100	28100	19.91	22.83		
STA 168		168	5200	28200	19.81	22.75		
STA 169		169	5300	28300	19.71	22.67		
STA 170		170	5400	28400	19.61	22.59		
STA 171		171	5500	28500	19.51	22.51		
STA 172		172	5600	28600	19.41	22.43		



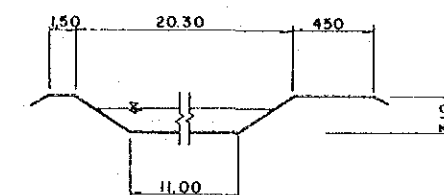
STATION	CURVE	DIVISION	DISTANCE	TOTAL DISTANCE	GROUND LEVEL	DESIGN LEVEL	WATER LEVEL	SLOPE
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STA 144		144	100	28100	25.84	23.34		
STA 145		145	200	28200	25.78	23.26		
STA 146		146	300	28300	25.72	23.18		
STA 147		147	400	28400	25.66	23.10		
STA 148		148	500	28500	25.60	23.02		
STA 149		149	600	28600	25.54	22.94		
STA 150		150	700	28700	25.48	22.86		
STA 151		151	800	28800	25.42	22.78		
STA 152		152	900	28900	25.36	22.70		
STA 153		153	1000	29000	25.30	22.62		
STA 154		154	1100	29100	25.24	22.54		
STA 155		155	1200	29200	25.18	22.46		
STA 156		156	1300	29300	25.12	22.38		
STA 157		157	1400	29400	25.06	22.30		
STA 158		158	1500	29500	25.00	22.22		
STA 159		159	1600	29600	24.94	22.14		
STA 160		160	1700	29700	24.88	22.06		
STA 161		161	1800	29800	24.82	21.98		
STA 162		162	1900	29900	24.76	21.90		
STA 163		163	2000	30000	24.70	21.82		
STA 164		164	2100	30100	24.64	21.74		
STA 165		165	2200	30200	24.58	21.66		
STA 166		166	2300	30300	24.52	21.58		
STA 167		167	2400	30400	24.46	21.50		
STA 168		168	2500	30500	24.40	21.42		
STA 169		169	2600	30600	24.34	21.34		
STA 170		170	2700	30700	24.28	21.26		
STA 171		171	2800	30800	24.22	21.18		
STA 172		172	2900	30900	24.16	21.10		
STA 173		173	3000	31000	24.10	21.02		
STA 174		174	3100	31100	24.04	20.94		
STA 175		175	3200	31200	23.98	20.86		
STA 176		176	3300	31300	23.92	20.78		
STA 177		177	3400	31400	23.86	20.70		
STA 178		178	3500	31500	23.80	20.62		
STA 179		179	3600	31600	23.74	20.54		
STA 180		180	3700	31700	23.68	20.46		
STA 181		181	3800	31800	23.62	20.38		
STA 182		182	3900	31900	23.56	20.30		
STA 183		183	4000	32000	23.50	20.22		
STA 184		184	4100	32100	23.44	20.14		
STA 185		185	4200	32200	23.38	20.06		
STA 186		186	4300	32300	23.32	19.98		
STA 187		187	4400	32400	23.26	19.90		
STA 188		188	4500	32500	23.20	19.82		
STA 189		189	4600	32600	23.14	19.74		
STA 190		190	4700	32700	23.08	19.66		
STA 191		191	4800	32800	23.02	19.58		
STA 192		192	4900	32900	22.96	19.50		
STA 193		193	5000	33000	22.90	19.42		
STA 194		194	5100	33100	22.84	19.34		
STA 195		195	5200	33200	22.78	19.26		
STA 196		196	5300	33300	22.72	19.18		
STA 197		197	5400	33400	22.66	19.10		
STA 198		198	5500	33500	22.60	19.02		
STA 199		199	5600	33600	22.54	18.94		
STA 200		200	5700	33700	22.48	18.86		
STA 201		201	5800	33800	22.42	18.78		
STA 202		202	5900	33900	22.36	18.70		
STA 203		203	6000	34000	22.30	18.62		



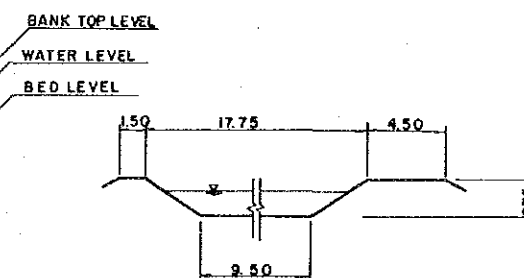
CANAL TYPE II



CANAL TYPE III

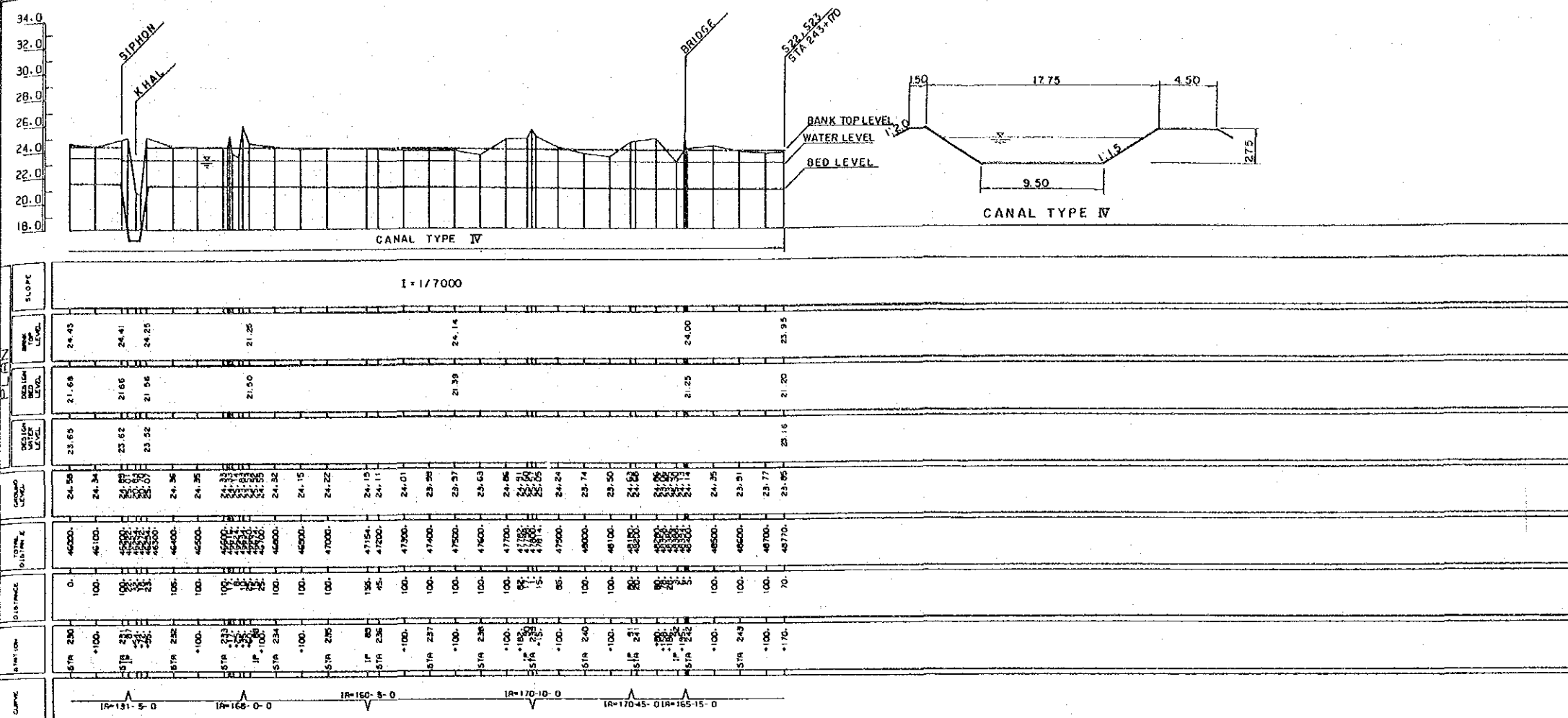


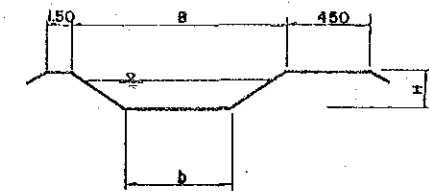
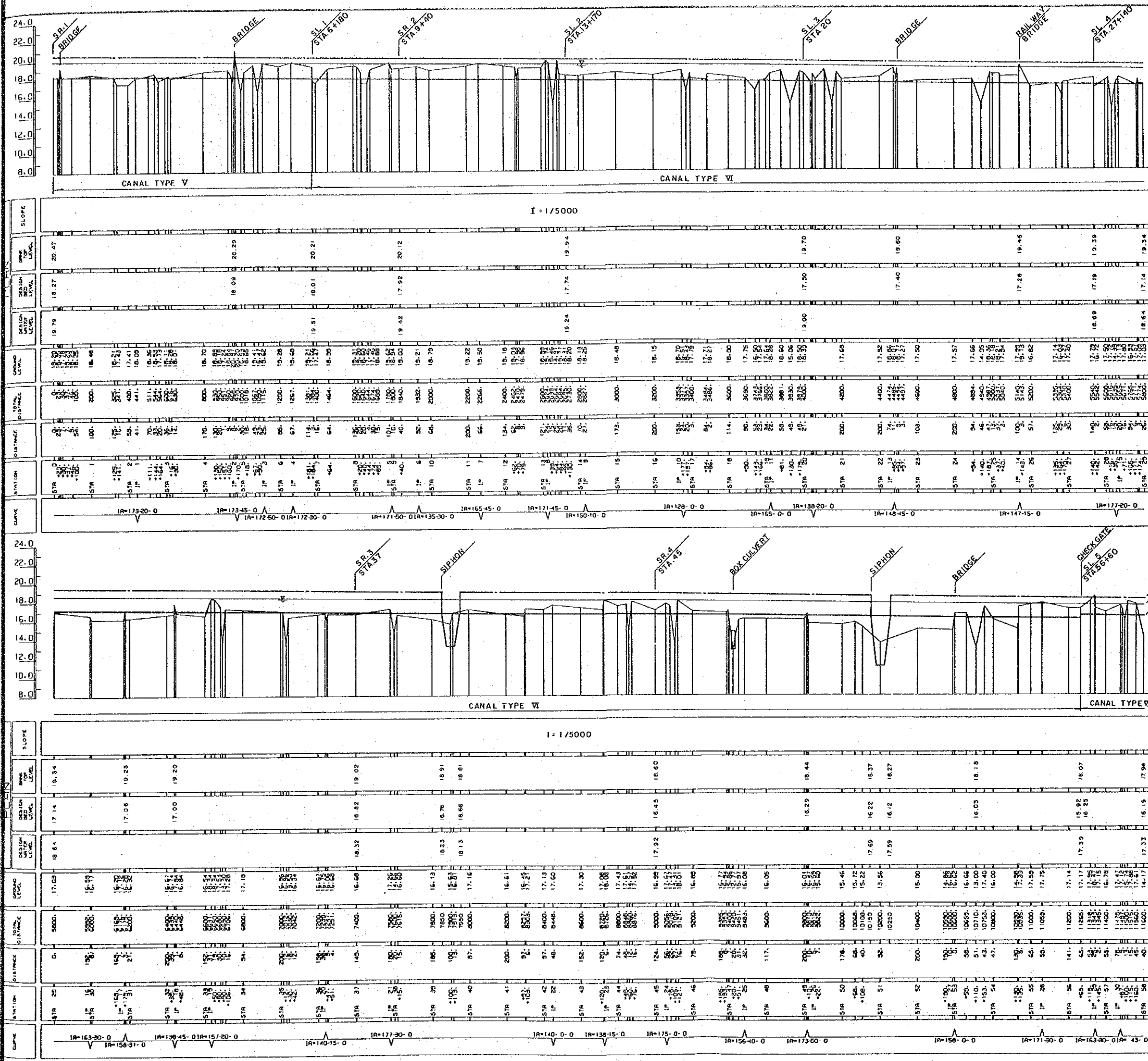
CANAL TYPE III



CANAL TYPE IV

SHEET 4 OF 5





unit : m

TYPE	b	8	H
V	8.00	14.60	2.20
VI	7.50	14.10	2.20
VII	4.50	10.95	2.15
VIII	3.00	8.25	1.75

BANK TOP LEVEL
WATER LEVEL
BED LEVEL

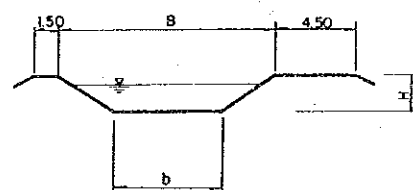
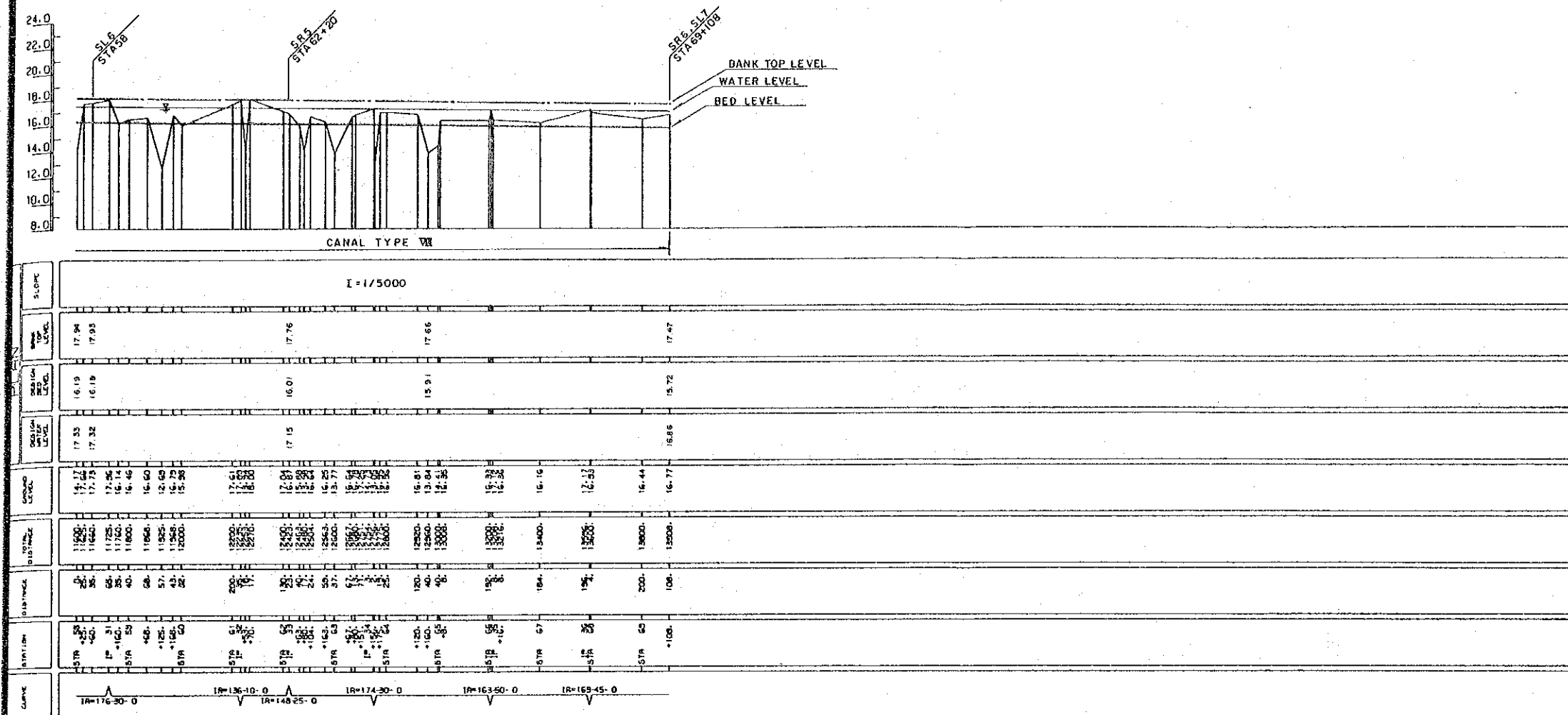
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BANGLADESH WATER DEVELOPMENT BOARD

NORTH RAJSHAHI
IRRIGATION PROJECT

PROFILE OF FLOOD PLAIN AREA
MAIN CANAL

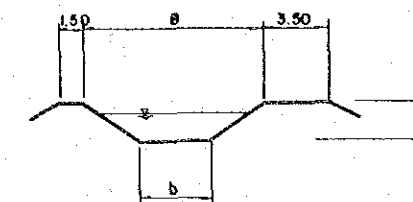
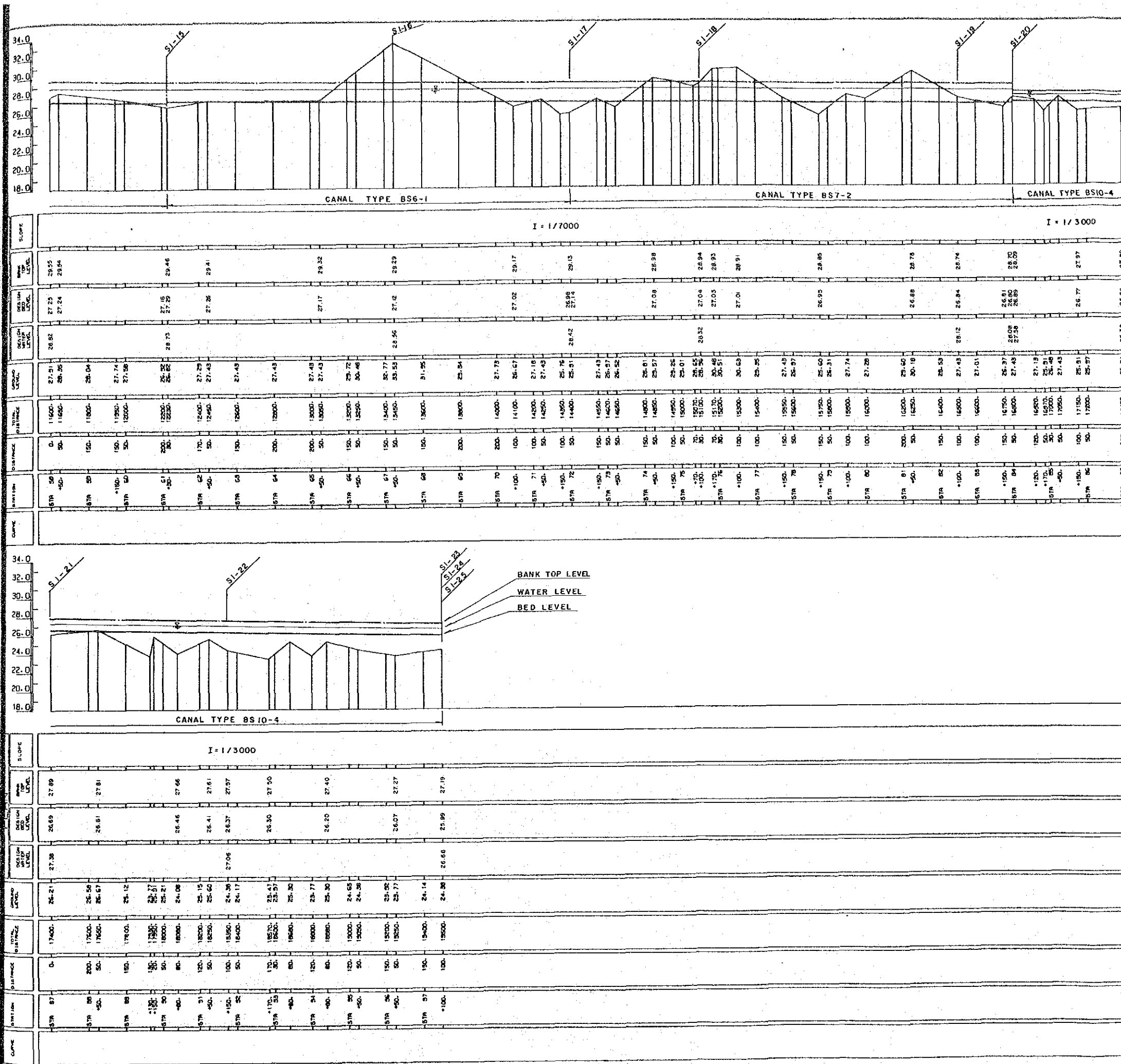
JAPAN INTERNATIONAL COOPERATION AGENCY

DWG. NO. 208 SHEET 1 OF 2

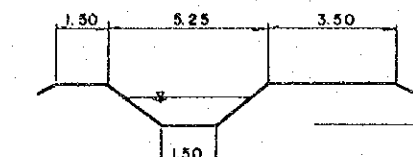
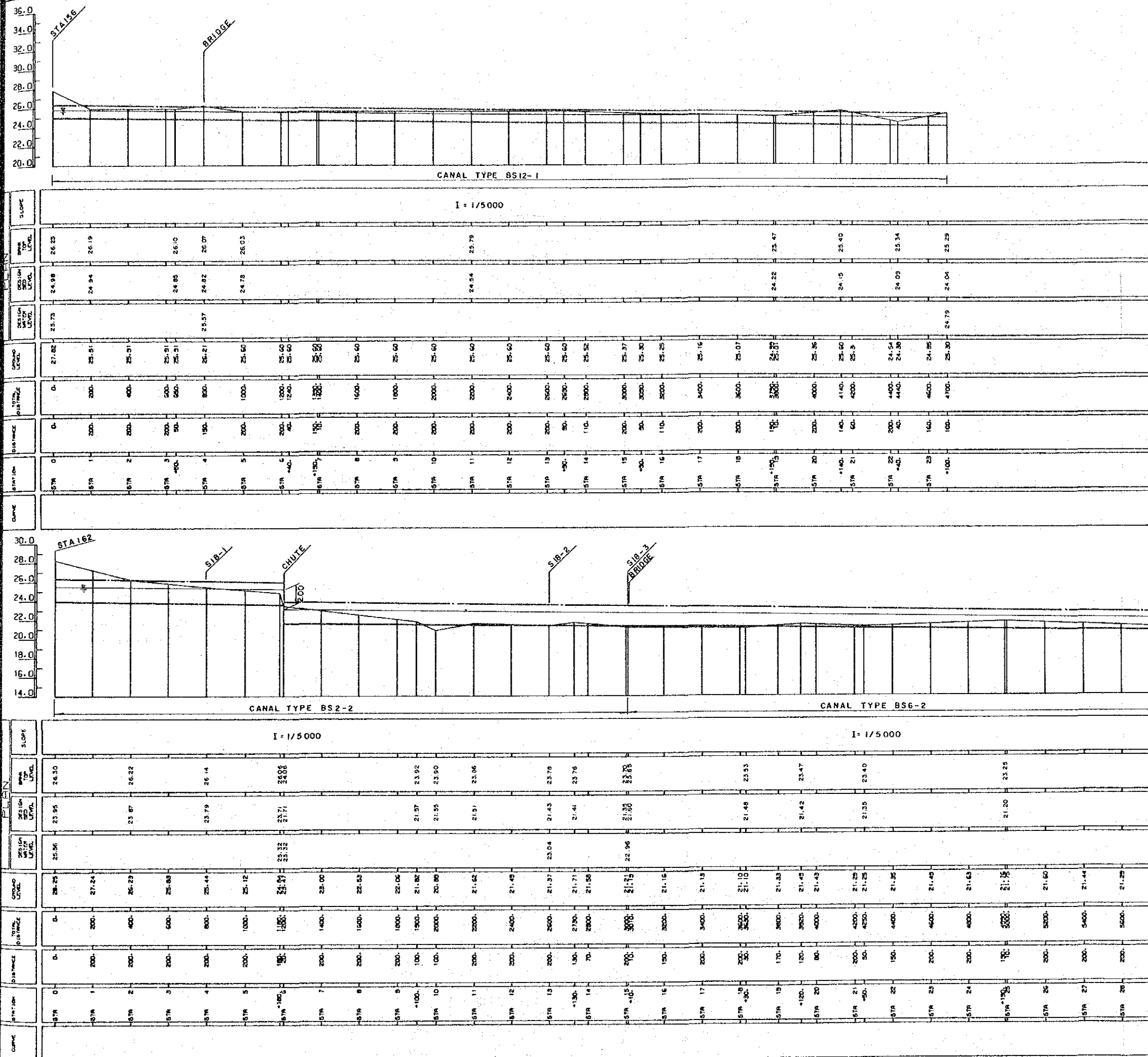


unit : m

TYPE	b	B	H
V	8.00	14.60	2.20
VI	7.50	14.10	2.20
VII	4.50	10.95	2.15
VIII	3.00	8.25	1.75

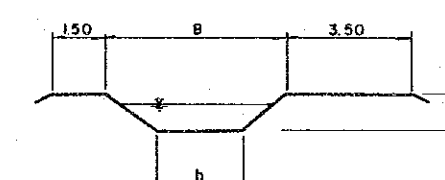


unit: m			
TYPE	b	B	H
BS1	9.0	16.50	2.50
BS3	7.0	14.50	2.50
BS4-1	6.0	12.90	2.30
BS6-1	4.5	10.95	2.15
BS7-2	4.0	9.70	1.90
BS10-4	2.5	6.10	1.20



CANAL TYPE BS12-1

BANK TOP LEVEL
WATER LEVEL
BED LEVEL



TYPE	b	B	H
BS2-2	0.5	15.55	2.35
BS6-2	4.5	10.65	2.05
BS6-3	4.5	9.60	1.70
BS8-2	3.5	8.45	1.65

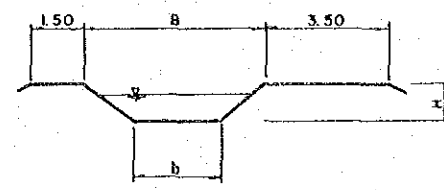
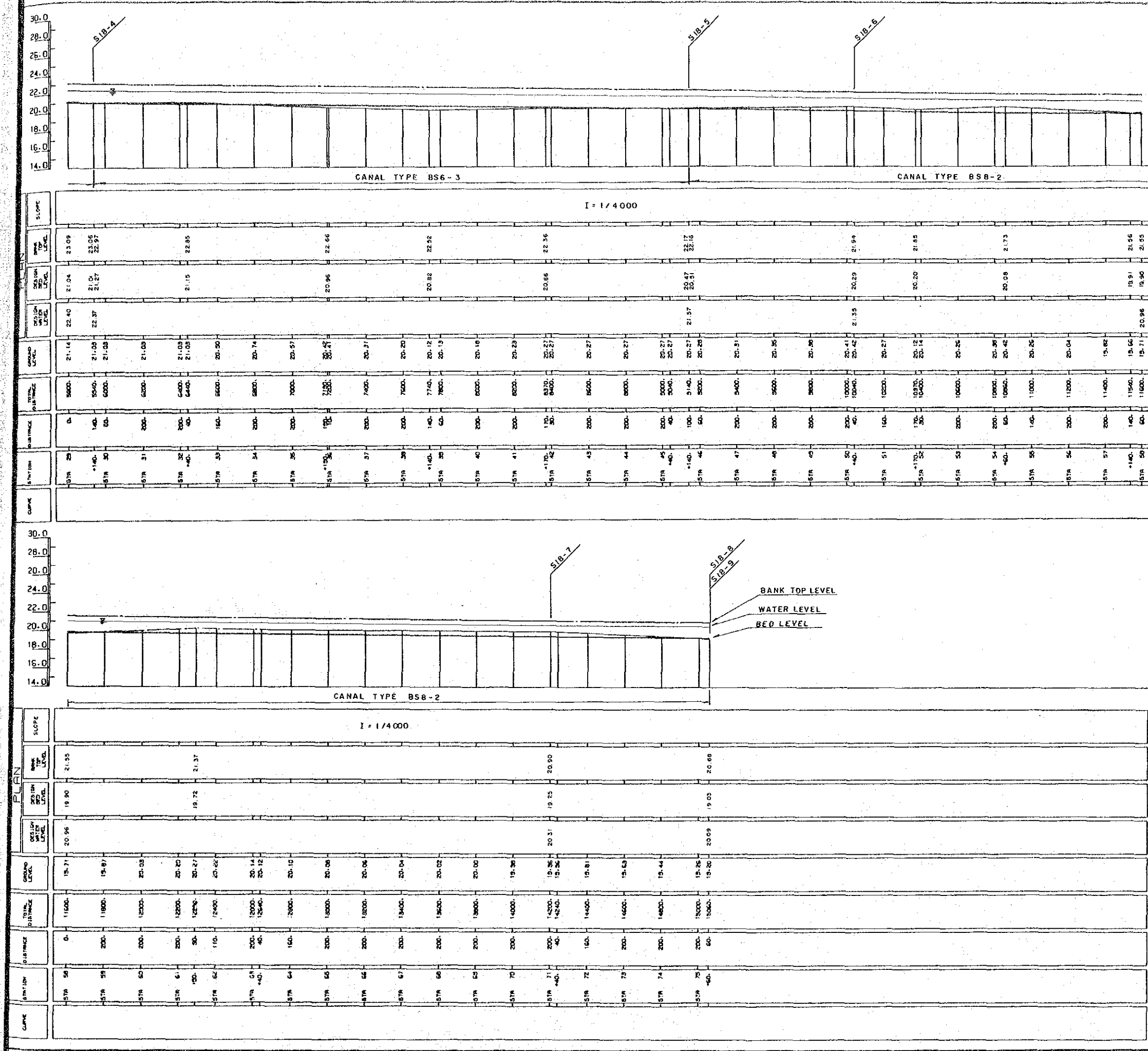
THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

NORTH RAJSHAHI
IRRIGATION PROJECT

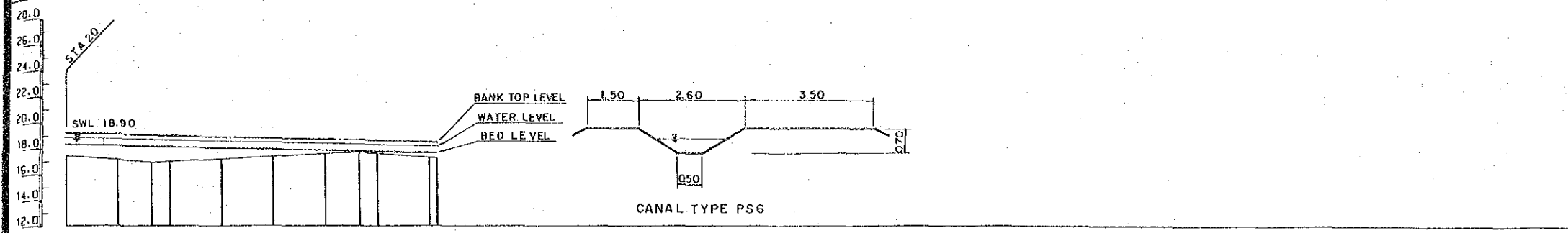
PROFILE OF BARIND AREA
SECONDARY CANAL (BS17, BS18)

JAPAN INTERNATIONAL COOPERATION AGENCY

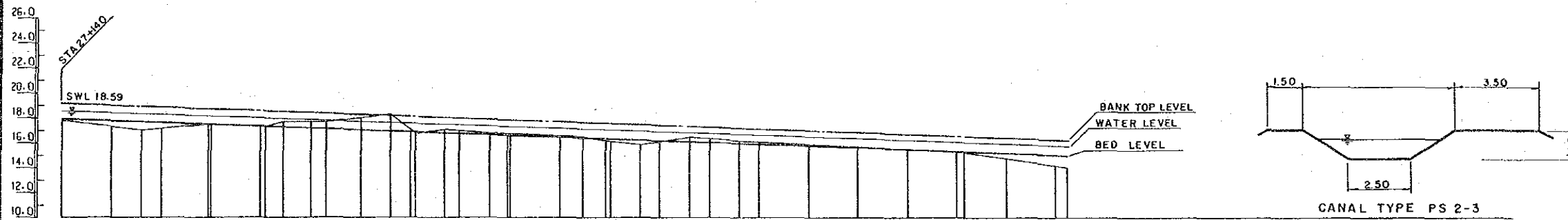
DWG. NO. 212 SHEET 1 OF 2



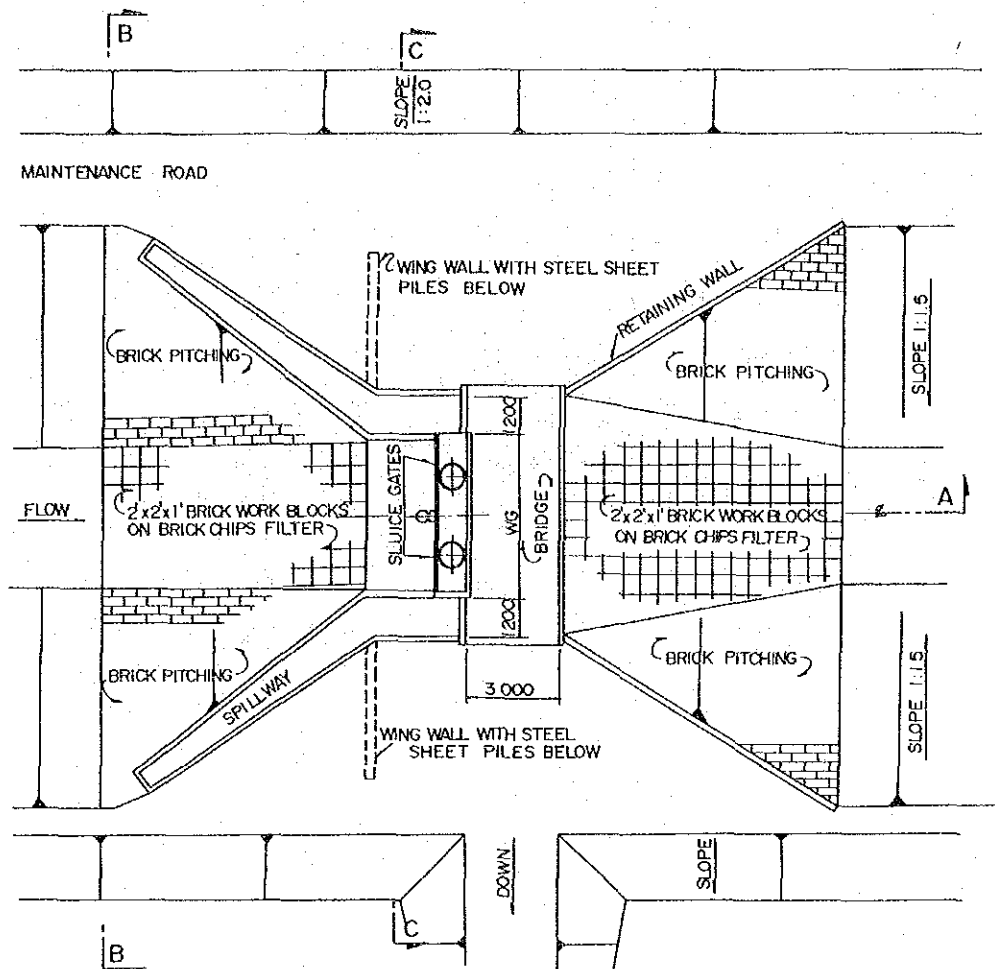
unit: m			
TYPE	b	B	H
BS2-2	8.5	15.55	2.35
BS6-2	4.5	10.65	2.05
BS6-3	4.5	9.60	1.70
BS8-2	3.5	8.45	1.65



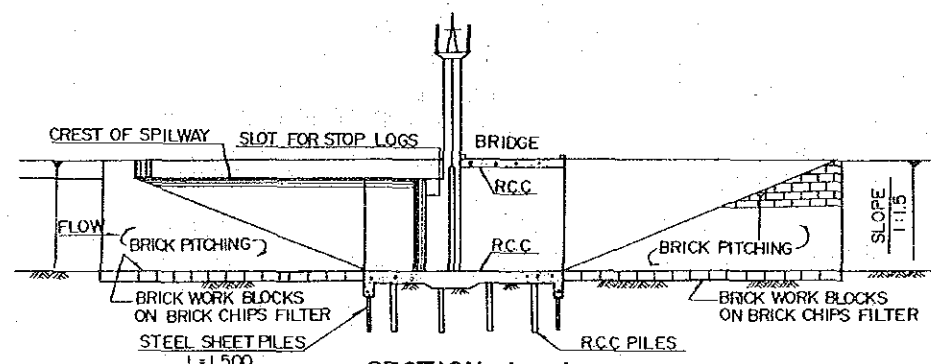
Station	Distance	Channel Bottom Level	Water Level	Bank Top Level	Slope
STA 0	0	18.90	18.90	19.27	1:2000
STA 1	200	18.41	18.41	18.56	
STA 2	400	17.41	17.41	17.86	
STA 3	600	17.11	17.11	17.56	
STA 4	800	16.90	16.90	17.25	
STA 5	1000	16.70	16.70	16.95	
STA 6	1200	16.50	16.50	16.65	
STA 7	1400	16.30	16.30	16.35	
STA 8	1600	16.10	16.10	16.05	
STA 9	1800	15.90	15.90	15.75	
STA 10	2000	15.70	15.70	15.55	
STA 11	2200	15.50	15.50	15.35	
STA 12	2400	15.30	15.30	15.15	
STA 13	2600	15.10	15.10	14.95	
STA 14	2800	14.90	14.90	14.75	
STA 15	3000	14.70	14.70	14.55	
STA 16	3200	14.50	14.50	14.35	
STA 17	3400	14.30	14.30	14.15	
STA 18	3600	14.10	14.10	13.95	
STA 19	3800	13.90	13.90	13.75	
STA 20	4000	13.70	13.70	13.55	
STA 21	4200	13.50	13.50	13.35	
STA 22	4400	13.30	13.30	13.15	
STA 23	4600	13.10	13.10	12.95	
STA 24	4800	12.90	12.90	12.75	
STA 25	5000	12.70	12.70	12.55	
STA 26	5200	12.50	12.50	12.35	
STA 27	5400	12.30	12.30	12.15	
STA 28	5600	12.10	12.10	11.95	
STA 29	5800	11.90	11.90	11.75	
STA 30	6000	11.70	11.70	11.55	
STA 31	6200	11.50	11.50	11.35	
STA 32	6400	11.30	11.30	11.15	
STA 33	6600	11.10	11.10	10.95	
STA 34	6800	10.90	10.90	10.75	
STA 35	7000	10.70	10.70	10.55	
STA 36	7200	10.50	10.50	10.35	
STA 37	7400	10.30	10.30	10.15	
STA 38	7600	10.10	10.10	9.95	
STA 39	7800	9.90	9.90	9.75	
STA 40	8000	9.70	9.70	9.55	
STA 41	8200	9.50	9.50	9.35	
STA 42	8400	9.30	9.30	9.15	
STA 43	8600	9.10	9.10	8.95	
STA 44	8800	8.90	8.90	8.75	
STA 45	9000	8.70	8.70	8.55	
STA 46	9200	8.50	8.50	8.35	
STA 47	9400	8.30	8.30	8.15	
STA 48	9600	8.10	8.10	7.95	
STA 49	9800	7.90	7.90	7.75	
STA 50	10000	7.70	7.70	7.55	



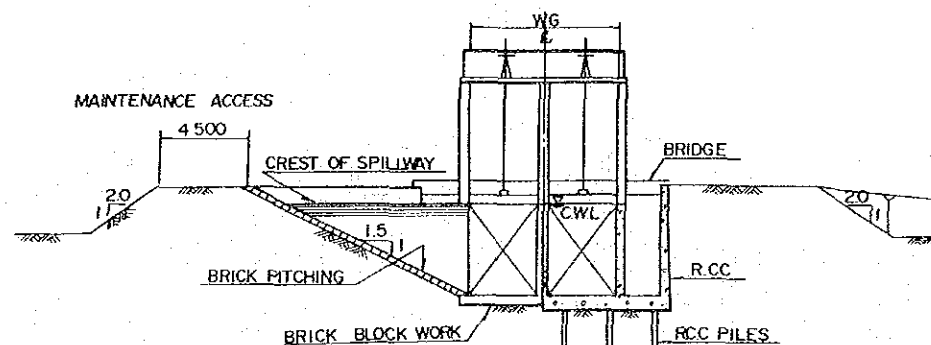
Station	Distance	Channel Bottom Level	Water Level	Bank Top Level	Slope
STA 0	0	18.59	18.59	19.09	1:1500
STA 1	200	17.79	17.79	18.88	
STA 2	400	17.50	17.50	18.59	
STA 3	600	17.20	17.20	18.30	
STA 4	800	16.90	16.90	18.01	
STA 5	1000	16.60	16.60	17.72	
STA 6	1200	16.30	16.30	17.43	
STA 7	1400	16.00	16.00	17.14	
STA 8	1600	15.70	15.70	16.85	
STA 9	1800	15.40	15.40	16.56	
STA 10	2000	15.10	15.10	16.27	
STA 11	2200	14.80	14.80	15.98	
STA 12	2400	14.50	14.50	15.69	
STA 13	2600	14.20	14.20	15.40	
STA 14	2800	13.90	13.90	15.11	
STA 15	3000	13.60	13.60	14.82	
STA 16	3200	13.30	13.30	14.53	
STA 17	3400	13.00	13.00	14.24	
STA 18	3600	12.70	12.70	13.95	
STA 19	3800	12.40	12.40	13.66	
STA 20	4000	12.10	12.10	13.37	
STA 21	4200	11.80	11.80	13.08	
STA 22	4400	11.50	11.50	12.79	
STA 23	4600	11.20	11.20	12.50	
STA 24	4800	10.90	10.90	12.21	
STA 25	5000	10.60	10.60	11.92	
STA 26	5200	10.30	10.30	11.63	
STA 27	5400	10.00	10.00	11.34	
STA 28	5600	9.70	9.70	11.05	
STA 29	5800	9.40	9.40	10.76	
STA 30	6000	9.10	9.10	10.47	
STA 31	6200	8.80	8.80	10.18	
STA 32	6400	8.50	8.50	9.89	
STA 33	6600	8.20	8.20	9.60	
STA 34	6800	7.90	7.90	9.31	
STA 35	7000	7.60	7.60	9.02	
STA 36	7200	7.30	7.30	8.73	
STA 37	7400	7.00	7.00	8.44	
STA 38	7600	6.70	6.70	8.15	
STA 39	7800	6.40	6.40	7.86	
STA 40	8000	6.10	6.10	7.57	
STA 41	8200	5.80	5.80	7.28	
STA 42	8400	5.50	5.50	6.99	
STA 43	8600	5.20	5.20	6.70	
STA 44	8800	4.90	4.90	6.41	
STA 45	9000	4.60	4.60	6.12	
STA 46	9200	4.30	4.30	5.83	
STA 47	9400	4.00	4.00	5.54	
STA 48	9600	3.70	3.70	5.25	
STA 49	9800	3.40	3.40	4.96	
STA 50	10000	3.10	3.10	4.67	



PLAN



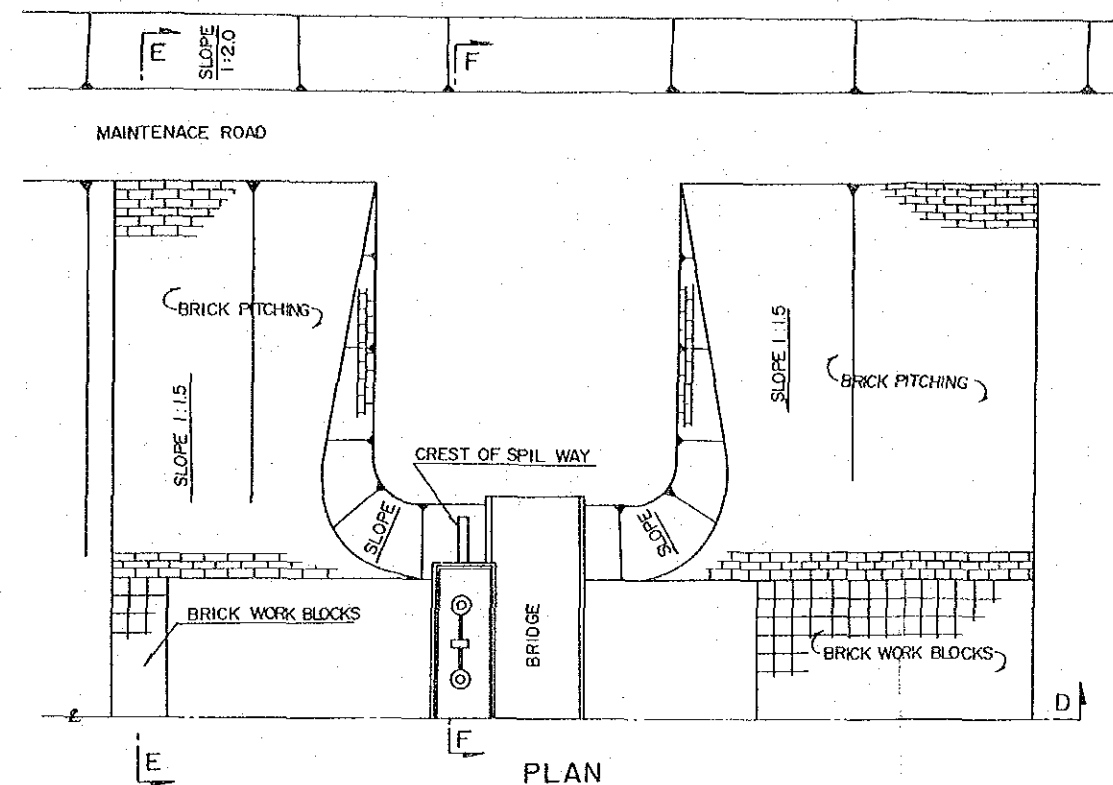
SECTION A - A



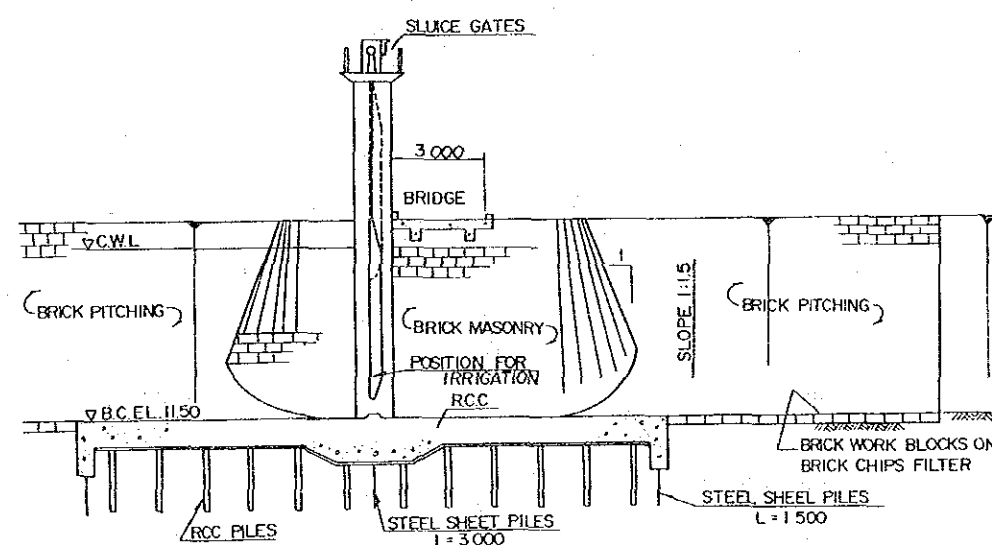
SECTION B - B

SECTION C - C

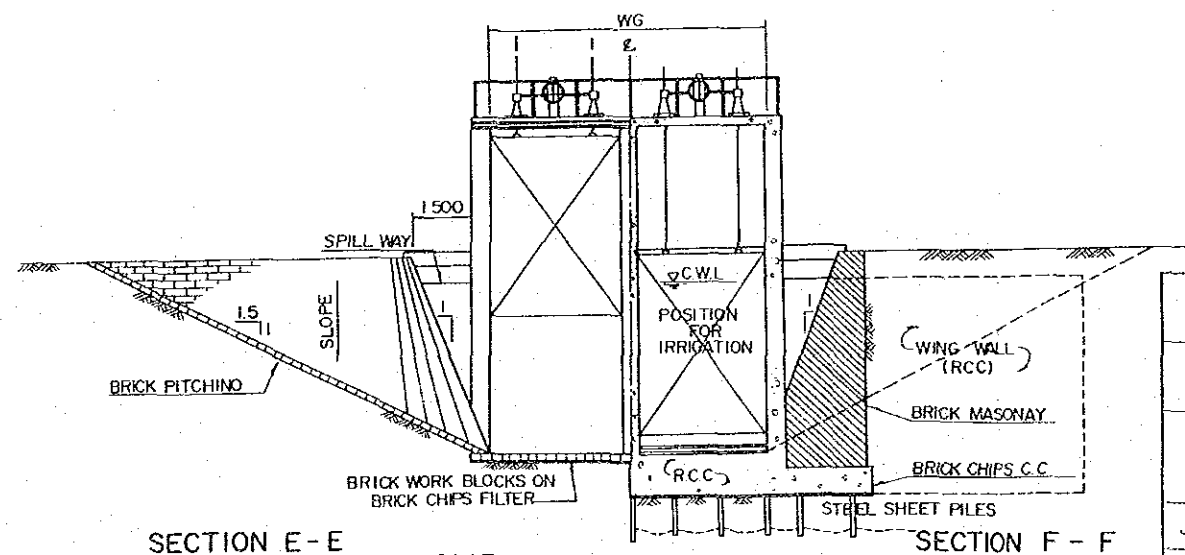
CHECK GATE TYPE - A



PLAN



SECTION D - D



SECTION E - E

CHECK GATE TYPE - B

SECTION F - F

DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

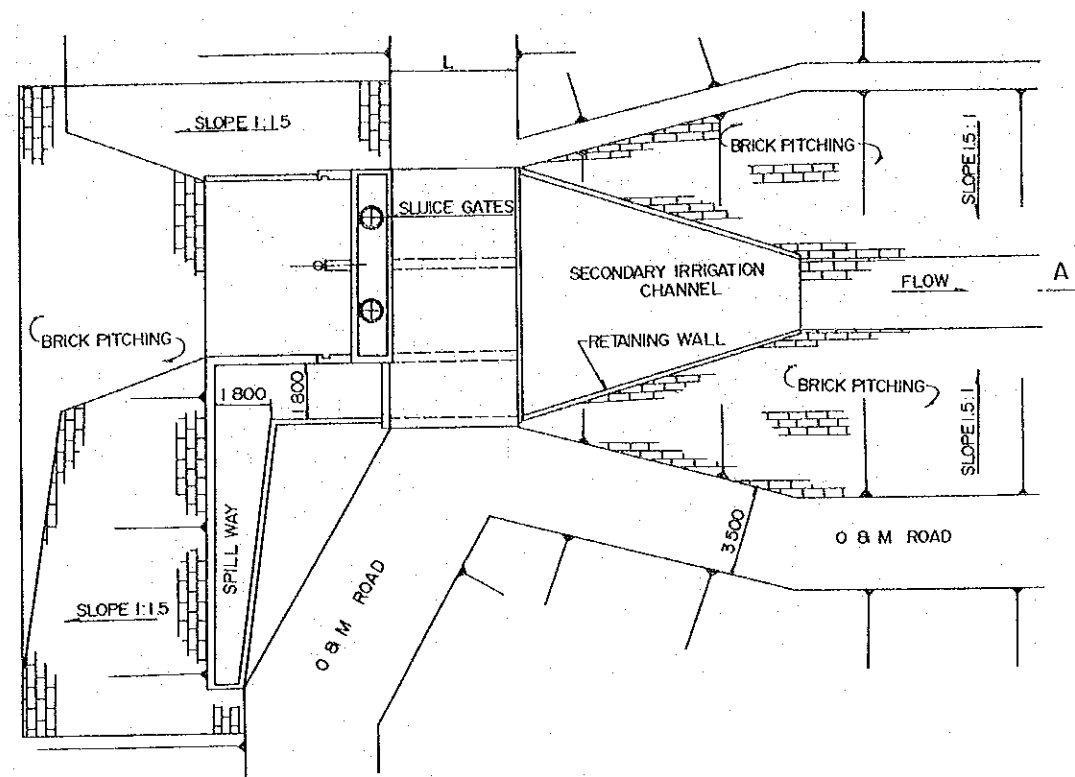
NORTH RAJSHAHI
IRRIGATION PROJECT

CHECK GATE (TYPE A, B)

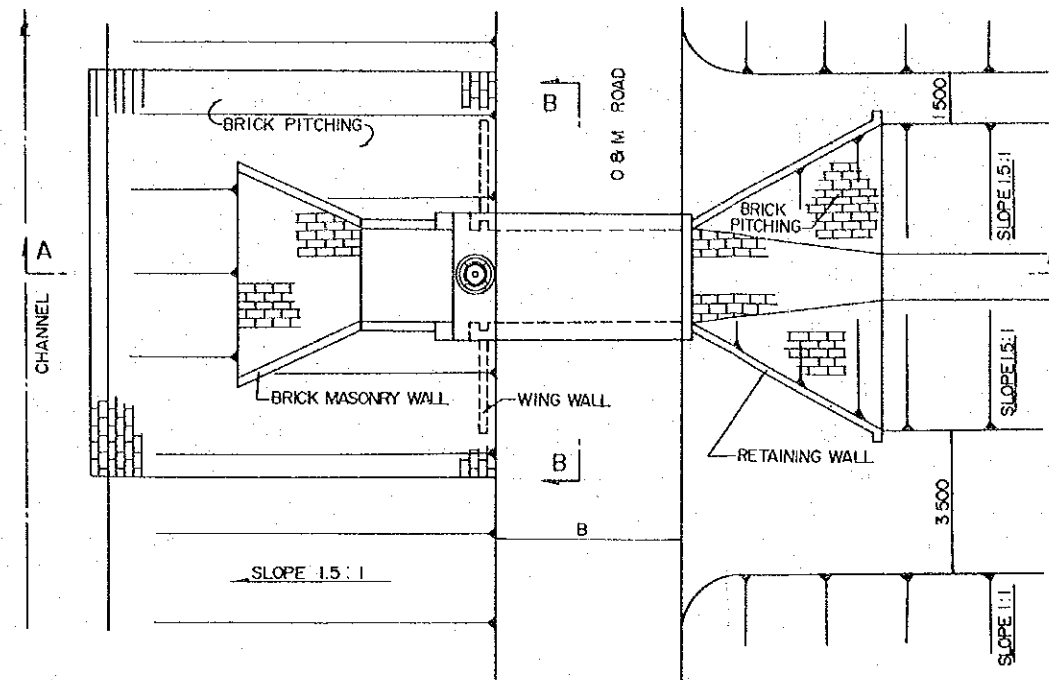
JAPAN INTERNATIONAL COOPERATION AGENCY

DWG. NO. 215

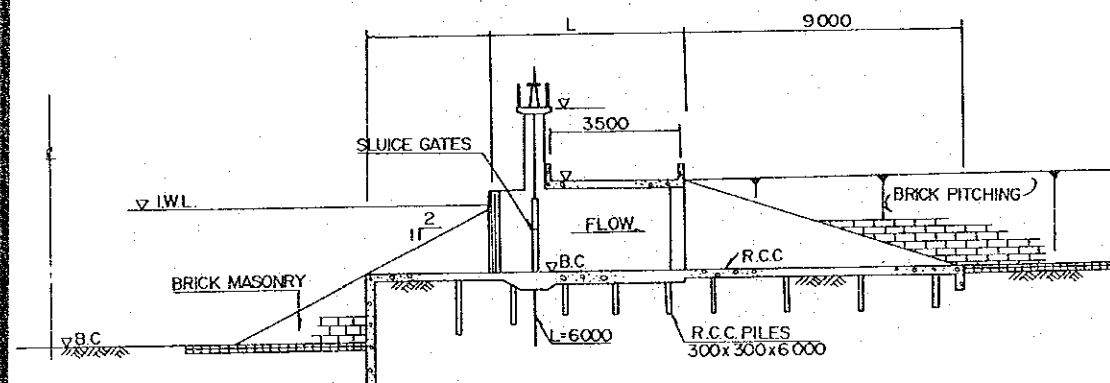
SHEET OF



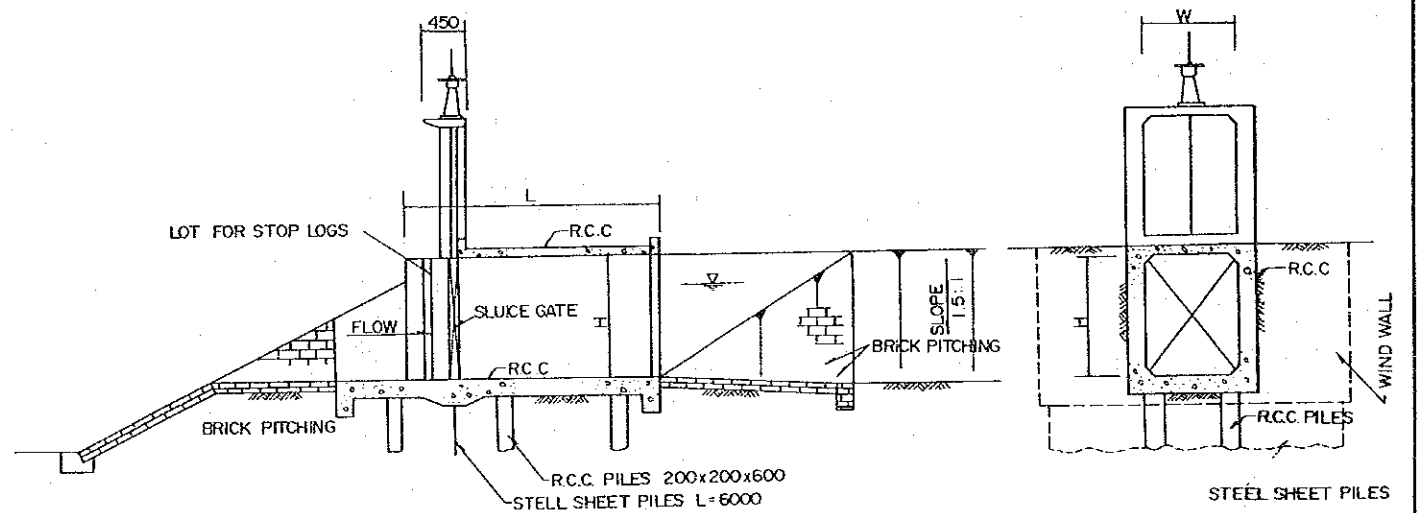
PLAN



PLAN



SECTION A - A



SECTION A - A

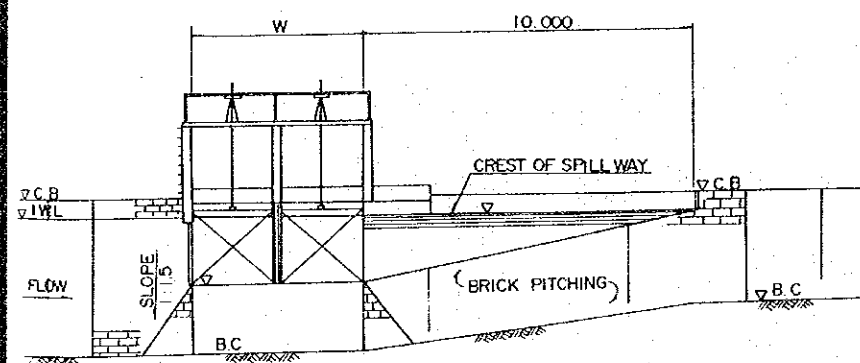
SECTION B - B

BIFURCATION TYPE A

	DESIGN CAPACITY (m³/s)	CULVERT		LENGTH : L	
		W	H	ACTUAL	AVERAGE
A - 1	55~11.0	8.00	2.30	450-550	5.00
A - 2	28~5.5	6.00	2.00	- do -	- do -
A - 3	15~2.8	4.00	1.65	- do -	- do -
A - 4	0.7~1.5	3.00	1.20	- do -	- do -

BIFURCATION TYPE B

	DESIGN CAPACITY (m³/s)	CULVERT		LENGTH : L	
		W	H	ACTUAL	AVERAGE
B - 1	28~5.5	2.50	2.00	450-550	5.00
B - 2	1.5~2.8	2.00	1.60	- do -	- do -
B - 3	1.0~1.5	1.50	1.20	- do -	- do -

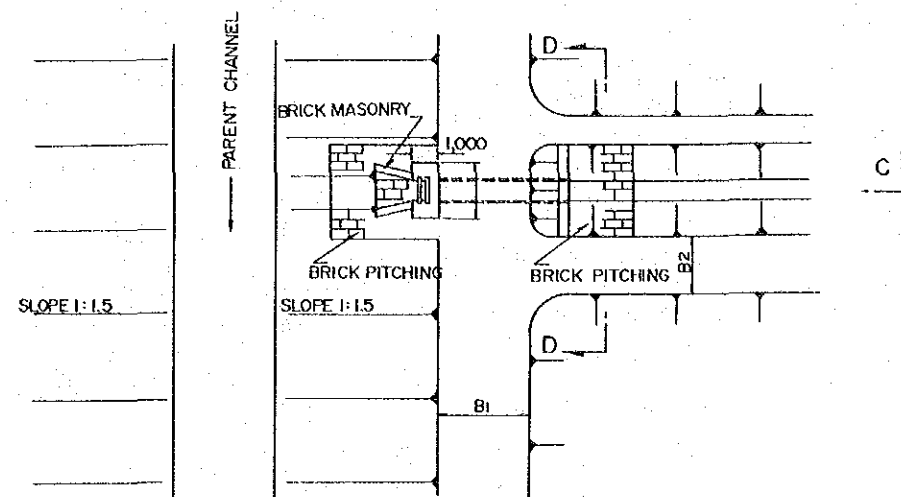


BIFURCATION TYPE A

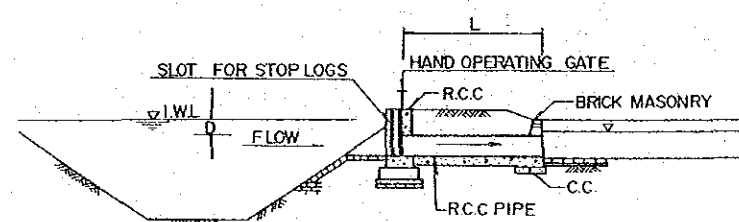
BIFURCATION TYPE B

DIMENSION ; mm

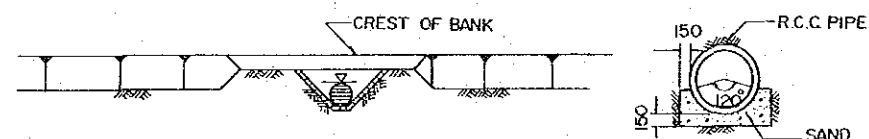
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
BIFURCATION STRUCTURE (TYPE A, B)	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 216	SHEET 1 OF 2



PLAN



SECTION C - C



SECTION D - D

PIPE IN PLACE

BIFURCATION TYPE C
AND FARM TURN OUT

	DESIGN CAPACITY (m ³ /s)	DIA OF PIPE Ø mm	LENGTH OF PIPE		A
			ACTUAL	AVERAGE	
TYPE C	0.3 ~ 1.0	900	250 ~ 600	4.25	2.10
FARM TURNOUT	LESS THAN 0.3	300 ~ 600	250 ~ 600	4.25	1.80

DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

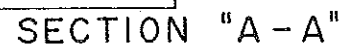
NORTH RAJSHAHI
IRRIGATION PROJECT

BIFURCATION STRUCTURE (TYPE C)
AND FARM TURNOUT

JAPAN INTERNATIONAL COOPERATION AGENCY

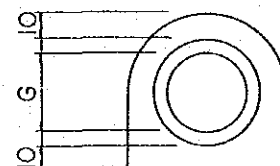
DWG. NO. 217

SHEET 2 OF 2

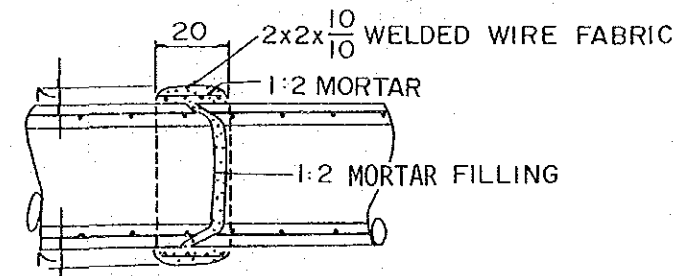


Technical drawing of a U-shaped component. The top horizontal edge is divided into three segments: a left segment of 15, a central segment labeled 'A', and a right segment of 15. The vertical edge on the right is labeled '15VAR'. The bottom horizontal edge is labeled '10x10 FILLET'.

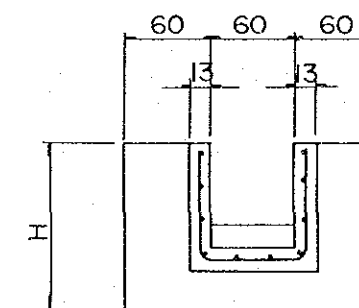
SECTION "B-B"



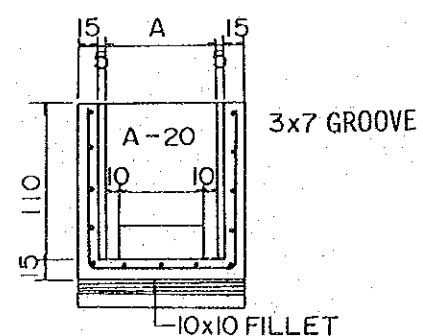
SECTION "E-E"



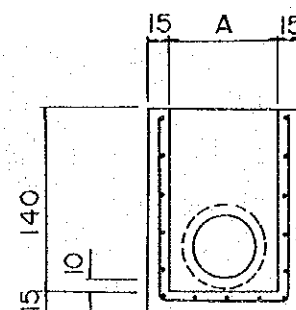
ALTERNATE PIPE COLLAR JOINT



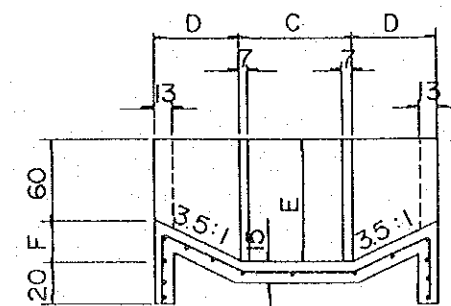
SECTION "F - F"



SECTION "C-C"



SECTION "D-D"

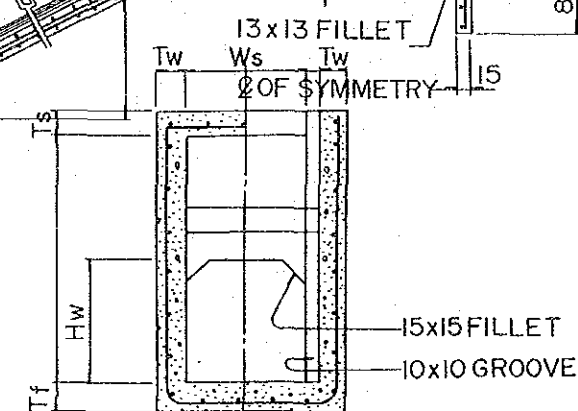
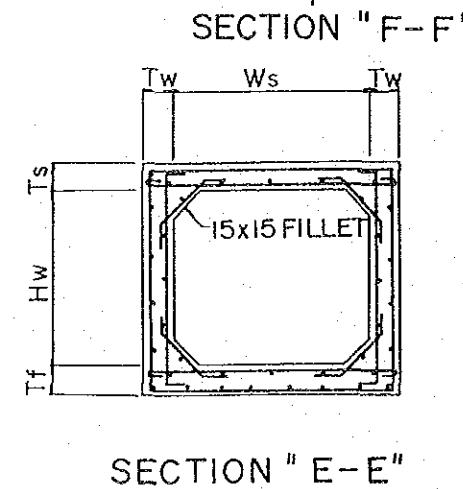
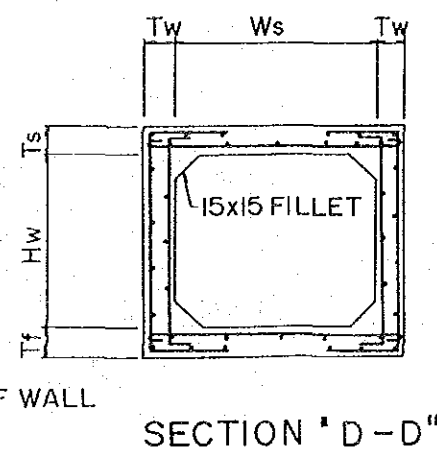
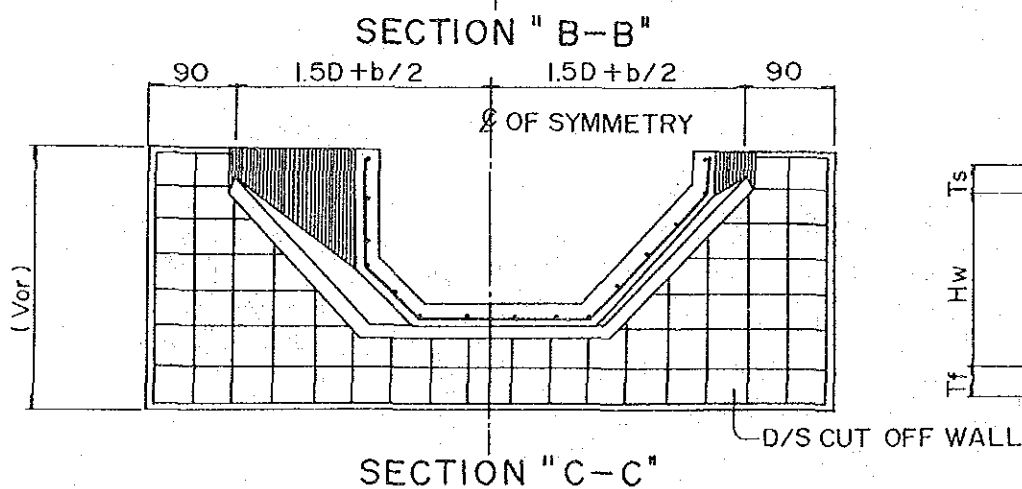
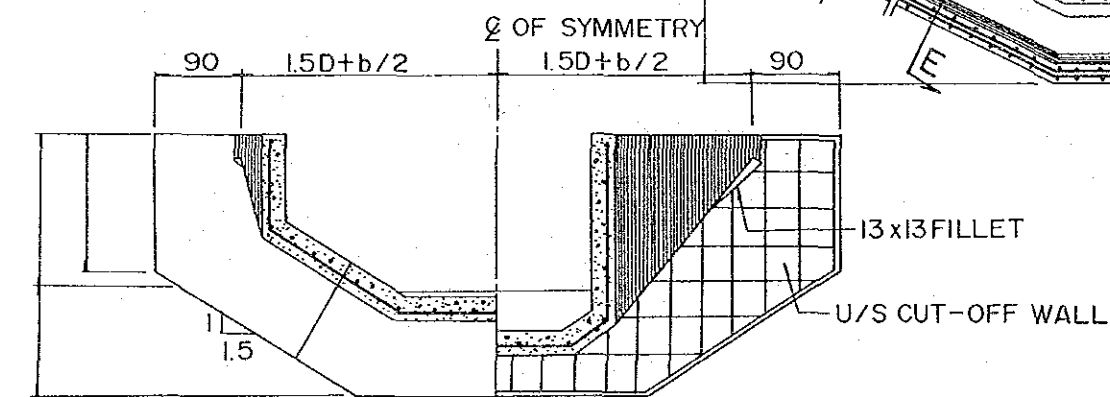
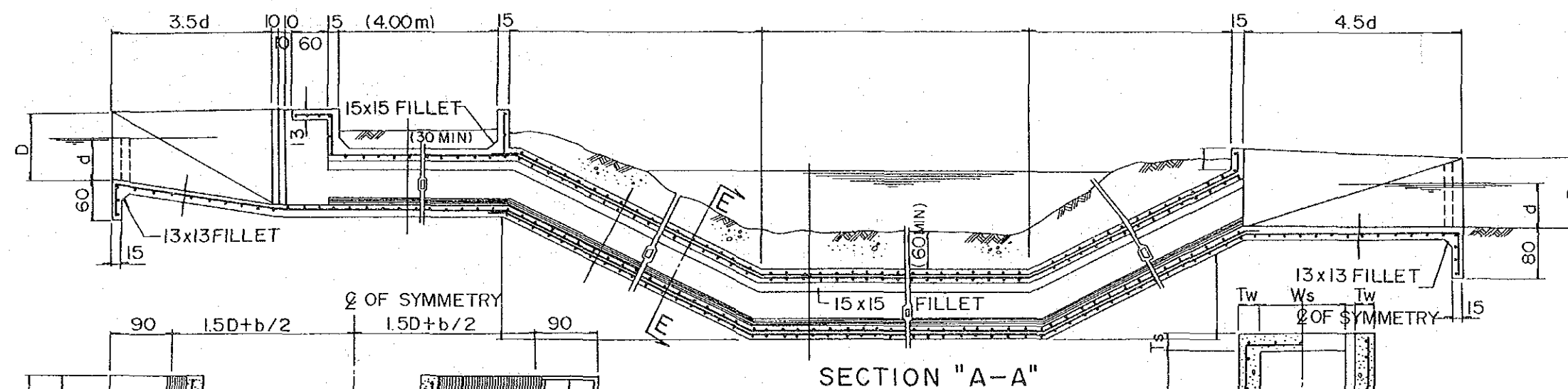
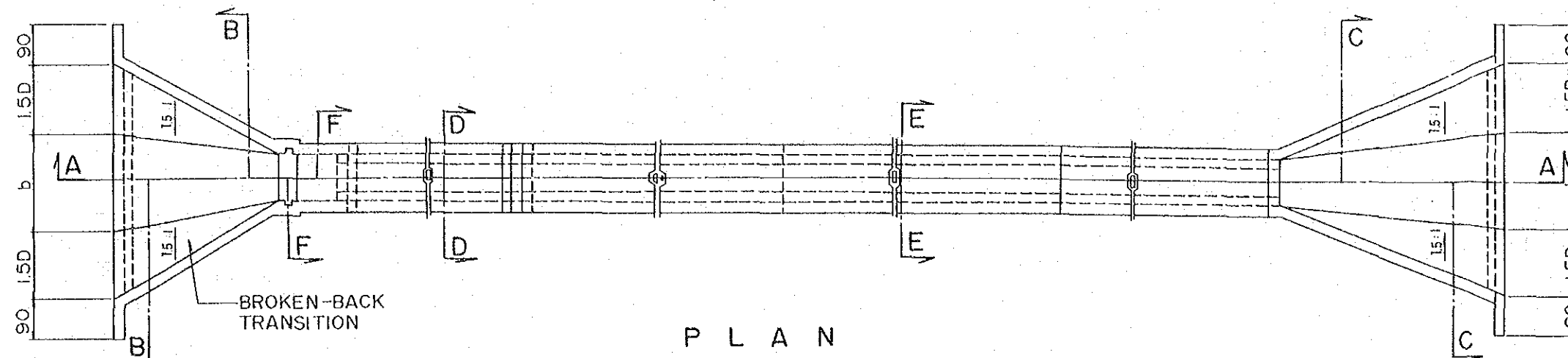


SECTION "G-G"

DIMENSION; cm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
DOUBLE ORIFICE TURNOUT	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 218	SHEET OF

SHEET 1 OF 2



TYPE	Ws	Hw	Q m ³ /s
C	2.0	1.50	3~4

DIMENSION ; cm

THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

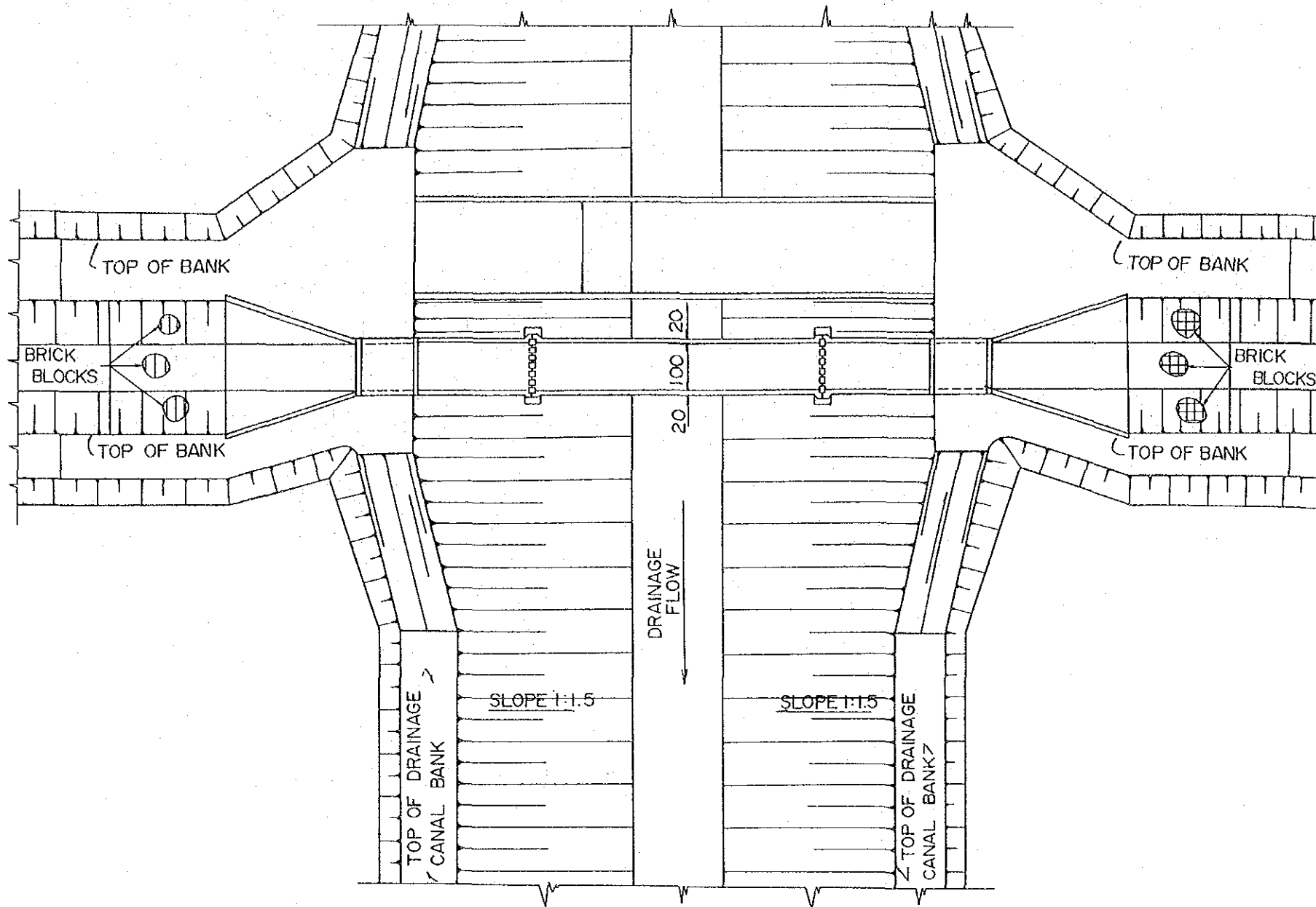
NORTH RAJSHAHI
IRRIGATION PROJECT

TYPICAL INVERT SIPHON (TYPE C)

JAPAN INTERNATIONAL COOPERATION AGENCY

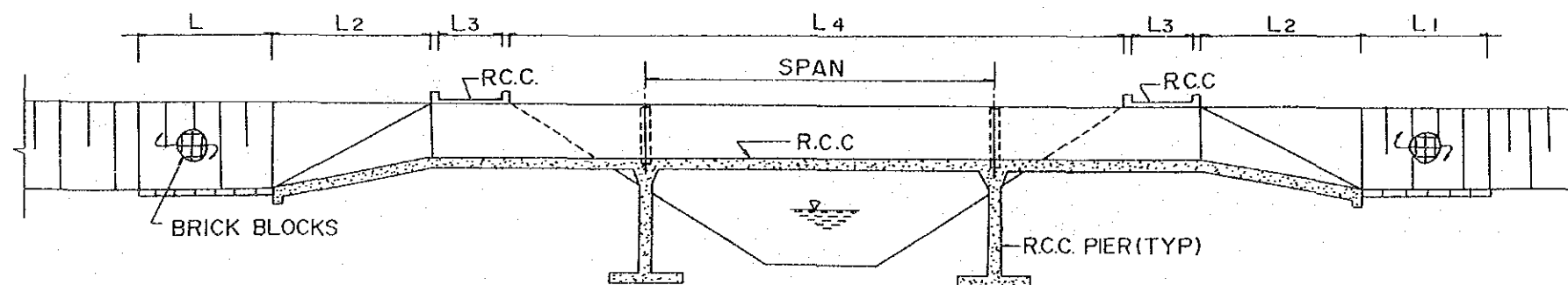
DWG. NO. 220

SHEET 2 OF 2



P L A N

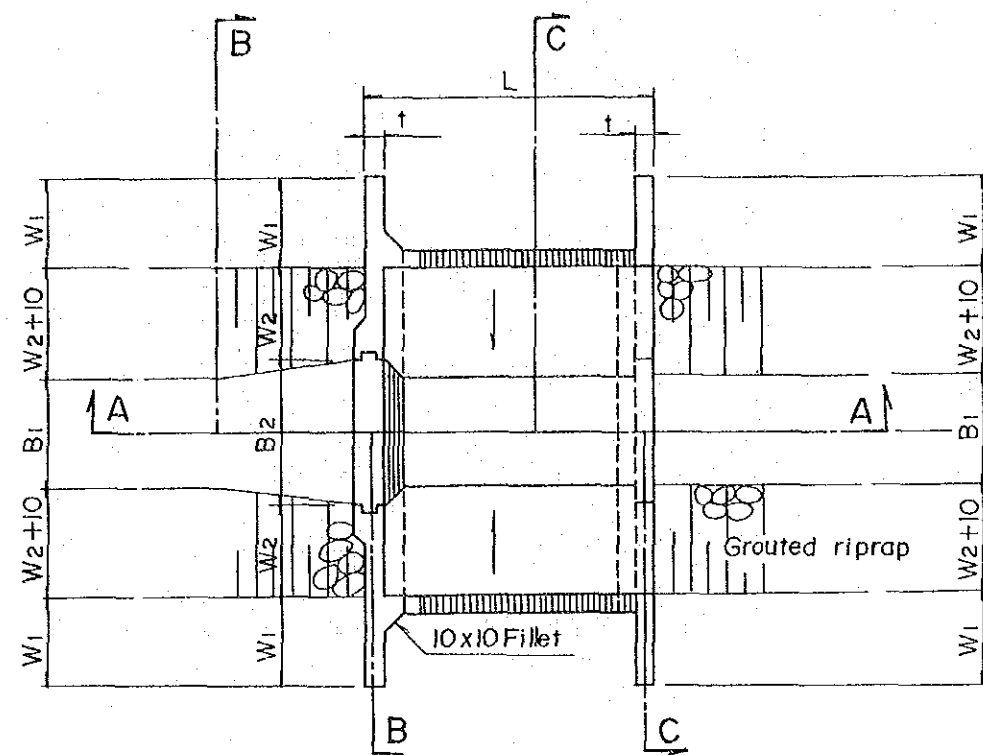
CONCRETE OVERCHUTES



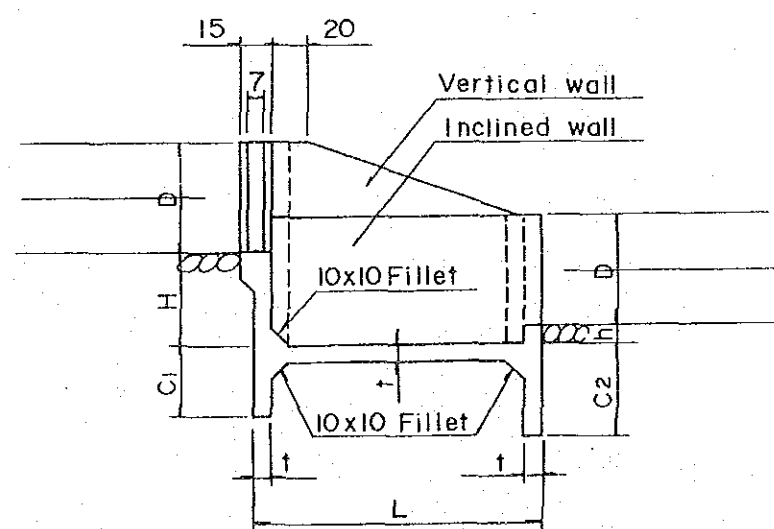
P R O F I L E

DIMENSION ; cm

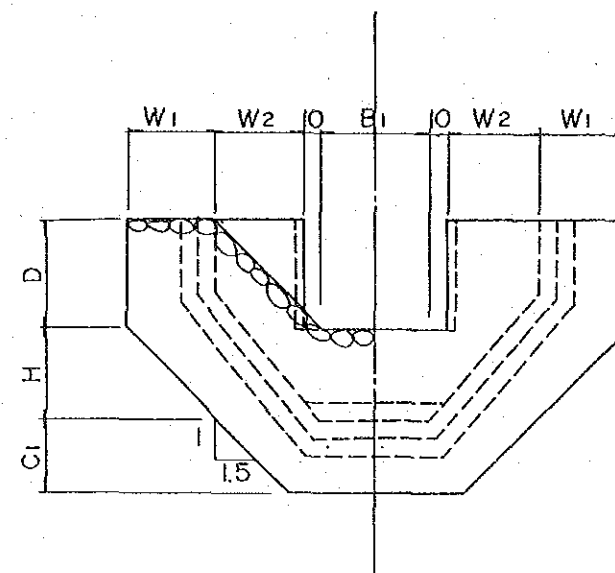
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL AQUEDUCT	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 221	SHEET OF



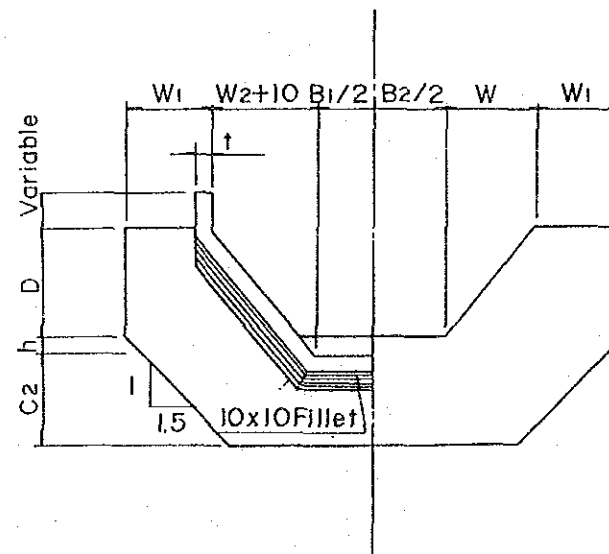
P L A N



SECTION "A-A"



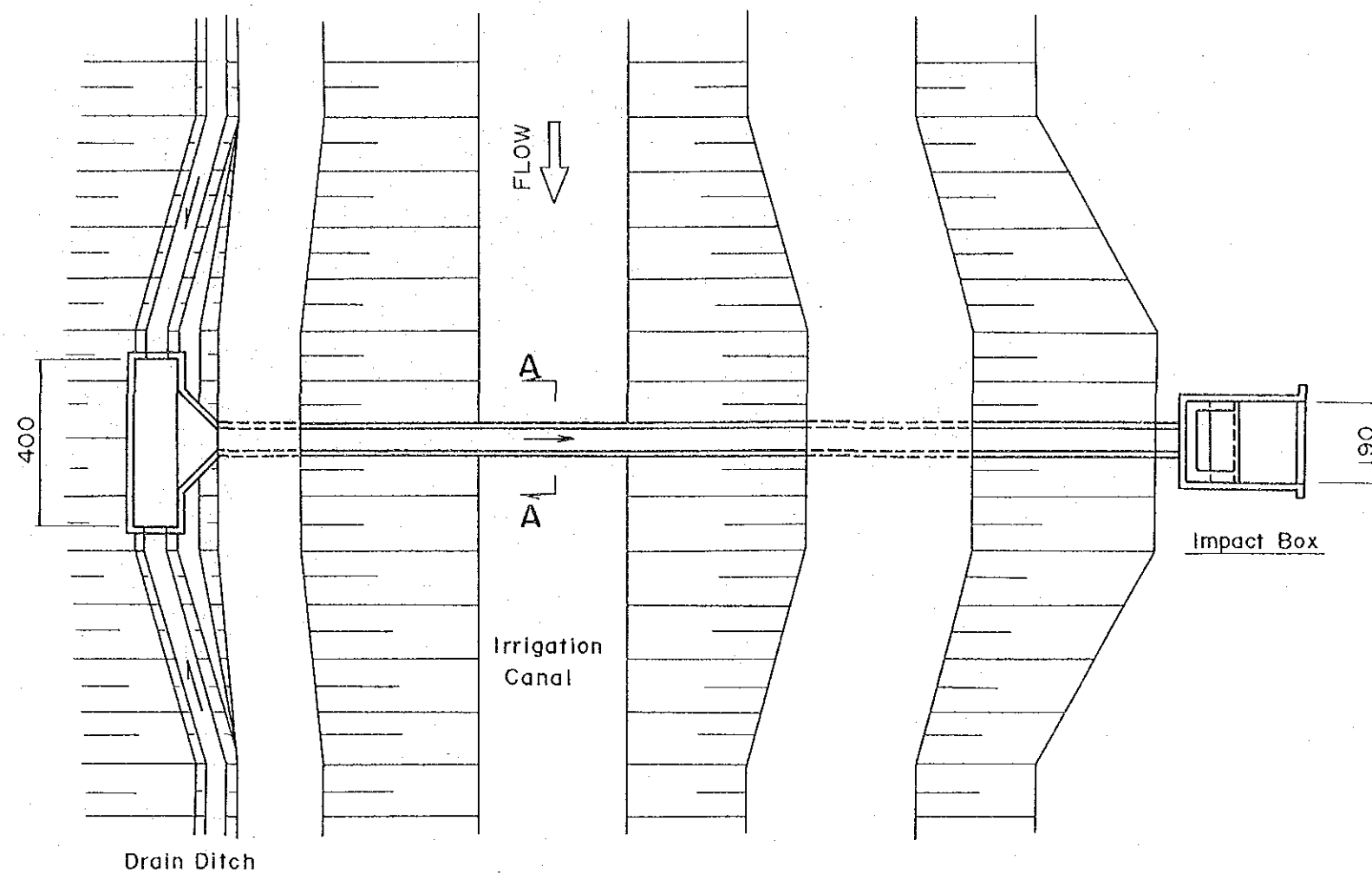
SECTION "B-B"



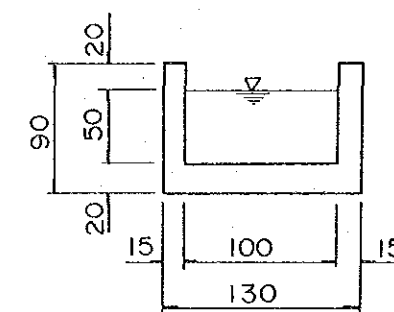
SECTION "C-C"

DIMENSION ; cm

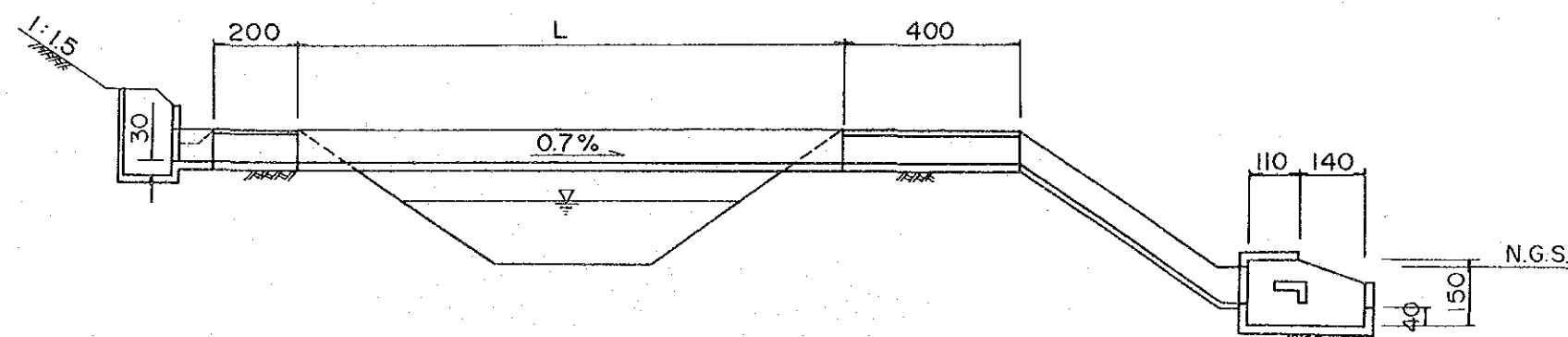
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
VERTICAL DROP	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 223	SHEET OF



P L A N



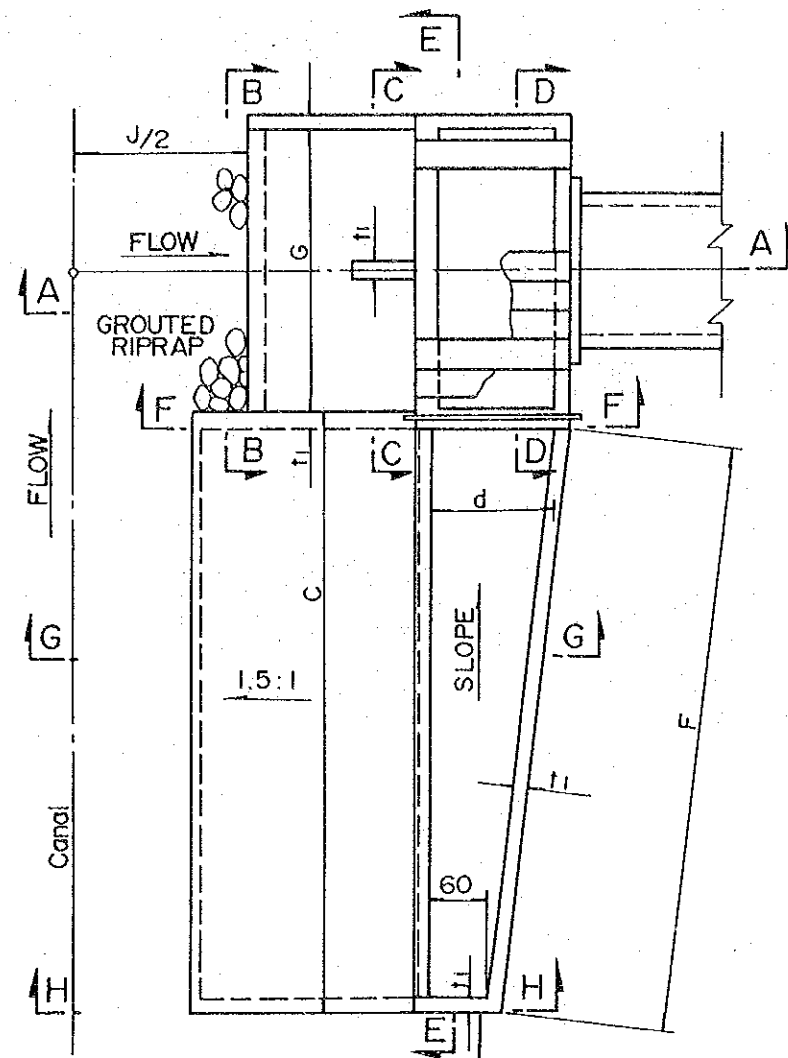
SECTION "A-A"



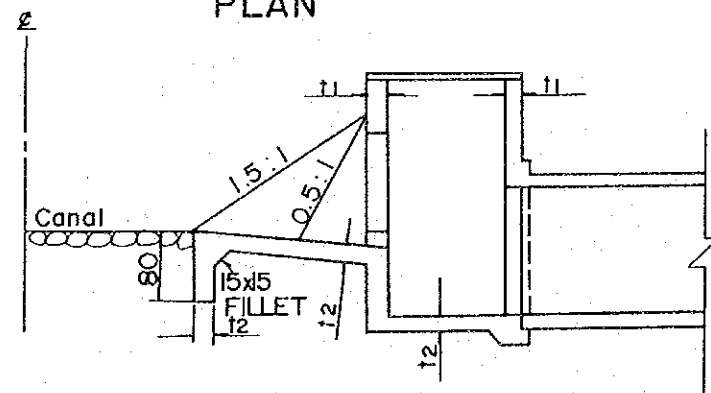
P R O F I L E

DIMENSION ; cm

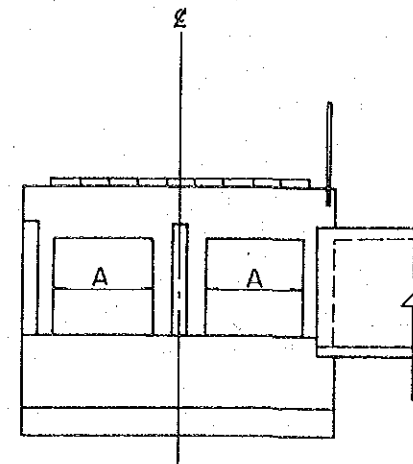
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
OVER CHUTE	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 224	SHEET OF



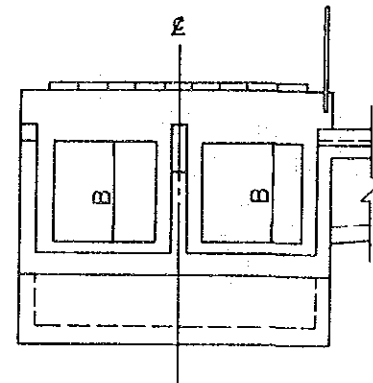
PLAN



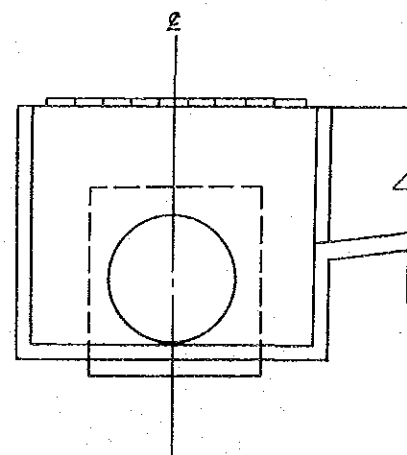
SECTION "A - A"



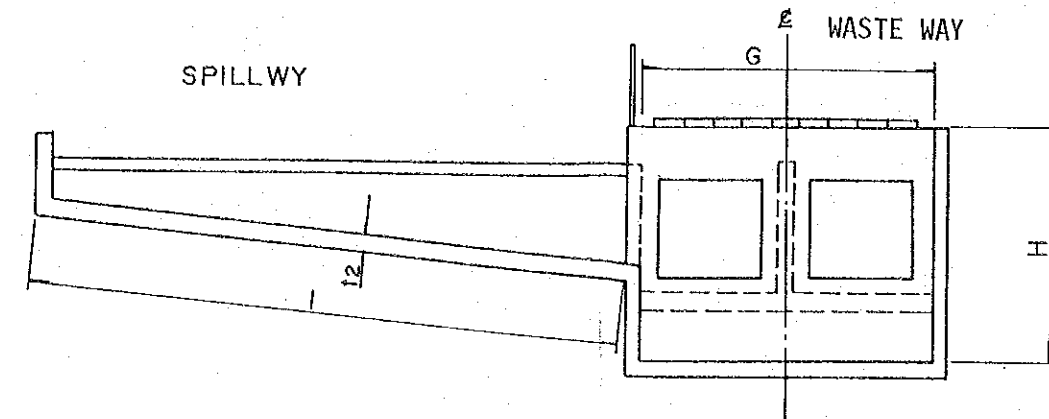
SECTION "B - B"



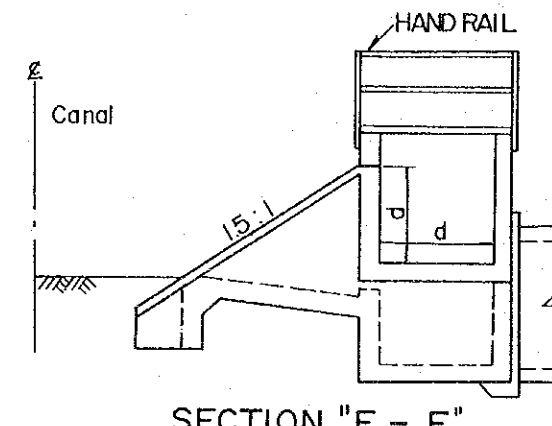
SECTION "C - C"



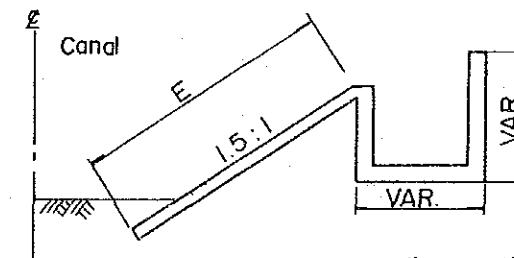
SECTION "D - D"



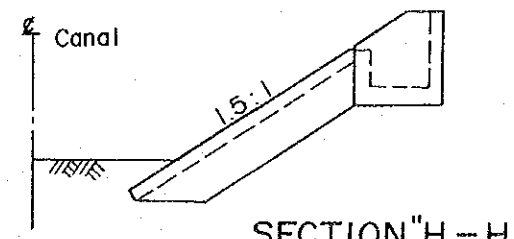
SECTION "E - E"



SECTION "F - F"



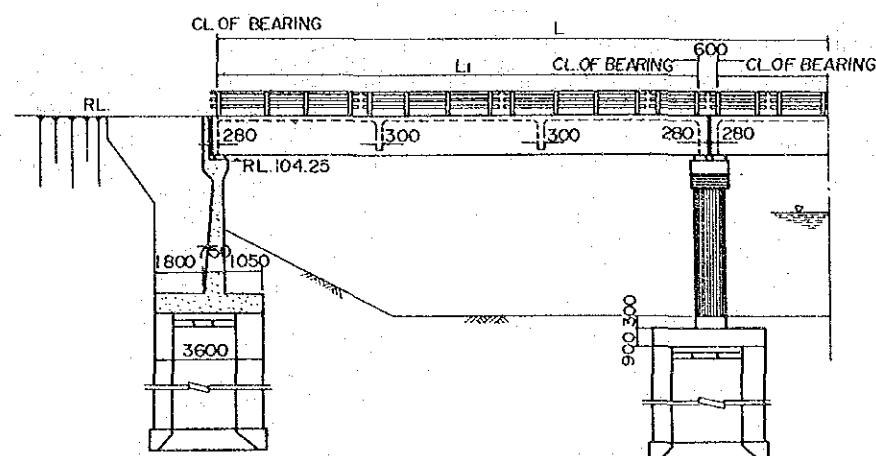
SECTION "G - G"



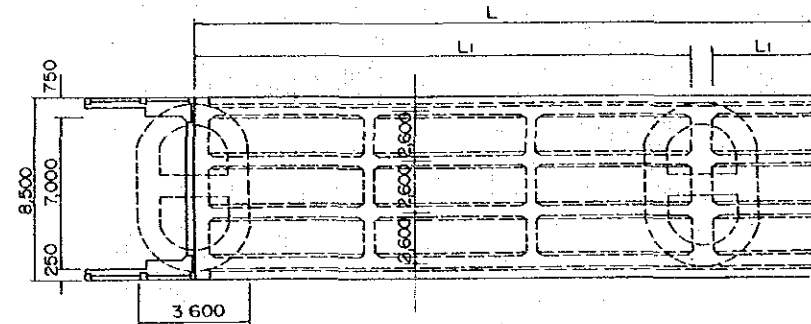
SECTION "H - H"

DIMENSION ; mm

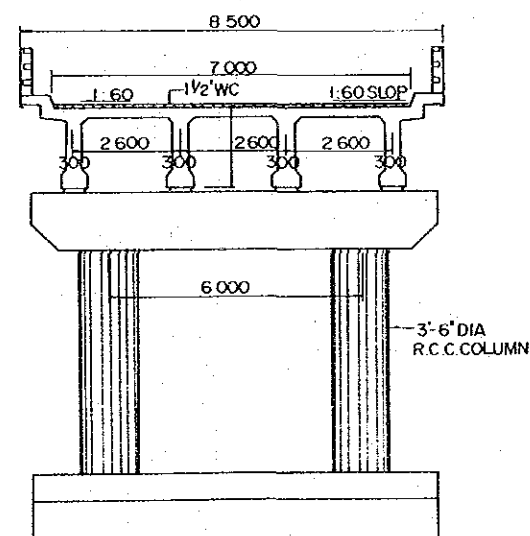
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
WASTE WAY	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 225	SHEET OF



PROFILE

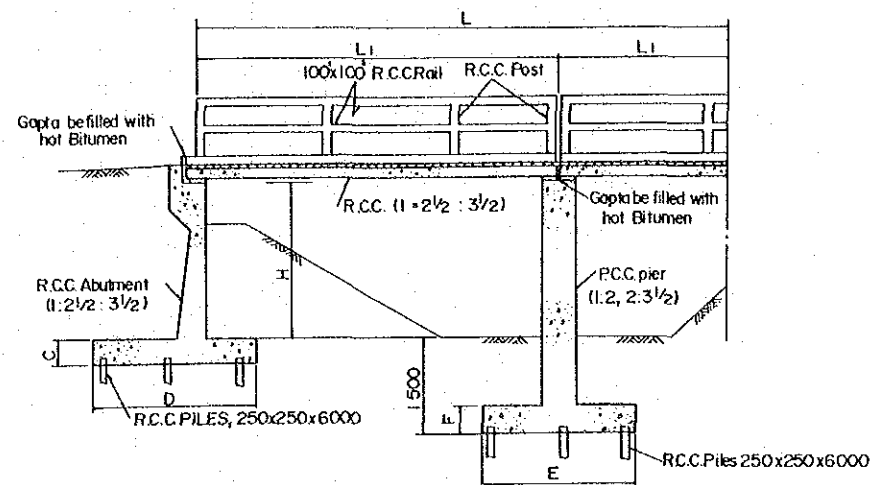


PLAN

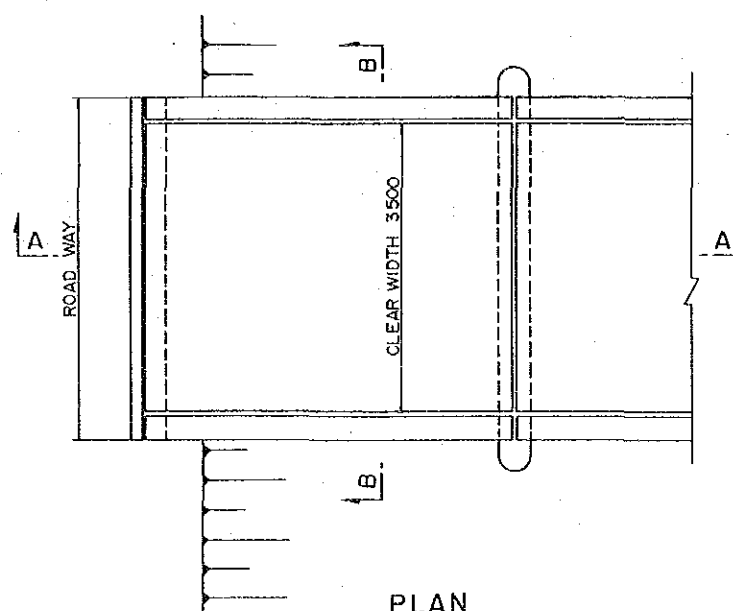


SECTION OF DECK SLAB

TYPICAL HIGHWAY & TRACK BRIDGE TYPE A

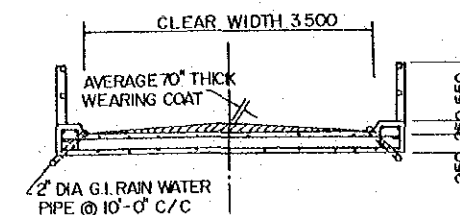


SECTION "A - A"

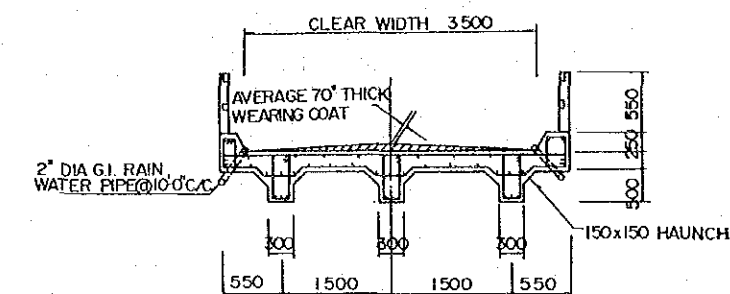


PLAN

TYPICAL TRACK BRIDGE TYPE B



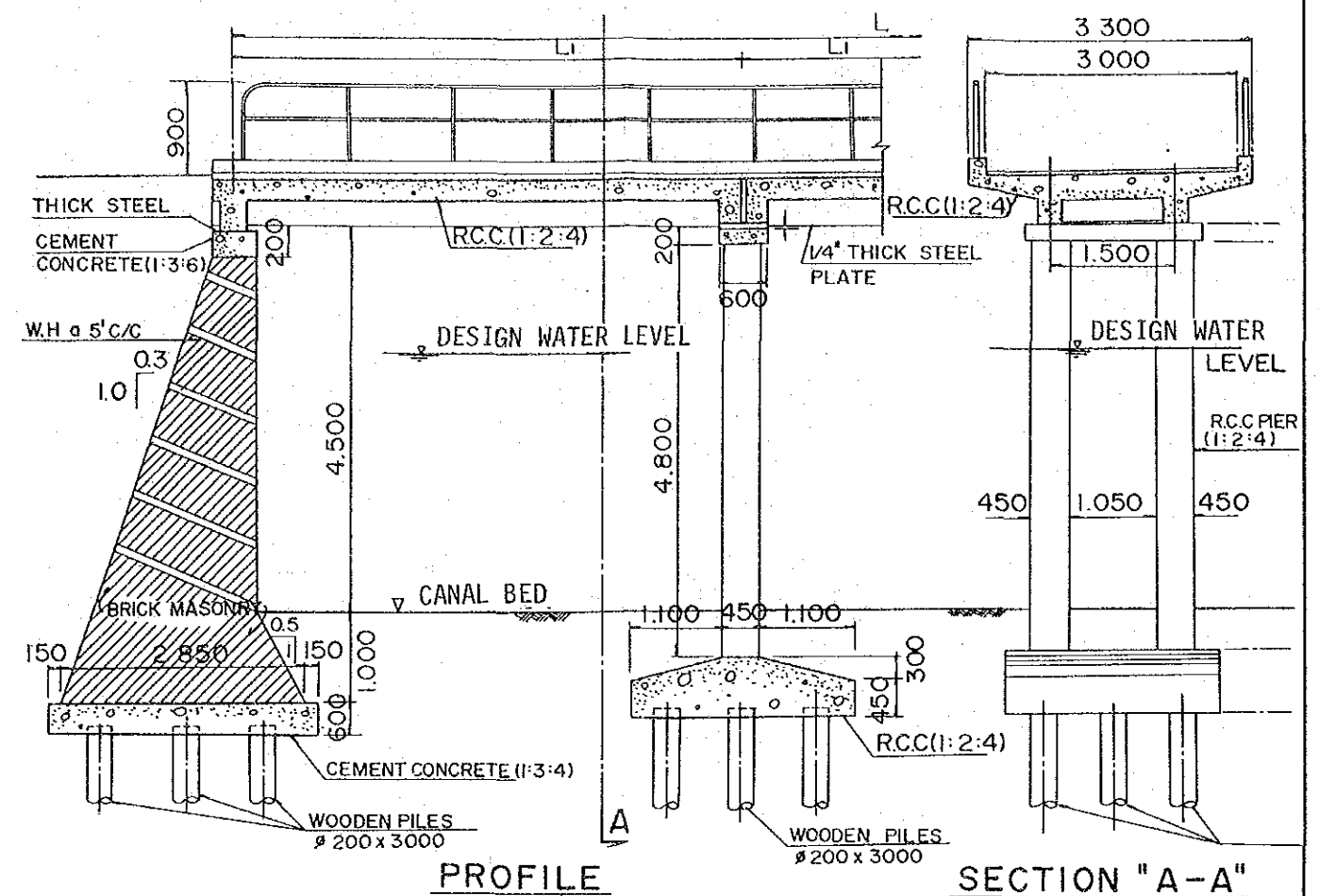
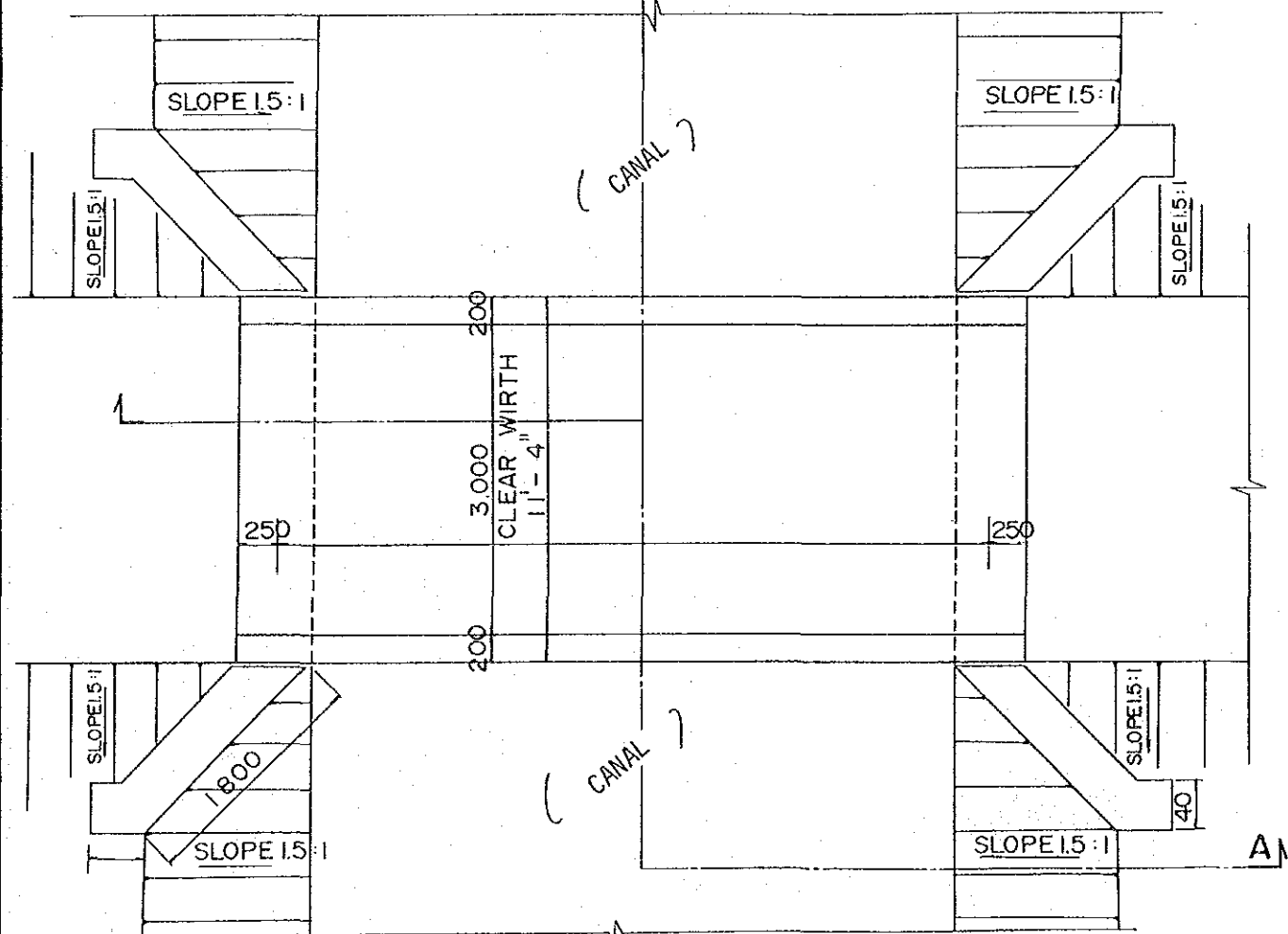
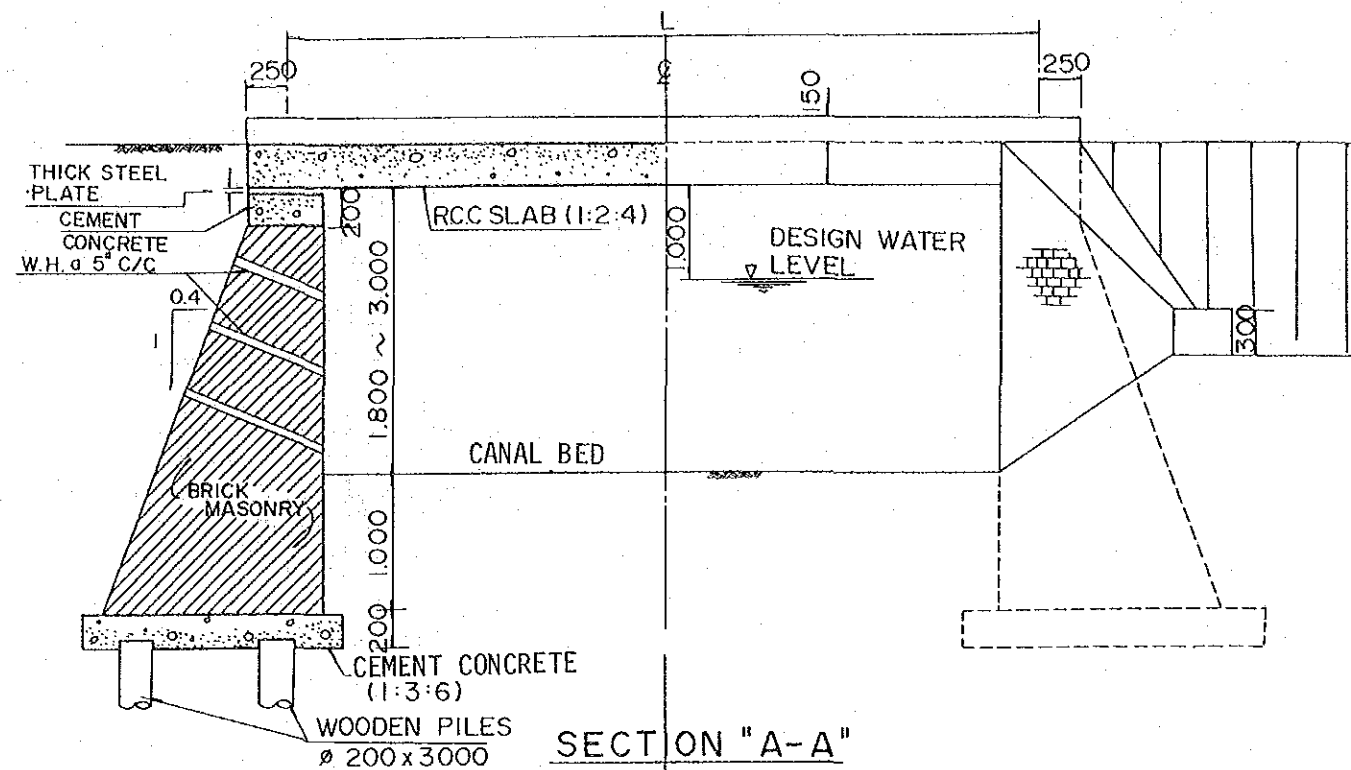
SECTION "B - B"



SECTION "B - B"
(FOR 6,000 TO 7,500 SPAN)

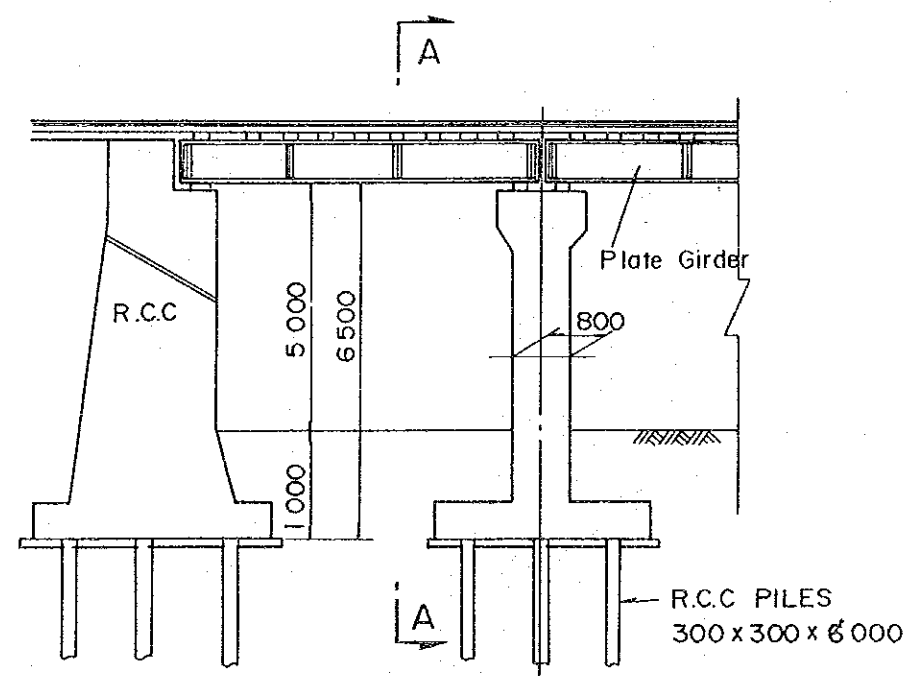
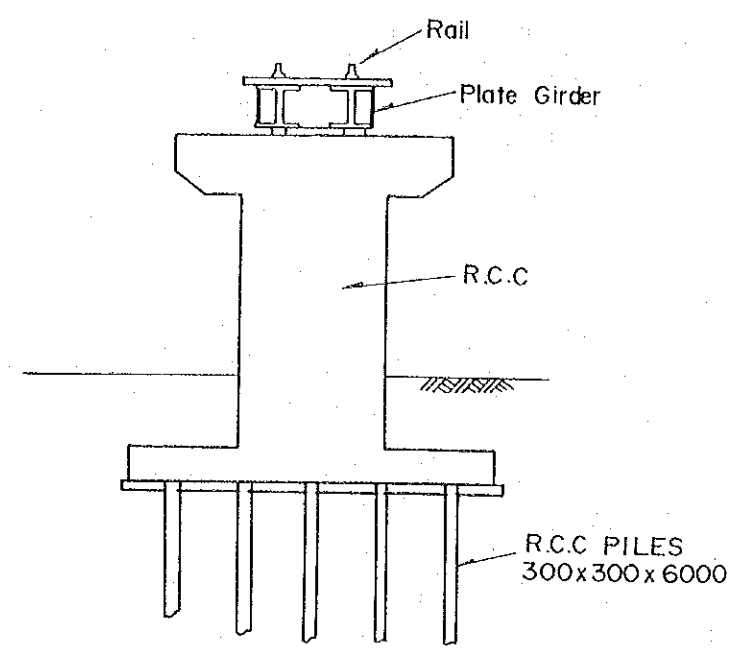
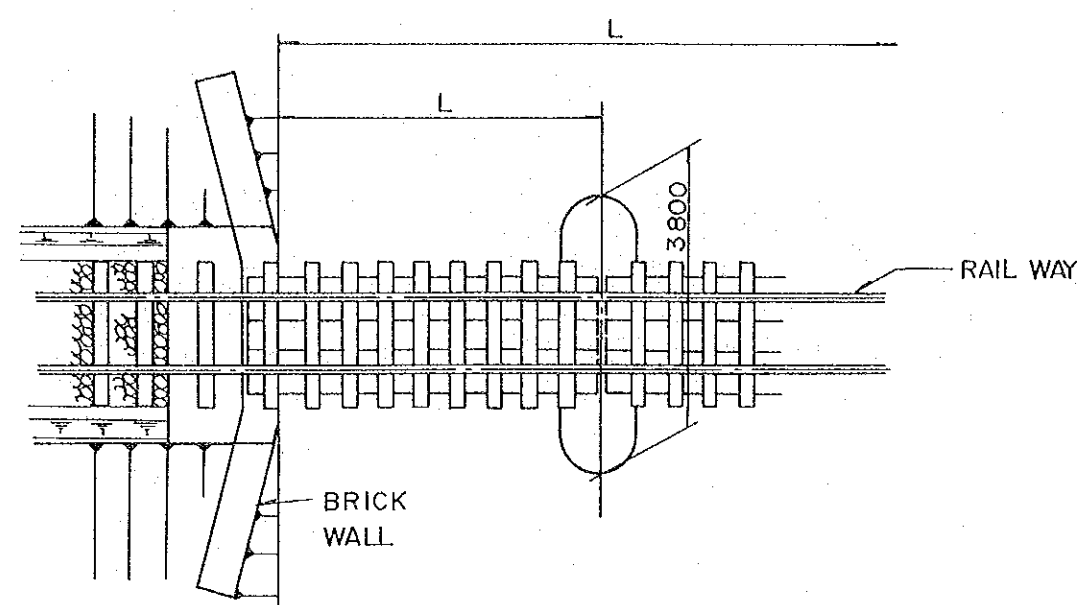
DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL HIGHWAY AND TRUCK BRIDGE	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 226	SHEET OF



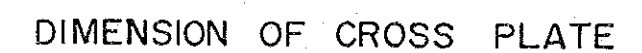
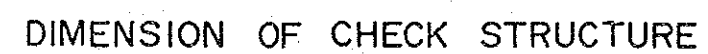
DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL FARM BRIDGE	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 227	SHEET OF



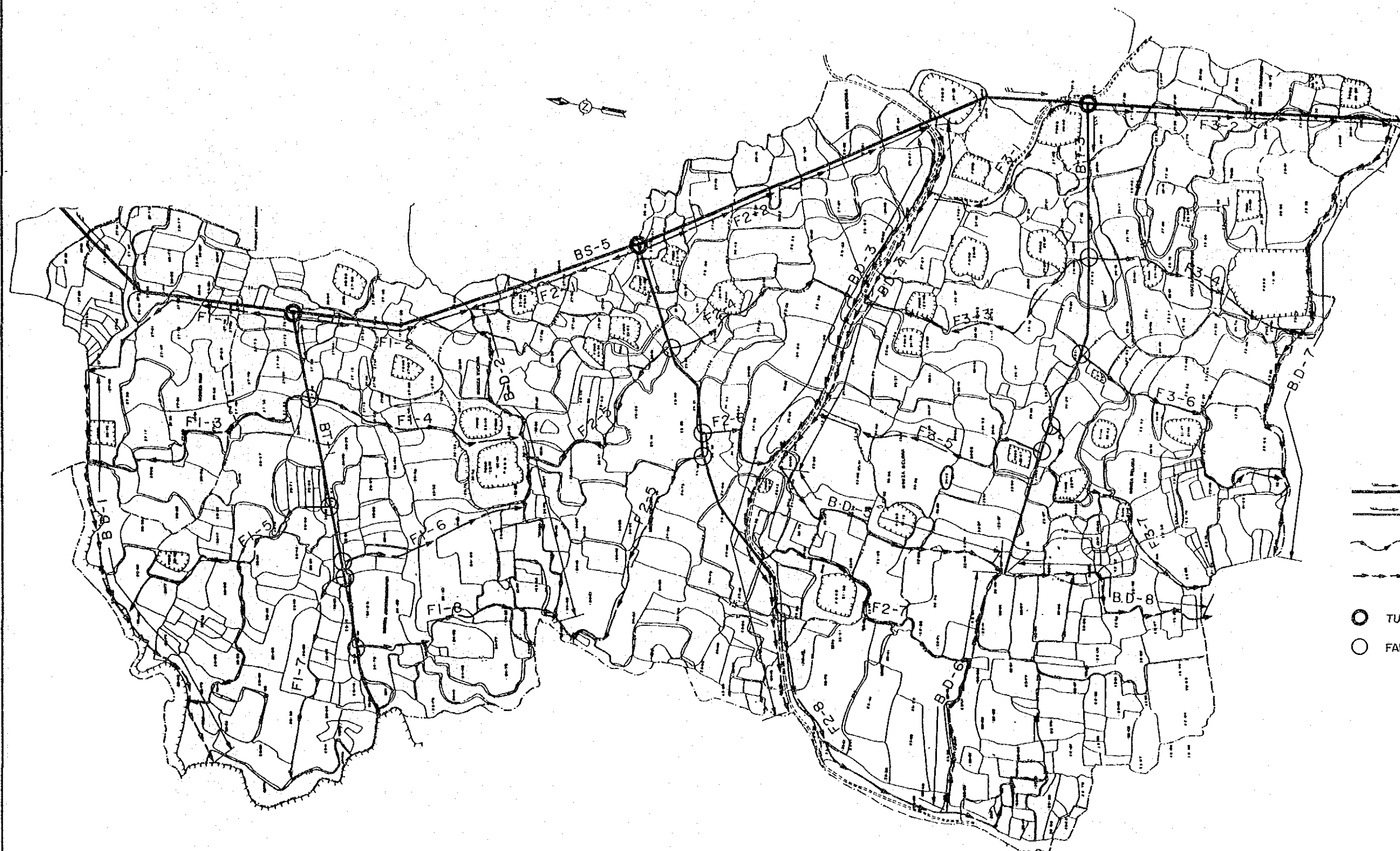
DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL RAILWAY BRIDGE	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 228	SHEET OF



DIMENSION ; cm

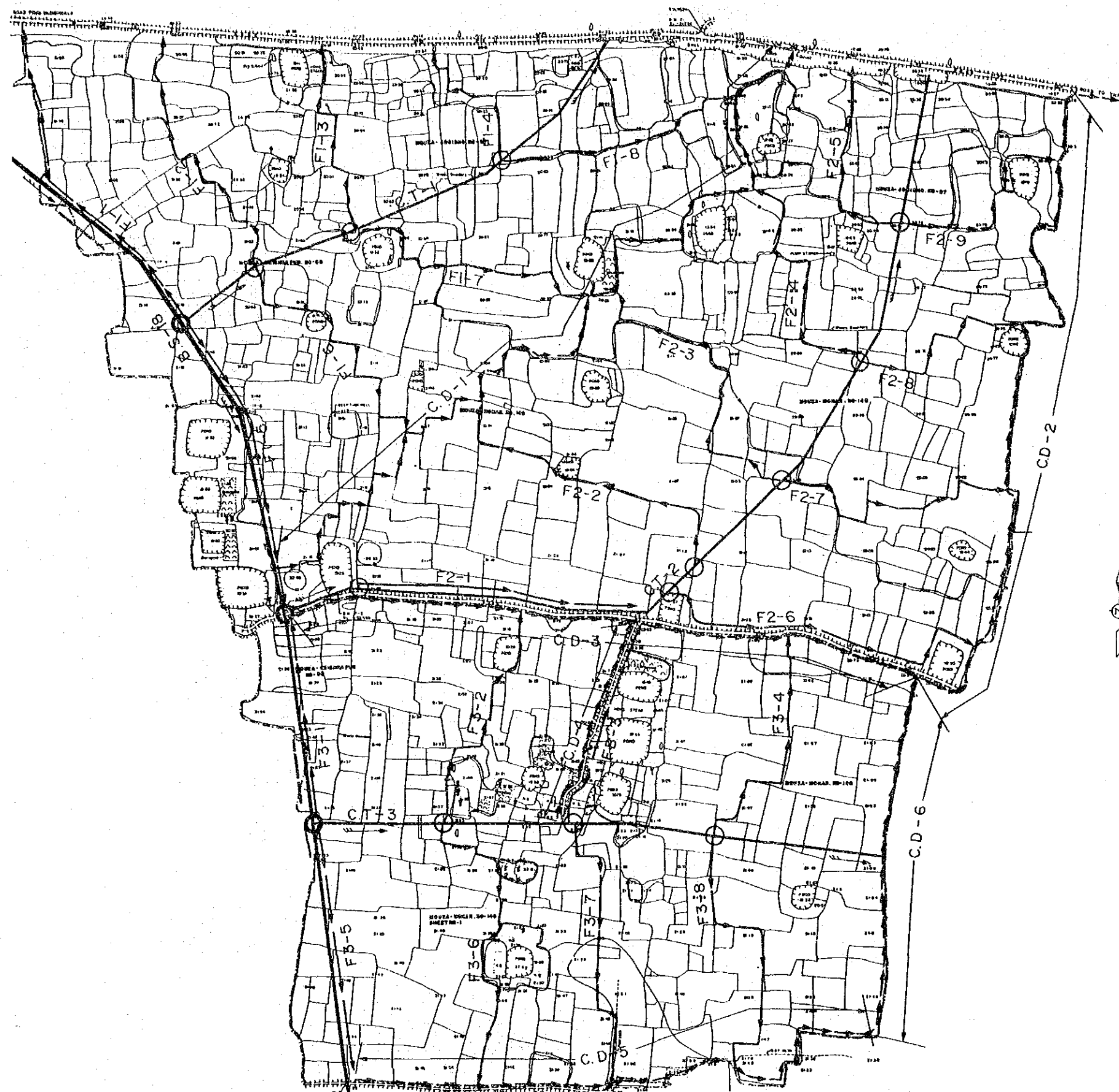
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL FARM DITCH SECTION AND DIVISION BOX	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 301	SHEET OF



SAMPLE AREA "B" FOR BARIND TRACT AREA

A = 181 ha

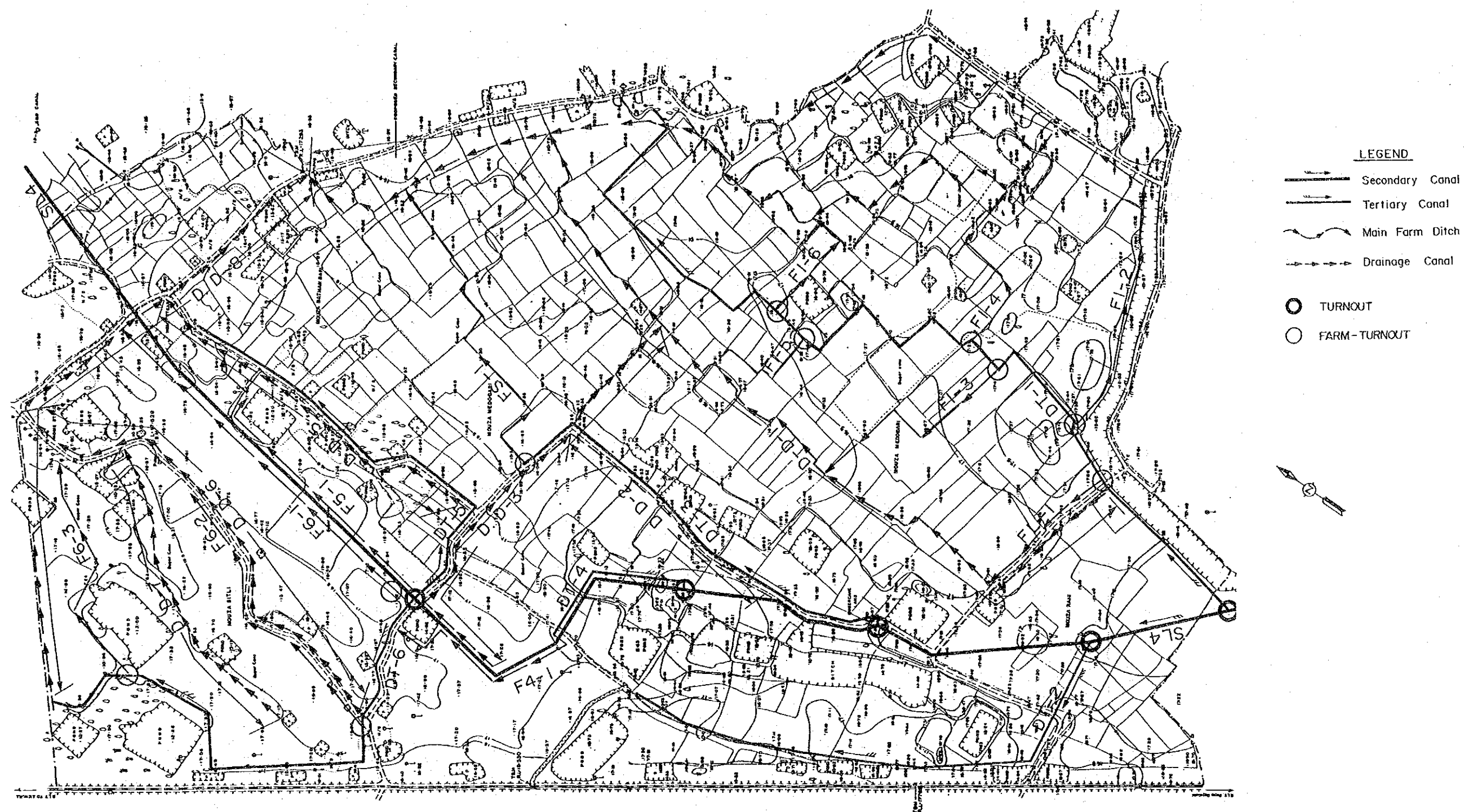
THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
LAYOUT OF ON-FARM FACILITIES BARIND AREA (Sample B)	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 303	SHEET 2 OF 4



- LEGEND**
- Secondary Canal
 - Tertiary Canal
 - Main Farm Ditch
 - Drainage Canal
 - TURNOUT
 - FARM-TURNOUT

SAMPLE AREA "C" FOR BARIND TRACT AREA
A=191ha

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
LAYOUT OF ON-FARM FACILITIES BARIND AREA (Sample C)	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 304	SHEET 3 OF 4



SAMPLE AREA "D" FOR FLOOD PLAIN AREA
A = 138ha

THE PEOPLE'S REPUBLIC OF BANGLADESH
BANGLADESH WATER DEVELOPMENT BOARD

NORTH RAJSHAHI
IRRIGATION PROJECT

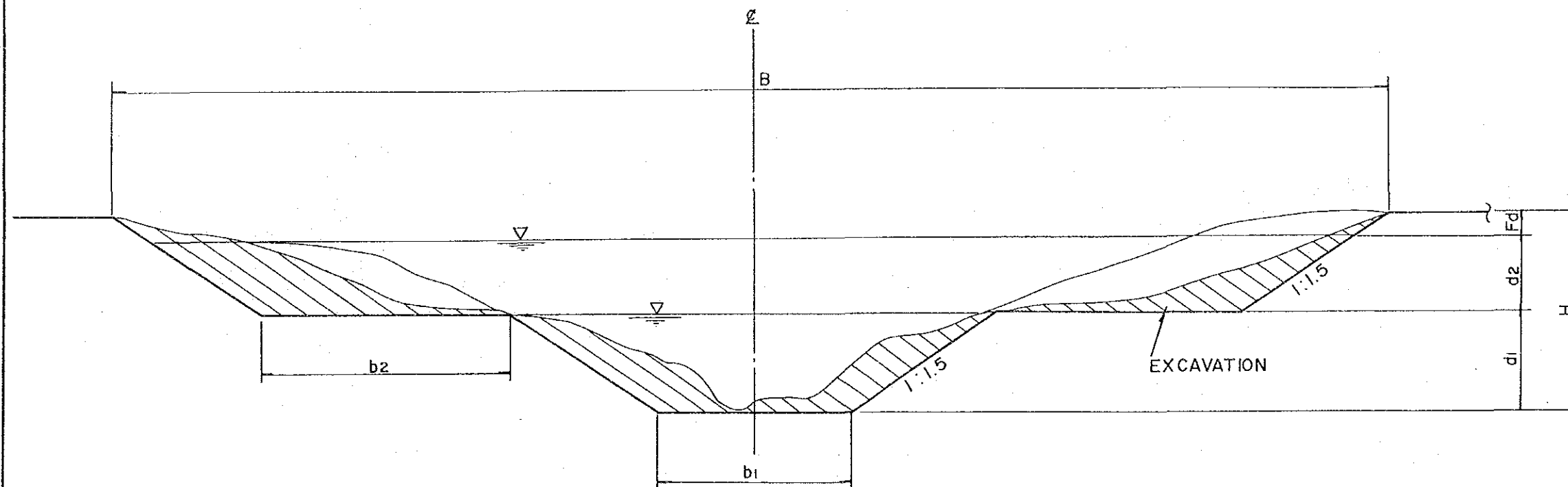
LAYOUT OF ON-FARM FACILITIES
FLOOD PLAIN AREA (Sample D)

JAPAN INTERNATIONAL COOPERATION AGENCY

DWG. NO. 305

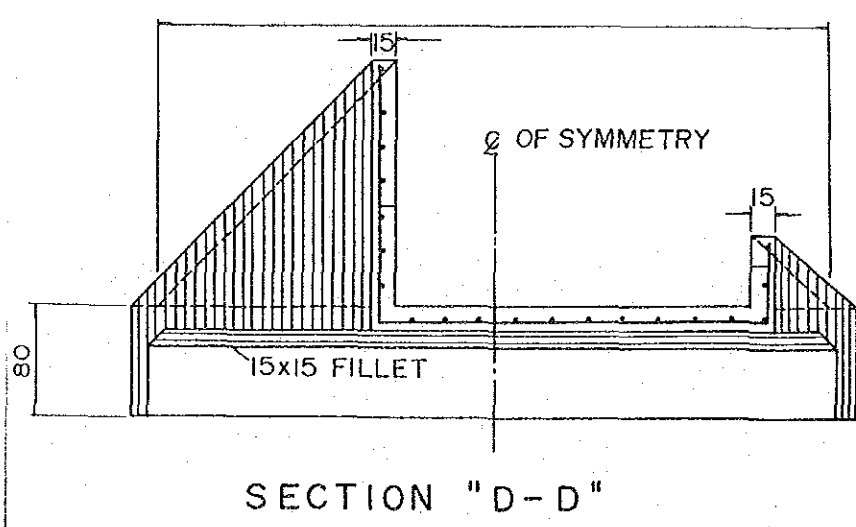
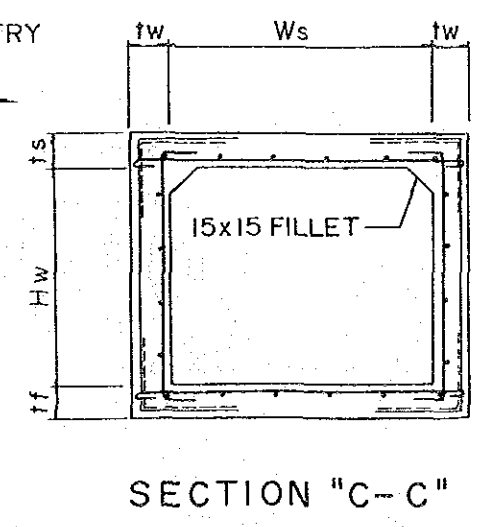
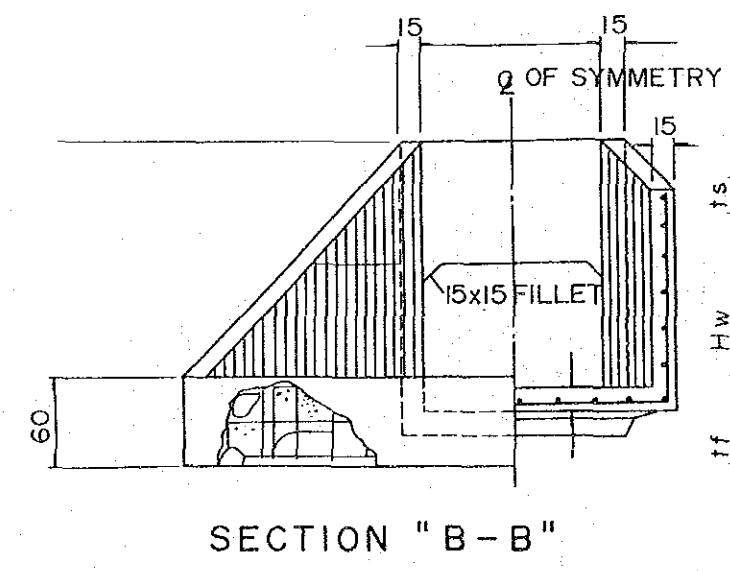
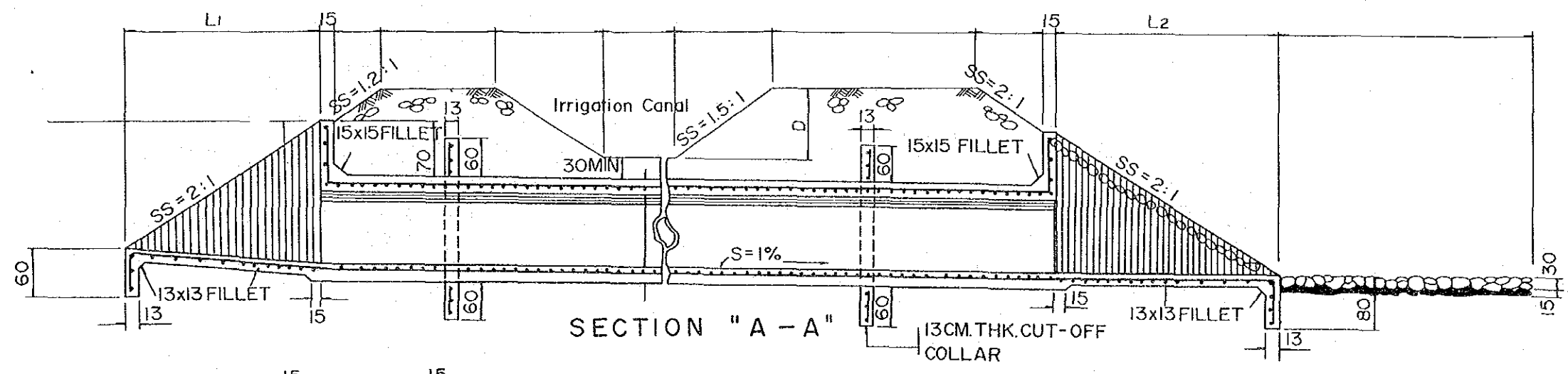
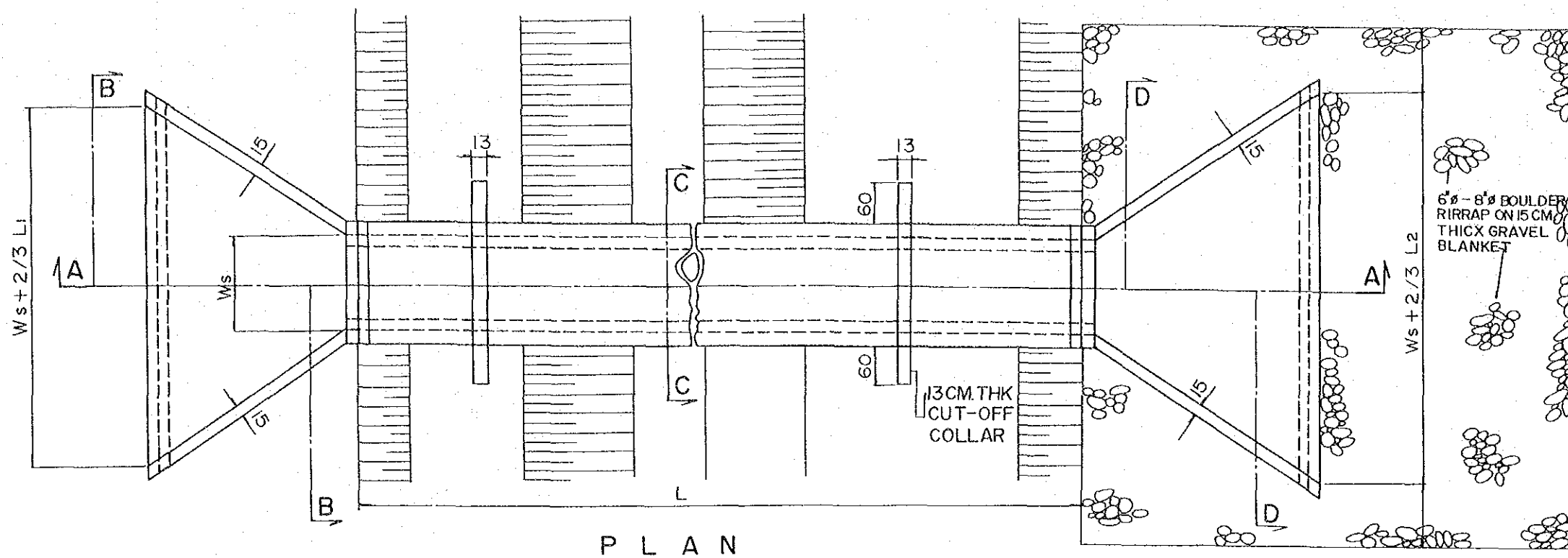
SHEET 4 OF 4

Drainage Canal	Q (m ³ /s)		b ₁	b ₂	d ₁	d ₂	F _d	H	Length (m)
	1/2	1/5							
D 1	20.9	36.9	12.0	5.0	2.8	1.00	0.3	3.9	2,600
- 1 R	5.9	10.3	7.0	5.0	1.8	0.60	0.2	2.6	950
- 1 L	4.2	8.1	6.0	5.0	1.6	0.60	0.2	2.4	1,050
D 2	146.5	188.5	36.0	10.0	4.8	1.00	0.3	6.1	2,950
- 2 R	15.4	22.5	12.0	5.0	2.4	0.60	0.3	3.3	1,550
- 2 L	131.3	169.0	32.0	10.0	4.8	1.00	0.3	6.1	2,550
D 3	146.5	188.5	36.0	10.0	4.8	1.00	0.3	6.1	1,100
- 3 R	12.6	18.7	11.0	5.0	2.2	0.60	0.3	3.1	2,500
- 3 L	131.3	169.0	32.0	10.0	4.8	1.00	0.3	6.1	3,550
D 4	12.6	22.3	11.0	5.0	2.2	0.80	0.3	3.3	500
D 5	73.6	124.2	24.0	10.0	4.0	1.40	0.3	5.7	4,300



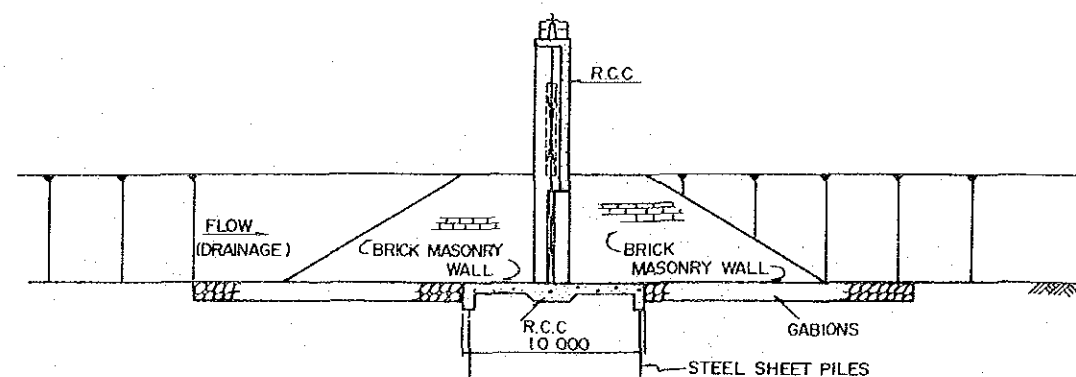
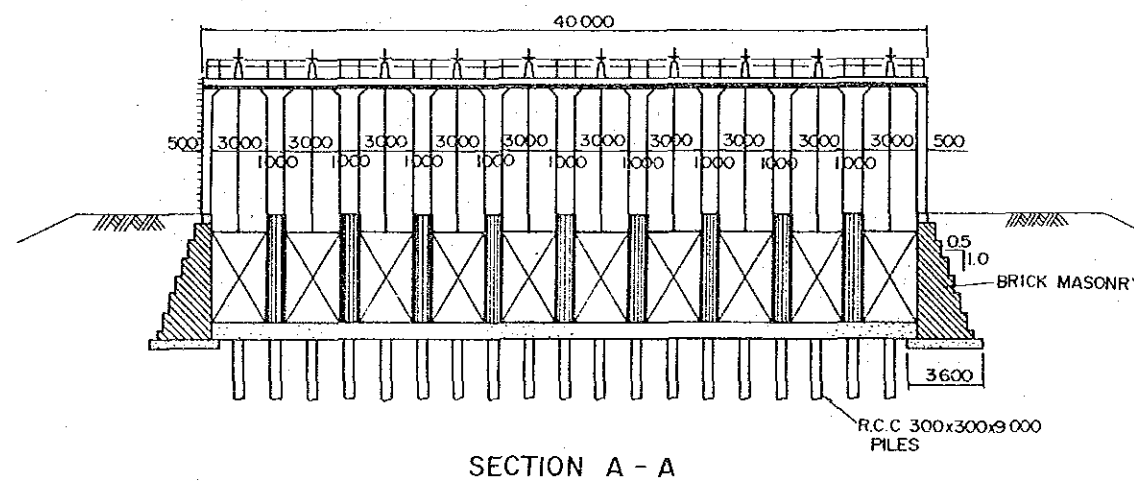
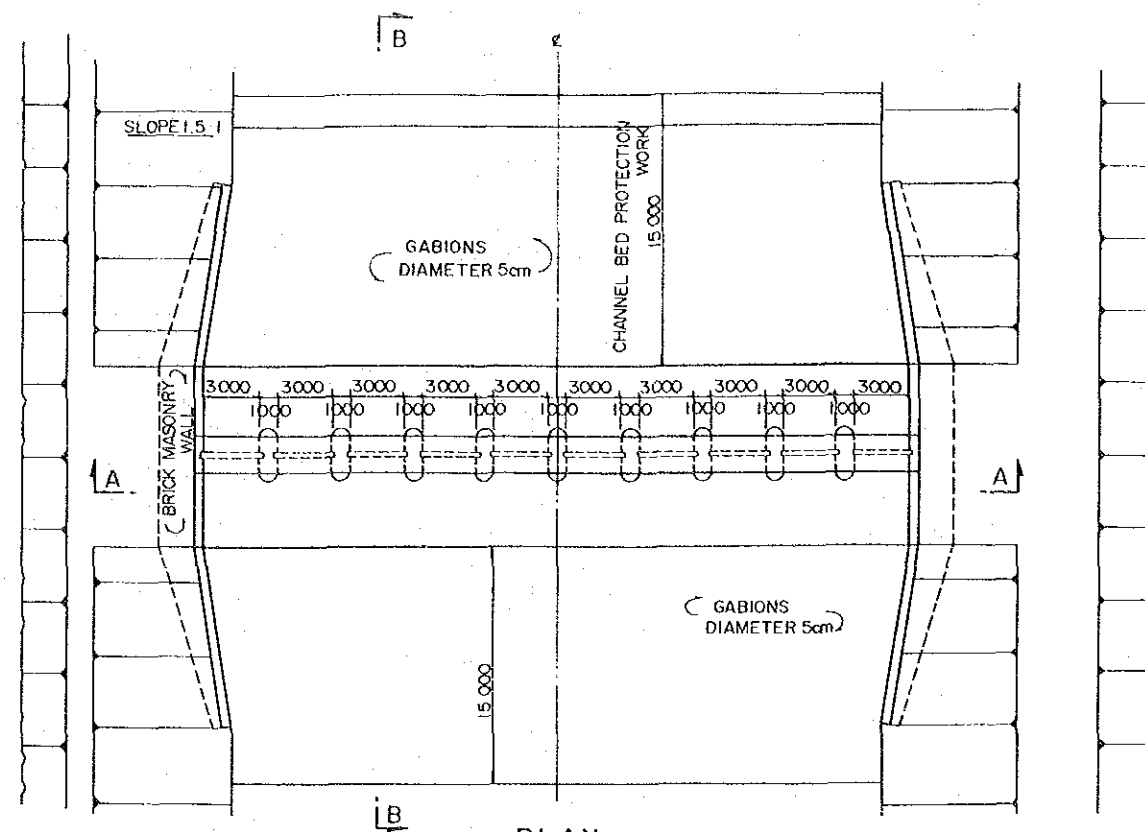
TYPICAL CROSS SECTION OF
PROPOSED DRAINAGE CANAL

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
TYPICAL CROSS SECTION OF PROPOSED DRAINAGE CANAL	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 401	SHEET OF



DIMENSION ; cm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
DRAINAGE CULVERT	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 402	SHEET 0F



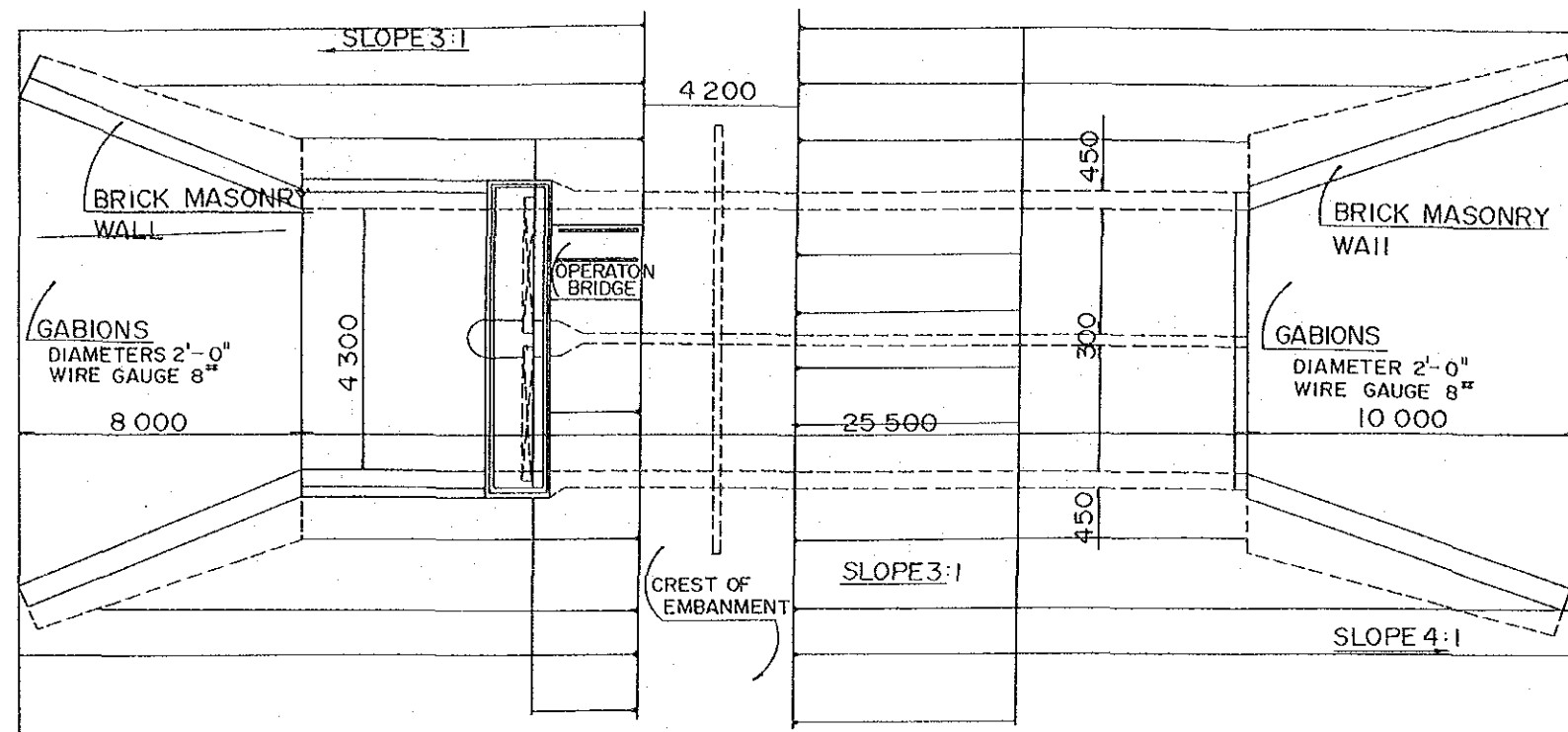
REGULATOR TYPE A

NOTE

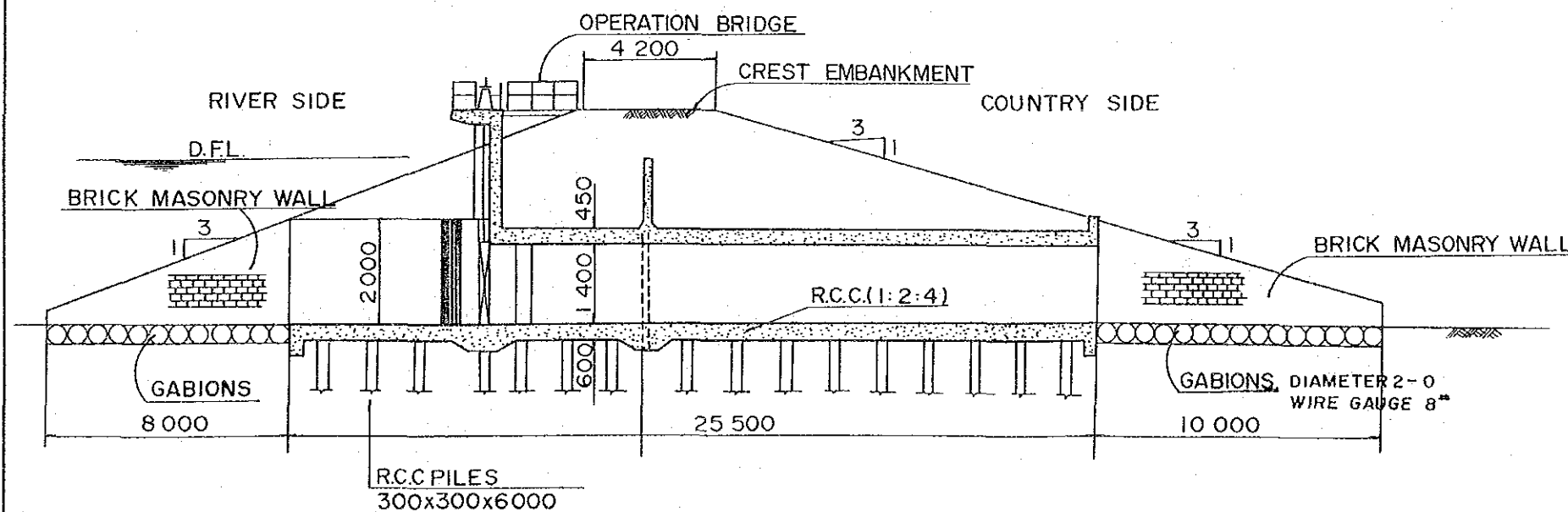
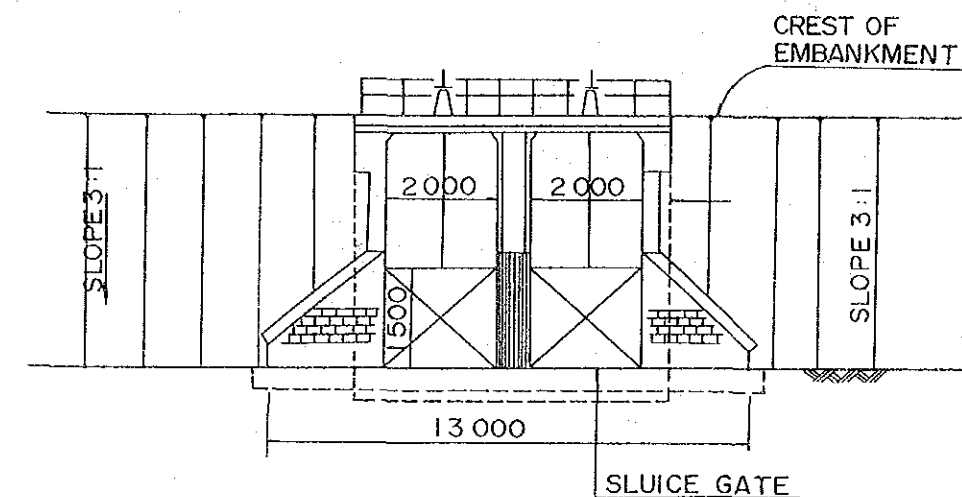
TYPE	LOCATION	GATE
A - 1	END OF D2 Canal (Flow TO SIB RIVER)	3.00 ^m x 5.00 ^m x 10 units
A - 1	END OF D3 Canal (Flow TO The Ganges)	3.00 ^m x 5.00 ^m x 10 units
A - 2	Jodkhori River	3.00 ^m x 3.00 ^m x 10 units

DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
REGULATOR (TYPE A)	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 403	SHEET 1 OF 2



P L A N



P R O F I L E

REGULATOR TYPE B

DIMENSION ; mm

THE PEOPLE'S REPUBLIC OF BANGLADESH BANGLADESH WATER DEVELOPMENT BOARD	
NORTH RAJSHAHI IRRIGATION PROJECT	
REGULATOR (TYPE B)	
JAPAN INTERNATIONAL COOPERATION AGENCY	
DWG. NO. 404	SHEET 2 OF 2

JICA