

THE REPUBLIC OF COLOMBIA

**THE FEASIBILITY STUDY ON
THE ARIARI RIVER BASIN
INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT**



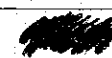
DRAWINGS

NOVEMBER 1989

**JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)**

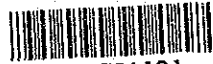
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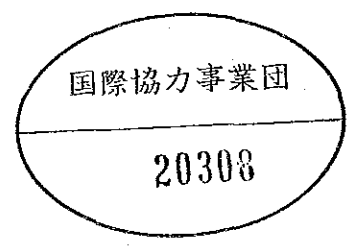
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INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT**

DRAWINGS

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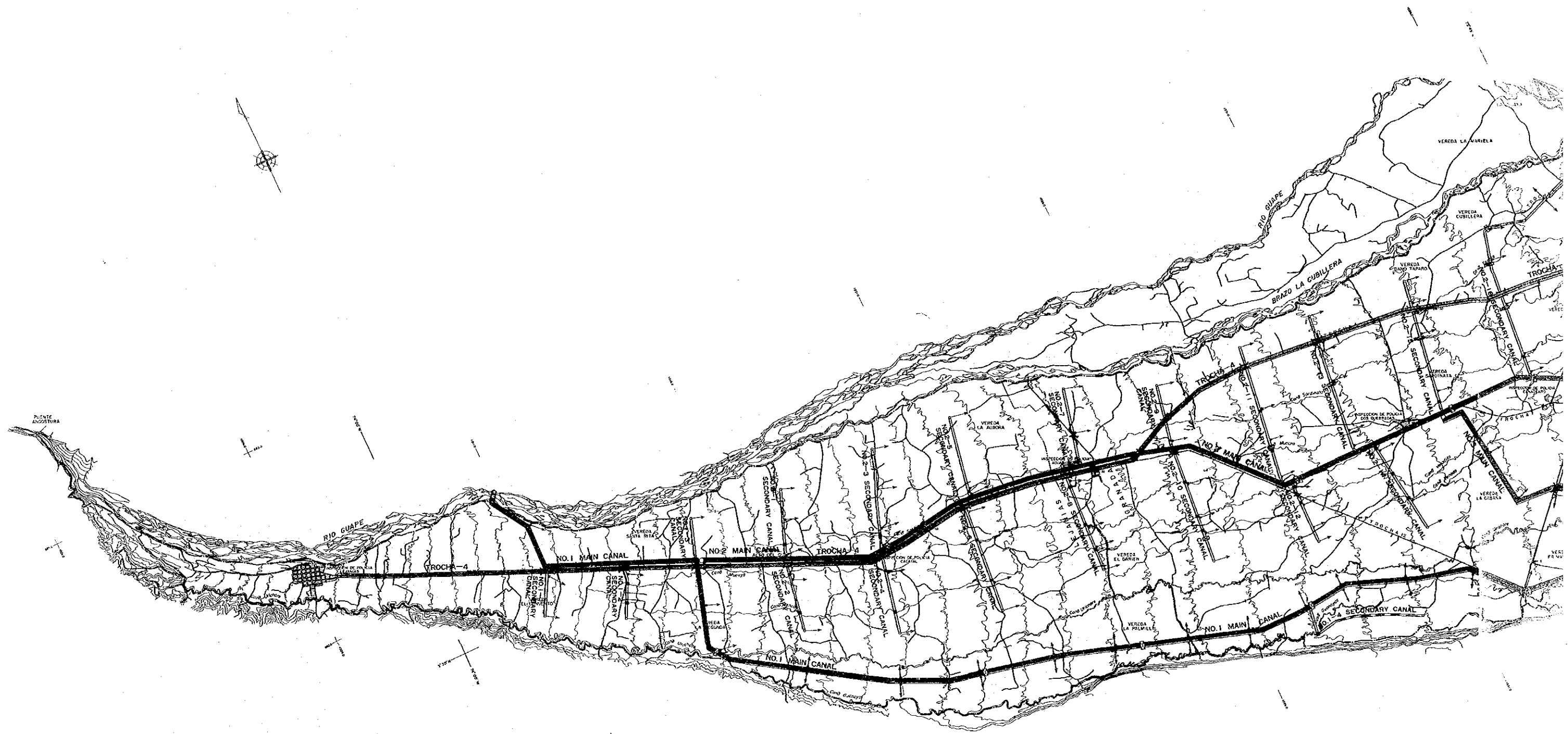


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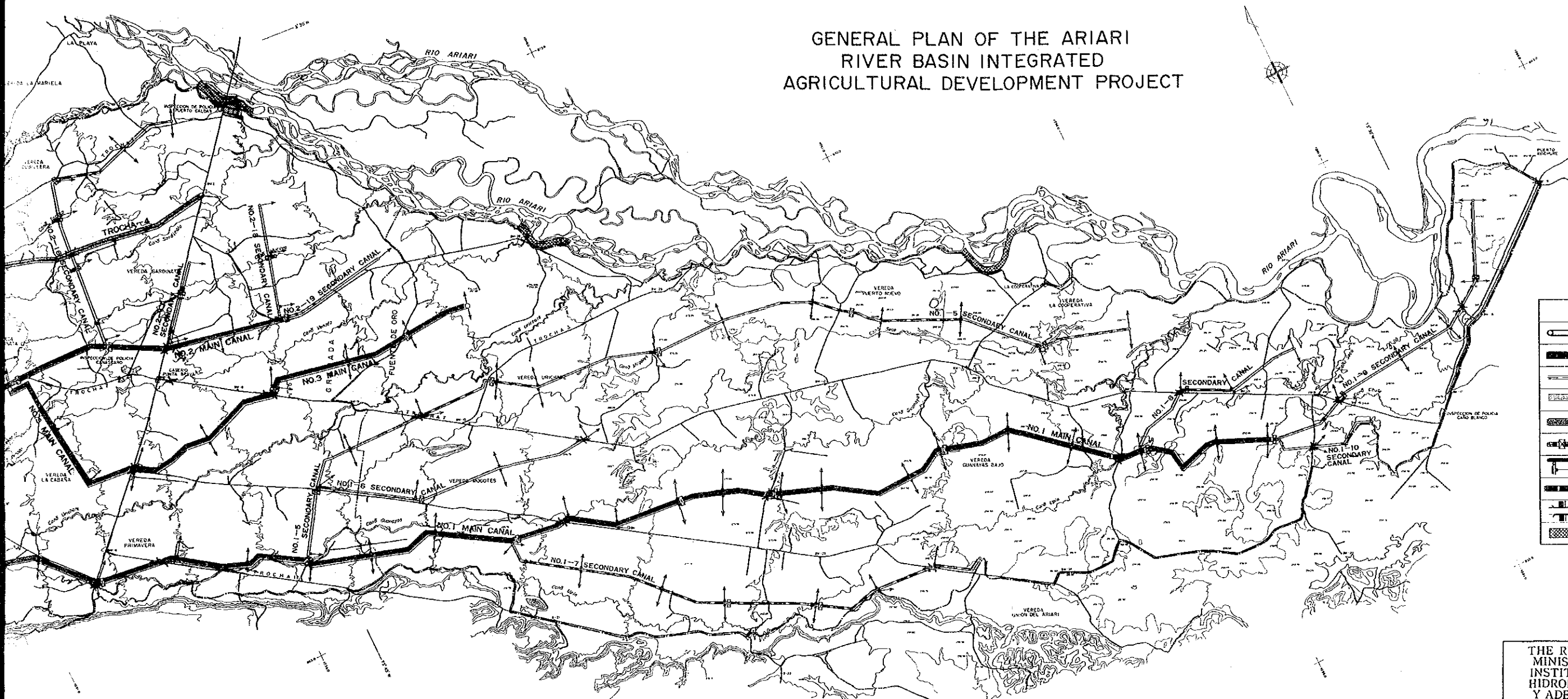
20308

LIST OF DRAWINGS

DWG. NO.	TITLE
1.	General Plan
2.	Longitudinal Profile And Cross Section Main Canal No.1 (1/2)
3.	Longitudinal Profile And Cross Section Main Canal No.1 (2/2)
4.	Longitudinal Profile And Cross Section Main Canal No.2
5.	Longitudinal Profile And Cross Section Main Canal No.3
6.	Head Works-1
7.	Head Works-2
8.	Division Works-1 (Longitudinal Type)
9.	Division Works-2 (Gate-Controlled Type)
10.	Drop
11.	WasteWay-1 ($Q \geq 1.0 \text{m}^3/\text{s}$)
12.	WasteWay-2 ($Q \leq 1.0 \text{m}^3/\text{s}$)
13.	Siphon-1 ($Q \geq 2.5 \text{m}^3/\text{s}$)
14.	Siphon-2 ($Q \leq 2.5 \text{m}^3/\text{s}$)
15.	Road Network
16.	Typical Road Section
17.	Bridge
18.	Revetment Works



GENERAL PLAN OF THE ARIARI
RIVER BASIN INTEGRATED
AGRICULTURAL DEVELOPMENT PROJECT



LEGEND	
	Head Works
	Main Irrigation Canal
	Secondary Irrigation Canal
	Drainage Canal
	Asphalt Pavement
	Wasteway
	Division Works
	Siphon
	Bridge
	Retention

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(HIMAT)

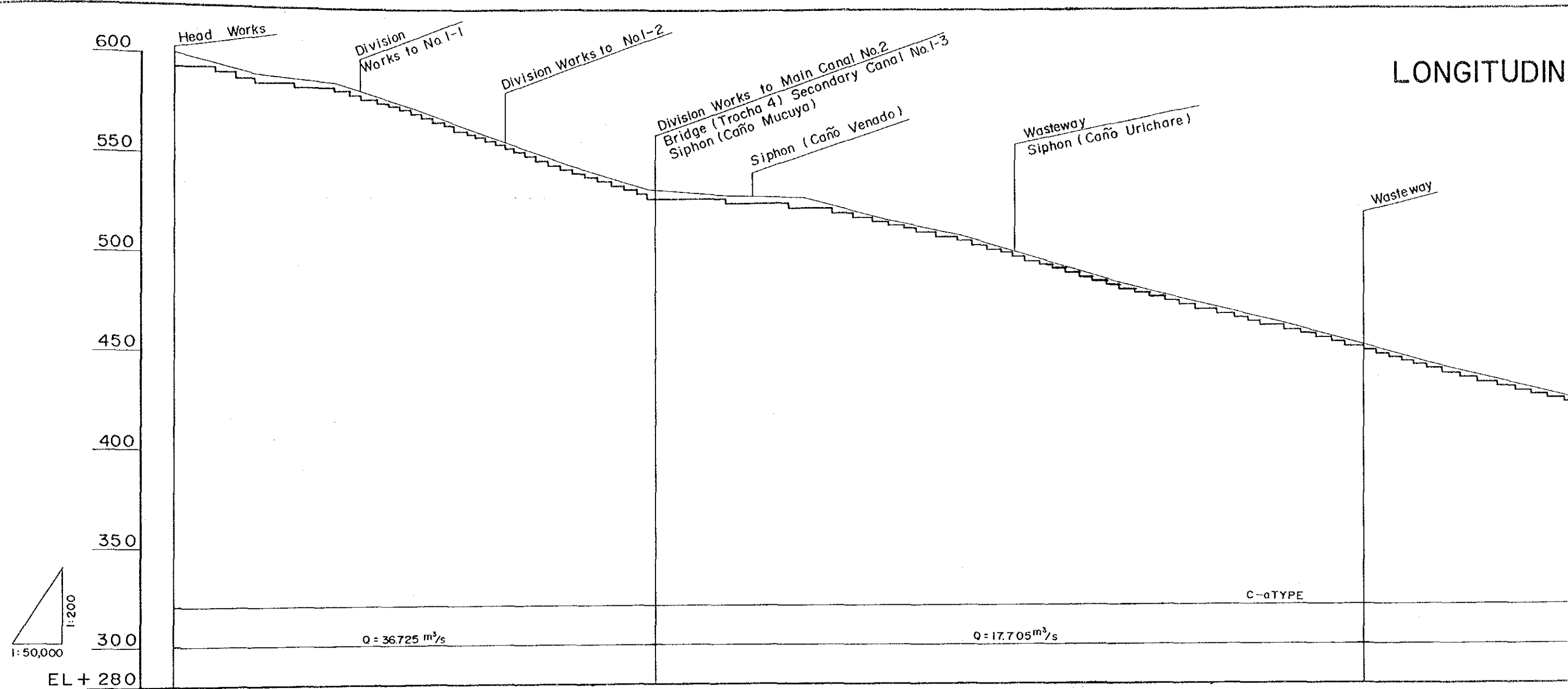
THE ARIARI RIVER BASIN
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GENERAL PLAN

Figure No. 1

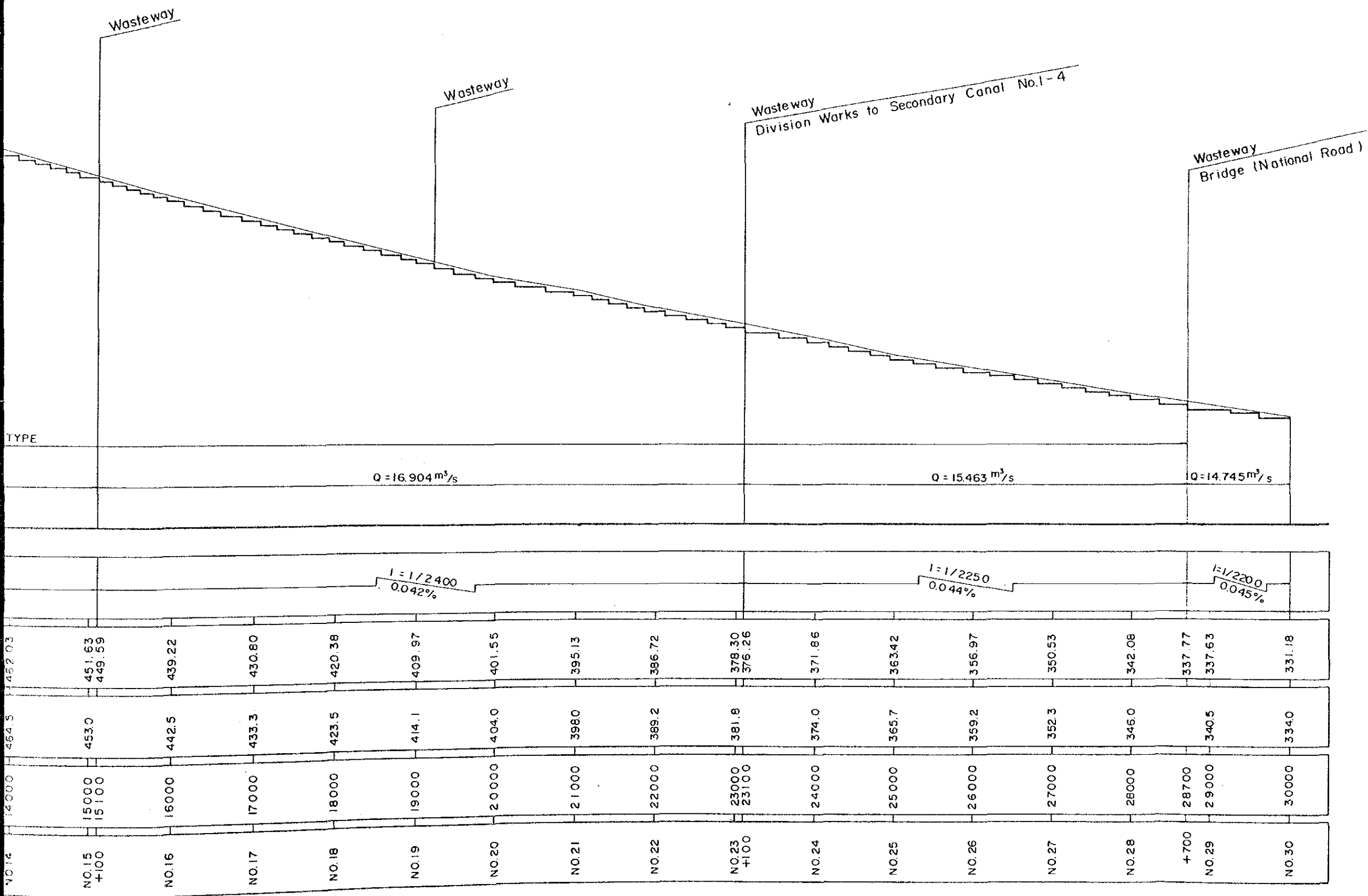
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LONGITUDINAL

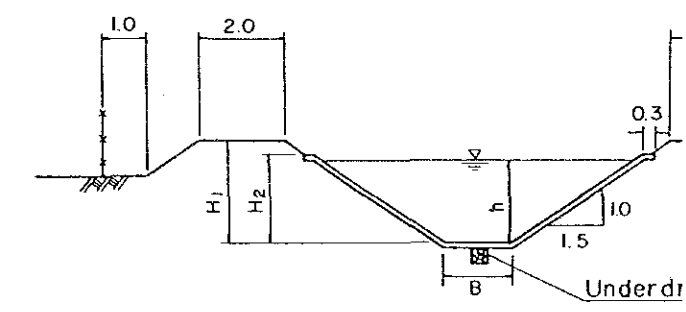


LONGITUDINAL SLOPE																		
DESIGN CANAL BED	529.7	586.45	582.21	569.96	555.71	541.46	527.22 527.19	524.83	522.43	516.03	505.63	493.23	480.83	470.43	462.03	451.63 449.59	439.22	430.80
GROUND LEVEL	600.0	590.0	586.4	574.0	558.9	544.4	532.1	529.2	528.1	517.2	508.6	496.8	484.5	474.3	464.5	453.0	442.5	433.3
ACCUMULATED DISTANCE	0	1000	2000	3000	4000	5000	6000 6100	7000	8000	9000	10000	11000	12000	13000	14000	15000 15100	16000	17000
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6 +100	NO.7	NO.8	NO.9	NO.10	NO.11	NO.12	NO.13	NO.14	NO.15 +100	NO.16	NO.17

LONGITUDINAL PROFILE AND CROSS SECTION MAIN CANAL No1 (1/2)



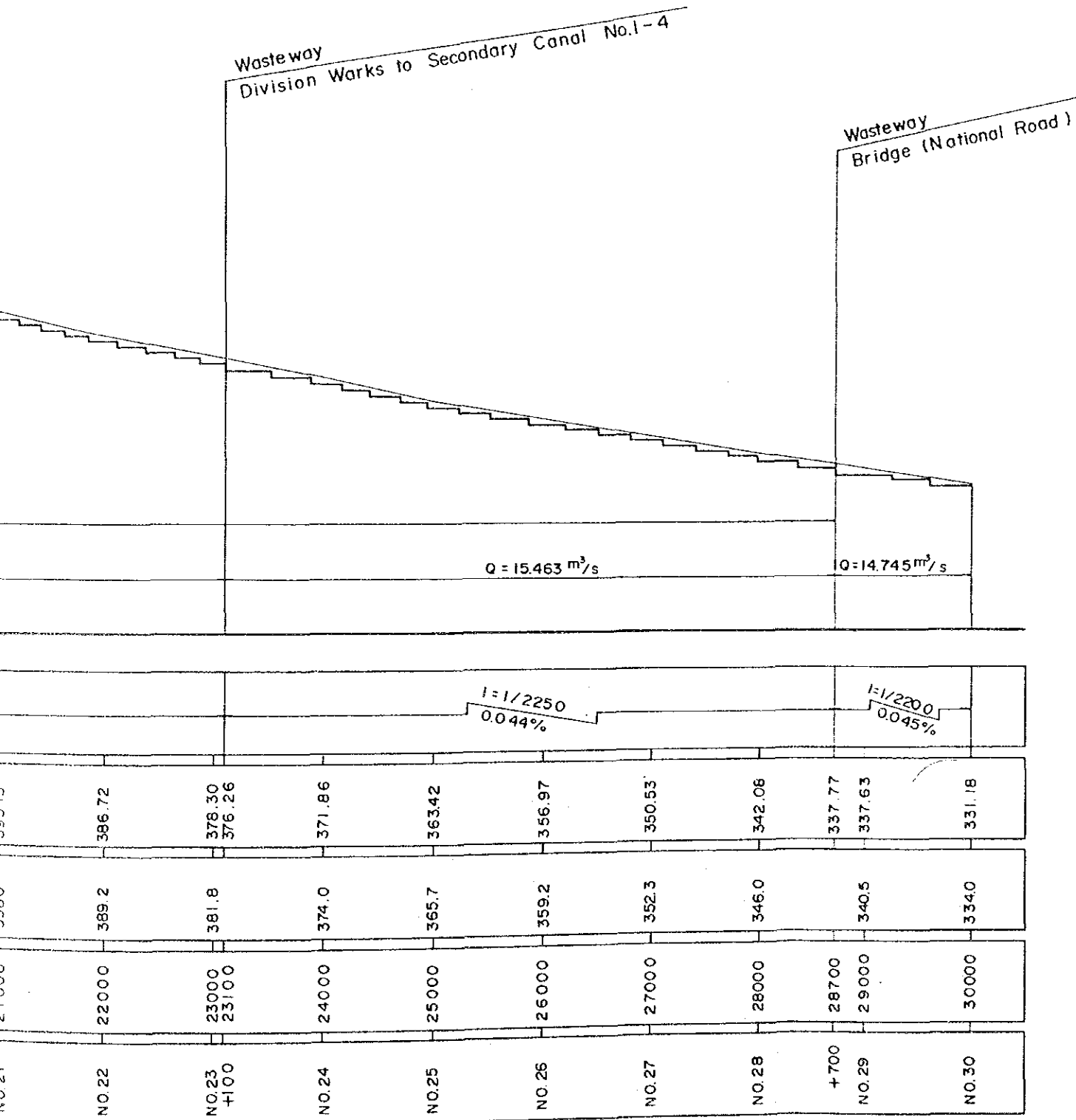
C-a TYPE TYPICAL SECTION



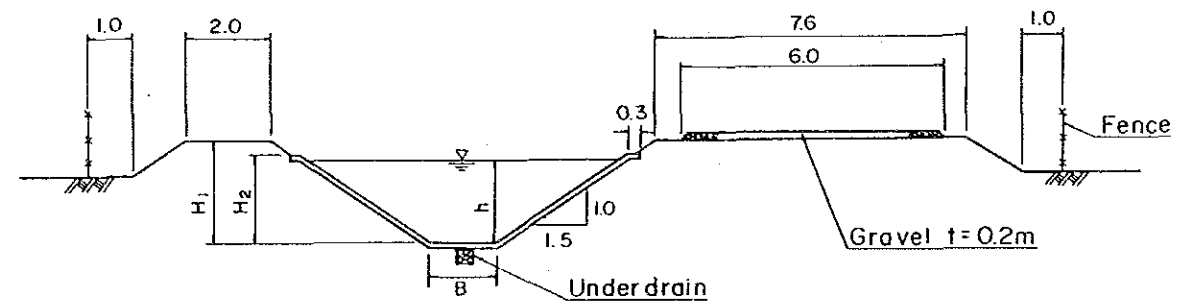
No	Q	B	h	H ₁	H ₂
1	36.725	2.5	3.30	3.70	3.4
2	17.705	1.5	2.36	2.70	2.4
3	16.904	1.5	2.29	2.70	2.4
4	15.463	1.5	2.16	2.50	2.2
5	14.745	1.5	2.11	2.50	2.2

CROSS SECTION

MAIN CANAL No1 (1/2)



C-a TYPE TYPICAL SECTION



No	Q	B	h	H ₁	H ₂
1	36.725	2.5	3.30	3.70	3.40
2	17.705	1.5	2.36	2.70	2.45
3	16.904	1.5	2.29	2.70	2.40
4	15.463	1.5	2.16	2.50	2.25
5	14.745	1.5	2.11	2.50	2.20

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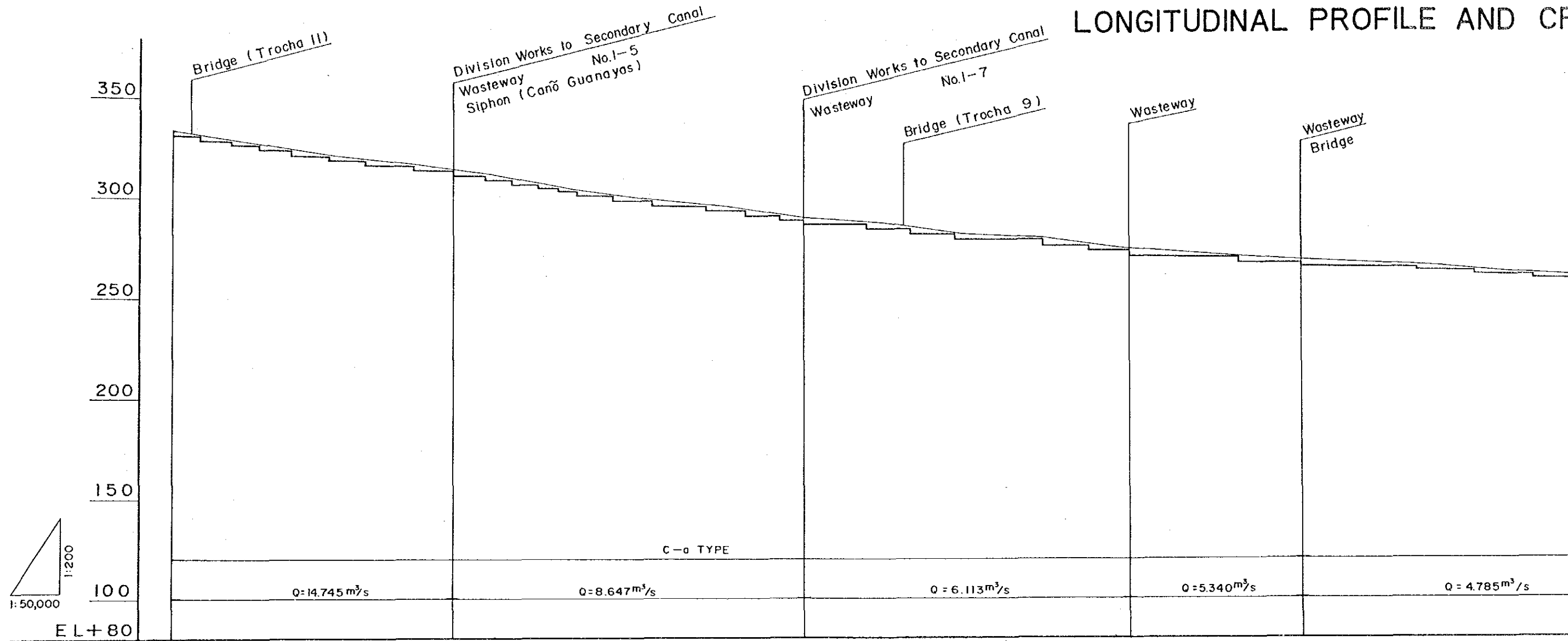
THE ARIARI RIVER BASIN
 INTEGRATED AGRICULTURAL
 DEVELOPMENT PROJECT

LONGITUDINAL PROFILE AND
 CROSS SECTION MAIN CANAL
 NO.1 (1/2)

Figure No. 2

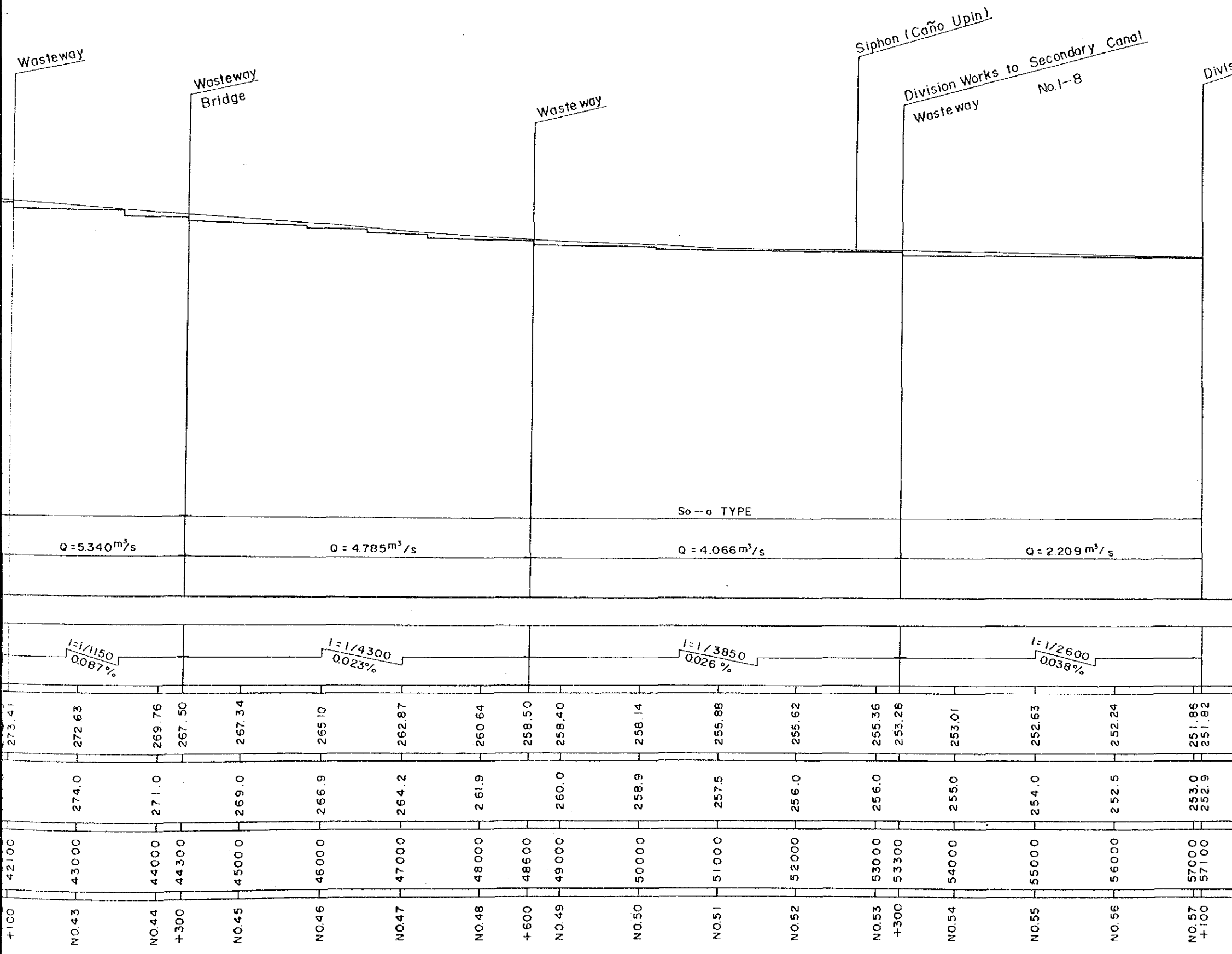
JAPAN INTERNATIONAL
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LONGITUDINAL PROFILE AND CF

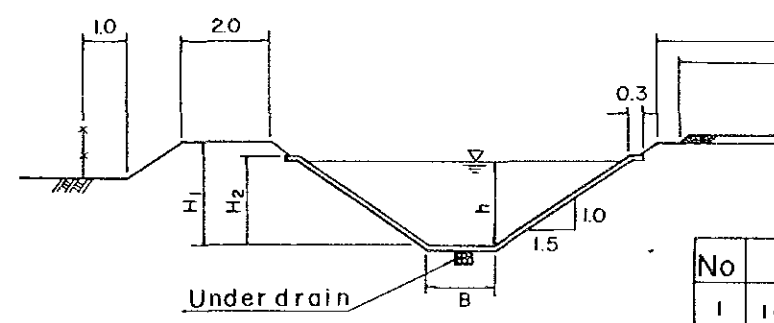


LONGITUDINAL SLOPE	1:1/2200 0.045%		1:1/1550 0.065%					1:1/1250 0.080%			1:1/1150 0.087%		1:1/4300 0.023%								
DESIGN CANAL BED	331.18	326.72	320.27	315.82	313.59	311.27	304.62	299.98	295.33	288.69	285.89	281.09	278.29	275.49	273.41	272.63	269.76	267.50	267.34	265.10	262.87
GROUND LEVEL	334.0	328.2	322.7	319.1	314.0	307.3	302.0	298.0	292.0	289.0	284.0	282.0	277.0	274.0	271.0	269.0	266.9	264.2			
ACCUMULATED DISTANCE	30000	31000	32000	33000	33500	34000	35000	36000	37000	38000	39000	40000	41000	42000	42100	43000	44000	44300	45000	46000	47000
STATION	NO.30	NO.31	NO.32	NO.33	+500	NO.34	NO.35	NO.36	NO.37	NO.38	NO.39	NO.40	NO.41	NO.42	+100	NO.43	NO.44	+300	NO.45	NO.46	NO.47

LONGITUDINAL PROFILE AND CROSS SECTION MAIN CANAL No1 (2/2)

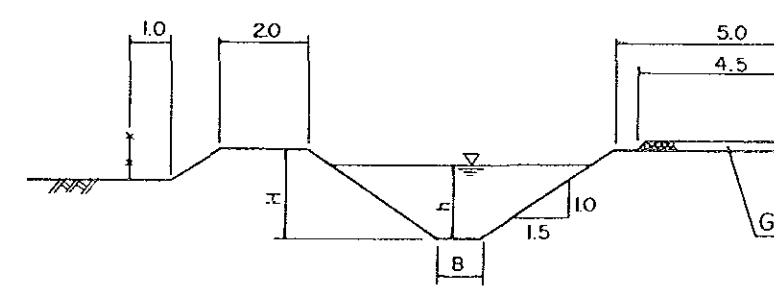


C-a TYPE TYPICAL SECTION



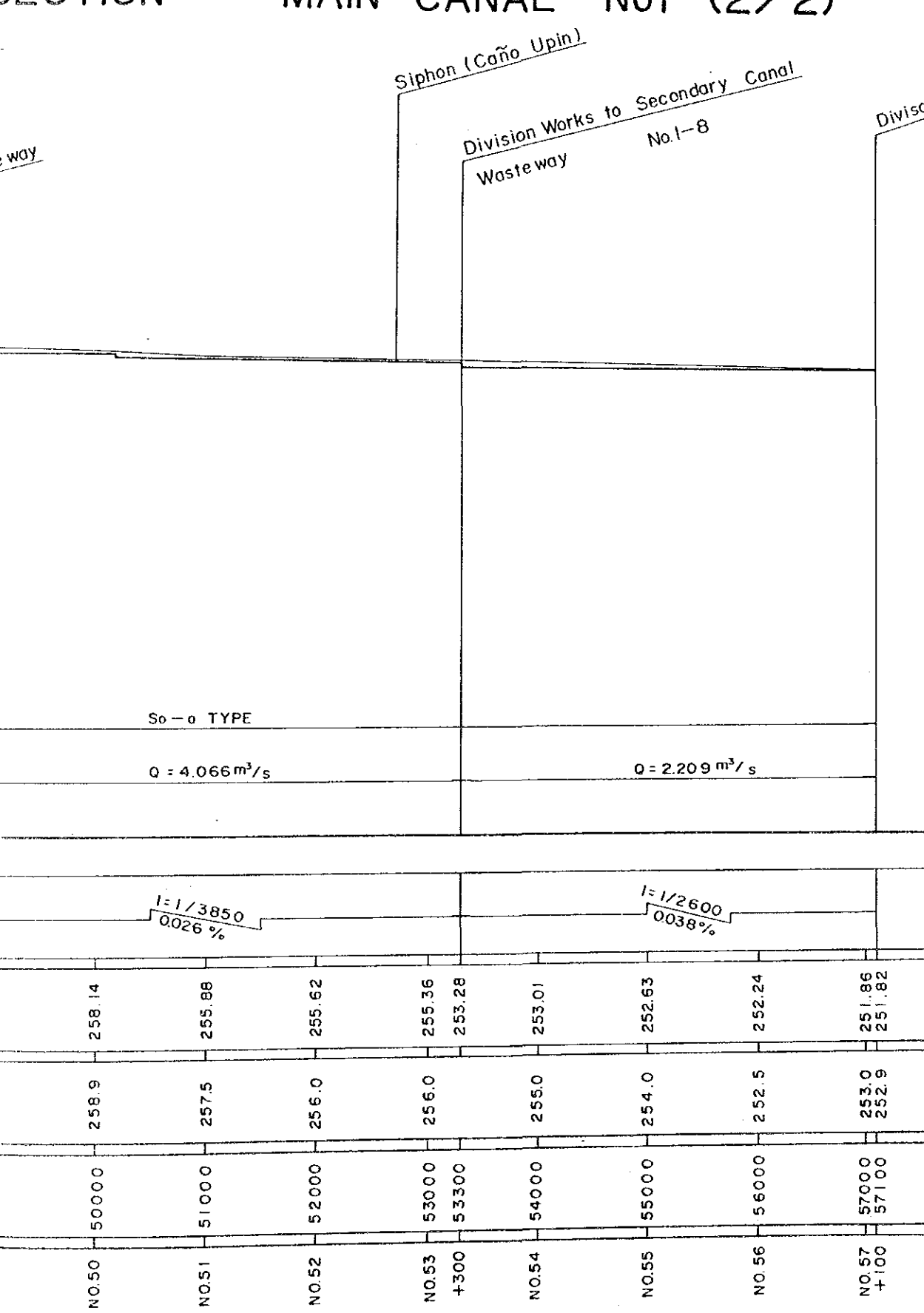
No	1	2	3	4
1	1.0	2.0	0.3	1.5
2	1.0	2.0	0.3	1.5
3	1.0	2.0	0.3	1.5
4	1.0	2.0	0.3	1.5

So-a TYPE TYPICAL SECTION

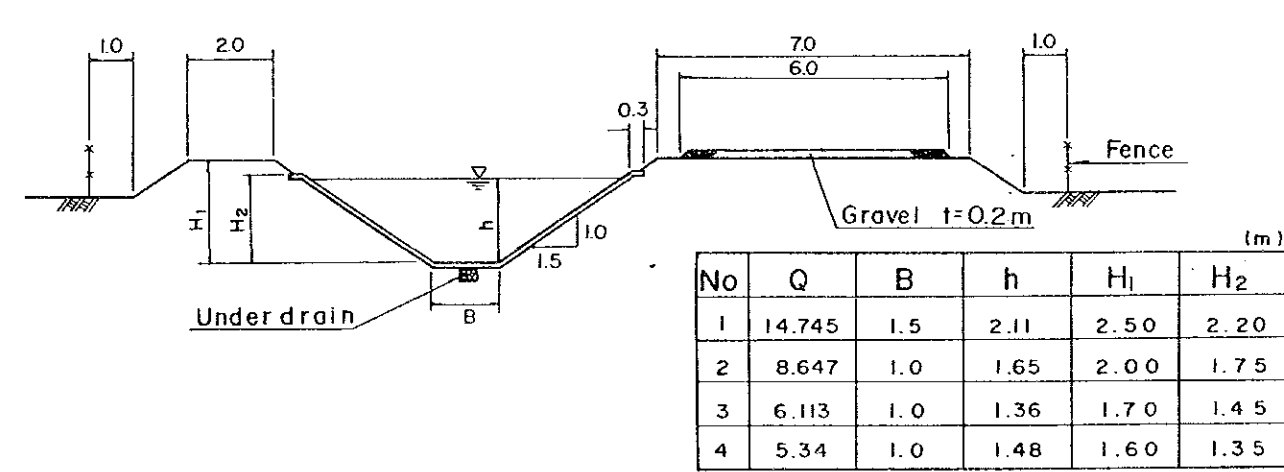


No	Q	B	h	H
1	4.785	1.0	2.00	2.30
2	4.066	1.0	1.82	2.10
3	2.209	1.0	1.27	1.40

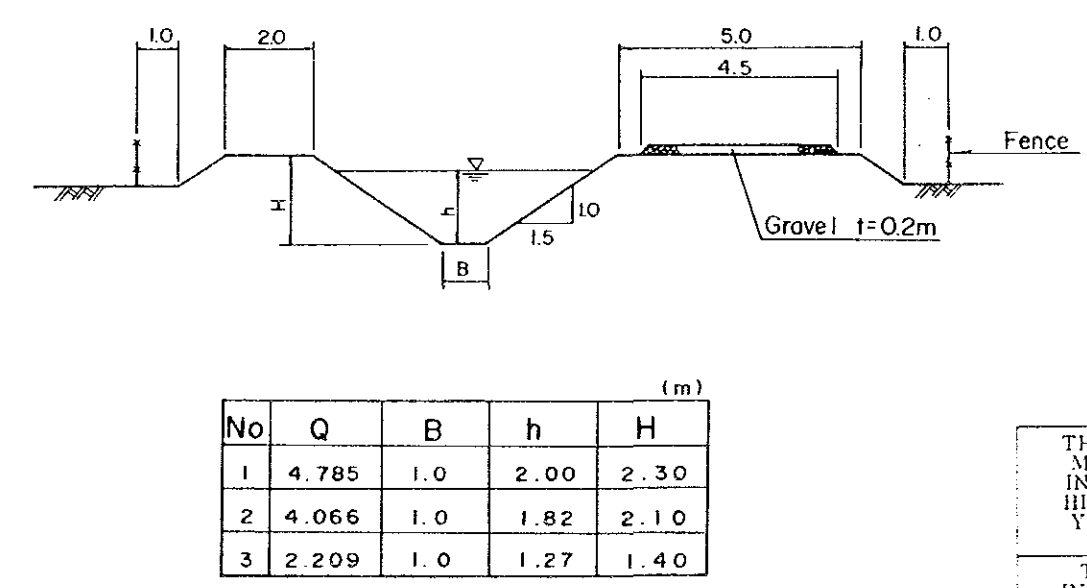
SECTION MAIN CANAL No1 (2/2)



C-a TYPE TYPICAL SECTION



So-a TYPE TYPICAL SECTION



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(HIMAT)

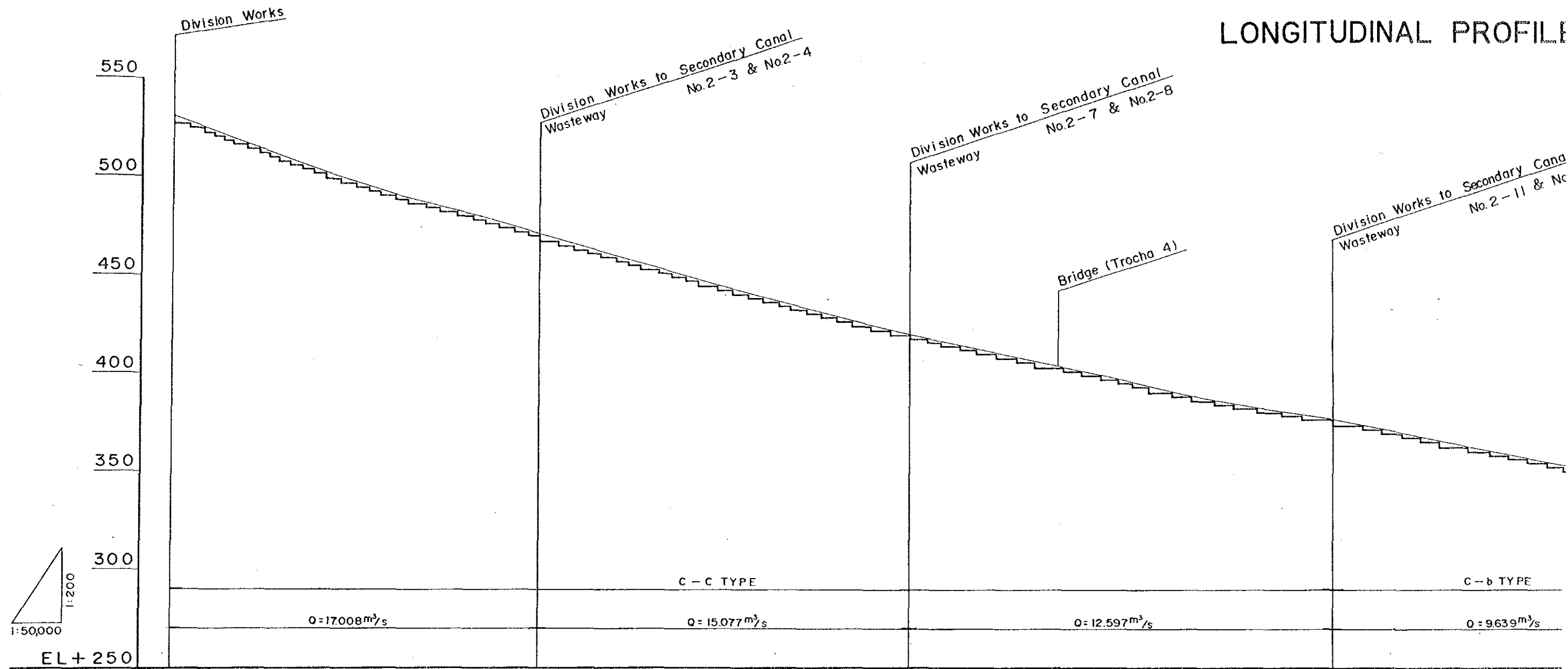
THE ARIARI RIVER BASIN
INTEGRATED AGRICULTURAL
DEVELOPMENT PROJECT

LONGITUDINAL PROFILE AND
CROSS SECTION MAIN CANAL
NO.1 (2/2)

Figure No. 3

JAPAN INTERNATIONAL
COOPERATION AGENCY
(JICA)

LONGITUDINAL PROFILE



LONGITUDINAL SLOPE	1:1/2450 0.041%				1:1/2250 0.044%				1:1/2000 0.050%				1:1/1650 0.061%								
DESIGN CANAL BED	527.19	515.19	500.37	489.96	477.55	469.27	467.13	454.69	444.24	433.80	423.35	419.14	414.89	406.39	397.89	385.39	380.89	374.44	374.37	367.77	359.39
GROUND LEVEL	530.7	516.7	503.4	491.1	481.4	470.0	459.1	447.8	437.4	426.0	416.9	408.4	400.0	390.0	382.5	377.1	369.0	361.4	355.9	351.4	346.9
ACCUMULATED DISTANCE	0	1000	2000	3000	4000	4700	5000	6000	7000	8000	9000	9500	10000	11000	12000	13000	14000	14900	15000	16000	17000
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	+700	NO.5	NO.6	NO.7	NO.8	NO.9	+500	NO.10	NO.11	NO.12	NO.13	NO.14	+900	NO.15	NO.16	NO.17

LONGITUDINAL PROFILE AND CROSS SECTION

MAIN CANAL No2

Secondary Canal
No.2-7 & No.2-8

Division Works to Secondary Canal
Wasteway
No.2-11 & No.2-12

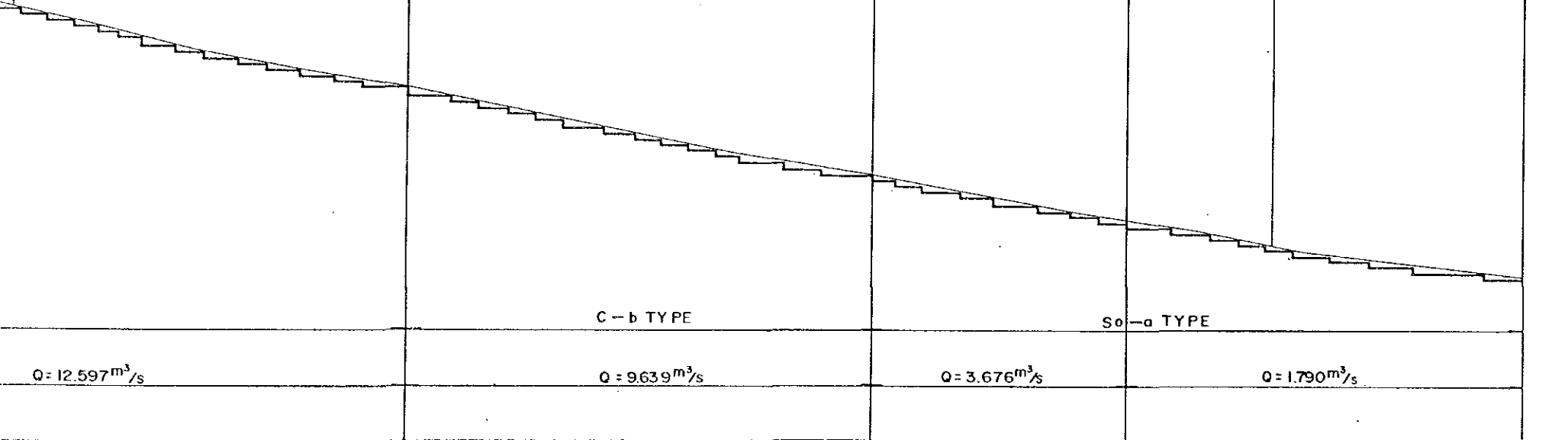
Division Works to Secondary Canal
Wasteway
Main Canal No.3
No.2-15

Division Works to Secondary Canal
Wasteway
No.2-16

Division Works to Secondary Canal
Bridge (National Road)

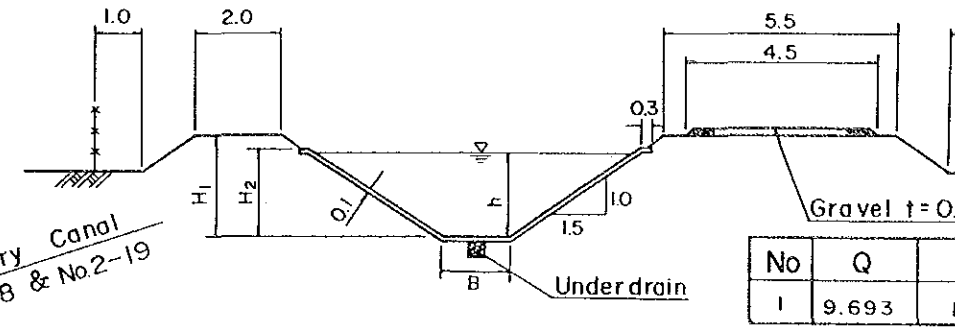
Division Works to Secondary Canal
No.2-18 & No.2-19

Bridge (Trocha 4)

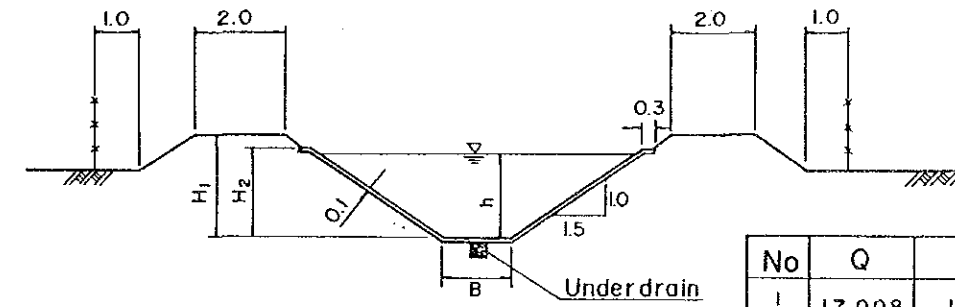


Station	Elevation (m)	Flow Rate (m³/s)	Bed Elevation (m)	Water Surface Elevation (m)	Slope (i)
NO.12	397.89	12.597	400.0	12000	1/2000 (0.050%)
NO.13	385.39	12.597	390.0	13000	
NO.14	380.89	12.597	382.5	14000	
+900	374.44	12.597	377.1	14900	
NO.15	374.37	9.639	369.0	15000	1/1650 (0.061%)
NO.16	367.77	9.639	361.4	16000	
NO.17	359.39	9.639	353.6	17000	
NO.18	350.89	9.639	346.7	18000	
NO.19	346.39	9.639	340.0	19000	
+100	343.89	9.639	332.9	19100	
NO.20	337.65	3.676	326.4	20000	1/3750 (0.027%)
NO.21	331.38	3.676	319.6	21000	
+400	327.28	3.676	316.58	21400	
NO.22	325.01	3.676	314.0	22000	1/2300 (0.043%)
NO.23	316.58	3.676	310.14	23000	
NO.24	310.14	3.676	307.71	24000	
NO.25	307.71	3.676	307.71	25000	

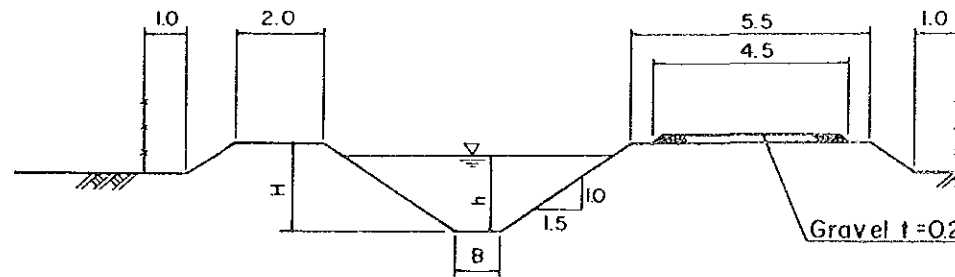
C-b TYPE TYPICAL SECTION



C-c TYPE TYPICAL SECTION



So-a TYPE TYPICAL SECTION



No	Q	B	h	H
1	3.676	1.0	1.77	2.00
2	1.790	1.0	1.33	1.30

LONGITUDINAL PROFILE AND CROSS SECTION MAIN CANAL No2

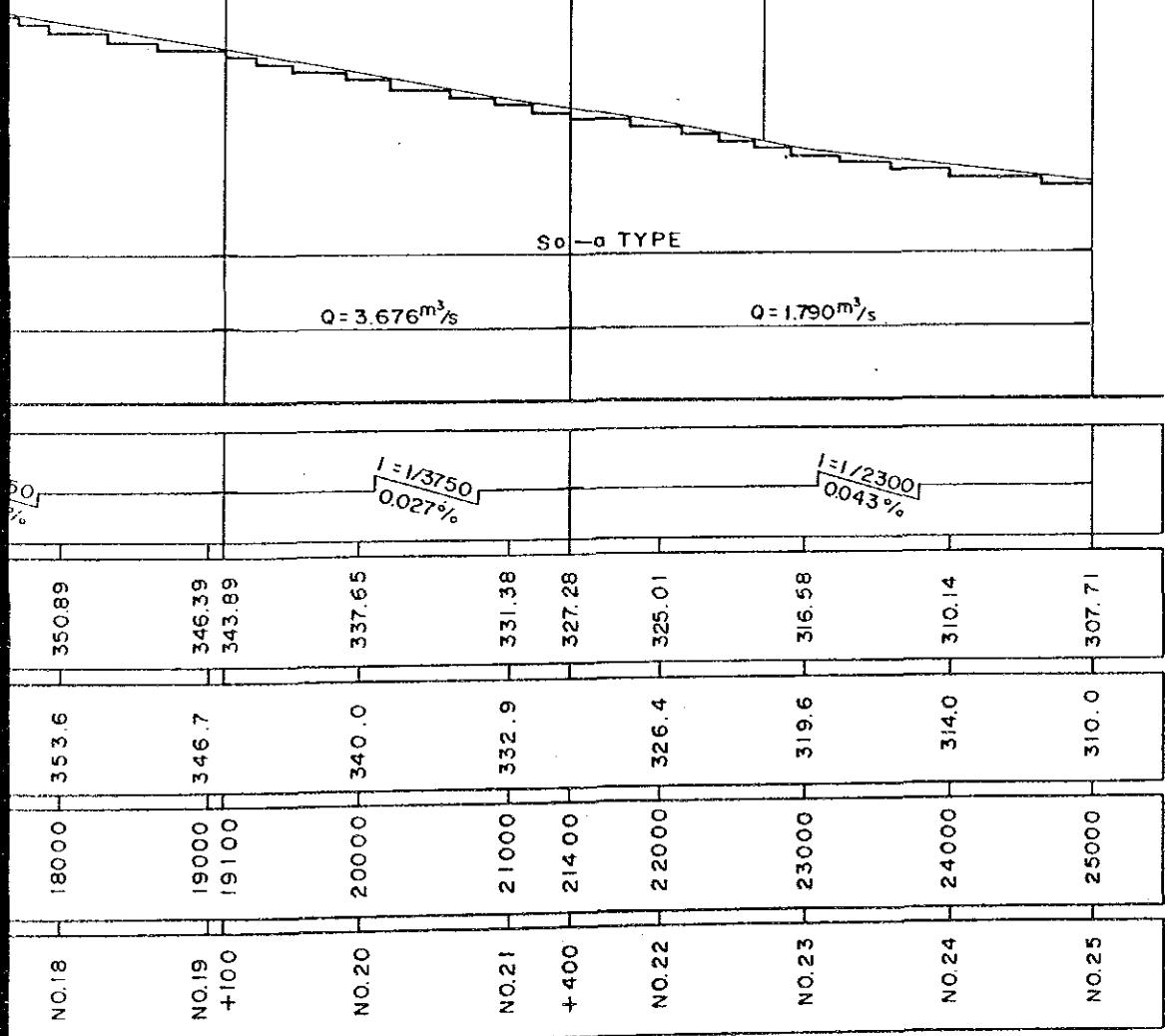
Canal No. 2-12

Division Works to Secondary Canal No.2-15
Main Canal No3 Wasteway

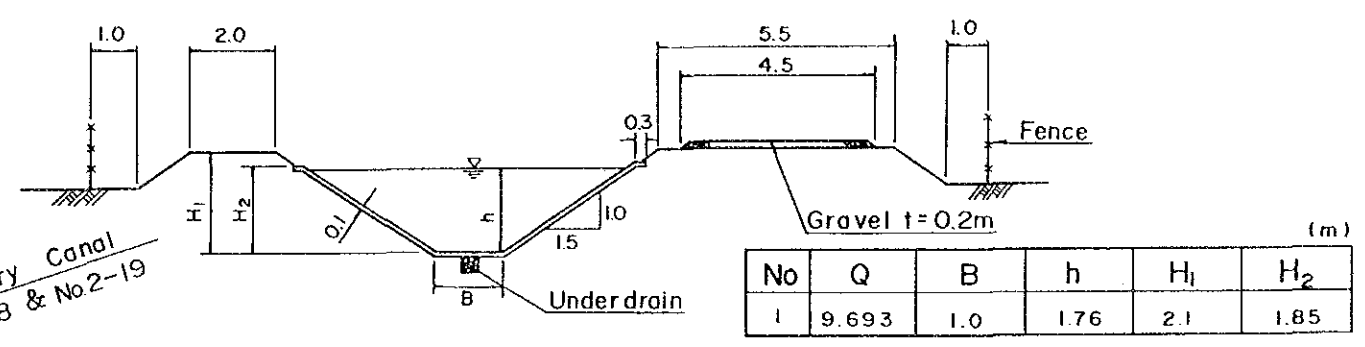
Division Works to Secondary Canal No.2-16
Wasteway

Division Works to Secondary Canal No.2-17
Bridge (National Road)

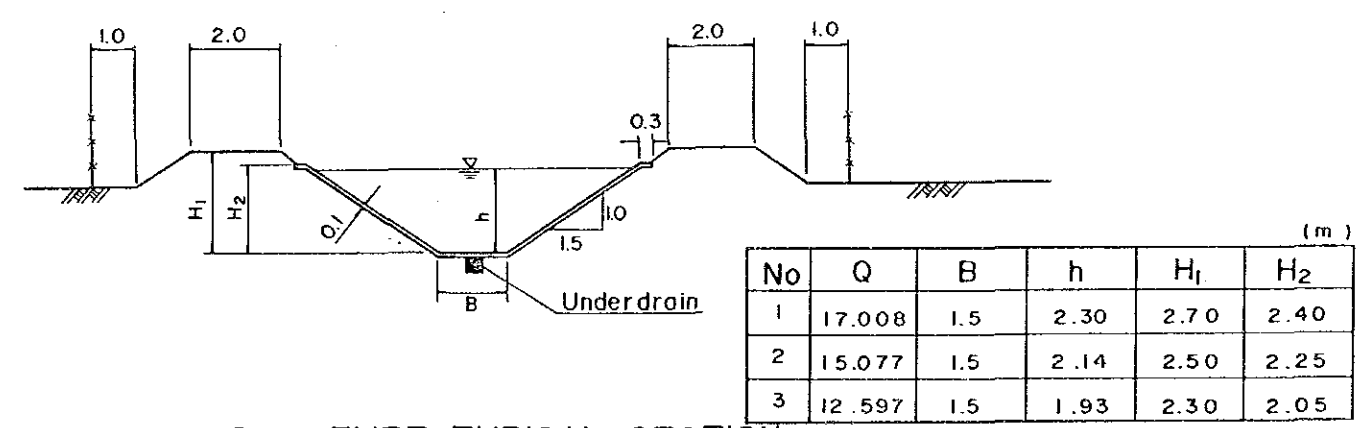
Division Works to Secondary Canal No.2-18 & No.2-19



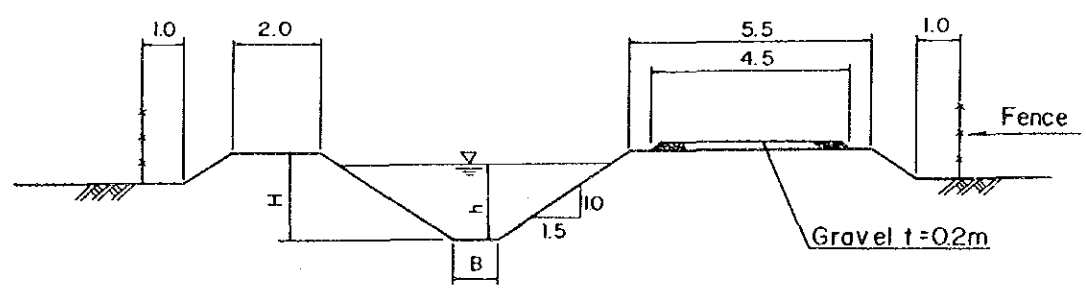
C-b TYPE TYPICAL SECTION



C-c TYPE TYPICAL SECTION



So-a TYPE TYPICAL SECTION



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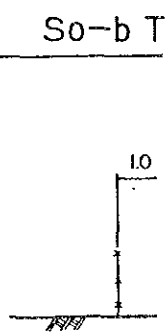
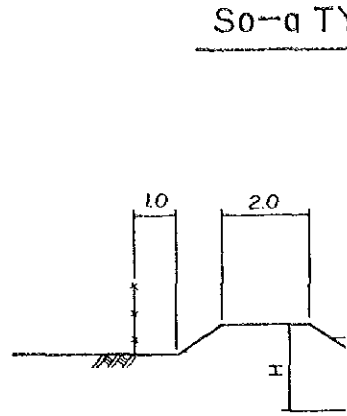
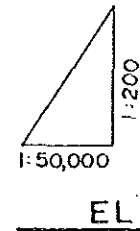
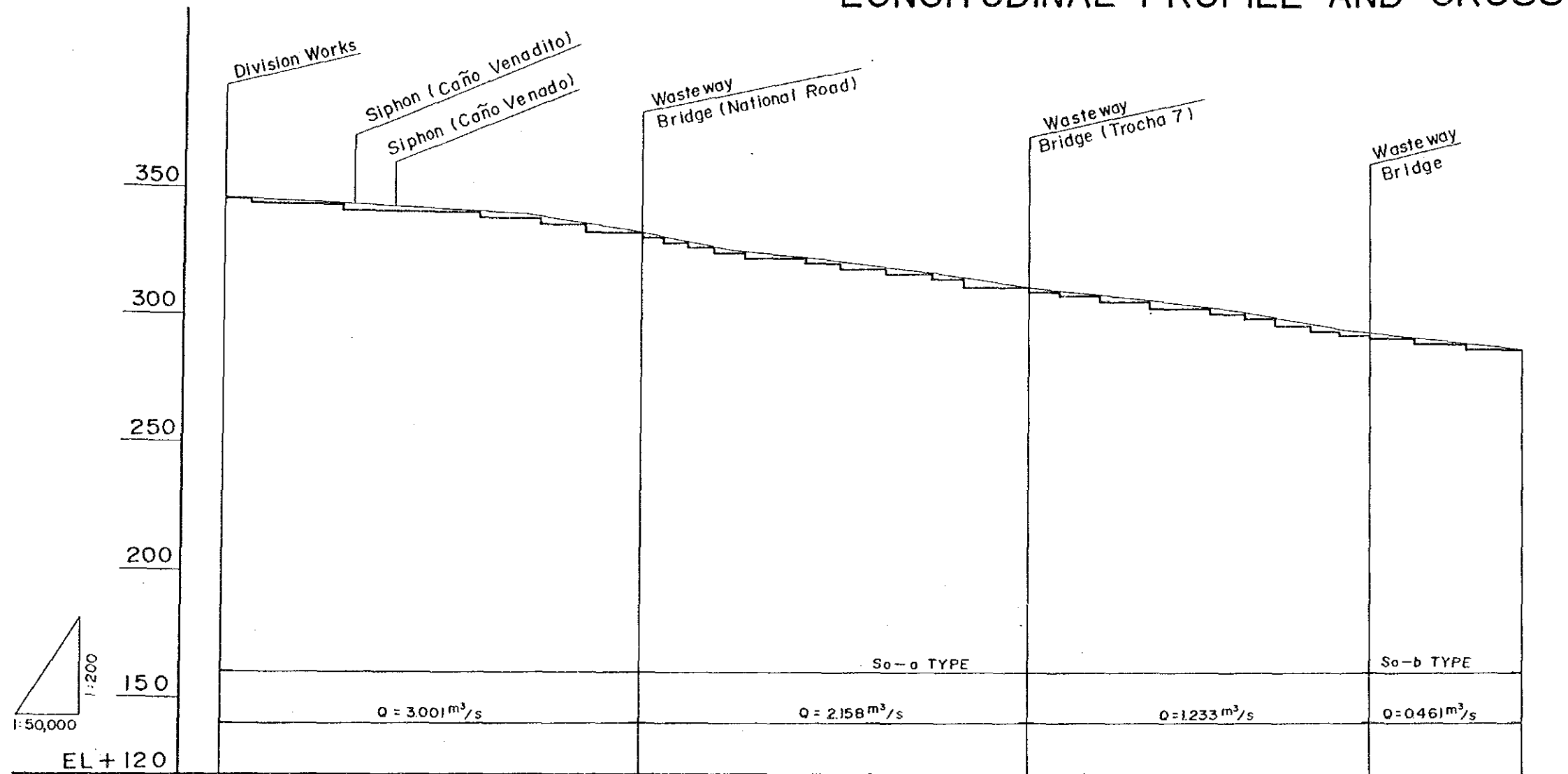
THE ARIARI RIVER BASIN
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LONGITUDINAL PROFILE AND
CROSS SECTION MAIN CANAL
NO. 2

Figure No. 4

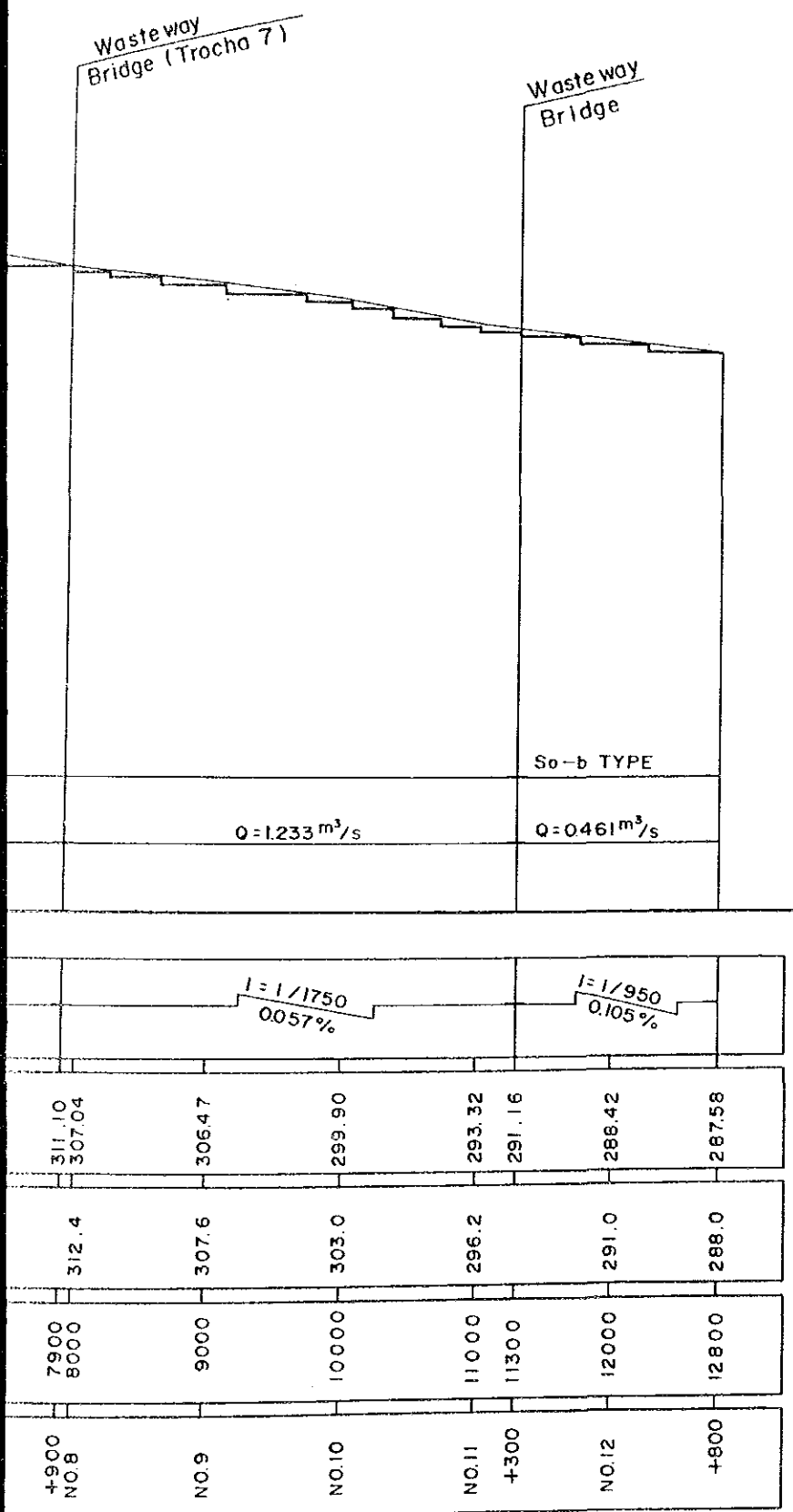
JAPAN INTERNATIONAL
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LONGITUDINAL PROFILE AND CROSS SECTION MAIN CANAL

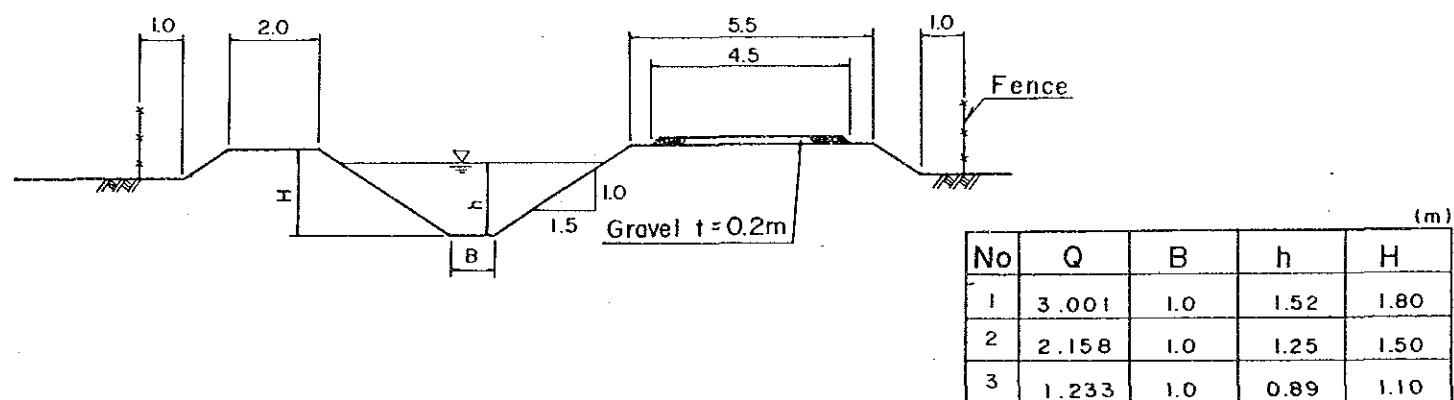


LONGITUDINAL SLOPE	1 = 1/3150 0.032%		1 = 1/2550 0.039%		1 = 1/1750 0.057%		1 = 1/950 0.105%										
DESIGN CANAL BED	345.89	343.57	341.25	338.93	334.62	332.59	324.23	319.84	313.30	311.10	307.04	306.47	299.90	293.32	291.16	288.42	287.58
GROUND LEVEL	346.0	344.7	343.3	341.2	334.7	332.59	327.3	322.6	318.0	312.4	307.6	307.6	303.0	296.2	291.16	288.42	288.0
ACCUMULATED DISTANCE	0	1000	2000	3000	4000	4100	5000	6000	7000	7900	8000	9000	10000	11000	11300	12000	12800
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	+100	NO.5	NO.6	NO.7	+900	NO.8	NO.9	NO.10	NO.11	+300	NO.12	+800

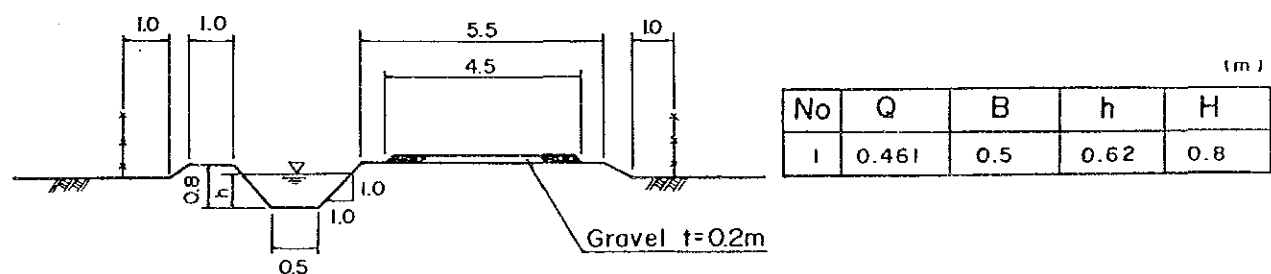
LONGITUDINAL PROFILE AND CROSS SECTION MAIN CANAL No3



So-a TYPE TYPICAL SECTION



So-b TYPE TYPICAL SECTION



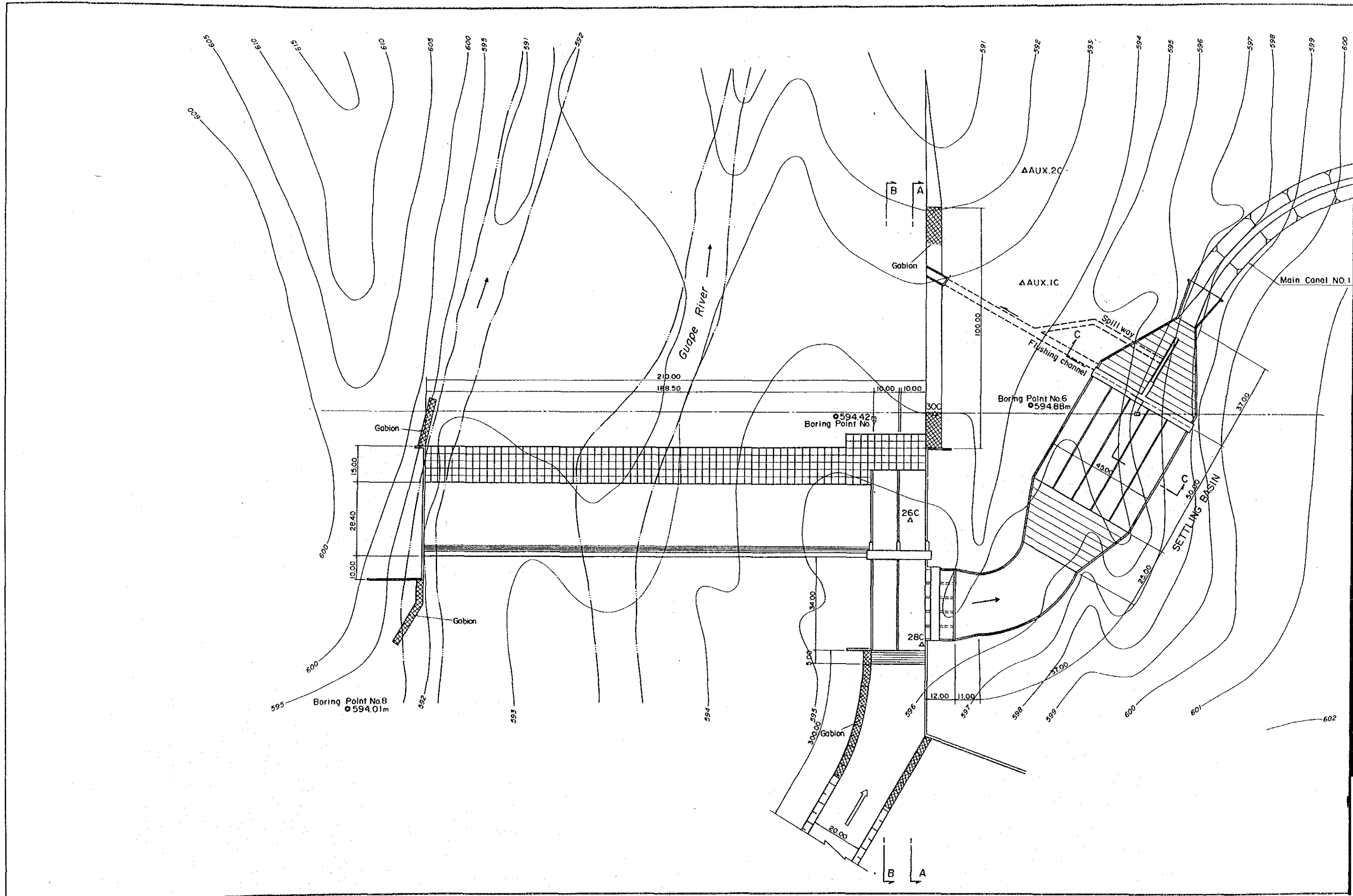
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 (HIMAT)

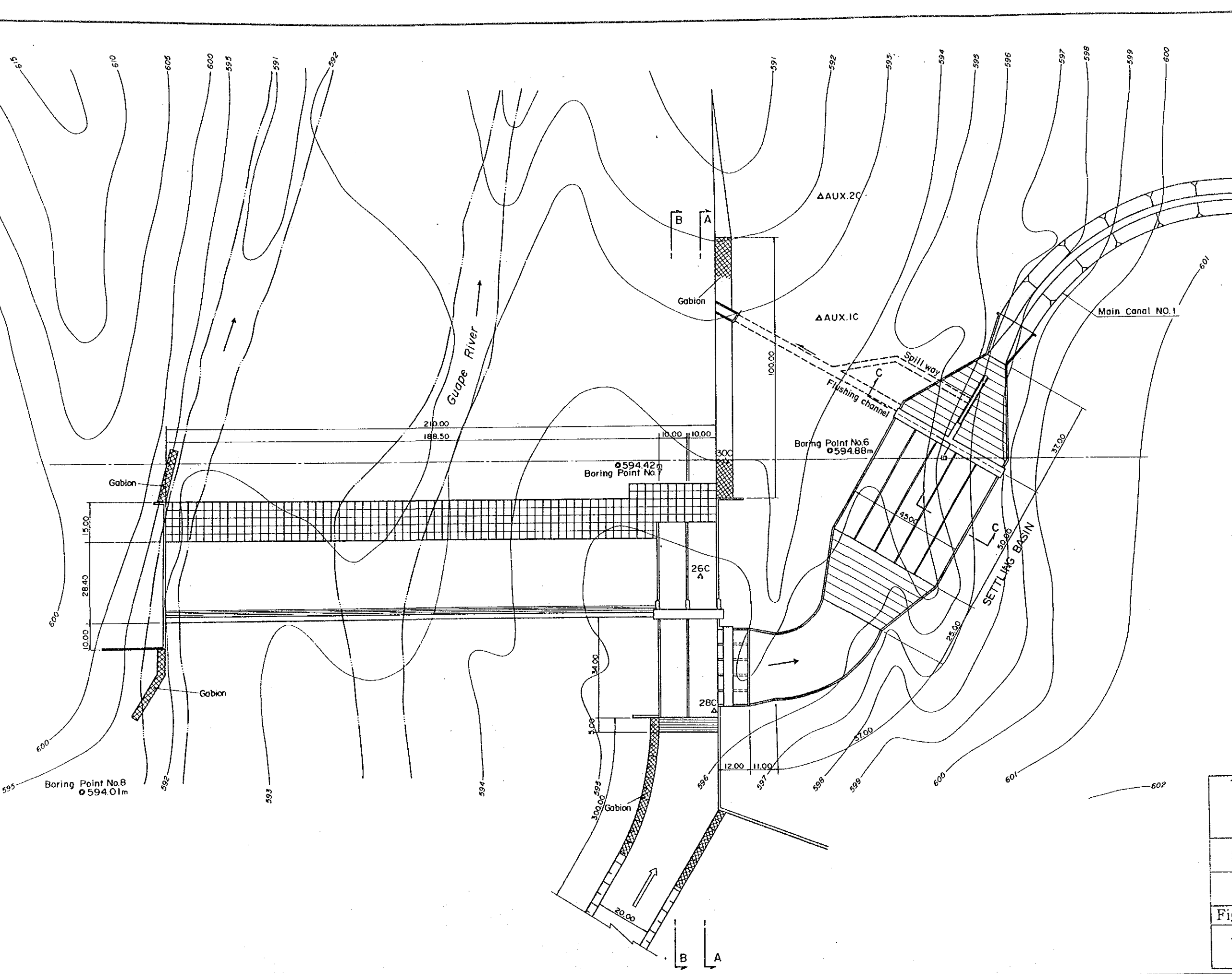
THE ARIARI RIVER BASIN
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LONGITUDINAL PROFILE AND
 CROSS SECTION MAIN CANAL
 NO. 3

Figure No. 5

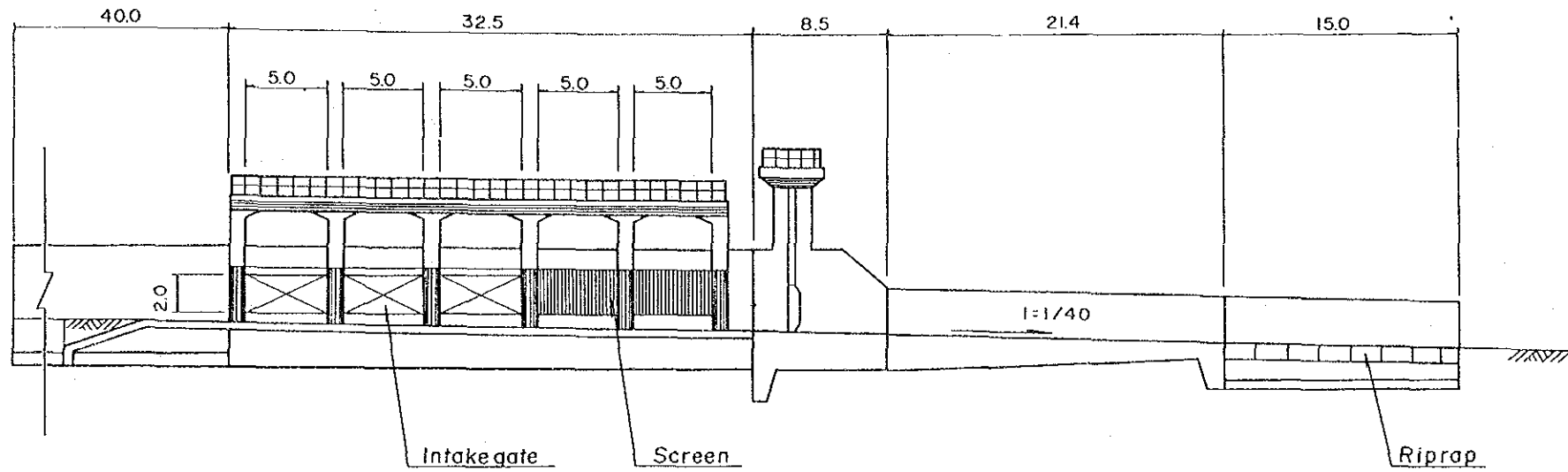
JAPAN INTERNATIONAL
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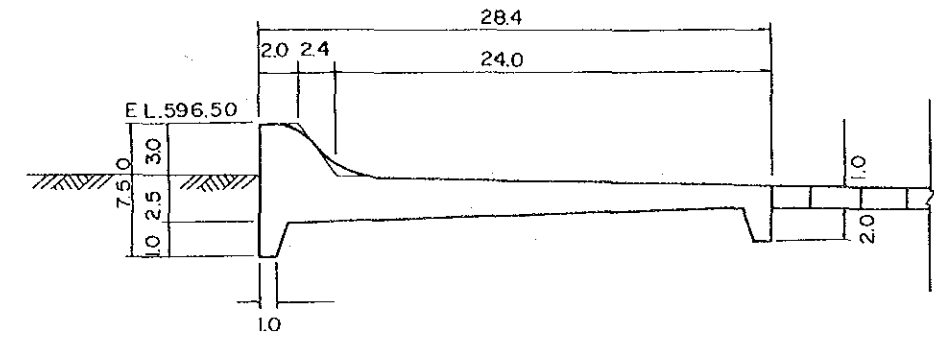


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THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
HEAD WORKS-1	
Figure	No. 6
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

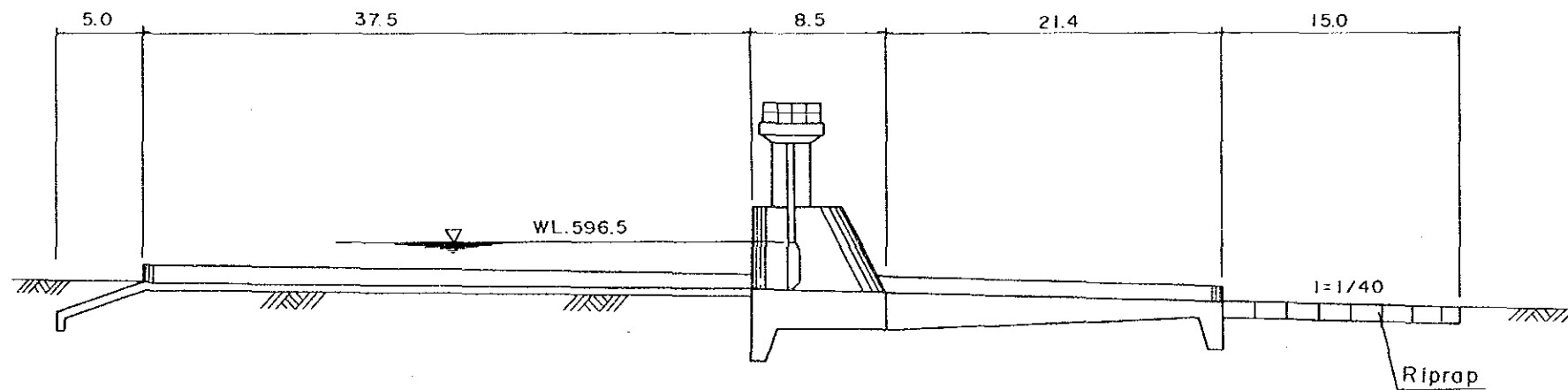
HEAD WORKS-2



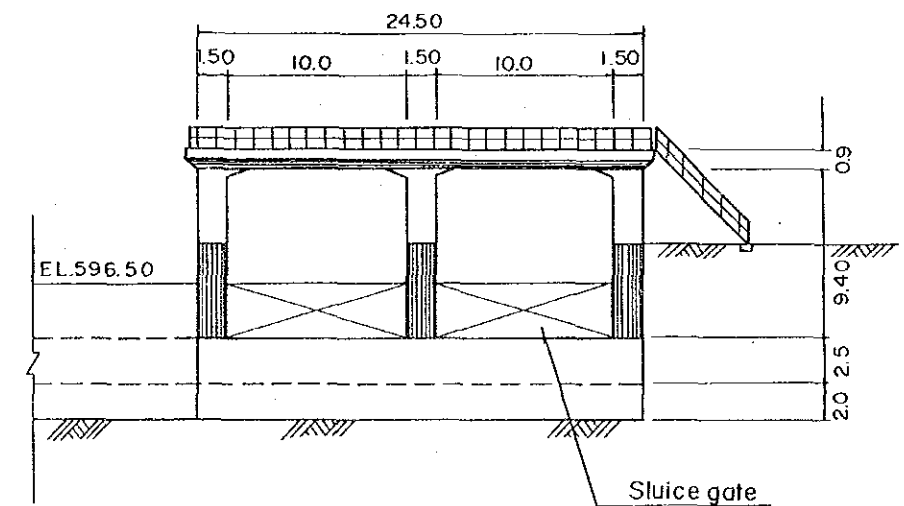
SECTION A-A



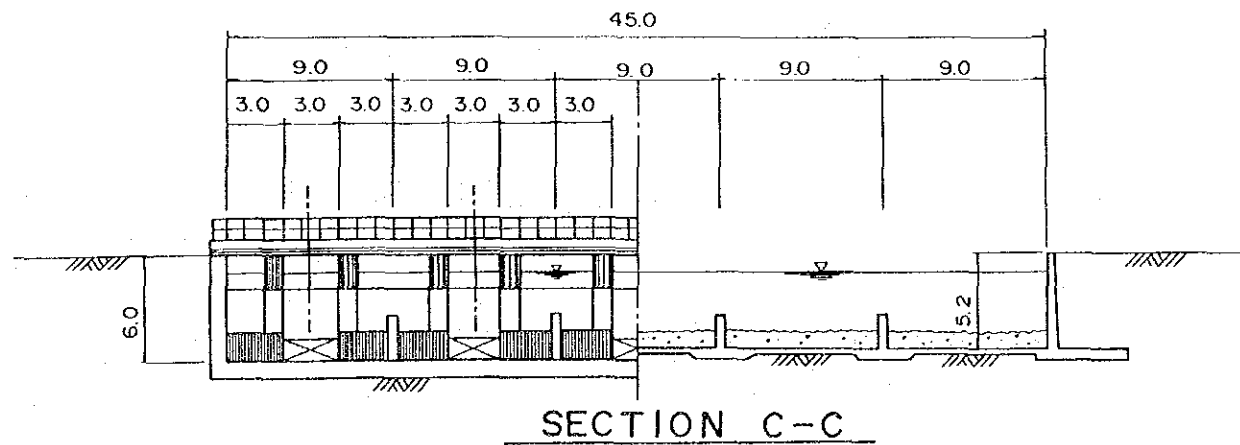
FIXED WEIR SECTION



SECTION B-B



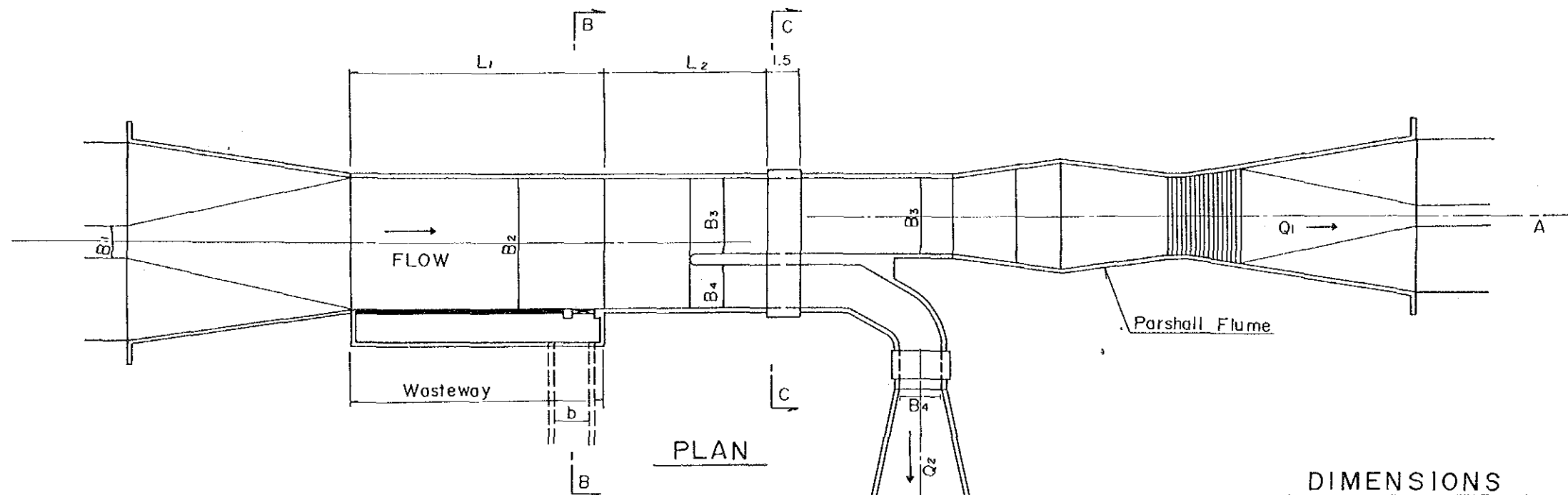
SAND SLUICeway SECTION



SECTION C-C

THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
HEAD WORKS-2	
Figure	No. 7
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

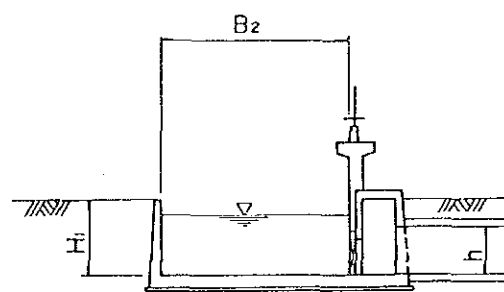
DIVISION WORKS-1 (LONGITUDINAL TYPE)



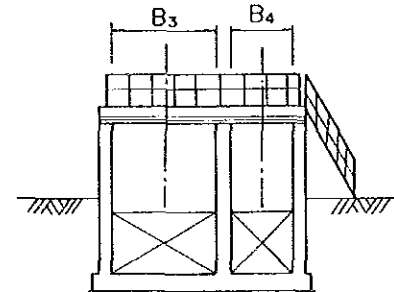
DIMENSIONS

No	Q_1	Q_2	b	h	L_1	L_2	H_1	H_2	B_1	B_2	B_3	B_4
1	17.705	17.008	2.2	2.2	19	16.5	3.7	2.7	2.5	10.4	5.0	4.9
2	8.647	5.001	1.6	1.6	15	8.5	2.5	1.5	1.5	6.0	3.5	2.0
3	6.113	1.694	1.4	1.4	10	7.0	2.0	1.7	1.0	5.3	3.0	1.8
4	3.388	1.098	1.2	1.2	9	4.5	1.5	1.9	1.0	4.4	2.4	1.5
5	1.790	1.727	0.9	0.9	8	9.5	2.0	1.3	1.0	4.1	1.8	1.8
6	3.676	3.001	1.2	1.2	11	7.5	2.1	2.0	1.0	5.2	2.4	2.3

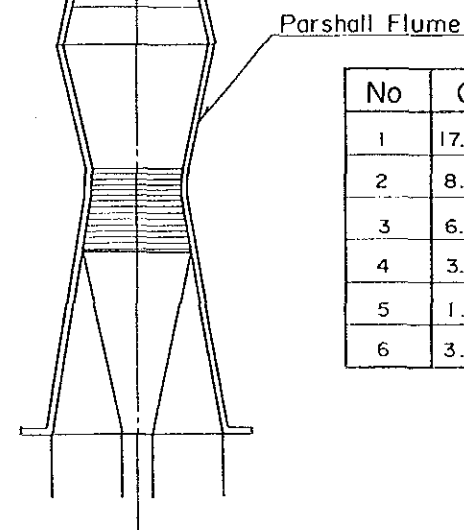
(m)



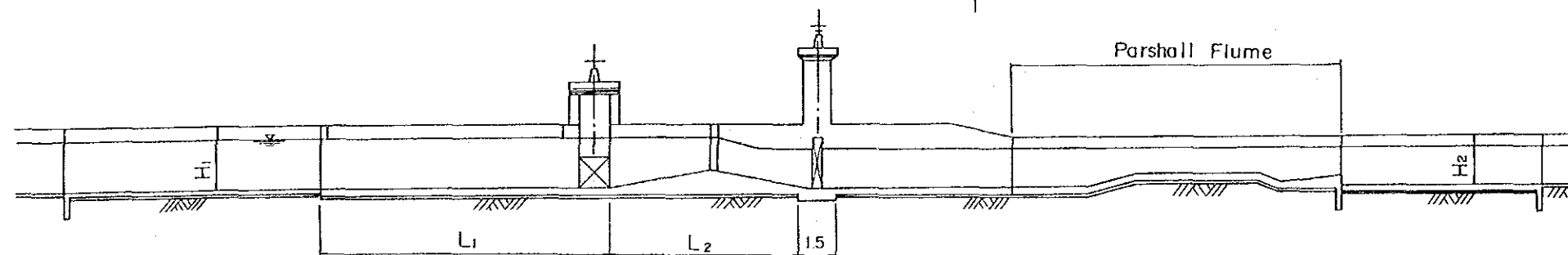
SECTION B-B



SECTION C-C



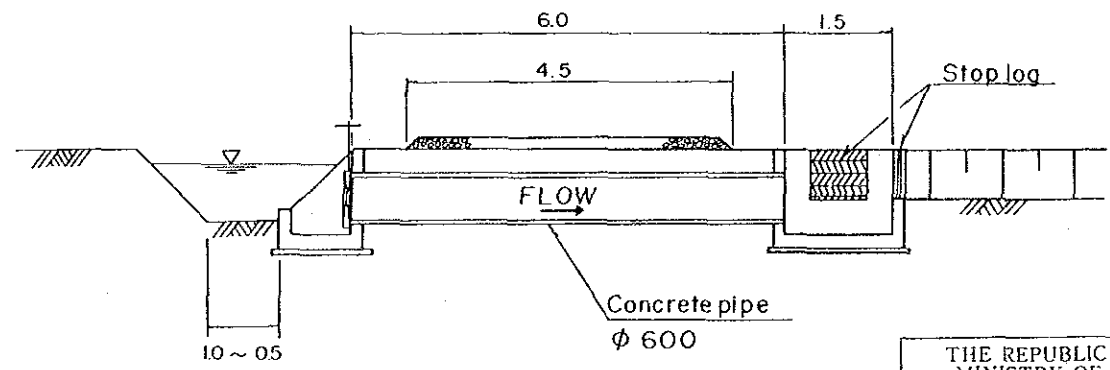
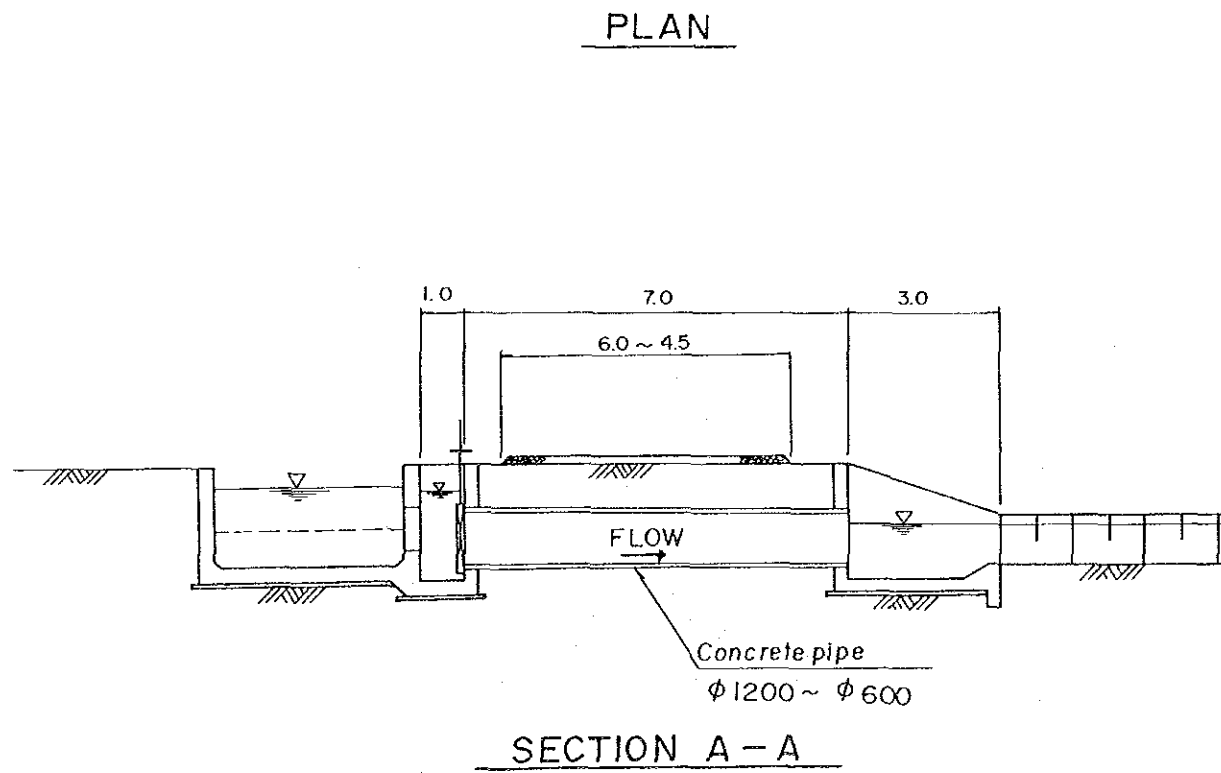
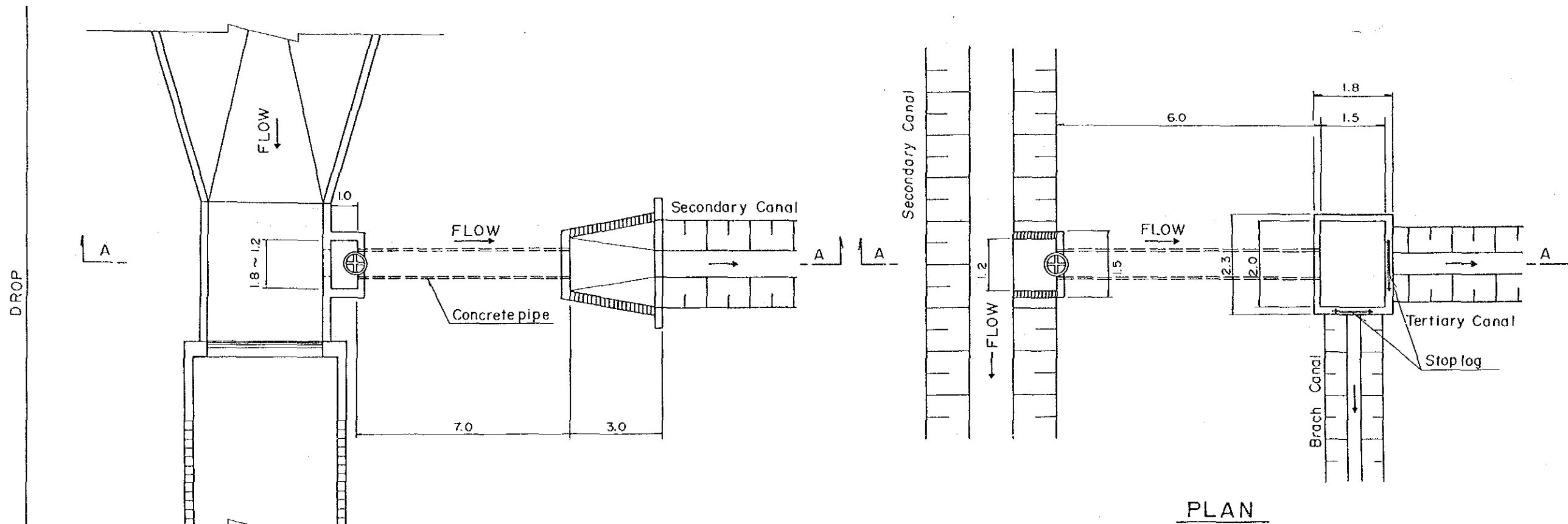
Parshall Flume



SECTION A-A

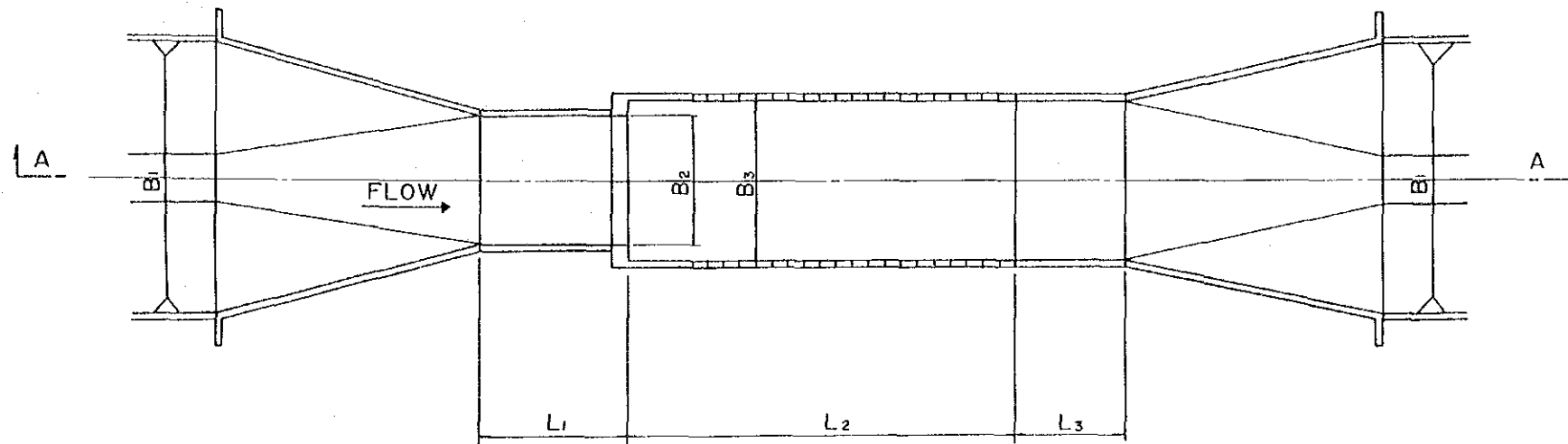
THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
DIVISION WORKS-1 (LONGITUDINAL TYPE)	
Figure	No. 8
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

DIVISION WORKS-2 (GATE-CONTROLLED TYPE)



THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
DIVISION WORKS-2 (GATE-CONTROLLED TYPE)	
Figure	No. 9
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

DROP

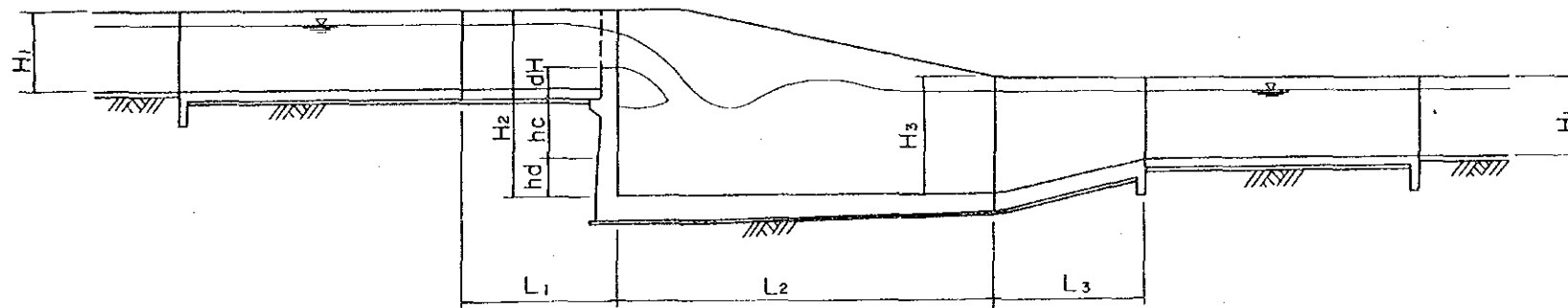


DIMENSIONS

(m)

No.	Q		H_1	H_2	dH	hc	hd	B_1	B_2	B_3	L_1	L_2	L_3
	max.	min.											
1	37	36	3.8	7.0	0.6	2.0	1.2	2.5	4.6	5.6	5.5	17	4.8
2	18	14	2.7	5.9	0.6	2.0	1.2	1.5	4.1	5.1	4.9	14	4.8
3	14	9	2.3	5.4	0.6	2.0	1.1	1.5	4.0	5.0	4.5	11	4.4
4	9	3.8	2.0	4.9	0.6	2.0	0.9	1.0	3.6	4.6	4.3	9	3.6
5	3.0	2.2	1.8	4.5	0.5	2.0	0.7	1.0	2.2	3.2	4.2	7.5	2.8
6	2.2	0.1	1.3	3.9	0.25	2.0	0.6	1.0	1.7	2.7	4.1	6	2.4
7	2.0	0.1	1.1	2.6	0.25	1.0	0.5	1.0	1.6	2.6	3.4	4.5	1.6

PLAN



SECTION A-A

THE REPUBLIC OF COLOMBIA
 MINISTRY OF AGRICULTURE
 INSTITUTO COLOMBIANO DE
 HIDROLOGIA, METEOROLOGIA
 Y ADECUACION DE TIERRAS
 (HIMAT)

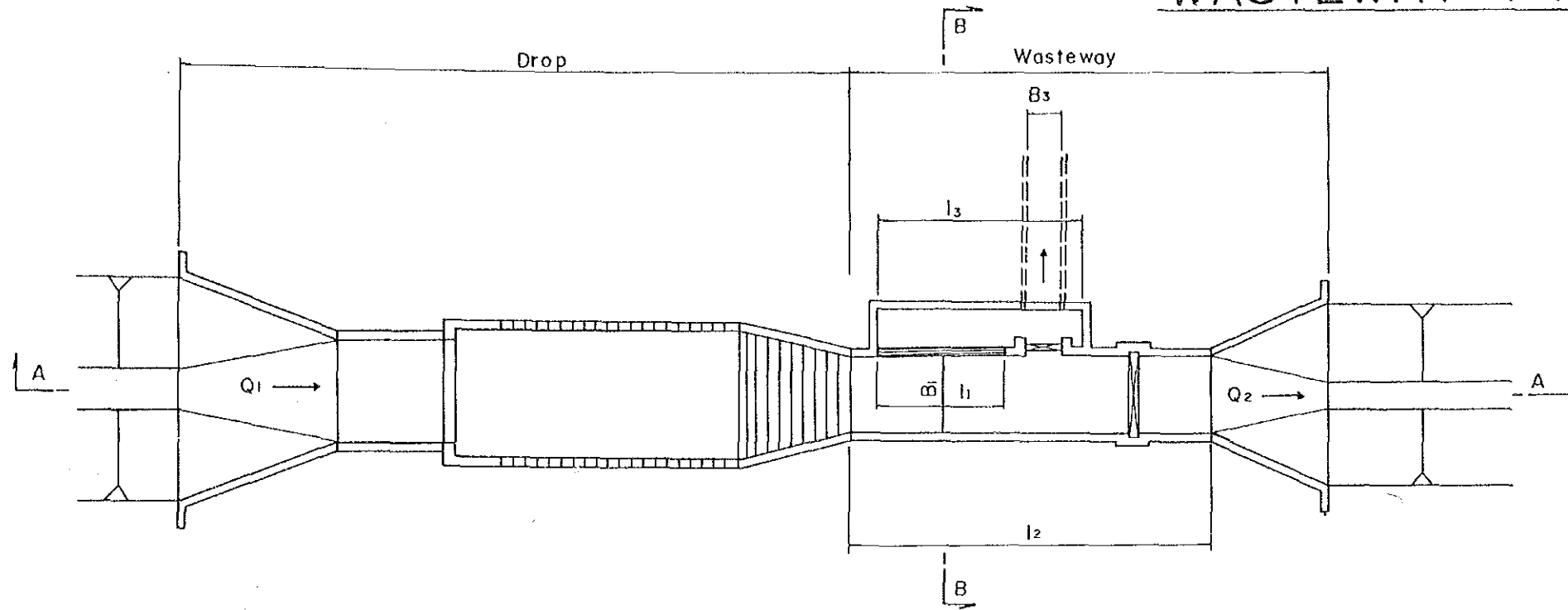
THE ARIARI RIVER BASIN
 INTEGRATED AGRICULTURAL
 DEVELOPMENT PROJECT

DROP

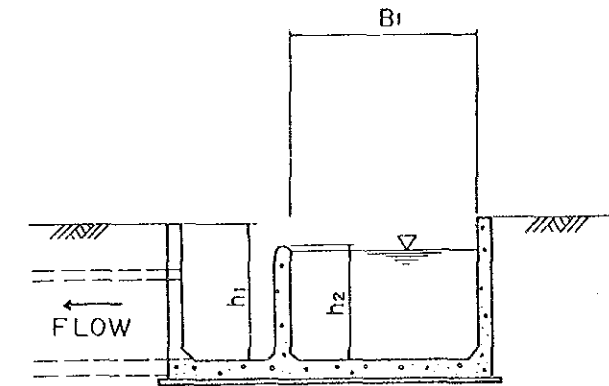
Figure No. 10

JAPAN INTERNATIONAL
 COOPERATION AGENCY
 (JICA)

WASTEWAY-1 ($Q_1 \geq 1.0 \text{ m}^3/\text{s}$)



PLAN

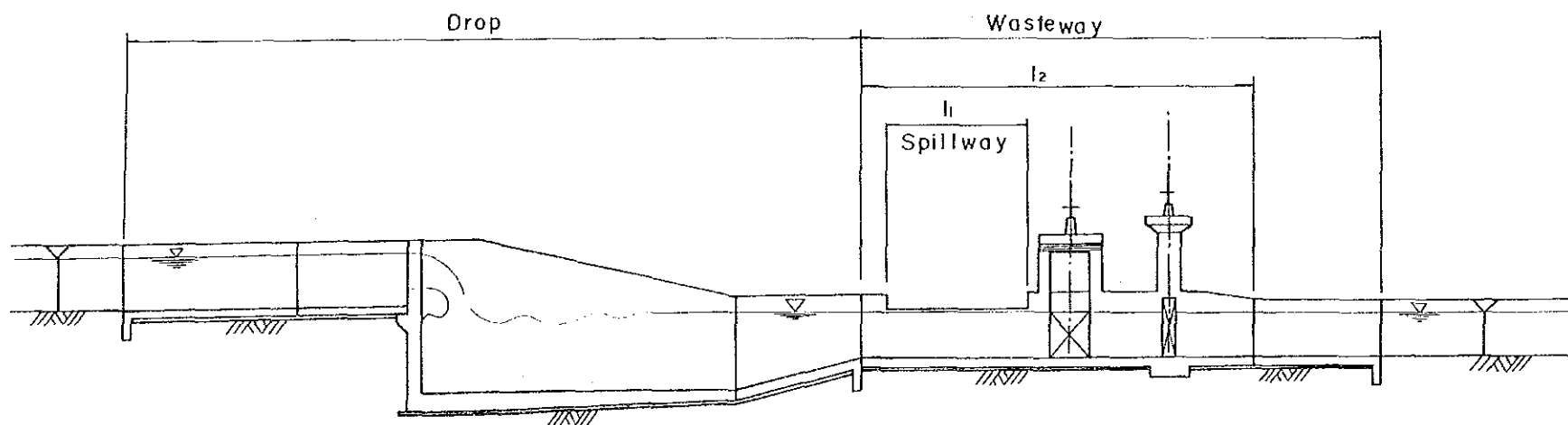


SECTION B-B

DIMENSIONS

No	Q_1	Q_2	B_1	B_2	h_1	h_2	l_1	l_2
1	15~18	12~17	4.5	2.0	2.7	2.25	5.0	15.0
2	12~13	9~10	3.5	2.0	2.3	1.85	7.0	15.0
3	5~7	3~6	2.5	1.5	1.7	1.35	4.0	12.0
4	3~5	2~5	2.5	$\phi 1200$	2.1	1.40	3.0	8.0
5	1~3	0.5~2	1.5	$\phi 1000$	1.2	0.95	3.0	8.0

(m)



SECTION A-A

THE REPUBLIC OF COLOMBIA
MINISTRY OF AGRICULTURE
INSTITUTO COLOMBIANO DE
HIDROLOGIA, METEOROLOGIA
Y ADECUACION DE TIERRAS
(HIMAT)

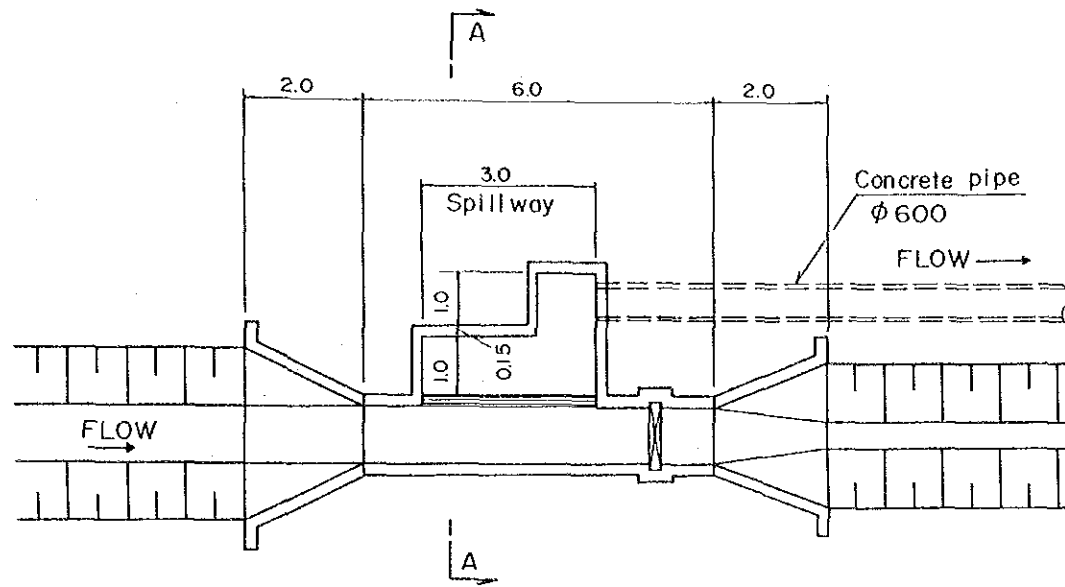
THE ARIARI RIVER BASIN
INTEGRATED AGRICULTURAL
DEVELOPMENT PROJECT

WASTE WAY-1
($Q \geq 1.0 \text{ m}^3/\text{s}$)

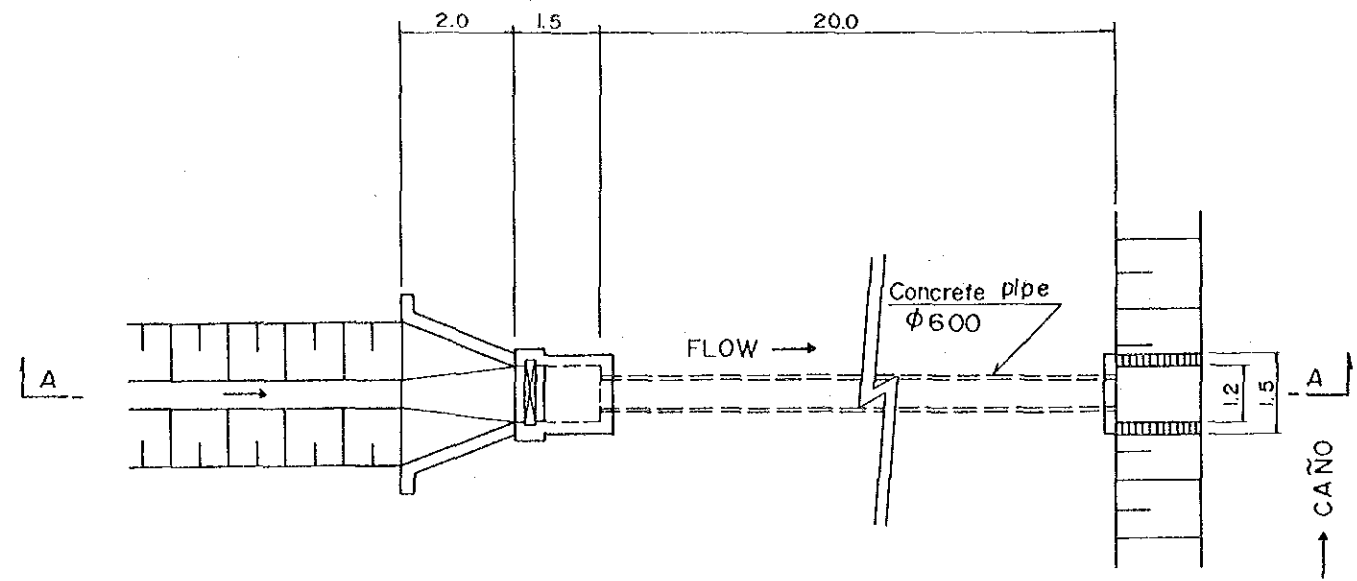
Figure No. 11

JAPAN INTERNATIONAL
COOPERATION AGENCY
(JICA)

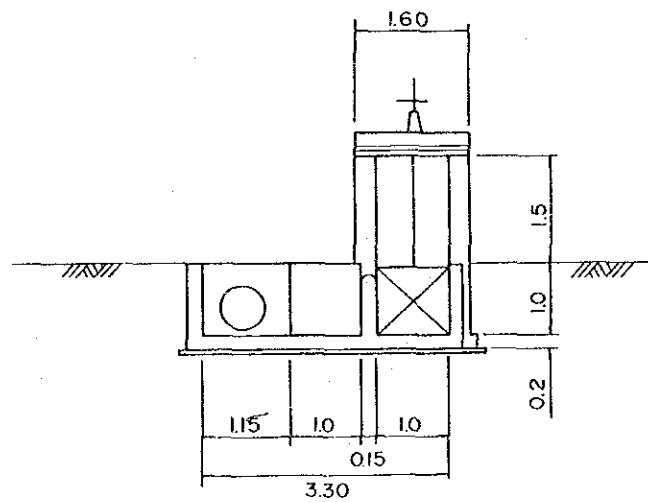
WASTEWAY-2 ($Q \leq 1.0 \text{ m}^3/\text{s}$)



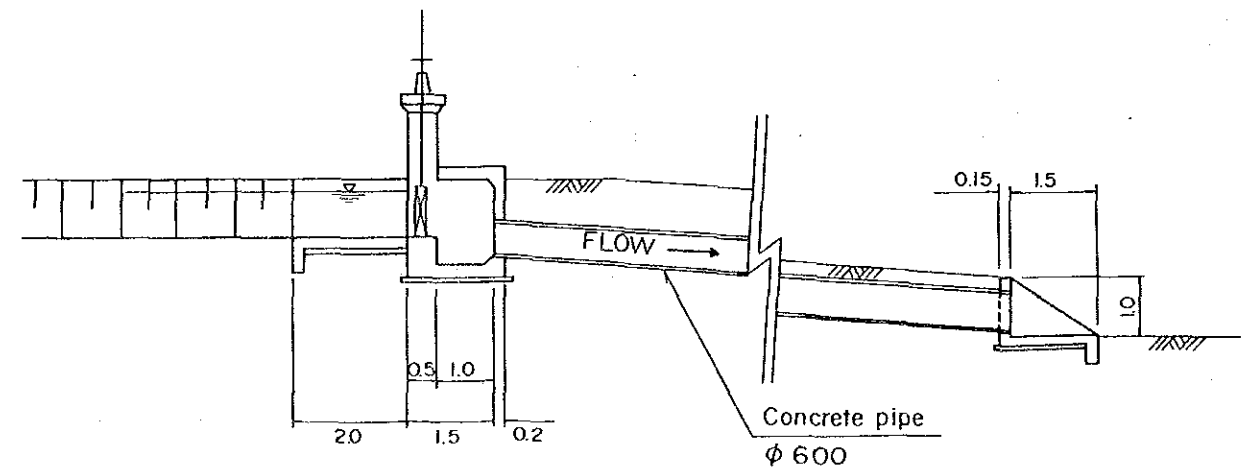
PLAN



PLAN



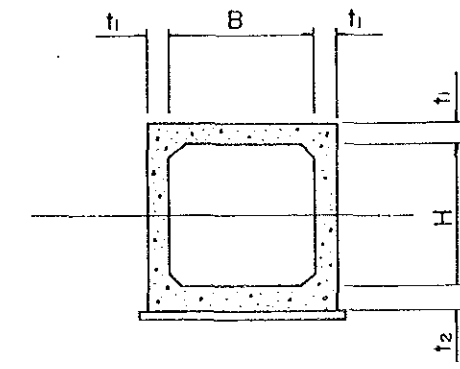
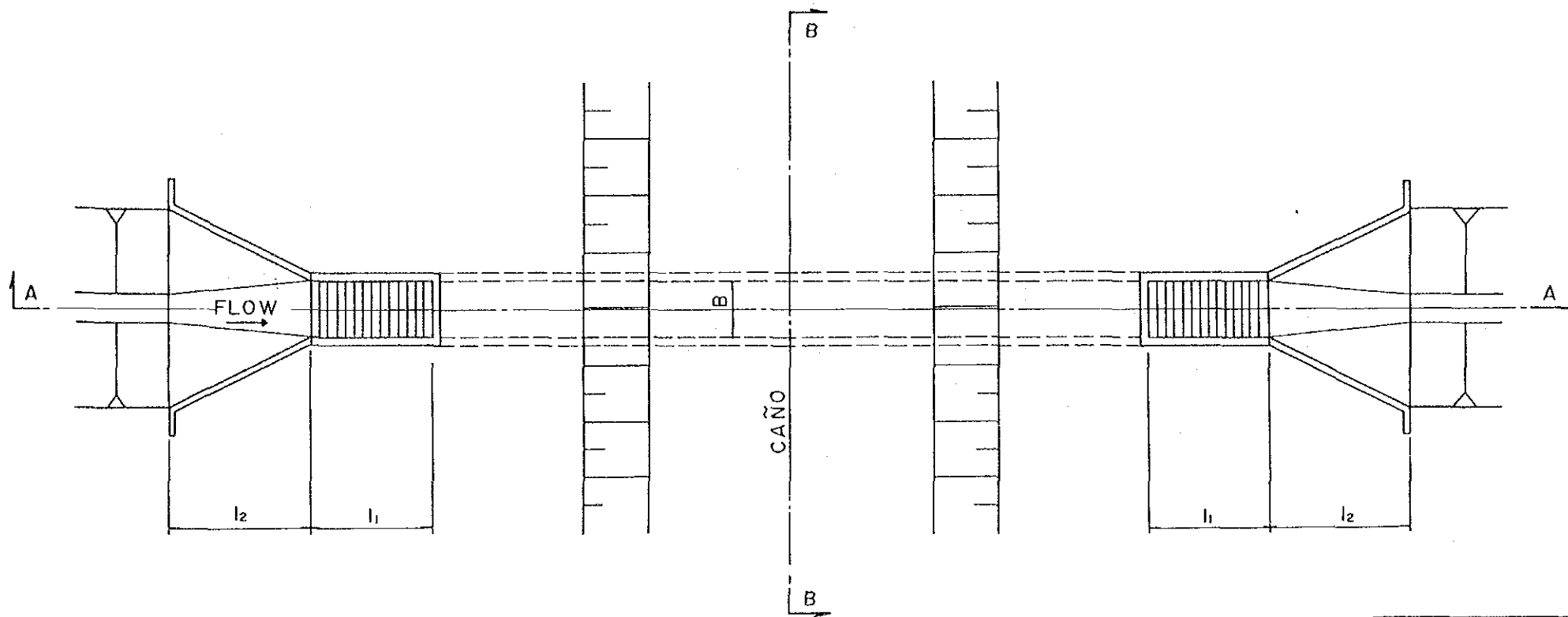
SECTION A-A



SECTION A-A

THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
WASTE WAY-2 ($Q \leq 1.0 \text{ m}^3/\text{s}$)	
Figure	No. 12
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

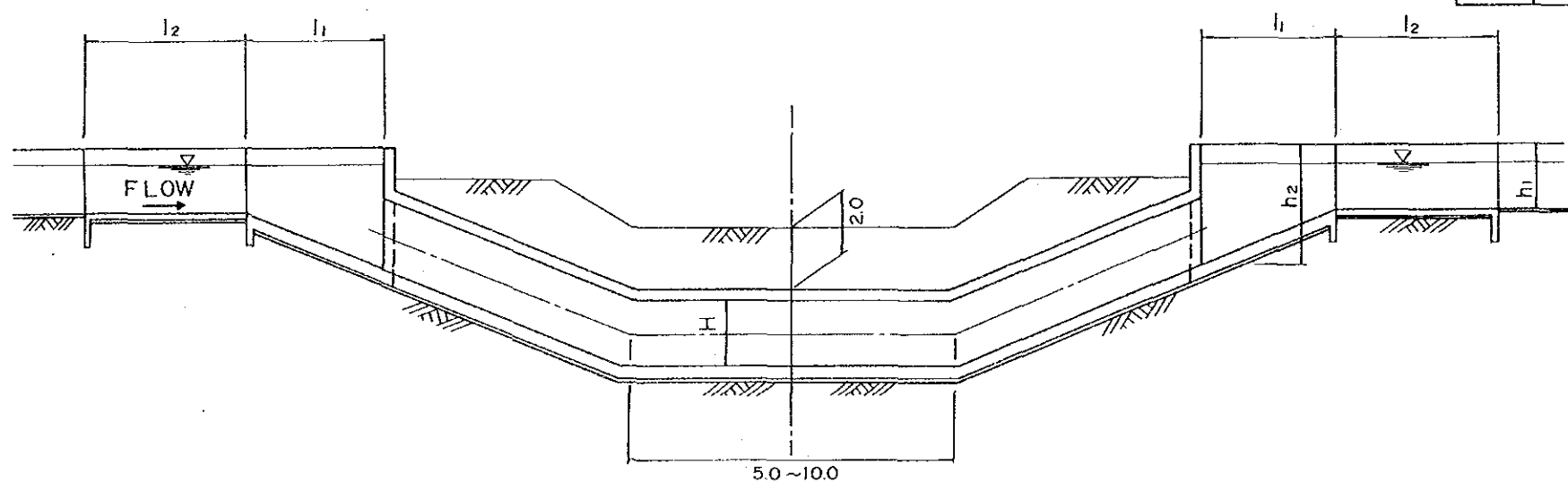
SIPHON-1 ($Q \geq 2.5 \text{ m}^3/\text{s}$)



DIMENSIONS

No.	Q		B	H	h ₁	h ₂	l ₁	l ₂	t ₁	t ₂
	max.	min.								
1	37	36	3.5 ^m	3.5 ^m	3.7	6.0	6.0	5.0	0.4	0.45
2	18	15	2.5	2.5	2.7	4.5	4.5	5.0	0.3	0.35
3	13	8	2.0	2.0	2.1	3.5	3.5	5.0	0.3	0.35
4	6	2.5	1.5	1.5	2.1	3.0	2.5	5.0	0.3	0.35

(m)



THE REPUBLIC OF COLOMBIA
 MINISTRY OF AGRICULTURE
 INSTITUTO COLOMBIANO DE
 HIDROLOGIA, METEOROLOGIA
 Y ADECUACION DE TIERRAS
 (HIMAT)

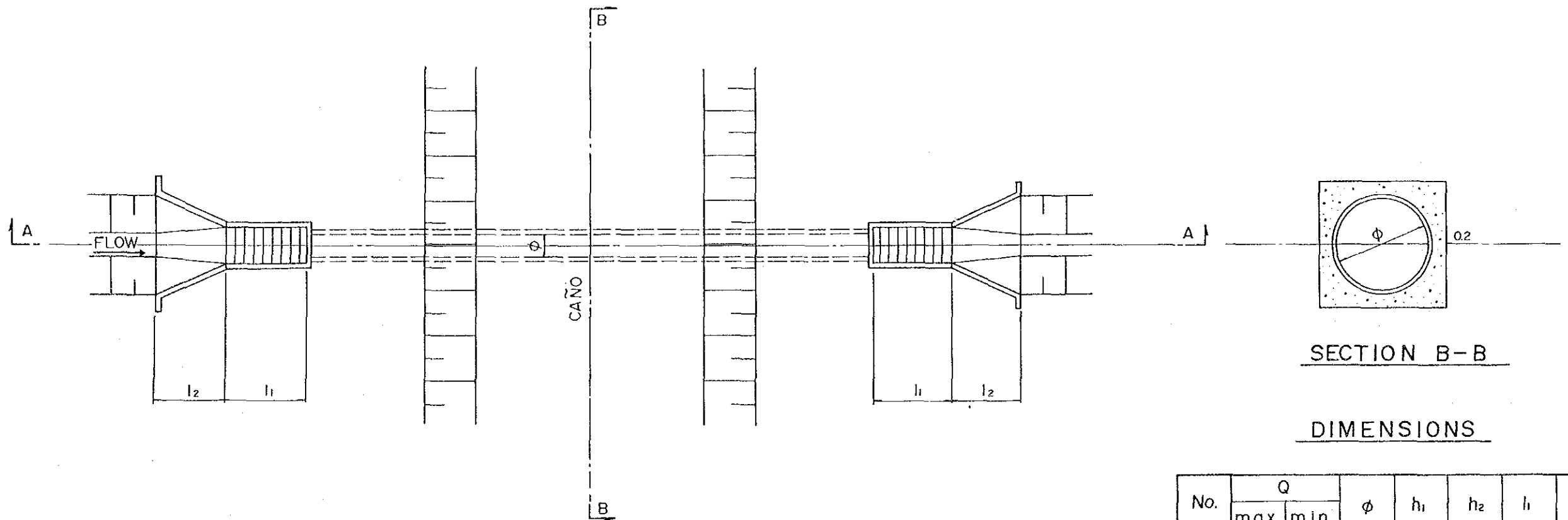
THE ARIARI RIVER BASIN
 INTEGRATED AGRICULTURAL
 DEVELOPMENT PROJECT

SIPHON-1 ($Q \geq 2.5 \text{ m}^3/\text{s}$)

Figure No. 13

JAPAN INTERNATIONAL
 COOPERATION AGENCY
 (JICA)

SIPHON-2 ($Q \geq 2.5 \text{ m}^3/\text{s}$)



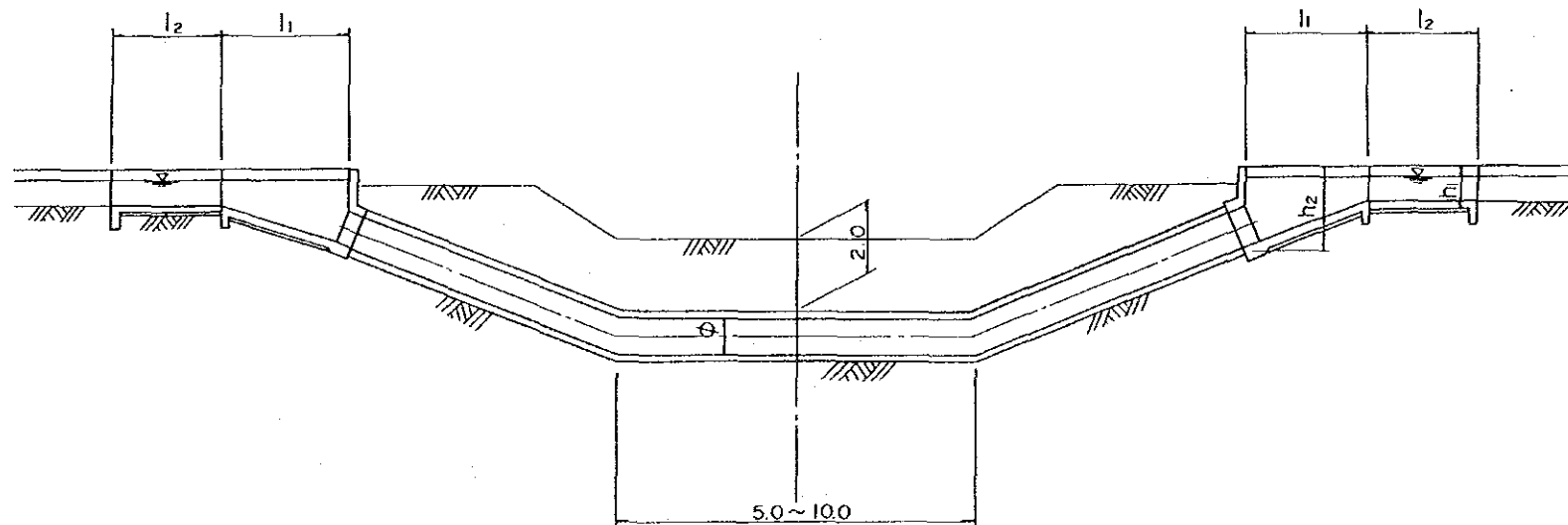
PLAN

SECTION B-B

DIMENSIONS

No.	Q		ϕ	h_1	h_2	l_1	l_2
	max.	min.					
1	2.5	1.5	1200 ^{mm}	1.5	2.8	3.5	3.0
2	1.5	1.0	1000	1.2	2.4	3.0	3.0
3	1.0	0.5	800	0.9	2.1	3.0	2.0
4	0.5	0.1	600	0.9	1.8	2.5	2.0

(m)



SECTION A-A

THE REPUBLIC OF COLOMBIA
 MINISTRY OF AGRICULTURE
 INSTITUTO COLOMBIANO DE
 HIDROLOGIA, METEOROLOGIA
 Y ADECUACION DE TIERRAS
 (HIMAT)

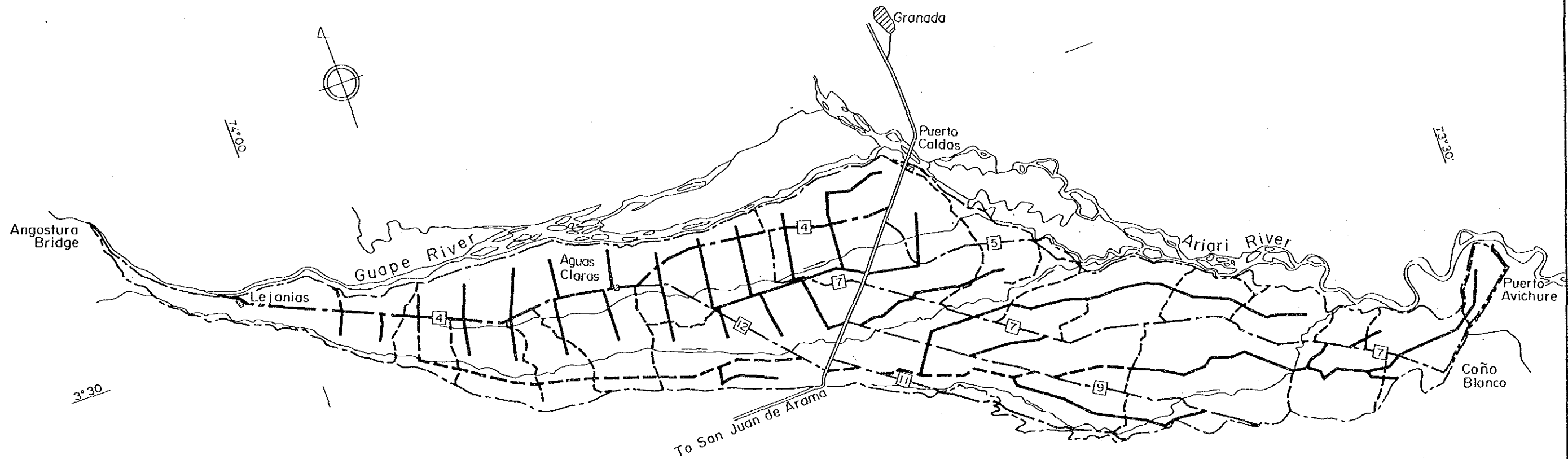
THE ARIARI RIVER BASIN
 INTEGRATED AGRICULTURAL
 DEVELOPMENT PROJECT

SIPHON-2 ($Q \leq 2.5 \text{ m}^3/\text{s}$)

Figure No. 14

JAPAN INTERNATIONAL
 COOPERATION AGENCY
 (JICA)

ROAD NETWORK



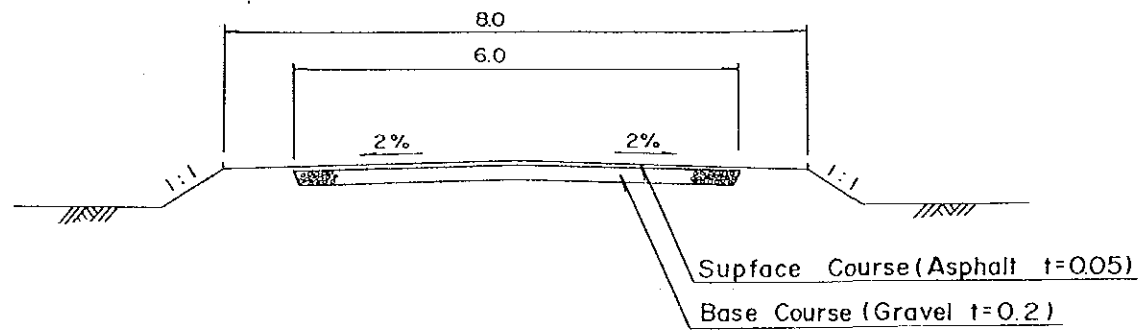
LEGEND

- Existing Farm Road
- [9]--- Existing Trocho
- [4]--- Proposed Asphalt Pavement
(Trocho - 4)
- Proposed Operation and Maintenance Road
(Road Width 7.0 m)
- Proposed Operation and Maintenance Road
(Road Width 5.5 m)

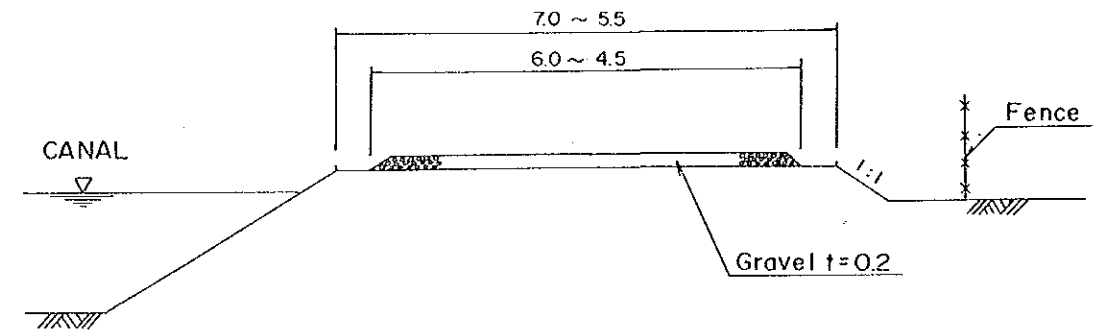


THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
ROAD NETWORK	
Figure	No. 15
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

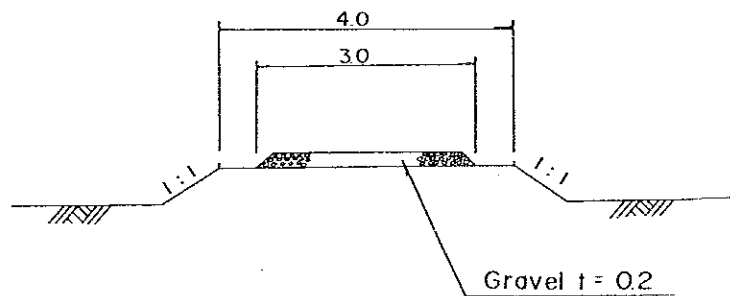
TYPICAL ROAD SECTION



TROCHA-4 ROAD



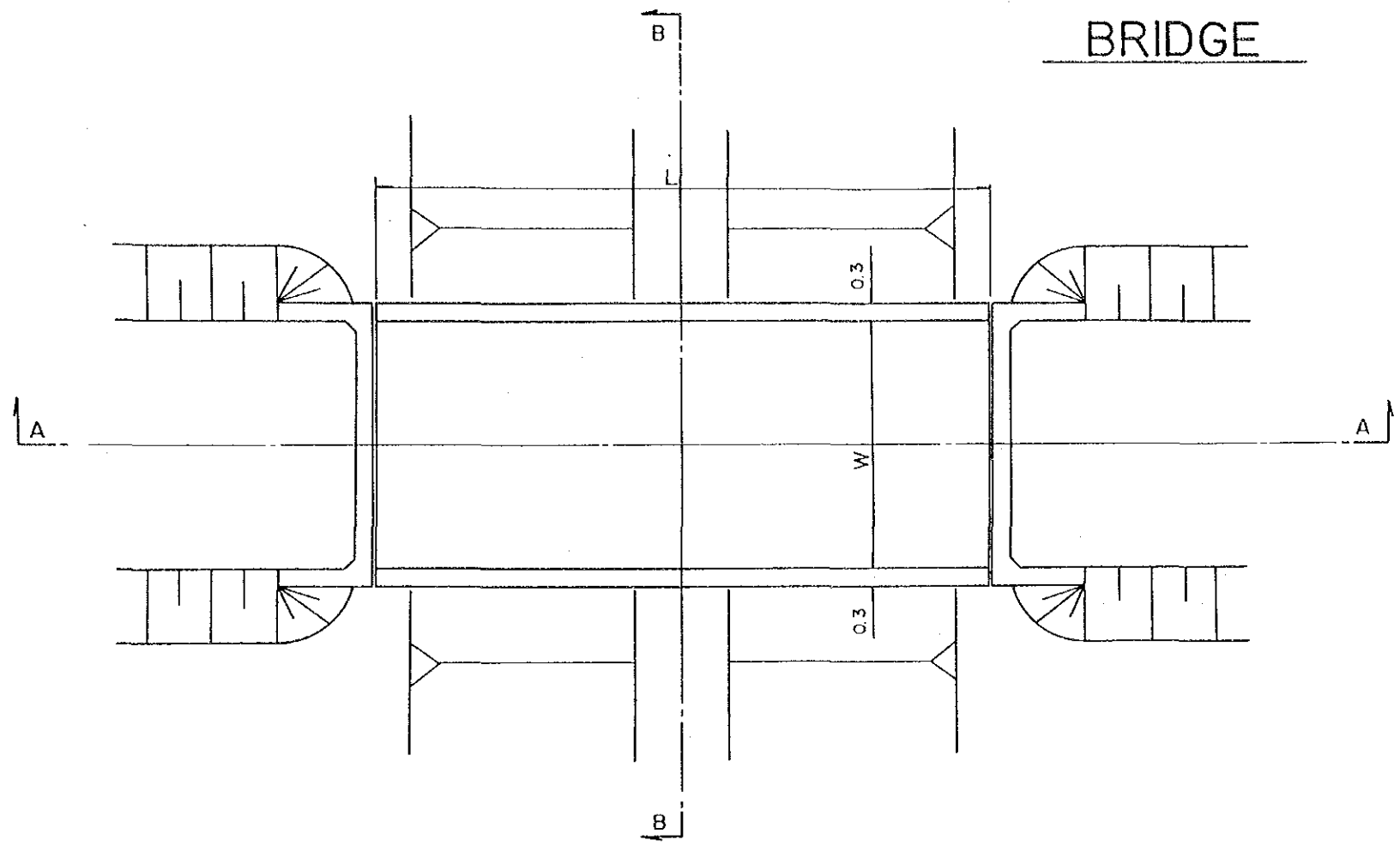
OPERATION AND MAINTENANCE ROAD



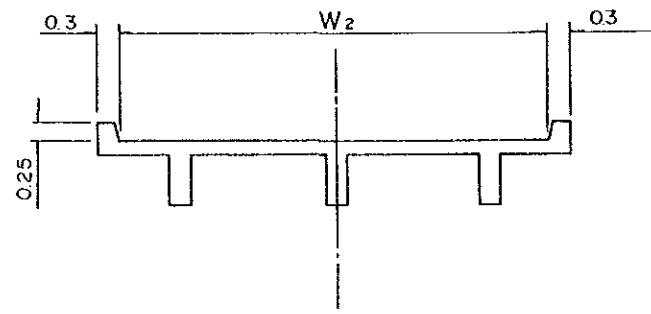
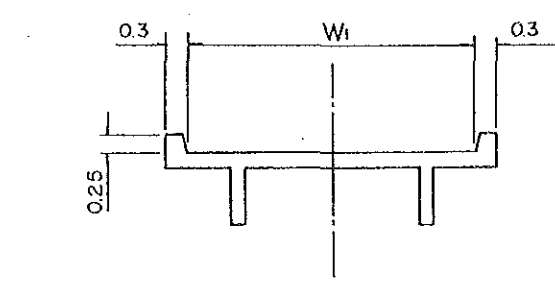
ON-FARM ROAD

THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
TYPICAL ROAD SECTION	
Figure	No. 16
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

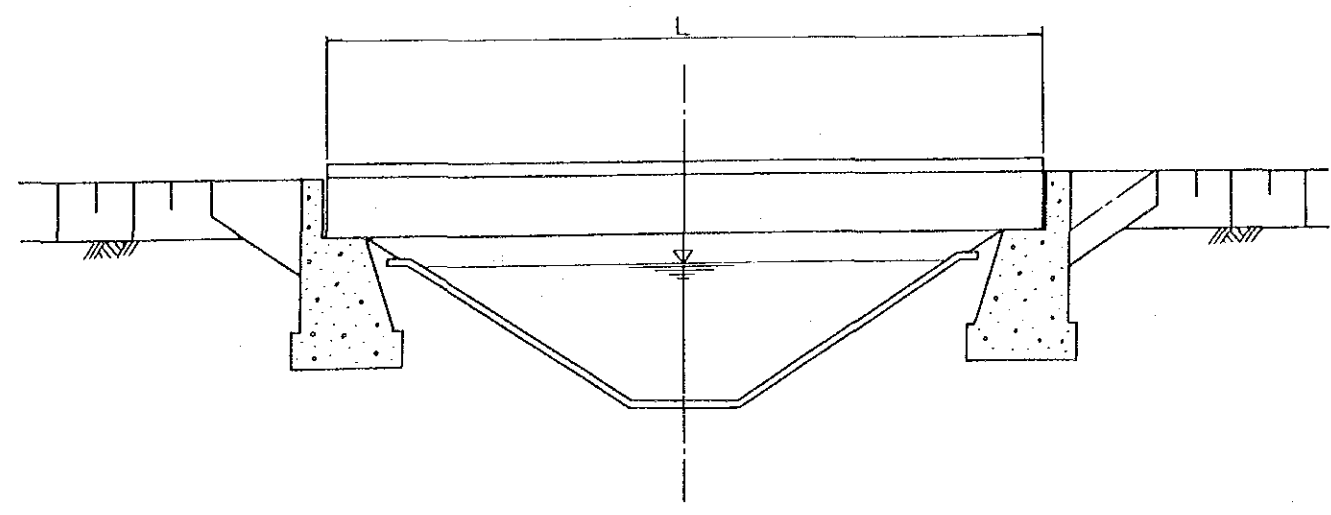
BRIDGE



PLAN



SECTION B-B



SECTION A-A

DIMENSIONS

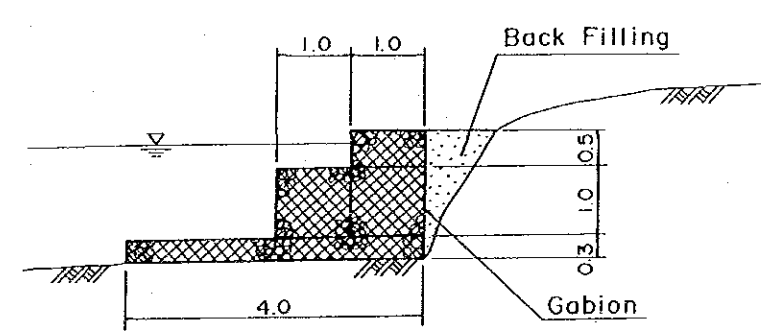
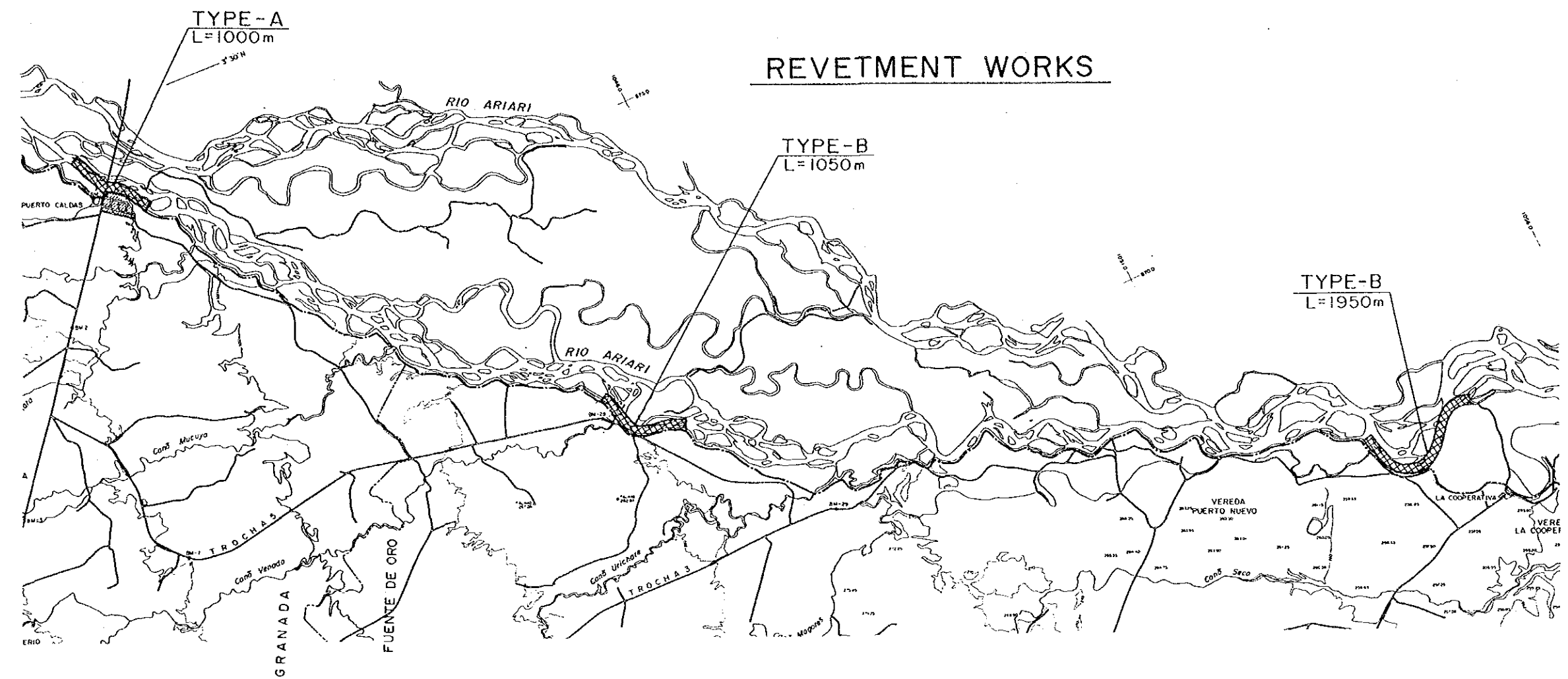
No.	Q		L	W (m)		
	max.	min.		W ₁	W ₂	W ₃
1	37	36	14.8	4.0	6.0	8.0
2	17	16	10.8	4.0	6.0	8.0
3	16	12	10.2	4.0	6.0	8.0
4	11	9	8.7	4.0	6.0	8.0
5	9	8	8.2	4.0	6.0	8.0
6	6	5	7.2	4.0	6.0	8.0
7	2	0.1	6.2	4.0	6.0	8.0

RE MARKS

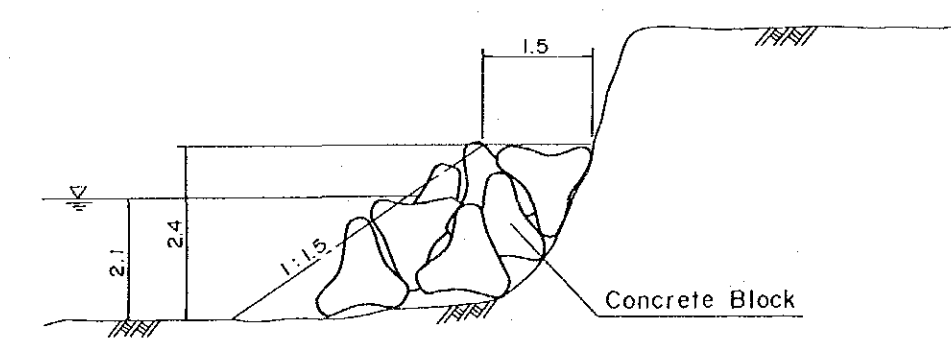
W=4.0 : ON-FARM ROAD
W=6.0,8.0 : TROCHA

THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
BRIDGE	
Figure	No. 17
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	

REVETMENT WORKS

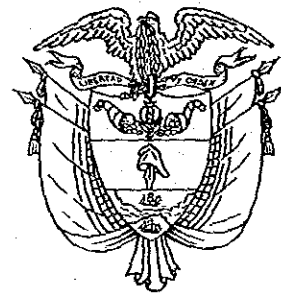


TYPE-A



TYPE-B

THE REPUBLIC OF COLOMBIA MINISTRY OF AGRICULTURE INSTITUTO COLOMBIANO DE HIDROLOGIA, METEOROLOGIA Y ADECUACION DE TIERRAS (HIMAT)	
THE ARIARI RIVER BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
REVETMENT WORKS	
Figure	No. 18
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	



JICA