

REPUBLIC OF COSTA RICA
SERVICIO NACIONAL DE AGUAS SUBTERRANEAS
RIEGO Y AVENAMIENTO (SENARA)

LIMON INTEGRATED AGRICULTURAL
DEVELOPMENT PROJECT

VOLUME IV
DRAWINGS

OCTOBER 1988

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



JICA LIBRARY



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18657

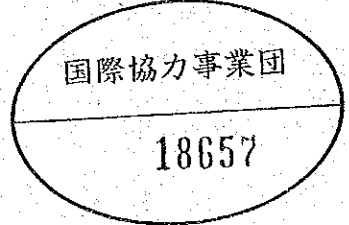
REPUBLIC OF COSTA RICA
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RIEGO Y AVENAMIENTO (SENARA)

LIMON INTEGRATED AGRICULTURAL
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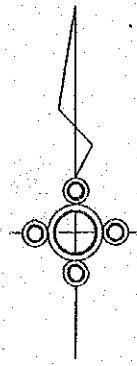
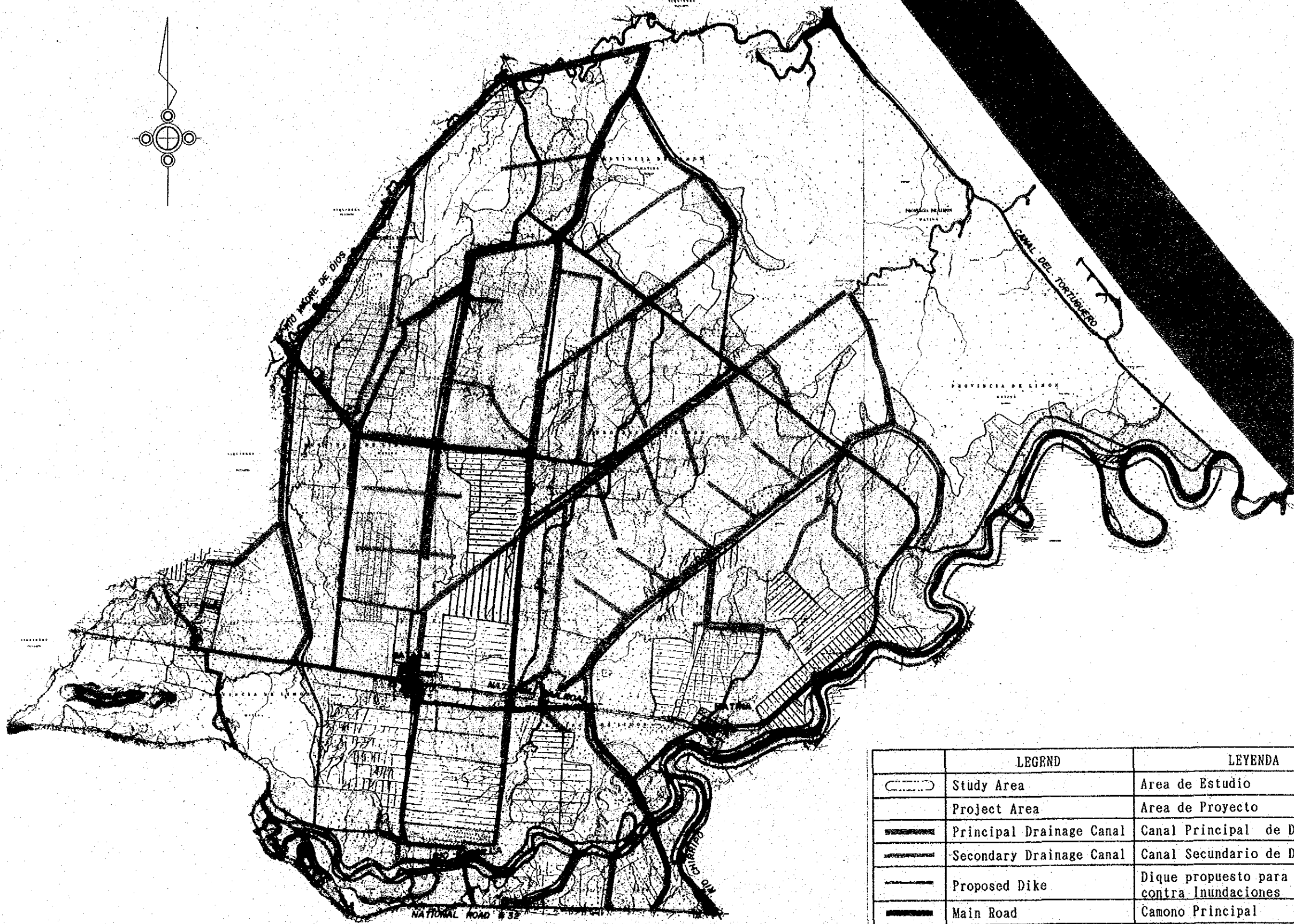
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



LIST OF DRAWINGS

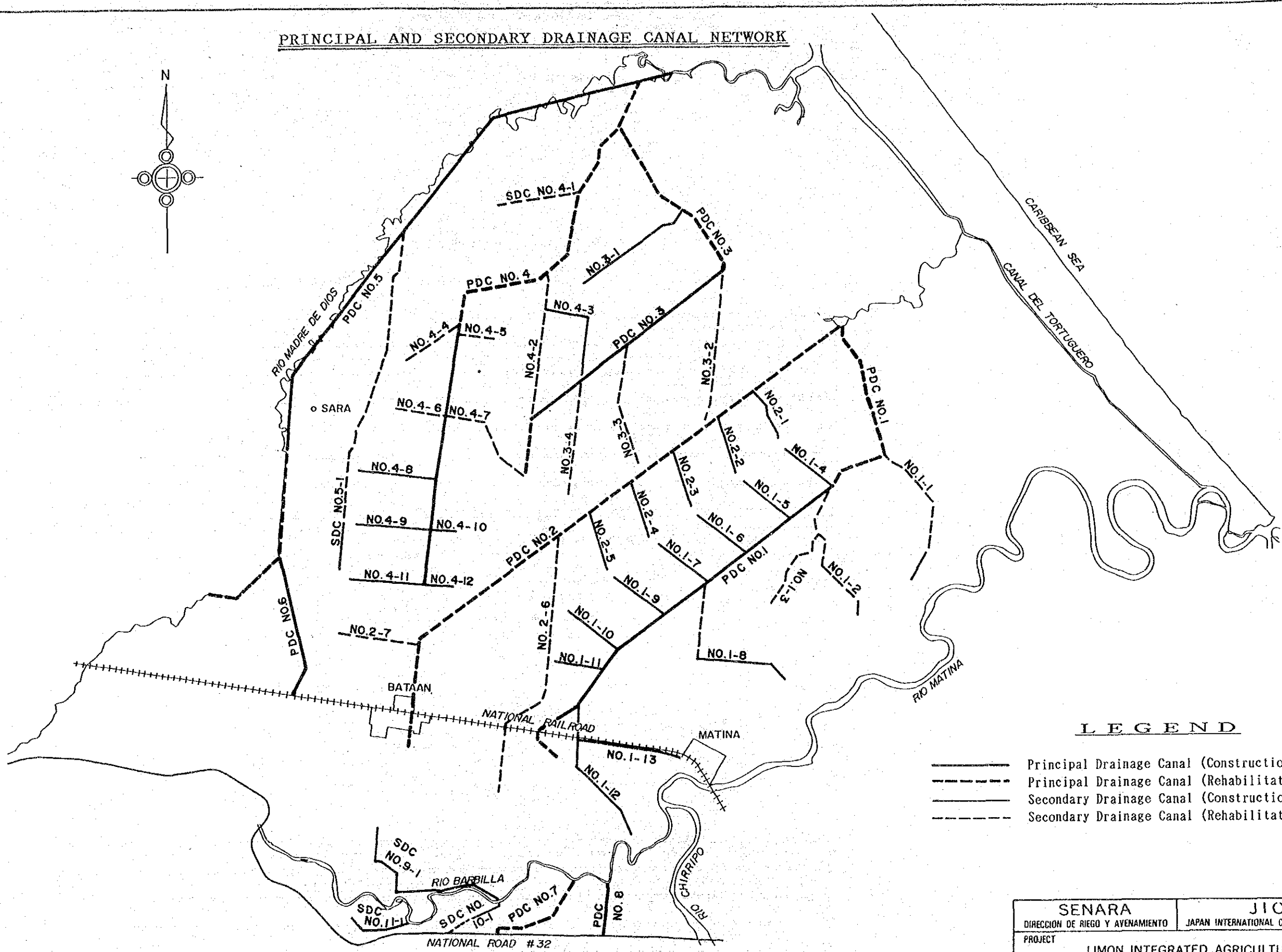
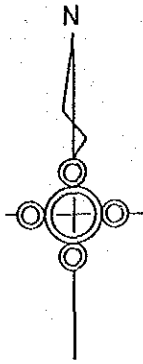
DWG. NO.	TITLE
1.	GENERAL PLAN
2.	PRINCIPAL AND SECONDARY DRAINAGE CANAL NETWORK
3.	PROFILE AND CROSS SECTION OF PRINCIPAL DRAINAGE CANAL (1)
4.	PROFILE AND CROSS SECTION OF PRINCIPAL DRAINAGE CANAL (2)
5.	PROFILE AND CROSS SECTION OF PRINCIPAL DRAINAGE CANAL (3)
6.	PROFILE AND CROSS SECTION OF PRINCIPAL DRAINAGE CANAL (4)
7.	PROFILE AND CROSS SECTION OF PRINCIPAL DRAINAGE CANAL (5)
8.	PROFILE AND CROSS SECTION OF PRINCIPAL DRAINAGE CANAL (6)
9	FLOOD PROTECTION PLAN
10.	RIVER TRAINING PLAN OF RIO MATINA
11.	RIVER TRAINING PLAN OF RIO BARBILLA AND RIO CHIRRIPO
12.	PROPOSED ROAD NETWORK
13.	TYPICAL ROAD CROSS SECTION
14.	BRIDGE TYPE (I)
15.	BRIDGE TYPE (II)
16.	BRIDGE TYPE (III)
17.	BRIDGE TYPE (IV)
18.	CULVERT

GENERAL PLAN
PLANO GENERAL



	LEGEND	LEYENDA
	Study Area	Area de Estudio
	Project Area	Area de Proyecto
	Principal Drainage Canal	Canal Principal de Drenaje
	Secondary Drainage Canal	Canal Secundario de Drenaje
	Proposed Dike	Dique propuesto para Protecciones contra Inundaciones
	Main Road	Camino Principal
	Trunk Road	Camino Secundario
	Lateral Road	Camino Terciario

PRINCIPAL AND SECONDARY DRAINAGE CANAL NETWORK

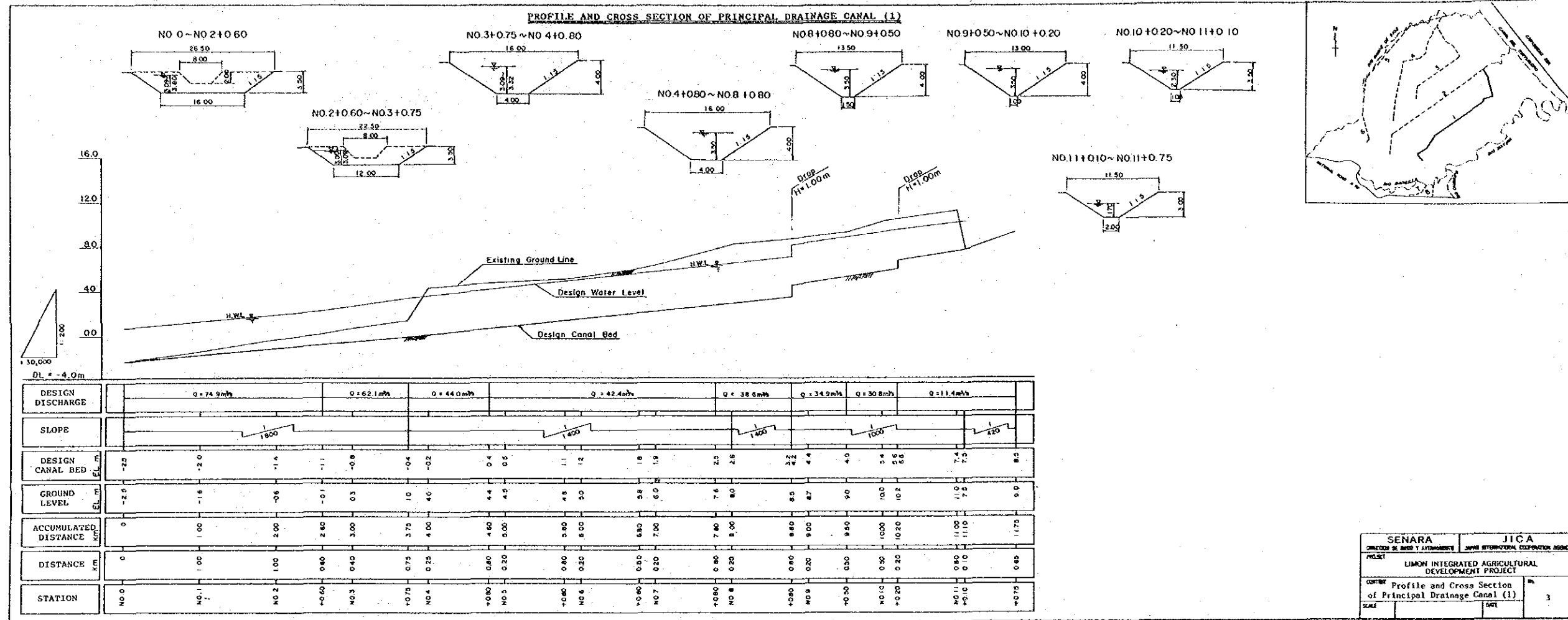


LEGEND

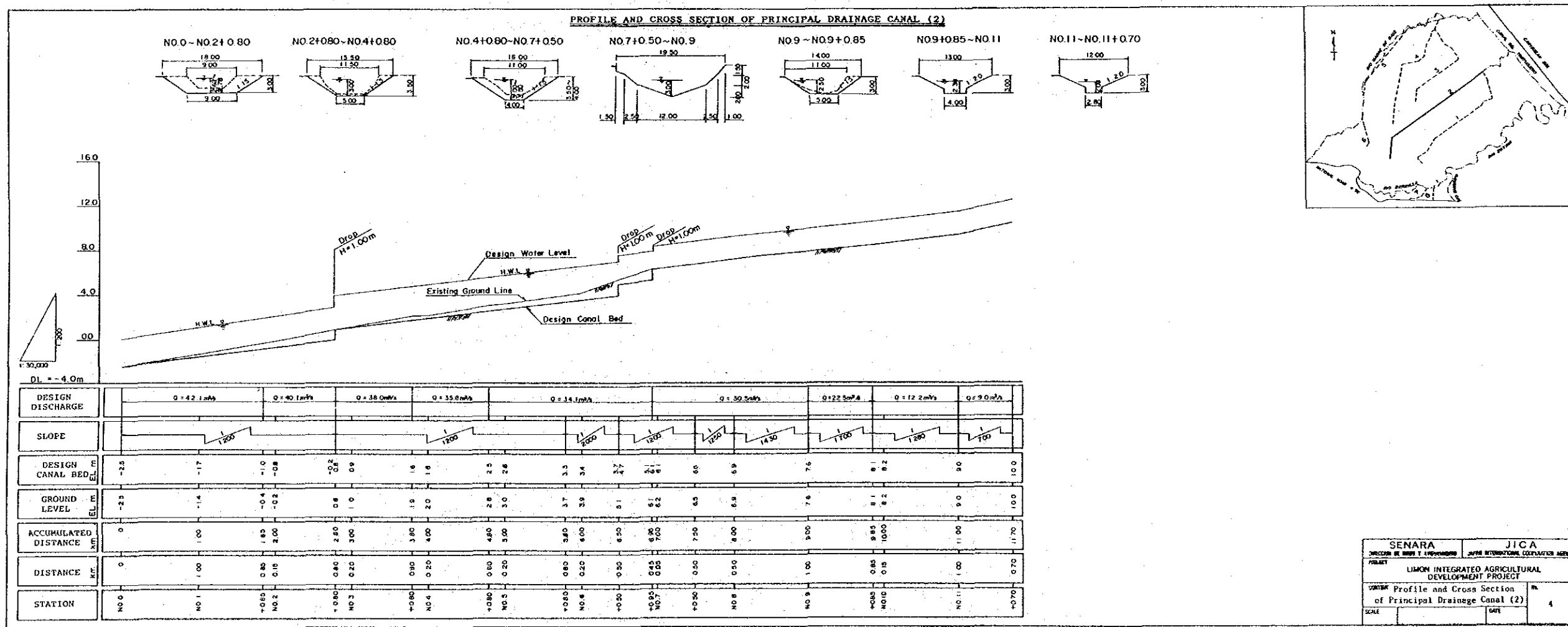
- Principal Drainage Canal (Construction)
- - - - Principal Drainage Canal (Rehabilitation)
- Secondary Drainage Canal (Construction)
- - - - Secondary Drainage Canal (Rehabilitation)



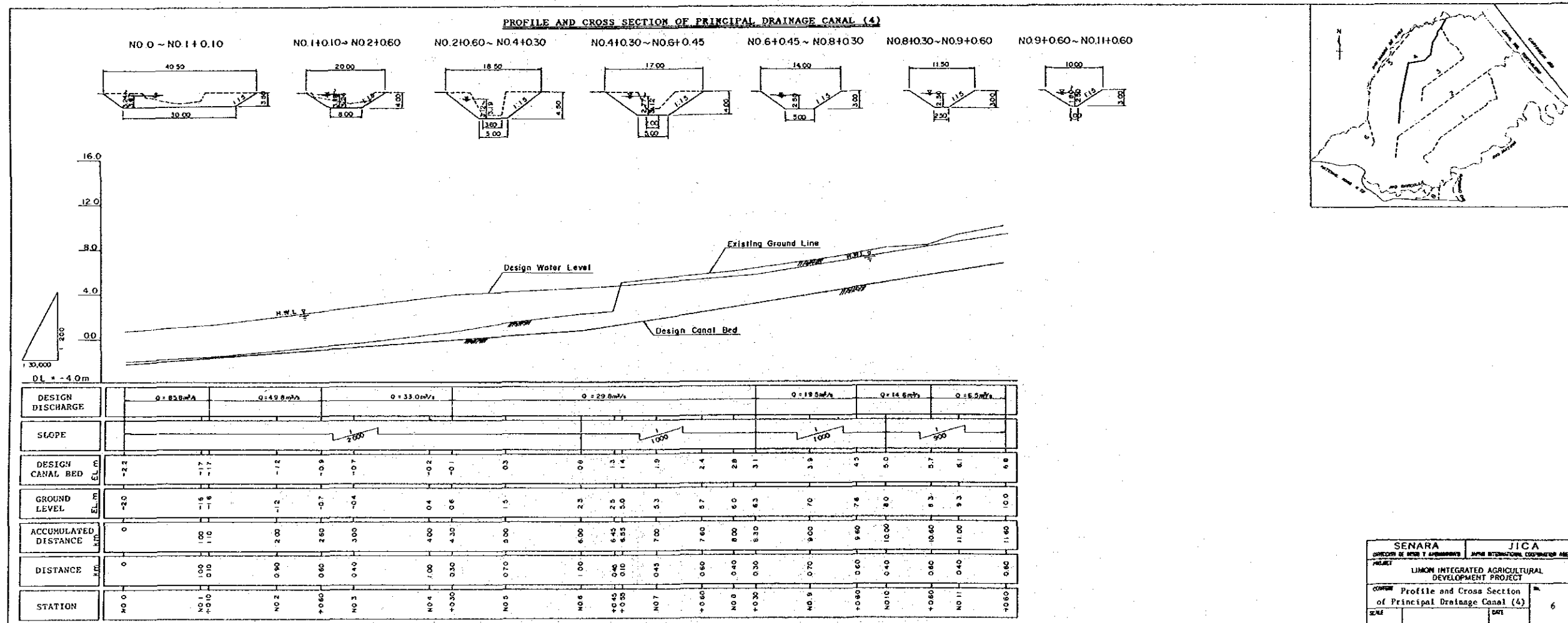
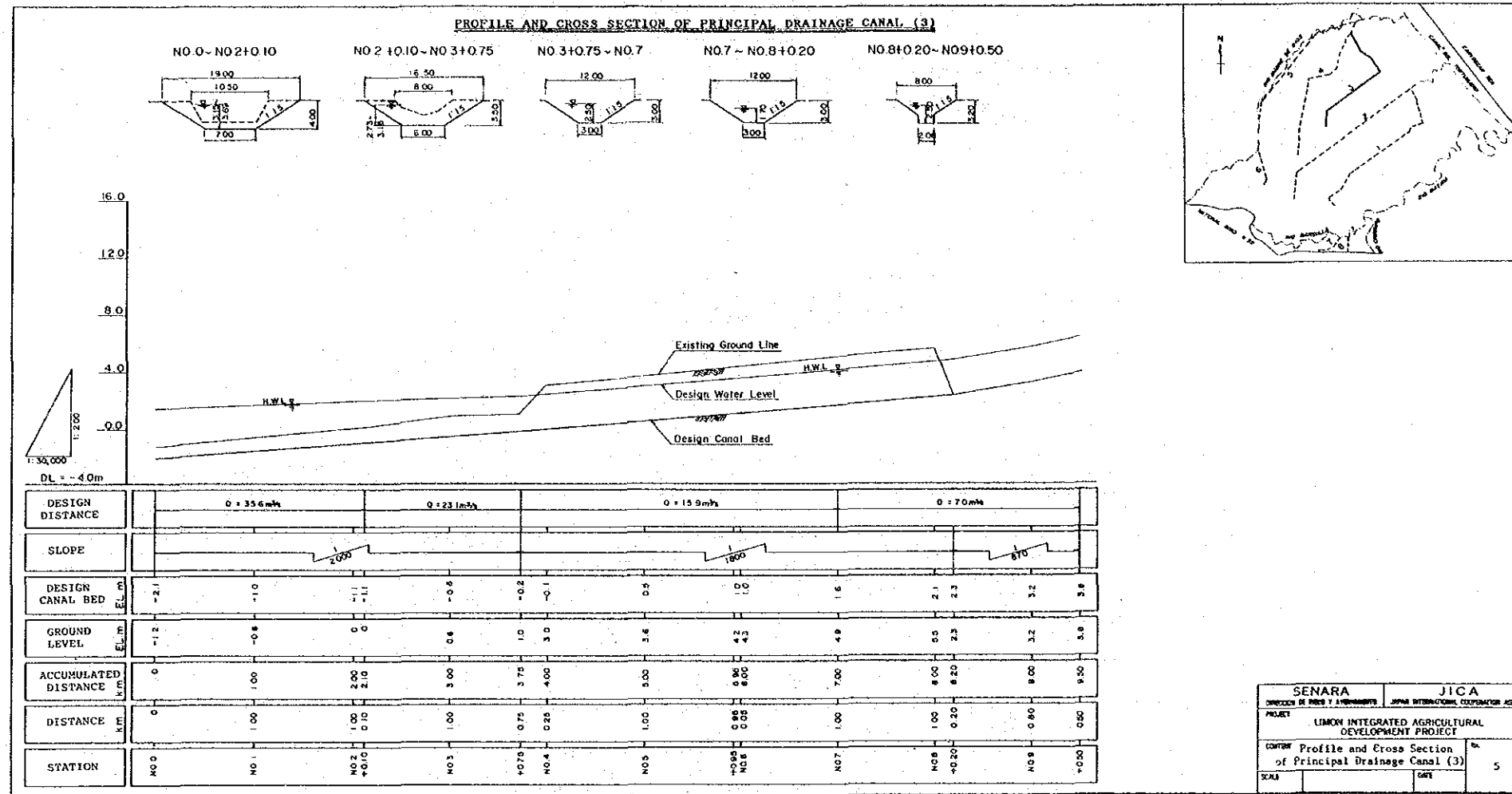
SENARA		JICA	
DIRECCION DE RIEGO Y AVENAMIENTO		JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT			
LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Principal and Secondary Drainage Canal Network			No.
			2
SCALE		DATE	

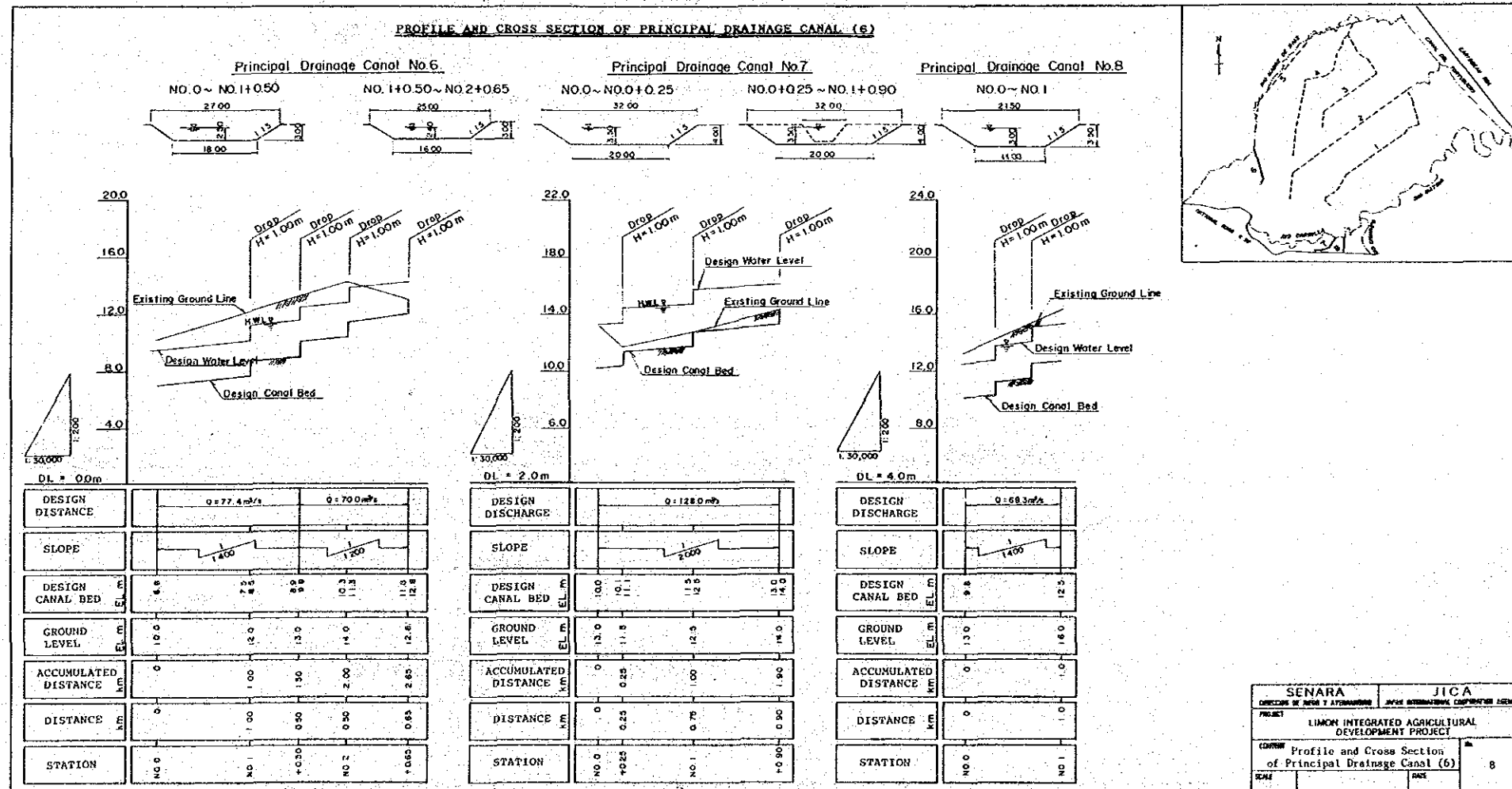
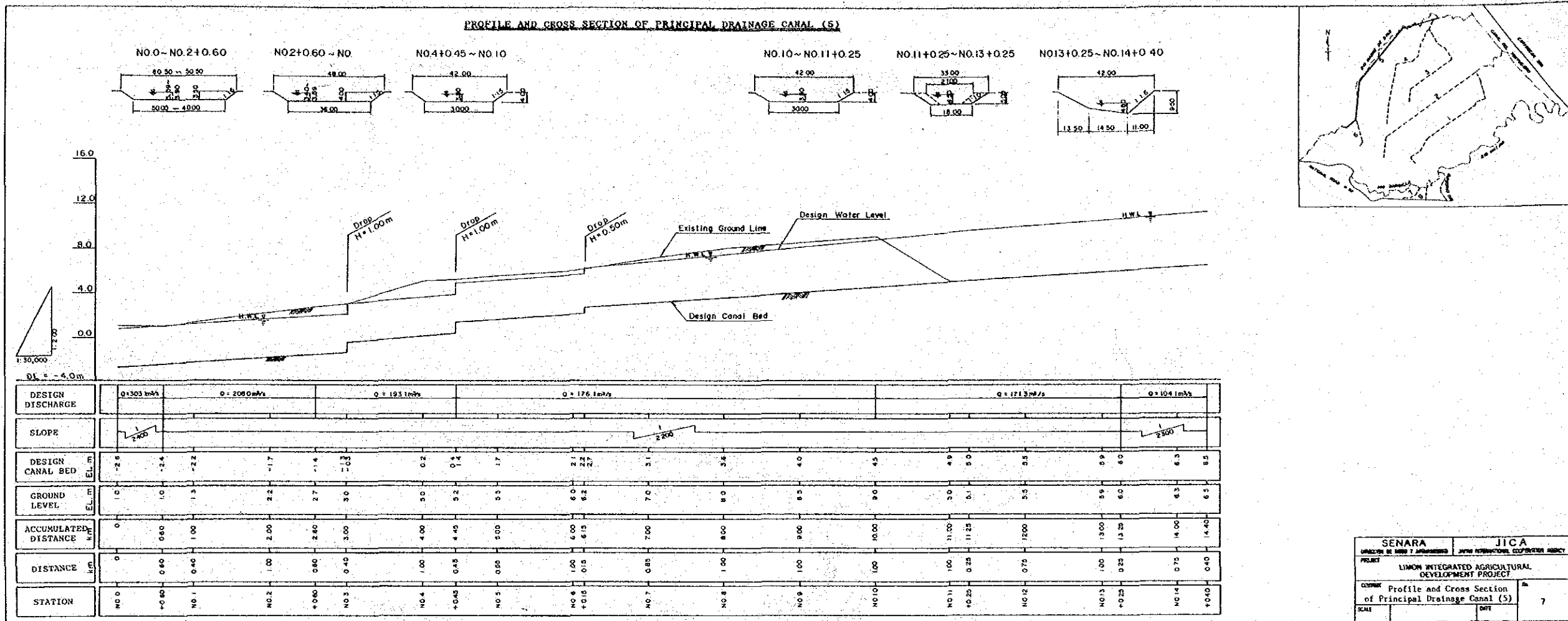


SENARA	JICA
DIRECTOR OF RIVER & ESTUARINE	JAPANESE INTERNATIONAL COOPERATION AGENCY
PROJECT: LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
CONTENT: Profile and Cross Section of Principal Drainage Canal (1)	
SCALE	SHEET: 3



SENARA	JICA
DIRECTOR OF RIVER & ESTUARINE	JAPANESE INTERNATIONAL COOPERATION AGENCY
PROJECT: LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
CONTENT: Profile and Cross Section of Principal Drainage Canal (2)	
SCALE	SHEET: 4

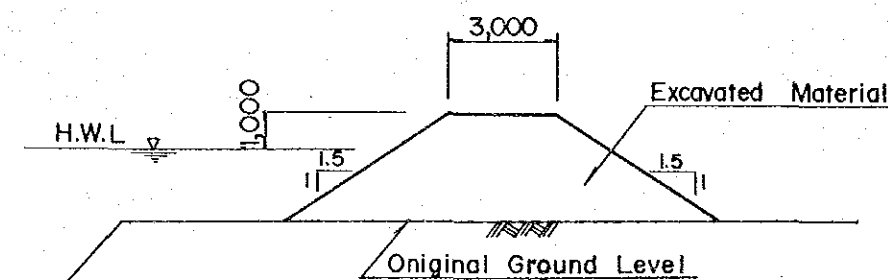
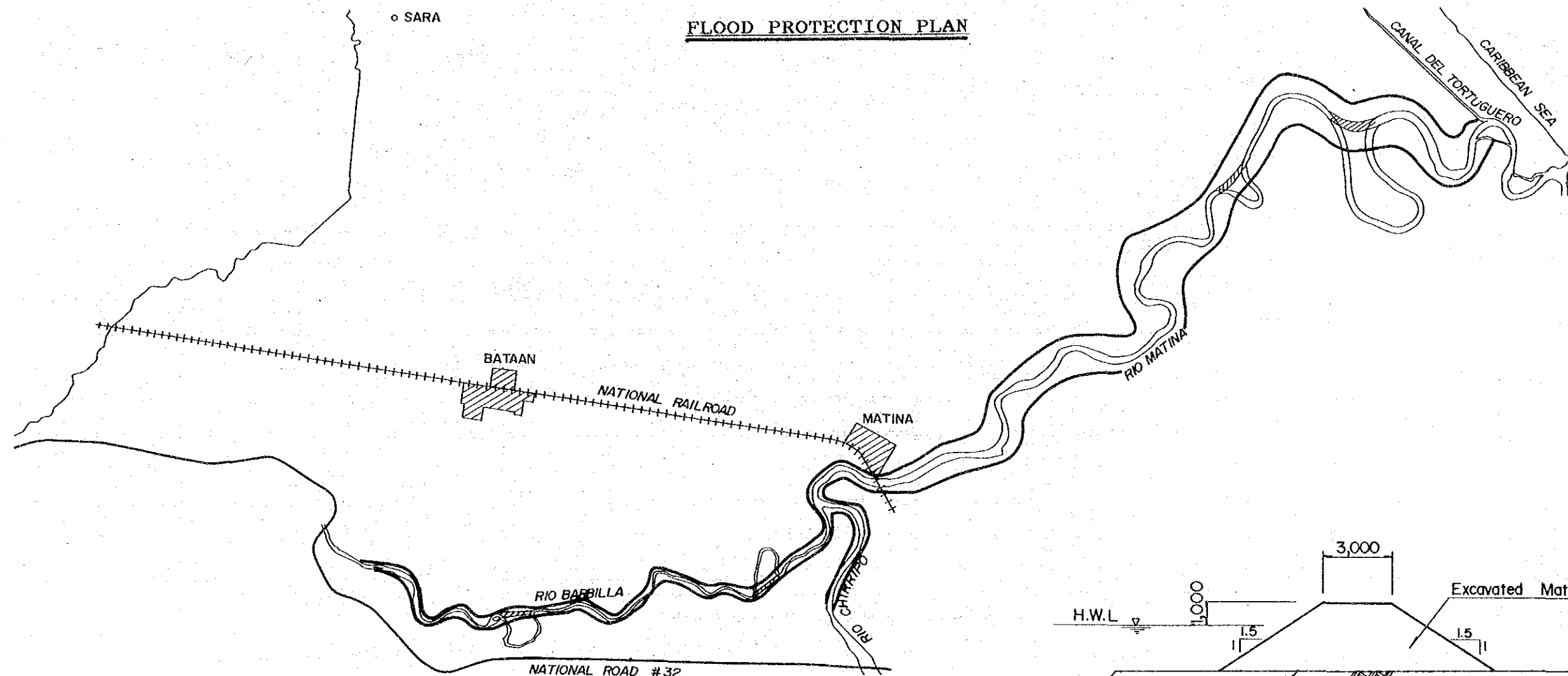




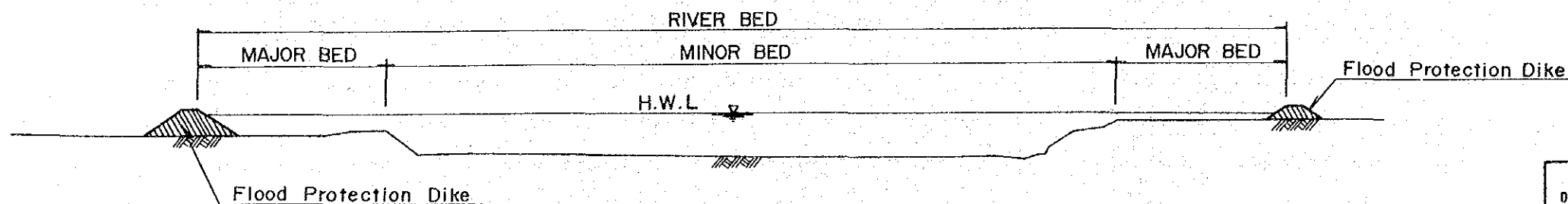
SENARA JICA
 DIRECTOR DE OBRAS Y EQUIPAMIENTO JAPAN INTERNATIONAL COOPERATION AGENCY
 PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT
 DRAWING Profile and Cross Section of Principal Drainage Canal (5) No. 7
 SCALE DATE

SENARA JICA
 DIRECTOR DE OBRAS Y EQUIPAMIENTO JAPAN INTERNATIONAL COOPERATION AGENCY
 PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT
 DRAWING Profile and Cross Section of Principal Drainage Canal (6) No. 8
 SCALE DATE

FLOOD PROTECTION PLAN



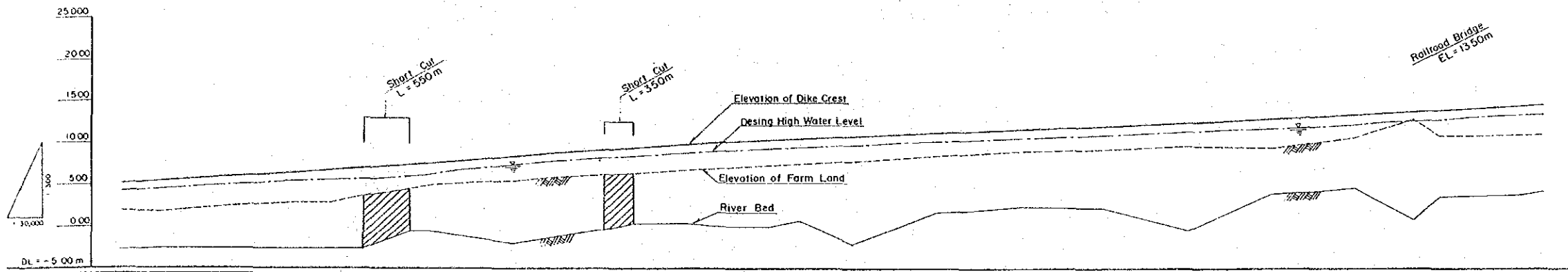
TYPICAL DIKE CROSS SECTION



TYPICAL RIVER CROSS SECTION

SENARA		JICA	
DIRECCION DE RIEGO Y AVENAMIENTO		JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT			
LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT			No.
Flood Protection Plan			
SCALE		DATE	9

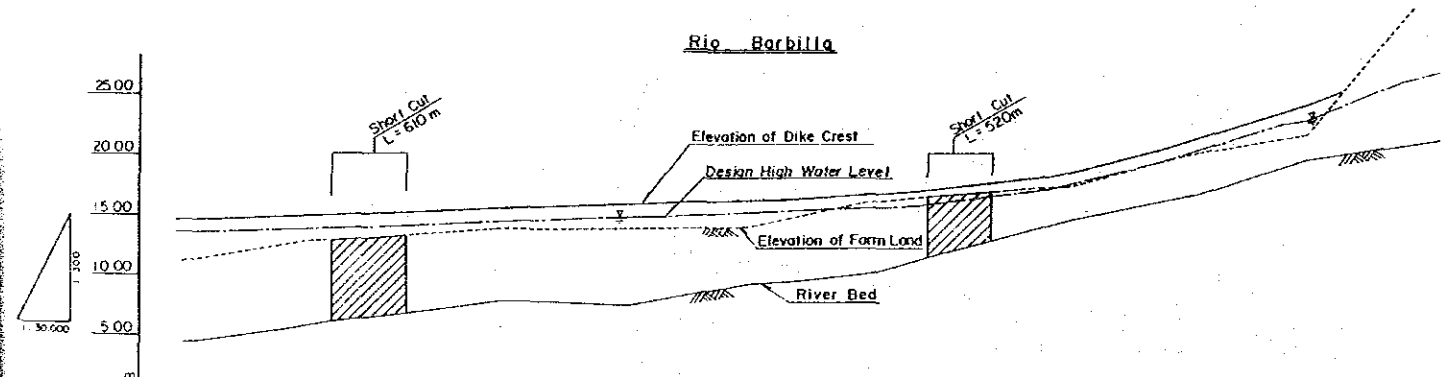
RIVER TRAINING PLAN OF RIO MATINA



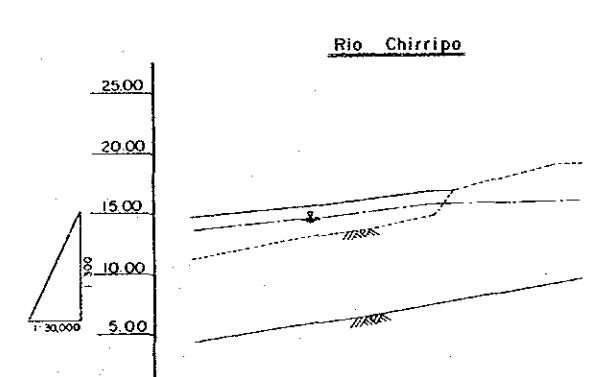
DESIGN RIVER LOCATION	E	330	420	420	390	380	640	640	520	520	300	300	380	320	510	510	310	310	330	330	340	540	540	520	350	350	300	350	330	330	
LONGITUDINAL DISTANCE			L: 900m L: 800m	L: 1,200m L: 750m		L: 2,000m L: 2,200m		L: 650m L: 1,400m	L: 1,150m L: 900m	L: 350m L: 1,000m	L: 600m L: 450m	L: 750m L: 500m	L: 300m L: 900m	L: 1,650m L: 500m	L: 1,350m L: 750m	L: 250m L: 1,000m		L: 3,500m L: 1,100m		L: 1,450m L: 1,000m	L: 700m L: 750m										
HEIGHT OF DIKE	E	3.40	3.70	3.60	3.80	3.70	4.00	3.30	2.70	3.00	3.00	3.00	3.30	2.90	3.10	3.10	3.00	3.00	2.80	2.70	2.70	2.80	2.70	2.80	2.90	2.90	1.90	2.00	2.90	3.00	
ELEVATION OF DIKE CREST	EL	9.0	9.40	9.70	6.10	6.40	6.80	7.10	7.00	6.30	6.30	6.30	6.60	6.87	6.87	6.11	6.20	9.20	11.00	11.11	12.20	12.40	12.40	12.50	12.80	13.90	12.70	14.00	14.00	14.70	
DESIGN HIGH WATER LEVEL	EL	4.08	4.40	4.66	5.00	5.32	5.58	5.72	5.83	6.74	7.38	7.76	8.00	8.24	8.87	9.11	8.90	10.05	11.10	11.11	12.20	12.40	12.40	12.50	12.80	13.90	12.70	14.00	14.00	14.70	
ELEVATION OF MAJOR BED	EL	1.7	1.7	2.1	2.5	2.7	2.8	3.9	4.8	5.1	5.5	5.0	6.3	6.8	6.8	7.0	8.0	8.2	8.2	9.4	9.5	9.4	9.5	9.6	9.6	10.8	12.38	12.70	14.00	14.70	
RIVER BED	EL	-2.9	-2.7	-2.7	-2.7	-2.7	-2.7	-1.9	-0.6	-1.1	-2.0	-1.4	-0.4	0.4	0.4	0.1	0.7	0.7	0.6	2.4	2.4	2.3	1.4	1.4	1.4	1.4	2.6	0.9	1.1	1.1	1.1
ACCUMULATION DISTANCE	Km	0	0.50	1.00	1.50	2.00	2.50	3.00	3.65	4.00	4.65	5.00	5.65	6.30	6.65	7.00	7.65	8.00	8.65	9.00	9.65	10.00	10.65	11.00	11.65	12.00	12.65	13.00	13.65	14.00	
DISTANCE	Km	0	0.50	1.00	1.50	2.00	2.50	3.00	3.65	4.00	4.65	5.00	5.65	6.30	6.65	7.00	7.65	8.00	8.65	9.00	9.65	10.00	10.65	11.00	11.65	12.00	12.65	13.00	13.65	14.00	
STATION		N+0	N+0.5	N+1	N+1.5	N+2	N+2.5	N+3	N+3.65	N+4	N+4.65	N+5	N+5.65	N+6.30	N+6.65	N+7	N+7.65	N+8	N+8.65	N+9	N+9.65	N+10	N+10.65	N+11	N+11.65	N+12	N+12.65	N+13	N+13.65	N+14	N+14.00

SENARA	JICA
DIRECCION DE REGO Y ASESORAMIENTO	JAPAN INTERNATIONAL COOPERATION AGENCY
PROJECT: LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
CONTENT: River Training Plan of Rio Matina	
SCALE: 1:30,000	DATE: 10

RIVER TRAINING PLAN OF RIO BARBILLA AND RIO CHIRRIPO



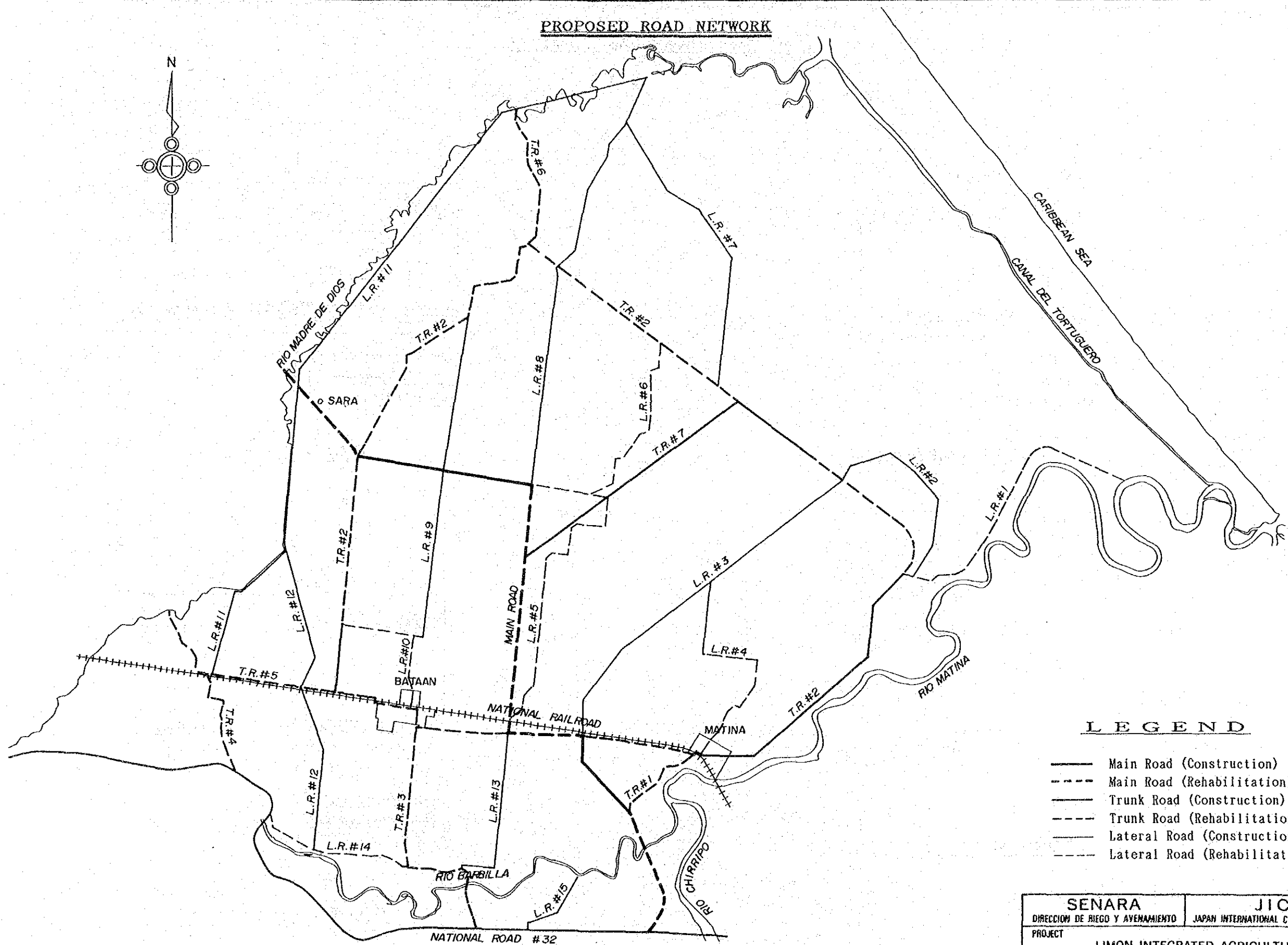
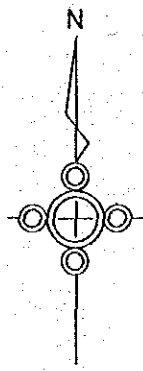
DESIGN RIVER LOCATION	E	130	130	160	160	160	160	160	160	110	110	130	130	130	130	130	120	120	131	150	150	
LONGITUDINAL DISTANCE			L: 2,000m L: 2,500m		L: 1,000m L: 1,600m	L: 1,400m L: 1,300m	L: 950m L: 900m	L: 1,050m L: 950m	L: 1,000m L: 1,050m	L: 1,000m L: 500m	L: 500m											
HEIGHT OF DIKE	E	3.60	2.60	2.60	1.90	1.60	1.80	2.00	2.10	2.30	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	
ELEVATION OF DIKE CREST	EL	14.70	13.00	13.00	15.30	15.30	15.90	16.10	16.20	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	
DESIGN HIGH WATER LEVEL	EL	13.86	13.86	13.86	14.14	14.14	14.40	14.51	14.78	15.00	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	
ELEVATION OF MAJOR BED	EL	11.1	11.1	11.1	13.4	13.8	13.8	13.9	14.6	14.6	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
RIVER BED	EL	4.5	5.8	5.8	7.7	7.7	7.4	8.0	8.4	8.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
ACCUMULATION DISTANCE	Km	0.00	0.50	1.00	2.00	2.65	3.65	4.00	4.65	5.00	5.65	6.00	6.65	7.00	7.65	8.00	8.65	9.00	9.65	10.00	10.30	
DISTANCE	Km	0.00	0.50	1.00	2.00	2.65	3.65	4.00	4.65	5.00	5.65	6.00	6.65	7.00	7.65	8.00	8.65	9.00	9.65	10.00	10.30	
STATION		N+0	N+0.5	N+1	N+2	N+2.65	N+3	N+3.65	N+4	N+4.65	N+5	N+5.65	N+6	N+6.65	N+7	N+7.65	N+8	N+8.65	N+9	N+9.65	N+10	N+10.30



DESIGN RIVER LOCATION	E	130	130	130	130	130	130
LONGITUDINAL DISTANCE			L: 1,050m L: 950m	L: 1,050m L: 1,050m			
HEIGHT OF DIKE	E	3.60	2.80	2.90	2.00	1.1	1.1
ELEVATION OF DIKE CREST	EL	14.70	16.60	16.20	16.00	16.80	16.80
DESIGN HIGH WATER LEVEL	EL	13.86	14.23	15.10	15.73	15.78	15.84
ELEVATION OF MAJOR BED	EL	11.1	12.0	13.7	14.8	16.3	16.3
RIVER BED	EL	4.5	5.8	5.5	7.4	7.7	7.5
ACCUMULATION DISTANCE	Km	0	1.00	1.50	2.00	2.50	3.00
DISTANCE	Km	0	1.00	1.50	2.00	2.50	3.00
STATION		N+0	N+1	N+1.5	N+2	N+2.5	N+3

SENARA	JICA
DIRECCION DE REGO Y ASESORAMIENTO	JAPAN INTERNATIONAL COOPERATION AGENCY
PROJECT: LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT	
CONTENT: River Training Plan of Rio Barbilla and Rio Chirripo	
SCALE: 1:30,000	DATE: 11

PROPOSED ROAD NETWORK



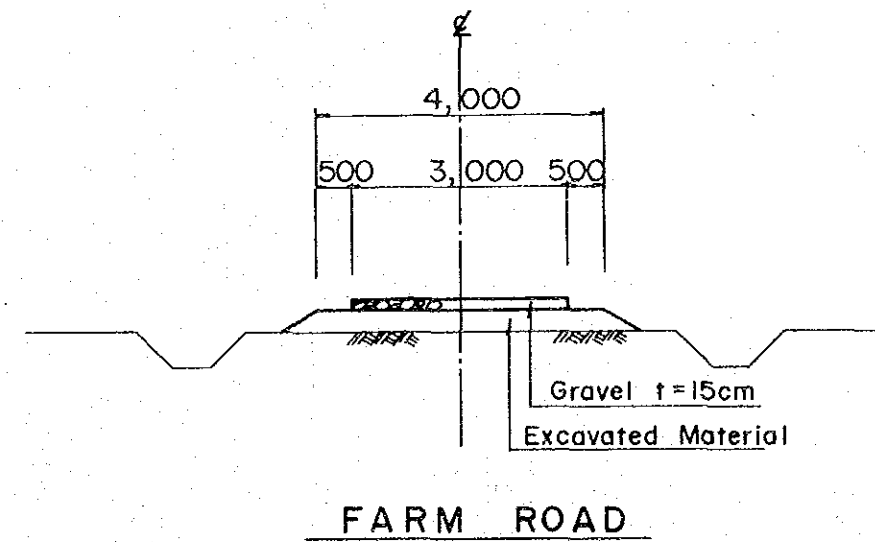
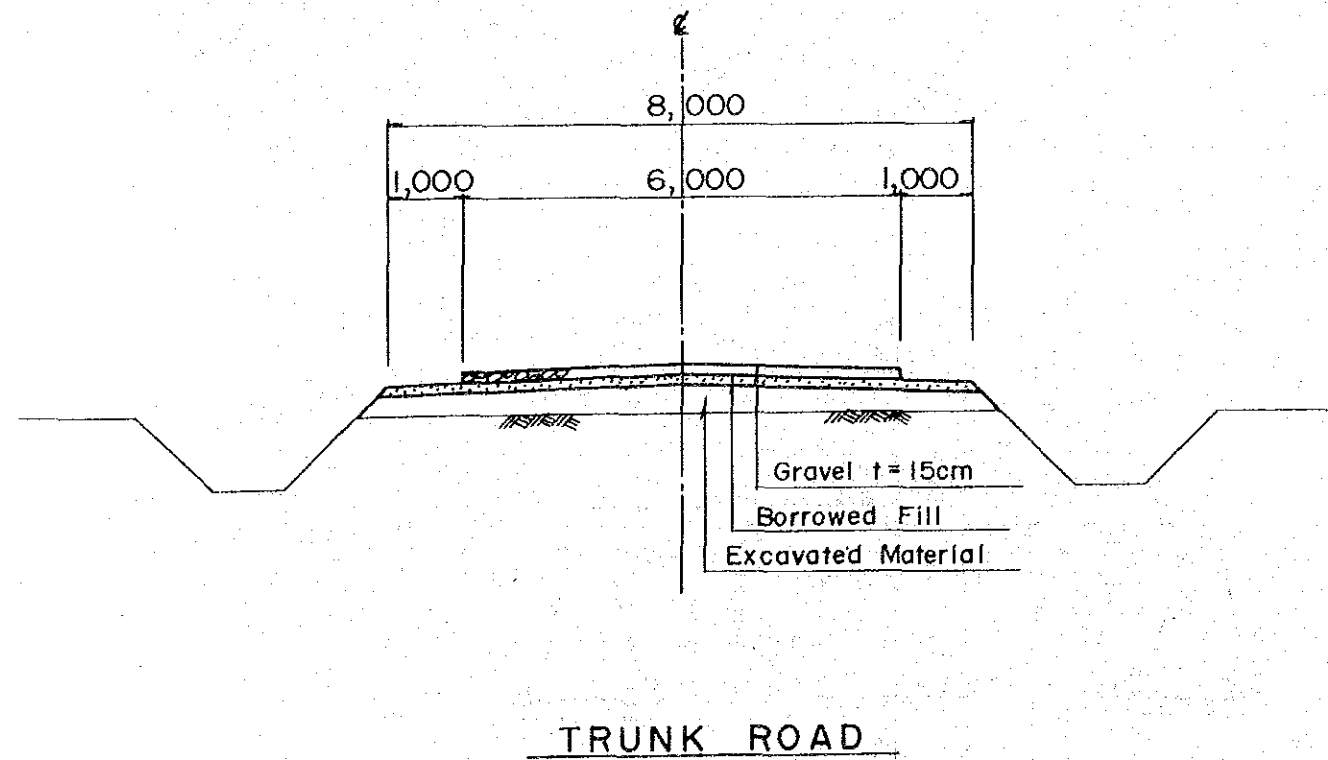
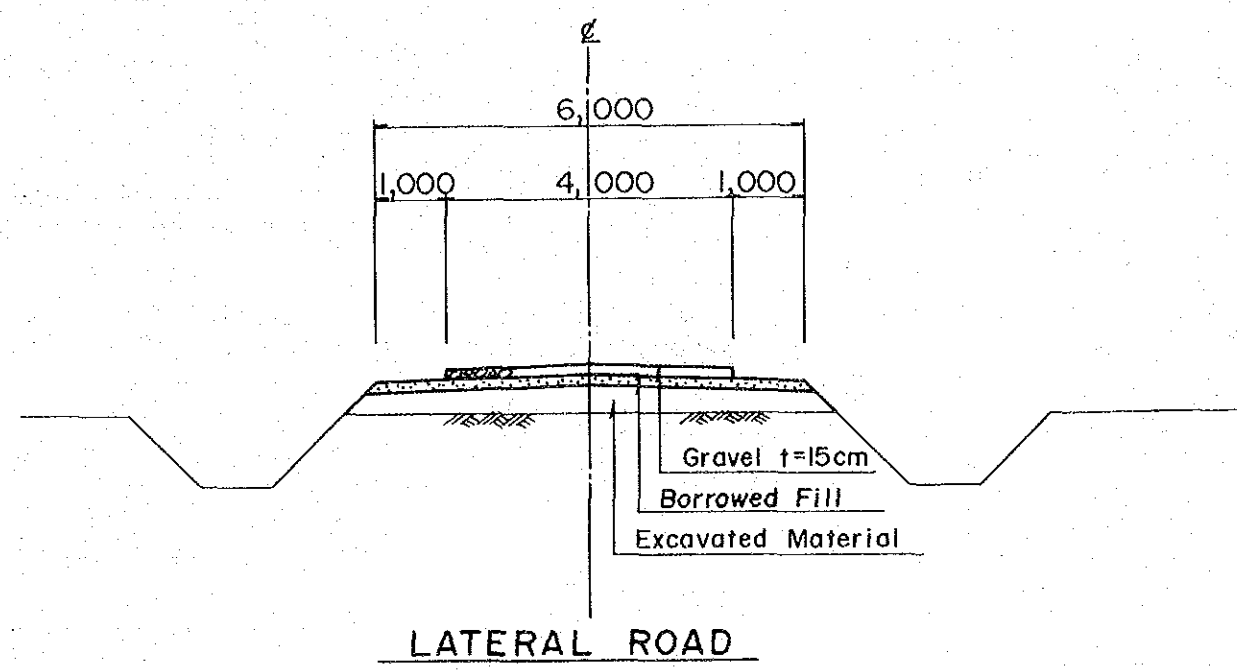
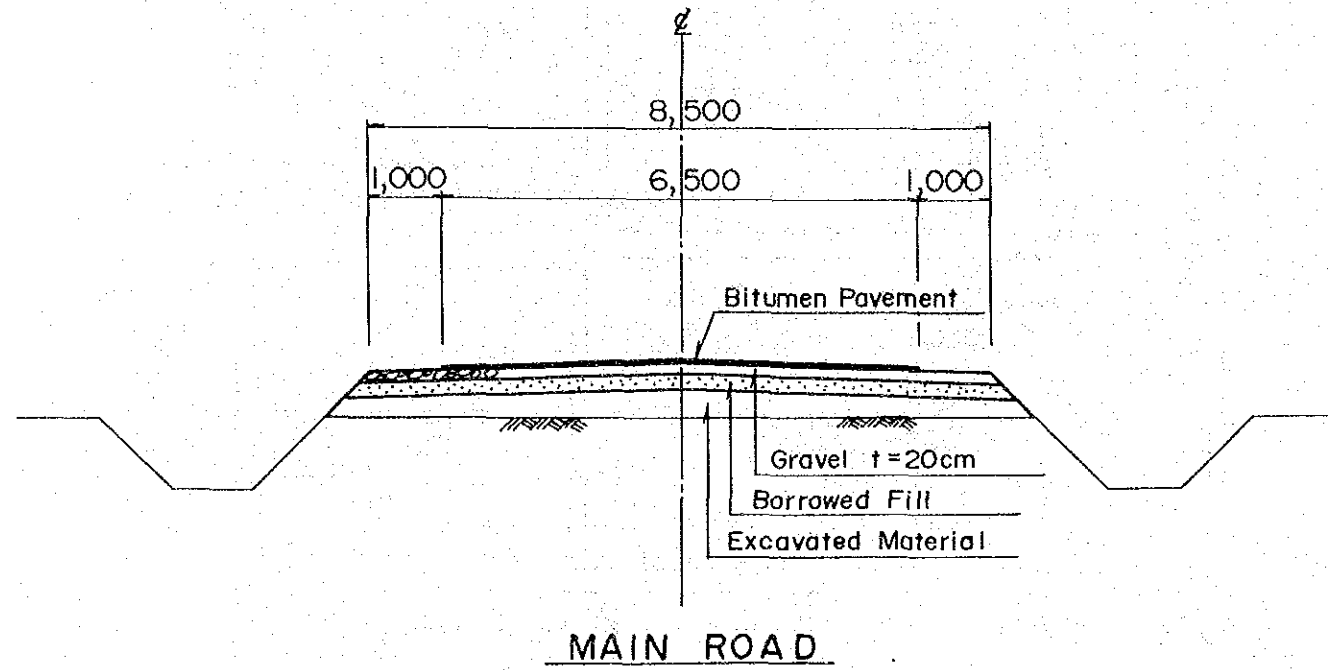
LEGEND

- Main Road (Construction)
- - - Main Road (Rehabilitation)
- Trunk Road (Construction)
- - - Trunk Road (Rehabilitation)
- Lateral Road (Construction)
- - - Lateral Road (Rehabilitation)



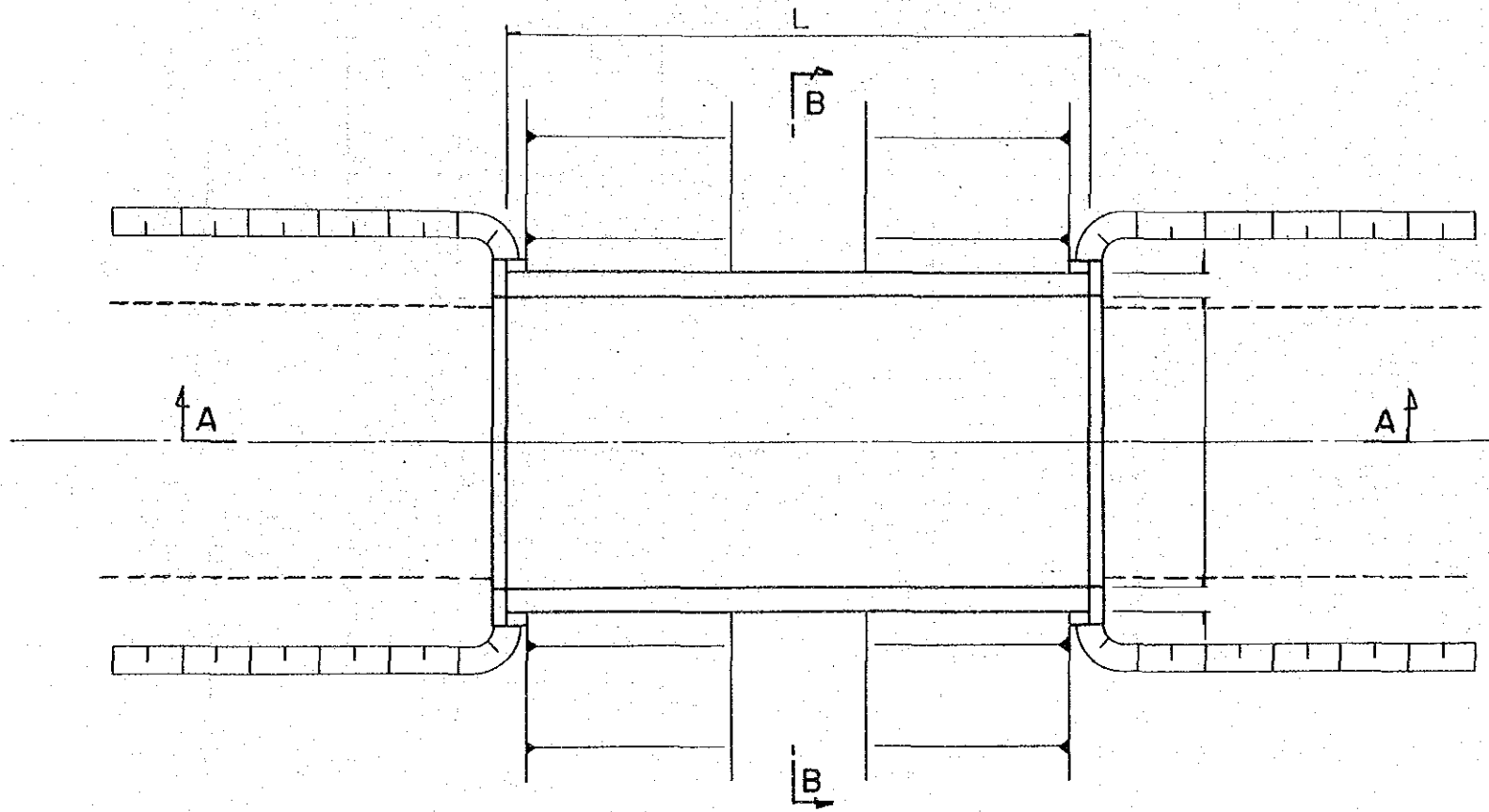
SENARA		JICA	
DIRECCION DE RIEGO Y AVENAMIENTO		JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT			
LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT			No.
Proposed Road Network			12
SCALE		DATE	

TYPICAL ROAD CROSS SECTION

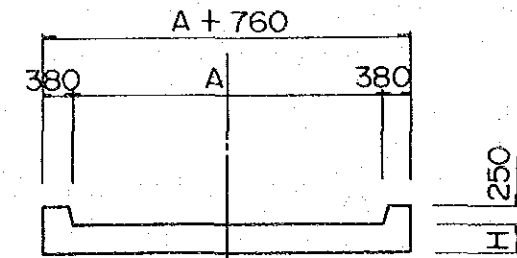
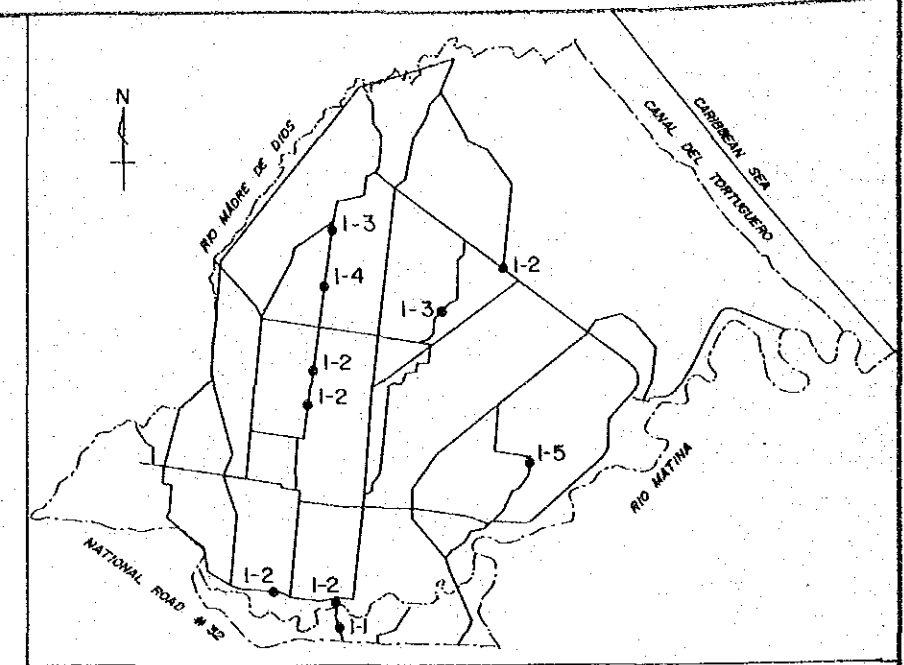


SENARA DIRECCION DE RIEGO Y AVENAMIENTO		JICA JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Typical Road Cross Section			No. 13
SCALE		DATE	

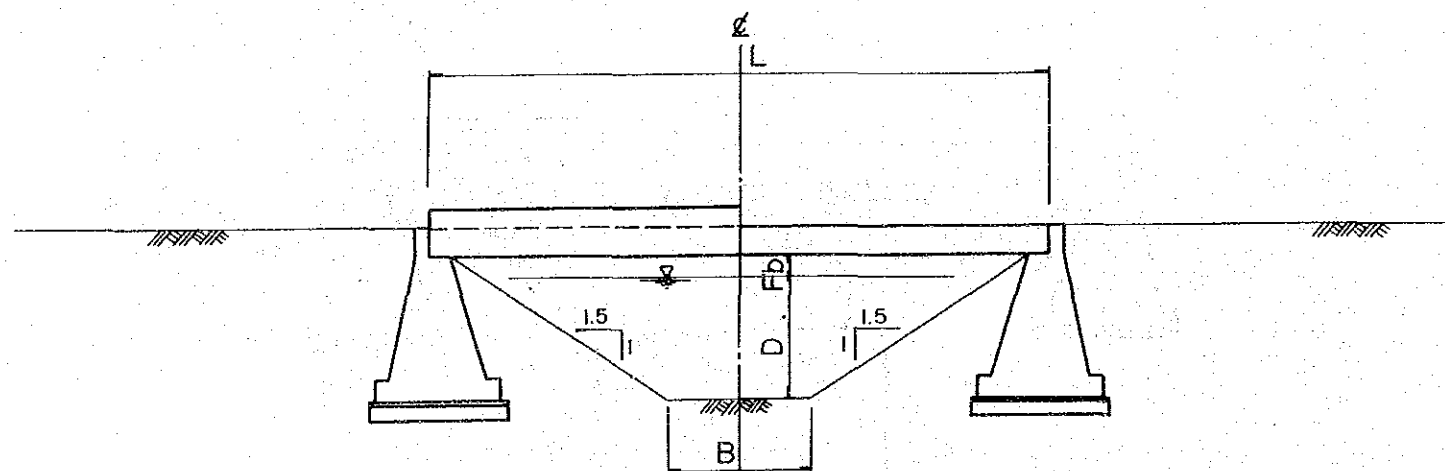
BRIDGE TYPE (I)



PLAN



SECTION B-B



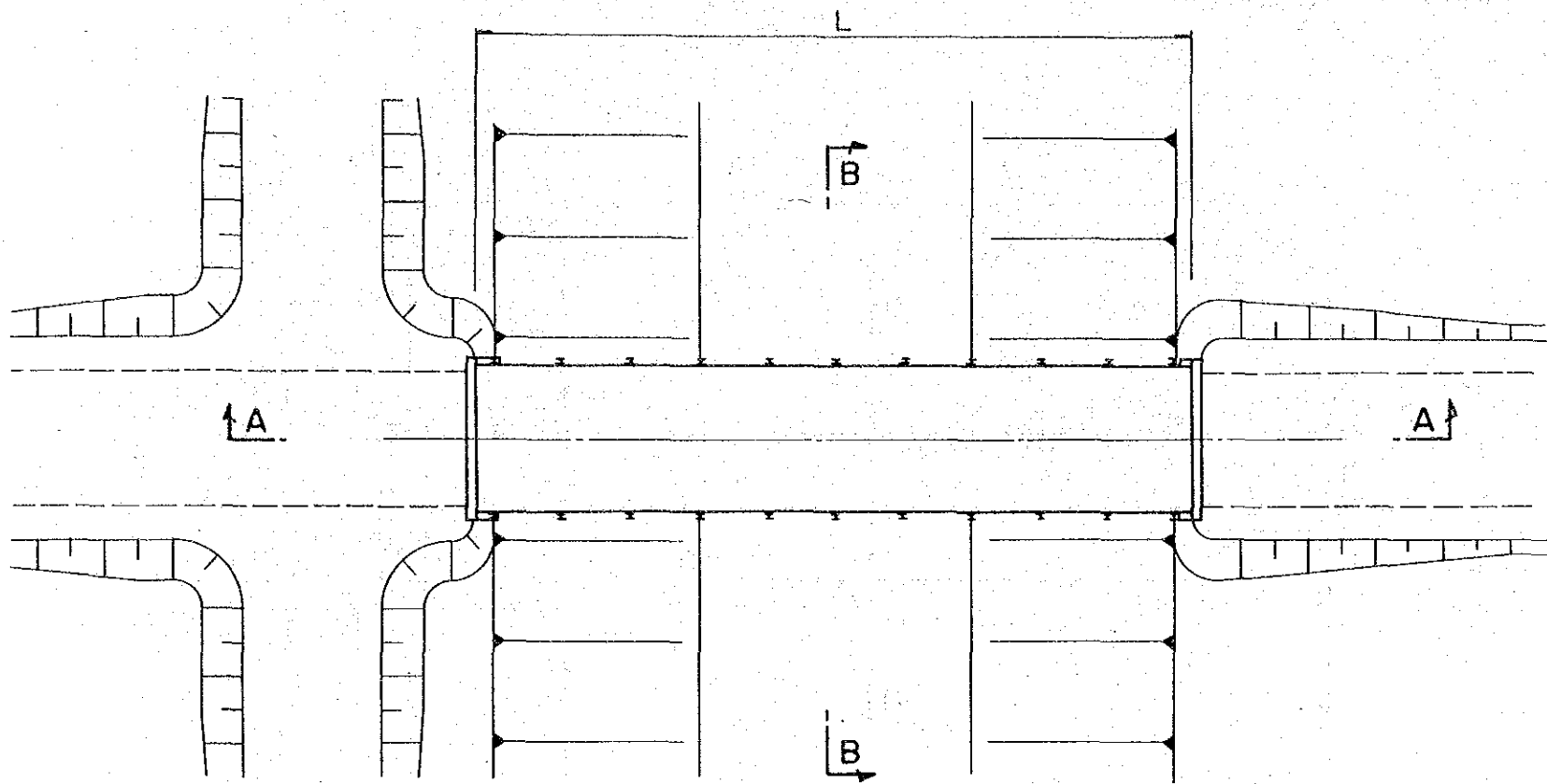
SECTION A-A

(UNIT : mm)

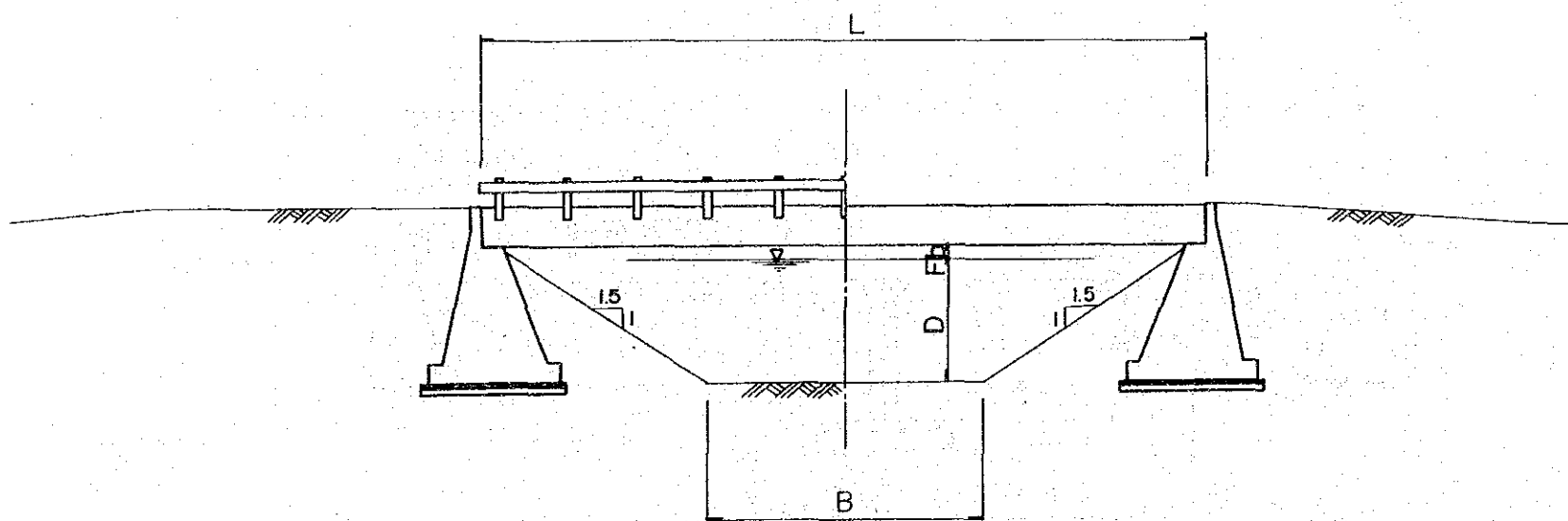
TYPE	B	D	Fb	L	A	H
1 - 1	1,500	1,700	300	7,100	4,300	320
1 - 2	1,000	1,700	300	7,600	4,300	400
1 - 3	1,500	1,700	300	8,100	4,300	400
1 - 4	2,000	1,700	300	8,600	4,300	430
1 - 5	2,500	1,700	300	9,100	4,300	430

SENARA DIRECCION DE RIEGO Y AVENAMIENTO		JICA JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Bridge Type (I)			No. 14
SCALE		DATE	

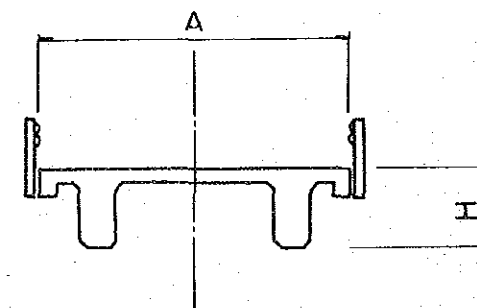
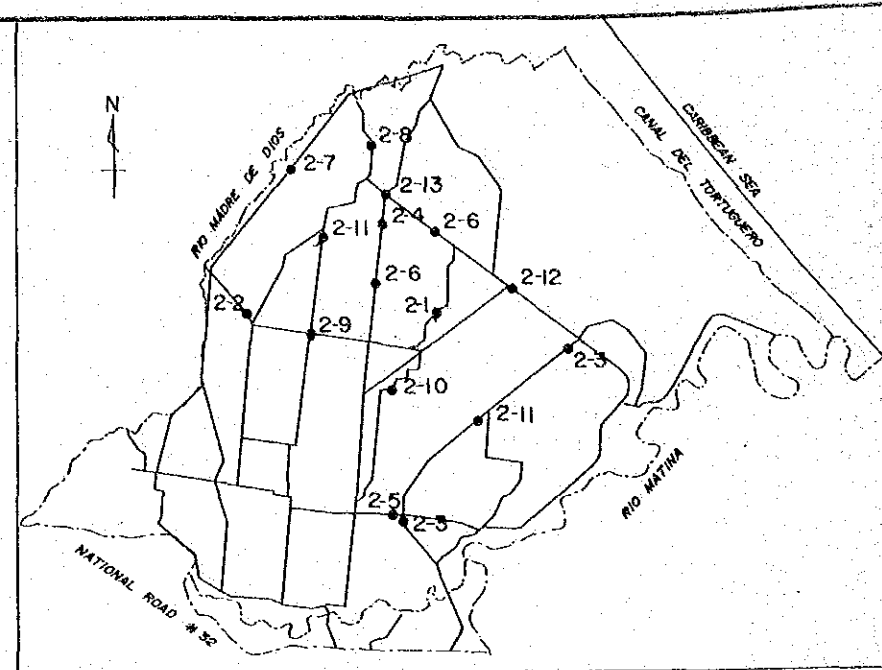
BRIDGE TYPE (II)



PLAN



SECTION A-A

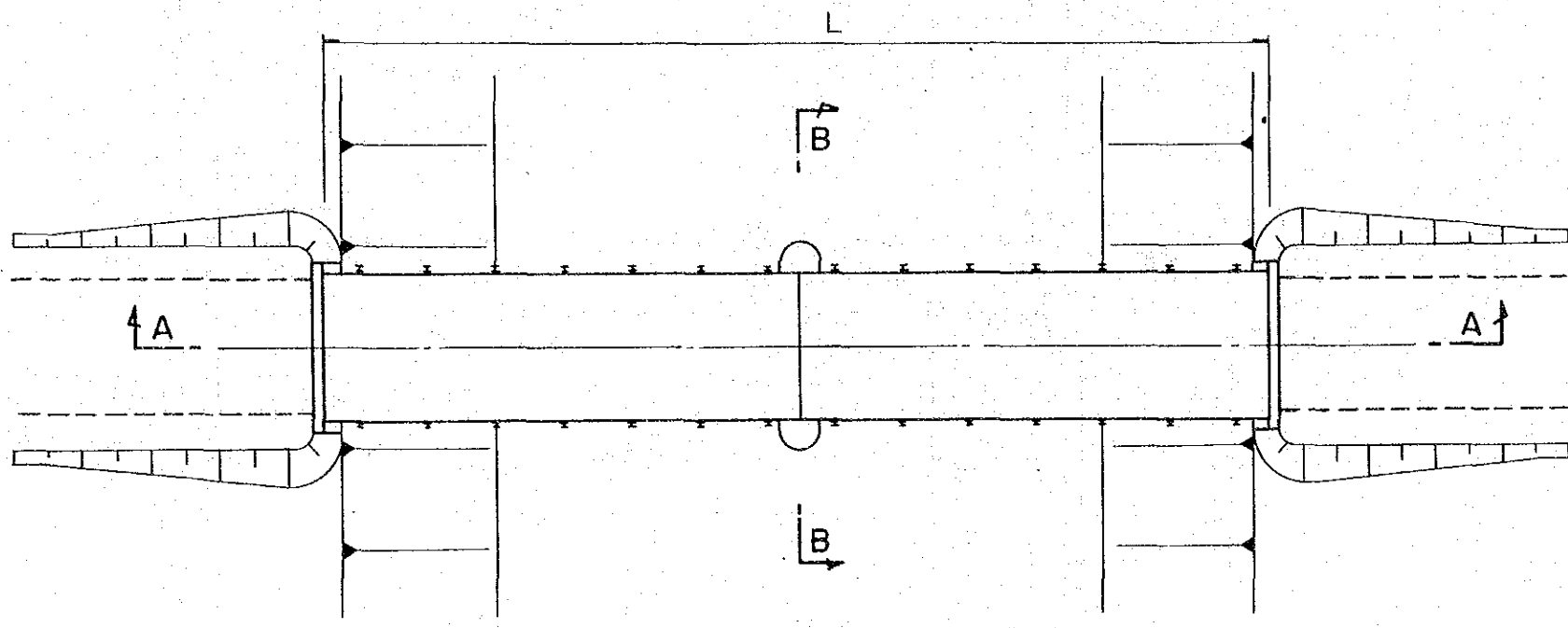


(UNIT : mm)

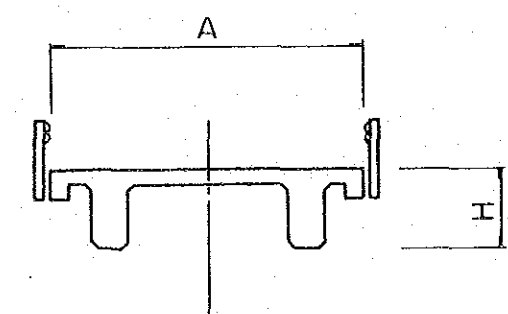
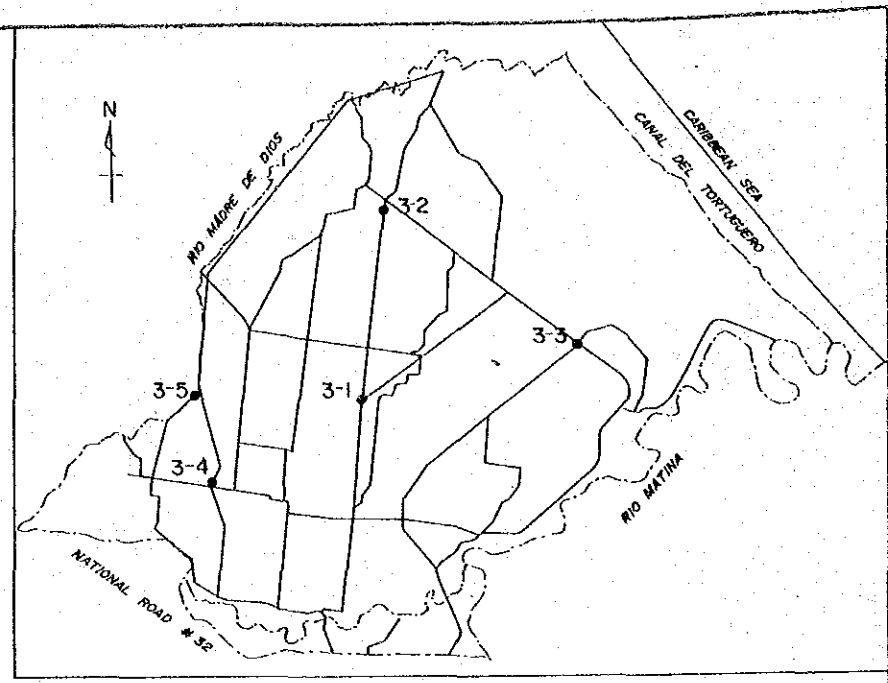
TYPE	B	D	Fb	L	A	H
2-1	3,000	1,700	300	10,000	4,300	800
2-2	2,000	2,000	500	10,500	7,300	850
2-3	4,000	1,700	300	11,000	4,300 (7,300)	850
2-4	4,500	1,700	300	11,500	7,300	900
2-5	2,500	2,500	500	12,500	4,500	900
2-6	3,000	2,500	500	13,000	7,300	950
2-7	3,500	2,500	500	13,500	4,300 (7,300)	950
2-8	4,500	2,500	500	14,500	4,300	1050
2-9	5,000	2,500	500	15,000	4,300	1100
2-10	7,000	2,500	500	12,000	4,300	1150
2-11	5,000	3,500	500	18,000	4,300	1150
2-12	9,000	2,500	500	19,000	4,300	1200
2-15	5,000	4,000	500	19,500	4,300	1200

SENARA DIRECCION DE RIEGO Y AVERAMIENTO		JICA JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Bridge Type (II)			No. 15
SCALE		DATE	

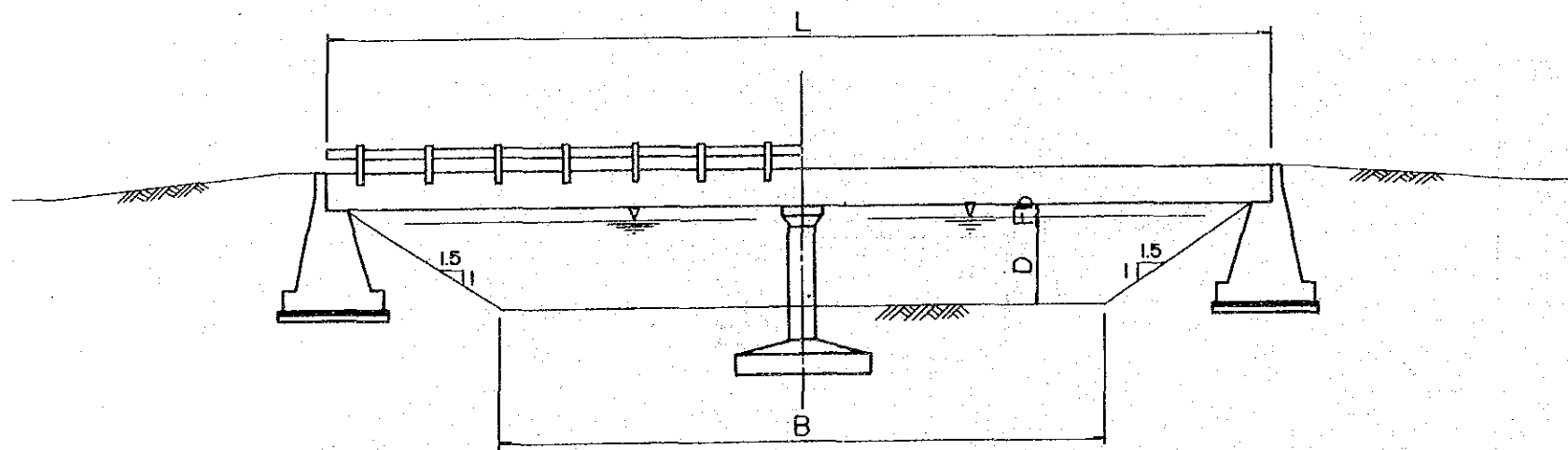
BRIDGE TYPE (III)



PLAN



SECTION B-B



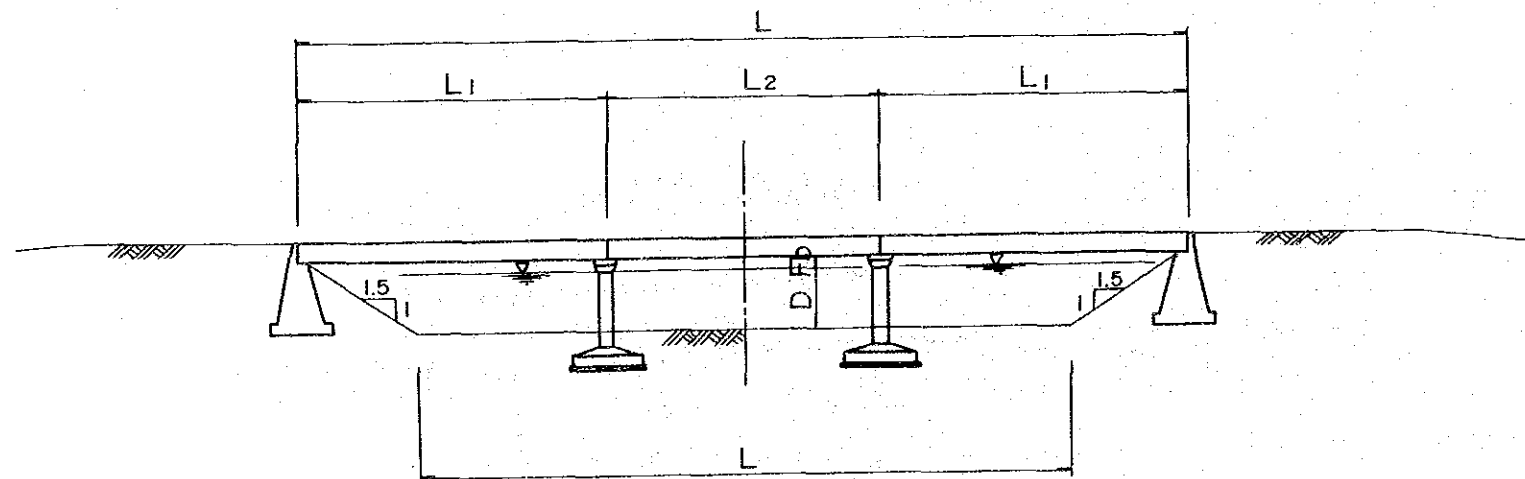
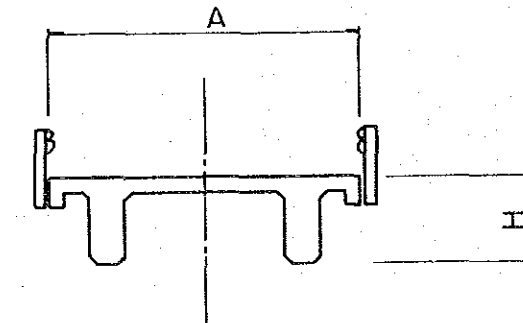
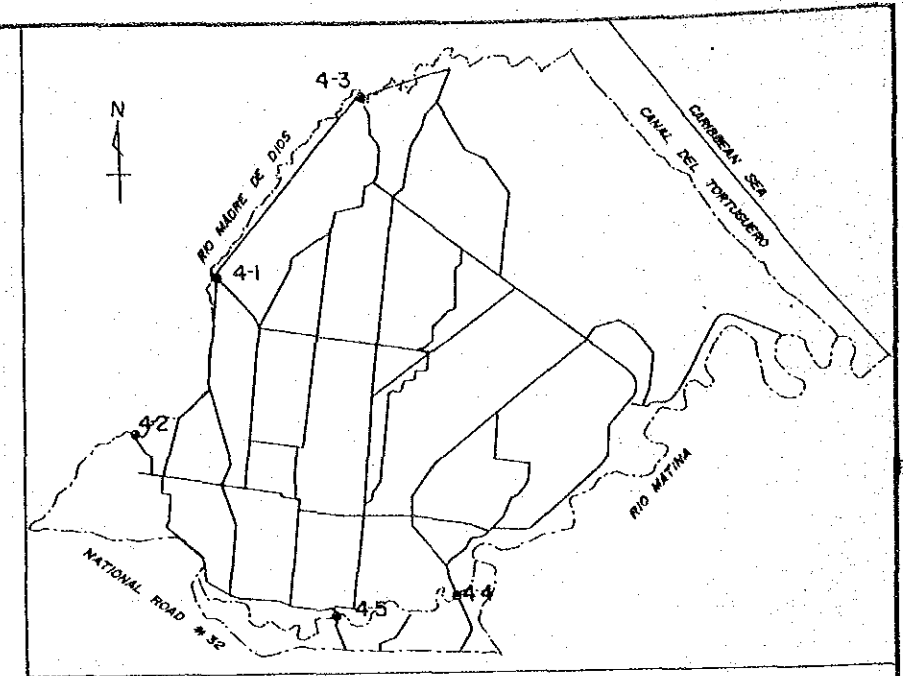
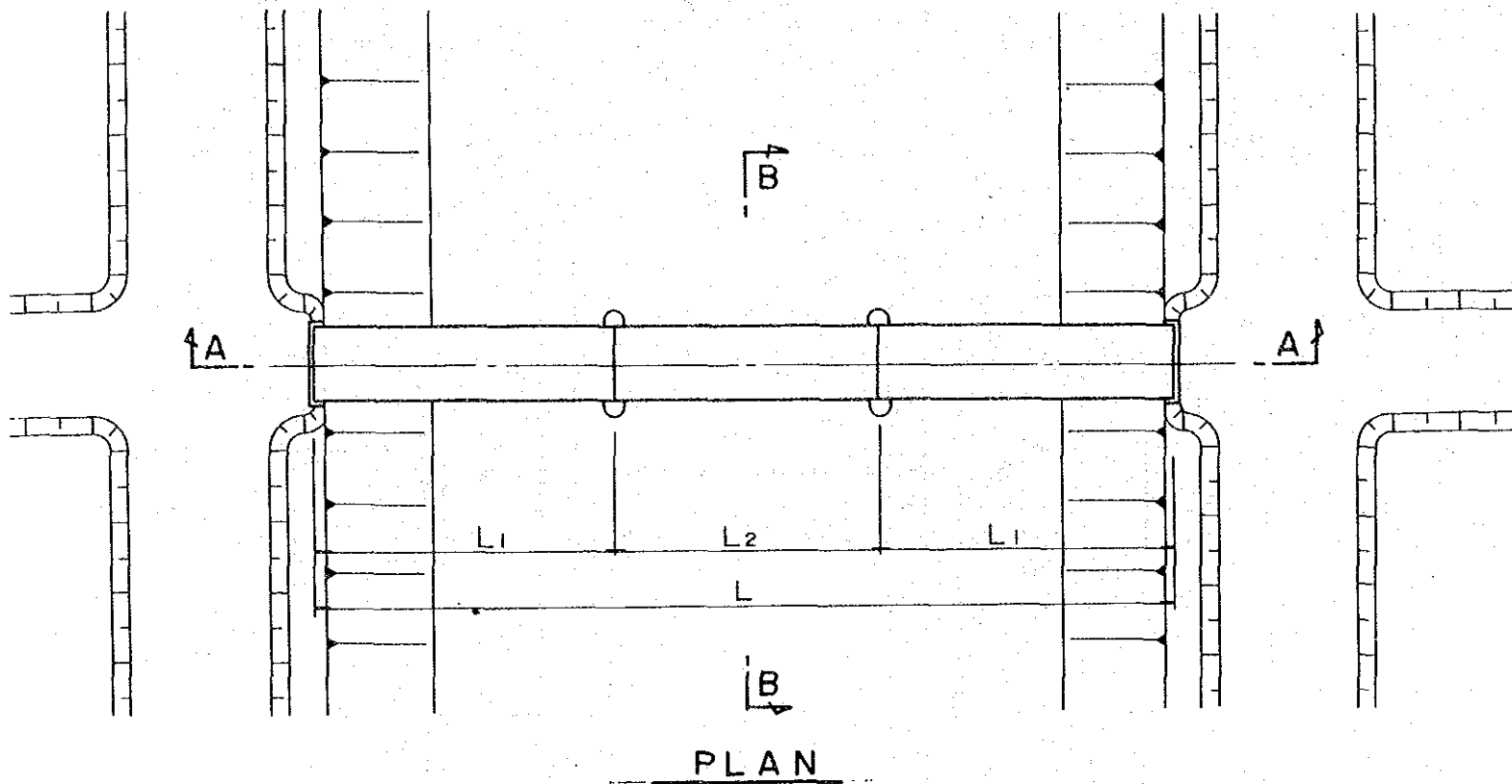
SECTION A-A

(UNIT : mm)

TYPE	B	D	Fb	L	A	H
3-1	—	5,000	500	20,500	7,300	800
3-2	8,000	3,500	500	21,000	4,300	850
3-3	12,000	3,000	500	23,500	4,300	900
2-4	16,000	2,500	500	26,000	4,300	900
3-5	18,000	2,500	500	28,000	4,300	1,000

SENARA DIRECCION DE RIEGO Y AVENAMIENTO		JICA JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Bridge Type (III)			No. 16
SCALE		DATE	

BRIDGE TYPE (IV)

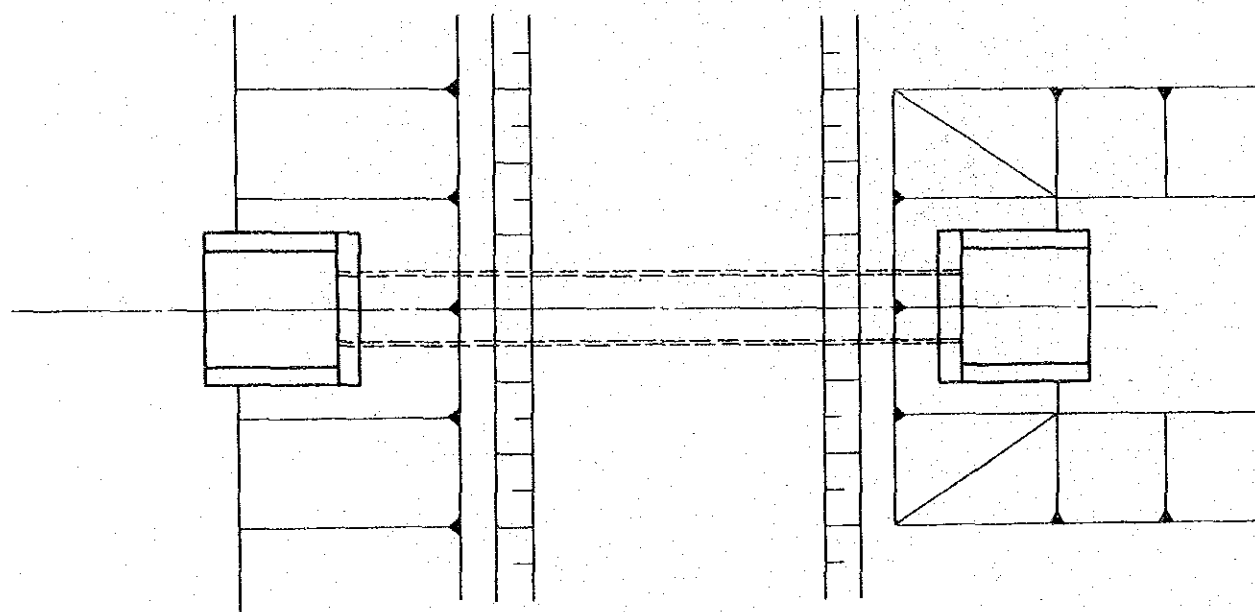


(UNIT : mm)

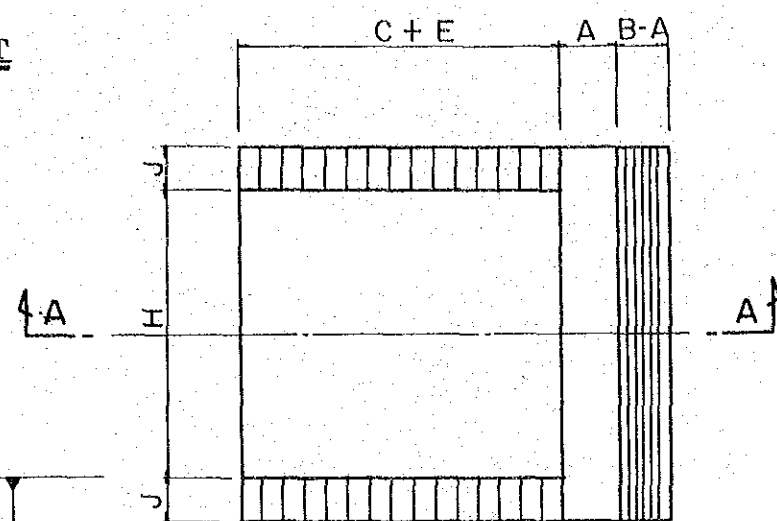
TYPE	B	D	Fb	L1	L2	L	A	H
4-1	30,000	3,500	500	14,000	15,000	43,000	7,300	1 050
4-2	30,000	3,500	500	14,000	15,000	43,000	4,300	1 050
4-3	36,000	3,500	500	16,000	17,000	39,000	4,300	1 150
4-4	—	—	1,000	17,500	5x19,000	130,000	7,300	1 200
4-5	—	—	1,000	17,500	5x19,000	130,000	4,300	1 200

SENARA DIRECCION DE RIEGO Y AVENAMIENTO		JICA JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Bridge Type (IV)			No. 17
SCALE	DATE		

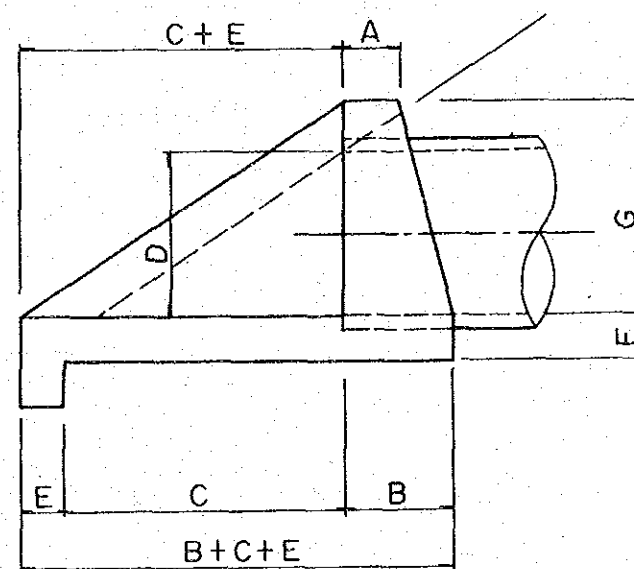
CULVERT



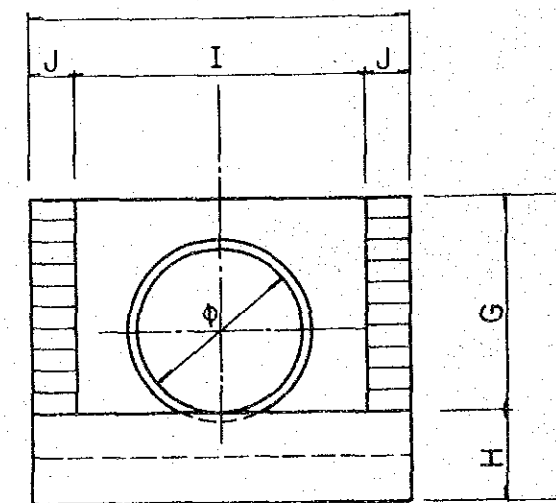
PLAN



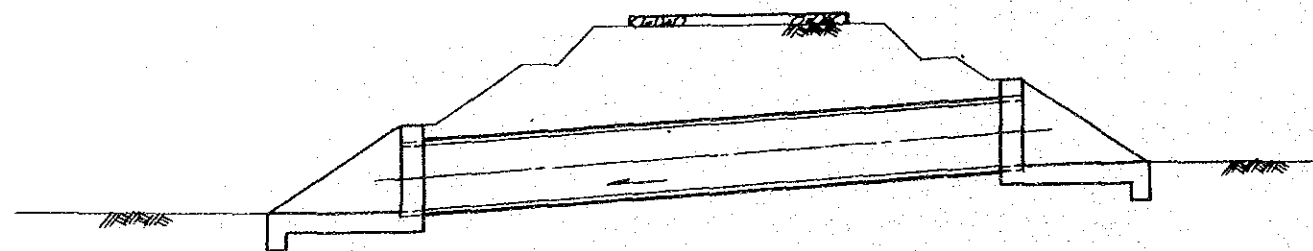
PLAN



SECTION A-A



SECTION B-B



PROFILE

(UNIT: mm)

D	A	B	C	E	F	G	H	I	J
60	25	35	135	20	25	90	500	1200	25
70	30	40	150	20	25	100	500	130	25
80	30	40	165	20	25	110	500	140	25
90	30	40	180	20	25	120	500	150	25
100	30	45	195	20	25	130	500	160	30
120	30	45	225	20	25	150	500	180	30
137	30	50	255	20	25	170	500	200	30
152	30	50	270	20	25	180	500	210	30
168	30	50	300	20	25	200	500	230	30
183	30	50	315	20	25	210	500	240	30

SENARA DIRECCION DE RIEGO Y AVENAMIENTO		JICA JAPAN INTERNATIONAL COOPERATION AGENCY	
PROJECT LIMON INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT			
CONTENT Culvert			No. 18
SCALE		DATE	

JICA