

THE REPUBLIC OF PARAGUAY
THE FEASIBILITY STUDY
ON
THE INTEGRATED RURAL INFRASTRUCTURE
IMPROVEMENT PROJECT
IN
LA COLMENA
DRAWINGS

MAY 1989

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

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JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

THE JAPANESE IN THE UNITED STATES

AND THE JAPANESE IN THE

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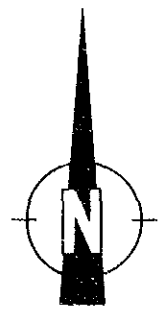
THE JAPANESE IN THE UNITED STATES

AND THE JAPANESE IN THE

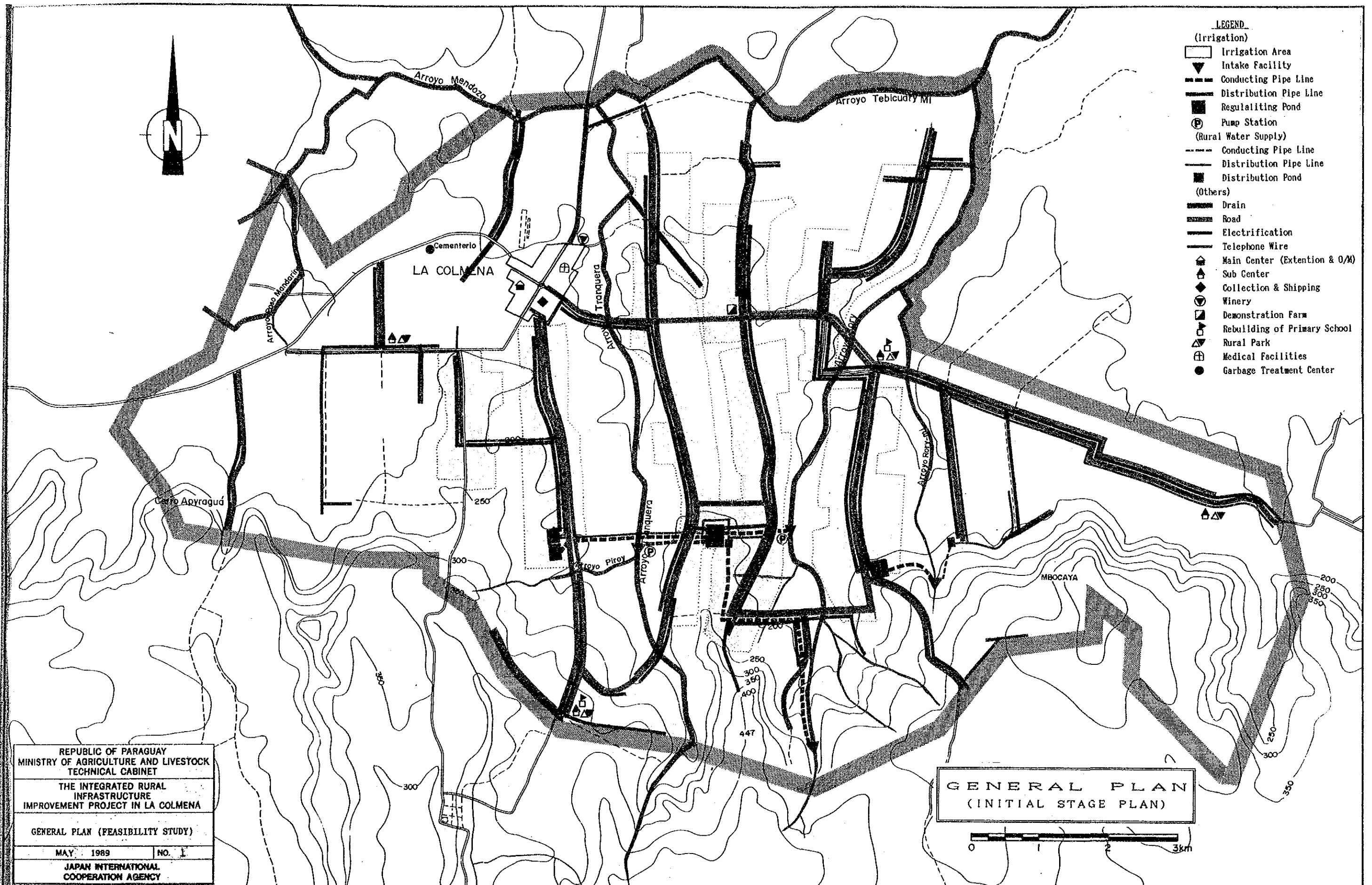
LIST OF DRAWINGS

THE INTEGRATED RURAL INFRASTRUCTURE IMPROVEMENT PROJECT

<u>DWG No.</u>	<u>TITLE</u>
1.	GENERAL PLAN (FEASIBILITY STUDY)
2.	IRRIGATION FACILITY PLAN
3.	TRANQUERA & RORY-I DIVERSION WEIR
4.	RORY-II & RORY-MI DIVERSION WEIR
5.	TRANQUERA & RORY PUMP STATION
6.	TRANQUERA REGULATING POND RORY RURAL WATER SUPPLY PLANT
7.	RORY-MI & YAJHAPETY REGULATING POND
8.	RORY-MI WATER SUPPLY PLANT
9.	PROFILE OF IRRIGATION PIPE LINE (1) (TRANQUERA-I, III, RORY-I, II, IV, RORY-MI-I)
10.	PROFILE OF IRRIGATION PIPE LINE (2) (TRANQUERA-II, RORY-III)
11.	PROFILE OF IRRIGATION PIPE LINE (3) (RORY-MI-II, III, YAJHAPETY-I)
12.	PROFILE OF IRRIGATION PIPE LINE & RELATED STRUCTURE (4) (YAJHAPETY-II, III)
13.	ROAD NETWORKS
14.	LOCATION OF BRIDGE & CULVERT
15.	TYPICAL ROAD SECTION & CULVERT STRUCTURE
16.	BRIDGE TYPE
17.	GENERAL PLAN OF EXTENSION & ADMINISTRATION CENTER
18.	BUILDING STRUCTURE EXTENSION & ADMINISTRATION CENTER, SUB-CENTER, COLLECTING & SHIPPING CENTER



- LEGEND**
- (Irrigation)
- Irrigation Area
 - Intake Facility
 - Conducting Pipe Line
 - Distribution Pipe Line
 - Regulating Pond
 - Pump Station
- (Rural Water Supply)
- Conducting Pipe Line
 - Distribution Pipe Line
 - Distribution Pond
- (Others)
- Drain
 - Road
 - Electrification
 - Telephone Wire
 - Main Center (Extension & O/M)
 - Sub Center
 - Collection & Shipping
 - Winery
 - Demonstration Farm
 - Rebuilding of Primary School
 - Rural Park
 - Medical Facilities
 - Garbage Treatment Center



REPUBLIC OF PARAGUAY
MINISTRY OF AGRICULTURE AND LIVESTOCK
TECHNICAL CABINET

THE INTEGRATED RURAL
INFRASTRUCTURE
IMPROVEMENT PROJECT IN LA COLMENA

GENERAL PLAN (FEASIBILITY STUDY)

MAY 1989 NO. 1

JAPAN INTERNATIONAL
COOPERATION AGENCY

GENERAL PLAN
(INITIAL STAGE PLAN)

0 1 2 3km

LEGEND

- Irrigation Area
- ▼ Intake works
- Distribution Pipe
- - - Conducting Pipe
- Regulating Pond
- (P) Pumping Station

R. Pond	Volume	Height	B x L (M)
Tranquera	2 900m ³	2.80m	45.5x45.5
Rory-mi	800m ³	2.80m	32.5x23.5
Yajhabety	500m ³	2.80m	27.5x19.9

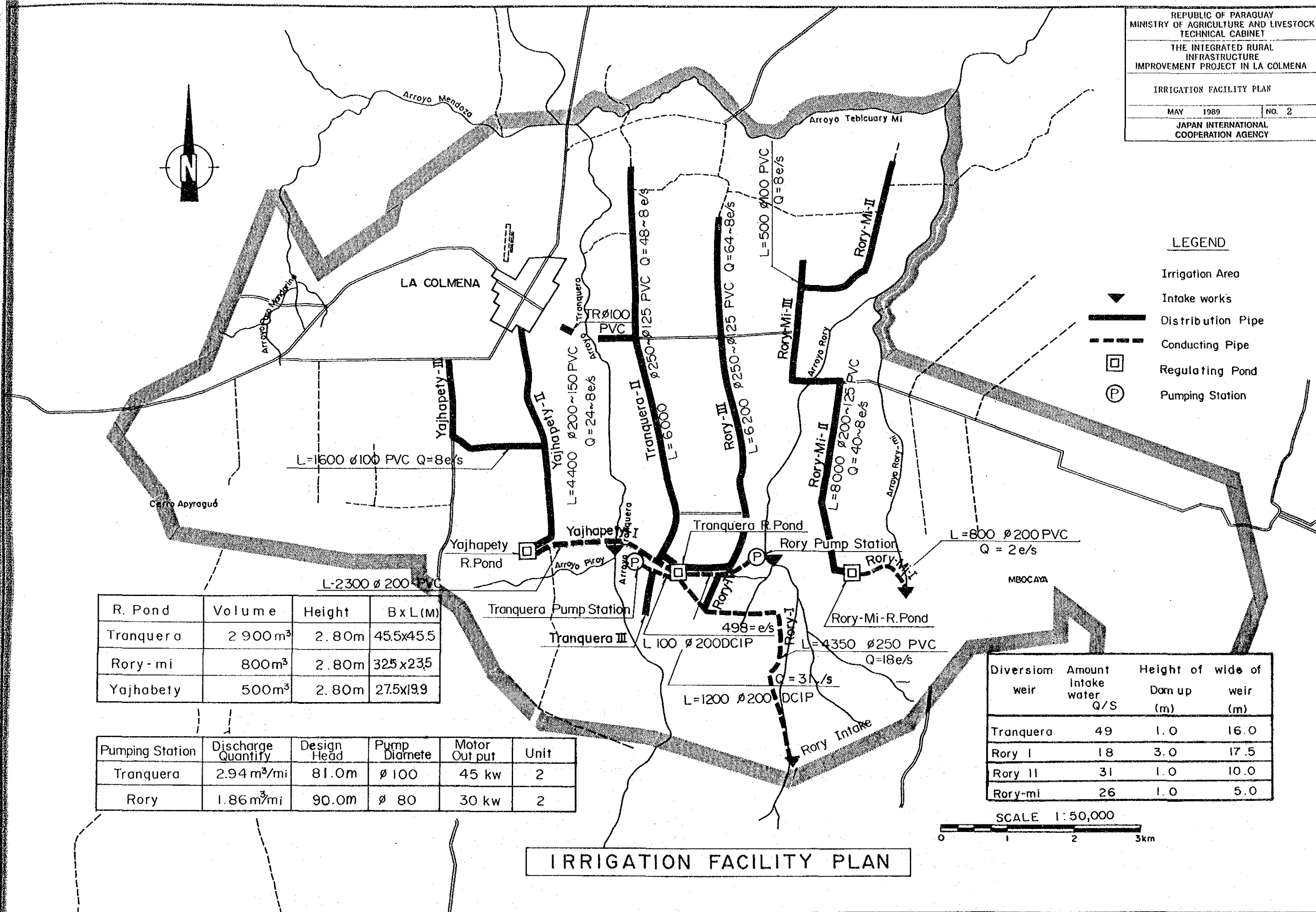
Pumping Station	Discharge Quantity	Design Head	Pump Diamete	Motor Out put	Unit
Tranquera	2.94 m ³ /mi	81.0m	ø 100	45 kw	2
Rory	1.86 m ³ /mi	90.0m	ø 80	30 kw	2

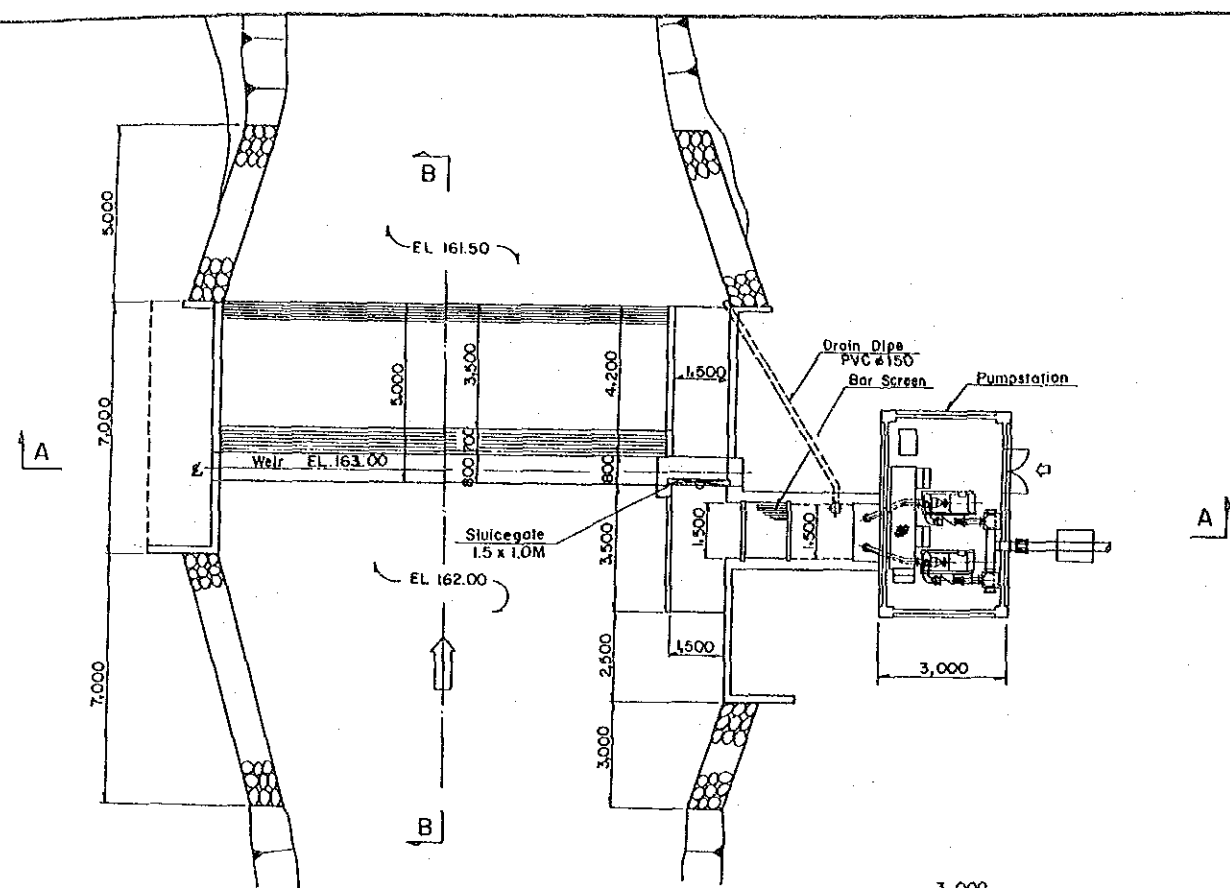
Diversiom weir	Amount Intake water Q/S	Height of Dam up (m)	wide of weir (m)
Tranquera	49	1.0	16.0
Rory I	18	3.0	17.5
Rory II	31	1.0	10.0
Rory-mi	26	1.0	5.0

SCALE 1:50,000

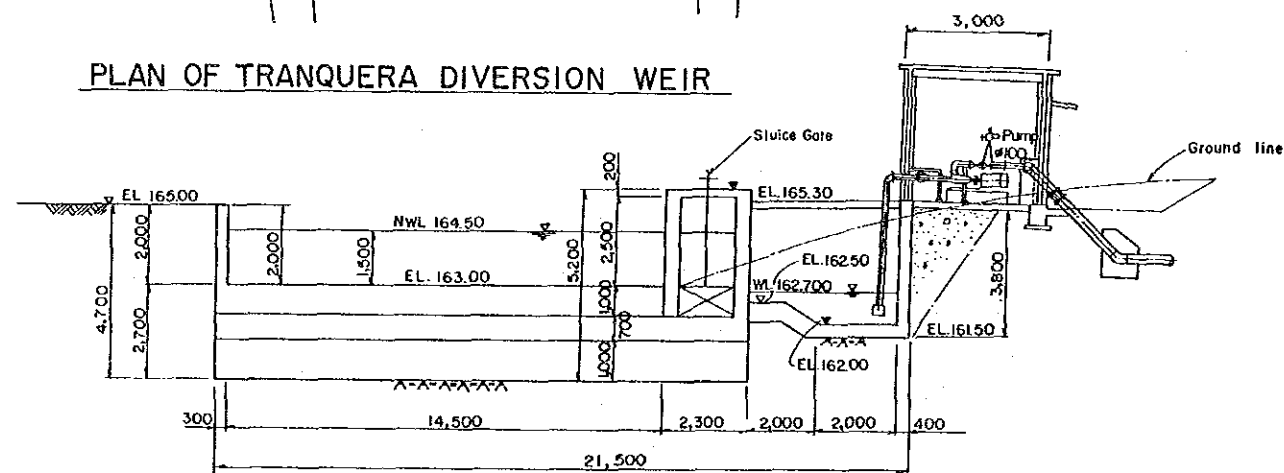
0 1 2 3km

IRRIGATION FACILITY PLAN

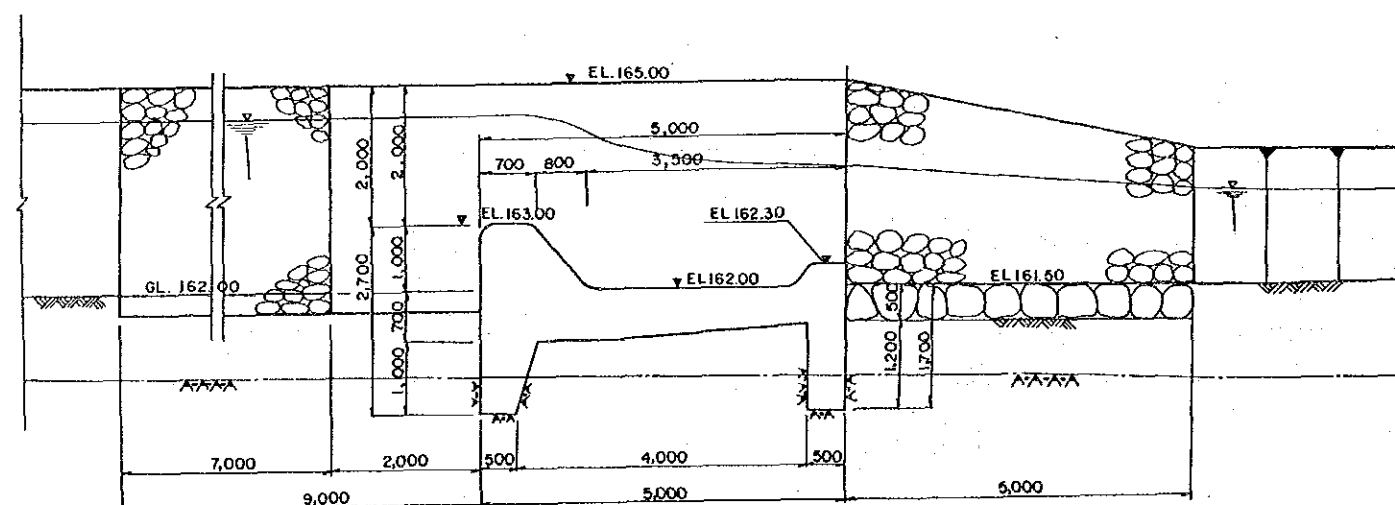




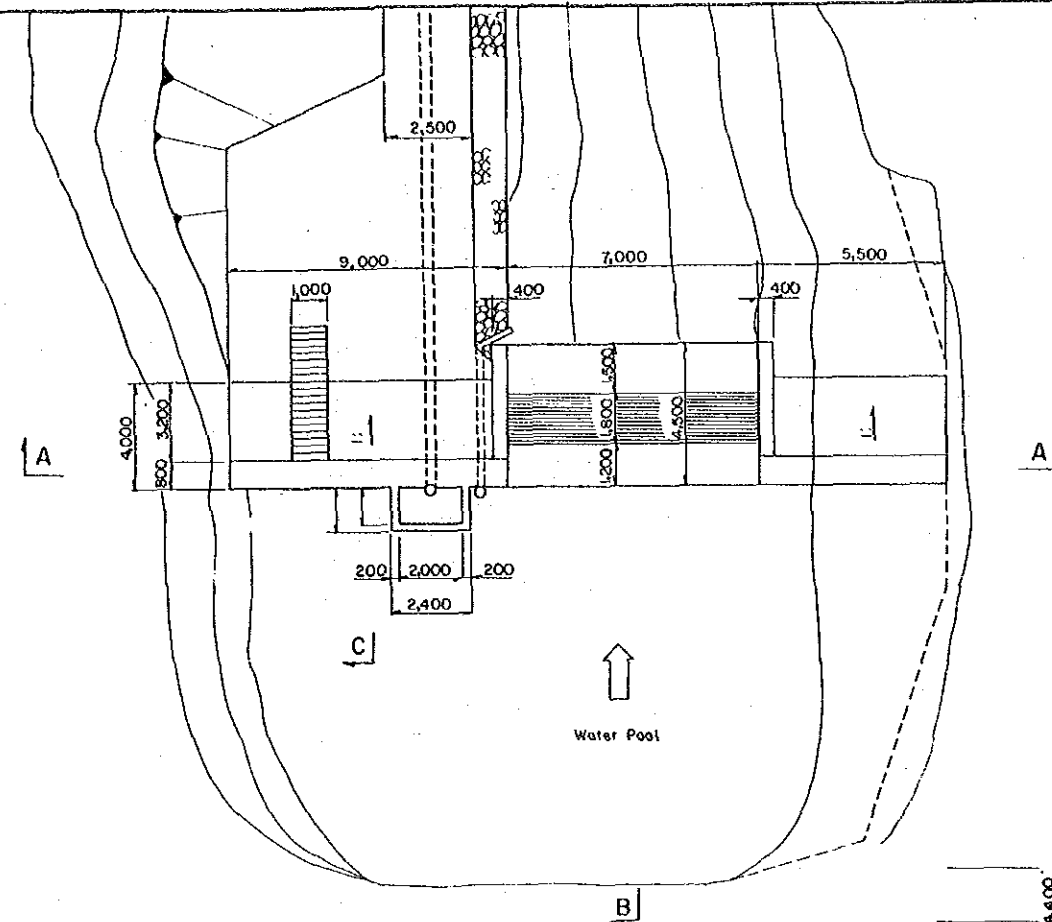
PLAN OF TRANQUERA DIVERSION WEIR



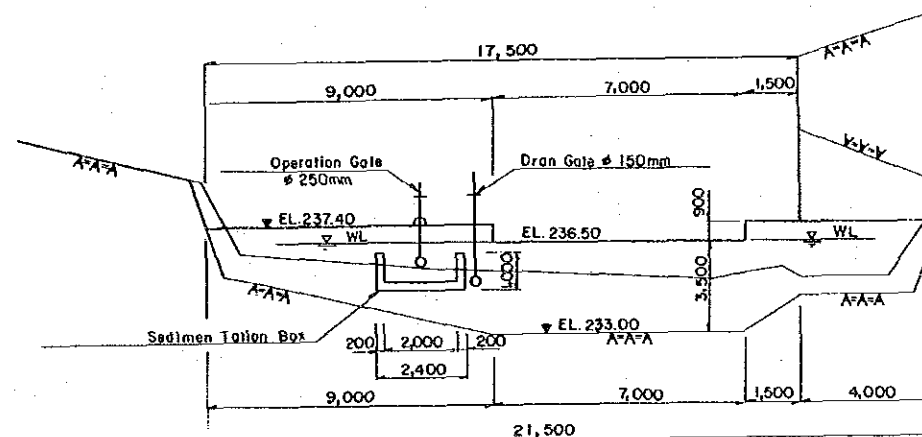
SECTION A-A



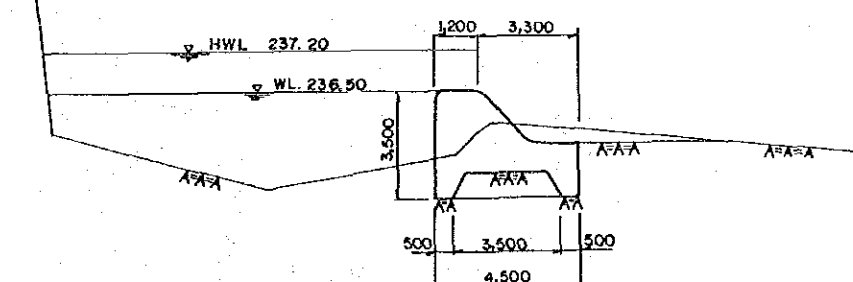
SECTION B-B



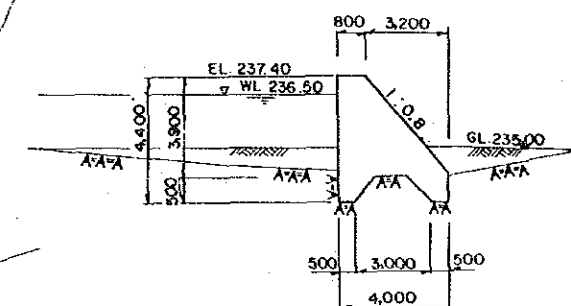
PLAN OF RORY-I DIVERSION WEIR



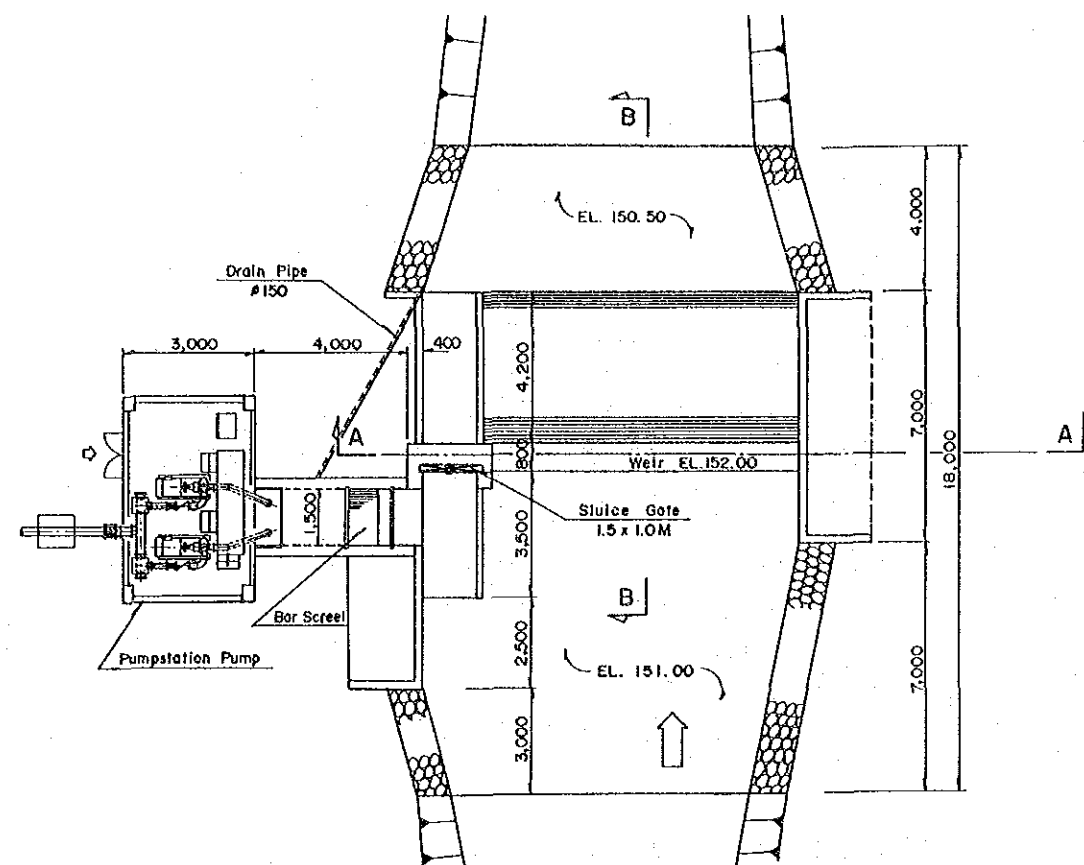
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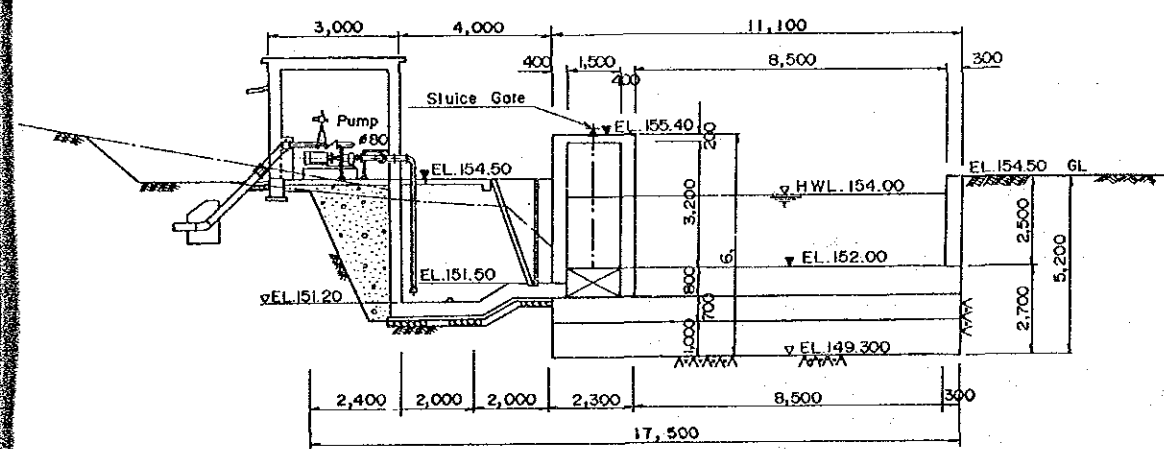
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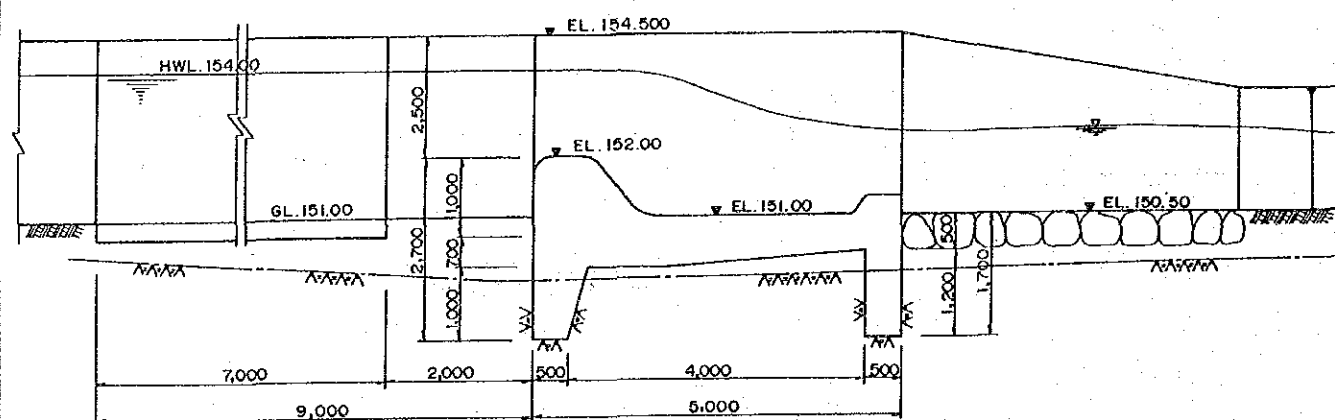
SECTION C-C



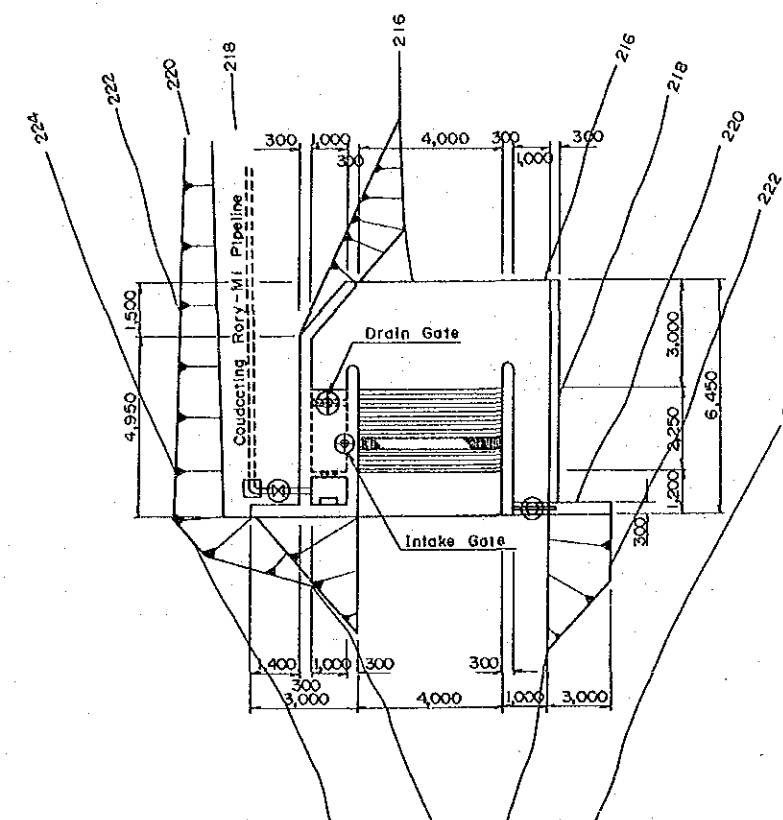
PLAN OF RORY DIVERSION WEIR



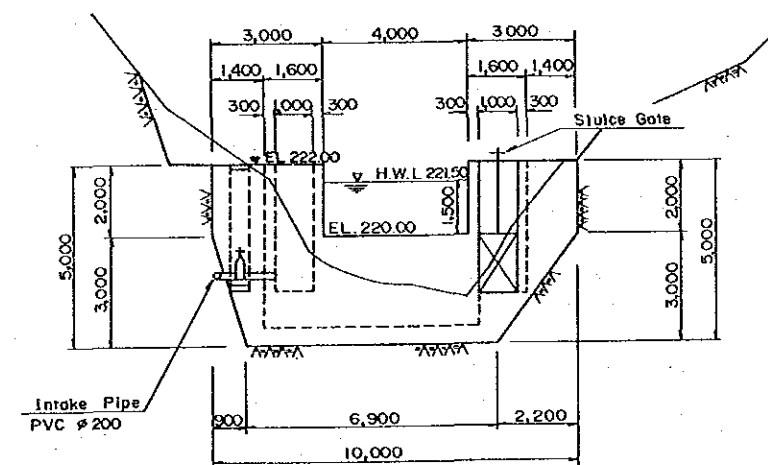
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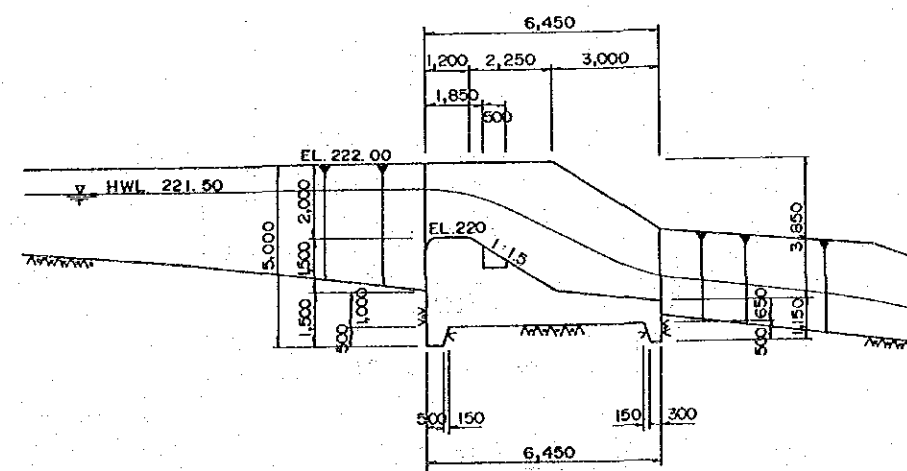
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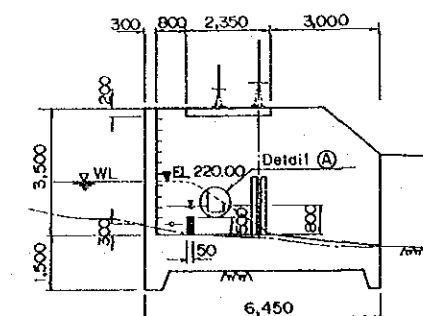
PLAN OF RORY-MI DIVERSION WEIR



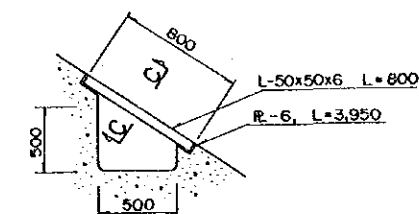
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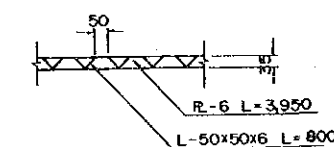
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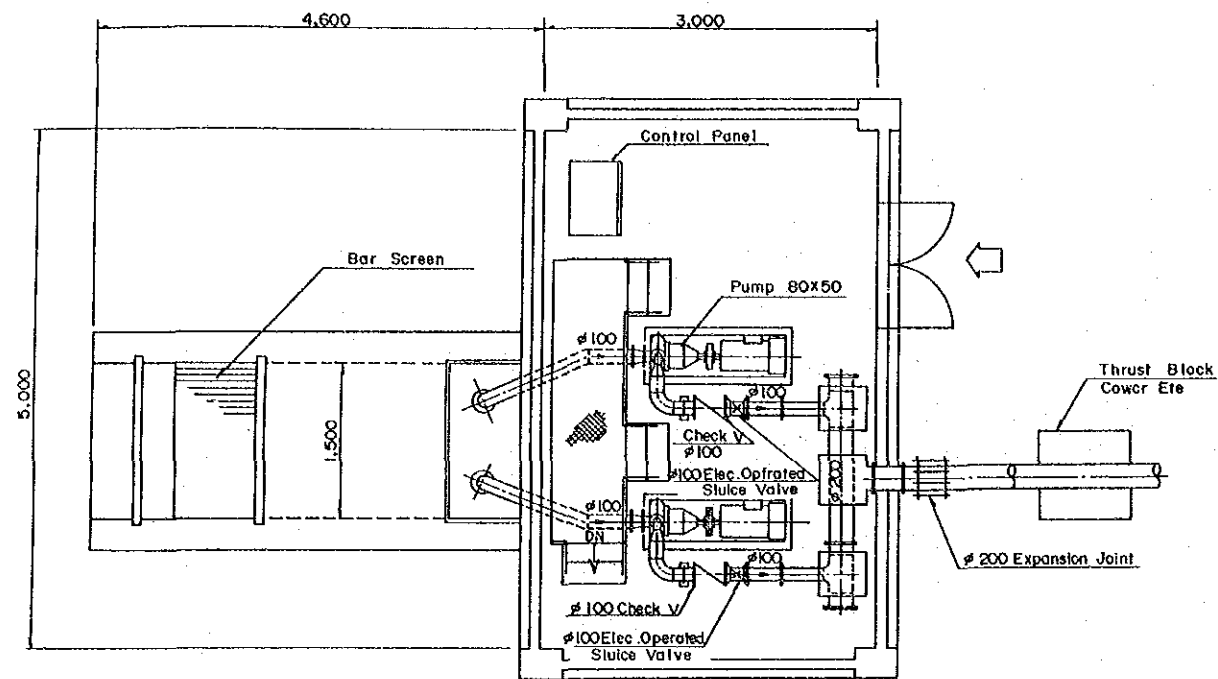
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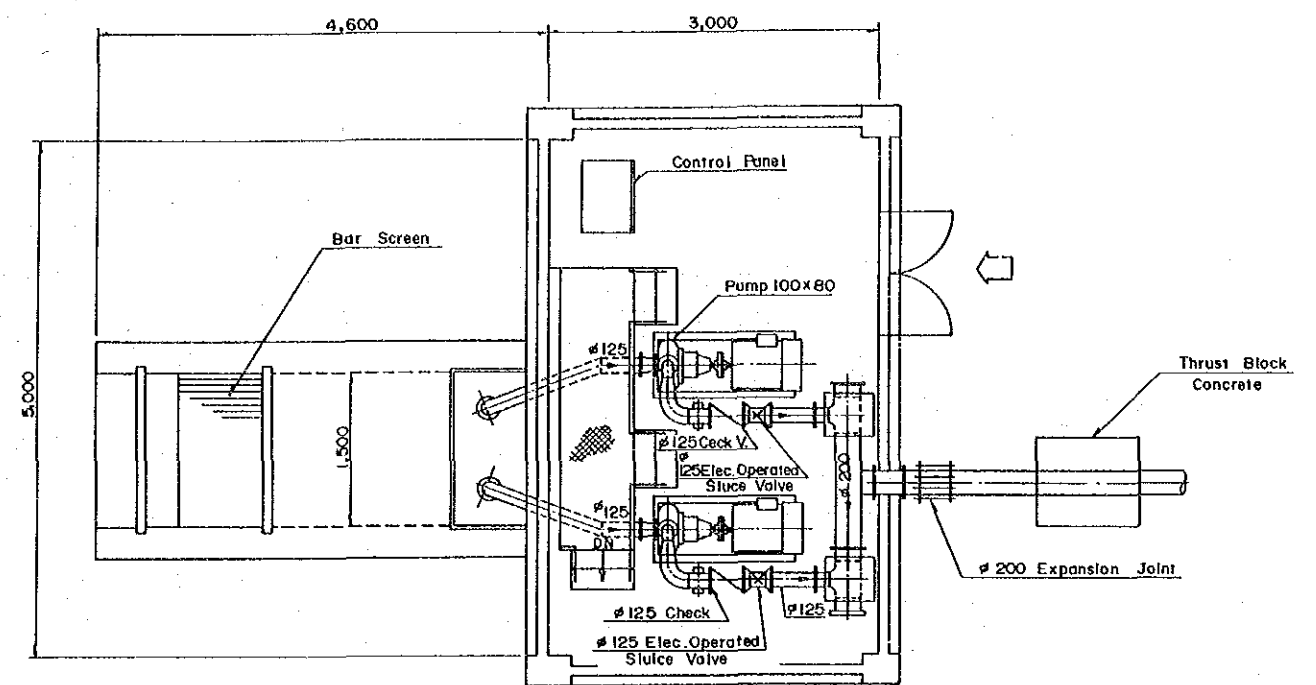
DETAIL A



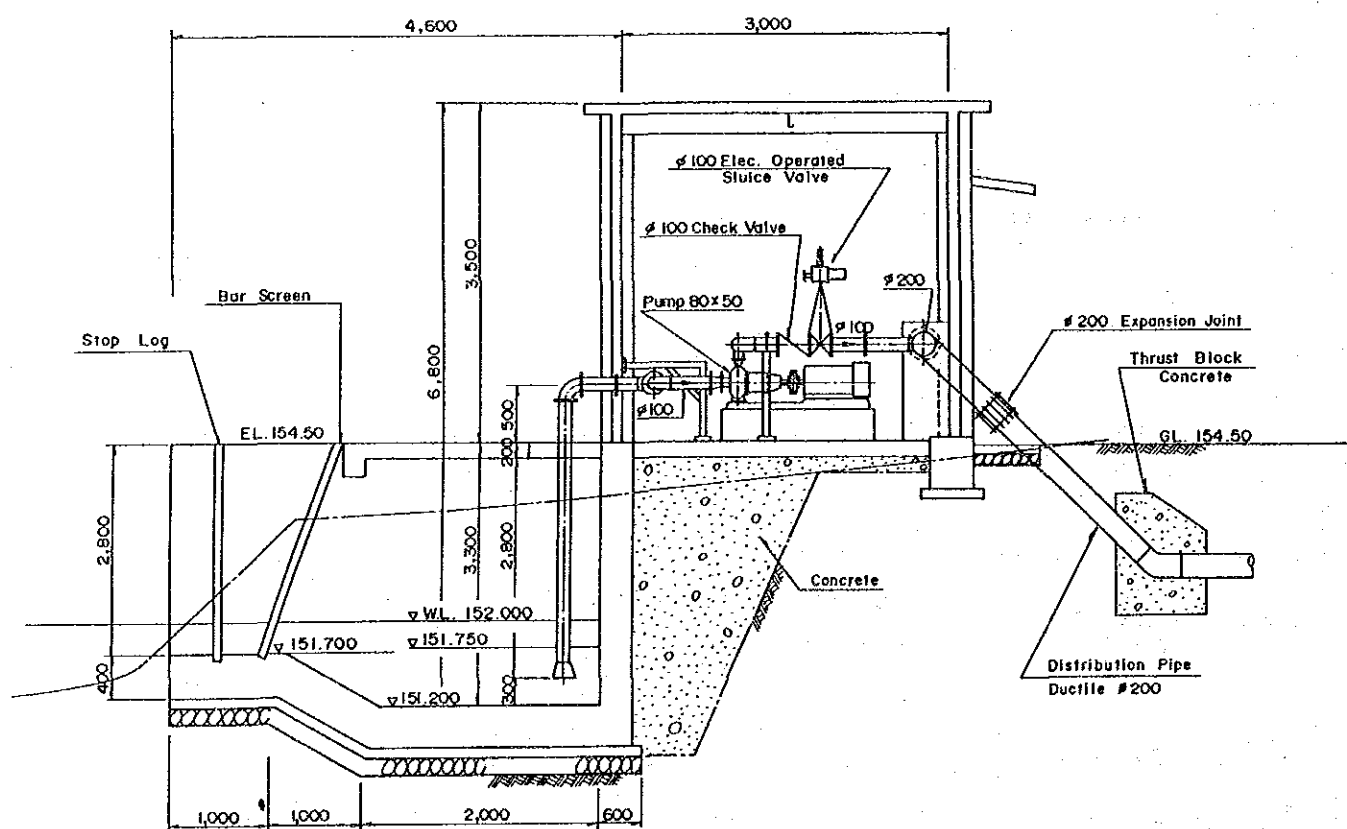
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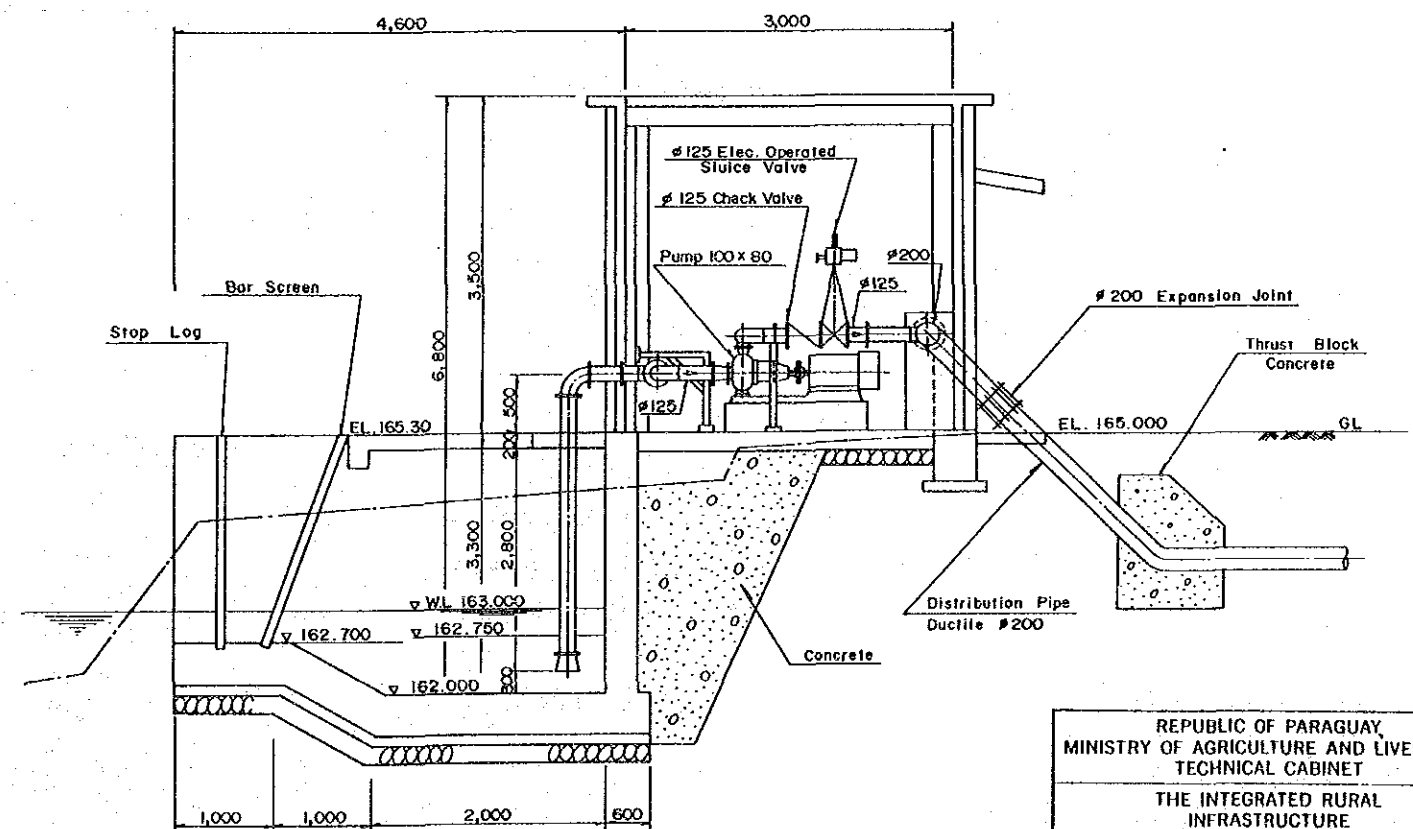
PLAN OF RORY PUMP STATION



PLAN OF TRANQUERA PUMP STATION



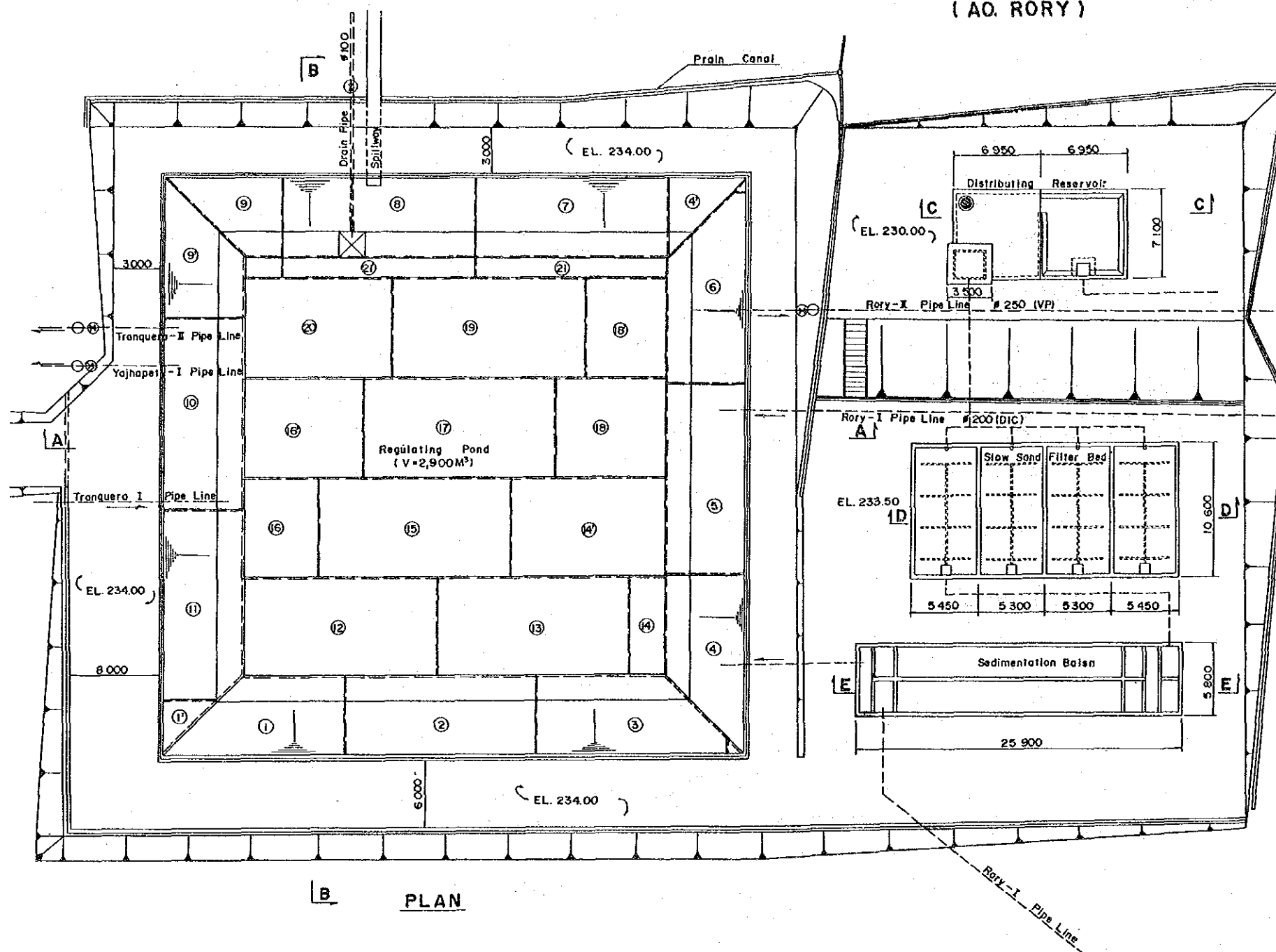
PROFILE OF PUMP STATION



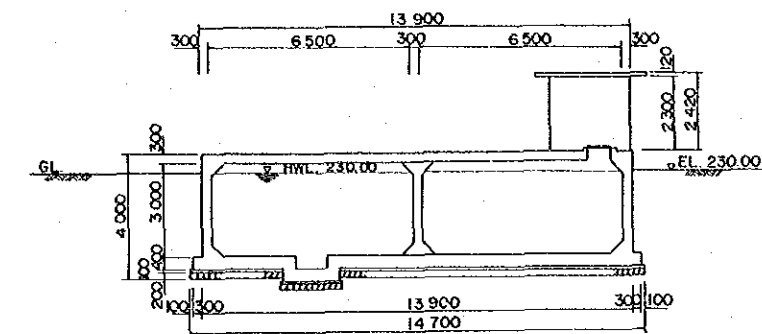
PROFILE OF PUMP STATION

TRANQUERA & RORY REGULATING POND

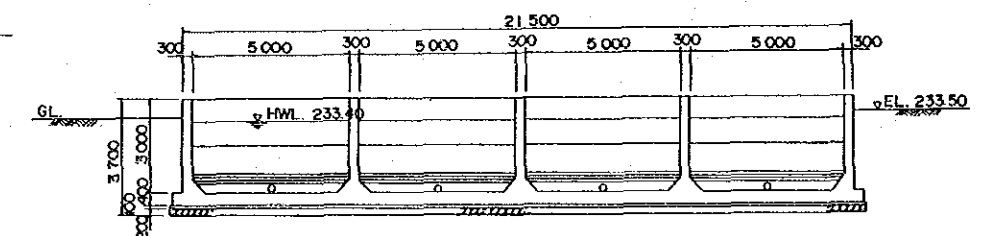
RURAL WATER SUPPLY PLANT (AO. RORY)



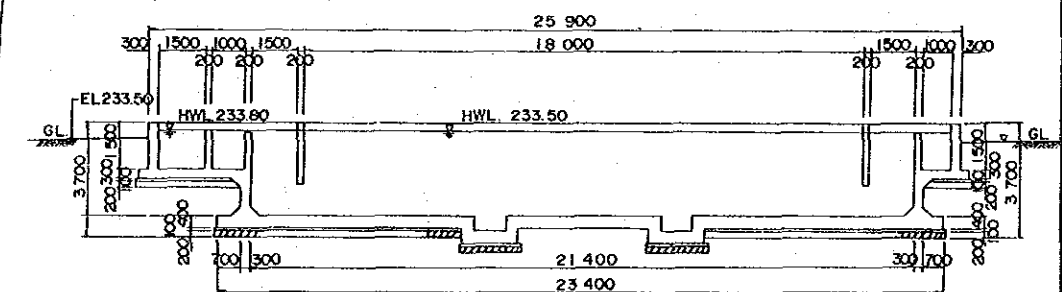
B PLAN



**SECTION C-C
(DISTRIBUTING RESERVOIR)**

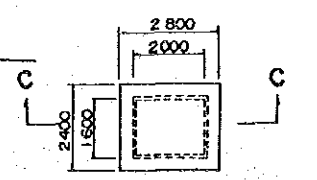


**SECTION D-D
(SLOW SAND FILTER BED)**

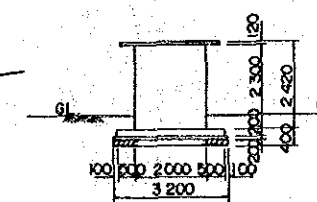


**SECTION E-E
(SEDIMENTATION BASIN)**

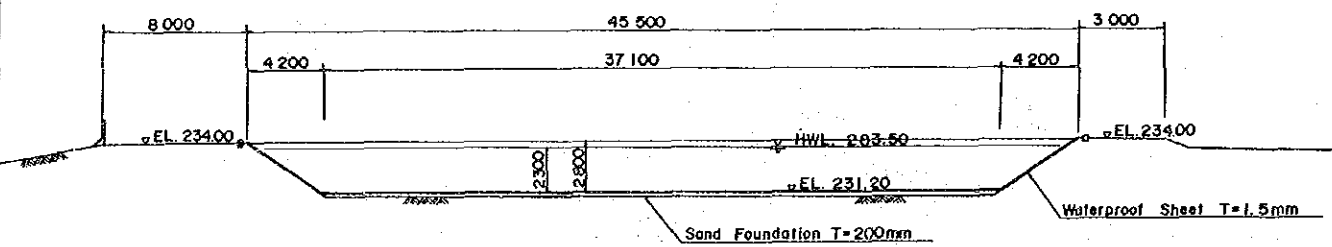
DISINFECTING CHNBER



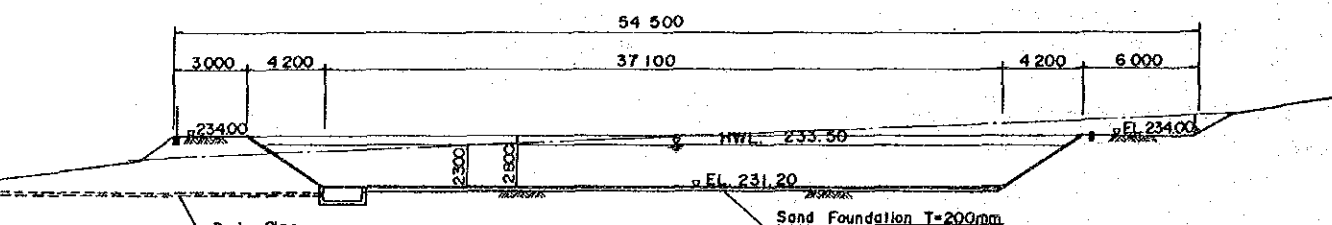
PLAN



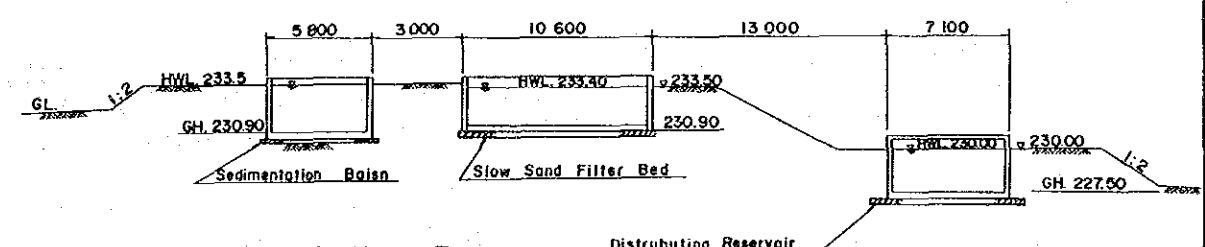
SECTION C-C



SECTION A-A



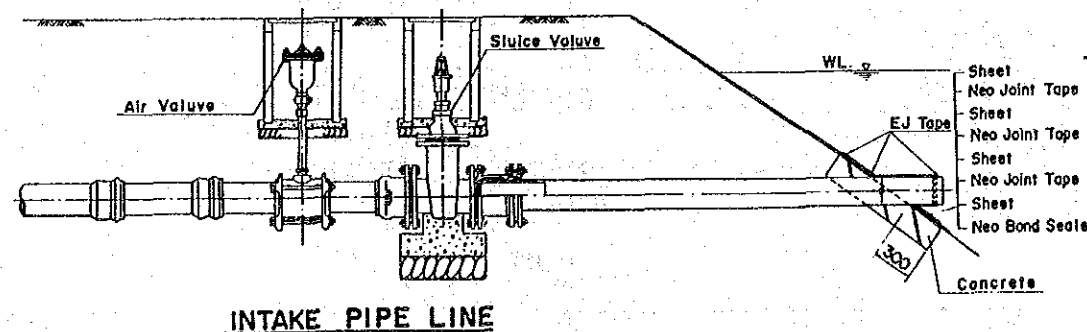
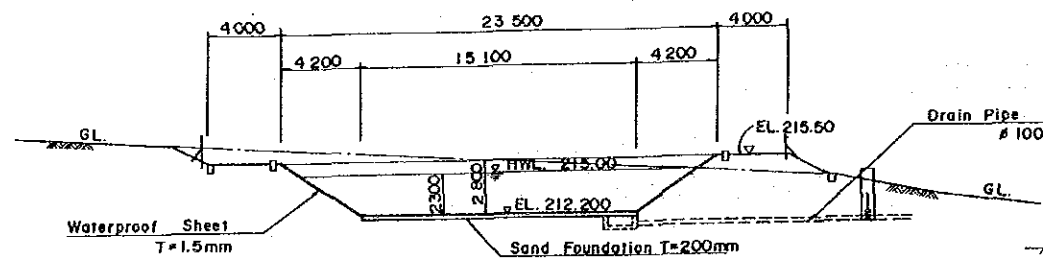
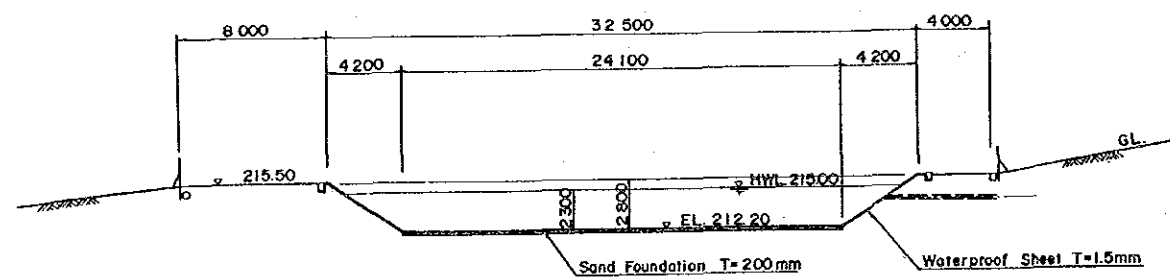
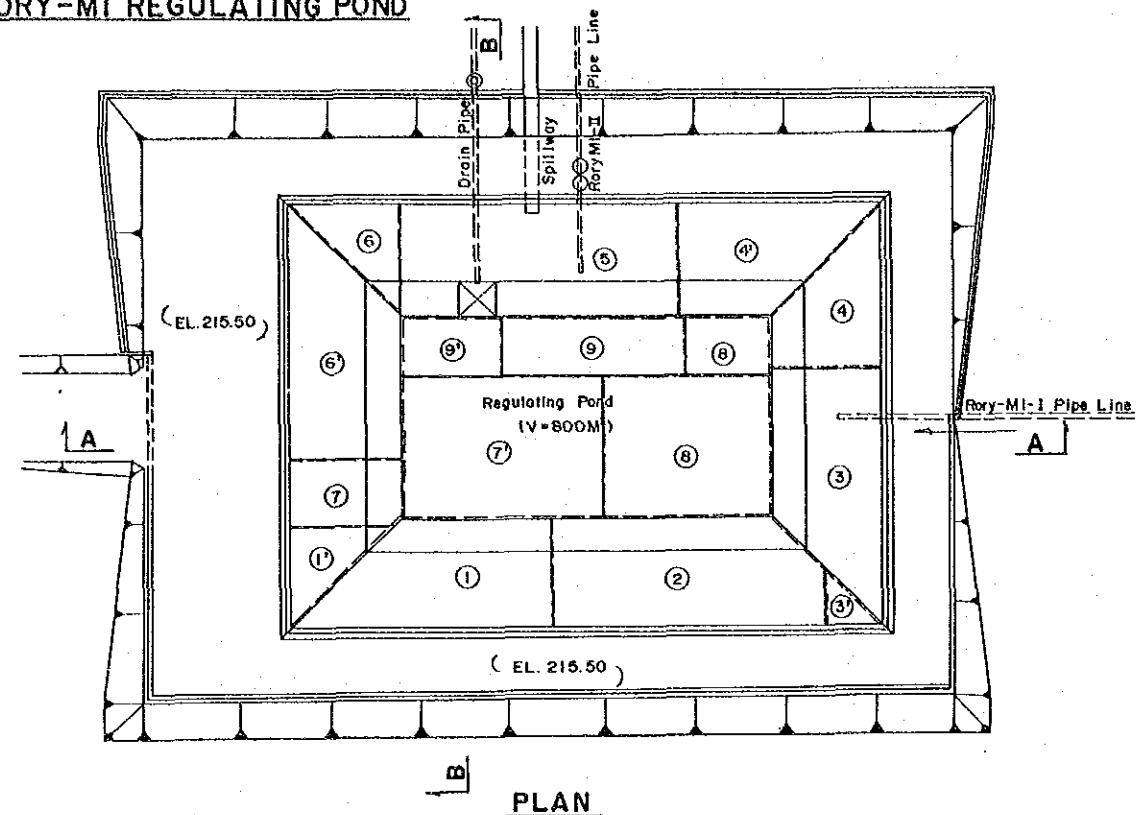
SECTION B-B



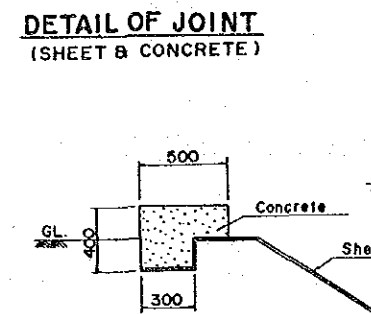
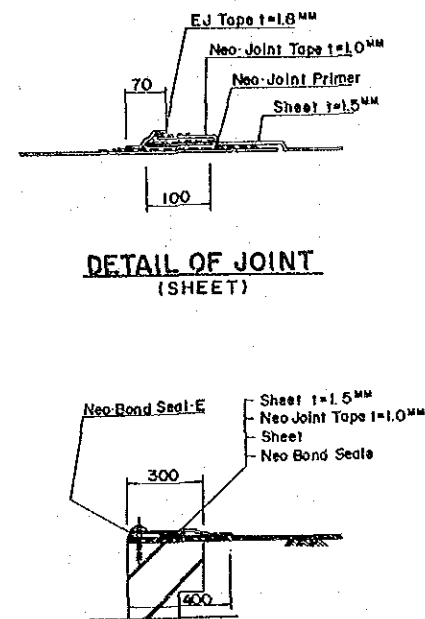
SECTION F-F

REPUBLIC OF PARAGUAY
MINISTRY OF AGRICULTURE AND LIVESTOCK
TECHNICAL CABINET
THE INTEGRATED RURAL
INFRASTRUCTURE
IMPROVEMENT PROJECT IN LA COLMENA
TRANQUERA REGULATING POND
RORY RURAL WATER SUPPLY PLANT
MAY 1989 NO. 6
JAPAN INTERNATIONAL
COOPERATION AGENCY

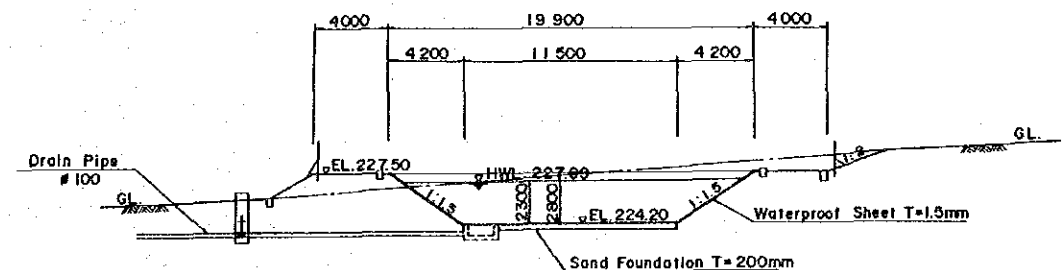
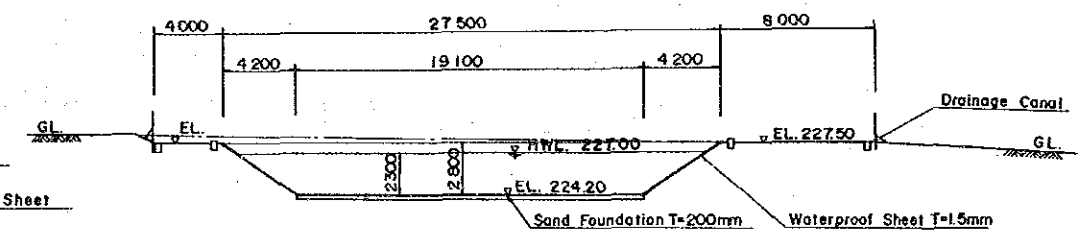
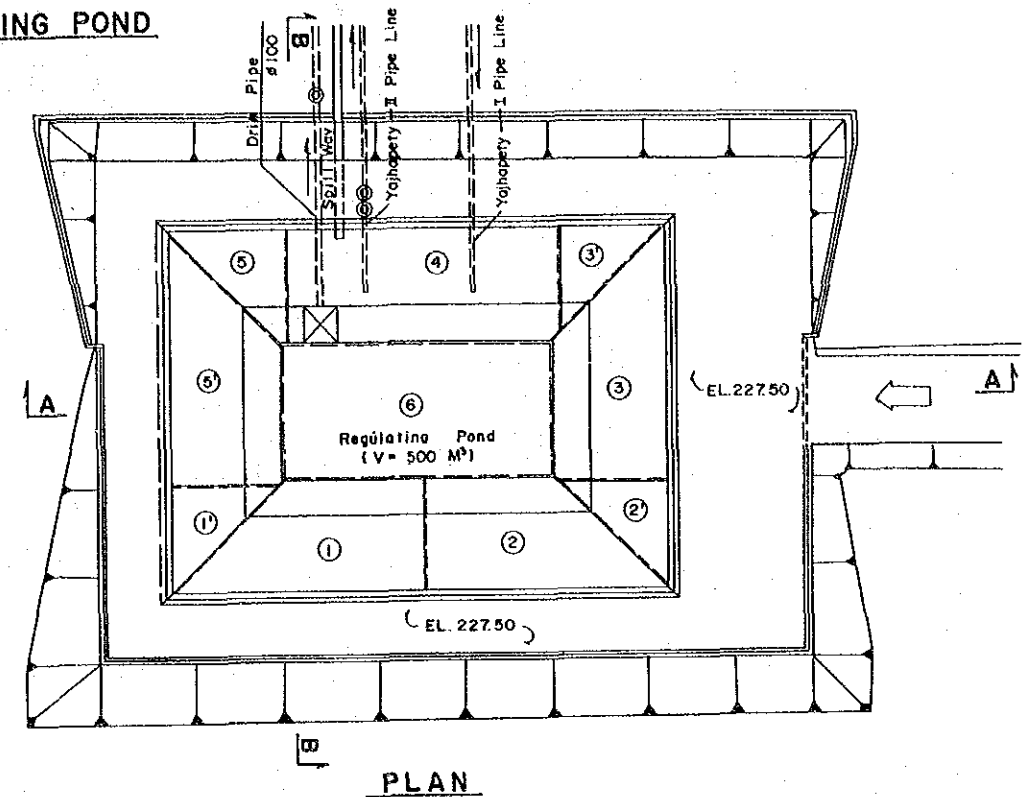
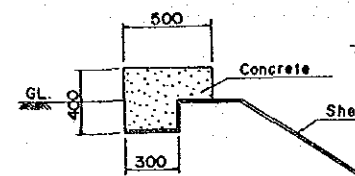
RORY-MI REGULATING POND



YAJHAPATY REGULATING POND

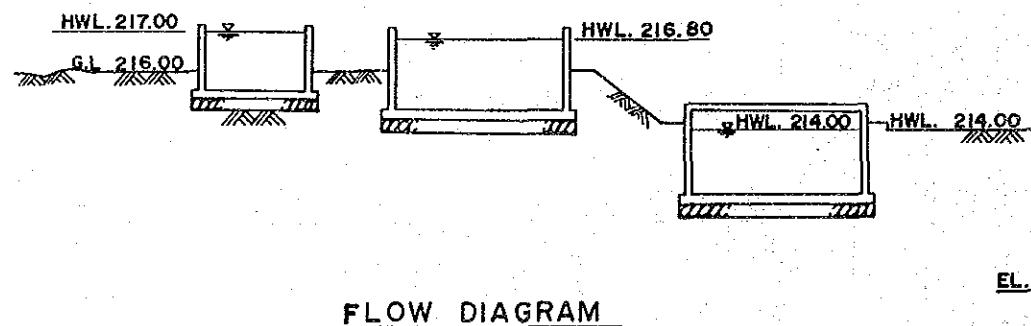
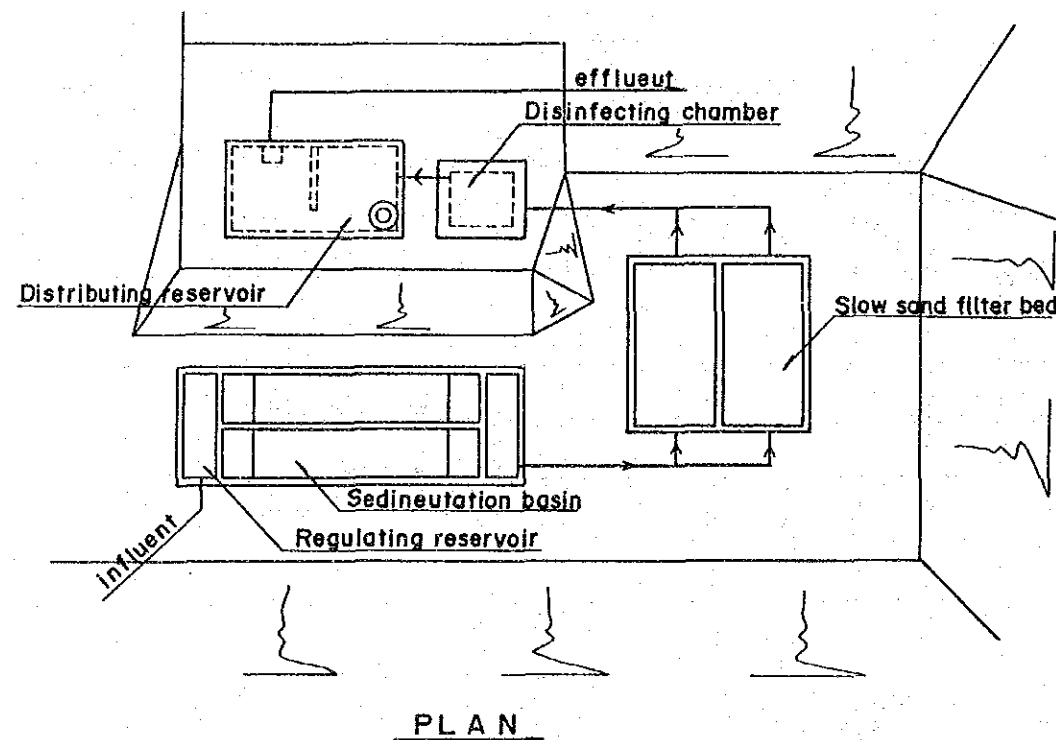


DETAIL OF FIX SHEET

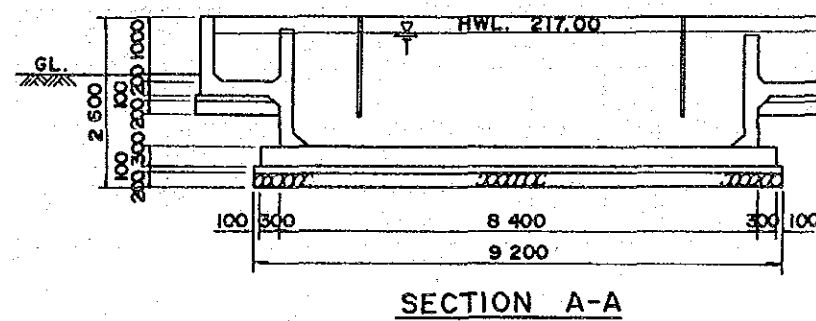
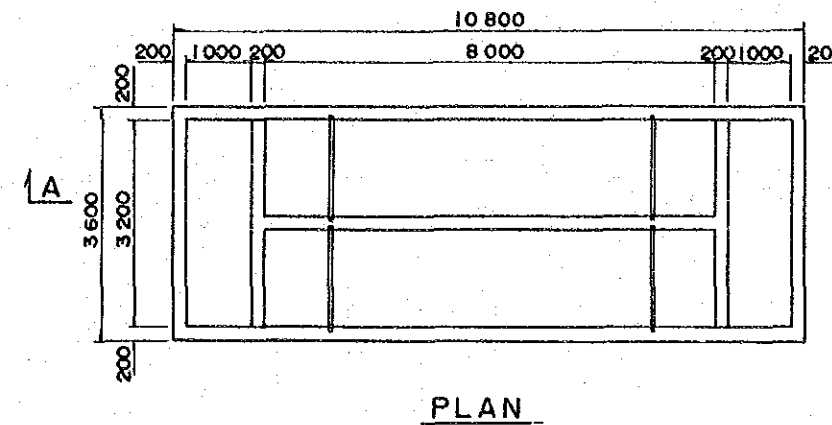


REPUBLIC OF PARAGUAY	
MINISTRY OF AGRICULTURE AND LIVESTOCK	
TECHNICAL CABINET	
THE INTEGRATED RURAL	
INFRASTRUCTURE	
IMPROVEMENT PROJECT IN LA COLMENA	
RORY-MI & YAJHAPATY REGULATING POND	
MAY 1989	NO. 7
JAPAN INTERNATIONAL	
COOPERATION AGENCY	

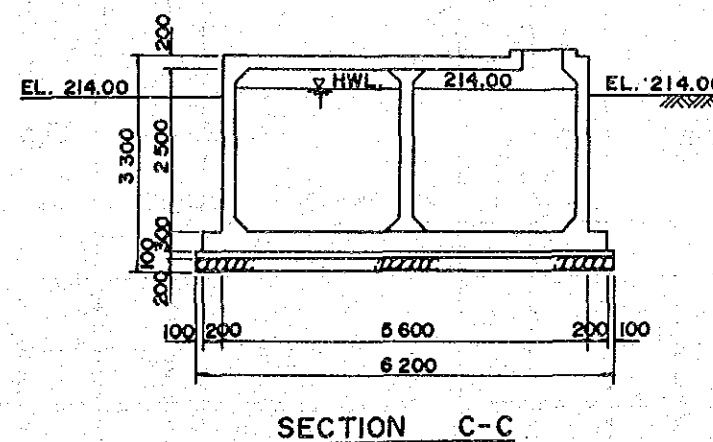
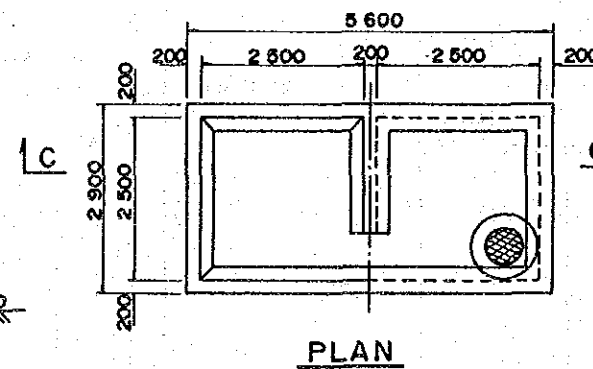
RURAL WATER SUPPLY PLANT (Ao. RORY - MI)



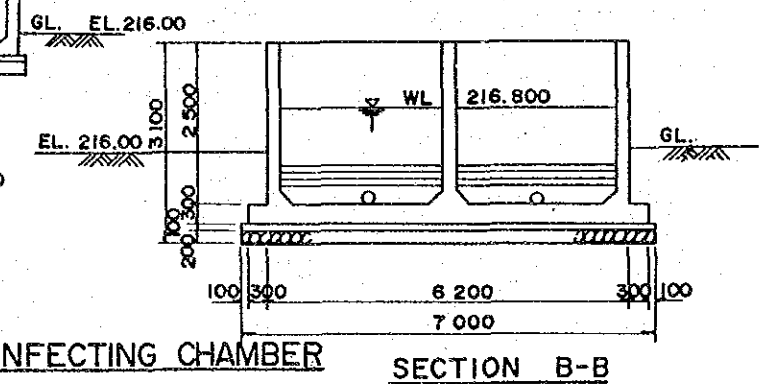
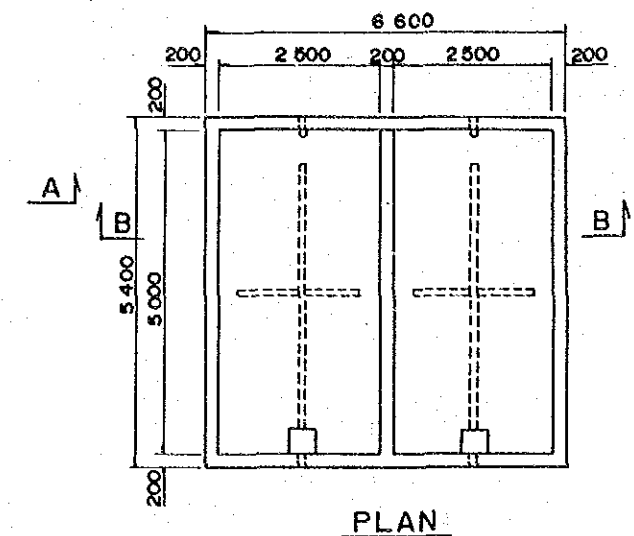
SEDIMENTATION BASIN



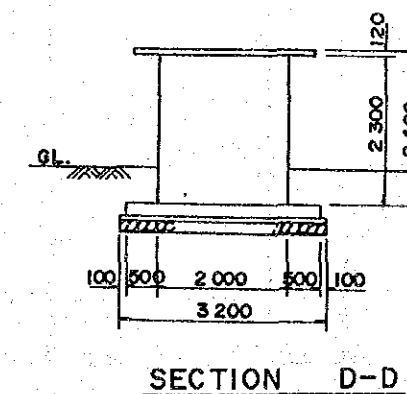
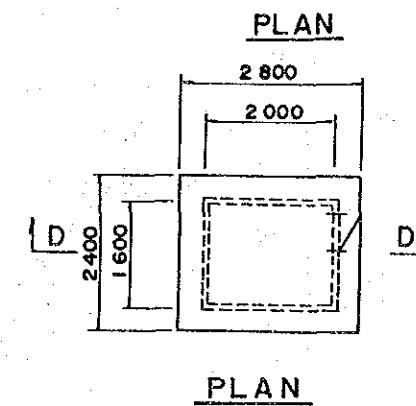
DISTRIBUTING RESERVOIR



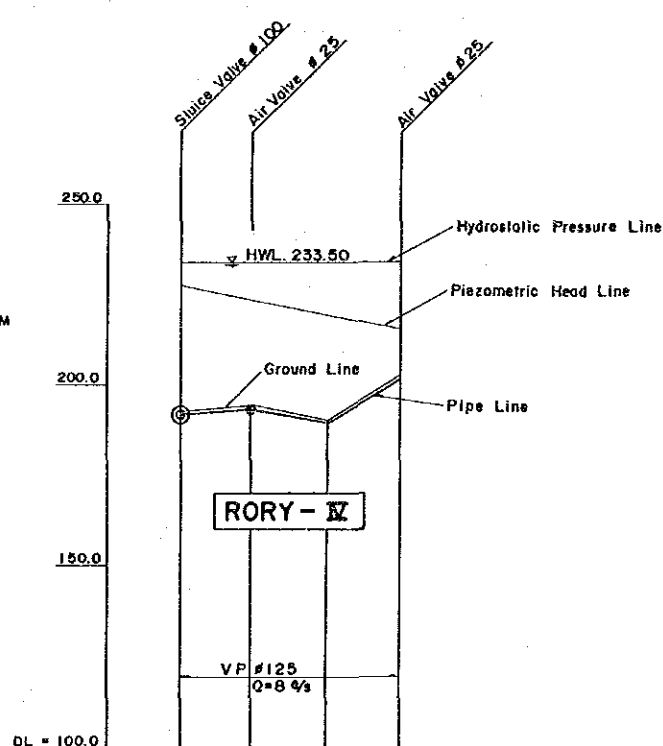
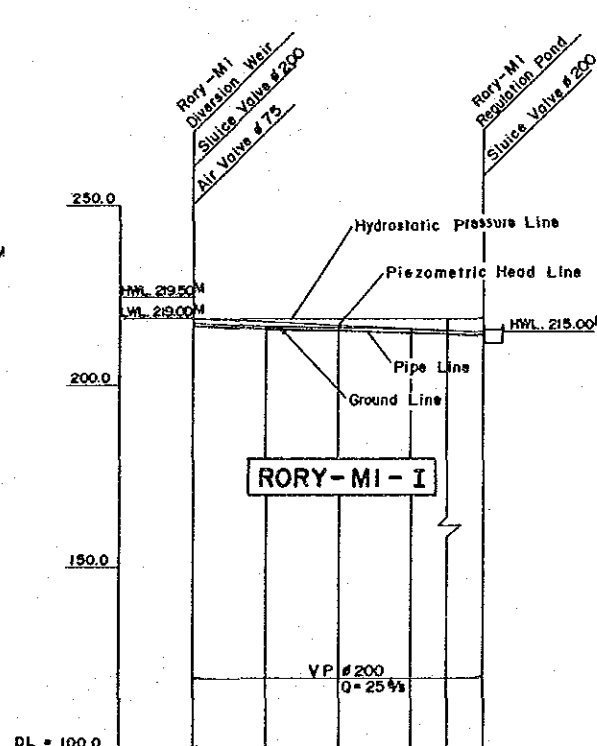
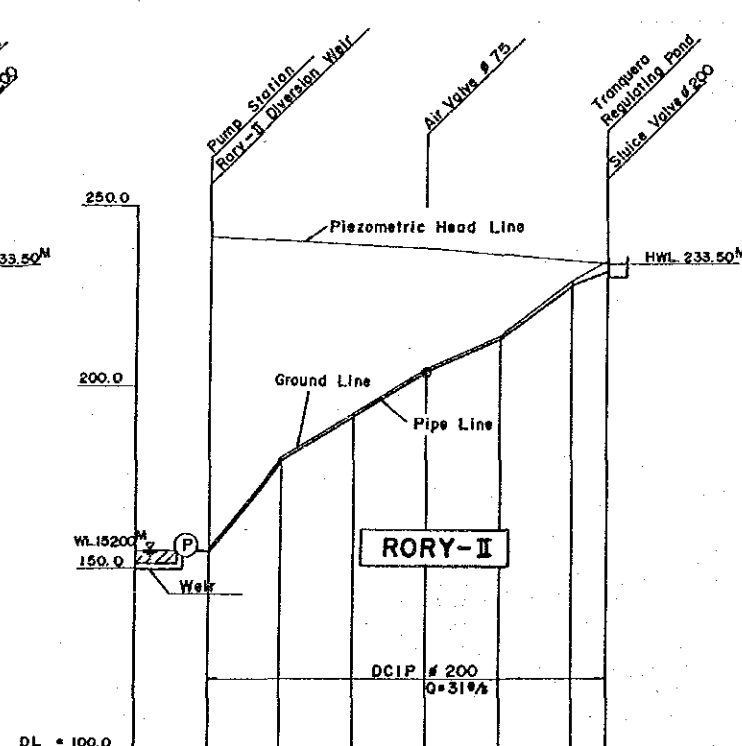
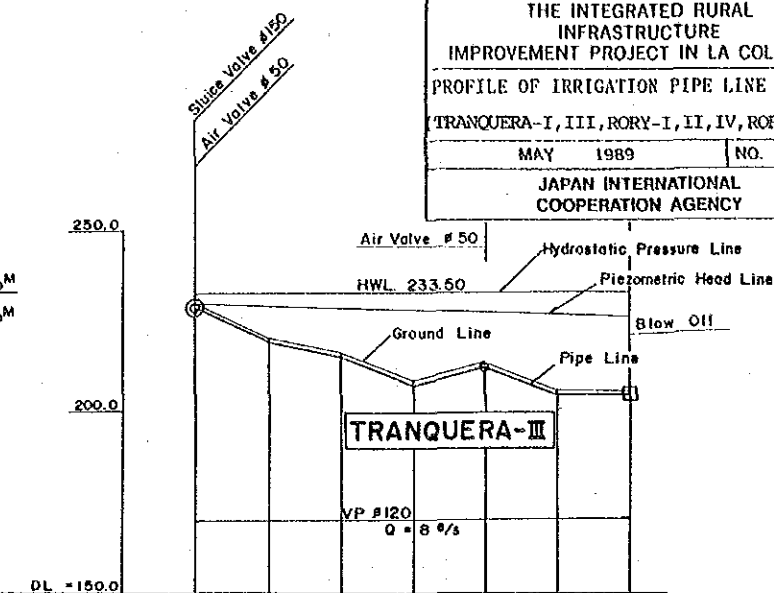
SLOW SAND FILTER BED



DISINFECTING CHAMBER

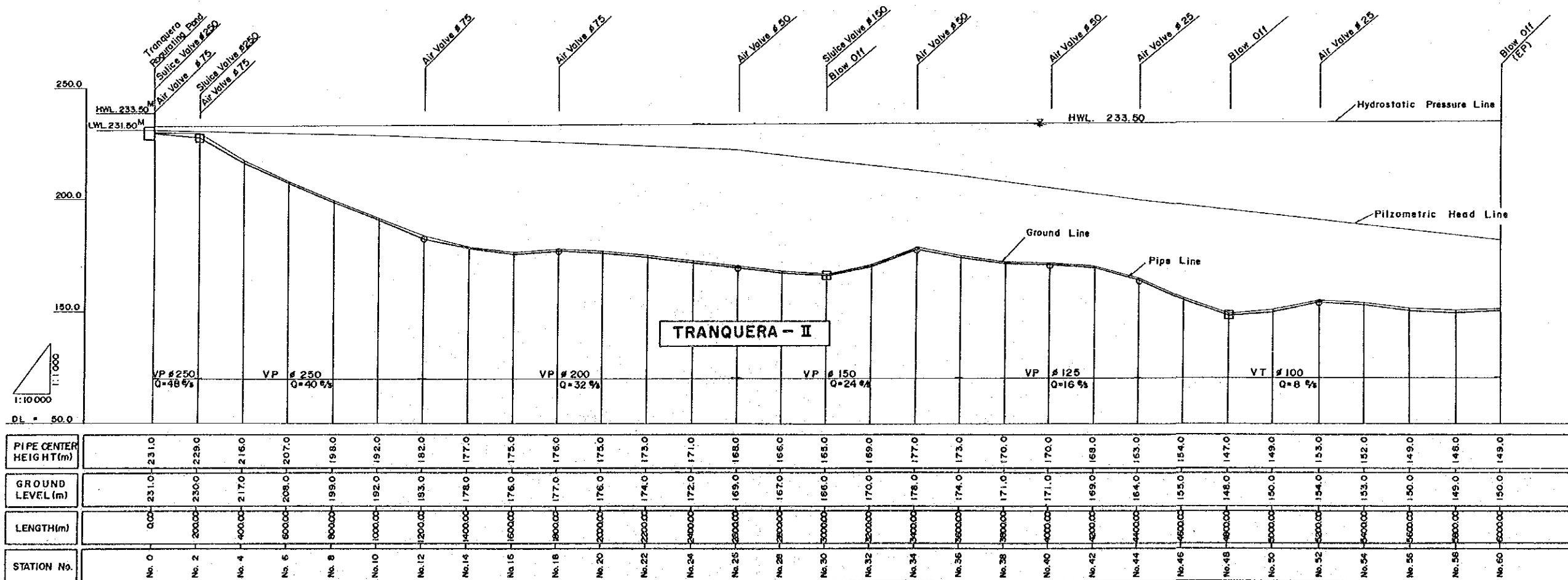
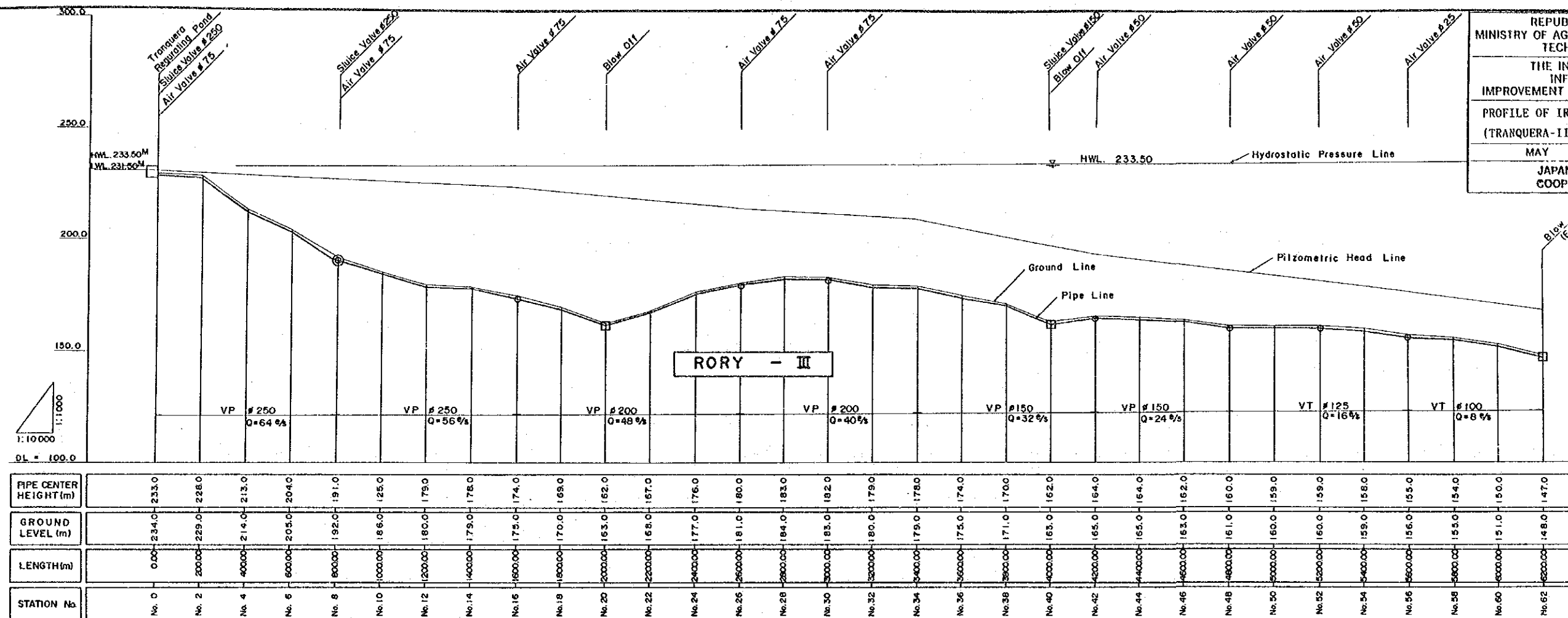


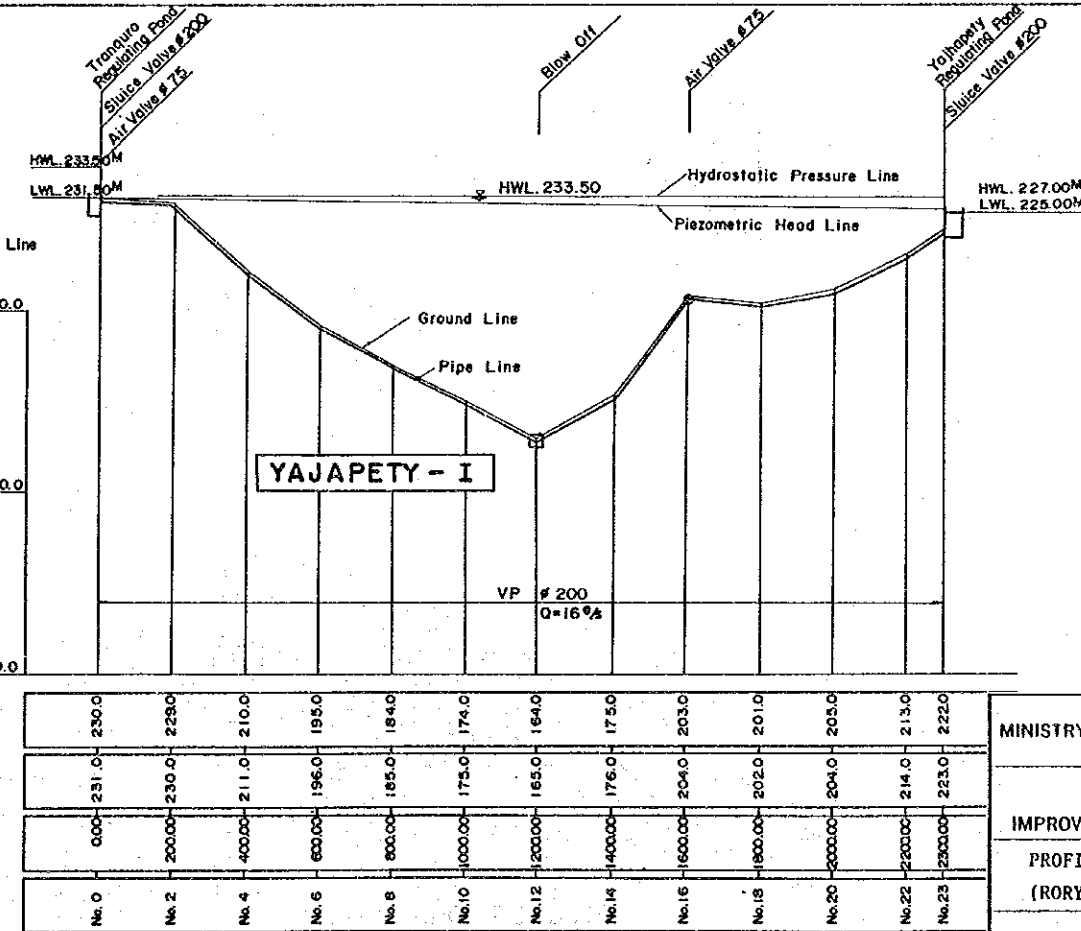
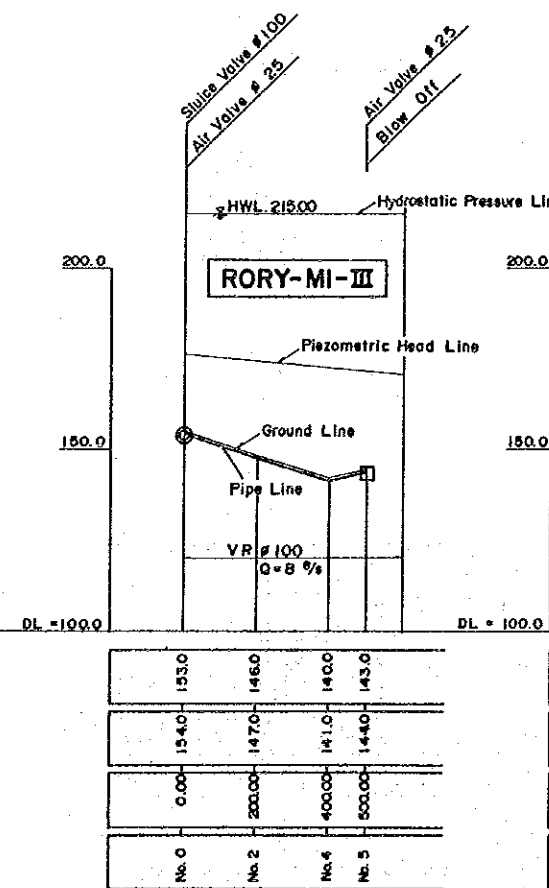
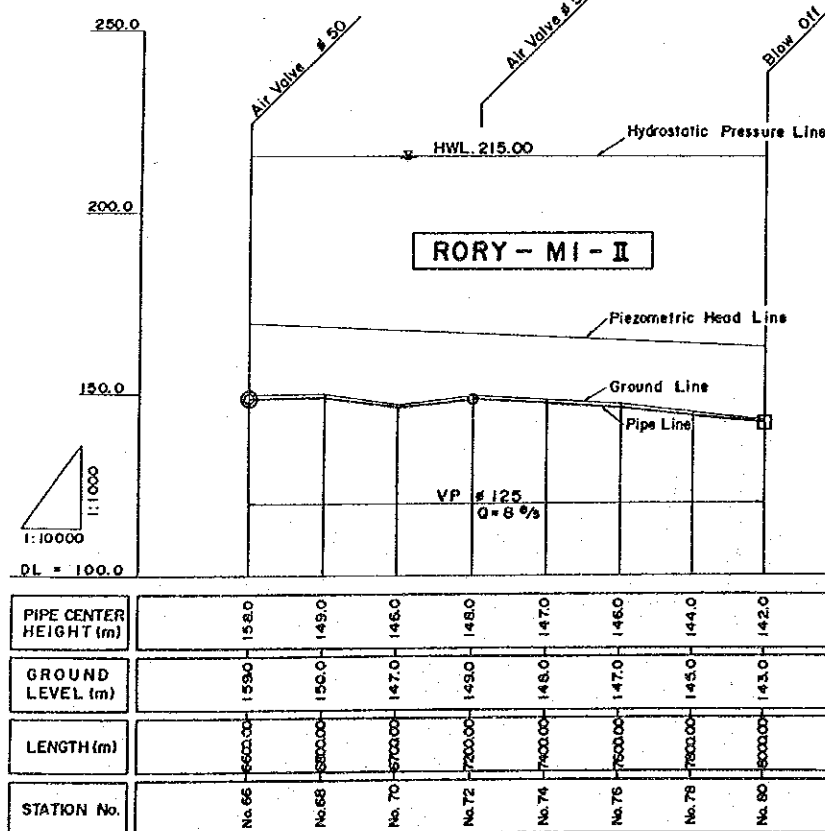
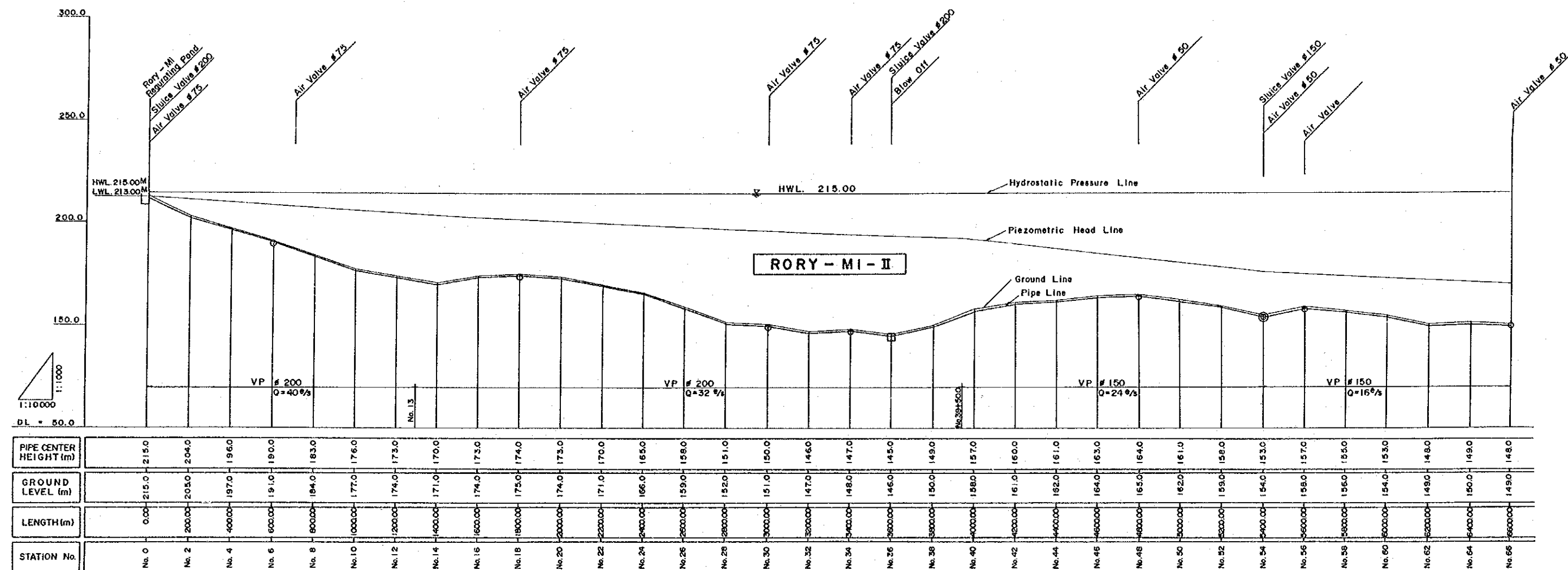
REPUBLIC OF PARAGUAY MINISTRY OF AGRICULTURE AND LIVESTOCK TECHNICAL CABINET	
THE INTEGRATED RURAL INFRASTRUCTURE IMPROVEMENT PROJECT IN LA COLMENA	
RORY-MI WATER SUPPLY PLANT	
MAY 1989	NO. 8
JAPAN INTERNATIONAL COOPERATION AGENCY	

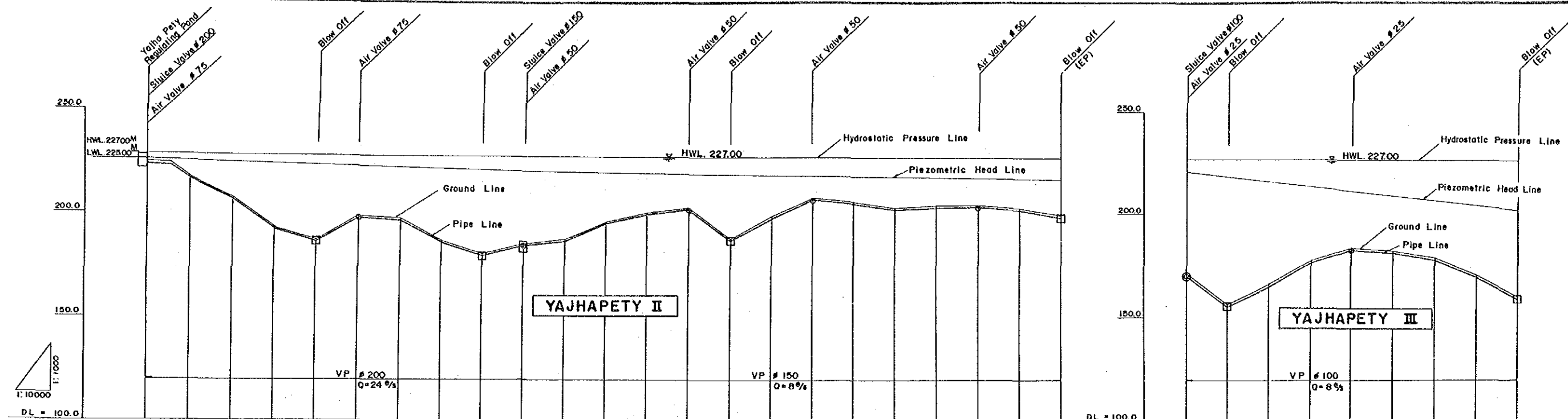


No. 0	0.00	153.0	152.0
No. 2	20.00	190.0	179.0
No. 4	40.00	193.0	192.0
No. 6	60.00	203.0	204.0
No. 8	80.00	214.0	213.0
No. 10	100.00	229.0	228.0
No. 11	110.00		223.0

No. 0	0.00	192.0	191.0
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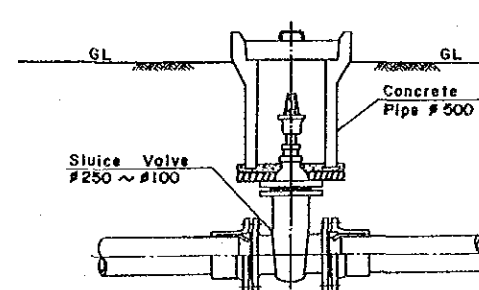
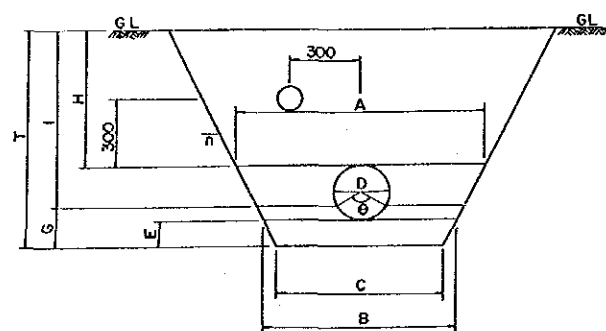




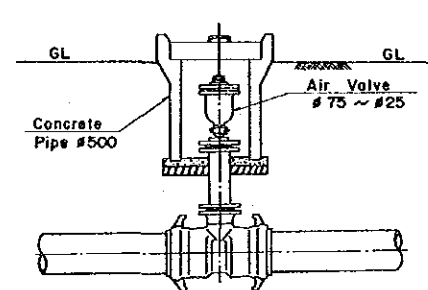


PIPE CENTER HEIGHT (m)	222.0	215.0	205.0	191.0	185.0	197.0	196.0	185.0	179.0	184.0	186.0	195.0	199.0	202.0	187.0	196.0	207.0	205.0	201.0	203.0	204.0	201.0	197.0
GROUND LEVEL (m)	223.0	216.0	206.0	192.0	186.0	198.0	197.0	186.0	180.0	185.0	187.0	196.0	200.0	203.0	188.0	199.0	208.0	206.0	202.0	204.0	204.0	202.0	198.0
LENGTH (m)	0.00	200.00	400.00	600.00	800.00	1000.00	1200.00	1400.00	1600.00	1800.00	2000.00	2200.00	2400.00	2600.00	2800.00	3000.00	3200.00	3400.00	3600.00	3800.00	4000.00	4200.00	4400.00
STATION No.	No. 0	No. 2	No. 4	No. 6	No. 8	No. 10	No. 12	No. 14	No. 16	No. 18	No. 20	No. 22	No. 24	No. 26	No. 28	No. 30	No. 32	No. 34	No. 36	No. 38	No. 40	No. 42	No. 44

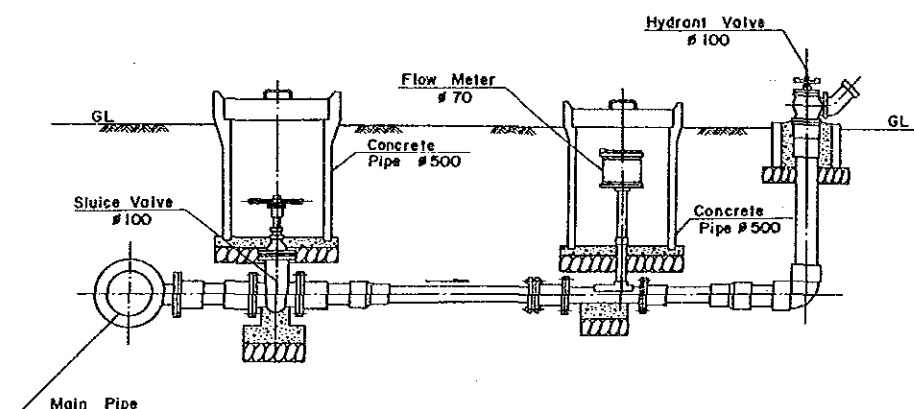
PIPE CENTER HEIGHT (m)	170.0	155.0	165.0	177.0	183.0	181.0	179.0	170.0	160.0
GROUND LEVEL (m)	171.0	156.0	166.0	178.0	184.0	182.0	180.0	171.0	161.0
LENGTH (m)	0.00	200.00	400.00	600.00	800.00	1000.00	1200.00	1400.00	1600.00
STATION No.	No. 0	No. 2	No. 4	No. 6	No. 8	No. 10	No. 12	No. 14	No. 16



SLUICE VALVE



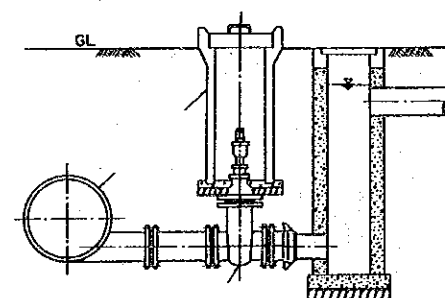
AIR VALVE



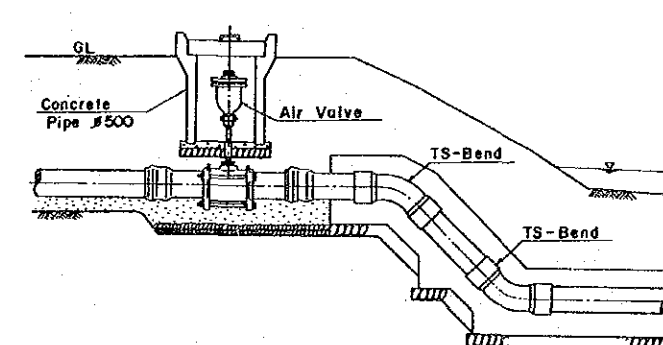
HYDRANT VALVE

(UNIT: mm)

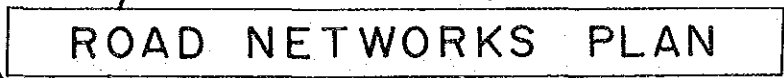
		# 50	# 75	# 100	# 125	# 150	# 200	# 250
A	mm	550	575	600	625	650	700	850
B	mm	500	500	500	500	500	500	600
C	mm	400	400	400	400	400	400	450
D	mm	50	75	100	125	150	200	250
E	mm	100	100	100	100	100	100	150
n		0.5	0.5	0.5	0.5	0.5	0.5	0.5
θ	°	120	120	120	120	120	120	120
H	mm	1000	1000	1000	1000	1000	1000	1000
F	mm	1150	1175	1200	1225	1250	1300	1400
G	mm	113	119	125	131	138	150	213
I	mm	1038	1056	1075	1094	1113	1150	1188
J	mm	1550	1575	1600	1625	1650	1700	1750

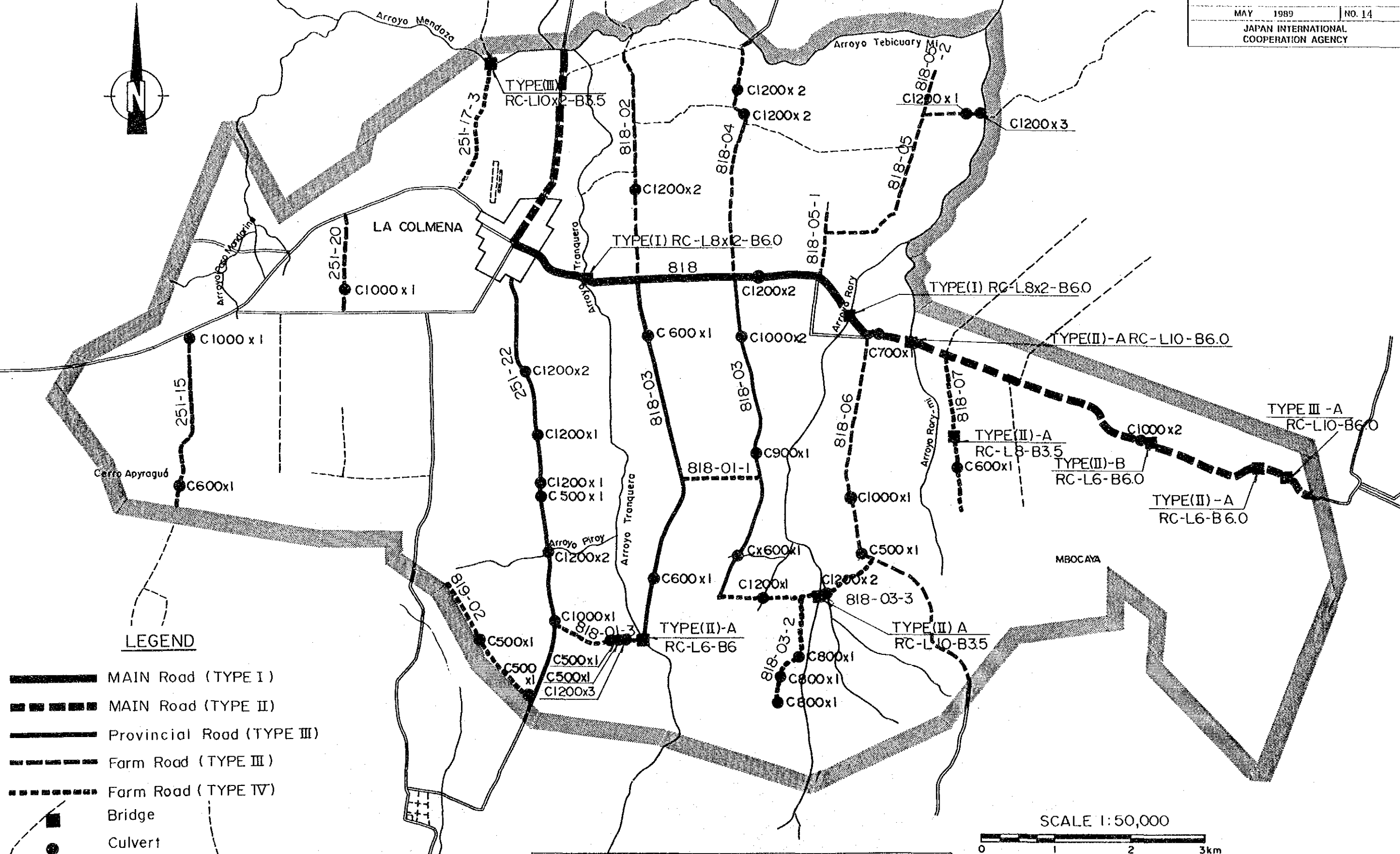
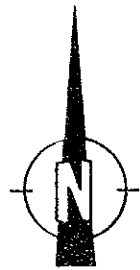


BLOW OFF VALVE



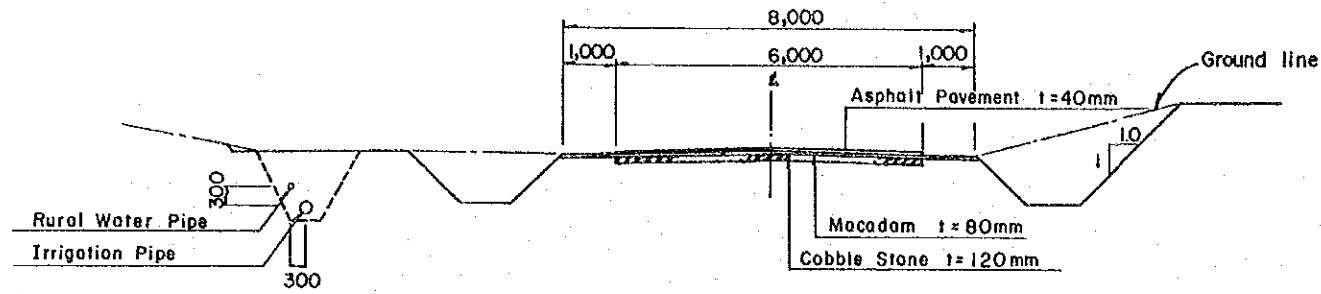
RIVER CROSS SECTION



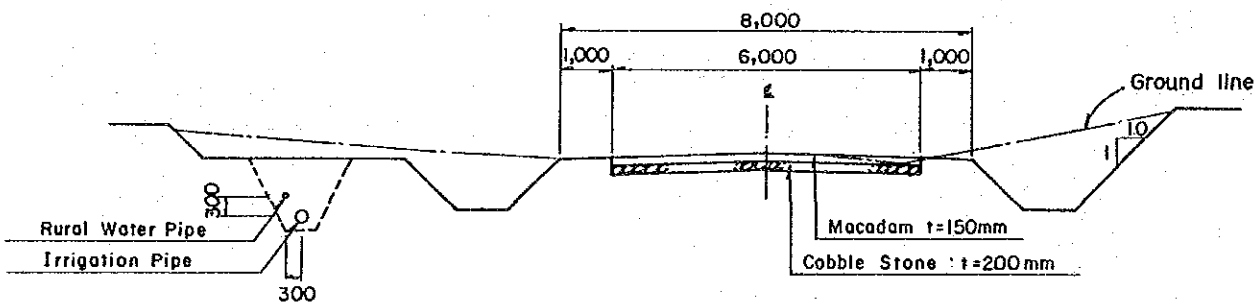


LOCATION OF BRIDGE & CULVERT

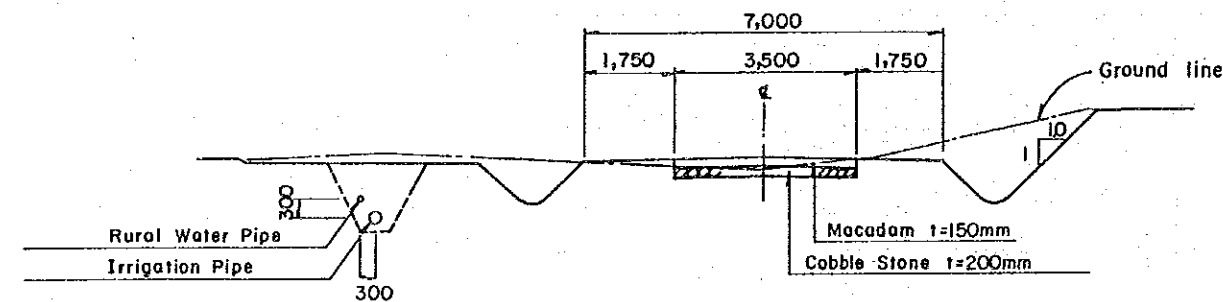
TYPICAL ROAD CROSS SECTION



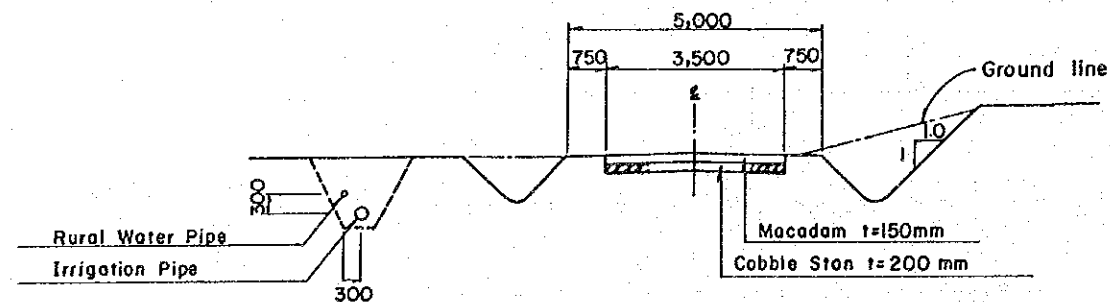
MAIN ROAD (TYPE-I)



MAIN ROAD (TYPE-II)

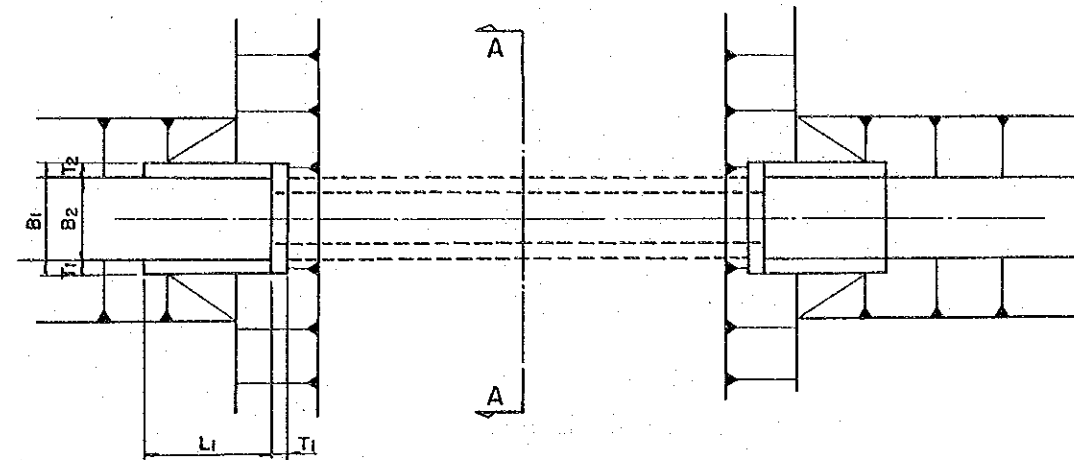


PROVINCIAL ROAD (TYPE-III)
FARM ROAD-MAIN (TYPE-III)

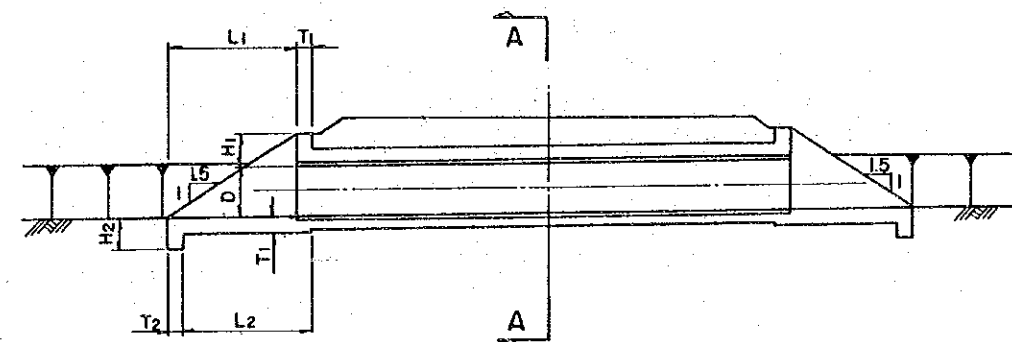


FARM ROAD-SECONDARY (TYPE-IV)

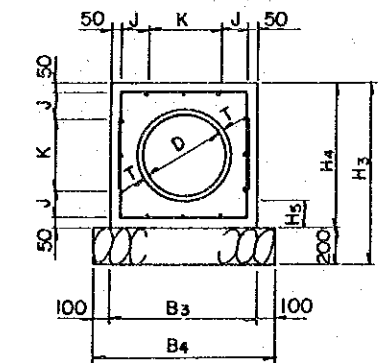
CULVERT



PLAN



PROFILE



SECTION A-A

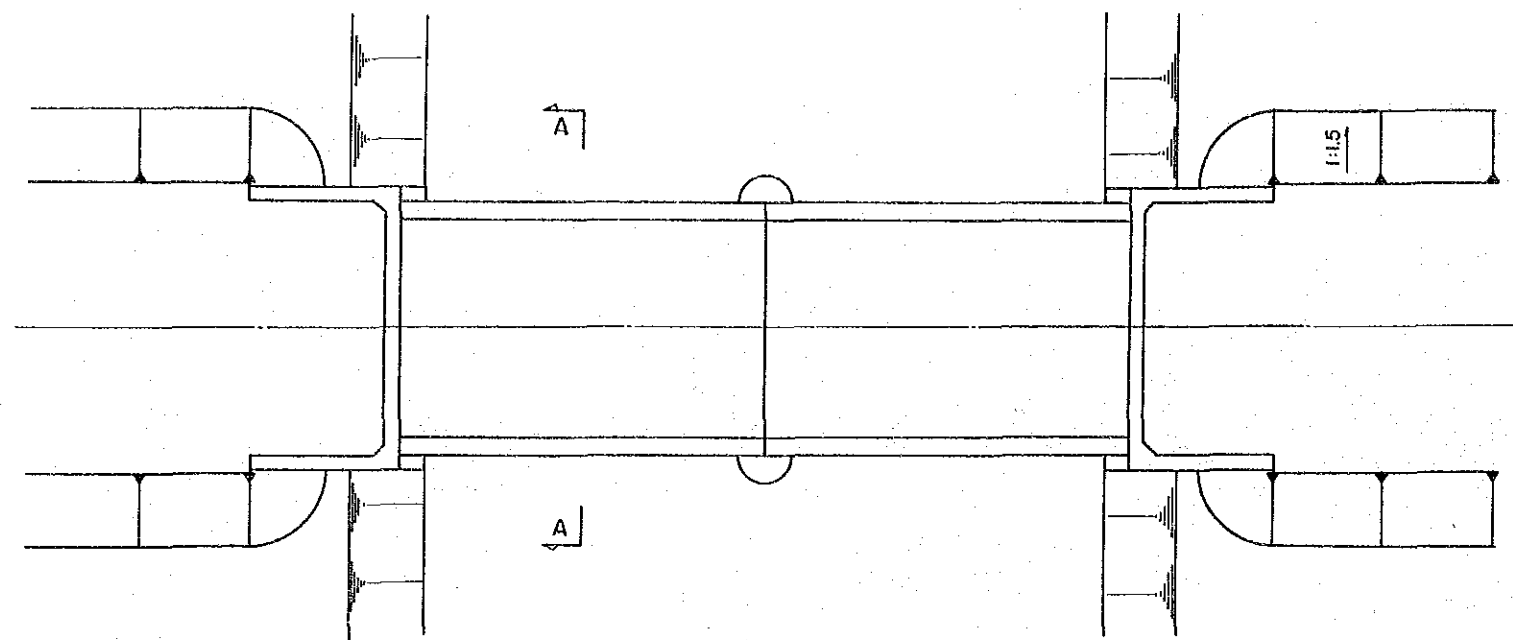
DIMENSION OF CULVERT

(UNIT: mm)

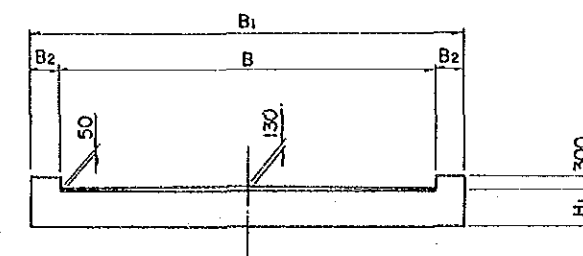
	D	T ₃	B ₃	B ₄	H ₃	H ₄	H ₅	J	K
C-500	500	42	900	1100	1050	900	150	-	800
C-600	600	50	1000	1200	1200	1000	150	150	600
C-700	700	58	1220	1420	1420	1220	200	160	800
C-800	800	66	1340	1540	1540	1340	200	120	1000
C-900	900	75	1460	1660	1660	1460	200	180	1000
C-1000	1000	82	1580	1780	1780	1580	200	140	1200
C-1200	1200	88	1780	1980	1980	1780	200	240	1200

(UNIT: mm)

	D	B ₁	B ₂	L ₁	L ₂	H ₁	H ₂	T ₁	T ₂
C-500	500	1600	1100	1500	1200	500	800	250	300
C-600	600	1700	1200	1650	1360	500	800	250	300
C-700	700	1800	1300	1800	1500	500	800	250	300
C-800	800	1900	1400	1950	1650	500	800	250	300
C-900	900	2100	1500	2100	1800	500	800	300	300
C-1000	1000	2200	1600	2250	1850	500	800	300	400
C-1200	1200	2440	1800	2550	2150	500	900	300	400



PLAN

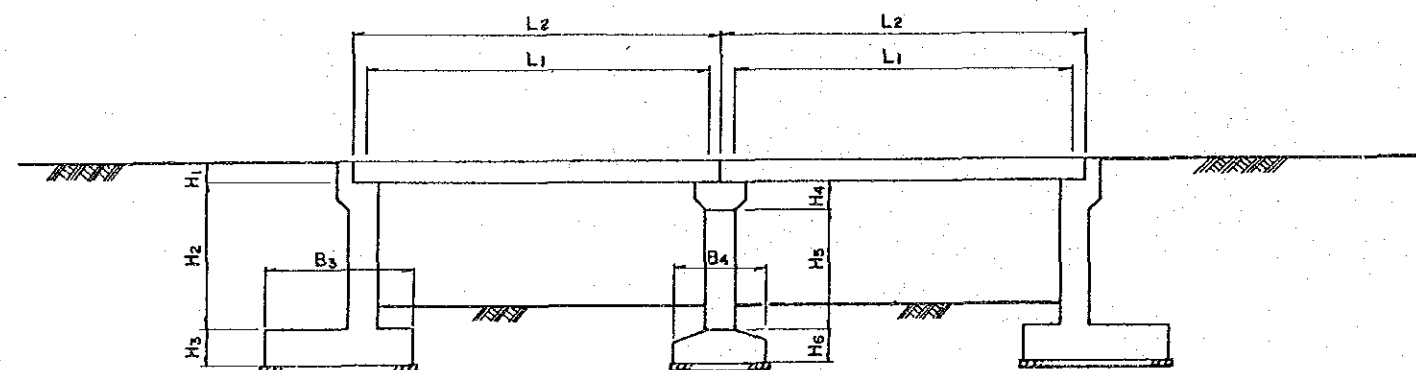


SECTION A-A

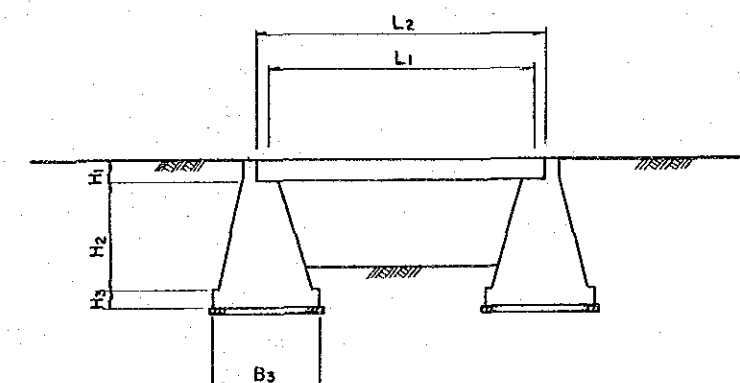
DIMENSIONS FOR BRIDGE

(UNIT: mm)

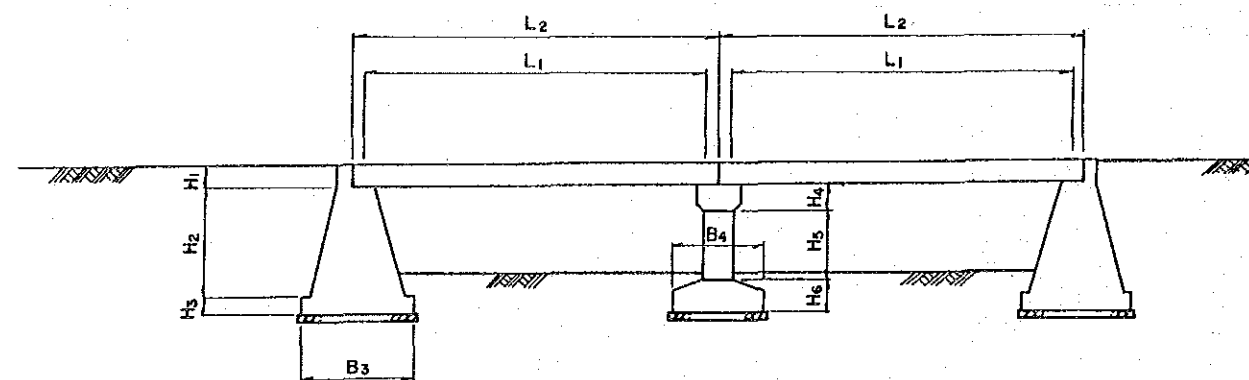
TYPE	L ₁	L ₂	B	B ₁	B ₂	H ₁
RC-L4-B 3.5	4.000	4.330	3.500	4.500	0.500	0.300
RC-L4-B 6.0	4.000	4.330	6.000	7.000	0.500	0.300
RC-L6-B 3.5	6.000	6.430	3.500	4.500	0.500	0.430
RC-L6-B 6.0	6.000	6.430	6.000	7.000	0.500	0.430
RC-L8-B 3.5	8.000	8.530	3.500	4.500	0.500	0.530
RC-L8-B 6.0	8.000	8.530	6.000	7.000	0.500	0.530
RC-L10-B 3.5	10.000	10.640	3.500	4.500	0.500	0.640
RC-L10-B 6.0	10.000	10.640	6.000	7.000	0.500	0.640



TYPE (I)



TYPE (II) A,B



TYPE (III)

DIMENSIONS FOR ABUTMENT

(UNIT: mm)

	H ₂	H ₃	B ₃	H ₄	H ₅	H ₆	B ₄
TYPE (I)	5.000	1.000	4.000	800	4.000	900	2.500
TYPE (II)-A	3.000	500	3.000	—	—	—	—
TYPE (II)-B	2.000	500	2.500	—	—	—	—
TYPE (III)	2.000	500	2.500	800	1.300	900	2.000

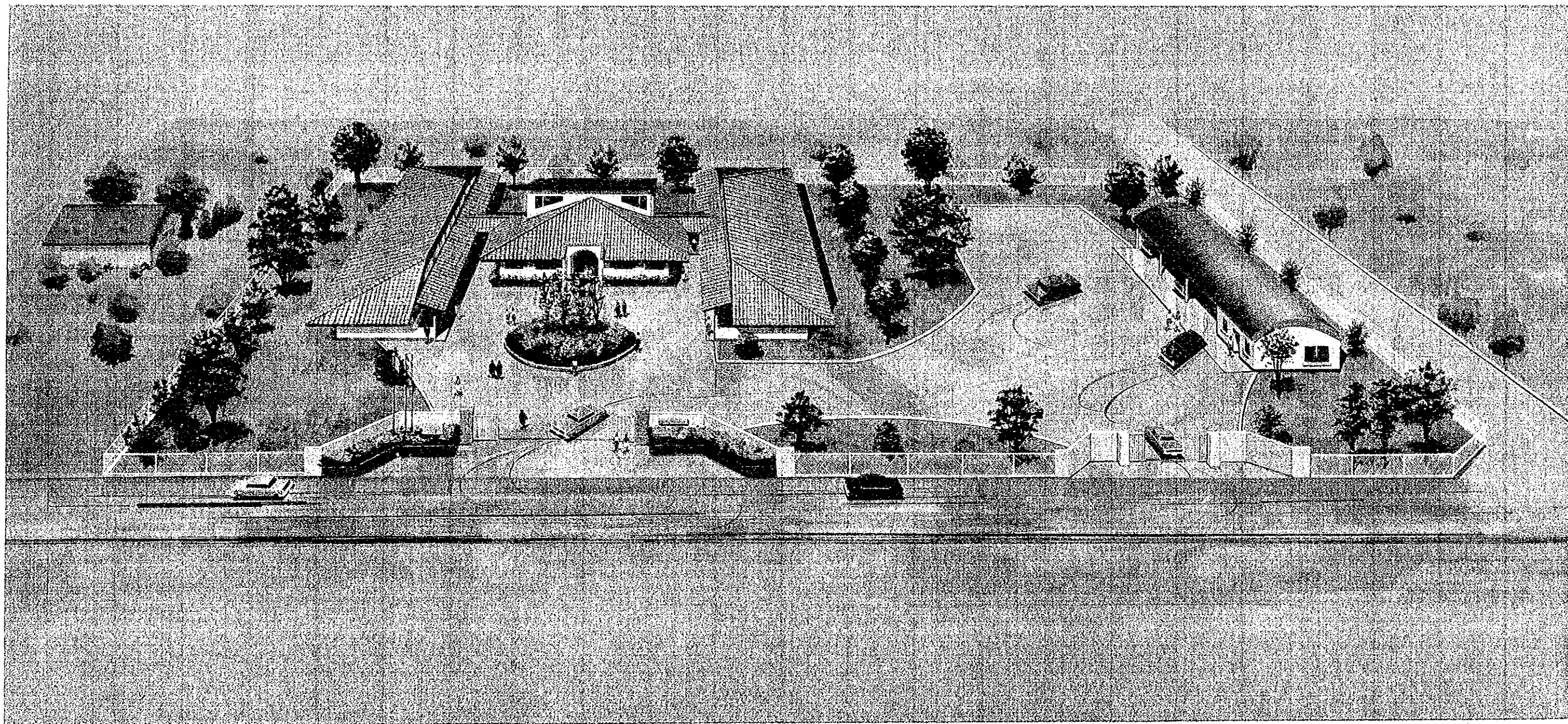
REPUBLIC OF PARAGUAY
MINISTRY OF AGRICULTURE AND LIVESTOCK
TECHNICAL CABINET

THE INTEGRATED RURAL
INFRASTRUCTURE
IMPROVEMENT PROJECT IN LA COLMENA

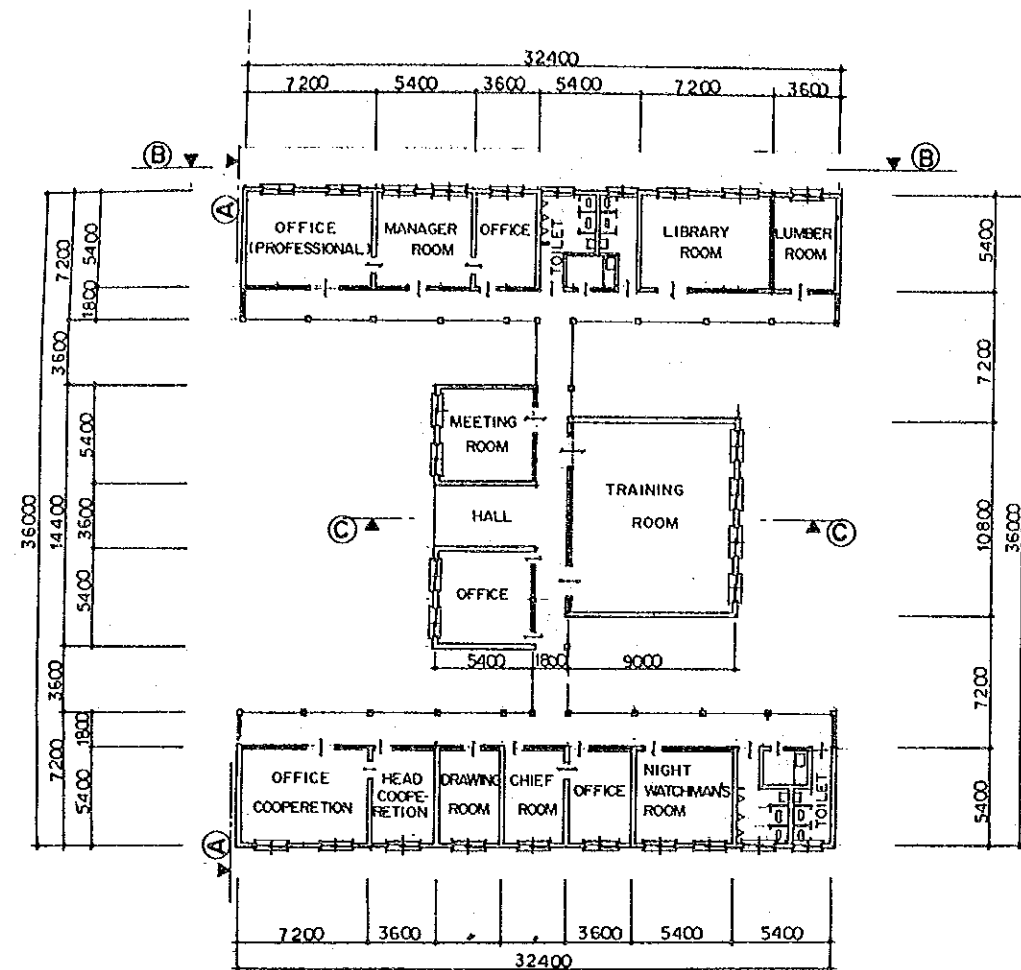
BRIDGE TYPE

MAY 1989 NO. 16

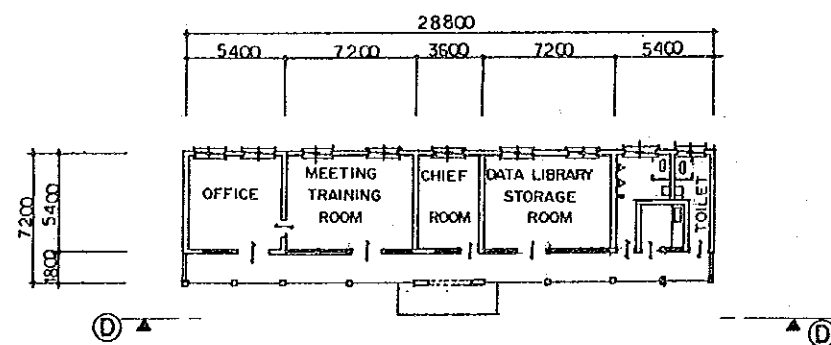
JAPAN INTERNATIONAL
COOPERATION AGENCY



REPUBLIC OF PARAGUAY	
MINISTRY OF AGRICULTURE AND LIVESTOCK	
TECHNICAL CABINET	
THE INTEGRATED RURAL	
INFRASTRUCTURE	
IMPROVEMENT PROJECT IN LA COLMENA	
GENERAL PLAN OF EXTENSION &	
ADMINISTRATION CENTER	
MAY 1989	NO. 17
JAPAN INTERNATIONAL	
COOPERATION AGENCY	



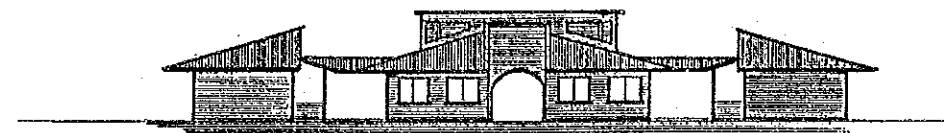
EXTENSION & ADMINISTRATION CENTER



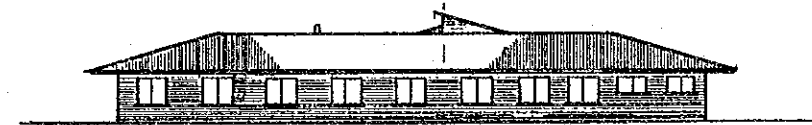
SUB - SENTER



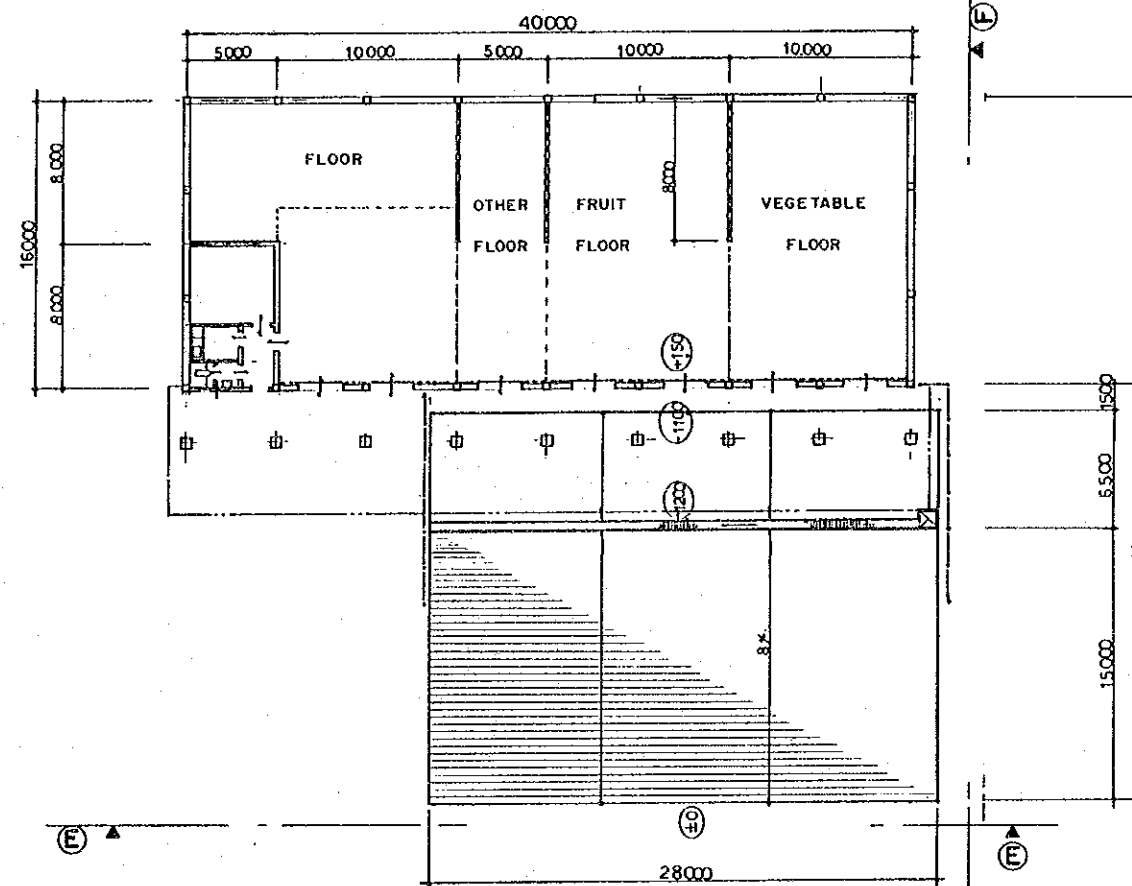
SECTION D - D



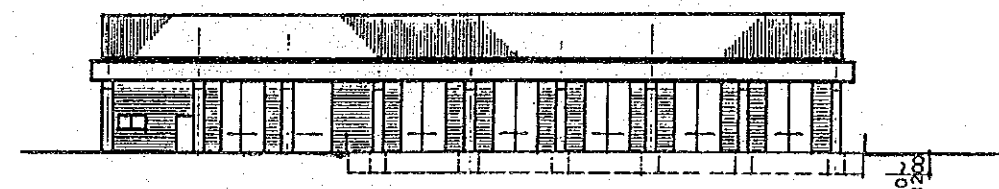
SECTION A - A



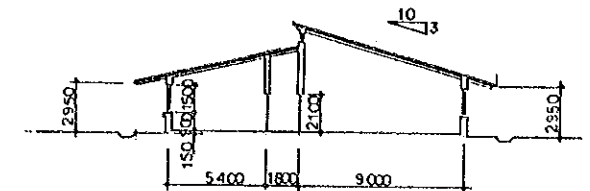
SECTION B - B



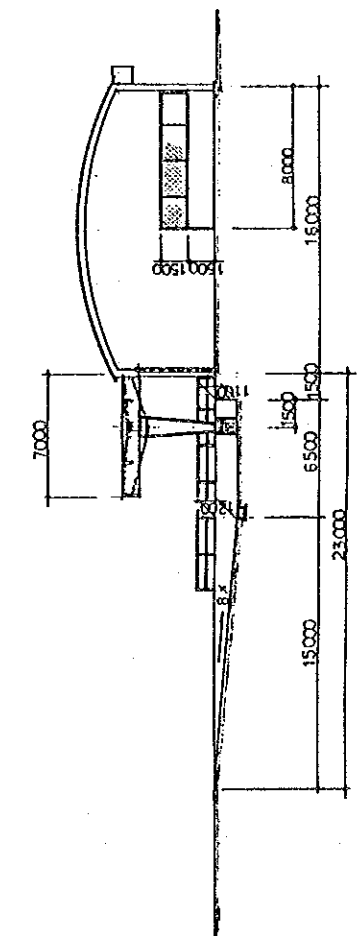
COLLECTING & SHIPMENT CENTER



SECTION E - E



SECTION C - C



SECTION F - F

REPUBLIC OF PARAGUAY	
MINISTRY OF AGRICULTURE AND LIVESTOCK	
TECHNICAL CABINET	
THE INTEGRATED RURAL	
INFRASTRUCTURE	
IMPROVEMENT PROJECT IN LA COLMENA	
BUILDING STRUCTURE	
MAY 1989	NO. 18
JAPAN INTERNATIONAL	
COOPERATION AGENCY	

JICA