

## Chapter 4 Project Evaluation and Recommendation

### 4-1 Project Effect

This Project aims at the development and raise of the living standard in the Communal Land, which are also promoted by the Government of Zimbabwe. In particular, the development of the Communal Land situated in the marginal area of the country, where people are suffering from unstable rain fed agriculture, is the most urgent subject by which the Government is confronted.

The implementation of this irrigation project in Nyakomba Ward which is the typical Communal Land contributes to leveling up of the living standard of indigenous people, by means of the construction of the irrigation facilities, stable supply of food and water decreasing women's heavy burden.

Therefore, a huge benefit is expected by means of the implementation of the Project, and the Project will contribute to the improvement of BHN(Basic Human Needs) of the farmers in the proposed Communal Land, so it is judged that the implementation of the Project under Japan's Grant Aid is appropriate.

The effect of this Project is summarized as follows.

- : Through the introduction of irrigation, the yield of maize will increase, thus, staple food can be secured steadily and cash crops are possible to be introduced. Hence, the increase of farmers' income and leveling up of the living standard are expected. The beneficiaries of the Project living in the area are listed below.

Item	Block D	Block A	Block E
Beneficiaries (The number of house hold)	147	131	121
Beneficiaries (Population)	846	683	758

- : As well as already implemented Block B and C in Phase I, AGRITEX can provide the benefited farmers with training after introduction of irrigation. AGRITEX is planning to conduct study and training for the farmers using the project management facility constructed in Phase I. Its program is under preparation and the necessary budget is to be secured.

As these support by the Government is expected, irrigated agriculture of the whole year

will be realized, and double or triple cropping can be expected to take root smoothly.

- : By means of the development of farm roads in the total area, the access from fields and villages to the main district road is becoming simple and easier, thus, regional transportation system will be far improved.
- : Farmers can draw water for their domestic use from the farm pond or irrigation canals adjacent to their residences. The volume of water for domestic use is estimated as 650 l/family/day (Suppose 6 people and 5 cattle per family: 300 liters are for the people, in which 90 liters for eating and drinking). The pumping capacity includes this volume of water, therefore, women are released from the heavy work of drawing water from the far river. However, from the point of view of public health, it is necessary to lead farmers to use water only after boiling.

Agriculture is the basic industry in the Communal Lands, however, improvement of agricultural conditions including social infrastructure has been delayed. Consequently, the present condition shows that the farmers are forced to carry out agriculture with low productivity in this region. The Government of Zimbabwe has been trying to construct irrigation facilities and to give a lead to farmers to improve such poor conditions, but the progress is limited due to the tight financial situation of the country.

The implementation of the Project continued from phase 1 is expected to realize the improvement of living standards in the Nyakomba Ward, which is one of the typical Communal Lands, by means of 1) increasing income, 2) improvement of employment opportunities, 3) a stable food supply and 4) reduction of the labour burden of women and children by providing a constant water supply that is derived from the construction of the irrigation facilities. Moreover, its implementation is expected to have beneficial effects on the adjacent areas.

## 4-2 Recommendation

As mentioned above, the Project will contribute to the increase of agricultural production, leveling up of living standard and the improvement of BHN of the farmers in the proposed Communal Land. Concerning the operation and maintenance of the Project, the responsible organization of Zimbabwe has sufficient personnel and knowledge. Moreover, seeing the successful example of phase I, the expectation of the farmers toward the irrigated agriculture is so high, thus, as for the operation and maintenance after construction, there are expected to be no problems.

Prior to the commencement of the Project, the Government of Zimbabwe is requested to understand well the system of Japan's Grant Aid and the content of this Project and to comply with formalities required by the authorities to avoid any interference with the Project. It is also requested during the construction, to establish a proper organization and to execute the obligations to be done by the Government of Zimbabwe. After the construction, long lasting follow-up to the Project by the Government is also requested.

Thus, it is considered, that if the following points were to be improved and maintained, the Project will be carried out more smoothly and effectively.

### (1) Securing of budget for the Project

Securing of the budget for the staffs of AGRITEX and DWD and for management and operation & maintenance costs during the implementation stage and execution stage of the Project is necessary.

### (2) Establishment of farmers' organization and strengthening its activity

After the completion of the construction, the beneficiaries in each block are expected to make an organization for the operation and maintenance of the Project. To make this organization more active and efficient, cooperation and assistance by AGRITEX are essential.

### (3) Establishment of the supporting system for the irrigated farming

Farmers in the area have no experience of irrigated farming, so they have little know-how regarding effective timing and method of irrigation, proper crops and the

management of the crops under irrigation. Therefore, like in block C, supporting and guidance by AGRITEX are absolutely necessary.

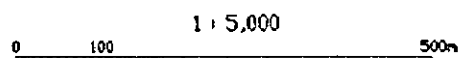
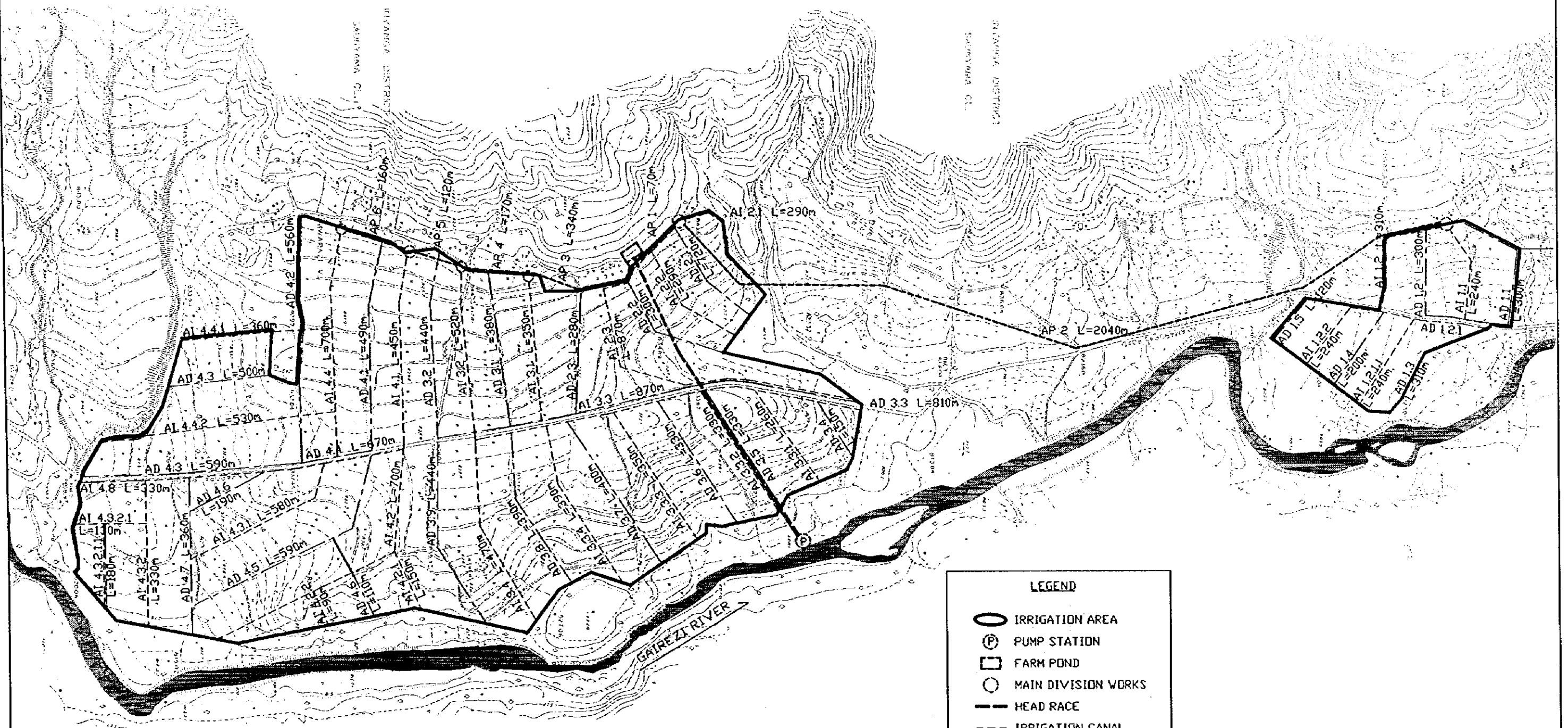
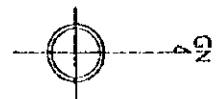
## **【DRAWINGS】**

[Drawings]

List of Drawings

No.	Title	No.	Title
	<b>[Block A] A=115ha</b>	28	FARM POND : DETAILS
1	GENERAL PLAN	29	IRRIGATION FACILITIES (1/3)
2	PUMP STATION : GENERAL PLAN	30	" (2/3)
3	" : LONG SECTION	31	" (3/3)
4	" : CROSS SECTION	32	DRAINAGE FACILITIES (1/2)
5	" : FACILITY PLAN	33	" (2/2)
6	" : FACILITY SECTION	34	FARM ROAD : TYPICAL SECTION
7	" : PUMP ROOM PLAN	35	TEMPORALY STORAGE FACILITY (1/2)
8	" : PUMP ROOM SECTION	36	" (2/2)
9	HEAD RACE : LONG SECTION		<b>[Block E] A=94ha</b>
10	FARM POND : PLAN AND SECTION	37	GENERAL PLAN
11	" : DETAILS	38	PUMP STATION : GENERAL PLAN
12	IRRIGATION FACILITIES (1/3)	39	" : LONG SECTION
13	" (2/3)	40	" : CROSS SECTION
14	" (3/3)	41	" : FACILITY PLAN
15	DRAINAGE FACILITIES (1/2)	42	" : FACILITY SECTION
16	" (2/2)	43	" : PUMP ROOM PLAN
17	FARM ROAD : TYPICAL SECTION	44	" : PUMP ROOM SECTION
	<b>[Block D] A=203ha</b>	45	HEAD RACE : LONG SECTION
18	GENERAL PLAN	46	FARM POND : PLAN AND SECTION
19	PUMP STATION : GENERAL PLAN	47	" : DETAILS
20	" : LONG SECTION	48	IRRIGATION FACILITIES (1/3)
21	" : CROSS SECTION	49	" (2/3)
22	" : FACILITY PLAN	50	" (3/3)
23	" : FACILITY SECTION	51	DRAINAGE FACILITIES (1/2)
24	" : PUMP ROOM PLAN	52	" (2/2)
25	" : PUMP ROOM SECTION	53	FARM ROAD : TYPICAL SECTION
26	HEAD RACE : LONG SECTION		
27	FARM POND : PLAN AND SECTION		





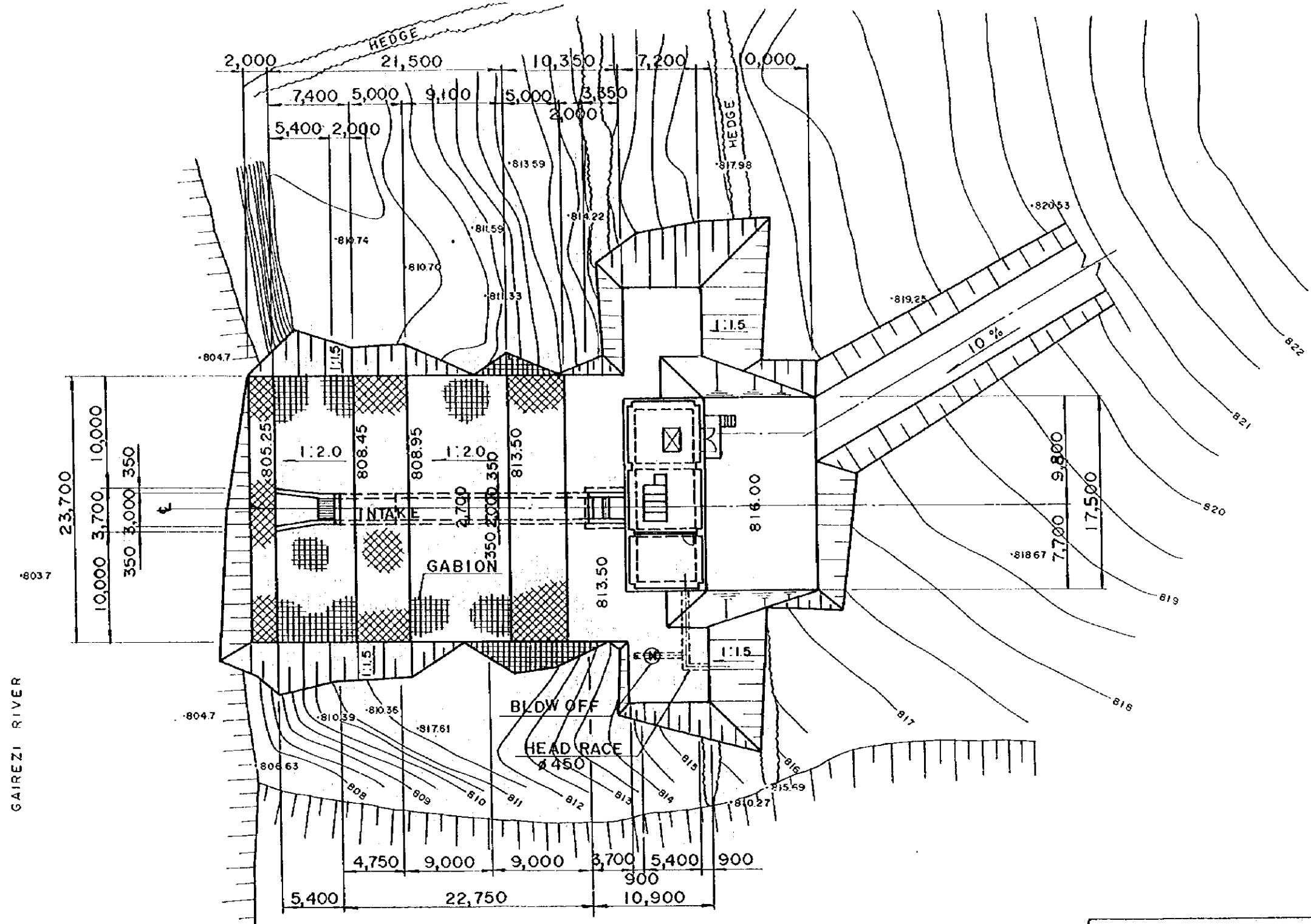
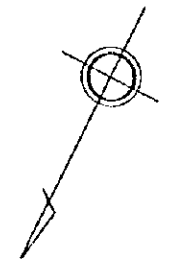
**NOTATION**  
 COORDINATES - THE COORDINATE SYSTEM IS ARBITRARY  
 SOURCES - AERIAL PHOTOGRAPHS 1:25000 IN 1986  
 CONTOUR - GENTLY SLOPING AREA-1METRE  
 STEEP MOUNTAINOUS AREA-5METRES

LEGEND	
	IRRIGATION AREA
	PUMP STATION
	FARM POND
	MAIN DIVISION WORKS
	HEAD RACE
	IRRIGATION CANAL
	DRAINAGE CANAL
	FARM ROAD
	AP DISTRIBUTION PIPE LINE
	AI BLOCK A IRRIGATION CANAL
	AD BLOCK A DRAINAGE CANAL

THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)		
GENERAL PLAN BLOCK A (115 ha)		
Date	No.	1
JAPAN INTERNATIONAL COOPERATION AGENCY		

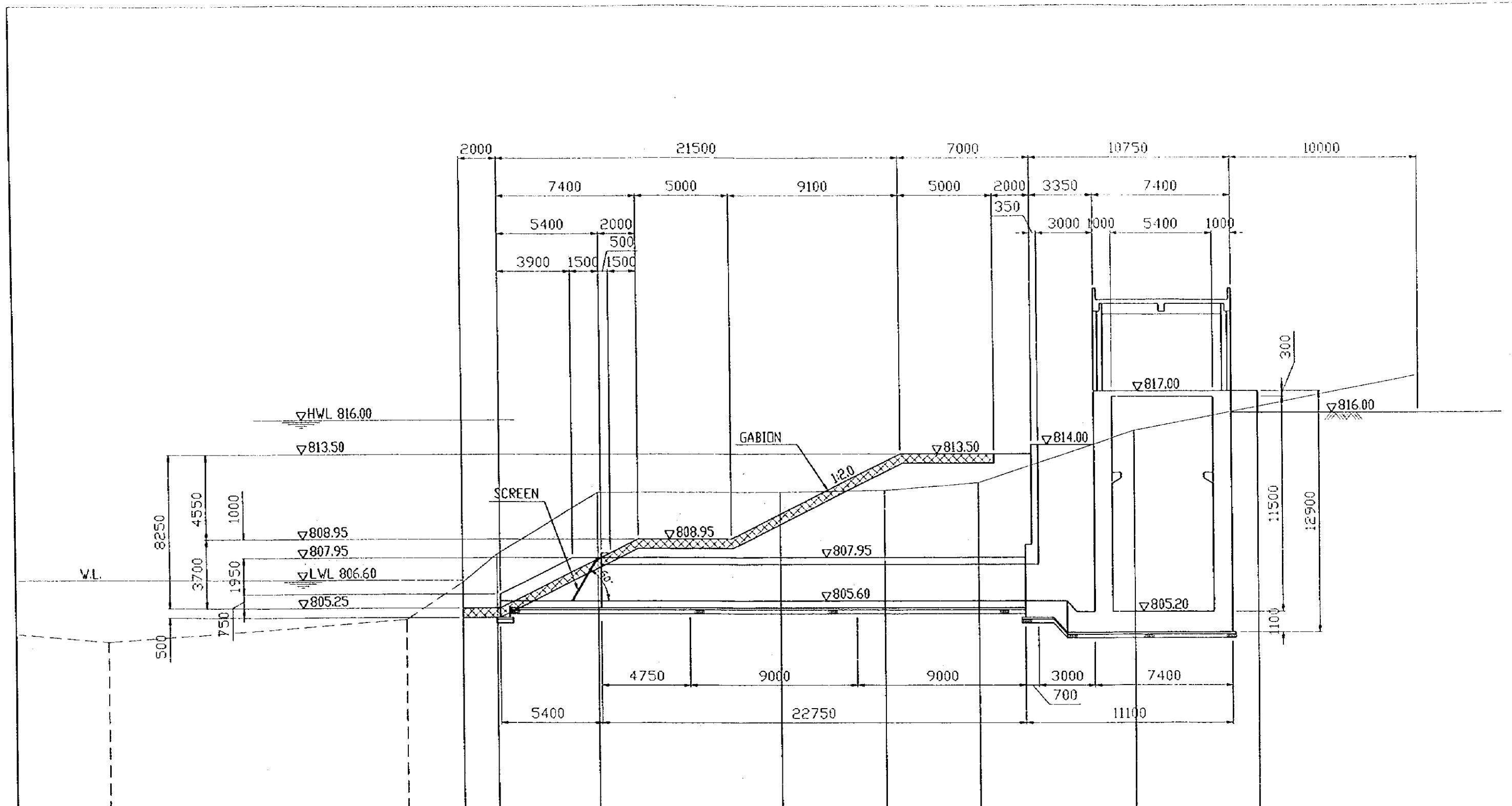


# PUMP STATION A



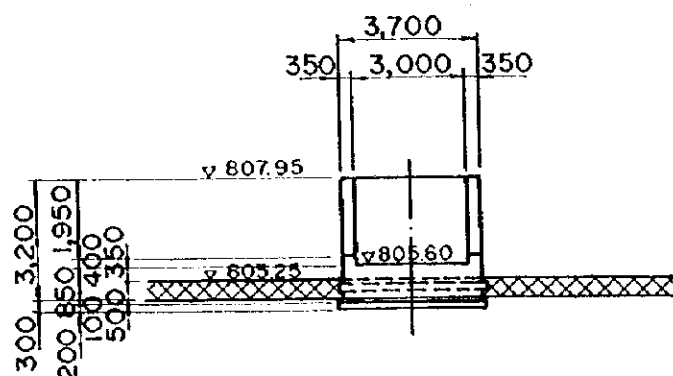
**GENERAL PLAN**  
S=1:200

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE II)			
<b>PUMP STATION A GENERAL PLAN</b>			
Date		No.	2
JAPAN INTERNATIONAL COOPERATION AGENCY			

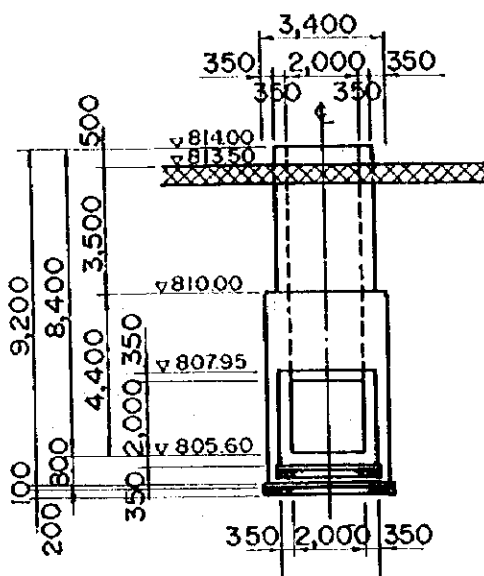


THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT(PHASE 2)			
PUMP STATION A LONG SECTION			
Date		No.	3
JAPAN INTERNATIONAL COOPERATION AGENCY			

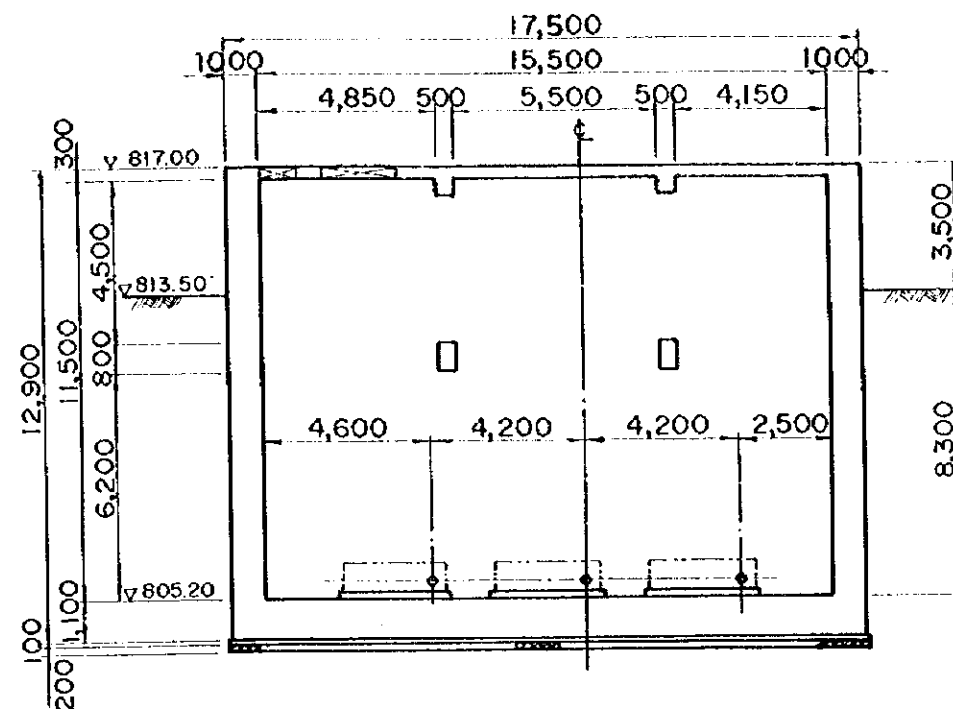
# PUMP STATION A SECTION S=1:100



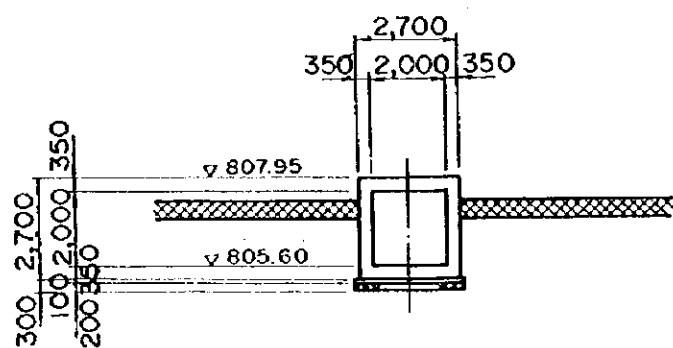
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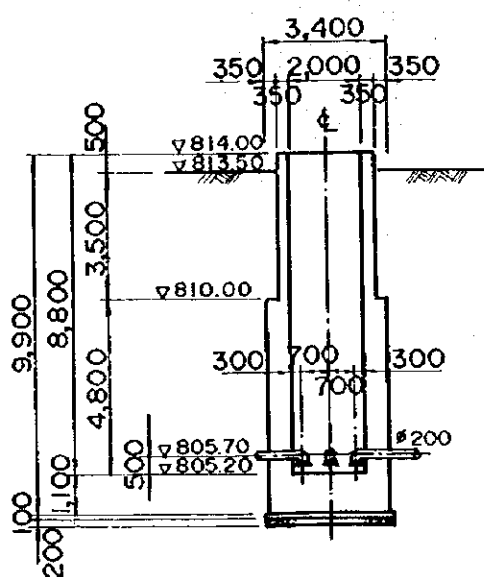
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5-5

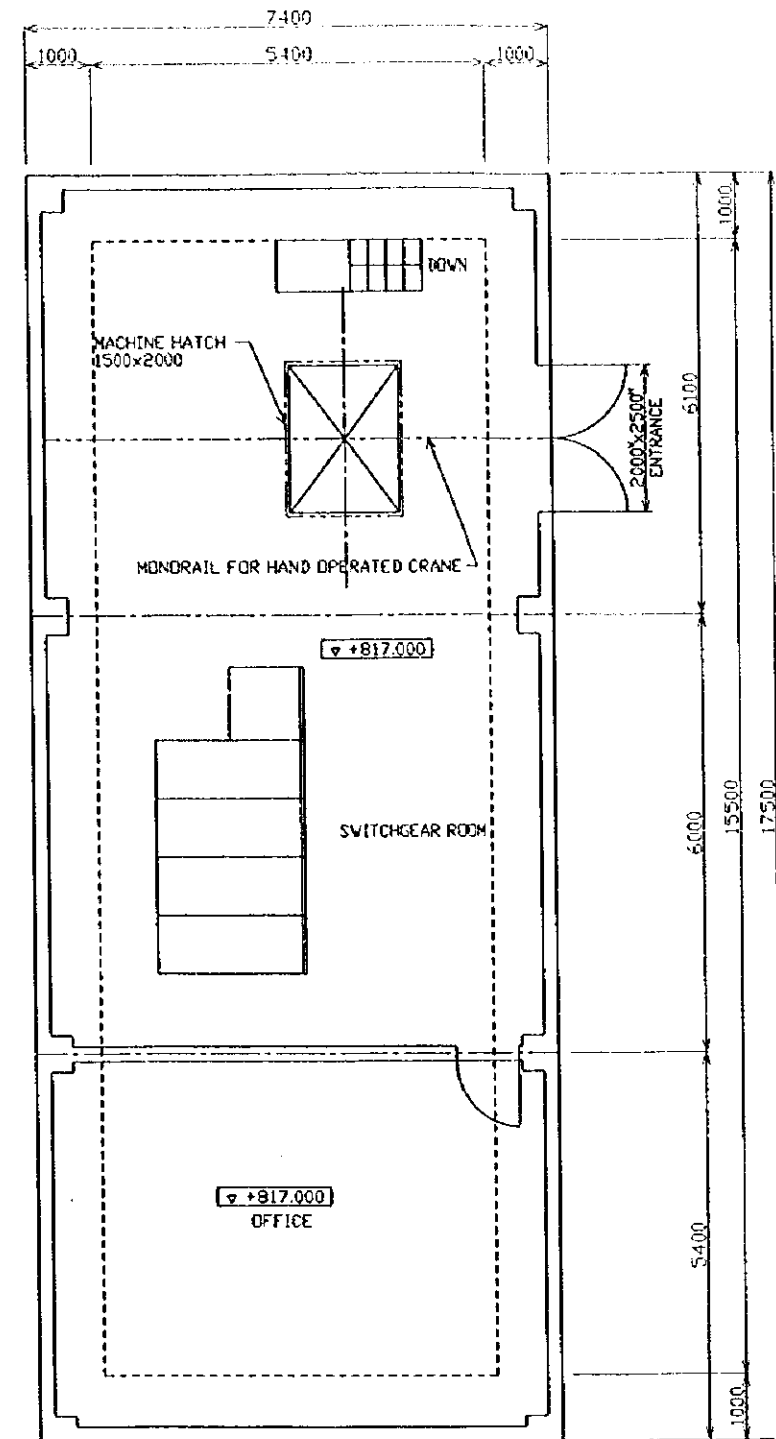
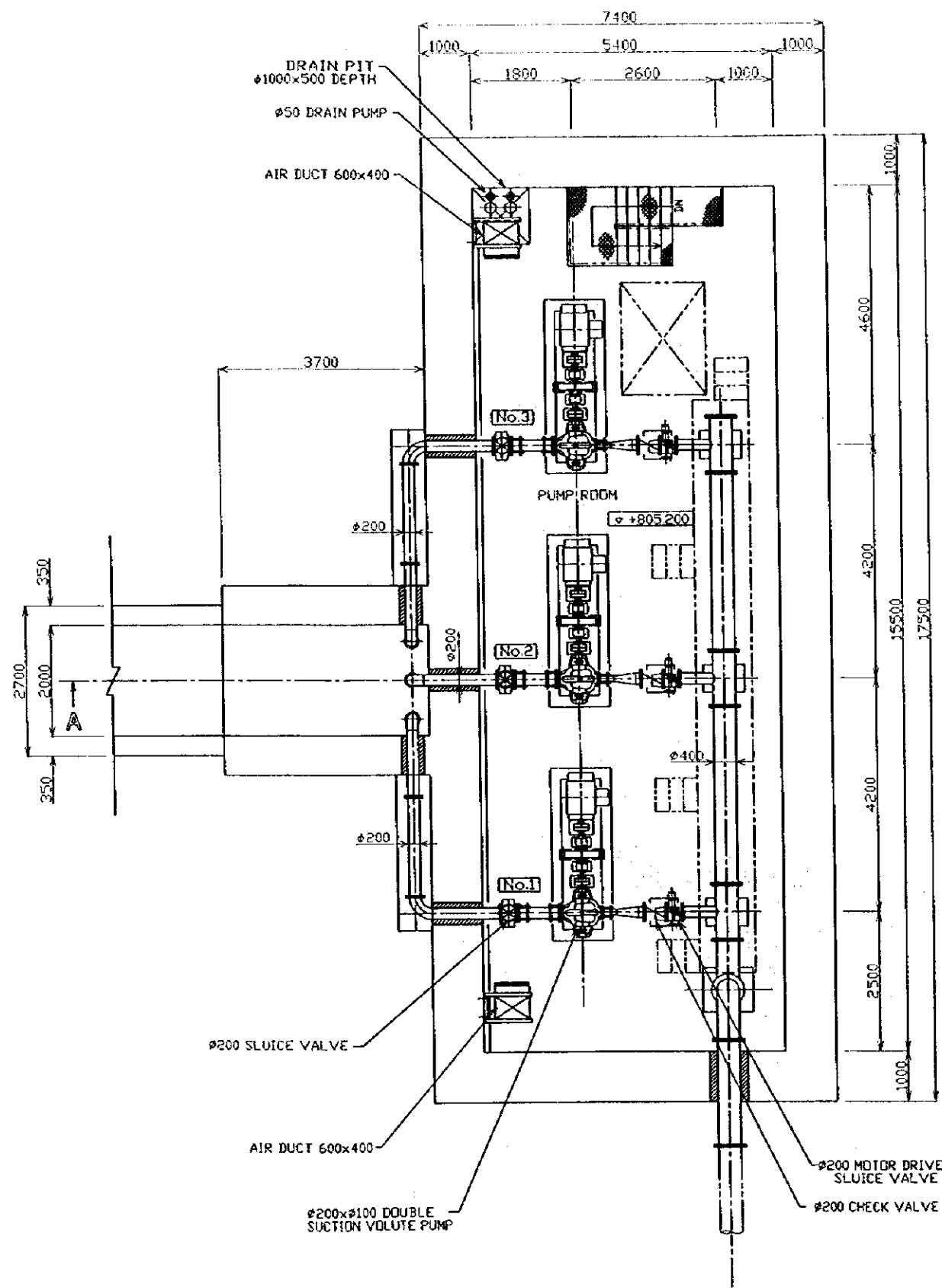


2-2

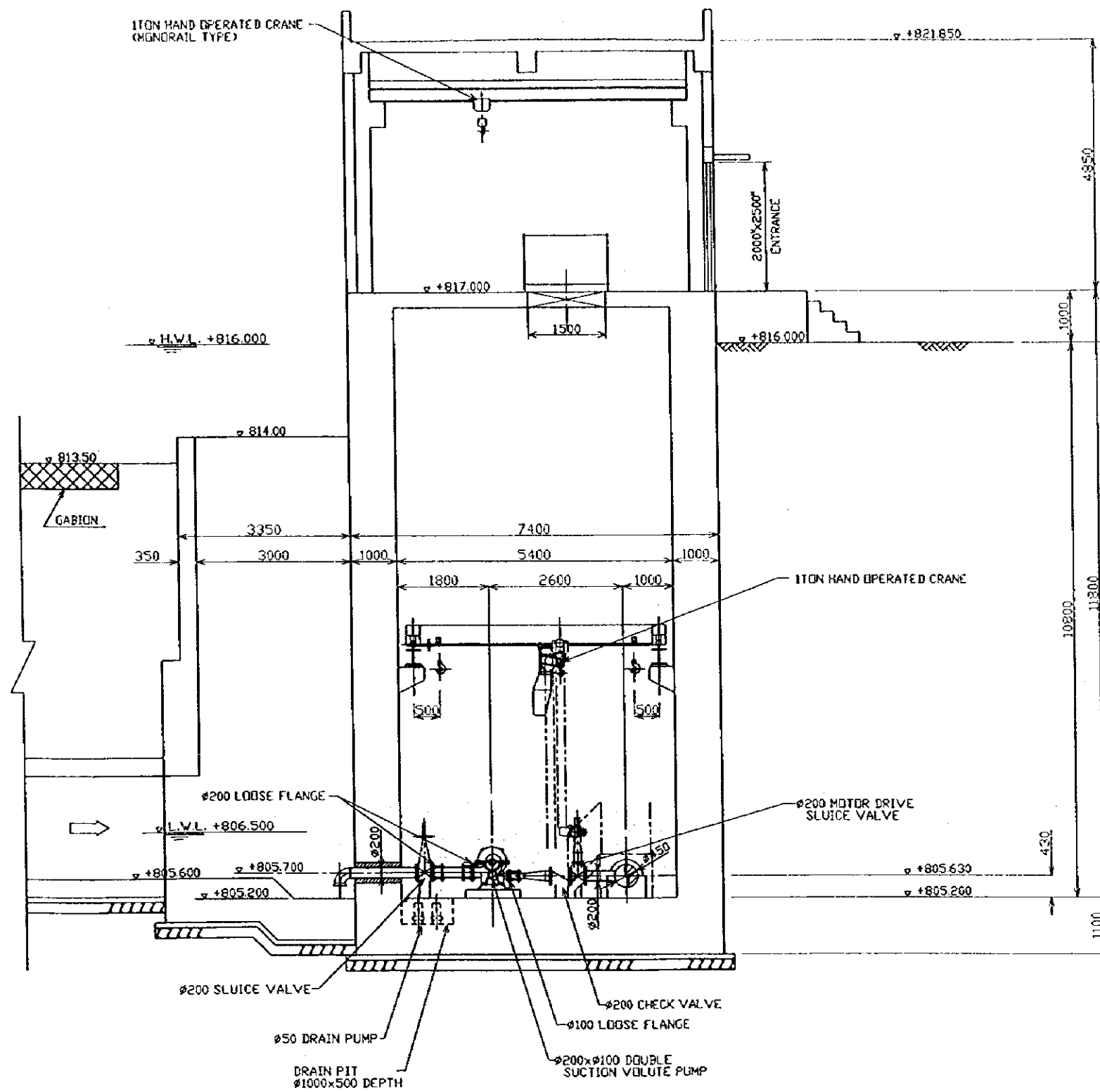


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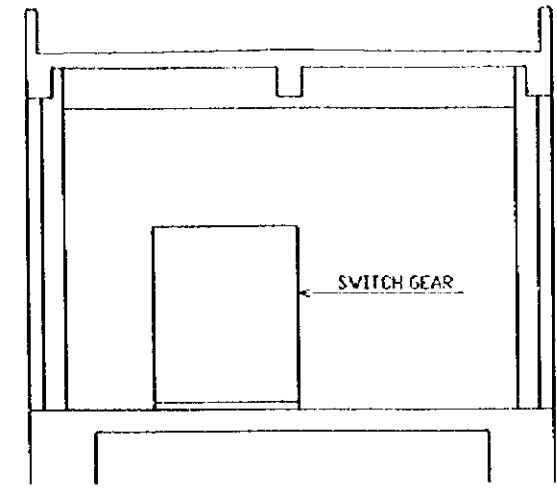
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
<b>PUMP STATION A SECTION</b>			
Date		No.	4
JAPAN INTERNATIONAL COOPERATION AGENCY			



THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP STATION (BLOCK A) PLAN			
Date		No.	5
JAPAN INTERNATIONAL COOPERATION AGENCY			

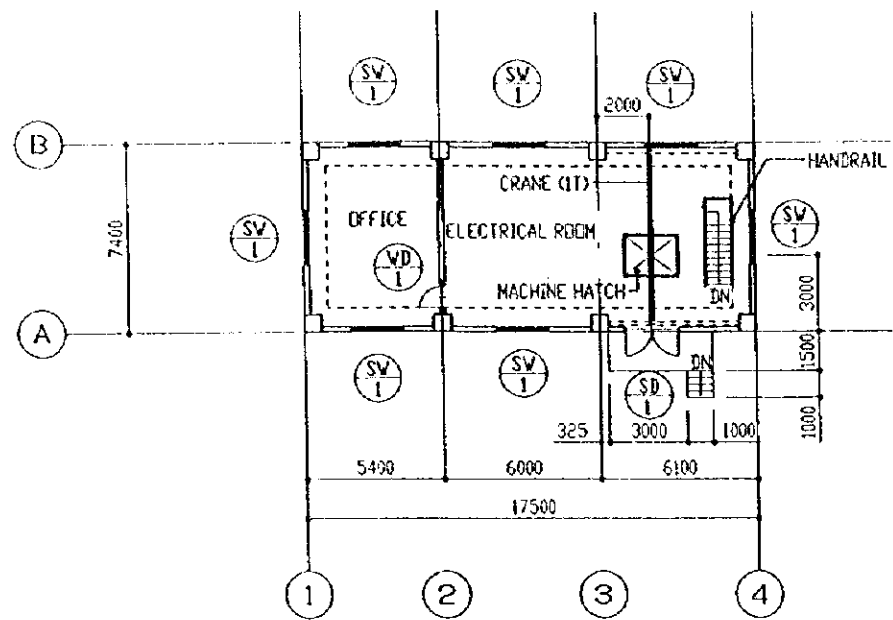


SECTION A

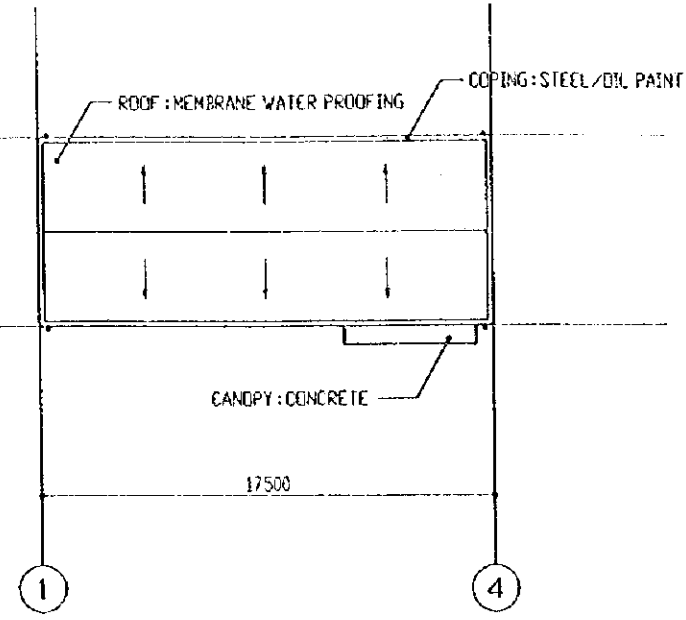


SECTION B

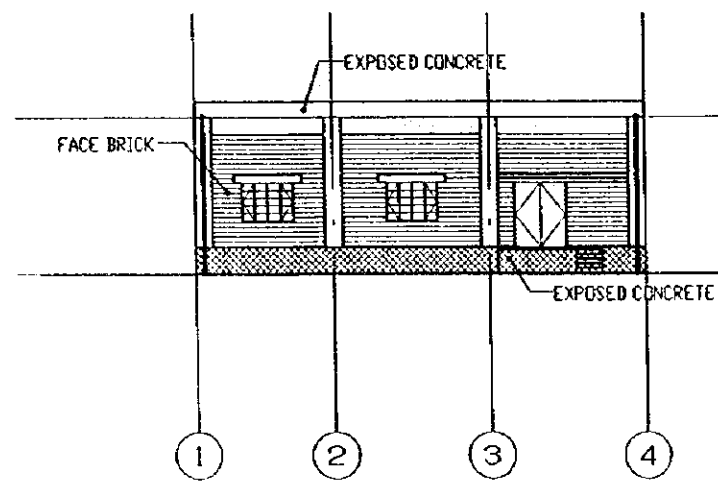
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP STATION (BLOCK A) SECTION			
Date		No.	6
JAPAN INTERNATIONAL COOPERATION AGENCY			



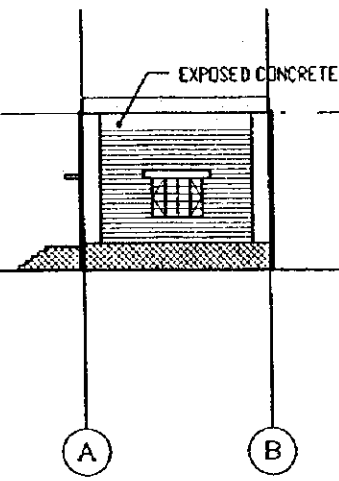
FLOOR PLAN



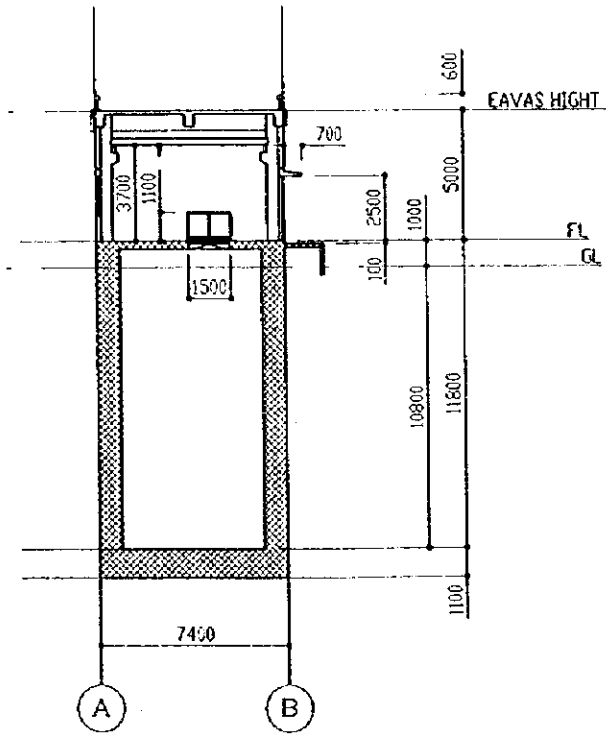
ROOF FLOOR PLAN



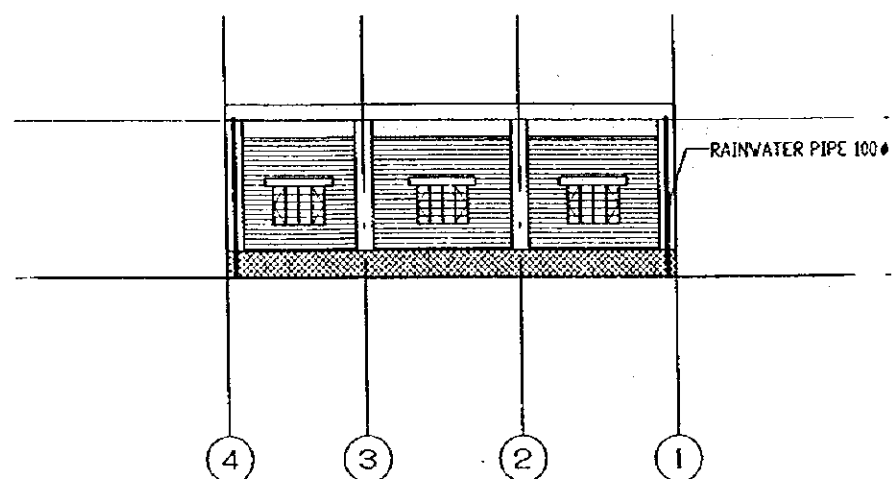
A ELEVATION



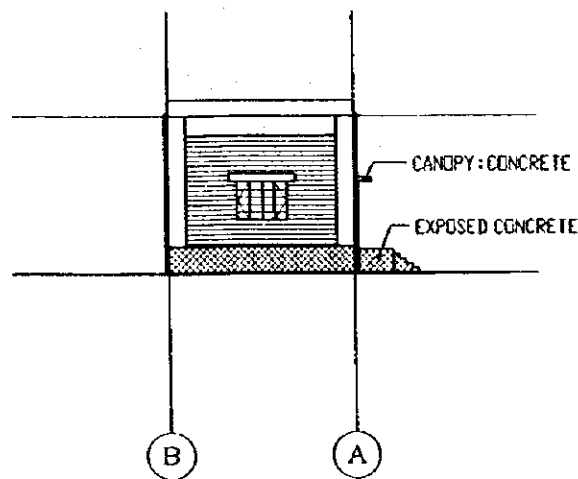
B ELEVATION



SECTION

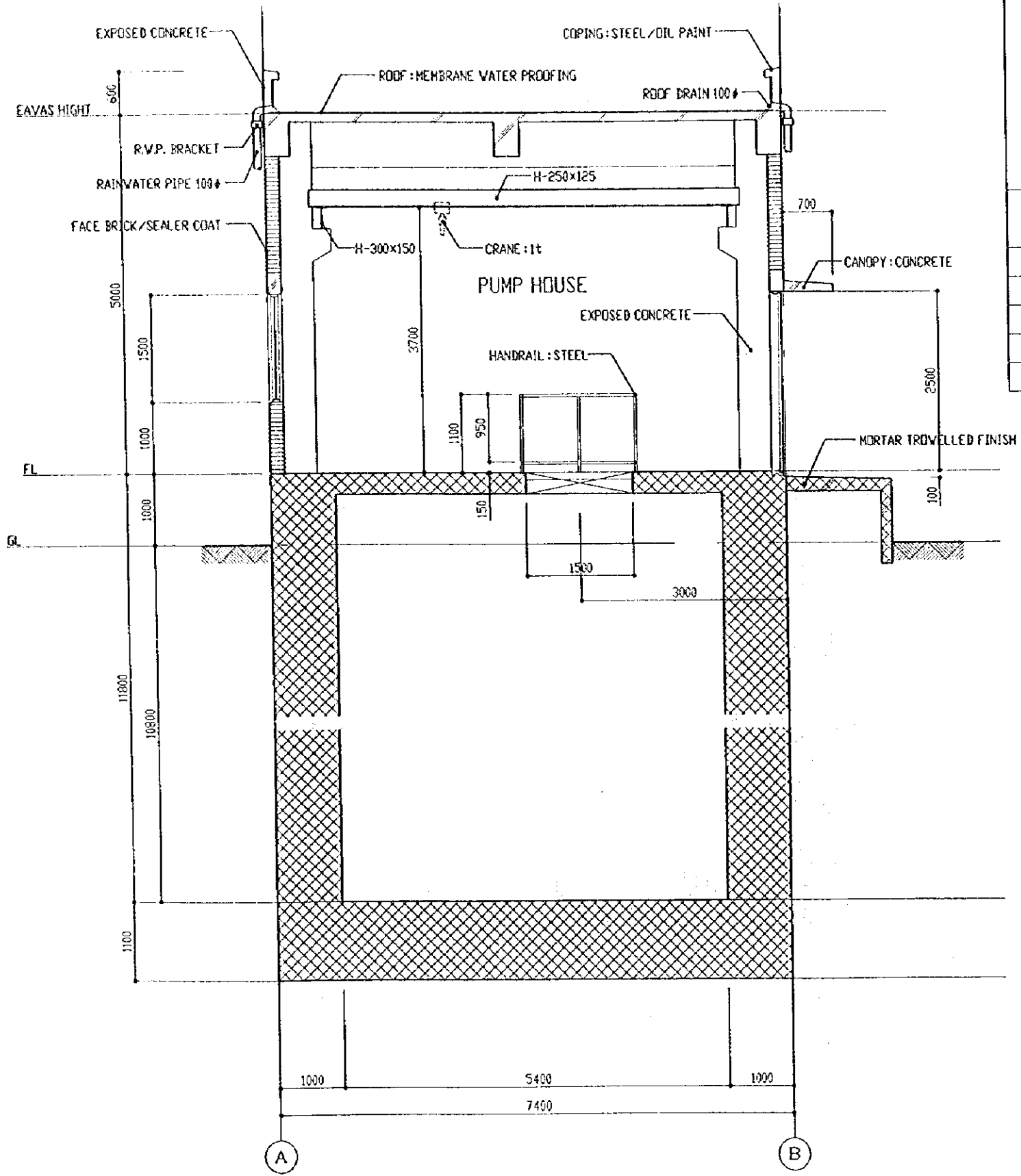


C ELEVATION






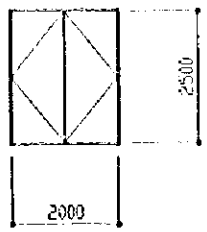
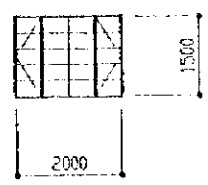
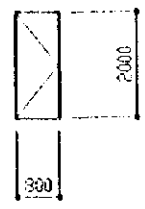
D ELEVATION

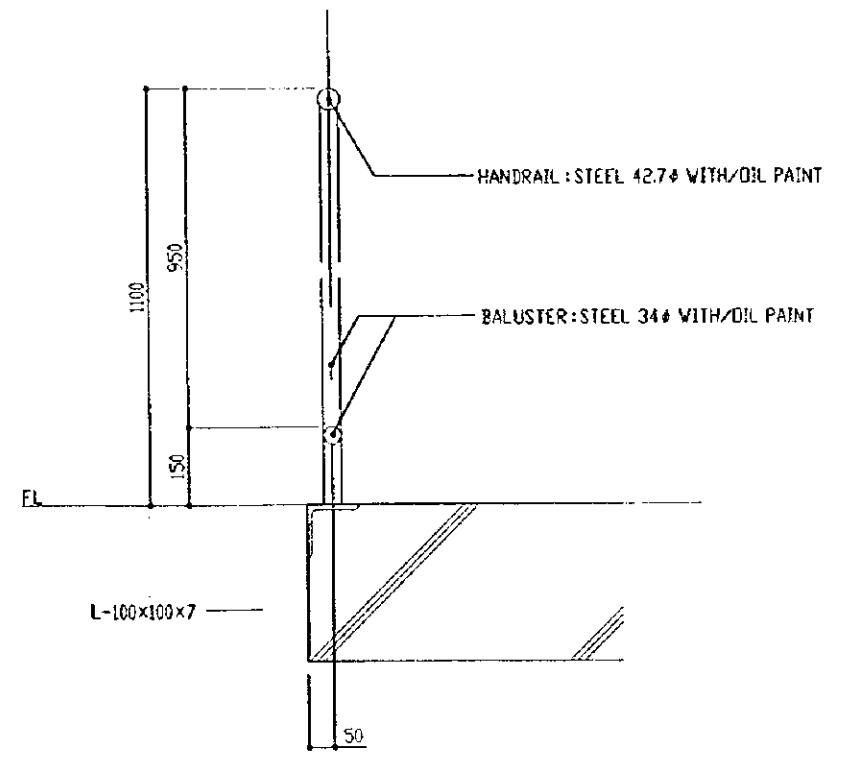
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP ROOM (BLOCK A)			
FLOOR PLAN • ELEVATION • SECTION • KEYPLAN			
Date		No.	7
JAPAN INTERNATIONAL COOPERATION AGENCY			



TYPICAL DETAIL SECTION

DOORS & WINDOWS SCHEDULE

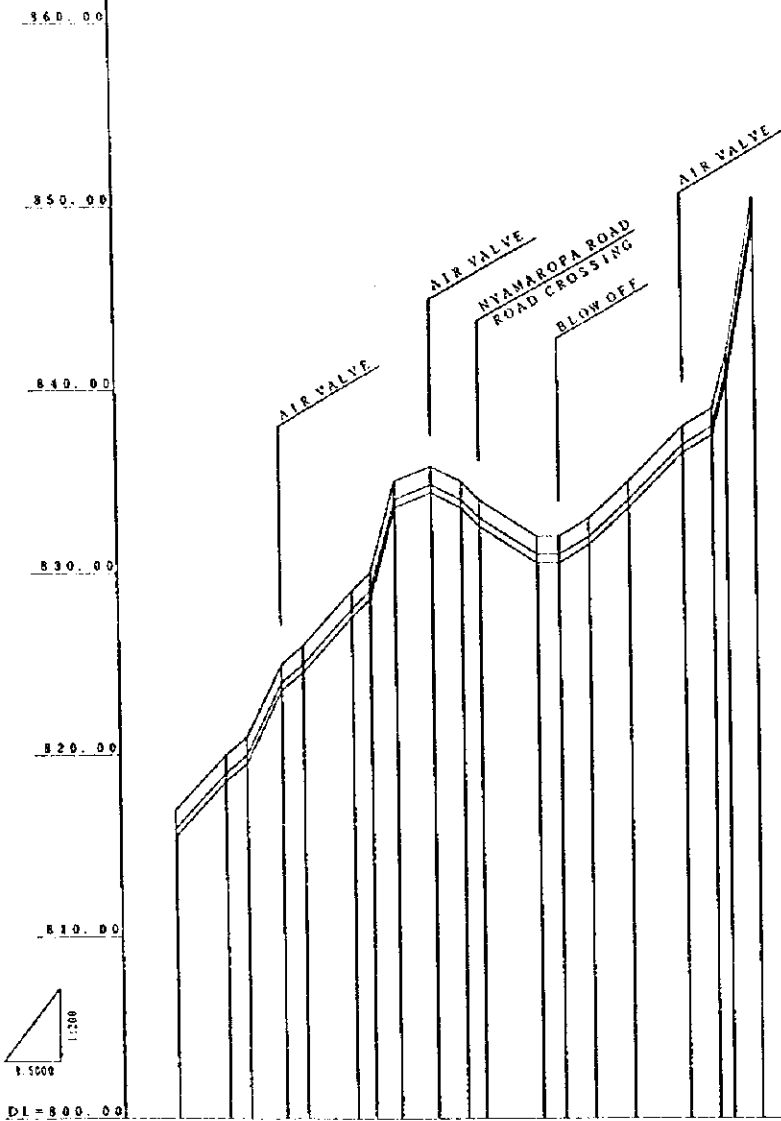
SYMBOL		QUANTITY	1		QUANTITY	7		QUANTITY	1
FIGURE ELEVATION & DIMENSION			1:100			1:100			1:100
TYPE & MATERIAL	DOUBLE SWING			FIXED +			SINGLE SWING		
	FLUSH DOOR/STEEL			CASEMENT WINDOW/STEEL			FLUSH DOOR/PLAYWOODEN		
THICKNESS	230						230		
GLASS				4mm OBSCURE GLASS					
FINISH	OIL PAINT			OIL PAINT			OIL PAINT		
HARD WARE	ONE SET			ONE SET			ONE SET		
REMARK									



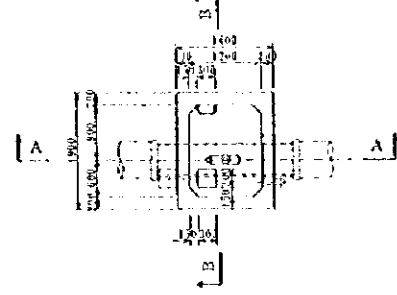
HANDRAIL DETAIL

THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)		
PUMP ROOM (BLOCK A)		
TYPICAL SECTION - DETAIL DOORS & WINDOWS SCHEDULE		
Date	No.	8
JAPAN INTERNATIONAL COOPERATION AGENCY		

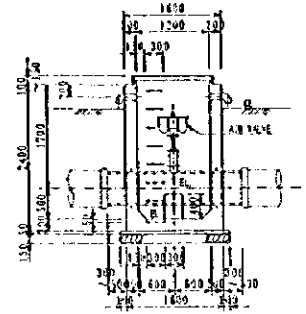
HEAD RACE  
LONG SECTION  
A-P-1  $\phi 450$



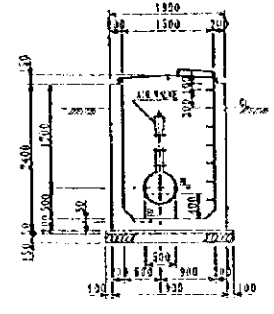
AIR VALVE



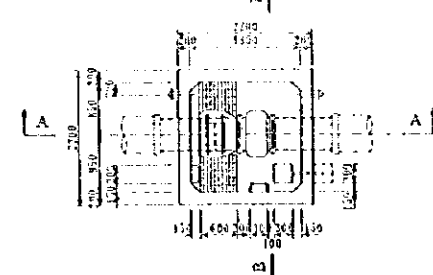
A-A



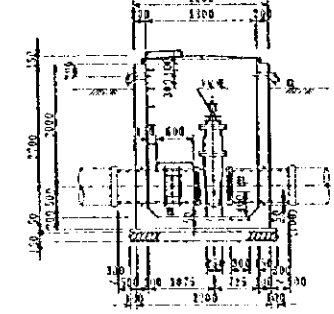
B-B



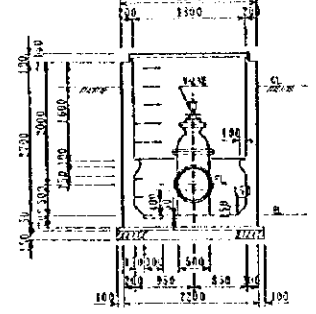
ISORATING VALVE  
 $\phi 100 \sim \phi 600$



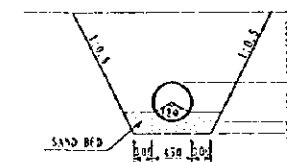
A-A



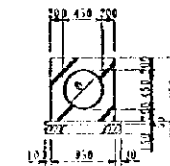
B-B



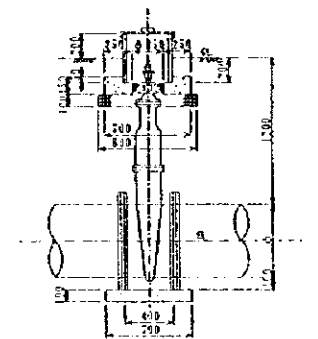
TYPICAL SECTION



CONCRETE PROTECTION



SLUICE VALVE



PIPE	FIBERGLASS PIPE $\phi 450$ E-307.05a	
PIPE ELEVATION	815.77	848.27
GROUND LEVEL	817.00	849.00
ACCUMULATED DISTANCE	0.00	50.00
DISTANCE	0.00	50.00
STATION	7+00.00	7+50.00
CURVE		

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

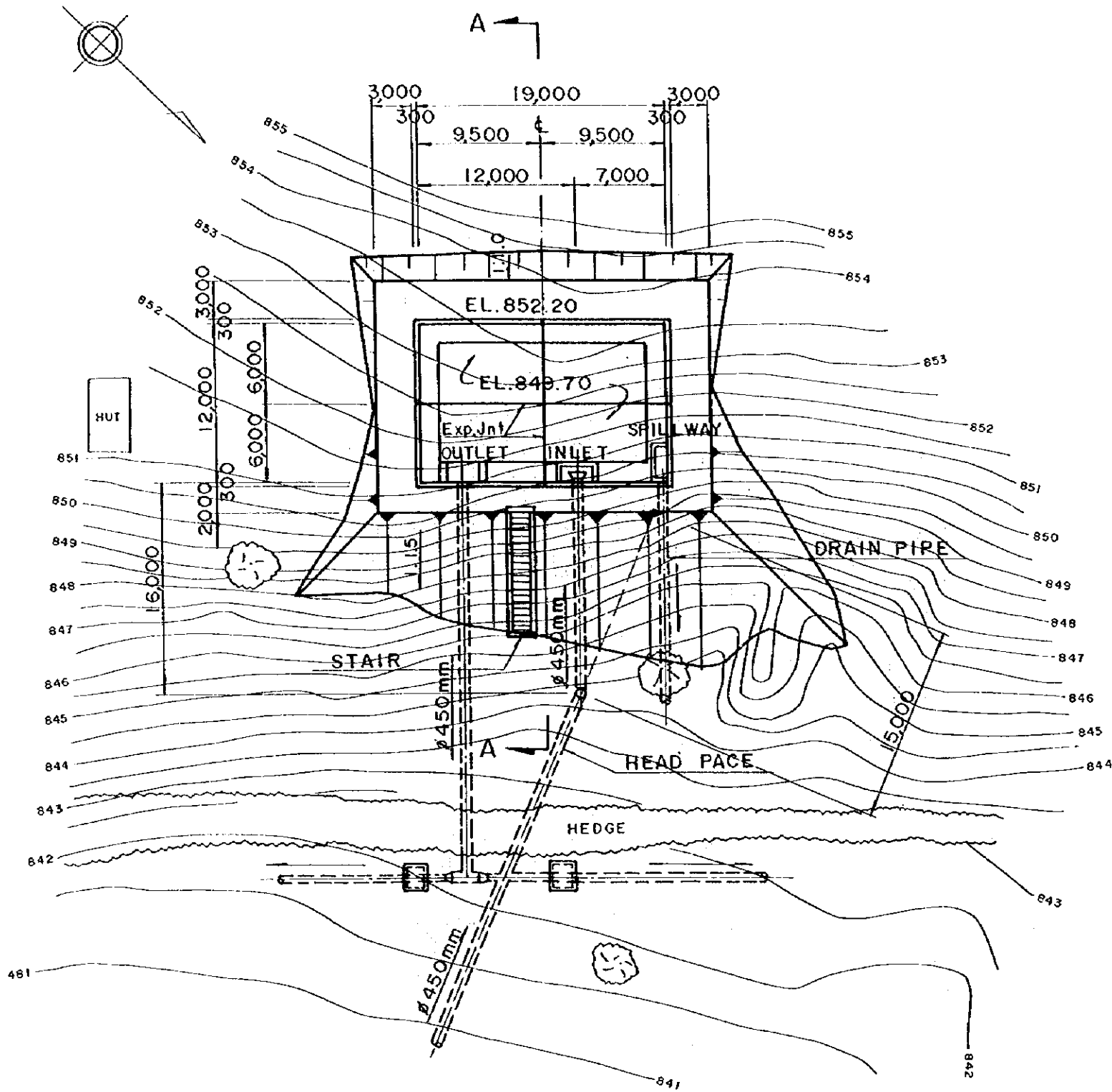
HEAD RACE (BLOCK A)  
LONG SECTION A-P-1

Date: \_\_\_\_\_ No. 9

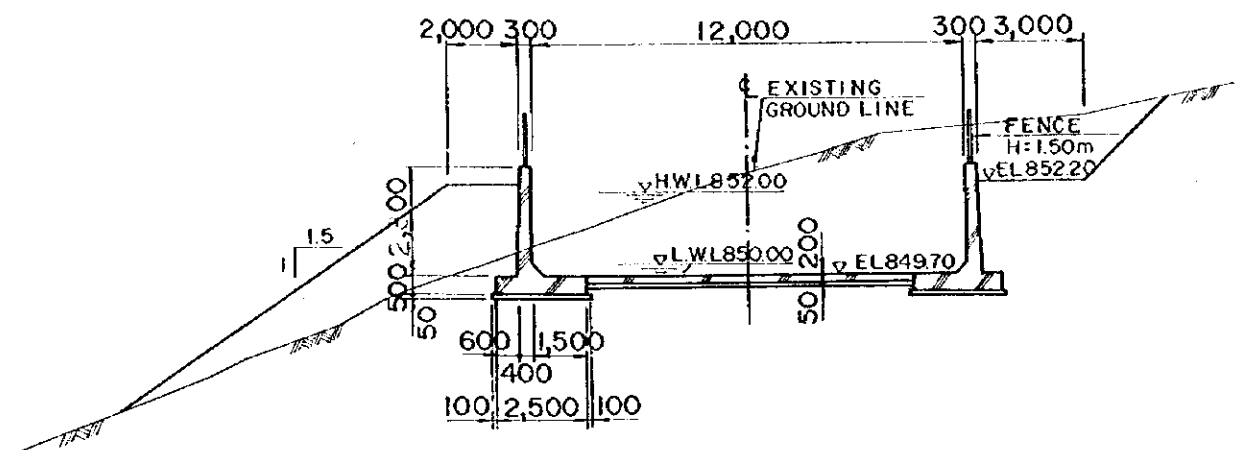
JAPAN INTERNATIONAL COOPERATION AGENCY



# FARM POND A



**PLAN**  
S=1:200

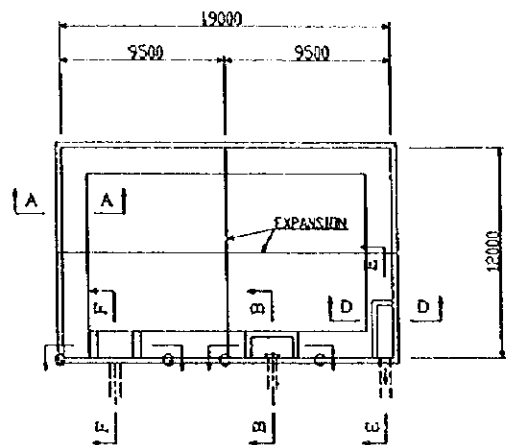


**SECTION A-A**  
S=1:100

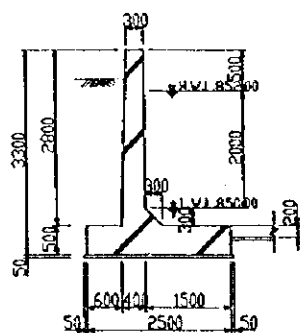
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE I)			
<b>FARM POND A</b> PLAN AND SECTION			
Date		No.	10
JAPAN INTERNATIONAL COOPERATION AGENCY			

FARM POND A  
DETAILS OF FARM POND

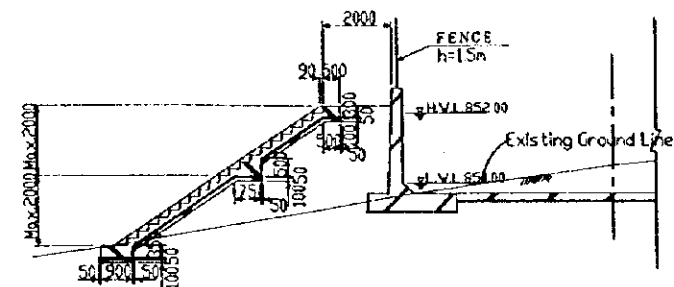
TYPICAL PLAN SCALE 1:200



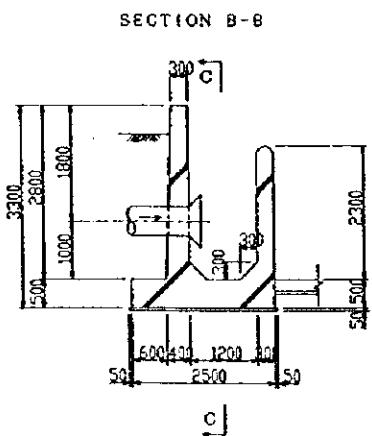
SECTION A-A SCALE 1:60



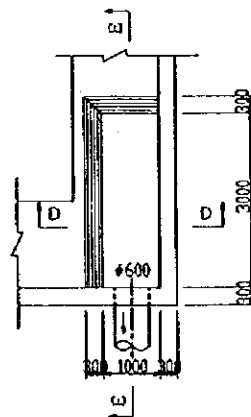
STAIR CASE SECTION SCALE 1:100



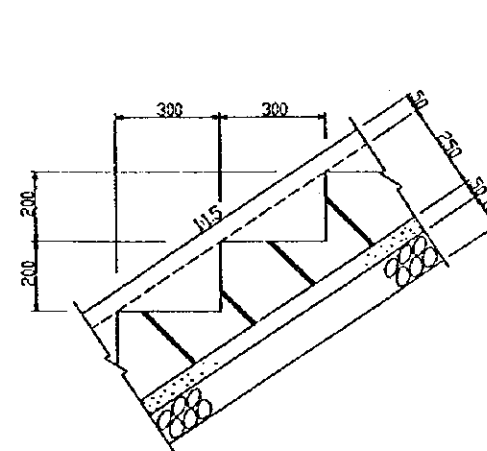
INLET SCALE 1:60



SPILL WAY SCALE 1:60



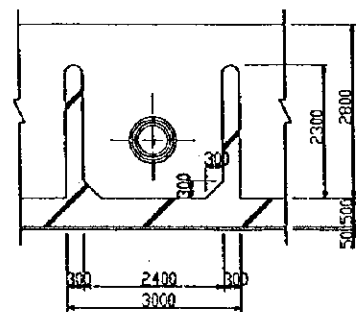
STAIR CASE DETAIL SCALE 1:10



SCALE 1:10

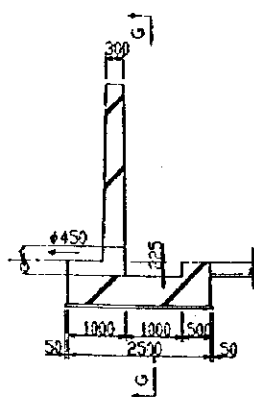
SECTION B-B

SECTION C-C

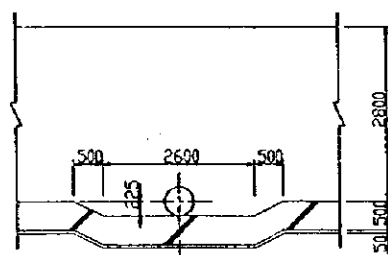


OUTLET SCALE 1:60

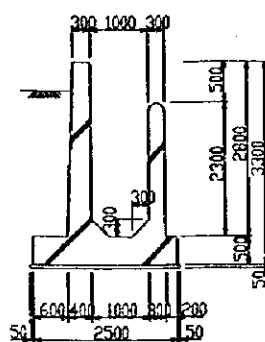
SECTION F-F



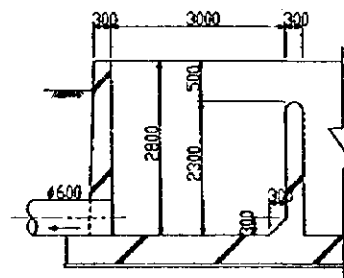
SECTION G-G



SECTION D-D



SECTION E-E



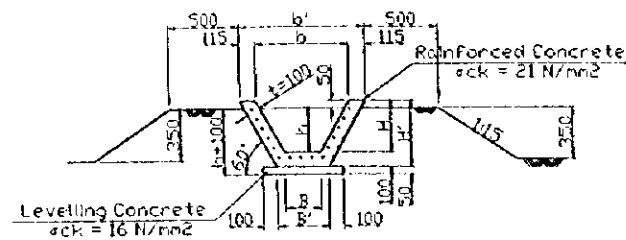
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
FARM POND A DETAILS OF FARM POND			
Date		No.	11
JAPAN INTERNATIONAL COOPERATION AGENCY			

# IRRIGATION FACILITIES (1/3)

SCALE 1:50

## IRRIGATION CANAL

### TYPICAL SECTION



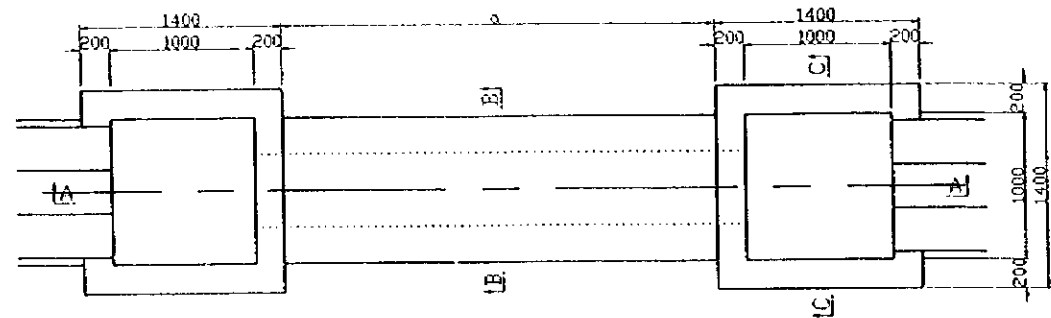
	B	B'	b	b'	H	H'	h
Type A	300	415	762	992	400	500	350
Type B	250	364	654	884	350	450	300
Type C	200	314	546	776	300	400	250

**NOTE**

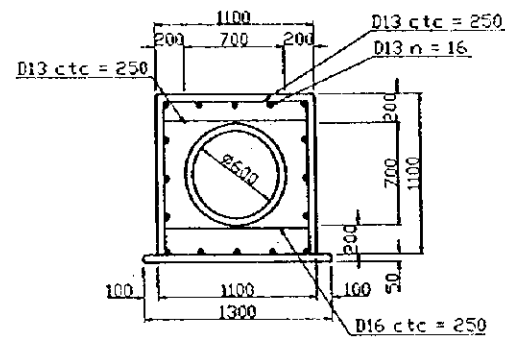
REINFORCEMENT SHALL BE WELDED MESHED WIRE #6mm (MESH 100 x 100)

## ROAD CROSS SIPHON

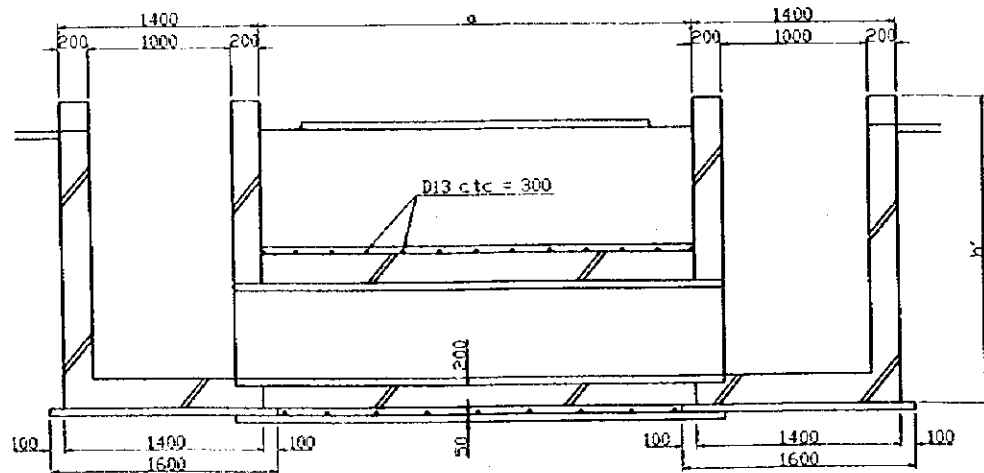
### PLAN



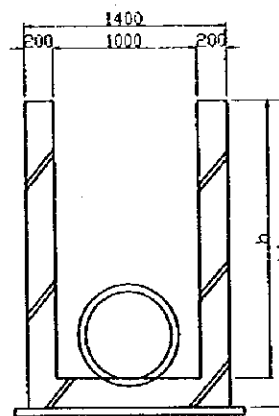
### SECTION B - B



### SECTION A - A

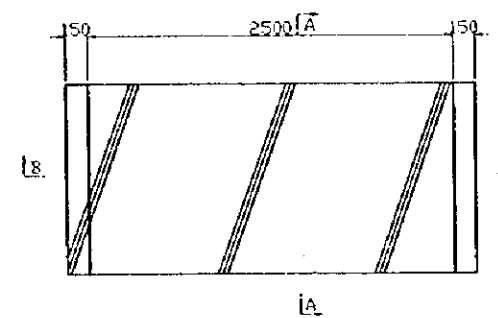


### SECTION C - C

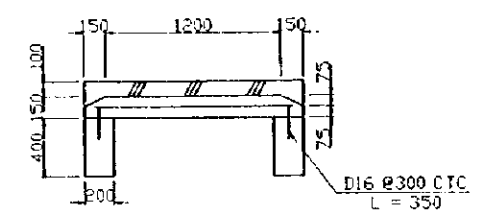


## ENTRANCE WORKS

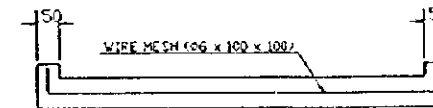
### PLAN



### SECTION A - A



### SECTION B - B



Road Cross Siphon (Irrigation)

	a	b	h	h'	t (< )
Type 1	3000	600	1850	2100	50
Type 2	7000	600	1850	2100	50
Type 3	10000	600	1850	2100	50
Type 4	15000	600	2150	2400	50
Type 5	19000	600	2150	2400	50

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT(PHASE 2)

IRRIGATION FACILITIES (1/3)  
BLOCK A

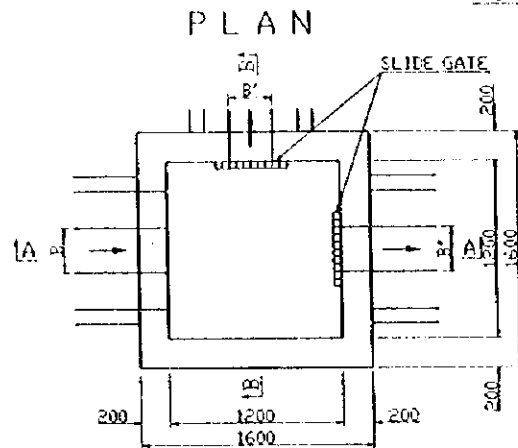
Date No. 12

JAPAN INTERNATIONAL COOPERATION AGENCY

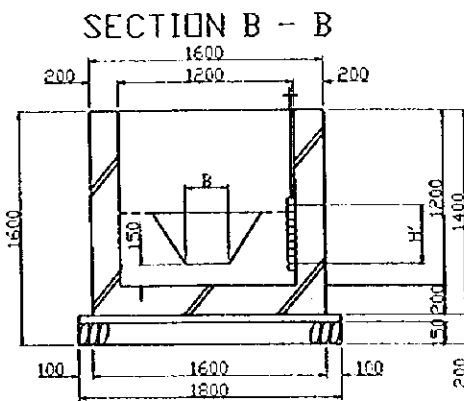
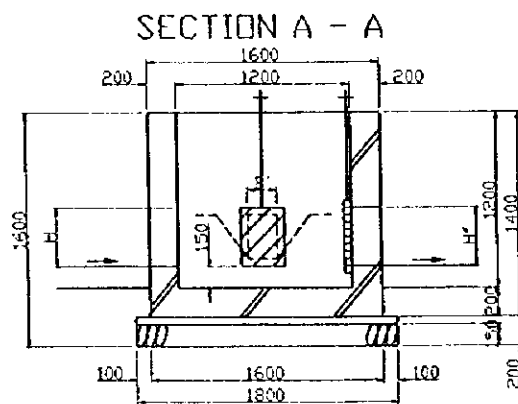
# IRRIGATION FACILITIES (2/3)

SCALE 1:50

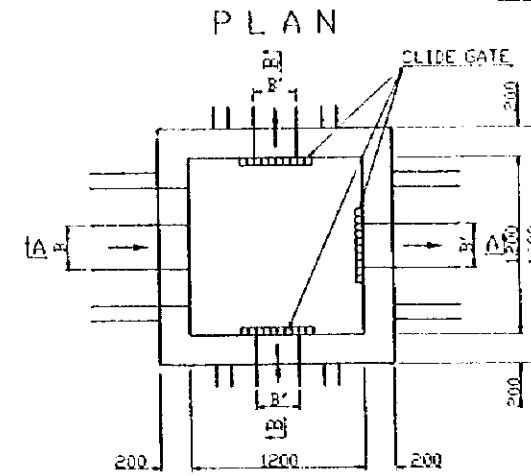
## DIVISION WORKS



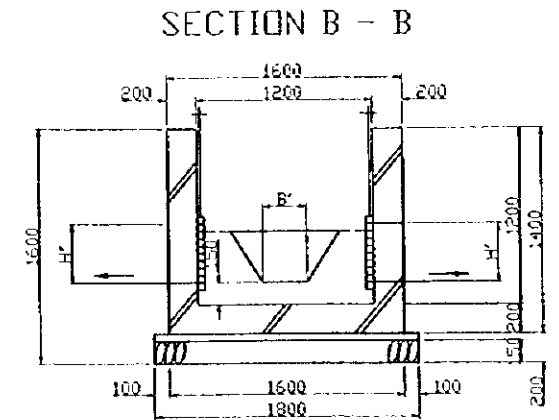
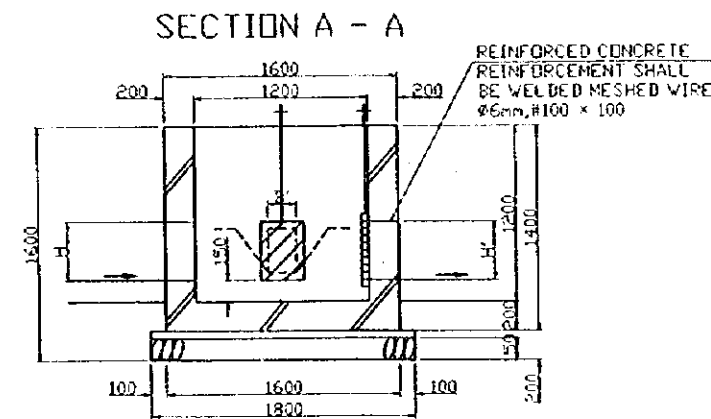
	B	H	B'	H'	GATE	B'	H'	GATE
Type 1	300	400	250	350	300 x 350 x 1	250	350	300 x 350 x 1
2	300	400	250	350	300 x 350 x 1	200	300	250 x 300 x 1
3	250	350	250	350	300 x 350 x 1	250	350	300 x 350 x 1
4	250	350	250	350	300 x 350 x 1	200	300	250 x 300 x 1
5	250	350	200	300	250 x 300 x 1	200	300	250 x 300 x 1
6	200	300	200	300	250 x 300 x 1	200	300	250 x 300 x 1



## DIVISION WORKS

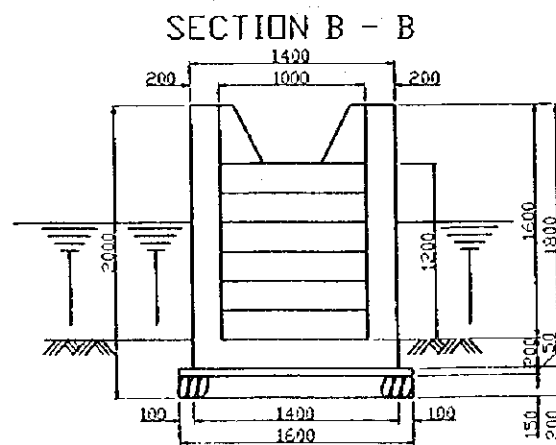
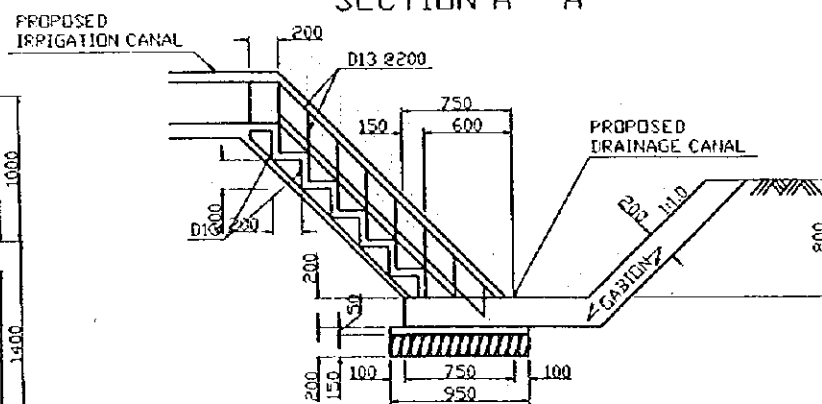
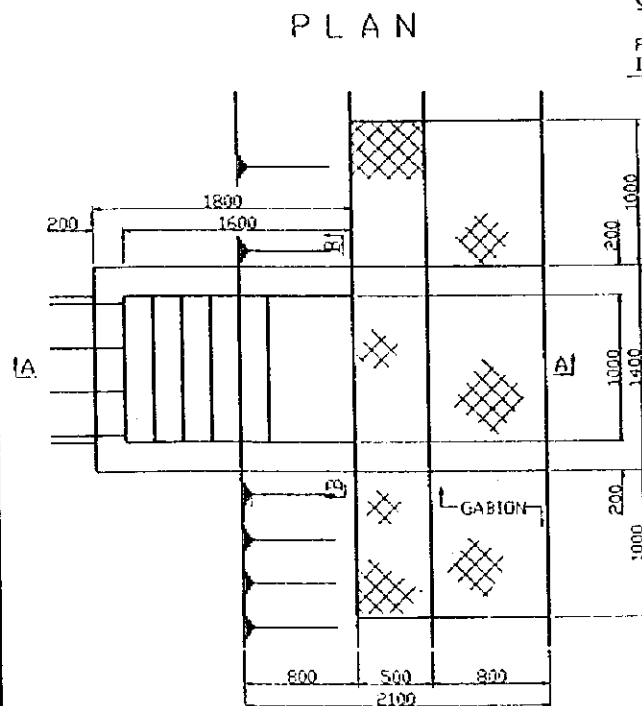


	B	H	B'	H'	GATE	B'	H'	GATE
Type 7	300	400	250	350	300 x 350 x 2	200	300	250 x 300 x 1

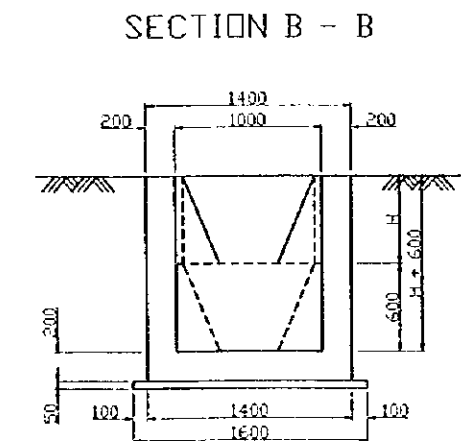
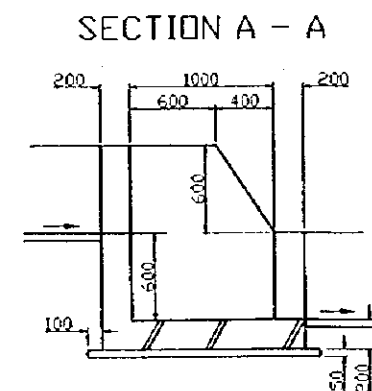
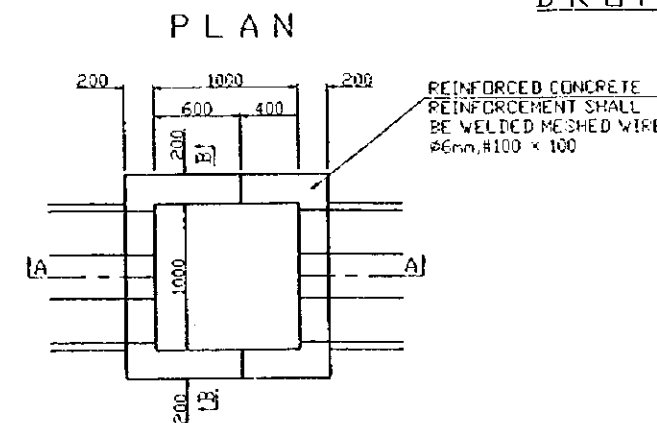


NOTE  
CUT-THROAT FLUME SHALL BE INSTALLED AT THE STARTING PORTION OF EVERY DIVERTED CANAL. THE STANDARD OF THE FLUME SHALL BE SUBJECT TO IRRIGATION MANUAL ISSUED BY AGRITEX.

## CHUTE



## DROP



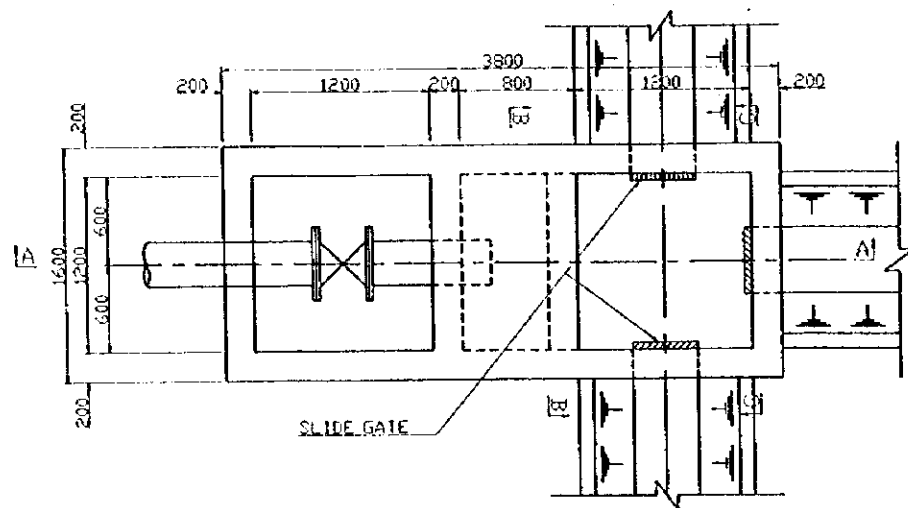
THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)		
IRRIGATION FACILITIES (2/3) BLOCK A		
Date	No.	13
JAPAN INTERNATIONAL COOPERATION AGENCY		

# IRRIGATION FACILITIES (3/3)

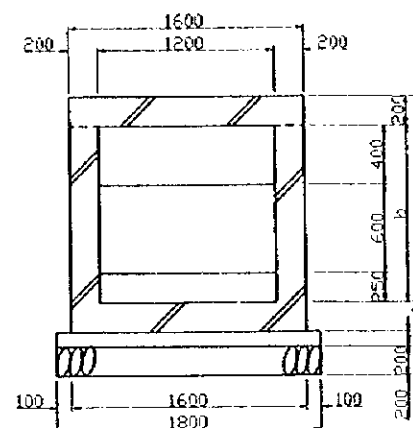
SCALE 1:50

## DISCHARGE CHAMBER

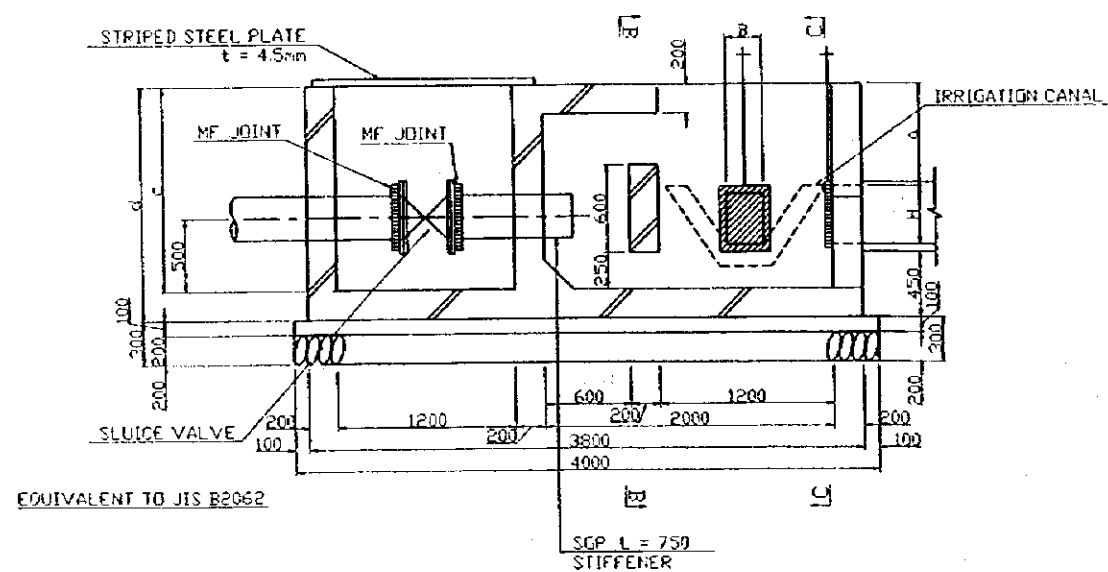
PLAN



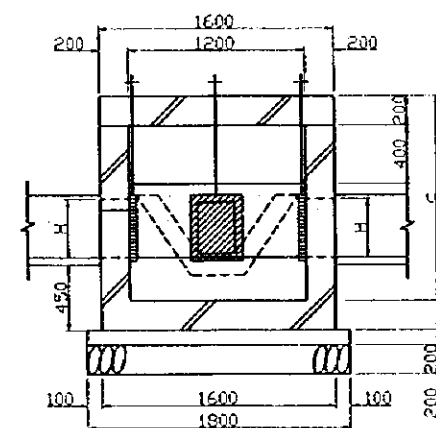
SECTION B - B



SECTION A - A



SECTION C - C



TYPE	B-1	H-1	B-2	H-2	B-3	H-3	SLUICE VALVE	MF JOINT
Type 1	200	300	200	300	-	-	±200	±200
Type 2	200	300	-	-	-	-	±200	±200
Type 3	250	350	200	300	-	-	±200	±200
Type 4	250	350	-	-	-	-	±300	±300
Type 5	300	400	-	-	-	-	±300	±300

note: To a front d shall be adjusted to the site ground levels width of Slide Gate should be wider than bottom of canal by 5 cm.

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

IRRIGATION FACILITIES (3/3)  
BLOCK A

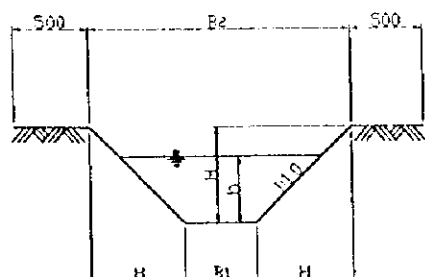
Date: \_\_\_\_\_ No. 14

JAPAN INTERNATIONAL COOPERATION AGENCY

# DRAINAGE FACILITIES (1/2)

SCALE 1:50

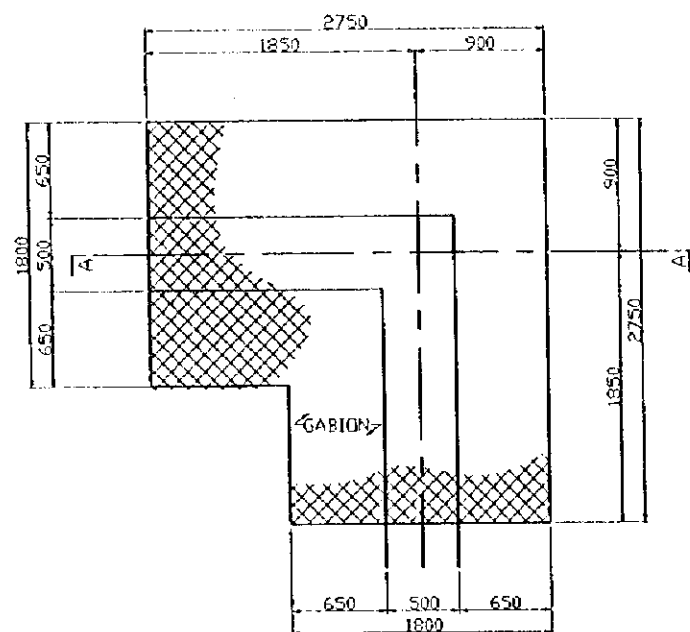
## DRAINAGE CANAL TYPICAL SECTION



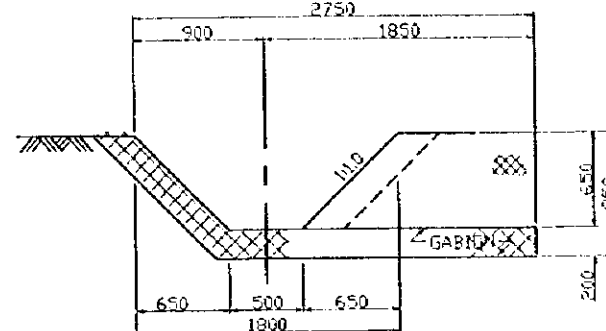
	B <sub>1</sub>	B <sub>2</sub>	h	H
Type 1	0.60	2.50	0.35	0.95
Type 2	0.70	2.70	0.40	1.00
Type 3	0.70	2.90	0.50	1.10

## SLOPE PROTECTION

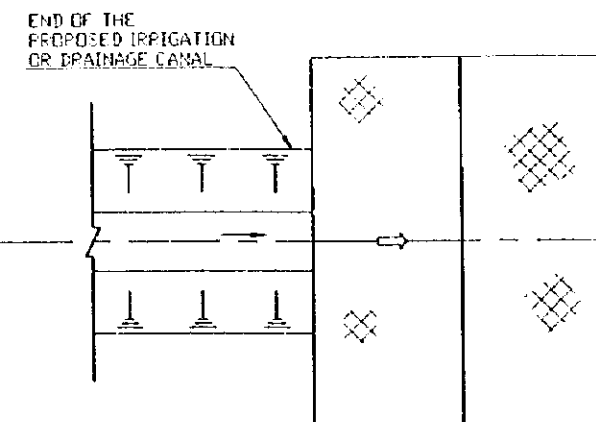
### PLAN



### SECTION A - A



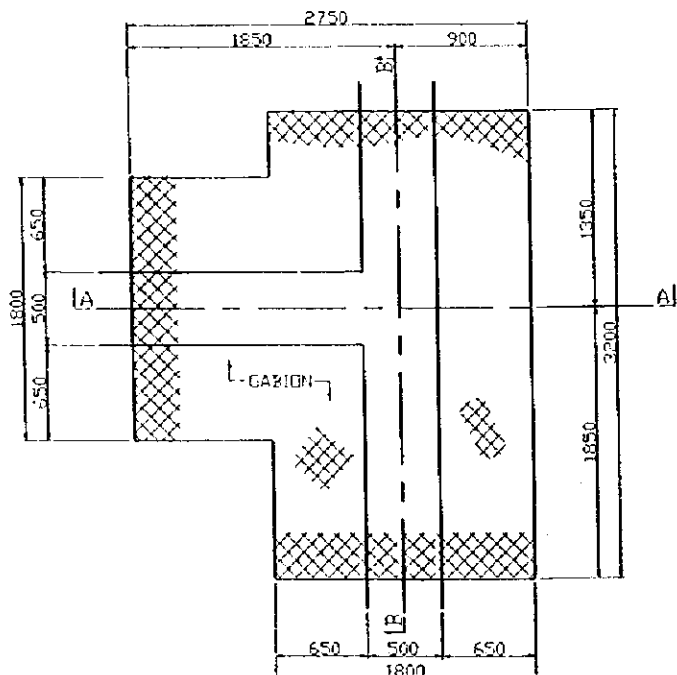
## WASTEWAY



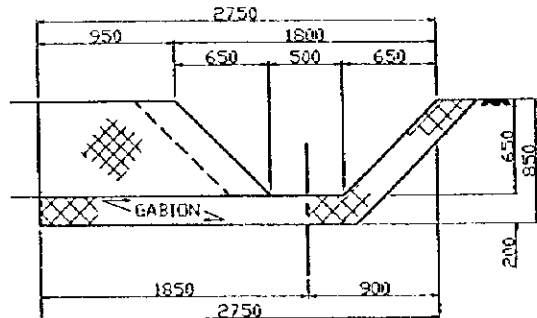
GABION n = 4  
2050 x 1500 x 300  
Ø4, #100 x 100

## CONFLUENT FACILITIES

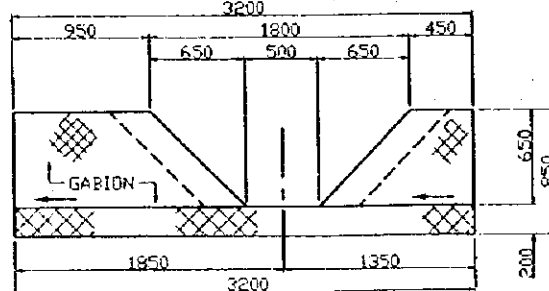
### PLAN



### SECTION A - A

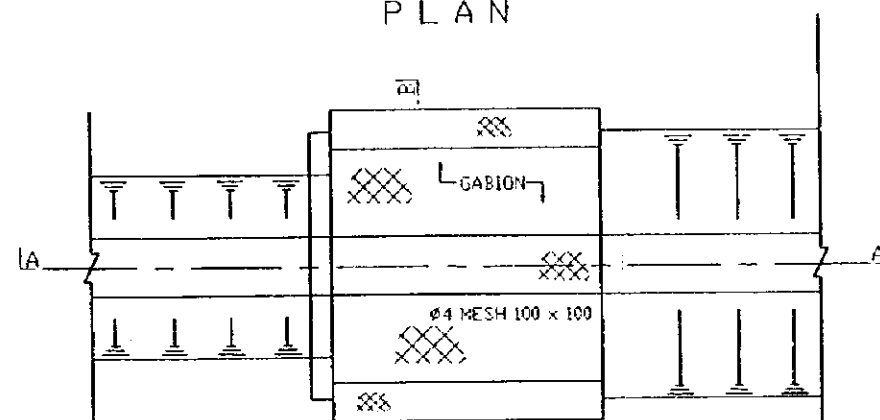


### SECTION B - B

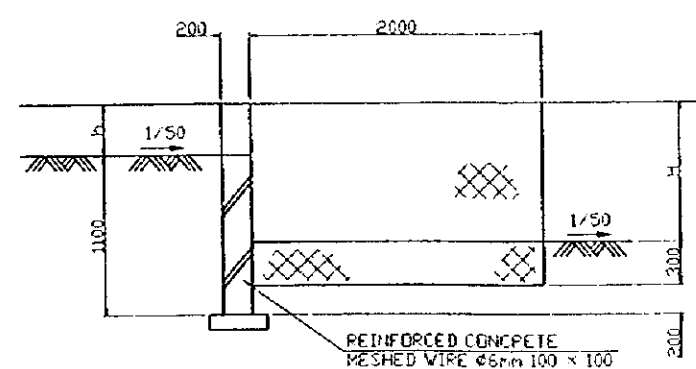


## DROP STRUCTURE FOR DRAINAGE CANAL

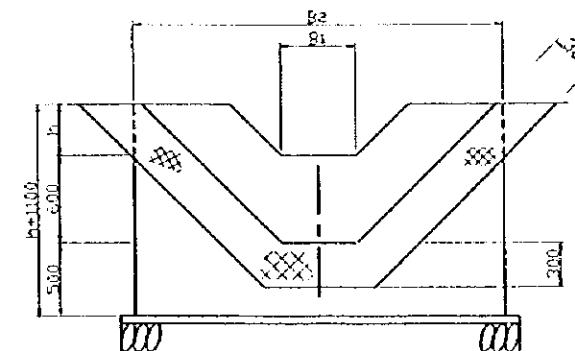
### PLAN



### SECTION A - A



### SECTION B - B



	B <sub>1</sub>	B <sub>2</sub>	h	H
Type 1	0.60	2.50	0.35	0.95
Type 2	0.70	2.70	0.40	1.00
Type 3	0.70	2.90	0.50	1.10

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

DRAINAGE FACILITIES (1/2) BLOCK A

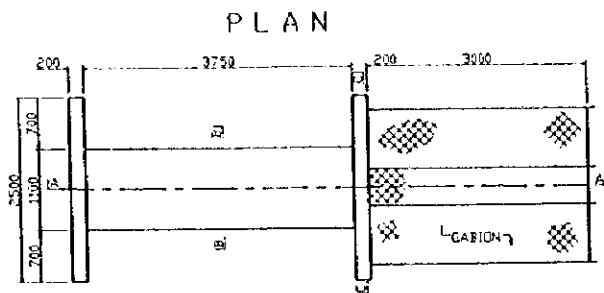
Date	No.	15
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JAPAN INTERNATIONAL COOPERATION AGENCY

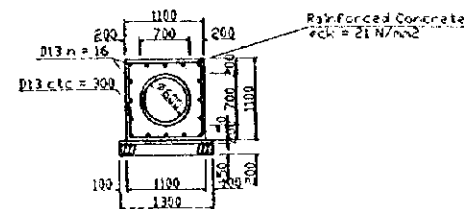
# DRAINAGE FACILITIES (2/2)

SCALE 1:100

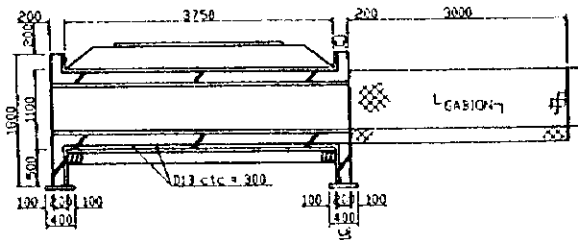
## ROAD CROSS CULVERT



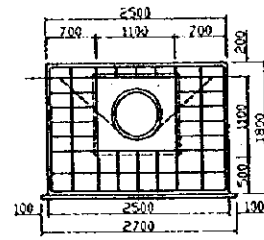
### SECTION B - B



### SECTION A - A

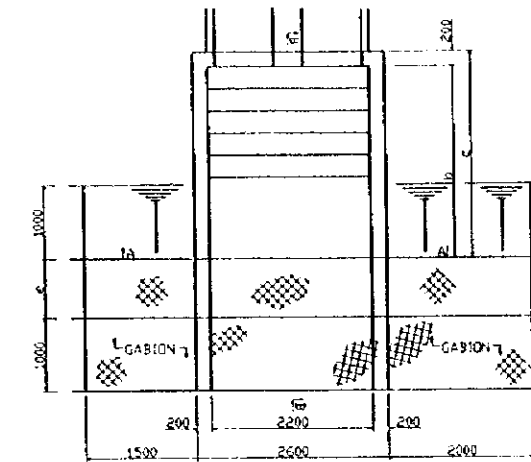


### SECTION C - C

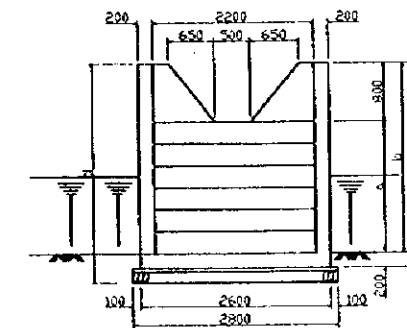


## CHUTE

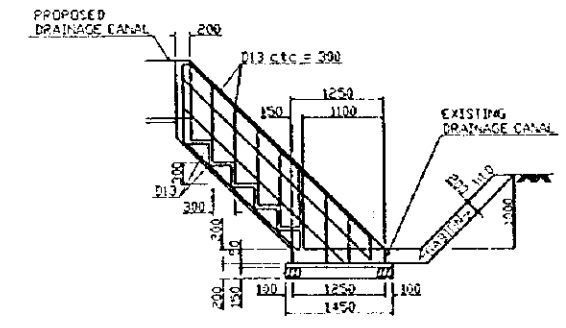
### PLAN



### SECTION A - A

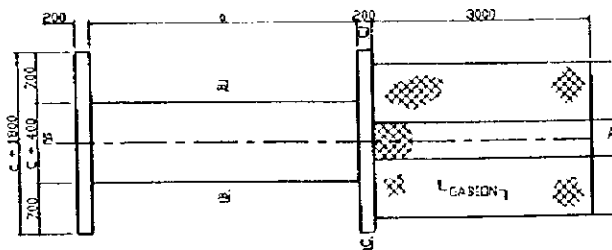


### SECTION B - B

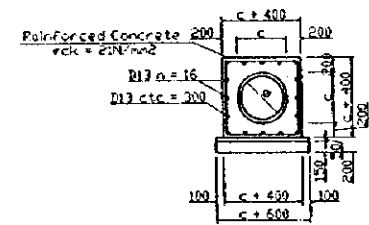


## CANAL CROSS CULVERT [ENTRANCE WORKS]

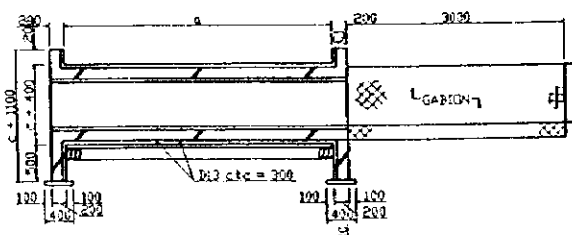
### PLAN



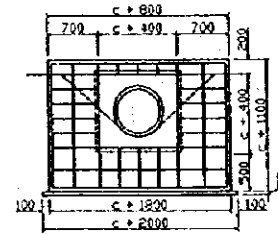
### SECTION B - B



### SECTION A - A



### SECTION C - C



Canal Cross Culvert (Drainage) (Entrance Works)

	Road Type	a	b	c
Type 1	b = 3	3000	600	700
Type 2	b = 5	5000	600	700
Type 3	b = 5	5000	1000	1180
Type 4	b = 5	5000	1200	1420

Chute

	a	b	c	d
Type 1	1800	2600	2800	3000
Type 2	12000	13800	14000	14200

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

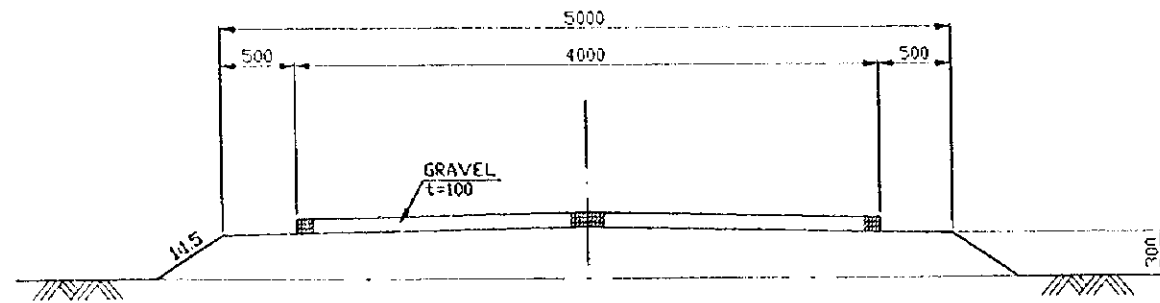
DRAINAGE FACILITIES (2/2) BLOCK A

Date No. 16

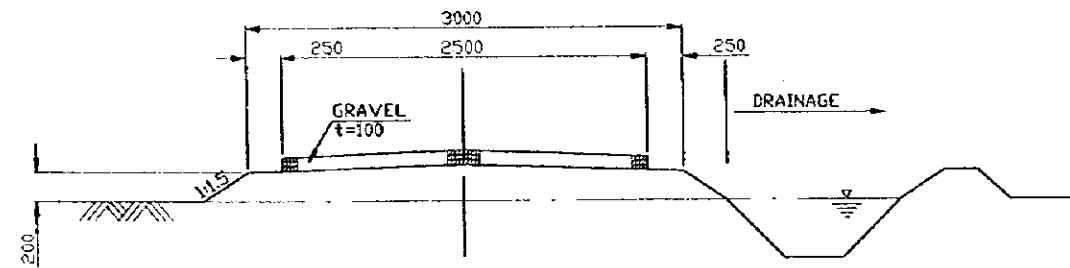
JAPAN INTERNATIONAL COOPERATION AGENCY

# FARM ROAD TYPICAL SECTION

## TRUNK ROAD

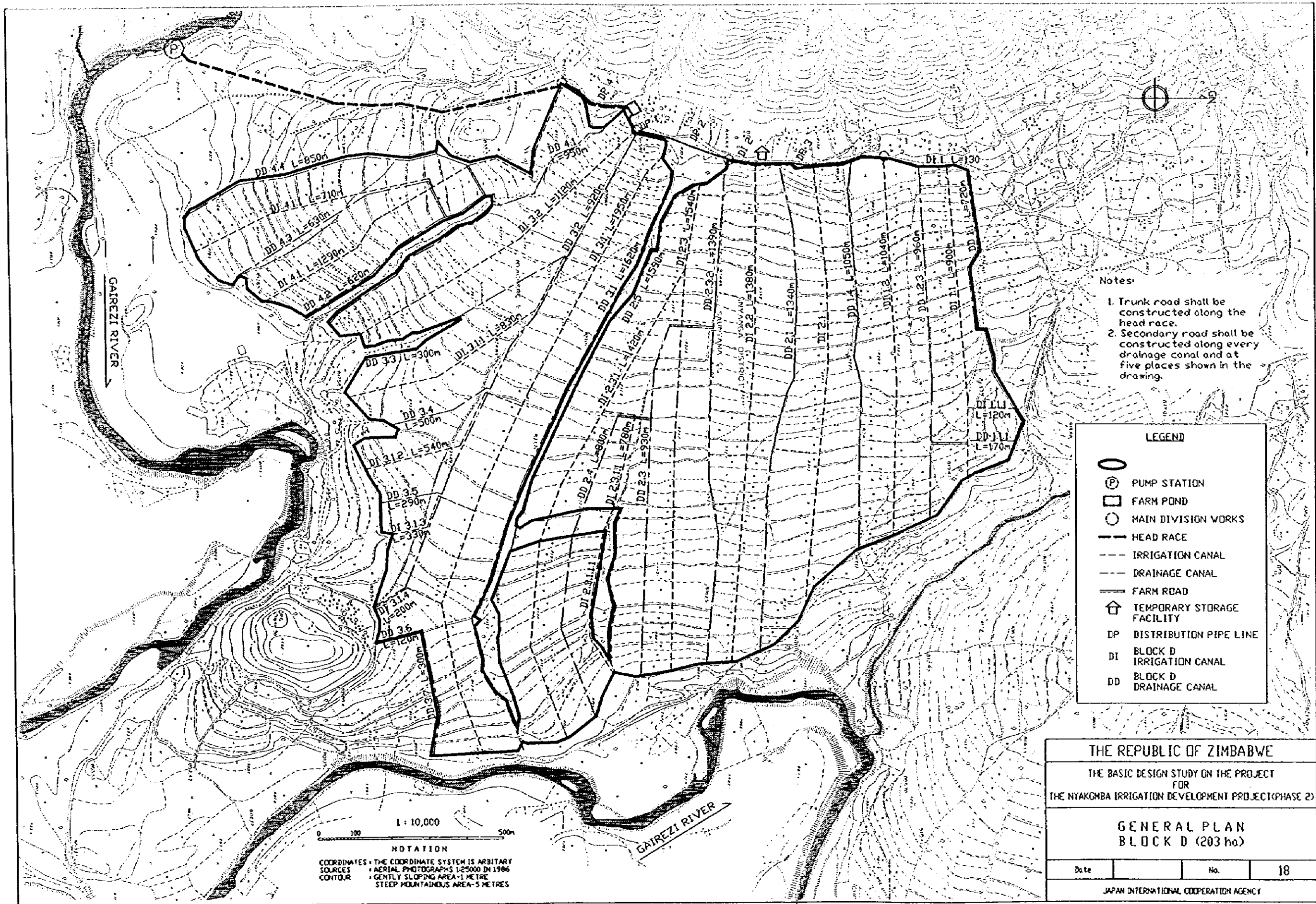


## SECONDARY ROAD



THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
FARM ROAD TYPICAL SECTION BLOCK A			
Date		No.	17
JAPAN INTERNATIONAL COOPERATION AGENCY			





Notes:

1. Trunk road shall be constructed along the head race.
2. Secondary road shall be constructed along every drainage canal and at five places shown in the drawing.

LEGEND	
	PUMP STATION
	FARM POND
	MAIN DIVISION WORKS
	HEAD RACE
	IRRIGATION CANAL
	DRAINAGE CANAL
	FARM ROAD
	TEMPORARY STORAGE FACILITY
	DP DISTRIBUTION PIPE LINE
	DI BLOCK D IRRIGATION CANAL
	DD BLOCK D DRAINAGE CANAL

THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)		
GENERAL PLAN BLOCK D (203 ha)		
Date	No.	18
JAPAN INTERNATIONAL COOPERATION AGENCY		

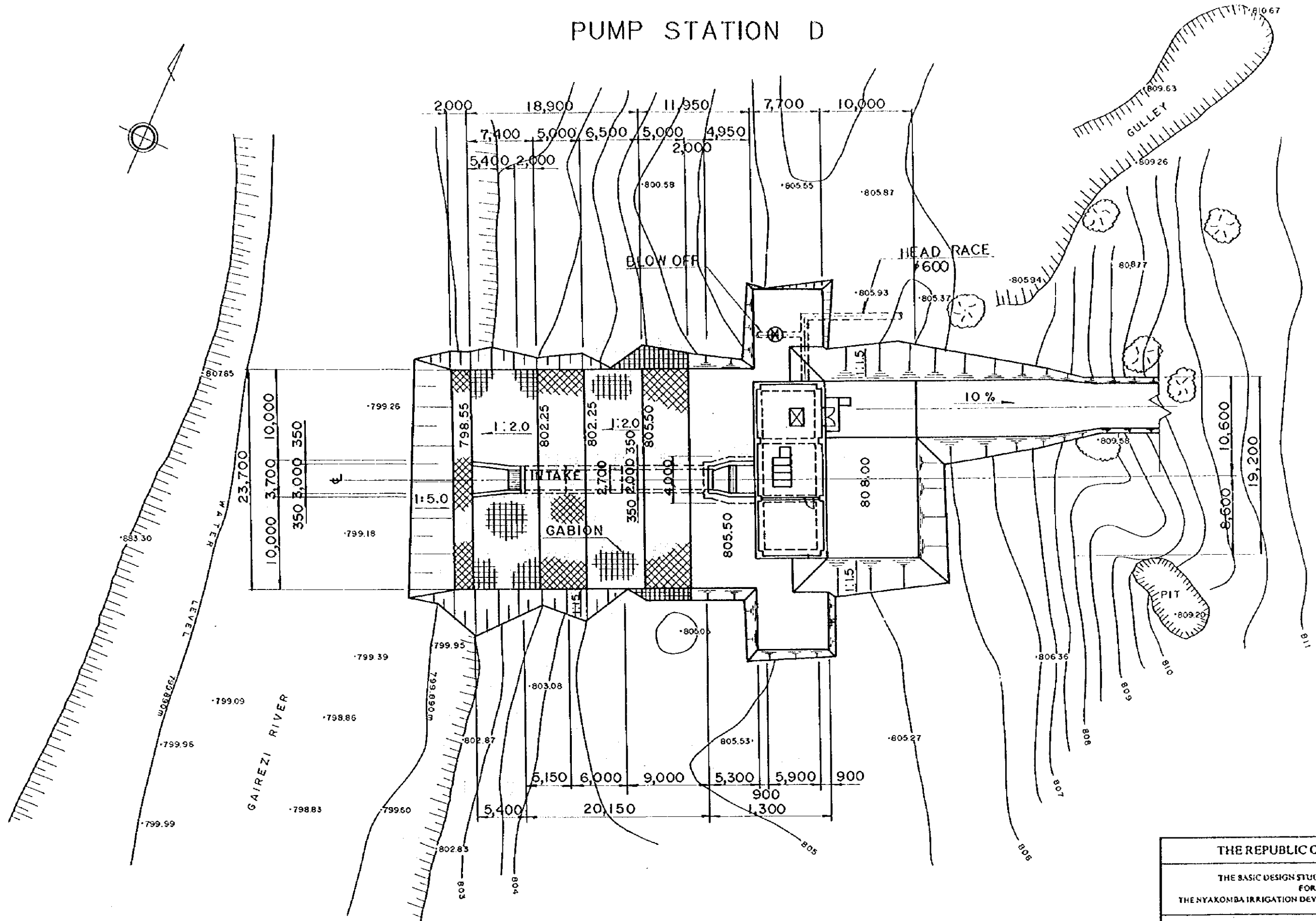
1:10,000

0 100 500m

NOTATION

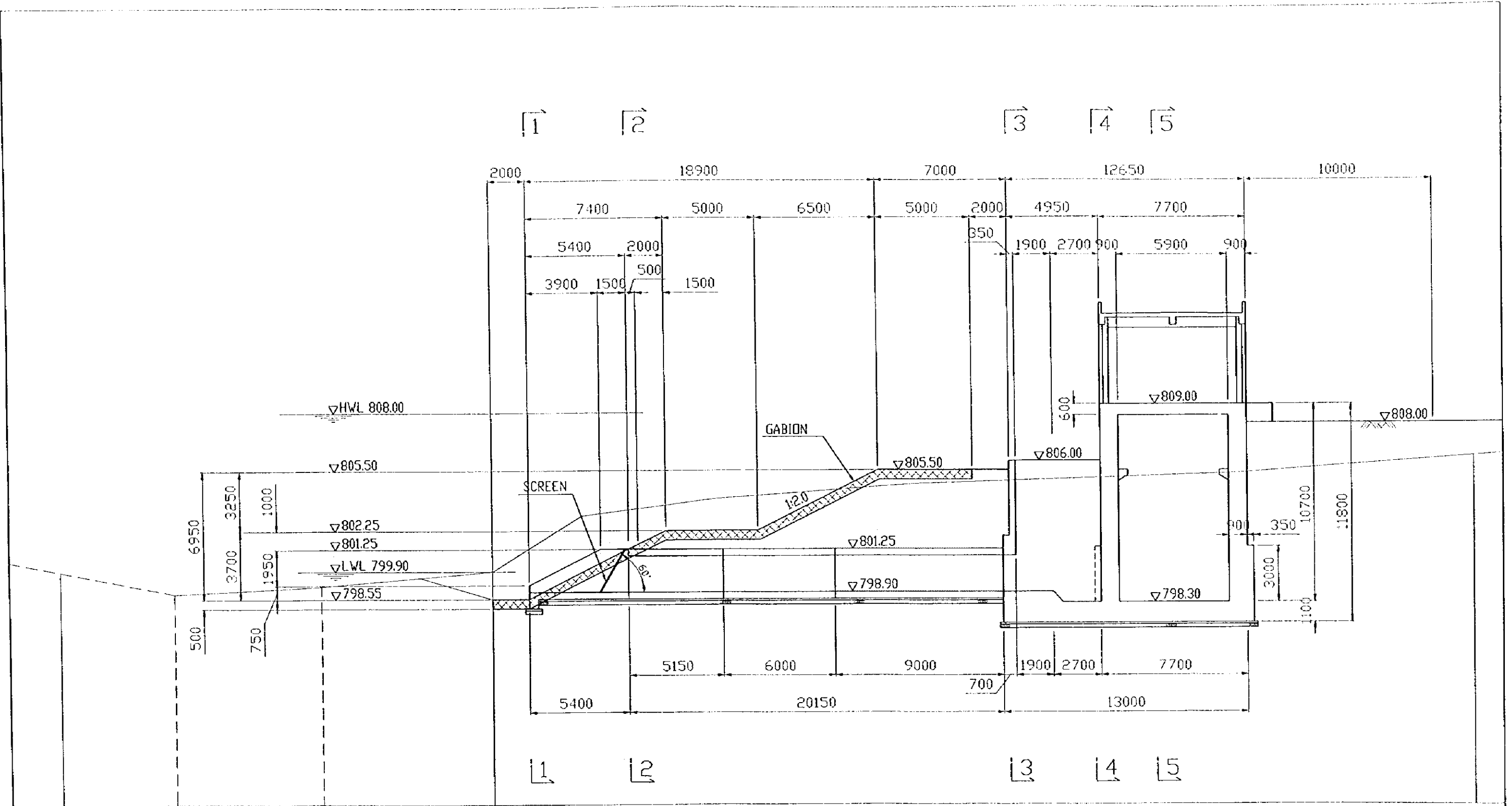
COORDINATES - THE COORDINATE SYSTEM IS ARBITRARY  
 SOURCES - AERIAL PHOTOGRAPHS 1:25000 IN 1986  
 CONTOUR - GENTLY SLOPING AREA - 1 METRE  
 STEEP MOUNTAINOUS AREA - 5 METRES

# PUMP STATION D



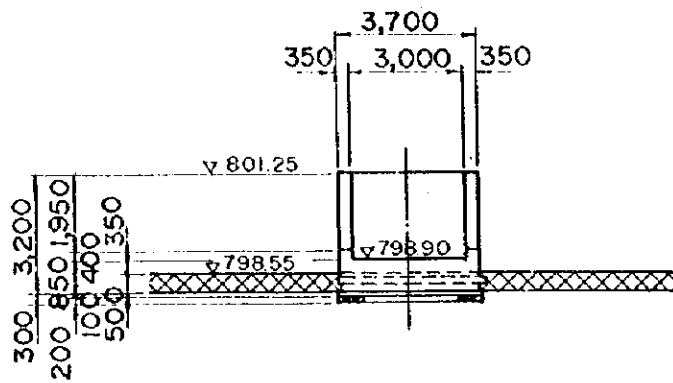
**GENERAL PLAN**  
S=1:200

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE II)			
<b>PUMP STATION D GENERAL PLAN</b>			
Date		No.	19
JAPAN INTERNATIONAL COOPERATION AGENCY			

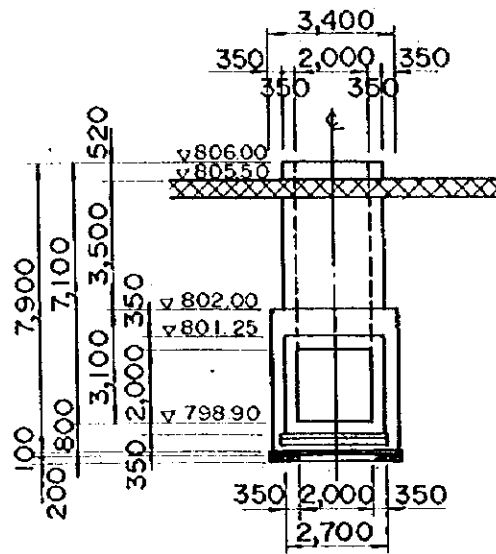


THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP STATION D LONG SECTION			
Date		No.	20
JAPAN INTERNATIONAL COOPERATION AGENCY			

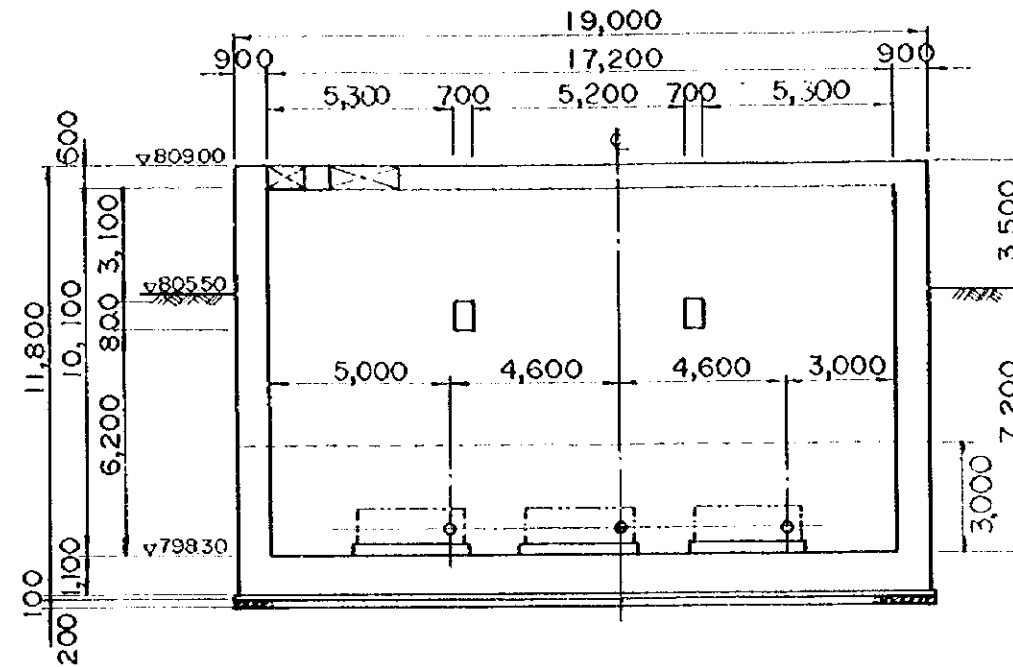
PUMP STATION D SECTION S=1:100



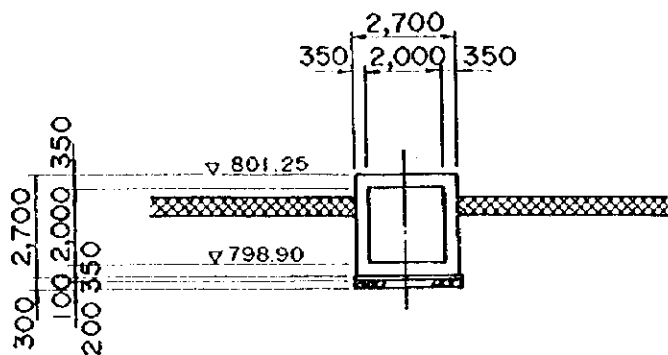
1-1



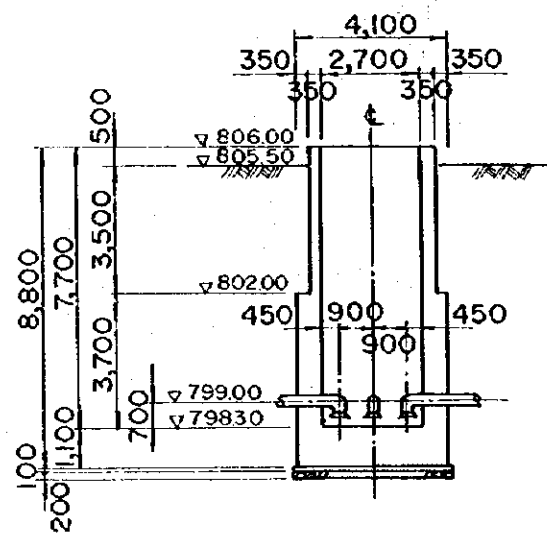
3-3



5-5

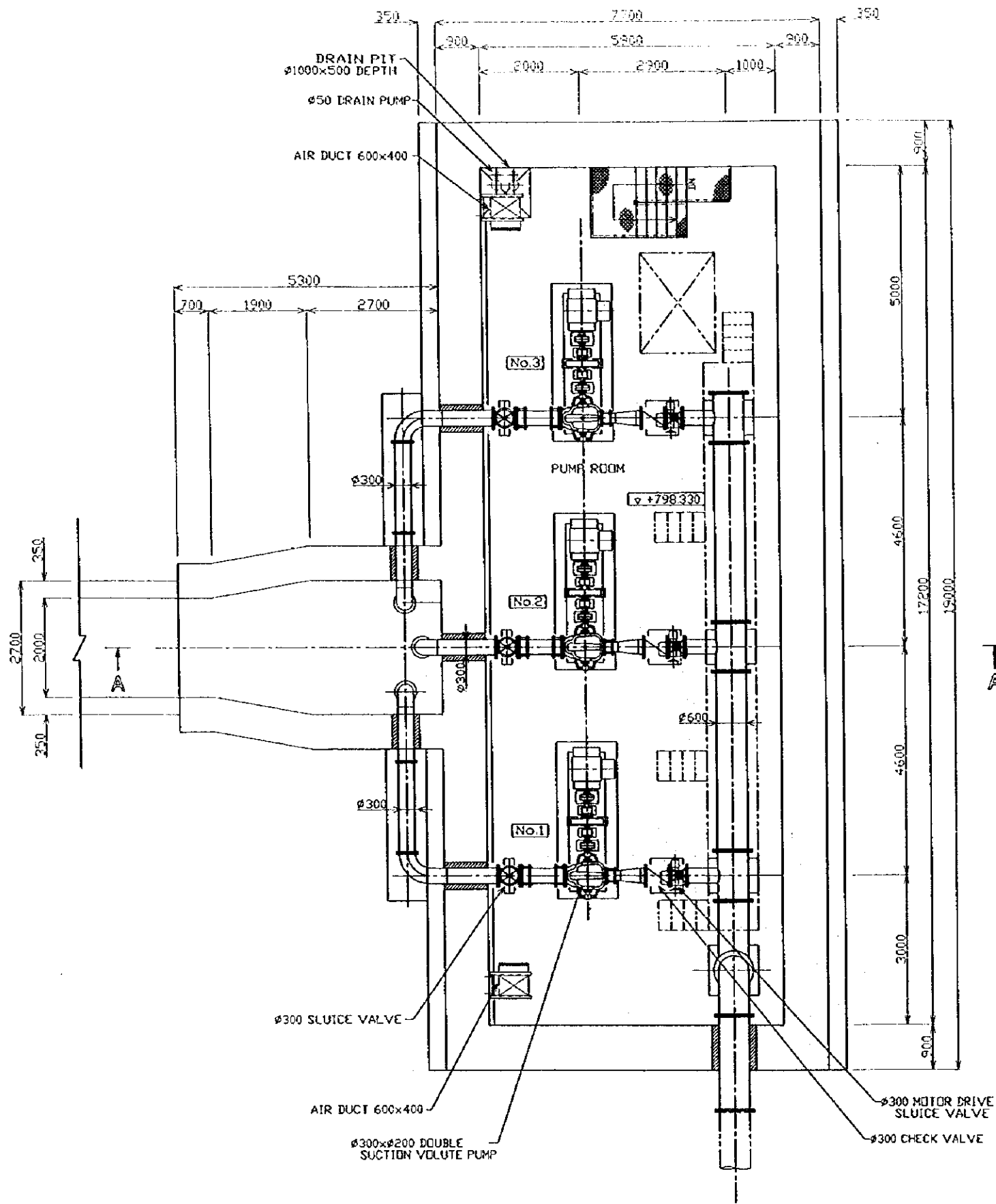


2-2



4-4

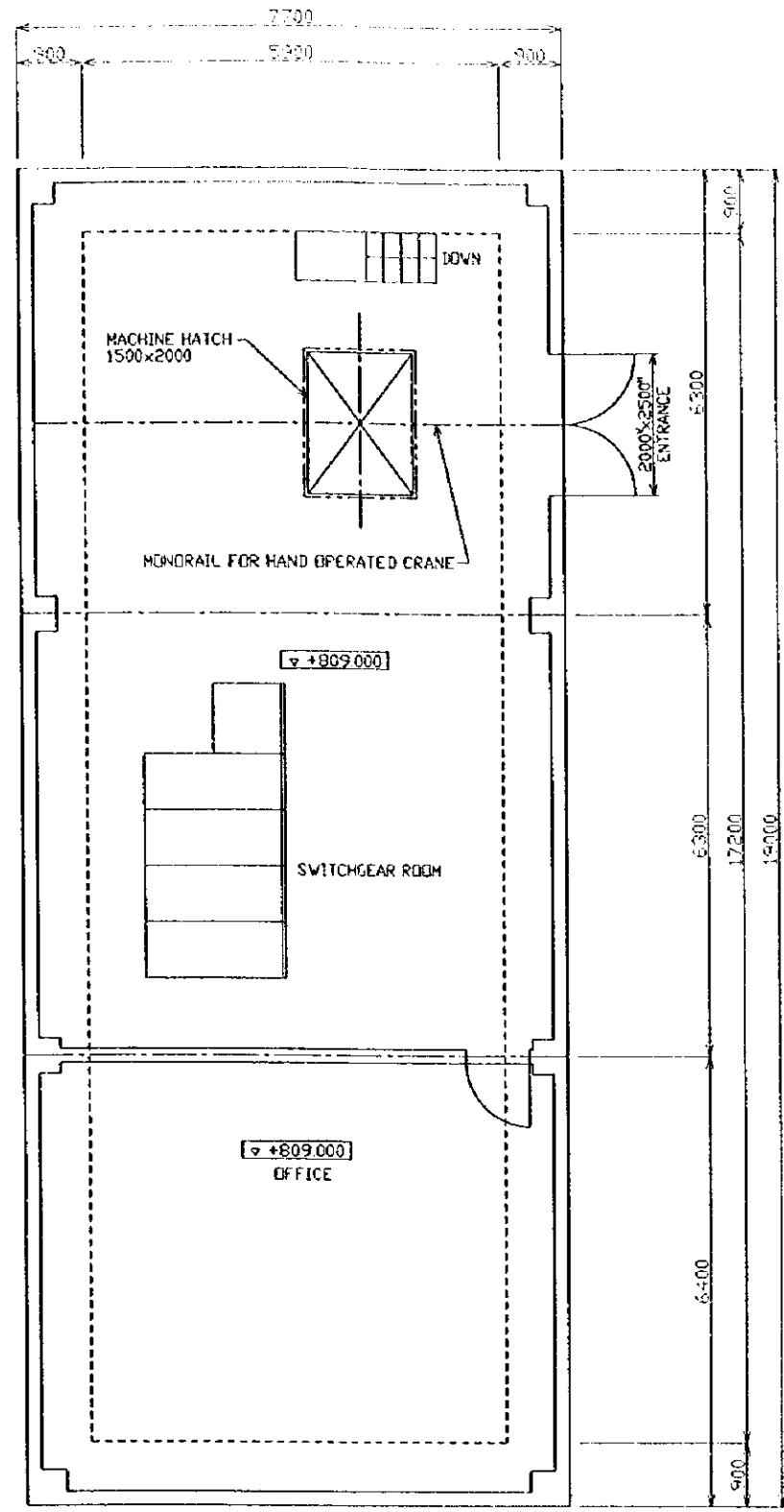
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP STATION D SECTION			
Date		No.	21
JAPAN INTERNATIONAL COOPERATION AGENCY			



↑ A

↑ A

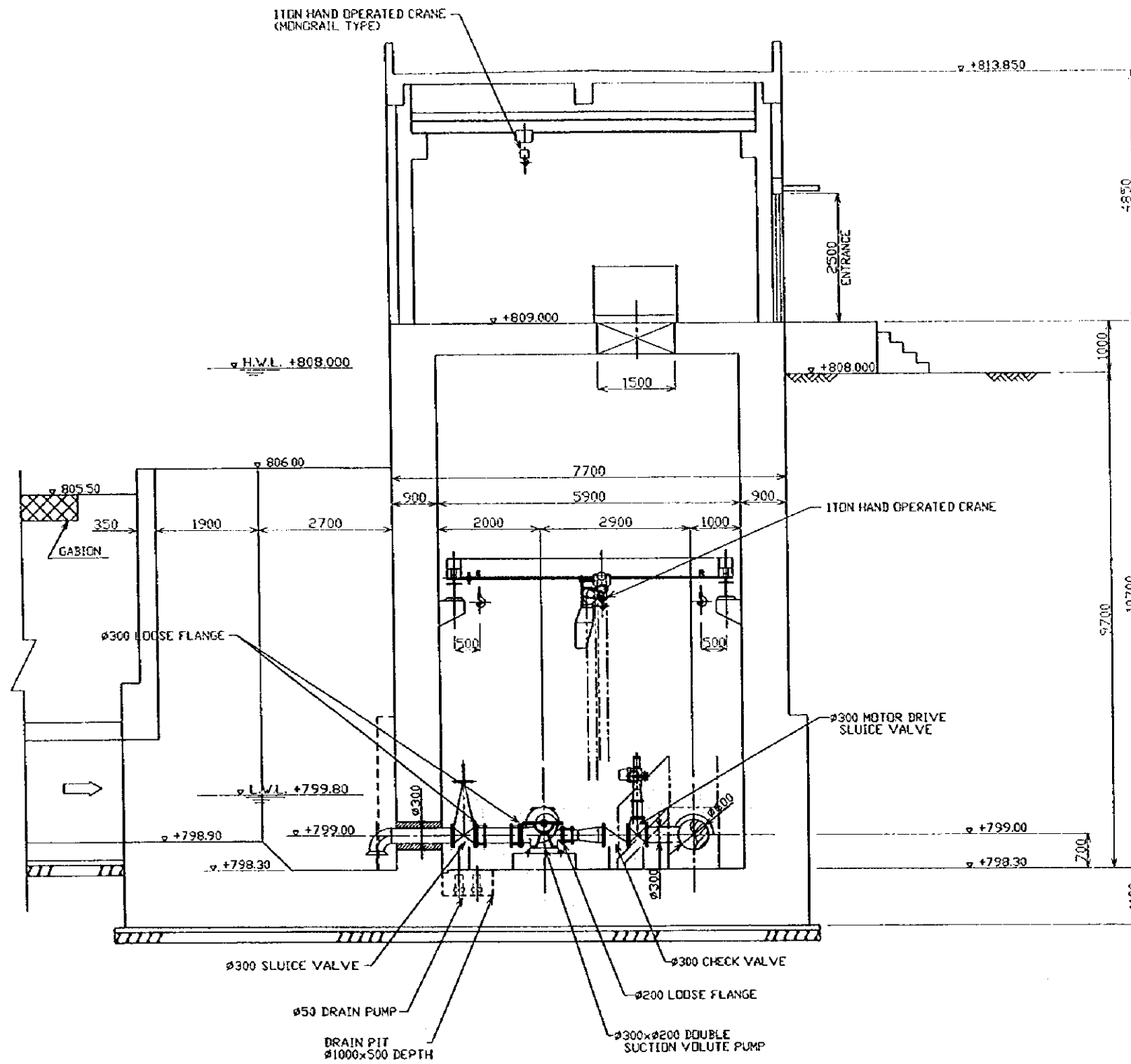
↑ B



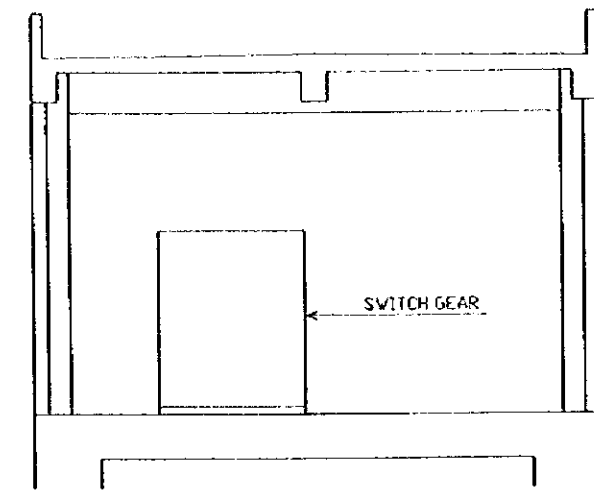
↑ A

↑ B

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT(PHASE 2)			
PUMP STATION (BLOCK D) PLAN			
Date		No.	22
JAPAN INTERNATIONAL COOPERATION AGENCY			

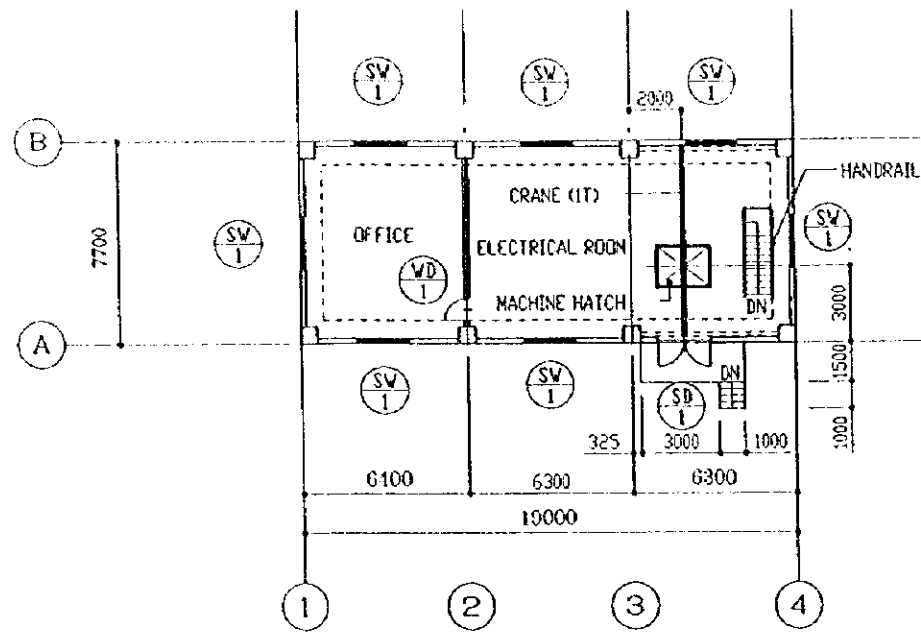


**SECTION A**

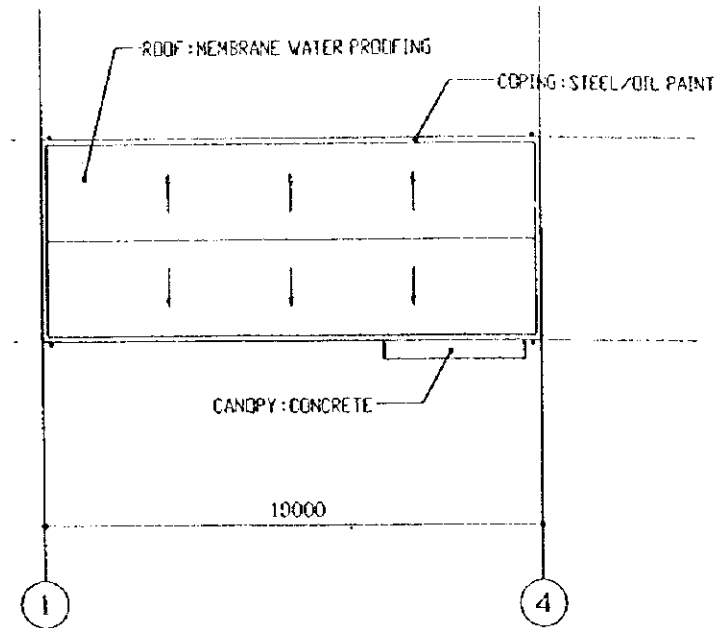


**SECTION B**

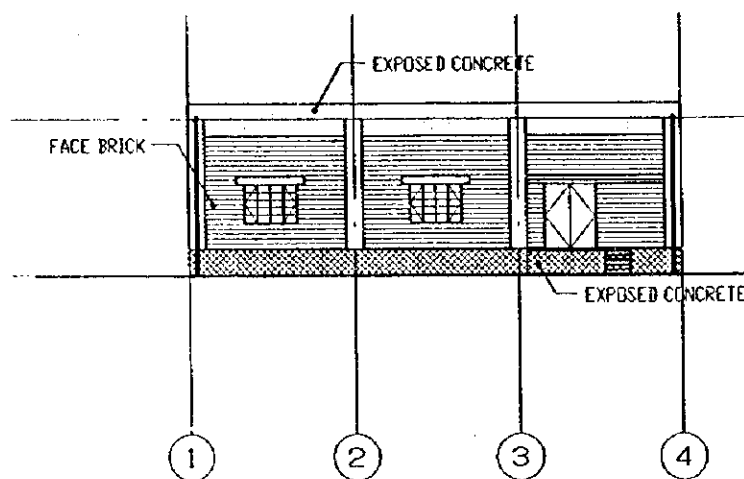
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP STATION (BLOCK D) SECTION			
Date		No.	23
JAPAN INTERNATIONAL COOPERATION AGENCY			



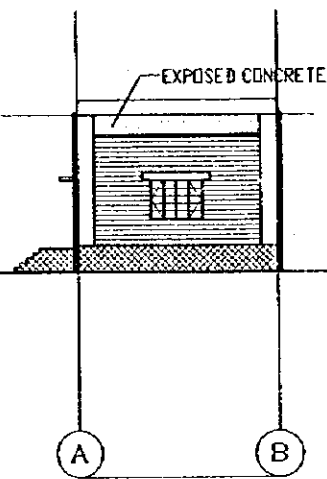
FLOOR PLAN



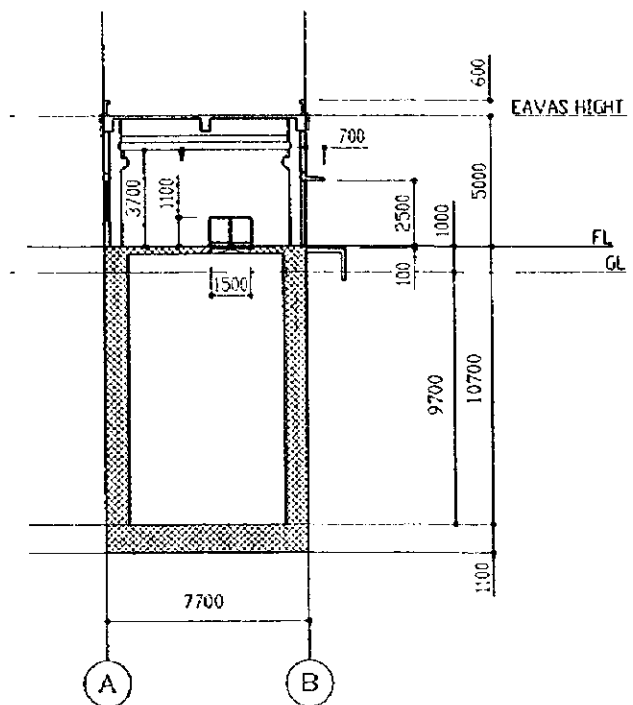
ROOF FLOOR PLAN



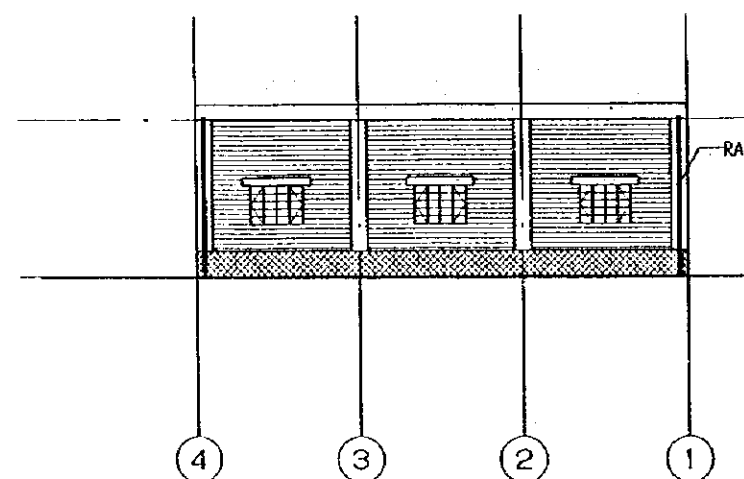
A ELEVATION



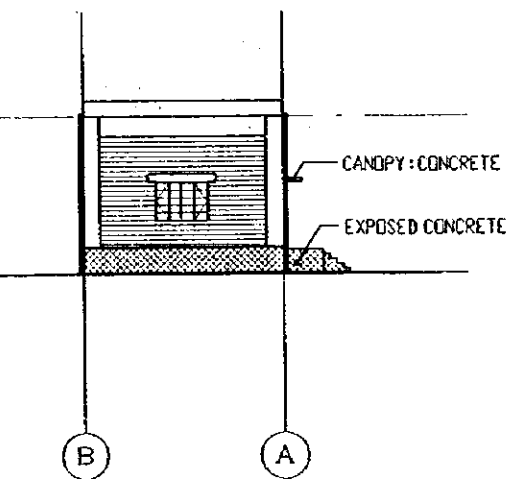
B ELEVATION



SECTION

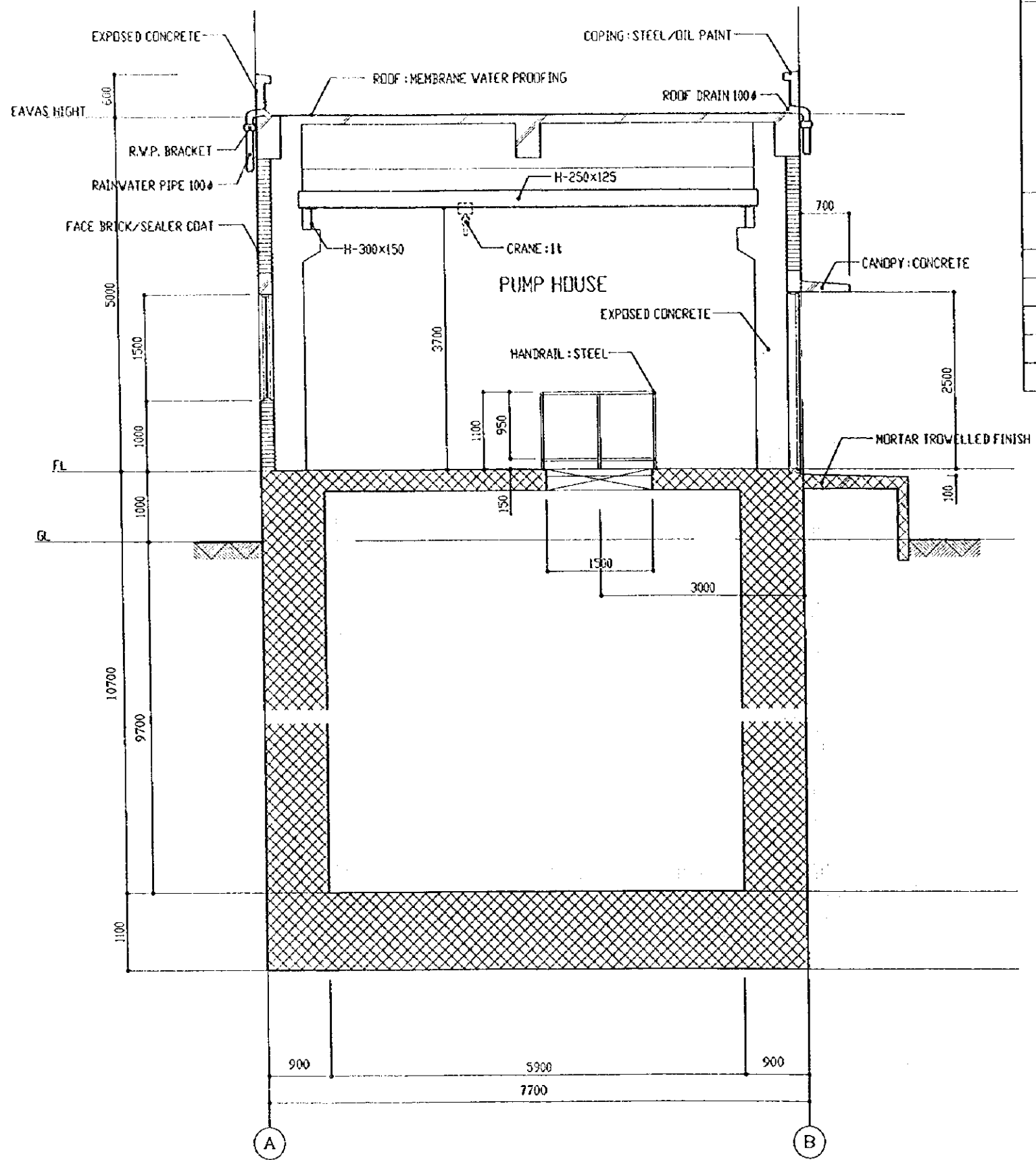


C ELEVATION



D ELEVATION

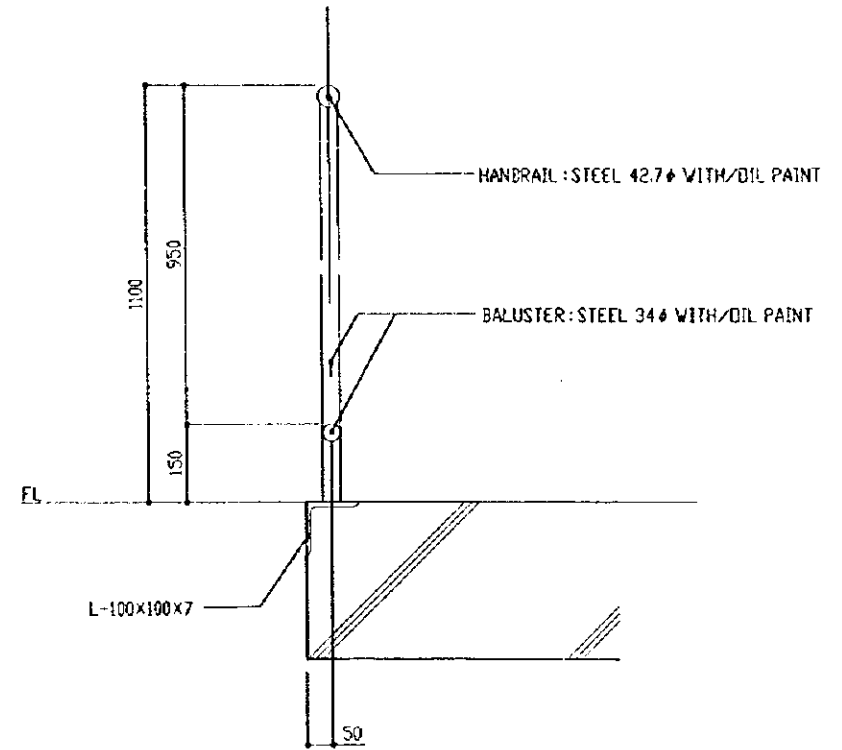
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP ROOM (BLOCK D)			
FLOOR PLAN • ELEVATION • SECTION • KEYPLAN			
Date		No.	24
JAPAN INTERNATIONAL COOPERATION AGENCY			



TYPICAL DETAIL SECTION

DOORS & WINDOWS SCHEDULE

SYMBOL	SD	QUANTITY	1	SW	QUANTITY	7	VD	QUANTITY	1
FIGURE ELEVATION & DIMENSION			1:100			1:100			1:100
TYPE & MATERIAL	DOUBLE SWING			FIXED +			SINGLE SWING		
	FLUSH DOOR/STEEL			CASEMENT WINDOW/STEEL			FLUSH DOOR/PLYWOODEN		
THICKNESS	230						230		
GLASS				4mm OBSCURE GLASS					
FINISH	OIL PAINT			OIL PAINT			OIL PAINT		
HARD WARE	ONE SET			ONE SET			ONE SET		
REMARK									

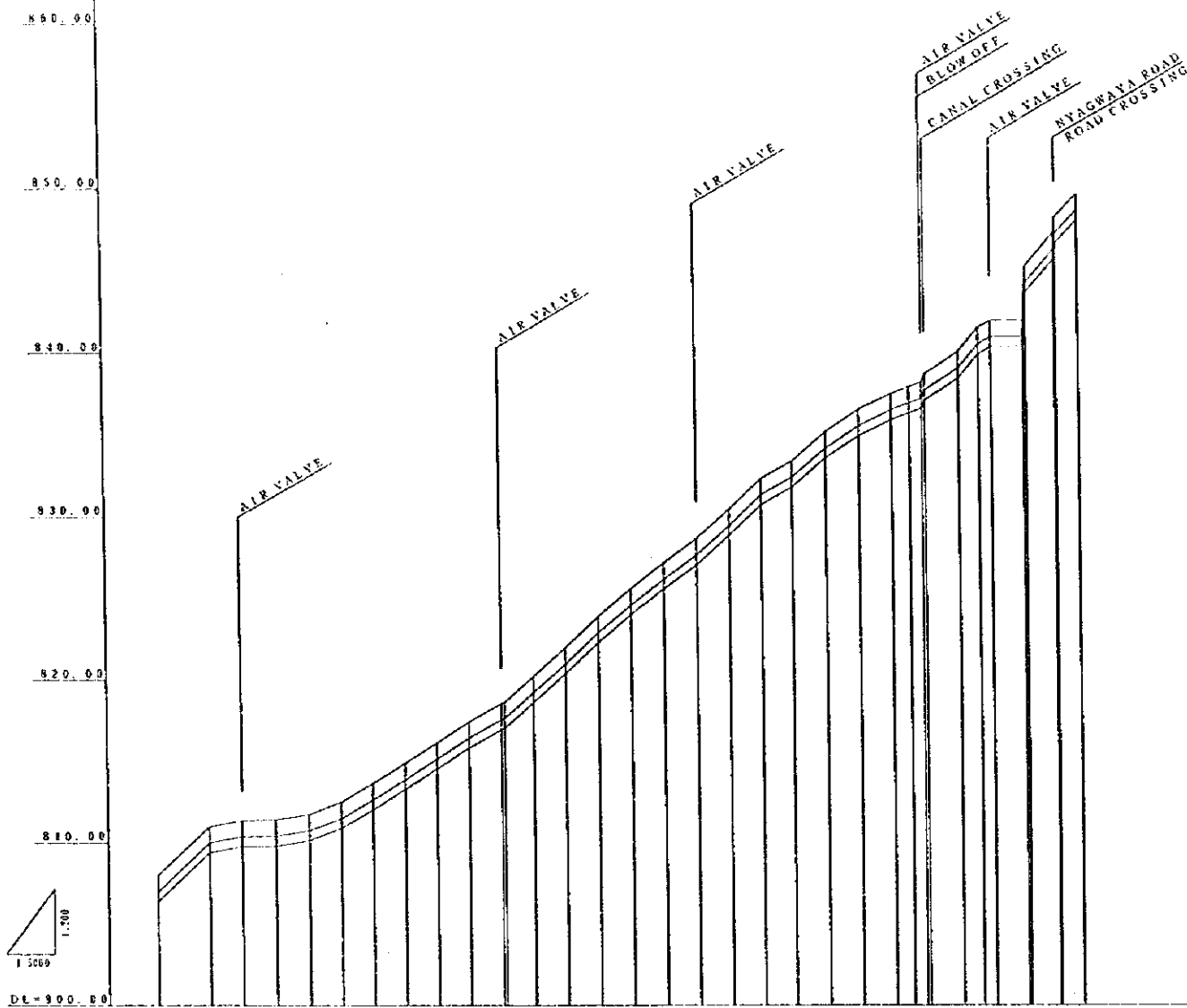


HANDRAIL DETAIL

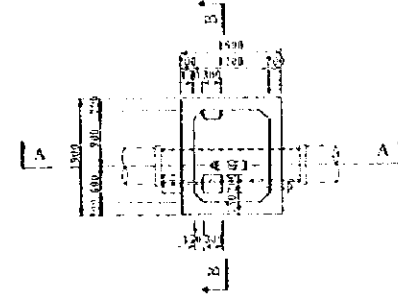
THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)		
PUMP ROOM (BLOCK D)		
TYPICAL SECTION - DETAIL DOORS & WINDOWS SCHEDULE		
Date	No.	25
JAPAN INTERNATIONAL COOPERATION AGENCY		



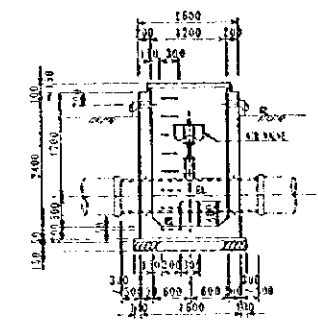
HEAD RACE  
LONG SECTION  
D-P-1  $\phi 600$



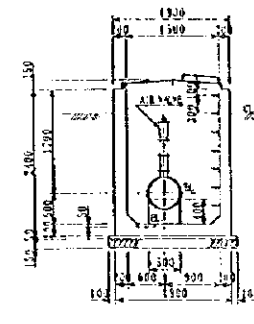
AIR VALVE



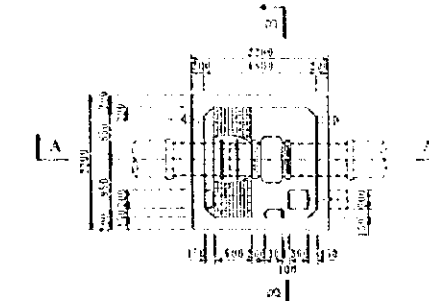
A-A



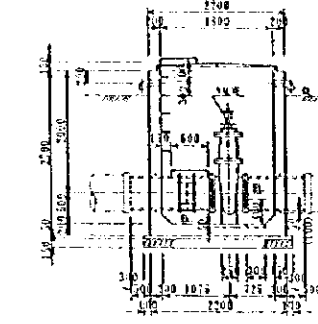
B-B



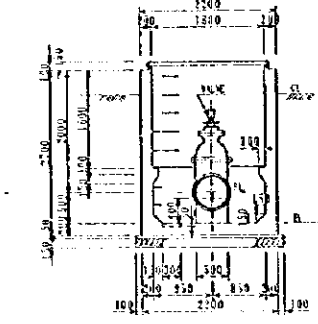
ISORATING VALVE  
 $\phi 100 \sim \phi 600$



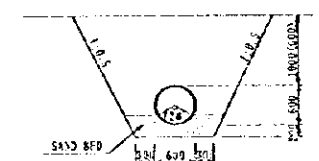
A-A



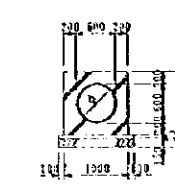
B-B



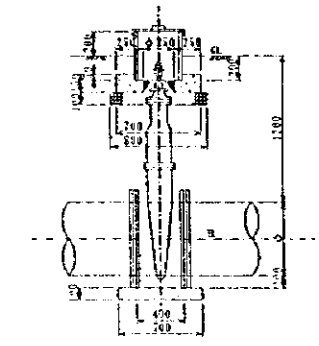
TYPICAL SECTION



CONCRETE PROTECTION



SLUICE VALVE



PIPE	FIBERGLASS PIPE $\phi 600 \times 1016.00$																				
PIPE ELEVATION	806.70	808.64	810.58	812.52	814.46	816.40	818.34	820.28	822.22	824.16	826.10	828.04	830.00	831.94	833.88	835.82	837.76	839.70	841.64	843.58	
GROUND LEVEL	806.00	810.00	811.25	811.40	811.55	811.70	811.85	812.00	812.15	812.30	812.45	812.60	812.75	812.90	813.05	813.20	813.35	813.50	813.65	813.80	
ACCUMULATED DISTANCE	0.00	4.00	10.00	16.00	22.00	28.00	34.00	40.00	46.00	52.00	58.00	64.00	70.00	76.00	82.00	88.00	94.00	100.00	106.00	112.00	
DISTANCE	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00	
STATION	0+00	0+04	0+10	0+18	0+28	0+40	0+54	0+70	0+88	0+110	0+136	0+166	0+200	0+238	0+280	0+326	0+376	0+430	0+488	0+550	
CURVE																					

THE REPUBLIC OF ZIMBABWE

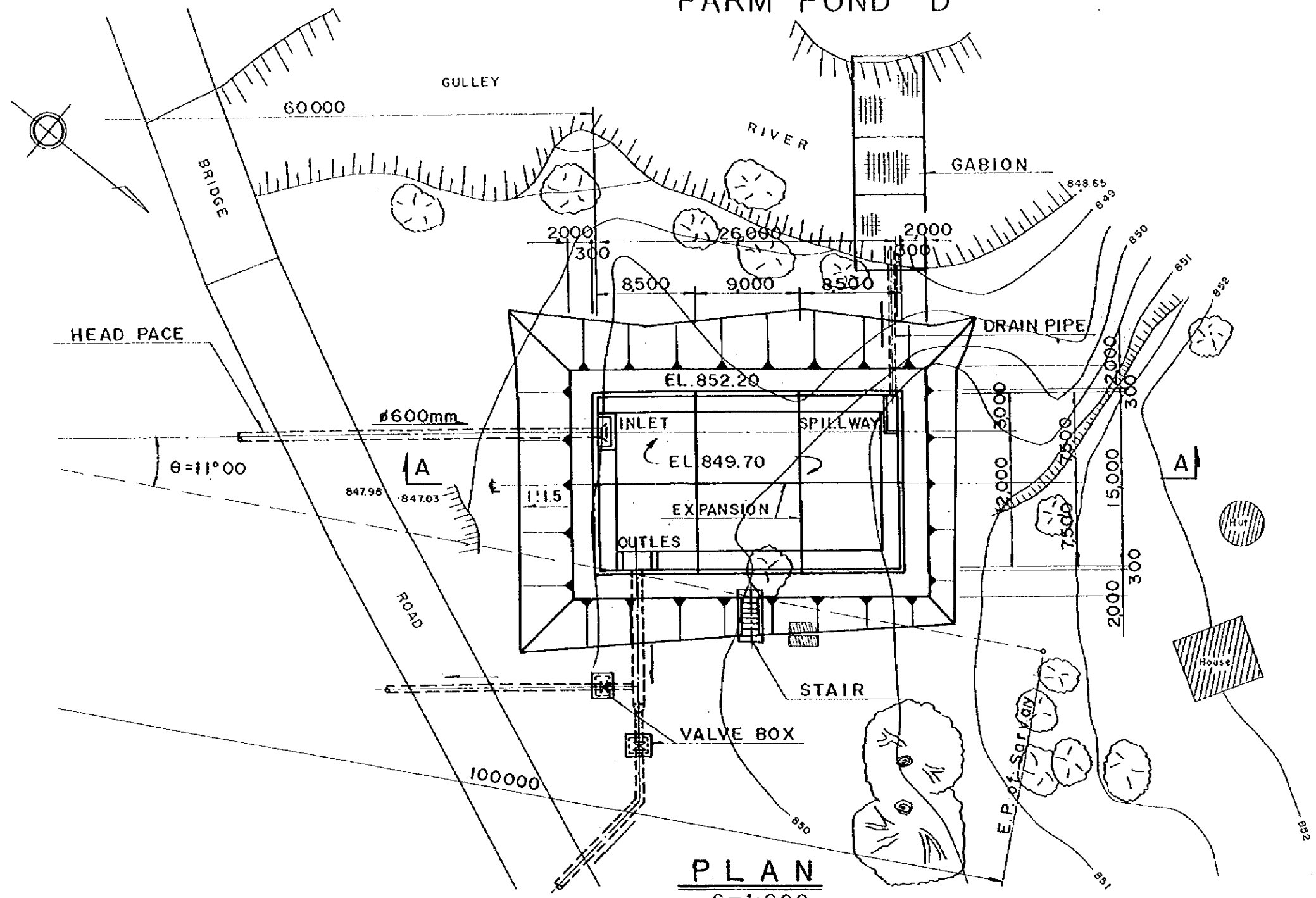
THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

HEAD RACE (BLOCK D)  
LONG SECTION D-P-1

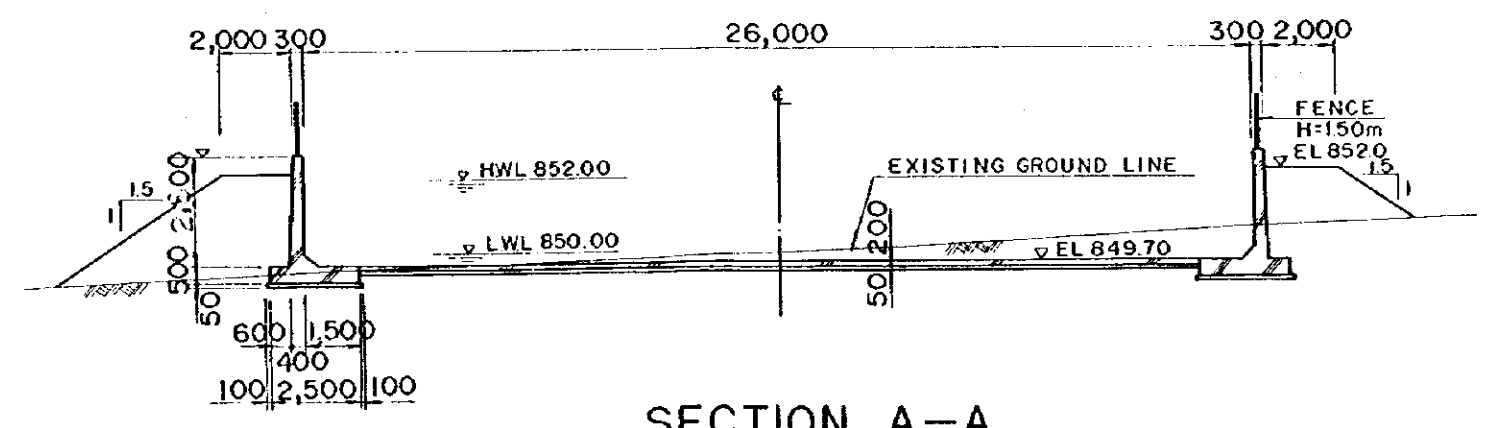
Date: \_\_\_\_\_ No. 26

JAPAN INTERNATIONAL COOPERATION AGENCY

# FARM POND D



**PLAN**  
S=1:200

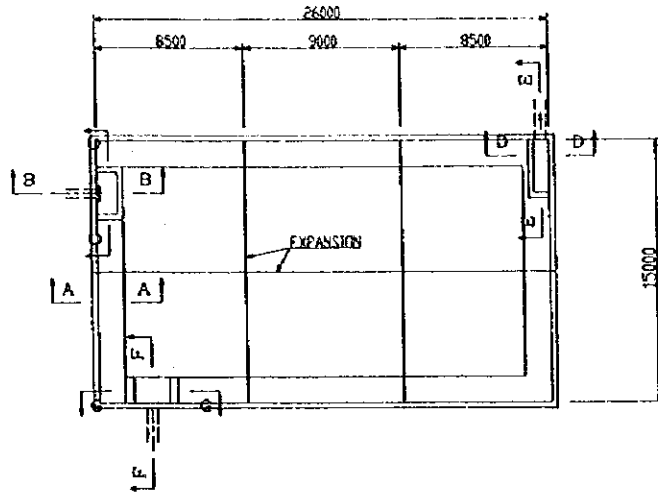


**SECTION A-A**  
S=1:100

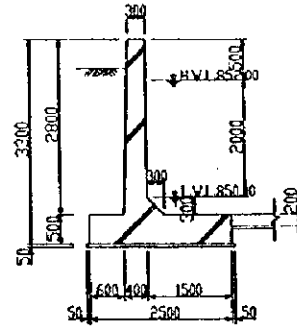
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
<b>FARM POND D</b> PLAN AND SECTION			
Date		No.	27
JAPAN INTERNATIONAL COOPERATION AGENCY			

FARM POND D  
DETAILS OF FARM POND

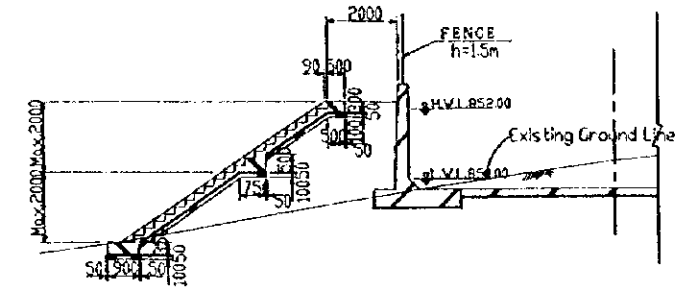
TYPICAL PLAN SCALE 1:200



SECTION A-A SCALE 1:60



STAIR CASE SECTION SCALE 1:100



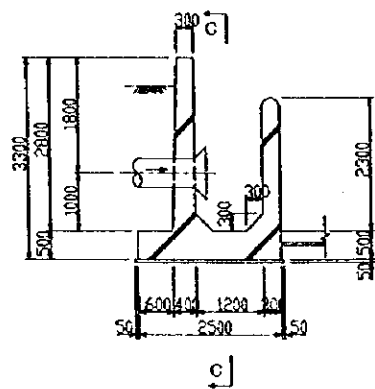
INLET SCALE 1:60

SPILL WAY SCALE 1:60

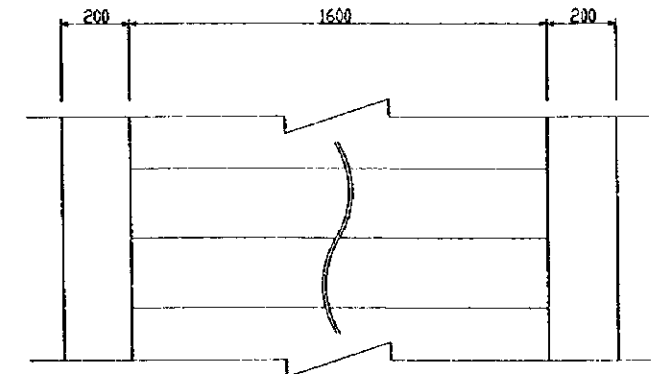
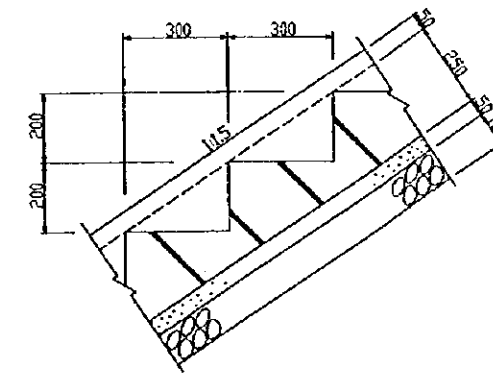
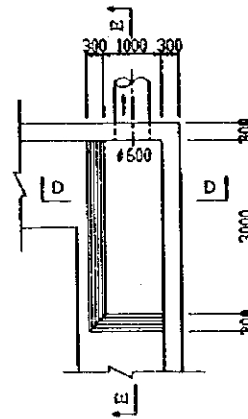
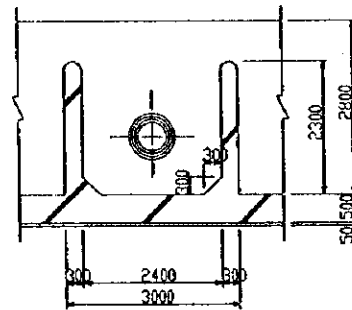
STAIR CASE DETAIL SCALE 1:10

SCALE 1:10

SECTION B-B

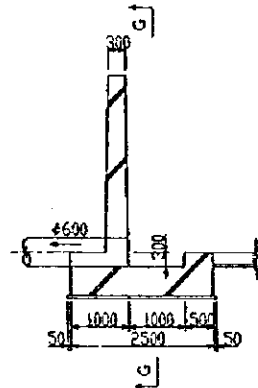


SECTION C-C

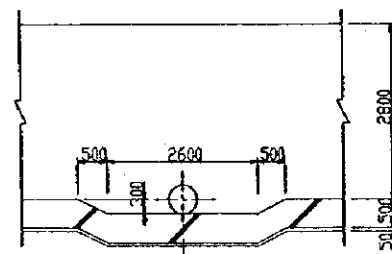


OUTLET SCALE 1:60

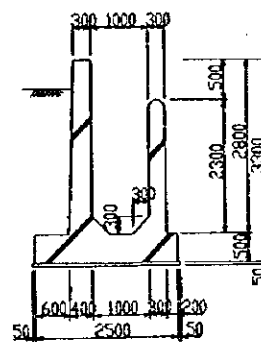
SECTION F-F



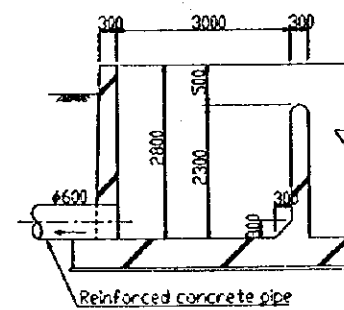
SECTION G-G



SECTION D-D



SECTION E-E



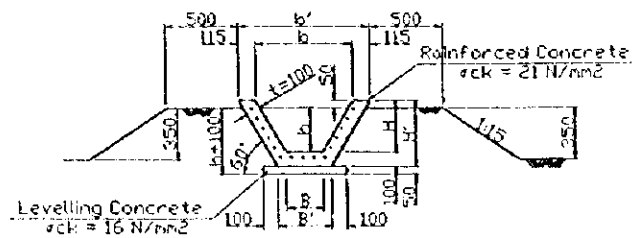
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
FARM POND D DETAILS OF FARM POND			
Date		No.	28
JAPAN INTERNATIONAL COOPERATION AGENCY			

# IRRIGATION FACILITIES (1/3)

SCALE 1:50

## IRRIGATION CANAL

### TYPICAL SECTION



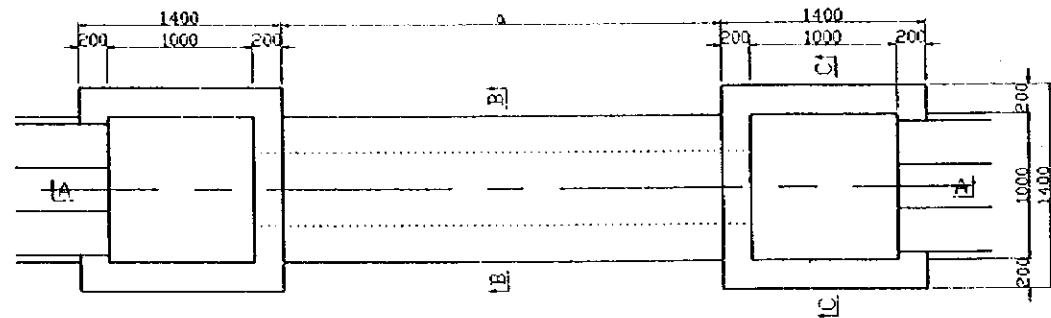
	B	B'	b	b'	H	H'	h
Type A	300	415	762	992	400	500	350
Type B	250	364	654	884	350	450	300
Type C	200	314	546	776	300	400	250

NOTE

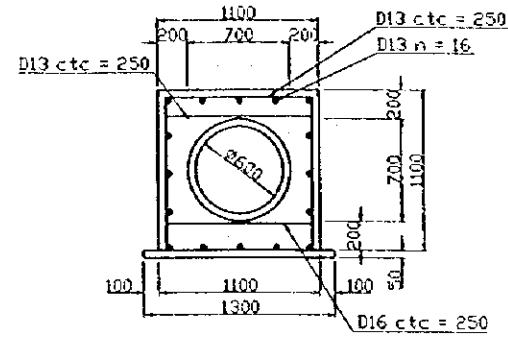
REINFORCEMENT SHALL BE WELDED MESHED WIRE  $\phi 6\text{mm}$  (MESH 100 x 100)

## ROAD CROSS SIPHON

### PLAN

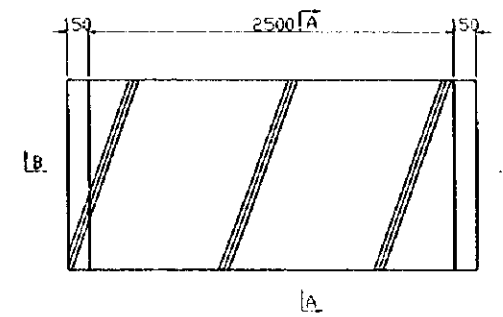


### SECTION B - B

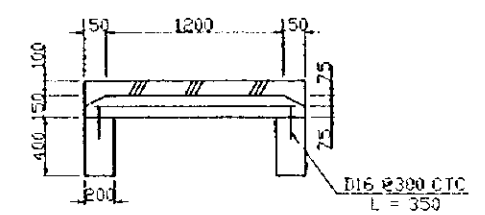


## ENTRANCE WORKS

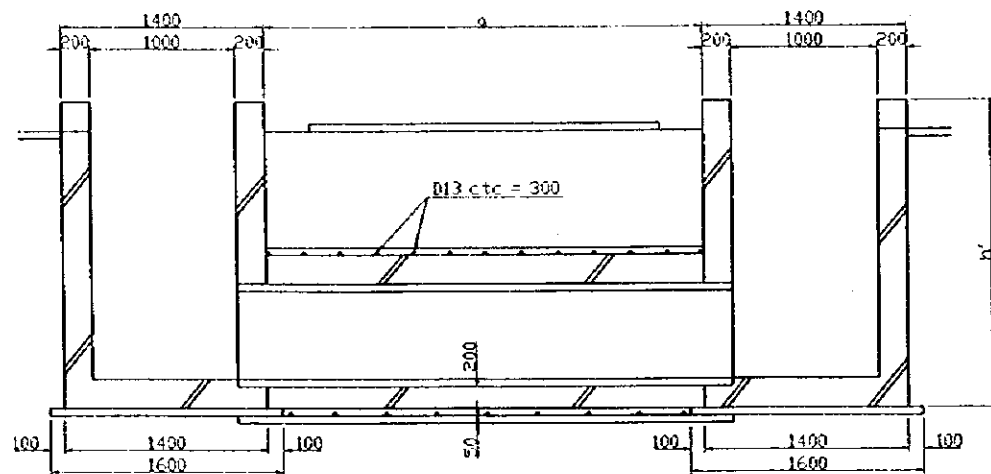
### PLAN



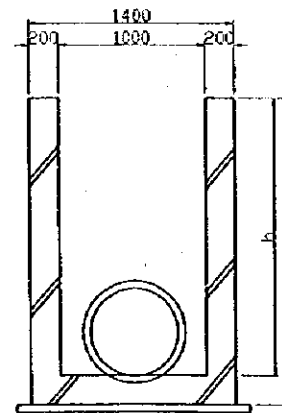
### SECTION A - A



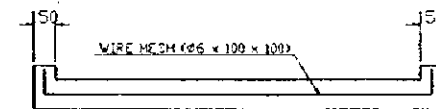
### SECTION A - A



### SECTION C - C



### SECTION B - B



Road Cross Siphon (Irrigation)

	a	b	h	H'	t (< >)
Type 1	3000	600	1850	2100	50
Type 2	7000	600	1850	2100	50
Type 3	10000	600	1850	2100	50
Type 4	15000	600	2150	2400	50
Type 5	19000	600	2150	2400	50

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

IRRIGATION FACILITIES (1/3)  
BLOCK D

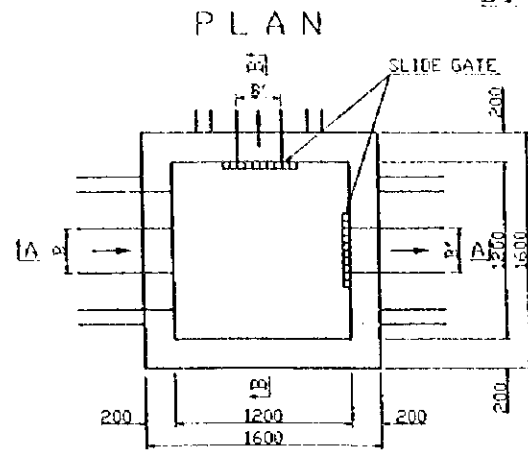
Date No 29

JAPAN INTERNATIONAL COOPERATION AGENCY

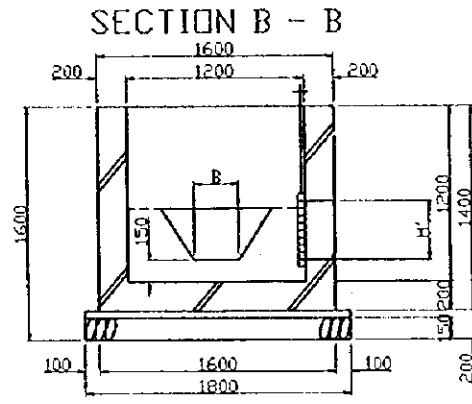
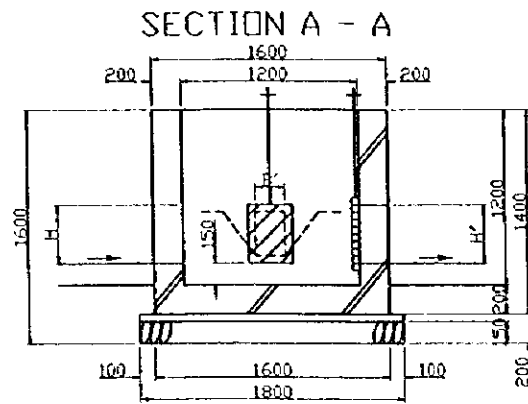
# IRRIGATION FACILITIES (2/3)

SCALE 1:50

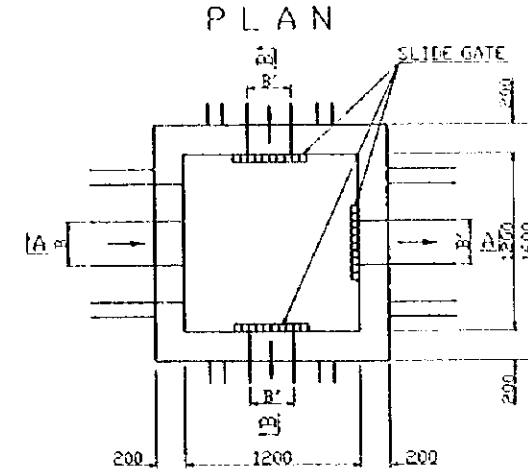
## DIVISION WORKS



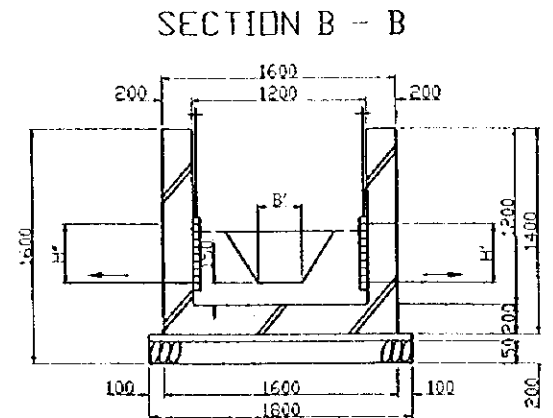
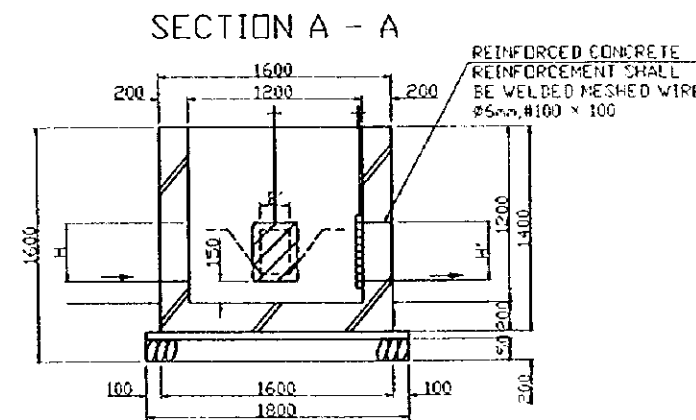
	B	H	B'	H'	GATE	B'	H'	GATE
Type 1	300	400	250	350	300 x 350 x 1	250	350	300 x 350 x 1
2	300	400	250	350	300 x 350 x 1	200	300	250 x 300 x 1
3	250	350	250	350	300 x 350 x 1	250	350	300 x 350 x 1
4	250	350	250	350	300 x 350 x 1	200	300	250 x 300 x 1
5	250	350	200	300	250 x 300 x 1	200	300	250 x 300 x 1
6	200	300	200	300	250 x 300 x 1	200	300	250 x 300 x 1



## DIVISION WORKS

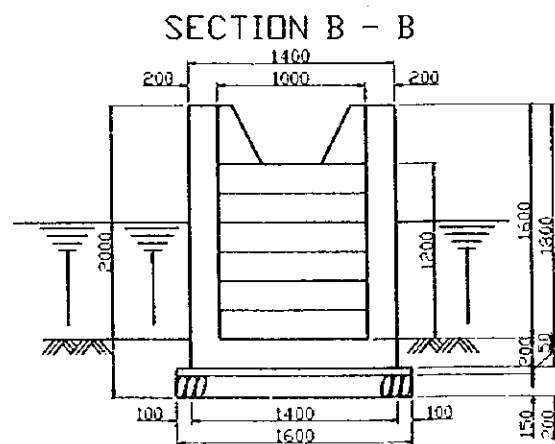
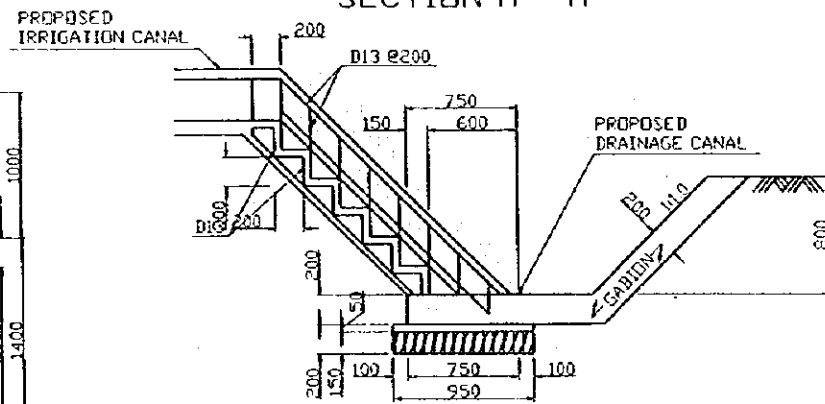
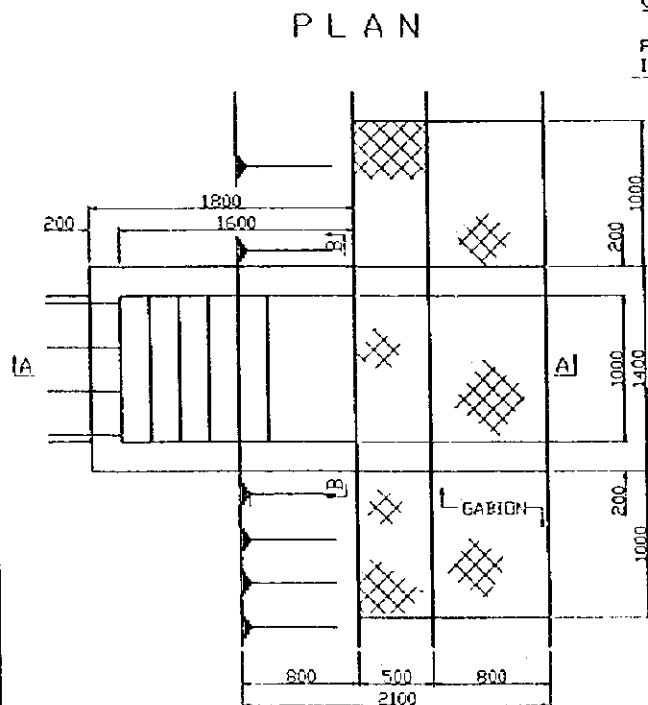


	B	H	B'	H'	GATE	B'	H'	GATE
Type 7	300	400	250	350	300 x 350 x 2	200	300	250 x 300 x 1

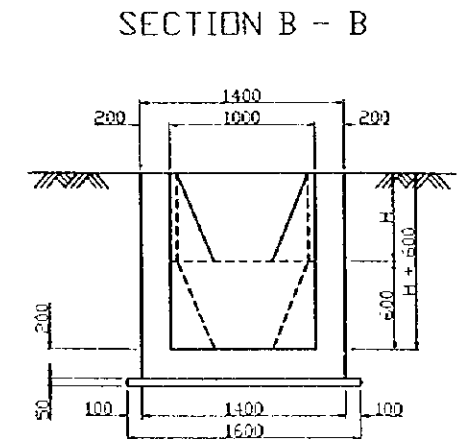
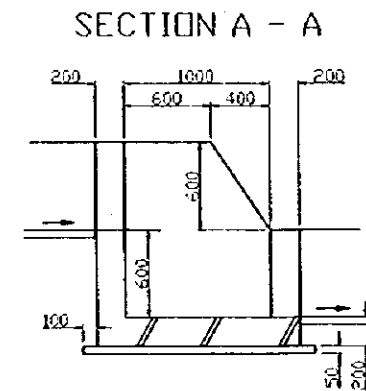
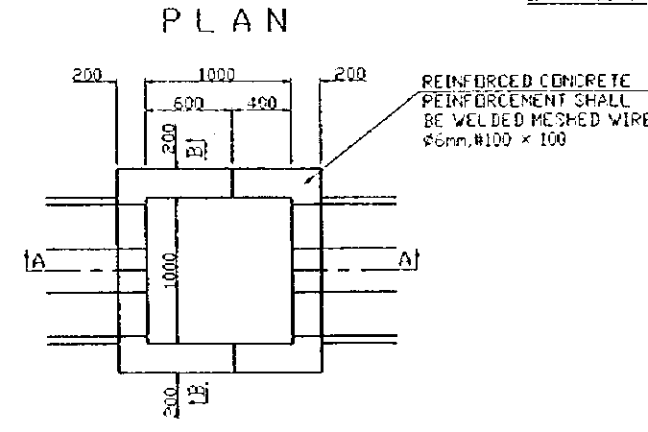


NOTE  
CUT-THROAT FLUME SHALL BE INSTALLED AT THE STARTING PORTION OF EVERY DIVERTED CANAL. THE STANDARD OF THE FLUME SHALL BE SUBJECT TO IRRIGATION MANUAL ISSUED BY AGRITEX.

## CHUTE



## DROP



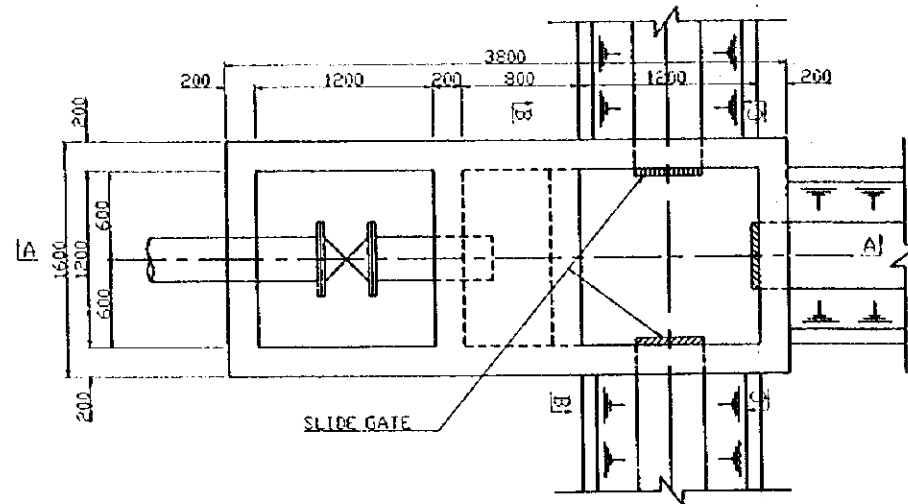
THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)		
IRRIGATION FACILITIES (2/3) BLOCK D		
Date	No.	30
JAPAN INTERNATIONAL COOPERATION AGENCY		

# IRRIGATION FACILITIES (3/3)

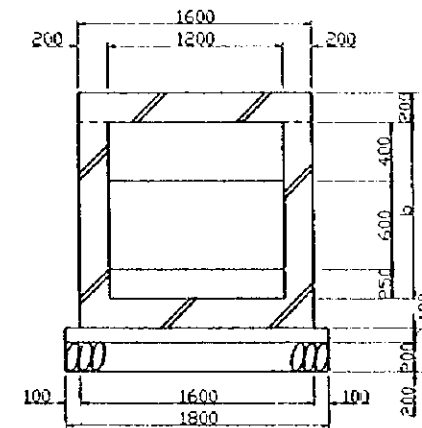
SCALE 1:50

## DISCHARGE CHAMBER

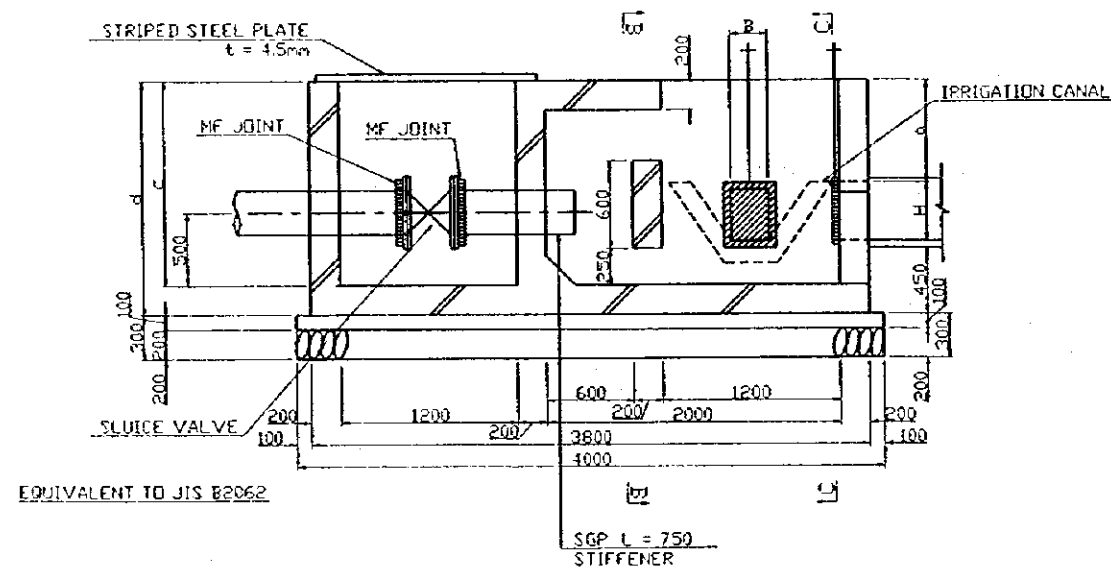
PLAN



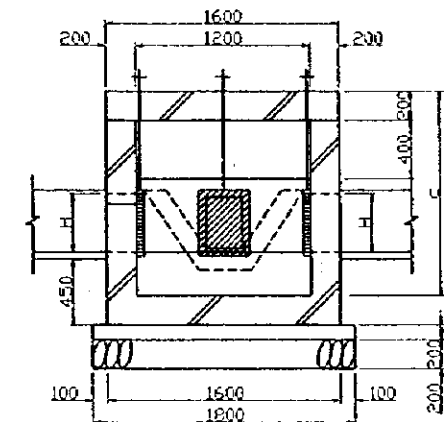
SECTION B - B



SECTION A - A



SECTION C - C



TYPE	B-1	H-1	B-2	H-2	B-3	H-3	SLUCE VALVE	MF JOINT
Type 1	250	350	250	350	-	-	φ300	φ300
Type 2	250	350	-	-	-	-	φ200	φ200
Type 3	300	400	250	350	-	-	φ300	φ300
Type 4	300	400	300	400	-	-	φ300	φ300

note: To a front shall be adjusted to the site ground levels width of Slide Gate should be wider than bottom of canal by 5 cm.

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

IRRIGATION FACILITIES (3/3)  
BLOCK D

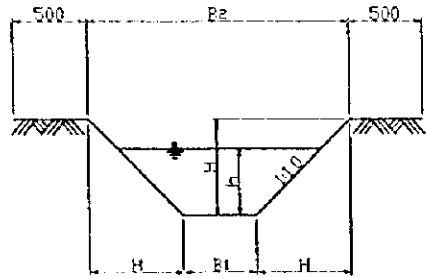
Date No. 31

JAPAN INTERNATIONAL COOPERATION AGENCY

# DRAINAGE FACILITIES (1/2)

SCALE 1:50

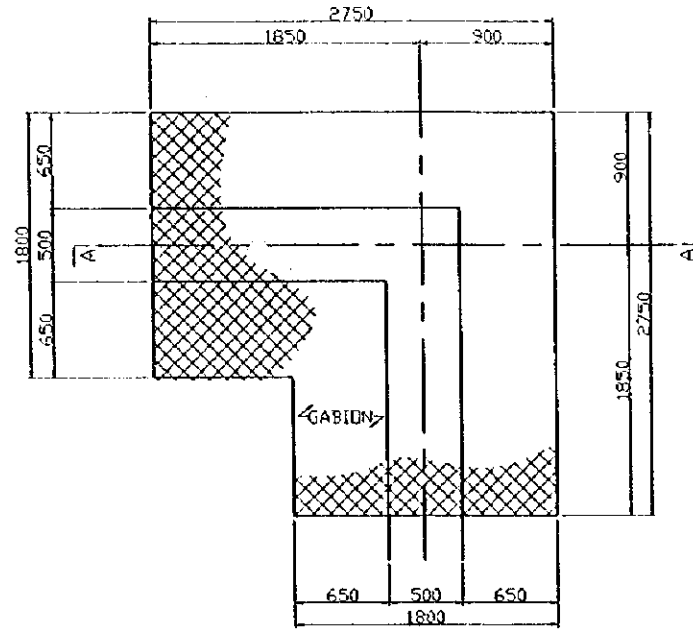
## DRAINAGE CANAL TYPICAL SECTION



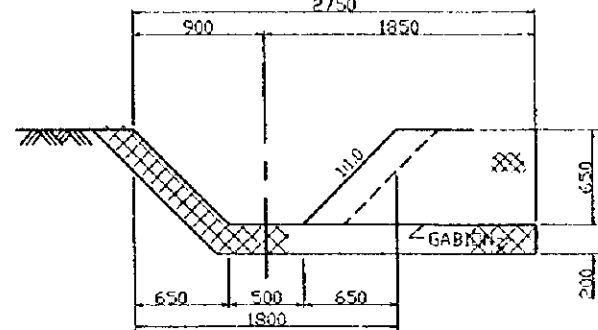
	B1	B2	h	H
Type 1	0.60	2.50	0.35	0.95
Type 2	0.70	2.70	0.40	1.00
Type 3	0.70	2.90	0.50	1.10

## SLOPE PROTECTION

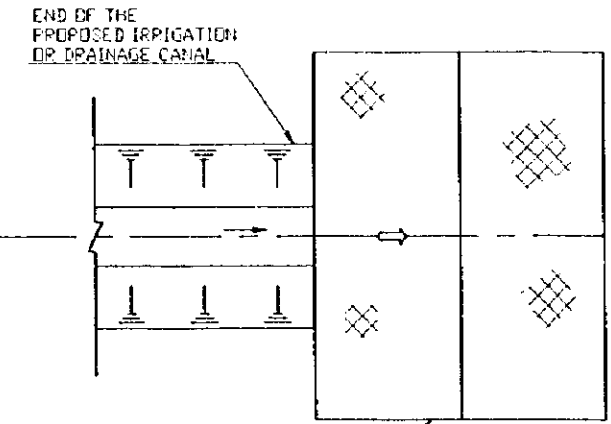
### PLAN



### SECTION A - A



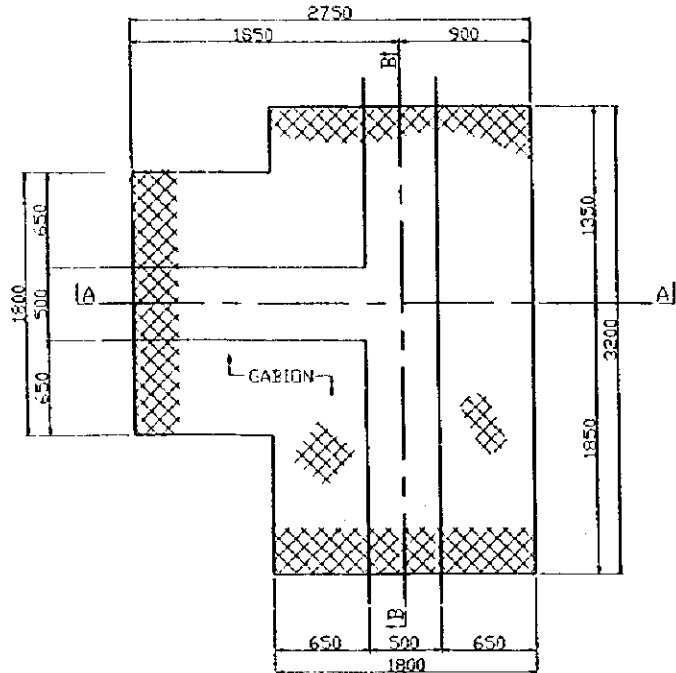
## WASTEWAY



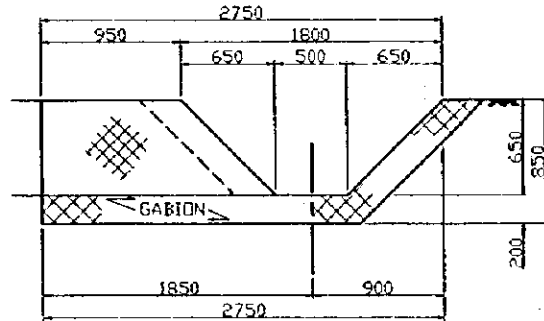
GABION n = 4  
2000 x 1500 x 300  
ø4, #100 x 100

## CONFLUENT FACILITIES

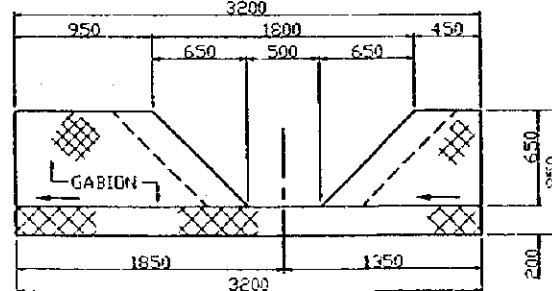
### PLAN



### SECTION A - A

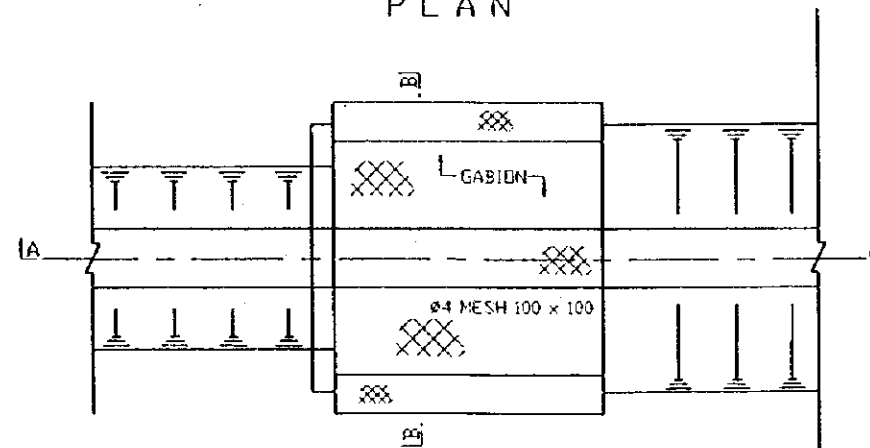


### SECTION B - B

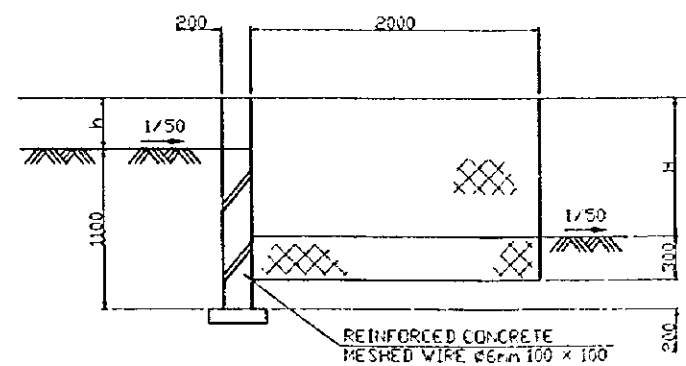


## DROP STRUCTURE FOR DRAINAGE CANAL

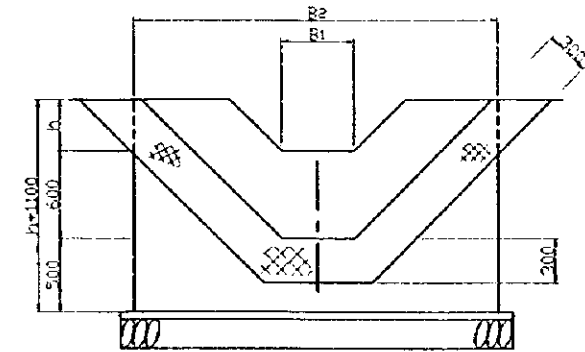
### PLAN



### SECTION A - A



### SECTION B - B



	B1	B2	h	H
Type 1	0.60	2.50	0.35	0.95
Type 2	0.70	2.70	0.40	1.00
Type 3	0.70	2.90	0.50	1.10

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

DRAINAGE FACILITIES (1/2)  
BLOCK D

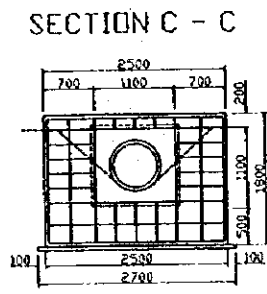
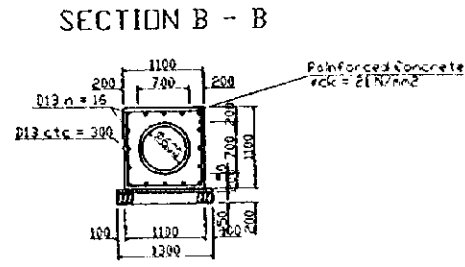
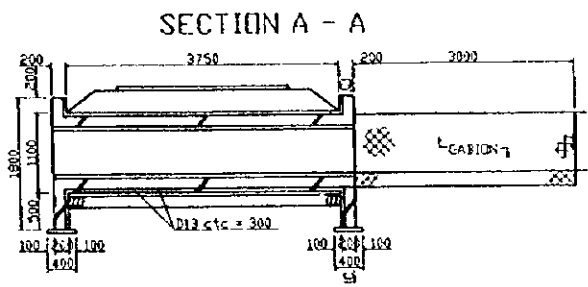
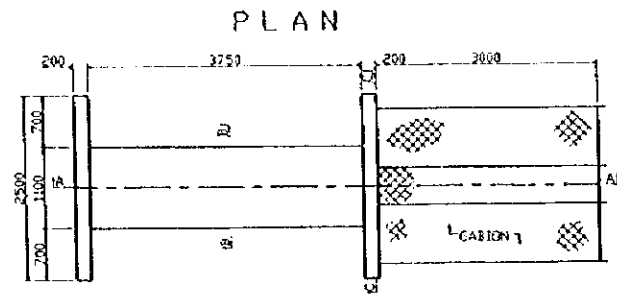
Date	No.	32
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JAPAN INTERNATIONAL COOPERATION AGENCY

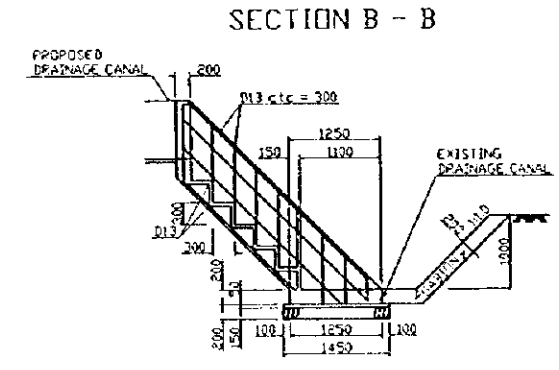
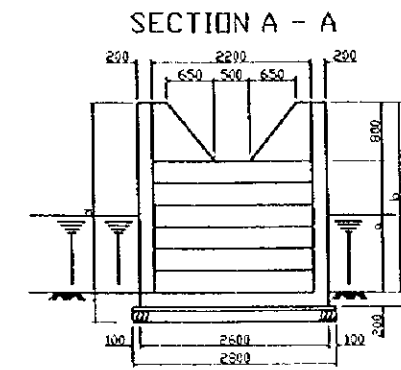
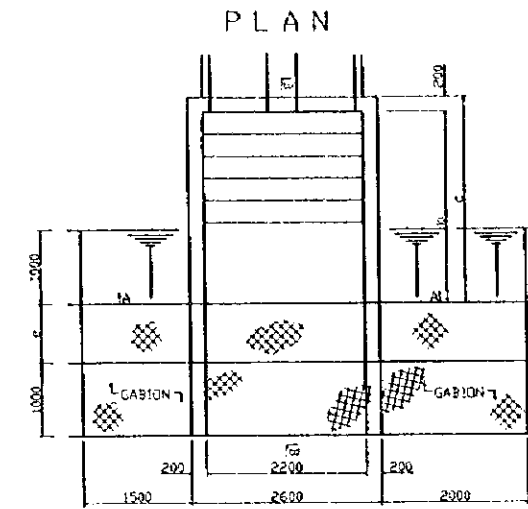
# DRAINAGE FACILITIES (2/2)

SCALE 1:100

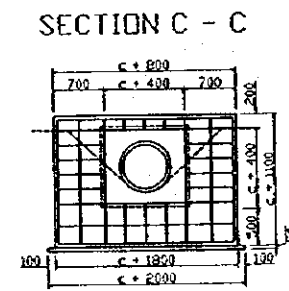
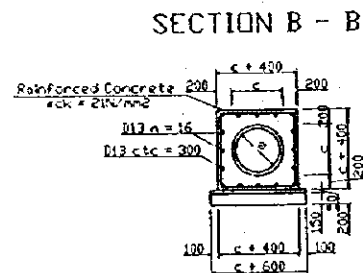
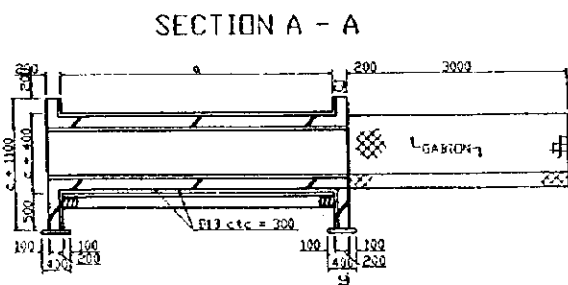
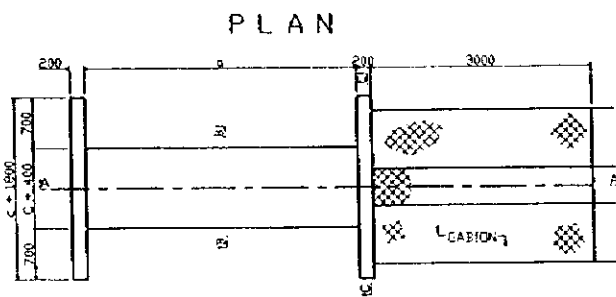
## ROAD CROSS CULVERT



## CHUTE



## CANAL CROSS CULVERT (ENTRANCE WORKS)



Chute

	a	b	c	d
Type 1	1800	2600	2800	3000
Type 2	12000	13800	14000	14200

Canal Cross Culvert (Drainage)  
(Entrance Works)

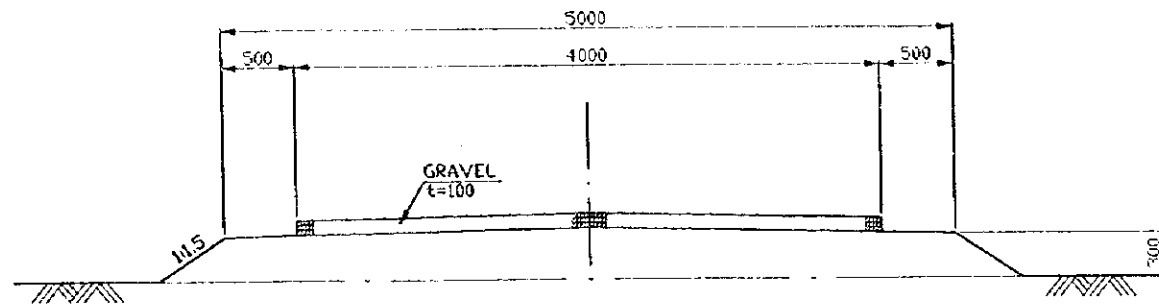
	Road Type	a	b	c
Type 1	b = 3	3000	600	700
Type 2	b = 5	5000	600	700
Type 3	b = 5	5000	1600	1180
Type 4	b = 5	5000	1200	1420

<b>THE REPUBLIC OF ZIMBABWE</b>			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
<b>DRAINAGE FACILITIES (2/2)</b> <b>BLOCK D</b>			
Date		No.	33
JAPAN INTERNATIONAL COOPERATION AGENCY			

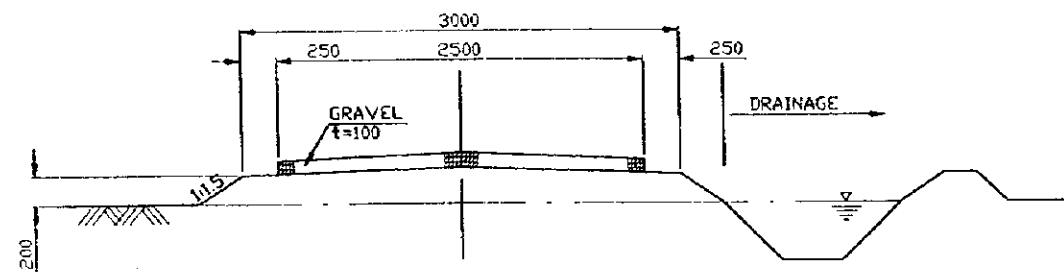


# FARM ROAD TYPICAL SECTION

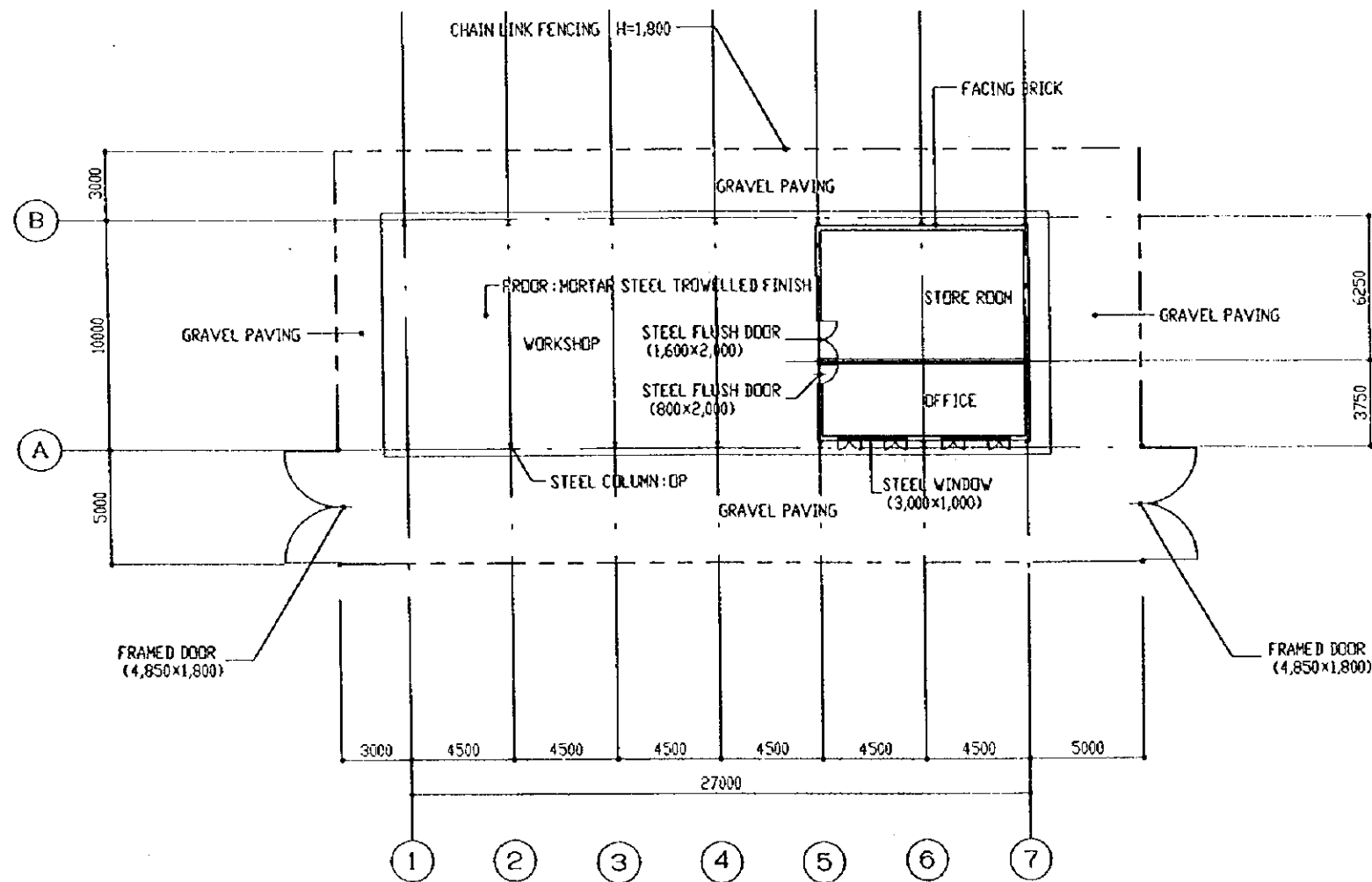
## TRUNK ROAD



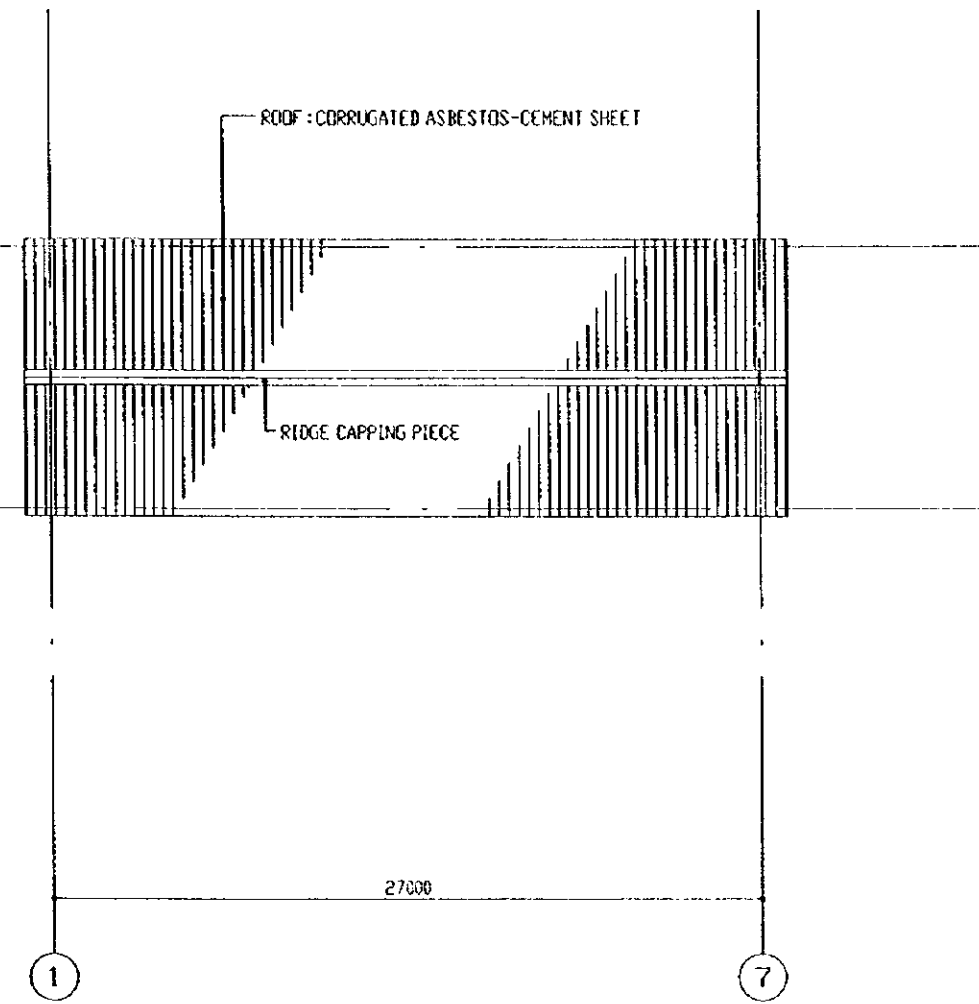
## SECONDARY ROAD



THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
FARM ROAD TYPICAL SECTION BLOCK D			
Date		No.	34
JAPAN INTERNATIONAL COOPERATION AGENCY			

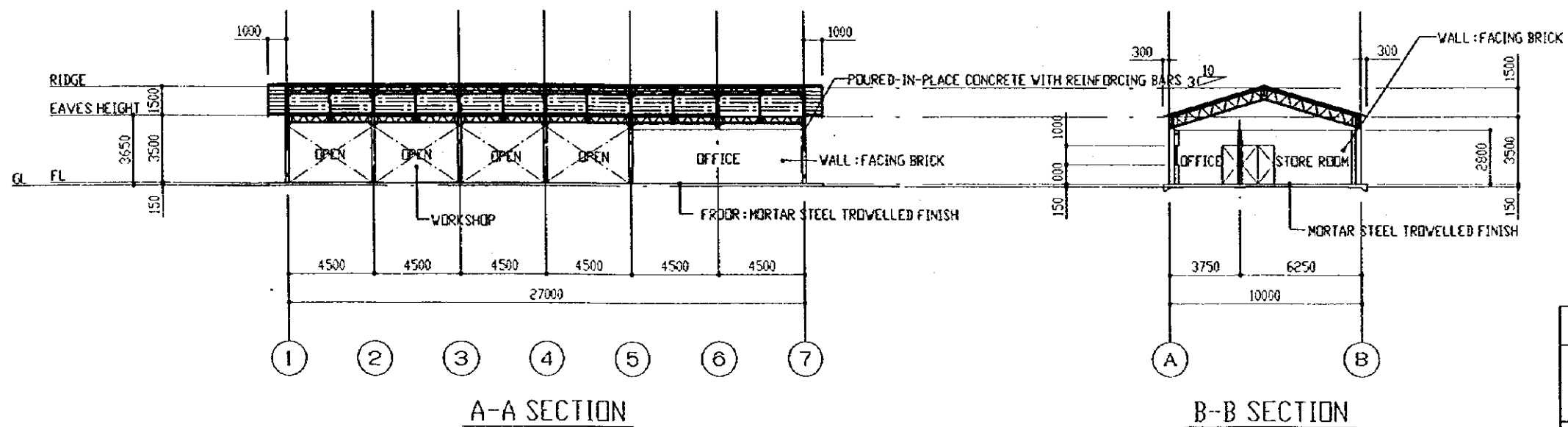
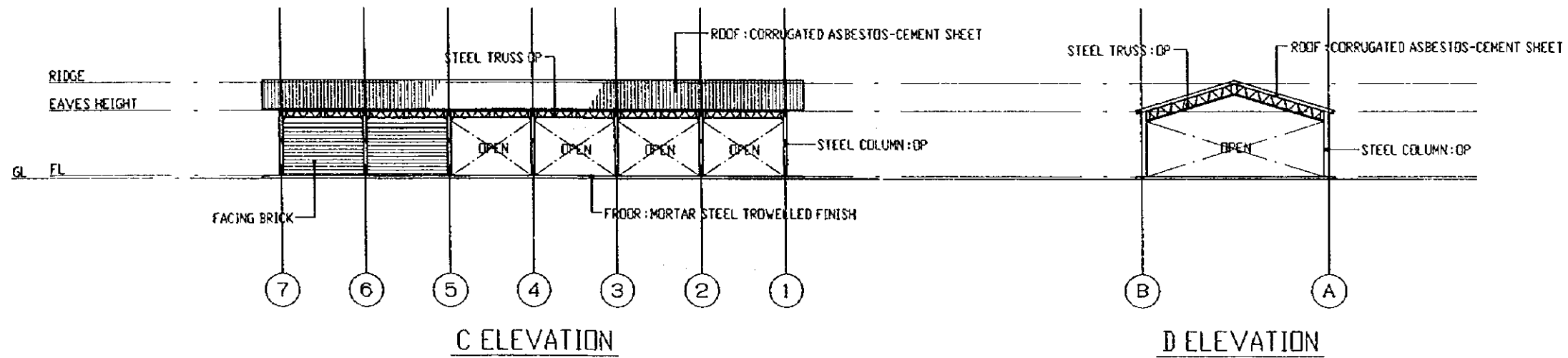
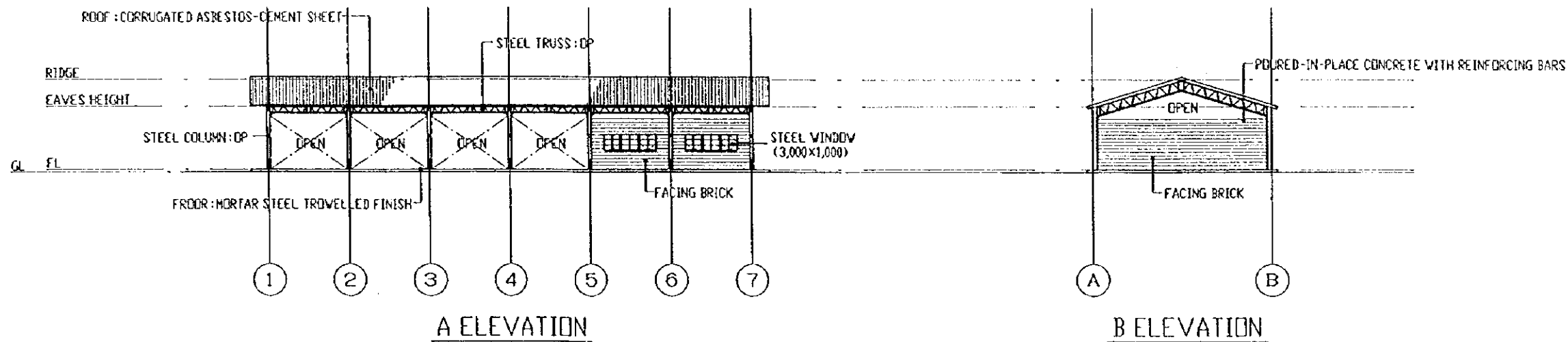


SITE PLAN - FLOOR PLAN

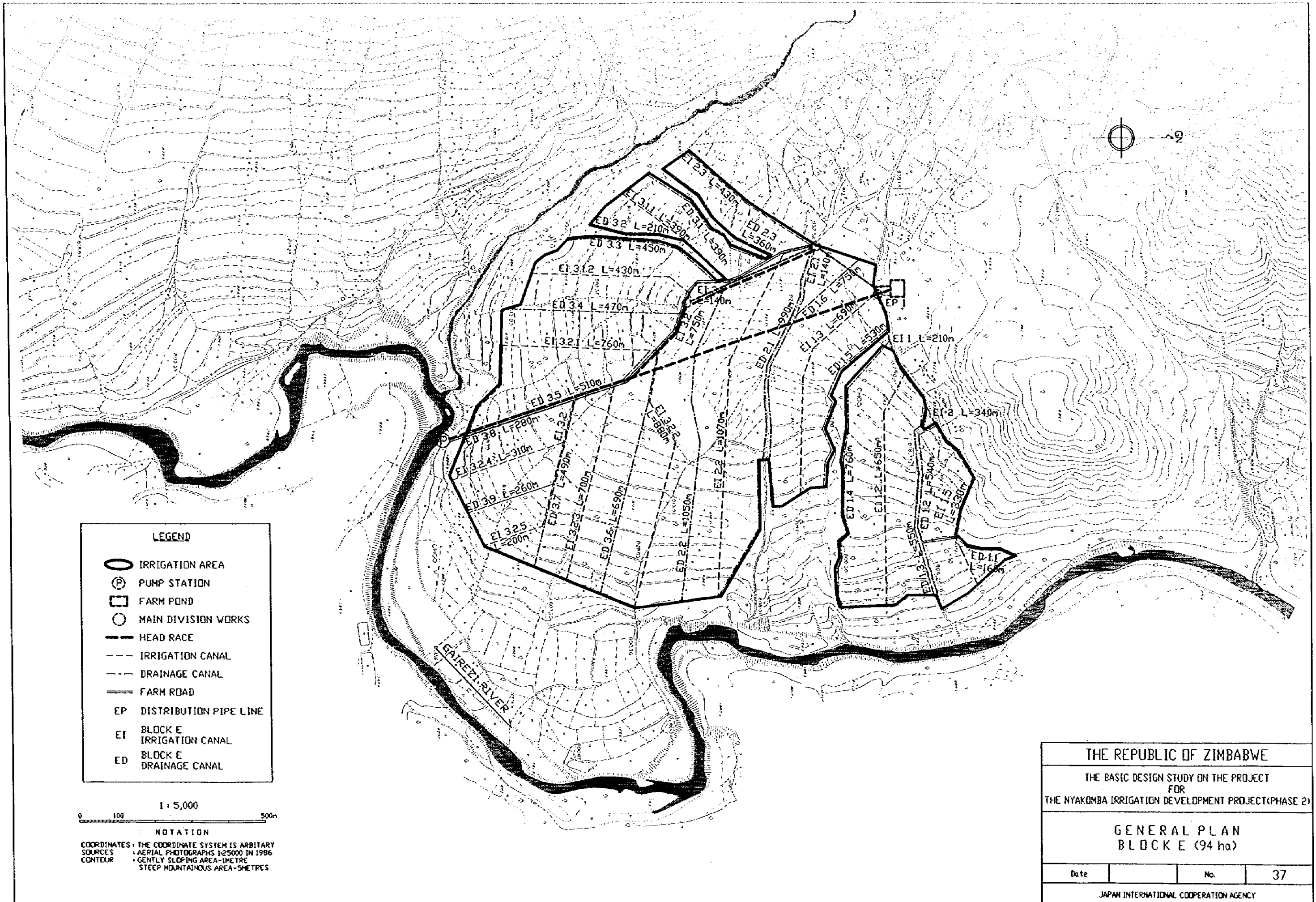


ROOF FLOOR PLAN

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
TEMPORARY STORAGE FACILITY (1/2) BLOCK D SITE PLAN - FLOOR PLAN - ROOF FLOOR PLAN			
Date		No.	35
JAPAN INTERNATIONAL COOPERATION AGENCY			



THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
TEMPORARY STORAGE FACILITY (2/2) BLOCK D ELEVATION SECTION			
Date		No.	36
JAPAN INTERNATIONAL COOPERATION AGENCY			



**LEGEND**

- IRRIGATION AREA
- PUMP STATION
- FARM POND
- MAIN DIVISION WORKS
- HEAD RACE
- IRRIGATION CANAL
- DRAINAGE CANAL
- FARM ROAD
- DISTRIBUTION PIPE LINE
- BLOCK E IRRIGATION CANAL
- BLOCK E DRAINAGE CANAL

1 : 5,000  
 0 100 500m

**NOTATION**  
 COORDINATES - THE COORDINATE SYSTEM IS ARBITRARY  
 SOURCES - AERIAL PHOTOGRAPHS 1:25000 IN 1986  
 CONTOUR - GENTLY SLOPING AREA-1METRE  
 STEEP MOUNTAINOUS AREA-5METRES

THE REPUBLIC OF ZIMBABWE

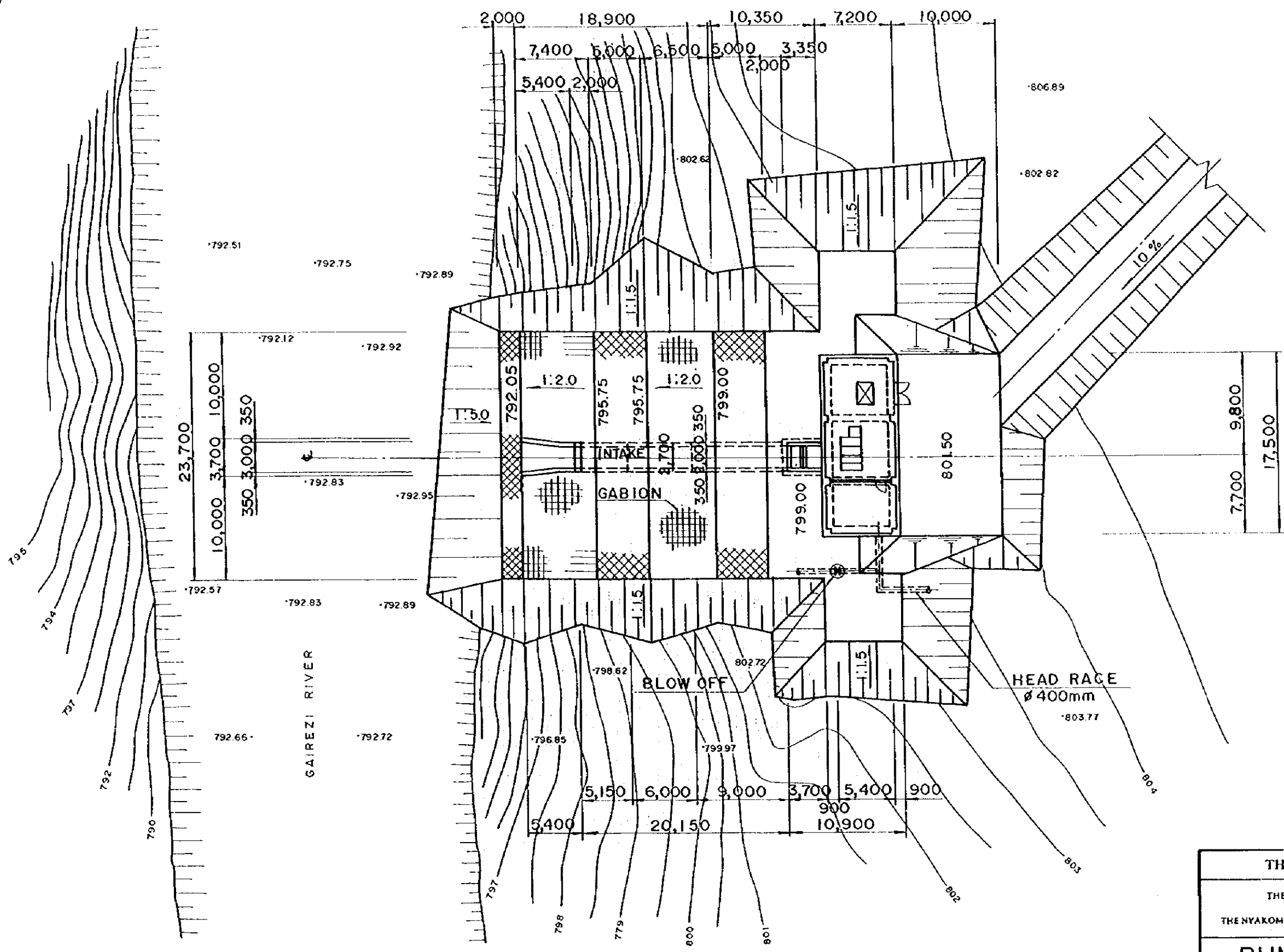
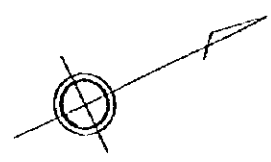
THE BASIC DESIGN STUDY ON THE PROJECT  
 FOR  
 THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

**GENERAL PLAN  
 BLOCK E (94 ha)**

Date	No.	37
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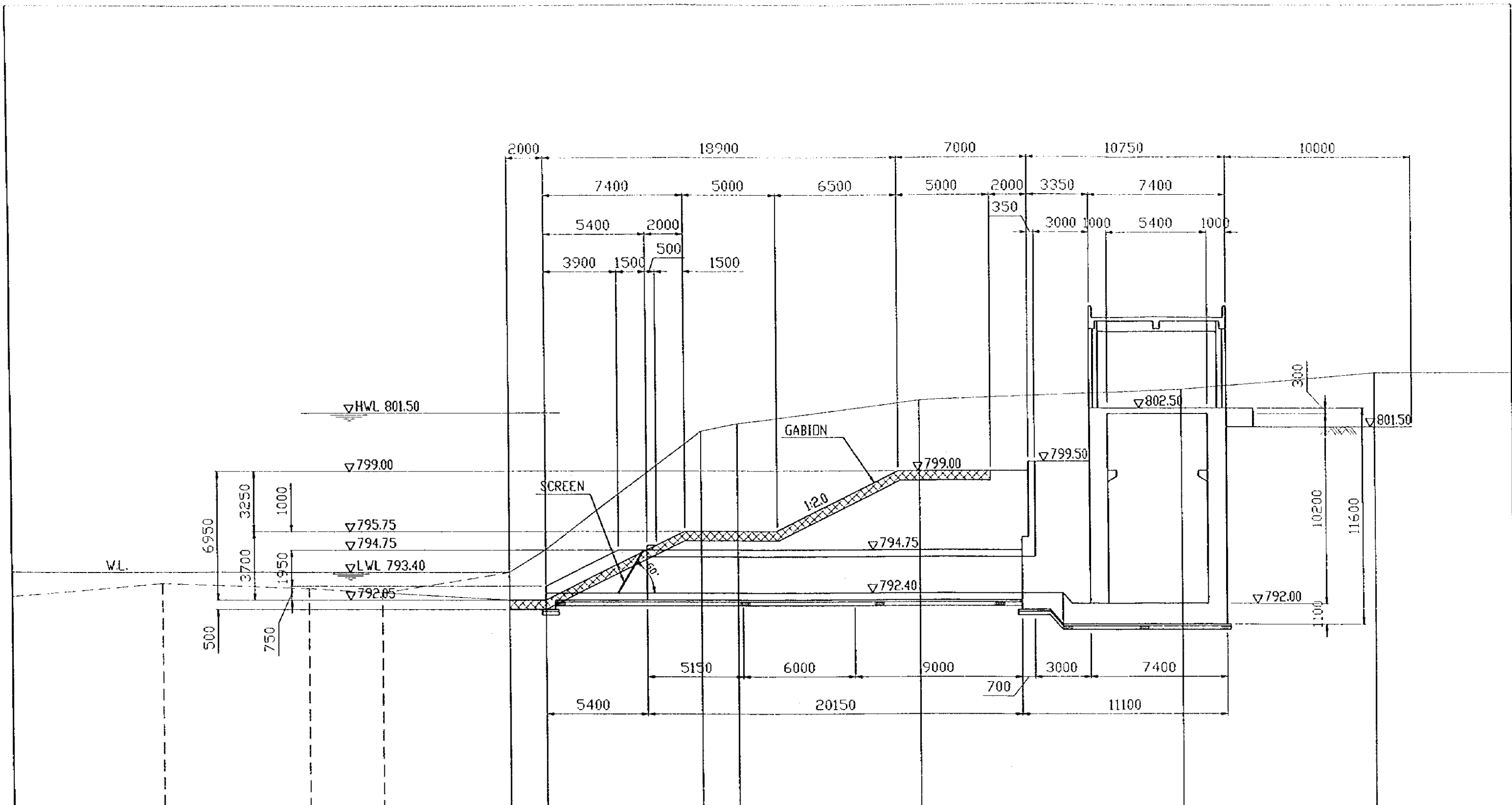
JAPAN INTERNATIONAL COOPERATION AGENCY

# PUMP STATION E



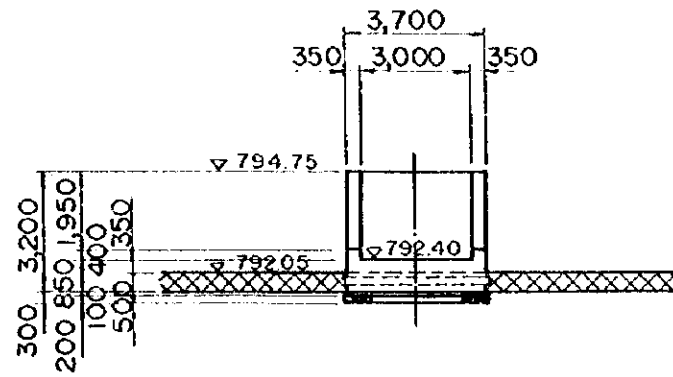
**GENERAL PLAN**  
S=1:200

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 1)			
<b>PUMP STATION E GENERAL PLAN</b>			
Date		No.	38
JAPAN INTERNATIONAL COOPERATION AGENCY			

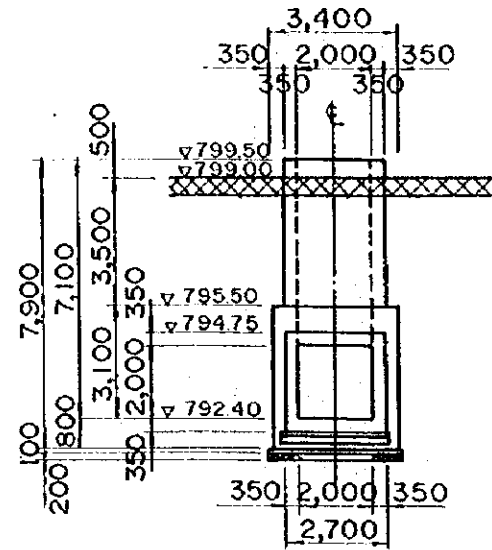


THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT(PHASE 2)			
PUMP STATION E LONG SECTION			
Date		No.	39
JAPAN INTERNATIONAL COOPERATION AGENCY			

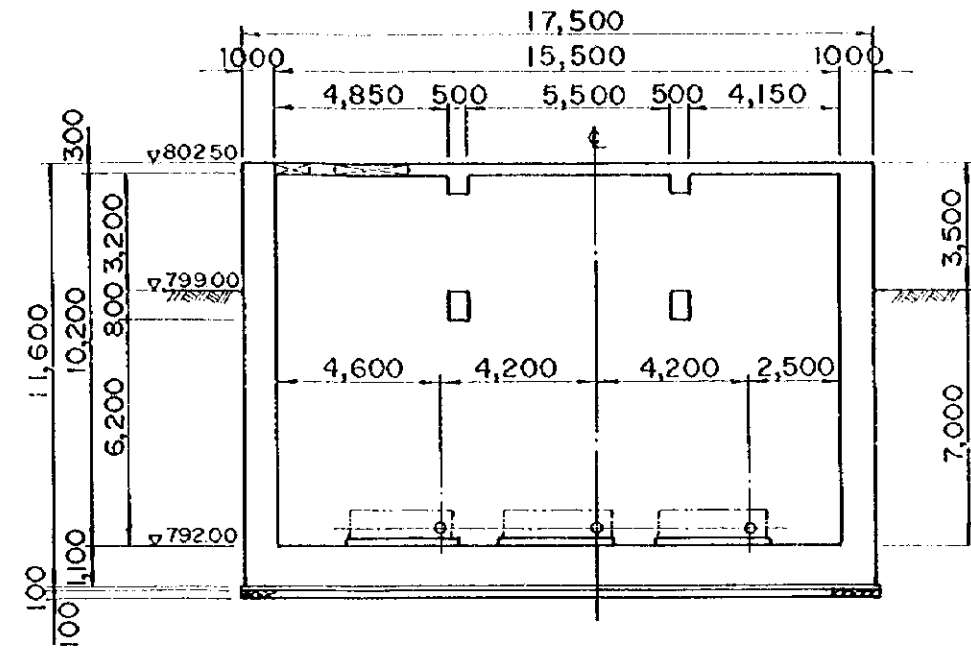
PUMP STATION E SECTION S=1:100



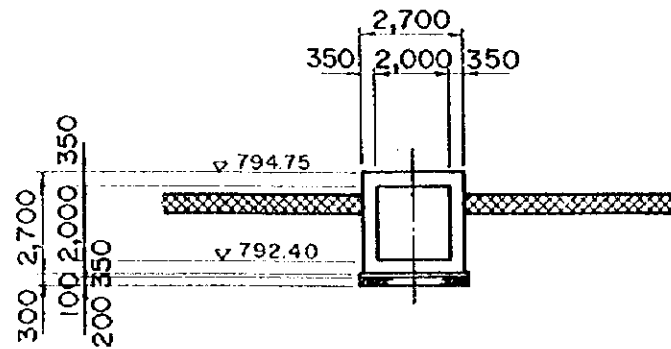
1-1



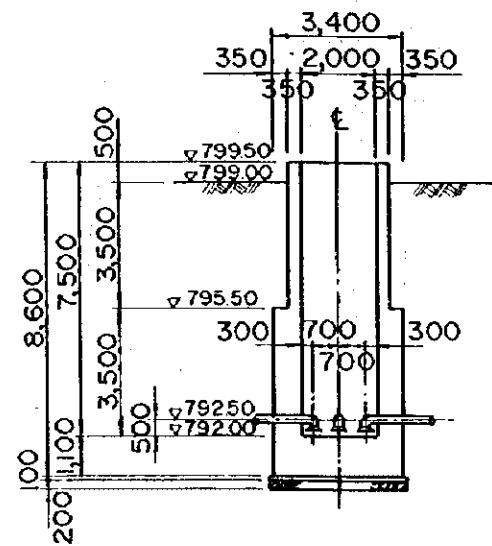
3-3



5-5

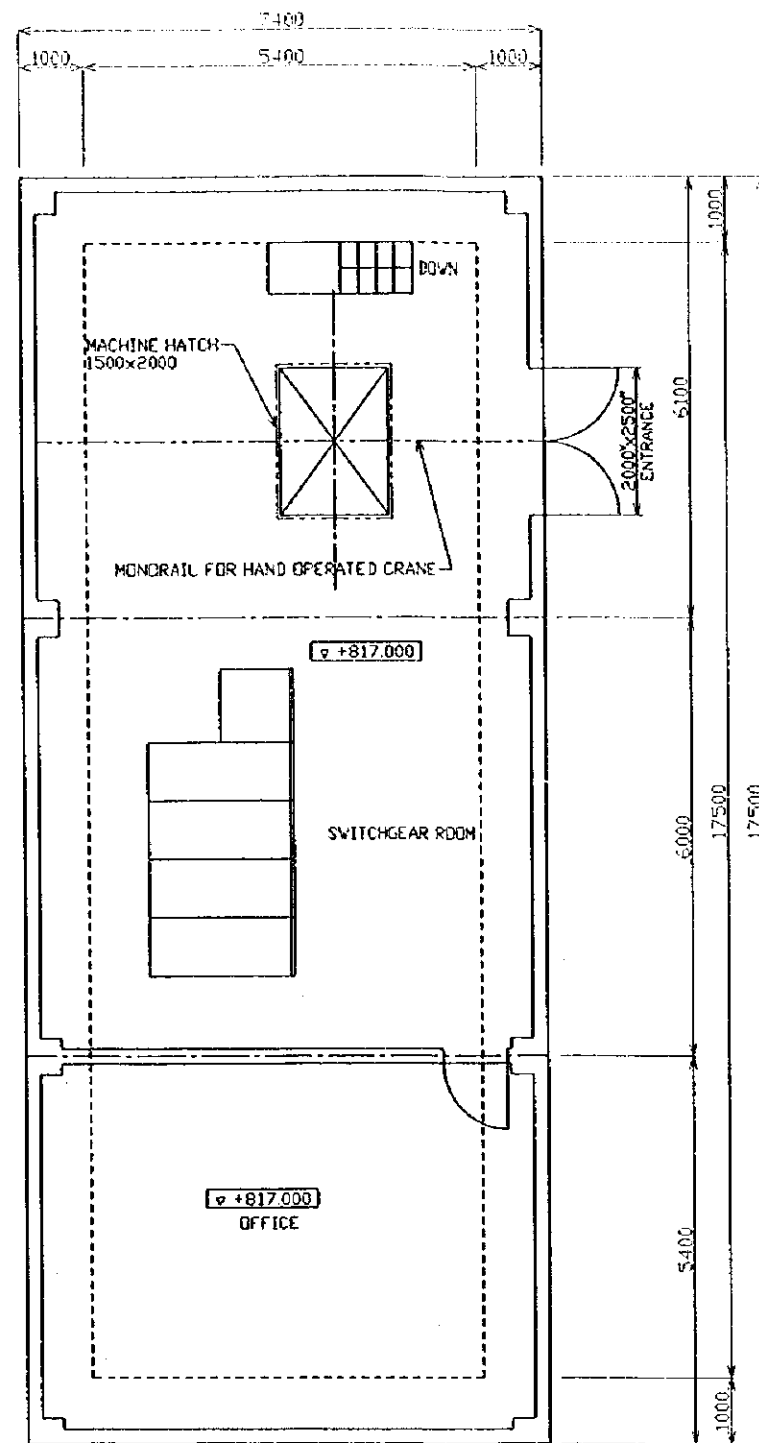
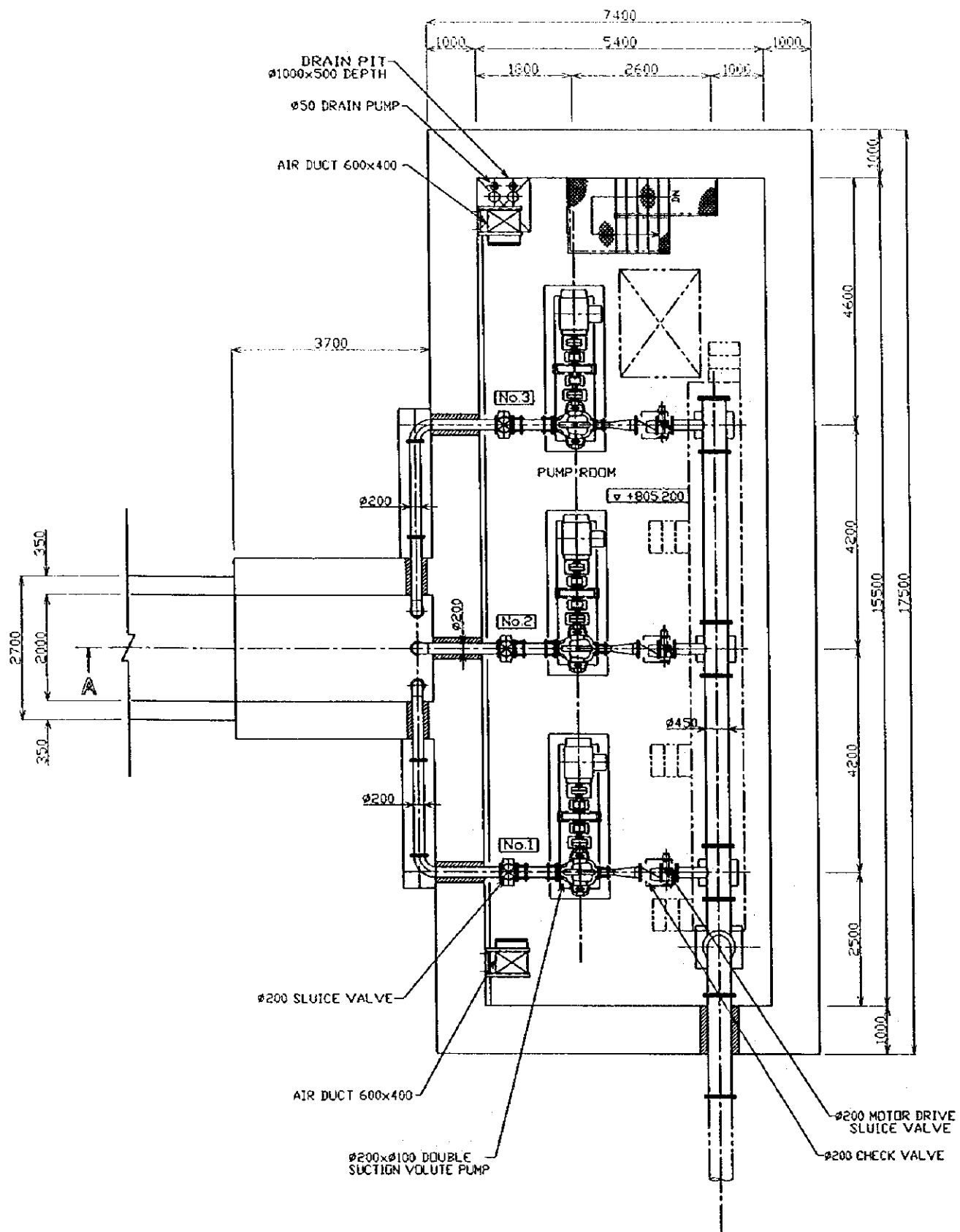


2-2



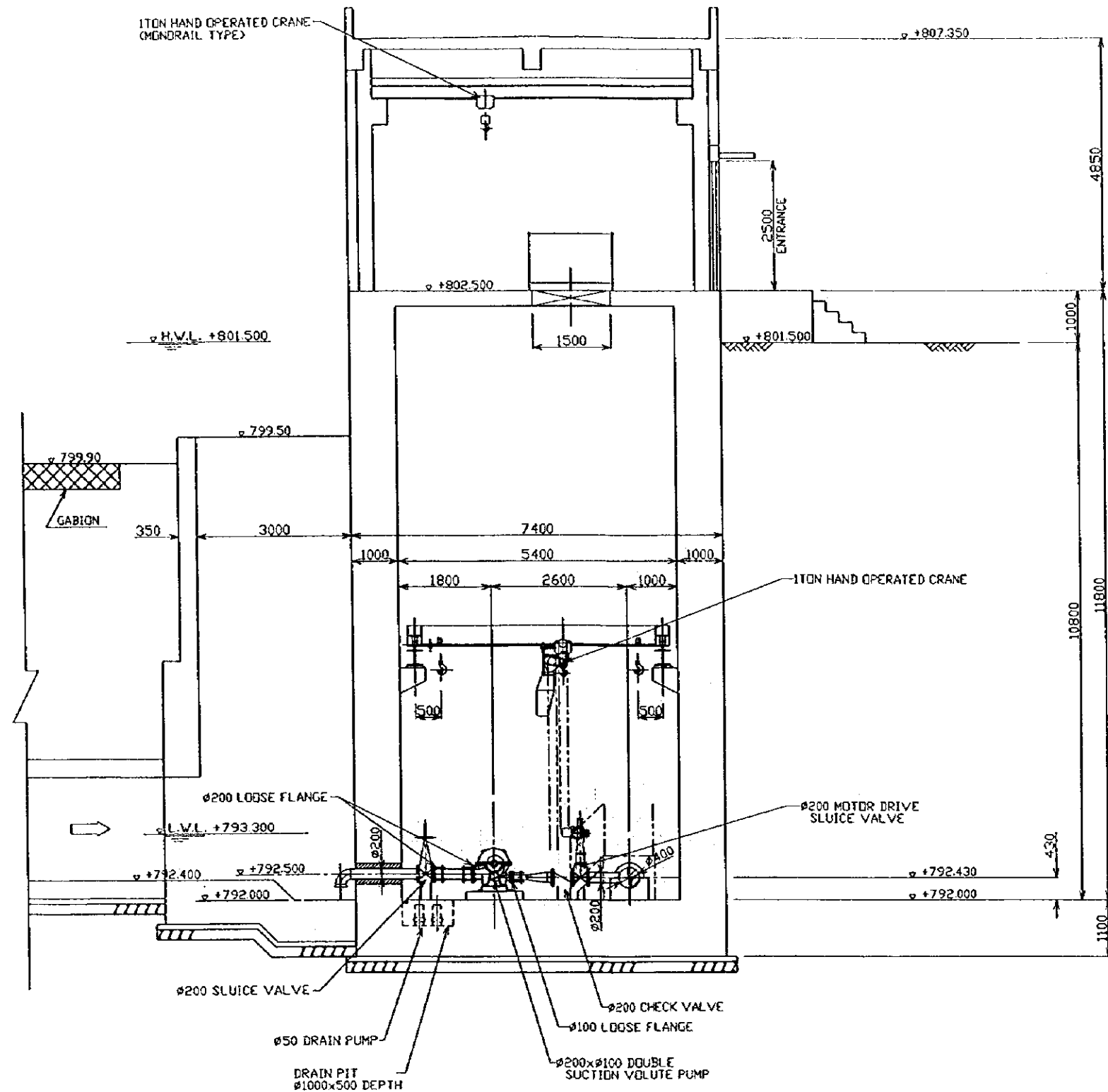
4-4

THE REPUBLIC OF ZIMBABWE		
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE II)		
PUMP STATION E SECTION		
Date	No.	4
JAPAN INTERNATIONAL COOPERATION AGENCY		

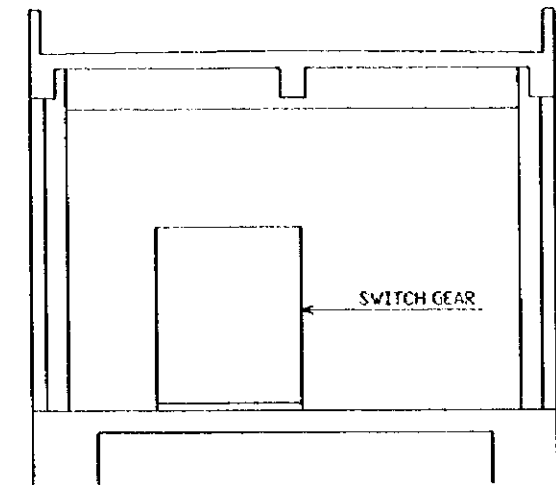


THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP STATION (BLOCK E) PLAN			
Date		No.	41
JAPAN INTERNATIONAL COOPERATION AGENCY			



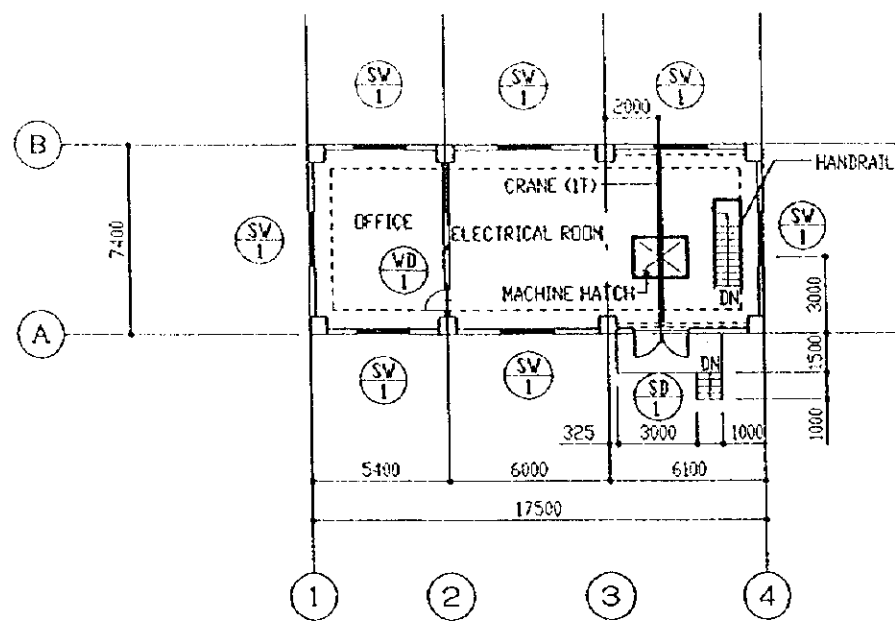


SECTION A

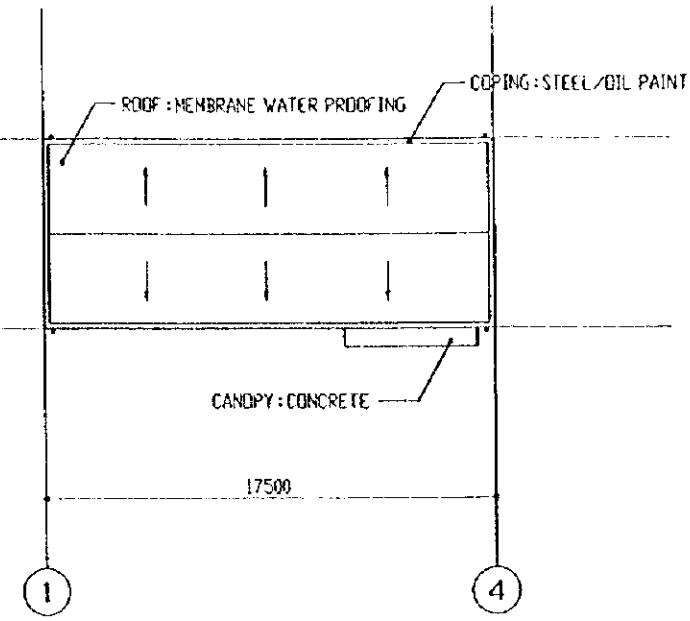


SECTION B

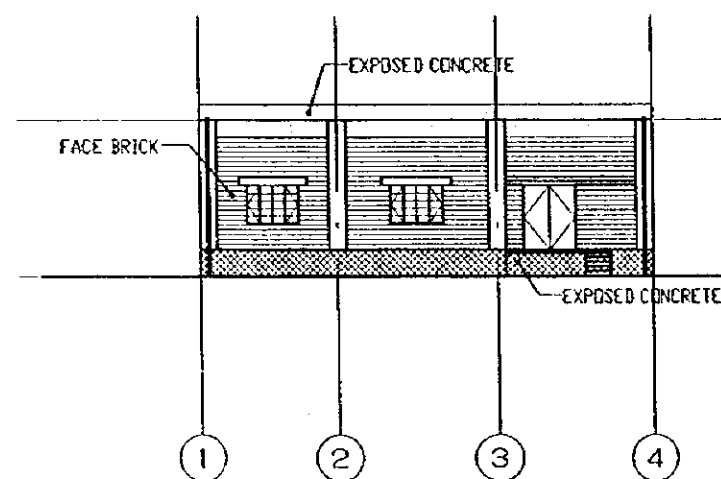
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT(PHASE 2)			
PUMP STATION (BLOCK E) SECTION			
Date		No.	42
JAPAN INTERNATIONAL COOPERATION AGENCY			



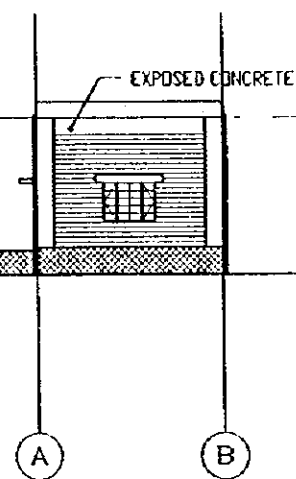
FLOOR PLAN



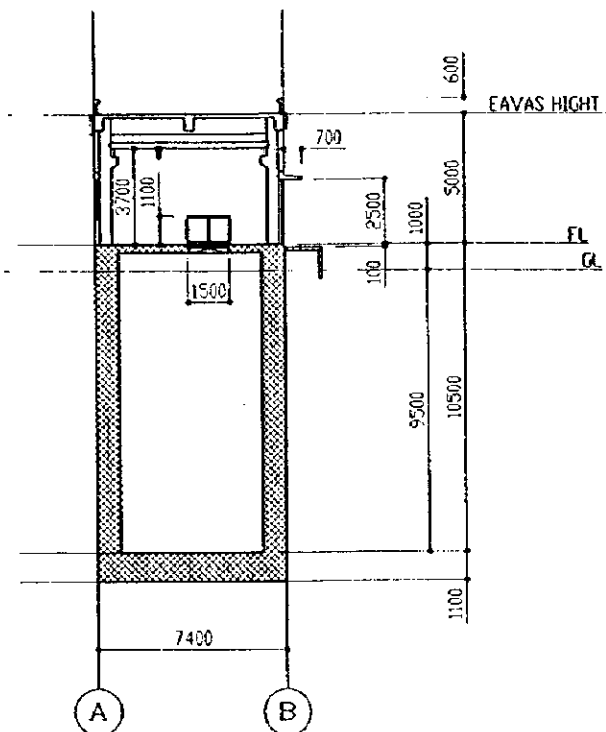
ROOF FLOOR PLAN



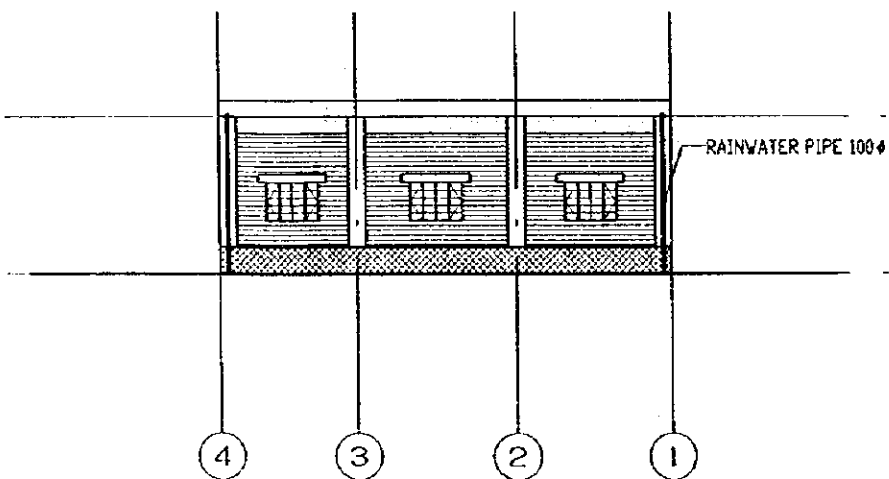
A ELEVATION



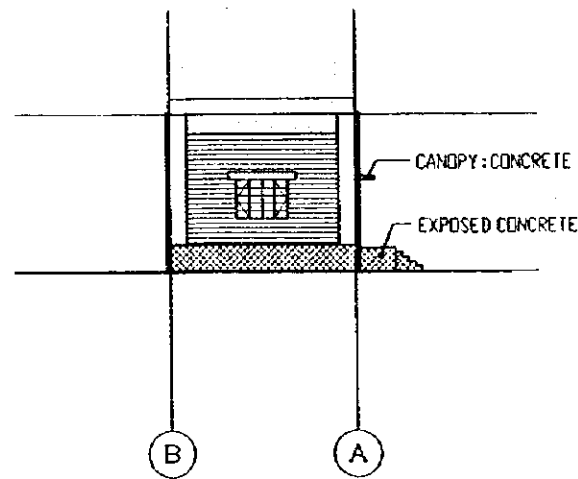
B ELEVATION



SECTION

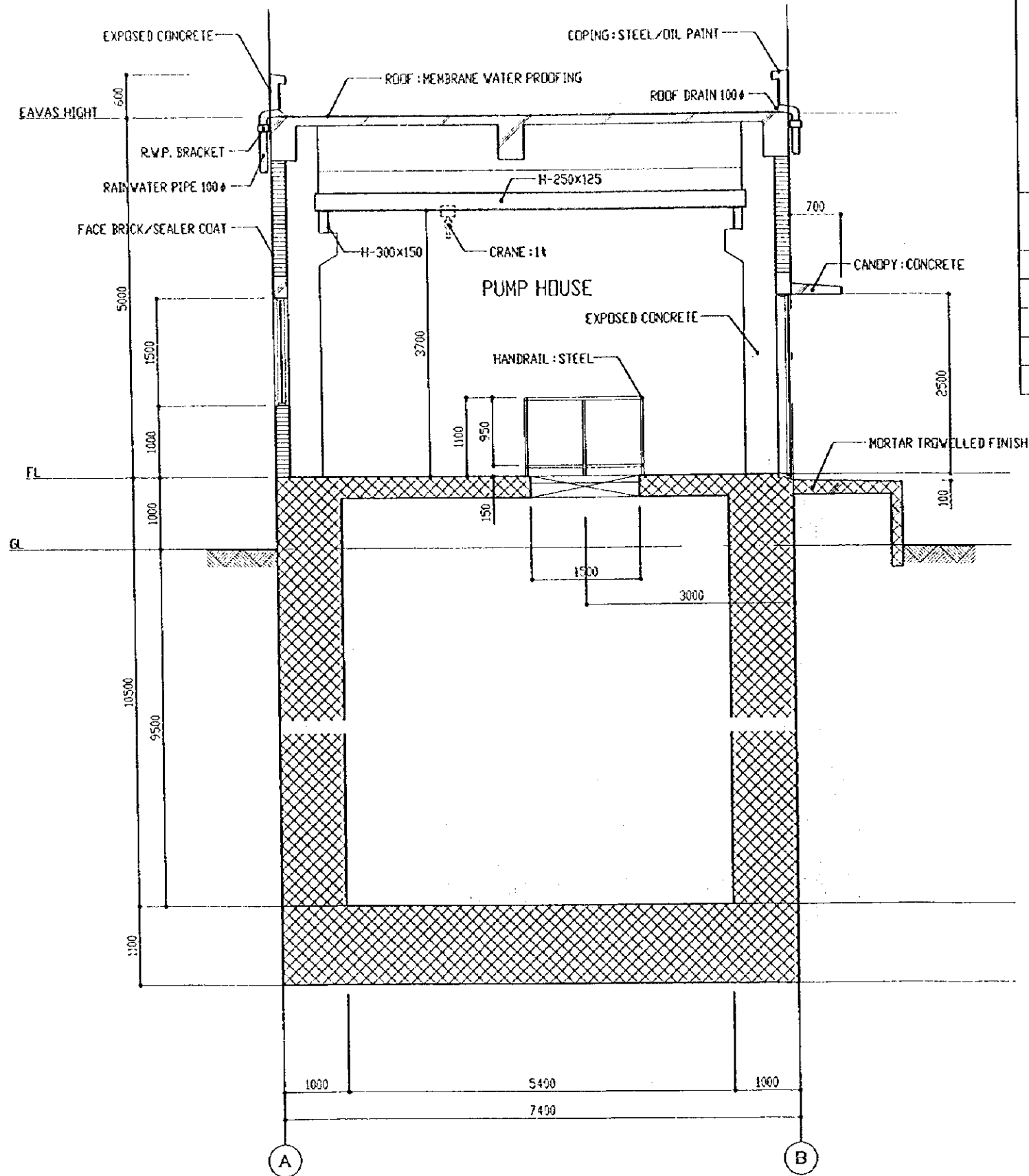


C ELEVATION



D ELEVATION

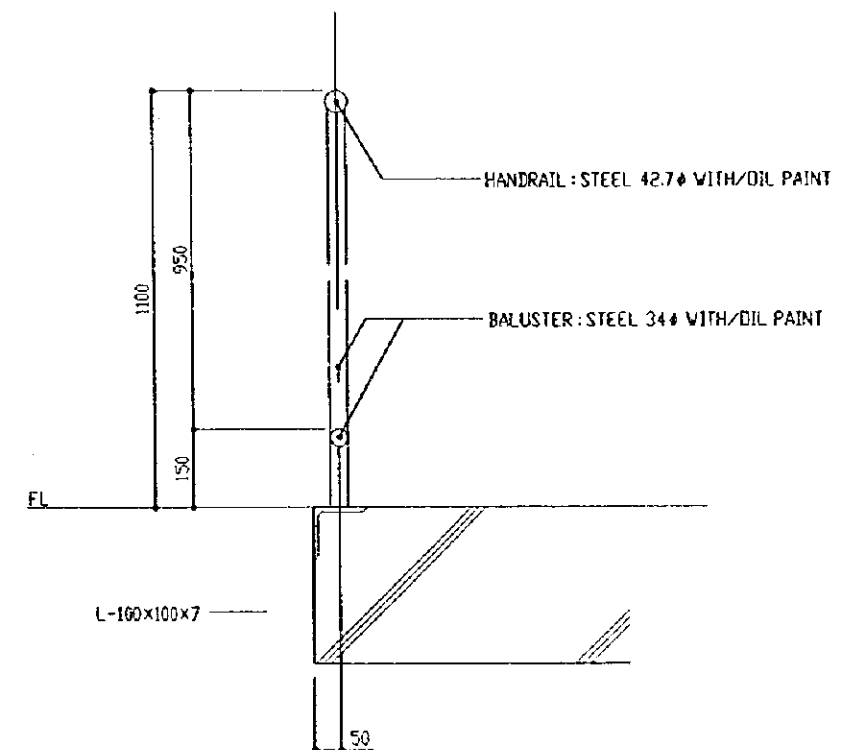
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP ROOM (BLOCK E)			
FLOOR PLAN • ELEVATION • SECTION • KEYPLAN			
Date		No.	43
JAPAN INTERNATIONAL COOPERATION AGENCY			



TYPICAL DETAIL SECTION

DOORS & WINDOWS SCHEDULE

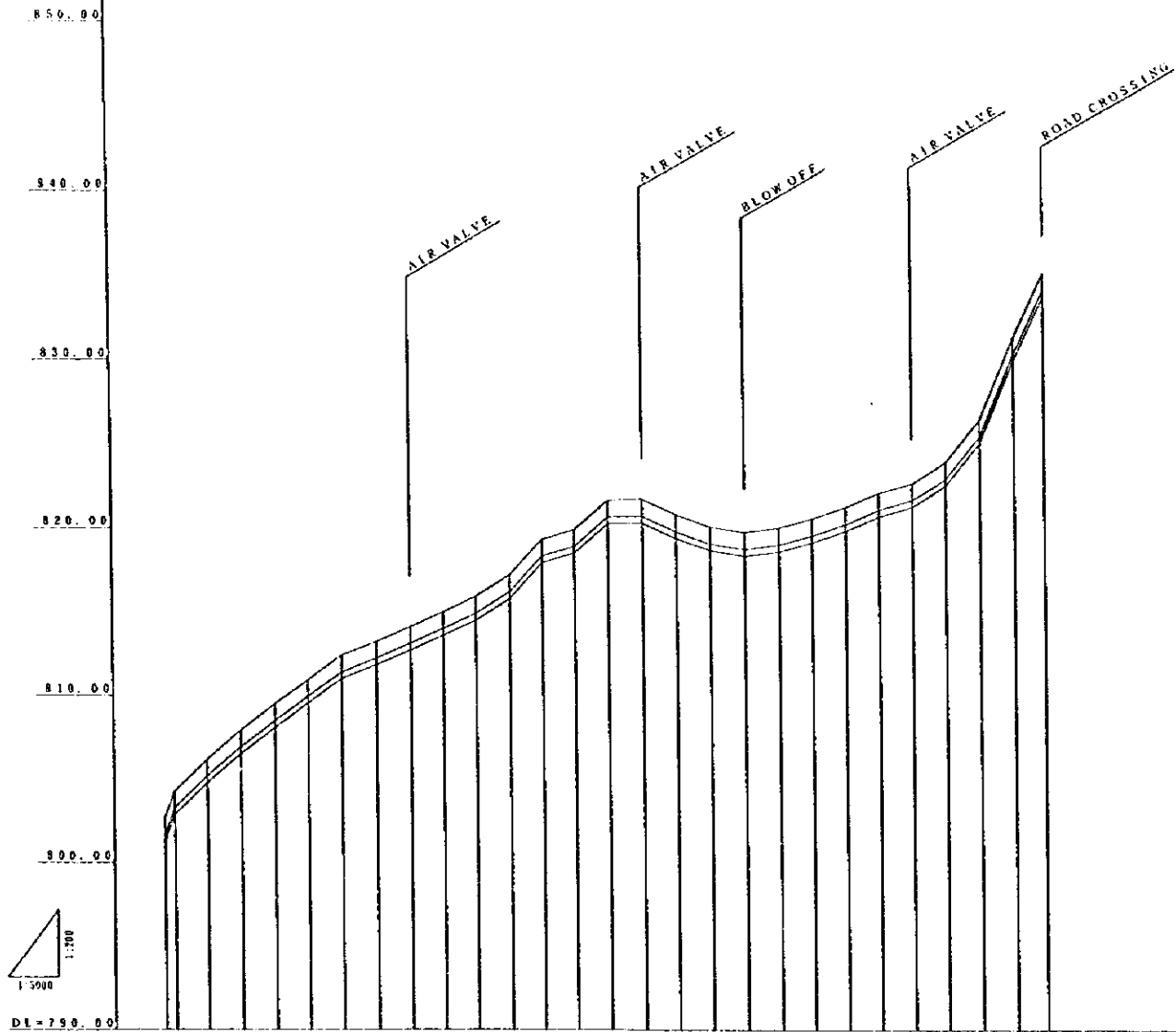
SYMBOL	SD 1	QUANTITY	1	SV 1	QUANTITY	7	VD 1	QUANTITY	1
FIGURE ELEVATION & DIMENSION			1:100			1:100			1:100
TYPE & MATERIAL	DOUBLE SWING			FIXED +			SINGLE SWING		
	FLUSH DOOR/STEEL			CASEMENT WINDOW/STEEL			FLUSH DOOR/PLYWOODEN		
THICKNESS	230						230		
GLASS				4mm OBSCURE GLASS					
FINISH	OIL PAINT			OIL PAINT			OIL PAINT		
HARD WARE	ONE SET			ONE SET			ONE SET		
REMARK									



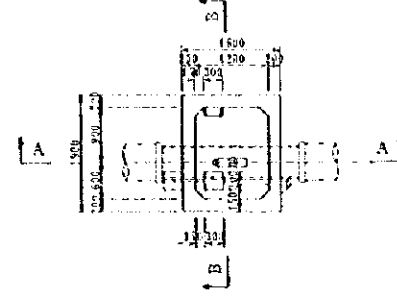
HANDRAIL DETAIL

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
PUMP ROOM (BLOCK E)			
TYPICAL SECTION - DETAIL DOORS & WINDOWS SCHEDULE			
Date		No.	44
JAPAN INTERNATIONAL COOPERATION AGENCY			

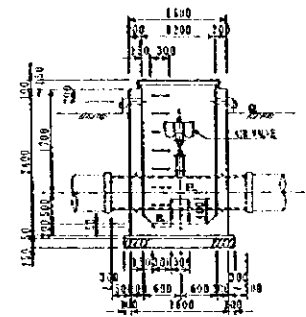
HEAD RACE  
LONG SECTION  
E-P-1  $\phi 400$



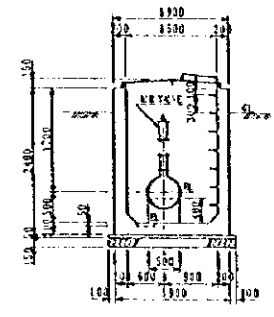
AIR VALVE



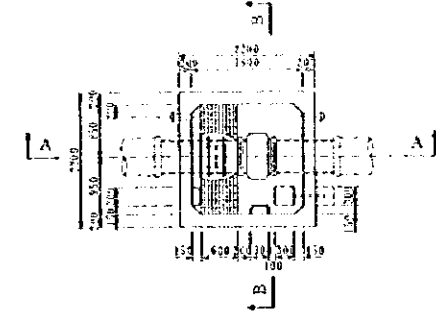
A-A



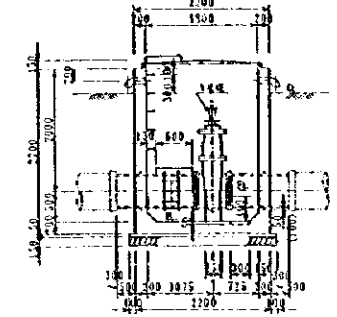
B-B



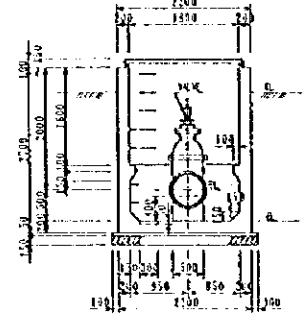
ISORATING VALVE  
 $\phi 400 \sim \phi 600$



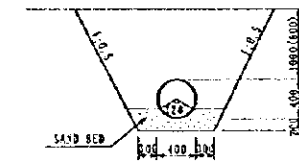
A-A



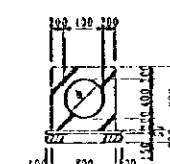
B-B



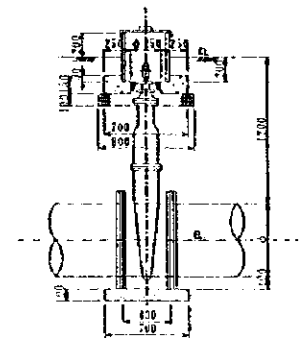
TYPICAL SECTION



CONCRETE PROTECTION



SLUICE VALVE



PIPE	FIBERGLASS PIPE $\phi 400$ E-1718.006	
PIPE ELEVATION	801.50	812.87
GROUND LEVEL	802.70	814.10
ACCUMULATED DISTANCE	0.00	43.55
DISTANCE	0.00	43.55
STATION	0+00	0+43.55
CURVE		

THE REPUBLIC OF ZIMBABWE

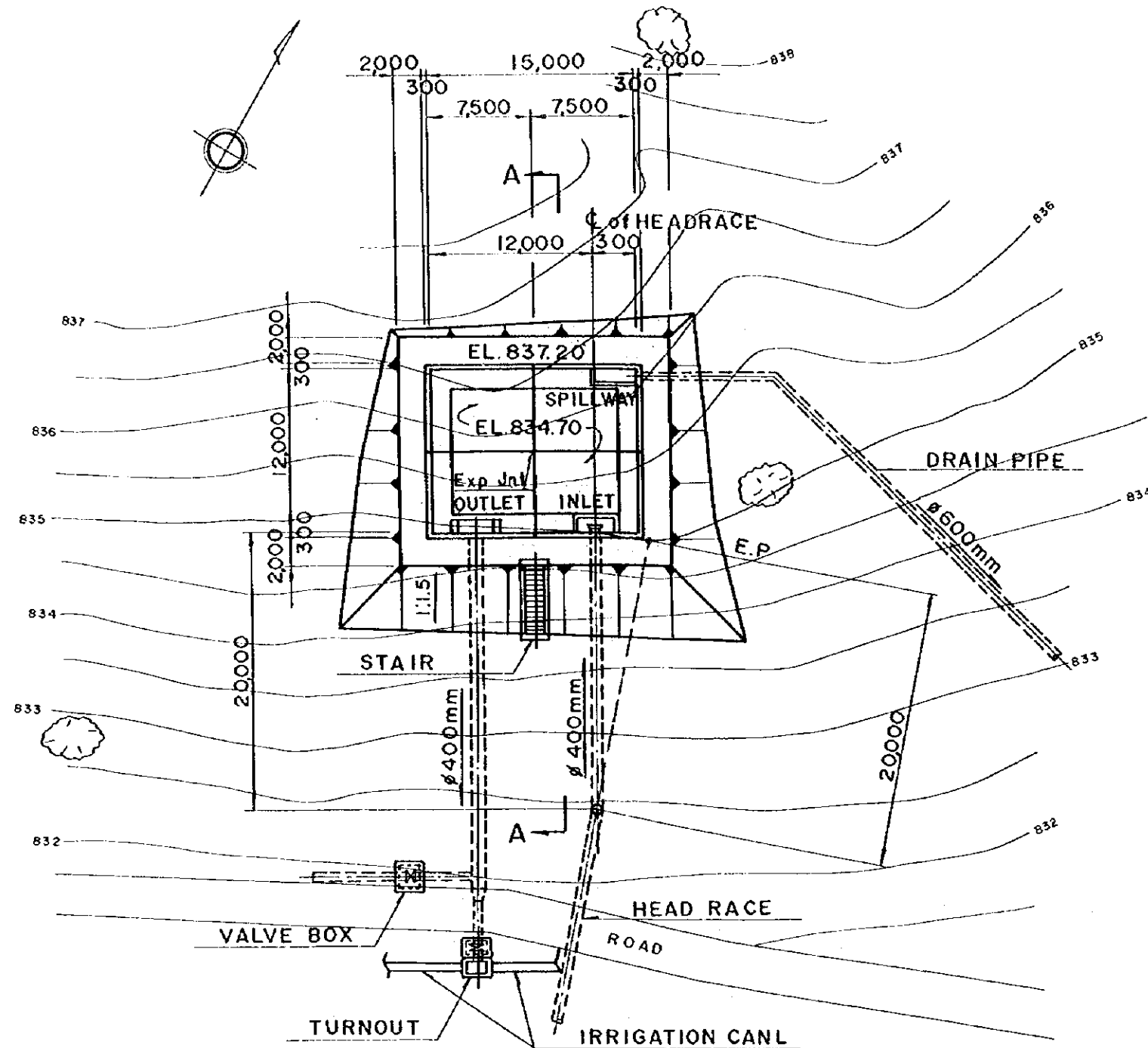
THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

**HEAD RACE (BLOCK E)  
LONG SECTION E-P-1**

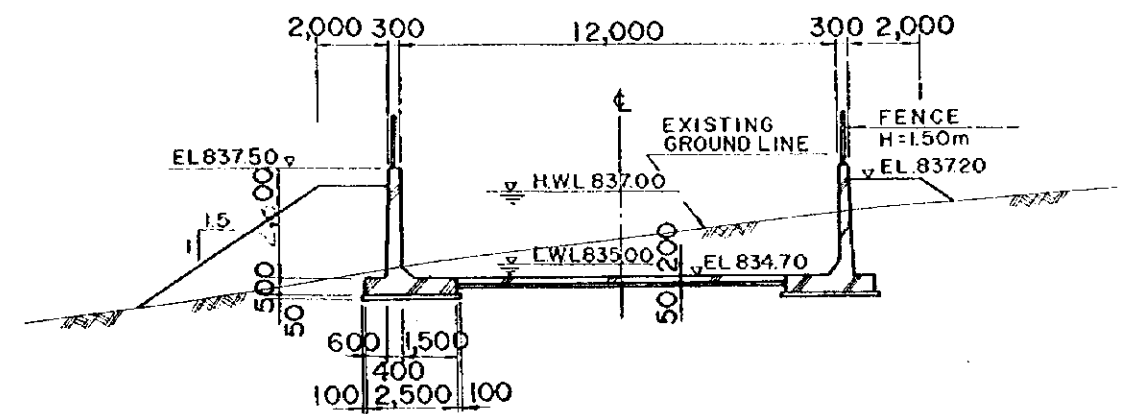
Date	No.	45
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JAPAN INTERNATIONAL COOPERATION AGENCY

# FARM POND E



**PLAN**  
S=1:200

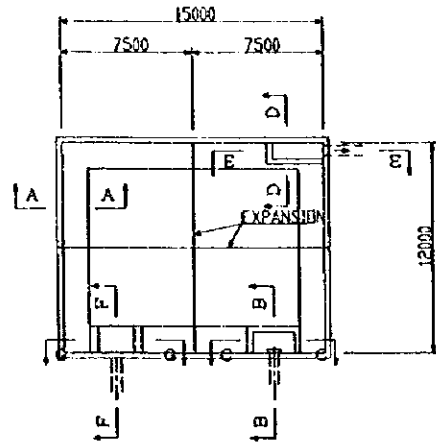


**SECTION A-A**  
S=1:100

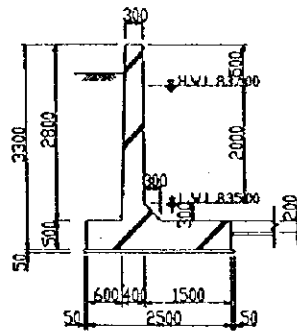
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
<b>FARM POND E</b> PLAN AND SECTION			
Date		No.	16
JAPAN INTERNATIONAL COOPERATION AGENCY			

FARM POND E  
DETAILS OF FARM POND

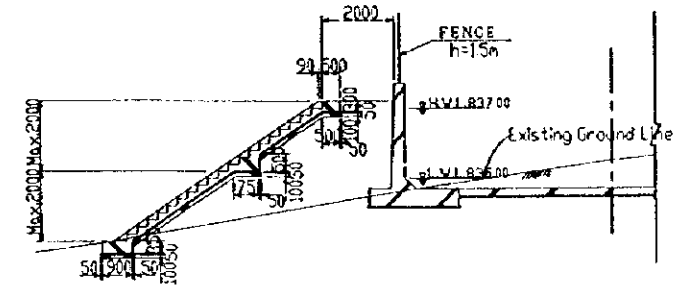
TYPICAL PLAN SCALE 1:200



SECTION A-A SCALE 1:60



STAIR CASE SECTION SCALE 1:100

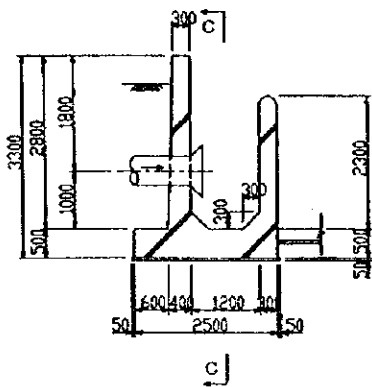


INLET SCALE 1:60

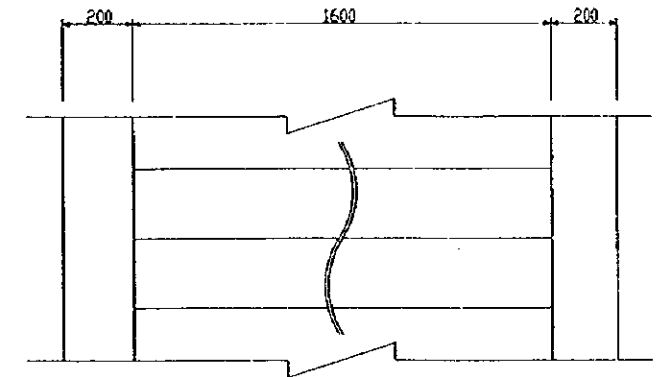
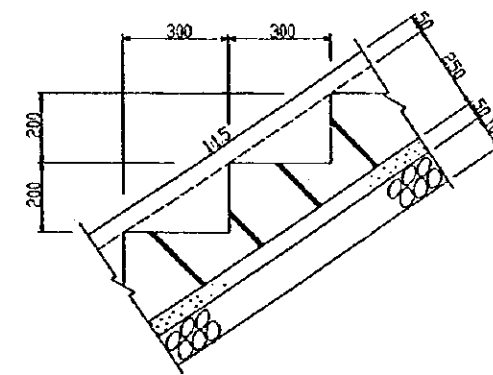
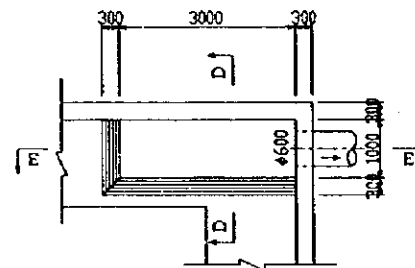
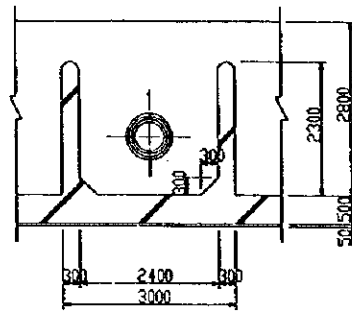
SPILL WAY SCALE 1:60

STAIR CASE DETAIL SCALE 1:10

SECTION B-B

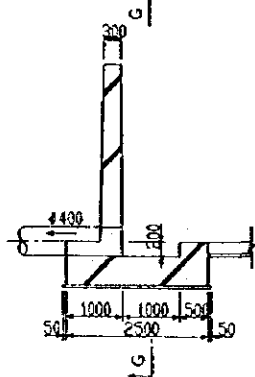


SECTION C-C

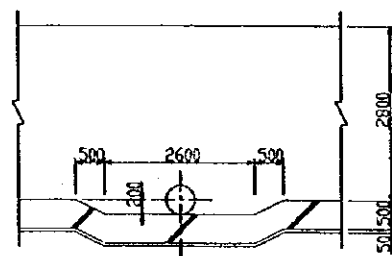


OUTLET SCALE 1:60

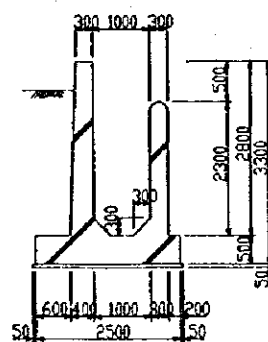
SECTION F-F



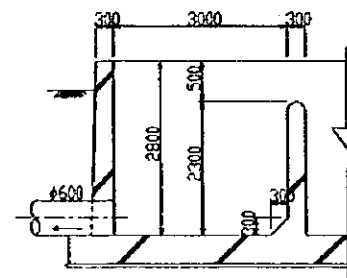
SECTION G-G



SECTION D-D



SECTION E-E



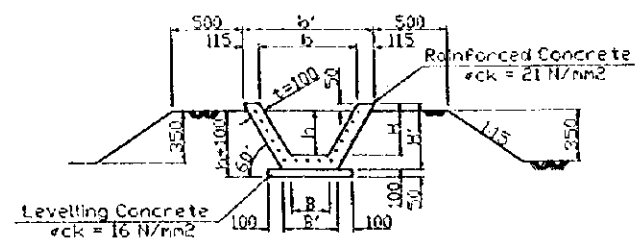
THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
FARM POND E DETAILS OF FARM POND			
Date		No.	47
JAPAN INTERNATIONAL COOPERATION AGENCY			

# IRRIGATION FACILITIES (1/3)

SCALE 1:50

## IRRIGATION CANAL

### TYPICAL SECTION

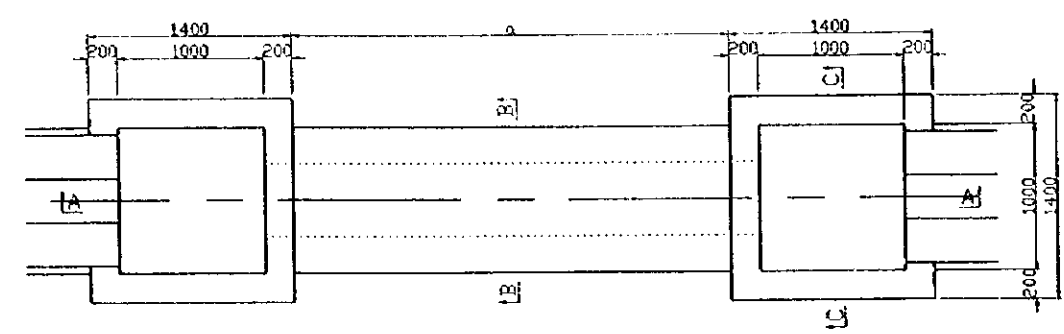


	B	B'	b	b'	H	H'	h
Type A	300	415	762	992	400	500	350
Type B	250	364	654	884	350	450	300
Type C	200	314	546	776	300	400	250

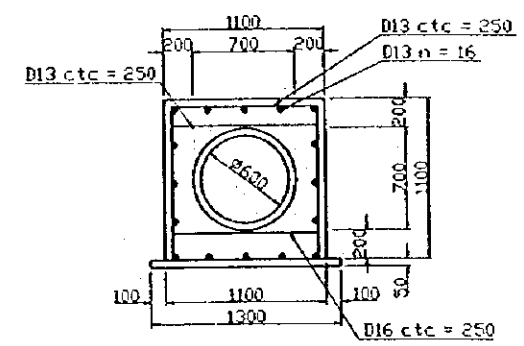
NOTE  
REINFORCEMENT SHALL BE WELDED MESHED  
WIRE #6mm (MESH 100 x 100)

## ROAD CROSS SIPHON

### PLAN

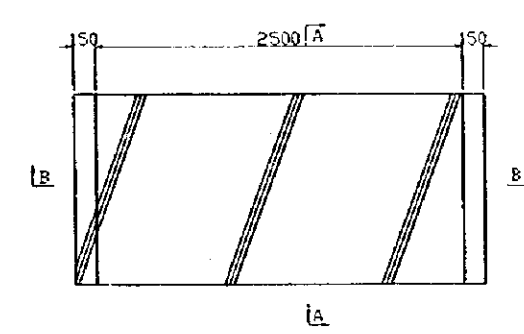


### SECTION B - B

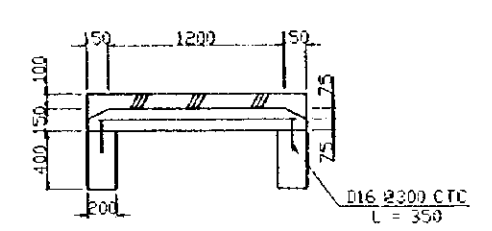


## ENTRANCE WORKS

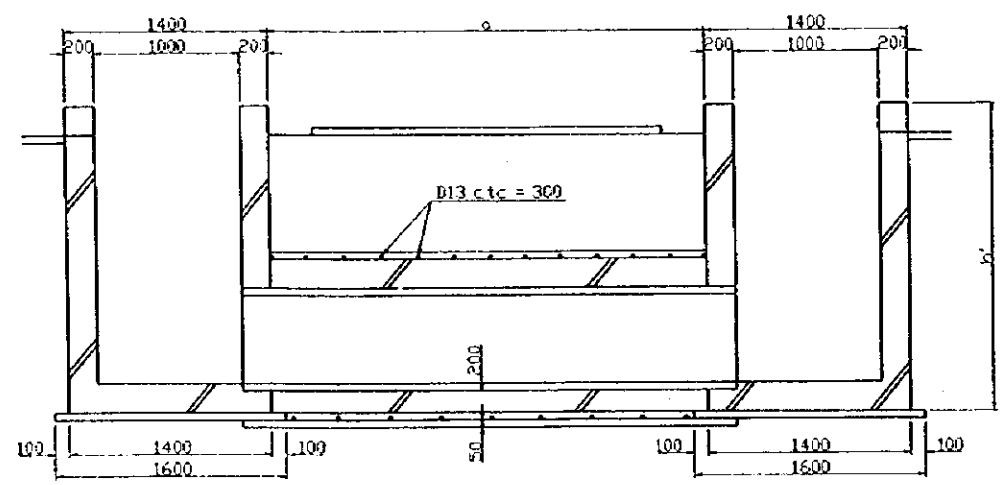
### PLAN



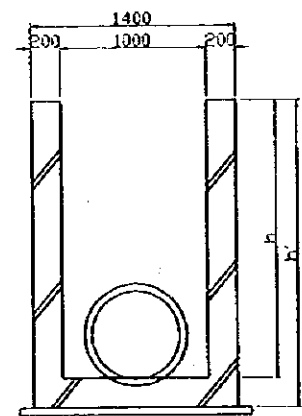
### SECTION A - A



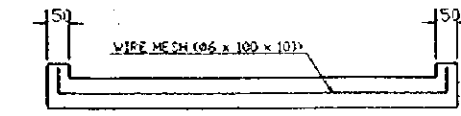
### SECTION A - A



### SECTION C - C



### SECTION B - B



Road Cross Siphon (Irrigation)

	a	b	h	h'	t ( )
Type 1	3000	600	1850	2100	50
Type 2	7000	600	1850	2100	50
Type 3	10000	600	1850	2100	50
Type 4	15000	600	2150	2400	50
Type 5	19000	600	2150	2400	50

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

IRRIGATION FACILITIES (1/3)  
BLOCK E

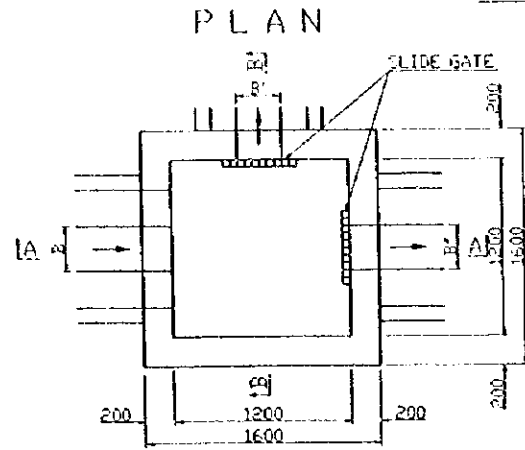
Date		No.	48
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JAPAN INTERNATIONAL COOPERATION AGENCY

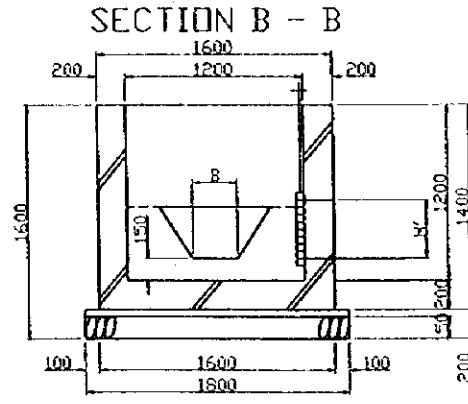
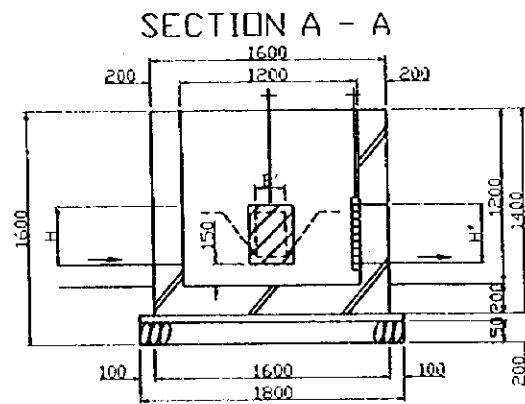
# IRRIGATION FACILITIES (2/3)

SCALE 1:50

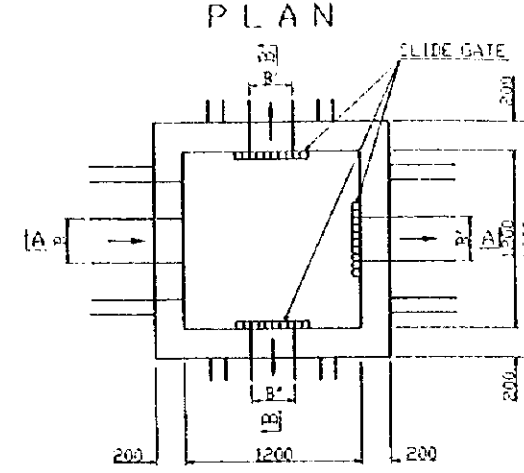
## DIVISION WORKS



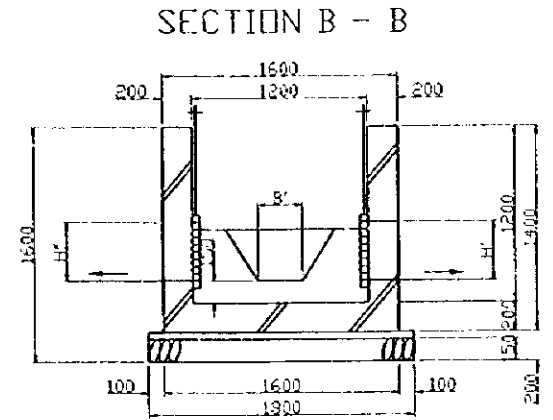
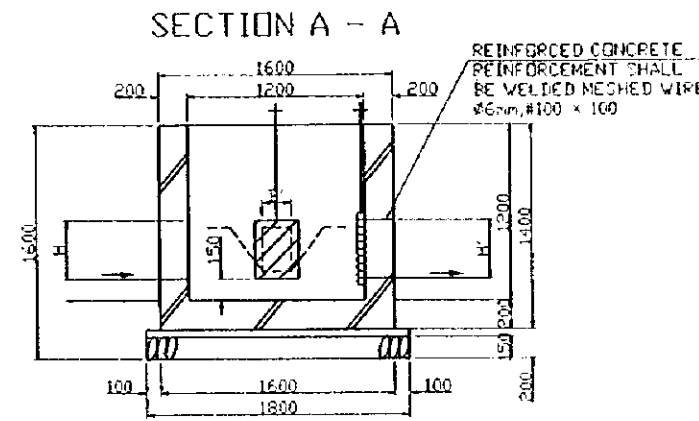
	B	H	B'	H'	GATE	B'	H'	GATE
Type 1	300	400	250	350	300 x 350 x 1	250	350	300 x 350 x 1
2	300	400	250	350	300 x 350 x 1	200	300	250 x 300 x 1
3	250	350	250	350	300 x 350 x 1	250	350	300 x 350 x 1
4	250	350	250	350	300 x 350 x 1	200	300	250 x 300 x 1
5	250	350	200	300	250 x 300 x 1	200	300	250 x 300 x 1
6	200	300	200	300	250 x 300 x 1	200	300	250 x 300 x 1



## DIVISION WORKS

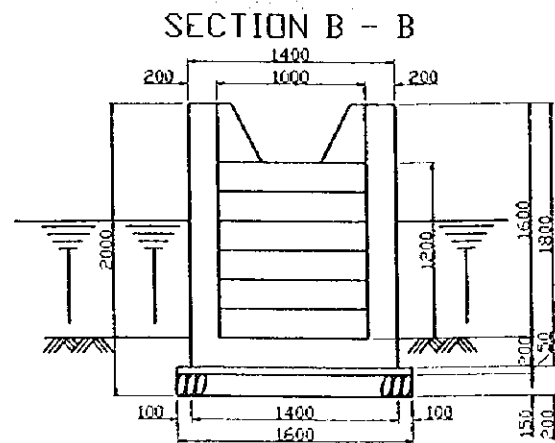
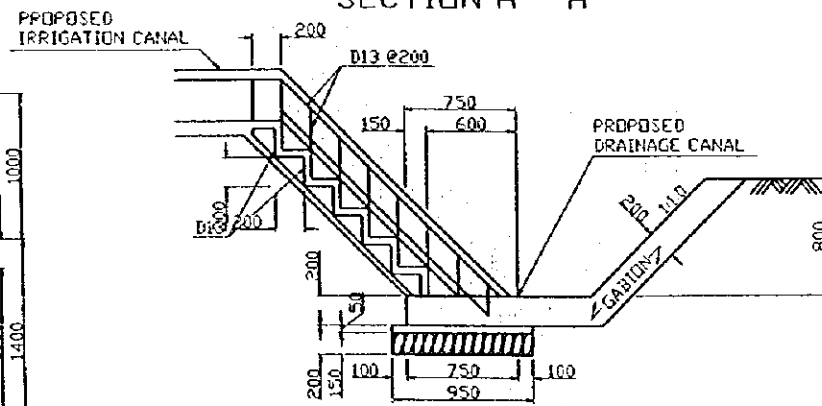
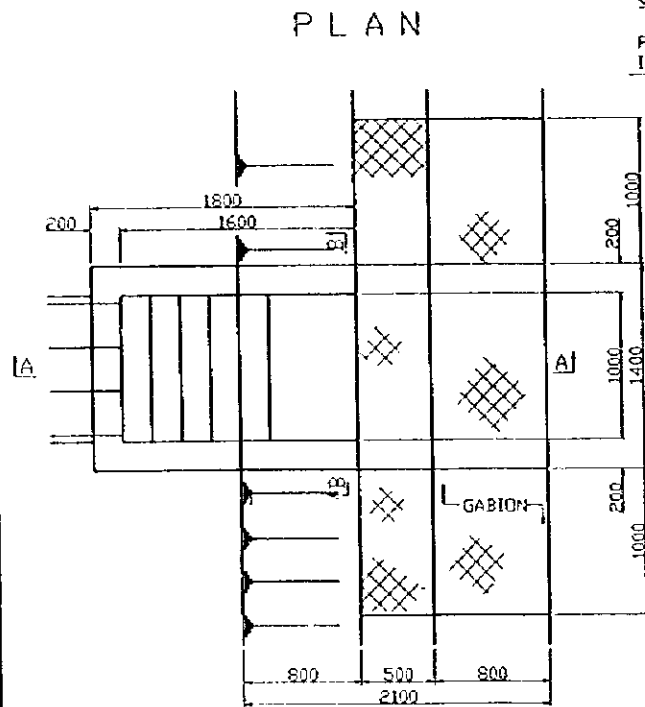


	B	H	B'	H'	GATE	B'	H'	GATE
Type 7	300	400	250	350	300 x 350 x 2	200	300	250 x 300 x 1

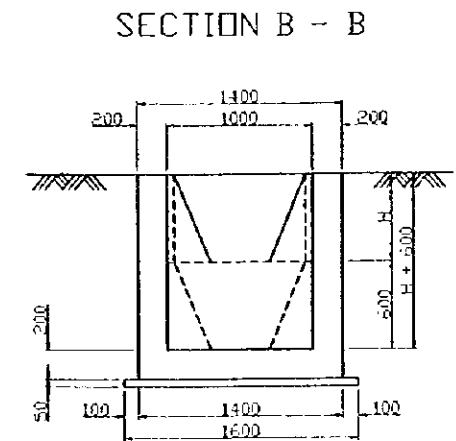
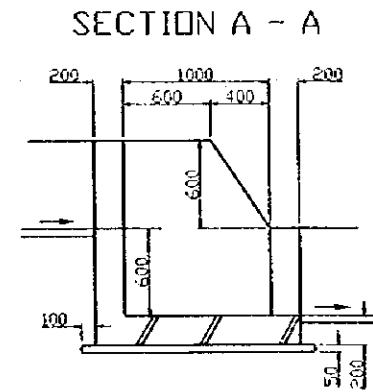
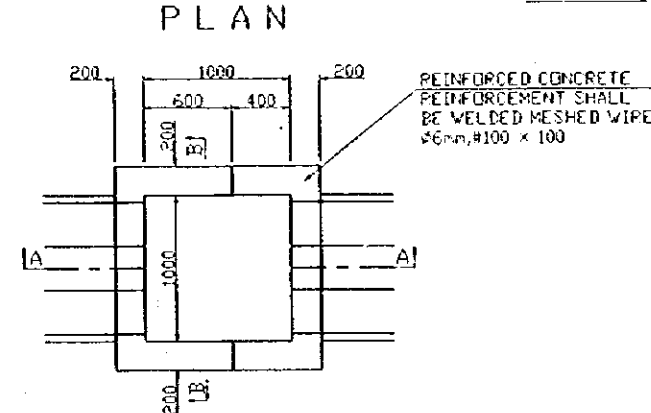


NOTE  
CUT-THROAT FLUME SHALL BE INSTALLED AT THE STARTING PORTION OF EVERY DIVERTED CANAL. THE STANDARD OF THE FLUME SHALL BE SUBJECT TO IRRIGATION MANUAL ISSUED BY AGRITEX.

## CHUTE



## DROP



THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

IRRIGATION FACILITIES (2/3) BLOCK E

Date	No.	49
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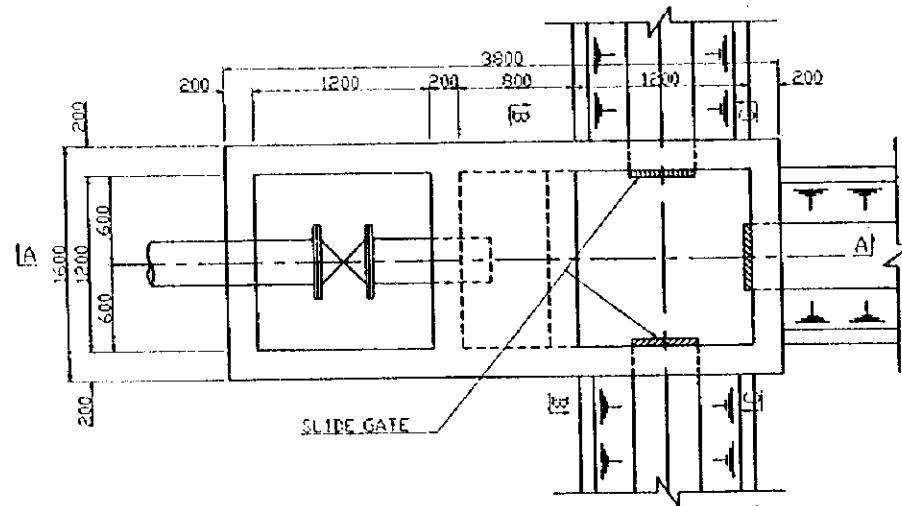
JAPAN INTERNATIONAL COOPERATION AGENCY



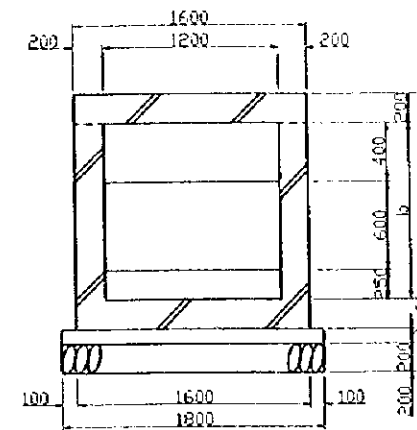
IRRIGATION FACILITIES (3/3)  
SCALE 1:50

DISCHARGE CHAMBER

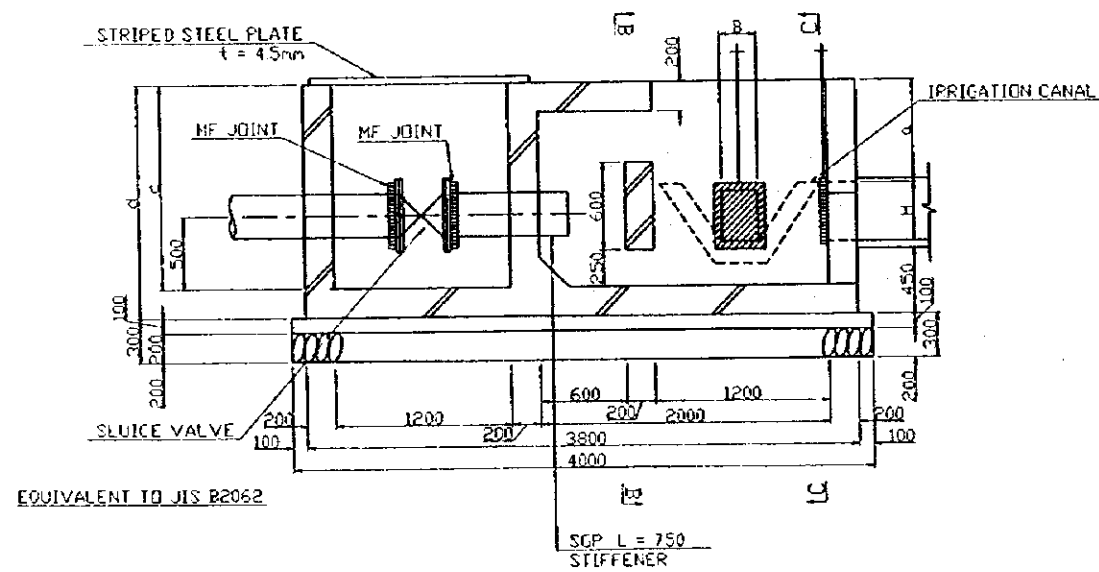
PLAN



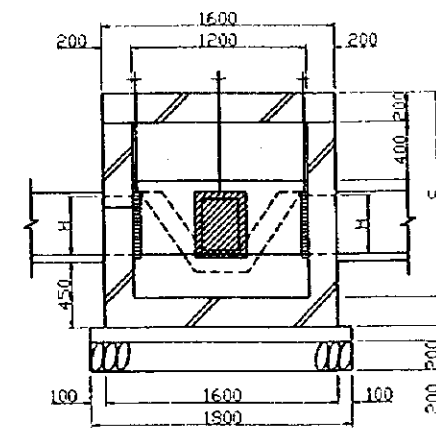
SECTION B - B



SECTION A - A



SECTION C - C



TYPE	B-1	H-1	B-2	H-2	B-3	H-3	SLUICE VALVE	MF JOINT
Type 1	200	300	250	350	-	-	φ200	φ200
Type 2	200	300	200	300	250	350	φ300	φ300
Type 3	250	350	300	400	-	-	φ300	φ300

note: To a front d shall be adjusted to the site ground levels width of Slide Gate should be wider than bottom of canal by 5 cm.

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

IRRIGATION FACILITIES (3/3)  
BLOCK E

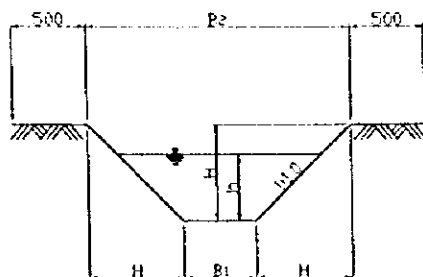
Date No. 50

JAPAN INTERNATIONAL COOPERATION AGENCY

# DRAINAGE FACILITIES (1/2)

SCALE 1:50

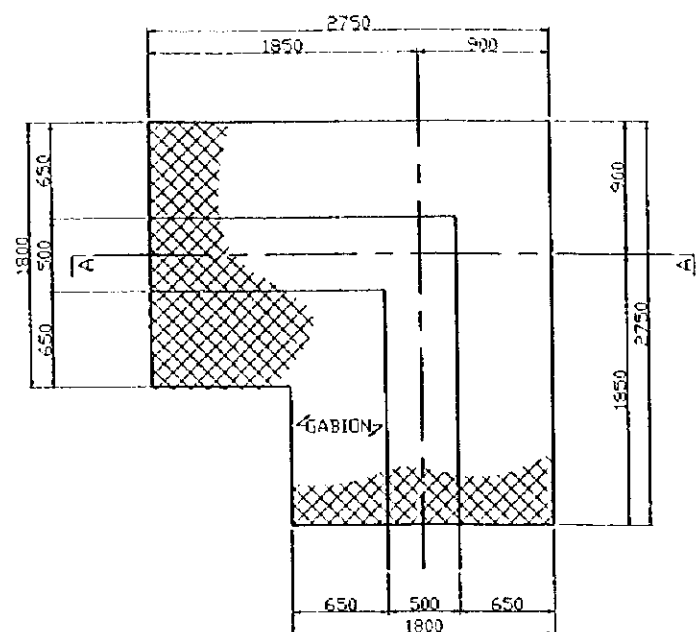
## DRAINAGE CANAL TYPICAL SECTION



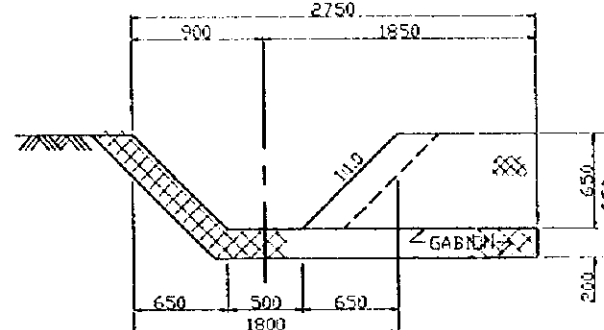
	B1	B2	h	H
Type 1	0.60	2.50	0.35	0.95
Type 2	0.70	2.70	0.40	1.00
Type 3	0.70	2.90	0.50	1.10

## SLOPE PROTECTION

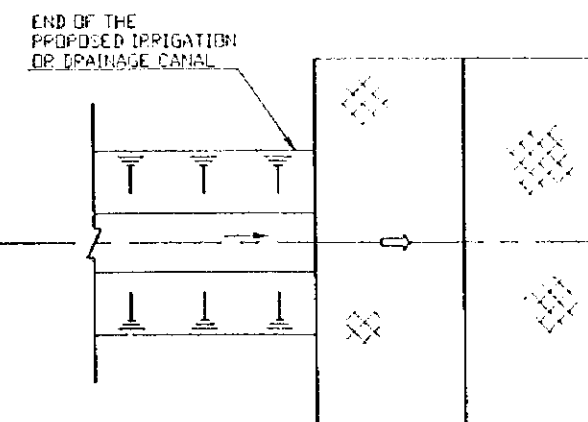
### PLAN



### SECTION A - A



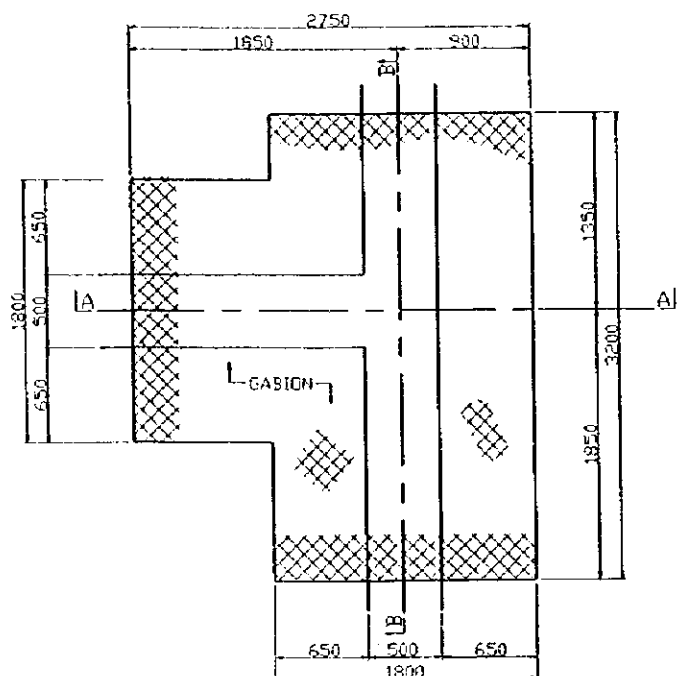
## WASTEWAY



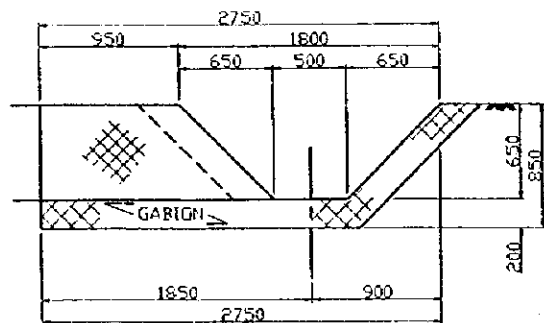
GABION  $n = 4$   
2000 x 1500 x 300  
#4, #100 x 100

## CONFLUENT FACILITIES

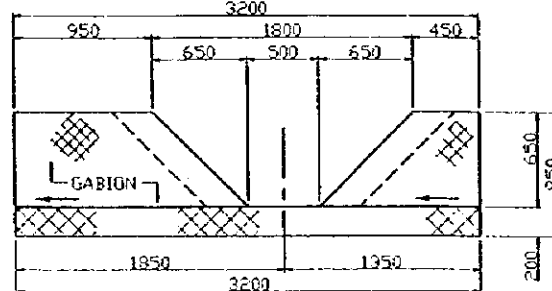
### PLAN



### SECTION A - A

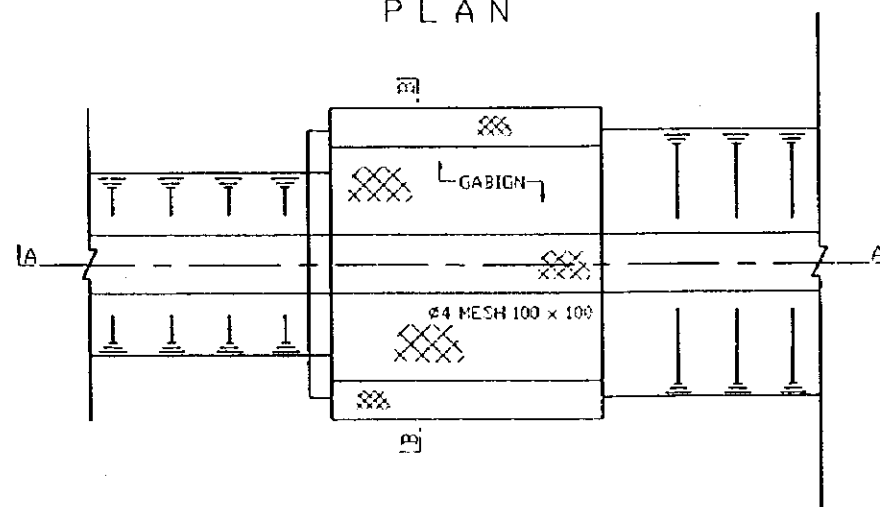


### SECTION B - B

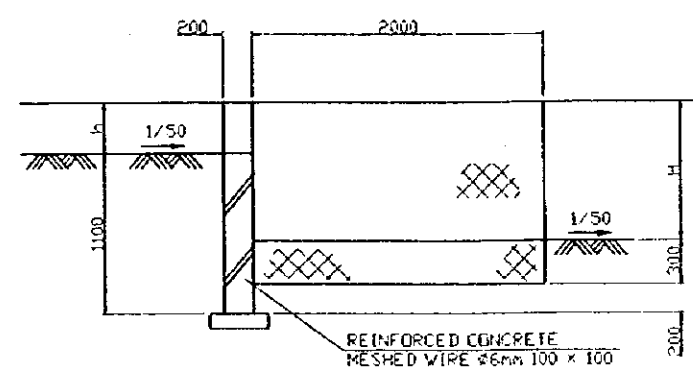


## DROP STRUCTURE FOR DRAINAGE CANAL

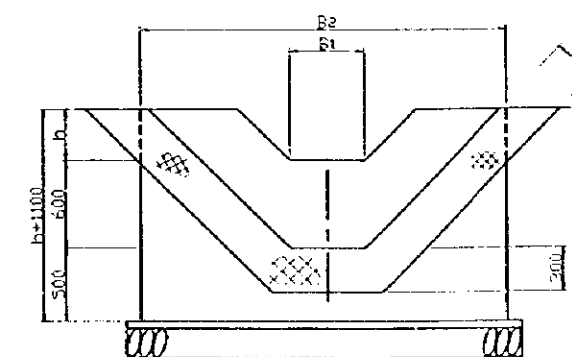
### PLAN



### SECTION A - A



### SECTION B - B



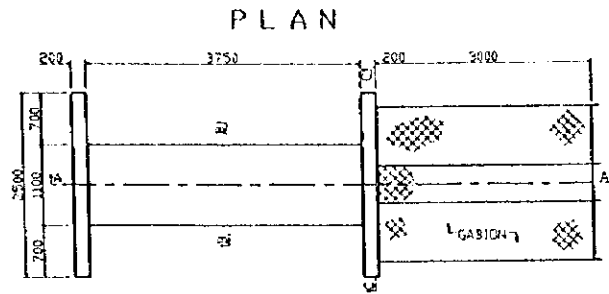
	B1	B2	h	H
Type 1	0.60	2.50	0.35	0.95
Type 2	0.70	2.70	0.40	1.00
Type 3	0.70	2.90	0.50	1.10

THE REPUBLIC OF ZIMBABWE			
THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)			
DRAINAGE FACILITIES (1/2) BLOCK E			
Date	No.	51	
JAPAN INTERNATIONAL COOPERATION AGENCY			

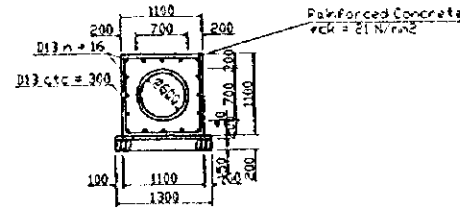
# DRAINAGE FACILITIES (2/2)

SCALE 1/100

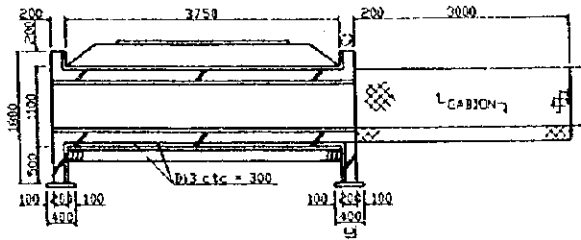
## ROAD CROSS CULVERT



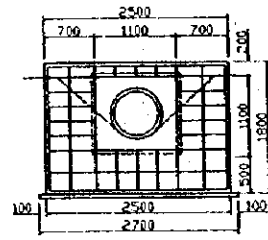
### SECTION B - B



### SECTION A - A

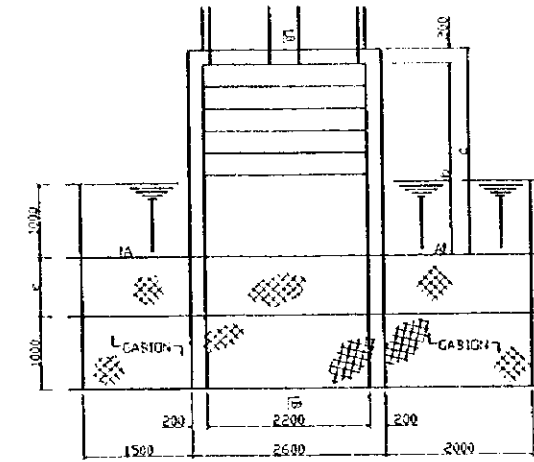


### SECTION C - C

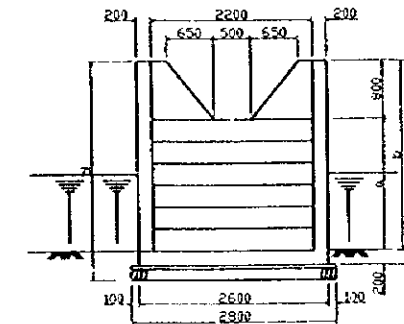


## CHUTE

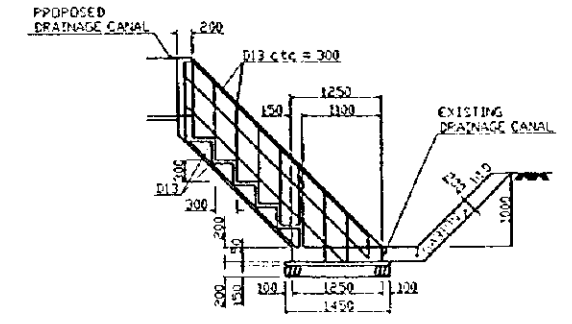
### PLAN



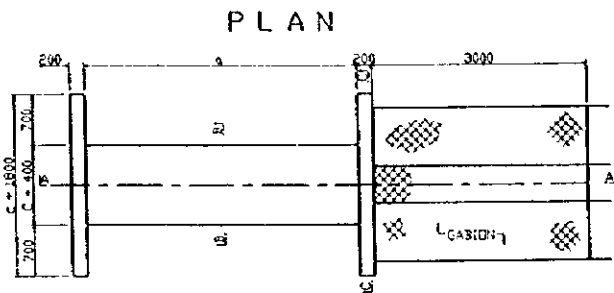
### SECTION A - A



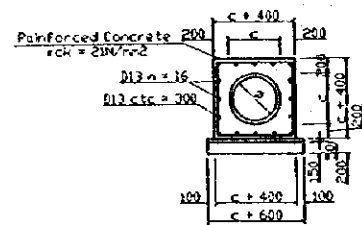
### SECTION B - B



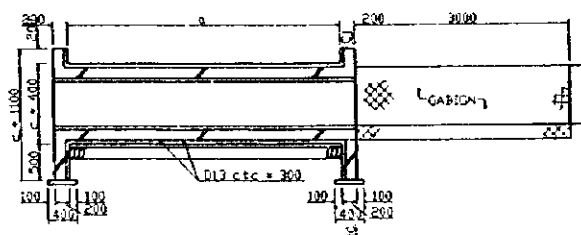
## CANAL CROSS CULVERT (ENTRANCE WORKS)



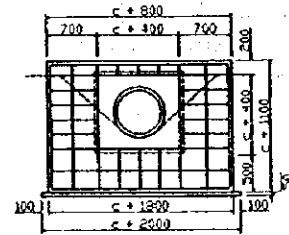
### SECTION B - B



### SECTION A - A



### SECTION C - C



Canal Cross Culvert (Drainage) (Entrance Works)

	Road Type	a	b	c
Type 1	b = 3	3000	600	700
Type 2	b = 5	5000	600	700
Type 3	b = 5	5000	1000	1100
Type 4	b = 5	5000	1200	1420

Chute

	a	b	c	d
Type 1	1800	2600	2800	3000
Type 2	12000	13600	14000	14200

THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT FOR THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

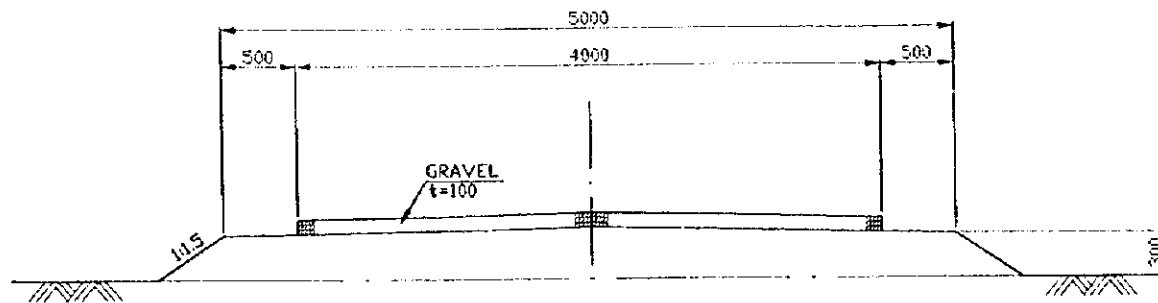
DRAINAGE FACILITIES (2/2) BLOCK E

Date No. 52

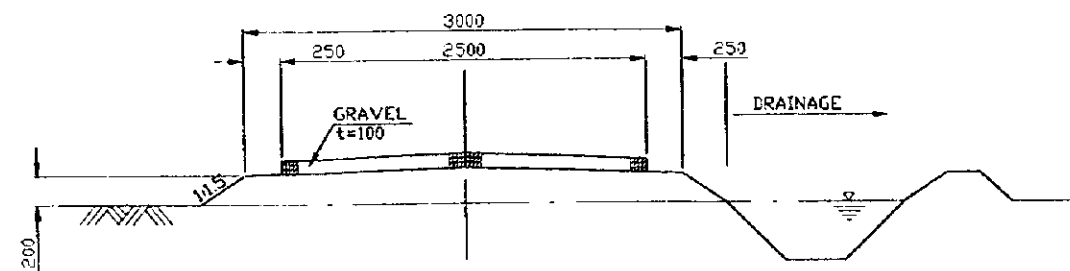
JAPAN INTERNATIONAL COOPERATION AGENCY

# FARM ROAD TYPICAL SECTION

## TRUNK ROAD



## SECONDARY ROAD



THE REPUBLIC OF ZIMBABWE

THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)

FARM ROAD TYPICAL SECTION  
BLOCK E

Date		No.	53
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JAPAN INTERNATIONAL COOPERATION AGENCY