

REPUBLIC OF THE PHILIPPINES
METROPOLITAN WATERWORKS AND SEWERAGE SYSTEM

THE FEASIBILITY STUDY
ON
THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT

VOLUME IV
DRAWINGS

MARCH 1992

JAPAN INTERNATIONAL COOPERATION AGENCY

SSS
OR(3)
92-025

ARY

国際協力事業団

23510

REPUBLIC OF THE PHILIPPINES
METROPOLITAN WATERWORKS AND SEWERAGE SYSTEM

THE FEASIBILITY STUDY

ON

THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT

VOLUME IV

DRAWINGS

JICA LIBRARY



1096917(8)

23510

MARCH 1992

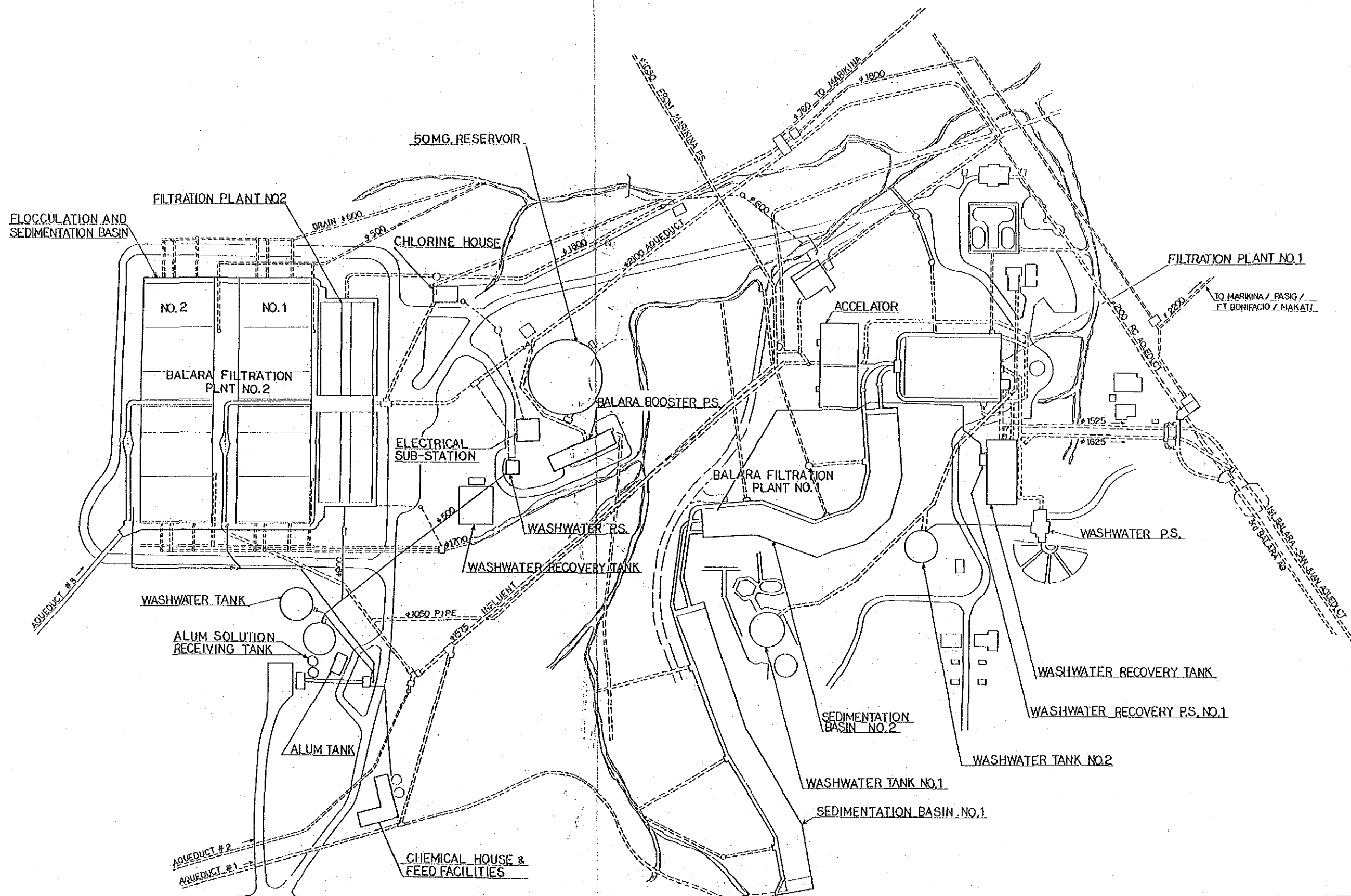
JAPAN INTERNATIONAL COOPERATION AGENCY

THE FEASIBILITY STUDY
ON
THE BALARA WATER TREATMENT PLANT
REHABILITATION PROJECT

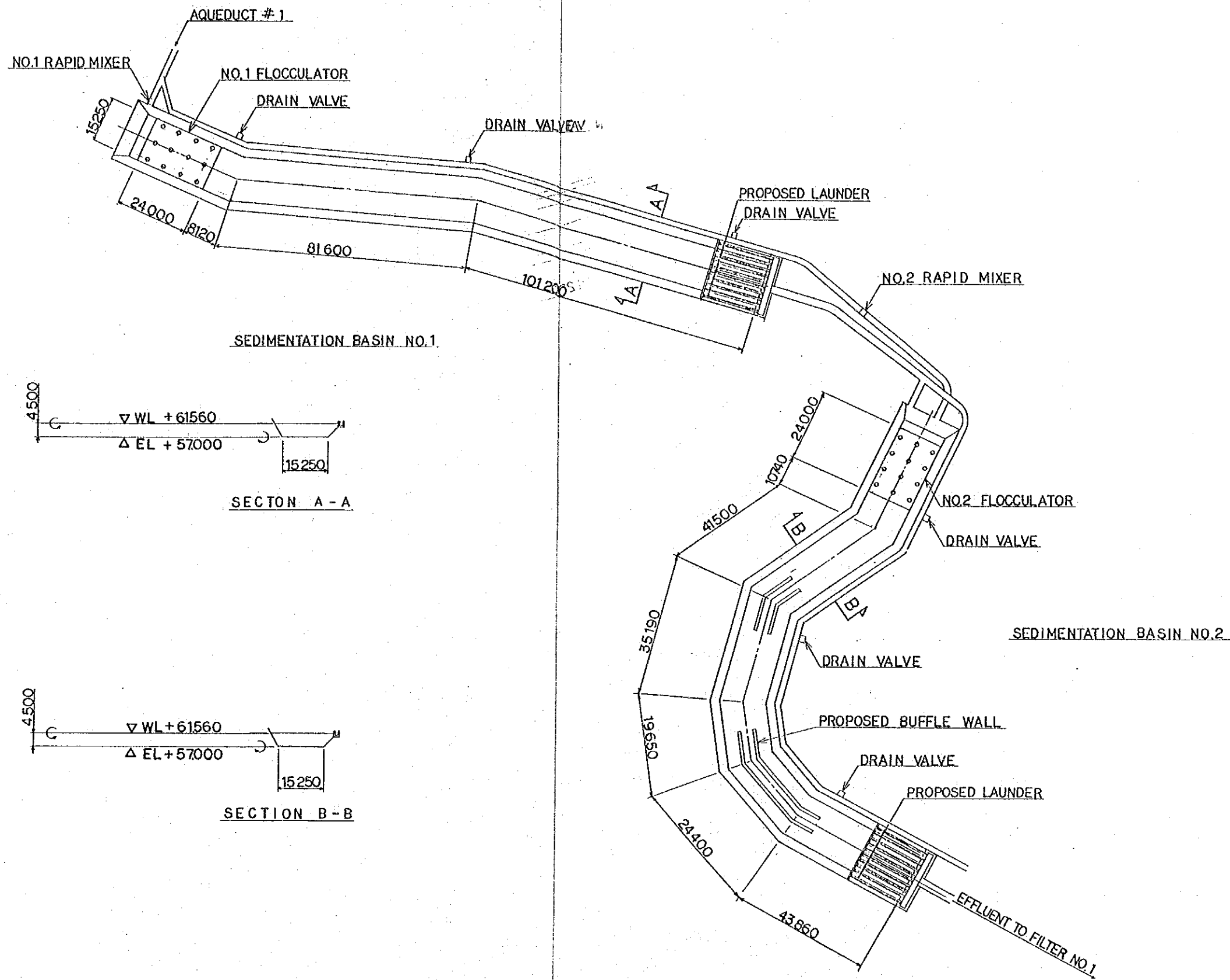
DRAWINGS

Drawing	Title
1	General Layout
2	Plant No.1-Sedimentation Basin
3	Plant No.1-Rapid Mixer, Flocculator, Drain Valve
4	Plant No.1-Accelator
5	Plant No.1-Accelator Drive Unit, Sludge Extraction Valve
6	Plant No.1-Filter
7	Plant No.1-Surface Wash Piping, Venturi Tube, Hydraulic and Pneumatic Control Unit
8	Plant No.1-Wash Water Recovery Tank
9	Plant No.1-Washwater Pump, Washwater Recovery Pump
10	Plant No.2-Flocculation and Sedimentation Basin
11	Plant No.2-Flushing Pump
12	Plant No.2-Flocculator
13	Plant No.2-Filter
14	Plant No.2-Surface Wash Piping, Hydraulic Control Unit
15	Plant No.2-Washwater Recovery Tank

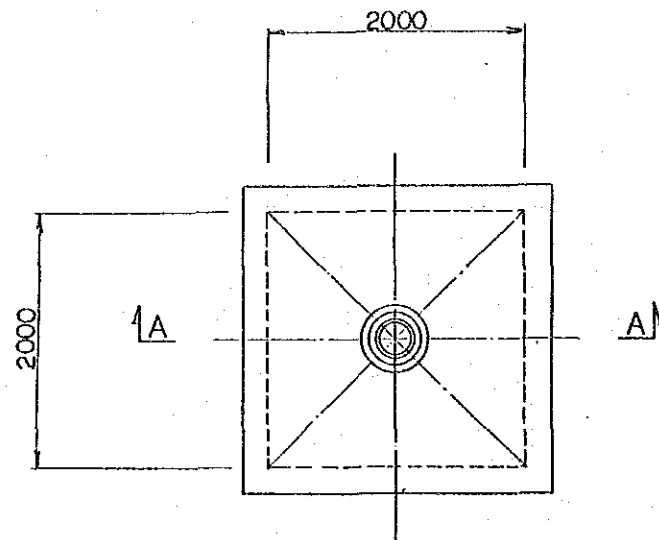
Drawing	Title
16	Plant No.2-Washwater Pump, Washwater Recovery Pump
17	Plant No.1 and No.2-Washwater Tank
18	Chemical House-Alum and Polymer Feeder
19	Chlorine House-Chlorinator, Evaporator, Booster Pump
20	Plant No.1 and No.2-Single Line Diagram
21	Plant No.1 and No.2-Location of Power Receiving Equipment
22	Plant No.1 and No.2-Location of Electrical Panel
23	Plant No.1 and No.2-Outline of Electrical Panel
24	Plant No.1 and No.2-Instrumentation Flow Diagram
25	Plant No.1 and No.2-Instrumentation of Filter
26	Plant No.1 and No.2-Location of Instrumentation
27	Plant No.1 and No.2-Location of Outdoor Lighting



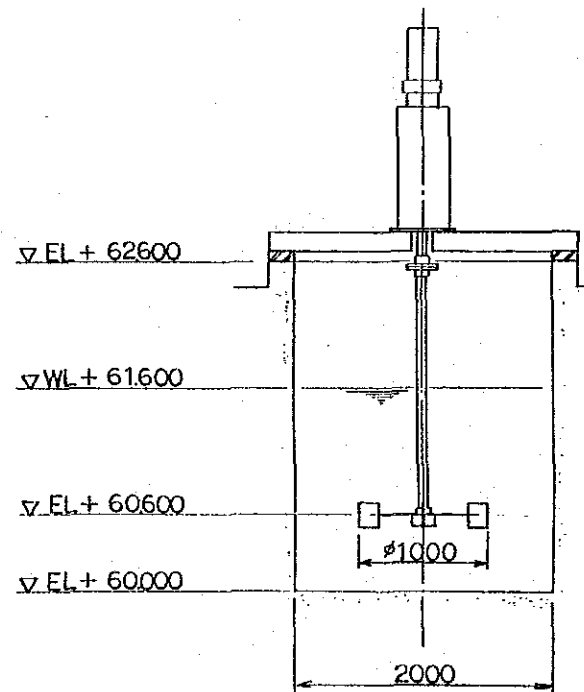
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	GENERAL LAYOUT	DRAWING 1



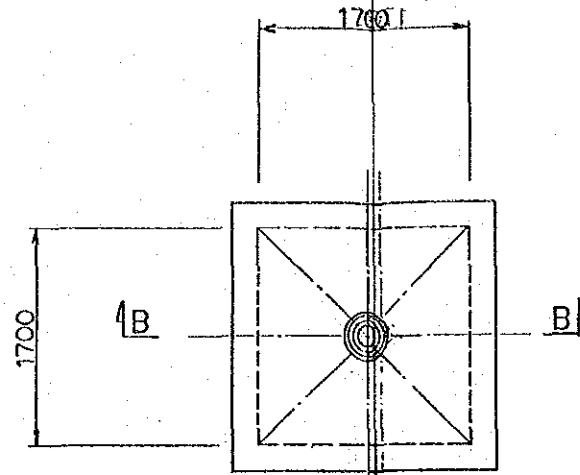
MWSS 1 JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 SEDIMENTATION BASIN	DRAWING 2



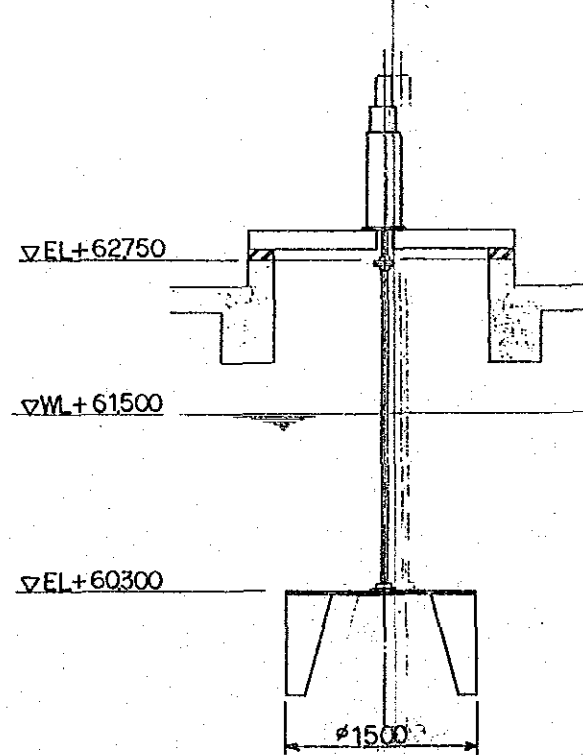
RAPID MIXER FOR BASIN NO.1
(REPLACE)



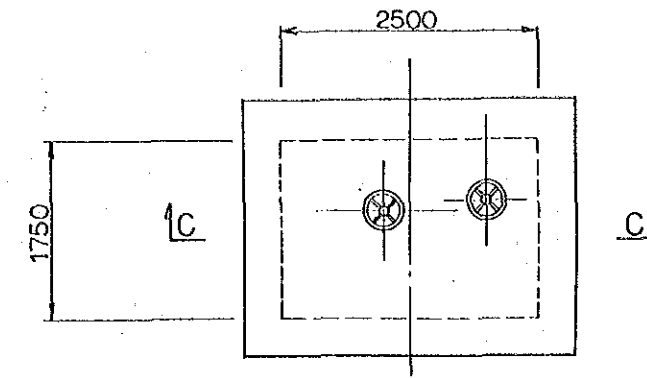
SECTION A-A



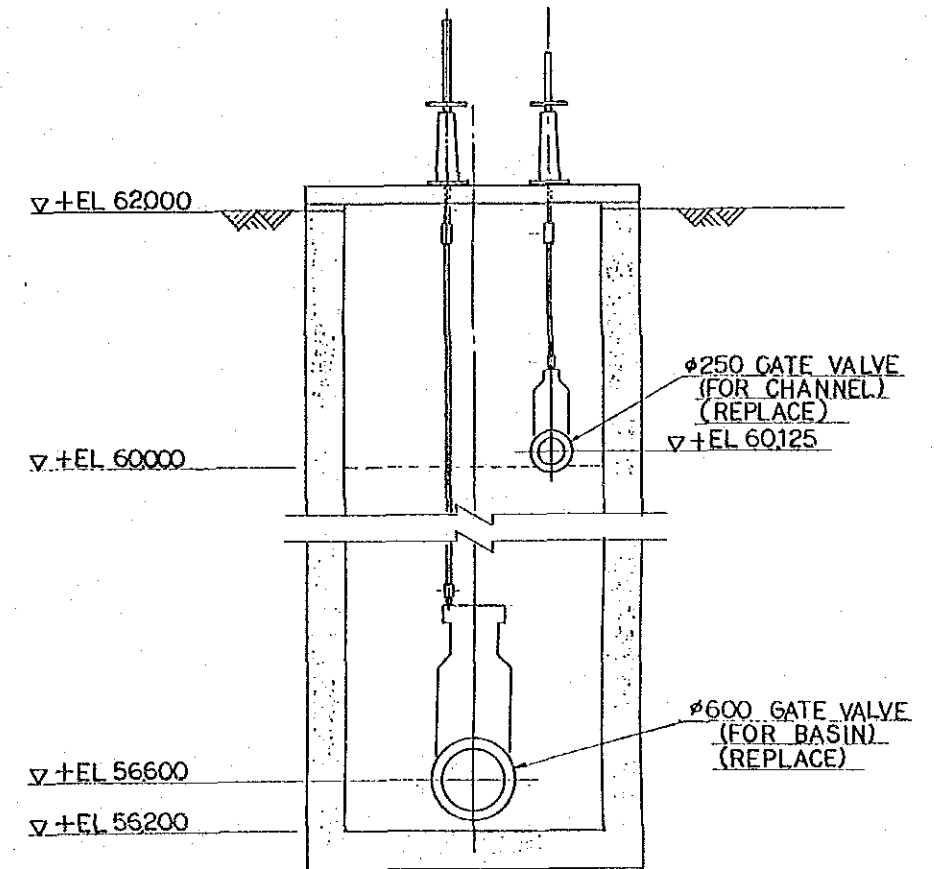
FLOCCULATOR FOR BASIN NO.1&2
(REPLACE)



SECTION B-B

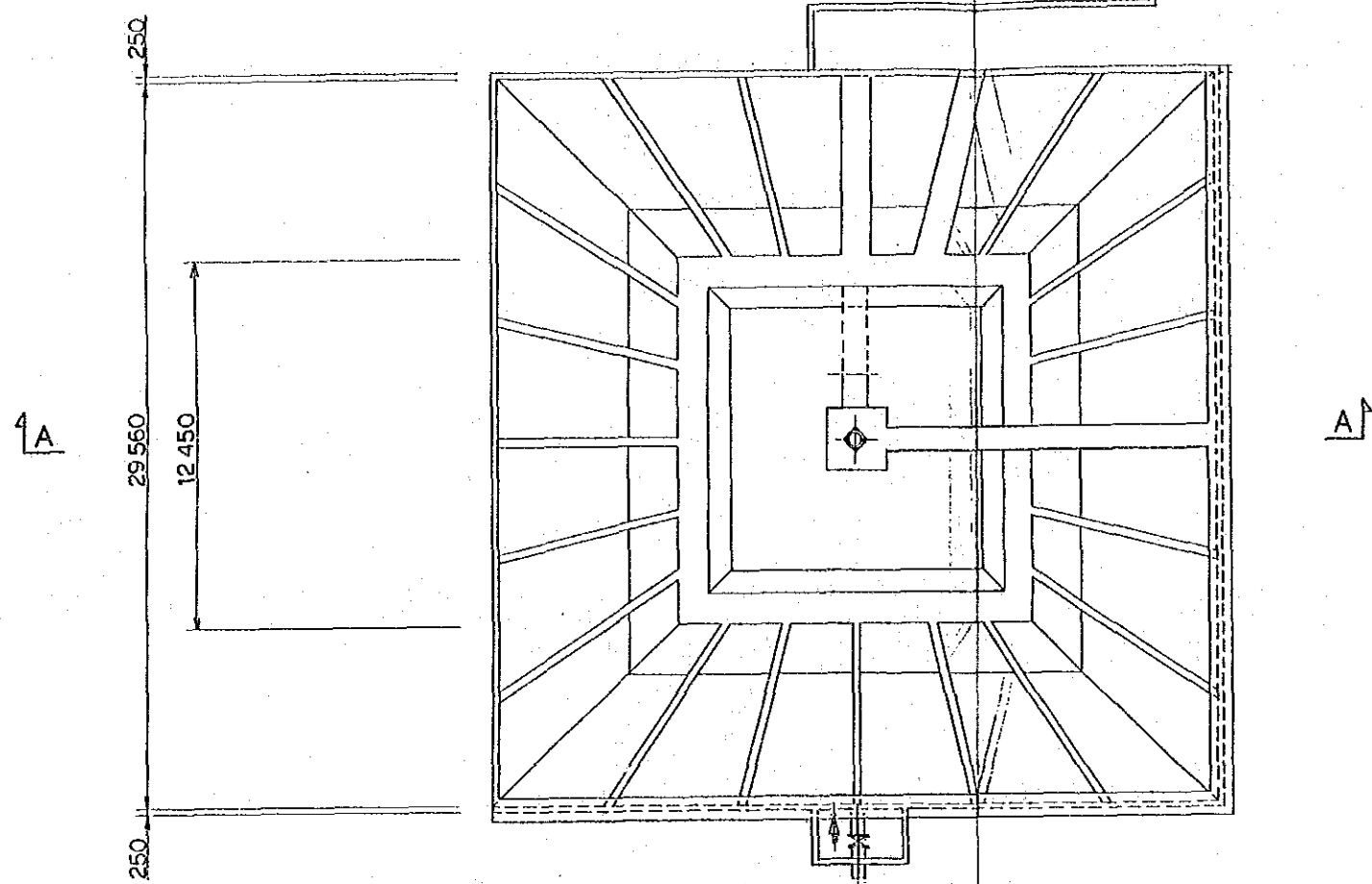


DRAIN VALVE

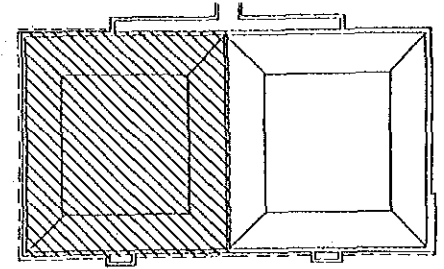


SECTION C-C

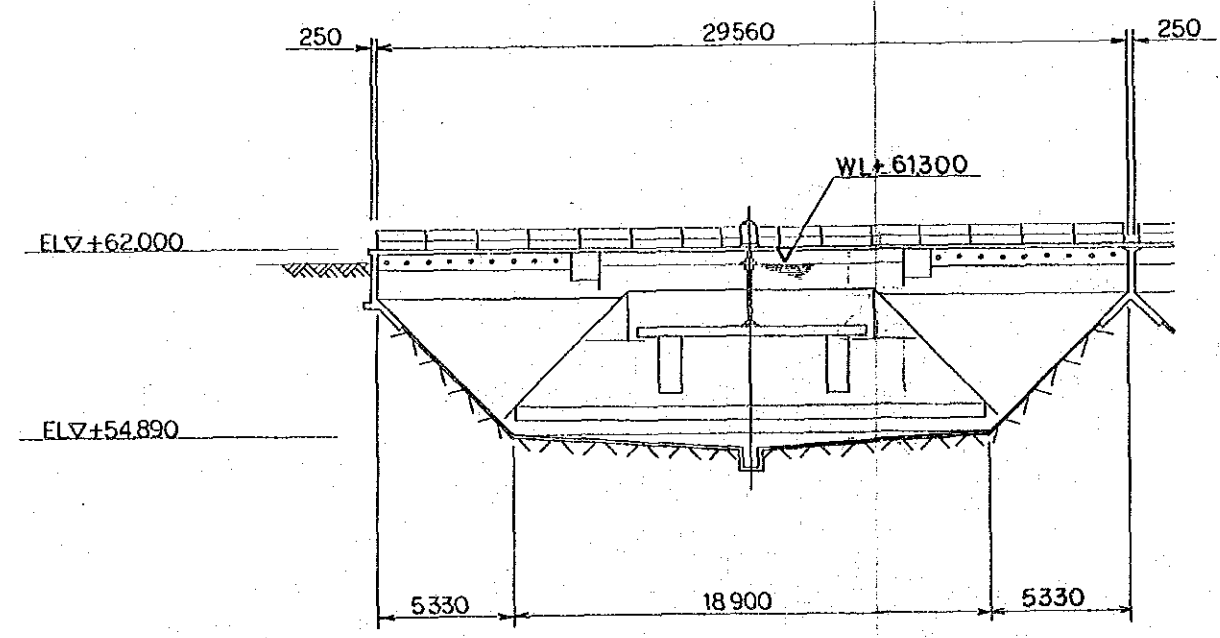
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 - RAPID MIXER, FLOCCULATOR, DRAIN VALVE	DRAWING 3



PLANT NO.1 EXISTING ACCELATORS

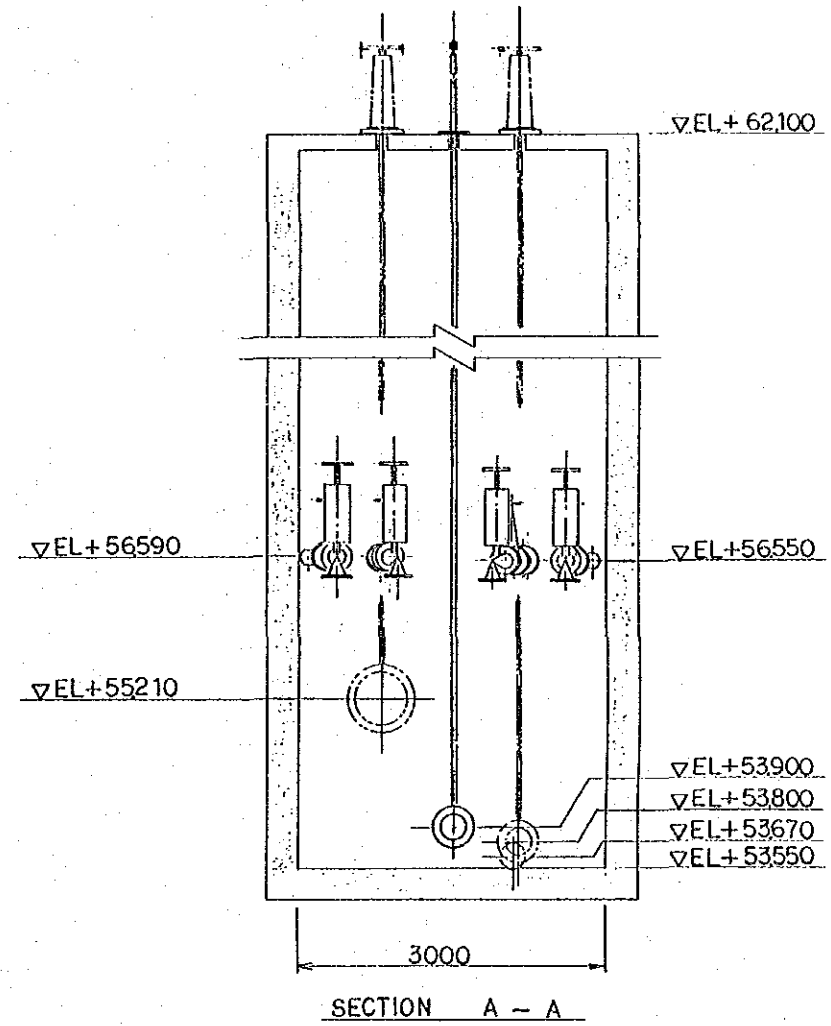
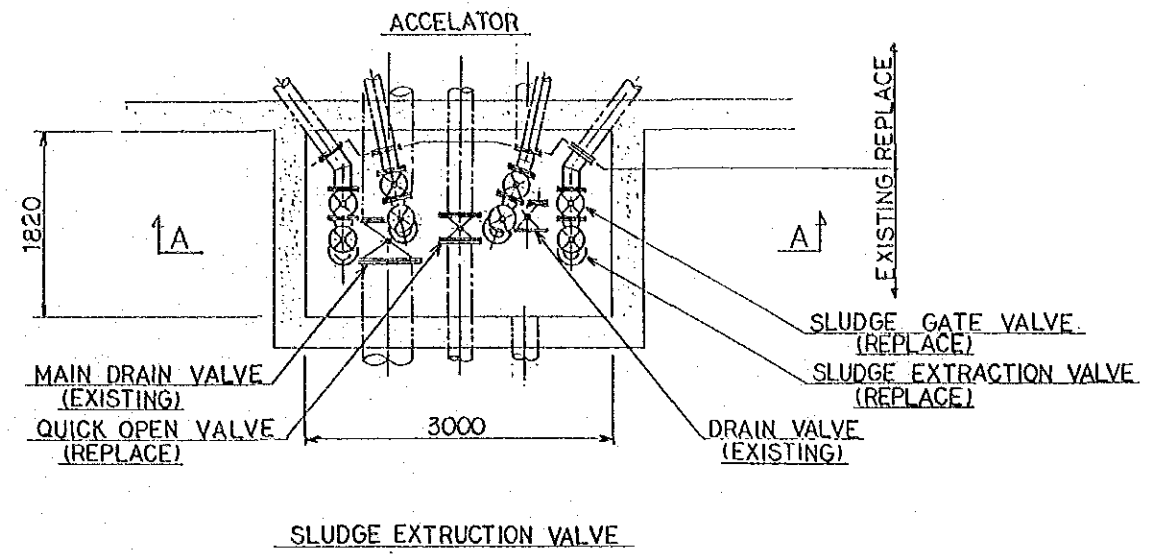
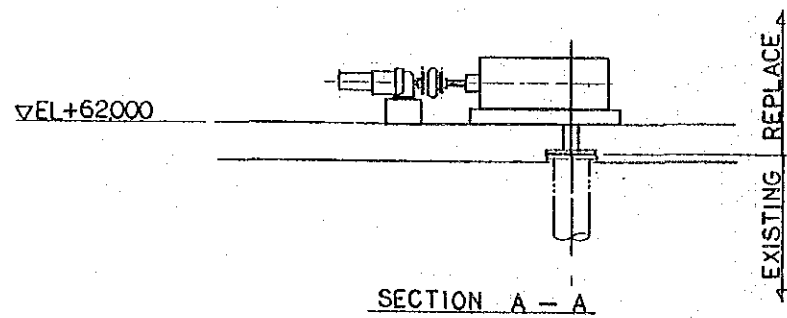
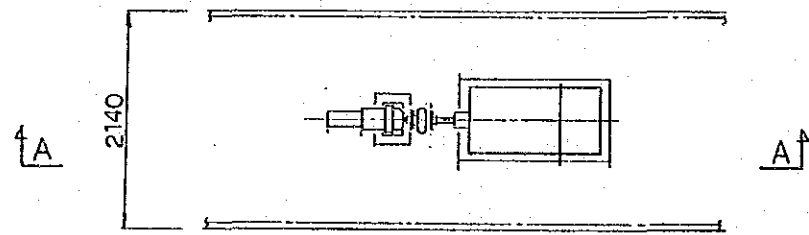
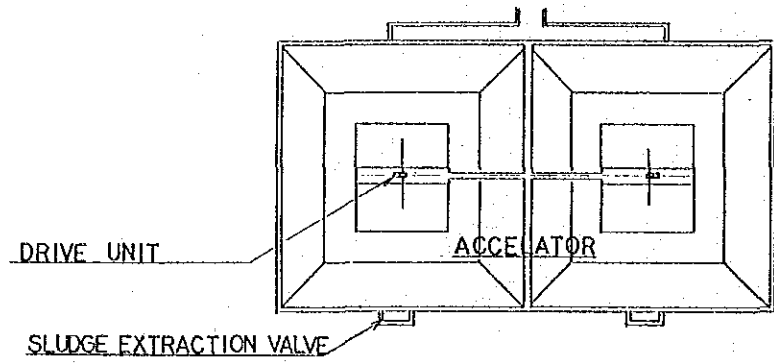


KEY PLAN

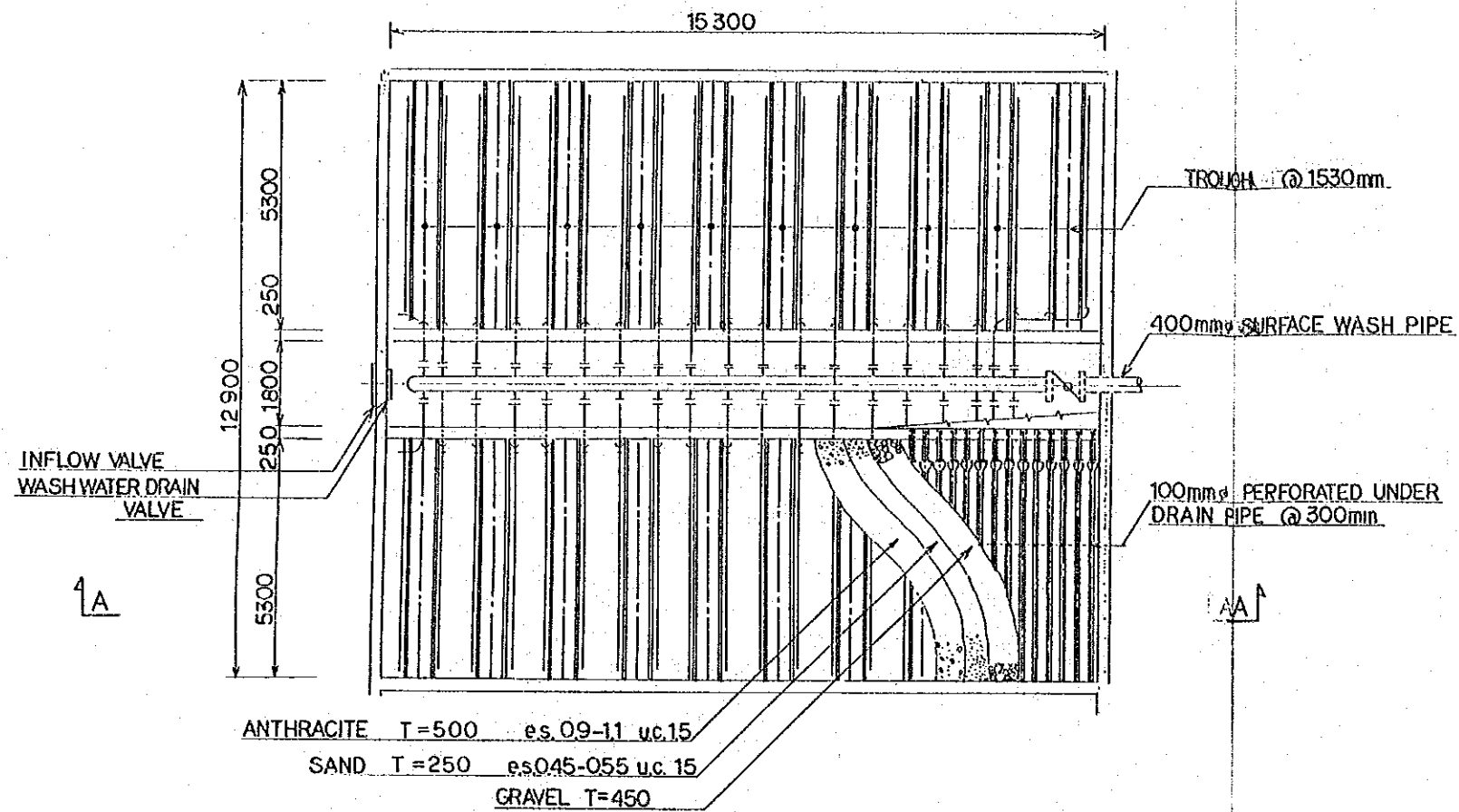


SECTION A - A

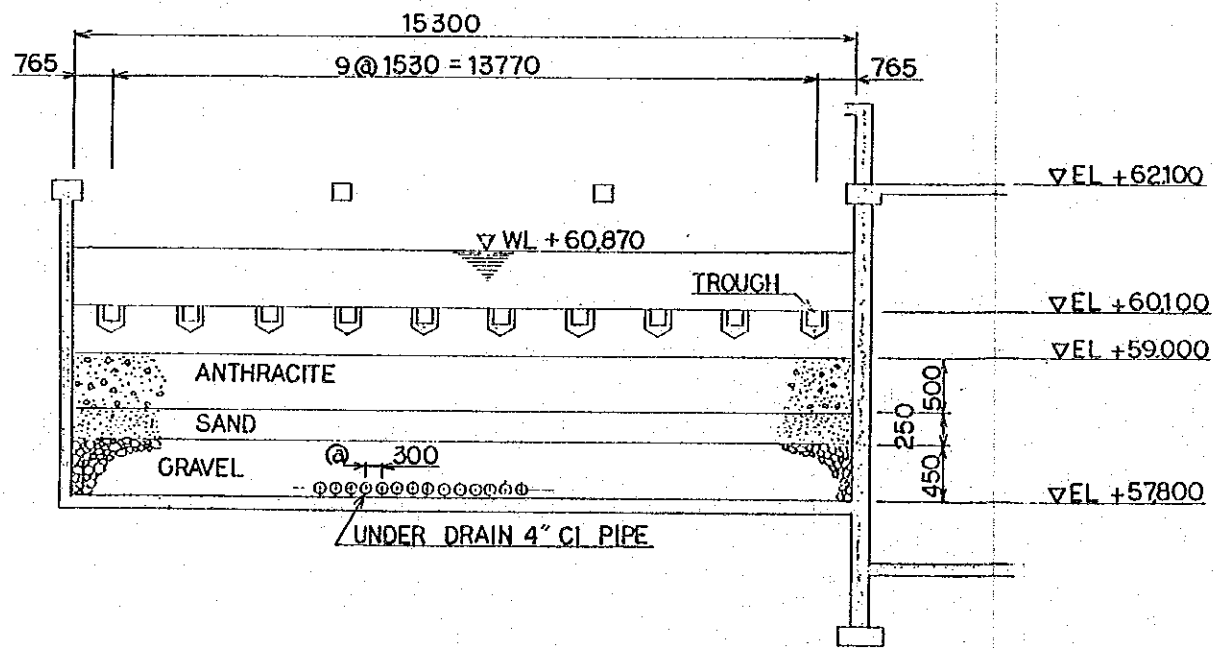
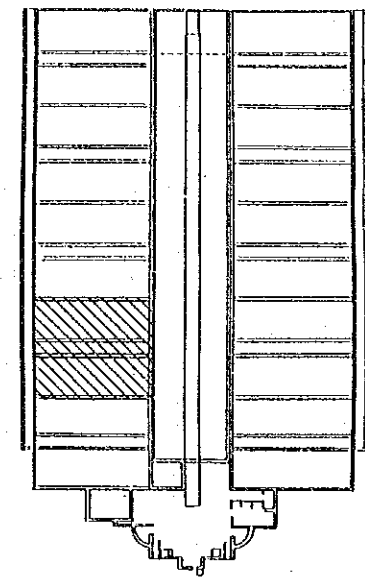
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 ACCELATOR	DRAWING 4



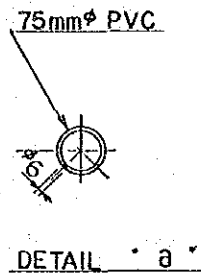
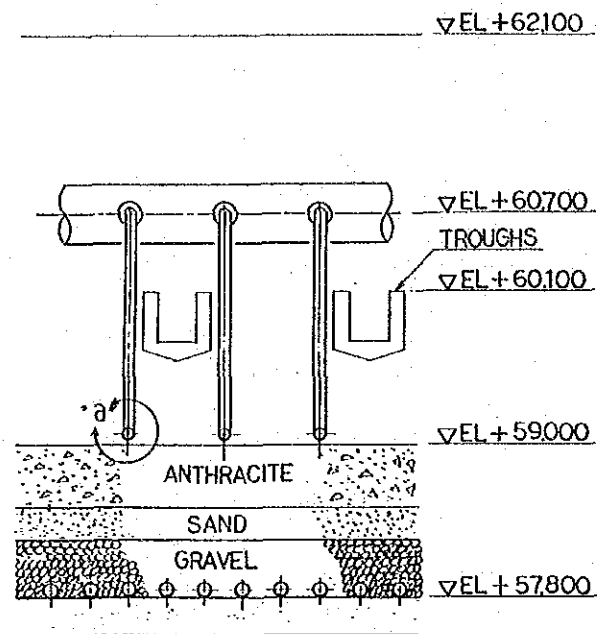
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 - ACCELERATOR DRIVE UNIT, SLUDGE EXTRACTION VALVE	DRAWING 5



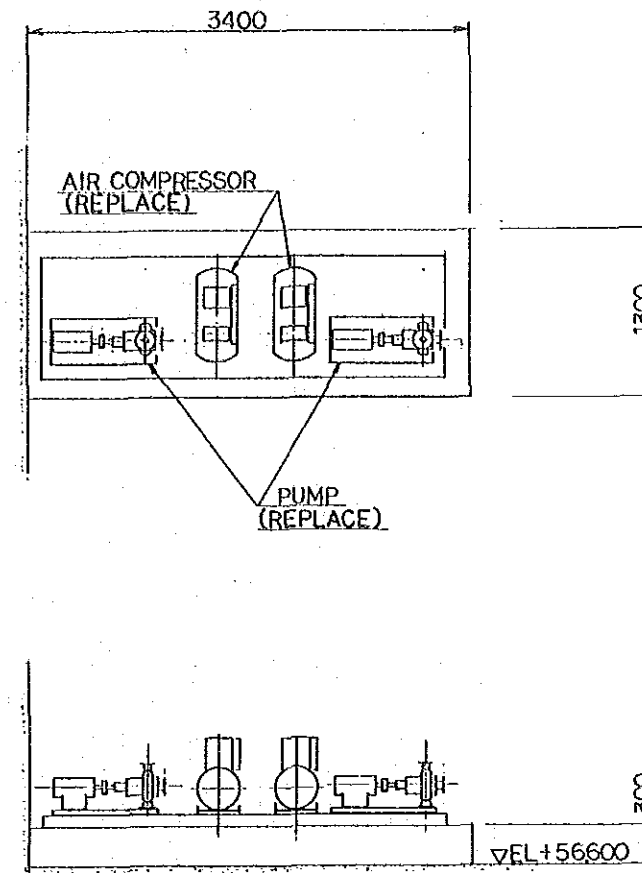
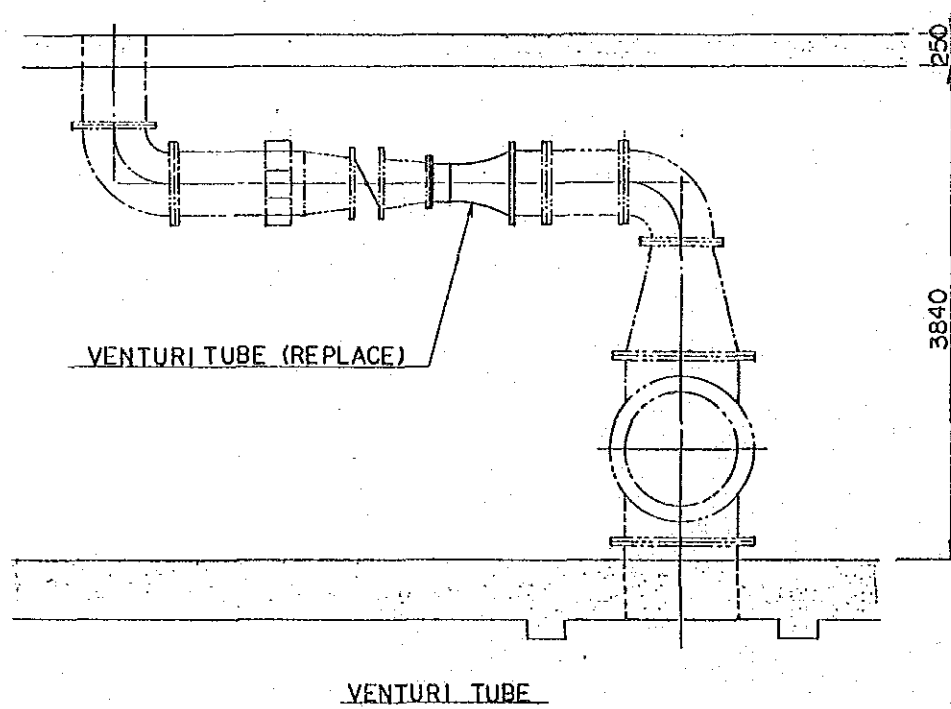
PLANT NO.1 EXISTING FILTRATION PLANT.



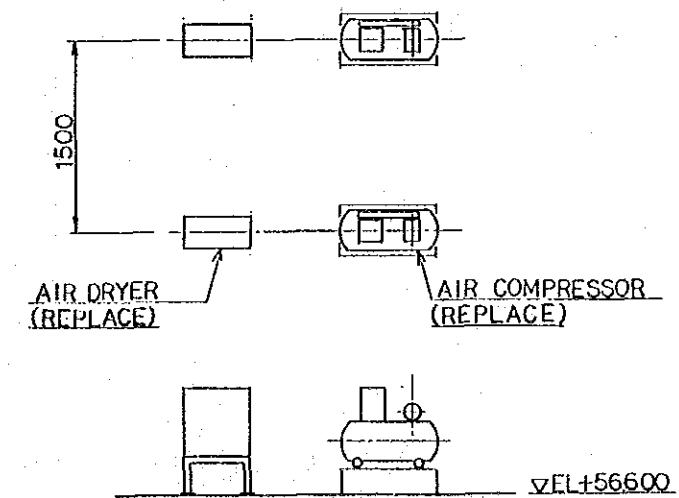
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 FILTER	DRAWING 6



SURFACE WASH PIPING

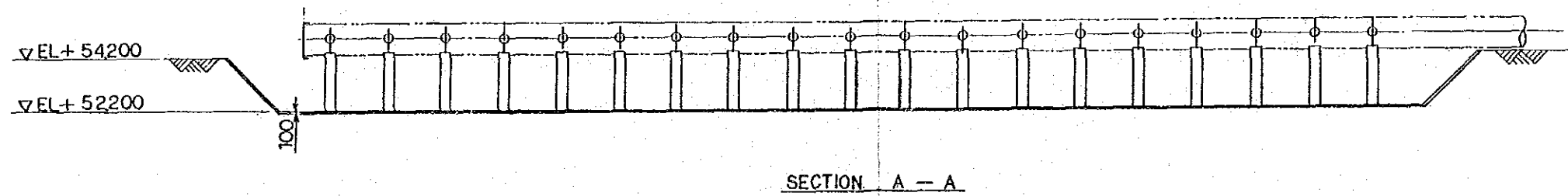
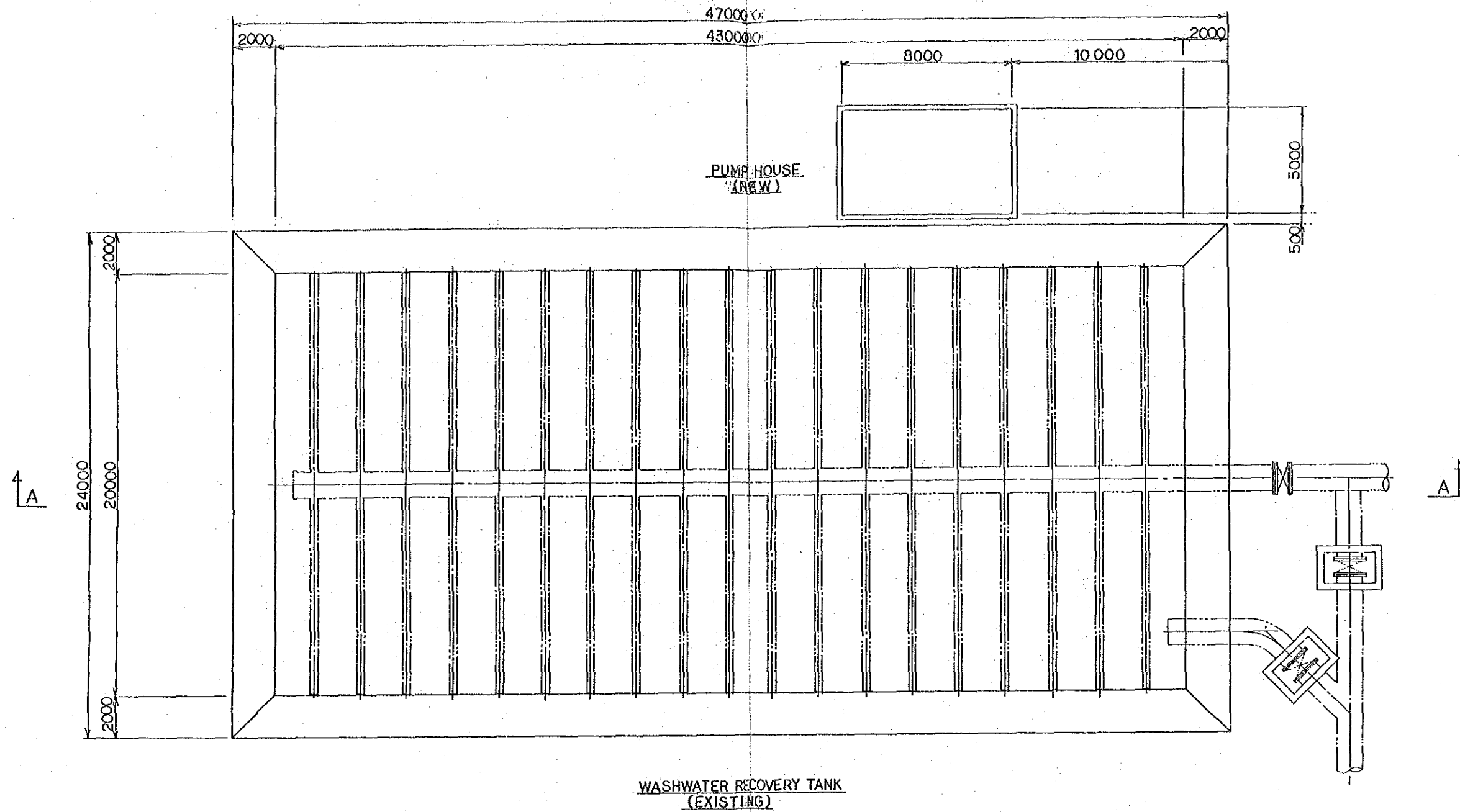


HYDRAULIC CONTROL UNIT

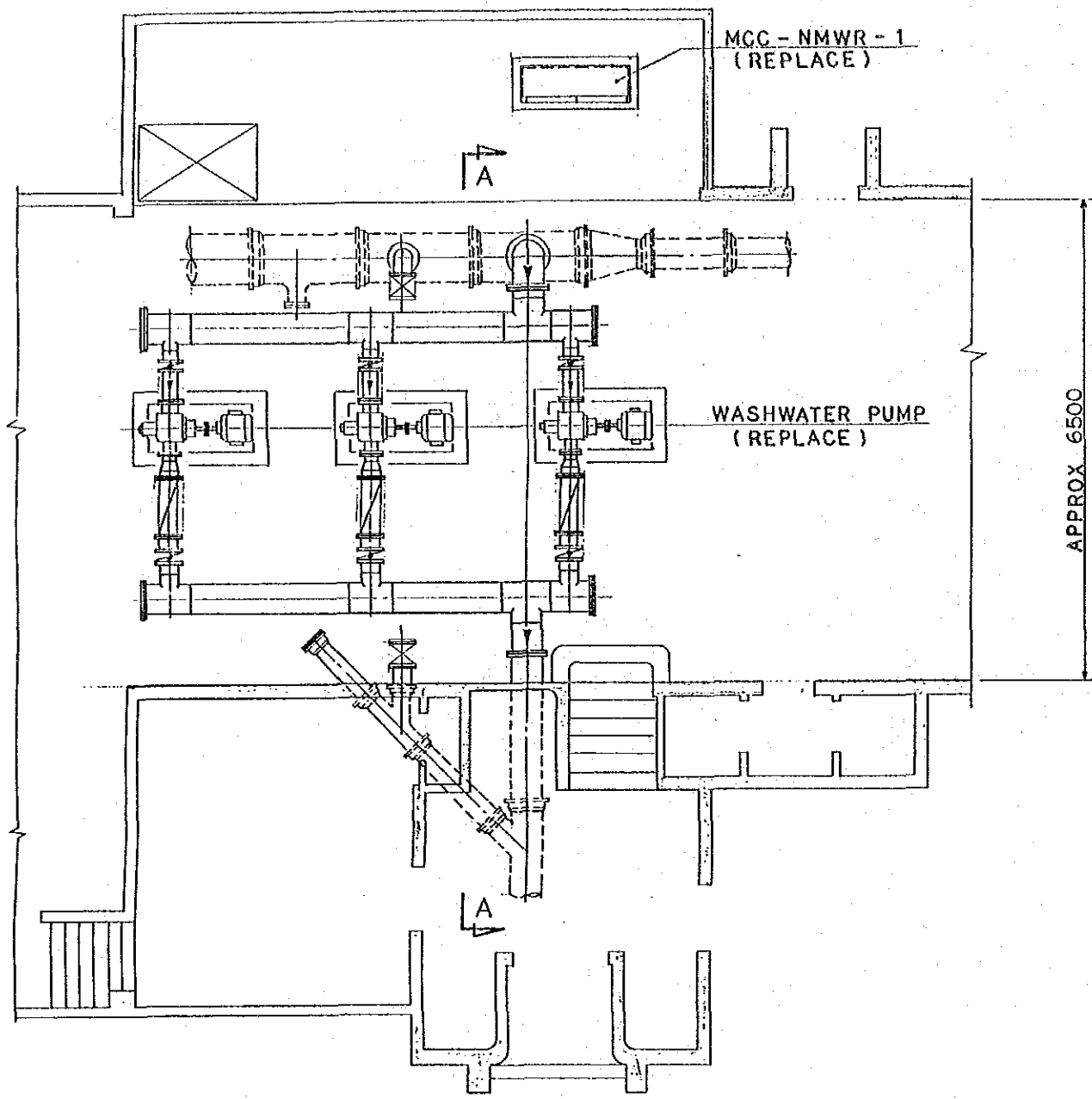


PNEUMATIC CONTROL UNIT

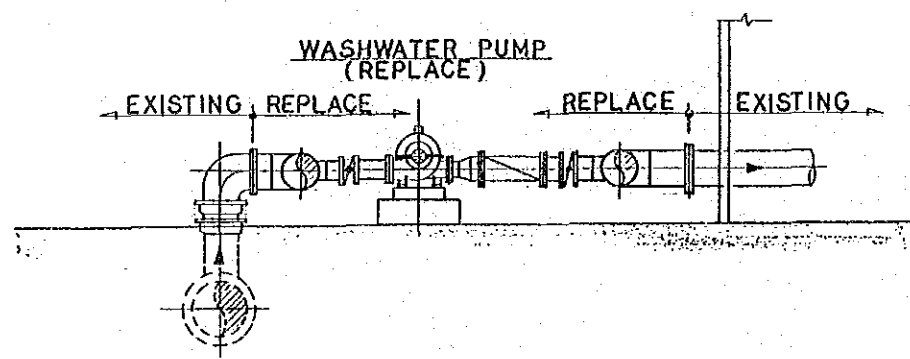
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 - SURFACE WASH PIPING, VENTURI TUBE, HYDRAULIC AND PNEUMATIC CONTROL UNIT	DRAWING 7



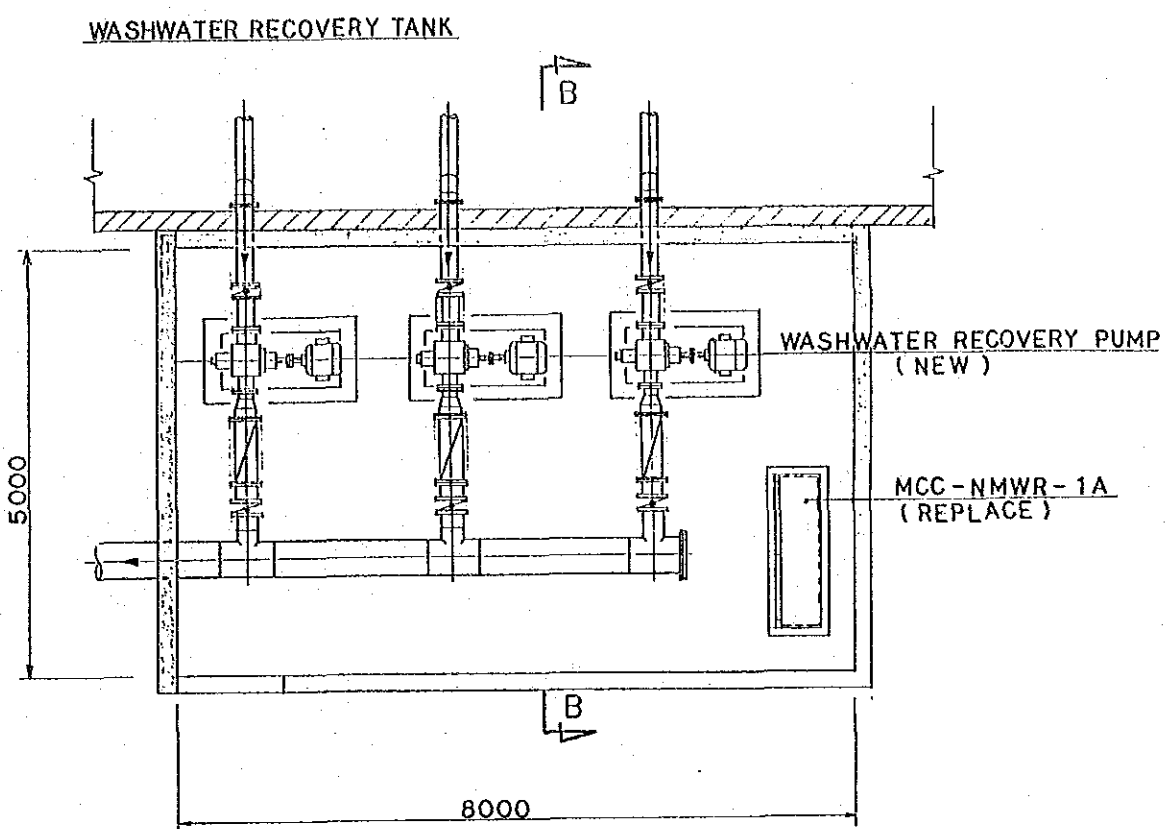
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO. 1. WASHWATER RECOVERY TANK	DRAWING 8



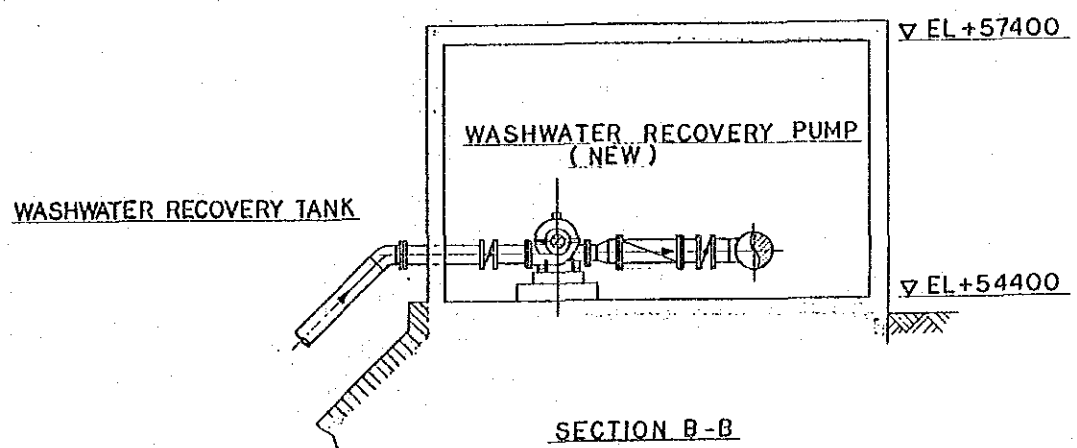
WASHWATER PUMP LAYOUT



SECTION A-A

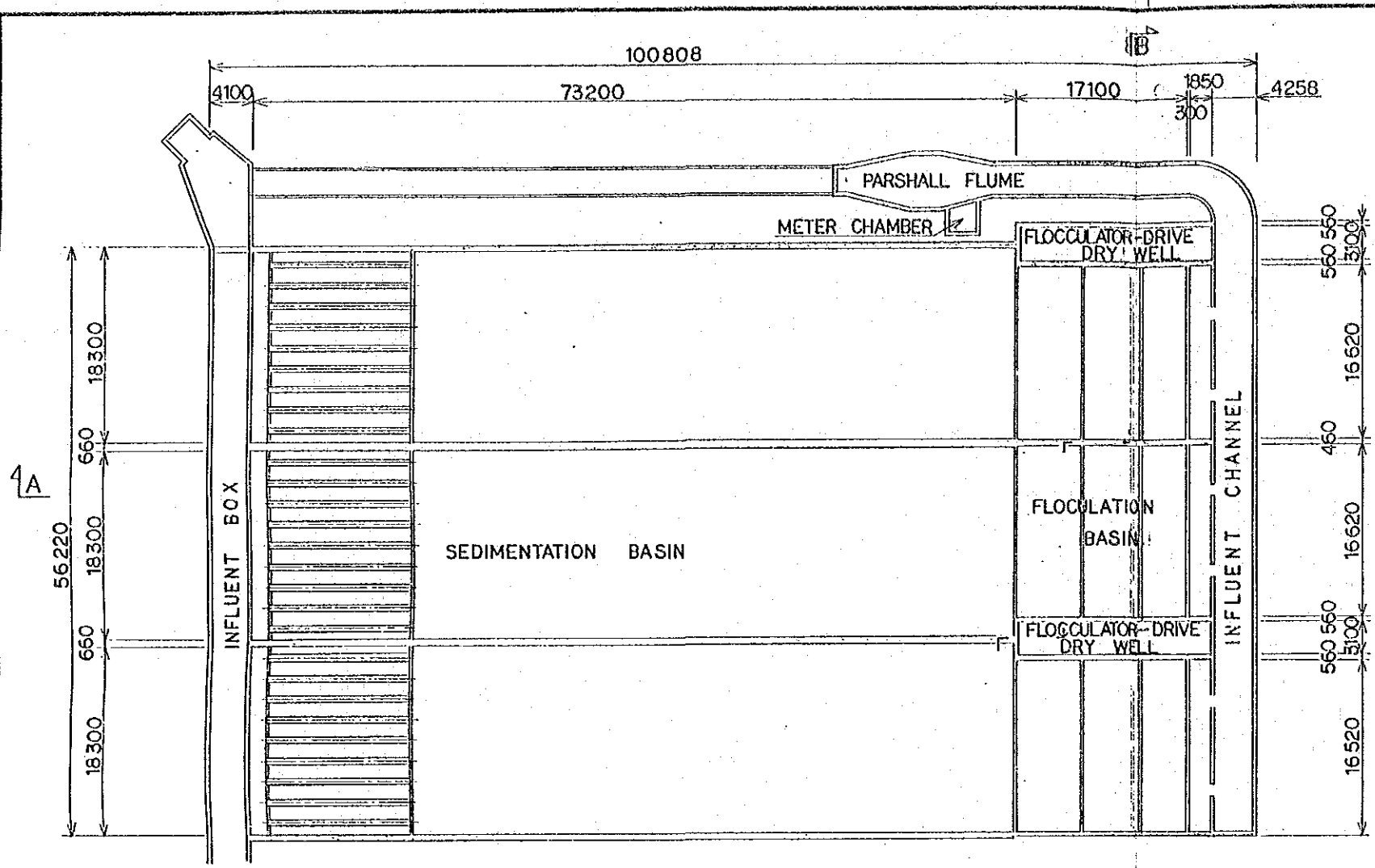


WASHWATER RECOVERY PUMP LAYOUT



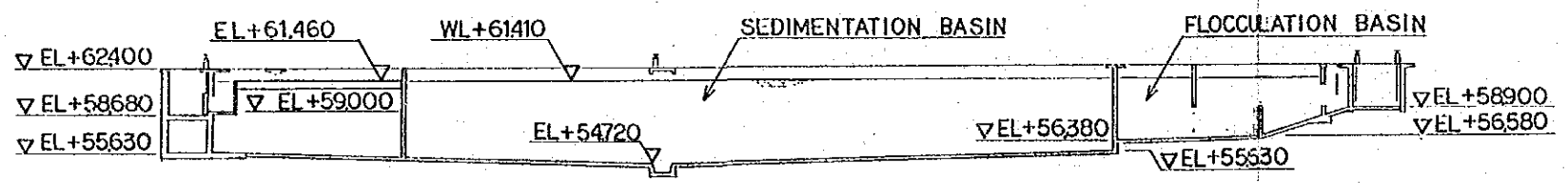
SECTION B-B

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO. 1 - WASHWATER PUMP, WASHWATER RECOVERY PUMP	DRAWING 9

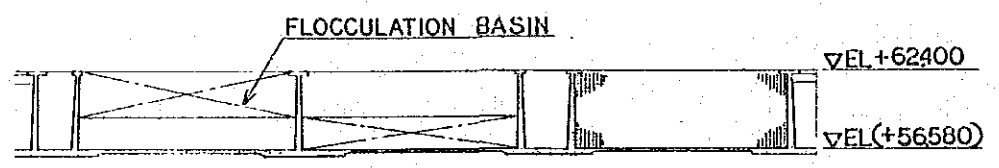


PLAN

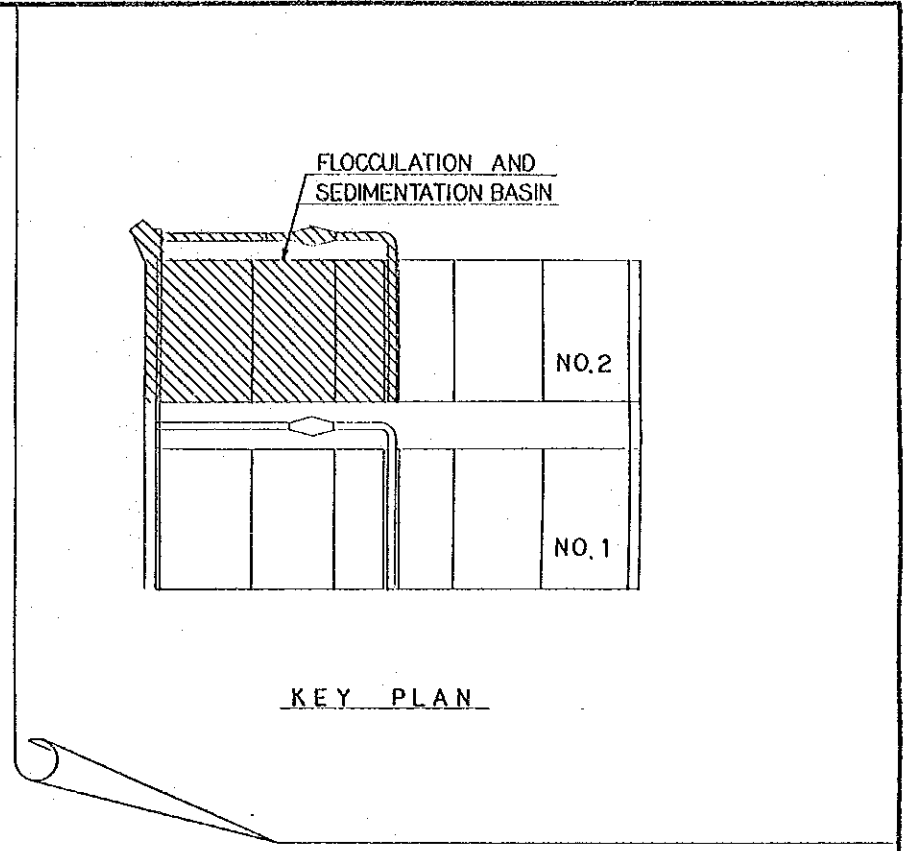
B



SECTION A-A

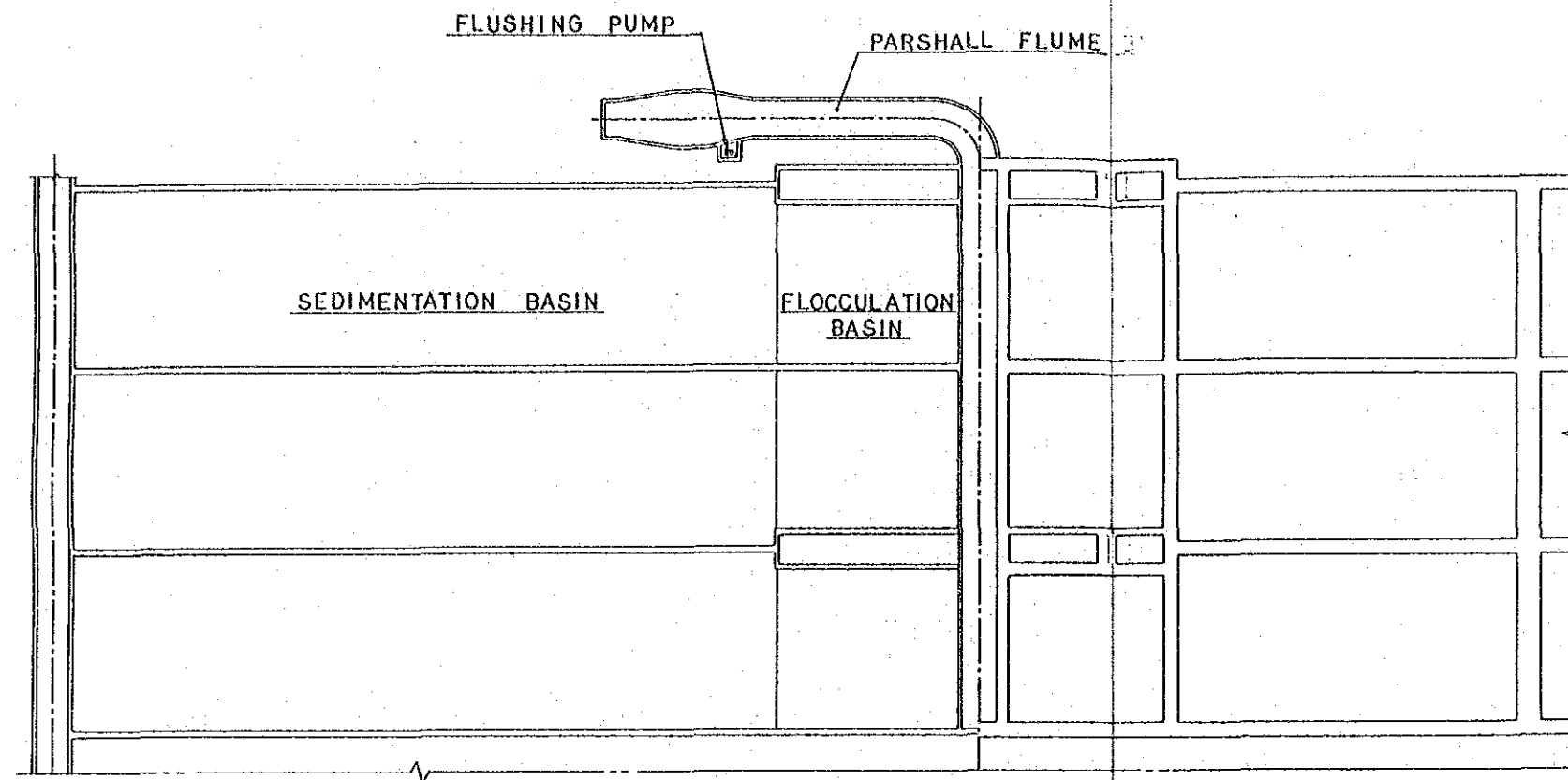


SECTION B-B

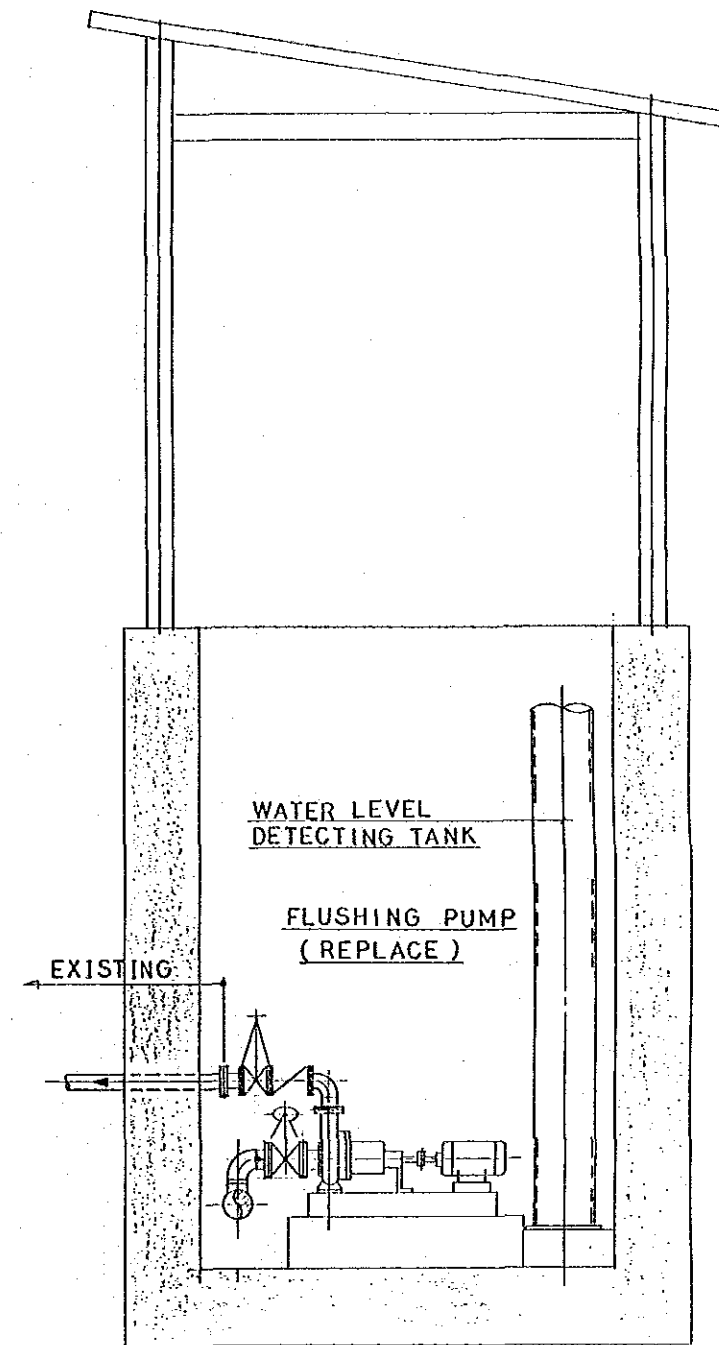


KEY PLAN

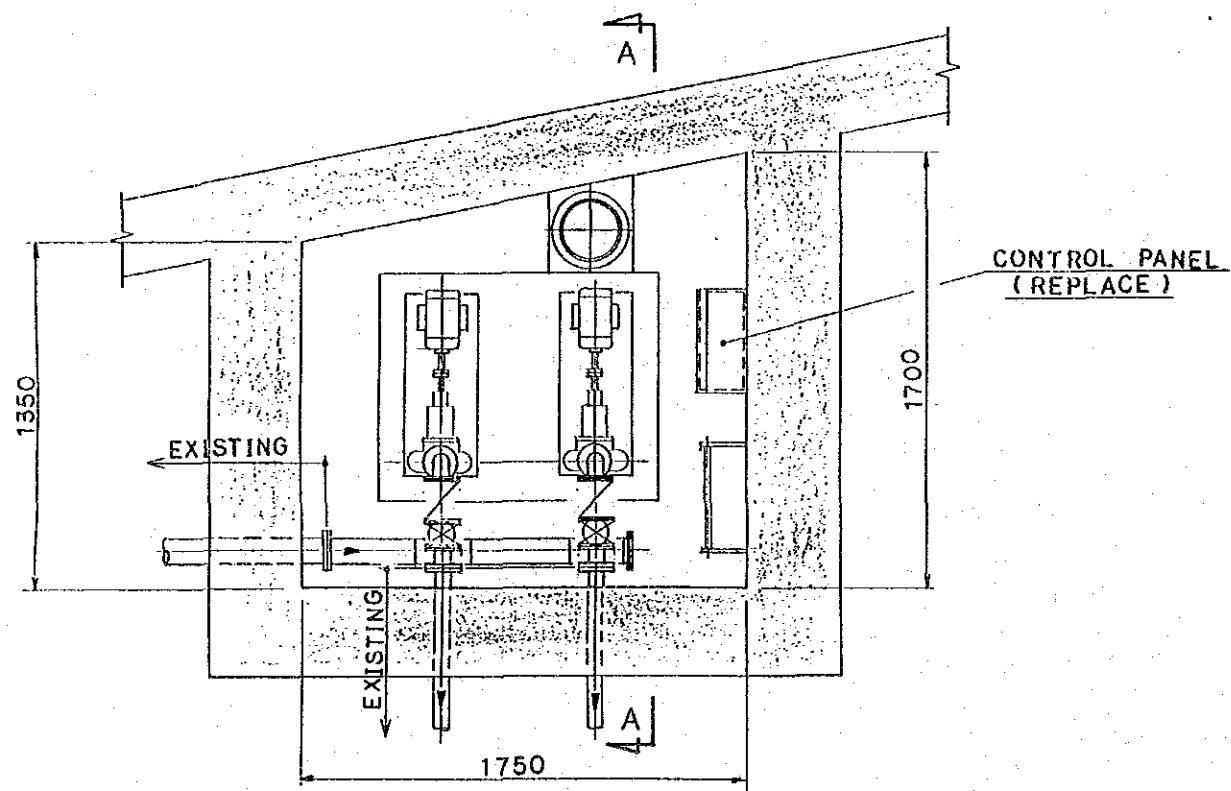
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.2 FLOCCULATION AND SEDIMENTATION BASIN	DRAWING 10



KEY PLAN

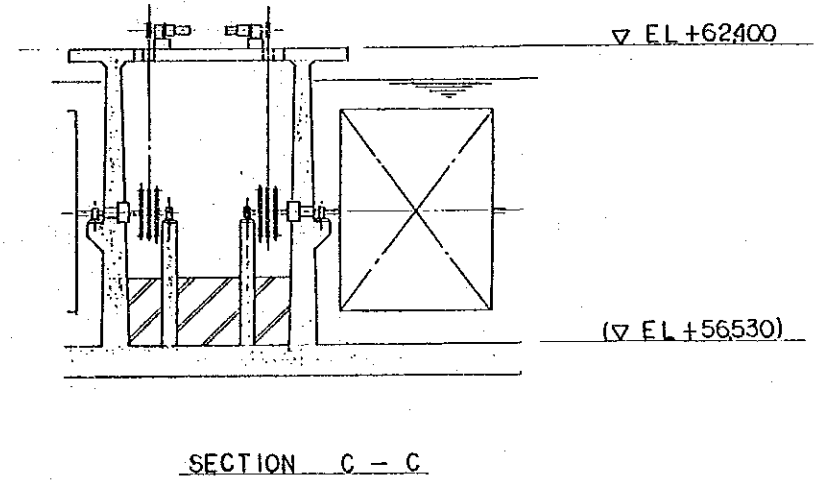
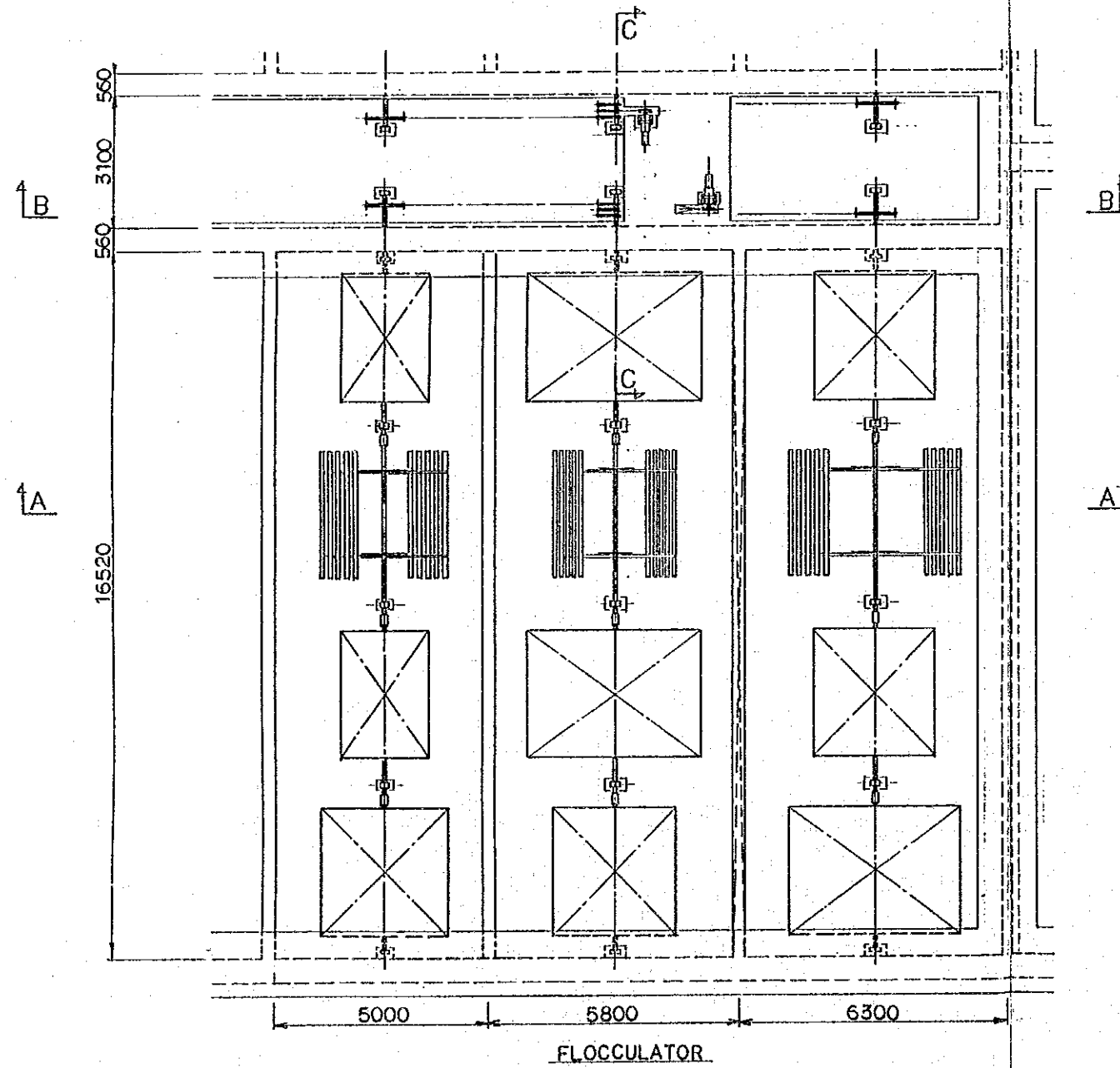
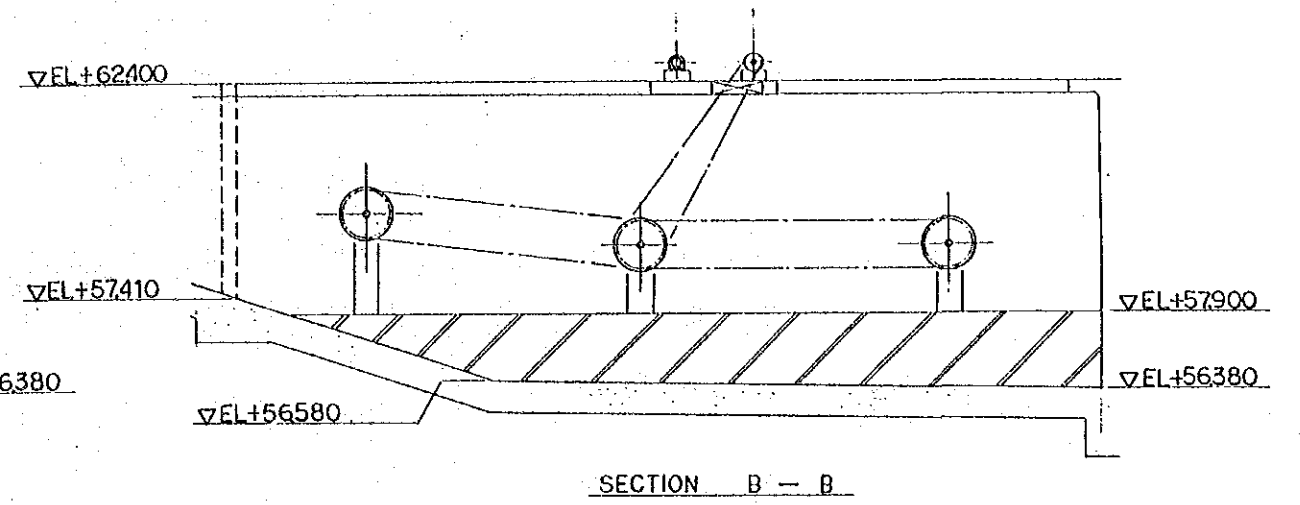
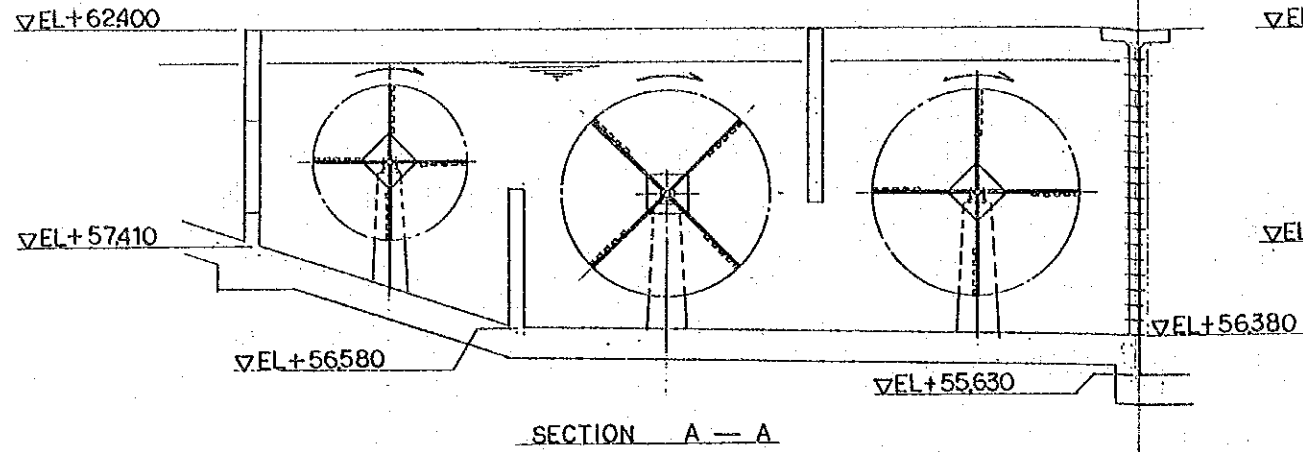


SECTION A - A

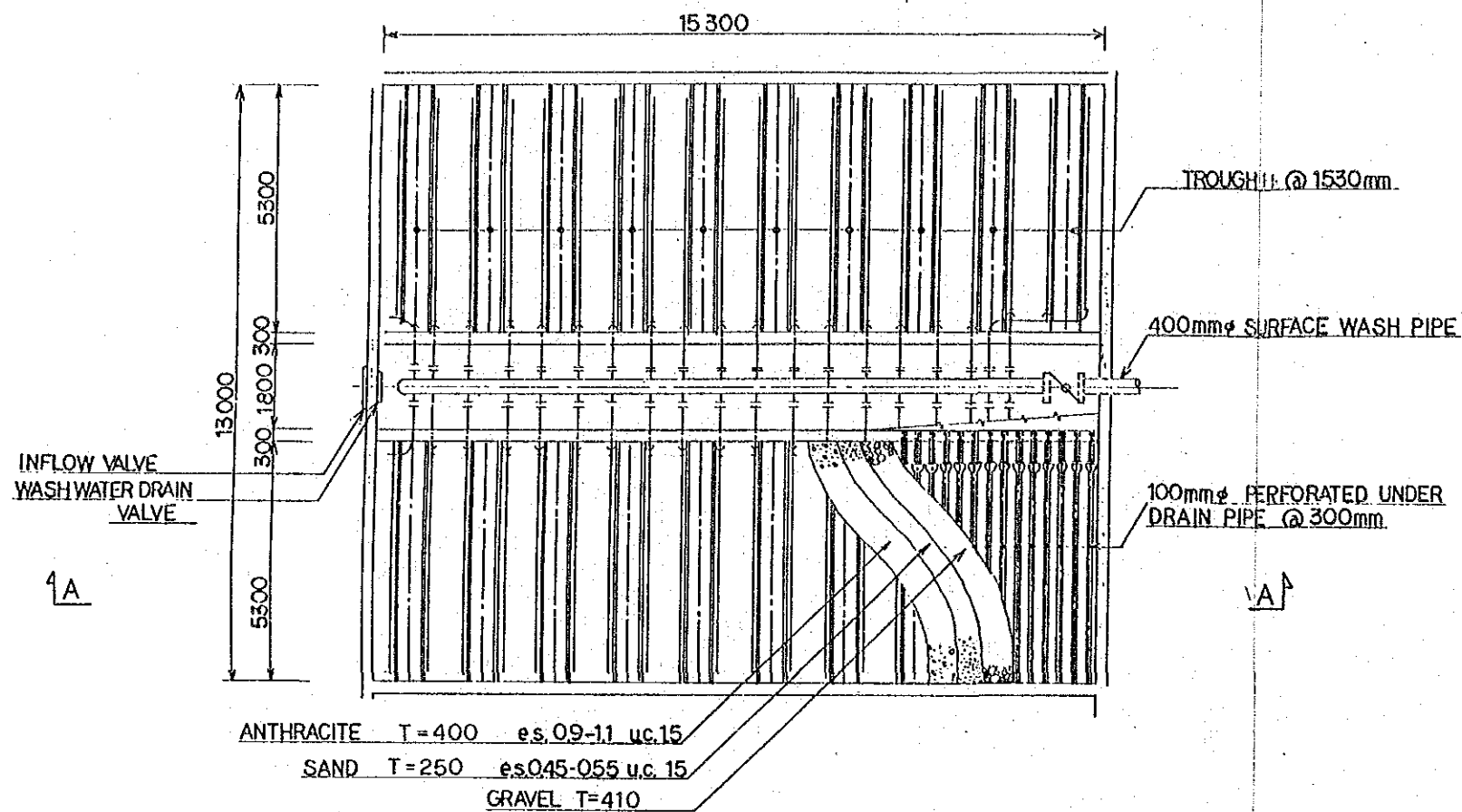


FLUSHING PUMP LAYOUT

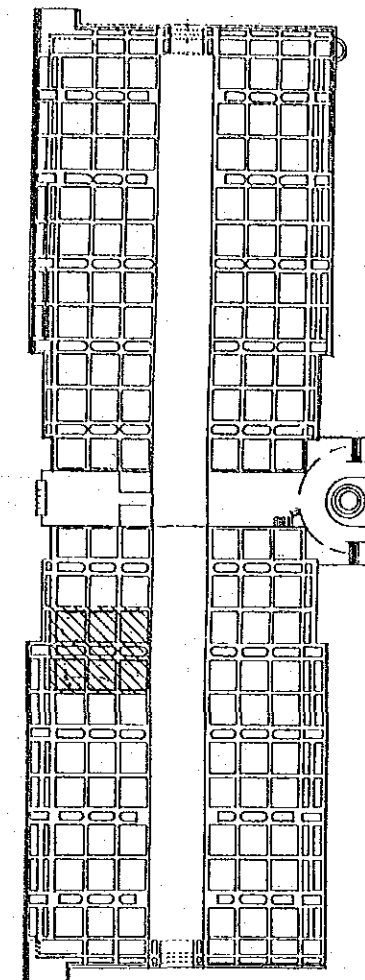
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO. 2 FLUSHING PUMP	DRAWING 11



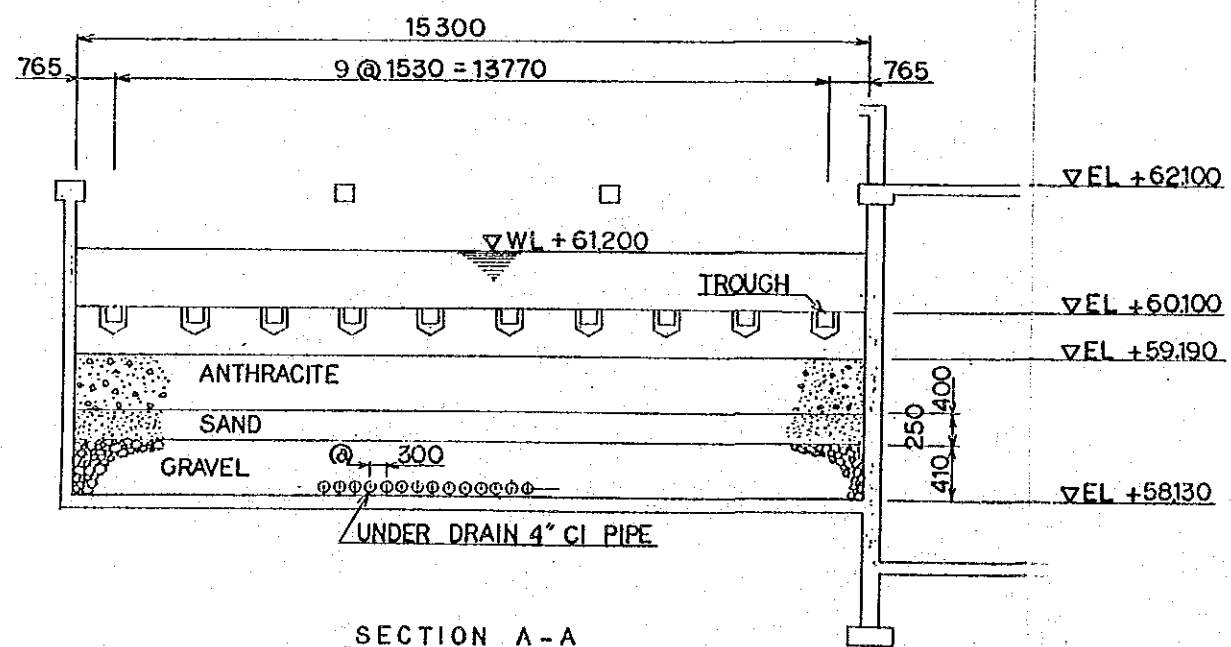
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.2 FLOCCULATOR	DRAWING 12



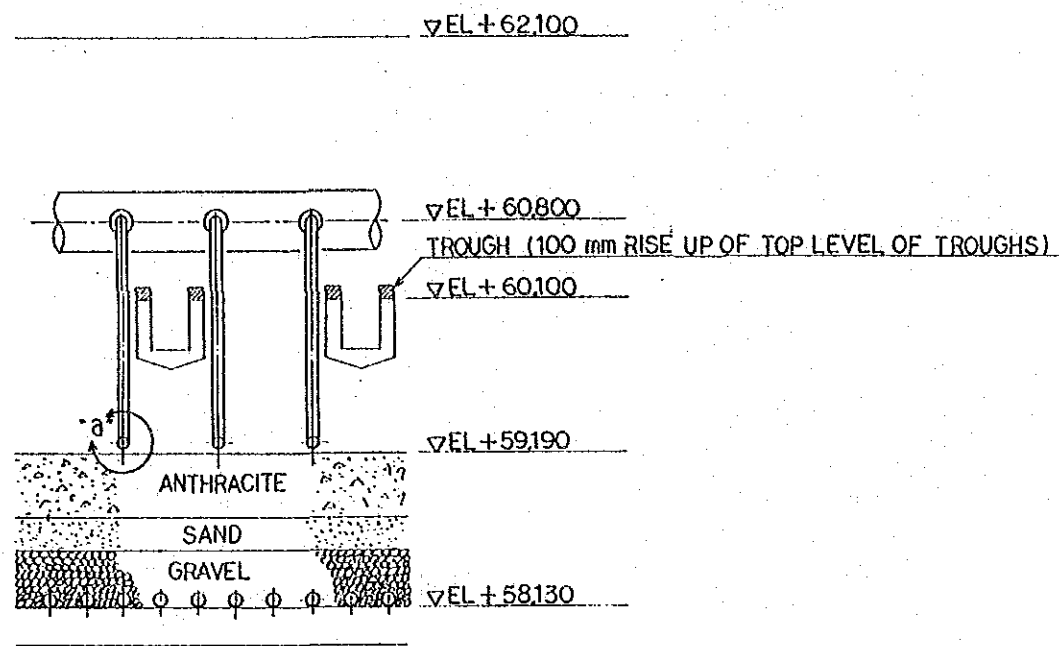
PLANT NO.2 EXISTING FILTRATION PLANT



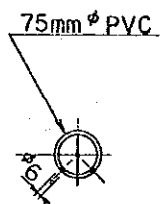
KEY PLAN



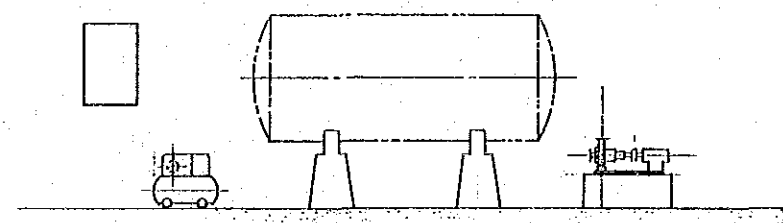
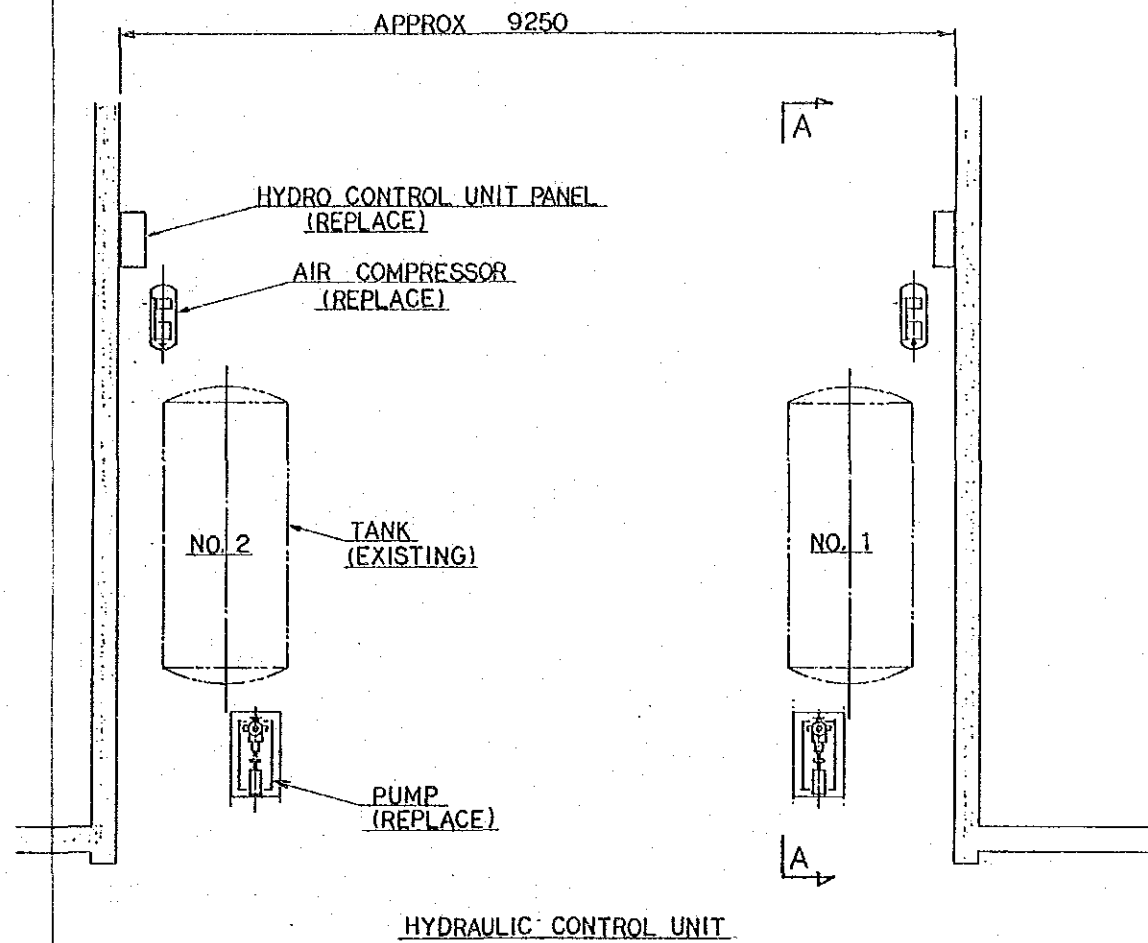
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.2 FILTER	DRAWING 13



SURFACE WASH PIPING

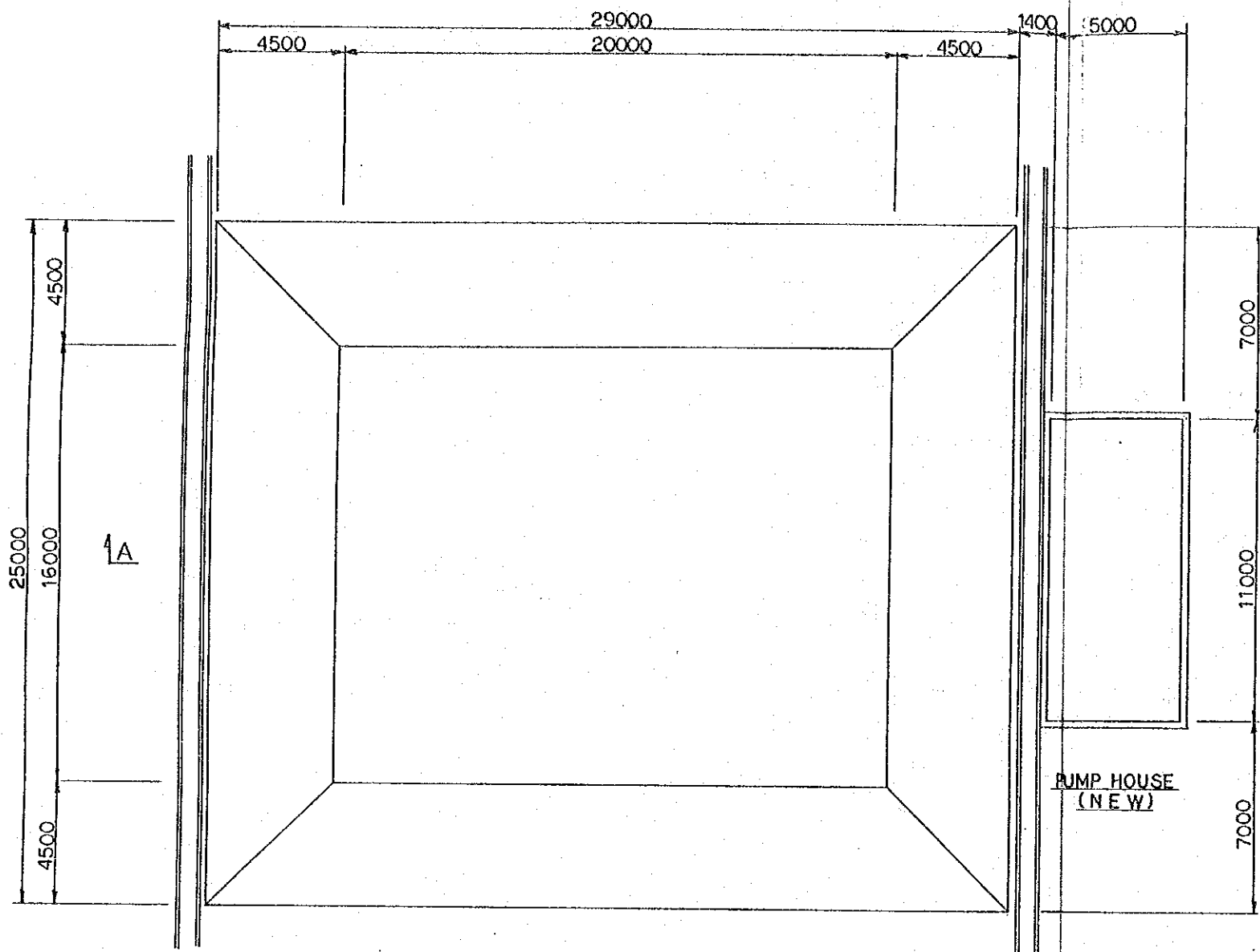


DETAIL "a"

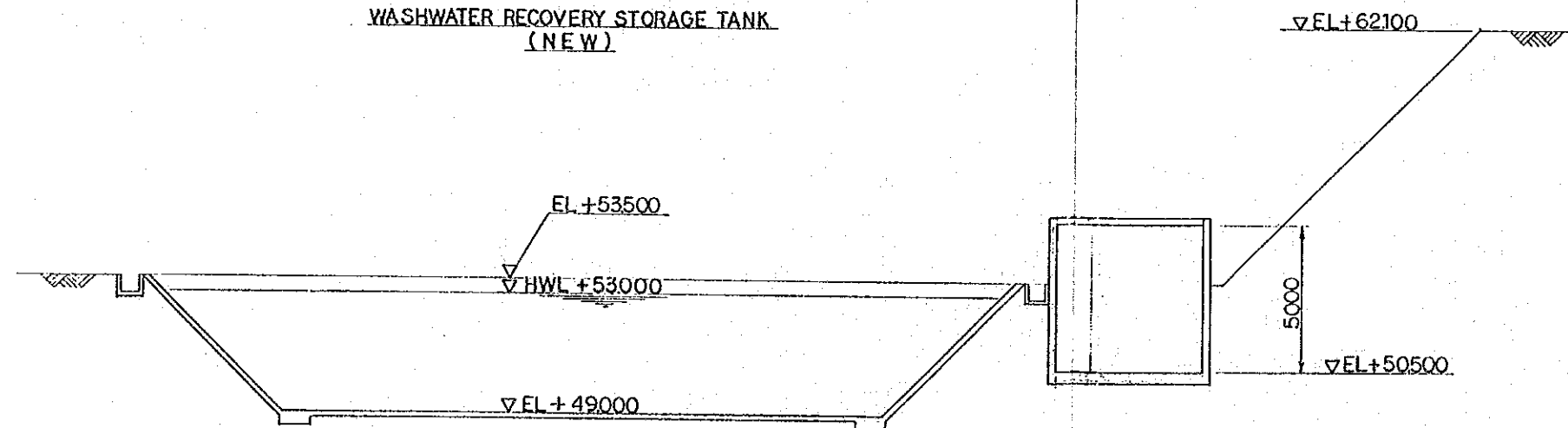


SECTION A - A

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO. 2 - SURFACE WASH PIPING, HYDRAULIC CONTROL UNIT	DRAWING 14

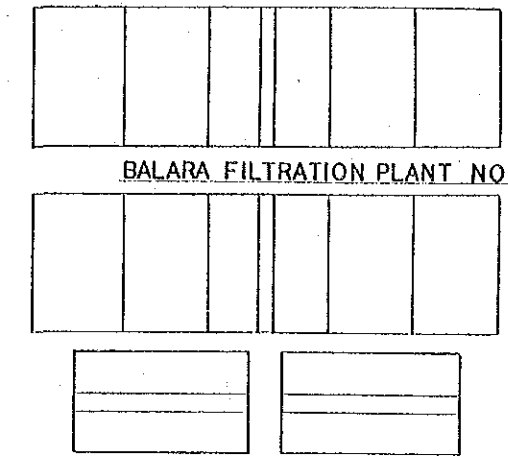


WASHWATER RECOVERY STORAGE TANK (NEW)



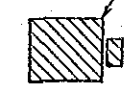
SECTION A-A

FLOCCULATION AND SEDIMENTATION BASIN



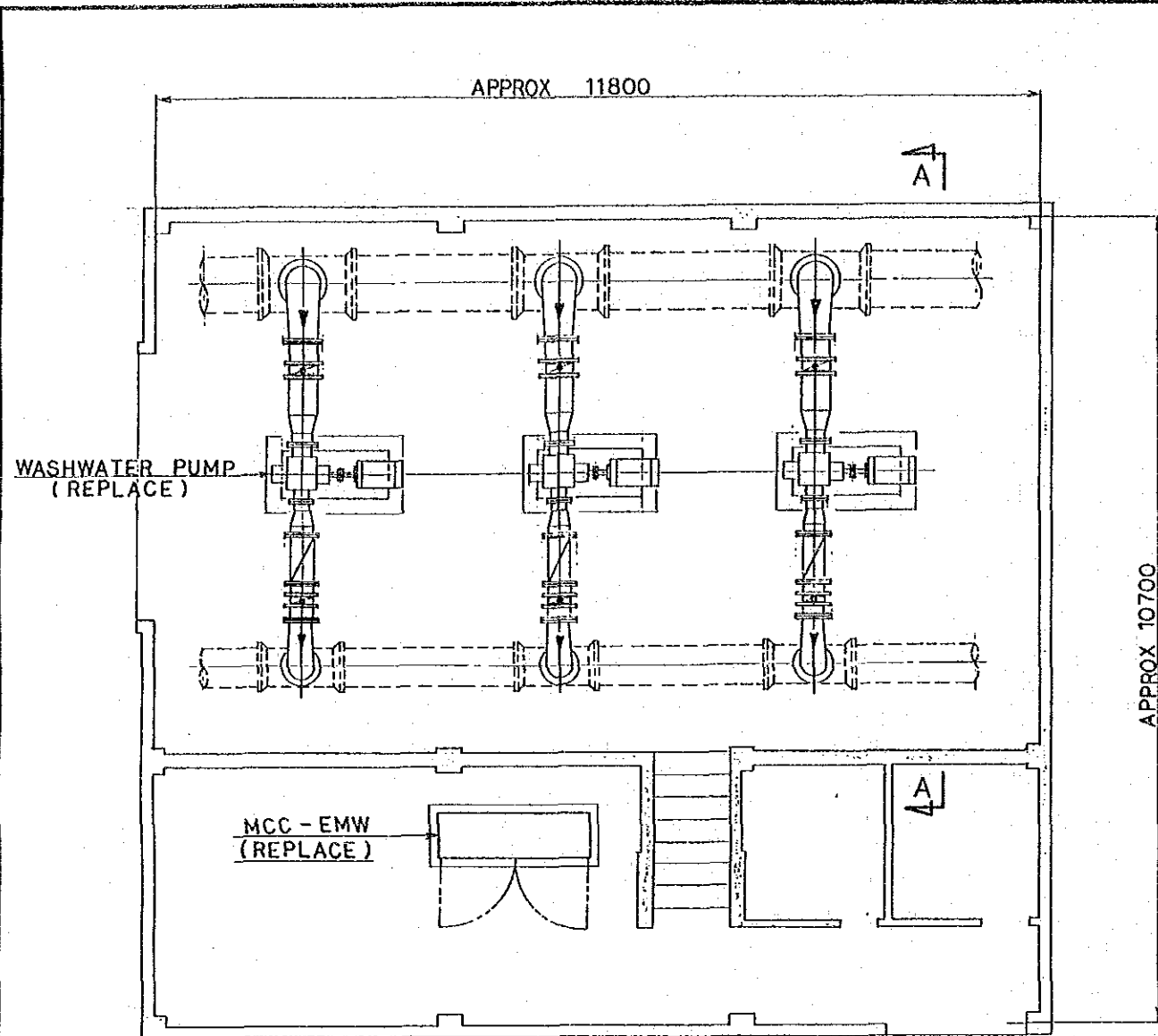
BALARA FILTRATION PLANT NO. 2

WASHWATER RECOVERY TANK (NEW)

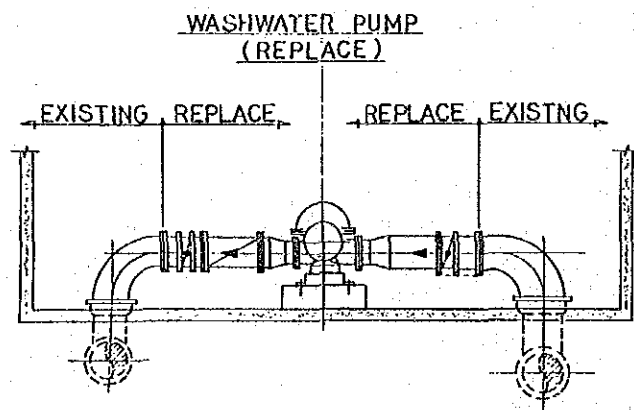


KEY PLAN

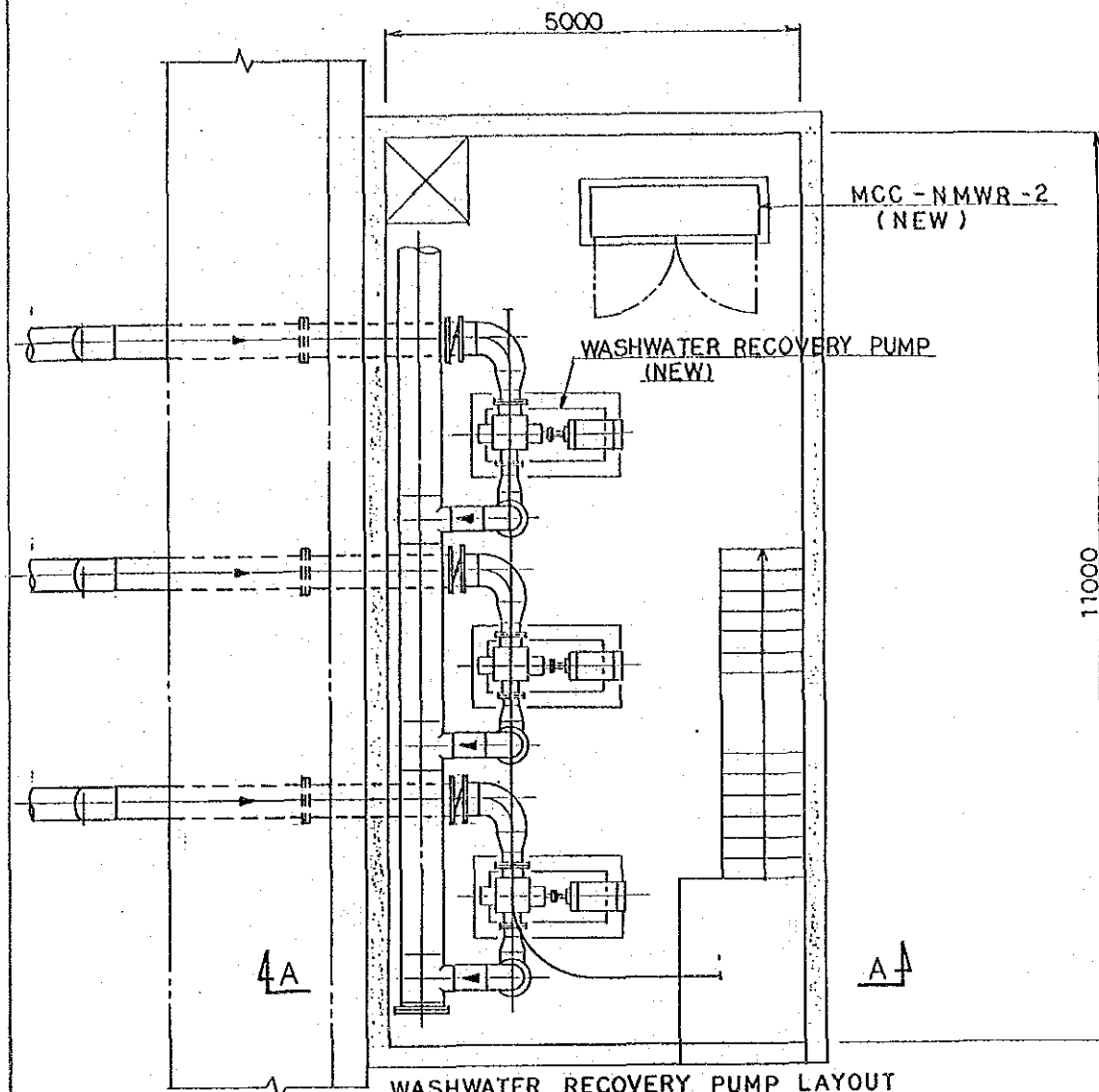
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO. 2 WASHWATER RECOVERY TANK	DRAWING 15



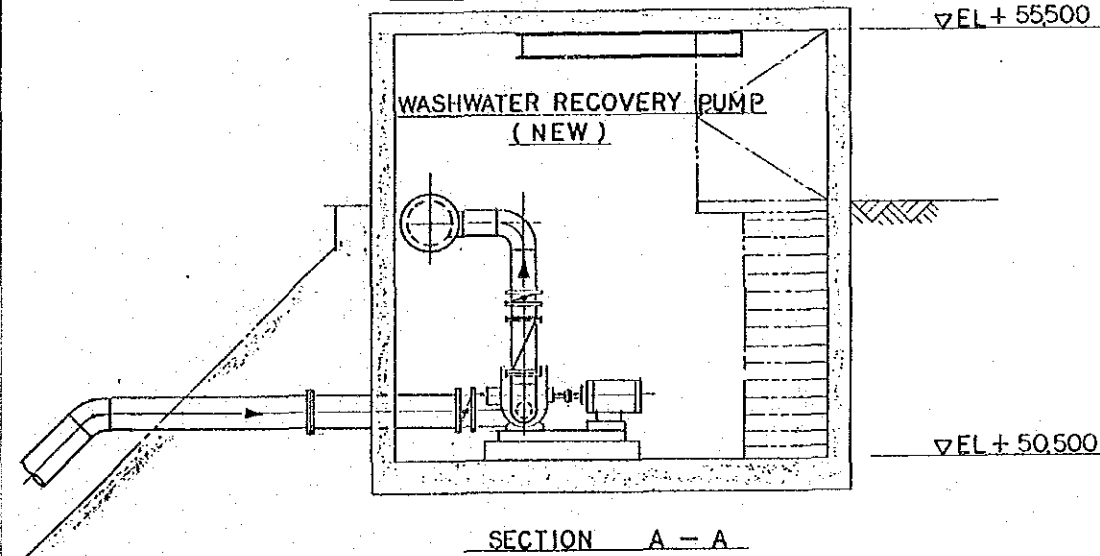
WASHWATER PUMP LAYOUT



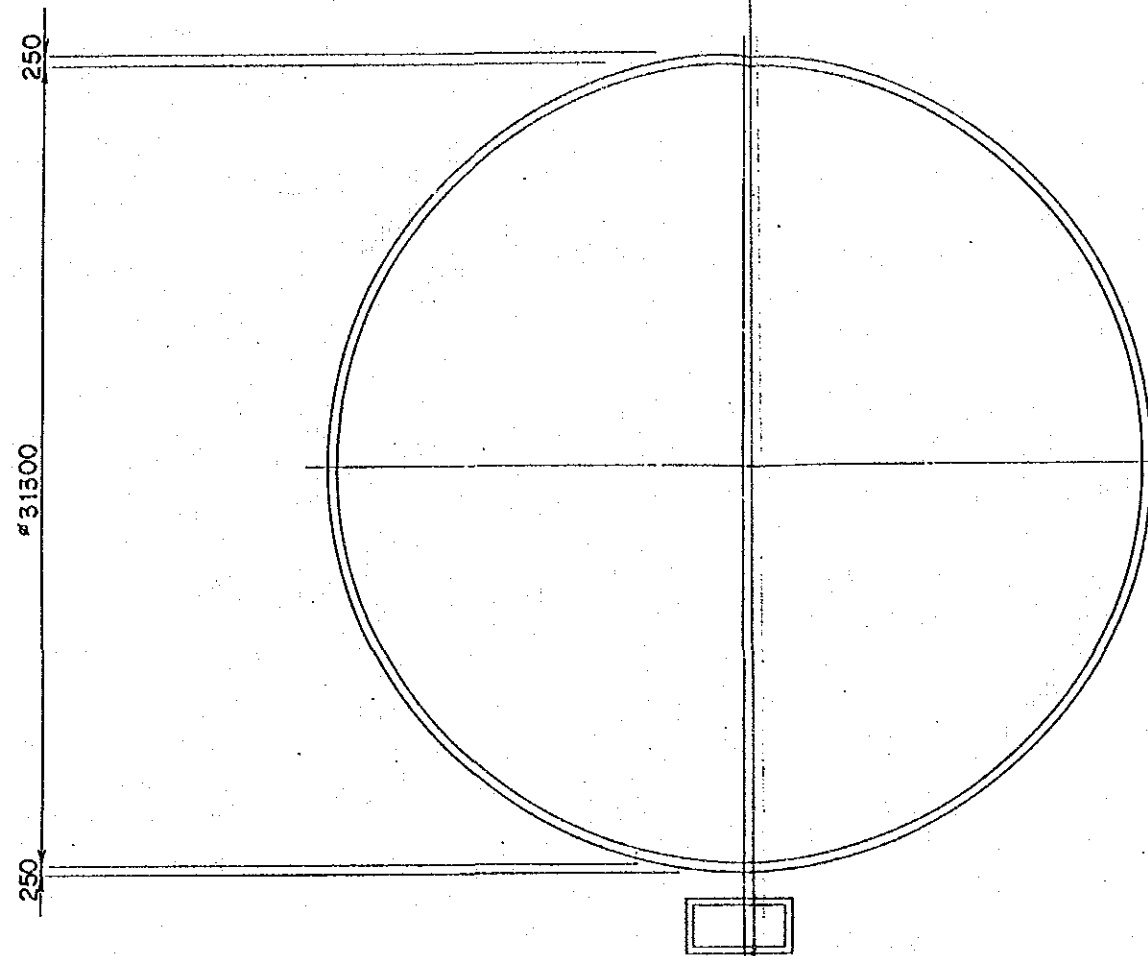
SECTION A - A



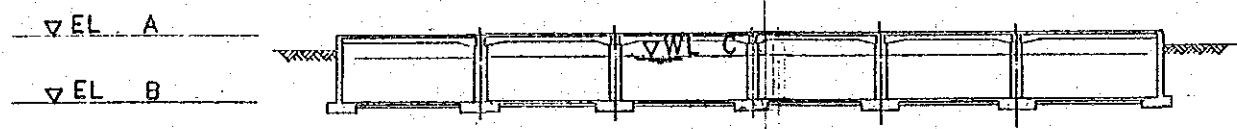
WASHWATER RECOVERY PUMP LAYOUT



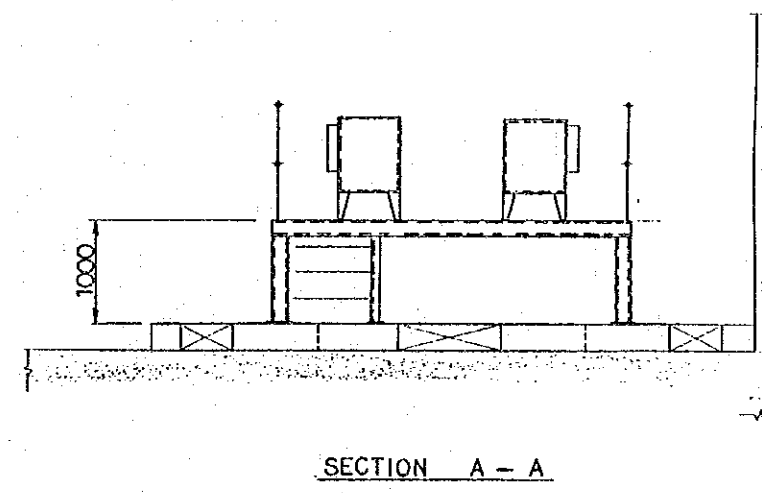
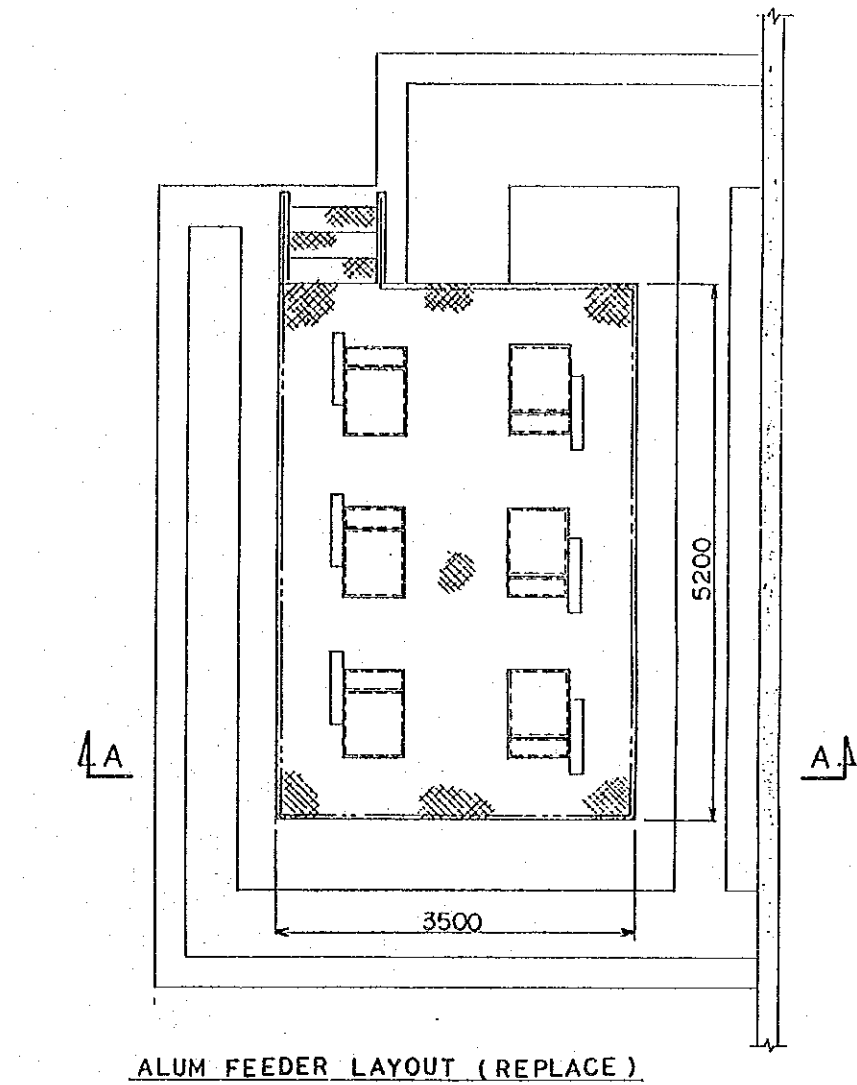
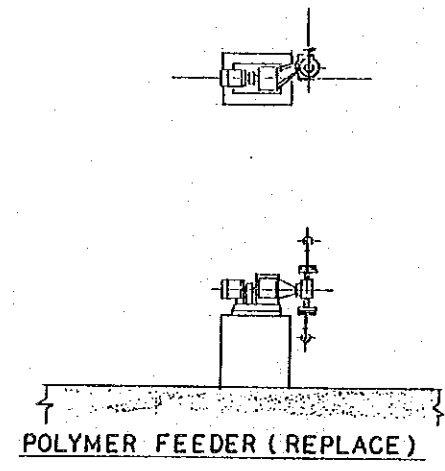
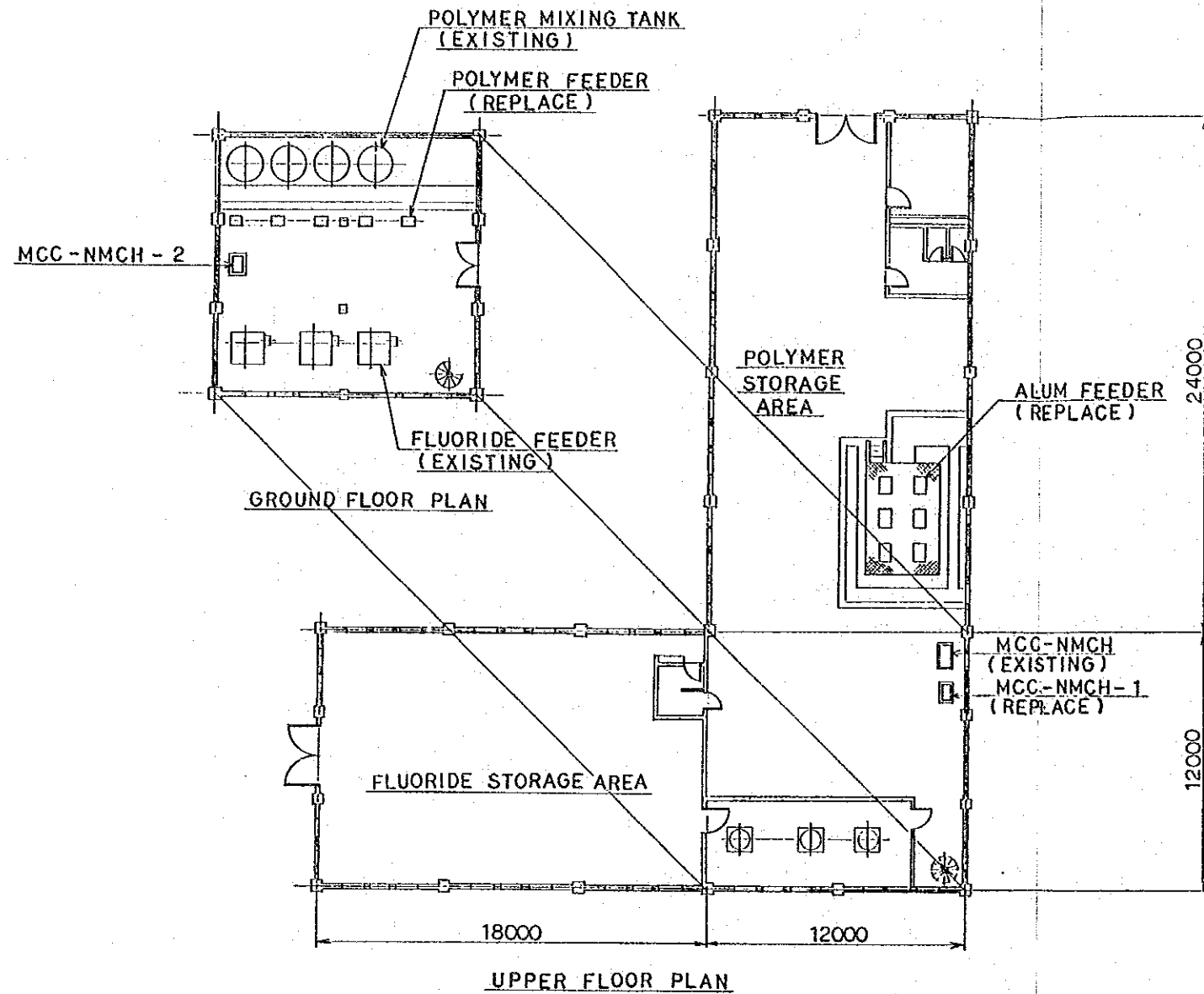
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.2 - WASHWATER PUMP, WASHWATER RECOVERY PUMP	DRAWING 16



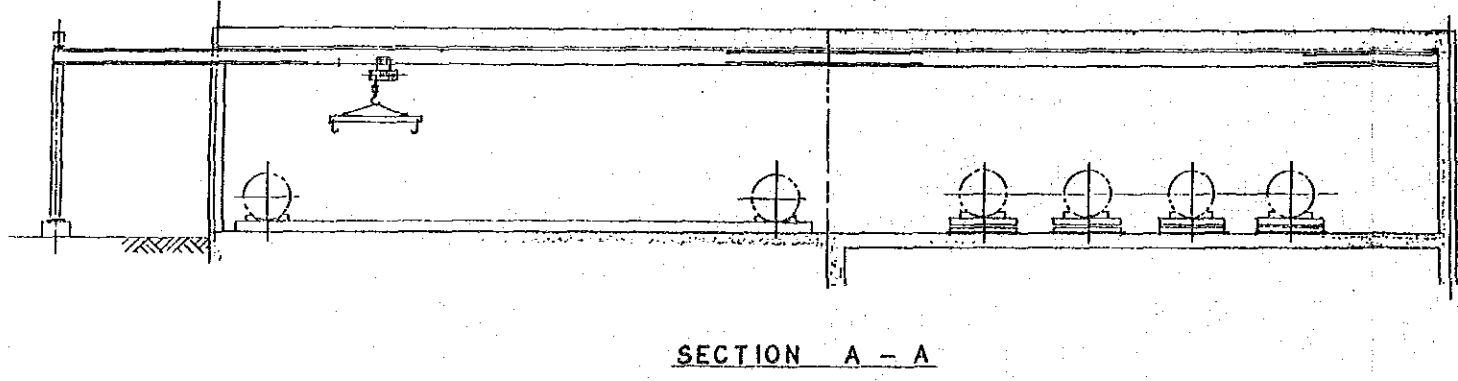
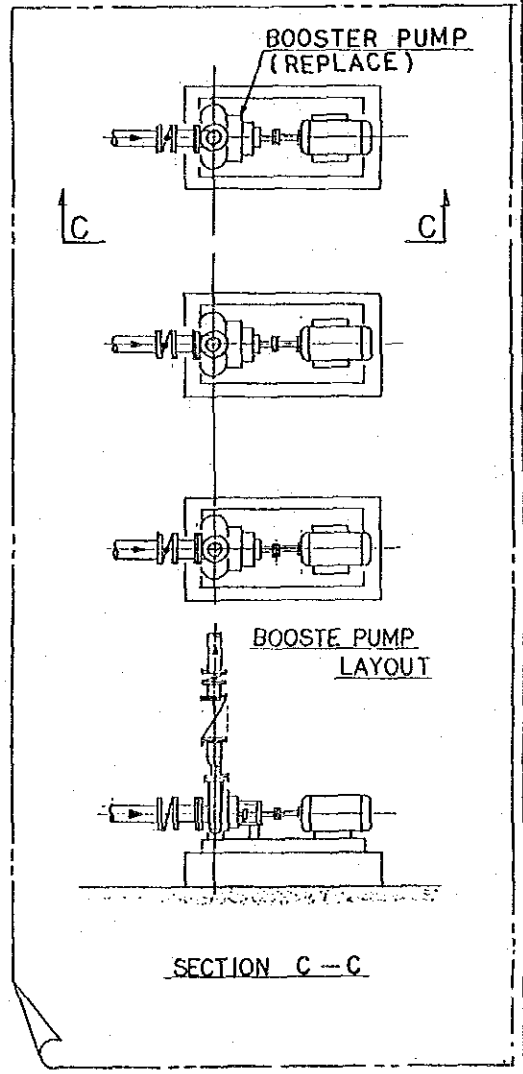
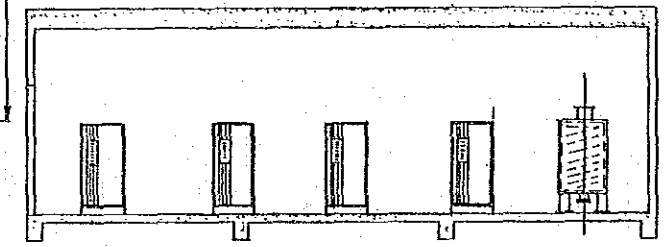
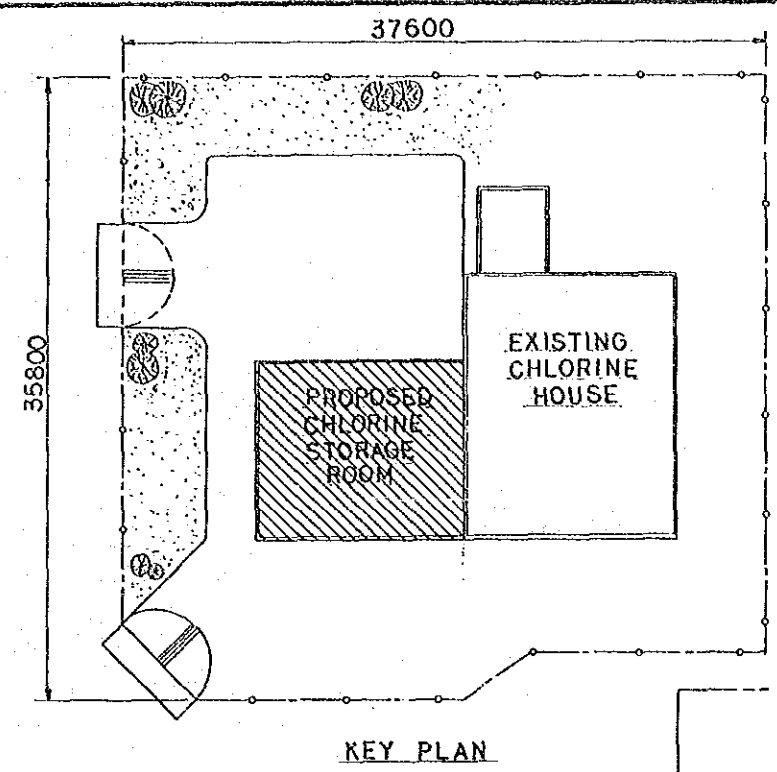
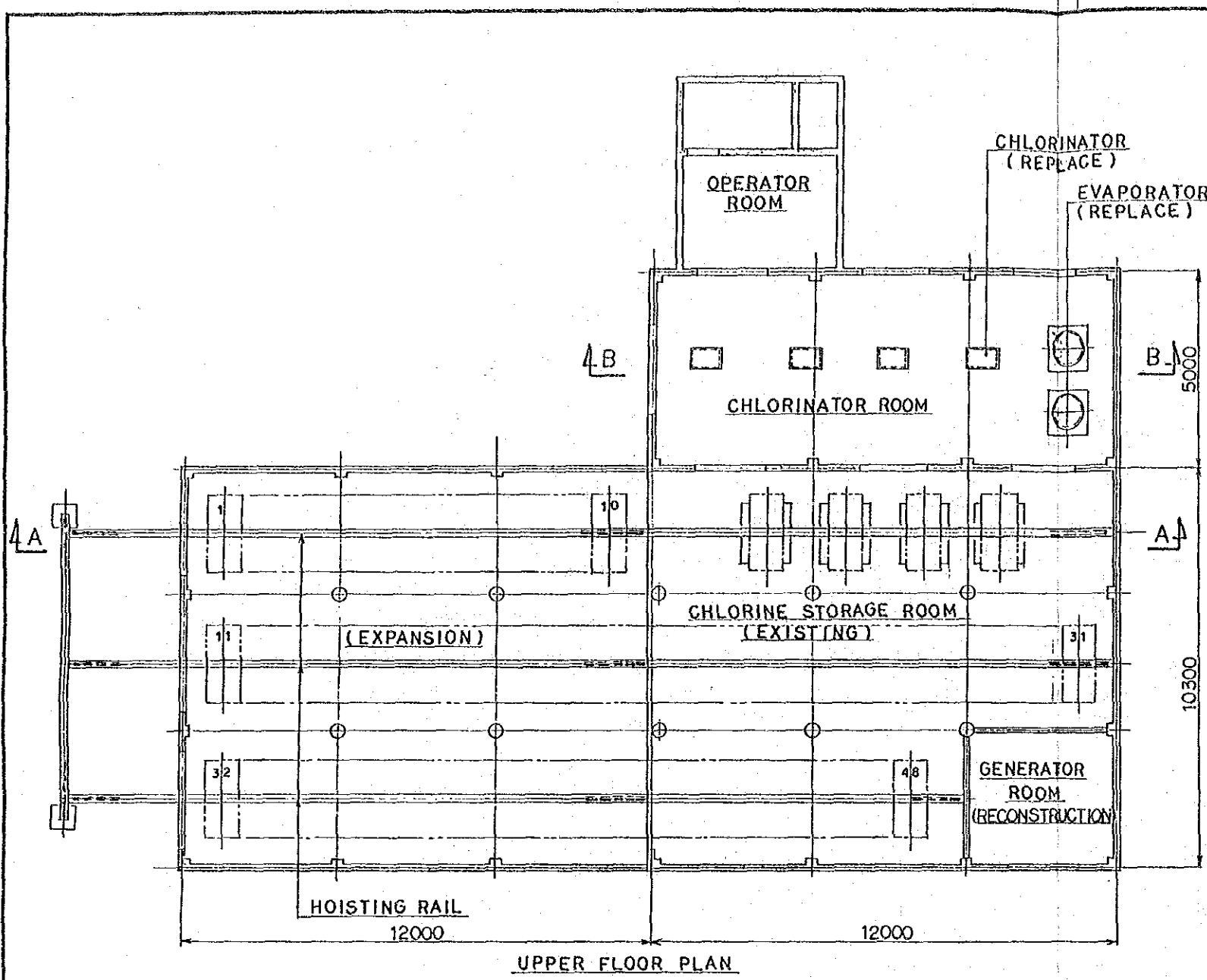
	PLANT NO.1	PLANT NO.2
NO.OF TANK	1	2
A	+ 72070	+ 74,030
B	+ 69440	+ 71,400
C	+ 71,140	+ 73,100



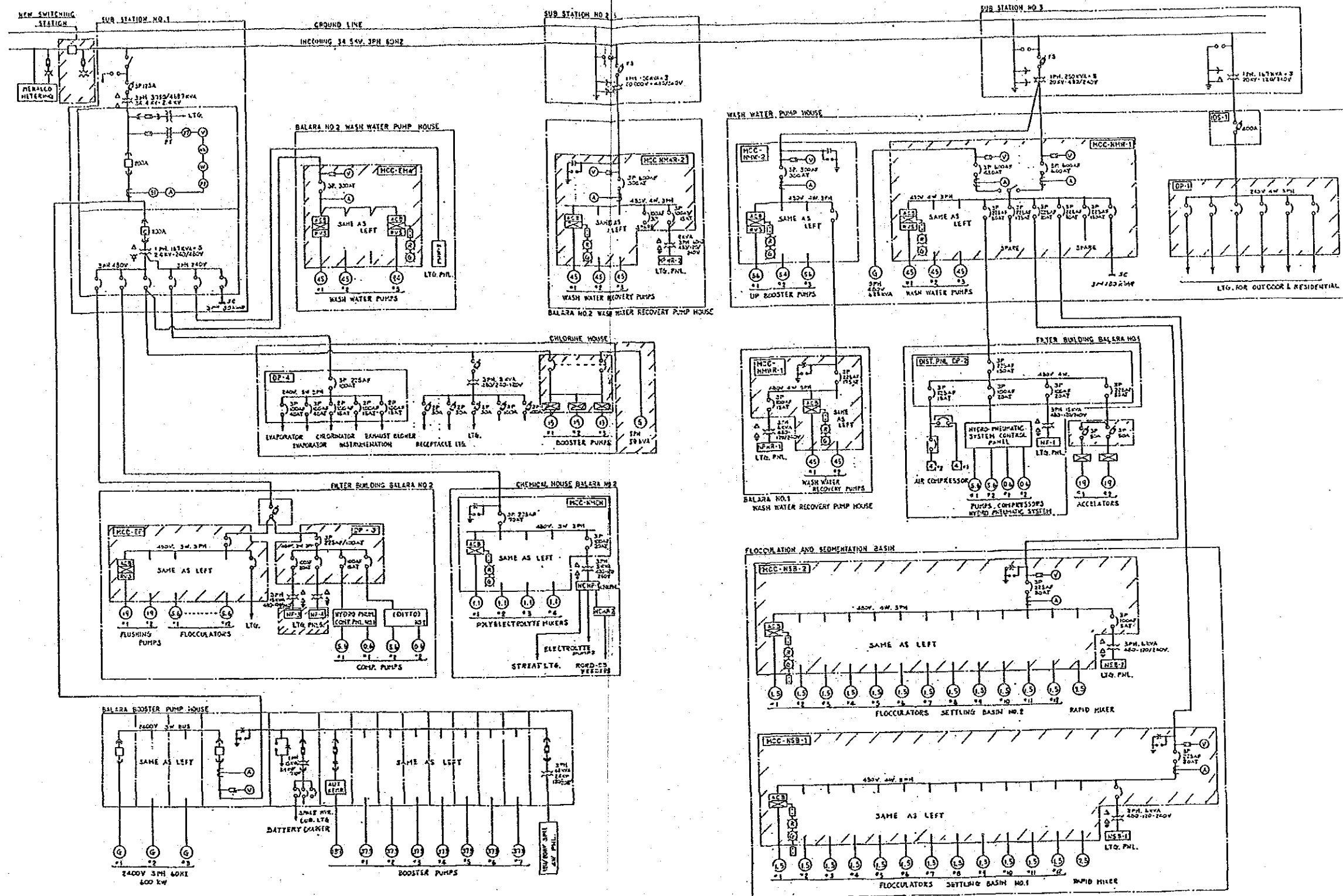
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1AND NO.2 WASHWATER TANK	DRAWING 17




MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	CHEMICAL HOUSE ALUM AND POLYMER FEEDER	DRAWING 18



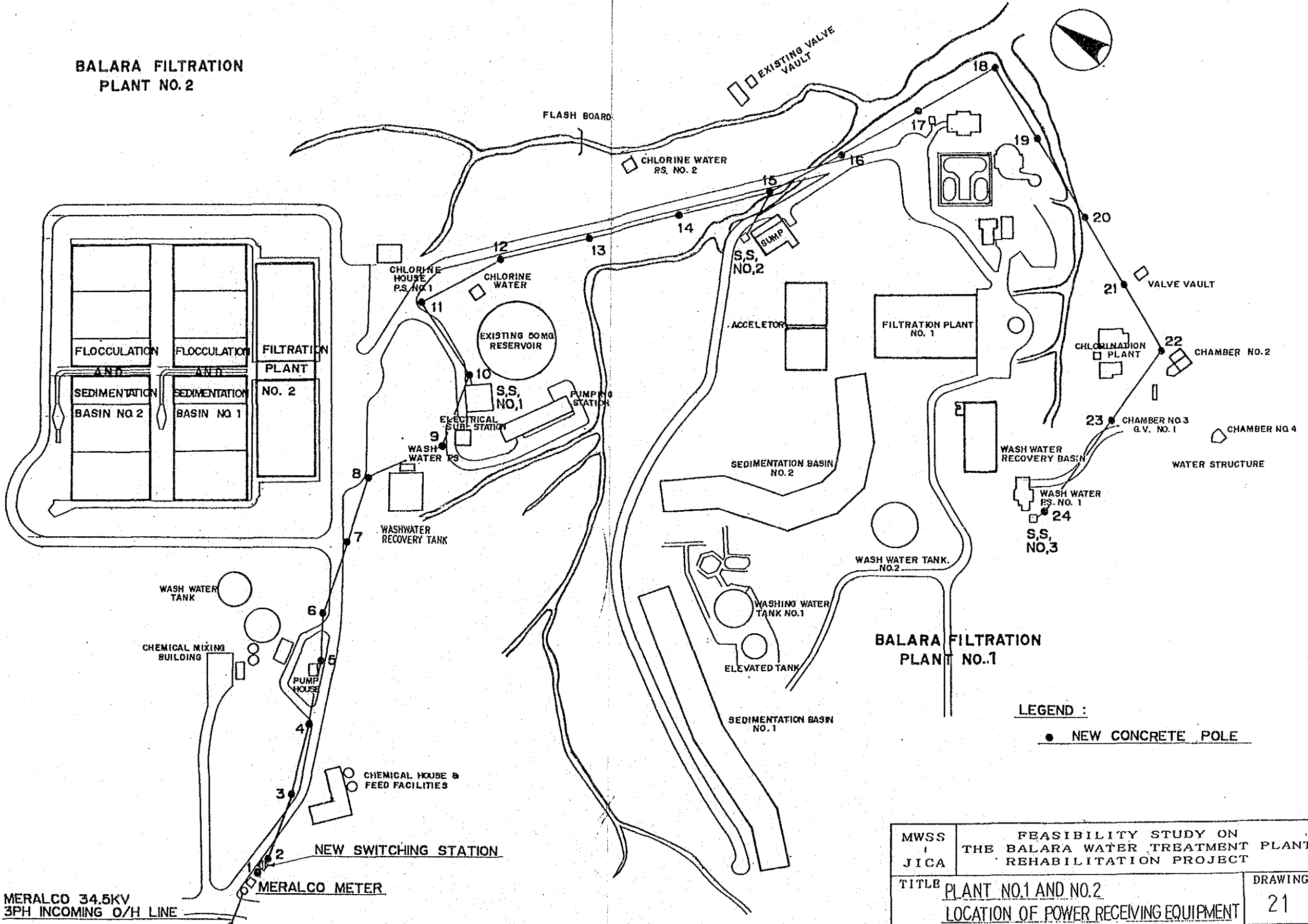
MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	CHLORINE HOUSE CHLORINATOR, EVAPORATOR, BOOSTER PUMP	DRAWING 19



NOTE
 REPLACE EQUIPMENT

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 AND NO.2 SINGLE LINE DIAGRAM	DRAWING 20

**BALARA FILTRATION
PLANT NO. 2**

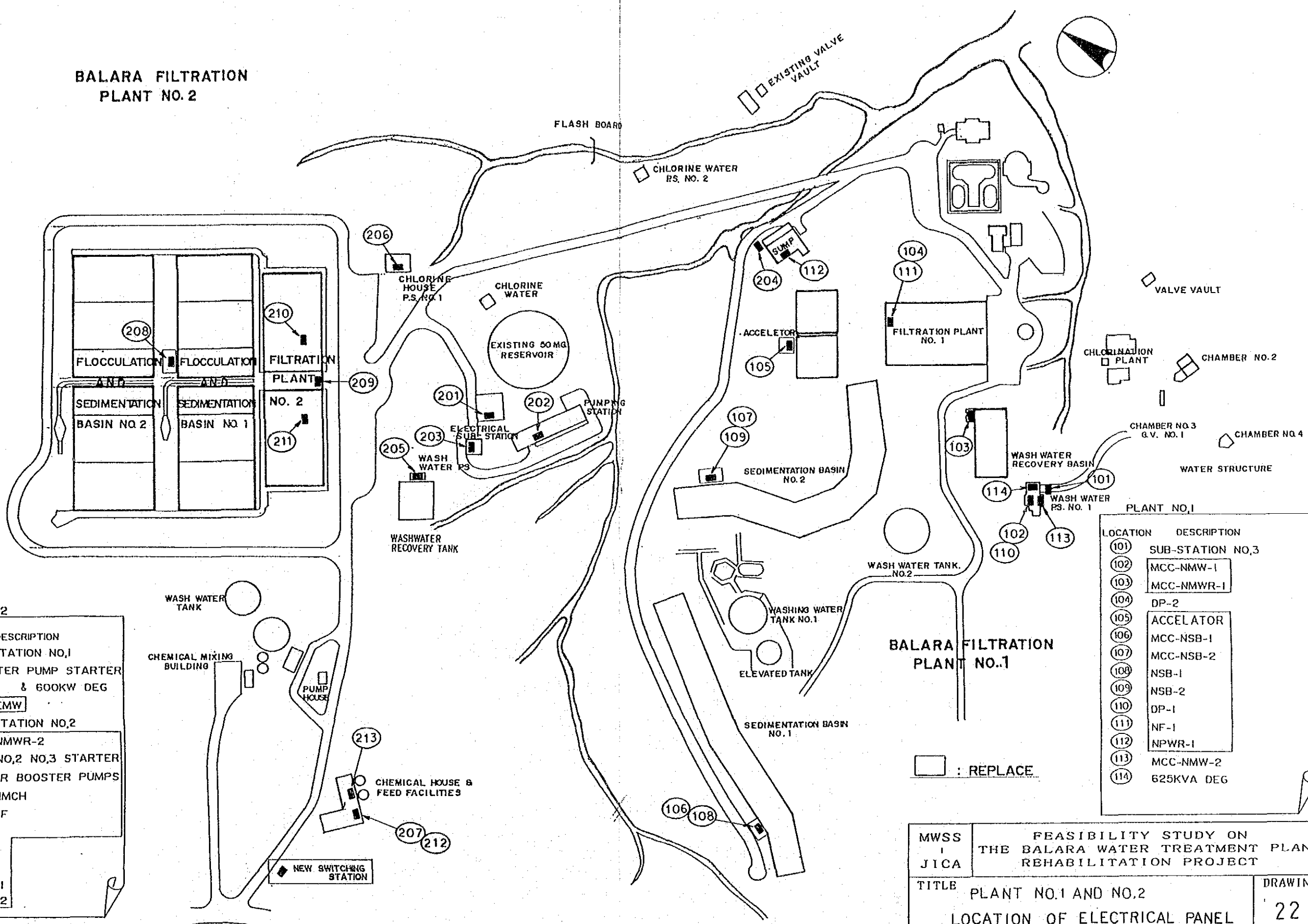


LEGEND :
● NEW CONCRETE POLE

MERALCO 34.5KV
3PH INCOMING O/H LINE

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT
TITLE	PLANT NO.1 AND NO.2 LOCATION OF POWER RECEIVING EQUIPMENT
	DRAWING 21

**BALARA FILTRATION
PLANT NO. 2**



PLANT NO.2

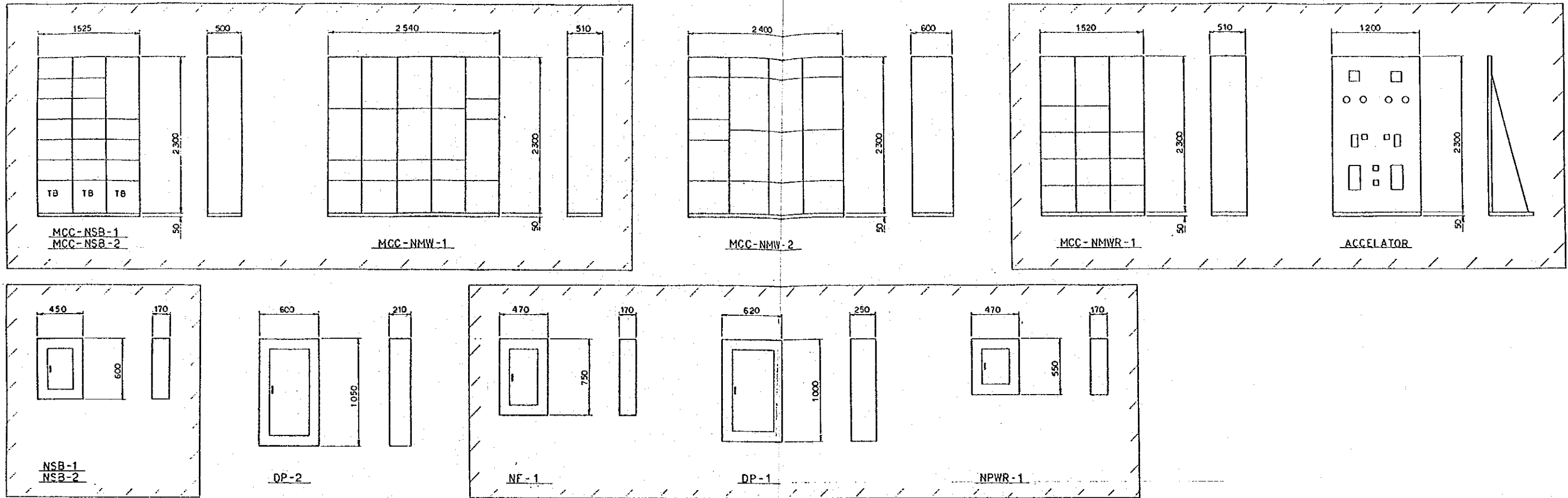
LOCATION	DESCRIPTION
201	SUB-STATION NO.1
202	BOOSTER PUMP STARTER & 600KW DEG
203	MCC-EMW
204	SUB-STATION NO.2
205	MCC-NMWR-2
206	NO.1 NO.2 NO.3 STARTER FOR BOOSTER PUMPS
207	MCC-NMCH
208	MCC-EF
209	DP-3
210	NF-3
211	NF-4
212	NCHP-1
213	NCHP-2

LOCATION	DESCRIPTION
101	SUB-STATION NO.3
102	MCC-NMW-1
103	MCC-NMWR-1
104	DP-2
105	ACCELERATOR
106	MCC-NSB-1
107	MCC-NSB-2
108	NSB-1
109	NSB-2
110	DP-1
111	NF-1
112	NPWR-1
113	MCC-NMW-2
114	625KVA DEG

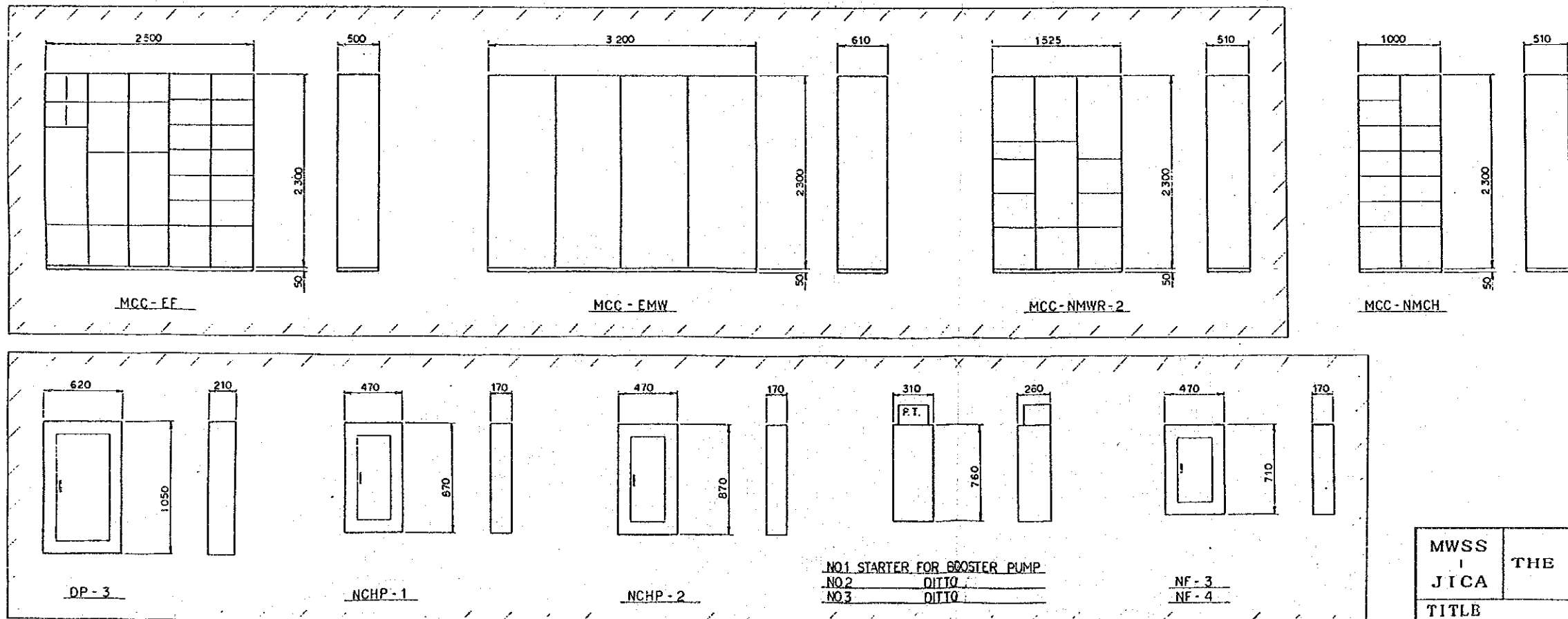
□ : REPLACE

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT
TITLE	PLANT NO.1 AND NO.2 LOCATION OF ELECTRICAL PANEL
DRAWING	22

PLANT NO.1



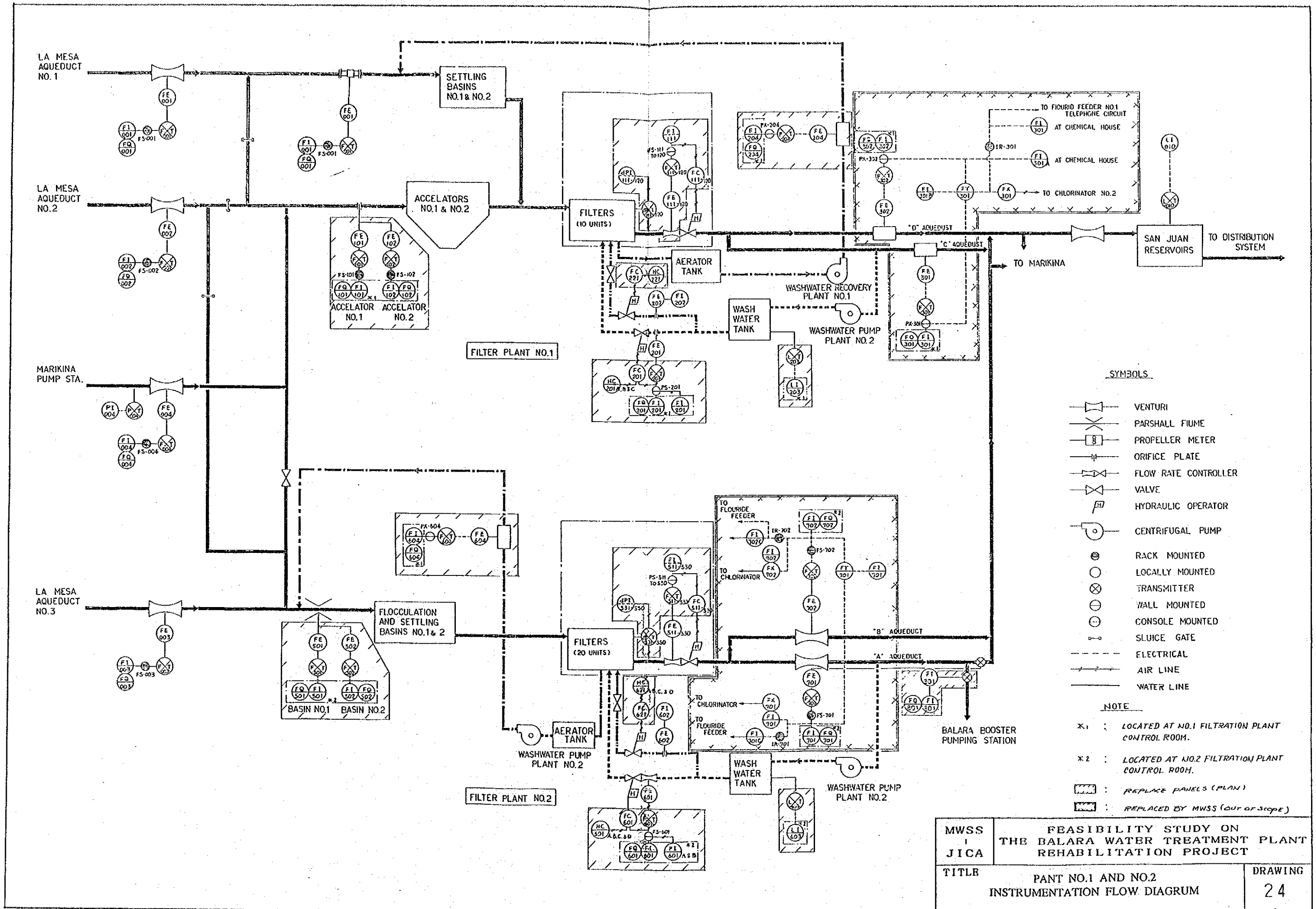
PLANT NO.2



NOTE
 REPLACE PANELS

NO.1 STARTER FOR BOOSTER PUMP
 NO.2 DITTO
 NO.3 DITTO

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	DRAWING
TITLE	PANT NO.1 AND NO.2 OUTLINE OF ELECTRICAL PANEL	23



SYMBOLS

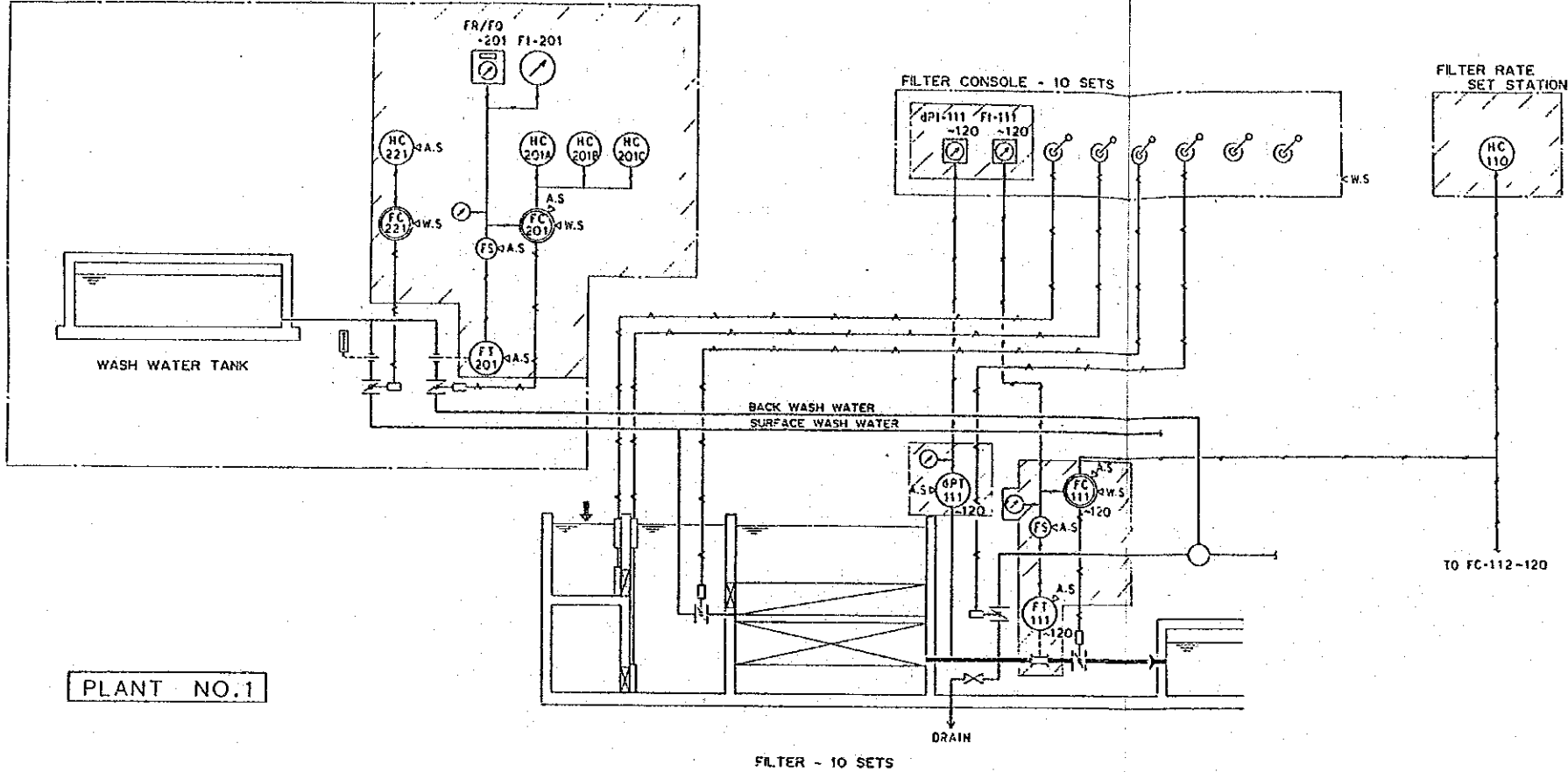
- VENTURI
- PARSHALL FIUME
- PROPELLER METER
- ORIFICE PLATE
- FLOW RATE CONTROLLER
- VALVE
- HYDRAULIC OPERATOR
- CENTRIFUGAL PUMP
- RACK MOUNTED
- LOCALLY MOUNTED
- TRANSMITTER
- WALL MOUNTED
- CONSOLE MOUNTED
- SLUICE GATE
- ELECTRICAL
- AIR LINE
- WATER LINE

NOTE

- *1 : LOCATED AT NO.1 FILTRATION PLANT CONTROL ROOM.
- *2 : LOCATED AT NO.2 FILTRATION PLANT CONTROL ROOM.
- : REPLACE PANELS (PLAN)
- : REPLACED BY MWSS (OUT OF SCOPE)

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PANT NO.1 AND NO.2 INSTRUMENTATION FLOW DIAGRAM	DRAWING 24

WASH WATER SYSTEM - 1 SET

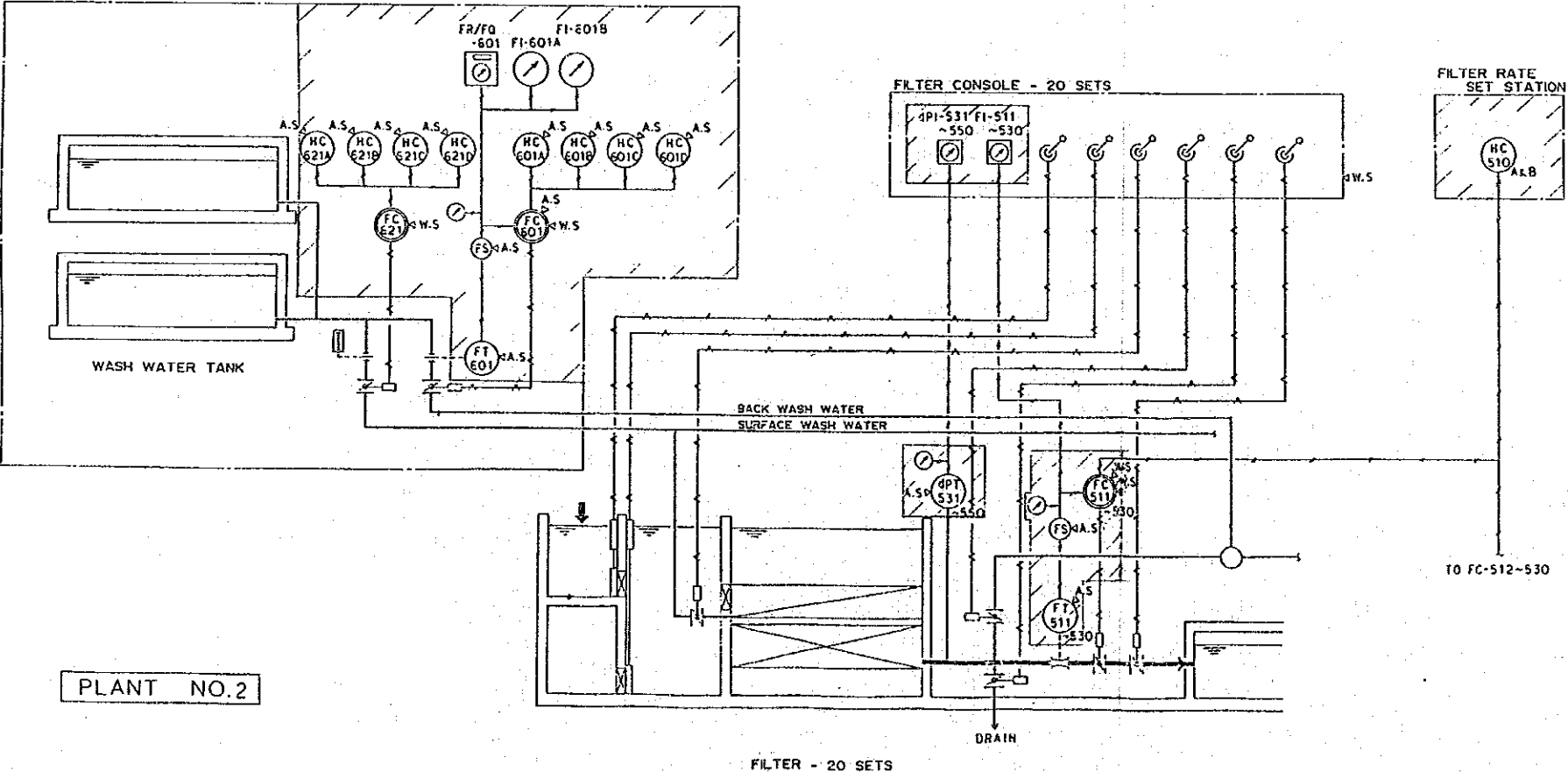


PLANT NO.1

FILTER - 10 SETS

- LEGEND
- INSTRUMENT PNEUMATIC LINE
 - HYDROPNEUMATIC LINE (DOUBLE)
 - VENTURI
 - ORIFICE PLATE
 - CONTROL VALVE WITH CYLINDER ACTUATOR
 - ⊗ OPERATING VALVE-LEVER
 - ⊙ FT FLOW TRANSMITTER
 - ⊙ FC FLOW CONTROLLER
 - ⊙ HC FLOW RATE SET STATION
 - ⊙ FPI FILTER LOSS OF HEAD TRANSMITTER
 - ⊙ FS SQUAR ROOT EXTRACTOR
 - ⊙ INDICATOR
 - ⊙ A.S AIR SUPPLY
 - ⊙ W.S WATER SUPPLY
 - ▨▨▨▨ REPLACE INSTRUMENTS

WASH WATER SYSTEM - 1 SET

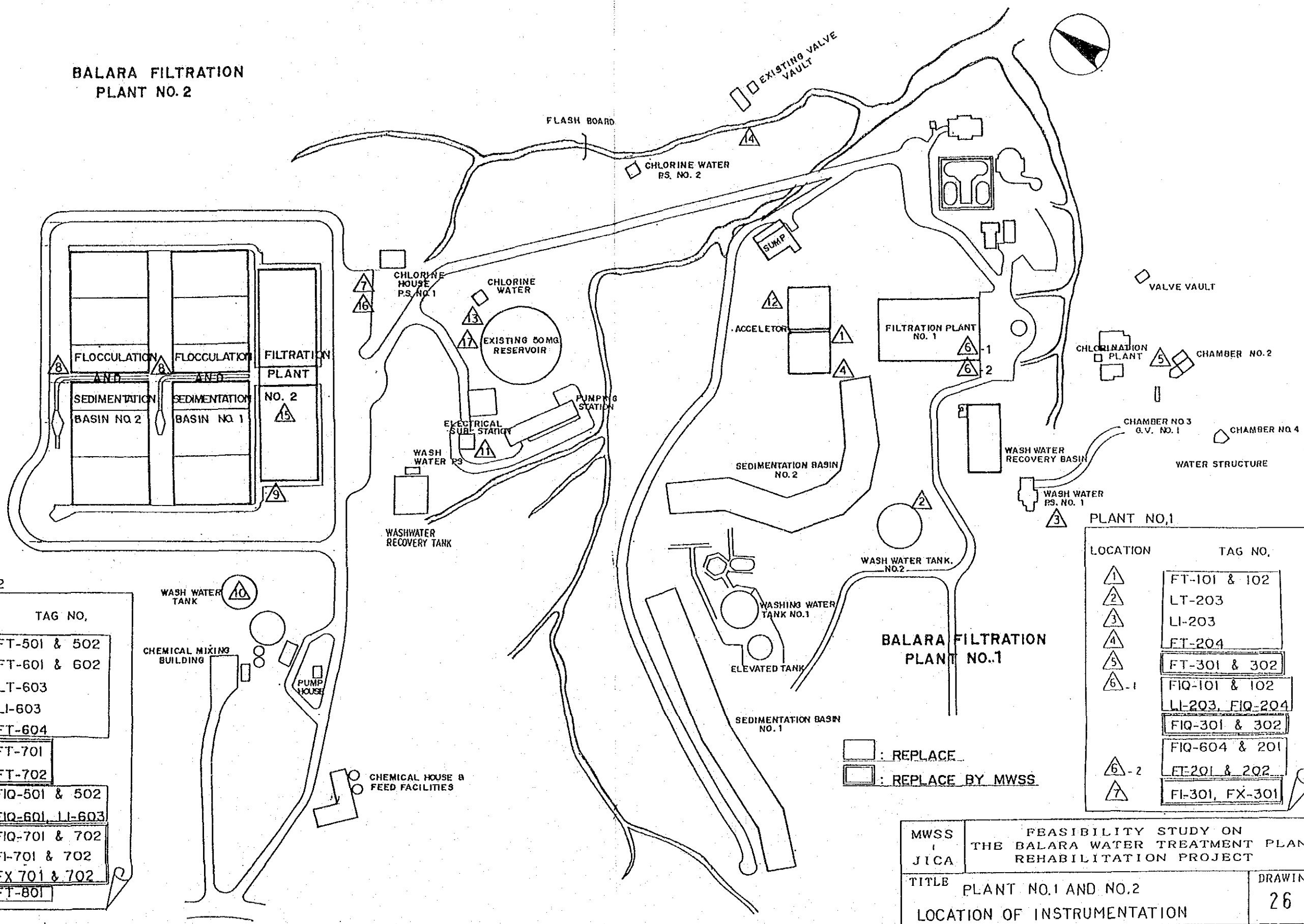


PLANT NO.2

FILTER - 20 SETS

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PANT NO.1 AND NO.2 INSTRUMENTATION OF FILTER	DRAWING 25

**BALARA FILTRATION
PLANT NO. 2**



PLANT NO.2

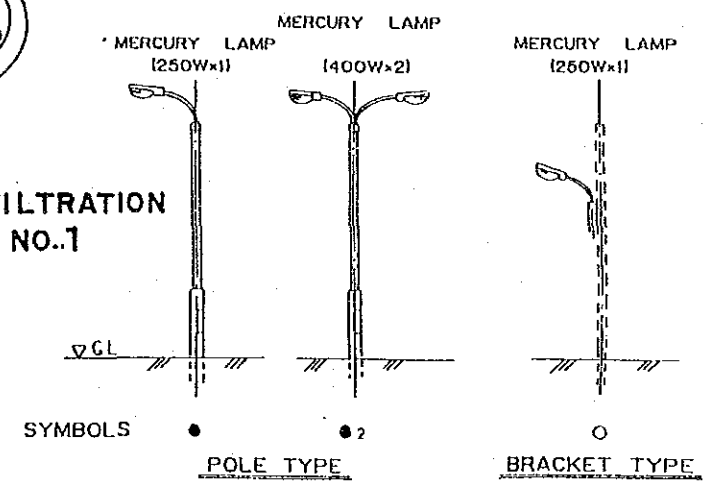
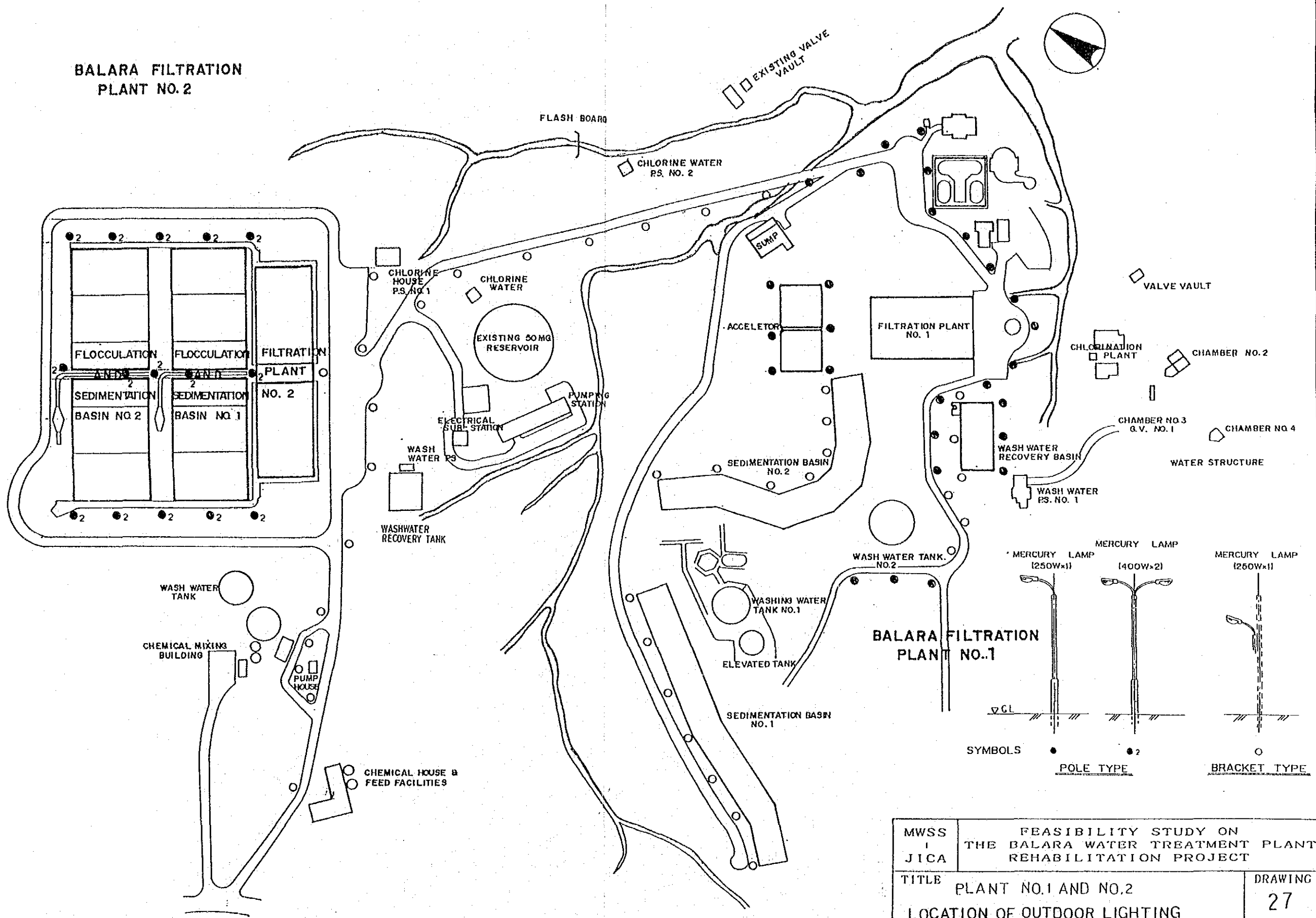
LOCATION	TAG NO.
8	FT-501 & 502
9	FT-601 & 602
10	LT-603
11	LI-603
12	FT-604
13	FT-701
14	FT-702
15	FIQ-501 & 502 FIQ-601, LI-603
16	FIQ-701 & 702 FI-701 & 702 FX 701 & 702
17	FT-801

LOCATION	TAG NO.
1	FT-101 & 102
2	LT-203
3	LI-203
4	FT-204
5	FT-301 & 302
6-1	FIQ-101 & 102 LI-203, FIQ-204
6-2	FIQ-301 & 302 FIQ-604 & 201
6-2	FT-201 & 202
7	FI-301, FX-301

□ : REPLACE
 □ : REPLACE BY MWSS

MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 AND NO.2	DRAWING
	LOCATION OF INSTRUMENTATION	26

**BALARA FILTRATION
PLANT NO. 2**



MWSS JICA	FEASIBILITY STUDY ON THE BALARA WATER TREATMENT PLANT REHABILITATION PROJECT	
TITLE	PLANT NO.1 AND NO.2	DRAWING
	LOCATION OF OUTDOOR LIGHTING	27

JICA