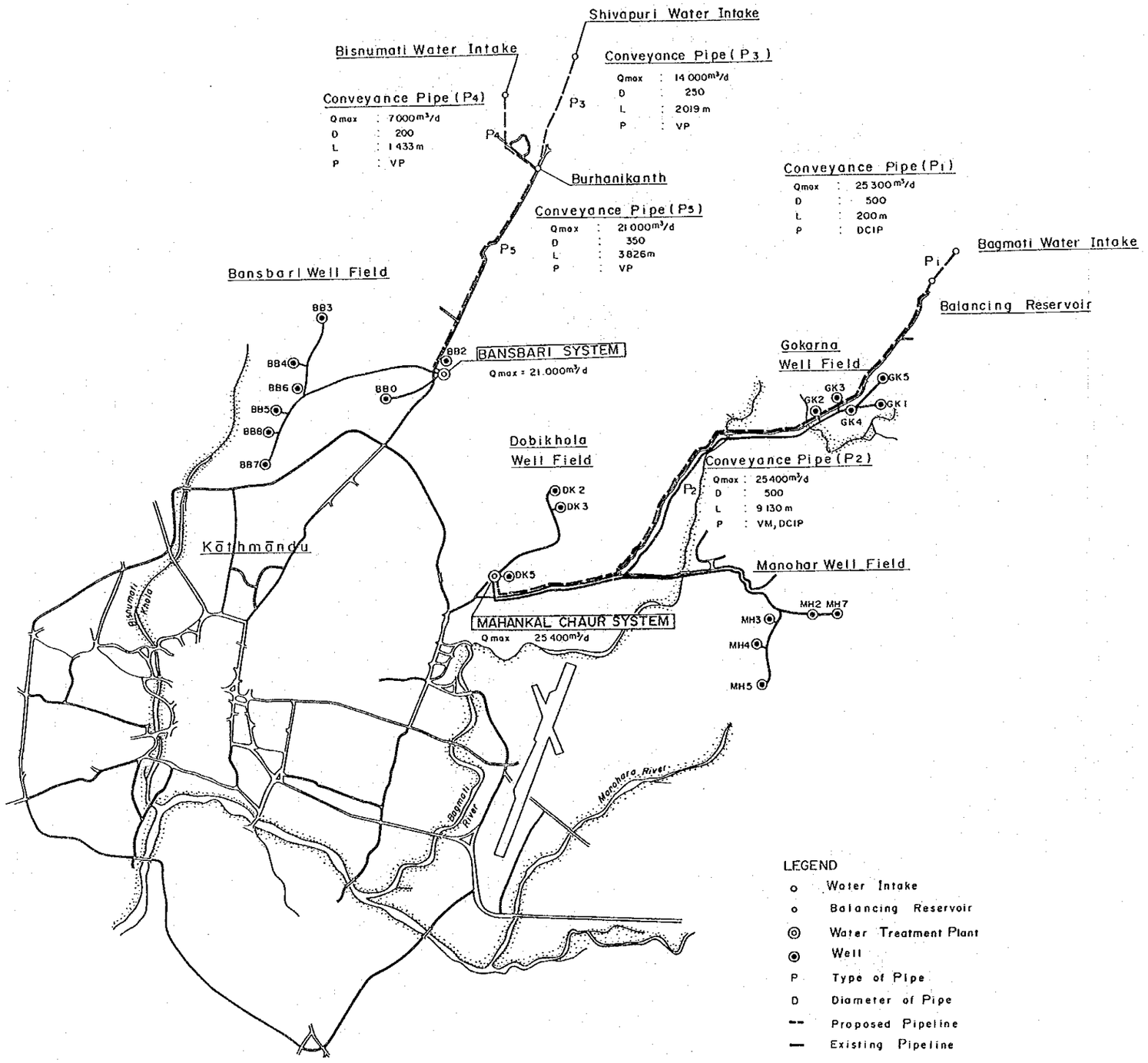
5.4 Basic Design Drawings

Basic Design Drawings consists of the following:

(1) Mahankal Chaur project

Drawing No.	Title of Drawing
1.	General Plan
2.	Treatment Plant General Plan
3.	Different in Water Level of Treatment Plant
4.	Bio-Filter Plan and Section
5.	Sedimentation Basin Plan and Section
6.	Rapid Sand Filter Plan
7.	Rapid Sand Filter Section
8.	Clear Water Reservoir Plan and Section
9.	Flow Sheet
10.	Flow Diagram of PAC Feeding System
11.	Flow Diagram of Slaked Lime Feeding System
12.	Flow Diagram of Solidum Hypochlorite System
13.	Flow Diagram of Bleaching Powder Feeding System
14.	Electrical Installations Plan
15.	Sub-Station
16.	Power Control Panel and Wiring List
17.	Pressure Control Valve and Valve Room
18.	Balancing Reservoir Plan and Section
19.	Conveyance Pipe Plan and Profile (1/5)
20.	Conveyance Pipe Plan and Profile (2/5)
21.	Conveyance Pipe Plan and Profile (3/5)
22.	Conveyance Pipe Plan and Profile (4/5)
23.	Conveyance Pipe Plan and Profile (5/5)

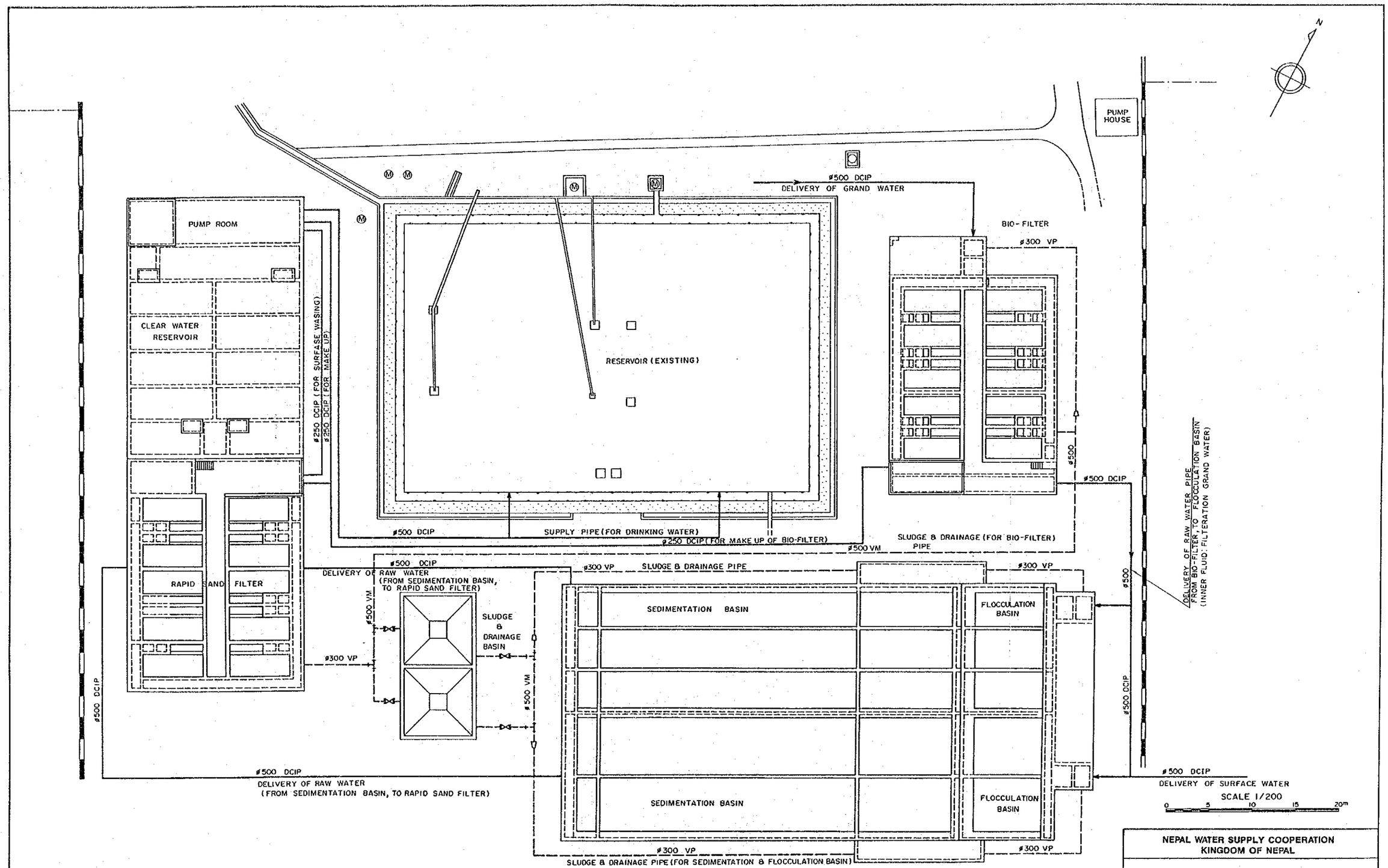
GENERAL PLAN



LEGEND

- o Water Intake
- o Balancing Reservoir
- ◎ Water Treatment Plant
- ◉ Well
- P Type of Pipe
- D Diameter of Pipe
- -- Proposed Pipeline
- — Existing Pipeline

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
GENERAL PLAN			
Date	JULY, 1991	Drawing No.	M - 1
JAPAN INTERNATIONAL COOPERATION AGENCY			



NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

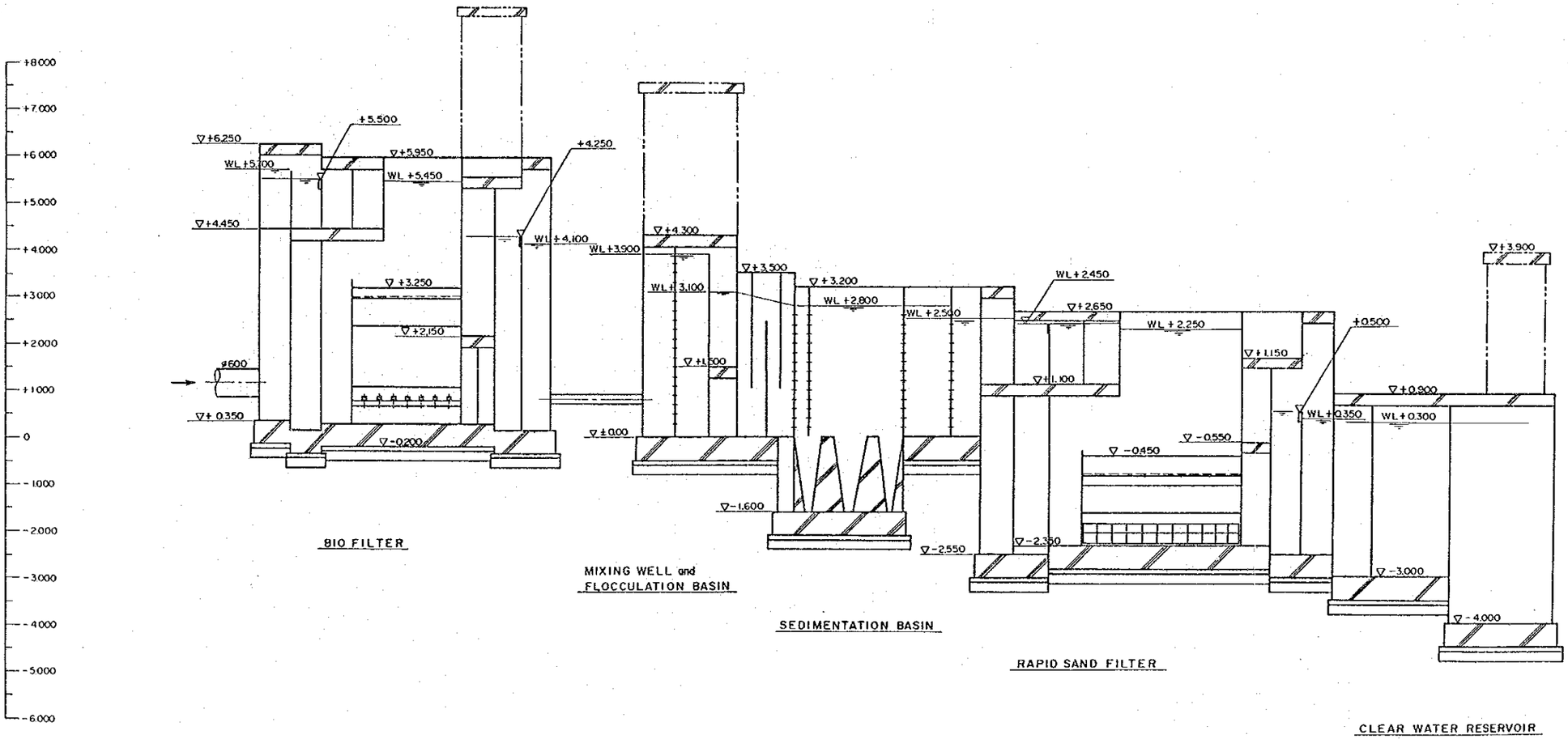
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

TREATMENT PLANT GENERAL PLAN

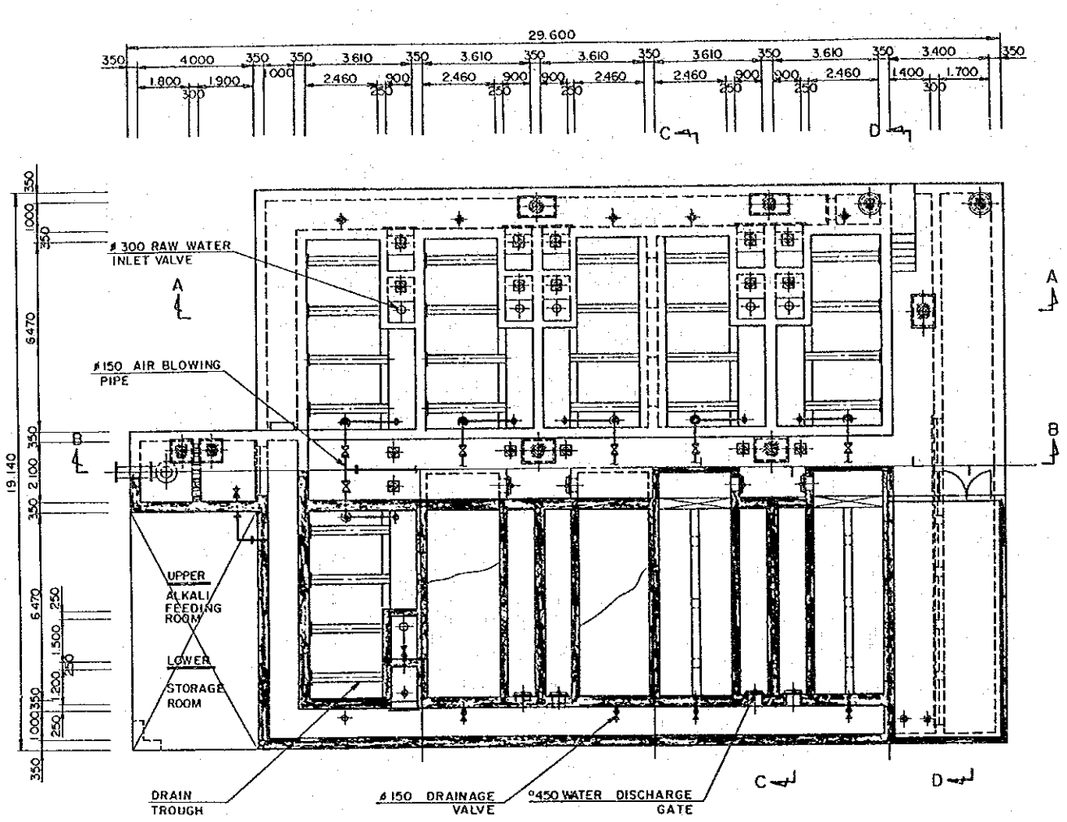
Date	JULY, 1991	Drawing No.	M-2

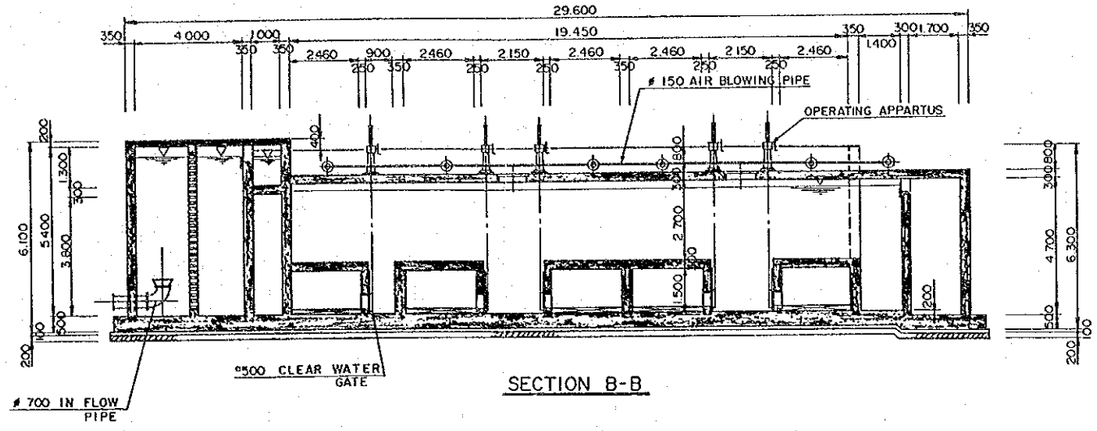
JAPAN INTERNATIONAL COOPERATION AGENCY

DIFFERENCE IN WATER LEVELS OF TREATMENT PLANT

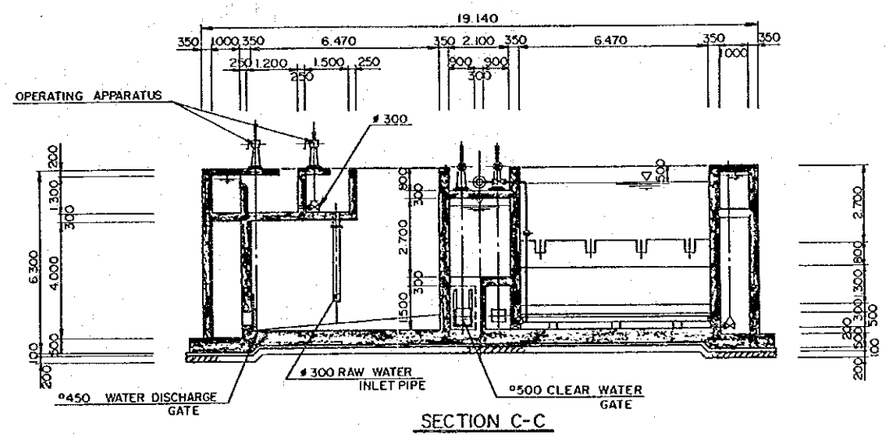


NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
DIFFERENT IN WATER LEVEL OF TREATMENT PLANT			
Date	JULY, 1991	Drawing No.	M-3
JAPAN INTERNATIONAL COOPERATION AGENCY			

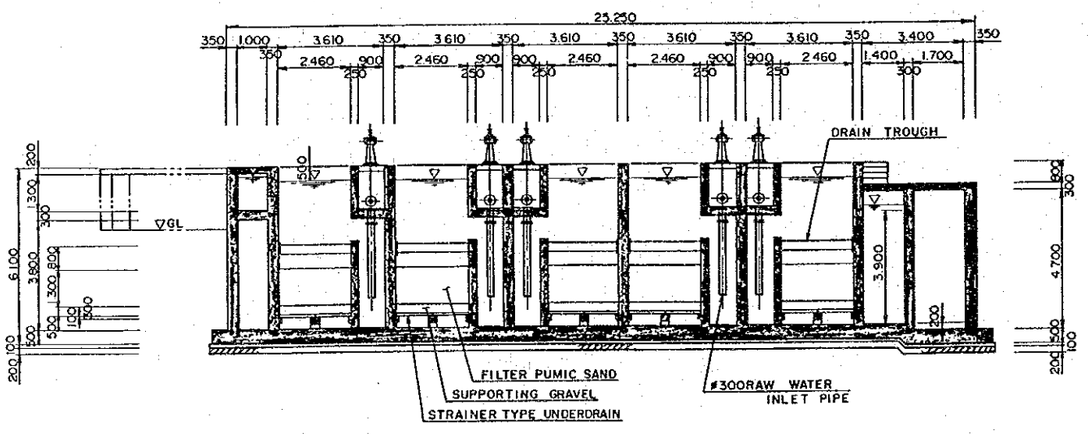




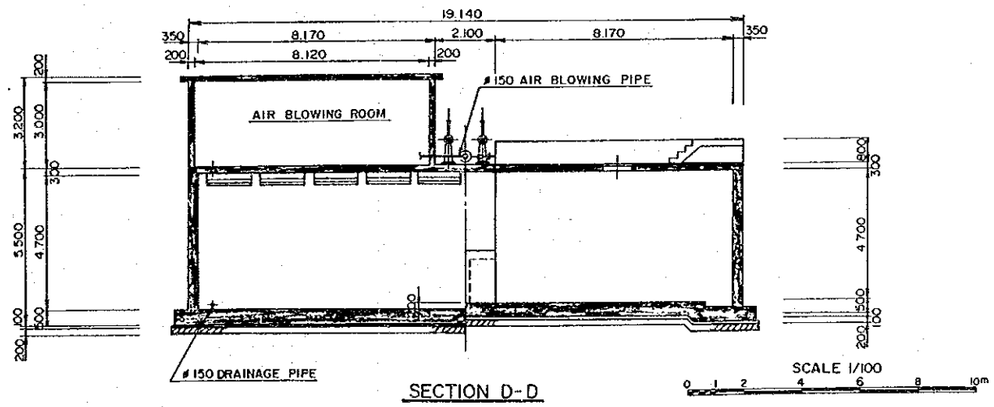
SECTION B-B



SECTION C-C

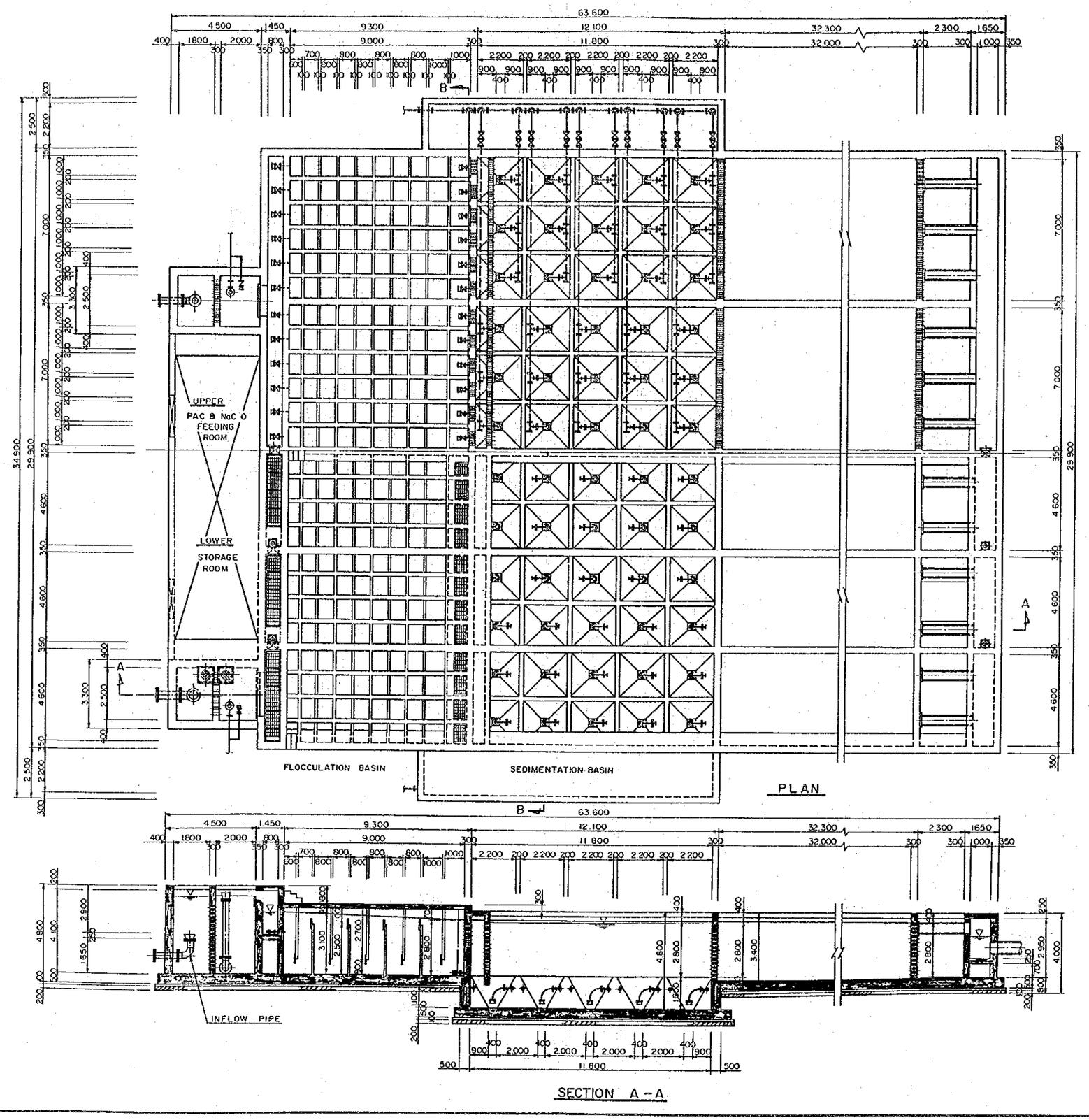


SECTION A-A



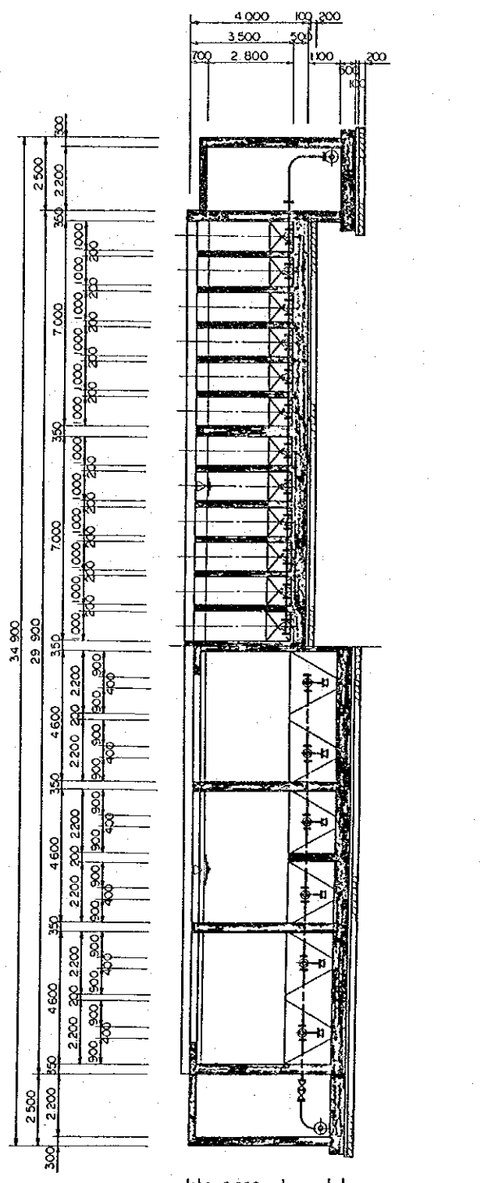
SECTION D-D

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
BIO FILTER PLAN AND SECTION			
Date	JULY, 1991	Drawing No.	M-4
JAPAN INTERNATIONAL COOPERATION AGENCY			



PLAN

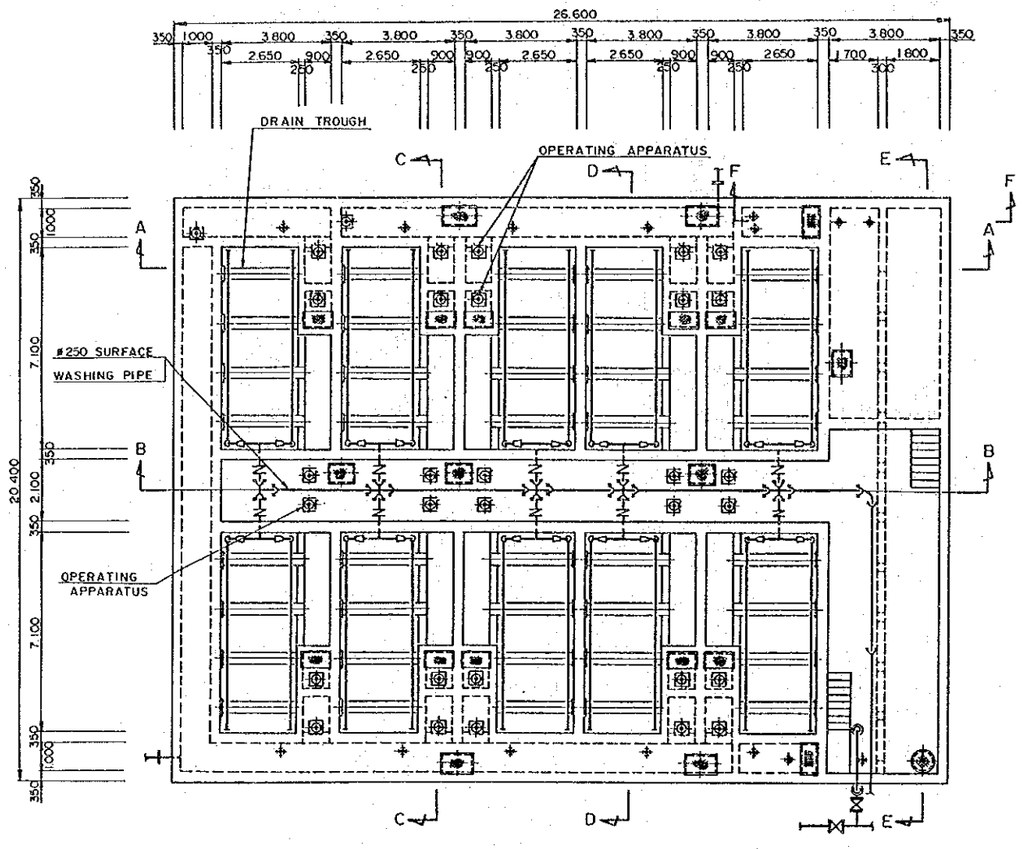
SECTION A-A



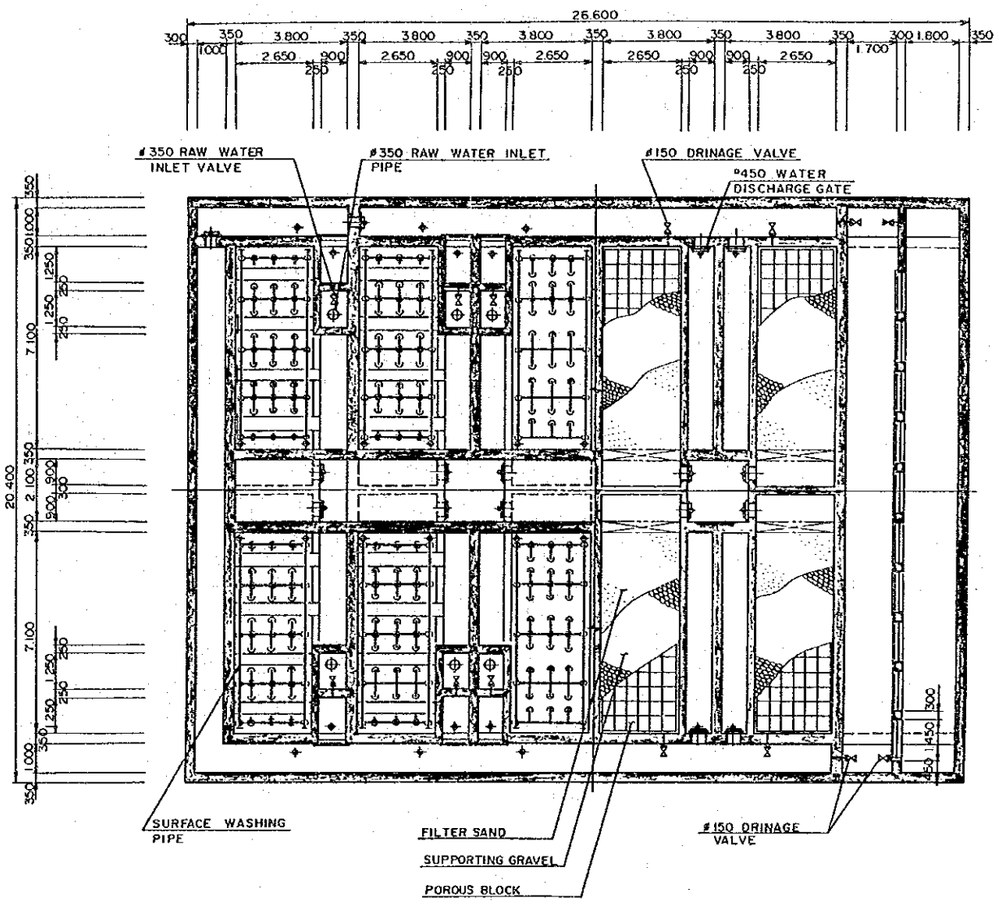
SECTION B-B

SCALE 1/100

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL	
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT	
SEDIMENTATION BASIN PLAN AND SECTION	
Date: JULY, 1991	Drawing No.: M-5
JAPAN INTERNATIONAL COOPERATION AGENCY	



PLAN



PLAN

SCALE 1/100

0 1 2 4 6 8 10m

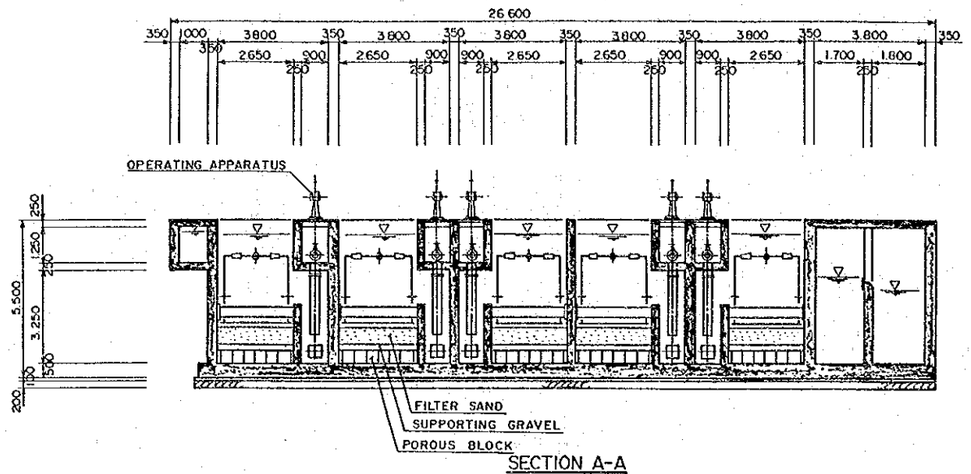
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

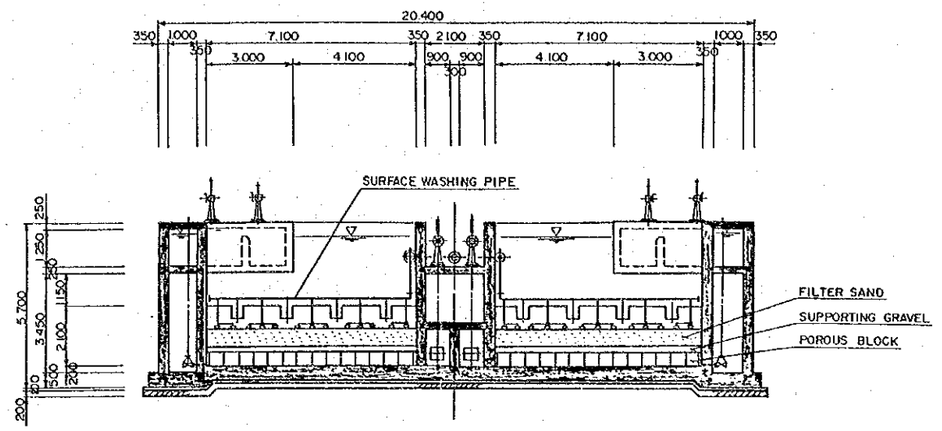
RAPID SAND FILTER PLAN

Date	JULY, 1991	Drawing No.	M - 6

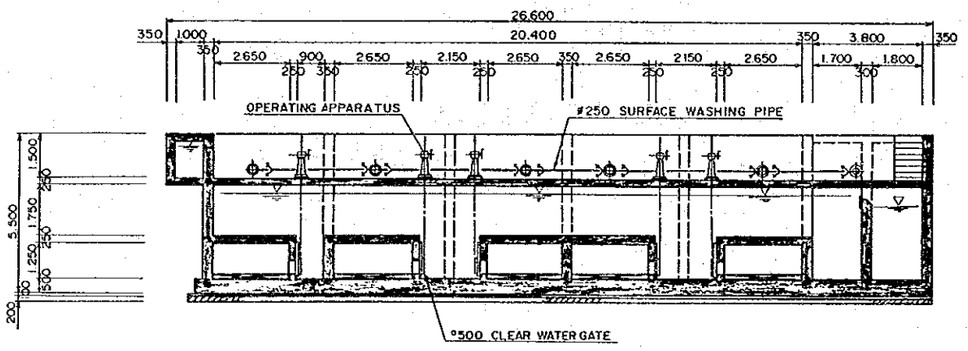
JAPAN INTERNATIONAL COOPERATION AGENCY



SECTION A-A



SECTION D-D



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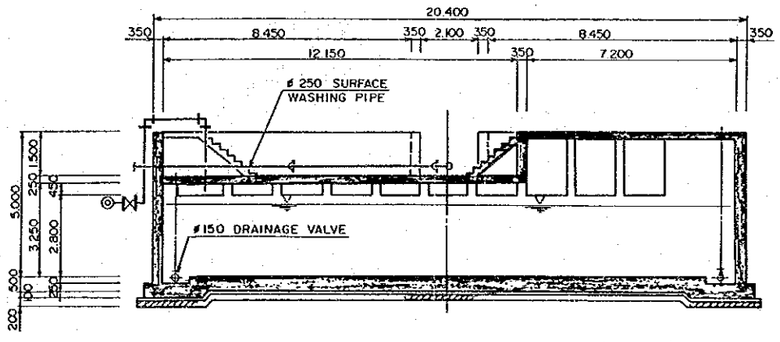

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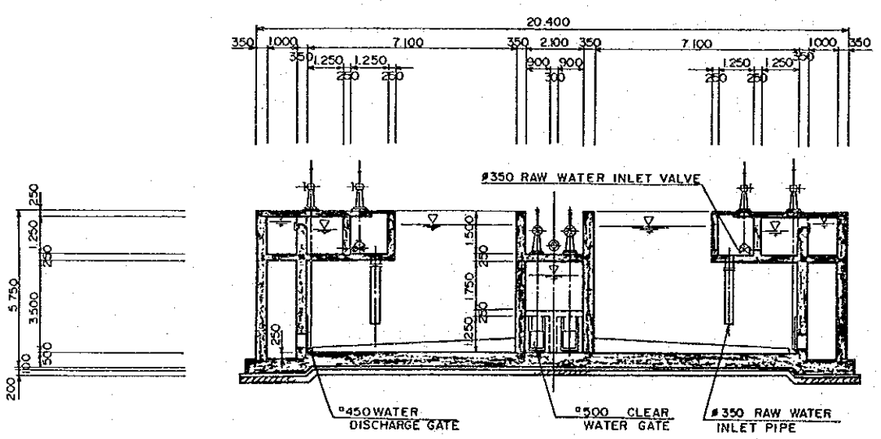
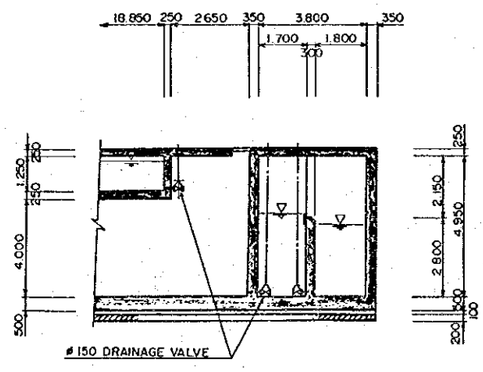


SECTION C-C



SECTION F-F

SCALE 1/100

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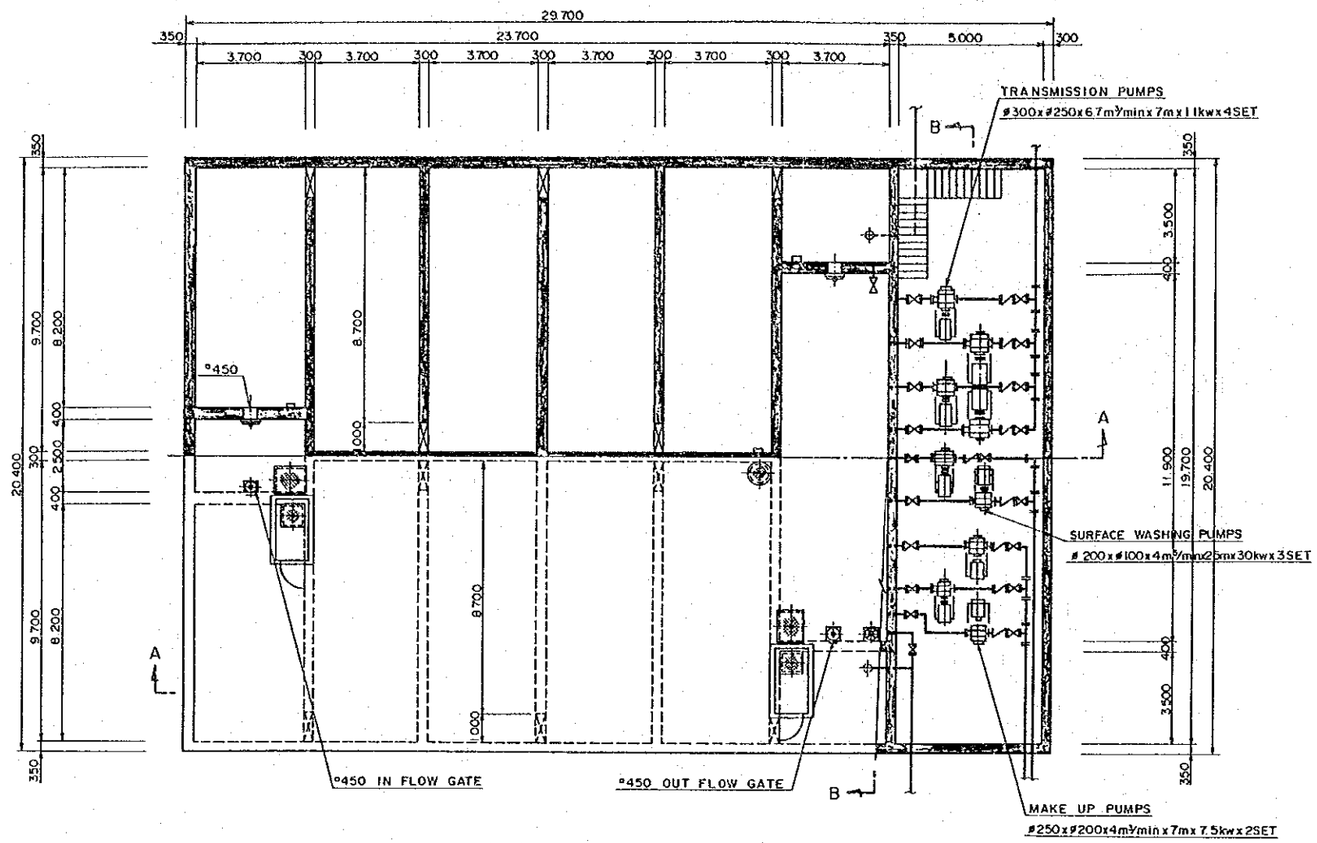
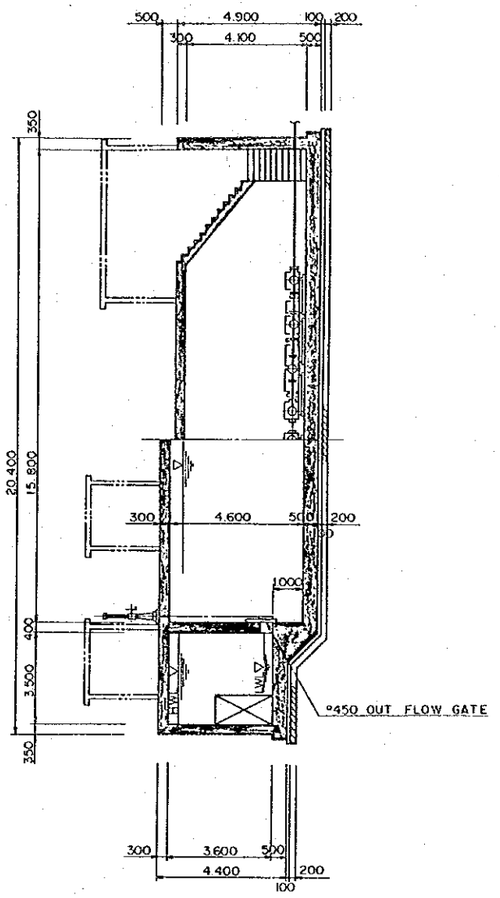
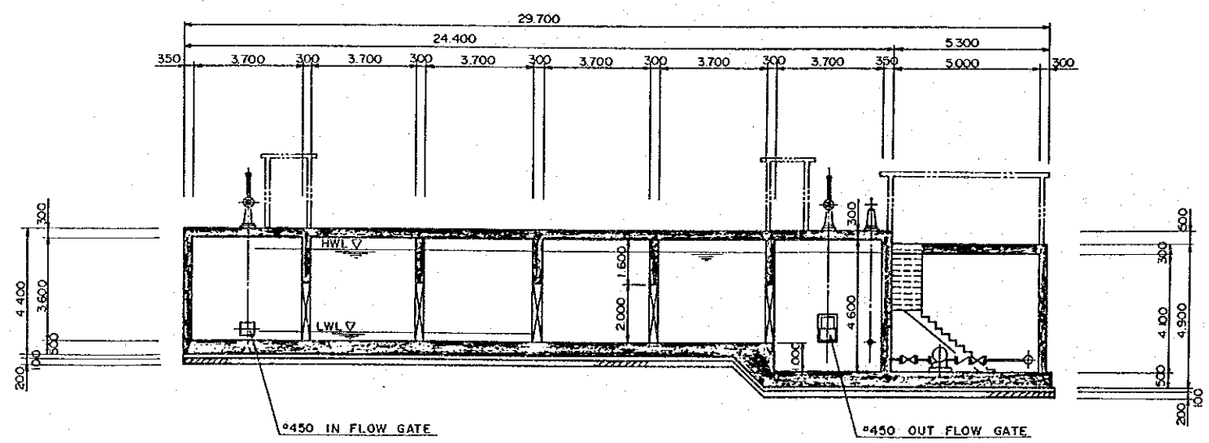
NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
RAPID SAND FILTER SECTION			
Date	JULY, 1991	Drawing No.	M-7
JAPAN INTERNATIONAL COOPERATION AGENCY			



PLAN



SECTION B-B



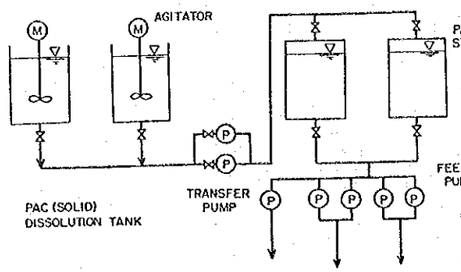
SECTION A-A

SCALE 1/100

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
CLEAR WATER RESERVOIR PLAN AND SECTION			
Date	JULY, 1991	Drawing No.	M-8
JAPAN INTERNATIONAL COOPERATION AGENCY			

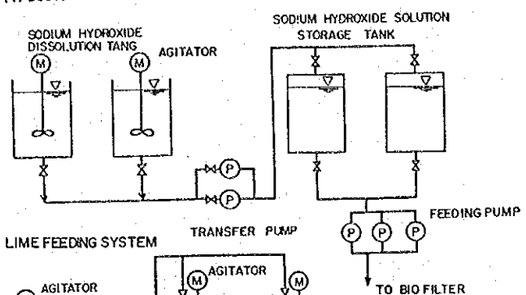
AGGLUTINATION REAGENT FEEDING SYSTEM

PAC(SOLID)FEEDING SYSTEM

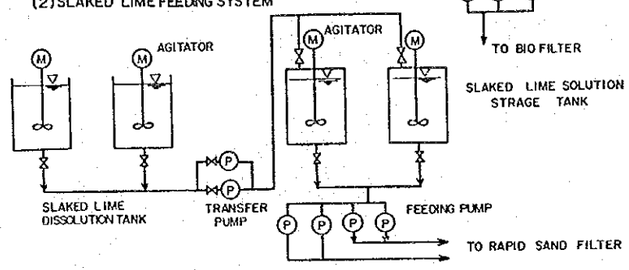


ALKALI REAGENT FEEDING SYSTEM

(1) SODIUM HYDROXIDE FEEDING SYSTEM

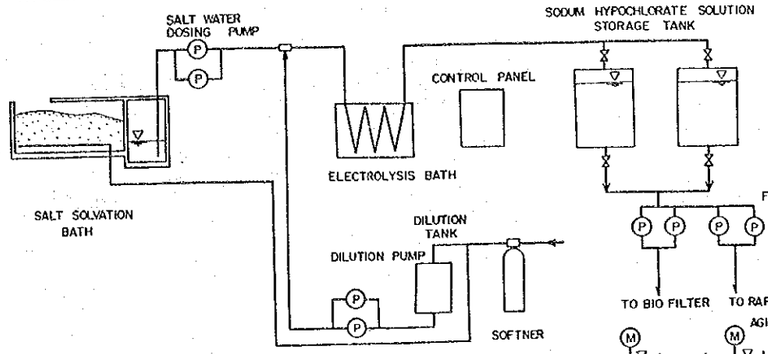


(2) SLAKED LIME FEEDING SYSTEM

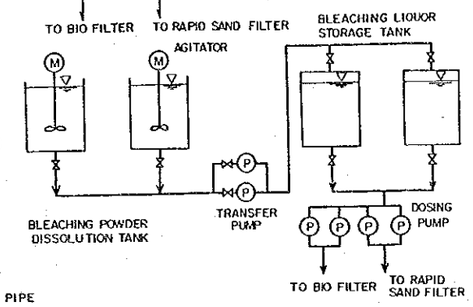


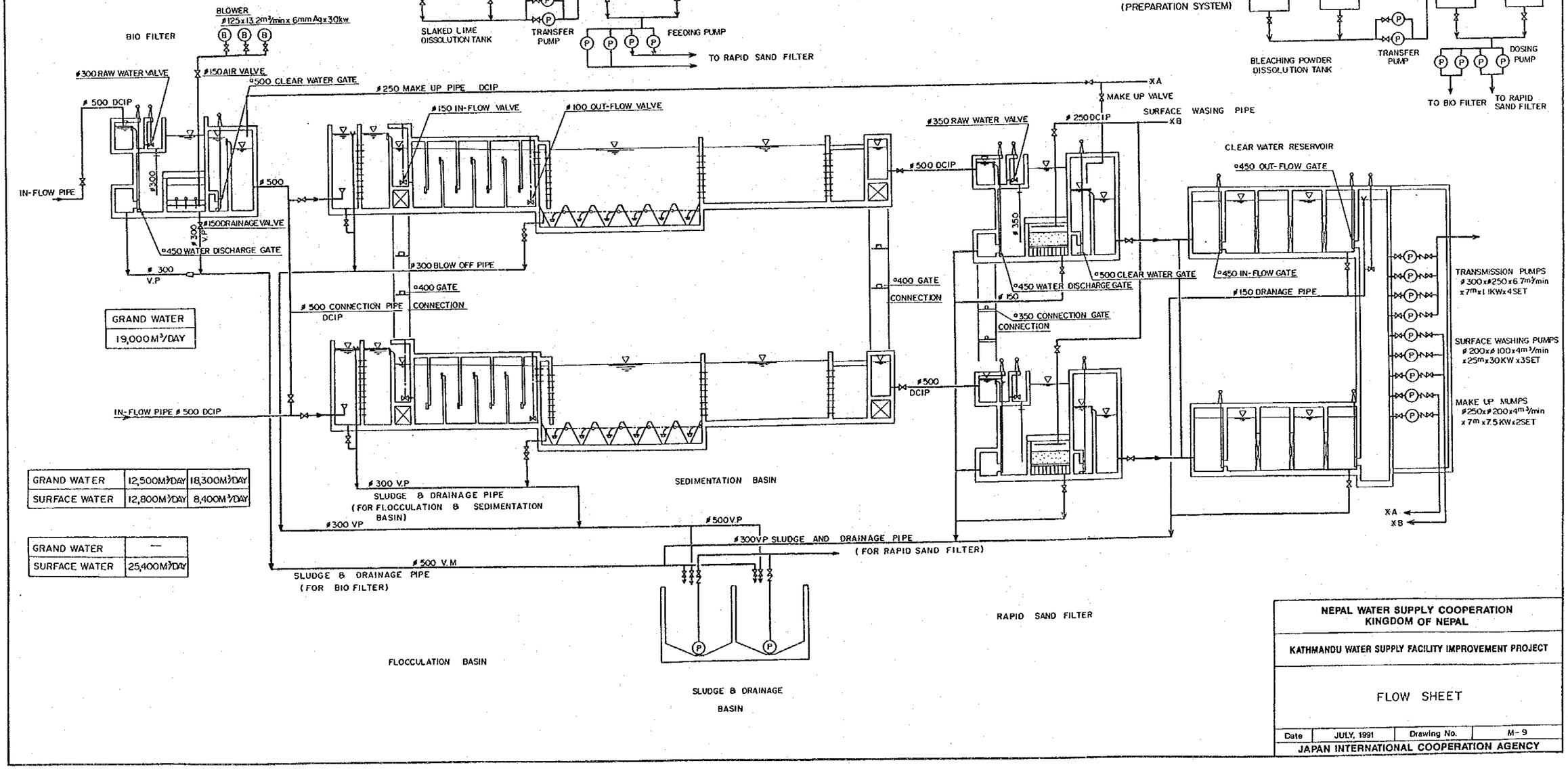
CHLORINATION SYSTEM

(1) ELECTROLYSIS SODIUM HYPOCHLORATE SYSTEM



(2) BLEACHING POWDER FEEDING SYSTEM (PREPARATION SYSTEM)





NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

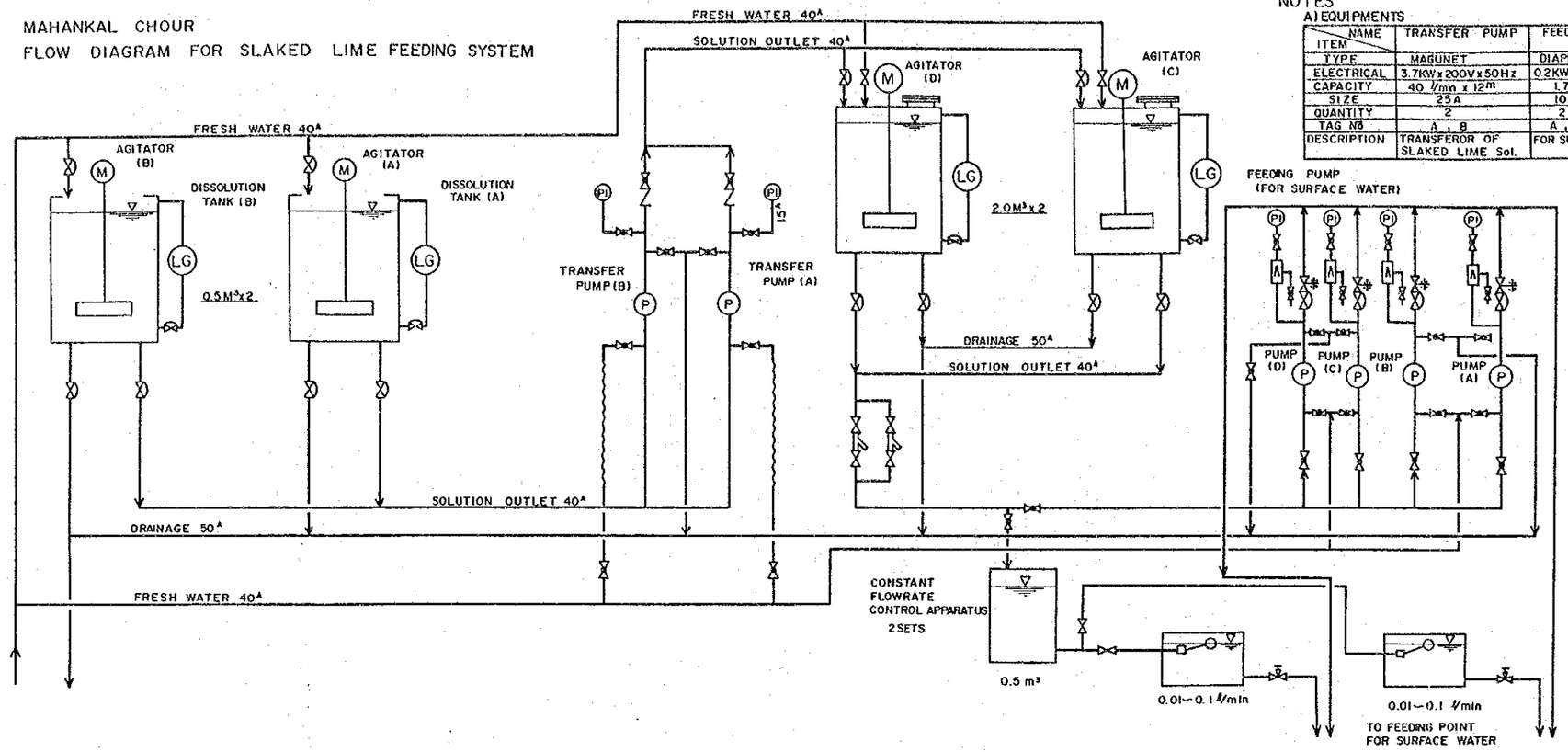
FLOW SHEET

Date	JULY, 1991	Drawing No.	M-9

JAPAN INTERNATIONAL COOPERATION AGENCY

MAHANKAL CHOUR

FLOW DIAGRAM FOR SLAKED LIME FEEDING SYSTEM



NOTES

A) EQUIPMENTS

NAME / ITEM	TRANSFER PUMP	FEEDING PUMP		AGITATOR	SOLUTION STRAGE TANK
TYPE	MAGUNET	DIAPHRAGM		OSCILLATION	ROUND - VERTICAL
ELECTRICAL	3.7KWx200Vx50Hz	0.2KWx 200V x 50 Hz		2.2KWx200V x 50Hz	---
CAPACITY	40 l/mn x 12m	1.7 l/mn	0.85 l/min	196 cpm	2.0m3
SIZE	25A	10A	10A	---	ø1,400mm xH 1,580mm
QUANTITY	2	2	2	4	2
TAG Nō	A , B	A , B	C , D	A , B , C , D	A , B
DESCRIPTION	TRANSFEROR OF SLAKED LIME Sol.	FOR SURFACE WATER		AGITATOR OF SLAKED LIME HYDROLYSIS	STRAGE OF SLAKED LIME SOLUTION

NOTE

OTHER EQUIPMENTS (DISSOLUTION TANK etc) SEE SHEET OF FLOW DIAGRAM SODIUM HYPOCLORITE.

B) DESIN ITEMS

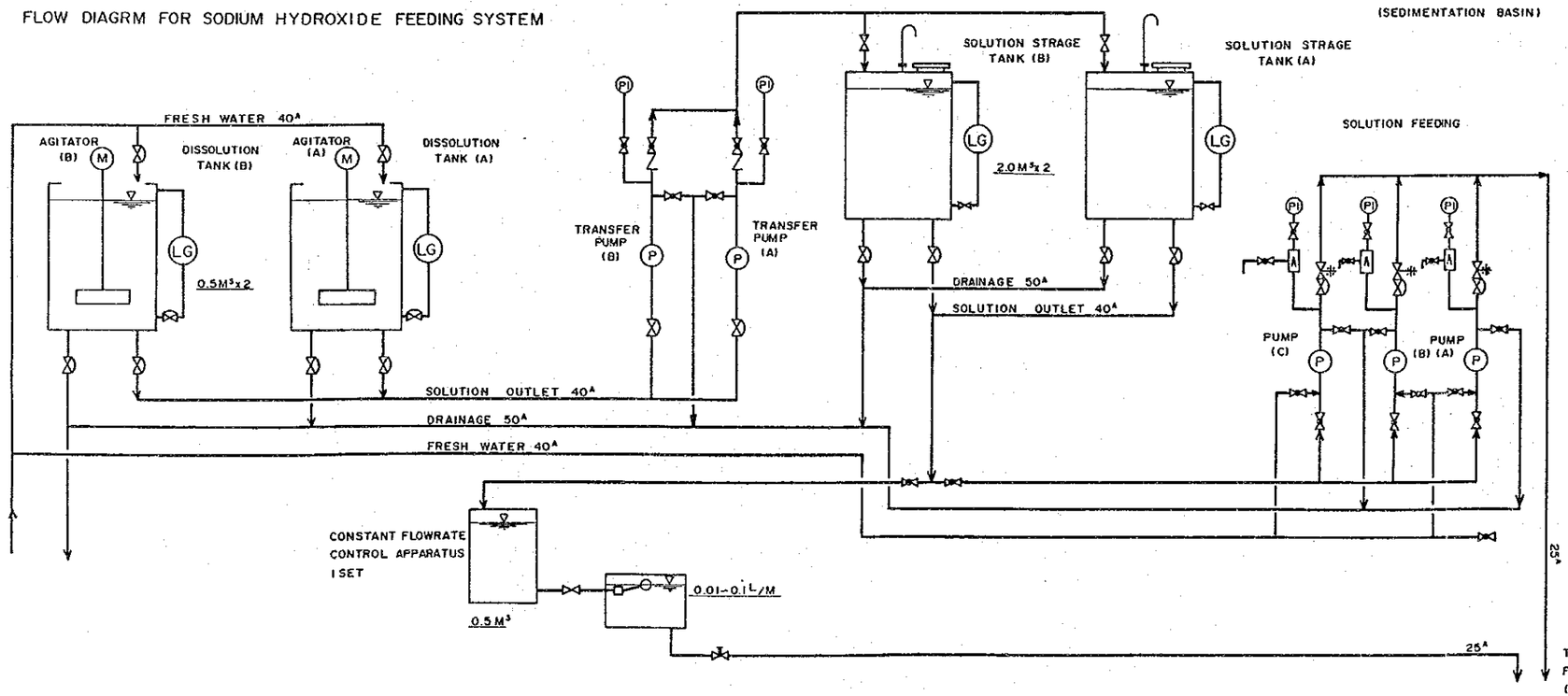
B-1. QUANTITY OF FLOW

WATER	MINMUM	MAXIMUM
SURFACE	8,500m3/day	25,400m3/day

B-2. RATE OF DOSING (MEAN)

WATER	SEASON	MEAN
SURFACE	RAIN-FALL	20 mg/l
	DRY	5 mg/l

FLOW DIAGRM FOR SODIUM HYDROXIDE FEEDING SYSTEM



NOTE

A) DESIGN ITEMS

A-1. QUANTITY OF FLOW

GRAND WATER 19.000m3/day

A-2. RATE OF DOSING

MEAN 20mg/

B) EQUIPMENTS

NAME / ITEM	FEEDING PUMP	SOLUTION STRAGE TANK
TYPE	DIAPHRAGM	ROUND-VERTICAL
ELECTRICAL	0.2KWx200V x 50Hz	—
CAPACITY	0.85 l/min	2.0m3
SIZE	10A	ø1,400mm xH 1,580mm
QUANTITY	3	2
TAG Nō	A , B , C	A , B
DESCRIPTION		MATERIAL PE CLOSE TYPE

NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF PAC FEEDING SYSTEM

Date	JULY, 1991	Drawing No.	M-10

JAPAN INTERNATIONAL COOPERATION AGENCY

NOTE

A) DESIGN ITEMS

A-1. QUANTITY OF FLOW

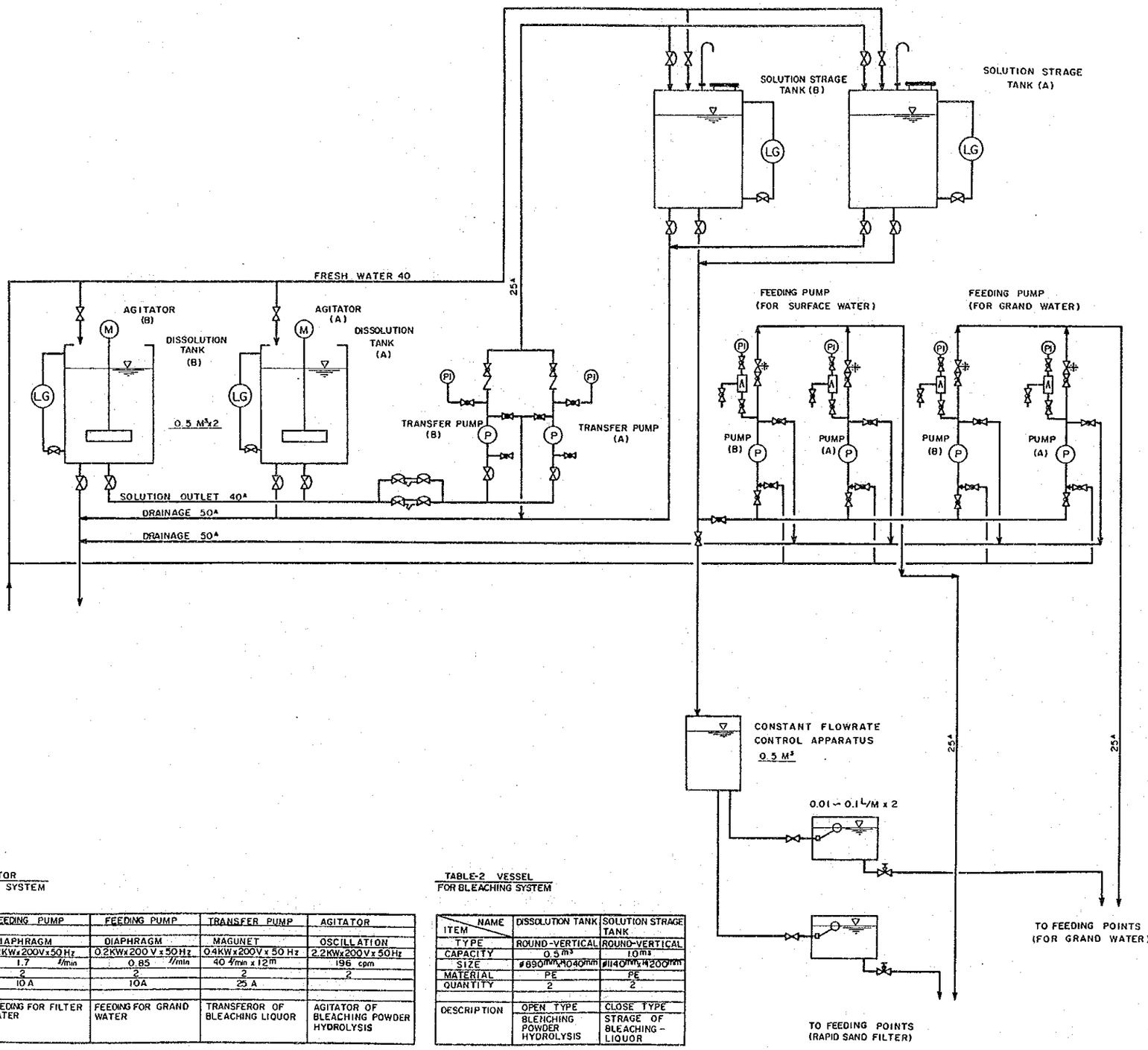
ITEM / WATER	MINIMAM	MAXIMUM	DESCRIPTION
GRAND	–	19,000m³/day	OXYDATION
FILTER	25300m³/day	26,800m³/day	STERILIZE

A-2. RATE OF FEEDIN (MEAN)

ITEM / WATER	SEASON	MEAN QUANTITY	DESCRIPTION
GRAND	–	2.1 mg/ℓ	OXYDATION
FILTER	RAIN-FALL	2.5 mg/ℓ	STERILIZE
	DRY	1.5 mg/ℓ	

B) SYMBOLS

SEE, SHEET OF FLOW DIAGRAM PAC FEEDING SYSTEM



EQUIPMENTS

TABLE-1 ROTETOR
FOR BLEACHING SYSTEM

ITEM / NAME	FEEDING PUMP	FEEDING PUMP	TRANSFER PUMP	AGITATOR
TYPE	DIAPHRAGM	DIAPHRAGM	MAGUNET	OSCILLATION
ELECTRICAL	0.2KWx200Vx50Hz	0.2KWx200Vx50Hz	0.4KWx200Vx50Hz	2.2KWx200Vx50Hz
CAPACITY	1.7 ℓ/min	0.85 ℓ/min	40 ℓ/min x 12m	196 cpm
QUANTITY	2	2	2	2
SIZE	10A	10A	25A	
DESCRIPTION	FEEDING FOR FILTER WATER	FEEDING FOR GRAND WATER	TRANSFEROR OF BLEACHING LIQUOR	AGITATOR OF BLEACHING POWDER HYDROLYSIS

TABLE-2 VESSEL
FOR BLEACHING SYSTEM

ITEM / NAME	DISSOLUTION TANK	SOLUTION STRAGE TANK
TYPE	ROUND-VERTICAL	ROUND-VERTICAL
CAPACITY	0.5 m³	1.0 m³
SIZE	ø690mm x H940mm	ø1140mm x H1200mm
MATERIAL	PE	PE
QUANTITY	2	2
DESCRIPTION	OPEN TYPE BLEACHING POWDER HYDROLYSIS	CLOSE TYPE STRAGE OF BLEACHING-LIQUOR

NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF SLAKED LIME FEEDING SYSTEM

Date	JULY, 1991	Drawing No.	M-11

JAPAN INTERNATIONAL COOPERATION AGENCY

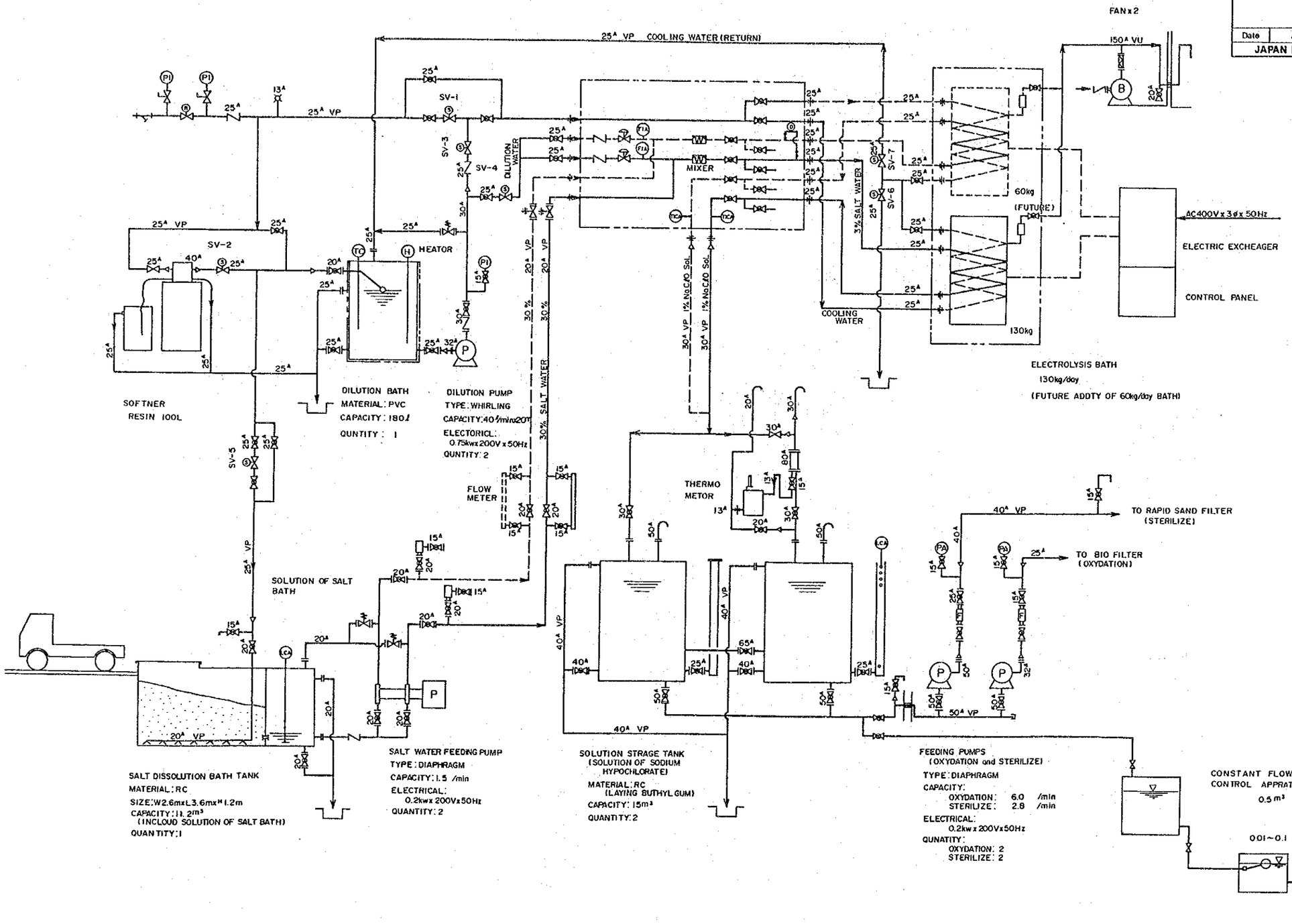
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF SOLIDUM HYPOCHLORITE SYSTEM

Date	JULY, 1991	Drawing No.	M-12

JAPAN INTERNATIONAL COOPERATION AGENCY



SYMBOLS

	NAME
	GATE VALVE
	BALL VALVE
S	MAGUNET VALVE
	BACK PRESSURE VALVE
	SAFTY VALVE
R	PRESSURE REDUCING VALVE
	CHECK VALVE
	WATER TAP
	Y-TYPE STRAINER
	BALL TAP
	BUTTERFLY
	FLOWMETOR(MAGUNET TYPE)
H	HEATOR
TC	THERMOMETOR
LG	LEVEL GAUGE
TCA	THERMOSENSER(FOR NaC OSOL)
PI	PRESSURE GAUGE
PA	PRESSURE SWITCH

NOTES

A) DESIGN ITEMS

A-1. QUANTITY OF FLOW

WATER \ CASE	1	2	3
GRAND	18,300 m³/day	12,500m³/day	—
SURFACE	8,500 m³/day	12,800m³/day	25,400m³/day
TOTAL	26,800m³/day	25,300m³/day	25,400m³/day

A-2. RATE OF FEEDING

WATER \ ITEM	SEASON	MEAN	MAXIMUM
GRAND	—	15.6 mg/ℓ	40 mg/ℓ
SURFACE	RAIN-FALL	22.2 mg/ℓ	
	DRY	15.6 mg/ℓ	

B) SYMBOLS

VALVES

- BALL VALVE
- CHECK VALVE
- DIAPHRAGM VALVE
- BACK PRESSURE REGULATION VALVE
- GATE VALVE
- FLOW CONTROL VALVE
- BALL TAP

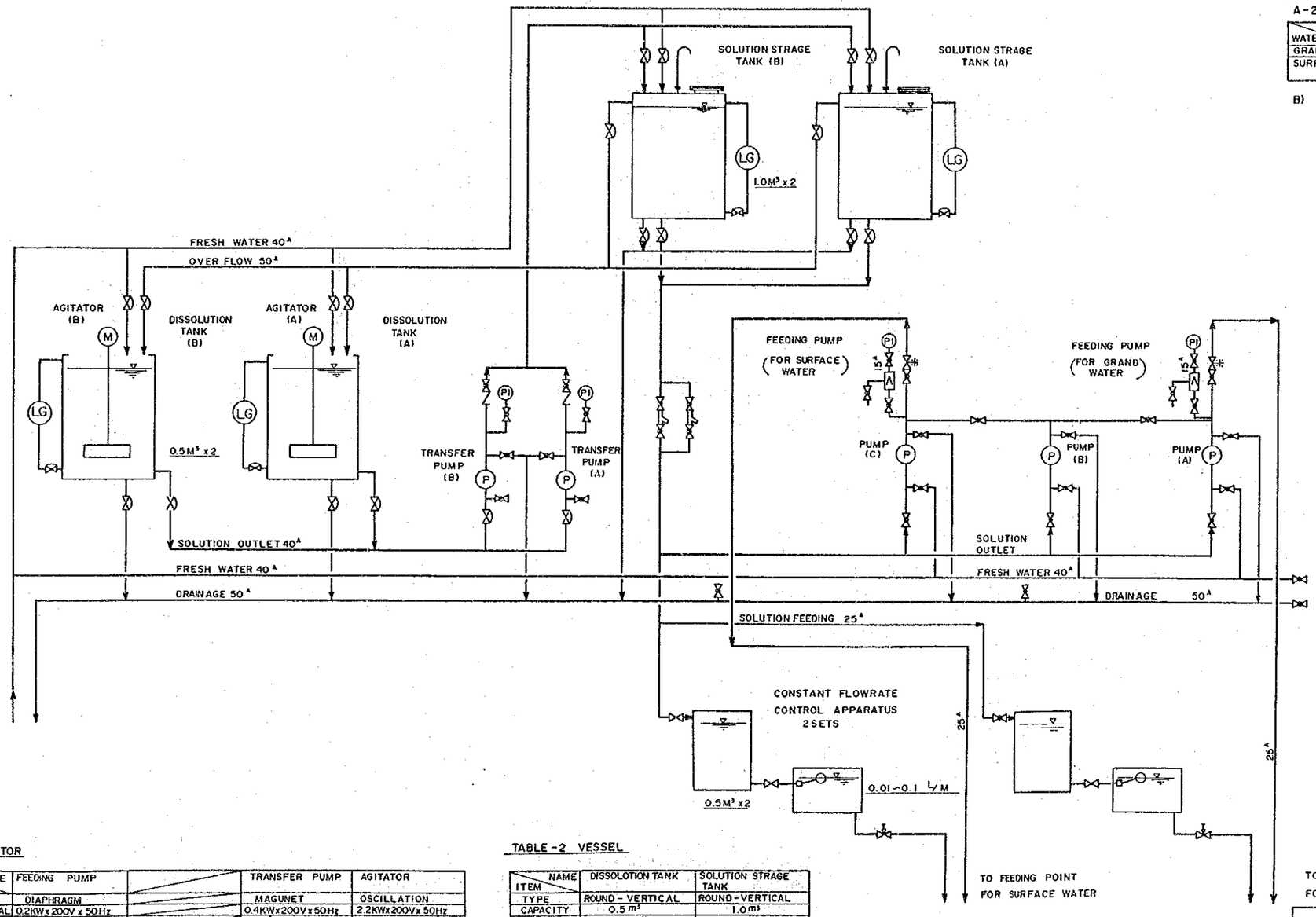
EQUIPMENTS

ROTATOR

- (M) MOTOR
- (P) PUMP

OTHERS

- (PI) PRESSURE GAUGE
- (LG) LEVEL GAUGE
- AIR CHAMBER
- Y-TYPE STRAINER



EQUIPMENTS

TABLE-1 ROTATOR

NAME / ITEM	FEEDING PUMP	TRANSFER PUMP	AGITATOR
TYPE	DIAPHRAGM	MAGUNET	OSCILLATION
ELECTRICAL	0.2KW x 200V x 50Hz	0.4KW x 200V x 50Hz	2.2KW x 200V x 50Hz
CAPACITY	1.7 ℓ/min	40 ℓ/min x 12 m	196 cpm
QUANTITY	3	2	2
SIZE	10A	25A	
TAG NO	A, B, C	A, B	A, B
DESCRIPTION	FEEDING FOR SURFACE WATER & GRAND WATER	TRANSFEROR OF PAC SOLUTION.	AGITATOR OF PAC HYDROLYSIS

TABLE-2 VESSEL

NAME / ITEM	DISSOLOTION TANK	SOLUTION STRAGE TANK
TYPE	ROUND-VERTICAL	ROUND-VERTICAL
CAPACITY	0.5 m³	1.0 m³
SIZE	ϕ 890mm x H 1040mm	ϕ 1140mm x H 1200mm
MATERIAL	PE	PE
QUANTITY	2	2
DESCRIPTION	OPEN TYPE PAC (SOLID) HYDROLYSIS	CLOSE TYPE STRAGE OF PAC SOLUTION.

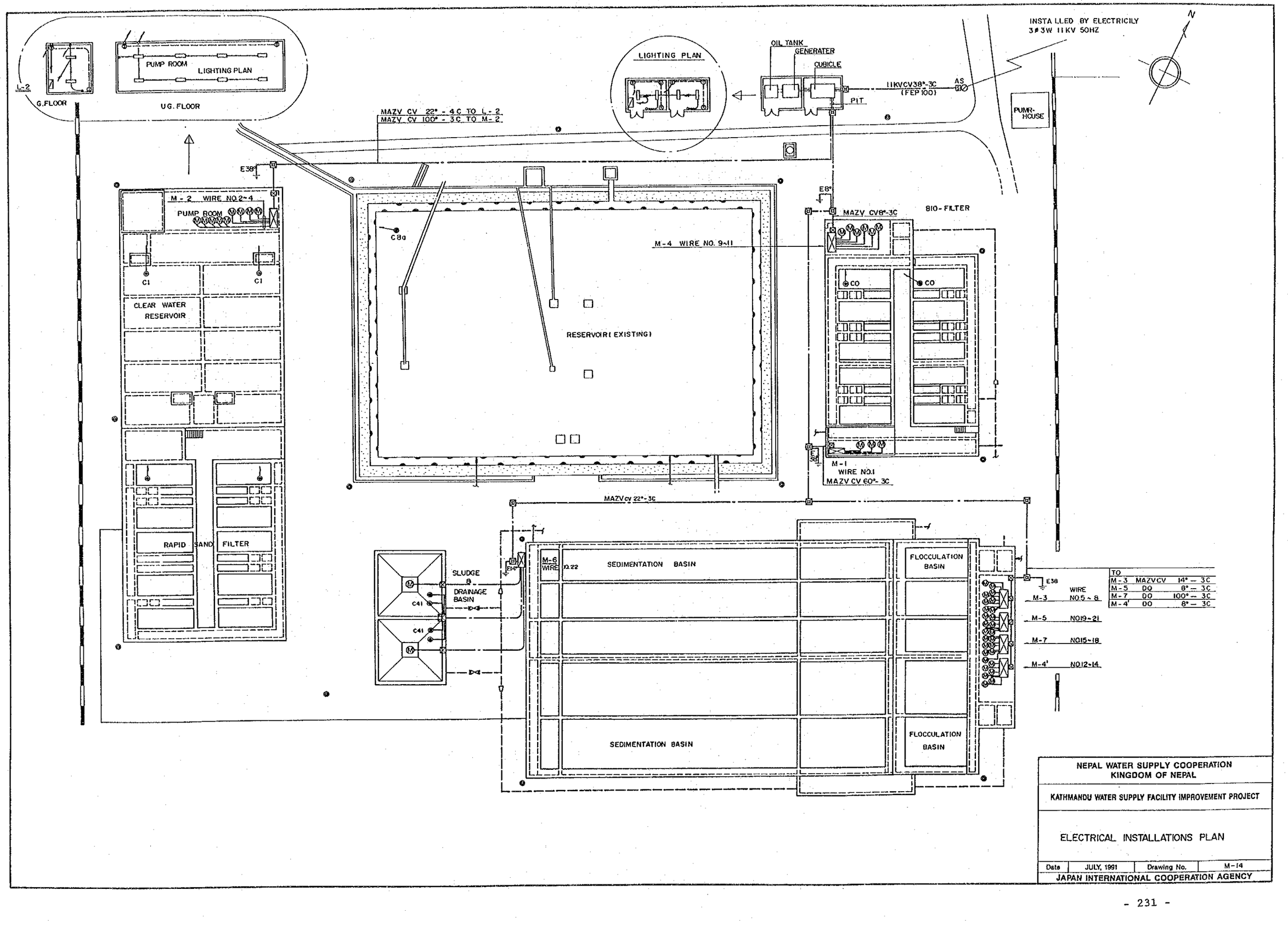
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF BLEACHING POWDER FEEDING SYSTEM

Date	JULY, 1991	Drawing No.	M-13

JAPAN INTERNATIONAL COOPERATION AGENCY



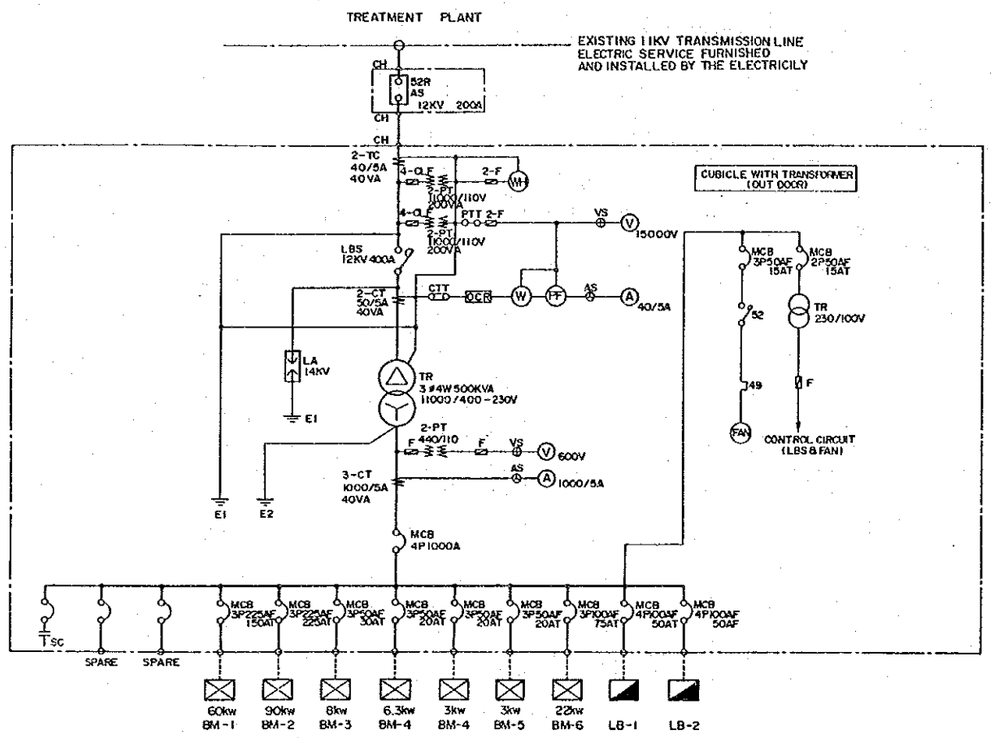
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

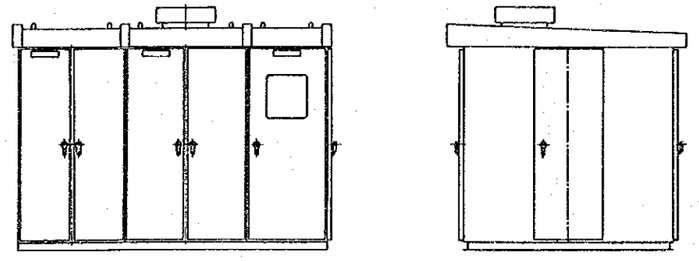
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

ELECTRICAL INSTALLATIONS PLAN

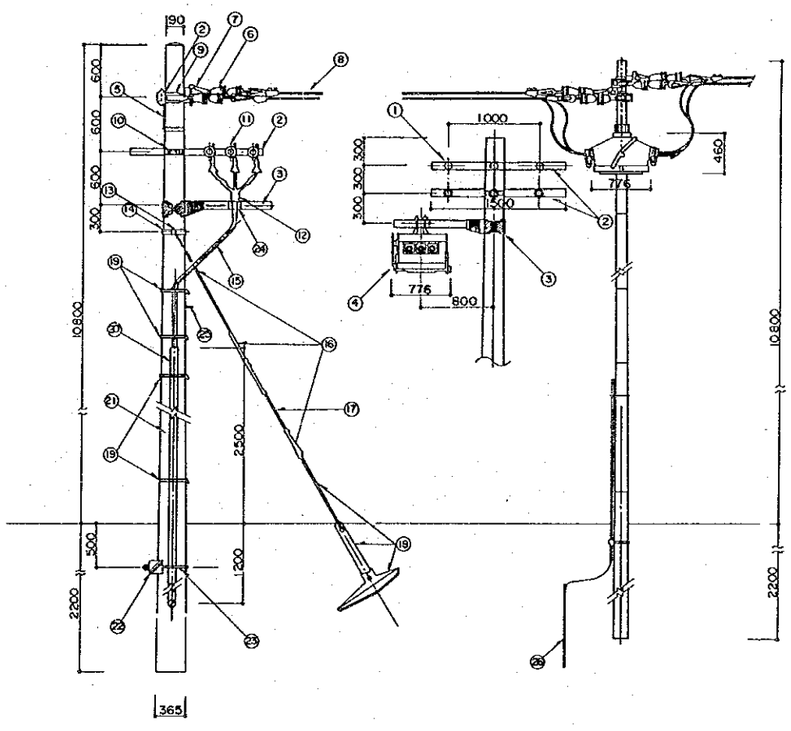
Date	JULY, 1991	Drawing No.	M-14

JAPAN INTERNATIONAL COOPERATION AGENCY





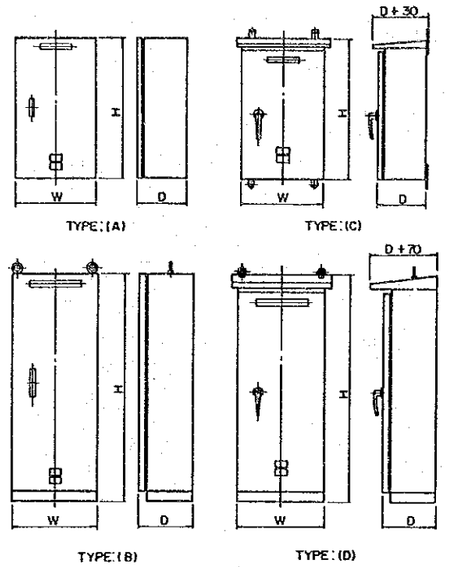
NO	DESCRIPTION		NO	DESCRIPTION	
1	SIDE PIN INSULATOR		19	CABLE BAND(SUS-TYPE)	
2	ARM C-75 (LGA)		20	(FP 100)	
3	ARM (ALS)		21	CONCRETE POLE 13M	
4	AIR LOAD-BREAK SWITCH		22	STOPPER ARM FOR POLE	
5	ARM TIE (AMT-0)		23	U-BOLT	
6	INSULATOR 3SETS		24	CABLE HANGER	
7	MAIN WERE HANGER		25	STEPPING BOLT	
8	H.V 15kvOC-CABLE		26	EARTH ROD 14ϕX1500	
9	TWIST STRIPE (TSTP)				
10	ARM-BAND (UABO)				
11	SIDE PIN INSULATOR				
12	H.V 12kv XLPE CABLE HEAD				
13	THIMBLE				
14	U-BAND (SPRIT-TYPE)				
15	H.V 12kv XLPE CABLE				
16	GRIP FOR WIRE				
17	STEEL WIRE 30M²				
18	STAY ROD				

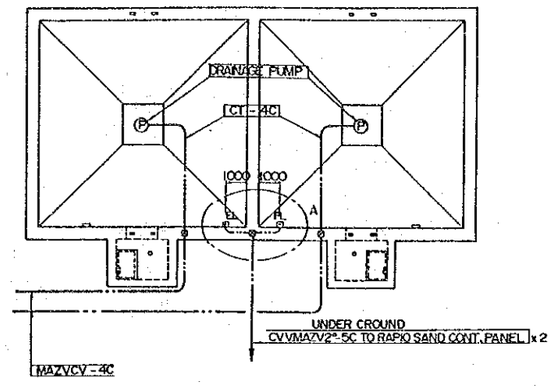


NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
SUB-STATION			
Date	JULY, 1991	Drawing No.	M-15
JAPAN INTERNATIONAL COOPERATION AGENCY			

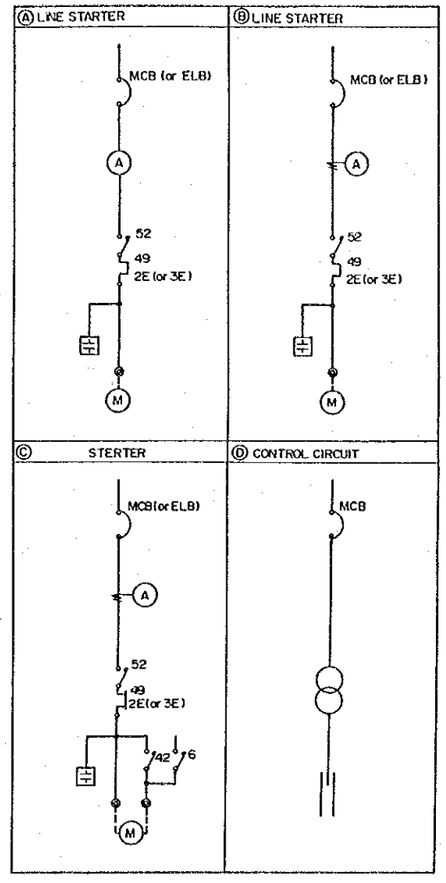
SIZE and PIPE of POWER CONTROL PANEL

PANELE	SIZE W	SIZE H	SIZE D	TYPE	REM
MM - 1	1000	2250	500	B	
MM - 2	1600	2250	500	B	
MM - 3	1000	2150	400	D	
MM - 4	1000	2150	400	D	
MM - 4'	800	2150	400	D	
MM - 5	800	2150	400	D	
MM - 6	700	1300	300	C	
MM - 7	1000	2150	400	D	





SLUDGE and DRAINAGE BASIN S:1/100



WIRING LIST

MOTER CONTROL PANEL	EQUIPMENT NAME	LOAD CAP (KW)	WIRE No.	POWER WIRE CV C E	PIPE	CONTROL		CONT WIRE No.	Control WIRE CVV sq		FS
MM 1	BIO FILTER BLOWER	30	1	22*3 8	51*2	BIO FILTLTER	FULL at SIGN to MM-2	C- 0	2	-3 C	2
MM 2	CLEAR WATER RESERVOIR					WASTE WATER BASIN	FULL at OFF & SIGNAL	00	2	-5 C	2
	SURFACE WASHIING PUMPS	30	2	22*3 8	31*2	CLEAR WATER RESERVOIR	LOW at OFF	1	2	-3 C	2
						RAPID SAND FILTER	FULL at OFF & SIGNAL	2	2	-3 C	2
						BIO FILTER	FULL at OFF & SIGNAL	3	2	-3 C	P0
	MAKE UP PUMPS	7.5	3	5.5*3 20	31	CLEAR WATER RESERVOIR	LOW at OFF	4	2	-5 C	P1
						RAPID SAND FILTER	FULL at OFF & SIGNAL	5	2	-3 C	P2
						BIO FILTER	FULL at OFF & SIGNAL	6	2	-3 C	P3
	TRANSMISSON PUMPS	11	4	8*3 5.5	39*2	CLEAR WATER RESERVOIR	LOW at OFF	7	2	-3 C	P1
						RESERVOIR	LOW HI at ON OFF	28	8b	3.5 -7	2
MM 3	ALUMINUM SULFATE FEEDING SYSTEM										
	MIXER	2.2	5	5.5*3 20	31	ALUMINUM SULFATE TANK	LOW at OFF & SIGNAL	9	2	-3 C	P10
	TRANSFER PUMPS	0.4	6	5.5*3 20	31	ALUMINUM SULFATE TANK	LOW HI at ON OFF	10	2	-5 C	2
						ALUMINUM SULFATE SOLUTION TANK	LOW at OFF	11	2	-3 C	2
	FEEDING PUMPS	0.2	7	5.5*3 20	31	PH METER	at ON OFF	12	2	-5 C	0
						ALUMINUM SUFATE TANK	LOW at OFF	13	2	-3 C	P10
	FEEDING PUMPS	0.2	8	5.5*3 20	31	PH METER	at ON OFF	14	2	-5 C	0
						ALUMINUM SUFATE TANK	LOW at OFF	15	2	-3 C	P10
MM 4	ALKARI AGENT FEEDING SYSTEM										
	MIXER	2.2	9	5.5*3 20	31	ALKARI AGENT TANK	LOW at OFF & SIGNAL	16	2	-3 C	P17
	TRANSFER PUMPS	3.7	10	5.5*3 20	31	ALKARI AGENT TANK	LOW at ON OFF	17	2	-5 C	4
						ALKARI AGENT SOLUTION TANK	LOW at OFF	18	2	-3 C	2
	FEEDING PUMPS	0.2	11	5.5*3 20	31	PH METER	at ON OFF	19	2	-5 C	0
						ALKARI AGENT TANK	LOW at OFF	20	2	-3 C	P17
MM 4'	ALKARI AGENT FEEDING SYSTEM										
	MIXER	2.2	12	5.5*3 20	31	ALKARI AGENT TANK	LOW at OFF & SIGNAL	21	2	-3 C	P22
	TRANSFER PUMPS	0.4	13	5.5*3 20	31	ALKARI AGENT TANK	LOW HI at ON OFF	22	2	-5 C	2
						ALKARI AGENT SOLUTION TANK	LOW at OFF	23	2	-3 C	2
	FEEDING PUMPS	0.2	14	5.5*3 20	31	PH METER	at ON OFF	24	2	-5 C	0
						ALKARI AGENT TANK	LOW at OFF	25	2	-3 C	P22
MM 7	SELF-MADE SODIUM										
	SOLT WATER PUMPS	0.4	15	5.5*3 20	31	SOLT RESERVOIR	LOW at OFF & SIGNAL	27	2	-3 C	2
						ELECTROYSYS	ON NFF at ON OFF	28	2	-5 C	0
	CLEAR WATER PUMPS	0.4	16	5.5*3 20	31	CLEAR WATER TANK	LOW OFF & SIGNAL	29	2	-3 C	2
						ELECTROYSYS	ON NFF at ON OFF	30	2	-5 C	0
	ELECTROLYSIS	36.5	17	38*3 8	51*2	SODIUM HYPOCLRITE STRGE TANK	LOW HI at ON OFF	31	2	-5 C	2
		20		22*3 5.5	51*2	SOLT W.PP & CLEAR W.PP	OFF at OFF	32	2	-3 C	P27.29
						SODIUM HYPOCLRITE STRAGE TANK	FULL at OFF	33	2	-3 C	P31
	FEEDING PUMPS	0.4	18	5.5*3 20	31	PH METER	at ON OFF	34	2	-5 C	0
						SODIUM HYPOCLRITE STRAGE TANK	LOW at OFF	35	2	-3 C	P31
MM 5	BLEACHING POWDER FEEDING SYSTEM										
	MIXER	2.2	19	5.5*3 20	31	BLEAVHIING TANK	LOW at OFF & SIGNAL	36	2	-3 C	P37
	TRANSFER PUMPS	0.4	20	5.5*3 20	31	ALKARI AGENT TANK	LOW HI at ON OFF	37	2	-5 C	2
						ALKARI AGENT SOLUTION TANK	LOW at OFF	38	2	-3 C	2
	FEEDING PUMPS	0.2	21	5.5*3 20	31	PH METER	at ON OFF	39	2	-5 C	0
						ALKARI AGENT TANK	LOW at OFF	40	2	-3 C	P37
MM 6	WASTE WATER BASIN	11	22	22*3 5.5	51*2	WASTE WATER BASIN	LOW at OFF	41	2	-5 C	2

MOTER CONTROL PANEL	EQUIPMENT NAME	LOAD CAP (KW)	F IX Q'ty	S FIX -RS Q'ty	NON FIX Q'ty	TOTAL LOAD (KW)	LOC ON OFF	MANUAL DRIVE	NO LOW VSTCH	OVER FLOW W	CRO UIT NO	REM.
MM-1	BIO FILTER BLOWER	30	2	1	0	60		O			C	
MM-2	CLEAR WATER RESVOIR											
	SURFACE WASHIING PUMPS	30	2	1	0	60		O	O	O	C	
	MAKE UP PUMPS	7.5	1	1	0	7.5		O	O	O	B	
	TRANSMISSON PUMPS	11	3	1	0	33			O	O	B	
MM-3	ALUMINUM SULFATE FEEDING SYSTEM											
	MIXER	2.2	2	0	0	4.4	O	O	O		B	
	RECEPTION PUMPS	0.4	1	1	0	0.4			O	O	B	
	FEEDING PUMPS	0.2	3	2	0	0.6			O		B	
	FEEDING .. PUMPS	0.2	2	1	0	0.4			O		B	
MM-4	ALKARI AGENT FEEDING SYSTEM											
	MIXER	2.2	4	0	0	8.8	O	O	O		B	
	TRANSFER PUMPS	3.7	1	1	0	3.7			O	O	B	
	FEEDING PUMPS	0.2	4	0	0	0.8			O		B	
MM-4'	ALKARI AGENT FEEDING SYSTEM											
	MIXER	2.2	2	0	0	4.4	O	O	O		B	
	TRANSFER PUMPS	0.4	1	1	0	0.4			O	O	B	
	FEEDING . PUMPS	0.2	2	1	0	0.4			O		B	
MM-7	SELF-MADE SODIUM											
	SOLT WATER PUMPS	0.4	1	1	1	0.8			O		B	
	CLEAR WATER PUMPS	0.4	1	1	1	0.8			O	O	B	
	ELECTROLYSIS	36.5	1	0	0	36.5	O	O			C	
		20	0	0	1	20	O	O		O	C	
	FEEDING PUMPS	0.4	4	0	0	1.6			O		B	
MM-5	BLEACHING POWDER FEEDING SYSTEM											
	MIXER	2.2	2	0	0	4.4	O	O	O	O	B	
	TRANSFER PUMPS	0.4	1	1	0	0.4			O	O	B	
	FEEDING PUMPS	0.2	4	0	0	0.8			O		B	
MM-6	WASTE WATER BASIN	11	2	1	0	22			O	O	C	

Σ 272.1

NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

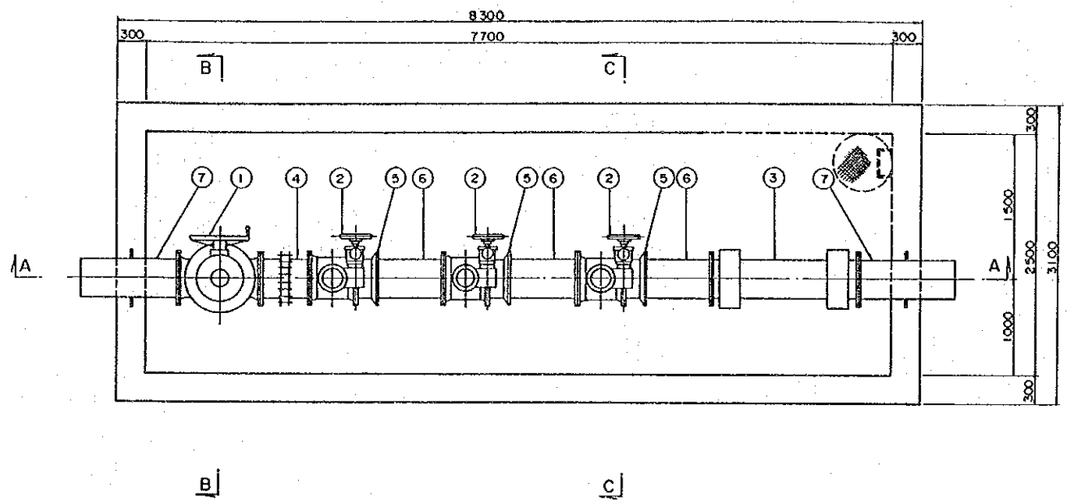
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

POWER CONTROL PANEL
AND WIRING LIST

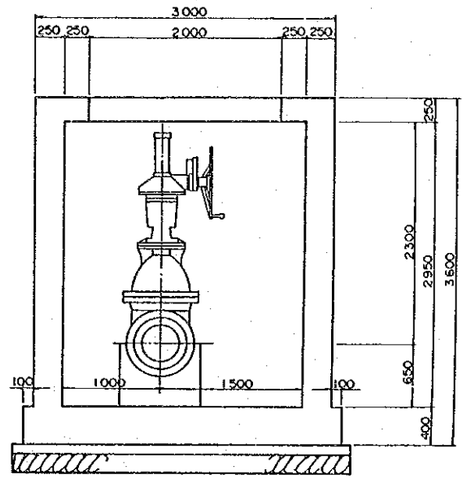
Date	JULY, 1991	Drawing No.	M-16

JAPAN INTERNATIONAL COOPERATION AGENCY

PLAN



SECTION B-B



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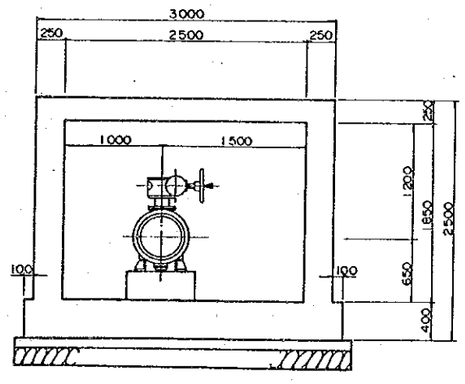
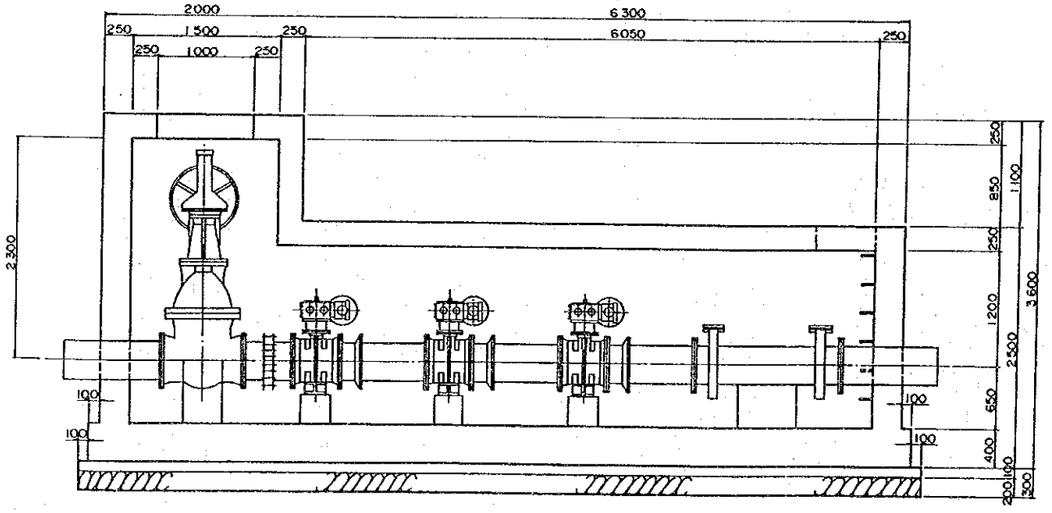


SECTION A-A



NO	NAME	SIZE	Nos
1	GATE VALVE, HIGHPRESSUR TYPE	ø 400	1
2	PRESSURE CONTROL VALVE (JETPORT)	"	3
3	PRESSURE REDUCING DEVICE	"	1
4	DOUBLE FLANGED ADAPTOR	ø400xø500	1
5	SOCKET AND FLANGED TYPE	ø 400	3
6	FLAGES AND SPIGOT TYPE	"	3
7	DOUBLE FLANGED SHORT PIPE WITH HANDWHEEL	ø400xø1000	2

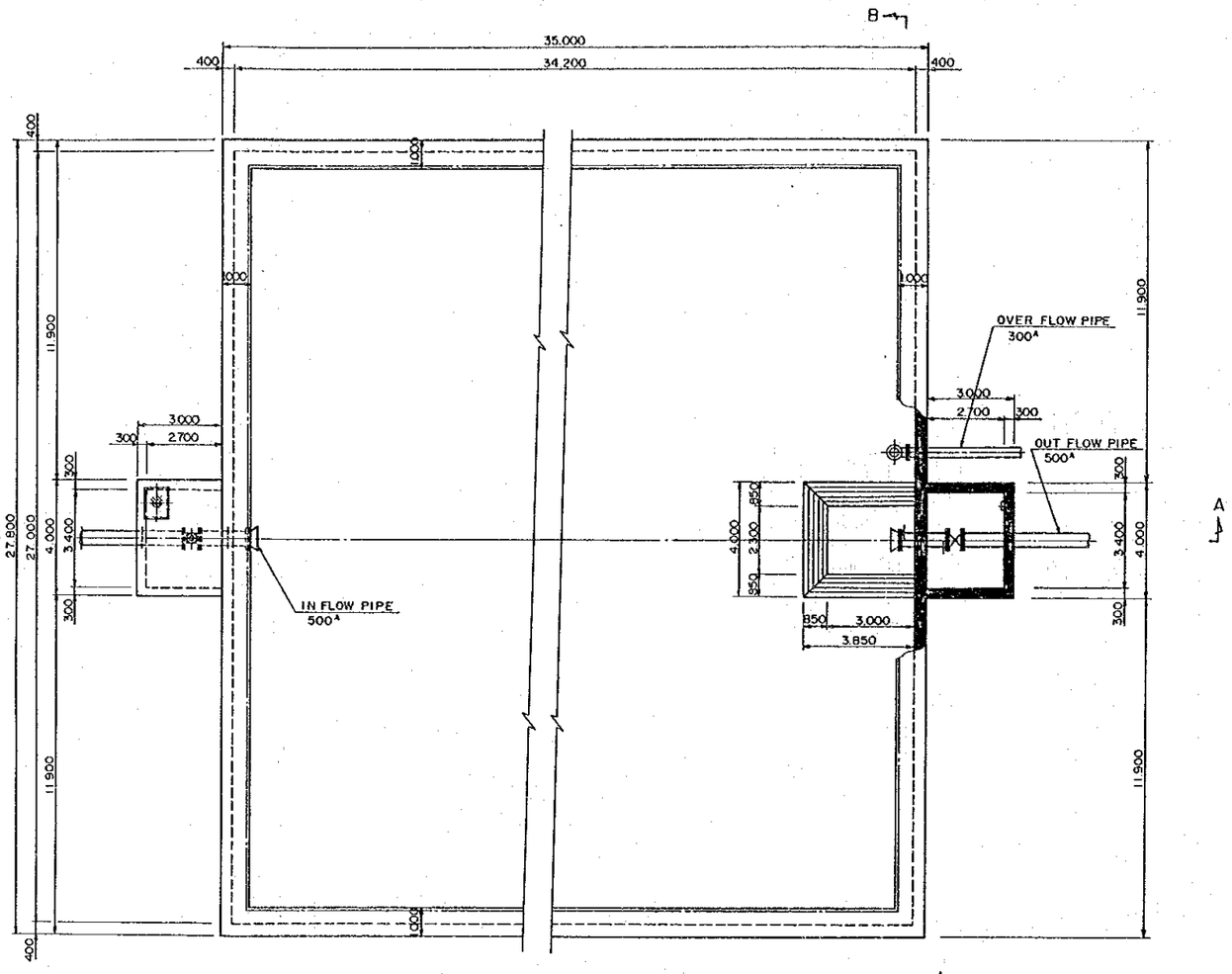
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

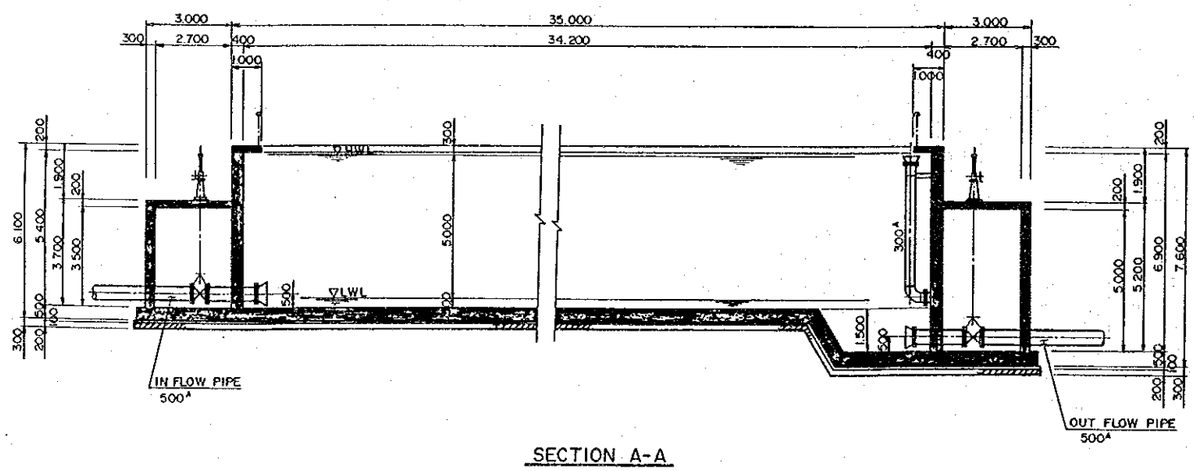
PRESSURE CONTROLVALVE
AND VALVE ROOM

Date	JULY, 1991	Drawing No.	M - 17

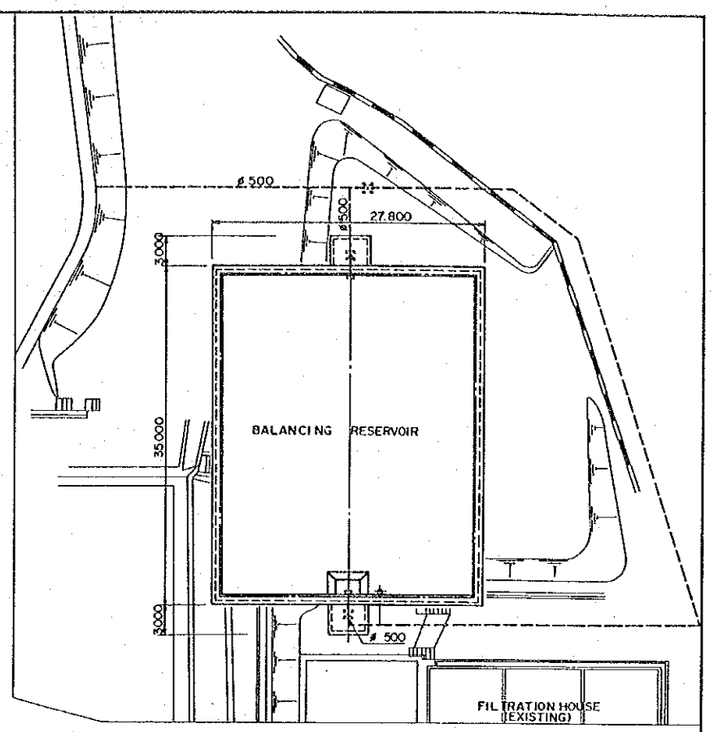
JAPAN INTERNATIONAL COOPERATION AGENCY



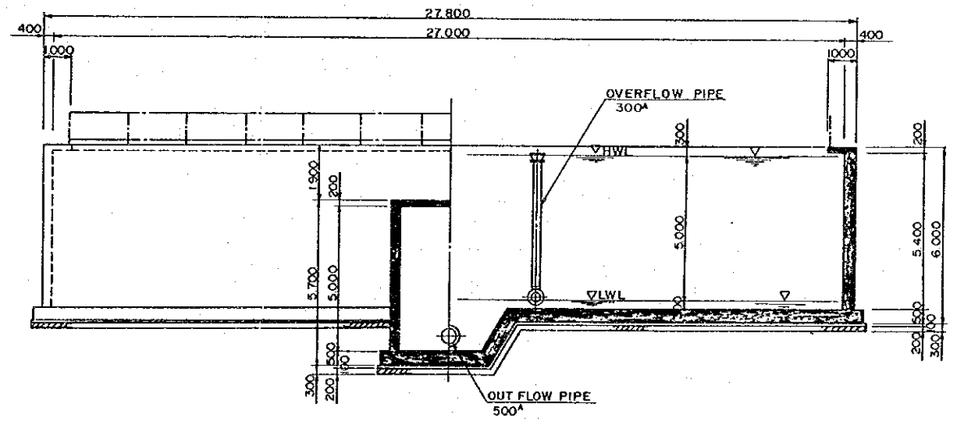
PLAN



SECTION A-A



KEY PLANE



SECTION B-B

SCALE 1/100

0 1 2 4 6 8 10m

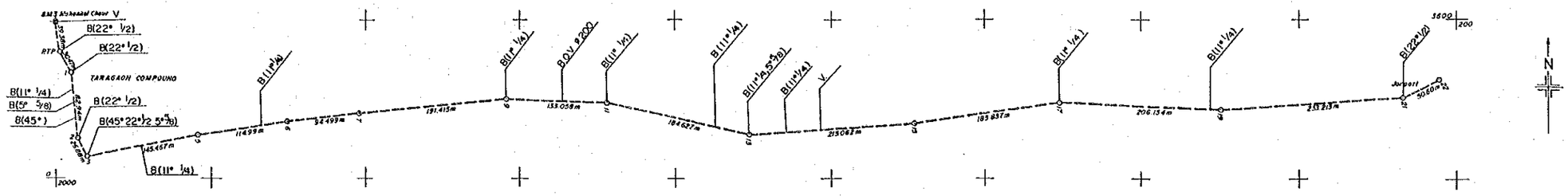
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

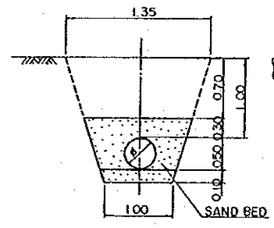
BALANCING RESERVOIR PLAN AND SECTION

Date	JULY, 1991	Drawing No.	M-18

JAPAN INTERNATIONAL COOPERATION AGENCY



TYPE I



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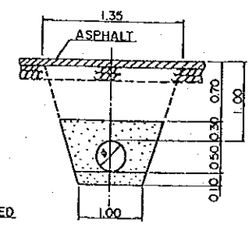
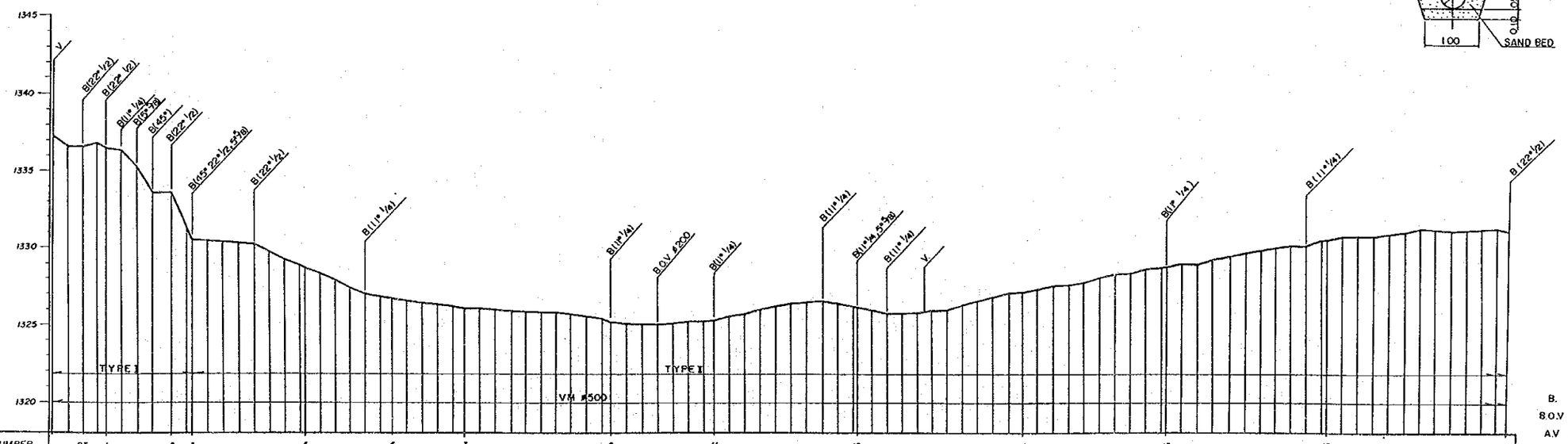


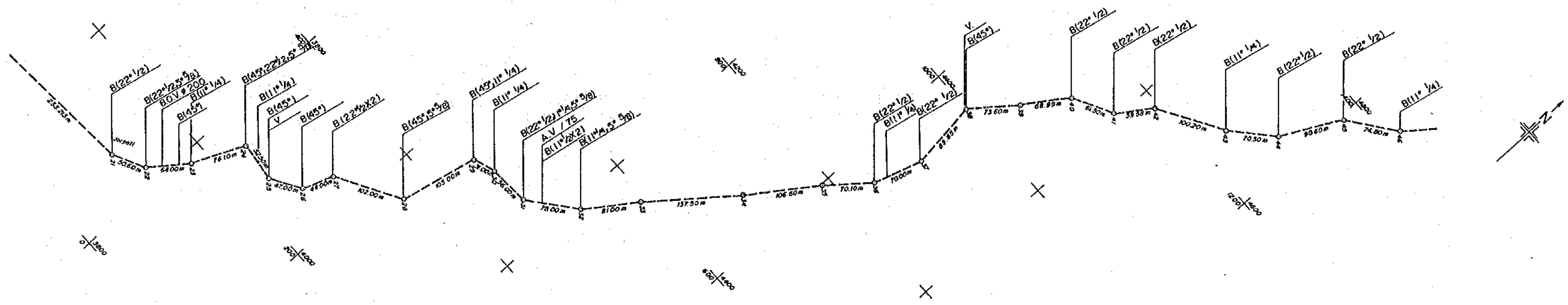


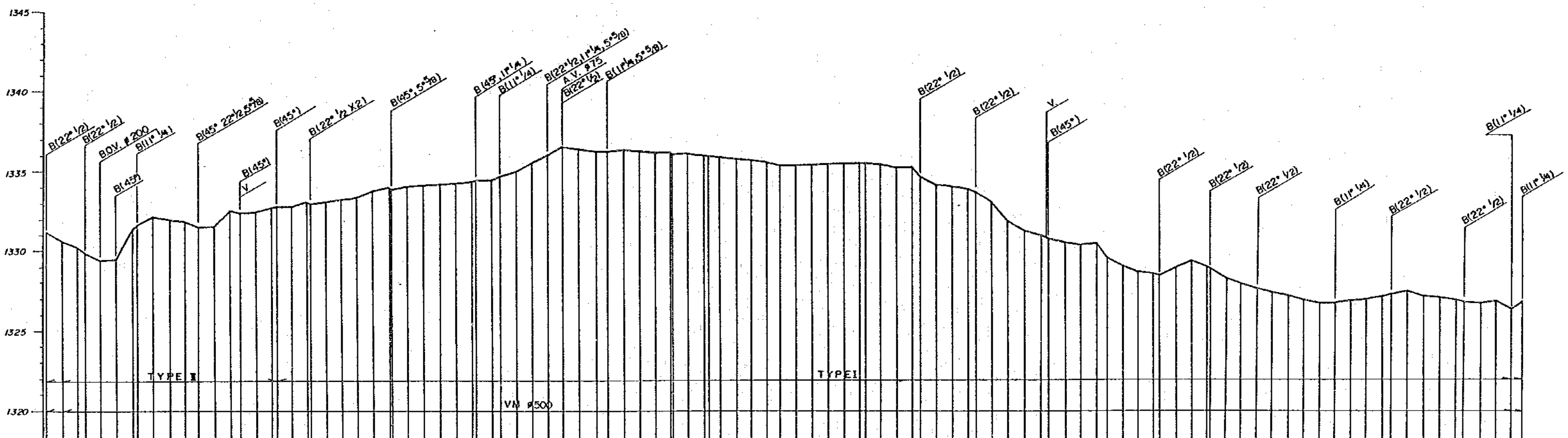
PEG NUMBER	PT	1	2	3	5	6	7	9	11	13	15	17	19	21
GAP DISTANCE IN METER	39.38	30.47	82.94	26.86	145.467	114.999	94.499	191.415	133.058	184.627	215.062	185.837	206.154	233.213
TOTAL DISTANC IN METER	0.000	39.380	69.850	152.790	179.676	325.107	440.106	534.605	725.020	859.078	1043.705	1229.542	1444.604	1650.758
EXISTING GROUND LEVEL	1327.29	1326.32	1326.00	1325.06	1324.81	1328.70	1326.69	1326.13	1325.24	1325.58	1326.75	1327.70	1328.79	1330.61	1331.40
PROPOSED PIPE LINE LEVEL															

LEGEND

B. BEND
B.O.V BLOW OFF VALVE
A.V AIR VALVE
A.D AQUE DUKT
P.R.V PRESSURE REDUCING VALVE
V VALVE

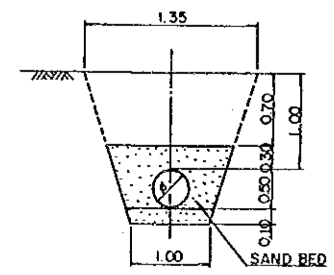
NEPAL WATER SUPPEY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
CONVEYANCE PIPE PLAN AND PROFILE (1/5)			
Date	JULY, 1991	Drawing No.	M-19
JAPAN INTERNATIONAL COOPERATION AGENCY			



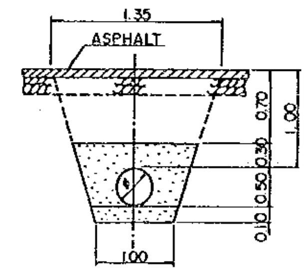


PEG NUMBER	GAP DISTANCE IN METER	TOTAL DISTANCE IN METER	EXISTING GROUND LEVEL	PROPOSED PIPE LINE LEVEL
21		1884.00	1331.180	
	50.60			
22		1934.60	1329.910	
	64.00			
23		1998.60	1331.743	
	76.10			
24		2074.70	1331.623	
	52.50			
25		2127.20	1332.473	
	47.00			
26		2174.20	1332.613	
	44.00			
27		2218.20	1332.996	
	102.00			
28		2320.20	1333.937	
	105.00			
29		2425.20	1334.464	
	31.00			
30		2456.20	1334.697	
	56.00			
31		2512.20	1335.945	
	78.00			
32		2590.20	1336.188	
	81.00			
33		2671.20	1335.977	
	137.50			
34		2808.20	1335.332	
	106.60			
35		2914.80	1335.484	
	70.10			
36		2984.90	1334.599	
	70.00			
37		3054.90	1333.710	
	89.85			
38		3144.75	1330.792	
	73.60			
39		3218.35	1329.617	
	68.99			
40		3287.34	1328.475	
	61.50			
41		3348.84	1328.926	
	59.58			
42		3408.42	1327.659	
	100.20			
43		3508.62	1326.747	
	70.50			
44		3579.12	1327.311	
	90.60			
45		3669.72	1326.833	
	74.80			
46		3744.52	1325.883	

TYPE I



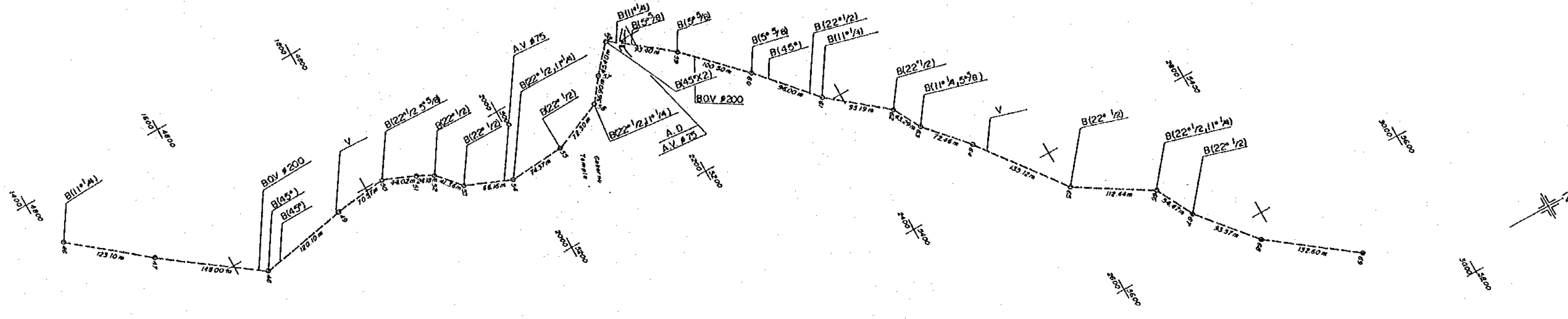
TYPE II

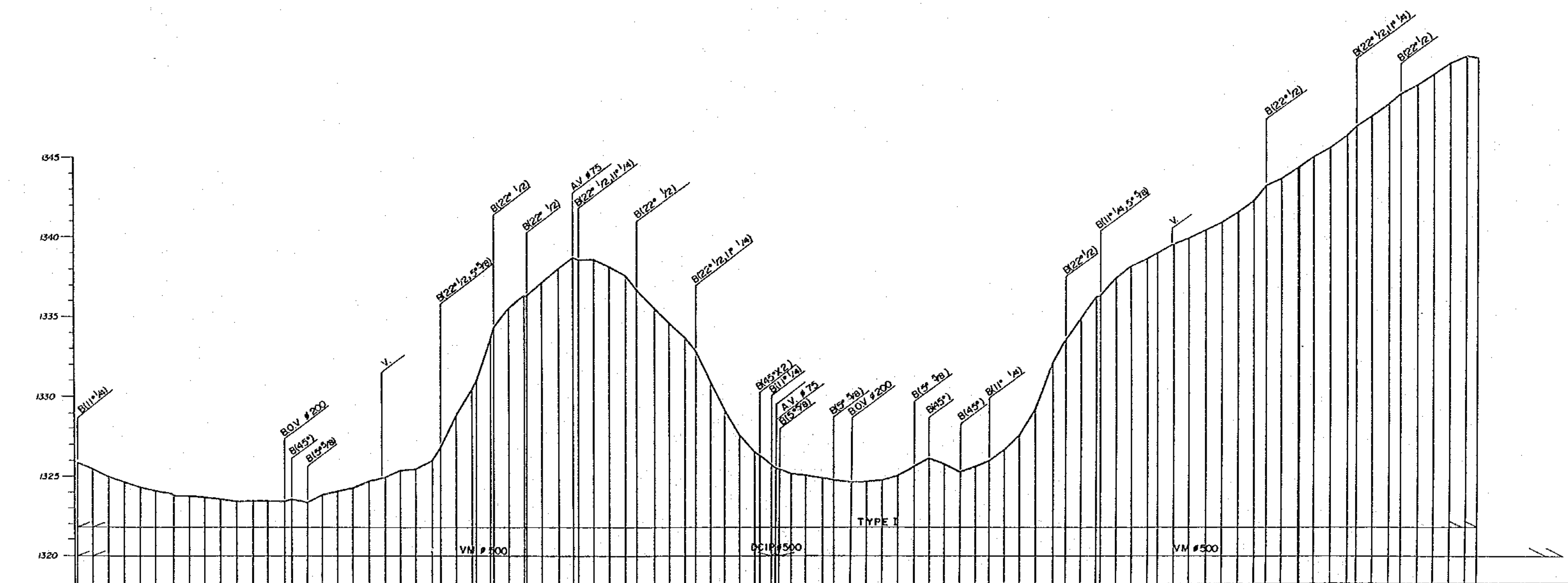


LEGEND

- B. BEND
- B.O.V BLOW OFF VALVE
- A.V AIR VALVE
- A.D AQUE DUKT
- P.R.V PRESSURE REDUCING VALVE
- V. VALVE

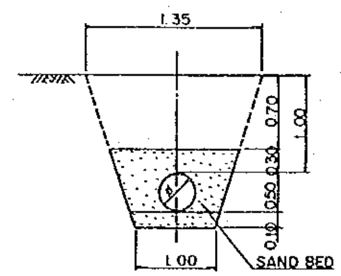
NEPAL WATER SUPPEY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
CONVEYANCE PIPE PLAN AND PROFILE (2/5)			
Date	JULY, 1991	Drawing No.	M-20
JAPAN INTERNATIONAL COOPERATION AGENCY			





PEG NUMBER	GAP DISTANCE IN METER	TOTAL DISTANCE IN METER	EXISTING GROUND LEVEL	PROPOSED PIPE LINE LEVEL
46	123.10	3744.321	1325.883	
47	148.00	3867.621	1323.821	
48	120.10	4015.621	1323.576	
49	70.57	4135.621	1324.946	
50	44.02	4206.191	1327.796	
51	24.16	4250.211	1330.879	
52	61.36	4274.591	1334.373	
53	86.16	4335.751	1335.304	
54	74.57	4381.911	1338.605	
55	72.30	4456.481	1336.712	
56	35.90	4528.781	1332.834	
57	45.40	4565.481	1329.194	
58	93.40	4611.081	1326.317	
59	100.60	4704.481	1324.752	
60	96.00	4805.081	1325.560	
61	93.19	4901.081	1325.880	
62	45.29	4994.271	1333.555	
63	72.46	5039.560	1336.281	
64	135.12	5112.021	1338.927	
65	112.44	5247.141	1343.108	
66	54.47	5359.581	1346.691	
67	93.57	5414.051	1348.754	
68		5507.621	1350.953	

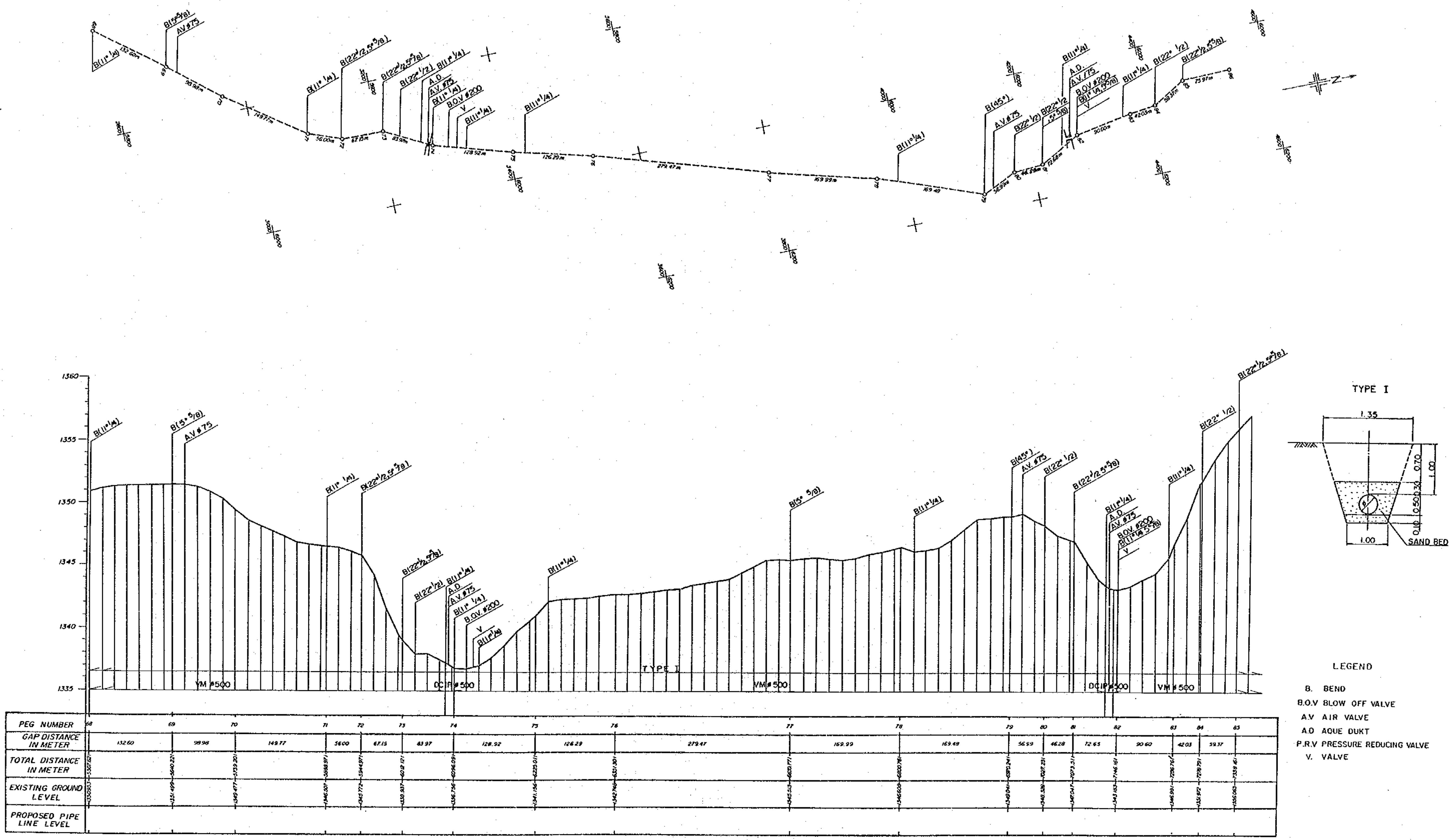
TYPE I



LEGEND

B. BEND
B.OV BLOW OFF VALVE
A.V AIR VALVE
A.D AQUE DUKT
P.R.V PRESSURE REDUCING VALVE
V. VALVE

NEPAL WATER SUPPEY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
CONVEYANCE PIPE PLAN AND PROFILE (3/5)			
Date	JULY, 1991	Drawing No.	M-21
JAPAN INTERNATIONAL COOPERATION AGENCY			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1.00
SAND BED
TYPE I
VM #500
DCIP #500
VM #500
DCIP #500
VM #500
PEG NUMBER
GAP DISTANCE IN METER
TOTAL DISTANCE IN METER
EXISTING GROUND LEVEL
PROPOSED PIPE LINE LEVEL
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
132.60
98.98
149.77
56.00
67.15
83.97
128.92
126.29
279.47
169.99
169.49
56.99
46.28
72.63
90.60
42.03
59.37
LEGEND
B. BEND
B.O.V BLOW OFF VALVE
A.V AIR VALVE
A.O AQUE DUKT
P.R.V PRESSURE REDUCING VALVE
V. VALVE

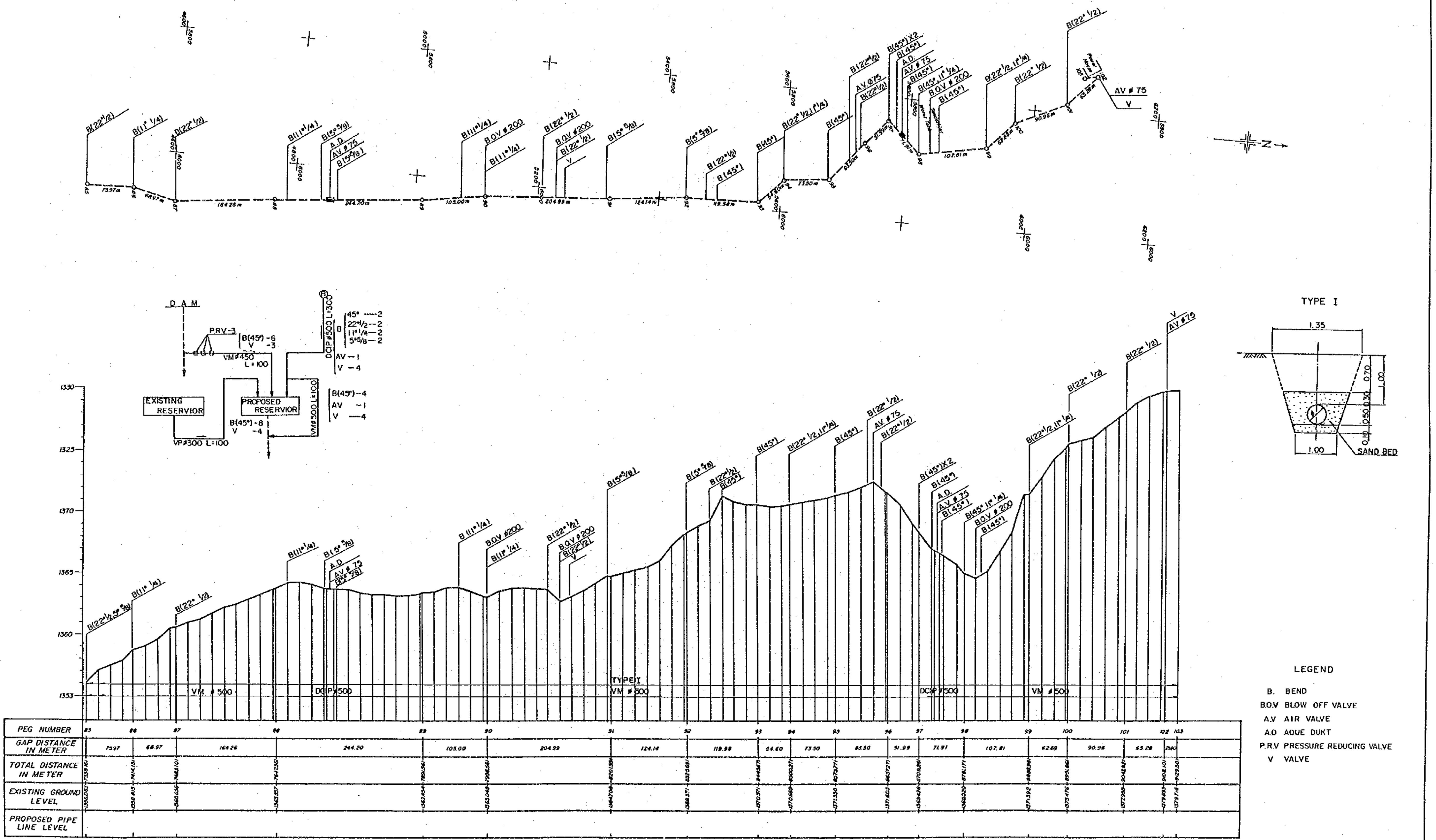
NEPAL WATER SUPPEY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

CONVEYANCE PIPE
PLAN AND PROFILE (4/5)

Date	JULY, 1991	Drawing No.	M-22

JAPAN INTERNATIONAL COOPERATION AGENCY



NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

CONVEYANCE PIPE
PLAN AND PROFILE (5/5)

Date	JULY, 1991	Drawing No.	M-23

JAPAN INTERNATIONAL COOPERATION AGENCY

(2) Bansbari project

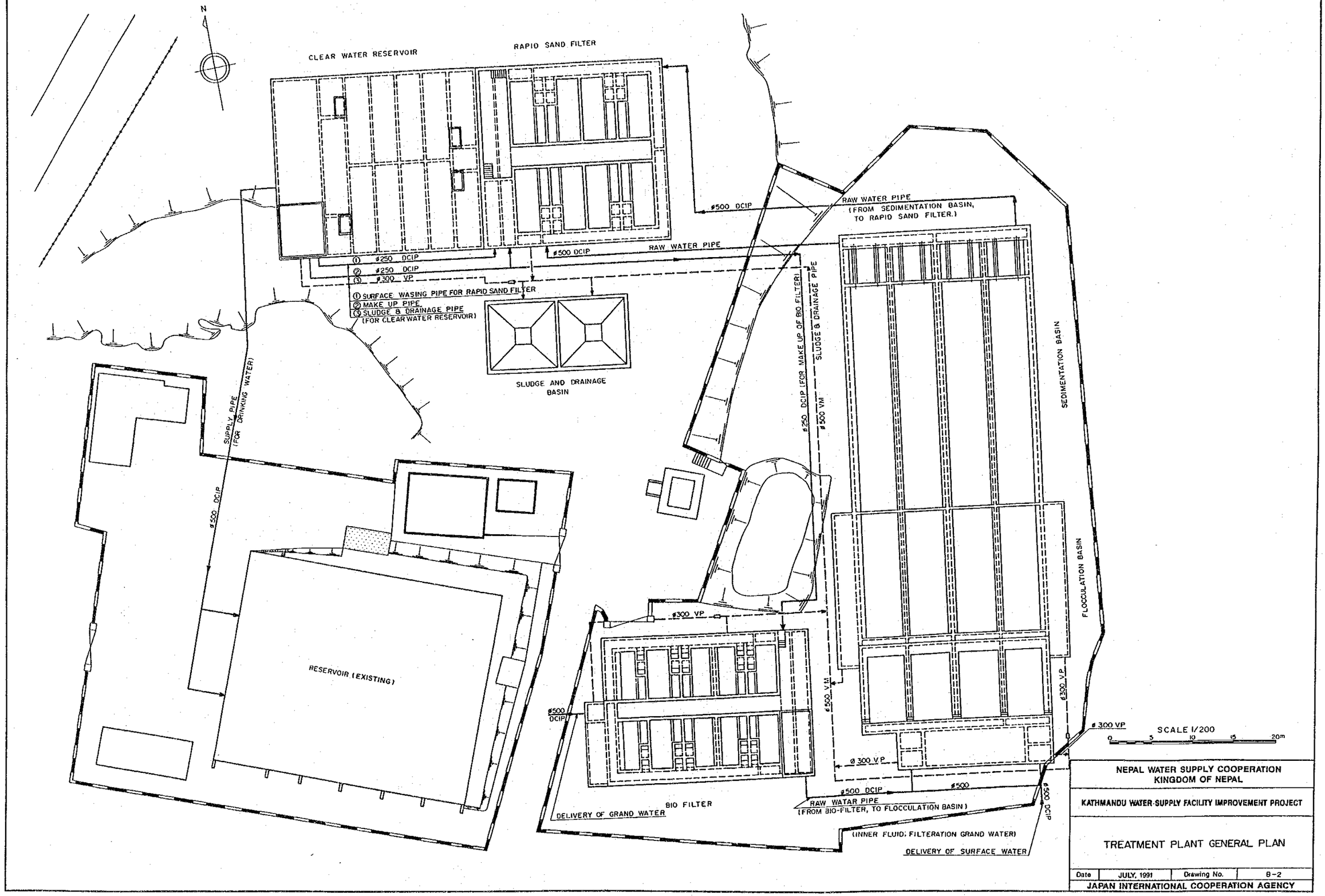
Drawing No.	Title of Drawing
1.	General Plan
2.	Treatment Plant General Plan
3.	Different in Water Level of Treatment Plant
4.	Bio-Filter Plan and Section
5.	Sedimentation Basin Plan and Section
6.	Rapid Sand Filter Plan
7.	Rapid Sand Filter Section
8.	Clear Water Reservoir Plan and Section
9.	Flow Sheet
10.	Flow Diagram of PAC Feeding System
11.	Flow Diagram of Solidum Hypochlorite Feeding System
12.	Flow Diagram of Sodium Hypochlorite Feeding System and Bleaching Powder Feeding System
13.	Electrical Installations Plan
14.	Sub-Station
15.	Wiring List and Power Control Panel
16.	Conveyance Pipe Plan and Profile (1/5)
17.	Conveyance Pipe Plan and Profile (2/5)
18.	Conveyance Pipe Plan and Profile (3/5)
19.	Conveyance Pipe Plan and Profile (4/5)
20.	Conveyance Pipe Plan and Profile (5/5)

GENERAL PLAN

LEGEND

- o Water Intake
- ● Balancing Reservoir
- ◎ Water Treatment Plant
- ◉ Well
- P Type of Pipe
- D Diameter Of Pipe
- --- Proposed Pipeline
- — Existing Pipeline

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL	
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT	
GENERAL PLAN	
Date: JULY, 1991	Drawing No.: 8-1
JAPAN INTERNATIONAL COOPERATION AGENCY	



NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

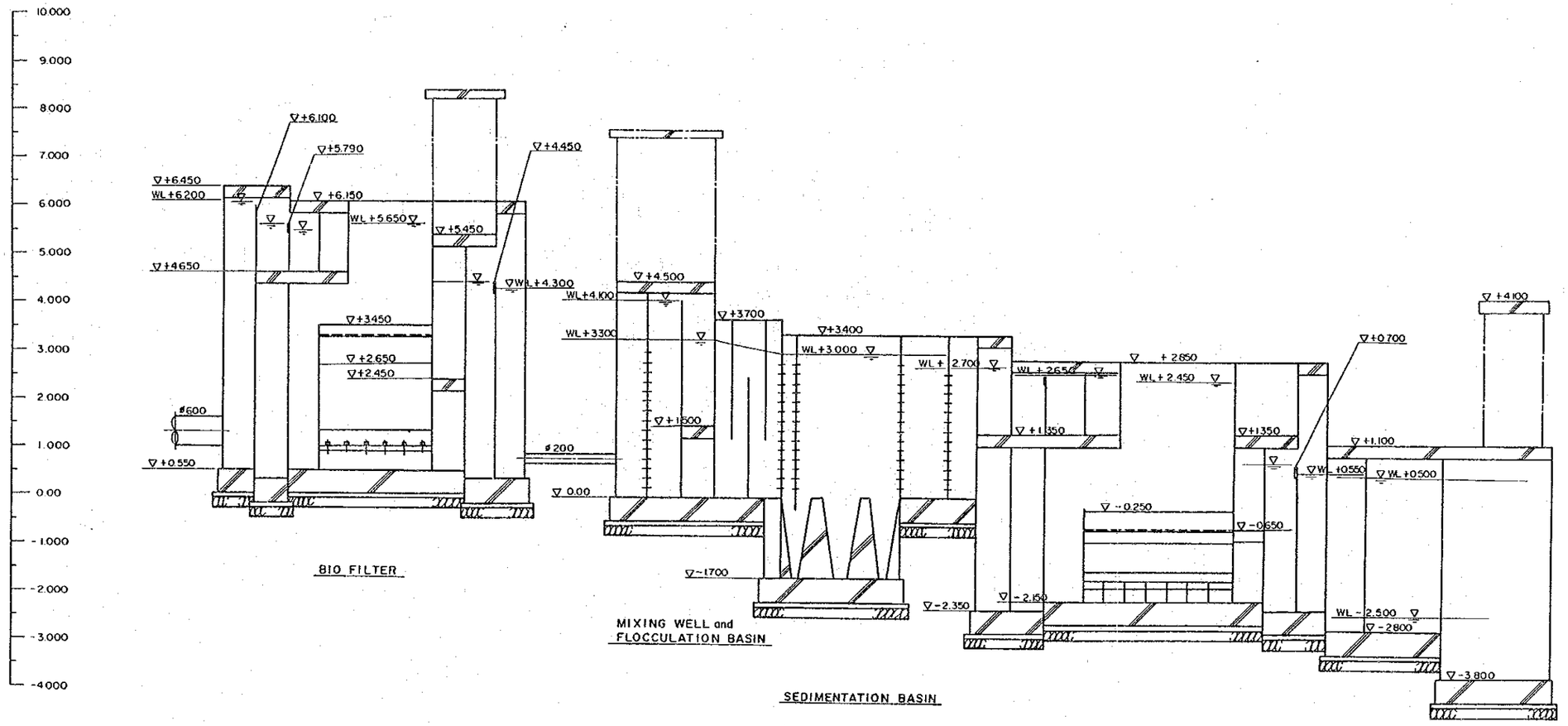
KATHMANDU WATER-SUPPLY FACILITY IMPROVEMENT PROJECT

TREATMENT PLANT GENERAL PLAN

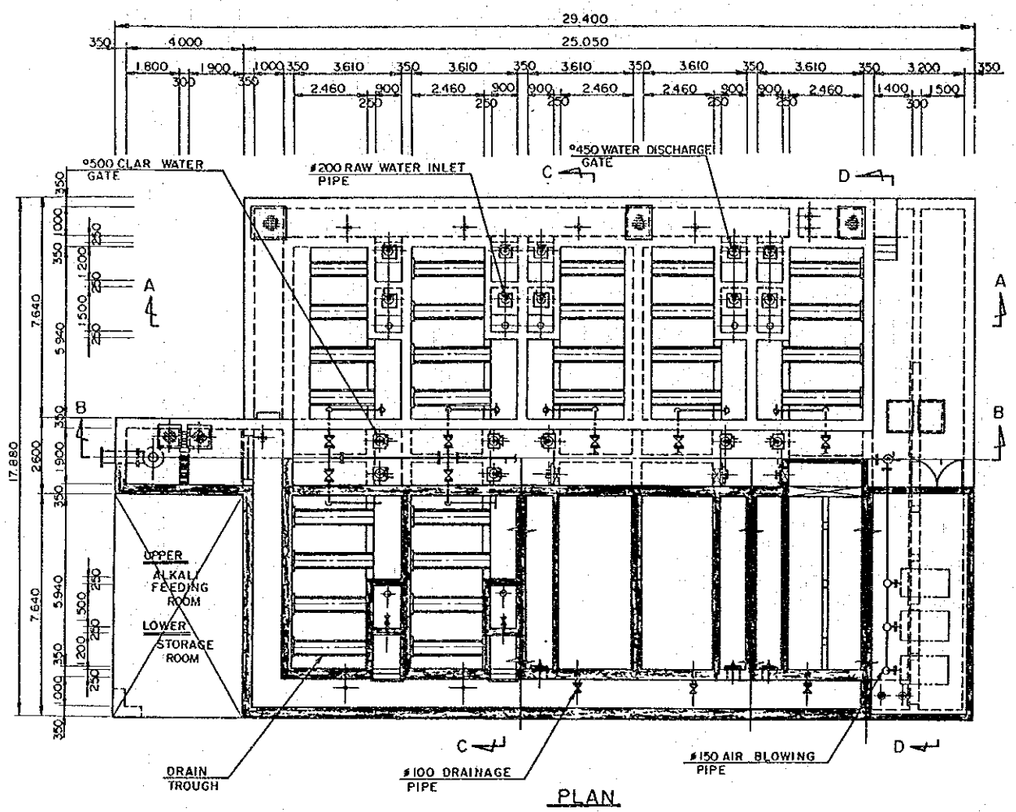
Date	JULY, 1991	Drawing No.	B-2

JAPAN INTERNATIONAL COOPERATION AGENCY

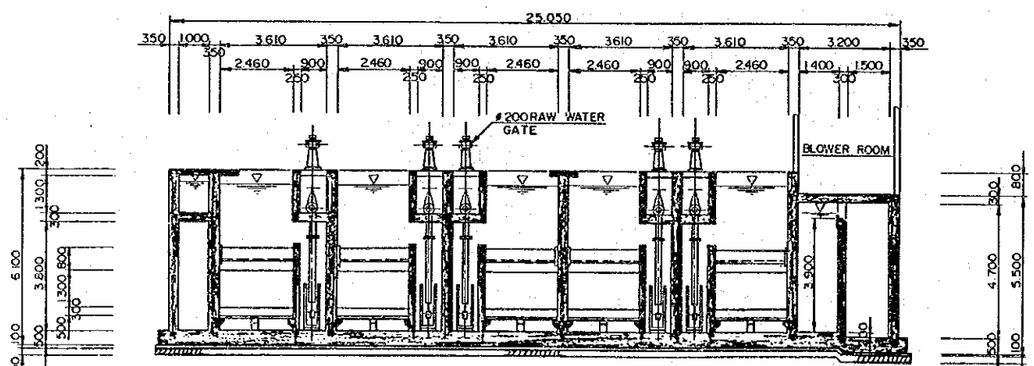
DIFFERNCE IN WATER LEVELS OF TREATMENT PLANT



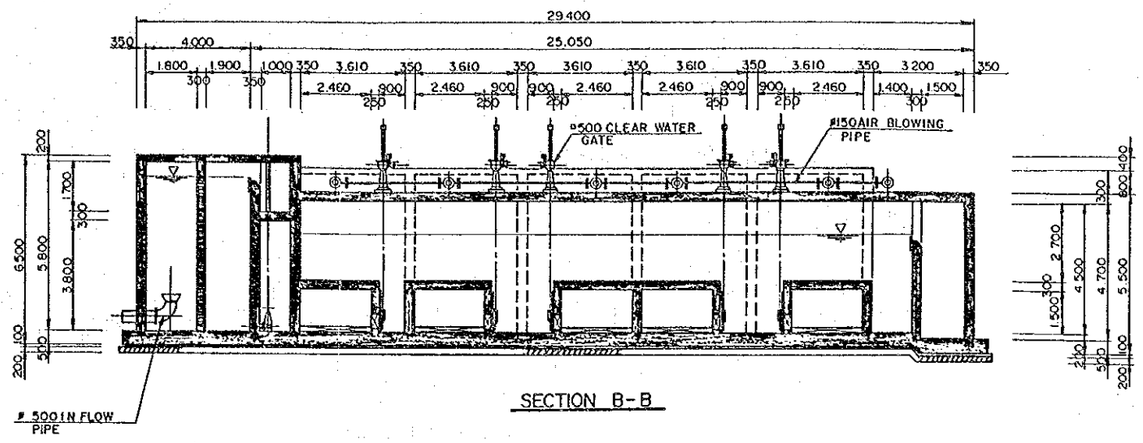
NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
DIFFERENT IN WATER LEVEL OF TREATMENT PLANT			
Date	JULY, 1991	Drawing No.	B-3
JAPAN INTERNATIONAL COOPERATION AGENCY			



PLAN



SECTION A-A



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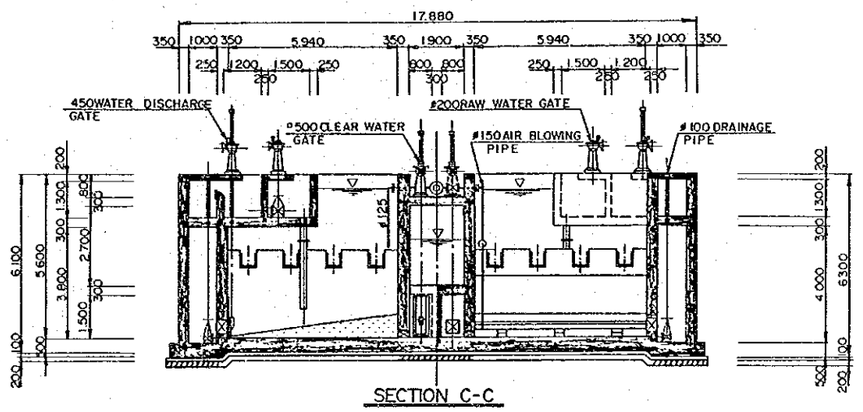
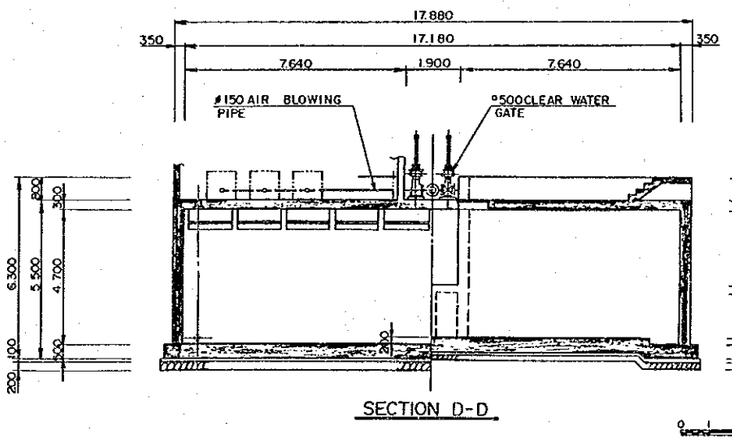


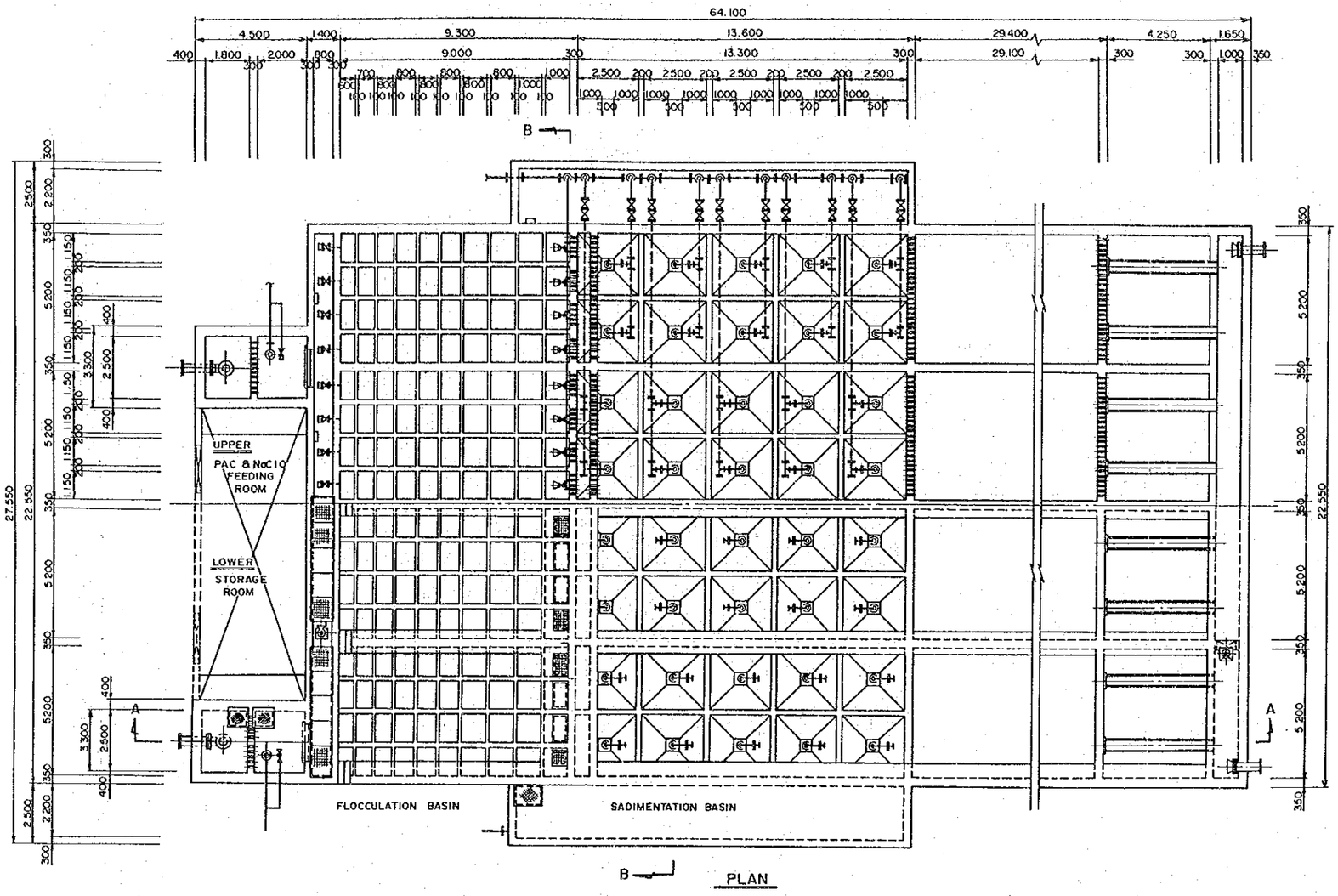
SECTION C-C

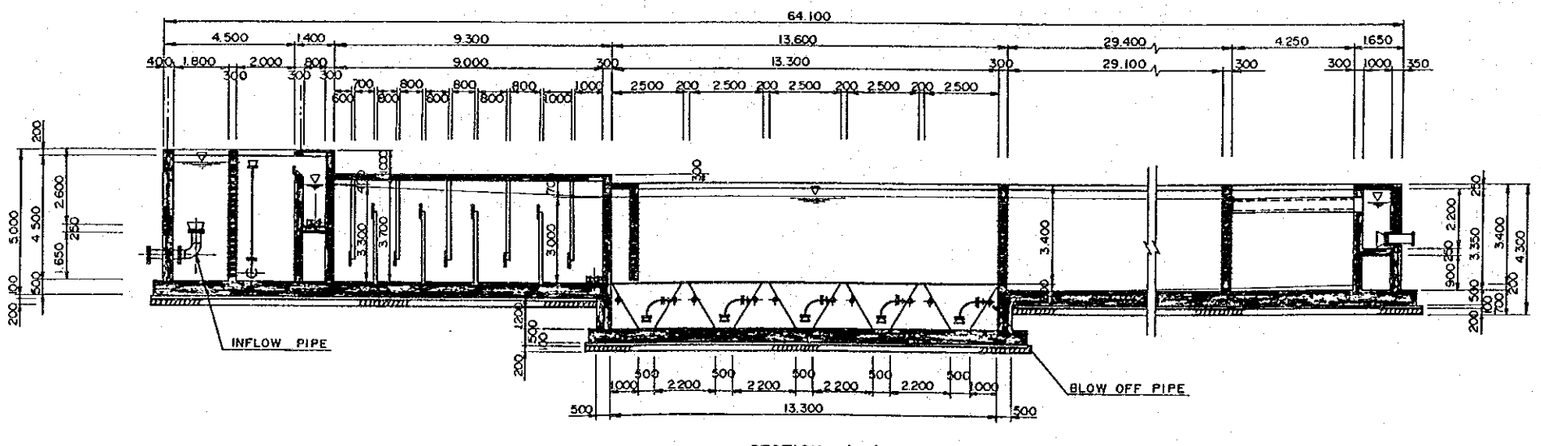


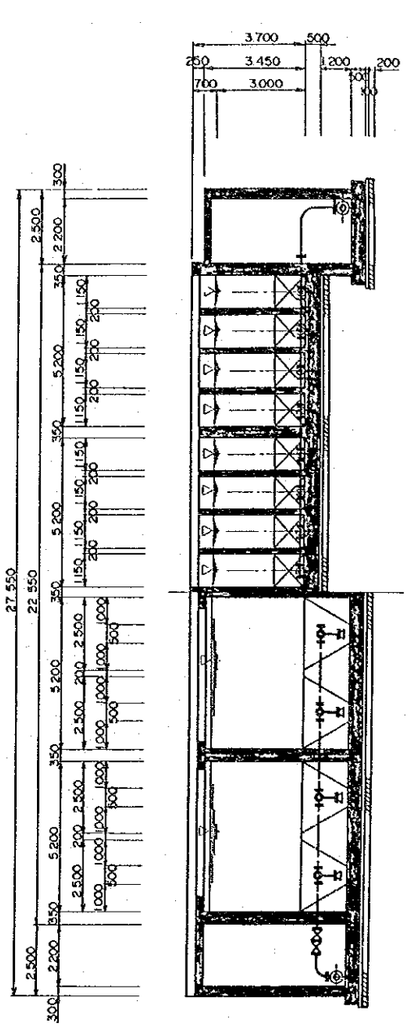
SECTION D-D

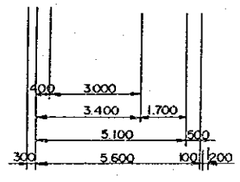
SCALE 1/100

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL	
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT	
BIO FILTER PLAN AND SECTION	
Date: JULY, 1991	Drawing No.: B - 4
JAPAN INTERNATIONAL COOPERATION AGENCY	









SECTION B-B

SCALE 1/100

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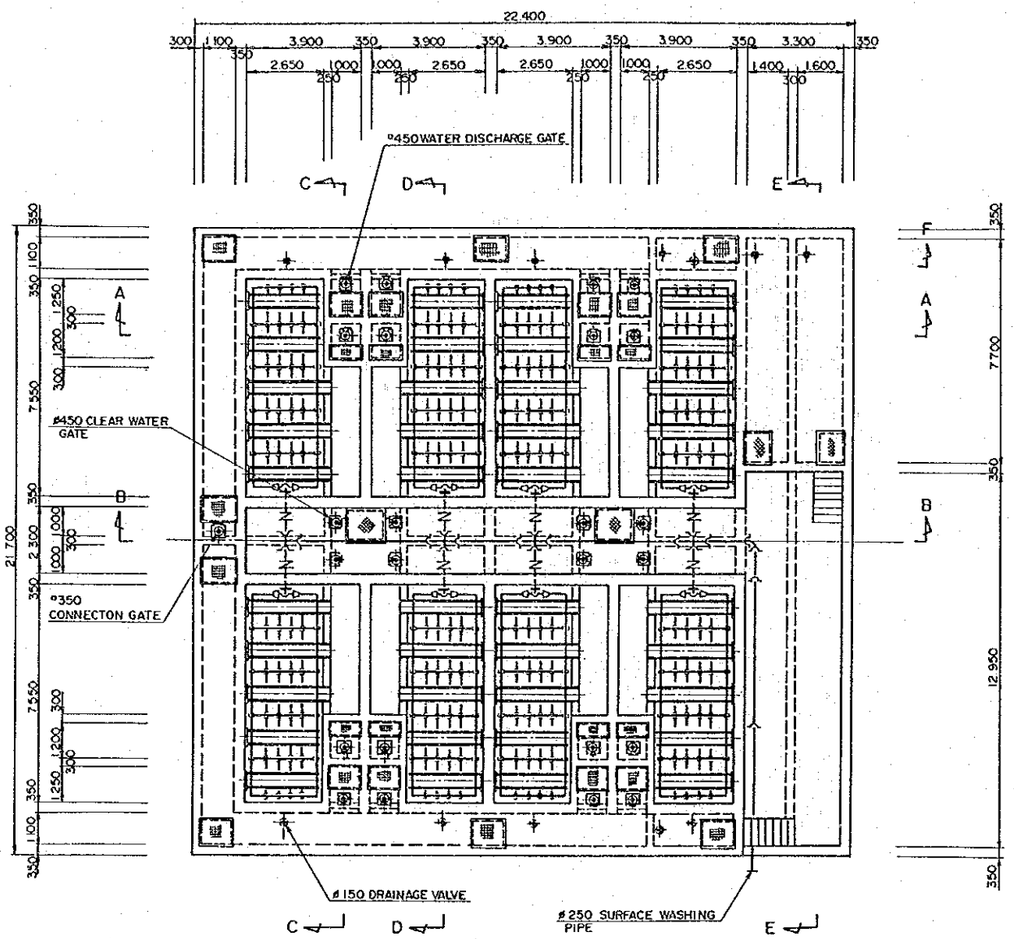
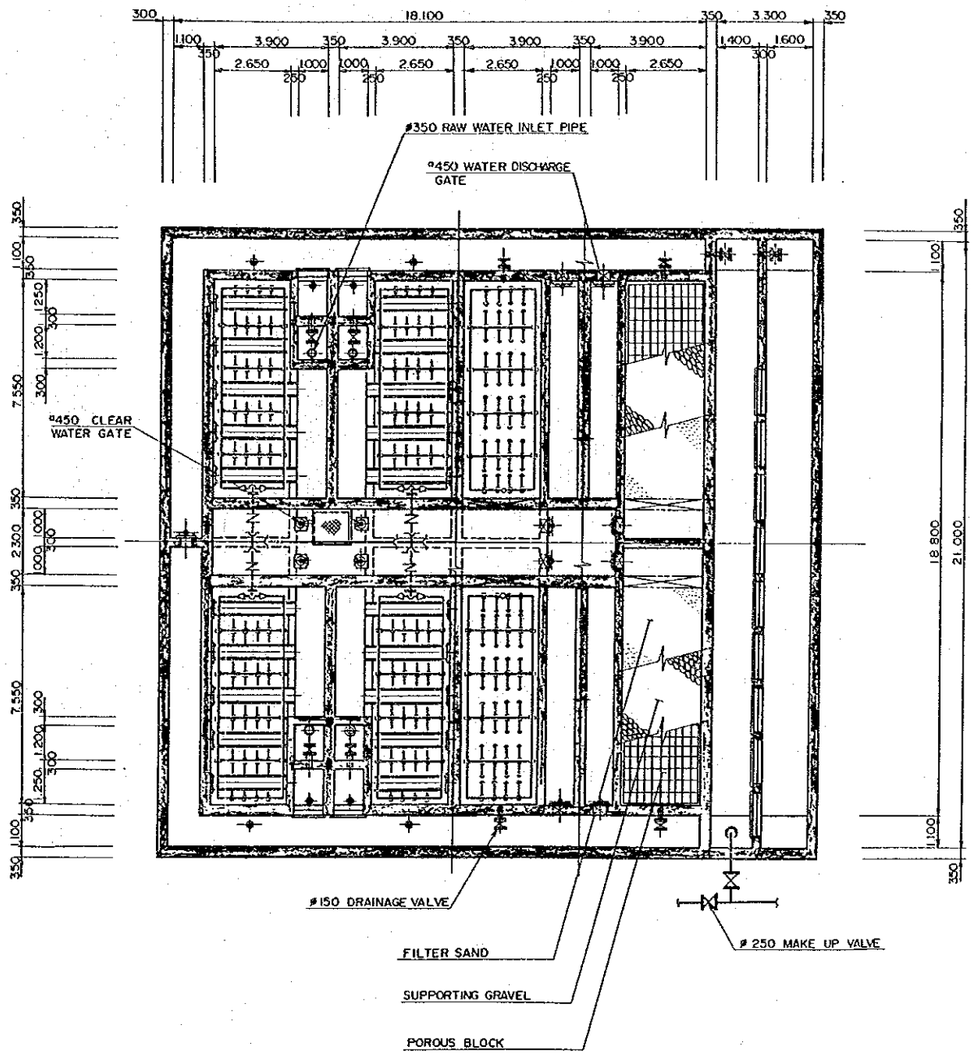
NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
SEDIMENTATION BASIN PLAN AND SECTION			
Date	JULY, 1991	Drawing No.	B-5
JAPAN INTERNATIONAL COOPERATION AGENCY			



PLAN

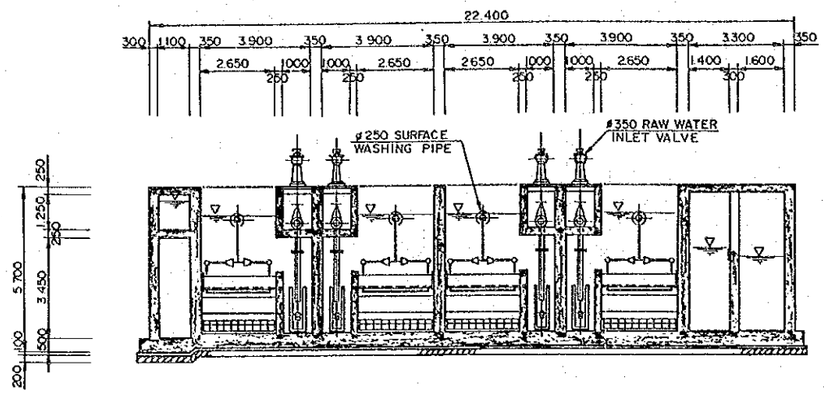


PLAN

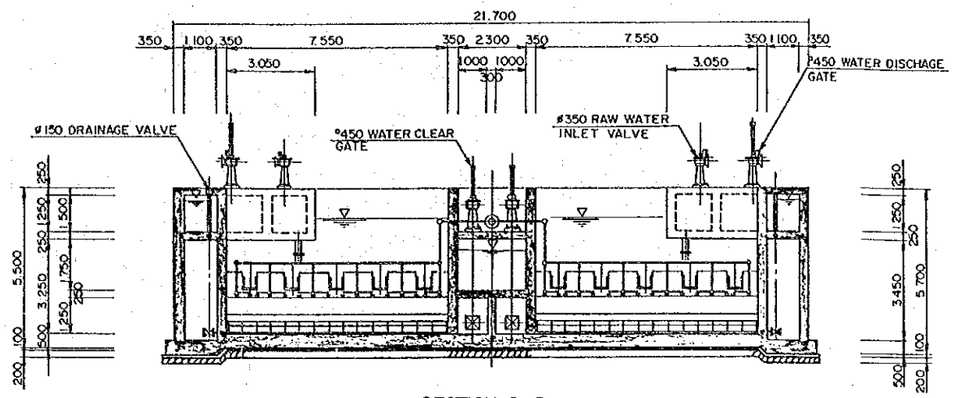
SCALE 1/100

0 1 2 4 6 8 10m

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL	
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT	
RAPID SAND FILTER PLAN	
Date	JULY, 1991 / Drawing No. B-6
JAPAN INTERNATIONAL COOPERATION AGENCY	



SECTION A-A



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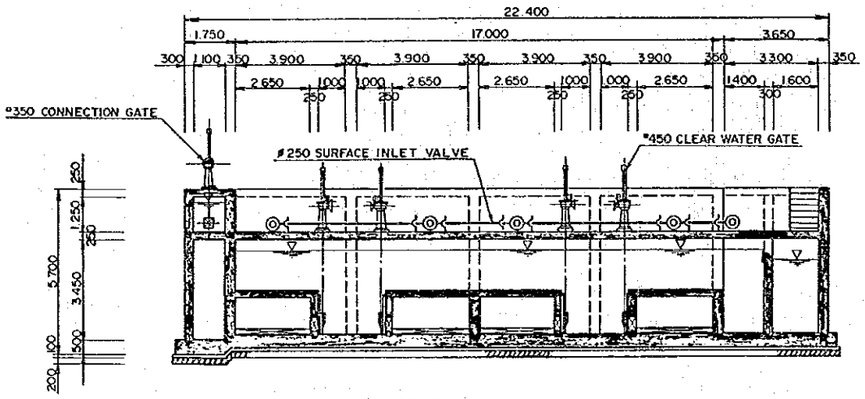

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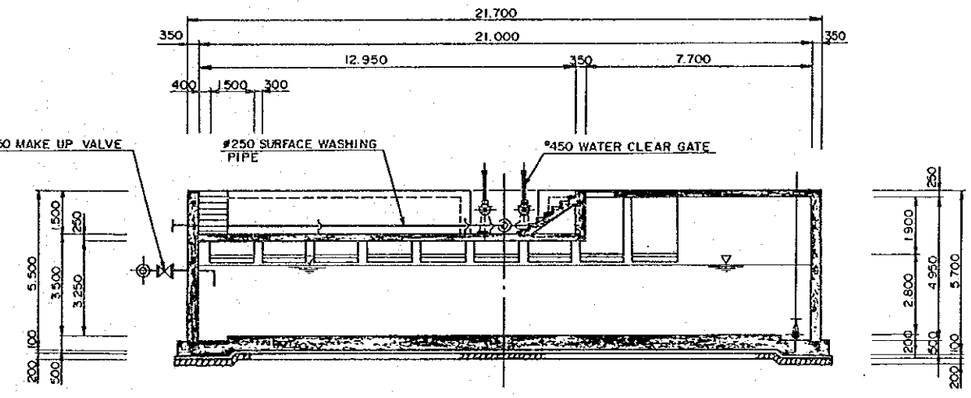

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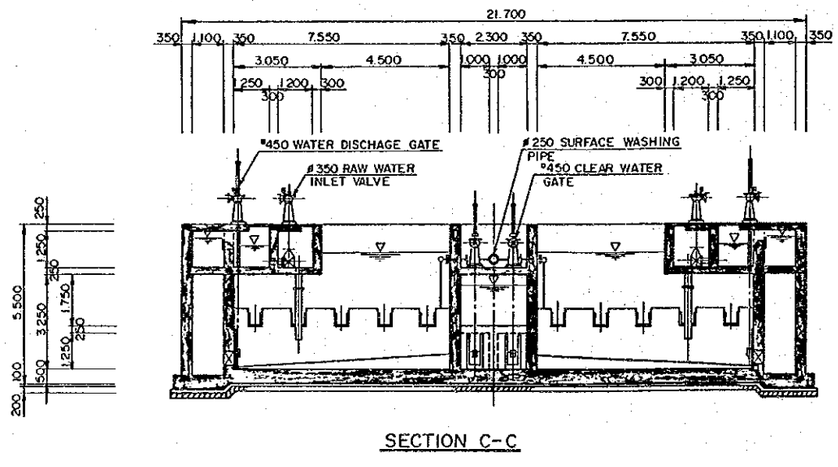
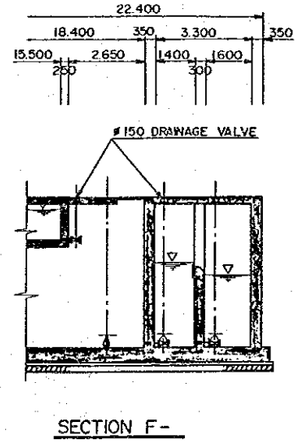


SECTION C-C

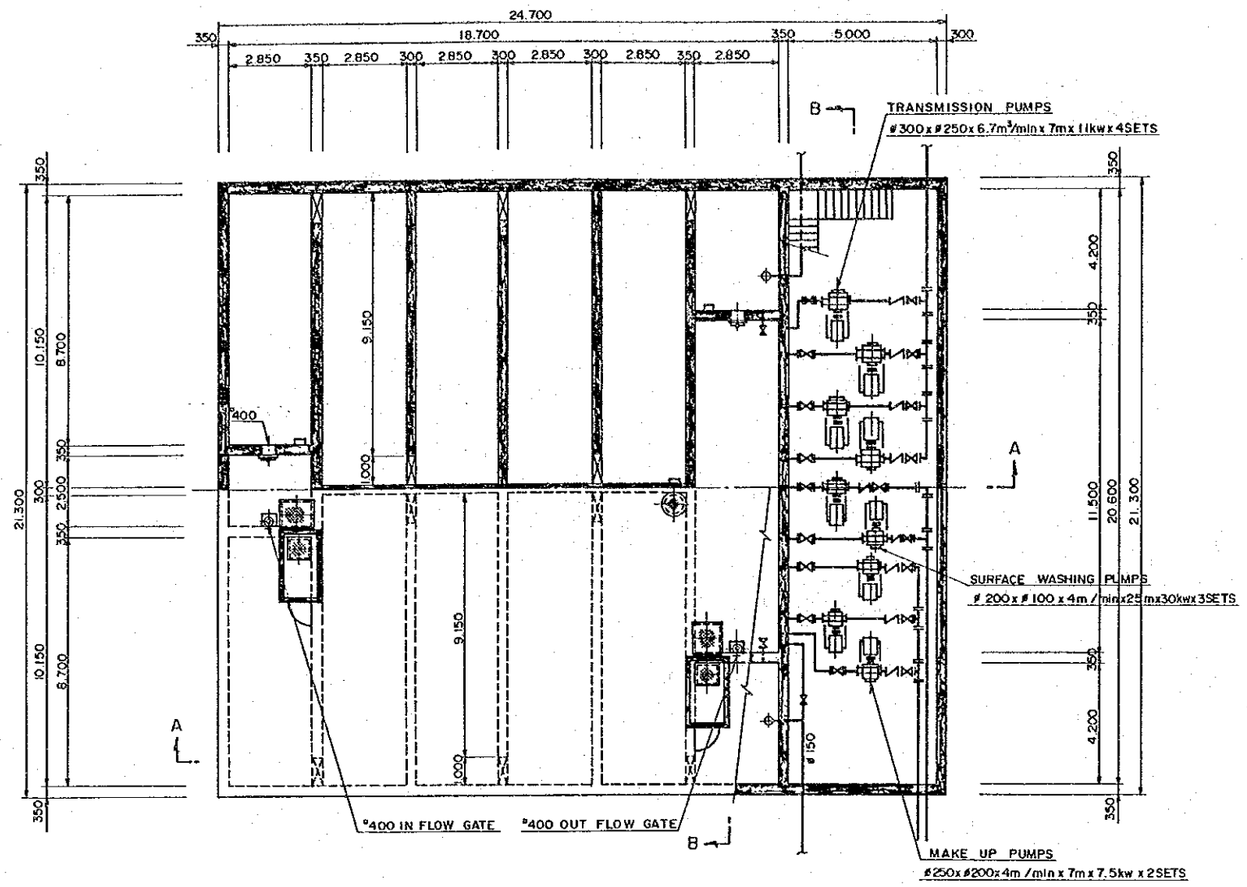


SECTION F-

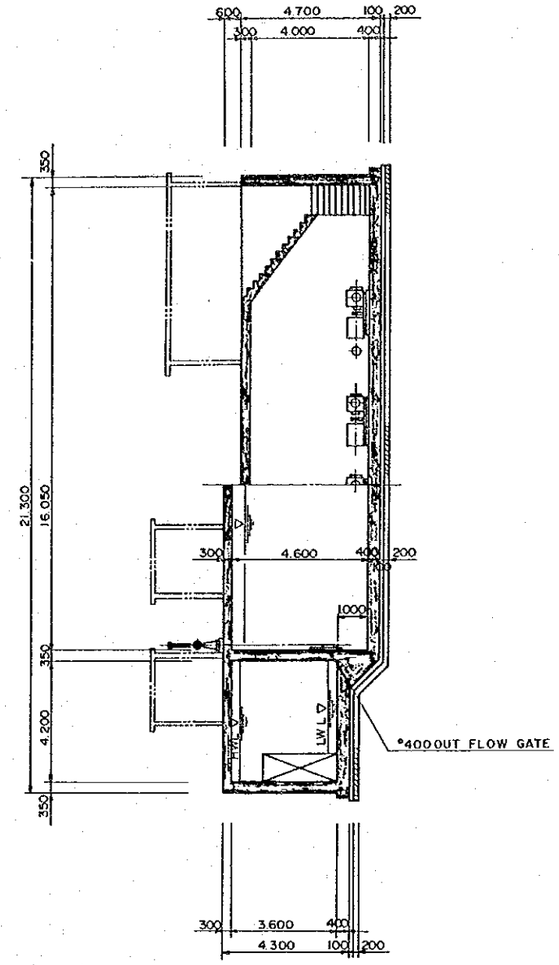
SCALE 1/100

0 1 2 4 6 8 10m

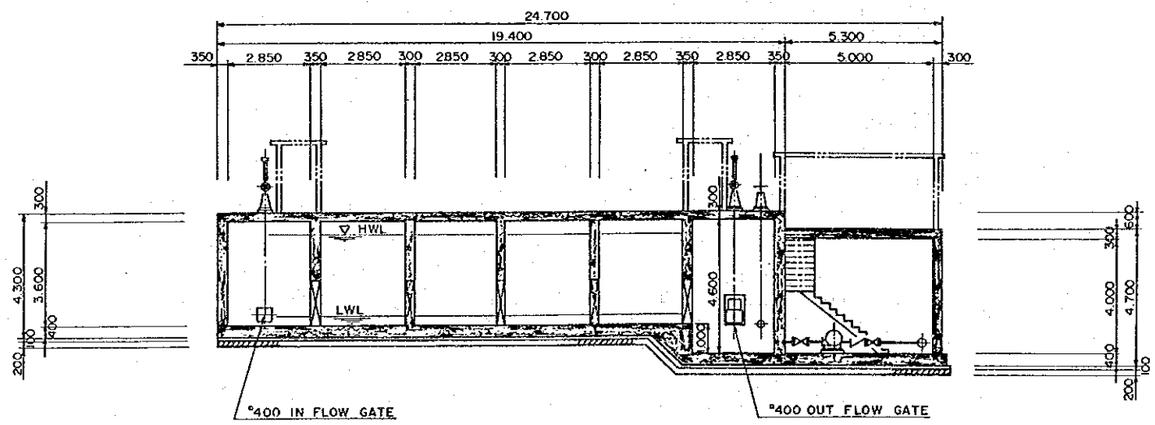
NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL	
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT	
RAPID SAND FILTER SECTION	
Date: JULY, 1991	Drawing No.: B-7
JAPAN INTERNATIONAL COOPERATION AGENCY	



PLAN



SECTION B-B

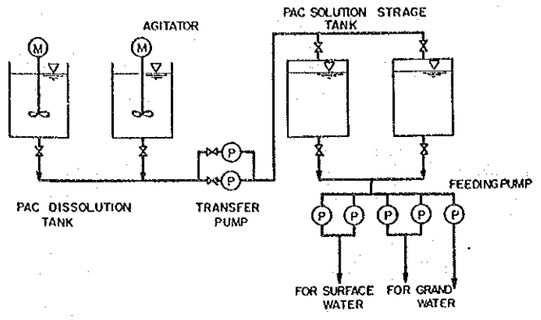


SECTION A-A

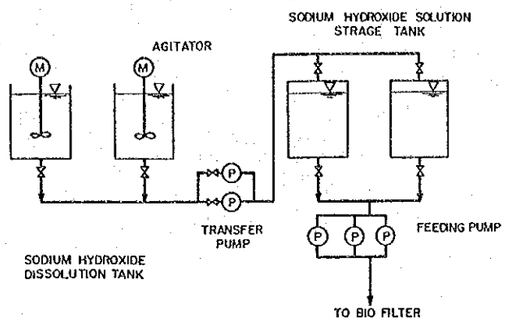
SCALE 1/100

NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL			
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT			
CLEAR WATER RESERVOIR PLAN AND SECTION			
Date	JULY, 1991	Drawing No.	B-8
JAPAN INTERNATIONAL COOPERATION AGENCY			

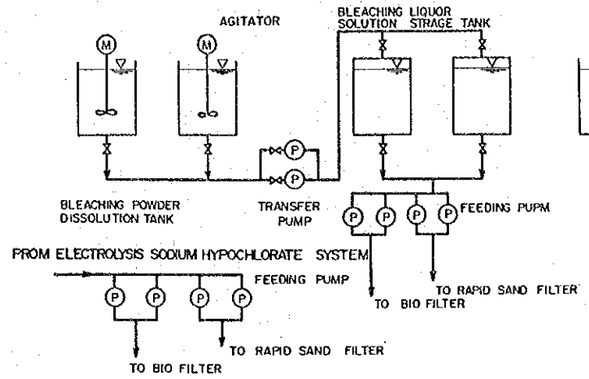
AGGLUTINATION REAGENT FEEDING SYSTEM
PAC(SOLID)FEEDING SYSTEM



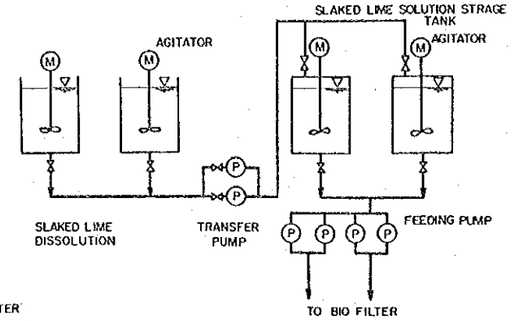
ALKALI REAGENT FEEDING SYSTEM(1)
SODIUM HYDROXIDE FEEDING SYSTEM

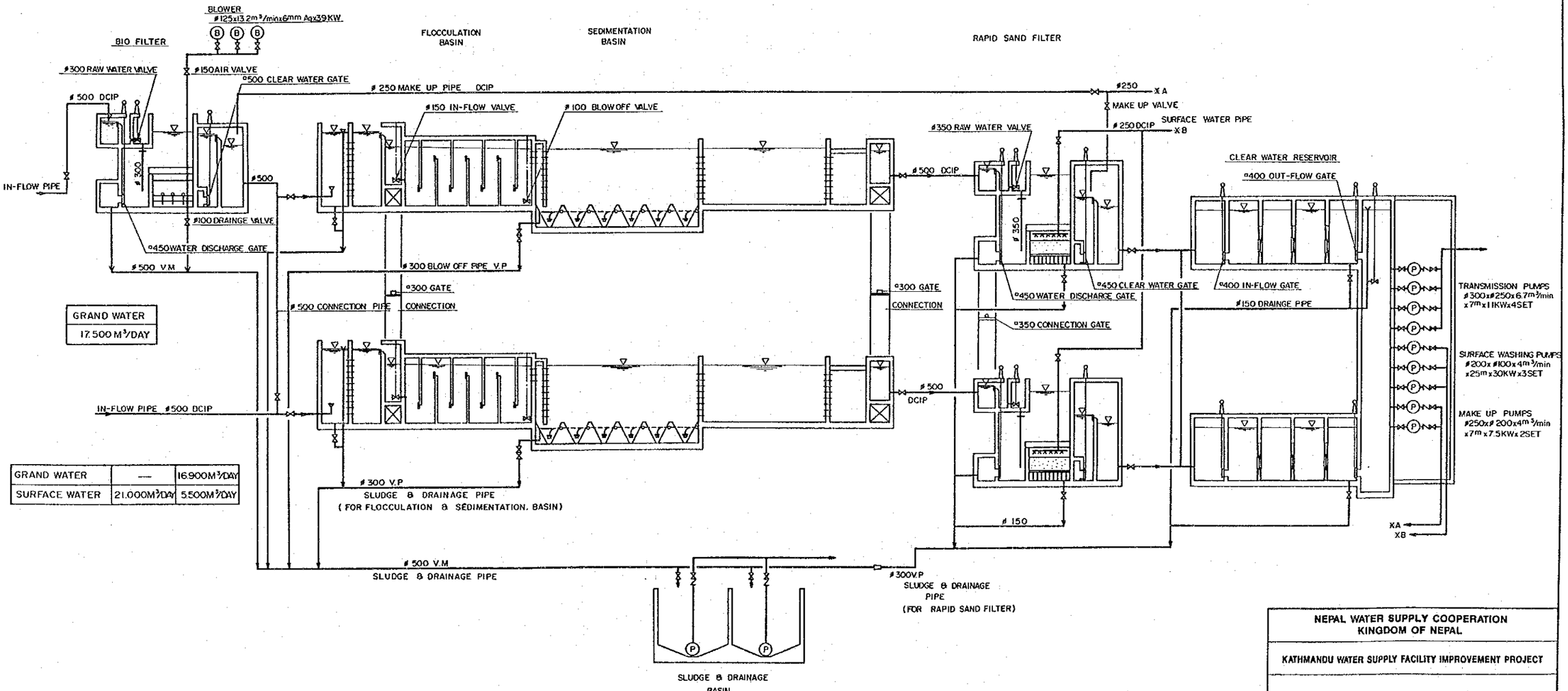


CHLORINATION SYSTEM
BLEACHING POWDER FEEDING SYSTEM



ALKALI REAGENT FEEDING SYSTEM(2)
SLAKED LIME FEEDING SYSTEM





GRAND WATER	---	16.900M³/DAY
SURFACE WATER	21.000M³/DAY	5.500M³/DAY

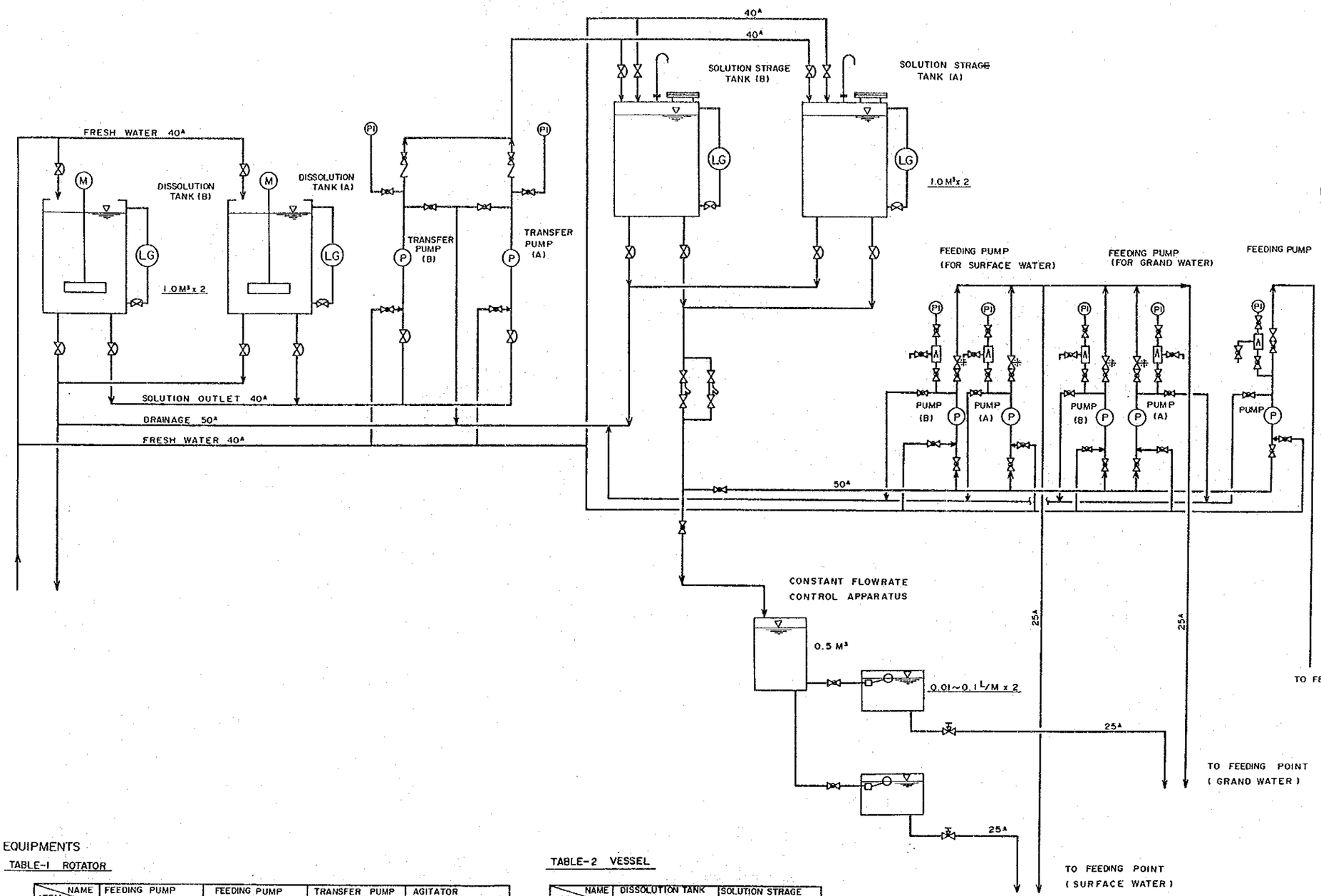
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW SHEET

Date	JULY, 1991	Drawing No.	B - 9

JAPAN INTERNATIONAL COOPERATION AGENCY



NOTES

A) DESIGN ITEMS

A-1. QUANTITY OF FLOW

CASE / WATER	1	2
GRAND	16,900m³/day	---
SURFACE	5,500m³/day	21,000m³/day
TOTAL	22,400m³/day	21,000m³/day

A-2. RATE OF FEEDING

ITEM / WATER	SEASON	MEAN	MAXIMUM
GRAND	---	15.6mg/l	40mg/l
SURFACE	RAIN-FALL	22.2mg/l	
	DRY	15.6mg/l	

B) SYMBOLS

VALVES

- BALL VALVE
- CHECK VALVE
- DIAPHRAGM VALVE
- BACK PRESSURE REGULATION VALVE
- GATE VALVE
- FLOW CONTROL VALVE
- BALL TAP

EQUIPMENTS

ROTATOR

- (M) MOTOR
- (P) PUMP

OTHERS

- (PI) PRESSURE GAUGE
- (LG) LEVEL GAUGE
- AIR CHAMBER
- Y-TYPE STRAINER

EQUIPMENTS

TABLE-1 ROTATOR

NAME / ITEM	FEEDING PUMP	FEEDING PUMP	TRANSFER PUMP	AGITATOR
TYPE	DIAPHRAGM	DIAPHRAGM	MAGUNET	OSCILLATION
ELECTRICAL	0.2KWx200Vx50Hz	0.2KWx200Vx50Hz	0.4KWx200Vx50Hz	2.2KWx200Vx50Hz
CAPACITY	1.7 l/min	0.85 l/min	40 l/min x 12m	196 cpm
QUANTITY	1	4	2	2
SIZE	10A	10A	25A	---
TAG NO		A, B, C, D	A, B	A, B
DESCRIPTION		FEEDING FOR GRAND WATER & SURFACE WATER	TRANSFEROR OF PAC SOLUTION	AGITATOR OF PAC HYDROLYSIS

TABLE-2 VESSEL

NAME / ITEM	DISSOLUTION TANK	SOLUTION STRAGE TANK
TYPE	ROUND-VERTICAL	ROUND-VERTICAL
CAPACITY	0.5 m³	1.0 m³
SIZE	φ890mm x H1040mm	φ1140mm x H1200mm
MATERIAL	PE	PE
QUANTITY	2	2
TAG NO	A, B	A, B
DESCRIPTION	OPEN TYPE PAC(SOLID) HYDROLYSIS	CLOSE TYPE STRAGE OF PAC SOLUTION

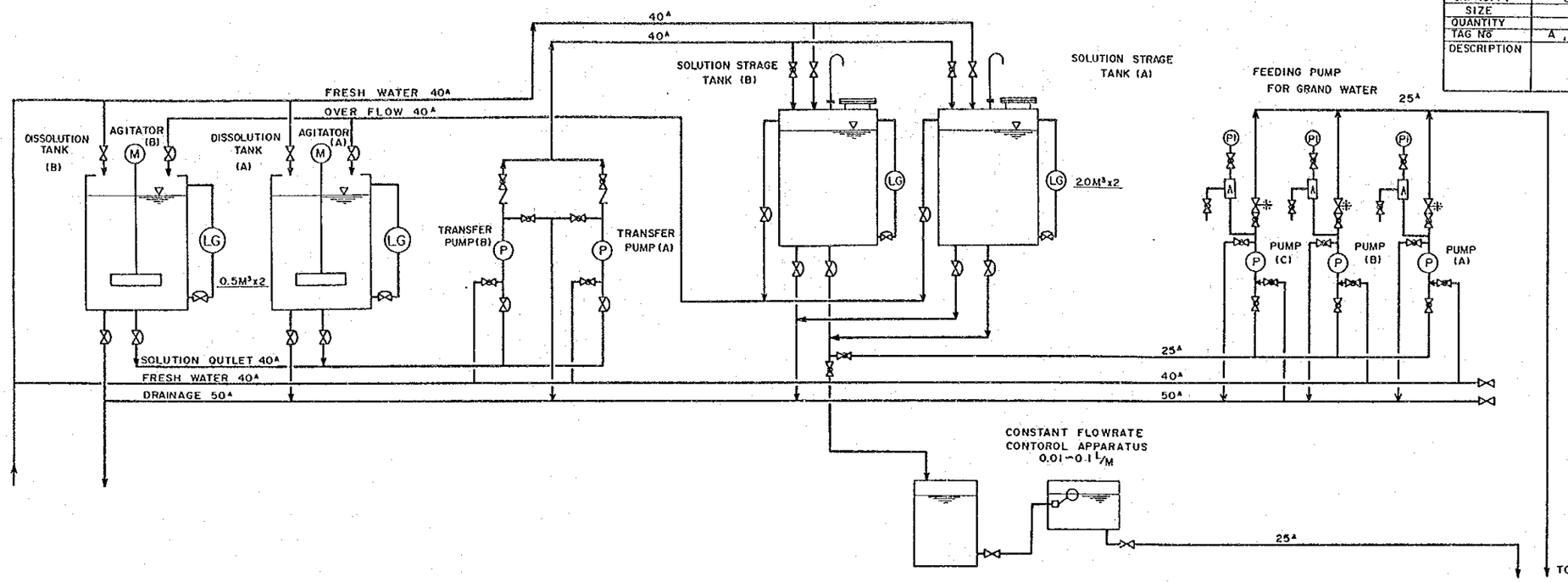
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF PAC FEEDING SYSTEM

Date	JULY, 1991	Drawing No.	B-10

JAPAN INTERNATIONAL COOPERATION AGENCY



NOTE

A) EQUIPMENTS

ITEM \ NAME	FEEDING PUMP	SOLUTION STRAGE TANK
TYPE	DIAPHRAGM	ROUND-VERTICAL
ELECTRICAL	0.2KW x 200V x 50Hz	—
CAPACITY	0.85 ℓ/min	2.0m³
SIZE	10A	ϕ1400mm x H 1580mm
QUANTITY	3	2
TAG NO	A, B, C	A, B
DESCRIPTION		MATERIAL PE

NOTE
OTHER EQUIPMENTS
SEE SHEET OF FLOW DIAGRAM
SODIUM HYPOCHLORATE

B) DESIGN ITEM

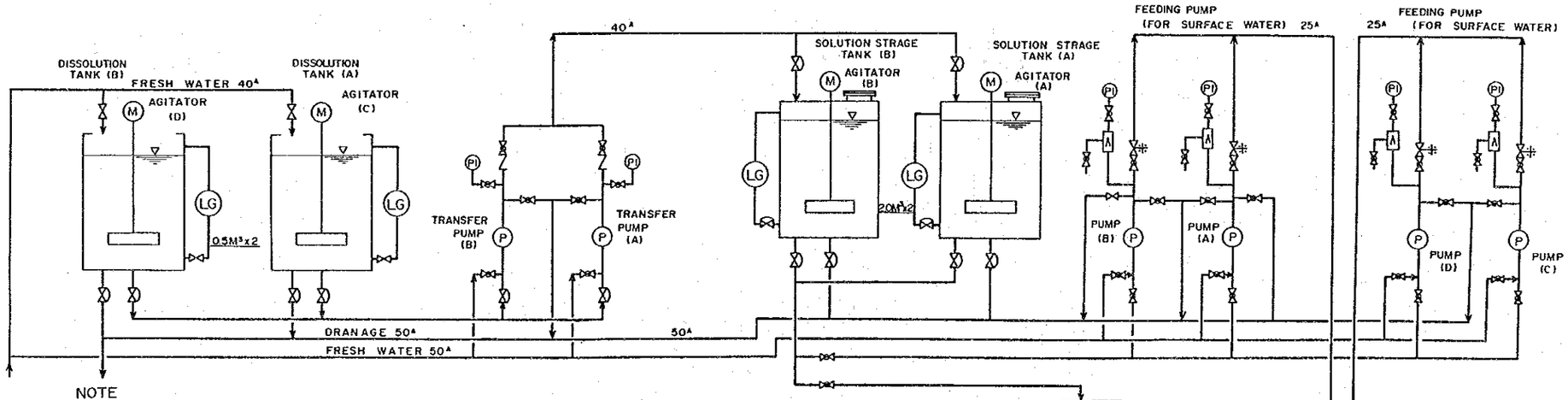
B-1. QUANTITY OF FLOW

GRAND WATER 17,600m³/day

B-2. RATE OF FEEDING

MEAN 20 mg/ℓ

FLOW DIAGRAM FOR SLAKED LIME FEEDING



NOTE

A) EQUIPMENTS

ITEM \ NAME	TRANSFER PUMP	FEEDING PUMP		AGITATOR	SOLUTION STRAGE TANK
TYPE	MAGUNET	DIAPHRAGM		OSCILLATION	ROUND-VERTICAL
ELECTRICAL	3.7KW x 200V x 50Hz	0.2KW x 200V x 50Hz		2.2KW x 200V x 50Hz	—
CAPACITY	40 ℓ/min x 12m	0.85 ℓ/min	0.50 ℓ/min	196 cpm	2.0m³
SIZE	25A	10A	10A	—	ϕ1400mm x H1580mm
QUANTITY	2	2	2	4	2
TAG NO	A, B	A, B	C, D	A, B, C, D	A, B
DESCRIPTION	TRANSFEOR OF SLAKED LIME Sol.	FOR SURFACE WATER		AGITATOR OF SLAKED LIME HYDROLYSIS	STRAGE OF SLAKED LIME SOLUTION

NOTE
OTHER EQUIPMENTS (DISSOLUTION TANK, etc)
SEE SHEET OF FLOW DIAGRAM SODIUM HYPOCHLORATE.

B) DESIGN ITEMS

B-1. QUANTITY OF FLOW

WATER \ ITEM	MINIMUM	MAXIMUM
SURFACE	5,500m³/day	21,000m³/day

B-2. RATE OF DOSING

WATER \ ITEM	SEASON	MEAN
SURFACE	RAIN-FALL	20mg/ℓ
	DRY	5mg/ℓ

NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

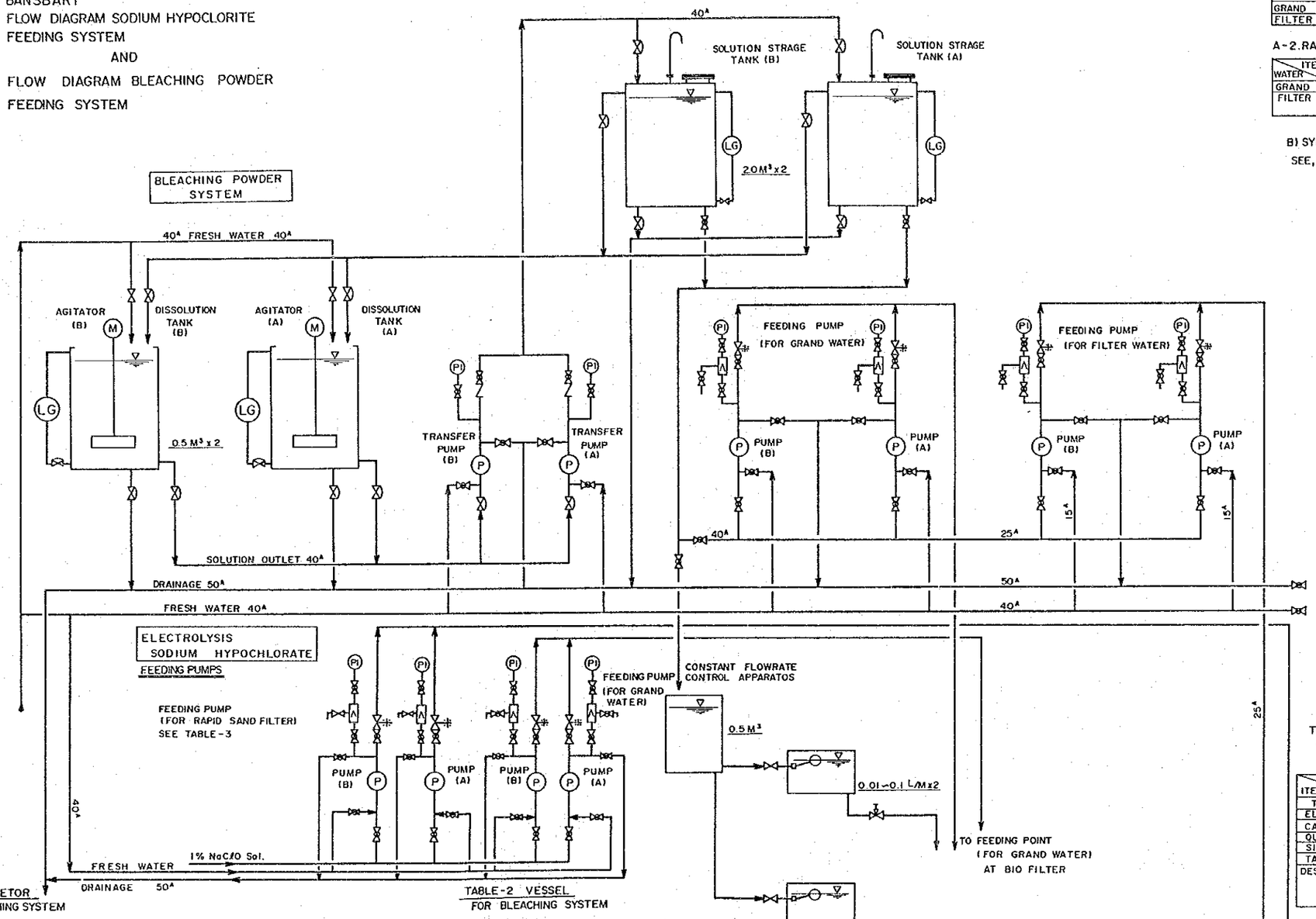
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF SOLIDUM HYPOCHIORITE FEEDING SYSTEM

Date	JULY, 1991	Drawing No.	B-11

JAPAN INTERNATIONAL COOPERATION AGENCY

BANSBARY
FLOW DIAGRAM SODIUM HYPOCLORITE FEEDING SYSTEM
AND
FLOW DIAGRAM BLEACHING POWDER FEEDING SYSTEM



EQUIPMENTS

TABLE-1 ROTETOR FOR BLEACHING SYSTEM

ITEM \ NAME	FEEDING PUMP	FEEDING PUMP	TRANSFER PUMP	AGITATOR
TYPE	DIAPHRAGM	DIAPHRAGM	MAGUNET	OSCILLATION
ELECTRICAL	0.2KW x 200V x 50Hz	0.2KW x 200V x 50Hz	0.4KW x 200V x 50Hz	2.2KW x 200V x 50Hz
CAPACITY	0.85 ℓ/min	0.50 ℓ/min	40 ℓ/min x 12m	196 cpm
QUANTITY	2	2	2	2
SIZE	10A	10A	25A	
TAG NO	A , B	A , B	A , B	A , B
DESCRIPTION	FEEDING FOR FILTER WATER	FEEDING FOR GRAND WATER	TRANSFEROR OF BLEACHING LIQUOR	AGITATOR OF BLEACHING POWDER HYDROLYSIS

TABLE-2 VESSEL FOR BLEACHING SYSTEM

ITEM \ NAME	DISSOLUTION TANK	SOLUTION STRAGE TANK
TYPE	ROUND-VERTICAL	ROUND-VERTICAL
CAPACITY	0.5 m3	1.0 m3
SIZE	φ890mm x H1040mm	φ1140mm x H1200
MATERIAL	PE	PE
QUANTITY	2	2
TAG NO	A , B	A , B
DESCRIPTION	OPEN TYPE BLENCHING POWDER HYDROLYSIS	CLOSE TYPE STRAGE OF BLEACHING LIQUOR

NOTES

A) DESIGN ITEMS

A-1. QUANTITY OF FLOW

ITEM \ WATER	MINIMUM	MAXIMUM	DESCRIPTION
GRAND	—	17,600m/day	OXYDATION
FILTER	21,000m/day	22,400m/day	STERILIZE

A-2. RATE OF DOSING

ITEM \ WATER	SEASON	MEAN QUANTITY	DESCRIPTION
GRAND	—	2.1 mg/ℓ	OXYDATION
FILTER	RAIN-FALL	2.5 mg/ℓ	STERILIZE
	DRY	1.5 mg/ℓ	

B) SYMBOLS

SEE, SHEET OF FLOW DIAGRAM PAC FEEDING SYSTEM

TABLE-3. FEEDING PUMPS
(ELECTOLYSIS SODIUM HYPOCHLORATE)

ITEM \ NAME	FEEDING PUMP	FEEDING PUMP
TYPE	DIAPHRAGM	DIAPHRAGM
ELECTRICAL	0.2KW x 200V x 50Hz	0.2KW x 200V x 50Hz
CAPACITY	6.0 ℓ/min	2.8 ℓ/min
QUANTITY	2	2
SIZE	10A	10A
TAG NO	A , B	A , B
DESCRIPTION	FEEDING FOR GRAND WATER	FEEDING FOR FILTER WATER

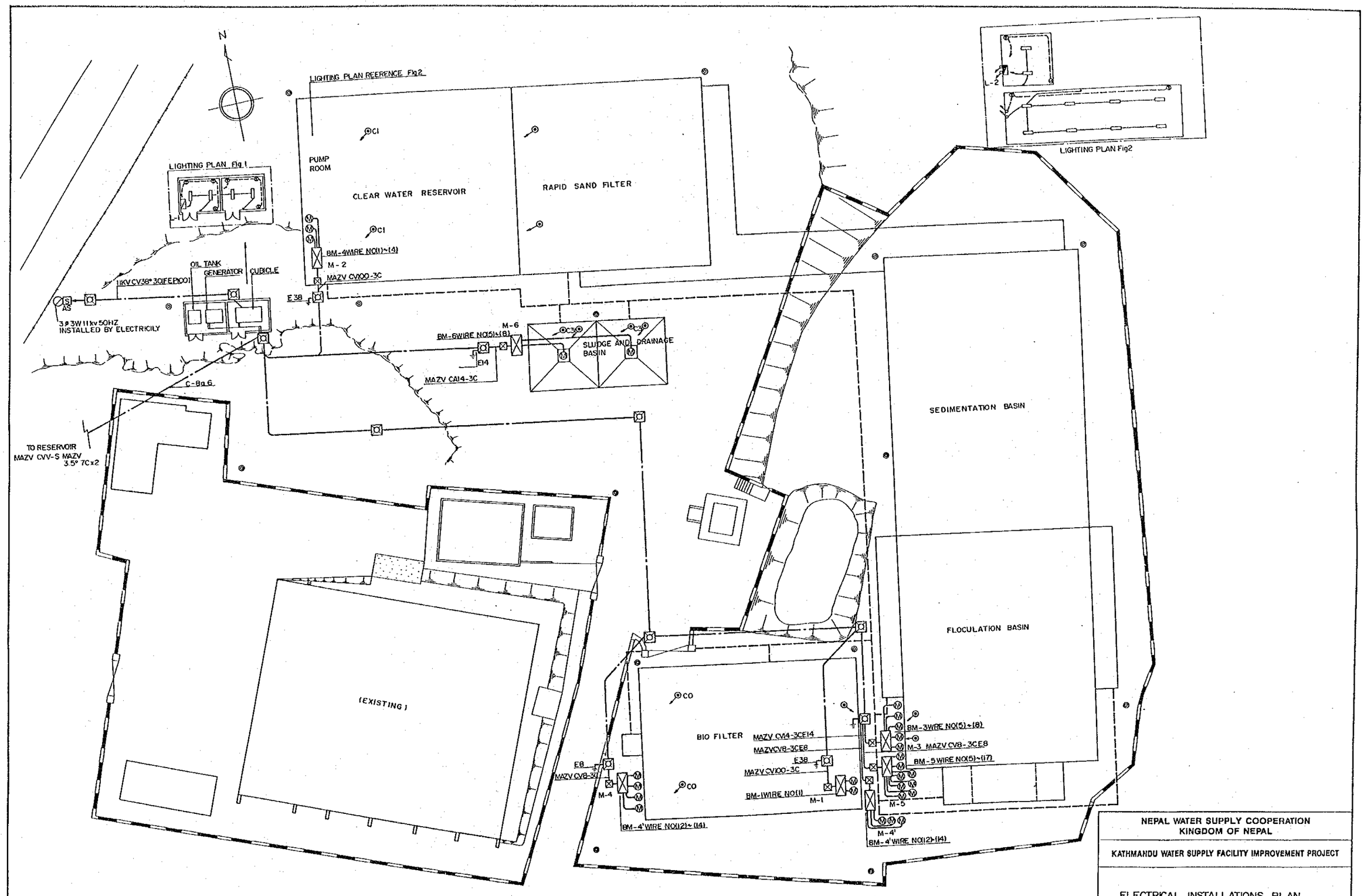
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

FLOW DIAGRAM OF SODIUM HYPOCHLORITE FEEDING SYSTEM AND BLEACHING POWDER FEEDING SYSTEM

Date	JULY, 1991	Drawing No.	B-12

JAPAN INTERNATIONAL COOPERATION AGENCY



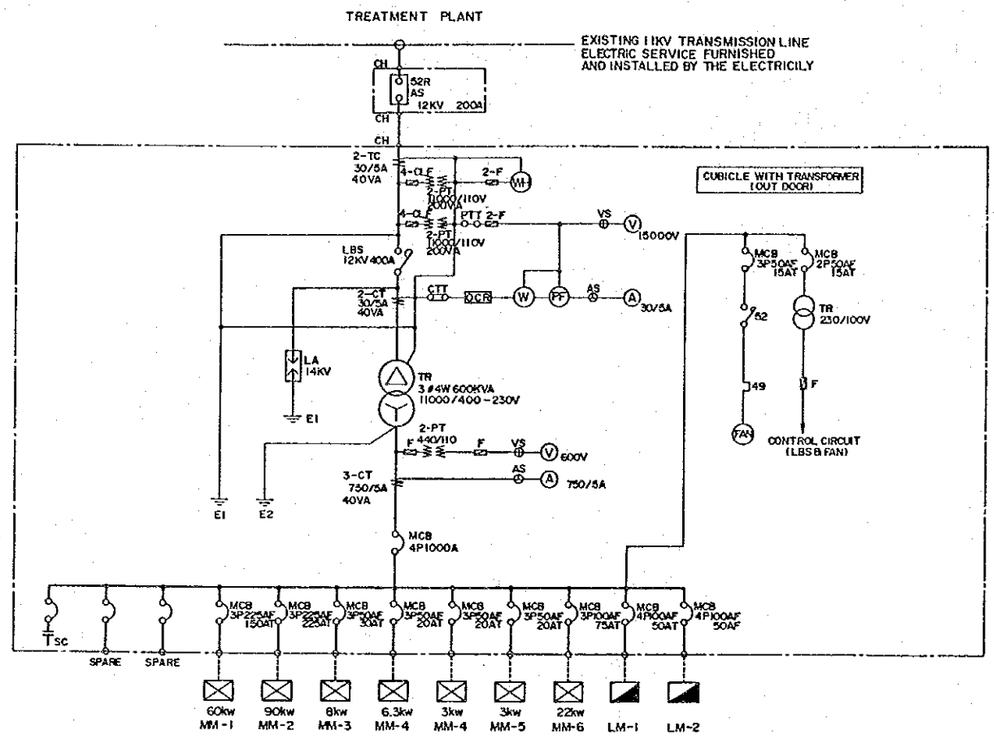
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

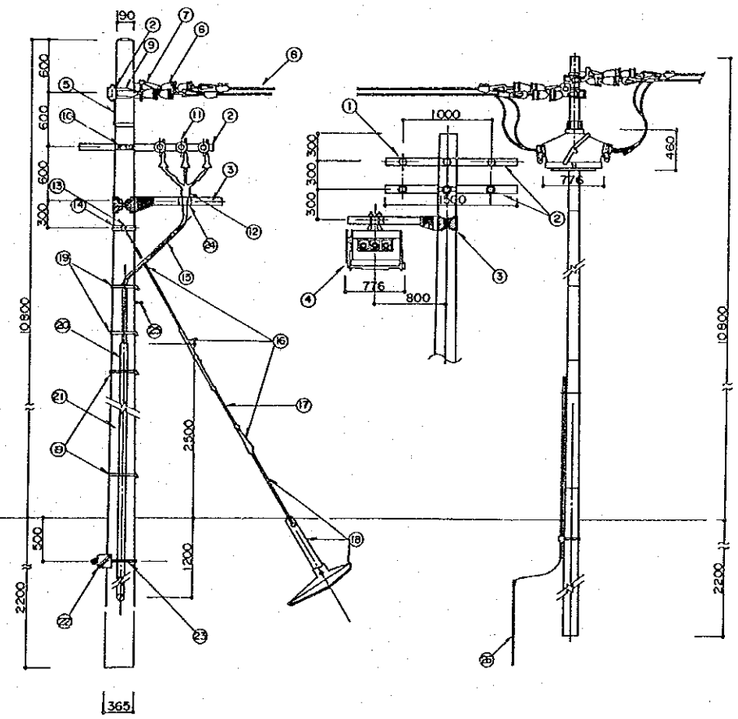
ELECTRICAL INSTALLATIONS PLAN

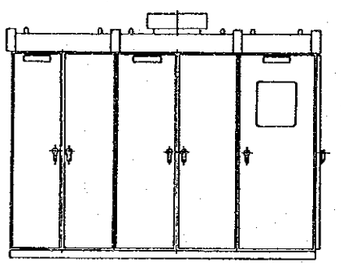
Date	JULY, 1991	Drawing No.	B – 13

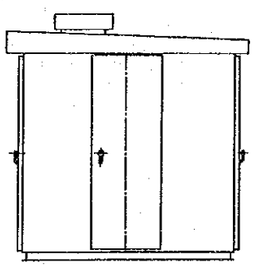
JAPAN INTERNATIONAL COOPERATION AGENCY



NO	DESCRIPTION		NO	DESCRIPTION	
1	SIDE PIN INSULATOR		19	CABLE BAND(SUS-TYPE)	
2	ARM C-75 (LGA)		20	(FP100)	
3	ARM (ALS)		21	CONCRETE POLE 13M	
4	AIR LOAD-BREAK SWITCH		22	STOPPER ARM FOR POLE	
5	ARM TIE (AMT-0)		23	U-BOLT	
6	INSULATOR 3SETS		24	CABLE HANGER	
7	MAIN WERE HANGER		25	STEPPING BOLT	
8	H.V 15kvOC-CABLE		26	EARTH 14øX1500	
9	TWIST STRIPE (TSTP)				
10	ARM-BAND (UABD)				
11	SIDE PIN INSULATOR				
12	H.V 12kv XLPE CABLE HEAD				
13	THIMBL				
14	U-BAND(SPRIT-TYPE)				
15	H.V 12kv XLPE CABLE				
16	GRIP FOR WIRE				
17	STEEL WIRE 30M²				
18	STAY ROD				



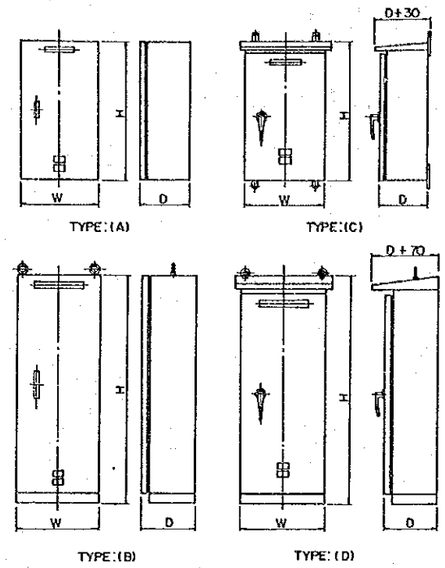


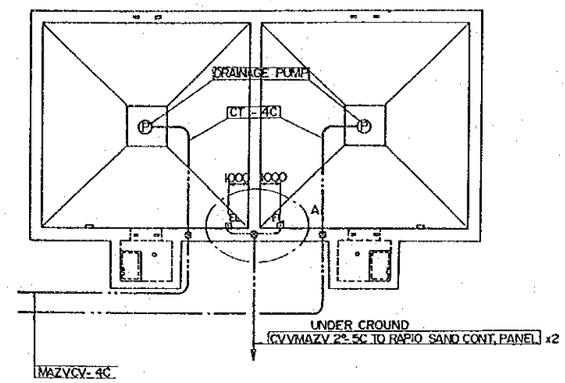


NEPAL WATER SUPPLY COOPERATION KINGDOM OF NEPAL	
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT	
SUB - STATION	
Date: JULY, 1991	Drawing No.: B - 14
JAPAN INTERNATIONAL COOPERATION AGENCY	

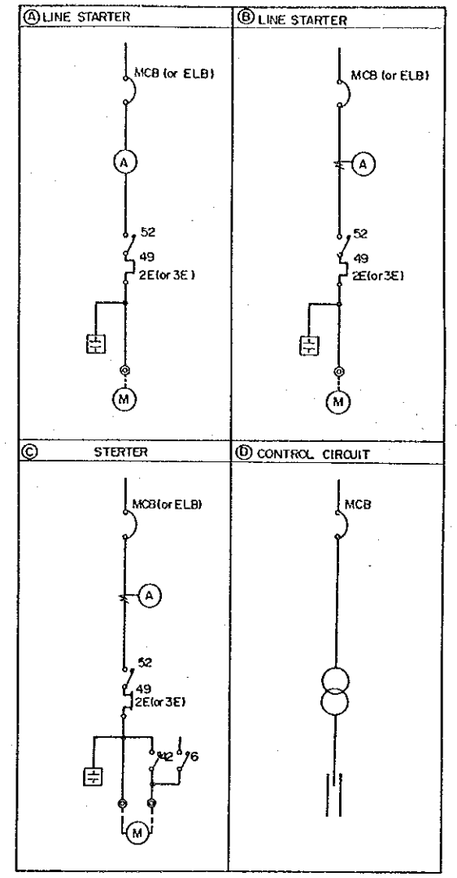
SIZE and TYPE of POWER CONTROL PANEL

PANELE	SIZE W	SIZE H	SIZE D	TYPE	REM
BM - 1	1000	2250	500	B	
BM - 2	1600	2250	500	B	
BM - 3	1000	2150	400	D	
BM - 4	1000	2150	400	D	
BM - 4'	800	2150	400	D	
BM - 5	800	2150	400	D	
BM - 6	700	1300	300	C	





SLUDGE and DRAINAGE BASIN S: 1/100



WIRING LIST

MOTER CONTROL PANEL	Baushori EQUIPMENT NAME	LOAD CAP. (KW)	WIRE No.	POWER WIRE CV C E	PIPE	CONTROL		CONT. WIRE No.	Control WIRE CVV sq		FS
BM 1	BIO FILTER BLOWER	30	1	22×3 8	51 ×2	BIO FILTER	FULL at SIGN To MM-2	C- 0	2	-3 C	2
BM 2	CLEAR WATER RESERVOIR					WASTE WATER BASIN	FULL at OFF & SIGNAL	00	2	-5 C	2
	SURFACE WASHIING PUMPS	30	2	22×3 8	51 ×2	CLEAR WATER RESERVOIR	LOW at OFF	1	2	-3 C	2
						RAPID SAND FILTER	FULL at OFF & SIGNAL	2	2	-3 C	2
						BIO FILTER	FULL at OFF & SIGNAL	3	2	-3 C	P0
	MAKE UP PUMPS	7.5	3	5.5×3 20	31	CLEAR WATER RESERVOIR	LOW at OFF	4	2	-3 C	P1
						RAPID SAND FILTER	FULL at OFF & SIGNAL	5	2	-3 C	P2
						BIO FILTER	FULL at OFF & SIGNAL	6	2	-3 C	P3
	TRANSMISSON PUMPS	7.5	4	8×3 5.5	39	CLEAR WATER RESERVOIR	LOW at OFF	7	2	-3 C	P1
						RESERVOIR	LOW Hi at ON OFF 1	8a 8b	3.5	-7 C 2	2
BM 3	ALUMINUM SULFATE FEEDING SYSTEM										
	MIXER	2.2	5	5.5×3 20	31	ALUMINUM SULFATE TANK	LOW at OFF & SIGNAL	9	2	-3 C	P10
	TRANSFER PUMPS	0.4	6	5.5×3 20	31	ALUMINUM SULFATE TANK	LOW Hi at ON OFF	10	2	-5 C	2
						ALUMINUM SULFATE SOLUTION TANK	LOW at OFF	11	2	-3 C	2
	FEEDING PUMPS	0.2	7	5.5×3 20	31	PH Meter	at ON OFF	12	2	-5 C	0
						ALUMINUM SULFATE TANK	LOW at OFF	13	2	-3 C	P10
	FEEDING PUMPS	0.2	8	5.5×3 20	31	PH Meter	at ON OFF	14	2	-5 C	0
						ALUMINUM SULFATE TANK	LOW at OFF	15	2	-3 C	P10
BM 4	ALKARI AGENT FEEDING SYSTEM										
	MIXER	2.2	9	5.5×3 20	31	ALKARI AGENT TANK	LOW at OFF & SIGNAL	16	2	-3 C	P17
	TRANSFER PUMPS	3.7	10	5.5×3 20	31	ALKARI AGENT TANK	LOW Hi at ON OFF	17	2	-5 C	4
						ALKARI AGENT SOLUTION TANK	LOW at OFF	18	2	-3 C	2
	FEEDING PUMPS	0.2	11	5.5×3 20	31	PH Meter	at ON OFF	19	2	-5 C	0
						ALKARI AGENT TANK	LOW at OFF	20	2	-3 C	P17
BM 4	ALKARI AGENT FEEDING SYSTEM										
	MIXER	2.2	12	5.5×3 20	31	ALKARI AGENT TANK	LOW at OFF & SIGNAL	21	2	-3 C	P22
	TRANSFER PUMPS	0.4	13	5.5×3 20	31	ALKARI AGENT TANK	LOW Hi at ON OFF	22	2	-5 C	2
						ALKARI AGENT SOLUTION TANK	LOW at OFF	23	2	-3 C	2
	FEEDING PUMPS	0.2	14	5.5×3 20	31	PH Meter	at ON OFF	24	2	-5 C	0
						ALKARI AGENT TANK	LOW at OFF	25	2	-3 C	P22
BM 5	BLEACHING POWDER FEEDING SYSTEM										
	MIXER	2.2	15	5.5×3 20	31	BLEAVHIING TANK	LOW at OFF & SIGNAL	26	2	-3 C	P27
	TRANSFER PUMPS	0.4	16	5.5×3 20	31	ALKARI AGENT TANK	LOW Hi at ON OFF	27	2	-5 C	2
						ALKARI AGENT SOLUTION TANK	LOW at OFF	28	2	-3 C	2
	FEEDING PUMPS	0.2	17	5.5×3 20	31	PH Meter	at ON OFF	29	2	-5 C	0
						ALKARI AGENT TANK	LOW at OFF	30	2	-3 C	P27
BM 6	WASTE WATER BASIN	11	18	22×3 5.5	51 2	WASTE WATER BASIN	LOW Hi at ON OFF	31	2	-5 C	2

MOTER CONTROL PANEL	II. Baushori EQUIPMENT NAME	LOAD CAP. (KW)	FIX Q'ty	SPAI -RE Q'ty	NON FIX Q'ty	TOTAL LOAD (KW)	LOC. ON-OFF	MANUAL DRIV	NO LOAD STOP	OVER FLOW	CIR-CUIT NO	REM.
BM 1	BIO FILTER BLOWER	30	2	1	0	60		O	O		C	
BM 2	CLEAR WATER RESERVOIR											
	SURFACE WASHIING PUMPS	30	2	1	0	60		O	O	O	C	
	MAKE UP PUMPS	7.5	1	1	0	7.5		O	O	O	B	
	TRANSMISSON PUMPS	7.5	3	1	0	22.5			O	O	B	
BM 3	ALUMINUM SULFATE FEEDING SYSTEM											
	MIXER	2.2	2	0	0	4.4	O	O	O		B	
	TRANSFER PUMPS	0.4	1	1	0	0.4			O	O	B	
	FEEDING PUMPS	0.2	3	2	0	0.6			O		B	
	FEEDING PUMPS	0.2	2	1	0	0.4			O		B	
BM 4	ALKARI AGENT FEEDING SYSTEM											
	MIXER	2.2	4	0	0	8.8	O	O	O		B	
	TRANSFER PUMPS	3.7	1	1	0	3.7			O	O	B	
	FEEDING PUMPS	0.2	4	0	0	0.8			O		B	
BM 4'	ALKARI AGENT FEEDING SYSTEM											
	MIXER	2.2	2	0	0	4.4	O	O	O		B	
	TRANSFER PUMPS	0.4	1	1	0	0.4			O	O	B	
	FEEDING PUMPS	0.2	2	1	0	0.4			O		B	
BM 5	BLEACHING POWDER FEEDING SYSTEM											
	MIXER	2.2	2	0	0	4.4	O	O	O	O	B	
	TRANSFER PUMPS	0.4	1	1	0	0.4			O	O	B	
	FEEDING PUMPS	0.2	4	1	0	0.8			O		B	
BM-6	WASTE WATER BASIN	11	2	1	0	22			O	O	C	

Σ 201.9

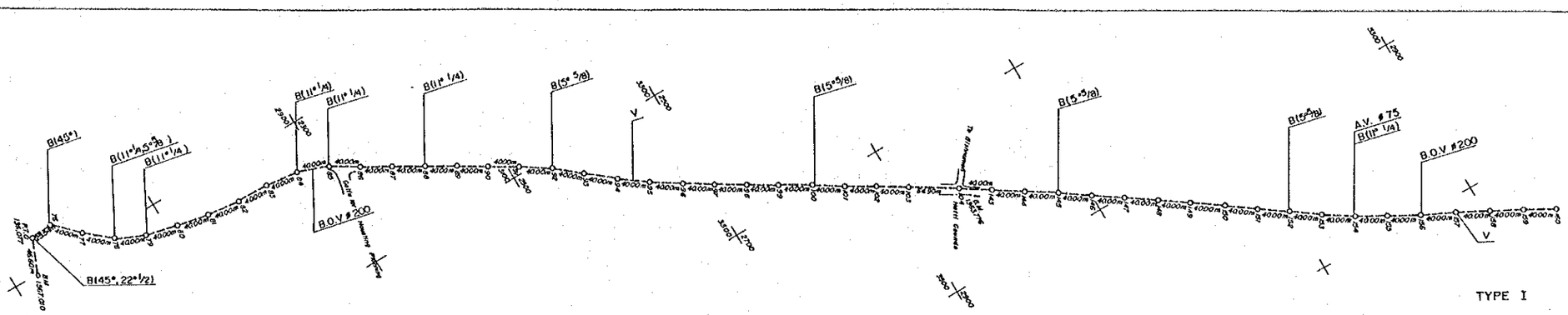
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

WIRING LIST AND
POWER CONTROL PANEL

Date	JULY, 1991	Drawing No.	B - 15

JAPAN INTERNATIONAL COOPERATION AGENCY



PEG NUMBER	BM	P.T.6	76	77	78	79	80	81	82	83	84	85	86	87	88	89
GAP DISTANCE IN METER		46.60	23.54	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
TOTAL DISTANCE IN METER	0.00	46.60	72.14	112.14	152.14	192.14	232.14	272.14	312.14	352.14	392.14	432.14	472.14	512.14	552.14	592.14
EXISTING GROUND LEVEL	1367.810	1367.770	1363.602	1362.484	1361.542	1360.244	1359.082	1358.224	1357.276	1355.880	1354.354	1354.356	1354.477	1354.804	1355.075	1355.250
PROPOSED PIPE LINE LEVEL																

PEG NUMBER	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	143
GAP DISTANCE IN METER	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	42.00	40.00	64.90	40.00
TOTAL DISTANCE IN METER	632.14	672.14	712.14	752.14	792.14	832.14	872.14	912.14	952.14	992.14	1032.14	1072.14	1112.14	1152.14	1217.04	1257.04
EXISTING GROUND LEVEL	1355.461	1355.863	1356.197	1356.527	1356.788	1357.236	1357.451	1357.844	1358.539	1359.159	1360.185	1360.920	1361.544	1362.484	1363.421	1363.440
PROPOSED PIPE LINE LEVEL																

PEG NUMBER	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
GAP DISTANCE IN METER	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
TOTAL DISTANCE IN METER	1297.04	1337.04	1377.04	1417.04	1457.04	1497.04	1537.04	1577.04	1617.04	1657.04	1697.04	1737.04	1777.04	1817.04	1857.04	1897.04	1937.04
EXISTING GROUND LEVEL	1363.560	1363.930	1364.776	1366.112	1367.515	1368.710	1369.866	1371.250	1372.479	1372.815	1372.854	1371.971	1371.165	1371.740	1372.559	1373.575	1374.066
PROPOSED PIPE LINE LEVEL																	

LEGEND

B.	BEND
B.O.V	BLOW OFF VALVE
A.V	AIR VALVE
A.D	AQUE DUKT
P.R.V	PRESSURE REDUCING VALVE
V	VALVE

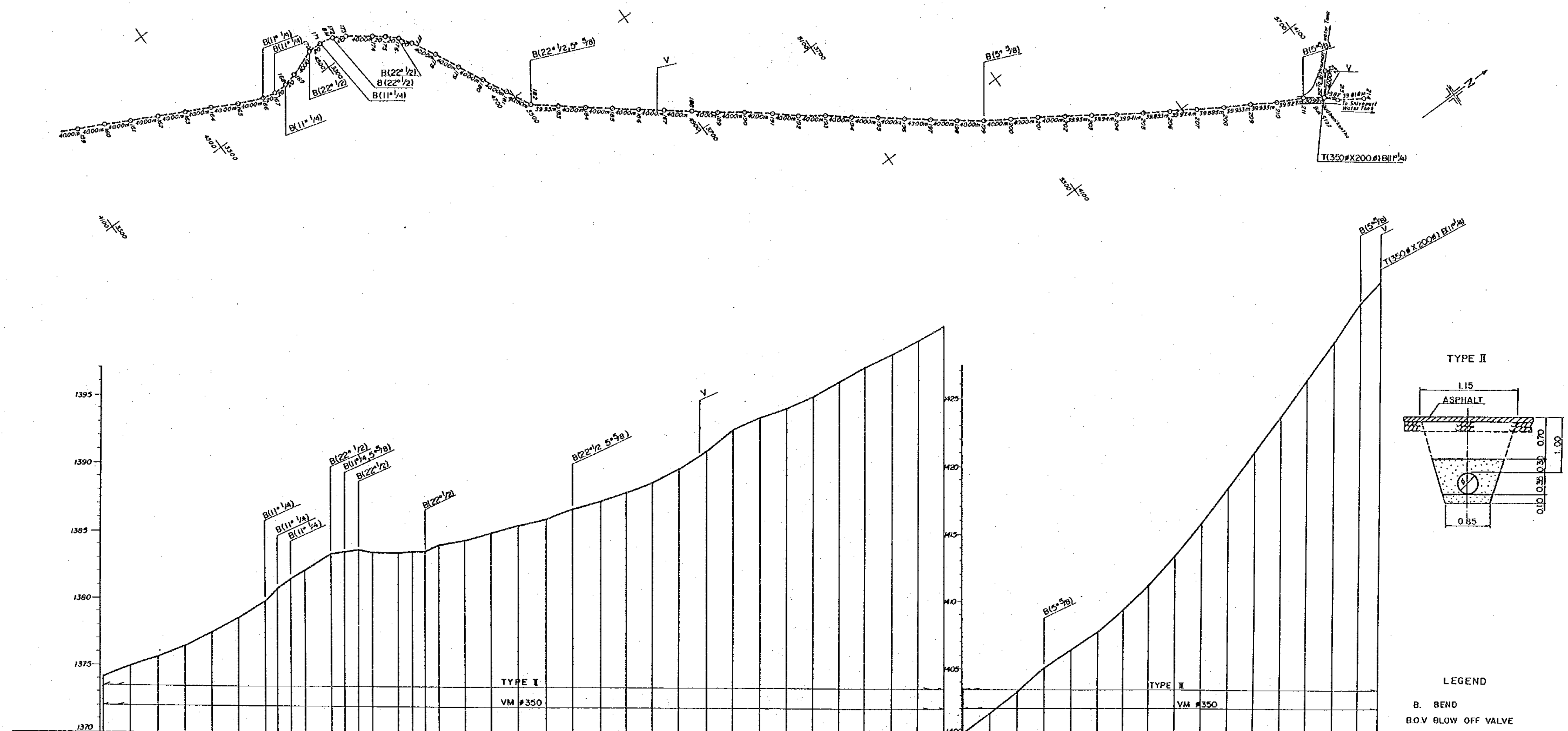
NEPAL WATER SUPPEY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

CONVEYANCE PIPE
PLAN AND PROFILE (1/5)

Date	JULY, 1991	Drawing No.	8-16

JAPAN INTERNATIONAL COOPERATION AGENCY



PEG NUMBER	GAP DISTANCE IN METER	TOTAL DISTANCE IN METER	EXISTING GRO LEVEL	PROPOSED PIPE LINE LEVEL
		1937.04	1374.088	
	40.00			
161		1977.04	1374.93	
	40.00			
162		2017.04	1375.636	
	40.00			
163		2057.04	1376.476	
	40.00			
164		2097.04	1377.512	
	40.00			
165		2137.04	1378.601	
	40.00			
166		2177.04	1379.837	
	20.00			
167		2197.04	1380.750	
	20.00			
168		2217.04	1381.541	
	20.00			
169		2237.04	1382.156	
	40.00			
170		2277.04	1383.569	
	20.00			
171		2297.04	1383.534	
	20.00			
172		2317.04	1383.670	
	20.00			
173		2337.04	1383.499	
	40.00			
174		2377.04	1383.436	
	20.00			
175		2397.04	1383.877	
	20.00			
176		2417.04	1383.861	
	20.00			
177		2437.04	1384.057	
	40.00			
178		2477.04	1384.396	
	40.00			
179		2517.04	1384.946	
	40.00			
180		2557.04	1385.518	
	40.00			
181		2597.04	1386.011	
	40.00			
182		2637.04	1386.771	
	39.95			
183		2676.99	1387.325	
	40.00			
184		2716.99	1388.004	
	40.00			
185		2756.99	1388.741	
	40.00			
186		2796.99	1389.703	
	40.00			
187		2836.99	1391.091	
	40.00			
188		2876.99	1392.627	
	40.00			
189		2916.99	1393.509	
	40.00			
190		2956.99	1394.259	
	40.00			
191		2996.99	1395.080	
	40.00			
192		3036.99	1396.173	
	40.00			
193		3076.99	1397.239	
	40.00			
194		3116.99	1398.225	
	40.00			
195		3156.99	1399.217	
	40.00			
196		3196.99	1400.709	
196		3196.99	1400.709	
	40.00			
197		3236.99	1401.650	
	40.00			
198		3276.99	1403.332	
	40.00			
199		3316.99	1405.069	
	40.00			
200		3356.99	1406.467	
	40.00			
201		3396.99	1407.791	
	40.00			
202		3436.99	1409.416	
	39.95			
203		3476.94	1411.294	
	39.94			
204		3516.88	1413.489	
	39.94			
205		3556.82	1415.896	
	39.89			
206		3596.71	1418.509	
	39.93			
207		3636.64	1421.175	
	39.90			
208		3676.54	1423.768	
	39.93			
209		3716.46	1426.461	
	39.93			
210		3756.40	1429.146	
	39.83			
211		3796.23	1431.991	
	30.10			
212		3826.33	1433.672	

LEGEND

- B. BEND
- B.O.V BLOW OFF VALVE
- A.V AIR VALVE
- A.D AQUE DUKT
- P.R.V PRESSURE REDUCING VALVE
- V. VALVE

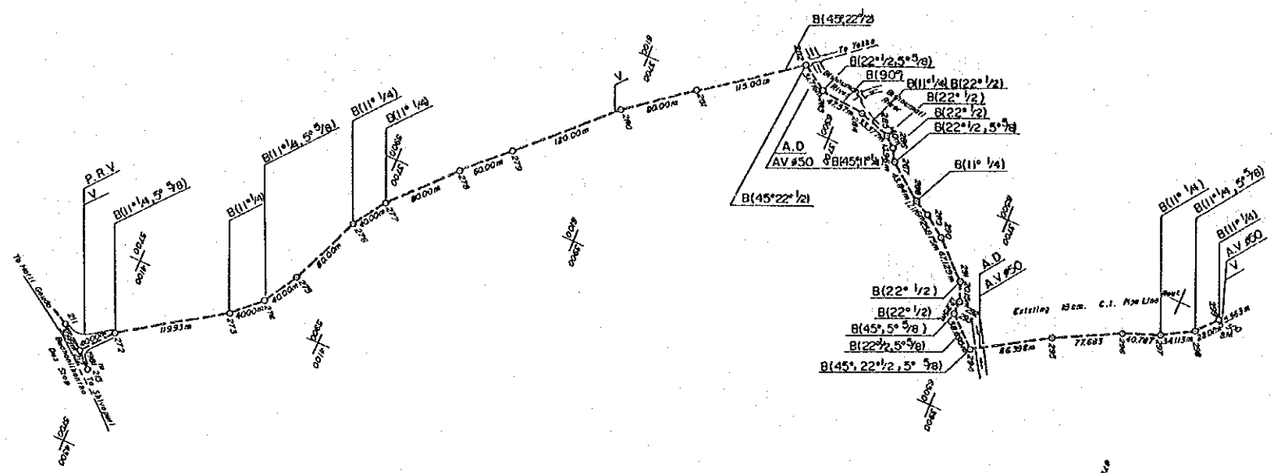
NEPAL WATER SUPPLY COOPERATION
KINGDOM OF NEPAL

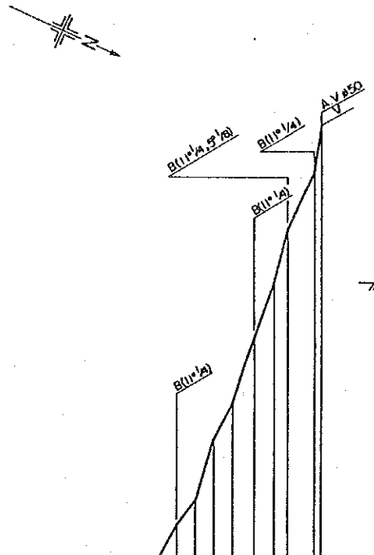
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

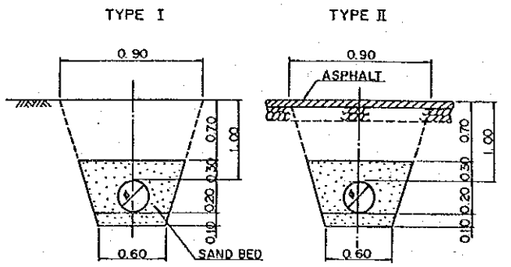
CONVEYANCE PIPE
PLAN AND PROFILE (2/5)

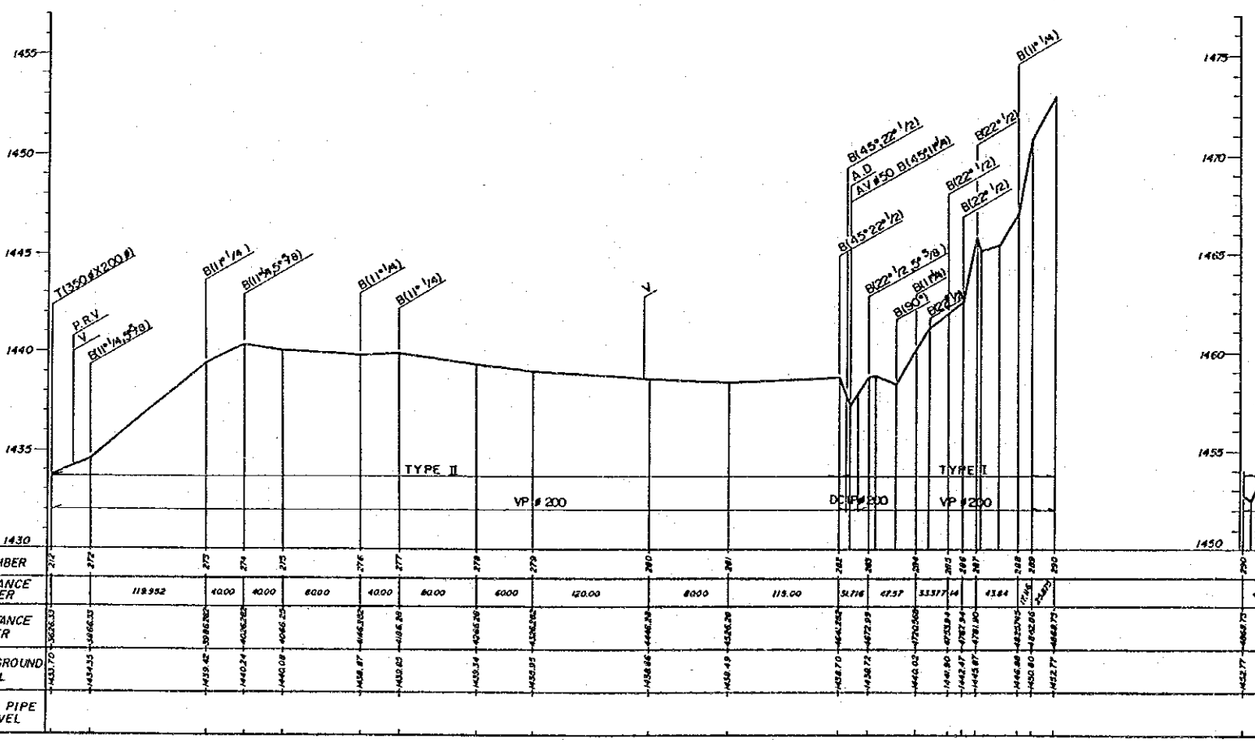
Date	JULY, 1991	Drawing No.	B-17

JAPAN INTERNATIONAL COOPERATION AGENCY









LEGEND

B. BEND
B.O.V BLOW OFF VALVE
A.V AIR VALVE
A.D AQUE DUKT
P.R.V PRESSURE REDUCING VALVE
V VALVE

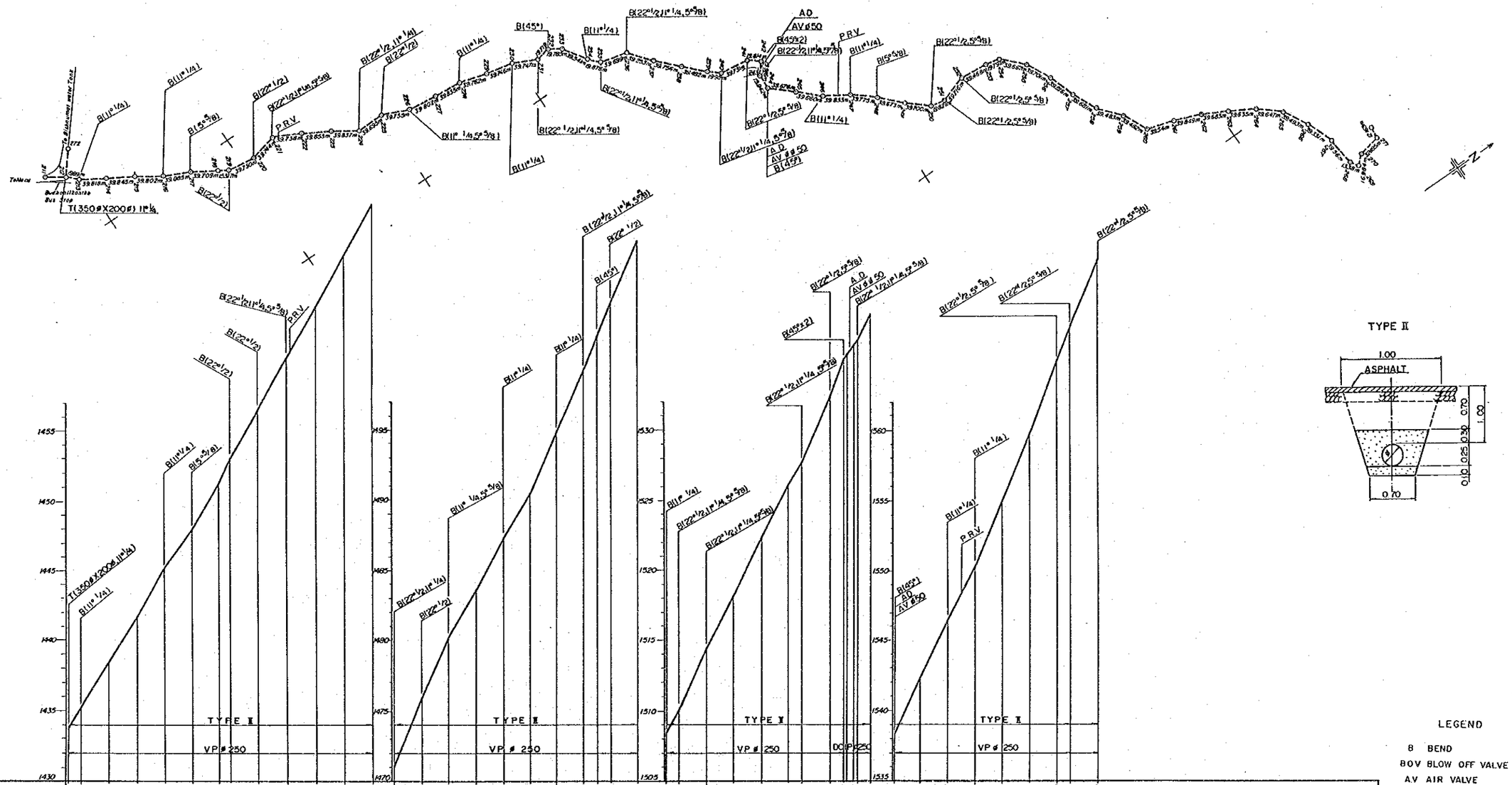
NEPAL WATER SUPPEY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

CONVEYANCE PIPE
PLAN AND PROFILE (3/5)

Date	JULY, 1991	Drawing No.	B-18

JAPAN INTERNATIONAL COOPERATION AGENCY



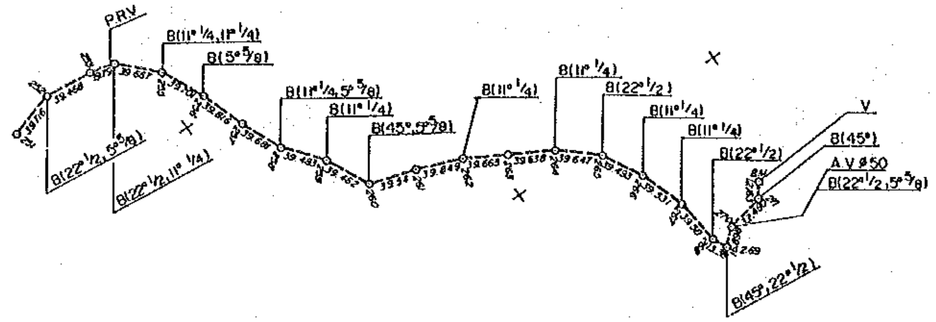
NEPAL WATER SUPPEY COOPERATION
KINGDOM OF NEPAL

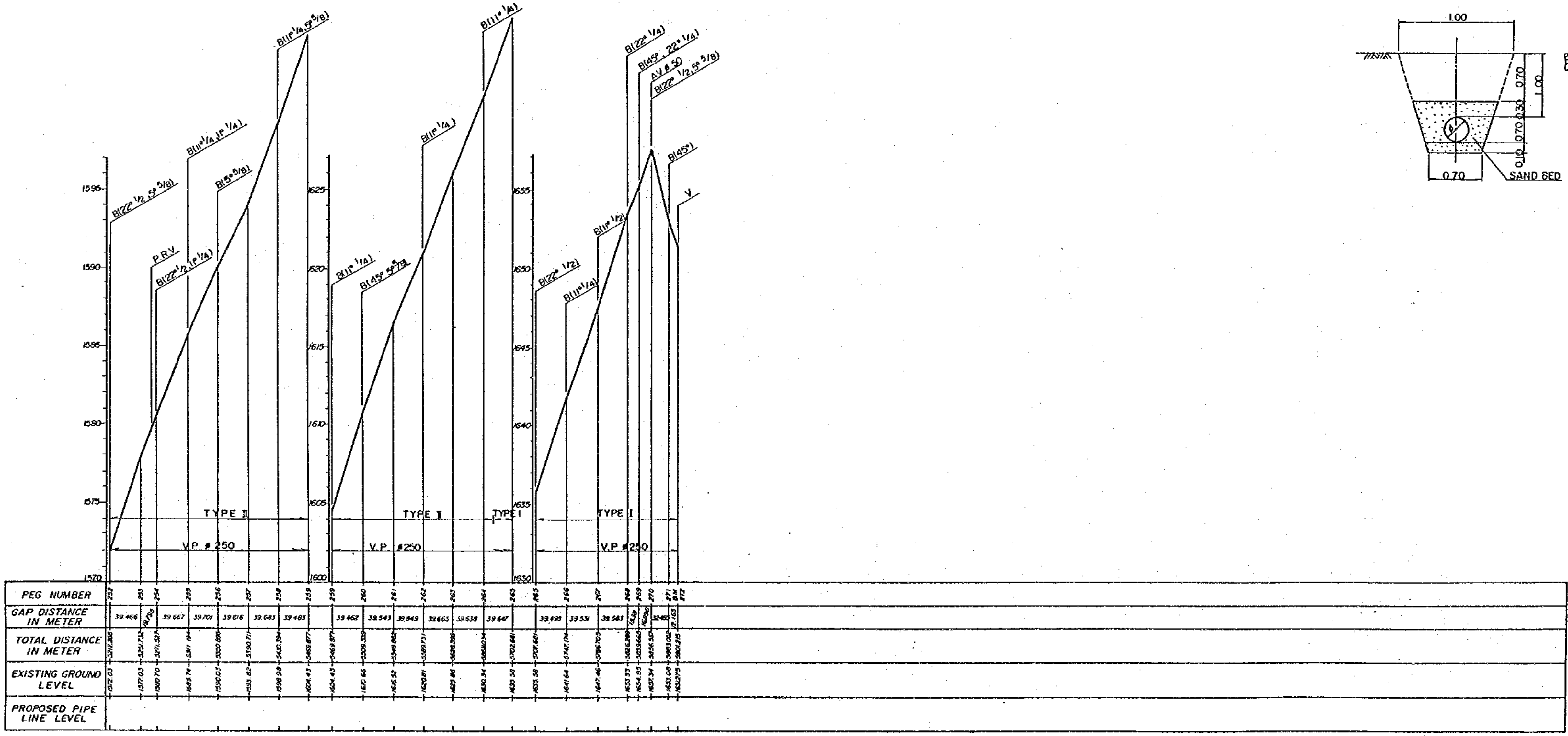
KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

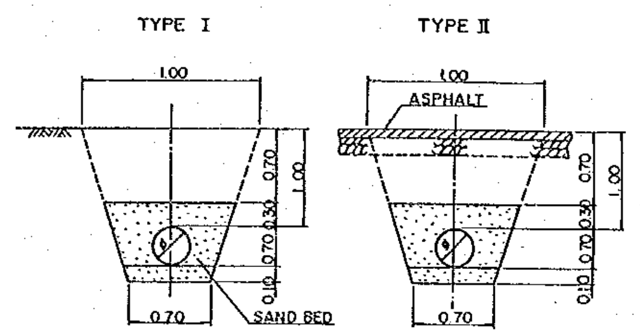
CONVEYANCE PIPE
PLAN AND PROFILE (4/5)

Date	JULY, 1991	Drawing No.	B - 19

JAPAN INTERNATIONAL COOPERATION AGENCY







LEGEND

B. BEND
B.O.V BLOW OFF VALVE
A.V AIR VALVE
A.D AQUE DUKT
P.R.V PRESSURE REDUCING VALVE
V VALVE

NEPAL WATER SUPPEY COOPERATION
KINGDOM OF NEPAL

KATHMANDU WATER SUPPLY FACILITY IMPROVEMENT PROJECT

CONVEYANCE PIPE
PLAN AND PROFILE (5/5)

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JAPAN INTERNATIONAL COOPERATION AGENCY

5.5 Implementation Plan

5.5.1 Execution policy

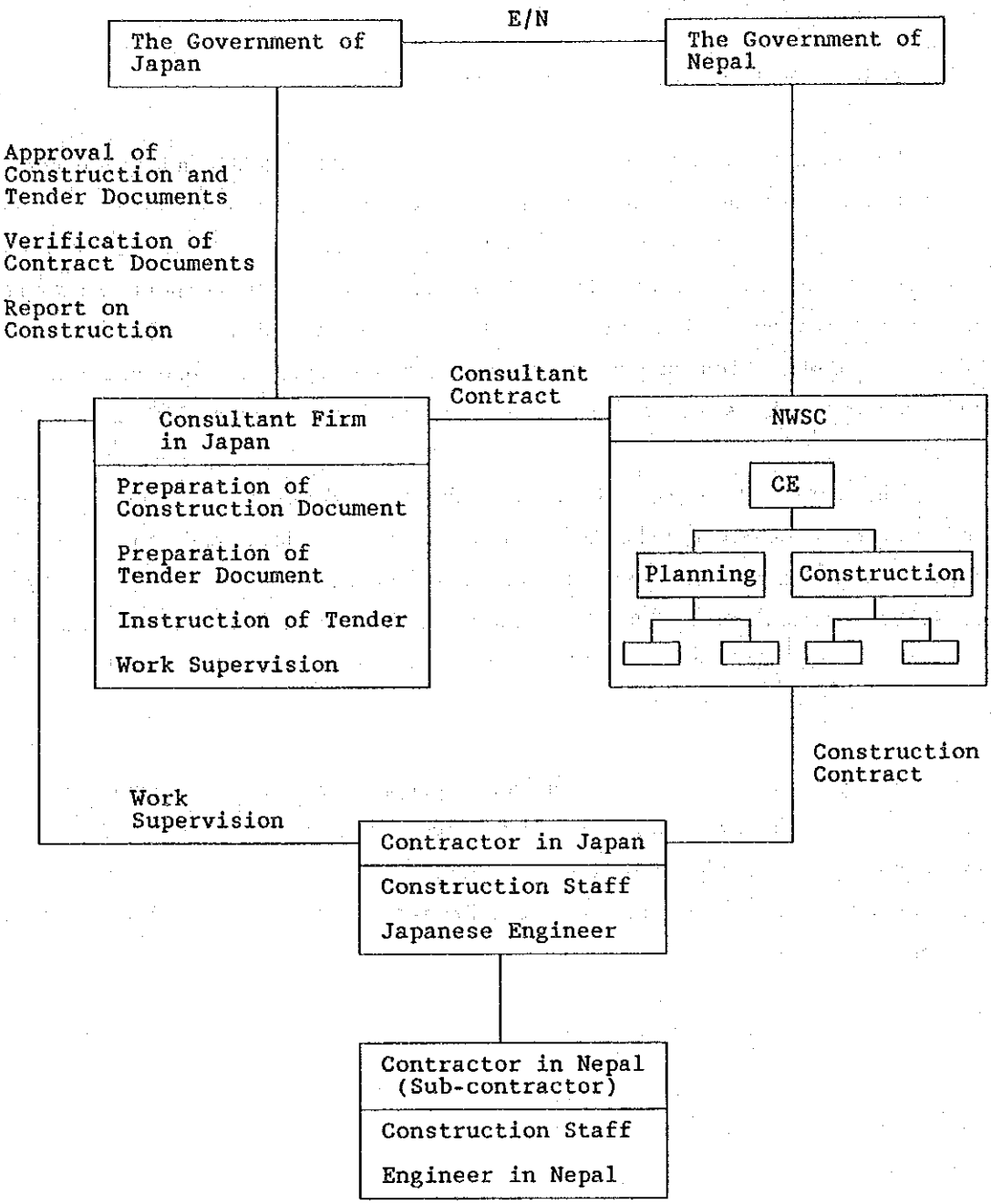
(1) Project implementation organization

The entity to implement the Project is NWSC. NWSC, an independent institution outside the Government, undertakes all waterworks of large cities from planning to operation and maintenance under the direction and guidance of MHPP. Accordingly, the responsible counterpart in Nepal during a detailed design survey is the staff of the design department of NWSC and construction supervision, material and equipment procurement are undertaken by the staff of the construction department of NWSC.

The detailed design, including the preparation of design drawings and tender documents, the execution of the tender, and construction supervision during the construction period should be carried out by a consultant from Japan. NWSC is to make a contract with the consultant for the above-mentioned consultant's services after Exchange Notes with regard to grant aid are signed.

The procurement of material and equipment and the construction are to be carried out by a Japanese contractor. NWSC will conduct the tender assisted by the above-mentioned consultant's service and choose the contractor. Fig. 5.5.1 set forth the Project implementation organization system.

Fig. 5.5.1 PROJECT ORGANIZATION CHART



(2) Scope of allotted responsibilities

The Project is to be implemented under the following scope of allotted responsibilities. The scope of the responsibilities of Nepal is as follows:

1) Land acquisition for the treatment facilities.
2) Construction of administrative facilities.
3) Exemption from taxes and custom duties of materials and equipment imported for the construction work.
4) Exemption from taxes of Japanese staff who take part in the construction work.
5) Long lasting use and effective and appropriate operation and maintenance after completion of the construction work.

The scope of the responsibilities of the Japanese parties is as follows:

1) Construction and installation of water treatment facilities covered by the Project (including water intakes and water conveyance facilities).
2) Expenses required for ocean transportation of materials and equipment imported from Japan and insurance on them.
3) Charges for inland transportation from a port of unloading to Kathmandu.
4) Consultant's services.
5) Supervision for the construction work.

(3) Matters requiring consideration in executing the construction work

In the Project, basic materials such as cement, gravel, sand, timber, brick and light equipment should be procured in Nepal and the construction work be performed by local labor. Accordingly, a local contractor who is familiar with the local conditions and labor is to be engaged as a subcontractor. The local subcontractor having similar construction experience has appropriate work executing skills if

supervised and instructed properly by a Japanese contractor.

Since 90% of annual rainfall is concentrated in the wet season (May through September) in the Kathmandu valley, it is difficult to carry out earthwork during this season. Therefore, it is desirable not to schedule earthwork in this season, and it is necessary to take sufficient allowance in time in a case of being unavoidable as a matter of progress schedule.

High-performance Japanese mechanical and electrical equipment should be imported, and installed by a local contractor under the supervision of Japanese engineers.

Since materials and equipment procured overseas will land at an Indian port, it is necessary to allocate sufficient time for customs clearance and inland transportation in India when making an overall transportation schedule.