

社会開発調査部報告書

No. 13

JAPAN INTERNATIONAL COOPERATION AGENCY

PUBLIC WORKS DEPARTMENT

MINISTRY OF INTERIOR

THE KINGDOM OF THAILAND

THE STUDY ON MASTER PLANNING
FOR
THE SEWERAGE DEVELOPMENT PROJECT
FOR
LOWER CHAO PHRAYA RIVER BASIN
IN
THE KINGDOM OF THAILAND

VOLUME 4-II

DRAWINGS

JANUARY 1994

NIPPON JOGESUIDO SEKKEI CO., LTD.

PACIFIC CONSULTANTS INTERNATIONAL

SSS

JR

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JAPAN INTERNATIONAL COOPERATION AGENCY

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MINISTRY OF INTERIOR
THE KINGDOM OF THAILAND

THE STUDY ON MASTER PLANNING
FOR
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THE KINGDOM OF THAILAND

VOLUME 4-II

DRAWINGS



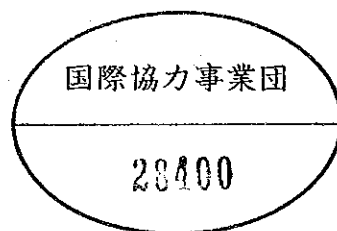
JANUARY 1994

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NIPPON JOGESUIDO SEKKEI CO., LTD.
PACIFIC CONSULTANTS INTERNATIONAL

MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT
PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN

PRELIMINARY ENGINEERING DESIGN OF SEWERAGE SYSTEMS
FOR RANG SIT ARER AND BANG BUA THONG MUNICIPALITY



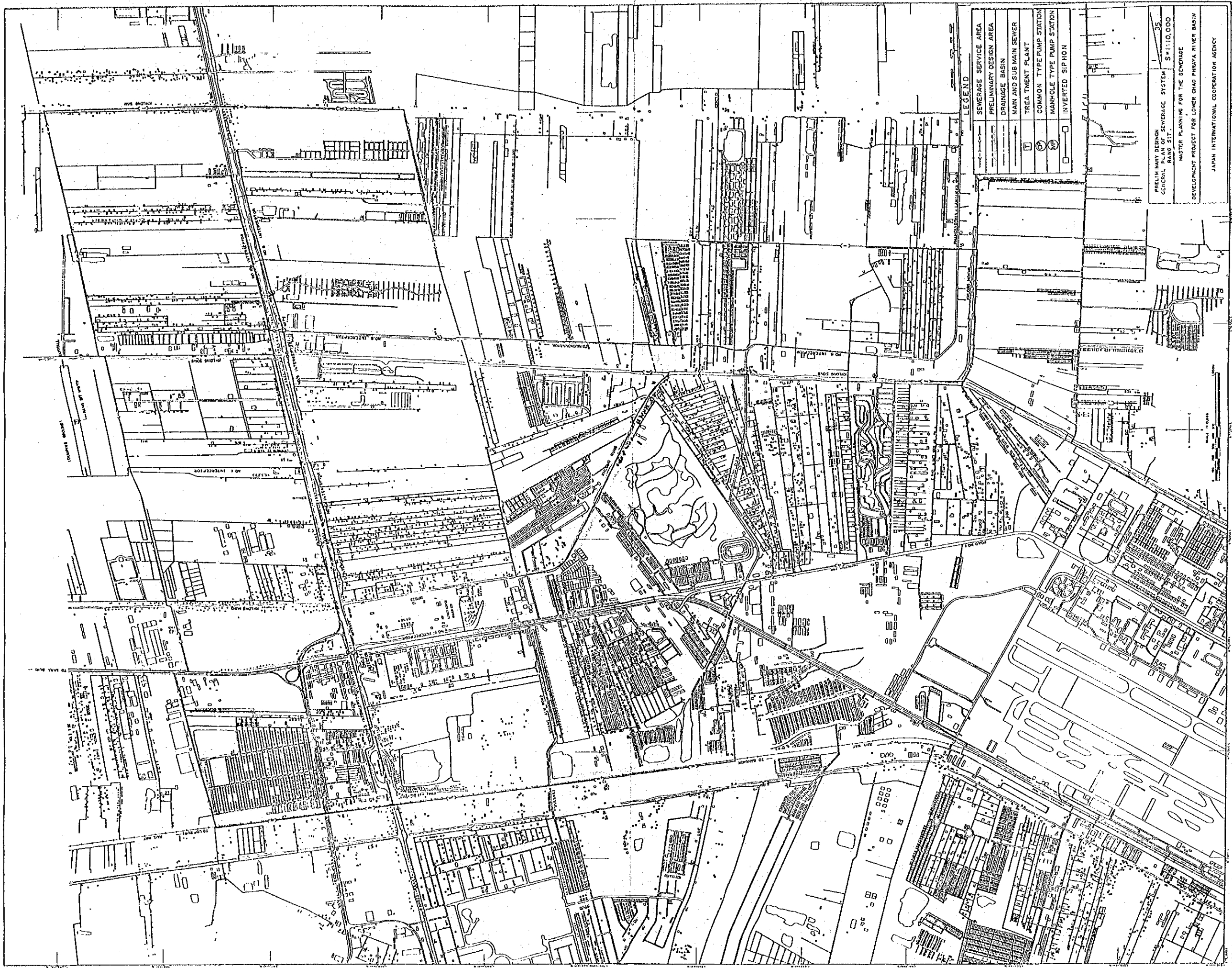
VOLUME IV-2 DRAWINGS

RANG SIT

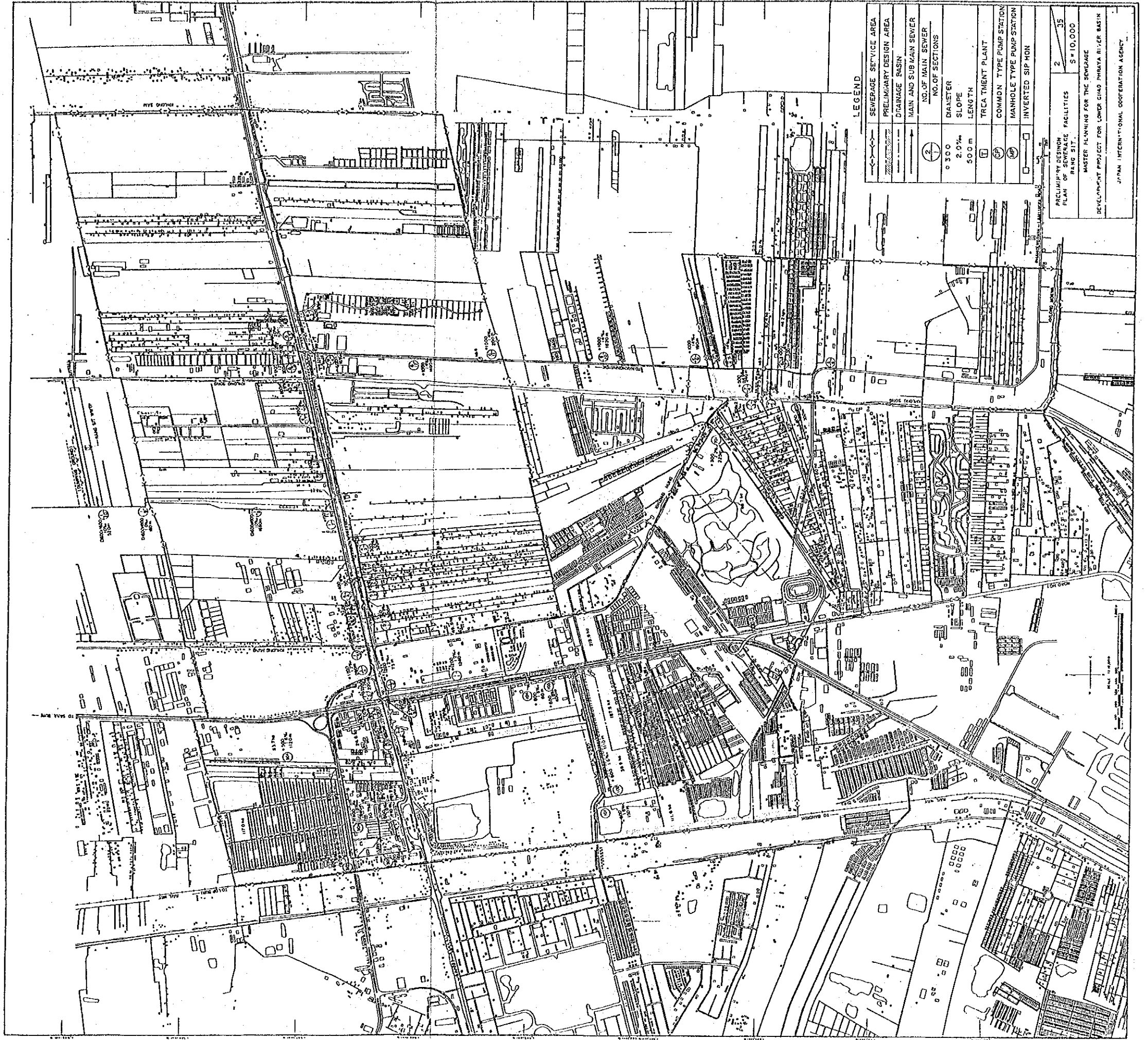
BANG BUA THONG

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE
1	35 GENERAL PLAN OF SEWERAGE SYSTEM	21	35 NO. 6 PUMP STATION (2)
2	35 PLAN OF SEWERAGE FACILITIES	22	35 NO. 7 PUMP STATION (1)
3	35 SEWER PROFILE (1)	23	35 NO. 7 PUMP STATION (2)
4	35 SEWER PROFILE (2)	24	35 NO. 11 PUMP STATION (1)
5	35 SEWER PROFILE (3)	25	35 NO. 11 PUMP STATION (2)
6	35 SEWER PROFILE (4)	26	35 NO. 12 PUMP STATION (1)
7	35 SEWER PROFILE (5)	27	35 NO. 12 PUMP STATION (2)
8	35 NO. 1 INVERTED SIPHON	28	35 SINGLE LINE DIAGRAM
9	35 NO. 2 INVERTED SIPHON	29	35 REMOTE MONITORING SYSTEM DIAGRAM
10	35 NO. 3 INVERTED SIPHON	30	35 LAYOUT OF SEWAGE TREATMENT PLANT
11	35 NO. 4 INVERTED SIPHON	31	35 PROCESS DIAGRAM OF SEWAGE TREATMENT PLANT
12	35 STANDARD DESIGN OF OVERFLOW CHAMBER	32	35 HYDRAULIC PROFILE OF SEWAGE TREATMENT PLANT
13	35 NO. 1 PUMP STATION (1)	33	35 PLAN AND SECTION (INFLOW PUMP STATION)
14	35 NO. 1 PUMP STATION (2)	34	35 LAYOUT PLAN
15	35 NO. 2 PUMP STATION (1)	35	35 LAYOUT SECTION
16	35 NO. 2 PUMP STATION (2)		
17	35 NO. 3 PUMP STATION		
18	35 NO. 5 PUMP STATION (1)		
19	35 NO. 5 PUMP STATION (2)		
20	35 NO. 6 PUMP STATION (1)		

DRAWING NO.	DRAWING TITLE
1	17 GENERAL PLAN OF SEWERAGE SYSTEM
2	17 PLAN OF SEWERAGE FACILITIES
3	17 SEWER PROFILE (1)
4	17 SEWER PROFILE (2)
5	17 NO. 1 INVERTED SIPHON
6	17 STANDARD DESIGN OF OVERFLOW CHAMBER
7	17 NO. 1 PUMP STATION (1)
8	17 NO. 1 PUMP STATION (2)
9	17 NO. 2 PUMP STATION (1)
10	17 NO. 2 PUMP STATION (2)
11	17 SINGLE LINE DIAGRAM&REMOTE MONITORING SYSTEM DIAGRAM
12	17 LAYOUT OF SEWAGE TREATMENT PLANT
13	17 PROCESS DIAGRAM OF SEWAGE TREATMENT PLANT
14	17 HYDRAULIC PROFILE OF SEWAGE TREATMENT PLANT
15	17 PLAN AND SECTION (INFLOW PUMP STATION)
16	17 LAYOUT PLAN
17	17 LAYOUT SECTION



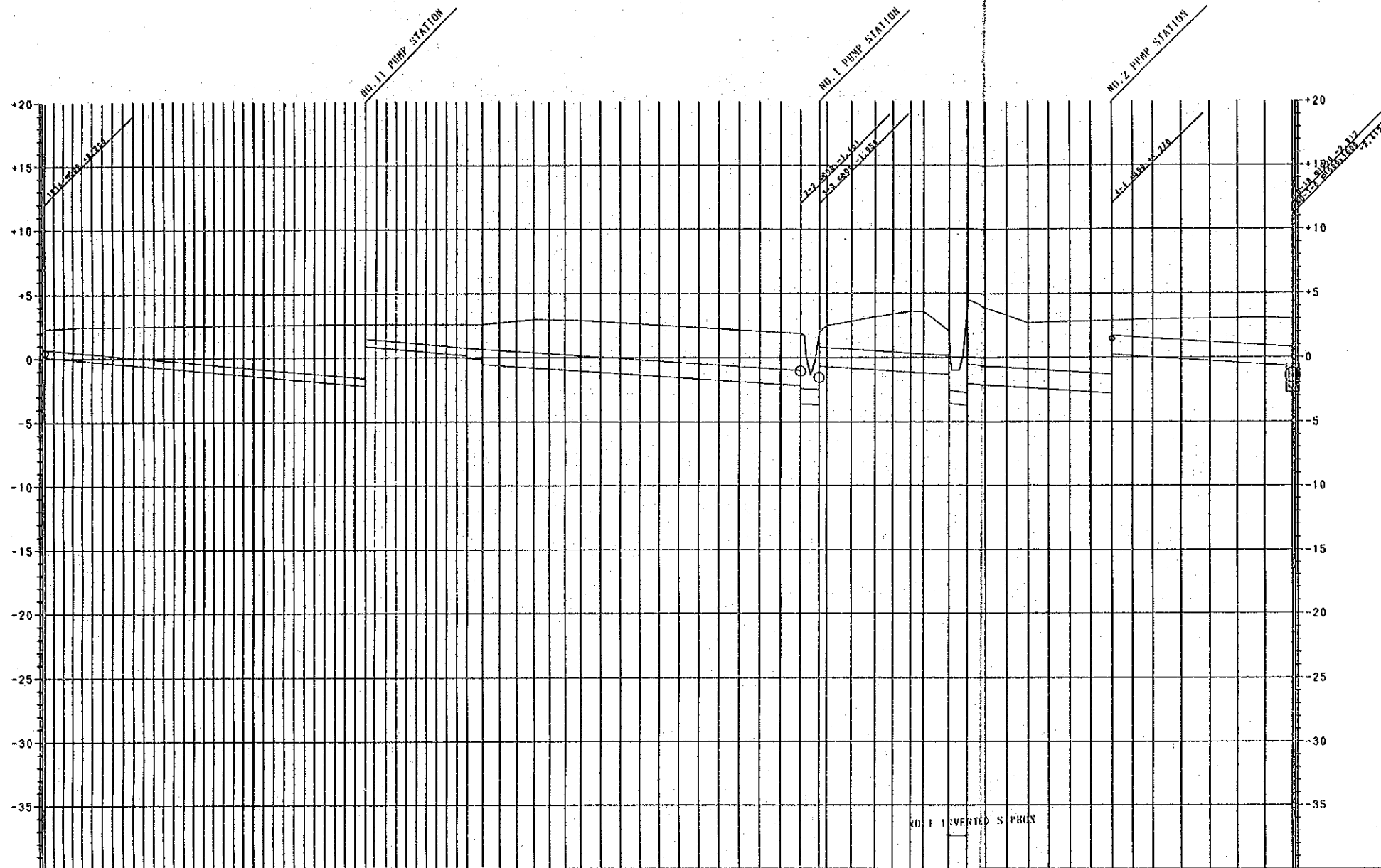
PRELIMINARY DESIGN
 REGIONAL SEWERAGE SYSTEM
 SCALE 1:10,000
 MASTER PLAN FOR THE SEWERAGE
 DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN
 JAPAN INTERNATIONAL COOPERATION AGENCY
 KHU KHOT



LEGEND

	SEWERAGE SERVICE AREA
	PRELIMINARY DESIGN AREA
	DRAINAGE BASIN
	MAIN AND SUB MAIN SEWER
	NO. OF MAIN SEWER
	NO. OF SECTIONS
	DIAMETER
	SLOPE
	LENGTH
	TREATMENT PLANT
	COMMON TYPE PUMP STATION
	MANHOLE TYPE PUMP STATION
	INVERTED SIPHON

PRELIMINARY DESIGN PLAN OF SEWERAGE FACILITIES
 S = 10,000
 MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN
 JAPAN INTERNATIONAL COOPERATION AGENCY



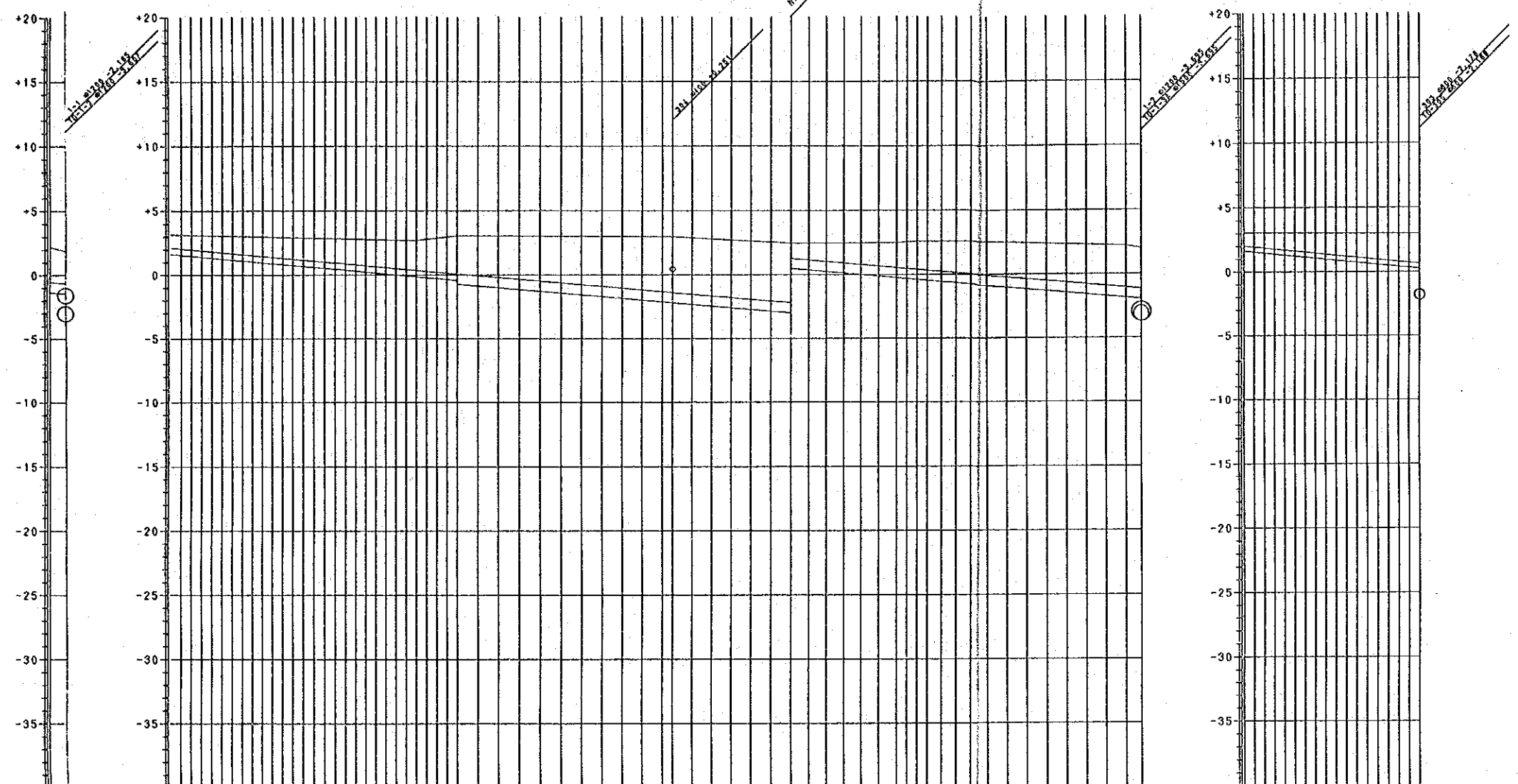
LEGEND

Item	Description
NO	NO. of Sewers
D	Diameter
S	Slope
DF	Design Flow
MF	Maximum Flow for Pipe
V	Velocity
EC	Earth Cover
IL	Invert Level
E	Elevation
AL	Accumulated Length
D	Distance

NO	101	102	102A	103	04	1-1	1-2	1-3	1-4	1-5	1-6	1-7A	1-7
D	0600	0600	0600	0600	0800	01200	01200	01500	01500	01000	01500	01500	01500
S	1.60%	1.60%	1.60%	1.60%	1.64%	1.20%	1.20%	1.20%	1.20%	2.80%	1.20%	1.20%	1.20%
DF	0.171	0.236	0.36	0.236	0.319	0.963	1.30	1.774	1.875	1.875	1.993	2.460	2.168
MF	0.246	0.246	0.246	0.246	0.579	1.351	1.35	2.449	2.449	2.449	2.449	2.449	2.449
V	0.87	0.87	0.87	0.87	1.05	1.19	1.19	1.39	1.39	1.62	1.39	1.39	1.39
EC	1.37	1.37	1.37	1.37	1.37	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
IL	0.100	0.100	0.100	0.100	0.100	-2.165	-2.165	-2.165	-2.165	-2.165	-2.165	-2.165	-2.165
E	2.32	2.46	2.63	2.63	2.63	1.69	1.69	1.69	1.69	2.05	2.05	2.05	2.05
AL	0.0	159.0	328.0	328.0	328.0	1746.0	1746.0	1746.0	1746.0	2000.0	2000.0	2000.0	2000.0
D	0.0	159.0	328.0	328.0	328.0	1746.0	1746.0	1746.0	1746.0	2000.0	2000.0	2000.0	2000.0

No. of Sewers

101	102	102A	103	104
1-1	1-2	1-3A	1-3	1-4
1-5	1-6A	1-6	1-7A	1-7



LEGEND

Item	Description
NO	No. of Sewers
D	Diameter
S	Slope
DF	Design Flow
MF	Maximum Flow for Pipe
V	Velocity
EC	Earth Cover
IL	Invert Level
E	Elevation
AL	Accumulated Length
D	Distance

	2-1	2-2	301	302	303	305	305A	3-1	3-2	3-3	304
NO	2-1		301	302	303	305	305A	3-1	3-2	3-3	304
D	Ø800		Ø500	Ø800	Ø800	Ø800	Ø800	Ø800	Ø800	Ø500	Ø400
S	1.60%		1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.80%
DF	0.314		0.197	0.303	0.313	0.377	0.377	0.413	0.454	0.156	0.051
MF	0.529		0.151	0.529	0.529	0.529	0.529	0.529	0.529	0.156	0.051
V	1.05		0.77	1.05	1.05	1.05	1.05	1.05	1.05	1.05	0.70
EC	2.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
IL	2.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
E	2.20	3.17	3.07	2.90	2.90	2.90	2.90	2.20	2.00	3.07	2.90
AL	0.0	0.0	1120.0	1920.0	1960.0	2450.0	2450.0	3130.1	3760.1	3760.1	880.0
D	0.0	0.0	1120.0	1920.0	1960.0	2450.0	2450.0	3130.1	3760.1	3760.1	880.0

No. of Sewers

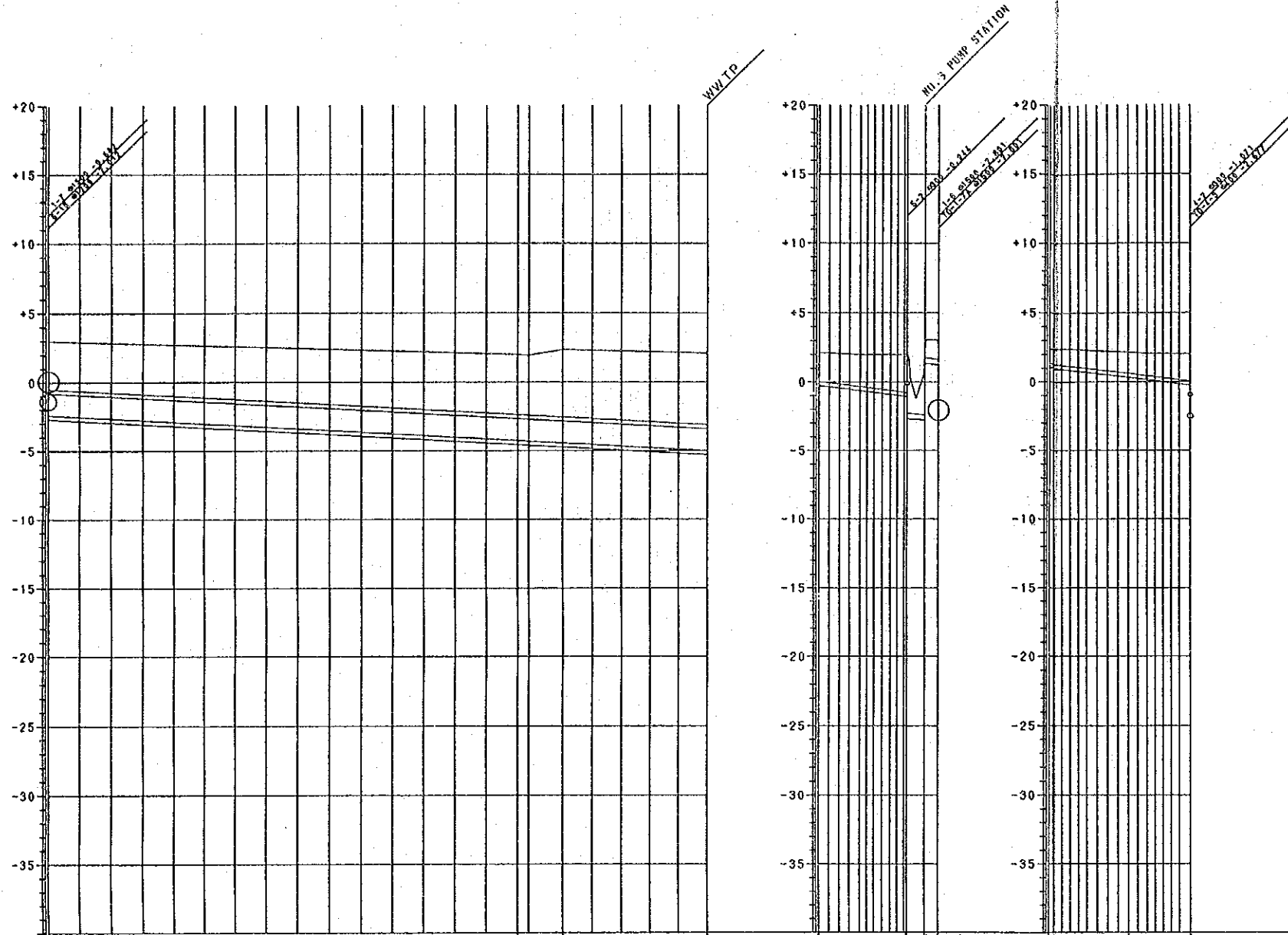
2-1	2-2	301	302	303
305	305A	3-1	3-2	3-3
304				

PRELIMINARY DESIGN
SEWER PROFILE (2)
RANG SIT

4/35
V I : 200
H I : 10,000

MASTER PLANNING FOR THE SEWERAGE
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY



LEGEND

Item	Description
NO	No. of Sowers
D	Diameter
S	Slope
DF	Design Flow
MF	Maximum Flow for Pipe
V	Velocity
EC	Earth Cover
IL	Invert Level
E	Elevation
AL	Accumulated Length
D	Distance

	1-8	1-9	1-10	4-1	4-2	4-3	5-1	5-2
NO				4-1	4-2	4-3	5-1	5-2
D	Ø1600	Ø1600	Ø1600	Ø300	Ø300	Ø400	Ø300	Ø300
S	1.00%	1.00%	1.00%	2.0%	2.20%	1.80%	2.20%	2.20%
DF	3.420	3.420	3.420	0.15	0.040	0.040	0.015	0.015
MF	3.538	3.538	3.538	0.15	0.045	0.045	0.015	0.015
V	1.36	1.36	1.36	0.44	0.64	0.70	0.64	0.64
EC	3.45	2.35	4.88	2.00	2.28	2.28	1.80	1.80
IL	-2.417	-2.246	-2.126	-2.285	-2.277	-2.277	-2.277	-2.277
E	2.38	2.01	2.36	2.14	2.04	2.04	2.15	2.04
AL	0.0	1680.0	1850.0	0.0	390.1	385.1	300.0	530.0
D	0.0	1680.0	1620.0	520.0	370.0	320.0	300.0	280.0

No. of Sowers

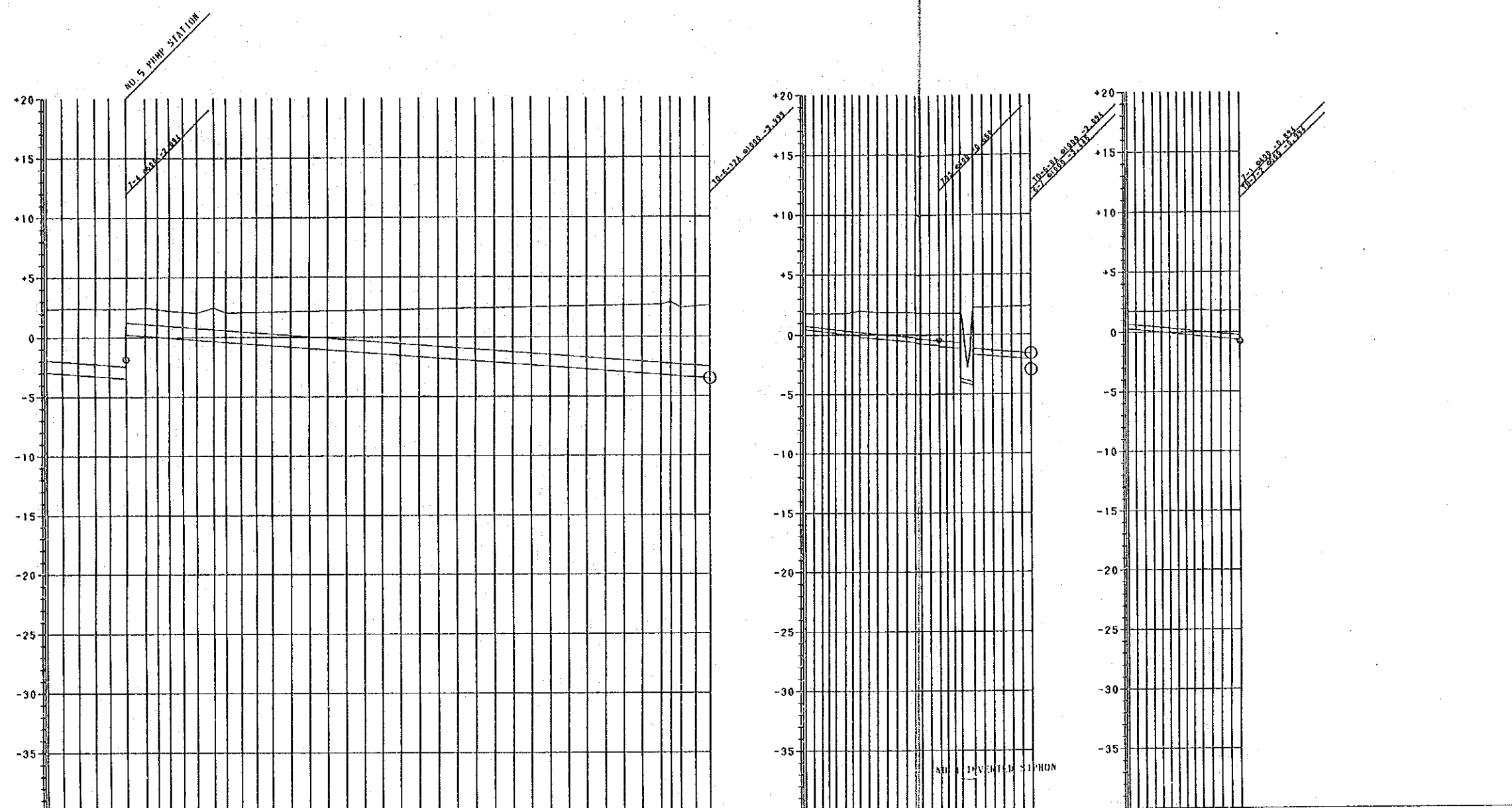
1-8	1-9	1-10	4-1	4-2
4-3	4-4A	4-4	5-1	5-2

PRELIMINARY DESIGN
SEWER PROFILE (3)
RANG SIT

5/35
V 1:200
H 1:10,000

MASTER PLANNING FOR THE SEWERAGE
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY



LEGEND

Item	Description
NO	NO. of Sewers
D	Diameter
S	Slope
DF	Design Flow
MF	Maximum Flow for Pipe
V	Velocity
EC	Earth Cover
IL	Invert Level
E	Elevation
AL	Accumulated Length
D	Distance

NO	6-7	6-8A	6-8	6-9	6-10	6-11	701	7-1	7-2	7-3A	7-4	702	703
D	Ø1000	Ø1000	Ø1000	Ø1000	Ø1000	Ø1000	Ø500	Ø400	Ø500	Ø500	Ø500	Ø400	Ø400
S	1.40%	1.40%	1.40%	1.40%	1.40%	1.40%	2.20%	1.80%	1.60%	1.60%	1.60%	1.80%	1.80%
DF	0.430	0.467	0.460	0.467	0.467	0.467	0.042	0.067	0.138	0.138	0.138	0.032	0.032
MF	0.897	0.897	0.897	0.897	0.897	0.897	0.045	0.089	0.154	0.151	0.151	0.038	0.038
V	1.14	1.4	1.14	1.14	1.14	1.14	0.64	0.70	0.77	0.77	0.77	0.70	0.70
EC	1.20	1.20	1.20	1.30	1.30	1.30	1.00	1.75	2.35	2.11	2.11	1.00	1.75
IL	-1.20	-1.20	-1.20	-1.30	-1.30	-1.30	-0.47	-0.88	-0.88	-0.88	-0.88	-0.31	-0.31
E	2.35	2.35	2.00	2.00	2.00	2.70	1.80	2.00	1.80	1.78	1.78	1.75	1.75
AL	0.0	330.1	750.2	940.2	1620.0	2560.2	0.0	225.0	350.0	540.0	685.0	350.0	475.0
D	0.0	330.1	425.0	181.0	1620.0	2060.2	0.0	225.0	350.0	540.0	685.0	350.0	475.0

No. of Sewers

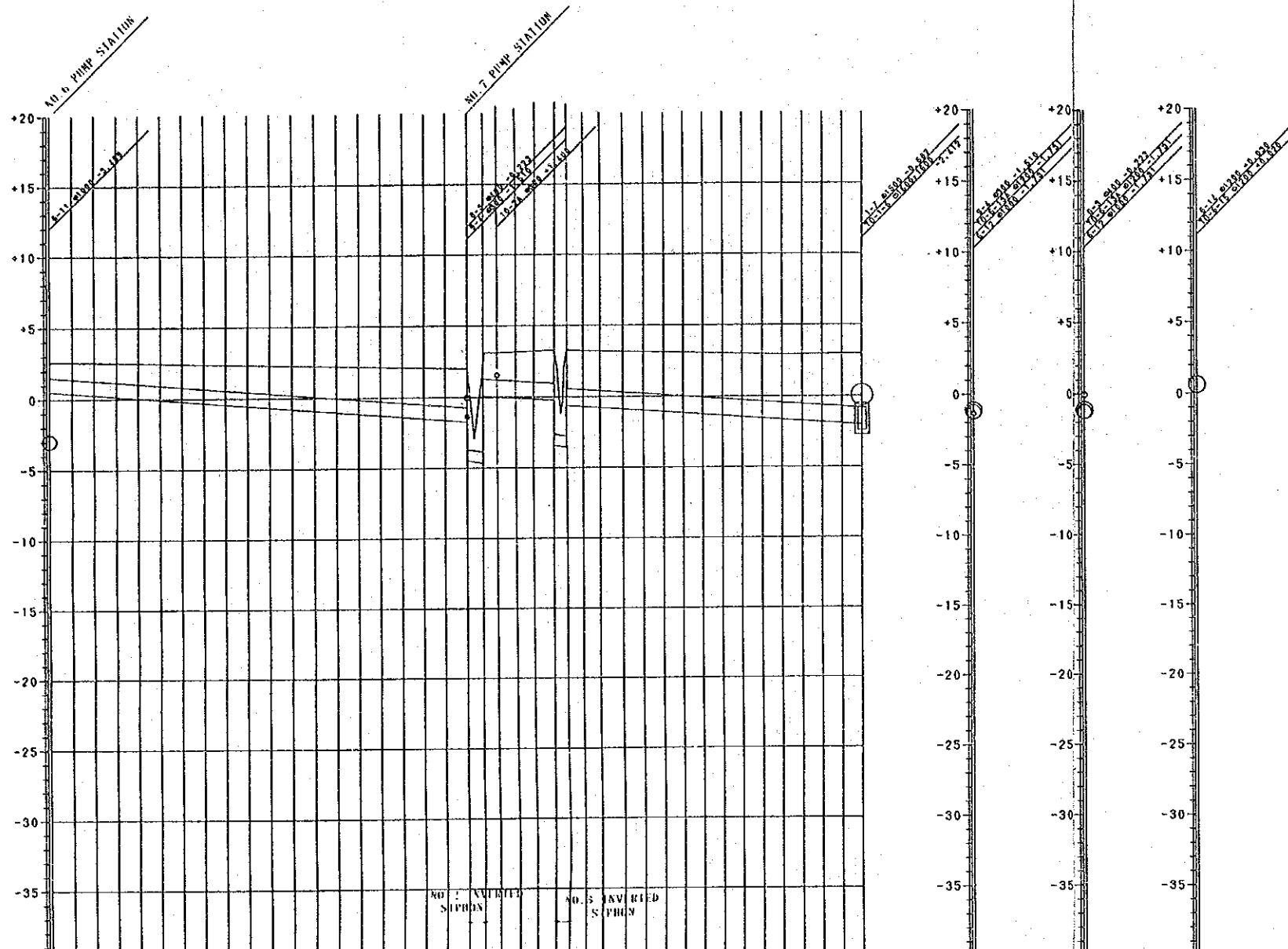
6-6	6-7	6-8A	6-8	6-9
		701	7-1	7-2
		7-3	7-3A	7-4
		7-4	702	703

PRELIMINARY DESIGN
SEWER PROFILE (4)
RANG SIT

6/35
V : 1 : 200
H : 1 : 10,000

MASTER PLANNING FOR THE SEWERAGE
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY



LEGEND

Item	Description
NO	No. of Sewers
D	Diameter
S	Slope
DF	Design Flow
MF	Maximum Flow for Pipe
V	Velocity
EC	Earth Cover
IL	Invert Level
E	Elevation
AL	Accumulated Length
D	Distance

NO	6-12	6-13	6-14	6-15	6-16	6-17	6-18	6-19	6-20	6-21
D	Ø1000	Ø1200	Ø1200	Ø1200	Ø1200	Ø1200	Ø1200	Ø1200	Ø1200	Ø1200
S	1.40%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%
DF	0.881	1.188	1.188	1.188	1.188	1.188	1.188	1.188	1.188	1.188
MF	0.897	1.251	1.251	1.251	1.251	1.251	1.251	1.251	1.251	1.251
V	1.14	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
EC	1.265	1.265	1.265	1.265	1.265	1.265	1.265	1.265	1.265	1.265
IL	2.225	2.225	2.225	2.225	2.225	2.225	2.225	2.225	2.225	2.225
E	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
AL	0.0	148.0	220.0	280.0	320.0	350.0	380.0	410.0	440.0	470.0
D	0.0	148.0	220.0	280.0	320.0	350.0	380.0	410.0	440.0	470.0

No. of Sewers

6-12A	6-12	6-13A	6-13	6-14A
6-14	6-15	6-16	6-17A	6-17
6-18	8-3	9-4	10-2A	

PRELIMINARY DESIGN
SEWER PROFILE (5)
RANG SIT

7/35
V 1:200
H 1:10,000

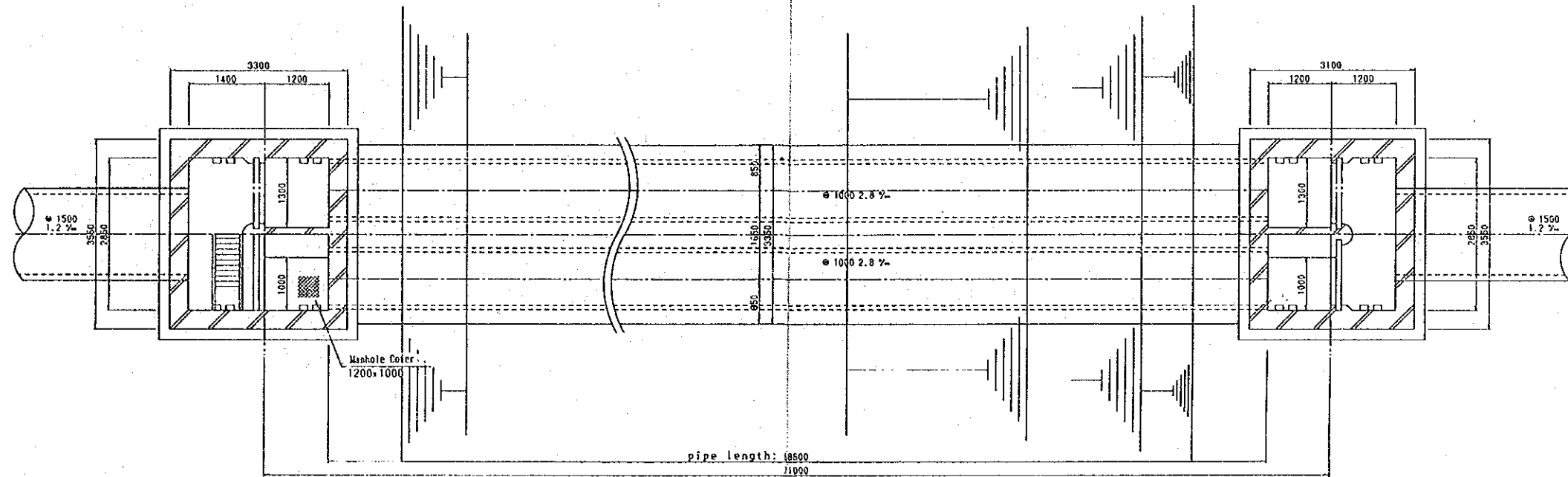
MASTER PLANNING FOR THE SEWERAGE
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

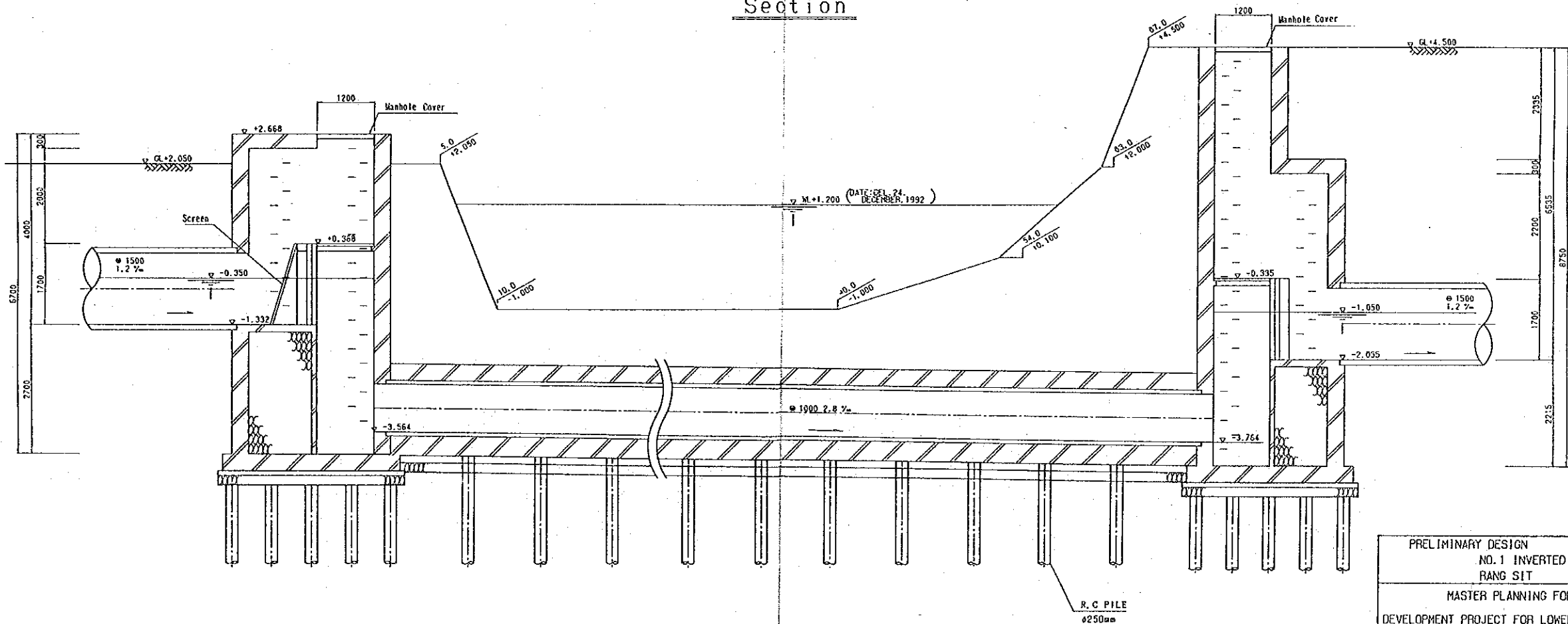
No. 1 (1-5) INVERTED SIPHON

S=1/50

Plan



Section

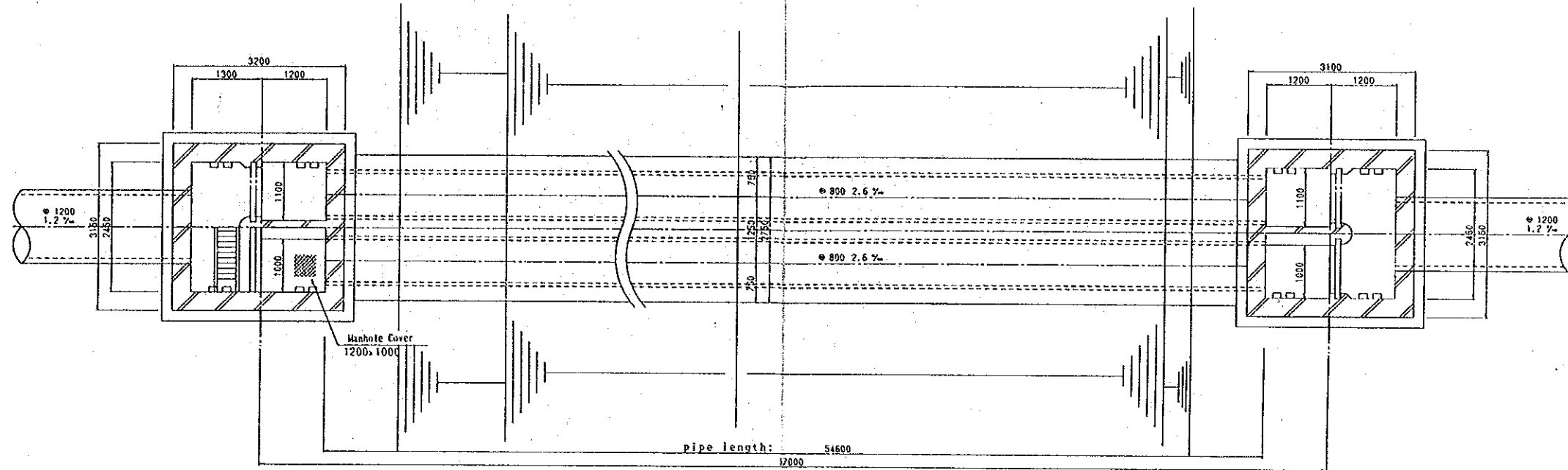


PRELIMINARY DESIGN	8	35
NO. 1 INVERTED SIPHON		
RANG SIT		S=1/50
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

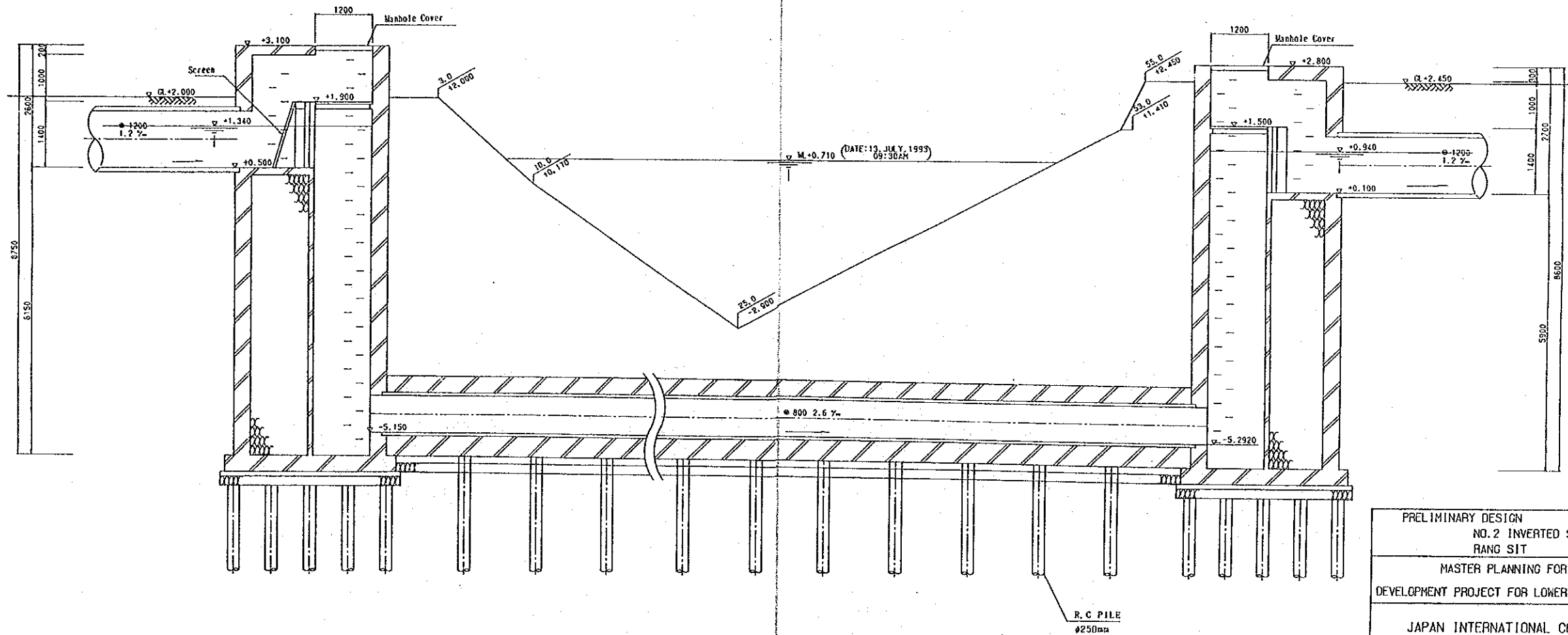
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S=1/50

Plan



Section

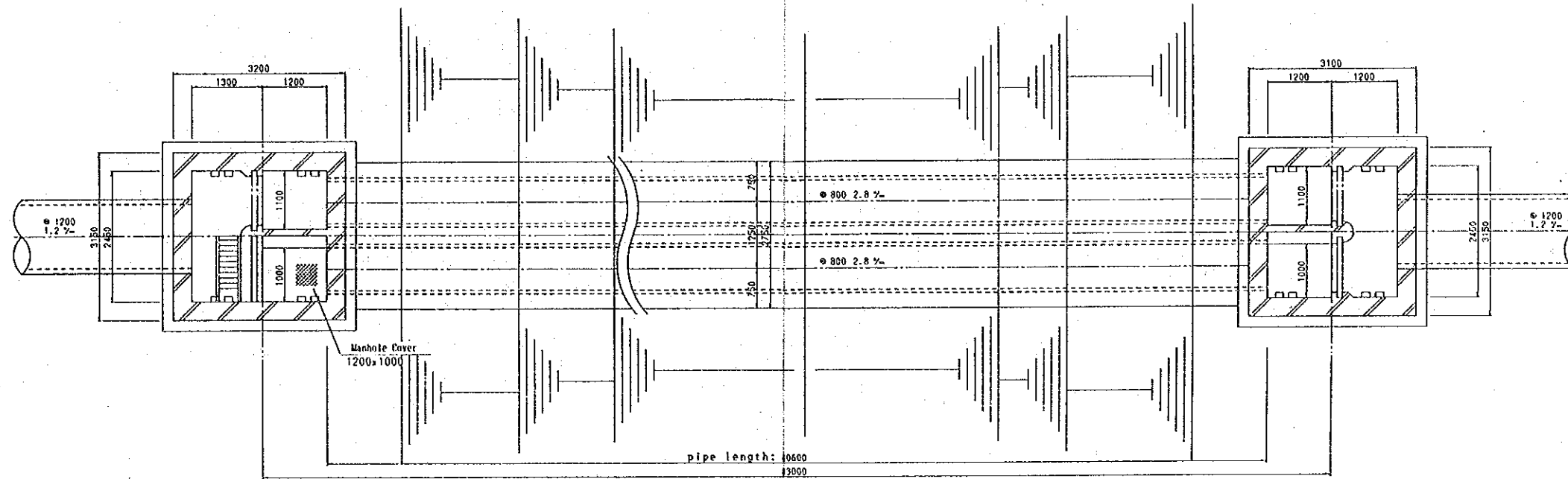


PRELIMINARY DESIGN	9	35
NO. 2 INVERTED SIPHON		
RANG SIT		S=1/50
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

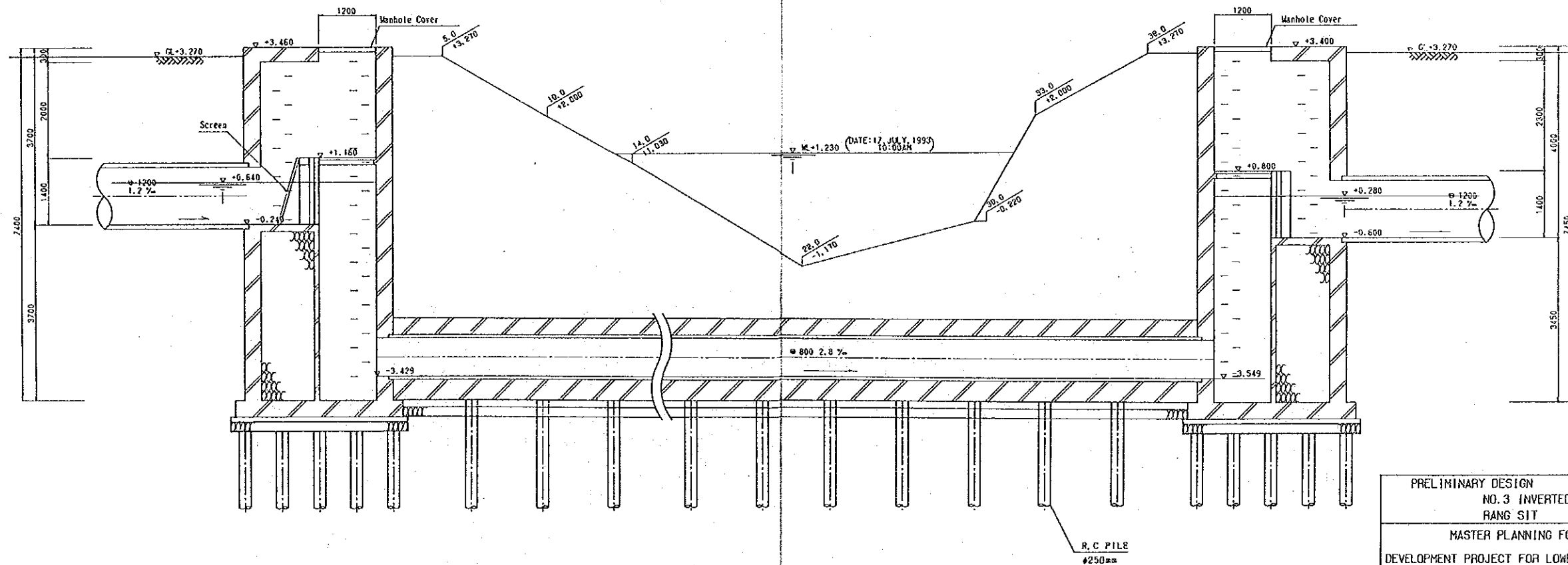
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S=1/50

Plan



Section

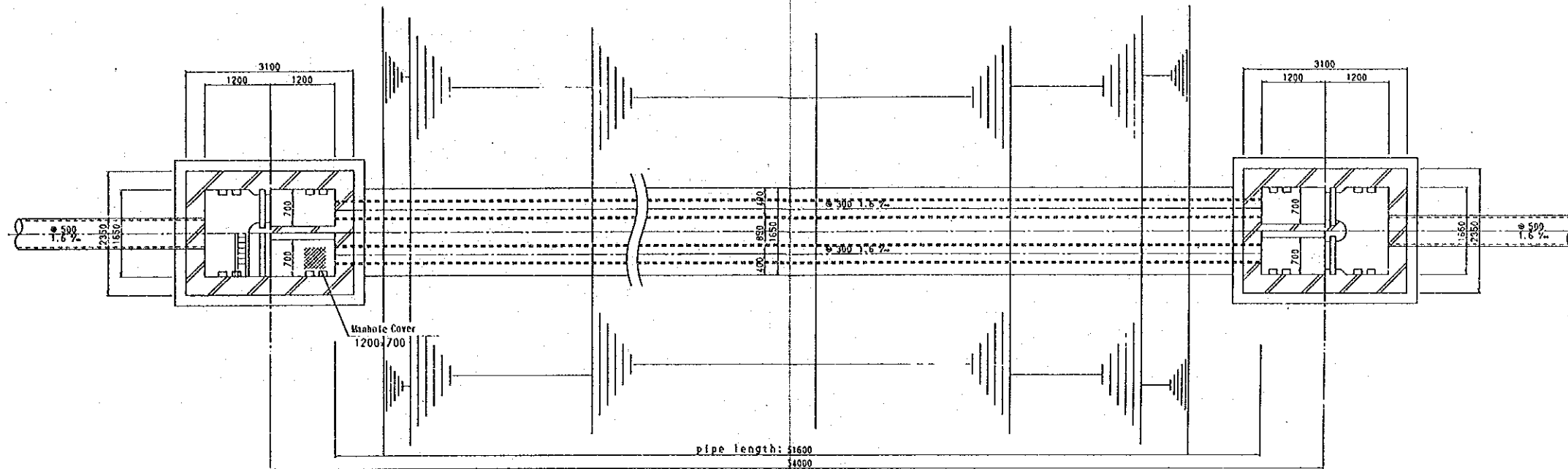


PRELIMINARY DESIGN	10	35
NO.3 INVERTED SIPHON	S=1/50	
RANG SIT		
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

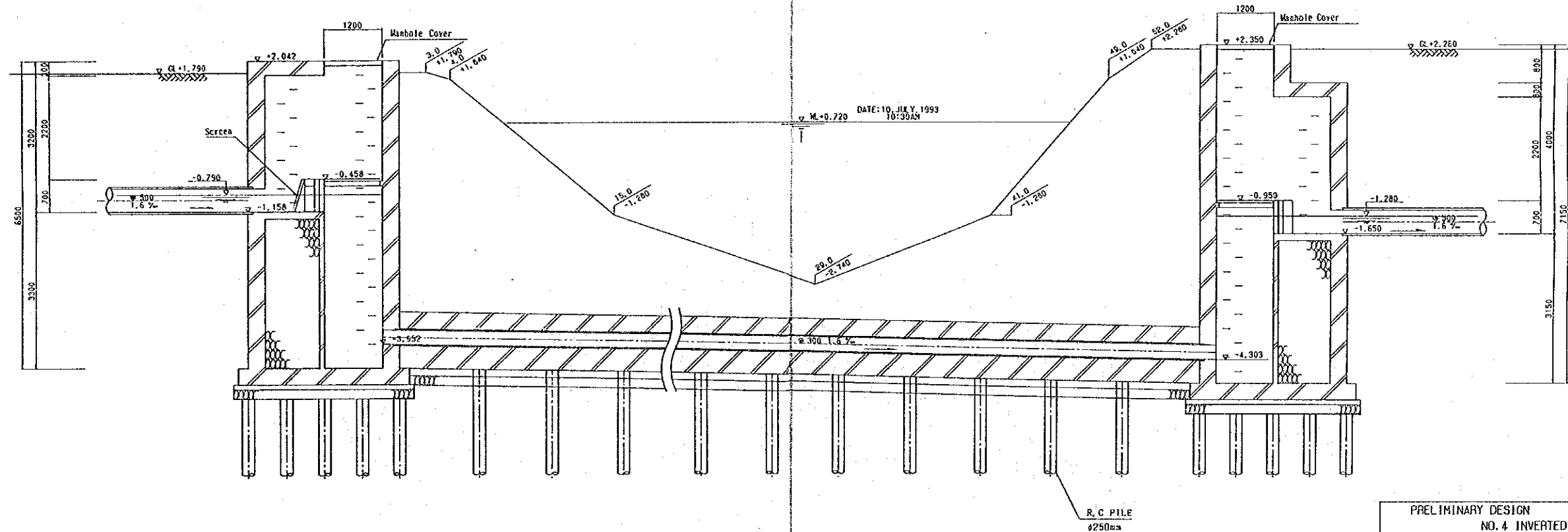
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S=1/50

Plan



Section

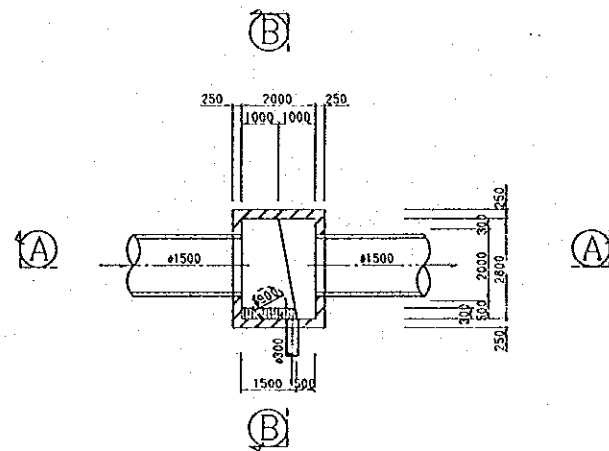


PRELIMINARY DESIGN	11	35
NO. 4 INVERTED SIPHON		S=1/50
RANG SIT		
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

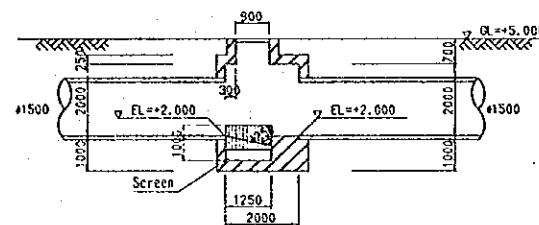
Standard Design of Overflow Chamber

Type B

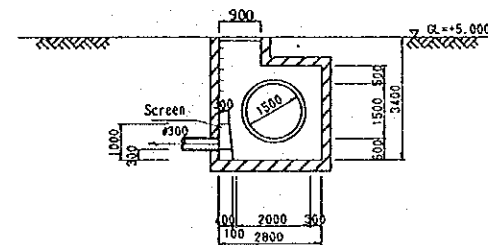
Plan



Section A-A

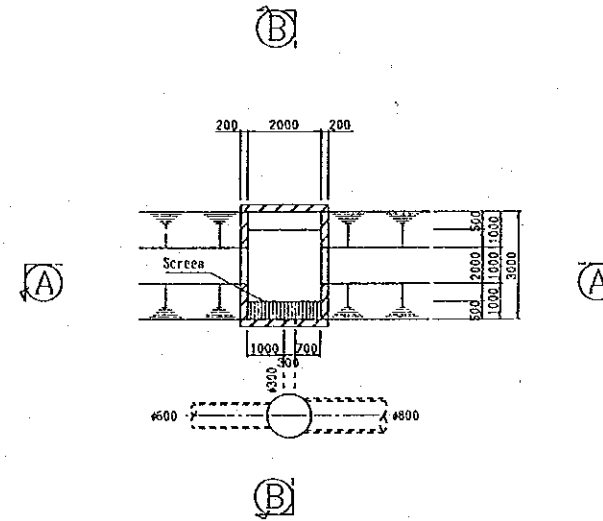


Section B-B

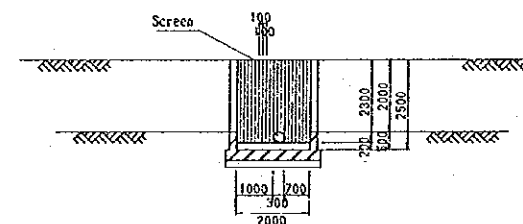


Type C

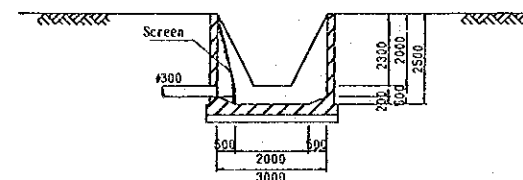
Plan



Section A-A



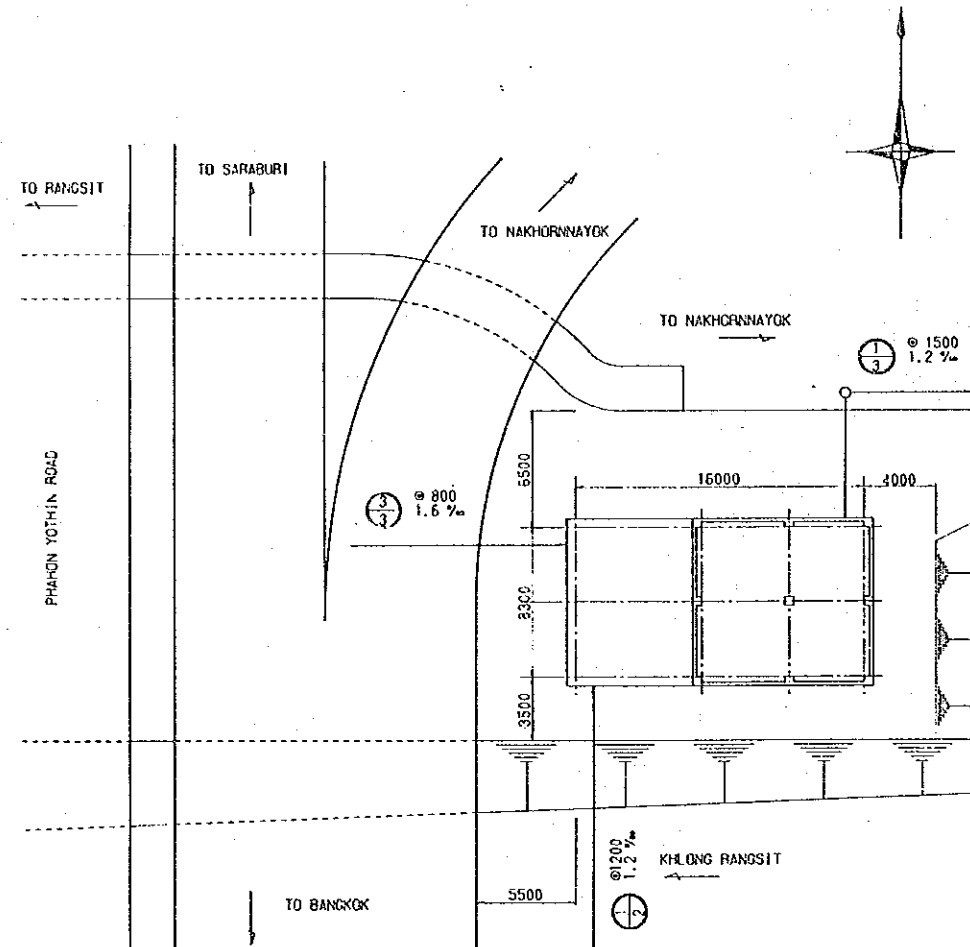
Section B-B



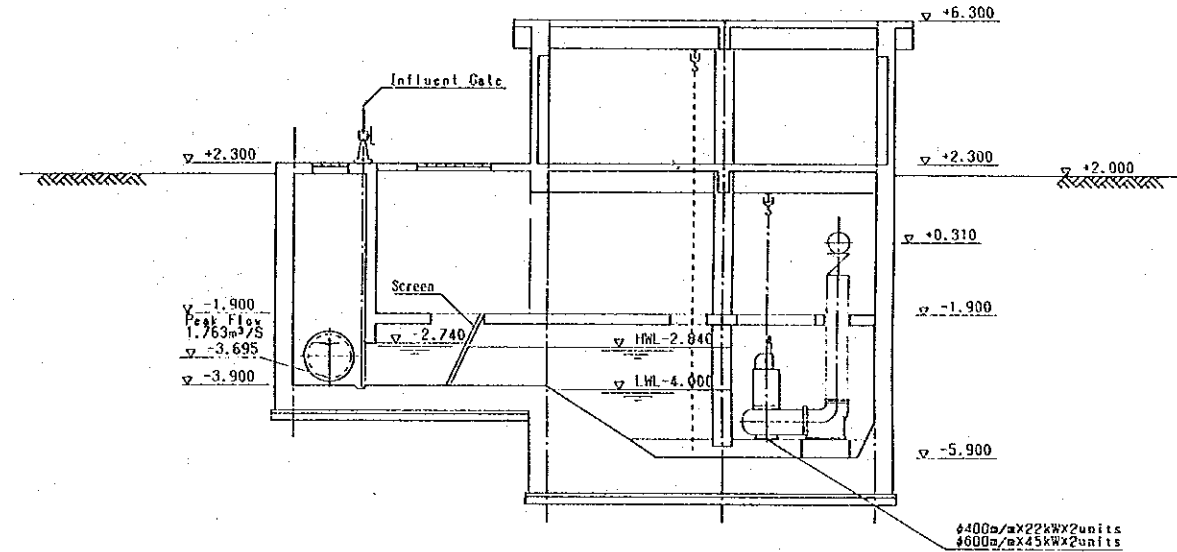
PRELIMINARY DESIGN STANDARD DESIGN OF OVERFLOW CHAMBER BANG SIT	12 / 35 S=1/100
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

NO. 1 PUMP STATION(1)

General Plan
S=1/200

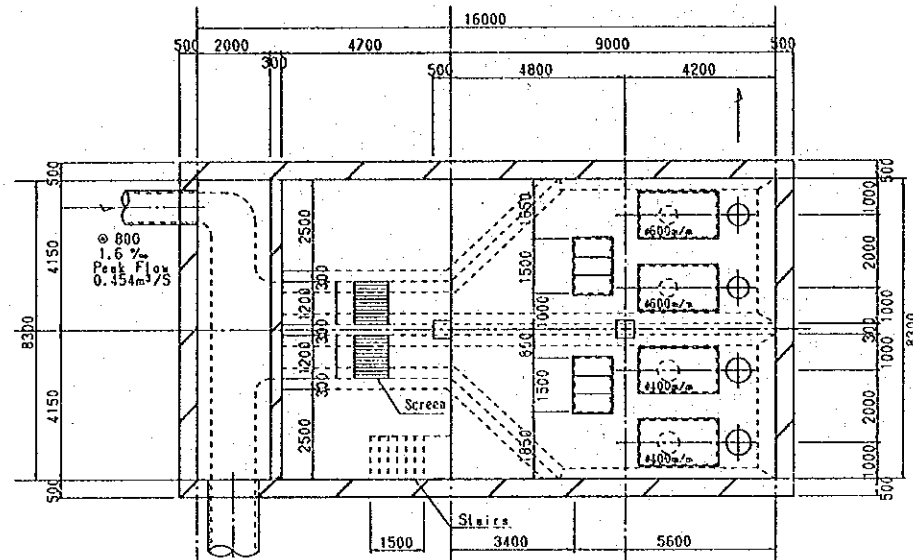


Water Levels Diagram

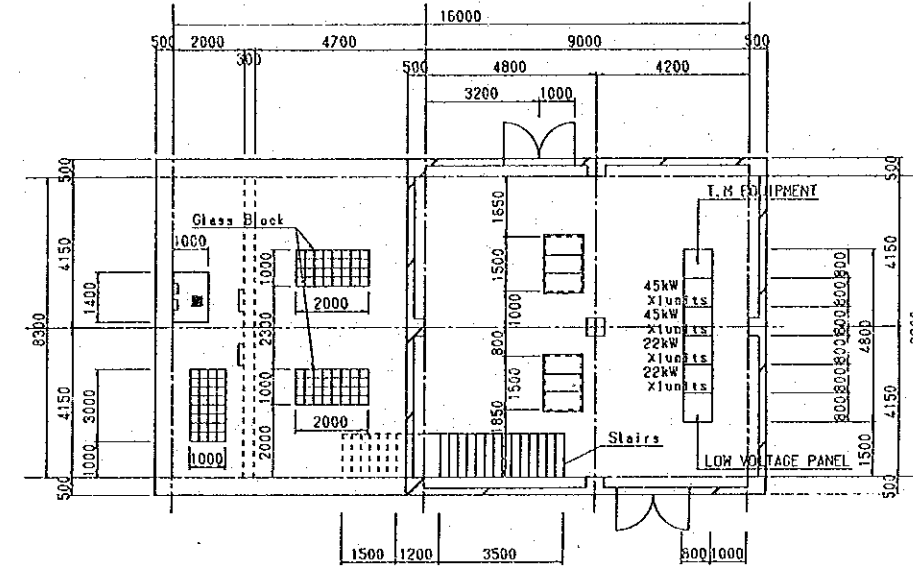


PRELIMINARY DESIGN	13	35
NO. 1 PUMP STATION(1)	S=1/200	S=1/100
RANG SIT		
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

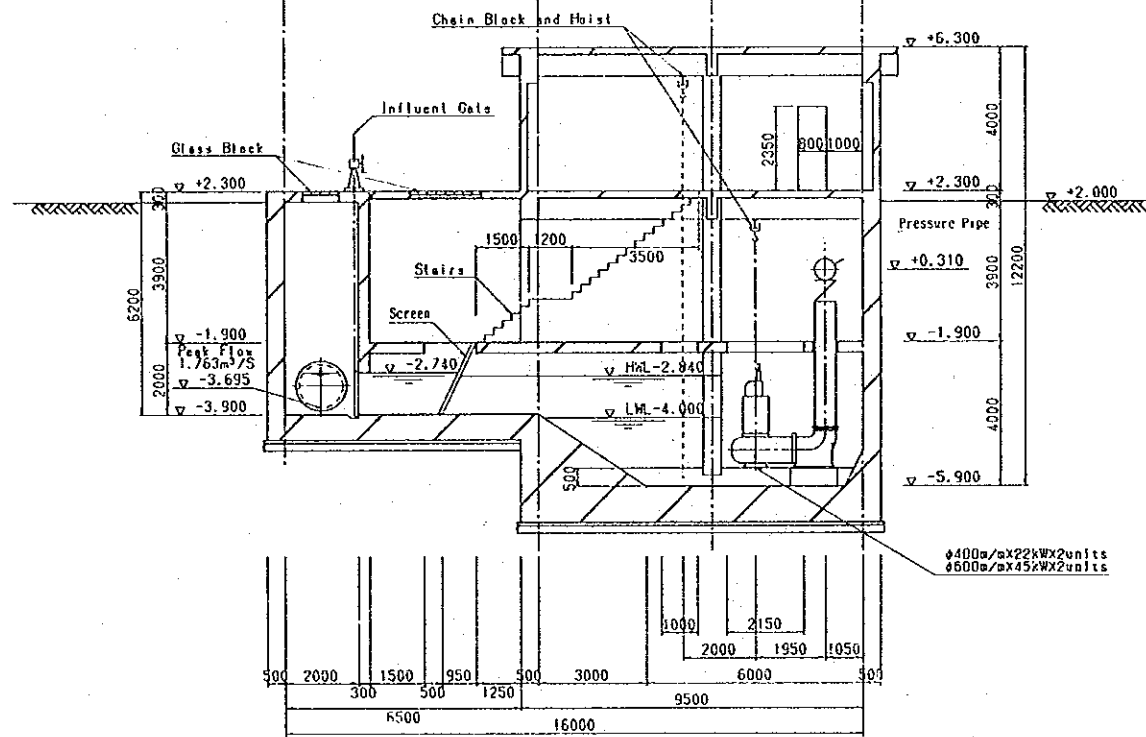
NO. 1 PUMP STATION (2)



1B Floor Plan



1 Floor Plan

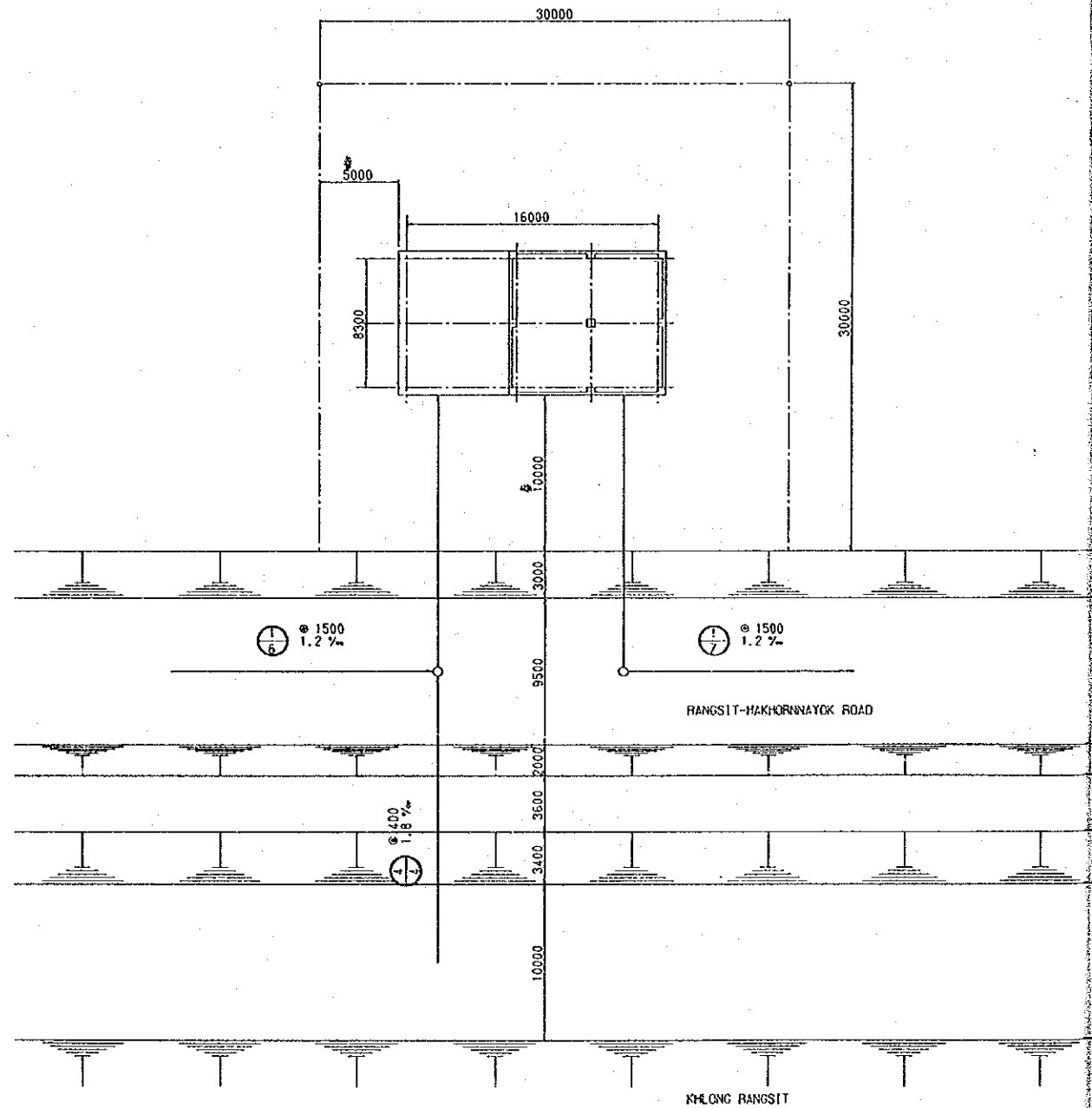


Section

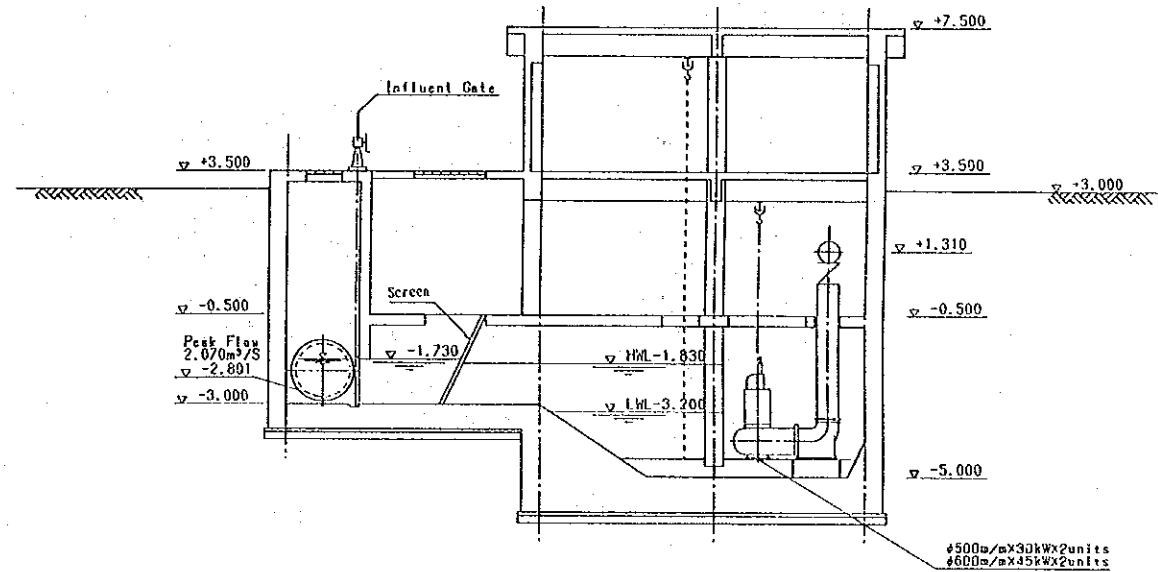
PRELIMINARY DESIGN	14	35
NO. 1 PUMP STATION (2)		
RANG SIT	S=1/100	
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

NO. 2 PUMP STATION (1)

General Plan
S=1/200

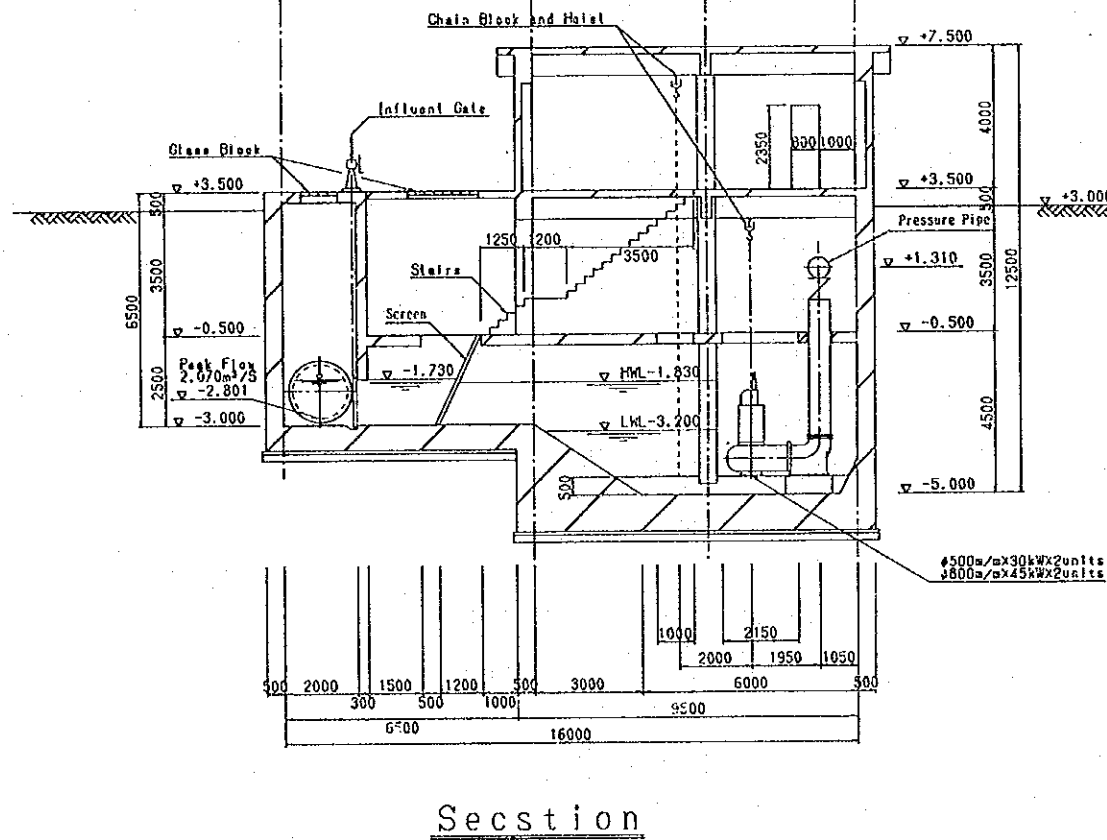
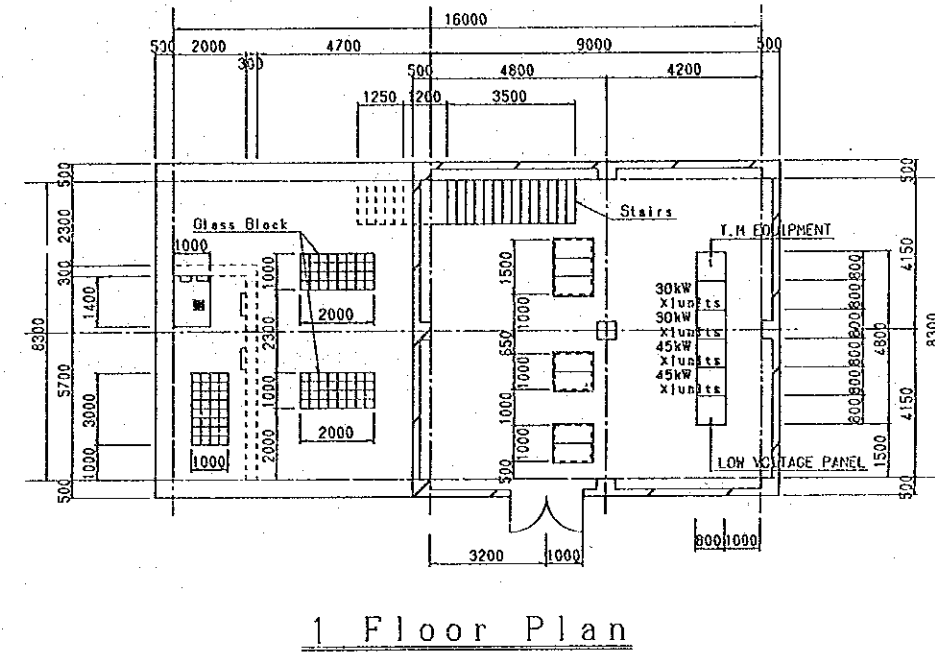
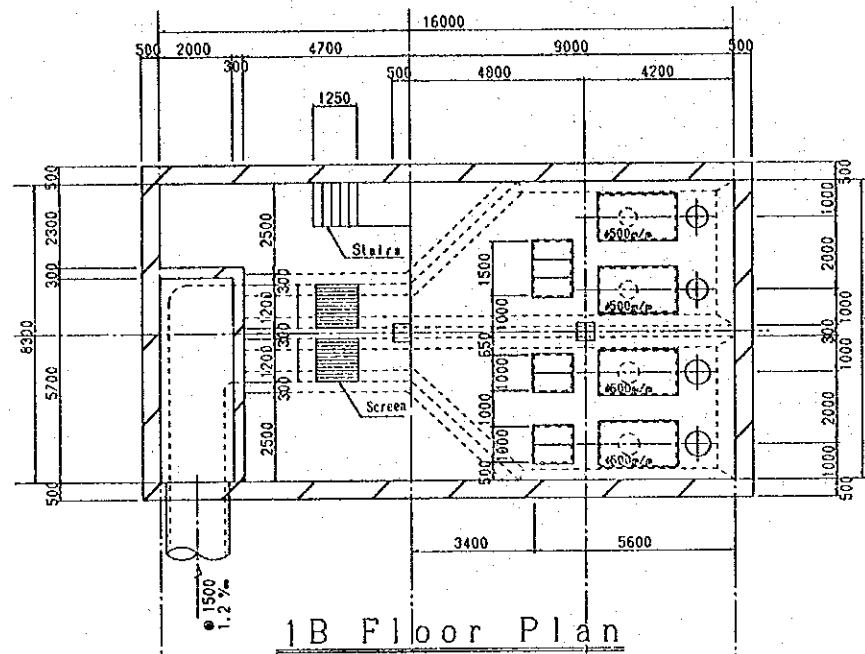


Water Levels Diagram



PRELIMINARY DESIGN	15
NO. 2 PUMP STATION (1)	35
RANG SIT	S=1/200 S=1/100
MASTER PLANNING FOR THE SEWERAGE	
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

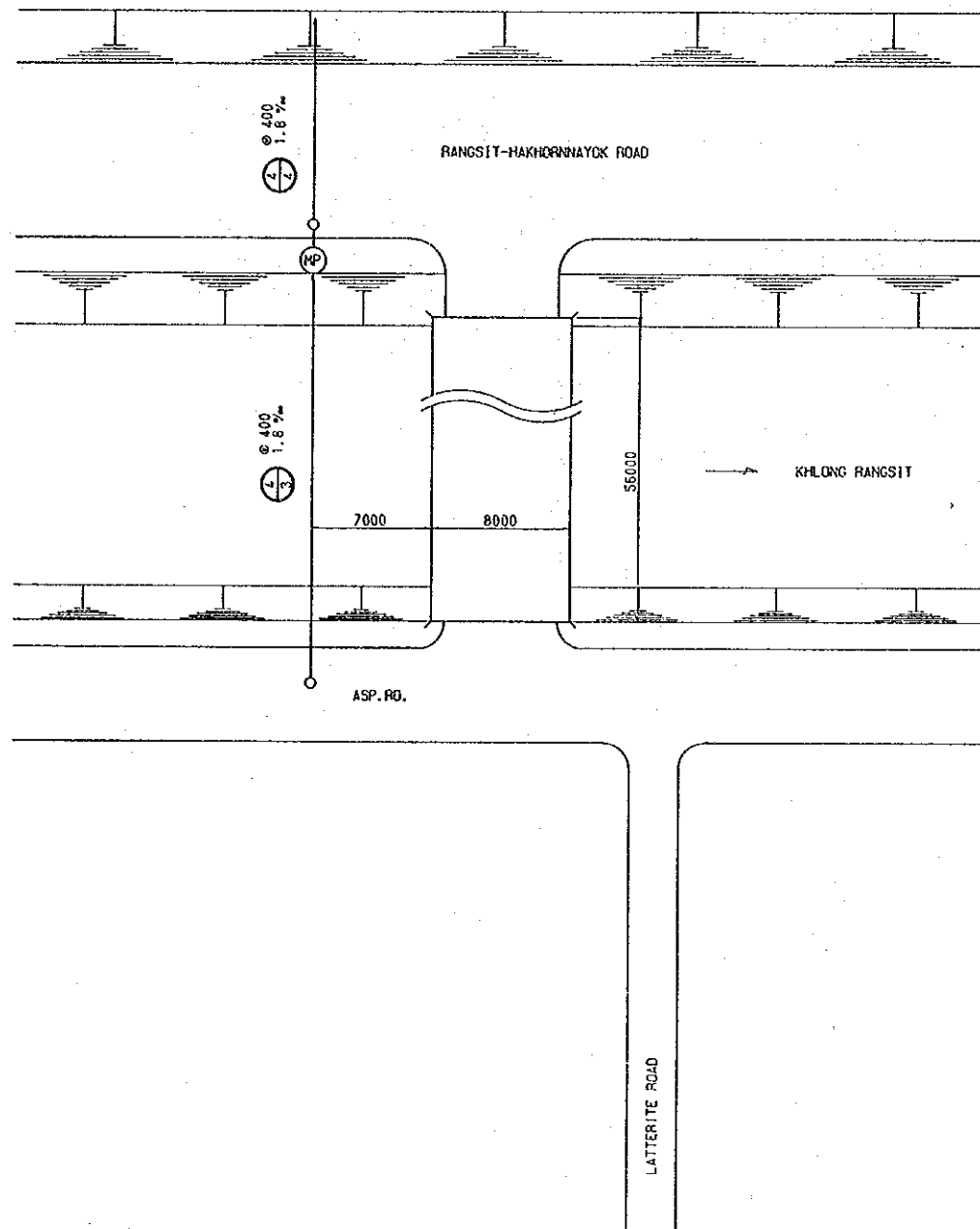
NO. 2 PUMP STATION (2)



PRELIMINARY DESIGN	16	35
NO. 2 PUMP STATION (2)		
RANG SIT		S=1/100
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

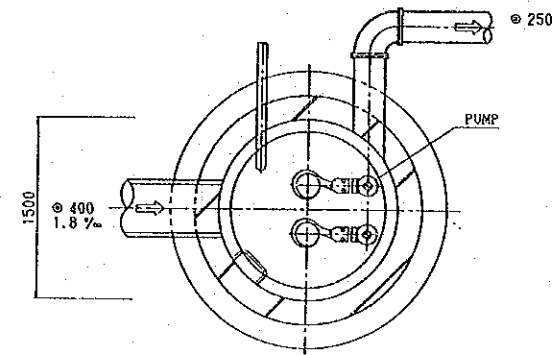
NO. 3 PUMP STATION

General Plan
S=1/200

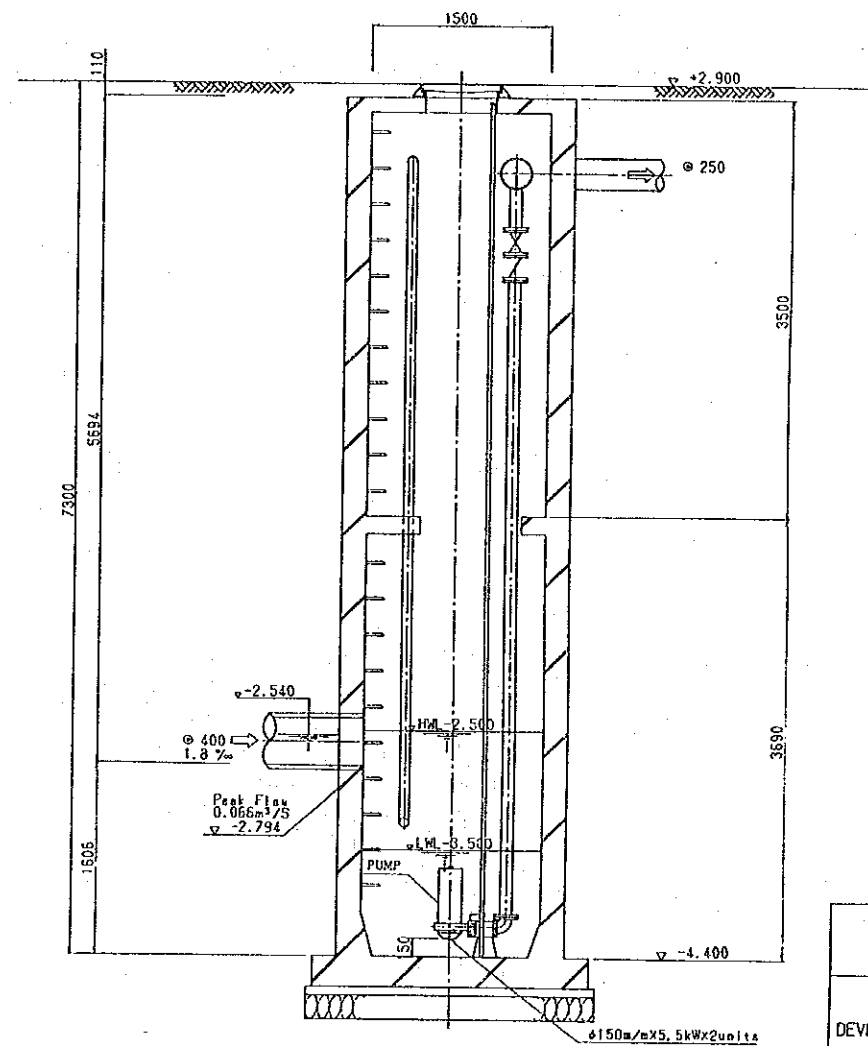


Manhole Type
S=1/30

Plan



Cross Section

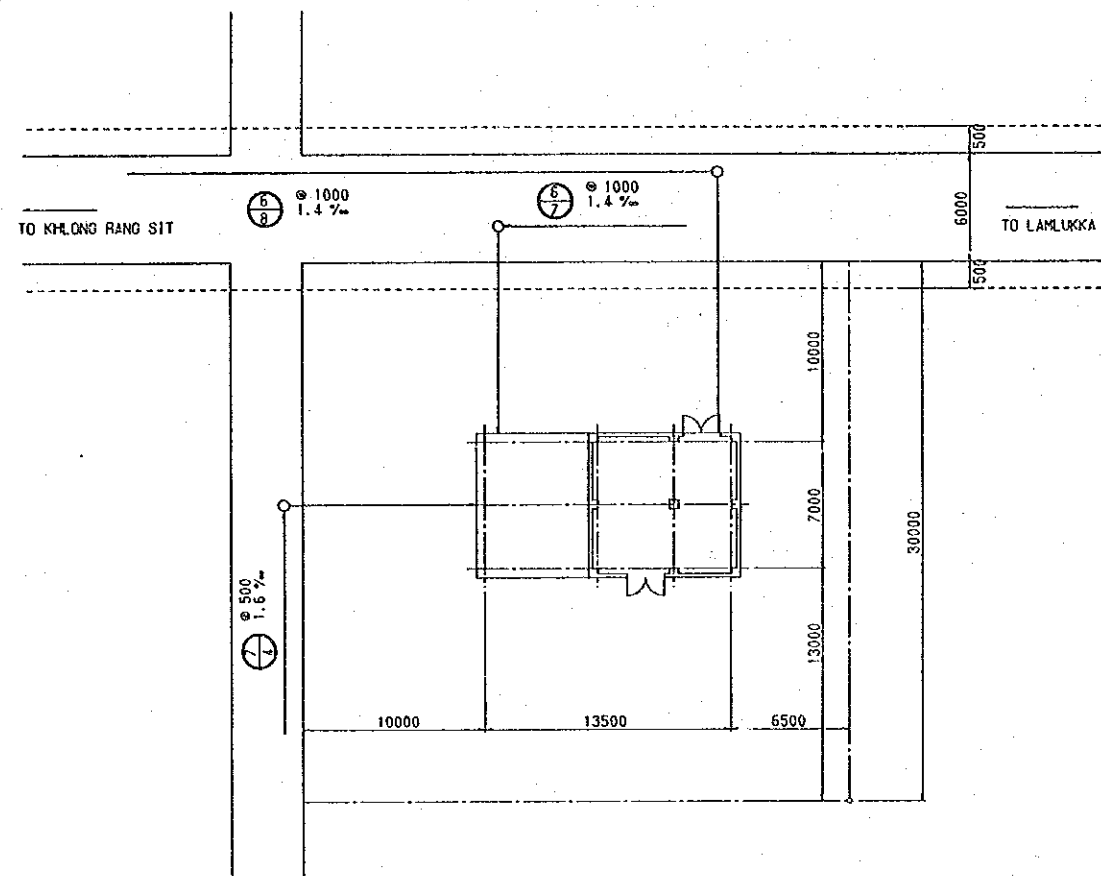


PRELIMINARY DESIGN NO. 3 PUMP STATION RANG SIT	17/35 S=1/200 S=1/30
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

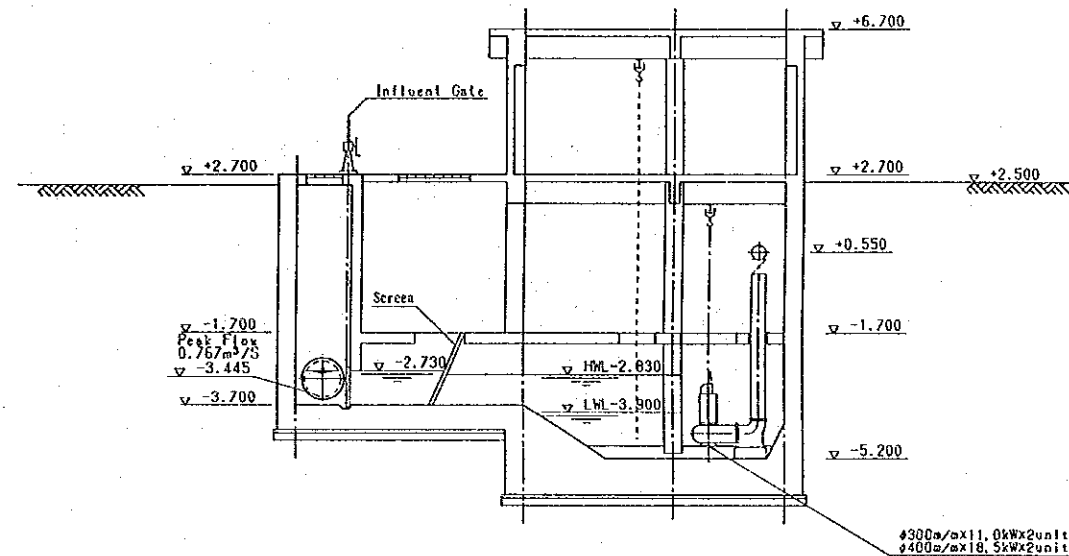
NO. 5 PUMP STATION (1)

General Plan

S=1/200

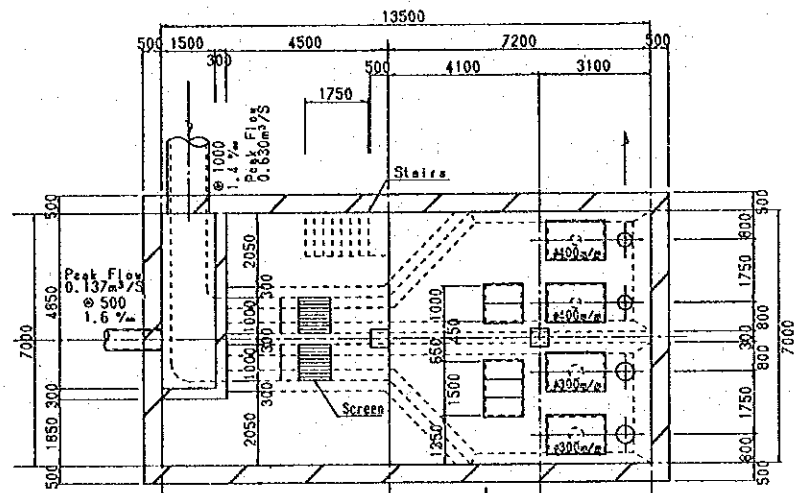


Water Levels Diagram

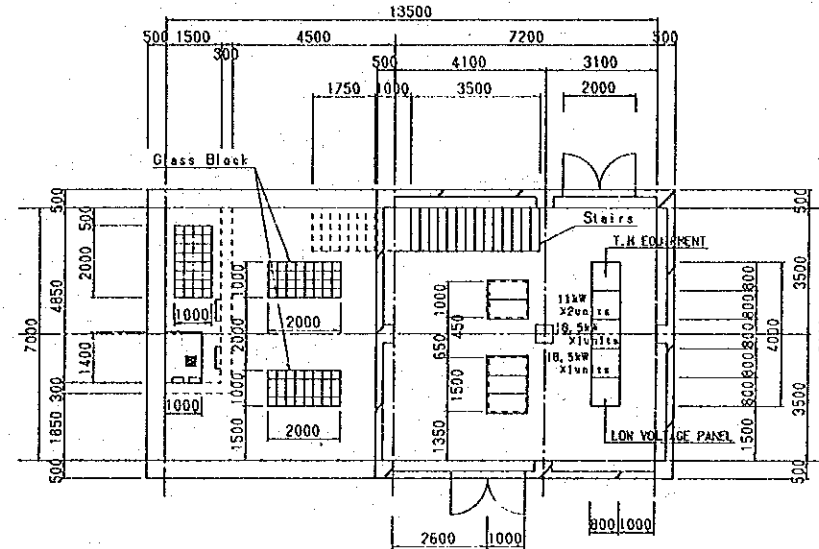


PRELIMINARY DESIGN	18 / 35
NO. 5 PUMP STATION (1)	S=1/200
RANG SIT	S=1/100
MASTER PLANNING FOR THE SEWERAGE	
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

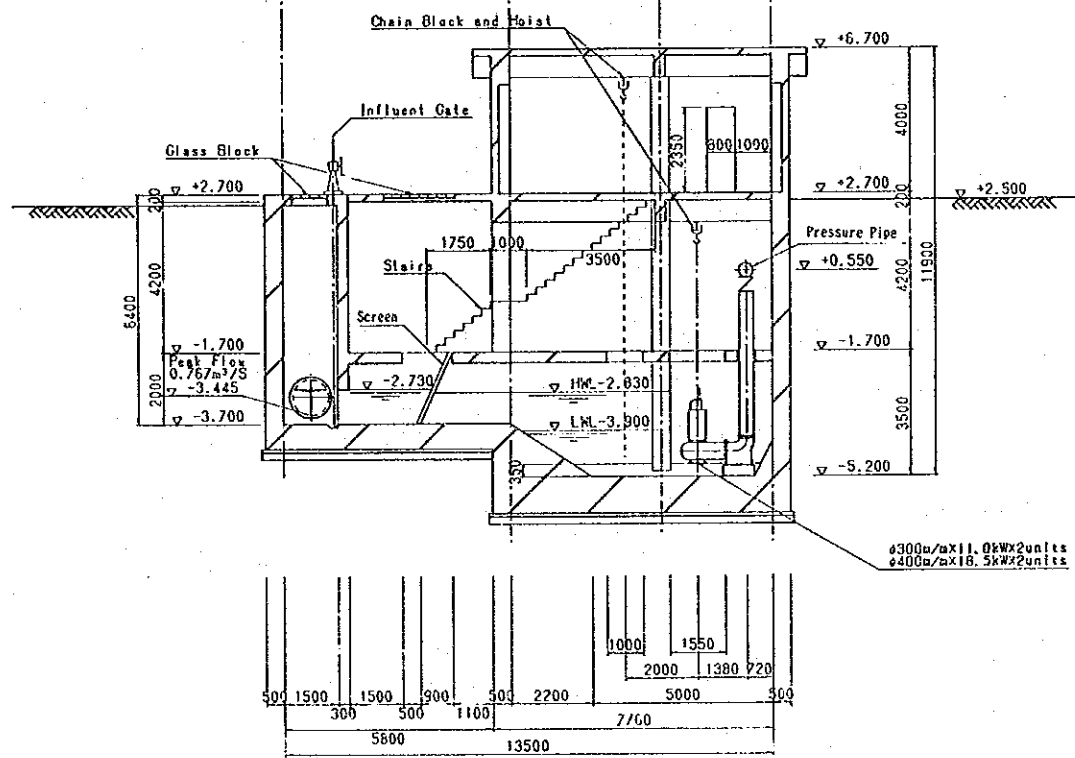
NO. 5 PUMP STATION (2)



1B Floor Plan



1 Floor Plan



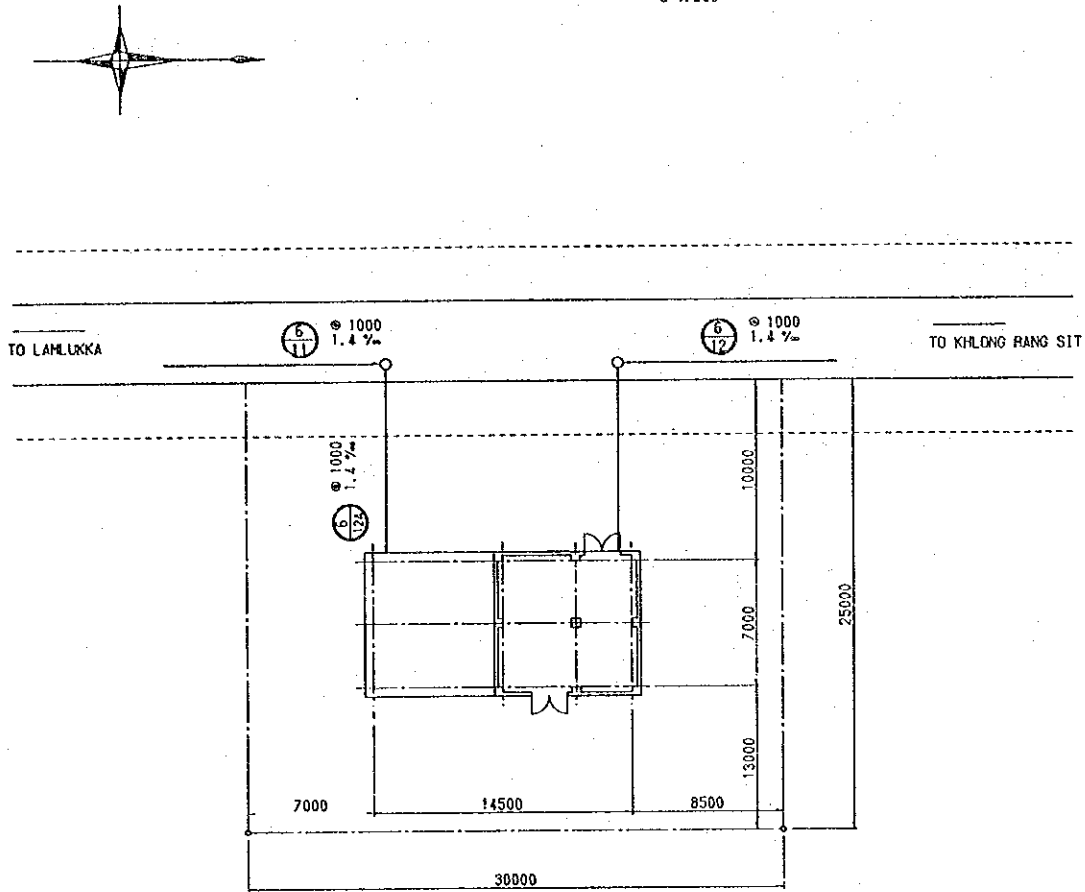
Section

PRELIMINARY DESIGN	19
NO. 5 PUMP STATION (2)	35
RANG SIT	S=1/100
MASTER PLANNING FOR THE SEWERAGE	
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

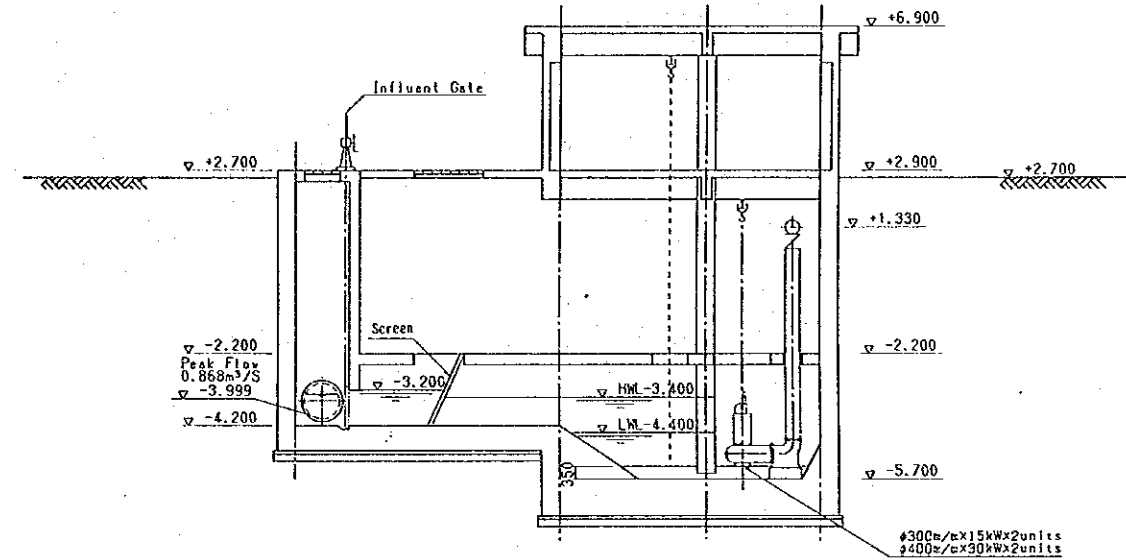
NO. 6 PUMP STATION (1)

General Plan

S=1/200

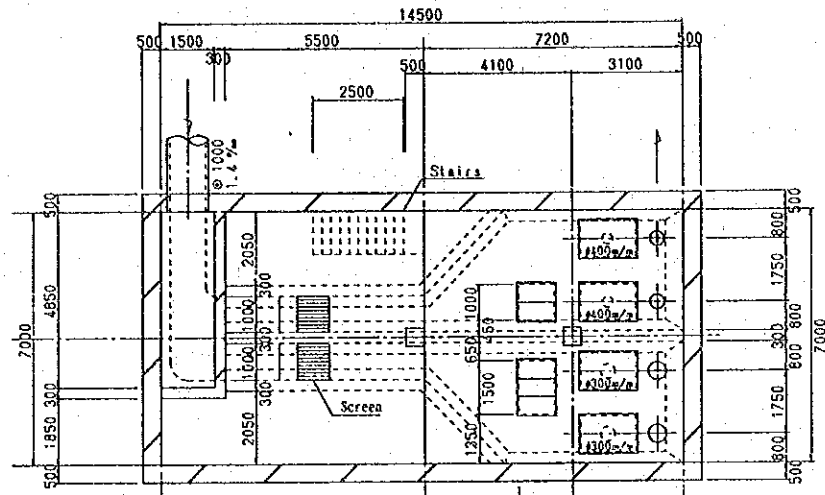


Water Levels Diagram

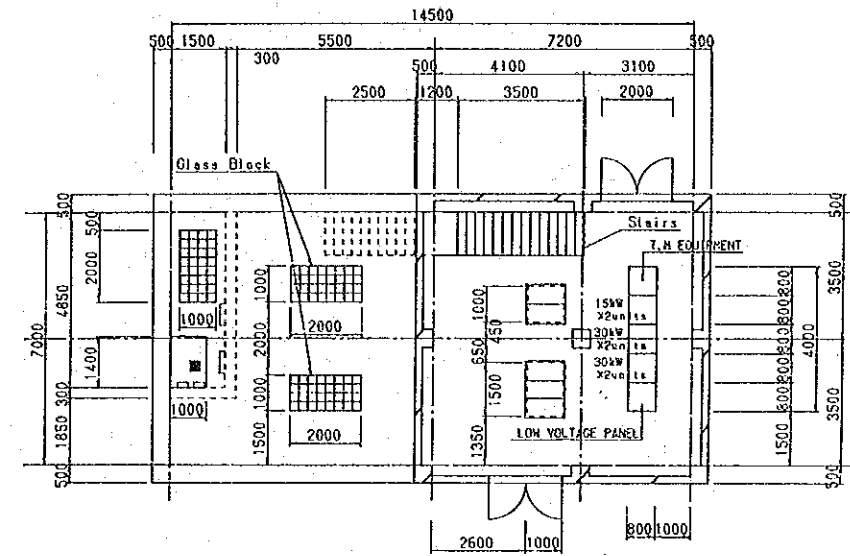


PRELIMINARY DESIGN NO. 6 PUMP STATION (1) RANG SIT	20 / 35 S=1/200 S=1/100
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAD PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

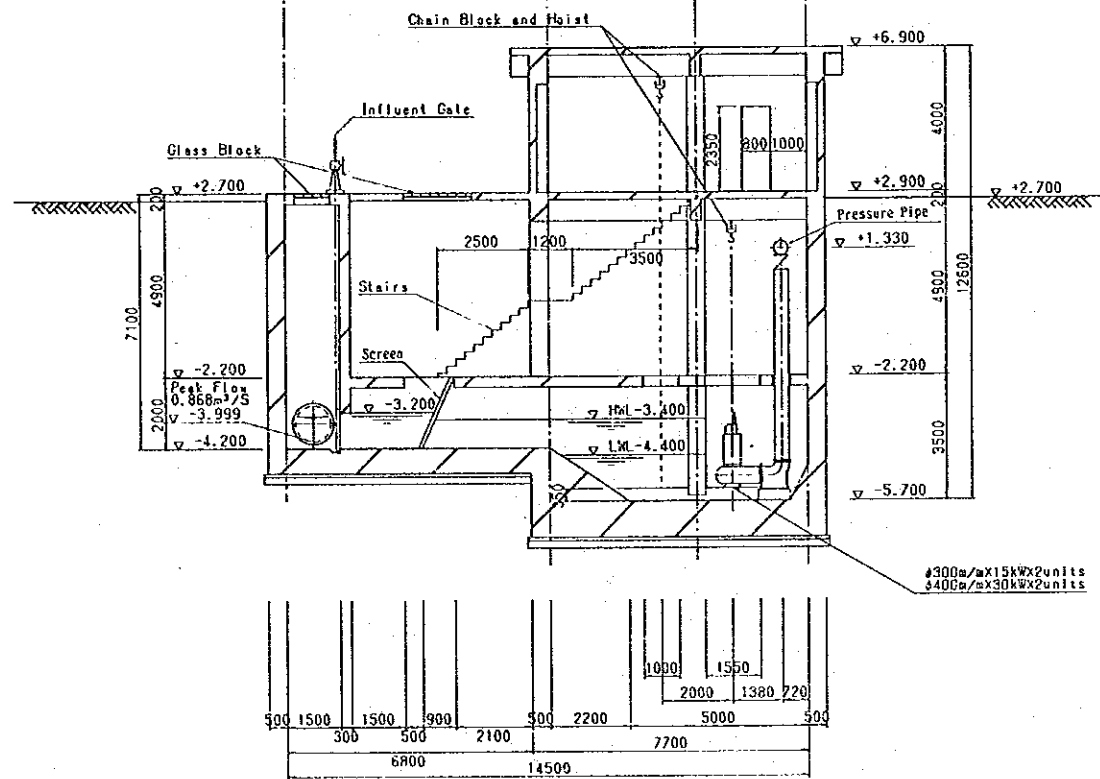
NO. 6 PUMP STATION (2)



1B Floor Plan



1 Floor Plan

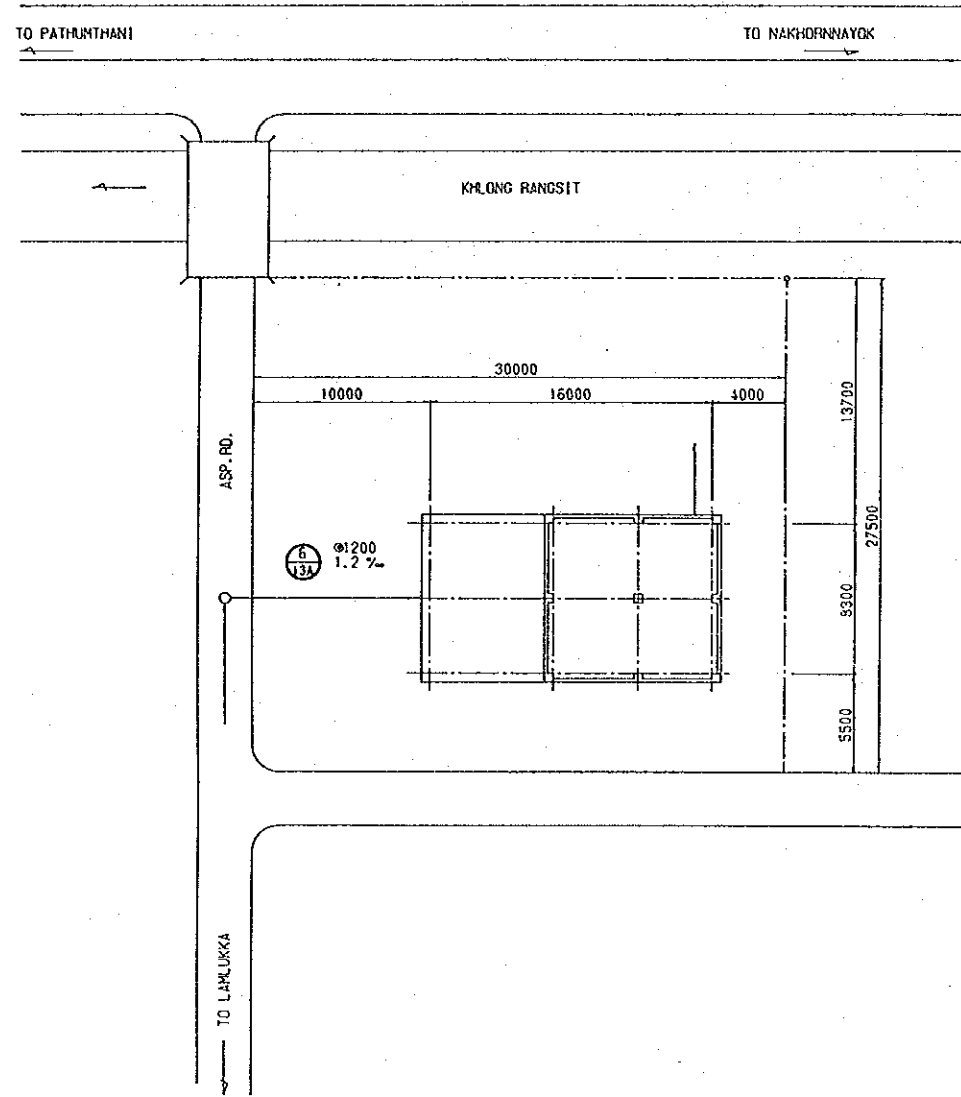


Section

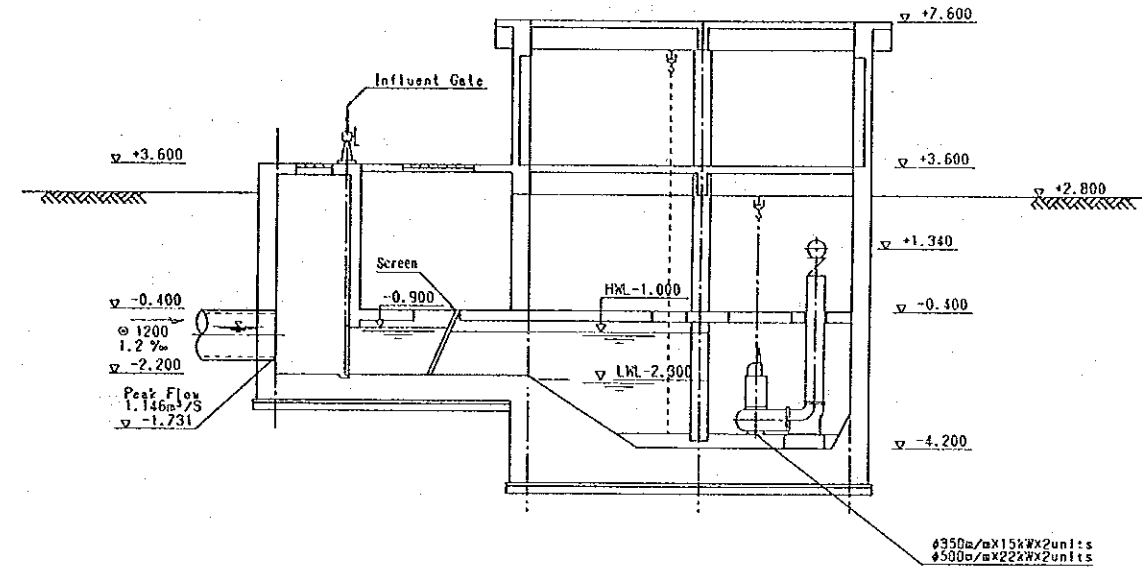
PRELIMINARY DESIGN NO. 6 PUMP STATION (2) RANG SIT	21 35 S=1/100
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

NO. 7 PUMP STATION (1)

General Plan
S=1/200

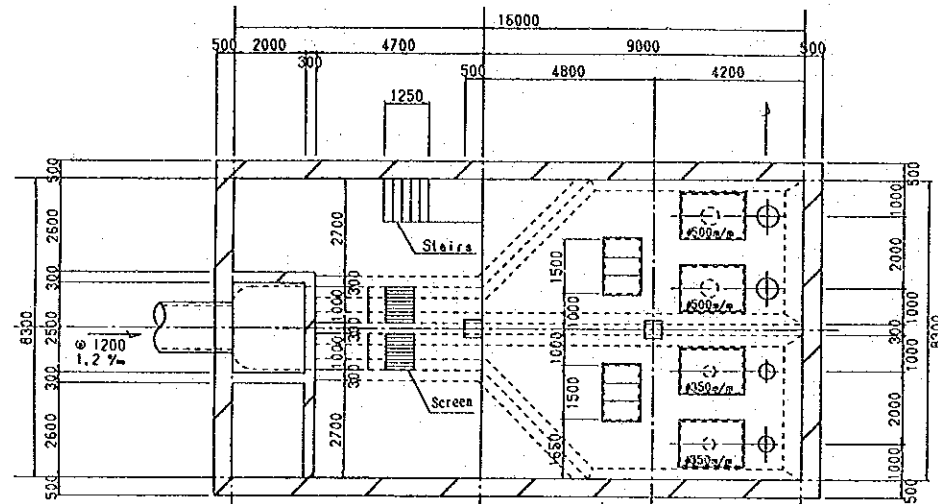


Water Levels Diagram

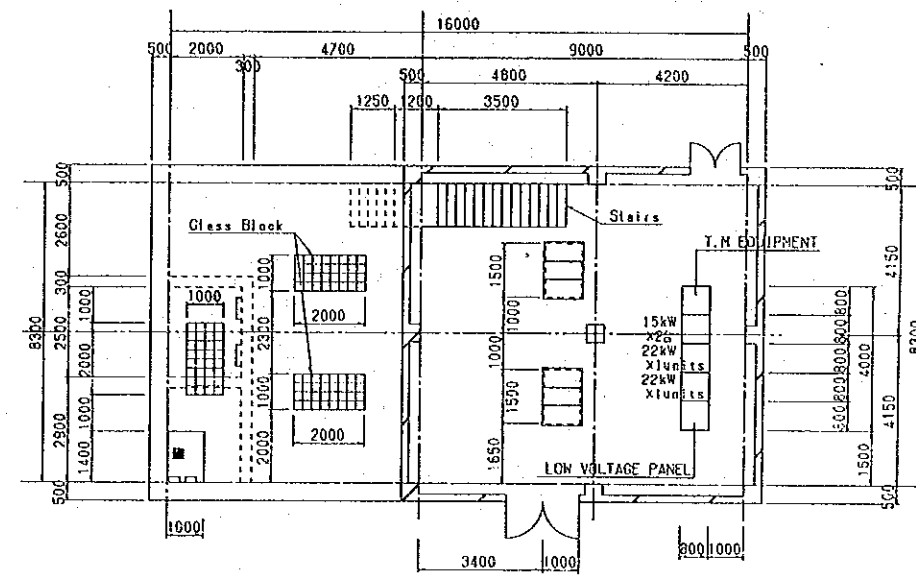


PRELIMINARY DESIGN	22	35
NO. 7 PUMP STATION (1)	S=1/200	
RANG SIT	S=1/100	
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

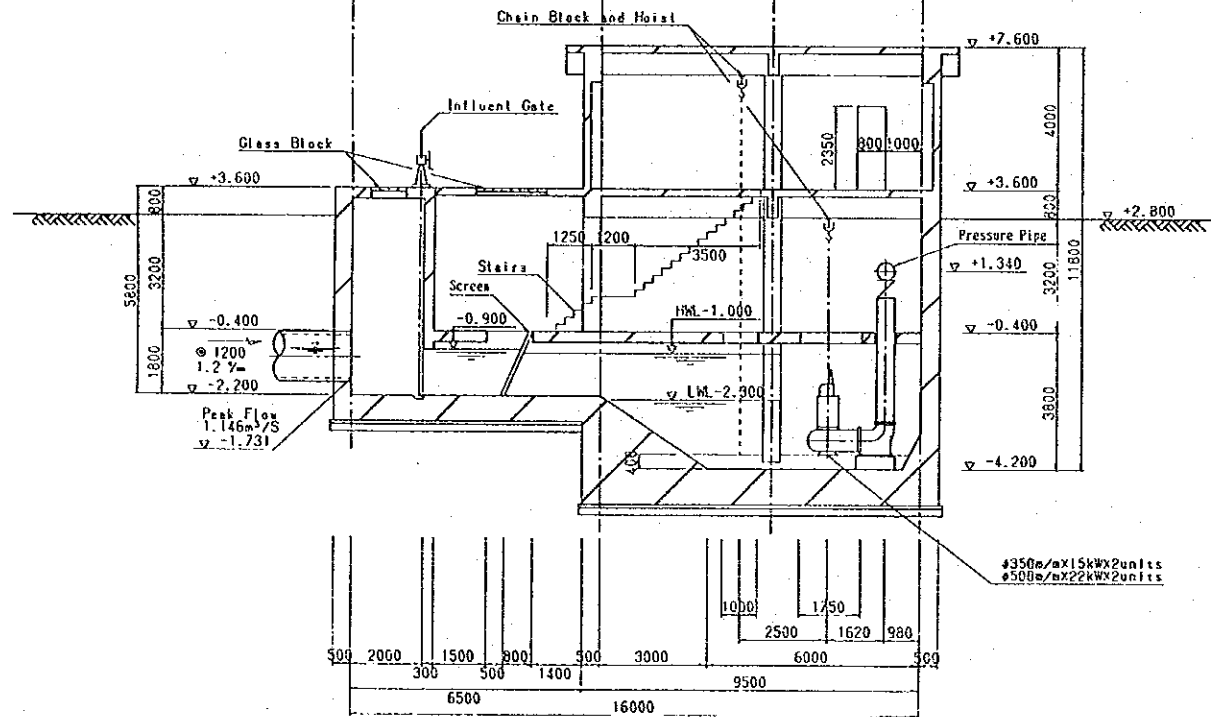
NO. 7 PUMP STATION (2)



1B Floor Plan



1 Floor Plan

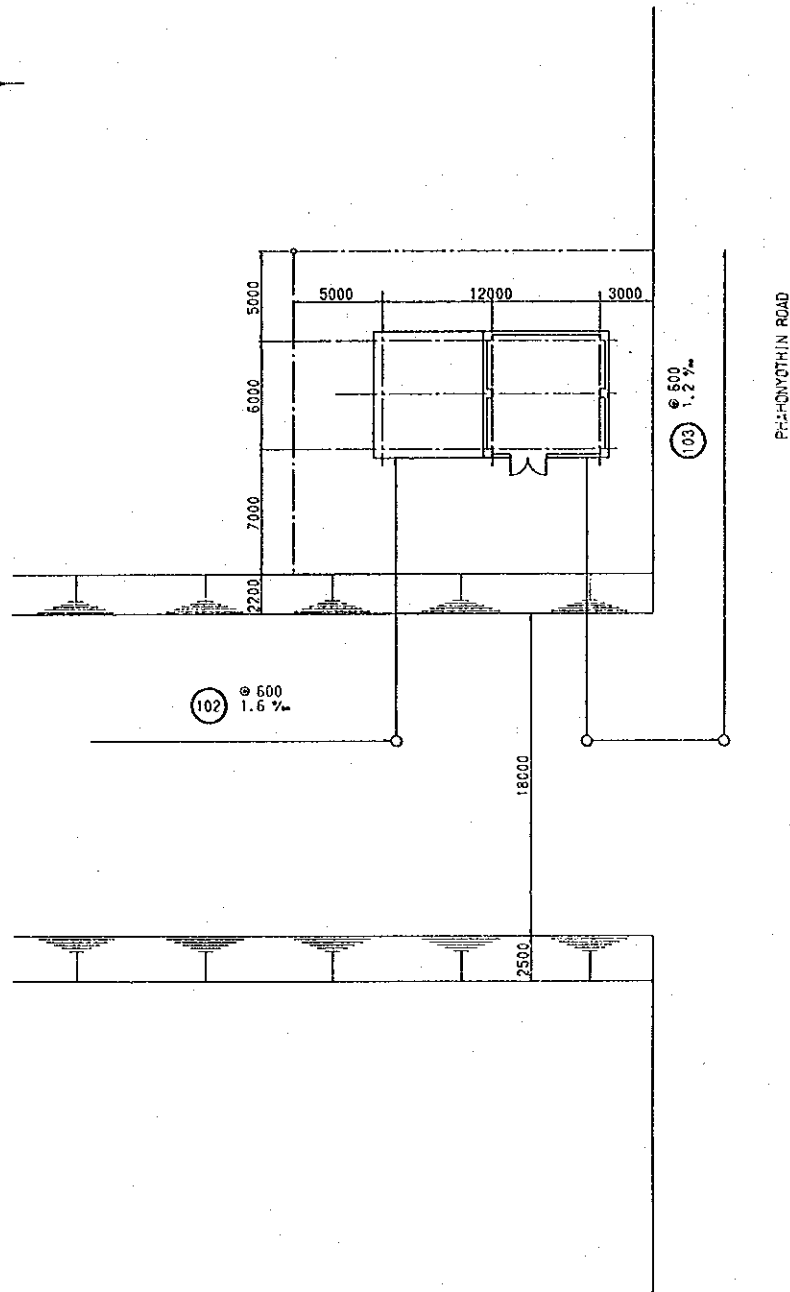


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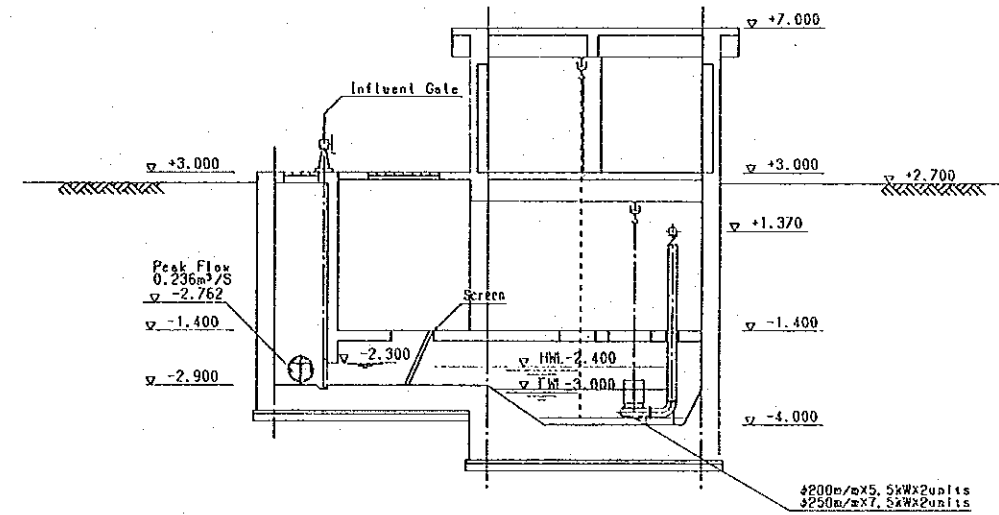
PRELIMINARY DESIGN NO. 7 PUMP STATION(2) RANG SIT	23 / 35 S=1/100
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

NO. 11 PUMP STATION (1)

General Plan
S=1/200

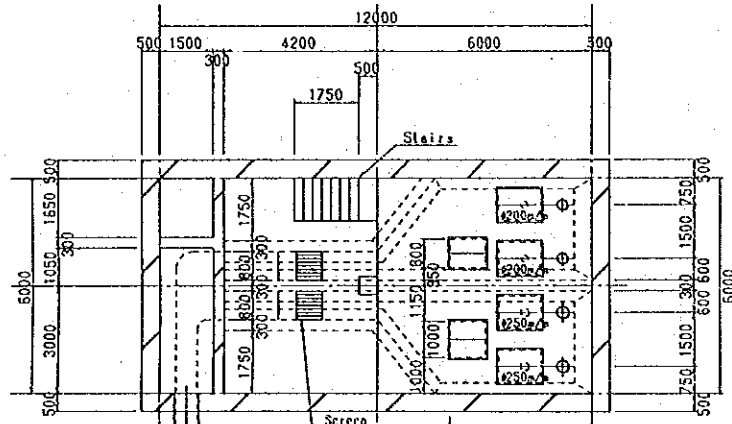


Water Levels Diagram

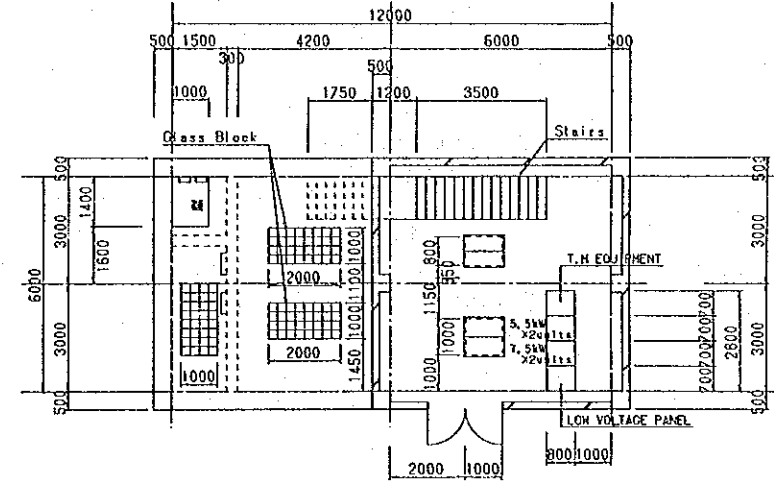


PRELIMINARY DESIGN	24
NO. 11 PUMP STATION (1)	35
RANG SIT	S=1/200 S=1/100
MASTER PLANNING FOR THE SEWERAGE	
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

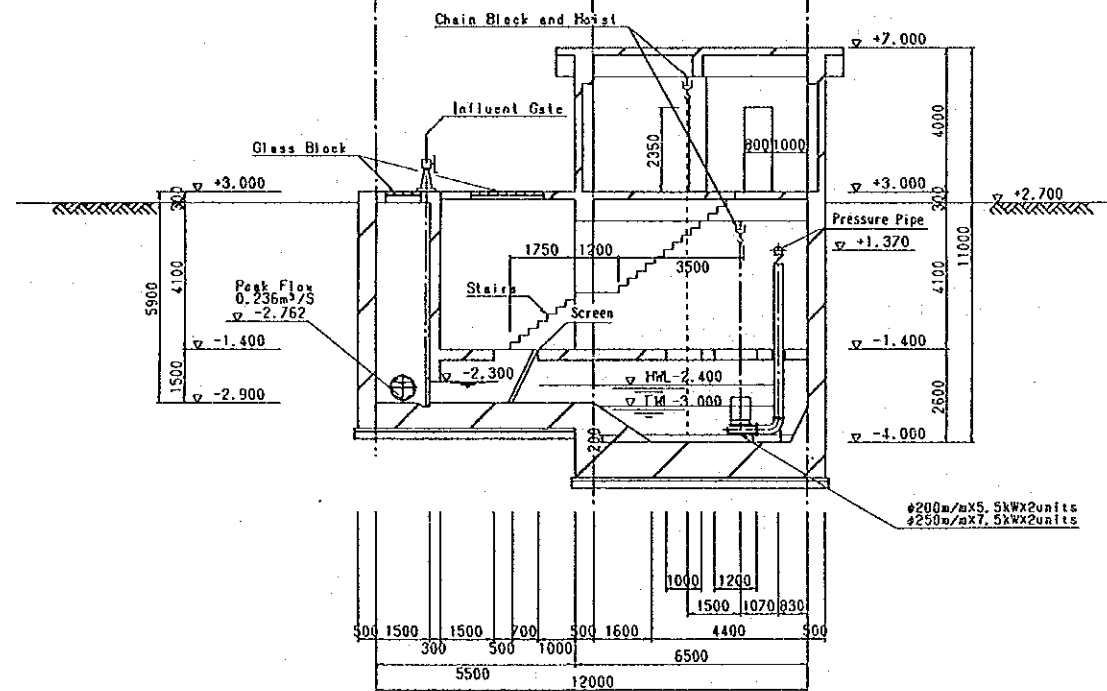
NO. 11 PUMP STATION (2)



1B Floor Plan



1 Floor Plan

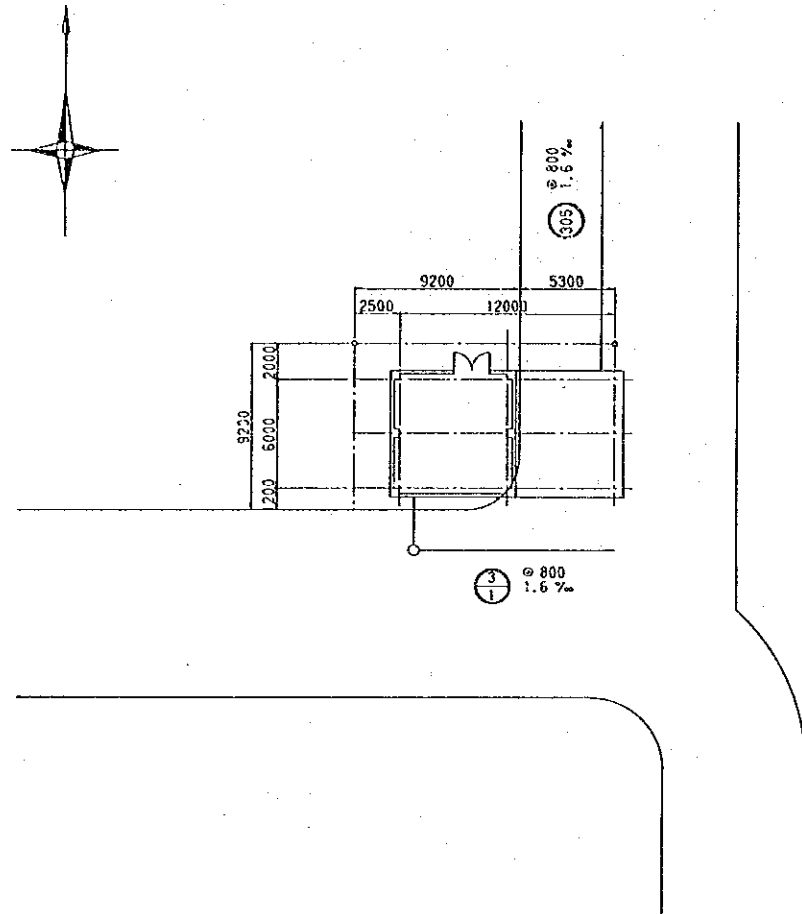


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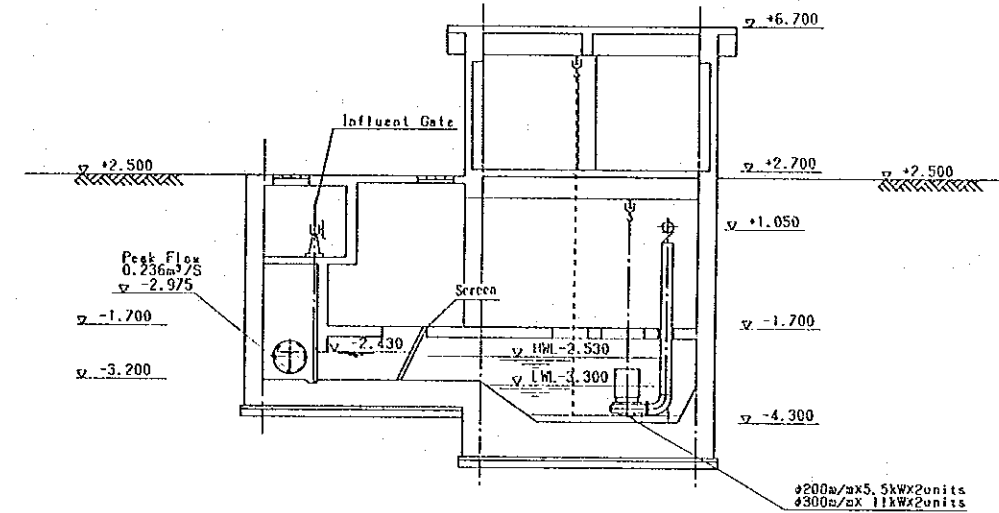
PRELIMINARY DESIGN	25
NO. 11 PUMP STATION (2)	35
RANG SIT	S=1/100
MASTER PLANNING FOR THE SEWERAGE	
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

NO. 12 PUMP STATION (1)

General Plan
S=1/200

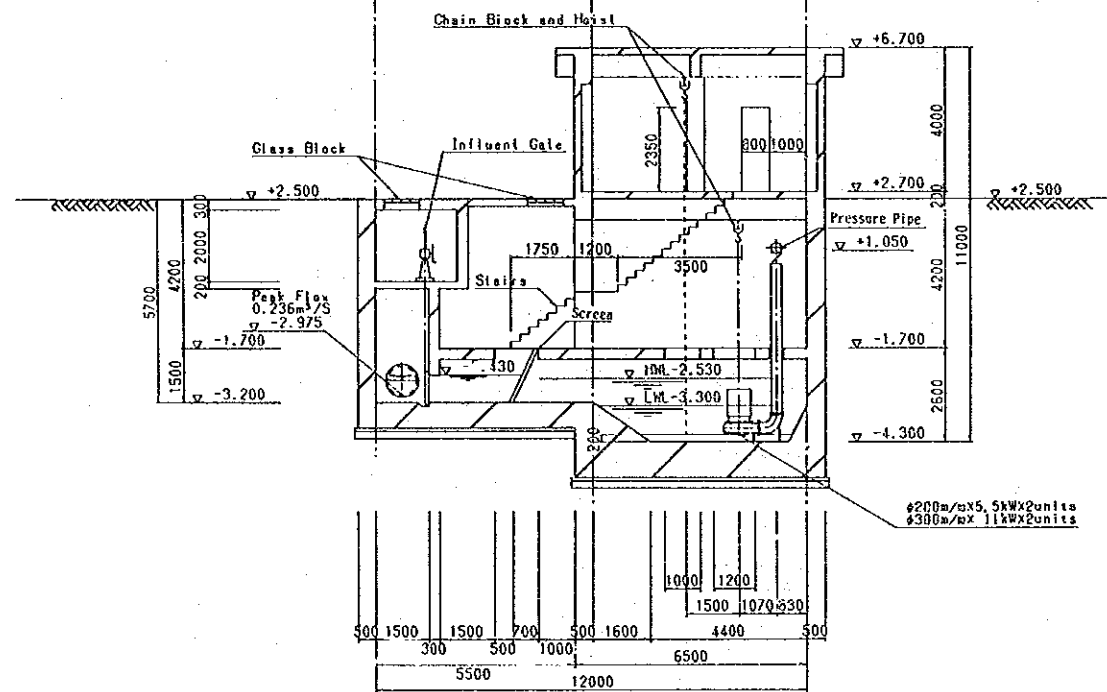
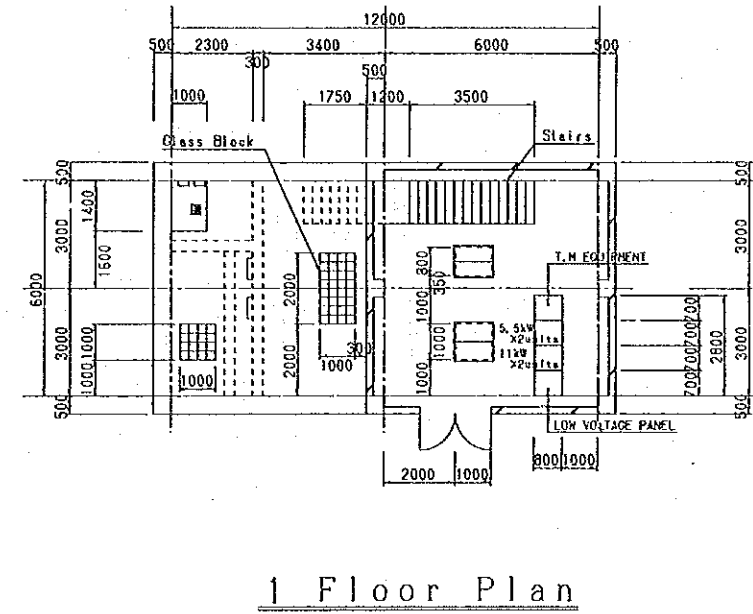
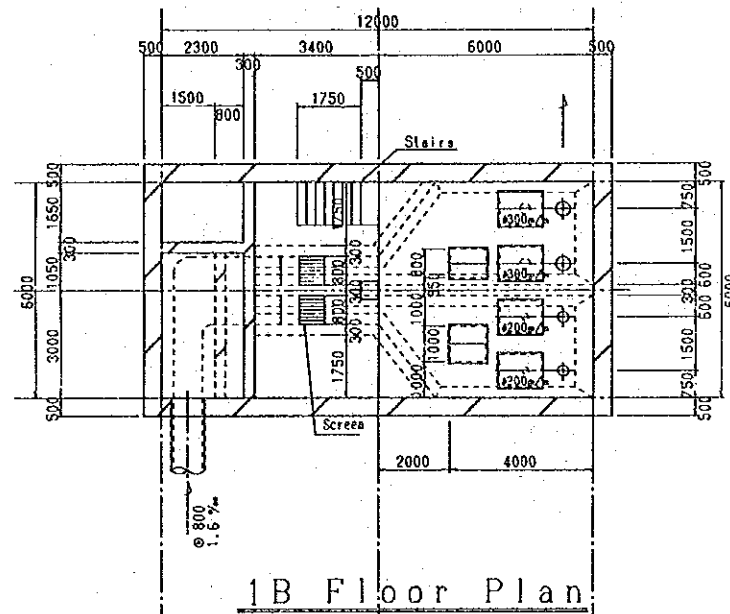


Water Levels Diagram

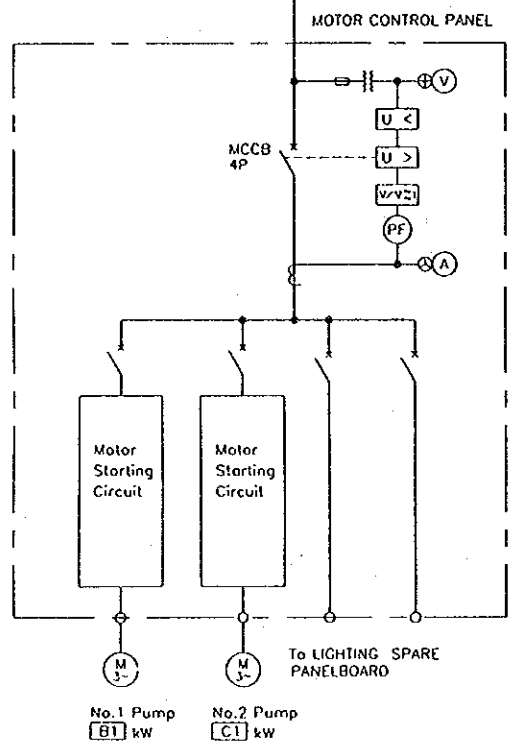
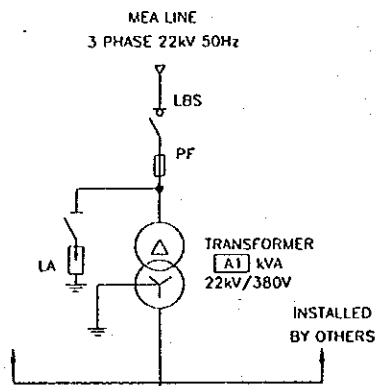


PRELIMINARY DESIGN	26	35
NO. 12 PUMP STATION (1)	S=1/200	S=1/100
RANG SIT		
MASTER PLANNING FOR THE SEWERAGE		
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

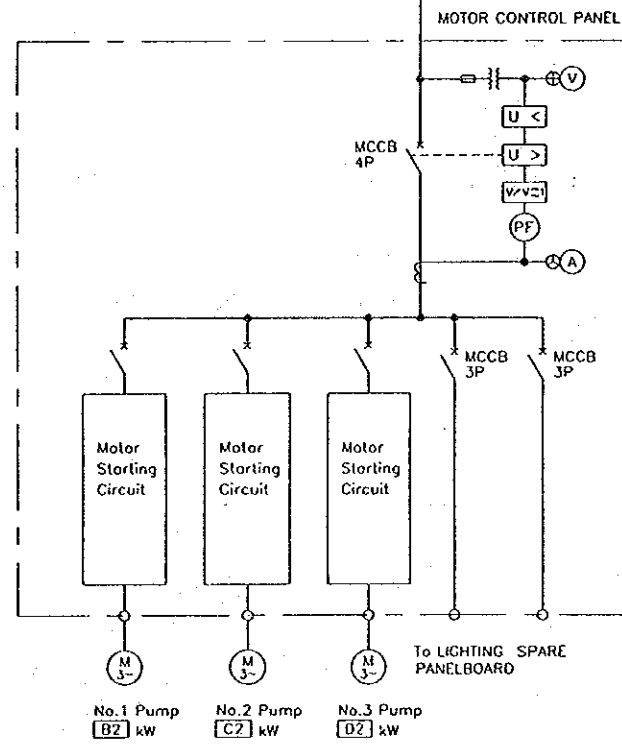
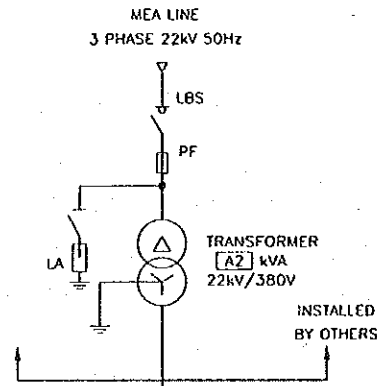
NO. 12 PUMP STATION(2)



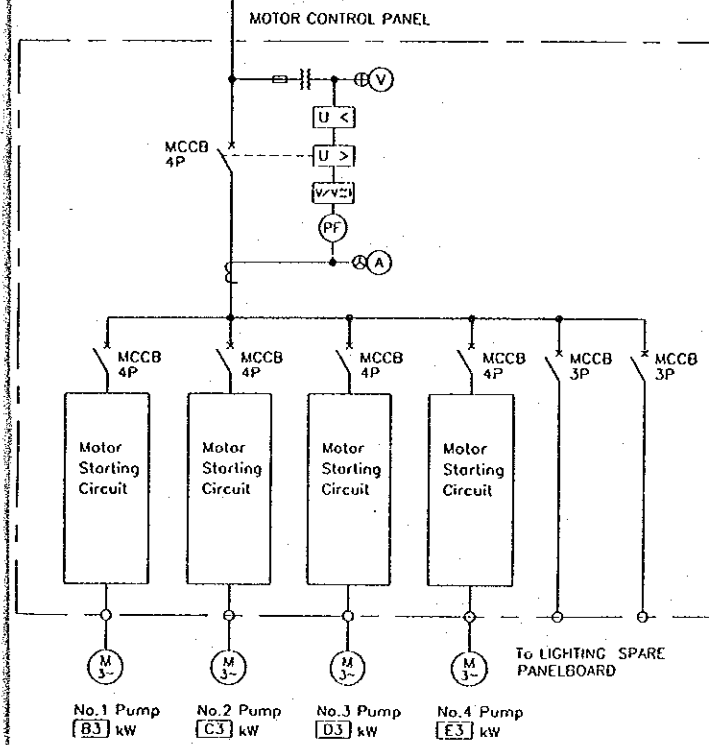
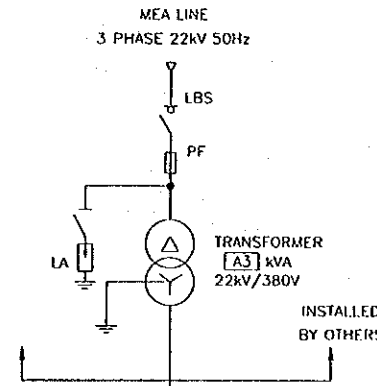
PRELIMINARY DESIGN NO. 12 PUMP STATION(2) RANG SIT	27 35 S=1/100
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	



SINGLE LINE DIAGRAM OF TYPE ① FOR No.5, No.6, No.7 PUMP ST.



SINGLE LINE DIAGRAM OF TYPE ② FOR No.1, No.2 PUMP ST.



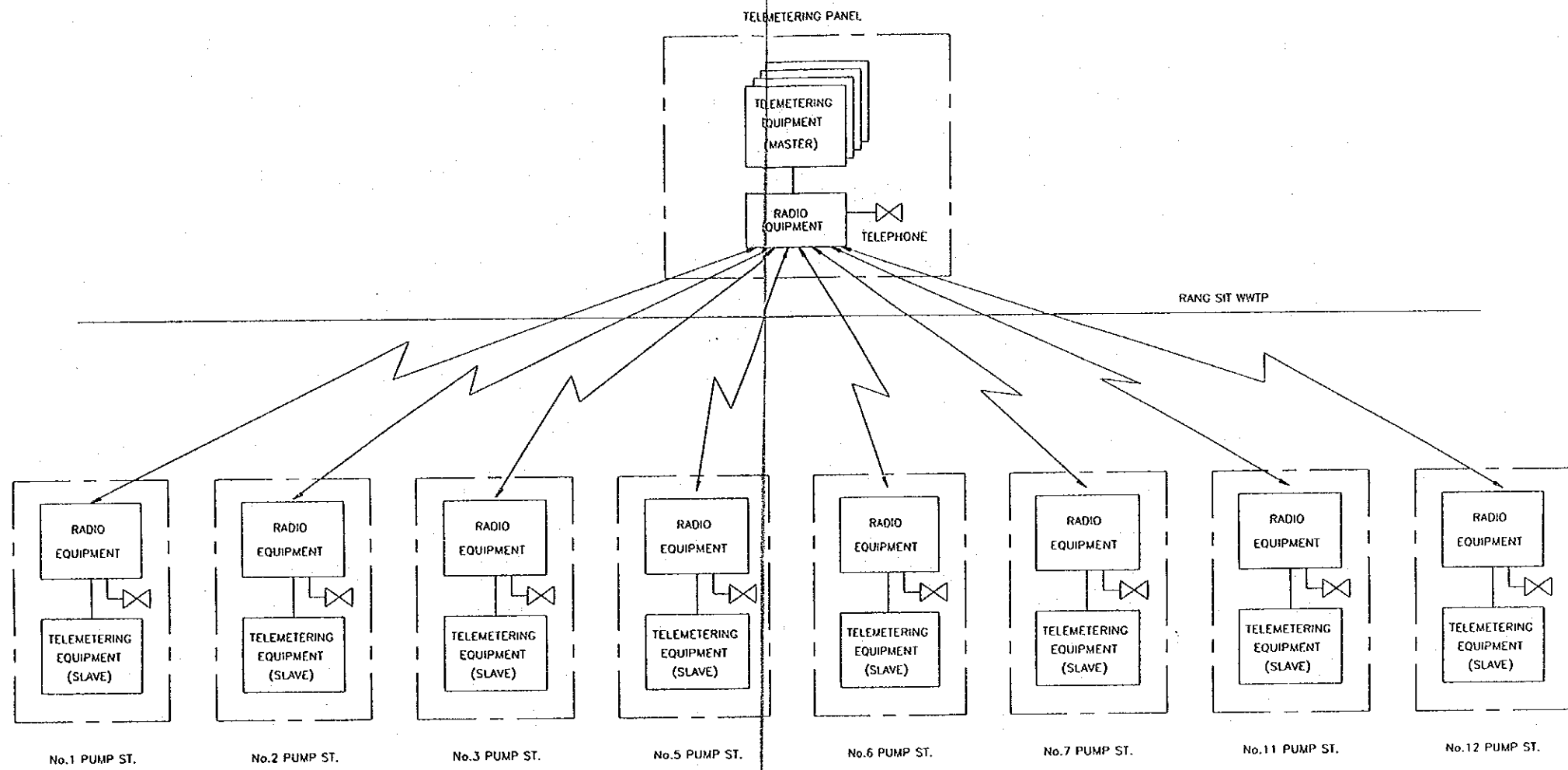
SINGLE LINE DIAGRAM OF TYPE ③ FOR No.11, No.12 PUMP ST.

PUMP ST.No.	TRANSFORMER CAPACITY(kVA)			PUMP MOTOR CAPACITY(kw)&STARTING METHOD		
	A1	B1	C1			
①	3	100	5.5 (Full Voltage)	5.5 (Full Voltage)		
	5	100	11 (Y-Δ)	11 (Y-Δ)		
	6	100	15 (Y-Δ)	15 (Y-Δ)		
	7	100	15 (Y-Δ)	15 (Y-Δ)		
②	A2	B2	C2	D2		
	1	250	22 (Y-Δ)	45 (Y-Δ)	45 (Y-Δ)	
	2	250	30 (Y-Δ)	45 (Y-Δ)	45 (Y-Δ)	
③	A3	B3	C3	D3	E3	
	11	100	5.5 (Full Voltage)	5.5 (Full Voltage)	7.5 (Y-Δ)	7.5 (Y-Δ)
	12	100	5.5 (Full Voltage)	5.5 (Full Voltage)	7.5 (Y-Δ)	7.5 (Y-Δ)

LEGEND

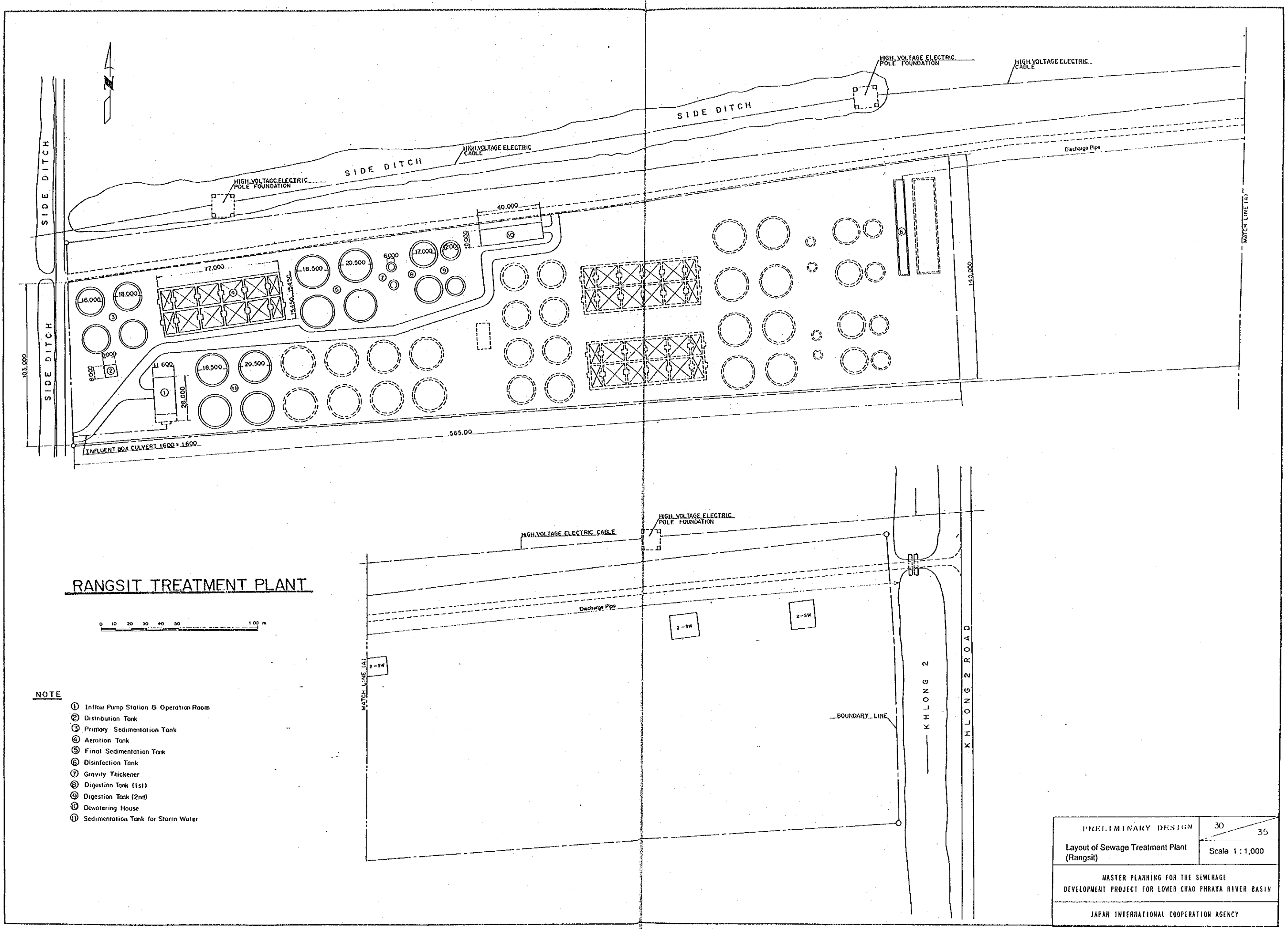
SYMBOL	DESCRIPTION
DS	DISCONNECTING SWITCH
LBS	LOAD BREAK SWITCH
MC	MAGNETIC CONTACTOR
MCCB	MOLDED CASE CIRCUIT BREAKER
LA	LIGHTNING ARRESTER
IM	INDUCTION MOTOR
3φ-T	3PHASE TRANSFORMER
PT	POTENTIAL TRANSFORMER
CT	CURRENT TRANSFORMER
⊖	VOLT SELECTOR
⊕	AMPERE SELECTOR
⊕>	ALTERNATIVE CURRENT OVER VOLTAGE RELAY
⊕<	ALTERNATIVE CURRENT UNDER VOLTAGE RELAY
W/V≠1	UNBALANCE RELAY
PF	POWER FUSE
E	EARTHING
⊙	AMMETER
⊕	VOLT METER
PF	POWER FACTOR METER
▽	CABLE HEAD

PRELIMINARY DESIGN	DWG.No. 28/35
SINGLE LINE DIAGRAM	NOT TO SCALE
RANG SII	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

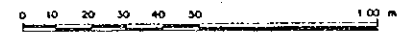


REMOTE MONITORING SYSTEM DIAGRAM

PRELIMINARY DESIGN REMOTE MONITORING SYSTEM DIAGRAM RANG SIT	DWG.No. 29/35
NOT TO SCALE	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	



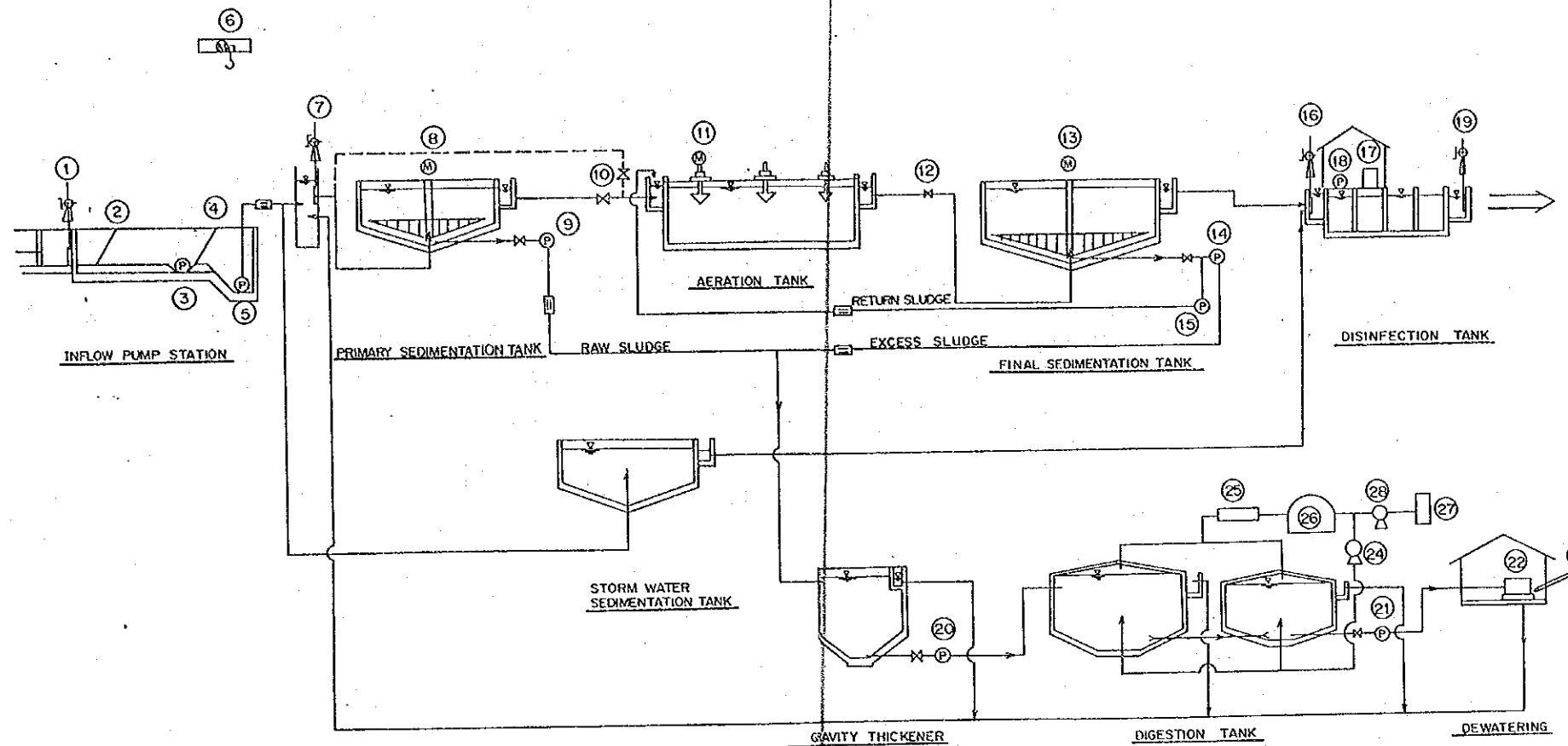
RANGSIT TREATMENT PLANT



NOTE

- ① Inflow Pump Station & Operation Room
- ② Distribution Tank
- ③ Primary Sedimentation Tank
- ④ Aeration Tank
- ⑤ Final Sedimentation Tank
- ⑥ Disinfection Tank
- ⑦ Gravity Thickener
- ⑧ Digestion Tank (1st)
- ⑨ Digestion Tank (2nd)
- ⑩ Dewatering House
- ⑪ Sedimentation Tank for Storm Water

PRELIMINARY DESIGN	30	35
Layout of Sewage Treatment Plant (Rangsit)	Scale 1 : 1,000	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		



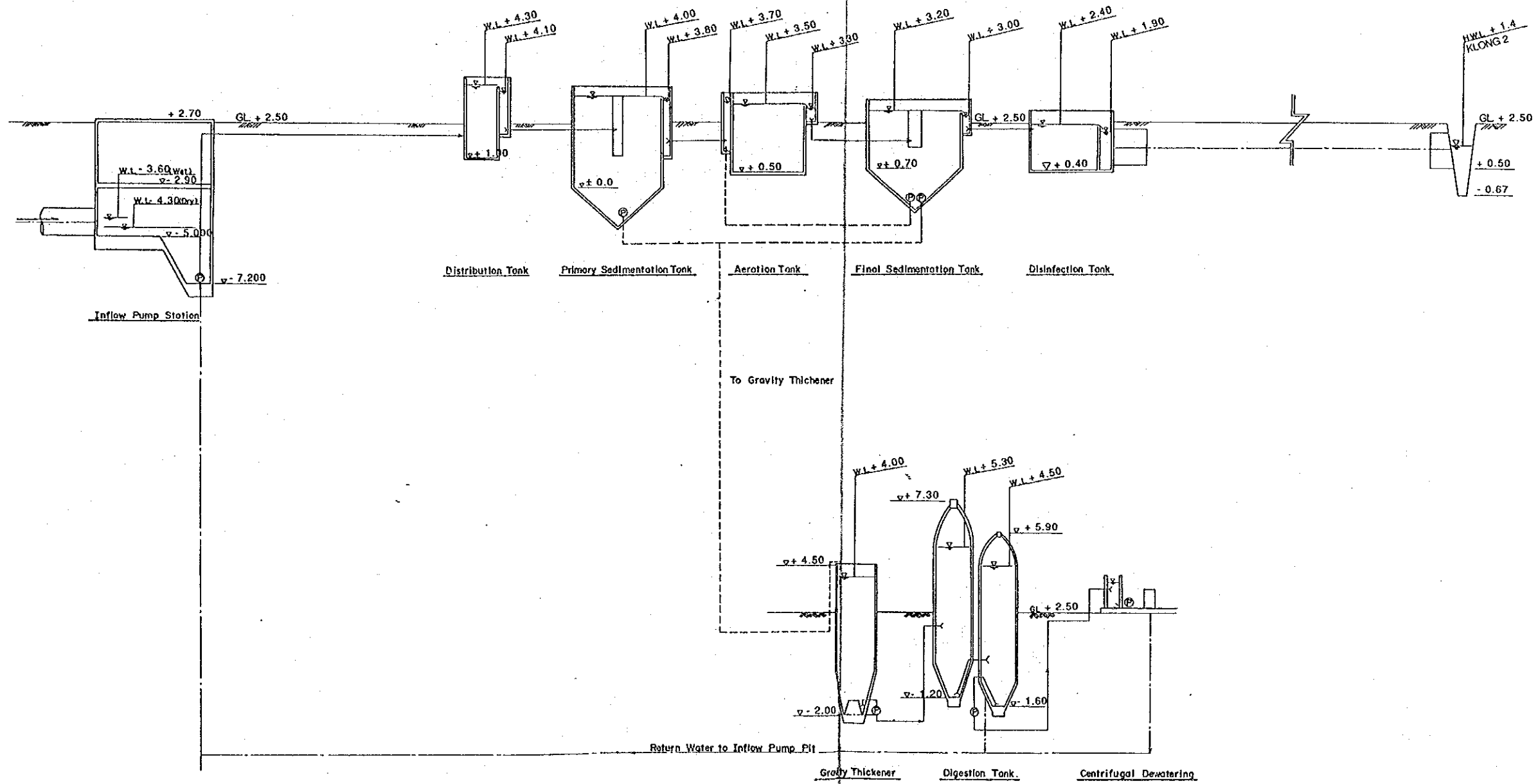
Facility No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Name	Influent Gate	Bar Screen	Sand Pump	Bar Screen	Sewage Pump	Chain Hoist	Distribution Tank Outlet Gate	Sludge Scraper	Sludge Draw off Pump	Aeration Tank Inlet Valve	Surface Aerator	Final Sedimentation Inlet Valve	Sludge Scraper	Excess Sludge Draw off Pump	Sludge Return Pump
Type	Manual Sluice Type	Manual Coarse Screen	Submersible	Manual Fine Screen	Submersible	Power Operated	Sluice Type Manual	Suspended Center Drive	Horizontal Sewage Pump	Sluice Valve Manual	Mechanical type	Sluice Valve Manual	Suspended Center Drive	Horizontal Sludge	Horizontal Sludge
Specification	900(w)x900(h)	1600(w)x3000(h)	ø100x1.0m ³ /min. x15m	1600(w)x3200(h)	ø350x11.55m ³ /min. ø500x23.15m ³ /min. ø800x66.85m ³ /min.	7.5t x12m	500(w) x 500(h)	ø16x3.8m(h)	ø100x0.15m ³ /min. x4	ø400	Bridge Mount	ø500	ø18.5m x 2.3m(h) x6m	ø100x0.12m ³ /min. x6m	ø150x1.04m ³ /min. x5m
Power (kw)			5.5		45, 25, 110	7.5		0.4	5		11, 22		0.75	5.5	15
Quantity (N/P)	6	6	1 (1)	6	2 + (2) + 1 (1)	1	4 (8)	4 (8)	4 (8)	4 (8)	6 (12), 4 (8)	4 (8)	4 (8)	4 (8)	4 (8)

Facility No.	16	17	18	19	20	21	22	23	24	25	26	27	28
Name	Disinfection Tank Inlet Gate	Hypochlorite Storage Tank	Hypochlorite Dosing Pump	Outlet Gate	Sludge Draw off Pump (thickener)	Sludge Draw off Pump (digester)	Mechanical Dewatering	Belt conveyor & Hopper	Digestion Tank Agitation Blower	Desulfurizer	Gas Storage Tank	Waste Gas Burner	Gas Transfer Blower
Type	Sluice Gate Manual	Steel, Anti-hypochlorite Lining		Sluice Type Manual	Horizontal Sludge	Horizontal Sludge	Centrifugal Type			Dry type			
Specification	1000(w)x1000(h)	4m ³	0-3 l/min.	1000(w)x1000(h)	ø100x0.15m ³ /min. x6m	ø100x0.14m ³ /min. x6m	3-10m ³ /hr 15-18m ³ /hr	10 m ³	2.8m ³ /hr. x7m	3000m ³ /day	500m ³	2 m ³ /min.	2m ³ /min. x6m
Power (kw)			0.4		5.5	5.5	45+2.2, 30+5.5	0.75					7.5
Quantity (N/P)	1	2 (2)	2 (2)	2	2 (2)	2 (4)	2 + (2)	2 (2)	2 (2)	1	1	1	2 (4)

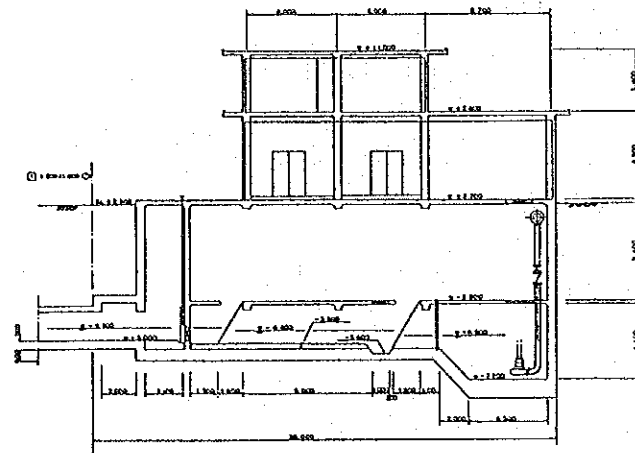
Note: Numbers in the parentheses of Quantity mean the unit of equipment installed at the Master Plan stage.

PRELIMINARY DESIGN	31	35
Process Diagram of Sewage Treatment Plant (Rangsit)	NOT TO SCALE	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN		
JAPAN INTERNATIONAL COOPERATION AGENCY		

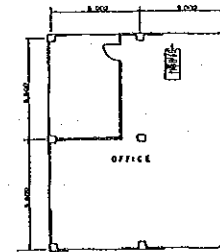
HYDRAULIC PROFILE



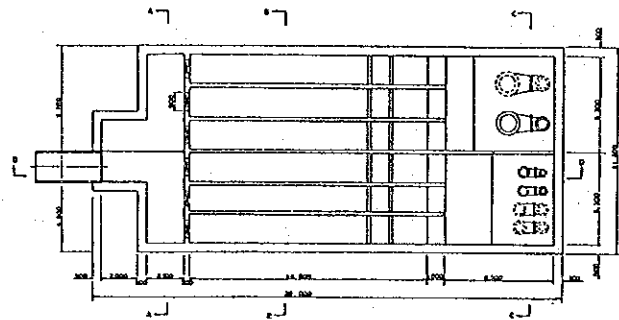
PRELIMINARY DESIGN	32
Hydraulic Profile of Sewage Treatment Plant (Rangsit)	35
NOT TO SCALE	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	



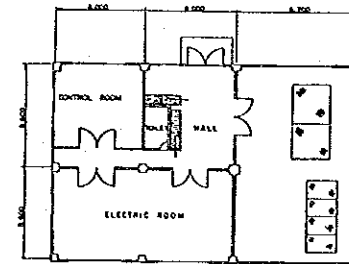
SECTION D-D



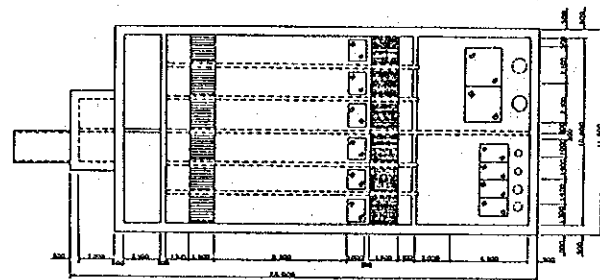
2nd FLOOR



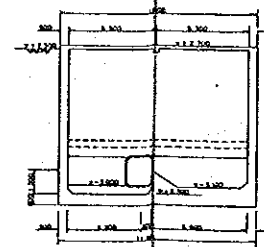
2nd BASEMENT



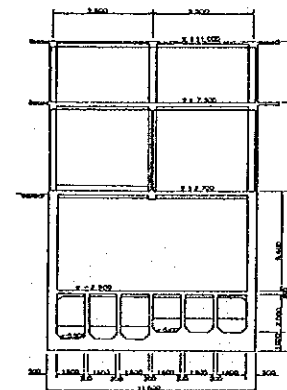
1st FLOOR



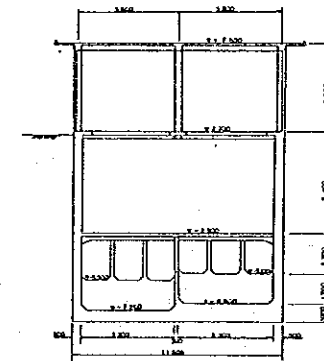
1st BASEMENT



SECTION A-A

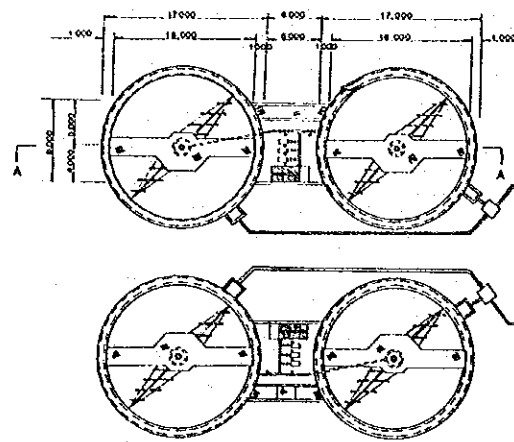


SECTION B-B

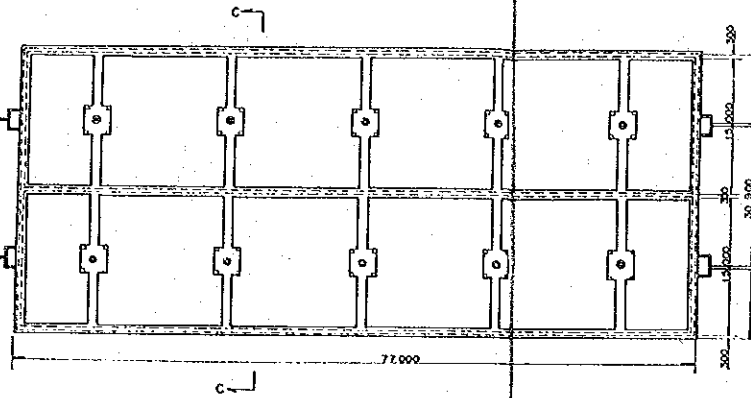


SECTION C-C

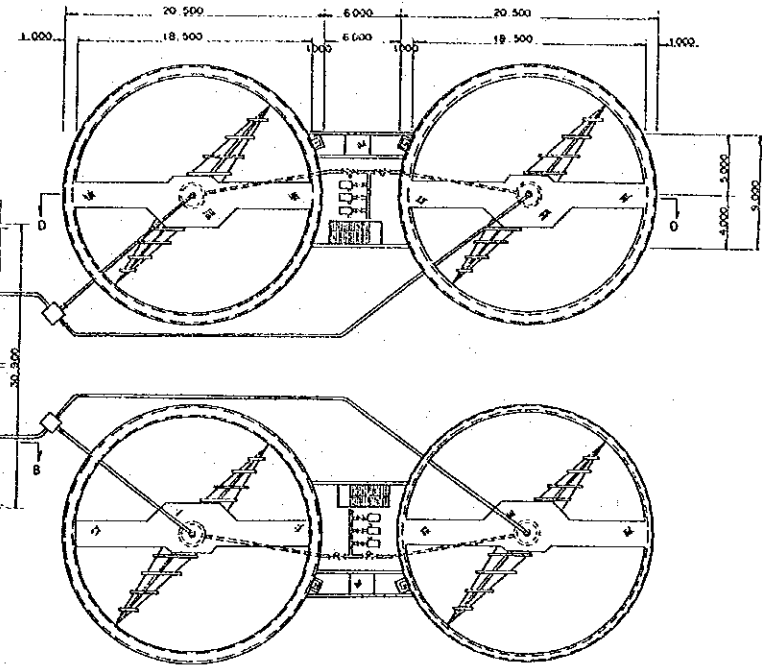
PRELIMINARY DESIGN	33
Plan and Section (Inflow Pump Station) (Rangsit)	35
Scale 1 : 200	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	



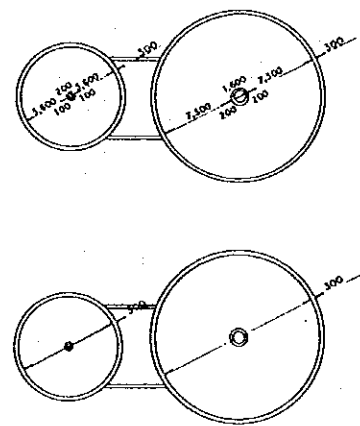
PRIMARY SEDIMENTATION TANK



AERATION TANK



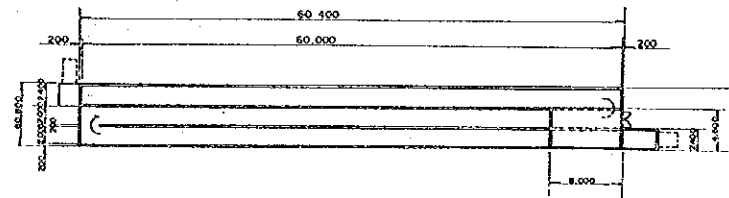
FINAL SEDIMENTATION TANK



DIGESTION TANK

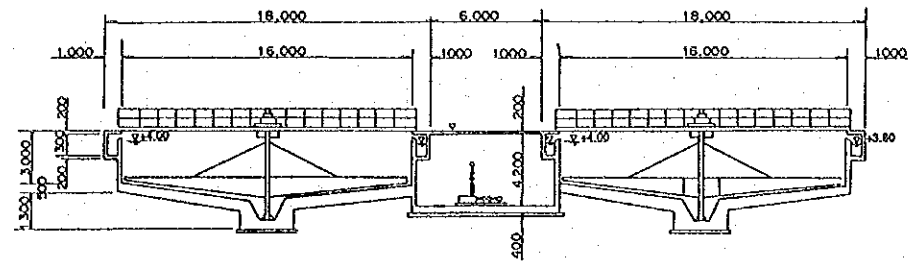


GRAVITY THICKENER

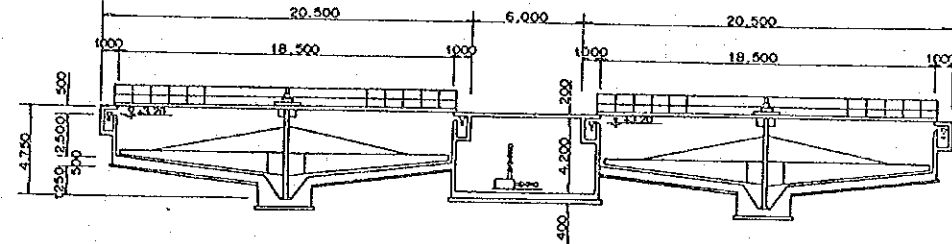


DISINFECTION TANK

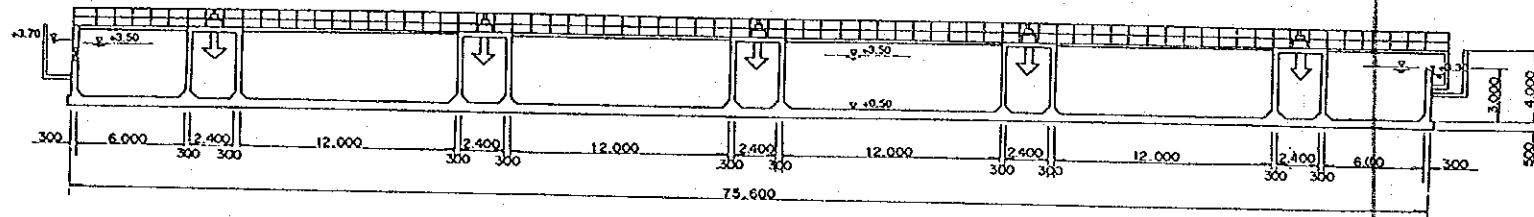
PRELIMINARY DESIGN	34
Layout Plan (Rangsit)	35
Scale 1:400	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	



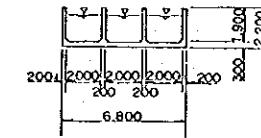
SECTION A-A



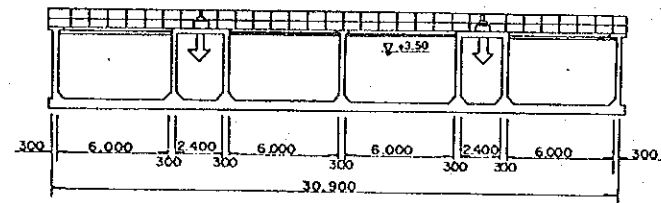
SECTION D-D



SECTION B-B



SECTION E-E



SECTION C-C

PRELIMINARY DESIGN	35
Layout Section (Rangsit)	35
Scale 1:200	
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	



LEGEND

SEWERAGE SERVICE AREA
PRELIMINARY DESIGN AREA
DRAINAGE BASIN
MAIN AND SUB MAIN SEWER
TREATMENT PLANT
COMMON TYPE PUMP STATION
MANHOLE TYPE PUMP STATION
INTERCEPTOR

PRELIMINARY DESIGN
GENERAL PLAN OF SEWERAGE SYSTEM
BANG BUA THONG. S = 1:10,000

MASTER PLANNING FOR THE SEWERAGE
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY



NONHABURI PROVINCE
BANG BUA THONG MUNICIPALITY.

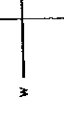
DESIGNED BY
CONSULTANTS OF TECHNICAL CO., LTD.



LEGEND	
	SEWERAGE SERVICE AREA
	PRELIMINARY DESIGN AREA
	DRAINAGE BASIN
	MAIN AND SUB MAIN SEWER
	NO. OF MAIN SEWER
	NO. OF SECTIONS
	DIAMETER
	SLOPE
	LENGTH
	TREATMENT PLANT
	COMMON TYPE PUMP STATION
	MANHOLE TYPE PUMP STATION
	INVERTED SIPHON

PRELIMINARY DESIGN PLAN
 BAND BIA TONG
 DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN
 JAPAN INTERNATIONAL COOPERATION AGENCY

SCALE 1 : 5,000
 0 50 100 200 300 400 500 600 700 800 900 1000



TALING CHAN ROAD

KHLONG PHRUP

BAND BIA TONG NORTH WTPP

NO.3

NO.4

12.50M

7.00M

12.50M

14.70M

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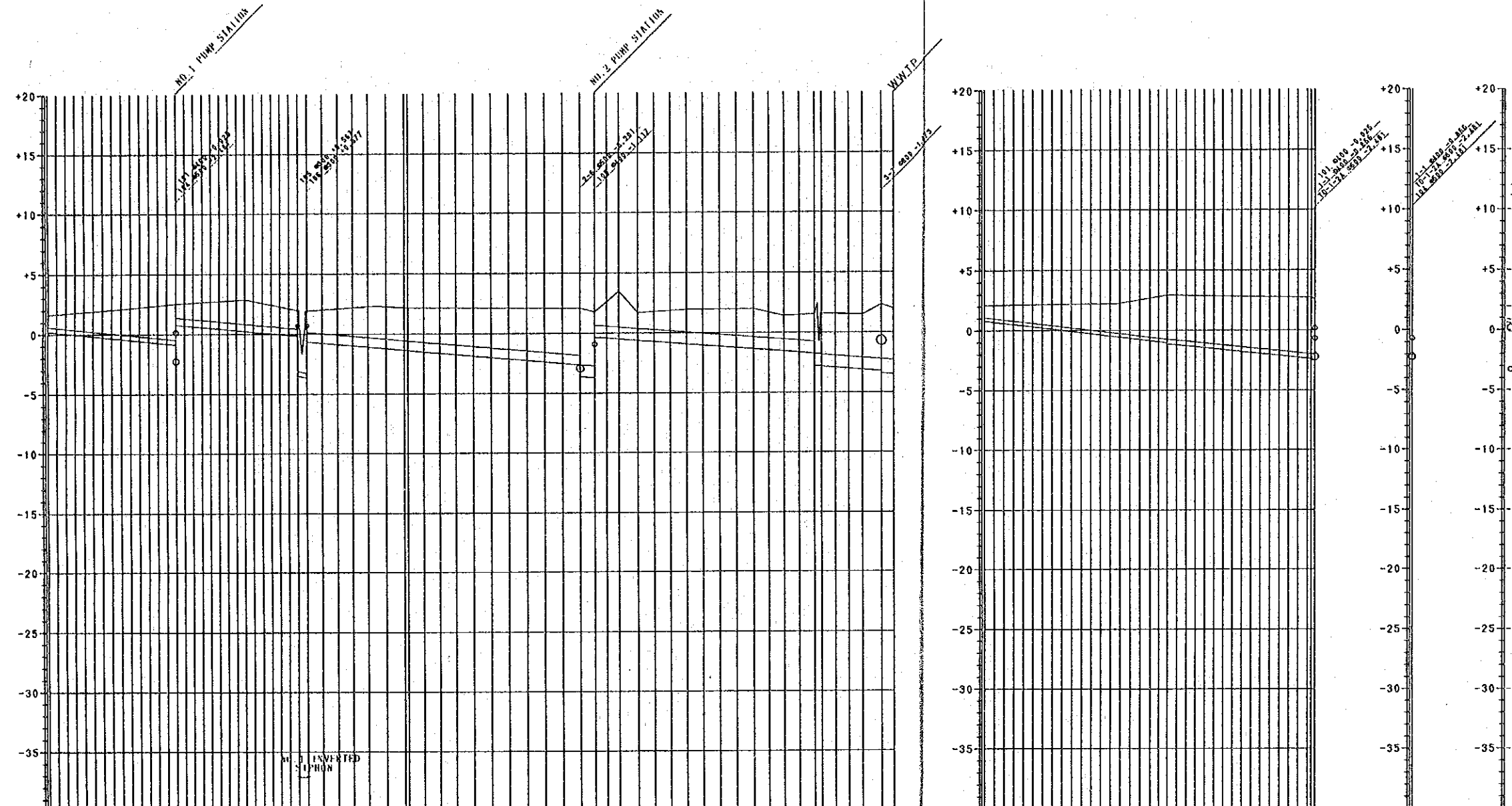
20.30M

20.30M

20.30M

20.30M

20.30M



LEGEND

Item	Description
NO	NO. of Sowers
D	Diameter
S	Slope
DF	Design Flow
MF	Maximum Flow for Pipe
V	Velocity
EC	Earth Cover
IL	Invert Level
E	Elevation
AL	Accumulated Length
D	Distance

	1-1	1-2A	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	102	103	104	105
NO	1	2	2	3	4	5	6	7	8	9	10	11	12	102	103	104	105
D	ø400	ø600	ø600	ø600	ø800	ø800	ø800	ø1000	ø1000	ø1000	ø1000	ø1000	ø200	ø300	ø400	ø400	ø300
S	1.80%	1.60%	1.60%	1.00%	1.60%	1.50%	1.60%	1.40%	1.40%	1.40%	1.40%	1.2%	1.0%	2.20%	1.80%	1.50%	1.0%
DF	0.034	0.114	0.140	0.112	0.332	0.332	0.432	0.774	0.832	0.832	0.832	0.832	0.048	0.037	0.044	0.057	0.033
MF	0.285	0.116	0.116	0.112	0.332	0.332	0.432	0.832	0.832	0.832	0.832	1.351	0.048	0.045	0.048	0.051	0.045
V	0.78	0.87	0.87	1.0	1.05	1.05	1.05	1.14	1.14	1.14	1.14	1.14	1.14	0.64	0.70	0.7	0.64
EC	1.00	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.00	0.64	0.7	0.64
IL	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.215	0.000	-1.100	-1.100	-1.100
E	1.65	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.13	2.84	2.84	2.84
AL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	750.0	750.0	750.0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

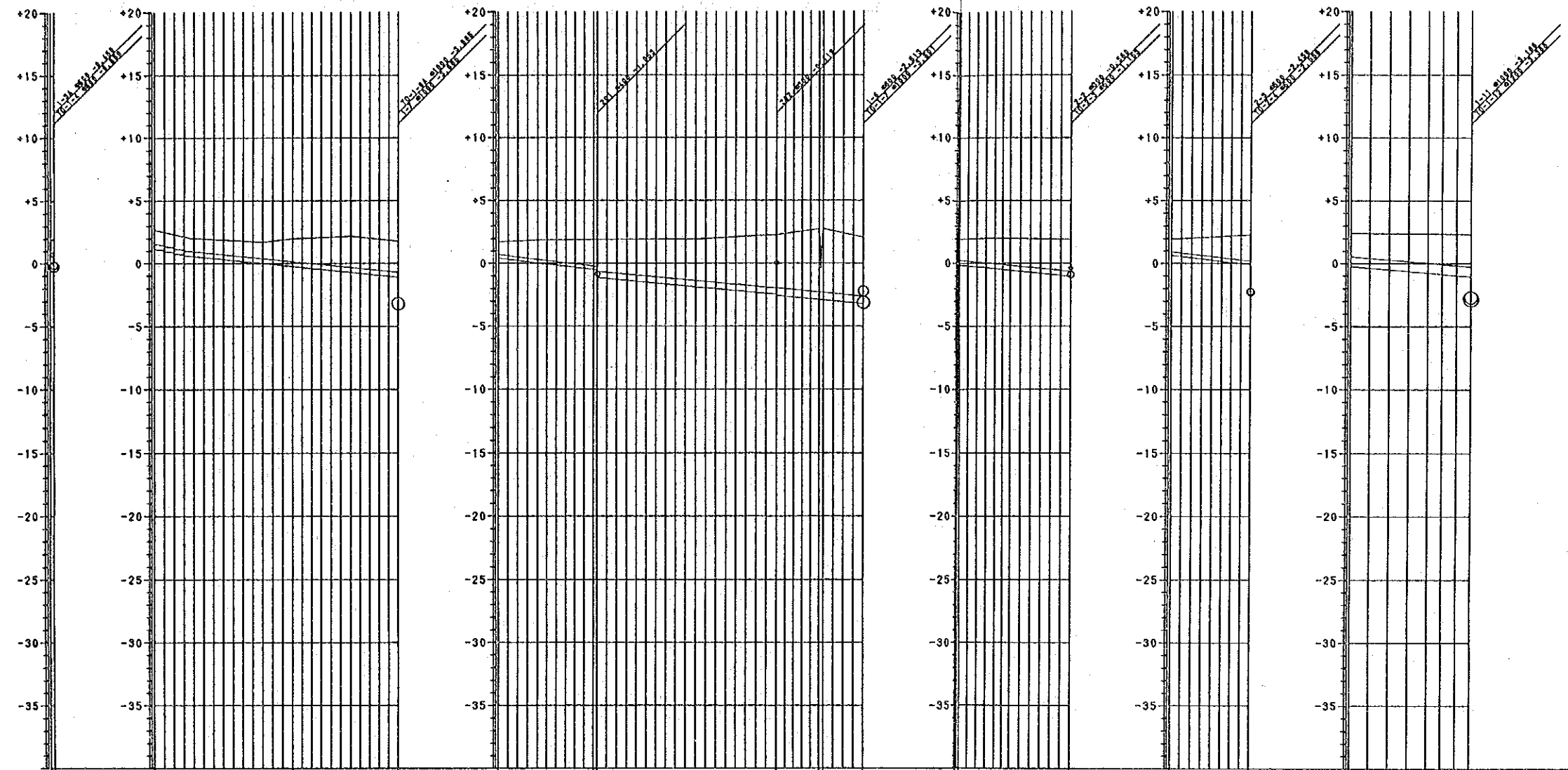
No. of Sowers

1-1	1-2A	1-2	1-3	1-3A
1-4	1-5	1-6	1-7	1-8A
102	103	104	101	105

3 / 17

PRELIMINARY DESIGN
SEWER PROFILE (1)
BANG BUA THONG - NORTH
MASTER PLANNING FOR THE SEWERAGE
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

V 1 : 200
H 1 : 10,000



LEGEND

Item	Description
N O	Nl. of Sewers
D	Diameter
S	Slope
D F	Design Flow
M F	Maximum Flow for Pipe
V	Velocity
E C	Earth Cover
I L	Invert Level
E	Elevation
A L	Accumulated Length
D	Distance

	106	107	108	2-1	2-2	2-3	2-4	2-5	201A	201	202	201A	201B
N O	106	107	108	2-1	2-2	2-3	2-4	2-5	201A	201	202	201A	201B
D	0400	0400	0400	0300	0500	0500	0600	0600	0400	0400	0300	0500	0600
S	2.20%	1.80%	1.80%	2.20%	2.20%	1.60%	1.60%	1.60%	1.80%	1.80%	2.20%	1.80%	1.60%
D F	0.024	0.082	0.073	0.042	0.042	0.144	0.180	0.182	0.083	0.083	0.023	0.082	0.071
M F	0.048	0.088	0.088	0.045	0.045	0.151	0.216	0.248	0.151	0.088	0.045	0.151	0.129
V	0.34	0.70	0.70	0.64	0.64	0.77	0.87	0.87	0.70	0.70	0.64	0.70	1.03
E C	1.85	1.19	1.82	2.45	1.00	1.11	2.21	2.21	1.86	1.86	1.00	2.09	2.88
I L	0.939	1.141	0.939	1.117	0.410	0.939	0.939	0.939	1.093	1.093	0.620	0.719	0.939
E	1.321	2.88	3.01	1.78	1.74	1.82	2.39	2.39	1.82	1.82	1.86	2.39	2.94
A L	0.0	0.3	560.0	986.0	0.0	318.0	1105.0	179.0	0.0	440.1	0.0	310.0	476.1
D	0.0	0.6	560.0	428.0	0.0	318.0	710.0	179.0	0.0	440.0	0.0	310.0	476.0

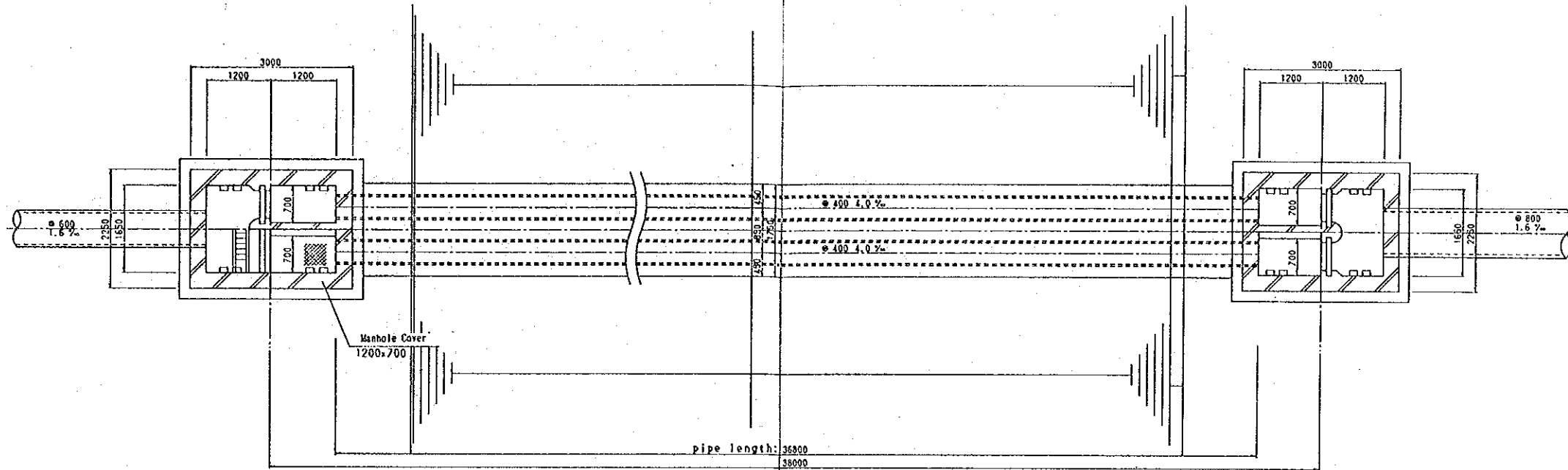
No. of Sewers

106	107	108	2-1	2-2
2-3	2-4	2-5	2-6	201A
201	202	3-6	3-7	

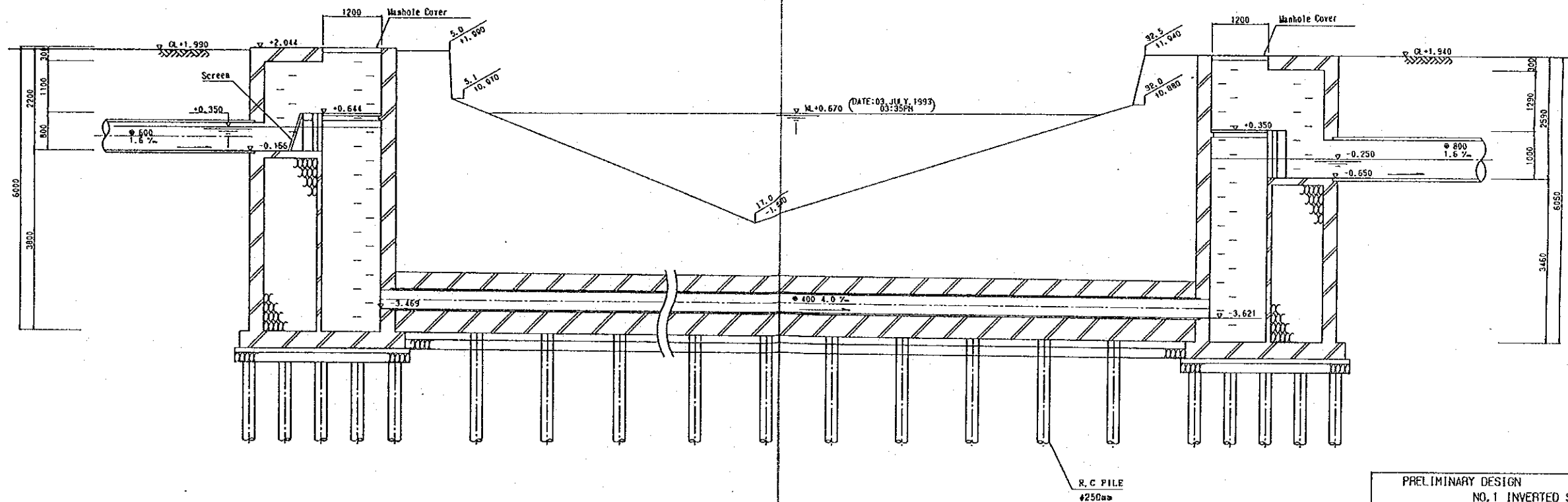
No. 1 (1-3) INVERTED SIPHON

S=1/50

Plan



Section

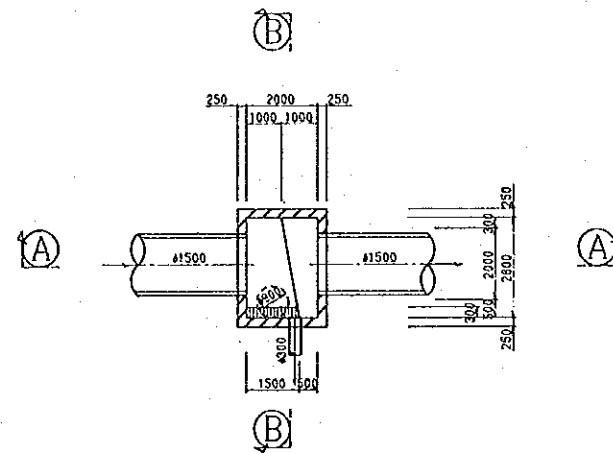


PRELIMINARY DESIGN	5
NO. 1 INVERTED SIPHON	17
BANG BUA THONG	S=1/50
MASTER PLANNING FOR THE SEWERAGE	
DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	

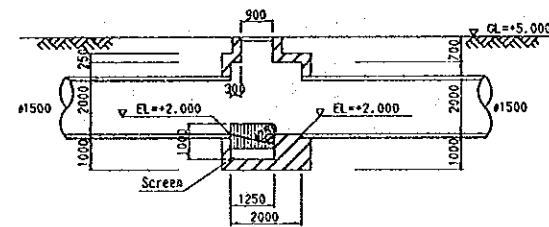
Standard Design of Overflow Chamber

Type B

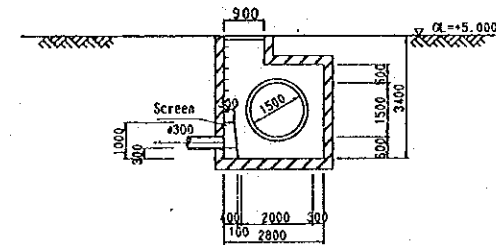
Plan



Section A-A

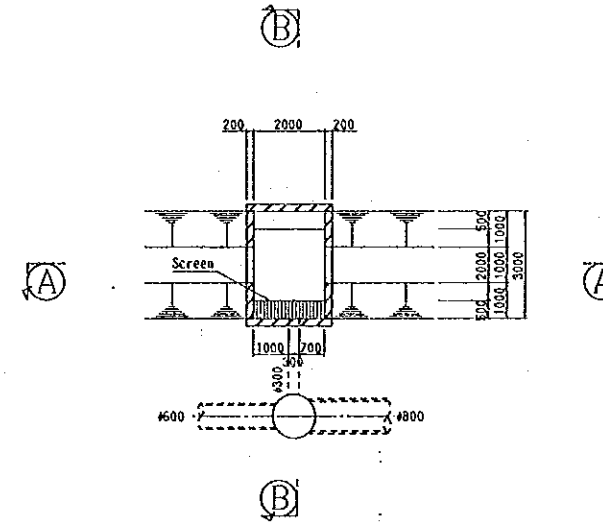


Section B-B

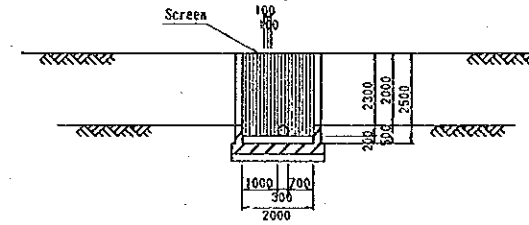


Type C

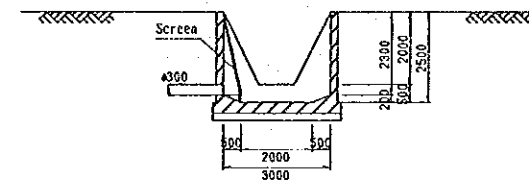
Plan



Section A-A



Section B-B



PRELIMINARY DESIGN STANDARD DESIGN OF OVERFLOW CHAMBER BANG BUA THONG	6 / 17 S=1/100
MASTER PLANNING FOR THE SEWERAGE DEVELOPMENT PROJECT FOR LOWER CHAO PHRAYA RIVER BASIN	
JAPAN INTERNATIONAL COOPERATION AGENCY	