

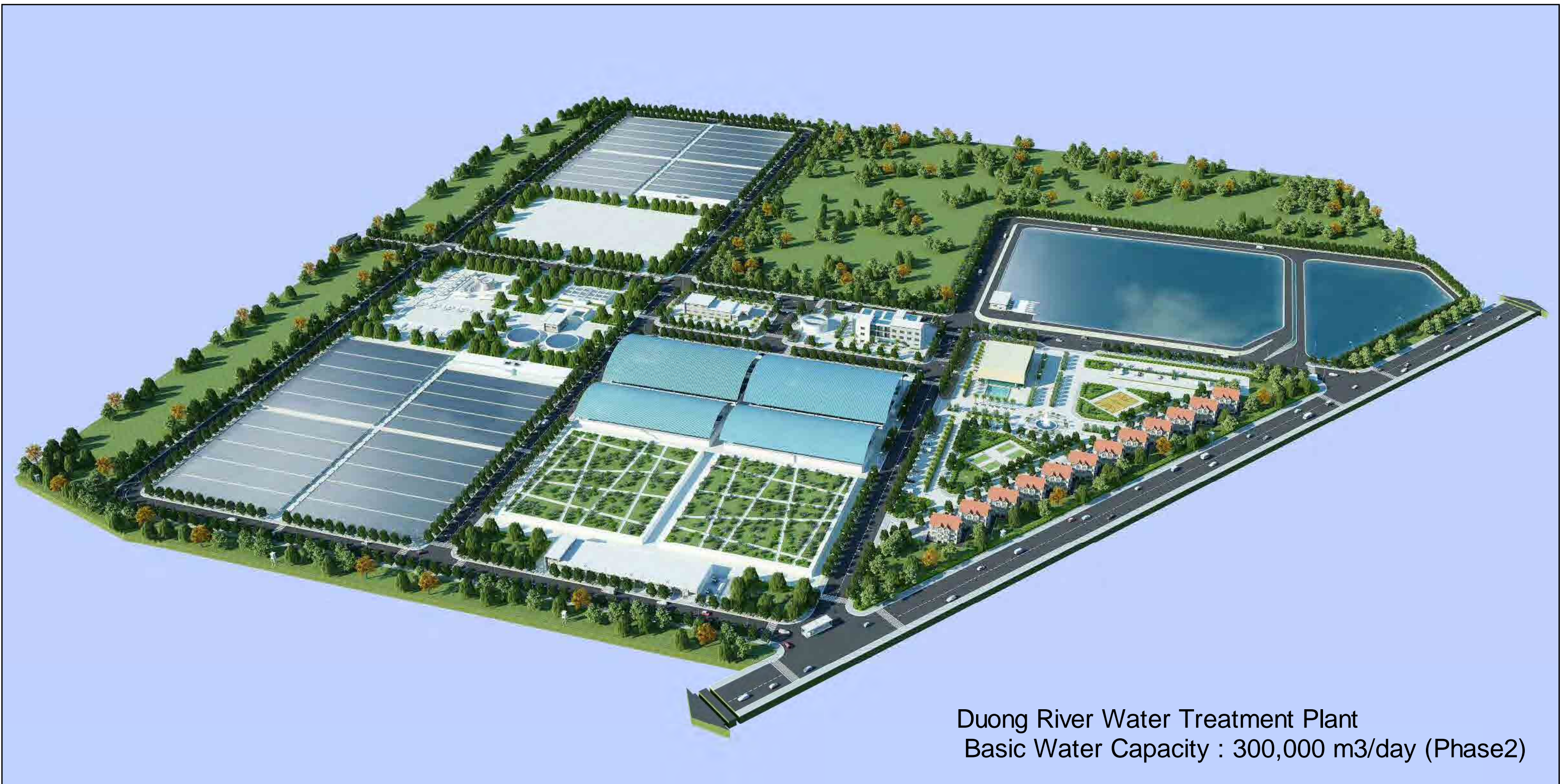
ベトナム国
ハノイ都市圏水道PPPドン河事業
準備調査（PPPインフラ事業）

ファイナル・レポート
付録-1 土木・機械・電気設計図

平成24年5月
(2012年)

独立行政法人国際協力機構
(JICA)

メタウォーター(株)
(株)東京設計事務所
(株)クボタ
プライスウォーターハウスコーパス(株)



Duong River Water Treatment Plant
Basic Water Capacity : 300,000 m³/day (Phase2)

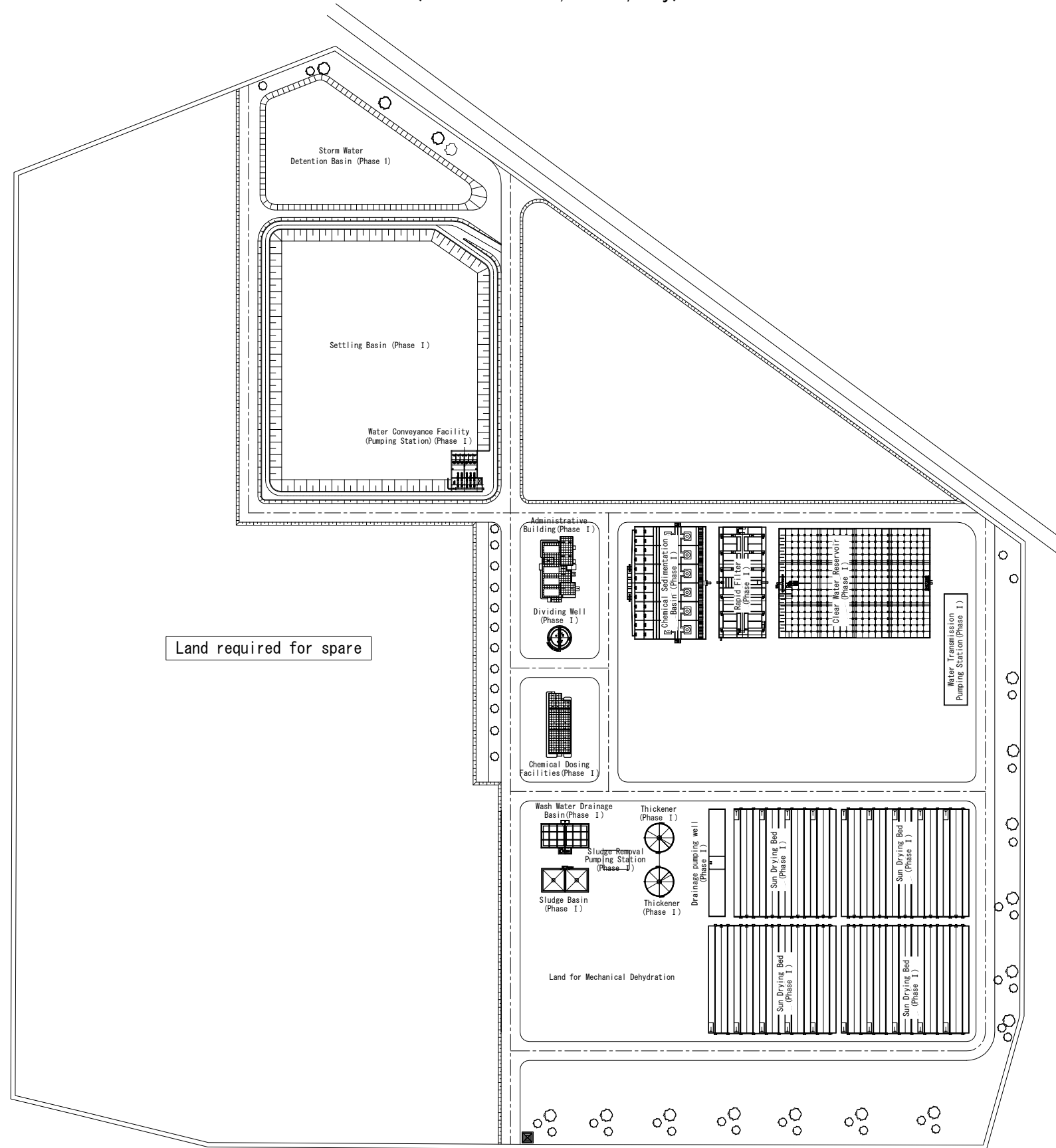
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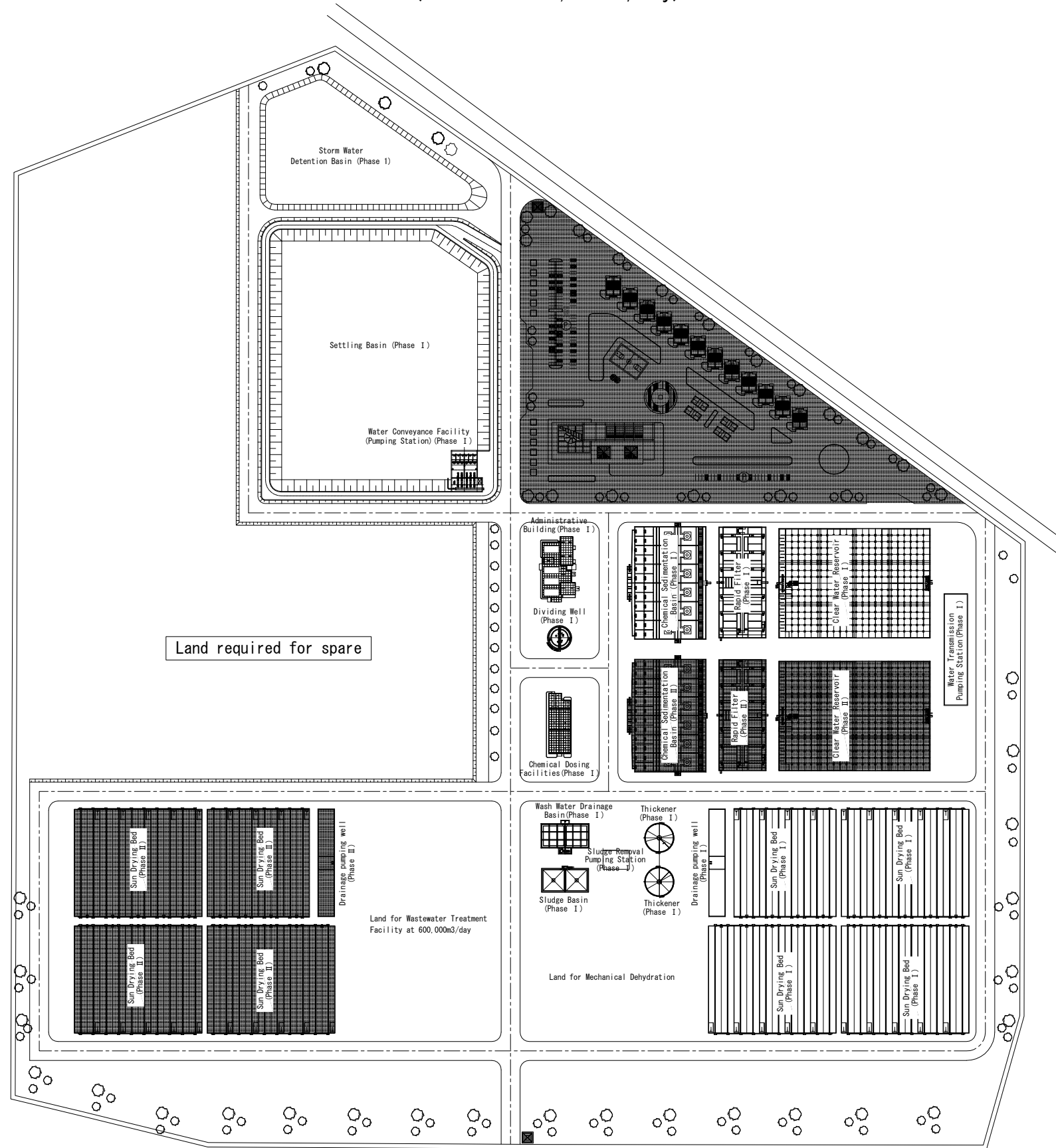
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General Plan s=1:2000
 (Phase 1 : 150,000m³/day)



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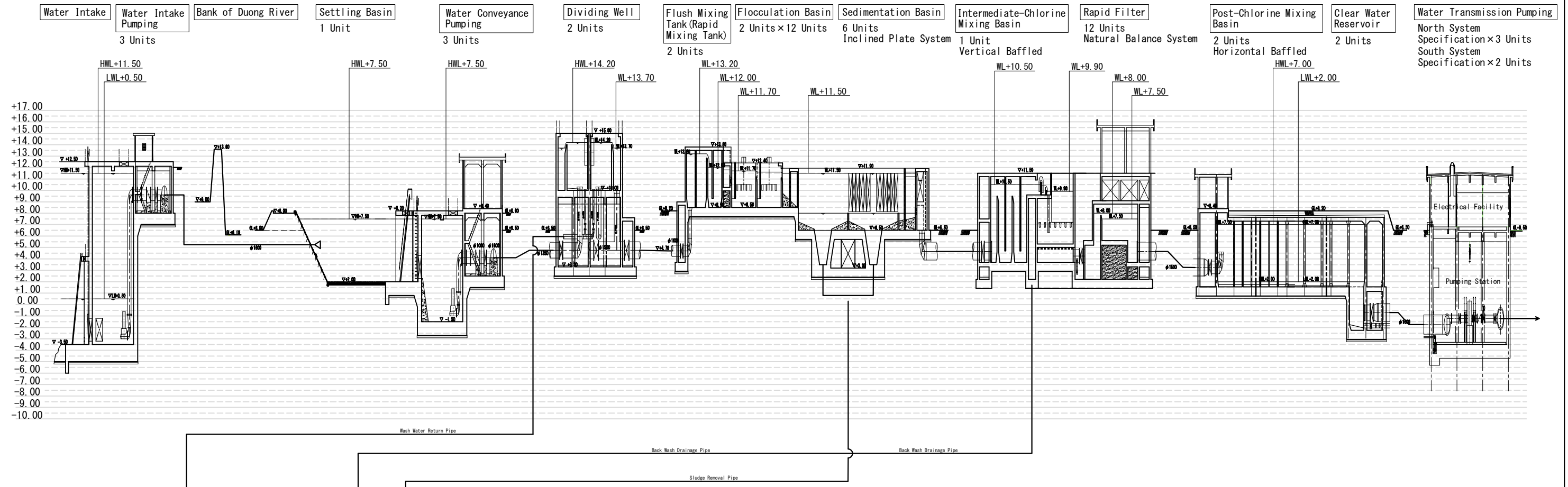
General Plan s=1:2000
(Phase 2 : 300,000m³/day)



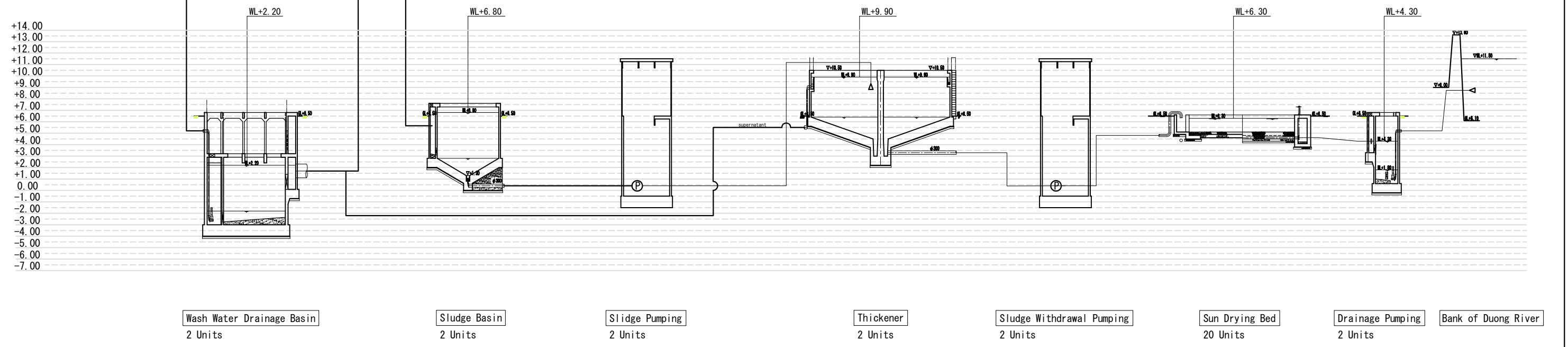
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Water Level Chart H=1:350

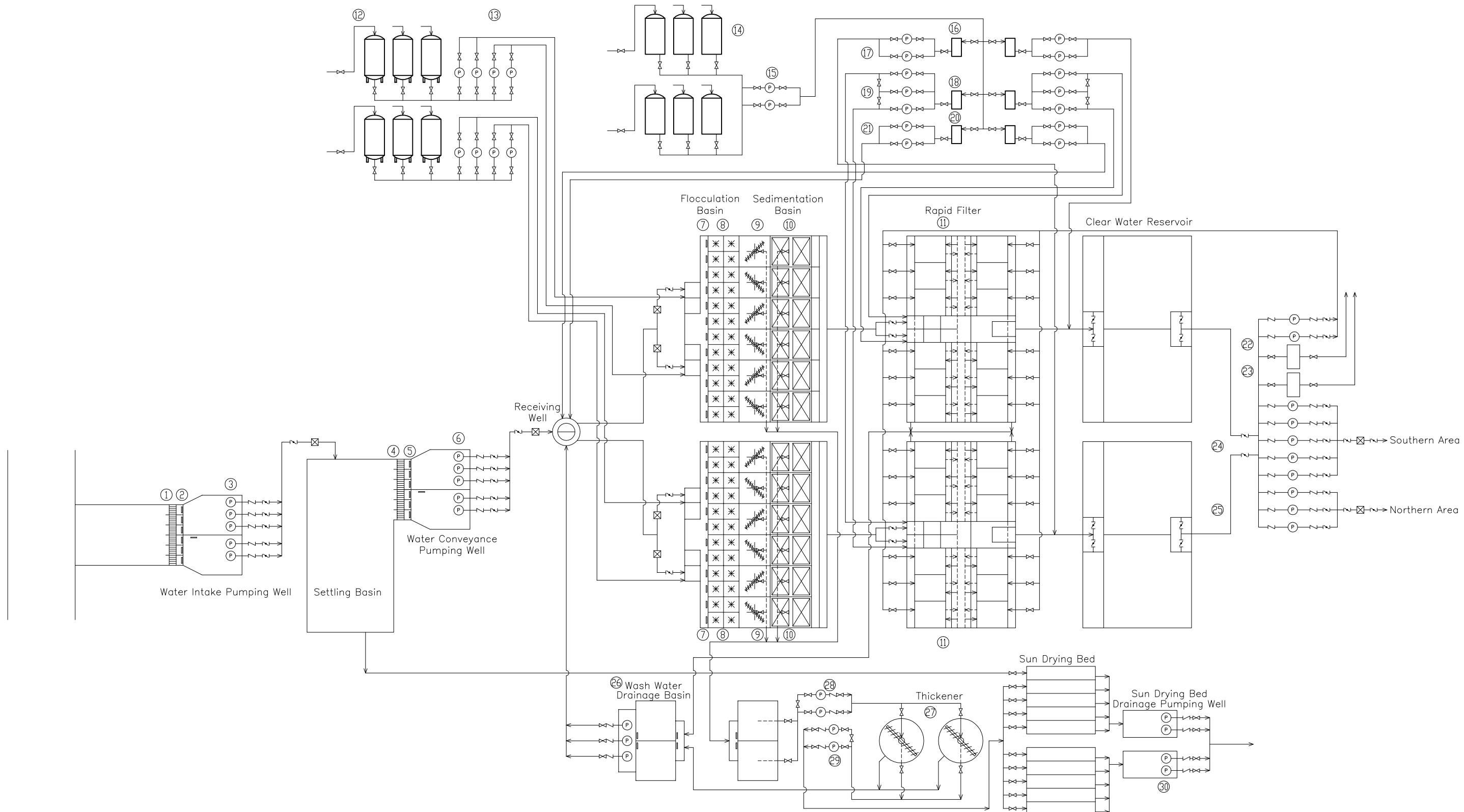
[Water Treatment System]



[Wastewater Treatment System]



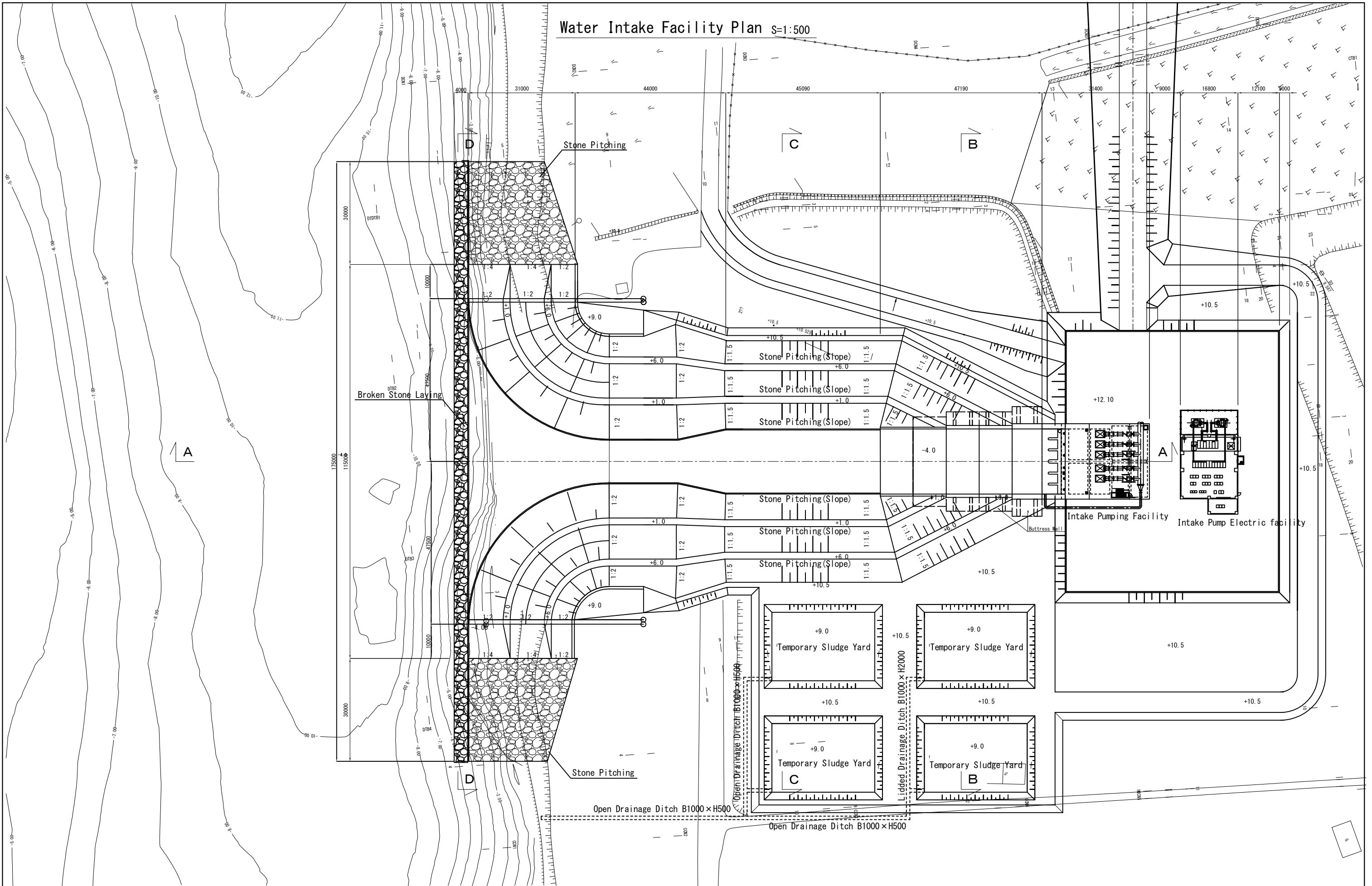
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	No.								
THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM					Date. NOV. 2011	Duong River Water Treatment Plant			Drawing No
					Scale non	Water Level Chart			3



No.	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯
Name	Water Intake Pumping Well Screen	Water Intake Pumping Well Inflow Gate	Water Intake Pump	Water Conveyance Pumping Well Screen	Water Conveyance Pumping Well Inflow Gate	Water Conveyance Pump	Flocculation Basin Inflow Gate	Flocculator	Sedimentation Basin Sludge Scraper	Sedimentation Basin Inclined Pipe	Rapid Filter Syphon	PAC Storage Tank	PAC Dosing Pump	Chlorine Storage Tank	Chlorine Transfer pump	Post-chlorine Service Tank
Type																
Number (Phase1/Phase2)	6 / 0	6 / 0	3 / 2	6 / 0	6 / 0	3 / 2	12 / 12	24 / 24	6 / 6	6 / 6	12 / 12	3 / 3	4 / 4	3 / 3	2 / 0	1 / 1
Remarks																

No.	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔	㉕	㉖	㉗	㉘	㉙	㉚	㉛
Name	Post-chlorine Dosing Pump	Intermediate-chlorine Service Tank	Intermediate-chlorine Dosing Pump	Pre-chlorine Service Tank	Pre-chlorine Dosing Pump	Rapid Filter Surface-washing pump	Feed-water Unit	(Southern Area) Transmission Pump	(Northern Area) Transmission Pump	Back-washing water Returning pump	Thickener Sludge Scraper	Sludge Basin Drainage Pump	Thickener Drainage Pump	Sun Drying Bed Drainage Pump	
Type															
Number (Phase1/Phase2)	2 / 2	1 / 1	3 / 3	1 / 1	2 / 2	2 / 0	1 / 1	3 / 2	2 / 1	2 / 1	2 / 0	2 / 0	2 / 2		
Remarks															

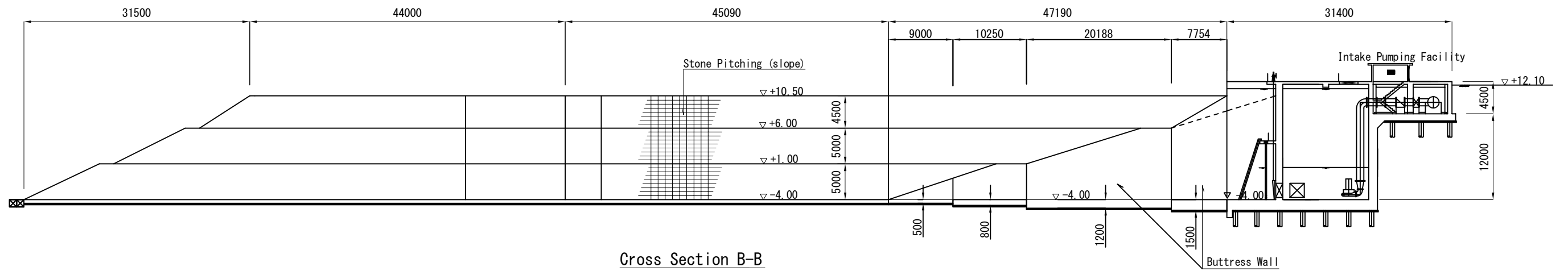
Water Intake Facility Plan S=1:500



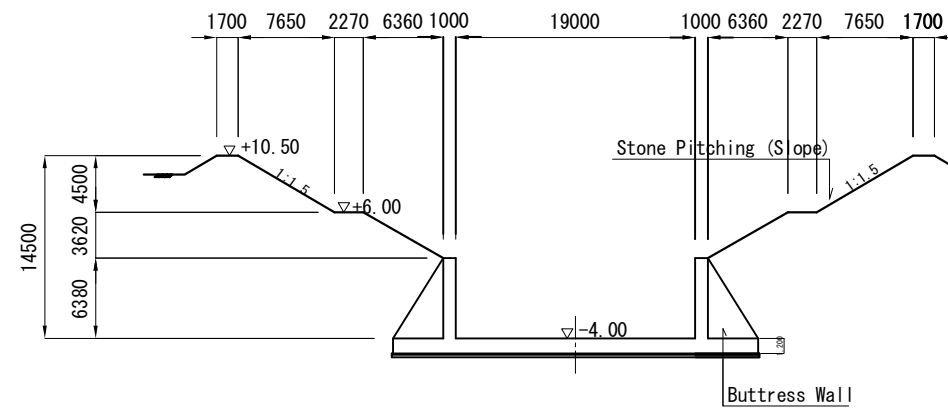
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			NOV. 2011		5
			Scale	Water Intake Facility Plan	
			1/500		

Water Intake Facility Cross Section S=1:300

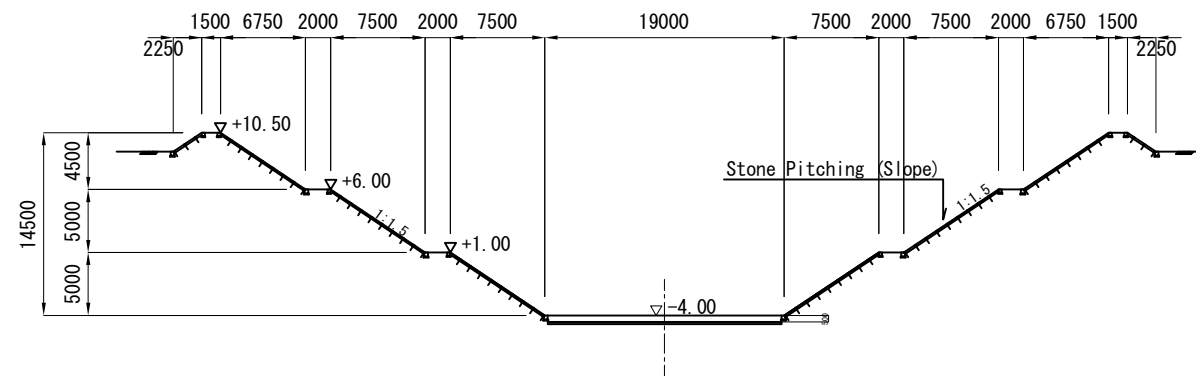
Cross Section A-A



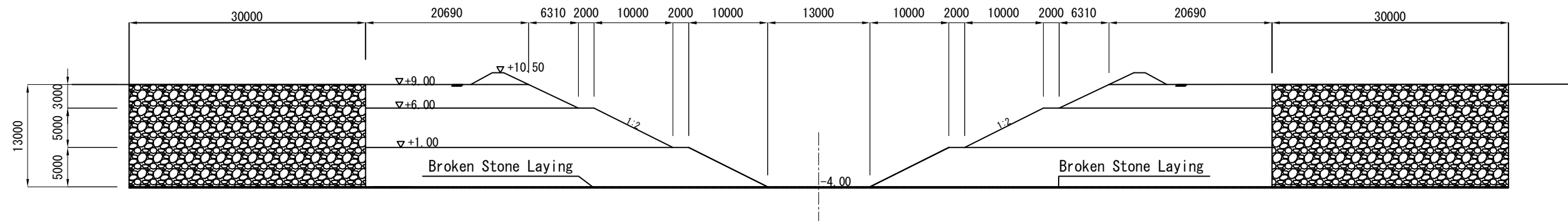
Cross Section B-B



Cross Section C-C

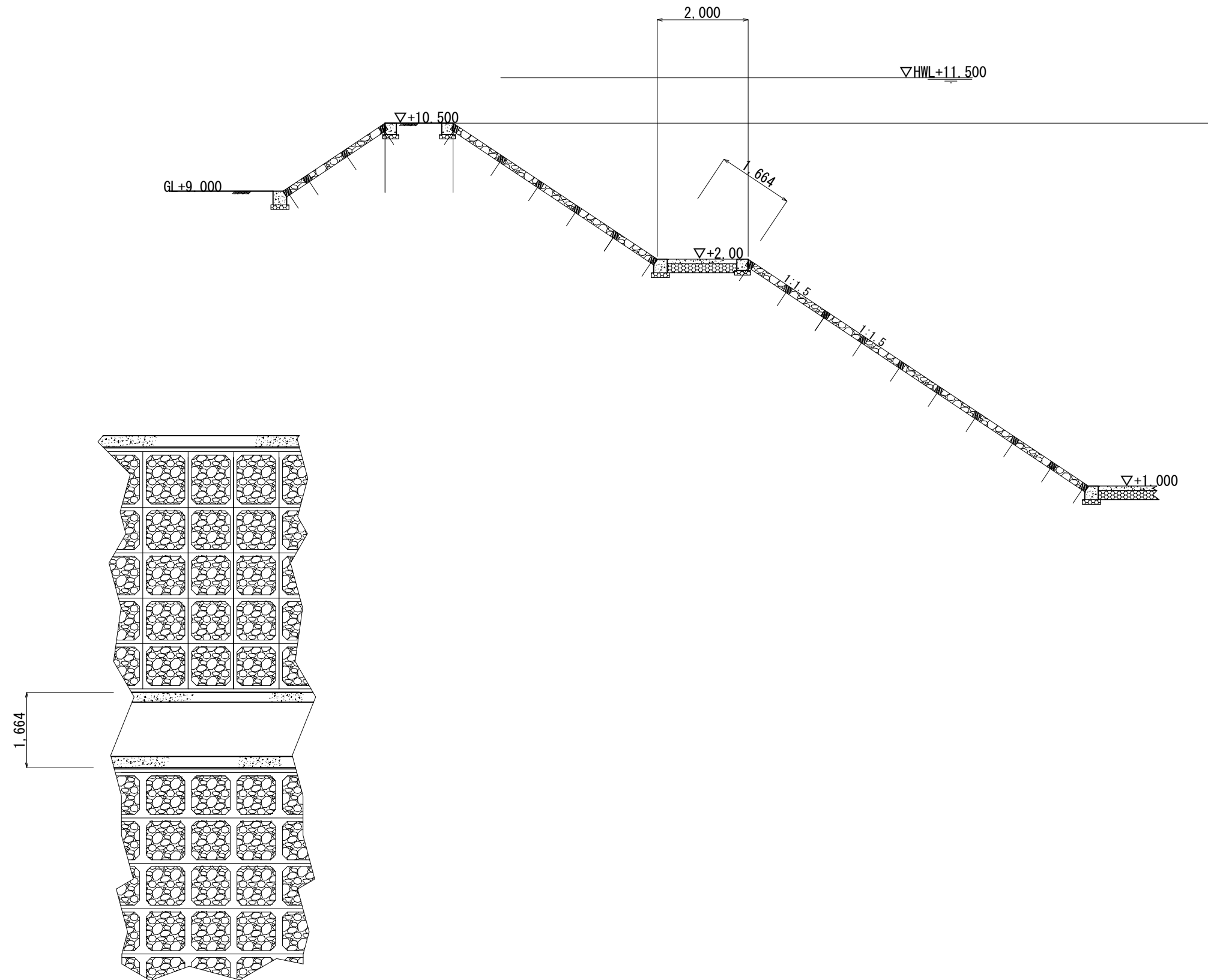


Cross Section D-D



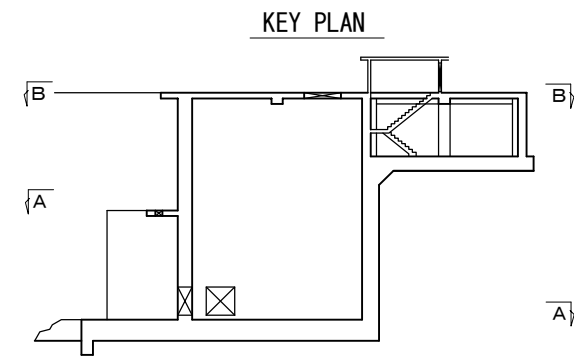
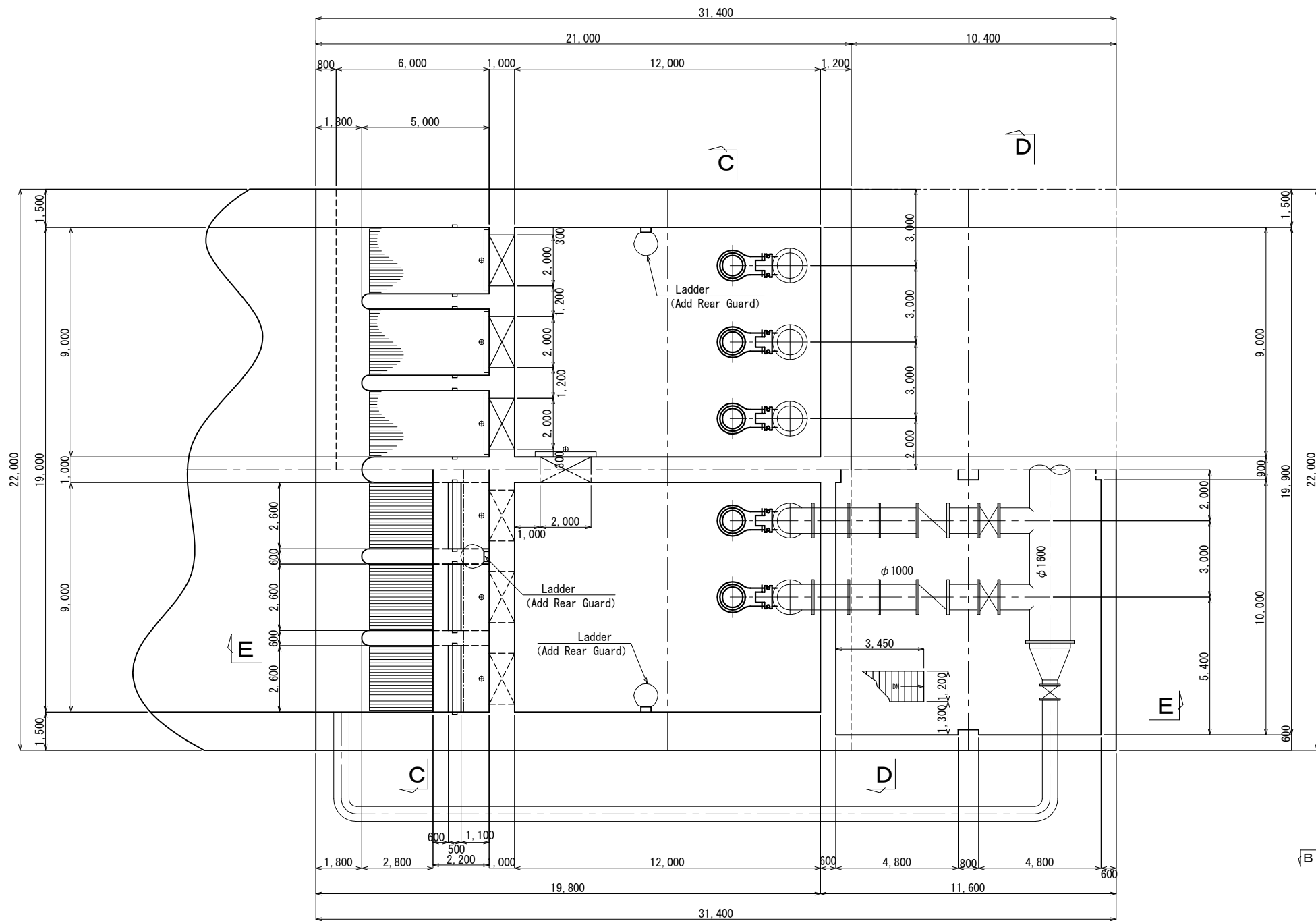
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取水口標準断面図 S=1:50



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Cross Section A-A



JICA Study Team			
	No.		

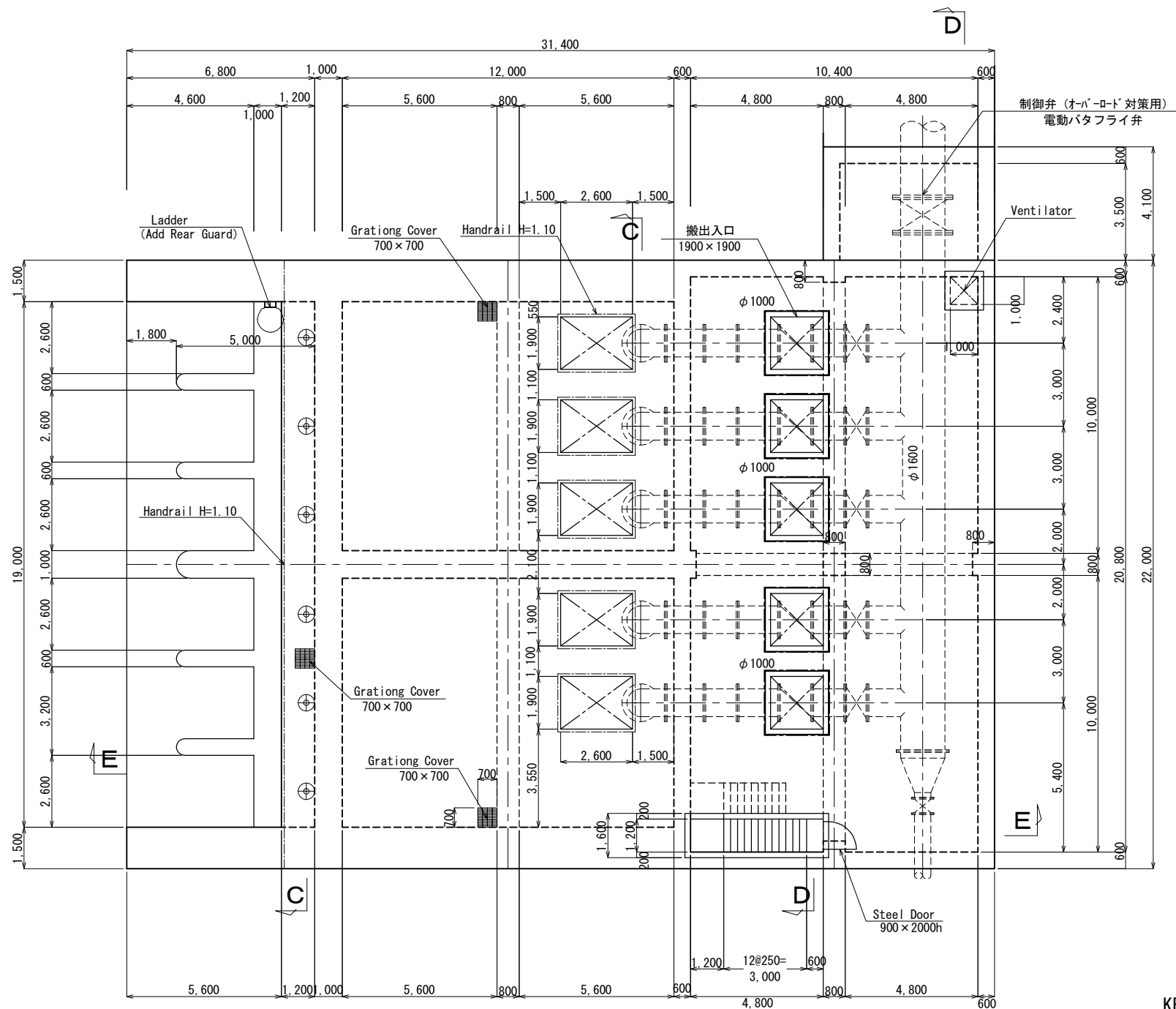
THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT
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Date.
NOV. 2011
Scale
1/100

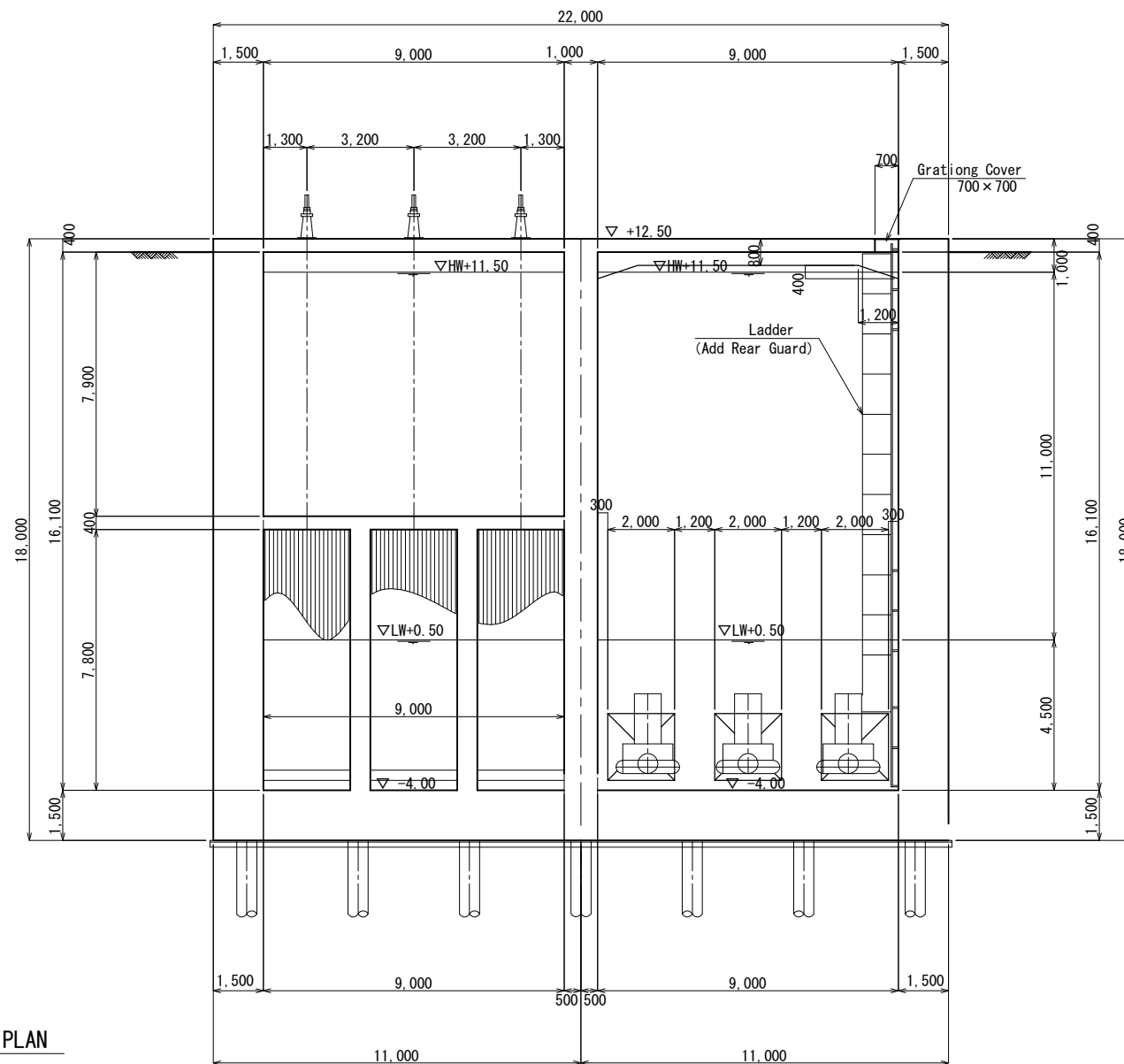
Duong River Water Treatment Plant
Water Intake Facility (Pumping Station) 1/3

Drawing No
8

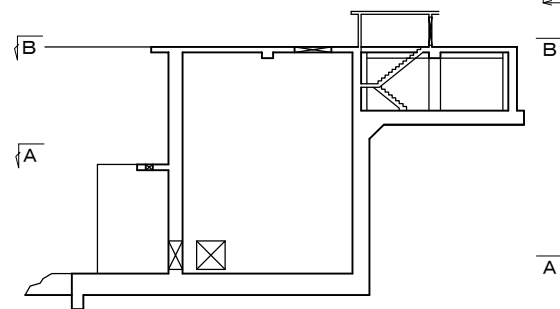
Cross Section B-B



Cross Section C-C

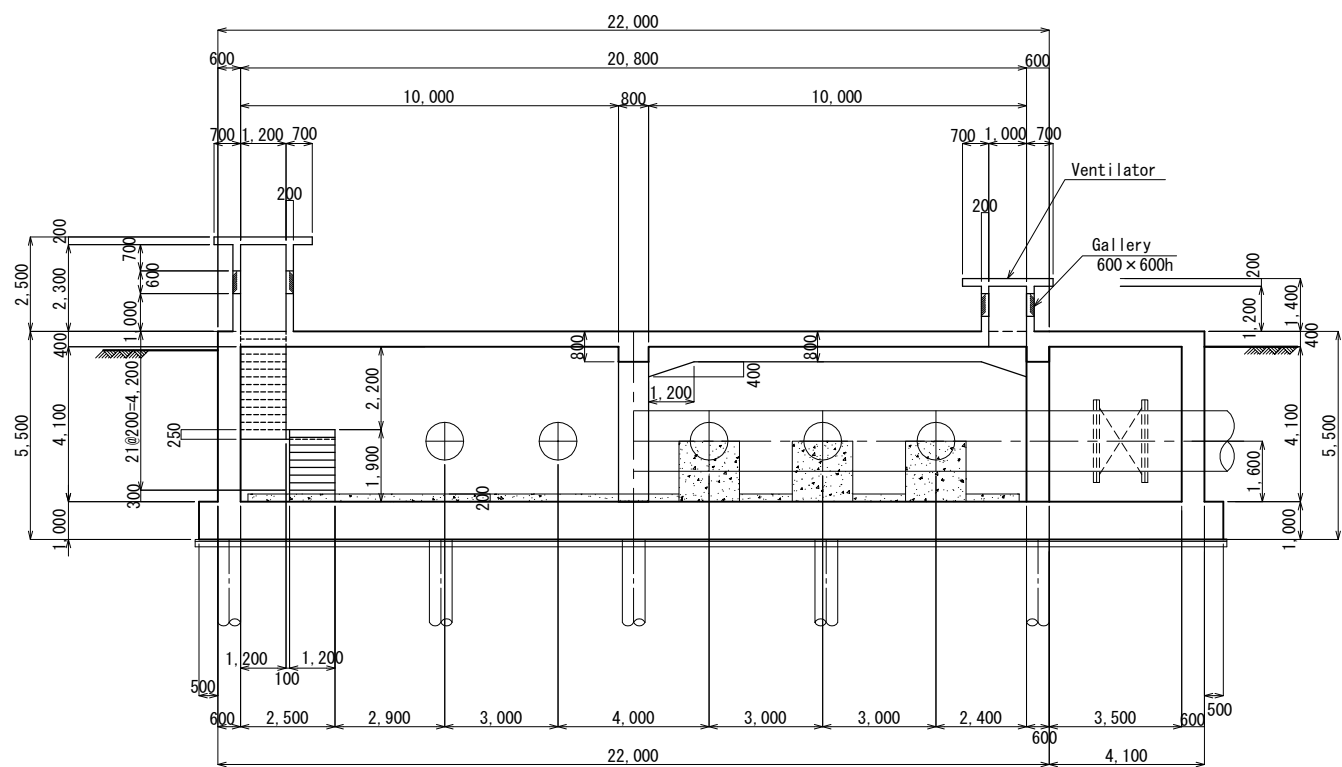


KEY PLAN

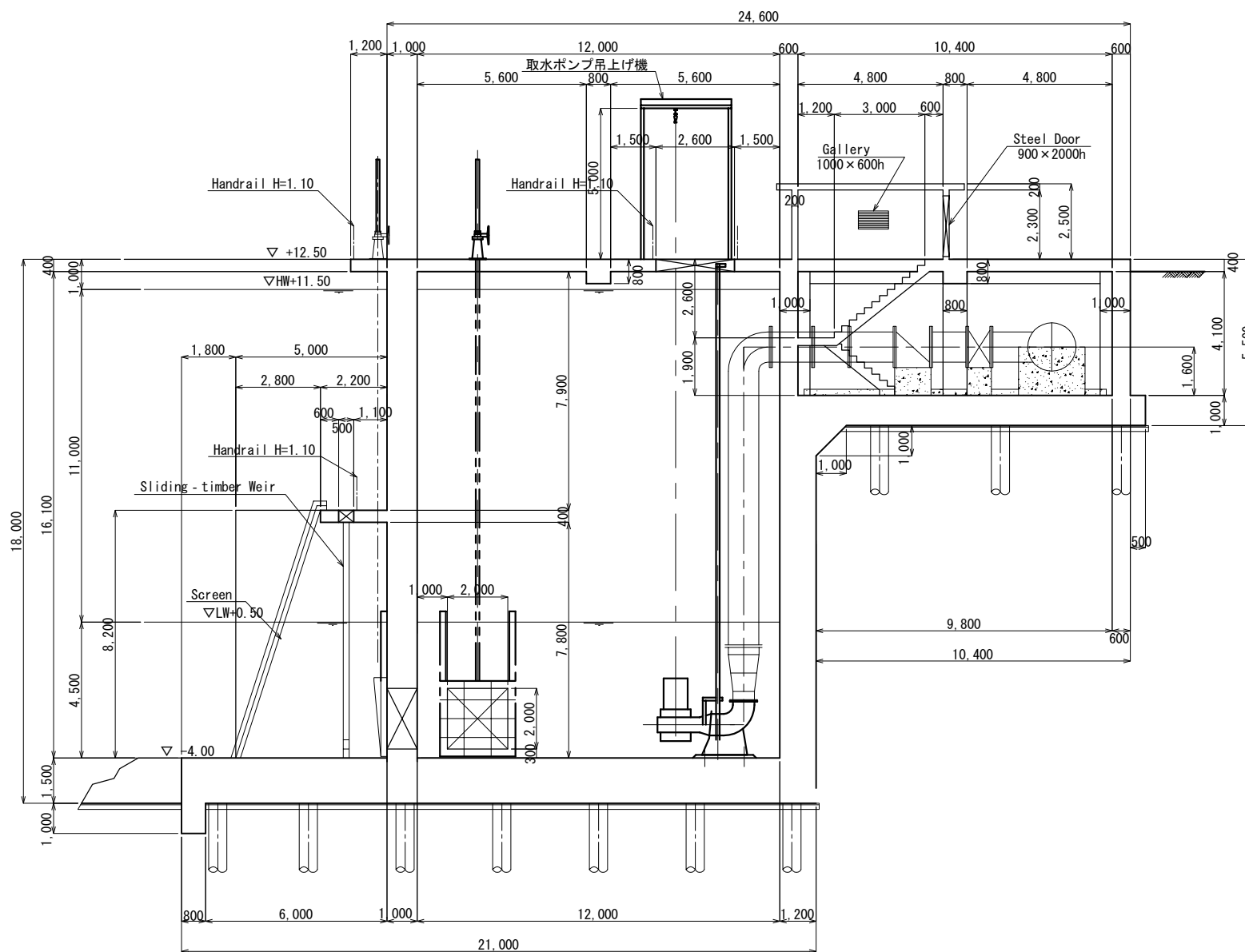


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Cross Section D-D

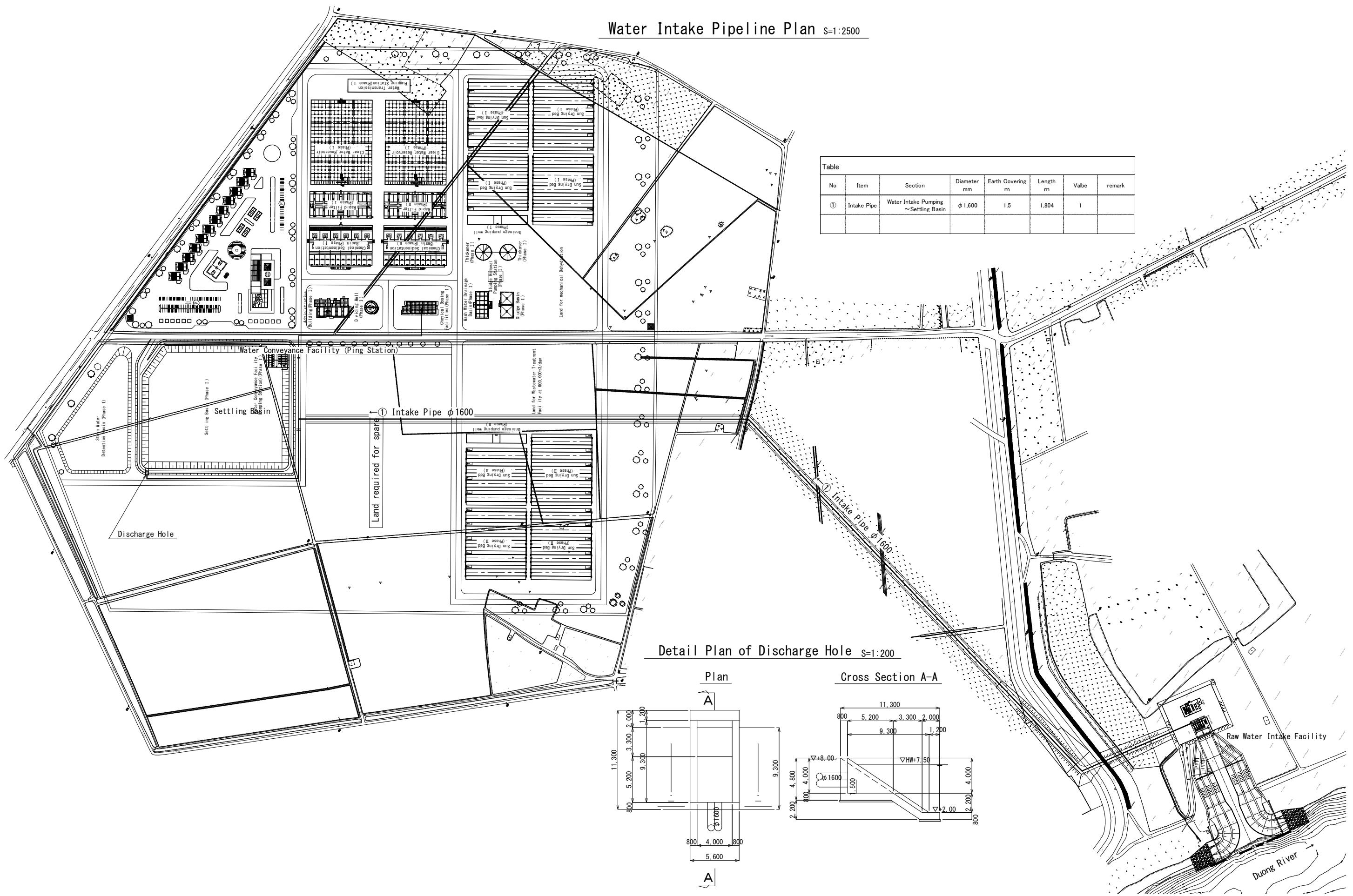


Cross Section E-E



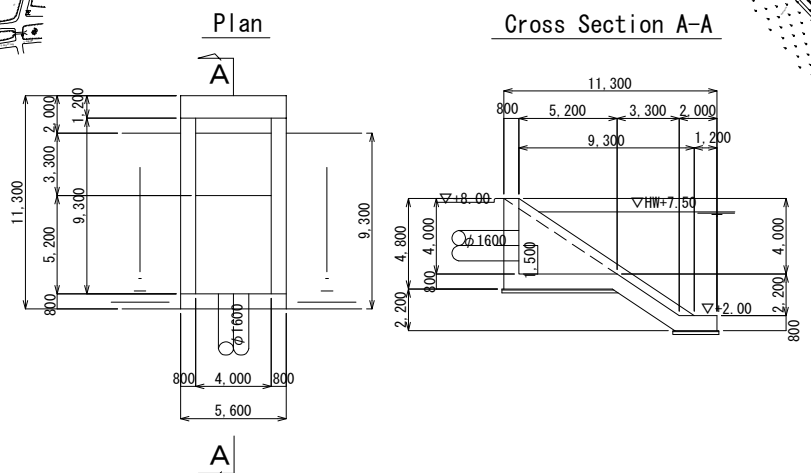
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Water Intake Pipeline Plan S=1:2500

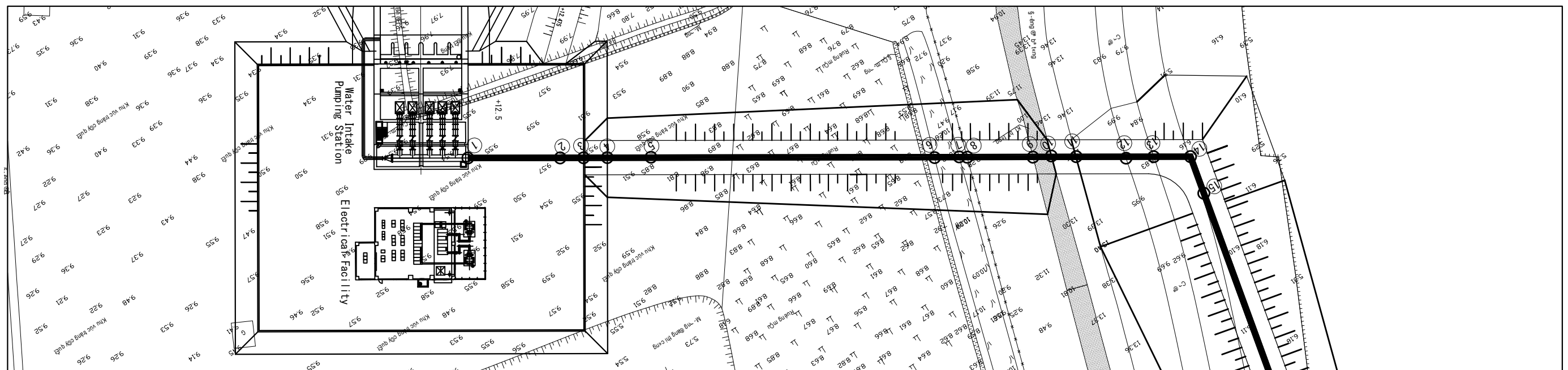
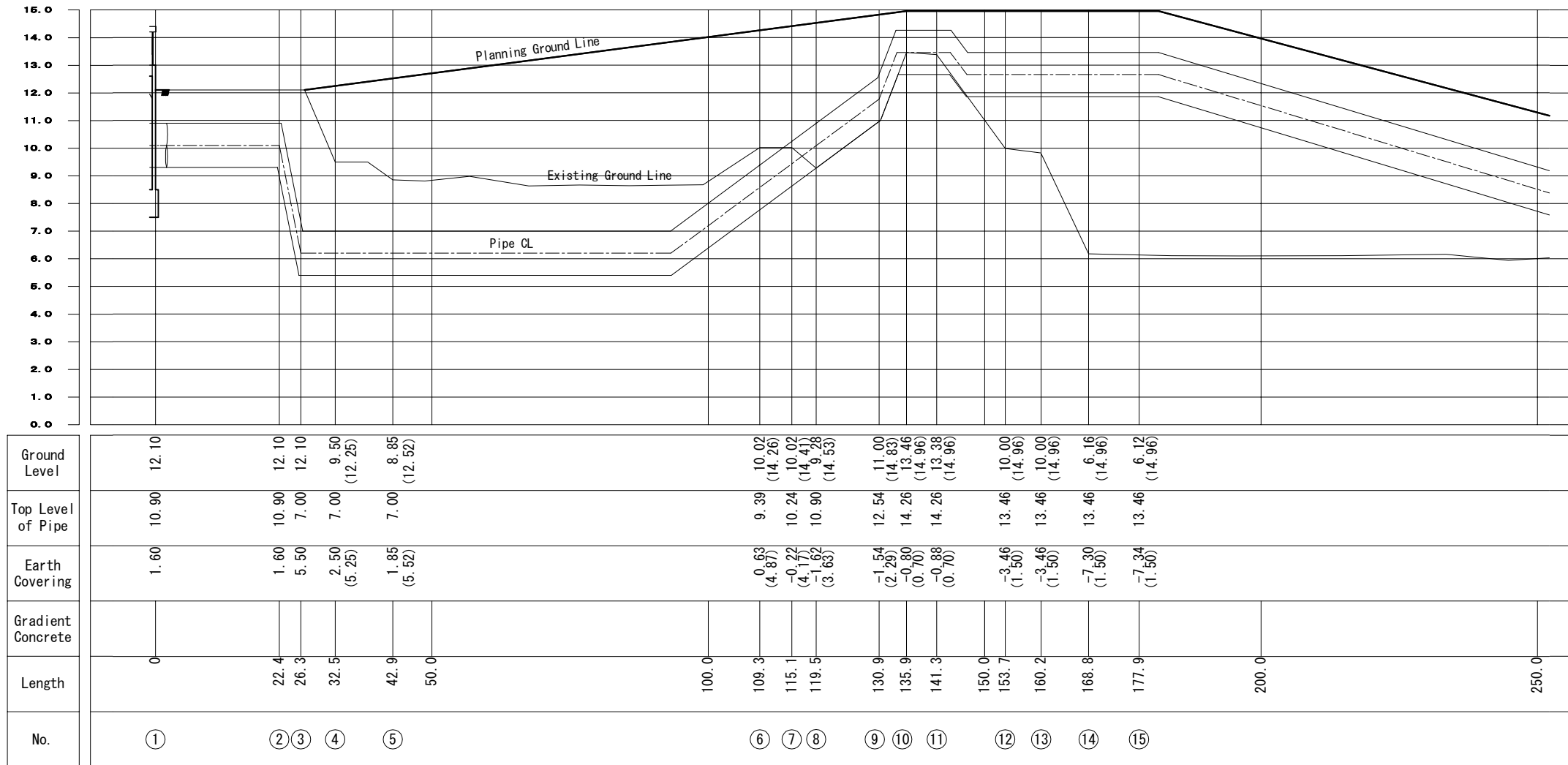


No	Item	Section	Diameter mm	Earth Covering m	Length m	Valve	remark
①	Intake Pipe	Water Intake Pumping ~ Settling Basin	φ 1,600	1.5	1,804	1	

Detail Plan of Discharge Hole S=1:200

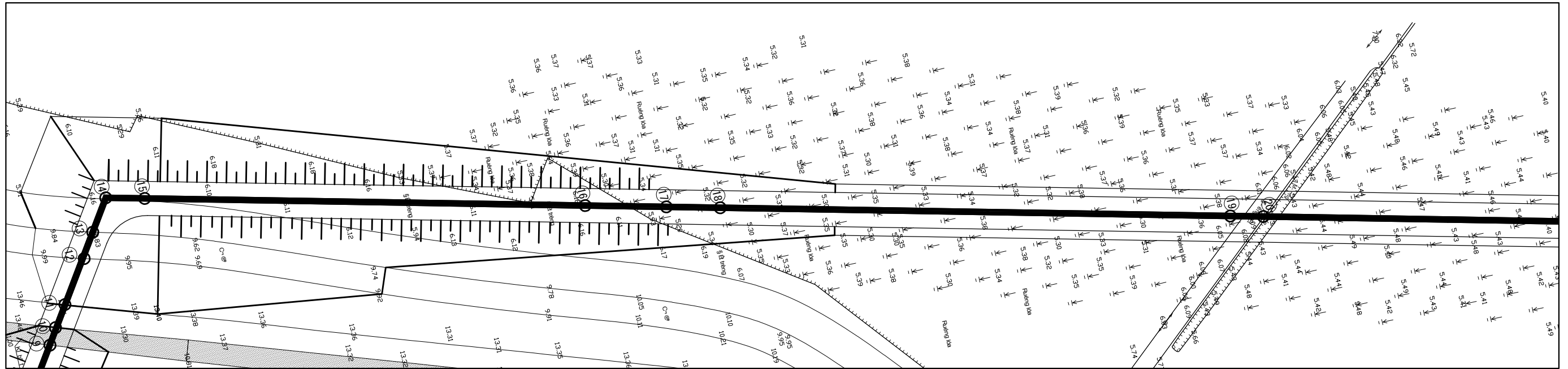
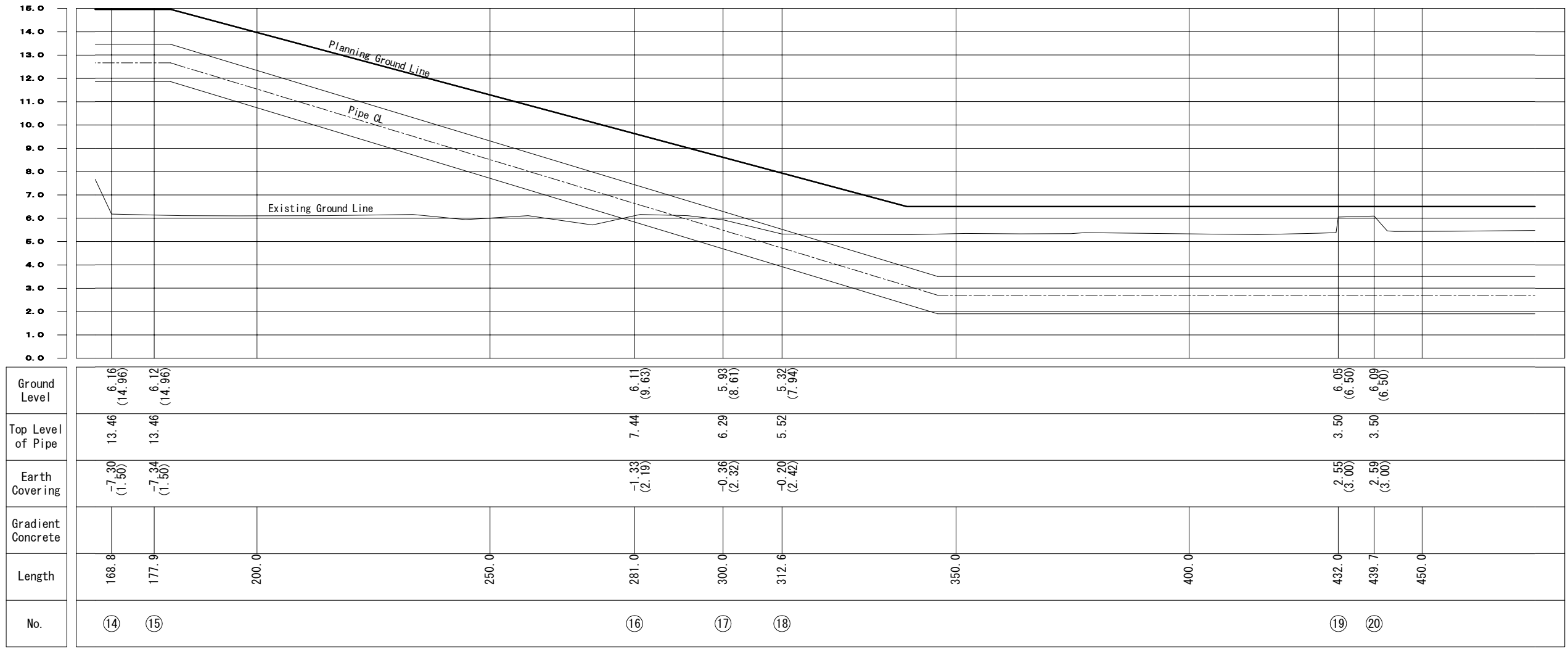


Intake Pipe Plan (1/6)

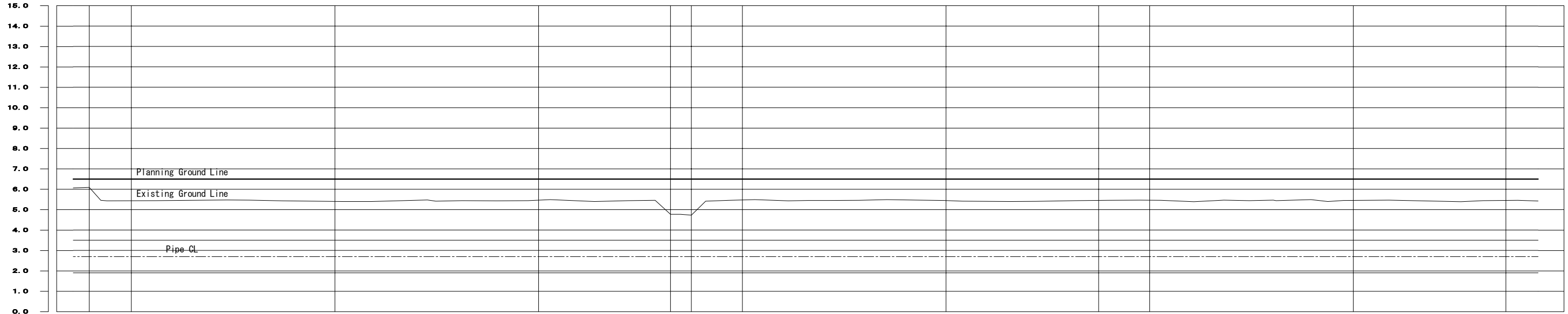


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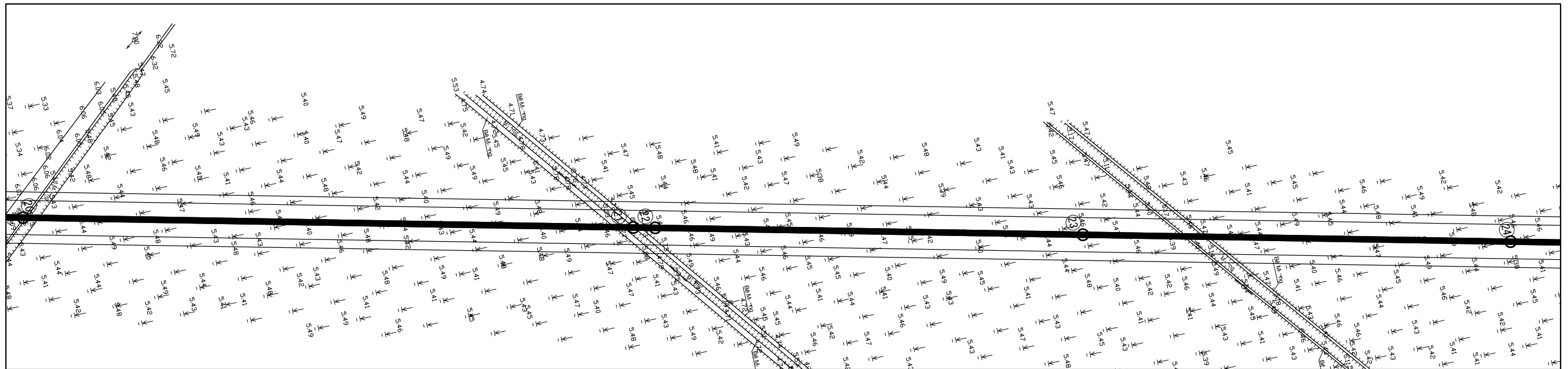
Intake Pipe Plan (2/6)



Intake Pipe Plan (3/6)



Ground Level	6.09 (6.50)				4.77 (6.50)				5.45 (6.50)		5.45 (6.50)	
Top Level of Pipe	3.50				3.50				3.50		3.50	
Earth Covering	2.59 (3.00)				1.27 (3.00)		1.23 (3.00)		1.95 (3.00)		1.95 (3.00)	
Gradient Concrete												
Length	439.7		450.0		500.0		550.0		600.0		650.0	
											687.5	
											700.0	
											750.0	
											787.5	
No.	⑳				㉑		㉒				㉓	
											㉔	



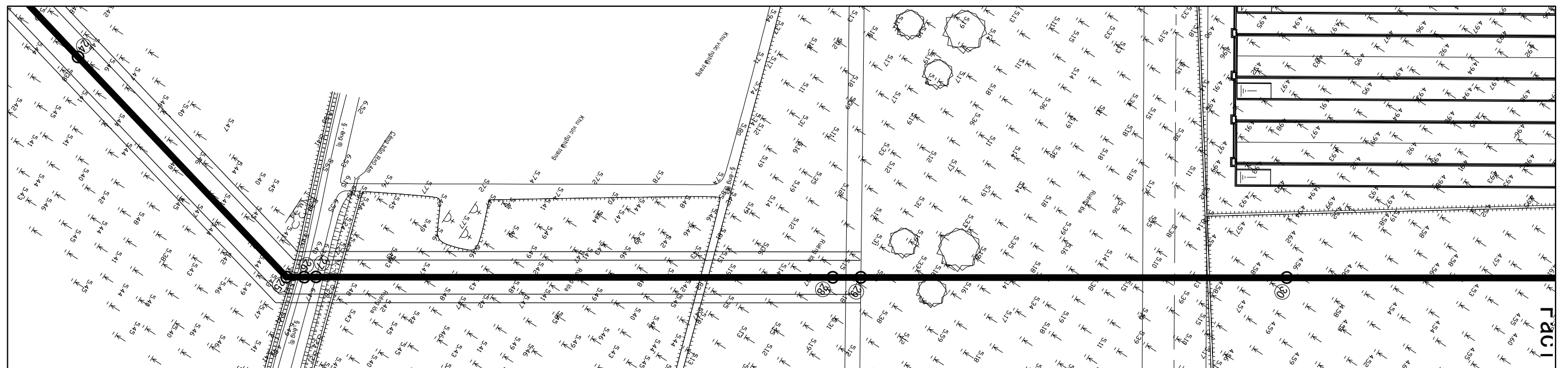
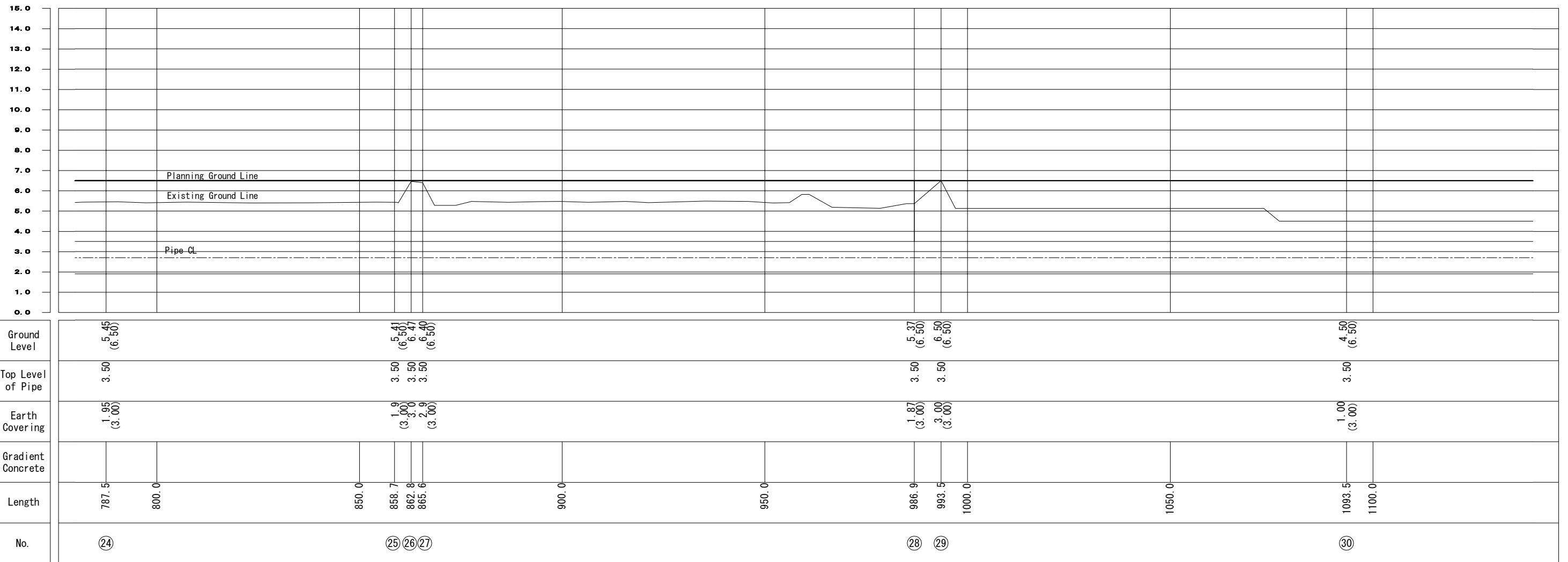
JICA Study Team			
	No.		

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Date.	NOV. 2011
Scale	1/500

Duong River Water Treatment Plant	Drawing No
Intake Pipe Plan (3/6)	14

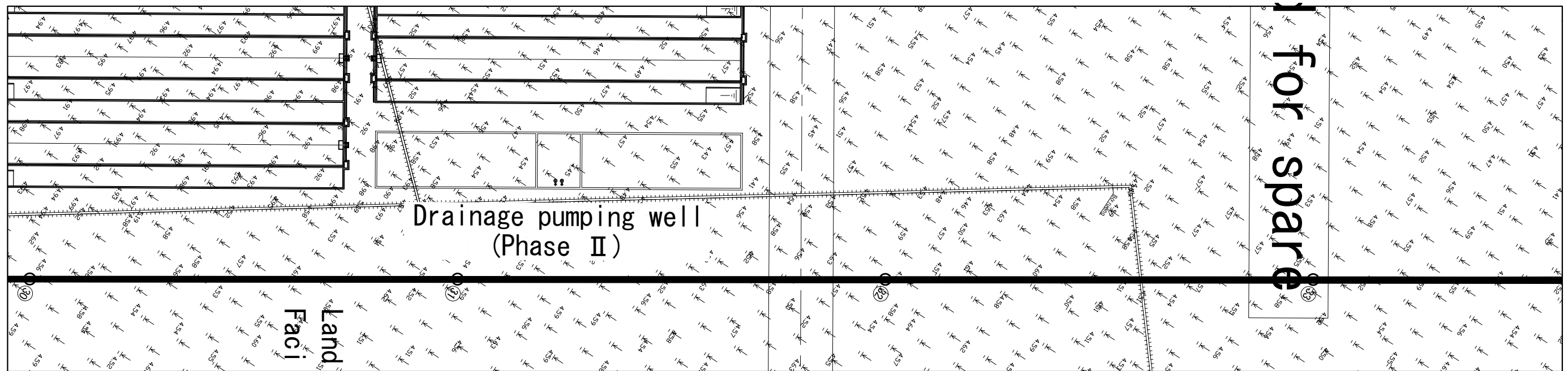
Intake Pipe Plan (4/6)



No.			
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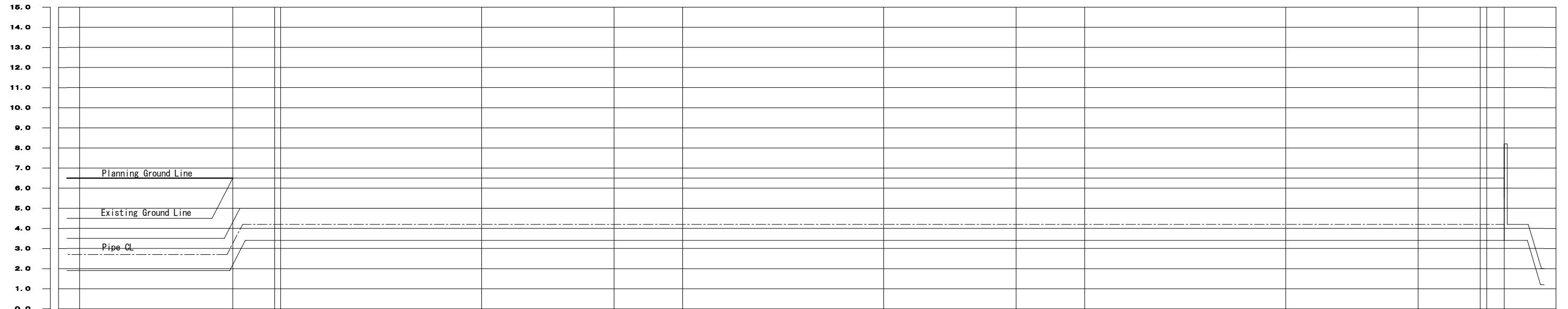
Intake Pipe Plan (5/6)

15.0												
14.0												
13.0												
12.0												
11.0												
10.0												
9.0												
8.0												
7.0	Planning Ground Line											
6.0												
5.0	Existing Ground Line											
4.0												
3.0	Pipe CL											
2.0												
1.0												
0.0												
Ground Level	4.50 (6.50)				4.50 (6.50)				4.50 (6.50)		4.50 (6.50)	
Top Level of Pipe	3.50				3.50				3.50		3.50	
Earth Covering	1.00 (3.00)				1.00 (3.00)				1.00 (3.00)		1.00 (3.00)	
Gradient Concrete												
Length	1093.5	1100.0	1150.0		1193.5	1200.0	1250.0		1293.5	1300.0	1350.0	
No.	③①				③②				③③			

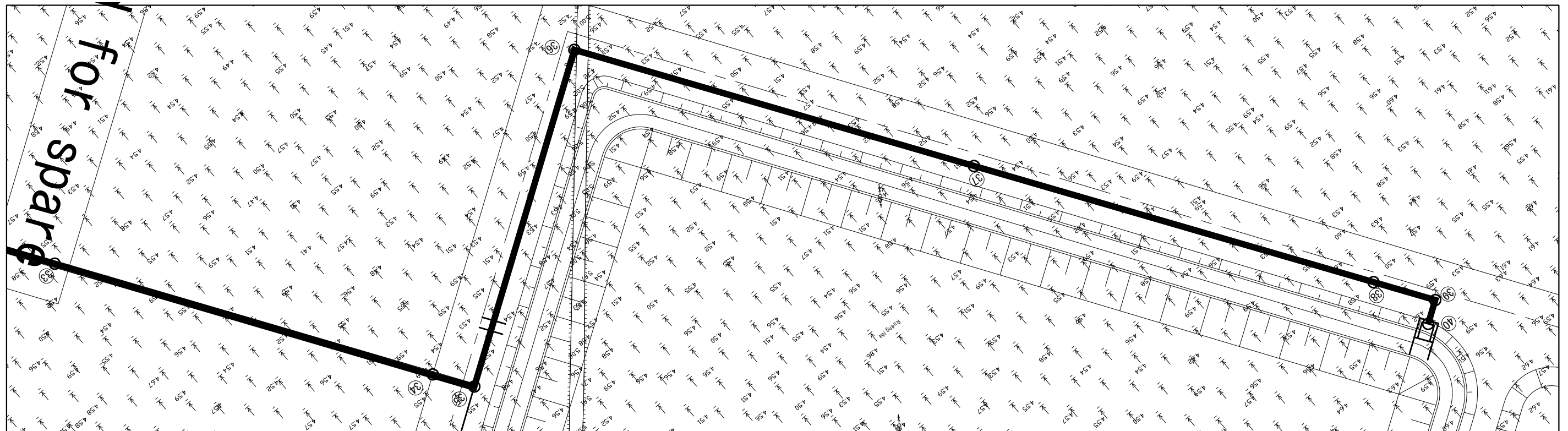


JICA Study Team				THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date. NOV. 2011	Duong River Water Treatment Plant	Drawing No
	No.				Scale 1/500	Intake Pipe Plan (5/6)	16

Intake Pipe Plan (6/6)

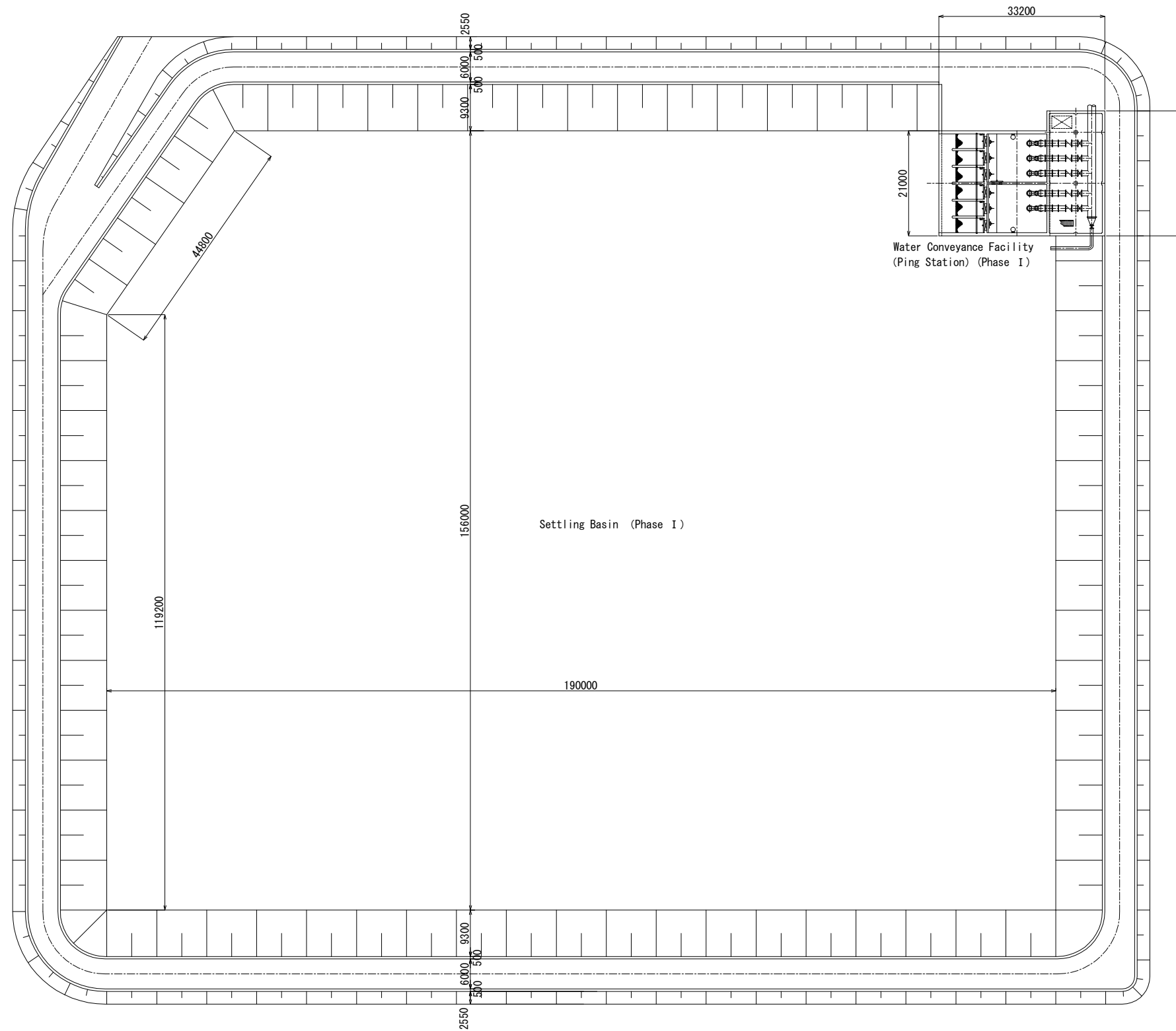


Ground Level		6.50	6.50			6.50								6.50	6.50	6.50	
Top Level of Pipe		5.00	5.00			5.00								5.00	5.00	5.00	
Earth Covering		1.50	1.50			1.50								1.50	1.50	1.50	
Gradient Concrete																	
Length	1450.0	1488.1	1498.5 1500.0		1550.0	1582.9	1600.0		1650.0		1682.9	1700.0		1750.0		1782.9	1798.4 1800.0 1804.3
No.		(34)	(35)			(36)					(37)					(38)	(39) (40)



No.			
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Settling Basin Plan S=1/500



JICA Study Team			
	No.		

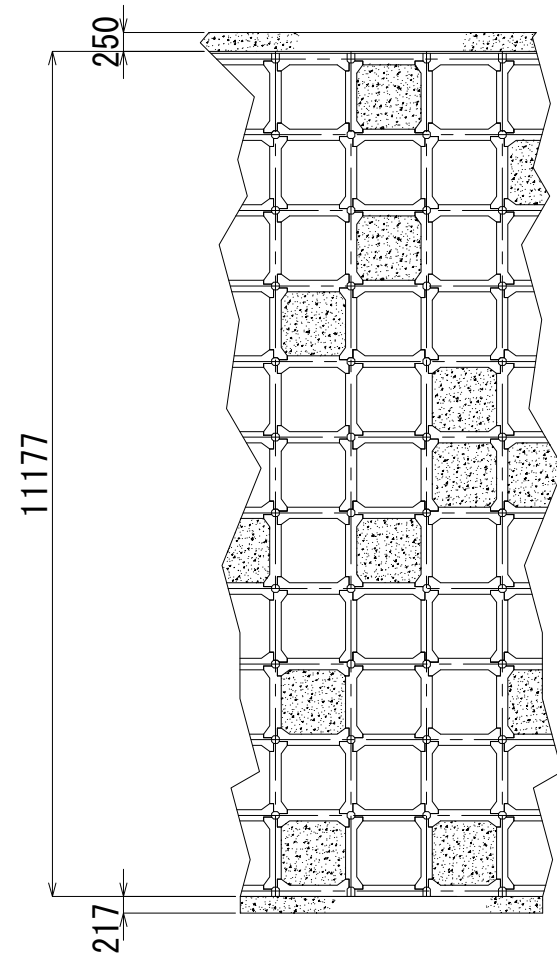
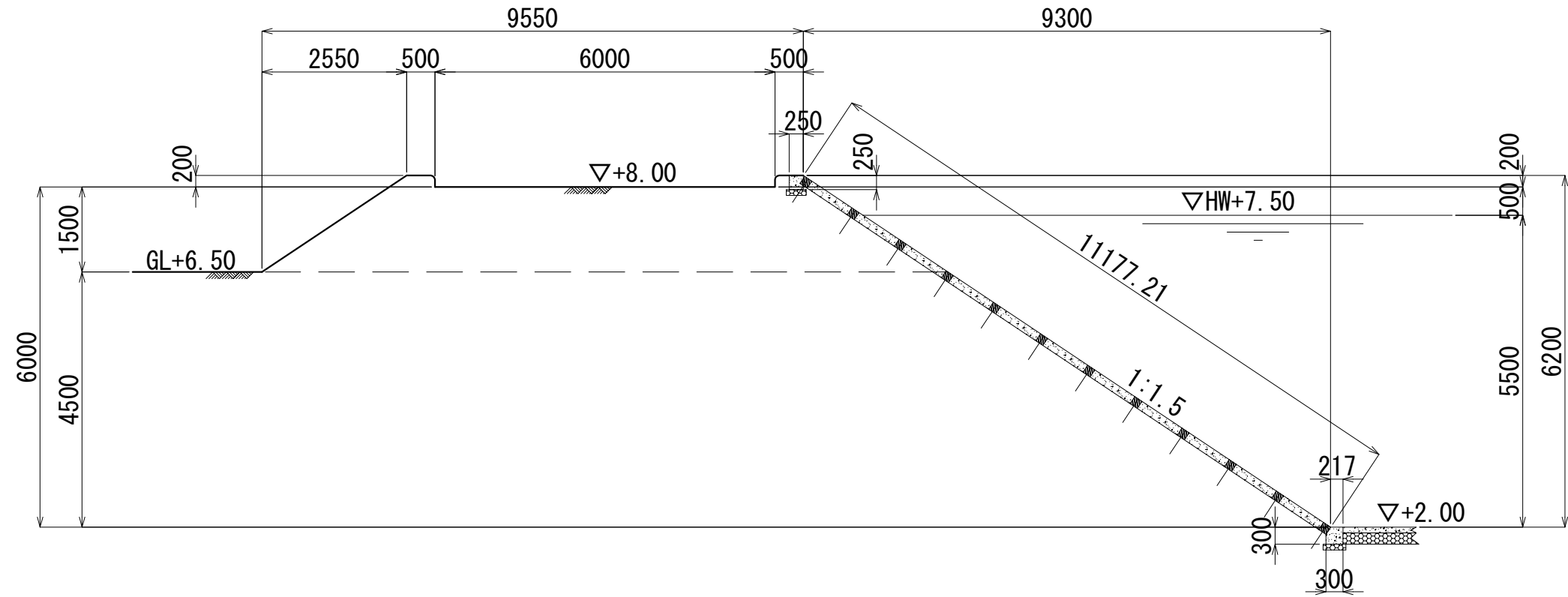
THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT
IN THE SOCIALIST REPUBLIC OF VIET NAM

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NOV. 2011
Scale
1/500

Duong River Water Treatment Plant
Settling Basin Plan

Drawing No
18

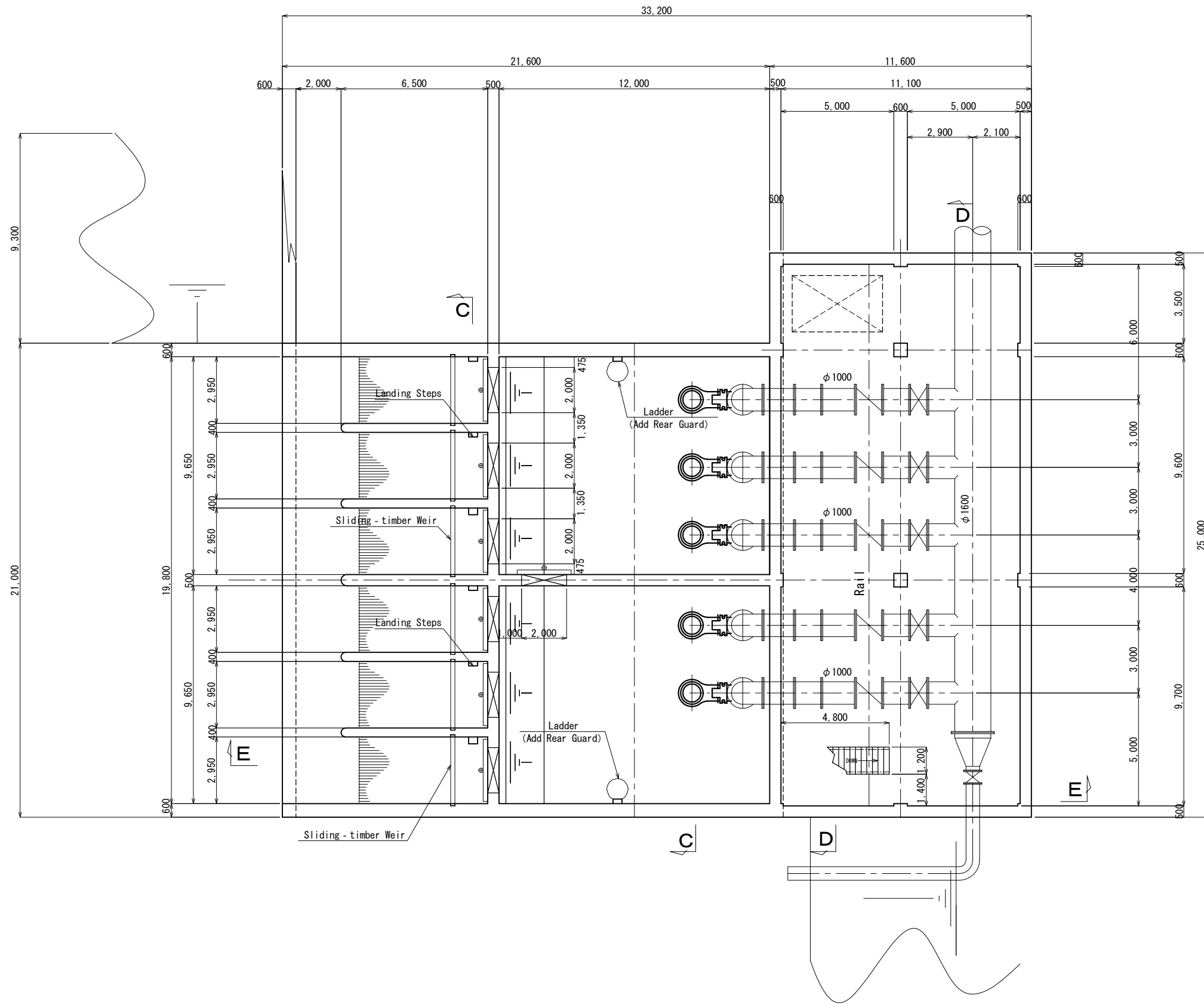
Settling Basin Cross Section $s=1/50$



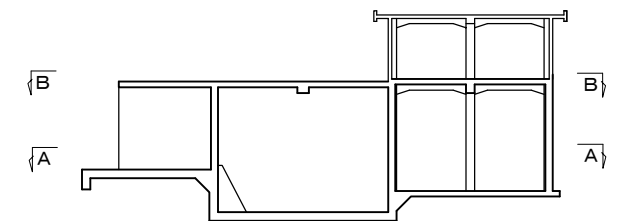
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Water Conveyance Facility (Pumping Station) 1/4

Cross Section A-A



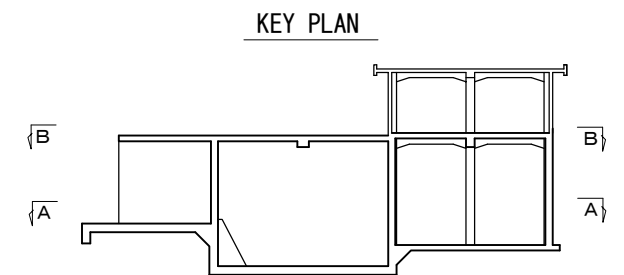
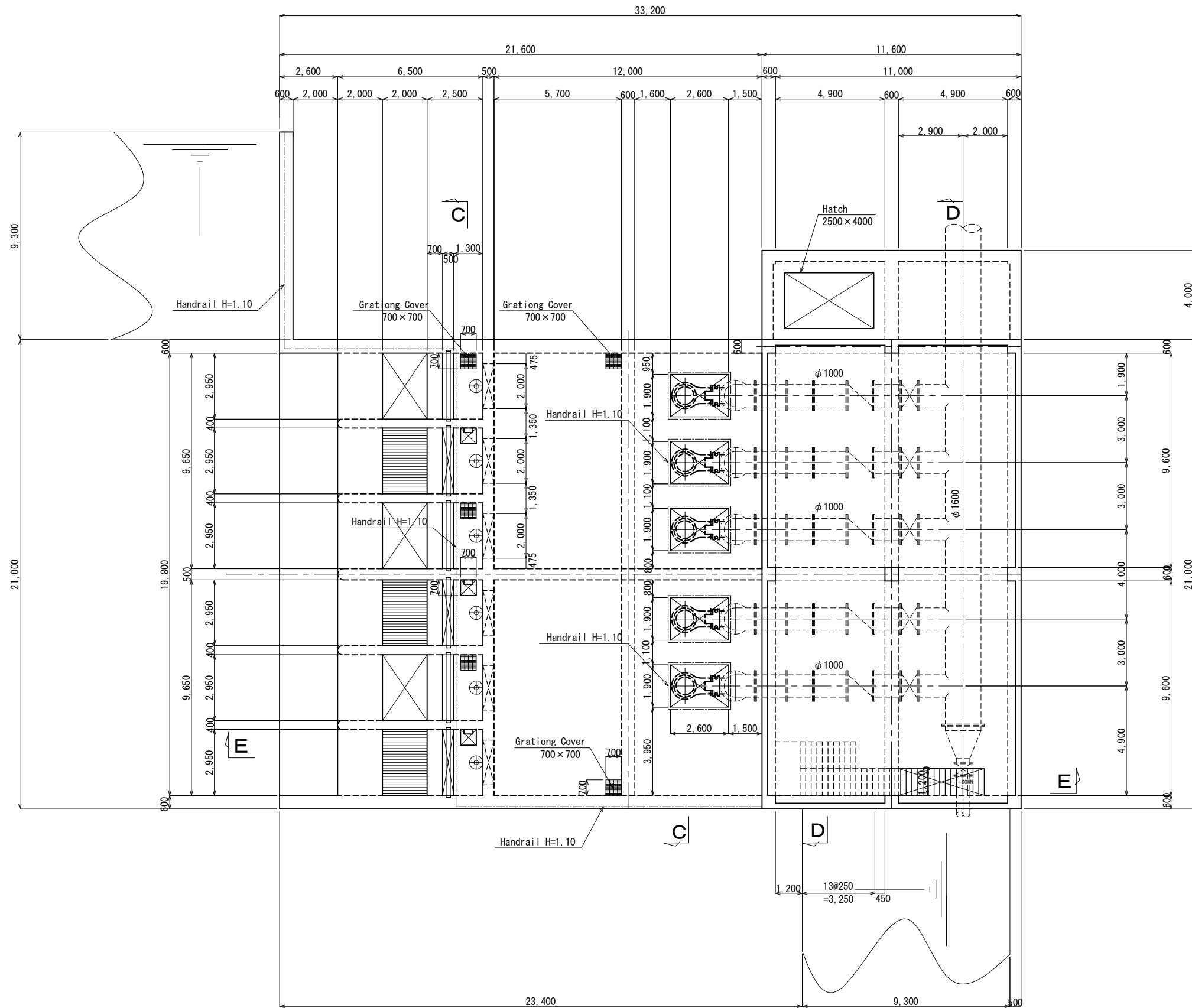
KEY PLAN



No.			
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Water Conveyance Facility (Pumping Station) 2/4

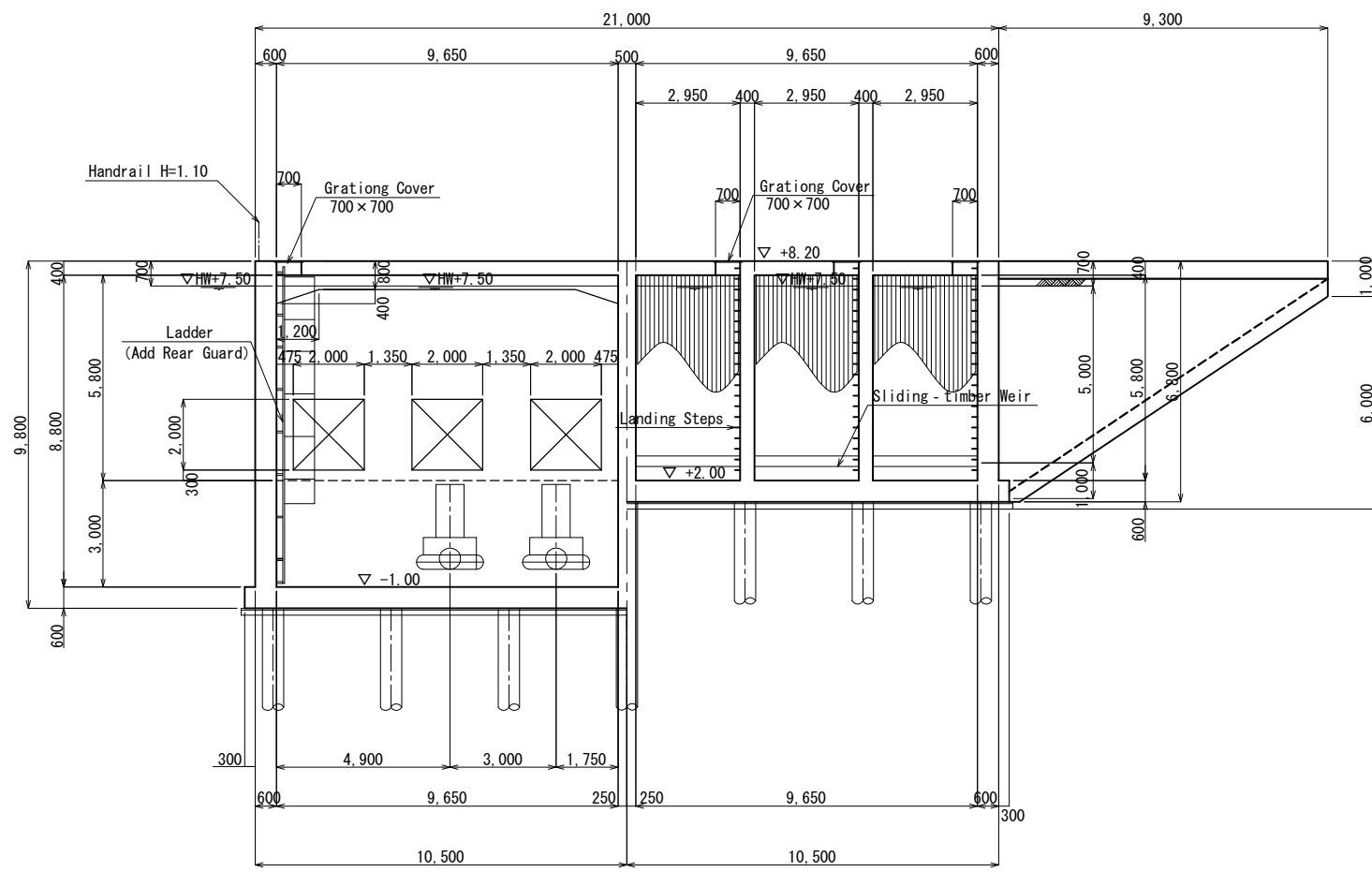
Cross Section B-B



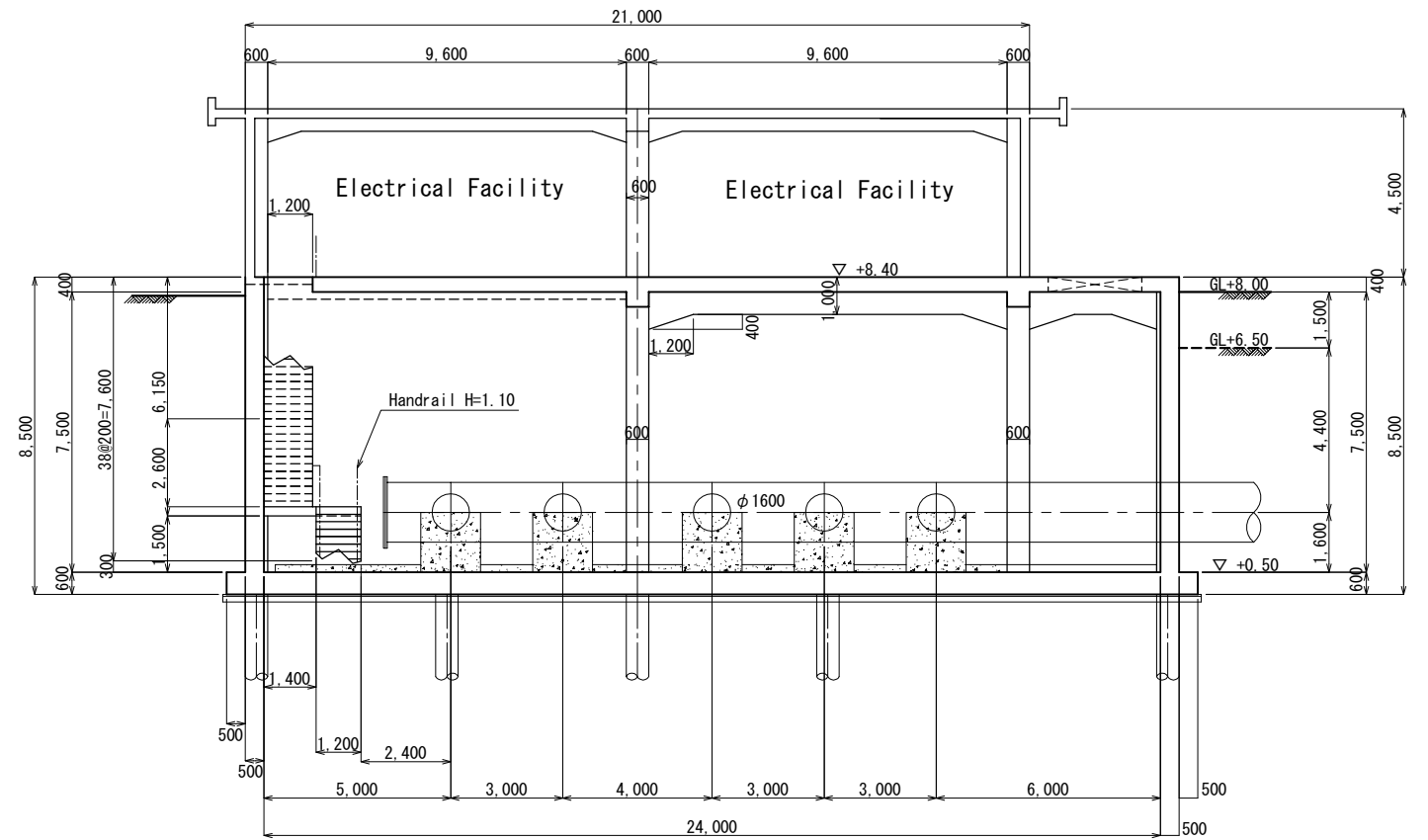
No.			
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Water Conveyance Facility (Pumping Station) 3/4

Cross Section C-C



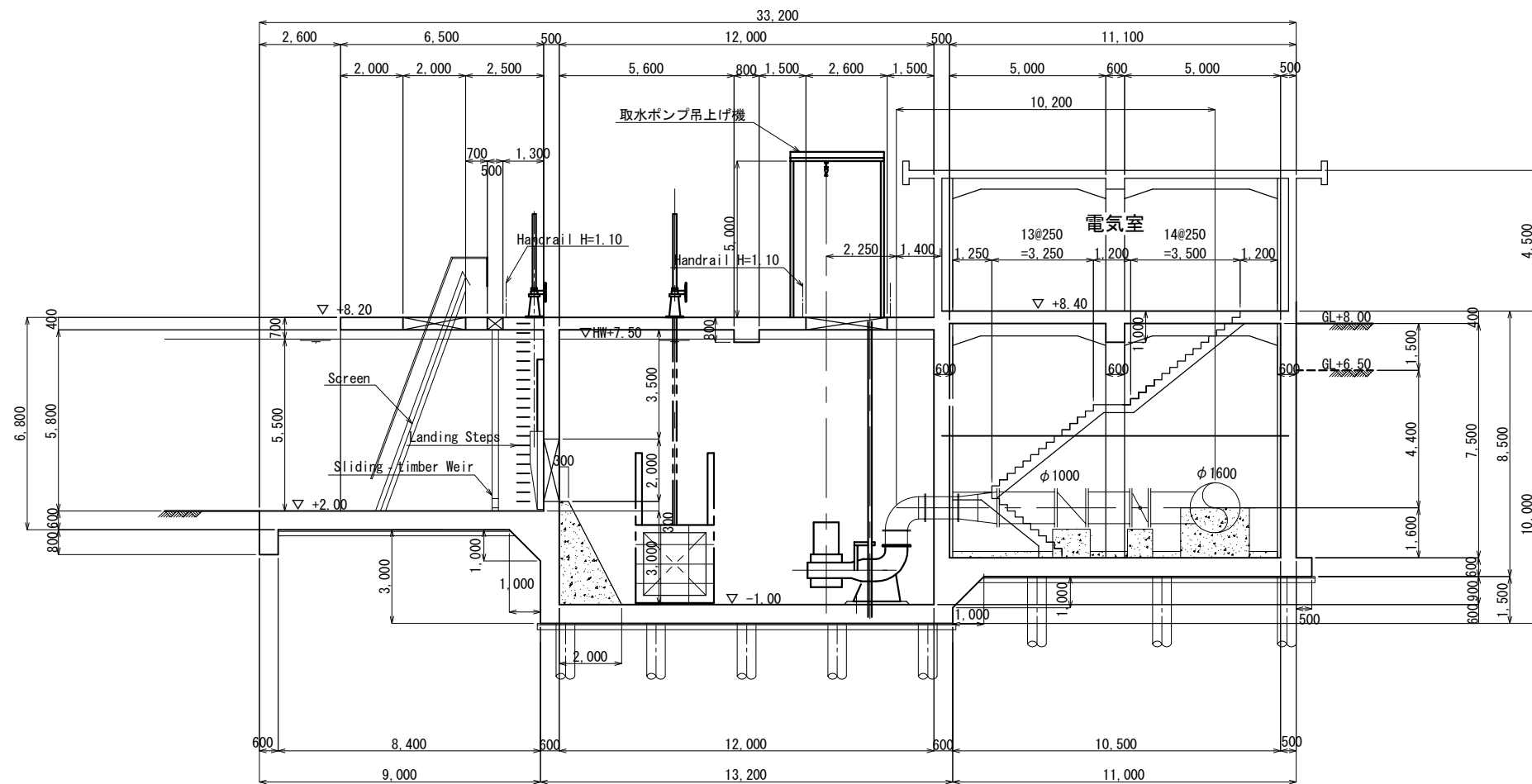
Cross Section D-D



No.			

Water Conveyance Facility (Pumping Station) 4/4

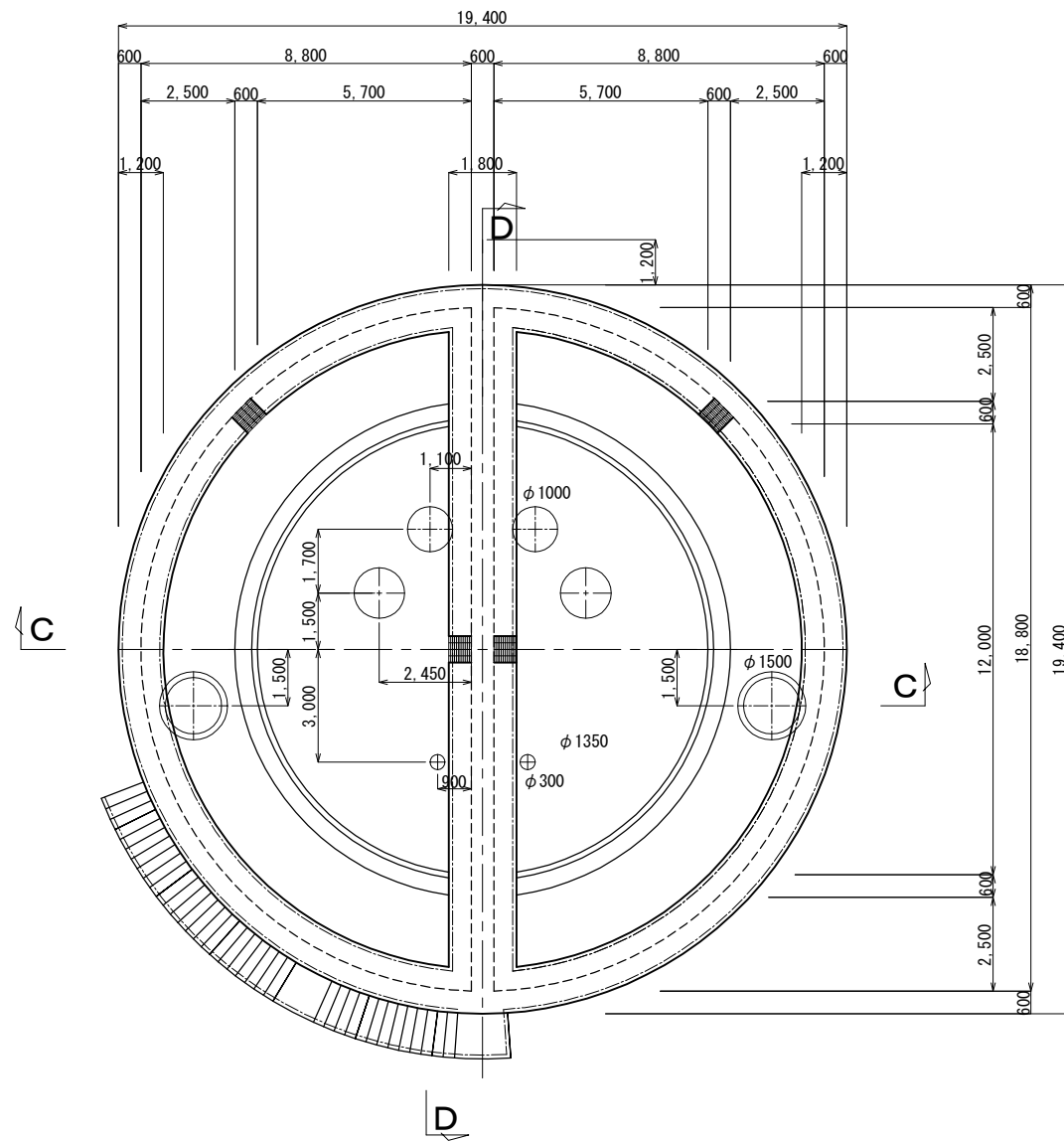
Cross Section E-E



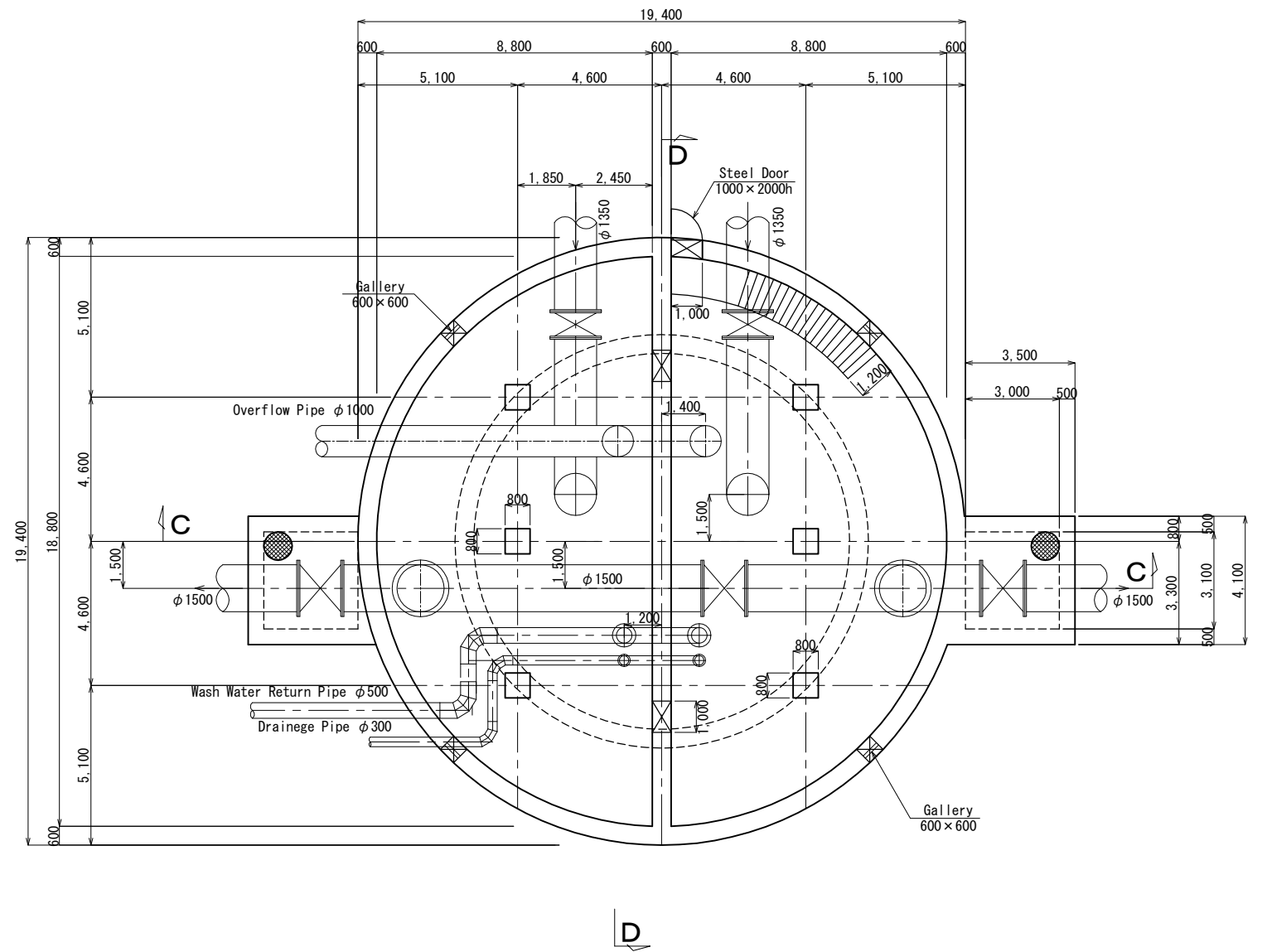
No.			

Dividing Well 1/2

Cross Section A-A



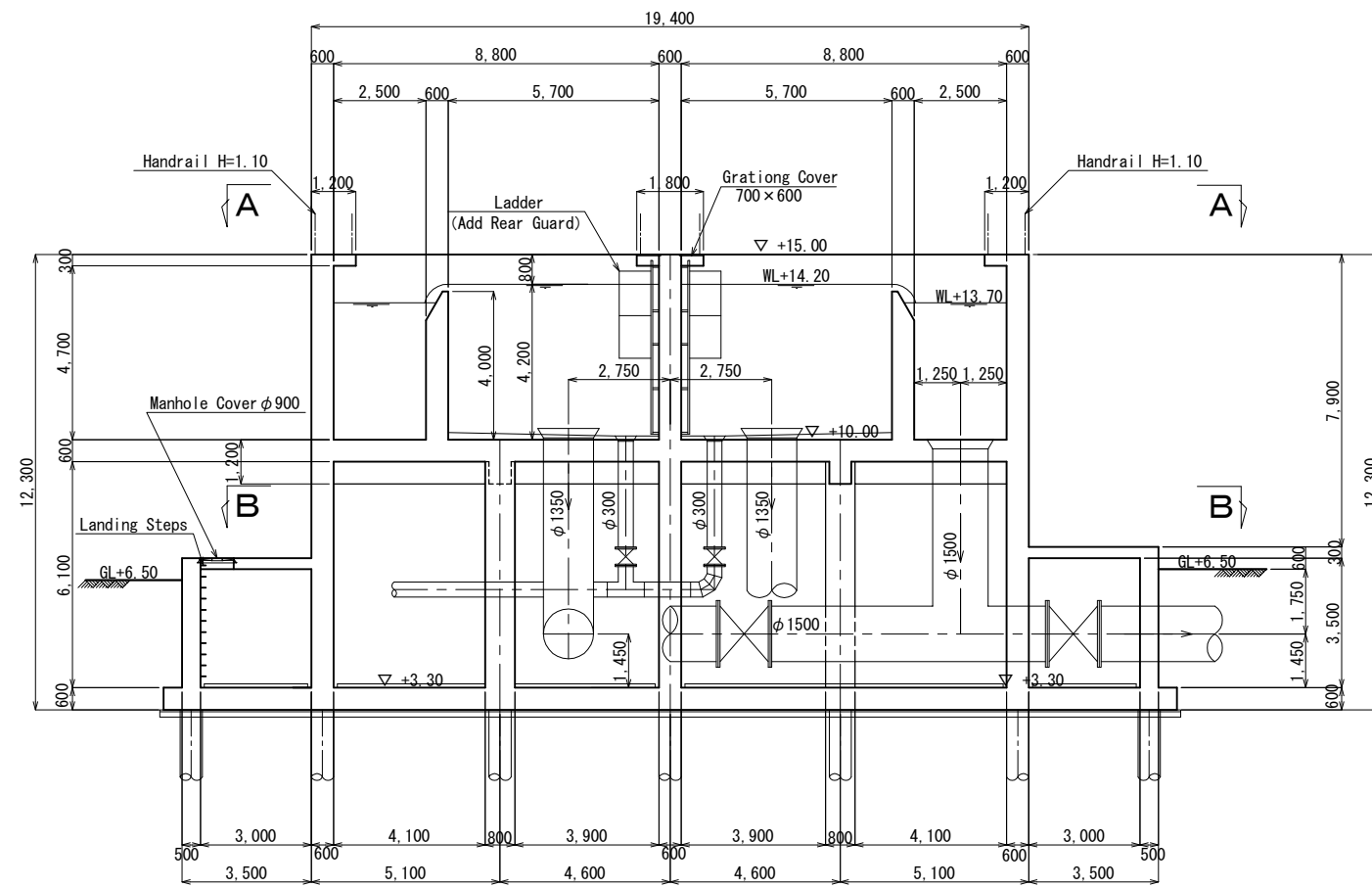
Cross Section B-B



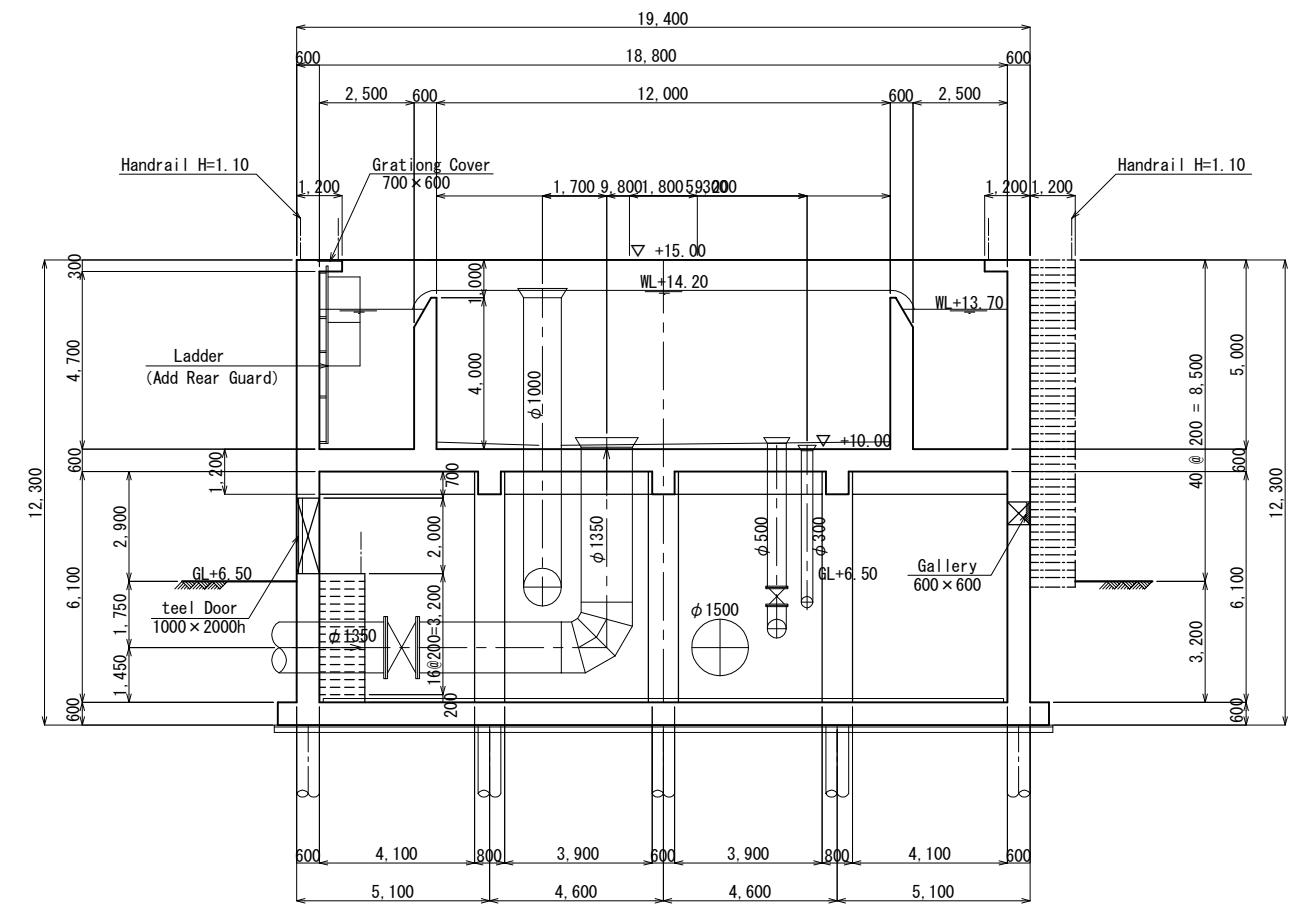
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Dividing Well 2/2

Cross Section C-C



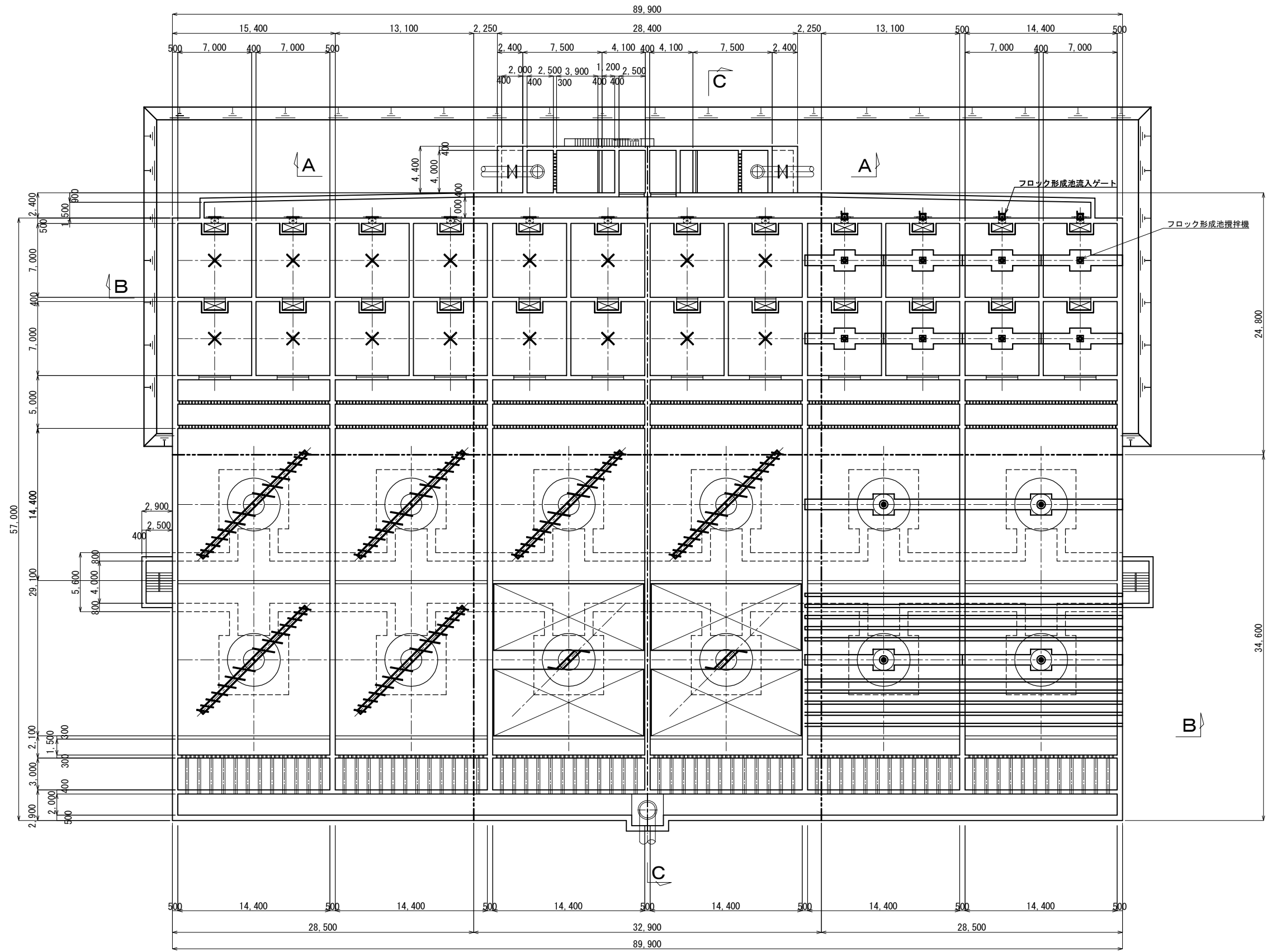
Cross Section D-D



No.			

General Plan(1/2)

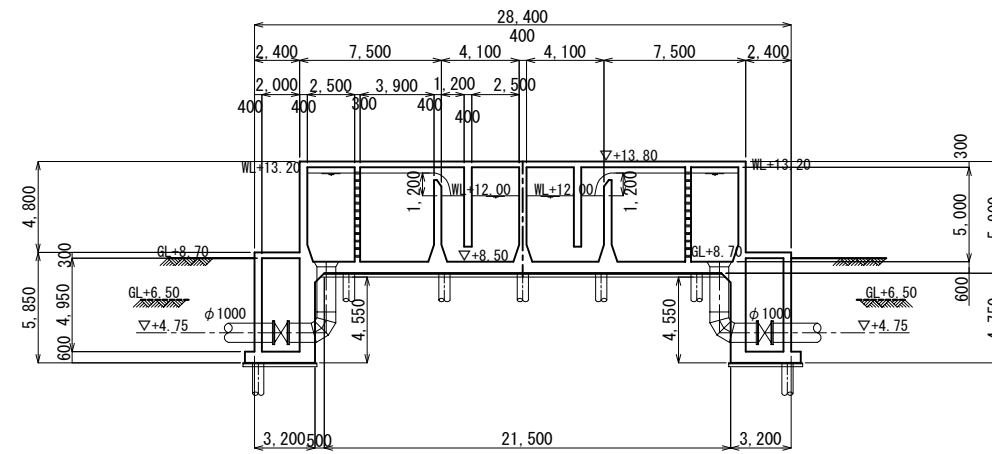
標準平面図 S=1:200



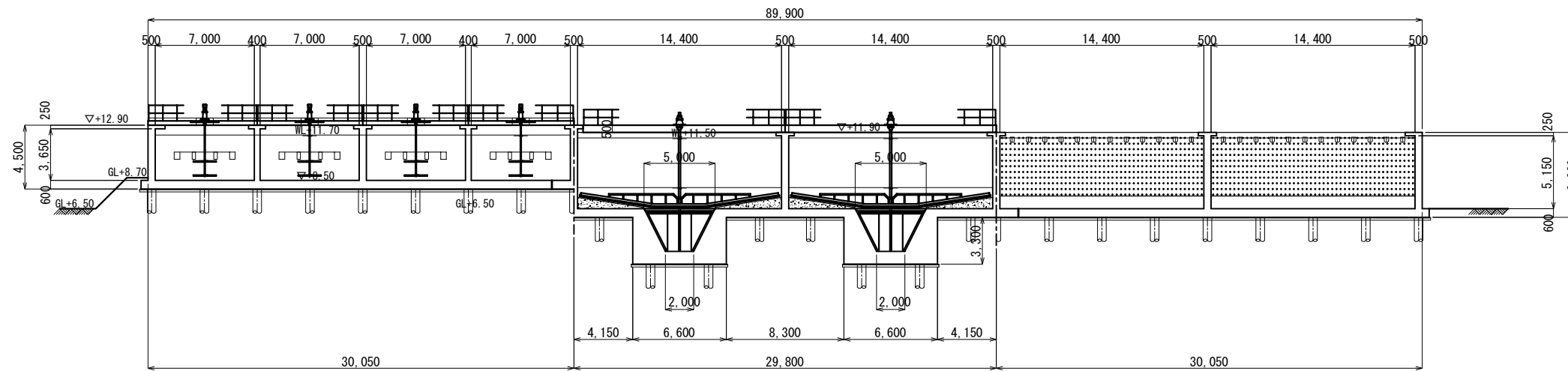
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General Plan(2/2)

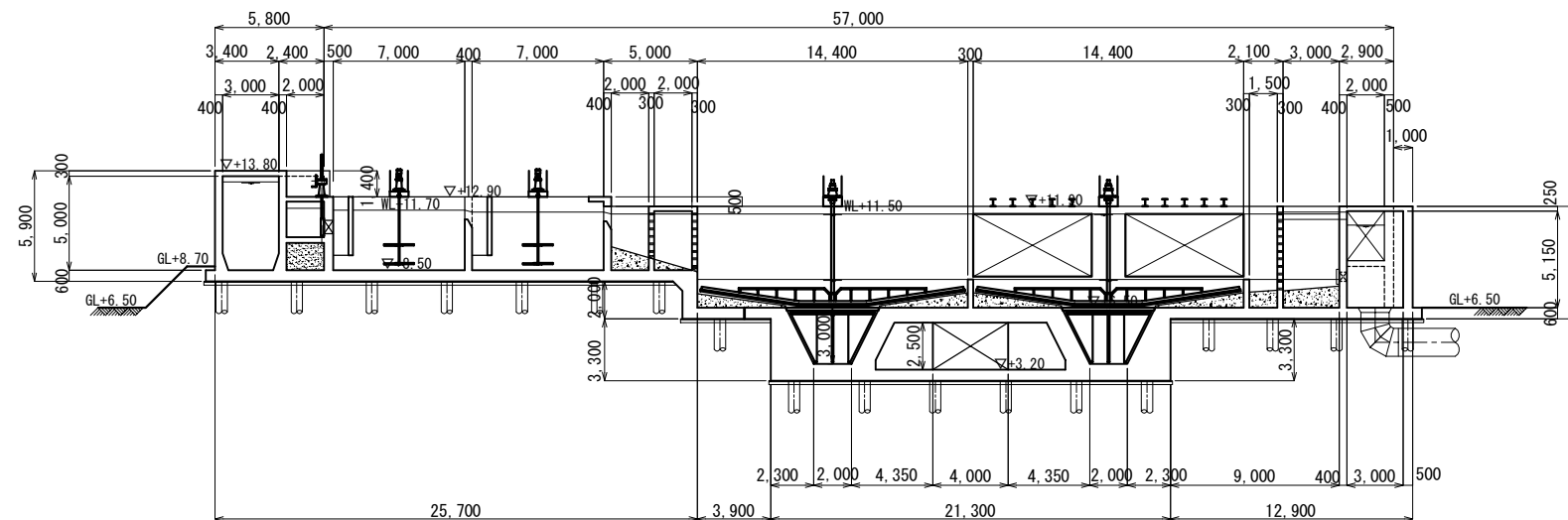
A-A断面图 S=1:200



B-B断面图 S=1:200

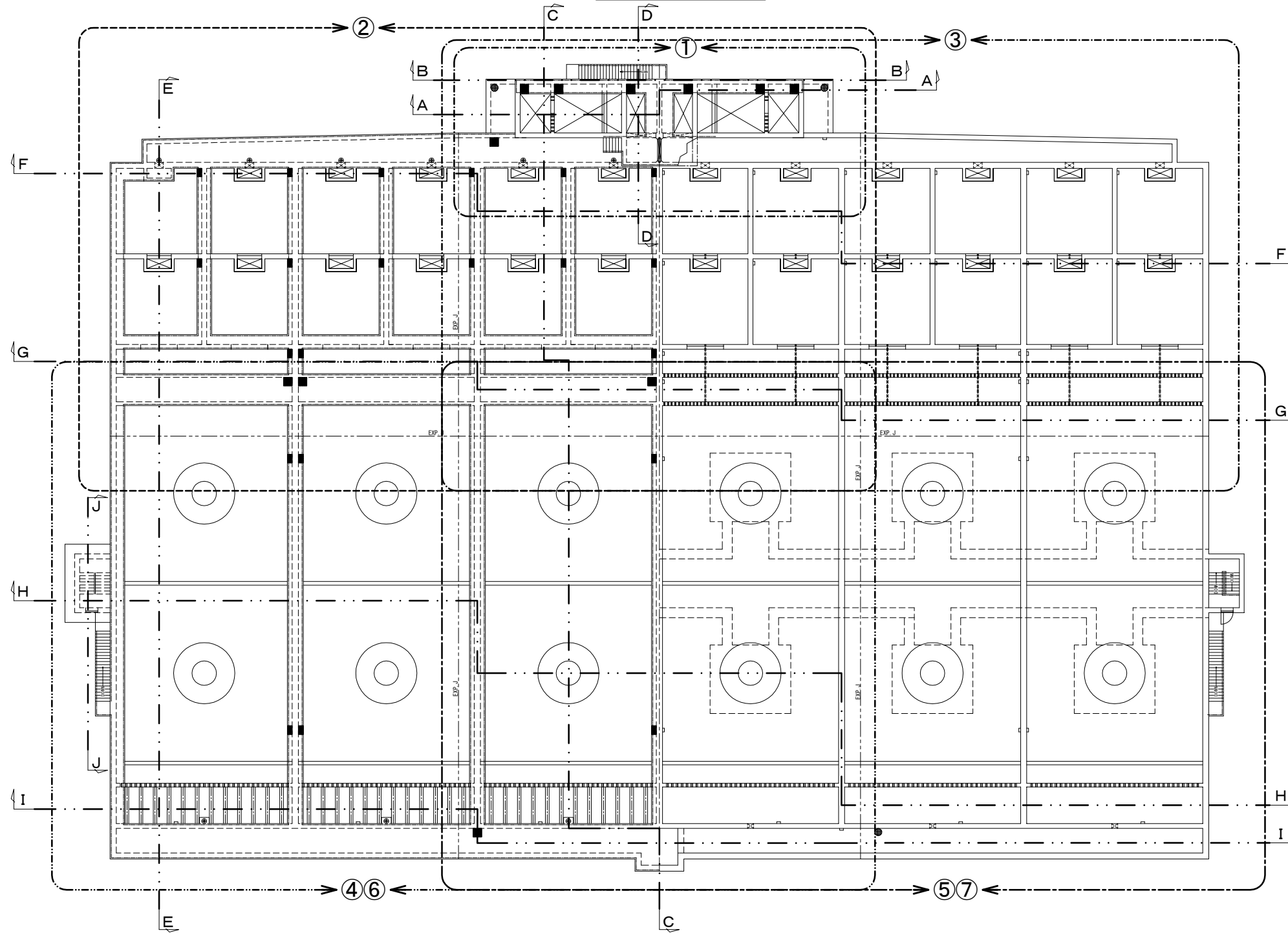


C-C断面图 S=1:200

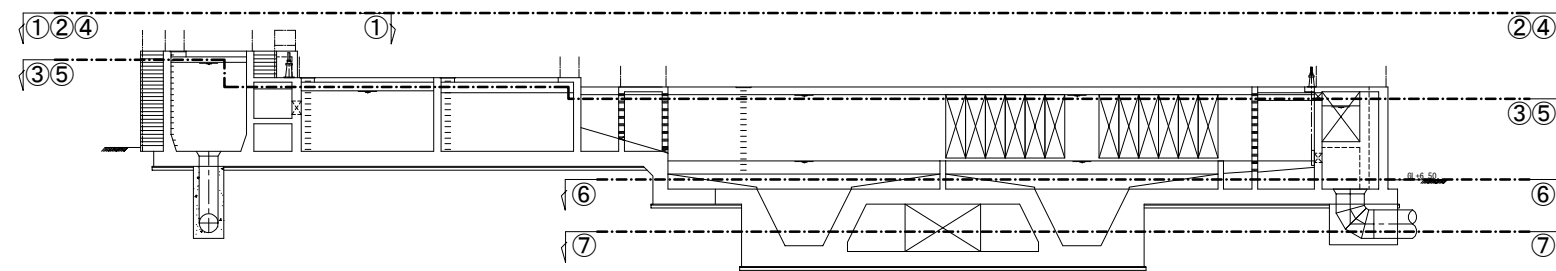


Detail Plan(1/13)

KEY PLAN S=1:200



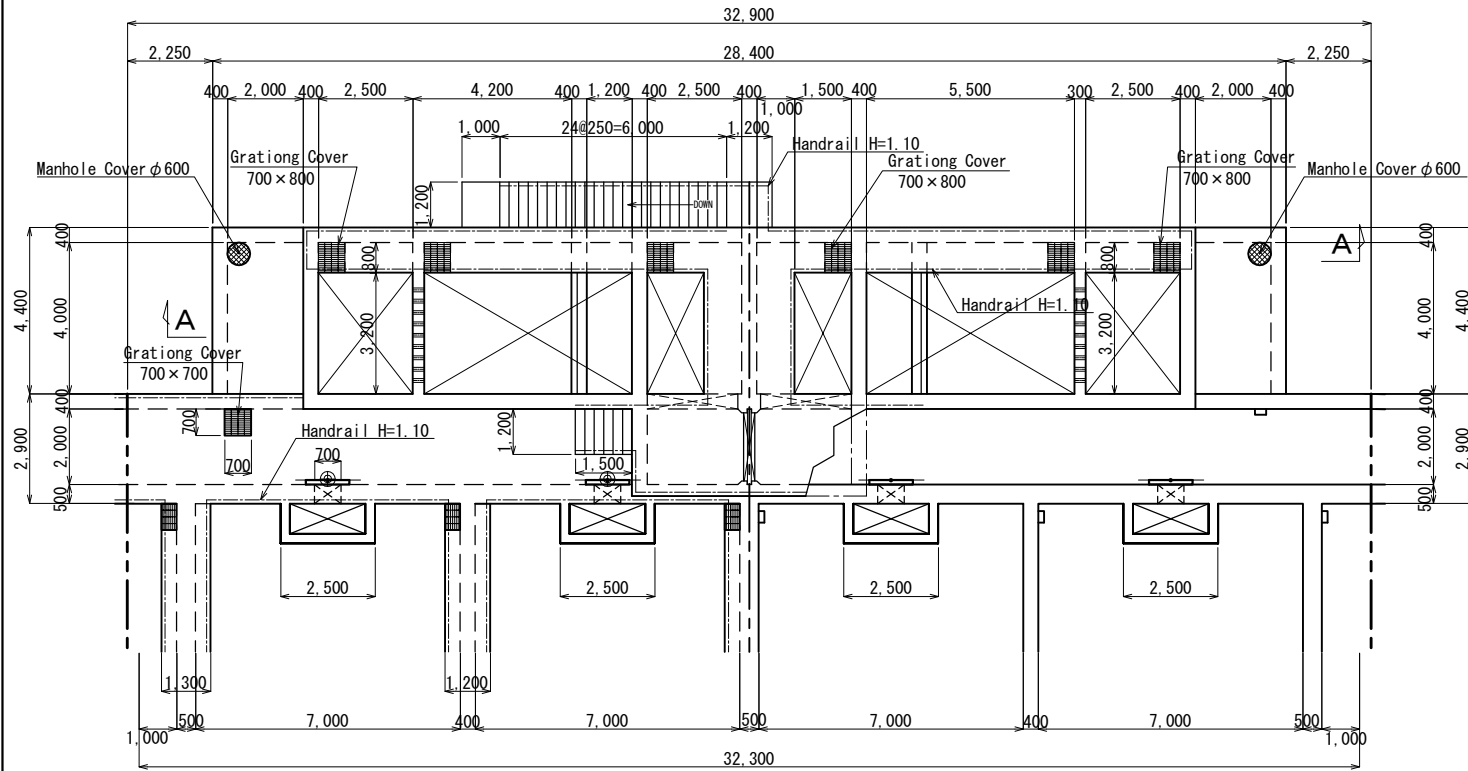
KEY PLAN S=1:200



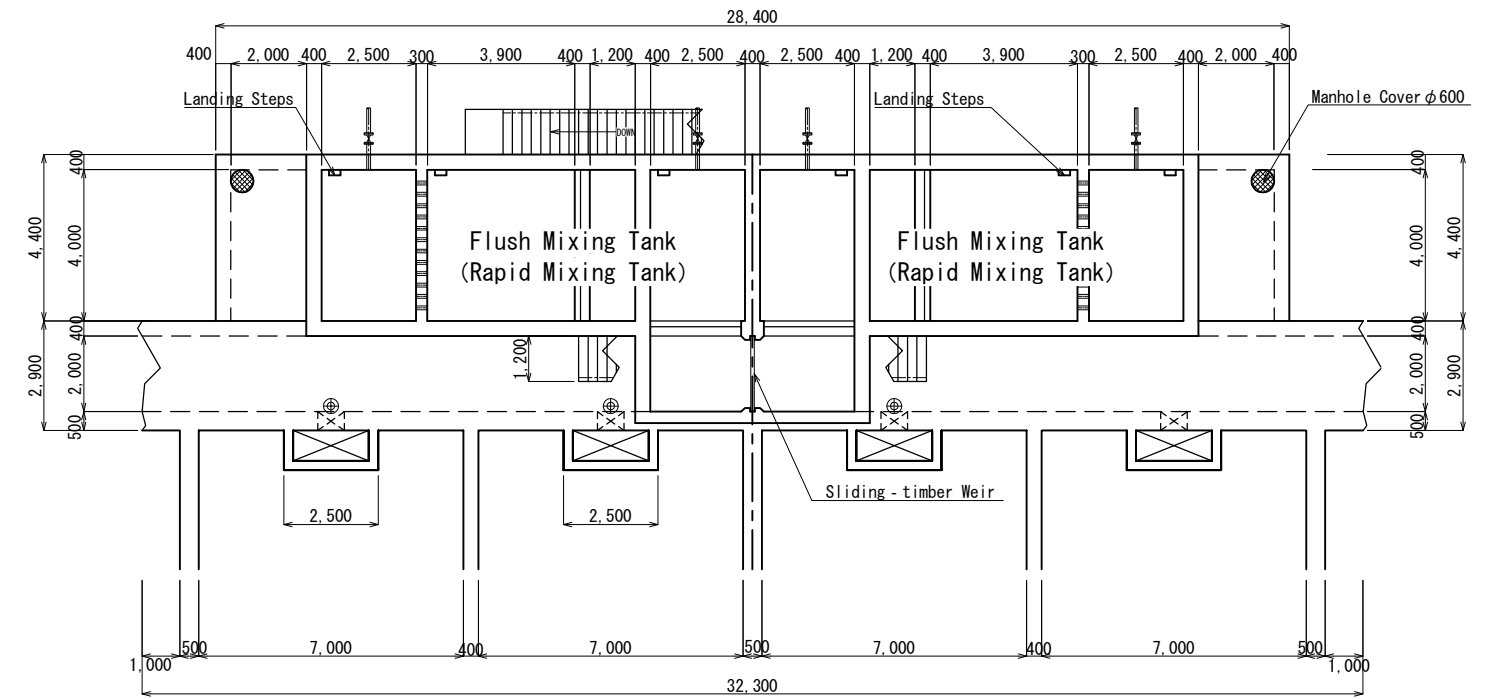
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Detail Plan(2/13)

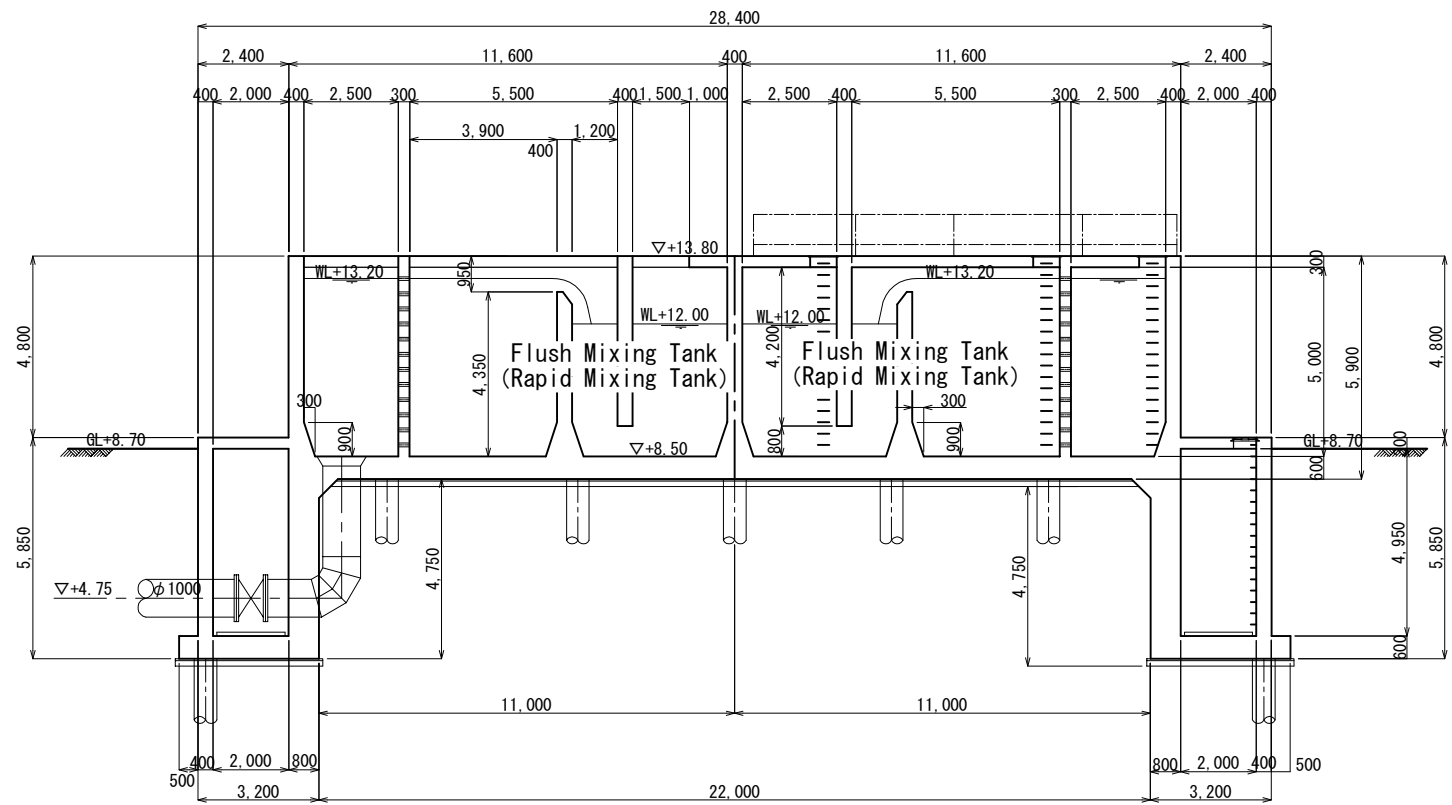
① Plan(上) S=1:100



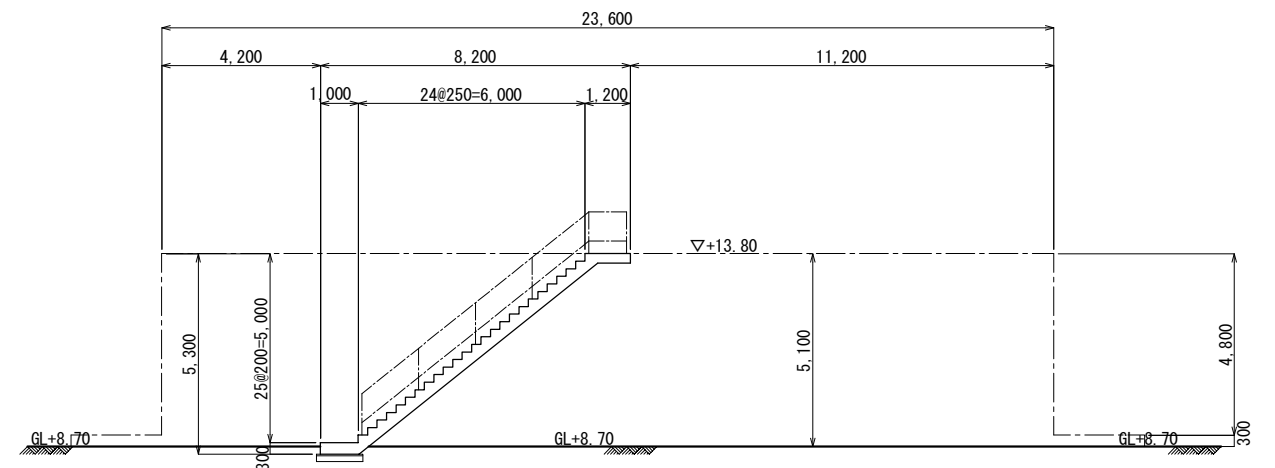
① Plan(下) S=1:100



Cross Section A-A S=1:100



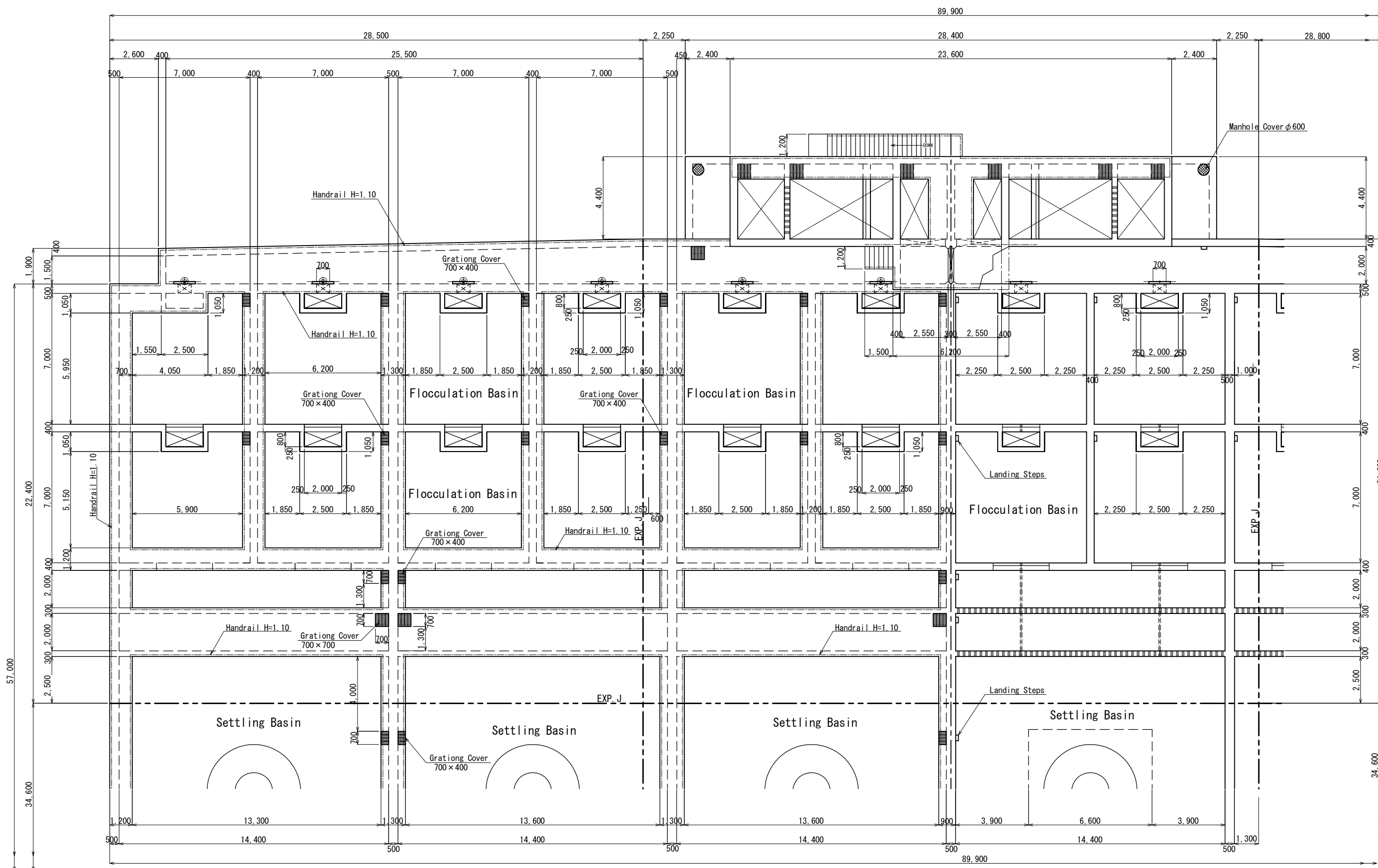
Cross Section B-B S=1:100



No.			
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Detail Plan(3/13)

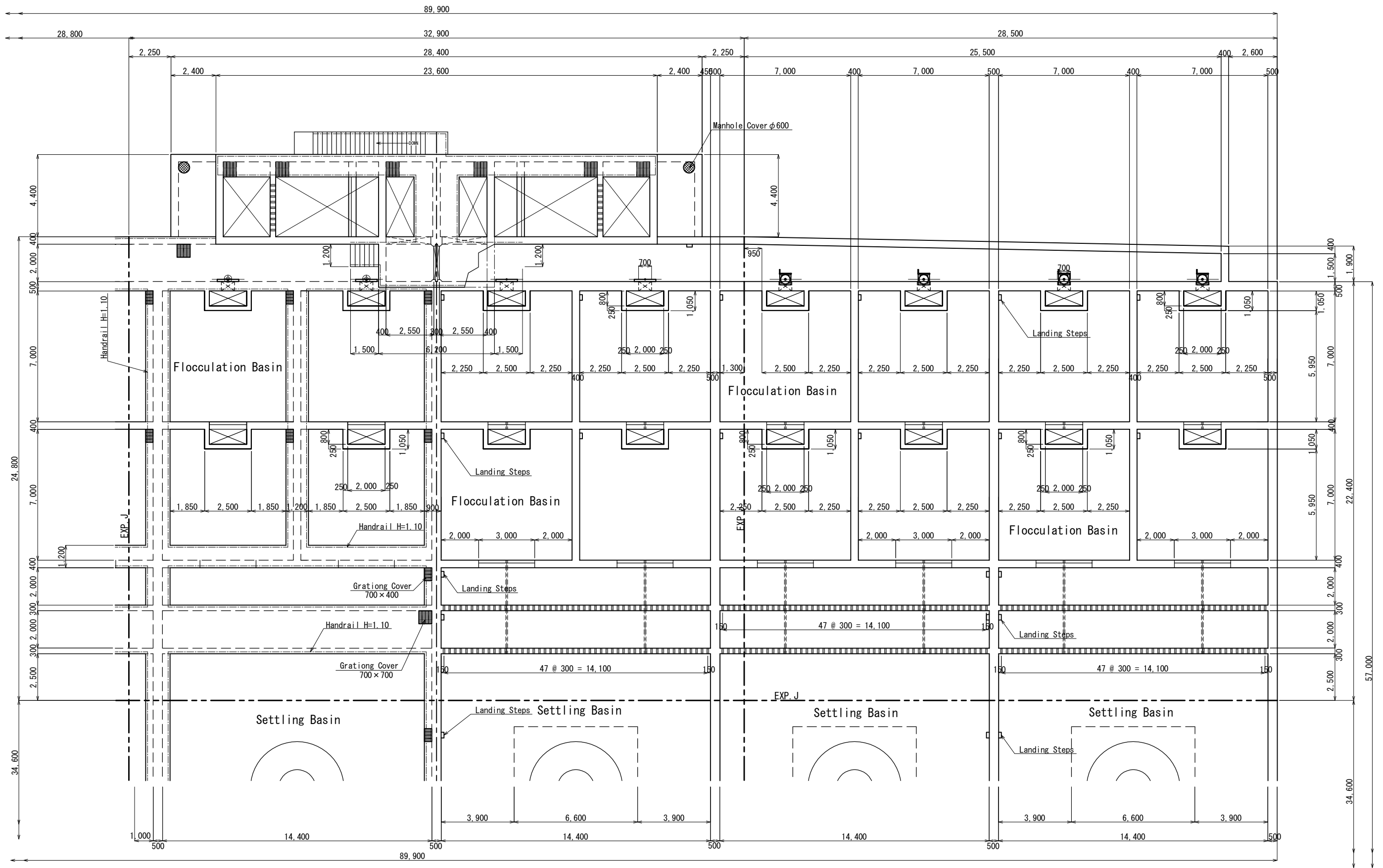
② Plan S=1:100



No.			
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Detail Plan(4/13)

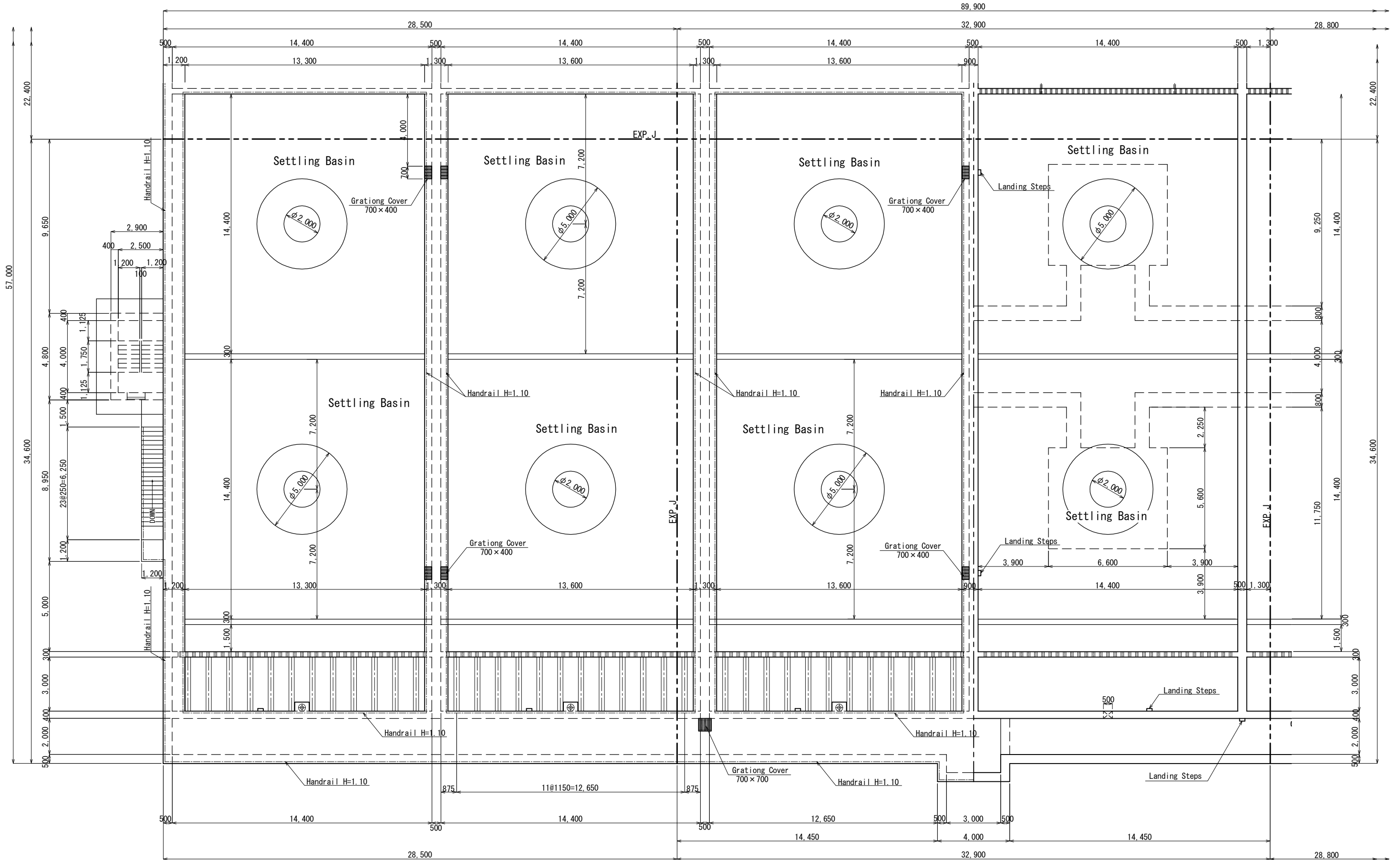
③ Plan S=1:100



No.			
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Detail Plan(5/13)

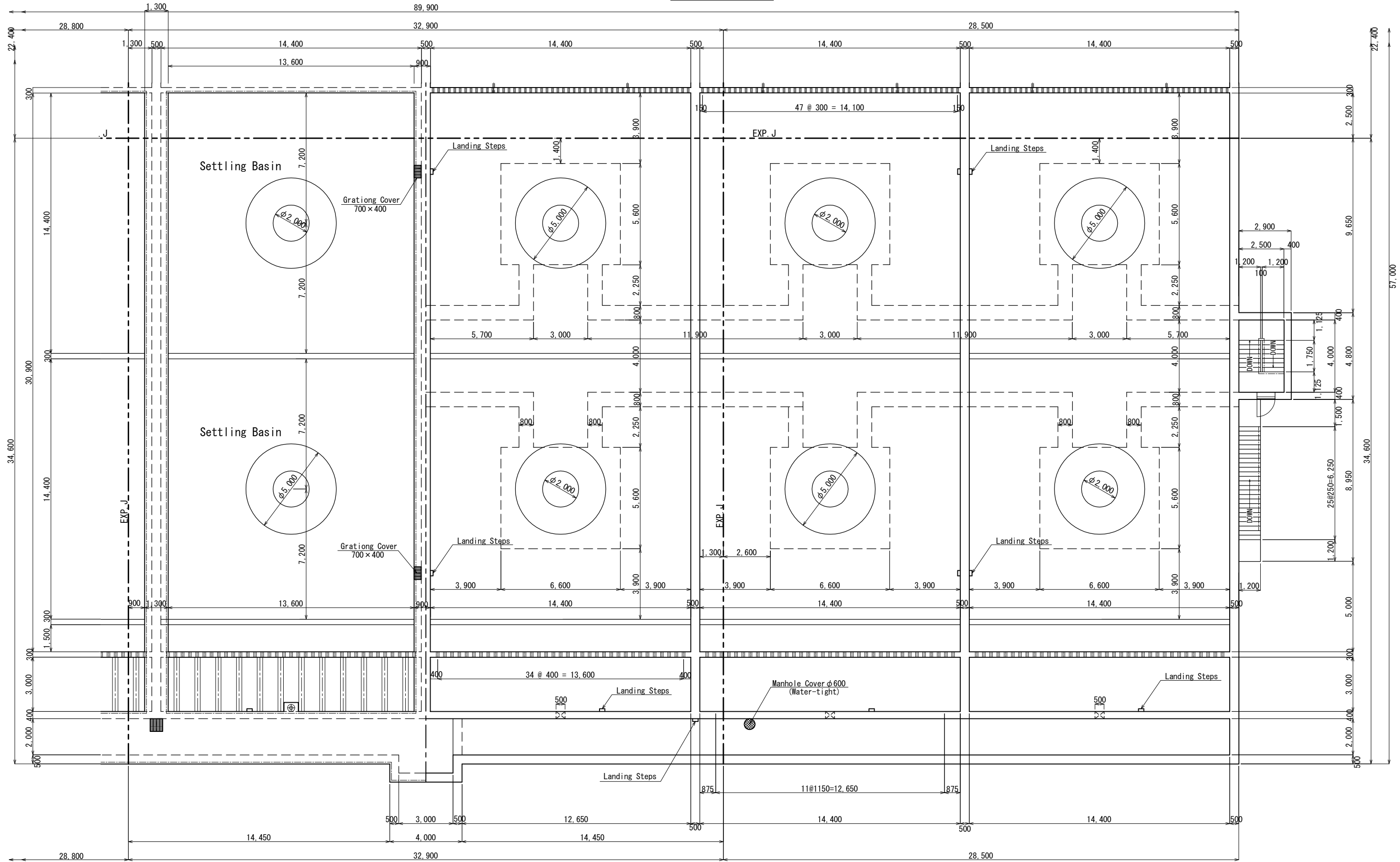
④ 平面图 S=1:100



No.			
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Detail Plan (6/13)

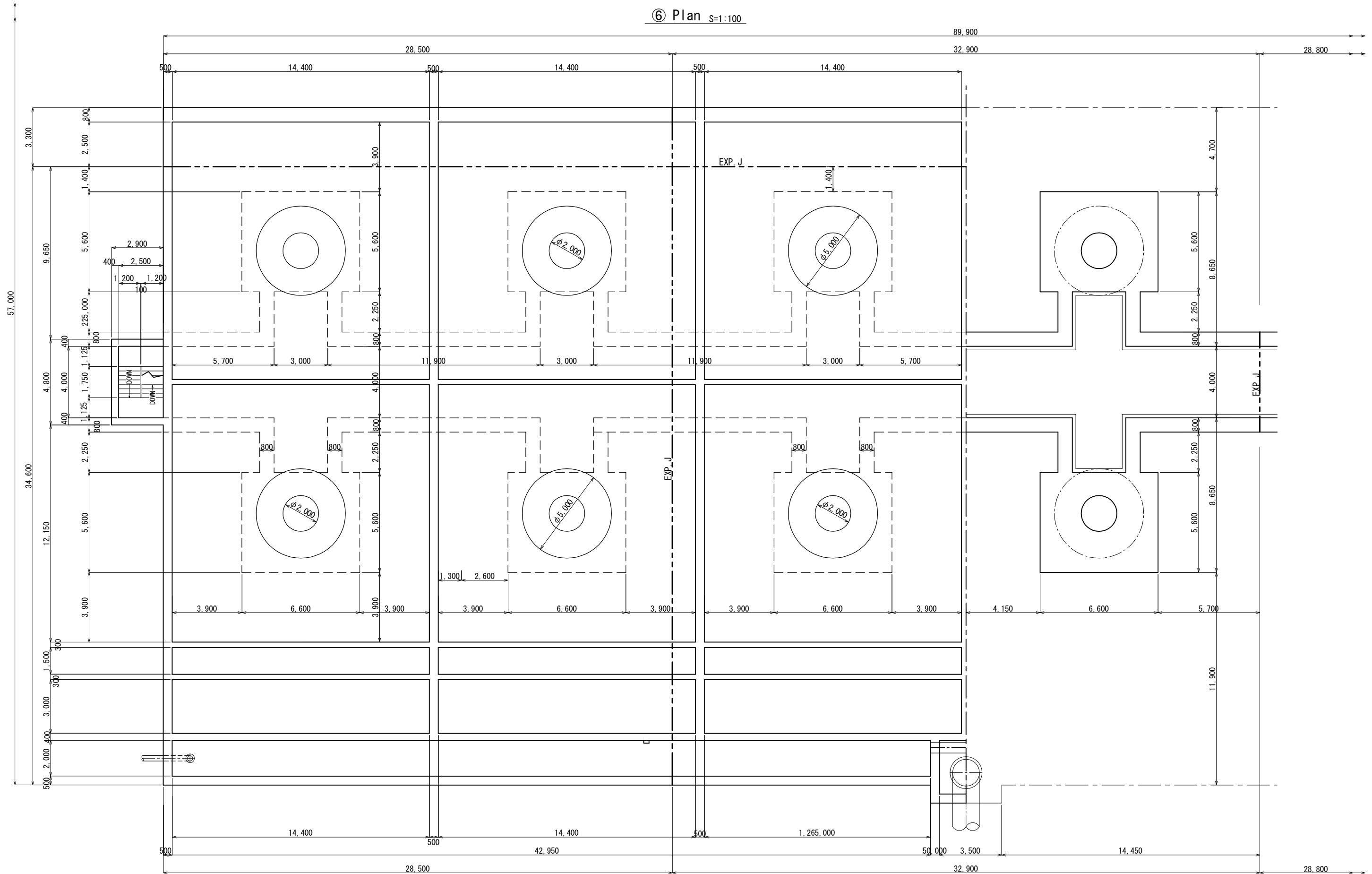
⑤ Plan S=1:100



No.			
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Detail Plan(7/13)

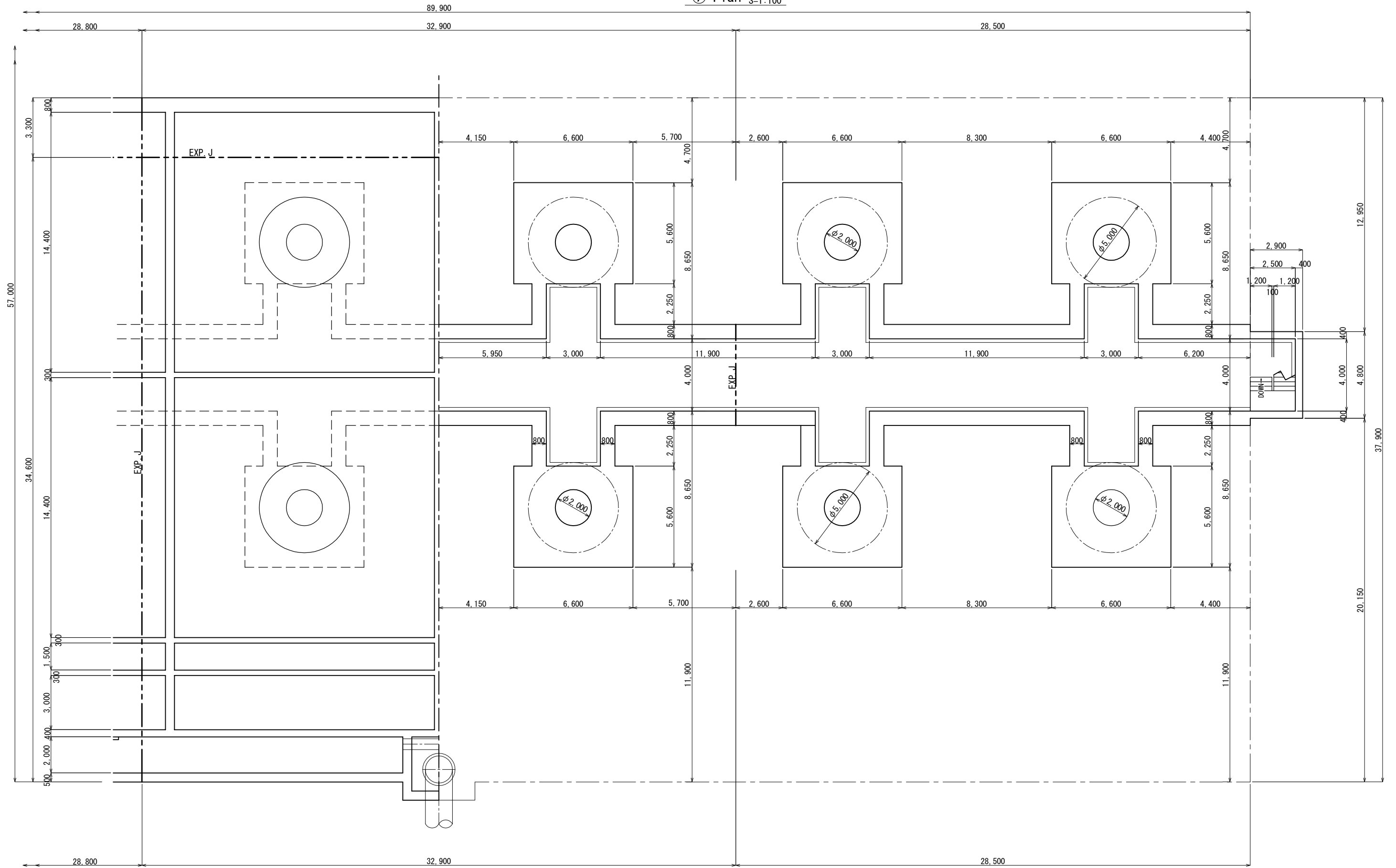
⑥ Plan S=1:100



No.			

Detail Plan(8/13)

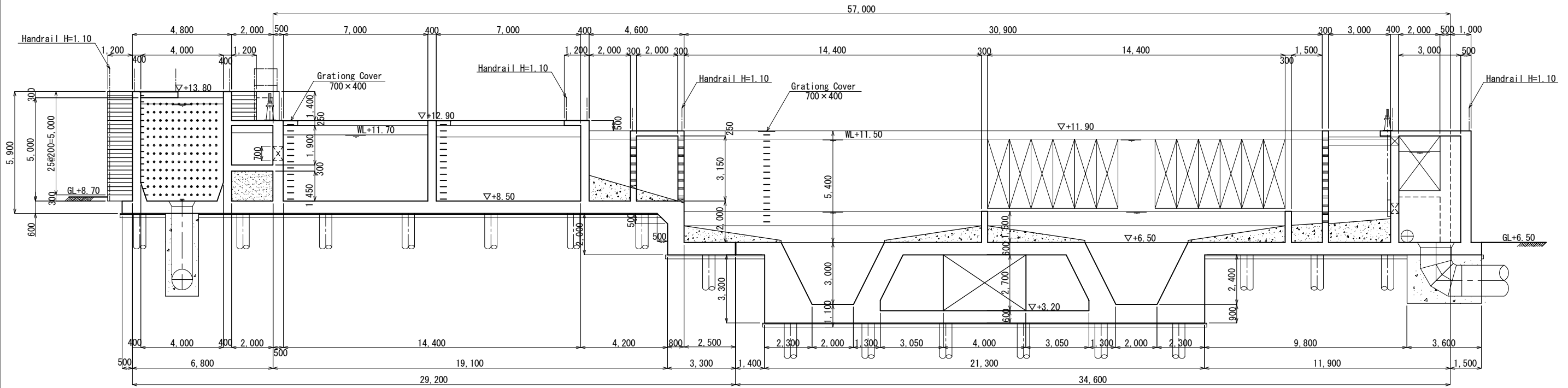
⑦ Plan S=1:100



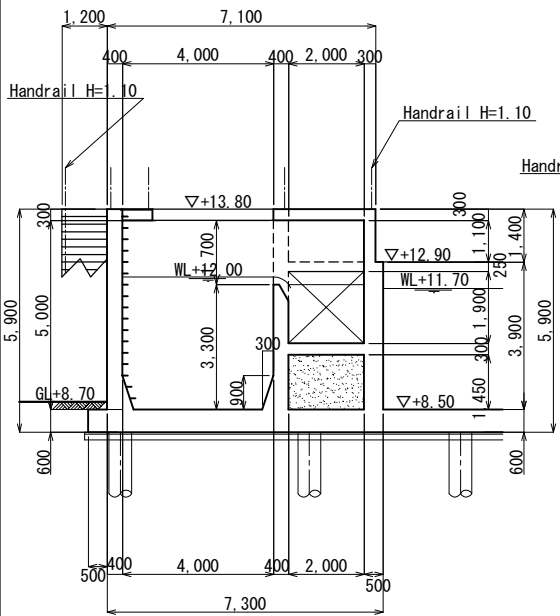
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Detail Plan(9/13)

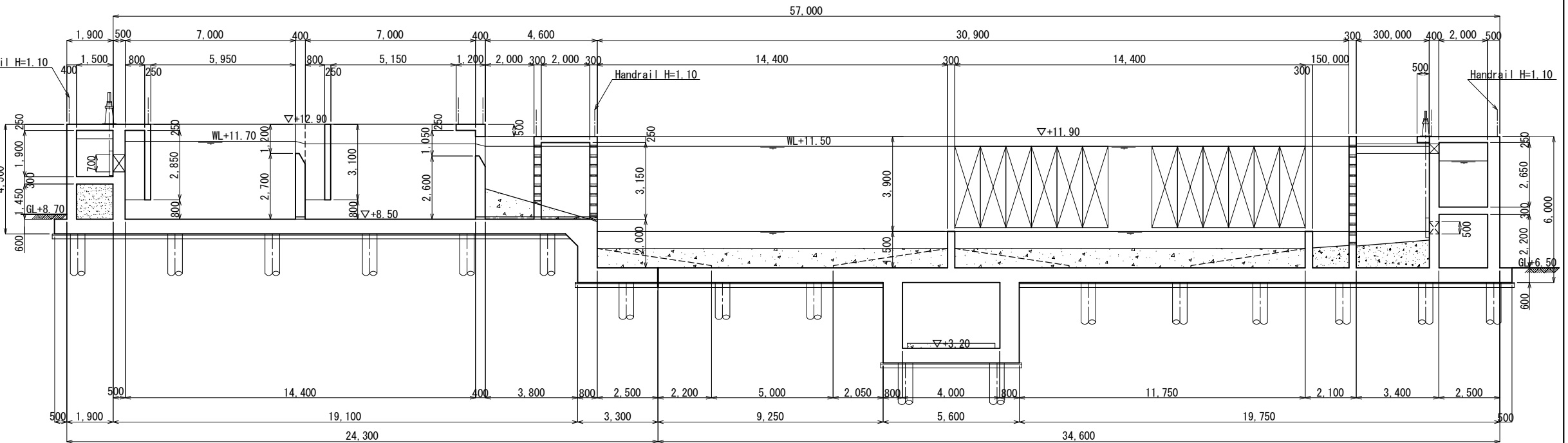
Cross Section C-C S=1:100



Cross Section D-D S=1:100



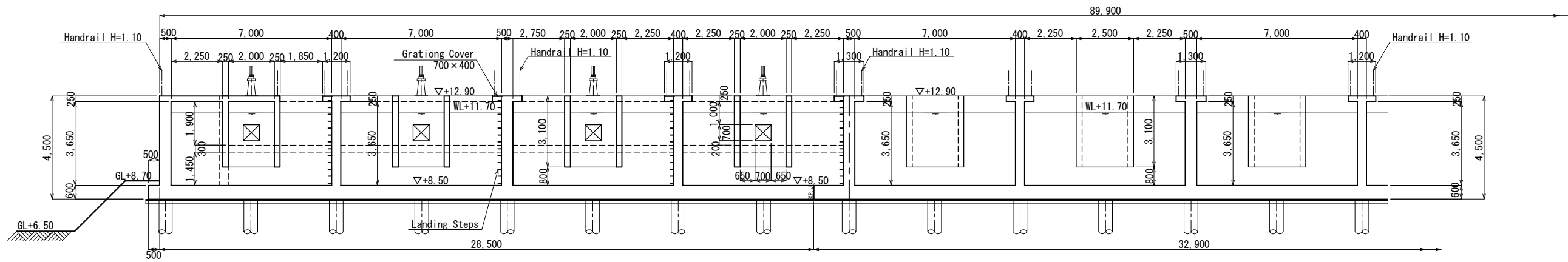
Cross Section E-E S=1:100



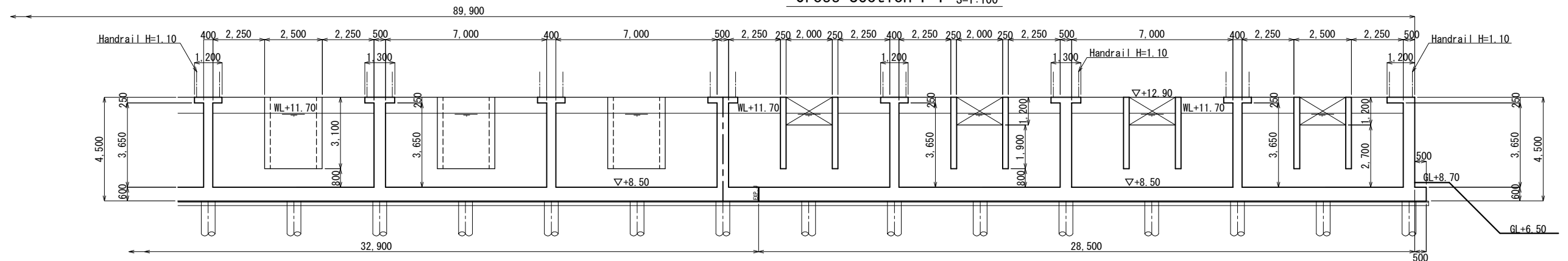
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Detail Plan(10/13)

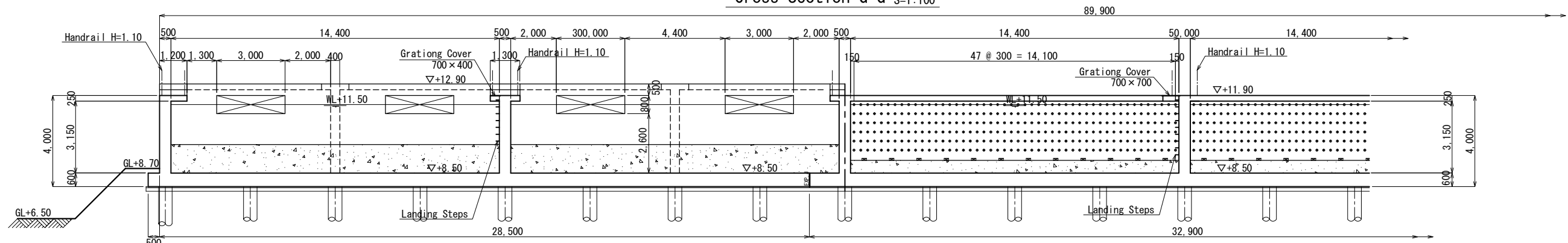
Cross Section F-F S=1:100



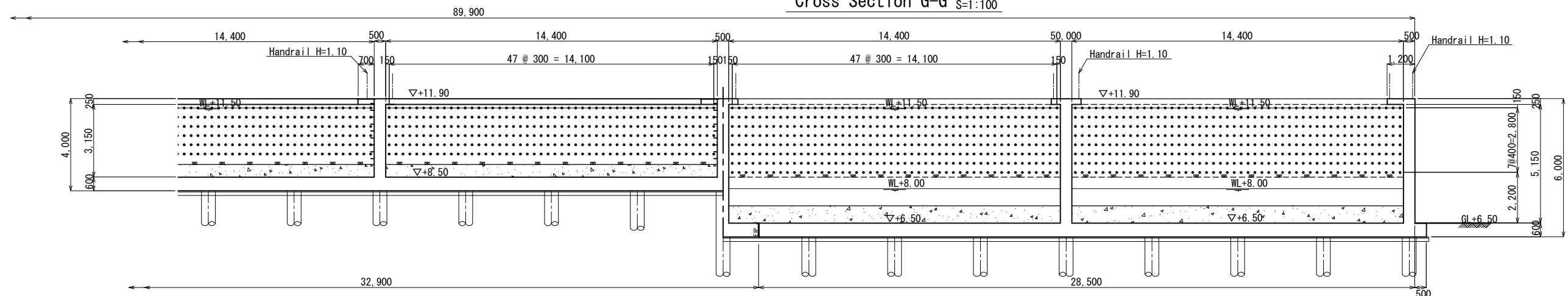
Cross Section F-F S=1:100



Cross Section G-G S=1:100



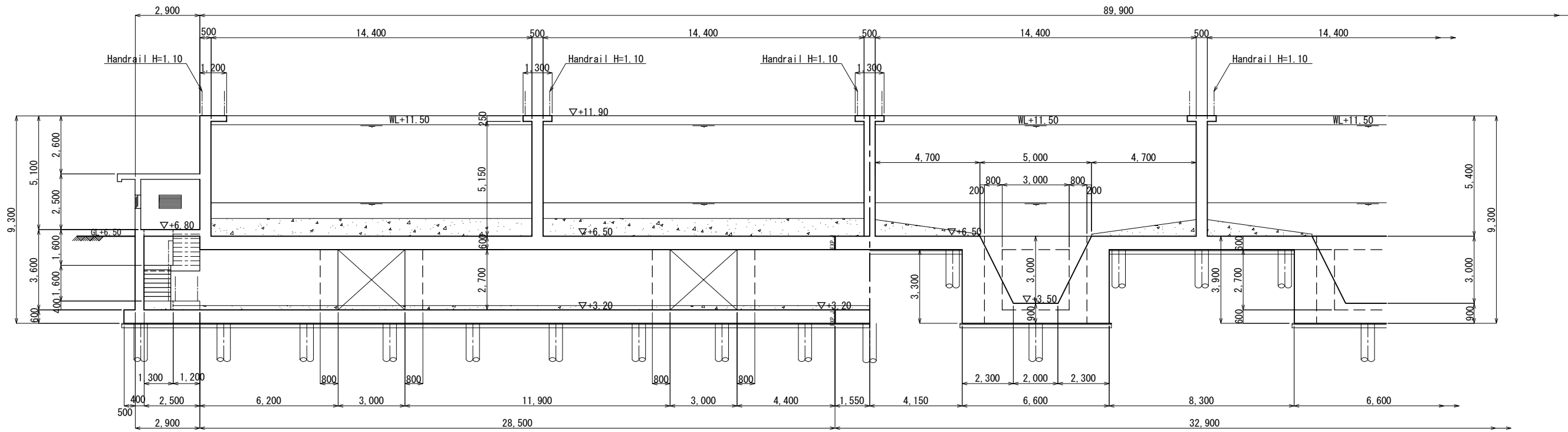
Cross Section G-G S=1:100



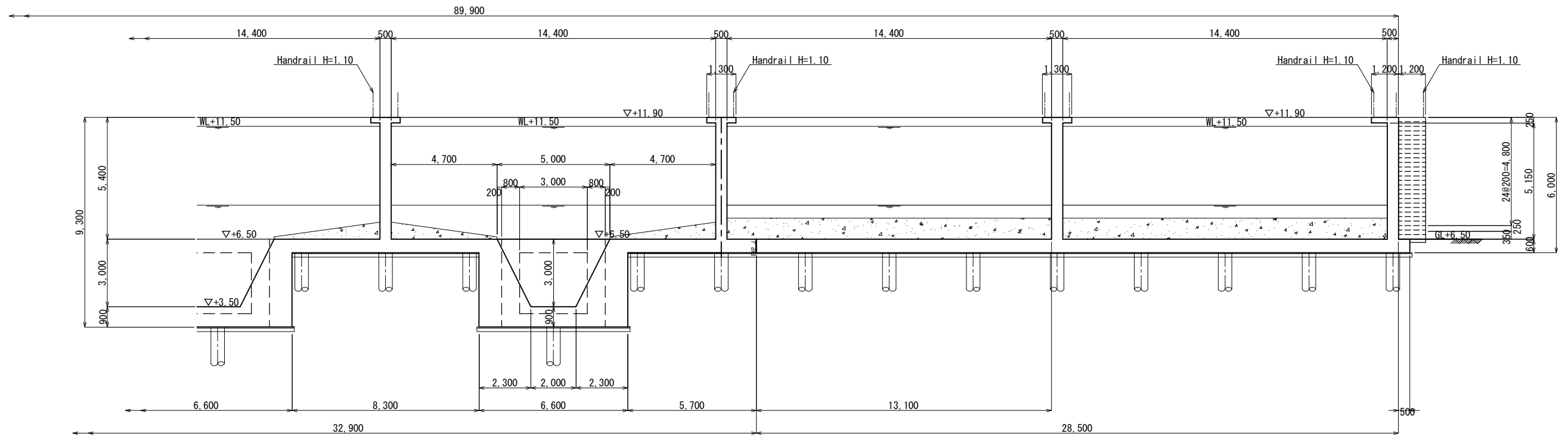
No.			
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Detail Plan(11/13)

Cross Section H-H S=1:100



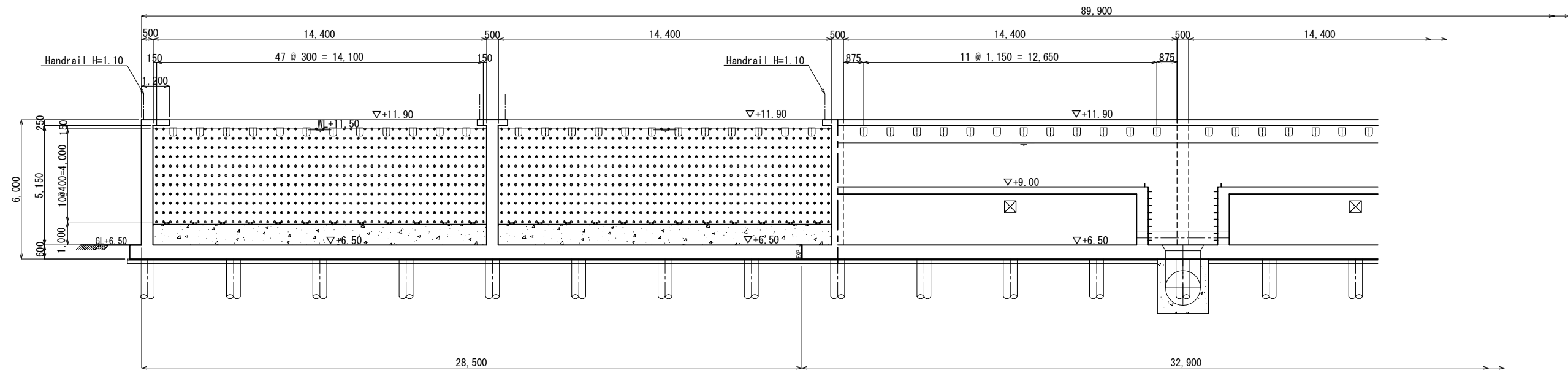
Cross Section H-H S=1:100



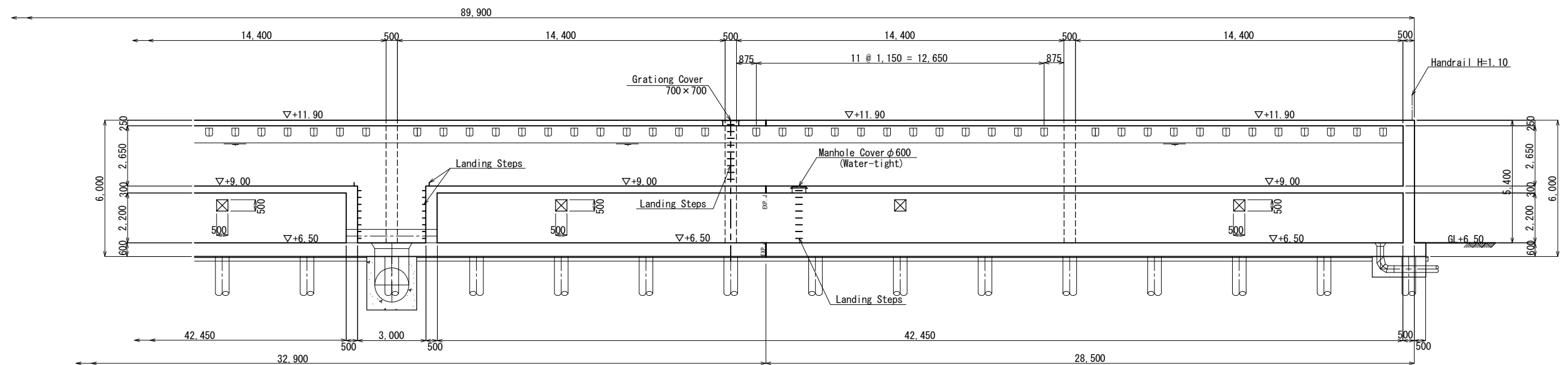
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Detail Plan(12/13)

Cross Section I-I s=1:100



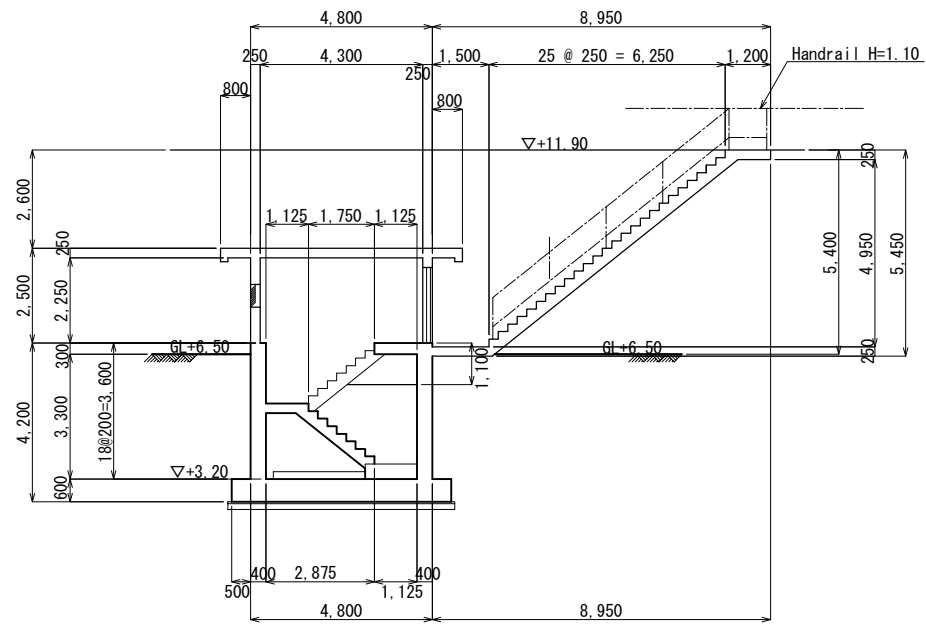
Cross Section I-I s=1:100



No.			
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Detail Plan(13/13)

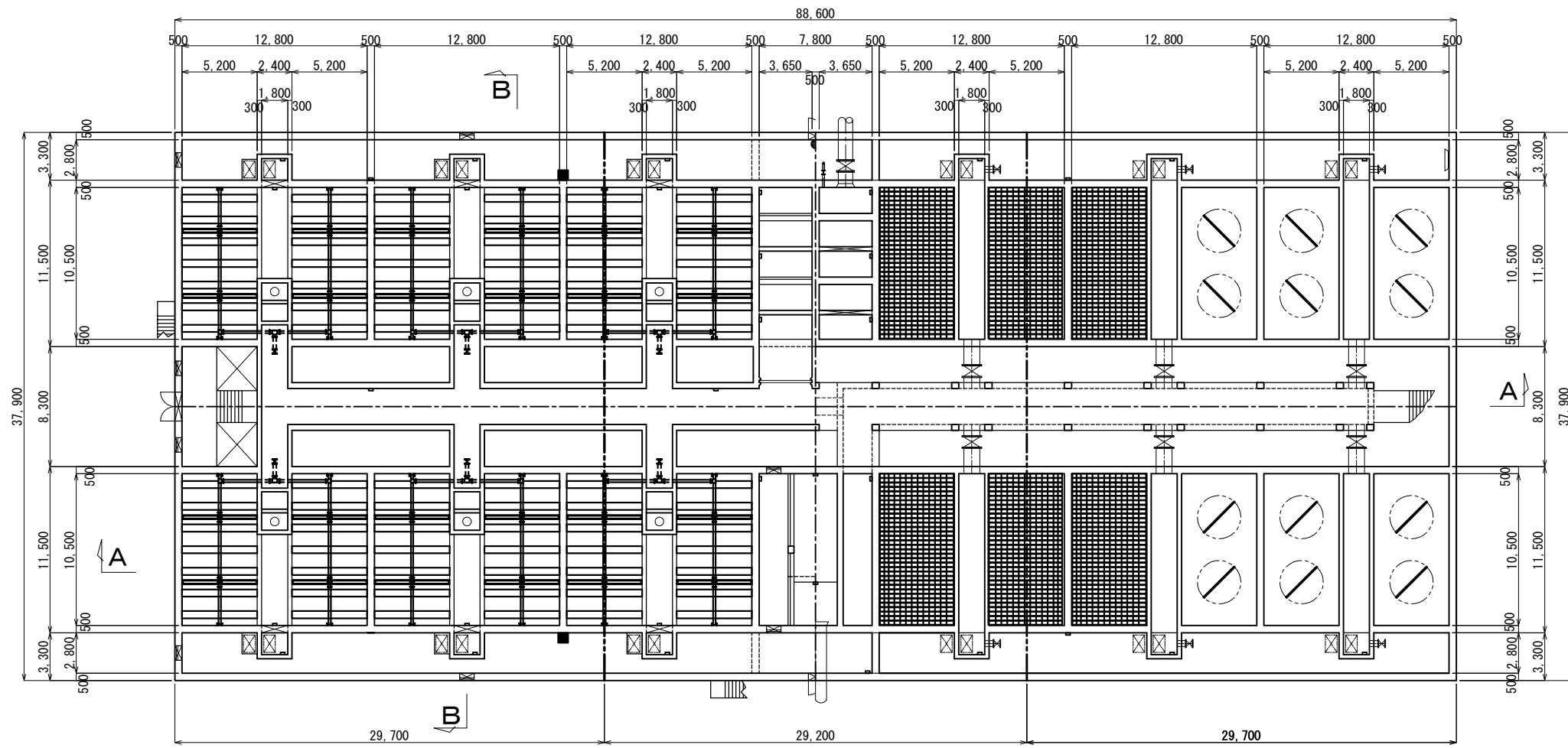
Cross Section J-J s=1:100



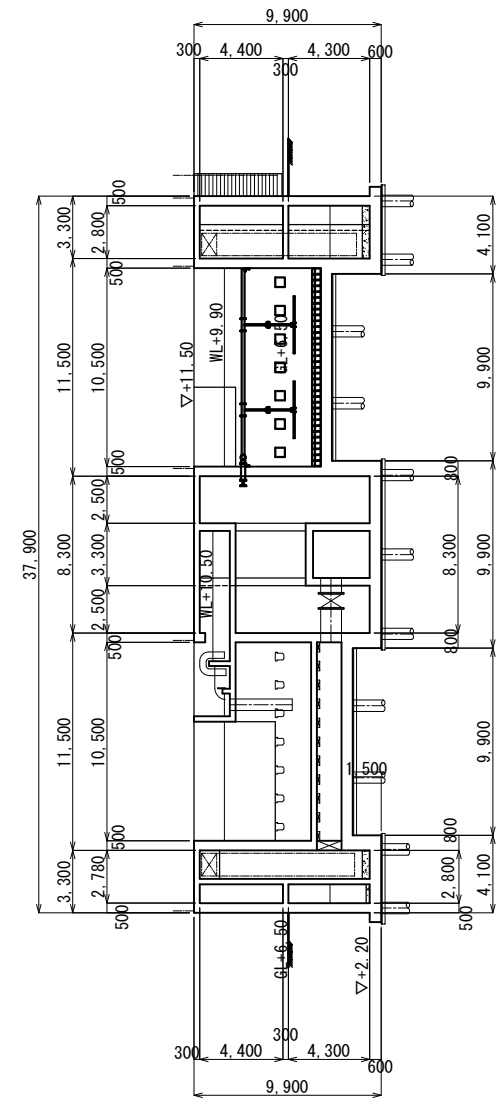
No.			

Rapid Filter Structural Plan s=1:200

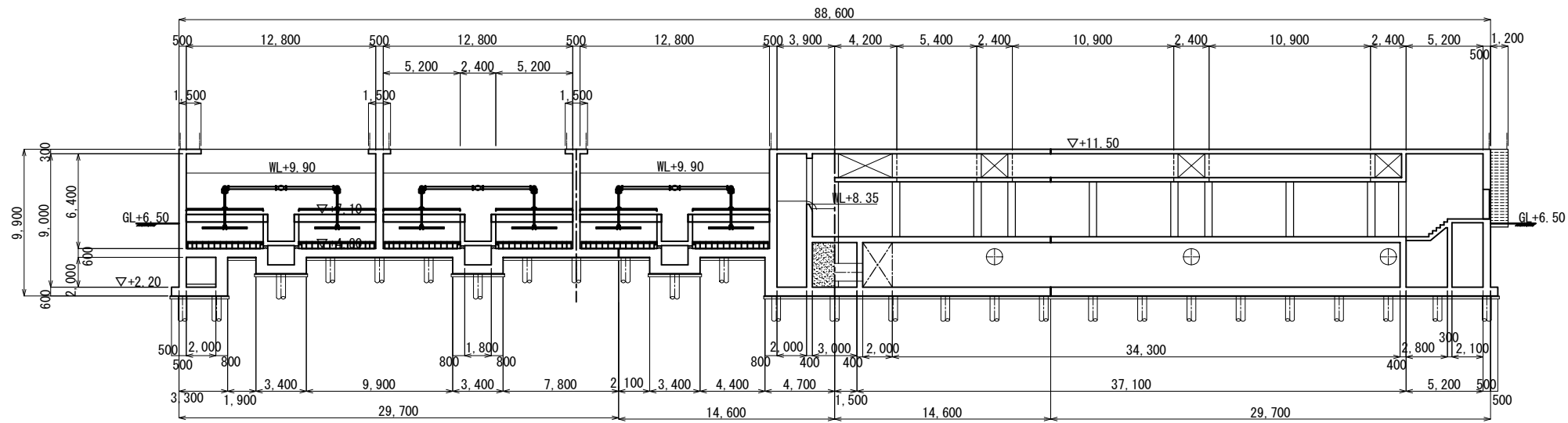
Plan



Cross Section B-B



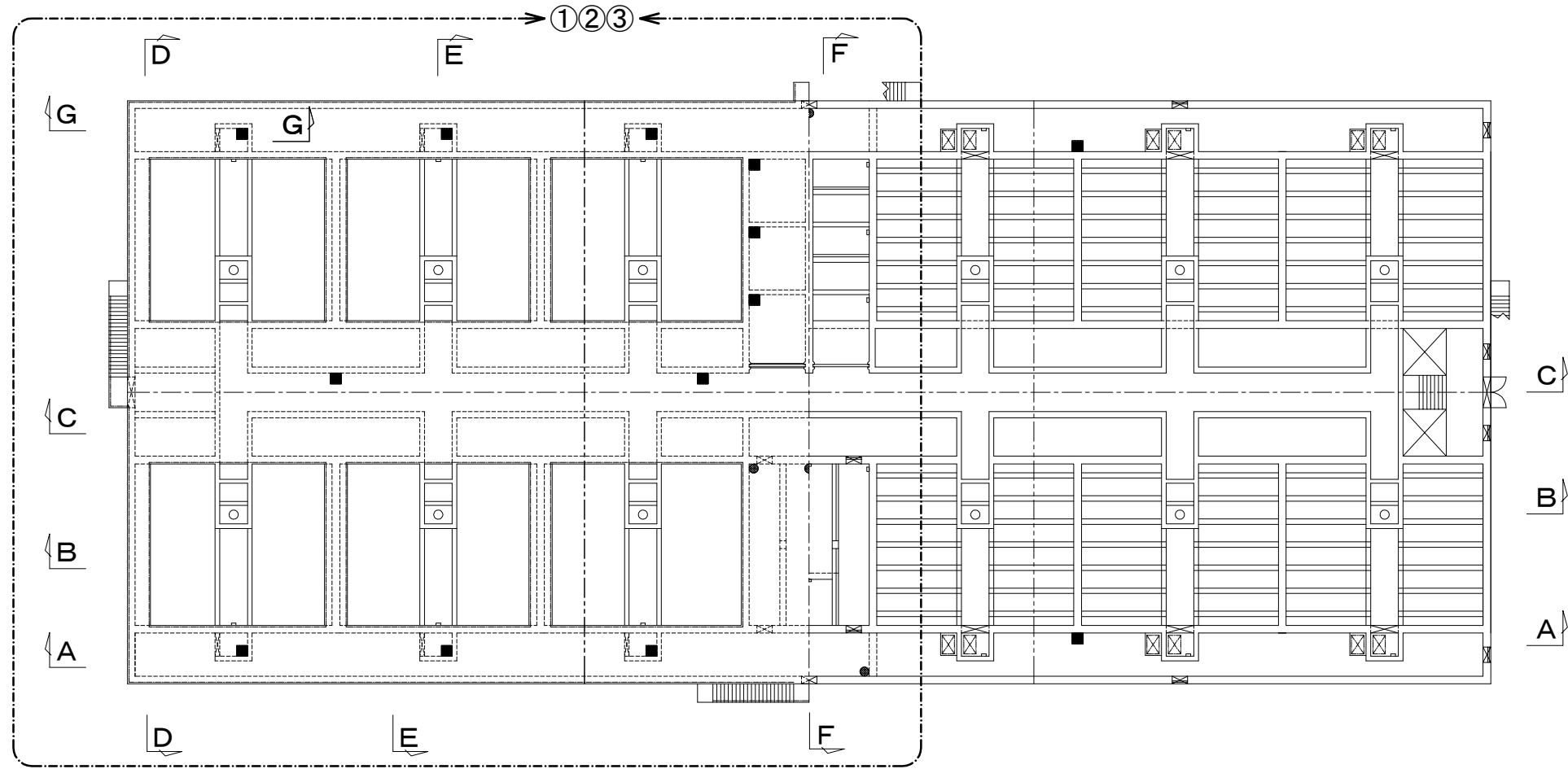
Cross Section A-A



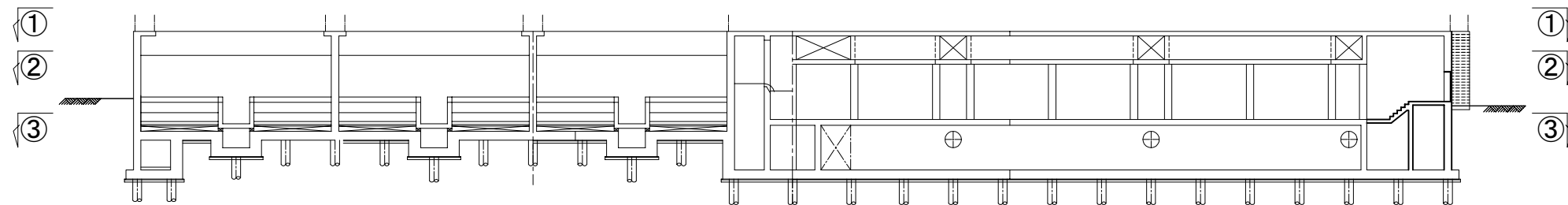
JICA Study Team	No.	THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date. NOV. 2011	Duong River Water Treatment Plant	Drawing No
			Scale 1/200	Rapid Filter Structural Plan	41

Detail Plan (1/9)

KEY PLAN S=1:200



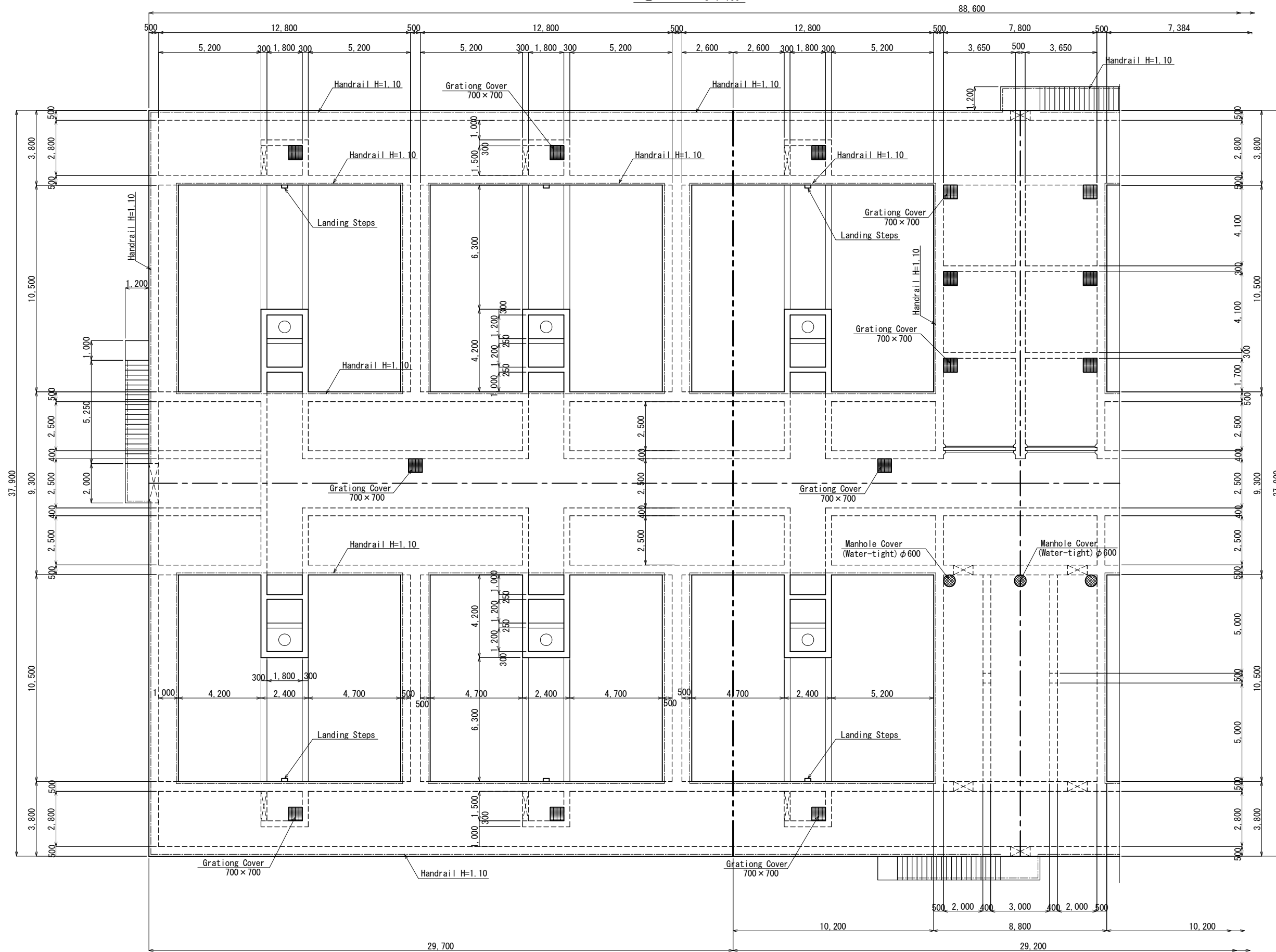
KEY PLAN S=1:200
(B-C)



No.			
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Detail Plan (2/9)

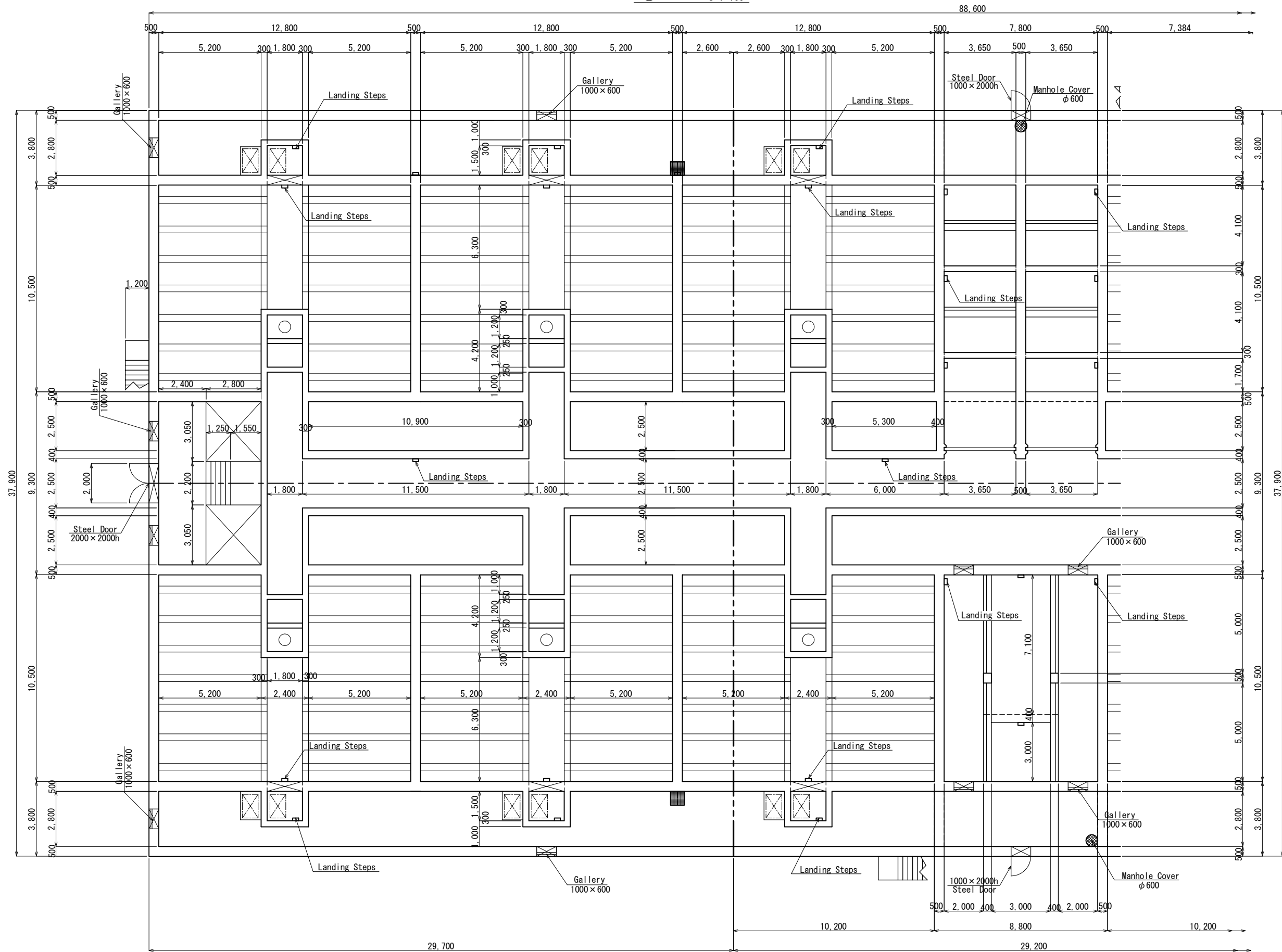
① Plan s=1:100



No.			
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Detail Plan (3/9)

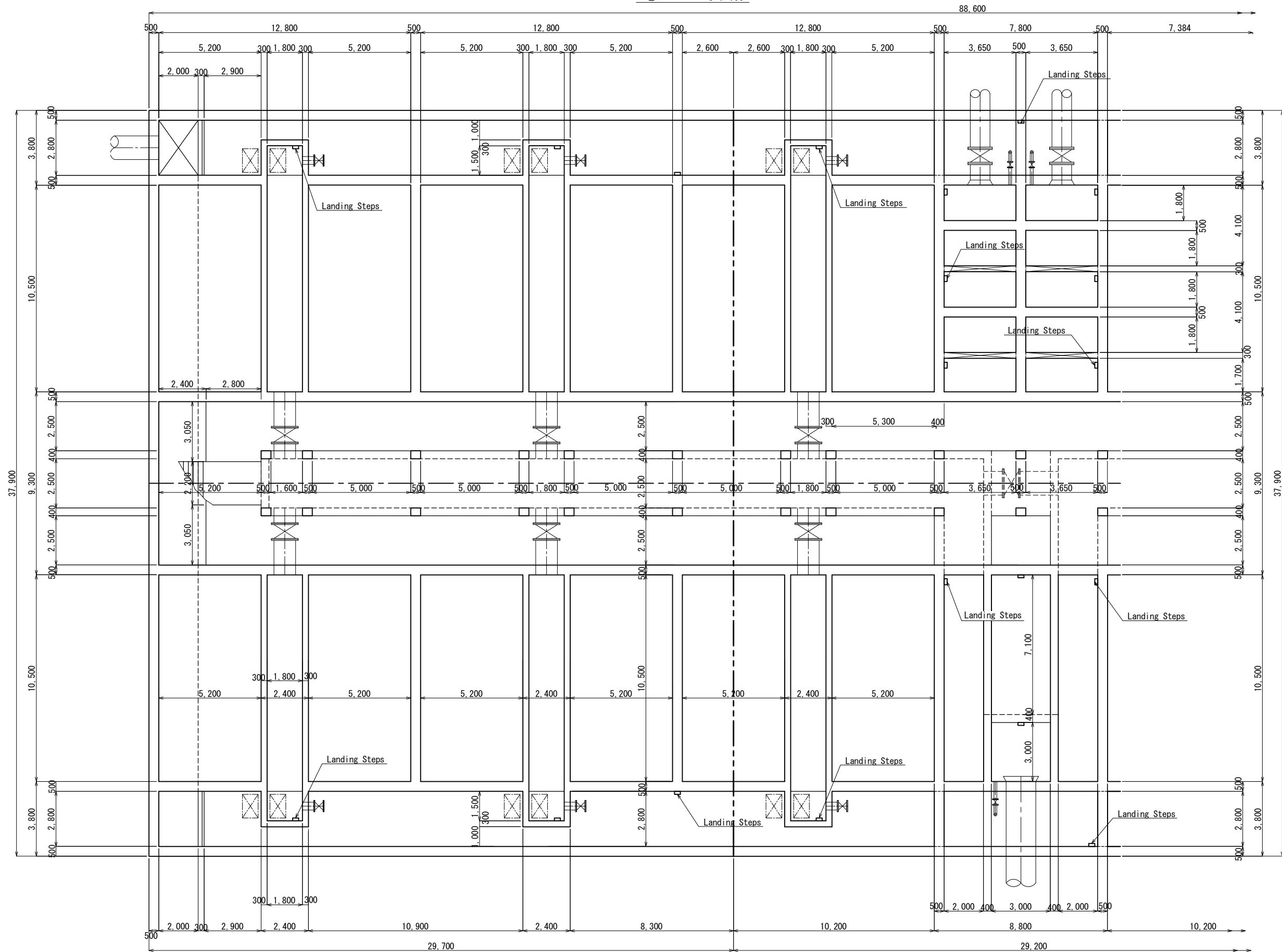
② Plan S=1:100



No.			
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Detail Plan (4/9)

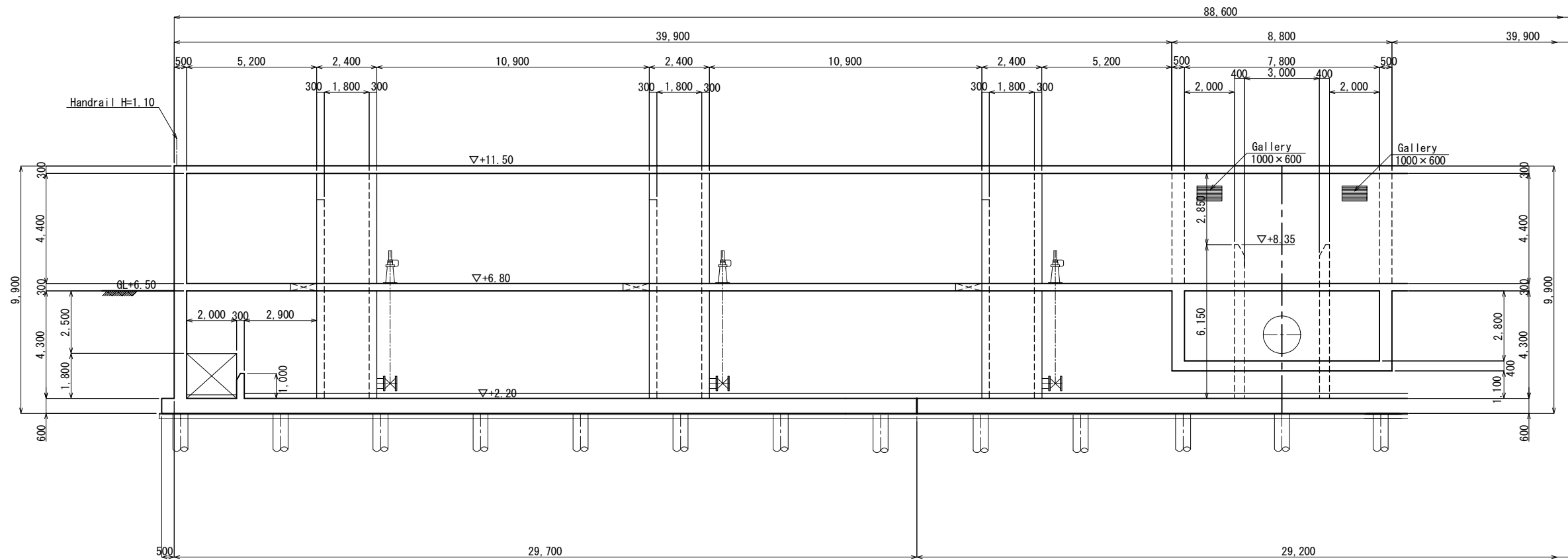
③ Plan s=1:100



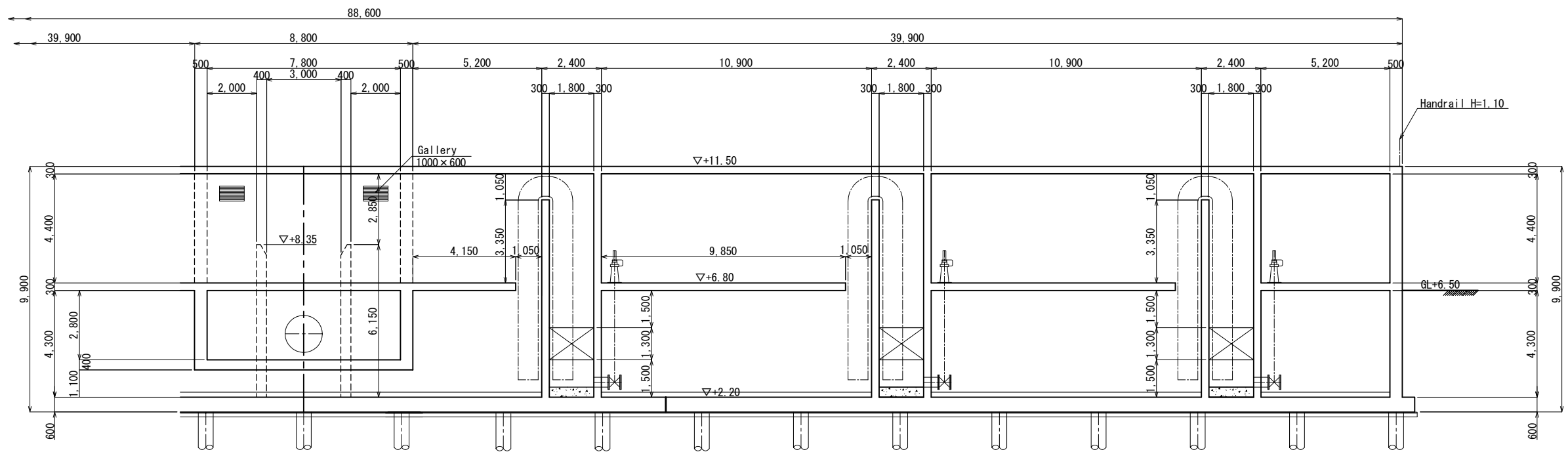
No.			
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Detail Plan (5/9)

Cross Section A-A S=1:100



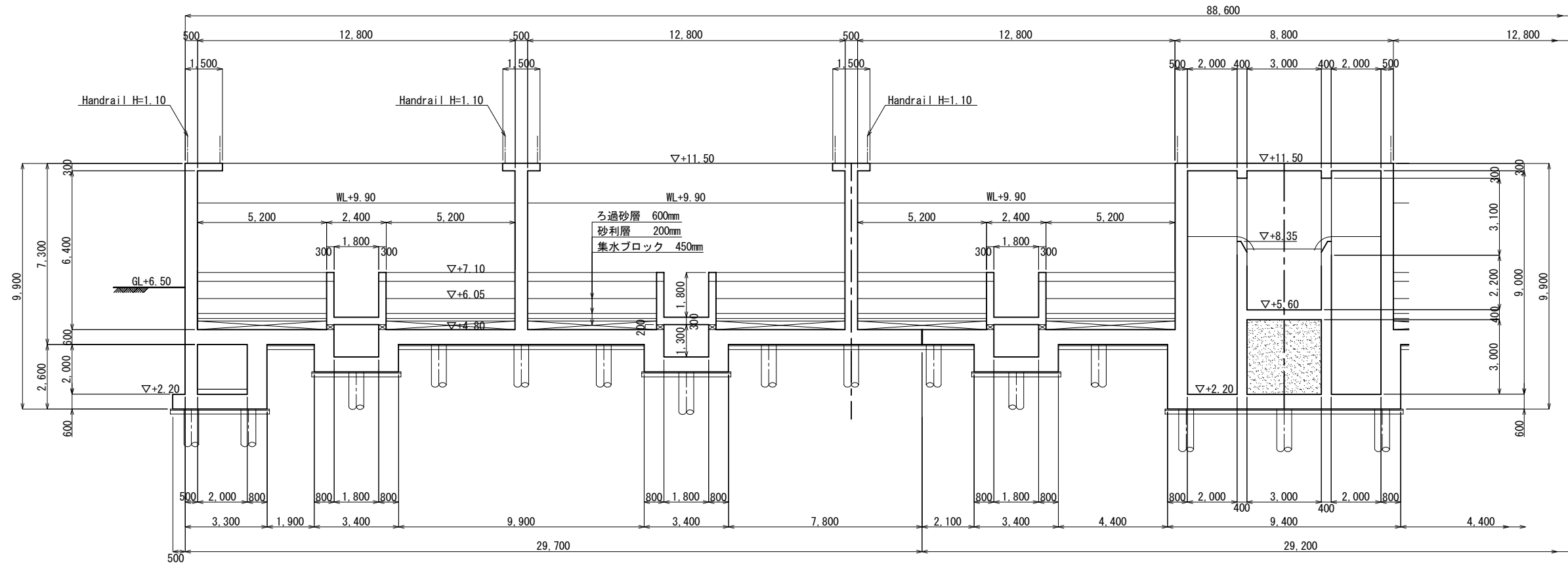
Cross Section A-A S=1:100



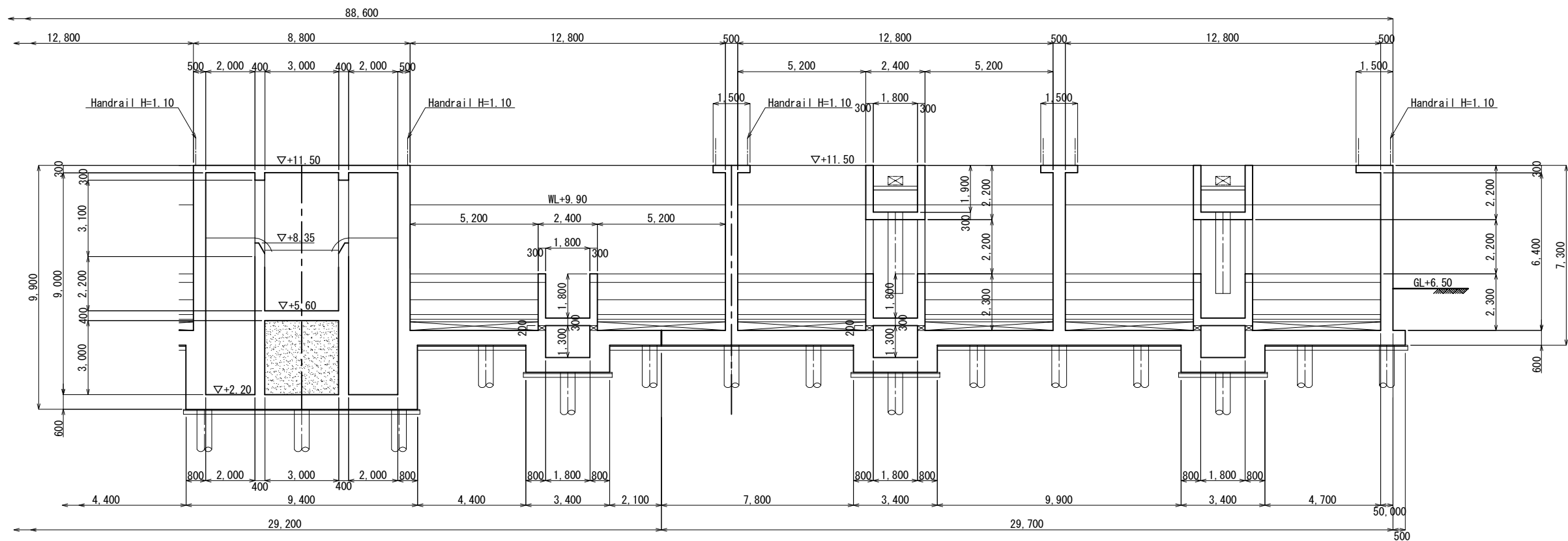
No.			
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Detail Plan (6/9)

Cross Section B-B s=1:100



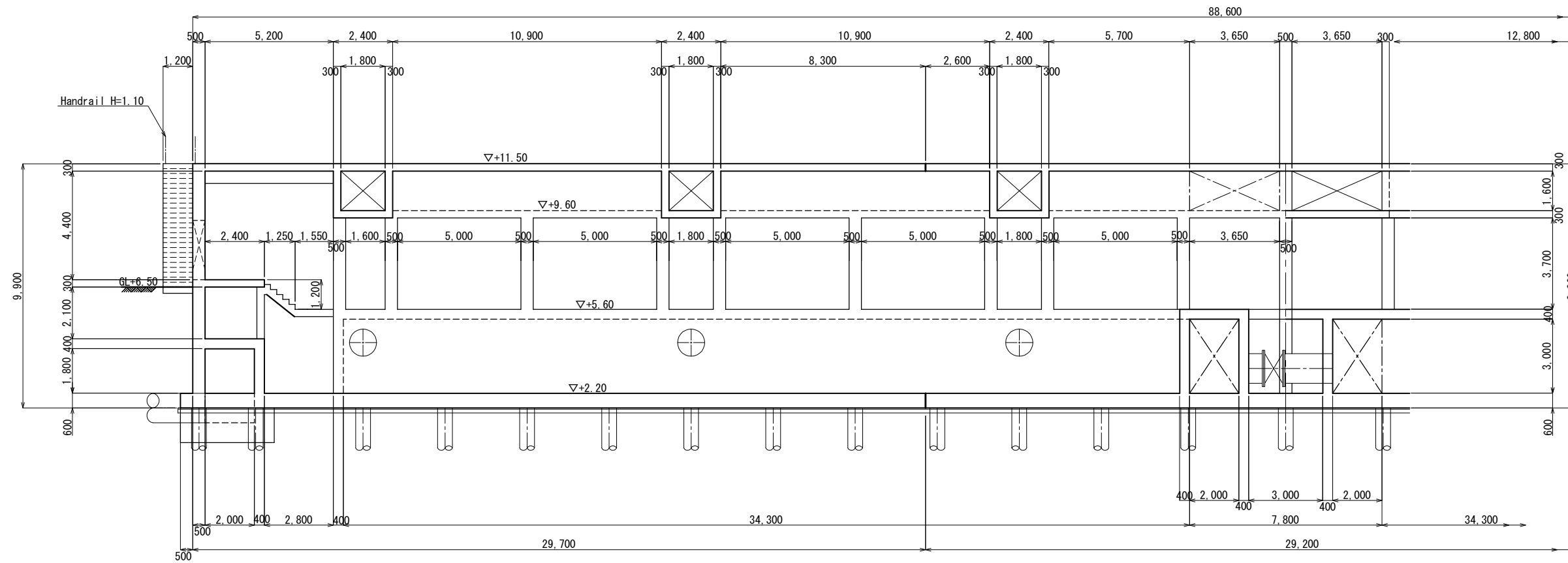
Cross Section B-B s=1:100



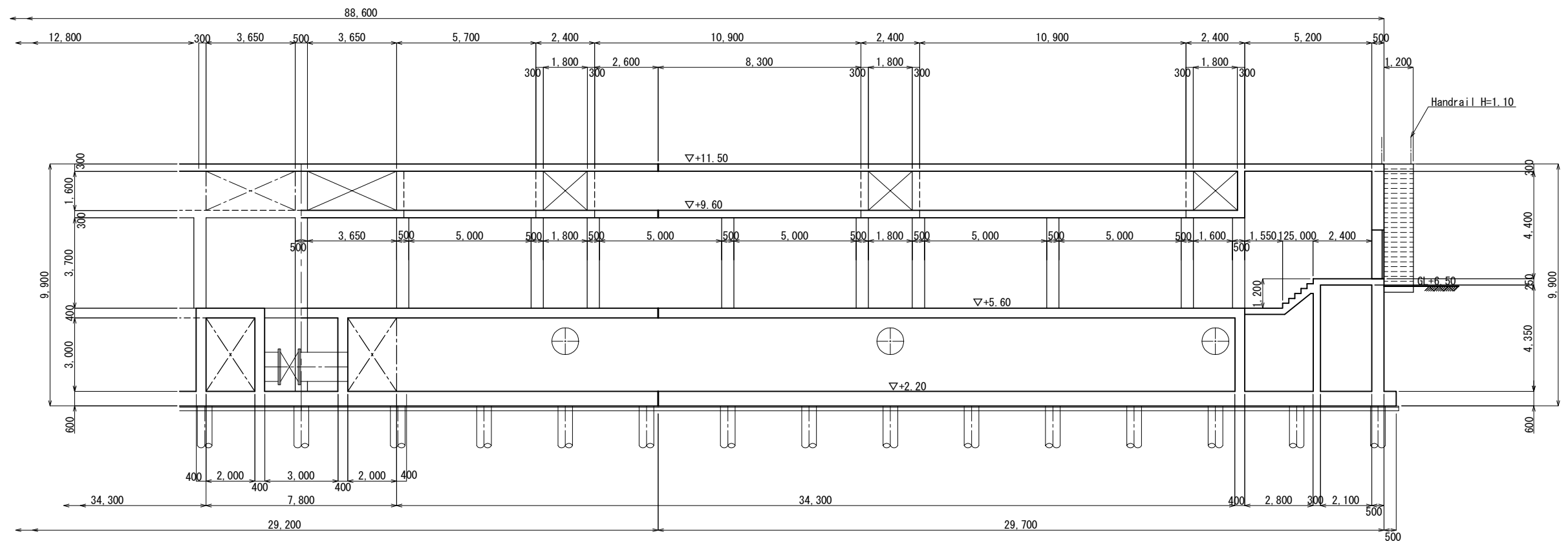
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Detail Plan (7/9)

Cross Section C-C s=1:100



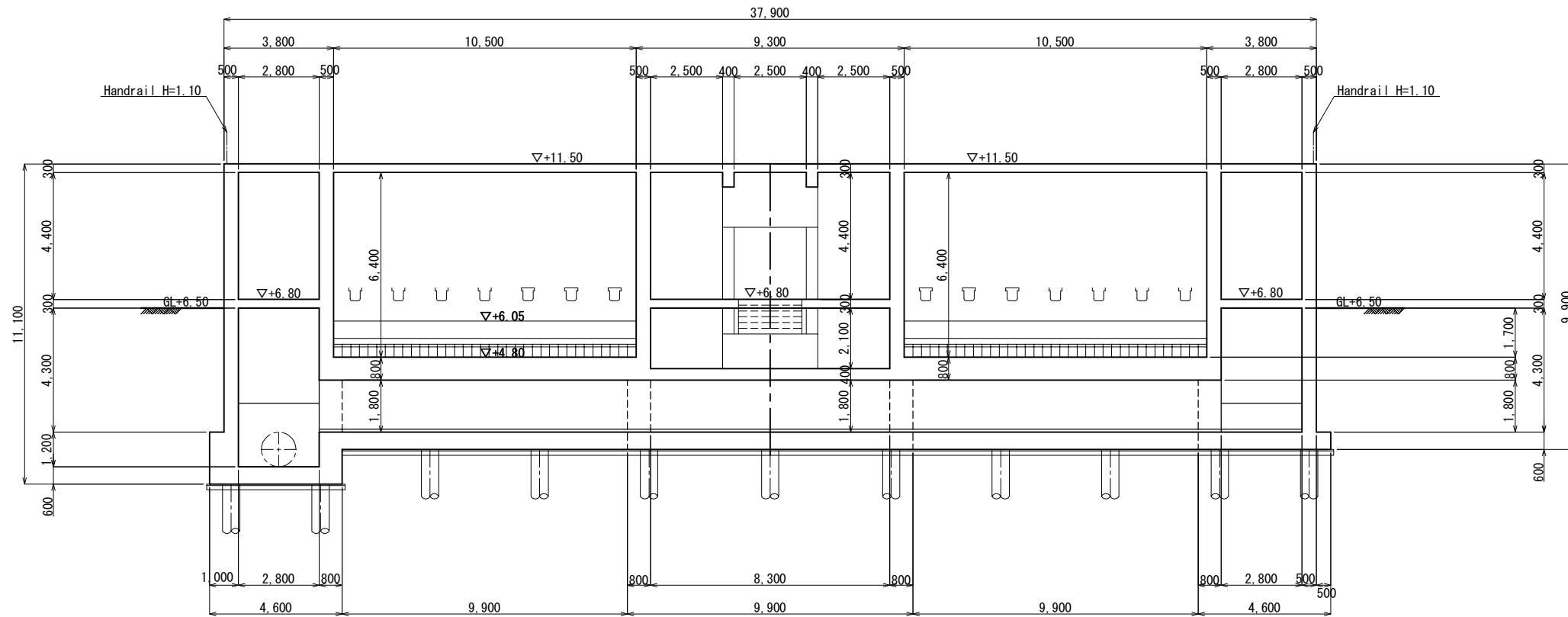
Cross Section C-C s=1:100



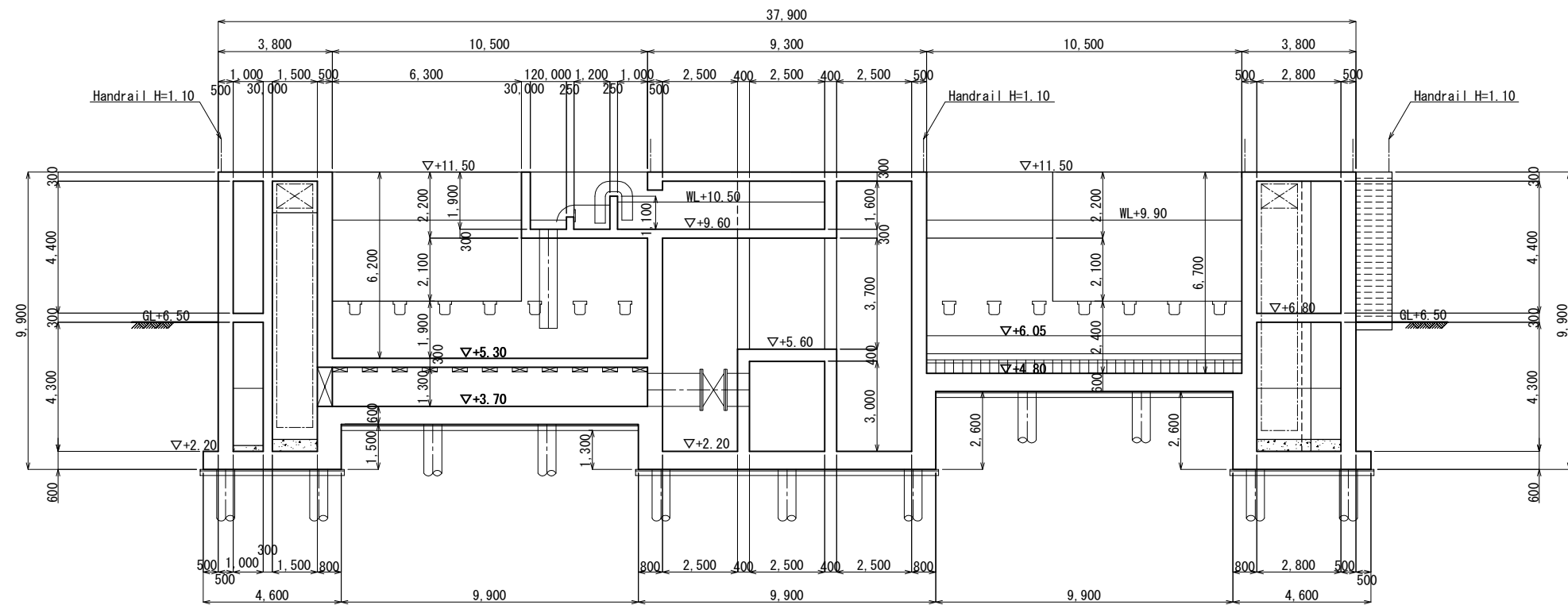
No.			
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Detail Plan (8/9)

Cross Section D-D S=1:100



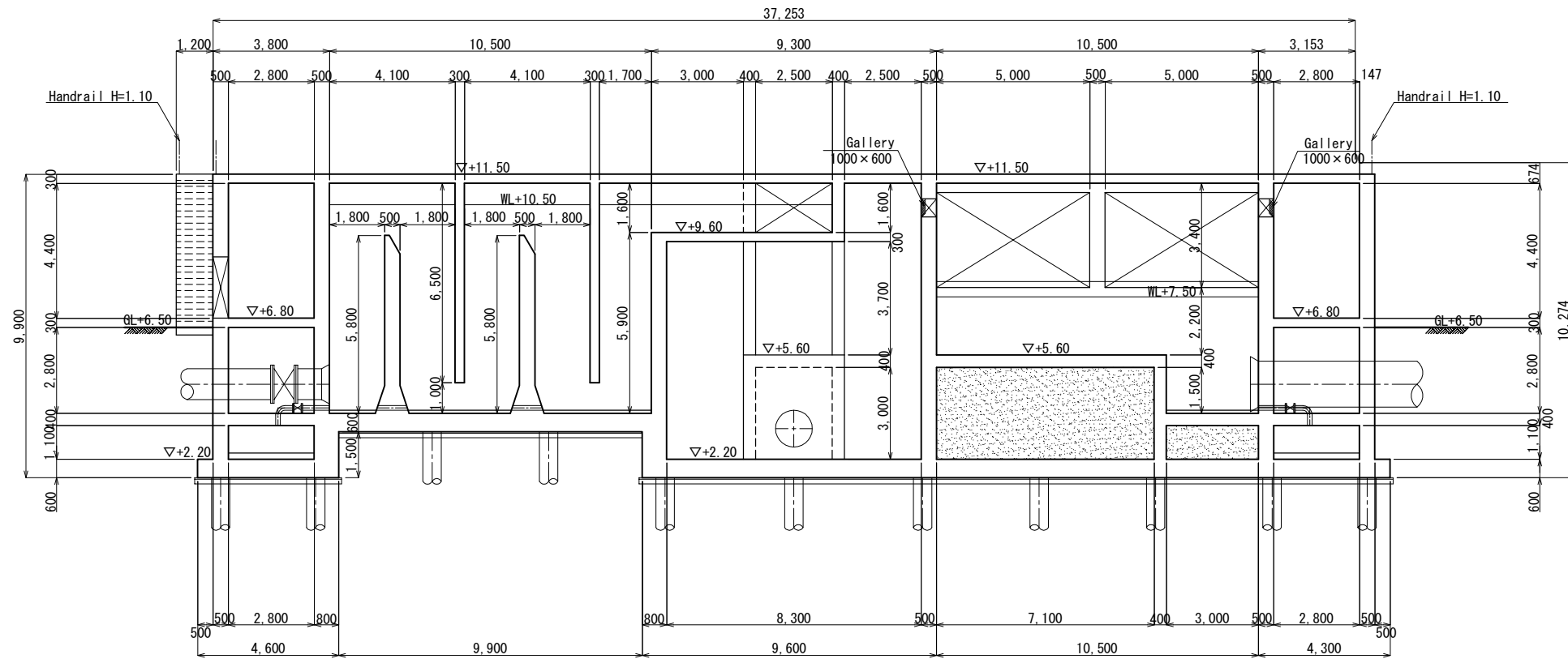
Cross Section E-E S=1:100



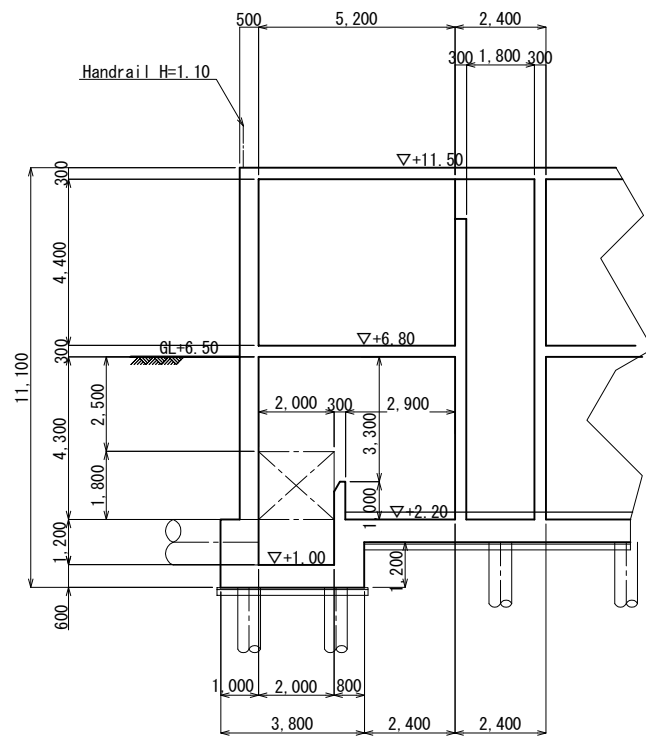
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Detail Plan (9/9)

Cross Section F-F s=1:100



Cross Section G-G s=1:100



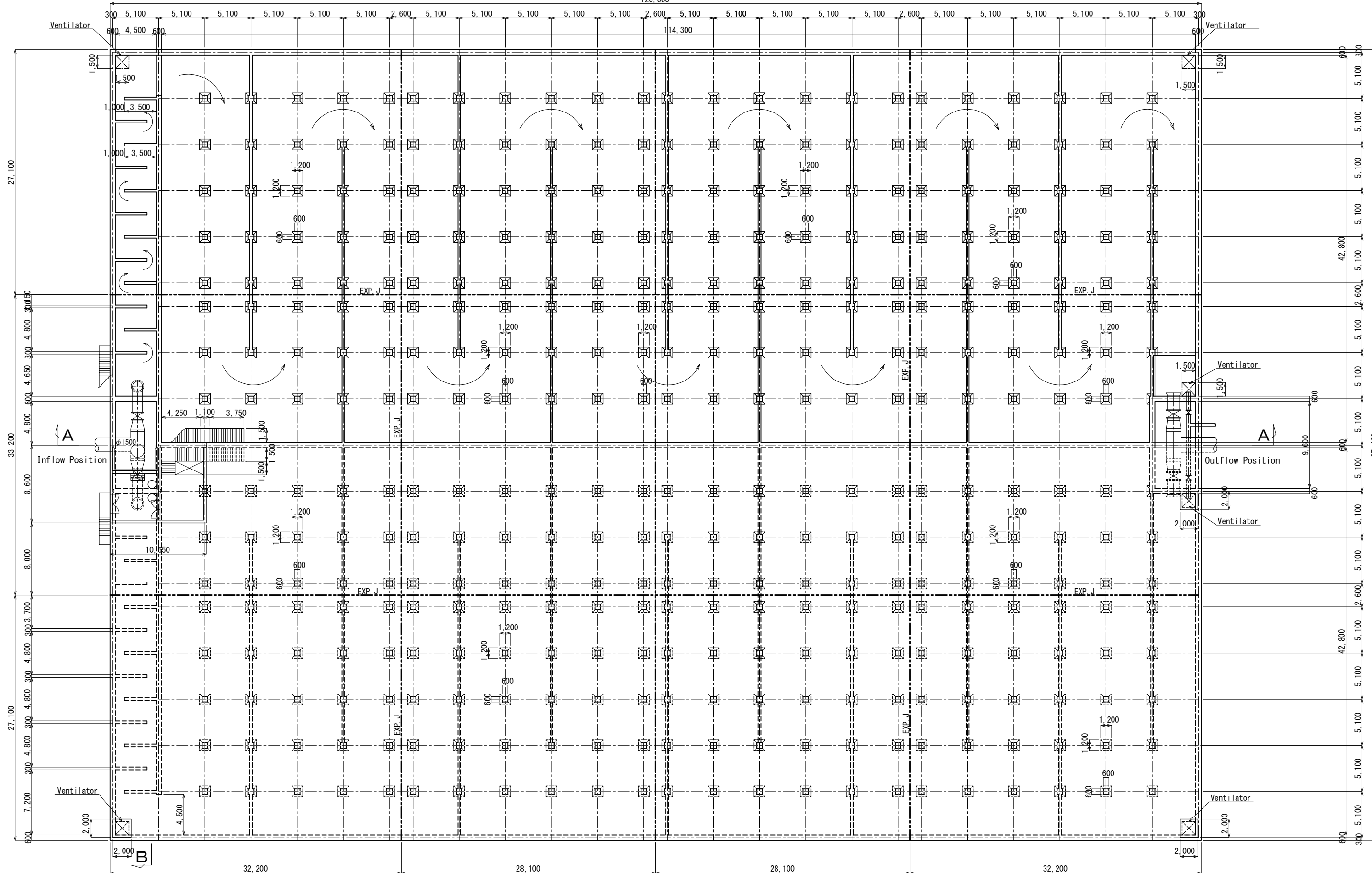
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Clear Water Reservoir (1/2) S=1:200

Plan

120.600

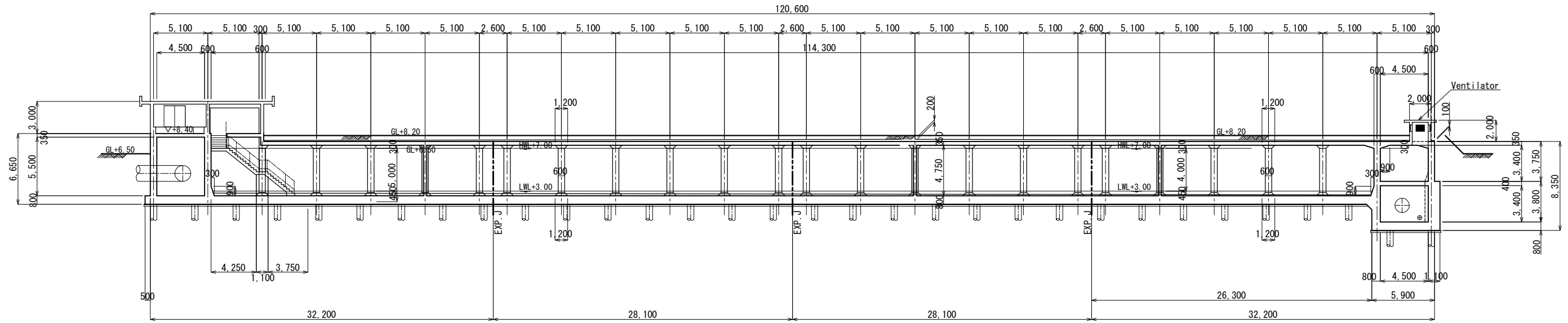
B



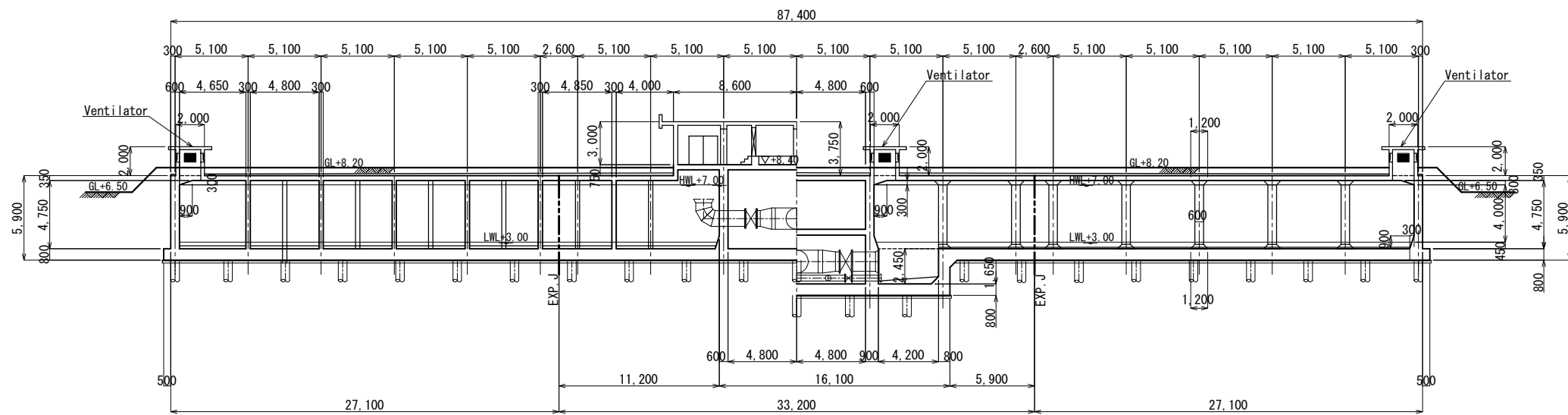
No.			
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Clear Water Reservoir (2/2) S=1:200

Cross Section A-A

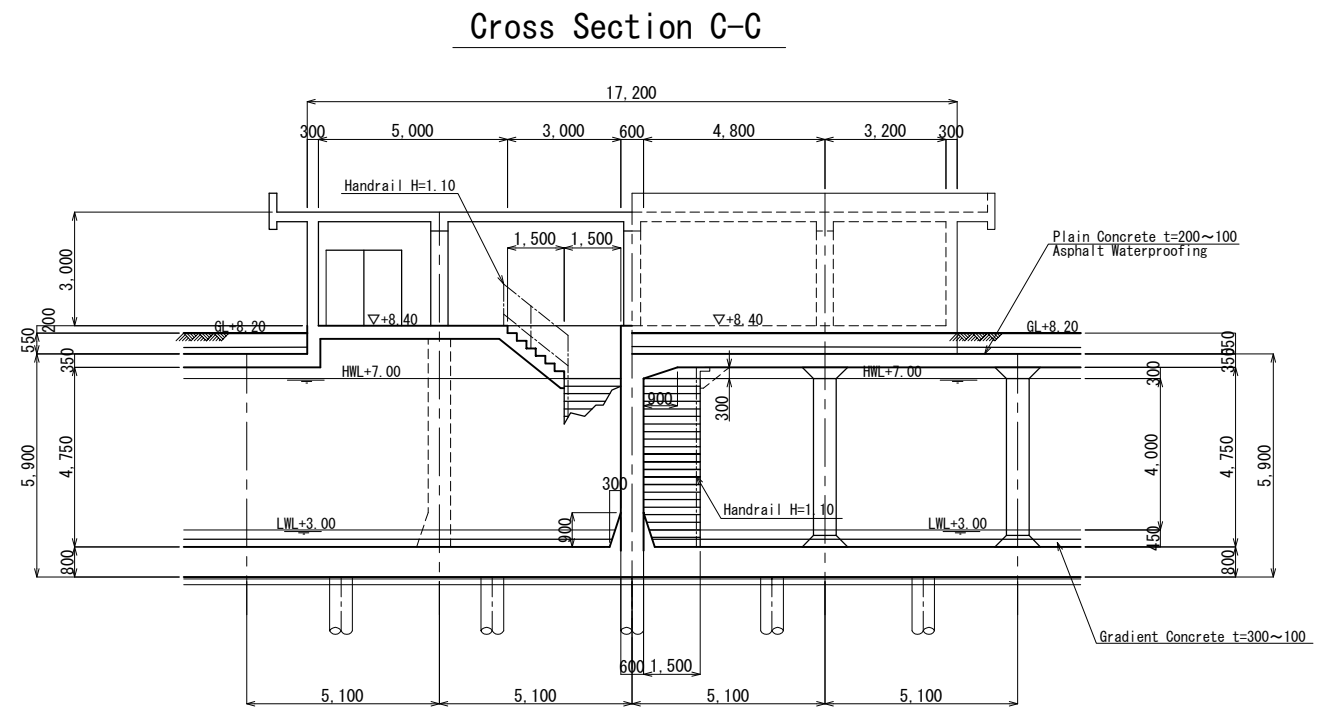
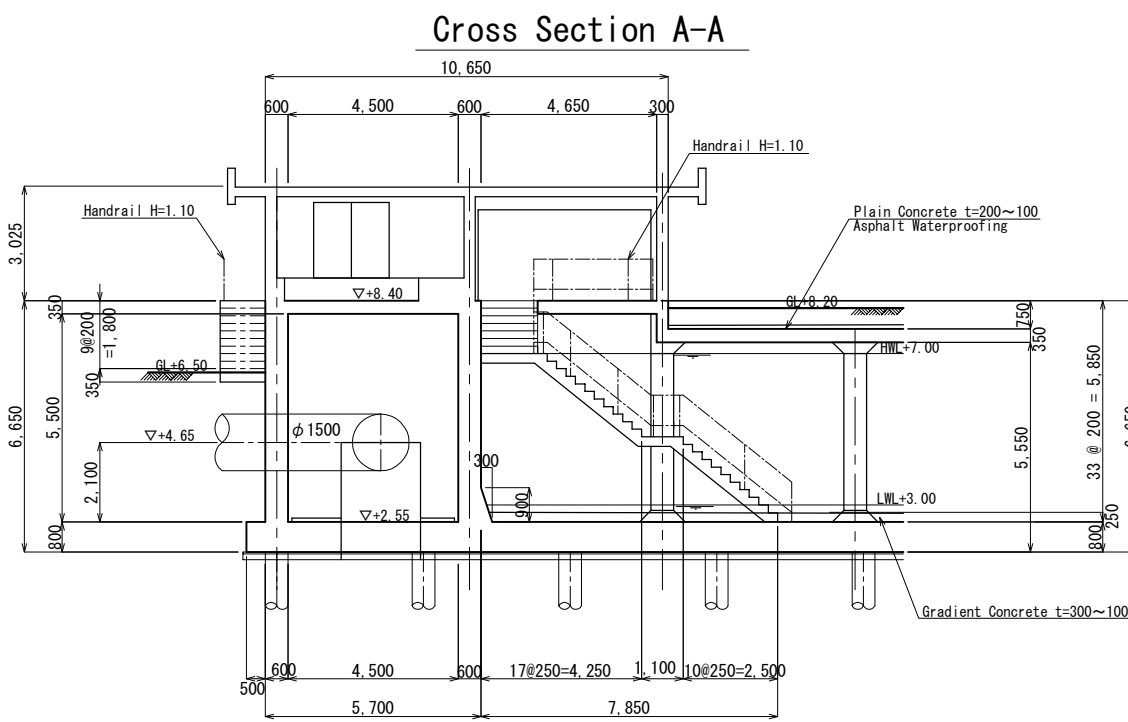
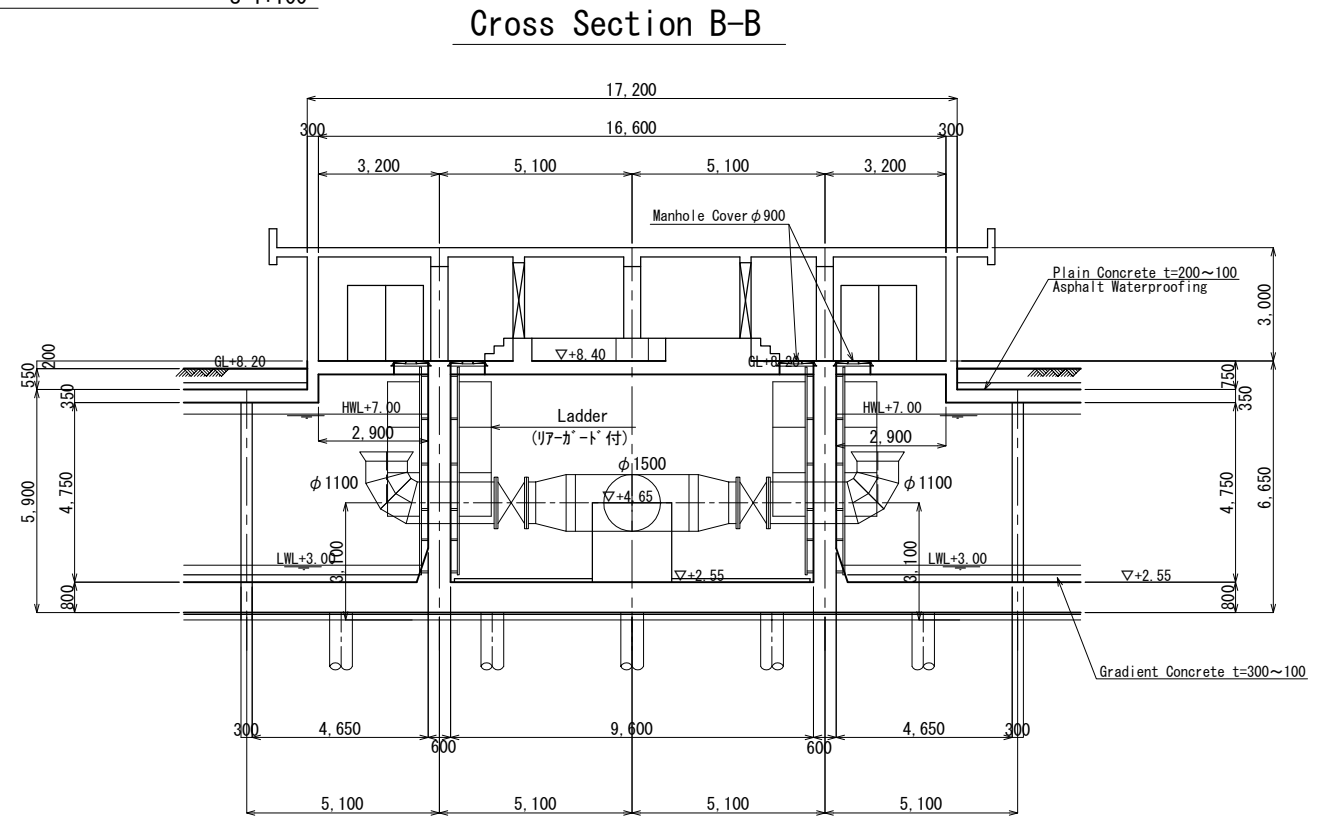
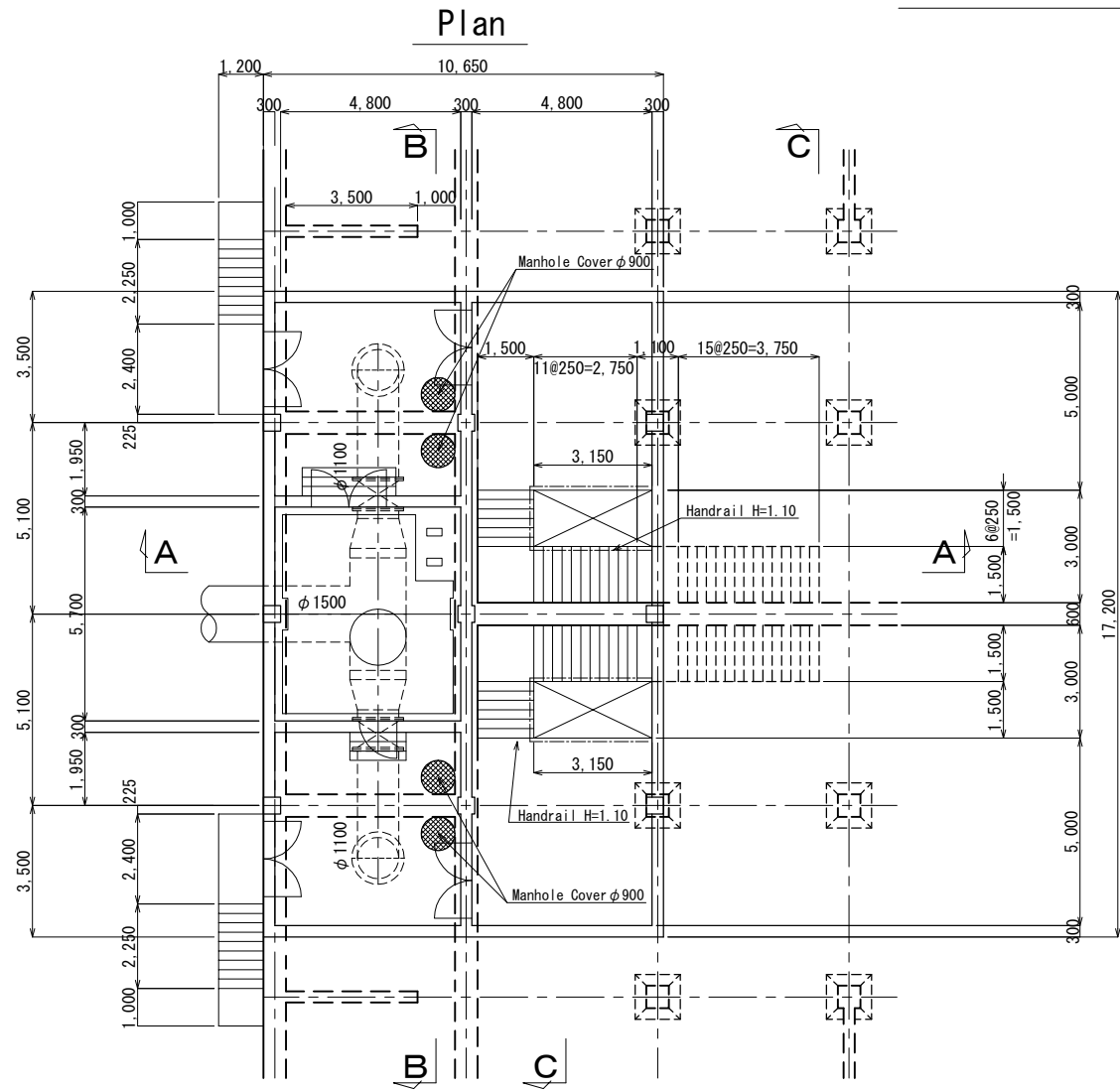


Cross Section B-B



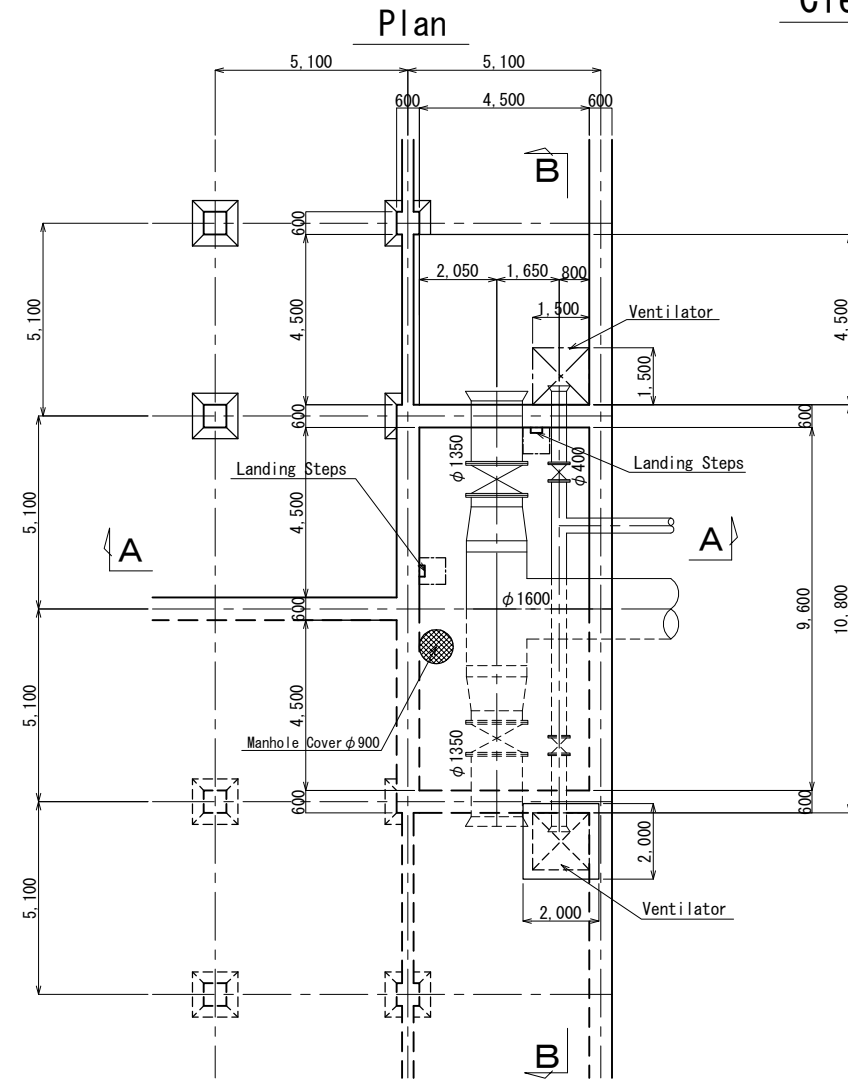
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Clear Water Reservoir Detail Plan (Inflow Part) S=1:100

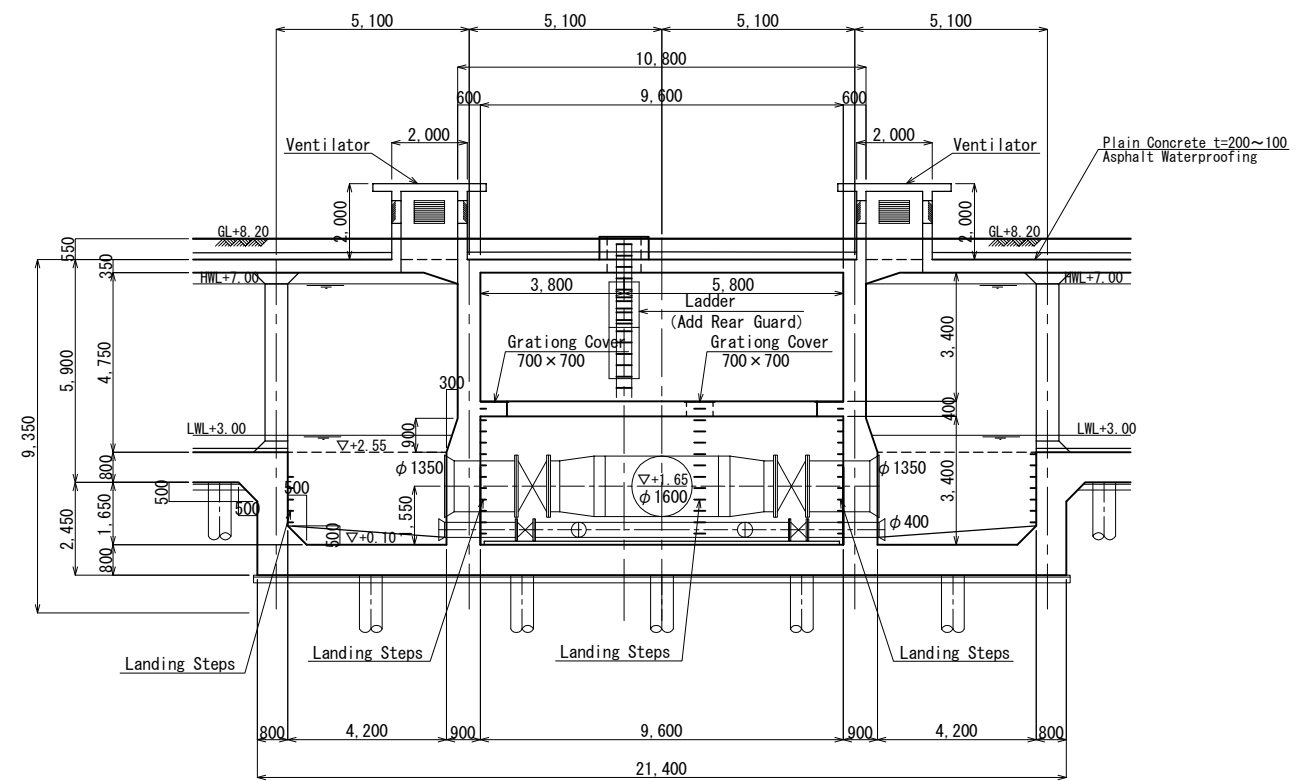


No.			
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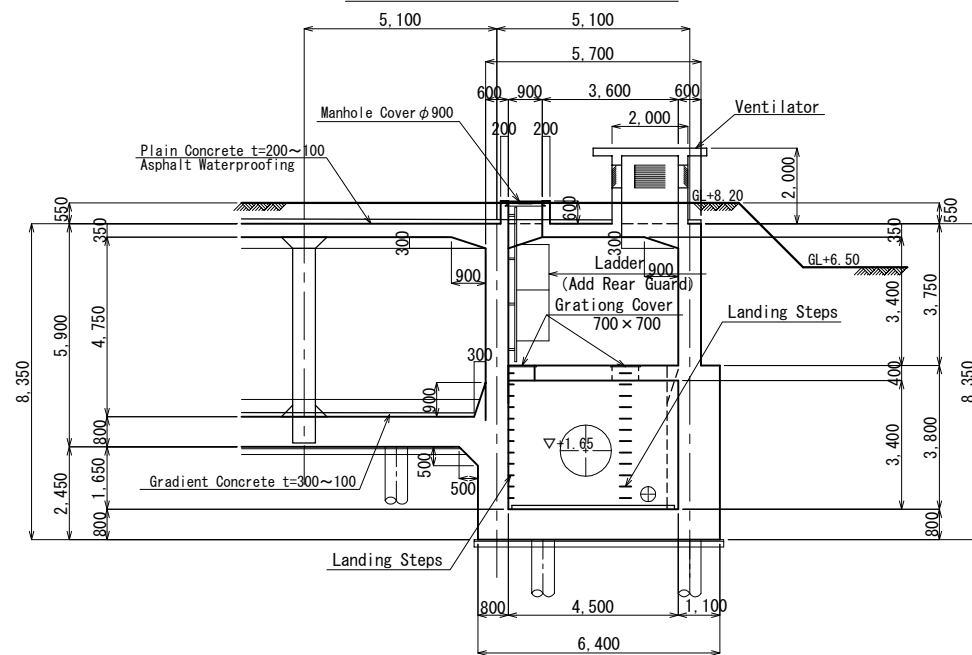
Clear Water Reservoir Detail Plan S=1:100
(Outflow Part)



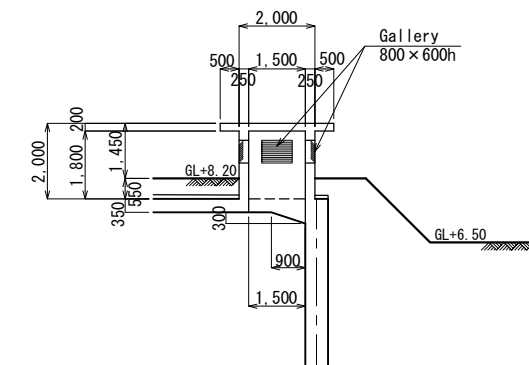
Cross Section B-B



Cross Section A-A

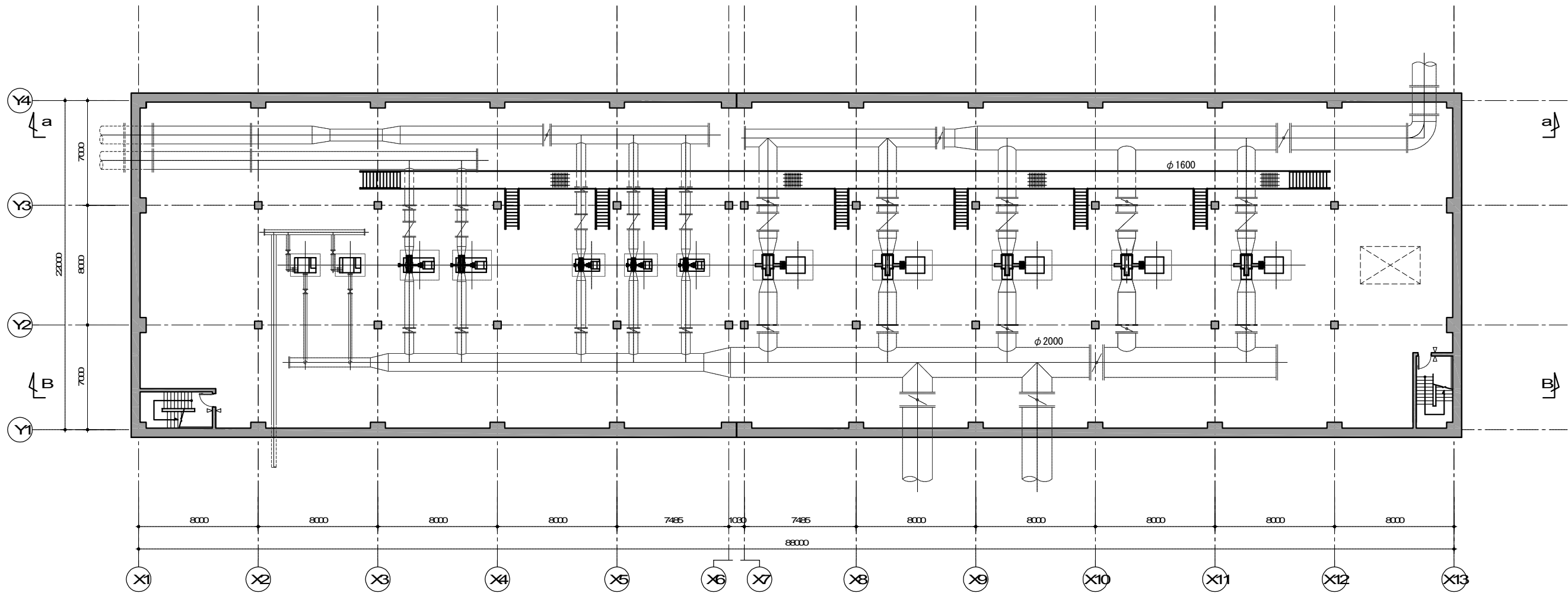


Detail Plan (Ventilator)



No.			
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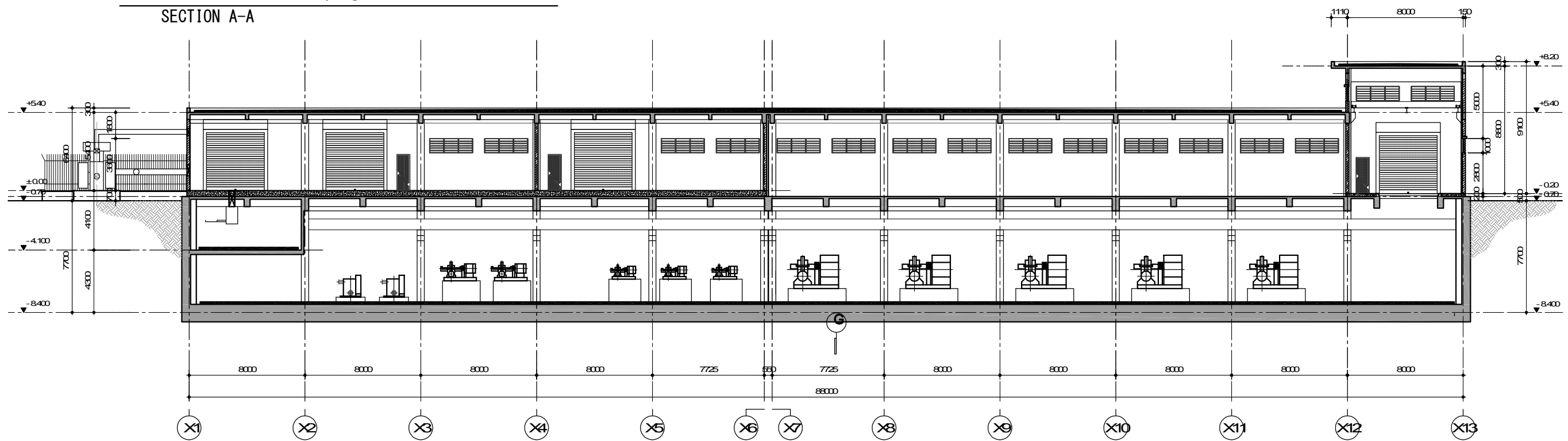
Water Transmission Pumping Station Plan



No.			

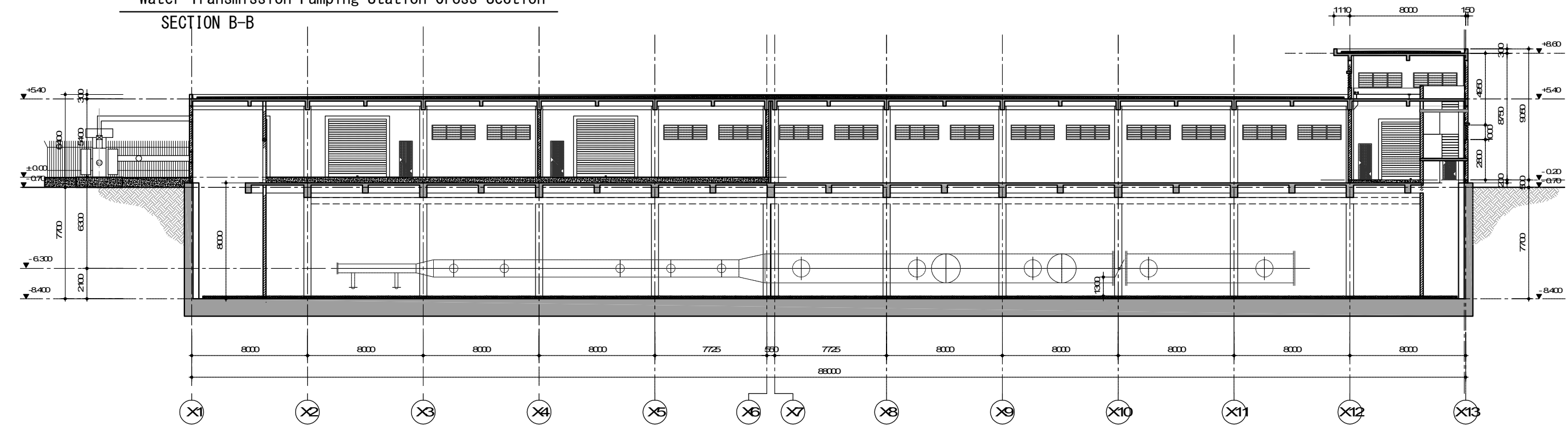
Water Transmission Pumping Station Cross Section

SECTION A-A



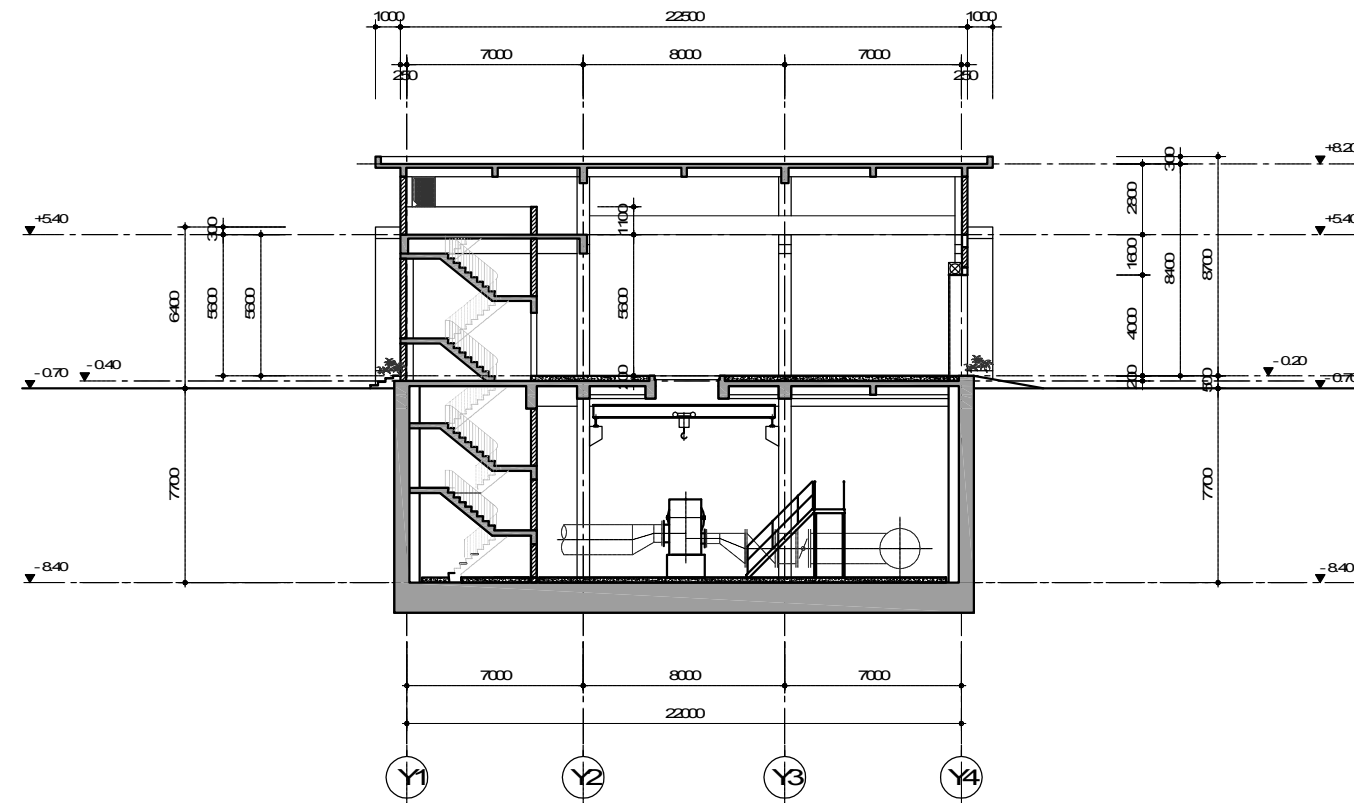
Water Transmission Pumping Station Cross Section

SECTION B-B

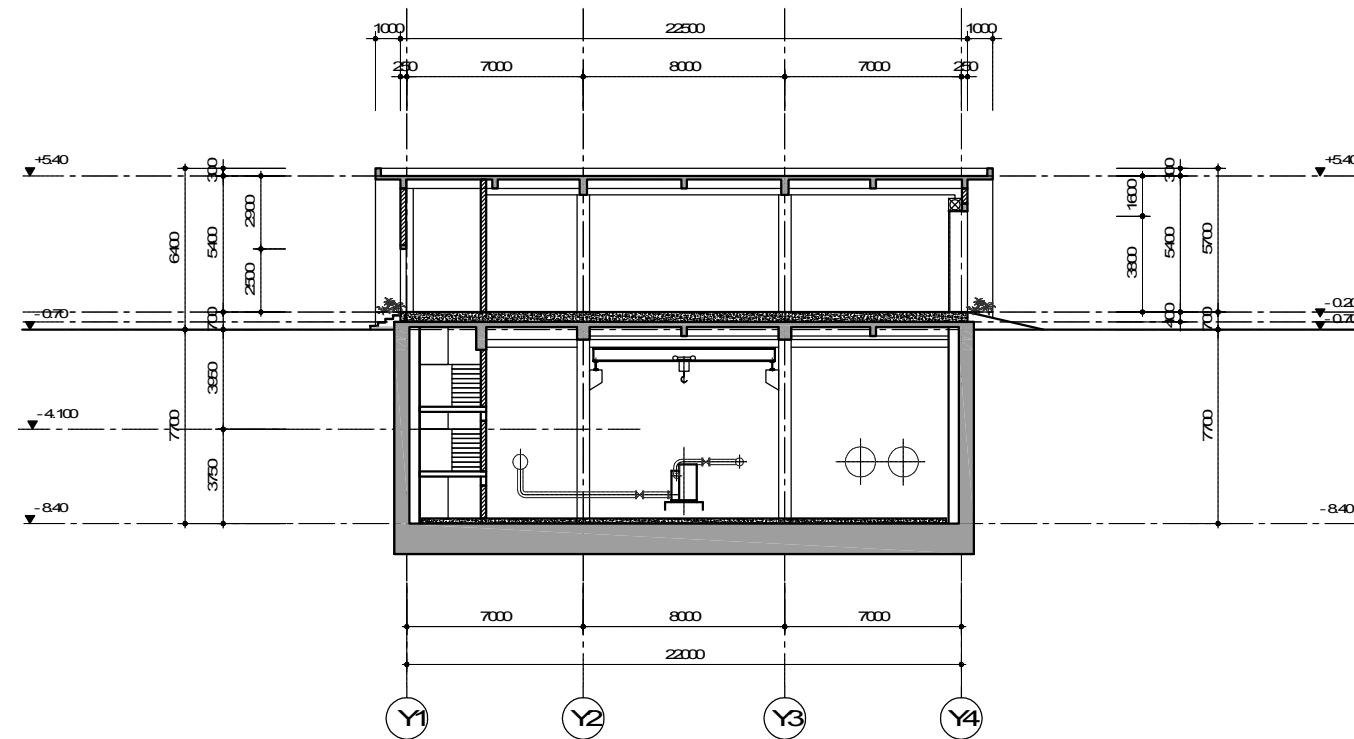


No.			
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Water Transmission Pumping Station Cross Section
SECTION C-C



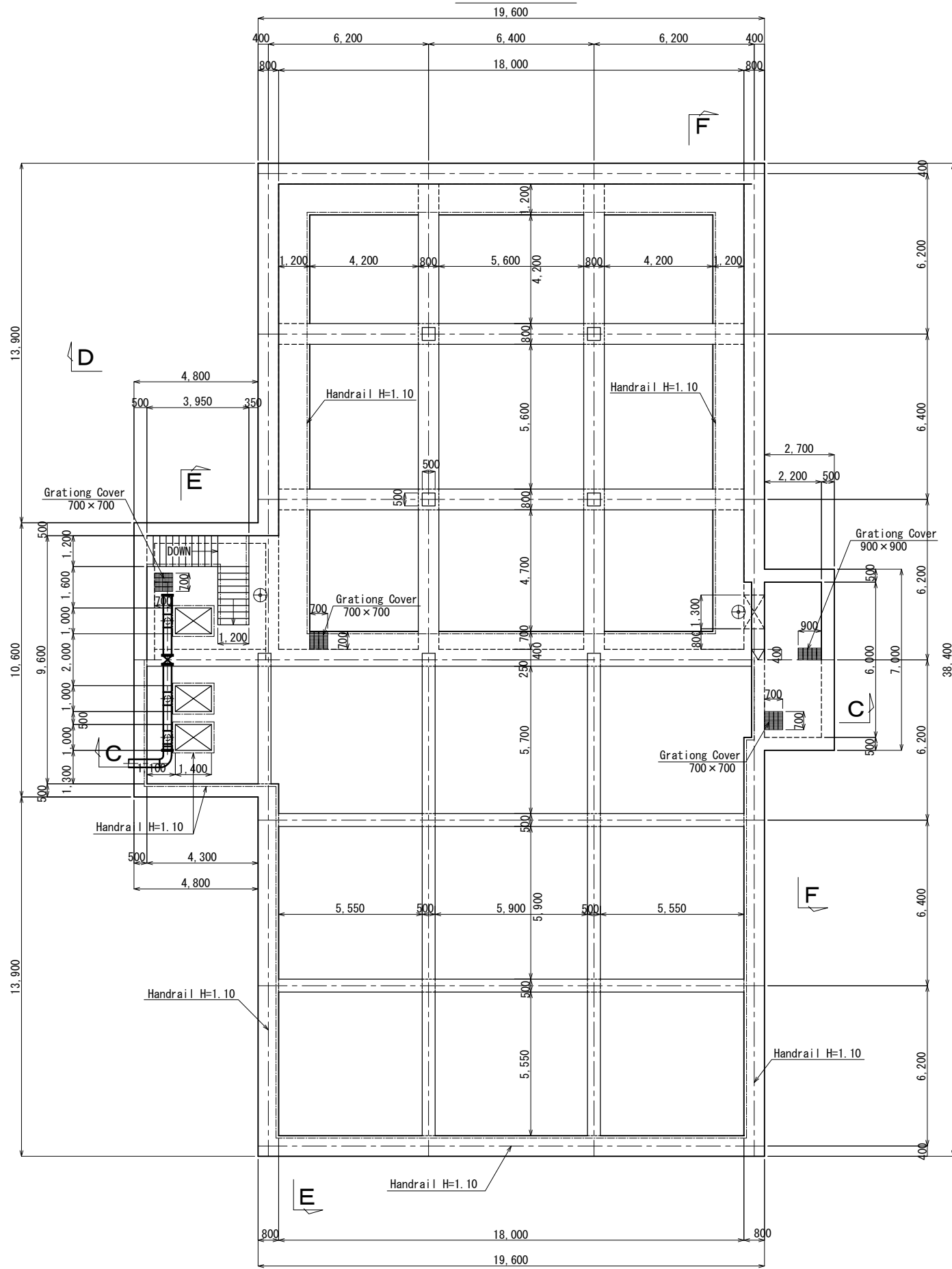
Water Transmission Pumping Station Cross Section
SECTION D-D



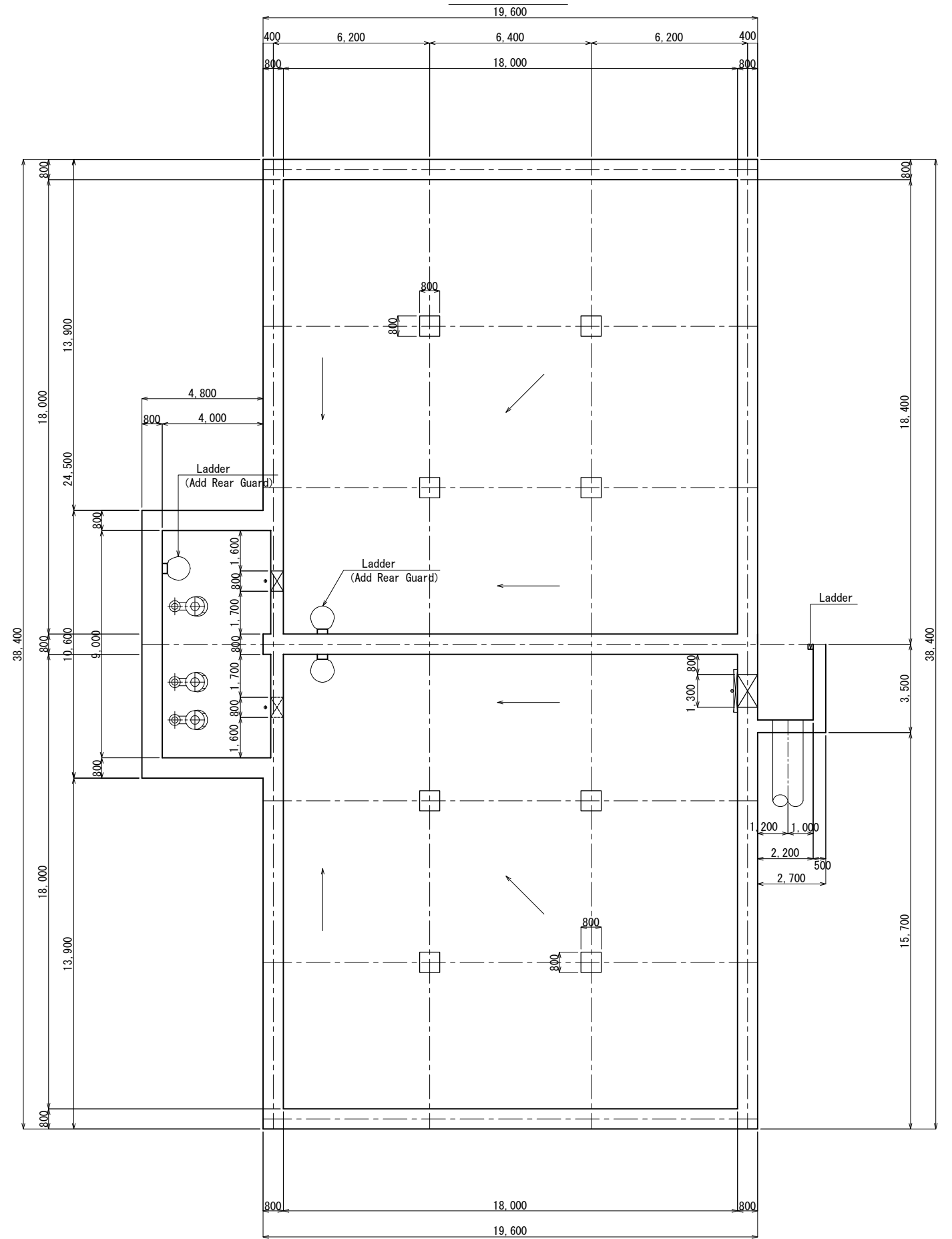
No.			

Wash Water Drainage Basin

Plan A-A

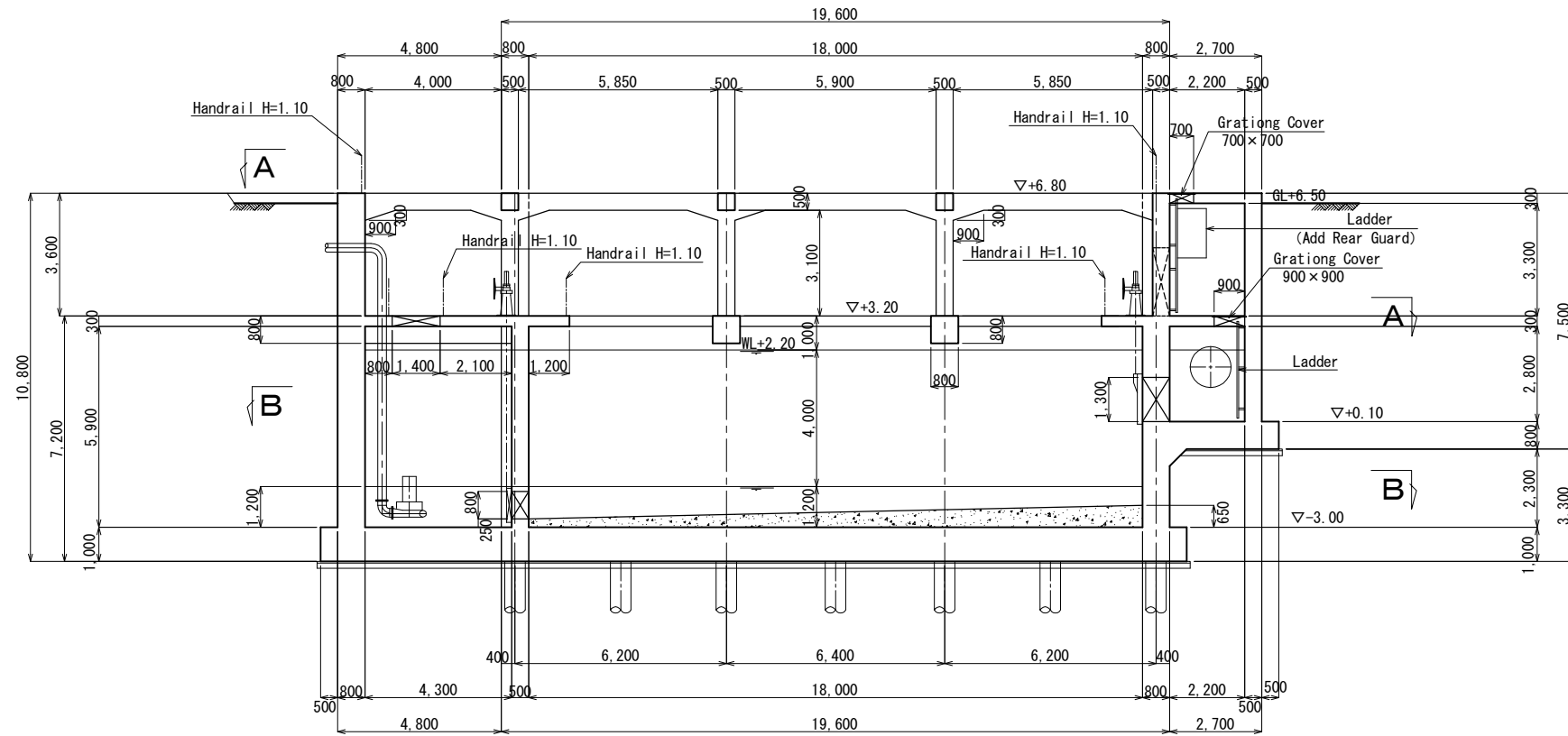


Plan B-B

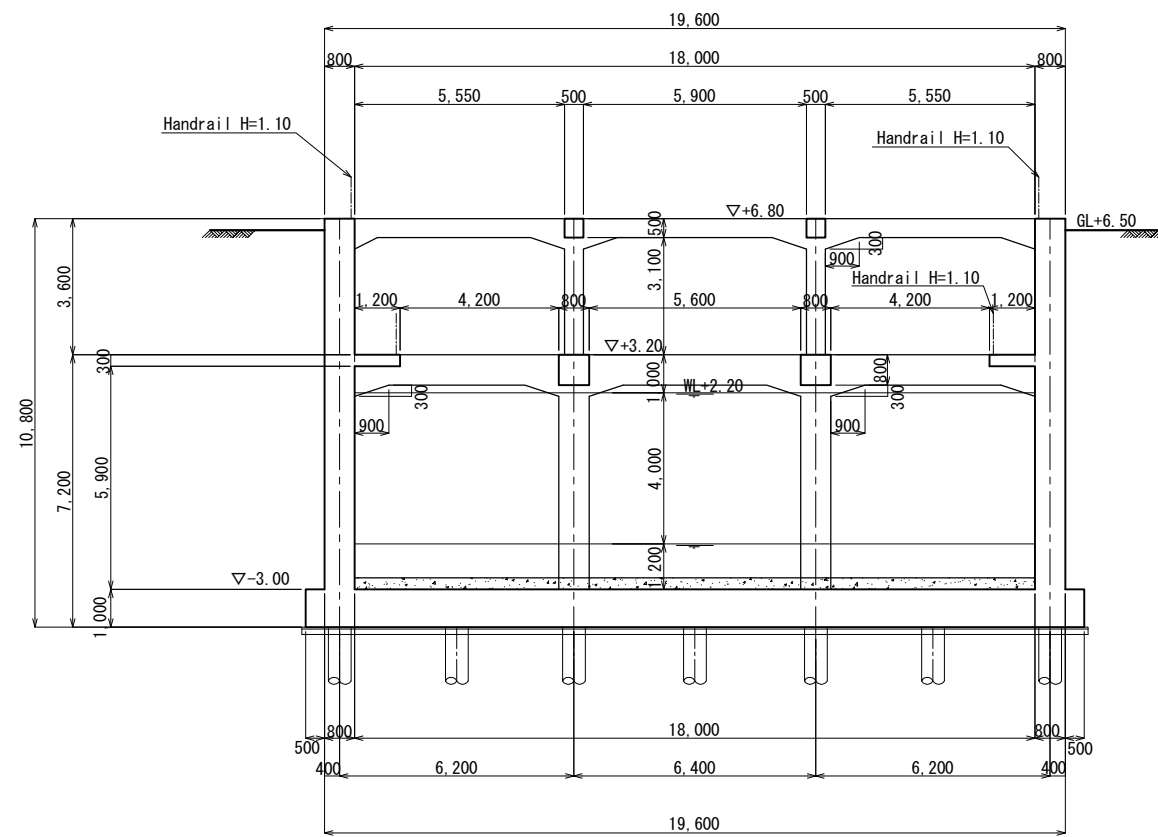


No.			
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Cross Section C-C

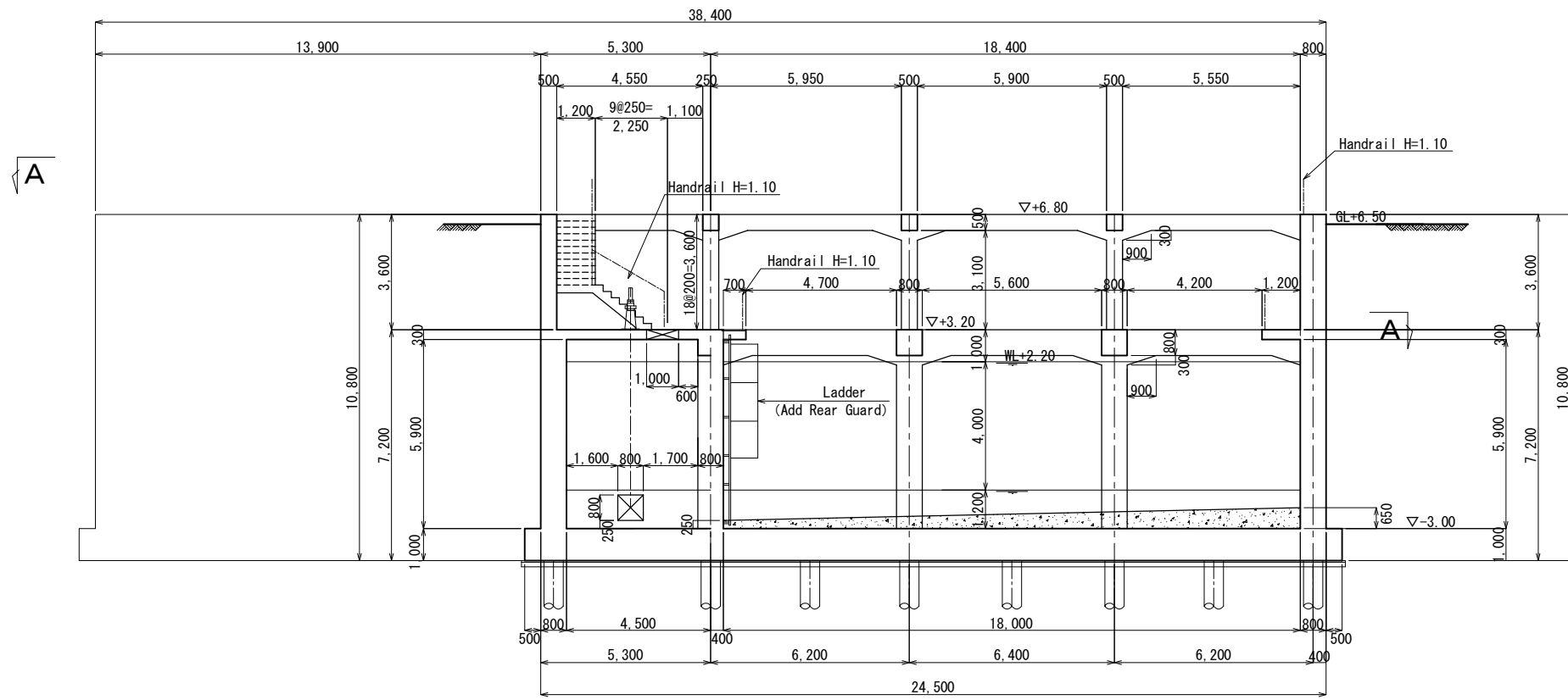


Cross Section D-D

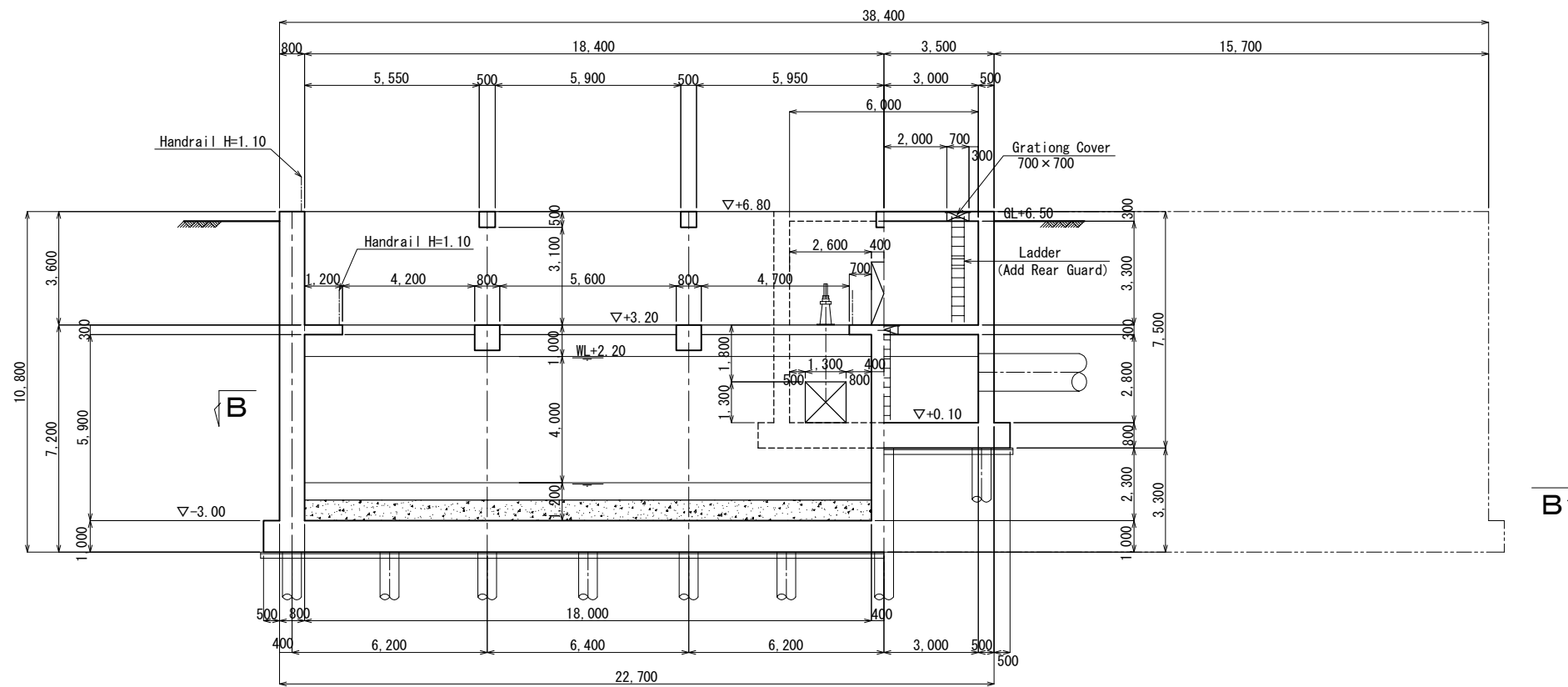


No.			
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Cross Section E-E

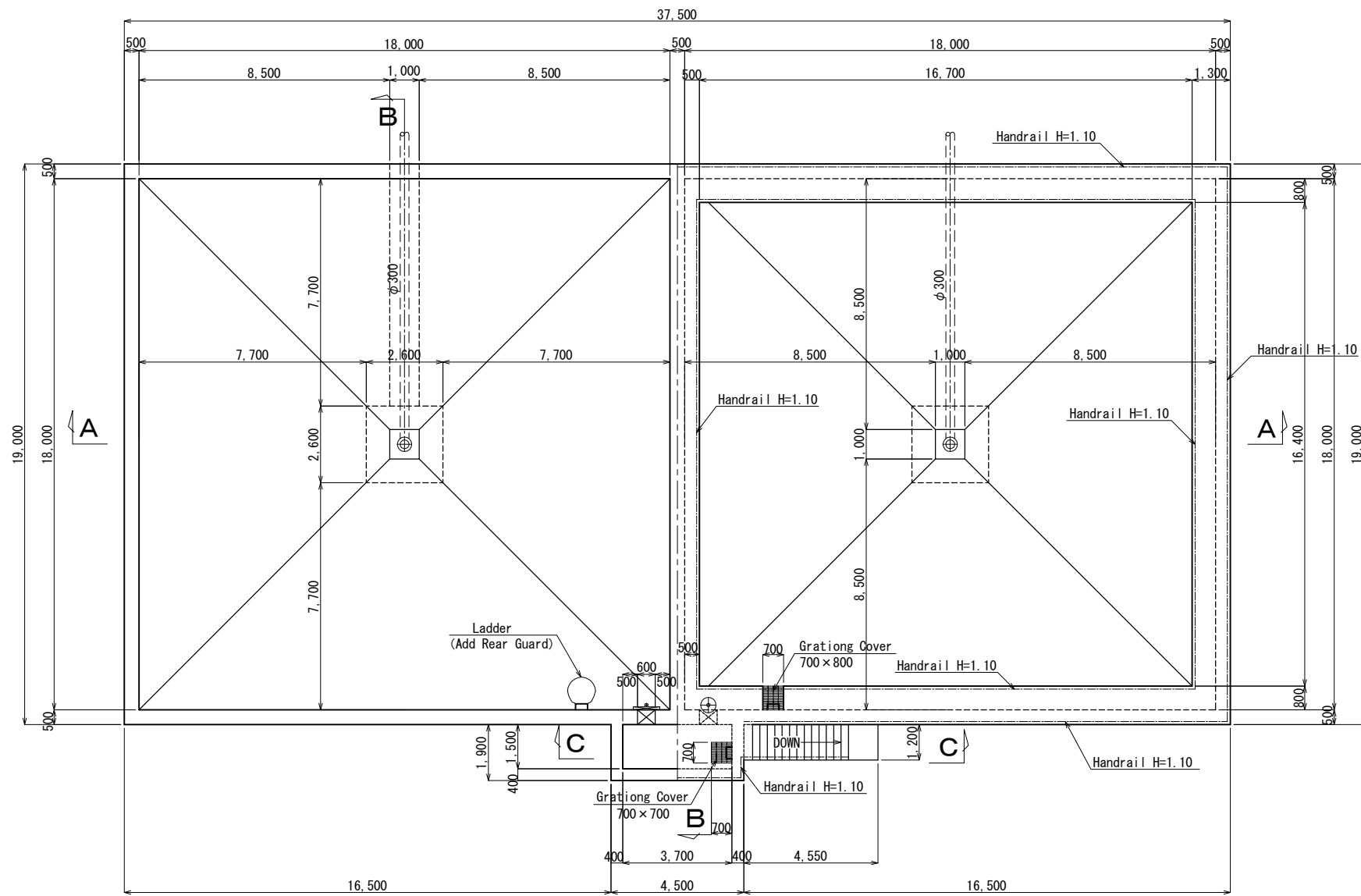


Cross Section F-F

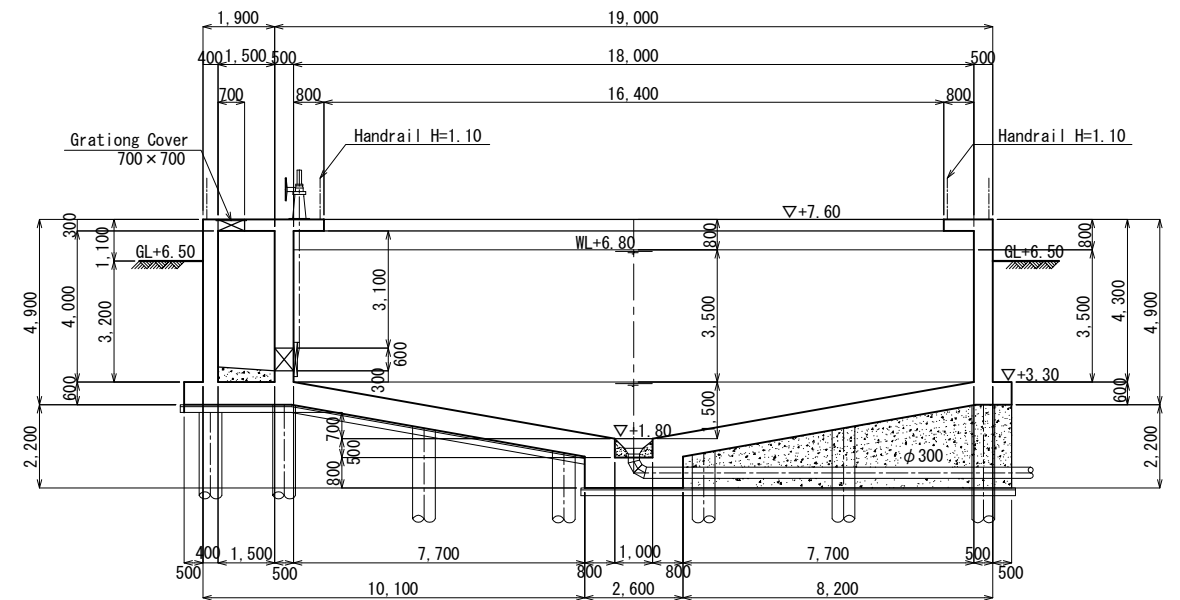


No.			
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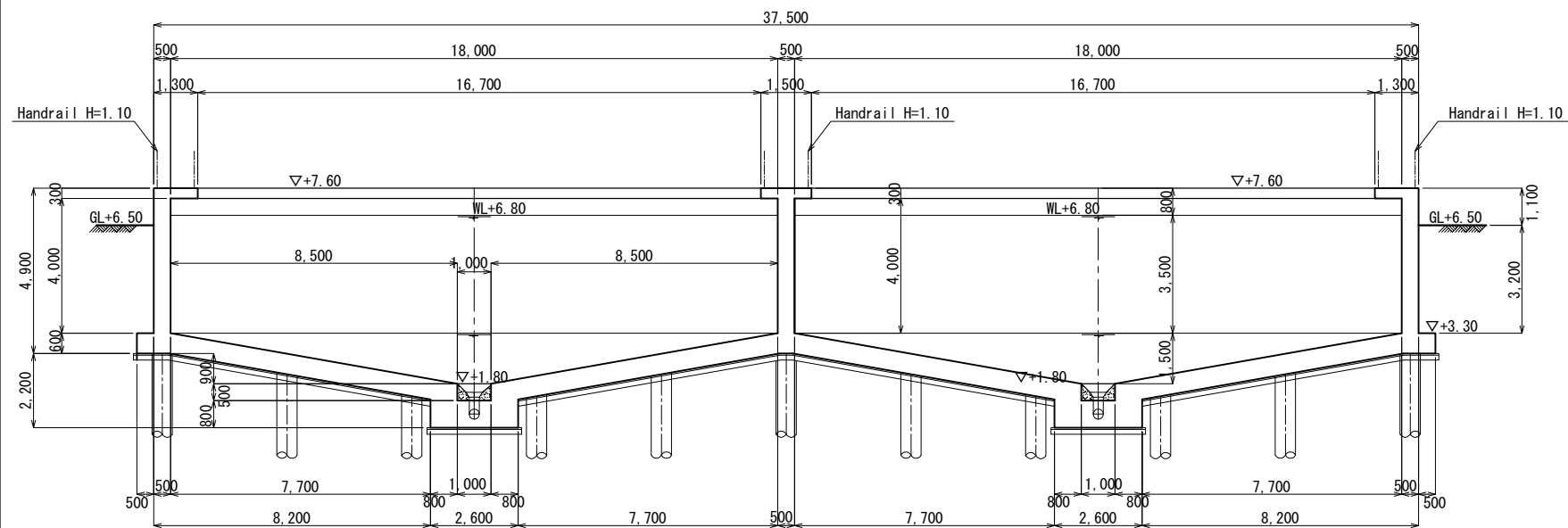
Sludge Basin Plan



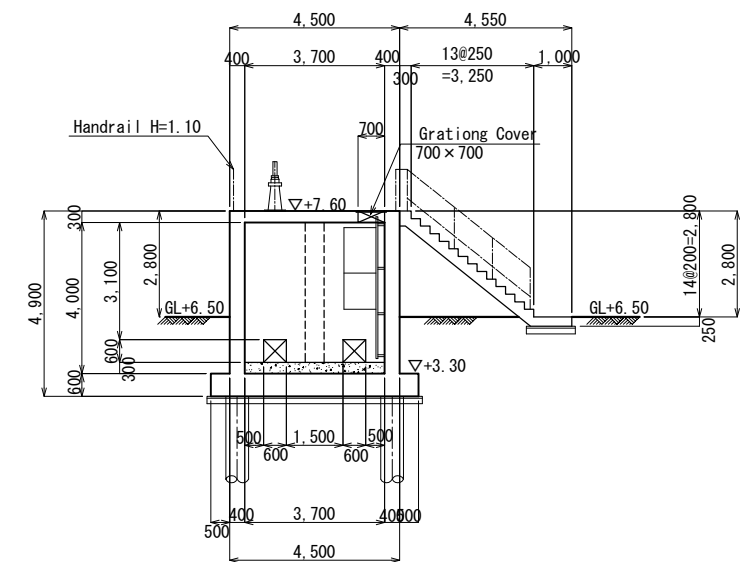
Cross Section B-B



Cross Section A-A

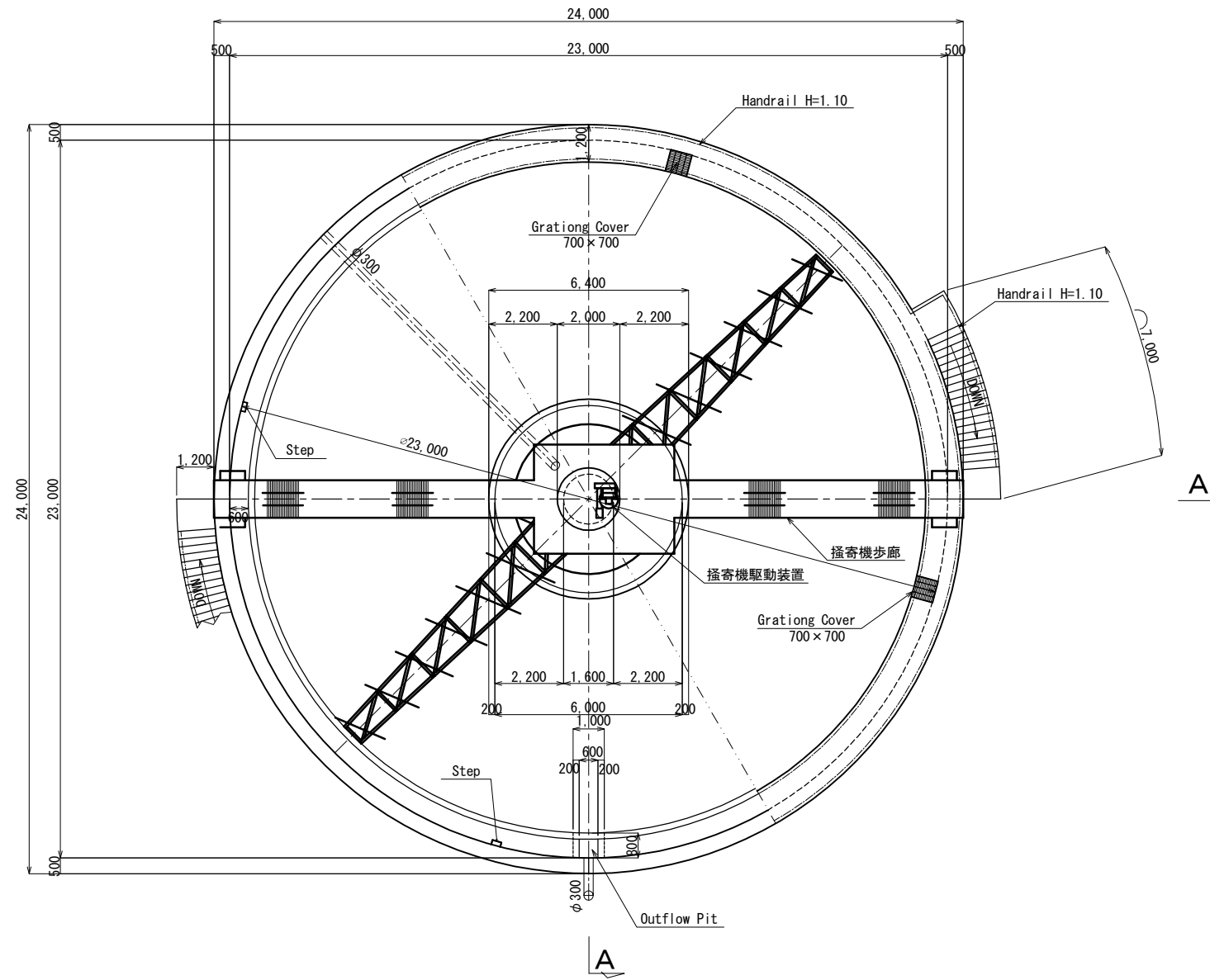


Cross Section C-C



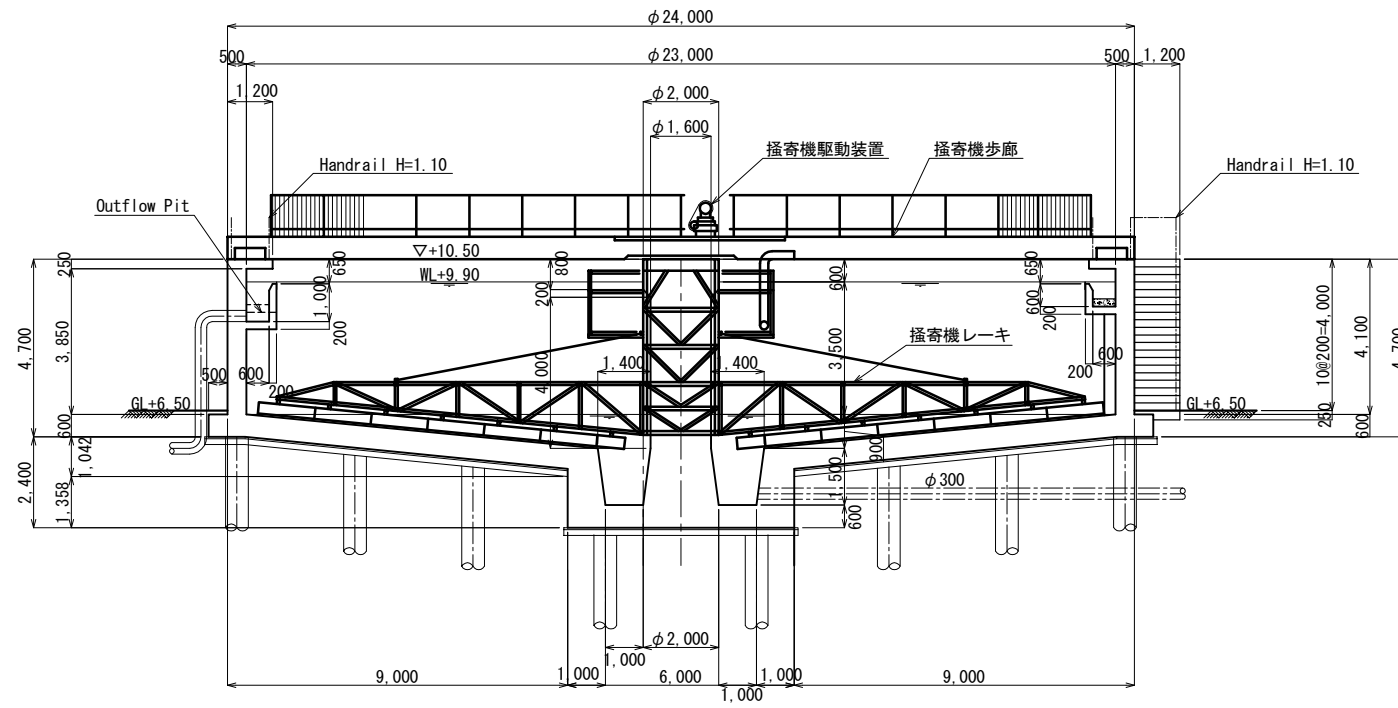
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Thickener Plan

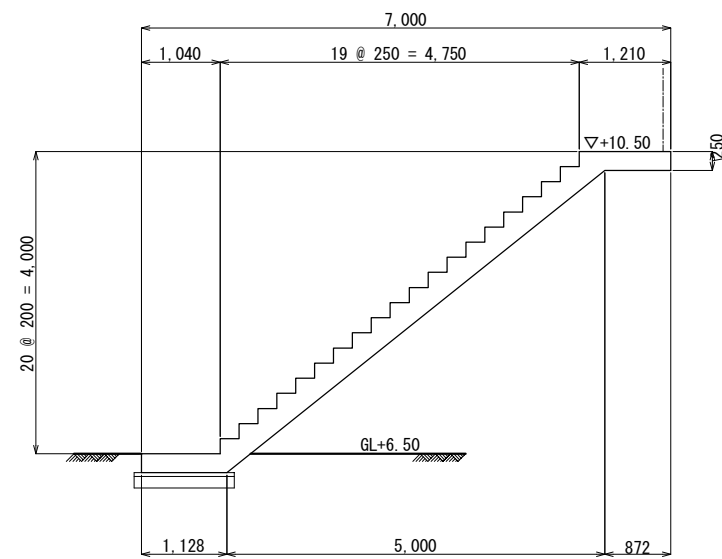


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Cross Section A-A

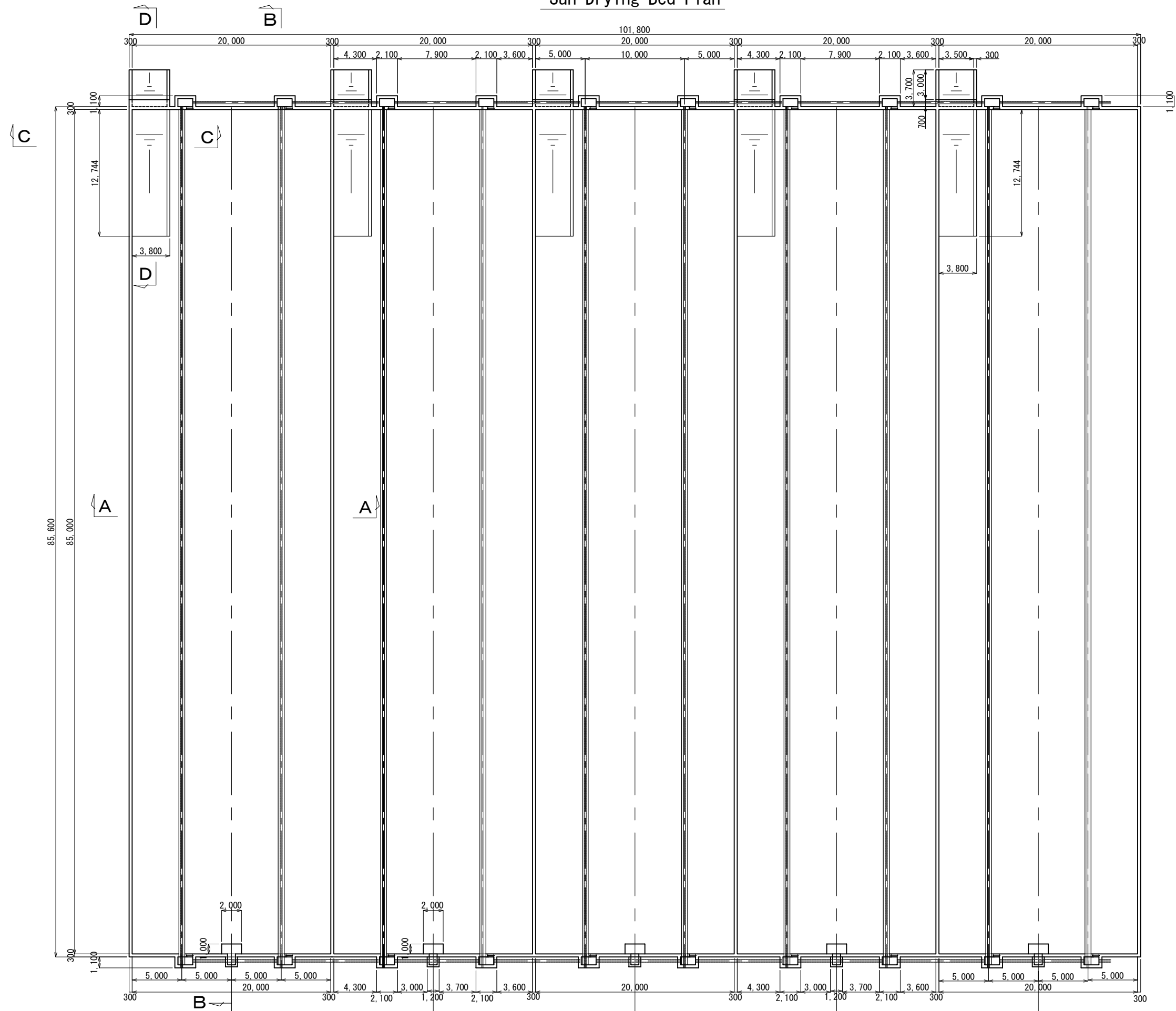


Cross Section B-B S=1:50



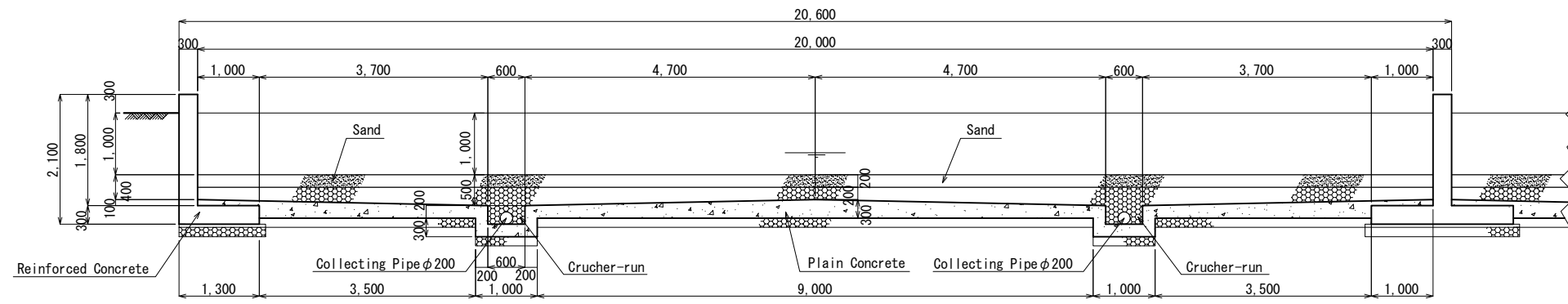
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Sun Drying Bed Plan



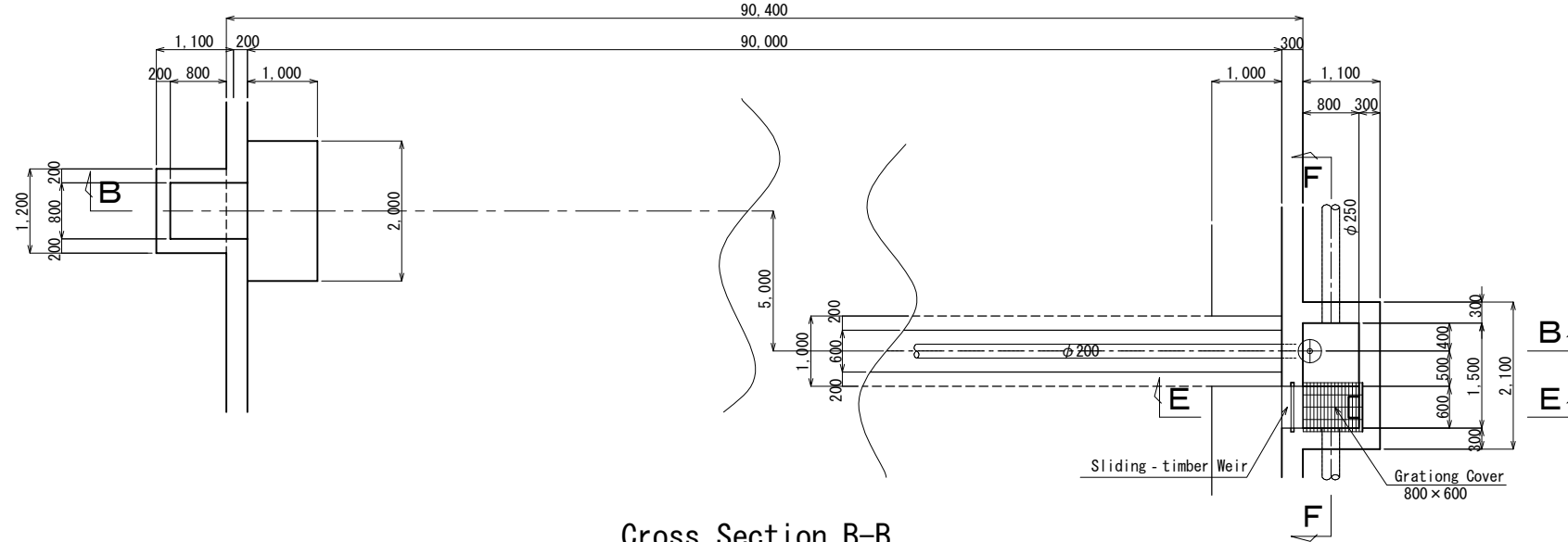
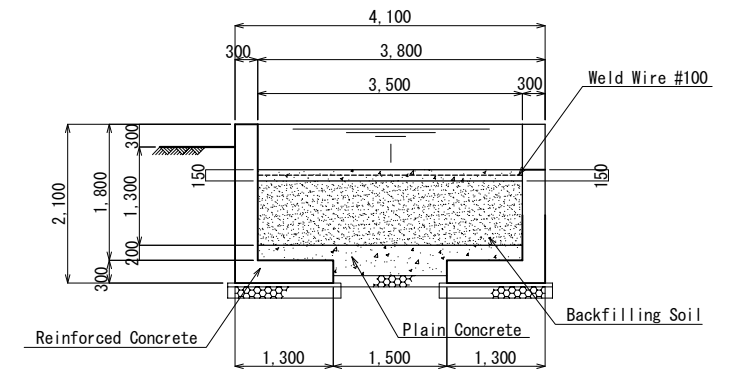
JICA Study Team							
	No.				THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date. NOV. 2011	Duong River Water Treatment Plant
						Scale 1/500	Sun Drying Bed Plan

Cross Section A-A



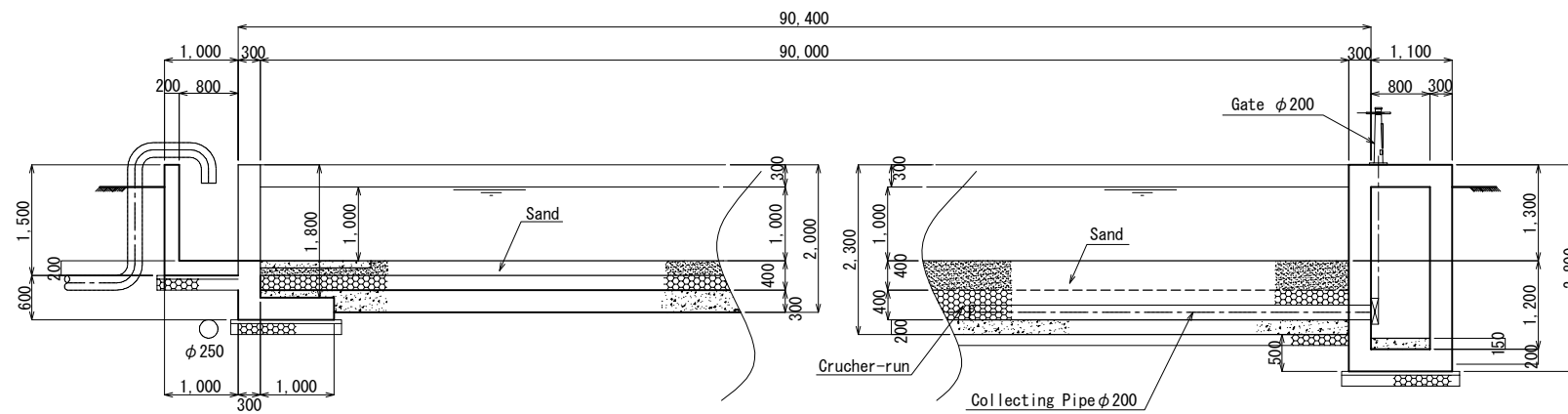
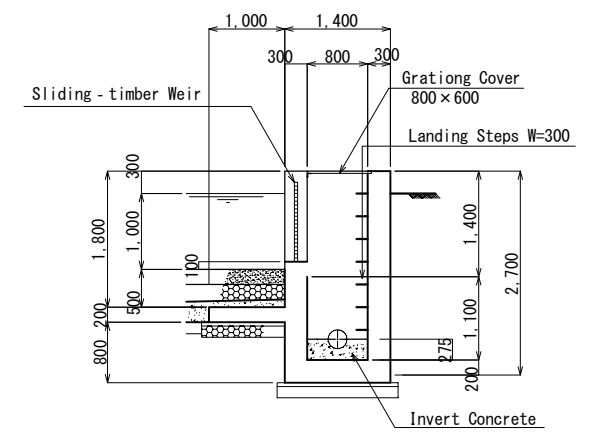
Plan

Cross Section C-C



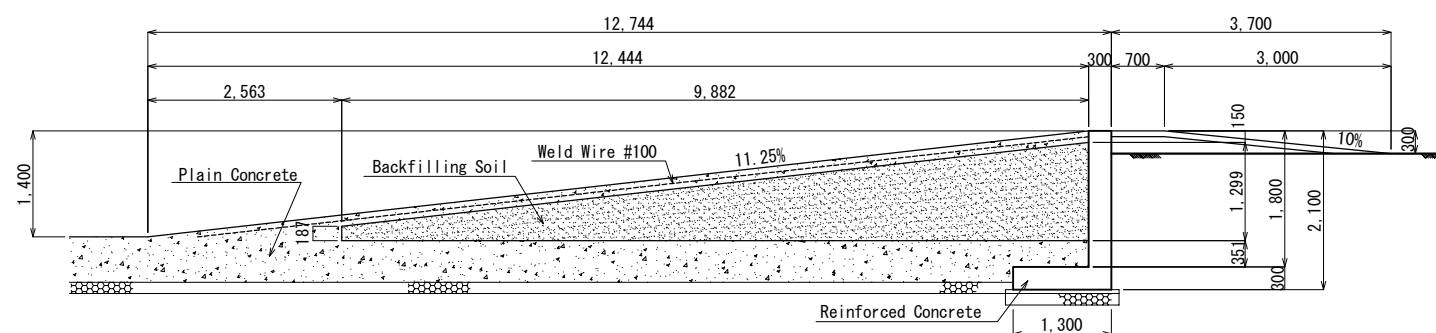
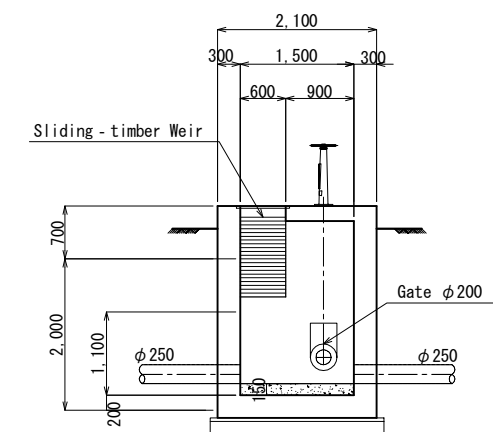
Cross Section B-B

Cross Section E-E



Cross Section D-D

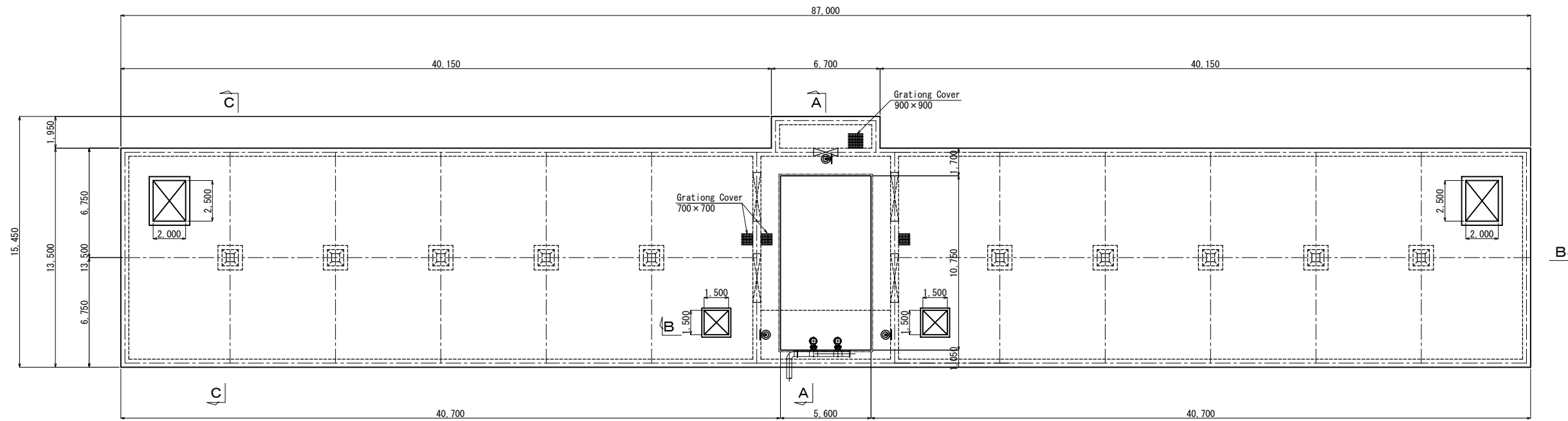
Cross Section F-F



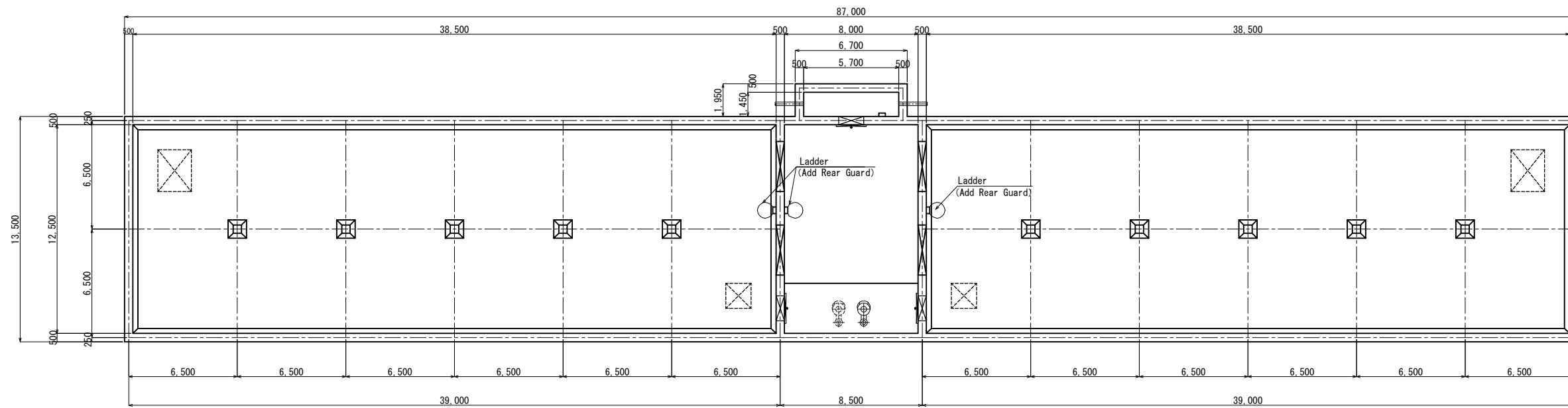
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Sun Drying Bed Drainage Pumping Well Plan

Upper Floor Plan



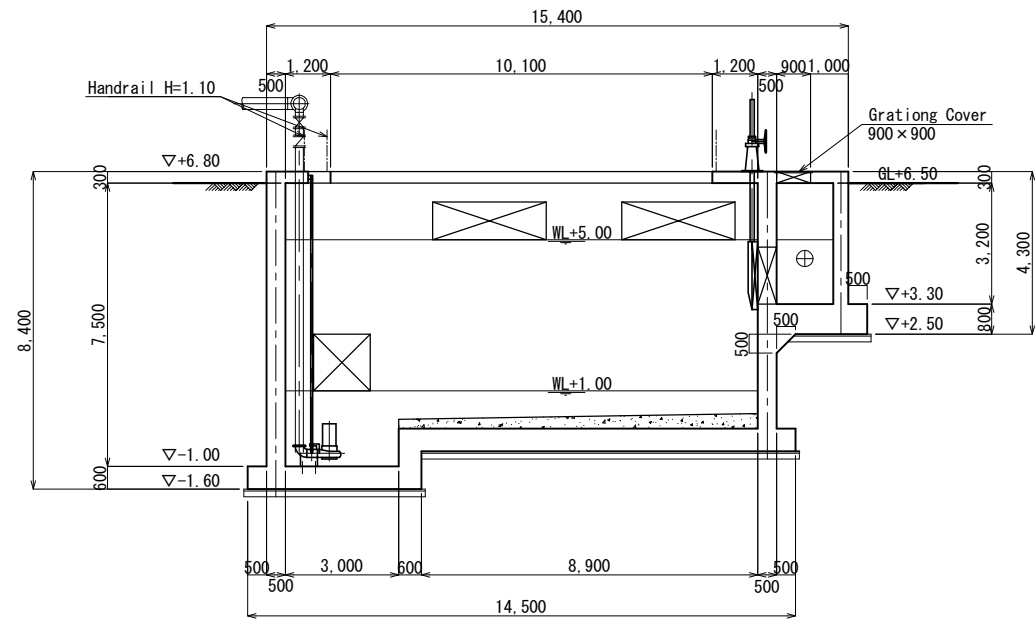
Lower Floor Plan



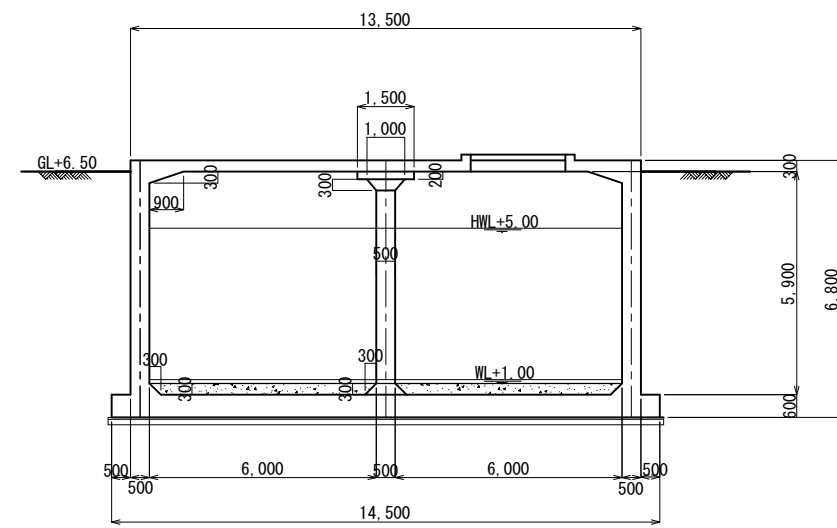
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Sun Drying Bed Drainage Pumping Well Section

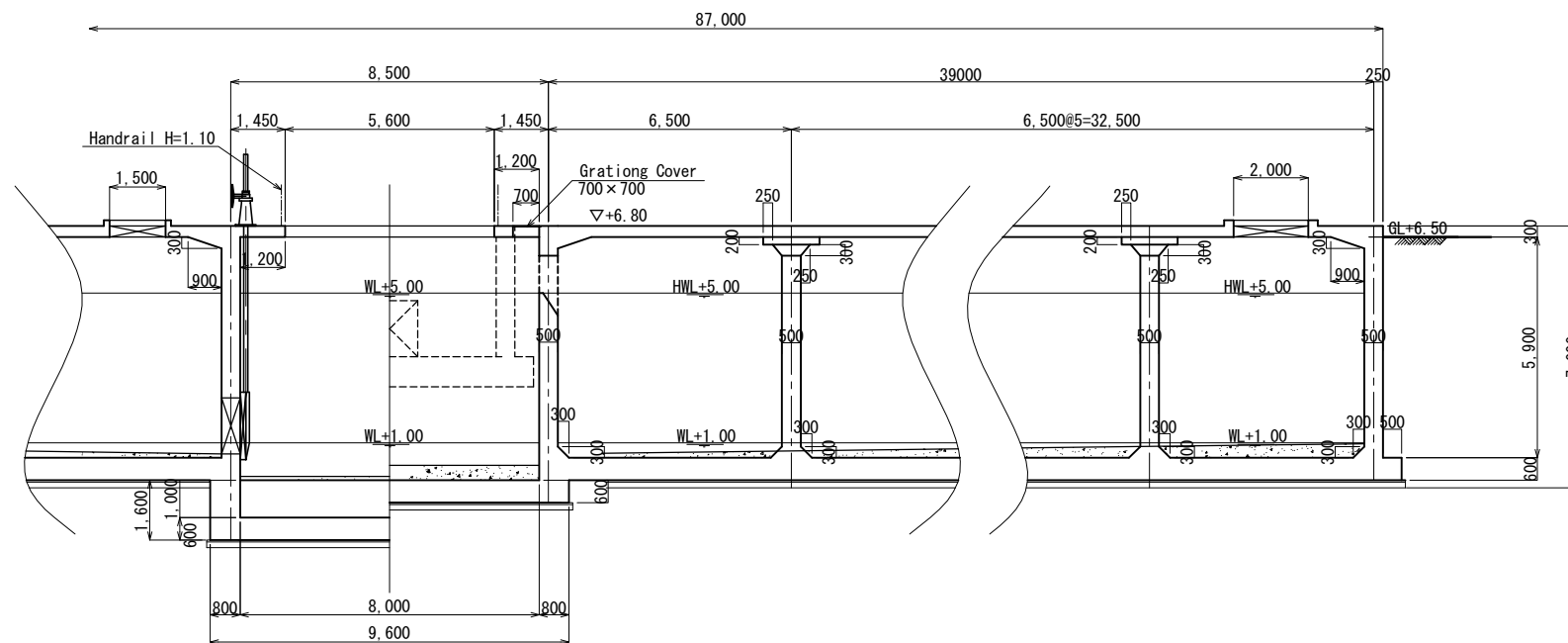
Cross Section A-A



Cross Section C-C

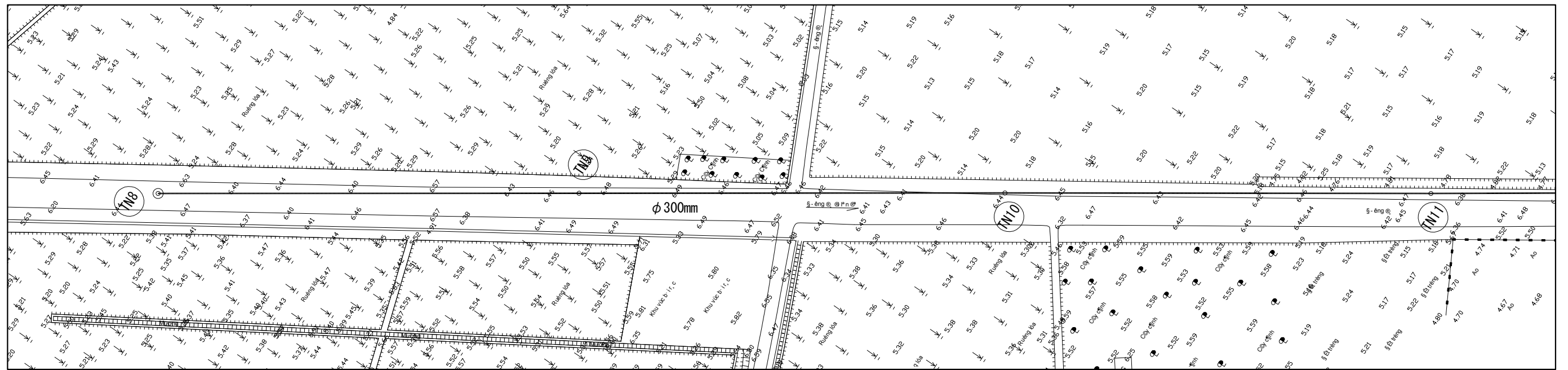
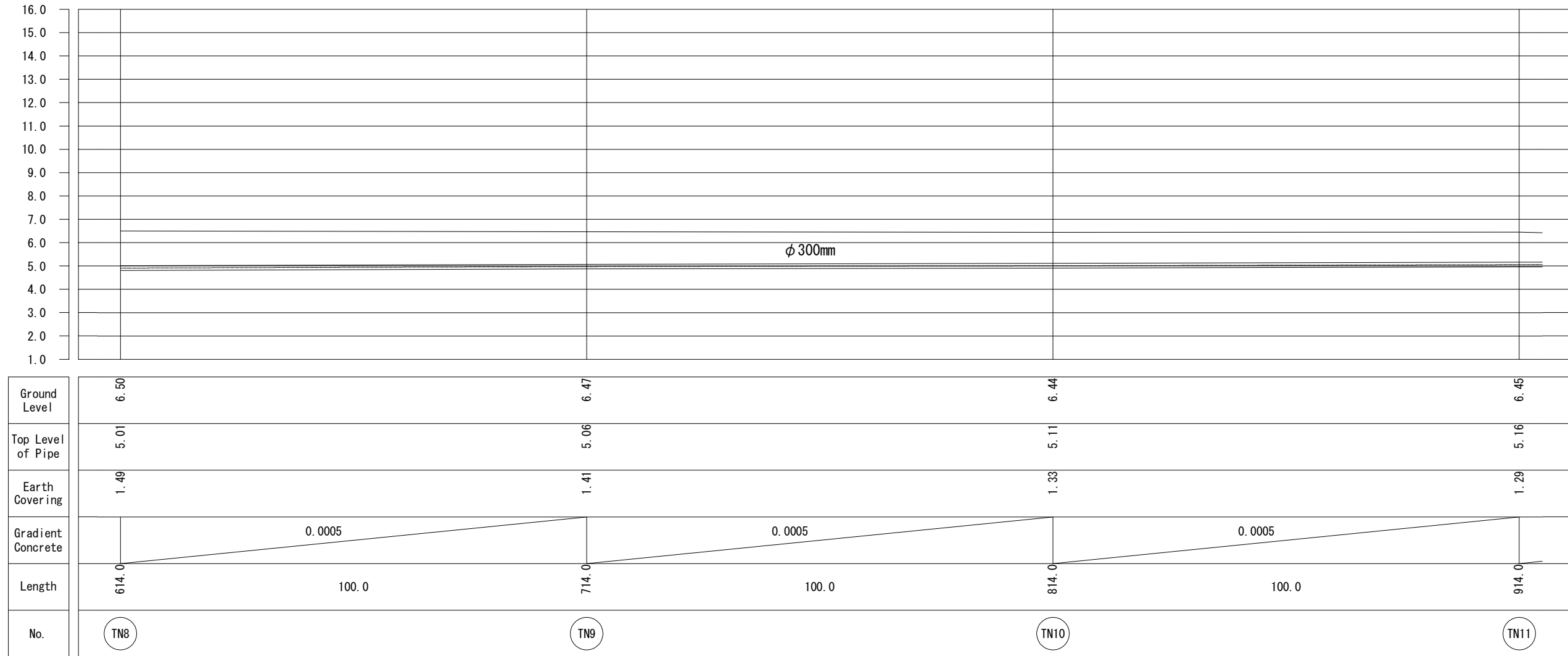


Cross Section B-B



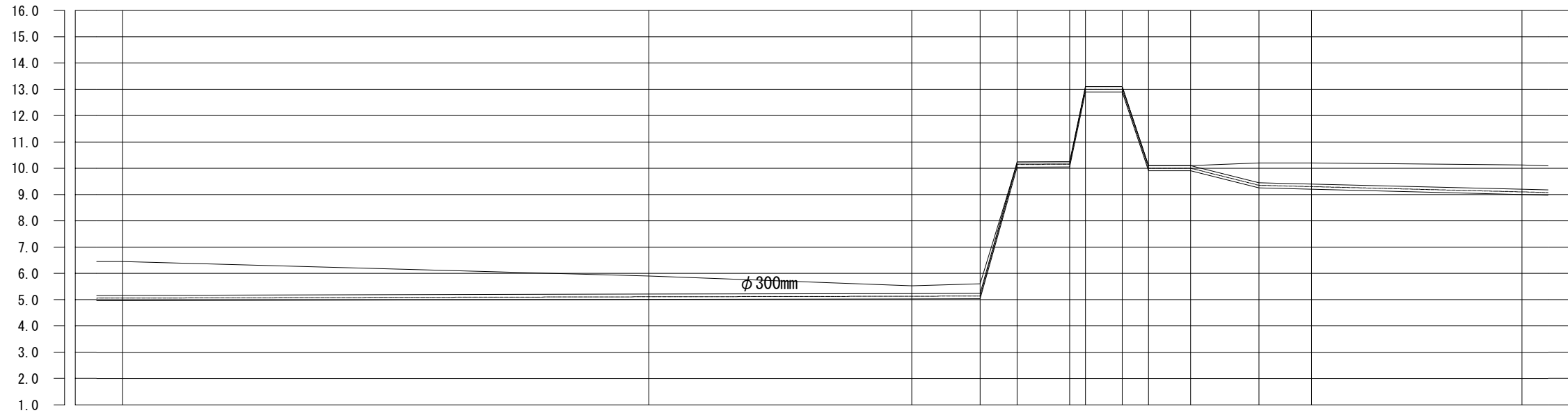
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Sun Drying Bed Drainage Pipe(1/5)

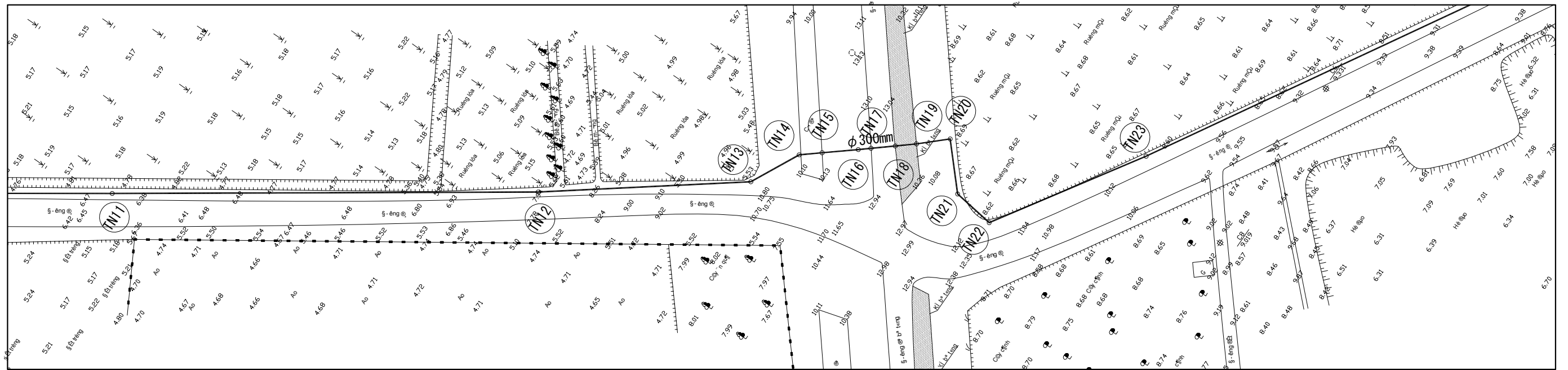


No.			
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Sun Drying Bed Drainage Pipe (2/5)

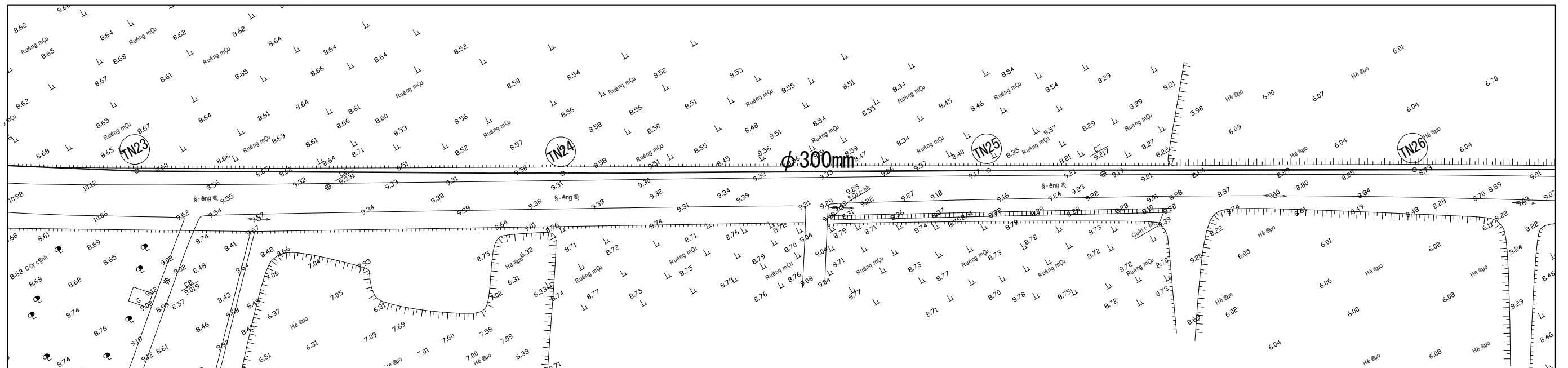
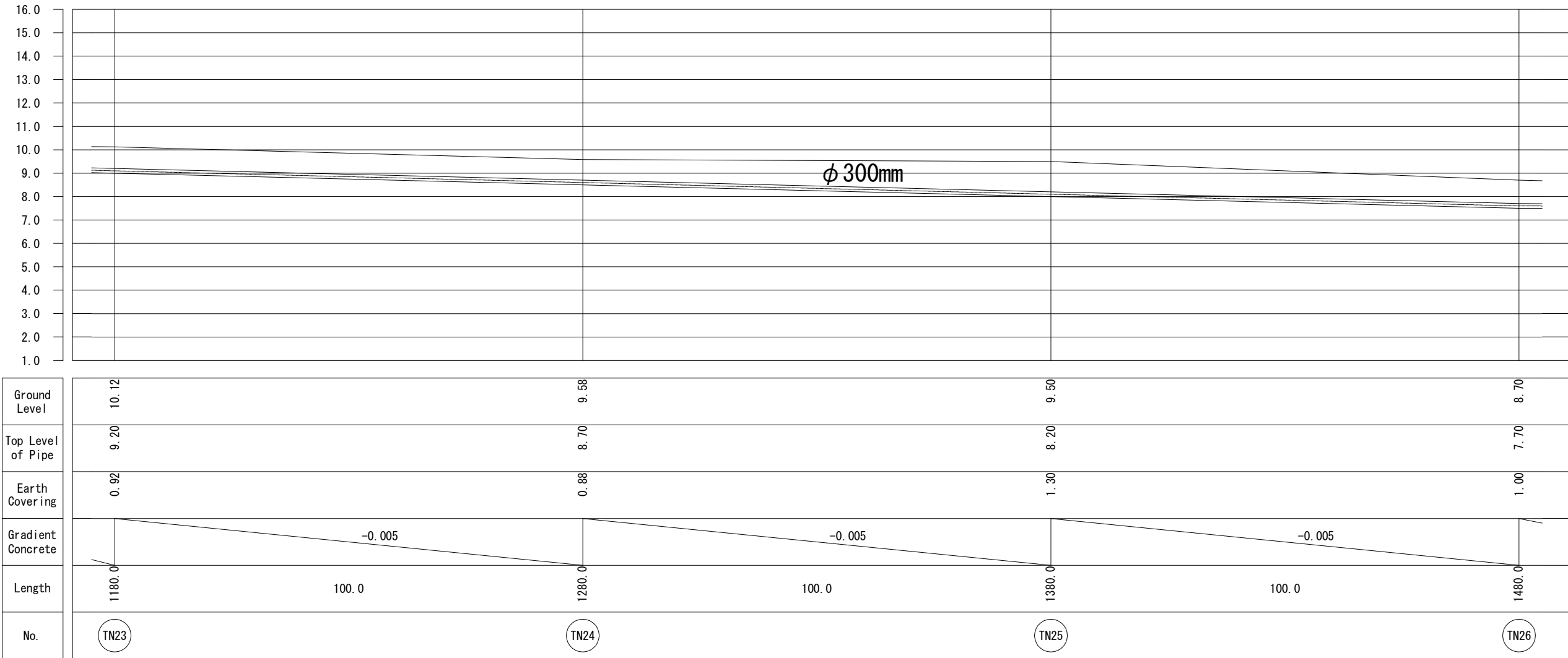


Ground Level	6.45	5.90	5.53	5.60	10.20	10.20	13.10	13.10	10.10	10.10	10.20	10.20	10.12								
Top Level of Pipe	5.16	5.21	5.23	5.24	10.24	10.25	13.10	13.10	10.10	10.10	9.45	9.40	9.20								
Earth Covering	1.29	0.69	0.30	0.36	0.04	0.05	0.00	0.00	0.00	0.00	0.75	0.80	0.92								
Gradient Concrete	0.0005		0.0005		1	0.05%	0.05%	-1	-0.05%	-0.05%	-0.05%	-0.005									
Length	914.0	100.0	1014.0	50.0	1064.0	13.0	1077.0	1084.0	10.0	1094.0	1097.0	1104.0	1109.0	8.0	1117.0	13.0	1130.0	10.0	1140.0	40.0	1180.0
No.	TN11		TN12		TN13	7.0	TN14	TN15	3.0	TN16	TN17	7.0	TN18	TN19	5.0	TN20	TN21	TN22	TN23		



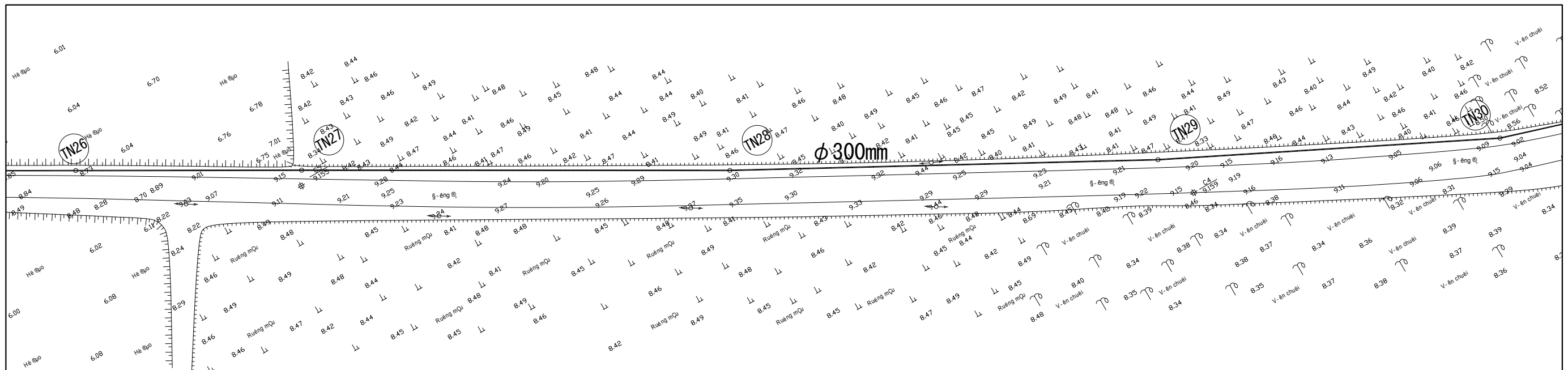
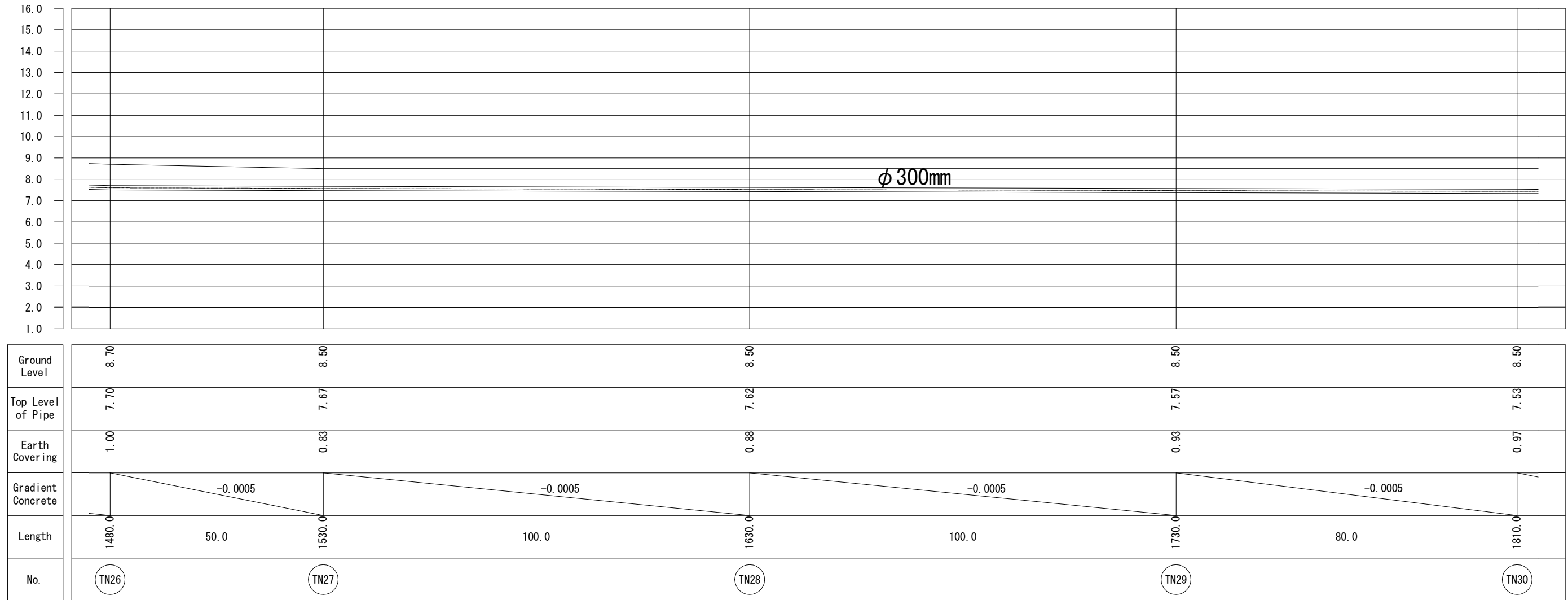
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Sun Drying Bed Drainage Pipe (3/5)



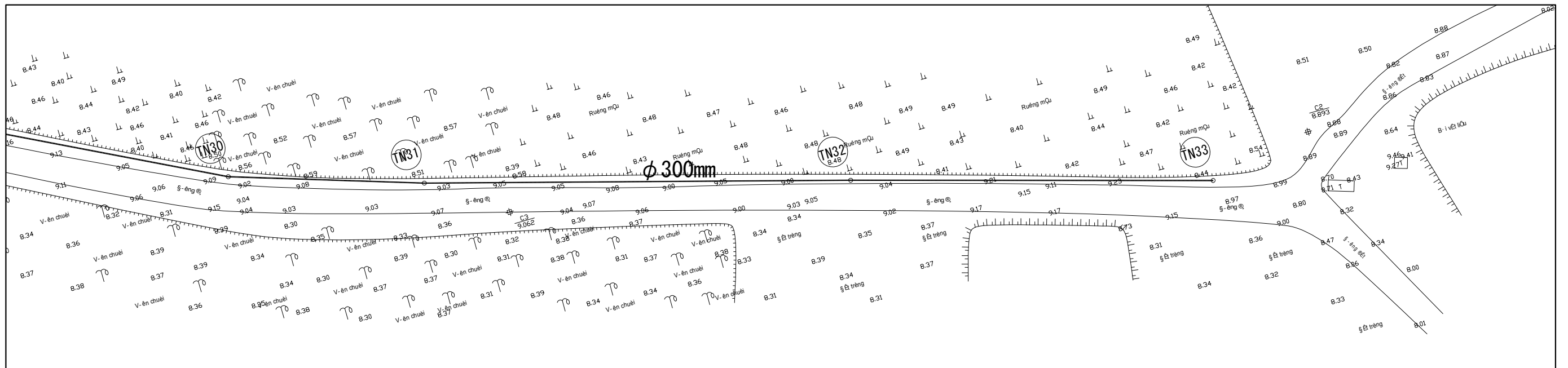
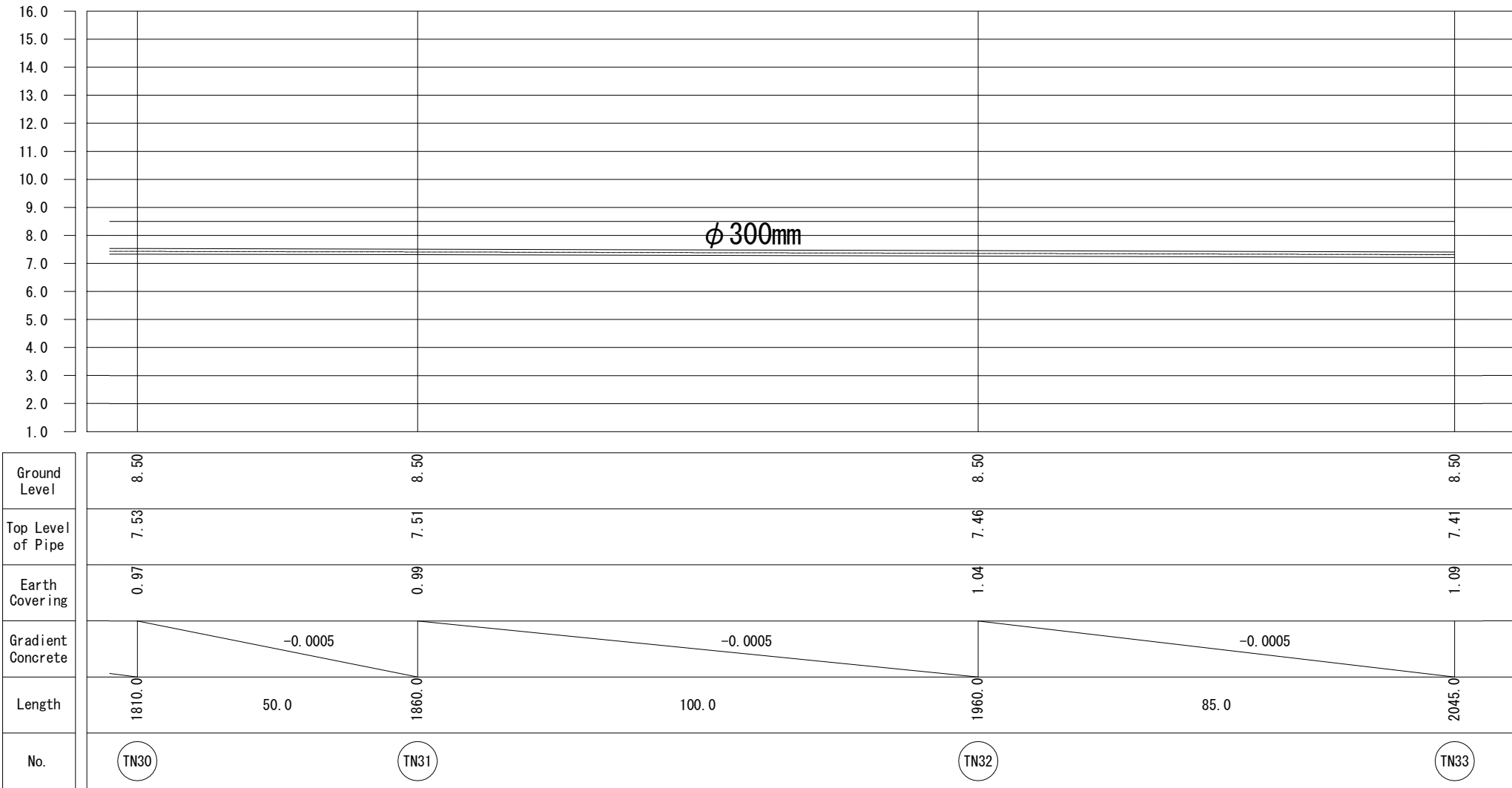
No.			
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Sun Drying Bed Drainage Pipe (4/5)



No.			
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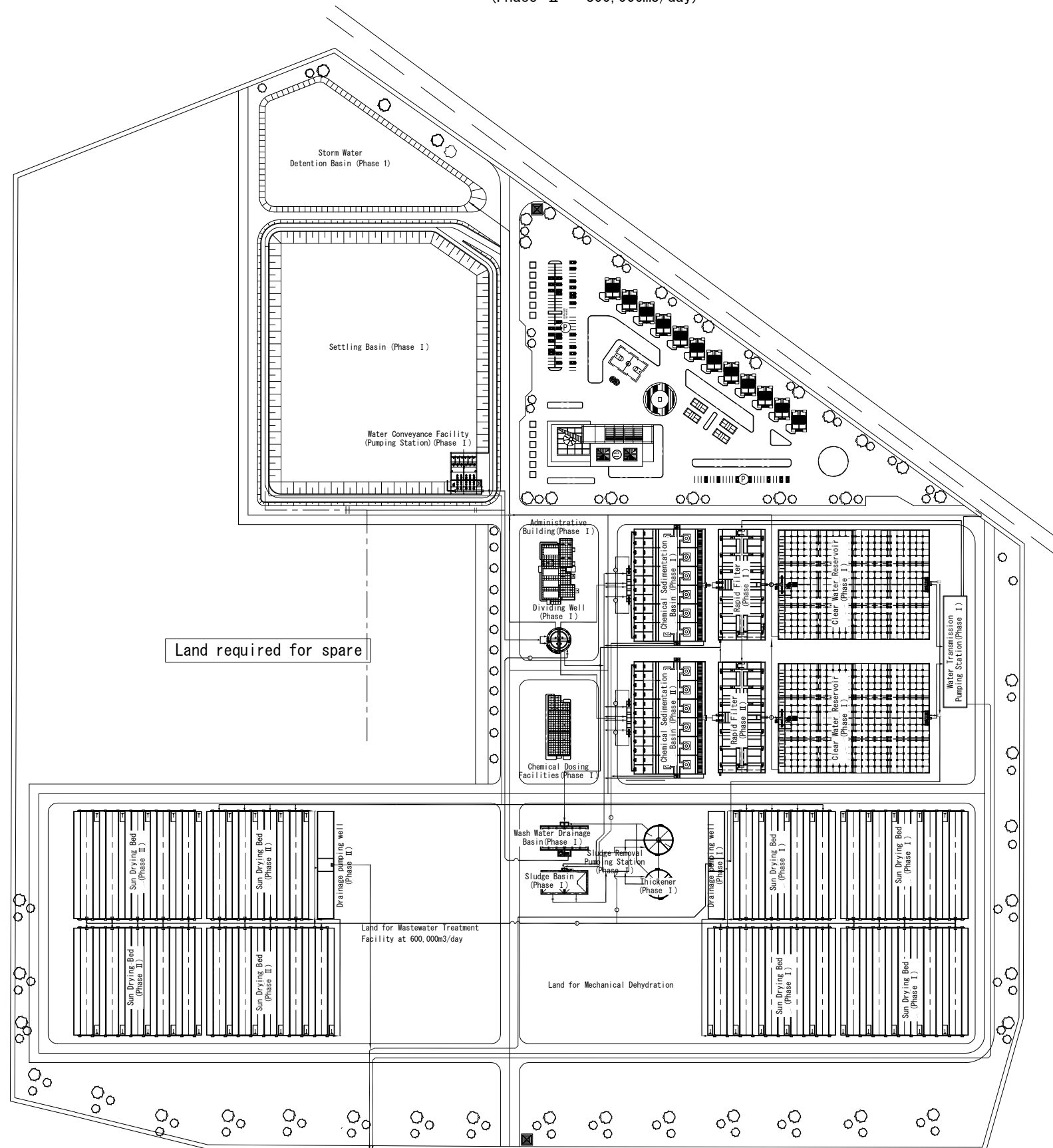
Sun Drying Bed Drainage Pipe (5/5)



No.			
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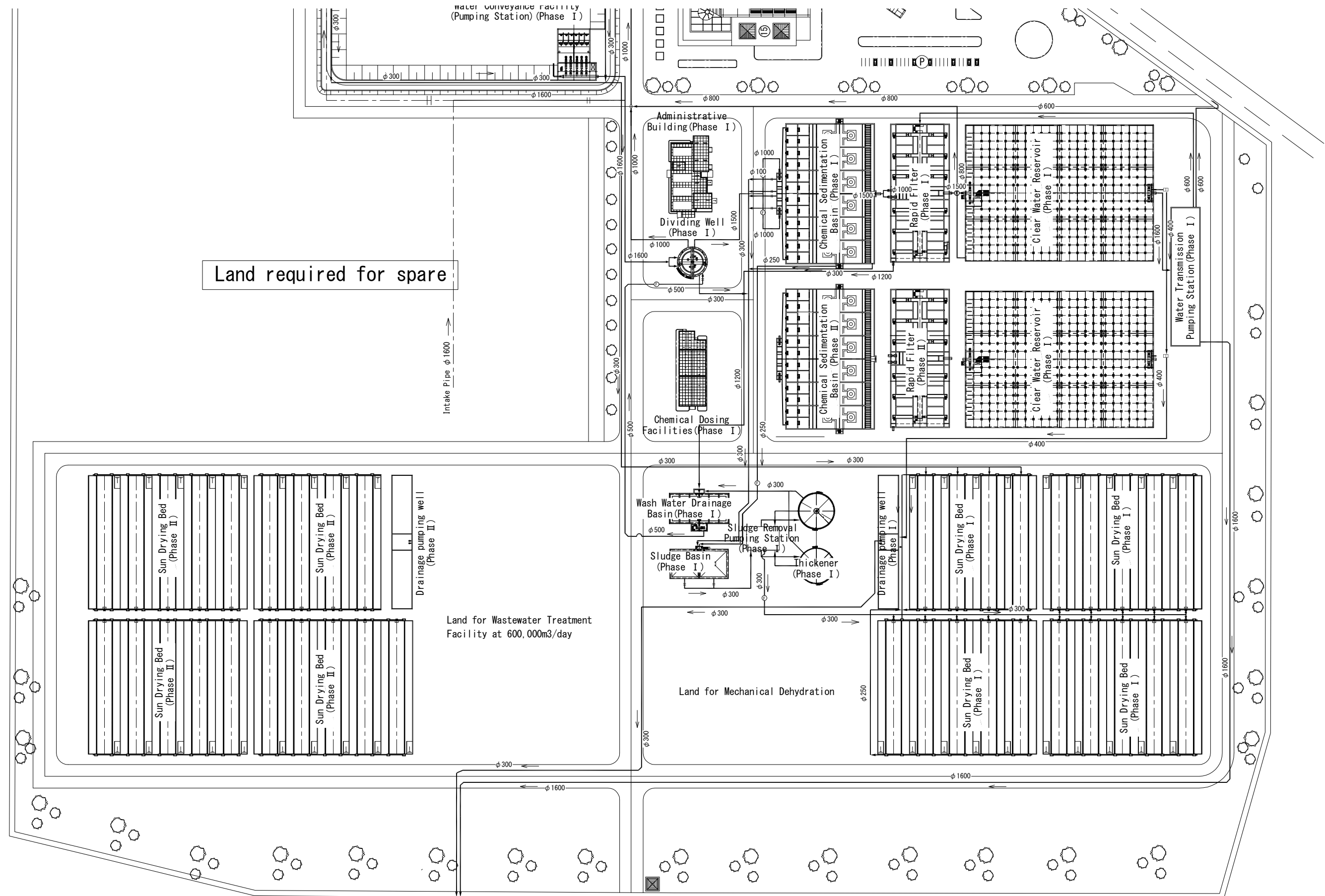
Connecting Pipeline Plan (Overall)

(Phase II 300,000m³/day)



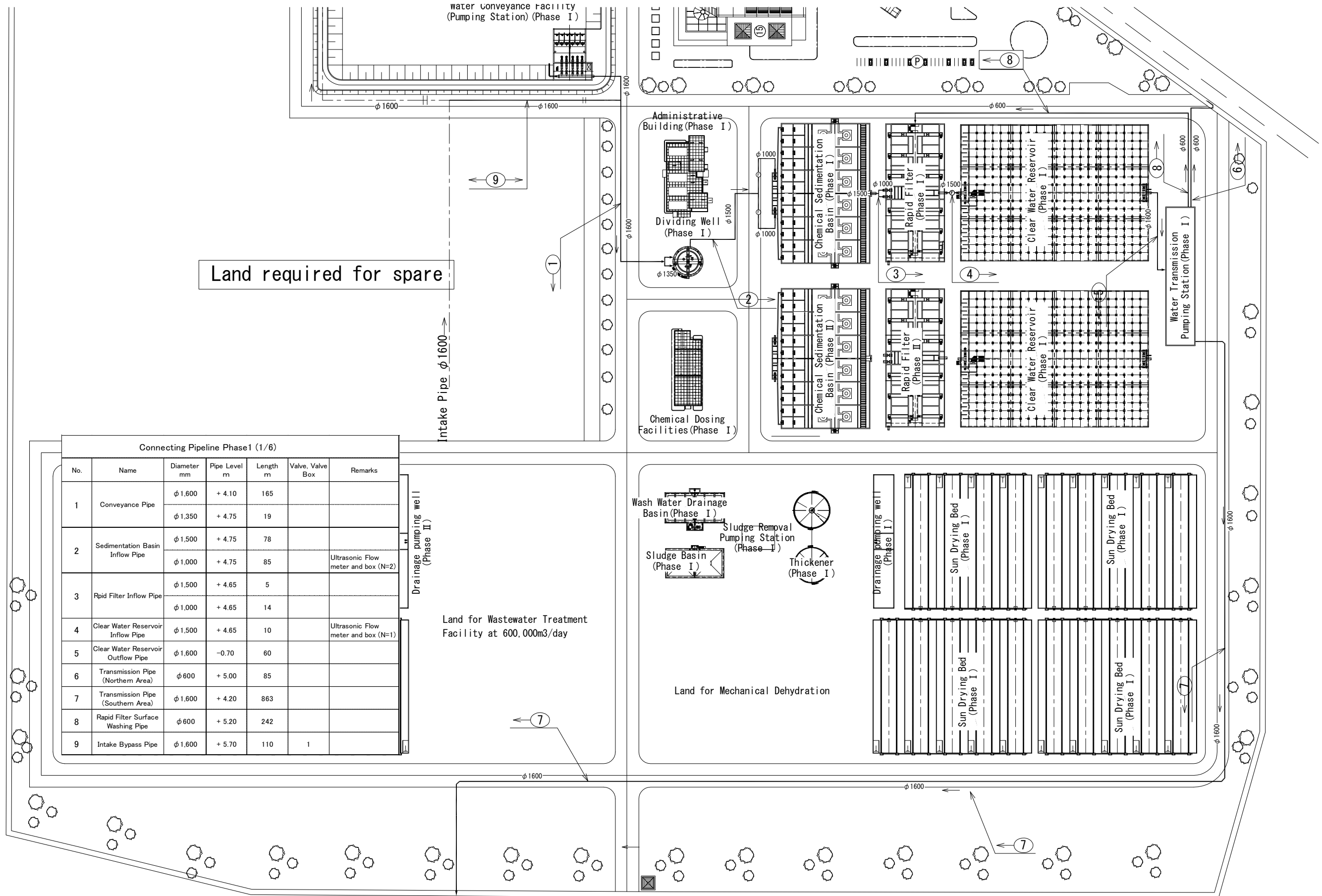
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Connecting Pipeline Plan (Phase1) Overall



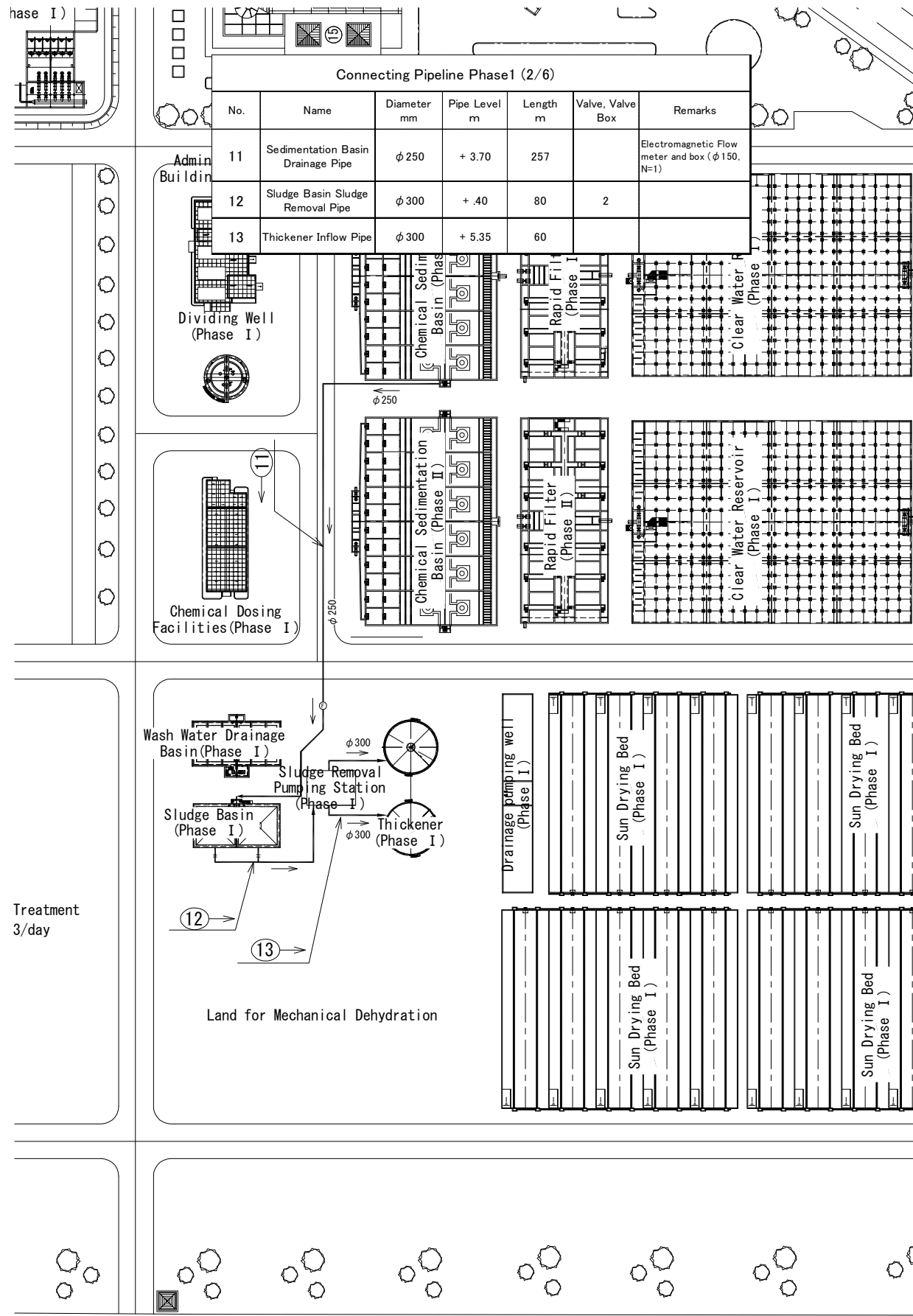
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Connecting Pipeline Plan (Phase 1) 1/6



No.			
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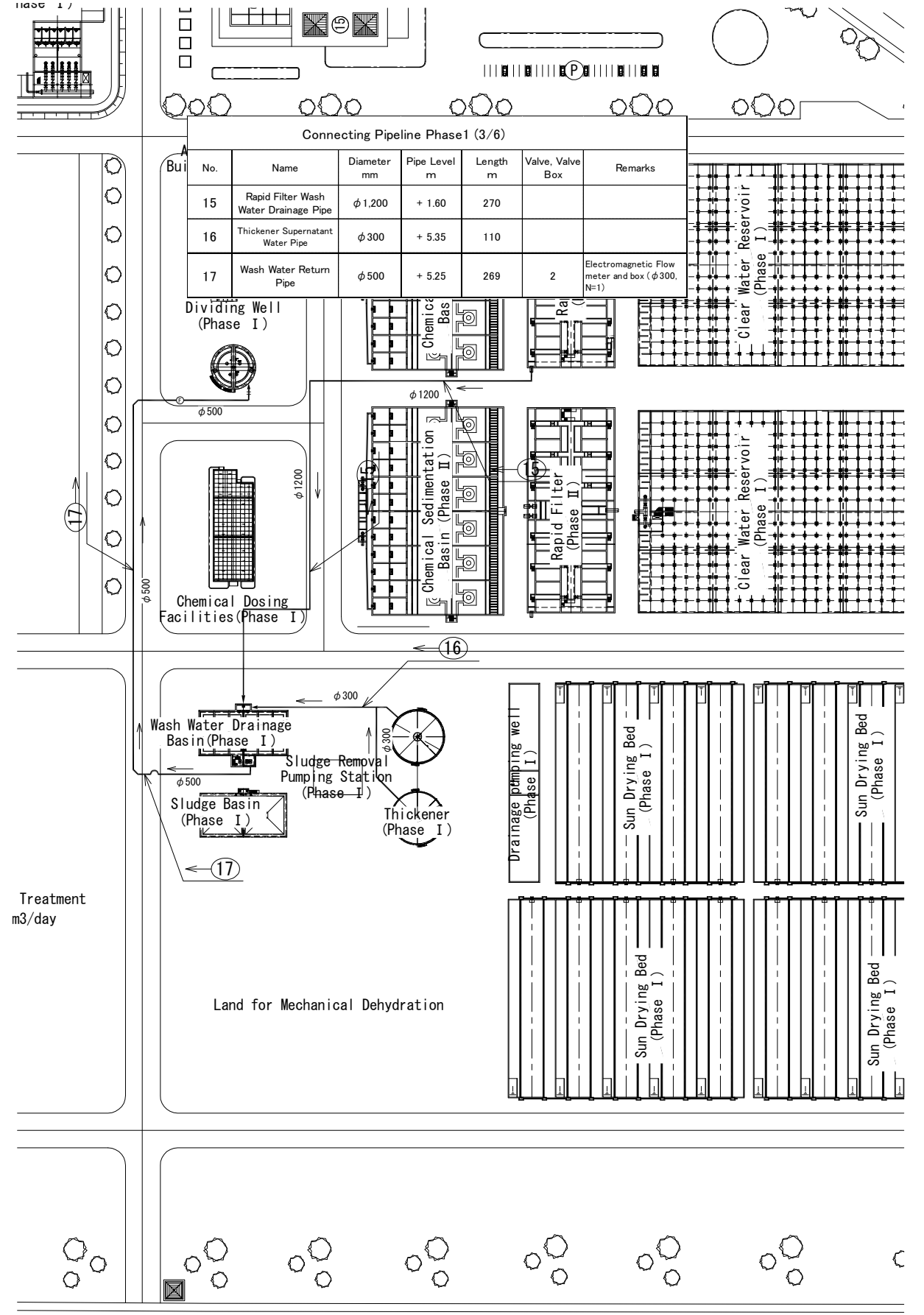
Connecting Pipeline Plan (Phase 1) 2/6



Treatment
3/day

Land for Mechanical Dehydration

Connecting Pipeline Plan (Phase 1) 3/6

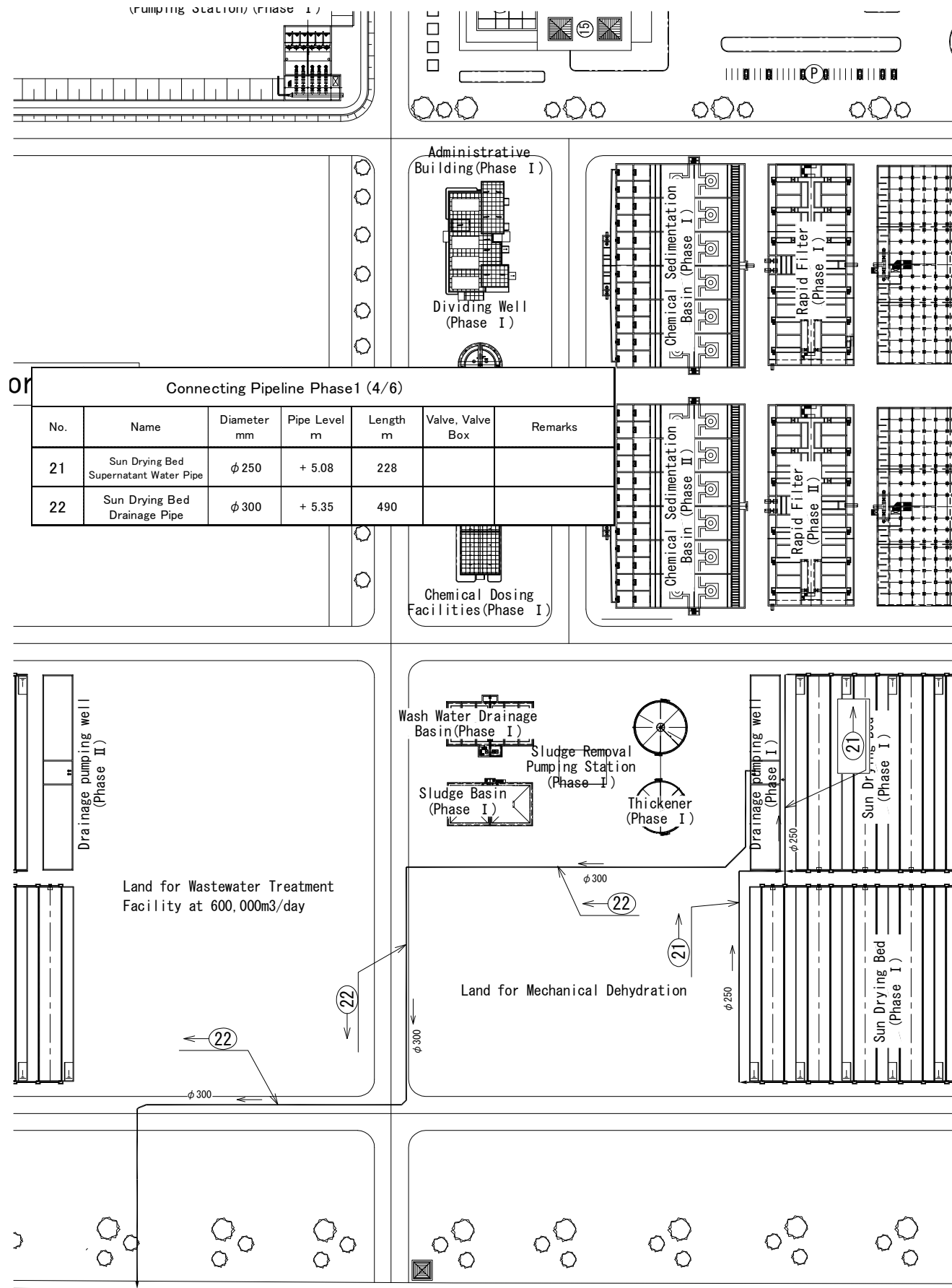


Treatment
m3/day

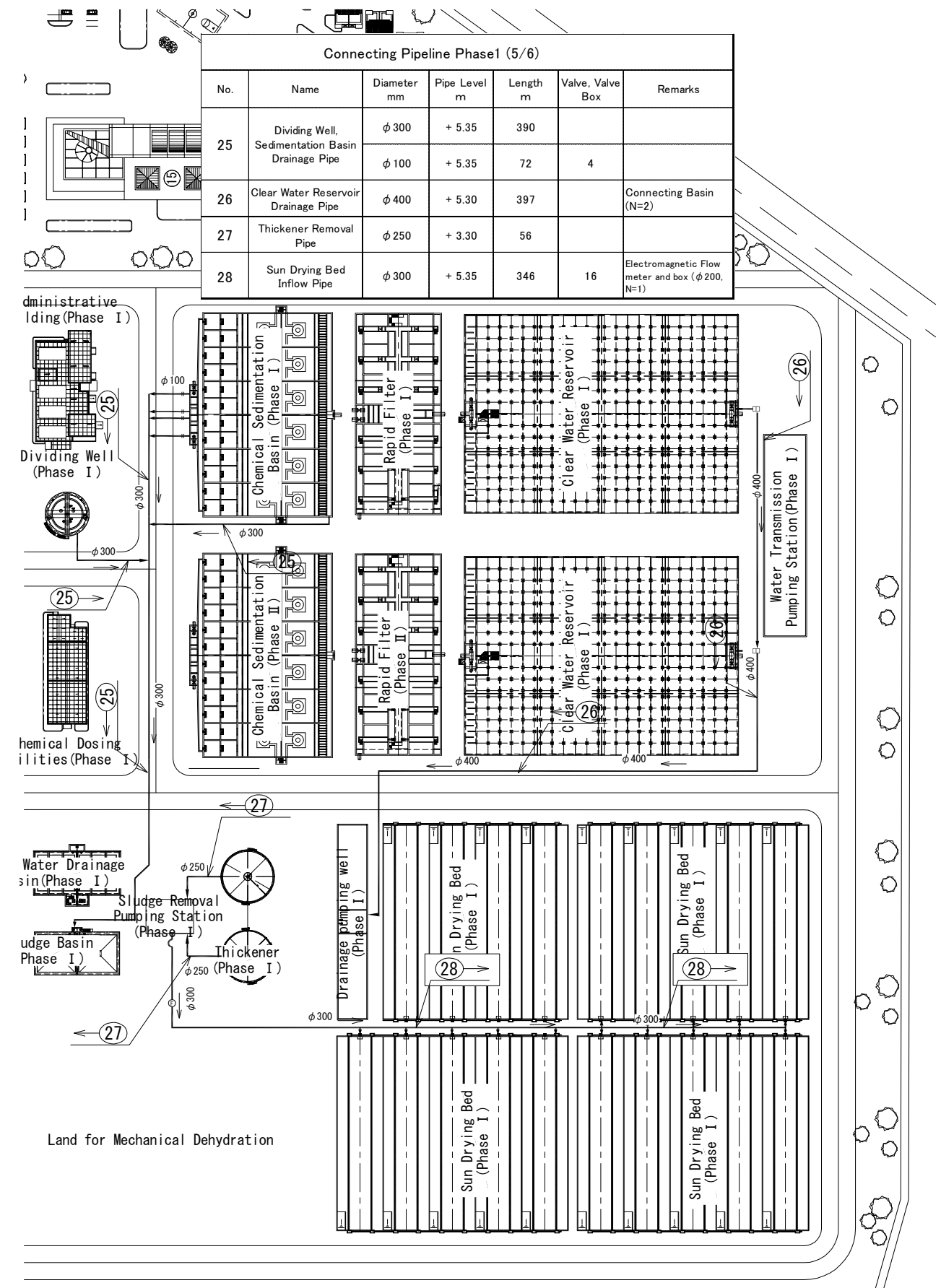
Land for Mechanical Dehydration

No.			
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Connecting Pipeline Plan (Phase 1) 4/6



Connecting Pipeline Plan (Phase 1) 5/6



No.	Name	Diameter mm	Pipe Level m	Length m	Valve, Valve Box	Remarks
25	Dividing Well, Sedimentation Basin Drainage Pipe	φ 300	+ 5.35	390		
		φ 100	+ 5.35	72	4	
26	Clear Water Reservoir Drainage Pipe	φ 400	+ 5.30	397		Connecting Basin (N=2)
27	Thickener Removal Pipe	φ 250	+ 3.30	56		
28	Sun Drying Bed Inflow Pipe	φ 300	+ 5.35	346	16	Electromagnetic Flow meter and box (φ 200, N=1)

No.	Name	Diameter mm	Pipe Level m	Length m	Valve, Valve Box	Remarks
21	Sun Drying Bed Supernatant Water Pipe	φ 250	+ 5.08	228		
22	Sun Drying Bed Drainage Pipe	φ 300	+ 5.35	490		

No.			
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Connecting Pipeline Plan (Phase 1) 6/6

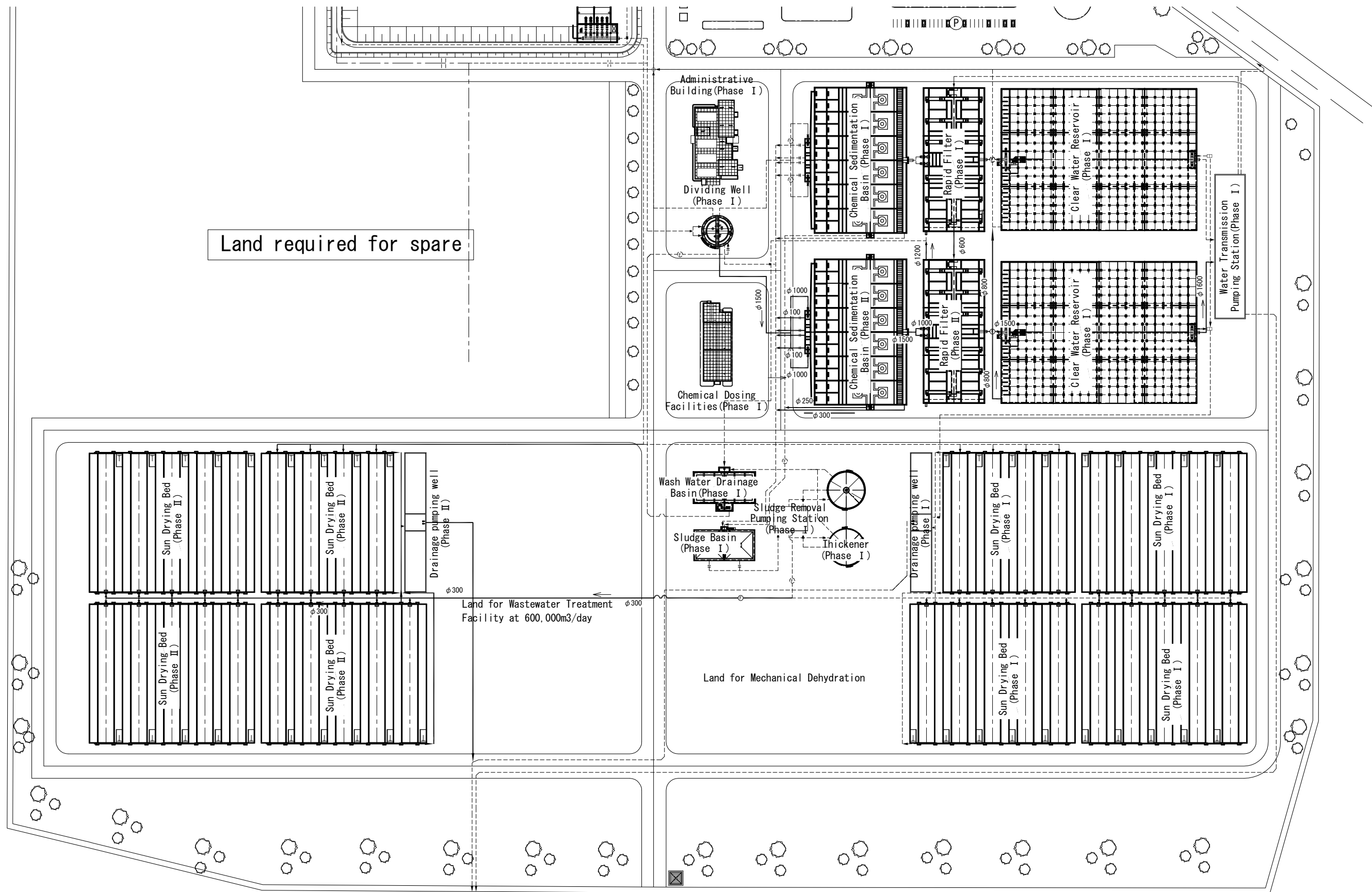


Land required for spare

Connecting Pipeline Phase 1 (6/6)						
No.	Name	Diameter mm	Pipe Level m	Length m	Valve, Valve Box	Remarks
31	Dividing Well, Clear Water Reservoir Overflow Pipe	φ 1,000	+ 5.00	390		Connecting Basin (N=1)
		φ 800	+ 5.10	310		
32	Settling Basin Drainage Pipe	φ 300	+ 5.35	1,084	4	

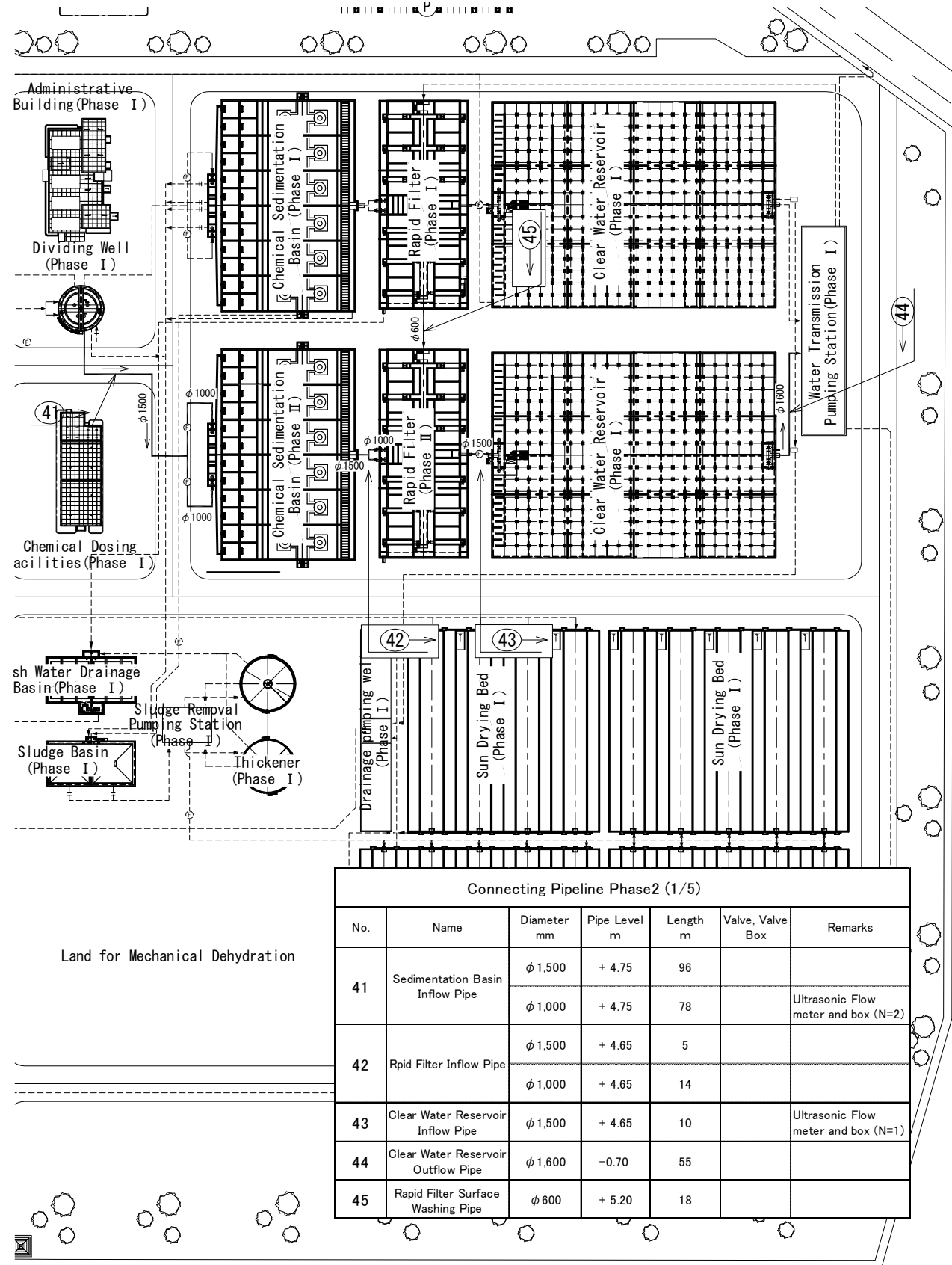
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Connecting Pipeline Plan (Phase 2) Overall

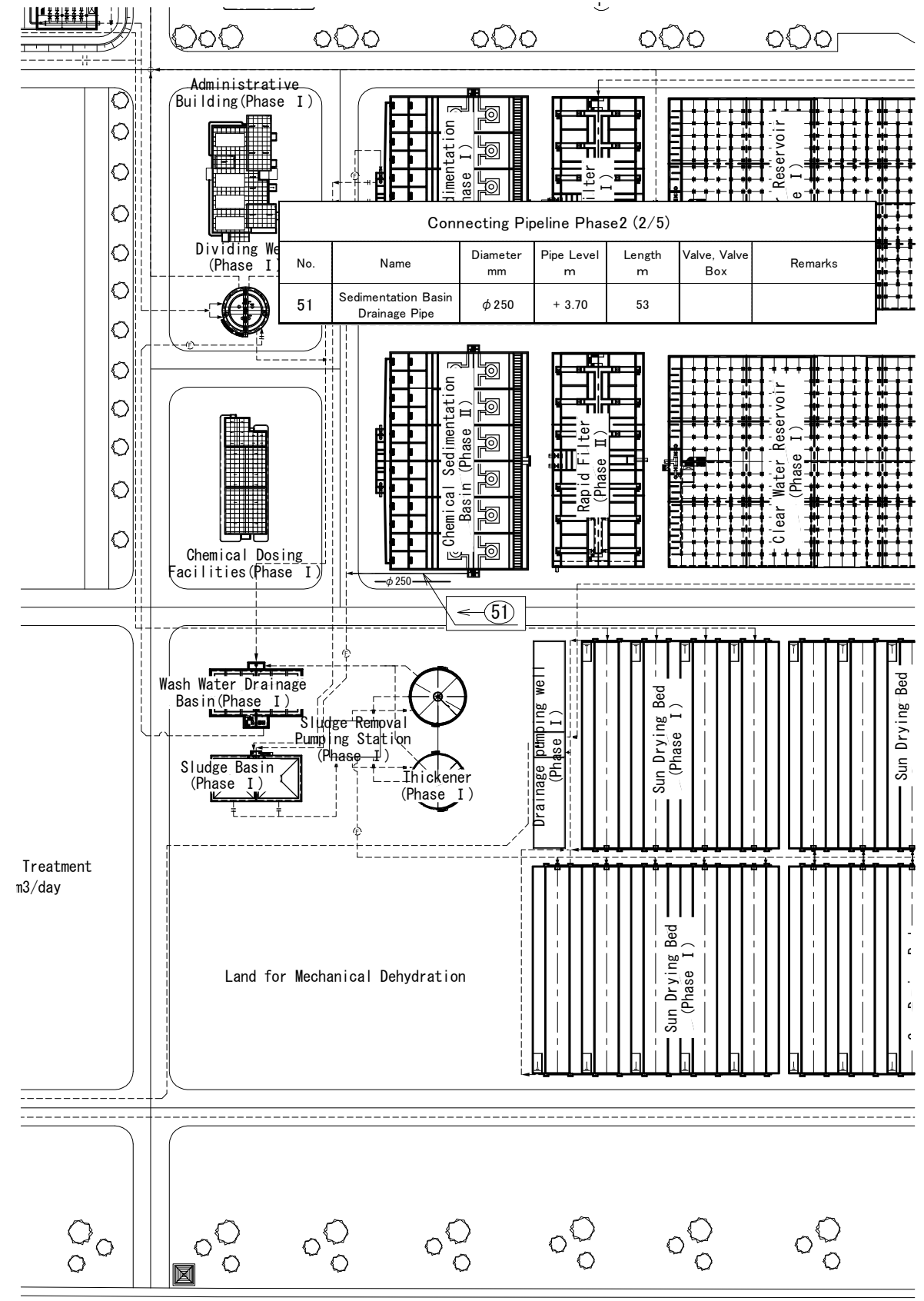


No.			
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Connecting Pipeline Plan (Phase 2) 1/5

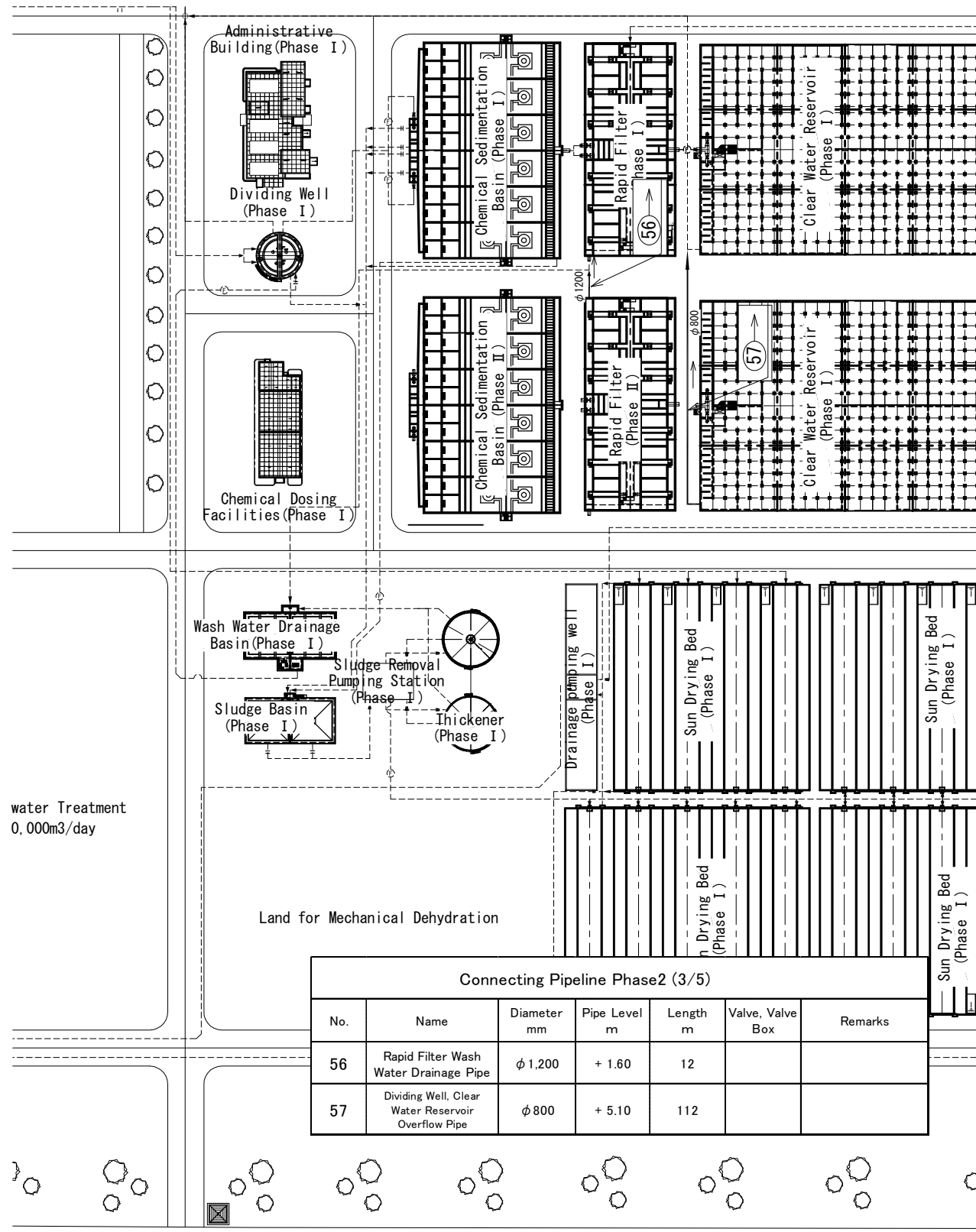


Connecting Pipeline Plan (Phase 2) 2/5

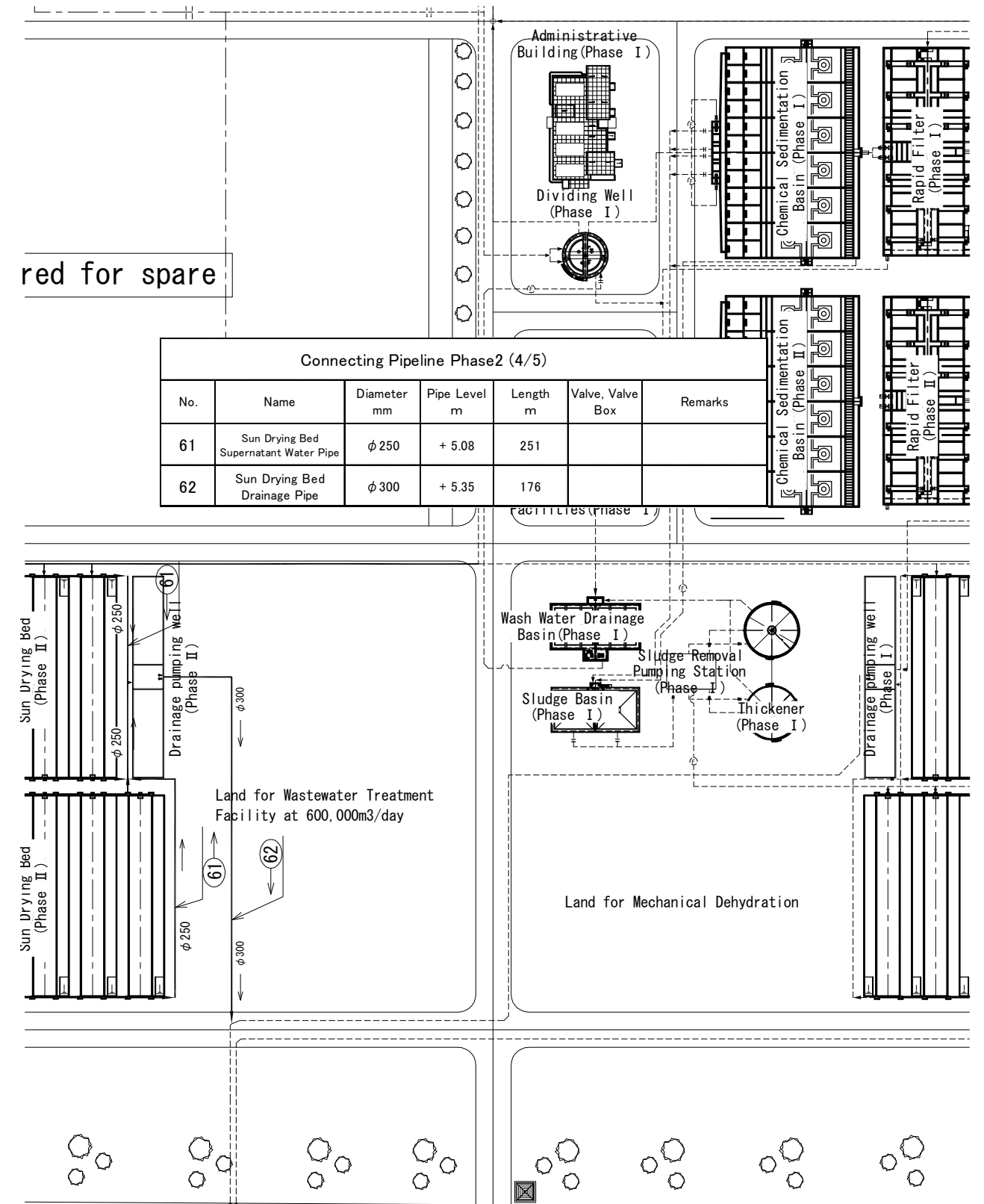


No.			
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Connecting Pipeline Plan (Phase 2) 3/5



Connecting Pipeline Plan (Phase 2) 4/5



water Treatment
0,000m³/day

Land for Mechanical Dehydration

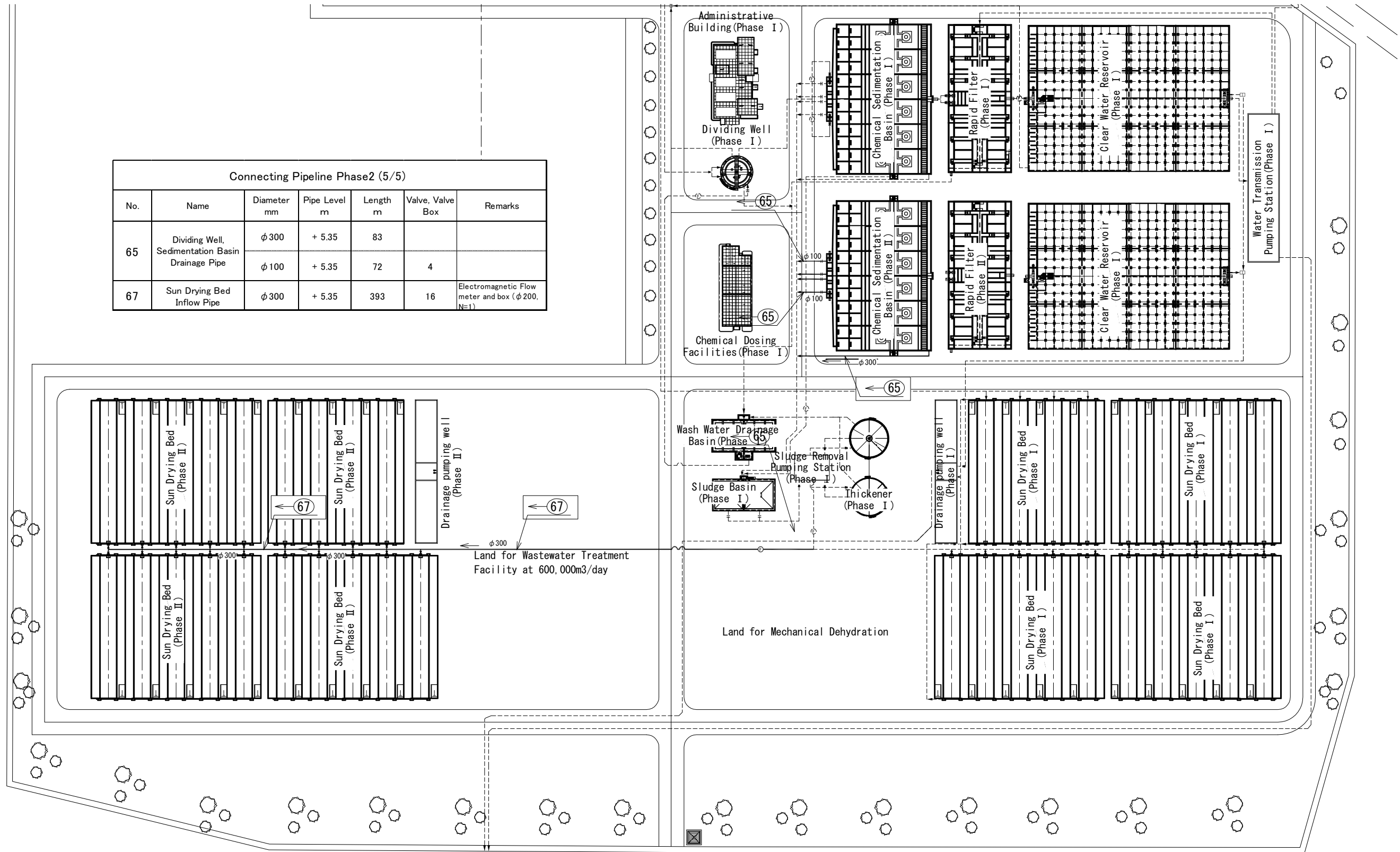
Land for Wastewater Treatment
Facility at 600,000m³/day

Land for Mechanical Dehydration

No.			
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Connecting Pipeline Plan (Phase 2) 5/5

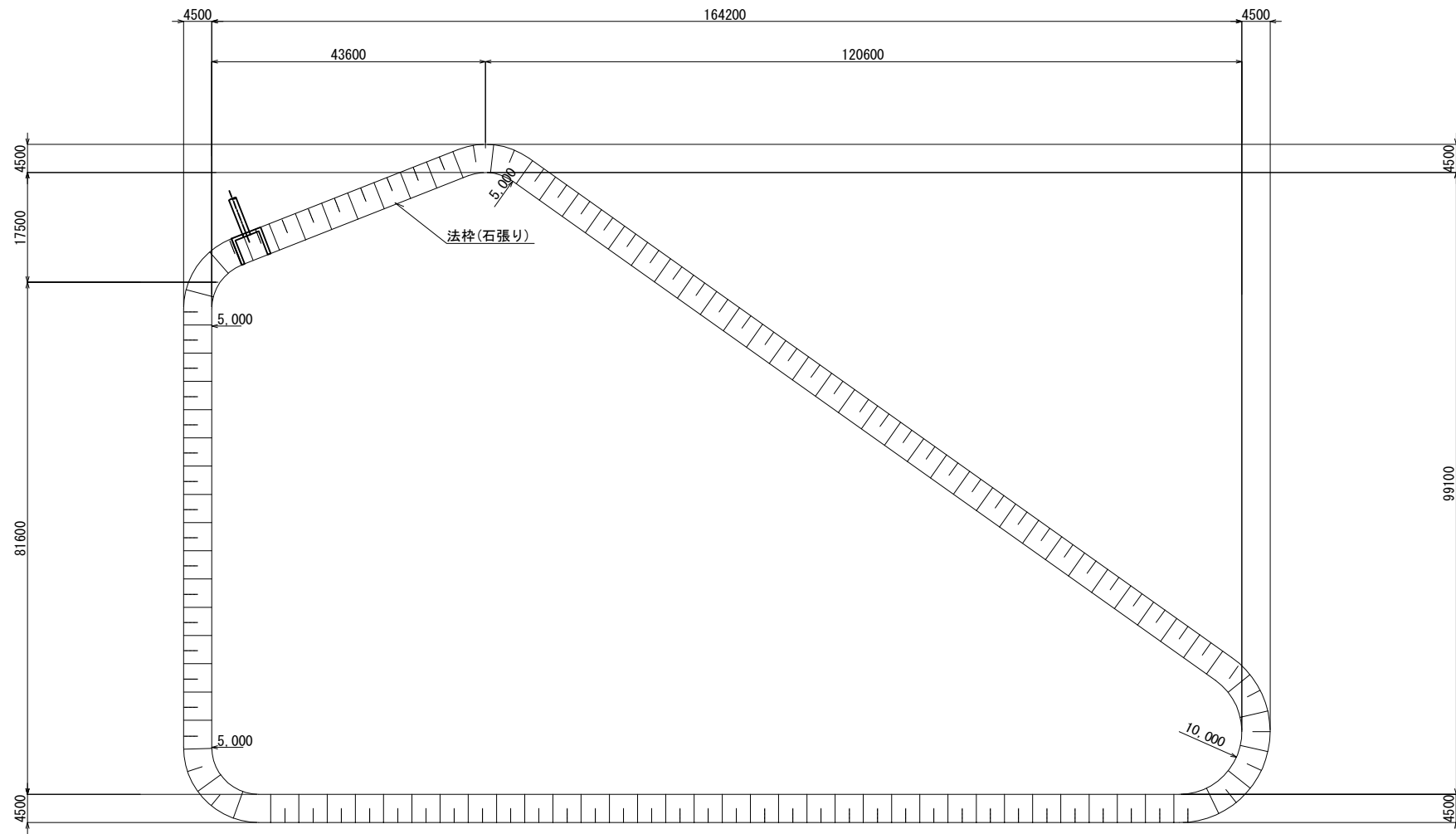
Connecting Pipeline Phase2 (5/5)						
No.	Name	Diameter mm	Pipe Level m	Length m	Valve, Valve Box	Remarks
65	Dividing Well, Sedimentation Basin Drainage Pipe	φ 300	+ 5.35	83		
		φ 100	+ 5.35	72	4	
67	Sun Drying Bed Inflow Pipe	φ 300	+ 5.35	393	16	Electromagnetic Flow meter and box (φ 200, N=1)



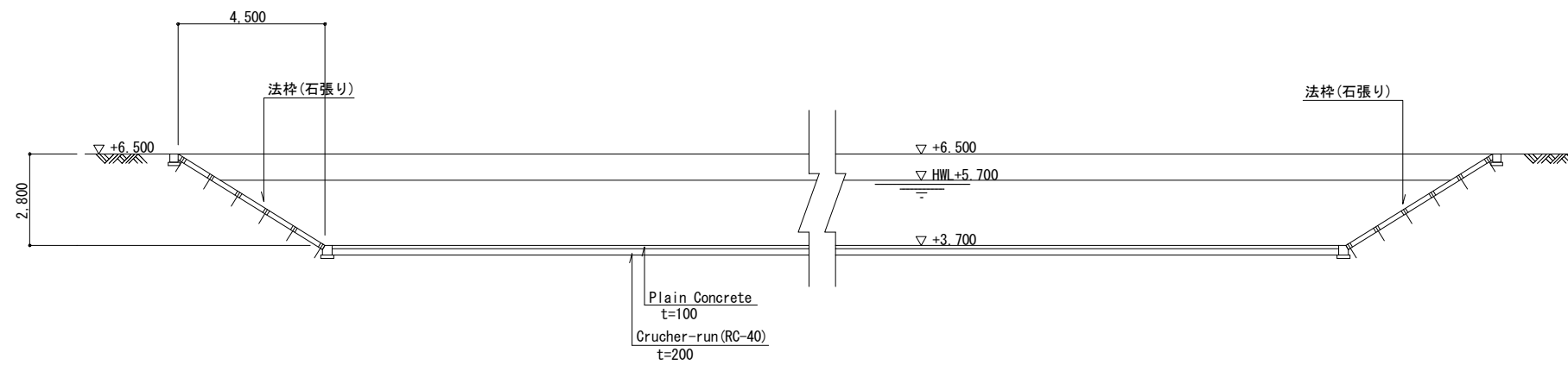
No.			
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Stormwater pond

Plan S=1/500



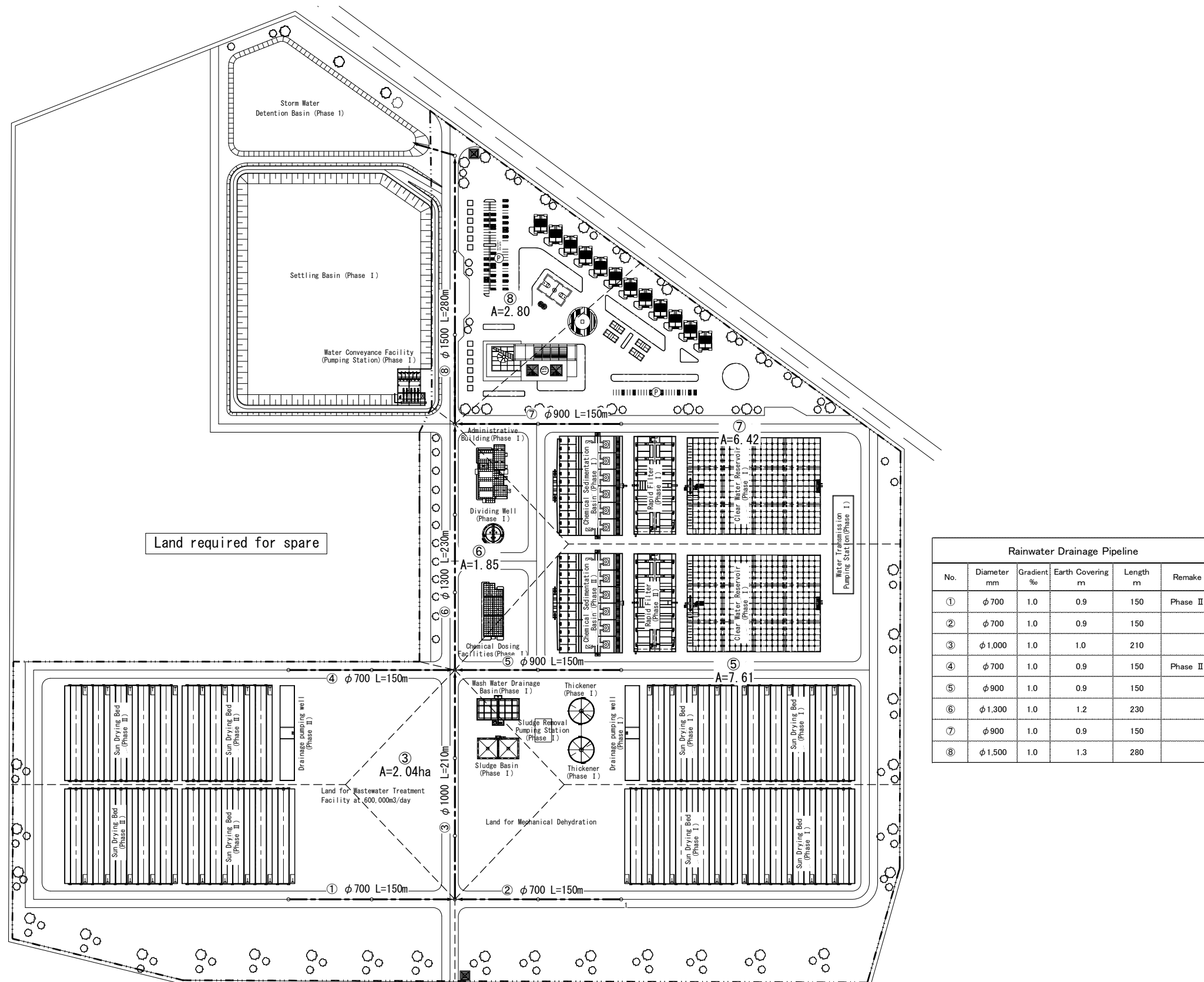
Cross section S=1/100



No.			
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Rainwater Drainage Pipeline Plan

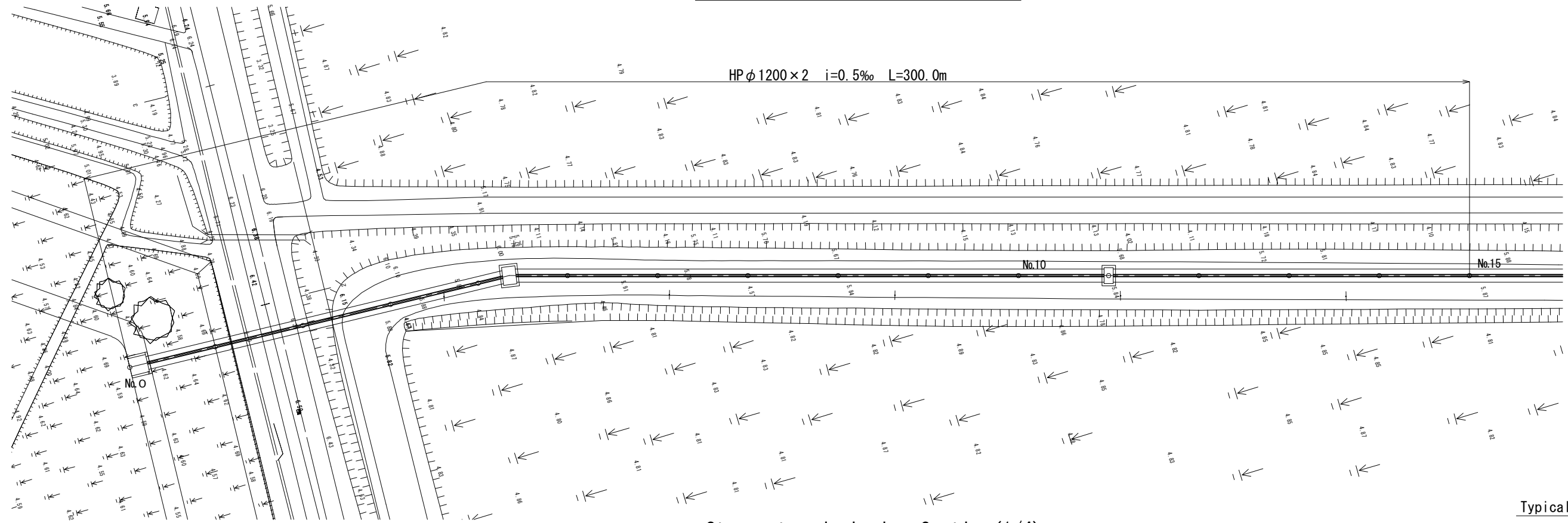
(Phase II 300,000m³/day)



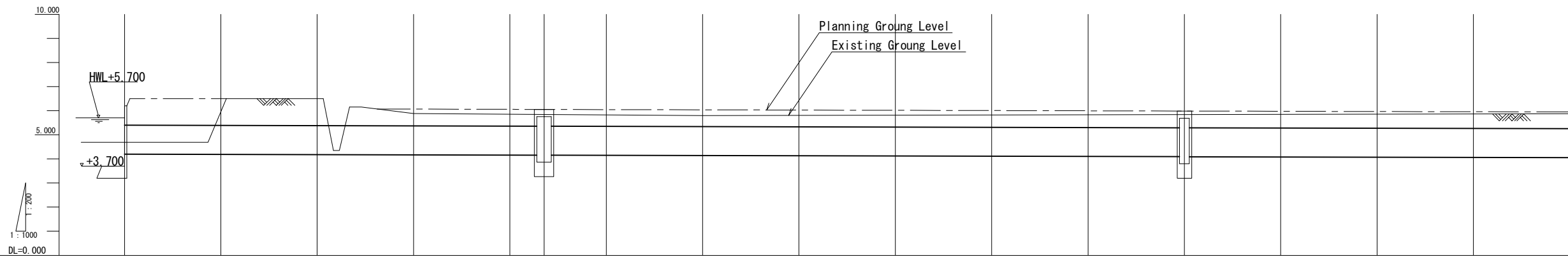
Rainwater Drainage Pipeline					
No.	Diameter mm	Gradient %	Earth Covering m	Length m	Remark
①	φ 700	1.0	0.9	150	Phase II
②	φ 700	1.0	0.9	150	
③	φ 1,000	1.0	1.0	210	
④	φ 700	1.0	0.9	150	Phase II
⑤	φ 900	1.0	0.9	150	
⑥	φ 1,300	1.0	1.2	230	
⑦	φ 900	1.0	0.9	150	
⑧	φ 1,500	1.0	1.3	280	

No.			
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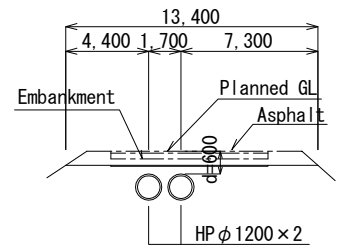
Stormwater drainpipe Plan(1/4)



Stormwater drainpipe Section(1/4)

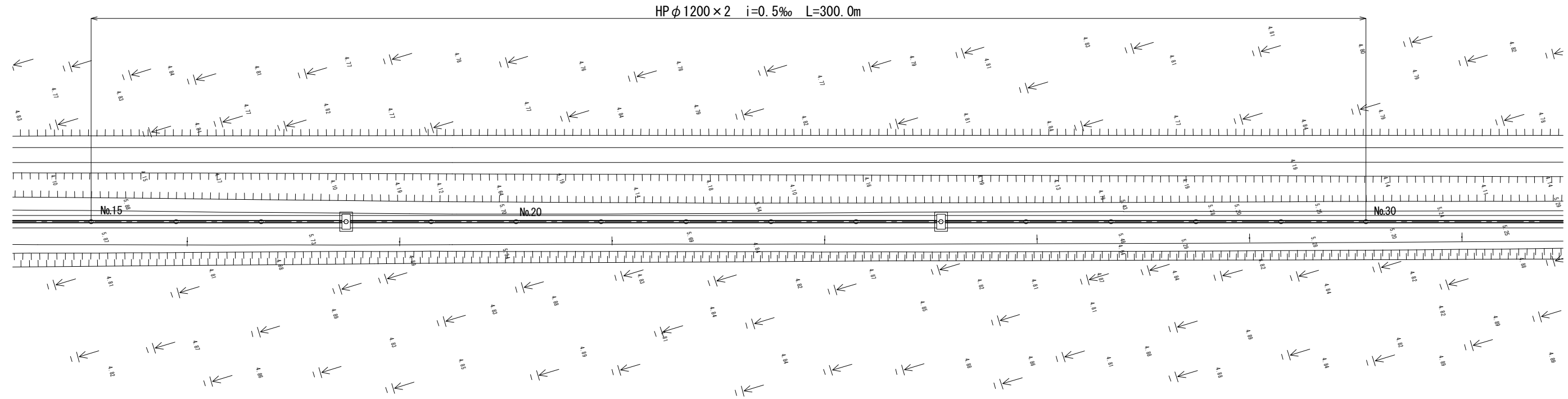


Typical Cross Section

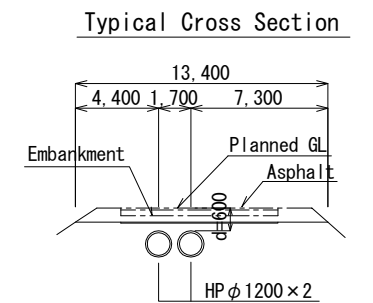
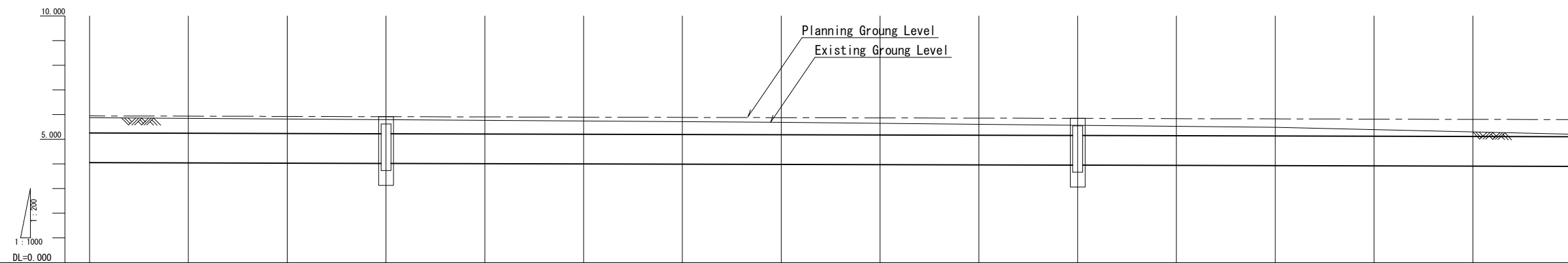


Bottom Level of Pipe		4.200	4.190	4.180	4.170	4.160	4.156	4.150	4.140	4.130	4.120	4.110	4.100	4.090	4.080	4.070	4.060	4.050	
Earth Covering		(1.01)	(1.02)	1.03	0.42 (0.60)	0.40 (0.60)	0.38 (0.60)	0.39 (0.60)	0.37 (0.60)	0.39 (0.60)	0.41 (0.60)	0.42 (0.60)	0.44 (0.60)	0.46 (0.60)	0.42 (0.60)	0.42 (0.60)	0.50 (0.60)	0.42 (0.60)	
Pipe Gradient		HP φ 1200 × 2 i=0.5‰																	
Ground Level (Planning)		6.50	6.50	6.50	5.47	5.46	5.45	5.45	5.44	5.43	5.42	5.41	5.40	5.39	5.38	5.37	5.36	5.35	
Ground Level		4.69	4.69	6.50	5.88	5.85	5.84	5.83	5.80	5.81	5.82	5.82	5.83	5.84	5.85	5.85	5.86	5.87	
Accumulated Distance		0.00	20.00	40.00	60.00	80.00	87.08	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00	300.00	
Length		0.00	20.00	20.00	20.00	7.08	12.92	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	
Point		No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13	No.14	No.15		

Stormwater drainpipe Plan(2/4)

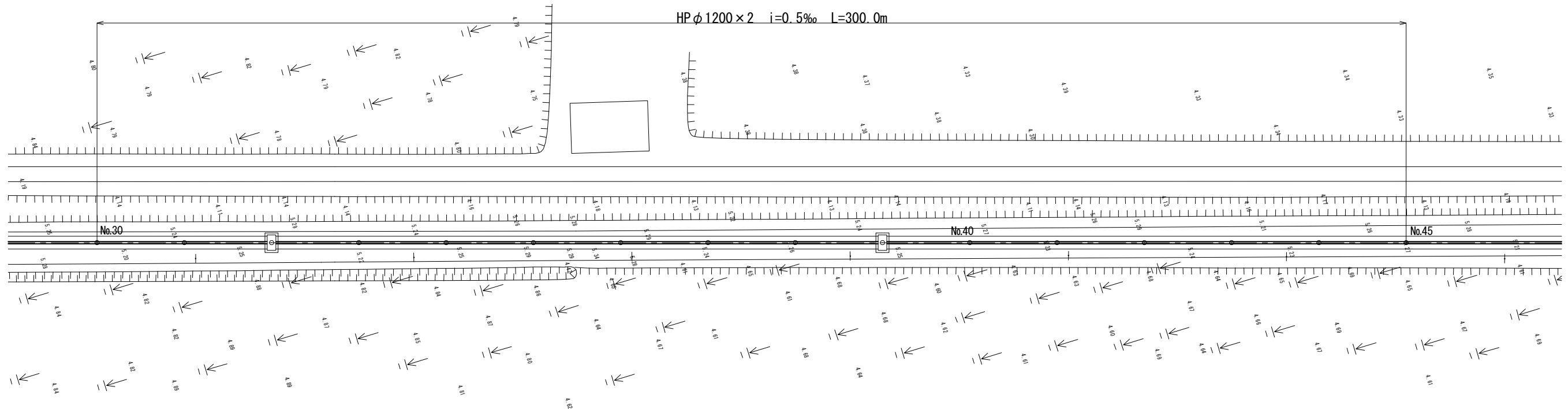


Stormwater drainpipe Section(2/4)

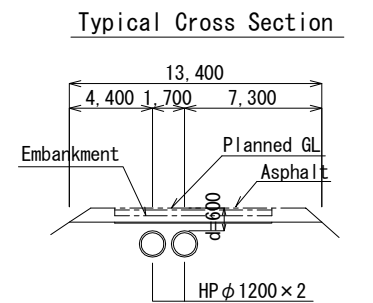
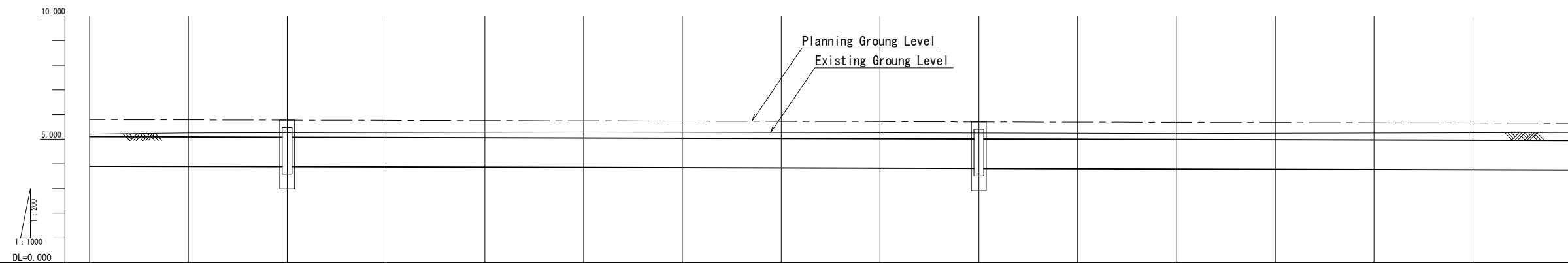


Bottom Level of Pipe	4.050	4.040	4.030	4.020	4.010	4.000	3.990	3.980	3.970	3.960	3.950	3.940	3.930	3.920	3.910	3.900
Earth Covering	0.42 (0.60)	0.51 (0.60)	0.50 (0.60)	0.48 (0.60)	0.47 (0.60)	0.45 (0.60)	0.44 (0.60)	0.42 (0.60)	0.39 (0.60)	0.36 (0.60)	0.32 (0.60)	0.29 (0.60)	0.26 (0.60)	0.18 (0.60)	0.08 (0.60)	0.01 (0.60)
Pipe Gradient	HP φ 1200 × 2 i=0.5‰															
Ground Level (Planning)	5.95	5.94	5.93	5.92	5.91	5.90	5.89	5.88	5.87	5.86	5.85	5.84	5.83	5.82	5.81	5.80
Ground Level	5.87	5.84	5.82	5.79	5.77	5.74	5.72	5.69	5.65	5.61	5.56	5.52	5.48	5.39	5.29	5.20
Accumulated Distance	300.00	320.00	340.00	360.00	380.00	400.00	420.00	440.00	460.00	480.00	500.00	520.00	540.00	560.00	580.00	600.00
Length	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Point	No.15	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24	No.25	No.26	No.27	No.28	No.29	No.30

Stormwater drainpipe Plan(3/4)

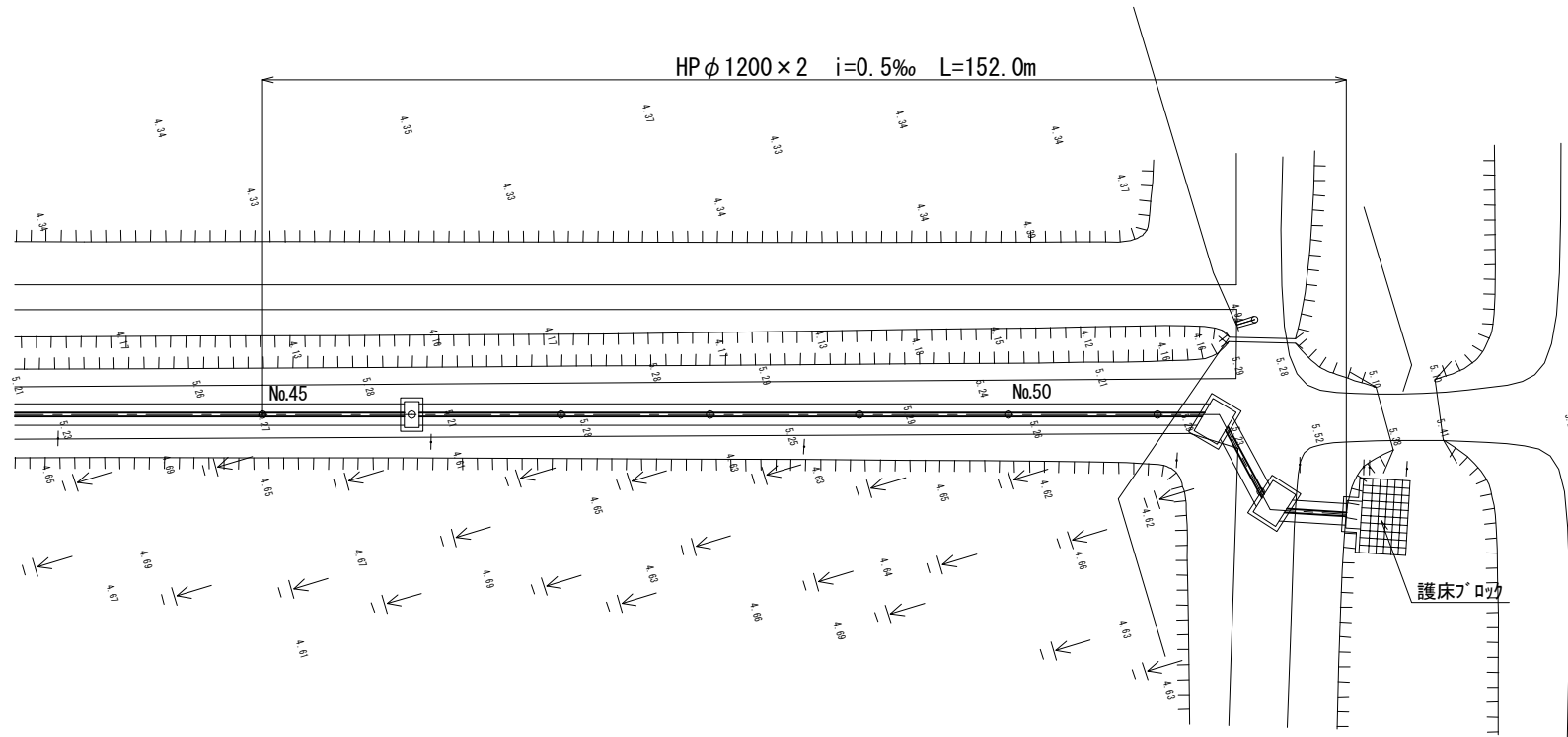


Stormwater drainpipe Section(3/4)

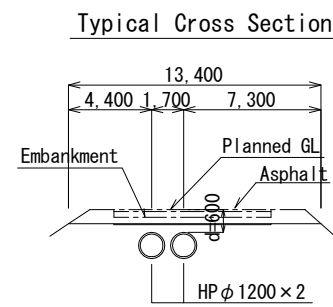
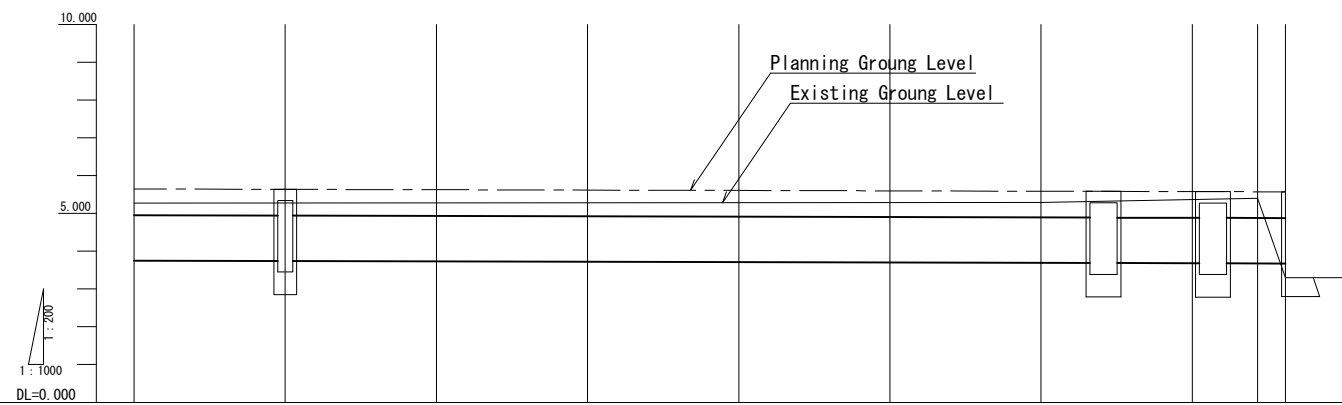


Bottom Level of Pipe	3.900	3.890	3.880	3.870	3.860	3.850	3.840	3.830	3.820	3.810	3.800	3.790	3.780	3.770	3.760	3.750
Earth Covering	0.01 (0.60)	0.07 (0.60)	0.08 (0.60)	0.11 (0.60)	0.13 (0.60)	0.15 (0.60)	0.15 (0.60)	0.15 (0.60)	0.15 (0.60)	0.15 (0.60)	0.15 (0.60)	0.15 (0.60)	0.17 (0.60)	0.19 (0.60)	0.21 (0.60)	0.23 (0.60)
Pipe Gradient	HP φ 1200 x 2 i=0.5‰															
Ground Level (Planning)	5.80	5.79	5.78	5.77	5.76	5.75	5.74	5.73	5.72	5.71	5.70	5.69	5.68	5.67	5.66	5.65
Ground Level	5.20	5.25	5.26	5.27	5.28	5.29	5.28	5.27	5.26	5.25	5.24	5.23	5.24	5.25	5.26	5.27
Accumulated Distance	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00	300.00
Length	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Point	No.30	No.31	No.32	No.33	No.34	No.35	No.36	No.37	No.38	No.39	No.40	No.41	No.42	No.43	No.44	No.45

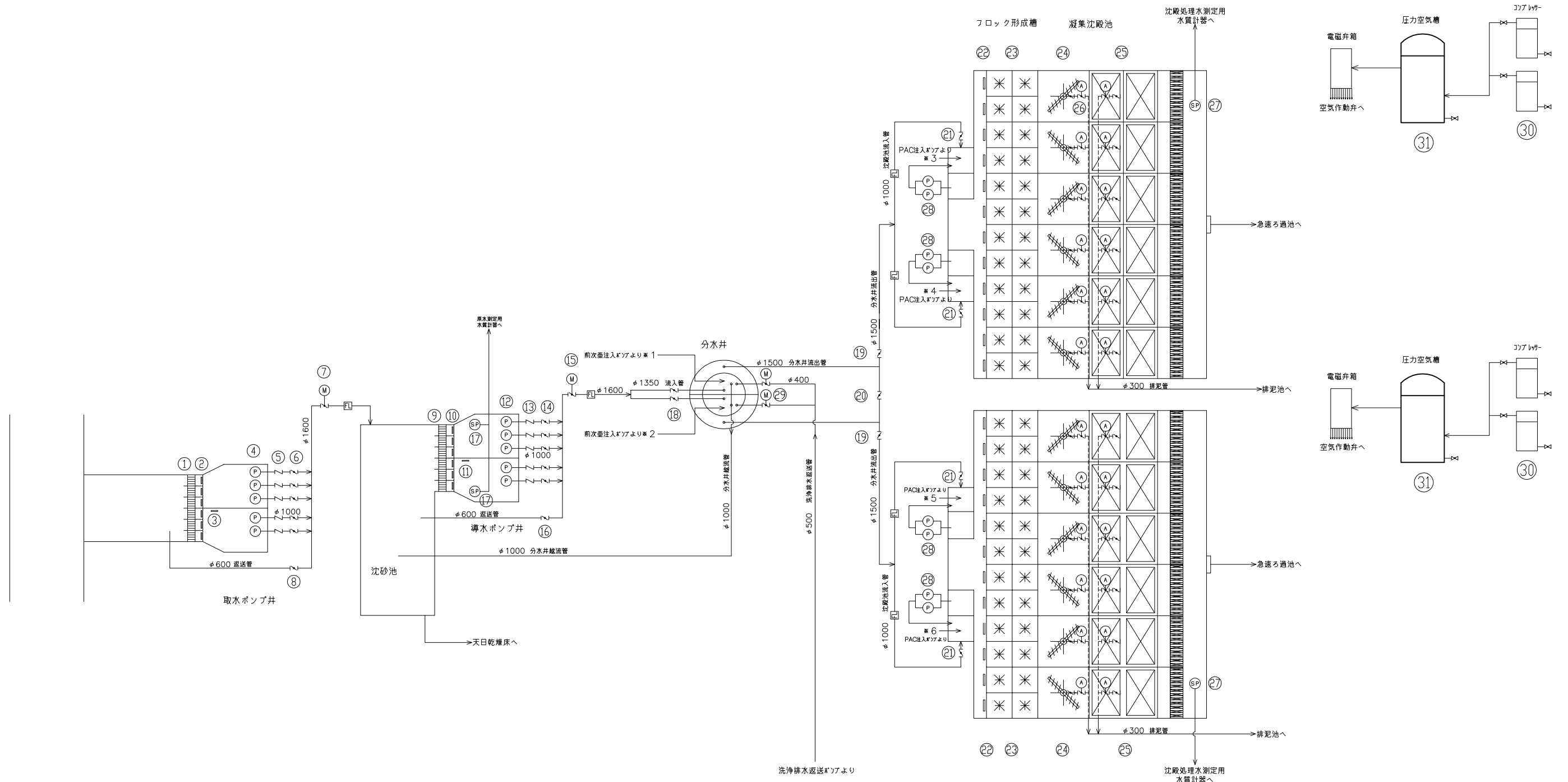
Stormwater drainpipe Plan(4/4)



Stormwater drainpipe Section(4/4)

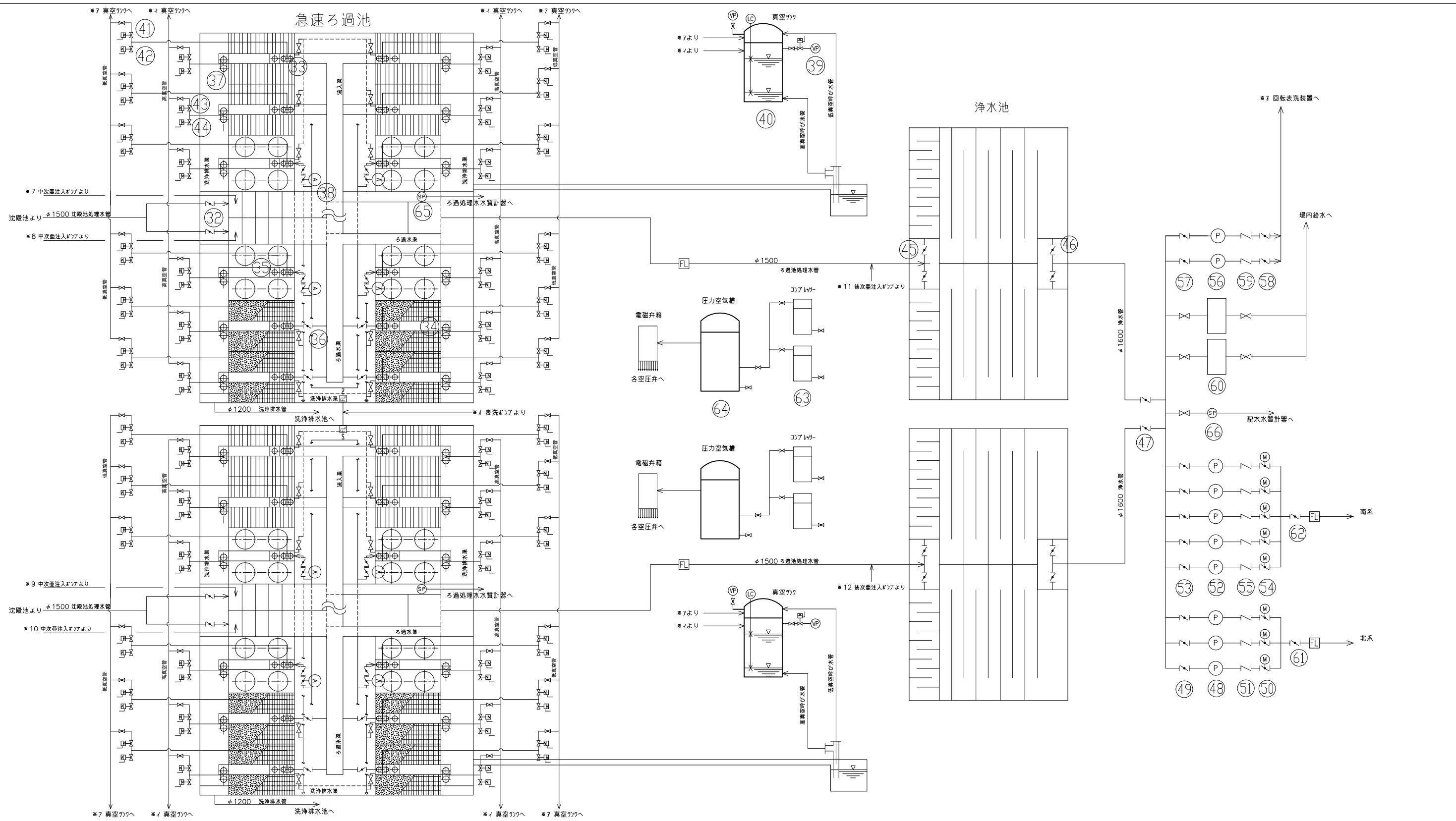


Bottom Level of Pipe	3.750	3.740	3.730	3.720	3.710	3.700	3.690	3.680	3.674
Earth Covering	0.23 (0.60)	0.24 (0.60)	0.26 (0.60)	0.27 (0.60)	0.28 (0.60)	0.30 (0.60)	0.31 (0.60)	0.40 (0.60)	0.60
Pipe Gradient	HP ϕ 1200 \times 2 $i=0.5\%$								
Ground Level (Planning)	5.65	5.64	5.63	5.62	5.61	5.60	5.59	5.58	5.57
Ground Level	5.27	5.27	5.28	5.28	5.28	5.29	5.29	5.37	5.40
Accumulated Distance	900.00	920.00	940.00	960.00	980.00	1000.00	1020.00	1040.00	1052.33
Length	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	12.33
Point	No.45	No.46	No.47	No.48	No.50	No.51	No.52	No.53	No.53 +12.33



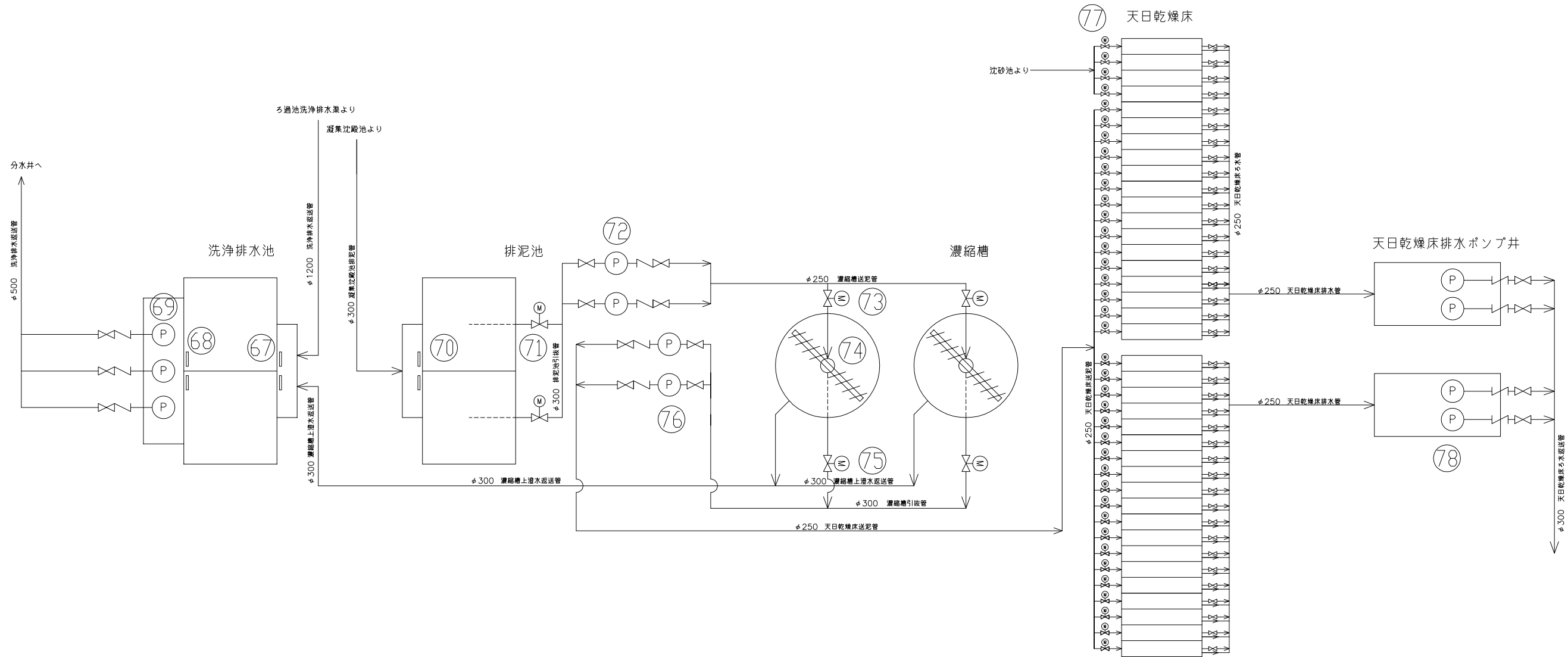
機器番号	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯
機器名称	取水ポンプ井スクリーン	取水ポンプ井流入ゲート	取水ポンプ井連絡ゲート	取水ポンプ	取水ポンプ逆止弁	取水ポンプ吐出弁	取水流量調整弁	取水送戻弁	導水ポンプ井スクリーン	導水ポンプ井流入ゲート	導水ポンプ井連絡ゲート	導水ポンプ	導水ポンプ逆止弁	導水ポンプ吐出弁	原水流量調整弁	原水送戻弁
型式	手動式A-スクリーン	角型手動式A+	角型手動式A+	巻戻式水中A+	無水型	手動式A+	電動式A+	手動式A+	手動式スクリーン	角型手動式A+	角型手動式A+	巻戻式水中A+	無水型	手動式A+	電動式A+	手動式A+
数量(第1期/第2期)	6/0	6/0	1/0	3/2	3/2	3/2	1/0	1/0	6/0	6/0	1/0	3/2	3/2	3/2	1/0	1/0
備考	目開き 100mm	幅2.0m×高さ2.0m	幅2.0m×高さ2.0m	φ700mm×56m/15m×200kw	φ1,000mm	φ1,000mm	φ1,600mm×2.2kw	φ600mm	目開き50mm	幅2.0m×高さ2.0m	幅2.0m×高さ2.0m	φ700mm×56m/15m×200kw	φ1,000mm	φ1,000mm	φ1,600mm×2.2kw	φ600mm

機器番号	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔	㉕	㉖	㉗	㉘	㉙	㉚	㉛
機器名称	原水リアリアポンプ	原水流入弁1	原水流入弁2	原水流入連絡弁	沈殿池流入弁	フロック形成池流入ゲート	フロック形成池攪拌機	沈殿池汚泥掻き機	沈殿池傾斜管	沈殿池排泥弁	沈殿処理水リアリアポンプ	PAC希釈ポンプ	洗浄排水送戻弁	コンプレッサー	圧力空気槽
型式	自吸式渦巻ポンプ	手動式A+	手動式A+	手動式A+	手動式A+	角型手動式A+	座懸垂式	中央駆動懸垂式	上向流式	空気作動式偏心構造弁	自吸式渦巻ポンプ	自吸式渦巻ポンプ	電動式A+	A+ポンプ無給油タイプ	立型円筒槽
数量(第1期/第2期)	1/1	2/0	2/0	1/0	2/2	12/12	24/24	6/6	6池分	12/12	1/1	4/4	2/0	2/2	1/1
備考	φ32mm×50/15m×30m×1.5kw	φ1,350mm	φ1,500mm	φ1,500mm	φ1,000mm	幅1.0m×高さ1.0m	幅1.0m×高さ1.0m	幅1.0m×高さ1.0m	φ200mm	φ200mm	φ32mm×50/15m×30m×1.5kw	φ40mm×0.3m/10m×1.5kw	φ400mm×0.4kw	240/15m×0.08MPa×2.2kw	



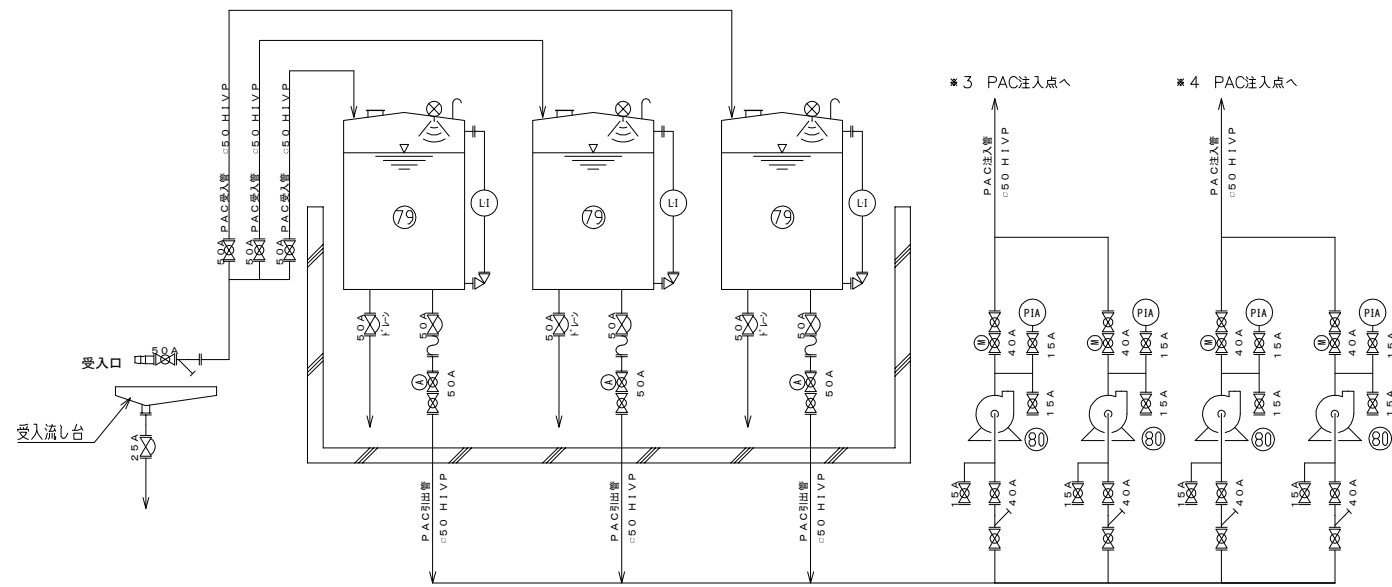
機器番号	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
機器名称	ろ過池流入弁	流入サイフォン	集水装置	表洗装置	濾過弁	排水サイフォン	表洗弁	真空ポンプ	真空ポンプ	流入用真空弁	流入用真空破弁	排水用真空弁	排水用真空破弁	浄水池流入弁	浄水池流出弁	送水ポンプ流入弁	北系送水ポンプ	北系送水ポンプ吸込弁	北系送水ポンプ吐出弁	北系送水ポンプ逆止弁	南系送水ポンプ	
型式	手動式 ¹ のり弁	SUS製	自己水洗型有効70kg	回転式表面洗浄装置	手動式 ¹ のり弁	SUS製	空気作動式 ¹ のり弁	水射式	水射式	空気作動仕切弁	空気作動仕切弁	空気作動仕切弁	空気作動仕切弁	手動式 ¹ のり弁	手動式 ¹ のり弁	手動式 ¹ のり弁	電動機 ¹ のり弁	手動式 ¹ のり弁	電動機 ¹ のり弁	無水型	電動機 ¹ のり弁	
数量(第1期/第2期)	2 / 2	12 / 12	12池分 / 12池分	12池分 / 12池分	12 / 12	12 / 12	12 / 12	1 / 1	1 / 1	12 / 12	12 / 12	12 / 12	12 / 12	2 / 2	2 / 2	1 / 1	2 / 1	2 / 1	2 / 1	2 / 1	1 / 3	2 / 2
備考	φ1,500mm	φ550mm	φ12池分 φ12池分 φ12池分	φ12池分 φ12池分 φ12池分	φ1,200mm	φ1,200mm	φ300mm	7.0m ³ /min×650mmH ₂ O(参考) φ80mm×15kw	φ1.8m×2.5mH ₂ O(参考)	φ25mm(参考)	φ25mm	φ80mm	φ80mm(参考)	φ1,000mm	φ1,500mm	φ1,600mm	φ300mm×10.5m/min×65mm×132kw S&W製	φ500mm	φ500mm×1.5kw	φ500mm	φ500mm	φ700mm×17.0m/min×30.0m×132kw S&W製

機器番号	53	54	55	56	57	58	59	60	61	62	63	64	65	66
機器名称	南系送水ポンプ吸込弁	南系送水ポンプ吐出弁	北系送水ポンプ逆止弁	表洗ポンプ	表洗ポンプ吸込弁	表洗ポンプ吐出弁	表洗ポンプ逆止弁	給水ユニット	北系送水管弁	南系送水管弁	コンプレッサー	圧力空気槽	ろ過水リフティングポンプ	浄水リフティングポンプ
型式	手動式 ¹ のり弁	電動機 ¹ のり弁	無水型	電動機 ¹ のり弁	手動式 ¹ のり弁	電動機 ¹ のり弁	無水型	交互+並列運転式	手動式 ¹ のり弁	手動式 ¹ のり弁	ハヤシ式無給油 ¹ のり弁	立型円筒槽	自吸式消泡 ¹ のり弁	自吸式消泡 ¹ のり弁
数量(第1期/第2期)	3 / 2	3 / 2	3 / 2	2 / 0	2 / 0	2 / 0	2 / 0	1 / 1	1 / 0	1 / 1	2 / 2	1 / 1	1 / 1	1 / 0
備考	φ1,000mm	φ1,000mm×2.2kw	φ1,000mm	φ400mm×17.0m/min×30.0m×132kw	φ500mm	φ500mm×1.5kw	φ500mm	φ150mm×3.2m/min×30.0m×15kw	φ700mm	φ1,600mm	240L/min×0.2MPa×2.2kw	φ32mm×50L/min×30m×1.5kw	φ32mm×40L/min×30m×0.75kw	

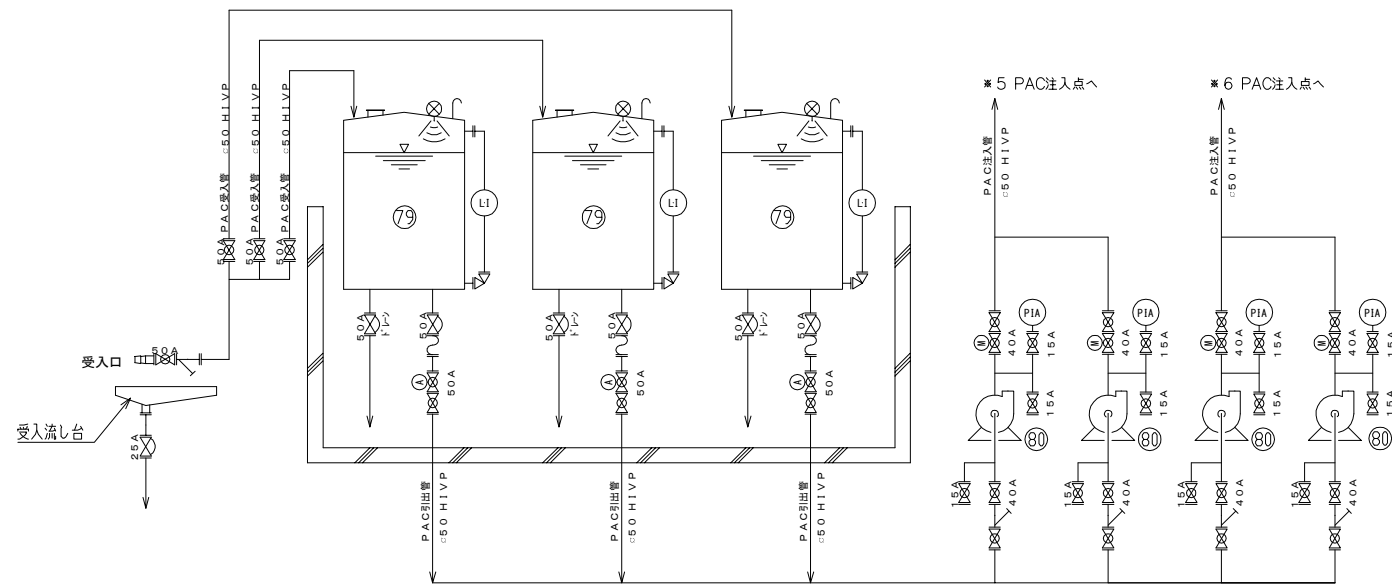


機器番号	67	68	69	70	71	72	73	74	75	76	77	78
機器名称	排水池流入ゲート	排水池流出ゲート	洗淨排水送水ポンプ	排泥池流入ゲート	排泥池汚泥引上げ弁	排泥池引上げポンプ	濃縮槽汚泥流入弁	濃縮槽汚泥送電機	濃縮槽汚泥引上げ弁	濃縮槽引上げポンプ	天日乾燥床汚泥流入弁	天日乾燥床排水ポンプ
型式	角型手動式	角型手動式	巻胴式水中ポンプ	角型手動式	電動式偏心構造弁	スクリュー式揚水ポンプ	電動仕切弁	中央駆動ベテラ式	電動式偏心構造弁	スクリュー式揚水ポンプ	電動仕切弁	巻胴式水中ポンプ
数量(第1期/第2期)	2/0	2/0	2/1	2/0	2/0	2/0	2/0	2/0	2/0	2/0	19/19	2/2
備考	幅2.0m×高さ1.0m	幅1.0m×高さ1.0m	φ250mm×9.0m/10m×20.0m×55kw	幅2.0m×高さ1.0m	φ300mm×2.2kw	φ150mm×1.6m/10m×7.5kw	φ250mm	φ23mm×1.5kw	φ300mm×2.2kw	φ150mm×1.2m/10m×5.5kw	φ250mm	φ200mm×4.0m/10m×10.0m×15kw

No.			
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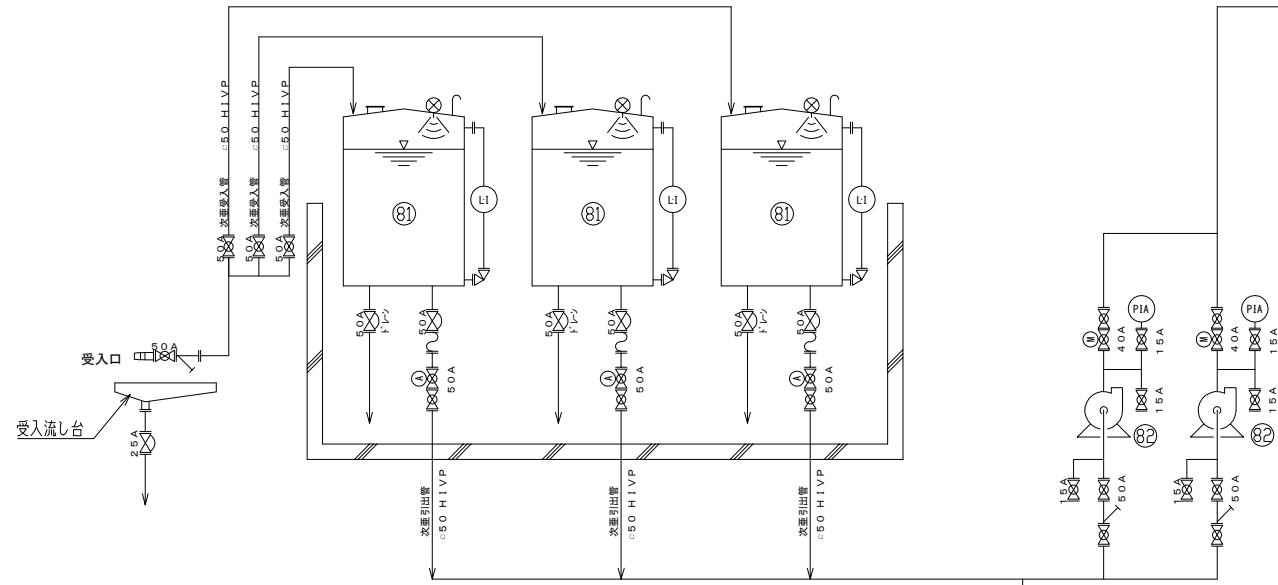


1系 PAC注入設備フローシート

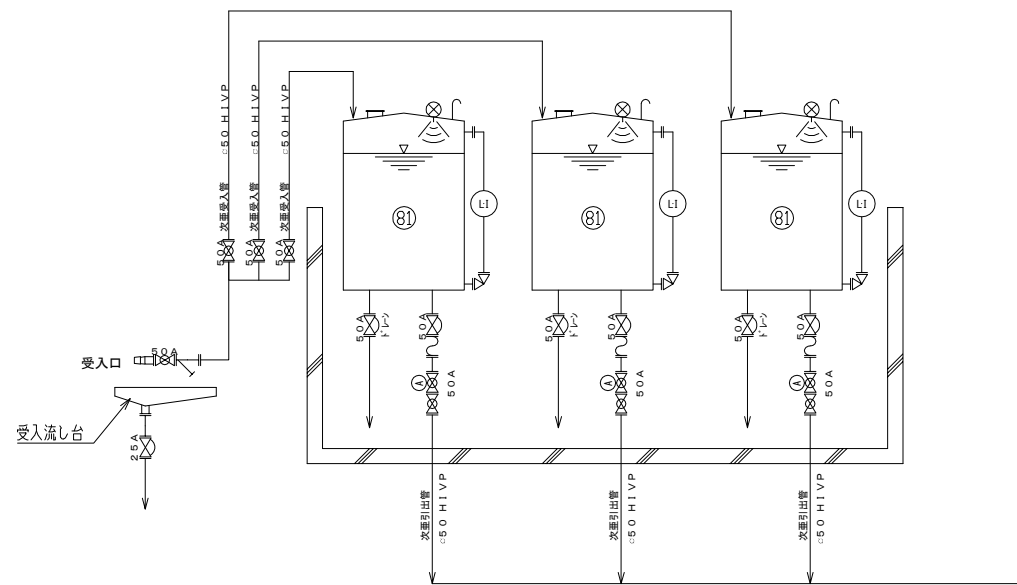


2系 PAC注入設備フローシート

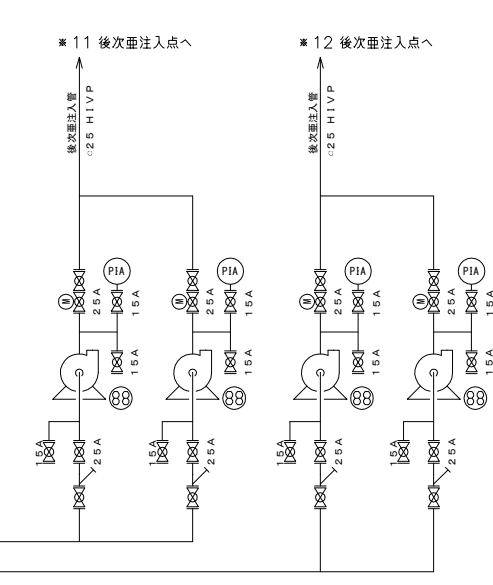
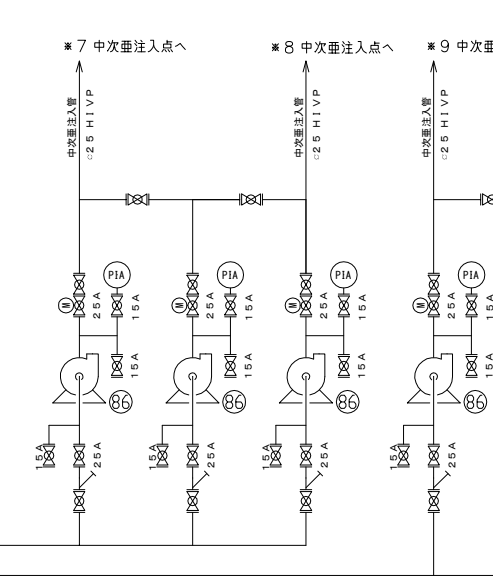
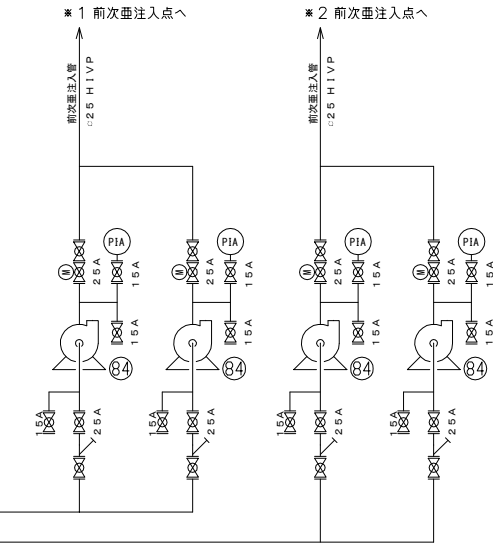
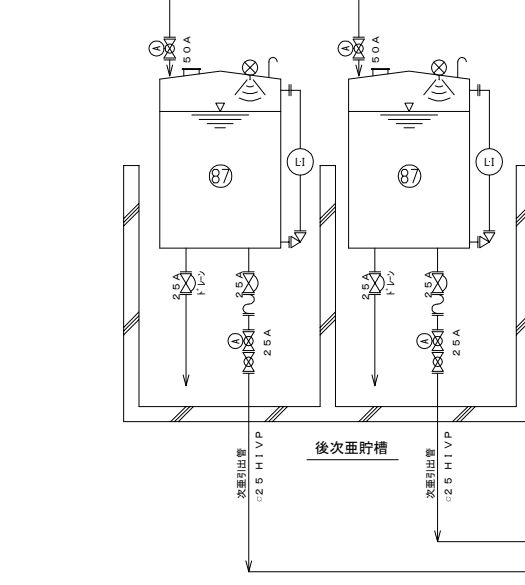
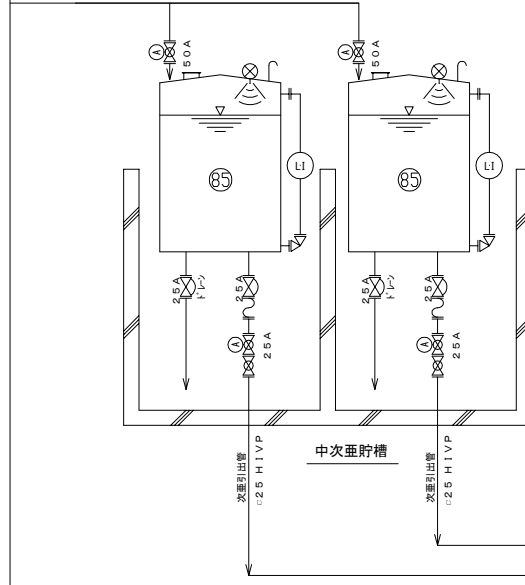
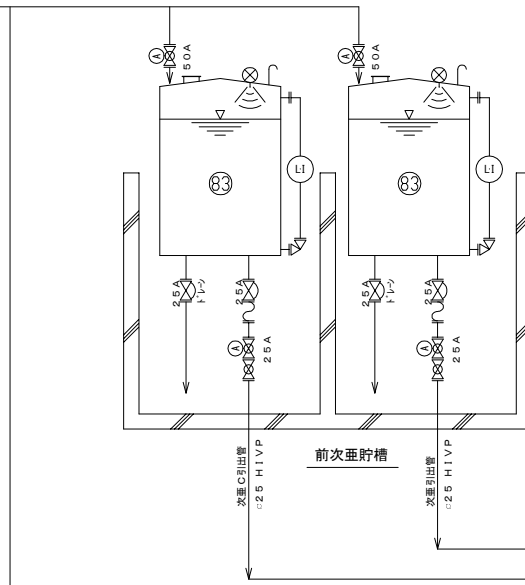
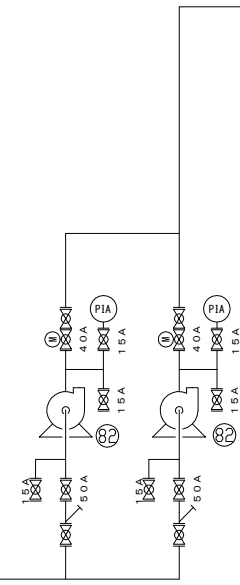
機器番号	79	80
機器名称	PAC貯留槽	PAC注入ポンプ
型式	鋼板製密閉円筒槽	7.1776式定置ポンプ
数量(第1期/第2期)	3 / 3	4 / 4
備考	#2.91m×6.5m H. #取38mm 厚板22mm	#25mmφ0.5-SL/minφ0.3MPaφ0.4kw 厚板22mm



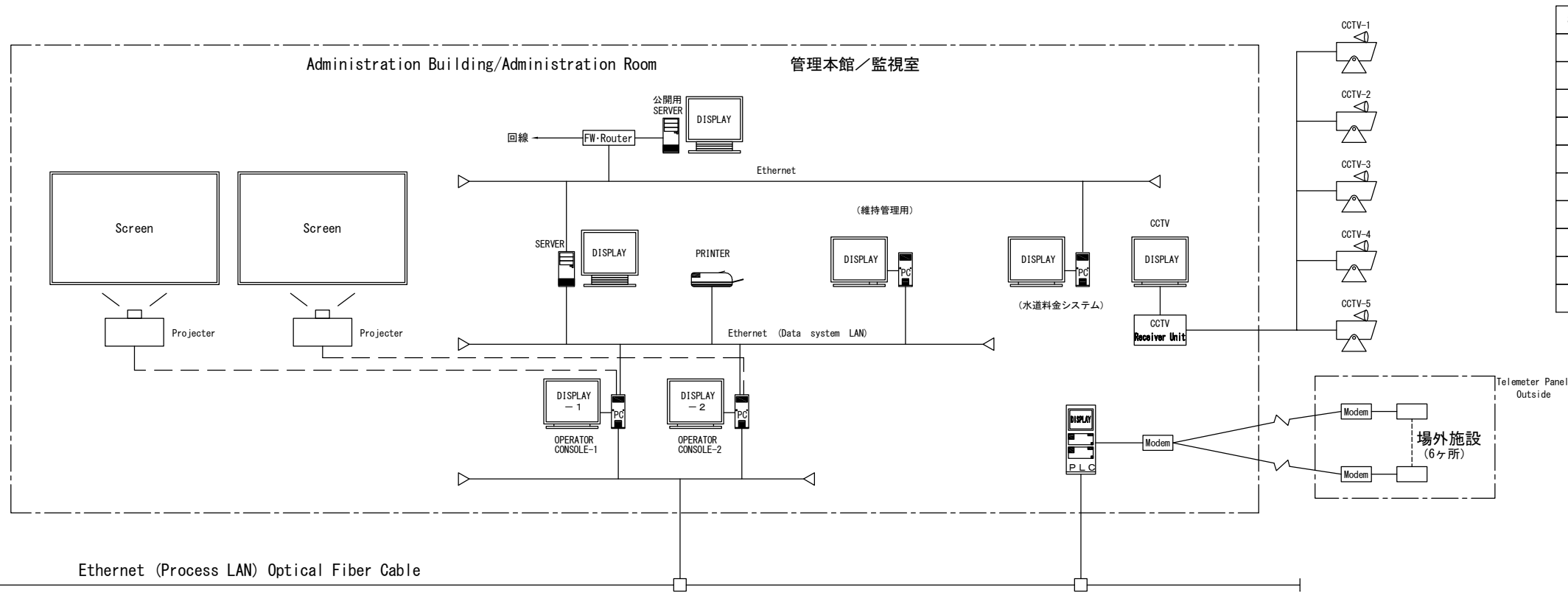
1系次垂貯槽



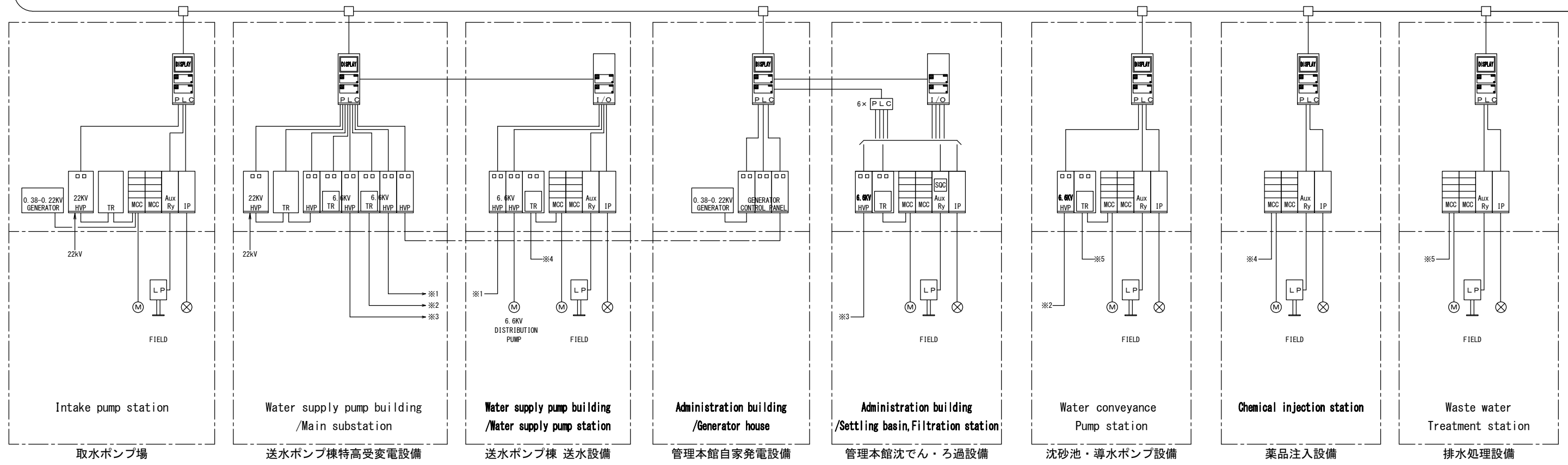
2系次垂貯槽

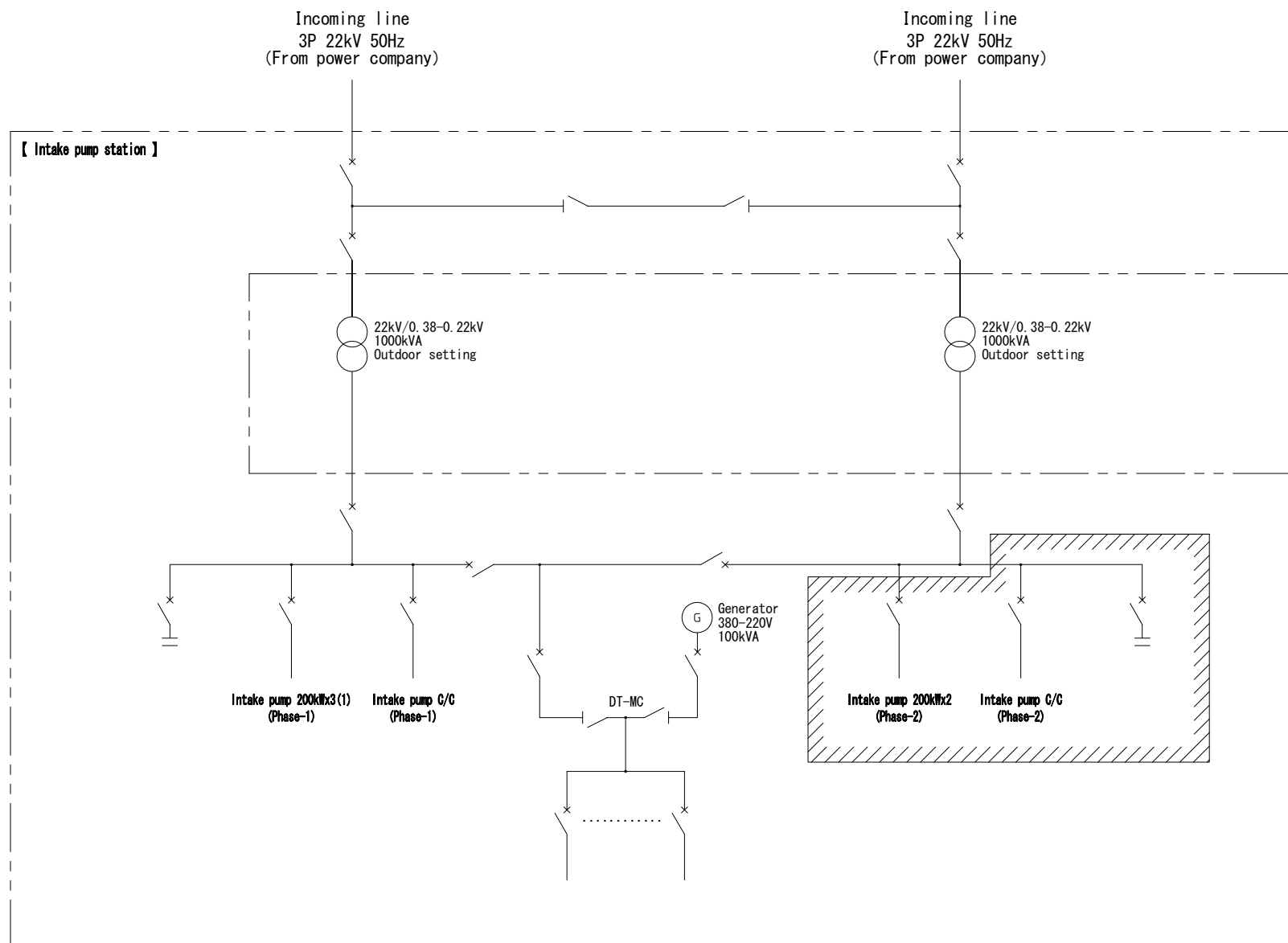



機器番号	81	82	83	84	85	86	87	88
機器名称	次垂貯槽	次垂移送タンク	前次垂小出槽	前次垂注入タンク	中次垂小出槽	中次垂注入タンク	後次垂小出槽	後次垂注入タンク
型式	樹脂製密閉円筒槽	マグネットタンク	PE製密閉円筒槽	ダイヤフラム式定量タンク	PE製密閉円筒槽	ダイヤフラム式定量タンク	PE製密閉円筒槽	ダイヤフラム式定量タンク
数量(第1期/第2期)	3/3	2/0	1/1	2/2	1/1	3/3	1/1	2/2
備考	φ2.9m×6.5mH. 数量30m ³	φ50mm×200L/min×20h×3.7kw	φ0.76m×0.94mH. 数量0.3m ³	φ25mm×0.1~1.0L/min×0.3MPa×0.2kw	φ1.4m×2.0mH. 数量2.0m ³	φ25mm×0.2~4.0L/min×0.3MPa×0.75kw	φ1.0m×0.9mH. 数量0.5m ³	φ25mm×0.2~2.0L/min×0.3MPa×0.2kw



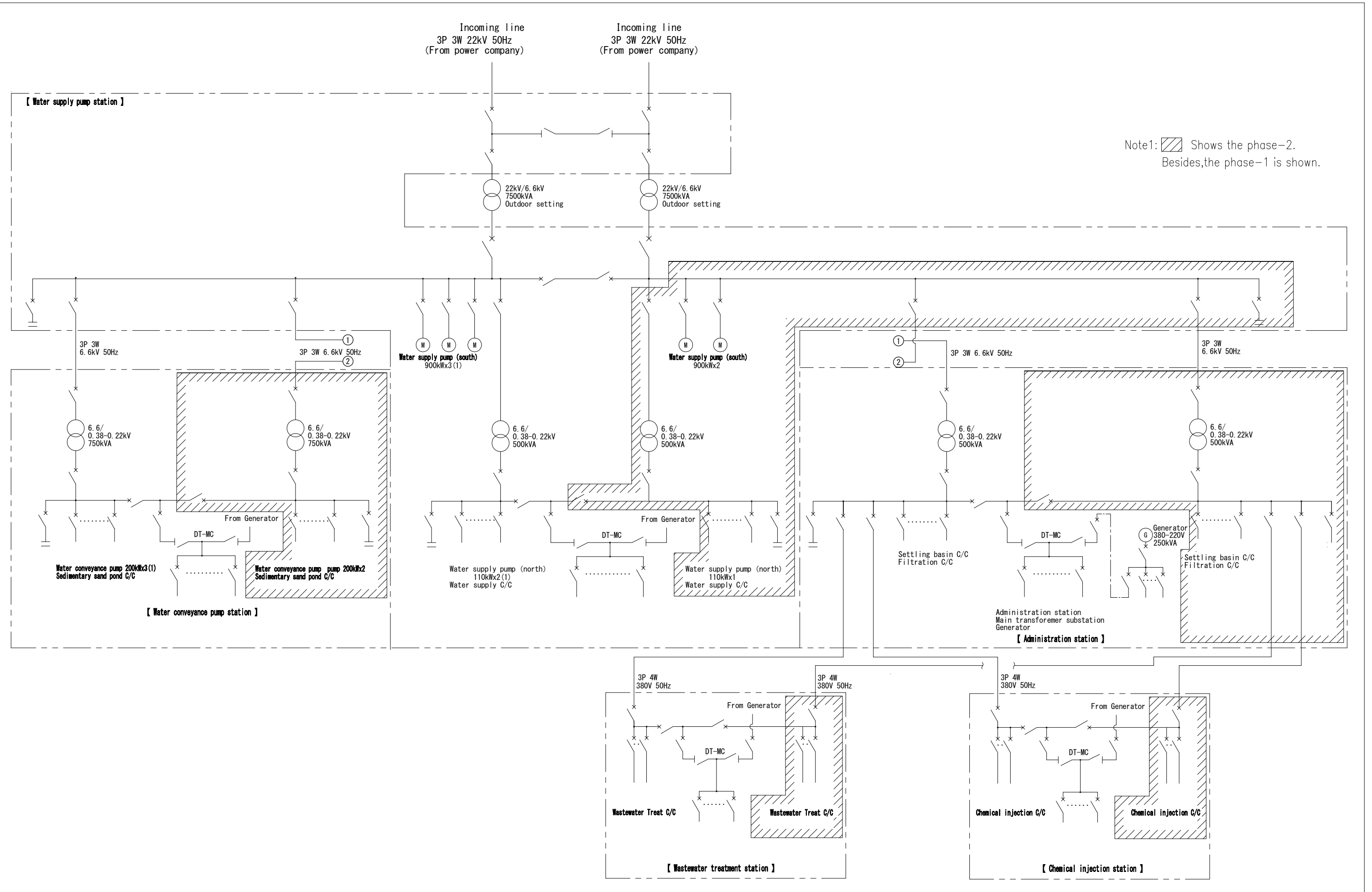
SYMBOL	LEGEND
PLC	PROGRAMMABLE LOGIC CONTROLLER
PC	PERSONAL COMPUTER
HVP	HIGH VOLTAGE PANEL
LVP	LOW VOLTAGE PANEL
TR	TRANSFORMER
MCC	MOTOR CONTROL CENTER / STARTER PANEL
Ry	AUXILIARY RELAY PANEL
LP	LOCAL CONTROL PANEL
M	MOTOR
IP	INSTRUMENT PANEL





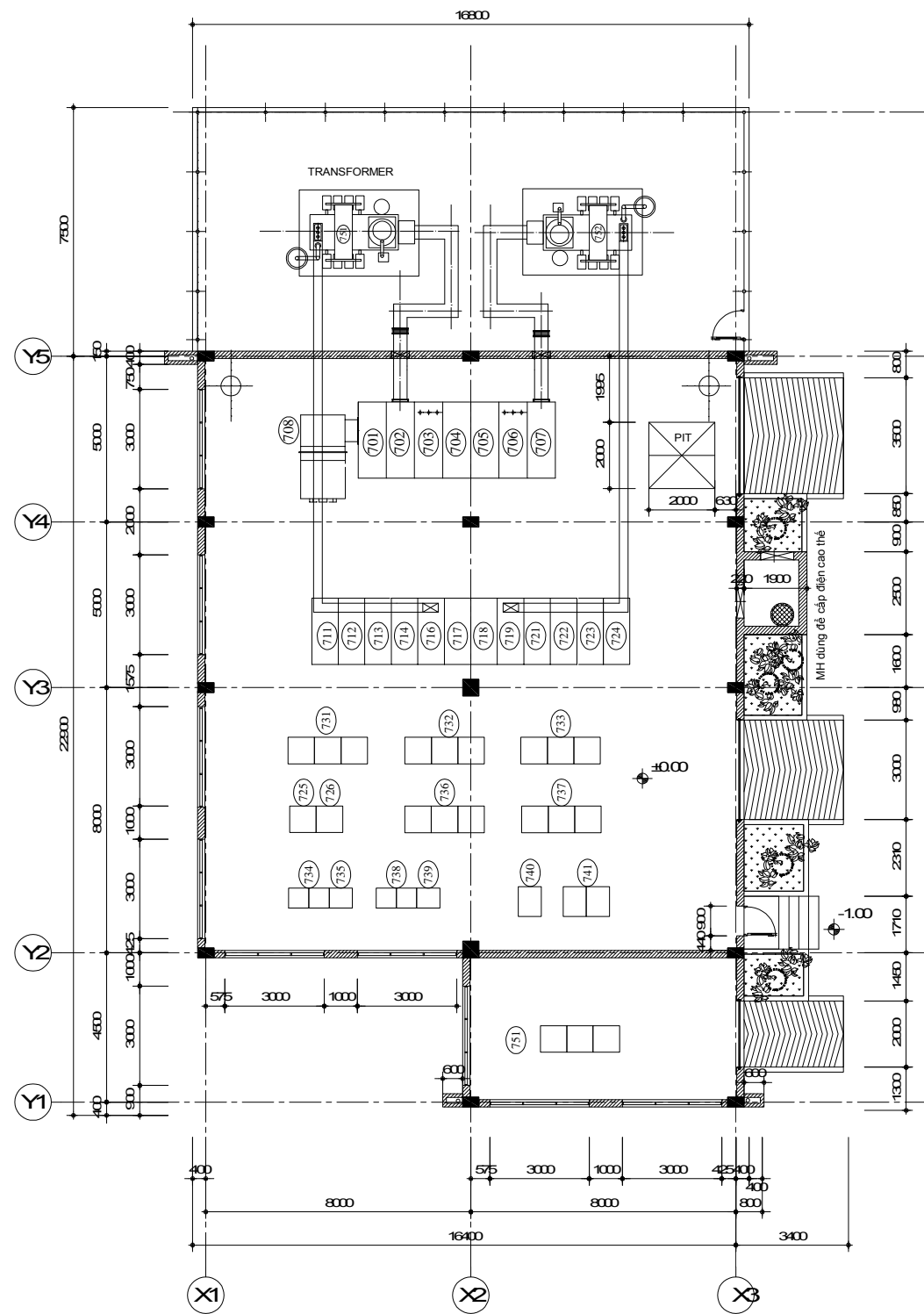
Note1:  Shows the phase-2.
Besides, the phase-1 is shown.

Study Team		THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date. NOV. 2011	Duong River Water Treatment Plant (Intake pump)	Drawing No
	No.		Scale non	A single line connection diagram (An outline)	95



Study Team		THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date.	Duong River Water Treatment Plant	Drawing No
	No.		NOV. 2011	A single line connection diagram (An outline)	
			Scale		96
			non		

Water Intake Electric Facility



Equipment List


No.	名称	記号	備考
701	VCT切替盤	HP1	1期
702	1系主変圧器1次盤	HP2	"
703	1番線受電盤	HP3	"
704	No.1母線連絡盤	HP4	"
705	No.2母線連絡盤	HP5	"
706	2番線受電盤	HP6	"
707	2系主変圧器1次盤	HP7	"
708	VCTユニット	VCT	"
751	1系主変圧器	P-T1	1期
752	2系主変圧器	P-T2	"

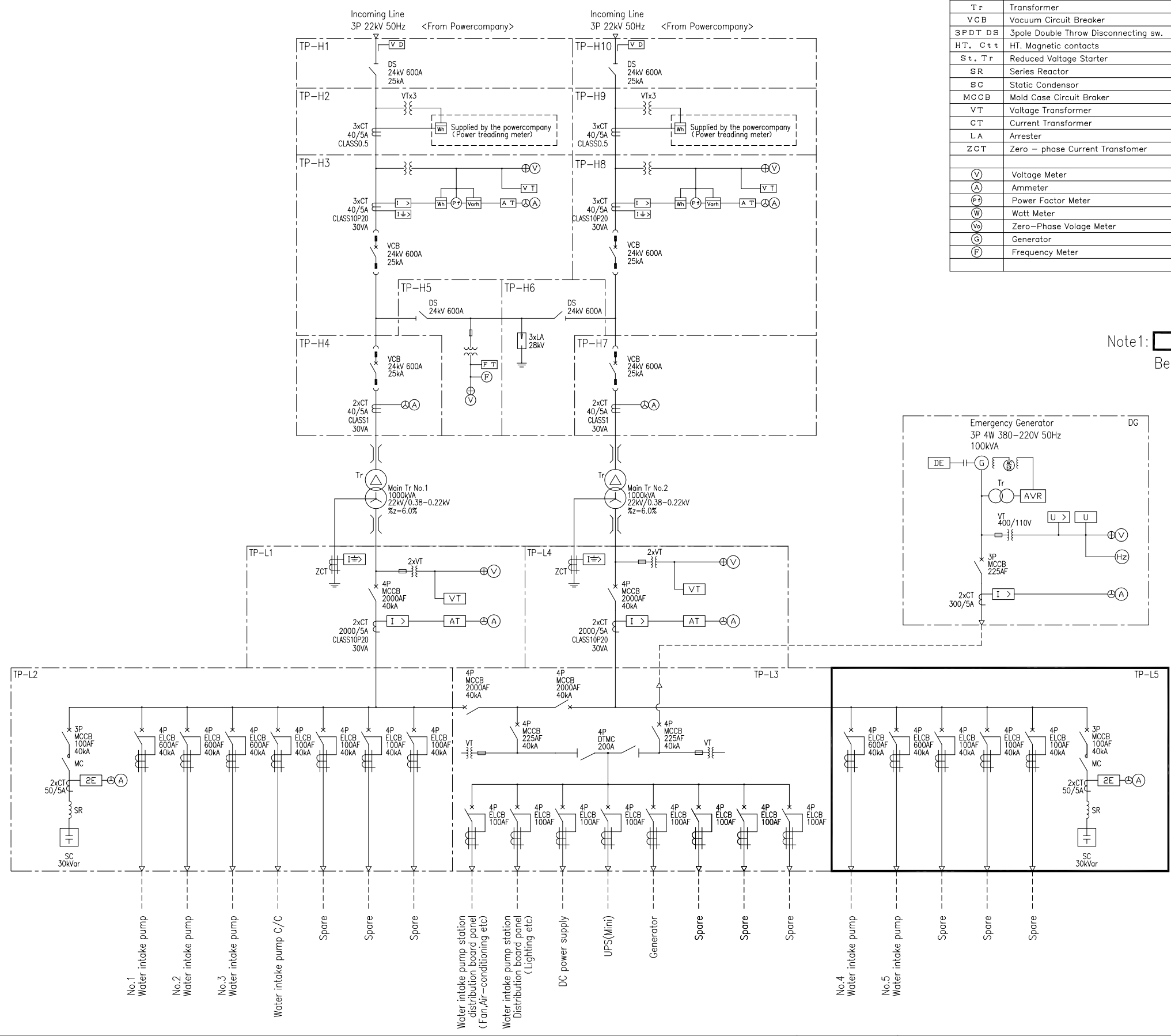
Equipment List

No.	名称	記号	備考
711	1系No.2進相コンデンサ盤	P-L1	1期
712	1系No.1進相コンデンサ盤	P-L2	"
713	1系低圧主幹盤(2)	P-L3	"
714	1系低圧主幹盤(1)	P-L4	"
715	-欠-	P-L5	"
716	1系変圧器二次盤	P-L6	"
717	1系母線盤	P-L7	"
718	2系母線盤	P-L8	"
719	2系変圧器二次盤	P-L9	"
720	-欠-	P-L11	"
721	2系低圧主幹盤(1)	P-L12	"
722	2系低圧主幹盤(2)	P-L13	"
723	2系No.1進相コンデンサ盤	P-L14	"
724	2系No.2進相コンデンサ盤	P-L15	"
725	電源切替盤	P-L16	"
726	建築動力・照明分岐盤	P-L17	"
731	No.1取水ポンプVWF盤	P-VF1	1期
732	No.2取水ポンプVWF盤	P-VF2	"
733	No.3取水ポンプVWF盤	P-VF3	"
734	No.1取水ポンプ設備CC	P-CC1	"
735	No.1取水ポンプ設備RY	P-RY1	"
736	No.4取水ポンプVWF盤	P-VF4	2期
737	No.5取水ポンプVWF盤	P-VF5	"
738	No.2取水ポンプ設備CC	P-CC2	"
739	No.2取水ポンプ設備RY	P-RY2	"
740	取水ポンプ設備計装変換器盤	P-KP	1期
741	取水ポンプ設備コントローラ盤	P-COT	"
751	取水水質架(濁度・PH・電気伝導率)	SP-10	1期

No.			
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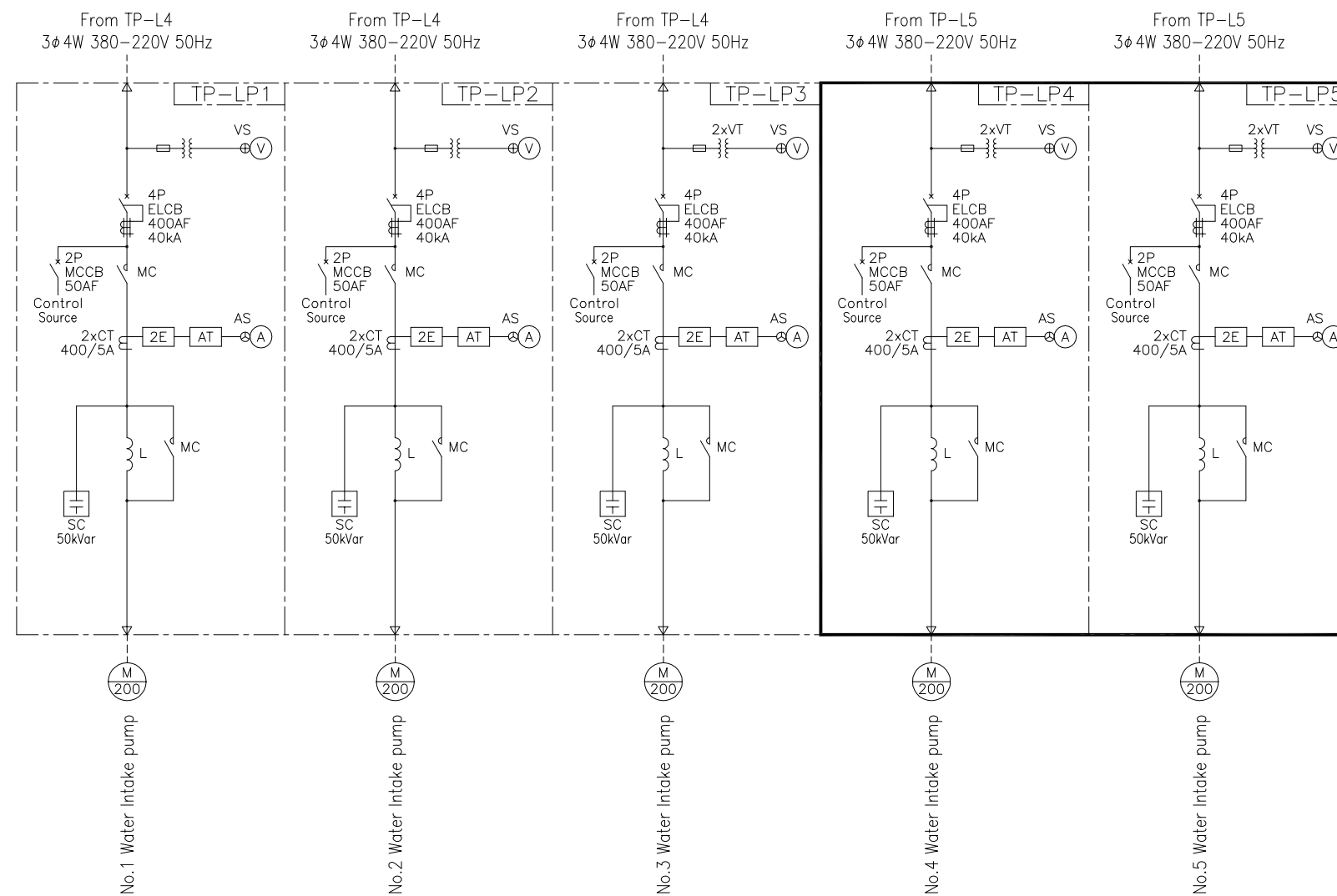
SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
Tr	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E X	Integrated Excitation
H.T. C t t	HT. Magnetic contacts	Dff	Differential Relay
S t. T r	Reduced Voltage Starter	I >	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensor	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	AVR	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P T T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transfomer	F T	Freguency Transducer
		V T	Voltage Transducer
V	Voltage Meter	Wh	Watt-Hour Meter
A	Ammeter	Varh	Tar-Hour Meter
F	Power Factor Meter	W	Watt Meter
W	Watt Meter	V S	Voltage Selector Switch
V0	Zero-Phase Volage Meter	+	Current Selector Switch
G	Generator		
F	Frequency Meter		

Note1:  Shows the phase-2. Besides, the phase-1 is shown.



No.			
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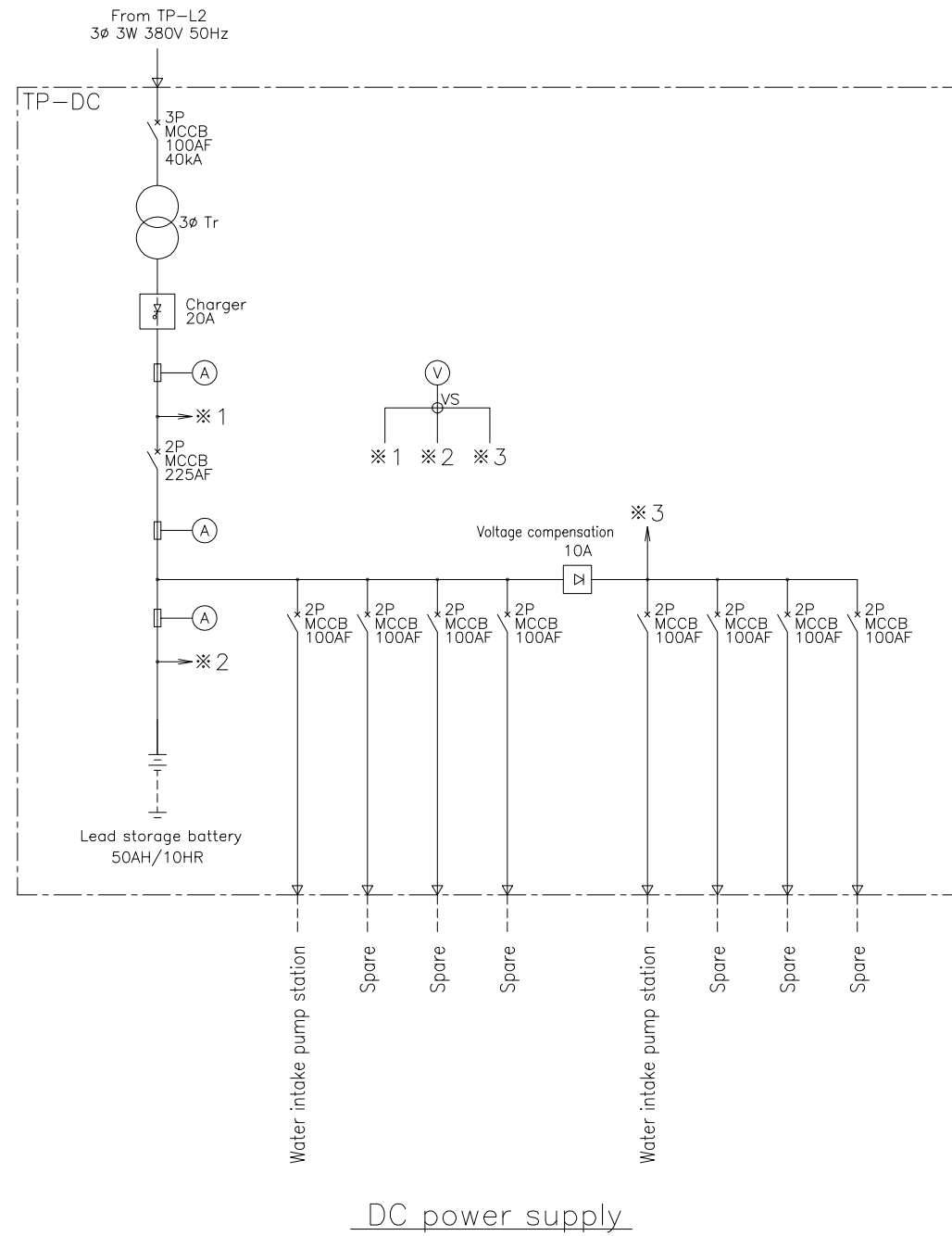
SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
T r	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E X	Integrated Excitation
H T. C t t	HT. Magnetic contacts	Dff	Differential Relay
S t. T r	Reduced Voltage Starter	I >	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensior	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	AVR	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P T T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transfomer	F T	Freguency Transducer
		V T	Voltage Transducer
V	Voltage Meter		
A	Ammeter	Wh	Watt-Hour Meter
Pf	Power Factor Meter	Tarh	Tar-Hour Meter
W	Watt Meter	V selector	Voltage Selector Switch
Vo	Zero-Phase Volage Meter	+	Current Selector Switch
G	Generator		
F	Frequency Meter		



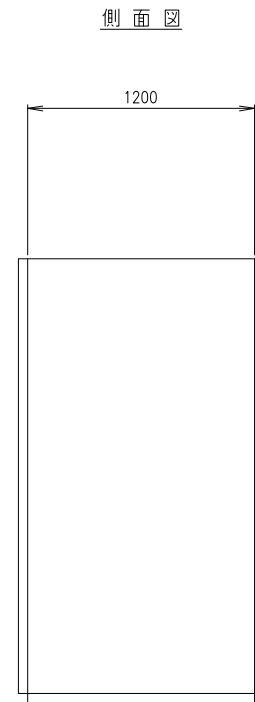
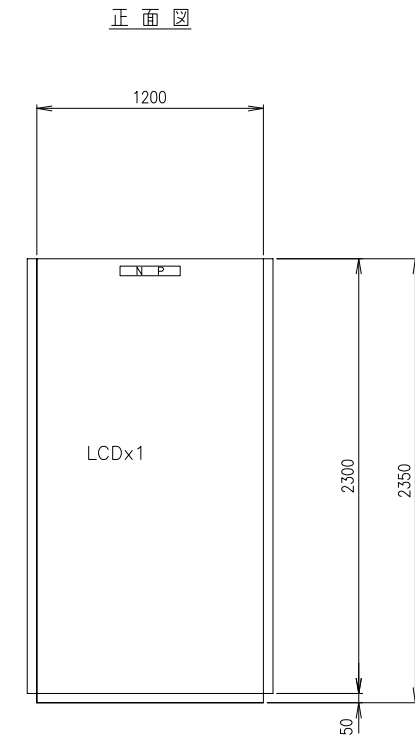
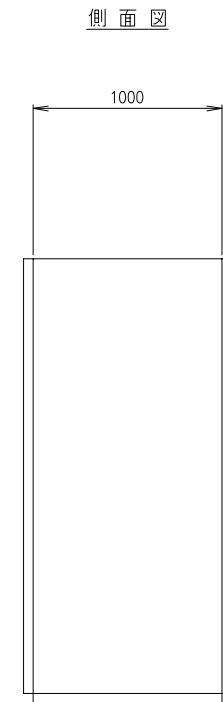
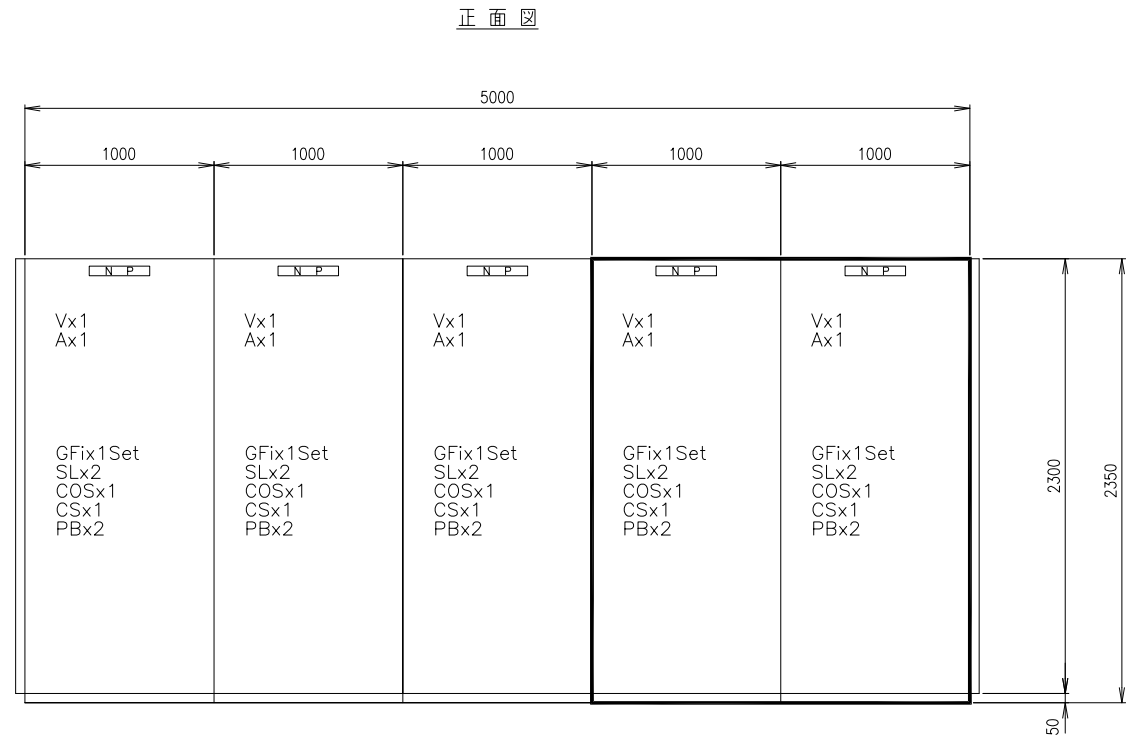
Note1: Shows the phase-2.
Besides, the phase-1 is shown.

No.			
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SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch		Voltage Detector		Voltage Meter
LDS	Load Switch		Over Current Relay		Ammeter
Tr	Transformer		Voltage & Current Transformer		Power Factor Meter
VCB	Vacuum Circuit Breaker		Diesel Engine		Watt Meter
3PDT DS	3pole Double Throw Disconnecting sw.		Integrated Excitation		Zero-Phase Volage Meter
HT. C t t	HT. Magnetic contacts		Differential Relay		Generator
S t . T r	Reduced Voltage Starter		Directional earth Fault Relay		Frequency Meter
SR	Series Reactor		Under Voltage Relay		Watt-Hour Meter
SC	Static Condensor		Over Voltage Relay		Tar-Hour Meter
MCCB	Mold Case Circuit Braker		Automatic Voltage Regulator		Voltage Selector Switch
VT	Voltage Transformer		Current Transducer		Current Selector Switch
CT	Current Transformer		Power Factor Transducer		
LA	Arrester		Watt Transducer		
ZCT	Zero - phase Current Transfomer		Frequency Transducer		
			Voltage Transducer		



Note1: This drawing Shows the phase-1.



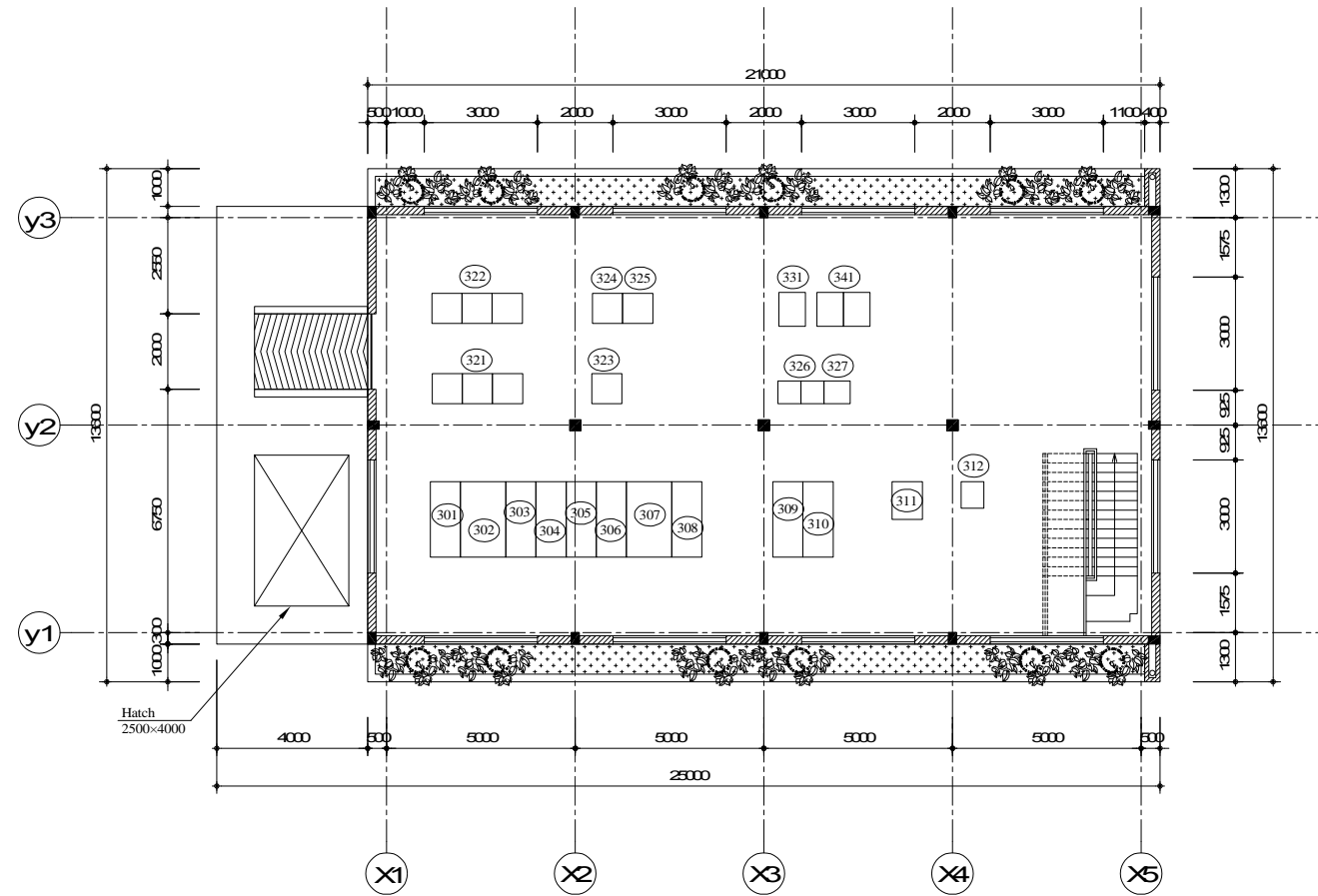
取水設備 直流電源盤
TP-DC

盤名称	No.1取水ポンプ盤	No.2取水ポンプ盤	No.3取水ポンプ盤	No.4取水ポンプ盤	No.5取水ポンプ盤
盤記号	TP-LP1	TP-LP2	TP-LP3	TP-LP4	TP-LP5

Symbol	Name
V	Voltage Meter
A	Ammeter
GFI	Group Fault Indicator
SL	Signal Lamp
COS	Selector Switch
CS	Control Switch
PB	Push Button Switch
27	Under Voltage Relay
51	Over Current Relay
59	Over Voltage Relay
64	Ground Over Voltage Relay
51G	Ground Over Current Relay
87	Differential Motion Ratio Rlay

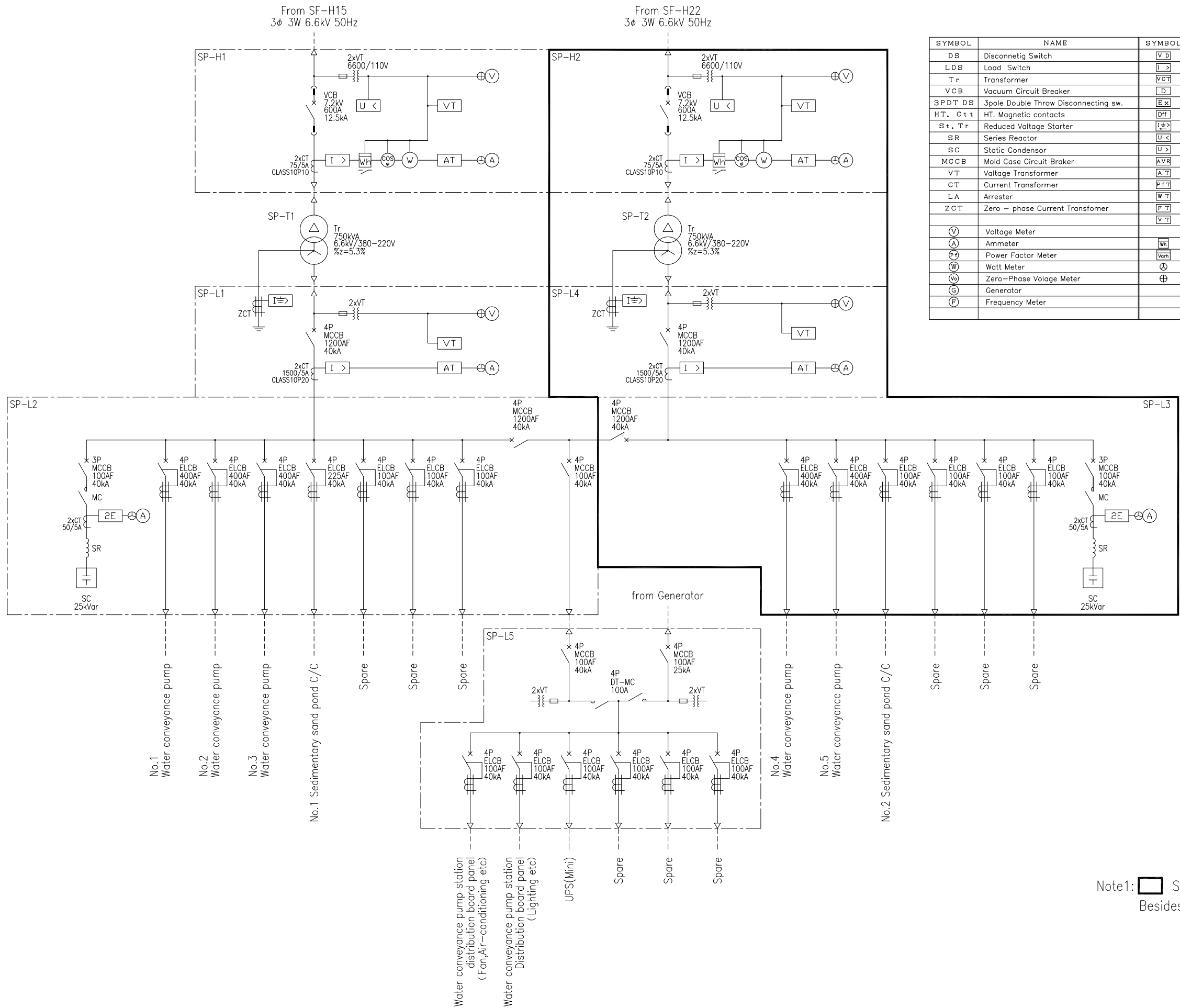
Note1: Shows the phase-2.
Besides,the phase-1 is shown.

Water Conveyance Electric Facility



Equipment List

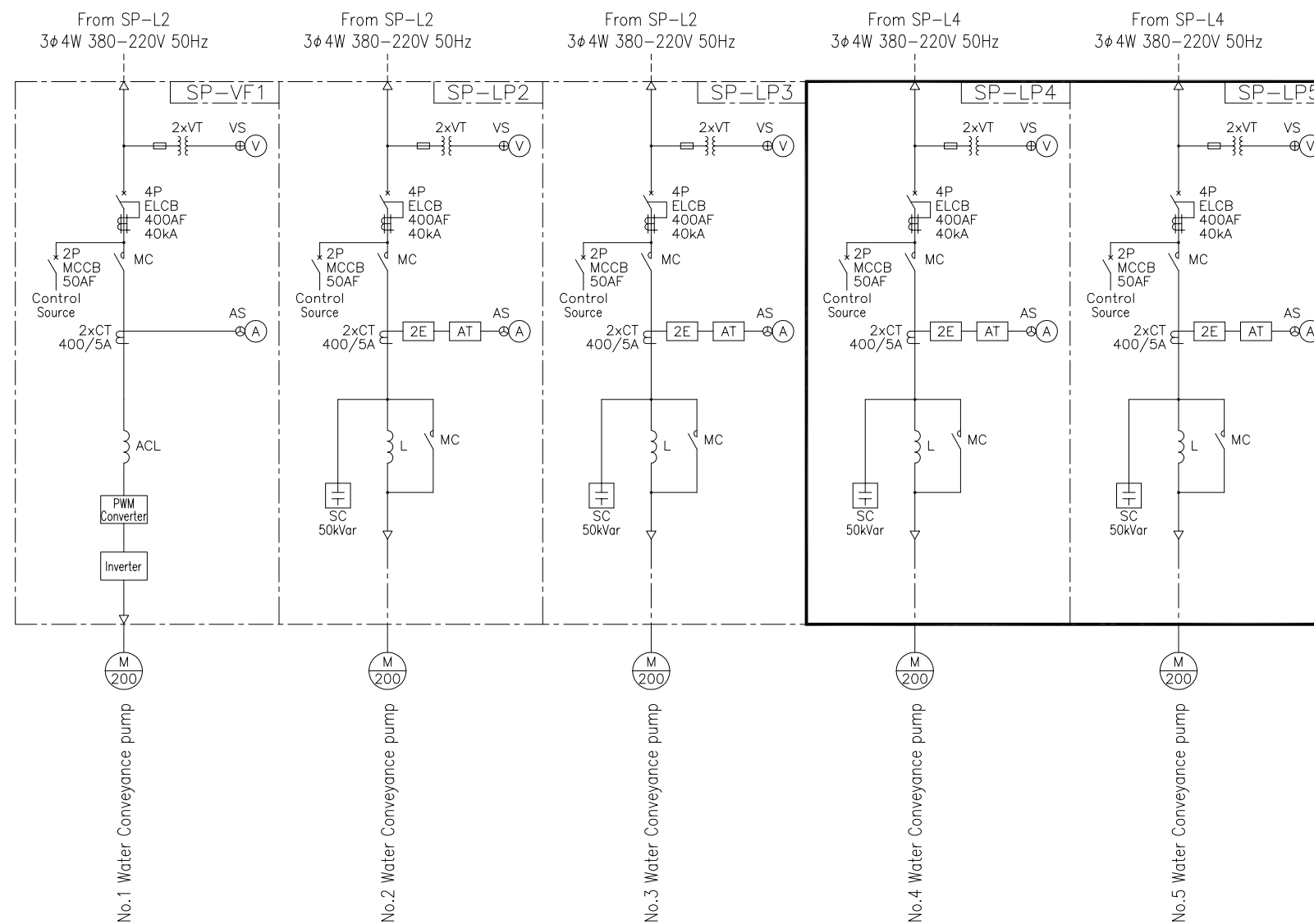
No.	Name	Symbol	Remarks	No.	Name	Symbol	Remarks
301	No.1 Power Receiving Panel	SP-H1	Phase 1	321	No.1 Conveyance Pumping WWF Panel	SP-VF1	Phase 1
302	No.1 Transformer Panel	SP-H2	"	322	No.2 Conveyance Pumping WWF Panel	SP-VF2	"
303	No.1 Transformer Secondary Circuit Panel	SP-L1	"	323	No.3 Conveyance Pumping Panel	SP-LP1	"
304	No.1 Low-pressure Power Divaricate Panel	SP-L2	"	324	No.4 Conveyance Pumping Panel	SP-LP2	Phase 2
305	No.2 Low-pressure Power Divaricate Panel	SP-L4	"	325	No.5 Conveyance Pumping Panel	SP-LP3	"
306	No.2 Transformer Secondary Circuit Panel	SP-L3	"				
307	No.2 Transformer Panel	SP-H4	"				
308	No.2 Power Receiving Panel	SP-H3	"				
309	Power Deverter Panel	SP-L5	"				
310	Power for Building / Lighting Deverter Panel	SP-L6	"				
311	Direct-current Power Panel	SP-DC	"	326	Settling Basin Facility CC	SP-CC	Phase 1
312	Mini-Uninterruptive Power Supply	SP-UPS	"	327	Settling Basin Facility RY	SP-RY	"
				331	Settling Basin Facility Instrumentation Converter Panel	SP-KP	"
				341	Settling Basin / Conveyance Pumping Facility Controller Panel	SP-COT	"



SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
Tr	Transformer	V & T	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E x	Integrated Excitation
H.T. C t t	HT. Magnetic contacts	Dff	Differential Relay
S t . T r	Reduced Voltage Starter	I > & D	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensar	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	A V R	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P f T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transformer	F T	Freguency Transducer
		V T	Voltage Transducer
V	Voltage Meter	Wh	Watt-Hour Meter
A	Ammeter	Whm	Tar-Hour Meter
Pf	Power Factor Meter	V S	Voltage Selector Switch
W	Watt Meter	C S	Current Selector Switch
V0	Zero-Phase Volage Meter		
G	Generator		
F	Frequency Meter		

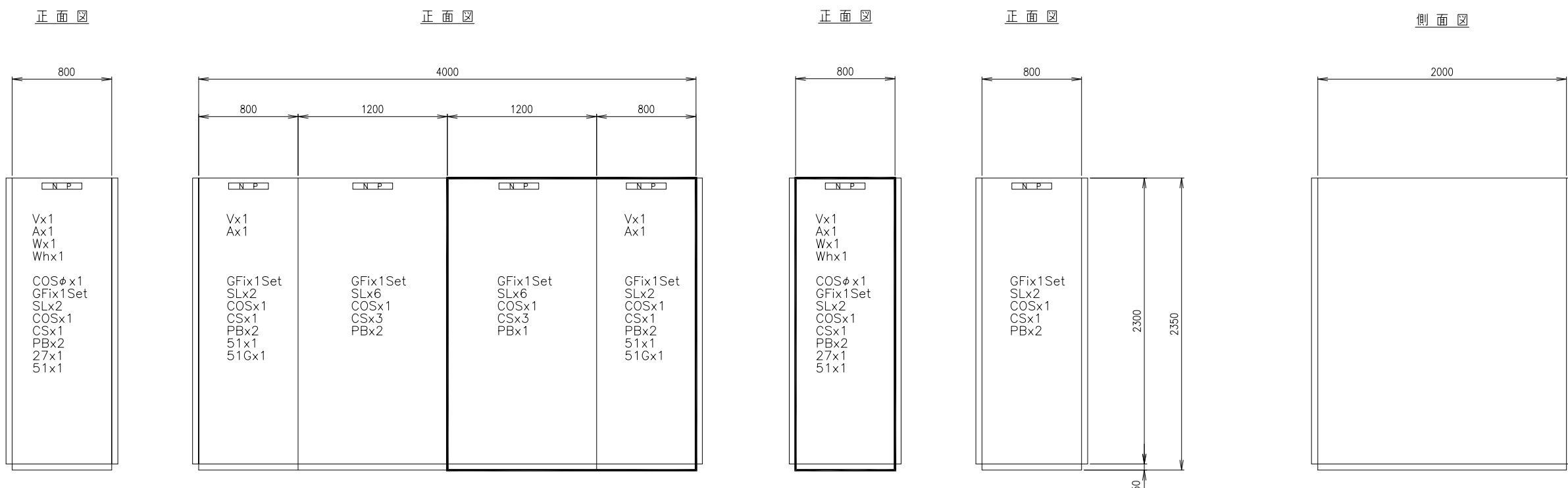
Note1: Shows the phase-2.
Besides, the phase-1 is shown.

SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
T r	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E X	Integrated Excitation
H.T. C t t	HT. Magnetic contacts	Dff	Differential Relay
S t. T r	Reduced Voltage Starter	I >	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensior	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	AVR	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transfomer	F T	Freguency Transducer
		V T	Voltage Transducer
V	Voltage Meter		
A	Ammeter	Wh	Watt-Hour Meter
Pf	Power Factor Meter	Tarh	Tar-Hour Meter
W	Watt Meter	V S	Voltage Selector Switch
Vo	Zero-Phase Volage Meter	+	Current Selector Switch
G	Generator		
F	Frequency Meter		



Note1: Shows the phase-2.
 Besides, the phase-1 is shown.

No.			
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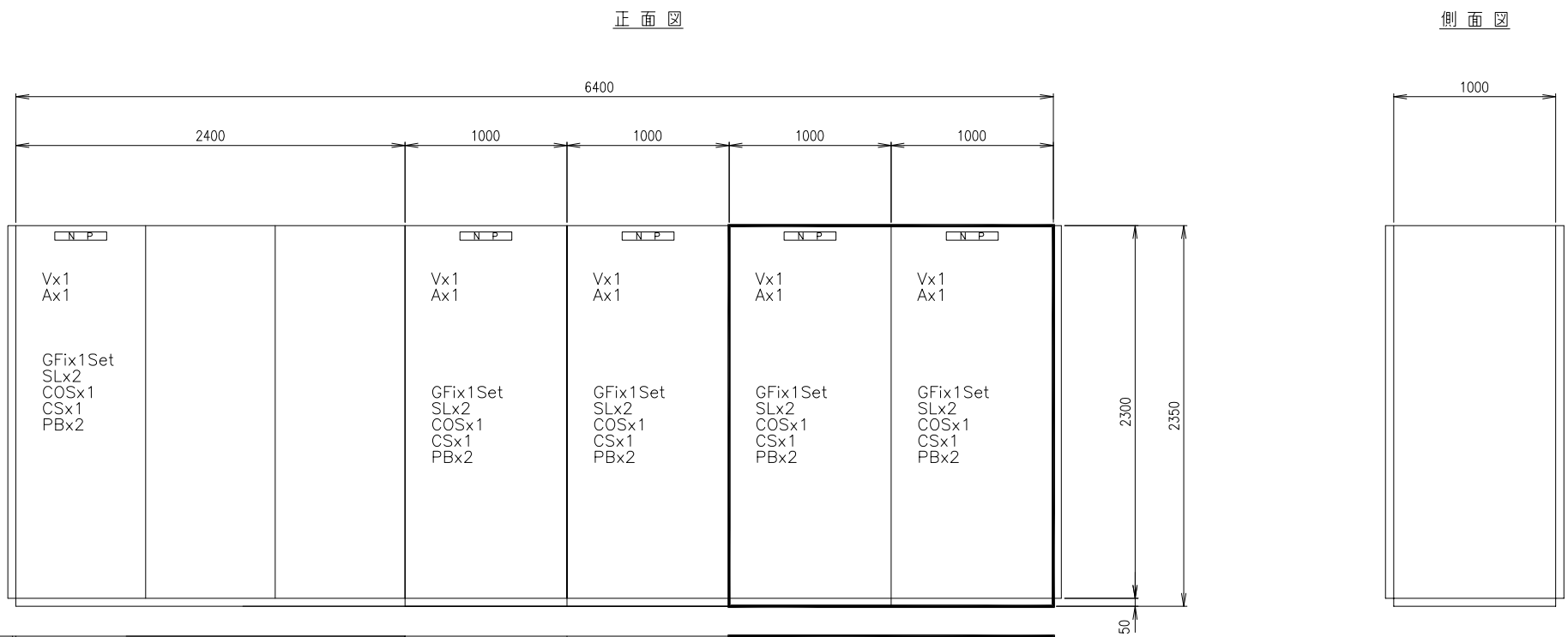


盤名称	No.1受電盤
盤記号	SP-H1

No.1 変圧器二次盤	No.1 低圧動力分岐盤	No.2 低圧動力分岐盤	No.2 変圧器二次盤
SP-L1	SP-L2	SP-L3	SP-L4

No.2受電盤
SP-H2

建築動力 照明分岐盤
SP-L5

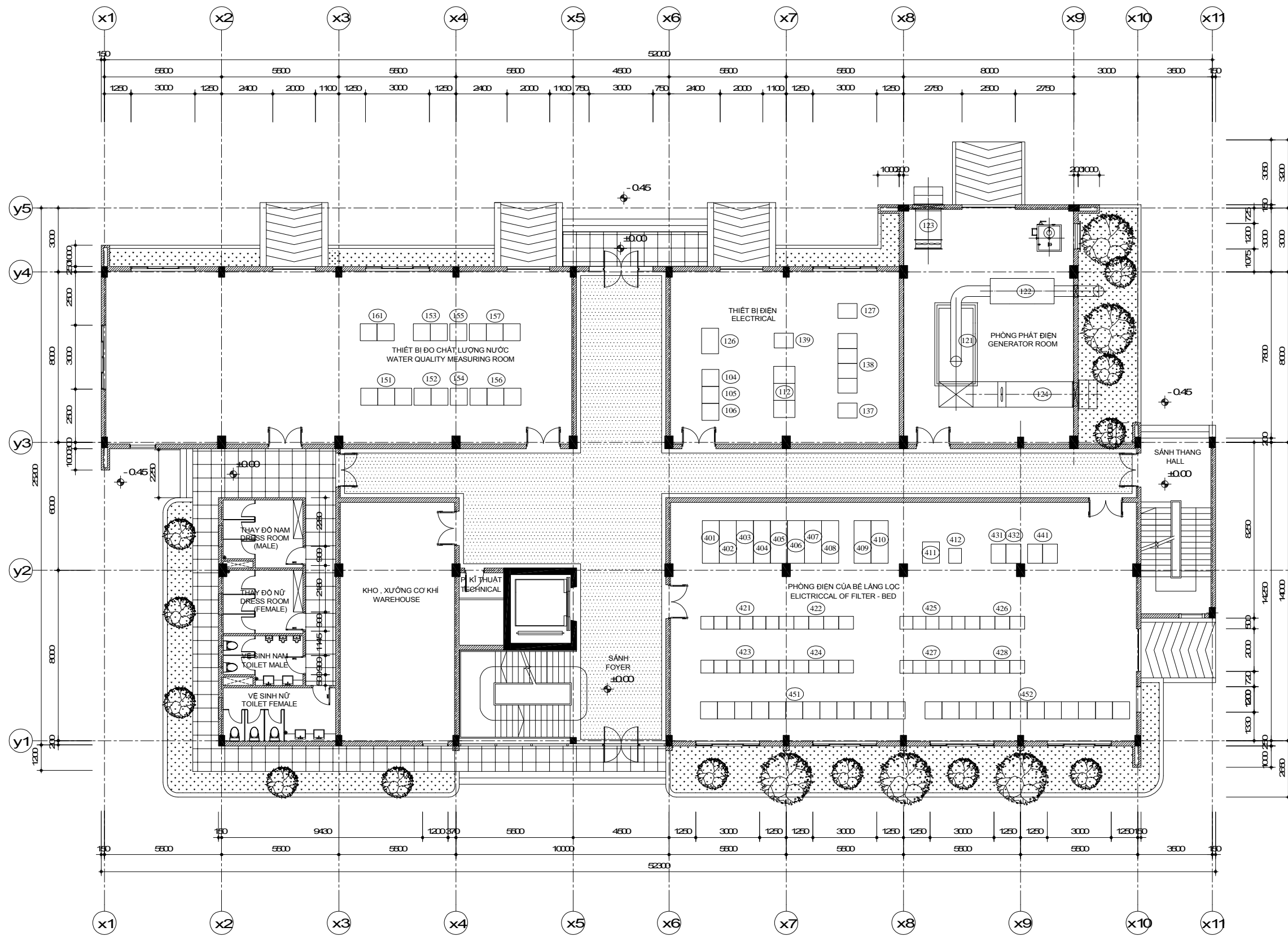


盤名称	No.1導水ポンプVWF盤	No.2導水ポンプ盤	No.3導水ポンプ盤	No.4導水ポンプ盤	No.5導水ポンプ盤
盤記号	SP-VF1	SP-LP2	SP-LP3	SP-LP4	SP-LP5

Symbol	Name
V	Voltage Meter
A	Ammeter
GFI	Group Fault Indicator
SL	Signal Lamp
COS	Selector Switch
CS	Control Switch
PB	Push Button Switch
27	Under Voltage Relay
51	Over Current Relay
59	Over Voltage Relay
64	Ground Over Voltage Relay
51G	Ground Over Current Relay
87	Differential Motion Ratio Relay

Note1: Shows the phase-2.
Besides, the phase-1 is shown.

Administration Station Electric facility 1/2
(1st Floor)



機器一覧表

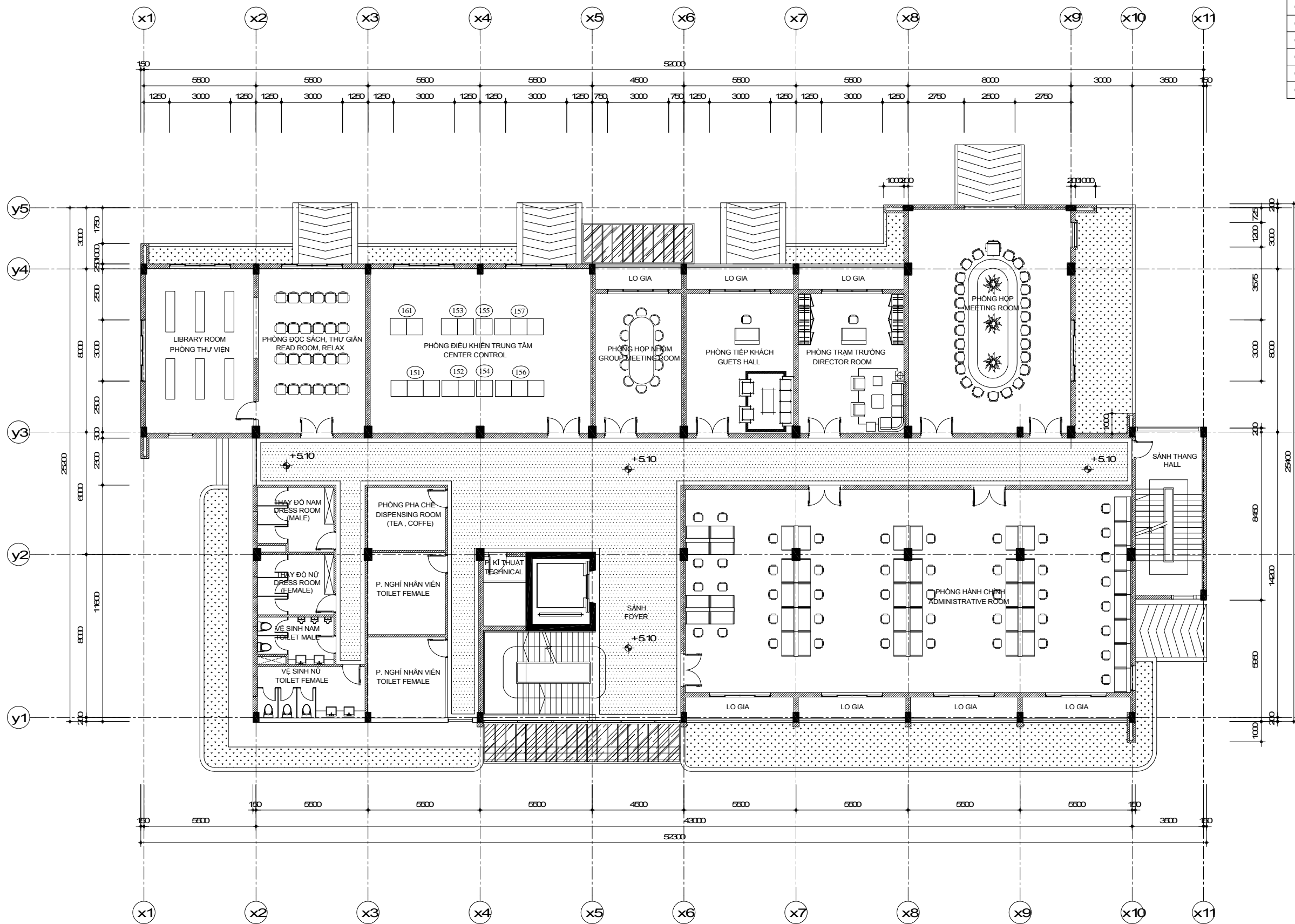
No.	名称	記号	備考
401	No.1受電盤	WR-H1	1期
402	No.1変圧器盤	WR-H2	"
403	No.1変圧器二次盤	WR-L1	"
404	No.1低圧動力分岐盤	WR-L2	"
405	No.2低圧動力分岐盤	WR-L4	"
406	No.2変圧器二次盤	WR-L3	"
407	No.2変圧器盤	WR-H4	"
408	No.2受電盤	WR-H3	"
409	電源切替盤	WR-L5	"
410	建築動力・照明分岐盤	WR-L6	"
411	直流電源盤	WR-DC	"
412	ミニUPS	WR-UPS	"
421	No.1沈殿池CC	W-CC1	1期
422	No.1沈殿池RY	W-RY1	"
423	No.2沈殿池CC	W-CC2	2期
424	No.2沈殿池RY	W-RY2	"
425	No.1ろ過池CC	R-CC1	1期
426	No.1ろ過池RY	R-RY1	"
427	No.2ろ過池CC	R-CC2	2期
428	No.2ろ過池RY	R-RY2	"
431	No.1沈殿ろ過池計装変換器盤	WR-KP1	1期
432	No.2沈殿ろ過池計装変換器盤	WR-KP2	2期
441	沈殿池・ろ過池コントロール盤	WR-COT	1期
451	グリーンリーフ制御盤(×12面)	別途機械	1期
452	グリーンリーフ制御盤(×12面)	"	2期
104	低圧動力分岐盤	M-L1	1期
105	電源切替盤	M-L2	"
106	建築動力・照明分岐盤	M-L3	"
112	無停電電源装置	M-CVCF	1期
121	非常用自家発電装置	DG	1期
122	排気消音器		"
123	給気消音器		"
124	換気消音器		"
125	燃料小出槽		"
126	非常用電源分岐盤	DG-L1	"
127	管理本館コントロール盤	M-COT	"
137	遠方監視コントロール盤	COT	"
138	テレメータ盤	TM	"
139	制御電源分岐盤	DB	"
151	着水井水質架(濁度・PH・電気伝導率)	SP-1	1期
152	1系沈殿池水質架(濁度・PH)	SP-2A	"
153	2系沈殿池水質架(濁度・PH)	SP-2B	2期
154	1系ろ過池水質架(残留塩素)	SP-3A	1期
155	2系ろ過池水質架(残留塩素)	SP-3B	2期
156	1系浄水池水質架(高感度濁度・PH・残留塩素)	SP-4A	1期
157	2系浄水池水質架(高感度濁度・PH・残留塩素)	SP-4A	2期
161	水質計器盤	KP-SP	1期

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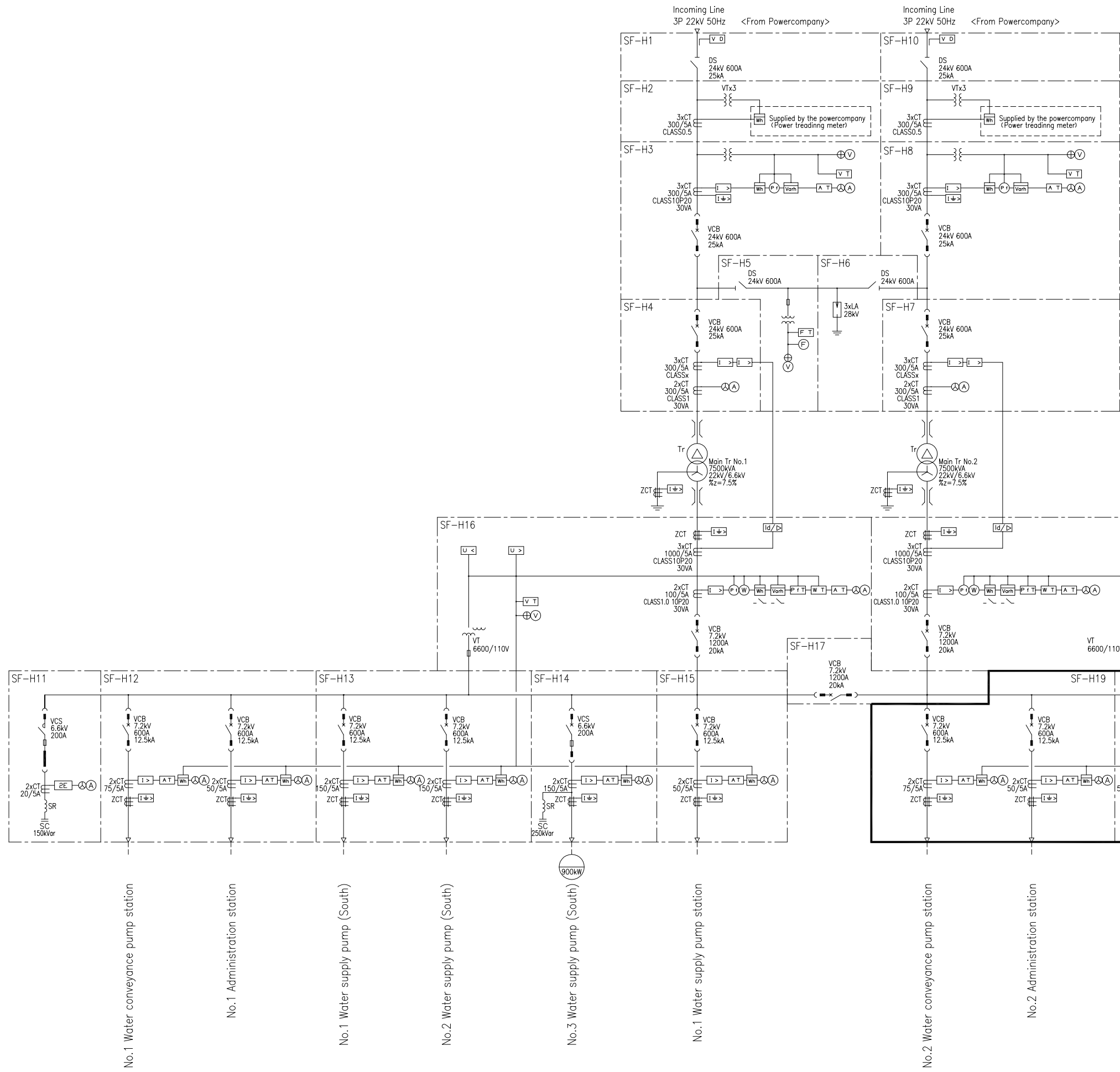
Administration Station Electric facility 2/2
(2nd Floor)

機器一覧表

No.	名称	記号	備考
(131)	オペレータコンソール1~4	OS	1期
(132)	Webサーバ	WEB	"
(133)	維持管理用PC	PC	"
(134)	水道料金システム	WPC	"
(135)	大型ディスプレイ	DP	"
(136)	プリンタ	PR	"

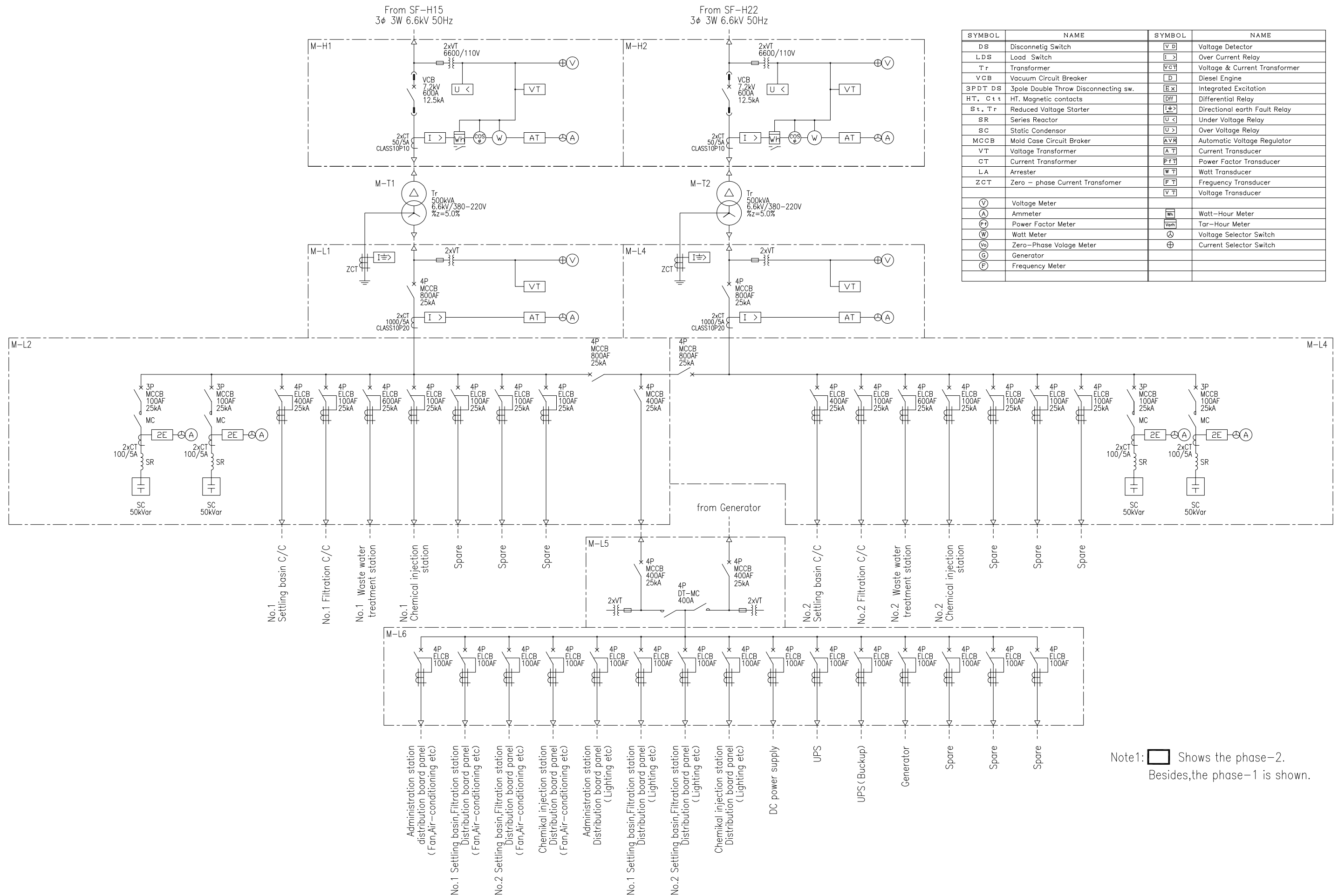


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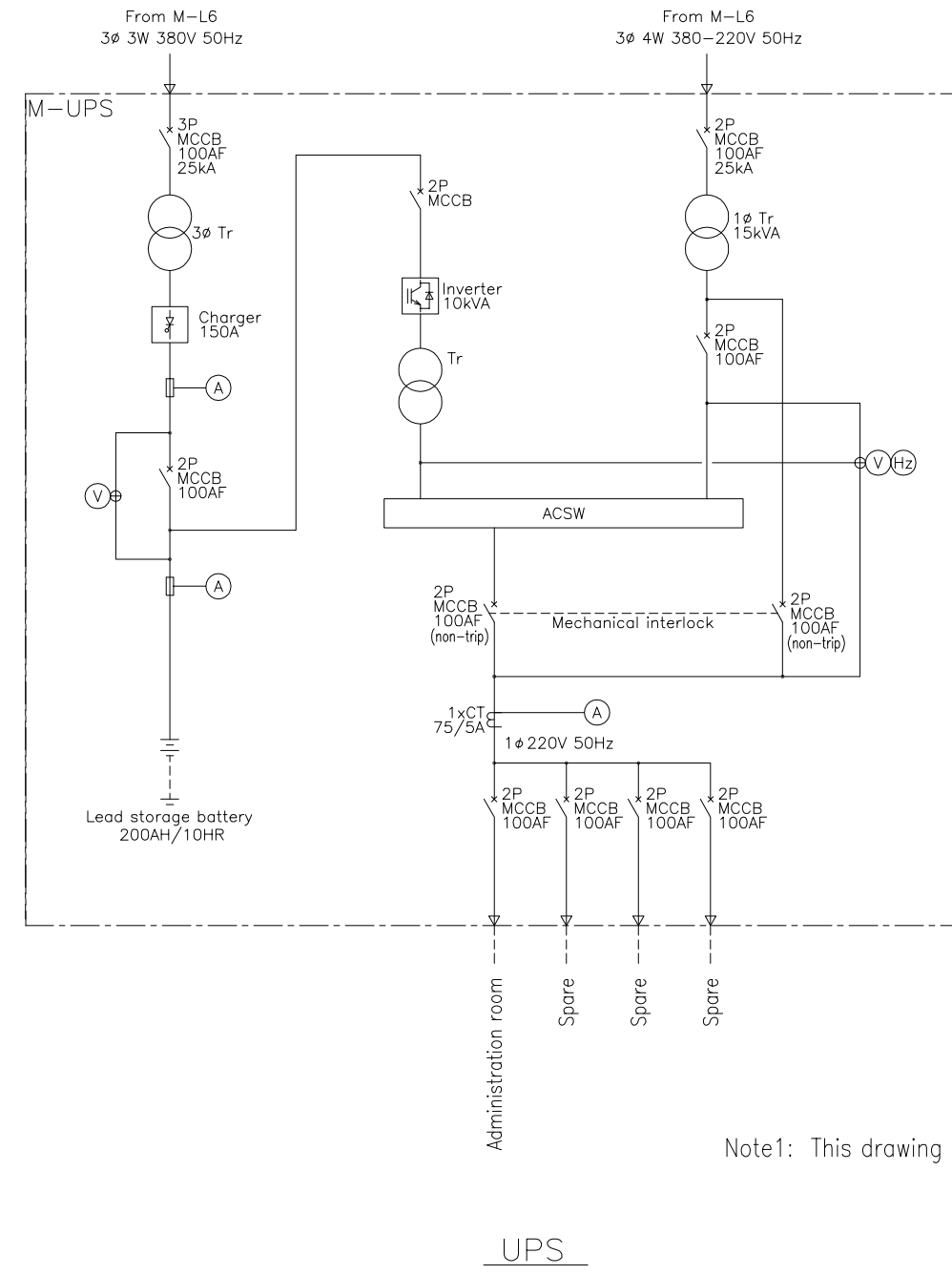
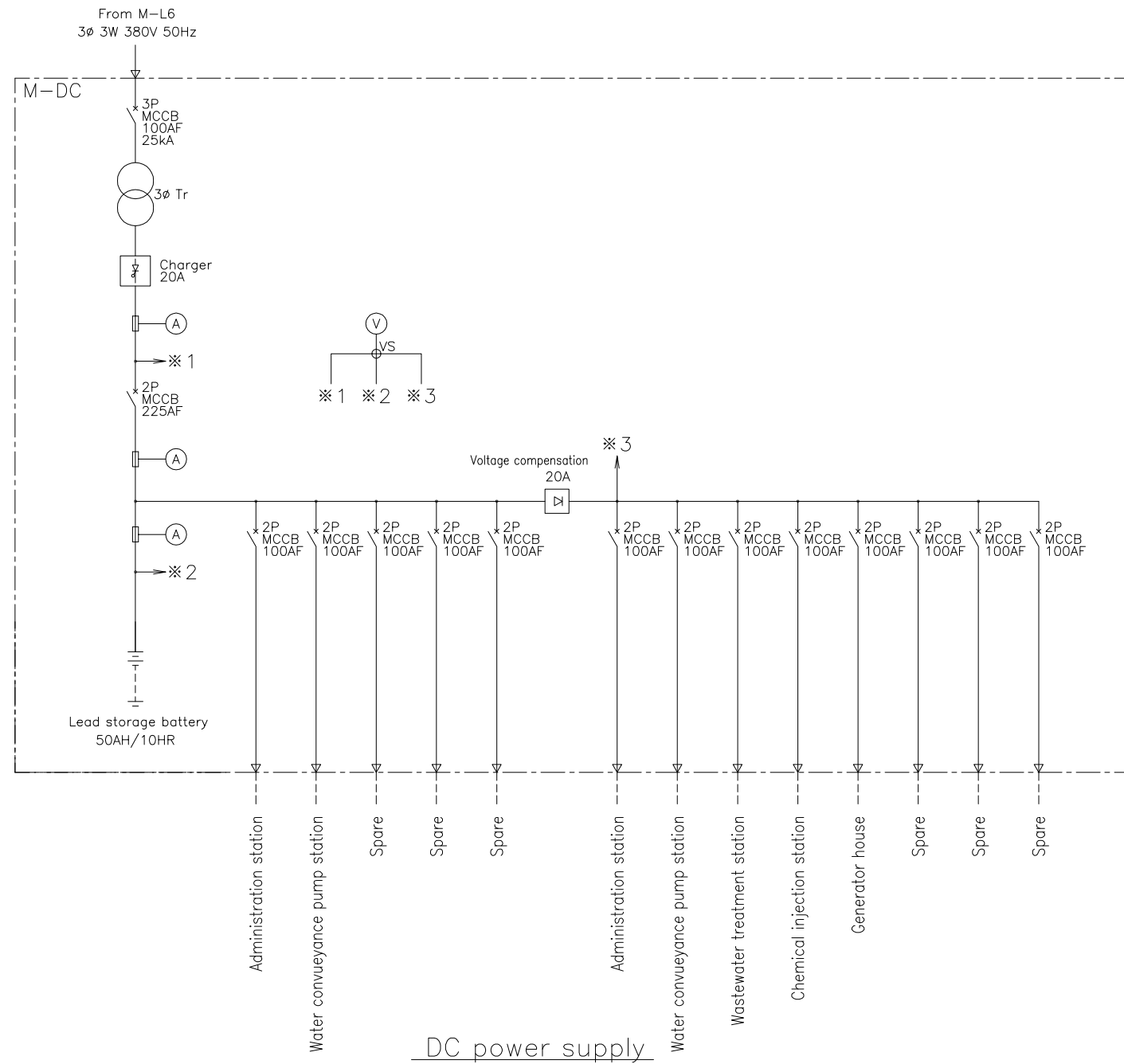
SYMBOL	NAME	SYMBOL	NAME
DS	Disconnector Switch	V D	Voltage Detector
L DS	Load Switch	I >	Over Current Relay
Tr	Transformer	V CT	Voltage & Current Transformer
V CB	Vacuum Circuit Breaker	D	Diesel Engine
3 P D T DS	3pole Double Throw Disconnecting sw.	E x	Integrated Excitation
H T. C o t t	HT. Magnetic contacts	D f r	Differential Relay
S t. T r	Reduced Voltage Starter	I < >	Directional earth Fault Relay
S R	Series Reactor	U <	Under Voltage Relay
S C	Static Condenser	U >	Over Voltage Relay
M C C B	Mold Case Circuit Breaker	A v R	Automatic Voltage Regulator
V T	Voltage Transformer	A T	Current Transducer
C T	Current Transformer	P T T	Power Factor Transducer
L A	Arrester	W T	Watt Transducer
Z C T	Zero - phase Current Transformer	F T	Frequency Transducer
O L T C	On Load Tap Changer	V T	Voltage Transducer
V	Voltage Meter		
A	Ammeter	Wh	Watt-Hour Meter
P	Power Factor Meter	Vwh	Tar-Hour Meter
W	Watt Meter		
Vo	Zero-Phase Voltage Meter		
G	Generator		
F	Frequency Meter		

Note1: I < Shows the phase-2.
Besides, the phase-1 is shown.



Note1: Shows the phase-2. Besides, the phase-1 is shown.

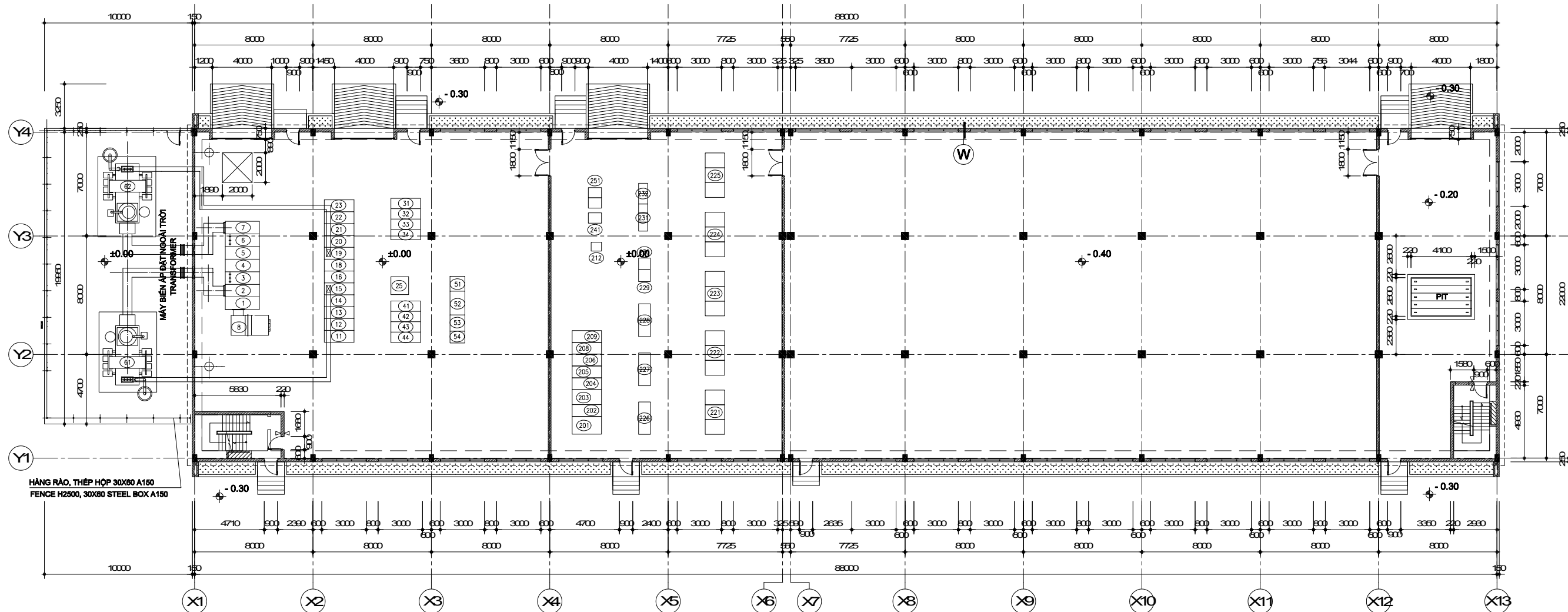
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch		Voltage Detector		Voltage Meter
LDS	Load Switch		Over Current Relay		Ammeter
Tr	Transformer		Voltage & Current Transformer		Power Factor Meter
VCB	Vacuum Circuit Breaker		Diesel Engine		Watt Meter
3PDT DS	3pole Double Throw Disconnecting sw.		Integrated Excitation		Zero-Phase Volage Meter
HT. C t t	HT. Magnetic contacts		Differential Relay		Generator
S t. T r	Reduced Voltage Starter		Directional earth Fault Relay		Frequency Meter
SR	Series Reactor		Under Voltage Relay		Watt-Hour Meter
SC	Static Condensor		Over Voltage Relay		Tar-Hour Meter
MCCB	Mold Case Circuit Braker		Automatic Voltage Regulator		Voltage Selector Switch
VT	Voltage Transformer		Current Transducer		Current Selector Switch
CT	Current Transformer		Power Factor Transducer		
LA	Arrester		Watt Transducer		
ZCT	Zero - phase Current Transformer		Frequency Transducer		
			Voltage Transducer		



Note1: This drawing Shows the phase-1.

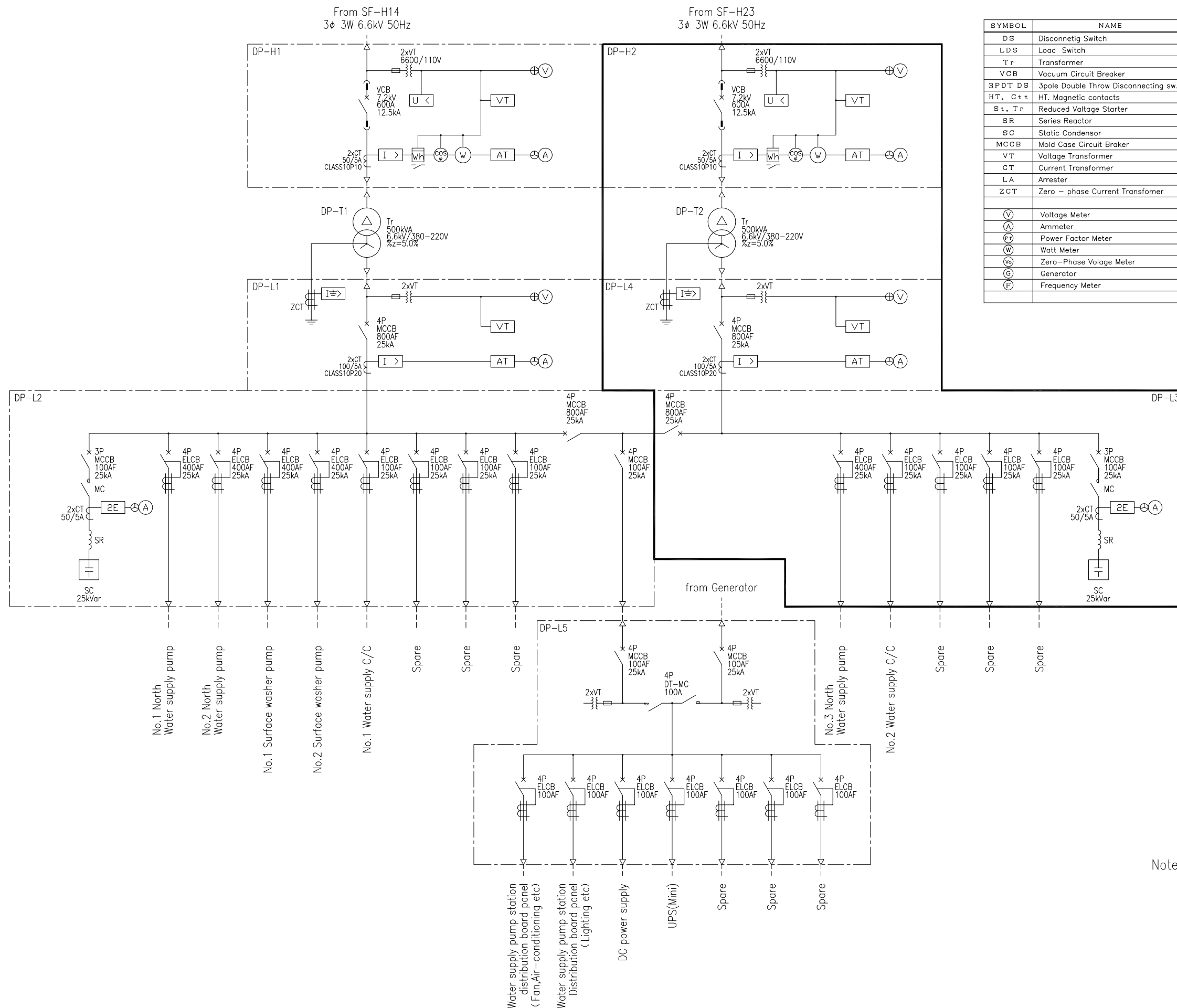
No.			
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Water Transmission Electric Facility



機器一覧表

No.	名称	記号	備考	No.	名称	記号	備考	No.	名称	記号	備考	No.	名称	記号	備考	No.	名称	記号	備考
①	VCT切替盤	H1	1期	⑪	No.1導水/No.1沉殿・ろ過器電盤	H11	1期	③①	1系No.1進相コンデンサ盤	H31	1期	②①	No.1南系送水ポンプVVVF盤	S-VF1	1期	②①	No.1南系送水ポンプVVVF盤	S-VF1	1期
②	1系主変圧器1次盤	H2	"	⑫	No.1送水変圧器一次/No.1送水ポンプ一次盤	H12	"	③②	1系No.2進相コンデンサ盤	H32	"	②②	No.2南系送水ポンプVVVF盤	S-VF2	"	②②	No.2南系送水ポンプVVVF盤	S-VF2	"
③	1番線受電盤	H3	"	⑬	No.2,3送水ポンプ一次盤	H13	"	③③	1系No.3進相コンデンサ盤	H33	"	②③	No.3南系送水ポンプVVVF盤	S-VF3	"	②③	No.3南系送水ポンプVVVF盤	S-VF3	"
④	No.1母線連絡盤	H4	"	⑭	1系EVT,GTR盤	H14	"	③④	1系No.4進相コンデンサ盤	H34	"	②④	No.4南系送水ポンプVVVF盤	S-VF4	2期	②④	No.4南系送水ポンプVVVF盤	S-VF4	2期
⑤	No.2母線連絡盤	H5	"	⑮	1系受電盤	H15	"					②⑤	No.5南系送水ポンプVVVF盤	S-VF5	"	②⑤	No.5南系送水ポンプVVVF盤	S-VF5	"
⑥	2番線受電盤	H6	"	⑯	1系母線盤	H16	"	④①	2系No.1進相コンデンサ盤	H41	1期	②⑥	No.2変圧器二次盤	S-L3	"	②⑥	No.2北系送水ポンプVVVF盤	S-VF6	1期
⑦	2系主変圧器1次盤	H7	"	⑰	一次-			④②	2系No.2進相コンデンサ盤	H42	"	②⑦	一次-			②⑦	No.2北系送水ポンプVVVF盤	S-VF7	"
⑧	VCTユニット	VCT	"	⑱	2系母線盤	H26	1期	④③	2系No.3進相コンデンサ盤	H43	"	②⑧	電源切替盤	S-L5	1期	②⑧	No.3北系送水ポンプVVVF盤	S-VF8	2期
⑥①	1系主変圧器	H-T1	1期	⑲	2系受電盤	H25	"	④④	2系No.4進相コンデンサ盤	H44	"	②⑨	建築動力・照明分岐盤	S-L6	"	②⑨	No.1表洗ポンプ盤	S-P1	1期
⑥②	2系主変圧器	H-T2	"	⑳	2系EVT,GTR盤	H24	"	⑤①	特高保護継電器盤	H-TR	1期				③①	No.2表洗ポンプ盤	S-P2	"	
				㉑	No.4,5送水ポンプ一次盤	H23	"	⑤②	特高監視操作盤	H-TK	"				③②	送水設備CC	S-CC	1期	
				㉒	No.2送水変圧器一次/予備盤	H22	"	⑤③	中継端子盤	H-TB	"				③③	送水設備RY	S-RY	"	
				㉓	No.2導水/No.2沉殿・ろ過器電盤	H21	"	⑤④	特高受変電設備コントロール盤	H-COT	"				③④	送水設備計装変換器盤	S-KP	"	
				㉔	一次-										③⑤	送水ポンプ設備コントロール盤	S-COT	"	
				㉕	直流電源盤	H-DC	1期						②⑲	ミニUPS	S-UPS	1期			

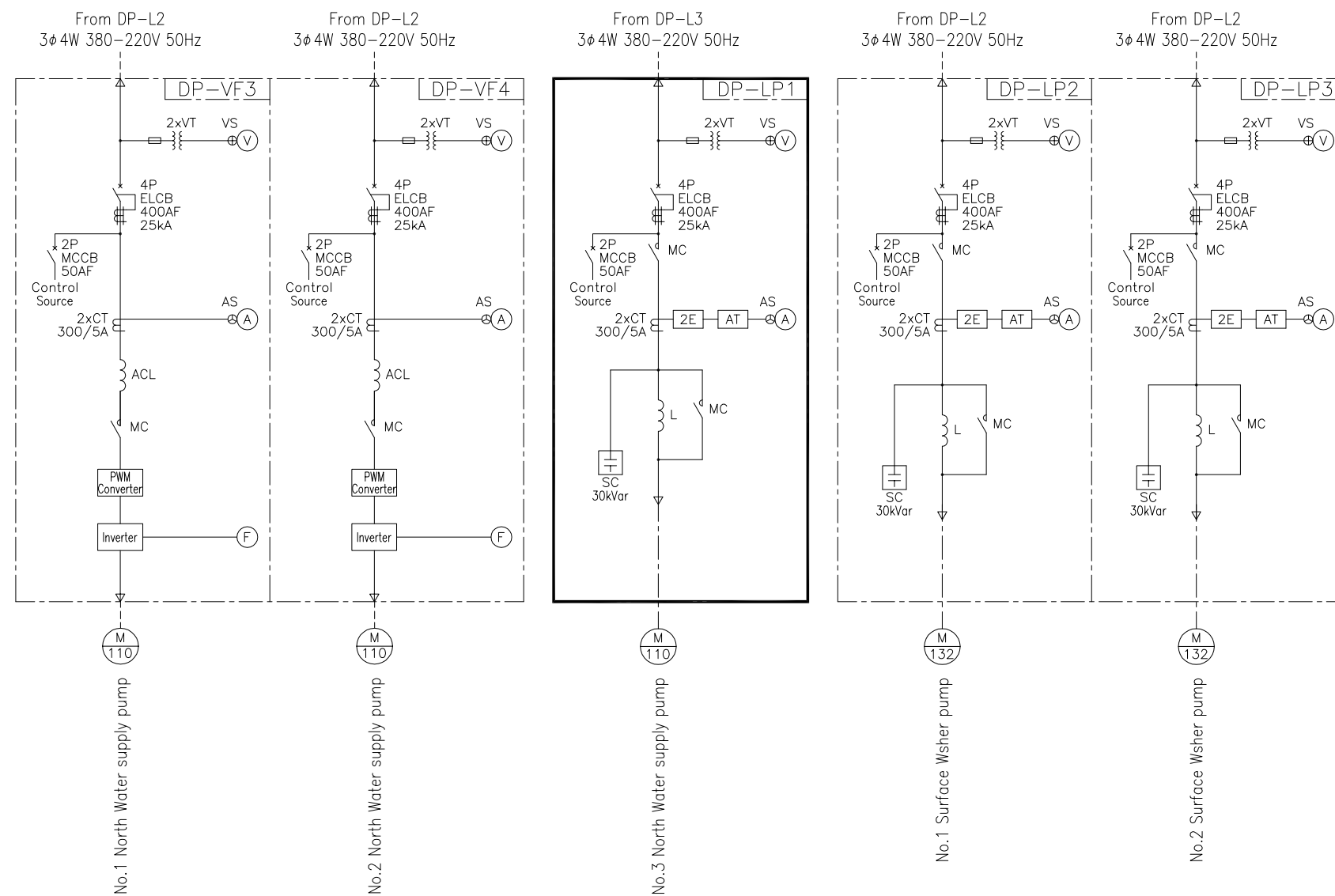


SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
Tr	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E x	Integrated Excitation
HT. C t t	HT. Magnetic contacts	Dff	Differential Relay
St. Tr	Reduced Voltage Starter	I >	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensar	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	AVR	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P f T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transfomer	F T	Freguency Transducer
		V T	Voltage Transducer
V	Voltage Meter	wh	Watt-Hour Meter
A	Ammeter	varh	Tar-Hour Meter
P	Power Factor Meter		
W	Watt Meter		
vo	Zero-Phase Volage Meter		
G	Generator		
F	Frequency Meter		

Note1: Shows the phase-2.
Besides, the phase-1 is shown.

No.			
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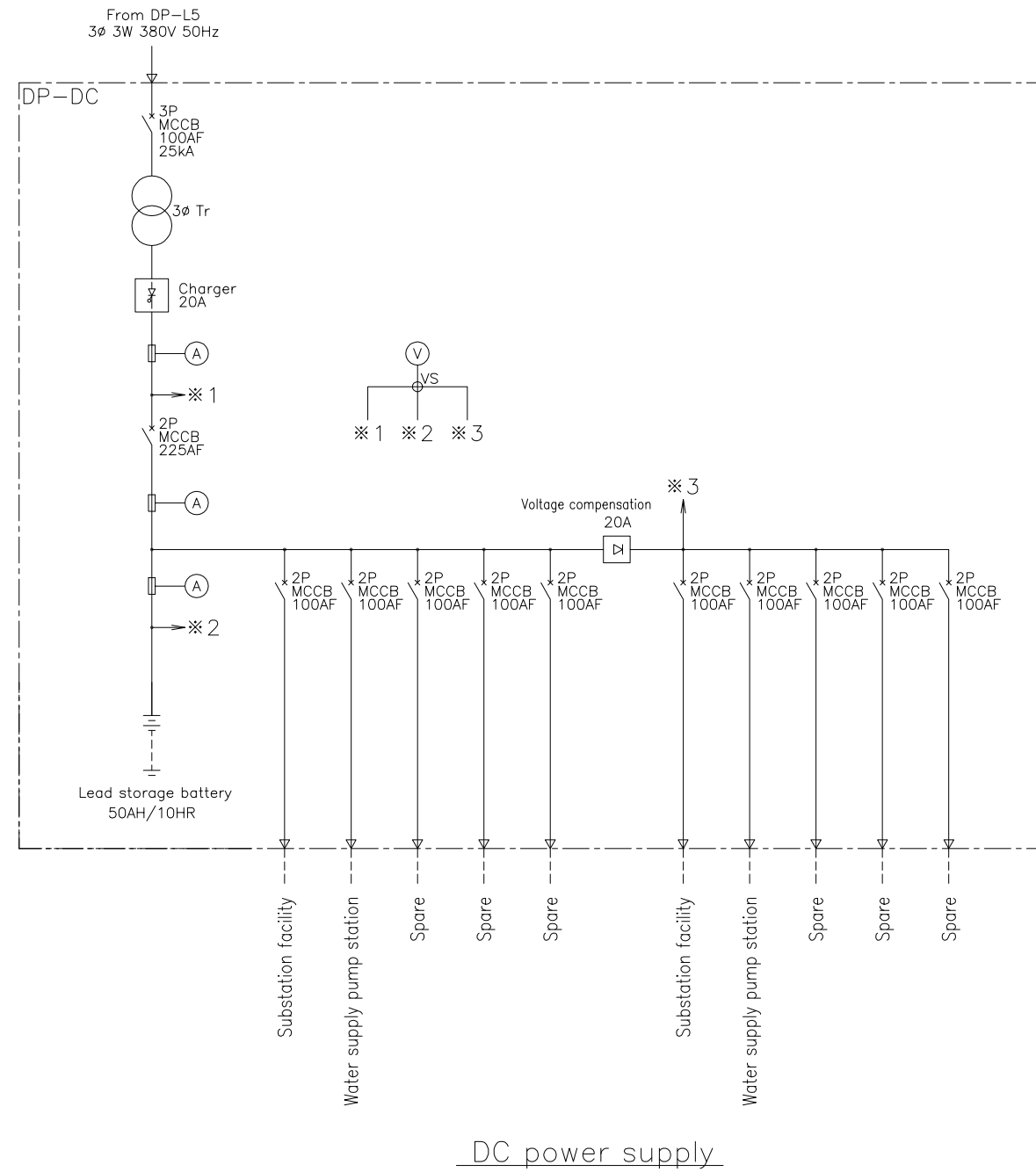
SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
T r	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E X	Integrated Excitation
H.T. C t t	HT. Magnetic contacts	Dff	Differential Relay
S t. T r	Reduced Voltage Starter	I >	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensor	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	AVR	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P T T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transfomer	F T	Freguency Transducer
		V T	Voltage Transducer
V	Voltage Meter		
A	Ammeter	Wh	Watt-Hour Meter
Pf	Power Factor Meter	TWh	Tar-Hour Meter
W	Watt Meter	V S	Voltage Selector Switch
Vo	Zero-Phase Volage Meter	+	Current Selector Switch
G	Generator		
F	Frequency Meter		



Note1: Shows the phase-2.
Besides, the phase-1 is shown.

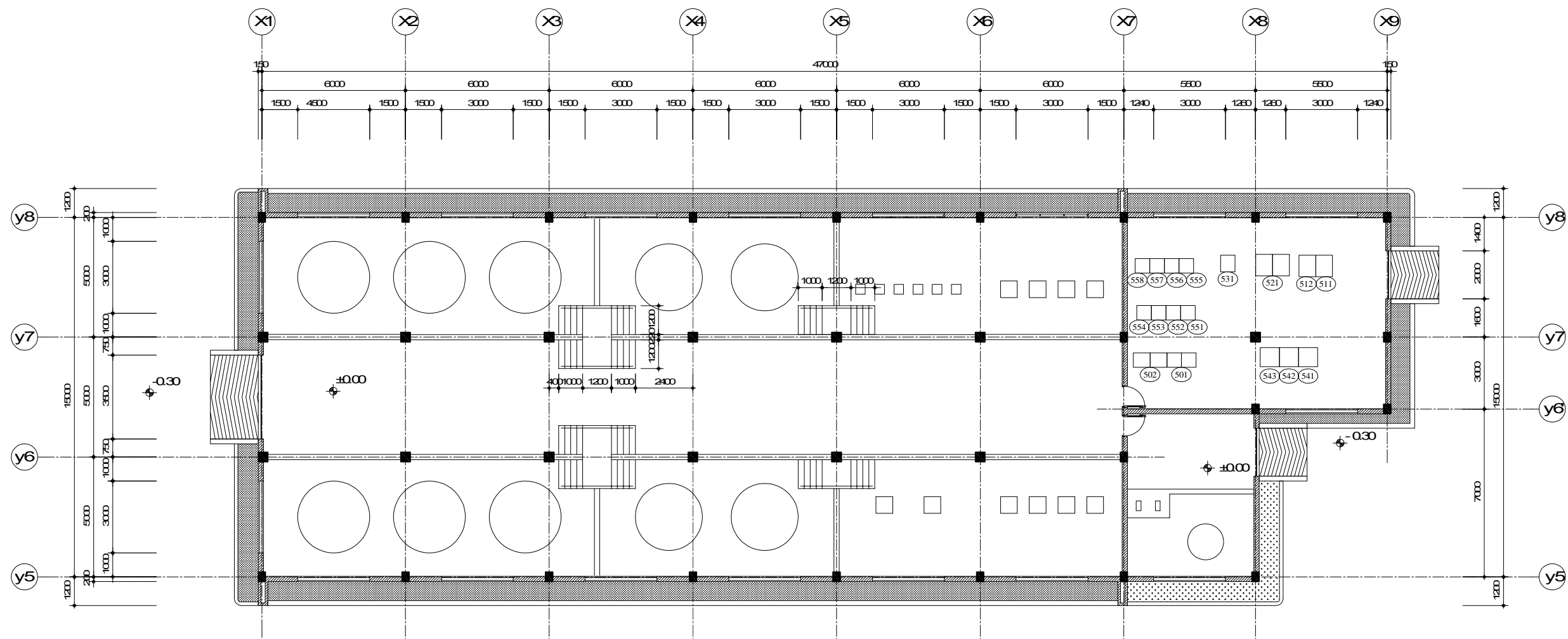
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SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch		Voltage Detector		Voltage Meter
LDS	Load Switch		Over Current Relay		Ammeter
T r	Transformer		Voltage & Current Transformer		Power Factor Meter
VCB	Vacuum Circuit Breaker		Diesel Engine		Watt Meter
3PDT DS	3pole Double Throw Disconnecting sw.		Integrated Excitation		Zero-Phase Volage Meter
H.T. C t t	HT. Magnetic contacts		Differential Relay		Generator
S t . T r	Reduced Voltage Starter		Directional earth Fault Relay		Frequency Meter
SR	Series Reactor		Under Voltage Relay		Watt-Hour Meter
SC	Static Condensor		Over Voltage Relay		Tar-Hour Meter
MCCB	Mold Case Circuit Braker		Automatic Voltage Regulator		Voltage Selector Switch
VT	Voltage Transformer		Current Transducer		Current Selector Switch
CT	Current Transformer		Power Factor Transducer		
LA	Arrester		Watt Transducer		
ZCT	Zero - phase Current Transfomer		Frequency Transducer		
			Voltage Transducer		



Note1: This drawing Shows the phase-1.

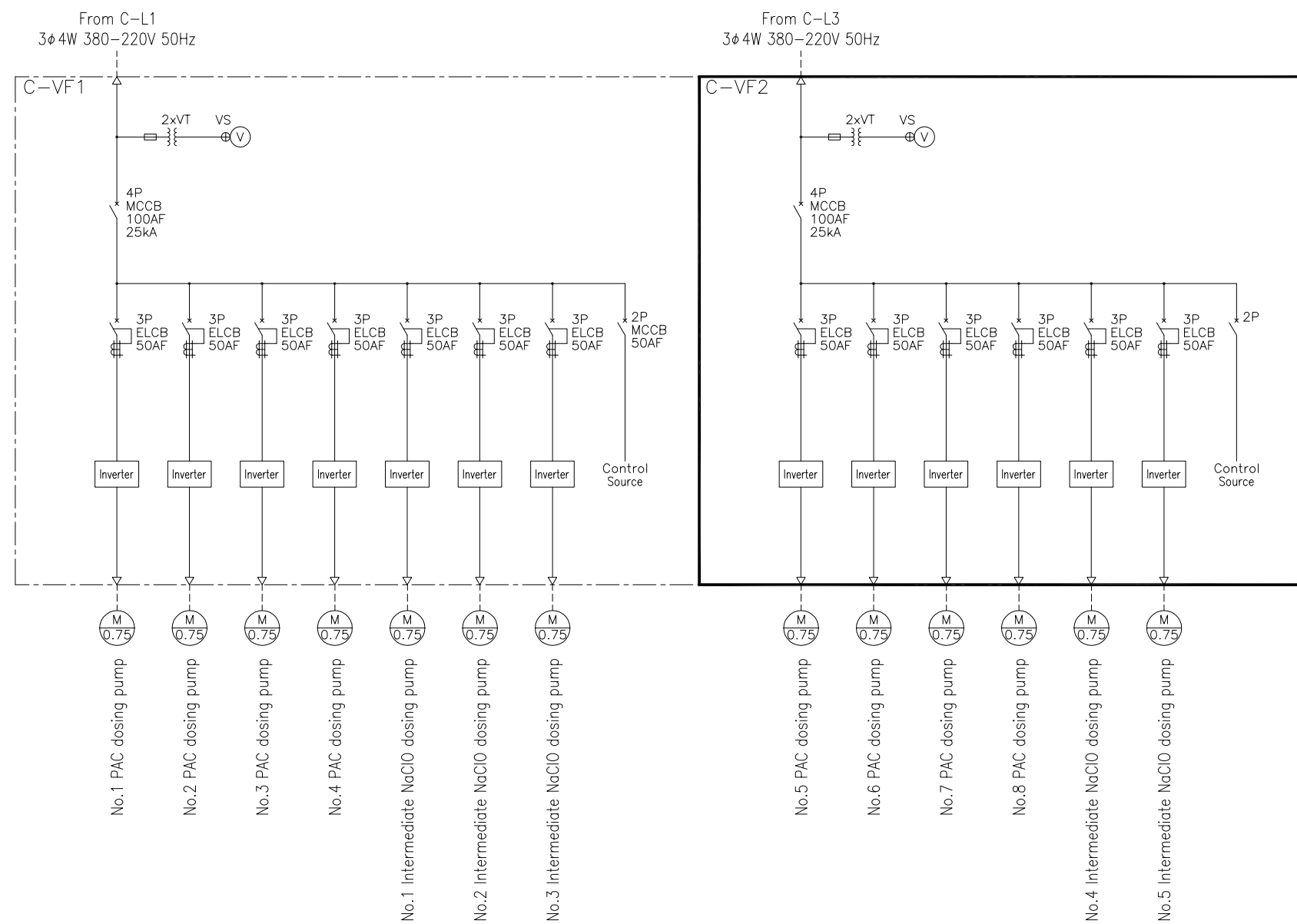
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機器一覧表

No.	名称	記号	備考	No.	名称	記号	備考
501	No.1薬注設備CC	Y-CC1	1期	551	No.1PAC注入ポンプVVVF盤	Y-VF1	1期
502	No.1薬注設備RY	Y-RY1	"	552	No.2PAC注入ポンプVVVF盤	Y-VF2	"
503	No.2薬注設備CC	Y-CC2	2期	553	No.3PAC注入ポンプVVVF盤	Y-VF3	"
504	No.2薬注設備RY	Y-RY2	"	554	No.4PAC注入ポンプVVVF盤	Y-VF4	"
				555	No.5PAC注入ポンプVVVF盤	Y-VF5	2期
511	No.1薬注設備計装変換器盤	Y-KP1	1期	556	No.6PAC注入ポンプVVVF盤	Y-VF6	"
512	No.2薬注設備計装変換器盤	Y-KP2	2期	557	No.7PAC注入ポンプVVVF盤	Y-VF7	"
				558	No.8PAC注入ポンプVVVF盤	Y-VF8	"
521	薬注設備コントローラ盤	Y-COT	1期	561	No.1前次垂注入ポンプVVVF盤	Y-VF9	1期
531	ミニUPS	Y-UPS	1期	562	No.2前次垂注入ポンプVVVF盤	Y-VF10	"
				563	No.3前次垂注入ポンプVVVF盤	Y-VF11	2期
				564	No.4前次垂注入ポンプVVVF盤	Y-VF12	"
541	低圧動力分岐盤	Y-L1	1期	571	No.1後次垂注入ポンプVVVF盤	Y-VF13	1期
542	電源切替盤	Y-L2	"	572	No.2後次垂注入ポンプVVVF盤	Y-VF14	"
543	建築動力・照明分岐盤	Y-L3	"	573	No.3後次垂注入ポンプVVVF盤	Y-VF15	2期
				574	No.4後次垂注入ポンプVVVF盤	Y-VF16	"

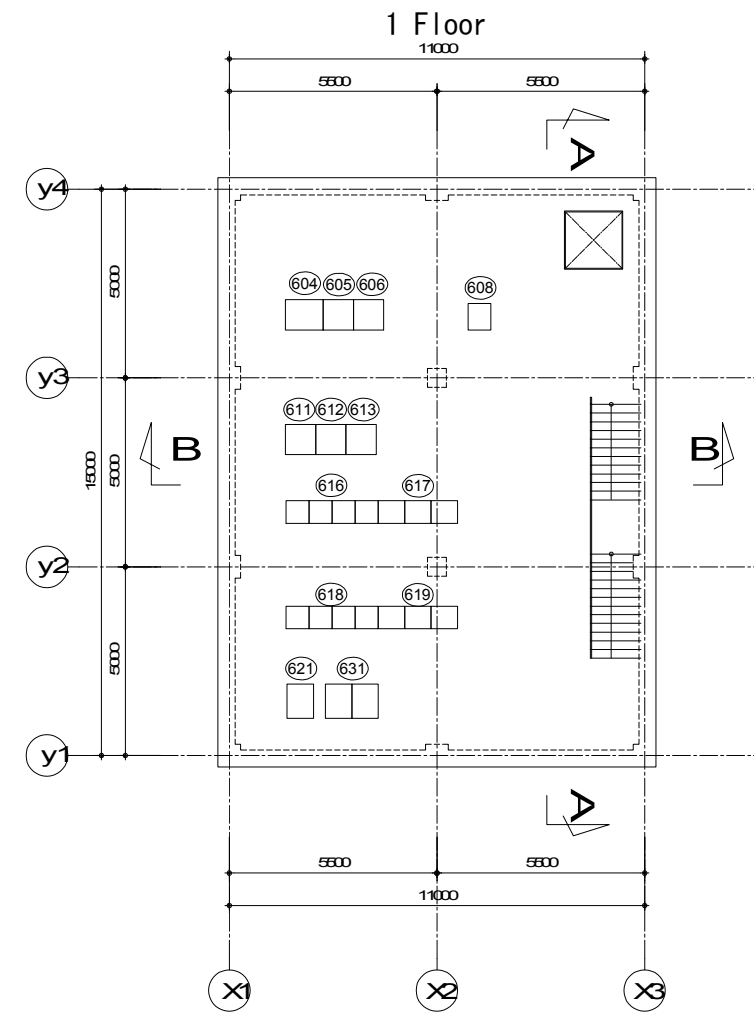
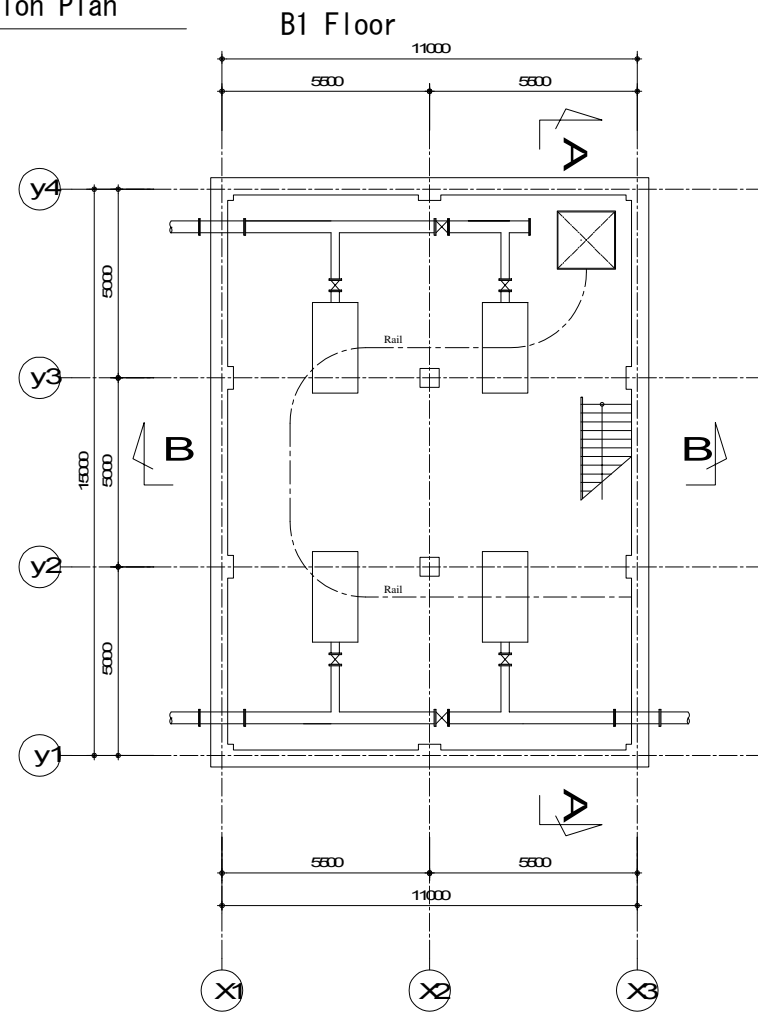
SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
T r	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E X	Integrated Excitation
H.T. C t t	HT. Magnetic contacts	Dff	Differential Relay
S t. T r	Reduced Voltage Starter	I >	Directional earth Fault Relay
SR	Series Reactor	U <	Under Voltage Relay
SC	Static Condensor	U >	Over Voltage Relay
MCCB	Mold Case Circuit Braker	AVR	Automatic Voltage Regulator
VT	Voltage Transformer	A T	Current Transducer
CT	Current Transformer	P T	Power Factor Transducer
LA	Arrester	W T	Watt Transducer
ZCT	Zero - phase Current Transfomer	F T	Frequency Transducer
		V T	Voltage Transducer
V	Voltage Meter		
A	Ammeter	Wh	Watt-Hour Meter
Pf	Power Factor Meter	Tar-H	Tar-Hour Meter
W	Watt Meter	V S	Voltage Selector Switch
V0	Zero-Phase Volage Meter	+	Current Selector Switch
G	Generator		
F	Frequency Meter		



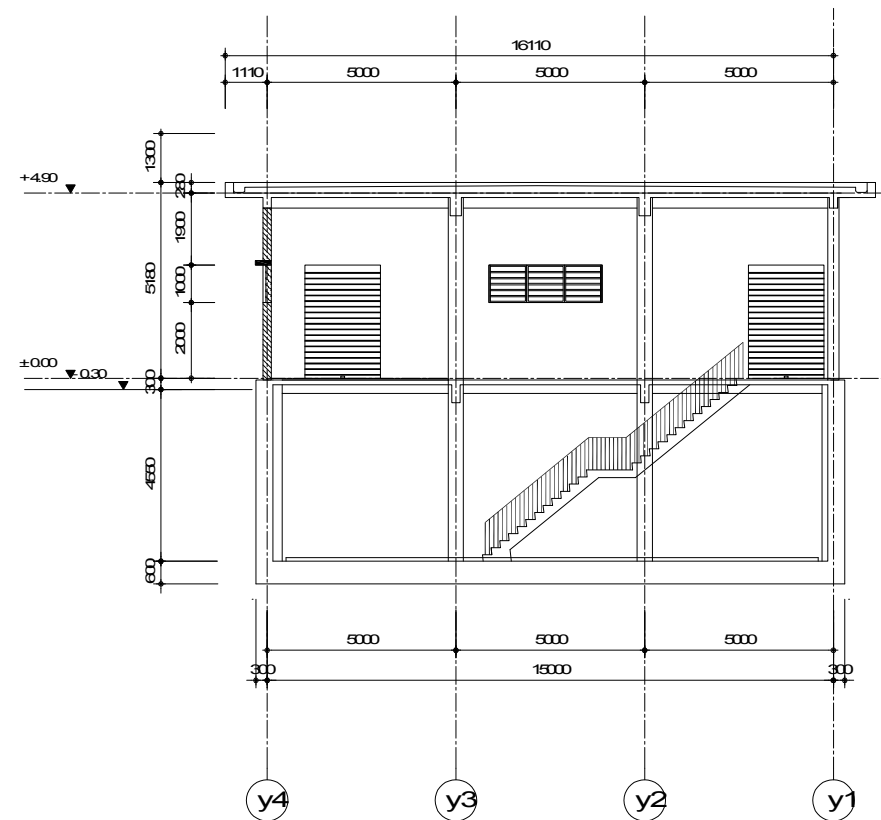
Note1: Shows the phase-2.
Besides, the phase-1 is shown.

No.			
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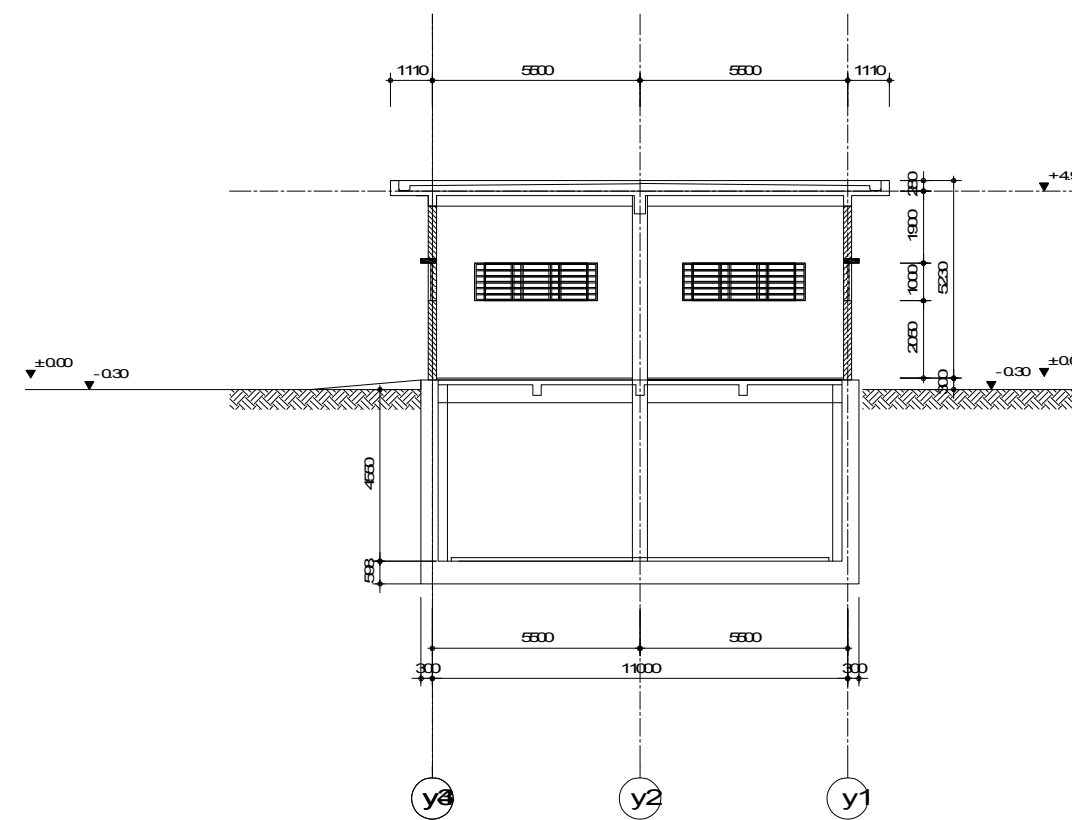
Sludge Removal Pumping Station Plan



SECTION A-A

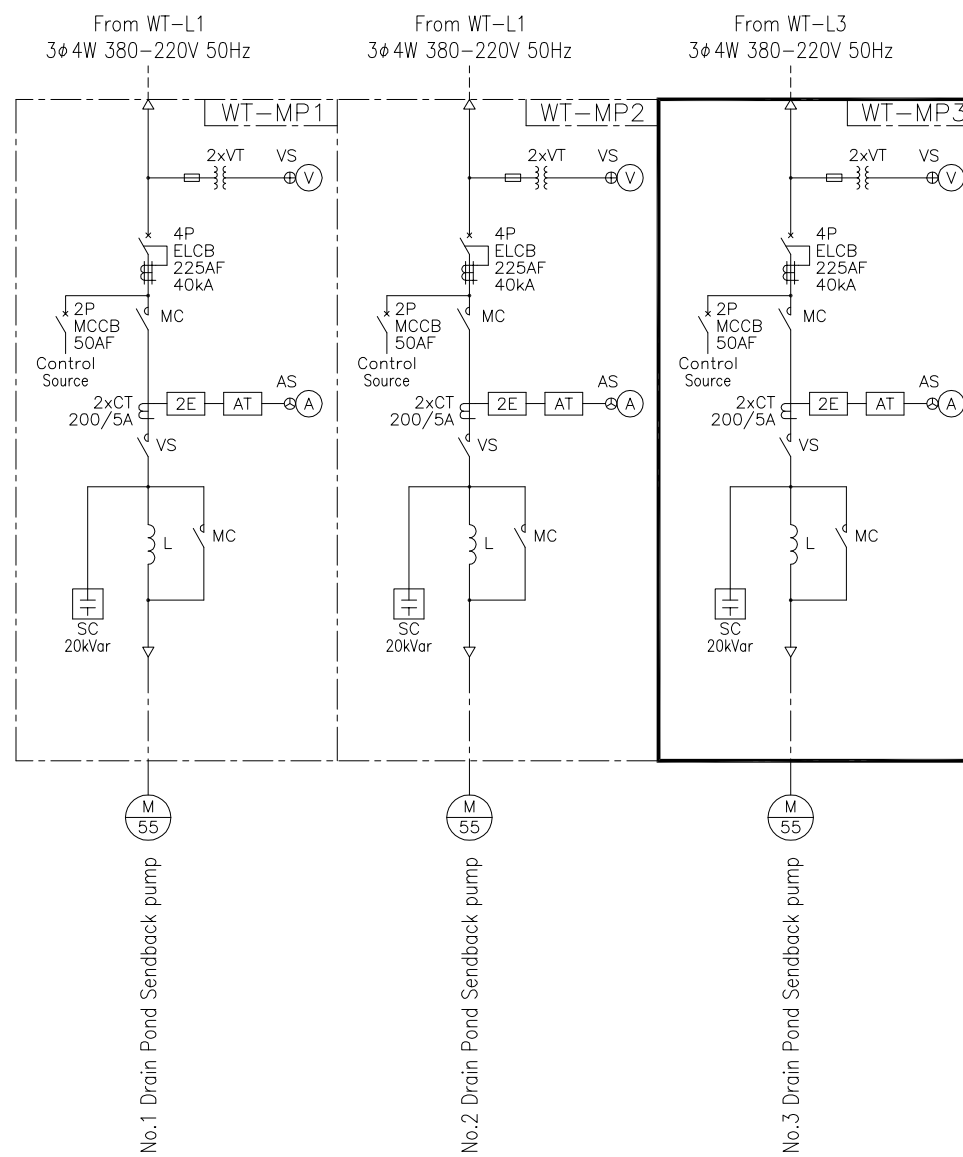


SECTION B-B



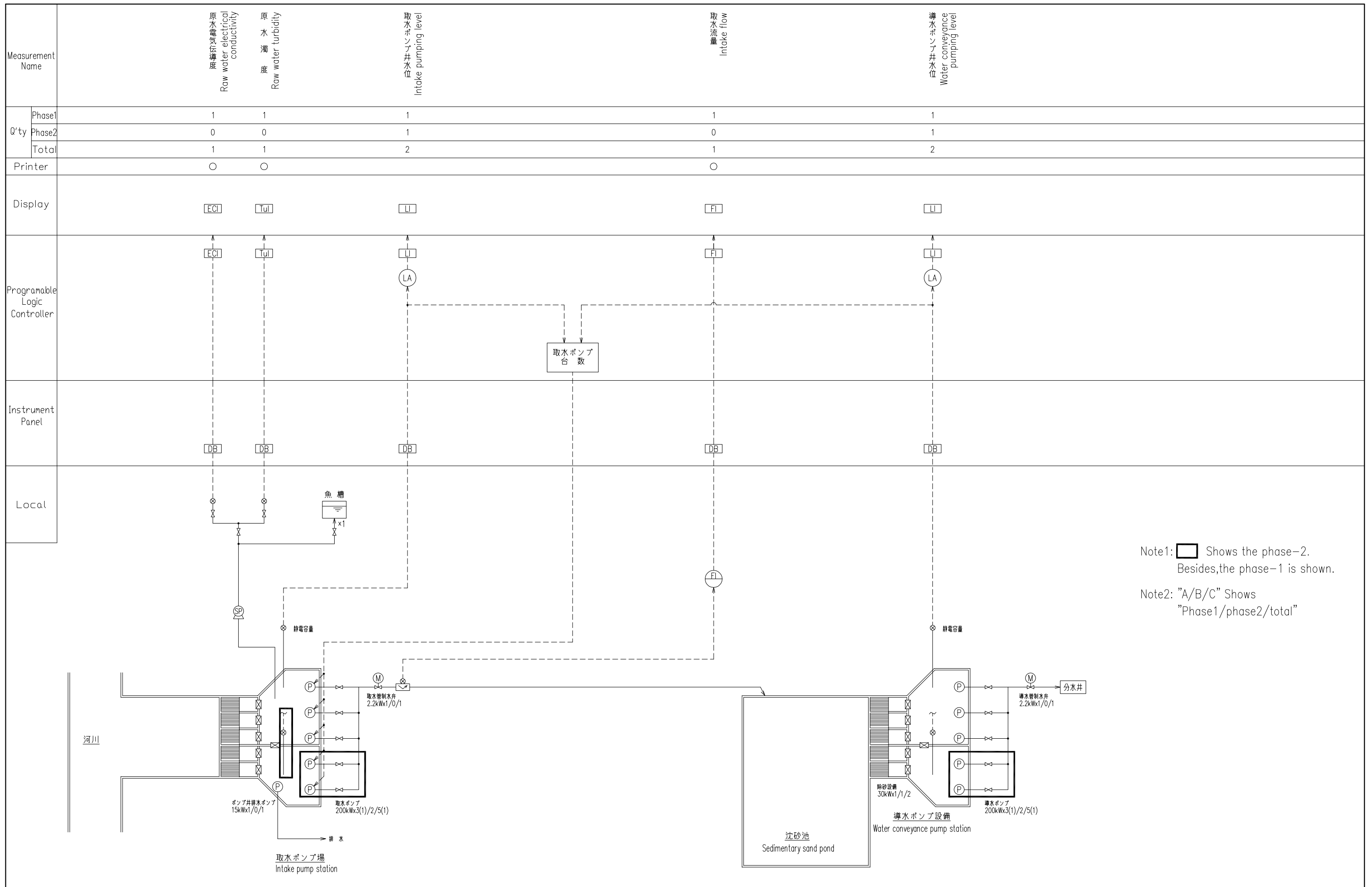
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SYMBOL	NAME	SYMBOL	NAME
DS	Disconnetig Switch	V D	Voltage Detector
LDS	Load Switch	I >	Over Current Relay
T r	Transformer	VCT	Voltage & Current Transformer
VCB	Vacuum Circuit Breaker	D	Diesel Engine
3PDT DS	3pole Double Throw Disconnecting sw.	E X	Integrated Excitation
H.T. C t t	H.T. Magnetic contacts	Dff	Differential Relay
S t. T r	Reduced Voltage Starter	I >	Directional earth Fault Relay
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SC	Static Condensor	U >	Over Voltage Relay
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ZCT	Zero - phase Current Transfomer	F T	Freguency Transducer
		V T	Voltage Transducer
(V)	Voltage Meter		
(A)	Ammeter	Wh	Watt-Hour Meter
(Pf)	Power Factor Meter	TWh	Tar-Hour Meter
(W)	Watt Meter	V S	Voltage Selector Switch
(Vo)	Zero-Phase Volage Meter	⊕	Current Selector Switch
(G)	Generator		
(F)	Frequency Meter		



Note1: Shows the phase-2.
Besides, the phase-1 is shown.

No.			
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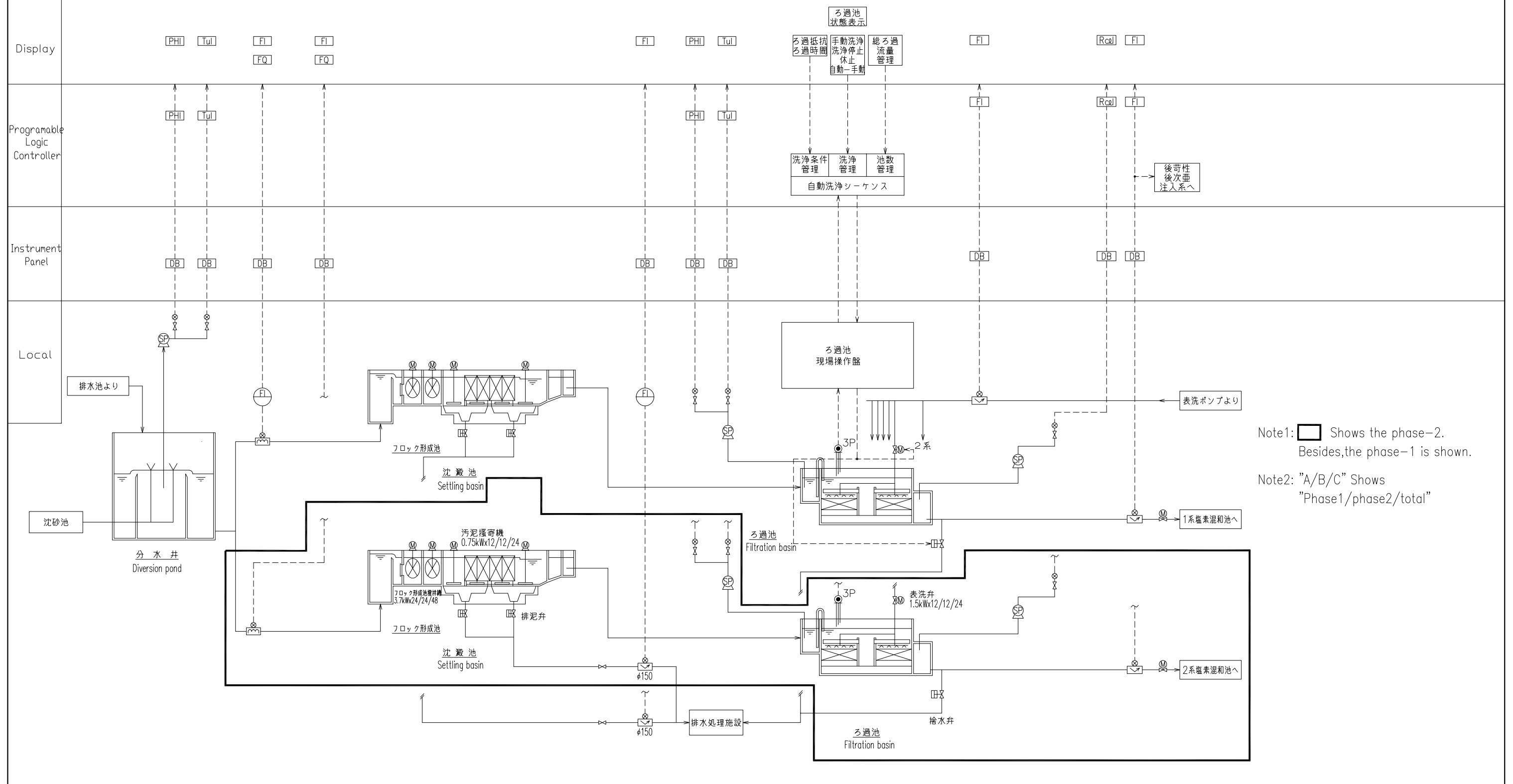


Note1: Shows the phase-2.
 Besides, the phase-1 is shown.

Note2: "A/B/C" Shows
 "Phase1/phase2/total"

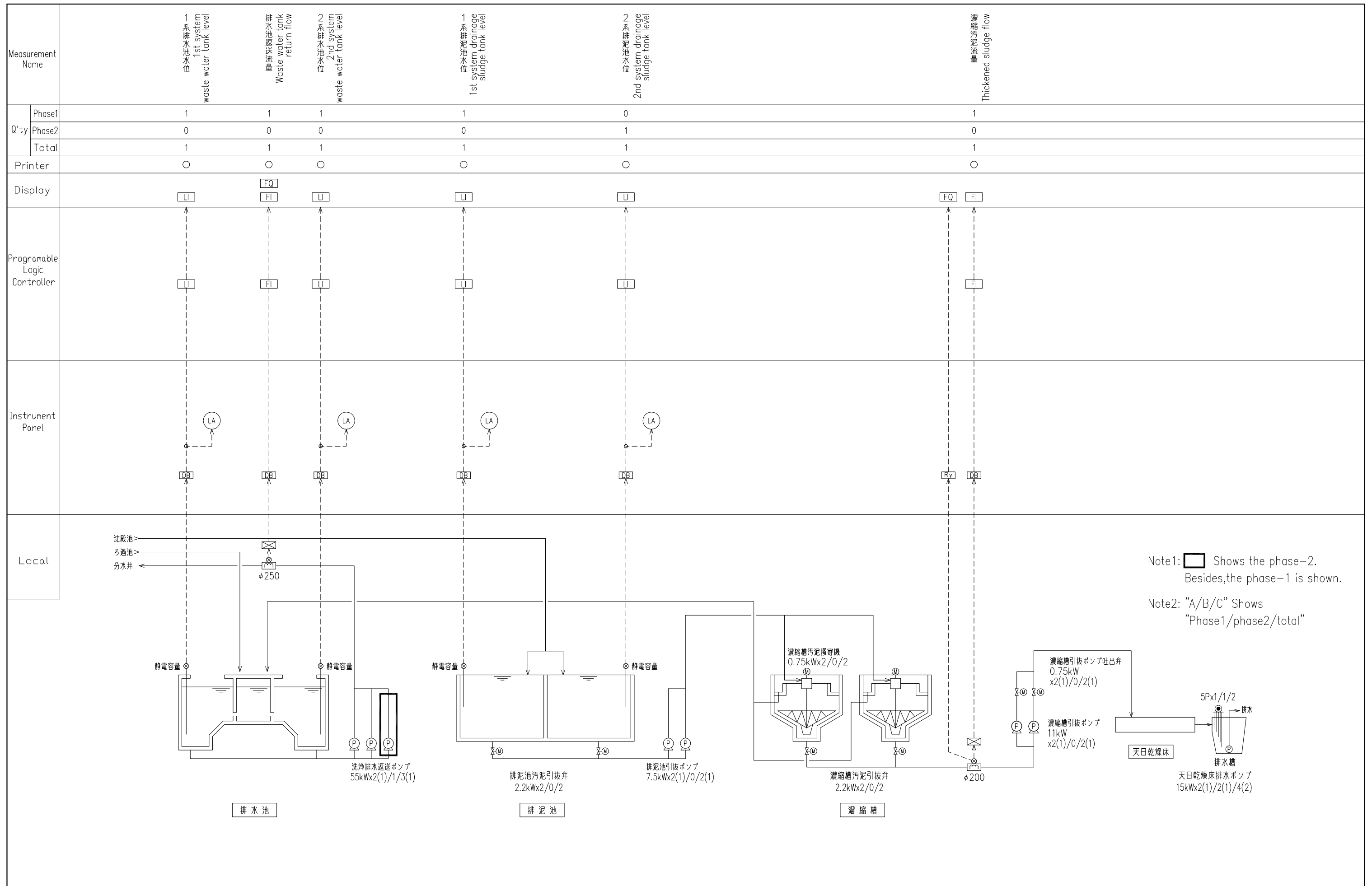
JICA Study Team					THE PREPARATORY SURVEY ON THE DUONG RIVER WATER SUPPLY SYSTEM PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM	Date. NOV. 2011	Duong River Water Treatment Plant	Drawing No
	No.					Scale NON	Instrument flow diagram (Water Intake Facilities)	119

Measurement Name	Influent flow				Sedimentary sludge flow			Surface washer flow	Filtration residual chlorine flow	
	Diversion pond influent PH	Diversion pond influent Turbidity	1st system mixing tank	2nd system mixing tank	Sedimentary drainage	Sedimentary treated Water PH	Sedimentary treated Water turbidity		Filtration residual chlorine	Total filtration flow
Q'ty	Phase1	1	1	2	0	1	1	1	1	1
	Phase2	0	0	0	2	1	1	1	1	1
	Total	1	1	2	2	2	2	2	2	2
Printer		○	○	○	○	○	○	○	○	○

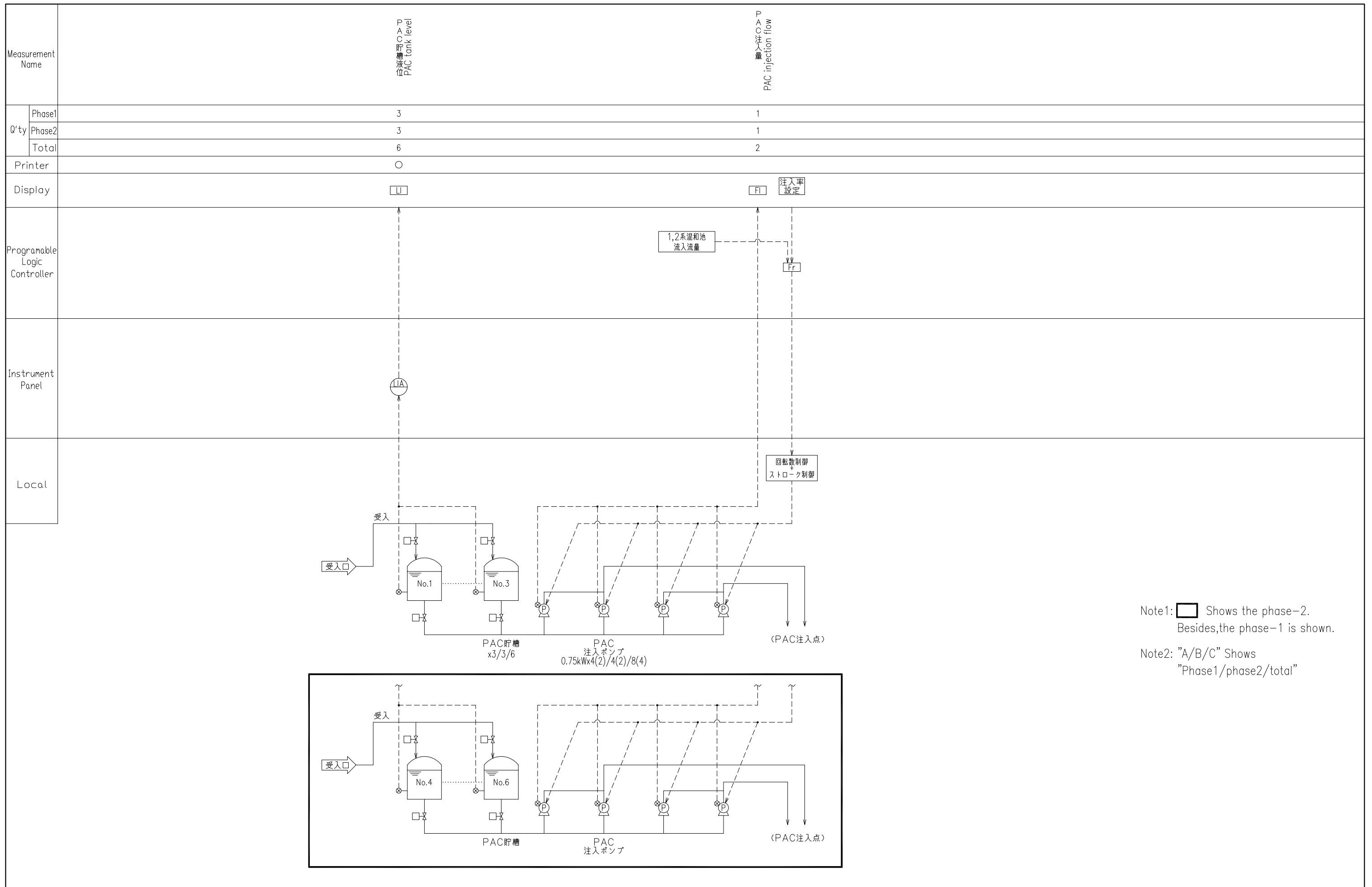


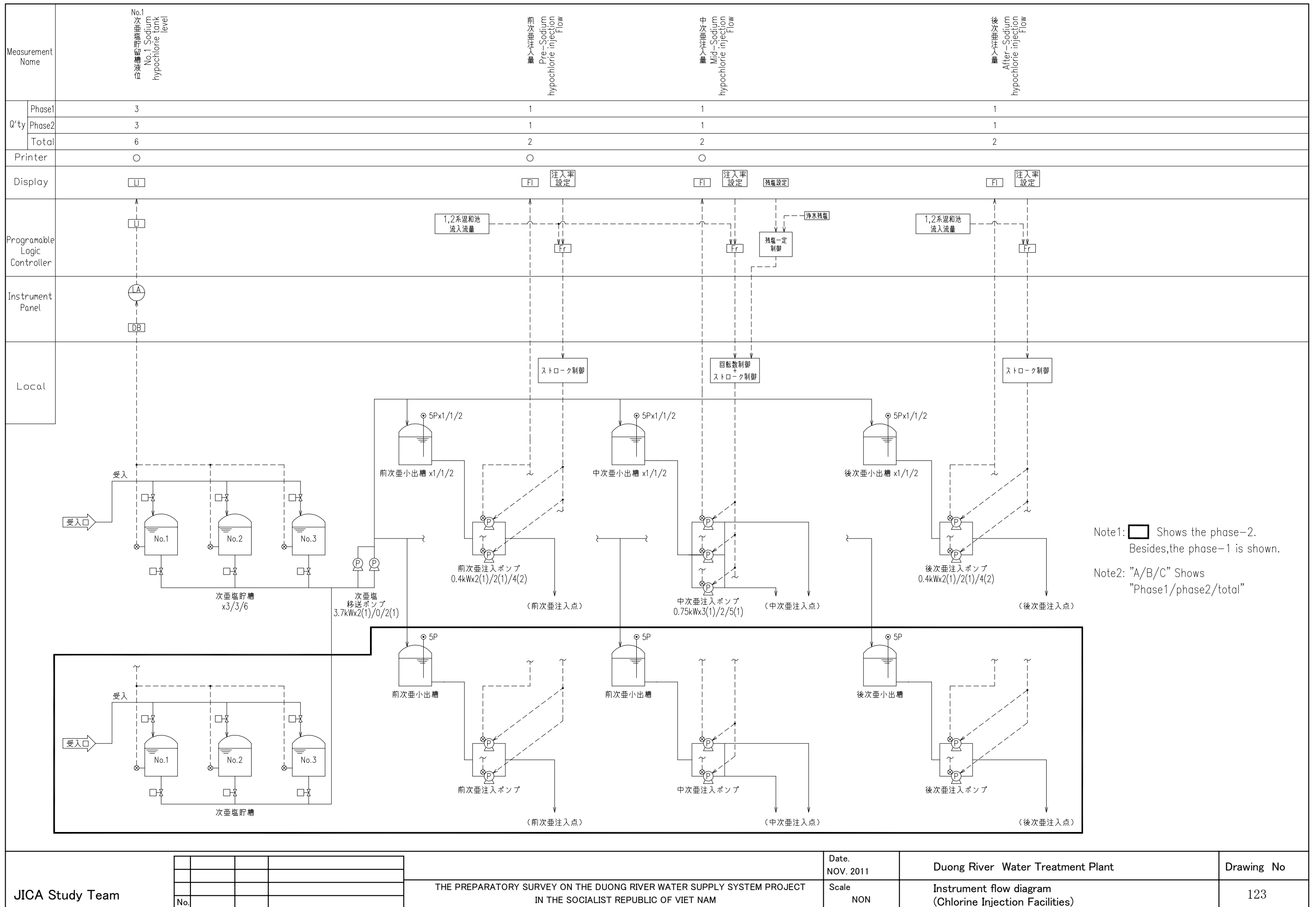
Note1: Shows the phase-2. Besides, the phase-1 is shown.

Note2: "A/B/C" Shows "Phase1/phase2/total"



No.			





No.			
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