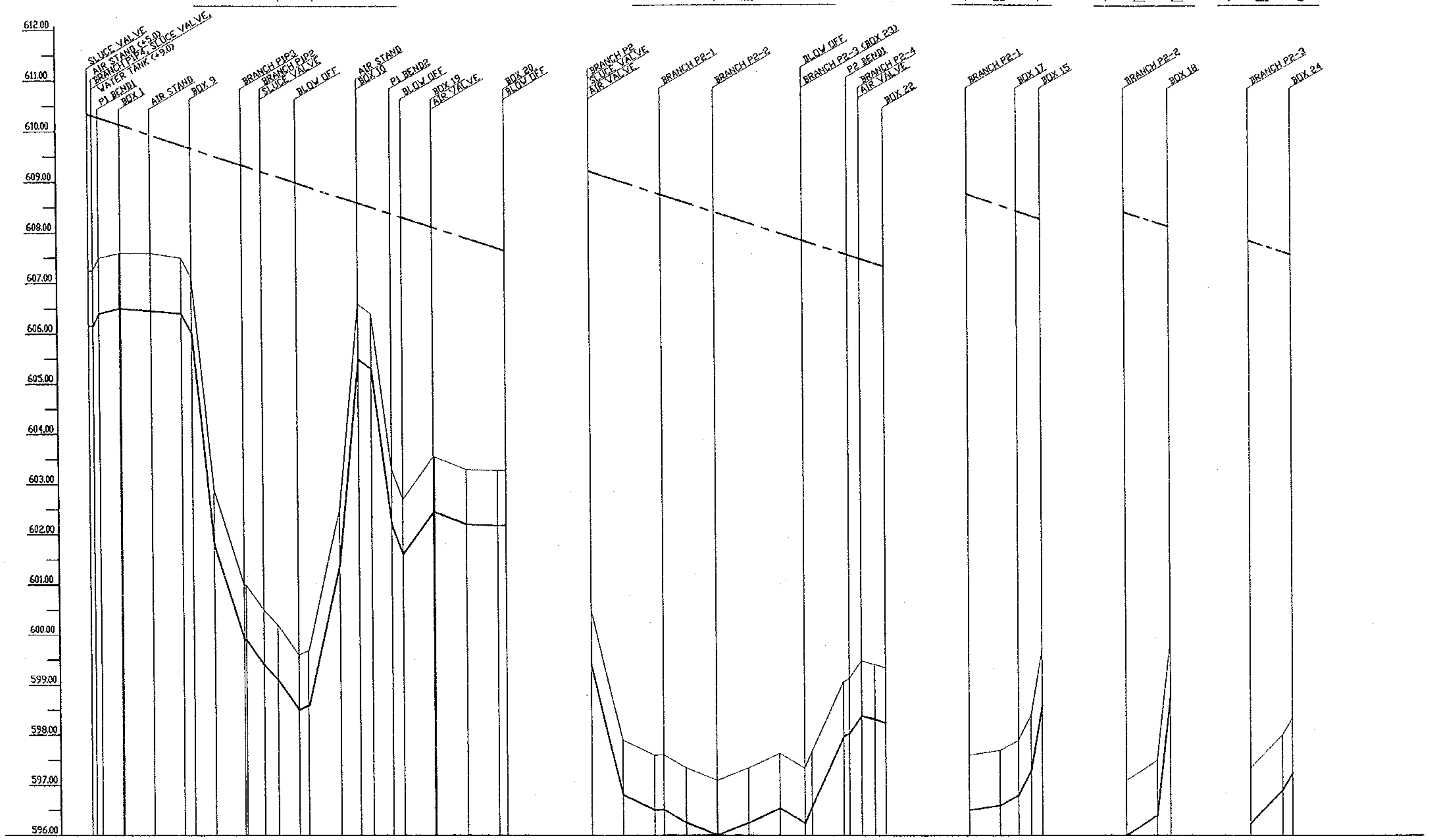
LONGITUDINAL SECTION



LEGEND

LINE	NAME
————	PIPE CENTER LEVEL
············	GROUND LEVEL
— — —	DYNAMIC WATER LEVEL

P 1

Station	PIPE	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	Q = 0.030m3/s, PVC ø = 200	610.34 610.31 610.27	606.15 606.15 606.40	607.25 607.25 607.50	0.0 7.0 17.0	0.0 7.0 10.0
NO.1		610.14 610.13	606.50 606.50	607.60 607.60	50.0 52.1	33.0 2.1
NO.2		609.93	606.50	607.60	100.0	47.9
NO.3		609.73 609.66	606.40 606.01	607.50 607.11	150.0 166.5	50.0 61.5
NO.4		609.53	601.80	602.90	200.0	33.5
NO.5		609.33 609.32	599.90 599.90	601.00 601.00	247.1 250.0	47.1 2.9
NO.6		609.21 609.12	599.40 599.10	600.50 600.20	278.0 300.0	28.0 22.0
NO.7		608.98 608.92	598.50 598.60	599.60 599.70	333.5 350	33.5 16.5
NO.8		608.71	601.40	602.50	400.0	50.0
NO.9		608.59 608.38	605.49 605.30	606.59 606.40	430.0 450.0	30.0 20.0
NO.10		608.31 608.11	602.19 601.60	603.29 602.70	482.0 500.0	32.0 18.0
NO.11		608.10 607.90	602.45 602.45	603.55 603.55	547.5 550.0	47.5 2.5
NO.12		607.90	602.20	603.30	600.0	50.0
NO.13		607.70 607.64	602.18 602.18	603.28 603.28	650.0 663.6	50.0 13.6

P 2

Station	PIPE	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	Q = 0.030m3/s, PVC ø = 200	609.21	599.40	600.50	0.0	0.0
NO.1		609.01	596.80	597.90	50.0	50.0
NO.2		608.80 608.74	596.50 596.51	597.60 597.61	100.0 114.4	50.0 14.4
NO.3		608.60	596.25	597.35	150.0	35.6
NO.4		608.40 608.40	596.00 596.00	597.10 597.10	199.1 200.0	49.1 0.9
NO.5		608.19	596.25	597.35	250.0	50.0
NO.6		607.99	596.54	597.64	300.0	50.0
NO.7		607.83 607.79	596.24 596.57	597.34 597.67	339.2 350.0	39.2 10.8
NO.8		607.58 607.55 607.47	597.97 598.03 598.38	599.07 599.13 599.48	400.0 409.0 428.7	50.0 9.0 19.7
NO.9		607.38 607.31	598.31 598.24	599.41 599.34	450.0 467.2	21.3 17.2

P 2-1

Station	PIPE	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	Q = 0.030m3/s, PVC ø = 200	608.74	596.51	597.61	0.0	0.0
NO.1		608.54	596.60	597.70	50.0	50.0
NO.2		608.42 608.33 608.26	596.80 597.30 598.59	597.90 598.40 599.69	79.7 100.0 118.2	29.7 20.3 18.2

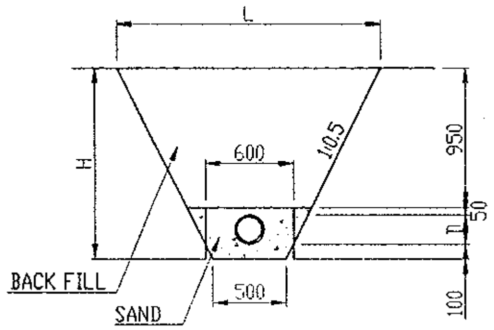
P 2-2

Station	PIPE	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	Q = 0.030m3/s, PVC ø = 200	608.40	596.00	597.10	0.0	0.0
NO.1		608.20 608.11	596.40 598.76	597.50 599.86	50.0 71.0	50.0 21.0

P 2-3

Station	PIPE	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	Q = 0.030m3/s, PVC ø = 200	607.83	596.24	597.34	0.0	0.0
NO.1		607.63 607.56	596.90 597.24	598.00 598.34	65.9 **	50.0 15.9

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

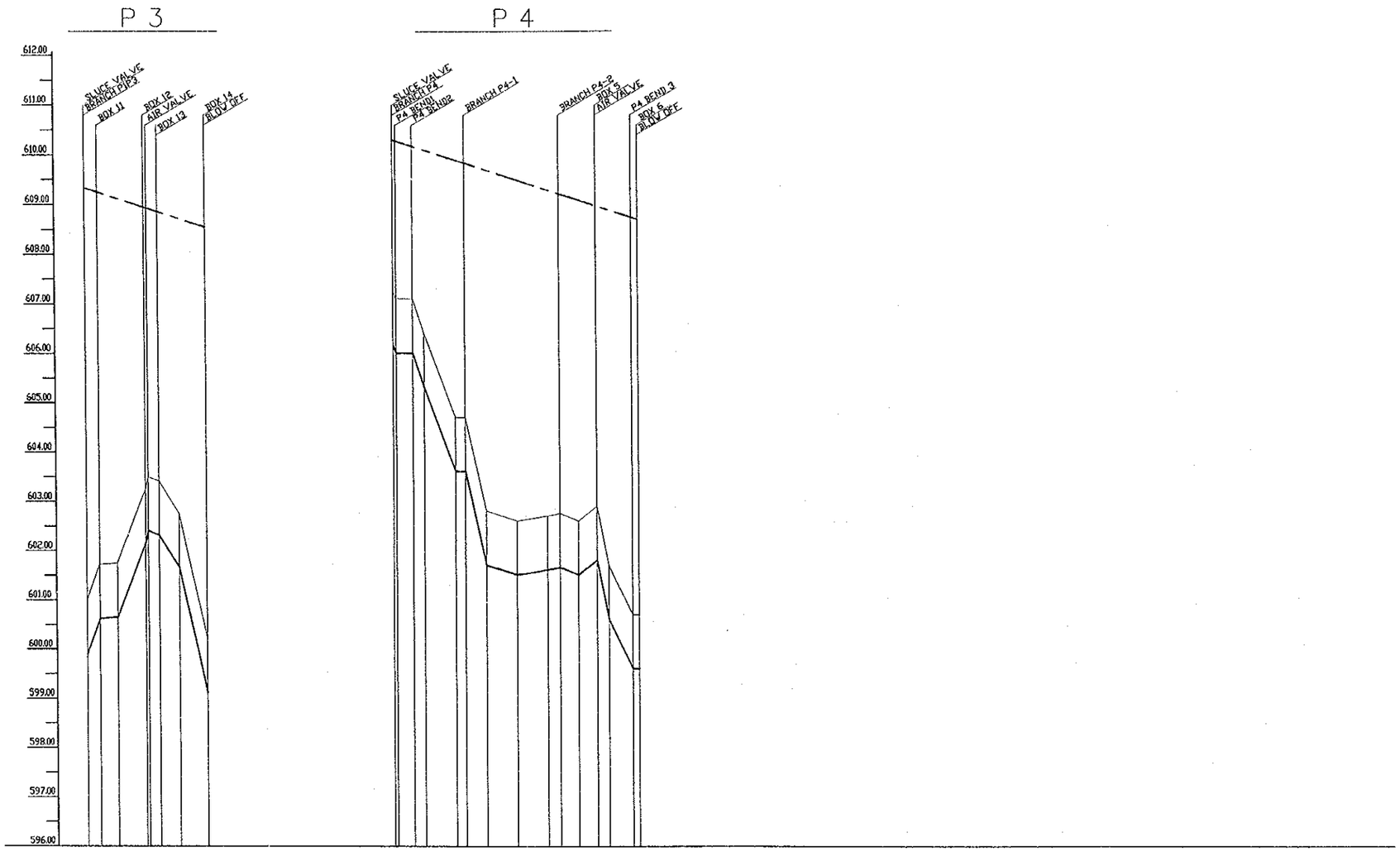
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION OF PIPELINE NO.4 TEMPOK (1/2)

Date		No.	20

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION



LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
·····	GROUND LEVEL
— — —	DYNAMIC WATER LEVEL

PIPE INSTALLATION

D	200	150
H	1300	1250
L	1800	1750

PIPE	Q = 0.030m3/s PVC ϕ = 200						Q = 0.030m3/s PVC ϕ = 200							
DYNAMIC WATER ELEVATION	609.33	609.25	609.13	608.94	608.92	608.72	608.54	610.27	610.16	610.09	609.99	609.83	609.69	609.49
PIPE CENTER ELEVATION	599.90	600.62	600.65	602.45	602.30	601.65	599.12	606.15	606.00	605.30	603.60	603.60	601.70	601.50
GROUND LEVEL	601.00	601.72	601.75	603.85	603.50	602.75	600.22	607.87	607.10	606.40	604.70	604.70	602.80	602.60
ACCUMULATED DISTANCE	0.0	20.9	50.0	95.4	100.0	150.0	194.6	0.0	31.6	50.0	100.0	115.7	150.0	200.0
DISTANCE	0.0	20.9	29.1	45.4	4.6	50.0	44.6	0.0	26.6	18.4	50.0	15.7	34.3	50.0
STATION	NO.0	NO.1	NO.2	NO.3				NO.0	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6

PIPE	Q = 0.030m3/s PVC ϕ = 200					
DYNAMIC WATER ELEVATION	609.29	609.21	609.09	608.96	608.89	608.73
PIPE CENTER ELEVATION	601.50	601.65	601.50	601.80	601.60	599.60
GROUND LEVEL	602.70	602.75	602.60	602.90	601.70	600.78
ACCUMULATED DISTANCE	250.0	270.0	300.0	330.7	350.0	387.8
DISTANCE	50.0	20.0	30.3	30.7	19.3	37.9
STATION	NO.5	NO.6	NO.7			

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

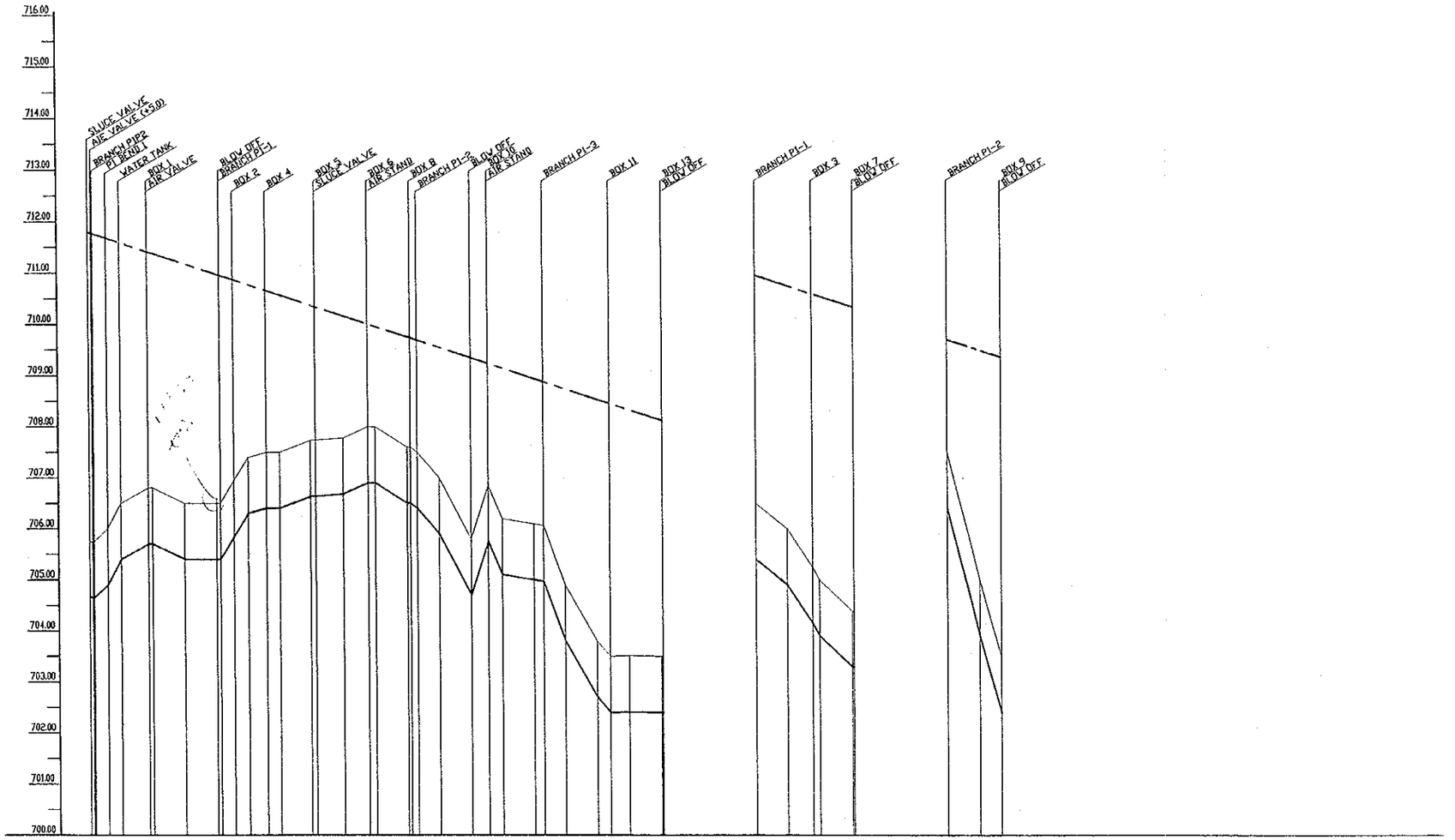
LONG SECTION OF PIPELINE
NO.4 TEMPOK (2/2)

Date		No.	21

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

P 1 | P 1−1 | P 1−2



PIPE	Q = 0.030m3/s PVC ø = 200																			Q = 0.030m3/s PVC ø = 200				Q = 0.030m3/s PVC ø = 200	
DYNAMIC WATER ELEVATION	711.79 711.67	711.59	711.41 711.38	711.18	710.98 710.86	710.77	710.65 710.57	710.37 710.33	710.16	710.00 709.96	709.79 709.63	709.55	709.35	709.24	709.15	708.94 708.88	708.74	708.54 708.45	708.33	708.13 708.12	710.95	710.75	710.54	710.34 710.33	709.69	709.49	709.35
PIPE CENTER ELEVATION	704.65 704.90	705.40	705.70 705.68	705.40	705.40 705.34	706.34	706.40 706.40	706.64 706.64	706.68	706.90 706.90	706.58 706.40	705.90	704.70	705.75 705.10	705.00 704.97	703.80	702.70 702.40	702.41	702.40	705.40	704.90	704.15 703.90	703.23 703.23	706.40	703.90	702.40
GROUND LEVEL	705.25 706.00	706.50	706.80 706.80	706.50	706.50 706.94	707.40	707.50 707.50	707.24 707.24	707.78	708.00 708.00	707.60 707.58	707.00	705.80	706.85 706.20	706.10 706.07	704.50	703.80 703.50	703.51	703.50 703.50	706.50	706.00	705.25 705.00	704.38	707.50	705.00	703.50
ACCUMULATED DISTANCE	0.0 28.5	50.0	93.8 100.0	150.0	200.0 206.2	227.6 250.0	279.0 300.0	350.0 358.0	400.0	439.0 450.0	500.0 512.3	550.0	600.0	627.3 650.0	700.0 715.4	750	800 820.3	850.0	900.0 920.0	0.0	50.0	89.5 100.0	150.0 152.5	0.0	50.0	84.1
DISTANCE	0.0 21.5	21.5	43.8 6.2	50.0	50.0 6.2	21.4 22.4	29.0 21.0	50.0 8.0	42.0	39.0 11.0	50.0 12.3	34.1	50.0	27.3 22.7	50.0 15.4	34.6	50.0 20.3	29.7	50.0 20.0	0.0	50.0	39.5 10.5	50.0 2.5	0.0	50.0	34.1
STATION	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	NO.16	NO.17	NO.18	NO.0	NO.1	NO.2	NO.3	NO.0	NO.1	

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
— · · —	DYNAMIC WATER LEVEL

PIPE INSTALLATION

D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

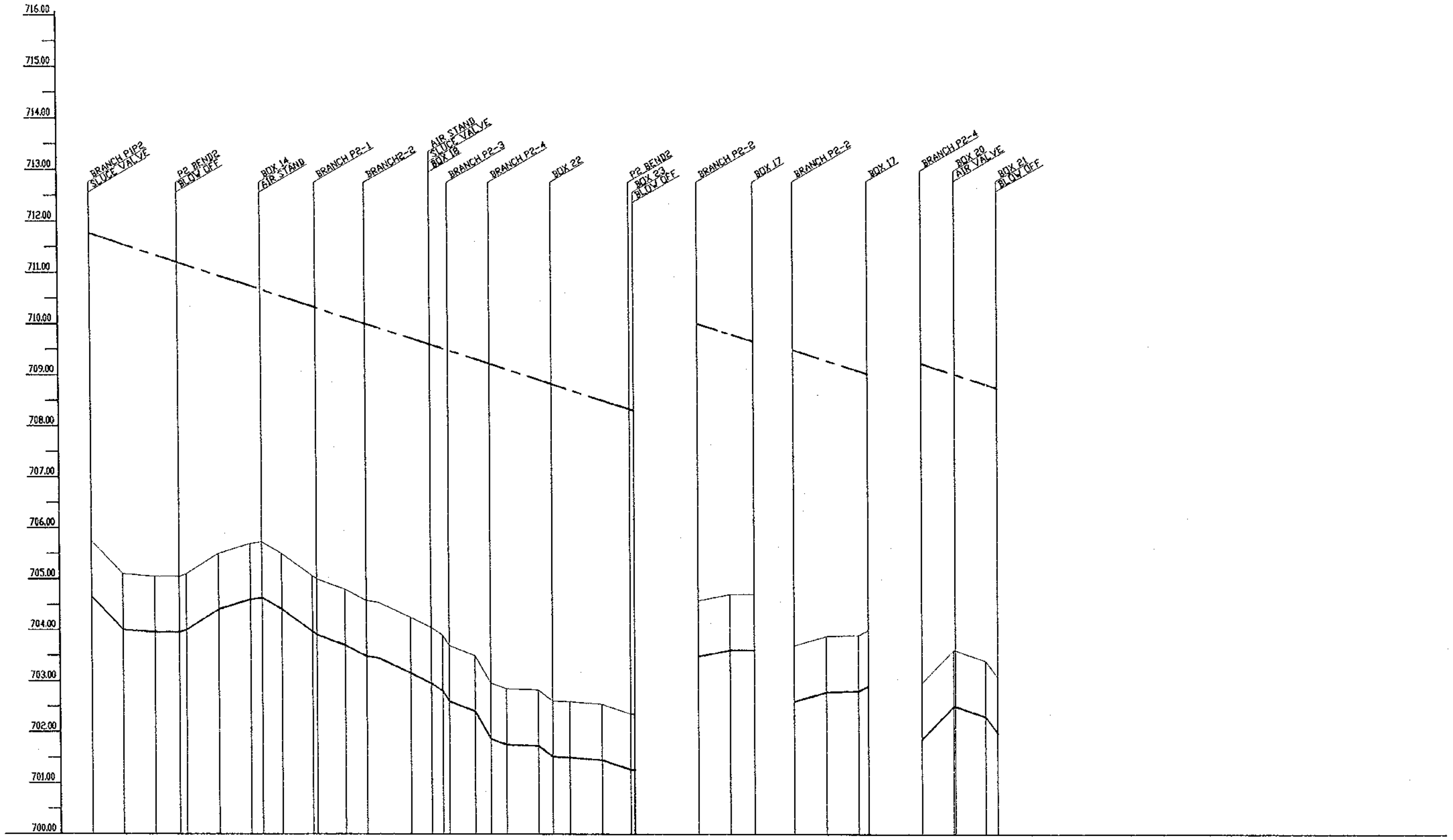
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION OF PIPELINE NO.5 PAREPE (1/2)

Date		No.	22

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION



P 2 — PIPE: Q = 0.030m3/s, PVC ø = 200

DYNAMIC WATER ELEVATION	711.76	711.56	711.35	711.20	711.15	710.95	710.74	710.67	710.54	710.34
PIPE CENTER ELEVATION	704.65	704.00	703.95	703.95	704.00	704.40	704.60	704.63	704.40	703.95
GROUND LEVEL	705.75	705.10	705.05	705.05	705.10	705.50	705.70	705.73	705.50	705.05
ACCUMULATED DISTANCE	0.0	50.0	100.0	138.6	150.0	200.0	250.0	268.2	300.0	350.0
DISTANCE	0.0	50.0	50.0	38.6	11.4	50.0	50.0	18.2	31.8	50.0
STATION	NO.0	NO.1	NO.2		NO.3	NO.4	NO.5		NO.6	NO.7

DYNAMIC WATER ELEVATION	710.31	710.13	710.00	709.93	709.73	709.60	709.52	709.48	709.32
PIPE CENTER ELEVATION	703.90	703.70	703.48	703.45	703.15	702.95	702.80	702.60	702.40
GROUND LEVEL	705.00	704.80	704.58	704.55	704.25	704.05	703.90	703.70	703.50
ACCUMULATED DISTANCE	356.8	400.0	432.7	450.0	500.0	532.5	550.0	559.9	600.0
DISTANCE	6.8	43.2	32.7	17.3	50.0	32.5	17.5	9.9	40.1
STATION		NO.8		NO.9	NO.10		NO.11		NO.12

DYNAMIC WATER ELEVATION	709.22	709.12	708.91	708.82	708.71	708.51	708.33	708.30	708.30
PIPE CENTER ELEVATION	701.86	701.75	701.73	701.51	701.50	701.45	701.26	701.26	701.26
GROUND LEVEL	702.96	702.85	702.83	702.61	702.60	702.55	702.36	702.36	702.36
ACCUMULATED DISTANCE	625.6	650.0	700.0	723.2	750.0	800.0	844.6	850.0	851.2
DISTANCE	25.6	24.4	50.0	23.2	26.8	50.0	44.6	5.4	1.2
STATION		NO.13	NO.14		NO.15	NO.16		NO.17	

P 2-2 — PIPE: Q = 0.030m3/s, PVC ø = 200

DYNAMIC WATER ELEVATION	710.00	709.80	709.65
PIPE CENTER ELEVATION	703.48	703.60	703.60
GROUND LEVEL	704.58	704.70	704.70
ACCUMULATED DISTANCE	0.0	50.0	87.1
DISTANCE	0.0	50.0	37.1
STATION	NO.0	NO.1	

P 2-3 — PIPE: Q = 0.030m3/s, PVC ø = 200

DYNAMIC WATER ELEVATION	709.48	709.28	709.07	709.01
PIPE CENTER ELEVATION	702.60	702.78	702.80	702.90
GROUND LEVEL	703.70	703.88	703.90	704.00
ACCUMULATED DISTANCE	0.0	50.0	100.0	115.5
DISTANCE	0.0	50.0	50.0	15.5
STATION	NO.0	NO.1	NO.2	

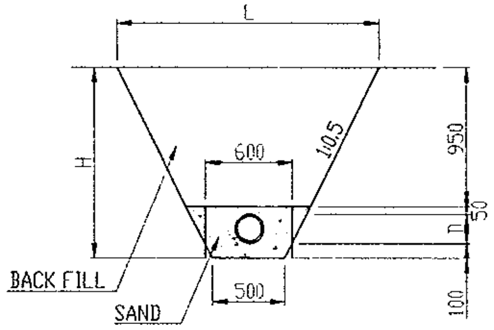
P 2-4 — PIPE: Q = 0.030m3/s, PVC ø = 200

DYNAMIC WATER ELEVATION	709.21	709.01	709.00	708.81	708.73
PIPE CENTER ELEVATION	701.86	702.50	702.50	702.38	701.98
GROUND LEVEL	702.96	703.60	703.60	703.40	703.08
ACCUMULATED DISTANCE	0.0	50.0	52.6	100.0	119.0
DISTANCE	0.0	50.0	2.6	47.4	19.0
STATION	NO.0	NO.1		NO.2	

LEGEND

LINE	NAME
————	PIPE CENTER LEVEL
————	GROUND LEVEL
— - —	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

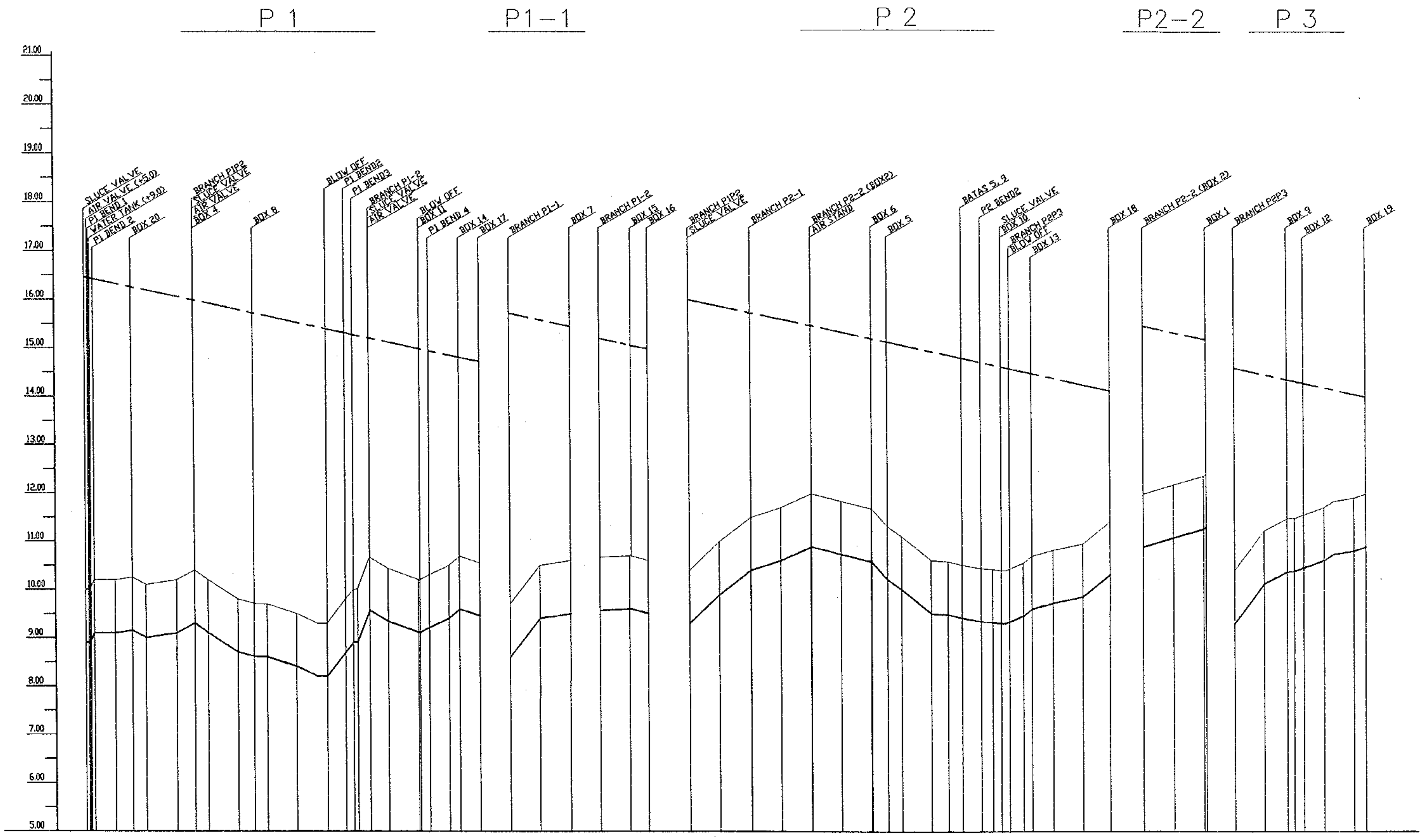
THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

LONG SECTION OF PIPELINE
NO.5 PAREPE (2/2)

Date		No.	23

JAPAN INTERNATIONAL COOPERATION AGENCY

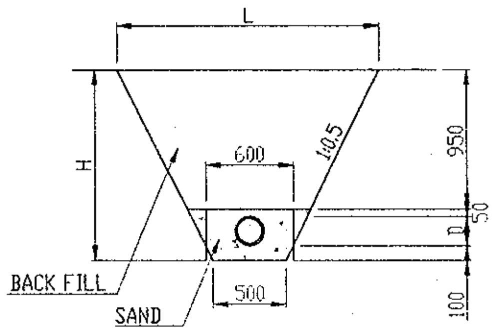
LONGITUDINAL SECTION



LEGEND

LINE	NAME
————	PIPE CENTER LEVEL
-·-·-·-	GROUND LEVEL
— — —	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

P1 — PIPE: Q = 0.024m3/s, PVC ø = 200

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND LEVEL	PIPE CENTER ELEVATION	DYNAMIC WATER ELEVATION
NO.0	0.0 / 7.0 / 8.0	0.0 / 7.0 / 15.0	10.00 / 10.00 / 10.20	8.90 / 8.90 / 9.10	16.46 / 16.44 / 16.42
NO.1	35.0	50.0	10.20	9.10	16.33
	28.0	78.0	10.25	9.15	16.25
NO.2	22.0	100.0	10.10	9.00	16.19
NO.3	50.0	150.0	10.20	9.10	16.06
	28.7	178.7	10.40	9.30	15.98
NO.4	21.3	200.0	10.20	9.10	15.92
NO.5	50.0	250.0	9.80	8.70	15.79
	32.9	282.9	9.70	8.60	15.70
NO.6	17.1	300.0	9.70	8.60	15.65
NO.7	50.0	350.0	9.50	8.40	15.52
	33.3	383.3	9.30	8.20	15.43
NO.8	16.7	400.0	9.30	8.20	15.38
NO.9	30.0 / 13.2 / 6.8	430.0 / 443.2 / 450.0	9.80 / 10.00 / 10.02	8.70 / 8.90 / 8.92	15.30 / 15.27 / 15.25
	20.0	470.0	10.67	9.57	15.20
NO.10	30.0	500.0	10.44	9.34	15.11
NO.11	50.0 / 2.4	550.0 / 552.4	10.21 / 10.21	9.11 / 9.11	14.98 / 14.97
	15.0	567.4	10.31	9.21	14.93
NO.12	32.6	600.0	10.50	9.40	14.85
	17.2	617.2	10.69	9.59	14.80
NO.13	32.8 / 0.2	650.0 / 650.2	10.55 / 10.55	9.45 / 9.45	14.71 / 14.71

P1-1 — PIPE: Q = 0.024m3/s, PVC ø = 200

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND LEVEL	PIPE CENTER ELEVATION	DYNAMIC WATER ELEVATION
NO.0	0.0	0.0	9.70	8.60	15.70
NO.1	50.0	50.0	10.50	9.40	15.57
NO.2	50.0 / 1.2	100.0 / 101.2	10.60 / 10.60	9.50 / 9.50	15.43 / 15.43

PIPE: Q = 0.024m3/s, PVC ø = 200

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND LEVEL	PIPE CENTER ELEVATION	DYNAMIC WATER ELEVATION
NO.0	0.0	0.0	10.67	9.57	15.19
NO.1	50.0 / 2.9	50.0 / 52.9	10.70 / 10.70	9.60 / 9.60	15.06 / 15.05
	28.7	81.6	10.60	9.50	14.97

P2 — PIPE: Q = 0.024m3/s, PVC ø = 200

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND LEVEL	PIPE CENTER ELEVATION	DYNAMIC WATER ELEVATION
NO.0	0.0	0.0	10.40	9.30	15.98
NO.1	50.0	50.0	11.00	9.30	15.85
NO.2	50.0 / 0.6	100.0 / 100.6	11.50 / 11.50	10.40 / 10.40	15.71 / 15.71
NO.3	49.4	150.0	11.70	10.60	15.58
NO.4	49.0 / 1.0	199.0 / 200.0	11.98 / 11.98	10.88 / 10.88	15.44 / 15.44
NO.5	50.0	250.0	11.83	10.73	15.31
NO.6	50.0 / 1.1	300.0 / 301.1	11.67 / 11.67	10.57 / 10.57	15.17 / 15.17
	25.4	326.5	11.30	10.20	15.10
NO.7	23.5	350.0	11.10	10.00	15.04
NO.8	50.0	400.0	10.60	9.50	14.90
	26.9	426.9	10.58	9.48	14.83
NO.9	23.1	450.0	10.51	9.41	14.77
	31	481.0	10.44	9.34	14.69
NO.10	19.0 / 13.8 / 7.1	500.0 / 513.8 / 520.9	10.42 / 10.40 / 10.40	9.32 / 9.30 / 9.30	14.63 / 14.60 / 14.58
NO.11	29.1 / 14.4	550.0 / 564.4	10.55 / 10.70	9.45 / 9.60	14.50 / 14.46
NO.12	35.6	600.0	10.82	9.72	14.36
NO.13	50.0	650.0	10.95	9.85	14.23
	44.6	694.6	11.41	10.31	14.11

P2-2 — PIPE: Q = 0.024m3/s, PVC ø = 200

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND LEVEL	PIPE CENTER ELEVATION	DYNAMIC WATER ELEVATION
NO.0	0.0	0.0	11.98	10.88	15.44
NO.1	50.0	50.0	12.17	11.07	15.30
NO.2	50.0 / 3.6	100.0 / 103.6	12.35 / 12.39	11.25 / 11.29	15.17 / 15.16

P3 — PIPE: Q = 0.024m3/s, PVC ø = 200

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND LEVEL	PIPE CENTER ELEVATION	DYNAMIC WATER ELEVATION
NO.0	0.0	0.0	10.40	9.30	14.57
NO.1	50.0	50.0	11.22	10.12	14.44
NO.2	37.9 / 12.1 / 50.0	87.9 / 100.0 / 150.0	11.47 / 11.48 / 11.70	10.37 / 10.38 / 10.60	14.33 / 14.30 / 14.17
NO.3	16.1	166.1	11.83	10.73	14.12
NO.4	33.9 / 19.2	200.0 / 219.2	11.90 / 11.98	10.80 / 10.88	14.03 / 13.98

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

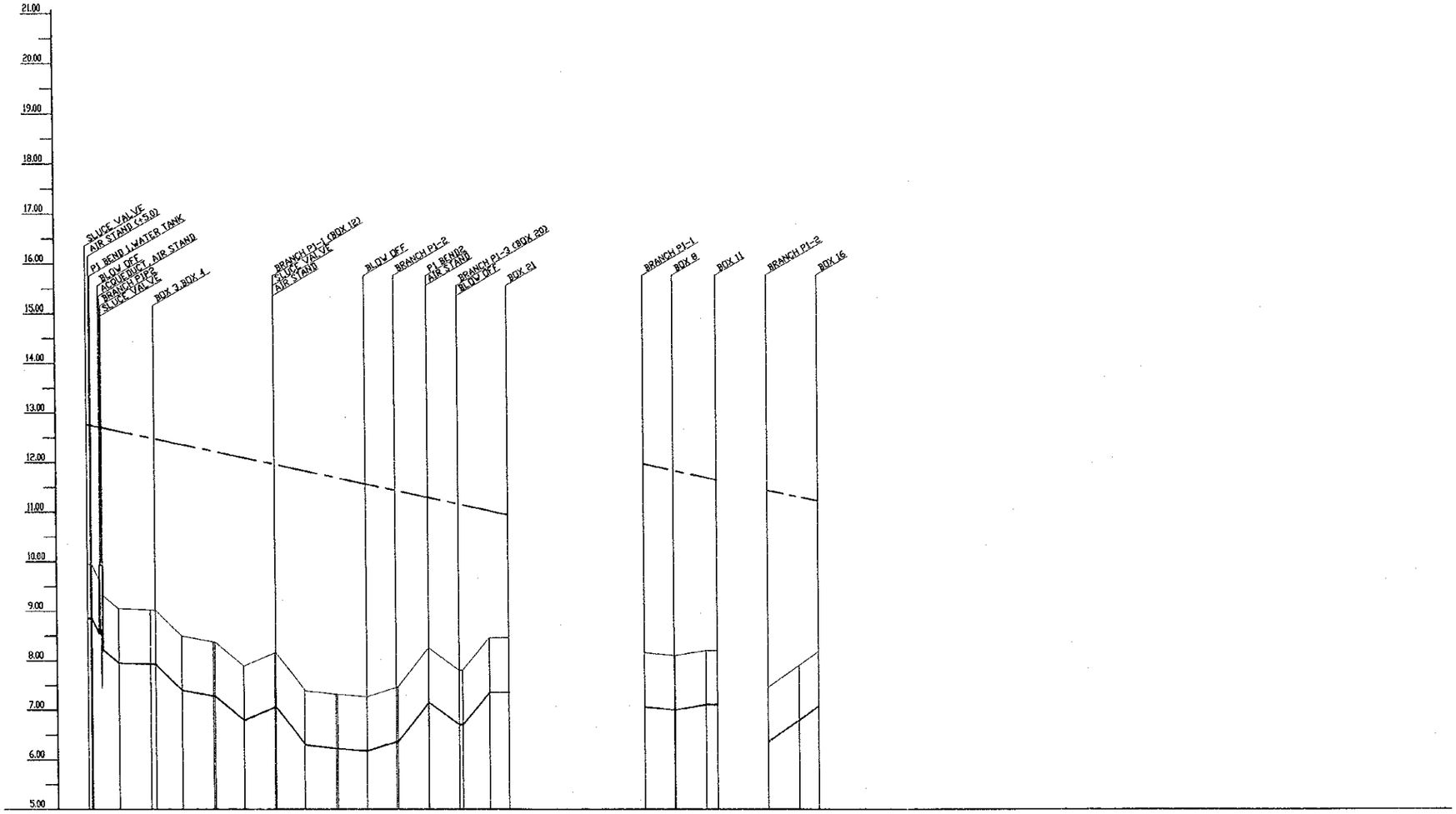
LONG SECTION PIPELINE
NO.6 RANOOHA

Date		No.	24

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

P 1　　P 1−1　P 1−2



PIPE	Q = 0.024m3/s PVC ϕ = 200														Q = 0.024m3/s PVC ϕ = 200			Q = 0.024m3/s PVC ϕ = 200		
DYNAMIC WATER ELEVATION	12.77	12.64	12.50	12.48	12.37	12.23	12.21	12.10	11.96	11.93	11.83	11.78	11.69	11.56	11.43	11.29	11.16	11.14	11.02	10.94	11.96	11.93	11.82	11.69	11.64	11.43	11.30	11.21
PIPE CENTER ELEVATION	8.95	7.95	7.93	7.92	7.40	7.28	7.28	6.79	7.06	7.06	6.29	6.22	6.22	6.17	6.36	6.36	7.15	7.15	6.70	7.36	7.36	7.06	7.00	7.00	7.10	7.10	6.36	6.80	7.08
GROUND LEVEL	9.95	9.05	9.03	9.02	8.50	8.38	8.38	7.89	8.16	8.16	7.39	7.32	7.32	7.27	7.46	7.46	8.25	8.25	7.88	8.46	8.46	8.16	8.10	8.10	8.20	8.20	7.46	7.90	8.18
ACCUMULATED DISTANCE	0.0	50.0	100.0	108.1	150.0	200.0	202.5	250.0	300.0	302.0	350.0	400.0	402.5	450.0	497.3	500.0	550.0	550.1	600.0	650.0	681.1	0.0	48.5	50.0	100.0	118.3	0.0	50.0	81.6
DISTANCE	0.0	25.7	50.0	8.1	41.9	50.0	2.5	47.1	50.0	2.0	48.0	50.0	2.5	47.5	47.3	2.7	50.0	0.1	49.9	44.6	31.1	0.0	48.5	1.5	50.0	18.3	0.0	50.0	31.6
STATION	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.0	NO.1	NO.2			NO.0	NO.1	

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
— - —	DYNAMIC WATER LEVEL

PIPE INSTALLATION

D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

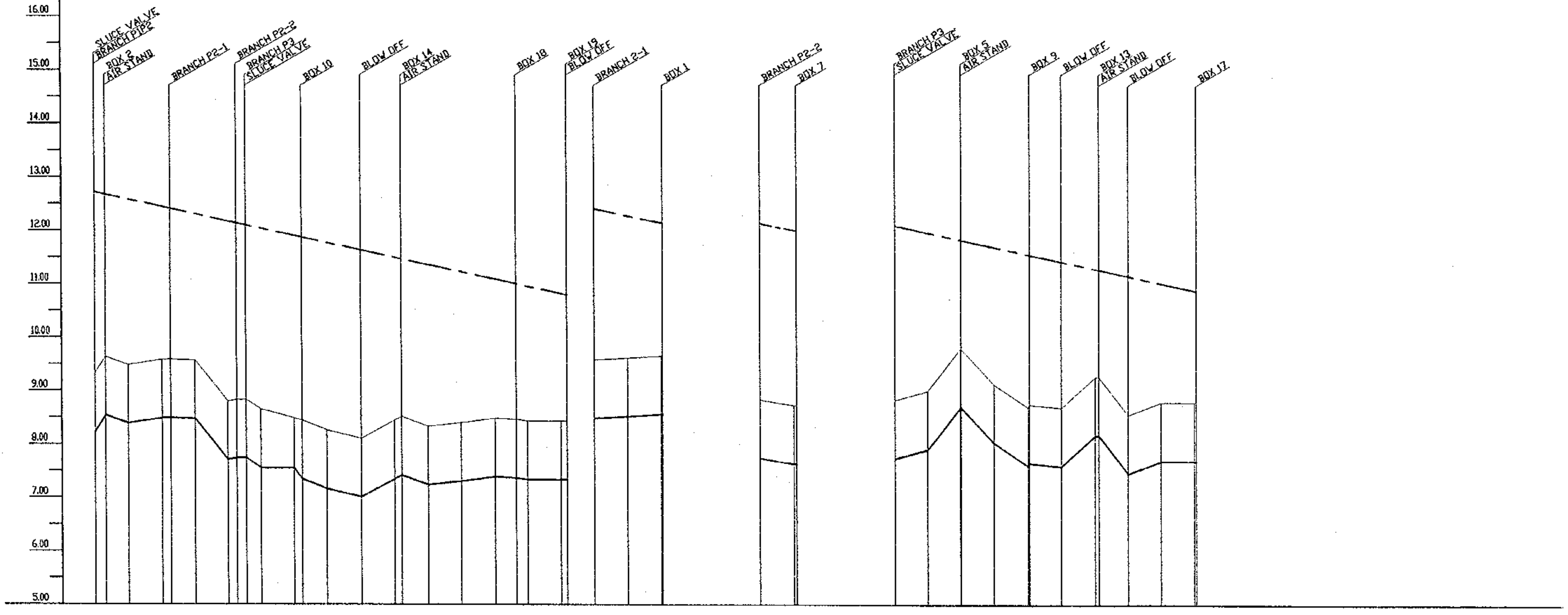
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION OF PIPELINE NO.7 RANOMETO (1/2)

Date		No.	25

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION



LEGEND

LINE	NAME
————	PIPE CENTER LEVEL
————	GROUND LEVEL
—— - ——	DYNAMIC WATER LEVEL

PIPE: Q = 0.024m3/s, PVC ø = 200 (P 2, P 2−1, P 2−2, P 3)

P 2

STATION	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	12.71 / 12.67	8.22 / 8.53	9.32 / 9.63	0.0 / 16.4	0.0 / 16.4
NO.1	12.57	8.38	9.48	50.0	33.6
NO.2	12.44 / 12.40	8.48 / 8.48	9.58 / 9.58	100.0 / 113.6	50.0 / 13.6
NO.3	12.30	8.47	9.57	150.0	36.4
NO.4	12.17 / 12.13 / 12.09	7.70 / 7.73 / 7.73	8.80 / 8.83 / 8.83	200.0 / 213.7 / 228.0	50.0 / 13.7 / 14.3
NO.5	12.03	7.55	8.65	250.0	22.0
NO.6	11.90 / 11.87	7.55 / 7.34	8.65 / 8.44	300.0 / 312.1	50.0 / 12.1
NO.7	11.76	7.15	8.25	350.0	37.9
NO.8	11.63	7.00	8.10	400.0	50.0
NO.9	11.49 / 11.46	7.34 / 7.41	8.44 / 8.51	450.0 / 461.0	50.0 / 11.0
NO.10	11.36	7.23	8.33	500.0	39.0
NO.11	11.22	7.30	8.40	550.0	50.0
NO.12	11.09	7.38	8.48	600.0	50.0
NO.13	11.00 / 10.95	7.36 / 7.33	8.46 / 8.43	632.4 / 650.0	32.4 / 17.6
NO.14	10.82 / 10.79	7.33 / 7.33	8.43 / 8.43	700.0 / 709.3	50.0 / 9.3

P 2−1

STATION	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	12.40	8.48	9.58	0.0	0.0
NO.1	12.27	8.51	9.61	50.0	50.0
NO.2	12.14 / 12.13	8.55 / 8.55	9.65 / 9.65	100.0 / 101.9	50.0 / 1.9

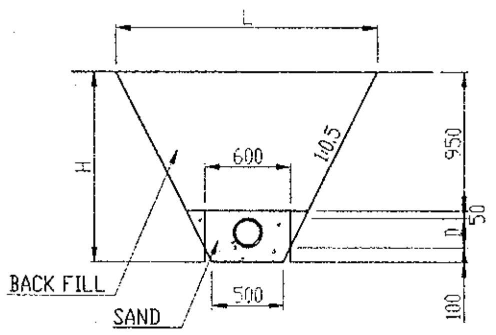
P 2−2

STATION	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	12.13	7.73	8.83	0.0	0.0
NO.1	12.00 / 11.99	7.63 / 7.63	8.73 / 8.73	50.0 / 53.7	50.0 / 3.7

P 3

STATION	DYNAMIC WATER ELEVATION	PIPE CENTER ELEVATION	GROUND LEVEL	ACCUMULATED DISTANCE	DISTANCE
NO.0	12.09	7.73	8.83	0.0	0.0
NO.1	11.96	7.90	9.00	50.0	50.0
NO.2	11.85 / 11.82	8.62 / 8.69	9.72 / 9.79	99.0 / 100.0	49.0 / 1.0
NO.3	11.69	8.03	9.13	150.0	50.0
NO.4	11.56 / 11.56	7.60 / 7.65	8.70 / 8.75	200.0 / 202.2	50.0 / 2.2
NO.5	11.43	7.59	8.69	250.0	47.8
NO.6	11.29 / 11.28	8.17 / 8.17	9.27 / 9.27	300.0 / 305.7	50.0 / 5.7
NO.7	11.16	7.46	8.56	350.0	44.3
NO.8	11.02	7.69	8.79	400.0	50.0
NO.9	10.89 / 10.89	7.69 / 7.69	8.79 / 8.79	450.0 / 453.3	50.0 / 3.3

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

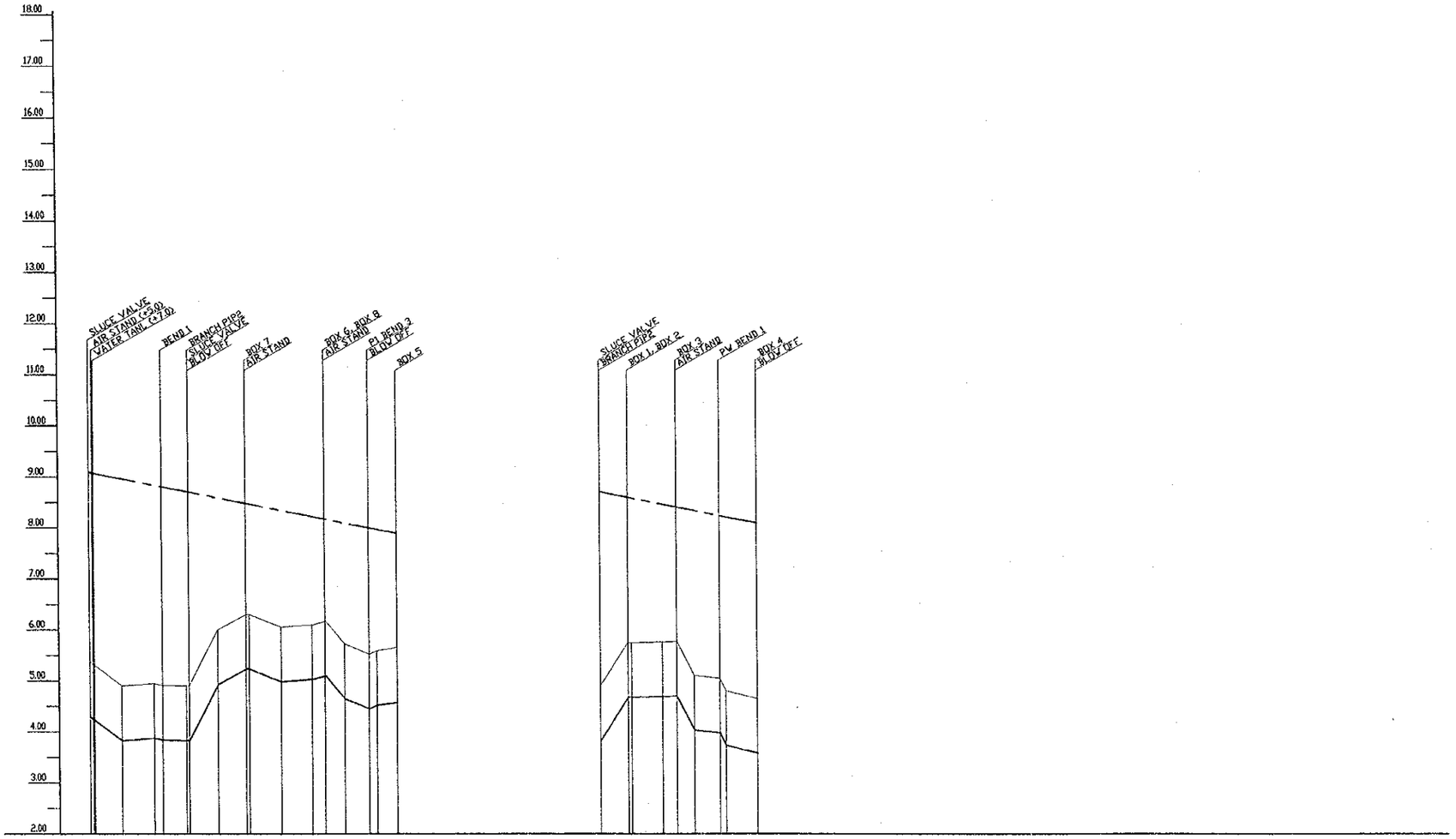
THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

LONG SECTION OF PIPELINE
NO.7 RANOMETO (2/2)

Date		No.	26

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

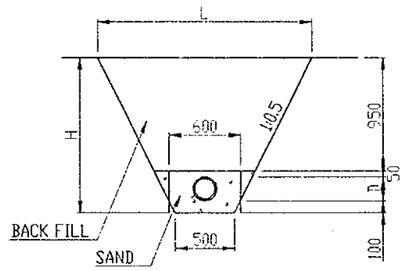


PIPE	Q = 0.010m3/s PVC ϕ = 150											Q = 0.010m3/s PVC ϕ = 150				
DYNAMIC WATER ELEVATION	9.08 9.07 9.06	8.96	8.83 8.80	8.76	8.59	8.47 8.42	8.34	8.21 8.16	8.09	8.00 7.97	7.89	8.70	8.59 8.58	8.45	8.40	8.39	8.23 8.21	8.09
PIPE CENTER ELEVATION	4.30 4.25 4.23	3.83	3.88 3.84	3.83	4.93	5.23 5.23	4.98	5.03 5.10	4.65	4.45 4.52	4.58	3.83	4.68 4.68	4.69	4.70	4.03	3.98 3.73	3.98
GROUND LEVEL	5.37 5.32 5.30	4.90	4.75 4.91	4.90	6.00	6.30 6.38	6.05	6.40 6.17	5.72	5.52 5.39	5.65	4.90	5.75 5.75	5.76	5.77	5.10	5.05 4.88	4.65
ACCUMULATED DISTANCE	0.0 5.0 7.0	50.0	100.0 113.0	150.0 154.5	200.0	244.7 256.0	300.0	350.0 370.0	400.0	438.2 450.0	461.0	0.0	44.2 56.0	106.0	122.0	150.0	190.1 209.0	247.8
DISTANCE	0.0 2.0	50.0	50.0 13.0	37.0 4.5	45.5	44.7 11.3	50.0	50.0 20.0	30.0	38.2 11.8	11.0	0.0	44.2 11.8	50.0	22.0	28.0	40.1 9.9	47.8
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9		NO.0	NO.1	NO.2	NO.3	NO.4		

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
— - — - —	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

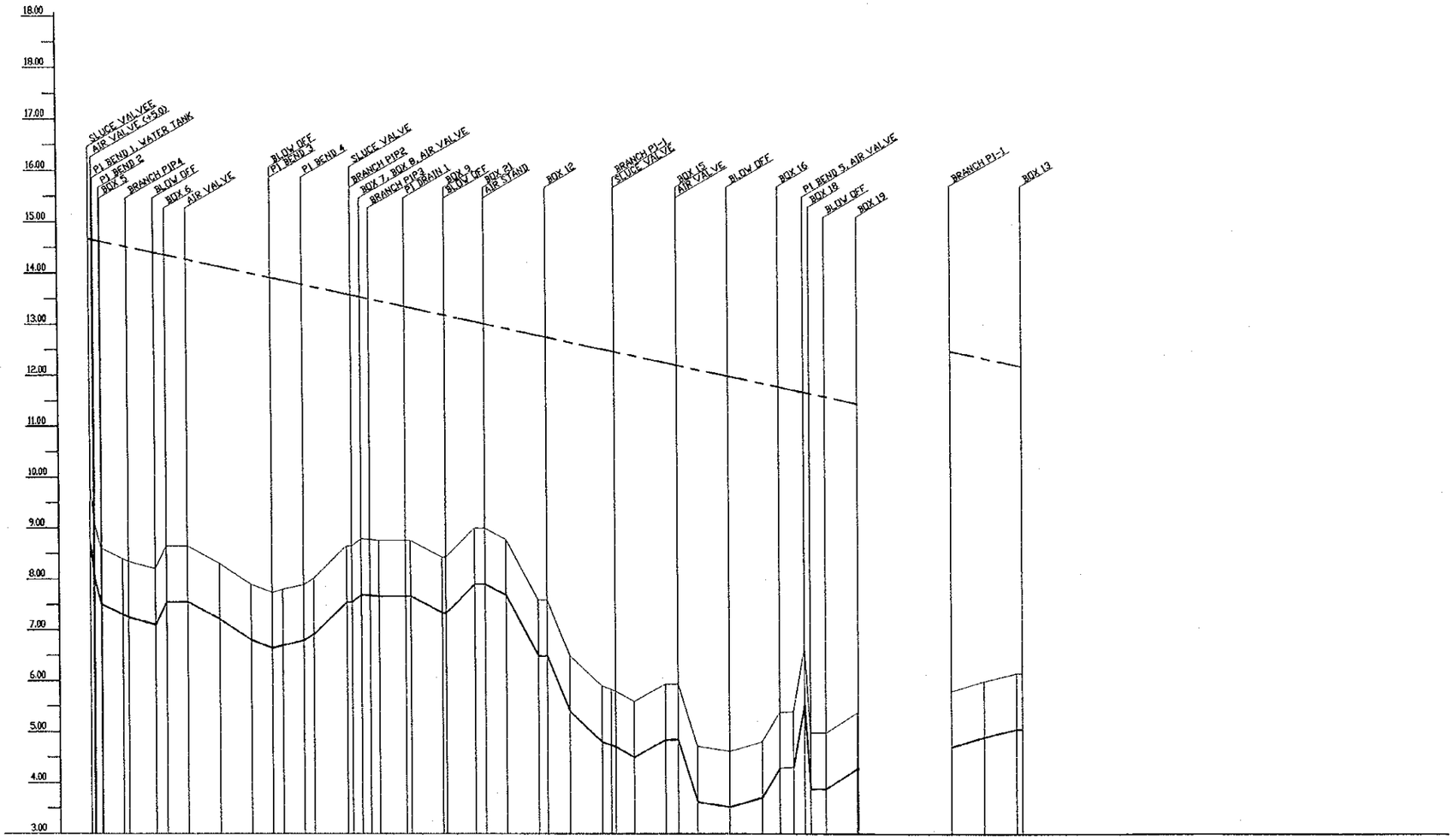
LONG SECTION PIPELINE NO.8 LAPULU

Date		No.	27

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

P 1 P 1-1

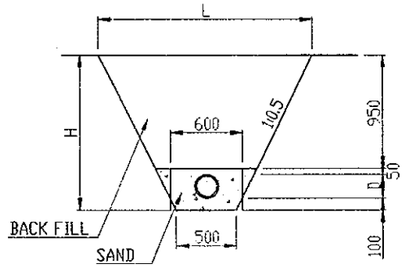


PIPE	Q = 0.024m3/s PVC ø = 200																									Q = 0.024m3/s PVC ø = 200		
DYNAMIC WATER ELEVATION	14.67 14.62 14.62 14.51 14.51	14.40 14.35	14.27	14.13	14.40	13.91 13.86	13.77 13.73	13.59 13.57 13.53 13.49 13.46	13.34 13.32	13.19 13.17	13.05 13.01	12.92	12.78 12.75	12.65	12.51 12.46	12.38	12.24 12.19	12.11	11.97	11.84	11.76	11.71	11.66 11.63	11.57	11.43 11.43	12.45	12.32	12.18 12.16
PIPE CENTER ELEVATION	8.20 8.20 7.50 7.50 7.28 7.28	7.10 7.55	7.55	7.21	6.80	6.64 6.70	6.79 6.93	7.55 7.55 7.69 7.68 7.66	7.66 7.66	7.33 7.33	7.90 7.90	7.68	6.49 6.49	5.40	4.90 4.70	4.50	4.84 4.84	3.62	3.52	3.71	4.29	4.30	5.54 3.88	3.88	4.38 4.38	4.70	4.90	5.05 5.05
GROUND LEVEL	8.80 8.80 8.20 8.20 8.40 8.40	8.20 8.65	8.65	8.31	7.90	7.74 7.80	7.89 8.03	8.65 8.65 8.78 8.78 8.76	8.76 8.76	8.43 8.43	9.00 9.00	8.78	7.59 7.59	6.50	5.90 5.80	5.60	5.94 5.94	4.72	4.62	4.81	5.39	5.40	6.64 4.98	4.98	5.38 5.38	5.60	6.00	6.15 6.15
ACCUMULATED DISTANCE	0.0 17.0 18.5 58.5 98.7	100.0 117.2	150.0	200.0	250.0	283.6 300.0	332.8 350.0	400.0 416.1 422.6 442.4 450.4	491.5 500.0	550.4 555.2	600.0 616.1	650.0	700.0 714.1	750	800.0 821.3	850.0	900.0 919.7	950.0	1000.0	1050.0	1078.3	1100.0 1117.0 1126.2		1150.0	1200.2 1200.2	0.0	50.0	100.0 108.7
DISTANCE	0.0 17.0 1.5 39.5 39.7	41.3 17.2	32.8	50.0	50.0	33.6 16.4	32.8 17.2	50.0 8.1 14.5 13.8 13.8	41.9 8.1	50.0 5.2	44.8 16.1	33.9	50.0 14.1	35.9	50.0 21.3	28.7	50.0 19.7	30.3	50.0	50.0	28.3	21.7 17.0 9.2 23.9		50.0	50.0	0.0	50.0	50.0 8.7
STATION	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	NO.16	NO.17	NO.18	NO.19	NO.20	NO.21	NO.22	NO.23	NO.24	NO.0	NO.1	NO.2

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
— — —	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

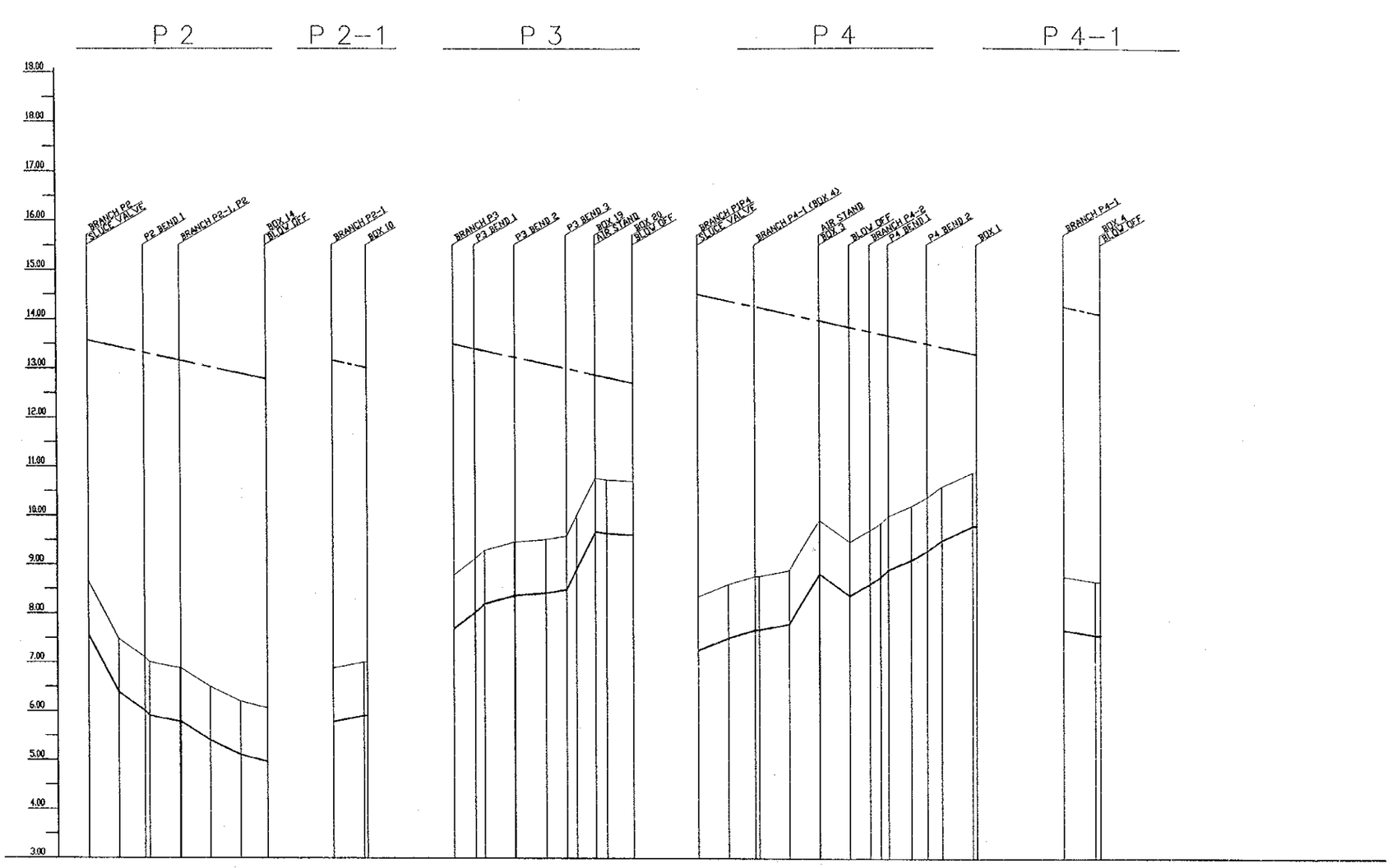
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION OF PIPELINE NO.9 MOOLO INDAH (1/2)

Date		No.	28

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

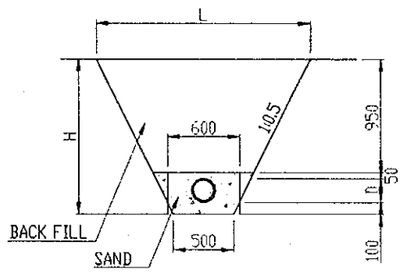


PIPE	Q = 0.024m3/s PVC ø = 200						Q = 0.024m3/s PVC ø = 200																		Q = 0.024m3/s PVC ø = 200						
DYNAMIC WATER ELEVATION	13.57	13.44	13.32 13.30	13.17 13.16	13.03	12.90	12.78	13.16	13.03 13.01	13.49	13.46 13.35	13.22 13.22	13.09	12.99 12.95	12.87 12.82	12.79	14.51	14.38	14.26 14.24	14.11	13.97 13.97	13.84	13.75 13.74 13.67	13.57	13.50	13.43	13.30 13.28	14.26	14.12 14.10			
PIPE CENTER ELEVATION	7.55	6.38	6.00 5.90	5.78 5.78	5.40	5.10	4.96	5.78	5.90 5.90	7.68	8.02 8.19	8.38 8.38	8.41	8.48 8.90	9.66 9.63	9.60	7.25	7.50	7.67 7.67	7.79	8.81 8.81	8.37	8.61 8.63 8.90	9.10	9.28	9.50	9.79 9.79	7.67	7.56 7.56			
GROUND LEVEL	8.65	7.48	7.00 7.00	6.88 6.88	6.50	6.20	6.06	6.88	7.00 7.00	8.78	9.12 9.29	9.46 9.46	9.51	9.58 10.00	10.76 10.73	10.70	8.35	8.60	8.77 8.77	8.89	9.91 9.91	9.47	9.71 9.85 10.00	10.20	10.38	10.60	10.83 10.83	8.77	8.66 8.66			
ACCUMULATED DISTANCE	0.0	50.0	92.5 100.0	150.0 151.8	200.0	250.0	293.7	0.0	50.0 56.3	0.0	34.6 50.0	98.8 100.0	150.0	184.1 200.0	231.5 250.0	293.8	0.0	50.0	92.9 100.0	150.0	200.0 200.7	250.0	282.6 300.0 312.8	350.0	376.5	400.0	450.0 456.7	0.0	50.0 56.4			
DISTANCE	0.0	50.0	42.5 7.5	50.0 1.8	48.2	50.0	43.7	0.0	50.0 6.3	0.0	34.6 15.4	48.8 1.2	50.0	34.1 15.9	31.5 18.5	43.8	0.0	50.0	42.9 7.1	50.0	50.0 0.7	49.3	32.6 17.4 12.8	37.4	26.5	23.5	50.0 6.7	0.0	50.0 6.4			
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5		NO.0	NO.1	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5		NO.0	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9		NO.0	NO.1			

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
— - —	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

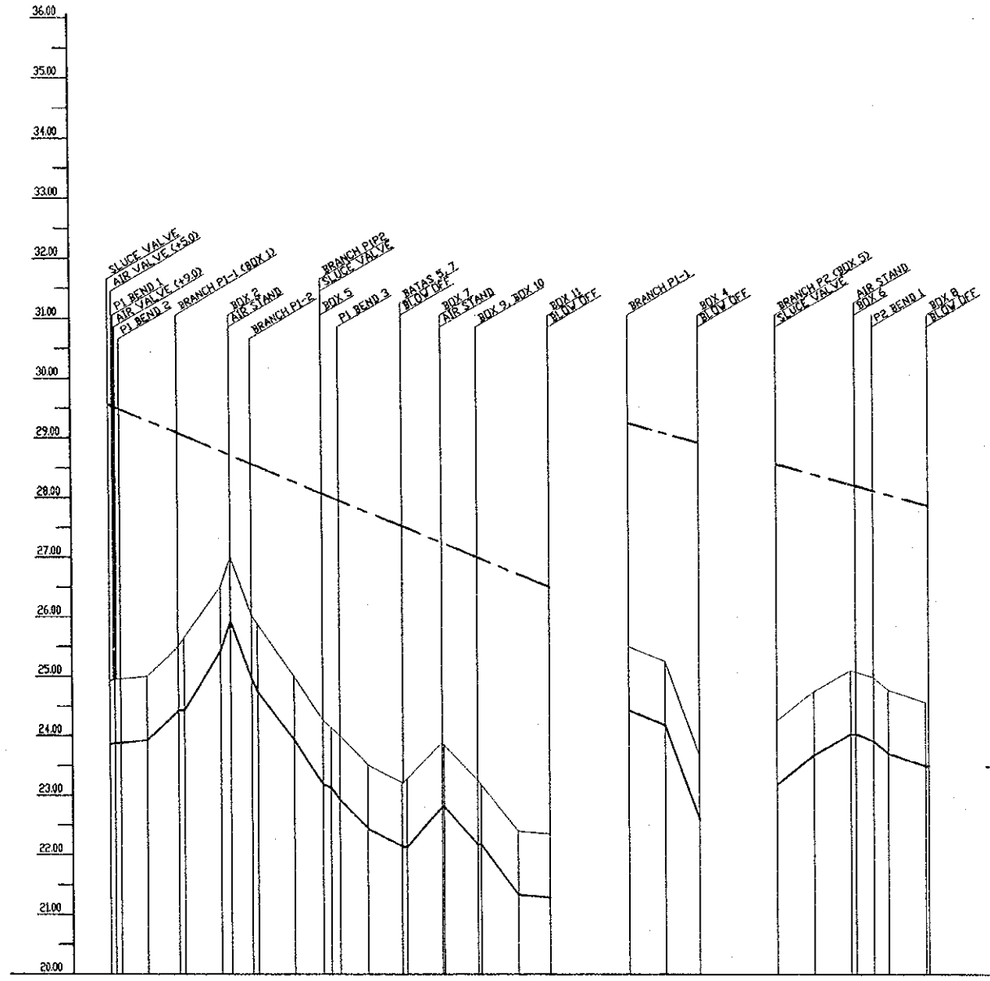
LONG SECTION OD PIPELINE NO.9 MOOLO INDAH (2/2)

Date		No.	29

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

P 1　　P 1−1　　P 2



LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
— - —	DYNAMIC WATER LEVEL

PIPE INSTALLATION

D	200	150
H	1300	1250
L	1800	1750

PIPE	Q = 0.012m3/s PVC ϕ = 150												Q = 0.012m3/s PVC ϕ = 150			Q = 0.012m3/s PVC ϕ = 150				
DYNAMIC WATER ELEVATION	28.55 28.48	29.30	29.09 29.04	28.78 28.71 28.63	28.27	28.06 27.95	27.75	27.52 27.49	27.24 27.23	27.01 26.98	26.72	26.50	29.25	29.08	28.92	28.56	28.39	28.22 28.17 28.11	28.05	27.87 27.86
PIPE CENTER ELEVATION	23.88 23.88	23.93	24.43	25.43 25.58 24.73	23.93	23.13 22.93	22.43	22.14 22.14	22.81 22.81	22.18 22.18	21.33	21.29	24.43	24.18	22.60	23.19	23.68	24.03 24.03	23.91	23.70	23.49 23.49
GROUND LEVEL	24.33 24.95	25.00	25.50 25.50	26.50 27.00 26.50	25.00	24.26 24.06	23.50	23.21 23.21	23.88 23.88	23.23 23.23	22.40	22.36	25.50	25.25	23.67	24.26	24.75	25.10 25.10	24.98	24.77	24.56 24.56
ACCUMULATED DISTANCE	0.0 15.0	50.0	91.8 100.0	150.0 163.8 182.1 200.0	250.0	280.7 291.4	350.0	364.5 400.0	447.8 456.0	495.6 500.0	550.0	592.3	0.0	50.0	95.5	0.0	50.0	100.1 119.6	130.5	150.0	200.0 242.2
DISTANCE	0.0 15.0	35.0	41.8 8.2	50.0 13.8 18.3 17.9	50.0	30.7 10.7 11.4	38.6	44.6 5.4	47.8 2.2	45.6 4.4	50.0	42.3	0.0	50.0	45.5	0.0	50.0	50.0 19.5	23.9	19.5	50.0 42.2
STATION	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.0	NO.1		NO.0	NO.1	NO.2	NO.3	NO.4	

THE REPUBLIC OF INDONESIA

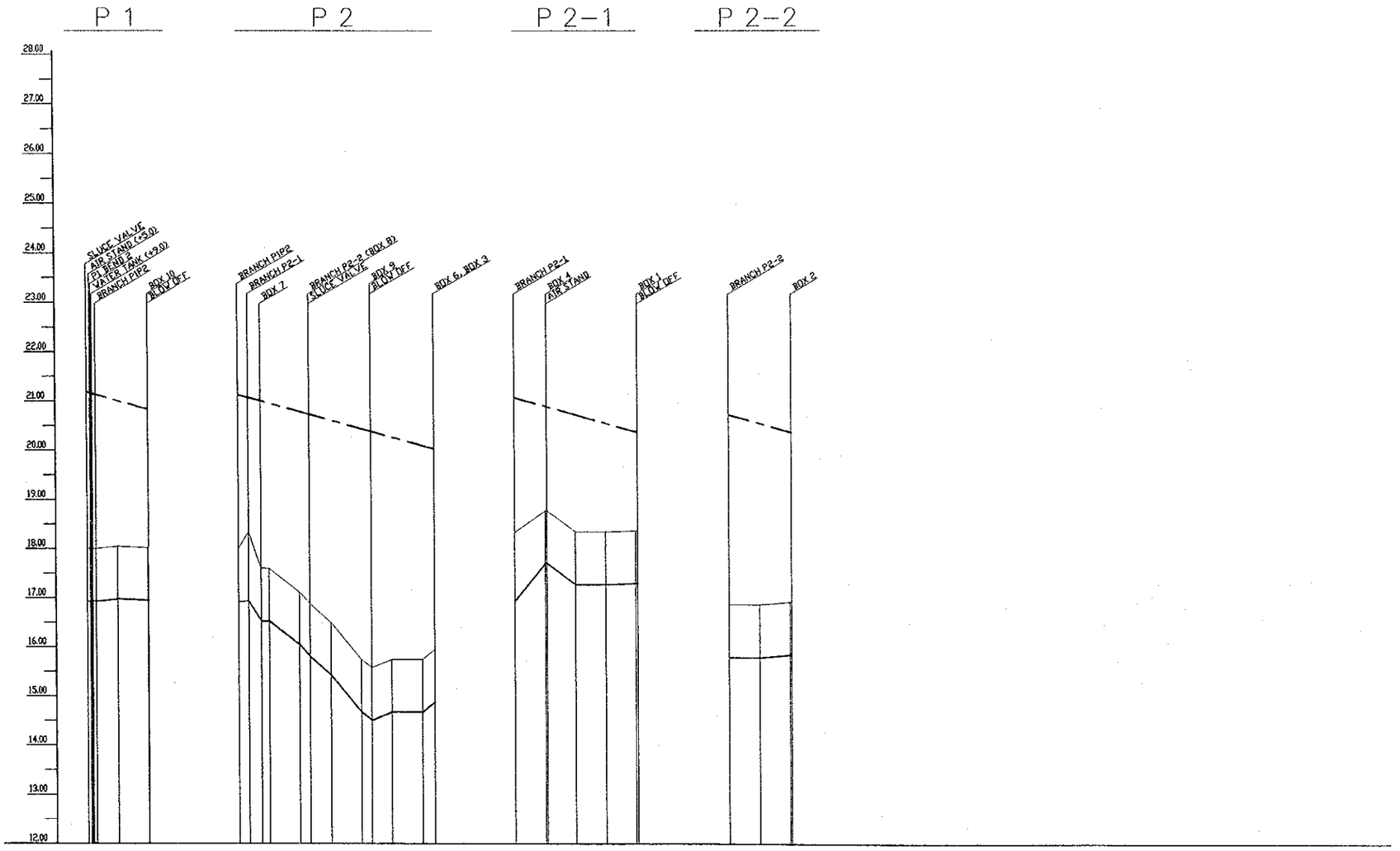
THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

LONG SECTION OF PIPELINE
NO.11 KALEMBUKAHA

Date		No.	30

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION



PIPE	Q = 0.012m3/s PVC ϕ = 150				Q = 0.012m3/s PVC ϕ = 150							Q = 0.012m3/s PVC ϕ = 150					Q = 0.012m3/s PVC ϕ = 150		
DYNAMIC WATER ELEVATION	21.18	21.15	21.01	20.83	21.13	21.07	21.00	20.96	20.79	20.73	20.61	20.44	20.38	20.27	20.10	20.03	21.07	20.92	20.89	20.73	20.55	20.39	20.37	20.73	20.56	20.38	20.37
PIPE CENTER ELEVATION	16.83	16.83	16.98	16.55	16.93	16.93	16.53	16.53	16.08	15.86	15.43	14.68	14.51	14.48	14.46	14.86	16.93	17.71	17.28	17.28	17.30	17.30	17.30	15.80	15.80	15.85	15.85
GROUND LEVEL	18.00	18.00	18.05	18.02	18.00	18.34	17.66	17.68	17.10	16.87	16.50	15.75	15.58	15.75	15.75	15.95	18.34	18.78	18.78	18.35	18.35	18.37	18.37	16.87	16.87	16.92	16.92
ACCUMULATED DISTANCE	0.0	15.0	50.0	100.0	0.0	17.0	33.0	83.0	100.0	117.0	150.0	200.0	217.0	250.0	300.0	320.0	0.0	50.0	97.5	100.0	150.0	200.0	220.0	0.0	50.0	100.0	120.0
DISTANCE	0.0	15.0	35.0	50.0	0.0	17.0	16.0	50.0	17.0	33.0	50.0	17.0	33.0	50.0	20.0		0.0	50.0	47.7	50.0	50.0	20.0		0.0	50.0	50.0	20.0
STATION	NO.0		NO.1	NO.2	NO.0		NO.1		NO.2		NO.3	NO.4		NO.5	NO.6		NO.0		NO.1	NO.2	NO.3	NO.4		NO.0		NO.1	NO.2

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
- - - -	DYNAMIC WATER LEVEL

PIPE INSTALLATION

D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

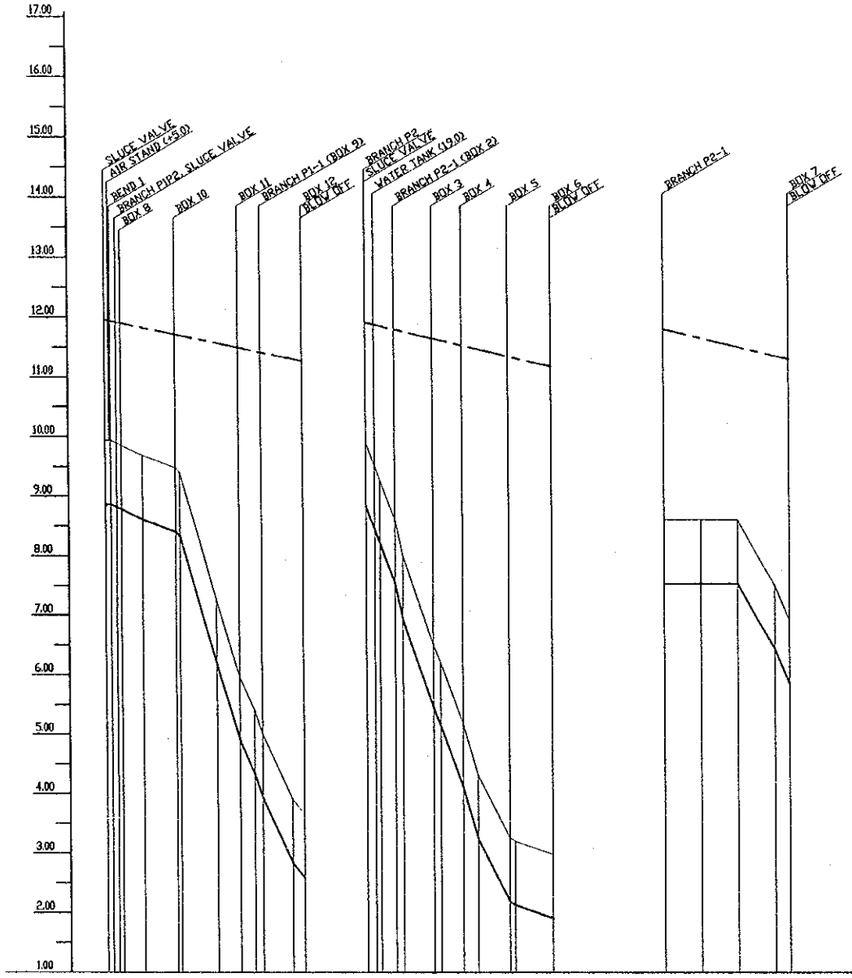
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION OF PIPELINE
NO.12 PALAKAHEMBI

Date		No.	31

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

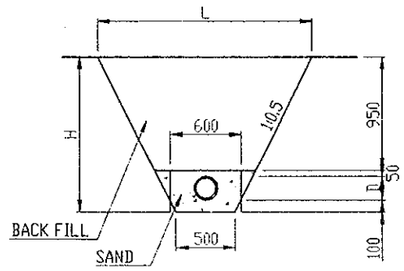


PIPE	Q = 0.011m3/s PVC ϕ = 150							Q = 0.011m3/s PVC ϕ = 150							Q = 0.011m3/s PVC ϕ = 150			
DYNAMIC WATER ELEVATION	11.85	11.67	11.50	11.62	11.18	11.69	11.56	11.48	11.40	11.30	11.26	11.90	11.84	11.75	11.64	11.61	11.52	11.46	11.34	11.31	11.17	11.79	11.84	11.49	11.35	11.29
PIPE CENTER ELEVATION	8.86	8.68	8.50	8.61	8.18	8.69	6.18	4.99	4.90	2.83	2.59	8.82	8.19	7.53	6.93	5.43	5.13	4.10	3.23	2.13	1.91	7.53	7.53	7.53	6.43	5.84
GROUND LEVEL	9.33	9.18	9.00	9.68	9.47	9.40	7.25	5.96	5.40	3.90	3.66	9.89	9.26	8.60	8.60	6.50	6.20	5.17	4.30	3.26	2.98	8.60	8.69	8.60	7.50	6.91
ACCUMULATED DISTANCE	0.0	15.0	21.1	50.0	94.5	100.5	150.0	180.2	200.0	211.1	250.0	265.7	0.0	19.0	39.1	50.0	80.3	100.0	130.4	150.0	198.5	248.9	0.0	50.0	100.0	150.0	168.9
DISTANCE	0.0	15.0	6.1	28.9	44.5	6.0	50.0	30.2	19.8	11.1	38.9	15.7	0.0	19.0	20.1	10.9	30.3	9.7	30.4	15.6	48.5	46.9	0.0	50.0	50.0	50.0	16.9
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5							NO.0	NO.1	NO.2	NO.3	NO.4						NO.0	NO.1	NO.2	NO.3	

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
- - - - -	GROUND LEVEL
—— · ——	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

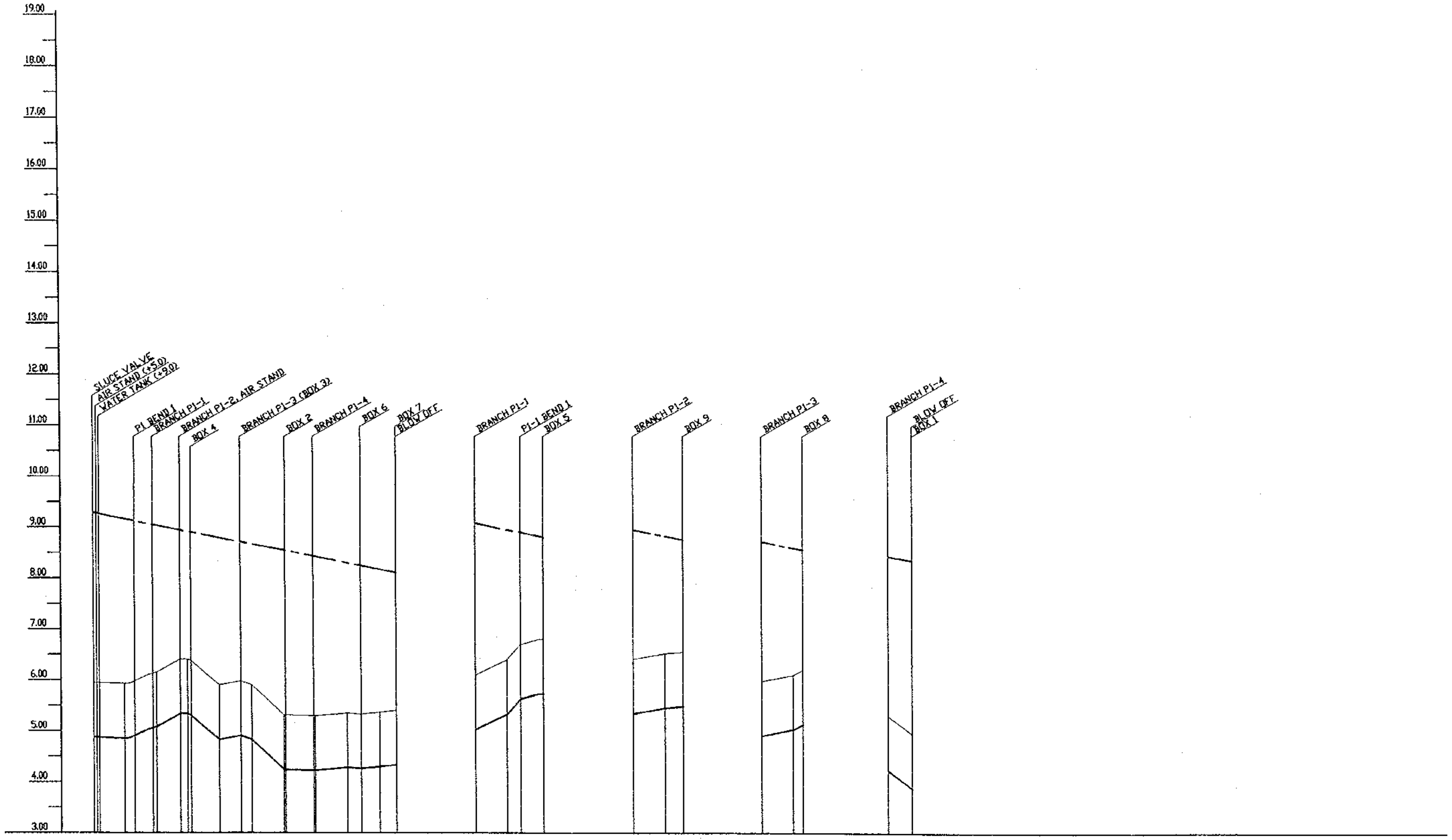
LONG SECTION OF PIPELINE
NO.13 NAMANGKEWA

Date		No.	32

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

P 1 P 1−1 P 1−2 P 1−3 P 1−4



LEGEND

LINE	NAME
————	PIPE CENTER LEVEL
- ·- ·- ·-	GROUND LEVEL
—— — ——	DYNAMIC WATER LEVEL

P 1

PIPE	Q = 0.010m3/s, PVC ø = 150											
DYNAMIC WATER ELEVATION	9.28	9.16 9.14	9.07 9.03	8.94 8.91 8.90	8.79	8.71 8.67	8.54 8.54	8.43 8.42	8.30	8.24	8.18	8.11
PIPE CENTER ELEVATION	4.88	4.86 4.86	5.03 5.08	5.34 5.34 5.30	4.83	4.91 4.83	4.24 4.24	4.23 4.23	4.28	4.26	4.30	4.34
GROUND LEVEL	5.95	5.93 5.93	6.10 6.15	6.41 6.41 6.37	5.90	5.98 5.90	5.31 5.31	5.30 5.30	5.35	5.33	5.37	5.41
ACCUMULATED DISTANCE	0.0	50.0 57.6	86.2 100.0	138.3 150.0 155.3	200.0	233.2 250.0	300.0 302.5	346.2 350.0	400.0	421.8	450.0	476.6
DISTANCE	0.0	50.0 7.6	28.6 13.8	38.3 11.7 5.3	44.7	33.2 16.8	50.0 2.5	43.7 3.8	50.0	21.8	28.2	26.6
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8		NO.9	

P 1−1

PIPE	Q = 0.010m3/s, PVC ø = 150			
DYNAMIC WATER ELEVATION	9.07	8.95	8.89	8.82 8.80
PIPE CENTER ELEVATION	5.03	5.33	5.63	5.73 5.73
GROUND LEVEL	6.10	6.40	6.70	6.80 6.80
ACCUMULATED DISTANCE	0.0	50.0	71.6	100.0 108.0
DISTANCE	0.0	50.0	21.6	28.4 8.0
STATION	NO.0	NO.1		NO.2

P 1−2

PIPE	Q = 0.010m3/s, PVC ø = 150		
DYNAMIC WATER ELEVATION	8.94	8.82	8.75
PIPE CENTER ELEVATION	5.34	5.45	5.48
GROUND LEVEL	6.41	6.52	6.55
ACCUMULATED DISTANCE	0.0	50.0	77.4
DISTANCE	0.0	50.0	27.4
STATION	NO.0	NO.1	

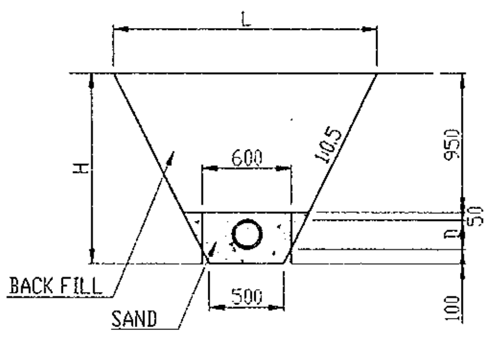
P 1−3

PIPE	Q = 0.010m3/s, PVC ø = 150	
DYNAMIC WATER ELEVATION	8.71	8.59 8.55
PIPE CENTER ELEVATION	4.91	5.03 5.13
GROUND LEVEL	5.98	6.10 6.20
ACCUMULATED DISTANCE	0.0	50.0 65.0
DISTANCE	0.0	50.0 15.0
STATION	NO.0	NO.1

P 1−4

PIPE	Q = 0.010m3/s, PVC ø = 150	
DYNAMIC WATER ELEVATION	8.43	8.34
PIPE CENTER ELEVATION	4.23	3.88
GROUND LEVEL	5.30	4.95
ACCUMULATED DISTANCE	0.0	37.6
DISTANCE	0.0	37.6
STATION	NO.0	

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

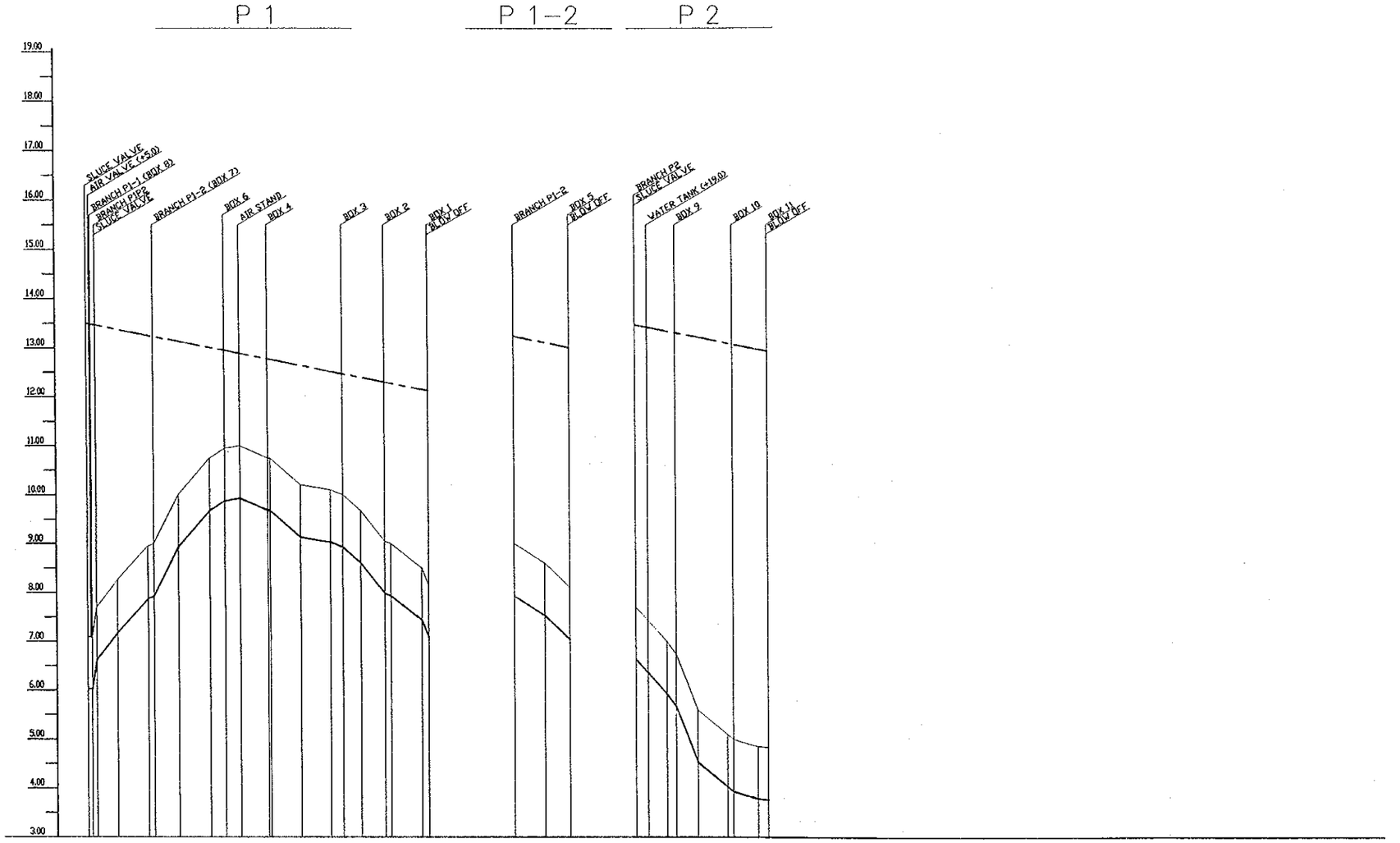
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION OF PIPELINE NO.14 MEGEPANDA

Date		No.	33

JAPAN INTERNATIONAL COOPERATION AGENCY

LONGITUDINAL SECTION

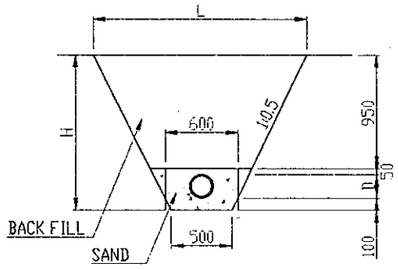


PIPE	Q = 0.010m3/s PVC ø = 150												Q = 0.010m3/s PVC ø = 150				
DYNAMIC WATER ELEVATION	13.58 13.48	13.38	13.25 13.23	13.13	13.01	12.95	12.88	12.77 12.76	12.64	12.52	12.46	12.39	12.29 12.27	12.15 12.12	13.23	13.10	13.00	13.46	13.41	13.34 13.30	13.22	13.09 13.07	12.97 12.93
PIPE CENTER ELEVATION	6.48 6.43	7.18	7.88 7.93	8.53	9.68	9.88	9.93	9.68 9.68	9.13	9.03	8.53	8.60	7.98 7.93	7.43 7.08	7.53	7.53	7.04	6.63	6.36	5.93 5.67	4.53	4.03 3.93	3.78 3.77
GROUND LEVEL	7.18 7.18	8.25	8.95 9.00	10.00	10.75	10.95	11.00	10.75 10.75	10.20	10.10	10.08	9.67	9.05 9.00	8.50 8.45	9.00	8.60	8.11	7.70	7.43	7.00 6.74	5.60	5.10 5.00	4.85 4.84
ACCUMULATED DISTANCE	0.0 15.0	50.0	100.0 110.0	150.0	200.0	224.9	250.0	296.1 300.0	350.0	400.0	420.4	450.0	489.9 500.0	550.0 560.5	0.0	50.0	91.3	0.0	15.0	50.0 64.7	100.0	150.0 161.3	200.0 216.8
DISTANCE	0.0 15.0	35.0	50.0 10.0	40.0	50.0	24.9	25.1	46.1 3.9	50.0	50.0	20.4	29.6	39.9 10.1	50.0 10.5	0.0	50.0	41.3	0.0	15.0	50.0 14.7	35.3	50.0 10.3	39.7 16.8
STATION	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.0	NO.1		NO.0	NO.1	NO.2	NO.3	NO.4	

LEGEND

LINE	NAME
———	PIPE CENTER LEVEL
———	GROUND LEVEL
- - - -	DYNAMIC WATER LEVEL

PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

LONG SECTION PIPELINE NO.17 TOTOMALA

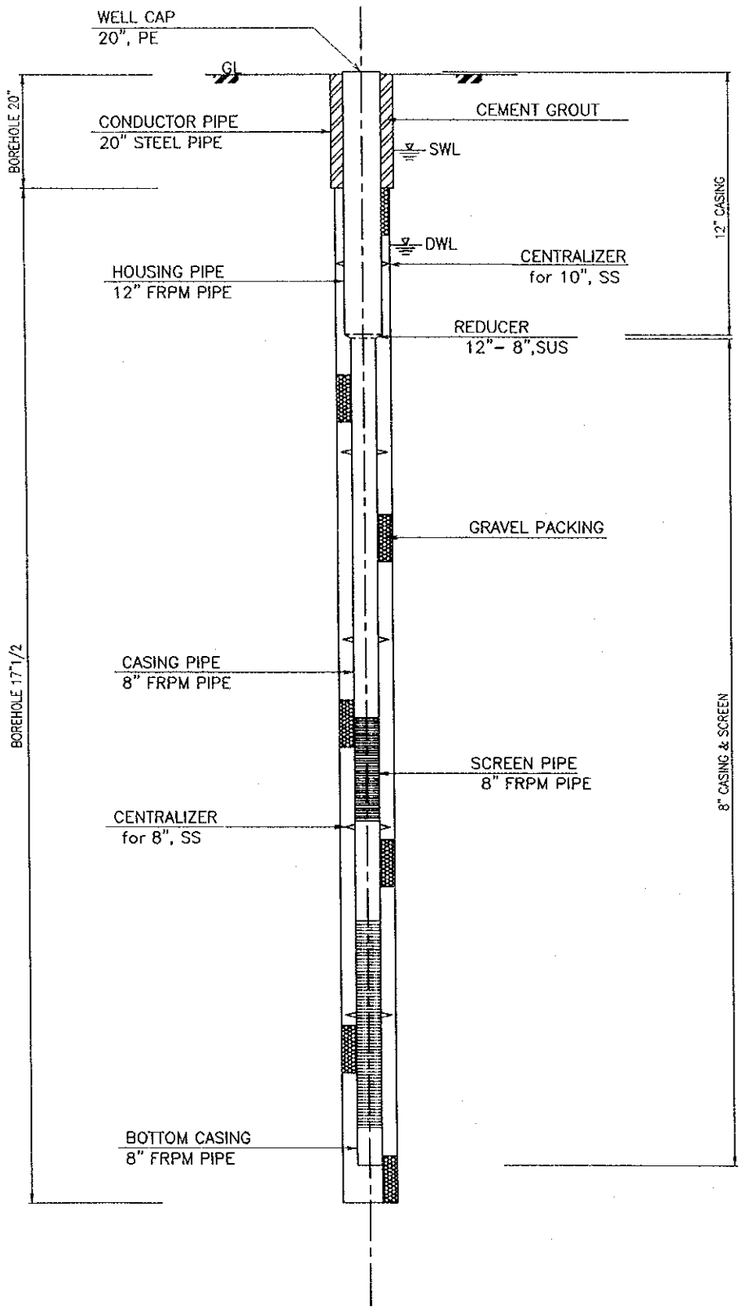
Date		No.	34

JAPAN INTERNATIONAL COOPERATION AGENCY

WELL WORKS

Well Section

NO SCALE



Well Material Table

Site Name	Total	Housing				Reducer		Casing				Screen				Centralizer		Well Cap	Bottom Plug
		12"				12"X 8"		8"				8"				12"	8"		
	(m)	(m)	4 m	3 m	2 m	(m)	0.4m	(m)	4 m	3 m	2 m	(m)	4 m	3 m	2 m			12"	8"
Bongo I	116.4	28.0	7			0.4	1	22.0	11			66.0	11			1	4	1	1
Bongo II	133.4	28.0	7			0.4	1	61.0	14	1	1	44.0	11			1	5	1	1
Bongo III	116.4	33.0	7	1	1	0.4	1	39.0	12		1	44.0	7	1	1	1	4	1	1
Tempok	116.4	22.0	5		1	0.4	1	50.0	12		1	44.0	11			1	4	1	1
Parepe	100.4	22.0	5		1	0.4	1	39.0	9	1		39.0	9	1		1	3	1	1
Ranocha	122.4	33.0	7	1	1	0.4	1	39.0	9	1		50.0	12		1	1	4	1	1
Ranometo	116.4	28.0	7			0.4	1	22.0	5		1	66.0	16		1	1	4	1	1
Lapulu	82.4	33.0	7	1	1	0.4	1	27.0	6	1		22.0	5		1	1	3	1	1
Moolo Indah	116.4	33.0	7	1	1	0.4	1	28.0	7			55.0	13	1		1	4	1	1
Kalembukaha	83.4	66.0	16		1	0.4	1	6.0	1		1	11.0	2	1		1		1	1
Palakahembi	82.4	33.0	7	1	1	0.4	1	6.0	1		1	11.0	2	1		1		1	1
Namangkewa	65.4	22.0	5		1	0.4	1	21.0	4	1	1	22.0	5		1	1	2	1	1
Magepanda	116.4	28.0	7			0.4	1	55.0	13	1		33.0	7	1	1	1	4	1	1
Toto Mala	82.4	33.0	7	1	1	0.4	1	27.0	6	1		22.0	5		1	1	3	1	1
Total	1418.6	442.0	101	6	10	5.6	14	442.0	110	7	7	529.0	116	6	7	16	44	14	14

Dimension Table

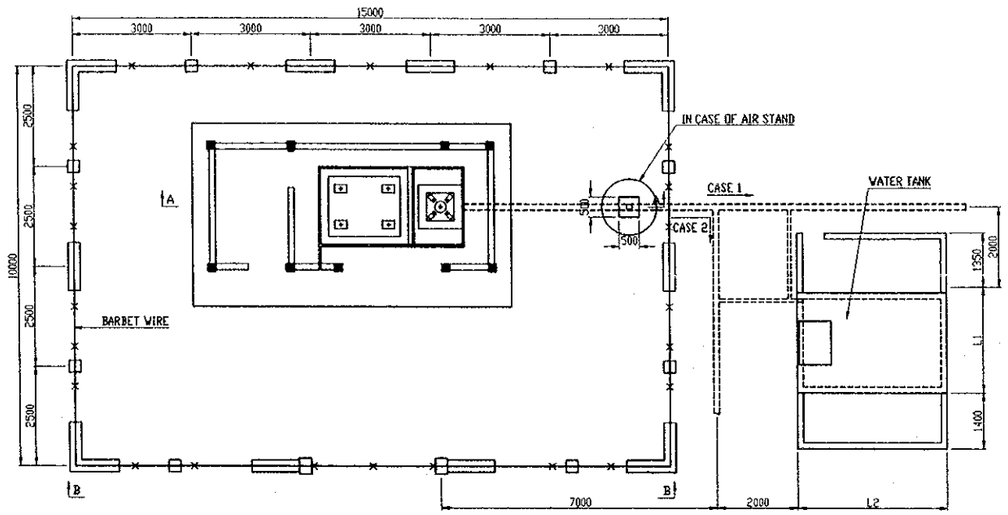
Site Name	Borehole Depth (m)			Design Discharge	SWL	DWL
	20"	17"1/2	Total	(lit/sec)	(m)	(m)
Bongo I	12	108	120	30	– 8.0	–18.0
Bongo II	12	123	135	30	– 7.0	–17.0
Bongo III	12	108	120	30	–11.0	–21.0
Tempok	12	108	120	30	– 4.0	–11.0
Parepe	12	93	105	30	– 1.0	–11.0
Ranocha	12	113	125	24	– 0.0	–24.0
Ranometo	12	108	120	24	– 0.0	–15.0
Lapulu	12	73	85	10	– 0.0	–22.0
Moolo Indah	12	108	120	24	– 0.0	–21.0
Kalembukaha	12	73	85	12	–52.0	–55.0
Palakahembi	12	38	50	12	–15.0	–24.0
Namangkewa	12	53	65	11	– 8.0	–11.0
Magepanda	12	108	120	12	– 1.0	–12.0
Toto Mala	12	73	85	10	–19.0	–22.0
Total	168	1287	1455	–	–	–

NOTE: SWL and DWL shows the depth from the ground level (GL).

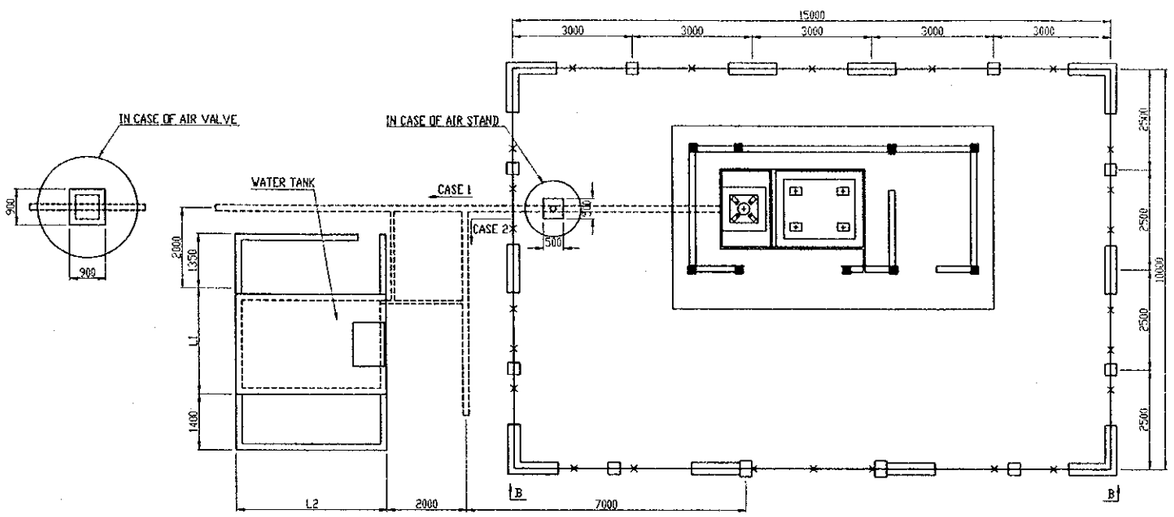
S=1:100

THE REPUBLIC OF INDONESIA			
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA			
WELL PROFILE			
Date		No.	35
JAPAN INTERNATIONAL COOPERATION AGENCY			

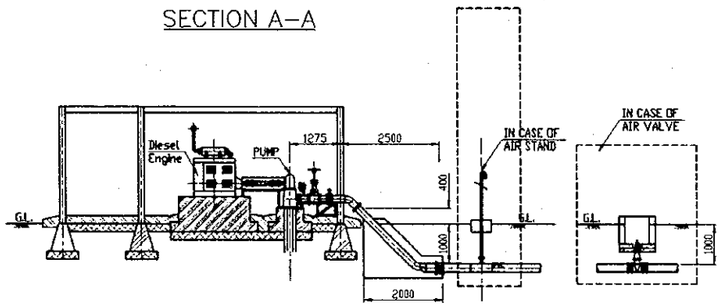
PUMP HOUSE TYPE A



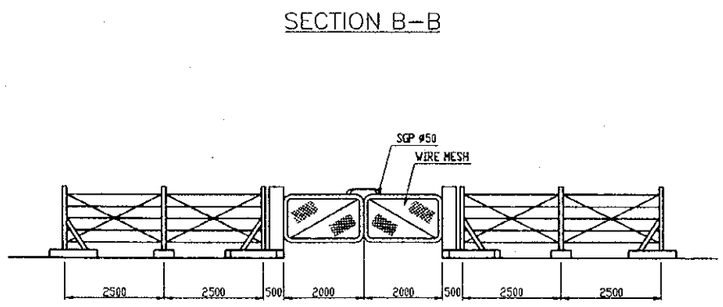
PUMP HOUSE TYPE B



SECTION A–A



SECTION B–B



SECTION C–C

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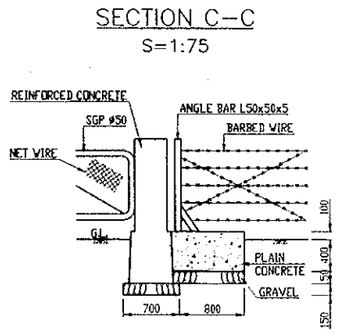

SECTION D–D

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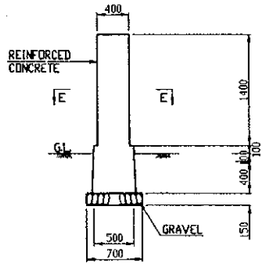

SECTION E–E

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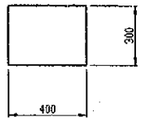
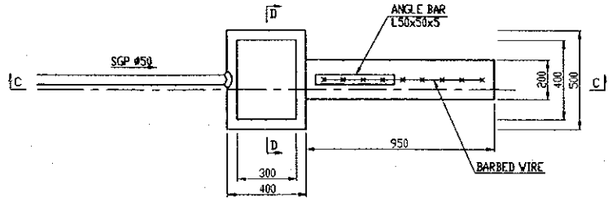


PLAN

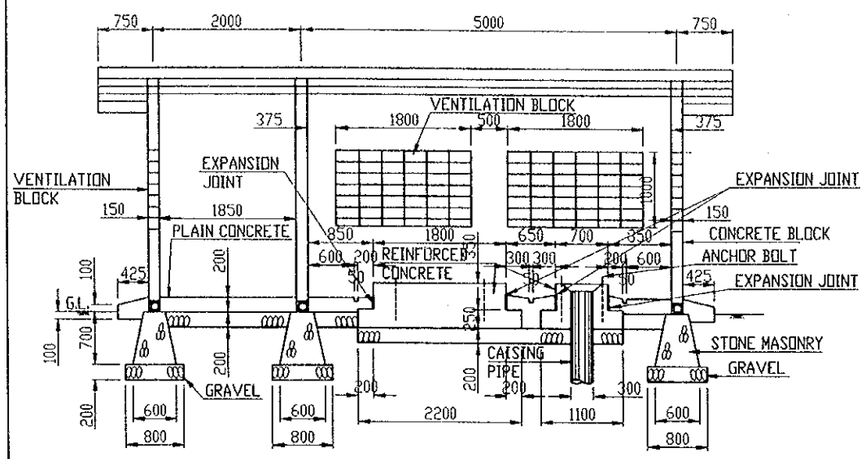
S=1:30



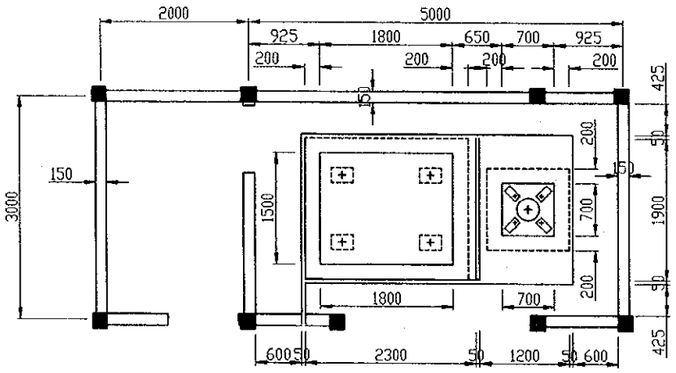
S=1:150

THE REPUBLIC OF INDONESIA			
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA			
PUMP HOUSE GENERAL PLAN			
Date		No.	36
JAPAN INTERNATIONAL COOPERATION AGENCY			

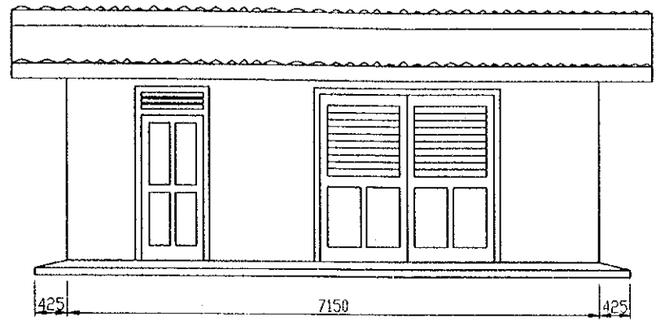
SECTION A–A



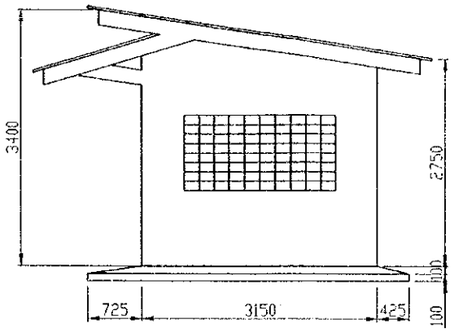
PEDESTAL PLAN



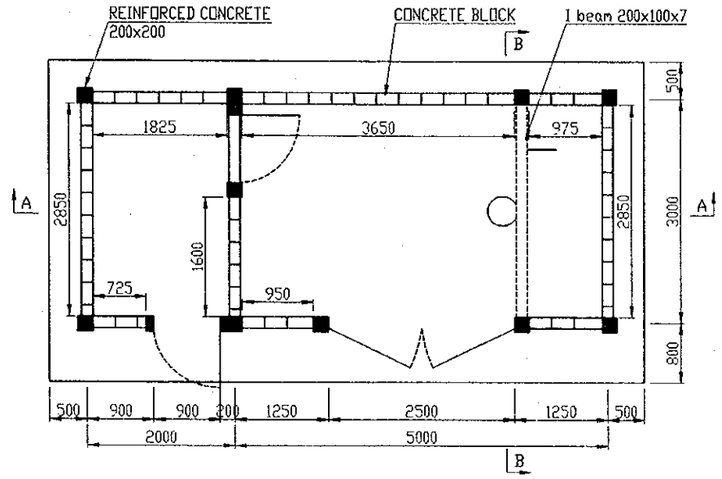
FRONT ELEVATION



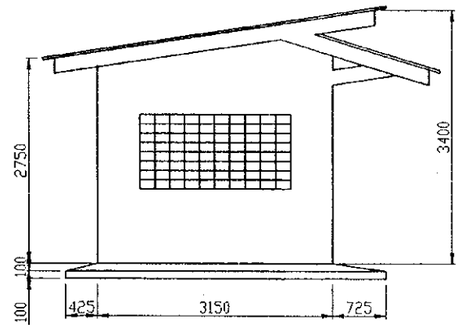
LEFT SIDE ELEVATION



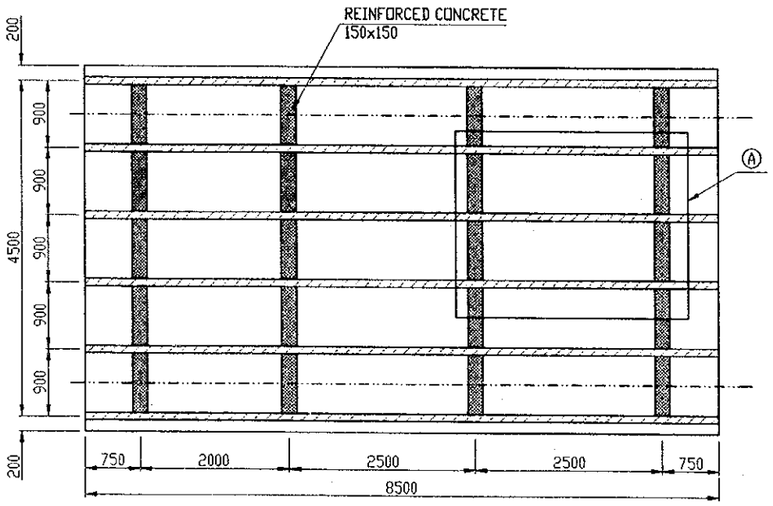
FLOOR PLAN



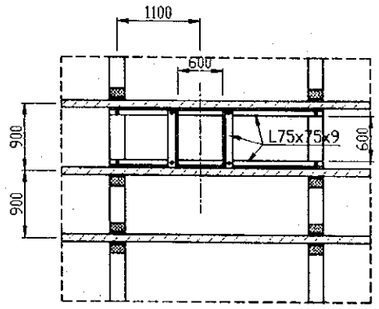
RIGHT SIDE ELEVATION



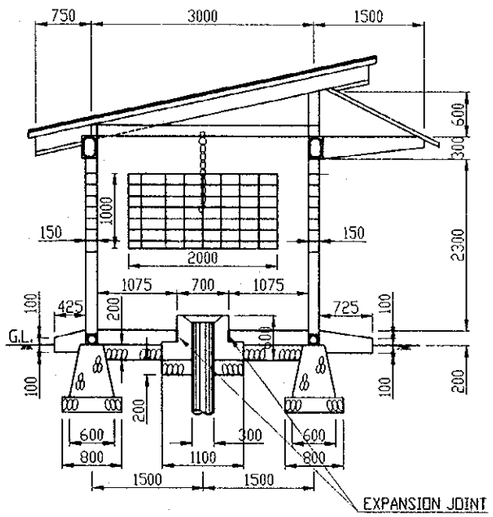
ROOF PLAN



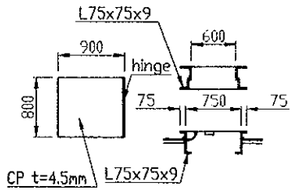
ROOF DOOR SUPPORT "A"



SECTION B–B



ROOF DOOR DETAIL



S=1:80

THE REPUBLIC OF INDONESIA

THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

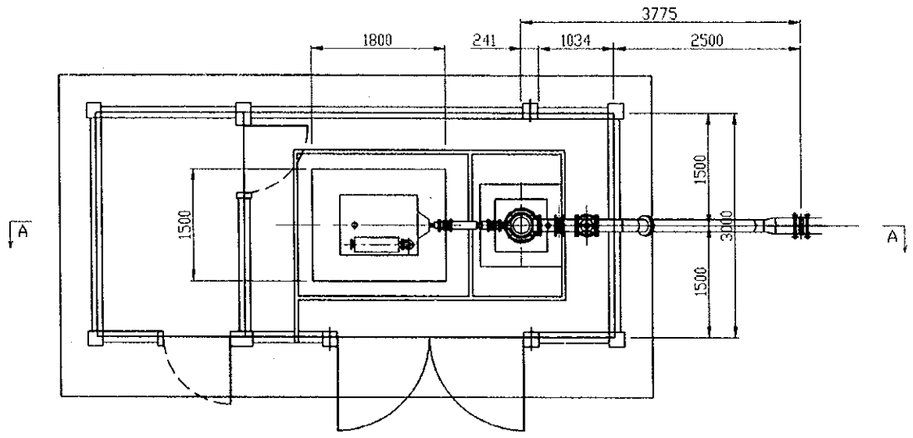
PUMP HOUSE

Date		No.	37

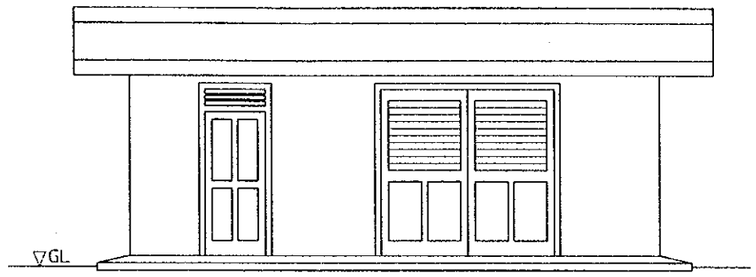
JAPAN INTERNATIONAL COOPERATION AGENCY

# PUMP ALLOCATION
S=1/30

FLOOR PLAN

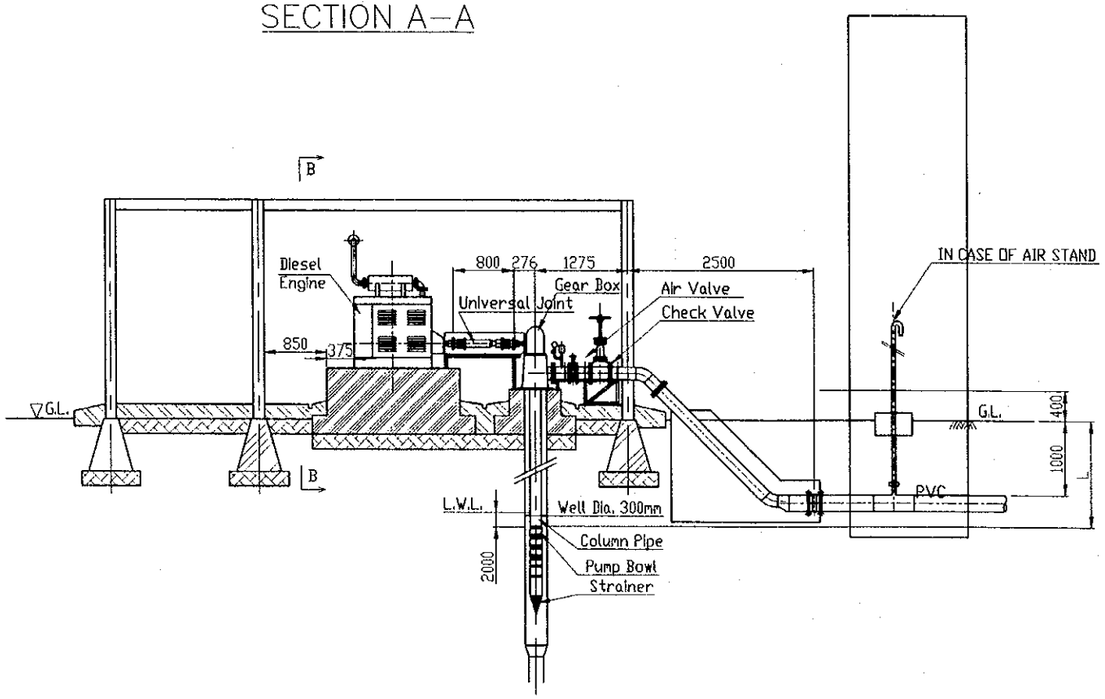


FRONT ELEVATION

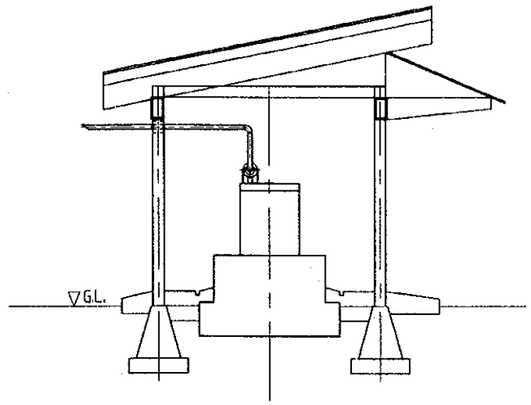


Site Name	L (m)
Bongo I	20
Bongo II	19
Bongo III	23
Tempok	11
Parepe	13
Ranooha	26
Ranometo	17
Lapulu	24
Moolo Indha	23
Kalembukaha	60
Palakahembi	34
Namang Kewa	13
Magepanda	17
Toto Mala	24
Total	324

SECTION A–A



SECTION B–B



S=1:80

THE REPUBLIC OF INDONESIA

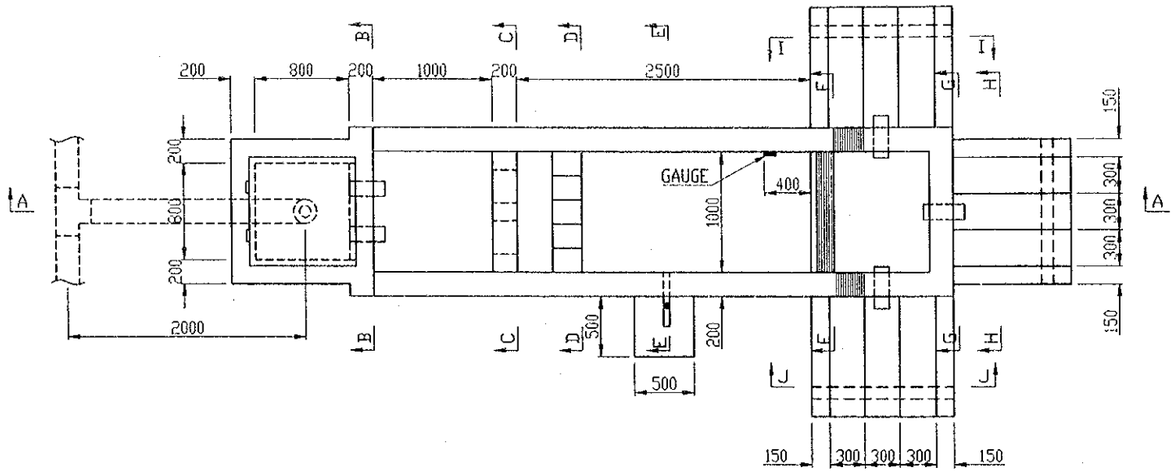
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA

PUMP ALLOCATION

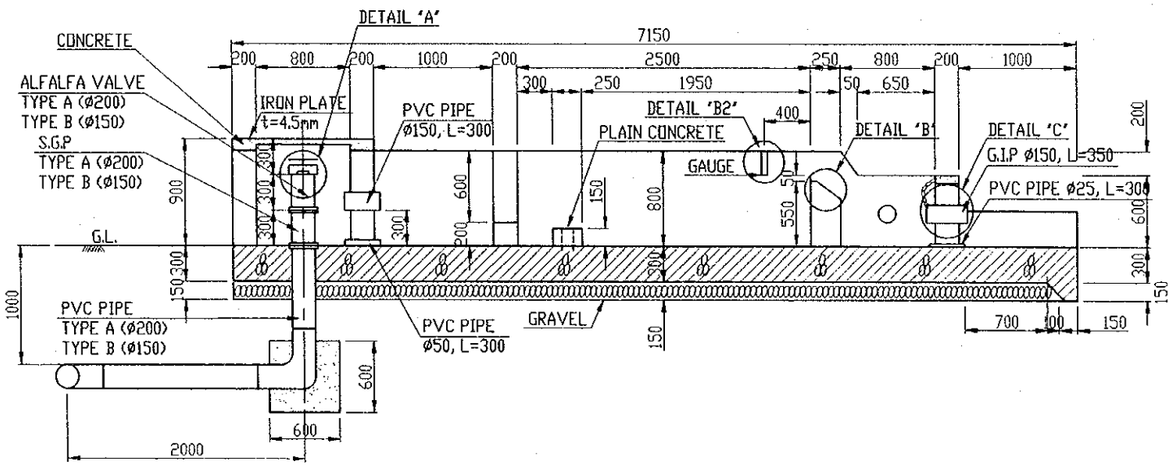
Date		No.	38

JAPAN INTERNATIONAL COOPERATION AGENCY

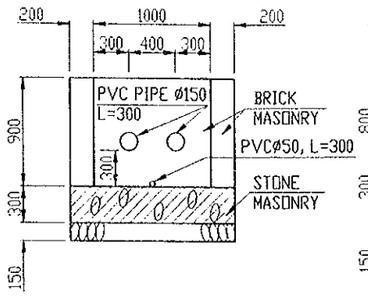
PLAN



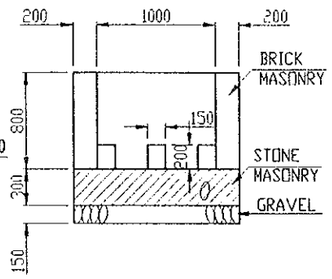
SECTION A–A



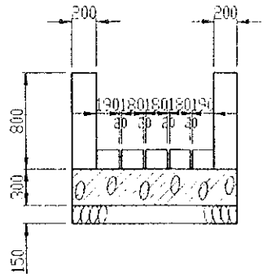
SECTION B–B



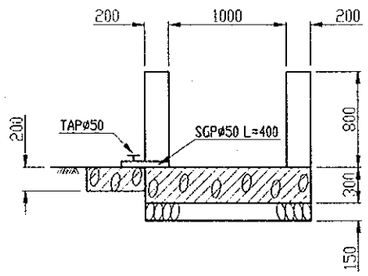
SECTION C–C



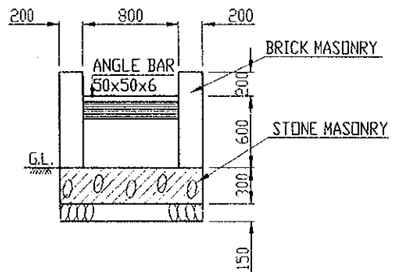
SECTION D–D



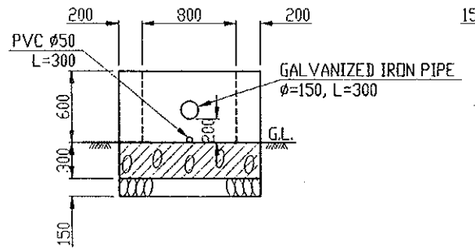
SECTION E–E



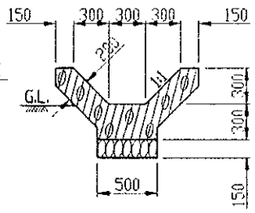
SECTION F–F



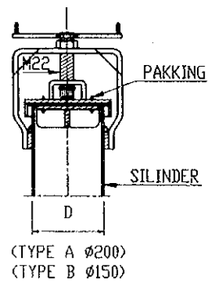
SECTION G–G



SECTION H–H, I–I, J–J

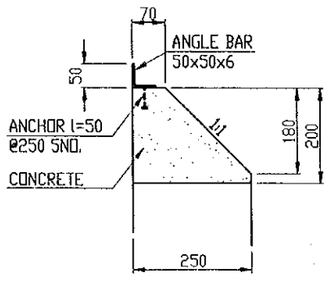


DETAIL "A"
(NO SCALE)

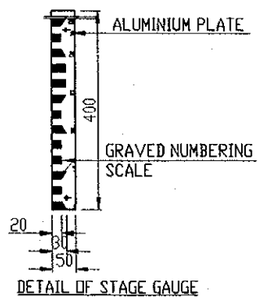


(TYPE A ø200)
(TYPE B ø150)

DETAIL "B1"
(NO SCALE)

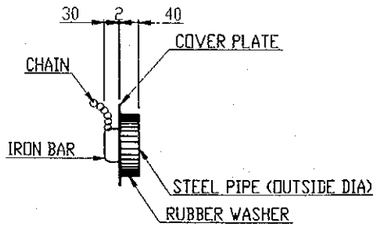


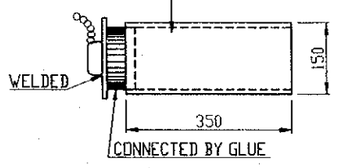
DETAIL "B2"
(NO SCALE)



DETAIL OF STAGE GAUGE

DETAIL "C"
(NO SCALE)

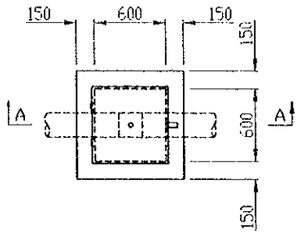




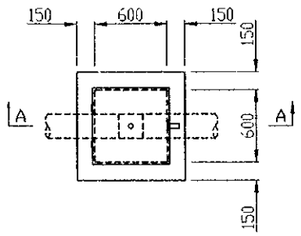
S=1:50

THE REPUBLIC OF INDONESIA			
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA			
DISTRIBUTION BOX AND MEASUREMENT DEVICE			
Date		No.	39
JAPAN INTERNATIONAL COOPERATION AGENCY			

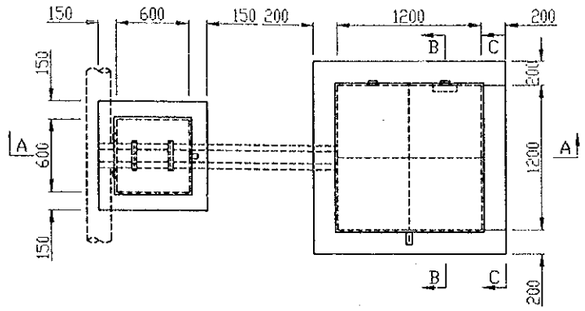
SLUCE VALVE



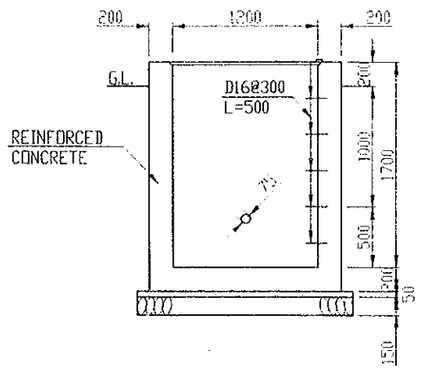
AIR VALVE



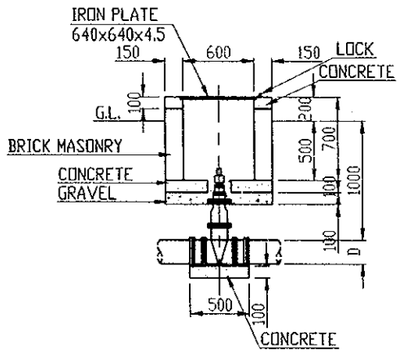
BLOW OFF

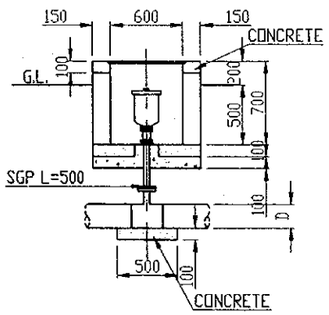


SECTION B–B

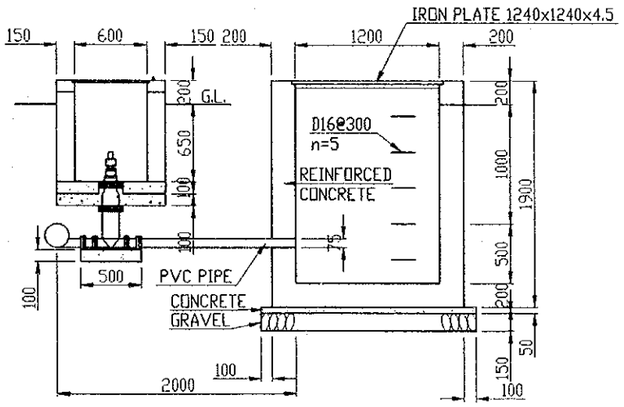


SECTION A–A

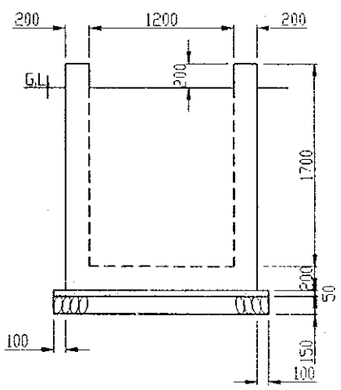




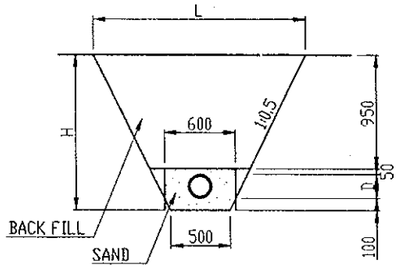
SECTION A–A



SECTION C–C

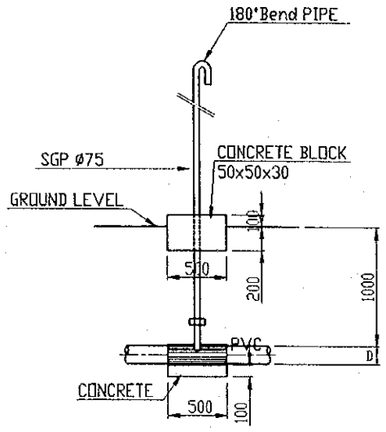


PIPE INSTALLATION



D	200	150
H	1300	1250
L	1800	1750

AIR STAND PIPE



AIR VALVE, AIR STAND PIPE

JOINT PIPE

ø200x75	1.	Bongo I
	2.	Bobgo II
	3.	Bongo III
	4.	Tempok
	5.	Parepe
	6.	Ranooha
	7.	Ranometo
	9.	Moolo Indah
ø150x75	8.	Lapulu
	11.	Kalembukaha
	12.	Palakahembi
	13.	Namangkewa
	14.	Magepanda
	17.	Toto Mala

BLOW OFF PIPE

ø 200x75	1.	Bongo I
	2.	Bobgo II
	3.	Bongo III
	4.	Tempok
	5.	Parepe
	6.	Ranooha
	7.	Ranometo
	9.	Moolo Indah
ø 150x75	8.	Lapulu
	11.	Kalembukaha
	12.	Palakahembi
	13.	Namangkewa
	14.	Magepanda
	17.	Toto Mala

S=1:50

THE REPUBLIC OF INDONESIA

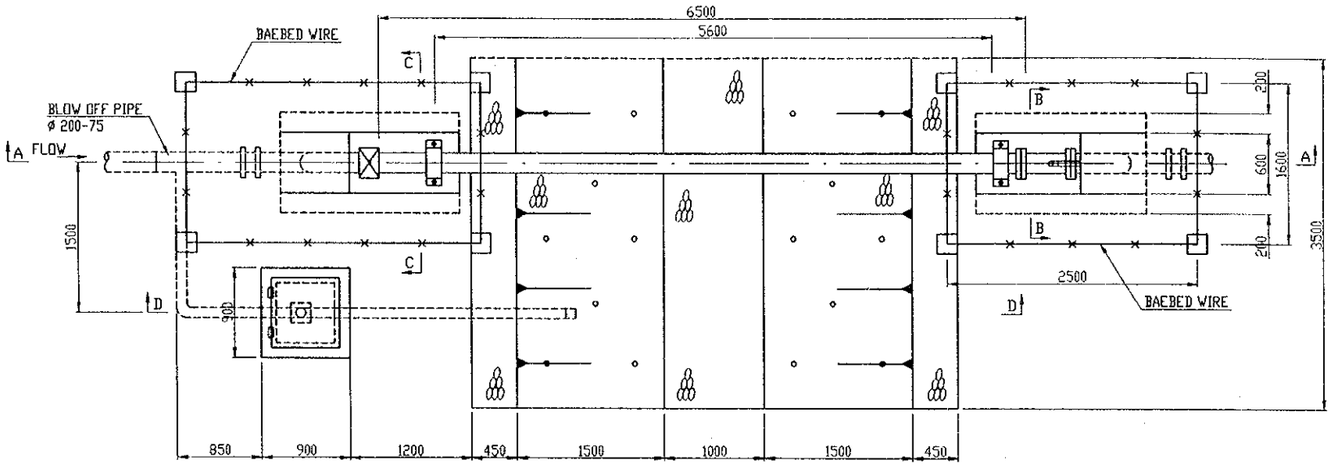
THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

RELATIVE STRUCTURE (1/2)

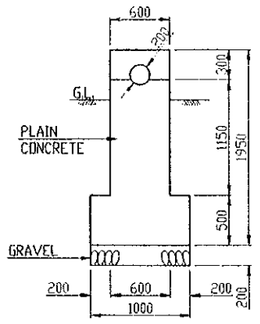
Date		No.	40

JAPAN INTERNATIONAL COOPERATION AGENCY

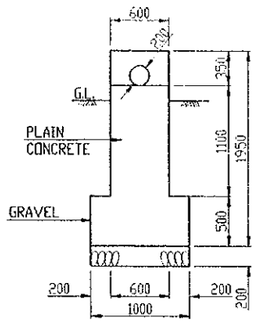
PLAN



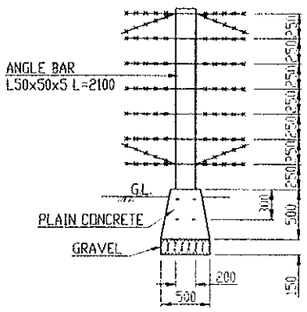
SECTION B–B



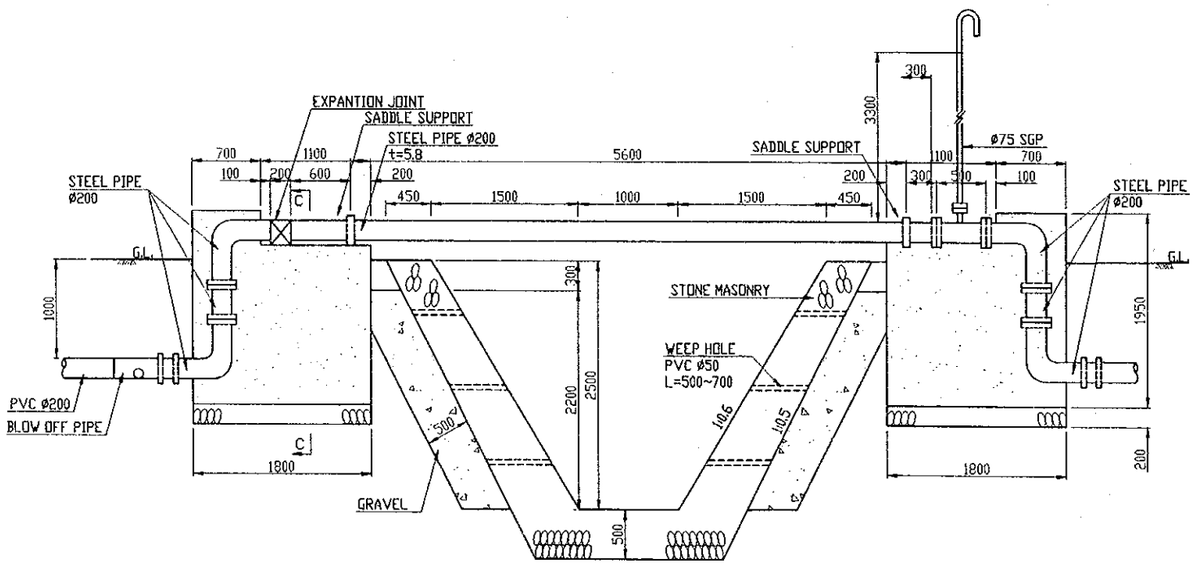
SECTION C–C



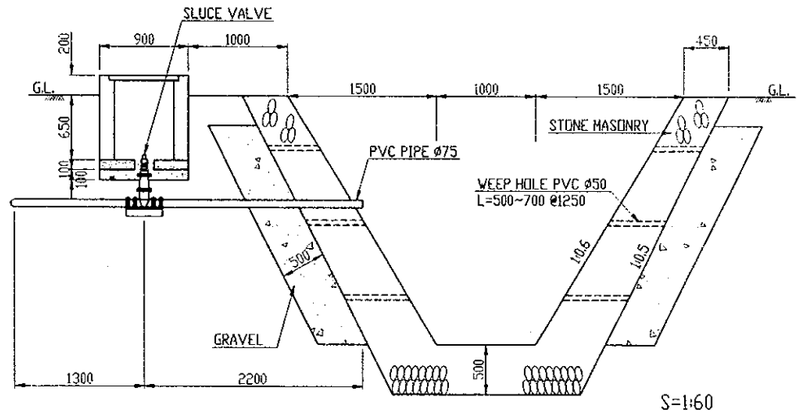
DETAIL BARBED WIRE



SECTION A–A



SECTION D–D



S=1:60

THE REPUBLIC OF INDONESIA

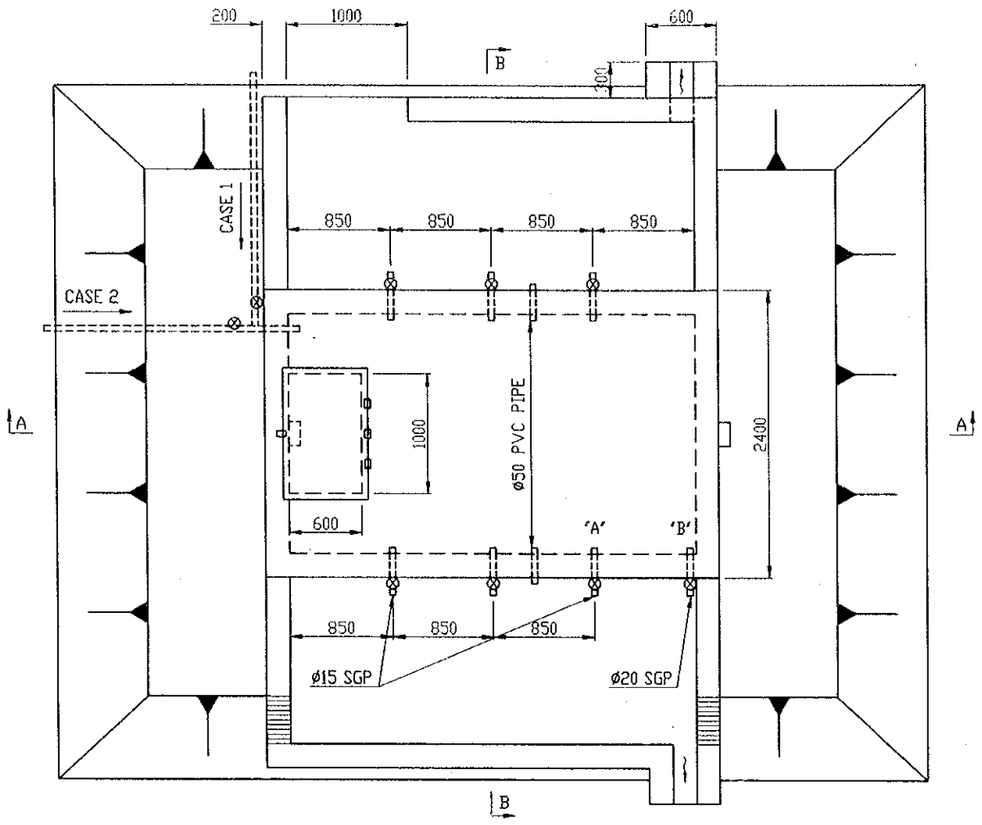
THE BASIC DESIGN STUDY ON THE PROJECT
FOR CONSTRUCTION OF FACILITY FOR IRRIGATION
EASTERN AREA

RELATIVE STRUCTURE (2/2)
; AQUEDUCT IN RANOMETO

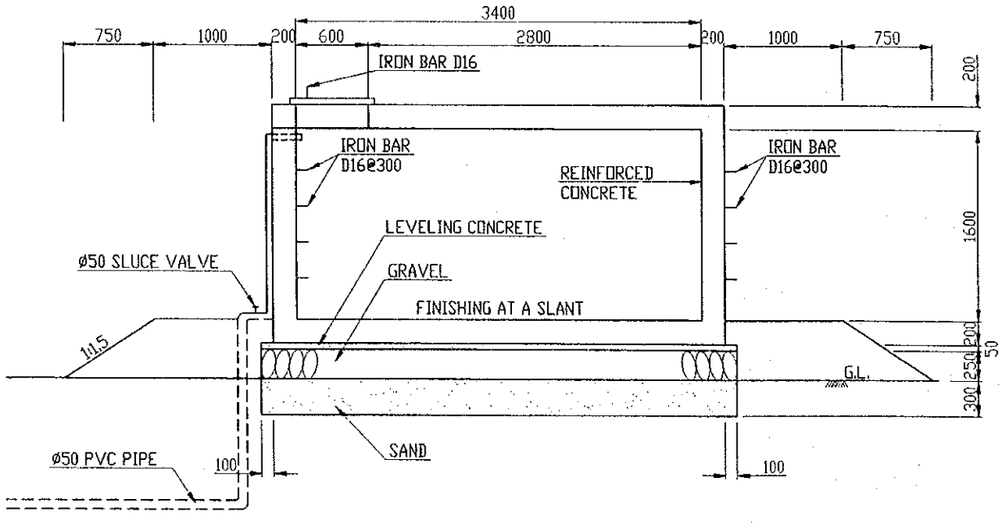
Date		No.	41

JAPAN INTERNATIONAL COOPERATION AGENCY

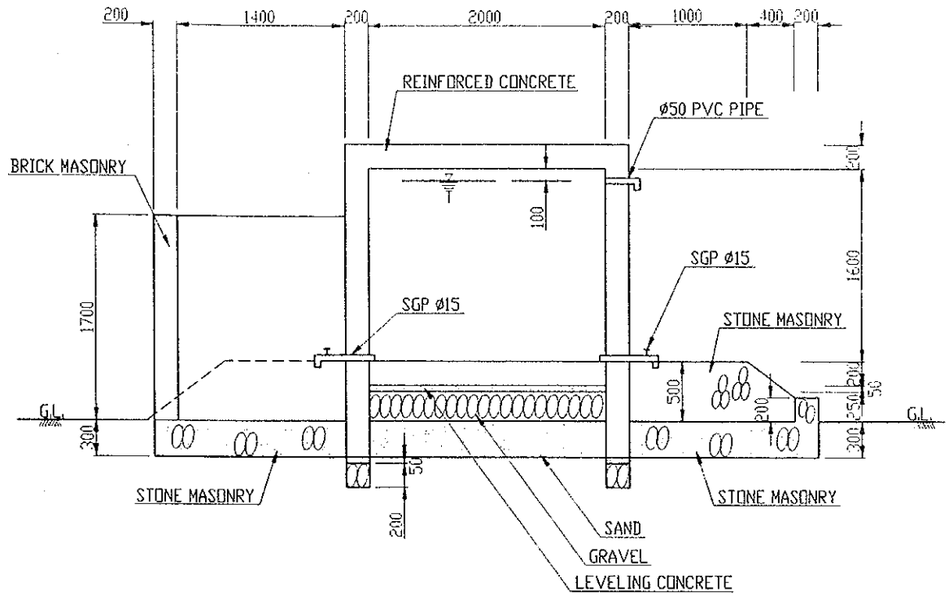
PLAN



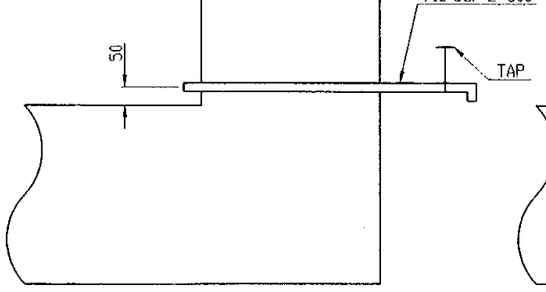
SECTION A–A



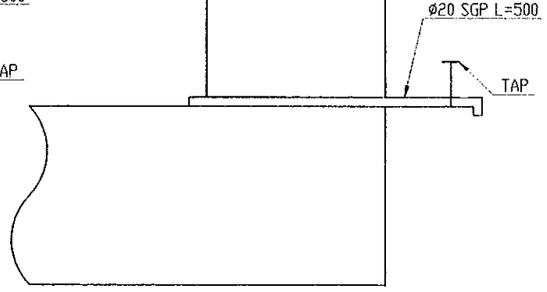
SECTION B–B



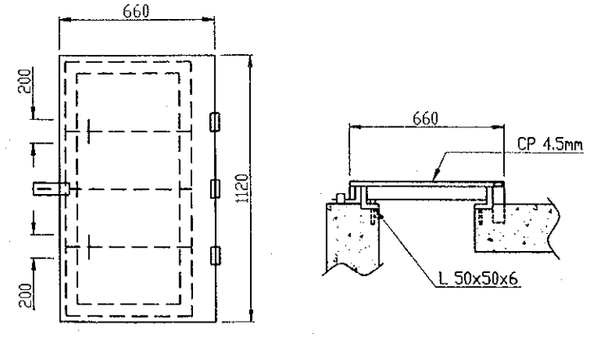
DETAIL "A"



DETAIL "B"



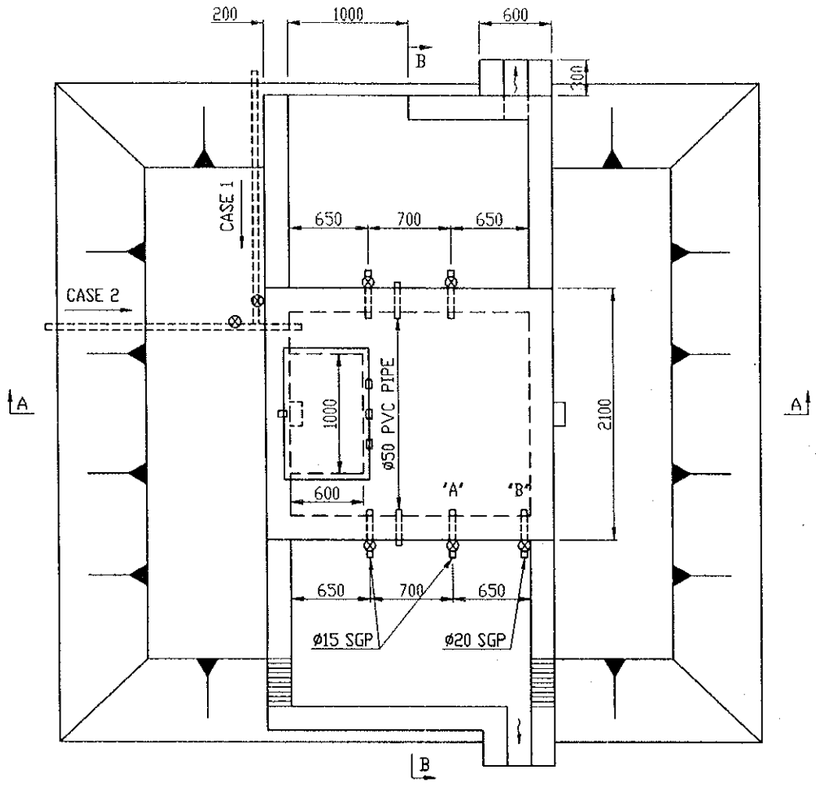
DETAIL "C"



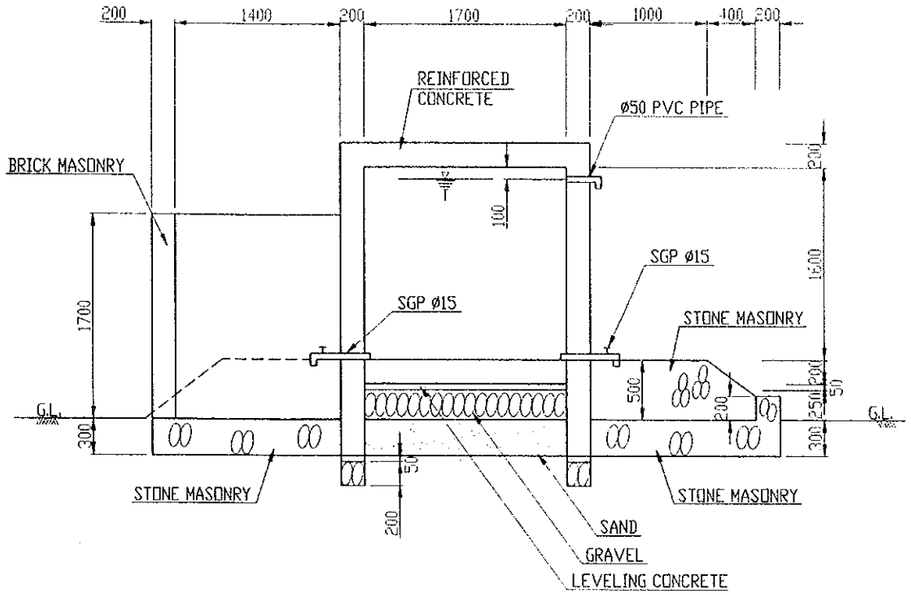
S=1:50

THE REPUBLIC OF INDONESIA			
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA			
WATER TANK Q=10m3			
Date		No.	42
JAPAN INTERNATIONAL COOPERATION AGENCY			

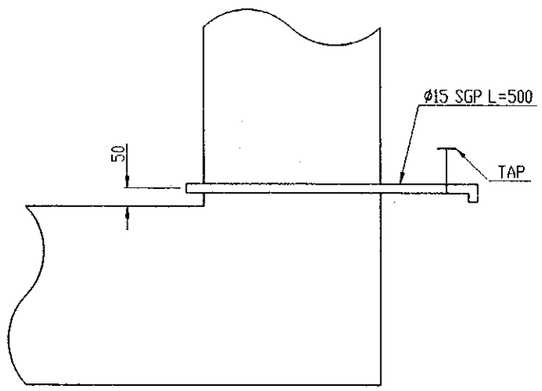
PLAN



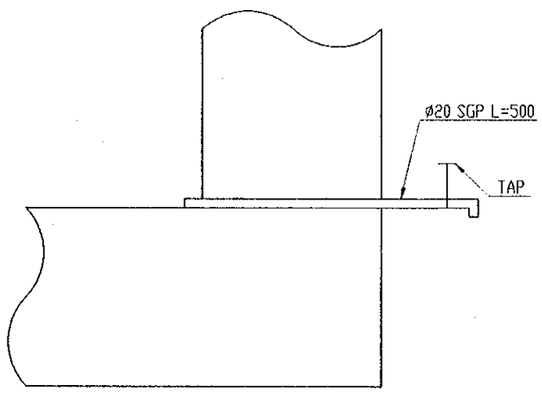
SECTION B–B



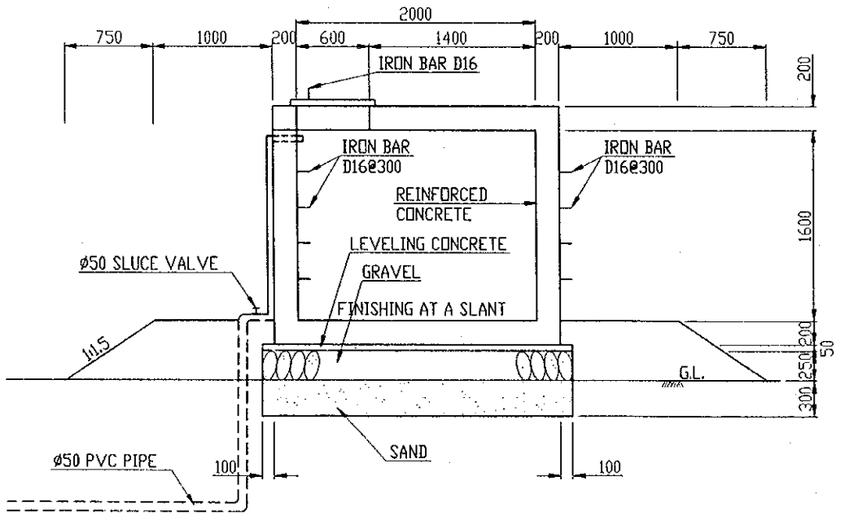
DETAIL "A"



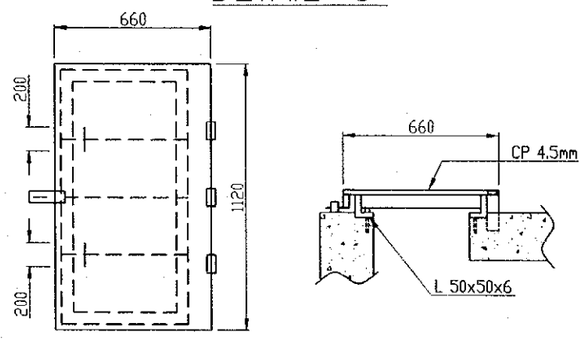
DETAIL "B"



SECTION A–A



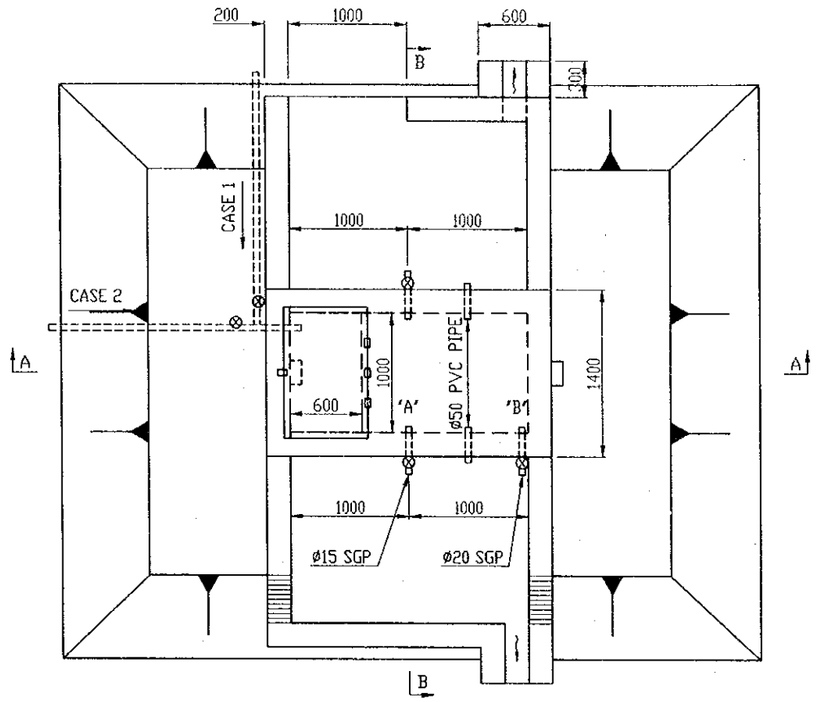
DETAIL "C"



S=1:50

THE REPUBLIC OF INDONESIA			
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA			
WATER TANK Q=5m3			
Date		No.	43
JAPAN INTERNATIONAL COOPERATION AGENCY			

PLAN



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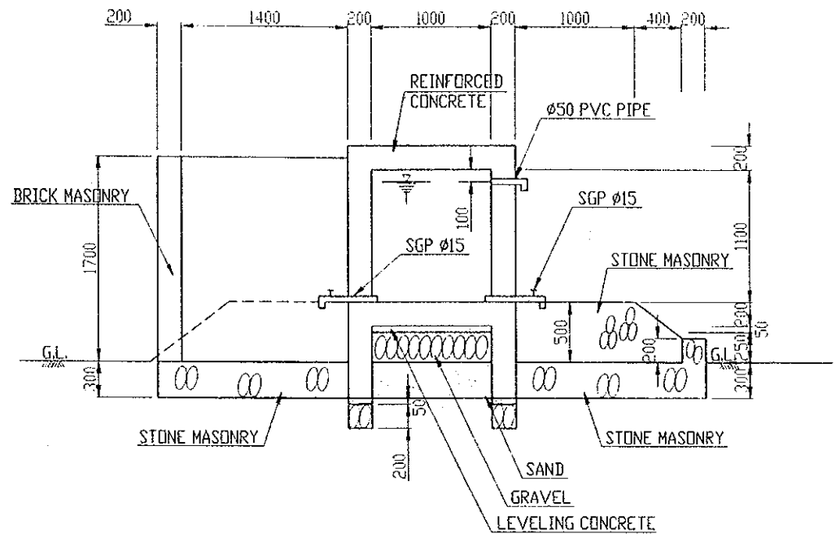

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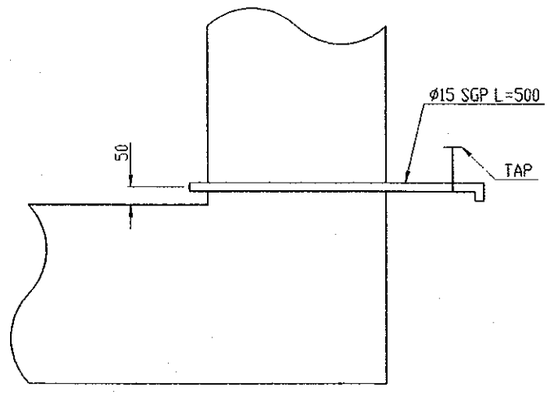

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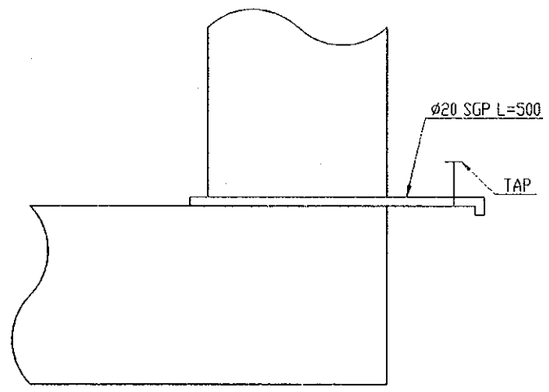

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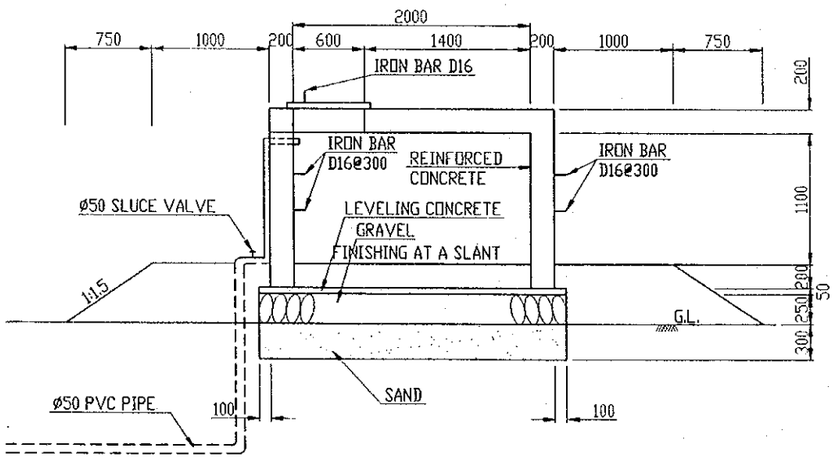

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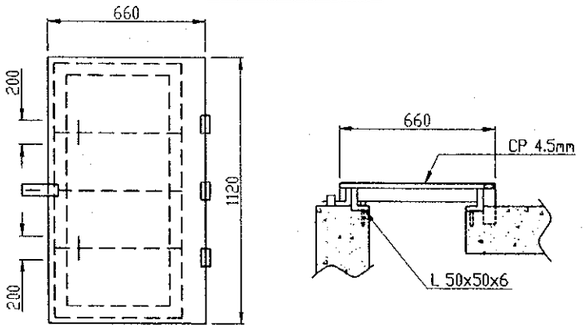

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THE REPUBLIC OF INDONESIA			
THE BASIC DESIGN STUDY ON THE PROJECT FOR CONSTRUCTION OF FACILITY FOR IRRIGATION EASTERN AREA			
WATER TANK Q=2m3			
Date		No.	44
JAPAN INTERNATIONAL COOPERATION AGENCY			

APPENDICES

APPENDICES

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I. Member List of the Survey Team

(1) Field Works (1999 April 10 - May 19)

Name	Assignment	Organization
Mr. Shin Imai	Leader	Deputy Director Overseas Land Improvement, Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries
Mr. Katsumi Yamanome	Coordinator	Staff, First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Tsuneo Amano	Chief Consultant	Taiyo Consultants Co., Ltd.
Mr. Shigeru Nakada	Irrigation & Drainage Plan	
Mr. Yasushi Osato	Facility Design	
Mr. Makoto Yasuda	Hydrogeology	
Mr. Mototaka Nishi	Cost Estimation	
Mr. Tsuyoshi Ito	PCM Workshop	

(2) Explanation of the Draft Report (1999 August 10 - August 25)

Name	Assignment	Organization
Mr. Akira Inamoto	Leader	Geologist Resources Division, Planning Department, Kanto Regional Agricultural Administration Office, Ministry of Agriculture, Forestry and Fisheries
Mr. Katsumi Yamanome	Coordinator	Staff, First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Tsuneo Amano	Chief Consultant	Taiyo Consultants Co., Ltd.
Mr. Shigeru Nakada	Irrigation & Drainage Plan	

2. Survey Schedule

(1) Field Works (1999 April 10 - May 19)

Date	Activities	Accommodation
April		
10 (S)	1)2)4) Arrive at Jakarta	Jakarta
11 (S)	1)2)4) Internal meeting, 6) Arrive at Jakarta	Jakarta
12 (M)	Courtesy call to EOJ, JICA and Ministry of Public Works, Meeting with Water Resources, Technical Guidance, and East Region	Jakarta
13 (T)	Meeting with BAPPENAS and Water Resources	Jakarta
14 (W)	1)2)4) Meeting with Water Resources, 3)5) Arrive at Jakarta 6) Travelling to Kotamobagu via Ujung Pandang and Manado	1)～5) Jakarta 6) Kotamobagu
15 (T)	1)～5) Travelling to Kotamobagu via Ujung Pandang and Manado, and Site Survey (4)(5) 6) Preparation of PCM Work Shop	Kotamobagu
16 (F)	1)2)5)6) PCM Work Shop 3)4) Site Survey (4)(5)	Kotamobagu
17 (S)	1)2)5)6) PCM Work Shop 3)4) Site Survey (4)(5)	Kotamobagu
18 (S)	1) Travelling to Jakarta via Manado and Ujung Pandang 2)～6) Analysis of PCM Work	1) Jakarta 2)～6) Kotamobagu
19 (M)	1) Meeting with Water Resources Technical Guidance 2)～5) Site Survey (4)(5) 6) Analysis of PCM Work	1) Jakarta 2)～6) Kotamobagu
20 (T)	1) Signing on M/D, Report to EOJ and JICA 2)～5) Travelling to Gorontalo 6) Leaving for Japan	1) Jakarta 2)～5) Gorontalo
21 (W)	1) Travelling to Manado via Ujung Pandang 2)～5) Site Survey (1)(2)(3)	1) Manado 2)～5) Gorontalo
22 (T)	1) Meeting with Irrigation Office, Data Collection 2)～5) Site Survey (1)(2)(3)	1) Manado 2)～5) Gorontalo
23 (F)	1) Data Collection 2)-5) Traveling to Manado	Manado
24 (S)	Internal Meeting, Meeting with Irrigation Office, Travelling to Ujung Pandang	Ujung Pandang
25 (S)	Travelling to Kendari	Kendari
26 (M)	Meeting with DGWRD and Irrigation Office, Site Survey (6)(7)	Kendari
27 (T)	Site Survey (8)(9)(10)	Kendari
28 (W)	Site Survey (6)(7)	Kendari
29 (T)	Site Survey (8)(9)(10)	Kendari
30 (F)	Site Survey (6)(7), Data Compiling	Kendari
May		
1 (S)	Travelling to Denpasar	Denpasr
2 (S)	Travelling to Maumere	Maumere
3 (M)	Site Survey (13)(14), Travelling to Moni	Moni
4 (T)	Site Survey (15), Travelling to Mbay	Mbay
5 (W)	Site Survey (16)(17), Travelling to Maumere	Maumere
6 (T)	1)5) Meeting with DGWRD, Site Survey (13) 2)3)4) Travelling to Denpasar	1)5) Maumere 2)3)4) Denpasar
7 (F)	1)5) Meeting with DGWRD, Site Survey (14) 2)3)4) Travelling to Waingapu	1)5) Maumere 2)3)4) Waingapu
8 (S)	1)5) Data Compiling 2)3)4) Site Survey (11)	1)5) Maumere 2)3)4) Waingapu
9 (S)	1)5) Travelling to Kupang 2)3)4) Travelling to Waitabula, Site Survey (12)	1)5) Kupang 2)3)4) Waitabula
10 (M)	1)5) Meeting with DGWRD, Data Collection 2)3)4) Site Survey (12)	1)5) Kupang 2)-4) Waitabula
11 (T)	1)5) Meeting with DGWRD, Data Collection 2)3)4) Travelling to Waingapu	1)5) Kupang 2)3)4) Waingapu

12 (W)	1)5) Travelling to Jakarta via Denpasar 2)3)4) Site Survey (11)	1)5) Jakarta 2)3)4) Waingapu
13 (T)	Data Compiling	1)5) Jakarta 2)3)4) Waingapu
14 (F)	1)5) Meeting with DGWRD 2)3)4) Travelling to Jakarta via Denpasar	Jakarta
15 (S)	Data Compiling	Jakarta
16 (S)	Data Compiling	Jakarta
17 (M)	Meeting with DGWRD, 3)5) Leaving for Japan	Jakarta
18 (T)	Report to EOJ and JICA 1)2)4) Leaving for Japan	

1) AMANO Tsuneo 2) NAKADA Shigeru 3) OSATO Yasushi 4) YASUDA Makoto

5) NISHI Mototaka 6) ITO Tsuyoshi

(1)~(17): Number of the project site

(2) Explanation of the Draft Report (1999 August 10 - August 25)

Date	Activities	Accommodation
August		
19 (T)	Arrive at Jakarta	Jakarta
20 (F)	Courtesy call to EOJ, JICA and Ministry of Public Works, Meeting with Water Resources, Technical Guidance, and East Region	Jakarta
21 (S)	Internal Meeting	Jakarta
22 (S)	Internal Meeting	Jakarta
23 (M)	Meeting with Water Resources, Technical Guidance, and East Region	Jakarta
24 (T)	Signing on M/D, Report to EOJ and JICA, Leaving for Japan	Jakarta
25 (W)	Arrival at Japan	

3. List of Party Concerned in the Recipient Country

Ministry of Public Works

- Bureau of International Cooperation
  - Mr. Darminto — Section Chief of Administration for Bilateral Cooperation
- Directorate General of Water Resources Department (DGWRD)
  - Mr. Budiman Arif — Director General
  - Mr. Susilo Soekardi — Secretary
- Directorate of Planning and Programming, DGWRD
  - Mr.Soenarno — Director
  - Mr. Her Wiryanto — Head, Sub Dir. of Foreign Aid and Administration
  - Mr. Yayat Hidayat — Foreign Aid and Administration Division
  - Mr. Sutardi — Chief of Section for Priority Setting
  - Mr. Minoru Nakano — JICA Expert
- Directorate of Technical Guidance, DGWRD
  - Mr. M. Napitupulu — Director
  - Mr. Wahyu Hartomo — Head of Sub Dir. of Groundwater
  - Mr. Djoko Santoso — Chief of Eastern Region, Sub-Dir. of Groundwater
  - Mr. Rochhadi — Chief of Dissemination, Sub-Dir. of Groundwater
  - Mr. Willy A Firdaus — Stuff of Central Region, Sub-Dir. of Groundwater
  - Mr. Nagata Satoshi — JICA Expert
- Directorate of Implementation Guidance for East Region, DGWRD
  - Mr. Meduk Suebiyanto — Director
- Irrigation Engineering Service Center, DRWRD
  - Mr. A. Tommy M. Sitompul — Project Manager
  - Mr. Masayuki Shimizu — Project Team Leader (JICA Expert)
- North Sulawesi Irrigation Project Office in Manado
  - Mr. Bambang Hargono — Manager
  - Mr. Nus Mokodongan — Sub Project Manager (for Surface Irrigation)
  - Mr. Aya Lahida — Chief of Construction Guidance
- North Sulawesi Groundwater Development Sub Project Office in Kotamobagu
  - Mr. Mar'l — Sub-project Maneger
  - Mr. Djidon R. Watania — Chief of Administration
  - Mr. Sujatno — Hydrogeologist
  - Mr. Zaenal Arifin — Stuff of O/M, P2AT
  - Mr. Basarudin — Mechanical Engineer
  - Mr. Rukani Be — Irrigation Enginner
- Southeast Sulawesi Irrigation Project Office in Kendari
  - Mr. Hudan Karyoso — Director

- Southeast Sulawesi Groundwater Development Sub-Project Office in Kendari
  - Mr. Edy Sanusi — ex-Sub Project Manager (Sub Project Manager for Surface Irrigation Project Office)
  - Mr. K. Tambunan — Sub Project Manager
  - Mr. Mr. Muh Tahir — Chief of Drilling Section
- Flores Irrigation Project Office in Ruteng
  - Mr. Obet Sabetu — Director
- Flores Groundwater Development Sub-Project Office in Maumere
  - Mr. Tjahjo Widiyanto — Sub Project Manager
  - Mr. Nuwa Videlis — Chief of Administration
  - Mr. Asdin Julaidy — Chief of Planning
- Timor Irrigation Project Office in kupang
  - Mr. A. Hasanudin — Director
- Timor Groundwater Development Sub-Project Office in Kupang
  - Mr. Suhartono — Sub Project Manager
  - Mr. I. Ketut Suardita — Chief of Administration
  - Mr. Mardono P. AMd — Chief of Planning
  - Mr. Subadinoto — Chief of Driling
- North Sulawesi Water Resources Institutional Development Project
  - Ms Ghislaine Larouche — Canadian Team Leader
- Rumbia Groundwater Irrigation Sub Project, Central Sulawesi, SSIMP-III
  - Mr. Untung Subagio — Sub Project Leader (Nippon Koei)

NATIONAL DEVELOPMENT PLANNING AGENCY (BAPPENAS)

- Mr. H. Koensatwanto Inpasihardjo — Chief, Bureau for Water Resources and Irrigation

MINISTRY OF HOME AFFAIRS

- North Sulawesi Provicial Public Works
  - Mr. Kambei — Head
- North Sulawesi Provicial Public Works
  - Mr. Bambang Sapto — Head

MINISTRY OF AGRICULTURE

- North Sulawesi Sub-Directorate of Land Development and Rehabilitation, Food Crop and Horticulture Services, North Sulawesi
  - Mr. Wemoie Uguy — Chief
  - Mr. H. Montolalu — Sub Project Manager

Embacy of Japan

Mr. Yukio Kawauch	First Secretary

JICA Indonesia Office

Mr. Hirayoshi Ihara	Resident Representative
Mr. Kazuhiro Yoneda	Deputy Resident Representative
Ms. Yaue Yoshinari	Assisitant Resident Representative

THE OVERSEAS ECONOMIC COOPERATION FUND OF JAPAN (OECF), JAKARTA OFFICE

Mr. Tanimoto	Resident Representative

MINUTES OF DISCUSSIONS
ON
BASIC DESIGN STUDY ON THE PROJECT
FOR
CONSTRUCTION OF FACILITY FOR IRRIGATION IN EASTERN AREA
IN
THE REPUBLIC OF INDONESIA

In response to a request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct a Basic Design Study on the Project for Construction of Facility for Irrigation in the Eastern Area (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Indonesia a Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Shin IMAI, Deputy Director, Overseas Land Improvement Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries, and is scheduled to stay in the country from April 10 to April 20, 1999.

The team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys at the study area.

In the course of discussions and field surveys, both parties have confirmed the main items described on the attached sheets. The team will proceed to further work and prepare the Basic Design Study Report.

Jakarta, April 20, 1999

Shin IMAI
Leader
Basic Design Study Team
JICA

for

Budiman Arif
Director General
Water Resources Development
Ministry of Public Works
The Republic of Indonesia

ATTACHMENT

1. Objective

The objective of the Project is to improve living conditions of inhabitants in three provinces in the Eastern Area by construction of small scale groundwater irrigation system in compliance with the national development plan of the Republic of Indonesia.

2. Project Site

The project sites are located in North Sulawesi, South-east Sulawesi and East Nusa Tenggara.

3. Responsible and Executing Agency

The Directorate General of Water Resources Development (hereinafter referred to as "DGWRD"), the Ministry of Public Works is responsible for the administration and execution of the Project.

The executing agencies are the Provincial Irrigation Project Offices in North Sulawesi, South-east Sulawesi and East Nusa Tenggara.

4. Items agreed by the Government of Indonesia

After discussions with the Team, 17 sites with the System were finally agreed by Indonesian side, even though the Government of Indonesia had requested 25 sites (See Annex-1,Annex-2). JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid System

(1) The Government of Indonesia has understood the system of Japan's Grant Aid explained by the Team. (See Annex-3)

(2) The Government of Indonesia will take necessary measures described in Annex-4 for smooth implementation of the Project on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Schedule of the Study

(1) The Team will proceed to further studies in Indonesia until May 18, 1999.

(2) JICA will prepare a draft report in English and dispatch a mission in order to explain

its contents around August 1999.

(3) In the case that the contents of the report is accepted in principle by the Government of Indonesia, JICA will complete the final report and send it to the Government of Indonesia by the end of December 1999.

7. Other Relevant Issues

(1) The public security is deteriorated around the districts, namely Irian Jaya and West Timor in East Nusa Tenggara, and the proper execution of the study seems to be difficult there. Therefore, even though the Government of Indonesia had requested 25 sites, the Team confirmed 17 sites excluding 8 sites in the aforementioned proposed districts.

The Team suggested that Indonesian side could request the excluded projects in the rest 8 sites when it comes the study could execute properly in the better security condition.

Indonesia side understood it.

(2) The Team explained that the Project should be formulated with the provision of utilization of the drilling rigs with necessary equipment which had been provided under the past three Japan's Grant Aid Schemes, namely "The Project for Supply of Equipment for Irrigation in Eastern Area (1/2 : 1996) and (2/2 : 1997)" and "Urgent Supply (1997)". Consequantly, the Team requested the proper maintenance of the drilling rigs in order to keep good condition for their smooth execution.
Indonesian side understood it.

(3) The Team inquired the number of existing drilling rigs and their usability. Indonesian side answered and showed the table as follows.

List of Drilling Rigs under Japan's Grant Aid Schemes

Provinces	The Project for Supply of Equipment for Irrigation in Eastern Area						Total (set)	Remarks
	(1/2) 1996		(2/2) 1997		Urgent 1997			
	set	Model	set	Model	set	Model		
North Sulawesi	2	Top150T	-	-	-	-	2	usable
South-east Sulawesi	2	Top150T	1	FSW-5T	-	-	3	"
East Nusa Tenggara (Sumba)	1	Top150T	-	-	1	Top 150T	2	"
East Nusa Tenggara (Flores)	-	-	1	FSW-5T	-	-	1	"
Total	5		2		1		8	

* Drilling Rigs are together with mud pumps, air compressors, logging test equipment, etc.

(4) The Team stressed the importance of the following matters:
a) establishment of the Water User's Association (hereinafter referred to as "WUA")

in connection with the Project

b) O/M of the irrigation facilities by WUA and overall water management including collection of water charge

c) making the farmers in the proposed sites master farming technology with groundwater irrigation

Indonesian side understood it and promised the establishment of and sufficient official support to WUA.

(5) Indonesian side assured that DGWRD would be responsible for the followings:

a) establishment of WUA and its proper management

b) guiding WUA's ultimate management of the System

c) assistance to the farmers in the proposed sites with the Cross-Related Agencies

(6) Indonesia side assured that he would be responsible for organization and staff etc. required for smooth implementation of the Project.

(7) Indonesia side assured that he would be responsible for the land preparation needed for construction.

Both side confirmed that the request items would be changeable due to the result of the Study.