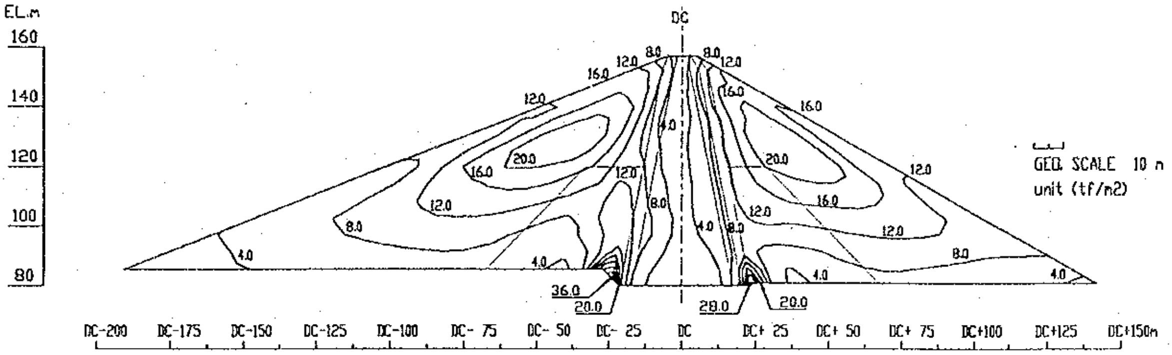
DYNAMIC ANALYSIS FOR DAM

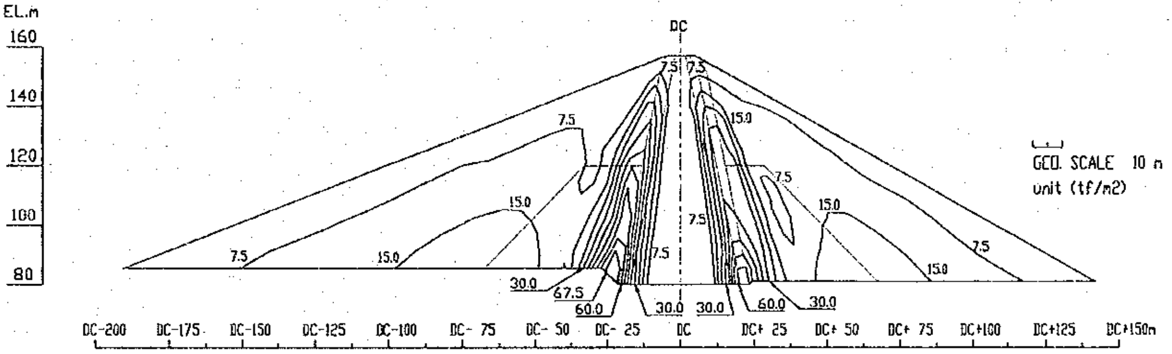
Stress Contour

Maximum Credible Earthquake (380.0 gal)

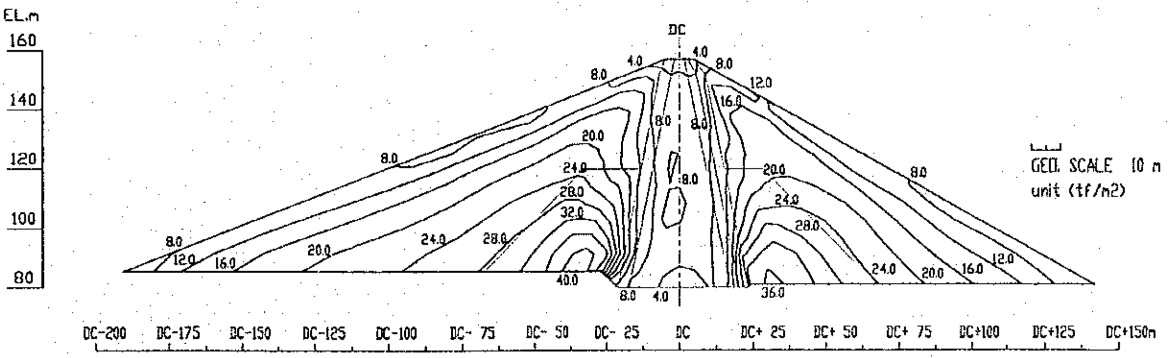
Horizontal Stress



Vertical Stress



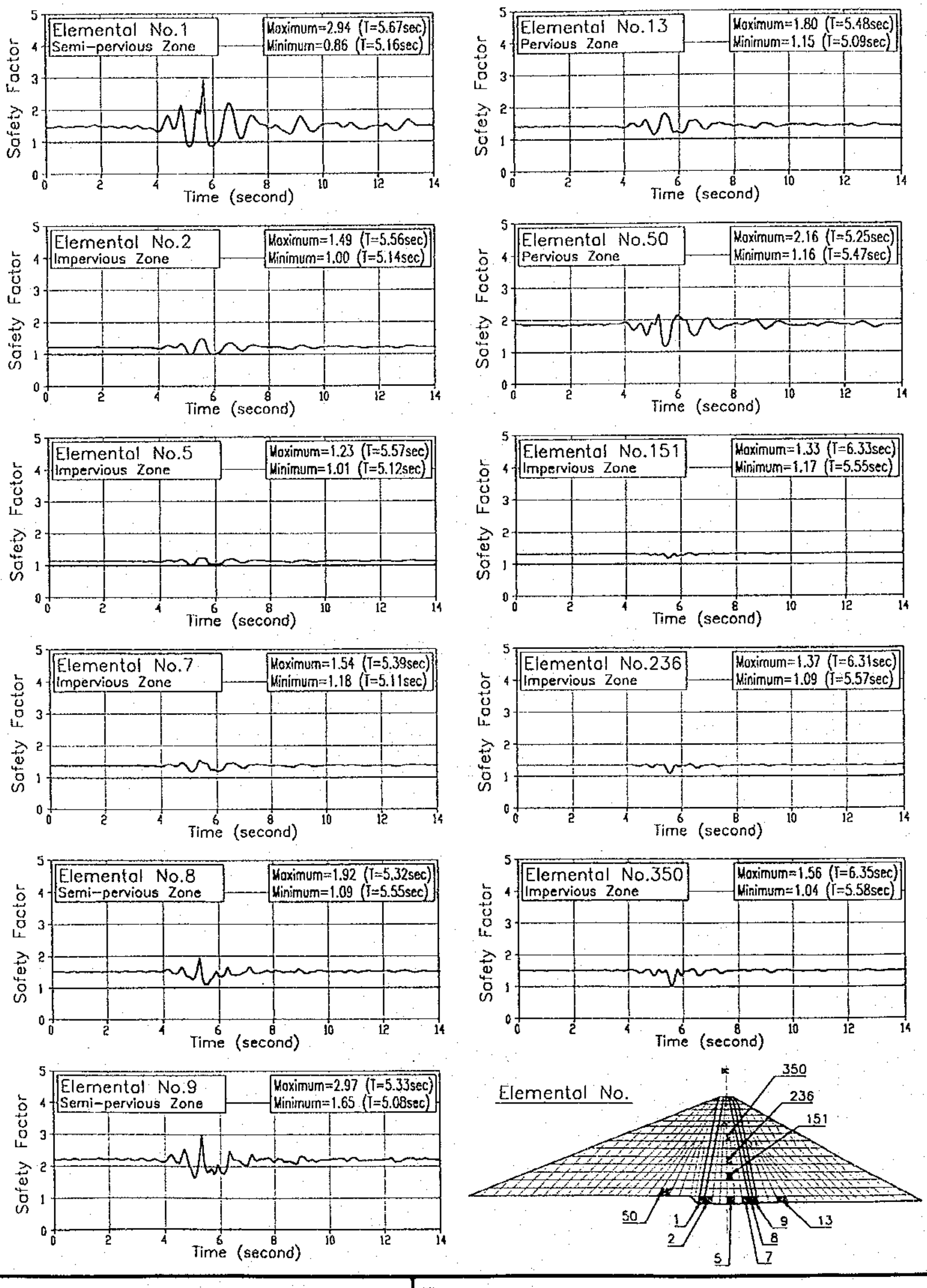
Shear Stress



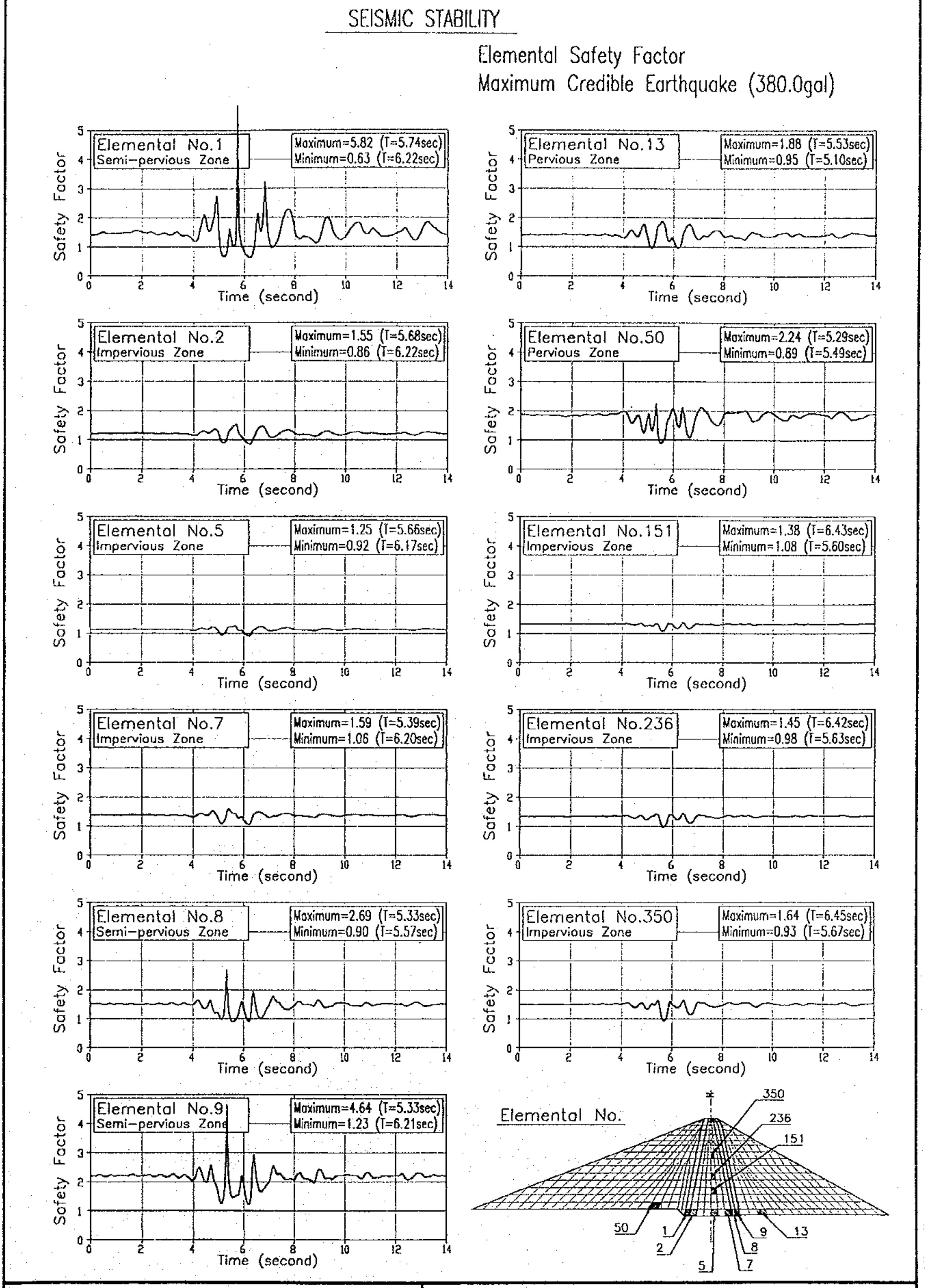
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. **7.3.17 (2/2)**
JAPAN INTERNATIONAL COOPERATION AGENCY	**RESULTS OF DYNAMIC ANALYSIS (DYNAMIC STRESS CONTOUR)**

SEISMIC STABILITY

Elemental Safety Factor
Design Basis Earthquake (189.1gal)



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. **7.3.18 (1/2)**
JAPAN INTERNATIONAL COOPERATION AGENCY	**STUDY ON SEISMIC STABILITY (ELEMENTAL SAFETY FACTOR)**

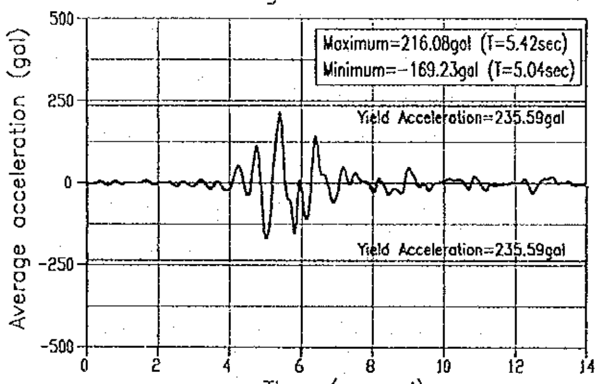


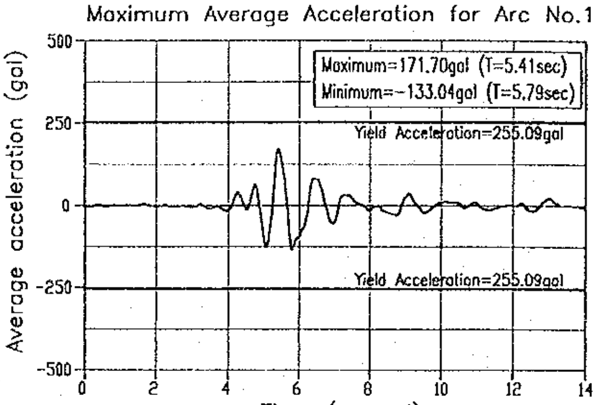
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. **7.3.18 (2/2)**
JAPAN INTERNATIONAL COOPERATION AGENCY	**STUDY ON SEISMIC STABILITY (ELEMENTAL SAFETY FACTOR)**

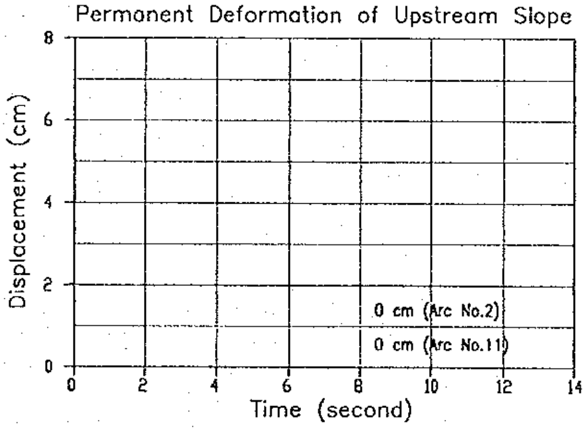
SEISMIC STABILITY

Permanent Deformation
Design Basis Earthquake (189.1gal)

Upstream Slope

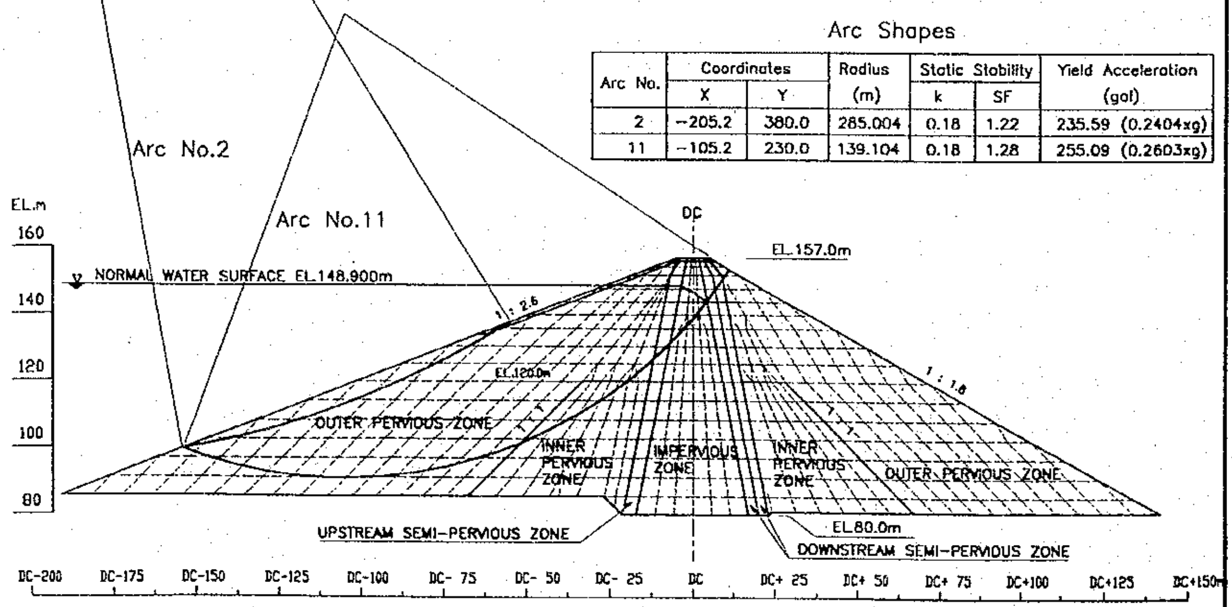






Arc Shapes

Arc No.	Coordinates		Radius	Static Stability		Yield Acceleration
	X	Y	(m)	k	SF	(gal)
2	−205.2	380.0	285.004	0.18	1.22	235.59 (0.2404xg)
11	−105.2	230.0	139.104	0.18	1.28	255.09 (0.2603xg)



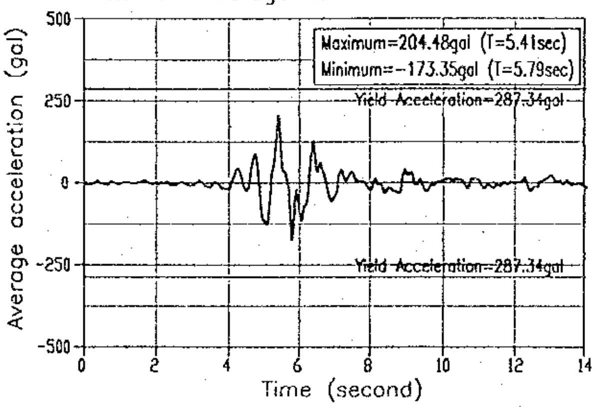
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. **7.3.19 (1/4)**
JAPAN INTERNATIONAL COOPERATION AGENCY	**STUDY ON SEISMIC STABILITY (PERMANENT DEFORMATION)**

SEISMIC STABILITY

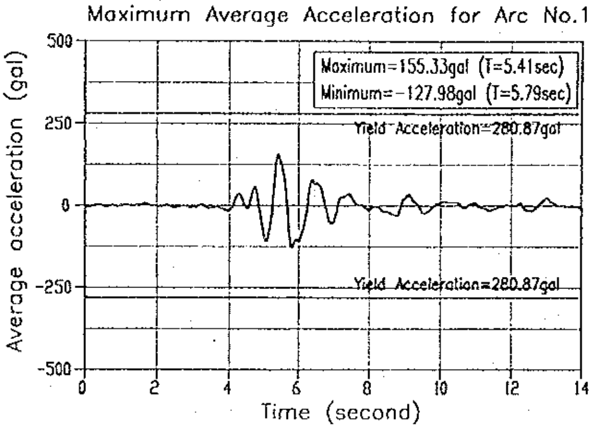
Permanent Deformation
Design Basis Earthquake (189.1gal)

Downstream Slope

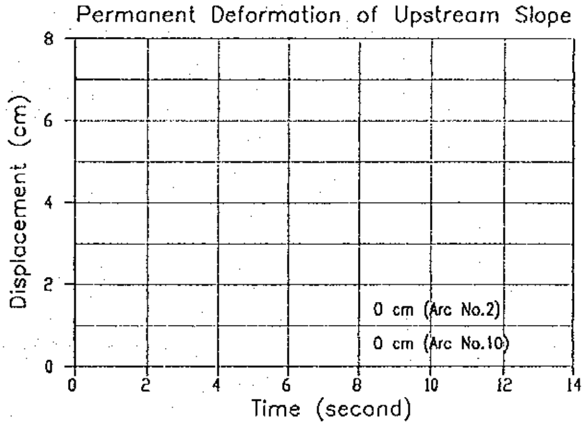
Maximum Average Acceleration for Arc No.2



Maximum Average Acceleration for Arc No.10

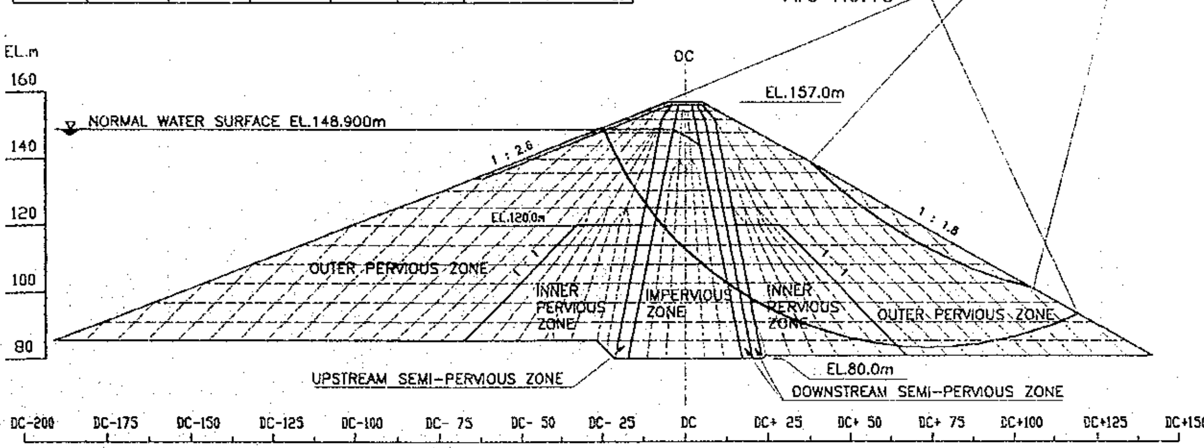


Permanent Deformation of Upstream Slope



Arc Shapes

Arc No.	Coordinates X	Coordinates Y	Radius (m)	Static Stability k	Static Stability SF	Yield Acceleration (gal)
2	143.6	250.0	153.642	0.18	1.24	287.34 (0.2932xg)
10	73.6	190.0	106.500	0.18	1.23	280.87 (0.2866xg)



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

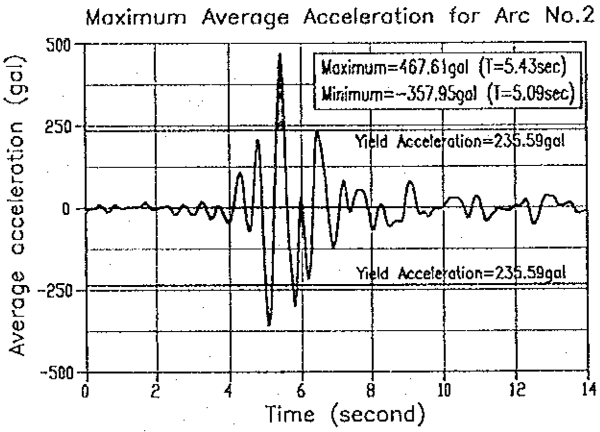
Fig. **7.3.19 (2/4)**

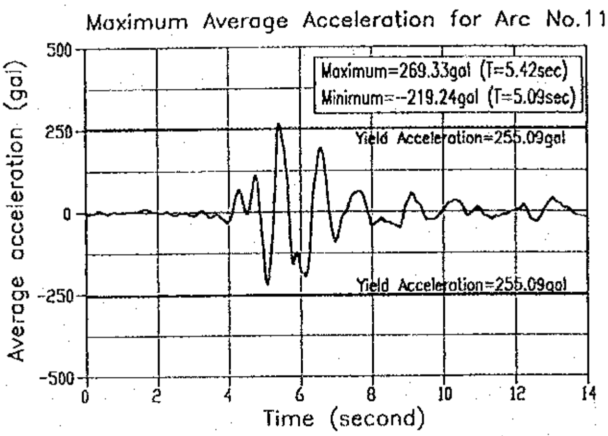
STUDY ON SEISMIC STABILITY (PERMANENT DEFORMATION)

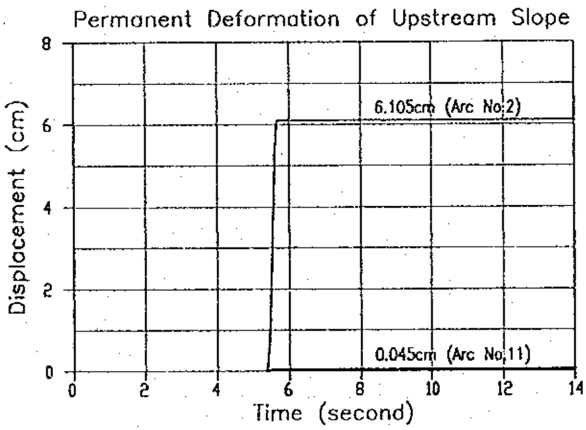
SEISMIC STABILITY

Permanent Deformation
Maximum Credible Earthquake (380.0gal)

Upstream Slope

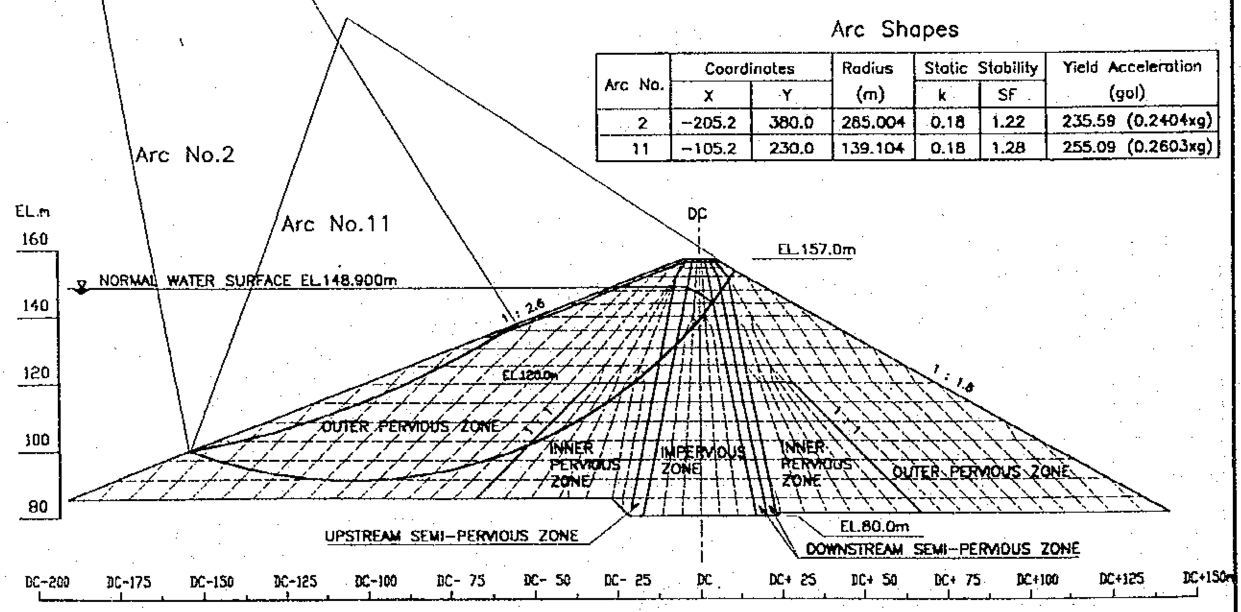






Arc Shapes

Arc No.	Coordinates X	Coordinates Y	Radius (m)	Static Stability k	Static Stability SF	Yield Acceleration (gal)
2	-205.2	380.0	285.004	0.18	1.22	235.59 (0.2404xg)
11	-105.2	230.0	139.104	0.18	1.28	255.09 (0.2603xg)

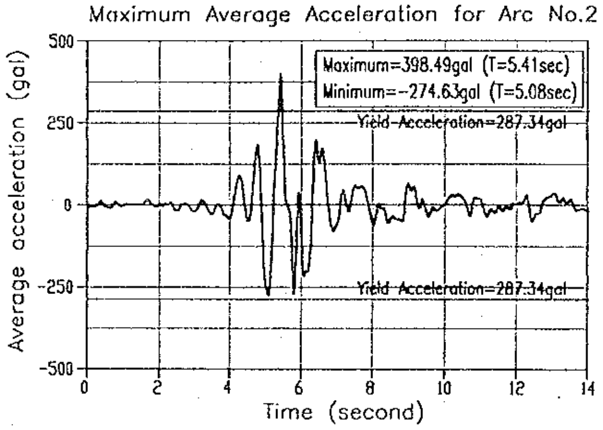


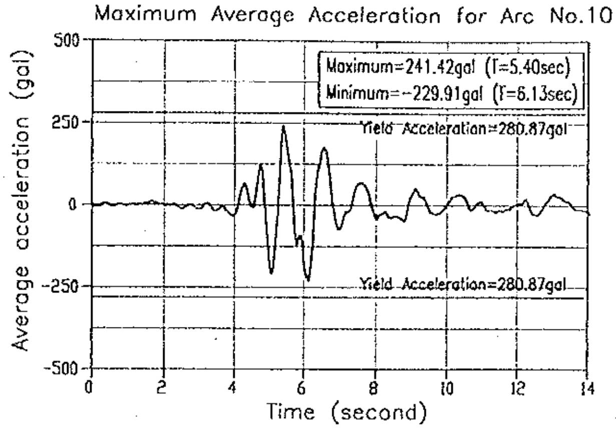
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. **7.3.19 (3/4)**
JAPAN INTERNATIONAL COOPERATION AGENCY	**STUDY ON SEISMIC STABILITY (PERMANENT DEFORMATION)**

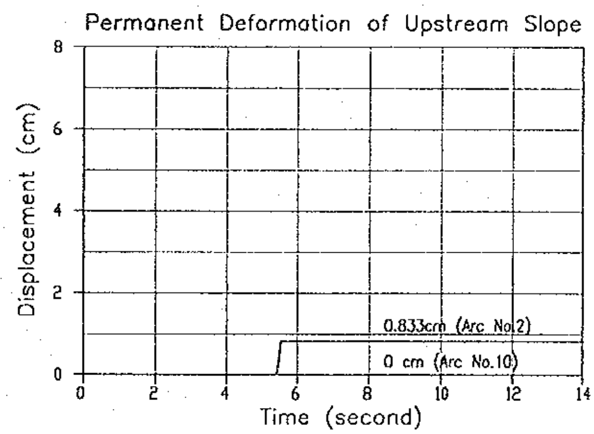
SEISMIC STABILITY

Permanent Deformation
Maximum Credible Earthquake (380.0gal)

Downstream Slope

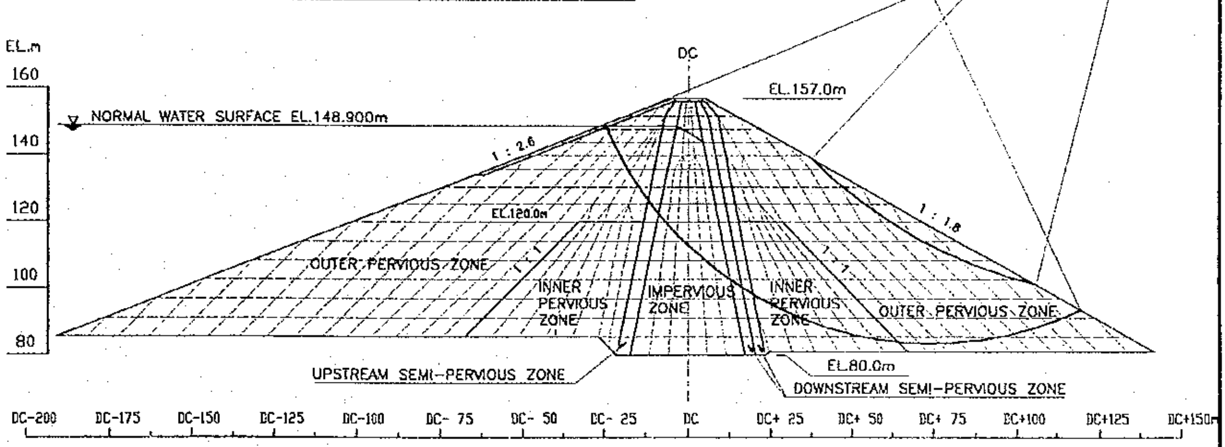






Arc Shapes

Arc No.	Coordinates X	Coordinates Y	Radius (m)	Static Stability k	Static Stability SF	Yield Acceleration (gal)
2	143.6	250.0	153.642	0.18	1.24	287.34 (0.2932xg)
10	73.6	190.0	106.500	0.18	1.23	280.87 (0.2866xg)

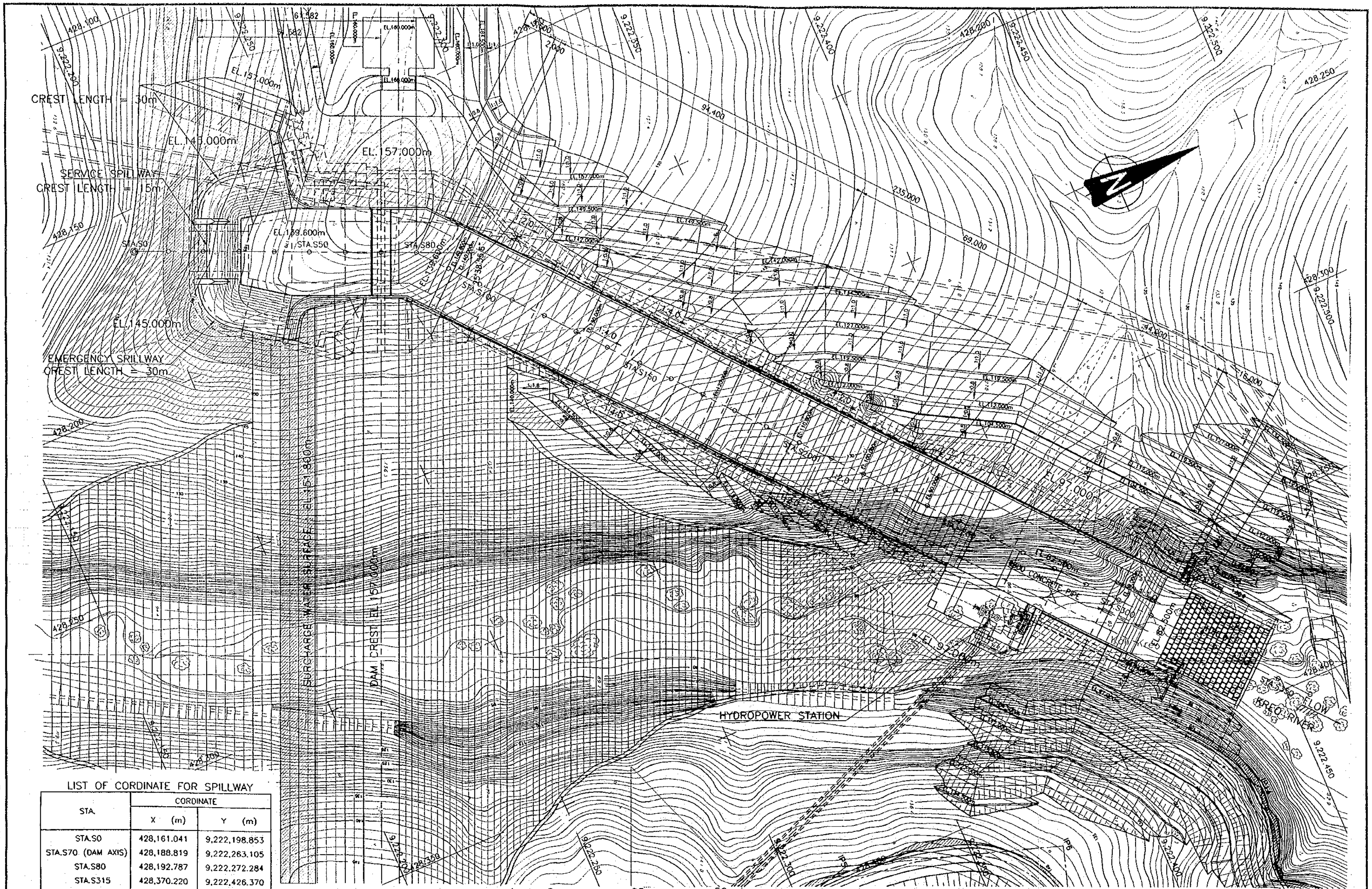


THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. **7.3.19 (4/4)**

STUDY ON SEISMIC STABILITY (PERMANENT DEFORMATION)



LIST OF CORDINATE FOR SPILLWAY

STA.	CORDINATE	
	X (m)	Y (m)
STA.S0	428,161.041	9,222,198.853
STA.S70 (DAM AXIS)	428,188.819	9,222,263.105
STA.S80	428,192.787	9,222,272.284
STA.S315	428,370.220	9,222,426.370
STA.S323	428,376.261	9,222,431.615

SCALE 0 25 50m

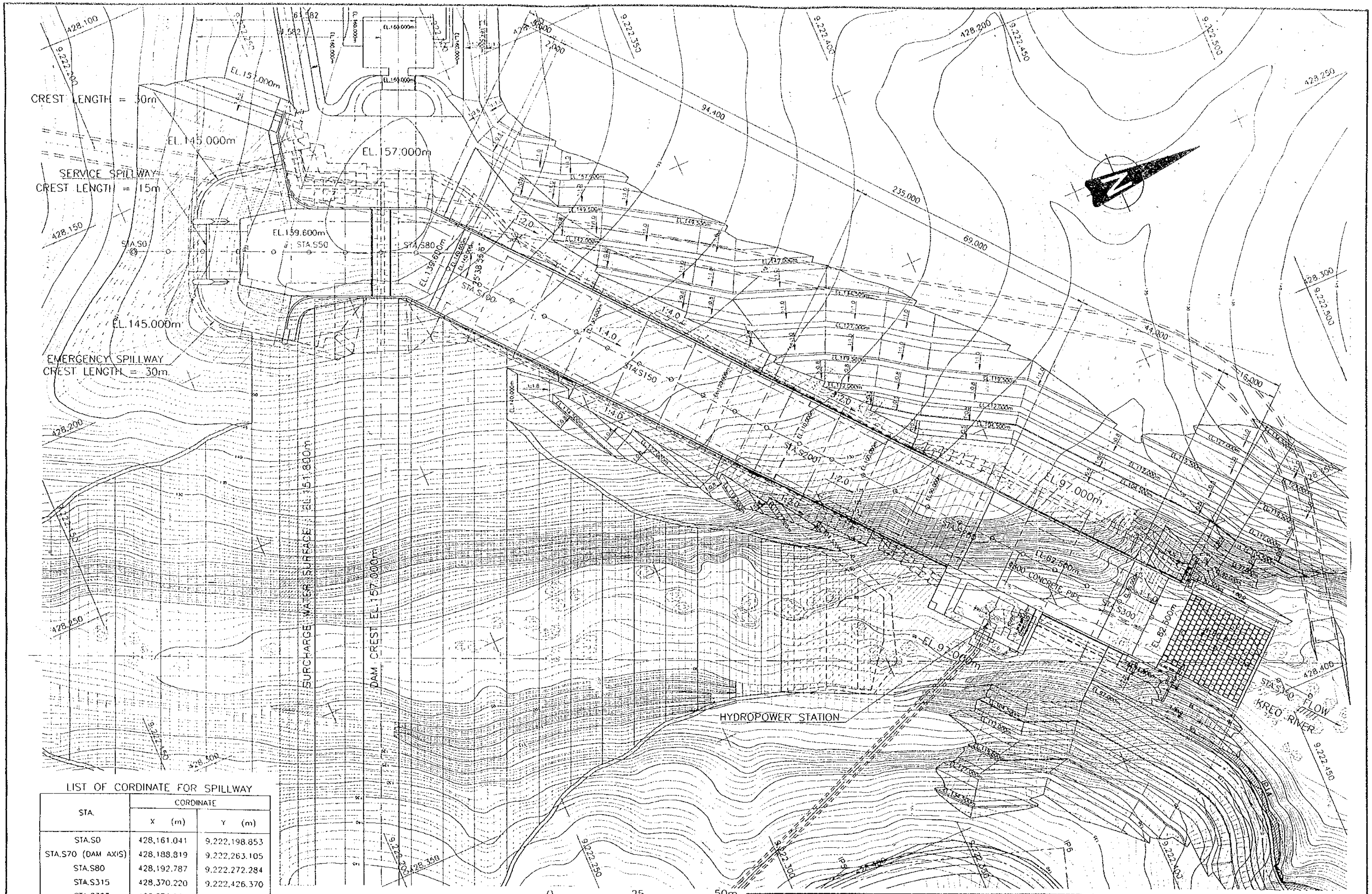
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.1 (1/2)
PLAN OF SPILLWAY (GENERAL PLAN)



LIST OF CORDINATE FOR SPILLWAY

STA.	CORDINATE	
	X (m)	Y (m)
STA.S0	428,161.041	9,222,198.853
STA.S70 (DAM AXIS)	428,188.819	9,222,263.105
STA.S80	428,192.787	9,222,272.284
STA.S315	428,370.220	9,222,426.370
STA.S323	428,376.261	9,222,431.615

SCALE 0 25 50m

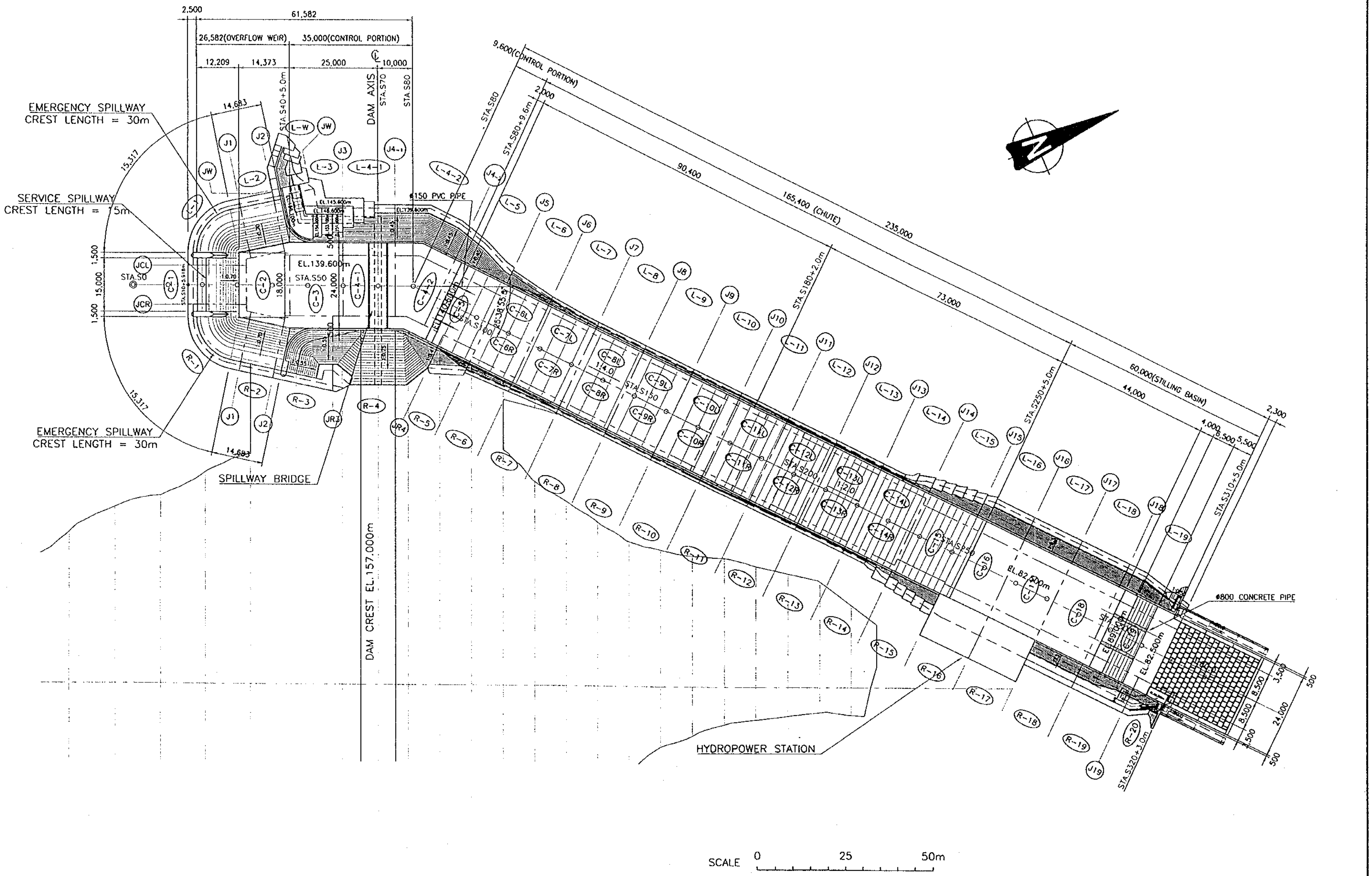
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

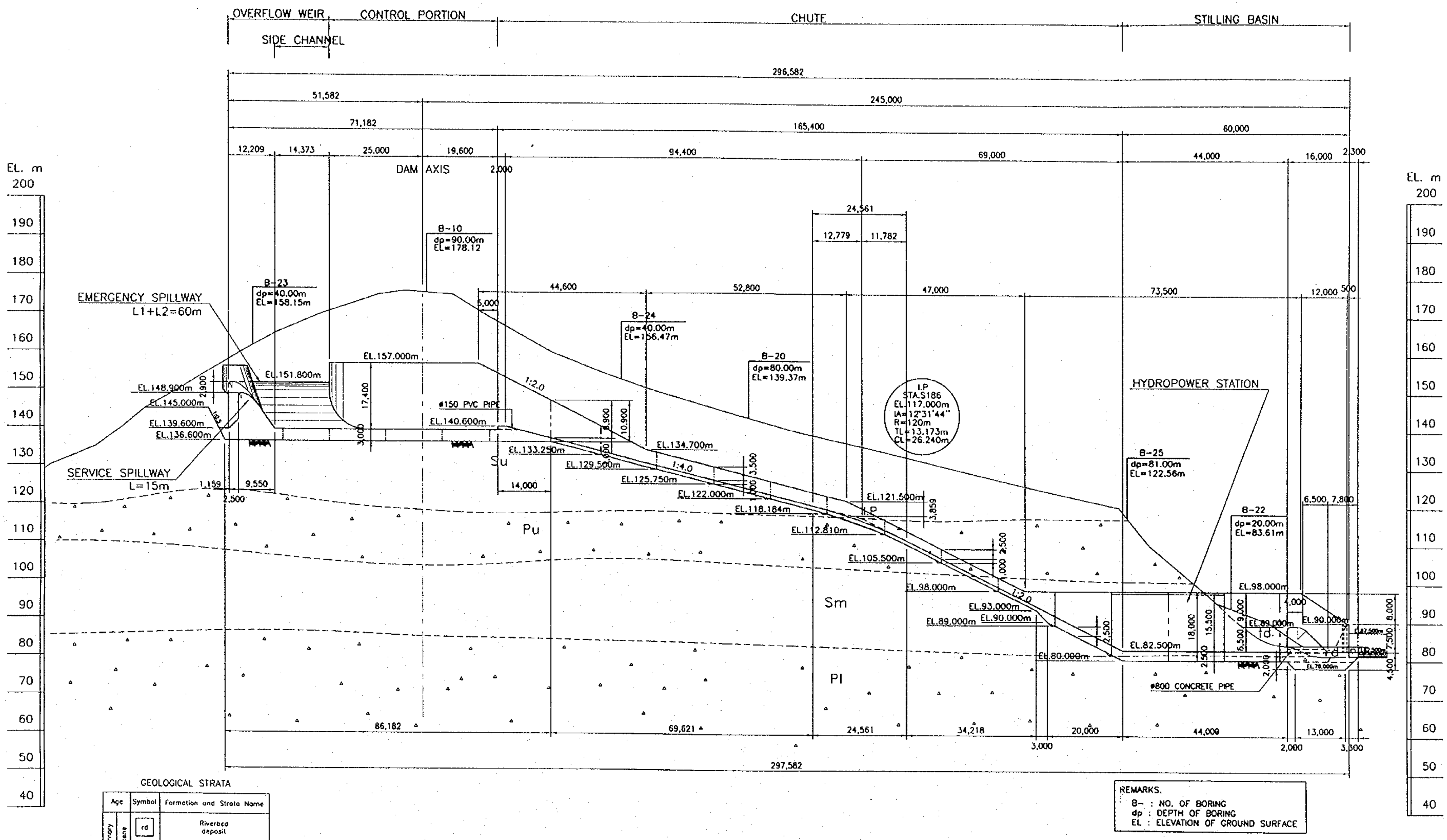
Fig. 7.4.1 (1/2)
PLAN OF SPILLWAY (GENERAL PLAN)



NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.4.1 (2/2) PLAN OF SPILLWAY (STRUCTURAL PLAN)
JAPAN INTERNATIONAL COOPERATION AGENCY	



GEOLOGICAL STRATA

Age			Symbol	Formation and Strata Name
Quaternary	Holocene		rd	Riverbed deposit
			td	Talus deposit
Tertiary-Quaternary	Pliocene-Pleistocene	Damar	Su	Upper Sedimentary Rock Unit
			Pu	Upper Pyroclastic Rock Unit
			Sm	Middle Sedimentary Rock Unit
			Pl	Lower Pyroclastic Rock Unit
			Sl	Lower Sedimentary Rock Unit

NOTES

1. REFER TO THE LEGEND ON REFERENCE DRAWING MENTIONED BELOW FOR SYMBOLS OF ROCKS AND ROCK CLASSIFICATION IN DRILLING LOG.

SCALE 0 25 50m

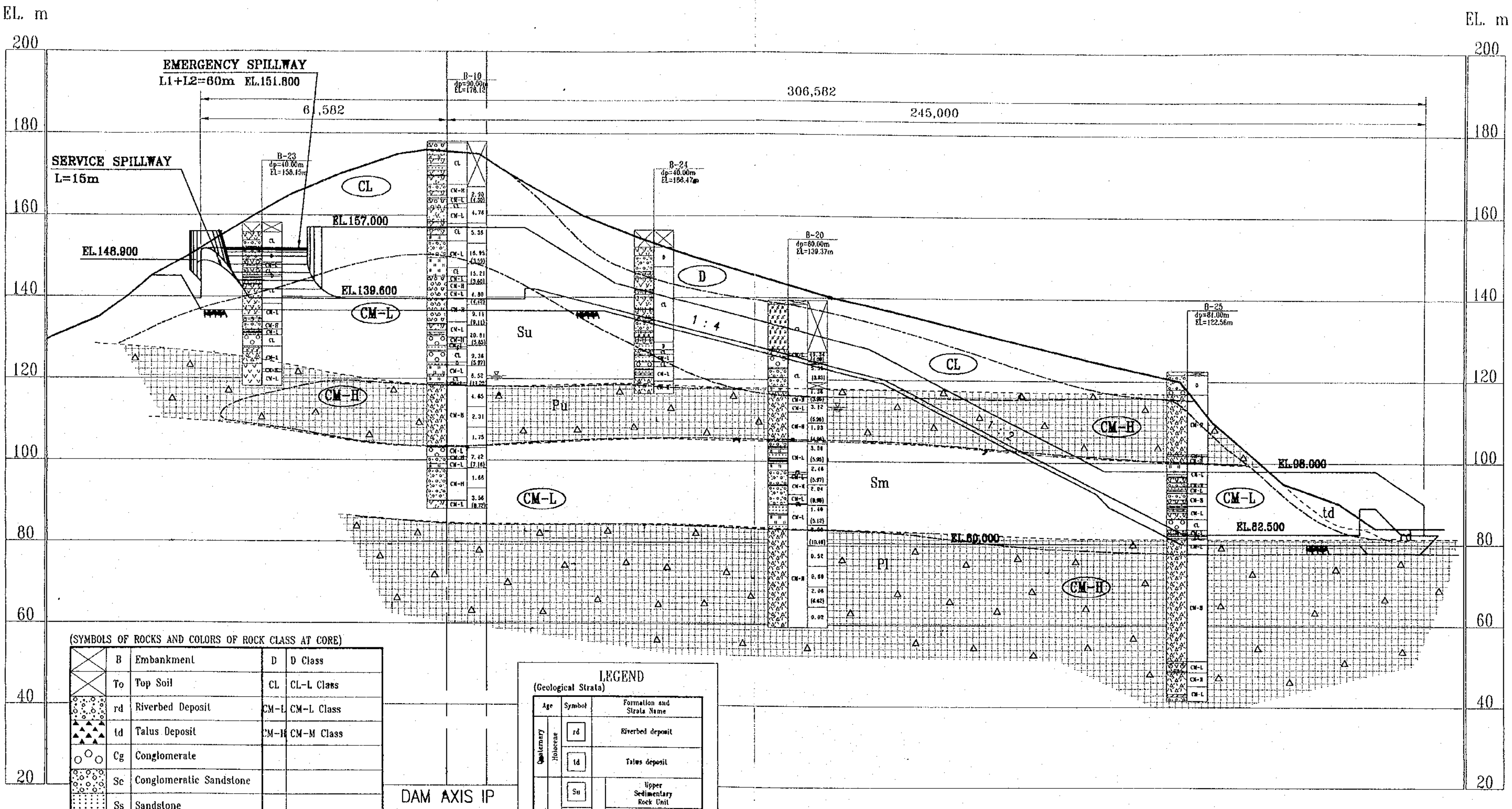
REFERENCE DRAWINGS

JD-P1-GE-Pr-1 GEOLOGICAL PROFILE ALONG DAM AXIS

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.2
PROFILE OF SPILLWAY



(SYMBOLS OF ROCKS AND COLORS OF ROCK CLASS AT CORE)

	B	Embankment	D	D Class
	To	Top Soil	CL	CL-L Class
	rd	Riverbed Deposit	CM-L	CM-L Class
	td	Talus Deposit	CM-H	CM-M Class
	Cg	Conglomerate		
	Sc	Conglomeratic Sandstone		
	Ss	Sandstone		
	Si	Siltstone		
	St	Tuffaceous Sandstone		
	Ts	Sandy Tuff		
	Tf	Tuff		
	Cv	Volcanic Conglomerate		
	Bb	Volcanic Breccia		
	La	Andesite Lava		

LEGEND

(Geological Strata)

Age		Symbol		Formation and Strata Name
Quaternary	Holocene	rd		Riverbed deposit
		td		Talus deposit
Tertiary-Quaternary	Pliocene-Pleistocene	Su	Damar	Upper Sedimentary Rock Unit
		Pu		Upper Pyroclastic Rock Unit
		Sm		Middle Sedimentary Rock Unit
		Pl		Lower Pyroclastic Rock Unit
		Sl		Lower Sedimentary Rock Unit

(Note)

- - - - Boundary of Geological Unit

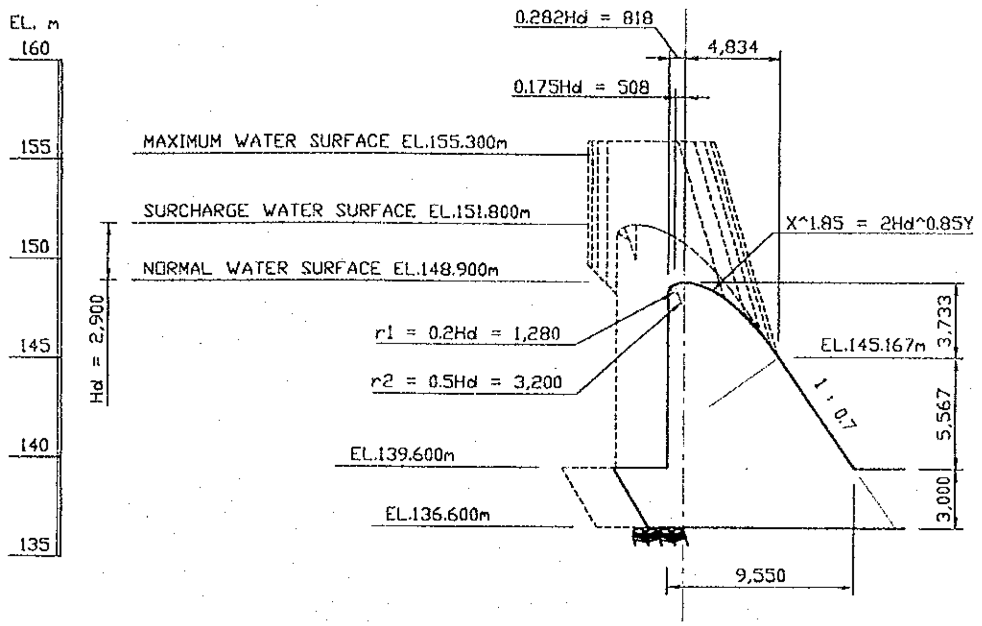
——— Boundary of Rock Class

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

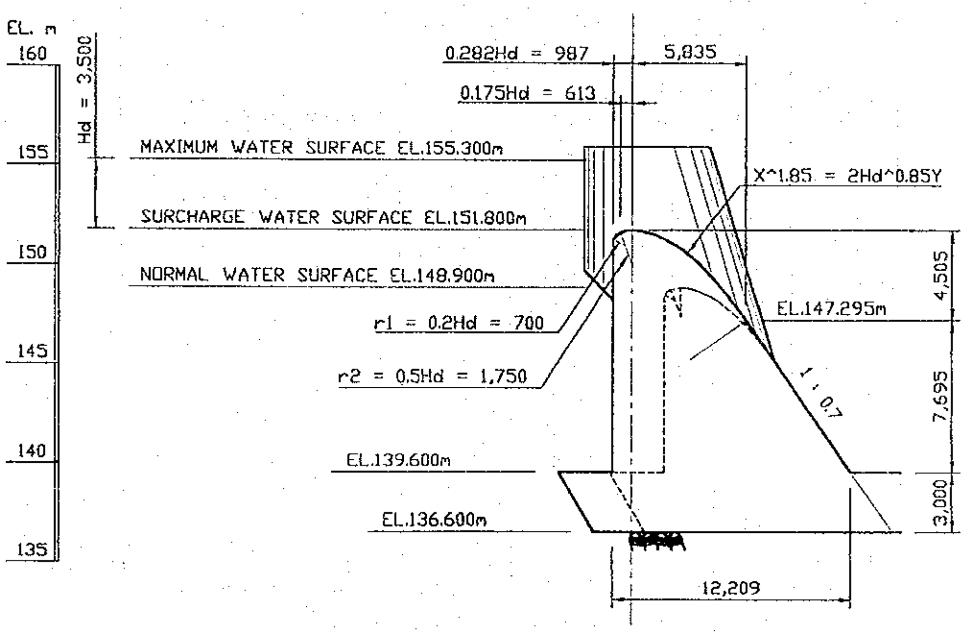
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.3

GEOLOGICAL PROFILE ALONG CENTERLINE OF SPILLWAY



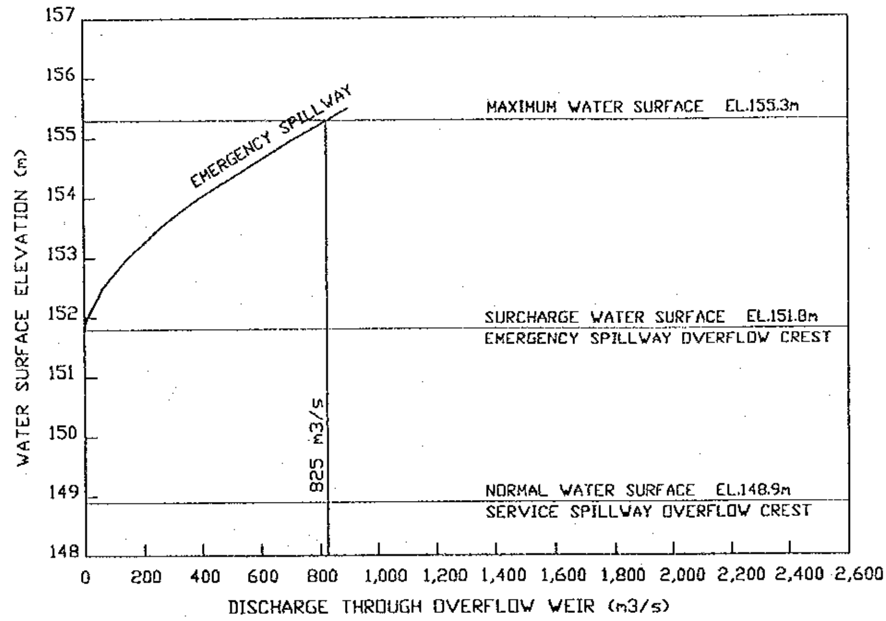
SERVICE SPILLWAY



EMERGENCY SPILLWAY

SCALE 0 5 10 15 20m

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.4.4 TYPICAL CROSS SECTION OF OVERFLOW WEIR
JAPAN INTERNATIONAL COOPERATION AGENCY	



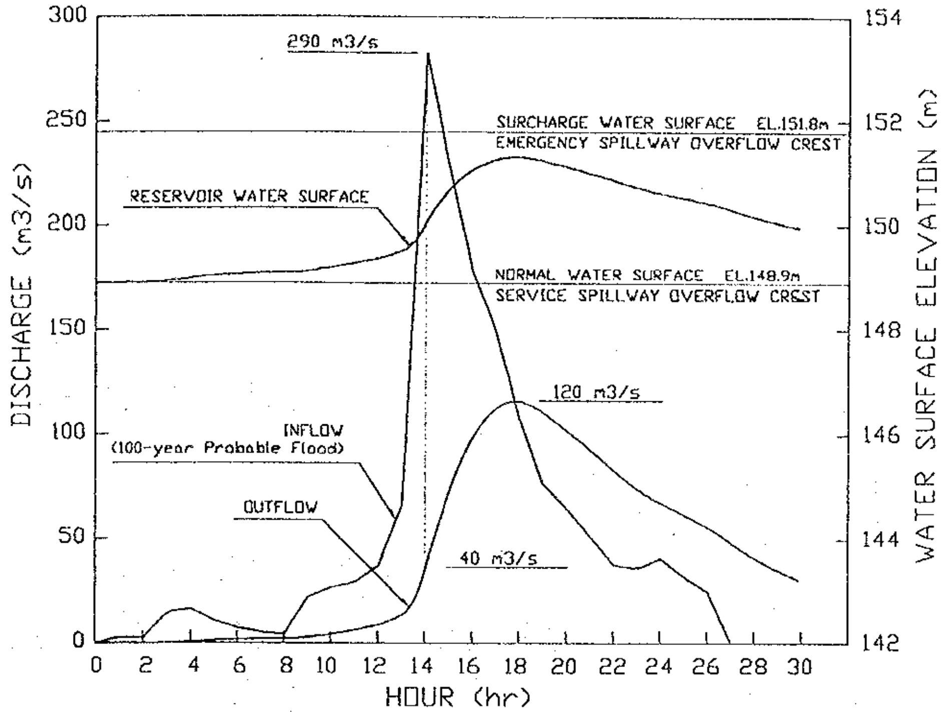
DISCHARGE-ELEVATION CURVES

OVERFLOW DISCHARGE

Elevation (m)	Depth H (m)	Crest Length B (m)	Discharge Coefficient C	Outflow Discharge Q (m^3/s)	Remarks
148.90	0.0	60	1.600	0.0	Normal Water Surface
149.00	0.0	60	1.600	0.0	
149.50	0.0	60	1.600	0.0	
150.00	0.0	60	1.600	0.0	
150.50	0.0	60	1.600	0.0	
151.00	0.0	60	1.600	0.0	
151.50	0.0	60	1.600	0.0	
151.80	0.0	60	1.600	0.0	Surcharge Water Surface
152.00	0.2	60	1.650	8.9	
152.50	0.7	60	1.759	61.8	
153.00	1.2	60	1.850	146.0	
153.50	1.7	60	1.928	256.4	
154.00	2.2	60	1.994	390.4	
154.50	2.7	60	2.050	545.7	
155.00	3.2	60	2.097	720.4	
155.30	3.5	60	2.100	825.0	Maximum Water Surface
155.50	3.7	60	2.100	896.8	

Note: design head (Hd) = 3.5 m
Height of Weir (W) = 6.8 m
Discharge Coefficient is not more than 2.100.

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.4.5 DISCHARGE-ELEVATION CURVE OF SERVICE SPILLWAY
JAPAN INTERNATIONAL COOPERATION AGENCY	



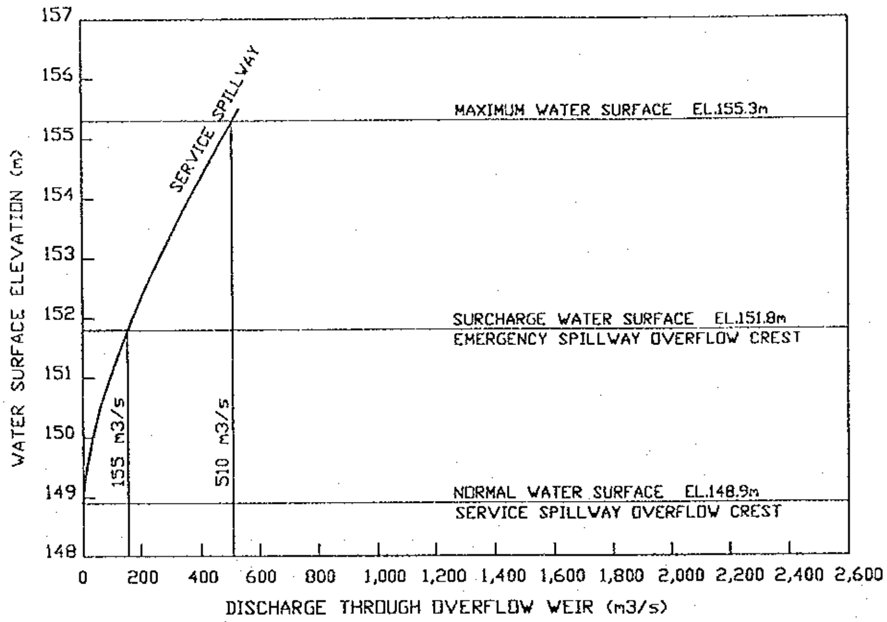
INFLOW AND OUTFLOW HYDROGRAPHS

Hour (hr)	100-year Probable Flood Inflow (m³/s)	Outflow (m³/s)	Reservoir Water Surface (EL. m)	Reservoir Storage Volume (m³)
0.0	0.0	0.0	148.90	0
1.0	2.7	0.0	148.90	4,817
2.0	2.7	0.1	148.91	14,273
3.0	15.1	0.4	148.95	45,613
4.0	16.4	0.8	149.00	100,308
5.0	10.8	1.4	149.05	145,165
6.0	7.4	1.8	149.07	172,023
7.0	5.5	2.1	149.09	188,142
8.0	4.3	2.2	149.10	197,976
9.0	22.3	3.0	149.14	236,822
10.0	26.9	4.5	149.21	312,027
11.0	29.5	6.4	149.30	393,855
12.0	37.2	9.0	149.39	486,340
13.0	66.7	13.6	149.54	633,717
14.0	282.7	36.3	150.08	1,182,957
15.0	226.4	73.2	150.73	1,900,060
16.0	177.8	98.9	151.10	2,313,700
17.0	149.1	112.7	151.28	2,518,409
18.0	107.6	116.0	151.32	2,565,697
19.0	76.7	110.6	151.25	2,487,776
20.0	64.7	101.9	151.14	2,359,584
21.0	51.7	92.7	151.01	2,218,483
22.0	37.7	83.0	150.87	2,062,896
23.0	35.7	74.0	150.74	1,912,974
24.0	40.8	67.3	150.63	1,797,058
25.0	32.0	61.7	150.54	1,695,779
26.0	25.0	55.9	150.44	1,586,830
27.0	1.0	48.6	150.32	1,444,866
28.0	1.0	41.0	150.18	1,287,704
29.0	1.0	35.0	150.06	1,154,788
30.0	1.0	30.0	149.95	1,041,440
Maximum Reservoir Storage Volume + 20 % Allowance				= 2,565,697 m³ x 1.2 = 3,100,000 m³

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.6
INFLOW AND OUTFLOW HYDROGRAPHS OF 100-YEARS PROBABLE FLOOD



DISCHARGE-ELEVATION CURVES

OVERFLOW DISCHARGE

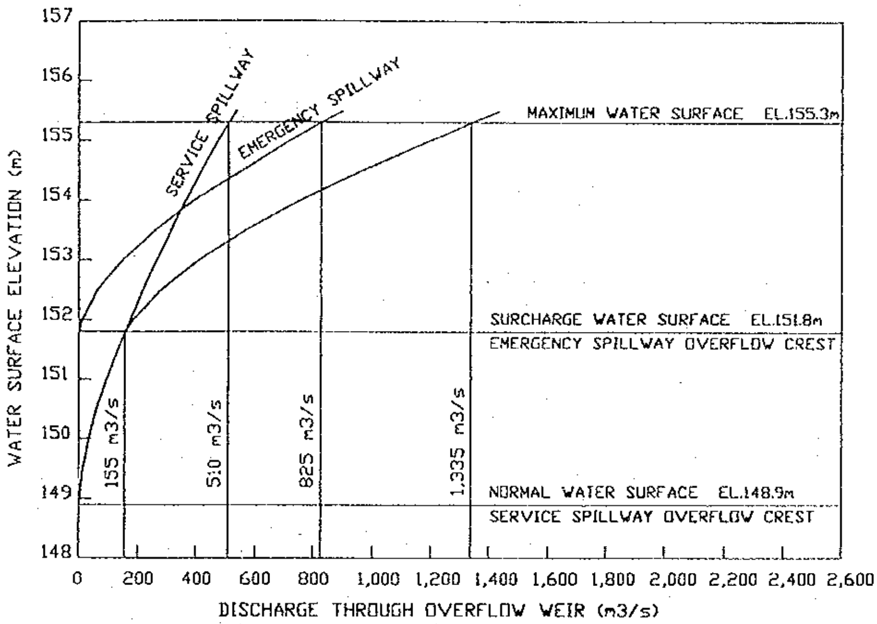
Elevation (m)	Depth H (m)	Crest Length B (m)	Discharge Coefficient C	Outflow Discharge Q (m^3/s)	Remarks
148.90	0.0	15	1.600	0.0	Normal Water Surface
149.00	0.1	15	1.630	0.8	
149.50	0.6	15	1.758	12.3	
150.00	1.1	15	1.862	32.2	
150.50	1.6	15	1.947	59.1	
151.00	2.1	15	2.015	92.0	
151.50	2.6	15	2.070	130.1	
151.80	2.9	15	2.097	155.3	Surcharge Water Surface
152.00	3.1	15	2.100	171.9	
152.50	3.6	15	2.100	215.2	
153.00	4.1	15	2.100	261.5	
153.50	4.6	15	2.100	310.8	
154.00	5.1	15	2.100	362.8	
154.50	5.6	15	2.100	417.4	
155.00	6.1	15	2.100	474.6	
155.30	6.4	15	2.100	510.0	Maximum Water Surface
155.50	6.6	15	2.100	534.1	

Note: design head (Hd) = 2.9 m
Height of Weir (W) = 3.9 m
Discharge Coefficient is not more than 2.100.

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.7
DISCHARGE-ELEVATION CURVE OF EMERGENCY SPILLWAY

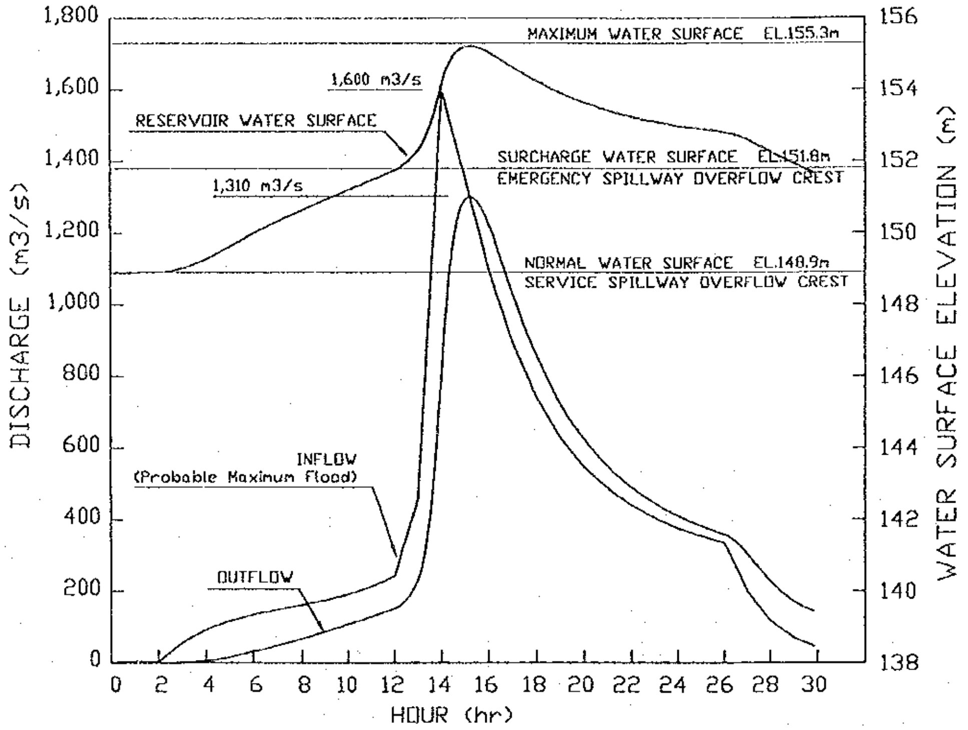


DISCHARGE-ELEVATION CURVES

OVERFLOW DISCHARGE

Elevation (m)	Service Spillway Discharge Qs (m^3/s)	Emergency Spillway Discharge Qe (m^3/s)	Total Discharge Q (m^3/s)	Remarks
148.90	0.00	0.00	0.00	Normal Water Surface
149.00	0.80	0.00	0.80	
149.50	12.30	0.00	12.30	
150.00	32.20	0.00	32.20	
150.50	59.10	0.00	59.10	
151.00	92.00	0.00	92.00	
151.50	130.10	0.00	130.10	
151.80	155.30	0.00	155.30	Surcharge Water Surface
152.00	171.90	8.85	180.75	
152.50	215.20	61.80	277.00	
153.00	261.50	145.95	407.45	
153.50	310.80	256.42	567.22	
154.00	362.80	390.40	753.20	
154.50	417.40	545.67	963.07	
155.00	474.60	720.35	1,194.95	
155.30	510.00	825.04	1,335.04	Maximum Water Surface
155.50	534.10	896.75	1,430.85	

Fig. 7.4.8
DISCHARGE-ELEVATION CURVES IN COMBINED OPERATION



INFLOW AND OUTFLOW HYDROGRAPHS

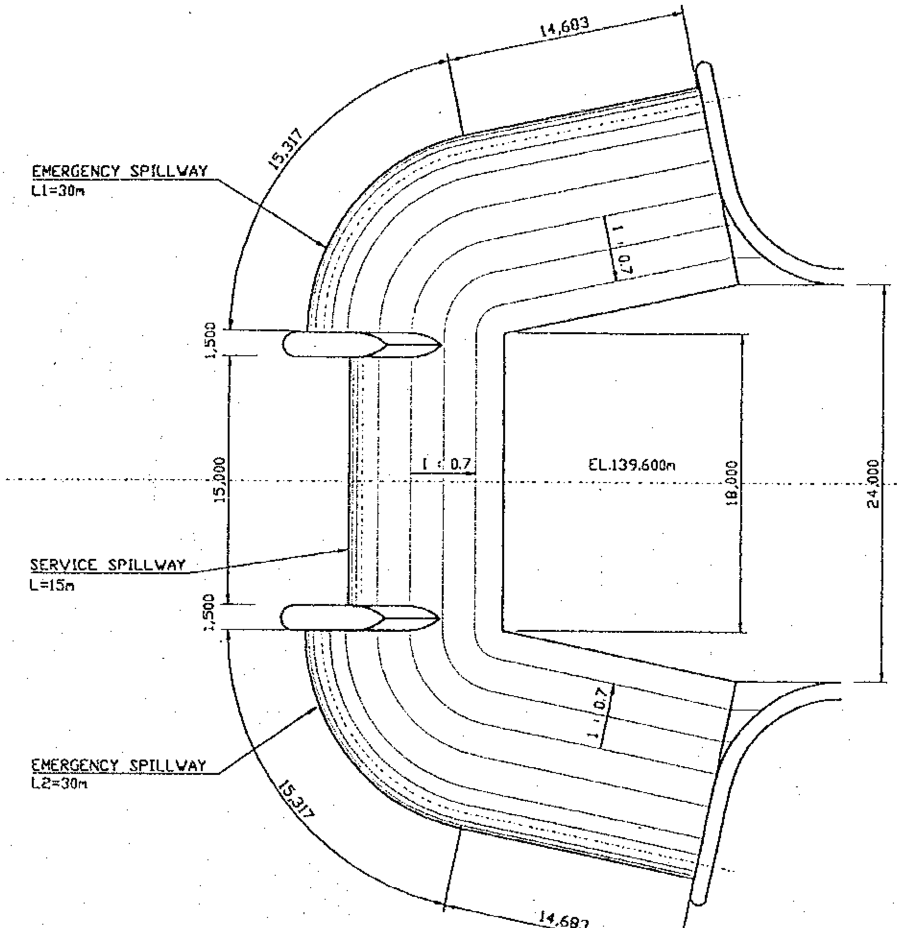
Hour	Probable Maximum Flood		Reservoir Water	Reservoir
	Inflow	Outflow	Surface	Storage Volume
(hr)	(m^3/s)	(m^3/s)	(EL. m)	(m^3)
0.0	0.00	0.00	148.90	0
1.0	2.70	0.04	148.90	4,817
2.0	2.70	0.11	148.91	14,273
3.0	57.60	1.10	149.02	121,311
4.0	93.20	6.13	149.28	381,230
5.0	116.90	16.63	149.63	720,014
6.0	134.20	32.03	150.00	1,085,628
7.0	148.20	48.80	150.32	1,449,081
8.0	161.30	67.35	150.63	1,797,512
9.0	175.30	86.90	150.93	2,125,991
10.0	191.60	107.14	151.21	2,437,338
11.0	212.70	128.45	151.48	2,741,417
12.0	242.80	152.06	151.76	3,057,354
13.0	459.60	233.71	152.30	3,663,048
14.0	1,599.30	813.84	154.15	5,751,728
15.0	1,355.10	1,302.05	155.23	7,003,193
16.0	1,099.00	1,225.36	155.07	6,793,842
17.0	894.10	1,030.17	154.65	6,315,097
18.0	741.10	857.94	154.26	5,871,456
19.0	629.00	724.53	153.93	5,499,992
20.0	546.90	623.84	153.66	5,198,066
21.0	486.00	547.89	153.44	4,954,506
22.0	440.00	490.08	153.27	4,757,620
23.0	404.60	445.46	153.13	4,597,258
24.0	376.50	410.35	153.01	4,465,084
25.0	354.00	382.32	152.91	4,354,784
26.0	335.30	359.54	152.83	4,261,398
27.0	199.20	302.96	152.61	4,013,762
28.0	117.30	228.16	152.27	3,630,632
29.0	69.60	171.91	151.94	3,254,233
30.0	41.70	140.02	151.62	2,898,763

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

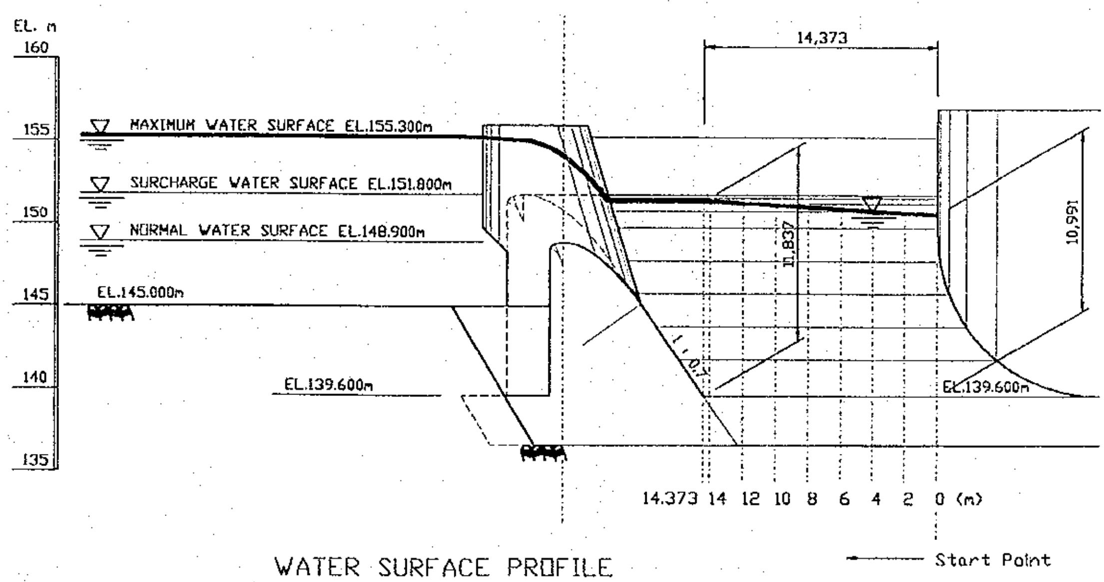
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.9

INFLOW AND OUTFLOW HYDROGRAPHS OF PROBABLE MAXIMUM FLOOD

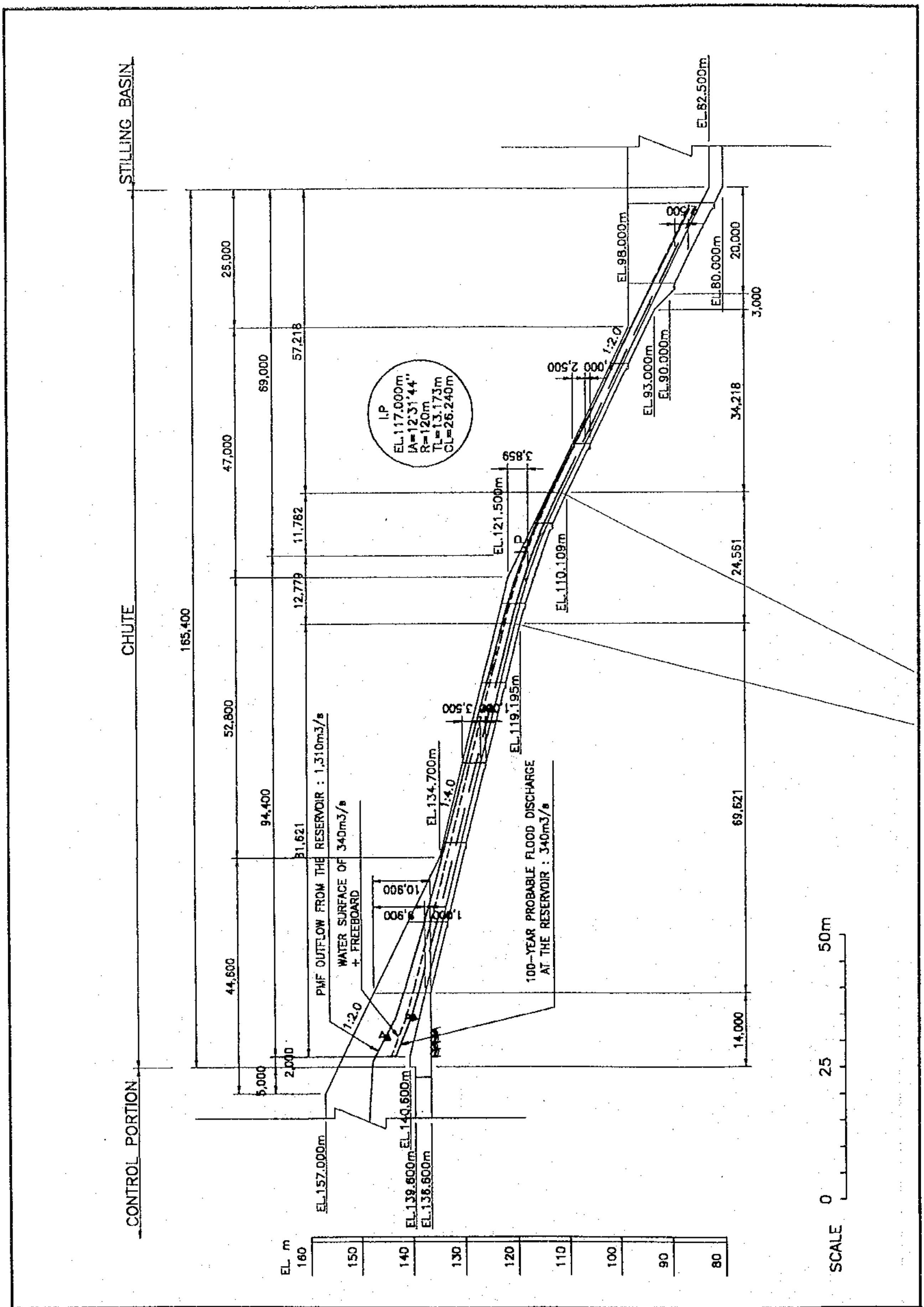


PLAN OF OVERFLOW WEIR

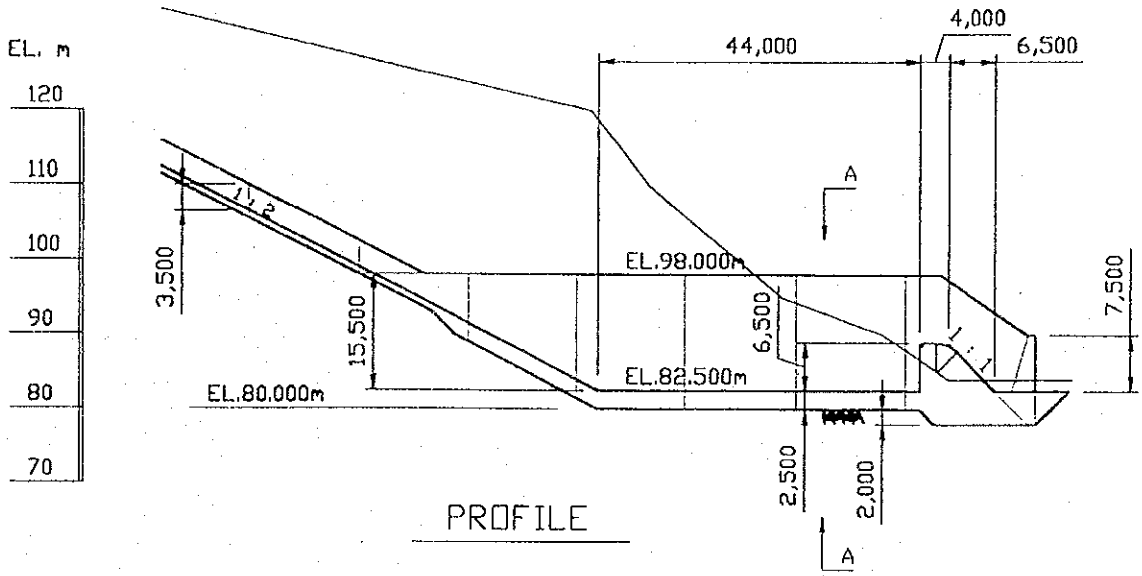


WATER SURFACE PROFILE

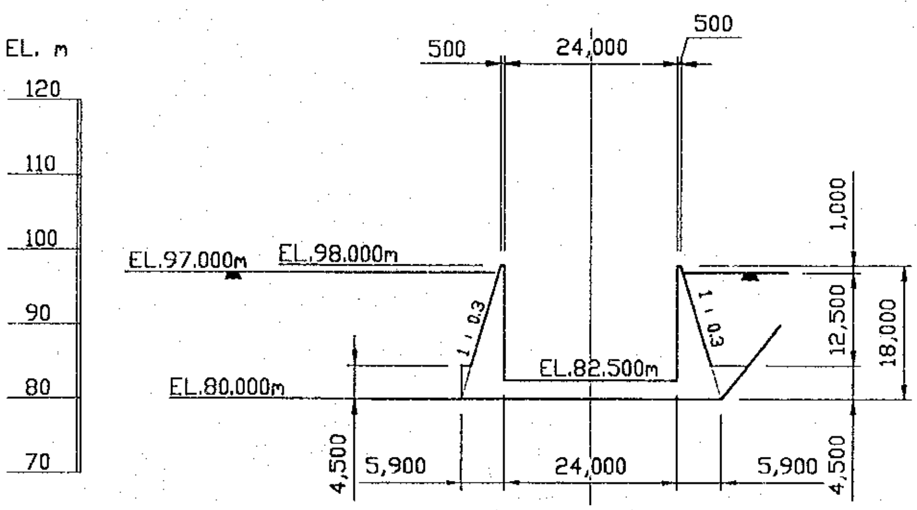
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.4.10 WATER SURFACE PROFILE IN SIDE CHANNEL
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. **7.4.11**
JAPAN INTERNATIONAL COOPERATION AGENCY	**WATER SURFACE PROFILE IN CHUTE**



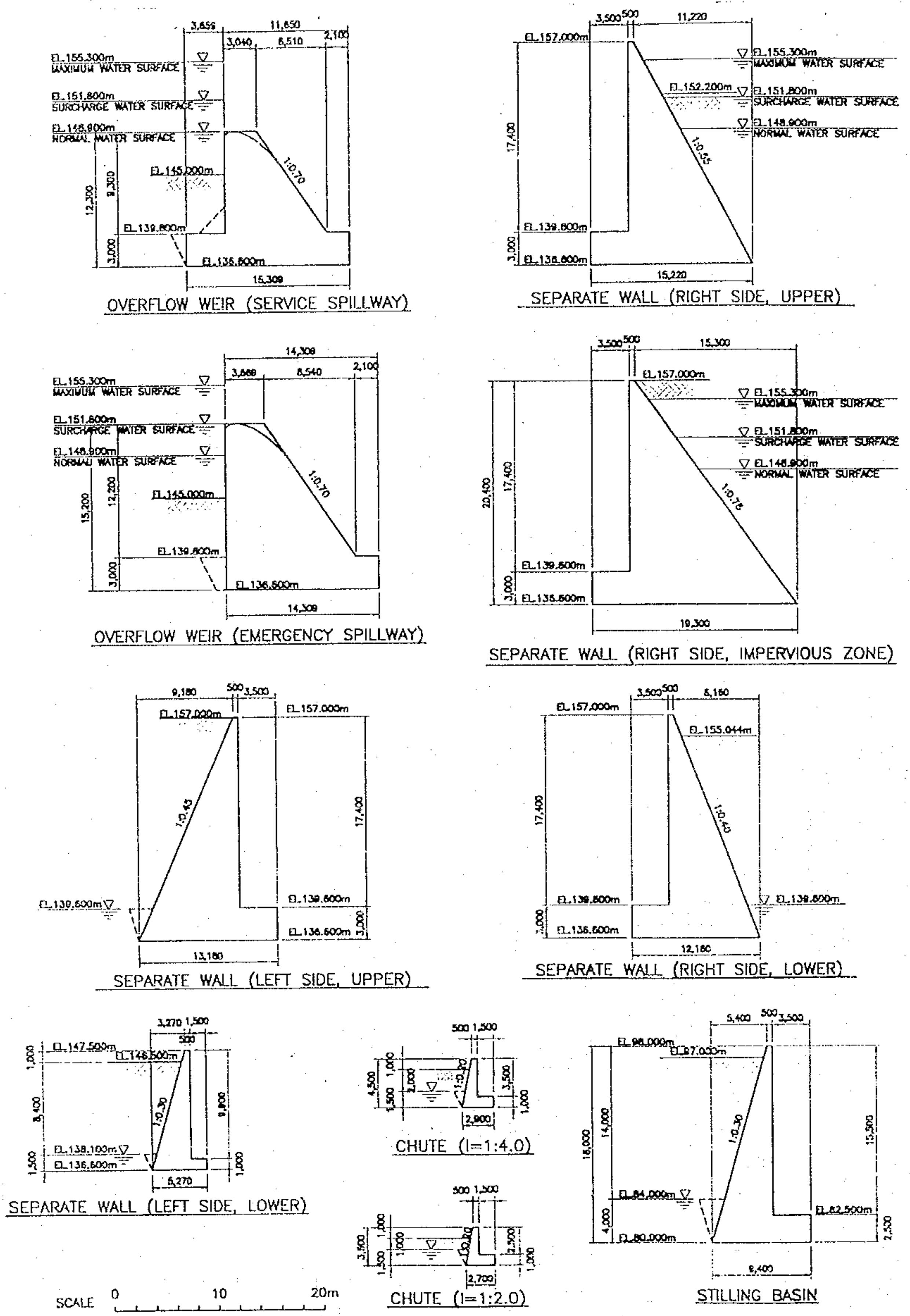
PROFILE



A-A SECTION

SCALE 0 10 20 40 60m

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.4.12 LAYOUT OF SPILLWAY STILLING BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY	

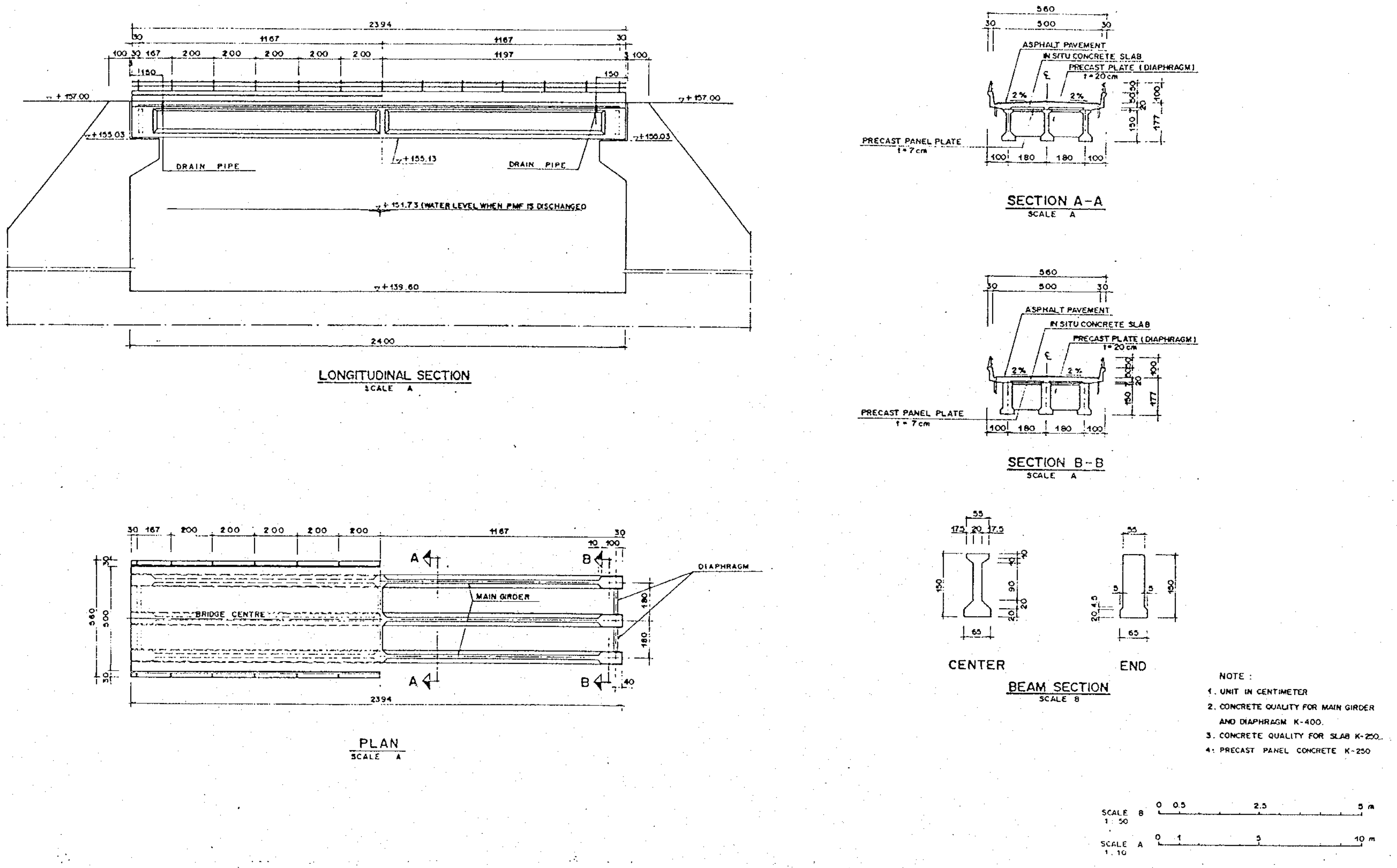


THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.4.13

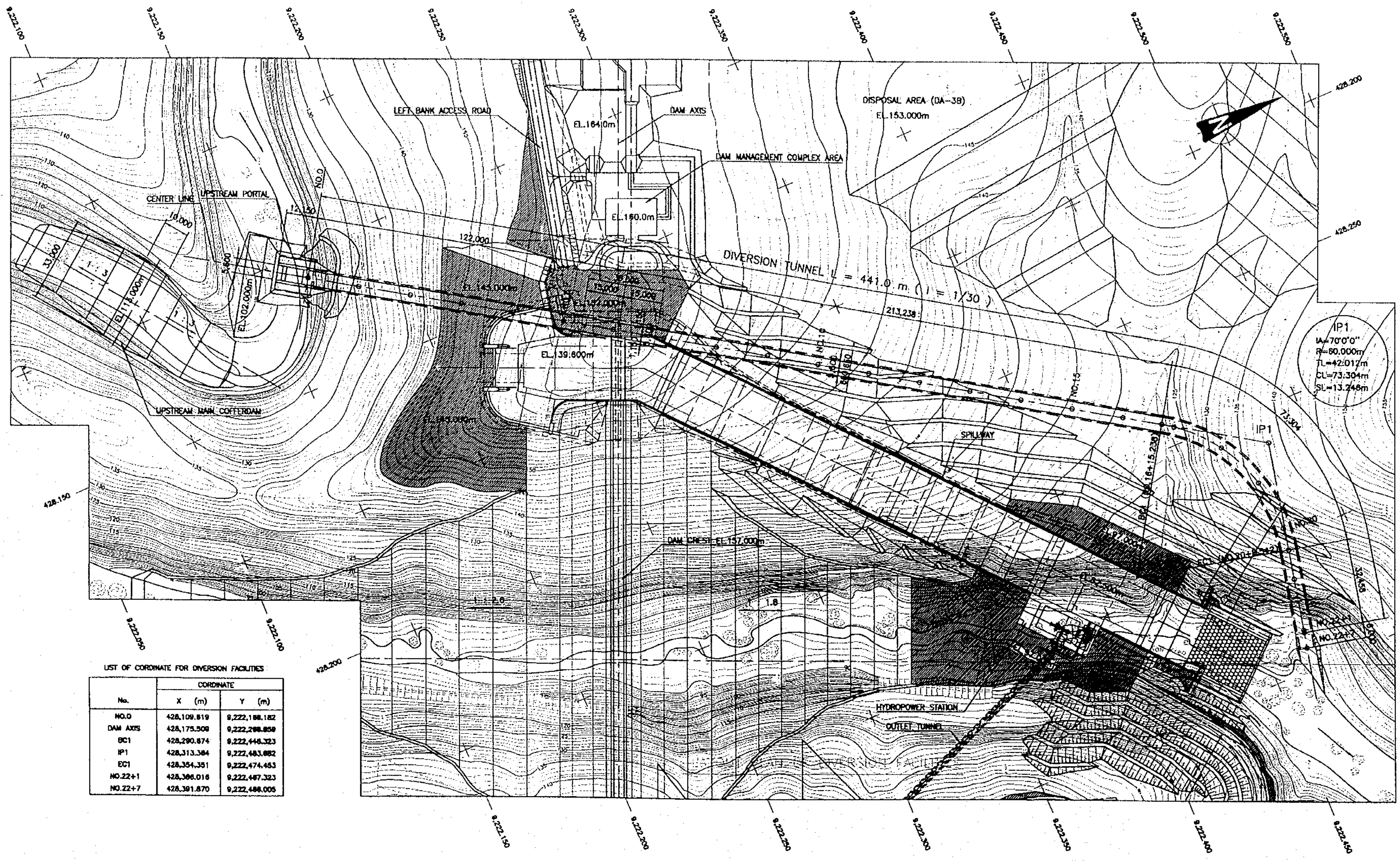
ANALYZED WALL SECTIONS OF SPILLWAY



NOTE :

1. UNIT IN CENTIMETER
2. CONCRETE QUALITY FOR MAIN GIRDER AND DIAPHRAGM K-400.
3. CONCRETE QUALITY FOR SLAB K-250.
4. PRECAST PANEL CONCRETE K-250

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.4.14 STRUCTURAL FEATURES OF SPILLWAY BRIDGE
JAPAN INTERNATIONAL COOPERATION AGENCY	



LIST OF CORDINATE FOR DIVERSION FACILITIES

No.	CORDINATE X (m)	CORDINATE Y (m)
NO.0	428,109.819	9,222,188.182
DAM AXIS	428,175.509	9,222,298.859
BC1	428,290.874	9,222,446.323
IP1	428,313.384	9,222,483.882
EC1	428,354.351	9,222,474.453
NO.22+1	428,386.016	9,222,487.323
NO.22+7	428,391.870	9,222,488.005

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS

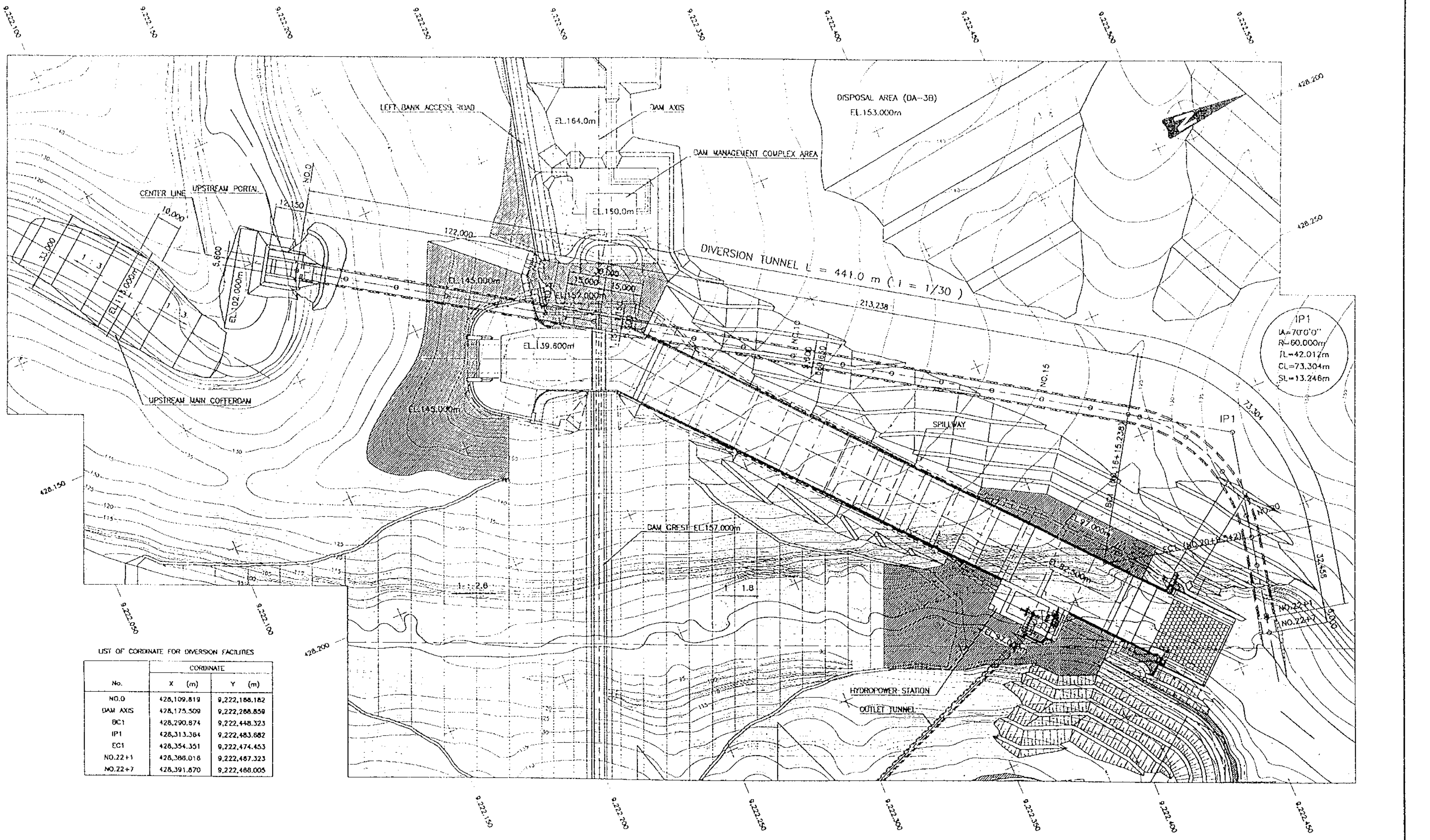
JD-P1-DF-Tu-1 TUNNEL – PROFILE AND TYPICAL CROSS SECTIONS
JD-P1-DF-Up-1 UPSTREAM PORTAL – LAYOUT PLAN
JD-P1-DF-Pg-1 PLUG WORKS IN DIVERSION TUNNEL – CONCRETE PLUG DETAILS

SCALE 0 20 40 80m

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.5.1
PLAN OF DIVERSION FACILITIES



LIST OF CORDINATE FOR DIVERSION FACILITIES

No.	CORDINATE X (m)	CORDINATE Y (m)
NO.0	428,109.819	9,222,188.182
DAM AXIS	428,175.509	9,222,288.859
BC1	428,290.874	9,222,448.323
IP1	428,313.384	9,222,483.682
EC1	428,354.351	9,222,474.453
NO.22+1	428,388.018	9,222,487.323
NO.22+7	428,391.870	9,222,488.005

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

SCALE 0 20 40 80m

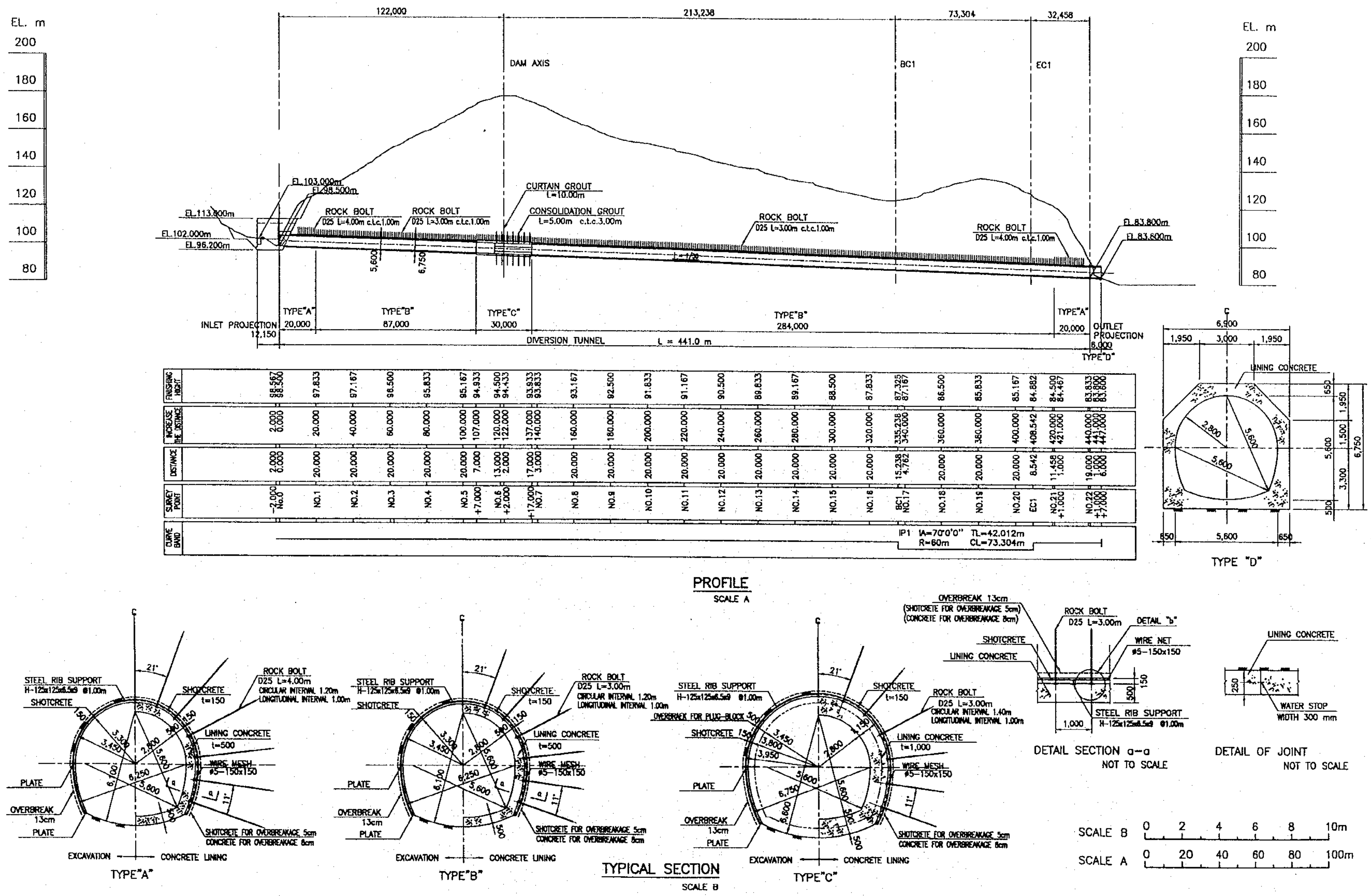
REFERENCE DRAWINGS

JD-P1-DF-Tu-1 TUNNEL - PROFILE AND TYPICAL CROSS SECTIONS
JD-P1-DF-Up-1 UPSTREAM PORTAL - LAYOUT PLAN
JD-P1-DF-Pg-1 PLUG WORKS IN DIVERSION TUNNEL - CONCRETE PLUG DETAILS

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.5.1 PLAN OF DIVERSION FACILITIES

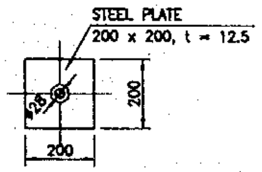


NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2. LINING CONCRETE OF DIVERSION TUNNEL SHALL BE OF TYPE A AS PER SPECIFICATION.

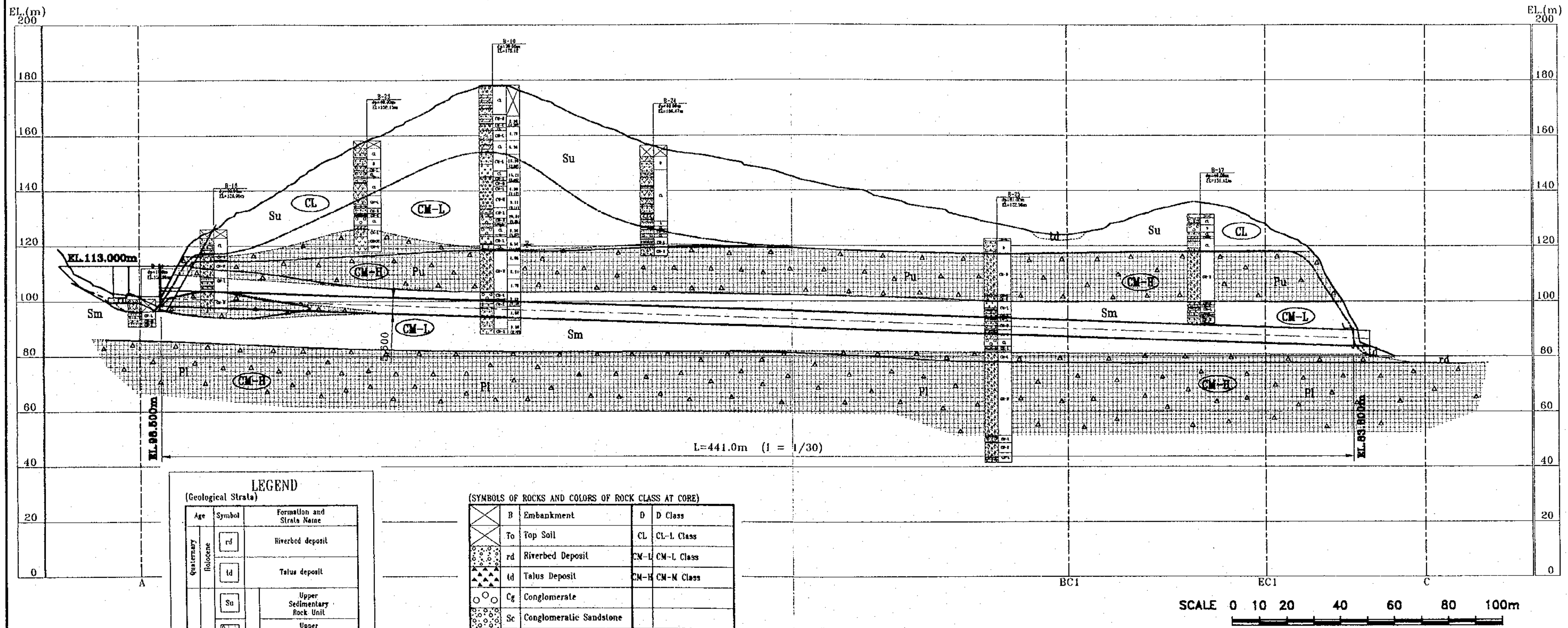
REFERENCE DRAWINGS

JD-P1-DF-Pl-1 DIVERSION FACILITIES – LAYOUT PLAN
JD-P1-DF-Tu-2 TUNNEL – REINFORCEMENT DETAILS AND STEEL RIB SUPPORT



DETAIL OF "b"
NOT TO SCALE

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 7.5.2 PROFILE OF DIVERSION FACILITIES
JAPAN INTERNATIONAL COOPERATION AGENCY	



LEGEND

(Geological Strata)

Age		Symbol	Formation and Strata Name	
Quaternary	Holocene	rd	Riverbed deposit	
		td	Talus deposit	
Tertiary-Quaternary	Pliocene-Pleistocene	Su	Damar	Upper Sedimentary Rock Unit
		Pu		Upper Pyroclastic Rock Unit
		Sm		Middle Sedimentary Rock Unit
		Pl		Lower Pyroclastic Rock Unit
		Sl		Lower Sedimentary Rock Unit

(Note)

Boundary of Geological Unit

Boundary of Rock Class

(SYMBOLS OF ROCKS AND COLORS OF ROCK CLASS AT CORE)

B	Embankment	D	D Class
To	Top Soil	CL	CL-L Class
rd	Riverbed Deposit	CM-L	CM-L Class
td	Talus Deposit	CM-H	CM-M Class
Cg	Conglomerate		
Sc	Conglomeratic Sandstone		
Ss	Sandstone		
Si	Siltstone		
St	Tuffaceous Sandstone		
Ts	Sandy Tuff		
Tf	Tuff		
Cv	Volcanic Conglomerate		
Bb	Volcanic Breccia		
La	Andesite Lava		

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 7.5.3
GEOLOGICAL PROFILE ALONG CENTERLINE OF DIVERSION TUNNEL