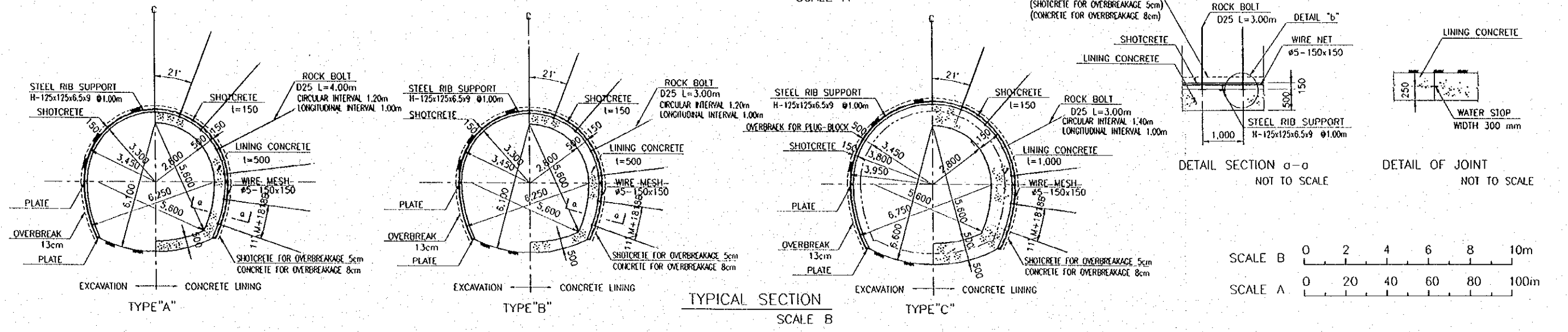


PROFILE SCALE A



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

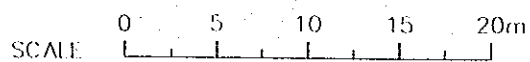
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7  
 PROFILE OF DIVERSION FACILITIES



**NOTES**

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2. CONCRETE OF POWERHOUSE SHALL BE OF TYPE B AS PER SPECIFICATION.



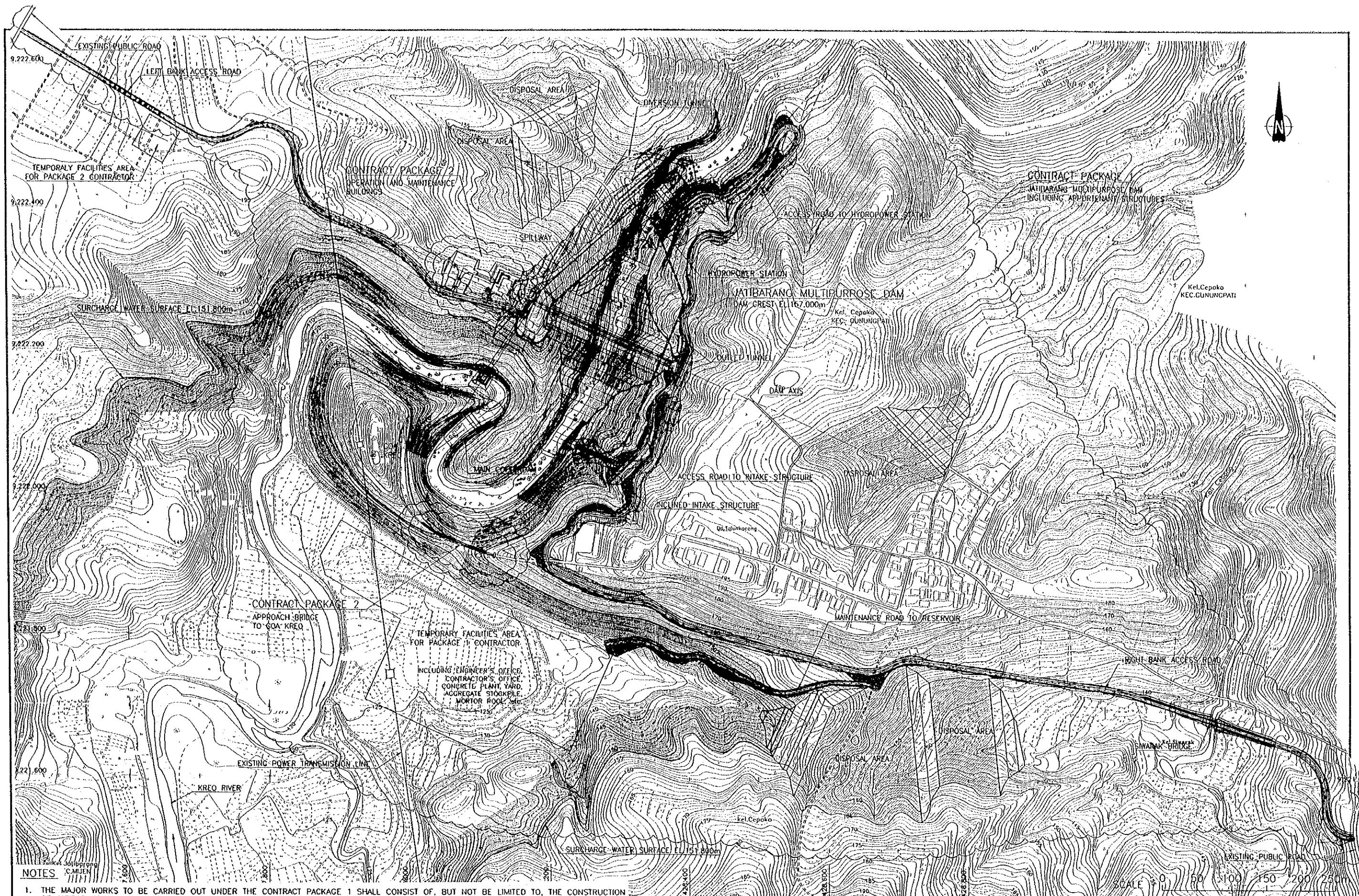
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.8

GENERAL PLAN OF POWERHOUSE AREA



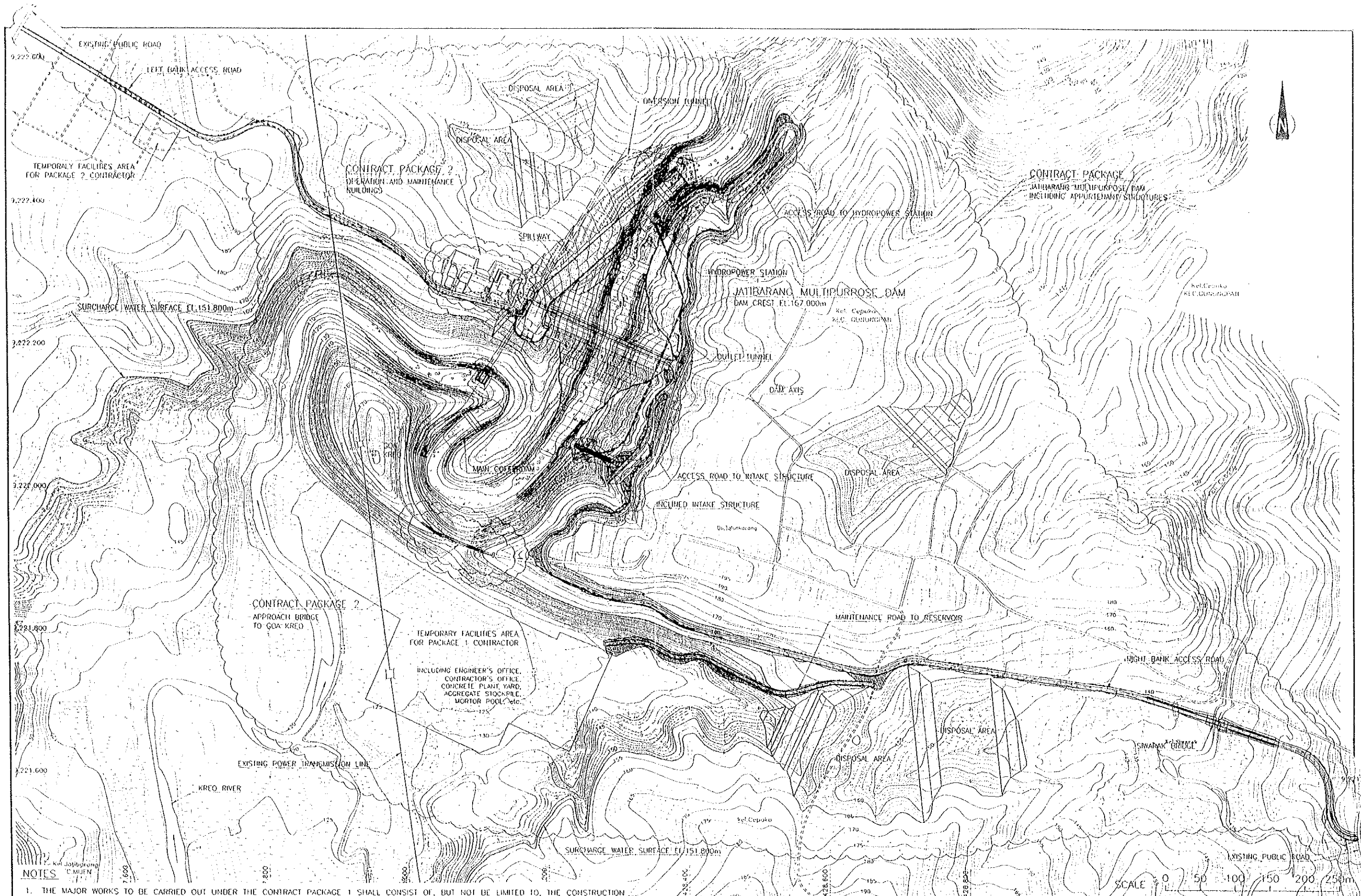


**NOTES**

1. THE MAJOR WORKS TO BE CARRIED OUT UNDER THE CONTRACT PACKAGE 1 SHALL CONSIST OF, BUT NOT BE LIMITED TO, THE CONSTRUCTION OF JATIBARANG MULTIPURPOSE DAM INCLUDING THE APPURTENANT STRUCTURES SUCH AS SPILLWAY, OUTLET FACILITIES, DIVERSION FACILITIES, HYDROPOWER STATION, ACCESS ROADS AND RELOCATION OF EXISTING POWER TRANSMISSION LINE.
2. THE MAJOR WORKS TO BE CARRIED OUT UNDER THE CONTRACT PACKAGE 2 SHALL CONSIST OF, BUT NOT BE LIMITED TO, THE CONSTRUCTION OF THE OPERATION AND MAINTENANCE BUILDINGS AND EXTERNAL WORKS IN THE DAM MANAGEMENT COMPLEX, AND THE APPROACH BRIDGE TO GOA KREO.
3. THE EXCAVATION WORKS OF THE DAM MANAGEMENT COMPLEX AREA SHALL BE CARRIED OUT BY THE PACKAGE 1 CONTRACTOR.

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

Fig. 4.9  
**CONTRACT PACKAGES OF JATIBARANG MULTIPURPOSE DAM CONSTRUCTION**

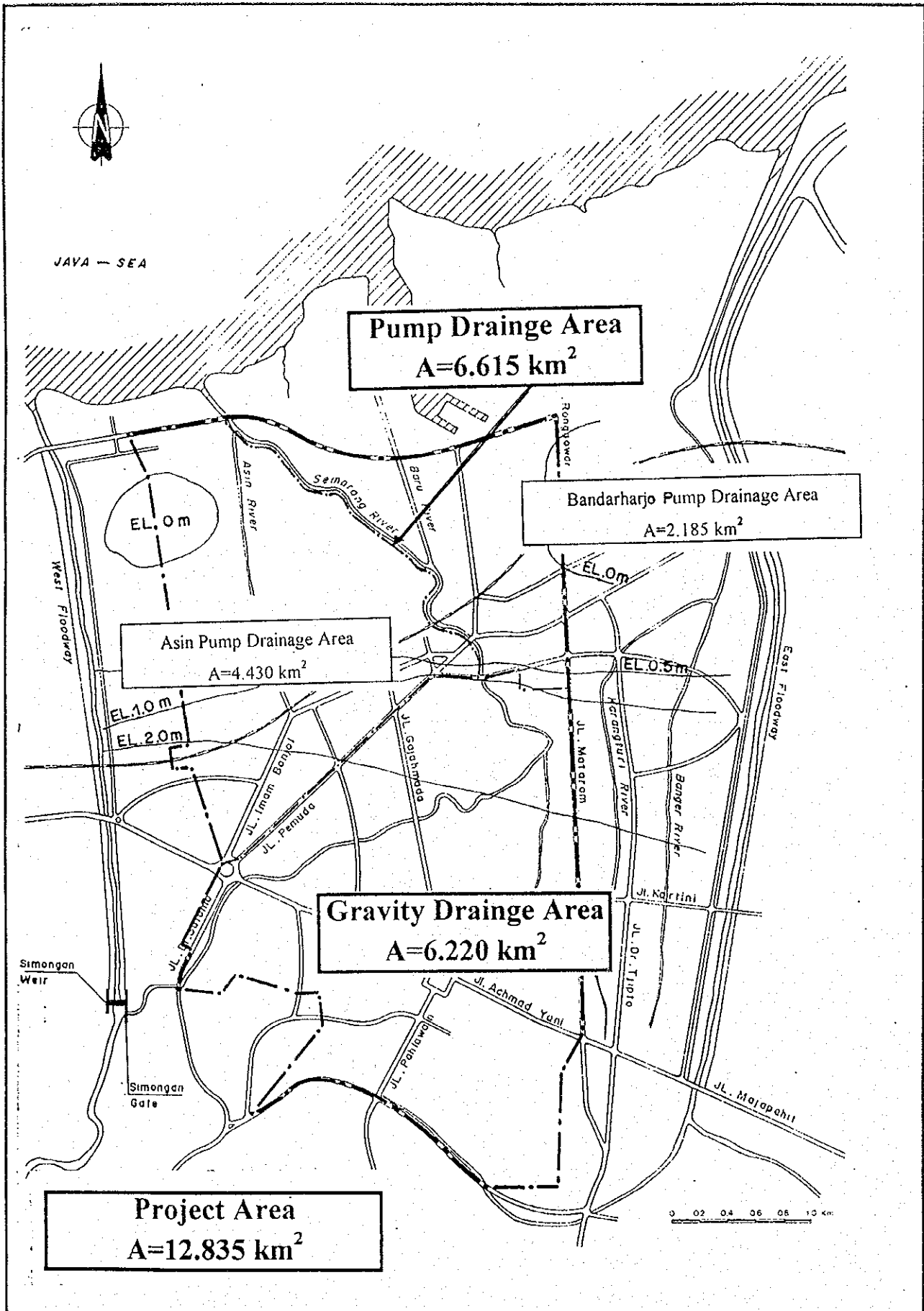


**NOTES**

1. THE MAJOR WORKS TO BE CARRIED OUT UNDER THE CONTRACT PACKAGE 1 SHALL CONSIST OF, BUT NOT BE LIMITED TO, THE CONSTRUCTION OF JATIBARANG MULTIPURPOSE DAM INCLUDING THE APPURTENANT STRUCTURES SUCH AS SPILLWAY, OUTLET FACILITIES, DIVERSION FACILITIES, HYDROPOWER STATION, ACCESS ROADS AND RELOCATION OF EXISTING POWER TRANSMISSION LINE.
2. THE MAJOR WORKS TO BE CARRIED OUT UNDER THE CONTRACT PACKAGE 2 SHALL CONSIST OF, BUT NOT BE LIMITED TO, THE CONSTRUCTION OF THE OPERATION AND MAINTENANCE BUILDINGS AND EXTERNAL WORKS IN THE DAM MANAGEMENT COMPLEX, AND THE APPROACH BRIDGE TO GOA KREO.
3. THE EXCAVATION WORKS OF THE DAM MANAGEMENT COMPLEX AREA SHALL BE CARRIED OUT BY THE PACKAGE 1 CONTRACTOR.

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

Fig. 4.9  
**CONTRACT PACKAGES OF JATIBARANG MULTIPURPOSE DAM CONSTRUCTION**



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

JAPAN INTERNATIONAL COOPERATION AGENCY

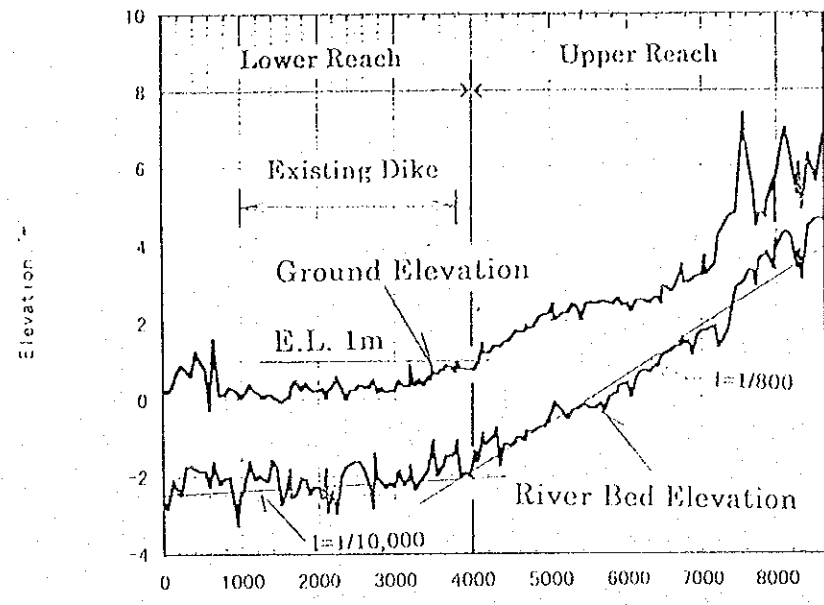
Fig. 5.1

**STUDY AREA FOR URBAN DRAINAGE SYSTEM IMPROVEMENT**

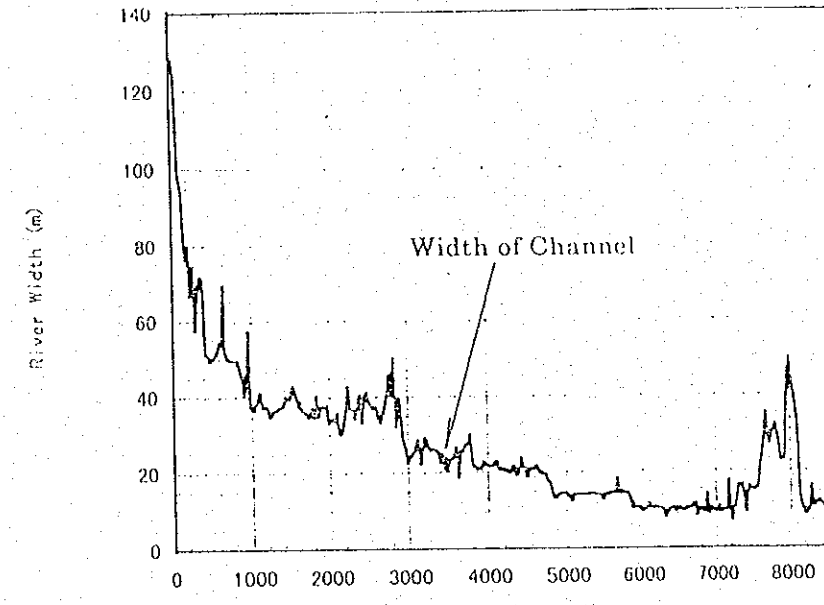




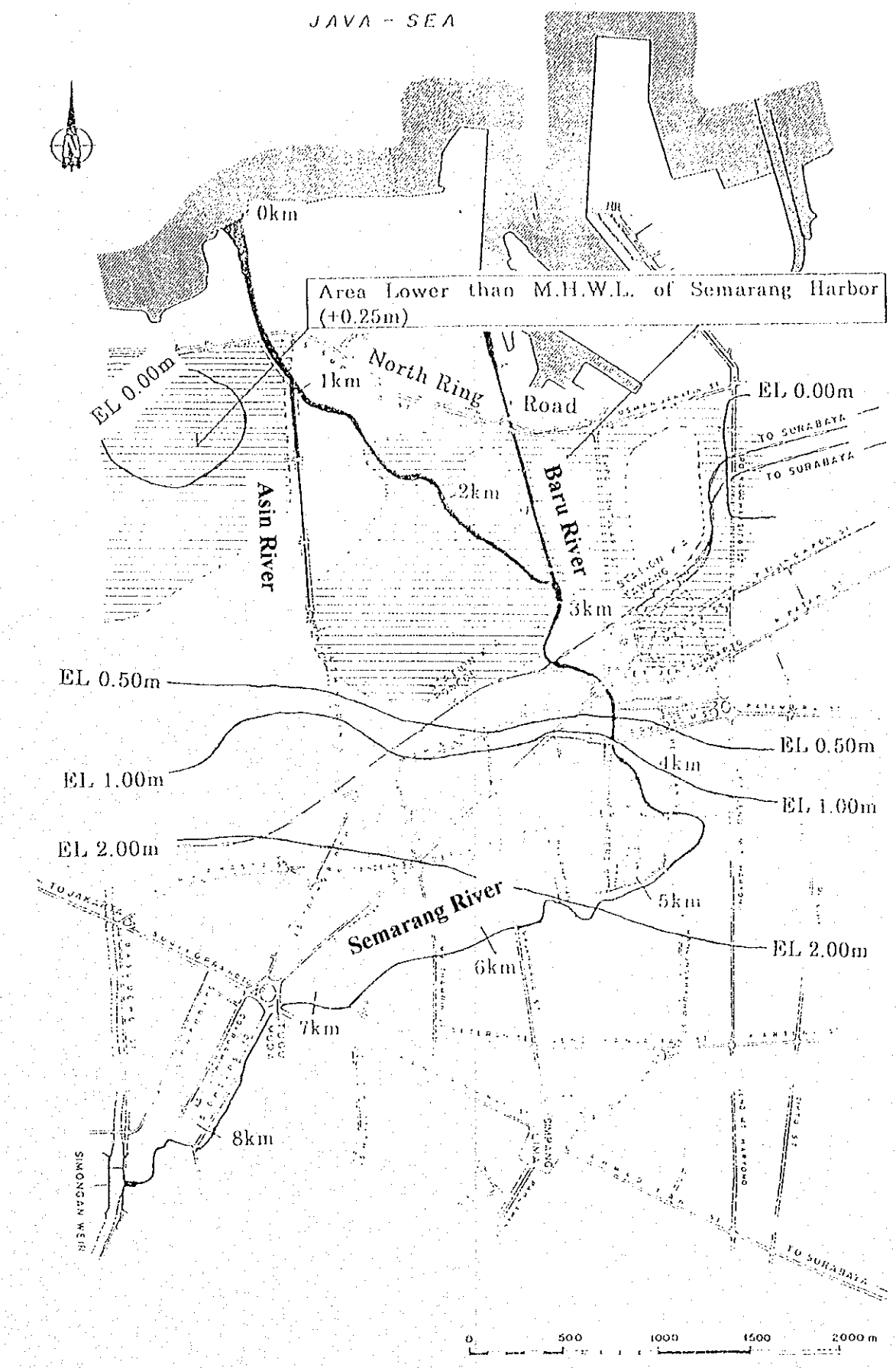
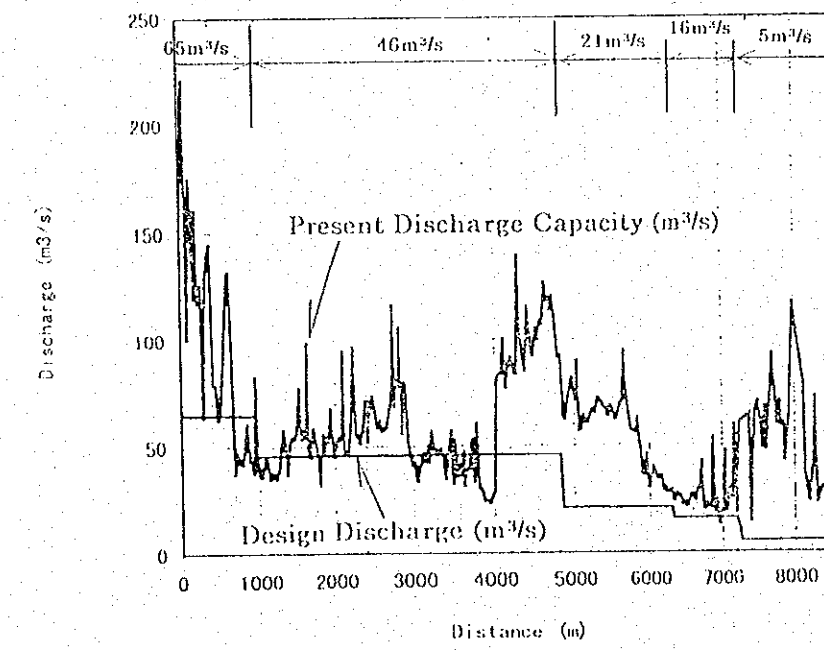
Ground Elevation and River Bed Elevation



Width

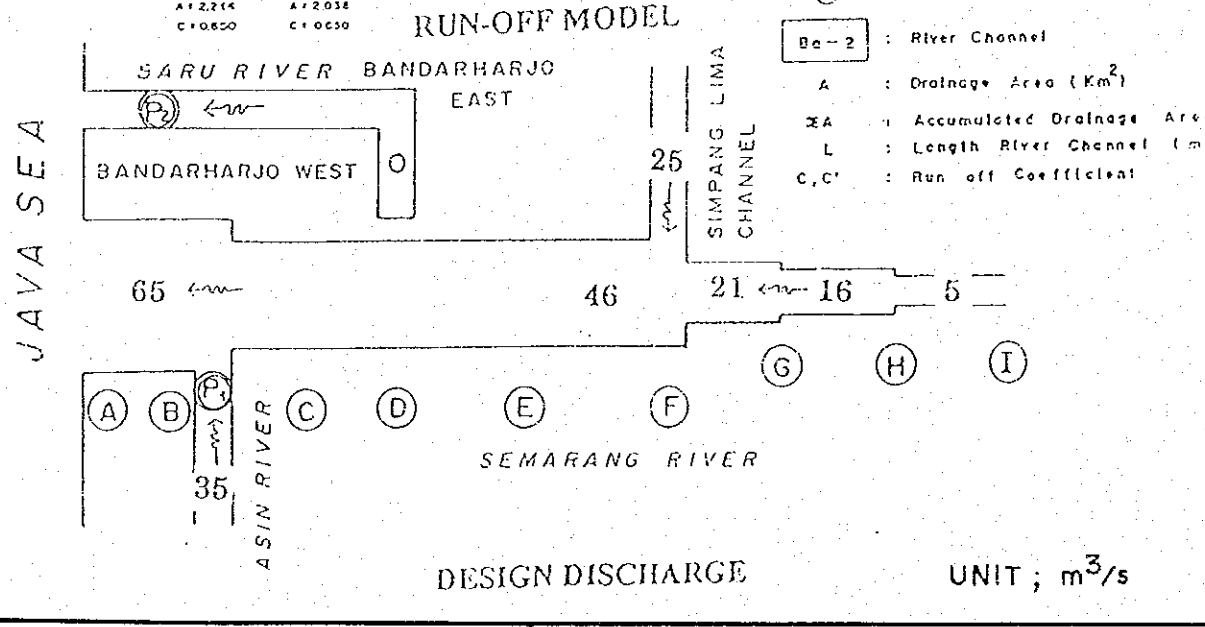
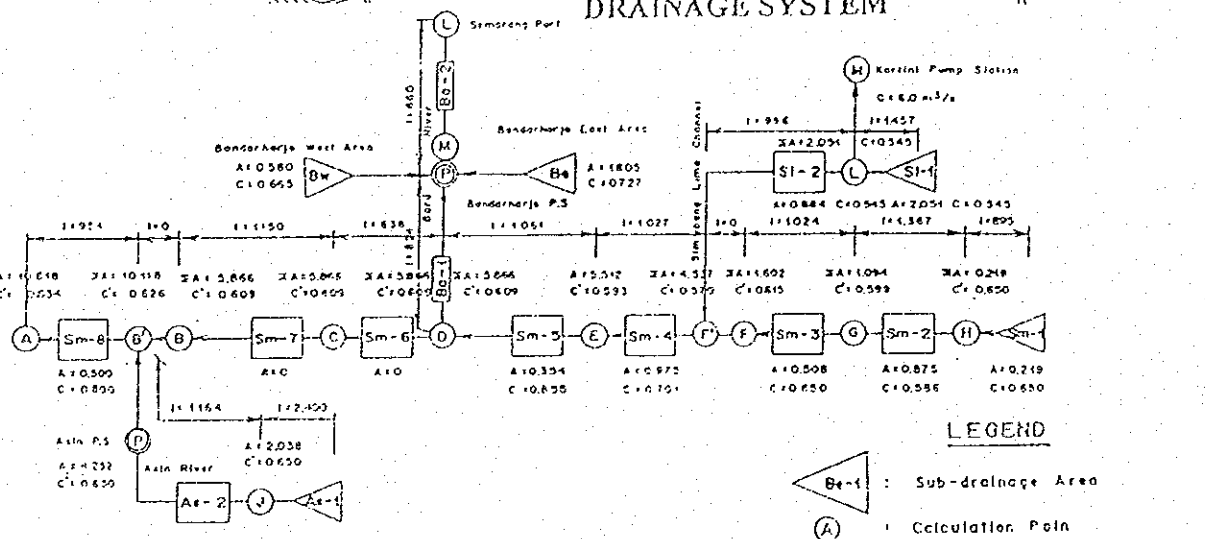
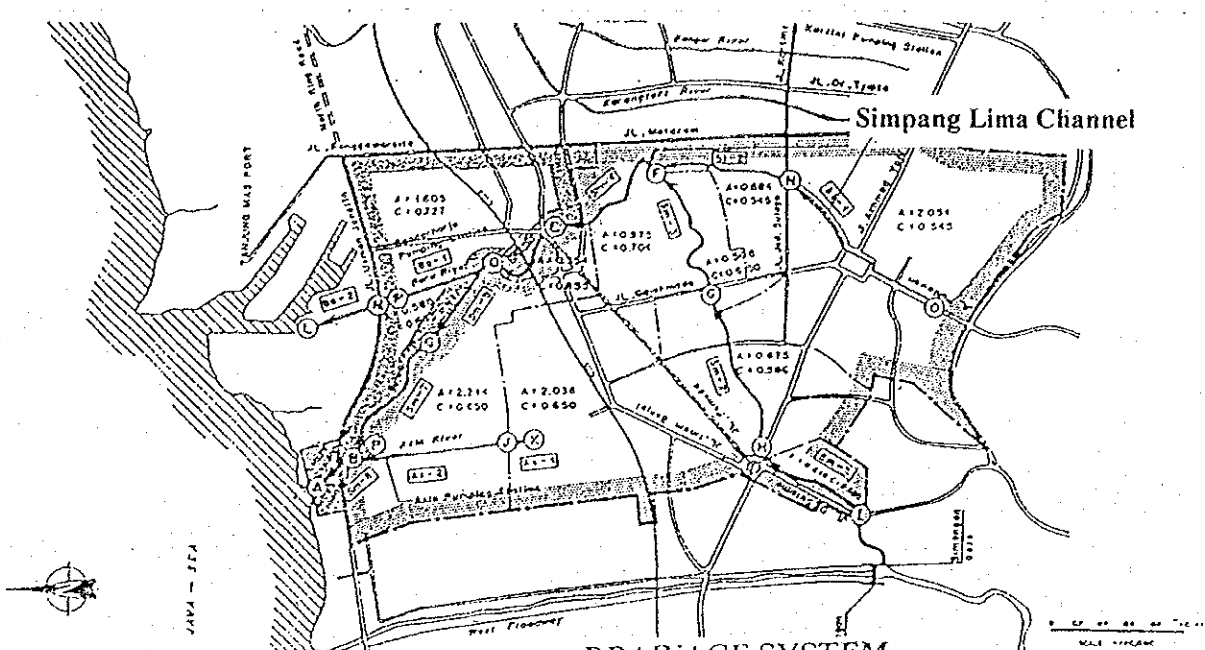


Discharge Capacity



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

Fig. 5.2  
FEATURES OF SEMARANG RIVER AND TOPOGRAPHY OF THE AREA



- LEGEND**
- Ba-1 : Sub-drainage Area
  - A : Calculation Point
  - Ba-2 : River Channel
  - A : Drainage Area ( $Km^2$ )
  - ΣA : Accumulated Drainage Area
  - L : Length River Channel (m)
  - C, C' : Run off Coefficient

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

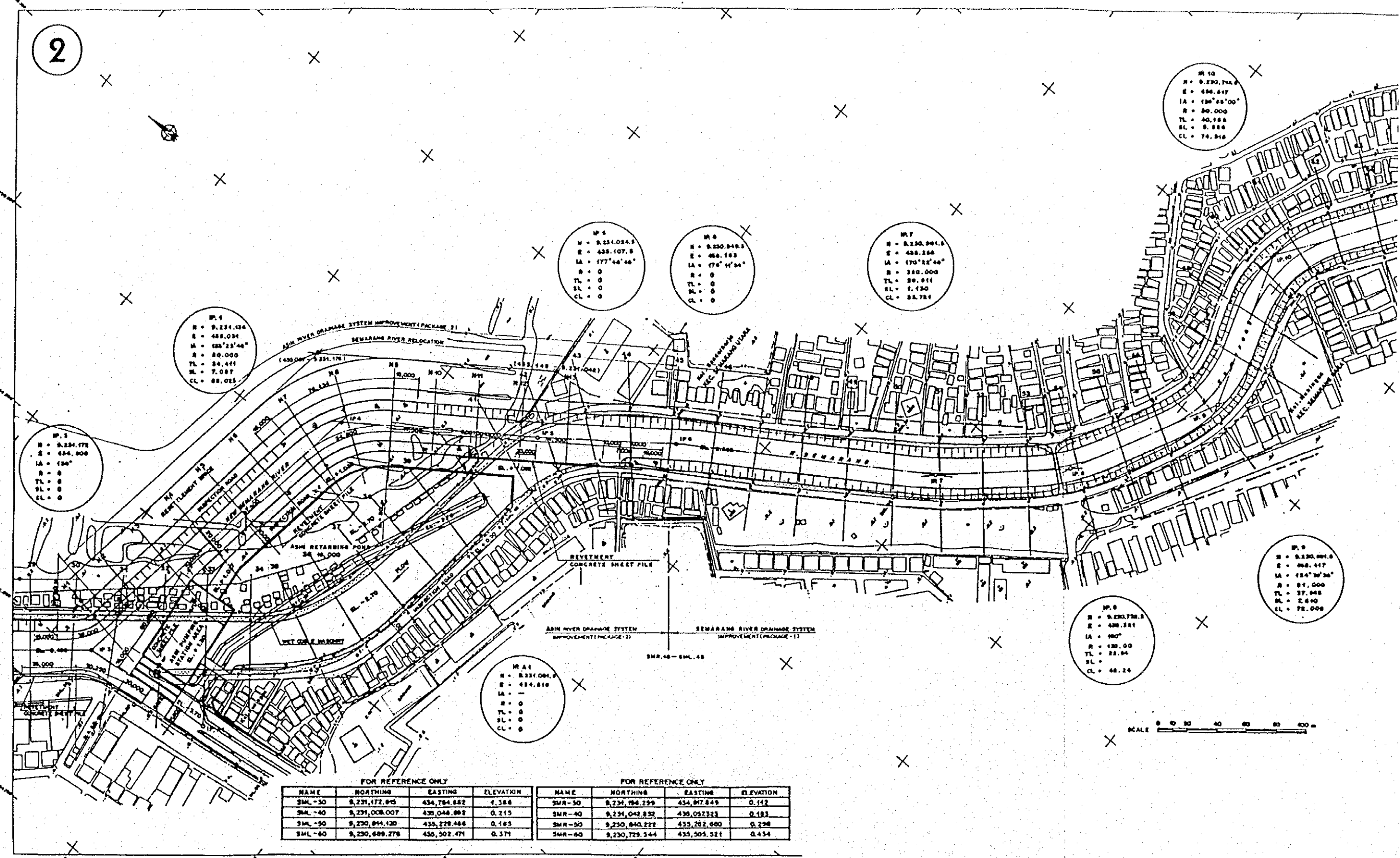
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.3  
**DESIGN DISCHARGE OF SEMARANG RIVER**





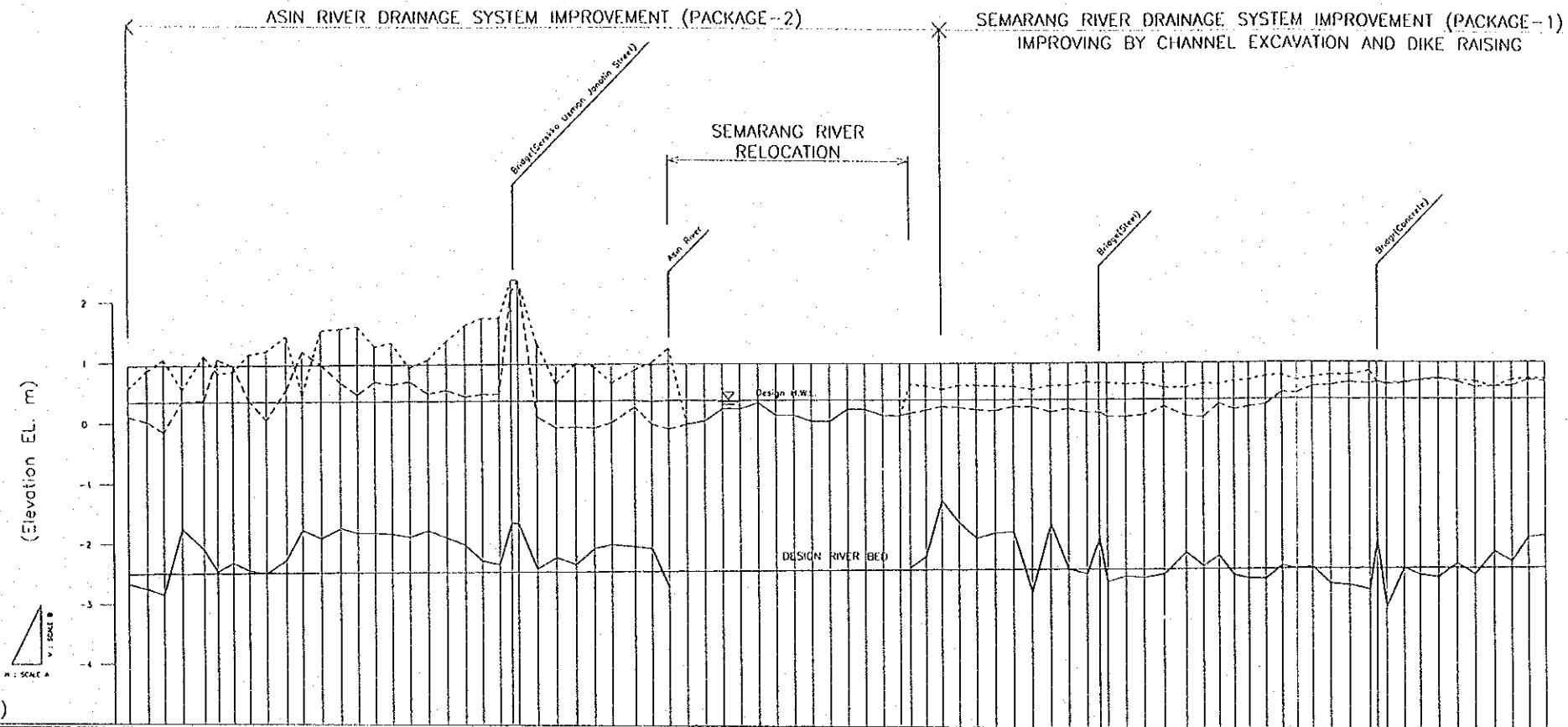
2



FOR REFERENCE ONLY				FOR REFERENCE ONLY			
NAME	NORTHING	EASTING	ELEVATION	NAME	NORTHING	EASTING	ELEVATION
SMR-30	9,231,172.693	434,784.882	0.388	SMR-50	9,234,194.299	434,817.849	0.142
SMR-40	9,231,008.007	435,046.889	0.215	SMR-40	9,234,049.832	435,057.323	0.183
SMR-50	9,230,844.120	435,228.486	0.165	SMR-50	9,230,840.272	435,282.680	0.298
SMR-60	9,230,689.278	435,502.471	0.371	SMR-60	9,230,729.144	435,505.521	0.454

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

Fig. 5.4  
 SEMARANG RIVER PLAN



GRADIENT OF DESIGN RIVER BED		1:10,000	
DESIGN ELEVATION (EL. m)	DIKE CROWN	0.950	1.146
	HIGH WATER LEVEL (H.W.L.)	0.350	0.546
	RIVER BED	-2.500	-2.260
EXISTING ELEVATION (EL. m)	RIGHT BANK	0.580	0.830
	LEFT BANK	0.110	0.870
	LOWEST RIVER BED	-2.570	-1.720
DISTANCE (m)	ACCUMULATED	0.000	2400.97
	PARTIAL	31.846	28.215
STATION NO. (SMR-)		0	79

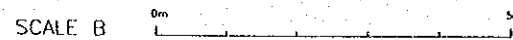
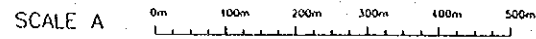
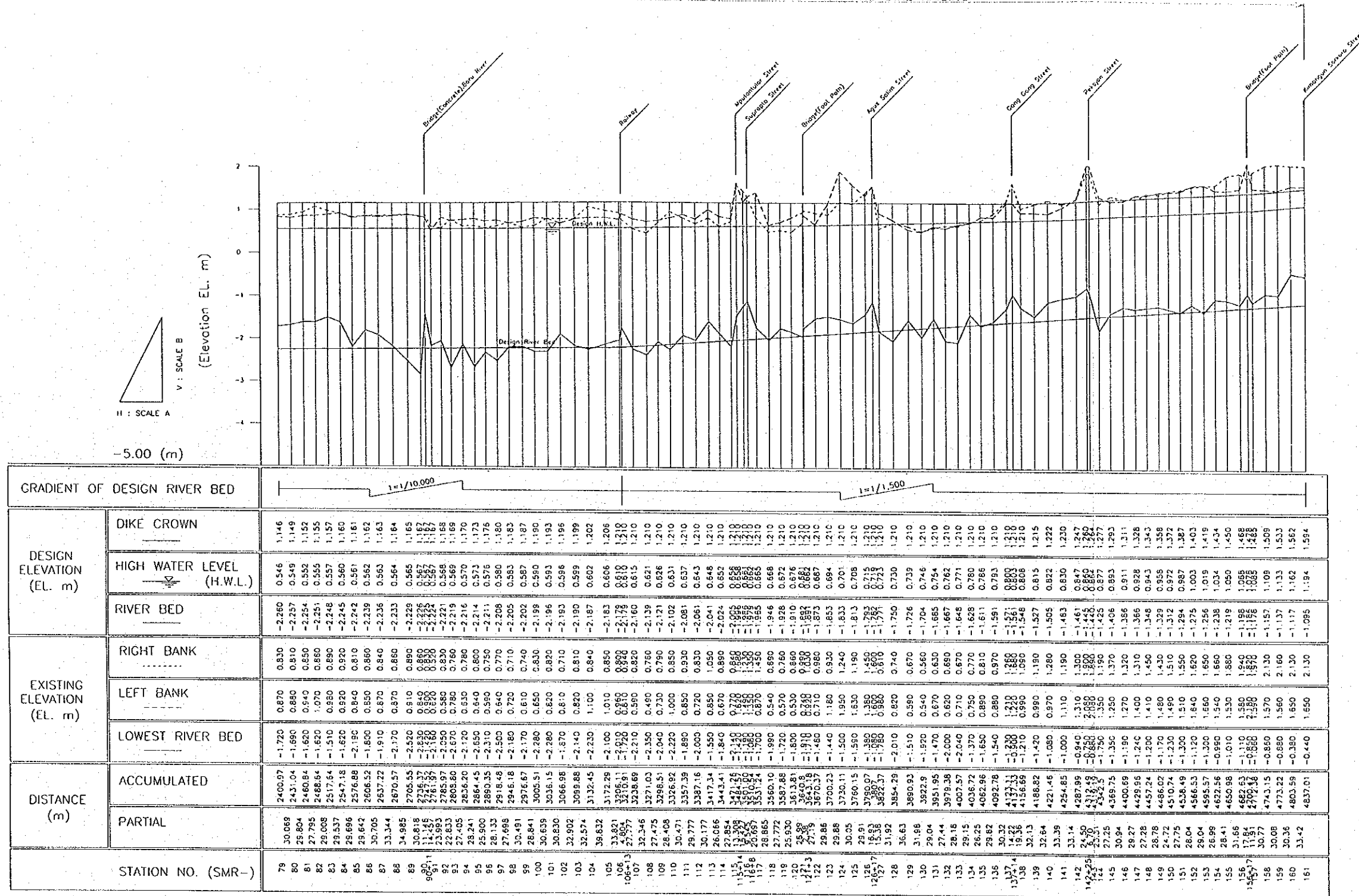
SCALE A 0m 100m 200m 300m 400m 500m

SCALE B 0m 5m

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

Fig. 5.5 (1/3)  
SEMARANG RIVER LONGITUDINAL PROFILE (1/3)

IMPROVING BY CHANNEL EXCAVATION AND DIKE RAISING

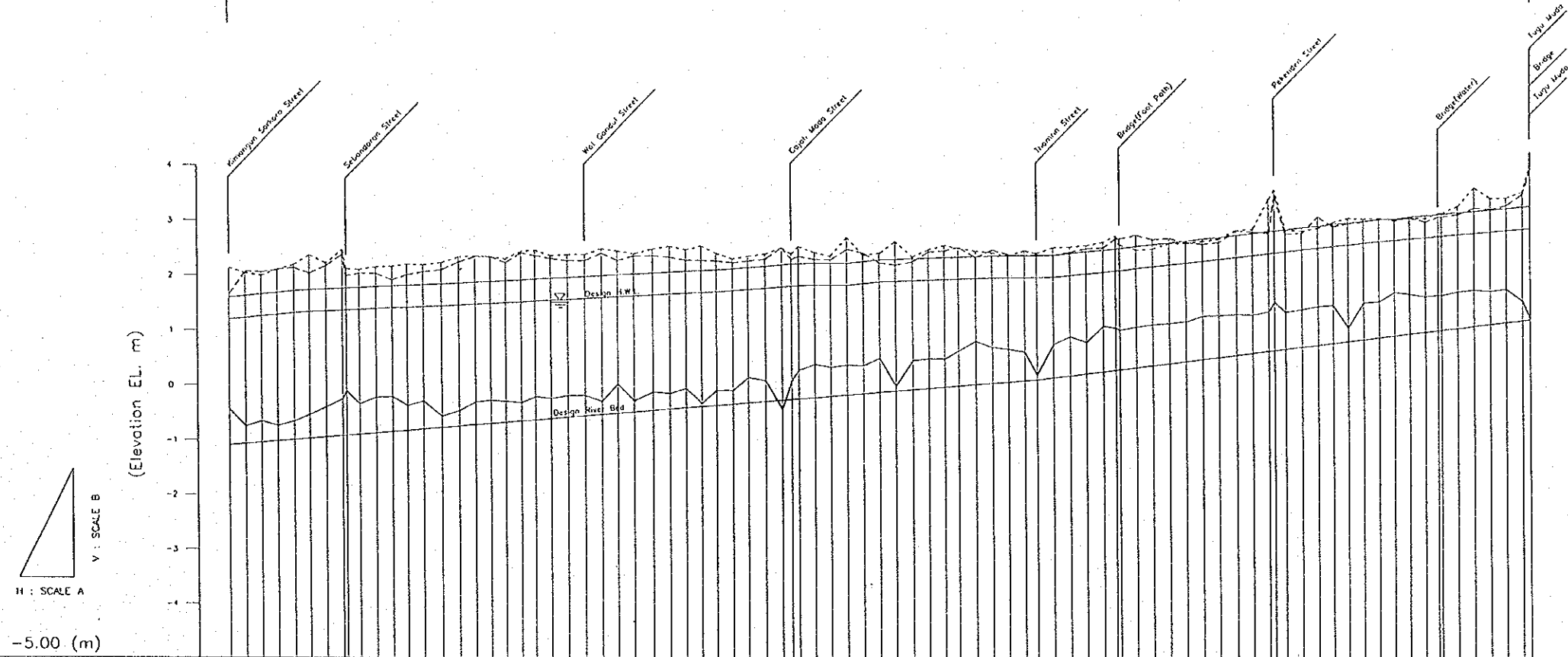


THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA  
JAPAN INTERNATIONAL COOPERATION AGENCY

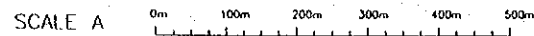
Fig. 5.5 (2/3)  
SEMARANG RIVER LONGITUDINAL PROFILE (2/3)



IMPROVEMENT BY CHANNEL EXCAVATION AND DIKE RAISING

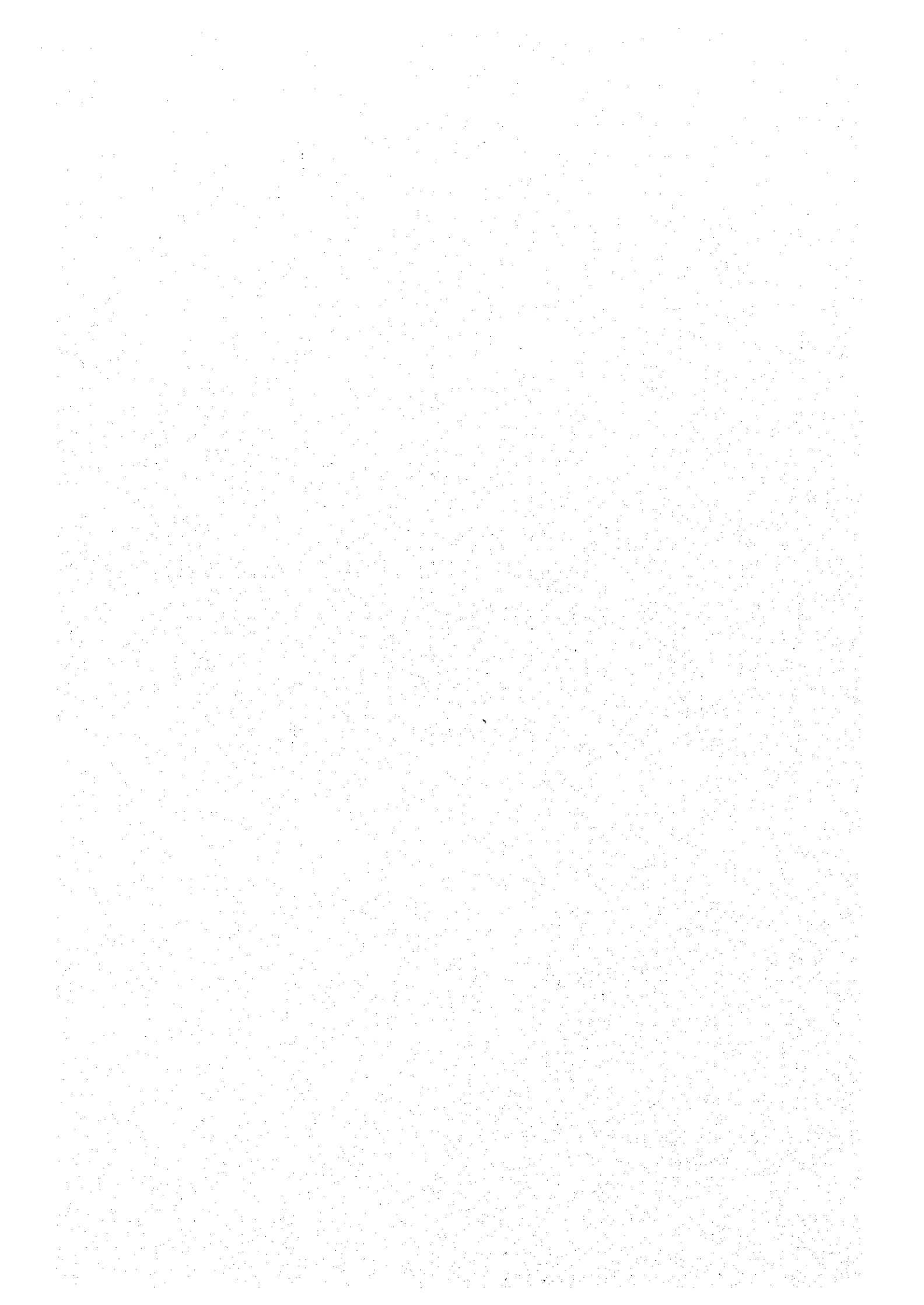


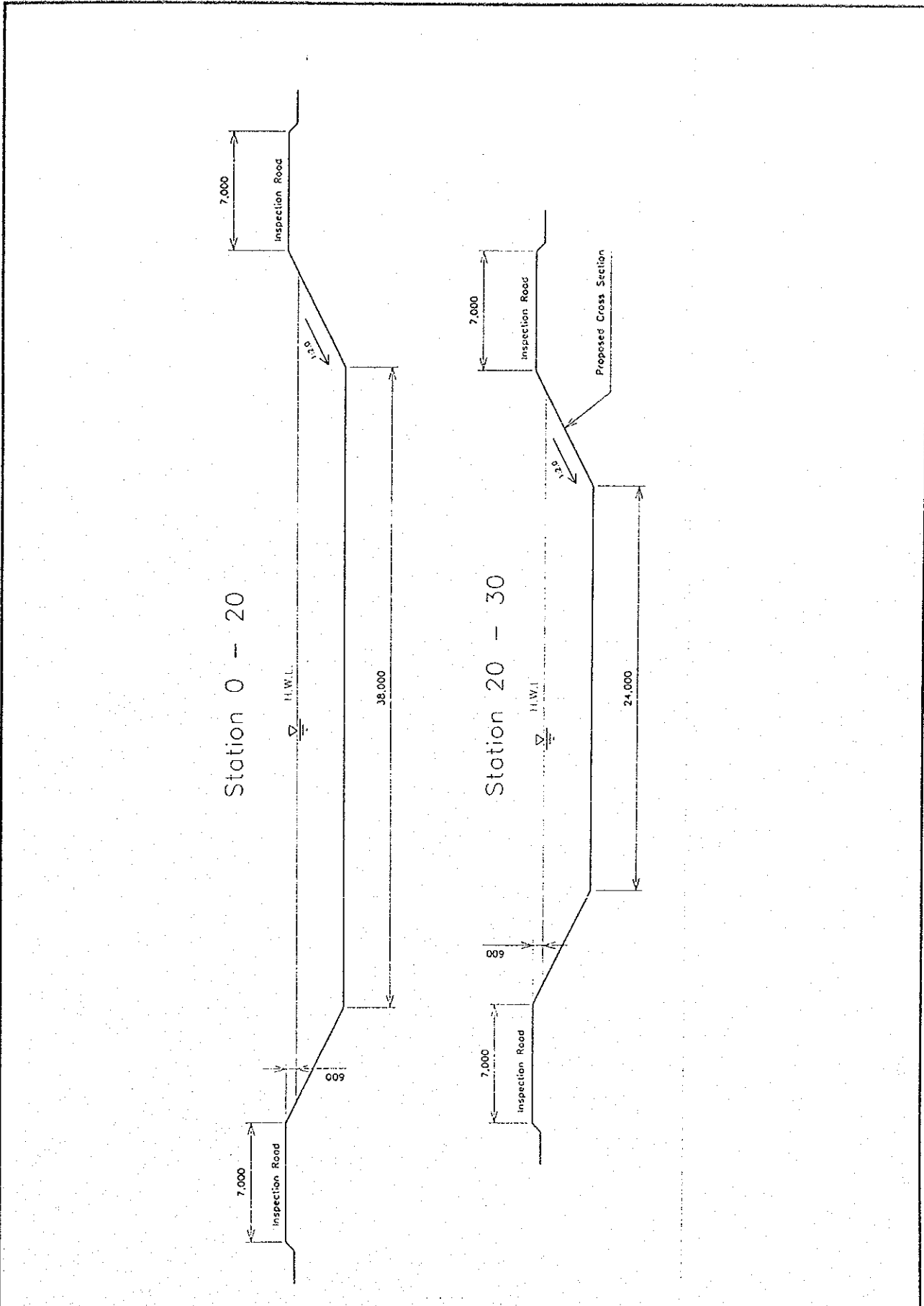
GRADIENT OF DESIGN RIVER BED		1=1/1,200		1=1/800	
DESIGN ELEVATION (EL. m)	DIKE CROWN	1.994	1.623	1.994	1.623
	HIGH WATER LEVEL (H.W.L.)	1.184	1.223	1.184	1.223
	RIVER BED	-1.095	-1.020	-1.095	-1.020
EXISTING ELEVATION (EL. m)	RIGHT BANK	2.130	2.040	2.130	2.040
	LEFT BANK	1.650	2.070	1.650	2.070
	LOWEST RIVER BED	-0.440	-0.750	-0.440	-0.750
DISTANCE (m)	ACCUMULATED	4837.01	4867.3	4837.01	4867.3
	PARTIAL	30.29	29.41	30.29	29.41
STATION NO. (SMR--)		161	162	161	162



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

Fig. 5.5 (3/3)  
 SEMARANG RIVER LONGITUDINAL PROFILE (3/3)



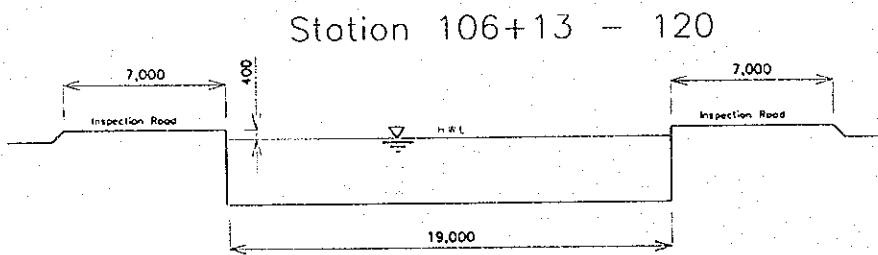
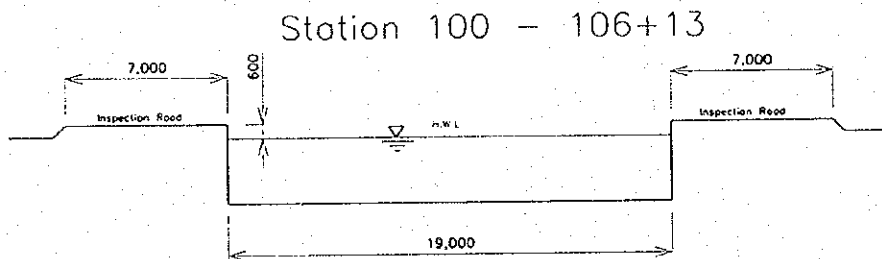
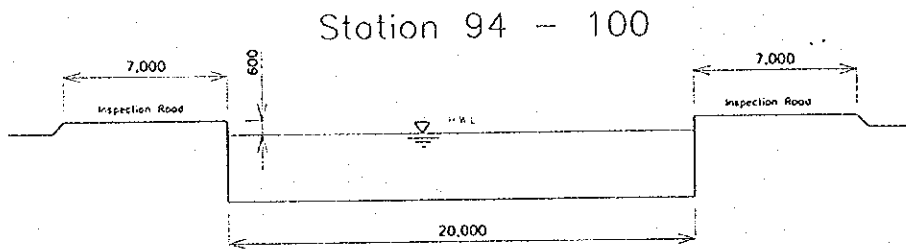


THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA.

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.6 (1/3)

SEMARANG RIVER DESIGN CROSS SECTION



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

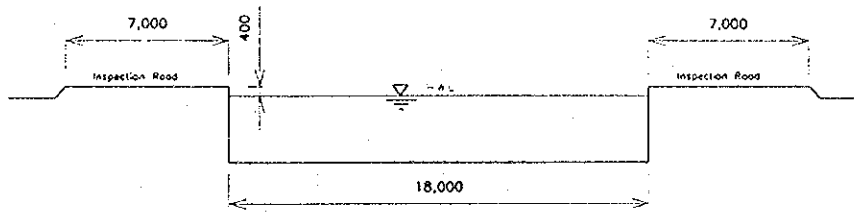
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.6 (2/3)

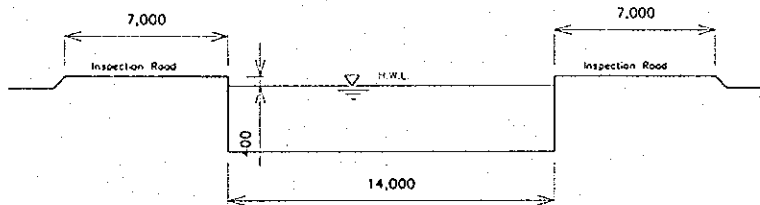
**SEMARANG RIVER DESIGN CROSS SECTION**



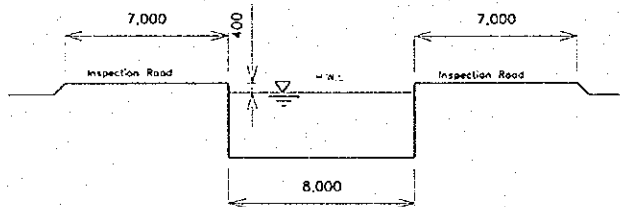
Station 120 - 137+14



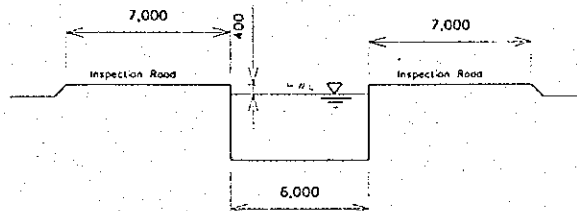
Station 137+14 - 161



Station 161 - 211



Station 211 - 241+13

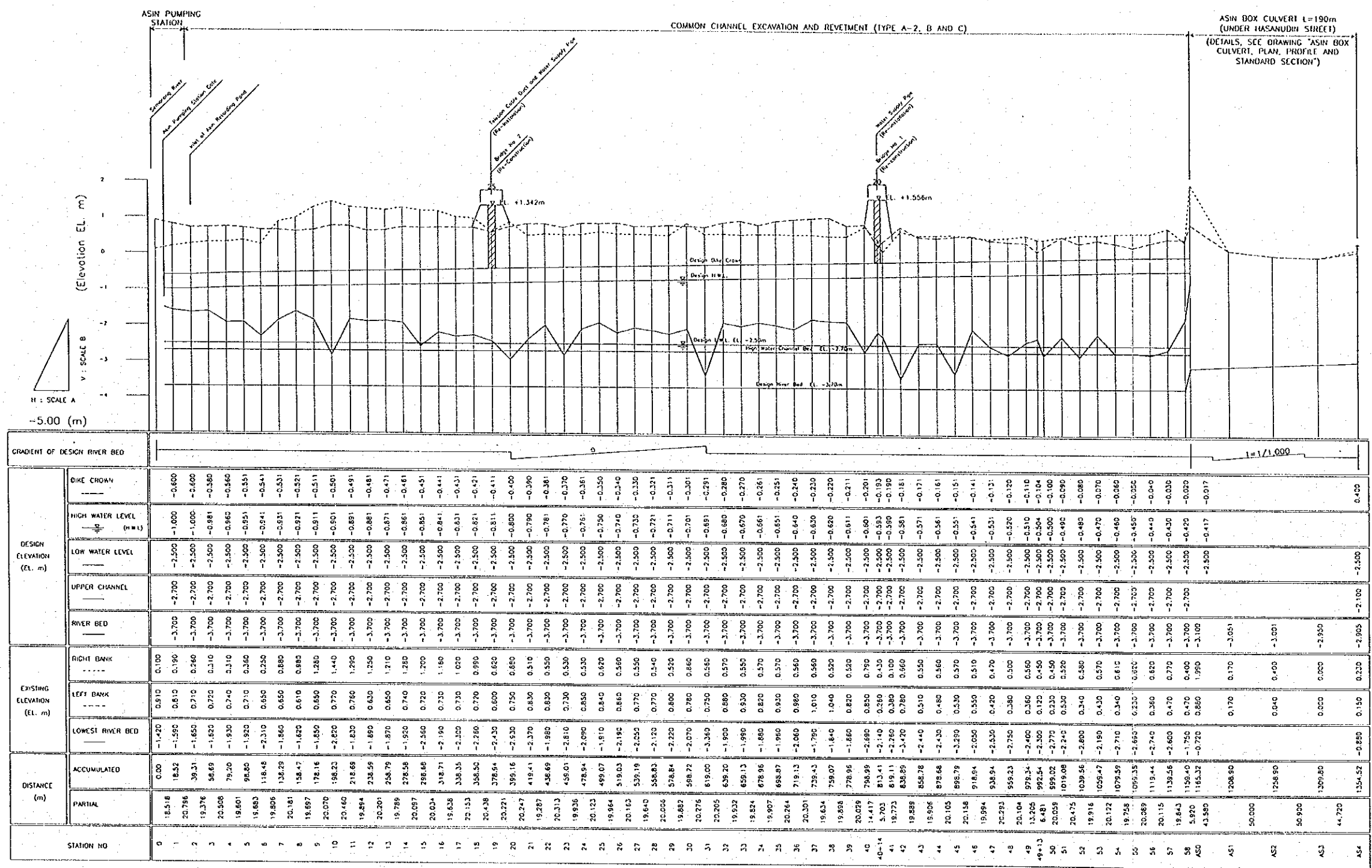


THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

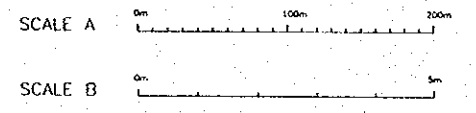
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.6 (3/3)

SEMARANG RIVER DESIGN CROSS SECTION

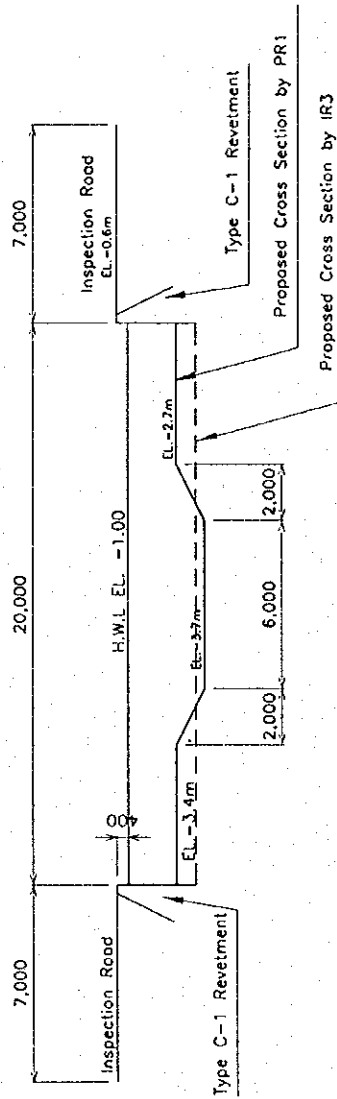


STATION NO	DISTANCE (m)		LOWEST RIVER BED (EL. m)	EXISTING ELEVATION (EL. m)		DESIGN ELEVATION (EL. m)				GRADIENT OF DESIGN RIVER BED	
	PARTIAL	ACCUMULATED		RIGHT BANK	LEFT BANK	RIVER BED	UPPER CHANNEL	LOW WATER LEVEL	HIGH WATER LEVEL	DIKE CROWN	GRADIENT
0		0.00	-1.420	0.910	0.100	-2.700	-2.700	-2.500	-1.000	-0.600	
1	18.518	18.52	-1.590	0.810	0.190	-2.700	-2.700	-2.500	-1.000	-0.600	
2	20.786	39.31	-1.650	0.710	0.280	-2.700	-2.700	-2.500	-1.000	-0.600	
3	19.376	58.69	-1.520	0.720	0.310	-2.700	-2.700	-2.500	-0.981	-0.580	
4	20.500	79.20	-1.930	0.740	0.310	-2.700	-2.700	-2.500	-0.962	-0.560	
5	19.601	98.80	-1.920	0.710	0.360	-2.700	-2.700	-2.500	-0.951	-0.551	
6	19.660	118.48	-2.310	0.650	0.250	-2.700	-2.700	-2.500	-0.941	-0.541	
7	19.806	138.29	-1.860	0.650	0.880	-2.700	-2.700	-2.500	-0.931	-0.531	
8	20.181	158.47	-1.620	0.610	0.880	-2.700	-2.700	-2.500	-0.921	-0.521	
9	19.697	178.16	-2.820	0.650	1.280	-2.700	-2.700	-2.500	-0.911	-0.511	
10	20.070	198.23	-1.820	0.770	1.440	-2.700	-2.700	-2.500	-0.901	-0.501	
11	20.460	218.69	-1.820	0.760	1.290	-2.700	-2.700	-2.500	-0.891	-0.491	
12	19.894	238.59	-1.890	0.620	1.250	-2.700	-2.700	-2.500	-0.881	-0.481	
13	20.201	258.79	-1.870	0.650	1.210	-2.700	-2.700	-2.500	-0.871	-0.471	
14	19.789	278.58	-1.920	0.740	1.280	-2.700	-2.700	-2.500	-0.861	-0.461	
15	20.097	298.68	-2.560	0.720	1.200	-2.700	-2.700	-2.500	-0.851	-0.451	
16	20.004	318.71	-2.190	0.730	1.160	-2.700	-2.700	-2.500	-0.841	-0.441	
17	19.626	338.35	-2.320	0.730	1.020	-2.700	-2.700	-2.500	-0.831	-0.431	
18	20.438	358.50	-2.260	0.770	0.990	-2.700	-2.700	-2.500	-0.821	-0.421	
19	20.271	378.54	-2.430	0.600	0.620	-2.700	-2.700	-2.500	-0.811	-0.411	
20	19.267	398.16	-2.530	0.750	0.680	-2.700	-2.700	-2.500	-0.800	-0.400	
21	19.267	418.41	-2.370	0.830	0.510	-2.700	-2.700	-2.500	-0.790	-0.390	
22	20.313	438.69	-1.980	0.820	0.550	-2.700	-2.700	-2.500	-0.781	-0.381	
23	19.936	458.01	-2.810	0.730	0.530	-2.700	-2.700	-2.500	-0.770	-0.370	
24	20.123	478.54	-2.090	0.830	0.530	-2.700	-2.700	-2.500	-0.761	-0.361	
25	19.964	498.07	-1.810	0.840	0.620	-2.700	-2.700	-2.500	-0.750	-0.350	
26	20.163	518.03	-2.190	0.860	0.560	-2.700	-2.700	-2.500	-0.740	-0.340	
27	19.640	538.19	-2.050	0.770	0.550	-2.700	-2.700	-2.500	-0.730	-0.330	
28	20.006	558.83	-2.120	0.770	0.340	-2.700	-2.700	-2.500	-0.721	-0.321	
29	19.882	578.84	-2.220	0.800	0.520	-2.700	-2.700	-2.500	-0.711	-0.311	
30	20.276	598.22	-2.070	0.780	0.660	-2.700	-2.700	-2.500	-0.701	-0.301	
31	20.205	618.00	-3.360	0.750	0.560	-2.700	-2.700	-2.500	-0.691	-0.291	
32	19.632	638.20	-1.900	0.680	0.570	-2.700	-2.700	-2.500	-0.680	-0.280	
33	19.824	658.13	-1.980	0.930	0.550	-2.700	-2.700	-2.500	-0.670	-0.270	
34	19.907	678.96	-1.680	0.820	0.570	-2.700	-2.700	-2.500	-0.661	-0.261	
35	20.264	698.87	-1.960	0.930	0.570	-2.700	-2.700	-2.500	-0.651	-0.251	
36	20.301	719.13	-2.060	0.980	0.560	-2.700	-2.700	-2.500	-0.640	-0.240	
37	19.634	739.43	-1.790	1.010	0.560	-2.700	-2.700	-2.500	-0.630	-0.230	
38	19.898	759.07	-1.840	1.040	0.520	-2.700	-2.700	-2.500	-0.620	-0.220	
39	20.029	778.96	-1.660	0.820	0.520	-2.700	-2.700	-2.500	-0.611	-0.211	
40	14.417	798.99	-2.680	0.830	0.790	-2.700	-2.700	-2.500	-0.601	-0.201	
41	19.773	813.41	-2.140	0.260	0.430	-2.700	-2.700	-2.500	-0.593	-0.193	
42	19.773	833.89	-2.260	0.380	0.100	-2.700	-2.700	-2.500	-0.580	-0.180	
43	19.888	858.78	-3.470	0.780	0.960	-2.700	-2.700	-2.500	-0.581	-0.181	
44	20.105	878.68	-2.440	0.510	0.550	-2.700	-2.700	-2.500	-0.571	-0.171	
45	20.158	898.79	-2.430	0.480	0.560	-2.700	-2.700	-2.500	-0.561	-0.161	
46	19.994	918.84	-2.230	0.530	0.570	-2.700	-2.700	-2.500	-0.551	-0.151	
47	20.293	938.94	-2.050	0.550	0.510	-2.700	-2.700	-2.500	-0.541	-0.141	
48	20.104	959.23	-2.530	0.420	0.470	-2.700	-2.700	-2.500	-0.531	-0.131	
49	13.206	979.34	-2.750	0.380	0.500	-2.700	-2.700	-2.500	-0.520	-0.120	
50	19.924	999.54	-2.400	0.360	0.560	-2.700	-2.700	-2.500	-0.510	-0.110	
51	20.058	1019.08	-2.370	0.450	0.450	-2.700	-2.700	-2.500	-0.504	-0.104	
52	20.475	1039.56	-2.240	0.530	0.500	-2.700	-2.700	-2.500	-0.500	-0.100	
53	19.916	1059.47	-2.800	0.340	0.580	-2.700	-2.700	-2.500	-0.490	-0.090	
54	20.172	1079.59	-2.710	0.430	0.570	-2.700	-2.700	-2.500	-0.480	-0.080	
55	19.798	1099.35	-2.860	0.340	0.610	-2.700	-2.700	-2.500	-0.470	-0.070	
56	20.089	1119.44	-2.660	0.230	0.620	-2.700	-2.700	-2.500	-0.460	-0.060	
57	20.115	1139.56	-2.740	0.360	0.620	-2.700	-2.700	-2.500	-0.440	-0.040	
58	19.643	1159.40	-2.600	0.470	0.710	-2.700	-2.700	-2.500	-0.430	-0.030	
59	5.920	1179.40	-1.750	0.470	0.600	-2.700	-2.700	-2.500	-0.420	-0.020	
60	43.880	1163.32	-0.720	0.660	1.990	-2.700	-2.700	-2.500	-0.420	-0.020	
AS1	1208.90		-3.051	0.170	0.170	-2.700	-2.700	-2.500	-0.417	-0.017	
AS2	50.000		-3.001	0.400	0.400	-2.700	-2.700	-2.500	-0.410	-0.010	
AS3	50.900		-3.000	0.000	0.000	-2.700	-2.700	-2.500	-0.400	-0.000	
AS4	44.720		-2.905	0.150	0.150	-2.700	-2.700	-2.500	-0.390	-0.009	



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 Fig. 5.7  
 ASIN RIVER LONGITUDINAL PROFILE

Proposed Cross Section of Asin River

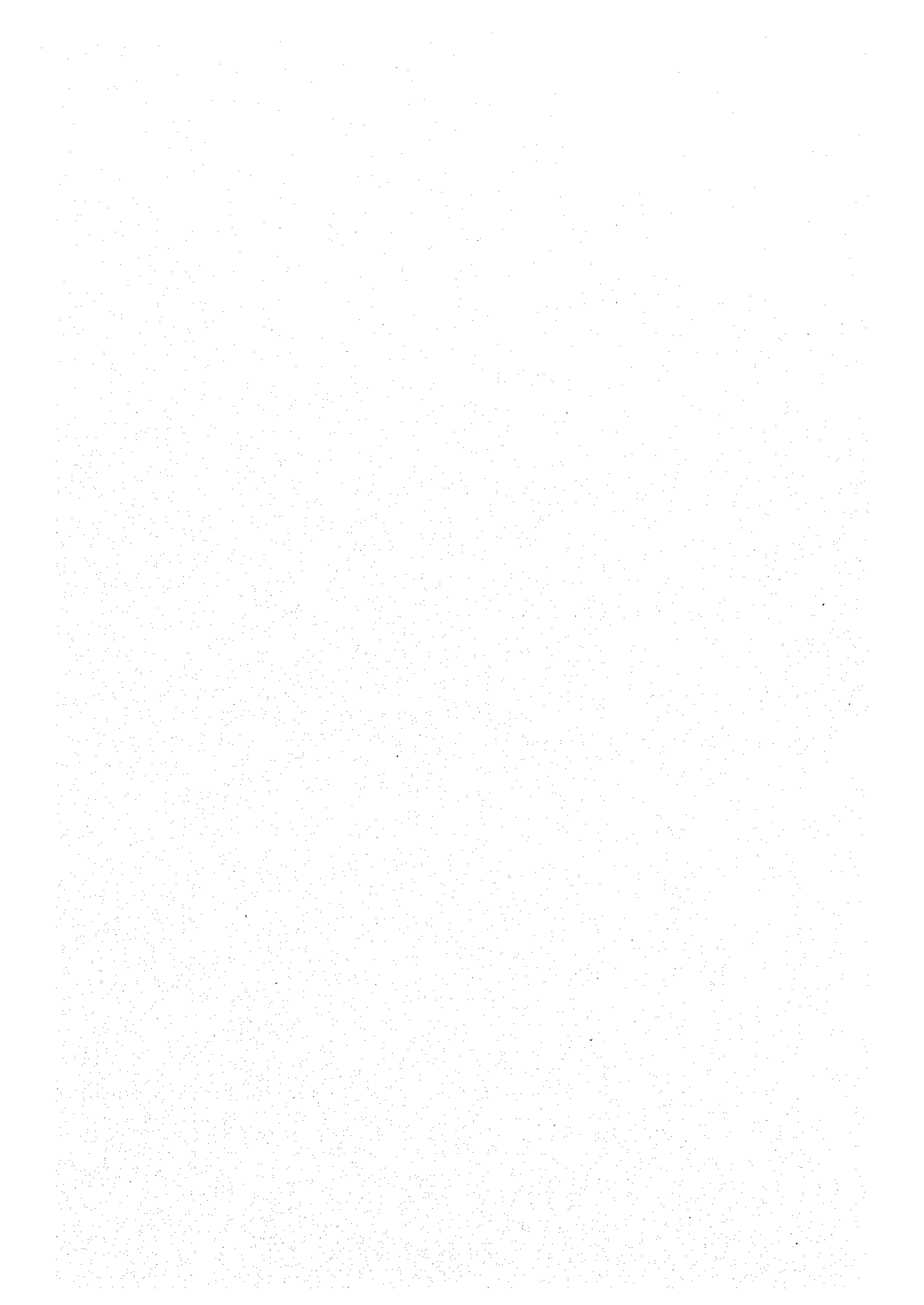


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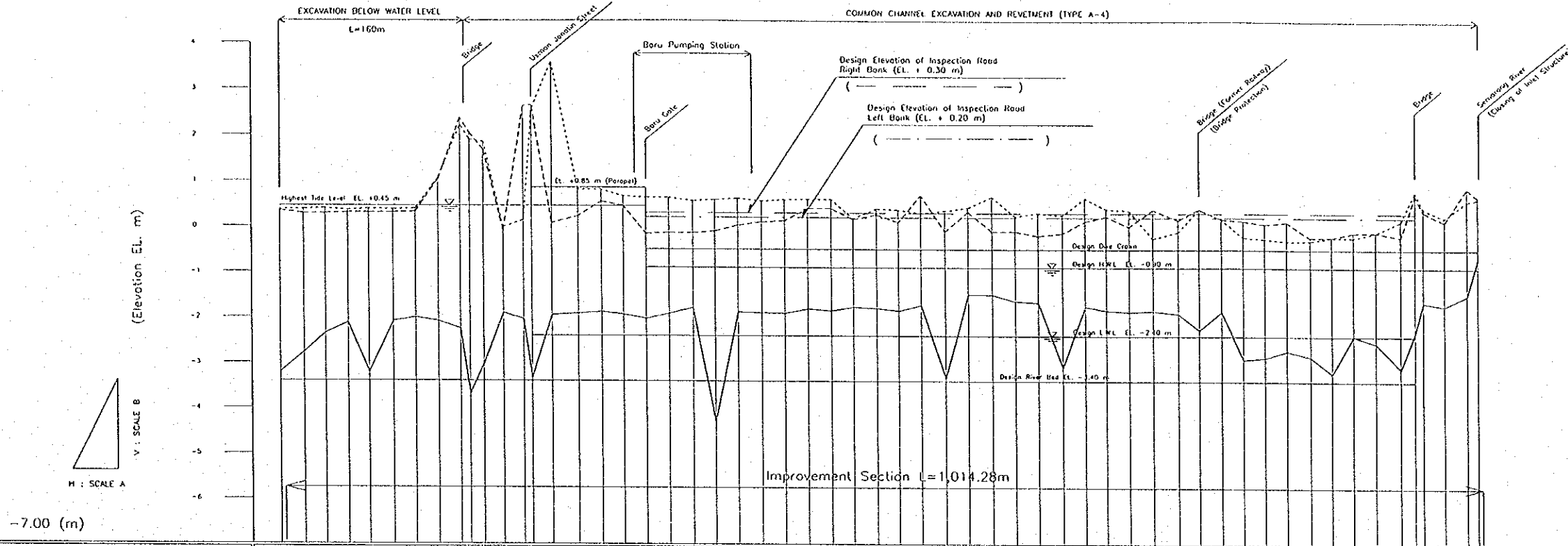
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.8

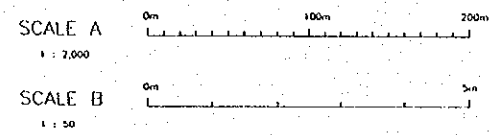
ASIN RIVER DESIGN CROSS SECTION





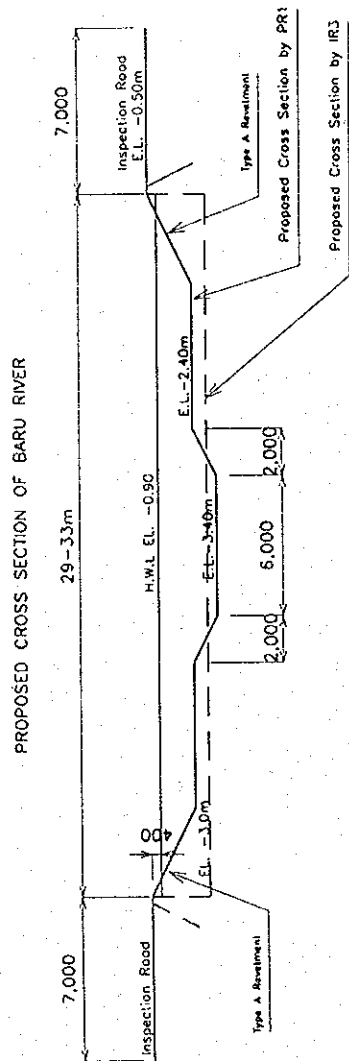


GRADIENT OF DESIGN RIVER BED			
DESIGN ELEVATION (EL. m)	DIKE CROWN		
	HIGH WATER LEVEL (H.W.L.)	0.450	-0.900
	LOW WATER LEVEL (L.W.L.)		
	HIGH WATER CHANNEL BED		
EXISTING ELEVATION (EL. m)	RIVER BED	-3.400	-3.400
	RIGHT BANK	0.370	0.370
	LEFT BANK	0.340	0.280
DISTANCE (m)	ACCUMULATED	0.00	20.79
	PARTIAL		
STATION NO. (BA-)		21	84EP



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA  
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Fig. 5.9  
 BARU RIVER LONGITUDINAL PROFILE



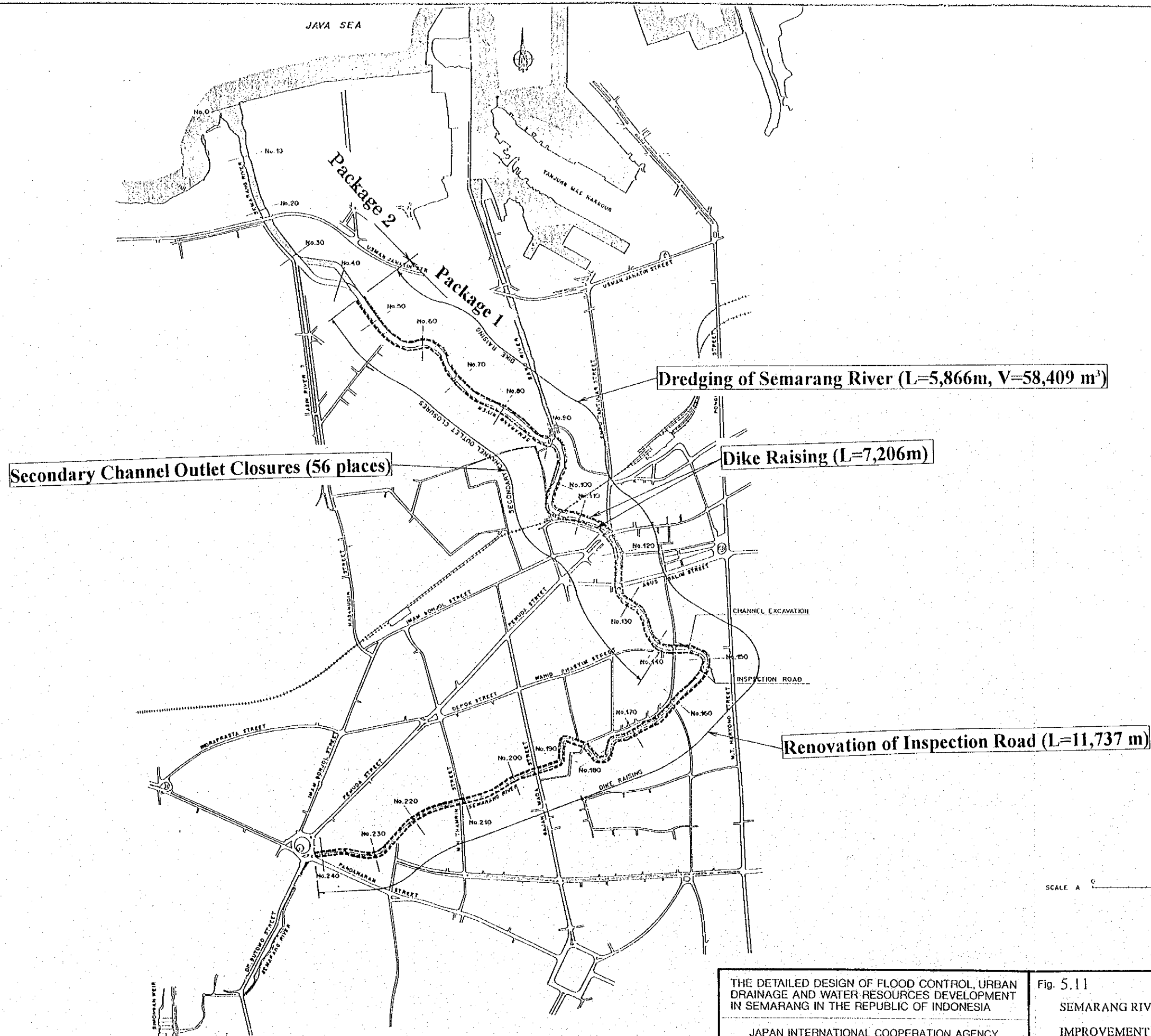
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

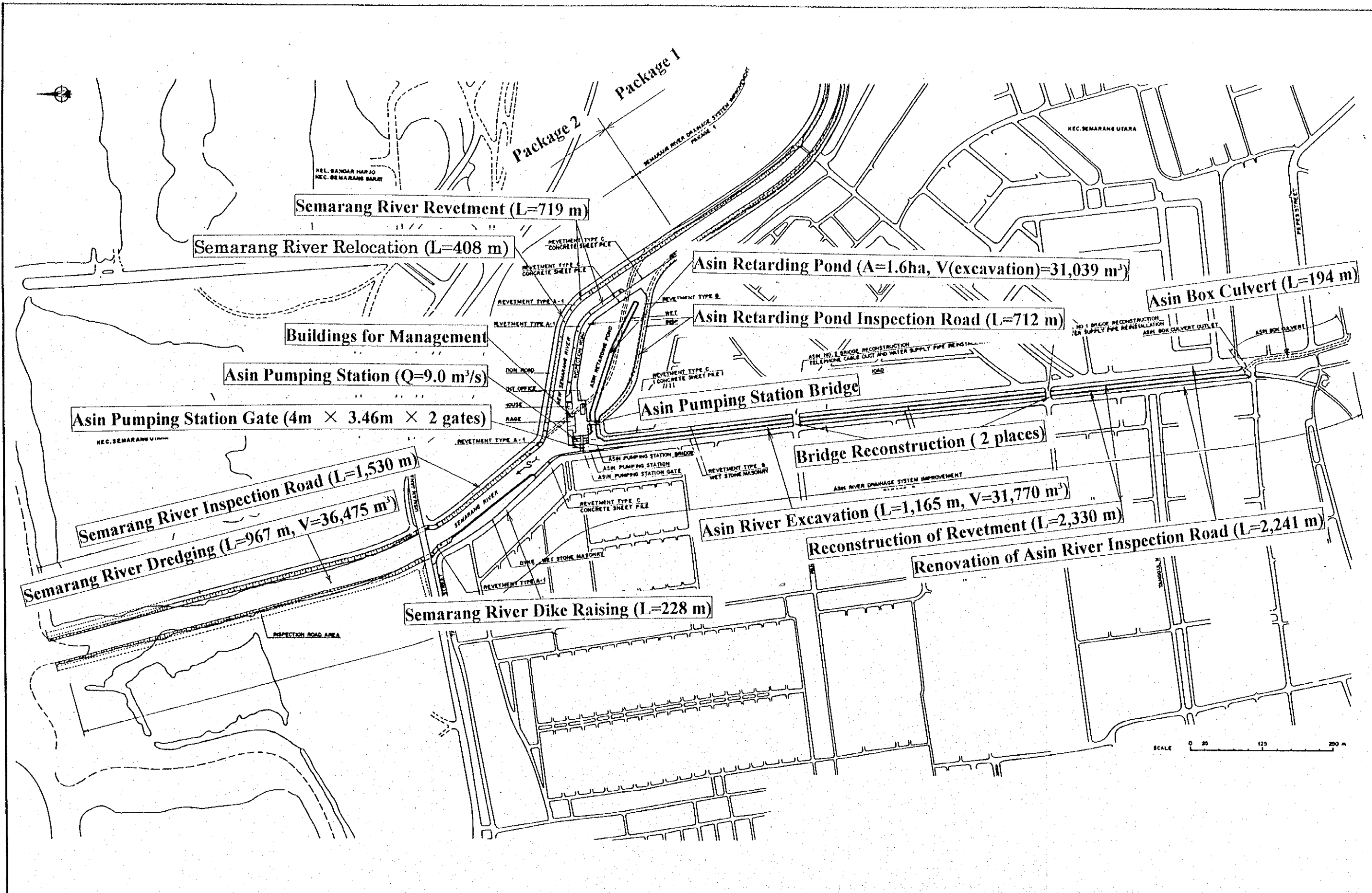
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Fig. 5.10

BARU RIVER DESIGN CROSS SECTION

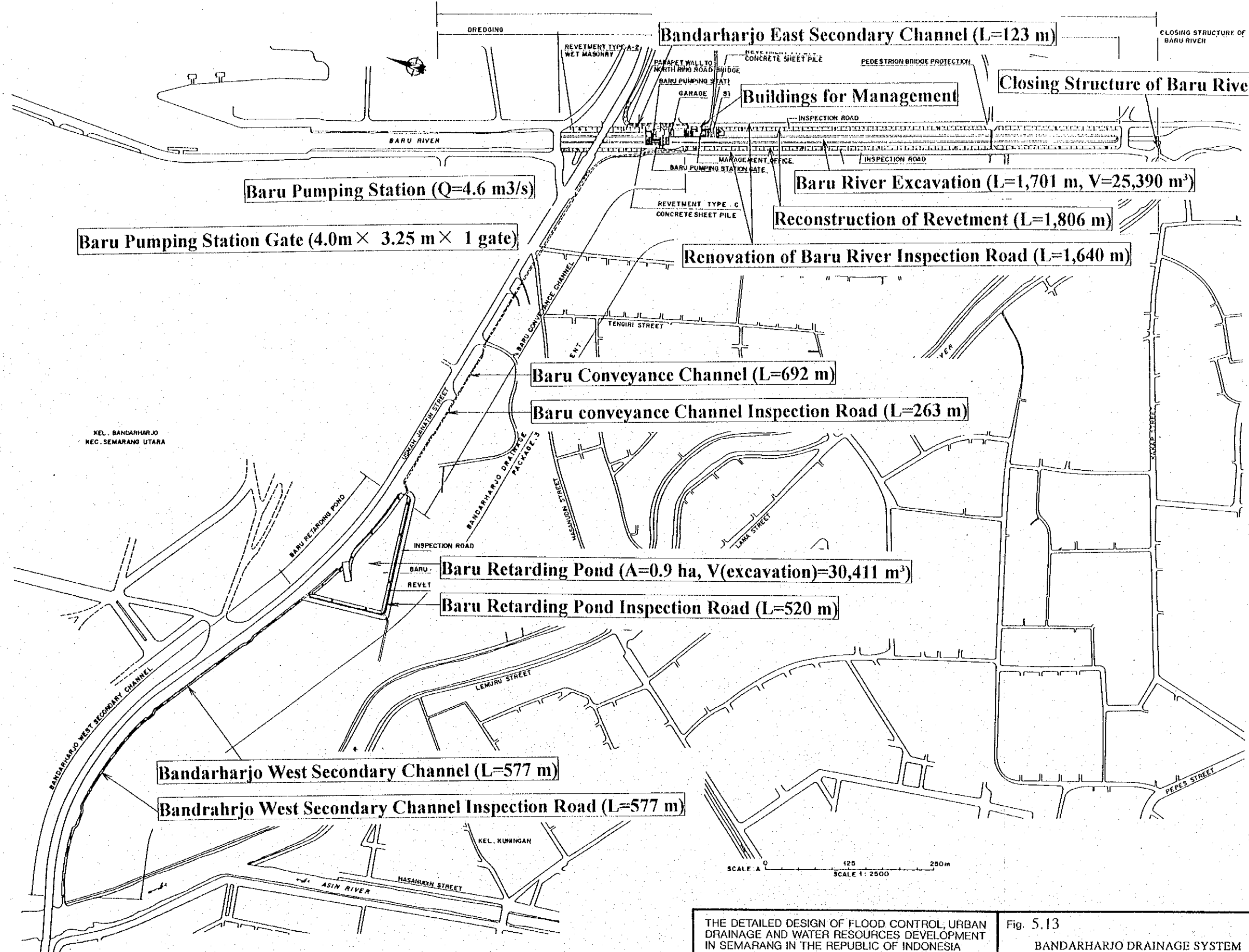






THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA  
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Fig. 5.12  
 ASIN RIVER DRAINAGE SYSTEM IMPROVEMENT  
 (PLAN OF WORKS FOR PACKAGE 2)



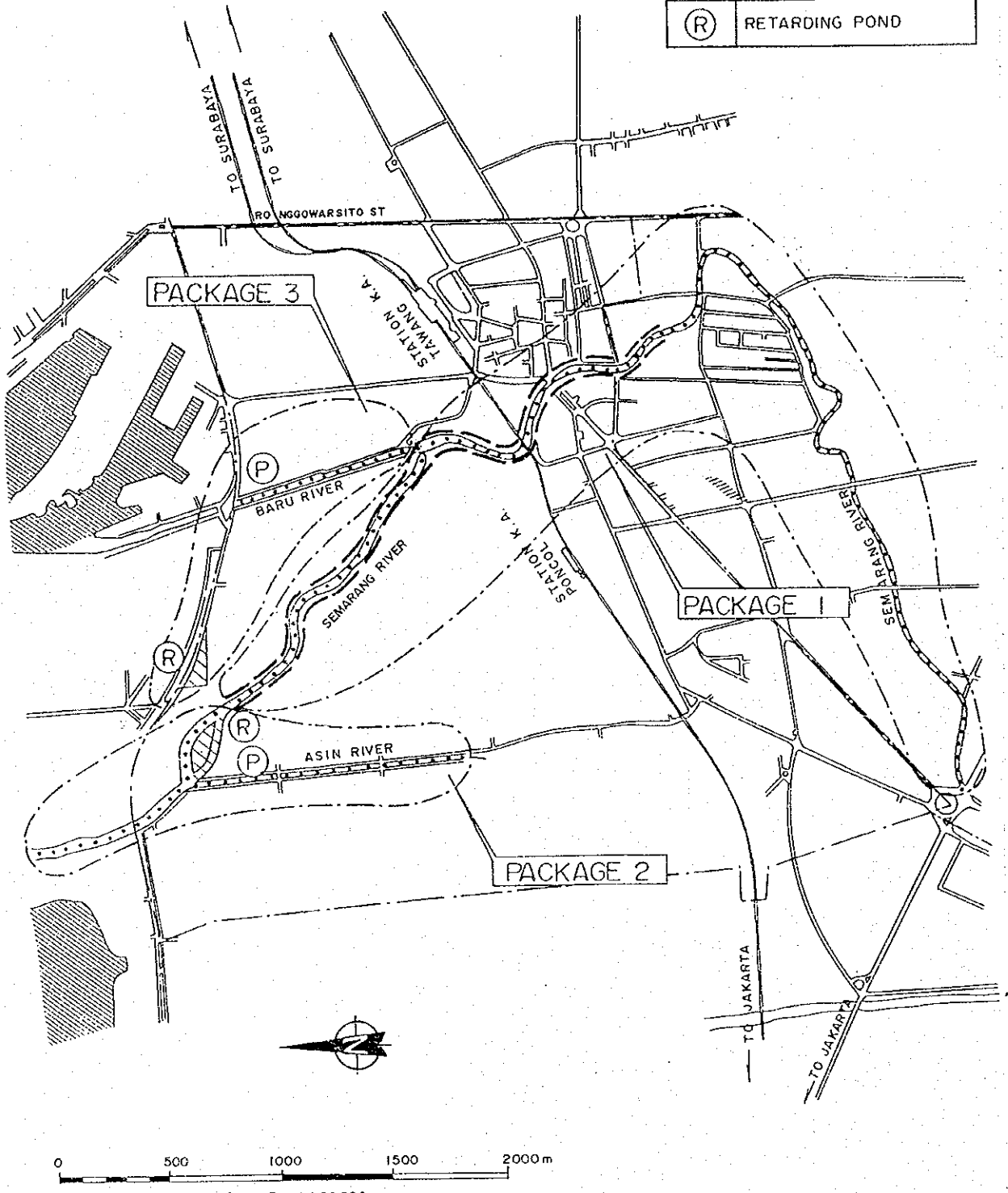
KEL. BANDARHARJO  
KEC. SEMARANG UTARA

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA  
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Fig. 5.13  
BANDARHARJO DRAINAGE SYSTEM  
IMPROVEMENT (PLAN OF WORKS FOR PACKAGE 3)

LEGEND

.....	DREDGING & EXCAVATION
==	DIKE RAISING
(P)	PUMPING STATION
(R)	RETARDING POND



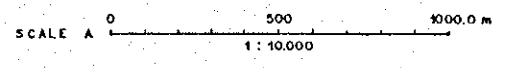
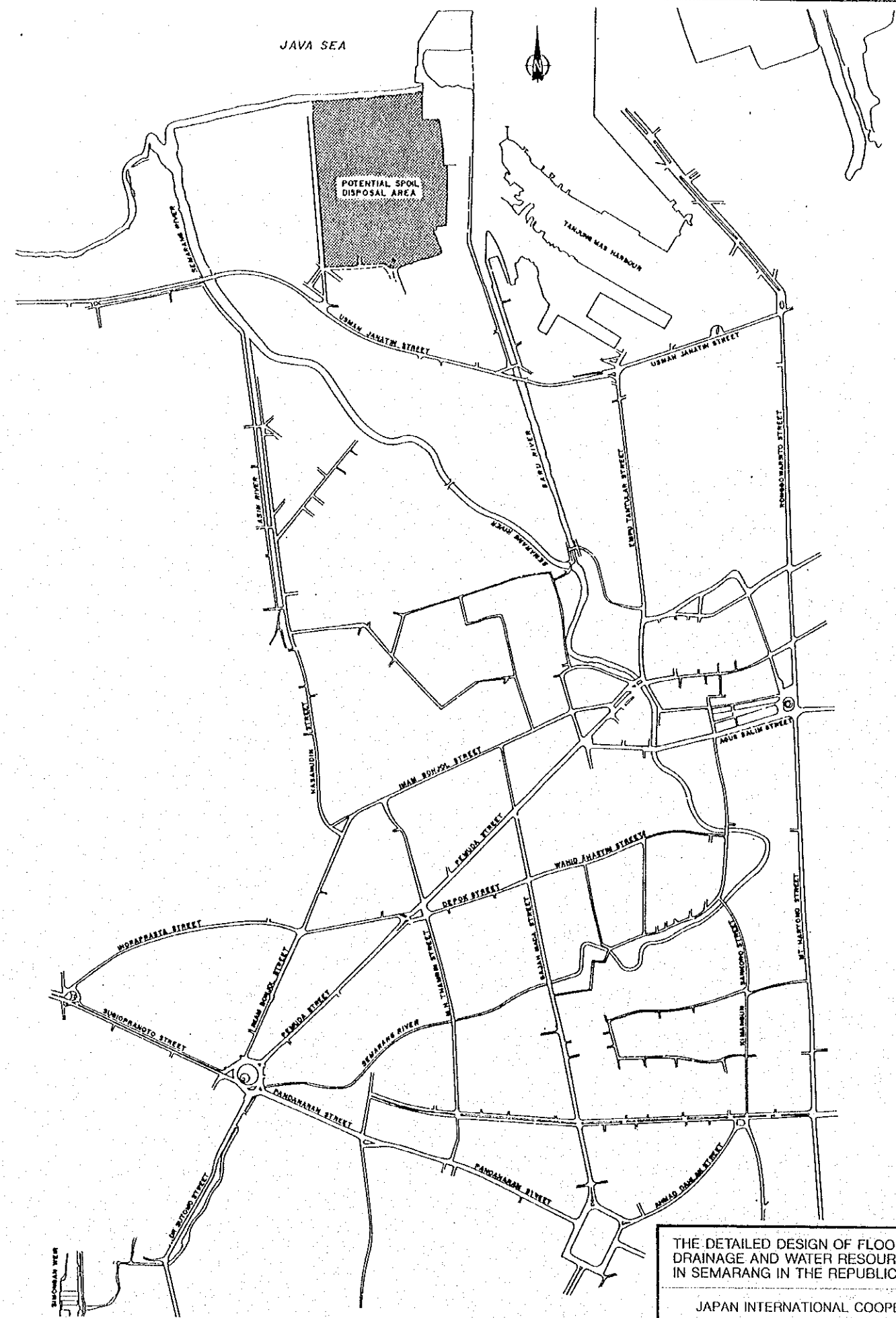
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Fig. 5.14  
CONTRACT PACKAGES OF SEMARANG RIVER, ASIN RIVER,  
AND BANDARHARJO DRAINAGE SYSTEM IMPROVEMENT

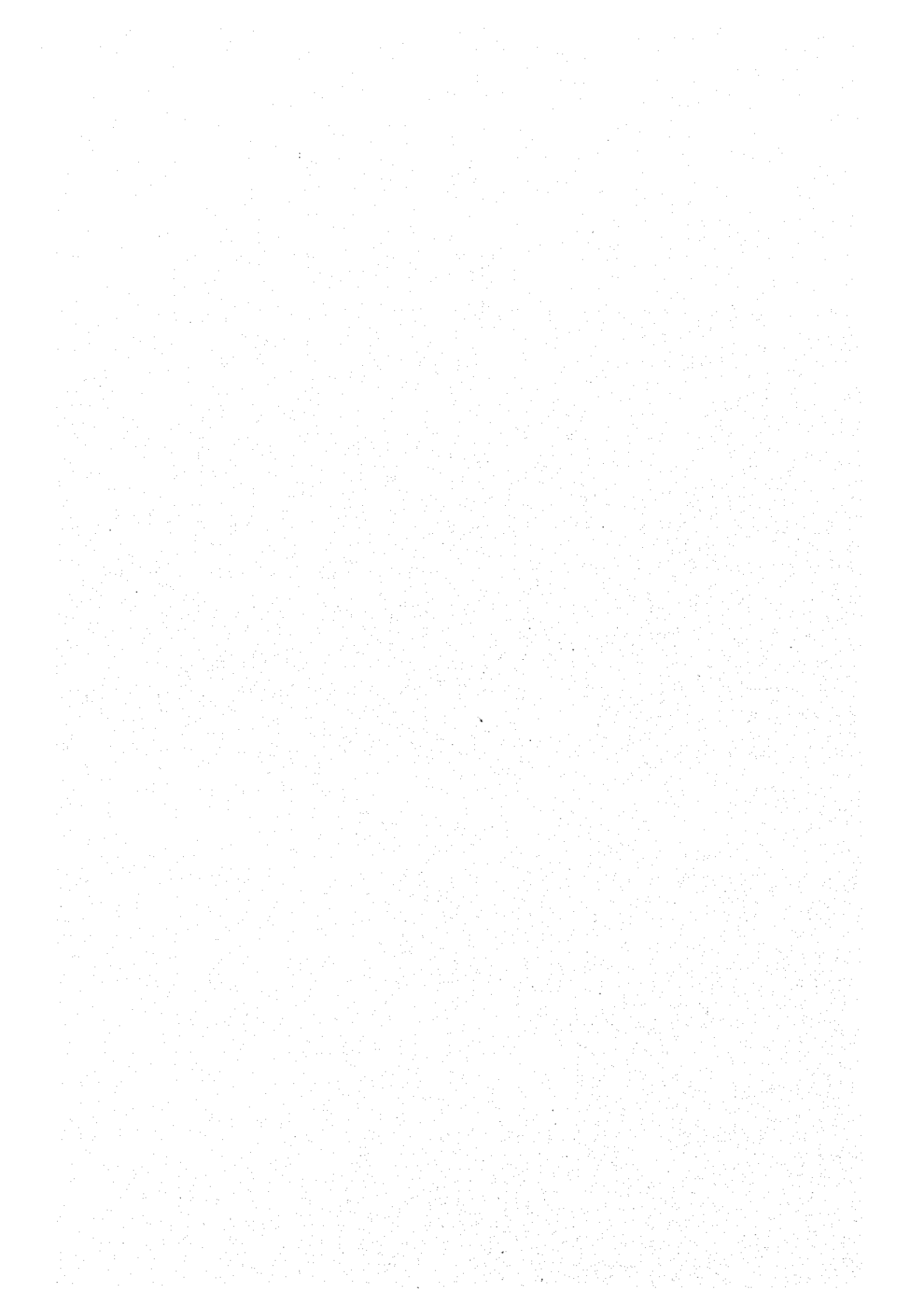


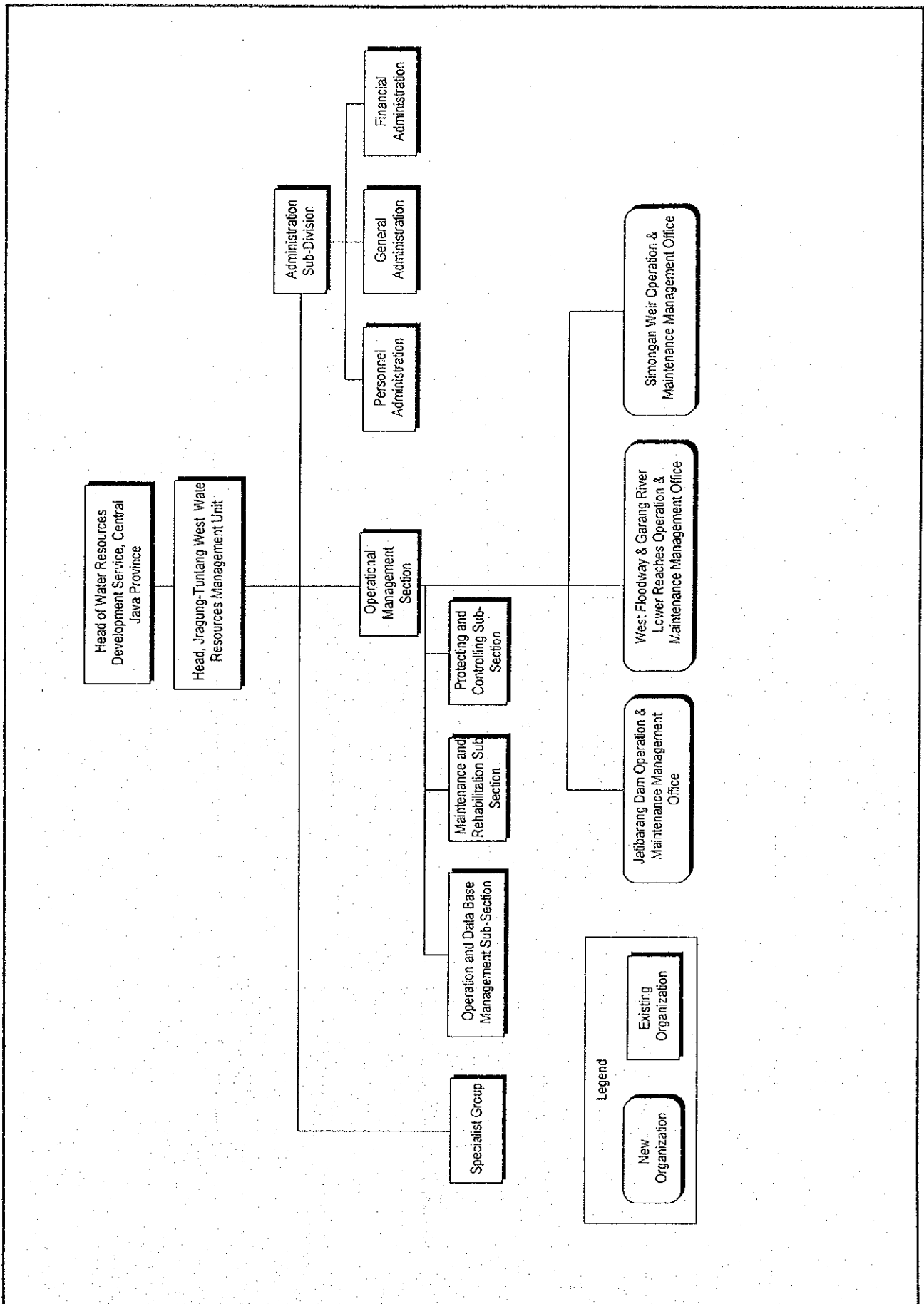




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Fig. 5.15  
LOCATION OF PROPOSED SPOIL BANK



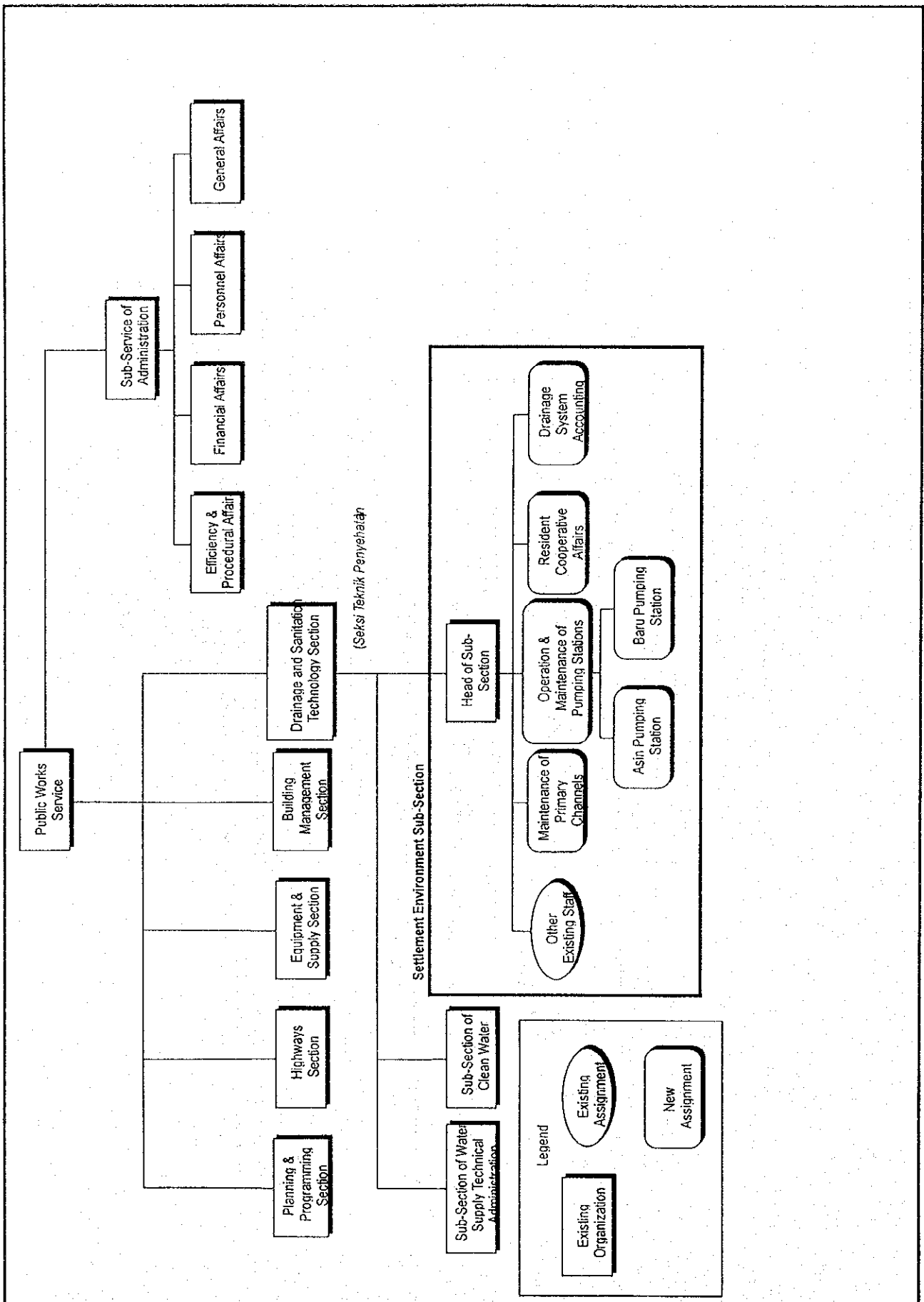


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Fig. 9.1

ORGANIZATION CHART FOR RIVER AND DAM MANAGEMENT



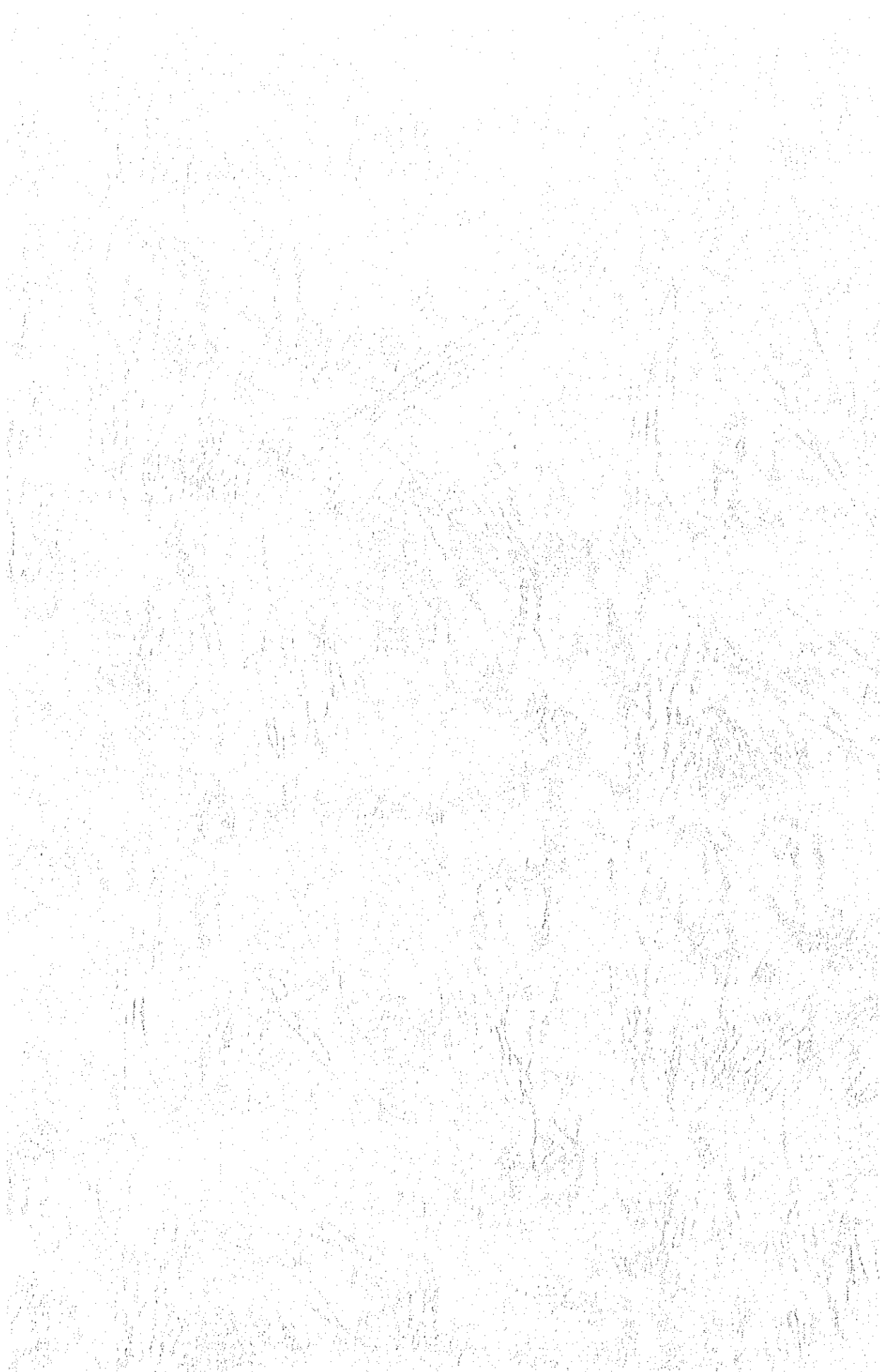
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Fig. 9.2

ORGANIZATION CHART FOR URBAN DRAINAGE MANAGEMENT









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