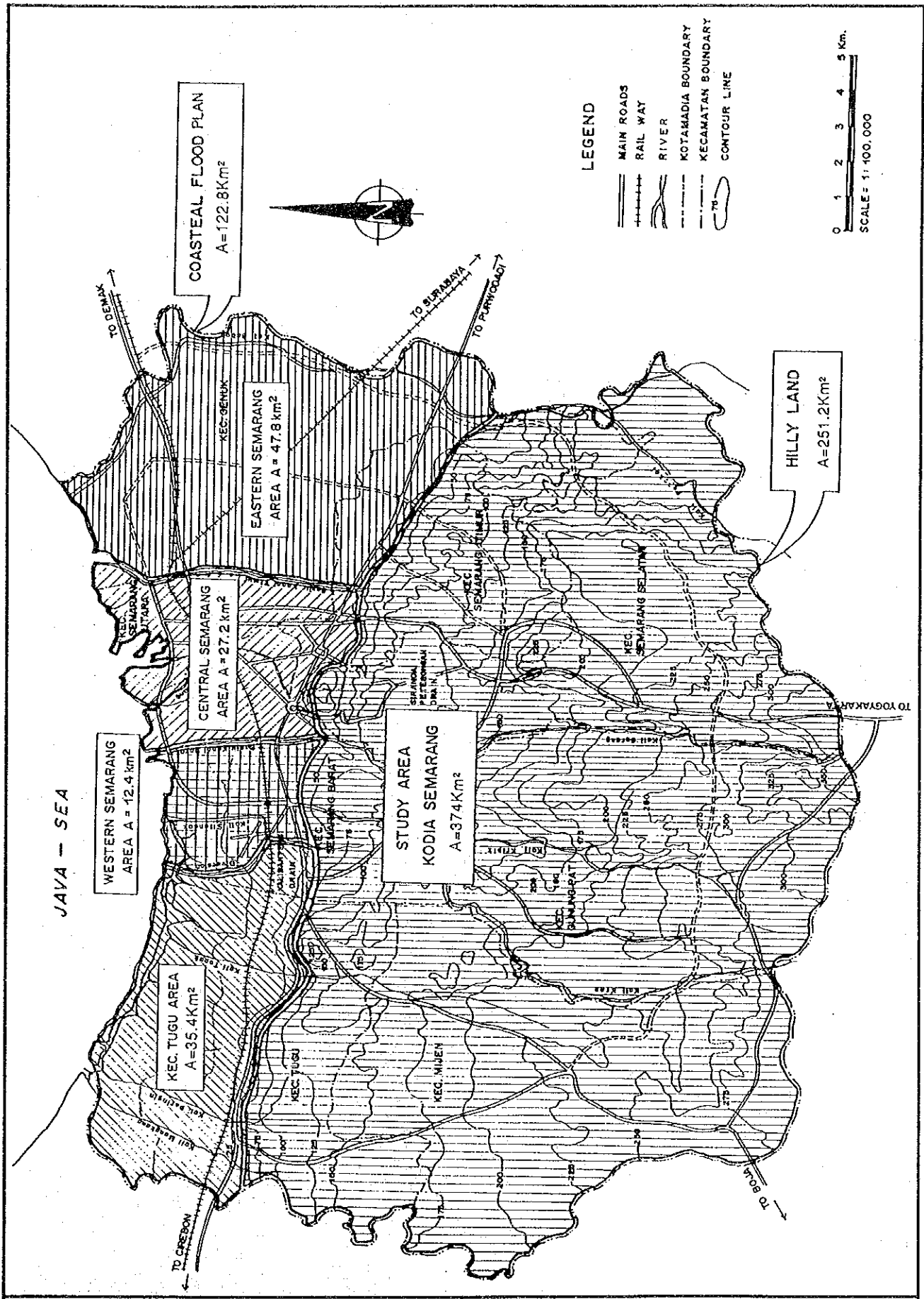


MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

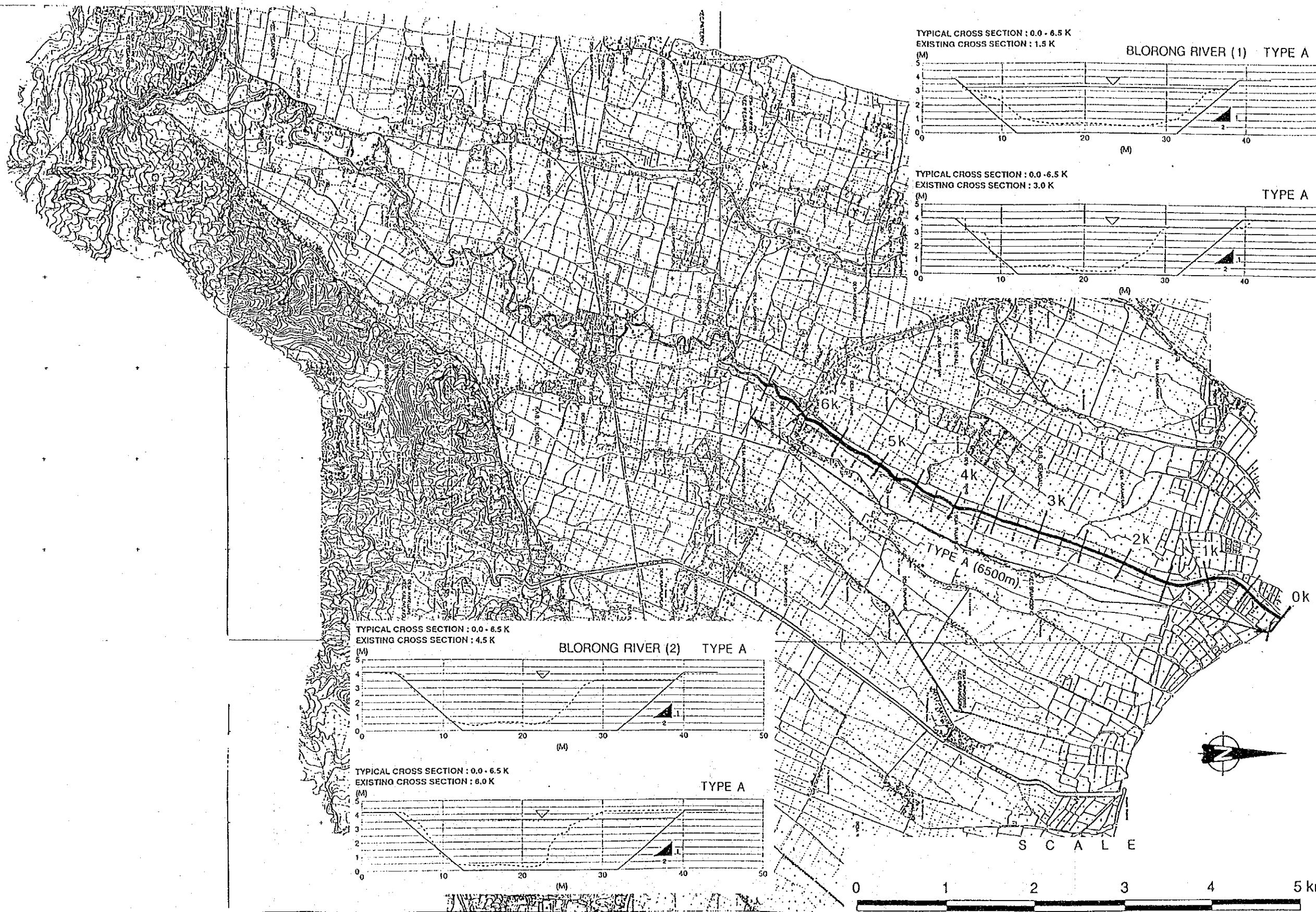
図 2.10 現況水系位置図





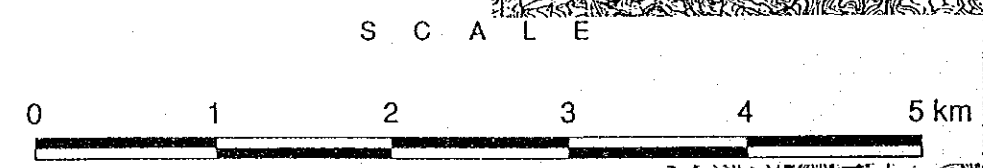
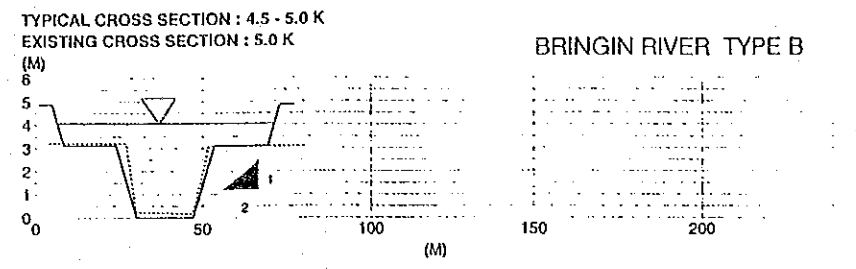
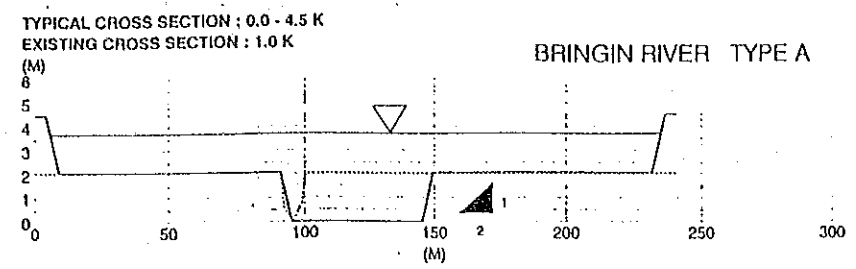
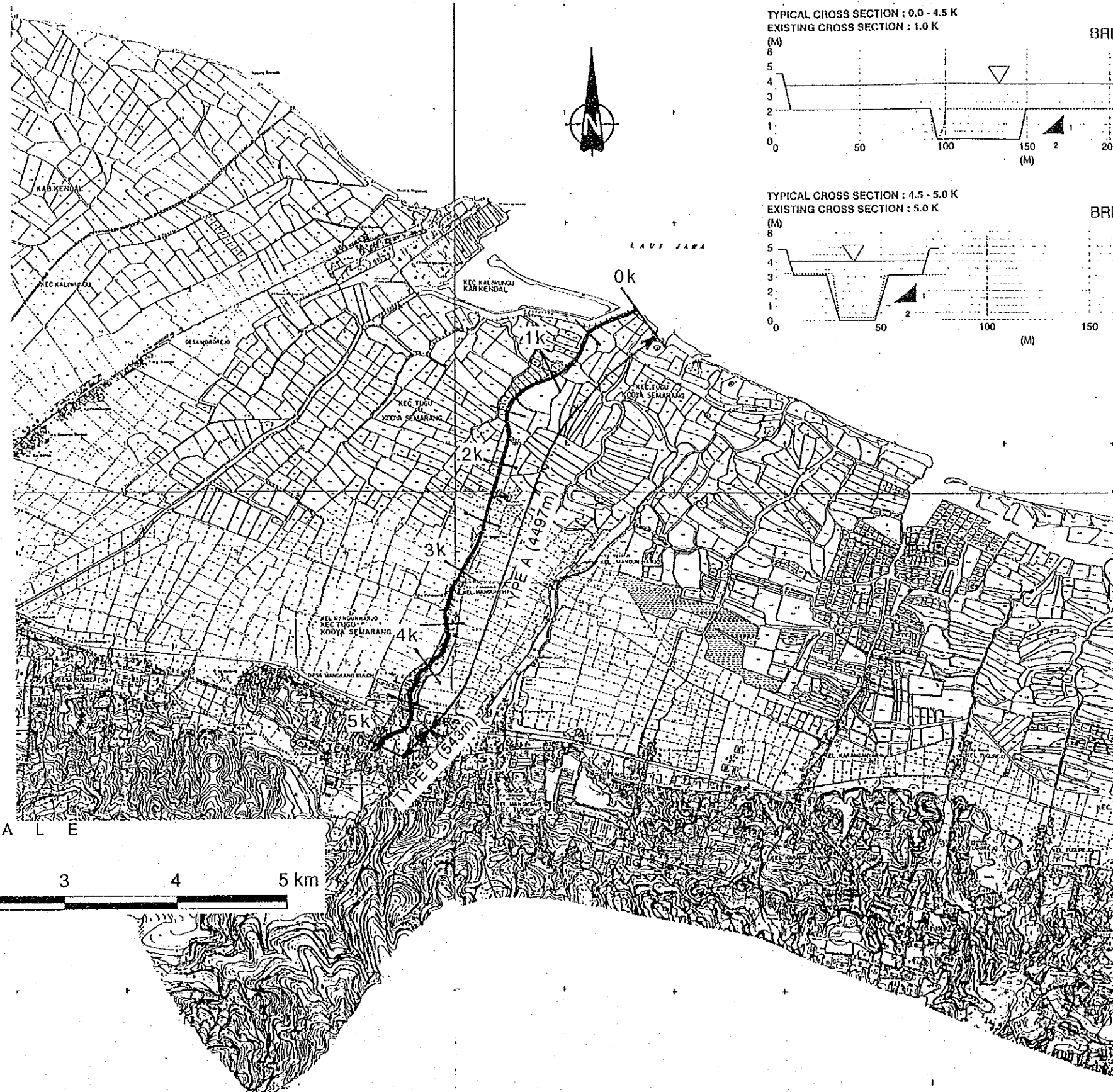
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図2.11 都市排水計画対象地域図



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.1 (1/4) 最適河川改修計画標準断面図  
 (プロロン川)

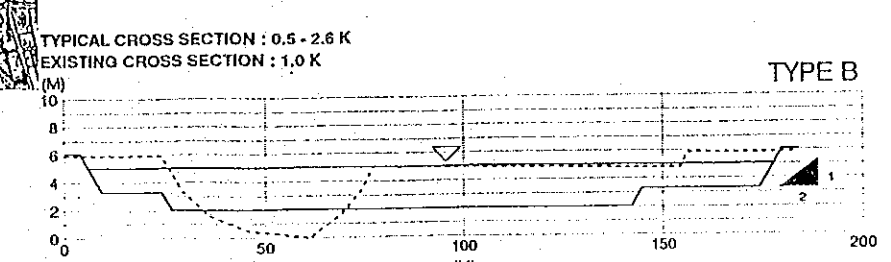
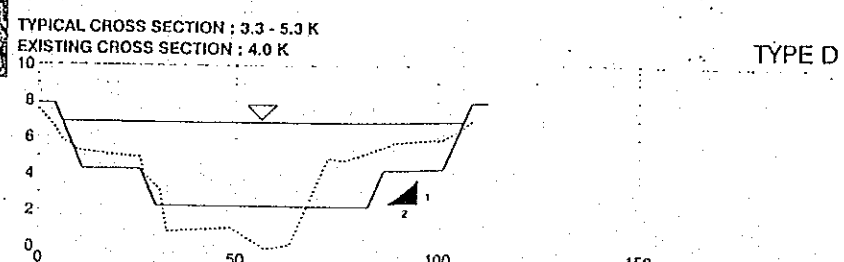
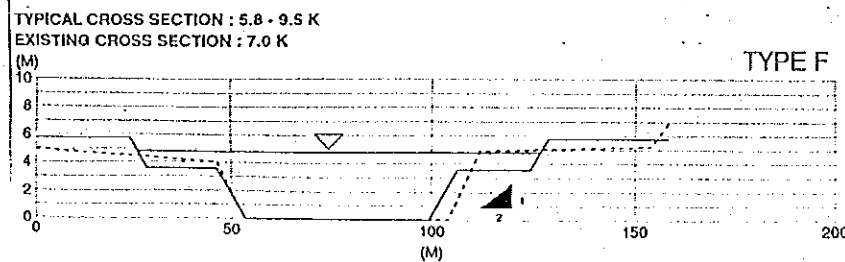
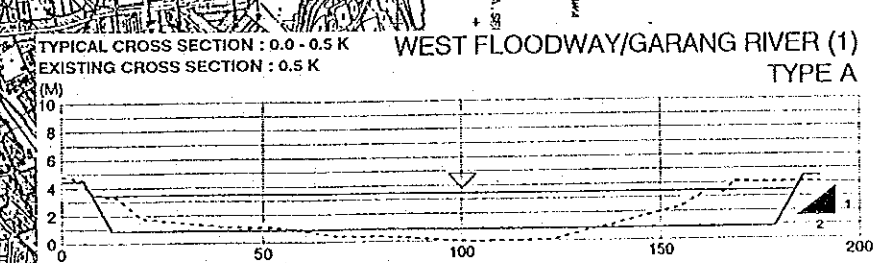
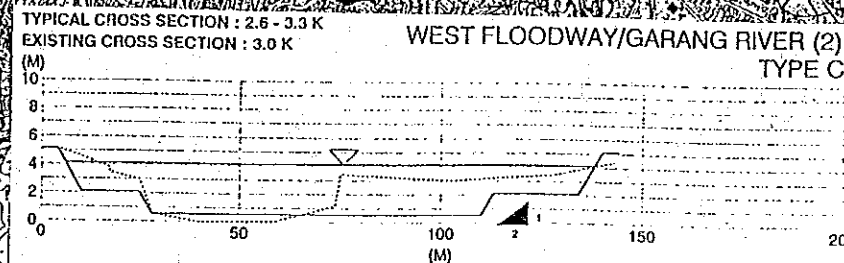
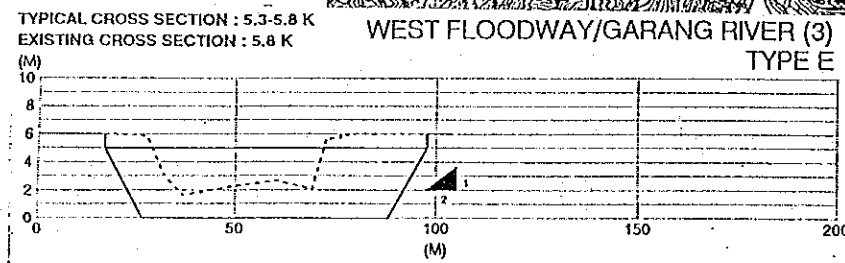
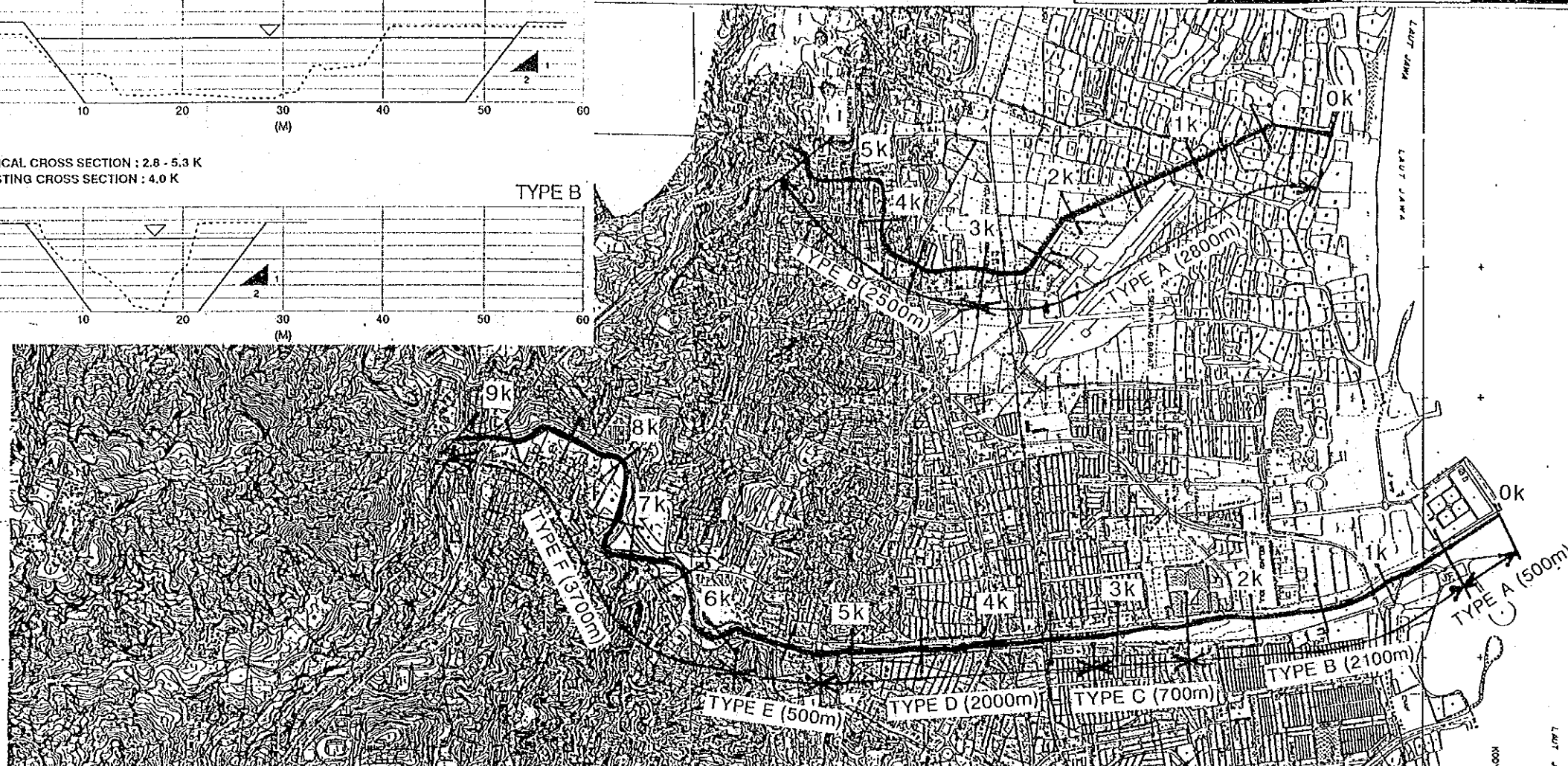
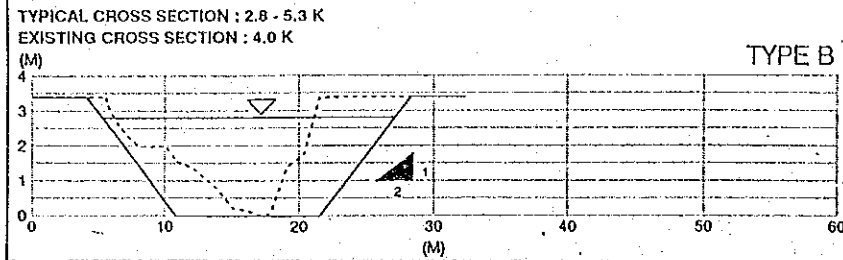
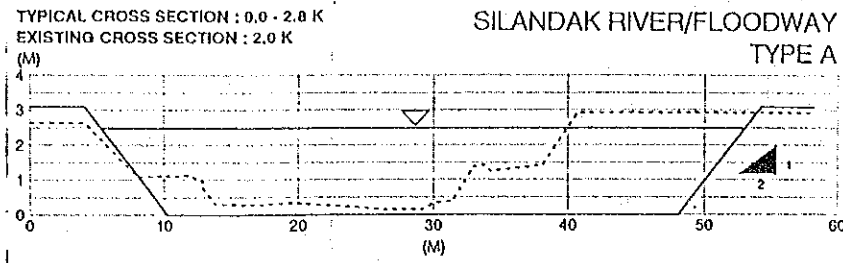


MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.1 (2/4) 最適河川改修計画標準断面図  
(プリンギン川)



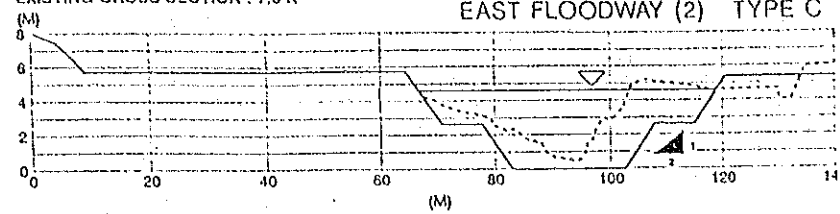
S C A L E



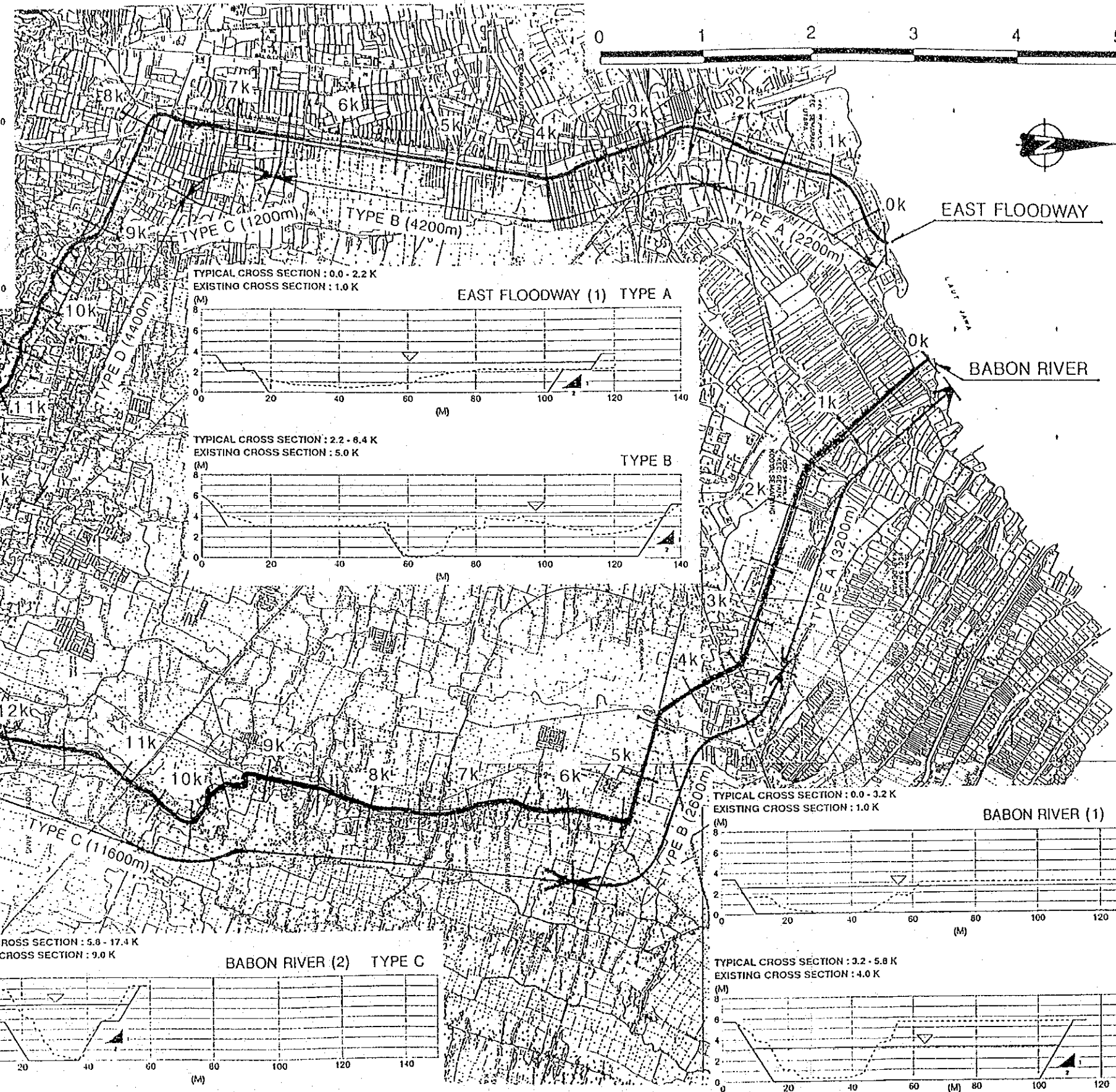
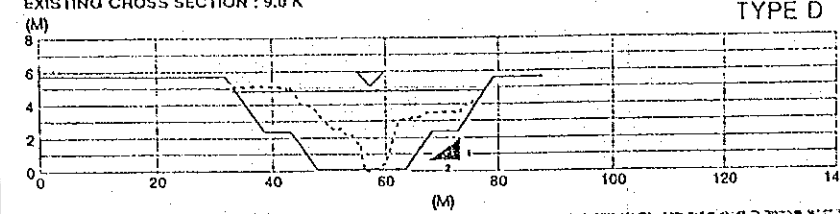
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図3.1 (3/4) 最適河川改修計画標準断面図  
(シランダック川、西放水路、ガラン川)

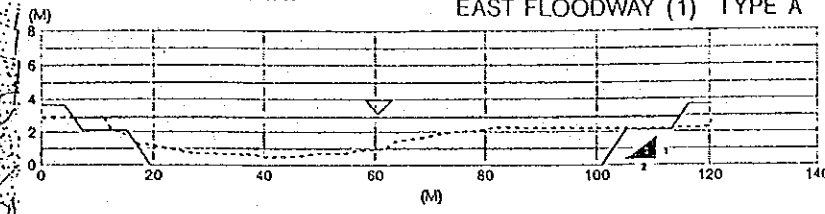
TYPICAL CROSS SECTION : 6.4 - 7.6 K  
EXISTING CROSS SECTION : 7.0 K



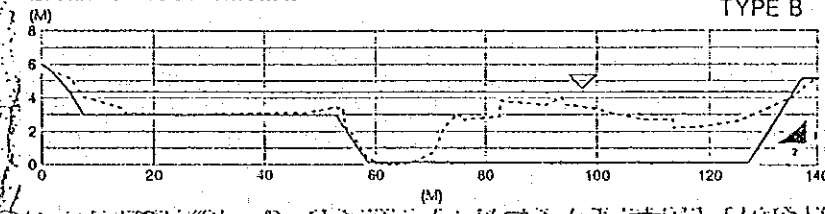
TYPICAL CROSS SECTION : 7.6 - 12.0 K  
EXISTING CROSS SECTION : 9.0 K



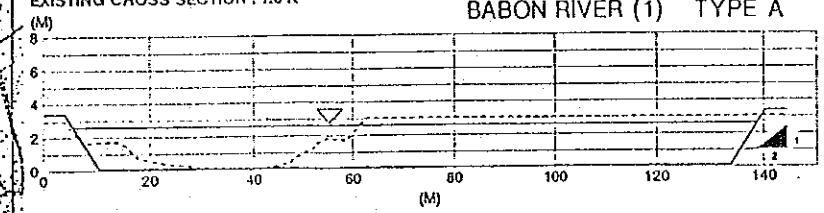
TYPICAL CROSS SECTION : 0.0 - 2.2 K  
EXISTING CROSS SECTION : 1.0 K



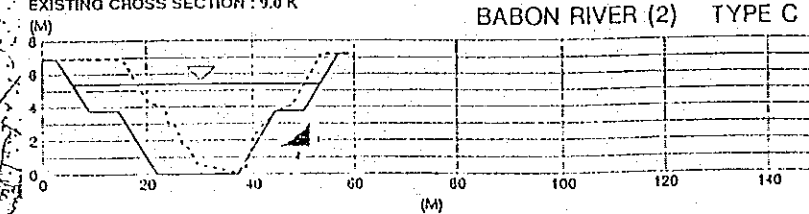
TYPICAL CROSS SECTION : 2.2 - 8.4 K  
EXISTING CROSS SECTION : 5.0 K



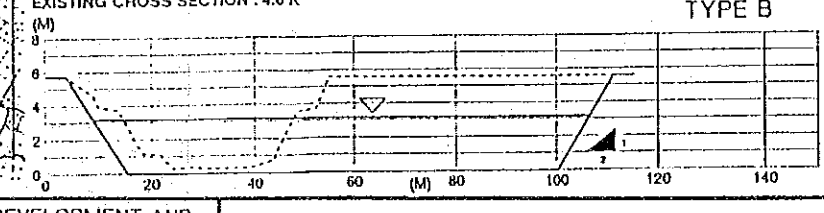
TYPICAL CROSS SECTION : 0.0 - 3.2 K  
EXISTING CROSS SECTION : 1.0 K



TYPICAL CROSS SECTION : 5.8 - 17.4 K  
EXISTING CROSS SECTION : 9.0 K



TYPICAL CROSS SECTION : 3.2 - 5.8 K  
EXISTING CROSS SECTION : 4.0 K



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

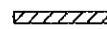

図 3.1 (4/4) 最適河川改修計画標準断面図  
(東放水路、バボン川)

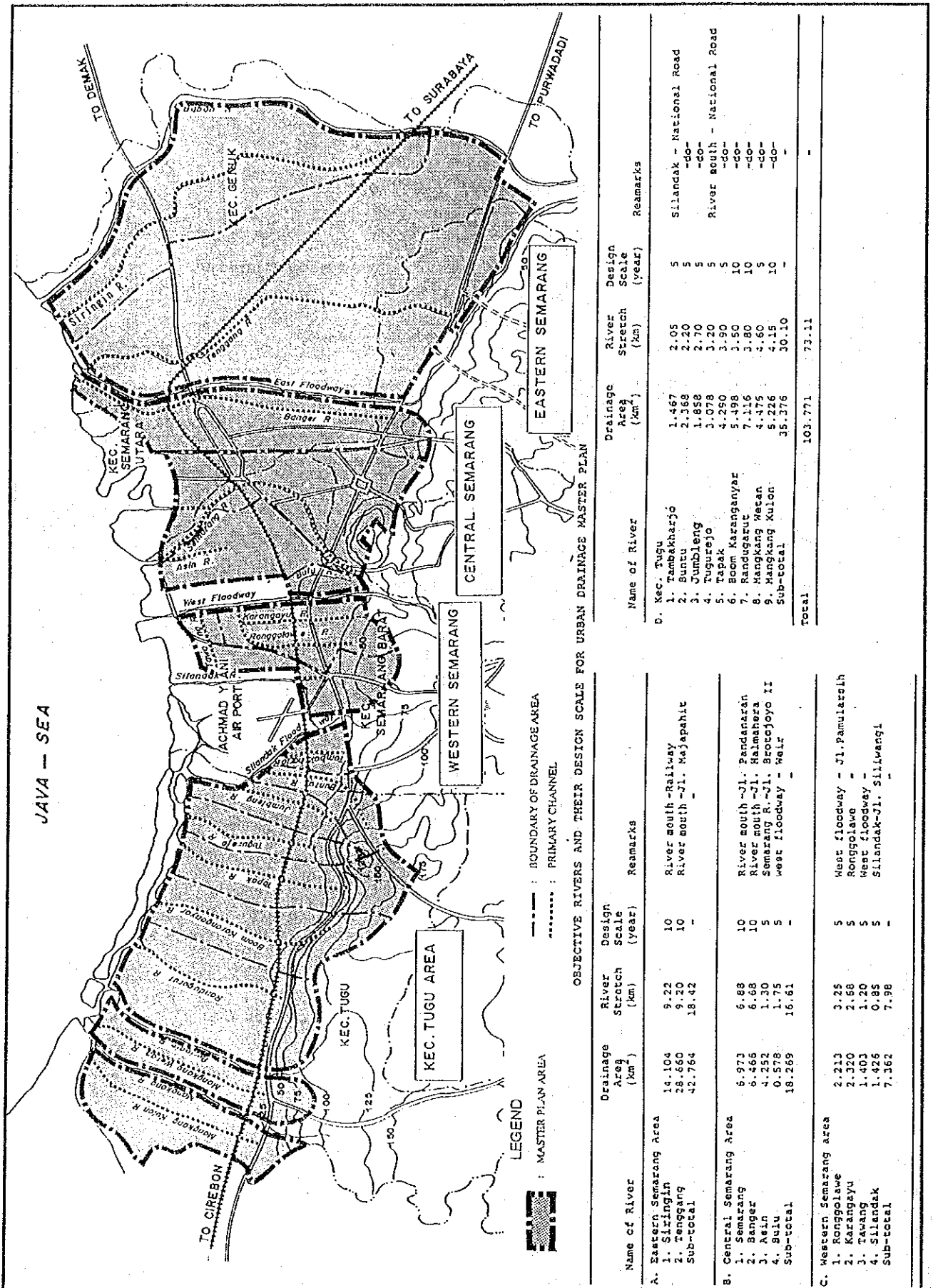




### FLOOD CONTROL PLAN

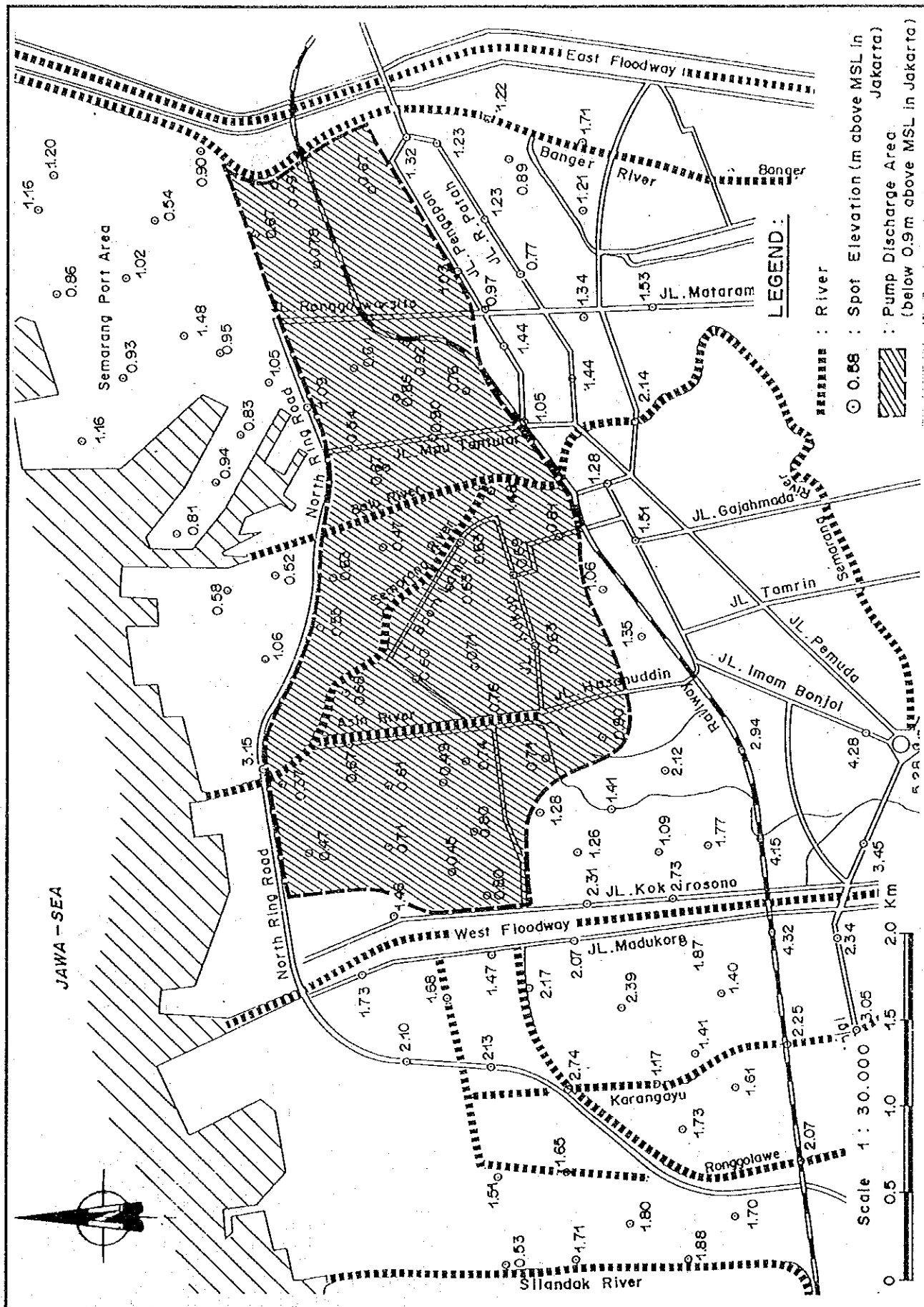
Description	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>1. Babon River</b>																					
Babon River Improvement																					
Babon Floodway			////																		
<b>2. East Floodway</b>																					
East Floodway Improvement																					
<b>3. Garang River/West Floodway</b>																					
Garang River Improvement																					
West Floodway Improvement																					
Jatibarang dam																					
<b>4. Silandak River</b>																					
Silandak River Improvement																					
<b>5. Bringin River</b>																					
Bringin River Improvement																					
<b>6. Blorong River</b>																					
Blorong River Improvement																					
Kedung Suren Dam																					

 On-going Project  
 Implemented by Master Plan



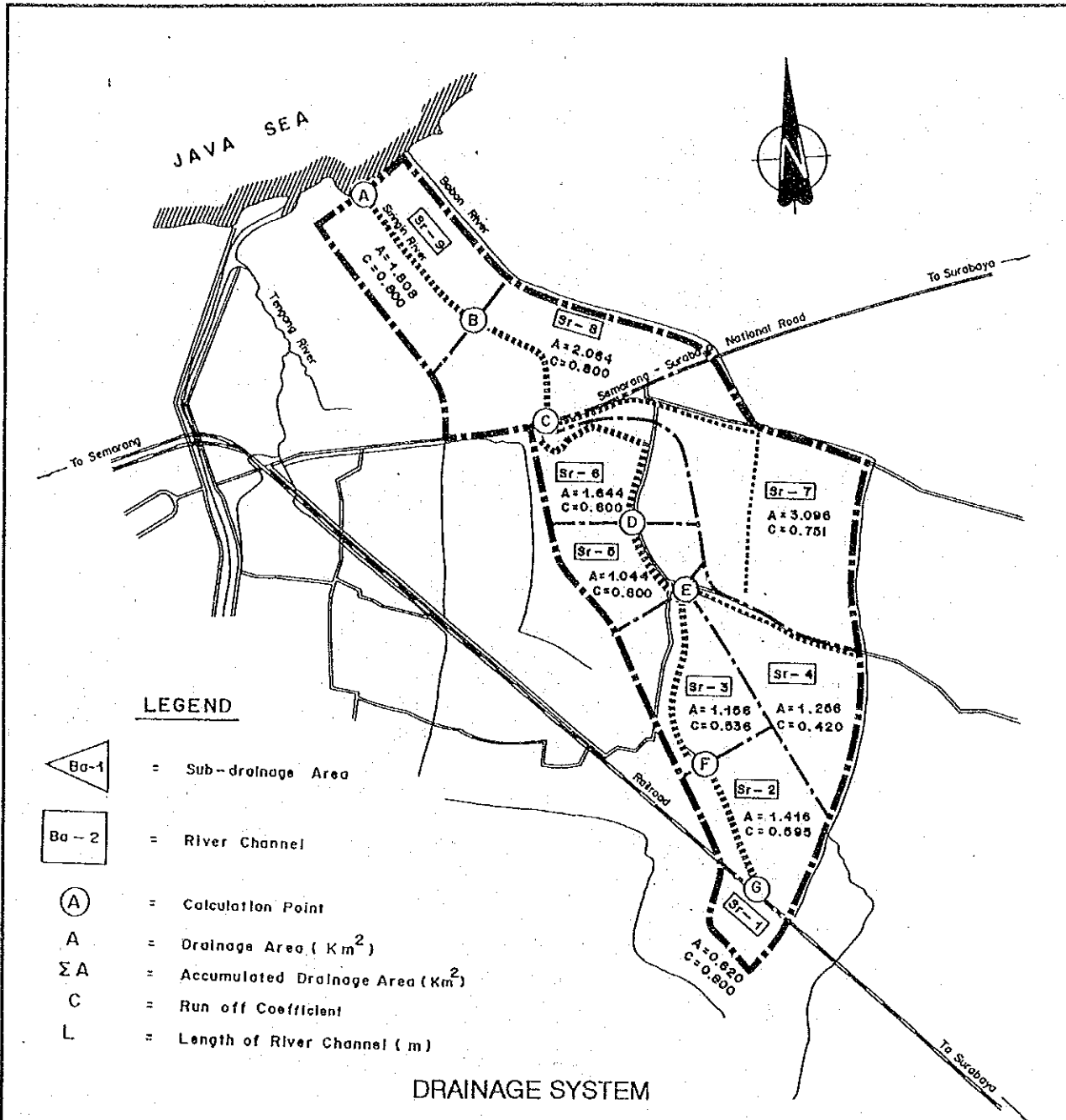
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図3.3 マスタープラン対象幹線排水路



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.4 ポンプ排水適用地区

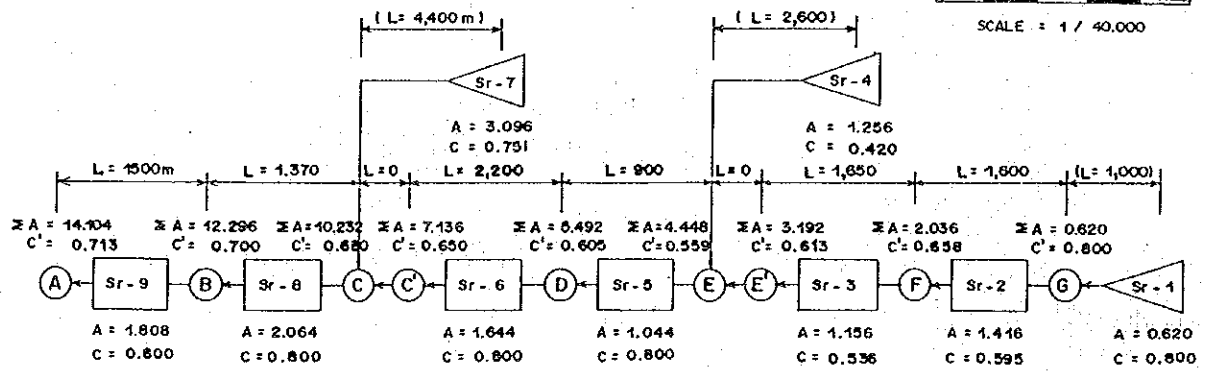


**LEGEND**

- Ba-1 = Sub-drainage Area
- Ba-2 = River Channel
- A = Calculation Point
- A = Drainage Area ( Km<sup>2</sup> )
- Σ A = Accumulated Drainage Area ( Km<sup>2</sup> )
- C = Run off Coefficient
- L = Length of River Channel ( m )

**DRAINAGE SYSTEM**

0 0.4 0.8 1.2 1.6 2.0 km  
SCALE = 1 / 40,000



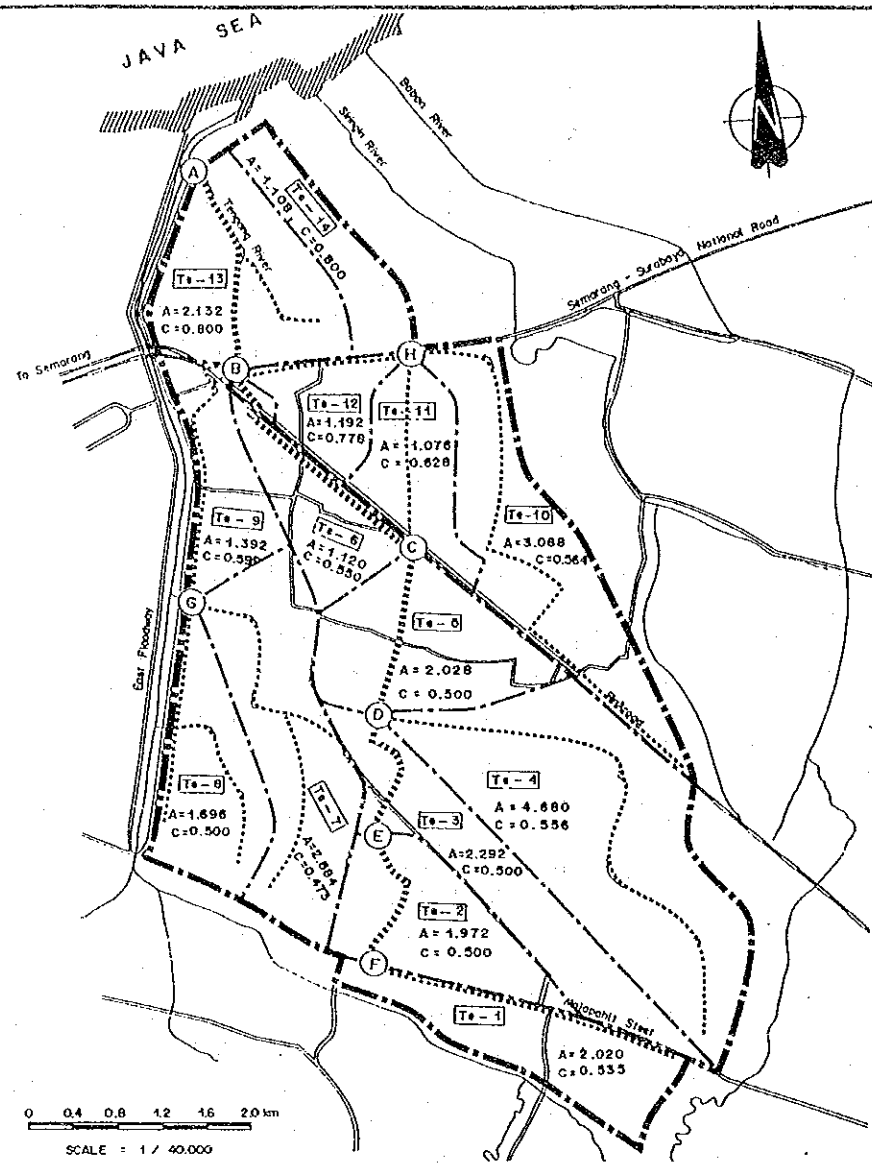
**RUN - OFF MODEL**

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

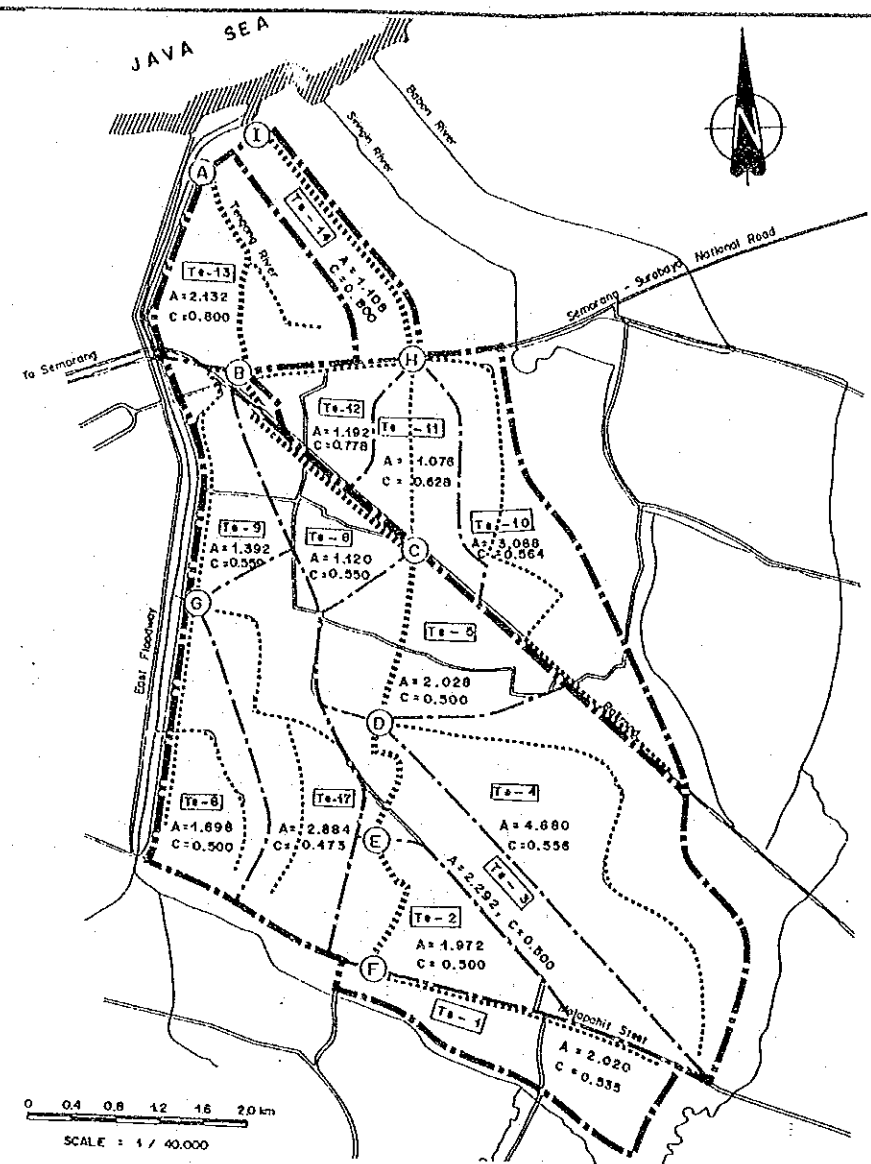
図 3.5 (1/7) 幹線排水路計画及び流出モデル  
(シリギン川)



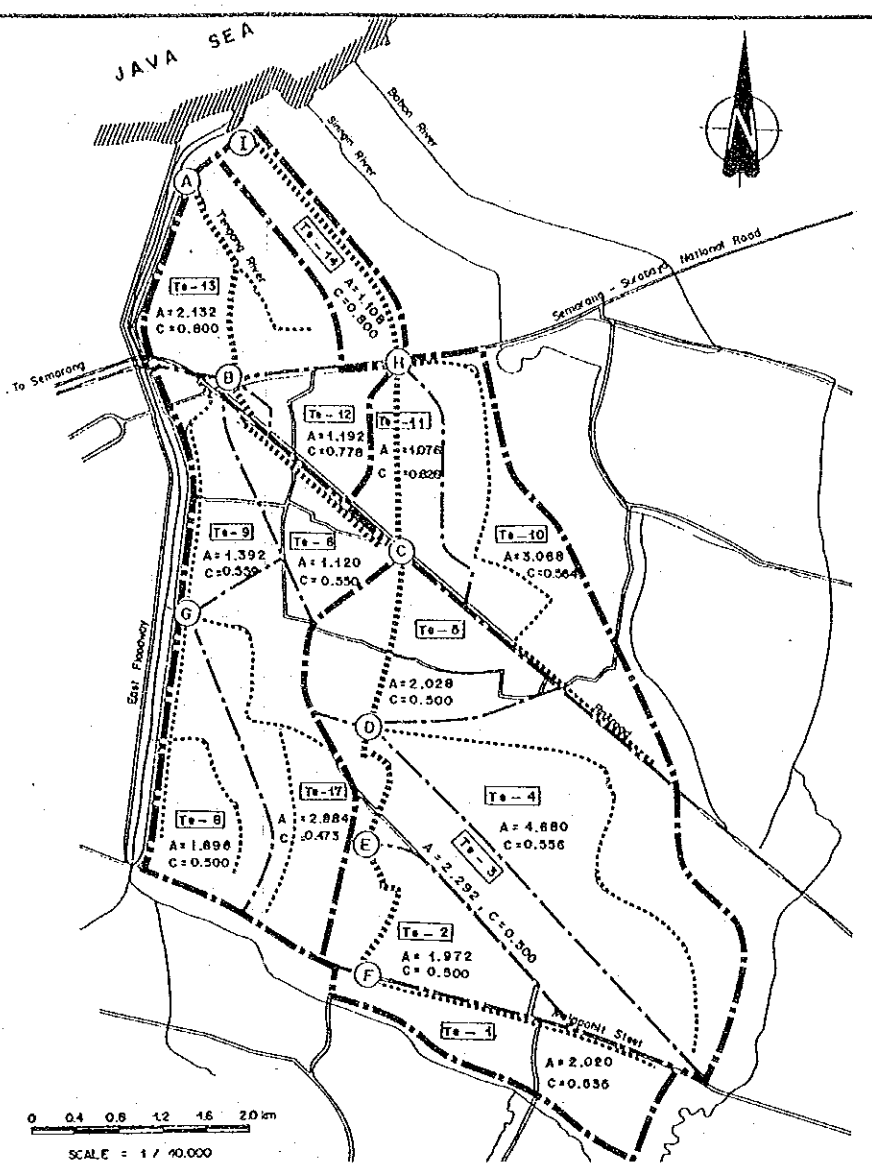




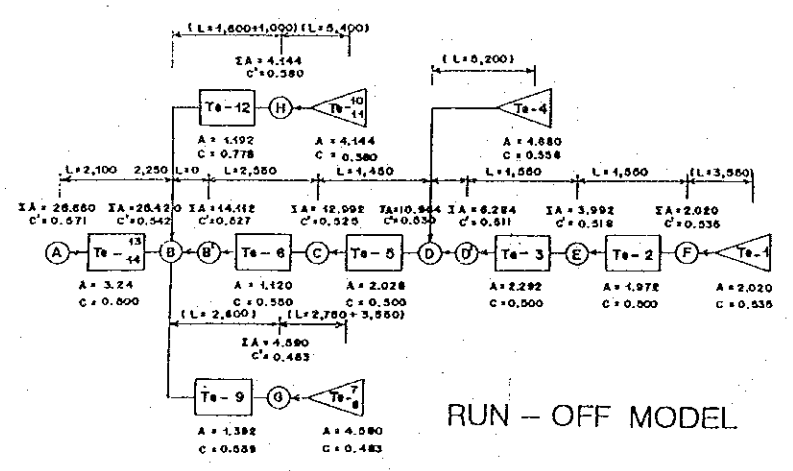
DRAINAGE SYSTEM



DRAINAGE SYSTEM

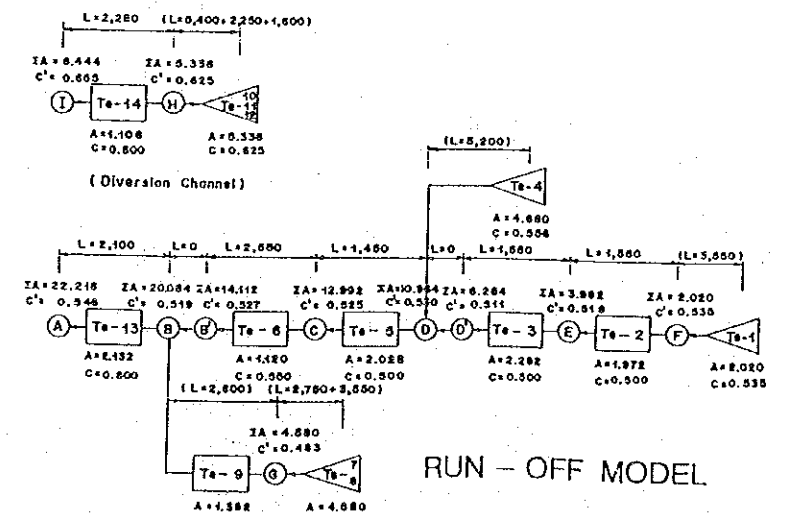


DRAINAGE SYSTEM



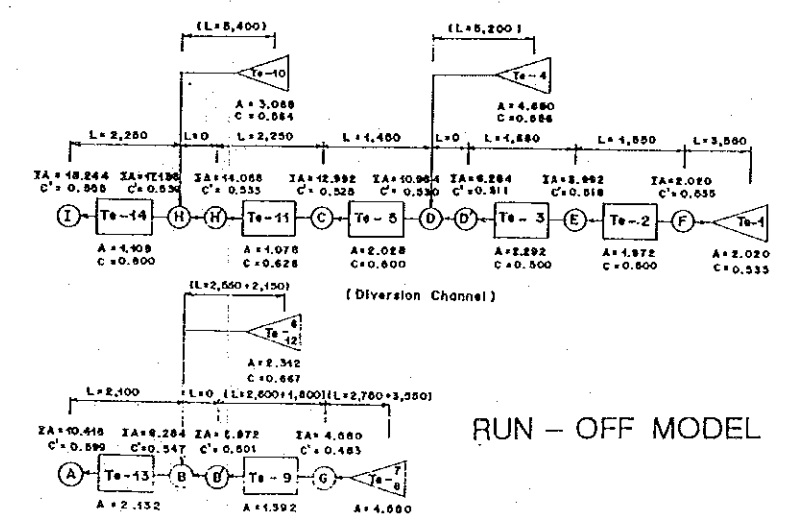
RUN - OFF MODEL

ALTERNATIVE I - A



RUN - OFF MODEL

ALTERNATIVE I - B



RUN - OFF MODEL

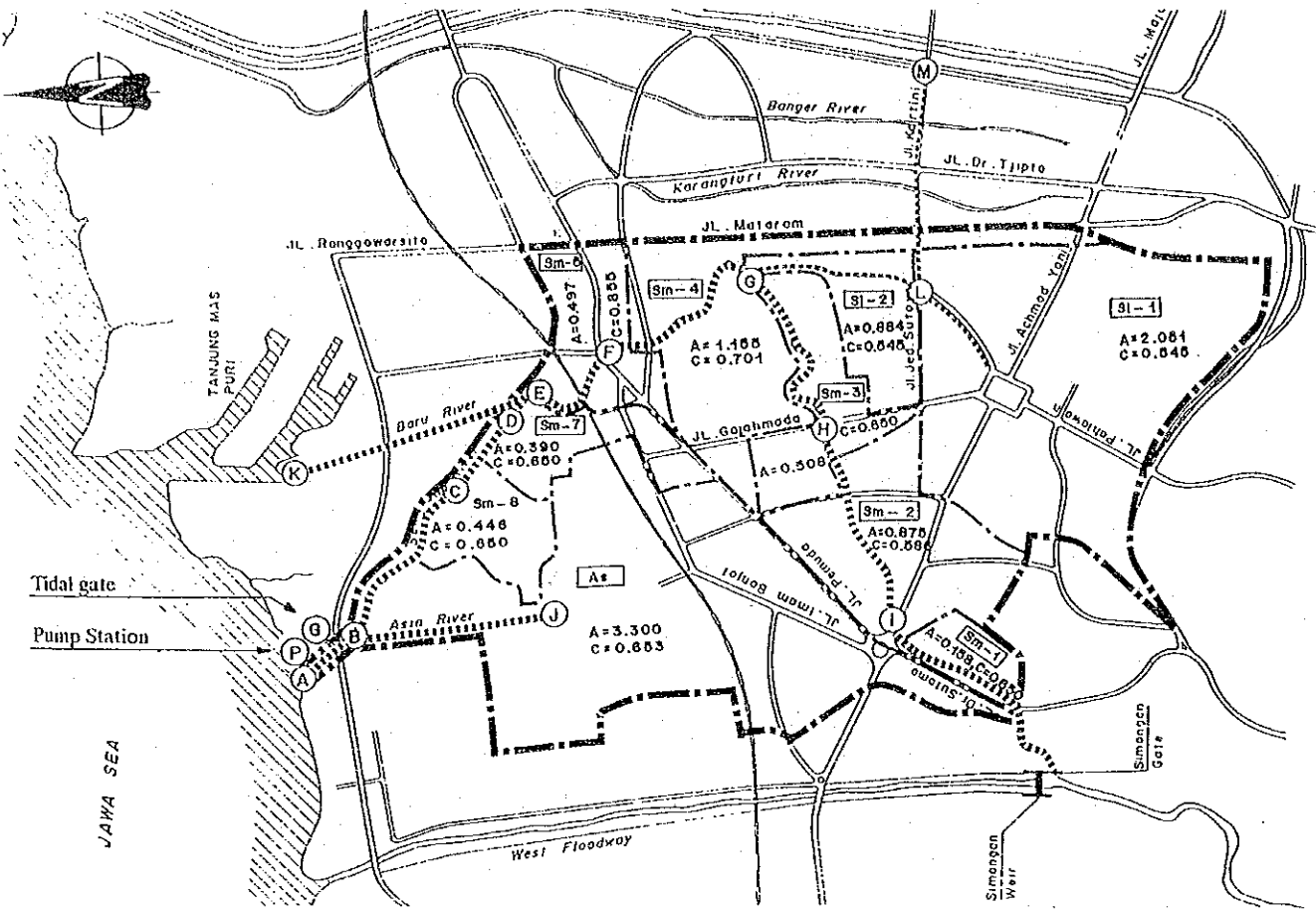
ALTERNATIVE I - C

- LEGEND**
- Ba-1 = Sub-drainage Area
  - Ba-2 = River Channel
  - A = Calculation Point
  - A = Drainage Area (Km<sup>2</sup>)

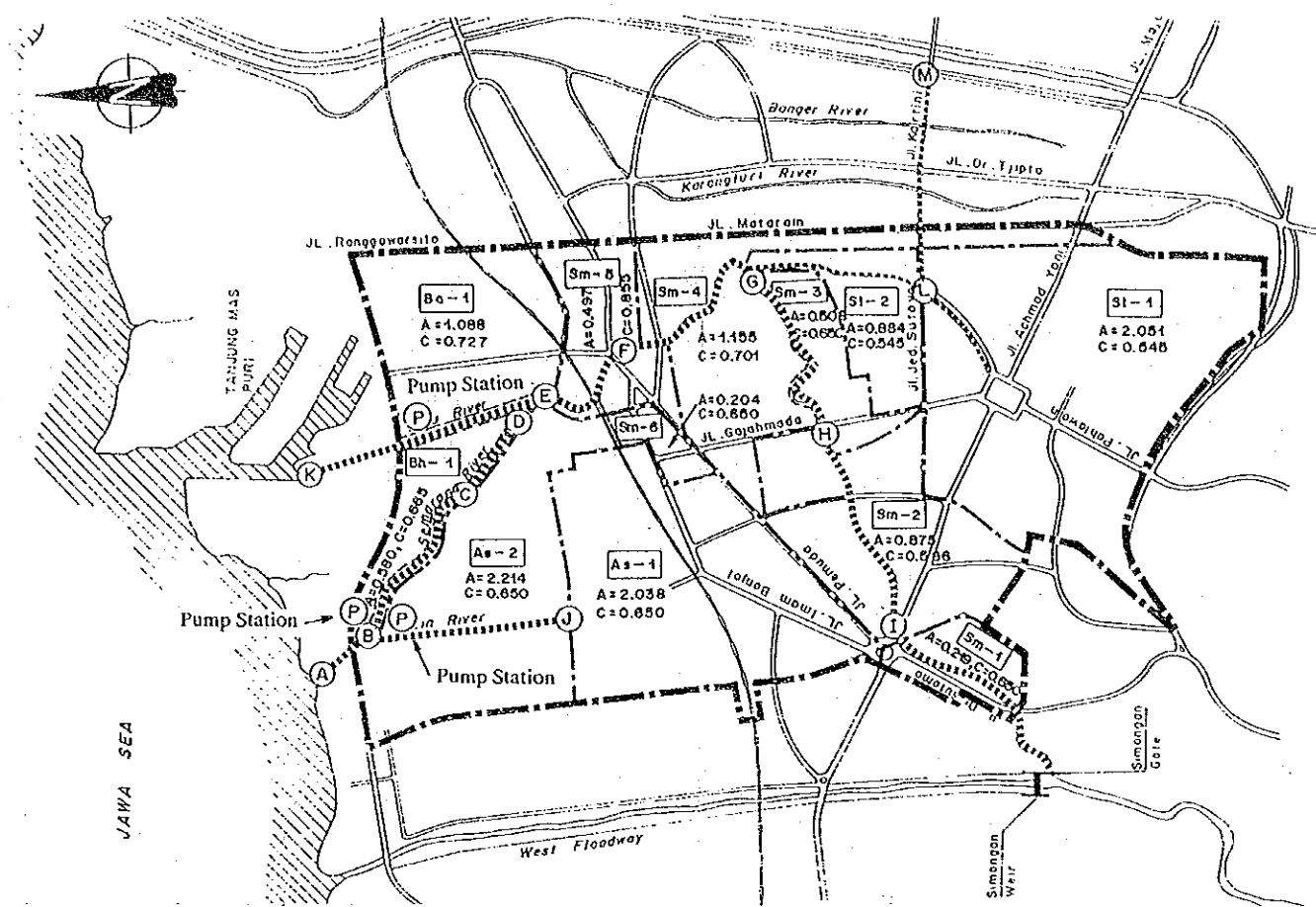
- $\Sigma A$  = Accumulated Drainage Area (Km<sup>2</sup>)
- L = Length of River Channel (m)
- C = Run off Coefficient

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

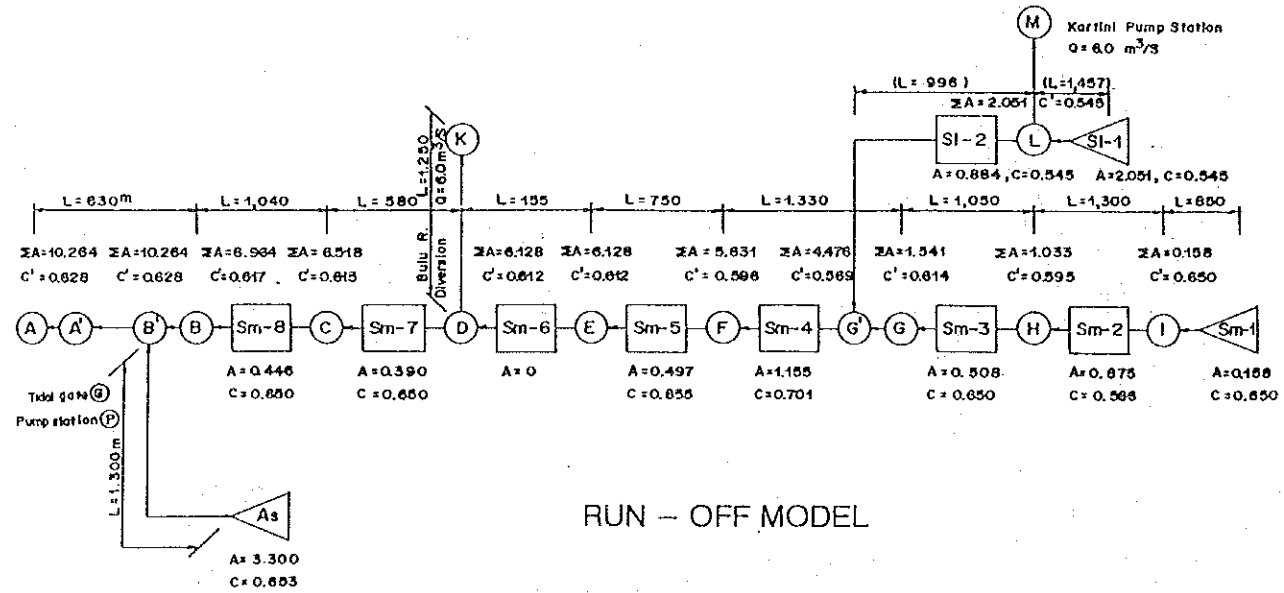
図3.5 (2/7) 幹線排水路計画及び流出モデル  
(テンガン川)



DRAINAGE SYSTEM

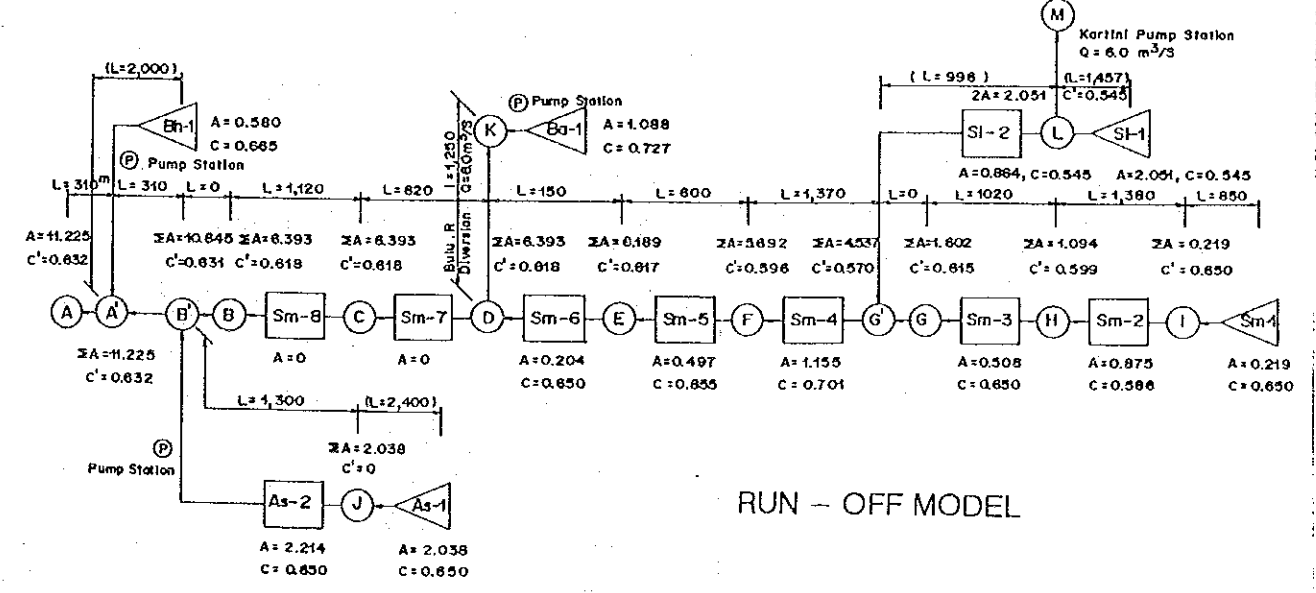


DRAINAGE SYSTEM



RUN - OFF MODEL

ALTERNATIVE 2 - A



RUN - OFF MODEL

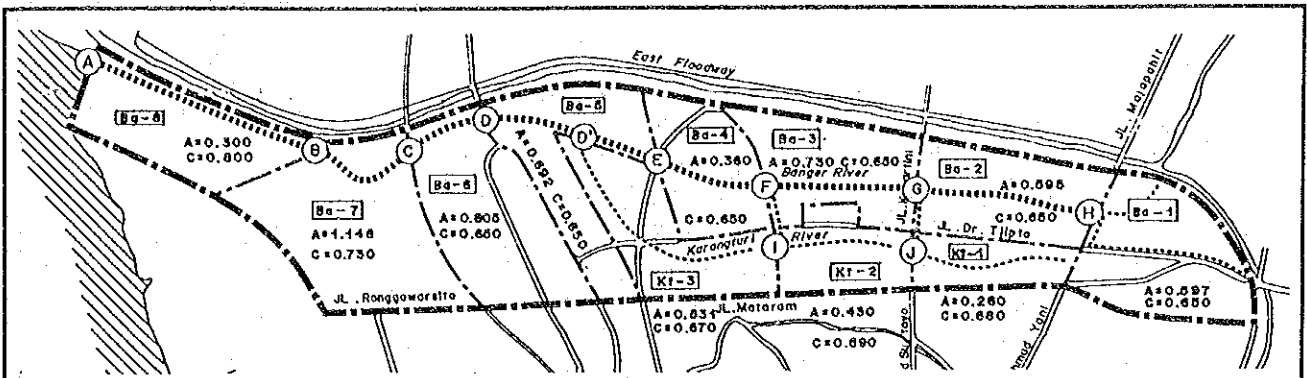
ALTERNATIVE 2 - B

- LEGEND**
- = Sub-drainage Area
  - = River Channel
  - = Calculation Point
  - = Drainage Area (Km<sup>2</sup>)
  - $\Sigma A$  = Accumulated Drainage Area (Km<sup>2</sup>)
  - L = Length of River Channel (m)
  - C = Run off Coefficient

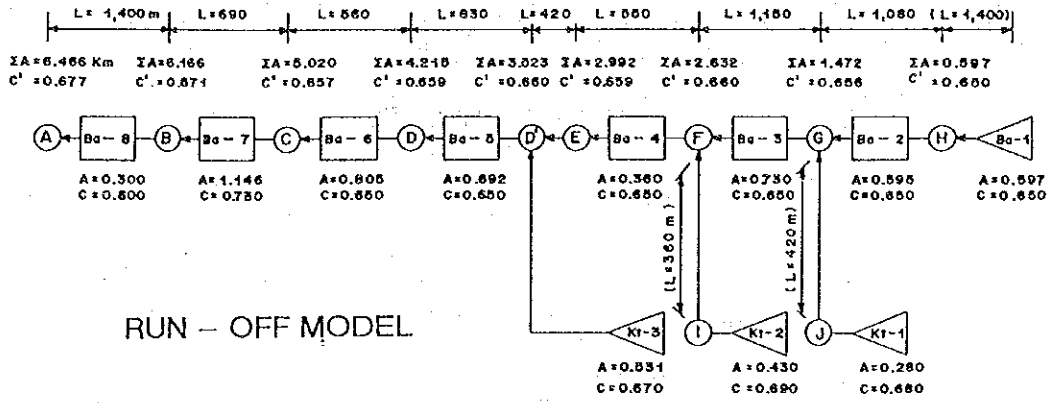
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.5 (3/7) 幹線排水路計画及び流出モデル (スマラン川)



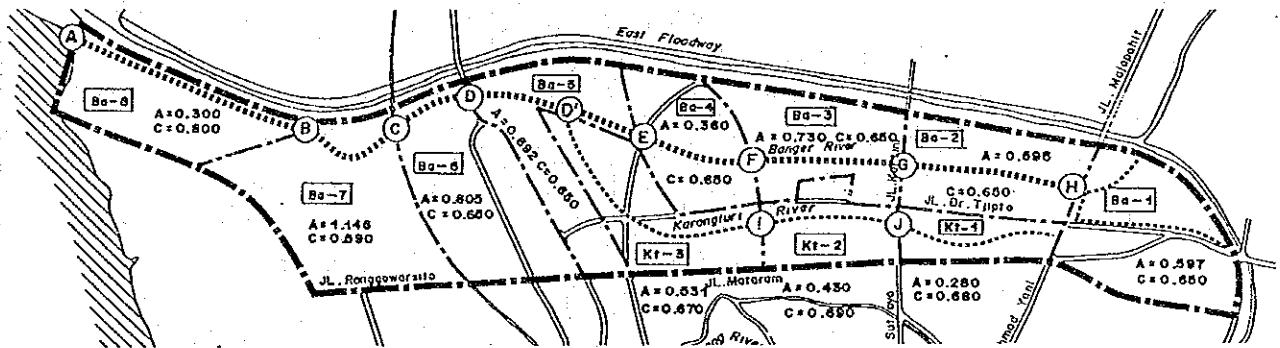


DRAINAGE SYSTEM

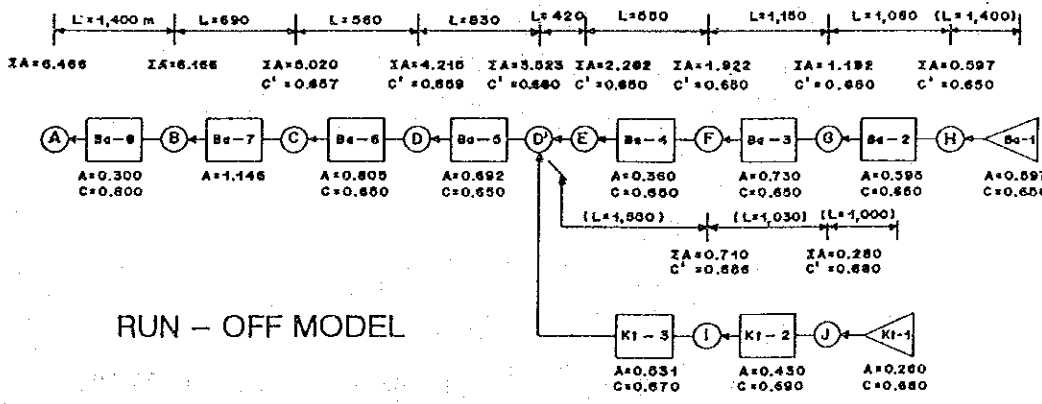


RUN - OFF MODEL

ALTERNATIVE 3 - A



DRAINAGE SYSTEM

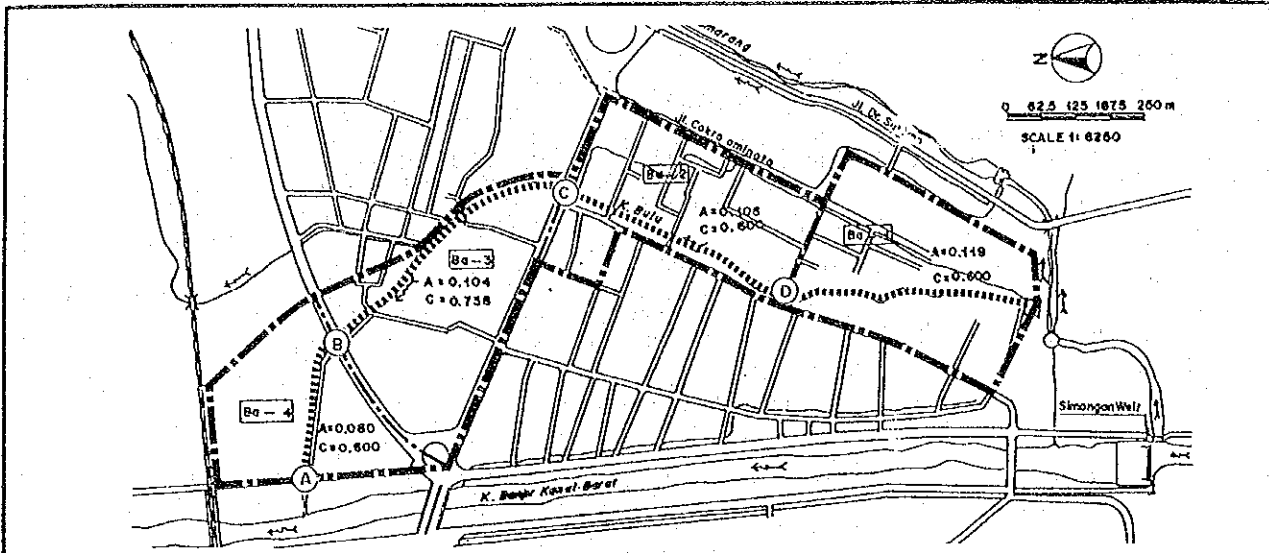


RUN - OFF MODEL

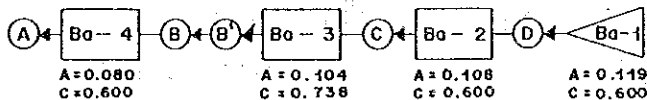
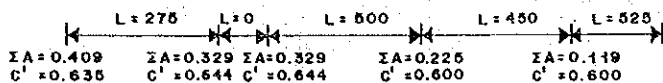
ALTERNATIVE 3 - B

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

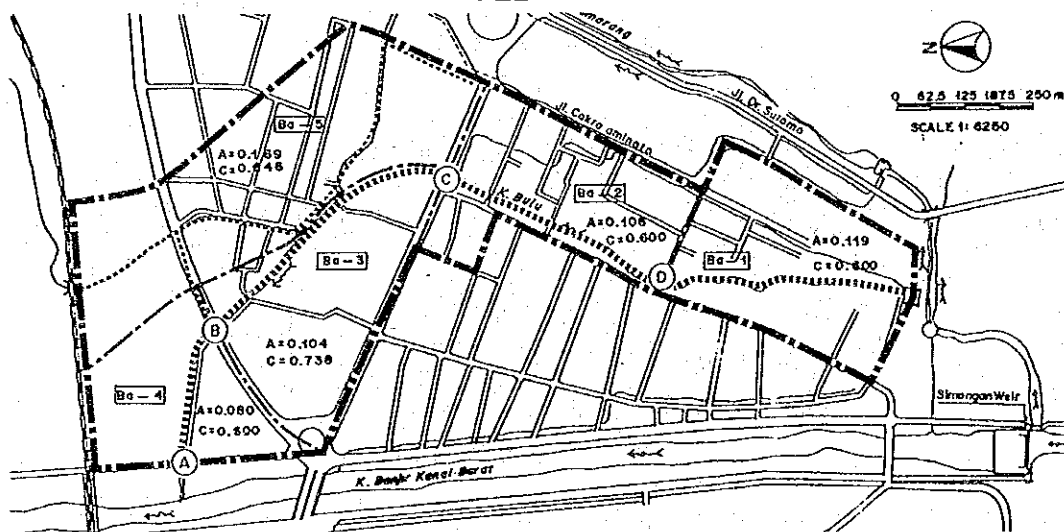
図3.5 (4/7) 幹線排水路計画及び流出モデル  
(バンゲル川)



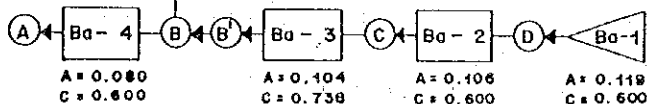
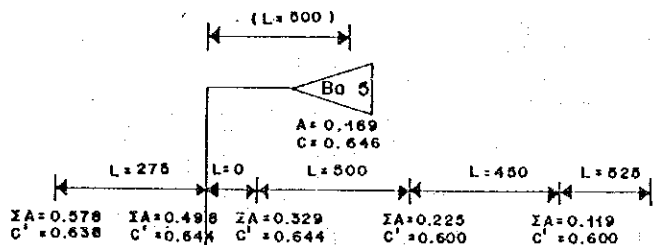
DRAINAGE SYSTEM



ALTERNATIVE 4 - A



DRAINAGE SYSTEM



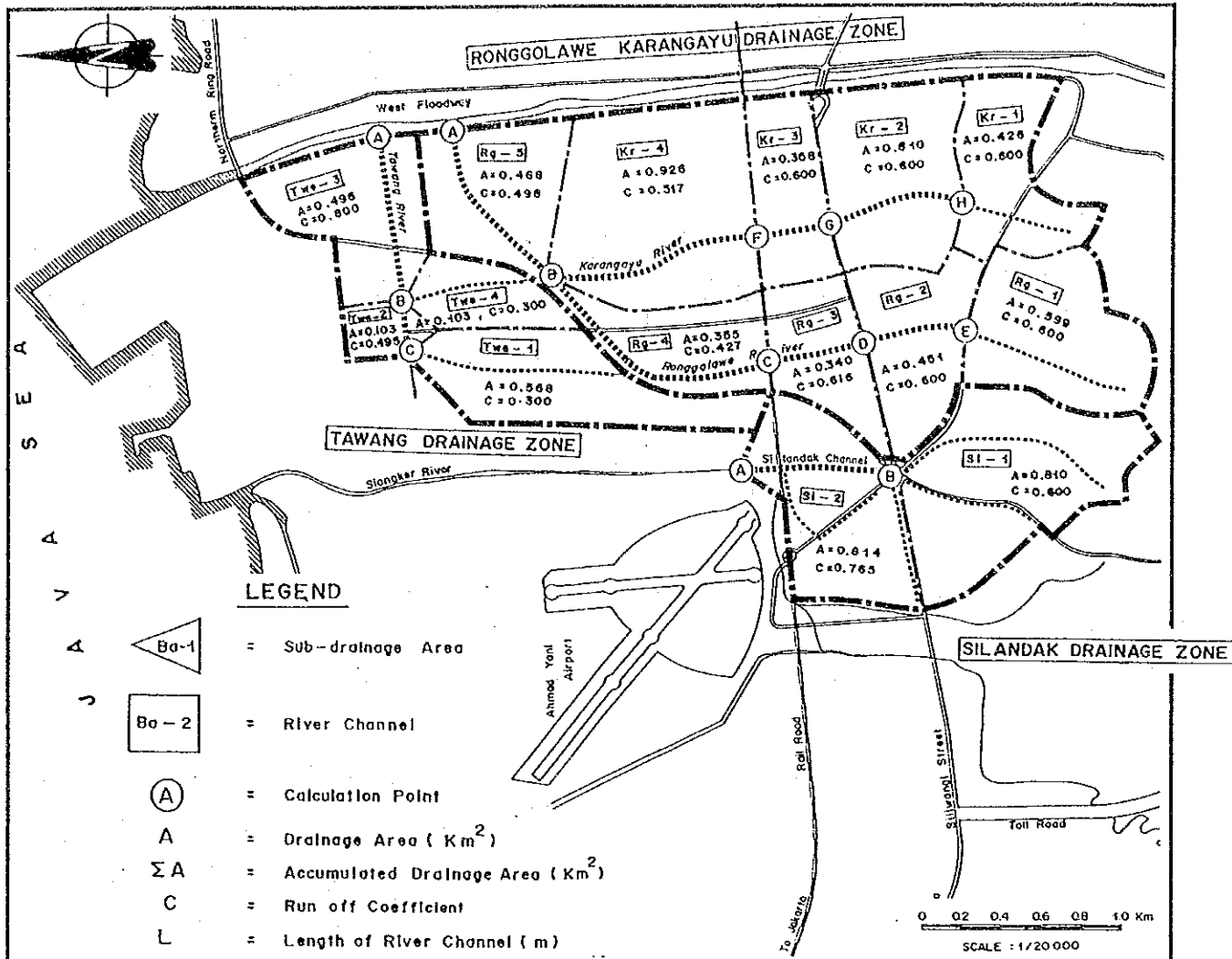
ALTERNATIVE 4 - B

RUN - OFF MODEL

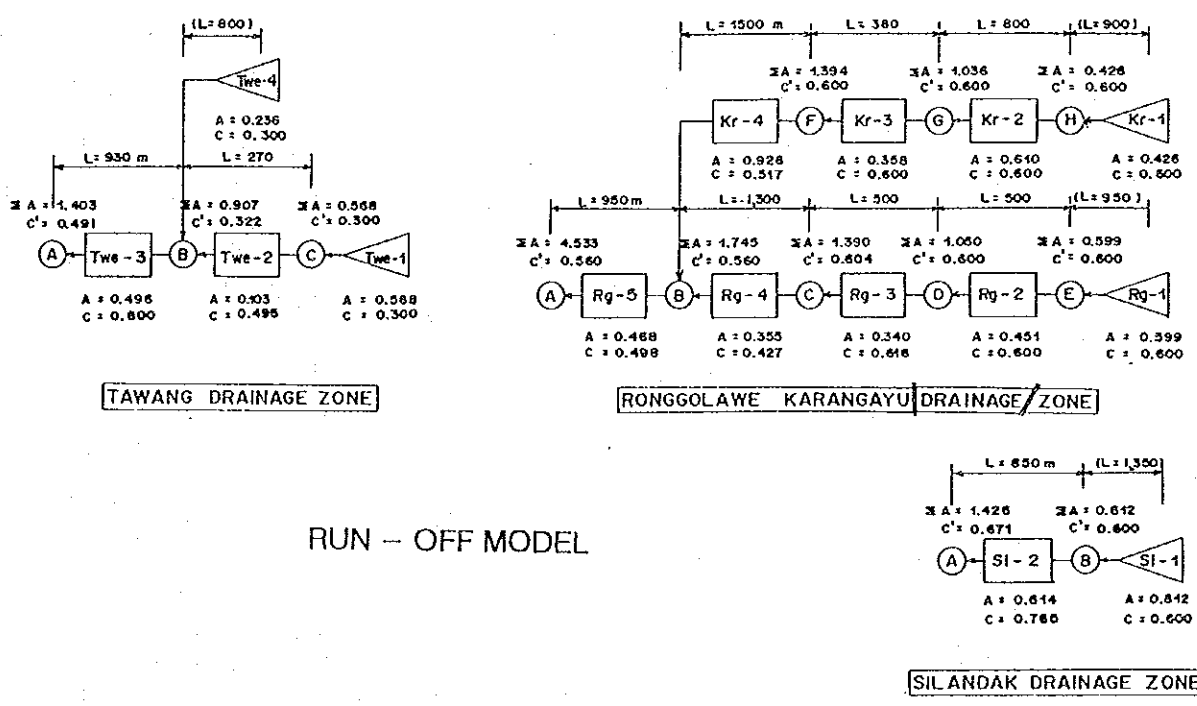
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.5 (5/7) 幹線排水路計画及び流出モデル  
(プル川)





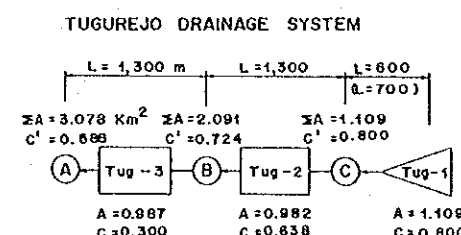
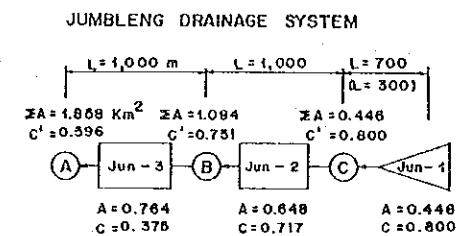
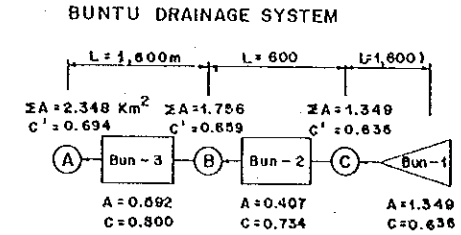
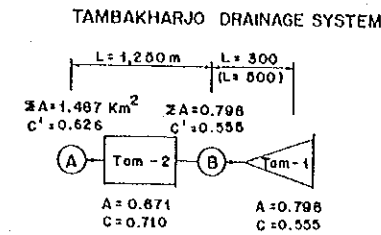
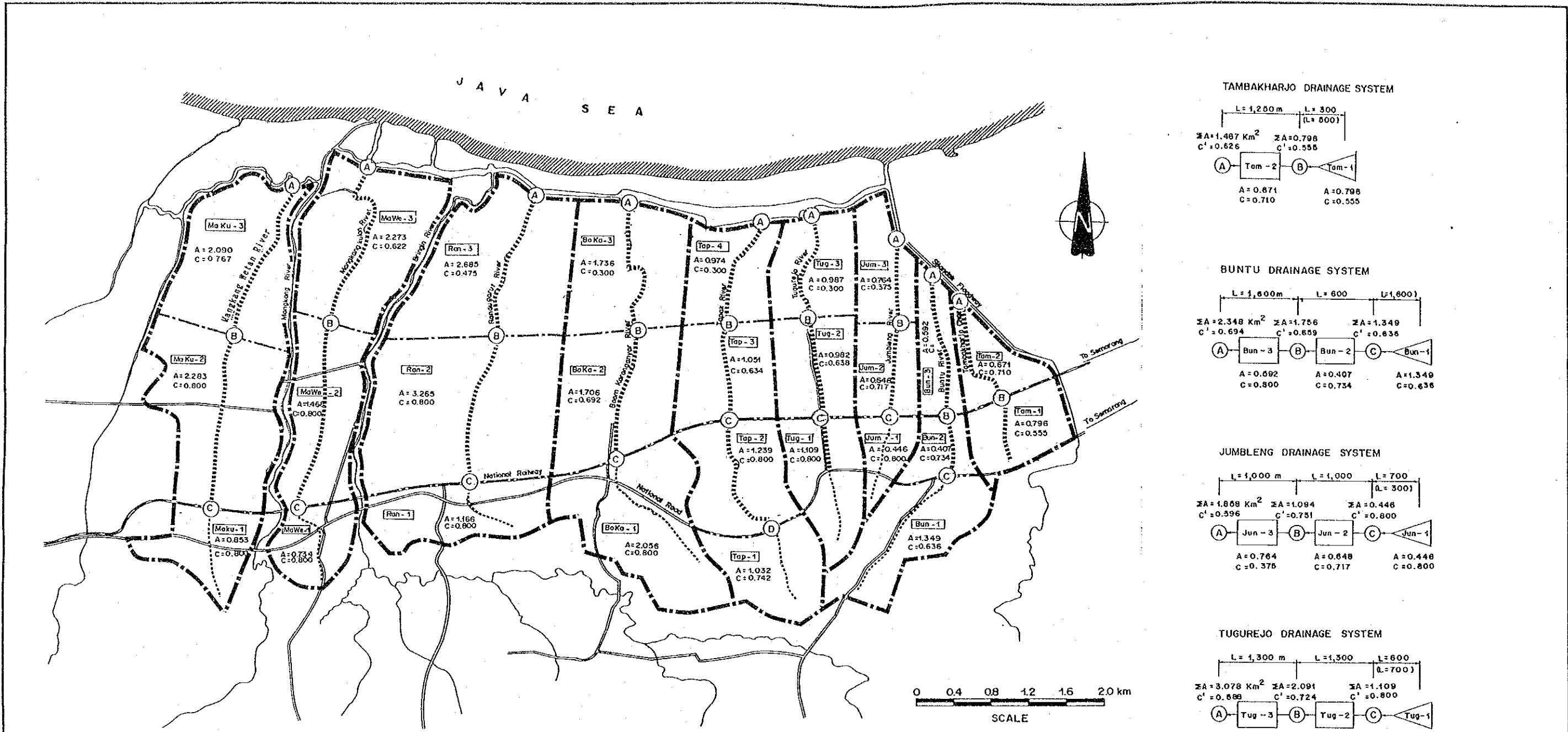
DRAINAGE SYSTEM



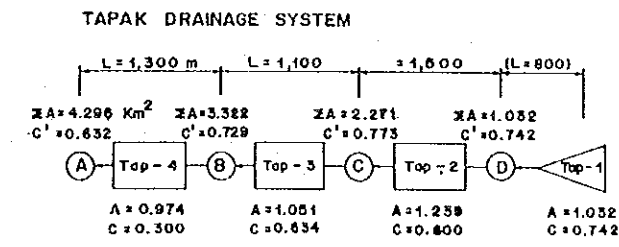
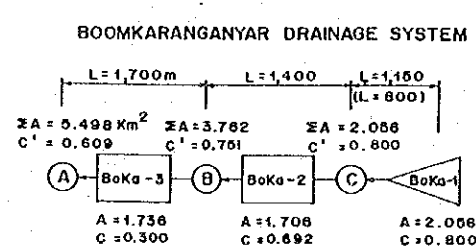
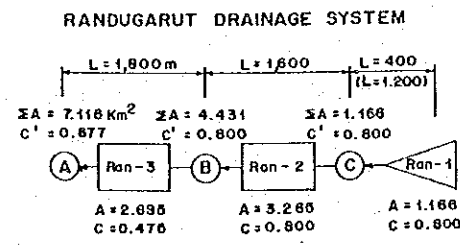
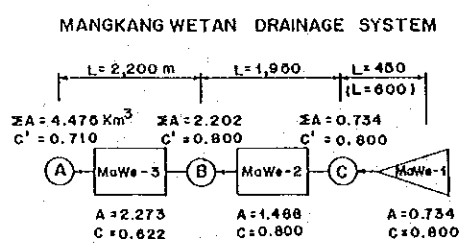
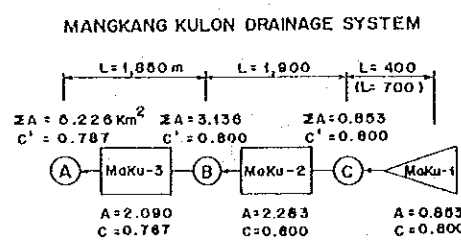
RUN - OFF MODEL

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.5 (6/7) 幹線排水路計画及び流出モデル (西部スマラン排水区)



DRAINAGE SYSTEM



LEGEND

- = Sub-drainage Area
- = River Channel
- $\Sigma A$  = Accumulated Drainage Area (Km<sup>2</sup>)
- $L$  = Length of River Channel (m)
- = Calculation Point
- $A$  = Drainage Area (Km<sup>2</sup>)
- $C$  = Run off Coefficient

RUN - OFF MODEL

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.5 (7/7) 幹線排水路計画及び流出モデル  
(クチャマタン ツグ排水区)



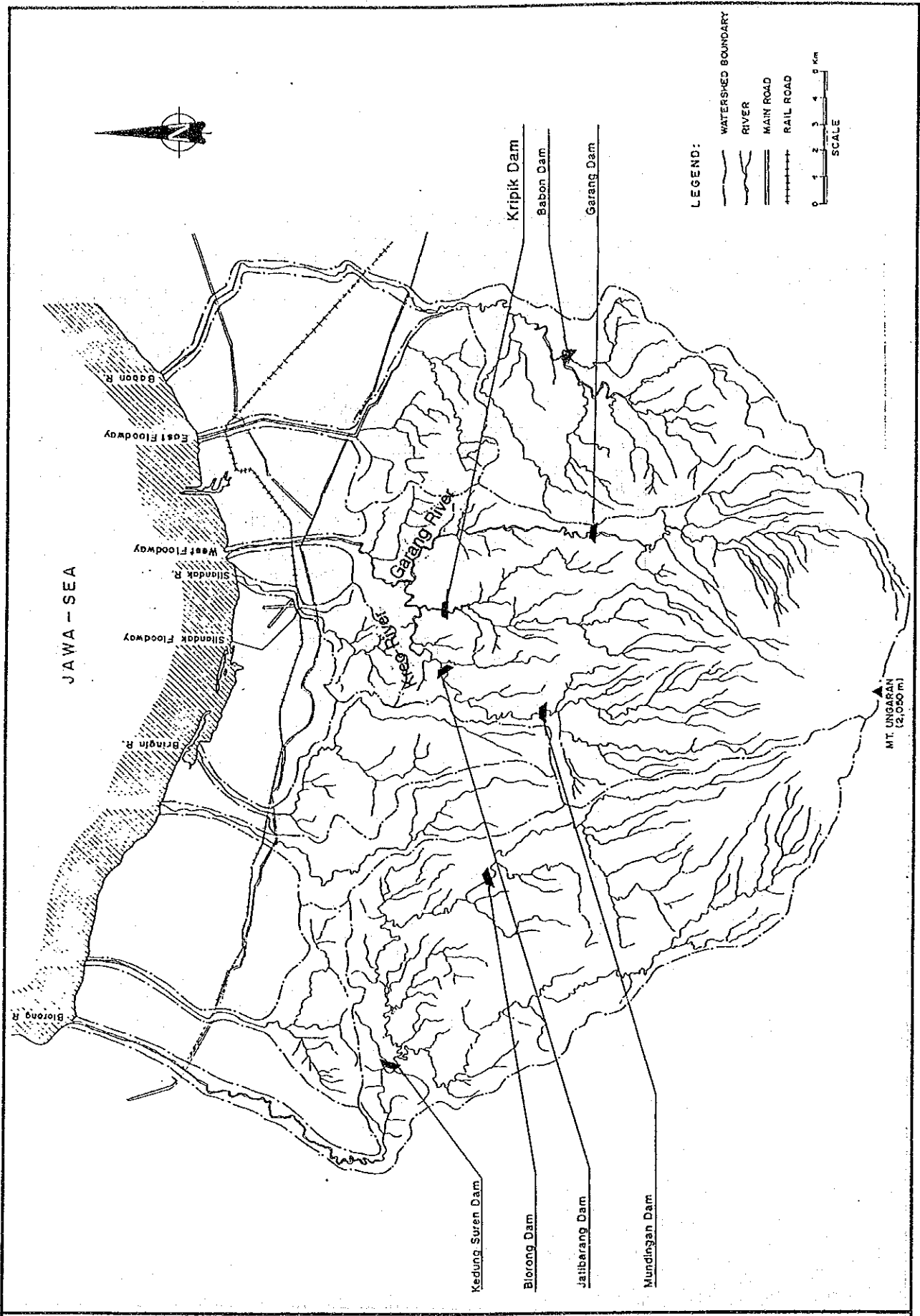
### URBAN DRAINAGE PLAN

Description	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>1. Eastern Semarang</b>																					
Siringin River																					
Tenggang River																					
<b>2. Central Semarang</b>																					
Semarang River																					
Banger River																					
Bulu River																					
<b>3. Western Semarang</b>																					
Ronggolawe River																					
Karangayu River																					
Tawang River																					
Silandak Channel																					

On-going Project  
 Implemented by Master Plan

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

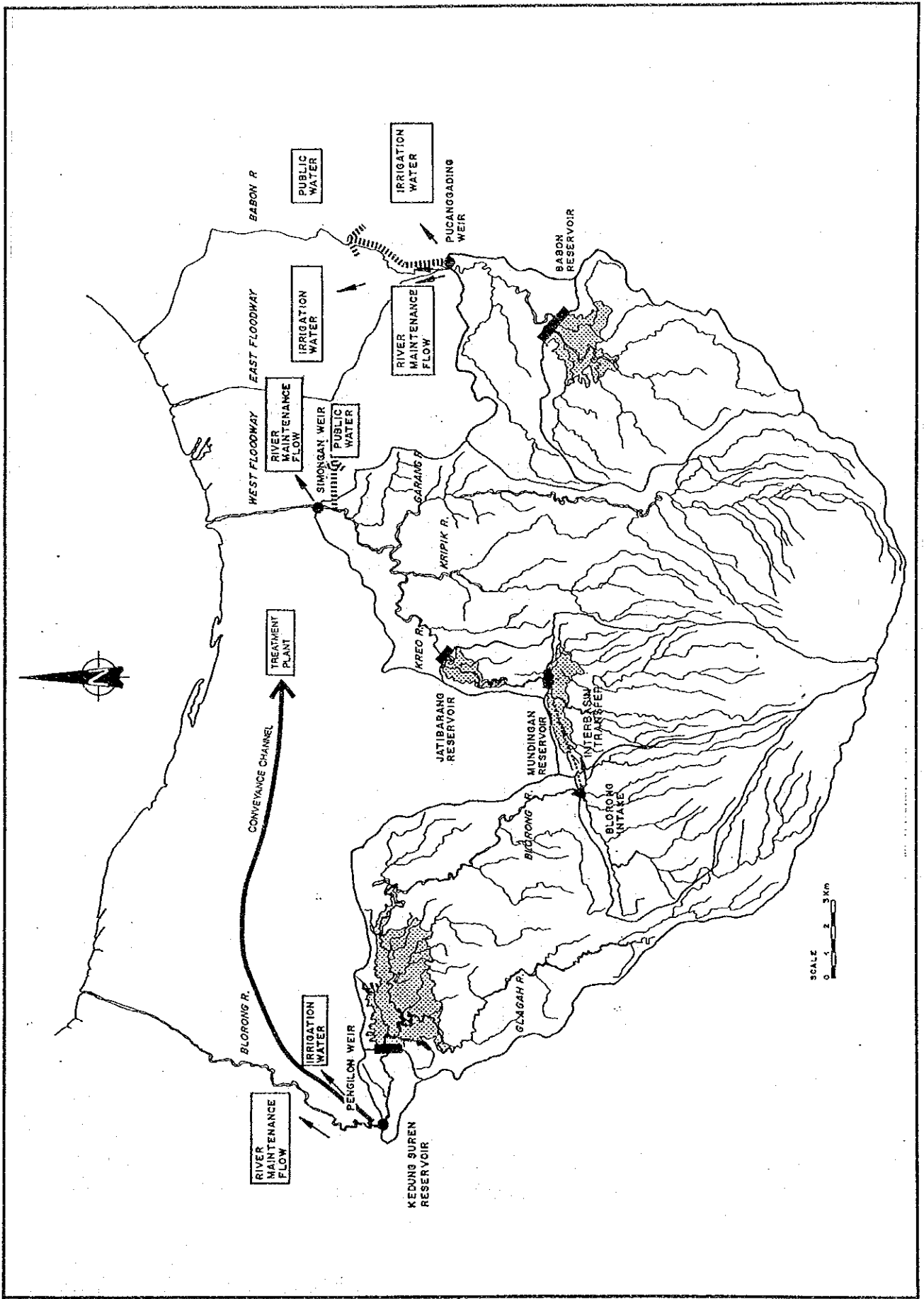
図 3. 6 都市排水マスタープラン  
 実施スケジュール



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.7 ダム建設候補地点位置図

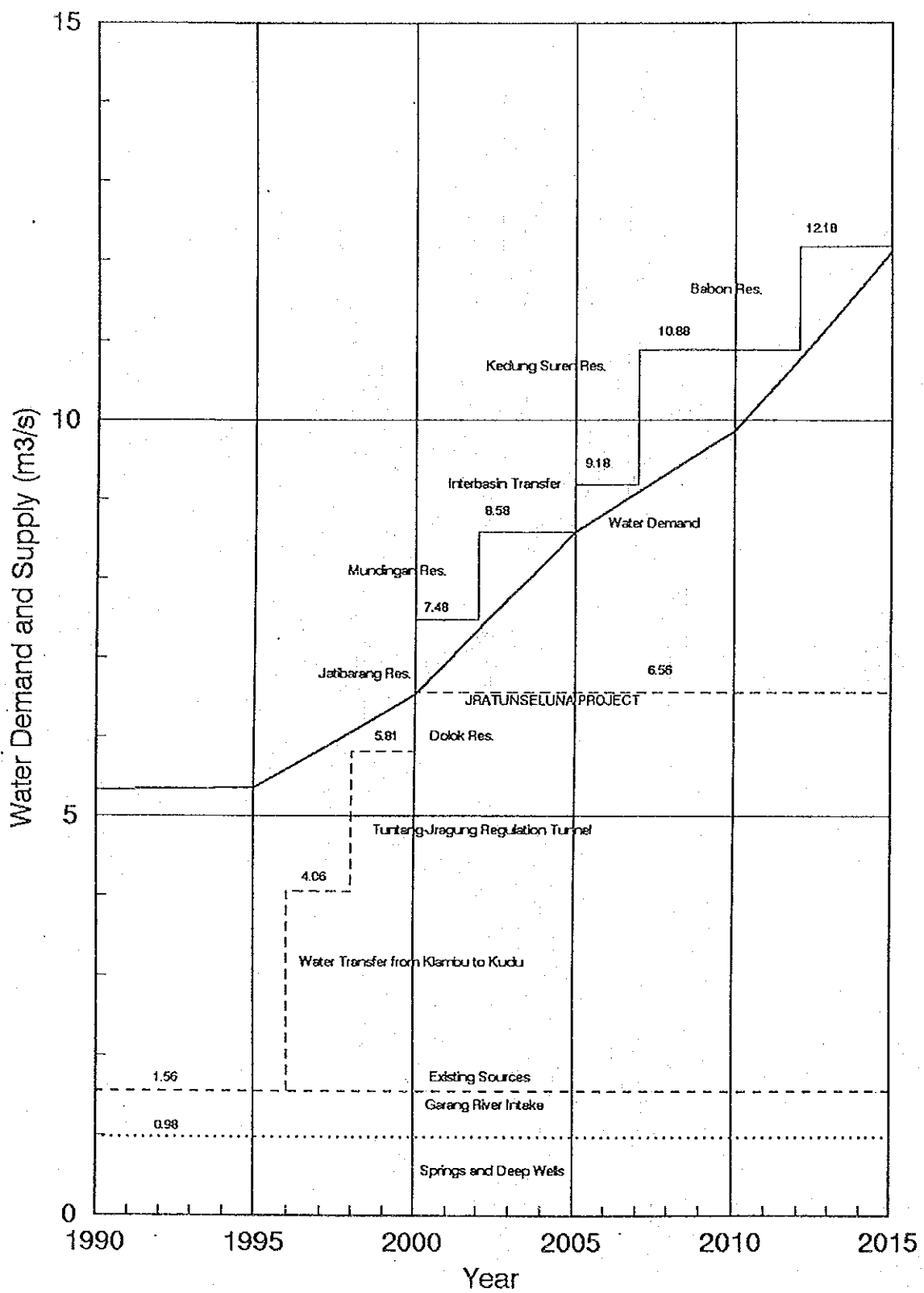




MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS

図 3. 8 水資源開発計画概念図

JAPAN INTERNATIONAL COOPERATION AGENCY



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 3.9 公共用水供給計画

### WATER RESOURCES DEVELOPMENT PLAN

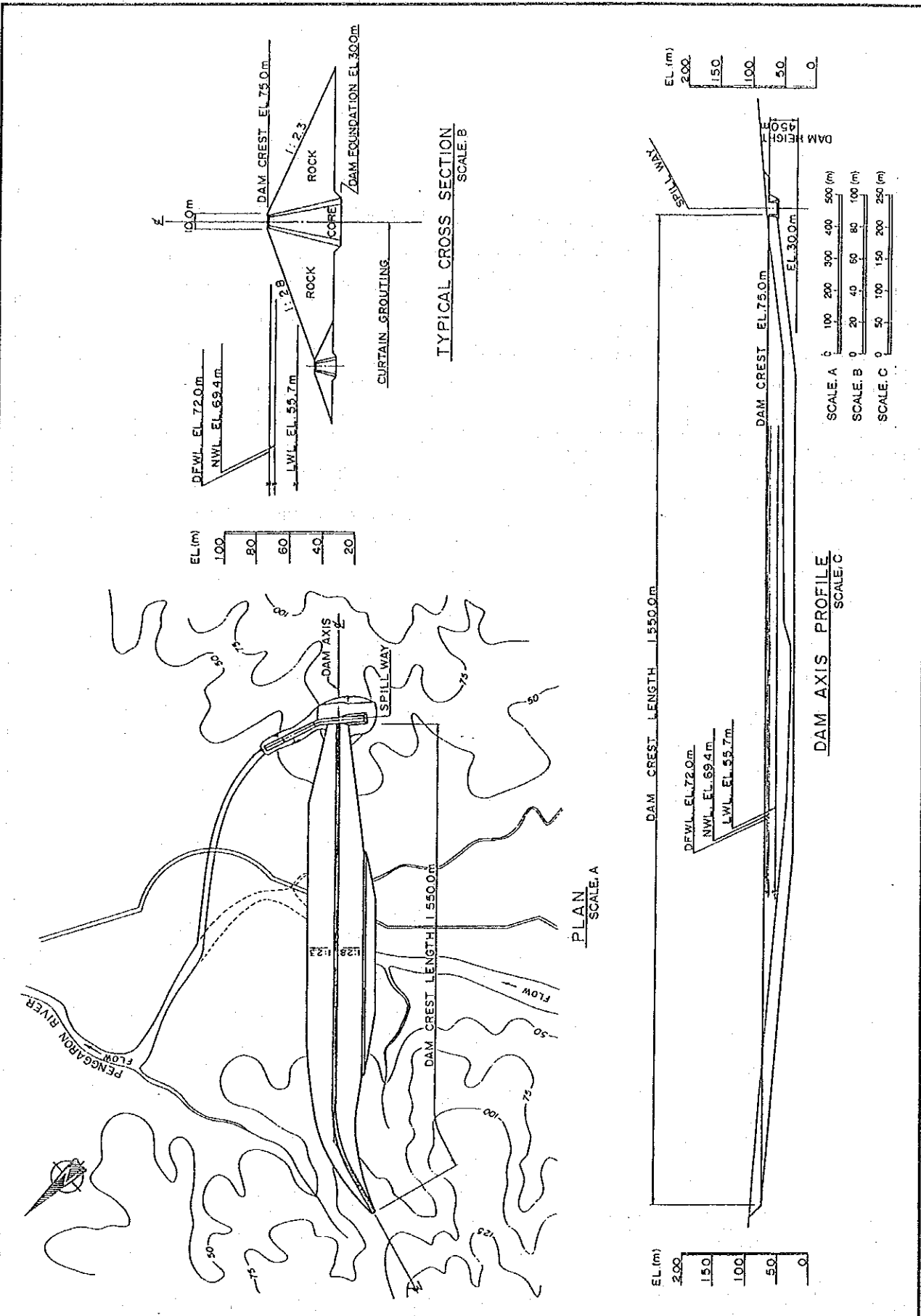
Description	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1. Babon Dam										■	■	■	■	■	■	■	■	■	■	■	■
2. Jatibarang Dam		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3. Mundingan Dam			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
4. Interbasin Transfer								■	■	■	■	■	■	■	■	■	■	■	■	■	■
5. Kedung Suren Dam																					
Kedung Suren Dam					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conveyance Channel										■	■	■	■	■	■	■	■	■	■	■	■

■ Implemented by Master Plan

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS

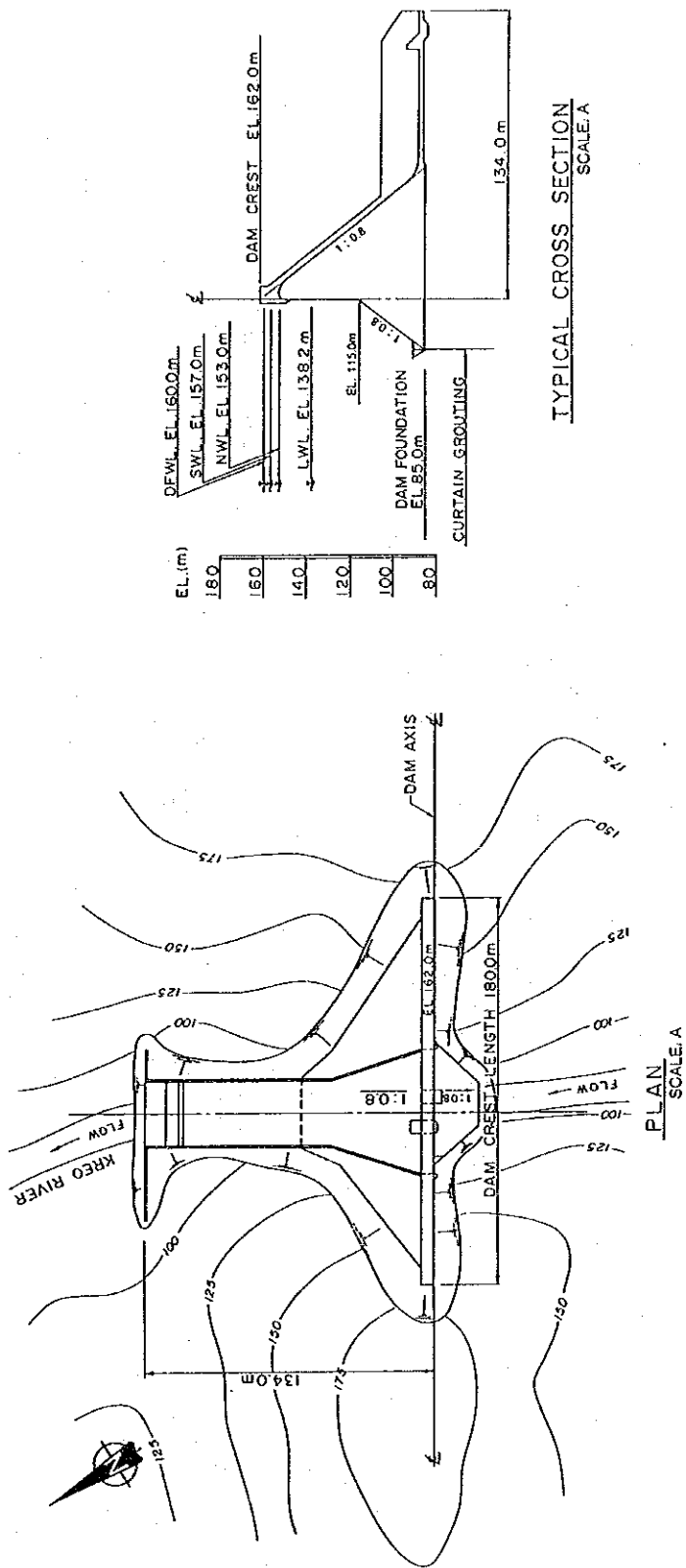
JAPAN INTERNATIONAL COOPERATION AGENCY

図3.10 水資源開発マスタープラン  
実施スケジュール

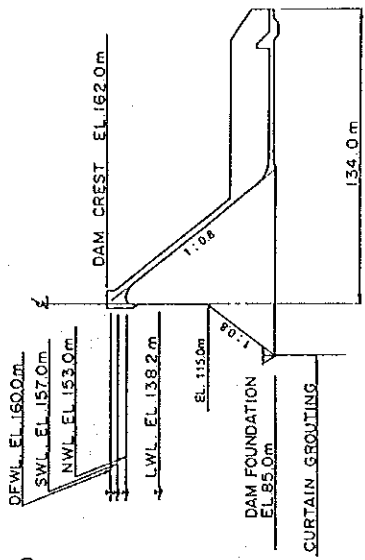


MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

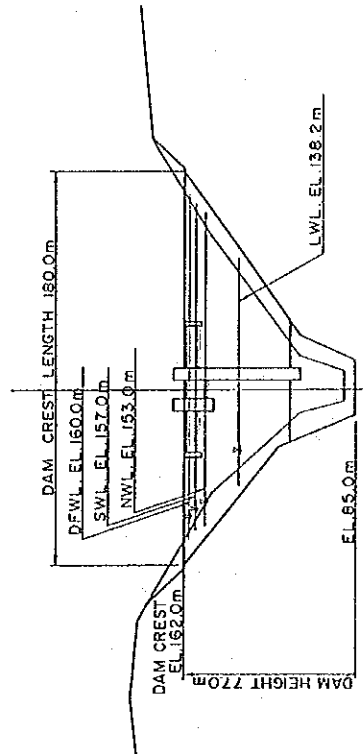
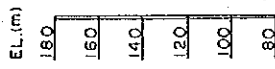
図 3.11 バボンダム一般図



PLAN  
SCALE: A



TYPICAL CROSS SECTION  
SCALE: A

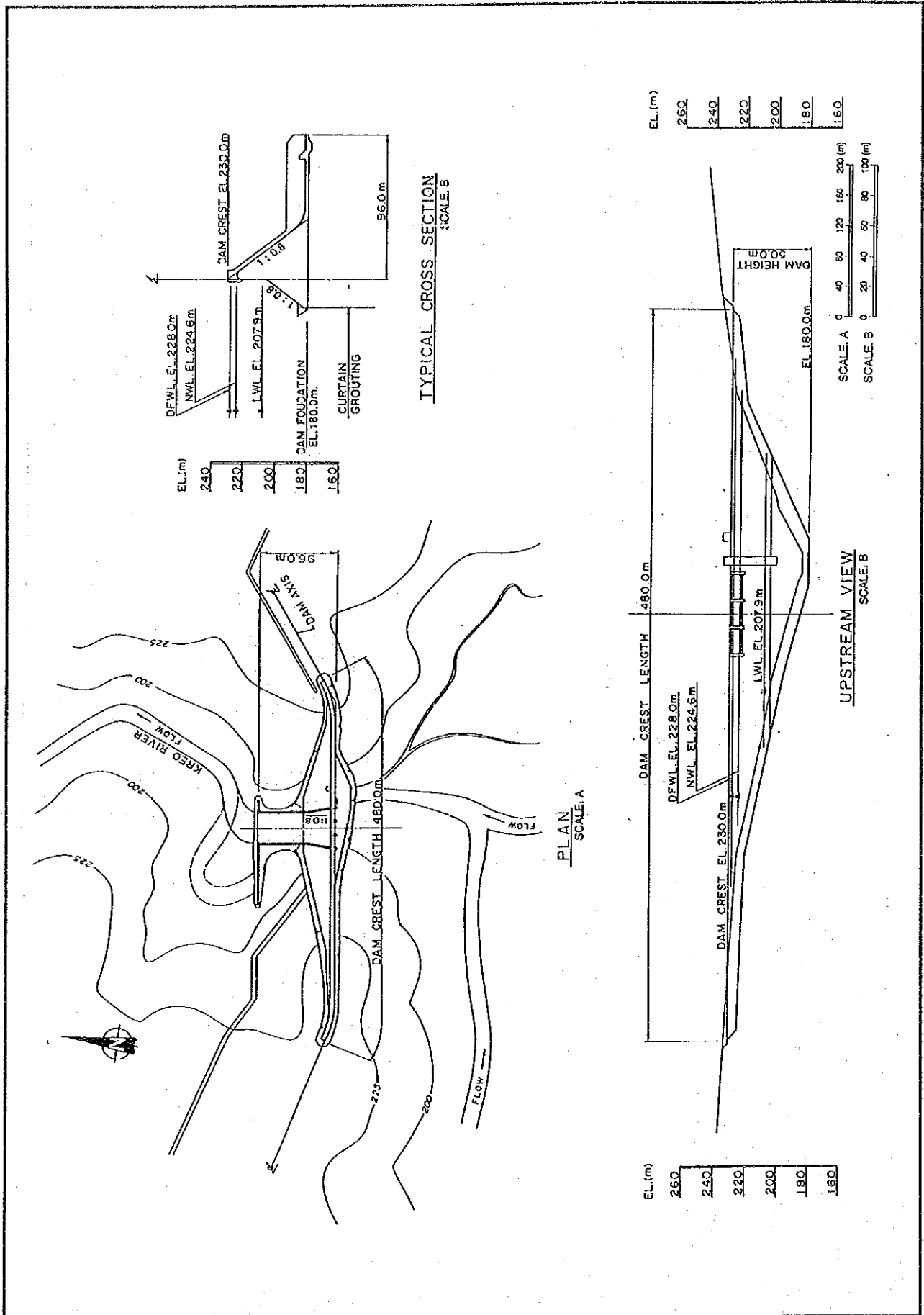


UPSTREAM VIEW  
SCALE: A

SCALE: A 0 20 40 60 80 100 (m)

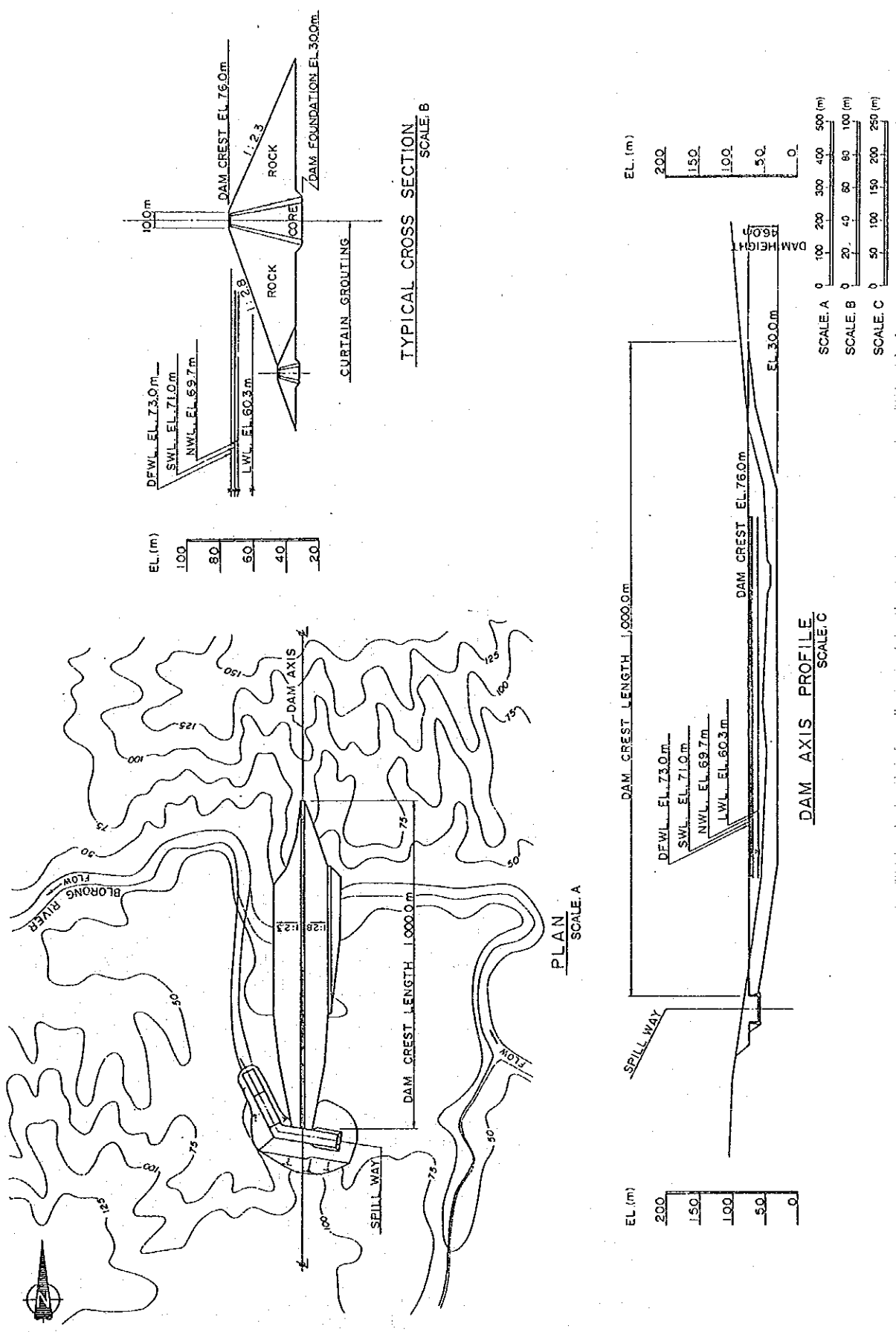
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

図3.12 ジャティバランダム一般図



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

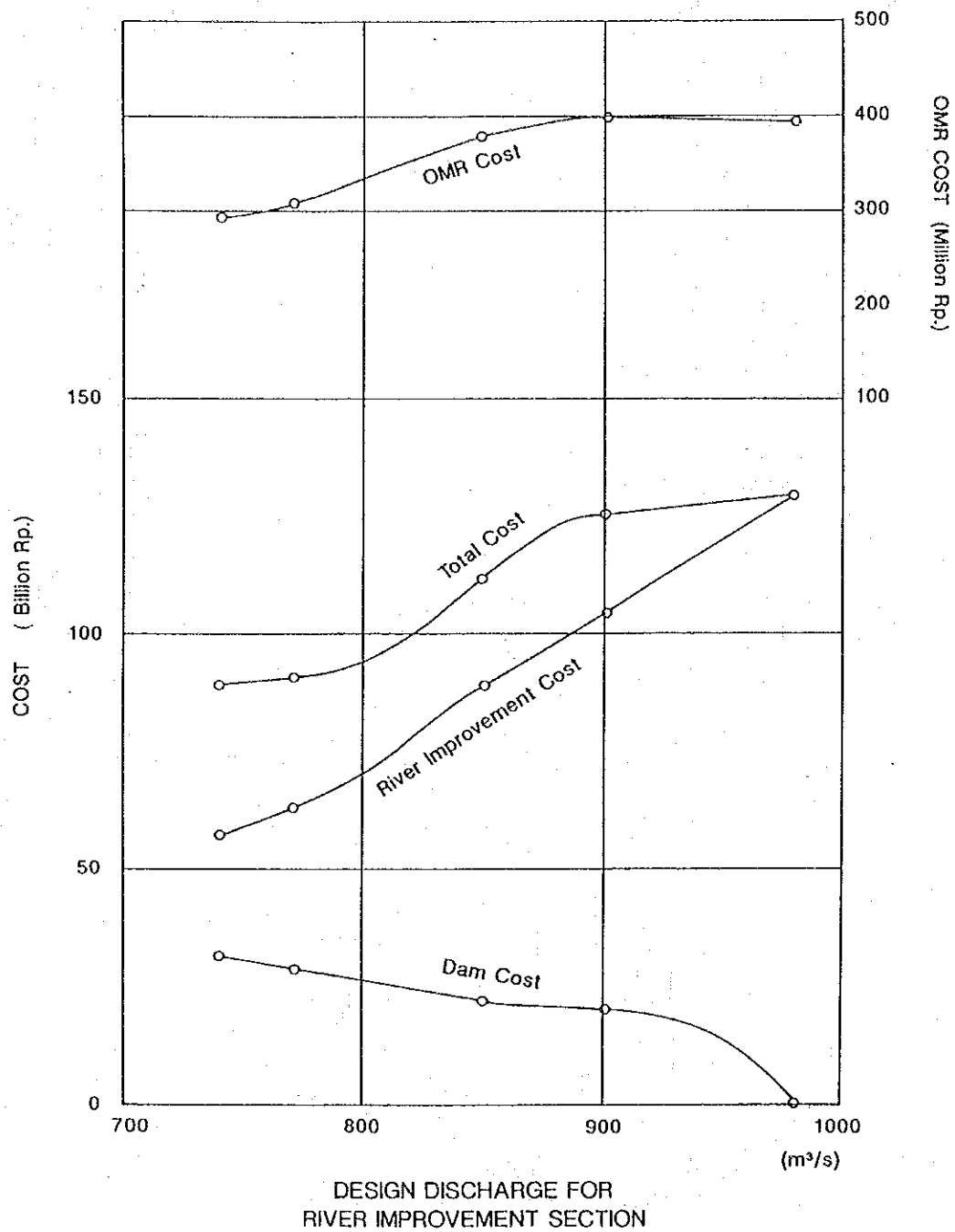
図 3.13 ムンディンガンダム一般図



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

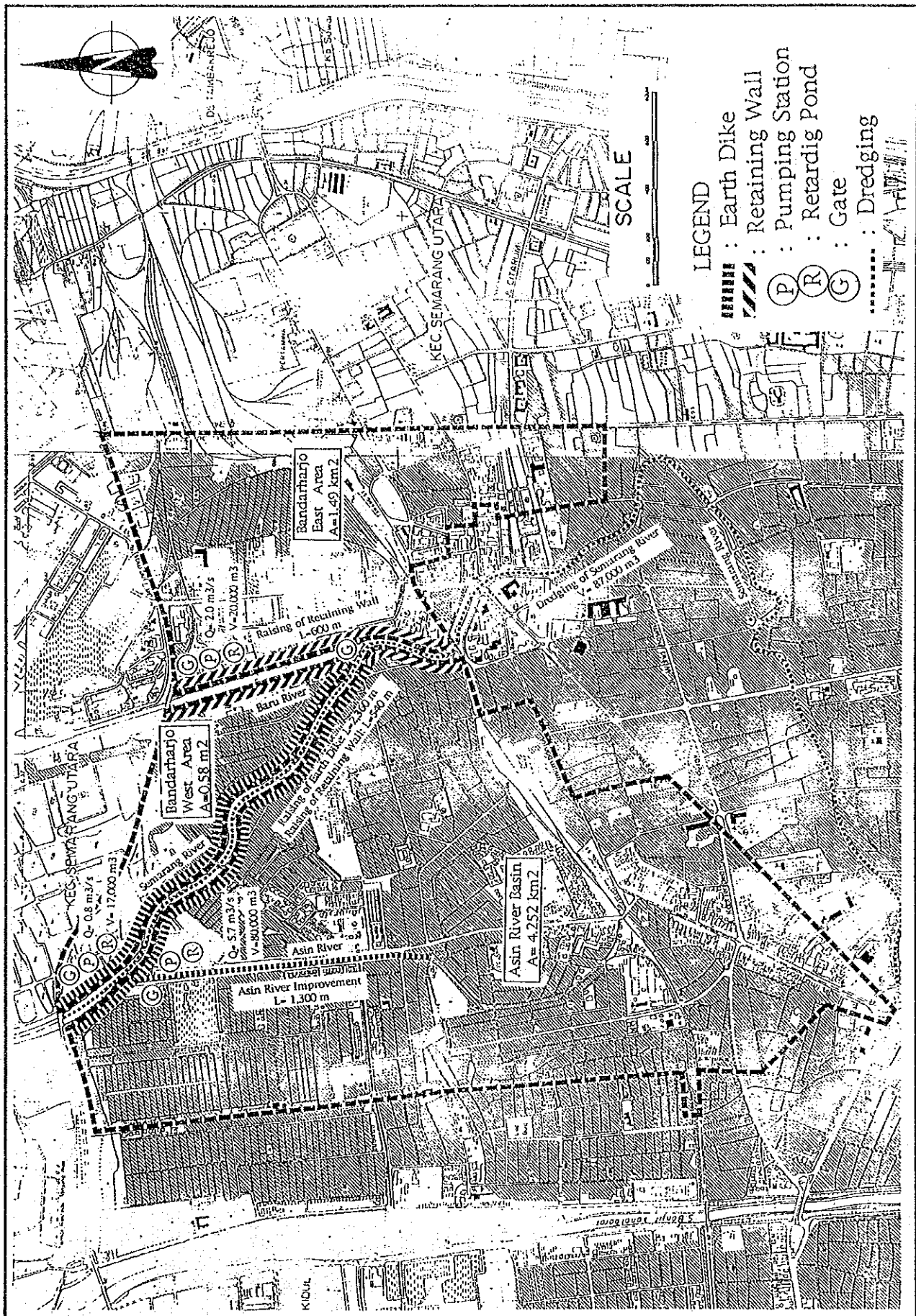
図 3.14 クドン・スレングダム一般図





MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図4.1 治水ダムと河川改修の  
 組合わせによる事業費



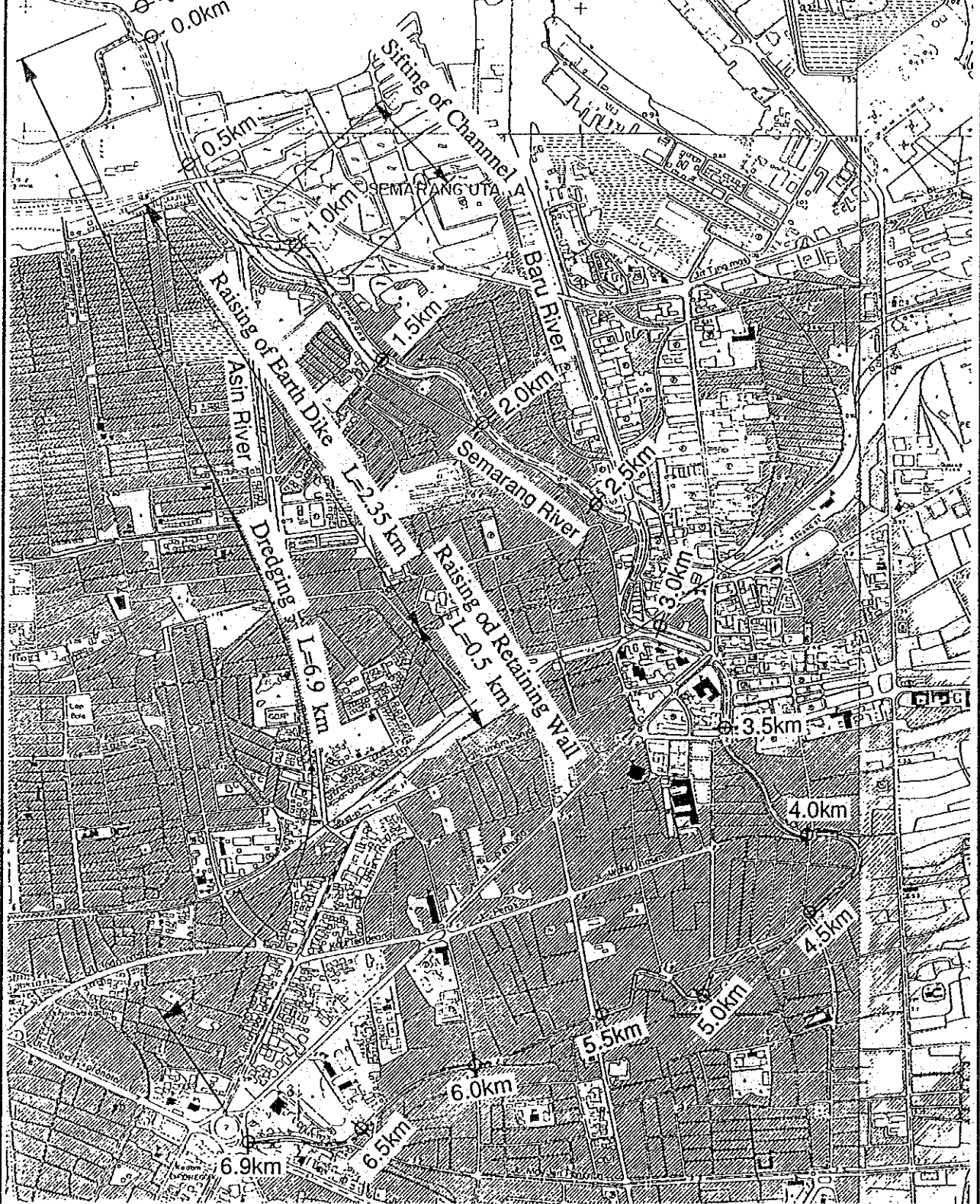
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図4.2 都市排水優先プロジェクト対象地域

LAUT JAWA

KEL. REJOMULYO  
KEC. SEMARANG  
UTARA

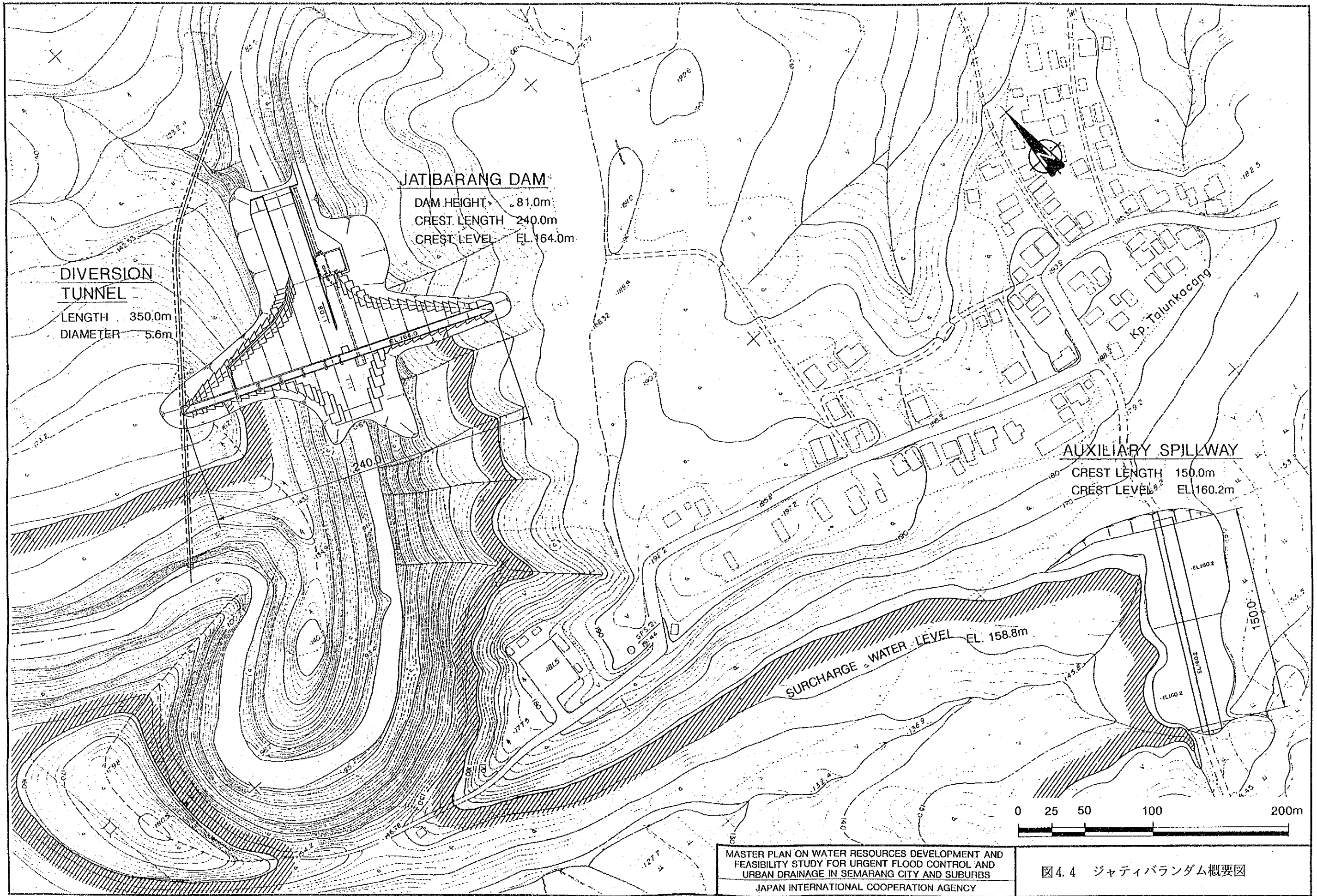
0.1km  
0.0km



MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

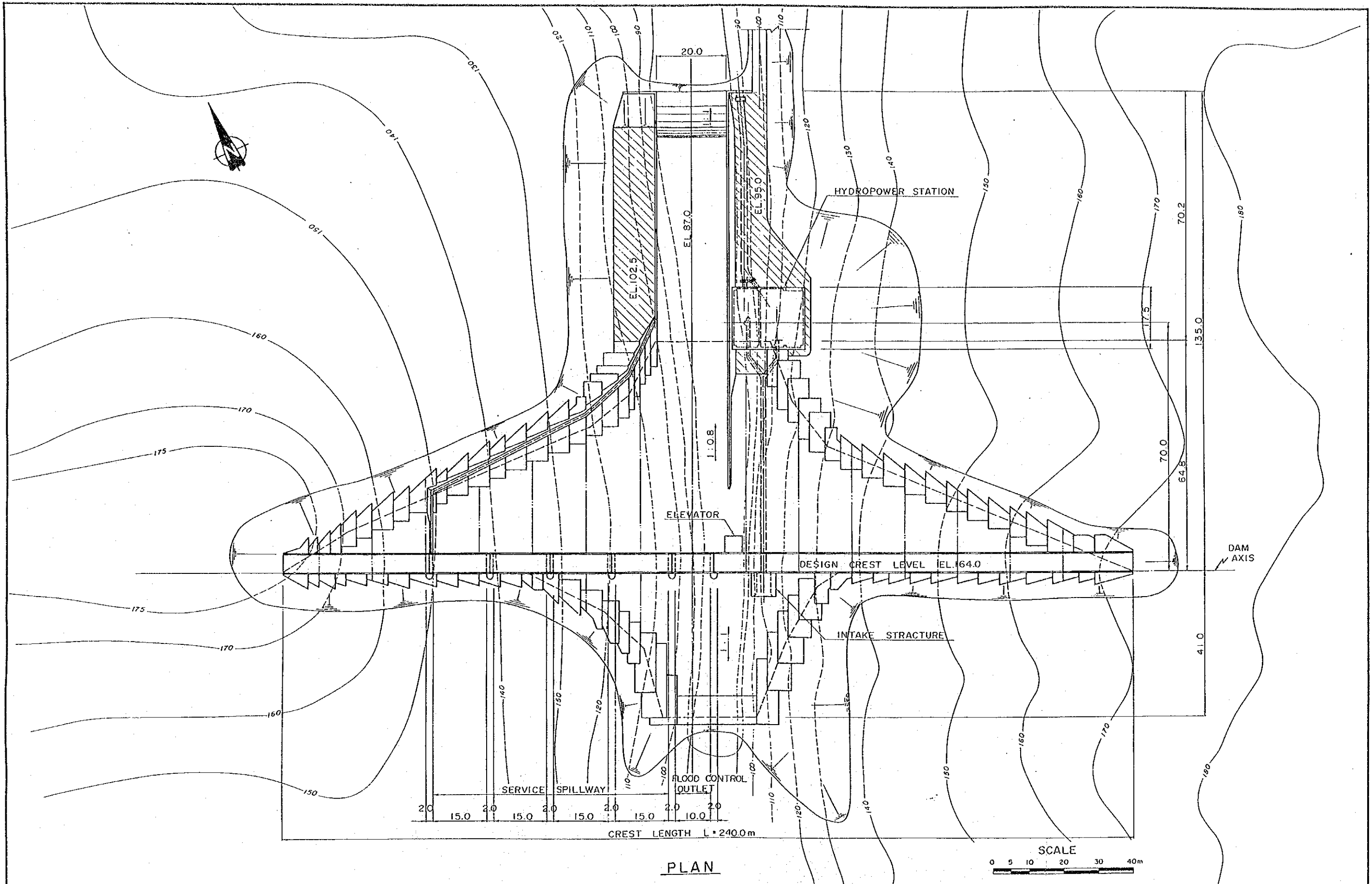
図 4.3 スマラン川改修計画平面図





MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図4.4 ジャティバラングダム概要図



PLAN

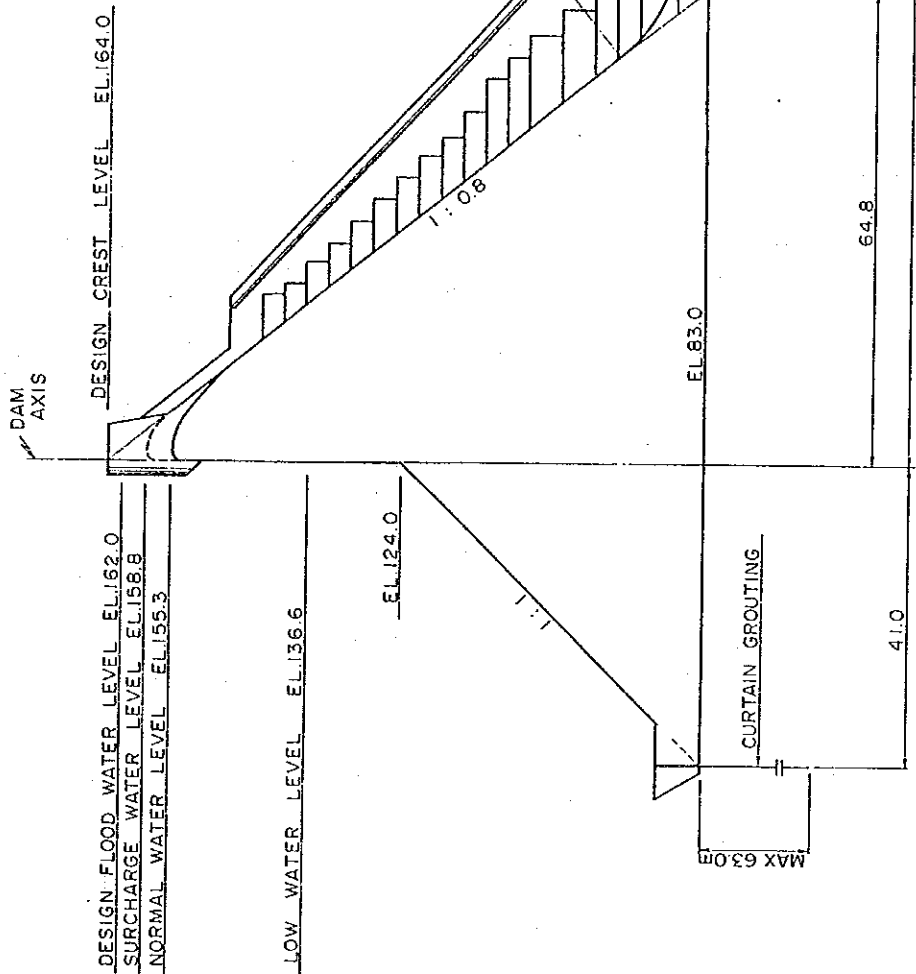
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図4.5 ジャティバラダム平面図





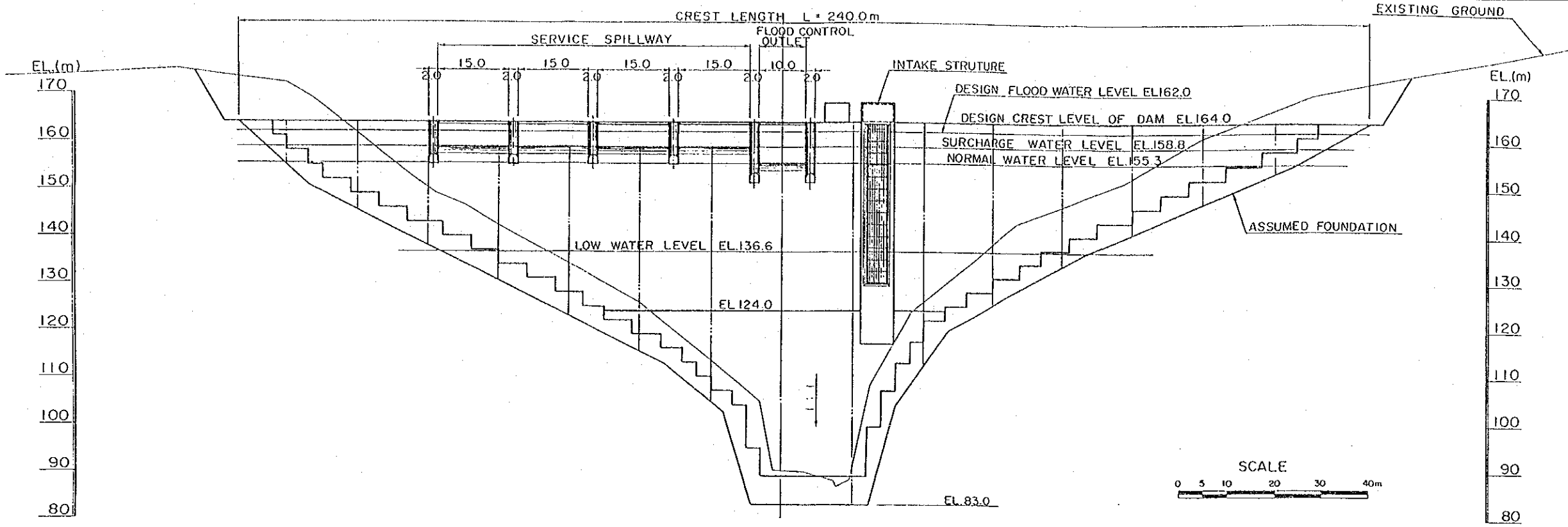
EL.(m)  
 170  
 160  
 150  
 140  
 130  
 120  
 110  
 100  
 90  
 80



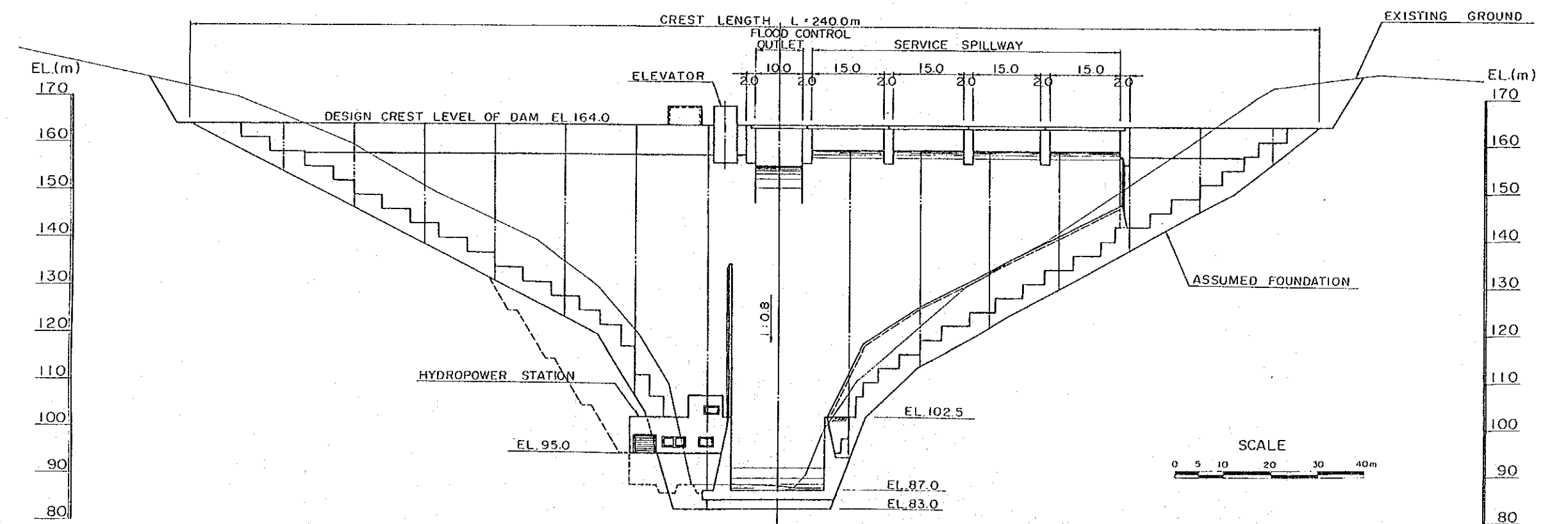
TYPICAL SECTION

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 4.6 ジャティバランダム標準断面図



UPSTREAM VIEW






DOWNSTREAM VIEW

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図4.7 ジャティバラダム上下流面図



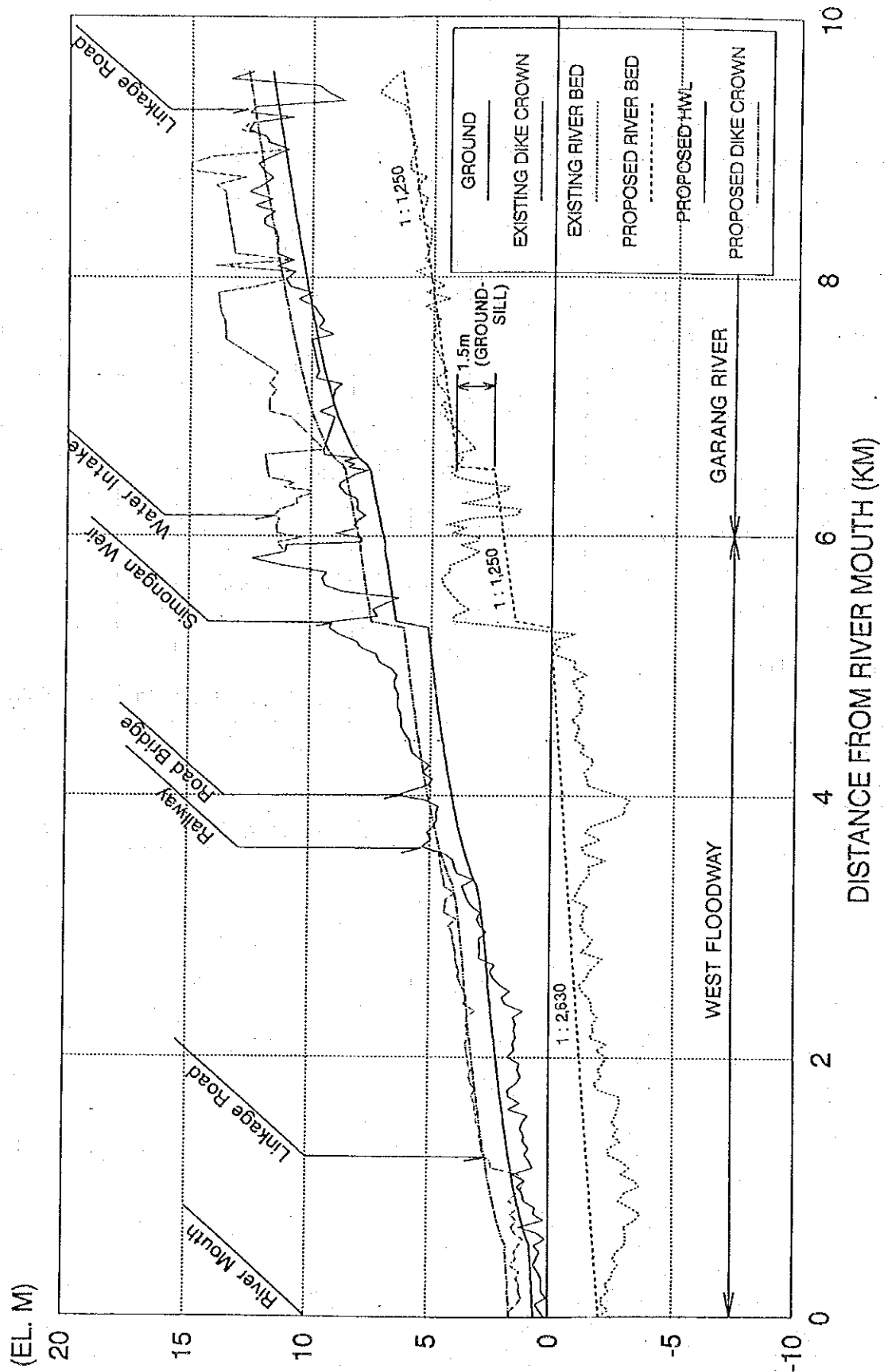
Description		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Flood Control Plan	River Improvement Works for West Floodway/ Garang River	Detailed Design			Construction Works							
	Jatibarang Dam Construction Works		Detailed Design	Land Acquisition		Construction Works						
Water Resources Development Plan	Hydropower Station Construction Works		Detailed Design		Construction Works							
	Urban Drainage Plan				Detailed Design		Land Acquisition		Construction Works			

-  Detailed Design
-  Land Acquisition
-  Construction Works

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS

JAPAN INTERNATIONAL COOPERATION AGENCY

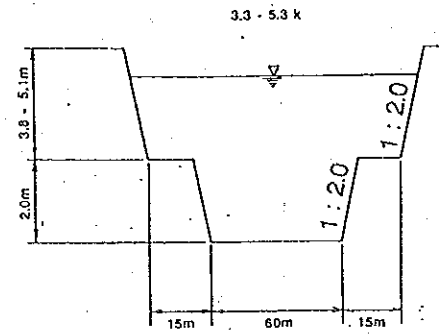
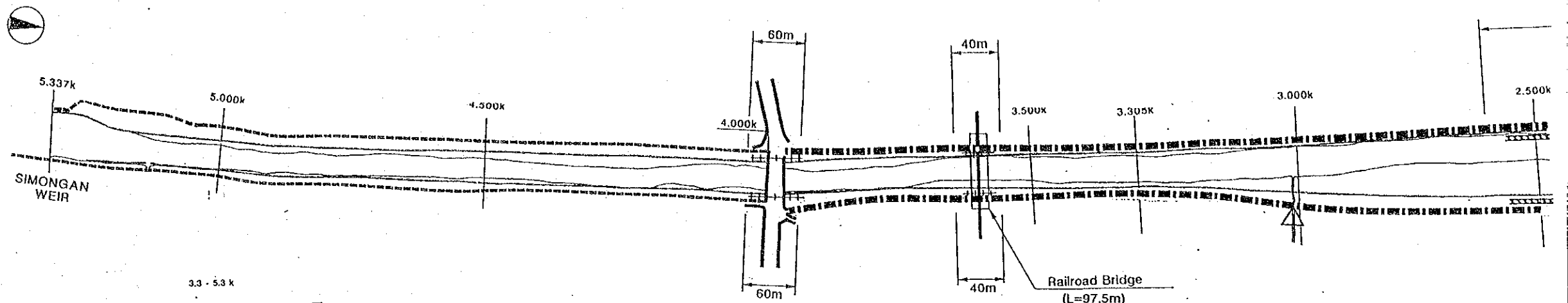
図4.8 優先プロジェクト実施スケジュール



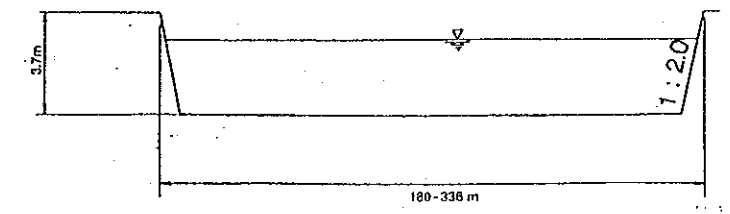
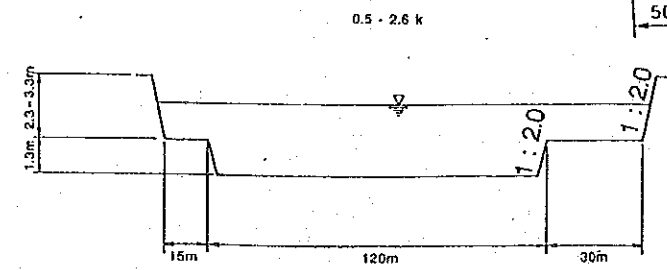
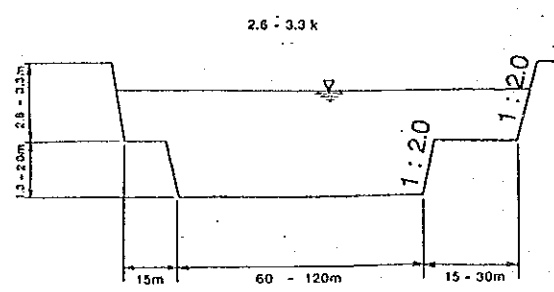
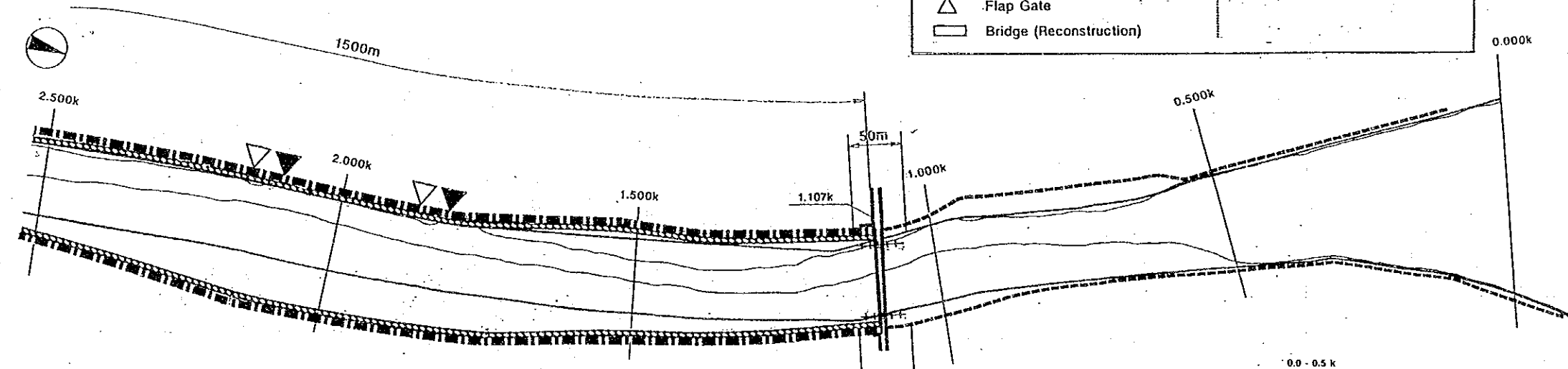
MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 5. 1 西放水路及びガラン川計画縦断面図





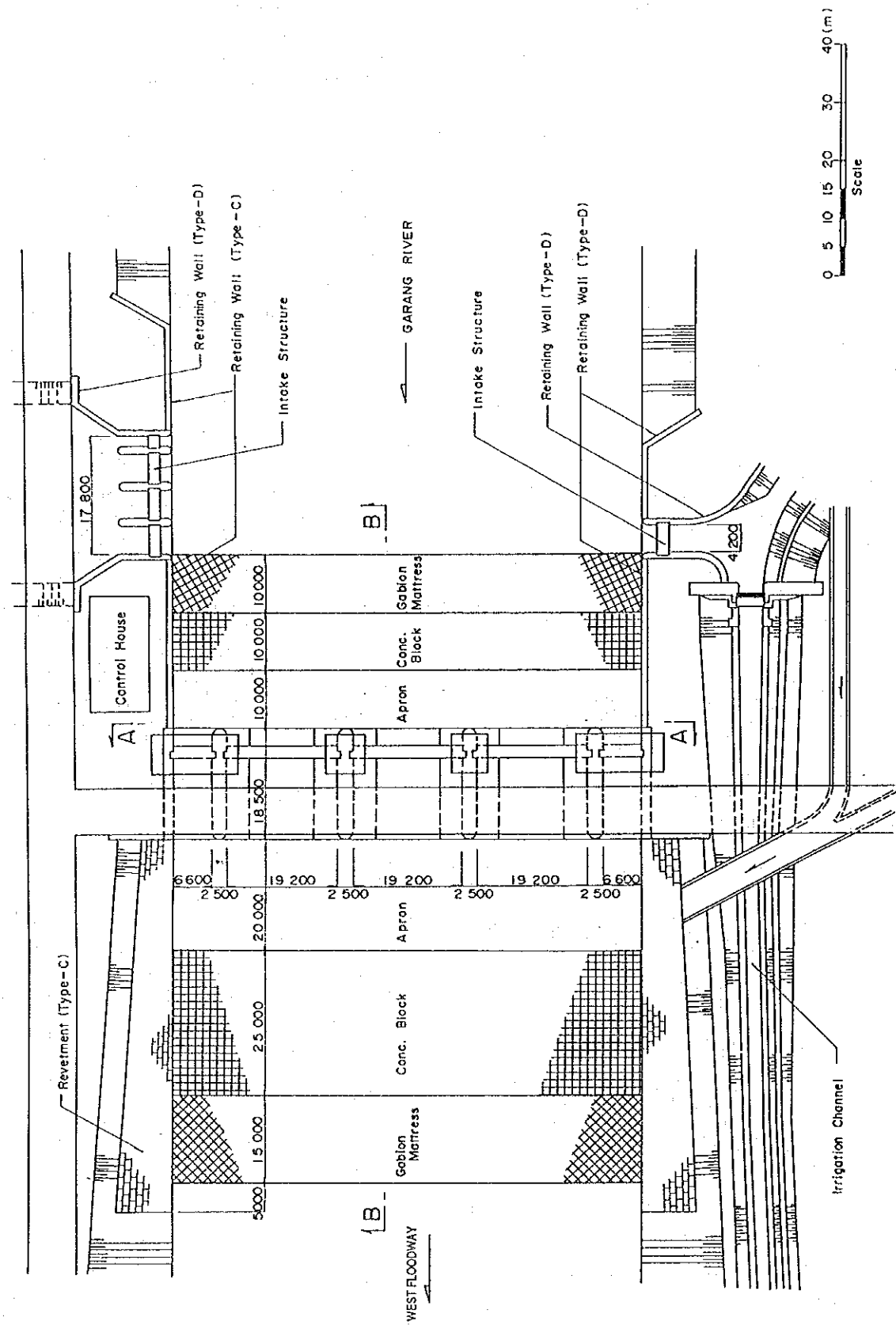
LEGEND	
Proposed	Existing
Low-Water Channel	Low-Water Channel
Embankment	Embankment
Revetment (Type-A)	Revetment (Type-A)
Revetment (Type-B)	Retaining Wall (Type-A)
Retaining Wall (Type-B)	Retaining Wall (Type-B)
Retaining Wall (Type-E)	Retaining Wall (Type-E)
Weir (Reconstruction)	Flap Gate
Ground Sill	Boundary of right-of-way
Intake Structure (Reconstruction)	
Flap Gate	
Bridge (Reconstruction)	



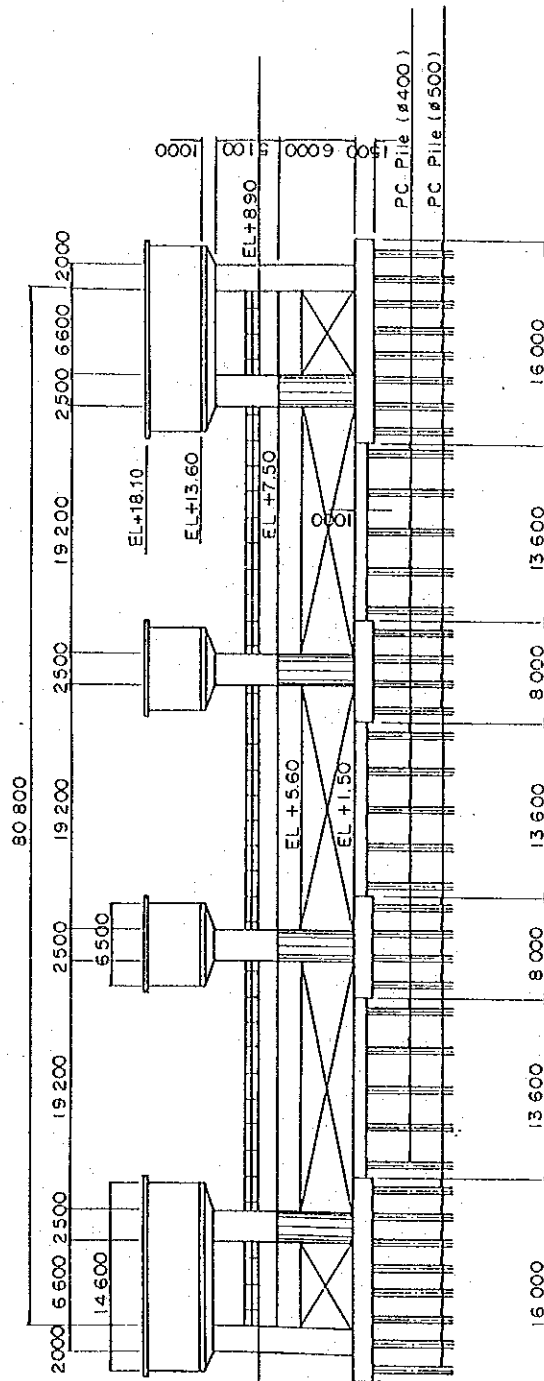
SCALE FOR PLAN  
0 50 100 150 200 250 300m

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
URBAN DRAINAGE IN SEMARANG-CITY AND SUBURBS  
JAPAN INTERNATIONAL COOPERATION AGENCY

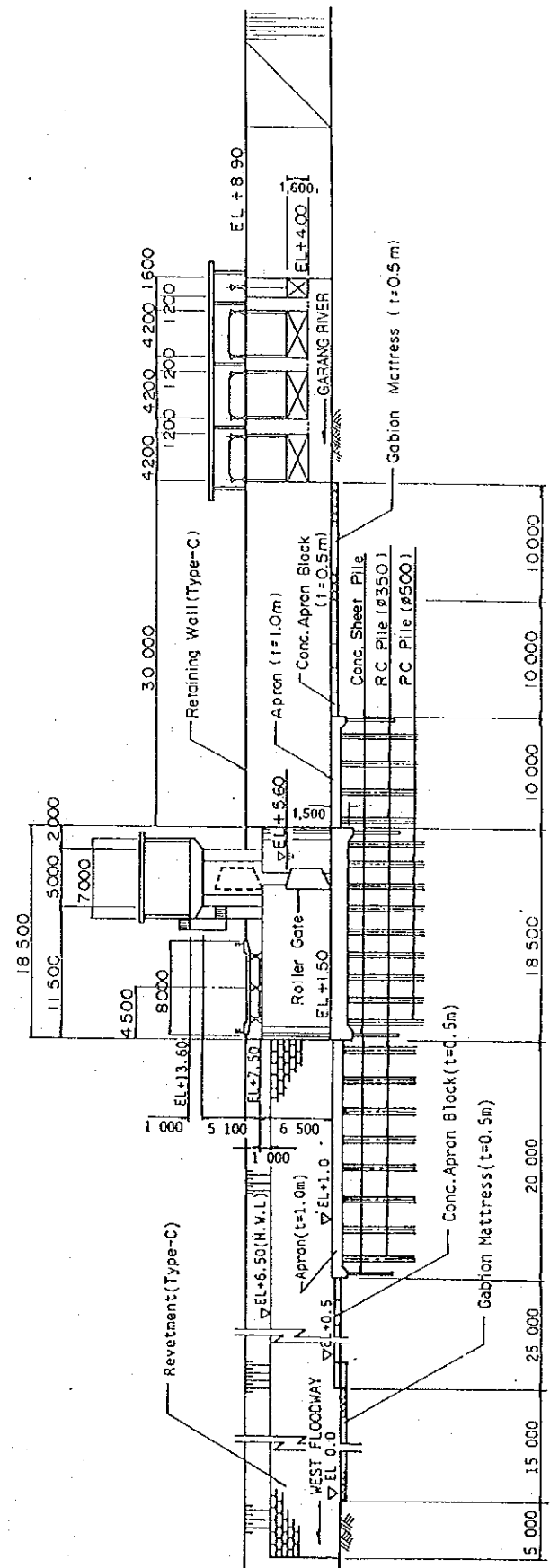
図 5.2 西放水路標準断面及び平面計画図



PLAN



SECTION A - A

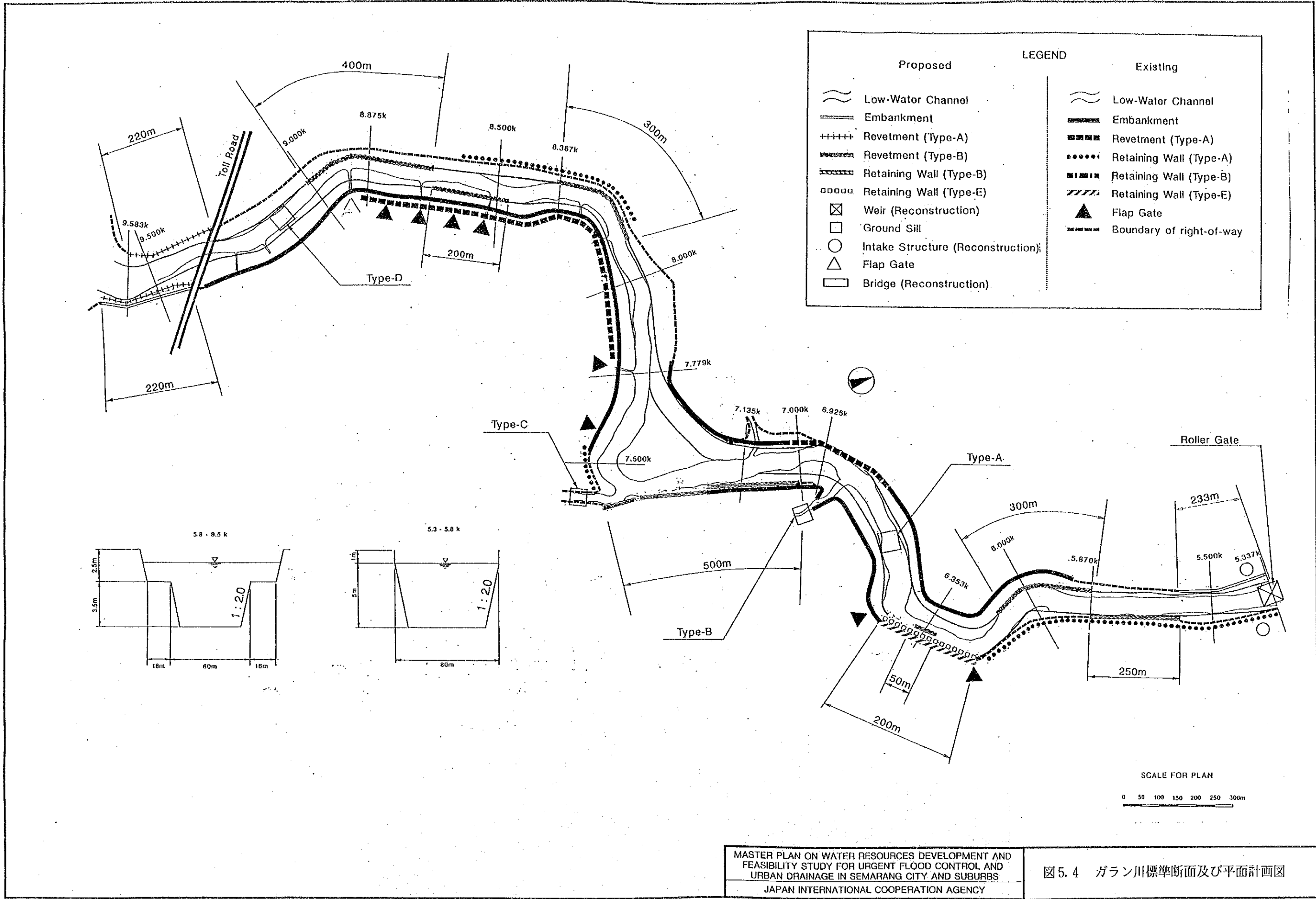


SECTION B - B

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図 5.3 シモンガン堰一般図





MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図5.4 ガラン川標準断面及び平面計画図



Item	1992	1993	1994	1995	1996	1997	1998	1999	2000
Feasibility Study	■								
Application for Loan		■							
Detailed Design			■	■					
P/Q and Tendering					■				
Construction						■	■	■	■

MASTER PLAN ON WATER RESOURCES DEVELOPMENT AND  
 FEASIBILITY STUDY FOR URGENT FLOOD CONTROL AND  
 URBAN DRAINAGE IN SEMARANG CITY AND SUBURBS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

図5.5 緊急プロジェクト実施スケジュール





