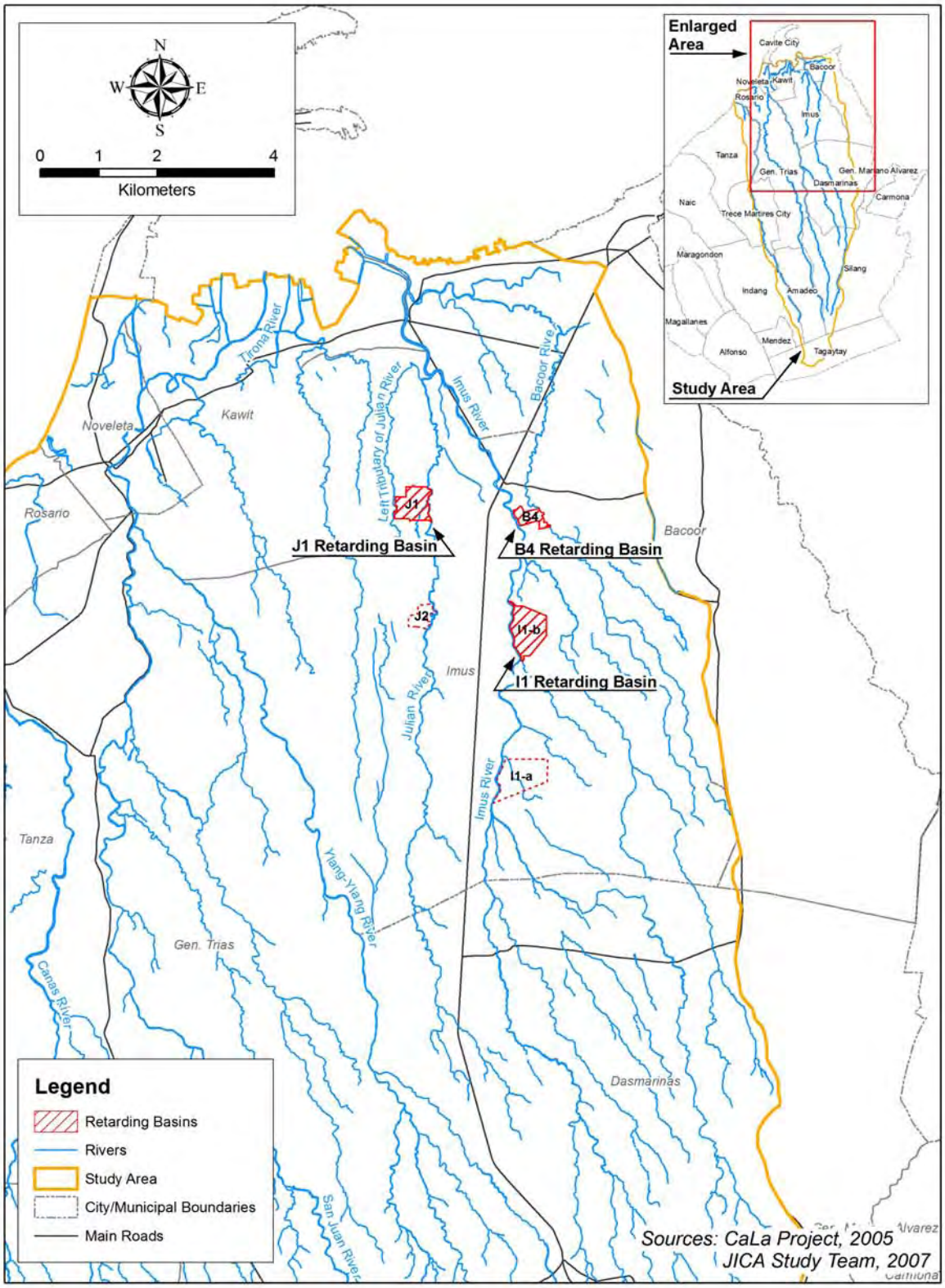
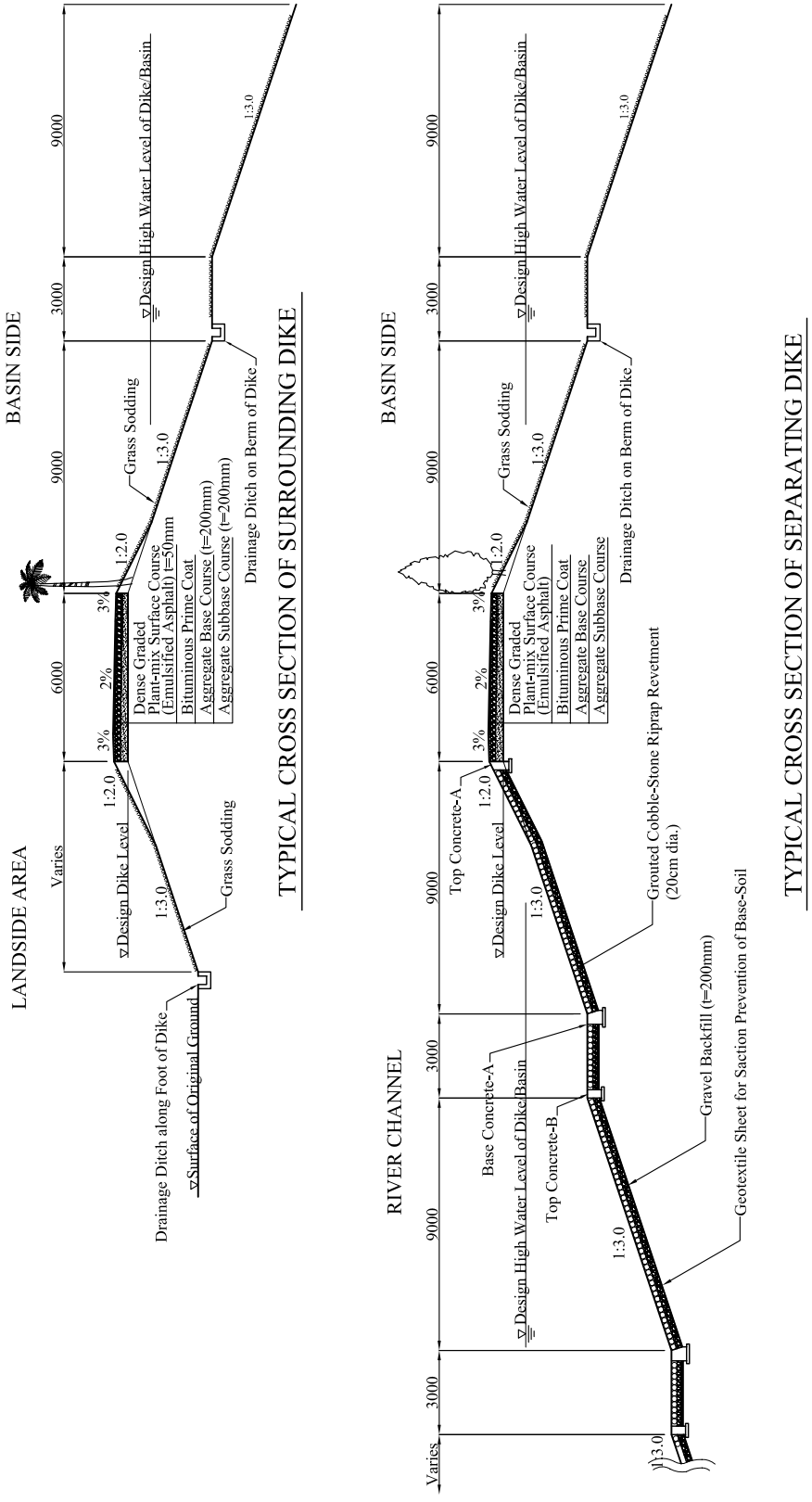
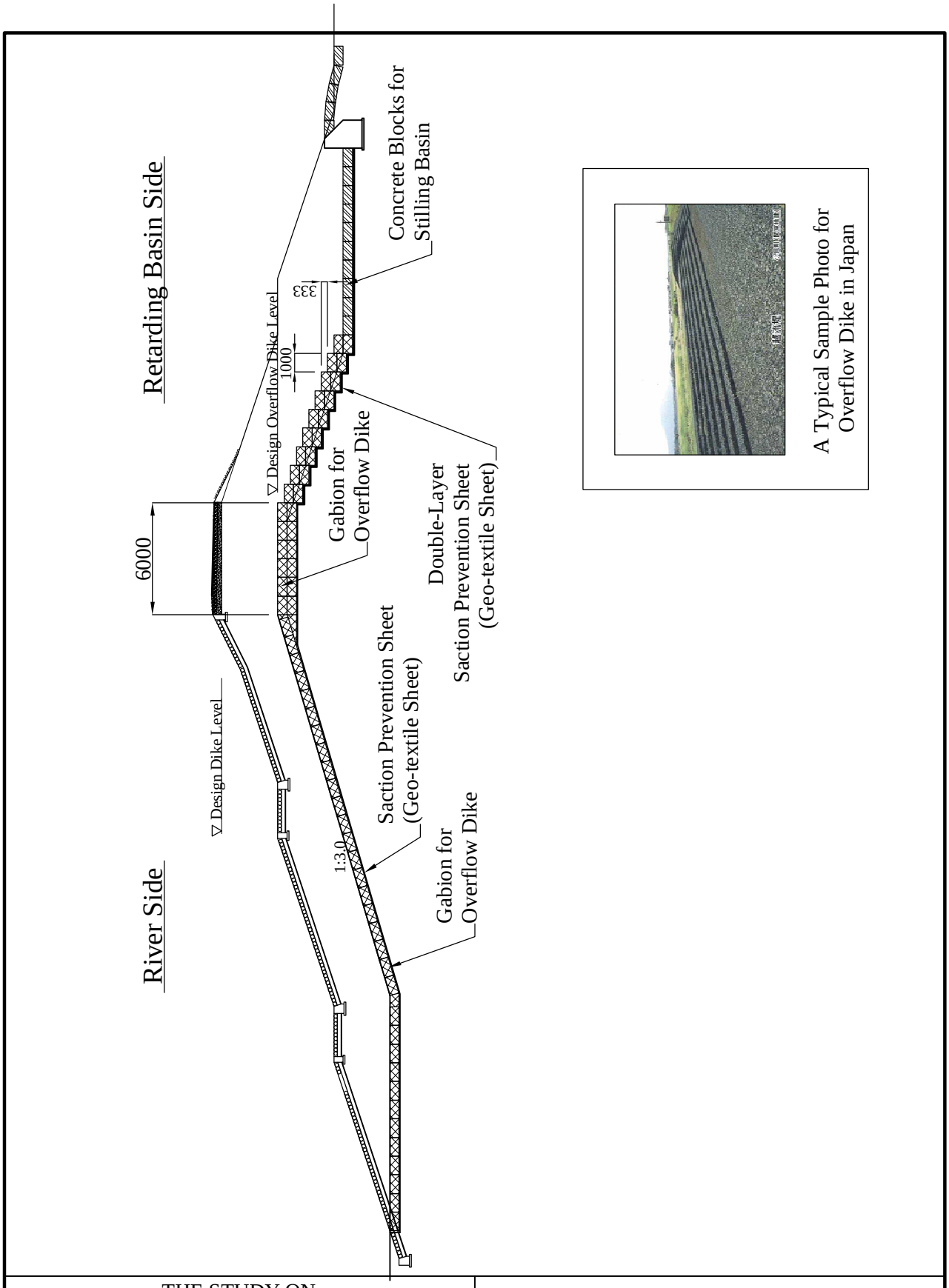
Figures



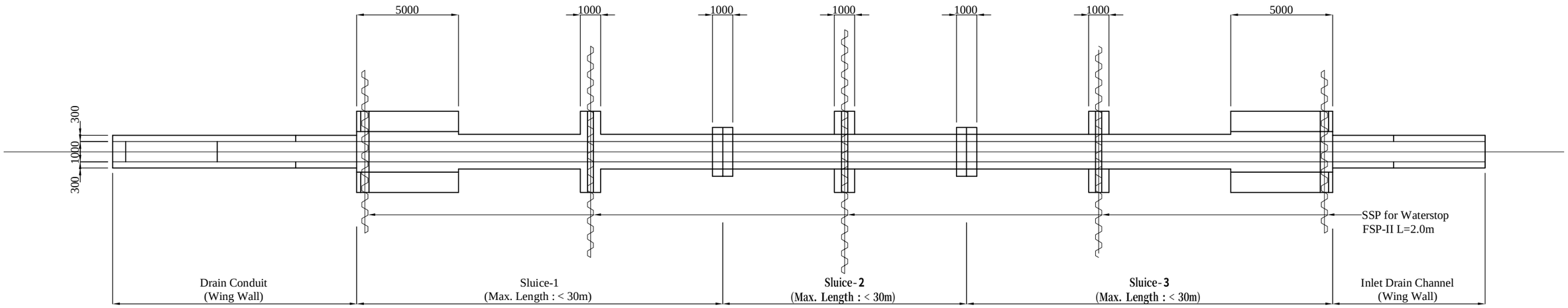
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.1 Location Map for Feasibility Study on the Priority Project as Structural Flood Mitigation Measures (Location Map of Off-site Flood Retarding Basins)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	



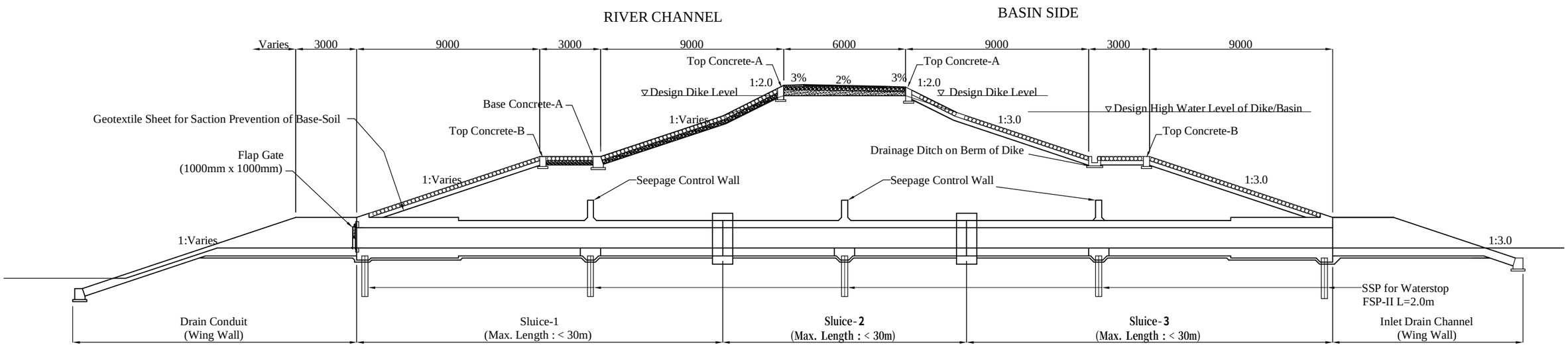
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.2 Typical Cross Sections of Surrounding Dike and Separating Dike
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	



THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.3 Typical Cross Sections of Overflow Dike
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	



TYPICAL PLAN OF DRAINAGE SLUICE



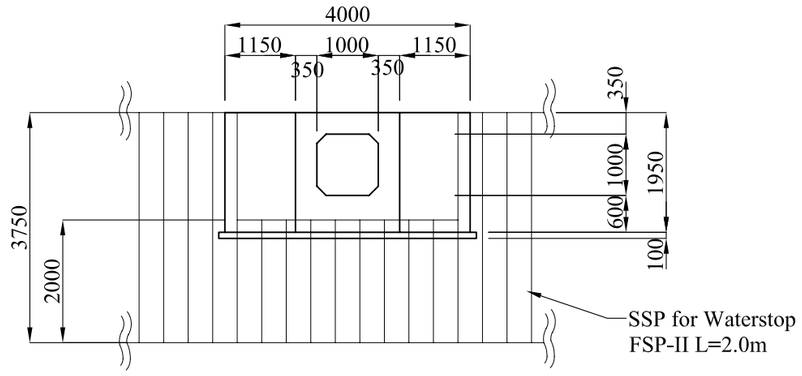
TYPICAL LONGITUDINAL PROFILE OF DRAINAGE SLUICE

A Typical Sample Photo for
Drainage Sluice for Outlet

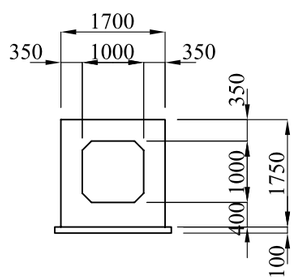
0 2 4 6 8 10m
SCALE 1 : 200

THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.4 (1/2)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	Typical Drawings of Drainage Sluice for Retarding Basin (1/2)

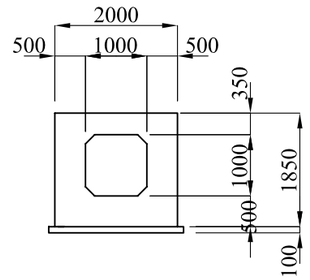
TYPICAL PLAN OF REVETMENT FOR DRAINAGE SLUICE



STANDARD CROSS SECTION OF DRAINAGE SLUICE
(at Seepage Control Wall Sections)



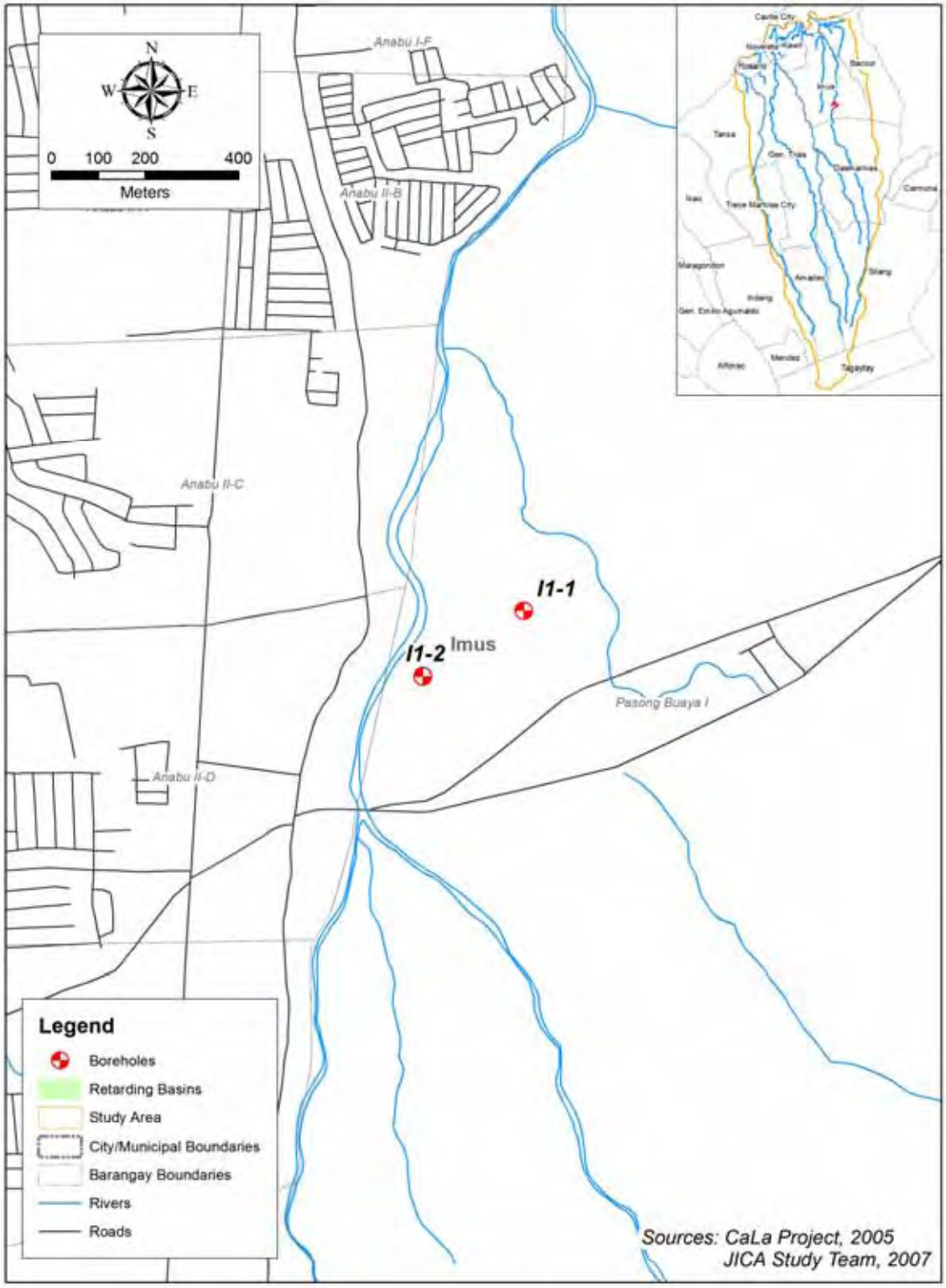
STANDARD CROSS SECTION OF DRAINAGE SLUICE
(at Ordinary Sections)



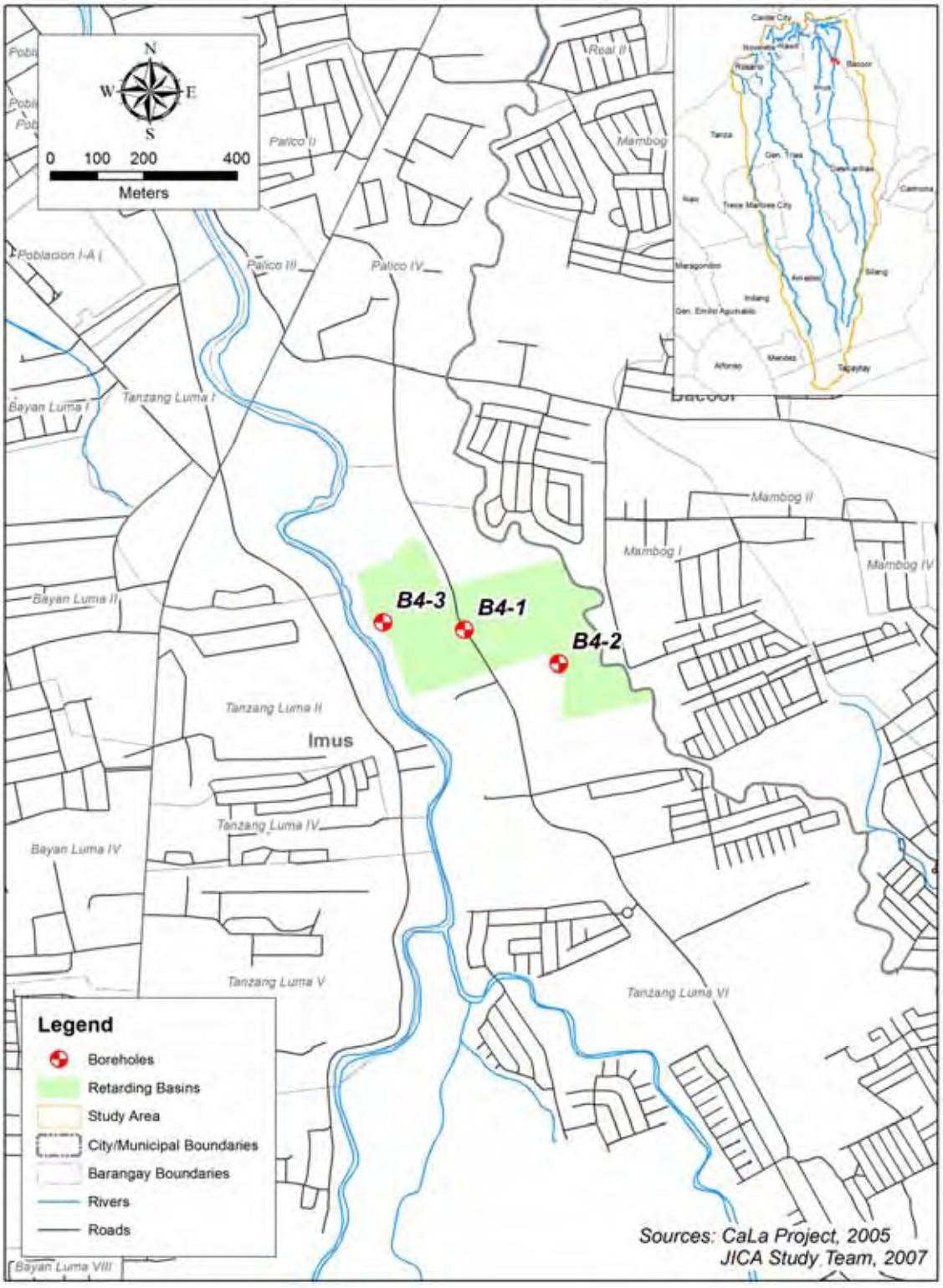
STANDARD CROSS SECTION OF DRAINAGE SLUICE
(at Both Edge Sections)

0 1 2 3 4 5m
SCALE 1 : 100

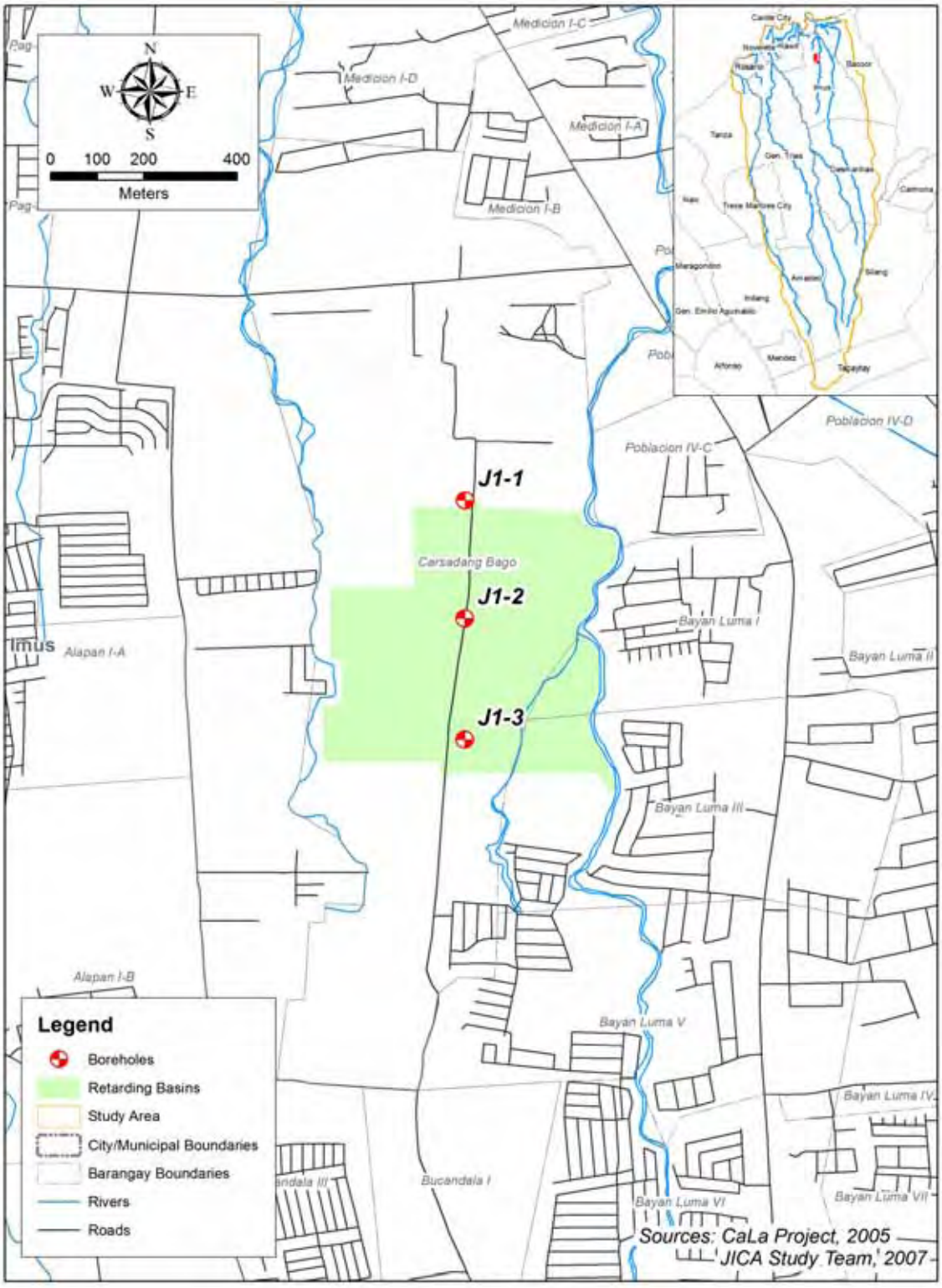
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.4 (2/2) Typical Drawings of Drainage Sluice for Retarding Basin (2/2)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	



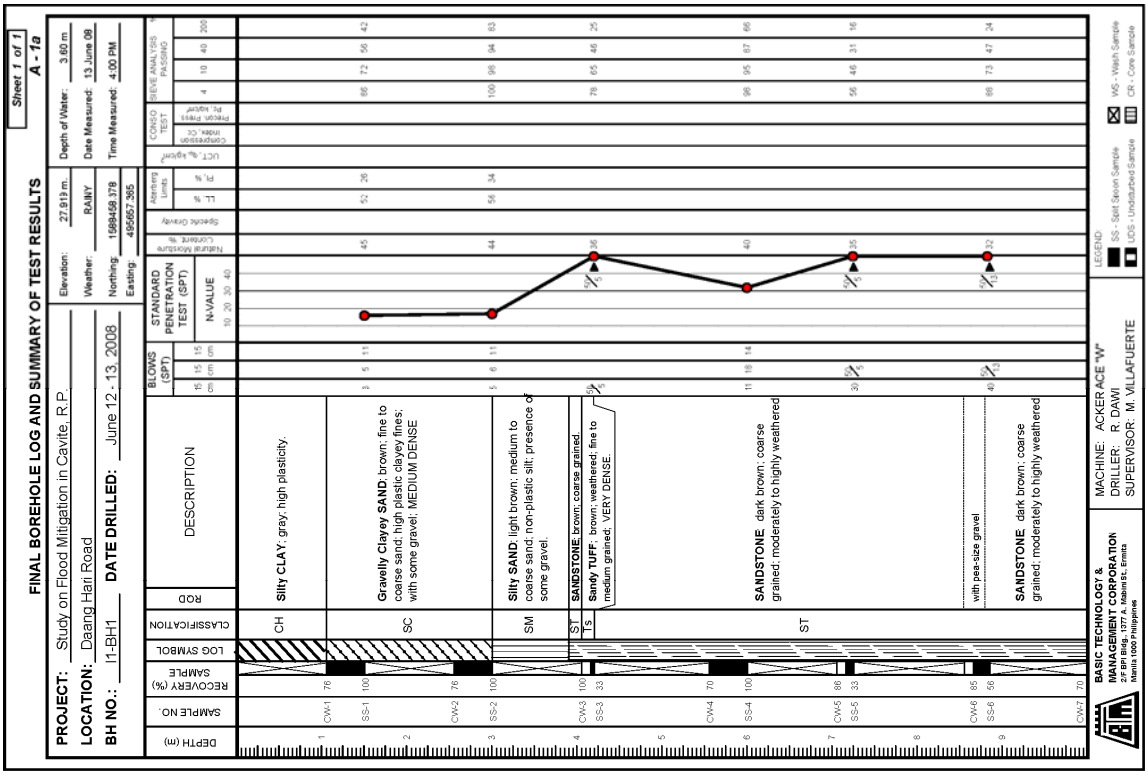
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.5 (1/3) Location of Boring Survey for Site in I1 Retarding Basin (Location I1-a)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	

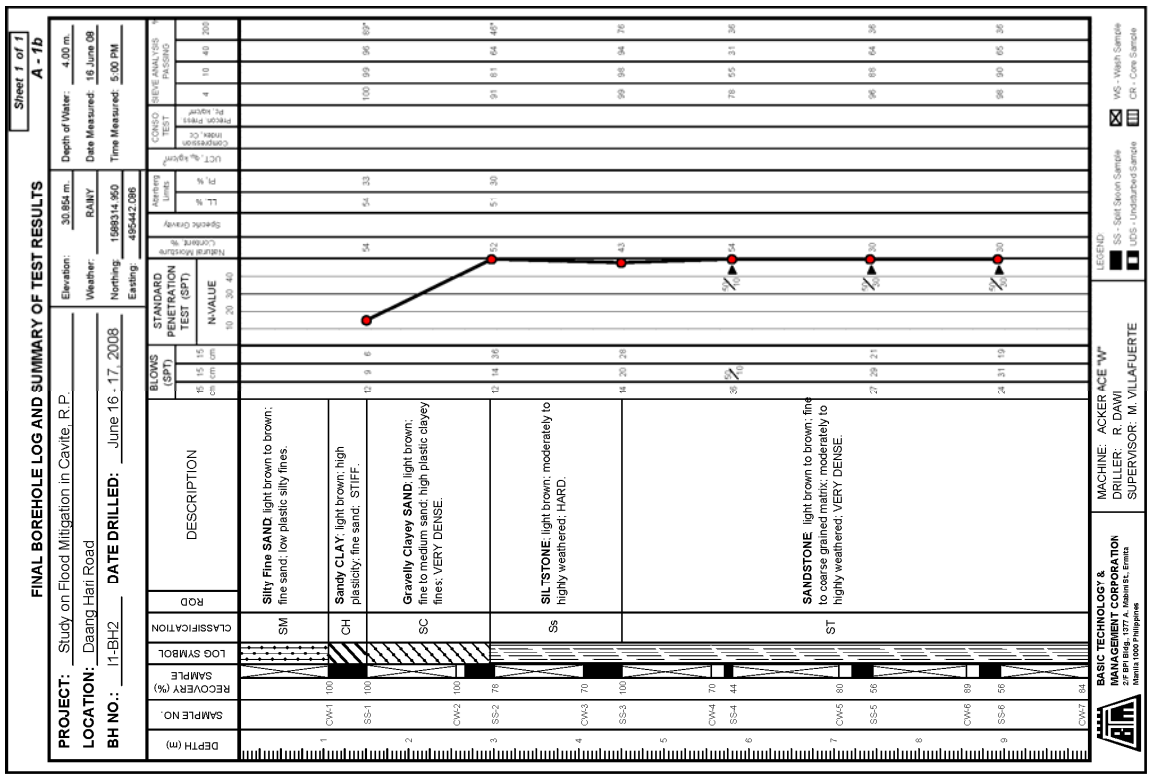


THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.5 (2/3) Location of Boring Survey for Site in B4 Retarding Basin
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	



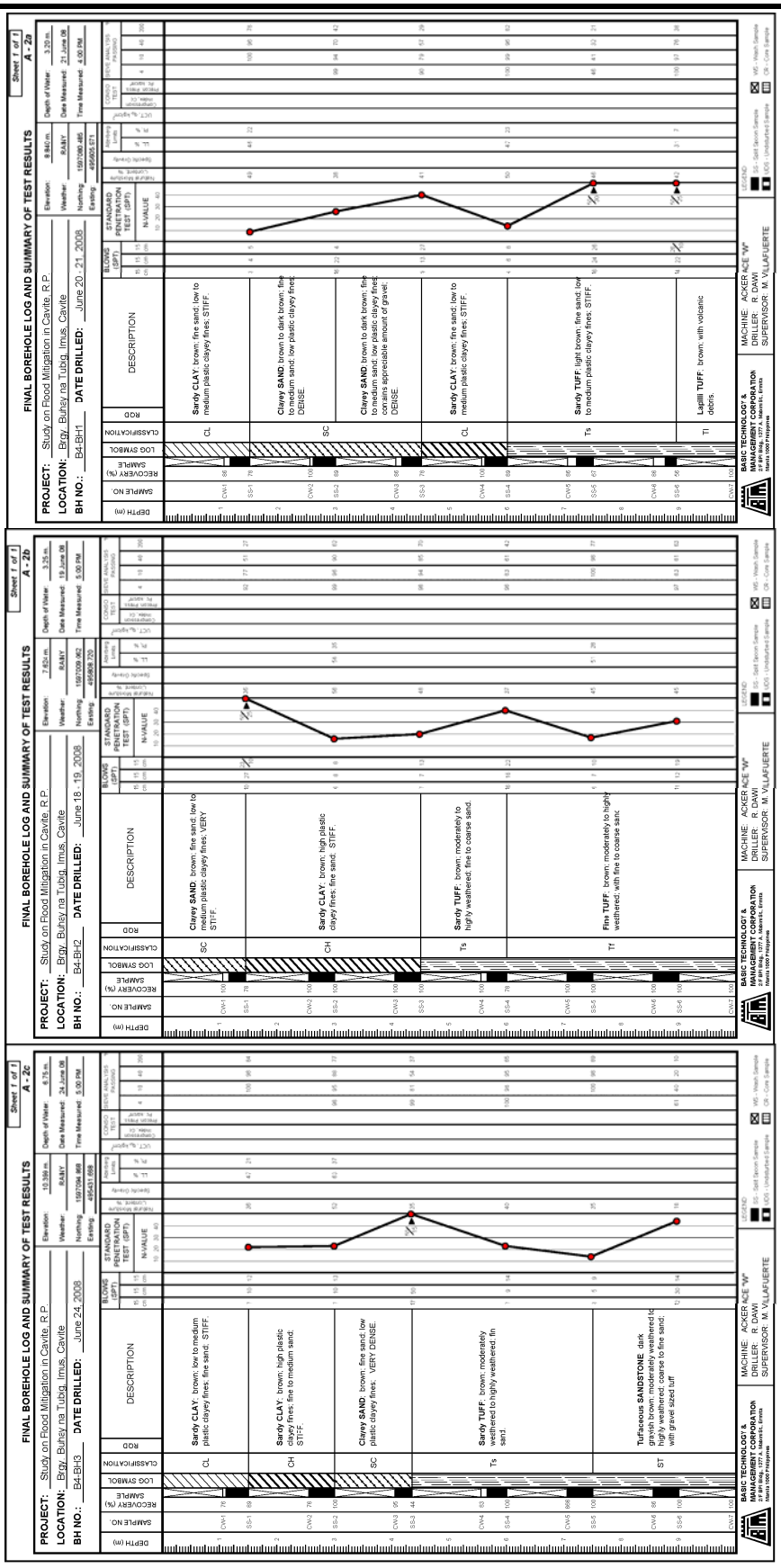
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.5 (3/3) Location of Boring Survey for Site in J1 Retarding Basin
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	



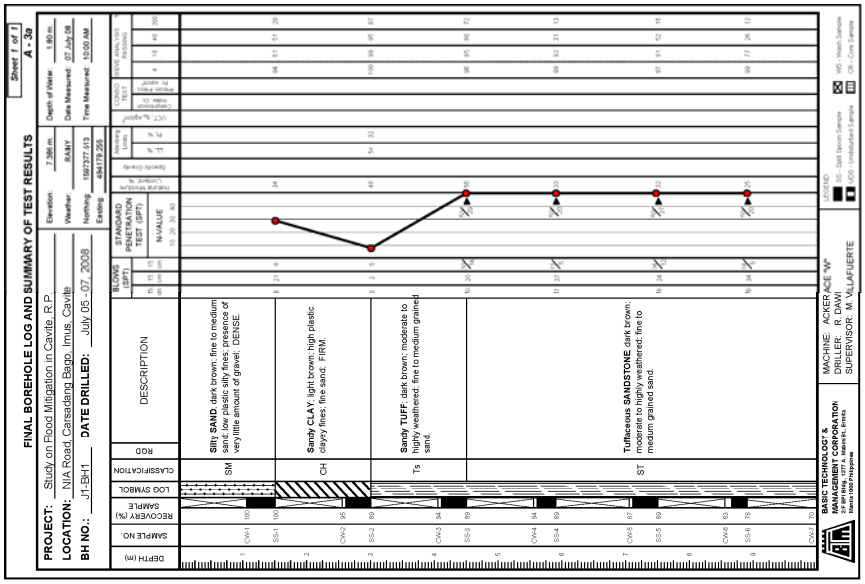


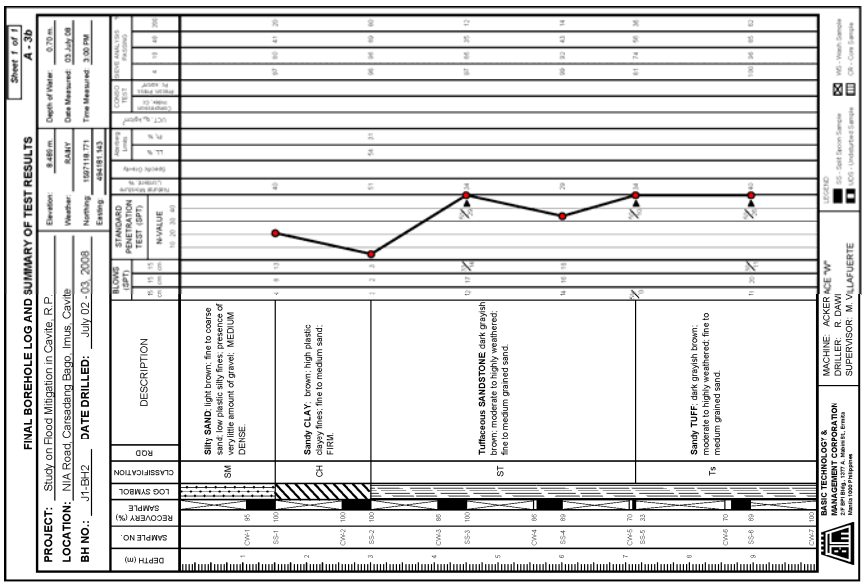
Note: This Data shall not be applied for pratical design purpose since the site of I1 has been tranferred toward downstream. Refer to Main Text.

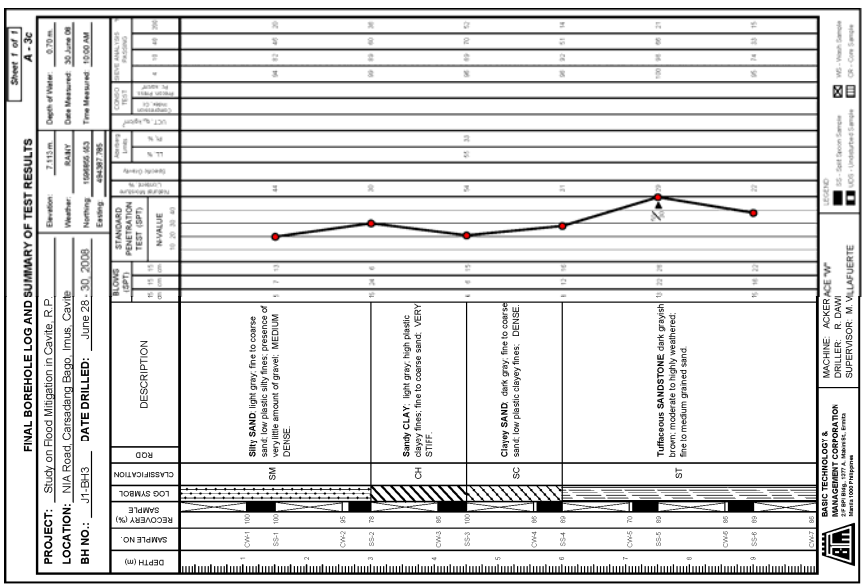
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.6 (1/3)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	Result of Boring and Summary of Test Results for Site in I1 Retarding Basin (Location: I1-a)



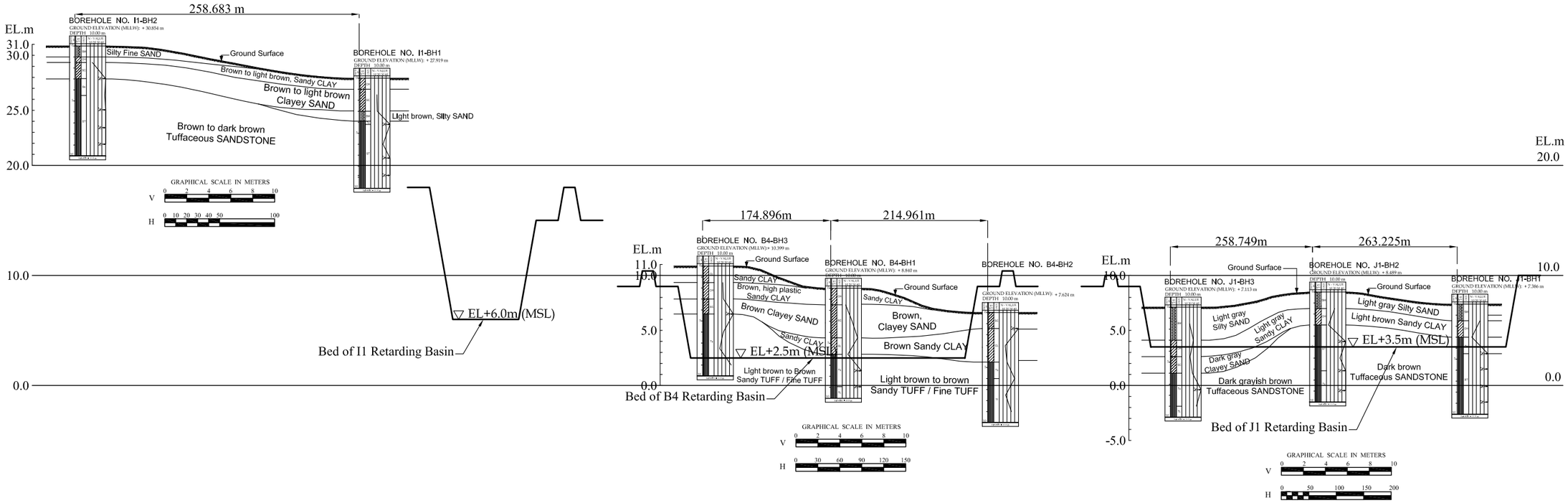
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.6 (2/3)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	Result of Boring and Summary of Test Results for Site in B4 Retarding Basin



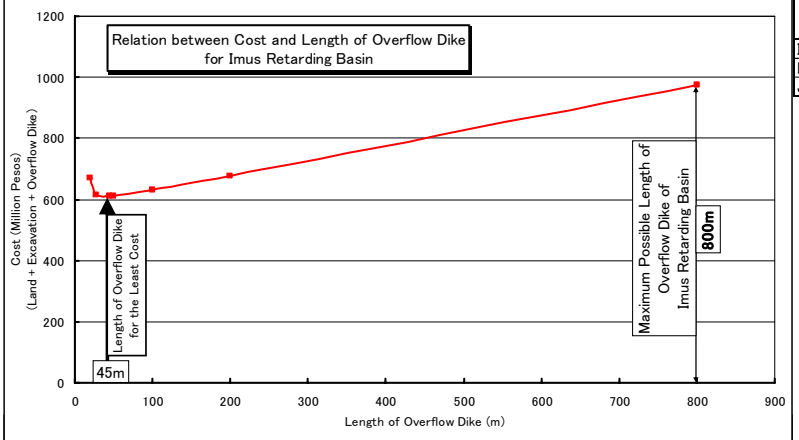


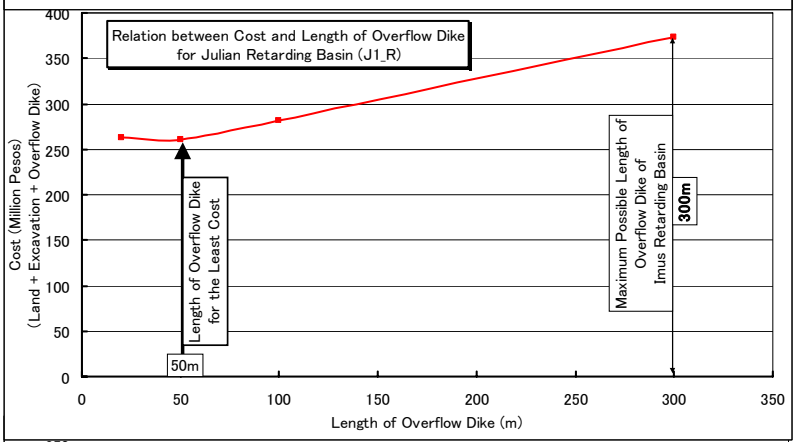


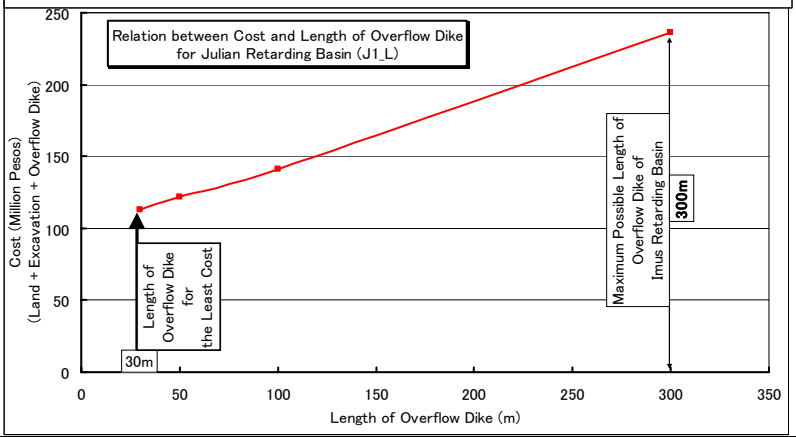
THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.6 (3/3)
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	Result of Boring and Summary of Test Results for Site in J1 Retarding Basin



THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.7 Boring Data Profile and Lowest Bed of Proposed Retarding Basin
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd	







Retarding Basin	Max.Area (ha)	Min. Bed EL+ (m)	Mean Bed EL+ (m)*1	Max. Possible Overflow Dike
Imus	44	6.5	8.5	800 m
Bacoor	12.2	2.5	2.5	200 m
Julian	38	3.5	4.0	300 m

Retarding Basin	Length of Overflow Dike (m)	Required Volume (MCM)*2	Required Area (ha)*3	Cost of Main Working Items			
				OverflowD.*4 (Mil. Peso)	L.A.*5 (Mil. Peso)	Excavation*6 (Mil. Peso)	Total*7 (Mil. Peso)
Imus	800	1.44	39.00	400	312.00	261.00	973
	200	1.45	39.22	100	313.76	262.81	677
	100	1.46	39.44	50	315.52	264.63	630
	50	1.48	39.89	25	319.12	268.25	612
	45	**1.48**	**39.89**	**22.5**	**319.12**	**268.25**	**610**
	28	1.52	40.78	14	326.24	275.50	616
	20	1.68	44.33	10	354.64	304.50	669
	10	– *8	–	–	–	–	–

Retarding Basin	Length of Overflow (m)	Required Volume (MCM)*2	Required Area (ha)*3	Cost of Main Working Items			
				OverflowD.*4 (Mil. Peso)	L.A.*5 (Mil. Peso)	Excavation*6 (Mil. Peso)	Total*7 (Mil. Peso)
Julian (R) (J1_R)	300	0.41	18.71	150	149.68	74.31	374
	100	0.43	19.29	50	154.32	77.94	282
	50	**0.44**	**19.57**	**25**	**156.56**	**79.75**	**261**
	20	0.48	20.71	10	165.68	87.00	263
	10	–	–	–	–	–	–
Julian (L) (J1_L)	300	0.0906	8.74	150	69.92	16.42	236
	100	0.1	9.15	50	73.20	18.13	141
	50	0.111	9.63	25	77.04	20.12	122
	30	**0.112**	**9.67**	**15**	**77.36**	**20.30**	**113**
	20	–	–	–	–	–	–

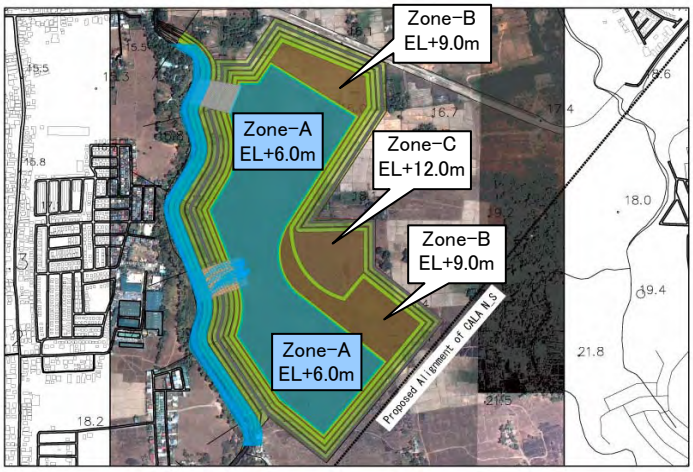
*1 : Considering zoning plan, assumed mean bed elevations are estimated.
*2 : Calculated in Hydraulic Analysis
*3 : Required Volume / (EL+13m – EL+8.5m) + 7 ha for Imus (7 ha is applied for Additional R.O.W.)
Required Volume / (EL+7.5m – EL+4m) + 7 ha for J1_R (7 ha is applied for Additional R.O.W.)
Required Volume / (EL+6.3m – EL+4m) + 5 ha for J1_L (5 ha is applied for Additional R.O.W.)
*4 : Based on actual cost estimates, the following unit cost (0.5million pesos/m) is applied.
*5 : Cost of Land Acquisition ; Adopted Unit Cost: Php 800 /m^2
*6 : Unit price for excavation (Php.145/m^3) is applied based on actual cost estimates.
Excavation Volumes of 125% of required retarded volume are adopted.
*7 : Other required works are similar in cost, thus, they are not included in the Costs shown above.
*8 : "–" means that the length of overflow dike setting is not applied since design cut discharge cannot be attained.

THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA

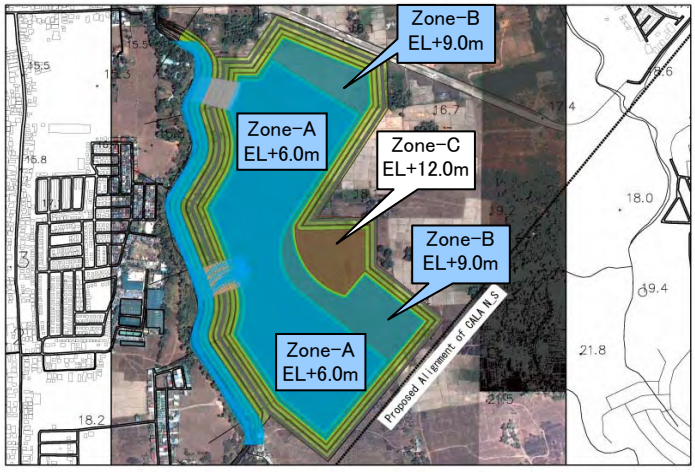
CTI Engineering International Co., Ltd.
Nippon Koei Co., Ltd.

Fig. 2.8

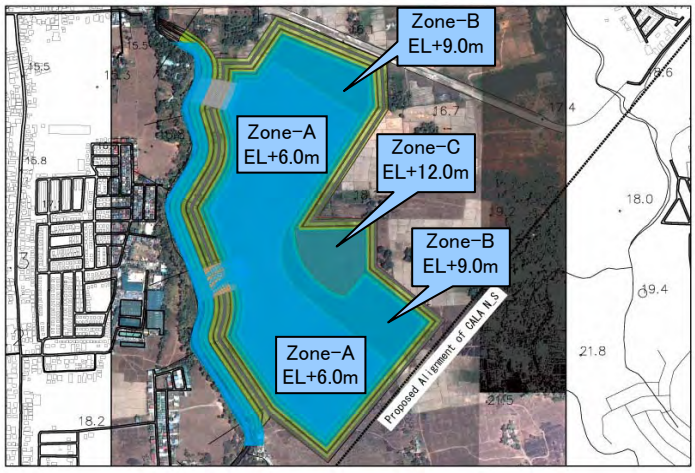
Relation between Cost and Length of Overflow Dike for Retarding Basins



In Small Scaled Flood,
(2-year (or less) return period)
Only Zone-A will be inundated.



In Medium Scaled Flood,
(3~5-year return period)
Zone-A and Zone-B will be inundated.



In Large Scaled Flood,
(10-year (or more) return period)
All Zones will be inundated.

THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.9 Concept for Zoning Plan for Imus Retarding Basin
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	

THE STUDY ON COMPREHENSIVE FLOOD MITIGATION FOR CAVITE LOWLAND AREA	Fig. 2.10 Conceptual Arrangement Plan of Community and Amenity Facilities in Imus Retarding Basin
CTI Engineering International Co., Ltd. Nippon Koei Co., Ltd.	