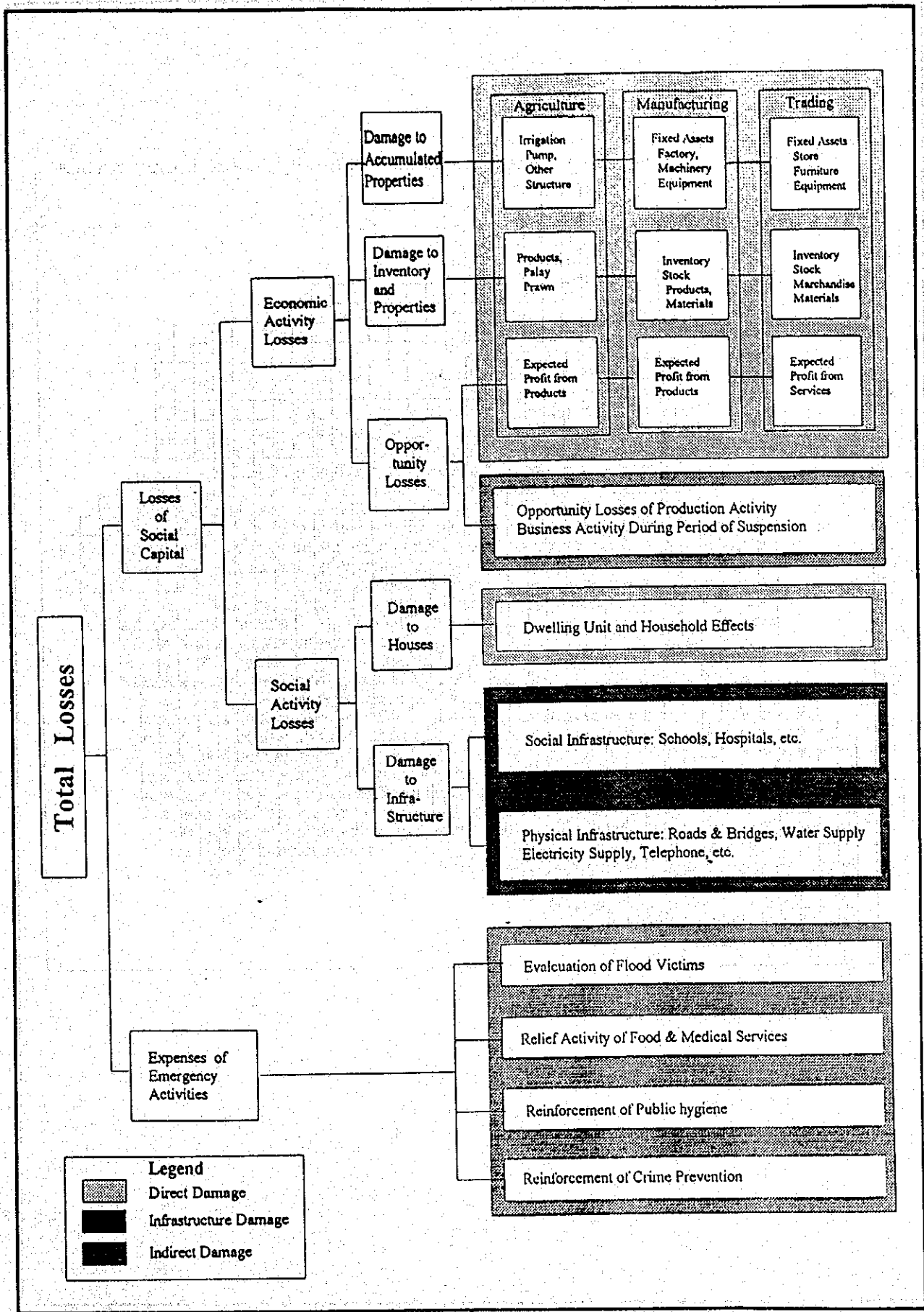


THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

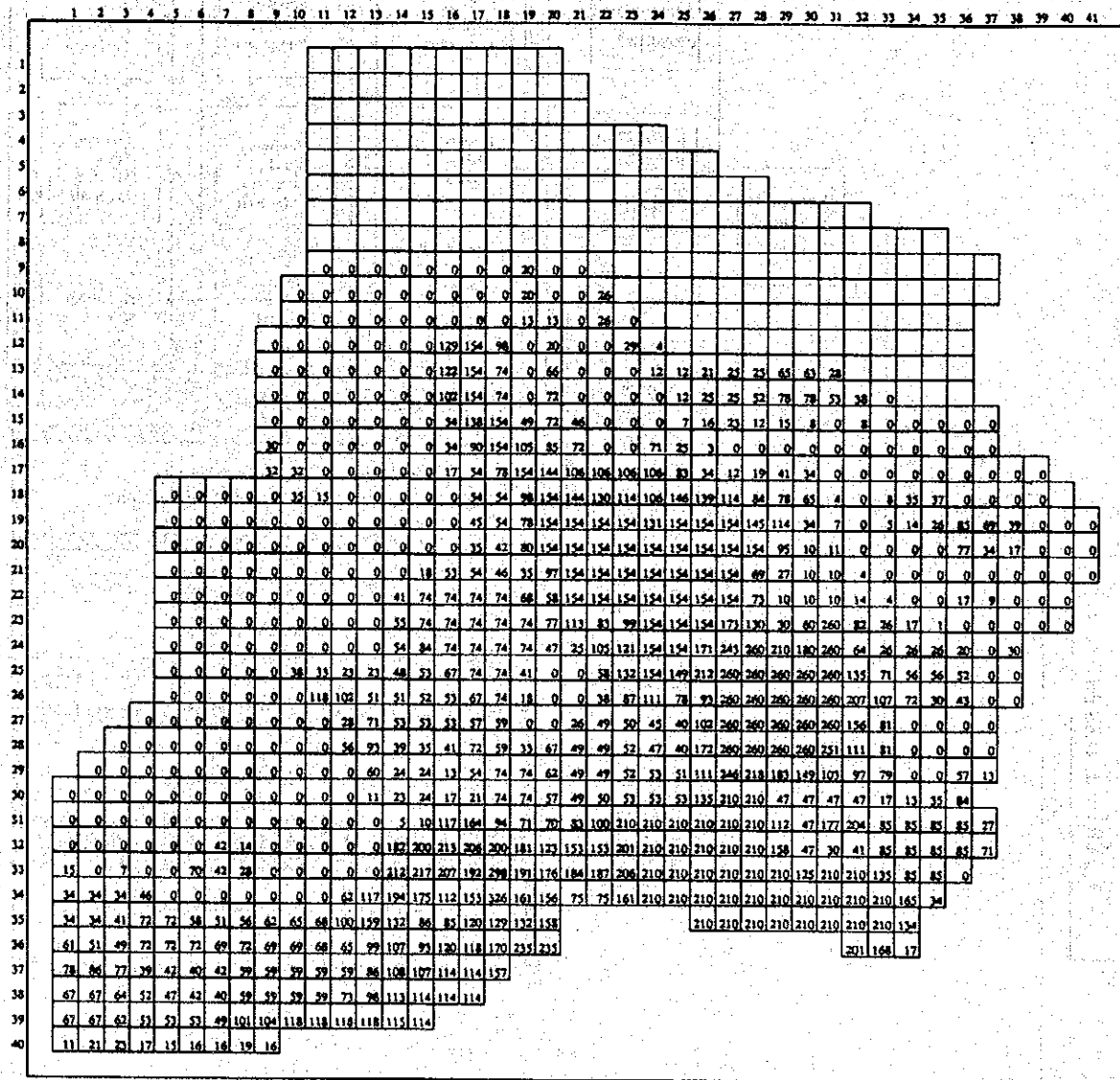
Fig. 3.40  
 Estimated Softground Area, Iloilo



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.41  
 Structure of Damage

Dobo City



Note  
 □ : Mesh unit (250m x 250m)  
 Figures in meshes present number of dwelling unit.


Fig. 3.42  
 Number of Dwelling Units by Mesh Block (Iloilo)



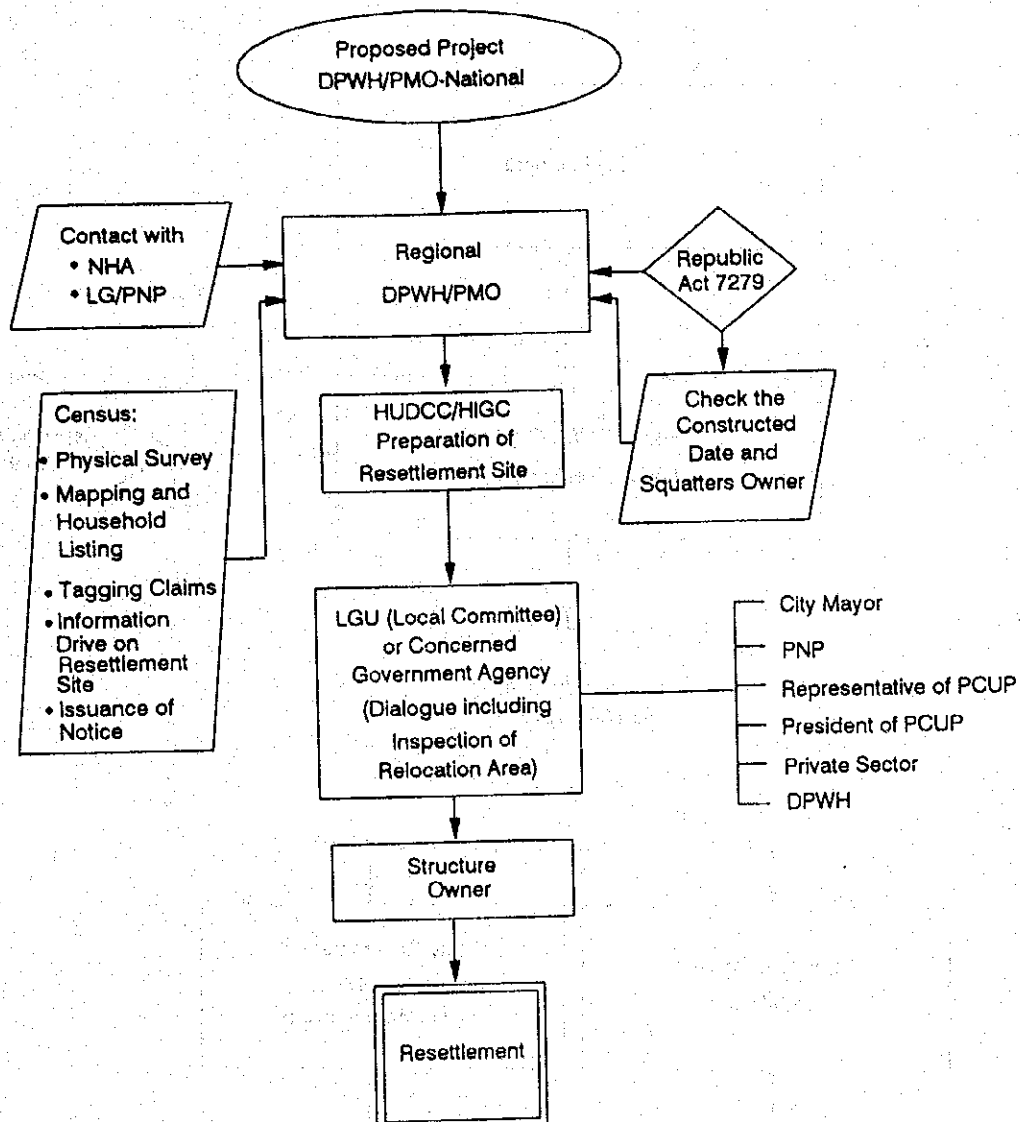
Ormoc City (Anilao and Maibasag Rivers)

	1	2	3	4	5	6	7	8
1				72	13	3		
2	26	69	96	91	21	10	12	0
3	60	72	91	97	44	17	5	0
4	119	100	100	100	115	30	6	1
5	205	164	85	100	238	200	9	12
6		51	23	63	297	302	86	20
7			18	110	302	302	246	20
8						230	235	20

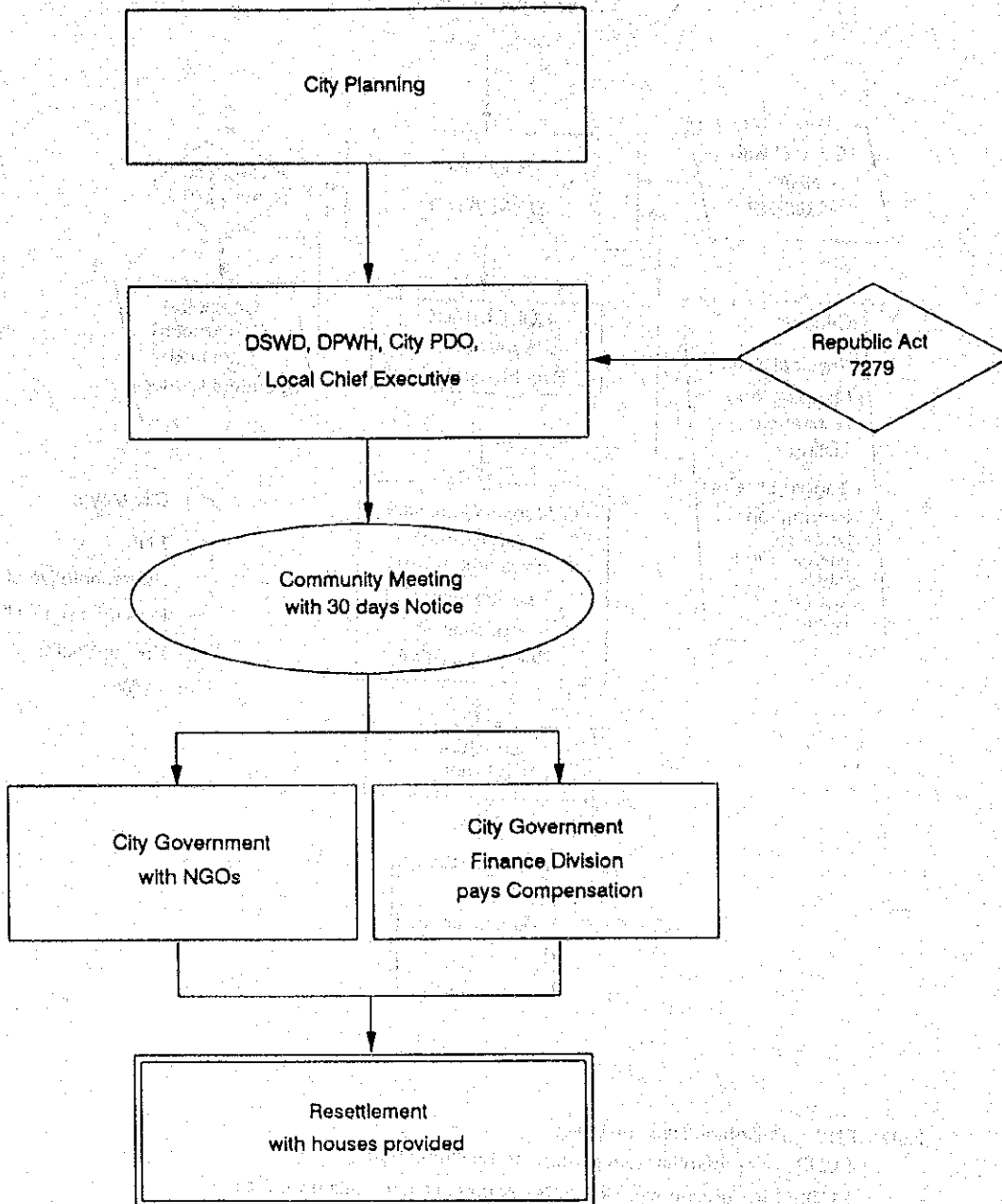
Note

 : Mesh unit (250m x 250m)

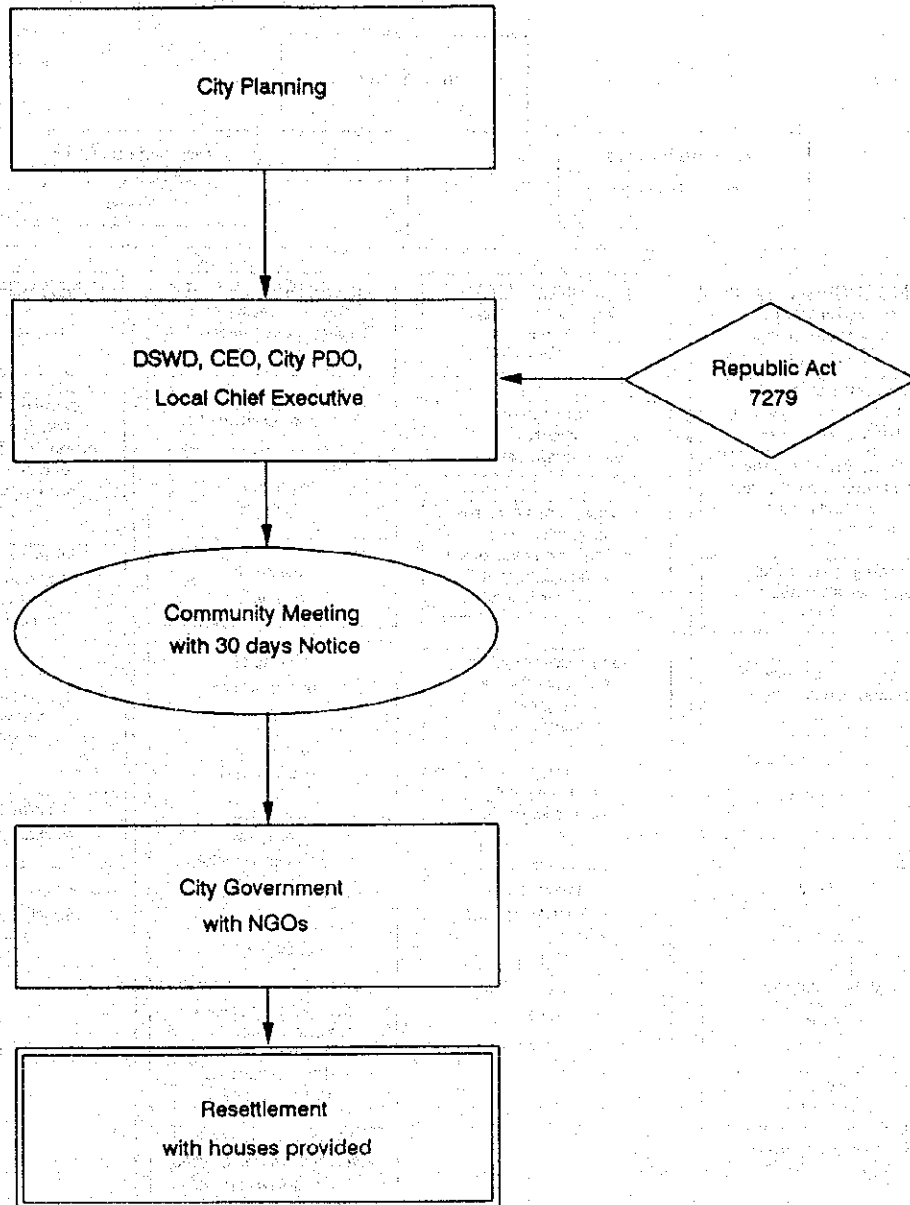
Figures in meshes present number of dwelling unit.



Note: PNP = Philippine National Police  
 PCUP = Presidential Commission for the Urban Poor  
 HUDCC = Housing and Urban Development Coordinating Council  
 HIGC = Home Insurance Guaranty Cooperation  
 NHA = National Housing Authority

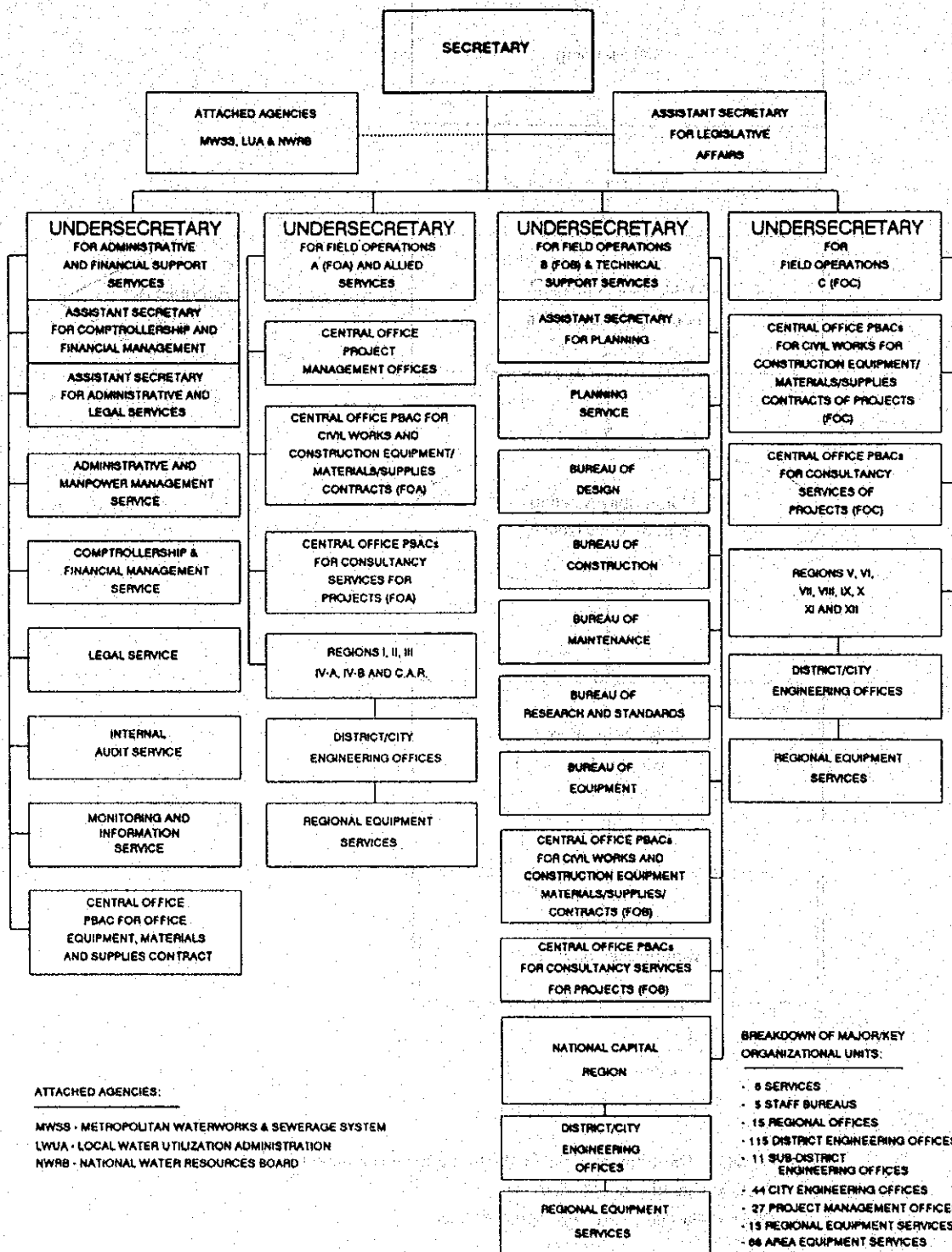


Note: DSWD = Department of Social Welfare and Development  
 CEO = City Engineer Office  
 PDO = Planning and Development Office



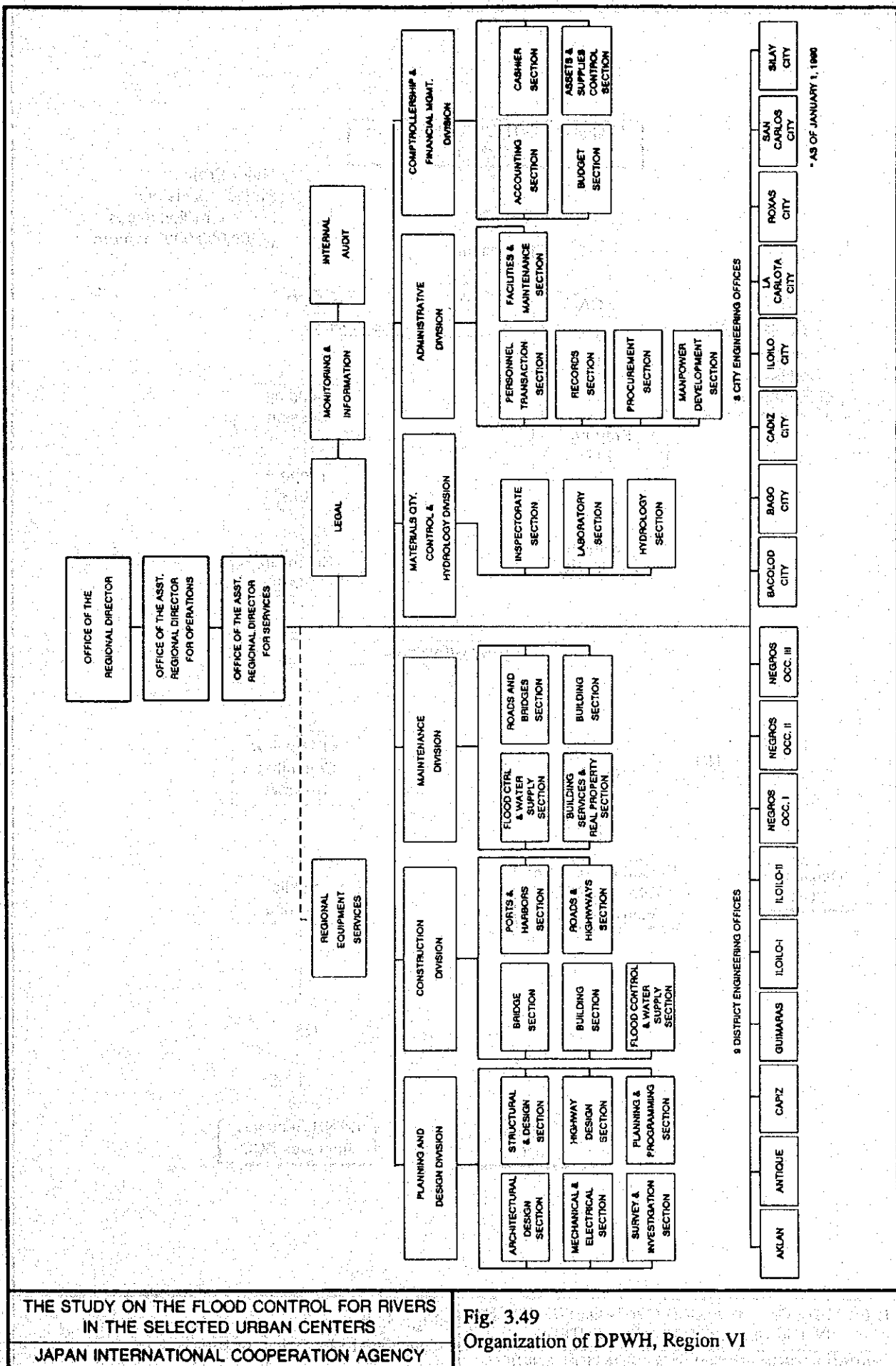
Note: DSWD = Department of Social Welfare and Development  
 CEO = City Engineer Office  
 PDO = Planning and Development Office





THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

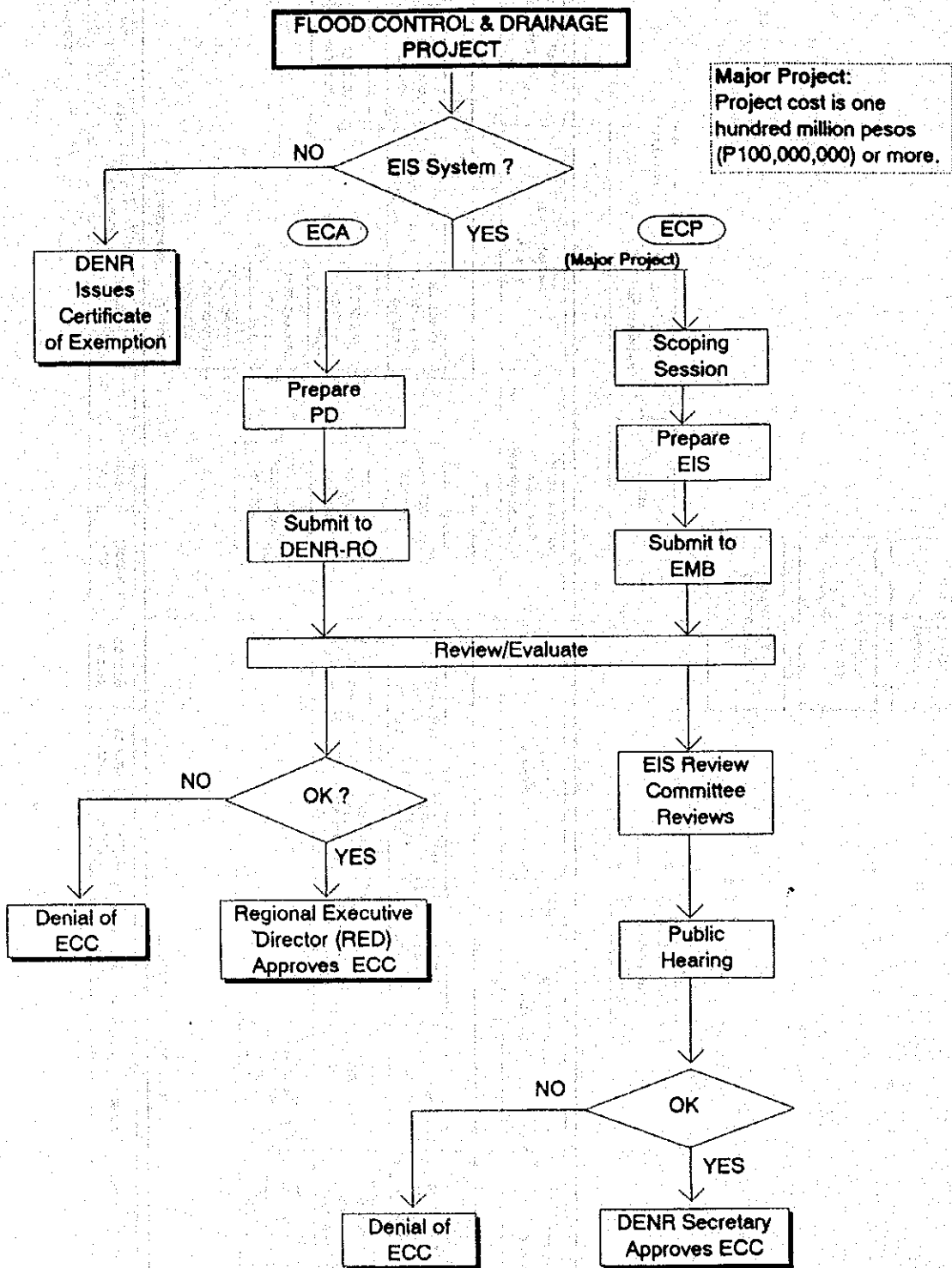
Fig. 3.48  
Organization of DPWH, Central Office



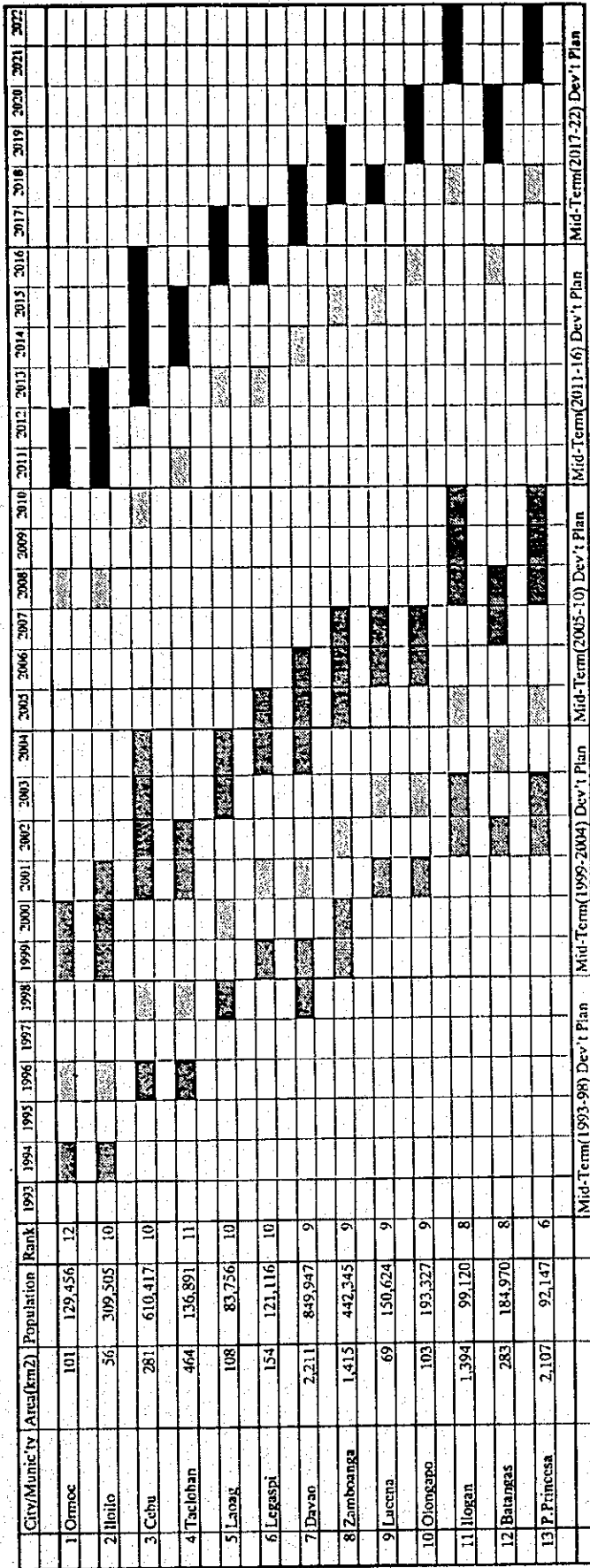
\* AS OF JANUARY 1, 1980

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3.49  
Organization of DPWH, Region VI



**OVERALL PROJECT IMPLEMENTATION PLAN FOR 13 URBAN CENTERS**



Feasibility Study  
 Detailed Design  
 Implementation of Urgent Plan  
 Implementation of Overall Plan

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

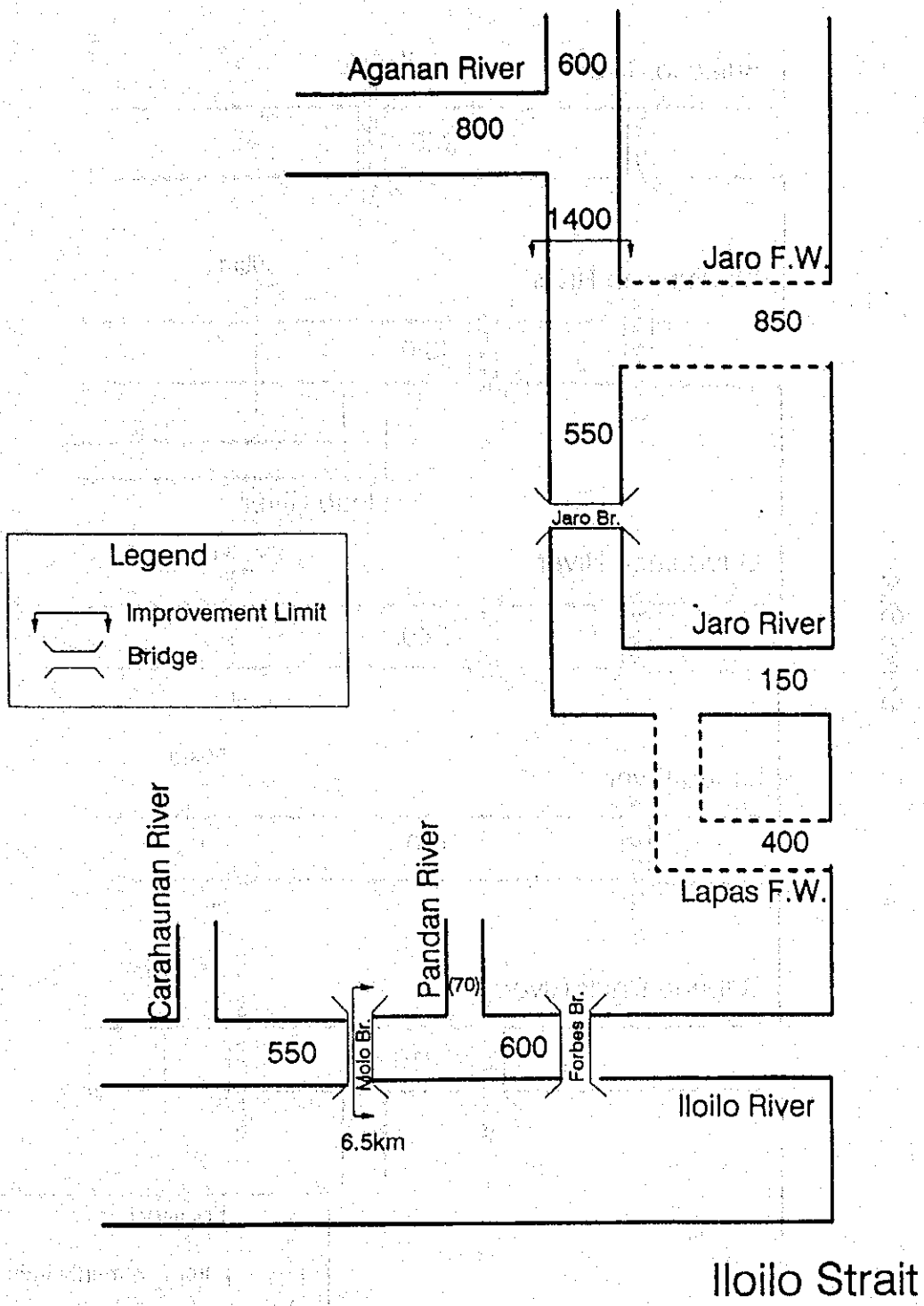
**Fig. 4.1**  
Overall Project Implementation Plan for 13 Urban Centers



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.2  
 Location and Area of Retarding Channel





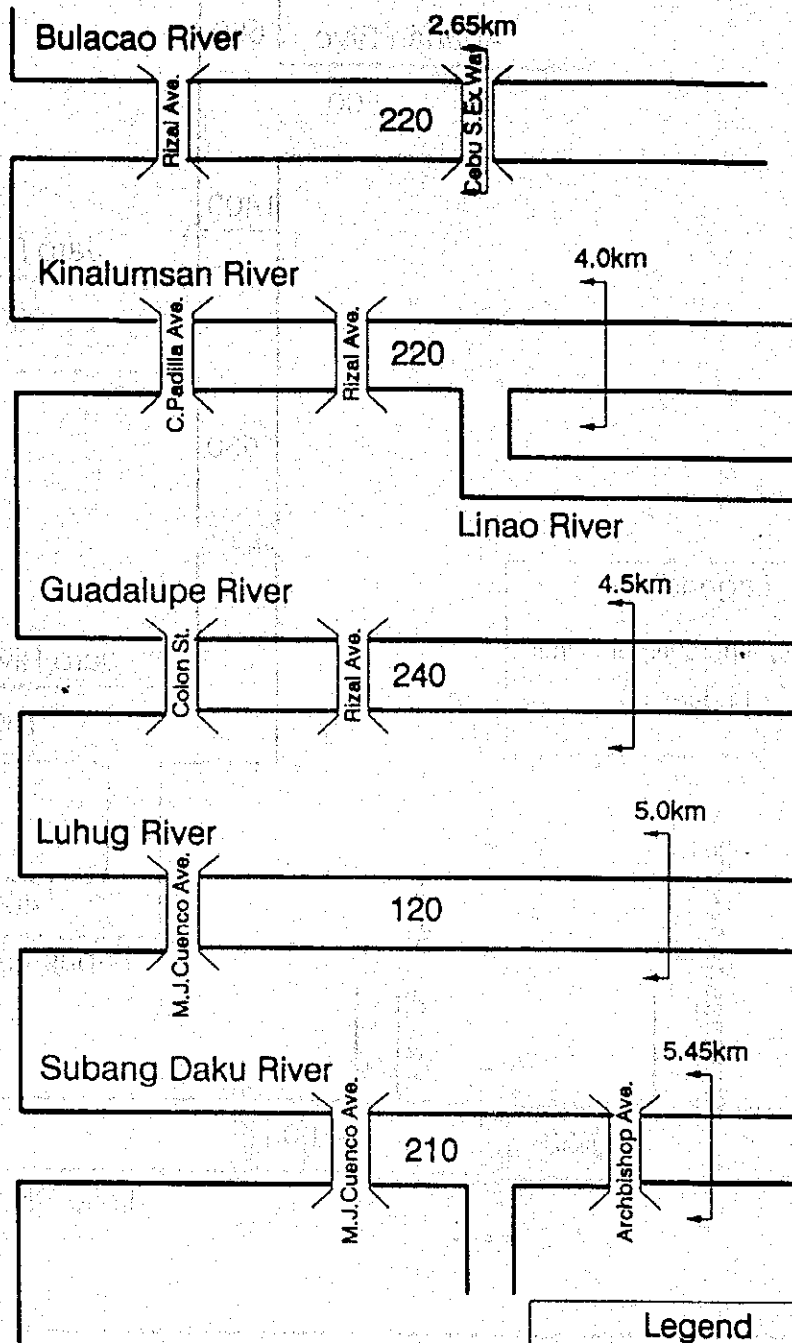
**Legend**

Improvement Limit

Bridge

- Note: 1. Unit: m<sup>3</sup>/s  
 2. The Figures show probable Flood Discharge of 50-Year Return Period  
 3. ( ) shows probable Flood Discharge of 20-Year Return Period

Bohol Strait



**Legend**

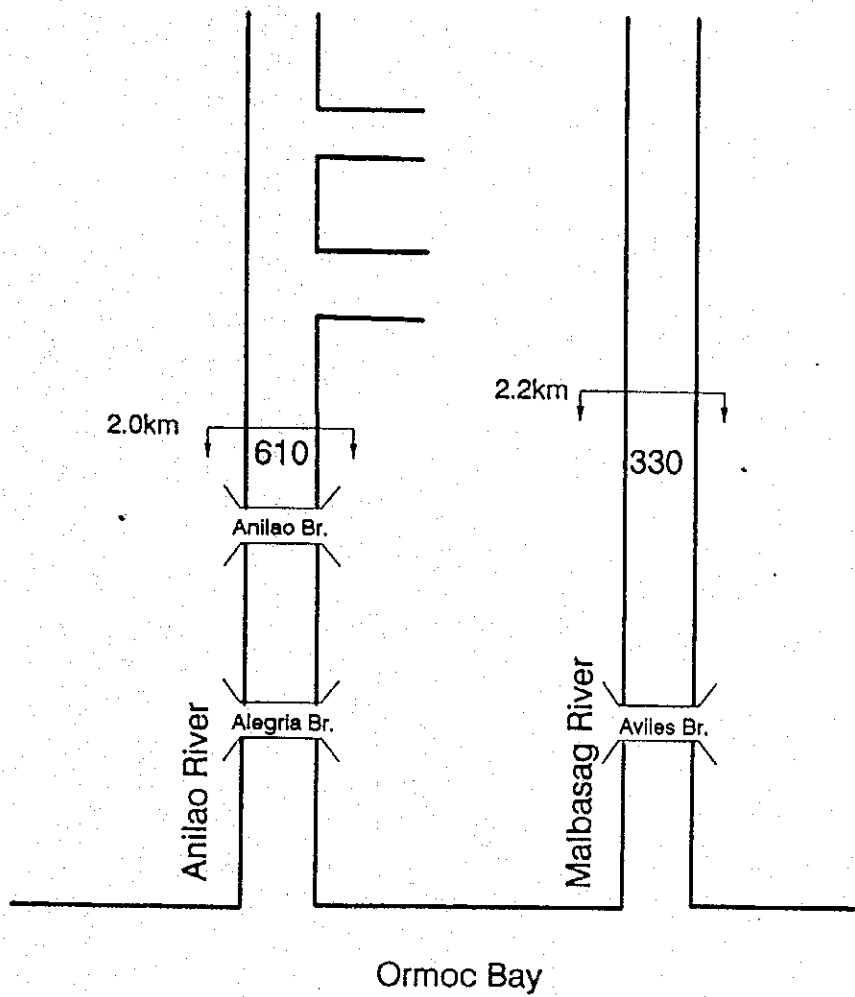
- Improvement Limit
- Bridge

Note: 1. Unit: m<sup>3</sup>/s  
 2. The Figures show probable Flood Discharge of 50-Year Return Period



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.4  
 Distribution of Design Discharge (Cebu City)

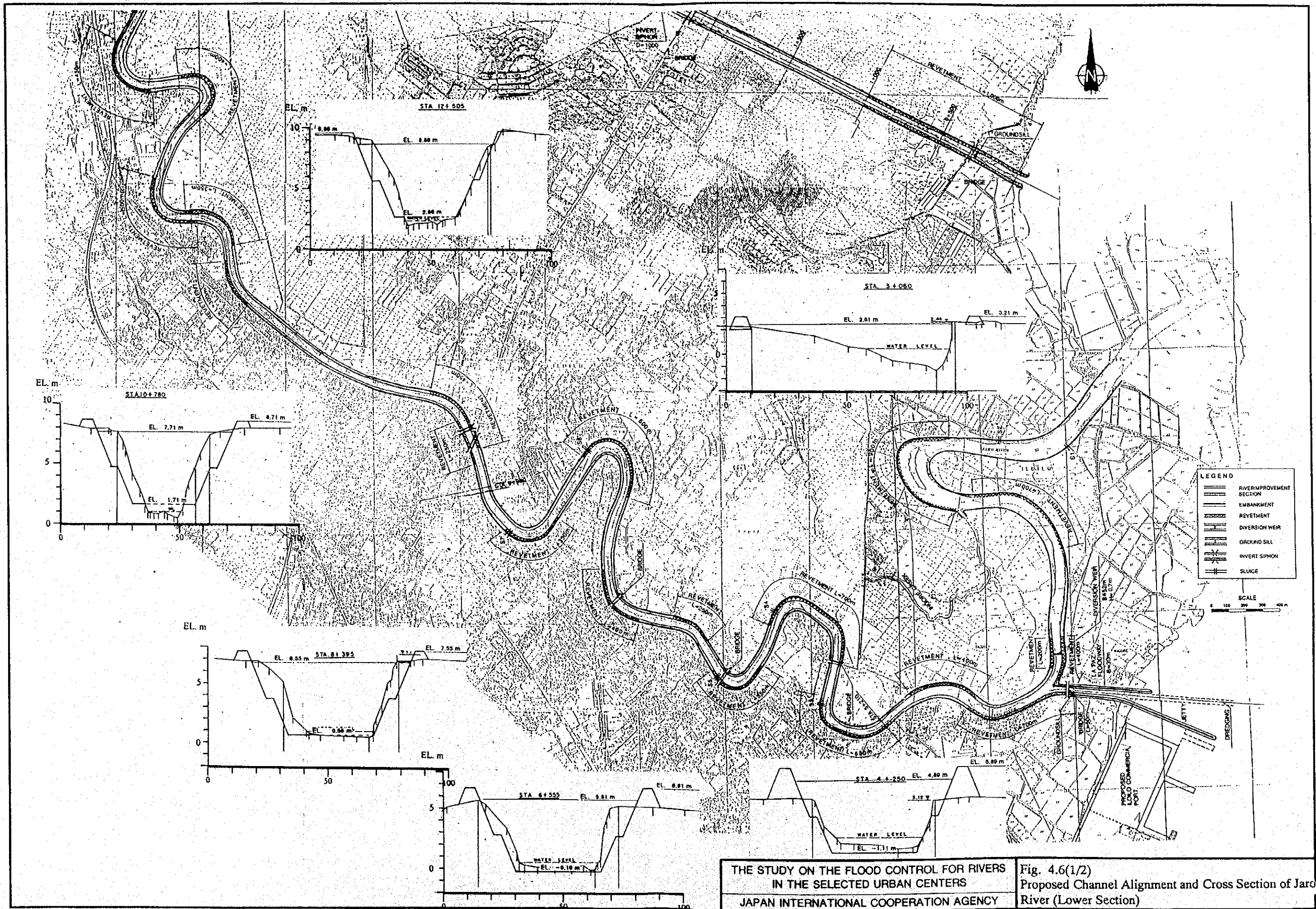




**Legend**

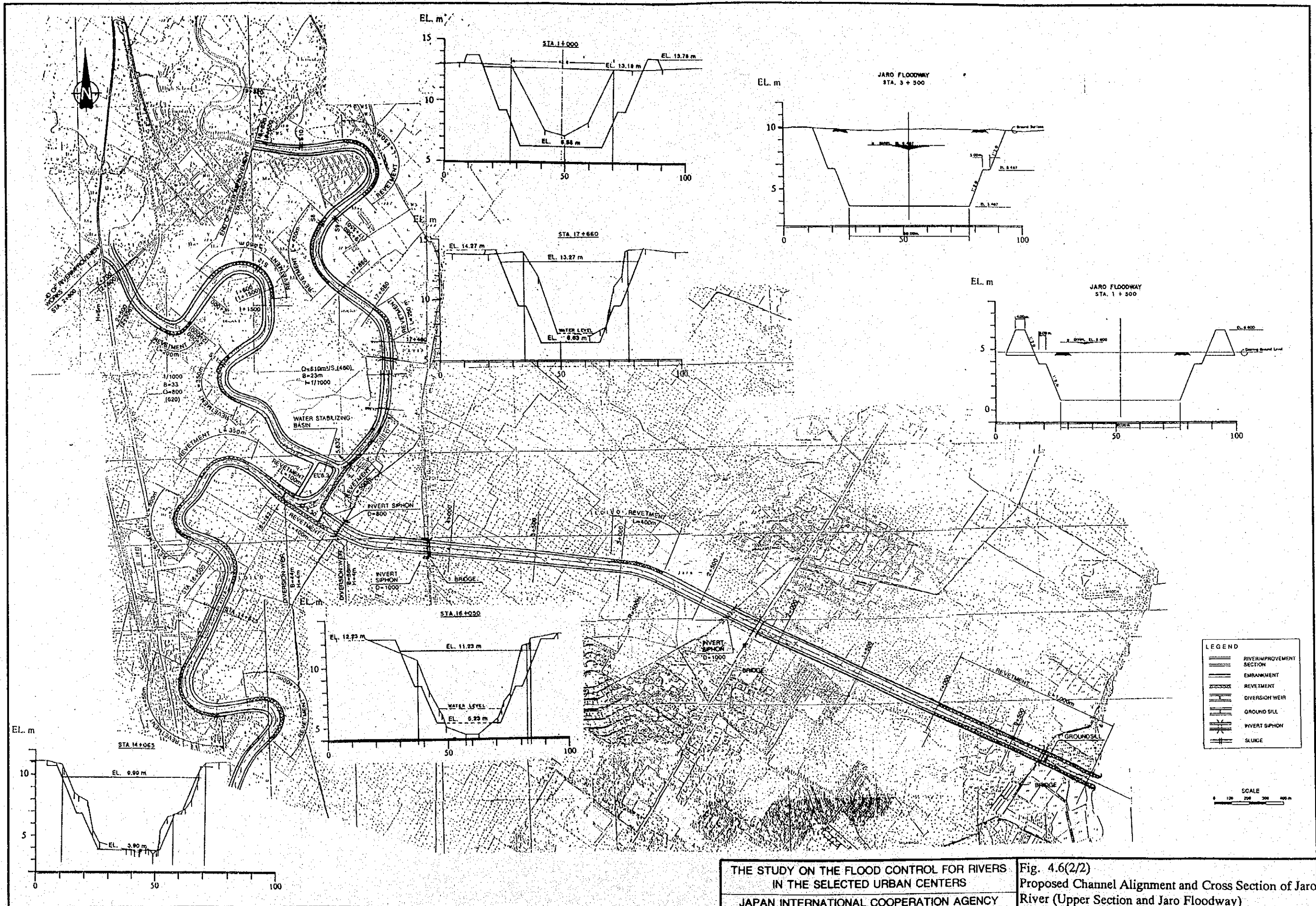
-  Improvement Limit
-  Bridge

Note: 1. Unit: m<sup>3</sup>/s  
 2. The Figures show probable Flood Discharge of 50-Year Return Period



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.6(1/2)  
 Proposed Channel Alignment and Cross Section of Jaru  
 River (Lower Section)

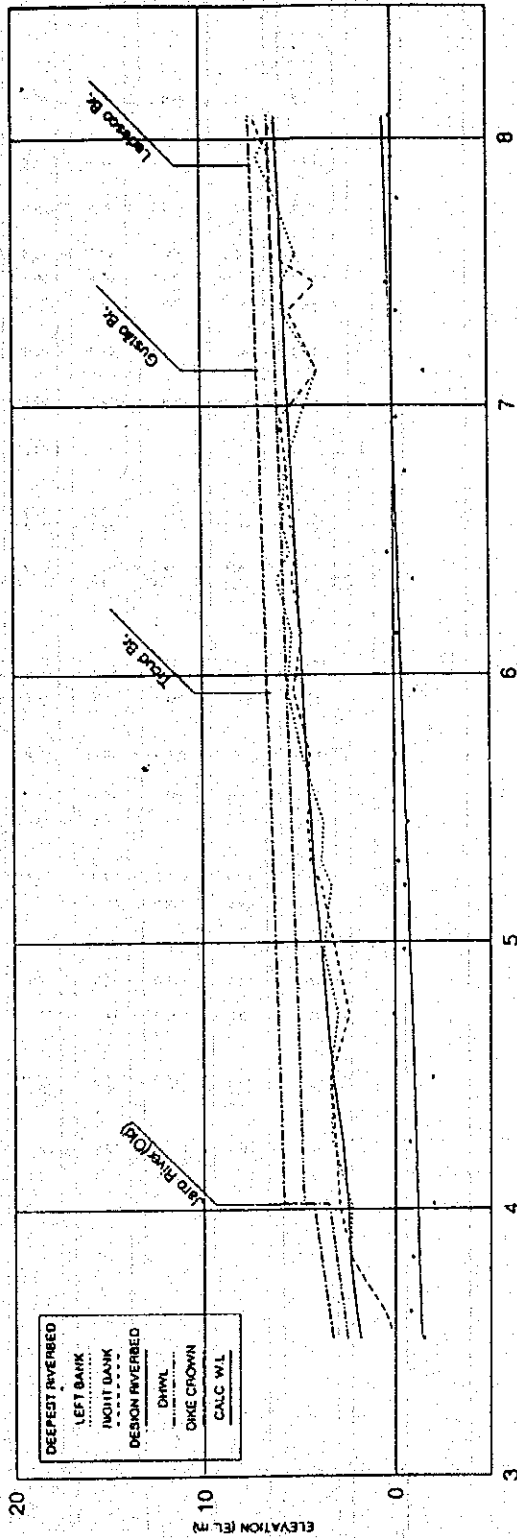


THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.6(2/2)  
 Proposed Channel Alignment and Cross Section of Jaro  
 River (Upper Section and Jaro Floodway)



LONGITUDINAL PROFILE  
JARO RIVER (1/3), ILOILO CITY

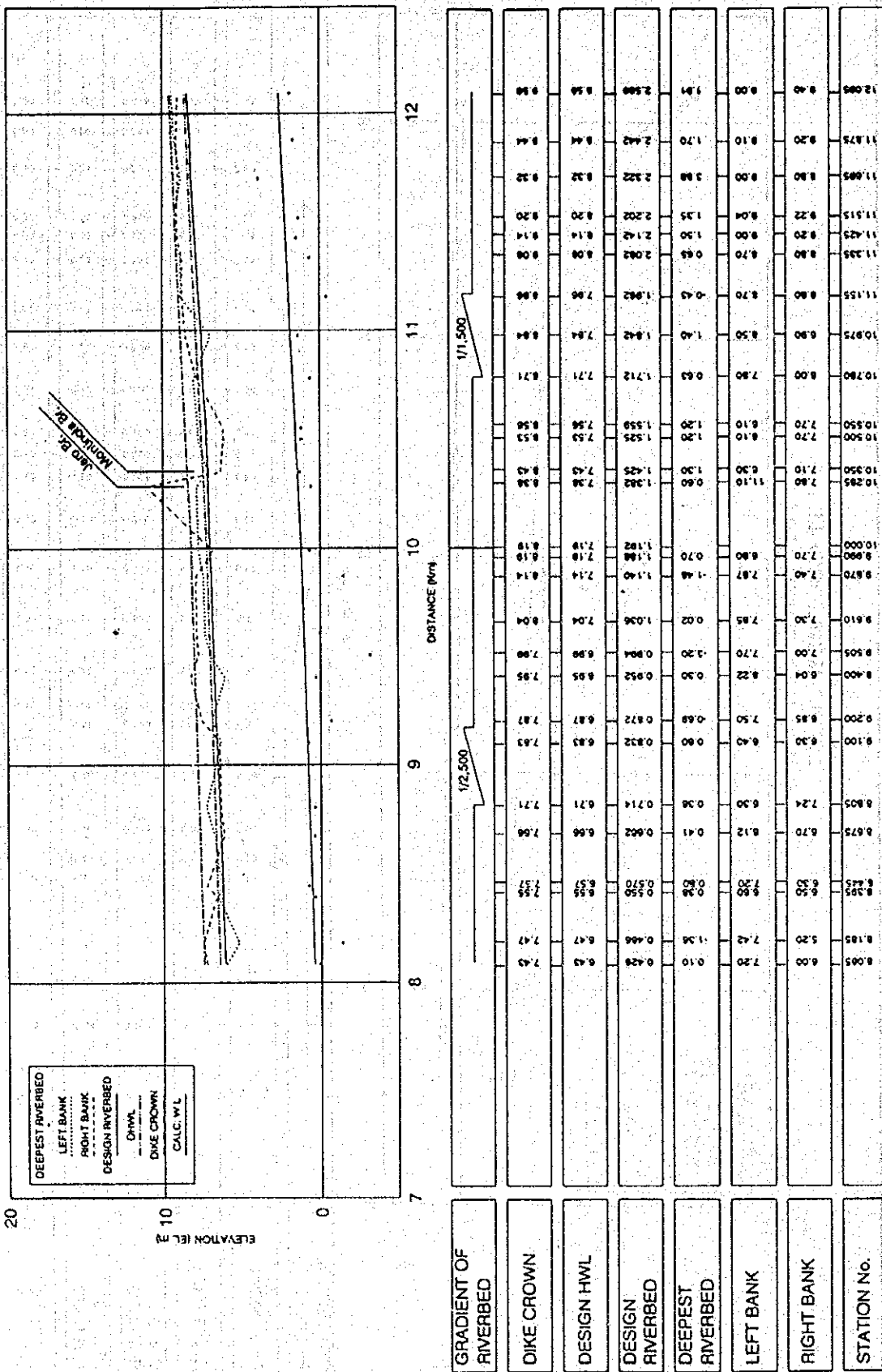


STATION NO.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
8,085	6.00	7.20	0.10	0.48	8.42	7.2	
7,930	7.00	8.30	0.00	0.34	8.38	7.36	
7,775	6.00	8.30	-0.35	0.302	8.30	7.30	
7,565	5.00	6.20	0.00	0.218	8.22	7.22	
7,460	5.70	4.00	0.30	0.176	8.18	7.18	
7,355	5.70	5.40	-0.23	0.134	8.13	7.13	
7,130	3.84	3.82	-1.87	0.044	8.04	7.04	
6,955	4.80	5.80	-0.20	-0.028	7.97	6.97	
6,755	5.60	5.51	-0.82	-0.108	7.88	6.88	
6,555	5.71	5.30	-0.03	-0.188	7.81	6.81	
6,455	5.40	5.10	0.30	-0.228	7.77	6.73	
6,355	6.02	5.27	-1.05	-0.288	7.73	6.73	
6,155	5.30	4.80	-0.15	-0.348	7.65	6.65	
5,940	5.50	5.20	-1.10	-0.432	7.57	6.57	
5,700	4.80	4.40	-0.08	-0.528	7.47	6.47	
5,450	3.70	4.50	-0.72	-0.628	7.37	6.37	
5,300	3.80	4.40	-0.20	-0.688	7.31	6.31	
5,210	3.30	3.81	-0.51	-0.724	7.28	6.28	
4,970	3.71	3.11	-0.46	-0.820	7.18	6.18	
4,730	3.00	2.40	0.10	-0.916	7.08	6.08	
4,480	3.42	3.38	-1.88	-1.012	6.98	5.98	
4,250	3.28	3.12	-0.77	-1.108	6.88	5.88	
4,020	2.30	2.81	-2.04	-1.204	6.80	5.80	
3,820	2.30	2.30	0.94	-1.280	6.70	5.70	
3,620	0.50	0.50	0.81	-1.360	6.60	5.60	
3,520	0.00	0.00	-1.48	-1.400	6.50	5.50	

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(1/7)  
Longitudinal Profile of Jaro River  
(La Paz Floodway - Jaro River STA. 8,085)

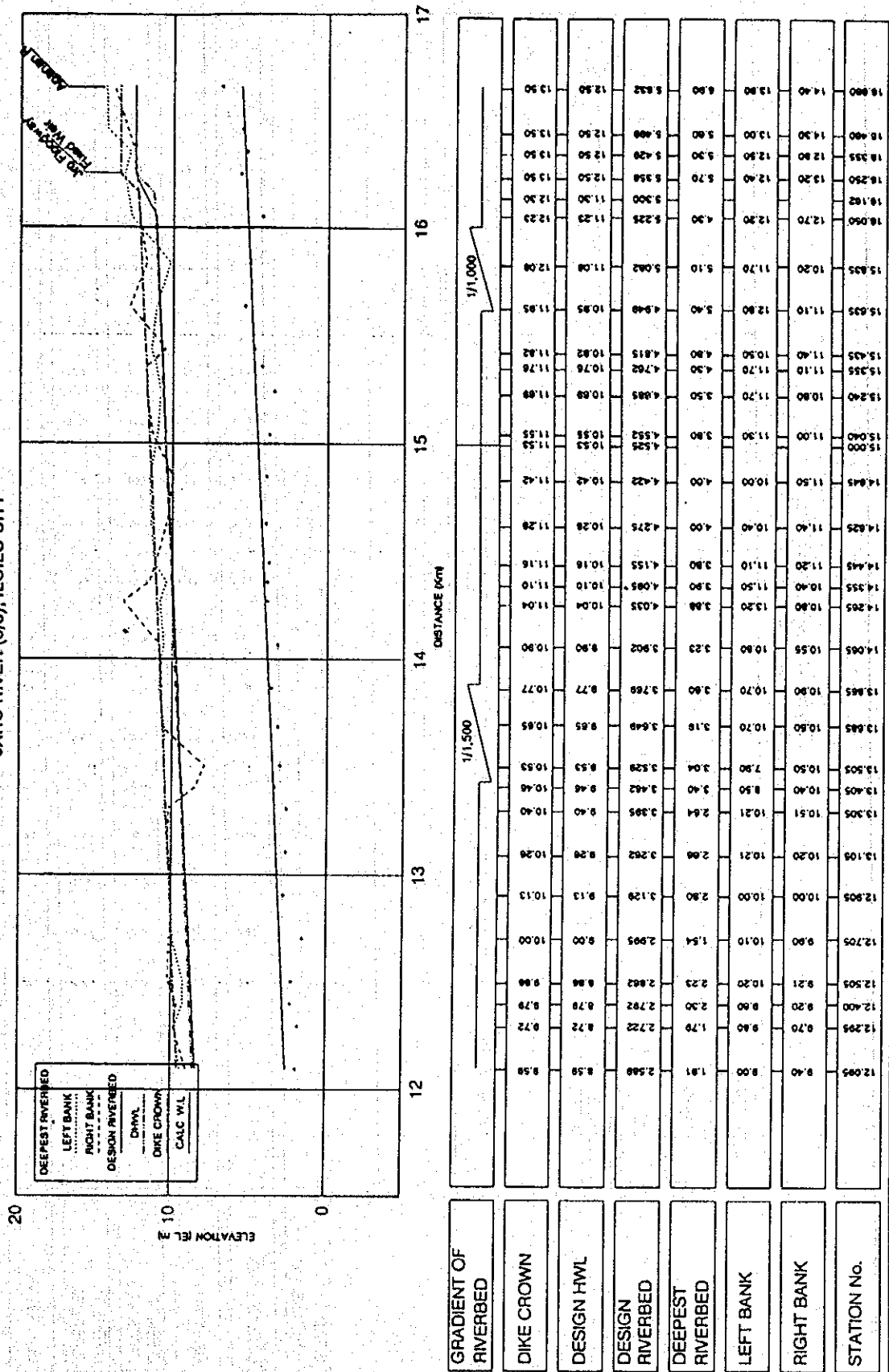
LONGITUDINAL PROFILE  
JARO RIVER (2/3), ILOILO CITY



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(2/7)  
Longitudinal Profile of Jaro River  
(Jaro River : STA. 8.085 - STA. 12.095)

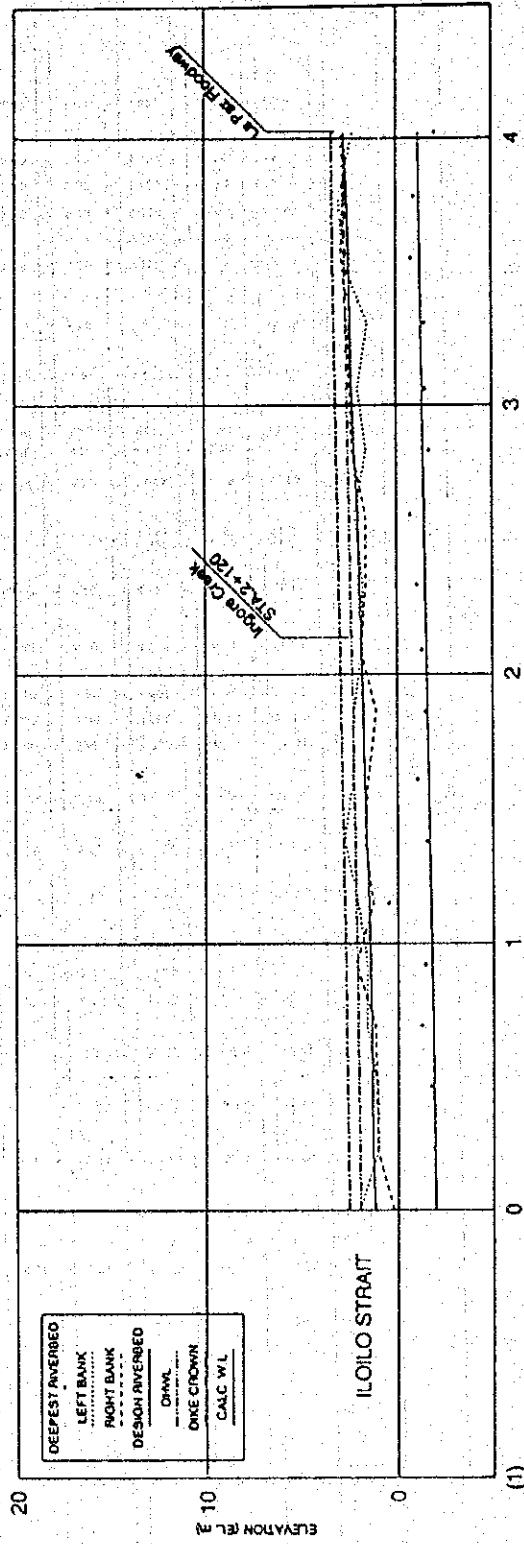
LONGITUDINAL PROFILE  
JARO RIVER (3/3), ILOILO CITY



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(3/7)  
Longitudinal Profile of Jaro River  
(Jaro River : STA. 12.095 - STA. 16.660)

LONGITUDINAL PROFILE  
JARO RIVER (RIVER MOUSE-LA PAZ FW), ILOILO CITY



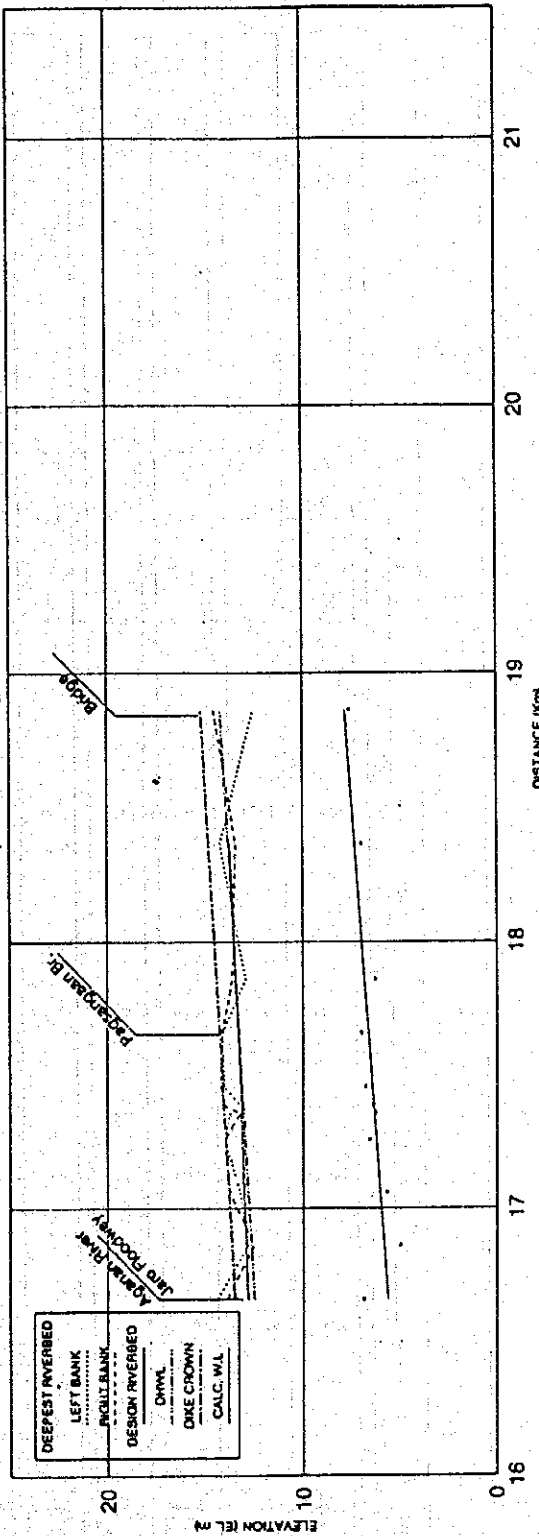
STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.00	2.00	0.20	-0.90	-2.00	2.00	2.80	
0.25	1.00	1.10	-1.87	-1.954	2.05	2.85	
0.46	1.07	1.10	-1.73	-1.908	2.08	2.89	
0.69	1.65	1.20	-1.25	-1.862	2.14	2.74	
0.92	1.80	2.20	-1.65	-1.818	2.18	2.78	
1.15	2.10	1.90	0.50	-1.770	2.23	2.83	
1.38	2.80	1.74	-1.56	-1.724	2.28	2.88	
1.61	2.40	1.53	-1.08	-1.678	2.32	2.92	
1.86	2.00	1.10	-1.52	-1.628	2.37	2.97	
2.09	1.88	1.82	-1.34	-1.582	2.42	3.02	
2.33	1.80	1.85	-1.08	-1.534	2.47	3.07	
2.56	2.23	1.84	-0.73	-1.482	2.52	3.12	
2.80	1.62	2.36	-1.72	-1.434	2.57	3.17	
3.06	2.04	2.44	-1.83	-1.388	2.61	3.21	
3.31	1.52	2.80	-1.40	-1.336	2.66	3.26	
3.55	2.85	2.88	-0.81	-1.290	2.71	3.31	
3.78	3.00	2.80	-0.84	-1.244	2.76	3.36	
4.00	2.30	2.91	-0.84	-1.198	2.80	3.40	

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(4/7)  
Longitudinal Profile of Jaro River  
(Jaro River : STA. 0.000 - STA. 4.020)



LONGITUDINAL PROFILE  
JARO RIVER (TIGUM RIVER), LOILO CITY

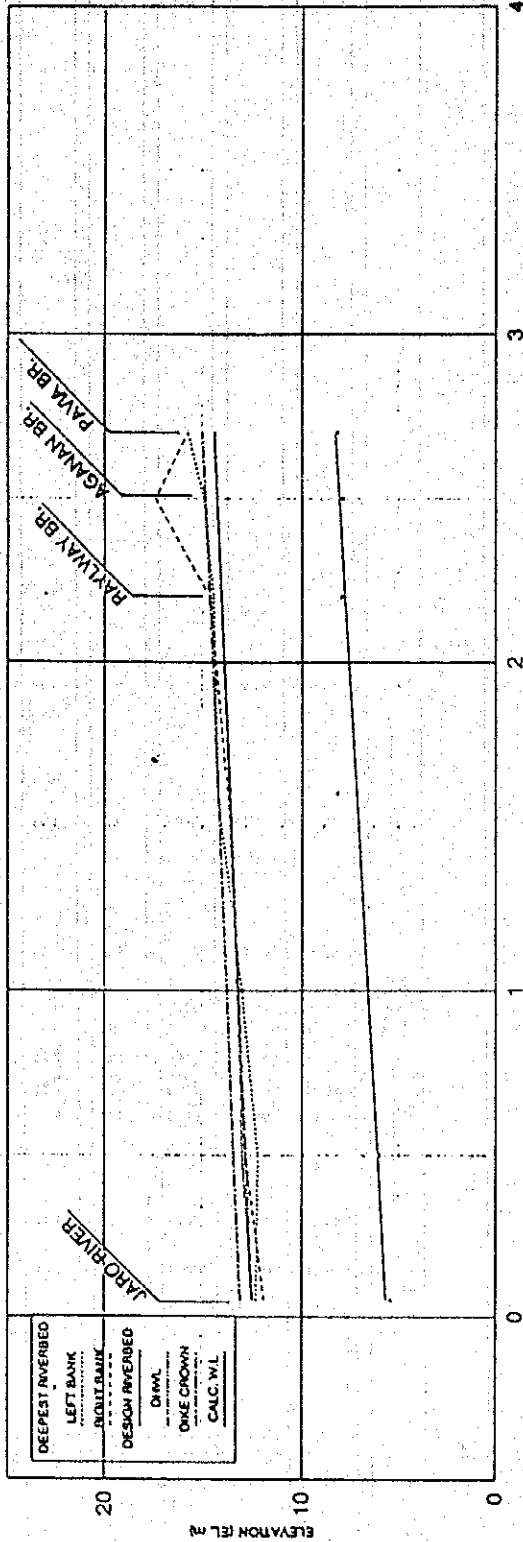


STATION No.	GRADIENT OF RIVERBED	DIKE CROWN	DESIGN HWL	DESIGN RIVERBED	DEEPEST RIVERBED	LEFT BANK	RIGHT BANK
16.00	13.50	13.50	12.50	5.832	6.0	13.0	14.4
17.00	13.81	13.81	12.81	6.032	5.7	13.7	15.2
17.26	13.96	13.96	12.96	6.232	6.6	14.0	14.0
17.28	14.02	14.02	13.02	6.332	6.2	13.9	13.7
17.46	14.12	14.12	13.12	6.432	6.8	14.2	14.0
17.66	14.27	14.27	13.27	6.632	7.0	14.1	14.1
17.86	14.42	14.42	13.42	6.832	6.3	13.8	12.9
18.06	14.61	14.61	13.61	7.032	7.0	13.4	14.2
18.36	14.81	14.81	13.81	7.232	7.8	13.0	12.5
18.66	14.19	14.19	14.19	7.832	7.8	14.5	12.6

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(S/7)  
Longitudinal Profile of Jaro River  
(Tigum River)

LONGITUDINAL PROFILE  
JARO RIVER (AGANAN RIVER), ILOILO CITY

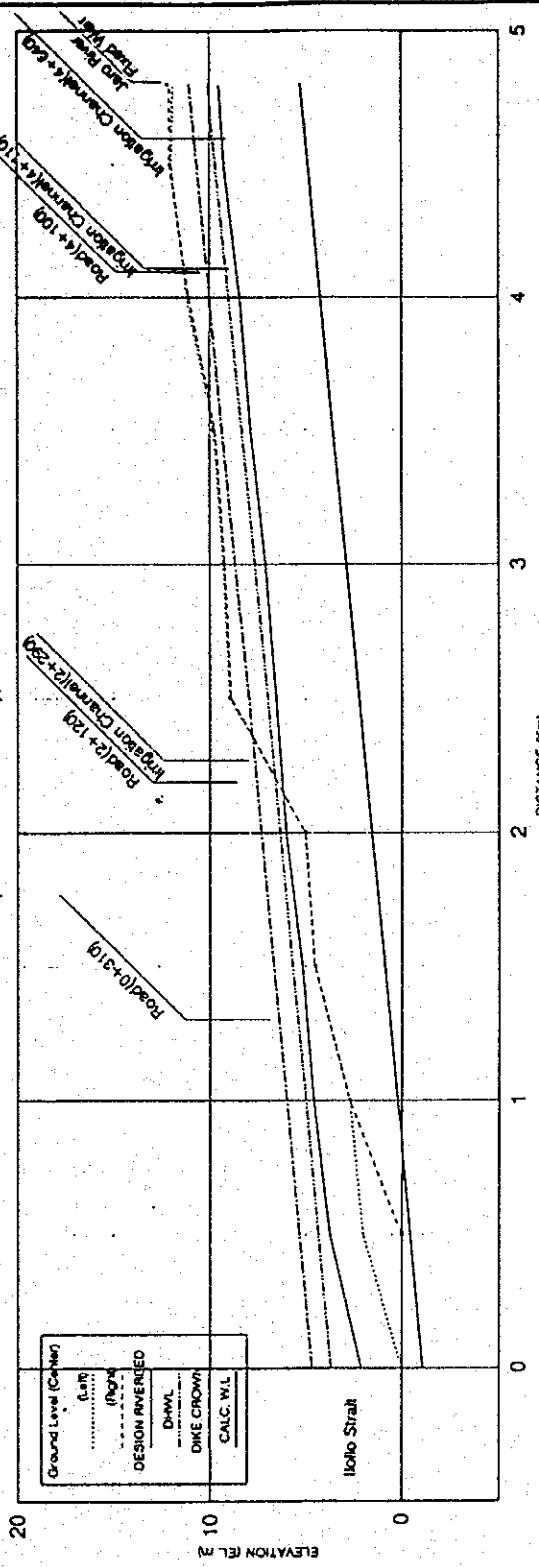


	0.05	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00
GRADIENT OF RIVERBED	13.10	13.42	13.78	14.21	14.04	14.85	14.90		
DIKE CROWN	12.50	13.82	15.18	13.81	14.04	14.25	14.38		
DESIGN HWL	5.82	6.02	6.58	7.18	7.72	8.02	8.28		
DESIGN RIVERBED	5.4	6.0	7.5	8.2	8.0	7.8	8.2		
DEEPEST RIVERBED	11.8	12.8	13.2	13.7	14.8	17.4	15.7		
LEFT BANK	12.3	12.2	13.0	14.2	14.4	14.8	15.7		
RIGHT BANK	12.3	12.2	13.0	14.2	14.4	14.8	15.7		
STATION No.	0.05	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(6/7)  
Longitudinal Profile of Jaro River  
(Aganan River)

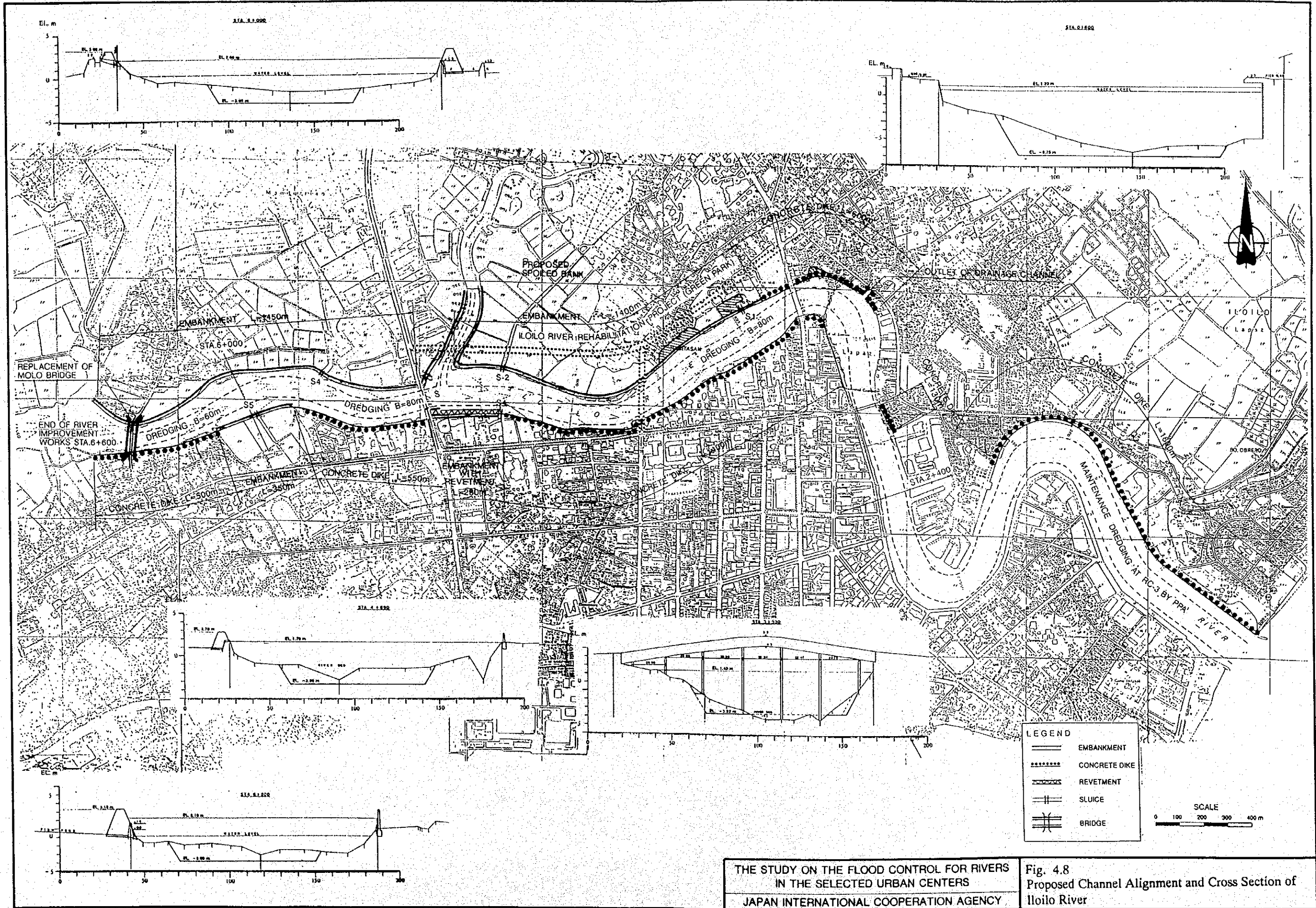
LONGITUDINAL PROFILE  
JARO RIVER (JARO FLOODWAY), ILOILO CITY



GRADIENT OF RIVERBED	DIKE CROWN	DESIGN HWL	DESIGN RIVERBED	GROUND LEVEL CENTER	GROUND LEVEL RIGHT	GROUND LEVEL Left	STATION No.
11.000	10.000	10.000	5.200	12.200	12.100	11.800	4.800
10.800	9.800	9.800	4.800	12.100	12.100	12.000	4.500
9.933	8.933	8.933	4.133	11.100	11.100	11.200	4.000
9.267	8.267	8.267	3.467	9.800	9.700	9.800	3.500
8.600	7.600	7.600	2.800	8.300	8.200	8.300	3.000
7.933	6.933	6.933	2.133	6.900	6.900	6.900	2.500
7.267	6.267	6.267	1.467	5.000	5.000	5.000	2.000
6.600	5.600	5.600	0.800	4.500	4.500	4.500	1.500
5.933	4.933	4.933	0.133	2.700	2.700	2.700	1.000
5.267	4.267	4.267	0.533	0.000	0.000	2.000	0.500
4.600	3.600	3.600	1.200	0.000	0.000	0.000	0.000

THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.7(77)  
Longitudinal Profile of Jaro River  
(Jaro Floodway)

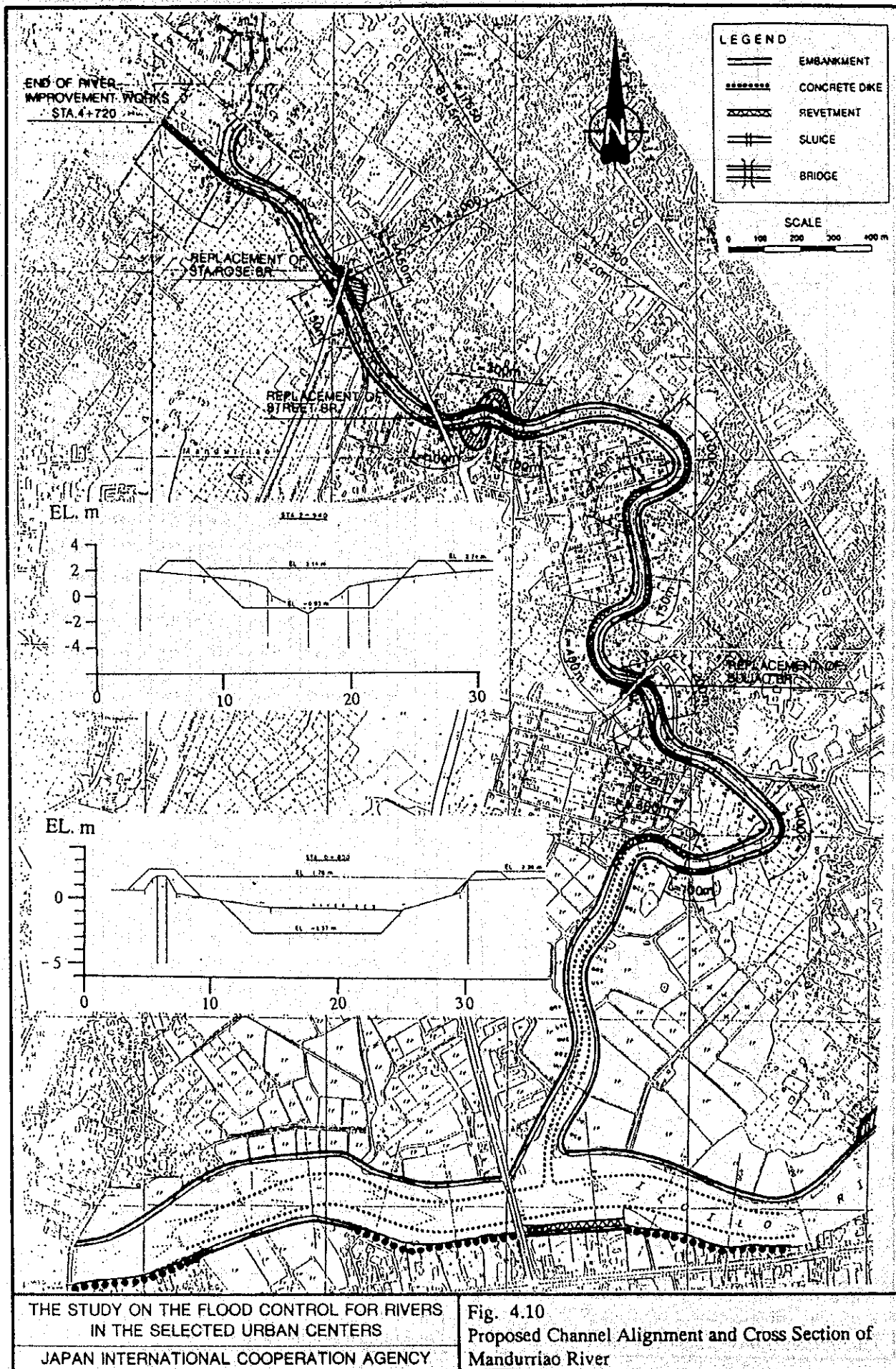


THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.8  
Proposed Channel Alignment and Cross Section of Iloilo River



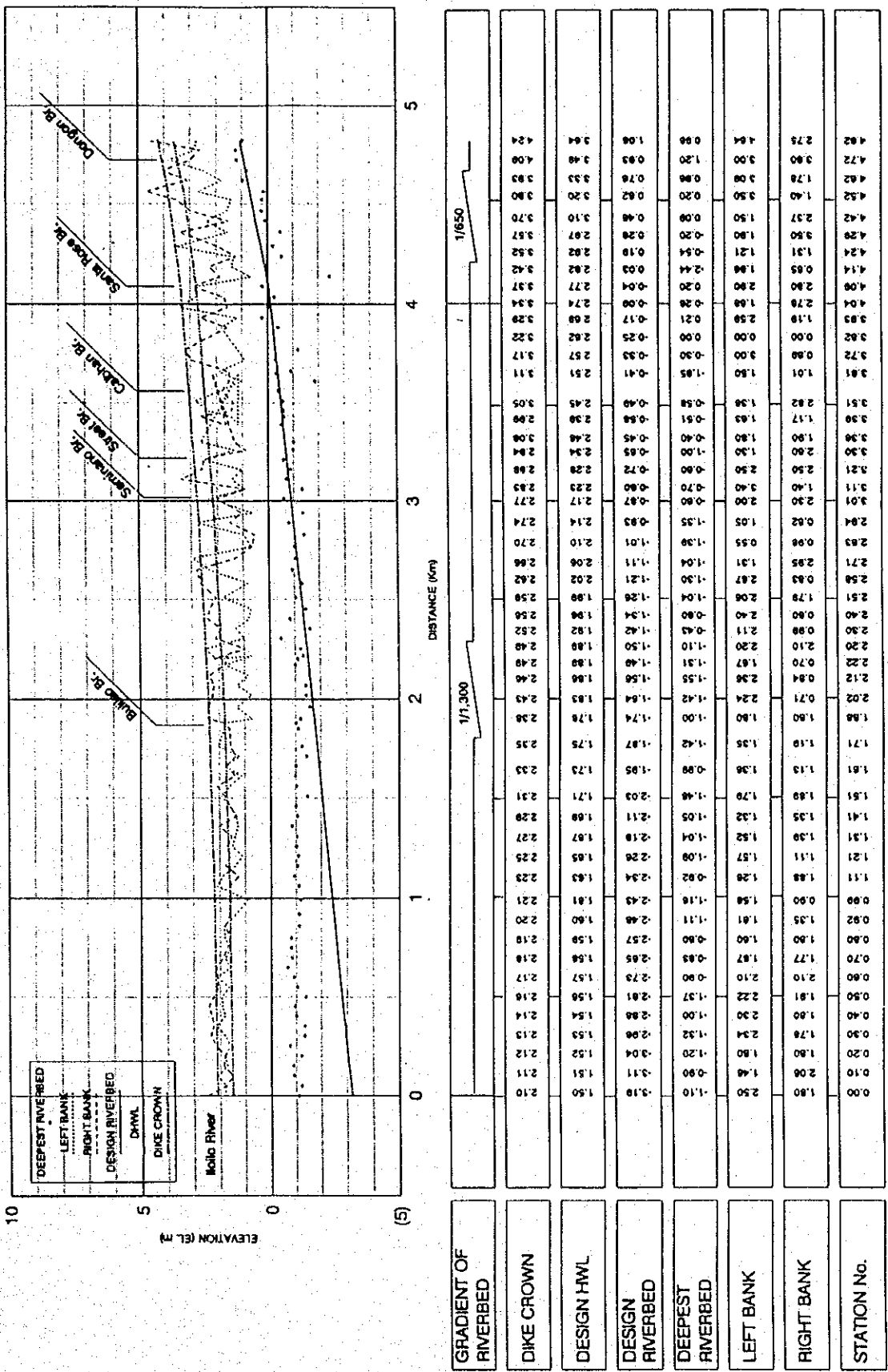




THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.10  
 Proposed Channel Alignment and Cross Section of  
 Mandurriao River

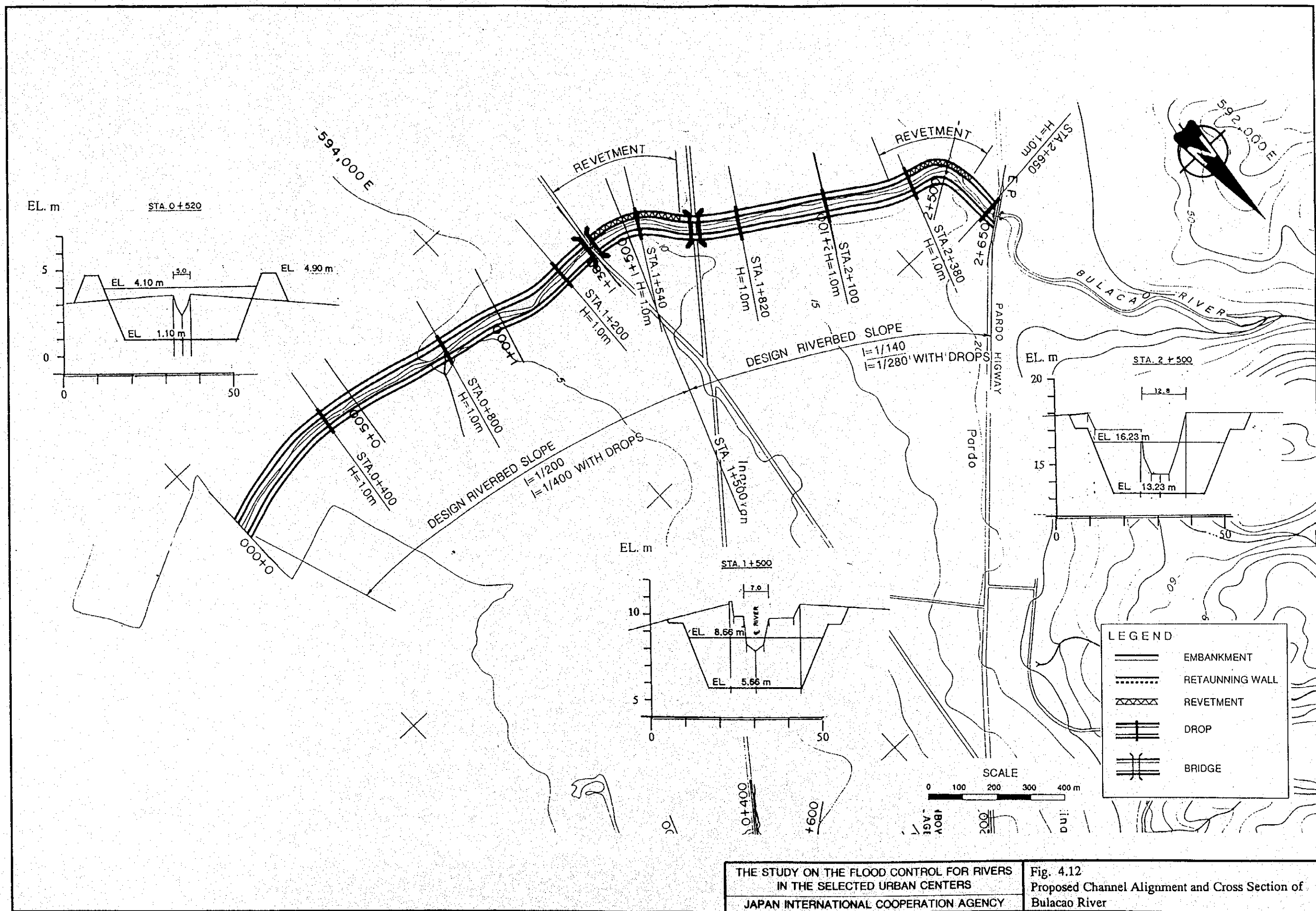
**LONGITUDINAL PROFILE**  
MANDURRIAO RIVER, ILOILO CITY



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.11  
Longitudinal Profile of Mandurriao River

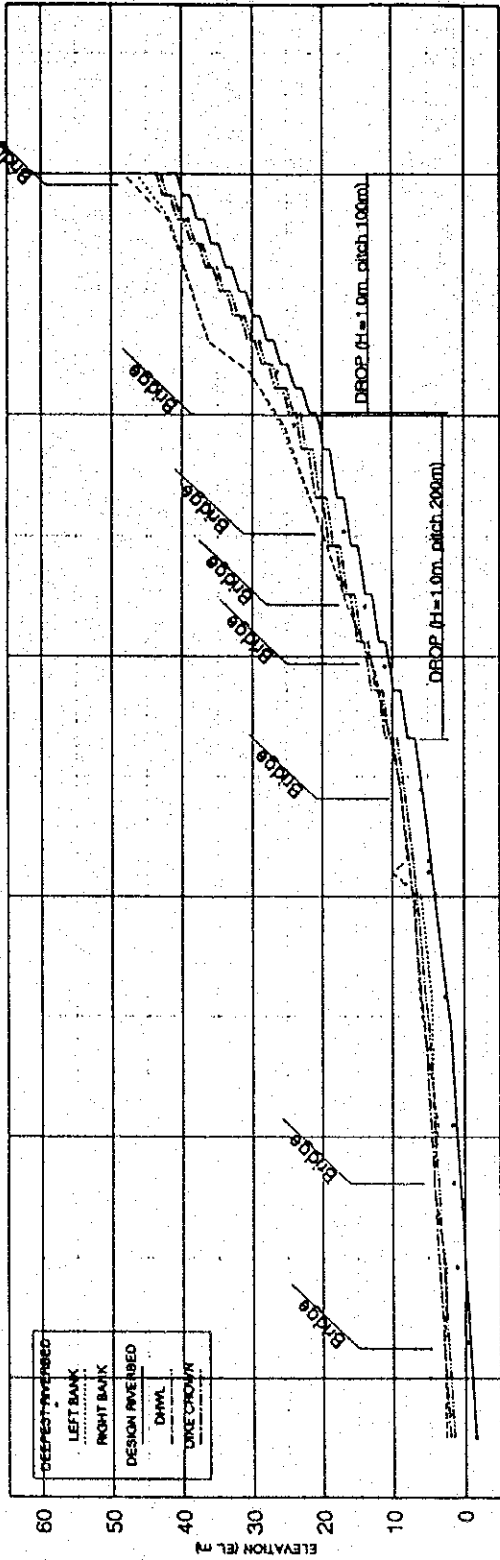




THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
 IN THE SELECTED URBAN CENTERS  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.12  
 Proposed Channel Alignment and Cross Section of  
 Bulacao River

LONGITUDINAL PROFILE  
SUBANG DAKU RIVER, CEBU CITY

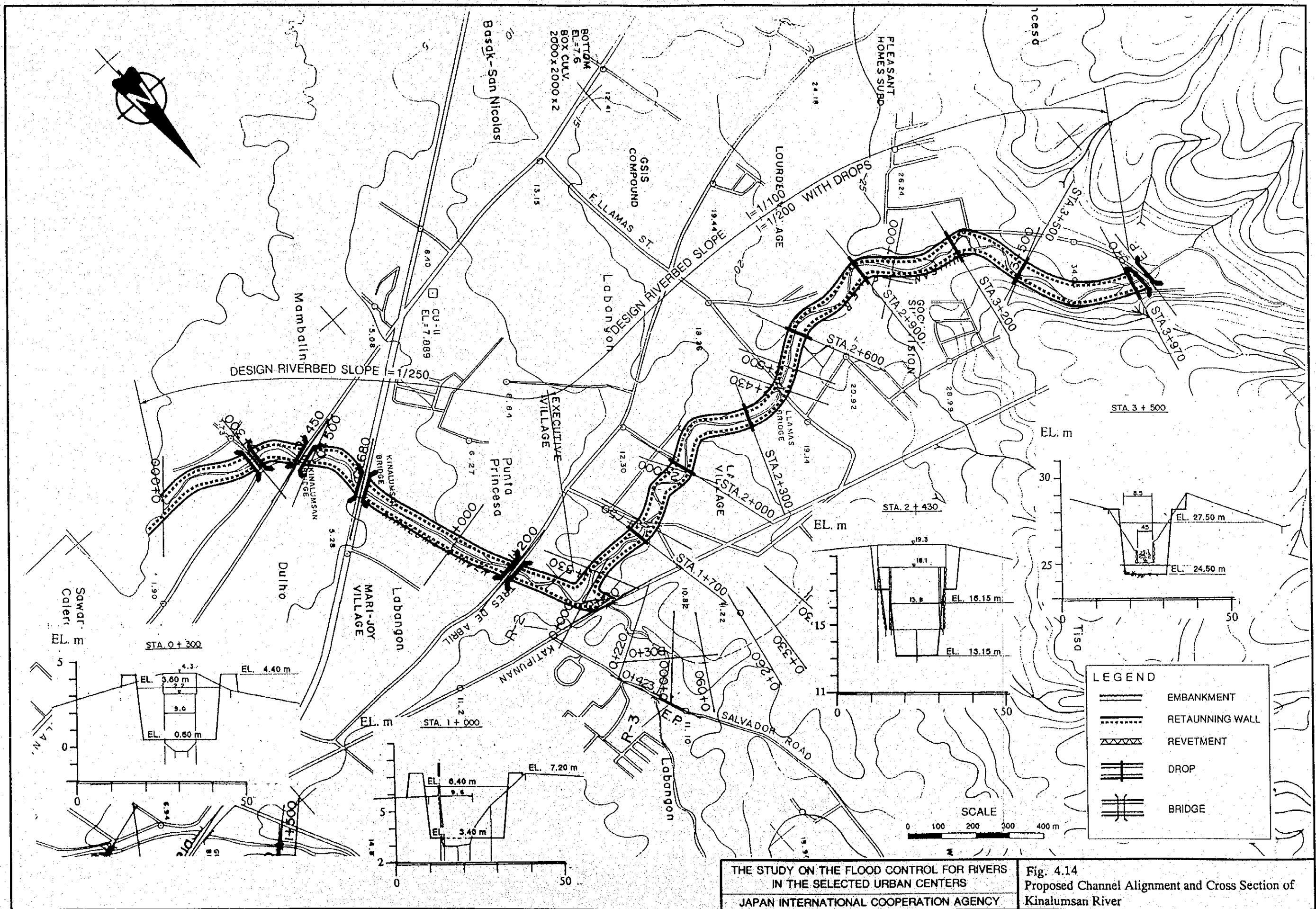


STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.250	2.700	2.900	-0.500	2.300	2.900	2.900	1/500
0.150	2.800	2.700	-0.400	2.600	3.200	3.200	1/500
0.400	2.500	2.700	1.100	2.820	4.220	4.220	1/500
0.810	4.210	3.900	1.500	3.820	4.100	4.100	1/250
1.460	4.500	5.300	2.700	4.920	5.520	5.520	1/100, with Drops
1.580	8.000	10.000	5.000	6.820	7.580	7.580	1/100, with Drops
2.010	6.000	8.900	4.000	6.200	7.220	7.220	1/250
2.100	10.000	10.000	5.000	6.980	7.580	7.580	1/100, with Drops
2.148	8.000	8.000	5.000	6.620	7.172	7.172	1/500
2.445	8.700	8.700	6.100	5.960	8.420	8.420	1/100, with Drops
2.480	8.700	8.700	6.100	5.960	8.420	8.420	1/100, with Drops
2.880	12.900	12.900	11.100	9.820	11.020	11.020	1/100, with Drops
2.890	12.900	12.900	11.100	9.820	11.020	11.020	1/100, with Drops
3.080	16.400	16.400	13.900	12.670	13.520	13.520	1/200, with Drops
3.210	16.400	16.400	13.900	12.670	13.520	13.520	1/200, with Drops
3.280	20.000	20.000	16.800	15.770	16.820	16.820	1/100, with Drops
3.480	20.000	20.000	16.800	15.770	16.820	16.820	1/100, with Drops
3.520	20.000	20.000	16.800	15.770	16.820	16.820	1/100, with Drops
3.880	25.400	25.400	21.100	18.820	21.020	21.020	1/100, with Drops
3.980	25.400	25.400	21.100	18.820	21.020	21.020	1/100, with Drops
4.110	30.400	30.400	24.100	21.820	24.020	24.020	1/100, with Drops
4.120	30.400	30.400	24.100	21.820	24.020	24.020	1/100, with Drops
4.210	36.200	36.200	28.300	25.820	28.020	28.020	1/100, with Drops
4.210	36.200	36.200	28.300	25.820	28.020	28.020	1/100, with Drops
4.310	42.000	42.000	34.100	31.820	34.020	34.020	1/100, with Drops
4.310	42.000	42.000	34.100	31.820	34.020	34.020	1/100, with Drops
4.410	48.000	48.000	40.100	37.820	40.020	40.020	1/100, with Drops
4.410	48.000	48.000	40.100	37.820	40.020	40.020	1/100, with Drops
4.510	54.000	54.000	46.100	43.820	46.020	46.020	1/100, with Drops
4.510	54.000	54.000	46.100	43.820	46.020	46.020	1/100, with Drops
4.610	60.000	60.000	52.100	49.820	52.020	52.020	1/100, with Drops
4.610	60.000	60.000	52.100	49.820	52.020	52.020	1/100, with Drops
4.710	66.000	66.000	58.100	55.820	58.020	58.020	1/100, with Drops
4.710	66.000	66.000	58.100	55.820	58.020	58.020	1/100, with Drops
4.810	72.000	72.000	64.100	61.820	64.020	64.020	1/100, with Drops
4.810	72.000	72.000	64.100	61.820	64.020	64.020	1/100, with Drops
4.910	78.000	78.000	70.100	67.820	70.020	70.020	1/100, with Drops
4.910	78.000	78.000	70.100	67.820	70.020	70.020	1/100, with Drops
5.000	84.000	84.000	76.100	73.820	76.020	76.020	1/100, with Drops
5.000	84.000	84.000	76.100	73.820	76.020	76.020	1/100, with Drops

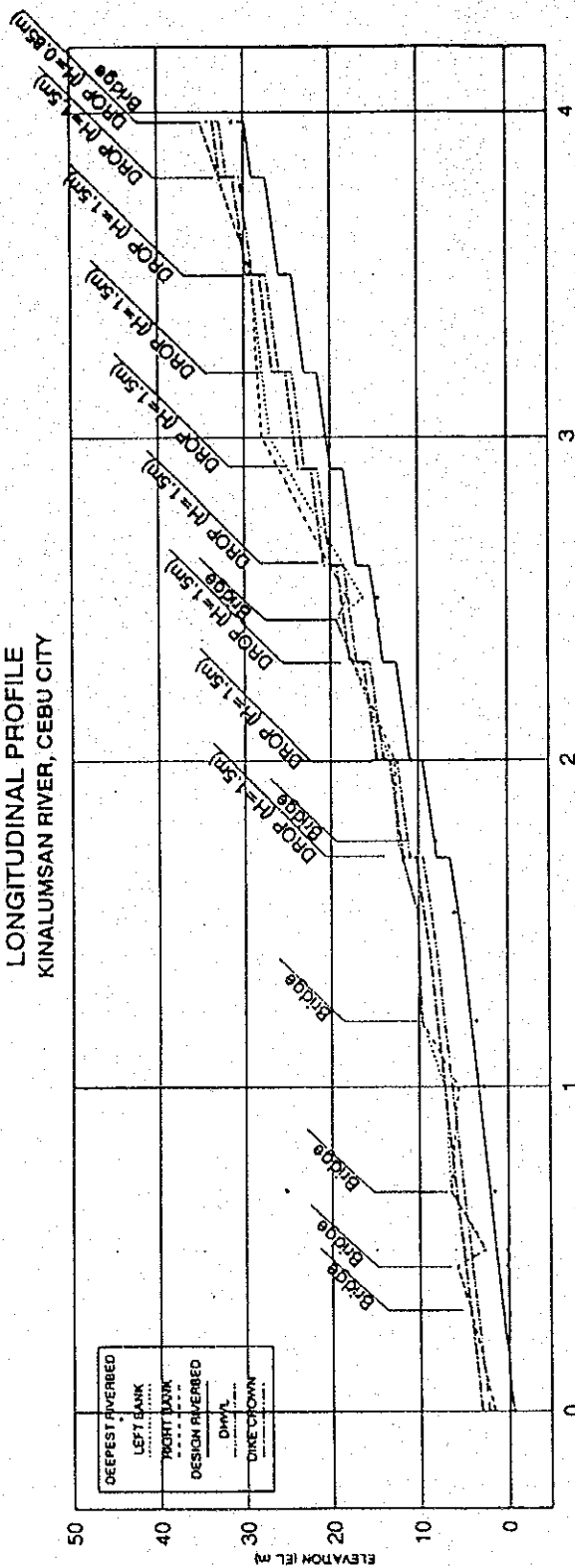
THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.13  
Longitudinal Profile of Bulacao River





LONGITUDINAL PROFILE  
KINALUMSAN RIVER, CEBU CITY

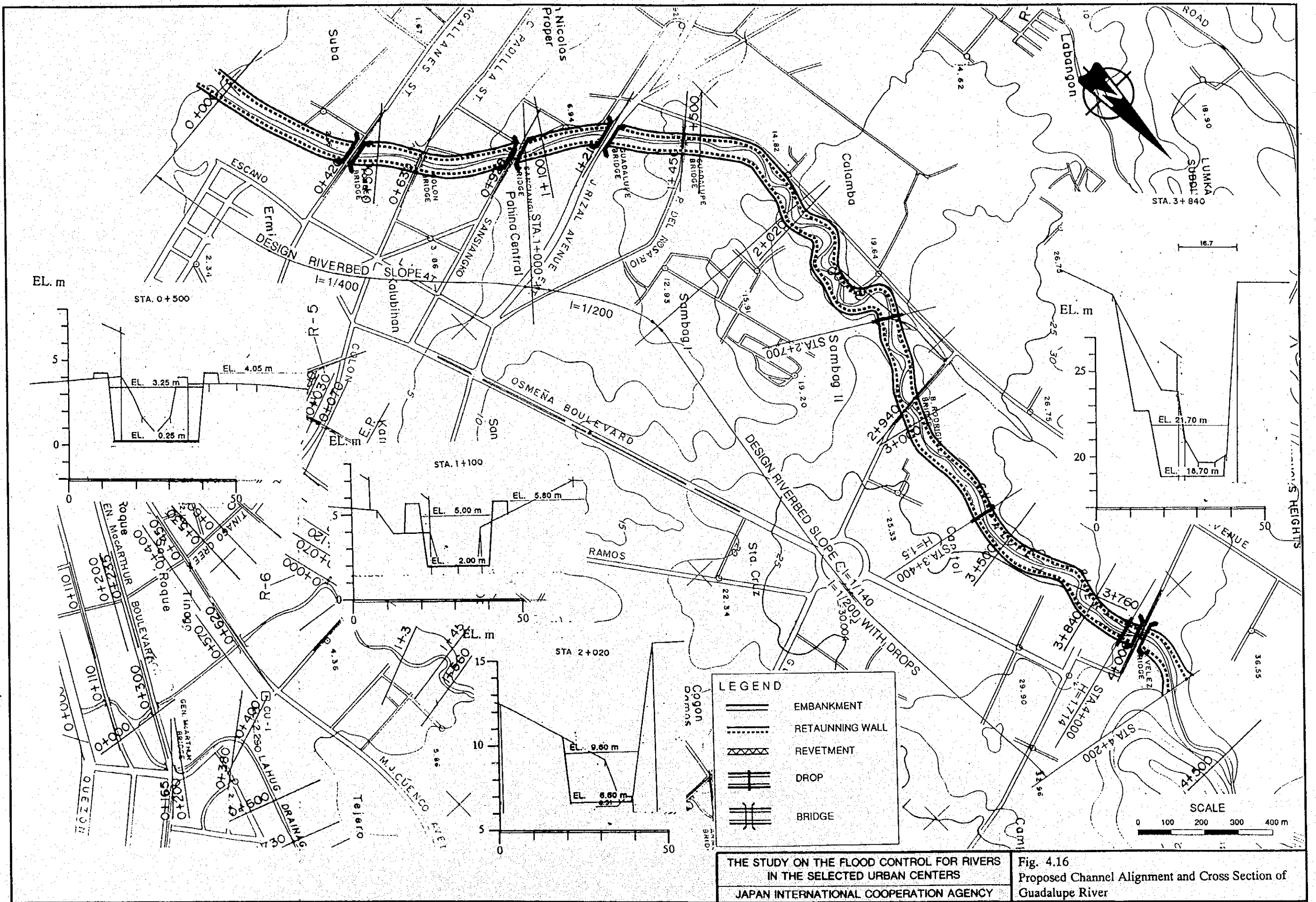


DISTANCE (M)	STATION No.	RIGHT BANK	LEFT BANK	DEEPEST RIVERBED	DESIGN RIVERBED	DESIGN HWL	DIKE CROWN	GRADIENT OF RIVERBED
0.00	1.700	1.700	4.300	0.600	3.900	4.400	2.400	
0.50	2.800	2.800	5.900	0.150	4.200	5.000	4.400	
1.00	7.200	7.200	5.700	2.800	3.400	8.400	7.200	
1.200	9.890	9.890	5.700	3.600	4.200	7.200	8.000	
1.400	10.100	10.100	6.100	5.650	8.650	8.450	8.800	
1.500	10.100	10.100	6.100	5.650	8.650	8.450	8.800	
1.700	11.800	11.800	8.250	9.500	11.800	12.050	10.300	
1.750	12.340	12.340	8.150	8.500	11.250	12.050	10.300	
2.000	13.200	13.200	12.700	10.900	11.000	12.500	14.800	
2.300	14.000	14.000	14.500	12.500	15.500	17.800	16.300	
2.400	15.300	15.300	14.650	14.650	17.650	18.450	18.800	
2.500	16.300	16.300	15.000	15.000	18.000	18.800	18.800	
2.600	17.000	17.000	15.500	15.500	18.500	19.300	19.300	
2.800	18.500	18.500	20.500	20.500	23.000	22.300	22.300	
3.000	20.000	20.000	23.500	23.500	24.300	24.300	24.300	
3.200	21.500	21.500	24.500	24.500	26.000	26.000	26.000	
3.500	27.500	27.500	28.300	28.300	28.000	28.000	28.000	
3.800	30.500	30.500	31.300	31.300	32.000	32.000	32.000	
4.000	32.850	32.850	33.700	33.700	34.500	34.500	34.500	

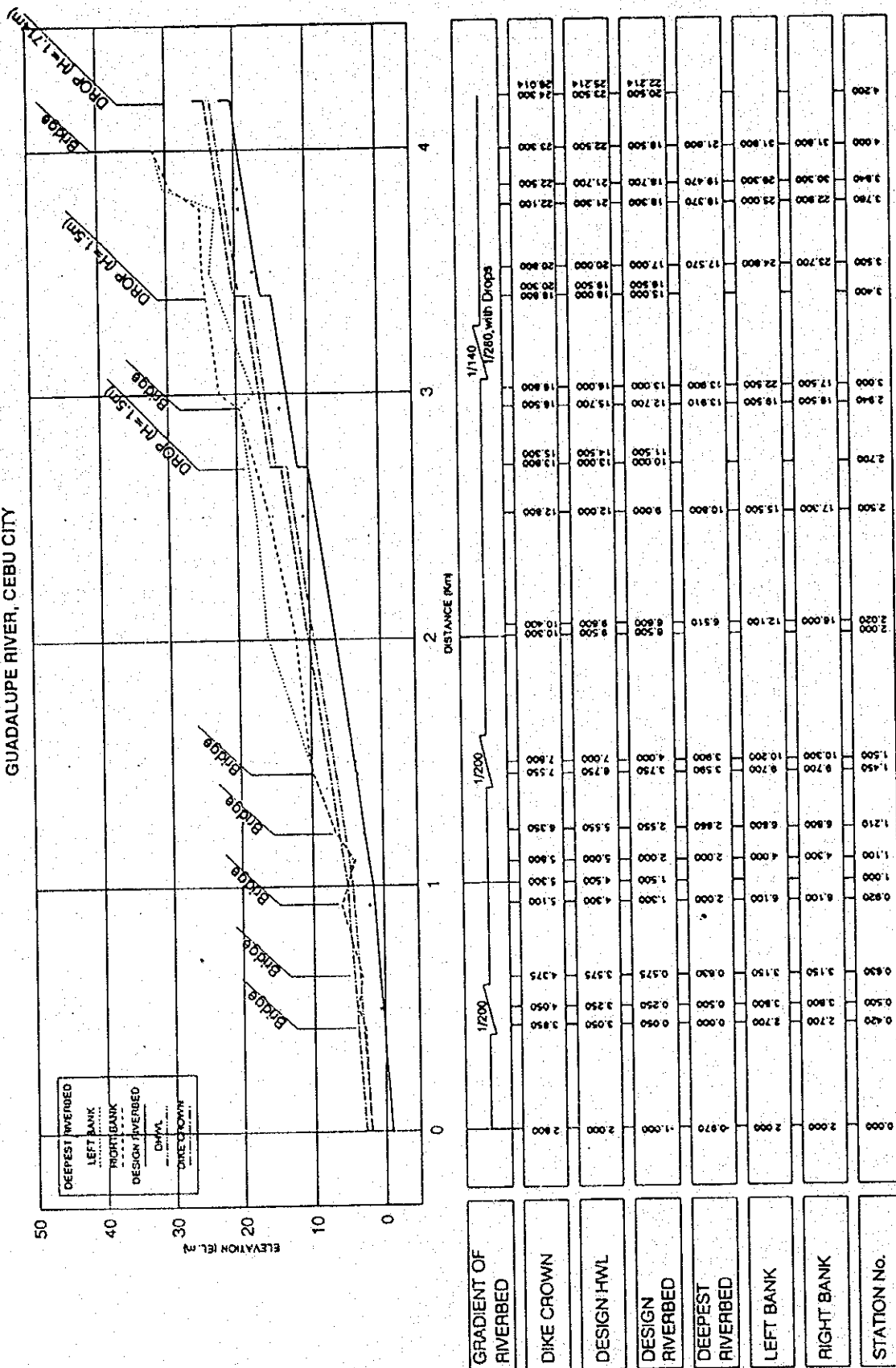
THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
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JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.15  
Longitudinal Profile of Kinalumsan River





LONGITUDINAL PROFILE  
GUADALUPE RIVER, CEBU CITY



THE STUDY ON THE FLOOD CONTROL FOR RIVERS  
IN THE SELECTED URBAN CENTERS  
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4.17  
Longitudinal Profile of Guadalupe River





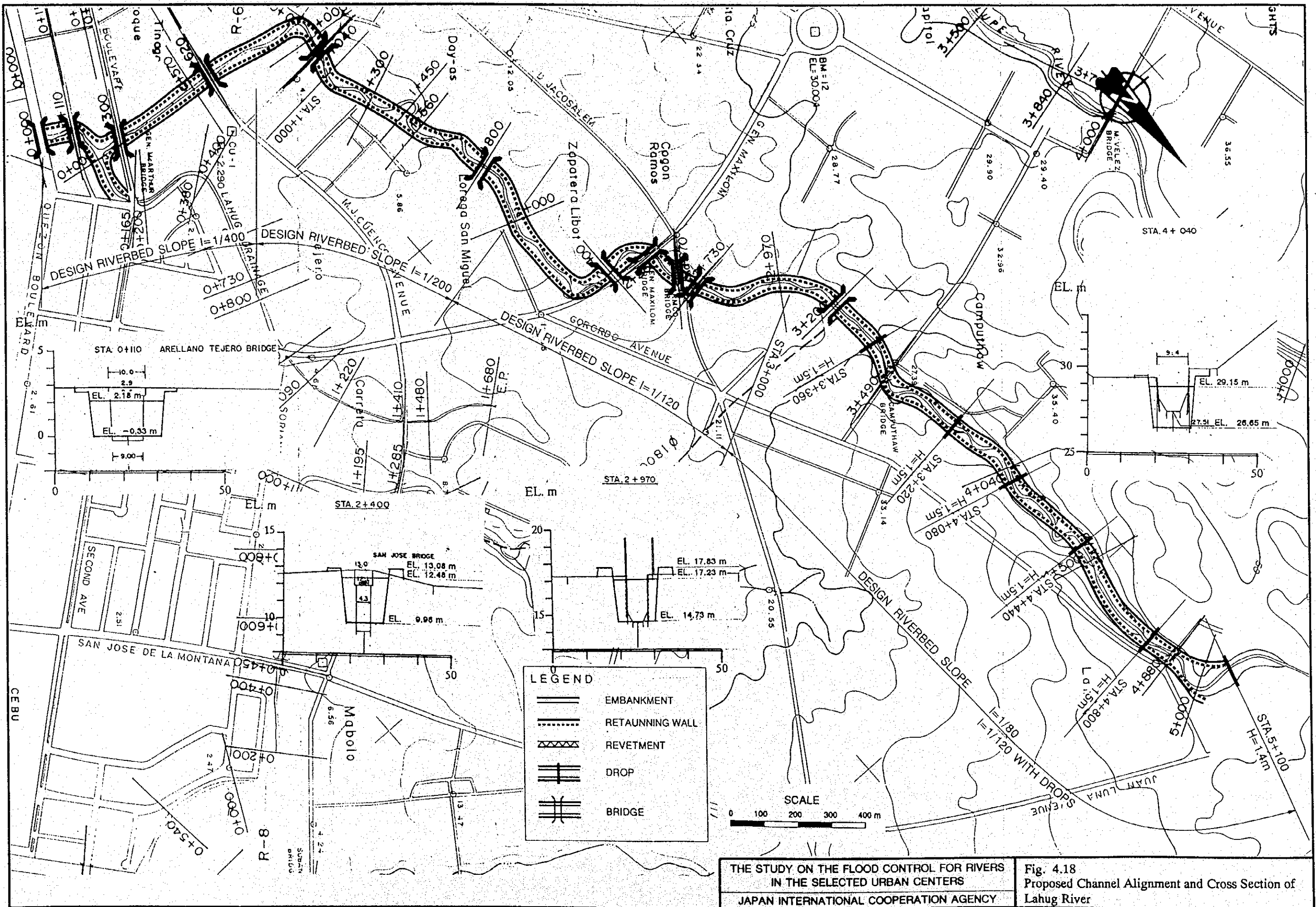


Fig. 4.18  
Proposed Channel Alignment and Cross Section of  
Lahug River