15.3 CONSTRUCTION COST PER KM.

Construction cost per km for each type of work was estimated by the calculation of unit costs of major construction items (attached in Appendix 15.3-1) and summarized as shown in Table 15.3-1.

TABLE 15.3-1 CONSTRUCTION COST PER KM.

Unit : Million Pesos at October 1998 Constant Prices

Type of Work	Abbreviation	Description of Work	Pavement Width = 6.1m			Pavement Width = 6.7m			Pavement Width = 7.0m		
			Flat	Rolling	Mountainous	Flat	Rolling	Mountainous	Flat	Rolling	Mountainous
Rehabilitation	Reh. (1-1)	PCC pavement reconstruction (t = 23m)	8.06	9.27	10.08	8.70	10.00	10.88	9.03	10.38	11.29
		PCC pavement reconstruction (t = 25m)	8.63	9.92	10.79	9.33	10.73	11.66	9.68	11.13	12.10
	Reh. (1-2)	AC overlay on PCC pavement (t = 10m)	6.88	7.22	7.57	7.28	7.64	8.01	—	—	—
	Reh. (2-1)	AC pavement reconstruction (t = 8m)	7.08	8.14	8.85	7.61	8.75	9.51	7.87	9.05	9.84
	Reh. (2-2)	AC overlay on AC pavement (t = 8m)	5.61	5.89	6.17	5.95	6.25	6.55	—	—	—
Improvement	Imp. (1)	2-lane gravel/earth to 2-lane PCCP (t = 23m)	12.58	15.10	16.35	13.17	15.80	17.12	13.47	16.16	17.51
		2-lane gravel/earth to 2-lane ACP (t = 8m)	11.00	13.20	14.30	11.51	13.81	14.96	11.77	14.12	15.30
	Imp. (2)	1-lane gravel/earth to 2-lane PCCP (t = 23m)	15.11	18.13	20.40	15.70	18.84	21.20	—	—	—
		1-lane gravel/earth to 2-lane ACP (t = 8m)	13.53	16.24	18.27	14.04	16.85	18.95	—	—	—
	Imp. (3) or New-2	New 2-lane with PCCP (t = 23m)	17.62	22.03	24.68	18.21	22.76	25.49	18.51	23.14	25.91
		New 2-lane with ACP (t = 8m)	16.03	20.04	22.44	16.55	20.69	23.17	16.80	21.00	23.52
Traffic Capacity Expansion	WO-4	Widening to 4-lane with Center Median (PCCP)	(Urban, 6.7m = 27.74)			15.68	19.60	23.52	—	—	—
		Widening to 4-lane within limited ROW (PCCP)	(Urban, 6.7m = 18.79)			13.13	16.41	19.70	—	—	—
	BP or PR	4-lane Bypass or Parallel Road (PCCP)	—	—	—	43.45	52.14	60.83	—	—	—
		2-lane Bypass or Parallel Road for Stage Construction (PCCP)	—	—	—	25.46	30.55	35.64	—	—	—
Expressway	EX-4	4-lane Expressway (PCCP)	—	—	—	—	—	—	(7.3m x 2) 52.54	(7.3m x 2) 65.68	(7.3m x 2) 73.56
		2-lane Expressway for Stage Construction (PCCP)	—	—	—	—	—	—	(7.3m) 31.66	(7.3m) 39.58	(7.3m) 44.32

15.4 ESTIMATED PROJECT COSTS

15.4.1 Group 1 Projects

Estimated project costs of the Group 1 (2-lane roads rehabilitation / improvement / new construction projects) are shown in Table 15.4-1.

15.4.2 Group 2 Projects

Estimated project costs of the Group 2 projects (widening projects from a 2-lane to 4-lane road) are presented in Table 15.4-2.

15.4.3 Group 3 Projects

1) Expressway and Bypass Projects

Estimated project costs of the expressways and bypasses are presented in Table 15.4-3.

2) Inter-Island Link Projects

Estimated project costs for the inter-island link projects are shown in Table 15.4-4.

15.4.4 Summary of Project Costs By Island

Project costs were summarized by each Group and island and shown in Table 15.4-5.

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (1/10)

Project No	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
MA 1	Marinduque Circumferential Road	MA 1-1	69.21	501.74	70.24	0	571.99
		MA 1-2	50.19	521.99	73.08	0	595.07
	Total for Marinduque Island		**119.40**	**1023.73**	**143.32**	**0**	**1167.06**
MR 1	Mindoro East Coast Road	MR 1-1	7.32	54.27	7.60	0	61.87
		MR 1-2	26.76	211.82	29.65	0	241.48
		MR 1-3	26.95	239.44	33.52	0	272.96
		MR 1-4	79.16	861.21	120.57	0	981.78
		MR 1-5	43.47	805.41	112.76	0	918.17
MR 2	Mindoro South Coast Road	MR 2-1	43.53	782.00	109.48	3.40	894.87
		MR 2-2	3.35	24.95	3.49	0	28.44
MR 3	Mindoro Cross Island Road	MR 3-1	17.65	271.40	38.00	0	309.39
		MR 3-2	6.77	166.37	23.29	6.09	195.76
		MR 3-3	59.12	1832.05	256.49	35.47	2124.01
MR 4	Mindoro West Coast Road	MR 4-1	17.79	1595.30	250.40	0	1845.70
		MR 4-2	24.21	367.02	51.38	0	418.40
		MR 4-3	43.56	1039.64	145.55	0	1185.19
		MR 4-4	16.99	(Included in MR 4-1)			
		MR 4-5	39.98	(- do -)			
		MR 4-6	25.34		52.18	0	424.86
		MR 4-7	2.22	5.24	0.73	0	5.97
		MR 4-8	14.68	(Included in MR 4-1)			
		MR 4-9	4.15	(- do -)			
		MR 4-10	13.55	(- do -)			
MR 5	Mindoro North Coast Road	MR 5-1	43.47	619.03	86.66	0	705.69
		MR 5-2	25.97	544.52	76.23	10.80	631.56
MR 6	Calapan - Socorro Coastal Road	MR 6-1	28.23	682.38	95.53	4.25	782.16
		MR 6-2	36.12	932.34	130.53	32.51	1095.38
		MR 6-3	11.85	98.42	13.78	0	112.20
MR 7	San Jose - Calintaan Inland Road	MR 7-1	43.57	812.46	113.75	15.15	941.36
MR 8	Mamburao - Abra de Ilog Coastal Road	MR 8-1	42.63	876.81	122.75	0	999.57
		MR 8-2	67.07	1909.81	267.37	40.24	2217.43
	Total for Mindoro Island		**815.46**	**15104.57**	**2141.70**	**147.91**	**17394.18**
PL 1	Palawan North Road	PL 1-1	8.85	1565.40	156.50	0	1721.90
		PL 1-2	28.61	(Included in PL 1-1)			
		PL 1-3	88.96	(- do -)			
		PL 1-4	10.32	(- do -)			
		PL 1-5	73.43	1433.90	200.75	0	1634.65
		PL 1-6	60.06	1304.12	182.58	0	1486.70
PL 2	Palawan South Road	PL 2-1	2.75	20.11	2.82	0	22.93
		PL 2-2	63.95	536.03	75.04	0	611.07
		PL 2-3	61.00	533.50	74.69	0	608.19
		PL 2-4	61.73	423.52	59.29	0	482.81
PL 3	Palawan South Road Extension	PL 3-1	27.43	447.72	62.68	0	510.40
		PL 3-2	39.91	692.47	96.95	0	789.41
		PL 3-3	54.23	1253.82	175.54	56.15	1485.50
PL 4	Salvacion - Roxas West Coast Road	PL 4-1	36.47	733.18	102.65	0	835.83
		PL 4-2	90.84	2328.33	325.97	63.77	2718.08
		PL 4-3	22.02	448.94	62.85	0	511.79
PL 5	Quezon - Bacungan West Coast Road	PL 5-1	35.98	667.32	93.43	0	760.74
		PL 5-2	117.65	2943.65	412.11	92.01	3447.77
PL 6	J.P. Rizal - Quezon West Coast Road	PL 6-1	59.96	1122.21	157.11	0	1279.32
		PL 6-2	42.45	989.16	138.48	49.24	1176.89
PL 7	Aboabo - Quezon Road	PL 7-1	18.38	281.19	39.37	0	320.55
PL 8	Batarasa Cross Island Road	PL 8-1	19.66	353.07	49.43	26.54	429.05
	Total for Palawan Island		**1024.64**	**18077.65**	**2468.22**	**287.72**	**20833.57**
RO 1	Romblon Island Road	RO 1-1	19.39	414.23	57.99	0	472.22
RO 2	Tablas Circumferential Road	RO 2-1	45.76	754.73	105.66	0	860.40
		RO 2-2	51.01	812.63	113.77	0	926.40
		RO 2-3	28.32	389.30	54.50	0	443.80
RO 3	Sibuyan Circumferential Road	RO 3-1	50.80	1057.98	148.12	0	1206.09
		RO 3-2	17.75	404.14	56.58	0	460.72

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (2/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		RO 3-3	24.70	471.54	66.02	0	537.56
	Total for Romblon Island		**237.73**	**4304.55**	**602.64**	**0**	**4907.19**
CA 1	Catanduanes Circumferential Road	CA 1-1	11.34	91.12	12.76	0	103.88
		CA 1-2	45.17	797.66	111.67	0	909.34
		CA 1-3	80.17	1552.19	217.31	0	1769.50
		CA 1-4	53.84	889.42	124.52	0	1013.95
		CA 1-5	14.20	80.03	11.20	0	91.24
	Total for Catanduanes Island		**204.72**	**3410.43**	**477.46**	**0**	**3887.89**
PA 1	Iloilo - Roxas Road	PA 1-1	2.94	17.33	2.43	0	19.75
		PA 1-2	18.79	153.14	21.44	0	174.58
		PA 1-3	7.98	47.47	6.65	0	54.12
		PA 1-4	19.97	228.51	31.99	0	260.51
		PA 1-5	14.13	121.39	16.99	0	138.38
		PA 1-6	7.18	51.90	7.27	0	59.17
		PA 1-7	8.30	59.60	8.34	0	67.94
		PA 1-8	22.35	223.06	31.23	0	254.29
		PA 1-9	10.45	15.33	2.15	0	17.48
PA 2	Kalibo - Roxas Road	PA 2-1	39.46	364.35	51.01	0	415.36
		PA 2-2	6.81	78.62	11.01	0	89.63
		PA 2-3	22.81	192.45	26.94	0	219.40
PA 3	Panay East-West Link Road	PA 3-1	11.33	108.63	15.21	0	123.83
		PA 3-2	24.63	304.86	42.68	0	347.54
		PA 3-3	24.63	375.99	52.64	0	428.63
		PA 3-4	13.53	131.31	18.38	0	149.69
		PA 3-5	12.23	112.09	15.69	0	127.78
		PA 3-6	9.89	186.37	26.09	0	212.46
		PA 3-7	33.77	874.79	122.47	20.26	1017.52
		PA 3-8	52.20	1374.31	192.40	31.32	1598.03
		PA 3-9	13.86	501.21	70.17	0	571.38
PA 4	Roxas - Estancia Road	PA 4-1	21.42	104.85	14.68	0	119.53
		PA 4-2	33.31	169.15	23.68	0	192.84
		PA 4-3	No Work				
		PA 4-4	No Work				
PA 5	Panay East Coast Road	PA 5-1	27.42	136.69	19.14	0	155.82
		PA 5-2	8.73	56.18	7.86	0	64.05
		PA 5-3	26.45	191.31	26.78	0	218.09
		PA 5-4	41.19	282.44	39.54	0	321.98
		PA 5-5	29.02	202.85	28.40	0	231.25
PA 6	Iloilo - Cabatuan - Lumbunao Road	PA 6-1	12.69	64.92	9.09	0	74.00
		PA 6-2	8.54	50.79	7.11	0	57.91
		PA 6-3	23.75	200.79	28.11	0	228.91
PA 7	Calinog - Jamindan - Altavas Road	PA 7-1	10.73	186.29	26.08	0	212.37
		PA 7-2	7.74	101.99	14.28	0	116.27
		PA 7-3	39.19	495.64	69.39	0	565.03
		PA 7-4	8.02	132.12	18.50	0	150.61
PA 8	Iloilo - Antique Road	PA 8-1	10.73	61.52	8.61	0	70.13
		PA 8-2	25.76	166.60	23.32	0	189.92
		PA 8-3	24.25	269.75	37.76	0	307.51
		PA 8-4	11.94	180.57	25.28	0	205.85
		PA 8-5	11.10	105.19	14.73	0	119.92
		PA 8-6	13.66	153.94	21.55	0	175.49
PA 9	Antique Coastal Road	PA 9-1	4.20	994.60	99.40	0	1094.00
		PA 9-2	6.48	(Included in PA 1-1)		0	0.00
		PA 9-3	35.73	(- do -)		0	0.00
		PA 9-4	30.14	(- do -)		0	0.00
		PA 9-5	22.58	(- do -)		0	0.00
		PA 9-6	32.09	400.01	56.00	0	456.02
		PA 9-7	6.85	19.88	2.78	0	22.66
PA 10	Nabas - Kalibo Road	PA 10-1	34.85	273.32	38.26	0	311.59
		PA 10-2	9.61	188.85	26.44	0	215.28
PA 11	Nabas - Caticlan - Pandal Road	PA 11-1	23.61	131.56	18.42	0	149.98
		PA 11-2	14.93	292.61	40.97	0	333.57
		PA 11-3	10.82	200.32	28.04	0	228.37
		PA 11-4	28.08	424.18	59.38	0	483.56
PA 12	Aklan Penetration Road	PA 12-1	17.03	263.84	36.94	0	300.78
		PA 12-2	3.14	337.09	47.19	4.70	388.98

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (3/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		PA 12-3	24.95	455.27	63.74	0	519.01
PA 13	Iloilo - Leon - Miagao Road	PA 13-1	18.38	131.11	18.35	0	149.46
		PA 13-2	7.28	51.87	7.26	0	59.13
		PA 13-3	41.15	758.51	106.19	0	864.70
PA 14	Barotac - San Rafael - Dumarao Road	PA 14-1	17.87	169.40	16.90	0	186.30
		PA 14-2	1.82	34.27	4.80	0	39.07
		PA 14-3	25.05	460.26	64.44	0	524.69
PA 15	Tapaz - Cuartero - Pontevedra Road	PA 15-1	20.77	331.59	46.42	0	378.02
		PA 15-2	31.54	359.80	50.37	0	410.17
PA 16	Leon - Sibalom Cross Mountain Road	PA 16-1	19.22	403.07	56.43	0	459.50
		PA 16-2	37.39	988.09	138.33	22.43	1148.85
		PA 16-3	37.87	609.45	85.32	2.10	696.87
PA 17	Tiolas - Dao - Asuloman Road	PA 17-1	14.74	268.42	37.58	0	306.00
		PA 17-2	41.89	751.21	105.17	0	856.38
	Total for Panay Island		**1392.94**	**18134.84**	**2492.23**	**80.82**	**20707.88**
GU 1	Guimaras Circumferential Road	GU 1-1	23.56	180.97	25.34	0	206.31
		GU 1-2	34.04	482.46	67.54	0	550.01
		GU 1-3	10.17	167.89	23.50	0	191.40
		GU 1-4	43.19	555.79	77.81	0	633.60
GU 2	Guimaras Cross Island Road	GU 2-1	15.59	291.28	40.78	0	332.06
	Total for Guimaras Island		**126.55**	**1678.40**	**234.98**	**0**	**1913.37**
NE 1	Bacolod - San Carlos Coastal Road	NE 1-1	No Work				
		NE 1-2	59.41	28.56	4.00	0	32.56
		NE 1-3	No Work				
		NE 1-4	50.01	209.20	29.29	0	238.49
NE 2	Bacolod - Kabankalan Road	NE 2-1	No Work				
		NE 2-2	No Work				
		NE 2-3	No Work				
		NE 2-4	26.24	40.88	5.72	0	46.60
		NE 2-5	No Work				
NE 3	Kabankalan - Bais Road	NE 3-1	No Work				
		NE 3-2	No Work				
		NE 3-3	33.36	43.90	6.15	0	50.05
NE 4	Bais - Dumaguete Road	NE 4-1	14.06	65.15	9.12	0	74.27
		NE 4-2	25.34	7.91	1.11	0	9.02
		NE 4-3	5.54	14.14	1.98	0	16.12
NE 5	Bacolod - D.S. Benedicto - San Carlos Road	NE 5-1	12.18	21.26	2.98	0	24.24
		NE 5-2	36.34	302.23	42.31	0	344.55
		NE 5-3	32.08	492.45	68.94	0	561.40
NE 6	Hinigaran - Guihulngan Road	NE 6-1	12.37	99.34	13.91	0	113.25
		NE 6-2	22.37	366.31	51.28	0	417.59
		NE 6-3	25.74	522.72	73.18	0	595.90
NE 7	Tanjay - Sta. Catalina Road	NE 7-1	50.74	760.20	106.43	0	866.63
NE 8	Kabankalan - Basay Road	NE 8-1	10.00	118.20	11.80	0	130.00
		NE 8-2	68.84	(Included in NE 8-1)			
		NE 8-3	46.93	708.65	99.21	0	807.86
NE 9	Basay - Dumaguete Road	NE 9-1	49.90	133.31	18.66	0	151.97
		NE 9-2	44.15	147.21	20.61	0	167.82
		NE 9-3	7.72	29.77	4.17	0	33.93
		NE 9-4	27.92	111.42	15.60	0	127.02
NE 10	San Carlos - Bais Road	NE 10-1	14.75	96.32	13.48	0	109.80
		NE 10-2	No Work				
		NE 10-3	No Work				
		NE 10-4	26.54	60.45	8.46	0	68.91
		NE 10-5	39.40	132.40	18.54	0	150.94
NE 11	San Enrique - La Castellana - Vallehermoso Road	NE 11-1	7.54	48.23	6.75	0	54.98
		NE 11-2	20.20	119.42	16.72	0	136.14
		NE 11-3	17.72	317.55	44.46	0	362.01
		NE 11-4	No Work				
NE 12	Talisay - Concepcion - La Carlota Road	NE 12-1	34.85	282.68	39.58	0	322.25
		NE 12-2	19.70	188.27	26.36	0	214.62
		NE 12-3	6.73	22.52	3.15	0	25.67
NE 13	Cadiz Access Road	NE 13-1	5.94	16.76	2.35	0	19.11
		NE 14-1	No Work				
NE 15	Sagay - Balea Road	NE 15-1	60.98	900.13	126.02	0	1026.15
NE 16	Dancalan - Sipalay Road	NE 16-1	67.88	1272.25	178.11	0	1450.36

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (4/10)

Project No.	Road Name	Segment No.	Length	Project Cost			Total
				Const.	Eng'ng	ROW	
NE 17	Mabinay - Bayawan Road	NE 17-1	61.58	1116.08	156.25	0	1272.33
	Total for Negros Island		**1045.05**	**8795.86**	**1226.67**	**0**	**10022.54**
CE 1	Cebu North Road	CE 1-1	No Work				
		CE 1-2	No Work				
		CE 1-3	16.30	24.40	3.42	0	27.82
		CE 1-4	19.95	93.81	13.13	0	106.95
		CE 1-5	8.60	17.28	2.42	0	19.70
		CE 1-6	34.85	170.15	23.82	0	193.98
		CE 1-7	No Work				
		CE 1-8	No Work				
CE 2	Cebu South Road	CE 2-1	No Work				
		CE 2-2	5.35	569.20	71.90	0	641.10
		CE 2-3	6.65 (Included in CE 2-2)			0	0.00
		CE 2-4	18.25 (- do -)			0	0.00
		CE 2-5	44.90	81.30	8.10	0	89.40
		CE 2-6	50.20	92.20	9.20	0	101.40
CE 3	Naga - Toledo Road	CE 3-1	18.45	203.41	28.48	0	231.88
		CE 3-2	16.39	75.52	10.57	0	86.09
CE 4	Catmon - Tuburan Road	CE 4-1	32.43	853.54	119.50	17.48	990.51
CE 5	Cebu Transcentral Road	CE 5-1	49.00	139.10	13.90	0	153.00
CE 6	Carcar - Barili - Dumanjug Road	CE 6-1	20.97	116.60	11.70	0	128.30
		CE 6-2	No Work				
CE 7	Bogo - Daan Bantayan Road	CE 7-1	33.45	235.65	32.99	0	268.65
CE 8	Cebu North West Coastal Road	CE 8-1	44.61	668.04	93.53	0	761.57
		CE 8-2	33.48	403.42	56.48	0	459.89
		CE 8-3	No Work				
		CE 8-4	38.45	333.14	46.64	0	379.78
CE 9	Cebu South West Coastal Road	CE 9-1	23.76	183.26	25.66	0	208.91
		CE 9-2	59.51	859.38	120.31	0	979.69
CE 10	Dalaguete - Badian Road	CE 10-1	31.47	667.40	93.44	0.65	761.49
CE 11	Sogod - Borbon - Bogo Road	CE 11-1	41.55	332.51	46.55	0	379.07
	Total for Cebu Island		**648.57**	**6119.33**	**831.73**	**18.13**	**6969.18**
BO 1	Bohol Circumferential Road (A)	BO 1-1	18.27	110.36	15.45	0	125.81
		BO 1-2	44.26	257.10	35.99	0	293.09
		BO 1-3	29.81	199.71	27.96	0	227.67
		BO 1-4	46.74	350.00	35.00	0	385.00
		BO 1-5	9.35 (Included in BO 1-4)				
BO 2	Loay Interior Road	BO 2-1	10.38	88.92	12.45	0	101.37
		BO 2-2	28.52	144.06	20.17	0	164.23
		BO 2-3	2.95	28.96	4.05	0	33.01
		BO 2-4	35.91	362.38	50.73	0	413.11
BO 3	Bohol Circumferential Road (B)	BO 3-1	28.15	107.28	15.02	0	122.30
		BO 3-2	25.33	144.07	20.17	0	164.24
		BO 3-3	9.21	370.00	37.00	0	407.00
		BO 3-4	49.65 (Included in BO 3-3)				
BO 4	Clarin - Carmen Road	BO 4-1	28.28	377.01	52.78	0	429.79
BO 5	Carmen - Jagna Road	BO 5-1	45.58	783.13	109.64	0	892.77
BO 6	Cortes - Balilihan - Sevilla Road	BO 6-1	32.77	405.86	56.82	0	462.68
BO 7	Panglao Island Road	BO 7-1	15.62	44.73	6.26	0	51.00
BO 8	Talibon Access Road	BO 8-1	1.87	9.63	1.35	0	10.98
	Total for Bohol Island		**462.65**	**3783.20**	**500.85**	**0**	**4284.05**
SI 1	Siquijor Circumferential Road	SI 1-1	9.90	28.76	4.03	0	32.78
		SI 1-2	33.27	124.11	17.38	0	141.49
		SI 1-3	31.96	173.49	24.29	0	197.78
	Total for Siquijor Island		**75.13**	**326.36**	**45.69**	**0**	**372.06**
LE 1	Pan-Philippine Highway (Visayas)	LE 1-1	0.79	307.00	30.70	0	337.70
		LE 1-2	4.37	43.32	6.06	0	49.38
		LE 1-3	No work				
		LE 1-4	10.71	43.48	6.09	0	49.57
		LE 1-5	24.99	104.33	14.61	0	118.94
		LE 1-6	No work				
		LE 1-7	5.80	66.73	9.34	0	76.07
		LE 1-8	18.02	148.92	20.85	0	169.77
		LE 1-9	19.25	211.87	29.66	0	241.53
		LE 1-10	15.12	111.25	15.57	0	126.82
		LE 1-11	31.32	352.14	49.30	0	401.44

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (5/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		LE 1-12	5.75	94.93	13.29	0	108.23
LE 2	Tacloban - Ormoc - Isabel Road	LE 2-1	9.28	56.77	7.95	0	64.72
		LE 2-2	32.85	229.24	32.10	0	261.34
		LE 2-3	17.92	180.69	25.30	0	205.98
		LE 2-4	35.25	232.71	32.58	0	265.30
		LE 2-5	44.43	143.20	20.05	0	163.25
LE 3	Leyte Northern Coast Road	LE 3-1	49.96	717.07	100.39	8.48	825.94
LE 4	Mahaplag - Baybay Road	LE 4-1	23.08	208.10	29.13	0	237.24
LE 5	Leyte - Biliran Road	LE 5-1	No work				
LE 6	Biliran Circumferential Road	LE 6-1	No work				
		LE 6-2	53.91	1083.06	151.63	0	1234.69
		LE 6-3	38.10	670.59	93.88	0	764.48
LE 7	North-West Leyte Road	LE 7-1	8.99	175.04	24.51	0	199.55
		LE 7-2	15.27	310.99	43.54	0	354.53
		LE 7-3	15.81	311.55	43.62	0	355.17
		LE 7-4	42.18	109.20	10.90	0	120.10
LE 8	West Leyte Road	LE 8-1	No work				
		LE 8-2	15.96	48.57	6.80	0	55.37
		LE 8-3	31.33	49.07	6.87	0	55.94
		LE 8-4	46.99	836.60	83.70	0	920.30
		LE 8-5	No work				
		LE 8-6	No work				
		LE 8-7	No work				
		LE 8-8	No work				
		LE 8-9	4.62	75.00	7.50	0	82.50
		LE 8-10	No work				
LE 9	Bato - Sogod Road	LE 9-1	15.66	135.00	13.50	0	148.50
		LE 9-2	8.59 (Included in LE 9-1)				
LE 10	North-East Leyte Inland Road	LE 10-1	11.98	132.16	18.50	0	150.66
		LE 10-2	25.64	282.15	39.50	0	321.65
		LE 10-3	32.45	535.84	75.02	0	610.85
LE 11	Calubian - Jubay - San Isidro Road	LE 11-1	72.71	1509.31	211.30	11.67	1732.28
LE 12	Durag - Alubuera Road	LE 12-1	17.04	123.10	17.23	0	140.34
		LE 12-2	13.45	235.32	32.94	0	268.26
		LE 12-3	35.07	976.08	136.65	25.39	1138.12
		LE 12-4	3.24	60.32	8.44	0	68.77
LE 13	Southern Leyte Pacific Coast Road	LE 13-1	54.06	946.09	132.45	0	1078.55
		LE 13-2	33.10	750.70	105.10	0	855.80
		LE 13-3	28.04	592.12	82.90	22.09	697.11
	Total for Leyte Island		**973.08**	**13199.65**	**1789.46**	**67.64**	**15056.74**
MS 1	Masbate - Cataingan Road	MS 1-1	32.05	53.97	7.56	0	61.52
		MS 1-2	No work				
MS 2	Masbate - Milagros Road	MS 2-1	12.32	79.34	11.11	0	90.45
		MS 2-2	No work				
MS 3	Milagros - Balud Road	MS 3-1	19.98	282.84	39.60	0	322.44
		MS 3-2	26.02	454.23	63.59	0	517.83
MS 4	Tolda - Aroroy - Lagta Road	MS 4-1	26.40	518.33	72.57	6.04	596.94
		MS 4-2	49.93	942.58	131.96	0	1074.54
		MS 4-3	15.95	264.45	37.02	0	301.47
MS 5	Cataingan - Placer Road	MS 5-1	5.00	147.70	14.80	0	162.50
		MS 5-2	15.20 (Included in MS 5-1)				
MS 6	Cataingan - Esperanza Road	MS 6-1	36.31	615.38	86.15	4.18	705.71
MS 7	Masbate South Coast Road	MS 7-1	35.61	891.52	124.81	33.13	1049.46
		MS 7-2	11.87	317.58	44.46	11.58	373.62
		MS 7-3	18.90	476.40	66.70	18.99	562.09
	Total for Masbate Island		**305.54**	**5044.33**	**700.33**	**73.92**	**5818.58**
SA 1	Pan Philippine Highway (Visayas)	SA 1-1	17.78	213.22	29.85	0	243.07
		SA 1-2	11.19	147.91	20.71	0	168.62
		SA 1-3	34.03	562.84	78.80	0	641.63
		SA 1-4	45.31	466.93	65.37	0	532.30
		SA 1-5	57.10	699.07	97.87	0	796.94
		SA 1-6	21.75	235.64	32.99	0	268.63
		SA 1-7	38.89	727.10	72.70	0	799.80
		SA 1-8	6.73 (Included in SA 1-7)				
SA 2	North Samar Coastal Road	SA 2-1	45.76	140.69	19.70	0	160.38
		SA 2-2	43.17	396.50	55.51	0	452.01

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (6/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		SA 2-3	1.87	13.58	1.90	0	15.49
		SA 2-4	13.09	304.88	42.68	15.48	363.05
SA 3	Catarman - Calbayog Road	SA 3-1	42.50	762.11	106.69	0	868.80
		SA 3-2	25.80	295.89	41.42	0	337.31
SA 4	Wright - Taft Road	SA 4-1	9.72	77.07	10.79	0	87.86
		SA 4-2	22.68	96.32	13.48	0	109.80
		SA 4-3	29.80	282.88	39.60	0	322.48
SA 5	South Samar Coastal Road	SA 5-1	11.88	1398.60	139.90	0	1538.50
		SA 5-2	38.92 (Included in SA 5-1)				
		SA 5-3	45.88 (Included in SA 5-1)				
SA 6	Samar Pacific Coast Road	SA 6-1	63.56	1442.30	201.92	27.94	1672.16
		SA 6-2	7.36	242.50	33.95	8.27	284.72
		SA 6-3	13.94	347.88	48.70	13.36	409.94
		SA 6-4	37.27	858.97	120.26	0	979.23
		SA 6-5	16.60	375.98	52.64	0	428.62
		SA 6-6	18.06	140.00	14.00	0	154.00
		SA 6-7	47.92	389.38	54.51	0	443.89
		SA 6-8	77.77	479.29	67.10	0	546.39
SA 7	Buenavista - Guloan Road	SA 7-1	33.44	208.97	29.26	0	238.23
SA 8	Samar Central Road	SA 8-1	20.77	245.80	34.41	0	280.21
		SA 8-2	27.33	645.38	90.35	28.37	764.10
		SA 8-3	59.88	1550.83	217.12	35.93	1803.87
		SA 8-4	39.28	872.12	122.10	0	994.22
SA 9	Basey - Borongan Road	SA 9-1	11.17	219.57	30.74	9.38	259.69
		SA 9-2	26.67	744.86	104.28	18.85	867.99
		SA 9-3	40.55	1123.32	157.26	24.66	1305.24
		SA 9-4	11.15	226.09	31.65	0	257.74
	Total for Samar Island		**1116.57**	**16934.44**	**2280.23**	**182.24**	**19396.89**
CM 1	Camiguin Circumferential Road	CM 1-1	24.25	149.10	20.87	0	169.98
		CM 1-2	39.75	325.10	45.51	0	370.62
	Total for Camiguin Island		**64.00**	**474.20**	**66.39**	**0**	**540.59**
MI 1	Pan Philippine Highway (Mindanao)	MI 1-1	32.81	199.49	19.95	0	219.44
		MI 1-2	21.51	186.41	18.64	0	205.06
		MI 1-3	19.30	69.26	6.93	0	76.19
		MI 1-4	23.62	157.92	15.79	0	173.71
		MI 1-5	20.54	256.67	25.70	0	282.36
		MI 1-6	1.86	17.14	1.71	0	18.85
		MI 1-7	3.19	23.22	2.32	0	25.55
		MI 1-8	32.35	510.00	51.00	0	561.00
		MI 1-9	24.13	640.00	64.00	0	704.00
		MI 1-10	15.40 (Included in MI 1-9)				
		MI 1-11	59.47	632.70	63.30	0	696.00
		MI 1-12	8.76	90.10	9.00	0	99.10
		MI 1-13	18.64	255.00	25.50	0	280.50
		MI 1-14	16.99	310.00	31.00	0	341.00
		MI 1-15	43.68	760.00	76.00	0	836.00
		MI 1-16	15.42	455.00	45.50	0	500.50
		MI 1-17	6.50 (Included in MI 1-18)				
		MI 1-18	4.94	35.96	5.03	0	41.00
		MI 1-19	6.96 (Included in MI 1-18)				
		MI 1-20	14.68 (Included in MI 1-18)				
		MI 1-21	3.62 (Included in MI 1-18)				
		MI 1-22	7.70 (Included in MI 1-18)				
MI 2	Davao - Digos - Gen. Santos Road	MI 2-1	No work				
		MI 2-2	No work				
		MI 2-3	No work				
		MI 2-4	No work				
		MI 2-5	No work				
		MI 2-6	No work				
		MI 2-7	No work				
		MI 2-8	No work				
MI 3	Sayre Highway	MI 3-1	No work				
		MI 3-2	9.94	74.43	10.42	0	84.85
		MI 3-3	57.50	369.76	51.77	0	421.52
		MI 3-4	12.04	71.67	10.03	0	81.71
		MI 3-5	18.45	111.92	15.67	0	127.59

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (7/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		MI 3-6	26.24	201.31	28.18	0	229.50
MI 4	Davao - Bukidnon Road	MI 4-1	No work				
		MI 4-2	59.75	(Included in MI 4-3)			
		MI 4-3	59.25	734.40	73.40	0	807.80
MI 5	Gen. Santos - Cotabato Road	MI 5-1	No work				
		MI 5-2	No work				
		MI 5-3	No work				
		MI 5-4	No work				
		MI 5-5	No work				
		MI 5-6	No work				
		MI 5-7	22.03	164.71	23.06	0	187.77
		MI 5-8	9.00	87.03	12.18	0	99.21
		MI 5-9	25.60	245.83	34.42	0	280.24
		MI 5-10	22.10	213.30	29.86	0	243.16
		MI 5-11	7.80	65.02	9.10	0	74.12
MI 6	Cotabato - Pagadian - Zamboanga Road	MI 6-1	18.55	235.00	32.90	0	267.90
		MI 6-2	8.90	80.59	11.28	0	91.88
		MI 6-3	23.90	206.61	28.92	0	235.54
		MI 6-4	28.00	212.62	29.77	0	242.39
		MI 6-5	31.30	1295.00	129.50	0	1424.50
		MI 6-6	24.50	(Included in MI 6-5)			
		MI 6-7	14.00	713.30	71.30	0	784.60
		MI 6-8	13.42	(Included in MI 6-7)			
		MI 6-9	9.55	(- do -)			
		MI 6-10	11.16	(- do -)			
		MI 6-11	34.17	(- do -)			
		MI 6-12	18.24	(- do -)			
		MI 6-13	21.41	576.30	57.60	0	633.90
		MI 6-14	32.06	(Included in MI 6-13)			
		MI 6-15	23.75	259.00	25.90	0	284.90
		MI 6-16	27.50	1248.00	124.80	0	1372.80
		MI 6-17	63.12	(Included in MI 6-13)			
		MI 6-18	45.36	901.00	90.10	0	991.10
		MI 6-19	22.23	128.16	17.94	0	146.10
		MI 6-20	18.72	294.29	41.20	0	335.49
MI 7	Butuan - Cagayan de Oro - Iligan - Tubod Road	MI 7-1	7.24	35.10	4.91	0	40.01
		MI 7-2	No work				
		MI 7-3	No work				
		MI 7-4	No work				
		MI 7-5	No work				
		MI 7-6	No work				
		MI 7-7	No work				
		MI 7-8	8.05	58.58	8.20	0	66.78
		MI 7-9	4.31	35.99	5.04	0	41.03
		MI 7-10	No work				
		MI 7-11	No work				
		MI 7-12	No work				
		MI 7-13	24.81	28.85	4.04	0	32.89
		MI 7-14	No work				
		MI 7-15	23.06	31.18	4.36	0	35.54
		MI 7-16	7.50	43.68	6.11	0	49.79
		MI 7-17	13.40	44.14	6.18	0	50.32
		MI 7-18	55.30	283.12	39.64	0	322.75
MI 8	Dapitan - Oroquieta - Tangub - Tubod - S.N. Dimapolo Road	MI 8-1	No work				
		MI 8-2	No work				
		MI 8-3	No work				
		MI 8-4	No work				
		MI 8-5	4.23	952.01	133.28	6.34	1091.64
		MI 8-6	20.10	116.74	16.34	0	133.08
		MI 8-7	15.05	115.62	16.19	0	131.80
MI 9	Dapitan - Dipolog - Liloy - Ipil Road	MI 9-1	No work				
		MI 9-2	No work				
		MI 9-3	No work				
		MI 9-4	74.19	167.54	23.45	0	190.99
		MI 9-5	No work				
		MI 9-6	No work				

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (8/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		MI 9-7	No work				
		MI 9-8	19.21	122.69	17.18	0	139.86
MI 10	Cotabato - Digos Road	MI 10-1	29.58	258.40	36.18	0	294.58
		MI 10-2	25.30	96.93	13.57	0	110.50
		MI 10-3	No work				
		MI 10-4	No work				
		MI 10-5	42.45	258.09	36.13	0	294.23
		MI 10-6	5.85	27.84	3.90	0	31.74
		MI 10-7	17.07	167.09	23.39	0	190.48
		MI 10-8	8.73	78.66	11.01	0	89.67
MI 11	Maramag - Kibawe - Kabacan Road	MI 11-1	19.17 (Included in MI 11-2)				
		MI 11-2	25.88	470.00	47.00	0	517.00
		MI 11-3	48.64	562.97	78.82	0	641.79
MI 12	Kalamansig - Isulan - Matalam Road	MI 12-1	55.28	944.60	132.24	0	1076.84
		MI 12-2	71.40	1341.53	187.81	0	1529.35
		MI 12-3	10.20	87.90	12.31	0	100.20
		MI 12-4	12.50	66.34	9.29	0	75.62
		MI 12-5	14.14	84.94	11.89	0	96.83
		MI 12-6	34.21	318.59	44.60	0	363.20
MI 13	Katipunan - S. Osmena - Molave - Labangan Road	MI 13-1	48.02	810.85	113.52	0	924.37
		MI 13-2	37.34	490.66	68.69	0	559.35
		MI 13-3	12.71	56.00	7.84	0	63.84
		MI 13-4	15.53	116.91	16.37	0	133.28
MI 14	Iligan - Marawi - Malabang Road	MI 14-1	22.10	63.13	8.84	0	71.97
		MI 14-2	No Work				
		MI 14-3	31.80	204.75	28.67	0	233.42
		MI 14-4	8.70	66.47	9.31	0	75.77
		MI 14-5	24.80	189.47	26.53	0	216.00
MI 15	Mindanao East-West Lateral Road	MI 15-1	41.40	876.12	122.66	0	998.78
		MI 15-2	22.32	521.84	73.06	18.57	613.47
		MI 15-3	14.86	298.38	41.77	0	340.16
		MI 15-4	13.04	370.89	51.93	7.82	430.64
		MI 15-5	49.82	829.44	116.12	0	945.56
		MI 15-6	50.19	861.71	120.64	0	982.35
		MI 15-7	12.52	354.14	49.58	7.51	411.23
		MI 15-8	86.13	2230.63	312.29	51.68	2594.59
		MI 15-9	8.66	126.30	17.68	0	143.99
		MI 15-10	32.10	593.68	83.11	14.10	690.89
		MI 15-11	18.55	187.30	26.22	0	213.52
		MI 15-12	32.29	527.93	73.91	0	601.84
		MI 15-13	25.73	452.01	63.28	0	515.29
MI 16	Tagum - Mati Road	MI 16-1	No Work				
		MI 16-2	62.42	184.99	25.90	0	210.89
		MI 16-3	7.97	31.67	4.43	0	36.10
		MI 16-4	19.78	179.22	25.09	0	204.31
MI 17	Bayugan - Tandag Road	MI 17-1	40.18	847.17	118.60	0	965.78
		MI 17-2	55.70	1079.75	151.16	9.23	1240.14
MI 18	Surigao - Davao Coastal Road	MI 18-1	No Work				
		MI 18-2	58.45	812.50	113.75	0	926.25
		MI 18-3	36.56	784.65	109.85	0	894.50
		MI 18-4	16.62	273.83	38.34	0	312.17
		MI 18-5	48.17	892.19	124.91	0	1017.10
		MI 18-6	91.68	1525.96	213.63	1.92	1741.51
		MI 18-7	71.44	1040.06	145.61	0	1185.67
		MI 18-8	39.16	719.30	100.70	0	820.00
		MI 18-9	37.98	703.78	98.53	0	802.31
		MI 18-10	99.99	1593.54	223.10	0	1816.64
		MI 18-11	62.58	950.79	133.11	0	1083.90
		MI 18-12	4.41	38.80	5.43	0	44.23
MI 19	Agusan River West Side Road	MI 19-1	47.03	1023.69	143.32	13.14	1180.14
		MI 19-2	3.28	51.82	7.26	0	59.08
		MI 19-3	3.61	125.76	17.61	0.31	143.67
		MI 19-4	25.86	620.73	86.90	26.42	734.05
		MI 19-5	19.05	350.45	49.06	0	399.51
		MI 19-6	43.46	808.43	113.18	0	921.61
MI 20	Bayugan - Esperanza Road	MI 20-1	7.18	54.93	7.69	0	62.62

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (9/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		MI 20-2	10.38	190.10	26.61	0	216.72
MI 21	Prosperidad - Talacogon Road	MI 21-1	28.19	194.04	27.16	0	221.20
MI 22	San Francisco - Barobo Road	MI 22-1	4.20	31.03	4.35	0	35.38
		MI 22-2	15.89	129.12	18.08	0	147.19
MI 23	Montevista - Compostela - Cateel Road	MI 23-1	No Work				
		MI 23-2	30.75	740.39	103.65	0	844.04
		MI 23-3	27.00	546.46	76.50	0	622.96
MI 24	Compostela - Mati Road	MI 24-1	13.89	187.00	18.70	0	205.70
		MI 24-2	32.44	620.58	86.88	0	707.47
		MI 24-3	20.71	411.96	57.67	0	469.63
		MI 24-4	40.28	868.62	121.61	0	990.23
MI 25	Montevista - Kapalog - Panabo Road	MI 25-1	No Work				
		MI 25-2	21.76	266.90	37.37	0	304.27
		MI 25-3	32.18	127.52	17.85	0	145.37
MI 26	Davao City Outer Circumferential Ro	ad 26-1	34.20	593.20	83.05	4.47	680.72
		MI 26-2	26.40	484.95	67.89	1.94	554.78
MI 27	Malalag - Malita - Kalipagan Road	MI 27-1	19.99	214.48	30.03	0	244.50
		MI 27-2	41.30	646.96	90.57	0	737.53
		MI 27-3	22.76	451.81	63.25	0	515.06
		MI 27-4	62.53	1807.77	253.09	39.67	2100.52
		MI 27-5	38.24	963.08	134.83	34.42	1132.33
MI 28	Gen. Santos - Glan - Kalipagan Road	MI 28-1	No Work				
		MI 28-2	No Work				
		MI 28-3	42.44	265.57	37.18	0	302.75
		MI 28-4	54.33	1170.15	163.82	13.38	1347.35
MI 29	Gen. Santos - Kiamba - Kalamansig Road	MI 29-1	No Work				
		MI 29-2	No Work				
		MI 29-3	No Work				
		MI 29-4	18.19	7.43	1.04	0	8.47
		MI 29-5	21.42	337.02	47.18	0	384.20
		MI 29-6	30.80	542.49	75.95	0	618.43
		MI 29-7	62.43	1217.51	170.45	6.30	1394.26
MI 30	Cotabato - Upi - Kalamansig Road	MI 30-1	27.50	420.66	58.89	0	479.56
		MI 30-2	42.25	963.33	134.87	0	1098.19
		MI 30-3	25.64	406.07	56.85	0	462.92
		MI 30-4	13.37	216.80	30.35	0	247.15
MI 31	Koronadal - Tacurong - Midsayap Road	MI 31-1	No Work				
		MI 31-2	5.40	52.74	7.38	0	60.12
		MI 31-3	21.90	284.44	39.82	0	324.26
		MI 31-4	9.99	222.52	31.15	0	253.67
		MI 31-5	16.15	255.46	35.76	0	291.23
		MI 31-6	23.12	310.38	43.45	0	353.83
MI 32	Gingoog - Villanueva Road	MI 32-1	31.93	700.23	98.03	0	798.26
		MI 32-2	39.98	528.06	73.93	0	601.99
MI 33	Cagayan de Oro - Talakag - Kibawe Road	MI 33-1	12.00	414.70	41.50	0	456.20
		MI 33-2	16.40	(Included in MI 33-1)			
		MI 33-3	7.84	98.79	13.83	0	112.62
		MI 33-4	28.44	403.12	56.44	0	459.55
		MI 33-5	44.74	775.25	108.54	0	883.78
		MI 33-6	56.38	881.97	123.48	0	1005.44
MI 34	Cagayan de Oro - Manolo Fortich Road	MI 34-1	9.12	118.84	16.64	0	135.48
		MI 34-2	45.62	579.58	81.14	0	660.72
MI 35	Lake Lanao Circumferential Road	MI 35-1	No Work				
		MI 35-2	17.60	112.59	15.76	0	128.35
		MI 35-3	51.20	700.79	98.11	0	798.90
MI 36	Tubod - Madamba Road	MI 36-1	14.30	105.77	14.81	0	120.58
		MI 36-2	8.70	163.91	22.95	0	186.85
		MI 36-3	33.70	639.54	89.54	0	729.08
MI 37	Molave - Tangub Road	MI 37-1	No Work				
		MI 37-2	No Work				
MI 38	Kapatagan - R. Magsaysay Road	MI 38-1	13.30	7.66	1.07	0	8.73
		MI 38-2	18.89	241.21	33.77	0	274.98
MI 39	Sindangan - R. Magsaysay Road	MI 39-1	32.25	695.20	97.33	0	792.52
		MI 39-2	24.57	334.32	46.81	0	381.13
		MI 39-3	39.61	797.42	111.64	11.70	920.76
MI 40	Dumalinao - V.A. Sagun Road	MI 40-1	21.65	149.68	20.95	0	170.64

TABLE 15.4-1 ESTIMATED PROJECT COST: GROUP 1 PROJECTS (10/10)

Project No.	Road Name	Segment No.	Length	Project Cost			
				Const.	Eng'ng	ROW	Total
		MI 40-2	23.76	293.95	41.15	0	335.10
MI 41	Liloy - Siocon - Zamboanga Road	MI 41-1	40.38	603.58	84.50	0	688.08
		MI 41-2	70.47	1440.75	201.71	0	1642.46
		MI 41-3	82.70	1997.83	279.70	38.40	2315.92
		MI 41-4	51.60	1206.72	168.94	11.50	1387.15
MI 42	Sibuco - Zamboanga Road	MI 42-1	9.50	210.90	29.53	0	240.43
		MI 42-2	9.55	259.20	36.29	4.82	300.32
MI 43	Surigao West Coast Road	MI 43-1	39.46	734.82	102.88	0	837.69
		MI 43-2	7.30	228.08	31.93	4.38	264.39
		MI 43-3	12.47	266.14	37.26	0	303.40
		MI 43-4	14.96	391.83	54.86	8.98	455.66
		MI 43-5	16.71	463.39	64.87	2.86	531.11
MI 44	Cabadbaran - Madrid Road	MI 44-1	9.19	196.30	27.48	4.28	228.07
		MI 44-2	46.80	1237.37	173.23	28.08	1438.68
		MI 44-3	34.19	924.00	129.36	20.51	1073.88
		MI 44-4	9.19	213.41	29.88	3.43	246.71
MI 45	Butuan - Tandag Road	MI 45-1	14.09	260.23	36.43	2.86	299.52
		MI 45-2	8.00	228.43	31.98	0	260.41
		MI 45-3	37.26	1026.76	143.75	22.36	1192.86
MI 46	Esperanza - Bukidnon Road	MI 46-1	61.92	1344.12	188.18	0	1532.29
		MI 46-2	18.23	468.18	65.54	10.94	544.67
MI 47	Sta. Josefa - Tagum Road	MI 47-1	28.00	452.58	63.36	0	515.94
		MI 47-2	23.02	602.53	84.35	13.81	700.70
		MI 47-3	34.83	611.86	85.66	0	697.52
MI 48	Tagum - Bukidnon Road	MI 48-1	17.89	347.95	48.71	0	396.66
		MI 48-2	66.01	1719.34	240.71	39.61	1999.66
		MI 48-3	61.70	1014.37	142.01	3.00	1159.39
MI 49	Peninsula Coastal Road	MI 49-1	30.34	442.50	61.95	0	504.45
		MI 49-2	50.86	1138.26	159.36	68.80	1366.42
		MI 49-3	100.05	2624.07	367.37	69.78	3061.22
MI 50	Manolo Fortich - Misor Road	MI 50-1	17.90	543.77	76.13	10.74	630.64
		MI 50-2	3.90	164.89	23.09	5.01	192.98
MI 51	Kidapawan - Arakan - Davao Road	MI 51-1	47.84	1220.32	170.85	21.04	1412.21
		MI 51-2	24.20	579.54	81.14	12.60	673.28
		MI 51-3	3.36	85.65	11.99	2.02	99.65
MI 52	Malungon - Tampakan Road	MI 52-1	37.92	698.63	97.81	0	796.43
		MI 52-2	28.39	660.45	92.46	0	752.91
MI 53	Lais - Alabel Road	MI 53-1	32.59	694.58	97.24	2.00	793.82
		MI 53-2	28.55	652.26	91.32	2.74	746.31
MI 54	Surallah - Lake Sebu - Maitum Road	MI 54-1	42.33	903.35	126.47	6.76	1036.58
		MI 54-2	32.80	802.72	112.38	16.79	931.89
MI 55	Lebak - Maganoy - S.S. Barongis Roa	d 55-1	49.30	981.46	137.40	1.20	1120.06
		MI 55-2	36.60	848.78	118.83	15.40	983.01
		MI 55-3	10.20	199.43	27.92	0	227.35
MI 56	Libungan - Banisilan - Wao - Malano	d R 56-1	25.30	401.15	56.16	0	457.31
		MI 56-2	49.29	973.38	136.27	0	1109.65
		MI 56-3	22.45	486.89	68.17	0	555.05
		MI 56-4	37.50	815.27	114.14	4.35	933.76
MI 57	Wao - Kalilangan Road	MI 57-1	No Work				
		MI 57-2	No Work				
MI 58	Parang - Lumbayanague Road	MI 58-1	43.20	705.52	98.77	0	804.29
		MI 58-2	18.50	424.08	59.37	6.12	489.57
MI 59	San Miguel - Tabina Road	MI 59-1	36.20	559.27	78.30	0	637.57
MI 60	Bacungan - Bayog Road	MI 60-1	30.00	762.92	106.81	15.90	885.64
		MI 60-2	13.94	360.18	50.43	12.85	423.46
		MI 60-3	23.82	390.41	54.66	0	445.07
MI 61	Imelda - Olutanga Road	MI 61-1	47.65	939.25	131.49	0	1070.74
MI 62	Siocon - Tugawan Road	MI 62-1	26.55	657.16	92.00	10.53	759.69
		MI 62-2	19.16	481.56	67.42	12.25	561.23
	Total for Mindanano Island		**6870.42**	**109372.50**	**14857.68**	**785.58**	**125015.80**

TABLE 15.4-2 ESTIMATED PROJECT COST: GROUP 2 WIDENING PROJECTS (1/2)

Project No.	Road Name	Seg. No.	Length	Project Cost			
				Construction	Engineering	ROW	Total
PA 1	Iloilo - Roxas Road	PA 1-1	2.94	0.00	0.00	0.00	0.00
		PA 1-2	18.79	232.29	32.52	9.20	274.01
		PA 1-3	7.98	135.07	18.91	4.00	157.98
		PA 1-4	19.97	451.07	63.15	10.00	524.22
		PA 1-5	14.13	286.36	40.09	0.00	326.46
		PA 1-6	7.18	140.83	19.72	0.00	160.54
		PA 1-7	8.30	190.76	26.71	0.00	217.46
		PA 1-8	22.35	535.22	74.93	11.00	621.15
		PA 1-9	10.45	189.41	26.52	20.00	235.92
PA 6	Iloilo - Cabatuan - Lumbunao Road	PA 6-1	12.69	198.76	27.83	5.30	231.89
		PA 6-2	8.54	168.86	23.64	4.30	196.80
PA 8	Iloilo - Antique Road	PA 8-1	10.73	173.00	24.22	4.40	201.62
		PA 8-2	25.76	502.89	70.40	13.00	586.30
	Total for Panay Island		**169.81**	**3204.51**	**448.63**	**81.20**	**3734.35**
NE 1	Bacolod - San Carlos Coastal Road	NE 1-1	23.47	247.16	34.60	9.30	291.06
		NE 1-2	59.41	1323.51	185.29	5.70	1514.50
		NE 1-3	12.08	199.88	27.98	6.00	233.87
NE 2	Bacolod - Kabankalan Road	NE 2-2	17.42	275.72	38.60	8.50	322.82
		NE 2-3	15.15	314.52	44.03	7.50	366.05
		NE 2-4	26.24	639.07	89.47	13.00	741.54
		NE 2-5	26.74	609.81	85.37	13.00	708.18
NE 4	Bais - Dumaguete Road	NE 4-1	14.06	256.02	35.84	6.50	298.36
		NE 4-2	25.34	528.01	73.92	13.00	614.93
		NE 4-3	5.54	94.47	13.23	5.00	112.70
	Total for Negros Island		**225.45**	**4488.16**	**628.34**	**87.50**	**5204.00**
CE 1	Cebu North Road	CE 1-3	16.30	311.85	43.66	32.60	388.11
CE 2	Cebu South Road	CE 2-4	18.25	343.24	48.06	18.30	409.60
CE 3	Naga - Toledo Road	CE 3-1	18.45	467.91	65.51	2.00	535.41
		CE 3-2	16.39	271.64	38.03	1.50	311.17
	Total for Cebu Island		**69.39**	**1394.64**	**195.25**	**54.40**	**1644.29**
LE 1	Pan-Philippine Highway, Visayas	LE 1-2	4.37	95.37	13.35	4.40	113.12
		LE 1-3	1.77	27.72	3.88	2.00	33.60
		LE 1-4	10.71	186.72	26.14	5.40	218.26
		LE 1-5	24.99	564.99	79.10	12.50	656.58
LE 2	Tacloban - Ormoc - Isabel Road	LE 2-1	9.28	166.96	23.38	18.50	208.84
		LE 2-2	32.85	694.83	97.28	32.90	825.01
LE 10	North-East Leyte Inland Road	LE 10-1	11.98	228.53	31.99	10.30	270.83
	Total for Leyte Island		**95.95**	**1965.13**	**275.12**	**86.00**	**2326.25**
MI 1	Pan-Philippine Highway, Mindanao	MI 1-5	20.54	541.39	75.79	0.00	617.19
		MI 1-6	1.86	40.72	5.70	0.00	46.42
		MI 1-7	3.19	50.02	7.00	0.00	57.02
		MI 1-8	32.35	836.28	117.08	0.00	953.36
		MI 1-9	24.13	564.48	79.03	0.00	643.51
		MI 1-10	15.40	346.61	48.53	0.00	395.14
		MI 1-12	8.76	201.52	28.21	0.00	229.73
		MI 1-13	18.64	489.13	68.48	0.00	557.61
		MI 1-14	16.99	360.74	50.50	0.00	411.24
		MI 1-15	43.68	838.79	117.43	0.00	956.22
		MI 1-16	15.42	364.78	51.07	0.00	415.85
		MI 1-17	6.50	101.92	14.27	0.00	116.19
		MI 1-18	4.94	77.07	10.79	0.00	87.86
		MI 1-19	6.96	123.75	17.33	0.00	141.08
		MI 1-20	14.68	239.30	33.50	21.00	293.81
		MI 1-21	3.62	114.18	15.99	3.20	133.37
		MI 1-22	7.70	185.77	26.01	9.50	221.27

TABLE 15.4-2 ESTIMATED PROJECT COST: GROUP 2 WIDENING PROJECTS (2/2)

Project No.	Road Name	Seg. No.	Length	Project Cost			
				Construction	Engineering	ROW	Total
MI 2	Davao - Digos - Gen. Santos Road	MI 2-1	14.93	273.03	38.22	0.00	311.26
		MI 2-2	31.47	597.64	83.67	0.00	681.31
		MI 2-3	20.31	347.74	48.68	0.00	396.43
		MI 2-4	9.94	189.66	26.55	0.00	216.21
		MI 2-5	34.03	705.01	98.70	0.00	803.71
		MI 2-6	4.66	81.37	11.39	0.00	92.76
		MI 2-7	18.04	298.62	41.81	0.00	340.42
		MI 2-8	6.31	4.83	0.68	0.00	5.51
MI 3	Sayre Highway	MI 3-1	12.71	246.73	34.54	0.00	281.27
		MI 3-2	9.94	211.24	29.57	0.00	240.81
		MI 3-3	57.50	1145.23	160.33	0.00	1305.56
		MI 3-4	12.04	193.37	27.07	0.00	220.45
		MI 3-5	18.45	360.91	50.53	0.00	411.44
		MI 3-6	26.24	513.73	71.92	0.00	585.65
MI 4	Davao - Bukidnon Road	MI 4-1	21.39	395.25	55.34	2.00	452.58
MI 5	Gen. Santos - Cotabato Road	MI 5-1	14.55	284.34	39.81	0.00	324.15
		MI 5-2	36.60	597.95	83.71	0.00	681.66
		MI 5-3	4.61	49.90	6.99	0.00	56.89
MI 6	Cotabato - Pagadian - Zamboanga Road	MI 6-1	18.55	427.04	59.79	0.00	486.83
		MI 6-18	45.36	933.66	130.71	0.00	1064.37
		MI 6-19	22.23	455.82	63.82	0.00	519.63
MI 7	Butuan - Cagayan de Oro - Iligan - Tubod	RMI 7-1	7.24	213.76	29.92	0.00	243.68
		MI 7-3	21.09	53.19	7.45	0.00	60.64
		MI 7-8	8.05	180.74	25.30	0.00	206.05
		MI 7-9	4.31	78.35	10.97	4.30	93.62
		MI 7-10	6.51	288.59	40.40	6.50	335.49
		MI 7-11	12.25	182.14	25.50	0.00	207.64
		MI 7-13	24.81	414.67	58.05	10.40	483.13
		MI 7-14	25.83	491.24	68.77	0.00	560.01
		MI 7-15	23.06	468.11	65.54	0.00	533.65
		MI 7-16	7.50	117.60	16.46	0.00	134.06
		MI 7-17	13.40	319.54	44.74	6.50	370.77
		MI 7-18	55.30	1281.04	179.35	5.50	1465.89
MI 8	Dapitan - Oroquieta - Tangub -	MI 8-3	40.09	820.42	114.86	0.00	935.28
	S.N. Dimapolo Road	MI 8-4	23.88	469.60	65.74	0.00	535.34
MI 10	Cotabato - Digos Road	MI 10-1	29.58	653.46	91.48	3.00	747.94
		MI 10-2	25.30	479.66	67.15	2.50	549.31
		MI 10-3	22.30	361.56	50.62	2.10	414.28
		MI 10-4	10.40	169.43	23.72	1.00	194.16
		MI 10-5	42.45	800.56	112.08	4.20	916.84
		MI 10-6	5.85	118.68	16.61	0.60	135.89
		MI 10-7	17.07	286.96	40.17	1.70	328.84
		MI 10-8	8.73	207.32	29.03	0.90	237.25
MI 14	Iligan - Marawi - Malabang Road	MI 14-1	22.10	406.11	56.85	2.20	465.17
		MI 14-2	7.65	175.52	24.57	0.80	200.90
MI 16	Tagum - Mati Road	MI 16-1	20.97	393.66	55.11	0.00	448.77
MI 25	Tagum - Kapalong - Panabo Road	MI 25-1	15.59	246.38	34.49	0.00	280.88
MI 29	Gen. Santos - Kiamba - Kalamansig Road	MI 29-1	19.78	281.56	39.42	0.00	320.98
MI 35	Lake Lanao Circumferential Road	MI 35-1	2.00	68.32	9.56	0.00	77.89
	Total for Mindanano Island		**1208.31**	**23817.72**	**3334.48**	**87.90**	**27240.11**

TABLE 15.4-3 ESTIMATED PROJECT COST: GROUP 3 SPECIAL PROJECT (Excluding Inter-Island Link Project)

Project No.	Road Name	Seg. No.	Length	Project Cost			
				Construction	Engineering	ROW	Total
PA 110	Iloilo Circumferential Road	PA 110-1	15.16	788.30	134.01	121.28	1043.59
	Total for Panay Island		**15.16**	**788.30**	**134.01**	**121.28**	**1043.59**
NE 110	Bacolod Parallel Road	NE 110-1	35.62	1064.02	180.88	213.72	1458.62
		NE 110-2	36.40	1065.46	181.13	218.40	1464.99
	Total for Negros Island		**72.02**	**2129.48**	**362.01**	**432.12**	**2923.61**
CE 100	Cebu Expressway	CE 100-1	10.94	1142.15	194.16	131.28	1467.59
		CE 100-2	21.67	5672.52	964.33	260.04	6896.90
		CE 100-3	18.59	2639.46	448.71	223.08	3311.25
CE 101	Cebu Expressway Access Road - 1	CE 101-1	0.93	28.46	4.84	1.86	35.16
CE 102	Cebu Expressway Access Road - 2	CE 102-1	2.22	60.61	10.30	4.44	75.35
CE 103	Cebu Expressway Access Road - 3	CE 103-1	3.34	107.07	18.20	6.68	131.95
CE 104	Cebu Expressway Access Road - 4	CE 104-1	4.17	106.33	18.08	8.34	132.75
CE 105	Cebu Expressway Access Road - 5	CE 105-1	2.00	56.10	9.54	4.00	69.64
CE 106	Cebu Expressway Access Road - 6	CE 106-1	3.75	109.65	18.64	7.50	135.79
CE 107	Cebu Expressway Access Road - 7	CE 107-1	3.86	110.47	18.78	7.72	136.96
	Total for Cebu Island		**71.47**	**10032.82**	**1705.58**	**654.94**	**12393.34**
MI 100	Davao City Expressway	MI 100-1	32.13	1392.14	236.66	205.02	1833.82
		MI 100-2	38.41	3854.54	655.27	220.92	4730.73
		MI 100-3	27.58	2673.10	454.43	165.42	3292.95
MI 101	Davao City Expressway Access Road - 1	MI 101-1	1.85	47.17	8.02	3.70	58.90
MI 102	Davao City Expressway Access Road - 2	MI 102-1	2.60	66.30	11.27	5.20	82.77
MI 103	Davao City Expressway Access Road - 3	MI 103-1	1.48	45.29	7.70	2.96	55.95
MI 104	Davao City Expressway Access Road - 4	MI 104-1	0.92	33.76	5.74	1.84	41.34
MI 105	Davao City Expressway Access Road - 5	MI 105-1	2.33	59.42	10.10	4.66	74.18
MI 106	Davao City Expressway Access Road - 6	MI 106-1	0.68	17.34	2.95	1.36	21.65
MI 110	Cagayan de Oro Bypass	MI 110-1	12.29	515.64	87.66	73.74	677.04
		MI 110-2	21.80	1988.51	338.05	130.80	2457.36
		MI 110-3	15.39	525.95	89.41	92.34	707.70
MI 111	Iligan City Bypass	MI 111-1	19.02	1043.67	177.42	114.12	1335.22
MI 112	Butuan City Bypass	MI 112-1	15.08	519.74	88.36	73.74	681.84
MI 113	Malaybalay Bypass	MI 113-1	9.63	637.02	108.29	28.89	774.21
MI 114	Valencia Bypass	MI 114-1	4.88	159.74	27.15	28.89	215.78
	Total for Mindanao Island		**206.07**	**13579.34**	**2308.49**	**1153.60**	**17041.43**

TABLE 15.4-4 ESTIMATED PROJECT COST: INTER-ISLAND LINK PROJECTS

Project No.	Project Name	Scope of Work	Project Cost (Million Pesos) Construc-tion	F/S	D/D	C/S	TOTAL
IL - 1	Luzon (Batangas) - Mindoro Link (L = 25.0 km)	• Under-Sea Tunnel L = 25km • Ventilation Tower M = 5	103,222	3,600	5,160	10,300	122,282
IL - 2	Iloilo - Guimaras Link (L = 2.59 km)	• Suspension Bridge L = 1,330m • Approach Viaduct L = 1,260m	11,953	420	600	1,200	14,173
IL - 3	Guimaras - Negros Link (L = 20.60 km)	• 5 long span Bridges L = 2,900m • Approach Viaduct L = 10,100m • Causeway L = 7,600m	33,318	1,170	1,670	3,330	39,488
IL - 4	Cebu - Negros Link (L = 14.3 km)	• Under-Sea Tunnel L = 14.0km • Ventilation Tower M = 2 • Approach L = 0.3 km	55,744	1,950	2,790	5,570	66,054
IL - 5	Luzon (Sorsogon) - Samar Link (L = 41.3 km)	• Under-Sea Tunnel L = 35.95km • Ventilation Tower M = 7 • Approach L = 5.35km	149,195	5,200	7,460	14,900	176,755
	TOTAL		353,432	12,340	17,680	35,300	418,752

TABLE 15.4-5 SUMMARY OF PROJECT COSTS BY ISLAND

Island	Group - 1 (2-lane Road Projects)	Grou - 2 (Widening Project)	Group - 3 (Expressway/Bypass)	Total
Marinduque	1,167.1	-	-	1,167.1
Mindoro	17,394.2	-	-	17,394.2
Palawan	20,833.6	-	-	20,833.6
Romblon	4,907.2	-	-	4,907.2
Catanduanes	3,887.9	-	-	3,887.9
Masbate	5,818.6	-	-	5,818.6
Panay	20,707.9	3,734.4	1,043.6	25,485.9
Guimaras	1,913.4	-	-	1,913.4
Negros	10,022.5	5,204.0	2,923.6	18,150.1
Bohol	4,284.1	-	-	4,284.1
Cebu	6,969.2	1,644.3	12,393.3	21,006.8
Siquijor	372.1	-	-	372.1
Leyte	15,056.7	2,326.3	-	17,383.0
Samar	19,396.9	-	-	19,396.9
Camiguin	540.6	-	-	540.6
Mindanao	125,015.8	27,240.1	17,041.3	169,297.2
Sub-Total	258,287.8	40,149.1	33,401.8	331,838.7
Inter-Island				418,752.0
Grand - Total				**750,590.7**

CHAPTER 16

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

16.1 ENVIRONMENTAL CONSIDERATIONS AND GENERAL IMPACTS

16.1.1 Planning and Detailed Design Stage

The Master Plan consists of various types of works and environmental studies required for each type are as follows:

	Type of Work	Environmental Study Required
Group 1	2-lane Road Projects	
	Reh. A	• ECC is usually exempted.
	Reh. B	• ECC is usually exempted.
	Imp.	• IEE within ECA. EIA required when a road alignment is changed from the existing alignment.
	New construction	• EIA required
Group 2	Widening	• EIA required.
Group 3	Bypasses, Expressways, Inter-Island Links	• EIA required.

Environmental considerations should be made as soon as a project is conceptualized. During a feasibility study stage, a preliminary EIA should be prepared including a survey of project acceptability by concerned people and agencies. All efforts should be made to avoid adverse environmental impacts, including careful studies on design standards, route alignment, type of construction materials to be used, methods of construction, etc.. Matters to be incorporated in a detailed design should be listed, and necessary recommendation should be made.

During a detailed design stage, mitigation measures should be incorporated in the design and costs for such measures should be included in a project cost. EIS should be prepared as early as possible to secure ECC.

Figure 16.1-1 shows selected environmentally critical areas and the basic road network.

In the Study Area, the following aspects should be fully considered. Planning and a detailed design of these roads that pass through or run close to such areas should be carefully undertaken.

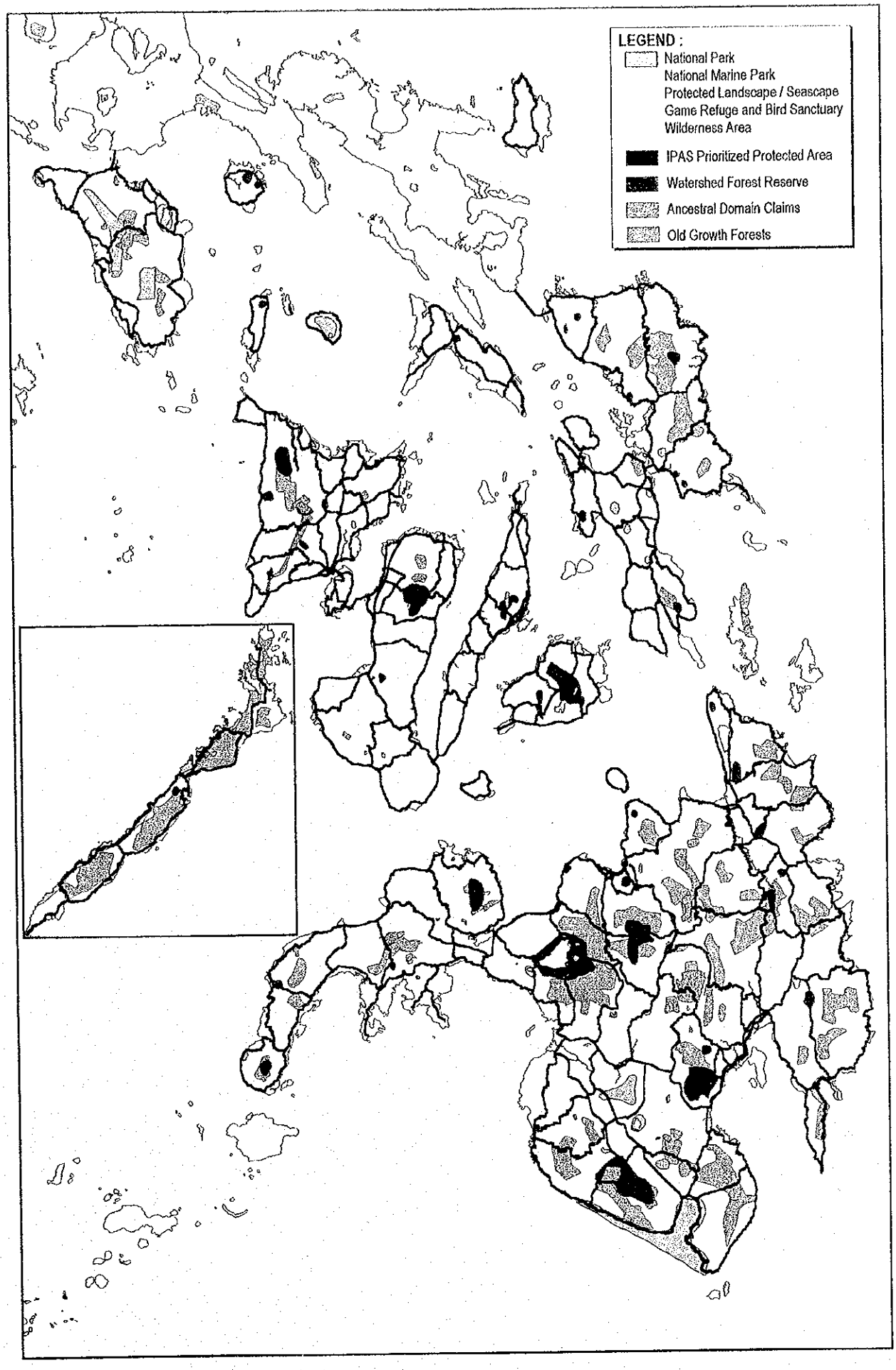


FIGURE 16.1-1 ENVIRONMENTAL CHARACTERISTICS OF THE STUDY AREA

1) Fauna and Flora

The clearing of forestland to secure the right-of-way can disturb the species composition and distribution of forest communities. Vegetation removal will create a new environment that will induce a shift in ecological importance from numerous specialized or rare species to a few dominant forms that have wider tolerances to extreme environmental conditions developed in disturbed areas of the forest.
There are many endemic wild species in the Philippines, these rare species are traded to foreign collector on the black market. The poaching of wildlife is likely to increase as a result of improved accessibility to dense forest areas. The increased traffic volume may increase road-kills of wildlife.

Some road sections traverse through or close to protected areas. These protected areas are the following:

Mindoro
Naujan Lake National Park, F.B. Harrison game refuge and bird sanctuary
Palawan
St. Paul Subterranean River National Park,
Palawan Flora, Fauna watershed forest
Catanduanes
Catanduanes watershed forest
Romblon
Mt. Guiting-quiting Natural Park
Negros
Mt. Canlaon National Park, Bago River watershed forest
Bohol
Loboc watershed forest, Wahig-Inabanga River watershed forest
Cebu
Central Cebu National Park, Mananga watershed forest,
Kotkot and Lusaran River watershed forest
Samar
Sohoton Natural Bridge National Park
Leyte
Kuapint-Balinsasyao National Park, Palompon watershed forest
Mindanao
Mt. Malindang National Park, Initao National Park, Lake Dapao National Park
Pujada Bay protected landscape/seascape,
Sarangani Bay protected landscape/seascape,
Mt. Apo Natural Park, Agusan Marsh Wildlife Sanctuary,
Muleta-Manupali watershed forest, Andap watershed forest,
Lake Lanao watershed forest, Libungan River watershed forest,
Cabadbaran watershed forest, Andanan River watershed forest

2) Ethnic Groups

Ethnic groups have distinct and original society, culture, religion, and history. There are many the ethnic group areas relatively in up-land of Mindoro and Mindanao. New road construction in the ethnic group areas may divide the community cohesion and decrease the originality. On the other hand, road construction may promote development of human resources among ethnic groups due to improved access to education, health and useful information.

3) Soil Erosion

Due to cut slope, land clearing and soil stripping, the stability of slope areas may be reduced, the topsoil may be erode more easily. The soil erosion in the deforested areas may cause water siltation and sedimentation of streambeds and farmlands. In areas along coral reefs, even slight erosion and turbid water may affect corals directly. The soil erosion is more severe during rainy season. The angle of slope and the vegetation are the important factors of the soil erosion. If the vegetation along the road is in dense condition, soil erosion can be limited within the vicinity except for steep slope areas by adopting adequate removal of surplus soil, appropriate construction period and road design.

4) Hydrological Situation

Construction of causeway has a major effect on hydrological situation. Road drainage systems and large piers may also affect hydrological situation. Turbid water due to construction works affects aquatic life and water use, especially clean water areas are more sensitive. Construction of tunnel through aquifers may cause to lower the groundwater level. The change of hydrological situation will have negative impacts on the aquatic ecosystem and the local water use.

5) Social Impacts

One of the most important and critical issues during the planning and detailed design stage is the assessment of social impacts in connection with the right-of-way acquisition which usually causes relocation of people. A project must be planned and designed in order that the adverse social impacts can be minimized. The following efforts should be made during this stage:

- Project campaign to concerned people and LGUs for better understanding of project needs and impacts.
- Constant dialogue with project-affected people and LGUs to create consensus for the project acceptability.
- Preparation and development of a resettlement site for which cost should be included in the project cost.
- Training program for the project-affected people's livelihood.

16.1.2 General Impacts of Construction Stage

Road construction works may cause changes in the physical environment that could result in direct or indirect, immediate or delayed, slight or significant negative impact in the project area. Especially the clearing, excavation and hauling operations may damage the land, the wildlife, the soil, the water and the air. As rehabilitation, pavement and widening works are mostly implemented within the right-of-way of existing roads, the impacts are much less than impacts of new road construction works.

New road construction and some widening works may need land acquisition and necessitate the relocation of residents living on the right-of-way. In the case of any road improvement projects, there will be various temporary uses of the land during construction period for borrow site, storage of equipment and materials, and service areas.

Crushing materials, earth-moving work, handling and storing aggregates and heavy equipment operation may generate harmful dust and noise that would affect trees, crops, animals as well as residents near the construction site. Improper disposal of waste and accidental spilling of harmful materials such as petroleum and cement causes water and soil contamination.

On the other hand, road construction works will bring additional income to the local residents in terms of the employment of workers.

16.1.3 General Impacts of Operation Stage

Road projects have positive impacts on the socio-economical environment. The improved accessibility will lead to increased economic activities, enhancement of social services such as schools, hospitals and recreation facilities, and input of other development plans. On the other hand, uncontrolled immigration along the road corridor leads to unsuitable shifts of land use pattern. An increase of traffic accidents and illegal exploitation of natural resources may be induced as negative impacts.

After construction, increased traffic volume will cause higher level of air pollution, noise and vibration. As for air pollution, poor road conditions and inadequate traffic capacity contribute to congestion and low running speed, consequently cause emissions of higher levels of pollutants. Improved road conditions will decrease pollutant level of each mobile source, but in the big cities such as Davao and Cebu City, it may be increased new vehicle use, air pollution may increase consequently. Dust from passing vehicles on unpaved roads is a major environmental problem in settlements. The road pavement will stop the dust and prevent an inconvenience and health hazard to the residents.

Access to archaeological and historical sites will be improved and no negative impact is expected as long as the new roads do not traverse directly within these sites.

16.2 MITIGATION AND MONITORING

The mitigation measures of the adverse environmental impact mentioned above and monitoring programs are summarized the following:

1) More detailed environmental study should be conducted at the feasibility study stage. The adequate mitigation and monitoring should be planned and implemented. DPWH EIA project office has been inputting protected areas, remote sensing data and social data into geographic information system (GIS). It is recommended to visit the office to get the latest data. With regard to ethnic groups, it is also recommended to visit Office for Southern Cultural Communities and region office of Land Management Sector, DENR to get the information.

2) Road alignments should follow the natural contour of the land, where possible, along the existing alignments to minimize new construction works. Land clearing and tree-cutting should be well planned and implemented within the restricted area. The cut down trees should be effectively used for such as construction of checkdams. Road widening works may cut roadside trees. On the road sections, either shift of the trees or planting young trees should be planned depending on the age and size of the trees, natural conditions, the landscape and the cost.

3) In the case of new road construction, the road alignments should be examined to bypass protected areas and biodiversity-rich areas at the beginning. As protected areas are wholly under reconsideration on the basis of the National Integrated Protected Area System (NIPAS), the latest information should be required at alternative alignment study stage.

4) In the case of construction works within Environmentally Critical Areas, it is necessary to discuss with not only DENR regional office but also Local Government Units and NGO.

5) In case of road construction within ethnic group areas, the latest information about Ancestral Domain Claims, their lifestyle and cultural gaps should be collected in advance. If necessary, the public hearing and the public participation program should be discussed.

6) In the case of construction works in old growth forests, a reforestation program should be implemented to replace lost vegetation cover. The choice of plants species must consider adaptability to the environment. It is available ecologically to use the topsoil as nursery culture of plants for reforestation or rehabilitation of impacted area.

7) To minimize soil erosion, cut slope, land clearing and soil stripping works should be mainly implemented during the dry season. Siltation of riverbeds can be minimized, if not completely avoided, by construction of checkdams. In case of construction works on/around the sea, turbid water measures such as using floating fence should be taken.

8) During construction works, borrowed land temporarily used as storage and borrow pit should be kept to a minimum level. The soil should be protected from the contamination by construction materials, oil and garbage.

9) In the case of new road contraction, to avoid uncontrolled economic activities and illegal immigration, the local government should develop new socio-economical programs. To conserve natural resources, the management system and conservation laws should be reinforced.

10) To reduce traffic accidents, in the road corridor in the vicinity of settlements, speed limits should be clearly posted. Road signs, rumble strips and pedestrian crossings should be provided.

11) The construction contractors should use appropriate methods and equipment to prevent noise, dust, water pollution, soil contamination and vibration during construction.

12) The environmental monitoring should be conducted to ensure environmental mitigation measures and to recognize the transition of environmental aspects such as air, water, soil, noise, vibration and vegetation in both periods during construction and operation.

13) The environmental specialist should be enlisted in site supervisor consultants to help prevent soil erosion, noise, dust, water pollution and inadequate tree cutting and to monitor the mitigation measures and the environmental aspects.

Table 16.2-1 shows summary of the environmental impact and mitigation by road location.

TABLE 16.2-1 SUMMARY OF ENVIRONMENTAL IMPACT AND MITIGATION BY ROAD LOCATION

Location: Protected Area, Old Growth Forest Area				
Environmental Item		Mitigating Measures		Related Road Project
		Construction Stage	Operation Stage	
Social Environment	Economic Activity	Sufficient compensation		New road project, Widening project
	Waste	Proper disposal plan		New road project, Widening project, Rehabilitation projects
	Hazard	Slope protection	Road maintenance	New road project, Widening project
Natural Environment	Topography and geology	Proper design and works		New road project, Widening project
	Soil erosion	Proper design and construction plan	Road maintenance	New road project, Widening project
	Flora and fauna	Ecological survey Proper alignment Protection plan (Passageway for animals, Drain design)	Monitoring program Restoration of vegetation	New road project, Widening project
	Landscape	Harmonious design Road side plantation		New road project, Widening project
Public Nuisance	Air pollution	Water spray		New road project, Widening project
	Water pollution	Pollution control (Checkdam, Drain design)		New road project, Widening project
	Noise and vibration	Machinery control		New road project, Widening project

Location: Ethnic Group Area, Ancestral Domain Area				
Environmental Item		Mitigating Measures		Related Road Project
		Construction Stage	Operation Stage	
Social Environment	Resettlement	Relocation scheme		New road project, Widening project
	Economic Activity	Sufficient compensation		New road project, Widening project
	Traffic and public facilities	Warning signs		New road project, Widening project
	Split of communities	Collection of the latest Information Public hearing Participation program	Educational program	New road project (especially in up-land of Mindoro and Mindanao)
	Cultural property	Property survey Proper alignment		New road project, Widening project
	Waste	Proper disposal plan		New road project, Widening project, Rehabilitation projects
Natural Environment	Groundwater	Groundwater use survey	Groundwater level monitoring	New road project (Including tunnel or located in aquifer)
	Landscape	Harmonious design		New road project, Widening project
Public Nuisance	Air pollution	Water spray		New road project, Widening project
	Water pollution	Pollution control		New road project, Widening project
	Noise and vibration	Machinery control	Noise/vibration monitoring	New road project, Widening project

Location: Urban Area

Environmental Item		Mitigating Measures		Related Road Project
		Construction Stage	Operation Stage	
Social Environment	Resettlement	Relocation scheme		New road project (Bypass, Expressway), Widening project
	Economic Activity	Sufficient compensation		New road project (Bypass, Expressway), Widening project
	Traffic and public facilities	Warning signs Traffic control	Traffic volume monitoring	New road projects, Widening projects, Rehabilitation projects
	Cultural property	Property survey		New road project, Widening project
	Waste	Proper disposal plan		New road project, Widening project, Rehabilitation projects
Natural Environment	Landscape	Harmonious design Road side plantation		New road project, Widening project
Public Nuisance	Air pollution	Water spray	Air quality monitoring	New road project, Widening project
	Water pollution	Pollution control		New road project, Widening project
	Noise and vibration	Machinery control	Noise/vibration monitoring	New road project, Widening project, Rehabilitation projects

Location: Steep Slope Area

Environmental Item		Mitigating Measures		Related Road Project
		Construction Stage	Operation Stage	
Social Environment	Waste	Proper disposal plan		New road project, Widening project Rehabilitation projects
	Hazard	Slope protection	Road maintenance	New road project, Widening project
Natural Environment	Topography and geology	Proper design and works		New road project, Widening project
	Soil erosion	Proper design (Drain, alignment) Proper construction plan (Checkdam, works during dry season)	Road maintenance	New road project, Widening project
	Groundwater	Groundwater use survey	Groundwater level monitoring	New road project (Including tunnel or located in aquifer)
	Hydrological situation	Proper drain design		New road project, Widening project
	Landscape	Harmonious design		New road project, Widening project
Public Nuisance	Air pollution	Water spray		New road project, Widening project
	Water pollution	Pollution control		New road project, Widening project
	Noise and vibration	Machinery control		New road project, Widening project

Location: Coastal Area

Environmental Item		Mitigating Measures		Related Road Project
		Construction Stage	Operation Stage	
Social Environment	Waste	Proper disposal plan		New road project, Widening project Rehabilitation projects
	Hazard	Slope protection	Road maintenance	New road project, Widening project
Natural Environment	Soil erosion	Proper design and construction plan	Road maintenance	New road project, Widening project
	Hydrological situation	Hydrological survey Proper design	Hydrological monitoring	Inter-Island Link
	Coastal zone	Proper design		Inter-Island Link
	Flora and fauna	Protection plan	Monitoring program	New road project, Widening project
	Landscape	Harmonious design		New road project, Widening project
Public Nuisance	Air pollution	Water spray		New road project, Widening project
	Water pollution	Pollution control (Drain design, floating fence)		New road project, Widening project
	Noise and vibration	Machinery control		New road project, Widening project

16.3 INITIAL IMPACT ASSESSMENT

The initial impact assessment was made for the selected projects. However rehabilitation projects are not mention because the environmental impacts are expected to be insignificant. The check items are based on "JICA Environmental Guideline on Road Project". Only check items concerned with this Study are selected.

The initial impact assessment of selected projects is presented in Appendix 16.3-1.

CHAPTER 17

IMPLEMENTATION SCHEDULE

17.1 PROCEDURE FOR IMPLEMENTATION SCHEDULING

The procedure for implementation scheduling is shown in Figure 17.1-1.

Project priority and implementation timing was evaluated for each group of projects. Group 1 consists of different types of projects and the prioritization was required under the established criteria. Group 2 is a traffic capacity expansion project and is to be implemented prior to occurrence of severe traffic congestion. Group 3 is a large scale project and implementing timing is governed by the economic viability.

For Group 1, the prioritization criteria was established. With the criteria, four implementation scenarios were prepared and evaluated, then the balance of regional investment and the engineering judgement were taken into account to develop the implementation schedule for Group 1.

For Group 2, implementation timing was assessed based on future traffic demand and set before traffic volume/capacity ratio becomes 1.25.

For Group 3, implementation timing was determined from the economic evaluation result.

Implementation schedules of three Groups were integrated to prepare overall implementation schedule. Minor adjustments were made to comply with the budgetary framework.

17.2 PROJECT PRIORITY OF GROUP 1 PROJECTS

17.2.1 Project Prioritization Criteria

(1) Evaluation Items

The following eight items were selected for road projects prioritization:

Road Class
I. Degree of Inconvenience
II. Economic Return
III. Contribution to Regional Development
IV. Type of Work
V. Environmental Aspects
VI. Inter-modal Linkage
VII. Continuity of On-going / Committed Project

I. Road Class

A skeleton road network must be assured of its transport efficiency, thus higher priority will be given to higher class of road. Lower class of roads should be always connected with a higher class of road in good/fair condition.

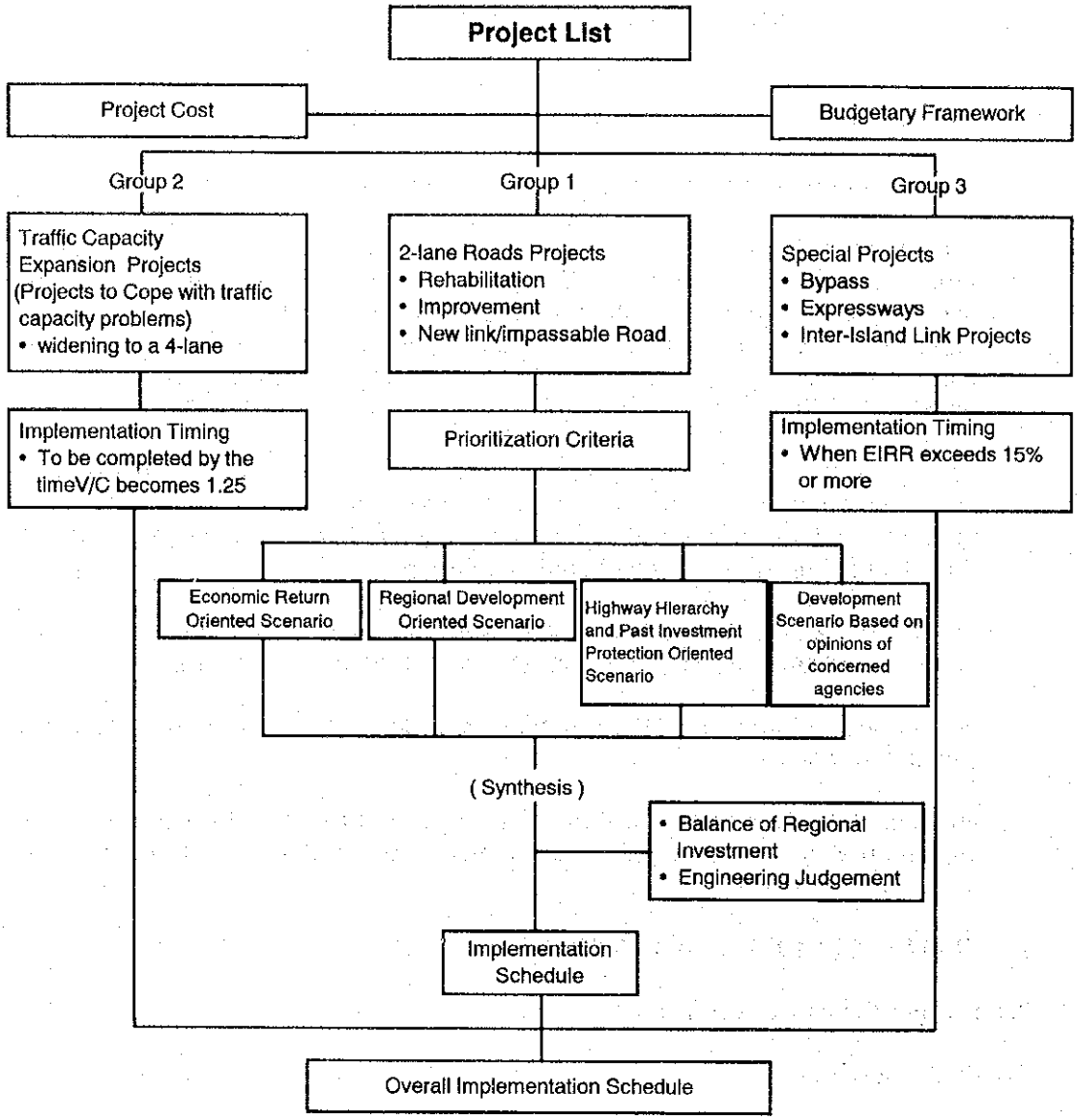


Figure 17.1-1 PROCEDURE FOR IMPLEMENTATION SCHEDULING

II. Degree of Inconvenience

A road in bad condition requires longer travel time and higher transport cost compared with a road in good/fair condition. Such inconvenience was quantified on the following assumptions.

- Degree of Inconvenience is expressed as follows:

$$DI = \text{Road Condition} \times \text{DI Factor} \times AADT$$

AADT for an impassable/new link is that of "with project case" (or AADT when the link is constructed).

- Factor of Degree of Inconvenience (DI Factor) was assumed as follows:

Paved Road	DI Factor
- In good condition	0
- In fair condition	1.0
- In bad condition	4.0
- In very bad condition	6.5

Unpaved Road	DI Factor
- In good/fair condition	8.0
- In bad/very bad condition	10.0
Impassable/New Link	30.0

Above shows that the degree of inconvenience of an impassable road (or no road) is 30 times of that of a paved road in fair condition and 3 times of an unpaved road in bad/very bad condition.

- Formula for DI is as follows:

$$DI = \left(\frac{L1}{L} \times 0.0 + \frac{L2}{L} \times 1.0 + \frac{L3}{L} \times 4.0 + \frac{L4}{L} \times 6.5 + \frac{L5}{L} \times 8.0 + \frac{L6}{L} \times 10.0 + \frac{L7}{L} \times 30.0 \right) \times AADT$$

Where:

DI:	Degree of Inconvenience
L:	Segment Length (km)
L1:	Length of Paved Section in Good Condition (km)
L2:	Length of Paved Section in Fair Condition (km)
L3:	Length of Paved Section in Bad Condition (km)
L4:	Length of Paved Section in Very Bad Condition (km)
L5:	Length of Unpaved Section in Good/Fair Condition (km)
L6:	Length of Unpaved Section in Bad/Very Bad Condition (km)
L7:	Length of Impassable/New Link (km)
AADT:	AADT in 2004 (with project case)

AADT EQUIVALENT TO DI FACTOR

	All Impassable or No Road	All Unpaved In Bad/V. Bad Condition	All Unpaved In Good/Fair Condition	All Paved In V. Bad Condition	All Paved In Bad Condition	All Paved In Fair Condition
AADT	100	300	375	461	750	3,000

III. Economic Return

Higher priority is given to the project with higher economic return.

IV. Contribution to Regional Development

- A road along the Growth Corridor or connecting an Industrial Center is important to support the regional development.
- Agricultural/forestry development is the priority target of the country. A new road construction usually provides high socio-economic impact. Improvement of an unpaved road to a paved road provides medium impact. Whereas, a paved road has usually been fulfilled its role and is considered not to contribute to additional agricultural/forestry development.

V. Type of Work

Type of work of each road project was classified as follows:

- Rehabilitation A - Rehabilitation of a paved road in bad, very bad condition
- Rehabilitation B - Rehabilitation of a paved road in fair condition
- Improvement - Improvement of an unpaved road (gravel or earth surface) to paved road
- New Construction - Improvement of an impassable road, or construction of a new link

DPWH is currently giving high priority on "Rehabilitation A", in order to protect the past investment.

VI Environmental Aspect

A road which passes through a protected area such as national parks, the Integrated Protected Area System (IPAS) areas, etc., must be carefully planned, designed and implemented, thus, schedule wise is lower priority.

A road project which requires right-of-way acquisition is usually associated with relocation of residents and would cause socially adverse environmental impacts, therefore considered to be given lower priority.

VII Inter-modal Linkage

In order to achieve overall transport efficiency, the inter-modal linkage is one of the important items to be evaluated.

VIII Continuity of On-going / Committed Project

Many on-going / committed projects cover only a limited road section, the continuity to complete the development of whole section is an important factor for prioritization.

(2) Weight of Each Evaluation Item

Priority of a project was determined by weighting each evaluation item. The Study Team sent a questionnaire on weight of each evaluation item to concerned agencies and offices to reflect their priority.

The Study Team tested the following four cases:

Scenario-1 : Economic Return Oriented Scenario
Scenario-2 : Regional Development Oriented Scenario
Scenario-3 : Highway Hierarchy and Past Investment Protection Oriented Scenario
Scenario-4 : Development Scenario Based on Opinions of Concerned Agencies

Evaluation criteria and weight of each evaluation item is shown in Table 17.2-1. Recommended weight of each item by various agencies is shown in Table 17.2-2 and graphically shown in Figure 17.2-1. Score for each sub-item recommended by various agencies is shown in Table 17.2-3.

(3) DI Value of Each Road Segment

In accordance with the DI formula, DI Value of each road segment was computed and presented in Appendix 17.2-1.

(4) Economic Return

For the purpose of the prioritization, the economic viabilities of all identified projects were calculated under the same conditions as follows:

Case-1	:	Detailed Design	:	Year 2000
		Construction	:	Year 2001-2002
		Opening Year	:	Year 2003
Case-2	:	Detailed Design	:	Year 2014
		Construction	:	Year 2015-2016
		Opening Year	:	Year 2017

TABLE 17.2-1 EVALUATION CRITERIA

Evaluation Item	Score for Sub-item	Weight of Evaluation Item			
		Economic Return Oriented	Regional Development Oriented	Highway Hierarchie Oriented	Based on Average Weight
I. ROAD CLASS		20	20	30	13.7
I - 1. N-S. Backbone	100%(97.5%)				
I - 2. E-W Lateral	90%(82.8%)				
I - 3. Strategic Road A	70%(69.1%)				
I - 4. Strategic Road B	60%(53.4%)				
II. DEGREE OF INCONVIENCE / PROBLEM		5	5	5	15.6
II - 1. Extremely High Inconvenience (DI over 10,000)	100%(100.0%)				
II - 2. High Inconvenience (5,000 - 10,000)	80%(80.8%)				
II - 3. Medium Inconvenience (2,000 - 5,000)	60%(61.6%)				
II - 4. Low Inconvenience (1,000 - 2,000)	40%(42.4%)				
II - 5. Slight Inconvenience (DI Less than 1,000)	20%(23.1%)				
III. ECONOMIC RETURN (EIRR)		50	10	10	17.4
III - 1. Over 30%	100%(100.0%)				
III - 2. 20 - 30%	90%(90.2%)				
III - 3. 15 - 20%	80%(79.8%)				
III - 4. 10 - 15%	60%(61.2%)				
III - 5. 5 - 10%	30%(30.8%)				
III - 6. Less than 5%	5%(2.6%)				
IV. CONTRIBUTION TO REGIONAL DEVELOPMENT		10	50	10	22.0
IV - 1. Growth Corridor / Industrial Center	80%(84.9%)				
IV - 2. Agricultural / Forestry / Fishery Dev't. (High Impact)	100%(96.3%)				
IV - 3. Agricultural / Forestry / Fishery Dev't. (Medium Impact)	70%(69.7%)				
IV - 4. Agricultural / Forestry / Fishery Dev't. (Low Impact)	40%(39.6%)				
IV - 5. Tourism Development	50%(52.9%)				
IV - 6. Already Contributed. No significant Additional Contribution (Note: Max. is 100%)	0%(6.9%)				
V. TYPE OF WORK		5	5	30	7.1
V - 1 Rehabilitation A	100%(99.1%)				
V - 2 Rehabilitation B	50%(49.3%)				
V - 3 Improvement	80%(82.4%)				
V - 4 New Construction	50%(56.3%)				
VI. ENVIRONMENTAL ASPECTS		3	3	3	9.4
VI - 1. Serious Problem not Expected	100%(100.0%)				
VI - 2. ROW Acquisition and Resettlement Needed	50%(53.7%)				
VI - 3. Pass Through Protected Areas	0%(3.5%)				
VII. INTER-MODAL LINKAGE		2	2	2	7.8
Access to Existing Port, Airport, New Port, New Airport and RO-RO Ports.					
VII -1. Yes	100%(100.0%)				
VII -2. No	0%(12.1%)				
VIII CONTINUITY OF ON-GOING / COMMITTED PROJECT		5	5	10	7.0
VIII - 1. Continuity be Considered	100%(100.0%)				
VIII - 2. Independent	0%(16.3%)				
Total Points	-	100	100	100	100.0

Note: Figure in ( ) is an average of recommended score by various agencies.

TABLE 17.2-2 WEIGHT OF EACH EVALUATION ITEM RECOMMENDED BY VARIOUS AGENCIES

EVALUATION ITEM	18 AGENCIES																		AVERAGE
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
I. ROAD CLASS	20	15	10	0	20	10	20	20	2.5	10	10	5	25	10	23	20	15	10	13.7
II. DEGREE OF INCONVENIENCE	20	18	15	15	15	20	15	15	5	15	15	15	10	15	18	15	20	20	15.6
III. ECONOMIC RETURN	10	15	20	30	15	20	20	10	25	20	20	20	20	15	3	15	15	20	17.4
IV. CONTRIBUTION TO REGIONAL DEVELOPMENT	20	18	25	40	15	15	15	20	40	25	25	35	20	20	18	15	15	15	22.0
V. TYPE OF WORK	10	10	5	0	10	10	10	5	2.5	5	5	5	3	5	8	15	10	10	7.1
VI. ENVIRONMENTAL ASPECTS	10	12	10	5	15	5	10	5	12.5	10	10	5	10	15	5	10	15	5	9.4
VII. INTER-MODAL LINKAGE	5	6	10	5	10	5	5	10	10	10	10	10	5	10	15	5	5	5	7.8
VIII. CONTINUITY OF PROJECT	5	6	5	5	0	15	5	15	2.5	5	5	5	7	10	10	5	5	15	7.0
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0

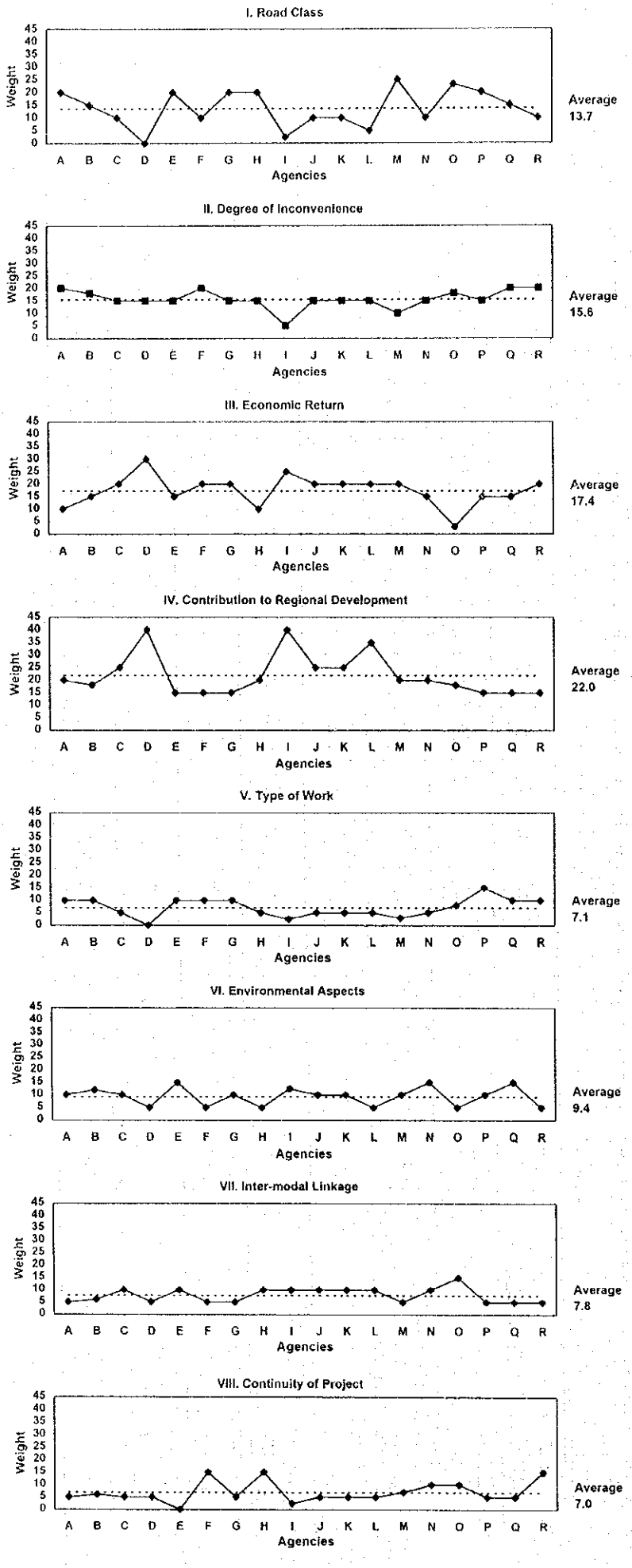


FIGURE 17.2-1 WEIGHT OF EVALUATION ITEMS RECOMMENDED BY AGENCIES

TABLE 17.2-3 RECOMMENDED SCORE FOR SUB-ITEMS BY VARIOUS AGENCIES

SUB-ITEM	18 AGENCIES																		AVERAGE
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
I. N-S Backbone	100	100	100	-	-	80	100	80	100	100	100	100	100	100	100	100	100	100	97.5
E-W Lateral	80	80	80	-	-	100	80	100	80	80	80	80	80	80	80	90	80	75	82.8
Strategic Road (A)	70	70	75	-	-	60	70	70	60	75	75	70	70	70	70	80	70	50	69.1
Strategic Road (B)	70	50	50	-	-	70	50	50	40	50	50	70	50	50	60	70	50	25	53.4
II. DI Rank A	100	100	100	100	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0
Rank B	80	80	80	80	-	80	80	80	80	80	80	80	80	80	80	90	80	83	80.8
Rank C	60	60	60	60	-	60	60	60	60	60	60	60	60	60	60	80	60	67	61.6
Rank D	40	40	40	40	-	40	40	40	40	40	40	40	40	40	40	70	40	50	42.4
Rank E	20	20	20	20	-	20	20	20	20	20	20	20	20	20	20	60	20	33	23.1
III. EIRR Over 30%	100	100	100	100	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0
20-30	90	90	90	90	-	90	90	90	90	90	90	90	90	90	90	100	90	83	90.2
15-20	80	80	80	80	-	80	80	80	80	80	80	80	80	80	80	90	80	67	79.8
10-15	70	60	60	60	-	60	60	60	60	60	60	60	60	70	60	70	60	50	61.2
5-10	40	30	20	30	-	10	30	30	30	20	20	30	40	50	30	50	30	33	30.8
Less than 5	0	0	0	0	-	0	0	0	0	0	0	0	10	0	5	30	0	0	2.6
IV. Growth Corridor	90	80	80	70	-	100	80	100	-	80	80	80	80	80	75	100	100	83	84.9
Agri, High	100	100	100	100	-	80	100	80	-	100	100	100	100	100	100	90	90	100	96.3
Agri, Medium	80	80	70	70	-	50	70	70	-	70	70	70	70	70	75	80	70	50	69.7
Agri, Low	40	50	30	40	-	30	40	40	-	30	30	40	30	40	40	70	50	33	39.6
Tourism	60	40	50	50	-	70	50	50	-	50	50	50	50	50	50	70	40	67	52.9
Already Contributed	0	0	0	0	-	0	0	0	-	20	20	0	0	0	0	50	0	0	6.9
V. Reh. A	100	100	100	-	-	100	100	100	85	100	100	100	100	100	100	100	100	100	99.1
Reh. B	50	30	50	-	-	50	50	50	50	50	50	50	60	50	50	70	40	38	49.3
Imp.	90	60	80	-	-	80	80	80	100	80	80	80	90	80	80	80	90	88	82.4
New	80	50	50	-	-	30	60	50	65	50	50	70	70	50	50	70	80	25	56.3
VI. Environmental not Serious	100	100	100	100	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0
ROW/Resettlement	50	50	50	50	-	50	70	50	50	50	50	50	80	50	50	80	50	33	53.7
Protected Area	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	50	0	0	3.5
VII. Inter-Modal Yes	100	100	100	100	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0
No	50	80	25	0	-	0	0	0	0	25	25	0	0	0	0	0	0	0	12.1
VIII. Continuity Yes	100	100	100	100	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0
No	70	50	0	10	-	0	50	0	-	0	0	0	0	0	0	80	0	0	6.3

Case-1 results were used for the prioritization. Case-2 results were utilized to identify road projects which would not be economically feasible within the plan period. Based on the results and the engineering judgements, some road projects were planned to be implemented at later years than the plan period. Economic evaluation results of both cases are presented in Appendix 17.2-2.

17.2.2 Priority of Projects and Alternative Scheduling Scenario: Group 1 Projects

Based on the prioritization criteria and weights of evaluation items, priority of road projects were decided under the following four scenarios:

Scenario-1	:	Economic Return Oriented Scenario
Scenario-2	:	Regional Development Oriented Scenario
Scenario-3	:	Highway Hierarchy and Past Investment Protection Oriented Scenario
Scenario-4	:	Development Scenario Based on Opinions of Concerned Agencies

Priority grouping was made in due consideration of the possible investment amount for each 6-year period as follows:

First Priority Group	:	Cumulative project costs up to 40 Billion pesos in consideration of on-going/ committed projects.
Second Priority Group	:	Cumulative project costs up to 134 Billion pesos.
Third Priority Group	:	Remaining projects

Priority ranking of road projects is presented in Appendix 17.2-3 and shown in Figures 17.2-2.

17.2.3 Priority of Group 1 Projects

Priority of Group 1 projects was determined based mainly on Scenario-4 and additional factors as follows:

- Regional balance of investment
- Engineering judgment, particularly construction sequence

17.3 IMPLEMENTATION TIMING OF GROUP 2 PROJECTS

Traffic capacity of a 2-lane road was estimated at about 9,500 pcu/day (Section 12.3.2). Widening to a 4-lane road is recommended to be completed before a traffic capacity-volume ratio becomes 1.25. Group 2 projects should be completed before traffic volume reaches to about 12,000 pcu/day. Future traffic volumes and the latest opening year are presented in Appendix 17.3-1 and summarized Table 17.3-1.

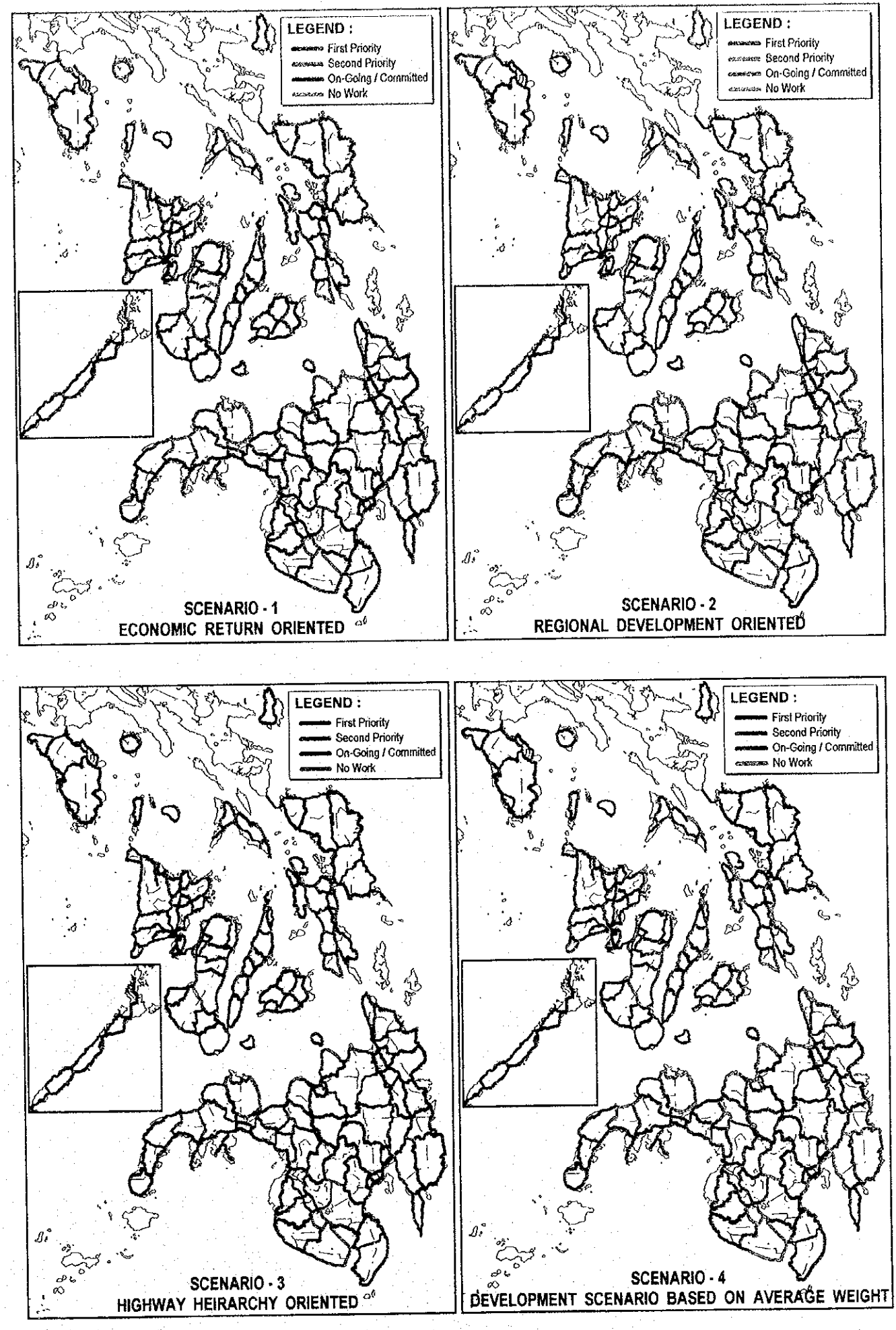


FIGURE 17.2-2 PRIORITY OF PROJECT BY SCENARIO

TABLE 17.3-1 LATEST OPENING YEAR OF GROUP 2 PROJECTS

Road Name	Segment No.	Latest Opening Year
Iloilo - Roxas Road	PA 1-2	2003
	PA 1-3,4	2008
	PA 1-5,6	2016
	PA 1-7,8,9	2010
Iloilo - Cabatuan – Lumbunao Road	PA 6-1,2	2007
Iloilo - Antique Road	PA 8-1,2	2010
Bacolod - San Carlos Coastal Road	NE 1-1	2006
	NE 1-2	2012
	NE 1-3	2010
Bacolod – Kabankalan Road	NE 2-2,3	2005
	NE 2-4	2006
	NE 2-5	2016
Bais - Dumaguete Road	NE 4-1	2015
	NE 4-2	2016
	NE 4-3	2014
Cebu North Road	CE 1-3	2006
Cebu South Road	CE 2-2,3	Committed
	CE 2-4	2007
Naga - Toledo Road	CE 3-1,2	2015
Pan-Philippine Highway (Visayas)	LE 1-2,3	2011
	LE 1-4	2012
	LE 1-5	2013
Tacloban - Ormoc - Isabel Road	LE 2-1	2012
	LE 2-2	2013
North - East Leyte Inland Road	LE 10-1	2012
Pan - Philippine Highway (Mindanao)	MI 1-5,6,7,8	2013
	MI 1-9,10,12,13,14	2017
	MI 1-15	2013
	MI 1-16	2008
	MI 1- 17,18,19,20, 21,22	2006
Davao - Digos - Gen. Santos Road	MI 2-1,2	2006
	MI 2-3	2012
	MI 2-4,5	2017
	MI 2-6,7,8	2012
Sayre Highway	MI 3-1	2017
	MI 3-2	2015
	MI 3-3	2017
	MI 3-4,5	2010
	MI 3-6	2017
Davao - Bukidnon Road	MI 4-1	2010
Cotabato - Pagadian - Zamboanga Road	MI 6-1	2013
	MI 6-18,19	2016
Butuan - Cagayan de Oro - Iligan - Tubod Road	MI 7-1,2,3	2005
	MI 7-8,9,10,11,12,13	2003
	MI 7-14	2008
	MI 7-15	2011
	MI 7-16,17	2010
	MI 7-18	2017
Dapitan - Oroquieta - Tangub - Tubod - S.N. Dimaporo Road	MI 8-3,4	2017
Cotabato - Digos Road	MI 10-1,2	2016
	MI 10-3,4,5,6,7,8	2015
Iligan - Marawi - Malabang Road	MI 14-1,2	2016
Tagum - Mati Road	MI 16-1	2017
Tagum - Kapalong - Panabo Road	MI 25-1	2016
Gen. Santos - Kiamba - Kalamansig Road		
Lake Lanao Circumferential Road	MI 35-1	2015

17.4 IMPLEMENTATION TIMING OF GROUP 3 PROJECTS

Economic viability of Group 3 projects was evaluated on the following cases:

Expressways / Bypasses

Case 1 : Opening Year 2003
Case 2 : Opening Year 2017

Inter-Island Link Projects

- Panay - Guimaras Link
  Case 1 : Opening Year 2006
  Case 2 : Opening Year 2017

- Guimaras - Negros Link
- Cebu - Negros Link
- Luzon - Samar Link
- Luzon - Mindoro Link
  Case 1 : Opening Year 2009
  Case 2 : Opening Year 2020

Economic evaluation results and proposed timing of implementation are shown in Table 17.4-1.

TABLE 17.4-1 ECONOMIC EVALUATION RESULTS AND PROPOSED IMPLEMENTATION TIMING OF GROUP 3 PROJECTS

Project	EIRR (%)		Construction Completed
	Case 1	Case 2	
Cebu Expressway (4-lane)	16.1	26.1	2010
Davao Expressway (2-lane)	23.5	40.6	2014
Iloilo City Circumferential	41.0	54.3	2012
Road	44.4	53.1	2011 (North), 2014
Bacolod Bypass	7.7	18.4	(South)
Cagayan de Oro Bypass	15.6	35.2	2010
Iligan Bypass	17.1	33.9	2008
Butuan Bypass	22.7	43.7	2007
Malaybalay Bypass	24.9	51.8	2009
Valencia Bypass			2009
Panay - Guimaras Link	13.2(14.1)	20.0 (21.1)	2013
Guimaras - Negros Link	8.2	10.7	Later Year
Cebu - Negros Link	7.4	9.5	Later Year
Luzon - Samar Link	-0.8	0.3	Later Year
Luzon - Mindoro Link	7.0	9.1	Later Year

Note: ( ) Shows with case of Guimaras - Negros Link

17.5 OVERALL IMPLEMENTATION SCHEDULE

17.5.1 Overall Implementation Schedule

By integrating project priorities of Group 1 projects and implementation timing of Groups 2 and 3 projects, the overall project implementation schedule was developed taking into account the following:

- Budgetary framework for each 6-year period.
- Regional balance of investment

The plan period was divided into following three periods, and projects would start within a period but not necessarily be completed within the same period:

Program I : First 6-year period (1999-2004)
Program II : Second 6-year period (2005-2010)
Program III : Third 6-year period (2011-2016)

Implementation priority and programs are shown in Figure 17.5-1 and the implementation schedule of each project is shown in Table 17.5-1,2 and 3.

17.5.2 Physical Target of Each Program

The physical target of each program is summarized in Table 17.5-4.

TABLE 17.5-4 PHYSICAL TARGET OF EACH PROGRAM

	Physical Target (Km)			
	Program I	Program II	Program III	Total
2-Lane Road				
• Rehabilitation A	765	377	150	1,292
• Rehabilitation B	1,041	663	939	2,643
• Improvement	2,165	2,075	2,346	6,586
• New Construction	73	311	1,105	1,489
Sub-total	4,044	3,426	4,540	12,010
Widening a 4-lane Road	350	620	799	1,769
Expressway	-	169	46	215
Bypass	-	51	98	149
Inter – Island Link	-	3	-	3
Total	4,394	4,269	5,483	14,146

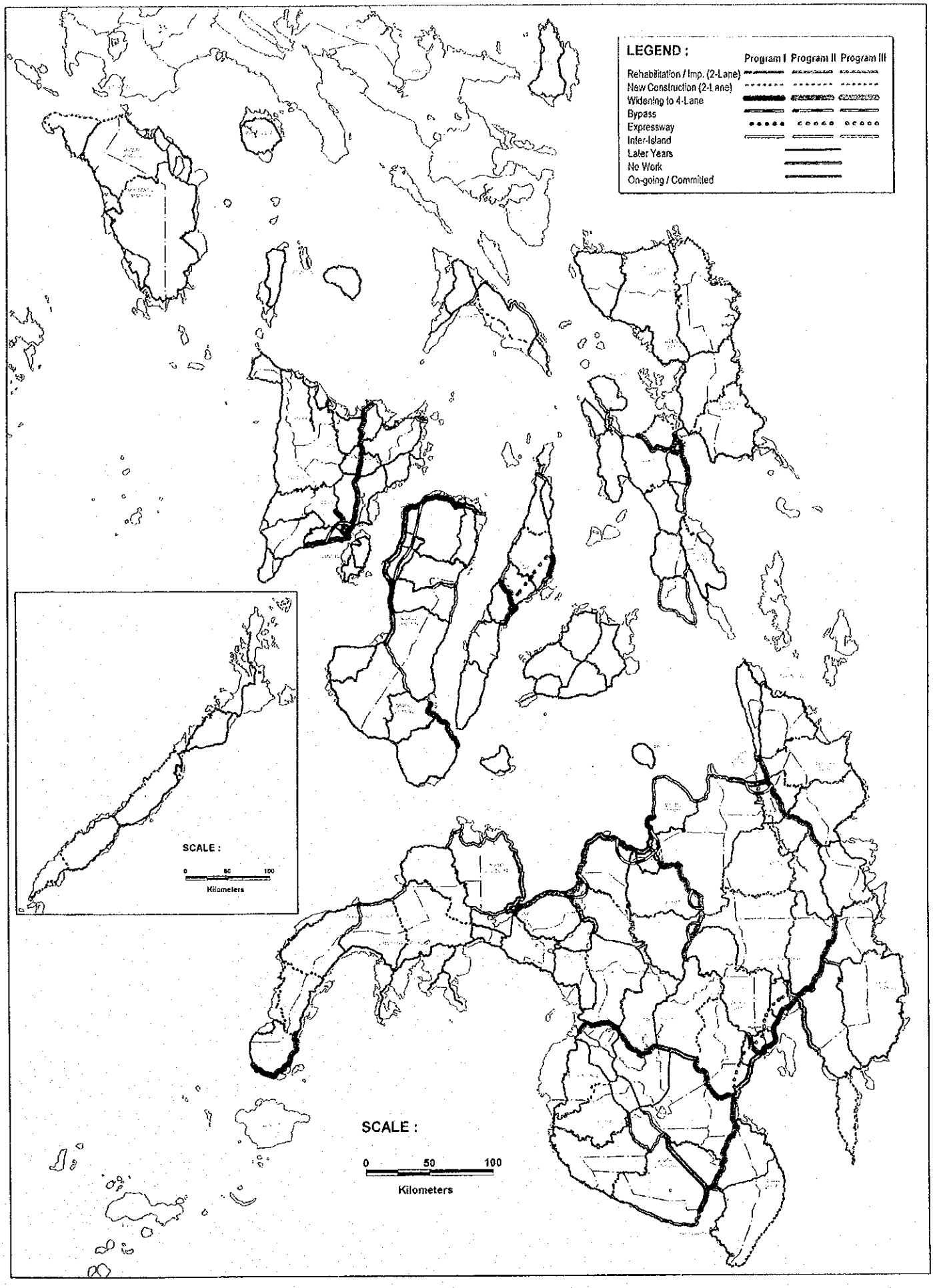
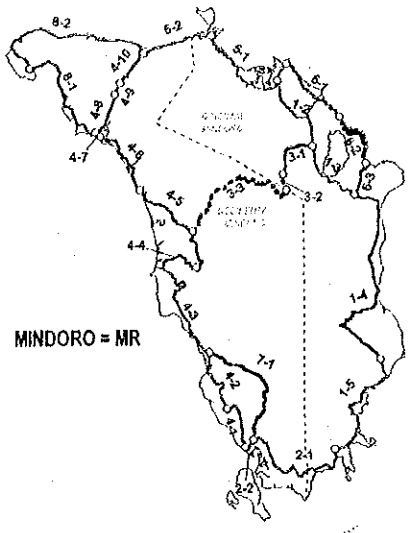
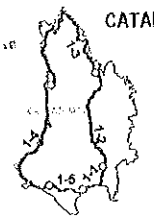


FIGURE 17.5-1 IMPLEMENTATION PRIORITY AND PROGRAMS



MINDORO = MR

MARINDUQUE = MA



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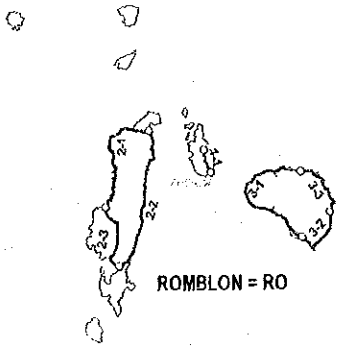

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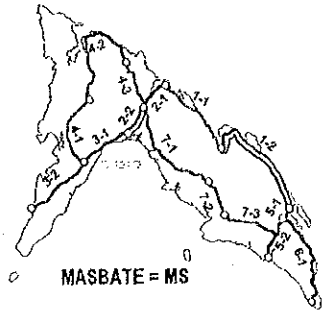

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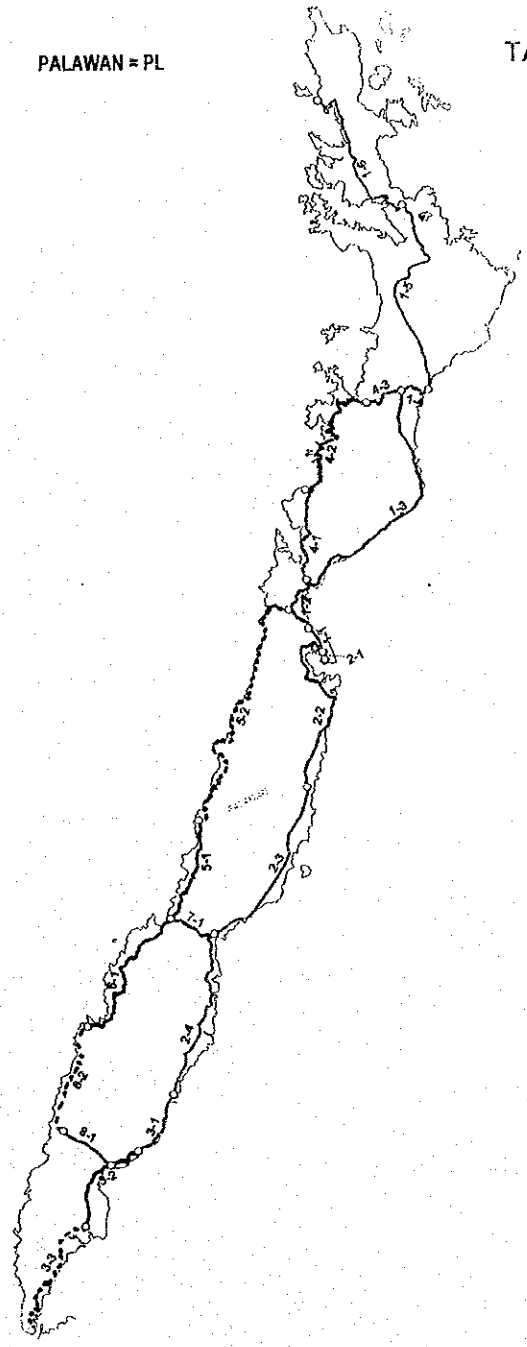

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TABLE 17.5-1 IMPLEMENTATION SCHEDULE: REG. IV-B/V

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year Program: 2011 - 2016
MA 1-1	572.0			
MA 1-2	595.1			
MR 1-1	61.9			
MR 1-2	241.5			
MR 1-3	273.0			
MR 1-4	981.8			
MR 1-5	918.2			
MR 2-1	894.9			
MR 2-2	26.4		(Later Years)	
MR 3-1	309.4		(Later Years)	
MR 3-2	195.8		(Later Years)	
MR 3-3	2124.0			
MR 4-1,4,5,8-10	1845.7			
MR 4-2	418.4			
MR 4-3	1185.2			
MR 4-6	424.9			
MR 4-7	6.0			
MR 5-1	705.7			
MR 5-2	631.6			
MR 6-1	782.2			
MR 6-2	1095.4		(Later Years)	
MR 6-3	112.2		(Later Years)	
MR 7-1	941.4			
MR 8-1	999.6			
MR 8-2	2217.4			
PL 1-1,2,3,4	1721.9			
PL 1-5	1634.7			
PL 1-6	1486.7			
PL 2-1	22.9			
PL 2-2	611.1			
PL 2-3	606.2			
PL 2-4	482.8			
PL 3-1	510.4			
PL 3-2	789.4		(Later Years)	
PL 3-3	1485.5		(Later Years)	
PL 4-1	835.8			
PL 4-2	2716.1			
PL 4-3	511.8			
PL 5-1	760.7		(Later Years)	
PL 5-2	3447.8		(Later Years)	
PL 6-1	1279.3		(Later Years)	
PL 6-2	1176.9		(Later Years)	
PL 7-1	320.6			
PL 8-1	429.1			
RO 1-1	472.2			
RO 2-1	860.4			
RO 2-2	926.4			
RO 2-3	443.8			
RO 3-1	1206.1			
RO 3-2	460.7			
RO 3-3	537.6			
CA 1-1	103.9			
CA 1-2	909.3			
CA 1-3	1769.5			
CA 1-4	1014.0			
CA 1-5	91.2			
MS 1-1	61.5			
MS 1-2			(No Work)	
MS 2-1	90.5		(No Work)	
MS 2-2				
MS 3-1	322.4			
MS 3-2	517.8			
MS 4-1	596.9			
MS 4-2	1074.6			
MS 4-3	301.5			
MS 5-1,2	162.5			
MS 6-1	705.7			
MS 7-1	1049.5			
MS 7-2	373.6			
MS 7-3	562.1			

Legend:

Project No.	*Proj. Cost*	*(Schedule other than Widening)* *(Widening Schedule)*

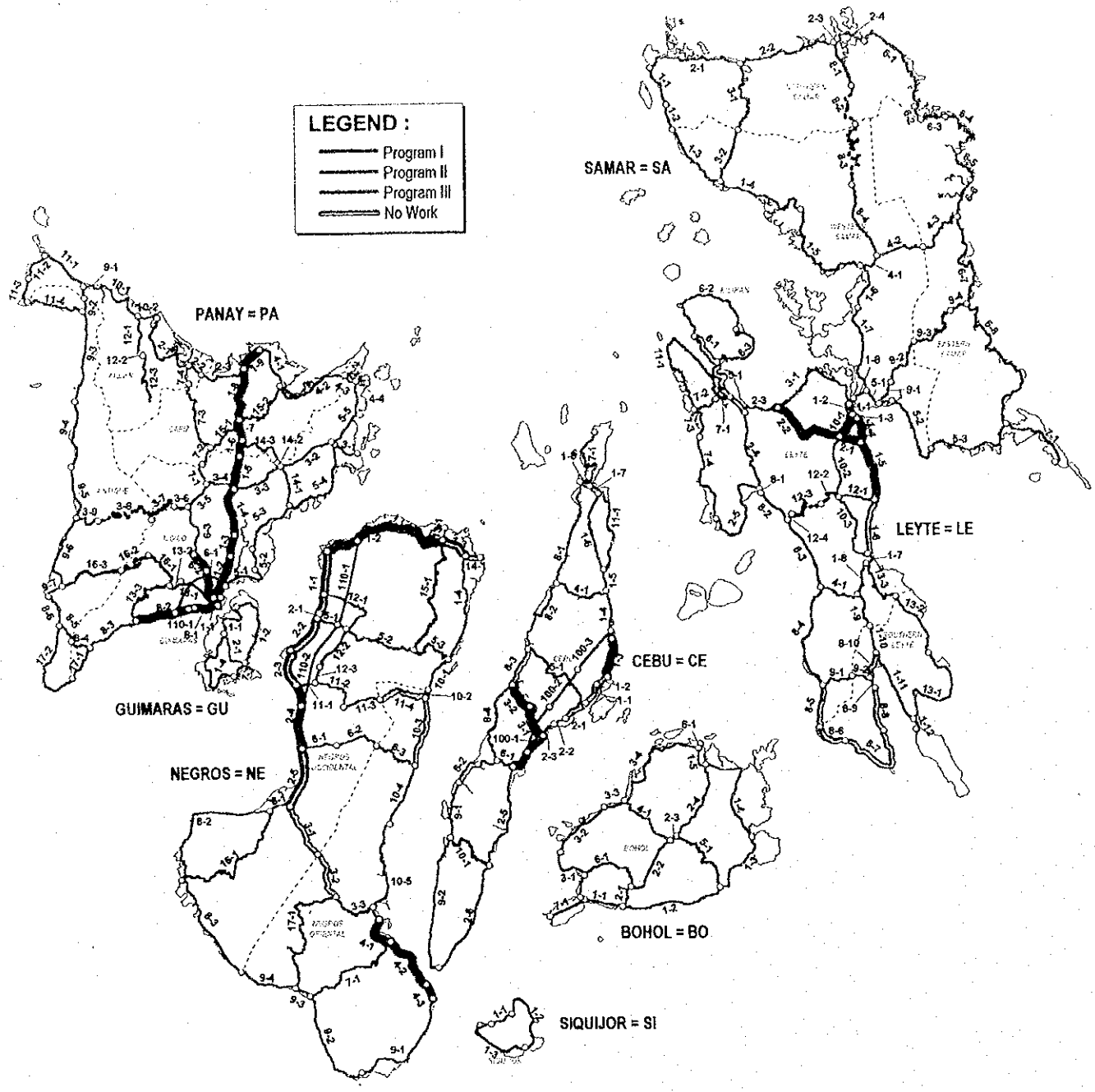
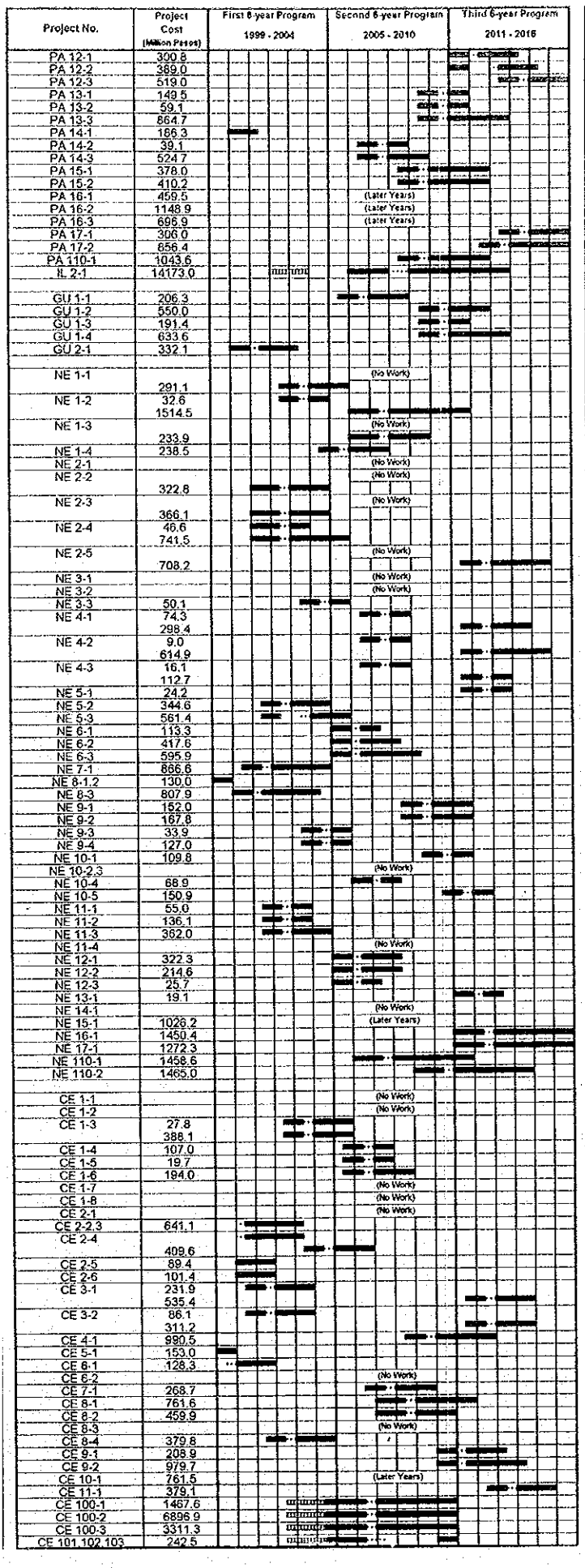


TABLE 17.5-2 IMPLEMENTATION SCHEDULE: VISAYAS

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year Program 2011 - 2016
PA 1-1	19.8			
PA 1-2	174.6			
	274.0			
PA 1-3	54.1			
	158.0			
PA 1-4	260.5			
	524.2			
PA 1-5	138.4			
	326.5			
PA 1-6	59.2			
	160.5			
PA 1-7	67.9			
	217.5			
PA 1-8	254.3			
	621.2			
PA 1-9	17.5			
	235.9			
PA 2-1	415.4			
PA 2-2	89.6			
PA 2-3	219.4			
PA 3-1	123.8			
PA 3-2	347.5			
PA 3-3	428.6			
PA 3-4	149.7			
PA 3-5	127.8			
PA 3-6	212.5		(Later Years)	
PA 3-7	1017.5		(Later Years)	
PA 3-8	1598.0		(Later Years)	
PA 3-9	571.4			
PA 4-1	119.5			
PA 4-2	192.8			
PA 4-3,4			(No Work)	

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year P 2011 - 20
PA 5-1	155.8			
PA 5-2	64.1			
PA 5-3	218.1			
PA 5-4	322.0			
PA 5-5	231.3			
PA 6-1	74.0			
	231.9			
PA 6-2	57.9			
	196.8			
PA 6-3	228.9			
PA 7-1	212.4			
PA 7-2	116.3			
PA 7-3	565.0			
PA 7-4	150.6			
PA 8-1	70.1			
	201.6			
PA 8-2	189.9			
	586.3			
PA 8-3	307.5			
PA 8-4	205.9			
PA 8-5	119.9			
PA 8-6	175.5			
PA 9-1,2,5	1094.0			
PA 9-6	456.0			
PA 9-7	22.7			
PA 10-1	311.6			
PA 10-2	215.3			
PA 11-1	150.0			
PA 11-2	333.6			
PA 11-3	228.4			
PA 11-4	483.6			



Project No.	Project Cost (Million Pesos)
PA 12-1	300.8
PA 12-2	389.0
PA 12-3	519.0
PA 13-1	149.5
PA 13-2	59.1
PA 13-3	864.7
PA 14-1	166.3
PA 14-2	39.1
PA 14-3	524.7
PA 15-1	378.0
PA 15-2	410.2
PA 16-1	459.5
PA 16-2	1148.9
PA 16-3	696.9
PA 17-1	306.0
PA 17-2	856.4
PA 110-1	1043.6
IL 2-1	14173.0
GU 1-1	206.3
GU 1-2	550.0
GU 1-3	191.4
GU 1-4	633.6
GU 2-1	332.1
NE 1-1	291.1
NE 1-2	32.6 1514.5
NE 1-3	233.9
NE 1-4	238.5
NE 2-1	
NE 2-2	322.8
NE 2-3	366.1
NE 2-4	46.6 741.5
NE 2-5	708.2
NE 3-1	
NE 3-2	
NE 3-3	50.1
NE 4-1	74.3 298.4
NE 4-2	9.0 614.9
NE 4-3	16.1 112.7
NE 5-1	24.2
NE 5-2	344.6
NE 5-3	561.4
NE 6-1	113.3
NE 6-2	417.6
NE 6-3	595.9
NE 7-1	866.6
NE 8-1,2	130.0
NE 8-3	807.9
NE 9-1	152.0
NE 9-2	167.8
NE 9-3	33.9
NE 9-4	127.0
NE 10-1	109.8
NE 10-2,3	
NE 10-4	68.9
NE 10-5	150.9
NE 11-1	55.0
NE 11-2	136.1
NE 11-3	362.0
NE 11-4	
NE 12-1	322.3
NE 12-2	214.6
NE 12-3	25.7
NE 13-1	19.1
NE 14-1	
NE 15-1	1026.2
NE 16-1	1450.4
NE 17-1	1272.3
NE 110-1	1458.6
NE 110-2	1465.0
CE 1-1	
CE 1-2	
CE 1-3	27.8 388.1
CE 1-4	107.0
CE 1-5	19.7
CE 1-6	194.0
CE 1-7	
CE 1-8	
CE 2-1	
CE 2-2,3	641.1
CE 2-4	409.6
CE 2-5	89.4
CE 2-6	101.4
CE 3-1	231.9 535.4
CE 3-2	86.1 311.2
CE 4-1	990.5
CE 5-1	153.0
CE 6-1	128.3
CE 6-2	
CE 7-1	268.7
CE 8-1	761.6
CE 8-2	459.9
CE 8-3	
CE 8-4	379.8
CE 9-1	208.9
CE 9-2	979.7
CE 10-1	761.5
CE 11-1	379.1
CE 100-1	1467.6
CE 100-2	6896.9
CE 100-3	3311.3
CE 101,102,103	242.5

Project No.	Project Cost (Million Pesos)
BO 1-1	125.8
BO 1-2	293.1
BO 1-3	227.7
BO 1-4,5	215.8
BO 2-1	101.4
BO 2-2	164.2
BO 2-3	33.0
BO 2-4	413.1
BO 3-1	122.3
BO 3-2	164.2
BO 3-3,4	407.0
BO 4-1	429.6
BO 5-1	892.8
BO 6-1	462.7
BO 7-1	51.0
BO 8-1	11.0
SI 1-1	32.8
SI 1-2	141.5
SI 1-3	197.8
LE 1-1	337.7
LE 1-2	49.4 113.1
LE 1-3	33.6
LE 1-4	49.6 218.3
LE 1-5	118.9 656.6
LE 1-6	
LE 1-7	76.1
LE 1-8	169.8
LE 1-9	241.5
LE 1-10	126.8
LE 1-11	401.4
LE 1-12	108.2
LE 2-1	64.7 208.8
LE 2-2	261.3 825.0
LE 2-3	206.0
LE 2-4	265.3
LE 2-5	163.3
LE 3-1	825.9
LE 4-1	237.2
LE 5-1	
LE 6-1	
LE 6-2	1234.7
LE 6-3	764.5
LE 7-1	199.6
LE 7-2	354.5
LE 7-3	355.2
LE 7-4	120.1
LE 8-1	
LE 8-2	55.4
LE 8-3	55.9
LE 8-4	920.3
LE 8-5,6,7,8	
LE 8-9	82.5
LE 8-10	
LE 9-1,2	148.5
LE 10-1	150.7 270.8
LE 10-2	321.7
LE 10-3	610.9
LE 11-1	1732.3
LE 12-1	140.3
LE 12-2	268.3
LE 12-3	1138.1
LE 12-4	68.8
LE 13-1	1078.6
LE 13-2	855.8
LE 13-3	697.1
SA 1-1	243.1
SA 1-2	168.6
SA 1-3	641.6
SA 1-4	532.3
SA 1-5	796.9
SA 1-6	268.6
SA 1-7,8	799.8
SA 2-1	160.4
SA 2-2	452.0
SA 2-3	15.5
SA 2-4	363.1
SA 3-1	868.8
SA 3-2	337.3
SA 4-1	87.9
SA 4-2	109.6
SA 4-3	322.5
SA 5-1,2,3	1538.5
SA 6-1	1672.2
SA 6-2	284.7
SA 6-3	409.9
SA 6-4	979.2
SA 6-5	428.6
SA 6-6	154.0
SA 6-7	443.9
SA 6-8	546.4
SA 7-1	236.2
SA 8-1	280.2
SA 8-2	764.1
SA 8-3	1803.9
SA 8-4	994.2
SA 9-1	259.7
SA 9-2	868.0
SA 9-3	1305.2
SA 9-4	257.7

Legend:

Project No.	*Proj. Cost*	*(Schedule other than Widening)* *(Widening Schedule)*

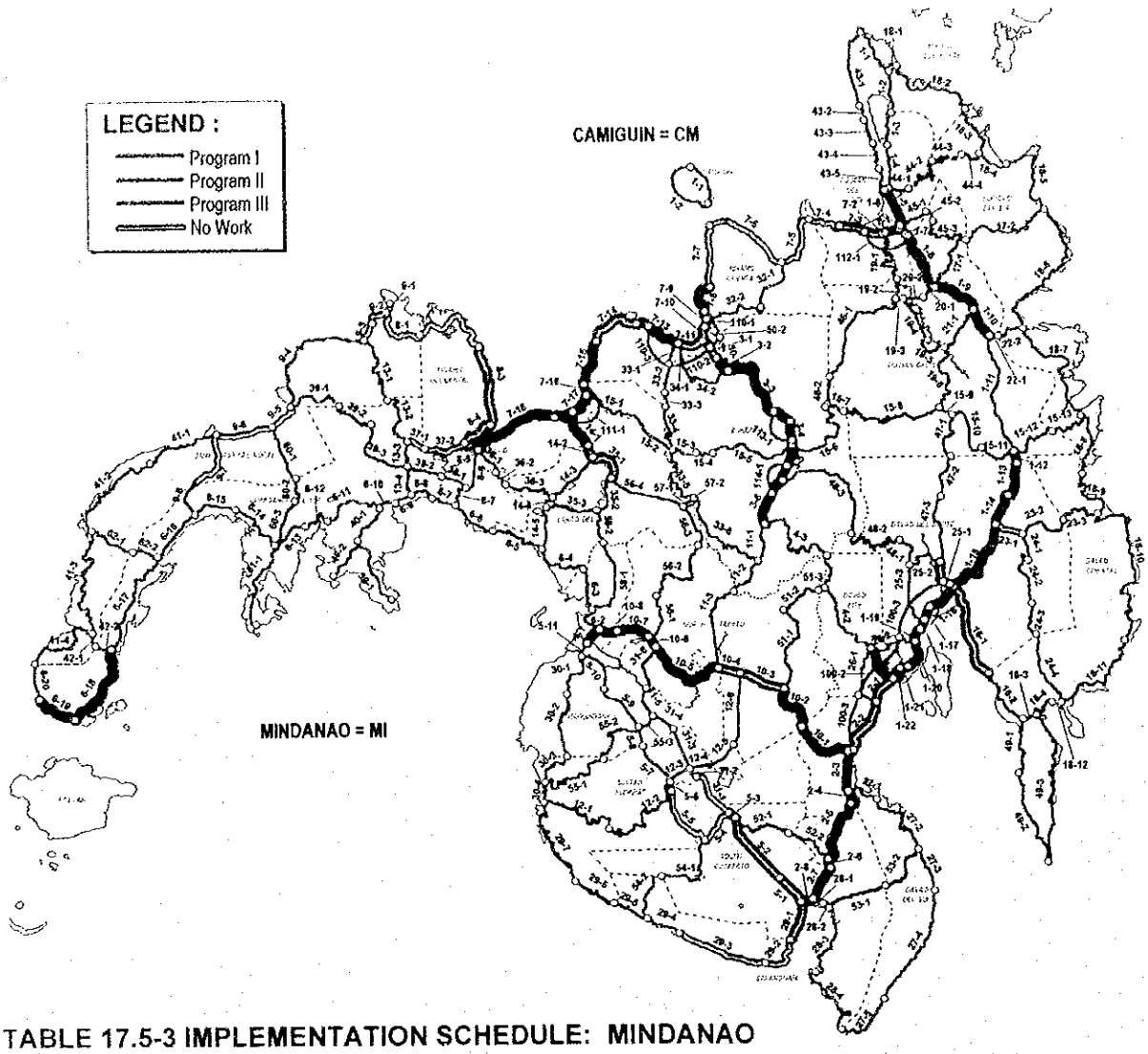


TABLE 17.5-3 IMPLEMENTATION SCHEDULE: MINDANAO

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year Program 2011 - 2016
CM 1-1	170.0			
CM 1-2	370.6			
MI 1-1	219.4			
MI 1-2	205.1			
MI 1-3	76.2			
MI 1-4	173.7			
MI 1-5	282.4			
	617.2			
MI 1-6	18.9			
	46.4			
MI 1-7	25.6			
	57.0			
MI 1-8	561.0			
	953.4			
MI 1-9,10	704.0			
MI 1-11	696.0			
MI 1-12	99.1			
	229.7			
MI 1-13	280.5			
	557.6			
MI 1-14	341.0			
	411.2			
MI 1-15	836.0			
	956.2			
MI 1-16	500.5			
	415.9			
MI 1-17	116.2			
MI 1-18	41.0			
	87.9			
MI 1-19	141.1			
MI 1-20	293.8			
MI 1-21	133.4			
MI 1-22	221.3			
MI 2-1	311.3		(No Work)	
MI 2-2	681.3		(No Work)	
MI 2-3	396.4		(No Work)	
MI 2-4	216.2		(No Work)	
MI 2-5	803.7		(No Work)	
MI 2-6	92.8		(No Work)	
MI 2-7	340.4		(No Work)	

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year P 2011 - 20
MI 2-8	5.5		(No Work)	
MI 3-1	281.3		(No Work)	
MI 3-2	84.9			
	240.8			
MI 3-3	421.5			
	1305.6			
MI 3-4	81.7			
	220.5			
MI 3-5	127.6			
	411.4			
MI 3-6	229.5			
	585.7			
MI 4-1	452.6		(No Work)	
MI 4-2,3	807.8			
MI 5-1	324.2		(No Work)	
MI 5-2	681.7		(No Work)	
MI 5-3	56.9		(No Work)	
MI 5-4,5			(No Work)	
MI 5-6	40.7		(Later Years)	
MI 5-7	187.8			
MI 5-8	99.2			
MI 5-9	280.2			
MI 5-10	243.2			
MI 5-11	74.1			
MI 6-1	267.9			
	486.8			
MI 6-2	91.9			
MI 6-3	235.5			
MI 6-4	242.4			
MI 6-5,6	1424.5			
MI 6-7,8-12	784.6			
MI 6-13,14	633.9			
MI 6-15	284.8			
MI 6-16,17	1372.8			
MI 6-18	991.1			
	1064.4			
MI 6-19	146.1			
	519.6			
MI 6-20	335.5			
MI 7-1	40.0			
	243.7			
MI 7-2			(No Work)	
MI 7-3	60.6		(No Work)	
MI 7-4,5,6,7			(No Work)	
MI 7-8	66.8			
	206.1			

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year Program 2011 - 2016
MI 7-9	41.0			
	93.6			
MI 7-10			(No Work)	
	335.5			
MI 7-11			(No Work)	
	207.6			
MI 7-12			(No Work)	
MI 7-13	32.9			
	463.1			
MI 7-14			(No Work)	
	560.0			
MI 7-15	35.5			
	533.7			
MI 7-16	49.8			
	134.1			
MI 7-17	50.3			
	370.8			
MI 7-18	322.8			
	1465.9			
MI 8-1,2			(No Work)	
MI 8-3,4			(No Work)	
	1470.6			
MI 8-5	1091.6			
MI 8-6	133.1			
MI 8-7	131.8			
MI 9-1,2,3			(No Work)	
MI 9-4	191.0			
MI 9-5,6,7			(No Work)	
MI 9-8	139.9			
MI 10-1	294.6			
	747.9			
MI 10-2	110.5			
	549.3			
MI 10-3			(No Work)	
	414.3			
MI 10-4			(No Work)	
	194.2			
MI 10-5	294.2			
	916.8			
MI 10-6	31.7			
	135.9			
MI 10-7	190.5			
	328.8			
MI 10-8	89.7			
	237.3			
MI 11-1,2	517.0			
MI 11-3	641.8			
MI 12-1	1076.8			
MI 12-2	1529.4			
MI 12-3	100.2			
MI 12-4	75.6			
MI 12-5	98.8			
MI 12-6	363.2			
MI 13-1	924.4			
MI 13-2	559.4			
MI 13-3	63.8			
MI 13-4	133.3			
MI 14-1	72.0			
	465.2			
MI 14-2			(No Work)	
	200.9			
MI 14-3	233.4			
MI 14-4	75.8			
MI 14-5	216.0			
MI 15-1	998.8			
MI 15-2	613.5			
MI 15-3	340.2			
MI 15-4	430.6			
MI 15-5	945.6			
MI 15-6	982.4			
MI 15-7	411.2			
MI 15-8	2594.6			
MI 15-9	144.0			
MI 15-10	690.9			
MI 15-11	213.5			
MI 15-12	601.8			
MI 15-13	515.3			
MI 16-1			(No Work)	
	448.8			
MI 16-2	210.9			
MI 16-3	36.1			
MI 16-4	204.3			
MI 17-1	865.8			
MI 17-2	1240.1			
MI 18-1			(No Work)	
MI 18-2	926.3			
MI 18-3	894.5			
MI 18-4	312.2			
MI 18-5	1017.1			
MI 18-6	1741.5			
MI 18-7	1185.7			
MI 18-8	820.0			
MI 18-9	802.3			
MI 18-10	1816.6			
MI 18-11	1083.9			
MI 18-12	44.2			
MI 19-1	1180.1			
MI 19-2	59.1			
MI 19-3	143.7			
MI 19-4	734.1			
MI 19-5	399.5			
MI 19-6	921.6			
MI 20-1	62.6			
MI 20-2	216.7			
MI 21-1	221.2			
MI 22-1	35.4			
MI 22-2	147.2			
MI 23-1			(No Work)	
MI 23-2	844.0			
MI 23-3	623.0			
MI 24-1	205.7			
MI 24-2	707.5			
MI 24-3	469.6			
MI 24-4	990.2			
MI 25-1			(No Work)	
	280.9			
MI 25-2	304.3			
MI 25-3	145.4			
MI 26-1	680.7			

Project No.	Project Cost (Million Pesos)	First 6-year Program 1999 - 2004	Second 6-year Program 2005 - 2010	Third 6-year Program 2011 - 2016
MI 26-2	554.8			
MI 27-1	244.5			
MI 27-2	737.5			
MI 27-3	515.1			
MI 27-4	2100.5			
MI 27-5	1132.3			
MI 28-1			(No Work)	
MI 28-2			(No Work)	
MI 28-3	302.8			
MI 26-4	1347.4			
MI 29-1			(No Work)	
	321.0			
MI 29-2,3			(No Work)	
MI 29-4	8.5			
MI 29-5	384.2			
MI 29-6	618.4			
MI 29-7	1394.3			
MI 30-1	479.6			
MI 30-2	1098.2			
MI 30-3	462.9			
MI 30-4	247.2			
MI 31-1			(No Work)	
MI 31-2	60.1			
MI 31-3	324.3			
MI 31-4	253.7			
MI 31-5	291.2			
MI 31-6	353.8			
MI 32-1	798.3			
MI 32-2	602.0			
MI 33-1,2	456.2			
MI 33-3	112.6			
MI 33-4	459.6			
MI 33-5	883.8			
MI 33-6	1005.4			
MI 34-1	135.5			
MI 34-2	660.7			
MI 35-1			(No Work)	
	77.9			
MI 35-2	128.4			
MI 35-3	798.9			
MI 36-1	120.6			
MI 36-2	186.9			
MI 36-3	729.1			
MI 37-1,2			(No Work)	
MI 38-1	8.7			
MI 38-2	275.0			
MI 39-1	792.5			
MI 39-2	381.1			
MI 39-3	920.8			
MI 40-1	170.6			
MI 40-2	335.1			
MI 41-1	688.1			
MI 41-2	1642.5			
MI 41-3	2315.9			
MI 41-4	1387.2			
MI 42-1	240.4			
MI 42-2	300.3			
MI 43-1	837.7			
MI 43-2	264.4		(Later Years)	
MI 43-3	303.4		(Later Years)	
MI 43-4	455.7		(Later Years)	
MI 43-5	531.1		(Later Years)	
MI 44-1,2,3	2740.6		(Later Years)	
MI 44-4	246.7			
MI 45-1	299.5			
MI 45-2	260.4			
MI 45-3	1192.9			
MI 46-1	1532.3			
MI 46-2	544.7			
MI 47-1	515.9			
MI 47-2	700.7			
MI 47-3	697.5			
MI 48-1	396.7			
MI 48-2	1999.7			
MI 48-3	1159.4			
MI 49-1	504.5			
MI 49-2	1366.4			
MI 49-3	3051.2			
MI 50-1,2	823.6			
MI 51-1	1412.2			
MI 51-2	673.3			
MI 51-3	99.7			
MI 52-1	796.4			
MI 52-2	752.9			
MI 53-1,2	1540.1		(Later Years)	
MI 54-1	1036.6			
MI 54-2	931.9			
MI 55-1	1120.1			
MI 55-2	983.0			
MI 55-3	227.4			
MI 56-1	457.3			
MI 56-2	1109.7			
MI 56-3	555.1			
MI 56-4	933.8			
MI 57-1,2			(No Work)	
MI 58-1	804.3			
MI 58-2	489.6			
MI 59-1	637.6			
MI 60-1	885.6			
MI 60-2	423.5			
MI 60-3	445.1			
MI 61-1	1070.7			
MI 62-1	759.7			
MI 62-2	561.2			
MI 100-1	1833.8			
MI 100-2	4730.7			
MI 100-3	3293.0			
MI 101-1,102-106	334.8			
MI 110-1	677.0			
MI 110-2	2457.4			
MI 110-3	707.7			
MI 111-1	1335.2			
MI 112-1	681.8			
MI 113-1	774.2			
MI 114-1	215.8			

Legend:

Project No.	Proj. Cost	(Schedule other then Widening) (Widening Schedule)

17.5.3 Road Network Development

Road network development under Program I, II and III is shown in Figure 17.5-2.

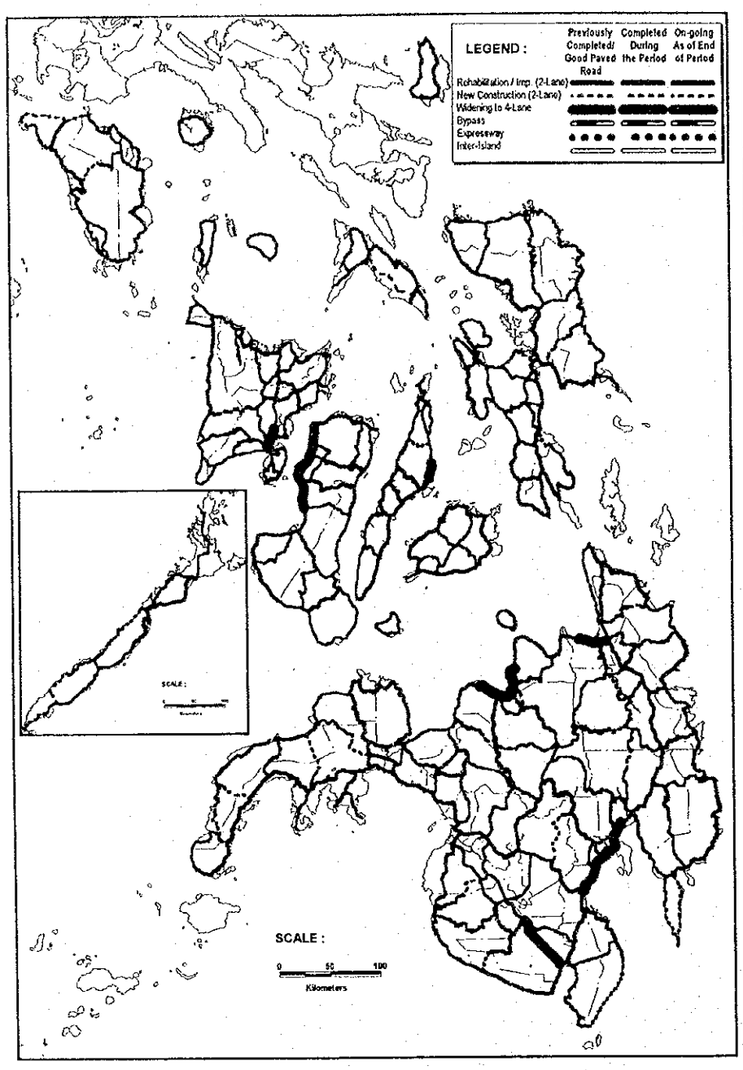
North-South Backbone

- All sections of NS backbones will be rehabilitated under Program I, except southern segment of Mindoro Island which will be improved/constructed under Program II.
- Capacity expansion of NS backbones will be implementated in and around Iloilo City, Bacolod City, Cebu City, Davao City, Cagayan de Oro City, Gen. Santos City and Butuan City under Program I. Other capacity expansion projects will be implemented according to traffic situation and successively implemented under Program II and III.

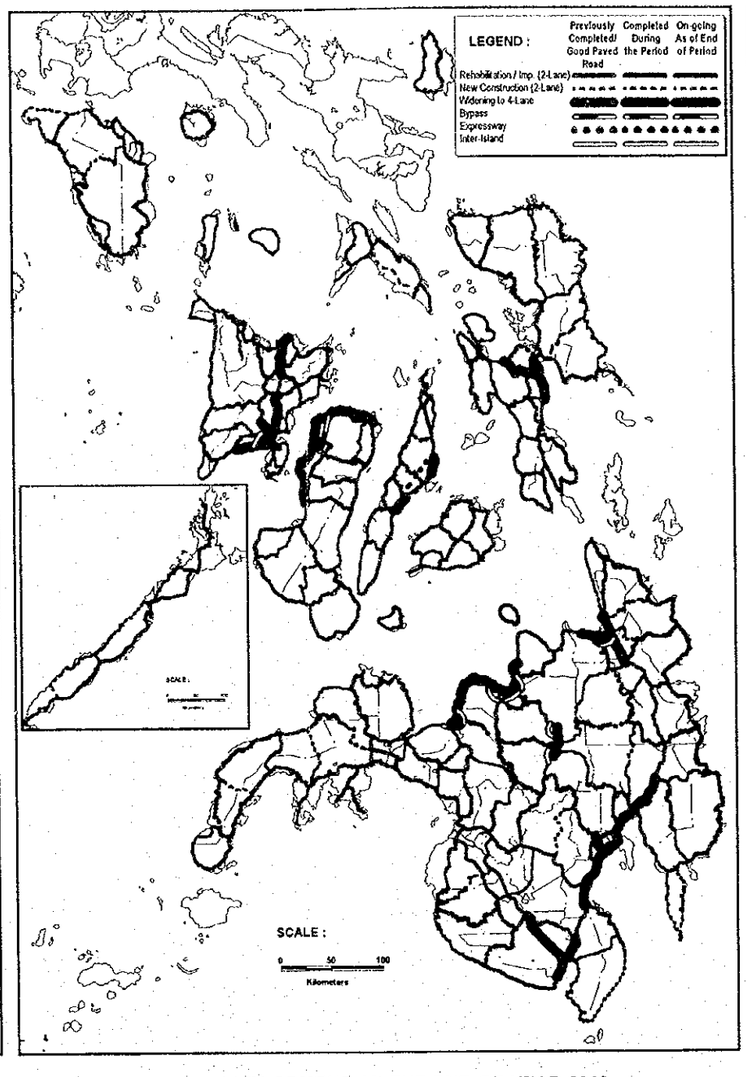
East-West Lateral

- Existing EW laterals to be rehabilitated/improved under Program I are as follows:
  - Panay East - West Link Road (Panay Island)
  - Bacolod - D.S. Benedict - San Carlos Road (Negros Island)
  - Tanjay - Sta. Catalina Road (Negros Island)
  - Cebu Transcentral Road (Negros Island)
  - Carcar - Barili - Dumanjug Road (Cebu Island)
  - South Samar Coastal Road (Samar Island)
  - Cotabato - Digos Road (Mindanao Island)
  - Maramag - Kibawe - Kabacan Road (Mindanao Island)
  - Katipunan - S. Osmeña - Molave - Labangan Road (Mindanao Island)
  - Western and Eastern Sections of Mindanao East - West Lateral Road (Mindanao Island)
  - Western Section of Bayugan - Tandag Road (Mindanao Island)

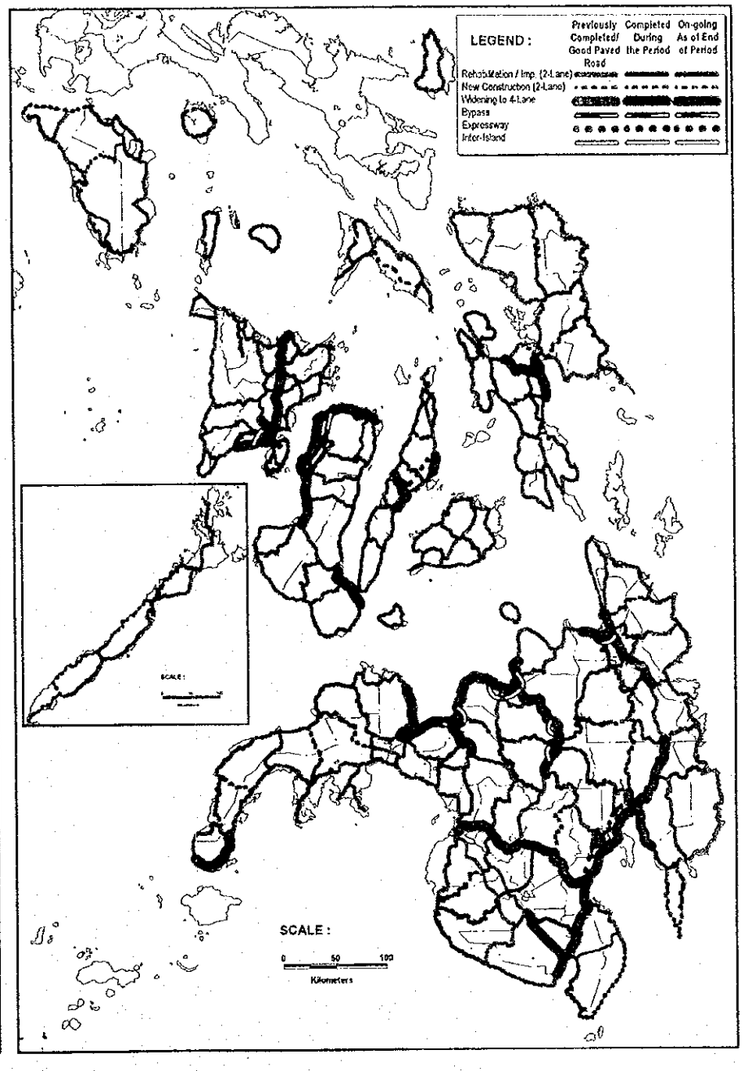
- Existing and new EW laterals to be improved/constructed under Program II are as follows:
  - Hinigaran - Guinhulngan Road (Negros Island)
  - Catmon - Tuburan Road (Cebu Island)
  - Loay - Interior Road (Bohol)
  - Leyte Northern Coast Road (Leyte Island)
  - Catarman - Calbayog Road (Samar Island)
  - A Portion of Kalamansig - Isulan - Matulan Road (Mindanao Island)



ROAD DEVELOPMENT AT THE END OF YEAR 2004



ROAD DEVELOPMENT AT THE END OF YEAR 2010



ROAD DEVELOPMENT AT THE END OF YEAR 2016

First 6-Year Investment : 58.0 Billion Pesos
(1999-2004)
Program I PHYSICAL TARGET : 4,394 km (*)
(*) Many projects will be completed in the second 6-Year Period

Second 6-Year Investment : 107.2 Billion Pesos
(2005-2010)
Program II PHYSICAL TARGET : 4,269 km

Third 6-Year Investment : 148.2 Billion Pesos
(2011-2016)
Program III PHYSICAL TARGET : 5,843 km

FIGURE 17.5-2 ROAD DEVELOPMENT AT THE END OF EACH 6-YEAR PERIOD

- Most of Bukidnon Section and a part of Agusan Del Sur Sections of Mindanao

  East-West Lateral Road (Mindanao Island)
- Remaining Section of Bayugan - Tandag Road (Mindanao Island)

• Remaining EW laterals would be improved/constructed under Program III, except some cross-mountain sections in Mindoro Island and Panay Island.

Strategic Road A

• Large scale projects of Strategic Road A which are to be started under Program I and completed under Program I or II are as follows:

  - Marinduque Circumferential Road (Marinduque Island)
  - Mindoro West Coast Road (Mindoro Island)
  - Palawan North Road (Palawan Island)
  - Palawan South Road (Palawan Island)
  - Antique Coastal Road (Panay Island)
  - Kabankalan - Basay Road (Negros Island)
  - San Enrique - La Castellana - Vallehermoso Road (Negros Island)
  - Northern Section of Samar Pacific Coast Road (Samar Island)
  - Surigao - Davao Coastal Road (Mindanao Island)
  - Cotabato - Upi - Kalamansig Road (Mindanao Island)
  - Cagayan de Oro - Talakag - Kibawe Road (Mindanao Island)
  - Lake Lanao Circumferential Road (Mindanao Island)
  - Tubod - Madamba Road (Mindanao Island)
  - Dumalinao - V.A. Sagun Road (Mindanao Island)Most
  - Most Sections of Liloy - Siocon - Zamboanga Road (Mindanao Island)
  - About ½ of Compostela - Mati Road (Mindanao Island)
  - About ½ of Maramag - Malita Kalipagan Road (Mindanao Island)
  - Gingoog - Villaneuva Road (Mindanao Road)

• Major projects of Strategic Road which are to be started under Program II and completed under Program II or III are as follows:

  - Mindoro North Coast Road (Mindoro Island)
  - Iloilo - Antique Road (Panay Island)
  - Basay - Dumaguete Road (Negros Island)
  - Tolda - Aroroy - Lagta Road (Masbate Island)
  - North - East Leyte Inland Road (Leyte Island)

- Davao City Outer Circumferential Road (Mindanao Island)
- Koronadal - Tacurong - Midsayap Road (Mindanao Island)
- Cagayan - de Oro - Manolo Fortich Road (Mindanao Island)
- Sindangan - R. Magsaysay Road (Mindanao Island)
- Sibuco - Zamboanga Road (Mindanao Island)

Strategic Road B

- Major projects of Strategic Road B which are to be started under Program I and completed under Program I or II are as follows:

  - Barotac - San Rafael - Dumarao Road (Panay Island)
  - Southern Leyte Pacific Coast Road (Leyte Island)
  - Surrallah - Lake Cebu - Maitum Road (Mindanao Island)

- Major projects of Strategic Road B which are to be started under Program II and completed under Program II or III are as follows:

  - Tapaz - Cuartero - Pontevedra Road (Panay Island)
  - Malungon - Tampakan Road (Mindanao Island)
  - Libungan - Banisilan - Wao - Malanod Road (Mindanao Island)
  - Parang - Lumbayanague Road (Mindanao Island)
  - San Miguel - Tabina Road (Mindanao Island)

Expressways

- Cebu City Expressway under Program II to be completed before 2011
- Davao City Expressway under Program III to be completed before 2015

Bypasses

- Iloilo Circumferential Road under Program II to be completed before 2013
- Bacolod Parallel Road under Program II and III to be completed before 2012 (Northern Section) and 2015 (Southern Section)
- Cagayan de Oro Bypass under Program II to be completed before 2011
- Iligan Bypass under Program II to be completed before 2009
- Butuan Bypass under Program II to be completed before 2010
- Malaybalan Bypass under Program II to be completed before 2010
- Valencia Bypass under Program II to be completed before 2010

Inter-Island Link Project

- Iloilo - Guimaras Link under Program II to be completed before 2014

17.6 TOTAL AND ANNUAL INVESTMENT

Total investment required for each 6-year period and estimated possible investment amount (refer to Chapter 10) are summarized in Table 17.6-1.

Total investment requirement including expressways is 313.4 Billion pesos comprising of the first, second and third 6-year period of 58.0 Billion pesos, 107.2 Billion pesos, and 148.2 Billion pesos, respectively. Second and third 6-year period exceeds the possible investment amount of even the high assumption case.

Total investment requirement excluding expressways is 291.4 Billion pesos comprising of the first, second and third 6-year period of 57.7 Billion pesos, 94.4 Billion pesos and 139.4 Billion pesos, respectively. The first and second 6-year period investment requirement is within the possible investment amount of the medium assumption case, and the third 6-year period within the high assumption case.

In order to realize the two expressway projects, additional fund sources such as the private sector investment would be required, unless special road fund is raised.

TABLE 17.6-1 TOTAL INVESTMENT REQUIREMENT

(Unit: Billion Pesos at 1998 Constant Prices)

Period	Investment Requirement		Possible Investment Amount		
	Including Expressways	Excluding Expressways	Low	Medium	High
First 6-year Period (1994-2004)	58.040	57.652	53.200	59.300	66.600
Second 6-year Period (2005-2010)	107.218	94.410	89.300	94.400	104.400
Third 6-year Period (2011-2016)	148.196	139.352	126.500	132.900	145.600
Plan Period (1999-2016)	313.454	291.414	269.000	286.600	316.600

Annual investment requirement is shown in Table 17.6-2 and Figure 17.6-1.

TABLE 17.6-2 ANNUAL INVESTMENT REQUIREMENT

Unit: Billion Pesos (1998)

Year	Program I	Program II		Program III		TOTAL	
1999	5.021	-		-		5.021	
2000	7.488	0.018		-		7.506	
2001	7.029	0.036		-		7.065	
2002	9.070	0.311	(0.214)	-		9.381	(9.284)
2003	11.645	0.533	(0.339)	-		12.178	(11.984)
2004	16.052	0.837	(0.740)	-		16.889	(16.792)
Sub-Total	56.305	1.735	(1.347)	-		58.040	(57.652)
2005	10.718	5.037	(4.843)	-		15.755	(15.561)
2006	3.863	11.786	(11.034)	0.158	(-)	15.807	(14.897)
2007	0.961	17.482	(14.810)	0.079	(-)	18.522	(15.771)
2008	-	17.914	(15.242)	0.164	(-)	18.078	(15.242)
2009	-	17.497	(14.825)	0.493	(0.329)	17.990	(15.154)
2010	-	19.477	(16.805)	1.589	(0.980)	21.066	(17.785)
Sub-Total	15.542	89.193	(77.559)	2.483	(1.309)	107.218	(94.410)
2011	-	11.947		11.978	(9.767)	23.925	(21.714)
2012	-	8.044		18.412	(16.201)	26.456	(24.245)
2013	-	3.633		29.630	(27.419)	33.263	(31.052)
2014	-	-		28.993	(26.782)	28.993	(26.782)
2015	-	-		21.335		21.335	
2016	-	-		14.224		14.224	
Sub-Total	-	23.624		124.572	(115.728)	148.196	(139.352)
Grand Total	71.847	114.552	(102.530)	127.055	(117.037)	313.454	(291.414)

Note: Figure in ( ) excludes investment requirement for the expressways.

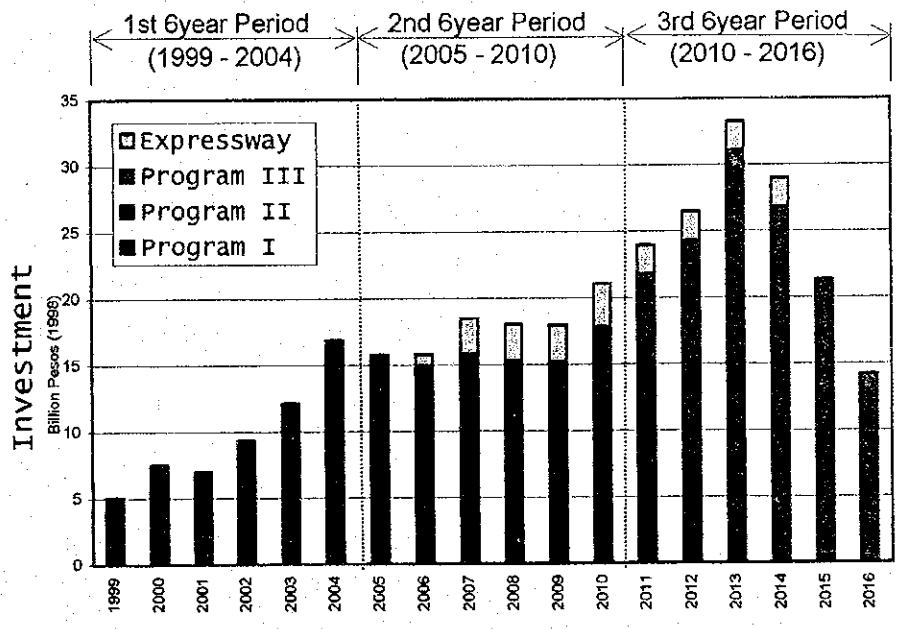


FIGURE 17.6-1 ANNUAL INVESTMENT REQUIREMENT