NO.	項　　目	単位	数 量	単 価 (Rp.)	金　額(Rp.)
2.	アクセス道路				
2.1	道路改良工事	Ls	1.00		220,900,000.00
2.2	新設道路及びフェンス	Ls	1.00		65,430,000.00
2.3	水抜工（排水施設）	Ls	1.00		20,200,000.00
2.4	橋　L=15,000 ; H=4,000	Ls	1.00		225,825,000.00
2.5	橋　L=10,000 ; H=3,000	Ls	1.00		82,180,000.00
2.6	構造物取り壊し	Ls	1.00		11,050,000.00
2.7	歩道　タイプ A	Ls	1.00		61,050,000.00
2.8	歩道　タイプ B	Ls	1.00		57,600,000.00
2.9	歩道　タイプ C	Ls	1.00		77,440,000.00
計 2					821,675,000.00

NO.	項　目	単位	数 量	単 価 (Rp.)	金　額(Rp.)
2.1	道路改良工事				
2.1.1	測量、杭打ち	Ls	1.00		3,600,000.00
2.1.2	排水工	Ls	1.00		33,600,000.00
2.1.3	表面仕上	m³	2,300.00	35,000.00	80,500,000.00
2.1.4	法面石積工 1:5	m³	860.00	120,000.00	103,200,000.00
小計 2.1					220,900,000.00
2.2	新設道及びフェンス				
2.2.1	測量、杭打ち	Ls	1.00		2,500,000.00
2.2.2	表面仕上	m³	710.00	35,000.00	24,850,000.00
2.2.3	法面石積工 1:5	m³	220.00	120,000.00	26,400,000.00
2.2.4	アングルスティール50,50,5 及び有刺鉄線フェンス	m²	160.00	73,000.00	11,680,000.00
小計 2.2					65,430,000.00
2.3	横断工（カルバート）				
2.3.1	測量、杭打ち	Ls	1.00		360,000.00
2.3.2	排水工	Ls	1.00		1,920,000.00
2.3.3	鉄筋カルバート（100cm ）	m²	32.00	560,000.00	17,920,000.00
小計 2.3					20,200,000.00
2.4	橋　L=15,000; W=4,000				
2.4.1	直接仮設工	Ls	1.00		2,700,000.00
2.4.2	排水工	Ls	1.00		8,500,000.00
2.4.3	床堀工	m³	181.00	14,000.00	2,534,000.00
2.4.4	埋戻し	m³	62.00	6,000.00	372,000.00
2.4.5	締固め	m³	48.00	35,000.00	1,680,000.00
2.4.6	基礎工	m³	53.00	120,000.00	6,300,000.00
2.4.7	鉄筋ケイソン(2.4 m)	m	10.00	1,100,000.00	11,000,000.00
2.4.8	ケイソン工	m	10.00	150,000.00	1,500,000.00
2.4.9	コンクリート工	m³	35.00	115,000.00	4,025,000.00
2.4.10	コンクリートK225	m³	136.00	267,500.00	36,380,000.00
2.4.11	鉄筋工	kg	42,200.00	1,700.00	71,740,000.00
2.4.12	スティールビーム	kg	16,220.00	4,700.00	76,234,000.00
2.4.13	橋梁工	m	30.00	90,000.00	2,700,000.00
小計 2.4					225,825,000.00
2.5	橋　L=10,000; W=3,000				
2.5.1	直接仮設工	Ls	1.00		2,400,000.00
2.5.2	排水工	Ls	1.00		5,600,000.00
2.5.3	掘削工	m³	114.00	14,000.00	1,596,000.00
2.5.4	埋戻し	m³	48.00	6,000.00	288,000.00
2.5.5	仕上工	m³	40.00	35,000.00	1,400,000.00
2.5.6	基礎工	m³	54.00	120,000.00	6,480,000.00
2.5.7	コンクリートK225	m³	36.00	267,500.00	9,630,000.00
2.5.8	鉄筋工	kg	11,160.00	1,700.00	18,972,000.00
2.5.9	ビーム組立工	kg	7,620.00	4,700.00	35,814,000.00
小計 2.5					82,180,000.00

NO.	項　　目	単位	数　量	単　価 (Rp.)	金　額(Rp.)
2.6	構造物取り壊し				
2.6.1	水門撤去	Ls	1.00		11,050,000.00
小計 2.6					11,050,000.00
2.7	歩道　タイプ A				
2.7.1	木道	m	185.00	330,000.00	61,050,000.00
小計 2.7					61,050,000.00
2.8	歩道　タイプ B				
2.8.1	木道	m	120.00	480,000.00	57,600,000.00
小計 2.8					57,600,000.00
2.9	歩道　タイプ C				
2.9.1	ココナッツ歩道	m	440.00	176,000.00	77,440,000.00
小計 2.9					77,440,000.00

NO.	項　　目	単位	数　量	単　価 (Rp.)	金　額(Rp.)
3.	苗畑				
3.1	直接仮設工事	Ls	1.00		5,200,000.00
3.2	排水工	Ls	1.00		12,400,000.00
3.3	床堀工	m^3	6,207.00	14,000.00	86,898,000.00
3.4	石積工	m^3	160.00	26,000.00	4,160,000.00
3.5	コンクリート工	m^3	185.00	41,000.00	7,585,000.00
3.6	コンクリート　1:3:5, 20cm　(厚)	m^3	325.00	267,500.00	86,937,500.00
3.7	床固工	m^3	620.00	120,000.00	7,440,000.00
3.8	被陰用フレーム設備　30,30, 3	ton	24.30	3,500,000.00	85,050,000.00
計　3					362,630,500.00

NO.	項　　目	単位	数量	金　額 (Rp.)	金　額(Rp.)
4.	関連施設				
4.1	仮設工事	Ls	1.00		4,600,000.00
4.2	埋戻し、締固め	m³	6,000.00	25,350.00	152,100,000.00
4.3	敷石	m²	920.00	99,000.00	91,080,000.00
4.4	施設回りの排水工	m	670.00	61,000.00	40,870,000.00
4.5	旗竿	unit	1.00		1,200,000.00
4.6	掲示板	unit	2.00	400,000.00	800,000.00
計	4				290,650,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
5.	事務所				
5.1	直接仮設工	Ls	1.00		8,300,000.00
5.2	土工事	Ls	1.00		6,805,500.00
5.3	基礎・構造工	Ls	1.00		53,754,000.00
5.4	壁敷設工	Ls	1.00		34,097,200.00
5.5	床敷設工	Ls	1.00		29,605,400.00
5.6	木製建具・屋根・天井敷設工	Ls	1.00		113,191,400.00
5.7	建具造作工	Ls	1.00		11,672,390.00
5.8	建具金物	Ls	1.00		10,348,500.00
5.9	塗装工	Ls	1.00		25,306,000.00
5.10	衛生工事	Ls	1.00		8,790,000.00
計　5					301,870,390.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
5.1	直接仮設工				
5.1.1	直接仮設工	Ls	1.00		8,300,000.00
小計	5.1				8,300,000.00
5.2	土工事				
5.2.1	根伐	m³	208.00	14,000.00	2,912,000.00
5.2.2	埋戻し	m³	37.70	6,000.00	226,200.00
5.2.3	盛土	m³	78.00	25,350.00	1,977,300.00
5.2.4	敷砂	m³	65.00	26,000.00	1,690,000.00
小計	5.2				6,805,500.00
5.3	軀体工				
5.3.1	基礎工　1:5	m³	124.80	120,000.00	14,976,000.00
5.3.2	コンクリート（鉄筋構造）	m³	38.60	937,500.00	36,187,500.00
5.3.3	補助コンクリート（鉄筋）	m³	3.30	785,000.00	2,590,500.00
小計	5.3				53,754,000.00
5.4	壁敷設工				
5.4.1	レンガ　1:2	m³	12.60	180,000.00	2,268,000.00
5.4.2	レンガ　1:5	m³	92.30	172,000.00	15,875,600.00
5.4.3	しっくい　1:2	m²	208.00	6,500.00	1,352,000.00
5.4.4	しっくい　1:5	m²	1,508.00	5,700.00	8,595,600.00
5.4.5	セメント表面仕上げ	m²	1,716.00	3,500.00	6,006,000.00
小計	5.4				34,097,200.00
5.5	床敷設工				
5.5.1	テラゾータイル 30 ×30	m²	400.00	45,300.00	18,120,000.00
5.5.2	陶器質タイル20×20(便所)	m²	43.00	48,800.00	2,098,400.00
5.5.3	巾木タイル5 ×30(テラゾー)	m	206.00	9,000.00	1,854,000.00
5.5.4	半磁器質タイル　11 ×11	m²	162.00	46,500.00	7,533,000.00
小計	5.5				29,605,400.00
5.6	木製建具・屋根・天井敷設工				
5.6.1	戸・建具枠	m³	7.90	1,570,000.00	12,403,000.00
5.6.2	屋根トラス	m³	35.00	1,570,000.00	54,950,000.00
5.6.3	垂木	m²	875.00	18,000.00	15,750,000.00
5.6.4	鼻隠し	m	100.00	21,200.00	2,120,000.00
5.6.5	樋	m	12.00	50,200.00	602,400.00
5.6.6	屋根瓦	m²	875.00	10,800.00	9,450,000.00
5.6.7	棟瓦	m	85.00	18,000.00	1,530,000.00
.6.8	アスベストセメント（天井）	m²	495.00	27,800.00	13,761,000.00
5.6.9	廻り縁	m	325.00	6,000.00	1,950,000.00
5.6.10	棟飾り（バリ）	Nos	6.00	112,500.00	675,000.00
小計	5.6				113,191,400.00

NO.	項　　目	単位	数量	単　価（Rp.）	金　額(Rp.)
5.7	建具造作				
5.7.1	扉（チーク）	m²	24.60	44,000.00	1,082,400.00
5.7.2	窓わく	m²	27.30	40,300.00	1,100,190.00
5.7.3	ガラス5mm	m²	91.00	40,800.00	3,712,800.00
5.7.4	壁用合板	m²	65.00	32,900.00	2,138,500.00
5.7.5	カーテンボックス	m	61.10	35,000.00	2,138,500.00
5.7.6	扉・窓	Nos	1.00	1,500,000.00	1,500,000.00
小計	5.7				11,672,390.00
5.8	建具金物				
5.8.1	扉用溝	Nos	21.00	76,000.00	1,596,000.00
5.8.2	扉・窓用丁番	Nos	315.00	6,500.00	2,047,000.00
5.8.3	窓用とめ金用溝	Nos	126.00	19,000.00	2,394,000.00
5.8.4	窓用とめ金	Nos	126.00	6,500.00	819,000.00
5.8.5	開閉窓5mm	Nos	180.00	19,400.00	3,492,000.00
小計	5.8				10,348,500.00
5.9	塗装工				
5.9.1	壁塗装	m²	1,720.00	8,800.00	15,136,000.00
5.9.2	天井塗装	m²	495.00	10,000.00	4,950,000.00
5.9.3	クリアーラッカー	m²	35.00	12,000.00	420,000.00
5.9.4	木部塗装	m²	400.00	12,000.00	4,800,000.00
小計	5.9				25,306,000.00
5.10	衛生工事				
5.10.1	洋式便器	Nos	2.00	1,200,000.00	2,400,000.00
5.10.2	中国式便器	Nos	5.00	260,000.00	1,300,000.00
5.10.3	小便器	Nos	3.00	260,000.00	780,000.00
5.10.4	洗面器	Nos	3.00	650,000.00	1,950,000.00
5.10.5	シャワー	Nos	1.00	260,000.00	260,000.00
5.10.6	水そう	Nos	5.00	260,000.00	1,300,000.00
5.10.7	水道蛇口	Nos	8.00	100,000.00	800,000.00
小計	5.10				8,790,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
6.	実験棟				
6.1	直接仮設工	Ls	1.00		2,000,000.00
6.2	土工	Ls	1.00		1,909,115.00
6.3	躯体工	Ls	1.00		9,858,250.00
6.4	壁敷設工	Ls	1.00		7,790,440.00
6.5	床敷設工	Ls	1.00		5,979,300.00
6.6	木製建具・屋根・天井敷設工	Ls	1.00		22,386,700.00
6.7	建具造作工	Ls	1.00		3,591,500.00
6.8	建具金物	Ls	1.00		2,336,900.00
6.9	塗装工	Ls	1.00		5,072,000.00
6.10	衛生工事	Ls	1.00		7,400,000.00
計　6					68,324,205.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
6.1	直接仮設工				
6.1.1	直接仮設工	Ls	1.00		2,000,000.00
小計	6.1				2,000,000.00
6.2	土工				
6.2.1	根伐	m³	62.40	14,000.00	873,600.00
6.2.2	埋戻し	m³	16.90	6,000.00	101,400.00
6.2.3	盛土	m³	18.90	25,350.00	479,115.00
6.2.4	敷砂	m³	17.50	26,000.00	455,000.00
小計	6.2				1,909,115.00
6.3	軀体工				
6.3.1	基礎工 1:5	m³	39.00	120,000.00	4,680,000.00
6.3.2	コンクリート（鉄筋構造）	m³	4.10	937,500.00	3,843,750.00
6.3.3	補助コンクリート（鉄筋）	m³	1.70	785,000.00	1,334,500.00
小計	6.3				9,858,250.00
6.4	壁敷設工				
6.4.1	レンガ　1:2	m³	2.70	180,000.00	486,000.00
6.4.2	レンガ　1:5	m³	19.50	172,000.00	3,354,000.00
6.4.3	しっくい　1:2	m²	348.40	6,500.00	2,264,600.00
6.4.4	しっくい　1:5	m²	50.70	5,700.00	288,990.00
6.4.5	セメント表面仕上げ	m²	399.10	3,500.00	1,396,850.00
小計	6.4				7,790,440.00
6.5	床敷設工				
6.5.1	コンクリート敷1:3:5	m²	72.00	7,500.00	540,000.00
6.5.2	テラゾータイル　30×30	m²	96.00	45,300.00	4,348,800.00
6.6.3	巾木タイル　15×30	m	54.00	9,000.00	486,000.00
6.6.4	半磁器質タイル　11×11	m³	13.00	46,500.00	604,500.00
小計	6.5				5,979,300.00
6.6	木製建具・屋根・天井敷設工				
6.6.1	戸・建具枠	m³	0.60	1,570,000.00	942,000.00
6.6.2	屋根トラス	m³	4.83	1,570,000.00	7,583,100.00
6.6.3	垂木	m²	300.00	18,000.00	5,400,000.00
6.6.4	鼻隠し	m	40.00	21,200.00	848,000.00
6.6.5	屋根瓦	m²	300.00	10,800.00	3,240,000.00
6.6.6	棟瓦	m	45.00	18,000.00	810,000.00
6.6.7	合板（天井）	m²	112.00	27,800.00	3,113,600.00
6.6.8	棟飾り（バリ式）	Nos	4.00	112,500.00	450,000.00
小計	6.6				22,386,700.00

NO.	項　　目	単位	数量	単　価（Rp.）	金　額(Rp.)
6.7	建具造作工				
6.7.1	扉（チーク材）	m²	57.60	44,000.00	2,534,400.00
6.7.2	窓わく	m²	9.00	40,300.00	362,700.00
6.7.3	ガラス　3mm	m²	14.40	26,000.00	374,400.00
6.7.4	カーテンボックス	m	16.00	20,000.00	320,000.00
小計	6.7				3,591,500.00
6.8	建具金物				
6.8.1	扉用溝	Nos	3.00	76,000.00	228,000.00
6.8.2	扉・窓用丁番	Nos	49.00	6,500.00	318,500.00
6.8.3	窓用とめ金用溝	Nos	20.00	19,000.00	380,000.00
6.8.4	窓用とめ金	Nos	20.00	6,500.00	130,000.00
6.8.5	開閉窓5mm	Nos	66.00	19,400.00	1,280,400.00
小計	6.8				2,336,900.00
6.9	塗装工				
6.9.1	壁塗装	m²	400.00	8,800.00	3,520,000.00
6.9.2	天井塗装	m²	112.00	10,000.00	1,120,000.00
6.9.3	クリアーラッカー	m²	16.00	12,000.00	192,000.00
6.9.4	木部塗装	m²	20.00	12,000.00	240,000.00
小計	6.9				5,072,000.00
6.10	衛生工事				
6.10.1	換気扇	Nos	1.00	2,200,000.00	2,200,000.00
6.10.2	陶器質タイル流し台	Nos	3.00	1,600,000.00	4,800,000.00
6.10.3	水道蛇口	Nos	4.00	100,000.00	400,000.00
小計	6.10				7,400,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
7.	車庫・倉庫				
7.1	直接仮設工	Ls	1.00		1,100,000.00
7.2	土工	Ls	1.00		1,901,835.00
7.3	軀体工	Ls	1.00		10,282,140.00
7.4	壁敷設工	Ls	1.00		2,701,050.00
7.5	床敷設工	Ls	1.00		3,148,500.00
7.6	木製建具・屋根・天井敷設工	Ls	1.00		17,767,000.00
7.7	建具造作工	Ls	1.00		734,380.00
7.8	建具金物	Ls	1.00		1,255,900.00
7.9	塗装工	Ls	1.00		2,113,600.00
計　7					41,004,405.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
7.1	直接仮設工				
7.1.1	直接仮設工	Ls	1.00		1,100,000.00
小計	7.1				1,100,000.00
7.2	土工				
7.2.1	根伐	m³	65.00	14,000.00	910,000.00
7.2.2	埋戻し	m³	18.20	6,000.00	109,200.00
7.2.3	盛土	m³	22.10	25,350.00	560,235.00
7.2.4	敷砂	m³	12.40	26,000.00	322,400.00
小計	7.2				1,901,835.00
7.3	軀体工				
7.3.1	基礎工 1:5	m³	39.00	120,000.00	4,680,000.00
7.3.2	コンクリート（鉄筋構造）	m³	4.80	937,500.00	4,500,000.00
7.3.3	補助コンクリート（鉄筋）	m³	1.404	785,000.00	1,102,140.00
小計	7.3				10,282,140.00
7.4	壁敷設工				
7.4.1	レンガ　1:2	m³	1.30	180,000.00	234,000.00
7.4.2	レンガ　1:5	m³	10.50	172,000.00	1,806,000.00
7.4.3	しっくい　1:2	m²	18.90	6,500.00	122,850.00
7.4.4	しっくい　1:5	m²	58.50	5,700.00	333,450.00
7.4.5	セメント表面仕上げ、	m²	58.50	3,500.00	204,750.00
小計	7.4				2,701,050.0
7.5	床敷設工				
7.5.1	コンクリート敷1:3:5	m²	114.00	7,500.00	855,000.00
7.5.2	テラゾータイル　30×30	m²	114.00	6,500.00	741,000.00
7.5.3	巾木タイル　15×30	m²	30.00	45,300.00	1,359,000.00
7.5.4	半磁器質タイル　11×11	m	21.50	9,000.00	193,500.00
小計	7.5				3,148,500.00
7.6	木質建具・屋根・天井敷設工				
7.6.1	戸・建具枠	m³	1.10	1,570,000.00	1,727,000.00
7.6.2	屋根トラス	m³	2.80	1,570,000.00	4,396,000.00
7.6.3	垂木	m²	180.00	18,000.00	3,240,000.00
7.6.4	鼻隠し	m	56.00	21,200.00	1,187,200.00
7.6.5	屋根瓦	m	180.00	10,800.00	1,944,000.00
7.6.6	棟瓦	m²	20.00	18,000.00	360,000.00
7.6.7	アスベストセメント（天井）	m	156.00	27,800.00	4,336,800.00
7.6.8	廻り縁	m	96.00	6,000.00	576,000.00
小計	7.6				17,767,000.00

NO.	項　　目	単位	数量	単　価（Rp.）	金　額(Rp.)
7.7	建具造作工				
7.7.1	扉（チーク材）	m²	1.90	44,000.00	83,600.00
7.7.2	窓枠	m²	10.60	40,300.00	427,180.00
7.7.3	ガラス 3 mm	m²	8.60	26,000.00	223,600.00
小計	7.7				734,380.00
7.8	建具金物				
7.8.1	扉用溝	Nos	1.00	76,000.00	76,000.00
7.8.2	扉・窓用丁番	Nos	27.00	6,500.00	175,500.00
7.8.3	窓用とめ金用溝	Nos	12.00	19,000.00	228,000.00
7.8.4	窓用とめ金	Nos	12.00	6,500.00	78,000.00
7.8.5	開閉窓5mm	Nos	36.00	19,400.00	698,400.00
小計	7.8				1,255,900.00
7.9	塗装工				
7.9.1	壁塗装	m²	22.00	8,800.00	193,600.00
7.9.2	天井塗装	m²	30.00	10,000.00	300,000.00
7.9.3	木部塗装	m²	135.00	12,000.00	1,620,000.00
小計	7.9				2,113,600.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
8.	発電室				
8.1	直接仮設工	Ls	1.00		120,000.00
8.2	土工	Ls	1.00		501,750.00
8.3	躯体工	Ls	1.00		5,179,750.00
8.4	屋根敷設工	Ls	1.00		3,072,100.00
8.5	塗装工	Ls	1.00		1,260,000.00
計　8					10,133,600.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
8.1	直接仮設工				
8.1.1	直接仮設工	Ls	1.00		120,000.00
小計	8.1				120,000.00
8.2	土工				
8.2.1	根伐	m³	6.00	14,000.00	84,000.00
8.2.2	埋戻し	m³	3.00	6,000.00	18,000.00
8.2.3	盛土	m³	9.00	25,350.00	228,150.00
8.2.4	敷砂	m³	6.60	26,000.00	171,600.00
小計	8.2				501,750.00
8.3	躯体工				
8.3.1	基礎工	m³	5.30	120,000.00	636,000.00
8.3.2	コンクリート（鉄筋構造）	m³	1.70	785,000.00	1,334,500.00
8.3.3	コンクリート（鉄筋　k-225 発電機台）	m³	6.60	450,000.00	2,970,000.00
8.3.4	コンクリート1:3:5	m²	31.90	7,500.00	239,250.00
小計	8.3				5,179,750.00
8.4	屋根敷設工				
8.4.1	屋根トラス	m³	0.95	1,570,000.00	1,491,500.00
8.4.2	垂木	m²	8.50	18,000.00	153,000.00
8.4.3	鼻隠し	m	13.00	21,200.00	275,600.00
8.4.4	屋根瓦	m²	85.00	10,800.00	918,000.00
8.4.5	棟瓦	m	13.00	18,000.00	234,000.00
小計	8.4				3,072,100.00
8.5	塗装工				
8.5.1	木部塗装	m²	105.00	12,000.00	1,260,000.00
小計	8.5				1,260,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
9	井戸及び給水タンク				
9.1	直接仮設工	Ls	1.00		50,000.00
9.2	土工	Ls	1.00		268,200.00
9.3	躯体工	Ls	1.00		6,180,500.00
9.4	金属工事	Ls	1.00		1,060,000.00
9.5	パイプ敷設工	Ls	1.00		525,000.00
9.6	井戸掘削・ポンプ敷設工	Ls	1.00		2,200,000.00
計　9					10,283,700.00

NO.	項　　目	単位	数量	単　　価（Rp.）	金　　額(Rp.)
9.1	直接仮設工				
9.1.1	直接仮設工	Ls	1.00		50,000.00
小計	9.1				50,000.00
9.2	土工				
9.2.1	根伐	m³	16.10	14,000.00	225,400.00
9.2.2	埋戻し	m³	5.40	6,000.00	32,400.00
9.2.3	敷砂	m³	0.40	26,000.00	10,400.00
小計	9.2				268,200.00
9.3	軀体工				
9.3.1	基礎工　　1:5	m³	4.50	120,000.00	540,000.00
9.3.2	コンクリート（鉄筋構造）	m³	1.10	860,000.00	946,000.00
9.3.3	コンクリート（鉄筋スラブ）	m³	3.40	860,000.00	2,924,000.00
9.3.4	しっくい　　1:2	m²	168.00	6,500.00	1,092,000.00
9.3.5	粗石コンクリート	m³	5.90	115,000.00	678,500.00
小計	9.3				6,180,500.00
9.4	金属工事				
9.4.1	階段	m	7.00	100,000.00	700,000.00
9.4.2	マンホール蓋	nos	1.00	120,000.00	120,000.00
9.4.3	貯水槽階段	nos	2.00	120,000.00	240,000.00
小計	9.4				1,060,000.00
9.5	パイプ敷設工				
9.5.1	パイプ直径1"流入用（亜鉛メッキ）	m	10.00	15,000.00	150,000.00
9.5.2	パイプ直径2"流出用　（亜鉛メッキ）	m	10.00	22,500.00	225,000.00
9.5.3	弁直径　2"	nos	2.00	60,000.00	120,000.00
9.5.4	オーバーフロー用パイプ 直径　2"（亜鉛メッキ）	nos	1.00	30,000.00	30,000.00
小計	9.5				525,000.00
9.6	井戸掘削・ポンプ敷設工				
9.6.1	井戸掘削（深さ10m）	unit	1.00	1,000,000.00	1,000,000.00
9.6.2	ポンプ敷設	unit	1.00	1,200,000.00	1,200,000.00
小計	9.6				2,200,000.00

NO.	項　　目	単位	数量	単　　価（Rp.）	金　　額(Rp.)
10	フェンス				
10.1	直接仮設工	Ls	1.00		80,000.00
10.2	土工	Ls	1.00		551,600.00
10.3	基礎工	Ls	1.00		4,436,600.00
10.4	フェンス敷設工	Ls	1.00		38,480,000.00
計　10					43,548,200.00

NO.	項　　目	単位	数量	単　価 (Rp.)	金　額(Rp.)
10.1	直接仮設工				
10.1.1	直接仮設工	Ls	1.00		80,000.00
小計	10.1				80,000.00
10.2	土工				
10.2.1	根伐	m³	36.40	14,000.00	509,600.00
10.2.2	埋戻し	m³	7.00	6,000.00	42,000.00
小計	10.2				551,600.00
10.3	基礎工				
10.3.1	基礎工　1:5	m³	35.00	120,000.00	4,200,000.00
10.3.2	しっくい 1:2	m²	36.40	6,500.00	236,600.00
小計	10.3				4,436,600.00
10.4	フェンス敷設工				
10.4.1	亜鉛メッキパイプ直径　2"	m	430.00	21,000.00	9,030,000.00
10.4.2	格子フェンス	m	320.00	90,000.00	28,800,000.00
10.4.3	門扉（守衛室）	unit	1.00	650,000.00	650,000.00
小計	10.4				38,480,000.00

NO.	項　　目	単位	数量	単　　価（Rp.）	金　　額(Rp.)
11	守衛室				
11.1	直接仮設工	Ls	1.00		60,000.00
11.2	土工	Ls	1.00		148,700.00
11.3	軀体工	Ls	1.00		864,750.00
11.4	壁敷設工	Ls	1.00		1,143,900.00
11.5	床敷設工	Ls	1.00		373,125.00
11.6	木質建具・屋根・天井敷設工	Ls	1.00		2,587,300.00
11.7	建具造作工	Ls	1.00		1,140,000.00
11.8	建具金物	Ls	1.00		95,500.00
11.9	塗装工	Ls	1.00		896,000.00
計　11					7,309,275.00

NO.	項　　目	単位	数量	単　　価（Rp.）	金　　額(Rp.)
11.1	直接仮設工				
11.1.1	直接仮設工	Ls	1.00		60,000.00
小計	11.1				60,000.00
11.2	土工				
11.2.1	根伐	m³	5.00	14,000.00	70,000.00
11.2.2	埋戻し	m³	2.50	6,000.00	15,000.00
11.2.3	盛土	m³	2.00	25,350.00	50,700.00
11.2.4	敷砂	m³	0.50	26,000.00	13,000.00
小計	11.2				148,700.00
11.3	躯体工				
11.3.1	基礎工　1:5	m³	2.30	120,000.00	276,000.00
11.3.2	コンクリート（鉄筋構造）	m³	0.52	785,000.00	408,200.00
11.3.3	補助コンクリート（鉄筋）	m³	0.23	785,000.00	180,550.00
小計	11.3				864,750.00
11.4	壁敷設工				
11.4.1	レンガ　1:2	m³	0.70	180,000.00	126,000.00
11.4.2	レンガ　1:5	m³	2.85	172,000.00	490,200.00
11.4.3	しっくい　1:2	m²	2.00	6,500.00	13,000.00
11.4.4	しっくい　1:5	m²	51.00	5,700.00	290,700.00
11.4.5	セメント仕上げ工	m²	64.00	3,500.00	224,000.00
小計	11.4				1,143,900.00
11.5	床敷設工				
11.5.1	テラゾータイル30×30	m²	6.25	45,300.00	283,125.00
11.5.2	巾木テラゾー15×30	m	10.00	9,000.00	90,000.00
小計	11.5				373,125.00
11.6	木質建具・屋根・天井敷設工				
11.6.1	戸・建具枠	m³	0.05	1,570,000.00	78,500.00
11.6.2	屋根トラス	m³	0.50	1,570,000.00	785,000.00
11.6.3	垂木	m²	25.00	18,000.00	450,000.00
11.6.4	鼻隠し	m	18.00	21,200.00	381,600.00
11.6.5	屋根瓦	m²	25.00	10,800.00	270,000.00
11.6.6	棟瓦	m	14.00	18,000.00	252,000.00
11.6.7	アスベストセメント（天井）	m²	9.00	27,800.00	250,200.00
11.6.8	廻り縁	m	20.00	6,000.00	120,000.00
小計	11.6				2,587,300.00
11.7	建具造作工				
11.7.1	扉（チーク材）	m²	2.10	44,000.00	92,400.00
11.7.2	開閉扉　ガラス5mm	Nos	54.00	19,400.00	1,047,600.00
小計	11.7				1,140,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
11.8	建具金物				
11.8.1	扉用溝	Nos	1.00	76,000.00	76,000.00
11.8.2	扉・窓用丁番	Nos	3.00	6,500.00	19,500.00
小計	11.8				95,500.00
11.9	塗装工				
11.9.1	壁塗装	m²	65.00	8,800.00	572,000.00
11.9.2	天井塗装	m²	9.00	10,000.00	90,000.00
11.9.3	クリアーラッカー	m²	5.00	12,000.00	60,000.00
11.9.4	木部塗装	m²	14.50	12,000.00	174,000.00
小計	11.9				896,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
12	作業室				
12.1	直接仮設工	Ls	1.00		80,000.00
12.2	土工	Ls	1.00		5,236,750.00
12.3	軀体工	Ls	1.00		11,386,850.00
12.4	床敷設工	Ls	1.00		1,504,800.00
12.5	屋根敷設工	Ls	1.00		13,687,200.00
12.6	塗装工	Ls	1.00		598,400.00
計　12					32,494,000.00

NO.	項　　目	単位	数量	単　　価 (Rp.)	金　　額(Rp.)
12.1	直接仮設工				
12.1	直接仮設工	Ls	1.00		80,000.00
小計	12.1				80,000.00
12.2	土工				
12.2.1	根伐	m³	80.20	14,000.00	1,122,800.00
12.2.2	埋戻し	m³	23.20	6,000.00	139,200.00
12.2.3	盛土	m³	141.00	25,350.00	3,574,350.00
12.2.4	敷砂	m³	15.40	26,000.00	400,400.00
小計	12.2				5,236,750.00
12.3	軀体工				
12.3.1	基礎工　1:5	m³	38.50	120,000.00	4,620,000.00
12.3.2	コンクリート（鉄筋構造）	m³	8.00	785,000.00	6,280,000.00
12.3.3	しっくい（コンクリート用）1:2	m²	74.90	6,500.00	486,850.00
小計	12.3				11,386,850.00
12.4	床敷設工				
12.4.1	コンクリート1:3:5(床)	m²	114.00	7,500.00	855,000.00
12.4.2	しっくい　1:5	m²	114.00	5,700.00	649,800.00
小計	12.4				1,504,800.00
12.5	屋根敷設工				
12.5.1	屋根トラス	m³	4.20	1,570,000.00	6,594,000.00
12.5.2	垂木	m²	189.00	18,000.00	3,402,000.00
12.5.3	鼻隠し	m	60.00	21,200.00	1,272,000.00
12.5.4	屋根瓦	m²	189.00	10,800.00	2,041,200.00
12.5.5	棟瓦	m	21.00	18,000.00	378,000.00
小計	12.5				13,687,200.00
12.6	塗装				
12.6.1	壁塗装	m²	68.00	8,800.00	598,400.00
小計	12.6				598,400.00

NO.	項　　目	単位	数　量　単　価 (Rp.)	金　額 (Rp.)
13	電気工事等			
13.1	電気工事	Ls	1.00	23,542,000.00
13.2	鉛管工	Ls	1.00	43,474,000.00
13.3	避雷設備	Ls	1.00	6,565,000.00
13.4	空調施設	Ls	1.00	32,340,000.00
13.5	外部設備敷設	Ls	1.00	46,021,400.00
13.6	汚水処理タンク	Ls	1.00	4,550,000.00
13.7	発電機	Ls	1.00	71,790,000.00
計	13			228,282,400.00

NO.	項　　目	単位	数　量　単　価 (Rp.)	金　額 (Rp.)
13.1	電気工事			
13.1(1)	事務所	Ls	1.00	10,273,000.00
13.1(2)	実験棟	Ls	1.00	3,372,000.00
13.1(3)	車庫・倉庫	Ls	1.00	2,336,000.00
13.1(4)	発電室	Ls	1.00	2,080,000.00
13.1(5)	井戸及び給水タンク	Ls	1.00	831,000.00
13.1(6)	守衛室	Ls	1.00	1,083,000.00
13.1(7)	作業室	Ls	1.00	3,567,000.00
計　13.1				23,542,000.00

NO.	項　　目	単位	数　量	単　価 (Rp.)	金　額 (Rp.)
13.1	電気工事				
	(1) 事務所				
13.1.1(1)	電柱敷設	Nos	53.00	41,000.00	2,173,000.00
13.1.2(1)	コンセント等敷設	Nos	34.00	41,000.00	1,394,000.00
13.1.3(1)	配電盤	Nos	1.00	1,000,000.00	1,000,000.00
13.1.4(1)	アース	Nos	1.00	95,000.00	95,000.00
13.1.5(1)	蛍光灯　2×40 w	Nos	27.00	203,000.00	5,481,000.00
13.1.6(1)	照明塔	Nos	26.00	5,000.00	130,000.00
小計	13.1.(1)				10,273,000.00
	(2) 実験棟				
13.1.1(2)	電柱敷設	Nos	7.00	41,000.00	287,000.00
13.1.2(2)	蛍光灯　2×40 w	Nos	7.00	203,000.00	1,421,000.00
13.1.3(2)	コンセント等敷設	Nos	9.00	41,000.00	369,000.00
13.1.4(2)	配電盤	Nos	1.00	1,200,000.00	1,200,000.00
13.1.5(2)	アース	Nos	1.00	95,000.00	95,000.00
小計	13.1.(2)				3,372,000.00
	(3) 車庫・倉庫				
13.1.1(3	電柱敷設	Nos	4.00	41,000.00	164,000.00
13.1.2(3)	蛍光灯　2×40 w	Nos	4.00	203,000.00	812,000.00
13.1.3(3)	コンセント等敷設	Nos	5.00	41,000.00	205,000.00
13.1.4(3)	配電盤	Nos	1.00	1,060,000.00	1,060,000.00
13.1.4(3)	アース	Nos	1.00	95,000.00	95,000.00
小計	13.1.(3)				2,336,000.00
	(4) 発電室				
13.1.1(4)	電柱敷設	Nos	3.00	41,000.00	123,000.00
13.1.2(4)	コンセント等敷設	Nos	3.00	41,000.00	123,000.00
13.1.3(4)	アース	Nos	1.00	95,000.00	95,000.00
13.1.4(4)	配電盤	Nos	1.00	1,130,000.00	1,130,000.00
13.1.5(4)	蛍光灯　2×40 w	Nos	3.00	203,000.00	609,000.00
小計	13.1.(4)				2,080,000.00
	(5) 井戸及び給水タンク				
13.1.1(5)	電柱敷設	Nos	1.00	350,000.00	350,000.00
13.1.2(5)	配電盤	Nos	1.00	440,000.00	440,000.00
13.1.3(5)	コンセント等敷設	Nos	1.00	41,000.00	41,000.00
小計	13.1.(5)				831,000.00
	(6) 守衛室				
13.1.1(6)	電柱敷設	Nos	2.00	41,000.00	82,000.00
13.1.2(6)	配電盤	Nos	1.00	500,000.00	500,000.00
13.1.3(6)	アース	Nos	1.00	95,000.00	95,000.00
13.1.4(6)	蛍光灯　2×40 w	Nos	2.00	203,000.00	406,000.00
小計	13.1.(6)				1,083,000.00

NO.	項　　目	単位	数　量	単　価 (Rp.)	金　額 (Rp.)
	(7) 作業室				
13.1.1(7)	アース	Unit	1.00	68,000.00	68,000.00
13.1.2(7)	配電盤	Unit	1.00	500,000.00	500,000.00
13.1.3(7)	電柱敷設	Nos	5.00	34,000.00	170,000.00
13.1.4(7)	コンセント等敷設	Nos	6.00	34,000.00	204,000.00
13.1.5(7)	蛍光灯　2×40 w	Nos	5.00	135,000.00	675,000.00
13.1.6(7)	給電線	m	150.00	13,000.00	1,950,000.00
小計	13.1.(7)				3,567,000.00

NO.	項　　目	単位	数　量	単　価 (Rp.)	金　額 (Rp.)
13.2	鉛管工				
13.2(1)	給水用	Ls	1.00		24,014,000.00
13.2(2)	汚水用	Ls	1.00		19,460,000.00
計　13.2					43,474,000.00

NO.	項　　目	単位	数　量	単　価 (Rp.)	金　額 (Rp.)
13.2(1)	給水用				
13.2.1(1)	ポリ塩化ビニールパイプ　2 1/2"	m	160.00	35,000.00	5,600,000.00
13.2.2(1)	ポリ塩化ビニールパイプ　1 1/2"	m	320.00	24,500.00	7,840,000.00
13.2.3(1)	ポリ塩化ビニールパイプ　1 "	m	160.00	9,450.00	1,512,000.00
13.2.4(1)	ポリ塩化ビニールパイプ　3/4"	m	160.00	9,450.00	1,512,000.00
13.2.5(1)	ポリ塩化ビニールパイプ　1/2"	m	120.00	8,750.00	1,050,000.00
13.2.6(1)	工具・試験	Ls	1.00	6,500,000.00	6,500,000.00
小計	13.2.(1)				24,014,000.00
13.2(2)	汚水用				
13.2.1(2)	ポリ塩化ビニールパイプ　4 "	m	80.00	71,750.00	5,740,000.00
13.2.2(2)	ポリ塩化ビニールパイプ　2 1/2"	m	96.00	35,000.00	3,360,000.00
13.2.3(2)	ポリ塩化ビニールパイプ　1 1/2"	m	80.00	24,500.00	1,960,000.00
13.2.4(2)	部品	Ls	1.00	8,400,000.00	8,400,000.00
小計	13.2.(2)				19,460,000.00

NO.	項　　目	単位	数　量	単　　価 (Rp.)	金　額 (Rp.)
13.3	避雷設備				
13.3.1	避雷設備	Unit	1.00	6,565,000.00	6,565,000.00
計	13.3				6,565,000.00
13.4	空調設備				
13.4.1	空調設備	Unit	7.00	4,620,000.00	32,340,000.00
計	13.4				32,340,000.00
13.5	外部設備敷設				
13.5.1	アース	Unit	1.00	170,000.00	170,000.00
13.5.2	配電盤	Unit	1.00	6,770,000.00	6,770,000.00
13.5.3	壁スイッチ	Unit	3.00	255,000.00	765,000.00
13.5.4	電線				
	a. 地中埋設ケーブル 4 × 25mm	m	210.00	60,000.00	12,600,000.00
	b. 地中埋設ケーブル 4 × 16mm	m	126.00	43,000.00	5,418,000.00
	c. 地中埋設ケーブル 4 × 10mm	m	70.00	34,000.00	2,380,000.00
	d. 地中埋設ケーブル 4 × 4mm	m	280.00	27,000.00	7,560,000.00
	e. 地中埋設ケーブル 3 ×2.5mm	m	140.00	4,000.00	560,000.00
13.5.5	亜鉛メッキパイプ 直径 1 1/2"	m	75.60	14,000.00	1,058,400.00
13.5.6	庭園用照明灯	Unit	19.00	460,000.00	8,740,000.00
計	13.5				46,021,400.00
13.6	汚水タンク				
13.6.1	汚水タンク	Unit	2.00	2,275,000.00	4,550,000.00
計	13.6				4,550,000.00
13.7	発電機				
13.7.1	発電機 32KVA	Unit	1.00	41,690,000.00	41,690,000.00
13.7.2	発電機 15KVA	Unit	1.00	25,600,000.00	25,600,000.00
13.7.3	燃料タンク 容量 1,500 l	Unit	1.00	2,000,000.00	2,000,000.00
13.7.4	燃料パイプ	Ls	1.00	2,500,000.00	2,500,000.00
計	13.7				71,790,000.00

4－3 工事仕様書

GENERAL SPECIFICATION FOR

THE DEVELOPMENT OF SUSTAINABLE
MANGROVE MANAGEMENT PROJECT

. Scope of Works.

This project principally, is to build a Base Camp for seeding, nursing, cultivating mangrove plant which will be grown in order to reboisate the Mangrove forest around this location.

The Scope of works to be done are :

A. Access Road betterment
B. 2 (two) Bridges
C. New Access Road started from the Bridge to the Base Camp and fence.
D. Base Camp's Building which consist of :
   1. Center Office..... 400.00 M^2
   2. Laboratory ..... 96.00 M^2
   3. Generator Room ..... 15.00 M^2
   4. Guard House ..... 6.25 M^2
   5. Water Tank and Well
   6. Potting House ..... 108.00 M^2
   7. Machine storage and garage..... 84.00 M^2
   8. Fence arround Base Camp.
E. Mangrove Nursery Bed.
F. Walking Road :
   1. Wooden Bridge
   2. Foothpath by coconut tree.

I. General Technical Specifications.

All materials will be used in this Project are Indonesian product (no material imported)

A. Access Road Betterment.

The existing road of lime stone is to be extended to 4 M' wide using compacted lime stone. To protect the road from sloping, the same shall be retained by retaining wall of river stone in cement and sand (1:4) mortar.

The existing culvert, is to be demolished and substituted with the new one with reinforced concrete pipe Ø 100 cm

B. Bridge.

1. The foundation is caisson filled with cyclope concrete.
2. Abutment is of reinforced concrete K-225
3. Bridges beam by steel I beam WF

4. Bridge floor slab is of reinforced concrete K-225
5. The Bridge's wing walls are of river-stone in cement and sand (1:4) mortar.
6. Bridge railling is of Galvanised pipe Ø 2" with reinforced concrete coloumn.

C. New Acces Road

1. New Access Road is of compacted limestone
2. The slope of this road will be retained by using river-stone in cement and sand (1:4) mortar

D. BASE CAMP BUILDINGS

1. Preparation
   - Cleaning up the site before commencing the work on site.
   - Providing temporary site office 36 m^2 at the location agreed by the Engineer with the specification as follows :
     * Cement screed floor in cement and sand (1:3) mortar.
     * Roof covering is corrugated galvanis iron sheet.
     * Walls and ceilling are triplex 4 mm with timber frame.
     * Doors and window frames are kruing timber.
     * Door leaves are of plywood 4mm and, glazed window 5 mm thick.
     * Roof truss are timber.
     * Completed with furniture.
   - Providing contractor's site office, workshop or storage or other temporary building for his own use at agreed positions.
   - Erecting notice board dims 90 cm x 120 cm and 250 cm hight of 9mm thick board as agreed or directed by the Engineer.

2. Batten Board
   - Batten board shall be meranti, planed flat at top side with stake-timber of meranti 5/7 cm.
   - The depth and distance of staking must be such that the batten board will not shaking or moving.

3. Substructure
   - Before executing permanent works on site the earth condition shall be improved by excavating swamped land 20 cm depth and fill it back with compacted limestone, up to the level as shown on drawing.
   - Excavation for foundation shall be as shown on drawing.
   - Back filling selected excavated material to foundation and arise floor level up to the level as described. Back filling shall be done layer per layer, such that its compaction is guaranteed. Materials for back filling must be free from muds

- Back filling for rising floor level shall be done layer-perlayer using compactor(stamper) each layer shall be 20 cm thick.

4. Compacted Sand.
   - Compacted sand under floor mortar shall be 15 cm thick, in other place is as shown on drawing and shall be poured with water.
   - Compacted sand also shall be filled under foundations.

5. Stone and Brick Work.
   - Free standing stone under foundations shall be river stone and filled with sand and water.
   - Foundation of Building shall be river-stone foundations as described in cement and sand (1:5) mortar.
   - All coloumns and posts shall be supported with foundation.
   - 11 Cm thick Common Brick work shall be laid in cement and sand (1:5) mortar in the place as shown on drawing.
   - Water-tight Common bricks wall in cement and sand (1:2) mortar are bedded in the places described.
   - Common bricks must be soaked before bedding until the air bubble is stop. No brick shall be bedded before soaked.
   - Bricks shall be of good quality, solid, sound not porous, fine textured and of uniform colour.

6. Concrete Works.
   - Concrete Works shall comply with Indonesian Reinforced Concrete Regulation (Peraturan Beton Bertulang Indonesia/PBI 1971)
   - Concrette for structure (structural concrete) such as coloumn, beam, ring beam, ground beam shall use concrete K-225.
   - Concrete Reinforcement shall be as shown on drawing.
   - Prior to commencement of the concrete work, the contractor shall make a slump test to assure the consistency of the concrete.
   - Form work shall comply with the regulation.

7. Plastering
   - Wall plastering shall be in Cement and sand (1:5) mortar and in order places as shown on drawing.
   - Wall surfaces to be plastered shall be cleaned up first and poured with water.
   - All water-tight surfaces shall be plastered in cement and sand (1:2) mortar
   - Plaster work shall be executed after any other related works have been done.

8. Carpenter & Joinery.
- Camphor timber is used for
  - Doors and window jams
  - Doors and window frames
  - Eaves Board and ceilling trim
- Kruing timber is used for :
  - Ceilling hanger (ceilling joist)
  - Roof truss-rather roaf-lath.
  - Structural timber to walking road.
- All timber shall be of good quality, free from defects such as knot, cracking, fungus, termit, and any other defects.
- No painting may be commenced before approval.
- Teak wood Ø 15 used for :
  - Timber post to support walking road.

9. Roof Truss
- Roof truss shall be of kruing timber,and all timber in roof truss shall be coated with approve material.

10. Flooring
- Floor finish for all floor in Centre Office shall be terrazo tile 30/30 except for shower and toilet with the colour decided after. the Contractor shall submit a sample of this tile for approval.
- Tile for skirting shall be 15/30 of the same embeded in wall internally.
- Floor tile shall be laid in cement and sand (1:4) mortar, and for water tight floor in 1Pc : 2 Sand mortar.
- All floor finish surfaces shall be a true and even surface over whole areas and stright line.
- Joint between tile-to tile shall be poured with cement-water to reach an even surface.
  The floor can be trampled down if only it has been dry.
- Floor finish for laboratorium , workshop & garage, Generator room shall be concrete slab finish in 1 cement : 3 sand : 5 agregate.
- The same for Guard House shall be Cement Screed in 1Pc : 3 sand mortar.

11. Roof Covering and Ceilling.
- Roof covering for all building shall be pressed roof tile equivalent to "Pejaten" Roof tile.
- Ridge Roofs are of the same material with roof covering and to be installed in cement and sand (1:2) mortar.

- Ceilling shall be Asbes Cement equivalent to Atrisco 3mm-4mm thick 1m x 1m and installed in whole building as shown on drawing.
- Ceilling trim at the edge of ceilling shall be camphor trim 1.5/5
- Ceilling timber hanger shall be champor of 5/7 and ceilling lattice is of 6/12 timber beam.

12. Painting and Stainning.
- All (exposed) wall surface shall be finished with wall-paint equivalent to VINILEX with the color decided after.
- Before painting, all timber surfaces shall be applied with basic-paint, and to be filled, coated and sanded to obtain a smooth surfaces.
- All doors and window jam shall be painted with paint equivalent to NIPPON PAINT, with the color decided after.
- Eaves Board shall be painted with NIPPON PAINT in the color decided after.
- Before staining, all timber surfaces shall be applied with base-coating (oker + water mix), to be filled and sanded such that the surface become smooth and neat.
- Teakwood door leave shall be stain finish.

13. Ironmongery and Glazing.
- Each door leave shall be installed with 3 nos hinges, while window leaves with 2 nos hinges and completed with 2 window closer.
- Hinges shall be of ARCH product.
- Doors jams shall be installed to brick wall with Anchor Ø 3/8".
- All glazed window/door shall use clear glass 5mm thick.

14. Electrical.
- The location, amount and sort of light points switches, and socket outlets shall be as described and shown on drawing.
- Before installing any light, the contractor shall submit a sample of the same for approval.
- All electrical installation voltage shall be 220 Volt and installed in inbow system.
- Switches are of squared white ebonit.
- Electrical Panel is LEGRAND with MCB system.

15. Sanitary.
- Wash basins, sinks, urinoirs, monoblock closet shall be equivalent to TOTO standard, medium size, and completed with assesories such as syphon and stainless tap in good quality, mirrow for wash basin and towel hook.

- Concrete table in laboratorium shall be semi porcelain tile finish in cement and sand (1:2) mortar.
- The contractor shall provide a sample of each material for approval before installing.
- Septictank shall be provided and completed with penetration.

16. Water Instalation.
- Before such installation, the contractor shall submit a request to the Engineer for his approval to commence the work.
- All pipe connection must be perfect, no defect and no leaking.
- Potable water instalation shall use PVC pipe Ø 1" distributed by the same Ø 1/2" to each bathroom/toilet/wash basin/sink and must be ready to flow.
- All pipe shall be drowned under the floor, in the wall and under the ground.
- Drilled well shall be provided completed with electrical pump of 100 watt and one unit water tank with reservoar, pipe and stop-tap as shown on drawing.

17. Fencing.
- Fencing sourounded the Base Camp shall be BRC 60m x 100m long and 1.80m high with galvanized pipe pillar each 3m.

18. Entrance Road, Parking, Gardening.
- Road pavement shall be concrete block 10 Cm x 20 Cm x 10 cm and to be laid as shown on drawing.
- Gardening shall be as shown on drawing.

E. WALKING ROAD.

Walking road means a bridge constructed with wood and foothpath with cocbnut tree.

Wood will be used are Kruwing.

5．工　期

工期は、概略工事工程表のとおり９ケ月とした。

工事スケジュール

No.	工事名	1	2	3	4	5	6	7	8	9	10	摘要
1	準備期間											
2	橋（スパン15m）											潜函工事，うめもどし コンクリート橋台，鉄骨組立
3	橋（スパン10m）											掘取り，コンクリート橋台， 鉄骨組立
4	仮設工事											
5	建物施設											事務所，実験室，作業室
6	道路改良											道路拡張
7	道路新設											法面石積工，盛土
8	苗畑施設											掘取り，コンクリート歩道

注
一期工事
二期工事

6．年度別供与機材一覧表

この実証事業を効果的に進めるに当たって必要な機材について、各専門家と協議を行い、事業別、年度別機材一覧表（別紙）を作成した。

なお、年度別用途別供与機材集計表は次のとおりである。

年度別用途別供与機材集計表

単位：Rp

用途＼年度	平成 4	5	6	7	計
共通機材（バリ）	43,650,000	71,660,800	8,775,000	—	124,085,800
造林機材（〃）	33,478,200	88,575,700	11,488,120	6,169,400	139,711,420
苗畑機材（〃）	39,063,100	346,880,560	14,700,600	3,250,000	403,894,260
試験調査機材（〃）	43,500,000	275,724,620	10,292,020	6,834,000	336,350,640
造林機材（ﾛﾝﾎﾞｸ）	—	19,486,020	3,641,400	1,815,600	24,943,020
苗畑機材（〃）	—	11,320,100	6,198,200	4,000,000	21,518,300
試験調査機材（〃）	—	136,695,160	9,195,980	1,700,000	147,591,140
計	159,691,300	950,342,960	64,291,320	23,769,000	1,198,094,580

＊必要機材はすべて現地調達とする。

7．造林費積算

1）造林費算定の基礎

造林費の算出は、プロジェクト側と協議の上作成した実施設計に基づき、基本計画の造林費の見直しと現地事業地の状況を勘案し算定基準を次表に示すとおり定めた。この算定基準については、Balai RLKTの資料、情報等を収集し参考にした。

造林費の算出に当たっての留意点は次のとおりである。

○本事業に係る作業はすべて海の干満に左右される。特に、現場作業の時間は干潮時に限られた短い時間のみであること。

○地形は平坦であるが、足場はBaliはTambak跡、Lombokは伐採跡と泥濘地で作業能率は良くないこと。

造林費を構成する項目については次のとおりである。

① 造林地境界測量

本計画は樹種、植栽密度、種子産地等多岐にわたる試験造林を行うために、各年次ごとの造林地の設定及び試験造林区の設定を行う。

② プロジェクト案内板

1ｍ×2ｍのプロジェクト案内用のボードで、バリは各ブロック（Ⅰ～Ⅴ）1個の計5個、ロンボクはGili Petangan に1個設置。

③ 作業小屋

広さ8㎡の作業小屋で、バリは12個（Ⅰ－2個、Ⅱ－3個、Ⅲ－3個、Ⅳ－2個、Ⅴ－2個）、ロンボクは2個（Gili Petangan に2個）設置する。

④ 種子採取、購入

バリの事業用種子は、生産用、展示用をインドネシア各州からの種子を入手する。ロンボク用の種子はBali・Lombok・Jawa Timurのみである。

それを考慮し、バリとロンボクは別の基準とした。

⑤ 育　苗

実施設計においては、ポット苗のほか裸根苗の育苗、さらに育苗の必要のない造林地への直挿、直播を計画している。

育苗費は期間5カ月で、4年間の平均育苗本数を用いた。

⑥ 見出し杭立て

植付前の準備作業で、造林地に植栽密度に従って植付位置に見出し用の杭を立てることである。

⑦ 植　付

造林地は平坦であるが足場が悪く、かつ植付作業は干潮の限られた時間のみである。そのために８人１組とし、苗木運搬、苗木配布、植付等、作業効率が上がる体系によるものとする。

⑧ 補　植

各試験造林区について造林作業基準の保育の項に従って補植を行う。補植経費は植栽年と同じとする。

⑨ 成績調査

植付後の活着状況についての調査で、この結果に基づき補植等の実行を計画する。

⑩ 監　督

造林事業についての現場監督者である。

⑪ 土手取壊

造林地の海水の流出入を順調に行わせるために土手を取壊し、幅１～２ｍの開口部をつくる。１haを１区画とした場合、１haで７カ所の開口となる。

項　　目	単位	単　　価	
(1) 造林地境界設定	Ha	Rp 21,670（バリ） 13,000（ロンボク）	境界測量及び試験造林区設定 ５人１組　１日６Ha
(2) プロジェクト案内板	個	200,000	１ｍ×２ｍ，木製，材料費含む
(3) 作業小屋	個	350,000	８㎡，木造，材料費含む
(4) 種子採取，購入	Ha	1,178,000（バリ） 596,000（ロンボク）	インドネシア各州からの種子 Bali・Lombok・Jawa Timurからの種子
(5) 育　　苗	本	170	育苗期間５カ月
(6) 見出し杭立て	本	35	材料費含む
(7) 植　　付	本	370	８人１組　１日300本
(8) 補　　植	本	320	５人１組　１日250本
(9) 成績調査	Ha	15,000	４Haに３人
(10) 監　　督	Ha	16,000	５Haに１人
(11) 土手取壊	Ha	100,000	１区画を１Haとする。１Haに７カ所

2）年次別造林費の算定

実施計画に基づき年次別の造林費を算定した。

年	バ リ	ロンボク	計	
1 年 次 (1993)	RP 107,139,950	RP —	RP 107,139,950	¥ 6,696,000
2 年 次 (1994)	222,850,435	33,717,800	256,568,235	16,036,000
3 年 次 (1995)	191,600,935	66,682,200	258,283,135	16,143,000
4 年 次 (1996)	143,505,235	66,332,200	209,837,435	13,115,000
計	665,096,555	166,732,200	831,828,755	51,990,000

(¥1.00=Rp16)

年次別の造林費内訳は次表に示すとおりである。

① 第1年次

サイト	項 目	単位	単 価	数 量	金 額
バ リ	造林地境界設定	Ha	Rp 21,670	30	Rp 650,100
	種 子	Ha	1,178,000	30	35,340,000
	育 苗	本	170	127,790	21,724,300
	見出し杭立て	本	35	95,830	3,354,050
	植 付	本	370	95,830	35,457,100
	補 植	Ha	320	19,170	6,134,400
	成績調査	Ha	15,000	30	450,000
	監 督	Ha	16,000	30	480,000
	土手取壊	Ha	100,000	30	3,000,000
	事業案内板	個	200,000	1	200,000
	作業小屋	個	350,000	1	350,000
	小 計				107,139,950

② 第2年次

サイト	項目	単位	単価	数量	金額
バリ	造林地境界設定	Ha	Rp 21,670	50	Rp 1,083,500
	種子	Ha	1,178,000	50	58,900,000
	育苗	本	170	293,940	49,969,800
	見出し杭立て	本	35	222,915	7,802,025
	植付	本	370	222,915	82,478,550
	補植	Ha	320	44,583	14,266,560
	成績調査	Ha	15,000	50	750,000
	監督	Ha	16,000	50	800,000
	土手取壊	Ha	100,000	50	5,000,000
	事業案内板	個	200,000	2	400,000
	作業小屋	個	350,000	4	1,400,000
	小計				222,850,435
ロンボク	造林地境界設定	Ha	13,000	10	130,000
	種子	Ha	596,000	10	5,960,000
	育苗	本	170	38,340	6,517,800
	見出し杭立て	本	35	50,000	1,750,000
	植付	本	370	50,000	18,500,000
	成績調査	Ha	15,000	10	150,000
	監督	Ha	16,000	10	160,000
	事業案内板	個	200,000	1	200,000
	作業小屋	個	350,000	1	350,000
	小計				33,717,800
計					256,568,235

③ 第3年次

サイト	項目	単位	単価	数量	金額
バリ	造林地境界設定	Ha	Rp 21,670	40	Rp 866,800
	種子	Ha	1,178,000	40	47,120,000
	育苗	本	170	260,600	44,302,000
	見出し杭立て	本	35	197,915	6,927,025
	植付	本	370	197,915	73,228,550
	補植	Ha	320	39,583	12,666,560
	成績調査	Ha	15,000	40	600,000
	監督	Ha	16,000	40	640,000
	土手取壊	Ha	100,000	40	4,000,000
	事業案内板	個	200,000	1	200,000
	作業小屋	個	350,000	3	1,050,000
	小計				191,600,935
ロンボク	造林地境界設定	Ha	13,000	20	260,000
	種子	Ha	596,000	20	11,920,000
	育苗	本	170	76,660	13,032,200
	見出し杭立て	本	35	100,000	3,500,000
	植付	本	370	100,000	37,000,000
	成績調査	Ha	15,000	20	300,000
	監督	Ha	16,000	20	320,000
	事業案内板	個	200,000	-	-
	作業小屋	個	350,000	1	350,000
	小計				66,682,200
計					258,283,135

④ 第4年次

サイト	項目	単位	単価	数量	金額
バリ	造林地境界設定	Ha	Rp 21,670	30	Rp 650,100
	種子	Ha	1,178,000	30	35,340,000
	育苗	本	170	193,900	32,963,000
	見出し杭立て	本	35	147,915	5,177,025
	植付	本	370	147,915	54,728,550
	補植	Ha	320	29,583	9,466,560
	成績調査	Ha	15,000	30	450,000
	監督	Ha	16,000	30	480,000
	土手取壊	Ha	100,000	30	3,000,000
	事業案内板	個	200,000	1	200,000
	作業小屋	個	350,000	3	1,050,000
	小計				143,505,235
ロンボク	造林地境界設定	Ha	13,000	20	260,000
	種子	Ha	596,000	20	11,920,000
	育苗	本	170	76,660	13,032,200
	見出し杭立て	本	35	100,000	3,500,000
	植付	本	370	100,000	37,000,000
	成績調査	Ha	15,000	20	300,000
	監督	Ha	16,000	20	320,000
	事業案内板	個	200,000	-	-
	作業小屋	個	350,000	-	-
	小計				66,332,200
計					209,837,435

8．事業所要経費

本事業の所要経費をとりまとめると次のとおりである。

単位：千円

	1992	1993	1994	1995	1996	1997	計
造林費	—	6,696	16,036	16,099	13,115	—	51,946
資機材費	9,981	59,396	4,018	1,486	—	—	74,881
基盤整備費	97,996	92,353	—	—	—	—	190,349
現地管理費	3,400	15,000	15,000	15,000	15,000	8,000	71,400
合同委員会運営費	518	858	858	858	858	858	4,808
計	111,895	174,303	35,912	33,443	28,973	8,858	393,384

9．付属資料

9－1　施工業者選定に当たっての留意点

入札指名業者

本プロジェクトに係る基盤整備事業は、林道、苗畑、建物等の建設である。これら基盤整備の施工留意事項は次のとおりである。

（ｉ）林道、苗畑の土木工事と建物の建築工事とから成る。

（ii）林道は大部分、苗畑は全工事水中作業である。

（iii）プロジェクト運営上、工期内に完了させる必要がある。

（iv）林道、苗畑、建物等の工事はすべて関連しているために綿密な工程管理が必要である。

上記事項を勘案すれば、本基盤整備事業の施工は、日系現地法人建設会社に発注するのが最適と判断される。

該当する日系現地法人は、1988／89年から1992／93年までのＪＩＣＡ無償案件請負施工業者９社のうち次の７社である。

1. 大成建設㈱ —— P.T. Pembangunan Perumahan-Taisei Indonesia Construction
2. 竹中工務店㈱ —— P.T. Hutama-Takenaka Corporation
3. 住友建設㈱ —— P.T. Sumicon Utama
4. 大林組㈱ —— P.T. Jaya Obayashi
5. 熊谷組㈱ —— P.T. Kadi International
6. 清水建設㈱ —— Dexitan Shimizu
7. 鹿島建設㈱ —— P.T. Waskita Kajima

なお、上記７社の現地法人についての社名等は別紙施工業者リスト一覧表のとおりである。

施工業者リスト一覧表

No.	会社名	担当者	住所	電話
1	P.T. PEMBANGUNAN PERUMAHAN-TAISEI INDONESIA CONSTRUCTION	K.KATOH Project Manager	CENTRAL PLAZA BUILDING 7TH FLOOR 47, Jl Jend Sudirman Jakarta 12930	5207520 5207533
2	P.T. HUTAMA-TAKENAKA CORPORATION	E.NAKAJIMA Assistant General Manager	SUMMITMAS TOWER 7TH FLOOR Jl Jend Sudirman kav. 61-62 Jakarta 12190	515280 5201272
3	P.T. SUMICON UTAMA	A.NARUSE General Manager	SUMMITMAS TOWER 20TH FLOOR Jl Jend Sudirman kav. 61-62 Jakarta 12190	512905 5200167
4	P.T. JAYA OBAYASHI	H.ENOKI Vice-President Director	Jl Prof. Dr. Supowa SH No.174 Jakarta 12870	8294003
5	P.T. KADI INTERNATIONAL	Y.TACHIKAWA Vice-President Director	LANDMARK BUILDING TOWER B 5TH FLOOR Jl Jend Sudirman No.1 Jakarta 12910	5209440
6	DEXITAM SHIMIZU	※1	MIDO PLAZA 4TH FLOOR Jl Jend Sudirman kav. 10-11 Jakarta 10220	5706252 5706164
7	P.T. WASKITA KAJIMA	※2	ATD PLAZA BLDG 7TH FLOOR Jl M.H. Thamrin kav. 3 Jakarta	6008181

※1 — 清水建設㈱インドネシア営業所　営業担当　Mr. SHIMIZU
※2 — 鹿島建設㈱インドネシア営業所　所　長　Mr. MUTOH

9－2　R／Dの写し

THE RECORD OF DISCUSSIONS

BETWEEN

THE JAPANESE IMPLEMENTATION SURVEY TEAM

AND

THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

ON

THE DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

IN THE REPUBLIC OF INDONESIA

The Japanese Implementation Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yasuyuki Suzuki, Deputy Director, Japan Forest Development Corporation, visited the Republic of Indonesia from October 26 to November 6, 1992 for the purpose of working out the details of the Development of Sustainable Mangrove Management Project in the Republic of Indonesia.

During its stay in the Republic of Indonesia, the Team exchanged views and had a series of discussions with the Indonesian authorities concerned in respect of the appropriate measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, both parties agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Jakarta, November 4, 1992

Yasuyuki Suzuki
Leader,
Implementation Survey Team,
Japan International
Cooperation Agency, Japan

Armana Darsidi
Director General of Reforestation
and Land Rehabilitation,
Ministry of Forestry,
The Republic of Indonesia

ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Republic of Indonesia will cooperate with each other in implementing the Development of Sustainable Mangrove Management Project in the Republic of Indonesia (hereinafter referred to as "the Project") for the purpose of collecting useful data, establishing technology to recover mangrove forests, and setting up of technical and managerial methods for the Sustainable Mangrove Management System in the recovered areas, which will contribute to the promotion of re-afforestation and the sustainable development of the forests in the tropics, by the surrounding communities and the private sector.

2. The Project will be implemented in accordance with the Master Plan which is given in Annex 1.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take the necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Japanese experts referred to in paragraph 1 above and their families will be granted in Indonesia, privileges, exemptions and benefits no less favorable than those accorded to experts of third countries working in the Republic of Indonesia under the Colombo Plan Technical Cooperation Scheme. The privileges, exemptions and benefits will include the following:

   (1) Exemption from income tax and charges of any kind imposed on or in connection with the living allowances remitted from abroad in relation to the implementation of the Project;

   (2) Exemption from import and export duties and any other charges imposed on personal and household effects which may be brought in from abroad or taken out of the Republic of Indonesia;.

   (3) Exemption from import taxes, import sales taxes, sales taxes and other

taxes and charges of any kind imposed on or in connection with the purchase in Indonesia by the Japanese experts of one motor vehicle per expert;

(4) Free local medical services and facilities for the Japanese experts and their families.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take the necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Equipment will become the property of the Government of the Republic of Indonesia upon being delivered C.I.F. to the Indonesian authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively in the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

IV. SPECIAL MEASURES

In accordance with the laws and regulations in force in Japan, the Government of Japan, through JICA, will take the necessary measures to provide at its own expense a portion of local costs which are to be mutually agreed upon.

V. TRAINING OF INDONESIAN PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take the necessary measures through JICA to receive at its own expense the Indonesian personnel related to the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation scheme.

2. The Government of the Republic of Indonesia will take the necessary measures to ensure that the knowledge and experience acquired by the Indonesian personnel who have received technical training in Japan will be utilized effectively in the

implementation of the Project.

VI. SERVICES OF INDONESIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take the necessary measures through the Ministry of Forestry to secure at its own expense the necessary services of Indonesian counterpart and administrative personnel as listed in Annex IV.

2. The Government of the Republic of Indonesia will allocate the necessary number of qualified personnel corresponding to each Japanese expert dispatched by the Government of Japan as specified in Annex II for the effective and successful transfer of technology under the Project.

VII. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

1. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take the following necessary measures to provide at its own expense:
   (1) Land, buildings and facilities as listed in Annex V;
   (2) The supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials which are available locally and necessary for the implementation of the Project other than those provided through JICA under Clause III;

   (3) Transportation facilities and travel allowances for the official travel of the Japanese experts within the Republic of Indonesia;
   (4) Appropriately furnished accommodation for the Japanese experts and their families.

2. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take the necessary measures to meet:

   (1) Expenses necessary for the transportation of the Equipment within Indonesia and for installation, operation and maintenance thereof;

(2) Customs duties, internal taxes and any other charges imposed on the Equipment in the Republic of Indonesia;

(3) Running costs necessary for implementation of the Project.

VIII. ADMINISTRATION OF THE PROJECT

1. The Director General of Reforestation and Land Rehabilitation of the Ministry of Forestry of the Government of the Republic of Indonesia will take full responsibility for the implementation of the Project.

2. As Project Director, the Director of Reforestation and Regreening will be responsible for administrative and managerial matters of the Project.

3. The Japanese Team Leader shall recommend and advise the Project Director on technical and administrative matters when it is necessary for the effective implementation of the Project.

4. The Japanese experts shall provide the necessary technical guidance and advice to the Indonesian counterpart personnel on matters pertaining to the implementation of the Project.

5. For the effective and successful implementation of the Project, a Joint Committee will be established. The function and composition of which is referred to in Annex VI.

IX. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of Indonesia undertakes to bear claims, if any arise, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official duties in the Republic of Indonesia except for those arising from willful misconduct or gross negligence on the part of the Japanese experts.

X. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major

issues arising from, or in connection with this Attached Document.

I. TERMS OF COOPERATION

The duration of the Project under this Attached document will be five (5) years from December 1, 1992.

MASTER PLAN

1. Objectives of the Project

The Project will be carried out in Bali and Lombok Islands, Indonesia, for the purpose of collecting useful data, establishing technology to recover mangrove forests, and setting up of technical and managerial methods for the Sustainable Mangrove Management System in the recovered areas, which will contribute to the promotion of re-afforestation and the sustainable development of the forests in the tropics, by the surrounding communities and the private sector.

2. Activities of the Project

To attain the above-mentioned objectives, the following cooperation activities will be implemented:

(1) Selection of tree species for mangrove plantation

(2) Development of silviculture technique

(3) Cost estimation for mangrove plantation

(4) Study on effects of mangrove forest on surrounding environment

(5) Study on conservation management of flora and fauna in the mangrove ecosystem in the Project sites.

(6) Pests and disease control techniques

(7) Study on the social and economic benefits for forestry and fisheries in the mangrove forests and surrounding areas

(8) Preparation of a mangrove forest management model

(9) Development of utilization techniques for mangrove forest products

(10) Other activities:

(a) construction of roads;

(b) establishment of nursery; and

(c) construction of office, storehouse and others

JAPANESE EXPERTS

1. Team Leader
2. Liaison Officer
3. Experts in the fields of:
   (1) nursery;
   (2) silviculture;
   (3) ecosystem; and
   (4) forest management.

Note: 1. The Team Leader may serve concurrently as an expert in one of the fields mentioned above.
2. One expert may cover another field mentioned above.
3. Short-term experts will be dispatched when they are necessary for the smooth implementation of the Project.

LIST OF EQUIPMENT

1. Equipment, machinery and their spare parts for:
   (1) nursery;
   (2) silviculture;
   (3) pests & disease control;
   (4) other experiments & investigation.
2. Vehicles, boats, and their spare parts.
3. Other necessary equipment, machinery, materials and their spare parts mutually agreed upon.

ANNEX IV

LIST OF INDONESIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Project Director : the Director of Reforestation and Regreening
2. Coordinator : Head of Soil Conservation and Land Rehabilitation Centre in Region VII Denpasar
3. Field Managers : 1. Head of Soil Conservation and Land Rehabilitation Sub Centre in Bali
   2. Head of Soil Conservation and Land Rehabilitation Sub Centre in Dodokan Moyosari West Nusa Tenggara
4. Counterpart personnel in the fields of:
   (1) nursery;
   (2) silviculture;
   (3) ecosystem; and
   (4) forest management.
5. Administrative personnel:
   (1) clerical and service employees;
   (2) drivers and laborers; and
   (3) other necessary supporting staff.

LIST OF LAND, BUILDINGS AND FACILITIES

1. Land for;
   (1) nursery;
   (2) trial plantation and demonstration forest;
   (3) project office and related facilities; and
   (4) roads
2. Building and facilities:
   (1) project office;
   (2) laboratories;
   (3) sheds for machinery and equipment;
   (4) storehouse for forestry materials;
   (5) workshop and garage;
   (6) accommodation for the Japanese experts and Indonesian counterparts; and
   (7) others.
3. Natural mangrove forests

THE JOINT COMMITTEE

1. Functions

The Joint Committee will meet at least once a year and whenever it is required, and work:

(1) to formulate the Annual Work Plan of the Project in line with the Tentative Schedule of Implementation formulated under the framework of this Record of Discussions;

(2) to review the overall progress of the Project as well as the achievements of the above-mentioned Annual Work Plan; and

(3) to review and exchange views on major issues arising from or in connection with the Project.

2. Composition

(1) Chairman: Director General of Reforestation and Land Rehabilitation(RLR), Ministry of Forestry, the Government of the Republic of Indonesia.

(2) Members:

(a) Indonesian Side:

1) Secretary of Directorate General of RLR.

2) Director of Reforestation and Regreening.

3) Director of Soil Conservation.

4) Director of Planning Bureau.

5) Director of Foreign Cooperation and Investment Bureau.

6) Director of Forestry Research and Development.

7) Representative of BAPPENAS.

8) Representative of SEKKAB

9) Head of Regional Forestry Office Bali Province.

10) Head of Regional Forestry Office NTB Province.

(b) Japanese Side:

1) Team Leader;

2) Liaison Officer;

3) Expert(s) appointed by the Team Leader;

4) Resident Representative of Indonesia office, JICA; and

5) Personnel concerned to be dispatched by JICA, if necessary.

Note: Official(s) of the Embassy of Japan and the Indivisual Japanese Expert(s) assigned to Ministry of Forestry as adviser(s) may attend the Joint Committee as observer(s).

TENTATIVE SCHEDULE OF IMPLEMENTATION
OF
THE DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT
IN
THE REPUBLIC OF INDONESIA

The Japanese Implementation Survey Team and the Indonesian authorities concerned have jointly formulated the Tentative Schedule of Implementation of the Project as attached hereto.

These have been formulated in connection with the Attached Document of the Record of Discussions signed between the Japanese Implementation Survey Team and the Indonesian authorities concerned with the Project on the condition that the necessary budget will be allocated for implementation of the Project by both sides, and that the schedule is subject to change within the framework of the Record of Discussions when the necessity arises in the course of the Project's implementation.

Jakarta, November 4, 1992

Yasuyuki Suzuki
Leader,
Implementation Survey Team,
Japan International
Cooperation Agency, Japan

Armana Darsidi
Director General of Reforestation
and Land Rehabilitation,
Ministry of Forestry,
The Republic of Indonesia

TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE
DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

ITEMS	1992	1993	1994	1995	1996	1997
I. PROJECT ACTIVITIES						
1. Selection of tree species for mangrove plantation						
2. Development of silvi culture technique						
3. Cost estimation for mangrove plantation						
4. Study on effects of mangrove forest on surrounding environment						
5. Study on conservation management of flora and fauna in the mangrove ecosystem in the Project sites						
6. Pest and disease control techniques						
7. Study on the social and economic benefits for forestry and fisheries in the mangrove forests and surrounding areas						
8. Preparation of a mangrove forest management model						
9. Development of utilization techniques for mangrove forest product						
10. Other activities constructions, etc.						

TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE
DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

ITEMS	1992	1993	1994	1995	1996	1997
II. JAPANESE CONTRIBUTION						
1. Dispatch of Japanese Experts: (1) Long term experts						
a. Team Leader	—	—	—	—	—	—
b. Liaison Officer	—	—	—	—	—	—
c. Nursery	—	—	—	—	—	—
d. Silviculture	—	—	—	—	—	—
e. Ecosystem	—	—	—	—	—	—
f. Forest management	—	—	—	—	—	—
(2) Short term Experts:	—	—	—	—	—	—
-They will be dispatched when necessary for the smooth implementation of the Project						
2. Training of Counterparts in Japan	—	—	—	—	—	—
3. Provision of Machinery and Equipment	—	—	—	—	—	—

TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE
DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT

ITEMS	1992	1993	1994	1995	1996	1997
III. INDONESIAN CONTRIBUTION						
1. Project director						
2. Coordinator						
3. Field Managers						
4. Couterpart personnel :						
a. Nursery						
b. Silviculture						
c. Ecosystem						
d. Forest management						
5. Administrative personnel						
6. Land , buildings and facilities						

9－3　入札関係資料

THE JAPAN INTERNATIONAL COOPERATION AGENCY

TENDER DOCUMENTS

FOR

IN
REPUBLIC OF INDONESIA

A. Invitation to Tender
B. Instruction to Tenderers
C. Tender Form
D. Construction Contract (Draft)
E. Specifications
F. Bill of Quantities
G. Drawings

May, 1993

INDEX

A. INVITATION TO TENDER A-1

B. INSTRUCTION TO TENDERERS ..... B-1 - B-7

C. TENDER FORM ..... C-1 - C-3

D. CONSTRUCTION CONTRACT (DRAFT) ..... D-1 - D-13

E. TECHNICAL SPECIFICATIONS

PART A GENERAL SPECIFICATIONS ..... EG-1 - EG-19

PART B TECHNICAL SPECIFICATIONS ..... ET-1 - ET-62

F. BILL OF QUANTITIES ..... 1 - 56

G. DRAWINGS ..... Fig 2-3 - Fig 5 - 8

A. INVITATION TO TENDER

A. INVITATION TO TENDER

Tenderers are invited by the Japan International Cooperation Agency (JICA) for

IN REPUBLIC OF INDONESIA.

Tender Document can be obtained from the JICA Indonesia Office in Jakarta at the following address. Only one set of documents will be provided for each at : hours WIB (Western Indonesian time) on th of 1993.

Japan International Cooperation Agency
Jl. M.H. Thamrin No.59
Jakarta
Tel : 324247

Tender shall be submitted to the aforementioned JICA office just before closing time on the TENDER FORM being enclosed in a sealed envelope, legibly endorsed as stated on the Form.

Closing Time of submission is at : hours WIB on th of , 1993. No Tender will be received after the Closing Time.

The tenders will be opened publicly at the JICA Indonesia Office, immediately after the Closing Time of submission.

This invitation shall be valid subject to the agreement between the JICA and the Government of Republic of Indonesia regarding the rehabilitation works mentioned above.

B. INSTRUCTION TO TENDERERS

INDEX

		PAGE
1.	General Description of the Works	B-1
2.	Qualification of Tenderer	B-3
3.	Form and Submission of Tenders	B-3
4.	Receipt and Opening of Tenders	B-4
5.	Tender Validity	B-5
6.	Award of Contract	B-5
7.	Contract Price	B-5
8.	Execution of Contract	B-5
9.	Rejection of Tender	B-5
10.	Withdrawal of Tender	B-5
11.	Questions and Answers as to Tender Documents	B-6
12.	Amendments	B-6
13.	Site Investigations	B-6
14.	Cost of Tendering	B-6
15.	Taxes and Port Charges	B-6
16.	Conditions of Contract	B-7

B. INSTRUCTION TO TENDERERS

Tenderers are invited by the Japan International Cooperation Agency (JICA) (hereinafter called as "the EMPLOYER") for

in Republic of Indonesia (hereinafter called "the Project")

1. General Description of the Works

(1) General Information of the Work

The Works will be implemented with financing from the EMPLOYER. The general information of the Works are as follows

(a) Title of the Project

(b) Construction Site

(c) Scope of Works

The major works to be covered by this Project shall be :

(d) Time of Completion

The Works shall be completed by __th of _____, 1993.

(2) The Engineer

is appointed as the Engineer (hereinafter called "the Engineer") to administrative the Project on behalf of the EMPLOYER.

(3) Tender Documents

The complete set of Tender Documents consists of the following :

1) INVITATION TO TENDER
2) INSTRUCTION TO TENDERERS
3) TENDER FORM
4) CONSTRUCTION CONTRACT (DRAFT)
5) SPECIFICATIONS
6) BILL OF QUANTITIES
7) DRAWINGS

(4) Tender's Responsibility

(a) The Tender shall carefully examine the Tender Documents., including all Addenda that may be issued during the tendering period, and shall be deemed to have full information as to all conditions in the Site, and elsewhere affecting the performance of the Works, and to have prepared his Tender considering those that will have to supply.

(b) The failure or omission of tenderer to receive or examine the documents, or to acquaint himself with site conditions, shall in no way relieve him from any obligation with respect to this Tender.

2. Qualification of Tenderer

(1) Only Tenderers from selected Japanese construction firms who have their local offices or agents in Republic of Indonesia will be invited to the Tender.

(2) Disqualification of Tenderers

Collusion among or between tenderers shall be considered as sufficient to disqualify the tenderers and to reject their tender.

3. Form and Submission of Tenders

(1) The form of the Contract to be awarded is on a fixed lump sum basis in payment to the Contractor.

(2) The Tender and accompanying documents shall be prepared in English and shall be submitted in duplicate in accordance with the Forms attached to this Tender Documents, The blank space provided in the Forms shall be filled in by typewriter or manually in ink with the authorized representative's signature. The proposals shall be shown in both written words and numerical figures. In case of a discrepancy between the price written in words and that written figures, the written words shall govern.

(3) The Tenderer shall offer his price in Rupiahs (Rp).

(4) The Tenderer shall submit hereto the power of attorney stamped by the Tokyo Chamber of Commence and Industry.

(5) The Tender shall be enclosed in separate envelopes which is sealed, marked in lower left hand corner "Tender for

. in Republic of Indonesia.

(6) No Tender Documents once submitted will be returned to the tenderer.

(7) The Tender Documents shall be returned to the Engineer immediately after the close of the Tender.

(8) Amendments to the Tender once submitted will not be accepted.

(9) Incomplete, vague or conditional Tenders will not be accepted.

4. Receipt and Opening of Tenders

(1) The Tender shall be submitted to the JICA Indonesia office by hand not later than ____ : ____ hours WIB on ____ th of May, 1993.

(2) The Tenders will be opened publicly at the JICA Indonesia Office immediately after the Closing Time of the Submission at the presence of the representative of the Tenderers.

(3) Any Tender received after the time and date for receipt of Tender will not be accepted.

(4) The winner of the tender shall be the one whose Tender is the lowest evaluated price within the original cost estimated by the Engineer, in compliance with all the tender conditions, and the contract will be awarded to the winner.

(5) If the tender prices exceed the original cost estimated by the Engineer all the tenderers are requested to participate in the second or third tenders. The times of tendering, including the first one, shall be maximum three (3) times.

When no tender succeeds after the tender of three (3) times, and if the lowest tender price is only slightly higher than the original cost estimated by the Engineer, direct negotiation with the lowest tenderer may be commenced. And when the price of the lowest tenderer is set to the level of the original cost of the Engineer as a result of the negotiation, the contract would be awarded to the said tenderer.

In case that the price of the lowest tenderer is largely exceeding the cost estimated by the Engineer throughout the three times of tenders, the re-tender will be provided.

5. Tender Validity

The tender price shall be valid for ninety (90) days after opening of the tender.

6. Award of Contract

(1) The Contract shall be awarded within 2 days after the opening of the Tender. The successful tender will be notified by registered mail delivered to the address shown on his tender that he shall be awarded the Contract.

(2) The successful tenderer shall provide the breakdown of the proposed tender price and work schedule. Such breakdown of the estimated cost shall be regarded as a part of the Contract price.

7. Contract Price

Contract to be awarded is on a fixed lump sum basis in payment to the Contractor.

8. Execution of Contract

Within 20 days after the Tender has received the notice of award, he shall sign the Contract.

9. Rejection of Tender

The EMPLOYER is not bound to accept the lowest or any tender nor he is obliged to give any reason for rejection of any tender.

10. Withdrawal of Tender

Tenderers may withdraw their tender by a written request over the signature of the representative of the tenderer and shall submit it to the Engineer prior to the time and date for receipt of Tender.

11. Question and Answer as to Tender Documents

(1) If the tenderer is in doubt as to the true meaning of any part of the Drawings, the Technical Specifications and/or other Contract Documents, he may submit to the Engineer written request for interpretation thereof which should by typed in his letterhead.

(2) Questions as to the Tender Documents shall be submitted to the Engineer by ___ : ___ hours WIB, ___ th of May , 1993, while answer to the question submitted shall be provided to the tenderers at ___ : ___ hours WIB on ___ th of May , 1993.

12. Amendments

When amendments in the Tender Documents are made by the Engineer and/or the EMPLOYER, these will be notified to all Tenderers in a form of addenda, and these addenda shall form an integral part of the Tender Documents.

13. Site Investigation

On-site orientation will not be held. So, if necessary, the tenderer shall at his own expense visit the site early in the period allowed for tendering.

14. Cost of Tendering

All cost associated with the preparation and submission of the tender shall be to the account of the tenderer, and the EMPLOYER will neither be responsible for, nor pay for, any expenses or losses which may be incurred by the tenderer in connection with visits to and examination of the site, and in tendering.

15. Taxes and Port Charges

(1) All materials and equipment imported from Japan under the Contract will be exempted from all customs duties and port charge in Republic of Indonesia.

(2) The Contractor will be exempted from the payment of customs duties, taxes and other fiscal levies which may be imposed by the Government of Republic of Indonesia with respect to the supply of products and services under the contract.

16. Conditions of Contract

Conditions of the Contract, when awarded, are described in the attached form of contract Agreement.

C. TENDER FORM

Tenderes are requested to fill in all the blank spaces in this Tender Form. The successful tenderer is requested to submit the breakdown of tender price to the Engineer.

TENDER FORM

Tender for

.N REPUBLIC OF INDONESIA

To : The Japan International Cooperation Agency

Dear Sirs,

The undersigned Tenderer, having examined the Tender Documents and with knowledge of site and other conditions for

in Republic of Indonesia, and being satisfied as to all conditions under which the above-mentioned work must be performed, hereby proposes to perform all the Works for the Gross Tender Sum of _____(Rp._____).

The undersigned fully understand that the EMPLOYER reserves the right to reject any or all Tenders.

Dated this _____ day of _____,1993.

Signature :_____ in the

Capacity of _____

duly authorized to sign Tenders for and on behalf of _____

_____

Address : _____

_____

(DRAFT)

CONSTRUCTION CONTRACT

BETWEEN

INDONESIA OFFICE
OF
JAPAN INTERNATIONAL COOPERATION AGENCY

AND

_____

FOR

IN
REPUBLIC OF INDONESIA

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AGREEMENT

This Agreement is made and enter into this ___th of ___, 1993 by and between the Japan International Cooperation Agency having its office at Jakarta (hereinafter referred to as "The EMPLOYER") and _____ _____, duly organized and existing under the laws of Japan, having its branch office of business at _____ _____, Republic of Indonesia (hereinafter referred to as "the Contractor").

WITNESS

WHEREAS the EMPLOYER provided funds and management in execution of the Works for the Government of Republic of Indonesia concerning

in Republic of Indonesia

(hereinafter referred to as "the Project")

WHEREAS, the EMPLOYER is desirous of having the construction work for the Project carried out, the Contractor is willing to execute the Works on the terms and conditions as set forth in this Agreement.

NOT THEREFORE, in consideration of the mutual covenants hereinafter contained, the parties agree as follows :

ARTICLE 1. DEFINITION

1.1 Definition

In interpreting or construing this Contract the following terms shall have the meanings hereby assigned to them except where the context otherwise requires :

"Project" means

In Republic of Indonesia.

"The EMPLOYER" means the Japan International Cooperation Agency (JICA), and shall include any person or persons authorized by the JICA.

"The Engineer" means Nippon Koei Co., Ltd. having its principal office at 4. Kojimachi 5-chome, Chiyoda-ku, Tokyo 102, Japan, and shall include any person or persons authorized by the said firm for the Project.

"The Works" means the construction work of the Project as described in Article 3.

"The Contract" means _____ _____ and shall include any person or persons authorized by the said company for the Project.

"The Contractor Documents" means the documents consisting of this Contract, Drawings, Specifications, and all addenda issued prior to the execution of this Contract.

1.2 Period

The period stipulated in this contract refers to calender period.

ARTICLE 2. SCOPE AND EXECUTION OF THE WORKS

The Works shall cover the construction and supply of the following facilities described in the Contract Documents prepared by the Engineer for the Project.

ARTICLE 3. PERIOD OF EXECUTION OF THE WORK

3.1 The Contractor shall commence the Works within fourteen (14) days from the date of the receipt of the notice to commence issued by the Engineer.

3.2 The Contractor shall complete the Works stipulated in Article 3, by the ___th of _____, 1993. However, when extension of the period of execution of the Works is necessary due to clause beyond the control and responsibility of the _____

the EMPLOYER, the extension of the term of this Contract shall be negotiation between the parties hereto.

ARTICLE 4. REMUNERATION

The EMPLOYER shall pay a sum of _____ US Dollars (Rp. _____) (hereinafter referred to as "the Contract price") to the Contractor, as the Contract Price for the Works, in accordance with the payment schedule stated in Article 6.

ARTICLE 5. PAYMENT

5.1 The payment will be made when payment request are presented by the Contractor to the EMPLOYER in Republic of Indonesia with necessary certificates.

5.2 Payment Schedule

5.2.1 Advance Payment

The amount of _____

Rupiahs (Rp. _____), which corresponds to forty percent (40%) of the Contract Price, shall be paid within 30 days after the EMPLOYER will have received the request for the advance payment.

5.2.1 Advance Payment

The amount of _____

Rupiahs (Rp. _____), which corresponds to sixty percent (60%) of the Contract Price, shall be paid upon the completion of the Works under this Contract. The request for final payment shall be accompanied with the certificate of the completion of the Works issued by the Engineer and approved by the EMPLOYER.

ARTICLE 6. EMPLOYER'S RESPONSIBILITIES

6.1 The EMPLOYER shall carry out the following works in time for the commencement of the Works or according to the progress of the Works :

6.1 The EMPLOYER shall help the Contractor in expediting the granting and issuance of visas of personnel of the Contractor and to carry out the Work arising from this Agreement.

6.2 The EMPLOYER shall take necessary measures to exempt the Contractor from customs duties, internal taxes and other fiscal levies which may be imposed in Republic of Indonesia with respect to the supply of the products, services and equipment necessary for the construction of the Project.

6.3 The EMPLOYER shall cooperate with the resident representative of the Contractor in the negotiations and procedures with the various authorities and public and private organizations for the execution of the Works.

ARTICLE 7. CONTRACTOR'S OBLIGATION

7.1 The Contractor shall perform the Works in accordance with the Contract Documents.

7.2 The Contractor shall prepare shop drawings, progress schedules and other technical documents required by the Engineer.

7.3 The Contractor shall submit to the EMPLOYER the lists of origin of material and equipment which the Contractor propose to purchase for the Works.

7.4 The Contractor shall not purchases products or services other than those of Republic of Indonesia or Japan without prior approval of the EMPLOYER.

7.5 The Contractor shall be responsible for construction means, methods, techniques, sequences or procedures, and for safety precautions and program in connection with the Works.

7.6 The Contractor shall be responsible for the acts or omission of the subcontractors, or any of Contractor's agents or employees, or any other persons performing any of the Works.

7.7 The Contractor shall furnish one resident representative with sufficient power to execute the Works at the Project site.

7.8 The Contractor shall bear the handling costs, custom clearance charges, storage charges and internal transportation expenses related to the import of the materials and the equipment for the Works imported from Japan or any other countries.

7.9 The Contractor shall, at his own expense, take necessary measures, in accordance with the Contract Documents and relevant laws, ordinances and regulations, to prevent damage to the Works, construction materials, adjacent structures or a third party, until the completion and delivery of the Works.

ARTICLE 8. SUPERVISION, INSPECTION AND REPORT

8.1 Appointment of the EMPLOYER Engineer

The EMPLOYER entrust the Engineer with power of the supervising work on the construction as well as the power of inspection to act as an agent on behalf of the EMPLOYER in accordance with the contract between the EMPLOYER and the Engineer dated the _____

The Engineer and the EMPLOYER shall, at all times until delivery and acceptance of the facilities and equipment, have the right to inspect all work in progress, or materials utilized in connection with the construction, wherever such work is being done, or such materials are stored.

The Contractor shall furnish the Engineer and the EMPLOYER with reasonable convenience and facilities according to the contractor's practice as may be necessary to enable them effectively carry out their duties.

8.2 Approval of Plans and Drawings

The Contractor shall submit to the Engineer three (3) copies each of plans, drawings and documents required for its approval in accordance with the Specifications. The Engineer shall, within fourteen (14) days after receipt thereof, return to the Contractor one (1) copy of such plans, drawings and documents with the Engineer's approval and/or comments written thereon, if any. A list of plans and drawings to be submitted to the Engineer shall be mutually agreed upon between the Engineer and the Contractor.

8.3 Supervision and Inspection

The necessary inspection of the Works shall be carried out by the Engineer and the EMPLOYER, throughout the entire period of construction, in order to ensure that the Works is duly performed in accordance with this Contract and the Specifications.

8.4 Report

The Contractor shall make a report to the EMPLOYER the monthly progress of the construction as of the end of every month.

The EMPLOYER shall have the right to request the Contractor at any time to obtain a report on the Works, if necessary.

8.5 Inspection

Upon completion of the Works, the Contractor shall request the final inspection of the EMPLOYER.

8.6 Delivery

When the Works has passed the final inspection of the Engineer, with the certificate of Completion issued by the Engineer and approved by the EMPLOYER, the Works shall be delivered to the EMPLOYER.

ARTICLE 9. WARRANTY AGAINST DEFECTS

The period of guarantee against any defects in the Works shall be six (6) months from the date of the final certificate for payment.

ARTICLE 10. BOND

The performance bond is a bond for the proper carrying out of all of the Contractor's obligations during the period from the date of the Signing of the Construction Contract to the completion of the Works in accordance with terms and conditions of this Contract, and the amount of the Performance Bond shall be five percent (5%) of the Contract Price.

The performance bond shall be released immediately after issued of the certificate of completion by the Engineer with approval by the EMPLOYER.

ARTICLE 11. ASSIGNMENT AND SUBLETTING

This Agreement and the rights and obligations hereunder shall not be transferred by either party excepts as otherwise Allowed in this Contract. The Contractor shall not sublet the whole of the Works or a major part of the Works to any third party.

ARTICLE 12. FORCE MAJEURE

12.1 Neither party shall be deemed to be in default or breach of the Contract if he is unable to perform his obligations under the Contract owing to circumstances beyond his reasonable control. Such circumstances (hereinafter referred to as Force Majeure) include, but shall not be limited to the following :

(a) Acts of God, including storm, earthquake, flood or any other such operation of the forces of nature as his reasonable foresight and ability could not foresee or reasonably provide against.

(b) War (declared or undeclared), hostilities, invasion, act of any foreign enemy, threat of or preparation for war; riot, insurrection, civil commotion, rebellion, revolution, usurped power, civil war; and labour trouble or other industrial troubles, strikes, embargoes, blockades, sabotage of labour.

12.2 Monetary Obligations

Notwithstanding the foregoing, the occurrence of Force Majeure shall not prejudice nor otherwise affect either party's liability to pay remuneration or reimbursement of expenses to which the other party is entitled on or before the date of the occurrence.

12.3 Notice

The party affected by Force Mejeure shall give the other party a written detailed account of the circumstances of the Force majeure as soon as practicable, but not later than 14 days from the occurrence.

12.4 Expatriate Staff

In the event that Force Majeure is likely to endanger the safety of any expatriate staff of the Contractor, they shall be allowed to leave the site and office, giving at least 24 hours advance to one of the EMPLOYER staff responsible for the management of the Project.

12.5 Suspension and Termination

Upon the occurrence, the party affected may be allowed to temporarily suspend the performance of his duties under the Contract for so long a period as Force Majeure continues and as his performance is prevented thereby. In such instance, he shall make all reasonable efforts to mitigate the effect of Force Majeure upon his duties, in spite of such efforts, after a cumulative period of 120 days of the suspension, either party may be entitled to terminate the Contract without prejudice.

ARTICLE 13. APPLICABLE LAW

This Contract is governed by laws of Japan and Republic of Indonesia.

ARTICLE 14. DISPUTES AND ARBITRATION

14.1 This Contract shall be executed by the parties hereto in good faith, and in case any doubtful point is raised or any dispute occurs concerning the interpretation or performance of this Contract, such matter shall be settled through the consultation of the parties.

14.2 In the event that an amicable settlement cannot to be reached through consultation, the matter shall be referred to arbitration. The arbitration shall be appointed by the EMPLOYER, another by the Contractor and the last by the said two arbitrators.

14.3 In the event that the said two arbitrators cannot reach agreement on the appointment of the third arbitrator, the dispute shall be settled by arbitration in accordance with the Rules of conciliation and arbitration of the International Chamber of Commerce in Paris.

14.4 The place of arbitration shall be Tokyo in Japan.

14.5 The arbitral award shall be final and blinding upon the parties hereto and the parties shall comply in good faith with the decision. Judgment upon the award or order of enforcement as the case may be.

14.6 The losing party shall bear the cost for all proceedings of arbitration throughout.

ARTICLE 15. LANGUAGE AND MEASUREMENT SYSTEM

15.1 All correspondence between the two parties including notices, request, consents offers or demands shall be in English. All drawings, specifications, reports and other documents shall also be prepared in English.

15.2 All documents made under this Contract shall adopt the metric system and days shall be calender days.

ARTICLE 16. EARLY TERMINATION

16.1 The EMPLOYER may terminate this Contract upon thirty (30) days' written notice to the Contractor, should the Contractor not fulfill his obligations as stipulated in Article 8 for more than sixty (60) consecutive days.

16.2 The Contractor may terminate this Contract upon thirty (30) days' written notice to the EMPLOYER, should the EMPLOYER delay the payment stipulated in Article 6 for more than sixty (60) consecutive days.

16.3 In the event of Early Termination for reasons stated in paragraphs 18.1 or 18.2 the Contractor shall be paid by the EMPLOYER, a fair and reasonable proportion of the Contract Price calculated on the basis of the Contractor's Works carried out up to the termination date.

ARTICLE 17. ENTIRE AGREEMENT

The Contract Documents contain the entire agreement between the parties in respect of the subject matter hereof and supersede and cancel any and all previous agreements, negotiations, commitments and writings in respect of the subject matter thereof.

ARTICLE 18. NOTICE

All notices pertaining to this Contract between the Owner and the Contractor shall be sent in writing by registered air mail, telegraph or telex, or be handed to the addresses so stated herein. In case either party hereto changes the address, the party concerned shall give such notice to the other party beforehand. Time of any notice shall start on the deposit of such a notice, in the post office of the sender.

For The EMPLOYER

Name	:	Mr. Akira TAKAHASHI Resident Representative Japan International Cooperation Agency Indonesia Office
Address	:	Jl. M.H. Thamrin No. 59, Jakarta
Telephone	:	Jakarta 3907533
Fax	:	Jakarta 3907536

For the Contractor

Name	:	_____
Address	:	_____
Telephone	:	_____
Telex	:	_____
Fax	:	_____

For the Contsultan

Name	:	
Address	:	
Telephone	:	
Telex	:	
Fax	:	

IN WITNESS HEREOF, the parties hereto have caused this contract to be signed in their respective name in duplicate, each party retaining one (1) copy thereof.

th day of May, 1993 as of the day and year first herein before written.

The EMPLOYER	The Contractor
_____	_____
Mr. Akira TAKAHASHI Resident Representative Japan International Cooperation Agency Indonesia Office	
Witness by	Witness by
_____	_____

Indonesia

9－4　ベノア湾潮汐表

39. BENOA (BALI)

08°,7 S — 115°,2 T

JANUARI 1993

Waktu : G.M.T. + 08.00

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30	18	19	19	16	13	9	6	4*	5	7	11	15	19	22	23*	21	18	15	11	8	7	7	9	12	30
31	14	16	17	16	14	11	9	7	6*	7	10	13	16	20	21*	21	20	17	14	11	9	8	8	9	31

PEBRUARI 1993

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9	21	16	11	5	2	1*	3	7	12	18	22	23	22	19	14	9	5	3	5	8	13	19	23	24*	9
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11	23	21	16	11	6	2	1*	3	8	13	19	23	24*	23	20	15	9	5	3	4	7	12	17	20	11
12	22	21	18	13	8	4	2*	3	6	11	16	21	24*	24	22	18	13	8	5	4	6	9	13	17	12
13	20	20	19	15	11	7	4*	4	5	9	14	18	22	23*	23	20	16	11	8	6	5	7	10	14	13
14	17	18	18	16	13	10	7	5*	6	8	12	16	19	22*	22	21	18	15	11	8	7	7	9	11	14
15	13	15	16	16	14	12	9	8	7*	8	10	13	16	19	21*	21	20	17	14	12	9	8	8	9	15
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17	9*	9	11	12	13	13	13	13	12	11	11	11	12	13	15	17	18	19*	19	18	16	14	11	9*	17
18	8	7*	8	9	11	12	14	14	14	14	13	12	11	11	12	14	16	18	19	20*	19	17	15	11	18
19	9	6	6*	6	8	11	13	15	17	16	15	13	11	10	9	10	12	15	18	20	21*	20	18	14	19
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24	21	17	11	6	2	1*	3	7	13	19	23	25*	23	20	14	9	4	2	3	7	12	17	22	23	24
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27	21	20	18	13	9	5	3*	4	7	12	17	21	24*	24	22	18	13	8	5	4	5	8	12	16	27
28	19	19	18	15	11	8	5*	5	6	10	14	19	22	23*	23	20	16	12	8	6	6	7	10	13	28

39. BENOA (BALI)

08°,7 S — 115°,2 T

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Waktu: G.M.T. + 08.00

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
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9	17	11	6	3	2*	4	8	13	18	22	24*	23	19	14	9	5	3	4	7	12	17	22	24*	23	9
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15	17	18	17	15	12	9	6*	6	8	11	14	18	21	23*	22	20	16	12	9	6*	6	7	9	12	15
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18	9*	10	12	13	14	14	14	13	12	12	12	12	13	14	15	17	18*	18	17	16	14	12	10	9*	18
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22	11	7	4*	4	5	9	13	18	21	22*	21	18	14	9	6	4*	5	8	12	17	20	22*	21	18	22
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29	19	19	17	14	10	7	6	6	9	13	17	21	23*	23	22	18	13	9	6	4*	5	7	10	14	29
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31	13	15	16	15	14	12	11	9	9	10	12	15	17	19	20*	19	18	15	13	10	8	8*	8	9	31

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T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
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3	8	7*	9	10	13	15	17	17	17	15	14	12	10	10	10	12	14	16	18	18*	18	16	13	10	3
4	8	6*	6	8	11	14	17	19	19	18	16	13	10	8	7	8	10	13	17	19	20*	19	16	13	4
5	9	6	5*	6	8	12	16	19	21*	21	19	16	11	8	5*	5	7	10	14	18	20	21*	19	16	5
6	11	7	5	4	6	9	14	19	22	23*	22	19	14	9	5	3*	4	7	11	16	20	22	21	18	6
7	14	9	5	3	4	7	12	17	22	25*	25	22	17	11	6	3	2*	4	8	13	18	21	22	20	7
8	17	12	7	4	3	5	9	15	20	24	26*	24	20	15	9	4	1*	1	4	9	15	19	22	22	8
9	19	14	9	5	3	4	7	12	18	23	26*	26	23	18	12	6	2	1*	2	6	11	17	20	22	9
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11	20	18	14	10	6	4	5	8	13	18	22	25*	25	23	18	13	7	3	2*	3	6	10	15	18	11
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13	18	18	17	14	11	9	7	7	9	13	16	20	22	23*	21	18	14	10	7	5*	5	7	9	12	13
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17	8*	9	11	13	15	16	17*	17	15	14	12	11	10	11	12	13	15	17	17*	17	15	13	11	9	17
18	7*	7	8	11	13	16	18	19*	18	17	14	11	9	8	8	10	12	15	17	18	18	16	13	10	18
19	8	6*	6	8	11	15	18	20	21*	20	17	13	10	7	6*	7	9	12	16	18	19	19	16	13	19
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26	20	18	15	11	7	6	6	8	13	17	22	24	25*	23	18	13	8	4	2*	3	5	9	13	17	26
27	19	18	17	13	10	8	7	8	11	14	19	22	23*	23	20	16	11	7	4	3*	5	7	11	14	27
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29	14	16	17	16	15	13	11	10	10	11	13	16	18	19	19*	19	16	14	11	8	7	6*	7	9	29
30	12	14	16	16	16	15	14	12	11	11	11	12	14	16	17	18*	17	16	14	11	9	8	7*	8	30

39. BENOA (BALI)

08°,7 S — 115°,2 T

MEI 1993

Waktu: G.M.T. + 08.00

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
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2	8*	9	11	14	16	18	18*	18	17	14	12	10	9	9	10	12	14	16	17	17	15	13	11	8*	2
3	7*	7	9	11	14	17	19	20*	20	17	14	11	9	7*	7	9	11	14	16	18	18	16	13	10	3
4	8	6	7	9	12	16	19	22*	22	21	18	13	9	6	5*	5	8	11	15	17	19	18	16	13	4
5	9	7	6	7	9	14	18	22	24*	23	21	17	12	7	4	3*	4	8	12	16	19	20	18	15	5
6	12	8	6	5	7	11	16	21	24	25*	24	20	15	9	4	2*	2	4	8	13	17	20	20	18	6
7	14	10	7	5	6	8	13	18	23	26*	26	23	18	12	6	2	1*	2	5	10	15	19	20	20	7
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11	19	18	16	12	9	7	7	9	12	16	21	23	24*	23	19	14	9	5	3*	3	5	8	12	16	11
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13	16	18	18	17	14	12	10	9	9	11	14	17	19	21*	20	18	15	11	8	6	5*	6	8	11	13
14	14	16	17	17	16	14	12	11	10	10	12	14	16	18	19*	18	17	14	11	9	7	6*	7	9	14
15	11	14	16	17	18*	17	16	13	12	11	10	11	13	14	16	17	17	16	14	12	10	8	7*	8	15
16	9	11	14	16	18	18*	18	16	14	12	11	10	10	11	12	14	16	16	16	15	13	10	9	8*	16
17	8*	9	11	14	17	19	20*	19	18	15	12	10	8*	8	9	11	13	15	16	16	15	13	11	9	17
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27	18	19	18	16	13	10	8	8	9	12	16	19	21	22*	20	17	13	9	6	4*	4	6	9	13	27
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30	11	14	17	18	19*	18	17	14	12	10	10	10	11	13	15	16	16	16	14	12	10	8	7*	8	30
31	9	12	14	17	19	20*	19	17	15	12	10	9	9	10	11	13	15	16	15	14	13	10	9	8*	31

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5	13	10	7	7	8	11	16	20	24	25*	24	21	16	10	5	2	1*	3	6	11	15	18	19	18	5
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17	8	9	10	13	16	19	21	22*	22	19	16	12	8	6	5*	6	8	11	13	15	16	16	14	12	17
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22	19	16	12	8	6	6	9	13	18	22	25*	25	23	18	13	7	3	1*	1	4	9	14	18	20	22
23	20	18	15	11	7	6	7	10	14	19	23	24*	24	21	16	10	5	2	1*	3	6	11	16	19	23
24	21	20	17	13	10	7	6	8	11	15	20	23*	23	22	18	13	8	4	2*	2	5	9	14	18	24
25	20	21	19	16	12	9	7	7	9	12	16	20	22*	22	20	16	11	7	4	3*	4	7	11	15	25
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27	17	20	21*	20	18	15	12	9	8	8	10	13	15	18	18	18	15	12	9	7	5*	6	8	11	27
28	14	18	20	21*	20	18	15	12	10	9	9	10	12	14	16	16	16	14	12	9	7	7*	7	9	28
29	12	15	18	20	21*	20	18	15	12	10	9	9	9	11	13	14	15	15	14	12	10	9	8*	8	29
30	10	13	15	18	20	21*	20	18	16	13	10	8	8*	8	9	11	13	14	14	14	13	11	10	9	30

39. BENOA (BALI)

08°,7 S — 115°,2 T

JULI 1993

Waktu : G.M.T. + 08.00

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
1	9	10	13	15	18	20	21*	21	19	16	13	10	8	6*	7	8	10	12	14	15	15	14	12	10	1
2	9	9	10	13	16	19	21	22*	22	20	16	13	9	6	5*	6	7	9	12	15	16	16	15	12	2
3	10	9	9	10	12	16	19	22	23*	22	20	16	11	7	4	3*	4	6	10	13	16	17	17	15	3
4	12	10	8	8	10	13	17	21	23	24*	23	19	15	9	5	2*	2	4	7	11	15	18	19	18	4
5	15	12	9	7	7	10	13	18	22	24	25*	22	18	13	7	3	1*	2	4	9	13	17	20	20	5
6	18	14	10	7	6	7	10	15	19	23	25*	24	21	16	10	5	2	1*	2	6	11	16	19	21	6
7	20	17	13	9	6	6	7	11	16	21	24	25*	23	19	13	8	3	1*	1	4	8	14	18	21	7
8	21	20	16	11	8	6	6	8	12	17	21	24*	24	21	16	11	6	2	1*	2	6	11	16	20	8
9	22	21	19	14	10	7	5	6	9	14	18	22	23*	22	19	14	9	4	2*	2	4	9	14	18	9
10	21	22*	21	17	13	9	7	6	7	11	15	18	21	21	20	16	12	7	4	3*	4	7	11	16	10
11	20	22*	22	20	16	12	9	7	7	8	11	15	18	19	19	17	14	10	7	4*	4	6	9	13	11
12	17	20	22*	21	19	15	12	9	8	8	9	12	14	17	18	17	15	12	9	7	6*	6	8	11	12
13	15	18	20	21*	20	18	15	12	10	8	8	9	11	13	15	16	15	14	12	10	8	7*	8	10	13
14	12	15	18	20	21*	20	18	16	13	10	9	8*	9	10	12	13	14	14	13	12	11	9	9	9	14
15	11	13	15	18	20	21*	20	19	16	13	11	9	8*	8	9	10	12	13	14	14	13	12	11	10	15
16	10	11	13	15	18	20	21*	21	19	17	14	11	8	6*	6	7	9	11	13	15	15	14	13	11	16
17	10	10	10	12	15	18	20	22*	22	20	17	13	10	6	5	4*	6	8	12	14	16	17	16	14	17
18	11	9	9	9	11	15	18	21	23*	23	21	17	12	8	4	3*	3	6	9	13	16	18	18	16	18
19	14	11	8	8	9	11	15	19	22	24*	23	20	16	10	6	3	2*	3	6	11	15	18	20	19	19
20	16	13	9	7	6	8	12	16	21	24	25*	23	19	14	8	4	1*	1	4	8	13	18	21	21	20
21	19	15	11	8	6	6	8	13	18	22	24*	24	22	17	11	6	2	0*	2	6	11	16	20	22	21
22	21	18	14	9	6	5	6	9	14	19	23	24*	23	20	14	8	4	1*	1	4	8	14	19	22	22
23	23	21	17	12	8	5	5	7	11	16	20	23	24*	21	17	11	6	2	1*	2	6	11	17	21	23
24	23*	23	20	15	10	7	5	5	8	12	17	21	22	22	19	14	9	5	2*	2	5	9	14	19	24
25	22	23*	22	18	14	9	6	5	6	9	13	17	20	21	19	16	12	7	4	3*	4	7	12	17	25
26	20	23*	22	20	17	13	9	7	6	8	10	14	17	19	19	17	14	10	7	5*	5	7	10	14	26
27	18	21	22*	21	19	16	12	9	7	7	9	11	13	16	17	16	15	12	10	7	6*	7	9	12	27
28	15	18	20	21*	20	18	15	12	10	8*	8	9	11	12	14	15	14	13	12	10	9	8*	9	10	28
29	13	15	18	20	20*	20	18	16	13	11	9	8*	8	9	11	12	13	13	13	12	11	10	10	10	29
30	11	13	15	17	19	20*	20	19	17	14	11	9	8	7*	8	9	11	12	14	14	14	13	12	11	30
31	10	11	12	14	16	19	20	21*	20	18	15	11	8	6	6*	6	8	10	13	15	16	15	14	13	31

AGUSTUS 1993

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
1	11	10	10	11	13	16	19	21	22*	21	18	14	10	7	5	4*	5	8	11	14	17	18	17	15	1
2	12	10	8	8	10	13	17	20	22	23*	21	18	13	9	5	3*	3	5	9	13	17	19	19	18	2
3	15	11	8	7	7	10	13	18	22	24*	23	21	17	11	6	3	1*	3	6	11	16	19	21	20	3
4	18	14	9	6	5	7	10	15	19	23	24*	23	20	14	9	4	1*	1	4	8	14	19	22	22	4
5	20	17	12	7	5	4	7	11	16	21	24*	24	22	17	12	6	2	1*	2	6	11	17	21	23	5
6	23	19	15	10	6	4	4	8	13	18	22	24*	23	20	15	9	4	1*	1	4	9	15	20	23	6
7	24*	22	18	13	8	4	4	5	9	14	19	22	23*	21	17	12	7	3	1*	3	7	12	18	22	7
8	24*	23	20	16	11	6	4	4	7	11	16	19	22	21	19	14	9	5	3*	3	5	10	15	20	8
9	23	24*	22	19	14	9	6	5	6	8	12	16	19	20	19	16	12	8	5	4*	5	8	13	17	9
10	21	23*	23	21	17	13	9	7	6*	7	10	13	16	18	18	16	14	10	8	6*	6	8	11	14	10
11	18	21	22*	21	19	16	12	9	8	7*	8	10	13	15	16	16	14	12	10	8	8	8	10	12	11
12	15	18	20	21*	20	18	16	13	10	9	8*	9	10	11	13	14	14	13	12	11	10	9	10	11	12
13	13	15	17	19	20*	19	18	16	14	12	10	9	8*	9	10	11	12	13	13	13	13	12	11	11	13
14	11	12	14	16	18	19	19*	19	17	15	12	10	8	7*	7	8	10	12	14	15	15	14	13	12	14
15	11	10	11	13	15	17	19	20*	20	18	16	12	9	6	5*	6	7	10	13	15	17	17	16	14	15
16	11	10	9	10	12	15	18	20	22*	21	19	15	11	7	4*	4	5	7	11	15	18	19	19	16	16
17	13	10	8	7	8	11	15	19	22	23*	22	19	14	9	5	3*	3	5	9	13	18	20	21	19	17
18	16	12	8	6	6	8	12	16	20	23	24*	21	17	12	7	3	1*	3	6	11	16	20	22	22	18
19	19	14	10	6	4	5	8	13	18	22	24*	23	20	15	9	4	1*	1	4	9	14	20	23	24*	19
20	22	17	12	7	4	3	5	9	15	20	23	24*	22	18	12	6	2	1*	2	6	12	18	22	24*	20
21	24*	20	15	10	5	3	3	6	11	16	21	23	23	20	15	9	4	2*	2	4	9	15	21	24*	21
22	25*	23	18	13	8	4	3	4	8	13	18	21	22	21	17	12	7	3	2*	4	7	13	18	23	22
23	25*	24	21	16	11	6	4*	4	6	10	14	18	21	20	18	14	10	6	4*	4	6	11	16	20	23
24	23	24*	22	19	14	10	6	5*	5	8	11	15	18	19	18	16	12	8	6	5*	6	9	13	17	24
25	21	23*	23	21	17	13	9	7	6*	7	9	12	15	16	17	16	14	11	8	7	7	8	11	15	25
26	18	20	21*	21	19	16	13	10	8	7*	8	10	12	13	15	15	14	13	11	10	9	9	10	13	26
27	15	17	19	20*	19	18	16	13	11	9	9*	9	9	10	12	13	13	13	13	12	11	11	11	11	27
28	13	14	16	18	19*	19	18	17	15	12	10	9	8*	8	9	10	12	13	14	14	14	13	12	11	28
29	11	12	13	14	16	18	19*	19	18	16	13	10	8	7	6*	7	9	12	14	16	16	16	14	13	29
30	11	10	10	11	13	16	18	20*	20	19	16	13	9	6	5*	5	7	10	13	16	18	19	17	15	30
31	12	9	8	8	10	13	16	19	21*	21	20	16	12	7	4	3*	4	7	11	16	19	21	20	18	31

39. BENOA (BALI)

08°,7 S — 115°,2 T

SEPTEMBER 1993

Waktu : G.M.T. + 08.00

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
1	19	13	7	3	1*	1	5	9	14	18	21	20	18	13	9	6	4	6	9	14	20	24	26*	26	1
2	22	17	11	5	1	0*	2	6	11	16	19	21	19	16	12	8	5	5	7	12	17	22	25	26*	2
3	24	20	14	8	4	1*	1	4	8	13	17	20	20	18	14	10	7	5	6	9	14	19	23	25*	3
4	25*	22	17	12	7	3	2*	3	6	10	15	18	19	19	16	13	9	7	6	8	11	16	20	23	4
5	24*	23	20	15	10	6	3*	3	5	8	12	15	18	19	17	15	12	9	8	8	10	13	16	20	5
6	22*	22	20	17	13	9	6	4*	4	6	9	13	16	17	18	17	15	12	10	9	9	11	13	16	6
7	19	20*	20	18	16	12	9	7	6*	6	8	10	13	15	17	17	17	15	13	11	10	10	11	13	7
8	15	17	18*	18	17	15	12	10	8	7*	7	8	10	13	15	17	17	17	16	14	12	11	10	11	8
9	12	13	15	16	17	16	15	13	11	9	8	7*	8	10	13	15	17	18*	18	17	15	13	11	10	9
10	9	10	11	13	15	16	16	15	14	11	9	8	7*	8	10	13	16	18	20*	20	18	16	13	10	10
11	8	7*	8	10	12	15	16	17	16	14	12	9	7*	7	8	11	14	17	20	22*	21	19	16	12	11
12	8	6	5*	6	9	12	15	17	18	17	14	11	8	7	6	8	11	15	19	22	23*	22	19	15	12
13	10	6	4*	4	6	9	13	16	18	19	17	14	10	7	6	6	9	13	17	22	24*	24	22	18	13
14	13	8	4	2*	3	6	10	14	18	19	19	17	13	9	6	5	7	10	15	20	24	26*	25	22	14
15	16	11	5	2	1*	3	6	11	16	19	20	19	16	11	8	5	5	8	12	17	22	25	26*	24	15
16	20	14	8	3	1*	1	4	8	13	17	20	20	18	14	10	7	5	6	9	14	19	24	26*	26	16
17	23	17	11	6	2	1*	2	5	10	15	18	20	19	16	13	9	6	6	7	11	16	21	24	26*	17
18	24*	20	15	9	4	1*	1	3	7	12	16	19	20	18	15	11	8	6	7	9	13	18	22	24*	18
19	24*	22	18	13	7	4	2*	2	5	9	14	17	19	19	17	14	11	8	7	8	11	14	18	21	19
20	25*	22	20	16	11	7	4	3*	4	7	11	15	18	19	18	16	14	11	9	8	9	12	15	18	20
21	20	21*	20	18	14	10	7	5	4*	6	9	12	15	18	18	18	16	14	11	10	9	10	12	15	21
22	17	19*	19	18	16	13	10	7	6*	6	7	10	13	16	18	18	18	16	14	12	11	10	10	12	22
23	14	15	17	17	17	15	13	10	8	7*	7	8	10	13	16	18	19*	18	17	15	13	11	10	10	23
24	10	12	14	15	16	16	15	13	11	9	8	7*	8	11	13	16	18	20*	20	18	16	13	11	9	24
25	8*	9	10	12	14	15	16	15	14	11	9	8*	8	9	11	14	17	19	21*	21	19	17	13	10	25
26	8	7*	7	9	11	14	16	16	16	14	12	9	8	7*	8	11	14	18	21	22*	22	20	16	12	26
27	8	6	5*	6	8	11	14	16	17	17	14	12	9	7	7	9	12	16	20	23	24*	23	20	15	27
28	11	6	4	3*	5	8	12	15	18	18	17	14	11	8	7	7	9	13	17	22	24	25*	23	19	28
29	14	8	4	2*	2	5	8	13	17	19	19	17	14	10	7	6	7	10	15	19	23	25*	25	22	29
30	17	11	6	2	1*	2	5	10	14	18	19	19	16	12	9	6	6	8	12	16	21	25	26*	24	30

OKTOBER 1993

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
1	20	15	9	4	1*	1	3	7	12	16	19	20	18	15	11	8	6	6	9	13	18	23	25*	25	1
2	23	18	12	7	3	1*	1	4	9	14	18	20	20	17	14	10	7	6	7	10	15	20	23	25*	2
3	24*	21	16	10	5	2	1*	3	6	11	16	19	20	19	16	13	9	7	7	8	12	16	20	23	3
4	24*	22	18	13	8	4	2*	2	5	8	13	17	19	20	18	16	12	9	7	8	10	13	17	20	4
5	22*	22	20	16	12	7	4	3*	4	6	10	14	18	19	19	18	15	12	9	8	9	10	13	17	5
6	19	20*	20	18	14	10	7	5	4*	5	8	12	15	18	19	19	17	15	12	10	9	9	11	13	6
7	16	18	19*	18	16	13	10	7	6*	6	7	10	13	16	18	19*	19	18	15	13	11	9	9	10	7
8	12	14	16	17	16	15	13	10	8	7*	7	8	10	13	16	19	20*	20	18	16	13	11	9	9	8
9	9	11	13	14	15	15	15	13	11	9	8*	8	9	11	14	17	19	20*	20	19	17	14	11	9	9
10	8*	8	9	11	13	15	15	15	14	12	10	8*	8	9	11	14	17	20	21	21	20	17	14	10	10
11	8	6*	6	8	10	13	15	16	16	14	12	10	8	8	9	11	15	18	21	23*	22	20	17	13	11
12	9	6	4*	5	7	10	13	16	17	16	15	12	10	8	8	9	12	16	20	23	24*	23	20	16	12
13	11	7	4	3*	4	7	10	14	17	18	17	15	12	9	7	7	9	13	17	21	24	25*	23	20	13
14	15	9	5	2*	2	4	7	12	16	18	19	17	14	11	8	7	7	10	14	18	23	25*	25	23	14
15	18	12	7	3	1*	2	4	9	13	17	19	19	17	14	10	7	6	7	11	15	20	24	25*	25	15
16	21	16	10	6	1*	1	2	6	11	15	19	20	19	16	12	9	6	6	8	12	17	21	24	25*	16
17	23	19	14	8	3	1*	1	4	8	13	17	20	20	19	15	11	8	6	7	9	13	18	22	24*	17
18	24*	21	17	11	6	2	1*	2	6	10	15	19	21	20	18	14	10	7	6	7	10	15	19	22	18
19	23*	22	19	14	9	5	2*	2	4	8	13	17	20	21	20	17	13	10	8	7	8	11	15	19	19
20	21	22*	20	17	12	8	5	3*	4	6	10	14	18	20	21	19	16	13	10	8	8	9	12	15	20
21	18	20*	20	18	15	11	7	5	4*	5	8	12	16	19	20*	20	19	16	13	10	9	8	10	12	21
22	14	17	18	18	16	13	10	8	6*	6	7	10	13	16	19	20*	20	18	16	13	11	9	9	10	22
23	11	13	15	16	16	15	13	10	8	7*	7	9	11	14	17	19	20*	20	19	16	14	11	9	8	23
24	9	10	12	13	15	15	14	13	11	9	8*	8	9	11	14	17	19	21*	21	19	17	14	11	9	24
25	7*	7	8	10	12	14	15	15	14	12	10	9	9	10	11	14	17	20	21	22*	20	18	14	11	25
26	8	6*	6	7	9	12	14	15	15	15	13	11	9	9	9	11	14	18	21	22	23*	21	18	13	26
27	9	6	4*	4	6	9	12	15	16	17	15	13	11	9	8	9	11	15	19	22	24*	23	21	17	27
28	12	8	4	3*	3	6	9	13	16	18	18	16	13	10	8	7	9	12	16	20	23	25*	24	20	28
29	16	10	6	2*	2	3	6	11	15	18	19	18	16	12	9	7	7	9	13	17	21	24	25*	23	29
30	19	14	8	3	1*	1	4	8	13	17	20	20	18	16	11	8	6	7	9	14	19	23	25*	25	30
31	22	17	11	6	2	0*	2	5	10	15	19	21	20	18	14	10	7	6	7	10	16	20	23	25*	31

39. BENOA (BALI)

08°,7 S — 115°,2 T

NOPEMBER 1993

Waktu : G.M.T. + 08.00

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
1	14	10	7	6	6	9	13	18	21	23*	22	19	15	10	5	3	2*	5	9	14	19	22	22	21	1
2	17	12	8	5	4	6	10	15	19	23	24*	22	18	12	7	3	2*	3	7	12	17	22	24*	23	2
3	20	15	10	5	3	3	6	11	17	21	24	23	20	15	10	5	2*	2	4	9	15	21	24	25*	3
4	23	18	12	7	3	2	4	8	13	18	22	23	22	18	12	7	3	1*	3	7	13	19	23	25*	4
5	25*	21	16	10	5	2*	2	5	10	15	20	22	22	20	15	10	5	2*	2	5	10	16	21	25*	5
6	25*	23	19	13	8	4	2*	3	7	12	17	20	21	20	17	12	8	4	3	5	8	13	19	23	6
7	25*	24	21	16	11	6	4	3*	5	9	13	17	19	20	18	14	10	7	5	5	7	11	16	20	7
8	23	24*	22	19	14	10	6	5*	6	7	11	14	17	18	17	15	12	9	7	6	7	10	13	17	8
9	20	22*	22	20	17	13	10	7	6*	7	9	11	14	15	16	15	14	12	10	8	8	9	12	14	9
10	17	19	20*	20	19	16	13	11	9	8*	8	9	11	12	14	14	14	13	12	11	10	10	11	12	10
11	14	16	18	19*	19	18	16	14	12	10	9	8*	9	10	11	12	13	14	14	14	13	12	12	11	11
12	12	13	14	16	17	18*	18	17	15	13	11	9	8	7*	8	10	12	14	15	16	16	15	13	12	12
13	11	10	11	13	15	17	18	19*	18	16	14	11	8	6*	6	7	9	12	15	17	18	18	16	13	13
14	11	9	8	9	11	14	17	20*	20	19	17	13	10	6	5*	5	7	10	14	18	20	20	19	16	14
15	12	9	7	6	8	11	15	19	21	22*	20	16	12	8	4	3*	4	8	12	17	20	22*	22	19	15
16	15	10	6	4	5	7	12	16	20	22	22	19	15	10	5	3*	3	5	10	15	20	23	24*	22	16
17	18	12	7	4	3	4	8	13	18	22	23	22	18	13	7	3	2*	3	7	13	18	23	25*	24	17
18	21	15	10	5	2*	2	5	10	15	20	23	23	20	15	10	5	2*	2	5	10	16	22	25	26*	18
19	23	19	13	7	3	1*	3	7	12	17	21	23	21	18	13	7	4	2	4	8	13	19	24	26*	19
20	25*	21	16	10	5	2*	2	4	9	14	19	21	21	19	15	10	6	3	3	6	11	17	22	25*	20
21	26*	23	19	13	8	4	2*	3	6	11	15	19	20	20	17	12	8	5	4	6	9	14	19	23	21
22	25*	24	21	16	11	7	4	3*	5	8	12	16	18	19	17	14	11	8	6	6	8	12	16	20	22
23	22	23*	22	19	15	10	7	5*	5	7	10	13	15	17	17	15	13	10	8	8	8	10	13	17	23
24	19	21*	21	20	17	14	10	8	7*	7	8	10	12	14	15	15	14	13	11	10	10	10	12	14	24
25	16	18	19*	19	18	16	14	11	9	8*	8	9	10	11	13	14	14	14	14	13	12	11	11	12	25
26	13	15	16	17	18*	17	16	15	13	11	9	8*	8	9	10	12	14	15	15	15	15	13	12	11	26
27	11	12	13	14	16	17	18*	17	16	14	11	9	8	7*	8	9	12	14	16	17	17	16	14	12	27
28	10	9	9	11	13	16	18	19	19	17	14	11	8	6*	6	7	10	13	16	19	20*	19	17	14	28
29	11	8	7	7	10	13	16	19	20	20	17	14	10	6	5*	5	7	11	15	19	21	22*	20	17	29
30	12	8	5	5	6	9	14	18	20	21	20	17	12	8	5	3*	5	8	13	18	22	24*	23	20	30

DESEMBER 1993

T \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J / T
1	15	10	6	3*	3	6	10	15	19	22	22	19	15	10	6	3*	3	6	10	16	21	24	25*	23	1
2	18	12	7	3	2*	3	7	12	17	21	22	21	18	13	8	4	3	4	8	14	19	24	26*	25	2
3	21	16	10	4	1*	1	4	8	14	19	22	22	20	15	10	6	3	3	6	11	17	22	26*	26	3
4	24	19	13	7	3	1*	2	5	11	16	20	22	21	18	13	8	5	3	5	9	14	20	24	26*	4
5	25*	22	16	10	5	2	1*	4	8	13	17	20	21	19	15	11	7	4	5	7	11	17	21	25*	5
6	25*	23	19	14	8	4	2*	3	6	10	14	18	19	19	17	13	9	7	6	7	10	14	18	22	6
7	24*	23	21	17	12	8	5	4*	5	8	11	15	17	18	17	15	12	9	7	7	9	12	15	19	7
8	21	22*	21	19	15	11	8	6	5*	7	9	12	14	16	16	16	14	12	10	9	9	11	13	16	8
9	18	20*	20	19	17	14	11	9	7*	7	8	9	12	14	15	15	15	14	13	11	11	11	12	13	9
10	15	17	18	18*	18	16	14	12	10	9	8*	8	9	11	13	14	15	16	15	14	13	12	11	11	10
11	12	13	14	16	17*	17	16	15	13	11	9	8	8*	8	10	12	14	16	17*	17	16	14	13	11	11
12	10	10	11	13	15	16	17	17	16	14	12	9	7*	7	8	10	12	15	18	19*	19	17	15	12	12
13	9	8	8	9	12	14	17	19	19	17	14	11	8	6*	6	7	10	14	17	20	21*	20	18	14	13
14	10	7	6	6	8	11	15	18	20	20	17	14	10	7	5*	5	8	11	16	20	23*	23	21	17	14
15	12	8	5	3*	5	8	12	17	20	21	20	17	12	8	5	4	5	9	14	19	23	25*	24	20	15
16	15	10	5	2*	2	5	9	14	18	21	21	19	15	10	6	4	4	7	11	17	22	25	26*	23	16
17	19	13	7	3	1*	2	6	11	16	20	22	21	18	13	8	5	3	5	9	14	20	24	26*	25	17
18	22	16	10	5	1*	1	3	7	13	17	21	21	19	15	11	7	4	4	7	11	17	22	26*	26	18
19	24	19	13	7	3	1*	1	5	9	14	19	21	20	17	13	9	6	4	6	9	14	19	24	26*	19
20	25*	22	17	11	6	2	1*	3	7	11	16	19	20	19	16	12	8	6	6	8	12	16	21	24	20
21	25*	23	19	14	9	5	3*	3	5	9	13	16	18	19	17	14	11	8	7	7	10	14	18	21	21
22	23*	23	21	17	13	8	5	4*	5	7	10	14	16	17	17	16	13	11	9	8	9	11	15	18	22
23	20	21*	21	18	15	12	8	6	5*	6	8	11	13	16	17	16	15	13	12	10	10	11	12	14	23
24	17	18	19*	19	17	15	12	9	8	7*	7	9	11	13	15	16	16	16	14	13	12	11	11	12	24
25	13	15	16	17*	17	16	15	13	10	9	8*	8	9	10	13	15	16	17*	17	16	14	13	11	11	25
26	11	11	13	15	16	17	17	15	14	11	9	8	7*	8	10	12	15	17	19*	19	17	15	13	11	26
27	9	9	9	11	13	16	17	17	16	14	12	9	7*	7	8	10	13	16	19	21*	20	18	15	12	27
28	9	7	6*	8	10	13	16	18	18	17	14	11	8	6*	6	8	11	15	19	21	22*	21	19	14	28
29	10	7	5*	5	7	10	14	17	19	19	17	14	10	7	5*	6	8	12	17	21	24*	24	22	18	29
30	13	8	4	3*	4	7	11	15	19	20	19	17	13	8	6	5	6	10	15	20	24	25*	24	21	30
31	16	10	5	2	1*	4	8	13	17	20	21	19	15	11	7	5	5	7	12	17	22	25	26*	24	31

図面 1

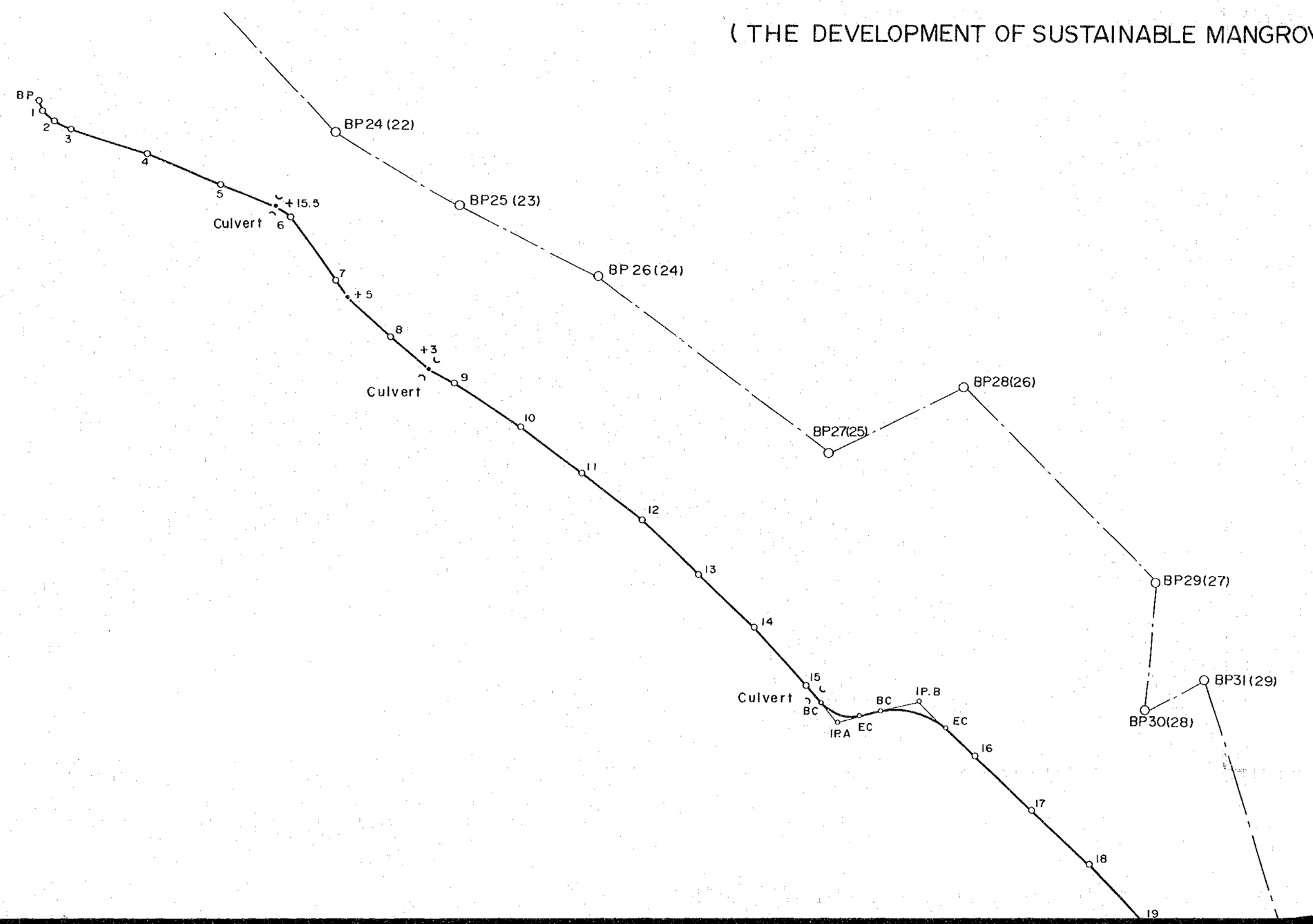
— アクセス道路及び敷設配置図

— アクセス道路縦断面図

— アクセス道路横断面図

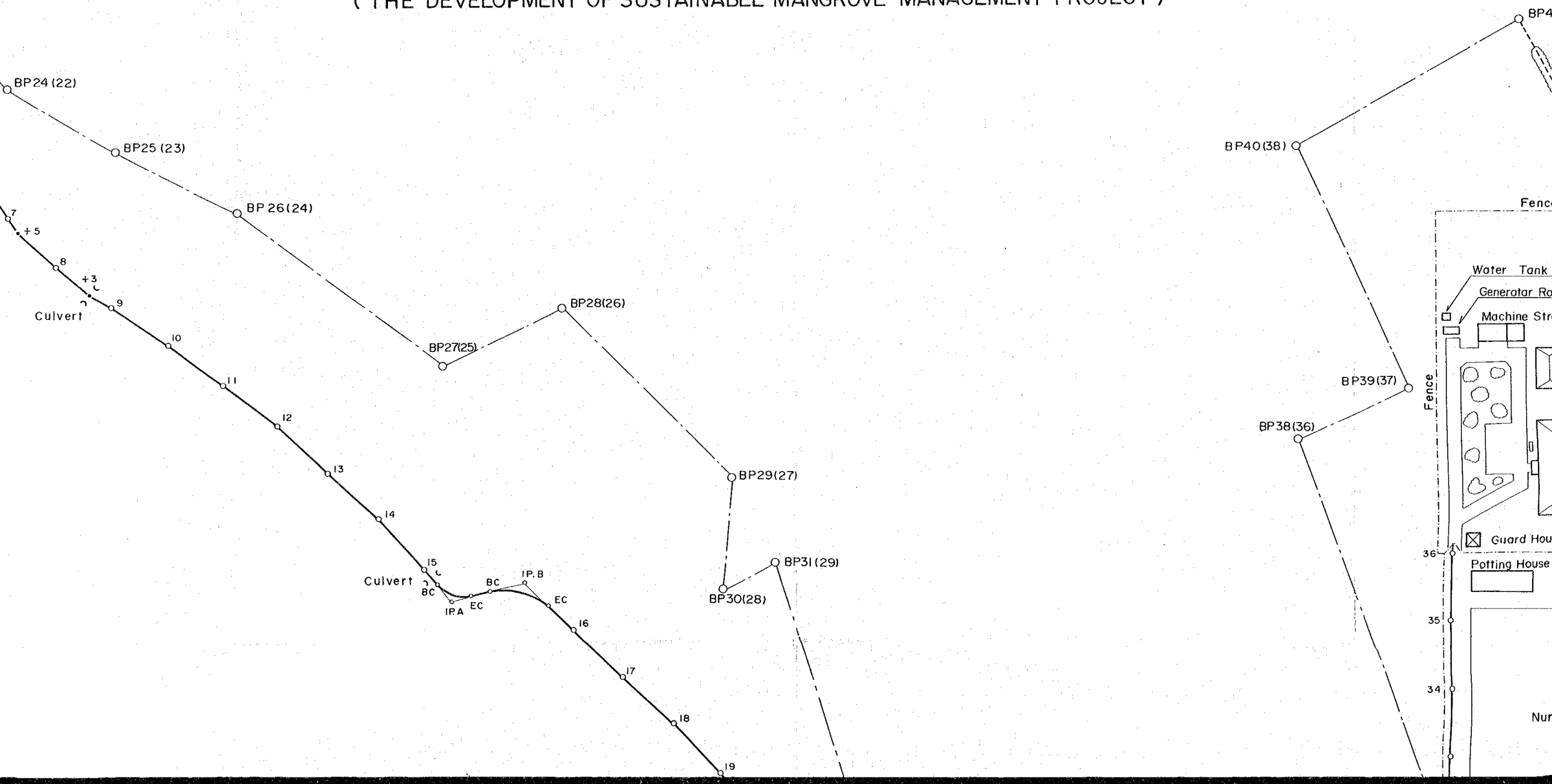
PLANE OF ACCESS ROAD AND L

(THE DEVELOPMENT OF SUSTAINABLE MANGRO



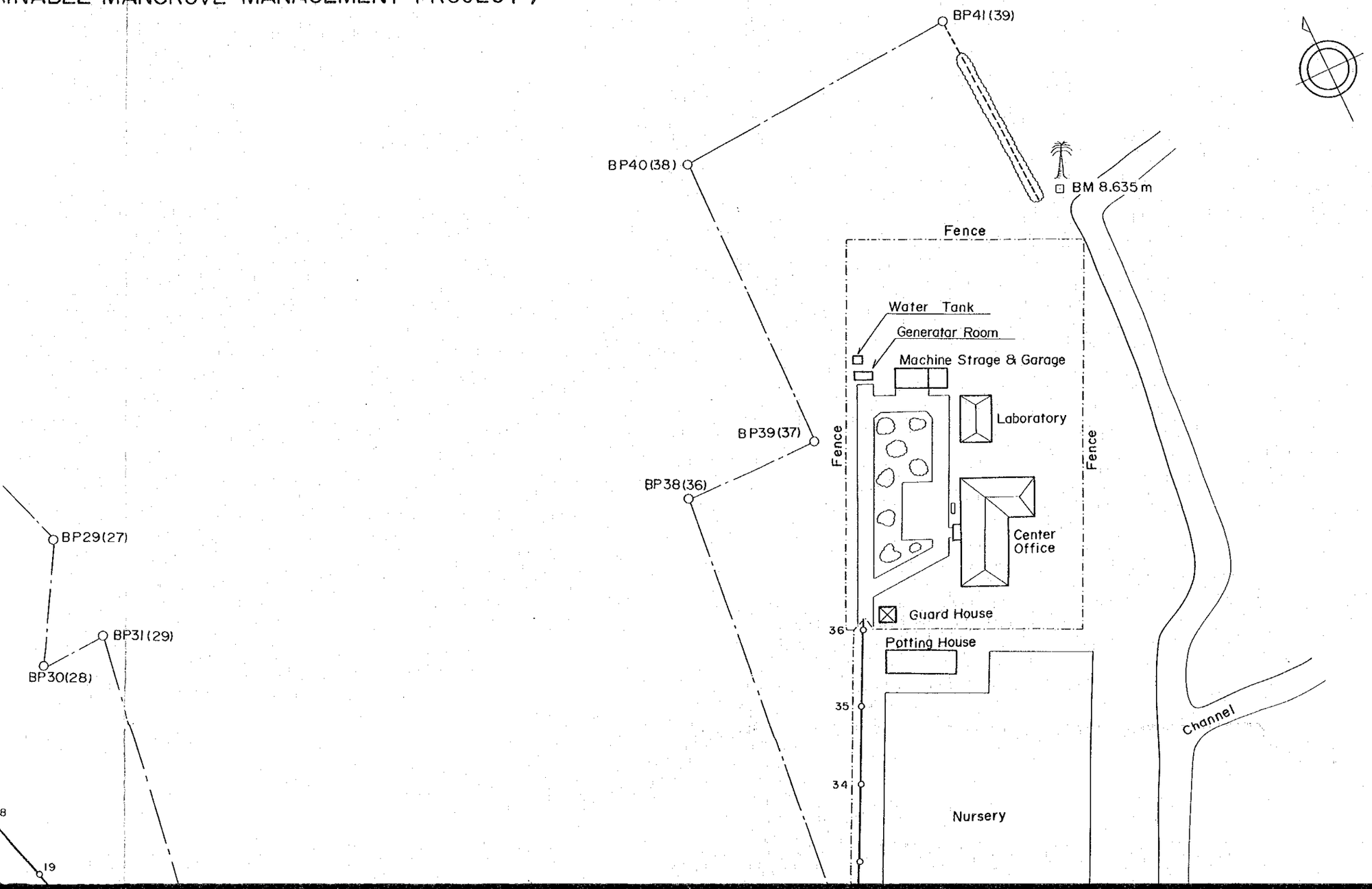
PLANE OF ACCESS ROAD AND LAYOUT OF FACILITIES

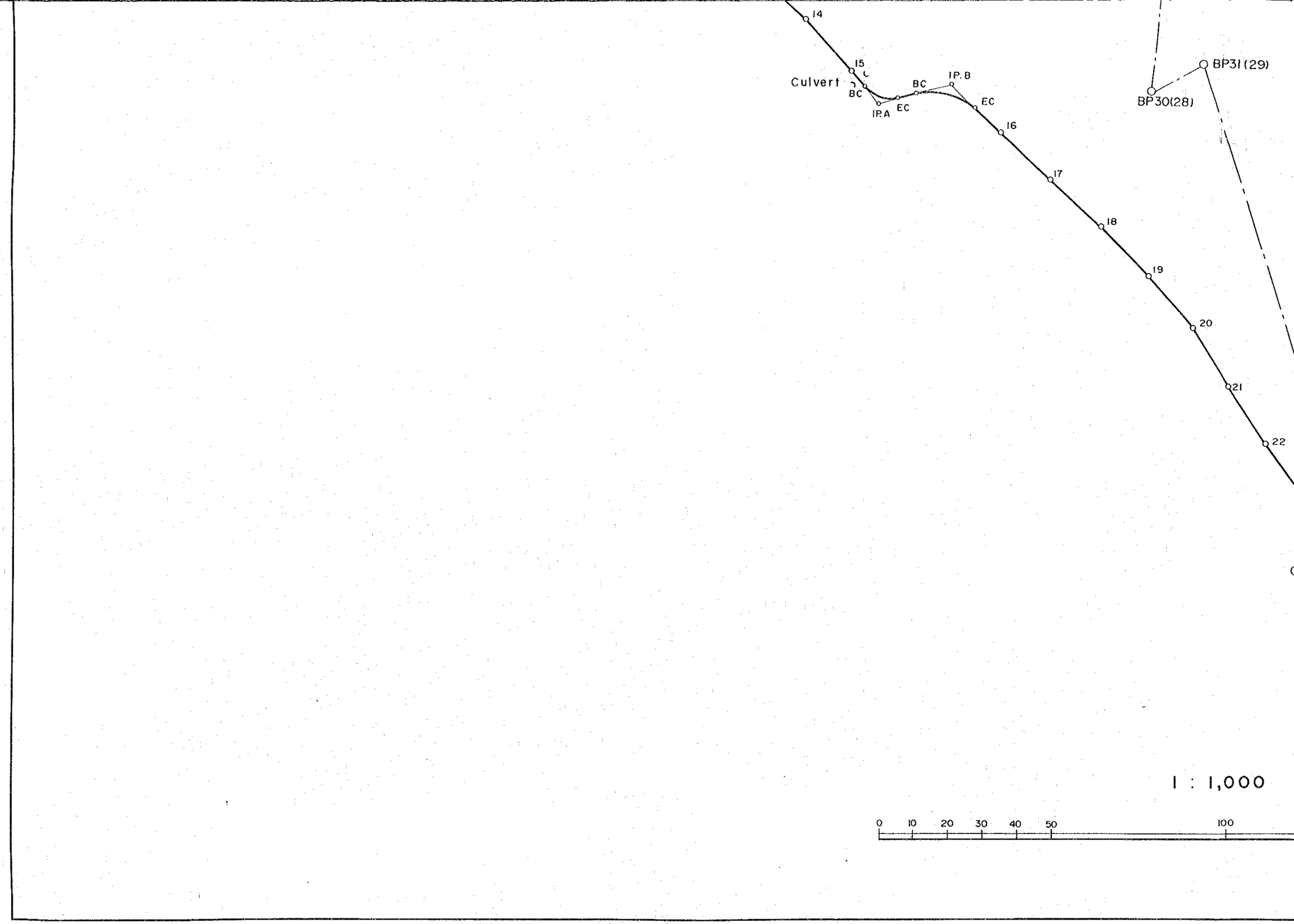
(THE DEVELOPMENT OF SUSTAINABLE MANGROVE MANAGEMENT PROJECT)

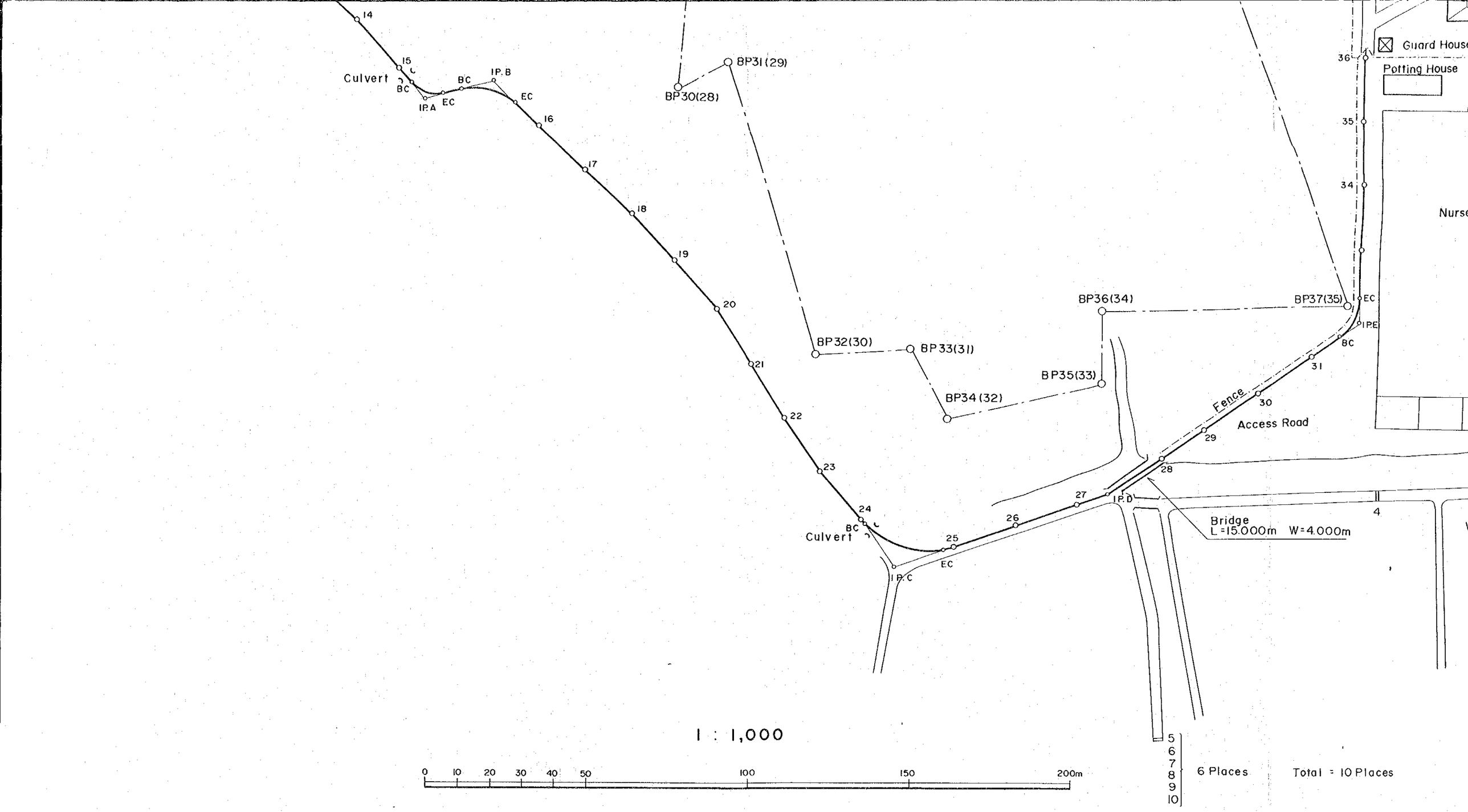


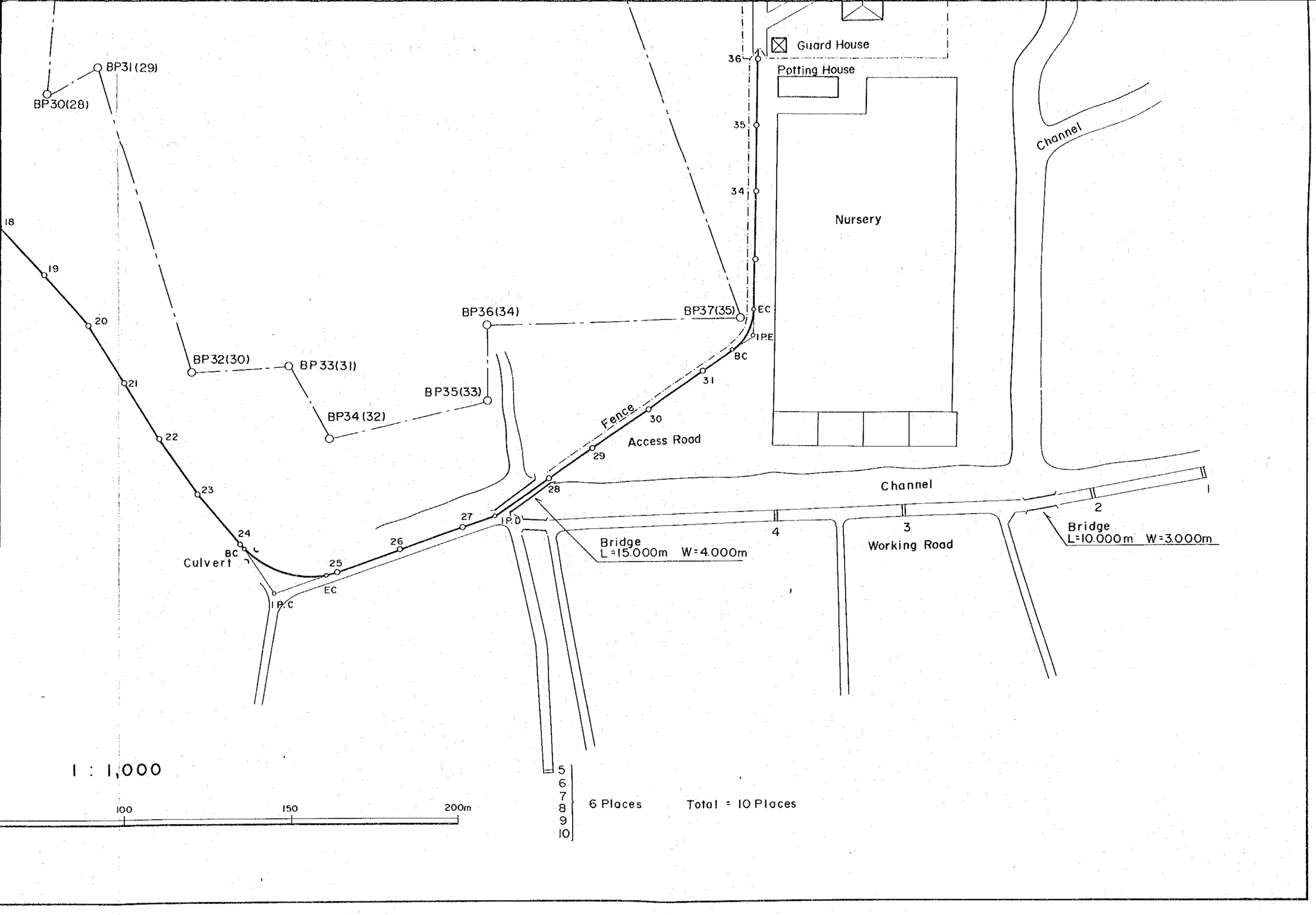
AD AND LAYOUT OF FACILITIES

AINABLE MANGROVE MANAGEMENT PROJECT)




14
15
Culvert
BC
IP.A
EC
BC
IP.B
EC
16
17
18
19
20
21
22
BP30(28)
BP31(29)
1 : 1,000
0
10
20
30
40
50
100


Guard House
Potting House
Nurse
Culvert
BC
IP.A
EC
BC
IP.B
EC
BP30(28)
BP31(29)
BP32(30)
BP33(31)
BP34(32)
BP35(33)
BP36(34)
BP37(35)
EC
IP.E
BC
Fence
Access Road
IP.D
Bridge
L=15.000m W=4.000m
Culvert
BC
IP.C
EC
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
34
35
36
4
5
6
7
8
9
10
6 Places
Total = 10 Places
1 : 1,000
0
10
20
30
40
50
100
150
200m


Guard House
Potting House
Nursery
Channel
Channel
BP31(29)
BP30(28)
BP32(30)
BP33(31)
BP34(32)
BP35(33)
BP36(34)
BP37(35)
EC
I.P.E
BC
Fence
Access Road
I.P.D
Bridge
L=15.000m W=4.000m
Working Road
Bridge
L=10.000m W=3.000m
Culvert
BC
EC
I.P.C
18
19
20
21
22
23
24
25
26
27
28
29
30
31
36
35
34
1
2
3
4
5
6
7
8
9
10
1 : 1,000
100
150
200m
6 Places
Total = 10 Places