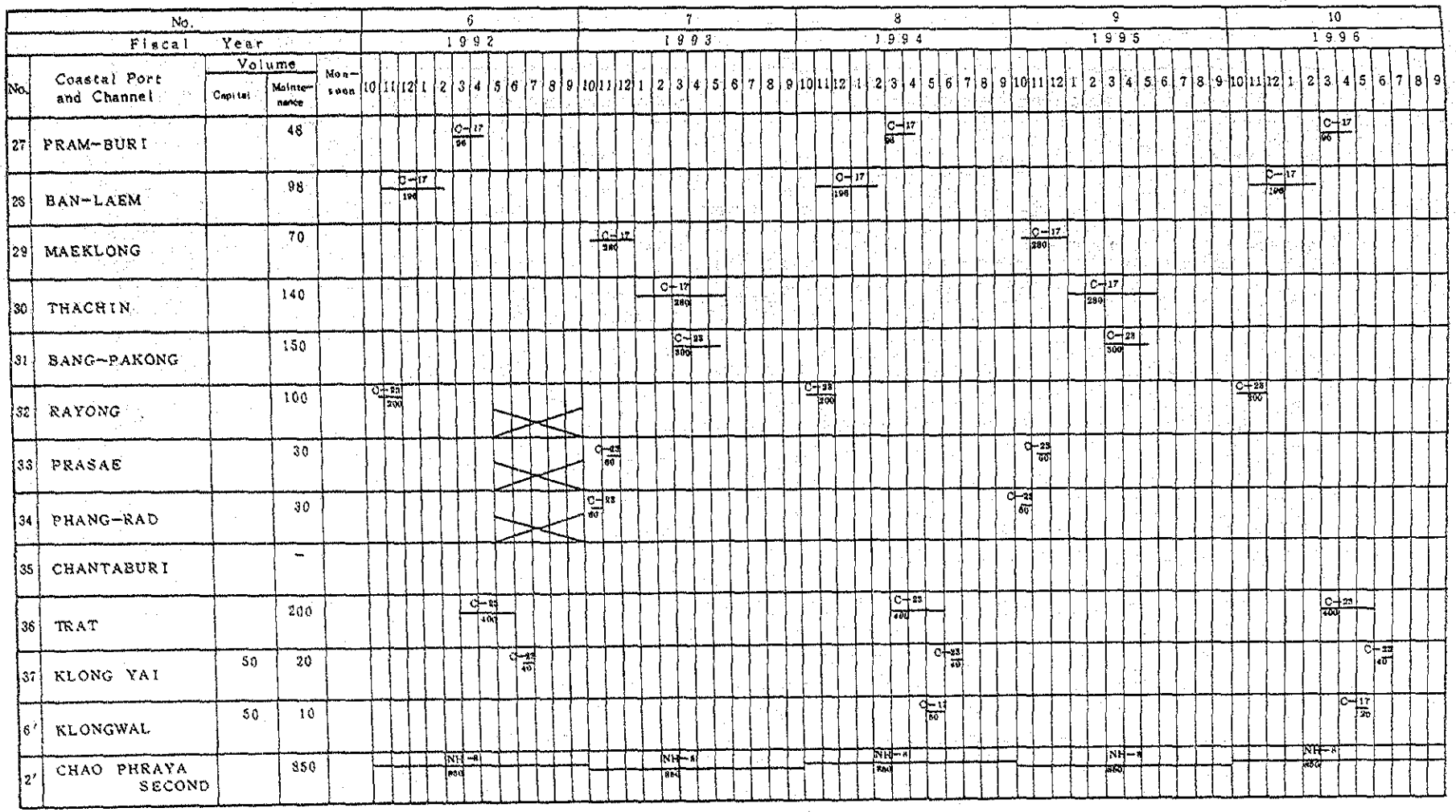

Fig. A.2-7 (4/4) Chantaburi Dredging Center Deployment Plan during the 7th National Five Year Plan with Project (Plan 2)

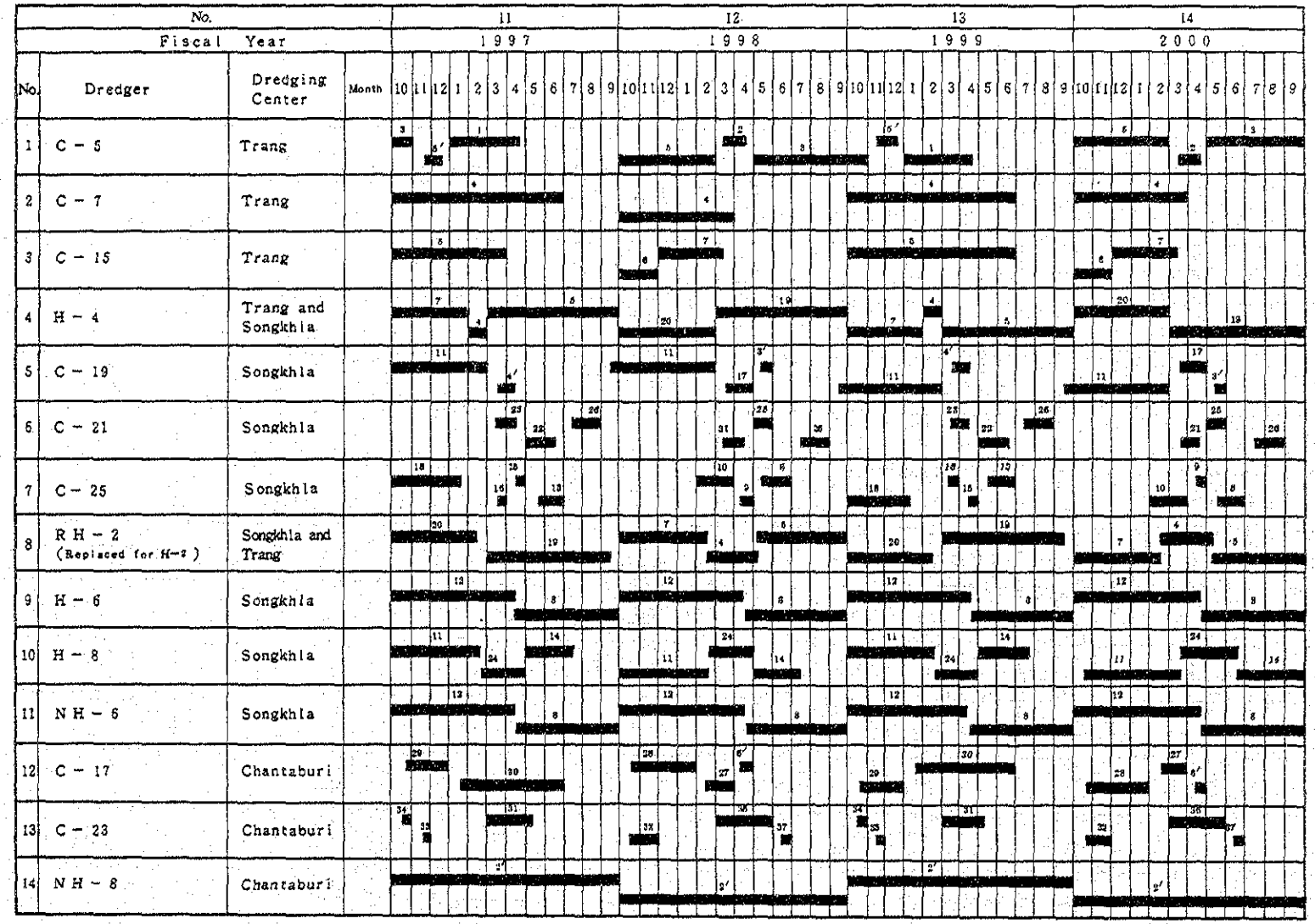

Fig. A.2-8 (1/4) Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

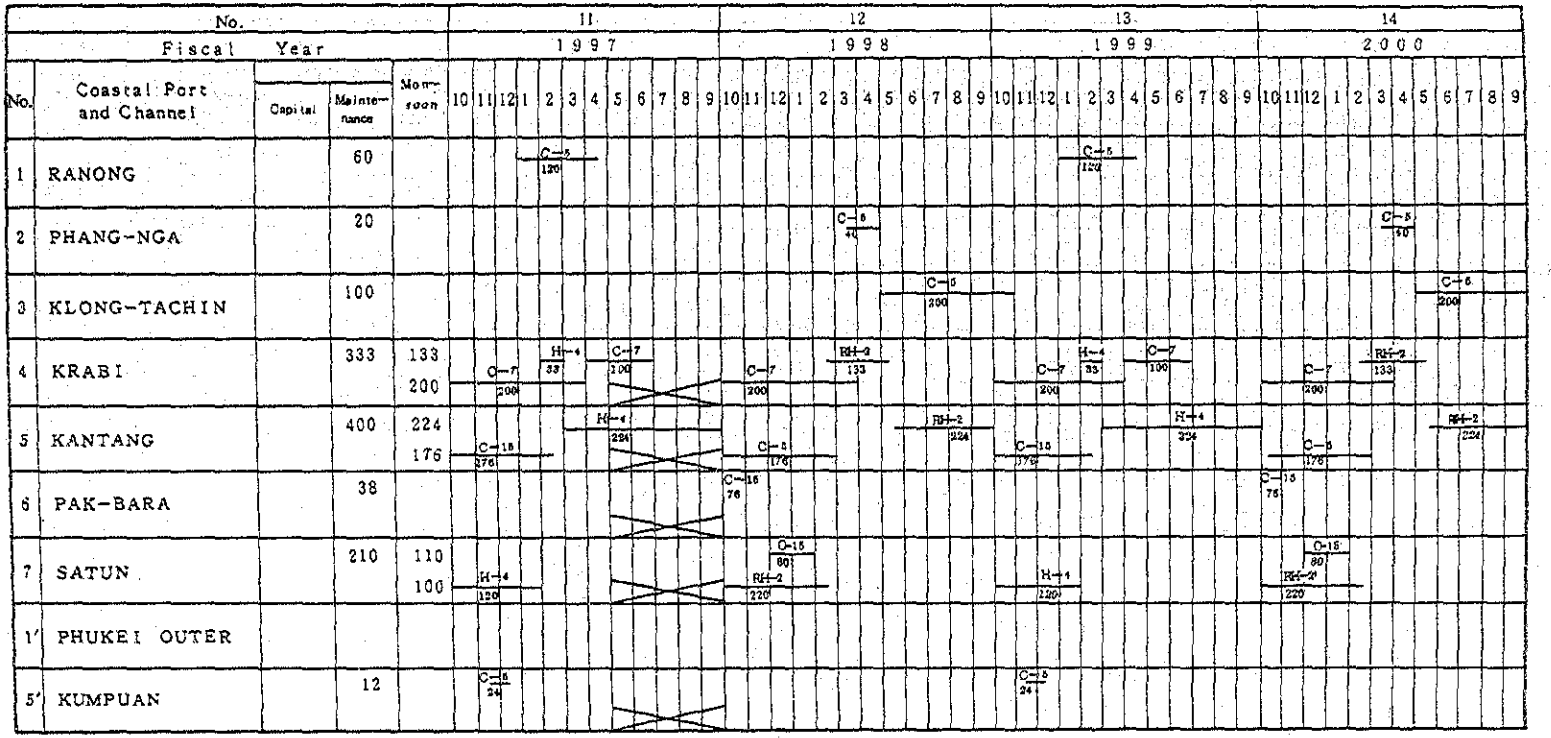

Fig. A.2-8 (2/4) Trang Dredging Center Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

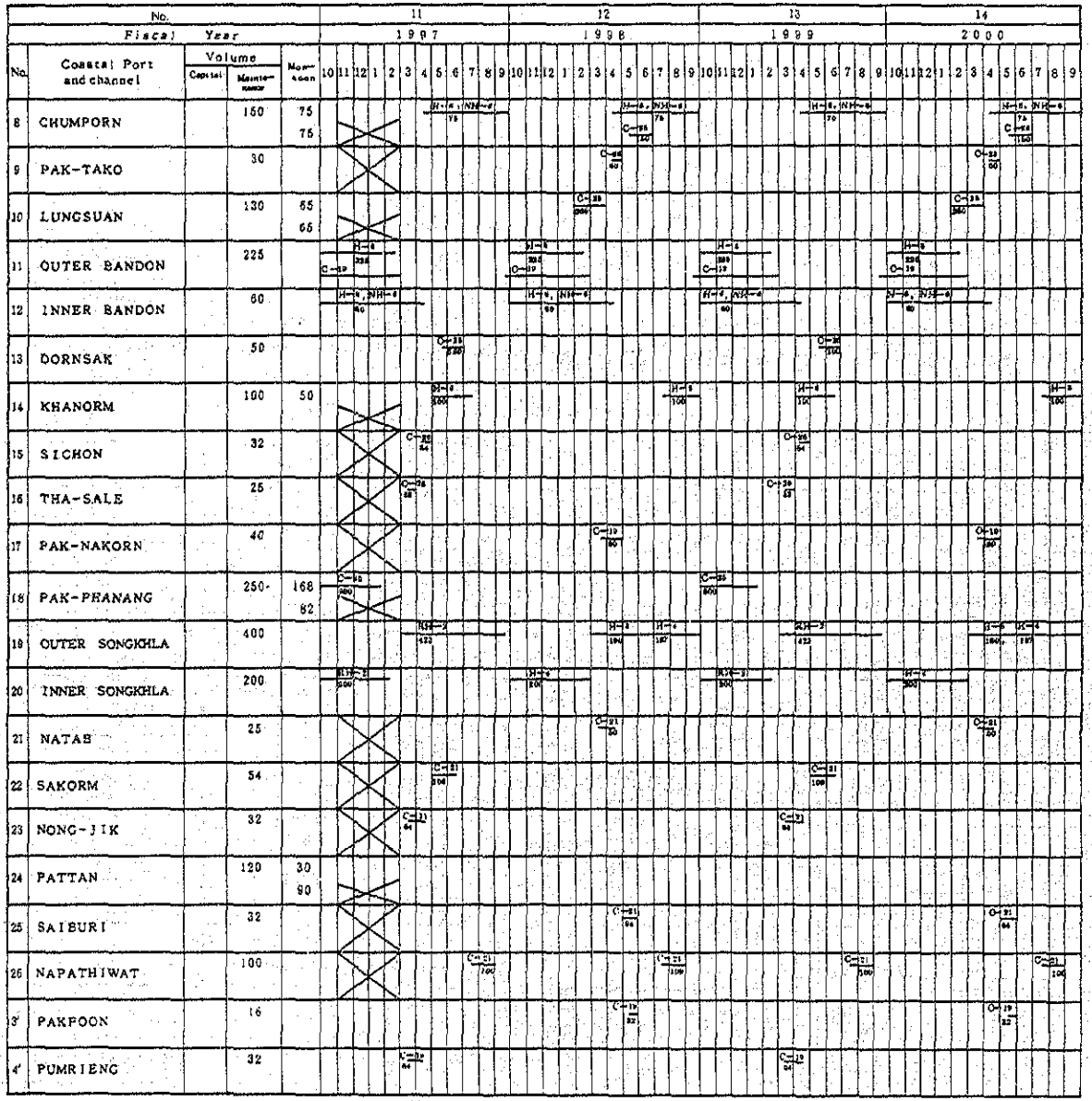

Fig. A.2-8 (3/4) Songkhla Dredging Center Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

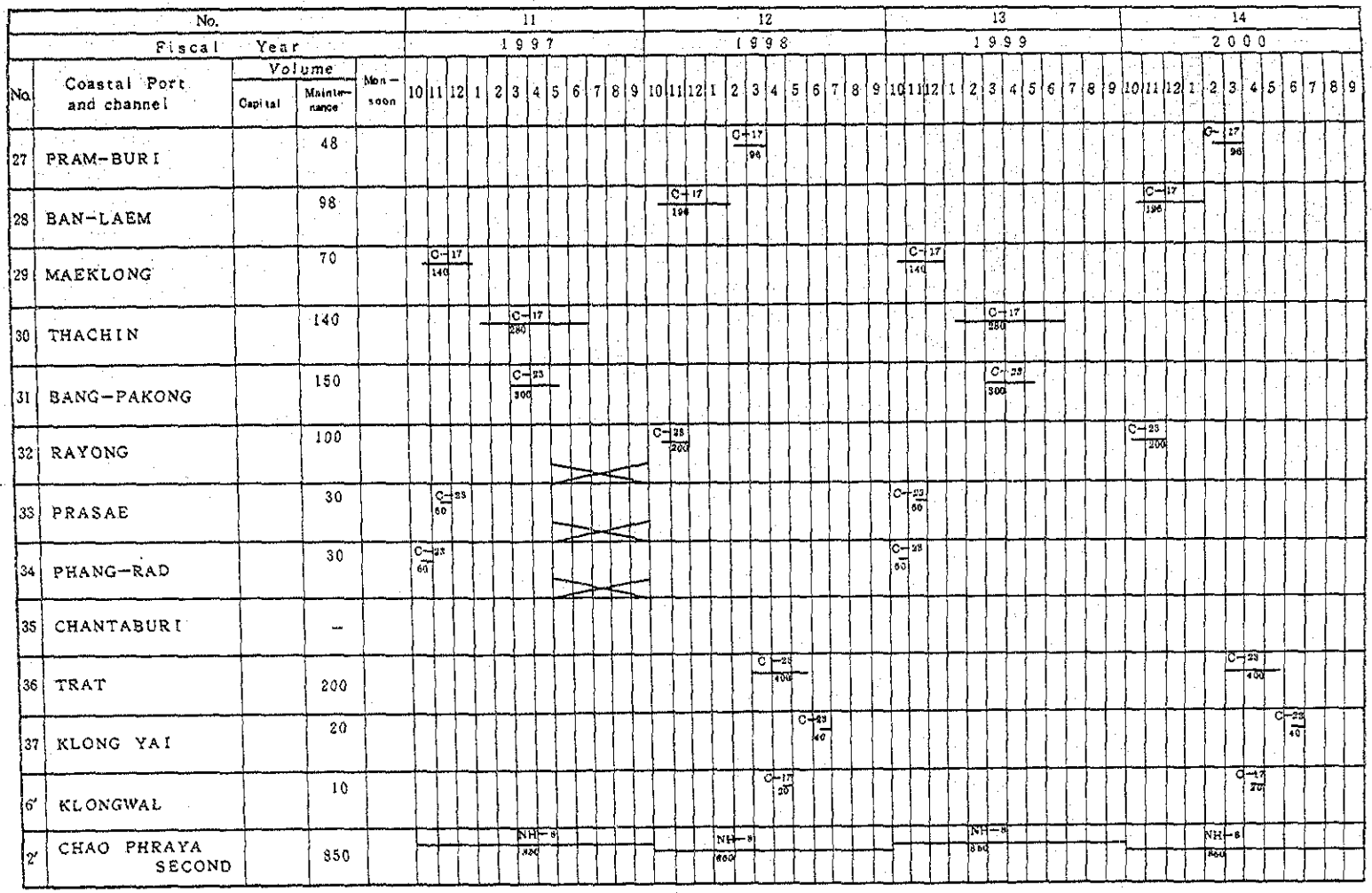

Fig. A.2-8 (4/4) Chantaburi Dredging Center Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

Notes for Fig. A.2-6, Fig. A.2-7, and Fig. A.2-8

(1) All notes for Fig. A.2-3, Fig. A.2-4, and Fig. A.2-5 also apply to these figures.

(2) Average sailing speed of new trailing hopper dredgers is estimated based on their service speed.

(3) As for the maintenance dredging for Chao Phraya Second Channel, 75 percent of hopper capacity is estimated to be the dredged volume instead of 80 percent, because most of the bottom sediment is composed of very fine soft silt.

APPENDIX 3 Material for Maintenance and Repair Facilities

Table A.3-1 (1/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

Unit : Baht
Price: In 1985

No.	Item	Unit	Quantity	Unit Price Baht	Amount		
					Total	Foreign Currency	Local Currency
1	Civil Engineering work				5,423,000	0	5,423,000
	1. Land Acquisition	m^2	34,600		2,460,000		2,460,000
	2. Land Readjustment	m^2	21,600	2.6	56,000	0	56,000
	3. Bank Protection	m^2	140	4,390	614,000	0	614,000
	4. Crane Foundation	sum			423,000	0	423,000
	5. Pavement	m^2	2,320	500	1,160,000	0	1,160,000
	6. Drainage	m	355	2,000	710,000	0	710,000
2	Building work				18,913,000	0	13,239,000
	1. Machine Shop & Office	m^2	2,340	6,000	14,040,000	5,674,000	8,366,000
	2. Attached Facility	sum			244,000	0	244,000
	3. Dock House	m^2	450	6,000	2,700,000	0	2,700,000
	4. Attached Facility	sum			53,000	0	53,000
	5. Power Substation Housing	m^2	200	6,000	1,200,000	0	1,200,000
	6. Attached Facility	sum			21,000	0	21,000
	7. Guard House	m^2	16	6,000	96,000	0	96,000
	8. Attached Facility	sum			4,000	0	4,000
	9. Fence	m	525	1,000	525,000	0	525,000
	10. Gate	sum			30,000	0	30,000
3	Slipway & related equipment				65,681,000	19,355,000	46,326,000
	1. Earth work						
	(1) Excavation at water	m^3	11,032	396	4,369,000	0	4,369,000
	(2) Finished excavation on land	"	1,019	270	275,000	0	275,000
	(3) General excavation on land	"	10,583	95	1,005,000	0	1,005,000
	(4) Back-fill at retaining wall	"	5,345	159	850,000	0	850,000

Table A.3-1 (2/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

Unit : Baht
Price: In 1985

No.	Item	Unit	Quantity	Unit Price Baht	Amount		
					Total	Foreign Currency	Local Currency
	2. Foundation						
	(1) Temporary scaffolding at the water	m^3	500	6,421	3,211,000		3,211,000
	(2) R.C. Piling at water	m	1,950	1,744	3,401,000		3,401,000
	on land	m	4,068	1,142	4,644,000		4,644,000
	(3) Sheet piling	m	1,500	1,189	1,784,000	555,000	1,229,000
	(4) Crushed stone						
	at water	m^3	3,233	920	2,974,000		2,974,000
	on land	m^3	3,520	476	1,676,000		1,676,000
	3. Concrete work						
	(1) Leveling concrete	m^3	263	2,886	759,000		759,000
	(2) Slab						
	at water	"	1,132	6,818	7,718,000		7,718,000
	on land	"	1,615	3,488	5,633,000		5,633,000
	(3) Retaining wall	"	331	3,488	1,155,000		1,155,000
	4. Rail, work						
	(1) at water	m	294	8,720	2,564,000	895,000	1,669,000
	(2) on land	"	486	4,534	2,204,000	770,000	1,434,000
	5. Miscellaneous work				1,455,000		1,455,000
	6. Crane foundation	sum			423,000		423,000
	7. Slipway winch						
	(1) Hauling winch	set	1		5,630,000	5,630,000	
	(2) Transfer winch	"	2	1,054,000	2,108,000	2,108,000	
	8. Cradle equipment	"	5	1,555,000	7,775,000	7,775,000	0
	9. Sheave, Blocks & Wire-rope	"	1	2,093,000	2,093,000	1,622,000	471,000
	10. Blocks	"	60	21,820	1,309,000	0	1,309,000
	11. Pontoon	"	1	666,000	666,000	0	666,000

Table A.3-1 (3/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

Unit : Baht
Price: In 1985

No.	Item	Unit	Quantity	Unit Price Baht	Amount		
					Total	Foreign Currency	Local Currency
4	Crane				9,378,000	9,378,000	0
	1. Overhead crane	set	1	2,178,000	2,178,000	2,178,000	0
	2. Jib crane	"	1	7,200,000	7,200,000	7,200,000	0
5	Utility Equipment & Pipe Lines				2,830,000	2,331,000	499,000
	1. Water supply equipment	sum	1		555,000	56,000	499,000
	2. Air compresser, vessel, etc.	"	1		699,000	699,000	0
	3. High pressure water pump	"	1		677,000	677,000	0
	4. Sandblast equipment	"	1		455,000	455,000	0
	5. Painting equipment	"	1		444,000	444,000	0
6	Electric equipment				11,854,000	555,000	11,299,000
	1. Power sub-station						
	(1) Transformer	set	1	2,885,000	2,885,000	2,885,000	0
	(2) Switch panel	"	1	2,775,000	2,775,000	2,775,000	0
	2. Machine shop power SW panel	"	2	243,000	486,000	486,000	0
	3. Machine shop light SW panel	"	2	122,000	244,000	244,000	0
	4. Office light switch panel	"	2	110,000	220,000	220,000	0
	5. Dock house light SW panel	"	1	78,000	78,000	78,000	0
	6. Floating dock switch panel	"	2	374,000	748,000	748,000	0
	7. Electric cable & wiring	sum			3,530,000	2,975,000	555,000
	8. Lighting fitting	"			888,000	888,000	0
7	Vehicles & Work Boat				2,841,000	2,230,000	611,000
	1. Forklift	set	1	577,000	577,000	577,000	0
	2. Truck crane	"	1	1,376,000	1,376,000	1,376,000	0
	3. Small boat	"	1	888,000	888,000	277,000	611,000

Table A.3-1 (4/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

Unit : Baht
Price: In 1985

No	Item	Unit	Quantity	Unit Price Baht	Amount		
					Total	Foreign Currency	Local Currency
8	Factory Machines & Installation				21,499,000	19,834,000	1,665,000
	1. Lathe (4m)	set	1	2,525,000	2,525,000	2,525,000	0
	2. Lathe (1m)	"	1	1,552,000	1,552,000	1,552,000	0
	3. Radial drilling machine	"	1	1,990,000	1,990,000	1,990,000	0
	4. Milling machine	"	1	2,613,000	2,613,000	2,613,000	0
	5. Shaping machine	"	1	492,000	492,000	492,000	0
	6. Bench drilling machine	"	1	159,000	159,000	159,000	0
	7. Bending roller	"	1	483,000	483,000	483,000	0
	8. Oil-pressure press	"	1	6,123,000	6,123,000	6,123,000	0
	9. Pipe bender	"	1	182,000	182,000	182,000	0
	10. Pipe cutter	"	1	325,000	325,000	325,000	0
	11. Tool grinder	"	1	175,000	175,000	175,000	0
	12. Sawing machine	"	1	415,000	415,000	415,000	0
	13. Centering surface table	"	1	478,000	478,000	478,000	0
	14. Honeycomb surface table	"	1	450,000	450,000	450,000	0
	15. Iron work table	"	1	354,000	354,000	354,000	0
	16. Welding unit & tools	"	1	1,518,000	1,518,000	1,518,000	0
	17. Machine Installation cost	sum			1,665,000	0	1,665,000
9	Furniture Telephone & Others for Office	sum			1,276,000	488,000	783,000
10	Freight	sum			8,007,000	8,007,000	0
	Sub Total 1 to 10				147,702,000	78,596,000	69,106,000
11.	Engineering Fee	sum			20,033,000	18,416,000	1,617,000
	1. Remuneration (consultants) Overseas Airplane Fare Training expense Travel Expense in Thailand	sum			18,416,000	18,416,000	0
	2. Boring test cost	sum			1,617,000	0	1,617,000
12.	Contingency	sum			2,593,000	0	2,593,000
	Grand Total 1 to 12				170,328,000	97,012,000	73,316,000

Table A.3-2 (1/3) Detailed Construction Cost Estimate for Proposed Bandon Mechanical Center with Floating Dock and Yard Facilities

Unit : Baht
Price : In 1985

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
1.	Civil engineering work	6,424,000	0	6,424,000
	Land purchasing	2,497,000	0	2,497,000
	Land readjustment	56,000	0	56,000
	Bank protection	1,282,000	0	1,282,000
	Pavement	1,249,000	0	1,249,000
	Drainage	710,000	0	710,000
	Jetty	630,000	0	630,000
2.	Building work	18,913,000	5,674,000	13,239,000
	Machine shop & office	14,284,000	5,674,000	8,610,000
	Dock house	2,753,000	0	2,753,000
	Power substation housing etc.	1,221,000	0	1,221,000
	Guard house	100,000	0	100,000
	Fence & gate	555,000	0	555,000
3.	Floating dock and related equipment	70,699,000	70,699,000	0
	Floating dock pontoon	40,677,000	40,677,000	0
	Jib-crane (2 unit)	9,001,000	9,001,000	0
	Mooring winch (4 unit)	5,283,000	5,283,000	0
	Pumps & pipe line	4,151,000	4,151,000	0
	Electric Fittings	4,173,000	4,173,000	0
	Blocks	1,310,000	1,310,000	0
		6,104,000	6,104,000	0
4.	Cranes	2,164,000	2,164,000	0
	Overhead crane	2,164,000	2,164,000	0

Table A.3-2 (2/3) Detailed Construction Cost Estimate for Proposed Bandon Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
5.	Utilities, equipment & pipe lines	2,830,000	2,331,000	499,000
	Water supply equipment	555,000	56,000	499,000
	Compressors & air vessel	699,000	699,000	0
	High pressure water pump	677,000	677,000	0
	Sandblasting equipment	455,000	455,000	0
	Painting equipment	444,000	444,000	0
6.	Electric equipment	11,854,000	11,299,000	555,000
	Power substation, distribution panel etc.	7,436,000	7,436,000	0
	Electric cables & wiring	3,530,000	2,975,000	555,000
	Lighting apparatus	888,000	888,000	0
7.	Vehicles	2,841,000	2,230,000	611,000
	Forklift	577,000	577,000	0
	Truck-crane	1,376,000	1,376,000	0
	Small Boat	888,000	277,000	611,000
8.	Factory machines	21,499,000	19,834,000	1,665,000
	Lathe (4m) 1			
	Lathe (1m) 1			
	Radial drilling machine 1			
	Milling machine 1			
	Shaping machine 1			
	Bench-drilling machine 1			
	Bending roller 1			
	Oil pressure press 1	19,834,000	19,834,000	0
	Pipe bender 1			
	Pipe cutter 1			
	Tool grinder 1			
	Sawing machine 1			
	Centering surface table 1			
	Honeycomb surface table 1			
	Iron work table 1			
	Welding units & tools 1			
	Machine installation cost		0	1,665,000

Table A.3-2 (3/3) Detailed Construction Cost Estimate for Proposed Bandon Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
9.	Telephone, furniture, etc. for office	1,276,000	488,000	788,000
10.	Freightage	10,866,000	10,866,000	0
	Sub Total 1 to 10	149,366,000	125,585,000	23,781,000
11.	Engineering fee	19,038,000	18,416,000	622,000
	Remuneration Overseas airplane fare Training expense etc.	18,416,000	18,416,000	0
	Inland transportation expense in Thailand Civil engineering boring cost etc.	622,000	0	622,000
12.	Contingency	321,000		321,000
	Grand Total 1 to 12	168,725,000	144,001,000	24,724,000

Table A.3-3 (1/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Slipway and Yard Facilities

Unit: Baht
Price: In 1985

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
1.	Civil engineering work	18,643,000	0	18,643,000
	Shore protection & reclamation	12,328,000	0	12,328,000
	Land-fill	3,878,000	0	3,878,000
	Land readjustment	55,000	0	55,000
	Crane foundation	423,000	0	423,000
	Pavement	1,249,000	0	1,249,000
	Drainage	710,000	0	710,000
2.	Building Work	18,913,000	5,674,000	13,239,000
	Machine shop & Office	14,284,000	5,674,000	8,610,000
	Dock House	2,753,000	0	2,753,000
	Power substation housing and so on	1,221,000	0	1,221,000
	Guard house	100,000	0	100,000
	Fence & gate	555,000	0	555,000
3.	Slipway and related equipment	65,681,000	19,355,000	46,326,000
	Civil engineering work of slipway	46,100,000	2,220,000	43,880,000
	Slipway winch (Hauling & Transferring)	7,738,000	7,738,000	0
	Cradle equipment	7,775,000	7,775,000	0
	Sheave blocks, wire rope etc.	2,093,000	1,622,000	471,000
	Blocks	1,309,000	0	1,309,000
	Pontoon	666,000	0	666,000
4.	Cranes	9,378,000	9,378,000	0
	Overhead crane	2,178,000	2,178,000	0
	Jib-crane	7,200,000	7,200,000	0

Table A.3-3 (2/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Slipway and Yard Facilities

No.	Description		Estimate Cost	Foreign Currency Portion	Local Currency Portion
5.	Utilities equipment & pipe lines		2,830,000	2,331,000	499,000
	Water supply equipment		555,000	56,000	499,000
	Compressors & air vessel		699,000	699,000	0
	High pressure water pump		677,000	677,000	0
	Sandblasting equipment		455,000	455,000	0
	Painting equipment		444,000	444,000	0
6.	Electric equipment		11,854,000	11,299,000	555,000
	Power sub-station, distribution panel etc.		7,436,000	7,436,000	0
	Electric cables & Wiring		3,530,000	2,975,000	555,000
	Lighting apparatus		888,000	888,000	0
7.	Vehicles		2,841,000	2,230,000	611,000
	Fork-lift		577,000	577,000	0
	Truck-crane		1,376,000	1,376,000	0
	Small boat		888,000	888,000	0
8.	Factory machines		21,499,000	19,834,000	1,665,000
	Lathe (4m)	1			
	Lathe (1m)	1			
	Radial drilling machine	1			
	Milling machine	1			
	Shaping machine	1			
	Bench-drilling machine	1			
	Bending roller	1			
	Oil pressure press	1	19,834,000	19,834,000	0
	Pipe bender	1			
	Pipe cutter	1			
	Tool grinder	1			
	Sawing machine	1			
	Centering surface table	1			

Table A.3-3 (3/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Slipway and Yard Facilities

No.	Description	Estimate Cost	Foreign Currency Portion	Local Currency Portion
	Honeycomb surface table 1 Iron work table 1 Welding units & tools 1 Machine installation cost	1,665,000	0	1,665,000
9.	Telephone, furnitures, etc. for office	1,276,000	488,000	788,000
10.	Freightage	8,007,000	8,007,000	0
	Sub Total 1 to 10	160,922,000	78,596,000	82,326,000
11.	Engineering fee	20,033,000	18,416,000	1,617,000
	Remuneration overseas airplane fare training expense etc.	18,416,000	18,416,000	0
	Inland transportation expense in Thailand civil engineering boring cost etc.	1,617,000	0	1,617,000
12.	Contingency	3,192,000	0	3,192,000
	Grand Total 1 to 12	184,147,000	97,012,000	87,135,000

Table A.3-4 (1/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Floating Dock and Yard Facilities

Unit: Baht
Price: In 1985

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
1.	Civil engineering work	18,220,000	0	18,220,000
	Shore protection & reclamation	12,328,000	0	12,328,000
	Land-fill	3,878,000	0	3,878,000
	Land readjustment	55,000	0	55,000
	Pavement	1,249,000	0	1,249,000
	Drainage	710,000	0	710,000
2.	Building work	18,913,000	5,675,000	13,239,000
	Machine shop & office	14,284,000	5,674,000	8,610,000
	Dock house	2,753,000	0	2,753,000
	Power substation housing etc.	1,221,000	0	1,221,000
	Guard house	100,000	0	100,000
	Fence & gate	555,000	0	555,000
3.	Floating dock and its related equipment	70,699,000	70,699,000	0
	Floating dock pontoon	40,677,000	40,677,000	0
	Jib-crane (2 unit)	9,001,000	9,001,000	0
	Mooring winch (4 unit)	5,283,000	5,283,000	0
	Pumps & pipe line	4,151,000	4,151,000	0
	Electric Fittings	4,173,000	4,173,000	0
	Blocks	1,310,000	1,310,000	0
	Pontoon & anchoring equipment	6,104,000	6,104,000	0
4.	Cranes	2,164,000	2,164,000	0
	Overhead crane	2,164,000	2,164,000	0

Table A.3-4 (2/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
5.	Utilities equipment & pipe lines	2,830,000	2,331,000	499,000
	Water supply equipment	555,000	56,000	499,000
	Compressors & air vessel	699,000	699,000	0
	High pressure water pump	677,000	677,000	0
	Sandblasting equipment	455,000	455,000	0
	Painting equipment	444,000	444,000	0
6.	Electric equipment	11,854,000	11,299,000	555,000
	Power sub-station distribution panel etc.	7,436,000	7,436,000	0
	Electric cables & wiring	3,530,000	2,975,000	555,000
	Lighting apparatus	888,000	888,000	
7.	Vehicles	2,841,000	2,230,000	611,000
	Fork-lift	577,000	577,000	0
	Truck-crane	1,376,000	1,376,000	0
	Small Boat	888,000	277,000	611,000
8.	Factory machines	21,499,000	19,834,000	1,665,000
	Lathe (4m) 1			
	Lathe (1m 1			
	Radial drilling machine 1			
	Milling machine 1			
	Shaping machine 1			
	Bench-drilling machine 1			
	Bending roller 1	19,834,000	19,834,000	0
	Oil pressure press 1			
	Pipe bender 1			
	Pipe cutter 1			
	Tool grinder 1			
	Sawing machine 1			
	Centering surface table 1			
	Honeycomb surface table 1			
	Iron work table 1			
	Welding unuts & tools 1			
	Machine installation cost		0	1,665,000

Table A.3-4 (3/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
9.	Telephone, furniture, etc. for office	1,276,000	488,000	788,000
10.	Freightage	10,866,000	10,866,000	0
	Sub Total 1 to 10	161,162,000	125,583,000	35,577,000
11.	Engineering fee	19,038,000	18,416,000	622,000
	Remuneration overseas airplane fare training expense etc.	18,416,000	18,416,000	0
	Inland transportation expense in Thailand Civil engineering boring cost etc.	622,000	0	622,000
12.	Contingency	1,048,000	0	1,048,000
	Grand Total 1 to 12	181,248,000	144,001,000	37,247,000

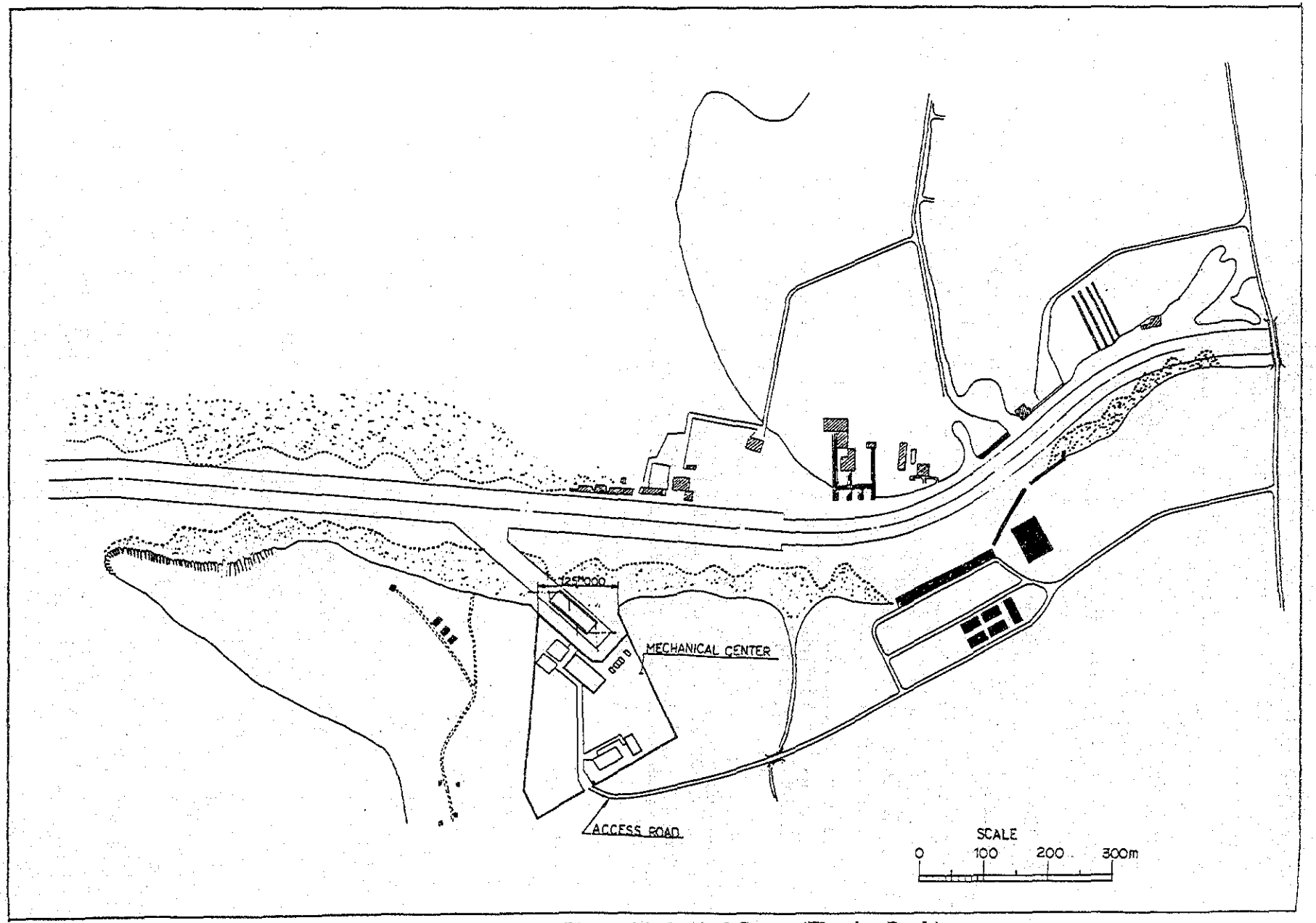

Fig. A-3-1 Site of the Phuket Mechanical Center (Floating Dock)

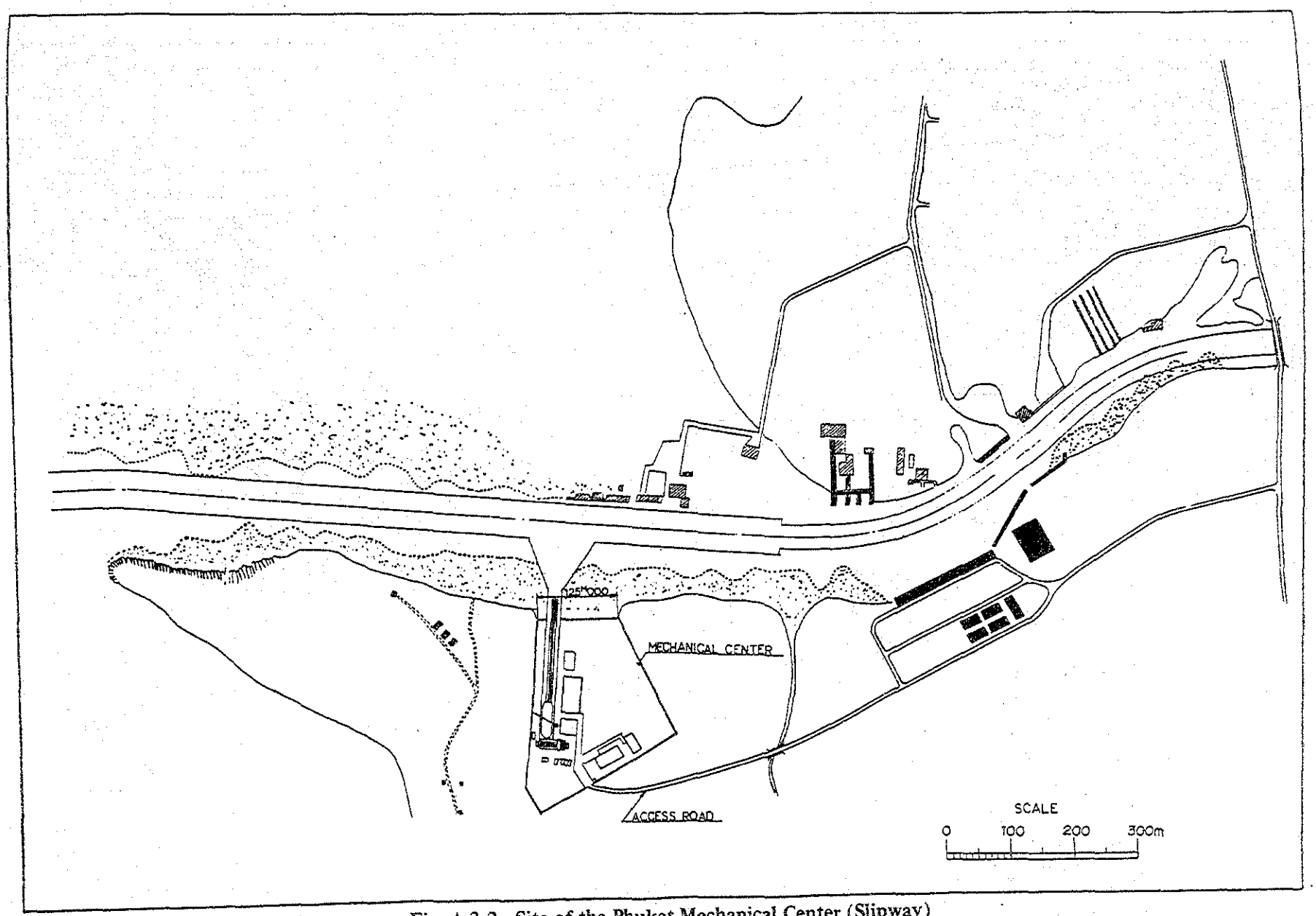

Fig. A-3-2 Site of the Phuket Mechanical Center (Slipway)

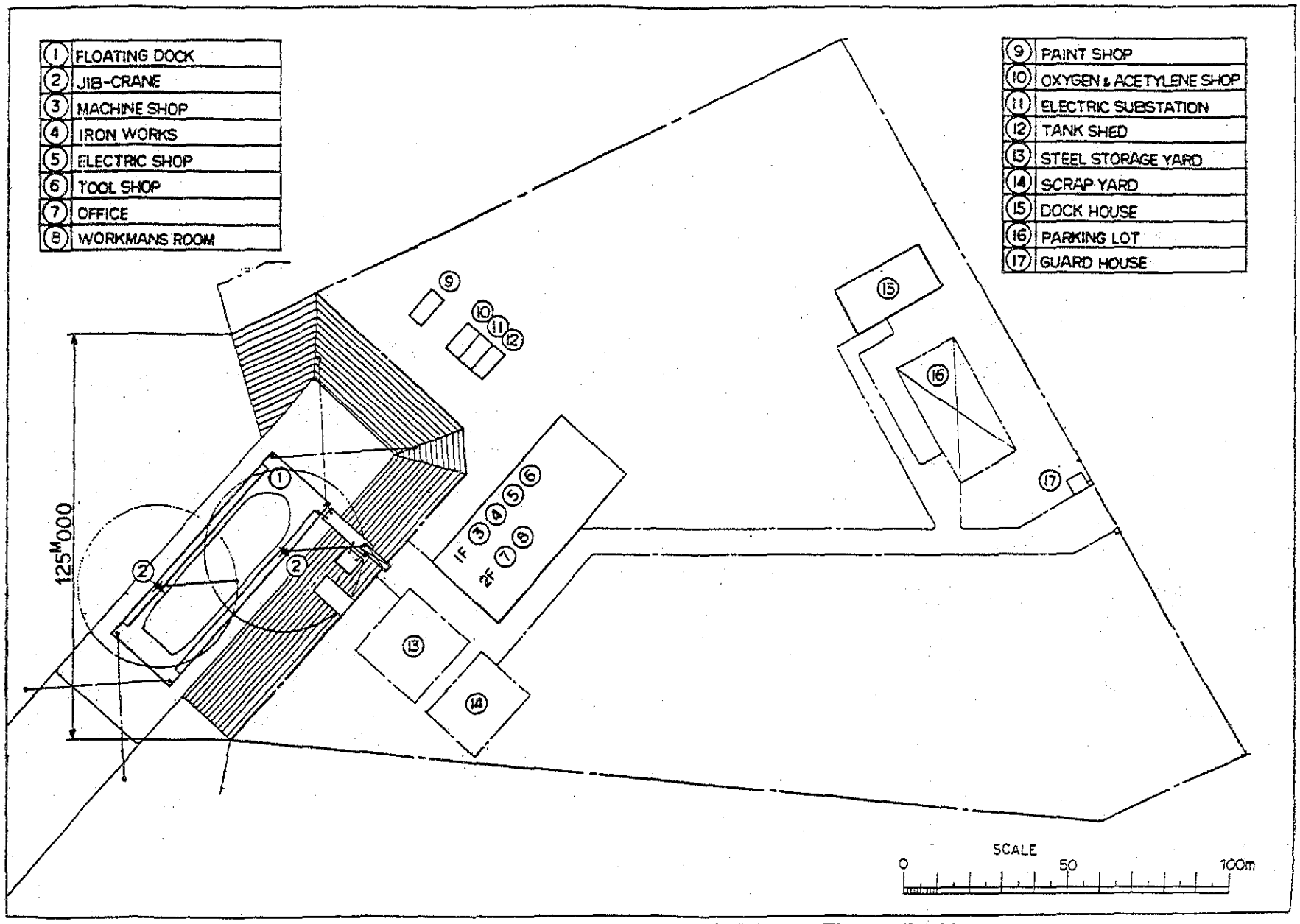

Fig. A-3-3 Layout of the Phuket Mechanical Center (Floating Dock)

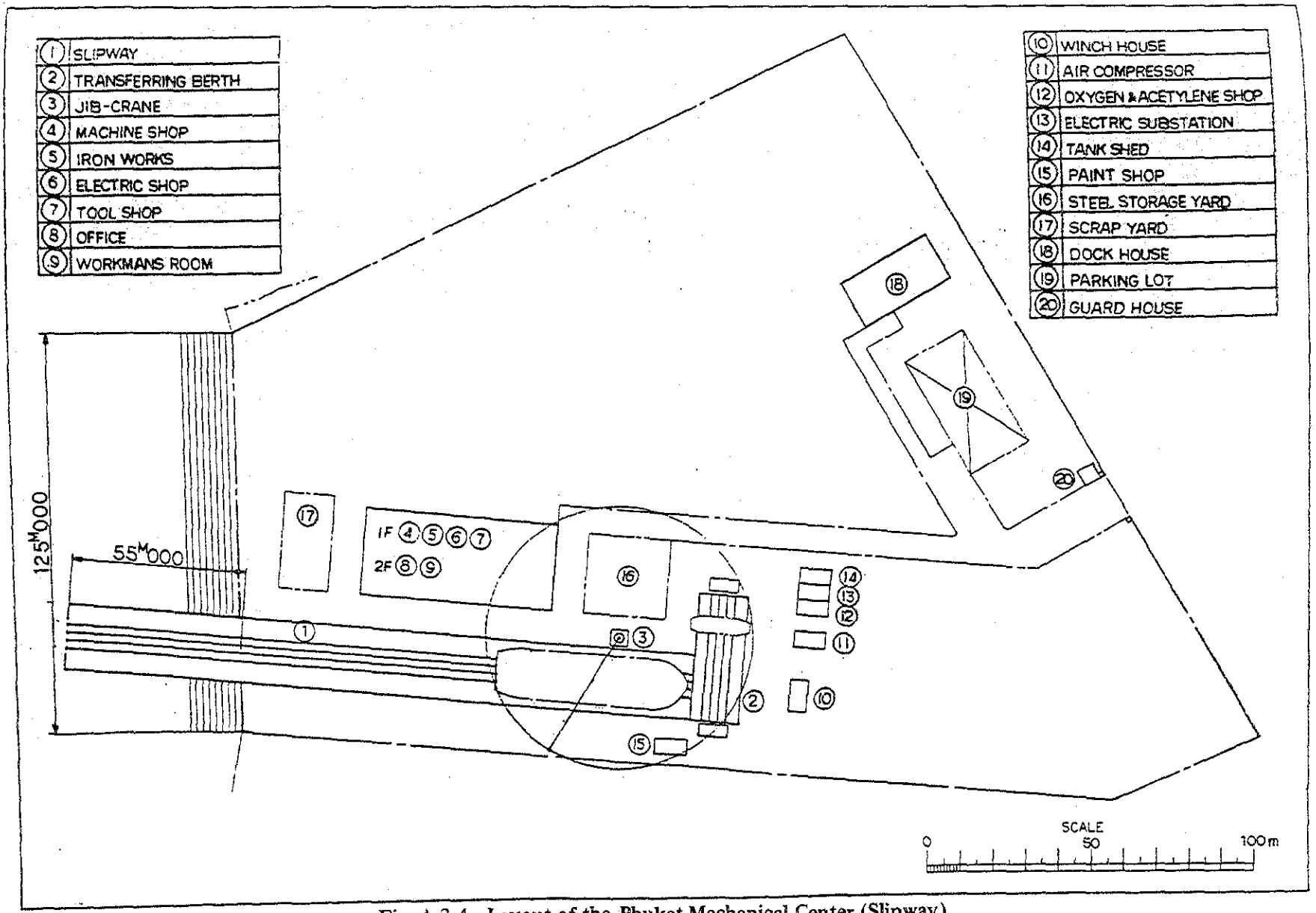

Fig. A-3-4 Layout of the Phuket Mechanical Center (Slipway)

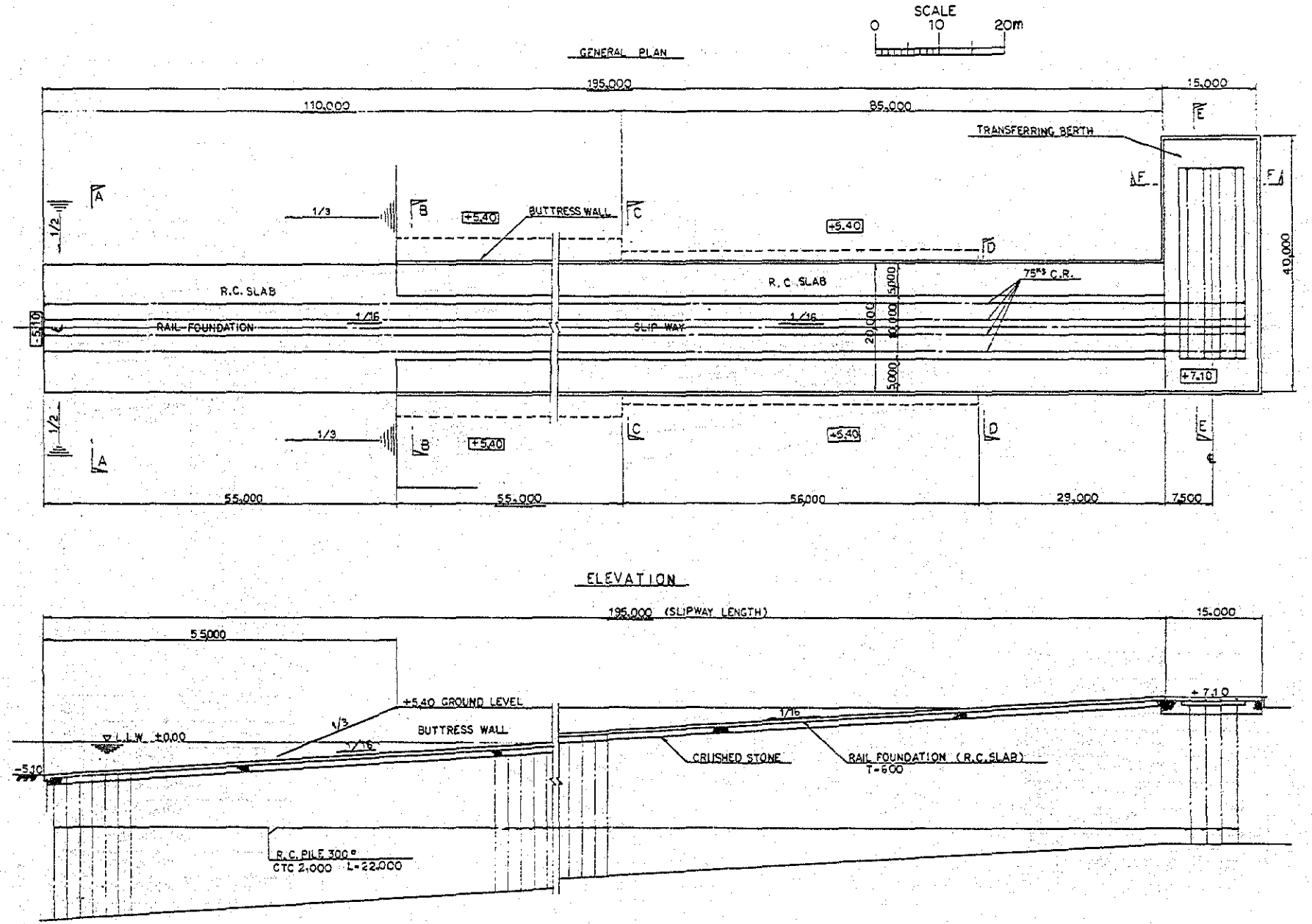

Fig. A-3-5 (1/3) Drawings of Slipway at the Phuket Mechanical Center

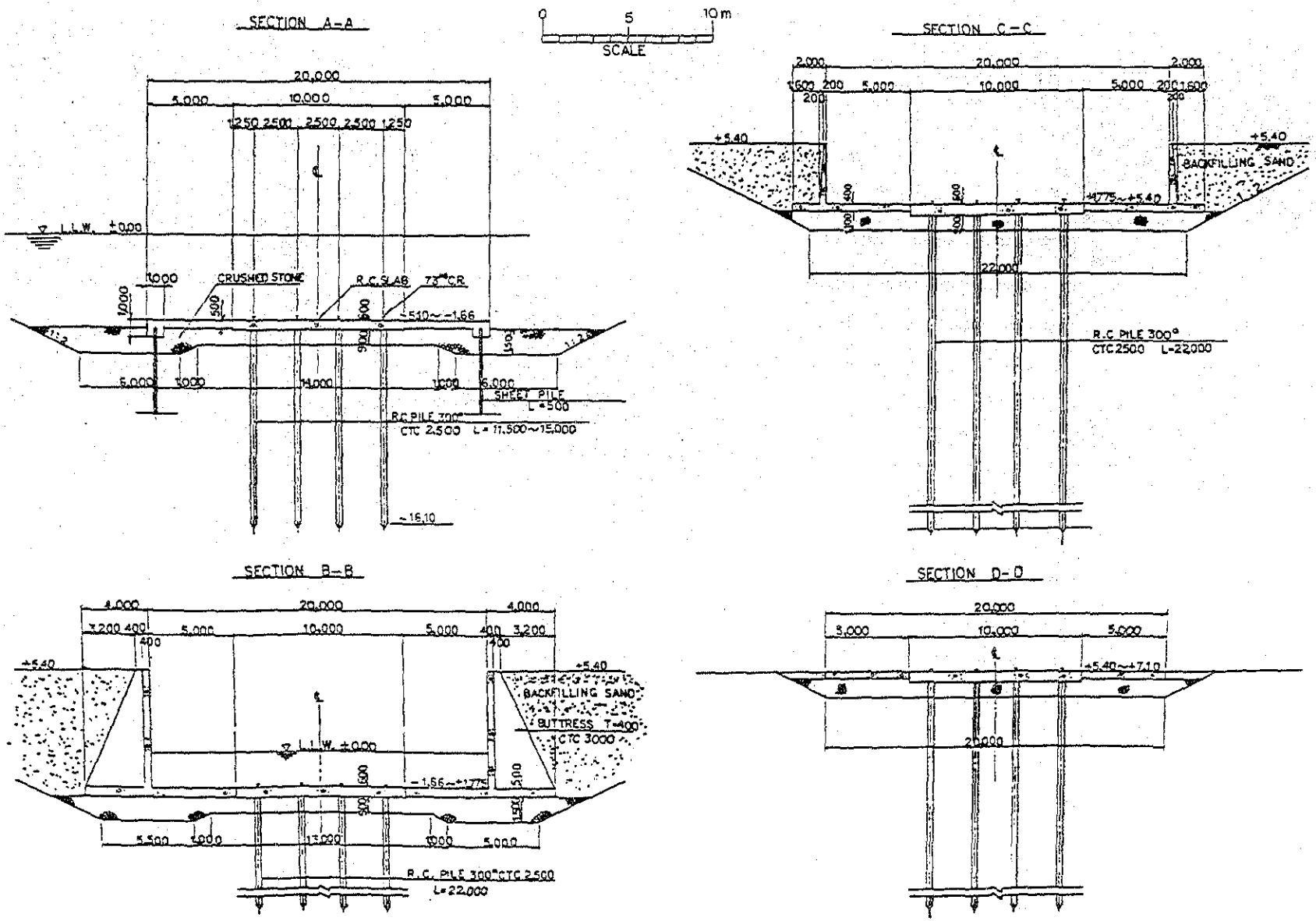

Fig. A-3-5 (2/3) Drawings of Slipway at the Phuket Mechanical Center

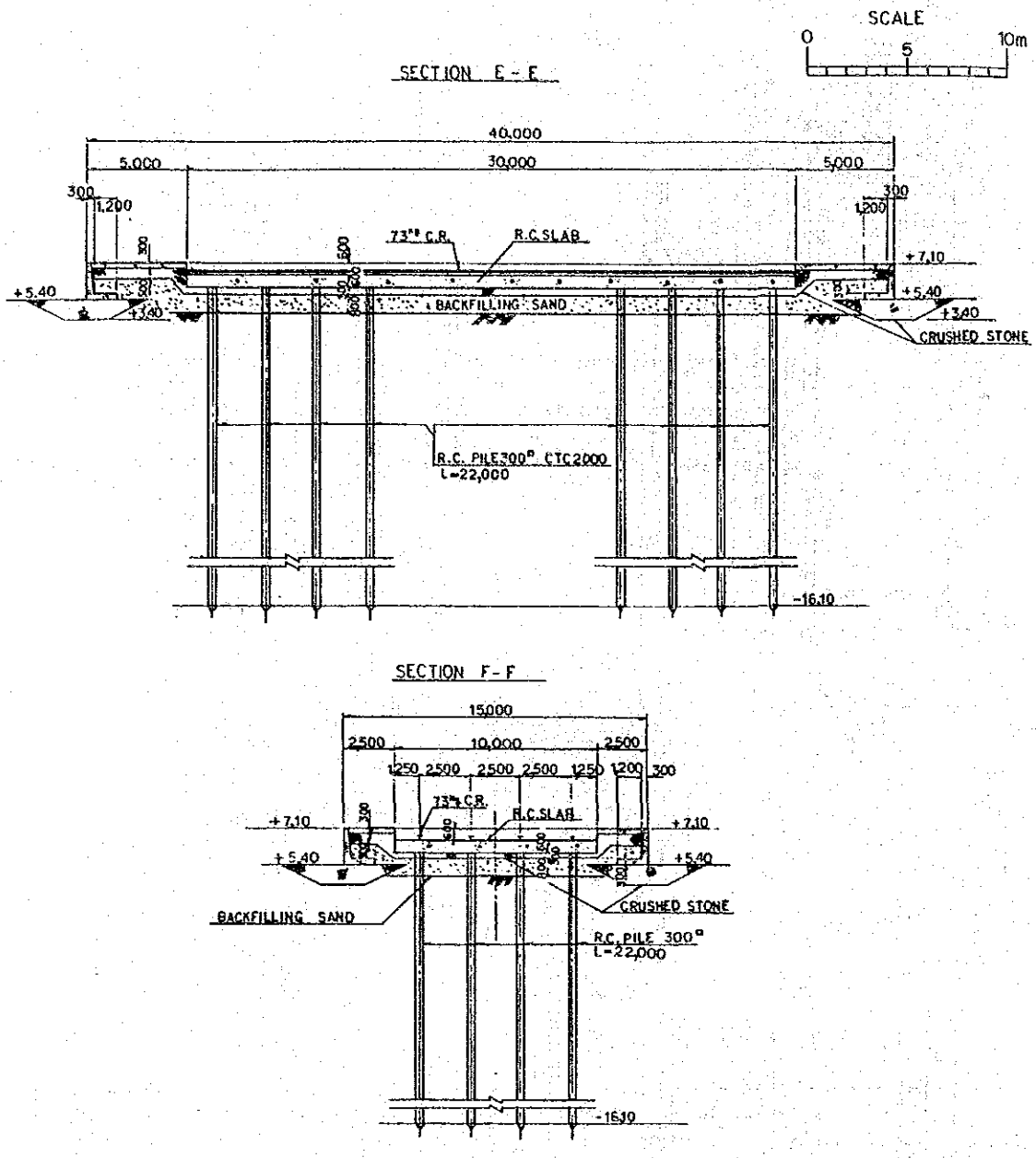

Fig. A-3-5 (3/3) Drawings of Slipway at the Phuket Mechanical Center

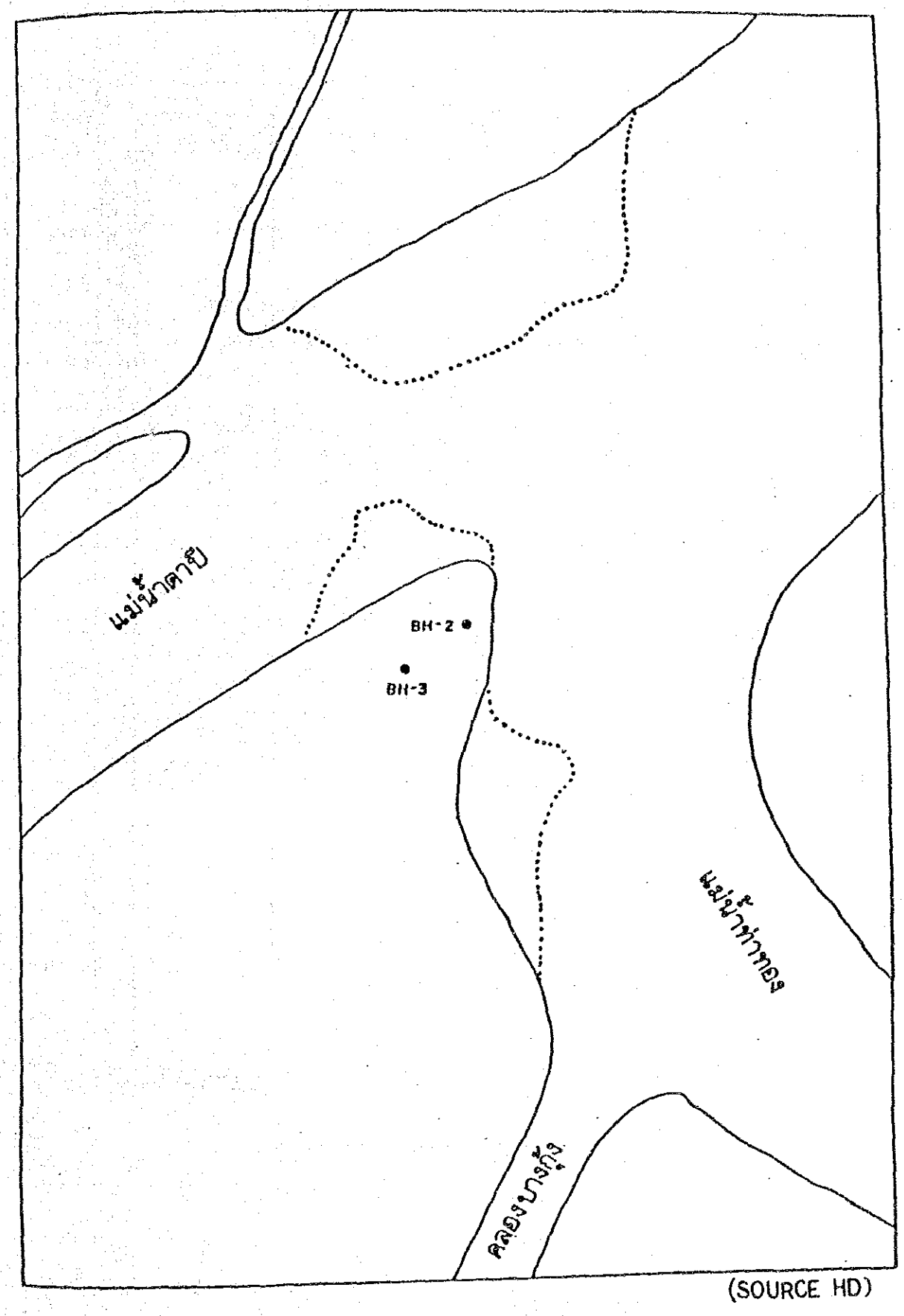

Fig. A-3-6 Boring Position in Bandon

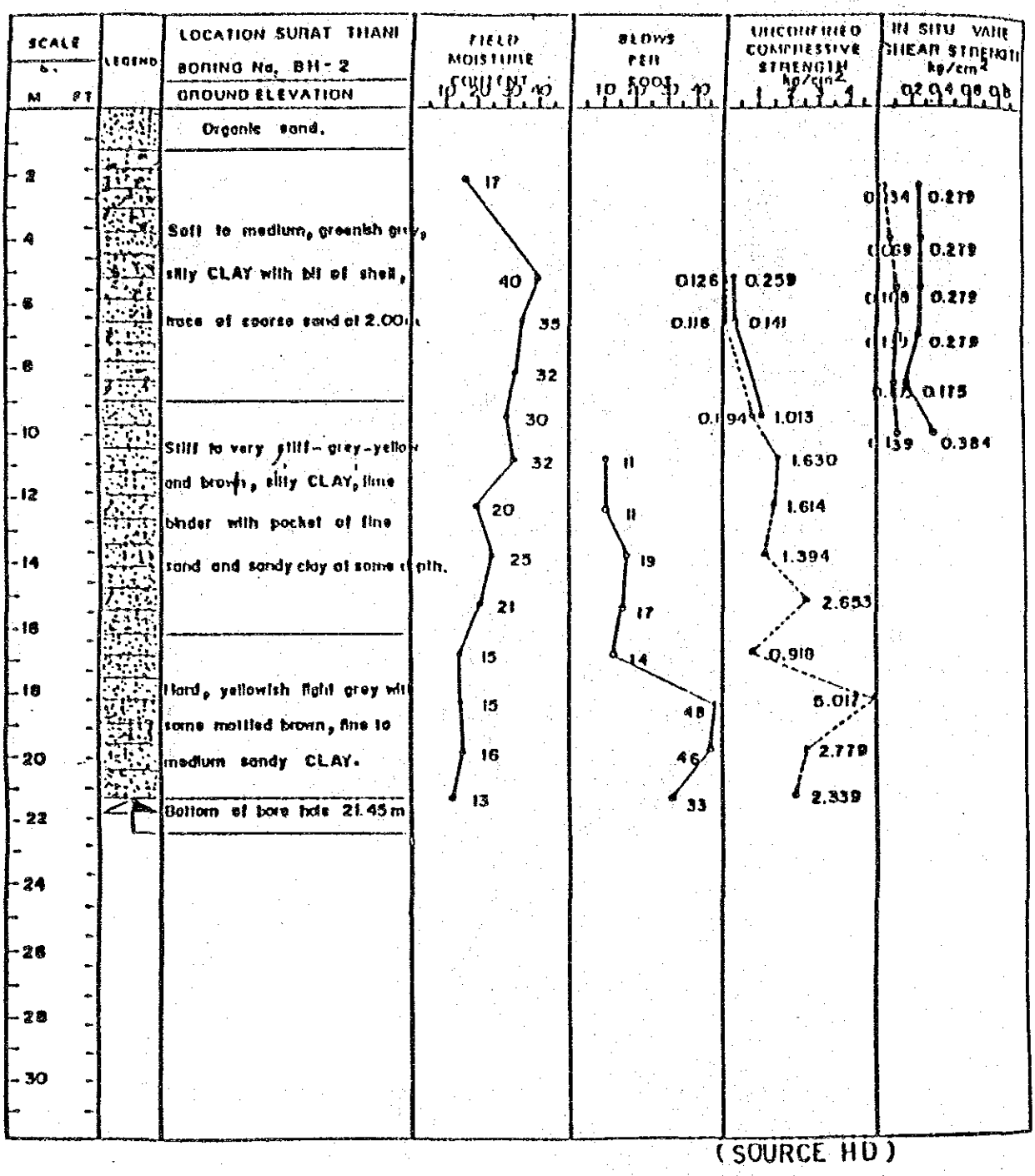

Fig. A-3-7 (1/2) Boring Log in Bandon

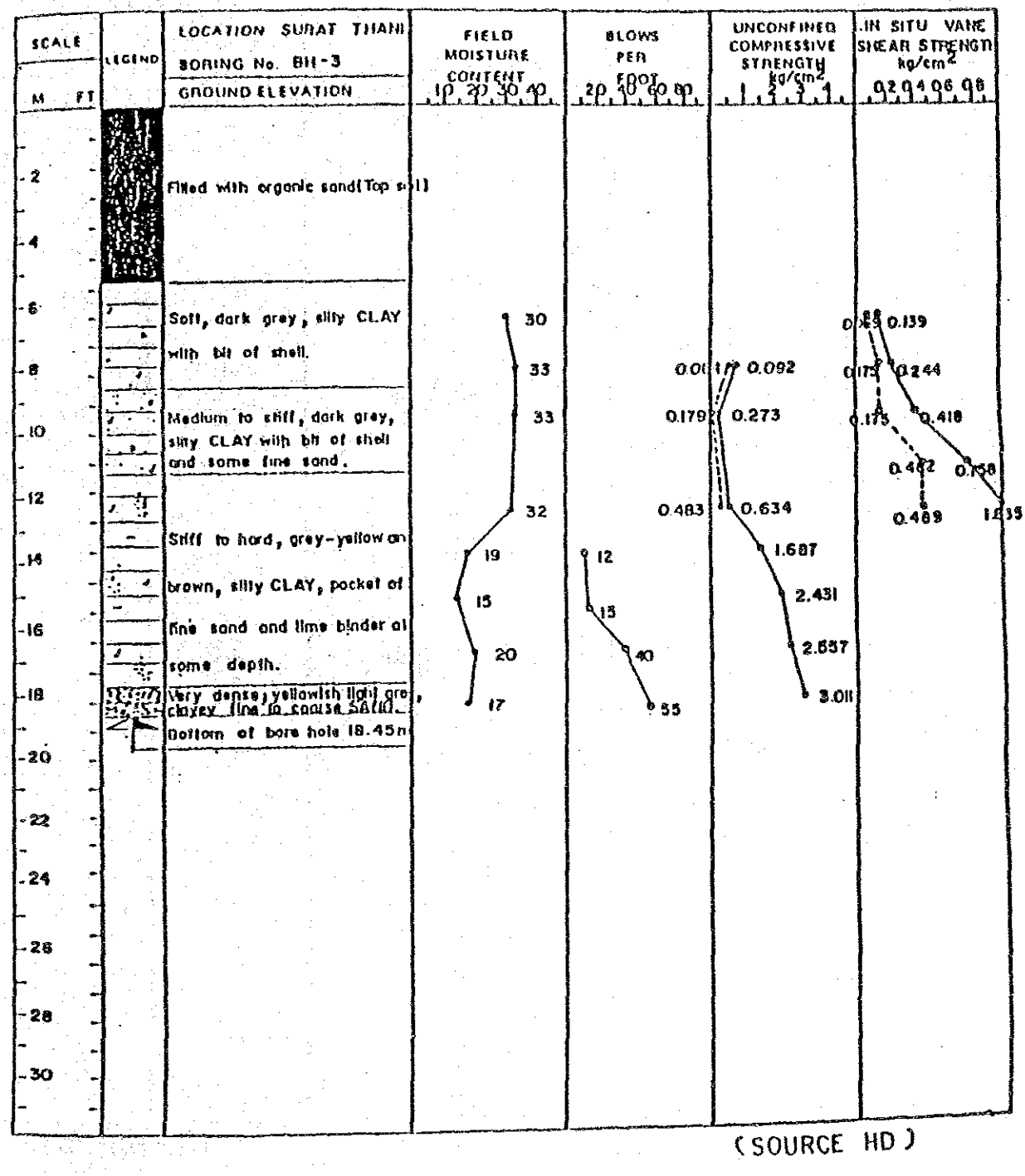

Fig. A-3-7 (2/2) Boring Log in Bandon

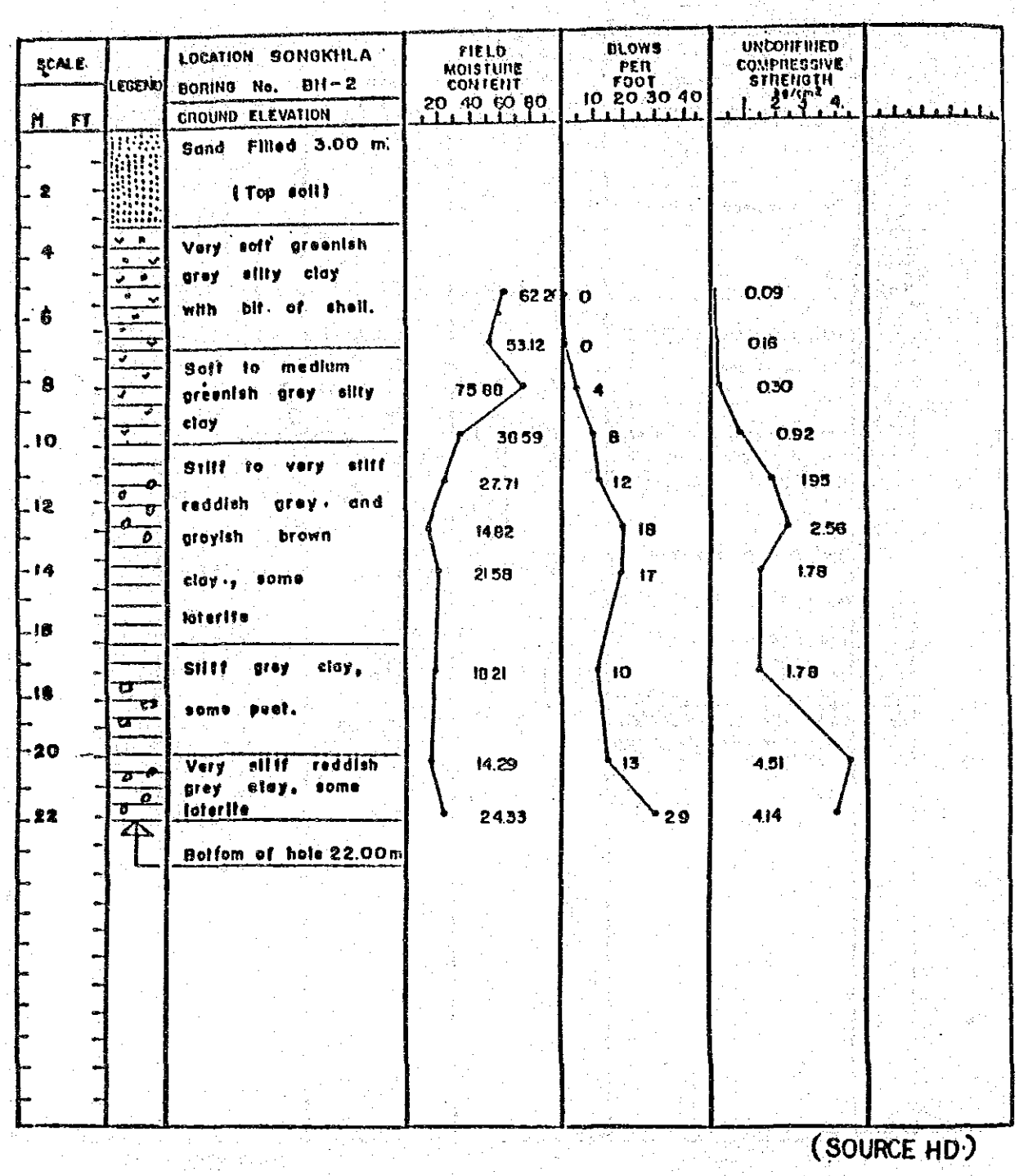

Fig. A-3-8 Boring Log in Songhkhla

APPENDIX 4 Breakdown of Building Cost for Dredgers

Table A.4-1 Breakdown of Building Cost for Dredger NH-6

		Baht
A.	Materials, Machinery and Equipment	33,465,000
	(1) Hull Construction	5,439,000
	Plate, angle, etc.	3,330,000
	Other material	2,109,000
	(2) Hull Fitting	6,215,000
	Deck machinery and mooring equip.	746,000
	Accommodation facilities	2,859,000
	Life saving, etc.	2,610,000
	(3) Machinery Part	10,798,000
	Main engine and shafting	8,638,000
	Auxiliary engine, etc.	2,160,000
	(4) Electrical Part	1,226,000
	Switchboard and light	491,000
	Other equipment	735,000
	(5) Dredging Part	9,787,000
	Pump, pipe, etc.	4,573,000
	Dredging hold equipment	5,214,000
B.	Labour Cost	23,549,000
	(1) Hull Construction	11,238,000
	(2) Hull Fitting	4,528,000
	(3) Machinery Part	4,576,000
	(4) Electrical Part	1,415,000
	(5) Dredging Part	1,792,000
C.	Indirect Cost	2,961,000
D.	Designing Cost	5,472,000
E.	Direct Expense	2,586,000
NET BUILDING COST		68,033,000
Overhead and Profit		5,996,000
Contingency (inclusive of transportation charge and cost of additional spare parts)		5,549,000
	Total	79,578,000

Table A. 4-2 Breakdown of Building Cost for Dredger NH-8

		Baht
A.	Materials, Machinery and Equipment	81,911,000
	(1) Hull Construction	17,558,000
	Plate, angle, etc.	9,589,000
	Other material	7,969,000
	(2) Hull Fitting	17,950,000
	Deck machinery and mooring equip.	1,616,000
	Accommodation facilities	10,411,000
	Life saving, etc.	5,923,000
	(3) Machinery Part	19,678,000
	Main engine and shafting	14,562,000
	Auxiliary engine, etc.	5,116,000
	(4) Electrical Part	3,949,000
	Switchboard and light	2,093,000
	Other equipment	1,856,000
	(5) Dredging Part	22,776,000
	Pump, pipe, etc.	8,979,000
	Dredging hold equipment	13,797,000
B.	Labour Cost	54,562,000
	(1) Hull Construction	32,364,000
	(2) Hull Fitting	7,214,000
	(3) Machinery Part	10,877,000
	(4) Electrical Part	1,887,000
	(5) Dredging Part	2,220,000
C.	Indirect Cost	7,112,000
D.	Designing Cost	6,659,000
E.	Direct Expense	6,493,000
NET BUILDING COST		156,737,000
Overhead and Profit		13,629,000
Contigency (inclusive of transportation charge and cost of additional spare parts)		7,436,000
	Total	177,802,000

APPENDIX 5 List of the Study Channels

Appendix 5 List of the Study Channels

The lists are prepared for the 43 study channels on the basis of the review of various sources and the field interviews.

The lists set forth the following items for each of the channels individually.

I. Characteristics of the channel
II. Past Record of Dredging
III. Meteorology, River & Marine Conditions
IV. Maintenance Volume of Dredging

The information given in the lists is obtained from the following governmental agencies:

1 Harbour Department (HD)
2 Port Authority of Thailand (PAT)
3 Royal Irrigation Department (RID)
4 Asian Institute of Technology (AIT)
5 Meteorological Department (MD)
6 Royal Thai Survey Department (RTSD)

No. 1 Name of the Channel: RANONG Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	3	5.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

The port approaches are well protected.

6) Dumping Area

South side of the channel from the mouth of the river

7) Others

The whole length of the channel is completely sheltered against the SW monsoon.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY78	526,148	–	C-7

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80	21,297	1.0	C-7
81			
82			
83	211,050	1.95	C-5
84			
85	(250,000)	(2.0)	(C-7)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: W
Max. Wind Spead (Knots): 60 W

– Annual Rainfall (mm)
4,275.4

2) River Conditions

– Name of the River
Ranong River & Klong Ranong

– Drainage Area (Km^2)
186

– Mean River Discharge (m^3/s)
9.9

– Annual Suspended Sediment Discharge (t)
47,000

3) Marine Conditions

– Wave
Prevailing Wave: W
Wave Height (m) H = max. 2.0
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+3.66 (MHWS)
MHW	–
MSL	+3.04
MLW	–
MLLW	+1.20 (MLWS)
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)
60,000

2) Silt Rate (m p.a.)
0.3 (Assumption)

3) Main Cause of Channel Shoaling
River: Siltation

4) Supply Source of Channel Shoaling
River-borne Sediment, especially, a major source of sedimentation is mining waste.

5) Bottom Sediment (Kind of soil & grain size)
– River Bed Material
Upper Stream: Clayey Silt
Midstream: – do –
Lower Reaches: – do –

– Estuary
Very Fine to Medium Sand

– Coast
– do –

6) Others
– The maintenance dredging has been carried out mainly at the mouth of the River.
– The river shows high suspended solids.

No. 2 *Name of the Channel:* PHANG-NGA Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.8

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Rocky Headland

5) Seasonal Influences

The channel is well protected.

6) Dumping Area

Both banks of the River.

7) Others

The dredging work has been interrupted because of occasional gust.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY85	202,500*	1.8	C-7

*including the special area near the mouth of the river at the request of the local government.

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

{ } stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: W
  Max. Wind Spead (Knots): 45 SW
- Annual Rainfall (mm)
  2,337.5

2) River Conditions

- Name of the River
  Khlong Phang-nga
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: S
  Wave Height (m) H = max. 1.0
  Wave Period (sec) T = 6 - 7
  Wave Length (m) L =
- Tidal Level (m)

HHW	–
MHHW	+3.50 (MHWS)
MHW	–
MSL	–
MLW	–
MLLW	+0.3 (MLWS)
LLW	±0.00

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

20,000

2) Silt Rate (m p.a.)

0.25 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne Sediment

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream: Latelitic Fine to Coarse Sand
  Midstream: – do –
  Lower Reaches: – do –
- Estuary
  Fine to Coarse Sand
- Coast
  – do –

6) Others

No. 3 Name of the Channel: KLONG THACHIN Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	60	3	4.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

Not significant

6) Dumping Area

Both banks of the river mouth.

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY70	404,604	–	C-7
FY71	1,287,840	[12]	H-4 & H-2

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72	102,875	[3]	C-7
73	513,906	[7]	H-4
74	216,435	[4]	H-4
75	587,160	[6]	C-5
76			
77	229,660	[2]	C-5
78	268,085	[5]	C-5
79			
80	34,600 87,010	3.0 2.0	H-2 C-7
81			
82	65,550 117,200	3.0 3.9	H-2 C-5
83			
84	213,275	1.65	C-5
85	(50,400)	(4.0)	(C-7)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: W
Max. Wind Spead (Knots): 45 SW

– Annual Rainfall (mm)
2,337.5

2) River Conditions

– Name of the River
Khlong Thachin

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: SE
Wave Height (m) H = Max. 1.0
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+3.04 (MHWS)
MHW	–
MSL	+1.85
MLW	–
MLLW	+0.3 (MLWS)
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

100,000

2) Silt Rate (m p.a.)

0.4 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne Sediment

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Clayey Silt or silty sand

– Estuary

– do –

– Coast

– do –

6) Others

Channel shoaling occurs at the entrance (by cutters) as well as the inner part (by hoppers).

No. 4 Name of the Channel: KRABI Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
Old Port	60	3	12.0
New Port	60	4.5	14.0

below LLW

2) Maximum Size of Vessels (GRT)

Old Port: 300
New Port: 1,000

3) Type of the Port

Old Port: River Port
New Port: Estuary Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

North bank near KO NU at the river mouth

7) Others

The dredging operation by means of cutter during SW monsoon is difficult.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 74	275,071	–	C-7
75	537,807	[6]	C-5 & C-7
FY 81	281,595	1.32	C-7
82	582,200	1.88	C-7
83	656,400	1.46	C-7

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76	472,650	[5]	C-5
77	615,805	[8]	C-7
78	723,700	[5]	C-7
79			
80	72,868	1.0	C-7
81			
82			
83	165,690	6.0	H-4
84	395,220	1.93	C-7
85	(84,000)	(14.0)	(C-7)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: W
Max. Wind Spead (Knots): 50 W

– Annual Rainfall (mm)
2,327.4

2) River Conditions

– Name of the River
Krabi River, Klong Chilat

– Drainage Area (Km^2)
195 & 37

– Mean River Discharge (m^3/s)
5.30 & 1.01

– Annual Suspended Sediment Discharge (t)
17,554 & 2,116

3) Marine Conditions

– Wave
Prevailing Wave: W
Wave Height (m) H = max. 2.0
Wave Period (sec) T = 6 ~ 7
Wave Length (m) L =

– Tidal Level (m)

HHW	+4.00
MHHW	+3.26
MHW	+3.15
MSL	+2.14
MLW	+1.07
MLLW	+0.99
LLW	+0.24
Ave. Tidal Range	2.08

– Current
Max. ebbing and flooding current
v = 0.6 ~ 0.6 g m/s (at the mouth of Khlong ChilLat and Khlong Krabi Yai)
Do during neap tides*
v = 0.3 m/s (parallel to the alignment of the navigation channel)

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)
333,000

2) Silt Rate (m p.a.)
0.3 (Assumption)

3) Main Cause of Channel Shoaling
Siltation

4) Supply Source of Channel Shoaling
River-borne Sediment

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Silty clay $D_{50} = 5 \sim 20\ \mu$

– Estuary
Clayey or Silty sand

– Coast
Fine to Medium sand

6) Others

The annual maintenance dredging has mainly been executed around the Ko Nu.

*Do during the spring tides
v = 0.9 m/s (with the same direction of the neap tides)

No. 5 Name of the Channel: KANTANG Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	60	4	27.0

below LLW

2) Maximum Size of Vessels (GRT)

600

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

Outer Part: Offshore
Inner Part: Deeper area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY66	1,611,804	–	C-1,3 & H-2
FY67	1,184,476	[6]	– do –
FY68	319,850	[4]	–

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69	301,375	[4]	H-2
70	1,112,766	[6]	C-5 H-4
71	1,546,621	[6]	C-5 H-2
72	744,044	[5]	C-5 H-4
73	767,570	[7]	C-5 H-2
74			
75	168,750	[4]	H-4
76	168,750	[4]	H-4
77	96,750	[3]	C-5 H-4
78	50,125	[0.3]	H-2
79	119,150	[6]	H-4
80	107,825	9.0	H-2
81	119,183	15.0	H-4
82	103,925	10.0	H-2
83	92,250	7.5	H-4
84	55,650	6.0	H-2
85	(200,000)	in front of wharf	(C-15)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: W
Max. Wind Spead (Knots): 50 W

– Annual Rainfall (mm)
2,327.4

2) River Conditions

– Name of the River
Kantang River, Klong Palian

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: W
Wave Height (m) H = max. 2.0
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+3.39 (MHWS)
MHW	–
MSL	+2.23
MLW	–
MLLW	+0.53 (MLWS)
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

400,000

2) Silt Rate (m p.a.)

0.25 (Assumption)

3) Main Cause of Channel Shoaling

Inner: Siltation
Outer: Littoral Drift

4) Supply Source of Channel Shoaling

Inner: River-borne Sediment
Outer: – do –

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Muddy sand

– Estuary
Fine sand

– Coast

6) Others

– The sections which require a great volume of maintenance dredging are a bend in the river and the estuary bar.

No. 6 Name of the Channel: PAK BARA Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	3.8

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

The port is usable all the year round.

6) Dumping Area

Inner: in front of right bank
Outer: left side

7) Others

The river mouth is kept deep enough due to the self-flushing action.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY84	118,400	0.99	C-15

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: W
  Max. Wind Spead (Knots): 50W
- Annual Rainfall (mm)
  2,327.4

2) River Conditions

- Name of the River
  Pak Baru River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: W
  Wave Height (m) H = max. 2.0
  Wave Period (sec) T = 6 – 7
  Wave Length (m) L =
- Tidal Level (m)
  HHW
  MHHW
  MHW
  MSL
  MLW
  MLLW
  LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

38,000

2) Silt Rate (m p.a.)

0.25 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift out of the entrance.

4) Supply Source of Channel Shoaling

Sand beach nearby coast.

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches: Silty sand
- Estuary
  Fine to Medium sand
- Coast
  – do –

6) Others

No. 7 Name of the Channel: SATUN Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	60	3	14.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

Winds and waves during SW Monsoon (May – Sept.) prohibit the use of cutter suction dredgers.

6) Dumping Area

North of Ka Yao

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY78	426,325	–	–
FY79	554,910	[10]	–
FY80	274,450	2.59	C-5
FY81	446,550	6.27	C-5

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82	30,825	8.0	H-2
83	68,250	6.0	H-4
84	76,400	4.5	H-2
85	(67,200)	(14.0)	(C-7)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: W
Max. Wind Spead (Knots): 50 W

– Annual Rainfall (mm)
2,327.4

2) River Conditions

– Name of the River
Satun River

– Drainage Area (Km^2)
193

– Mean River Discharge (m^3/s)
7.64

– Annual Suspended Sediment Discharge (t)
250,000

3) Marine Conditions

– Wave
Prevailing Wave: W – SW
Wave Height (m) H = 0.5 ~ 1.5
Wave Period (sec) T = 2 ~ 5
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+3.50 (MHWS)
MHW	–
MSL	+2.53
MLW	–
MLLW	+0.5 (MLWS)
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

210,000

2) Silt Rate (m p.a.)

0.25 (Assumption)

3) Main Cause of Channel Shoaling

Inner: Siltation
Outer: Littoral Drift

4) Supply Source of Channel Shoaling

River-borne Sediment and
Materials transported by wave action

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Clay 15 ~ 175μ

– Estuary
Silty sand

– Coast
Fine to Coarse sand

6) Others

– The sections which require a great volume of maintenance dredging are Temarang near the river mouth and Laem Puju at the mouth of the bay.
– Recent maintenance dredging has been carried out only for these two areas.

No. 8 Name of the Channel: CHUMPORN Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	60	3.5	5.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

North side: Bar
South side: Tombolo

5) Seasonal Influences

The mouth of the river is exposed to NE Monsoon, therefore, navigable difficulties in the period of Nov. and Dec. are found.

6) Dumping Area

East side at the entrance and west side of the outer channel

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY77	322,635	–	C-1

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78	149,755	(2)	C-1
79			
80	262,834	2.5	C-15
81			
82			
83	269,726	2.02	C-25
84			
85	(8,400) (70,000)	(5.0) (1.7)	(H-6) (C-23)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 47 E

– Annual Rainfall (mm)
2,029.3

2) River Conditions

– Name of the River
Khlong The Thapao

– Drainage Area (Km^2)
1,916

– Mean River Discharge (m^3/s)
49.7

– Annual Suspended Sediment Discharge (t)
536,000

3) Marine Conditions

– Wave
Prevailing Wave: E -- NE
Wave Height (m) H = 1 ~ 2
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)

HHW	--
MHHW	+2.10 (MHWS)
MHW	--
MSL	+1.0
MLW	--
MLLW	+0.8 (MLWS)
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

150,000

2) Silt Rate (m p.a.)

0.5 (Assumption)

3) Main Cause of Channel Shoaling

Inner: Siltation
Outer: Littoral Drift

4) Supply Source of Channel Shoaling

River-borne Sediment and
Material Transported by wave action

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Silty sand

– Estuary
Fine to Coarse sand

– *Coast*

6) Others

No. 9 Name of the Channel: PAK TAKO Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.5

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bars

5) Seasonal Influences

The mouth of the river is exposed to NE Monsoon. Navigable difficulties are found over the period of Oct. – March.

6) Dumping Area

South side of the channel

7) Others

The river mouth is rather stable and no remarkable change has been occured after capital dredging.
The depth at the mouth of the river is deep enough due to the self-flushing action.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY83	251,000	0.8	C-17

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 47 E

– Annual Rainfall (mm)
2,029.3

2) River Conditions

– Name of the River
Tako River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = 1.2 ~ 2.0
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)
HHW
MHHW
MHW
MSL (+1.0)
MLW
MLLW
LLW

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

30,000

2) Silt Rate (m p.a.)

0.5 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Materials transported by wave action

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Silty or clayey sand

– Estuary
Fine to Medium sand

– Coast

6) Others

No. 10 Name of the Channel: LUNG SUAN Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	3	4.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bars

5) Seasonal Influences

The port is unusable from Nov. to Feb.

6) Dumping Area

Inner: near the right bank
Outer: north side

7) Others

The channel entrance is nearly closed.
Moreover, the inner part is very shallow.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY70	475,785	–	C-3

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74	272,442	[3]	C-1
75			
76	284,750	[4]	C-1
77			
78	294,689	[5]	C-1
79			
80	1,500	1.5	C-1
81	210,160	0.67	C-3
82			
83	327,784	1.06	C-1
84			
85	(188,000)	(4.0)	(C-19, 21)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 47 E

– Annual Rainfall (mm)
2,029.3

2) River Conditions

– Name of the River
Lungsuan River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave:
Wave Height (m) H =
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+2.0 (MHWS)
MHW	–
MSL	+0.9
MLW	–
MLLW	+0.6 (MLWS)
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

130,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

River Mouth: Littoral Drift

4) Supply Source of Channel Shoaling

River-borne sediment and
Materials transported by wave action.

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches: Muddy sand

– Estuary
Clayey or Silty sand

– Coast

6) Others

No. 11, 12 Name of the Channel: BANDON Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
Outer	60	4	25.0
Inner	40	2	10.0

below LLW

2) Maximum Size of Vessels (GRT)

Outer: 600
Inner: 100

3) Type of the Port

Old Port: River Port
New Port: Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bars

5) Seasonal Influences

The port is usable all the year round because wave actions during NE Monsoon is not severe due to surrounding islands and the shallowness.

6) Dumping Area

East side of the outer channel

7) Others

- The contract dredging is being carried out for maintaining the outer channel.
- The new port at the confluence of the Tapi River and Khlong Tha Thong is capable of accommodating 1000 GRT vessels (*)

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 71	1,070,475	–	C-3 & H-2
72	1,517,141	[12]	C-1,3 & H-4
73	914,503	[11]	C-3 & H-4
74	854,808	[11]	C-3 & H-2,4
75	1,569,335	[10]	H-2, 4
76	1,069,390	[10]	H-2, 4

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77	1,261,865	[5]	C-1
78	155,723 * 73,380	[3] [0.5]	C-1 C-3
79	1,002,997	[9]	C-1 H-2, 4
80	148,154	13.5	H-4
81	174,020	11.0	H-2
82	190,611	0.46	C-1
83	30,225	9.0	H-6
84	(2,882,000)		Contract
85			– do –

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 40 NE

– Annual Rainfall (mm)
1,710

2) River Conditions

– Name of the River
Tapi River, Khlong Tha Thong

– Drainage Area (Km^2)
12,631

– Mean River Discharge (m^3/s)
300

– Annual Suspended Sediment Discharge (t)
1,311,000

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = 0.5
Wave Period (sec) T = 4 – 7
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+2.2 (MHWS)
MHW	–
MSL	+1.4
MLW	–
MLLW	+0.3 (MLWS)
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

285,000

2) Silt Rate (m p.a.)

0.15 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

Reiver-borne Sediment and surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream: Clay

Lower Reaches: Clay and Fine sand

– Estuary

Clayey or Silty sand 10 ~ 120μ

– Coast

Clayey or Silty sand

6) Others

No. 13 Name of the Channel: DORNSAK Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.5

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

Left bank of the river mouth (behind the Bar)

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY79	263,674	–	C-1

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80	164,854	1.5	C-1
81			
82	147,300	1.09	C-3
83			
84	31,300	2.5	H-6
85			

( ) stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 40 NE

– Annual Rainfall (mm)
1,710

2) River Conditions

– Name of the River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = 1.0
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+2.5 (MHWS)
MHW	–
MSL	+1.4
MLW	–
MLLW	+0.3 (MLWS)
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

50,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift & Siltation

4) Supply Source of Channel Shoaling

Surrounding shallow sea and River-borne sediment

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Partially Mud and Fine to Medium sand

– Coast

6) Others

No. 14 Name of the Channel: KHANORM Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
Outer	80	5	0.745
Middle	180	4.5	0.382
Inner	140	3	0.237

below LLW

2) Maximum Size of Vessels (GRT)

2,000

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Pocket Beach

5) Seasonal Influences

Not significant

6) Dumping Area

Approx. 1 sea mile east from the end of the channel.

7) Others

- The inner part of the river is fairly stable.
- The gust occurs occasionally.
- The river training wall are found at the mouth of the river.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY80	114,720	–	C-3

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82	97,000	1.4	H-4
83			
84	13,500	2.7	H-6
85	(132,000)	(1.3)	(H-2)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: NE
  Prevailing Wind: E
  Max. Wind Spead (Knots): 50 E
- Annual Rainfall (mm)
  1,934.7

2) River Conditions

- Name of the River
  Khanom River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: E – NE
  Wave Height (m) H = 1 – 1.5
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	–
MHHW	–
MHW	+1.9
MSL	+1.0
MLW	–
MLLW	–
LLW	±0.0

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

100,000

2) Silt Rate (m p.a.)

0.4 (Assumption)

3) Main Cause of Channel Shoaling

Outer: Littoral Drift
Inner: Siltation

4) Supply Source of Channel Shoaling

Outer: Sea-borne Sediment
Inner: Rivrr-borne Sediment

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

Upper Stream:

Midstream: Muddy sand

Lower Reaches: Silty sand with partial mud

- Estuary
  Fine to Coarse sand
- Coast
  Fine to Coarse sand

6) Others

The maintenance dredging by HD's hopper has been carried out for the outer and middle part only.

No. 15 Name of the Channel: SICHON Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

North side from the entrance

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY80	114,030	0.48	C-1

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84	16,200	0.5	H-6
85	(3,500) (6,000)	(2.0) (1.0)	(H-6) (C-23)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) *Meteorological Conditions*

- Wind
  Predominant Monsoon: NE
  Prevailing Wind: E
  Max. Wind Spead (Knots): 50 E
- Annual Rainfall (mm)
  1,934.7

2) River Conditions

- Name of the River
  Klong Sichou
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: E
  Wave Height (m) H = *max.* 2
  Wave Period (sec) T = 6 – 7
  Wave Length (m) L =
- Tidal Level (m)

HHW	–
MHHW	+1.23 (MHWS)
MHW	–
MSL	+0.76
MLW	–
MLLW	–
LLW	±0.00

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

32,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding beach

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches: Silty sand
- Estuary
  Fine to Medium sand
- Coast
  Fine to Coarse sand

6) Others

No. 16 Name of the Channel: THA SALA Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	0.8

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

South side of the channel

7) Others

– The mouth of the river is nearly closed.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY80	152,404	0.8	C-1, 3

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83	158,215	0.4	C-1
84			
85	(9,800)	(0.8)	(C-1, 21)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 50 E

– Annual Rainfall (mm)
1,934.7

2) River Conditions

– Name of the River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = 1 – 2
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)
HHW
MHHW
MHW
MSL (+0.8)
MLW
MLLW
LLW

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

25,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding Beach

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Medium to Coarse sand

– Coast
Medium to Coarse sand

6) Others

No. 17 Name of the Channel: PAK NAKORN Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	5.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Sand Spit named Laem Thalumphuk.

5) Seasonal Influences

The port is protected by the long sand spit.

6) Dumping Area

Both sides of the channel

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY84	434,910	3.4	C-21

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: NE
  Prevailing Wind: SW
  Max. Wind Spead (Knots): 55 WSW
- Annual Rainfall (mm)
  2,429.4

2) River Conditions

- Name of the River
  Pak Phanang River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave:
  Wave Height (m) H = Calm
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	–
MHHW	+1.4 (MHWS)
MHW	–
MSL	+0.8
MLW	–
MLLW	+0.2 (MLWS)
LLW	±0.0

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

40,000

2) Silt Rate (m p.a.)

0.2 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding shallow bay

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

  Upper Stream:

  Midstream:

  Lower Reaches:

- Estuary
  Muddy clay

- Coast

6) Others

No. 18 Name of the Channel: PAK PHANANG Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	60	3	24.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Sand spit named Laem Thalumphuk

5) Seasonal Influences

The channel is compleiely sheltered by the long sand spit.

6) Dumping Area

Both sides of the channel

7) Others

– The inner part of the river is relatively stable and no deposition occur.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY82	1,255,000	4.61	C-19,21
FY83	1,016,670	6.96	C-19,21
FY84	1,806,557	12.50	C-1, 23

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: SW
Max. Wind Spead (Knots): 55 WSW

– Annual Rainfall (mm)
2,429.4

2) River Conditions

– Name of the River
Pak Phanang River

– Drainage Area (Km^2)
1,071 & 757

– Mean River Discharge (m^3/s)
52.78 & 37.27

– Annual Suspended Sediment Discharge (t)
1,330,000 & 1,010,000

3) Marine Conditions

– Wave
Prevailing Wave:
Wave Height (m) H = Calm
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+1.4 (MHWS)
MHW	–
MSL	+0.8
MLW	–
MLLW	+0.2 (MLWS)
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

250,000

2) Silt Rate (m p.a.)

0.15 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary

Muddy clay 1 – 20μ

– Coast

– do –

6) Others

No. 19, 20 Name of the Channel: SONGKHLA Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
Outer*	120	9	5
Outer	100	5	3
Inner	250	5	4

below LLW

2) Maximum Size of Vessels (GRT)

2,000 DWT

(*) Deep-sea port 20,000 DWT

3) Type of the Port

Outer: Reclaimed land

Inner: Estuary port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

North of KO HNU for hoppers

7) Others

Breakwater at the Outlet of the Lake.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY67	337,531	–	C-3
FY68	2,125,892	[12]	C-1, 3 H-2
FY69	1,939,300	[12]	– do –
FY70	840,176	[7]	C-1, 3 H-4

(*) Under dredging by private contractor.

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71	685,508	[8]	C-1 H-2
72	582,489	[11]	C-1 H-2, 4
73	1,248,216	[12]	– do –
74	637,720	[9]	C-1 H-2
75	296,061	[10]	C-1 H-4
76	258,188	[6]	– do –
77	492,000	[7]	H-2, 4
78	34,375	[1]	H-2
79			
80			
81	102,650	3.5	H-2
82	140,000	6.5	H-4
83	134,728	4.0	H-4
84	154,268	4.57	C-19 H-4
85	(130,000)	(1.4)	(H-2)

[ ] stands for months worked.

( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind

Predominant Monsoon: NE

Prevailing Wind: E

Max. Wind Spead (Knots): 76 E

– Annual Rainfall (mm)

2,093.8

2) River Conditions

– Name of the River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave

Prevailing Wave: E – NE

Wave Height (m) H = max. 2.5

Wave Period (sec) T = 4 – 10

Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+1.37 (MHWS)
MHW	–
MSL	+0.97
MLW	+0.30
MLLW	–
LLW	±0.00 (CD)

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

600,000

2) Silt Rate (m p.a.)

0.5 ~ 0.8 (Assumption)

3) Main Cause of Channel Shoaling

Outer: Littoral Drift

Inner: Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and

Materials transported by wave action

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary

Silty clay or clayey silt

– Coast

Fine to Medium sand

6) Others

Bottom slope 1/400 ~ 1/500

No. 21 Name of the Channel: NATAB Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	0.8

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

North side

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY83	202,130	0.68	C-23

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: NE
  Prevailing Wind: E
  Max. Wind Spead (Knots): 76 E
- Annual Rainfall (mm)
  2,093.8

2) River Conditions

- Name of the River
  Khlong Natab
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: E – NE
  Wave Height (m) H = max. 2.5
  Wave Period (sec) T = 4 – 10
  Wave Length (m) L =
- Tidal Level (m)
  HHW
  MHHW
  MHW
  MSL (+0.5)
  MLW
  MLLW
  LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

25,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding Beach

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches:
- Estuary
  Silty Sand
- Coast
  Fine to Medium sand

6) Others

No. 22 Name of the Channel: SAKORM Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.7

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

North side

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY83	241,073	0.64	C-23

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

( ) stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: NE
  Prevailing Wind: E
  Max. Wind Spead (Knots): 76 E
- Annual Rainfall (mm)
  2,093.8

2) River Conditions

- Name of the River
  Khlong Sakorm
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: E – NE
  Wave Height (m) H = max. 2.5
  Wave Period (sec) T = 4 – 10
  Wave Length (m) L =
- Tidal Level (m)
  HHW
  MHHW
  MHW
  MSL (+0.5)
  MLW
  MLLW
  LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

54,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding Beach

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches:
- Estuary
  Silty sand
- Coast
  Fine to Coarse sand

6) Others

No. 23 Name of the Channel: NONG JIK Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

North side

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
Expected 1986 onward to 2,000			

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 40 W

– Annual Rainfall (mm)
1,816.3

2) River Conditions

– Name of the River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = max. 2.5
Wave Period (sec) T = 4 – 10
Wave Length (m) L =

– Tidal Level (m)
HHW
MHHW
MHW
MSL (+0.5) Assumption
MLW
MLLW
LLW

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

32,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding Beach

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Silty or Fine sand

– Coast
Fine to coarse sand

6) Others

No. 24 Name of the Channel: PATTANI Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	60	3	4.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Sand spit named Laem Ta Chi.

5) Seasonal Influences

The channel is protected from NE Monsoon by the long sand spit.

6) Dumping Area

7) Others

- The contract dredging is being carried out for maintaining the channel.
- The new port at the river mouth is capable of accommodating 1,000 GRT Vessels.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY69	1,044,939	[10]	C-1
FY70	600,957	[7]	C-1

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73	164,331	[2]	C-1
74			
75	205,228	[3]	C-1
76			
77	603,812	[5]	C-3
78	479,204	[7]	C-3
79			
80	232,745	0.6	C-3
81			
82			
83			
84			
85	(380,000)		Contract

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- *Wind*
  Predominant Monsoon: NE
  Prevailing Wind: E
  Max. Wind Spead (Knots): 40 W
- Annual Rainfall (mm)
  1,816.3

2) River Conditions

- Name of the River
  Pattani River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
  53
- Annual Suspended Sediment Discharge (t)
  48,635

3) Marine Conditions

- Wave
  Prevailing Wave: E – NE
  Wave Height (m) H = Calm
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	+3.3
MHHW	+2.67
MHW	+2.61
MSL	+2.43
MLW	+2.17
MLLW	+2.12
LLW	+1.18

  Ave. Tidal Range 0.44
- *Current*
  v max. = 0.42 ~ 0.70 m/s
  ebb and flood tide at *the river mouth*

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

120,000

2) Silt Rate (m p.a.)

0.5 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding shallow bay

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

  Upper Stream:

  Midstream:

  Lower Reaches:

- Estuary
  Silty clay D50 = 15 ~ 25μ
  γ = 1.62 ~ 1.86 t/m^3
- Coast

6) Others

No. 25 Name of the Channel: SAI BURI Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	3	2.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

7) Others

– The mouth of the river is kept deep due to strong flush current.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY77	603,812	–	C-3

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78	114,100	[2]	C-3
79			
80	16,838	0.2	C-3
81			
82			
83	99,060	0.54	C-19
84	17,200	0.5	H-6
85	(40,000)	(2.0)	(C-1)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: E
Max. Wind Spead (Knots): 60 NE

– Annual Rainfall (mm)
2,618.8

2) River Conditions

– Name of the River
Khlong Saiburi, Sai buri River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = max. 2.5
Wave Period (sec) T = 4 – 10
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+0.74 (MHWS)
MHW	–
MSL	+0.35
MLW	–
MLLW	–
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

32,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding Sandy Beach

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Medium to Coarse sand

– Coast

6) Others

No. 26 Name of the Channel: NARATHIWAT Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	3	2.0

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

Approx. 300 m west from the end of the channel.

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY79	97,763	--	C-15

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80	189,524	0.9	C-3
81	164,575	2.6	C-1
82			
83	162,780	0.69	C-19
84	248,220	0.8	C-19
85	(210,000)	(2.0)	(C-19)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: NE
  Prevailing Wind: E
  Max. Wind Spead (Knots): 60 NE
- Annual Rainfall (mm)
  2,618.8

2) River Conditions

- Name of the River
  Khlon Narathiwat
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: E – NE
  Wave Height (m) H = max. 2.5
  Wave Period (sec) T = 4 – 10
  Wave Length (m) L =
- Tidal Level (m)

HHW	--
MHHW	+0.88 (MHWS)
MHW	--
MSL	+0.72
MLW	--
MLLW	--
LLW	±0.0

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

100,000

2) Silt Rate (m p.a.)

1.25 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding Sandy Beach

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches:
- Estuary
  Fine to Coarse Sand
- Coast
  – do –

6) Others

No. 27 Name of the Channel: PRAN BURI Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	2.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

The port is usable all the year round because the channel is sheltered from NE Monsoon by the cape.

6) Dumping Area

Left bank of the river.

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY83	465,025	1.8	C-15
FY84	147,650	0.6	C-15

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: SW
Max. Wind Spead (Knots): 50 W

– Annual Rainfall (mm)
1,031.4

2) River Conditions

– Name of the River
Pran-buri River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: E – NE
Wave Height (m) H = max. 1.5
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)

HHW	
MHHW	+3.95 (MHWS)
MHW	–
MSL	+1.29
MLW	–
MLLW	–
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

48,000

2) Silt Rate (m p.a.)

0.6 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift/Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Fine to Medium sand

– Coast
– do –

6) Others

No. 28 Name of the Channel: BAN LAEM Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	2.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY80	285,991	2.0	C-17

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81	195,775	1.91	C-17
82			
83	327,247	2.34	C-17
84			
85			(C-17)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  - Predominant Monsoon: NE
  - Prevailing Wind: SW
  - Max. Wind Spead (Knots): 50 W
- Annual Rainfall (mm)
  - 1,301.4

2) River Conditions

- Name of the River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  - Prevailing Wave:
  - Wave Height (m) H = Calm
  - Wave Period (sec) T =
  - Wave Length (m) L =
- Tidal Level (m)
  - HHW
  - MHHW
  - MHW
  - MSL
  - MLW
  - MLLW
  - LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

98,000

2) Silt Rate (m p.a.)

0.7 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne Sediment

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  - Upper Stream:
  - Midstream:
  - Lower Reaches:
- Estuary
  - Muddy sand
- Coast

6) Others

- The section where requires a great volume of maintenance dredging are a bend part out of the entrance.

No. 29

MAEKLONG
Name of the Channel: (SAMUT SONGKRAM)

Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	3	2.5

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

Both sides of the channel

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY79	381,537	–	C-17

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82	297,835	2.6	C-15
83			
84	7,700	3.0	H-6
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: S – W
Max. Wind Spead (Knots): 56 E

– Annual Rainfall (mm)
1,458.2

2) River Conditions

– Name of the River
Mae Nam Klong

– Drainage Area (Km^2)
32,609

– Mean River Discharge (m^3/s)
536

– Annual Suspended Sediment Discharge (t)
6,840,000 – 9,570,000

3) Marine Conditions

– Wave
Prevailing Wave:
Wave Height (m) H = Calm
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+2.99 (MHWS)
MHW	–
MSL	+1.64
MLW	–
MLLW	+0.1 (MLWS)
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

70,000

2) Silt Rate (m p.a.)

0.7 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne Sediment and
Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Muddy sand

– Coast

6) Others

– The maintenance dredging is carried out mainly at the mouth of the river.

No. 30

Name of the Channel: THACHIN (SAMUT SAKORN)

Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	6.7

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

The port is usable all the year round.

6) Dumping Area

Both banks of the channel

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY78	543,748	–	C-15, 17
FY79	237,294	[2]	C-17

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82	3,078	0.03	C-17
83	385,390	3.0	C-17
84			
85	(25,200)	(6.7)	(H-6)

[ ] stands for months worked.

( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind

Predominant Monsoon: SW

Prevailing Wind: S – W

Max. Wind Spead (Knots): 56 E

– Annual Rainfall (mm)

1,458.2

2) River Conditions

– Name of the River

Thachin River

– Drainage Area (Km^2)

6,300

– Mean River Discharge (m^3/s)

59

– Annual Suspended Sediment Discharge (t)

615,000

3) Marine Conditions

– Wave

Prevailing Wave:

Wave Height (m) H = Calm

Wave Period (sec) T =

Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+3.25 (MHWS)
MHW	–
MSL	+1.65
MLW	–
MLLW	–
LLW	±0.0

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

140,000

2) Silt Rate (m p.a.)

0.7 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and

Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary

Muddy sand or

Fine cohesive clay 2 – 150μ

– Coast

6) Others

No. 31 Name of the Channel: BANG PAKONG Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	3	8.5

below LLW

2) Maximum Size of Vessels (GRT)

300

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

South-east of the channel (Outer part)

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY80	474,298	8.5	C-15,17
FY81	218,242	4.2	C-17

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83	27,999	8.5	H-6 C-25
84			
85	(25,200)	(8.5)	(H-6)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: S – W
  Max. Wind Spead (Knots): 56 E
- Annual Rainfall (mm)
  1,458.2

2) River Conditions

- Name of the River
  Bang Pakong River
- Drainage Area (Km^2)
  4,160
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave:
  Wave Height (m) H = max. 1.0
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	
MHHW	+2.98 (MHWS)
MHW	
MSL	+2.07
MLW	
MLLW	
LLW	±0.00

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

150,000

2) Silt Rate (m p.a.)

0.45 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and
Materials transported by wave actions

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches: Mud
- Estuary
  Mud
- Coast
  Mud

6) Others

- The maintenance dredging has been carried out for the outer part including the river mouth.
- Because the inner part is deep enough, there is no need to dredge there.

No. 32 Name of the Channel: RAYONG Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	3.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

East side

7) Others

- The inner part of the river is fairly stable.
- The breakwater to prevent the littoral drift was constructed at the mouth of the river in 1983.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY79	143,438	–	C-15

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80	94,810	1.0	C-17
81	107,349	0.44	C-15
82	123,521	1.6	C-15
83	167,030	0.35	C-23
84	484,849	3.0	C-25
85	(250,000)	(3.0)	(C-25)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: SW
  Max. Wind Spead (Knots): 73 NNW
- Annual Rainfall (mm)
  1,321.6

2) River Conditions

- Name of the River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: SW
  Wave Height (m) H = 1.0 – 1.5
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	+0.65
MHHW	+0.23
MHW	–
MSL	±0.00
MLW	–
MLLW	–0.74
LLW	–1.90

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

100,000

2) Silt Rate (m p.a.)

0.8 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Sand Beach nearby coast.

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches:
- Estuary
  Fine to Coarse Sand
- Coast
  Fine to Coarse Sand
  D50 = 0.45 ~ 0.57 (Beach Sand)

6) Others

No. 33 Name of the Channel: PRASAE Dredging Center: CHANTAGURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	2.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

The port is usable all the year round.

6) Dumping Area

East of the channel.

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY79	64,370	[0.7]	C-15

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81	123,185	2.0	C-15
82			
83	18,100	2.0	H-6
84			
85	(16,800)	(2.0)	(H-6)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: SW
  Max. Wind Spead (Knots): 73 NNW
- Annual Rainfall (mm)
  1,321.6

2) River Conditions

- Name of the River
  Prasae River
- Drainage Area (Km^2)
  2,700
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: SW
  Wave Height (m) H = 1.0 – 1.5
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	–
MHHW	+1.95 (MHWS)
MHW	–
MSL	+1.1
MLW	–
MLLW	+0.15 (MLWS)
LLW	±0.00

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

30,000

2) Silt Rate (m p.a.)

0.5 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Sand Beach nearby coast

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches: Clayey or Silty sand
- Estuary
  Silty or Fine sand
- Coast

6) Others

- The inner part of the river is deep enough and maintenance dredging is not necessary.

No. 34 Name of the Channel: PHANG RAD Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.8

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

The port is usable all the year round.

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY80	76,025	1.8	C-17

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84	19,880	–	C-25
85	(135,000)	(2.0)	(C-17)

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: SW
Max. Wind Spead (Knots): 73 NNW

– Annual Rainfall (mm)
1,321.6

2) River Conditions

– Name of the River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: SW
Wave Height (m) H = 1 – 1.5
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)
HHW
MHHW
MHW
MSL (+1.1)
MLW
MLLW
LLW

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

30,000

2) Silt Rate (m p.a.)

0.4 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Sand Beach nearby coast.

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary

– Coast

6) Others

– The inner part of the river need not be dredged.

No. 35 Name of the Channel: CHANTABURI Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	0.8

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

7) Others

- The inner part of the river is fairly stable.
- There is no navigational difficulty at present.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: SW
  Max. Wind Spead (Knots): 65 S
- Annual Rainfall (mm)
  2977.2

2) River Conditions

- Name of the River
  Chantaburi River
- Drainage Area (Km^2)
  7,390
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave:
  Wave Height (m) H =
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)

HHW	
MHHW	+2.65 (MHWS)
MHW	
MSL	+1.81
MLW	
MLLW	+0.2 (MLWS)
LLW	±0.00

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

–

2) Silt Rate (m p.a.)

–

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne Sediment and a major cause is jewel mining waste.

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

  Upper Stream:

  Midstream:

  Lower Reaches: Clay to silt

- Estuary
  Silty Sand
- Coast

6) Others

- The purpose of dredging in FY 1981 was to reclaim the land for the dredging center.
  V = 143,645 m^3
  L = 0.52 km
  Dredger: C-15

No. 36 Name of the Channel: TRAT Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	17.5

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

River Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

7) Others

– The inner part is rather stable and deep enough, therefore, there is no need to dredge.

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY83	20,600	5.0	H-6
FY84	481,644	2.64	C-17
(FY85	450,000	2~3	C-17)

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: SW
Max. Wind Spead (Knots): 65 S

– Annual Rainfall (mm)
2,977.2

2) River Conditions

– Name of the River
Trat River

– Drainage Area (Km^2)
1,528

– Mean River Discharge (m^3/s)
16.0

– Annual Suspended Sediment Discharge (t)
12,000

3) Marine Conditions

– Wave
Prevailing Wave: SW
Wave Height (m) H = 1 – 1.5
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)

HHW	–
MHHW	+2.1 (MHWS)
MHW	–
MSL	+1.1
MLW	–
MLLW	+0.15 (MLWS)
LLW	±0.00

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

200,000

2) Silt Rate (m p.a.)

0.3 (Assumption)

3) Main Cause of Channel Shoaling

Siltation due to the river-borne sediment.

4) Supply Source of Channel Shoaling

One of the major sources is jewel mining waste.

5) Bottom Sediment (Kind of soil & grain size)

– *River Bed Material*

Upper Stream:

Midstream: Latelite clay

Lower Reaches: Clay to silt

– Estuary

– *Coast*

6) *Others*

– The critical section is the entrance and it is expected that maintenance dredging is necessary for only the estuary bar.

No. 37 Name of the Channel: KLONG YAI Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
(FY85)	(200,000)	(1.0)	(C-25)

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: W
  Max. Wind Speed (Knots): 63 NNW
- Annual Rainfall (mm)
  4,763.9

2) River Conditions

- Name of the River
  (Small Canal only)
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  Prevailing Wave: SW
  Wave Height (m) H = 1 – 1.5
  Wave Period (sec) T =
  Wave Length (m) L =
- Tidal Level (m)
  HHW
  MHHW
  MHW
  MSL
  MLW
  MLLW
  LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

20,000

2) Silt Rate (m p.a.)

0.5 (Assumption)

3) Main Cause of Channel Shoaling

Siltation due to density current.

4) Supply Source of Channel Shoaling

Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  Upper Stream:
  Midstream:
  Lower Reaches:
- Estuary
  Mud to clay
- Coast

6) Others

No. 1'

Name of the Channel: PHUKET OUTER

Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	120	9	1.5

below LLW

2) Maximum Size of Vessels (GRT)

20,000 DWT

3) Type of the Port

Reclamed Land

4) Geographical Features at the mouth of the River

5) Seasonal Influences

The port is usable all the year round.

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger
(FY86)			

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: SW
Prevailing Wind: W
Max. Wind Spead (Knots): 45 SW

– Annual Rainfall (mm)
2,337.5

2) River Conditions

– Name of the River
No River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave: SE
Wave Height (m) H = max. 1.0
Wave Period (sec) T = 6 – 7
Wave Length (m) L =

– Tidal Level (m)

HHW	+4.00 (HAT)
MHHW	+3.40 (MHWS)
MHW	+2.30 (MHWN)
MSL	+2.03
MLW	+1.70 (MLWN)
MLLW	+0.7 (MLWS)
LLW	±0.00 (LAT)

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

–

2) Silt Rate (m p.a.)

–

3) Main Cause of Channel Shoaling

Littoral Drift but not significant

4) Supply Source of Channel Shoaling

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary

– Coast
Fine to Coarse sand

6) Others

No. 2'　　Name of the Channel: CHAO PHRAYA SECOND　　Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
Straight Bend	100 250	4.5	14.0

below MSL

2) Maximum Size of Vessels (GRT)

3) Type of the Port

4) Geographical Features at the mouth of the River

Bangkok Bar

5) Seasonal Influences

The channel is usable all the year round.

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger

3,700,000 m^3
Computed on the basis of the sounding survey of the year 1983.
where,
side slope: 1 in 10
depth allowance: 0.5 m

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  Predominant Monsoon: SW
  Prevailing Wind: S
  Max. Wind Spead (Knots): 56E
- Annual Rainfall (mm)
  1,458.2

2) River Conditions

- Name of the River
  Chao Pahraya River
- Drainage Area (Km^2)
  120.693 Km^2
- Mean River Discharge (m^3/s)
  723 (1976)
- Annual Suspended Sediment Discharge (t)
  3,354,910 (1976)

3) Marine Conditions

- Wave
  Prevailing Wave:
  Wave Height (m) H = max. 1.25
  Wave Period (sec) T = 3 ~ 4
  Wave Length (m) L =
- Tidal Level (m)

HHW	+2.28
MHHW	+1.18
MHW	+0.94
MSL	±0.00
MLW	-0.78
MLLW	-1.26
LLW	-2.42
Mean Range	2.44

- Current

Ebb tide	1.0 m/s
Flood tide	0.7 m/s
East flat	0.3 ~ 0.5 m/s

(at water discharge annual mean 700 m^3/sec)

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

850,000

2) Silt Rate (m p.a.)

0.8 (Partial)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne Sediment and surrounding Shallow Bar

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

  Upper Stream:

  Midstream:

  Lower Reaches:

- Estuary
  Mud
  $\gamma = 1.25 \sim 1.40$ t/m^3
- Coast
  (1) Mud
  $D_{50} = 0.001 \sim 0.01$ mm
  (2) Sand Except Muddy Area
  $D_{50} = 0.1 \sim 0.2$ mm

6) Others

The slope of sea bottom
East Flats 1/400 ~ 1/1000
West Flats 1/1000 ~ 3000

No. 3'

Name of the Channel: PAK POON

Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	2.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  - Predominant Monsoon: NE
  - Prevailing Wind: SW
  - Max. Wind Spead (Knots): 55 WSW
- Annual Rainfall (mm)
  - 2,429.4

2) River Conditions

- Name of the River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  - Prevailing Wave:
  - Wave Height (m) H = Calm
  - Wave Period (sec) T =
  - Wave Length (m) L =
- Tidal Level (m)

HHW	–
MHHW	+1.23 (MHWS)
MHW	–
MSL	+0.80
MLW	–
MLLW	–
LLW	±0.00

- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

16,000

2) Silt Rate (m p.a.)

0.2 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding shallow bay

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

- Estuary
  - Mud
- Coast

6) Others

No. 4'

Name of the Channel: PUMRIENG

Dredging Center: SONGKHLA

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	4.0

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

Estuary Port

4) Geographical Features at the mouth of the River

Estuary Bar

5) Seasonal Influences

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.

( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  - Predominant Monsoon: NE
  - Prevailing Wind: E
  - Max. Wind Spead (Knots): 40 NE
- Annual Rainfall (mm)
  - 1,710

2) River Conditions

- Name of the River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  - Prevailing Wave:
  - Wave Height (m) H = Calm
  - Wave Period (sec) T =
  - Wave Length (m) L =
- Tidal Level (m)
  - HHW
  - MHHW
  - MHW
  - MSL
  - MLW
  - MLLW
  - LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

32,000

2) Silt Rate (m p.a.)

0.2 (Assumption)

3) Main Cause of Channel Shoaling

Siltation

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

- Estuary

Mud

- Coast

6) Others

No. 5'

Name of the Channel: KUMPUAN

Dredging Center: KANTANG

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	1.5

below LLW

2) Maximum Size of Vessels (GRT)

3) Type of the Port

4) Geographical Features at the mouth of the River

5) Seasonal Influences

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

{ } stands for months worked.

( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

- Wind
  - Predominant Monsoon: SW
  - Prevailing Wind: S
  - Max. Wind Spead (Knots): 60 W
- Annual Rainfall (mm)
  - 4,275.4

2) River Conditions

- Name of the River
- Drainage Area (Km^2)
- Mean River Discharge (m^3/s)
- Annual Suspended Sediment Discharge (t)

3) Marine Conditions

- Wave
  - Prevailing Wave:
  - Wave Height (m) H ≈ 0.5 – 1.0
  - Wave Period (sec) T ≈
  - Wave Length (m) L ≈
- Tidal Level (m)
  - HHW
  - MHHW
  - MHW
  - MSL
  - MLW
  - MLLW
  - LLW
- Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

12,000

2) Silt Rate (m p.a.)

0.2 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

River-borne sediment and
Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

- River Bed Material
  - Upper Stream:
  - Midstream:
  - Lower Reaches:
- Estuary
  - Silty sand
- Coast
  - Fine to medium sand

6) Others

No. 6'

Name of the Channel: KLONGWAL

Dredging Center: CHANTABURI

I. Characteristics of the Channel

1) Dimensions of the Channel

	Width (m)	Depth (m)	Length (Km)
	40	2	0.6

below LLW

2) Maximum Size of Vessels (GRT)

100

3) Type of the Port

4) Geographical Features at the mouth of the River

Sand Bar

5) Seasonal Influences

No seasonal influence

6) Dumping Area

7) Others

II. Past Record of Dredging

1) Capital Dredging

Year	Volume (m^3)	Length (Km)	Dredger

2) Maintenance Dredging

Year	Volume (m^3)	Length (Km)	Dredger
FY 67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			

[ ] stands for months worked.
( ) stands for HD's Dredging Programme.

III. Meteorology, River & Marine

1) Meteorological Conditions

– Wind
Predominant Monsoon: NE
Prevailing Wind: SW
Max. Wind Spead (Knots): 50W

– Annual Rainfall (mm)
1,031.4

2) River Conditions

– Name of the River
Small River

– Drainage Area (Km^2)

– Mean River Discharge (m^3/s)

– Annual Suspended Sediment Discharge (t)

3) Marine Conditions

– Wave
Prevailing Wave:
Wave Height (m) H = 1 – 1.5
Wave Period (sec) T =
Wave Length (m) L =

– Tidal Level (m)
HHW
MHHW
MHW
MSL
MLW
MLLW
LLW

– Current

IV. Maintenance Volume of Dredging

1) Estimated Maintenance Volume (m^3 p.a.)

10,000

2) Silt Rate (m p.a.)

0.25 (Assumption)

3) Main Cause of Channel Shoaling

Littoral Drift

4) Supply Source of Channel Shoaling

Surrounding shallow sea

5) Bottom Sediment (Kind of soil & grain size)

– River Bed Material

Upper Stream:

Midstream:

Lower Reaches:

– Estuary
Silty Sand

– Coast
Fine to medium Sand

6) Others