

Final Report

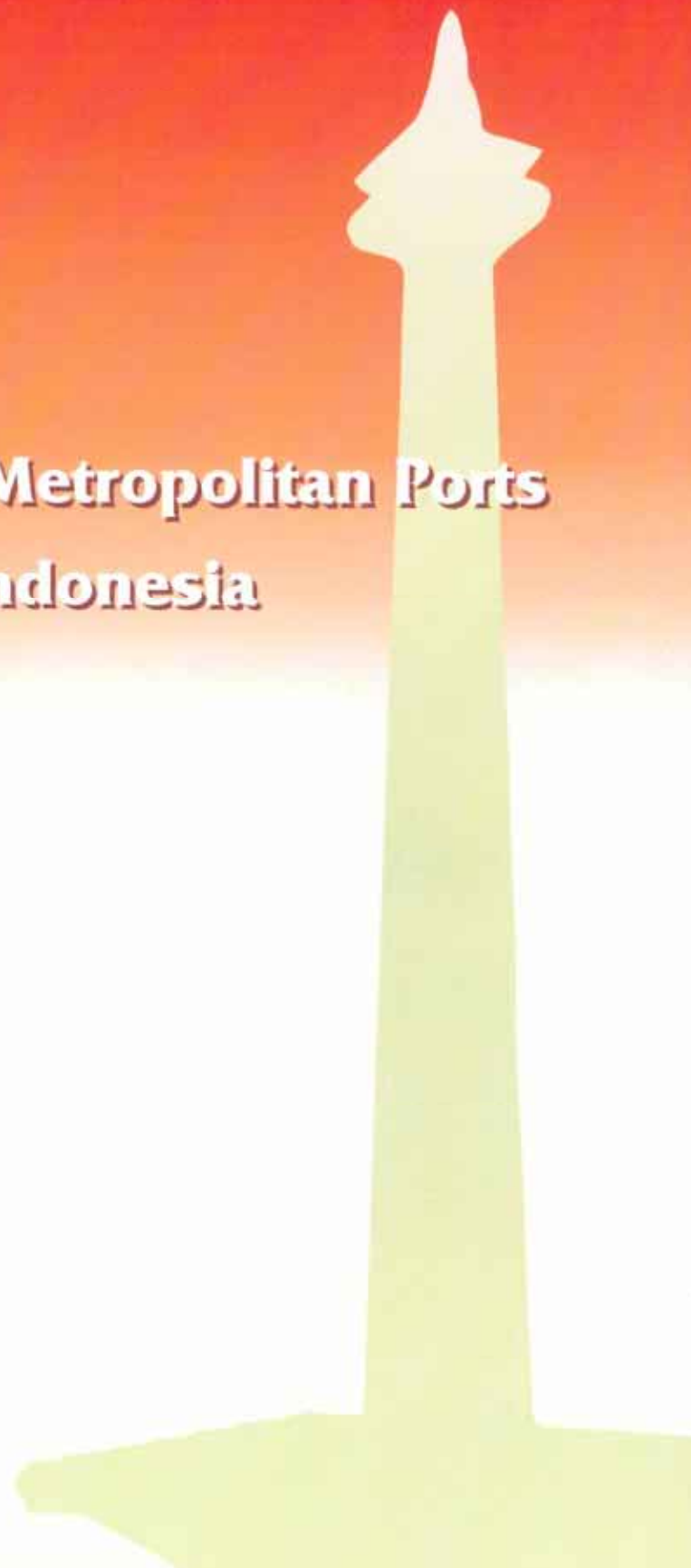
**The Study for
Development of
the Greater Jakarta Metropolitan Ports
in the Republic of Indonesia**

**Supporting Report
of Engineering Study**

December 2003

**The Overseas Coastal Area Development Institute of Japan (OCDI)
Pacific Consultants International (PCI)**

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SUPPORTING REPORT OF ENGINEERING STUDY

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1. Traffic Survey

The traffic in the vicinity of Tanjung Priok Port is mixed traffic, comprising short-journey traffic (intra urban) and long-journey traffic (inter urban).

Tanjung Priok Port is the inbound and outbound gate for the movement of goods, international (export-import) and inter-island movements and the transportation of people between island using west corridor from the port area.

The study included the following surveys:

- a. Traffic count survey
 - i. Road section
 - ii. Intersection
- b. Interview survey on the movement of goods transportation
- c. Interview survey on industrial enterprises
- d. Interview survey on operators of goods transportation

Summary of Traffic Data and findings of the survey are shown as follows

a) *Traffic Count Survey*

The Traffic Count survey was carried out on two working days with the location of survey at the entrance gate of Tanjung Priok Port and various locations in Depo Peti Kemas (Container Depot) around Cilincing. The survey at each location was for one day (i.e. 24 hours).

The survey was conducted at two locations namely at road intersections and on road section. Surveys at road intersections were at Koja Intersection and Enggano Intersection. Each movement was recorded for each vehicle classification. The survey at the road sections recorded the incoming and out-going traffic, based on classification (10 types of vehicles). The vehicles were classified as follows:

- a. Motorcycle
- b. Sedan, jeep, wagon, kijang
- c. Van, comby, minibus
- d. Mikrolet, bajaj
- e. Medium-size bus, big-size bus
- f. Pick up
- g. Truck 2 axles
- h. Truck 3 axles
- i. Truck trailer
- j. Trailer/ container

Each vehicle passing the survey point at the location of survey was counted based on its classification. Traffic was counted for hourly periods.

b) *Interview Survey on the Movement of Goods Transportation*

To determine the origin and destination of vehicles, interviews with truck drivers were necessary.

The survey was conducted at the entrance and exit gates from Tanjung Priok area and some areas of the container depot in Cilincing. This survey was done for one day, started from 06:00 AM until the final incoming and out-going vehicles.

c) *Interview Survey on Industrial Enterprises*

The interview was also conducted to some industries existing around Jakarta, Bekasi, Bogor, Cirebon and Cilegon. Considerable time was required to coordinate implementation of the survey with the relevant authorities.

The purpose of the survey was to determine the interrelation between the industry and the port used for the import and export of raw materials and products. The questions were designed to obtain information directly from use of the port.

The survey form also requested input from industrial enterprises, with respect to accessibility in distribution of the raw material and the processing of products. Input could be submitted to the regional administration and the central government as the policy makers. The survey also asked which routes were taken to the port.

d) Interview Survey on Operators of Goods Transportation

Interview surveys were also conducted to some operators involved with goods transportation to determine the movement pattern of operators involved with goods transportation. Each operator focused on one vehicle and the route passed in daily activity.

The goods transportation operators were surveyed by random sampling from the list of enterprises existing in DKI Jakarta. The operators were surveyed from two enterprises.

3) Output of Survey

A-4 Survey location of A-5,A-7 are mentioned

A-10 Traffic volume of W/O(without)and W(with)of vehicle number PCU are explained

A-11 Location of enterprises for good transportation operater and material handling by each operater are summarized (A-12~A-15)

A-16 ,A-17 Code number and required lane number by handling by each enterprise are shown(

A-18 Land acquisition area of Tanjung Priok and Bojonegara ae illustrated

The Study of Improvement of the Access to Tanjung Priok Port

(The Study for Development of the Greater Jakarta Metropolitan Ports in the Republic of Indonesia)

3 SUMMARY

TRAFFIC COUNT SURVEY

Location Number	Direction	TYPE OF VEHICLES												TOTAL	
		1	2	3	4	5	6	7	8	9	10	2-10 Without Motor Cycle	1-10 With Motor Cycle		
		Motor Cycle	Sedan, Jeep, Taxi	Van, Kijang, Panter	Small Bus	Medium Bus, Large Bus	Pick Up	Truck 2 Axle	Truck 3 Axle	Trailer, Container	Articulated Truck				
G-1	N	5,236	372	1,722	-	1	179	570	246	699	1	3,790	9,026		
	S	5,227	449	1,748	11	6	171	583	175	501	11	3,655	8,882		
G-2	N	7,905	642	850	-	9	248	268	94	85	-	2,196	10,101		
	S	6,528	520	514	6	7	190	200	117	96	14	664	8,192		
G-3	N	11,246	2	-	-	-	-	-	-	1	-	3	11,249		
	S	3,774	1,624	221	1	14	279	294	409	9	367	3,218	6,992		
G-4	W	363	1,382	2,699	13	36	466	781	508	3,515	30	9,430	9,793		
	E	5,658	669	1,219	15	35	209	367	638	2,363	31	5,546	11,204		
C-1	N	3,332	126	326	-	-	154	142	118	1,188	-	2,054	5,386		
	S	2,643	127	301	-	-	140	183	187	1,185	-	2,123	4,766		
C-2	N	2,831	156	321	7	1	185	337	267	463	-	1,737	4,568		
	S	4,161	165	357	1	-	159	419	294	456	22	1,873	6,034		
C-3	N	342	46	61	3	2	50	9	6	318	3	498	840		
	S	400	84	87	5	4	84	23	25	336	50	698	1,098		
C-4	N	3,135	222	363	3	7	112	233	334	385	1	1,660	4,795		
	S	3,889	224	382	1	7	106	188	356	391	-	1,655	5,544		
C-5	N	521	38	78	2	-	15	9	2	333	5	482	1,003		
	S	583	41	86	2	-	17	8	-	321	5	480	1,063		
C-6	N	640	38	66	-	-	25	25	1	4	-	159	799		
	S	708	38	79	-	-	31	29	-	2	-	179	887		
C-7	N	1,829	46	143	-	-	92	192	137	382	9	1,001	2,830		
	S	1,540	74	61	-	-	72	168	114	374	5	868	2,408		
C-8	W	4,453	232	601	17	1	110	331	119	197	9	1,617	6,070		
	E	5,786	439	1,209	5	-	160	473	178	509	3	2,976	8,762		
C-9	N	3,275	137	306	1	-	99	43	-	-	-	586	3,861		
C-10	W	10,436	1,638	2,782	3	29	569	921	1,060	3,090	15	10,107	20,543		
C-11	E	10,277	1,594	1,911	6	27	586	822	734	3,809	50	9,539	19,816		
C-12	N	1,540	131	184	4	2	46	49	-	1	1	418	1,958		

Location Number	Direction	TYPE OF VEHICLES										TOTAL	
		1 Motor Cycle	2 Sedan, Jeep, Taxi	3 Van, Kijang, Panter	4 Small Bus	5 Medium Bus, Large Bus	6 Pick Up	7 Truck 2 Axle	8 Truck 3 Axle	9 Trailer, Container	10 Articulated Truck	2-10 Without Motor Cycle	1-10 With Motor Cycle
C-13	S	1,412	329	622	4	1	158	328	157	394	1	1,994	3,406
C-14	N	2,809	307	583	2	15	46	2	1	4	-	960	3,769
C-15	N	859	44	71	1	-	11	-	-	-	-	127	986
C-16	S	987	37	67	-	-	10	-	-	-	-	114	1,101
C-16	N	5,468	754	1,558	5	8	288	675	395	1,565	37	5,285	10,753
C-17	S	4,595	529	1,081	15	8	338	346	229	1,453	68	3,764	8,662
C-17	W	11,884	1,554	2,322	-	32	500	873	655	3,566	-	9,502	21,386
C-18	W	16,099	3,405	4,920	3,825	842	1,215	1,827	1,118	5,563	10	22,725	38,824
C-18	E	14,382	2,890	3,925	3,886	843	1,193	1,887	1,141	5,852	4	21,621	36,003
C-19	N	-	-	-	-	-	-	-	-	23	-	23	23
C-19	S	-	-	-	-	-	-	-	-	1,467	-	1,467	1,467
C-20	N	-	-	-	-	-	-	-	-	2,793	-	2,793	2,793
C-20	S	-	-	-	-	-	-	-	-	1,295	-	1,295	1,295
C-21	N	8,951	3,844	3,173	942	1,906	512	745	1,105	2,974	-	15,201	24,152
C-21	S	10,376	3,828	5,166	1,259	1,639	497	1,743	992	2,905	8	18,037	28,413
C-22	N	15,402	5,419	5,976	3,792	942	1,471	2,272	1,193	3,620	15	24,700	40,102
C-22	S	20,694	4,456	5,777	3,665	934	979	1,900	1,338	2,632	17	21,698	42,392

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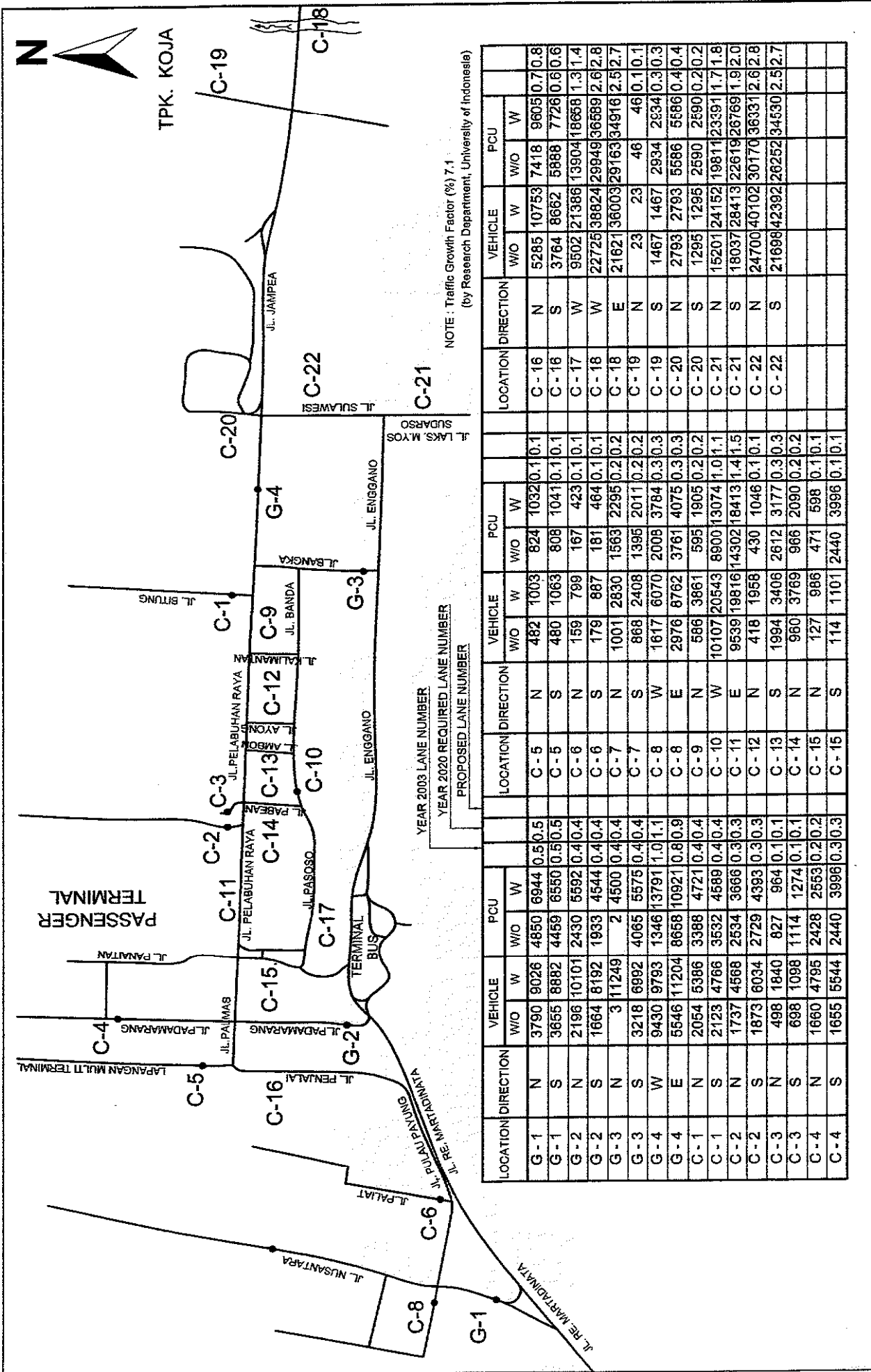
SUMMARY

4 INTERSECTION TRAFFIC COUNT SURVEY

Location Number	Direction	TYPE OF VEHICLES										TOTAL	
		1	2	3	4	5	6	7	8	9	10	2 - 10	1 - 10
		Motor Cycle	Sedan, Jeep, Taxi	Van, Kijang, Panter	Small Bus	Medium Bus, Large Bus	Pick Up	Truck 2 Axle	Truck 3 Axle	Trailer, Container	Articulated Truck	Without Motor Cycle	With Motor Cycle
I-1	A	3,129	121	328	-	-	41	176	23	20	1	710	3,839
	B	998	24	913	-	-	41	164	80	85	-	1,307	2,305
	C	1,109	227	481	-	1	97	230	143	594	-	1,773	2,882
	D	922	257	478	1	6	88	226	83	309	6	1,454	2,376
	E	1,205	107	251	17	1	65	138	85	161	8	833	2,038
	F	938	44	157	3	-	50	142	73	532	2	1,003	1,941
	G	539	24	74	1	-	25	108	14	280	3	523	1,068
	H	948	19	666	5	-	15	169	45	121	4	1,040	1,992
	I	119	4	22	-	-	4	17	11	16	-	74	193
	J	1,241	58	187	-	-	17	85	24	21	1	393	1,634
	K	1,188	208	418	-	-	75	200	107	417	1	1,426	2,614
	L	3,357	173	604	5	-	68	188	47	71	1	1,157	4,514
	I-2	A	128	13	40	-	-	6	5	2	68	3	137
B		5,340	741	1,518	5	8	282	671	393	1,501	34	5,153	10,493
C		4,522	521	1,050	13	8	334	336	229	1,420	63	3,974	8,496
D		393	25	38	2	-	9	4	-	265	2	345	738
E		510	33	55	-	-	13	4	-	288	-	393	903
F		73	8	31	2	-	4	4	-	33	5	87	160
I-3	A	1,895	58	156	2	-	49	27	4	21	-	295	2,212
	B	2,533	90	113	10	10	60	57	93	30	5	468	3,001
	C	3,047	274	529	2	16	132	160	74	96	-	1,283	4,330
	D	4,308	223	403	4	4	99	122	43	87	-	985	5,293
	E	3,125	624	1,037	40	5	226	583	260	1,579	20	4,374	7,499
	F	689	116	230	-	-	47	139	251	328	-	1,111	1,800
	G	1,312	193	381	2	7	80	196	342	326	-	1,527	2,839

Location Number	Direction	TYPE OF VEHICLES										TOTAL	
		1	2	3	4	5	6	7	8	9	10	2 - 10	1 - 10
		Motor Cycle	Sedan, Jeep, Taxi	Van, Kijang, Panther	Small Bus	Medium Bus, Large Bus	Pick Up	Truck 2 Axle	Truck 3 Axle	Trailer, Container	Articulated Truck	Without Motor Cycle	With Motor Cycle
I-4	H	3,010	201	204	3	3	45	48	42	64	3	613	3,623
	I	449	42	110	2	1	21	51	34	117	-	378	827
	J	545	44	121	1	-	27	81	68	118	-	460	1,035
	K	3,160	464	864	1	3	226	453	253	1,525	14	3,803	6,953
	L	1,448	54	95	1	-	32	22	5	17	-	226	1,674
I-5	A	8,237	981	1,851	10	8	370	746	505	1,979	28	6,478	14,715
	B	789	155	144	-	16	32	40	3	34	2	426	1,215
	C	2,145	400	586	1	4	122	355	201	2,266	10	3,945	6,090
	D	764	174	163	-	1	26	5	1	1	-	371	1,135
	E	7,995	854	1,485	34	43	364	740	542	2,062	59	6,183	14,178
I-6	A	2,831	156	321	7	1	185	337	267	463	-	1,737	4,568
	B	7,257	1,154	1,777	95	31	373	671	478	3,226	6	7,811	15,068
	C	4,161	165	357	1	-	159	419	294	456	22	1,873	6,034
	A	6,673	744	1,064	3	8	254	640	237	928	38	3,916	10,589
	B	363	1,382	2,699	13	36	466	781	508	3,515	30	9,430	9,793
I-7	C	5,658	669	1,219	15	35	209	367	638	2,363	31	5,546	11,204
	A	5,223	662	1,034	14	14	253	477	250	493	32	3,229	8,452
	B	11,344	49	62	-	-	43	83	9	115	7	368	11,712
	C	1,834	1,856	2,980	4	40	554	781	604	3,824	34	10,677	12,511
	A	1,925	375	529	851	6	173	50	-	-	-	1,984	3,909
I-8	B	858	146	147	918	-	65	35	-	-	-	1,311	2,169
	C	2,042	370	249	1,184	4	99	64	2	-	-	1,972	4,014
	D	10,499	3,480	4,056	2,186	802	825	2,819	904	4,710	53	19,835	30,334
	E	236	23	31	-	-	13	4	1	580	-	652	888
	F	474	21	20	1	1	10	9	4	760	4	830	1,304
I-9	G	880	83	136	-	-	15	4	1	473	-	712	1,592
	H	1,118	100	126	2	-	22	12	6	510	-	778	1,896
	I	12,378	3,997	3,438	3,671	863	931	1,425	1,335	5,916	53	21,629	34,007
	J	1,511	246	360	862	4	83	61	-	-	-	1,616	3,127
	A	19,057	2,986	2,868	2,153	802	814	687	361	334	3	11,008	30,065
I-9	B	20,358	3,668	2,630	2,105	725	826	771	360	407	7	11,499	31,857
	C	568	481	167	2,249	295	17	100	5	3	1	3,318	3,886

Location Number	Direction	TYPE OF VEHICLES										TOTAL			
		1 Motor Cycle	2 Sedan, Jeep, Taxi	3 Van, Kijang, Painter	4 Small Bus	5 Medium Bus, Large Bus	6 Pick Up	7 Truck 2 Axle	8 Truck 3 Axle	9 Trailer, Container	10 Articulated Truck	2 - 10 Without Motor Cycle	1 - 10 With Motor Cycle		
	D	-	-	-	1,746	690	-	-	-	-	-	-	-	2,436	2,436
	E	-	-	-	10	715	-	-	-	-	-	-	-	725	725
	F	-	-	-	659	-	-	-	-	-	-	-	-	659	659
	G	17,731	4,501	3,170	4,325	381	973	344	346	22	14,891	32,622	32,622	32,622	32,622
	H	-	-	-	2,063	2,033	-	-	-	-	-	-	-	4,096	4,096
	I	4,203	349	671	1,282	33	190	14	5	-	2,630	6,833	6,833	6,833	6,833
	J	2,137	229	322	1,019	25	99	2	1	3	1,748	3,885	3,885	3,885	3,885
	K	10,674	3,832	2,352	5,598	3,154	714	356	318	3	17,155	27,829	27,829	27,829	27,829
	M	-	-	-	3,049	1,907	-	-	-	3	4,959	4,959	4,959	4,959	4,959
	N	3,428	353	468	2,168	683	101	9	1	3	3,835	7,263	7,263	7,263	7,263
	O	250	64	210	1,479	121	8	2	5	3	1,896	2,146	2,146	2,146	2,146
	P	10,540	3,025	2,607	1,030	1,164	665	347	401	6	9,990	20,530	20,530	20,530	20,530
	Q	11,511	3,295	3,274	8,556	2,625	717	360	298	12	20,002	31,513	31,513	31,513	31,513
	R	4,683	686	1,168	2,850	39	228	15	-	-	5,085	9,768	9,768	9,768	9,768
	S	3,778	1,217	1,178	3,253	60	274	21	-	-	6,139	9,917	9,917	9,917	9,917
	T	3,648	529	850	259	33	227	9	-	-	2,012	5,660	5,660	5,660	5,660
	U	3,157	485	680	88	31	196	10	-	-	1,574	4,731	4,731	4,731	4,731
	A1	19,057	2,986	2,868	407	112	814	361	334	3	8,572	27,629	27,629	27,629	27,629
	P1	6,107	2,469	1,649	2,708	3,153	445	334	406	12	11,826	17,933	17,933	17,933	17,933
	Q1	7,483	2,014	1,886	3,824	2,444	435	337	293	9	11,967	19,450	19,450	19,450	19,450



NOTE : Traffic Growth Factor (%) 7.1
(by Research Department, University of Indonesia)

LOCATION	DIRECTION	VEHICLE		PCU		LOCATION	DIRECTION	VEHICLE		PCU	
		W/O	W	W/O	W			W/O	W		
G-1	N	3790	9026	4850	6944	0.5	0.5	482	1003	824	1032
G-1	S	3655	8892	4459	6550	0.5	0.5	480	1063	808	1041
G-2	N	2196	10101	2430	5592	0.4	0.4	159	799	167	423
G-2	S	1664	8192	1933	4544	0.4	0.4	179	887	181	464
G-3	N	3	11249	2	4500	0.4	0.4	1001	2830	1563	2295
G-3	S	3218	6992	4065	5575	0.4	0.4	868	2408	1395	2011
G-4	W	9430	9793	1346	13791	1.0	1.1	1617	6070	2008	3784
G-4	E	5546	11204	8658	10921	0.8	0.9	2976	8762	3761	4075
C-1	N	2054	5386	3388	4721	0.4	0.4	586	3861	595	1905
C-1	S	2123	4766	3532	4589	0.4	0.4	10107	20543	8900	13074
C-2	N	1737	4568	2534	3666	0.3	0.3	9539	19816	14302	18413
C-2	S	1873	6034	2729	4393	0.3	0.3	418	1956	430	1046
C-3	N	498	1840	827	964	0.1	0.1	1994	3406	2612	3177
C-3	S	698	1098	1114	1274	0.1	0.1	960	3769	966	2090
C-4	N	1660	4795	2428	2553	0.2	0.2	127	966	471	598
C-4	S	1655	5544	2440	3996	0.3	0.3	114	1101	2440	3996

THE STUDY FOR DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

5 TRAFFIC VOLUME SURVEY AND REQUIRED LANE NUMBER

Figure

DATA PROFIL PERUSAHAAN DI LINGKUNGAN PELABUHAN TANJUNGPRIOK

ID	Kategori	Nama Perusahaan	Kontak Person	Posisi Jabatan	Alamat	No Telepon
1	Perkantoran	PT. Samudra Eiko Jaya (Gralia Samudera)	Lusi Ang	Marketing	Jl. Pelayari no. 1, Pelindo II	4356286
2	Perkantoran	PT. Djakarta Lloyd (Peters)	M. Zamroui	Kabag Umum/ Personalia	Jl. Raya Pelabuhan no. 37	4301053 hunting 4 lines
3	Perkantoran	PT. Dharma Lautan Nusantara Cab. Tj. Priok	Hansono S	Kepala Bag. Umum	Jl. Pulau Payung no. 1	4303585
4	Perkantoran	PT. Multi Terminal Indonesia	Hari Toto Budiarto, SH	Manajer Personalia & Umum	Jl. Pulau Payung no. 1	4301080 ext. 2320
5	Perkantoran	PT. PELNI Cabang Tj. Priok	Wisnomo, SH	Kepala Cabang	Jl. Palmas no. 2	493196
6	Perkantoran	PT. Gosuri Lloyd Cab. Tj. Priok	Wajarwati	Sekretaris	Jl. Raya Pelabuhan no. 25	4351107
7	Perkantoran	Kantor Kesehatan Pel. Tj. Priok	H. Ishaka	Kasub Bag. Tata Usaha	Jl. Raya Pelabuhan no. 17	491045
8	Perkantoran	PT. Pelindo II (Office Center I & II)	Rahman	Pelayanan/Pelanggan	Jl. Panatun	494364 - 496024
9	Perkantoran	Kanwil Ben Cukai - Tj. Priok	Isadi	Kasubag TU & RT	Jl. Raya Pelabuhan	
10	Perkantoran	PT. Pelindo II Cab. Tj. Priok	Firdaus	Koordinator Terminal Penumpang	Terminal Penumpang Nusantara Pura	
11	Perkantoran	KPBC Tj. Priok I, II dan III	Seyadi	Korlak TU & Kepegawaian	Jl. Pabean no. 1	4369633
12	Terminal Operator	PT. Andalas Tami	Himran Saleh	Ka. Gd. 201	Terminal Operator H, Jl. Ambon, (Gudang, 201)	4306663
13	Terminal Operator	PT. Prima Nur Pamurjwan	Doyo	Kepala Gudang 005, 006, 007	Terminal Operator C, Jl. Nusantara II	
14	Terminal Operator	PT. PBMI Hainparan Jala Segara	Rachmat Soemadineja	Manager Operasional (08128499161)	Terminal Operator A, Jl. Nusantara I	4303058 - 4371540 - 4371541
15	Terminal Operator	PT. Mahardi Sarana Tami	Muhardin/ Alfred	Kepala Gudang 108, 109, 110	Terminal Operator F, Jl. Atlas	4391070
16	Terminal Operator	PT. Indodaya Abadi Sakti	Abdul Muis	Kepala Gudang	Terminal Operator K, Jl. Kalimantan	4371642
17	Terminal Operator	PT. Dharma Lautan Nusantara (Jakarta Lloyd)	Iskandar	Kepala Gudang 301	Terminal Operator N, Jl. Bangka (gd 301)	4351415 - 7205
18	Terminal Operator	PT. Dwipa Harsi Ummadita	Karel Yohannes L	Kasi. Pergudangan	Terminal Operator G, Jl. Atlas	4359676 Gd. 4390577 - 4351415 - 7210
19	Terminal Operator	PT. Sri Kreasi Unggul Persada	Heri Wijaya/ Wardoyo	Direktur/ Kep. Operasional (Hp. 0811175788)	Terminal Operator B, Jl. Nusantara I (Gudang 004)	652 1970
20	Container Terminal	PT. Multi Terminal Indonesia (Cont-term 009)		Supervisor Lapangan	Jl. P. Payung no. 1	4301080
21	Container Terminal	Terminal Peti kemas Kojia (TPK Kojia)	Achmad Syachiu	Manager Marketing	Jl. Timor I/1	4374142, Fax: 4374150
22	Container Terminal	PT. Jakarta International Container Terminal	Agus Haryanto	St. Staf MIS	Jl. Sulawesi Ujung no. 1	430447 Ps. 621
23	Industri	PT. ISM Tbk. Bogasari Flour Mills	Suhartono	VP-HRMA	Jl. Raya Cilincing - Tanjung Priok	43900170
24	Industri	PERTAMINA LPG Filling Plant UPMS III	Siswo K	Kepala LPG Filling Plant	Jl. Jampen I	490484 - 4301031 - 3368
25	Pergudangan	PT. Agung Raya	Agus Tejo Purnomo	Finance Manager	Jl. Bangka I, Tanjung Priok	4307777
27	Industri	PT. Golden - Castle	Victor Chandra	Chief Accounting	Jl., Nusantara II, KBN	495481

DATA KONDISI BANGUNAN PERUSAHAAN DI LINGKUNGAN PELABUHAN TANJUNG PRIOK

ID	Luas Lahan (m2)	Jumlah Lantai	Luas Bangunan Lantai (m2)	Luas Gudang (m2)	Luas Prukir (m2)	Lain-lain (m2)	Keterangan
1	4,410	6	10,320	-	2,000	0	Penjajala Gedung
2	4,474	1	2,088	-	1,800	586	Pelayaran samudera
3	1,435	3	1,200	-	300	0	Kantor PBM
4	1,960	3	1,740	50	675	0	Jasa bongkar muat peti kemas, general cargo, curah dan kegiatan pergudangan
5	3,757	3	1,674	-	2,005	1752	Pelayaran/ pelayanan kapal penunjang interinsular
6	943	3	738	-	705	0	Perusahaan pelayaran
7	3,272	2	2,074	58	750	0	Pencegahan mutu sanitasi pelabuhan, pelayanan kesehatan terbatas
8	10,000	3	2,550	-	4,000	0	Pusat perkantoran
9	4,500	3	7,418	-	200	363	Pusat perkantoran, Bank BCA
10	19,000	2	7,900	-	11,057	0	Pelayanan jasa kepabeanan di bidang ekspor dan impor
11	1,800	6	8,228	-	1,346	-	Receiving/ Delivery (Paper)
12	5,110	1	49	4,226	400	884	Bongkar muat cargo & container
13	28,000	2	300	16,000	1,200	12000	Perusahaan bongkar muat General Cargo/ Curah Kering
14	10,400	1	96	4,000	1,200	6600	Bongkar muat cargo 4 container
15	27,166	1	100	12,907	1,200	14259	Bongkar muat cargo 4 container
16	3,535	1	60	3,535	300	0	Bongkar muat cargo
17	5,610	1	42	5,610	400	0	Bongkar muat cargo & container
18	9,070	1	52	4,950	1,200	4120	Melayani kegiatan pelayanan B/m yang bersifat pelayanan, kegiatan perencanaan kedatangan kapal melalui komputer yang sudah link dengan PPSA
19	9,114	1	64	4,000	400	5114	Bongkar muat (Curah cair, curah kering, general cargo)
20	41,000	2	300	4,950	1,500	40000	B/M Container
21	380,800	2	2,016	-	950	5186	Jasa bongkar muat peti kemas
22	461,400	6	5,875	-	2,475	750	Bongkar muat & Perkantoran
23	30,000	3	4,230	52,736	675	0	Manufacturing, Technical Support, Human Resources, Financial, Commercial and Customer Relation
24	55,648	2	2,423	5,187	15,000	0	Penerimaan & Penitiban, Pengisian, dan Penyaluran LPG, Pemeliharaan sarana dan fasilitas
25	25,362	2	2,000	17,600	1,200	0	Melaksanakan Adm & Operasi perusahaan
27	9,681	2	7,761	-	500	0	Administrasi operasional pabrik

DATA JUMLAH KARYAWAN PERUSAHAAN DI LINGKUNGAN PELABUHAN TANJUNGPRIK

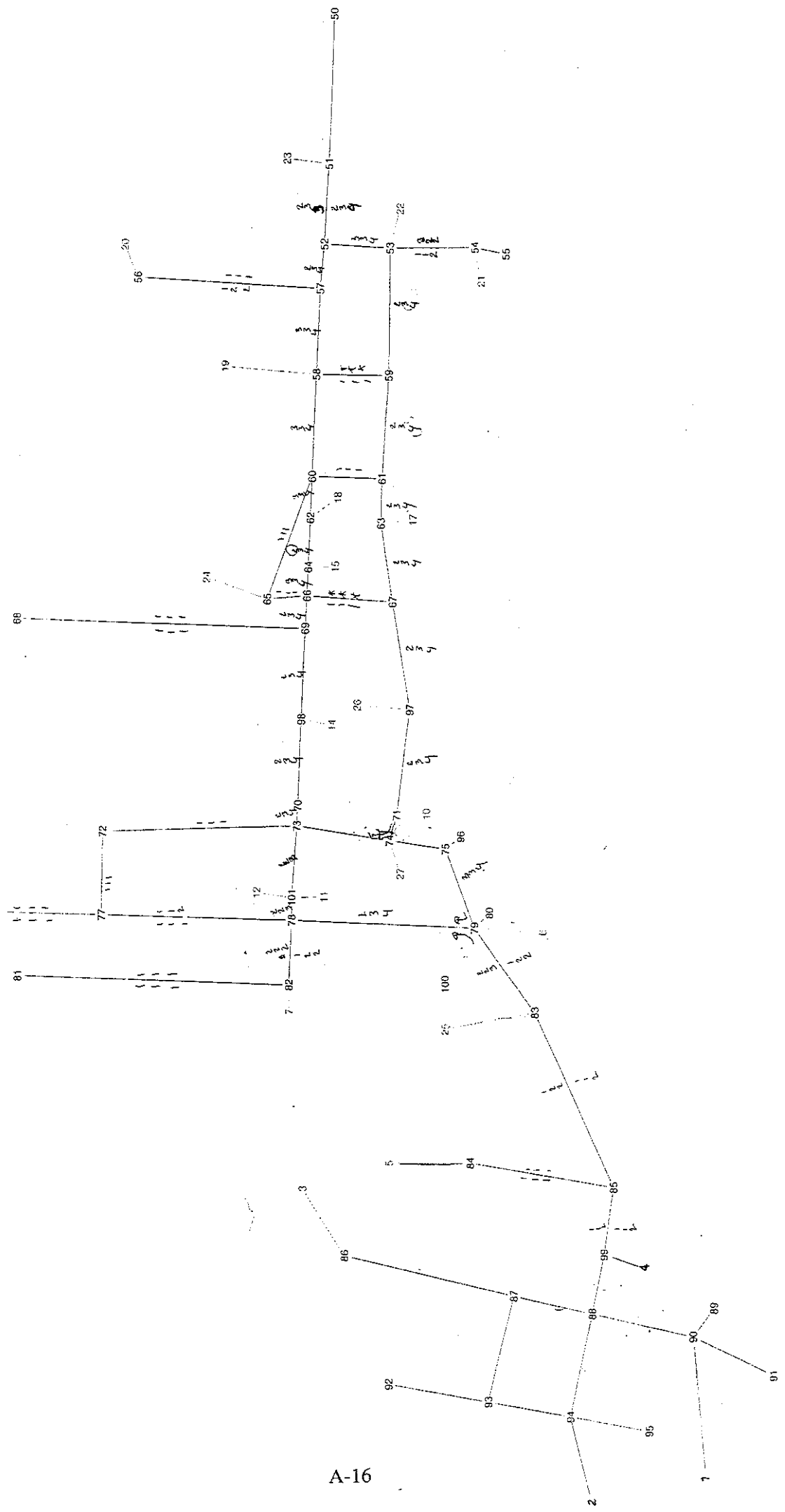
ID	Nama Perusahaan	Kontak Person	Karyawan Tetap	Karyawan Tidak Tetap	Lain-lain
1	PT. Samudra Eko Jaya (Graha Samudera)	Luisi Ang	15	10	300
2	PT. Djakarta Lloyd (Persero)	M. Zamoni	48	13	0
3	PT. Dharma Lautan Nusantara Cab. Tj. Priok	Hausono S	136	26	0
4	PT. Multi Terminal Indonesia	Hari Tojo Budiarto, SH	166	101	0
5	PT. PELNI Cabang Tj. Priok	Wismono, SH	107	10	0
6	PT. Gesuri Lloyd Cab. Tj. Priok	Wajarwati	16	5	Office boy (3)
7	Kantor Kesehatan Pel. Tj. Priok	H. Ishaka	66	30	cleaning service (25)
8	PT. Pelindo II (Office Center I & II)	Bpk. Rahmani	150	30	0
9	Kanwil Bet Cukak - Tj. Priok	Bpk. Istadi	324	0	20
10	PT. Pelindo II Cab. Tj. Priok	Firdaus	427	0	0
11	KPBC Tj. Priok I, II dan III	Setyadi	1	122	0
12	PT. Aurdalan Tama	Himran Saleh	0	7	0
13	PT. Prima Nur Panurjwan	Bpk. Doyo	21	28	0
14	PT. PBM Himpunan Jula Segara	Bpk. Rachmat Soemadireja	23	7	12
15	PT. Mahardi Sarana Tama	Muhaidin Alfred	26	0	0
16	PT. Indobaya Abadi Sakti	Abdull Muis	52	9	0
17	PT. Dharma Lautan Nusantara (Jakarta Lloyd)	Iskandar	7	0	0
18	PT. Dwipa Hasri Utamaduta	Karel Yohannes L (Hp. 08121020790)	30	35	0
19	PT. Sri Krensi Unggul Persada	Heri Wijaya/ Wardoyo	12	0	0
20	PT. Multi Terminal Indonesia		22	5	60
21	Terminal Peti kemas Koja (TPK Koja)	Aclmad Syaichu	488	9	0
22	PT. Jakarta International Container Terminal	Agus Hariyanto	1124	695	3
23	PT. ISM Tbk. Bogasari Flour Mills	Suhartono	2398	161	0
24	PERTAMINA LPG Filling Plant UPMS III	Siswo K	41	151	0
25	PT. Agung Raya	Agus Tejo Purnomo	67	74	0
26	PT. Golden - Castle	Victor Chandra	60	2	0

DATA VOLUME BONGKAR MUAT PERUSAHAAN DI LINGKUNGAN PELABUHAN TANJUNGPRIOK

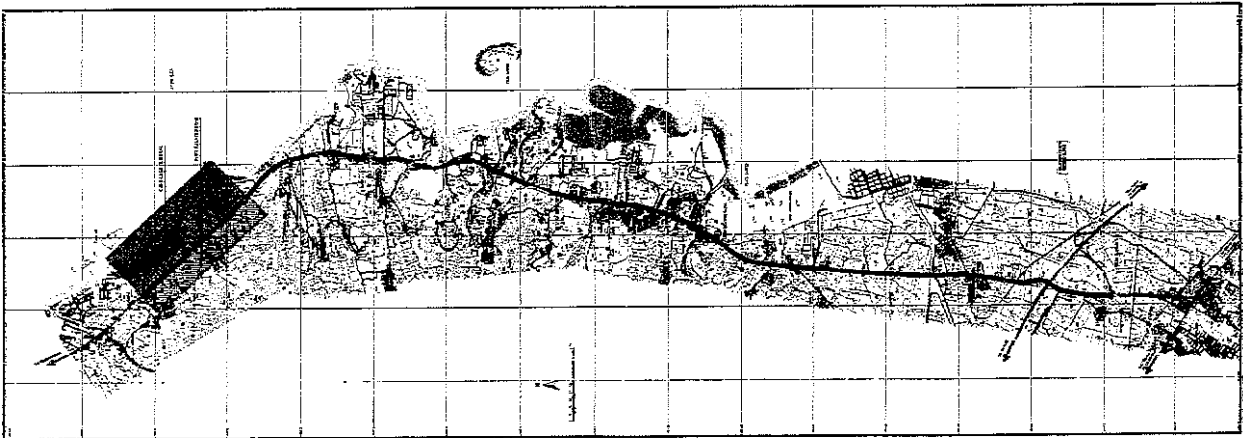
ID	Nama Perusahaan	Volume B. M. Sedia (ton)	Volume B. M. Selama (ton)	Volume B. M. Ratus (ton)	Volume B. M. Kantis (ton)	Volume B. M. Jumlah (ton)	Volume B. M. Sedia (ton)	Volume B. M. Munggu (ton)	Faktor Okupansi Jan '03 (%)	Faktor Okupansi Feb (%)	Faktor Okupansi Mar '03 (%)	Faktor Okupansi Apr '03 (%)	Jenis Peralatan	
1	PT. Samudra Eka Jaya (Ganda Samudra)	0	0	0	0	0	0	0					0	
2	PT. Djakarta Lloyd (Persero)	0	0	0	0	0	0	0					0	
3	PT. Dharma Layan Nusantara Cab. Tj. Priok	0	0	0	0	0	0	0					0	
4	PT. Multi Terminal Indonesia	0	0	0	0	0	0	0					0	
5	PT. PELAM Cikarang Tj. Priok	0	0	0	0	0	0	0					0	
6	PT. Gresik Cikarang Tj. Priok	0	0	0	0	0	0	0					0	
7	Kantor Kesehatan Bel. Tj. Priok	0	0	0	0	0	0	0					0	
8	PT. Pelindo B (Office Center I & II)	0	0	0	0	0	0	0					0	
9	Kantor Bel Cakri - Tj. Priok	0	0	0	0	0	0	0					0	
10	PT. Pelindo A Cab. Tj. Priok	0	0	0	0	0	0	0					0	
11	KPHC Tj. Priok Tj. Priok III	5179	530	328	56	300	90	33	60.00	60.00	65.00	60.00	Forklift (15) Forklift (12), Reel steller (2) Forklift (12 unit), Crane (4 unit), alat-alat PAM sesuai kebutuhan	
12	PT. Andhara Tama	3477	514	3128	480	6813	3377	3779	60.00	60.00	59.00	72.00	Forklift (12) Forklift (12 unit), Crane (4 unit), alat-alat PAM sesuai kebutuhan	
13	PT. Pinau Nur Pananjayan	3000	1500	1500	1000	2000	2000	0	60.00	60.00	70.00	80.00	Forklift (17) Forklift (3)	
14	PT. PBM Lampung Jala Segara	103056	225151	307163	390031	783843	5130	930119	75.00	80.00	80.00	80.00	Forklift (3) Forklift (8), Top Loader (1)	
15	PT. Mahardj Sarna Tama	719	1389	1082	232	1574	1274	136	60.00	60.00	70.00	70.00	Forklift (12 unit) Forklift (4 unit), Excavation (2 unit), Crane berat (1 unit)	
16	PT. Indohaya Abadi Sakti	4816	823	2556	547	790	988	0	60.00	70.00	65.00	75.00	Forklift (4 unit), Excavation (2 unit), Crane berat (1 unit)	
17	PT. Dharma Layan Nusantara (Djakarta Lloyd)	1750	1675	1860	1989	1335	891	0	20.00	25.00	20.00	15.00	Ganti Crane (3), RTG (9), Head Truck (8), Top Loader (1), FLT Kap (10 ton) 1, FLT (Kap 3 ton)	
18	PT. Dwilpa Hasil Utamadulu	2000	1000	1000	1000	700	1000	1000	66.00	63.00	67.00	65.00	RTG (20 unit), Head Truck (40 unit), Chassis (49 unit) Container crane (11 unit), Transraiser (45 unit), Super saetox (4 unit), Forklift (20 unit), Head truck (103 unit), Chassis (101 unit)	
19	PT. Sri Kreasi Ungat Persada	279	285	280	399	43	443	868	41.00	42.00	59.00	70.00	Suction Neuro (2 unit), Blower (4 unit), Air lock (4 unit), Compressor (4 unit), Dusing (2 unit), Loading arm dalam (20 unit), Loading arm laut (2 set), Baur pipa penemuan (10'-4''), Hydraulic Pump (2 set), Pompa Product (10 set), Gas compressor (1 set), Early warning system (1 set)	
20	PT. Multi Terminal Indonesia	14087/21413	22574/34354	14485/21229	11053/16255	20422/31145	29538/46600	19,416/29403	499,410.00	451,688.00	402,758.00	489,960.00	273,982.00	Head Truck (1), Forklift (10), Head Truck (6), Chassis (2), Truck Box (3)
21	Terminal Peti Kemas Kojka (TPK Kopp)	34526	34526	34526	34190	34190	34190	34190	289,633.00	247,732.00	276,009.00	273,982.00	273,982.00	Head Truck (1), Forklift (10), Head Truck (6), Chassis (2), Truck Box (3)
22	PT. Jaksata International Container Terminal	5666	5666	5666	5666	5666	5666	5666	0	0	0	0	0	
23	PT. ISM Tbk. Dogaari Flour Mills	1310	1274	1295	1216	1115	1190	1190	25,240.00	25,240.00	26,837.00	34,240.00	34,240.00	Head Truck (1), Forklift (10), Head Truck (6), Chassis (2), Truck Box (3)
24	PERTAMINA LNG Filling Plant UPMS III	406/12	875/37	258/23	633/27	1709/73	1068/45	1068/45	0	0	0	0	0	
25	PT. Agung Raya	3	6	4	13	8	4	4	0	0	0	0	0	
26	PT. Golden - Castle													

7 Code Number and Number of Lanes

13



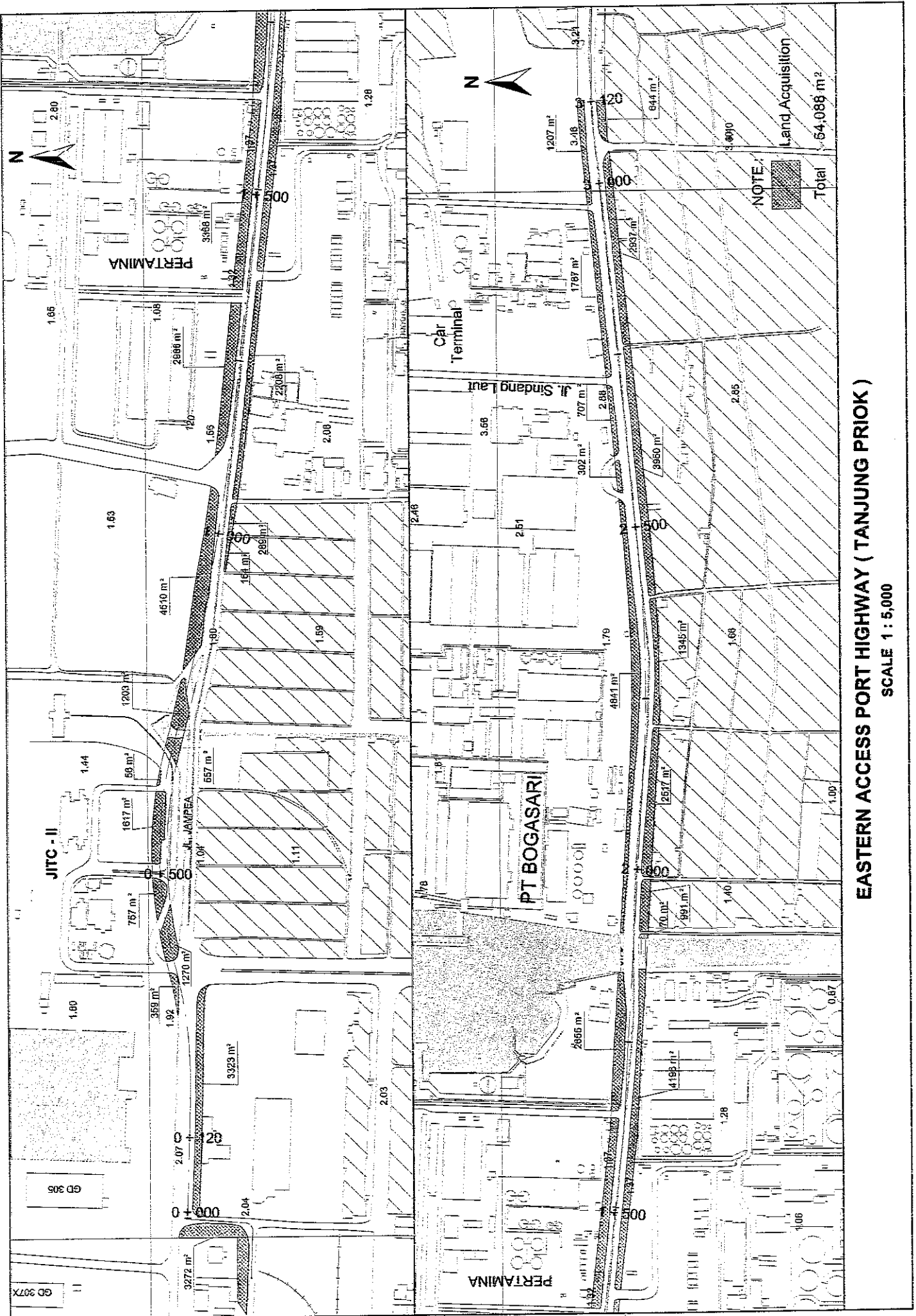
Anode	Bnode	Traffic Count 2003				(PCU/Hr)				Number of Lane			
		(PCU/Day)											
		2003	2008	2012	2025	2003	2008	2012	2025	2003	2008	2012	2025
51	52	21,759	25,843	29,555	46,380	1,897	2,253.50	2,586	4,044	2	2	3	4
52	51	14,052	16,889	19,151	29,952	1,225	1,455.31	1,670	2,612	2	2	2	3
52	53	23,100	27,436	31,483	49,238	2,014	2,392.38	2,745	4,294	2	3	3	4
53	54	11,712	13,910	15,962	24,964	1,021	1,212.97	1,392	2,177	1	2	2	2
53	59	20,963	24,897	28,570	44,683	1,828	2,171.06	2,491	3,896	2	2	3	4
54	53	8,452	10,038	11,519	18,016	737	875.34	1,004	1,571	1	1	1	2
56	57	5,180	6,152	7,060	11,041	452	536.47	616	963	1	1	1	1
57	52	21,793	25,883	29,702	46,452	1,900	2,257.02	2,590	4,051	2	2	3	4
57	56	11,172	13,269	15,226	23,813	974	1,157.04	1,328	2,077	1	1	2	2
58	57	23,152	27,497	31,554	49,349	2,019	2,397.77	2,751	4,303	2	3	3	4
59	58	642	762	875	1,368	56	66.49	76	119	1	1	1	1
59	61	22,012	26,143	30,000	46,919	1,919	2,279.70	2,616	4,091	2	2	3	4
60	58	23,152	27,497	31,554	49,349	2,019	2,397.77	2,751	4,303	2	3	3	4
60	61	489	581	666	1,042	43	50.64	58	91	1	1	1	1
60	65	182	216	248	388	16	18.85	22	34	1	1	1	1
61	63	22,012	26,143	30,000	46,919	1,919	2,279.70	2,616	4,091	2	2	3	4
62	60	23,152	27,497	31,554	49,349	2,019	2,397.77	2,751	4,303	2	3	3	4
63	67	22,202	26,369	30,259	47,324	1,936	2,299.38	2,639	4,127	2	2	3	4
64	62	22,012	26,143	30,000	46,919	1,919	2,279.70	2,616	4,091	2	2	3	4
65	66	1,920	2,280	2,617	4,093	167	198.85	228	357	1	1	1	1
66	64	23,152	27,497	31,554	49,349	2,019	2,397.77	2,751	4,303	2	3	3	4
67	66	983	1,167	1,340	2,095	86	101.81	117	183	1	1	1	1
67	97	22,202	26,369	30,259	47,324	1,936	2,299.38	2,639	4,127	2	2	3	4
68	69	4,234	5,029	5,771	9,025	369	438.50	503	787	1	1	1	1
69	66	21,102	25,063	28,760	44,979	1,840	2,185.45	2,508	3,922	2	2	3	4
69	68	3,912	4,646	5,332	8,338	341	405.15	465	727	1	1	1	1
70	98	20,268	24,072	27,623	43,201	1,767	2,099.08	2,409	3,767	2	2	3	4
71	74	22,202	26,369	30,259	47,324	1,936	2,299.38	2,639	4,127	2	2	3	4
72	77	2,350	2,791	3,203	5,009	205	243.38	279	437	1	1	1	1
72	70	20,268	24,072	27,623	43,201	1,767	2,099.08	2,409	3,767	2	2	3	4
73	72	2,350	2,791	3,203	5,009	205	243.38	279	437	1	1	1	1
73	74	26,919	30,890	35,311	48,311	2,347.34	2,694	4,213	6,423	2	2	3	4
74	73	22,020	-	-	-	1,920	-	-	-	2	0	0	0
73	101	14,715	-	-	-	1,283	-	-	-	2	0	0	0
74	75	114	27,054	31,046	48,554	10	2,359.14	2,707	4,234	1	3	3	4
75	79	-	27,054	31,046	48,554	-	2,359.14	2,707	4,234	0	3	3	4
75	96	-	-	-	-	-	-	-	-	0	0	0	0
76	77	3,539	4,203	4,823	7,543	309	366.52	421	658	1	1	1	1
77	76	3,559	4,227	4,851	7,586	310	368.59	423	662	1	1	1	1
77	78	7,289	8,657	9,934	15,537	636	754.89	866	1,355	1	1	1	2
78	77	5,806	6,896	7,913	12,376	506	601.31	690	1,079	1	1	1	1
78	82	10,538	12,516	14,362	22,462	919	1,091.38	1,252	1,959	1	1	2	2
78	101	14,132	16,784	19,260	30,123	1,232	1,463.60	1,680	2,627	2	2	2	3
78	79	4,899	5,818	6,677	10,442	427	507.37	582	911	1	1	1	1
79	78	9,543	24,205	27,776	43,440	832	2,110.68	2,422	3,788	1	2	3	4
79	80	-	-	-	-	-	-	-	-	0	0	0	0
79	83	-	13,425	15,406	24,094	-	1,171	1,343	2,101	0	1	2	2
80	79	-	-	-	-	-	-	-	-	0	0	0	0
81	82	1,063	1,263	1,449	2,266	93	110.09	125	198	1	1	1	1
82	78	11,396	13,535	15,532	24,291	994	1,180.24	1,354	2,118	1	2	2	2
82	81	1,003	1,191	1,367	2,138	87	103.88	119	186	1	1	1	1
82	83	10,516	-	-	-	-	-	-	-	-	-	-	-
83	25	8,656	10,281	11,797	18,450	755	896.47	1,029	1,609	1	1	1	2
83	79	-	15,287	17,542	27,435	-	1,333.00	1,530	2,392	0	2	2	3
83	82	12,871	-	-	-	1,122	-	-	-	1	0	0	0
83	85	8,556	10,281	11,797	18,450	755	896.47	1,029	1,609	1	1	1	2
84	85	223	265	304	475	19	23.10	27	41	1	1	1	1
85	83	10,758	12,777	14,662	22,931	938	1,114.17	1,279	2,000	1	1	2	2
85	84	205	243	279	437	18	21.23	24	38	1	1	1	1
85	99	8,656	10,281	11,797	18,450	755	896.47	1,029	1,609	1	1	1	2
86	87	2,372	2,817	3,233	5,056	207	245.66	282	441	1	1	1	1
87	86	2,602	3,090	3,546	5,546	227	269.48	309	484	1	1	1	1
87	88	3,253	3,864	4,434	6,934	284	336.90	387	605	1	1	1	1
87	93	-	-	-	-	-	-	-	-	0	0	0	0
88	87	5,880	6,984	8,014	12,533	513	608.97	699	1,093	1	1	1	1
88	90	8,882	10,549	12,105	18,932	775	919.88	1,056	1,651	1	1	1	2
88	94	6,070	7,209	8,273	12,938	529	628.65	721	1,128	1	1	1	1
88	99	6,564	7,796	8,946	13,991	572	679.81	780	1,220	1	1	1	2
89	90	-	-	-	-	-	-	-	-	0	0	0	0
90	88	9,026	10,720	12,302	19,239	787	934.79	1,073	1,678	1	1	1	2
90	89	-	-	-	-	-	-	-	-	0	0	0	0
90	91	-	-	-	-	-	-	-	-	0	0	0	0
91	90	-	-	-	-	-	-	-	-	0	0	0	0
92	93	-	-	-	-	-	-	-	-	0	0	0	0
93	87	-	-	-	-	-	-	-	-	0	0	0	0
93	92	-	-	-	-	-	-	-	-	0	0	0	0
93	94	-	-	-	-	-	-	-	-	0	0	0	0
94	88	8,762	10,407	11,942	18,676	764	907.45	1,041	1,629	1	1	1	2
94	93	-	-	-	-	-	-	-	-	0	0	0	0
94	95	-	-	-	-	-	-	-	-	0	0	0	0
95	94	-	-	-	-	-	-	-	-	0	0	0	0
96	75	-	-	-	-	-	-	-	-	0	0	0	0
97	71	22,202	26,369	30,259	47,324	1,936	2,299.38	2,639	4,127	2	2	3	4
98	69	20,268	24,072	27,623	43,201	1,767	2,099.08	2,409	3,767	2	2	3	4
99	85	6,564	7,796	8,946	13,991	572	679.81	780	1,220	1	1	1	2
99	88	6,355	7,548	8,661	13,546	554	658.16	755	1,181	1	1	1	2
101	73	14,132	16,784	19,260	30,123	1,232	1,463.60	1,680	2,627	2	2	2	3
101	78	14,715	-	-	-	1,283	-	-	-	2	0	0	0



8

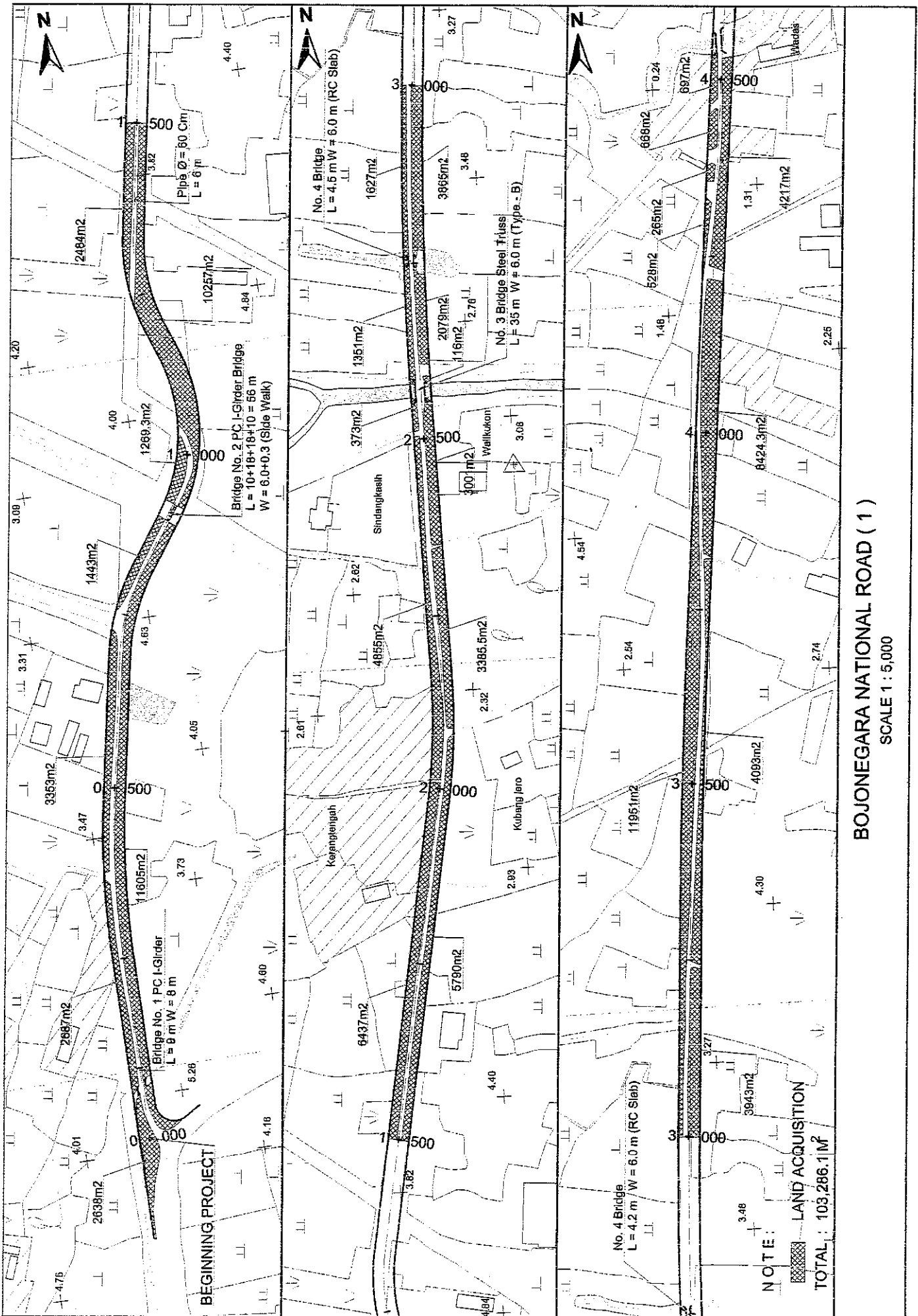
LAND ACQUISITION MAP

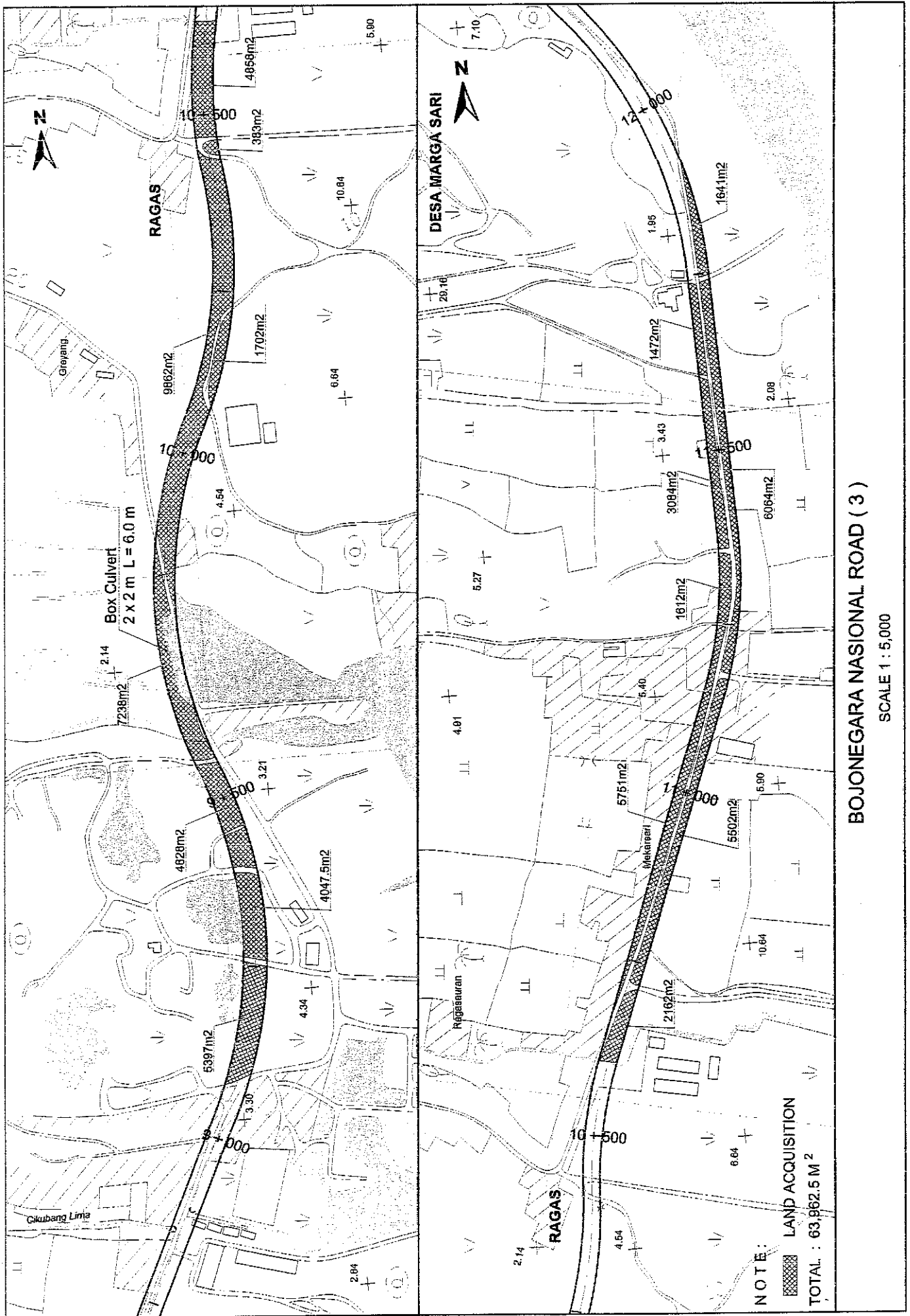
1. EASTERN ACCESS PORT HIGHWAY
(TANJUNG PRIOK)
2. BOJONEGARA NATIONAL ROAD

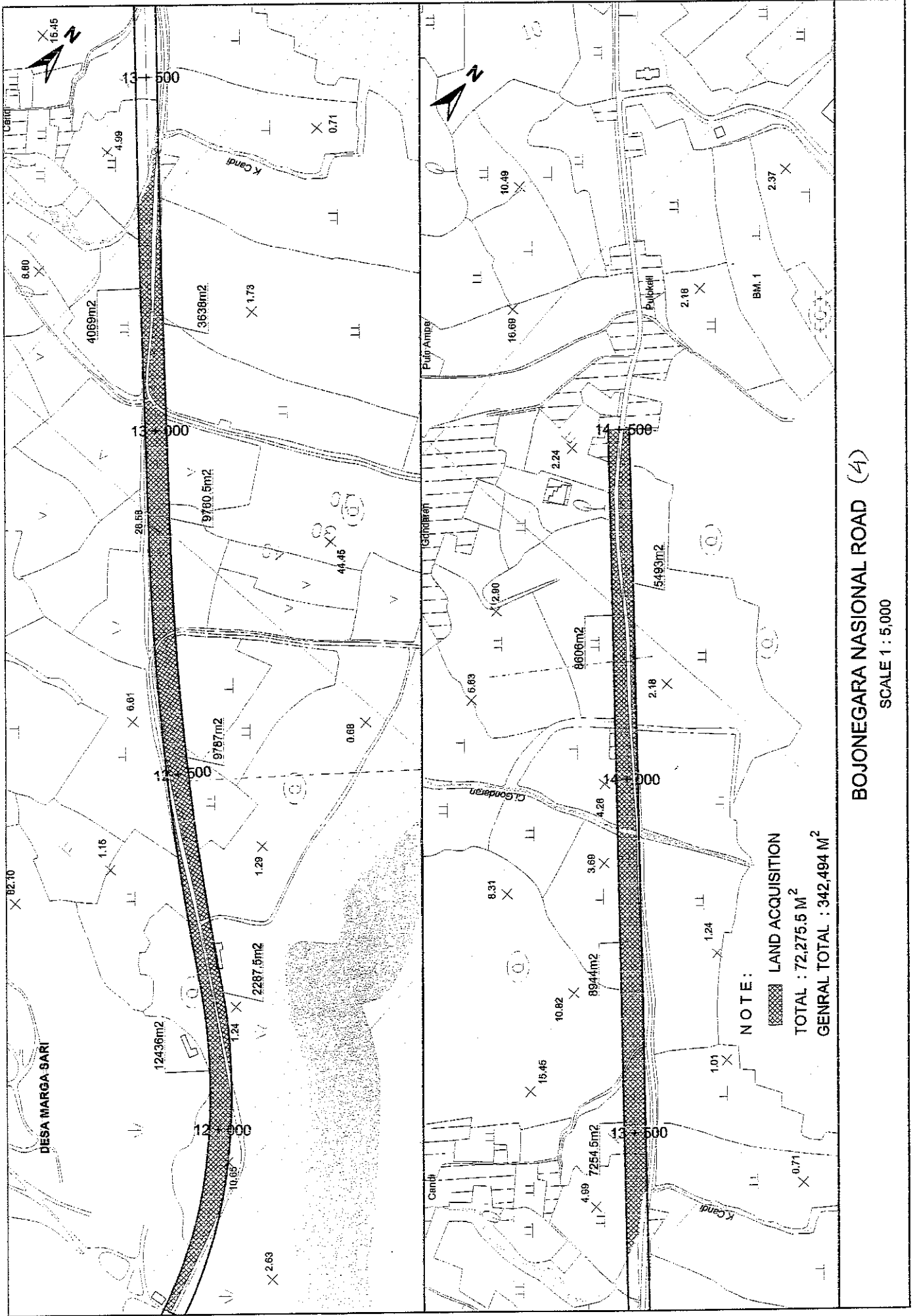


EASTERN ACCESS PORT HIGHWAY (TANJUNG PRIOK)

SCALE 1 : 5,000







BOJONEGARA NASIONAL ROAD (4)

SCALE 1 : 5,000

NOTE:
 [Hatched Box] LAND ACQUISITION
 TOTAL : 72,275.5 M²
 GENERAL TOTAL : 342,494 M²

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1. Natural Condition at Tanjung Priok Port

1.1 Natural Condition Survey by Study Team

1.1.1 1:10,000 Scale Digital Topographic Mapping

Urbanization and overpopulation affected the surrounding area of Tanjung Priok Port, resulting in heavy traffic congestion around the port facilities. The problem of traffic congestion around this port among other factors hindered the prosperity and redevelopment of Tanjung Priok Port.

On the other hand, the present premises of the port facilities offer little space for expansion, so that any other site than the present facilities site should be considered for redevelopment of the said Port.

The 1:10,000 scale digital topographic maps covering the Tanjung Priok Port and its surrounding area were produced by photogrammetric mapping method for the main purposes of planning the construction of access roads to the port facilities and selecting the sites of the planned new port facilities.

Figure 1-1-1 “1:10,000 Scale Digital Topographic Mapping Area, Tanjung Priok Port” shows the mapping area of 1:10,000 scale digital topographic mapping of Tanjung Priok Port by photogrammetric method. The specifications of the 1:10,000 scale digital topographic maps produced are as follows:

- 1) Scale of topographic mapping 1:10,000
- 2) Mapping area Approximately 3,600 ha
A-0 size, 1 sheet
- 3) Spheroid WGS-84
- 4) Map projection Universal Transverse Mercator (U.T.M.)
Zone No. 48
- 5) Datum level Lowest Low Water Level (LLWL)
- 6) Reference point of elevation PEM. DKI/P.05
(Existing benchmark established by DKI Jakarta)
Elevation = Elevation from MSL + 0.6 m (Z_0)
 $= 2.013 \text{ m} + 0.6 \text{ m} = 2.613 \text{ m}$
- 7) Aerial photos Existing 1:10,000 scale aerial photo taken in
December 2002
- 8) Contour line interval 1 m
- 9) Format style of digital data AutoCAD format

The horizontal coordinates and the elevation of the control points used for photogrammetric mapping are shown in Table 1-1-1 “Horizontal Coordinates of Control Points for Photogrammetric Mapping”.

Table 1-1-1 “Horizontal Coordinates of Control Points for Photogrammetric Mapping”

BM ID	Horizontal Coordinates		Elevation (m)
	X (m)	Y (m)	
068	711,878.302	9,324,924.537	2.547
474	704,366.630	9,321,854.193	3.368
475	709,553.657	9,321,644.959	3.199
476	710,970.023	9,321,751.133	1.570
477	714,535.282	9,321,674.125	----
478	714,750.163	9,323,434.763	----
480	709,224.563	9,323,107.249	1.406
481	704,590.798	9,323,049.035	1.698
491	706,227.169	9,323,867.874	2.049
492	708,527.414	9,324,615.627	1.469

Note: Spheroid: WGS-84, Projection: U.T.M. Zone No. 48
Datum of elevation: LLWS
Reference point for elevation: PEM. DKI/P.05,
Elevation = Elevation from MSL + 0.6 m = 2.013 + 0.6 m = 2.613 m

Appendix-1 shows the topographic/sounding map in which the latest results of sounding survey at navigational channels and anchorages are added to the produced 1:10,000 scale digital topographic maps.

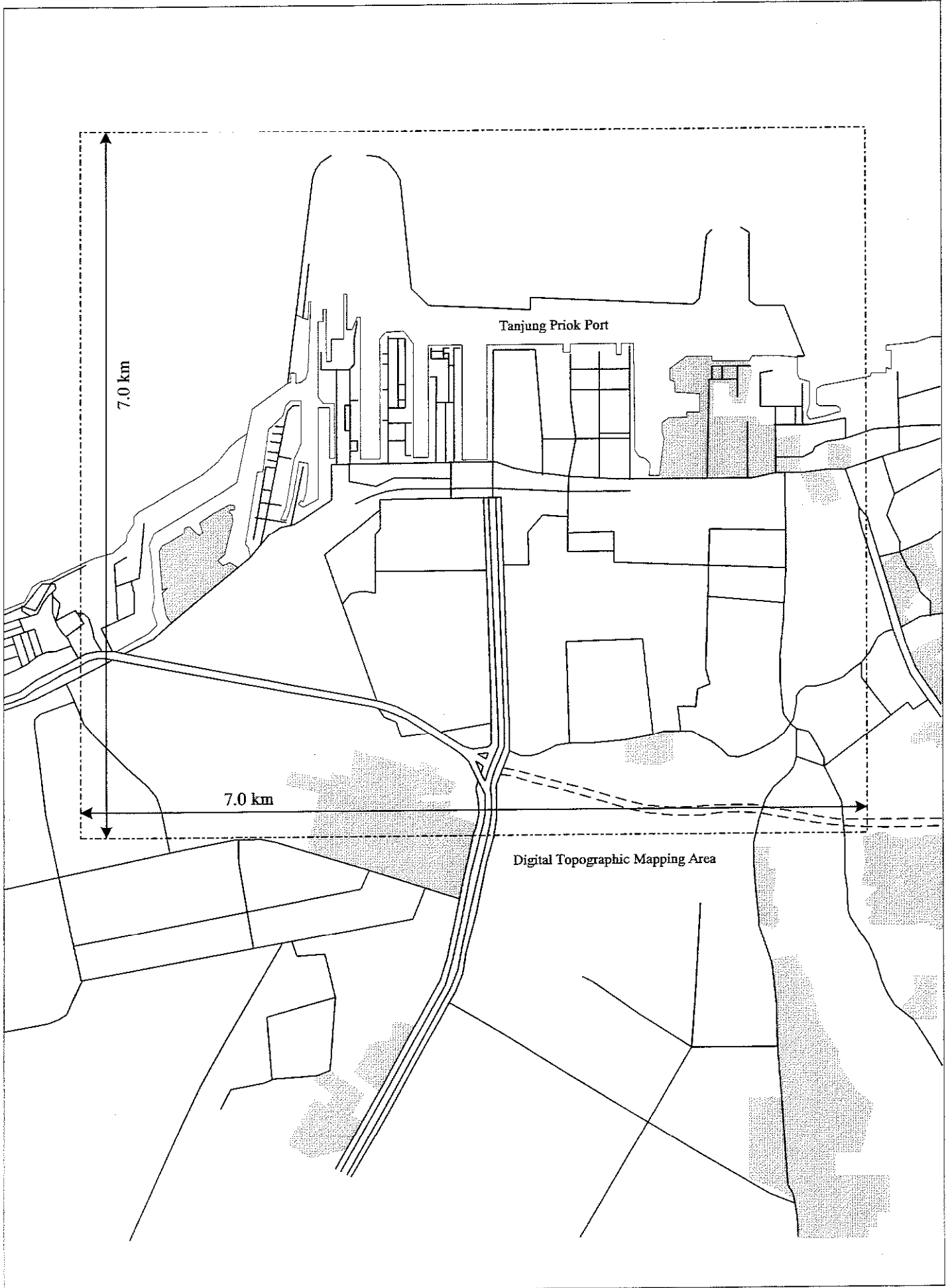


Figure 1-1-1 "1:10,000 Scale Digital Topographic Mapping Area, Tanjung Priok Port"

1.1.2 Sounding Survey

a) Existing Sounding Data

The first facilities at Tanjung Priok Port were constructed at the end of the 19th Century and the entrance channels, breakwaters, basins and port facilities were expanded for more than one century.

In Tanjung Priok Port, sounding surveys are made several times a year and are used for maintenance dredging, and eventually for the construction of port facilities, so that sufficient sounding data including the latest sounding maps are accumulated and kept by IPC-2.

Data collected by the JICA Study Team on the existing sounding surveys made, Tanjung Priok Port for the past 3 years are shown in Table 1-1-2 “List of Existing Sounding Map, Tanjung Priok Port”.

The ranges of sounding surveys are given in Figure 1-1-2 “Existing Sounding Map at Tanjung Priok Port”. These data were used to estimate the changes in the seabed surface in Tanjung Priok Port and entrance channels.

b) Sounding Survey

As already mentioned above, the sounding survey at Tanjung Priok Port has been made by IPC-2 periodically. However, the sounding survey at the east entrance channel has not been made in recent years because this channel is not used at present.

In addition, the sounding map of the planned west development site has not been provided yet. Thus, the sounding survey at Tanjung Priok Port was made in order to investigate the actual conditions of the water area for the east entrance channel rehabilitation plan and the front water area of the west development area for which the expansion of port facilities for Tanjung Priok Port is planned.

The range of sounding survey is shown in Figure 1-1-3 “Sounding Survey Area, Tanjung Priok Port”. The specifications of the sounding survey that has been carried out are shown below.

East Entrance Channel

1) Sounding survey area	Approximately 0.8 km × 4.3 km (344 ha)
2) Sounding line direction	Perpendicular to the center line of entrance channel
3) Sounding line interval	50 m
4) Positioning method	GPS
5) Sounding method	Deeper than –2 m: echo sounder Less than –2 m: staff or lead
6) Scale of sounding map prepared	1:2,500
7) Spheroid	WGS-84
8) Map projection	Universal Transverse Mercator (U.T.M.) Zone No. 48
9) Datum level	Lowest Low Water Level
10) Reference point for elevation	Tide pole at Tanjung Priok Port owned by IPC-2
11) Format style of digital data	AutoCAD format

West New Development Area

1) Sounding survey area	Approximately 2 km × 3.3 km (500 ha)
2) Sounding line direction	East – West direction
3) Sounding line interval	100 m
4) Positioning method	GPS
5) Sounding method	Deeper than –2 m: echo sounder Less than –2 m: staff or lead
6) Scale of sounding map prepared	1:10,000
7) Spheroid	WGS-84
8) Map projection	Universal Transverse Mercator (U.T.M.) Zone No. 48
9) Datum level	Lowest Low Water Level
10) Reference point for elevation	Tide pole at Tanjung Priok Port owned by IPC-2
11) Format style of digital data	AutoCAD format

Appendix-1 shows the topographic/sounding maps in which the results of sounding survey are added to the 1:10,000 scale digital topographic maps produced at the same time as the sounding survey.



Figure 1-1-4 “Bar Check before Sounding Survey, Tanjung Priok Port”

Table 1-1-2 "List of Existing Sounding Map, Tanjung Priok Port"

Area No.	No.	Date of Observation						Name of Sounding Map	Sounding Map Scale
		From			To				
		D	M	Y	D	M	Y		
1	1	1	3	1999	4	3	1999	Check Sounding Ambang Luar Pelb. Tg. Priok	1:2,500
	2	27	3	2001	30	3	2001	Hasil Pengukuran Kedalaman di Alur Amang Luar Pintu Barat Dalam Rangka Check Sounding	1:2,500
	3	25	6	2001	28	6	2001	Hasil Pengukuran Kedalaman di Alur Amang Luar Pintu Barat Dalam Rangka Final Sounding	1:2,500
	4	3	10	2001	8	10	2001	Hasil Pengukuran Kedalaman di Alur Amang Luar Pintu Barat Dalam Rangka Check Sounding	1:2,500
	5	19	12	2001	24	12	2001	Hasil Pengukuran Kedalaman di Alur Amang Luar Pintu Barat Dalam Rangka Check Sounding	1:2,500
	6	2	4	2002	5	4	2002	Hasil Pengukuran Kedalaman di Alur Amang Luar Pintu Barat Dalam Rangka Check Sounding	1:2,500
2	7	26	9	2000	27	9	2000	Hasil Pengukuran Kedalaman Utara Pelb. I s/d Lampu Merah Hijau Dalam Rangka Final Sounding	1:2,500
	8	12	3	2001	17	3	2001	Hasil Pengukuran Kedalaman Alur Utara Pelb. Is/d Lampu Merah Hijau Dalam Rangka Check Sounding	1:2,500
	9	11	6	2001	12	6	2001	Hasil Pengukuran Kedalaman Alur Utara Pelb. Is/d Lampu Merah Hijau Dalam Rangka Check Sounding	1:2,500
	10	21	9	2001	24	9	2001	Hasil Pengukuran Kedalaman Alur Utara Pelb. Is/d Lampu Merah Hijau Dalam Rangka Check Sounding	1:2,500
	11	14	12	2001	18	12	2001	Hasil Pengukuran Kedalaman Alur Utara Pelb. Is/d Lampu Merah Hijau Dalam Rangka Check Sounding	1:2,500
3	12	6	3	2000	8	3	2000	Check sounding Ambang Luar Pintu Timur, Tanjung Priok	1:2,500
	13	19	3	2001	22	3	2001	Hasil Pengukuran Kedalaman di Alur Timur Dalam Rangka, Check Sounding	1:2,500
	14	19	6	2001	22	6	2001	Hasil Pengukuran Kedalaman di Alur Timur Dalam Rangka, Check Sounding	1:2,500
	15	27	9	2001	2	10	2001	Hasil Pengukuran Kedalaman di Alur Timur Dalam Rangka, Check Sounding	1:2,500
	16	26	12	2001	31	12	2001	Hasil Pengukuran Kedalaman di Alur Timur Dalam Rangka, Check Sounding	1:2,500
4	17	6	3	2000	9	3	2000	Check sounding, Alur Dalam Pelab. Tg. Priok, Depan DKP - Depan Pelb.1	1:2,500
	18	21	9	2000	25	9	2000	Hasil Pengukuran Kedalaman Alur Dalam Pelab. Tg. Priok Dalam Rangka, Final Sounding	1:2,500
	19	13	6	2001	18	6	2001	Hasil Pengukuran Kedalaman Alur Dalam Pelab. Tg. Priok Dalam Rangka, Check Sounding	1:2,500
	20	5	7	2001	13	7	2001	Hasil Pengukuran Kedalaman Di Alur Dalam Pelab. Tg. Priok Dalam Rangka, Final Sounding	1:2,500
	21	17	9	2001	20	9	2001	Hasil Pengukuran Kedalaman Alur Dalam Pelab. Tg. Priok Dalam Rangka, Check Sounding	1:2,500
5	22	22	3	1999	25	3	1999	Predredge Sounding Pelabuhan Nusantara I & II, Tanjung Priok	1:2,000
	23	15	3	2001	12	3	2001	Hasil Pengukuran Kedalaman Pelabuhan Nusantara I & II, Tg. Priok, Dalam Rangka Check Sounding	1:2,000
	24	8	6	2001	13	6	2001	Hasil Pengukuran Kedalaman Pelabuhan Nusantara I & II, Tg. Priok, Dalam Rangka Check Sounding	1:2,000
	25	6	12	2001	7	12	2001	Hasil Pengukuran Kedalaman Pelabuhan Nusantara I & II, Tg. Priok, Dalam Rangka Final Sounding	1:2,000
	26	18	3	2002	22	3	2002	Hasil Pengukuran Kedalaman Pelabuhan Nusantara I & II, Tg. Priok, Dalam Rangka Check Sounding	1:2,000
	27	18	4	2002	24	4	2002	Hasil Pengukuran Kedalaman Alur Lantamal s/d Dermaga Serbangun Dalam Rangka Final Sounding	1:2,000
6	28	15	3	2000	17	3	2000	Check Sounding Perairan Kali Japat Tg. Priok	1:2,000
	29	12	3	2001	14	3	2001	Hasil Pengukuran Kedalaman Perairan Kali Japat T. Priok Dalam Rangka Check Sounding	1:2,000
	30	5	6	2001	7	6	2001	Hasil Pengukuran Kedalaman Perairan Kali Japat T. Priok Dalam Rangka Check Sounding	1:2,000
	31	17	9	2001	19	9	2001	Hasil Pengukuran Kedalaman Perairan Kali Japat T. Priok Dalam Rangka Check Sounding	1:2,000
	32	12	12	2001	14	12	2001	Hasil Pengukuran Kedalaman Perairan Kali Japat T. Priok Dalam Rangka Check Sounding	1:2,000
	33	12	3	2002	14	3	2002	Hasil Pengukuran Kedalaman Perairan Kali Japat T. Priok Dalam Rangka Check Sounding	1:2,000
	34	23	4	2002	23	4	2002	Hasil Pengukuran Kedalaman Perairan Kali Japat Tg. Priok Dalam Rangka Final Sounding	1:2,000
7	35	19	4	1999	28	4	1999	Pred Sounding Kolam Pelb. I, II & III Tg. Priok	1:1,000
	36	13	3	2000	22	3	2000	Pred Sounding Kolam Pelb. I, II & III Tg. Priok	1:1,000
	37	19	3	2001	28	3	2001	Hasil Pengukuran Kedalaman Kolam Pelb. I, II & III Pelb. Tg. Priok Dalam Rangka Check Sounding	1:1,000
	38	20	6	2001	29	6	2001	Hasil Pengukuran Kedalaman Kolam Pelabuhan I, II & III Tg. Priok Dalam Rangka Check Sounding	1:1,000
	39	27	9	2001	10	10	2001	Hasil Pengukuran Kedalaman Kolam Pelb. I, II & III Pelb. Tg. Priok Dalam Rangka Check Sounding	1:1,000
	40	13	12	2001	26	12	2001	Hasil Pengukuran Kedalaman Kolam Pelabuhan I, II & III Tg. Priok Dalam Rangka Check Sounding	1:1,000
8	41	29	3	2001	31	3	2001	Hasil Pengukuran Kedalaman Perairan Utara Pt. Dock Dalam Rangka Check Sounding	1:1,000
	42	24	9	2001	28	9	2001	Hasil Pengukuran Kedalaman Perairan Utara Pt. Dock Dalam Rangka Check Sounding	1:1,000
	43	19	12	2001	21	12	2001	Hasil Pengukuran Kedalaman Perairan Utara Pt. Dock Dalam Rangka Check Sounding	1:1,000
	44	2	4	2002	5	4	2002	Hasil Pengukuran Kedalaman Perairan Utara Pt. Dock Dalam Rangka Check Sounding	1:1,000
9	45	21	12	2000	22	12	2000	Hasil Pengukuran Kedalaman di Alur Pelabuhan Minyak Dalam Rangka Final Sounding	1:1,000
	46	29	3	2001	31	3	2001	Hasil Pengukuran Kedalaman Pelabuhan Minyak Tg. Priok Dalam Rangka Check Sounding	1:1,000
	47	11	6	2001	13	6	2001	Hasil Pengukuran Kedalaman Pelabuhan Minyak Tg. Priok Dalam Rangka Check Sounding	1:1,000
	48	16	8	2001	20	8	2001	Hasil Pengukuran Kedalaman di Alur Pelabuhan Minyak Dalam Rangka Final Sounding	1:10,000
	49	26	9	2001	28	9	2001	Hasil Pengukuran Kedalaman Pelabuhan Minyak Tg. Priok Dalam Rangka Check Sounding	1:1,000
	50	10	12	2001	12	12	2001	Hasil Pengukuran Kedalaman Pelabuhan Minyak Tg. Priok Dalam Rangka Check Sounding	1:1,000
	51	13	3	2002	15	3	2002	Hasil Pengukuran Kedalaman Pelabuhan Minyak Tg. Priok Dalam Rangka Check Sounding	1:1,000
	52	13	5	2002	13	5	2002	Hasil Pengukuran Kedalaman Pelabuhan Minyak Dalam Rangka Final Sounding	1:1,000
10	53	20	3	2000	21	3	2000	Check Sounding Depan Dermaga TPK Koja Tg. Priok	1:1,000
	54	22	3	2001	24	3	2001	Hasil Pengukuran Kedalaman di Depan Dermaga TPK Koja Tg. Priok Dalam Rangka Check Sounding	1:1,000
	55	21	6	2001	25	6	2001	Hasil Pengukuran Kedalaman di Depan Dermaga TPK Koja Tg. Priok Dalam Rangka Check Sounding	1:1,000
	56	5	11	2001	7	11	2001	Hasil Pengukuran Kedalaman di Depan Dermaga TPK Koja Dalam Rangka Final Sounding	1:1,000
	57	25	3	2002	27	3	2002	Hasil Pengukuran Kedalaman di Depan Dermaga TPK Koja Tg. Priok Dalam Rangka Check Sounding	1:1,000
11	58	27	3	2001	28	3	2001	Hasil Pengukuran Kedalaman di Utara Dermaga UTPK. I Tg. Priok Dalam Rangka Check Sounding	1:500
	59	20	9	2001	21	9	2001	Hasil Pengukuran Kedalaman Perairan Utara Der JICT Tg. Priok Dalam Rangka Check Sounding	1:500
	60	10	12	2001	11	12	2001	Hasil Pengukuran Kedalaman di Utara Dermaga JICT Tg. Priok Dalam Rangka Check Sounding	1:500
12	61	13	3	2000	14	3	2000	Check Sounding di Depan Dermaga Ex. Gudang Arang	1:500
	62	1	12	2000	1	12	2000	Hasil Pengukuran Kedalaman di Depan Dermaga Ex. Gd. Arang Dalam Rangka Final Sounding	1:500
	63	4	4	2001	5	4	2001	Hasil Pengukuran Kedalaman di Depan Dermaga Ex. Gd. Arang Dalam Rangka Check Sounding	1:500
	64	14	6	2001	15	6	2001	Hasil Pengukuran Kedalaman di Depan Dermaga Ex. Gd. Arang Dalam Rangka Check Sounding	1:500
	65	1	10	2001	2	10	2001	Hasil Pengukuran Kedalaman di Depan Dermaga Ex. Gd. Arang Dalam Rangka Check Sounding	1:500
	66	19	11	2001	20	11	2001	Hasil Pengukuran Kedalaman di Dep. Dermaga Ex. Gudang Arang Dalam Rangka Final Sounding	1:500
	67	28	3	2002	1	4	2002	Hasil Pengukuran Kedalaman di Depan Dermaga Ex. Gd. Arang Dalam Rangka Check Sounding	1:500
13	68	9	3	2000	10	3	2000	Check Sounding Depan Dermaga Ex. Syahbandar	1:500
	69	22	3	2001	23	3	2001	Hasil Pengukuran Kedalaman di Dep. Der. Ex. Syahbandar Tg. Priok Dalam Rangka Check Sounding	1:500
	70	25	9	2001	26	9	2001	Hasil Pengukuran Kedalaman di Dep. Der. Ex. Syahbandar Tg. Priok Dalam Rangka Check Sounding	1:500
	71	21	11	2001	22	11	2001	Hasil Pengukuran Kedalaman di Dep. Der. Ex. Syahbandar Tg. Priok Dalam Rangka Final Sounding	1:500
	72	11	3	2002	12	3	2002	Hasil Pengukuran Kedalaman di Dep. Der. Ex. Syahbandar Tg. Priok Dalam Rangka Check Sounding	1:500
14	73	9	4	1999	9	4	1999	Check Sounding Depan Dermaga 101 Baru Pelabuhan Tg. Priok	1:500
	74	9	3	2000	10	3	2000	Check Sounding Depan Dermaga Utara Gd. 101	1:500
	75	2	4	2001	3	4	2001	Hasil Pengukuran Kedalaman Utara Ex. Gudang 101 Dalam Rangka Check Sounding	1:500
	76	18	6	2001	19	6	2001	Hasil Pengukuran Kedalaman Utara Ex. Gudang 101 Tanjung Priok Dalam Rangka Check Sounding	1:500
	77	29	9	2001	30	9	2001	Hasil Pengukuran Kedalaman Utara Ex. Gudang 101 Dalam Rangka Check Sounding	1:500
	78	27	12	2001	28	12	2001	Hasil Pengukuran Kedalaman Utara Ex. Gudang 101 Dalam Rangka Check Sounding	1:500

Source: Existing sounding map provided by IPC-2

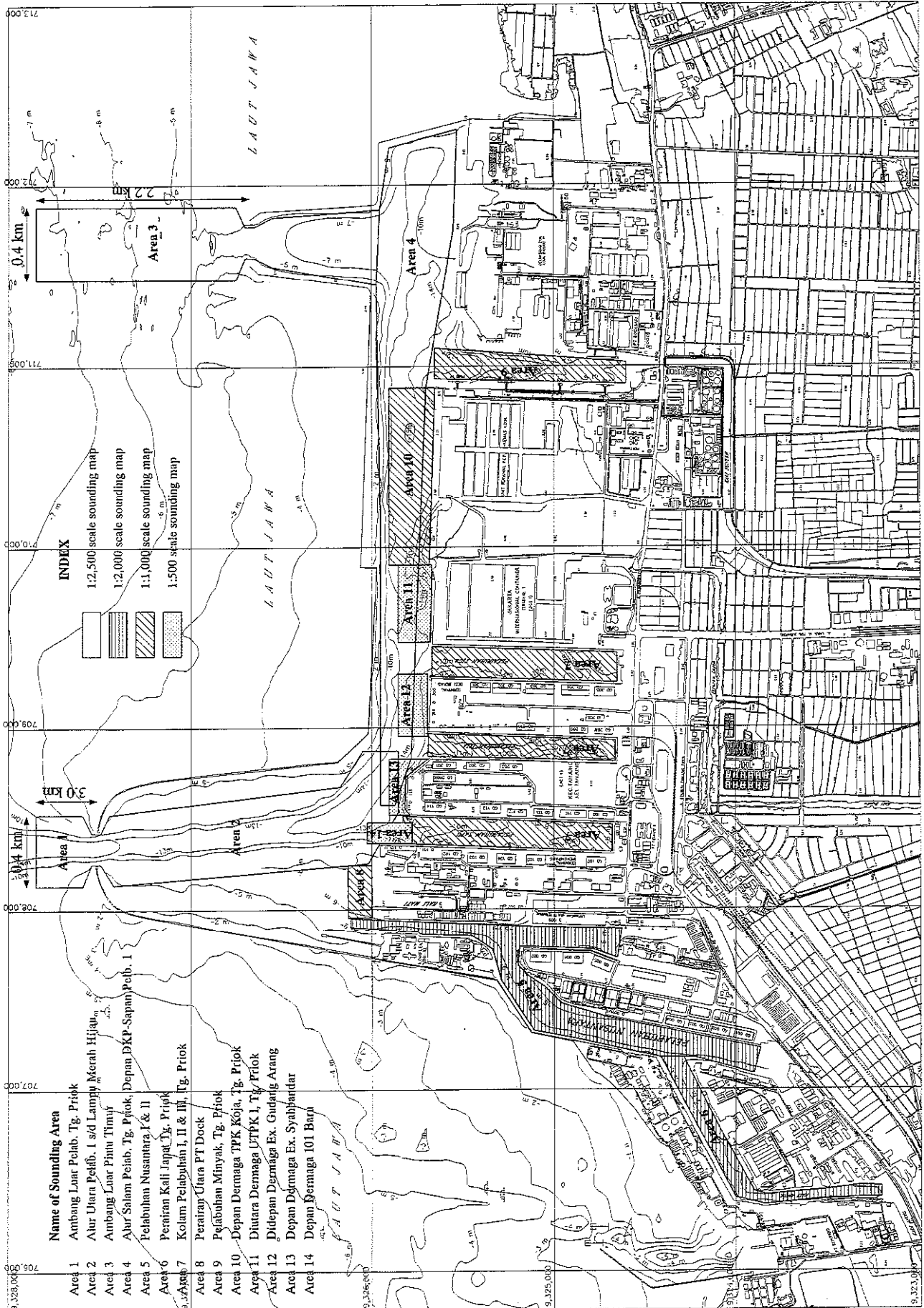


Figure 1-1-2 "Existing Sounding Map, Tanjung Priok Port"

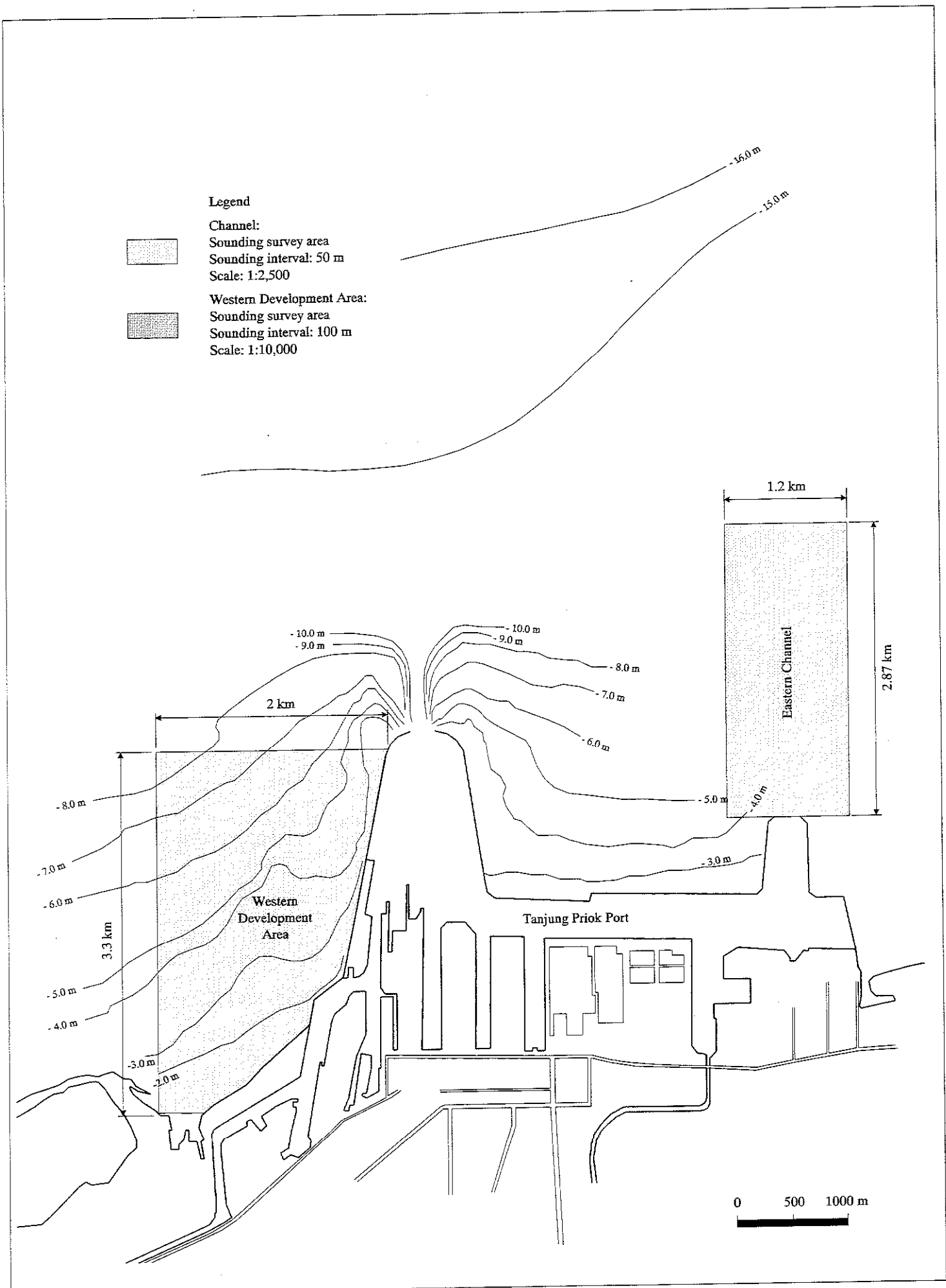


Figure 1-1-3 "Sounding Survey Area, Tanjung Priok Port"

1.1.3 Soil Investigation and Soil Laboratory Test

a) Existing Boring Data

IPC-2 has already executed many boring works and soil laboratory tests for the study of the construction of new berth and these data are very useful to estimate the subsoil condition at Tanjung Priok Port.

The existing boring data acquired by the JICA Study Team are shown in Table 1-1-3 “Location of Existing Boring Points, Tanjung Priok Port” and the locations of boring points are indicated in Figure 1-1-5 “Location of New and Existing Boring Point and Geological Profile Lines, Tanjung Priok Port”.

Table 1-1-3 “Location of Existing Boring Points, Tanjung Priok Port”

Project Name	Boring No.	Horizontal Coordinates		Boring Depth (m)
		X (m)	Y (m)	
Feasibility Study for the Development of a Bulk Terminal	BH.1	711,971.092	9,326,134.809	39.0
	BH.2	712,394.812	9,326,088.382	37.5
	BH.3	712,165.044	9,325,622.676	30.5
	BH.4	711,820.036	9,325,622.676	32.0
	BH.5	712,329.535	9,325,636.010	31.0
	BH.6	712,080.458	9,325,519.452	40.5
	BH.7	712,265.036	9,325,357.680	31.5
	BH.8	712,220.538	9,325,063.484	30.5
Rencana Pengerukan	B-1	-----	-----	22.5
	B-2	-----	-----	21.0
	B-3	-----	-----	21.0
	B-4	-----	-----	30.0
	B-5	-----	-----	24.0

Source: Information from IPC-2

The geological profiles based on the existing boring data are shown in Figure 1-1-6 “Geological Profile (B-B’ Section) at the Eastern Breakwater, Tanjung Priok Port”, Figure 1-1-7 “Geological Profile (C-C’ Section) at the Existing Western Breakwater, Tanjung Priok Port”, Figure 1-1-8 “Geological Profile (D-D’ Section) at the Existing Front Break Water, Tanjung Priok Port” and Figure 1-1-9 “Geological Profile (E-E’ Section) and Entrance of Western Channel, Tanjung Priok Port”.

According to the existing report, the soil conditions on the front water area of Tanjung Priok Port could be summarized as follows:

- 1) The seabed soil (from the seabed to approx. -35m) in the front of Tanjung Priok Port consists of nearly three layers.
- 2) The first layer is a soft clay layer in the depth range of nearly -13m, and its N-value is approximately 0.
- 3) The second layer is a deposit consisting of volcanic ash in the depth range of approx. -12m to -20m, with a N-value of approx. 6.
- 4) The third layer is a deposit consisting of volcanic ash, sand and silt in the depth range of approx. -20 m below, with a N-value of approx. 50 or more than 50.

b) Soil Investigation and Soil Laboratory Test

As described above, many soil surveys were carried out for the port facilities expansion plans at Tanjung Priok Port. However, no soil survey had been made before at the west development area. Therefore, the soil survey by offshore boring was carried out at the planned west development area.

The outline of the soil investigation and soil laboratory test is as follows:

West New Development Area

- | | | |
|------------------------------|------------------|--------------------------------|
| 1) Number of boring | Offshore boring: | 3 locations |
| 2) Boring length | | 30 m per hole, total 90 m |
| 3) Standard Penetration Test | | 1.5 m interval, total 60 times |
| 4) Undisturbed sampling | | 13 samples |

5) Soil Laboratory Test	Grain size analysis:	73 samples
	Specific gravity test:	73 samples
	Density test	73 samples
	Moisture content test:	73 samples
	Plastic/liquid limit test	73 samples
	Unconfined compression test:	12 samples
	Consolidation test:	12 samples

The locations of boring points are shown in Figure 1-1-4 “Location of New and Existing Boring Points and Geological Profile Lines, Tanjung Priok Port”. The horizontal coordinates, water depth and boring depth of each boring point are shown in Table 1-1-4 “Horizontal Coordinates and Elevation, and Boring Depth, Tanjung Priok Port”.

Table 1-1-4 “Horizontal Coordinates and Elevations, and Boring Depth, Tanjung Priok Port

Boring No.	Horizontal Coordinates		Elevation	Boring Depth	SPT
	X (m)	Y (m)	H (m)		
OSB-1	706,429	9,324,778	-2.4	30 m	20 times
OSB-2	707,015	9,325,520	-2.5	30 m	20 times
OSB-3	707,629	9,327,149	-3.4	30 m	20 times

Note: Elevation reference is LWS.

The Geological profile showing the results of boring is shown in Figure 1-1-10 “Geological Profile (A-A’ Section) at New West Development Area, Tanjung Priok Port”.

The boring log of each bore hole is shown in Figure 1-1-11 “Boring Log, Tanjung Priok Port (No. OSB-1)”, Figure 1-1-12 “Boring Log, Tanjung Priok Port (No. OSB-2)” and Figure 1-1-13 “Boring Log, Tanjung Priok Port (No. SOB-3)”.

The outline of soil conditions at the west development area obtained from the results of boring is shown in Table 1-1-5 “Outline of Soil Condition at Boring No. OSB-1, Tanjung Priok Port”, Table 1-1-6 “Outline of Soil Condition at Boring No. OSB-2, Tanjung Priok Port” and Table 1-1-7 “Outline of Soil Condition at Boring No. OSB-3, Tanjung Priok Port”.

Table 1-1-5 “Outline of Soil Condition at Boring No. OSB-1, Tanjung Priok Port”

Elevation from LWS	Layer Thickness	Description of Soil	N-Value	Characteristic
-2.40 ~ -11.4 m	9.0 m	Clay and shell fragment	1 ~ 4	Soft
-11.4 ~ -16.4 m	5.0 m	Silty sand	6 ~ 9	Soft
-16.4 ~ -18.4 m	2.0 m	Gravelly sand	> 60	Hard
-18.4 ~ -24.4 m	6.0 m	Sandy clay	26 ~ 60	Medium to hard
-24.4 ~ -32.4 m	8.0 m	Sand	44 ~ > 60	Hard

Table 1-1-6 “Outline of Soil Condition at Boring No. OSB-2, Tanjung Priok Port”

Elevation from LWS	Layer Thickness	Description of Soil	N-Value	Characteristic
-2.50 ~ -13.5 m	11.0 m	Clay and shell fragment	1 ~ 4	Soft
-13.5 ~ -22.0 m	8.5 m	Silty clay	60	Hard
-22.0 ~ -27.0 m	5.0 m	Sandy clay	48 ~ 60	Hard
-27.0 ~ -32.5 m	5.5 m	Clay	51 ~ 60	Hard

Table 1-1-7 “Outline of Soil Condition at Boring No. OSB-3, Tanjung Priok Port”

Elevation from LWS	Layer Thickness	Description of Soil	N-Value	Characteristic
-3.4 ~ -12.4 m	9.0 m	Clay and shell fragment	1 ~ 2	Soft
-12.4 ~ -19.9 m	7.5 m	Silty clay	4 ~ 60	Soft to Hard
-19.9 ~ -25.9 m	6.0 m	Sandy clay	45 ~ 60	Hard
-25.9 ~ -33.4 m	7.5 m	Clay	32 ~ 54	Hard

The soil condition at west development area is summarized as follow.

- 1) The soil conditions can be divided into three layers in boring depth.
- 2) The first layer consists of clay layer in the depth range from the seabed to nearly -11 m, eventually with shell fragments. This clay layer is very soft and the N-value is found in a range of 1 to 4.
- 3) The second layer is a silty clay layer in the depth range from -11 m to -19 m and the N-value varies from 4 to 60.
- 4) The third layer is a sand layer or a sandy clay layer in the depth range from -19 m to -30 m and it can be used as a foundation layer having the N-value of 40 to more than 60.

The results of soil laboratory test are simply shown in Table 1-1-8 "Summary of Soil Laboratory Test at Boring No. OSB-1, Tanjung Priok Port", Table 1-1-9 "Summary of Soil Laboratory Test at Boring No. OSB-2, Tanjung Priok Port" and Table 1-1-10 "Summary of Soil Laboratory Test at Boring No. OSB-3, Tanjung Priok Port".



Figure 1-1-14 "Offshore Boring, Tanjung Priok Port"



Figure 1-1-15 "Offshore Boring, Tanjung Priok Port"

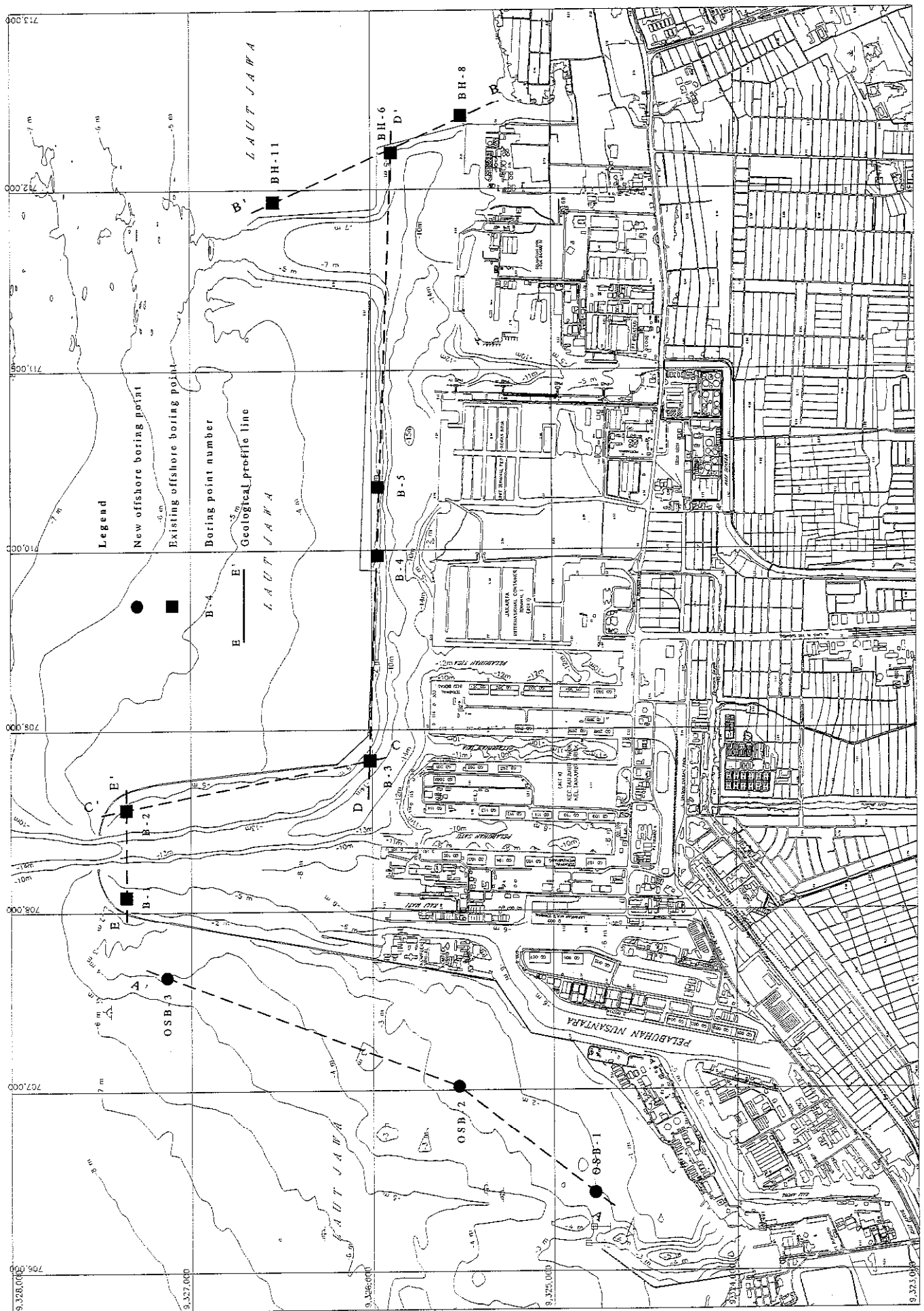


Figure 1-1-5 "Location of New and Existing Boring Points and Geological Profile Lines, Tanjung Priok Port"
 B-11

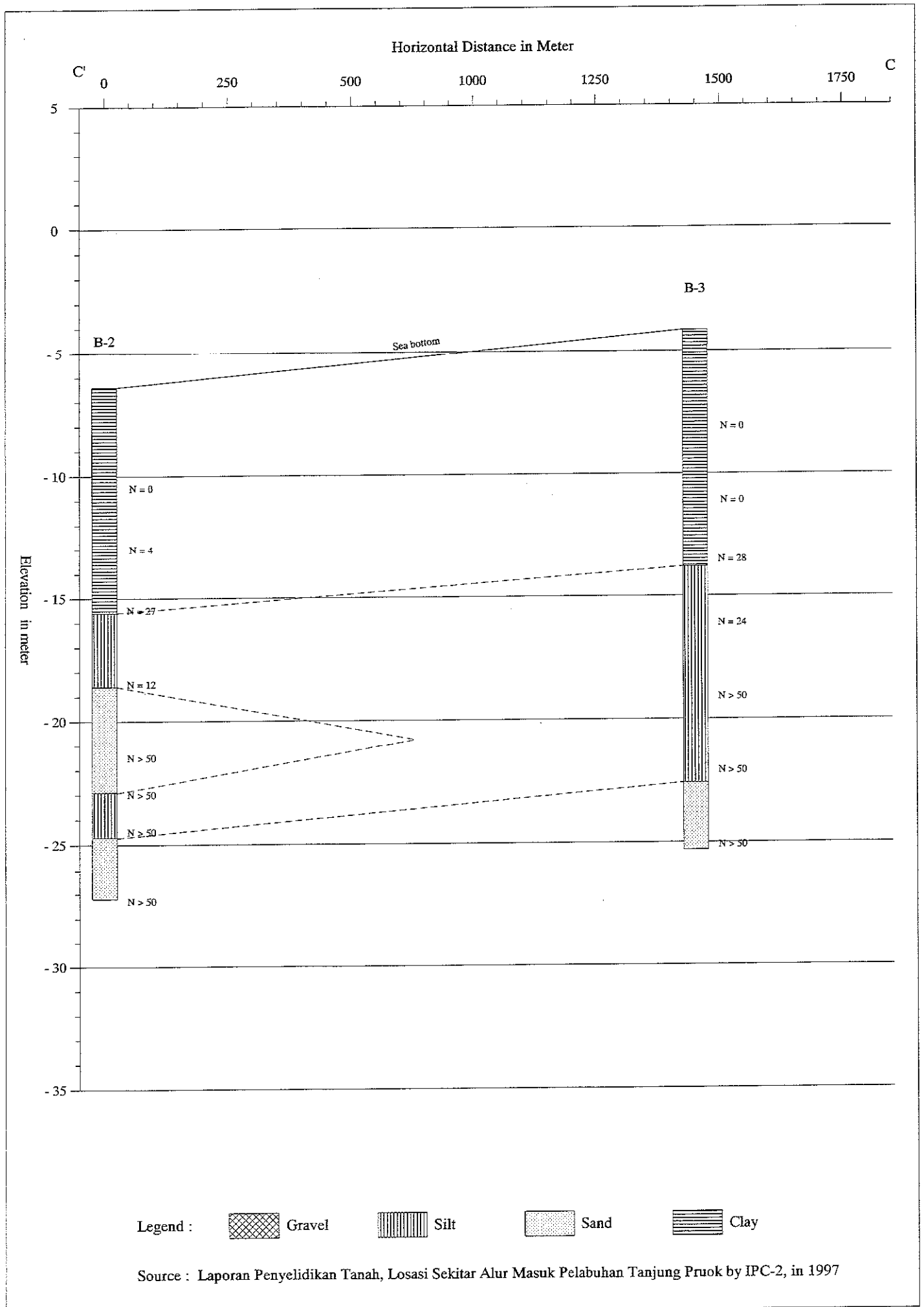


Figure 1-1-7 "Geological Profile (C - C' Section) at Existing Western Breakwater, Tanjung Priok Port"
B-13

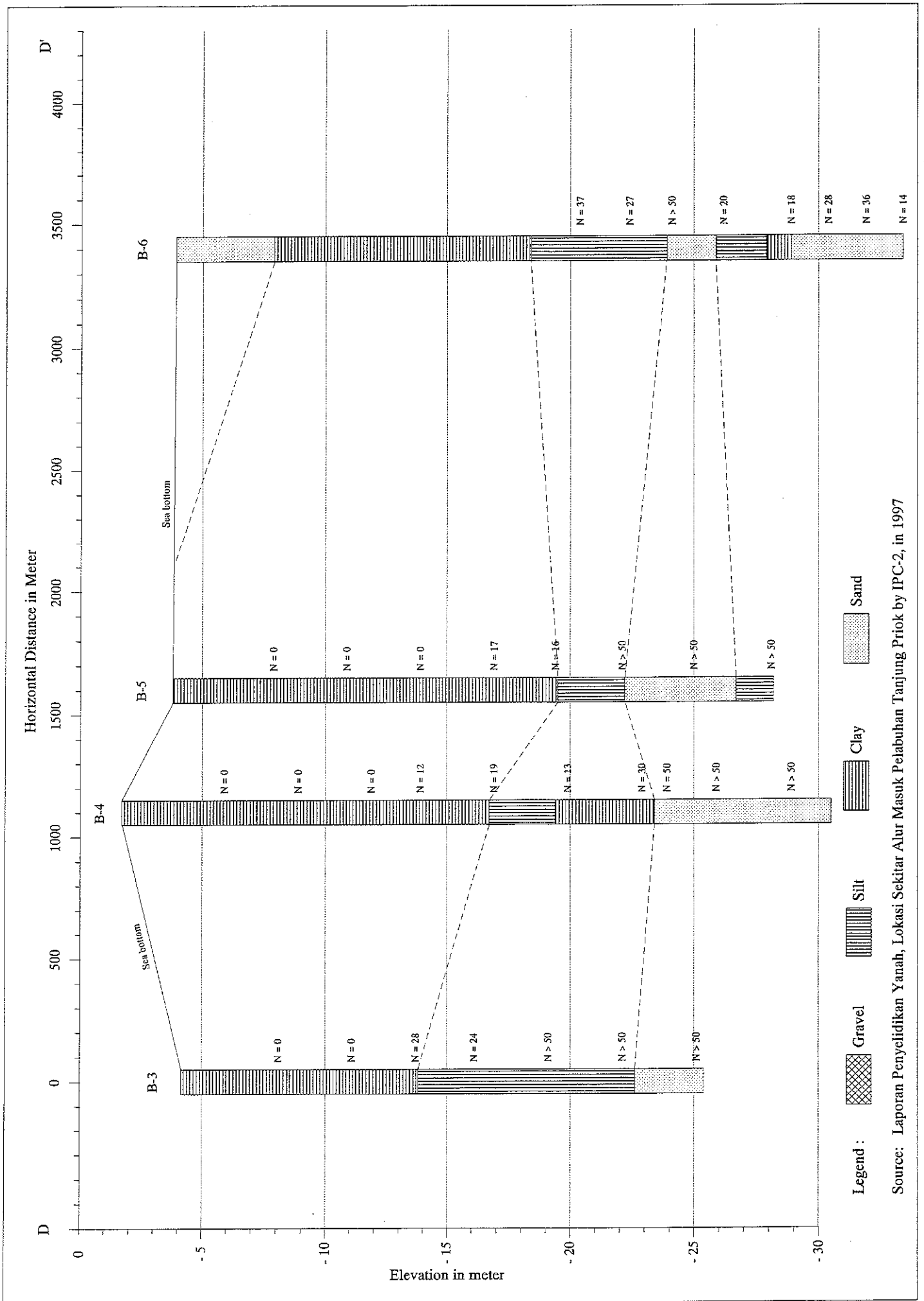


Figure 1-1-8 "Geological Profile (D - D' Section) at Existing Front Breakwater, Tanjung Priok"

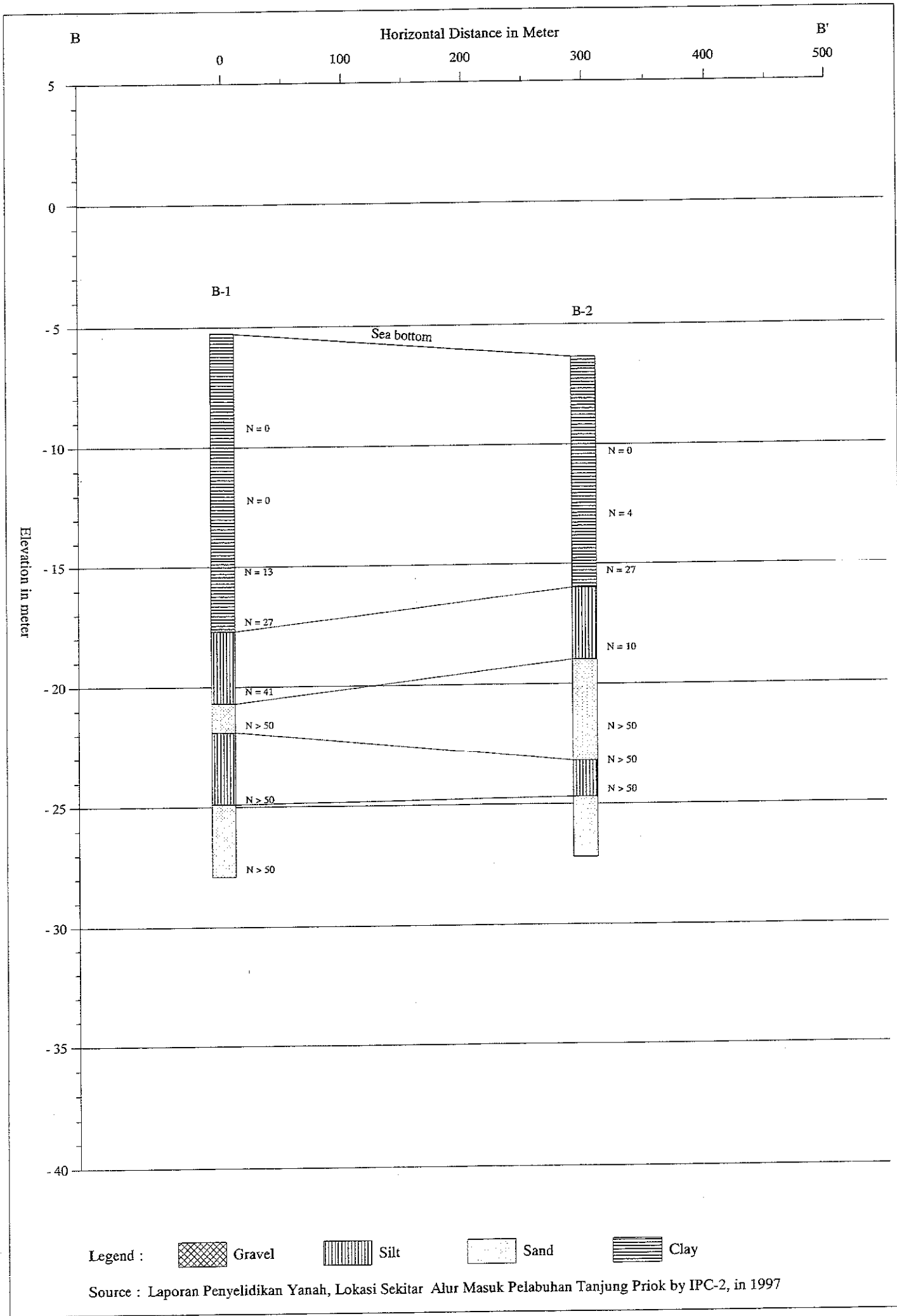


Figure 1-1-9 "Geological Profile (E - E' Section) at Entrance of Western Channel, Tanjung Priok Port"
B-15

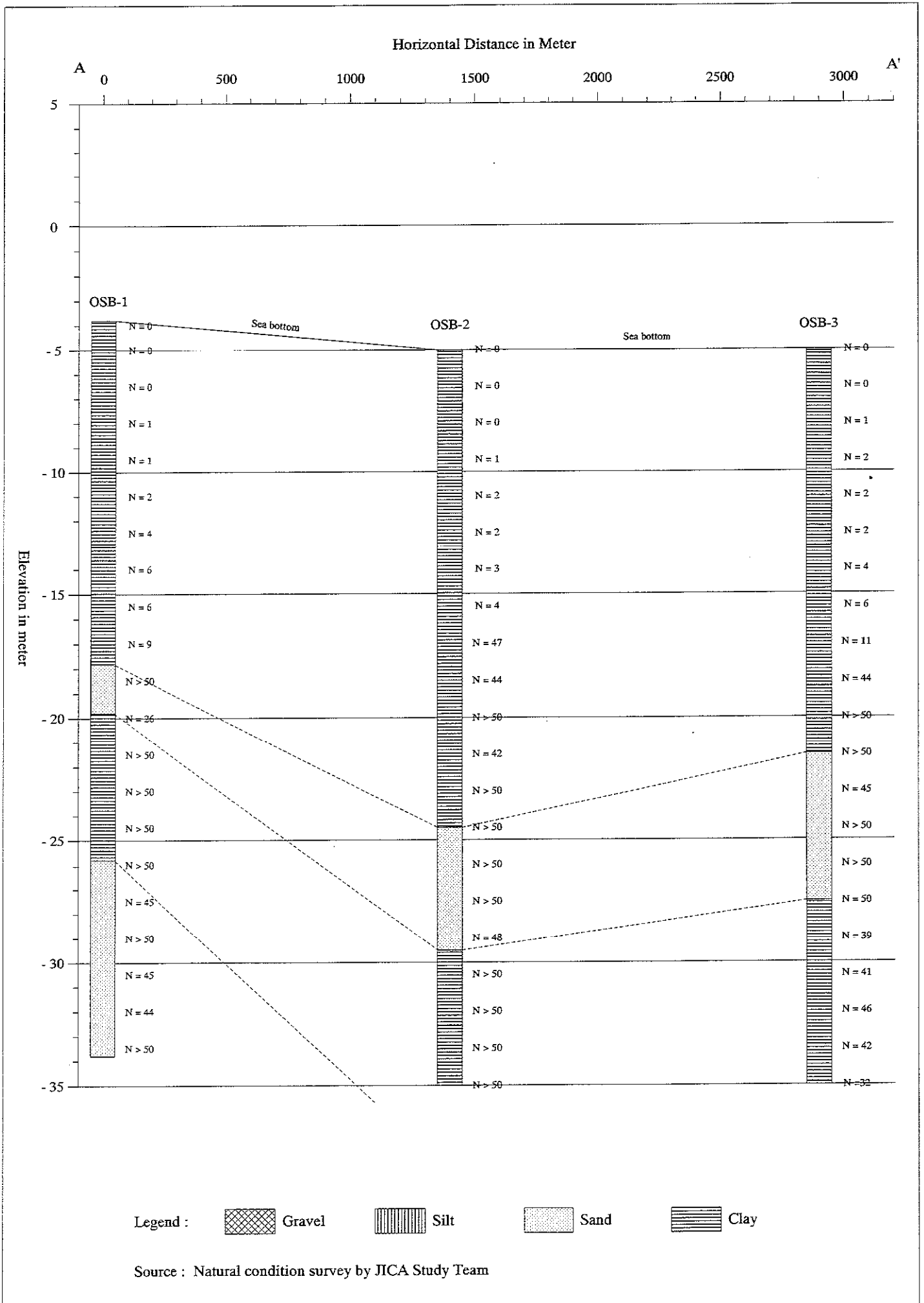


Figure 1-1-10 "Geological Profile (A - A' Section) at New West Development Site, Tanjung Priok Port"
B-16

DRILLING LOG

THE STUDY ON DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

Project : JICA		Coordinate x : 706,429.0		Drilling Machine : ZT-100	
Location : Tanjung Priok Port		Coordinate y : 9,324,778.0		Bor Master : Casna	
Number of bor hole : OSB -1		Sheet Number : 1		Description by : Mulyadi	
GWL Elevation : - m		Day/date : (15/06-18/06) 2002		Check by : Donny Z	

Elevation from LWS (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of blow	SPT - N Graphic	Remarks
				N1	N2	N3			
2.60									
1.60									
0.60									
-0.40									
-1.40									
-2.40	0.00		Sea bed						
-3.40	-1.00	X	Clay & shell fragment, arev. soft	0 / 15	0 / 15	0 / 15	0 / 30		UDS-1 : (0.50-1.00) m
-4.40	-2.00			0 / 15	0 / 15	0 / 15	0 / 30		SPT-1 : (1.00-1.45) m
-5.40	-3.00	2		0 / 15	0 / 15	1 / 15	1 / 30		SPT-2 : (2.50-2.95) m
-6.40	-4.00	3		0 / 15	0 / 15	1 / 15	1 / 30		SPT-3 : (4.00-4.45) m
-7.40	-5.00	4		0 / 15	0 / 15	1 / 15	1 / 30		SPT-4 : (5.50-5.95) m
-8.40	-6.00	X		0 / 15	1 / 15	1 / 15	2 / 30		UDS-2 : (5.95-6.50) m
-9.40	-7.00	5						SPT-5 : (7.00-7.45) m	
-10.40	-8.00	6							
-11.40	-9.00	7	Silty clay, brown, medium	1 / 15	2 / 15	2 / 15	4 / 30		SPT-6 : (8.50-8.95) m
-12.40	-10.00	8		2 / 15	3 / 15	3 / 15	6 / 30		SPT-7 : (10.00-10.45) m
-13.40	-11.00	9		2 / 15	3 / 15	3 / 15	6 / 30		SPT-8 : (11.50-11.95) m
-14.40	-12.00	X		3 / 15	4 / 15	5 / 15	9 / 30		UDS-3 : (12.50-13.00) m
-15.40	-13.00	10						SPT-9 : (13.00-13.45) m	
-16.40	-14.00	11	Gravelly fine sand, grey, dense, medium to hard	12 / 15	32 / 15	28 / 10	> 60 / 25		SPT-10 : (14.50-14.75) m
-17.40	-15.00	12		4 / 15	6 / 15	20 / 15	26 / 30		SPT-11 : (15.50-15.95) m
-18.40	-16.00	13	Sandy clay, arev. hard	16 / 15	20 / 15	32 / 15	52 / 30		SPT-12 : (17.50-17.95) m
-19.40	-17.00	14		25 / 15	45 / 15	15 / 15	> 60 / 30		SPT-13 : (19.00-19.45) m
-20.40	-18.00	15		22 / 15	39 / 15	21 / 15	> 60 / 30		SPT-14 : (20.00-20.95) m
-21.40	-19.00	16		60 / 10			> 60 / 10		SPT-15 : (22.00-22.10) m
-22.40	-20.00	17	Coarse sandy, grey, losse, medium	15 / 15	20 / 15	25 / 15	45 / 30		UDS-4 : (23.00-23.50) m
-23.40	-21.00	18		14 / 15	18 / 15	36 / 15	54 / 30		SPT-16 : (23.50-23.95) m
-24.40	-22.00	19		11 / 15	17 / 15	28 / 15	45 / 30		SPT-17 : (25.00-25.45) m
-25.40	-23.00	20		13 / 15	19 / 15	25 / 15	44 / 30		SPT-18 : (26.50-26.95) m
-26.40	-24.00	21		10 / 15	20 / 19	30 / 15	50 / 34		SPT-19 : (28.00-28.45) m
-27.40	-25.00	22							SPT-20 : (29.50-29.45) m
-28.40	-26.00								
-29.40	-27.00								
-30.40	-28.00								
-31.40	-29.00								
-32.40	-30.00								
-33.40	-31.00								
-34.40	-32.00								

☒ SPT Test	■ Clay	□ Sand	■ Shell fragment
☒ UDS Sample	■ Silt	■ Gravel	■ Andesit rock

Figure 1-1-11 "Drilling Log (No. OSB-1), Tanjung Priok Port"

DRILLING LOG

THE STUDY ON DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

Project : JICA		Coordinate x : 707,015.3		Drilling Machine : ZT-100	
Location : Tanjung Priok Port		Coordinate y : 9,325,520.7		Bor Master : Casna	
Number of bor hole : OSB -2		Sheet Number : 1		Description by : Mulyadi	
GWL Elevation : - m		Day/date : (20/06-24/06) 2002		Check by : Donny Z	

Elevation from LWS (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of blow	SPT - N Graphic							Remarks		
				N1	N2	N3		0	10	20	30	40	50	60			
2.50	+ 5.00																
1.50	+ 4.00																
0.50	+ 3.00																
-0.50	+ 2.00																
-1.50	+ 1.00																
-2.50	0.00		Sea bed														
-3.50	- 1.00	X															UDS-1 : (0.50-1.00) m
-4.50	- 2.00	X		0 / 15	0 / 15	0 / 15	0 / 30										SPT-1 : (1.50-1.95) m
-5.50	- 3.00	2		0 / 15	0 / 15	0 / 15	0 / 30										SPT-2 : (3.00-3.45) m
-6.50	- 4.00	3		0 / 15	0 / 15	1 / 15	1 / 30										SPT-3 : (4.50-4.95) m
-7.50	- 5.00	4	Clay & shell fragment, grey, soft	0 / 15	1 / 15	1 / 15	2 / 30										SPT-4 : (6.00-6.45) m
-8.50	- 6.00	5		0 / 15	1 / 15	1 / 15	2 / 30										UDS-2 : (7.00-7.50) m
-9.50	- 7.00	6		0 / 15	1 / 15	1 / 15	2 / 30										SPT-5 : (7.50-7.95) m
-10.50	- 8.00	7		1 / 15	1 / 15	2 / 15	3 / 30										SPT-6 : (9.00-9.45) m
-11.50	- 9.00	8		1 / 15	2 / 15	2 / 15	4 / 30										SPT-7 : (10.50-11.95) m
-12.50	- 10.00	9		13 / 15	17 / 15	30 / 15	47 / 30										SPT-8 : (12.00-12.45) m
-13.50	- 11.00	10		11 / 15	19 / 15	25 / 15	44 / 30										UDS-3 : (13.00-13.50) m
-14.50	- 12.00	11	Silty clay, brown, medium to hard	17 / 15	21 / 15	39 / 10	> 60 / 25										SPT-9 : (13.50-13.95) m
-15.50	- 13.00	12		11 / 15	19 / 15	23 / 15	42 / 30										SPT-10 : (15.00-15.40) m
-16.50	- 14.00	13		10 / 15	23 / 15	31 / 15	54 / 30										SPT-11 : (16.50-17.95) m
-17.50	- 15.00	14		60 / 10			> 60 / 10										UDS-4 : (19.00-19.50) m
-18.50	- 16.00	15	Coarse sandy clay, black, losse, medium	60 / 15			> 60 / 15										SPT-12 : (18.00-18.45) m
-19.50	- 17.00	16		60 / 15			> 60 / 15										SPT-13 : (19.50-19.60) m
-20.50	- 18.00	17		17 / 15	23 / 15	25 / 15	48 / 30										SPT-14 : (21.00-21.15) m
-21.50	- 19.00	18		25 / 15	37 / 15	23 / 10	> 60 / 25										SPT-15 : (22.50-22.65) m
-22.50	- 20.00	19	Clay, grey, dense, medium to hard	27 / 15	35 / 15	25 / 10	> 60 / 25										SPT-16 : (24.00-24.45) m
-23.50	- 21.00	20		10 / 15	19 / 15	32 / 15	51 / 30										SPT-17 : (25.50-25.90) m
-24.50	- 22.00			5 / 15	20 / 15	40 / 15	> 60 / 30										SPT-18 : (27.00-27.40) m
-25.50	- 23.00																SPT-19 : (28.5-29.95) m
-26.50	- 24.00																SPT-20 : (30.00-30.45) m
-27.50	- 25.00																
-28.50	- 26.00																
-29.50	- 27.00																
-30.50	- 28.00																
-31.50	- 29.00																
-32.50	- 30.00																
-33.50	- 31.00																
-34.50	- 32.00																

☒ SPT Test	■ Clay	■ Sand	■ Shell fragment
☒ UDS Sample	■ Silt	■ Gravel	■ Andesit rock

Figure 1-1-12 "Drilling Log (No. OSB-2), Tanjung Priok Port"

DRILLING LOG

THE STUDY ON DEVELOPMENT OF THE GREATER JAKARTA METROPOLITAN PORTS IN THE REPUBLIC OF INDONESIA

Project : JICA		Coordinate x : 707,629.5		Drilling Machine : ZT-100	
Location : Tanjung Priok Port		Coordinate y : 9,327,149.7		Bor Master : Casna	
Number of bor hole : OSB -3		Sheet Number : 1		Description by : Mulyadi	
GWL Elevation : - m		Day/date : (25/06-28/06) 2002		Check by : Donny Z	

Elevation from LWS (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of blow	SPT-N Graphic	Remarks
				N1	N2	N3			
1.60	+ 5.00								
0.60	+ 4.00								
-0.40	+ 3.00								
-1.40	+ 2.00								
-2.40	+ 1.00								
-3.40	0.00		Sea bed						
-4.40	- 1.00	X							UDS-1 : (1.00-1.50) m
-5.40	- 2.00	X		0 / 15	0 / 15	0 / 15	0 / 30		SPT-1 : (1.50-1.95) m
-6.40	- 3.00	X		0 / 15	0 / 15	1 / 15	1 / 30		SPT-2 : (3.00-3.45) m
-7.40	- 4.00	X	Clay & shell fragment, arev. soft	0 / 15	1 / 15	1 / 15	2 / 30		SPT-3 : (4.50-4.95) m
-8.40	- 5.00	X		0 / 15	1 / 15	1 / 15	2 / 30		SPT-4 : (6.00-6.45) m
-9.40	- 6.00	X		0 / 15	1 / 15	1 / 15	2 / 30		UDS-2 : (7.00-7.50) m
-10.40	- 7.00	X		0 / 15	1 / 15	1 / 15	2 / 30		SPT-5 : (7.50-7.95) m
-11.40	- 8.00	X		0 / 15	1 / 15	1 / 15	2 / 30		
-12.40	- 9.00	X		1 / 15	2 / 15	2 / 15	4 / 30		SPT-6 : (9.00-9.45) m
-13.40	- 10.00	X		2 / 15	3 / 15	3 / 15	6 / 30		SPT-7 : (10.50-10.95) m
-14.40	- 11.00	X		4 / 15	5 / 15	6 / 15	11 / 30		SPT-8 : (12.00-12.45) m
-15.40	- 12.00	X	Silty clay, brown, medium	17 / 15	20 / 15	24 / 15	44 / 30		UDS-3 : (13.00-13.50) m
-16.40	- 13.00	X		29 / 15	41 / 15	19 / 5	> 60 / 20	60	SPT-9 : (13.50-13.95) m
-17.40	- 14.00	X		60 / 15			> 60 / 15	60	UDS-4 : (14.50-15.00) m
-18.40	- 15.00	X		12 / 15	17 / 15	28 / 15	45 / 30	60	SPT-10 : (15.00-15.35) m
-19.40	- 16.00	X	Fine sandy clay . arev. hard	15 / 15	24 / 15	29 / 15	53 / 30	60	SPT-11 : (16.50-16.65) m
-20.40	- 17.00	X		13 / 15	22 / 15	30 / 15	52 / 30	60	SPT-12 : (18.00-18.45) m
-21.40	- 18.00	X		13 / 15	24 / 15	30 / 15	54 / 30	60	UDS-5 : (19.00-19.50) m
-22.40	- 19.00	X	Coarse sandy clay, grey, hard	15 / 15	17 / 15	22 / 15	39 / 30	60	SPT-13 : (19.50-19.95) m
-23.40	- 20.00	X		13 / 15	17 / 15	24 / 15	41 / 30	60	SPT-14 : (21.00-21.45) m
-24.40	- 21.00	X		13 / 15	17 / 15	24 / 15	41 / 30	60	SPT-15 : (22.50-22.95) m
-25.40	- 22.00	X		14 / 15	19 / 15	27 / 15	46 / 30	60	SPT-16 : (24.00-24.45) m
-26.40	- 23.00	X	Clay, arev. dense, medium to hard	15 / 15	19 / 15	23 / 15	42 / 30	60	SPT-17 : (25.50-25.95) m
-27.40	- 24.00	X		15 / 15	19 / 15	23 / 15	42 / 30	60	SPT-18 : (27.00-27.45) m
-28.40	- 25.00	X		11 / 15	14 / 15	18 / 15	32 / 30	60	SPT-19 : (28.50-29.95) m
-29.40	- 26.00	X							SPT-20 : (30.00-30.45) m
-30.40	- 27.00	X							
-31.40	- 28.00	X							
-32.40	- 29.00	X							
-33.40	- 30.00	X							
-34.40	- 31.00	X							
-35.40	- 32.00	X							

X SPT Test	■ Clay	■ Sand	■ Shell fragment
X UDS Sample	■ Silt	■ Gravel	■ Andesit rock

Figure 1-1-13 "Drilling Log (No. OSB-3), Tanjung Priok Port"

Table I-1-8 "Summary of Soil Laboratory Test at Boring No. OSB-1, Tanjung Priok"

Location : Tanjung Priok
 Boring Number : OSB-1

No.	Sample Number	Depth (m)	Atterberg Limits		Density		Water Content (%)	Specific Gravity	Grain Size Analysis (%)			Consolidation		Unconfined qu (kg/cm ²)	
			Soil Classification	Liquid Limit (%)	Plast. Index (%)	Dry (gr/cm ³)			Wet (gr/cm ³)	Clay-Silt (%)	Sand (%)	Gravel (%)	Cc		Cv cm ² /sec
1	UDS. 1	0.40 ~ 1.00	OH - MH	112.31	70.66	0.841	1.517	80.28	2.6305	92.54	7.46	0.00	0.968	1.40E-03	0.389
2	SPT. 1	1.00 ~ 1.45	ML - OL	45.45	12.69	0.987	1.614	63.57	2.6507	46.29	53.16	0.55	-	-	-
3	SPT. 2	2.50 ~ 2.95	CH	128.58	99.06	0.746	1.461	95.92	2.6422	74.79	8.79	16.42	-	-	-
4	SPT. 3	4.00 ~ 4.45	CH	98.69	72.04	0.680	1.416	108.18	2.6213	89.34	8.46	2.20	-	-	-
5	SPT. 4	5.50 ~ 5.95	CH	120.52	93.17	0.780	1.479	89.54	2.6238	88.99	7.49	3.52	-	-	-
6	UDS. 2	6.50 ~ 7.00	CH	139.19	103.94	0.729	1.452	99.07	2.6329	93.84	5.26	0.90	0.919	3.21E-03	0.081
7	SPT. 5	7.00 ~ 7.45	CH	139.38	108.95	0.625	1.387	121.75	2.6478	87.92	8.90	3.18	-	-	-
8	SPT. 6	8.50 ~ 8.95	CH	153.56	123.20	0.915	1.564	70.95	2.6372	69.95	19.48	10.57	-	-	-
9	SPT. 7	10.00 ~ 10.45	CH	118.27	86.95	0.950	1.569	67.33	2.6428	98.62	1.38	0.00	-	-	-
10	SPT. 8	11.50 ~ 11.95	CH	91.30	62.66	0.852	1.529	79.56	2.6649	79.46	20.34	0.20	-	-	-
11	UDS. 3	12.50 ~ 13.00	MH	78.88	41.92	0.971	1.601	64.84	2.655	67.54	32.46	0.00	0.432	3.60E-03	0.304
12	SPT. 9	13.00 ~ 13.45	CH	100.00	74.69	0.887	1.549	74.66	2.6565	86.80	13.20	0.00	-	-	-
13	UDS. 4	13.50 ~ 14.00	OL - ML	45.11	7.14	1.108	1.679	51.49	2.6737	50.40	45.24	4.36	0.206	8.41E-03	0.537
14	SPT. 10	14.50 ~ 14.75	SM	-	-	1.439	1.898	31.88	2.7224	11.45	47.86	40.69	-	-	-
15	SPT. 11	15.50 ~ 15.95	SM	-	-	1.364	1.842	35.04	2.7017	7.43	90.94	1.63	-	-	-
16	SPT. 12	17.50 ~ 17.95	MH	59.56	28.11	1.054	1.654	56.98	2.673	74.90	25.10	0.00	-	-	-
17	SPT. 13	19.00 ~ 19.35	CH	92.92	64.77	1.028	1.639	59.45	2.6515	92.66	7.34	0.00	-	-	-
18	SPT. 14	20.50 ~ 20.95	CH	131.25	98.70	0.917	1.569	71.01	2.6467	96.68	3.32	0.00	-	-	-
19	SPT. 15	22.00 ~ 22.10	SC	-	-	1.552	1.929	24.31	2.7063	29.96	69.11	0.93	-	-	-
20	SPT. 16	23.50 ~ 23.95	SC	-	-	1.454	1.901	30.73	2.6928	29.54	67.98	2.48	-	-	-
21	SPT. 17	25.00 ~ 25.45	SC	-	-	1.566	1.949	24.42	2.7125	16.60	82.75	0.65	-	-	-
22	SPT. 18	26.50 ~ 26.95	SC	-	-	1.635	2.016	23.33	2.712	13.38	84.47	2.15	-	-	-
23	SPT. 19	28.00 ~ 28.45	SC	-	-	1.815	2.112	16.39	2.7205	17.09	75.69	7.22	-	-	-
24	SPT. 20	29.50 ~ 29.95	SC	-	-	1.581	1.894	19.78	2.712	13.83	81.51	4.66	-	-	-
Average			CH	71.96	49.94	1.08	1.67	62.64	2.67	59.01	32.76	4.07	0.63	0.00	0.33

Table 1-1-9 "Summary of Soil Laboratory Test at Boring No. OSB-2, Tanjung Priok

Location : Tanjung Priok
 Boring Number : OSB-2

No.	Sample Number	Depth (m)	Atterberg Limits		Density		Water Content (%)	Specific Gravity	Grain Size Analysis (%)			Consolidation		Unconfined qu (kg/cm ²)	
			Soil Classification	Liquid Limit (%)	Plast. Index (%)	Dry (gr/cm ³)			Wet (gr/cm ³)	Clay (%)	Silt (%)	Sand (%)	Cc		Cv cm ² /sec
1	UDS. 1	1.00 ~ 1.50	CH	130.27	99.76	0.749	1.459	94.82	2.6402	95.20	4.50	4.50	0.972	2.36E-03	0.185
2	SPT. 1	1.50 ~ 1.95	CH	136.85	106.87	0.722	1.432	98.40	2.5647	97.14	97.14	2.37	-	-	-
3	SPT. 2	3.00 ~ 3.45	CH	92.41	64.85	0.972	1.595	64.17	2.6027	58.32	58.32	40.63	-	-	-
4	SPT. 3	4.50 ~ 4.95	CH	101.50	74.25	0.661	1.4	111.74	2.5843	93.92	93.92	3.73	-	-	-
5	SPT. 4	6.00 ~ 6.45	CH	140.37	110.99	0.648	1.394	115.01	2.5733	95.90	95.90	1.23	-	-	-
6	UDS. 2	7.00 ~ 7.50	CH	161.01	129.83	0.658	1.398	112.33	2.5862	96.34	96.34	0.28	1.794	4.16E-04	0.168
7	SPT. 5	7.50 ~ 7.95	CH	157.69	127.18	0.672	1.404	109.05	2.5808	93.52	93.52	3.28	-	-	-
8	SPT. 6	9.00 ~ 9.45	CH	156.55	125.06	0.788	1.474	87.13	2.5528	95.90	95.90	0.40	-	-	-
9	SPT. 7	10.50 ~ 10.95	CH	70.40	42.08	1.055	1.656	57.03	2.6615	87.04	87.04	4.82	-	-	-
10	SPT. 8	12.00 ~ 12.45	MH	54.02	14.75	1.020	1.637	60.55	2.6728	61.14	61.14	4.32	-	-	-
11	SPT. 9	13.50 ~ 13.95	SM	-	NP	1.468	1.899	29.33	2.7068	28.10	28.10	3.64	-	-	-
12	UDS. 3	13.50 ~ 14.00	MH	75.69	32.40	0.972	1.602	64.81	2.6556	83.50	83.50	0.00	0.318	5.50E-03	0.064
13	SPT. 10	15.00 ~ 15.40	SM	-	NP	1.427	1.896	32.86	2.7021	27.93	27.93	0.05	-	-	-
14	SPT. 11	16.50 ~ 16.95	OL-ML	45.44	8.04	1.066	1.661	55.85	2.6732	87.04	87.04	0.00	-	-	-
15	SPT. 12	18.00 ~ 18.45	MH	66.34	28.10	1.110	1.693	52.48	2.6806	57.58	57.58	0.32	-	-	-
16	UDS. 4	18.50 ~ 19.00	SM	-	NP	1.443	1.903	31.84	2.6909	27.95	27.95	0.66	-	-	-
17	SPT. 13	19.50 ~ 19.65	SP	-	NP	1.749	2.1	20.06	2.7139	6.36	6.36	54.77	-	-	-
18	SPT. 14	21.00 ~ 21.15	SM	-	NP	1.486	1.935	30.19	2.7169	20.60	20.60	30.31	-	-	-
19	SPT. 15	22.50 ~ 22.65	SM	-	NP	1.617	1.999	23.66	2.7238	21.93	21.93	43.22	-	-	-
20	SPT. 16	24.00 ~ 24.45	MH	64.75	22.65	0.988	1.613	63.29	2.6479	88.42	88.42	0.00	-	-	-
21	SPT. 17	23.50 ~ 25.90	CH	81.72	52.47	1.127	1.692	50.07	2.6508	94.58	94.58	0.37	-	-	-
22	SPT. 18	27.00 ~ 27.40	CH	141.15	111.13	0.762	1.462	91.78	2.5606	98.40	98.40	0.06	-	-	-
23	SPT. 19	28.50 ~ 28.95	CH	144.85	115.18	0.736	1.439	95.56	2.5519	99.18	99.18	0.04	-	-	-
24	SPT. 20	30.00 ~ 30.40	CH	146.66	116.51	0.724	1.412	94.90	2.5561	97.68	97.68	0.50	-	-	-
Average				81.99	57.59	1.03	1.63	68.62	2.64	71.40	67.62	8.31	1.03	0.00	0.14

Table 1-1-10 "Summary of Soil Laboratory Test at Boring No. OSB-3, Tanjung Priok Port

Location : Tanjung Priok
 Boring Number : OSB-3

No.	Sample Number	Depth (m)	Atterberg Limits		Density		Water Content (%)	Specific Gravity	Grain Size Analysis (%)			Consolidation		Unconfined qu (kg/cm ²)	
			Soil Classification	Liquid Limit (%)	Plast. Index (%)	Dry (gr/cm ³)			Wet (gr/cm ³)	Clay (%)	Silt (%)	Sand (%)	Cc		Cv cm ² /sec
1	UDS. 1	1.00 ~ 1.50	CH	151.92	126.46	0.702	1.419	102.13	2.5521	97.74	1.70	0.56	1.264	3.64E-03	0.201
2	SPT. 1	1.50 ~ 1.95	CH	101.57	76.55	0.958	1.592	66.10	2.6313	82.94	7.23	9.83	-	-	-
3	SPT. 2	3.00 ~ 3.45	CH	128.47	99.23	0.701	1.43	104.02	2.601	98.52	1.08	0.40	-	-	-
4	SPT. 3	4.50 ~ 4.95	CH	128.34	99.10	0.692	1.424	105.92	2.6017	96.85	2.10	1.05	-	-	-
5	SPT. 4	6.00 ~ 6.45	CH	124.17	97.83	0.672	1.412	110.16	2.5938	91.34	5.28	3.38	-	-	-
6	UDS. 2	7.00 ~ 7.50	CH	154.11	125.64	0.688	1.415	105.70	2.5609	93.95	4.30	1.75	0.94	7.31E-04	0.188
7	SPT. 5	7.50 ~ 7.95	CH	120.66	90.15	0.732	1.444	97.18	2.586	93.82	3.51	2.67	-	-	-
8	SPT. 6	9.00 ~ 9.45	CH	142.77	115.99	0.647	1.394	115.40	2.594	98.60	1.17	0.23	-	-	-
9	SPT. 7	10.50 ~ 10.95	CH	74.53	50.45	0.976	1.604	64.29	2.6455	61.04	32.67	6.29	-	-	-
10	SPT. 8	12.00 ~ 12.45	CH	82.44	54.93	1.011	1.627	60.96	2.6505	96.74	3.12	0.14	-	-	-
11	UDS. 3	13.00 ~ 13.50	CH	102.45	72.82	0.869	1.52	74.94	2.6133	97.24	2.72	0.04	0.586	5.97E-03	0.522
12	SPT. 9	13.50 ~ 13.95	MH	50.18	16.28	1.086	1.674	54.15	2.6535	45.30	53.78	0.92	-	-	-
13	UDS. 4	14.50 ~ 15.00	MH	58.57	14.05	1.174	1.713	45.86	2.6741	34.80	64.12	1.08	0.291	7.04E-03	0.253
14	SPT. 10	15.00 ~ 15.35	CH	70.02	46.61	0.964	1.561	61.94	2.6306	98.84	1.16	0.00	-	-	-
15	SPT. 11	16.50 ~ 16.65	CH	57.06	17.66	1.197	1.742	45.59	2.6744	86.60	13.20	0.20	-	-	-
16	SPT. 12	18.00 ~ 18.45	ML-OL	40.25	2.91	1.187	1.739	46.53	2.6738	99.44	0.56	0.00	-	-	-
17	UDS. 5	19.00 ~ 19.50	CH	110.42	78.23	0.949	1.584	67.00	2.6511	97.78	2.22	0.00	0.459	4.77E-03	0.416
18	SPT. 13	19.50 ~ 1.95	MH	92.03	43.00	0.991	1.563	57.78	2.6217	93.26	6.74	0.00	-	-	-
19	SPT. 14	21.00 ~ 21.45	CH	100.47	70.68	0.913	1.517	66.12	2.6061	99.46	0.54	0.00	-	-	-
20	SPT. 15	22.00 ~ 22.45	CH	131.82	102.26	0.857	1.504	75.54	2.5501	98.42	1.58	0.00	-	-	-
21	SPT. 16	24.00 ~ 24.45	MH	68.23	18.49	1.062	1.647	55.13	2.6457	87.10	12.90	0.00	-	-	-
22	SPT. 17	25.50 ~ 25.95	CH	67.60	43.33	1.031	1.64	59.13	2.654	88.74	11.26	0.00	-	-	-
23	SPT. 18	27.00 ~ 27.45	OH - MH	111.16	68.43	0.994	1.594	60.33	2.6316	95.06	4.94	0.00	-	-	-
24	SPT. 19	28.50 ~ 28.95	CH	140.93	114.03	0.840	1.503	78.89	2.5344	98.56	1.14	0.30	-	-	-
Average				100.42375	68.54625	0.9121486	1.5525833	74.199583	2.6179667	88.839167	9.9591667	1.2016667	0.708	4.43E-03	0.316

1.2 Topography

Tanjung Priok Port is located along the coastline in the northeastern direction from the center of Jakarta City. The surrounding area of Tanjung Priok Port is flat with the elevation of approximately 2 m (MSL), and the coastline runs nearly in the east-west direction and varies in the northeast to southwest direction at the west end of Tanjung Priok Port.

Many rivers and drain channels run in the south-north direction through the flat terrain surrounding the Tanjung Priok Port. The following three rivers or drain channels flow into the waters of Tanjung Priok Port:

- 1) Kali Sunter Baru flowing into Pertamina Berth at Tanjung Priok Port
- 2) Terusan Lagoa flowing into the front water area of Koja Terminal at Tanjung Priok Port
- 3) Kali Ancor flowing into Pelabuhan Nusantara on the west side of Tanjung Priok Port



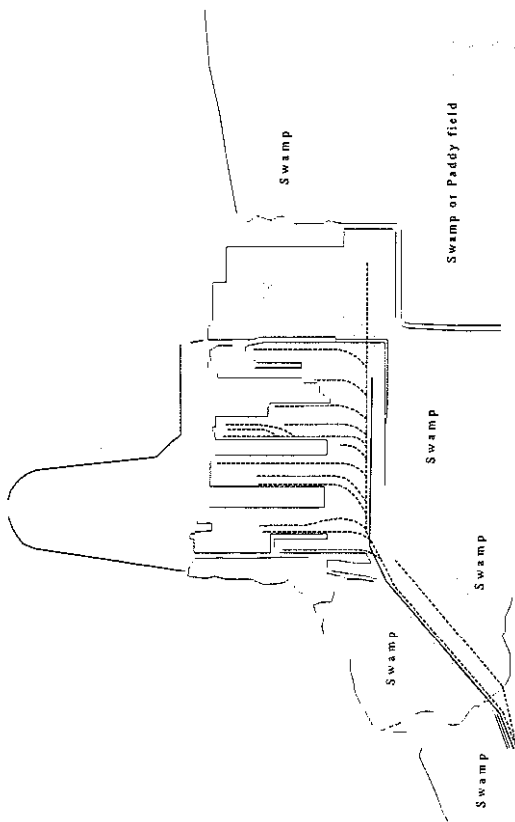
Figure 1-2-1 “Terusan Lagoa”



Figure 1-2-2 “Kali Sunter Baru”

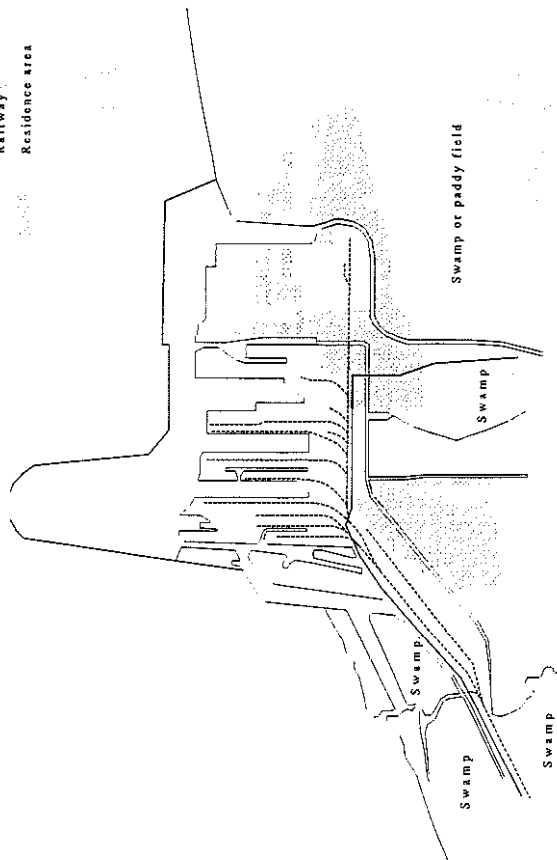
The first port facilities at Tanjung Priok Port were constructed at the end of the 19th Century and the said Port was constructed in the suburbs of Batavia City, surrounded only by paddy fields and swampy areas as seen from the topographic map produced in the 1930's.

In the 1950's, villages began appearing in the surrounding area of Tanjung Priok Port, which has been rapidly urbanized in the 1980's. The situation with many villages and factories built around the Tanjung Priok Port is seen in Figure 1-2-3 “History of Tanjung Priok Port” that was prepared based on the topographic map produced in the same years.

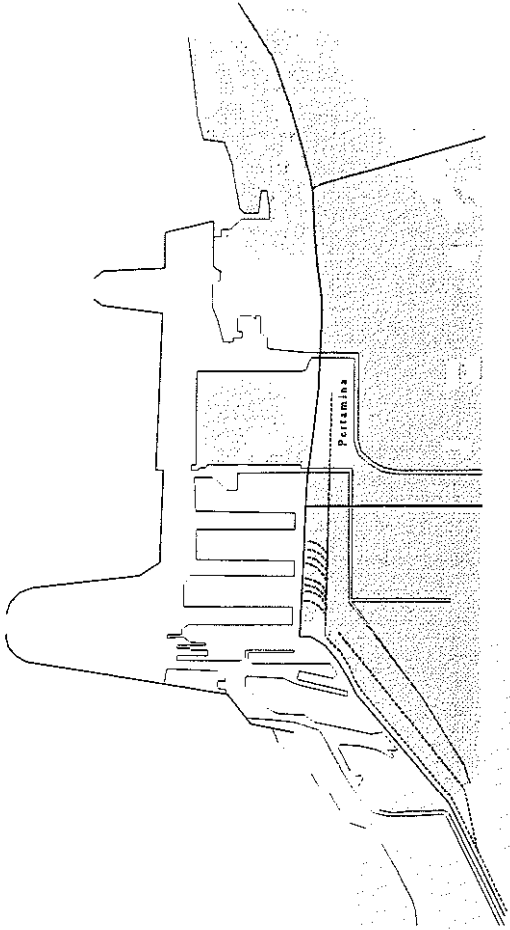


Tanjung Priok Port around 1938
 (Source: 1:50,000 Topographic Map by U.S. Army)

Index
 Road
 Railway
 Residence area

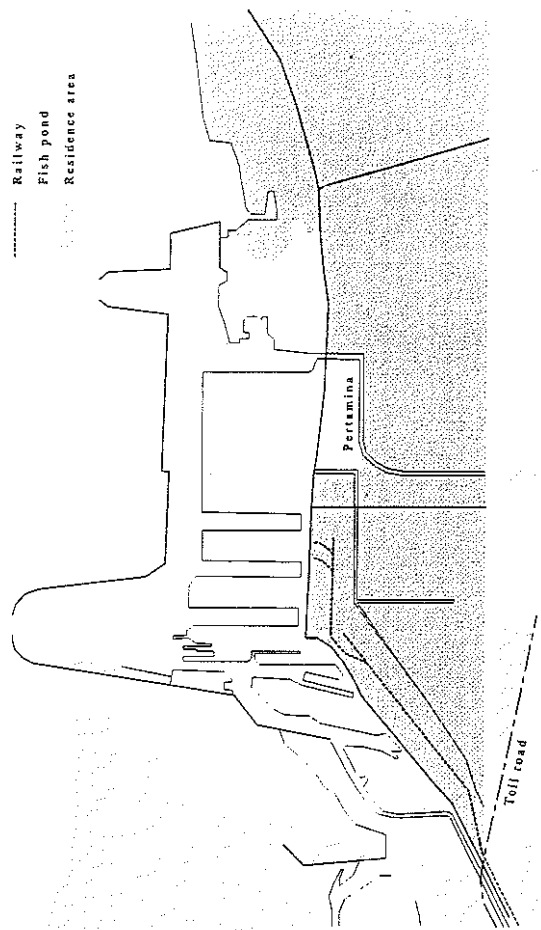


Tanjung Priok Port around 1953
 (Source: 1:50,000 Scale Topographic Map by U.S. Army)



Tanjung Priok Port around 1981
 (Source: 1:25,000 Scale Topographic Map by BAKOSURTANAL)

Index
 Road
 Railway
 Fish pond
 Residence area



Tanjung Priok Port around 2000
 (Source: 1:10,000 Scale Aerial Photos taken in December 2000)

Figure 1-2-3 "History of Tanjung Priok Port

1.3 Seabed Depth Condition

Tanjung Priok Port locates almost at the center of coastal line of Jakarta Bay. The coastal line runs nearly in the east-west direction and varies in the northeast to southwest direction at the west end of Tanjung Priok Port.

The seabed of Tanjung Priok Port forms a gentle slope that extends gradually deeper to offshore and the depth contour lines run nearly in parallel with the coastline.

According to the sounding survey at the east channel, the seabed is inclined at about 1/400 to 1/500 and the water depth increases in parallel with the coastline.

At the west end of Tanjung Priok Port, the depth contour lines vary from the east to west direction to the northeast to southwest direction as the coastline varies from the east to west direction to the northeast to southwest direction.

1.4 Climate

The region covering the study area has a tropical monsoon climate. Temperature (23°C ~ 33°C) and humidity (23°C ~ 33°C) are high with small seasonal variation.

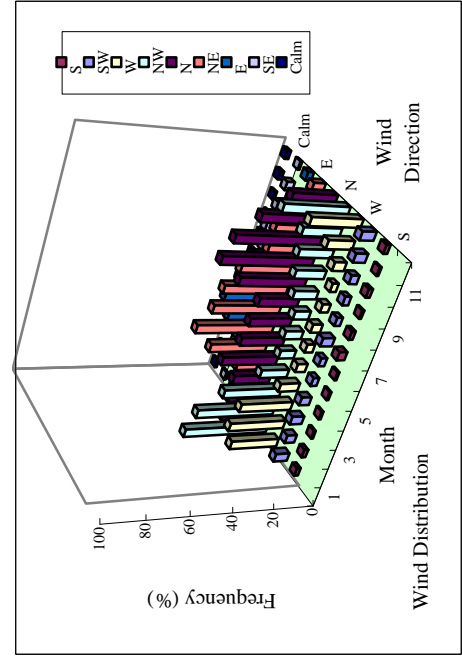
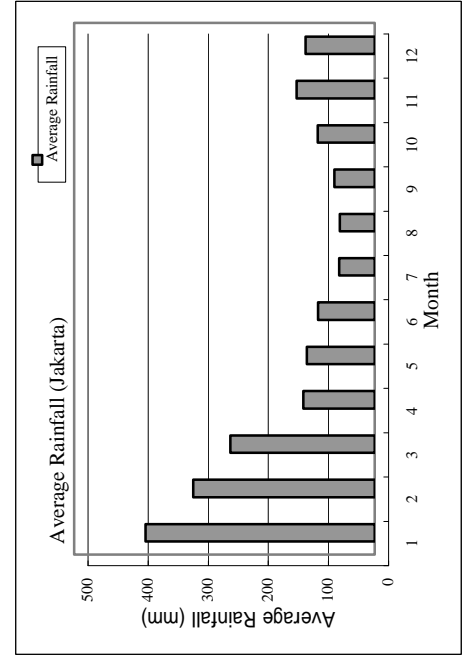
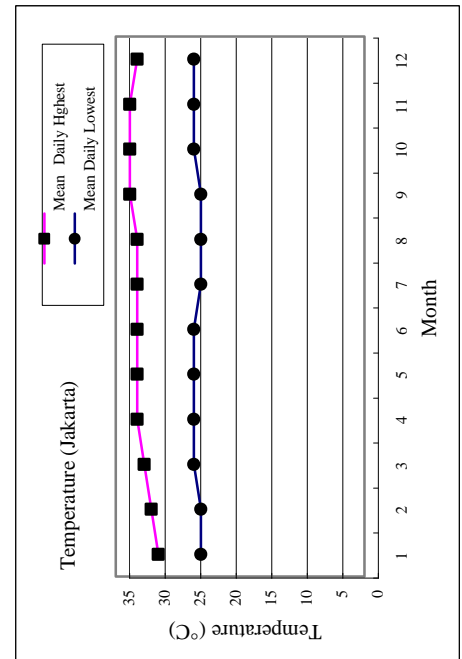
Rainfall is high with a yearly total of about 1,800 mm. In the rainy season, from November to March, it has about four to five times as much rain as the dry season, from June to September.

Winds are frequently light to moderate through the year although strong winds are blowing more likely during the rainy season between November to March. Gale force winds are rare.

Figure 1-4-1 “Climate of West Jawa Region (Jakarta) compiled from Observation (1936 – 1994)” shows the outline of climate at Jakarta from the existing meteorology data open to public use.

Table 1-4-1 "Climate of West Jawa Region (Jakarta) Compiled From Observation 1936 - 1994
(Source: Indonesia Pilot, Volume I, Second Edition 1996, The UK Hydrographic Office)

Month	Temperature		Humidity		Precipitation		Wind Distribution (%)														Mean Wind Speed (knot)		Number of Days with								
	Mean Daily Highest	Mean Daily Lowest	7:00	13:00	Average Fall (mm)	Days with over 0.3 mm	7:00							13:00							7:00	13:00	Gale	Fog	Thunder						
							N	NE	E	SE	S	SW	W	NW	Calm	N	NE	E	SE	S	SW	W	NW	Calm							
January	29	23	92	73	381	20	6	4	4	5	8	11	14	6	42	18	3	2	1	2	7	24	42	1	2	6	0	5	10		
February	30	23	93	72	302	18	5	2	3	7	10	10	5	47	18	4	2	1	2	5	28	39	1	2	6	0	2	12	12		
March	31	24	93	69	240	16	4	2	4	6	10	9	3	56	19	12	3	2	1	6	26	29	2	2	6	0	4	12	12		
April	32	24	92	66	119	11	2	2	6	9	8	5	4	1	63	28	29	10	2	1	5	10	14	1	1	5	Rare	5	10	10	
May	32	24	91	66	113	10	2	4	10	12	7	2	1	1	61	22	39	18	3	1	3	5	8	1	1	5	Rare	3	10	10	
June	32	24	89	63	94	7	3	6	8	10	7	2	1	1	62	21	34	23	3	1	3	4	9	2	1	6	0	Rare	5	10	10
July	32	23	88	58	59	5	4	5	7	13	10	3	2	1	55	20	32	19	4	4	6	5	8	2	1	6	0	2	3	10	10
August	32	23	88	57	58	5	3	5	9	15	12	3	2	1	50	33	27	13	5	2	3	4	12	1	1	6	0	1	6	10	10
September	33	23	87	57	67	5	3	4	1	12	18	2	2	2	47	45	17	8	7	1	3	3	15	1	1	6	0	1	7	10	10
October	33	24	86	60	95	8	4	3	6	13	14	5	3	2	50	42	17	6	5	2	4	6	17	1	1	6	0	1	7	10	10
November	33	24	91	64	130	12	4	3	6	9	13	8	5	1	51	33	15	7	4	1	6	13	19	2	2	6	0	3	13	10	10
December	32	24	91	68	115	15	5	3	5	7	10	12	14	3	41	22	6	3	1	2	7	25	32	2	2	6	Rare	2	9	10	10
Total					1773	132																						29	104	104	104
Mean	31.8	23.6	90.1	64.4	147.8	11.0	4	4	6	10	10	6	6	2	52	27	20	10	3	2	5	13	20	1	1.4	5.8		2.6	8.7	104	104



1.5 Tide

Tide forms and the principal harmonic components of the tide at Tanjung Priok Port which is opened to the public by Ddinas Hidro-Oceanografi are as follows. Tide is of diurnal type at Tanjung Priok Port.

Table 1-5-1 “Tide and Principal Harmonic Components, Tanjung Priok Port”

Components	M ₂	S ₂	N ₂	K ₂	K ₁	O ₁	P ₁	M ₄	MS ₄	Z ₀
Amplitude (cm)	5	5			25	13	8			60

Source: Tide Tables 2002, Dinas Hidro-Oceanografi

Ratio of principal harmonic constants

$$(K_1 + O_1) / (M_2 + S_2) = 3.80 \quad \text{Diurnal type}$$

Table 1-5-2 “Four Principal Harmonic Components

Component	Name	Period (Hours)
M ₂	Principal Semidiurnal Lunar	12.42
S ₂	Principal Semidiurnal Solar	12
K ₁	Principal Diurnal Luni-Solar	23.93
O ₁	Principal Diurnal Lunar	25.82

Table 1-5-3 “Ratio of Principal Harmonic Constants: (K₁+O₁)/(M₂+S₂)

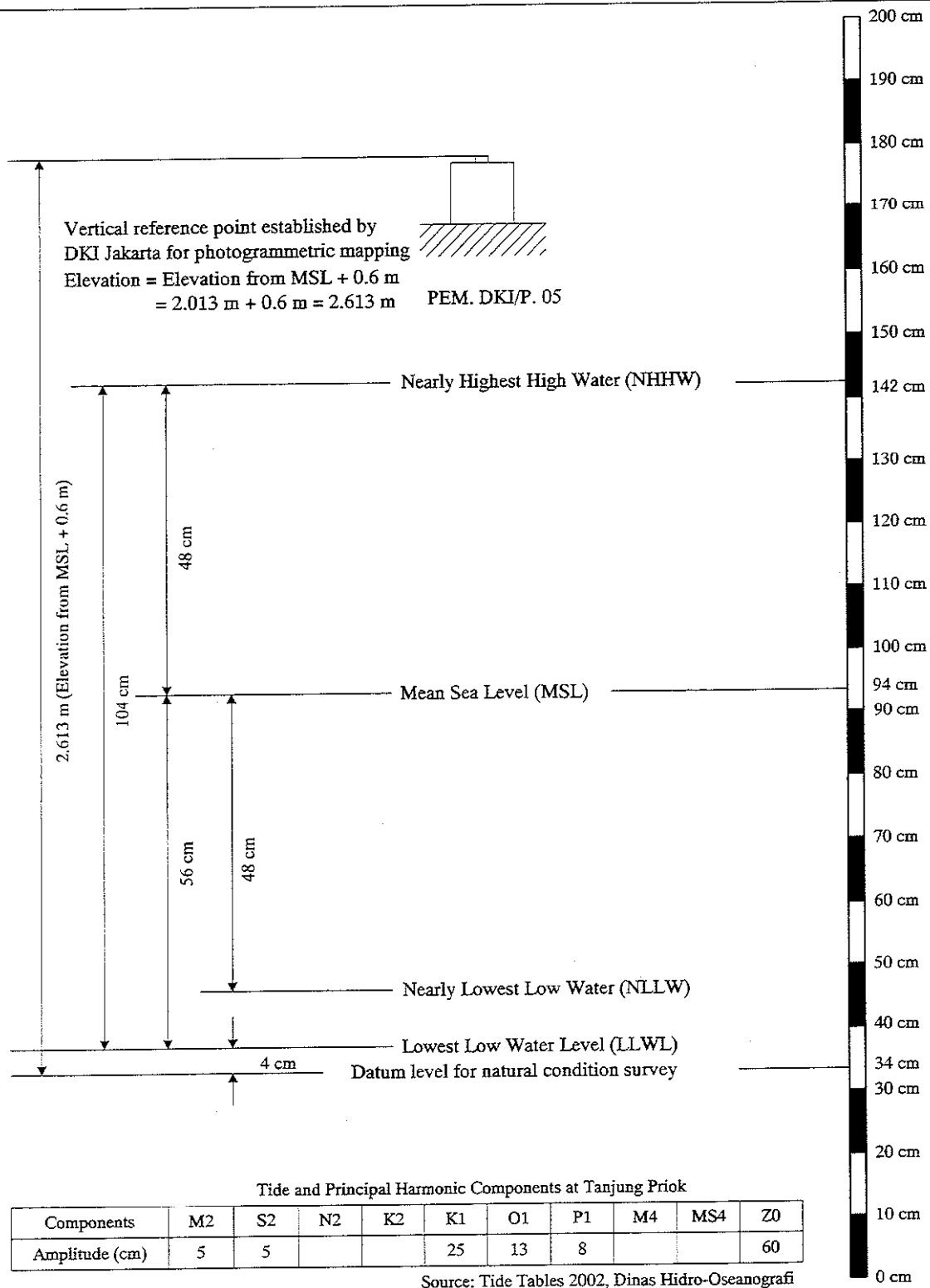
Ratios	Type	Description
0 to 0.25	Semidiurnal	Two highs and two lows of almost equal elevation each day.
0.25 to 1.5	Mixed, dominant semidiurnal	Two highs and two lows each day, but of unequal elevation and time of high water.
1.5 to 3.0	Mixed, dominant diurnal	Usually one high and one low each day. Time of high water varies.
3.0 and higher	Diurnal	One high and one low each day.

Source: The Ecology of the Indonesia Seas, Part One; Periplus Editions 1997

Also, tidal range is described as follows (source: Didnas Hidro-Oceanografi).

HHWL (highest High Water Level):	+105.15 cm
MHWS (Mean High Water Spring):	+90.64 cm
MSL (Mean Sea Level):	+47.55 cm
MLWS (Mean Low Water Spring):	+8.59 cm
DL (Datum Level = LLWL: Lowest Low Water Level)	0.0 cm

The relation between tidal range, bench mark which was used for 1:10,000 scale digital topographic mapping and tide pole owned by IPC-2 is shown in Figure 1-5-1 “Relation between Vertical Reference Points for Natural Condition Survey and Tide, Tanjung Priok Port”.



Tide pole owned by IPC-2

$$\text{Lowest Low Water Level} \cong (M2 + S2 + N2 + K2 + K1 + O1 + P1 + M4 + MS4) \text{ below MSL}$$

$$\cong 5 + 5 + 25 + 13 + 8 \cong 56 \text{ cm below MSL}$$

$$\text{Nearly Lowest Low Water} = (M2 + S2 + K1 + O1) \text{ below MSL}$$

$$= 5 + 5 + 25 + 13 = 48 \text{ cm below MSL}$$

$$\text{Nearly Highest High Water} = (M2 + S2 + K1 + O1) \text{ above MSL}$$

$$= 5 + 5 + 25 + 13 = 48 \text{ cm above MSL}$$

Figure 1-5-1 "Relation between Vertical Reference Points for Natural Condition Survey and Tide, Tanjung Priok Port"

1.6 Wave

No observed wave data along the north coast of West Java are available to the public. Wave condition is analyzed based on wave hindcast in Jawa Sea by 5-year wind data at the Chengkareng meteorological station (Soekarno-Hatta Airport, 1997 – 2001).

Wave frequency at offshore Tanjung Priok Port by the wave hindcast is shown in Table 1-6-1 “Wave Characteristics off-Tanjung Priok Port by Wave Hindcast (1997 – 2001).

Wave condition is generally calm in the western portion of Jawa Sea and the cumulative frequency of wave height of less than 0.5 m is about 87 %.

Westerly incident waves are most frequent in the table with about 11 % frequency due to the wind of northwest monsoon and transitional seasons. N ~ NNE ~ NE incident waves area also frequent, accounting for about 10 % of the frequency.

Table 1-6-1 "Wave Characteristics off-Tanjung Priok by Wave Hindcast (1997 - 2001)

Combined Frequency of Wave Height and Period (Unit: meter and second)

Period Height	0	2	3	4	5	6	7	8	8	Total	Cumulative
Calm										68.55	68.55
0 H < 0.25	5.36									5.36	73.92
0.25 H < 0.5	5.06	7.63								12.70	86.61
0.5 H < 0.75		5.19	1.70							6.89	93.50
0.74 H < 1.0		0.13	3.25	0.05						3.43	96.93
1.0 H < 1.25			1.02	0.63						1.64	98.58
1.25 H < 1.5			0.08	0.65	0.03					0.76	99.34
1.5 H < 1.75				0.28	0.07					0.36	99.69
1.75 H < 2.0				0.10	0.08					0.18	99.87
2.0 H < 2.5				0.05	0.07					0.12	99.99
2.5 H < 3.0				0.01						0.01	100.00
3.0 H < 3.5											
3.5 H < 4.0											
4.0 H											
Total	10.43	12.95	6.05	1.77	0.25	0.00	0.00	0.00	0.00	100.00	

Combined Frequency of Wave Height and Direction (Unit: meter)

Period Height	W	WNW	NW	NNW	N	NNE	NE	ENE	E	Total	Cumulative
Calm										68.55	68.55
0 H < 0.25	2.15	0.33	0.31	0.39	0.54	0.54	0.46	0.28	0.37	5.36	73.92
0.25 H < 0.5	3.79	0.88	0.92	1.15	1.30	1.49	1.67	0.85	0.64	12.7	86.61
0.5 H < 0.75	2.07	0.47	0.45	0.51	0.43	0.71	1.11	0.81	0.33	6.89	93.50
0.74 H < 1.0	1.32	0.40	0.16	0.13	0.09	0.24	0.51	0.44	0.15	3.43	96.93
1.0 H < 1.25	0.67	0.20	0.09	0.04	0.02	0.10	0.24	0.20	0.08	1.64	98.58
1.25 H < 1.5	0.29	0.16	0.02	0.01	0.01	0.03	0.08	0.12	0.03	0.76	99.34
1.5 H < 1.75	0.13	0.08	0.01	0.02	0.00	0.01	0.04	0.05	0.01	0.36	99.69
1.75 H < 2.0	0.06	0.02	0.01	0.01		0.01	0.03	0.04	0.00	0.18	99.87
2.0 H < 2.5	0.04	0.05	0.01					0.02	0.00	0.11	99.99
2.5 H < 3.0		0.01								0.01	100.00
3.0 H < 3.5											
3.5 H < 4.0											
4.0 H											
Total	10.52	2.59	1.97	2.26	2.40	3.14	4.14	2.81	1.62	100.00	

Combined Frequency of Wave Period and Direction (Unit: second)

Period Height	W	WNW	NW	NNW	N	NNE	NE	ENE	E	Total	Cumulative
Calm										68.55	68.55
0 H < 2.0	3.72	0.68	0.68	0.83	1.07	1.09	1.08	0.60	0.67	10.43	78.98
2.0 H < 3.0	3.83	0.82	0.90	1.10	1.12	1.47	1.96	1.17	0.59	12.95	91.93
3.0 H < 4.0	2.26	0.64	0.33	0.28	0.18	0.49	0.88	0.75	0.28	6.05	97.98
4.0 H < 5.0	0.68	0.38	0.07	0.03	0.02	0.08	0.21	0.22	0.08	1.77	99.97
5.0 H < 6.0	0.04	0.07	0.01	0.01	0.00	0.01	0.03	0.06	0.01	0.25	100.00
6.0 H < 7.0											
7.0 H < 8.0											
8.0 H < 9.0											
9.0 H											
Total	10.52	2.59	1.97	2.26	2.40	3.14	4.14	2.81	1.62	100.00	

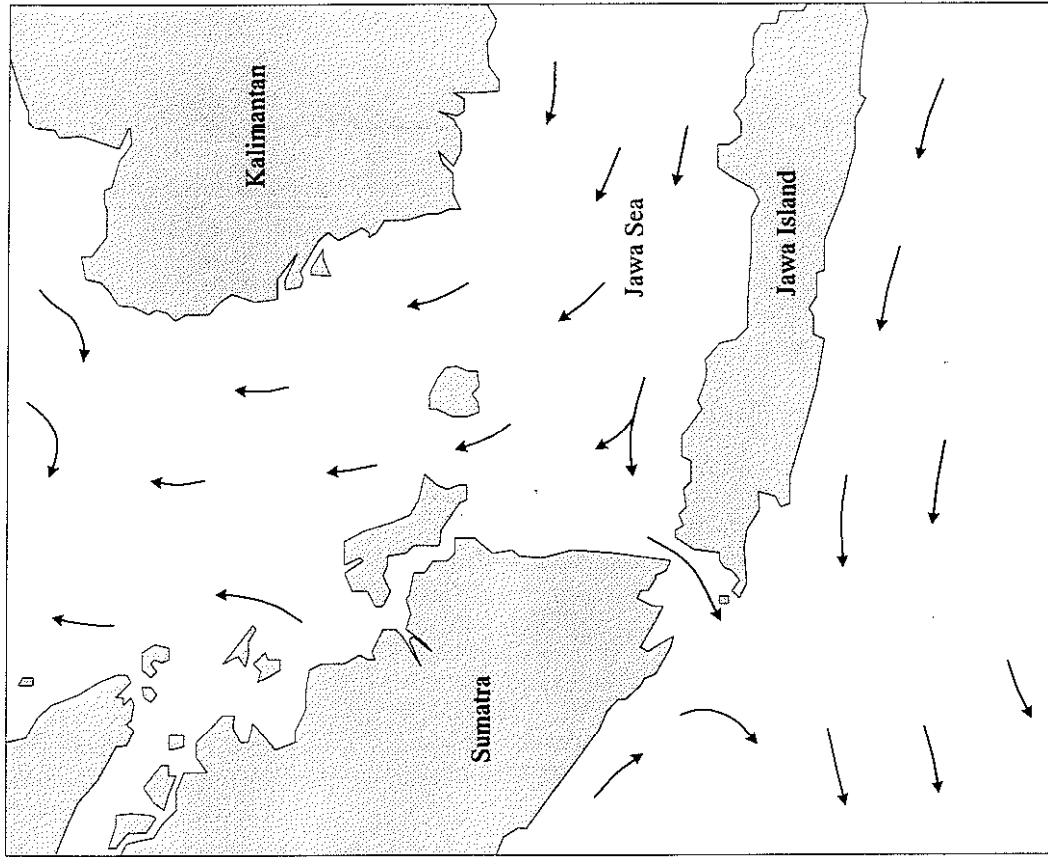
1.7 Surface Current and Tidal Stream

In the open sea, the direction of the predominant surface current generally sets in the same direction to which the monsoon wind is blowing.

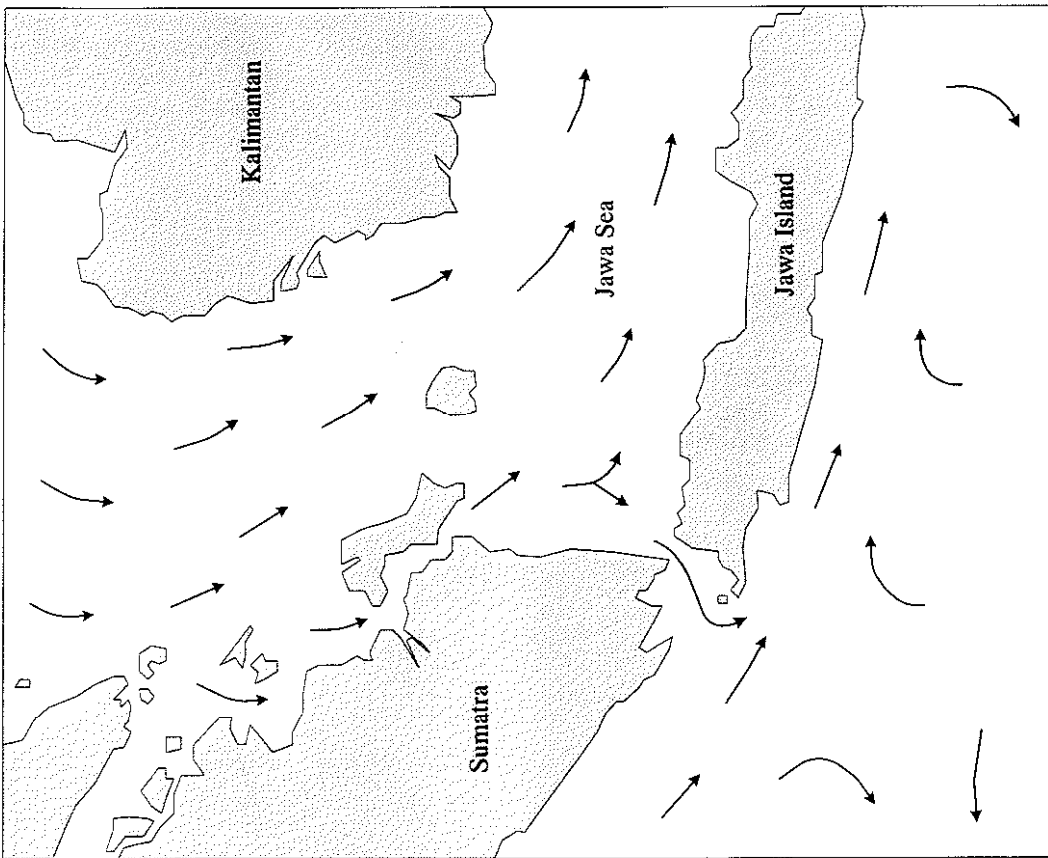
Figure 1-7-1 “Predominant Surface Current of Sea Around West Jawa” shows the predominant surface current of SE monsoon season (May to September) and NW monsoon season (November to March) at Westa Jawa Area.

From November to March the current set ESE in Jawa Sea with an average rate of 0.75 – 1.25 knots (0.4 – 0.6 m/sec). Between May and September the direction of the current is reversed with a WNW set in Jawa Sea with an average of about 0.75 knots. Maximum rates are usually less than 2 knots (1 m/sec).

Tidal streams are generally weak in the open sea, in general, negligible compared with the seasonal currents driven by the monsoon winds.



May to September (SE monsoon)



November to March (NW monsoon)

Figure 1-7-1 "Predominant Surface Current of Sea around West Jawa"

1.8 Maintenance Dredging

Maintenance dredging at channels and basins at Tanjung Priok Port has been executed regularly and maintained at -14 m depth at major channels and basins of Tanjung Priok Port.

The summary of maintenance dredging in the channels and basins of Tanjung Priok Port is shown in Table 1-8-1 “Summary of Maintenance Dredging Volume in Channel and Basin at Tanjung Priok Port”

The annual volumes of maintenance dredging are about 400,000 m³/year in the navigation channels and basins. Figure 1-8-1 “Annual Maintenance Dredging Volume at Major Channel and Basin, Tanjung Priok Port” gives the average dredging volume per year at major navigation channels and basins at Tanjung Priok Port.

From the eastern innermost of the port (DKP) to the western entrance (DKP s/d Pintu Masuk Barat; depth: -14 m, length: 5,530 m) shows the largest maintenance dredging volume and the average volume is about 140,000 m³/year.

The channel section adjacent to the Pertamina oil berth (Pelabuhan Minyak; depth: -12 m, length: 1,145 m) also shows a large maintenance dredging volume with an average of more than 110,000 m³/year.

As for the access channel outside the western entrance (Pintu Masuk Barat s/d Ambang Luar; depth: -14 m, length: 1,925 m), the average volume of maintenance dredging is about 60,000 m³/year.

Meanwhile, for the channel inside and outside the eastern entrance, no maintenance dredging has been executed in the last 10 years. This section of the channel is neither maintained nor used by any outgoing or entering major vessels except some small ships.

The maintenance dredging volume at basin shows a small volume. The maintenance dredging at some basin such as Kolam Pelabuhan I, Dermaga Syabandar, has not been executed in the last 11 years.



Figure 1-8-2 “Tanjung Priok Port”



Figure 1-8-3 “Dredging by Grab Dredger, Tanjung Priok Port”

Table 1-8-1 "Summary of Maintenance Dredging in Channel and Basin, Tanjung Priok Port"

Navigation Channel	Dimension of Channel (m)			Year / Volume of Maintenance Dredging (Unit: m ³)											
	Depth	Width	Length	Slope	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
DKP s/d Pintu Masuk Barat	-14.0	100	5,530	1:4.0	41,252	113,399	128,000	-	238,988	374,853	114,969	-	-	460,703	26,144
Pintu Masuk Barat s/d Ambang Luar	-14.0	100/150	1,925	1:4.0	-	-	-	118,601	-	-	109,620	-	-	-	412,811
Pelabuhan Minyak (Tahap I)	-12.0	50	1,145	1:4.0	125,257	31,989	95,544	91,719	102,241	83,461	143,349	114,418	95,157	101,708	100,000
Pelabuhan Minyak (Tahap II)	-12.0	50	1,145	1:4.0	-	-	-	-	-	-	-	33,000	-	83,646	-
Alur Pintu Timur / Ambang Luar	-6.0	50	1,200	1:4.0	-	-	-	-	-	-	-	-	-	-	-
Ex Arsa s/d Lantamal	-6.0/-8.0	40	1,600	1:2.0	-	-	-	-	-	-	-	-	-	-	-
Total					166,509	145,388	223,544	210,320	341,229	458,314	367,938	147,418	95,157	646,057	538,955
														Average	303,712

Harbor / Basin	Dimension of Channel (m)			Year / Volume of Maintenance Dredging (Unit: m ³)											
	Depth	Width	Length	Slope	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Kolam Pelabuhan I	-8.0	170	1,285	-	-	-	-	-	-	-	-	-	-	-	-
Kolam Pelabuhan II	-9.0	140	1,035	-	-	4,769	40,483	9,485	-	-	3,400	73,774	80,011	3,091	67,670
Kolam Pelabuhan III Barat	-10.0	180	1,050	-	-	-	-	-	-	-	7,599	-	-	-	-
Kolam Pelabuhan Nusantara I	-6.0	150	1,600	-	11,294	113,976	-	-	92,580	-	93,580	-	96,725	-	37,866
Kolam Pelabuhan Nusantara II	-6.0	40/100	1,300	-	-	34,504	-	-	-	-	-	-	-	-	-
Kolam Pelabuhan Kali Japat	-5.0	80	1,520	1:2.0	45,718	-	-	-	-	-	28,773	-	-	-	-
Kolam Lantamal s/d Der. S. Guna	-8.0	40/60	1,200	1:2.0	-	-	-	-	-	-	-	-	-	-	-
Dermaga Ex VTP	-10.0	100	400	-	-	-	-	-	-	-	-	-	-	-	-
Selatan Dam Citra	-2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dermaga Syahandar	-9.0	25	165	-	-	-	-	-	-	-	-	-	-	-	-
Dermaga Ex Gudang Arang	-12.0	170	300	-	-	-	-	-	4,430	-	-	42,004	27,018	20,381	57,296
Dermaga TPK Kojja	-14.0	175	430	-	-	-	-	-	-	-	-	-	-	99,785	62,096
Dermaga JCT (Pelabuhan III Timur)	-12.0	90	1,050	-	-	-	-	-	-	-	-	-	-	-	19,419
Dermaga TPK I Utara	-14.0	125	550	-	-	-	-	-	-	-	-	-	-	-	-
Dermaga Utara 101	-10.0	85	200	-	-	-	-	-	-	-	-	-	-	-	-
Total					57,012	153,249	40,483	9,485	97,010		104,579	144,551	203,754	123,257	244,347
														Average	107,078

Source: Cabang Tanjung Priok, PT. Pelabuhan Indonesia II

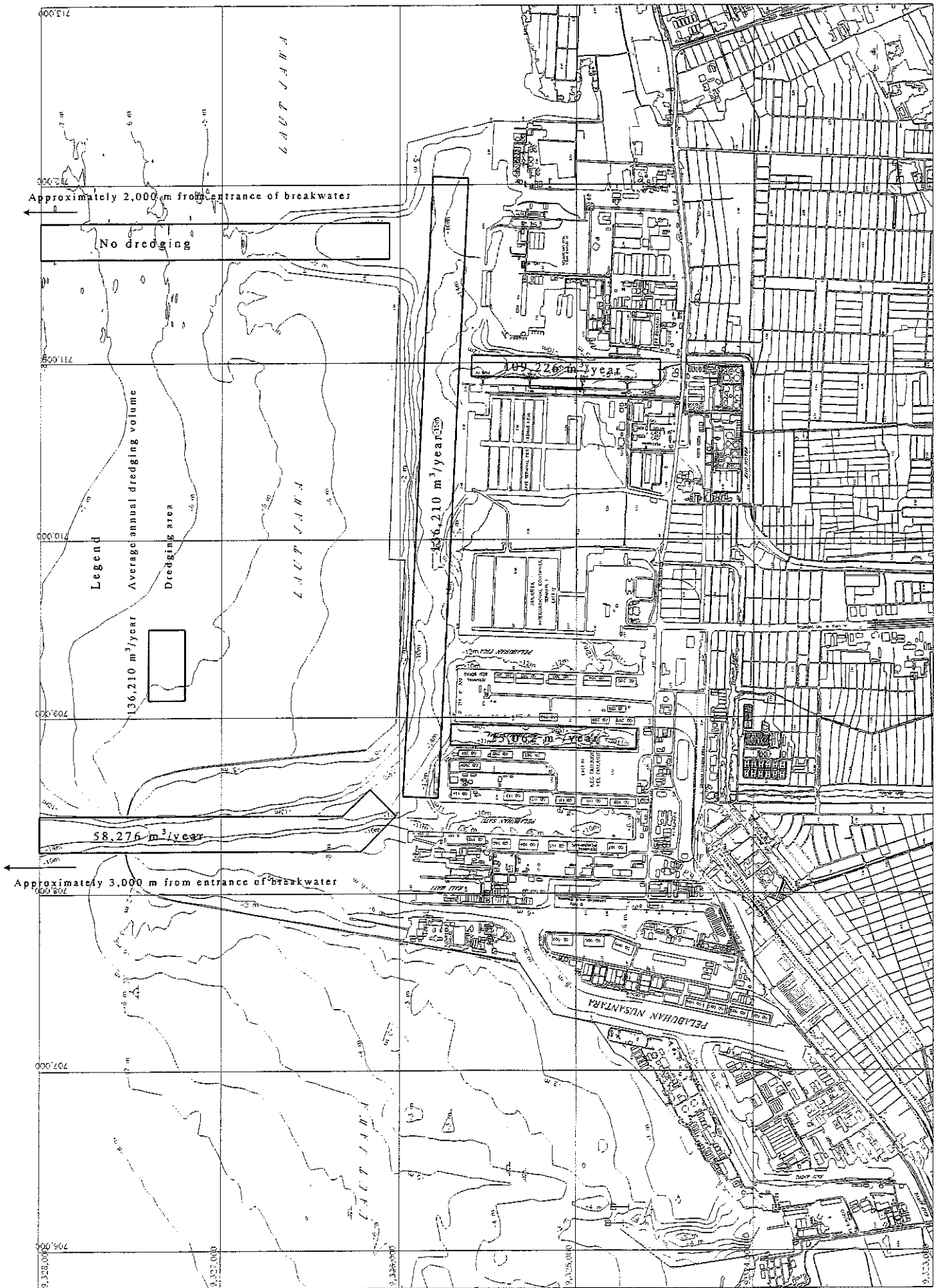


Figure 1-8-1 "Annual Maintenance Dredging Volume at Major Channel and Basin, Tanjung Priok Port"

1.9 Estimation of Seabed Variation

The sounding survey using echo sounder for navigation channels and basins has been executed several times per year by IPC-2. These existing sounding data are very useful to study the seabed variation at the access and inner channels and basins of Tanjung Priok Port.

The date of sounding survey at each location is mentioned in Table 1-1-2 “List of Existing Sounding Map, Tanjung Priok Port” and the location of sounding area is shown in Figure 1-1-2 “Existing Sounding Map, Tanjung Priok Port”

Using these existing sounding data, the cross sections and longitudinal profiles are prepared and the water depth at the same location of longitudinal profiles was compared to estimate the seabed variation.

The estimated yearly seabed variations at the access and inner channels and basins of Tanjung Priok Port are shown in Figure 1-9-1 “Estimation of Yearly Seabed Variation at Tanjung Priok Port”. The details of the estimation are also shown in Table 1-9-1 “Estimation of Yearly Seabed Variation at Tanjung Priok Port”.

The following features could be thus verified.

- 1) In the wet access channel to the Tanjung Priok Port (Ambang Luar), the seabed had risen for about +0.5 m per year at the channel center. The value of seabed rise becomes small with respect to the distance from the entrance of breakwater.
- 2) In east access channel to the Tanjung Priok Port (Lampu Merah Hijau), the seabed risen for about +0.6 m per year at the channel center. The value of seabed rise becomes small with respect to the distance from the entrance of breakwater.
- 3) The outlet of Kali Sunterbaru at Pelabuhan Minyak shows the highest value of seabed rise. The seabed rise at the outlet of Kali Sunterbaru (drainage channel) is estimated at about +7.0 m per year and about +2.0 m per year at the middle of Pertamina berth.
- 4) The area in front of the outlet of Terusan Lagoa (drainage channel) (Depan DKP) also shows a high value of seabed rise of +1.05 m per year. However, the seabed rise in the area within 100 m from the outlet of Terusan Lagoa shows a higher value of +3 ~ +4 m per year.
- 5) The outlet of Kali Japat shows a relatively small seabed variation of +0.4 m if compared with the outlets of Kali Sunterbaru and Terusan Lagoa.
- 6) The seabed rise at the Kolam Pelabuhan I, II and III is very small and estimated at less than +10 cm per year.
- 7) In general, the seabed rise at the area within breakwater is higher than in the outside area of the breakwater.

The tidal stream within the breakwater is considered very weak, due to the existing breakwater of Tanjung Priok Port. Therefore, the main reason of the seabed rise within breakwater is due to materials that are flown from the drainage channels such as Kali Sunterbaru, Terusan Lagoa and Kali Japat, into the inside of breakwater of Tanjung Priok Port.

Figure 1-9-2 shows the longitudinal profile at the channel center of Pelabuhan Minyak and Figure 1-9-3 shows the seabed variation at the channel center of Pelabuhan Minyak.

This figure shows that the seabed variation curves between December 2000 and March 2001, and between August 2001 and March 2002 are almost identical. Also, the annual maintenance dredging volume at Pelabuhan Minyak (Tahap I) remains constant at about 100,000 ~ 110,000 m³/year.

Thus, the total volume of sedimentation within the breakwater may not increase to that extent, even if the seabed depth becomes deeper from -14 m to -15 m.

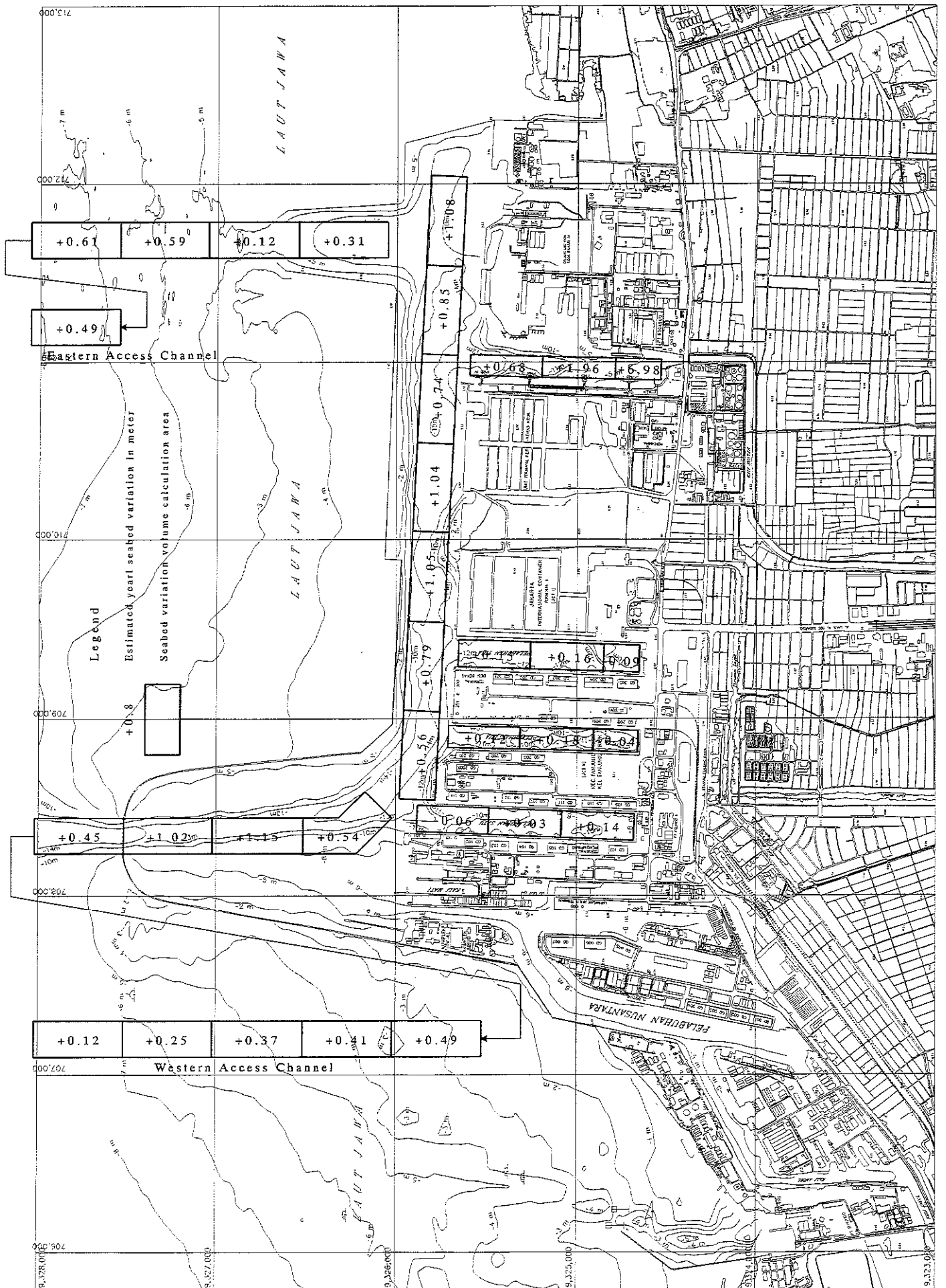


Figure 1-9-1 "Estimation of Yearly Seabed Variation, Tanjung Priok Port"

Table 1-9-1 "Estimation of Yearly Seabed Variation, Tanjung Priok Port"

Ambang Luar

Direction	North direction				South direction
Distance interval	500 m	500 m	500 m	500 m	500 m
Estimated seabed variation	+0.12 m	+0.25 m	+0.37 m	+0.49 m	+0.45 m
Note	Outside of breakwater				Entrance of breakwater

Lampu Merah Hijau

Direction	North direction		South direction
Distance interval	500 m	500 m	500 m
Estimated seabed variation	+1.02 m	+1.15 m	+0.54 m
Note	Entrance of breakwater		In front of Pelabuhan I

Ambang Luar Pintu Timur

Direction	North direction				South direction
Distance interval	500 m	500 m	500 m	500 m	500 m
Estimated seabed variation	+0.49 m	+0.61 m	+0.59 m	+0.12 m	+0.31 m
Note	Outside of breakwater			Entrance of breakwater	Inside of breakwater

Depan DKP

Direction	West direction					East direction	
Distance interval	500 m	500 m	500 m	500 m	500 m	500 m	500 m
Estimated seabed variation	+0.56 m	+0.79 m	+1.05 m	+1.04 m	+0.74 m	+0.85 m	+1.08 m
Note	In front of Pelabuhan II		Outlet of Terusan Lagoa		In front of Pelabuhan Minyak		

Pelabuhan Minyak

Direction	North direction		East direction
Distance interval	400 m	400 m	240 m
Estimated seabed variation	+0.68 m	+1.98 m	+6.68 m
Note			Outlet of Kali Sunterbaru

Kolam Pelabuhan I

Direction	North direction		East direction
Distance interval	400 m	400 m	400 m
Estimated seabed variation	-0.06 m	+0.03 m	+0.14 m
Note			East end of Pelabuhan I

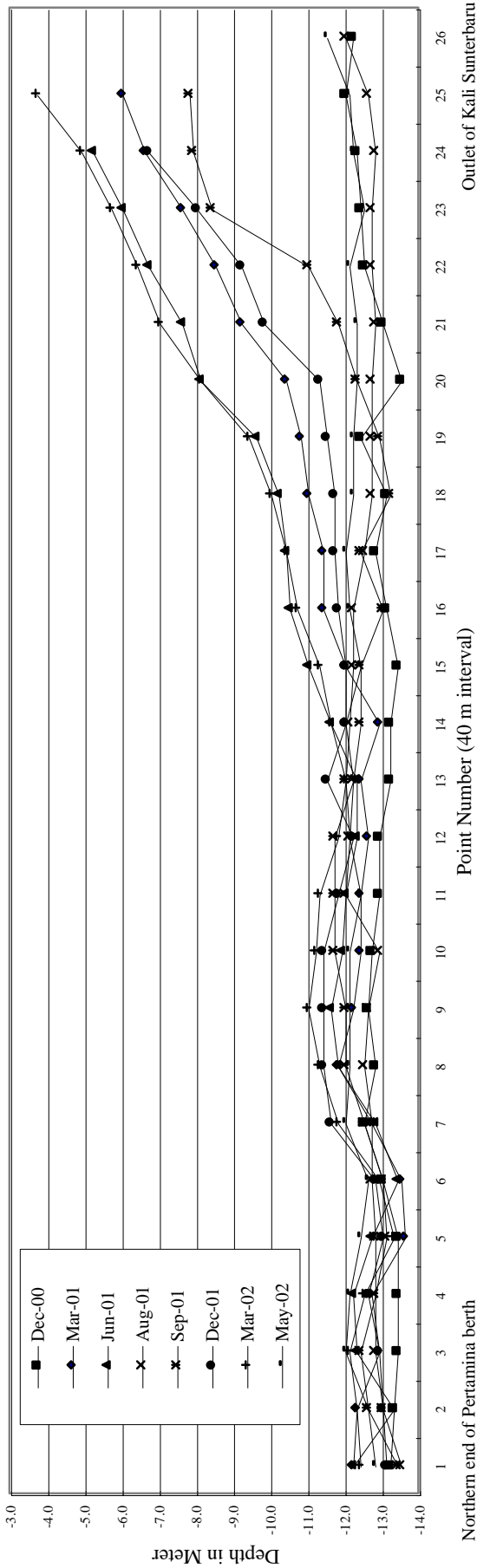
Kolam Pelabuhan II

Direction	North direction		East direction
Distance interval	400 m	400 m	240 m
Estimated seabed variation	+0.12 m	+0.18 m	- 0.04 m
Note			East end of Pelabuhan II

Kolam Pelabuhan III

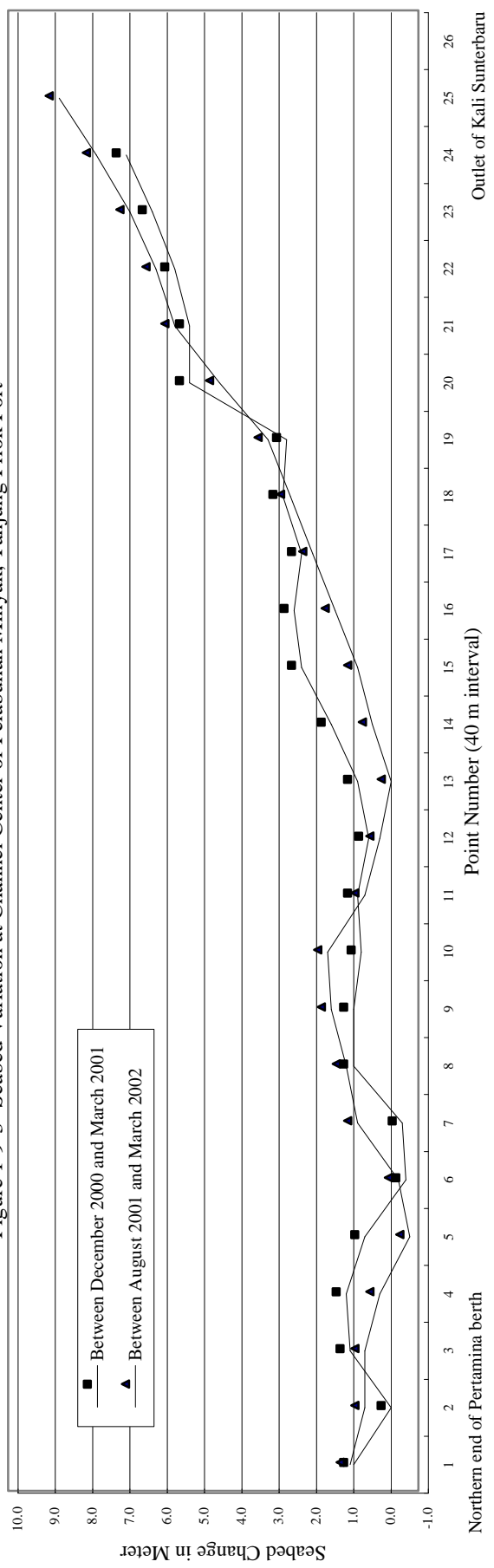
Direction	North direction		East direction
Distance interval	400 m	400 m	200 m
Estimated seabed variation	+0.15 m	+0.16 m	- 0.09 m
Note			East end of Pelabuhan II

Figure 1-9-2 "Longitudinal Profile at Channel Center of Pelabuhan Minyak, Tanjung Priok Port"



Source: Sounding survey data from IPC-2

Figure 1-9-3 "Seabed Variation at Channel Center of Pelabuhan Minyak, Tanjung Priok Port"



Source: Sounding survey data from IPC-2