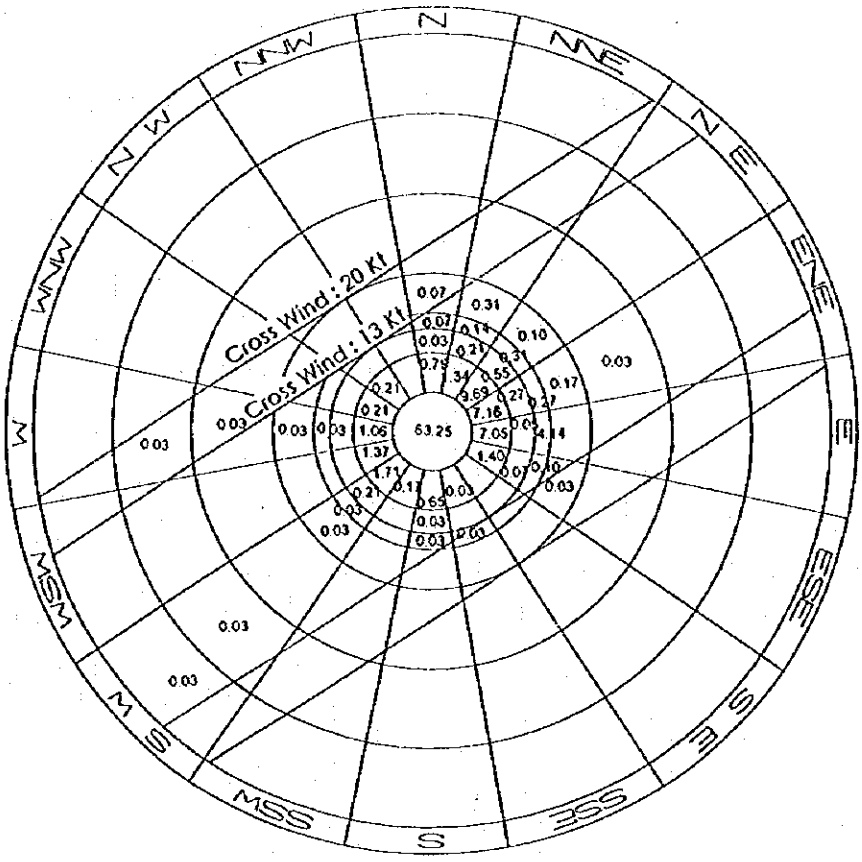


Figure A8.3.1 Wind Rose

Table A8.3.1 All Weather Wind Coverage

Direction	Cross Wind (Kt)	Tale Wind (Kt)	Wind Coverage (%)
RWY 06	13	5	95.03
	20	5	95.17
RWY 24	13	5	72.39
	20	5	72.48
RWY 06/24	13	0	99.79
	20	0	99.99

Table A8.3.2 Cloud Height and Visibility Matrix

Cloud Height (ft) \ Visibility (m)	-800	-1600	-2400	-3200	-4000	-4800	-5600	5600-	Total
0- 100	15	0	0	0	0	0	0	0	15
- 200	0	0	0	0	0	0	0	0	0
- 300	0	0	0	0	0	0	0	0	0
- 400	0	0	0	0	0	0	0	3	3
- 500	0	0	0	0	0	0	0	0	0
- 600	0	0	0	0	0	0	0	2	2
- 700	0	0	0	0	0	0	0	0	0
- 800	0	0	0	0	0	0	0	0	0
- 900	0	0	0	0	0	0	0	0	0
- 1000	0	0	0	0	0	0	0	0	0
- 1100	0	0	0	0	0	0	0	0	0
- 1200	0	0	0	0	0	0	0	0	0
- 1300	0	0	0	0	0	0	0	0	0
- 1400	0	0	0	0	0	0	1	2	3
- 1500	1	0	3	9	0	11	7	21	52
1500 -	0	0	3	9	0	12	20	1,635	1,679
< 5/8	0	0	0	0	0	0	2	1,157	1,159
Total	16	0	6	18	0	23	30	2,820	2,913

Table A8.3.3 Cloud Height/Visibility Coverage

	OCH (ft)	VIS (km)	Coverage
Existing Minima	1,000	5.0	97.6%
Improved Minima	720	2.0	99.2%

PAVEMENT INVESTIGATION REPORT: LEGASPI AIRPORT

1. Runway

The structure of the runway and taxiway pavement is 30cm aggregate base, 28cm cement concrete slab and a layer of asphalt overlay of 7.5cm. The runway pavement was constructed in the 1970s. The overlay work has been undertaken since 1993, and the remaining 260m meddle portion will be overlaid this year.

The condition of the overlaid asphalt concrete is relatively poor for its quality and flatness as follows.

a) A 500-600m section from the runway 24 has 4-5 reflection cracks of maximum 5mm wide in longitudinal direction. The infiltration of rain water is expected to enhance the growth of cracks.

b) Due to poor mix and poor workmanship of asphalt concrete, the surface of the pavement is rough. The gravel may be come off particularly near the touch down zones.

c) The asphalt concrete contains many small pieces of wood, rubber, steel, etc. The small holes are generated after those pieces are lost.

d) Asphalt concrete surface is in some places damaged from distorted shear stress by sharp turns of aircraft on the runway.

e) The transition portion between daily overlay work was not adequately constructed. As a result, the runway becomes bumpy for high speed vehicle.

As a temporary counter measure, reflection cracks on the runway 24 side should be eliminated with V-cut, and filled with adequate sealant.

2. Apron and Taxiway

The structure of the apron pavement is 30cm aggregate base and 28cm cement concrete slab on it. The standard size of the slabs is 6.0m by 3.0m and 4.0m by 3.0m. The apron was constructed during the 1970s.

The cement concrete slabs are significantly deteriorated. In particular, the size of gravel, which normally should be 40mm maximum, is about 100mm, and part of it is either exposed to the pavement surface or has been lost. Some of those slabs have small holes which were created by lost gravel. Since exposed gravel may be flown away by jet blast, they are hazardous for safe aircraft operations. Without adequate countermeasure, those situations are expected to continue.

Major transverse cracks are observed for some slabs (less than 3% of the total slabs). Asphalt sealant was used in the past; however, it does not work effectively due to lost flexibility.

In addition, scaling and corner cracking are observed for many slabs. Those damages would progressively worsen due to aging process of the slabs. Asphalt joint sealant has lost flexibility and may come off from joint groove. The leveling of the pavement surface is also bad, with a lot of standing water on slabs.

The taxiway pavement is generally in the same condition as the apron pavement.

As a temporary countermeasure, an asphalt overlay with a minimum thickness of 10cm (6cm binder course and 4cm surface course) is required in a few years. It should be done after sticking a 50cm wide reflection prevention sheet along the joint. Oil proof coating should be applied for aircraft parking positions. The northern part of the apron would require a thicker asphalt overlay to correct grading.

3. Vehicle Parking Area

The condition of the pavement is relatively poor. The surface asphalt mortar has been lost and the gravel is disposed from the surface due to a lack of compaction and poor finishing. This situation was observed widely for the vehicle parking area. Since it easily allows infiltration of rain water, the loss of asphalt mortar would be further enhanced. Many cracks were observed, some of which were alligator cracks. The flatness is also generally poor.

As a temporary countermeasure, an asphalt overlay with a minimum thickness of 4-5cm will be necessary in a few years. Alligator cracks will require a replacement of asphalt concrete pavement from base course.

Passenger Terminal Space Analysis for Legaspi Airport

		Current Data	Remarks
a: Number of peak hour originating passengers		140	
b: Number of peak hour landside transfer passengers		0	
c: Number of peak hour departing passengers		140	
d: Number of peak hour terminating passengers		140	
g: Time of first passenger at gate lounge (mins. before STD)		50	
m: Maximum number of seats on largest aircraft handled at gate in question		141	
o: Number of visitors - Originating passengers		2.1	
o: Number of visitors - Terminating passengers		2.1	
p: Proportion of passengers using car/taxi - Originating passengers		63%	
p: Proportion of passengers using car/taxi - Terminating passengers		63%	
q: Proportion of passengers arriving by wide-body aircraft during peak hour		0%	
r: Proportion of passengers arriving by narrow-body aircraft during peak hour		100%	
s: Maximum number of seats on largest aircraft handled at airport		141	
t1: Average processing time per passenger at check-in desk (mins.)		2.0	
		Required	
1. Departure Curb	L = (0.095 a p) 1.1 =	9	m
2. Departure Concourse	A = 0.75 [a (1 + o) + b] =	326	sq.m
3. Security Check (Check-in Baggage)	N = (a + b) / 300 =	0.5	
4. Check-in Queuing Area	A = [0.25 (a + b)] 1.1 =	39	sq.m
5. Check-in Counters	N = [(a + b) t1 / 60] 1.1 =	5.1	
6. Security Check (Gate Lounge)	N = 0.2 m / (g - 5) =	0.6	
7. Gate Lounge	A = 1.375 a x 0.5 x 1.3 =	125	sq.m
8. Baggage Claim Area	A = (0.9 d) 1.1 =	139	sq.m
9. Number of Baggage Claim Devices - Narrow Body	N = d r / 300 =	0.5	
10. Arrival Concourse Waiting Area	A = [0.375 (d + b + 2 d o)] 1.1 =	300	sq.m
11. Arrival Curb	L = (0.095 d p) 1.1 =	9	m

REQUIRED ASPHALT OVERLAY THICKNESS FOR LEGASPI AIRPORT

1) Existing Pavement (PCN39R/B/W/U)

Asphalt Overlay: 7.5cm
PCC Slab: 28cm
Base Course: 30cm

2) ACN of Typical Aircraft Operating at the Airport

B737-300 at Maximum Ramp Weight (56,470kg) : ACN = 35
A320 at Maximum Ramp Weight (68,400kg) : ACN = 42
A300-B4 at 140ton : ACN = (52 - 23) / (157,000 - 87,826) x (140,000 - 87,826) +23 = 45

3) Overlay Required for A320 Operations
(The study on pavement for Bacolod Airport indicates A320 is critical rather than A300, for more details refer to Appendix 5.5.1.)

Assumed CBR = 10%
Assumed K on Top of Subgrade = 80MN/m^3
Assumed Concrete Flexural Strength: 650 psi
Assumed Equivalent Annual Departure: 3,000
K on Top of Base Course: 370pci
Thickness of new rigid pavement: h_d = 13 inches = 33 cm
F-Factor: 0.88
Condition factor of the existing rigid pavement: C_b = 0.9
Thickness of asphalt overlay: $t = 2.5 \times (F \times h_d - C_b \times h_e) = 2.5 \times (0.88 \times 33 - 0.9 \times 28) = 10$ cm
Effective thickness of existing asphalt overlay: 7 cm
Required overlay thickness: 10 - 7 = 3 cm

Appendix 8.4.2 Economic Benefits by the Project for Legaspi Airport

Year	Air Passenger Traffic			Time Savings Benefit						Tourism Earnings Benefit									Benefit from Cargo					Total
	Passengers in WP Case	Passengers in WOP Case	Incremental Passengers in WP Case	Incremental Business Passengers in WP Case	Time Value of Business Passengers (PHP/hour)	Cost of Travel by Bus Transport (PHP)	Cost of Travel by Air Transport (PHP)	Time Savings Benefit per Business Passenger (PHP)	Time Savings Benefit by the Project (PHP '000)	Incremental Tourist Passengers in WP Case	Incremental Tourists in WP Case	Incremental Foreign Tourist in WP Case	Incremental Domestic Tourist in WP Case	Tourism Earnings Benefit per Foreign Tourist (PHP)	Tourism Earnings Benefit per Domestic Tourist (PHP)	Tourism Earnings Benefit from Foreign Tourist (PHP '000)	Tourism Earnings Benefit from Domestic Tourist (PHP '000)	Tourism Earnings Benefit by the Project (PHP '000)	Cargo in WP Case (ton)	Cargo in WOP Case (ton)	Incremental Cargo in WP Case (ton)	Cargo Benefit per ton of Cargo (PHP/ton)	Cargo Benefit by the Project (PHP '000)	Benefit by the Project (PHP '000)
	(1)	(2)	(3)=(1)-(2)	(4)=(3)x44.1%	(5)	(6)=(5)x12.6 hours +351	(7)=(5)x2.3 hours +1,106	(8)	(9)=(4)x(8)	(10)=(3)X15.5%	(11)=(10)/2	(12)=(11)x18.5%	(13)=(11)x81.5%	(14)	(15)	(16)=(12)x(14)	(17)=(13)x(15)	(18)=(16)+(17)	(19)	(20)	(21)=(19)-(20)	(22)	(23)=(21)x(22)	(24)=(9)+(18)+(23)
1995	155,523	155,523	0	0					0	0	0	0	0	2,700	800	0	0	0	919	919	0		0	0
1996	174,000	174,000	0	0	85	1,422	1,302	121	0	0	0	0	0	2,865	849	0	0	0	1,000	1,000	0		0	0
1997	174,000	174,000	0	0	90	1,487	1,313	174	0	0	0	0	0	3,039	901	0	0	0	1,000	1,000	0		0	0
1998	174,000	174,000	0	0	96	1,557	1,326	231	0	0	0	0	0	3,225	956	0	0	0	1,000	1,000	0		0	0
1999	174,000	174,000	0	0	102	1,630	1,340	291	0	0	0	0	0	3,422	1,014	0	0	0	1,000	1,000	0		0	0
2000	174,000	174,000	0	0	108	1,708	1,354	354	0	0	0	0	0	3,630	1,076	0	0	0	1,000	1,000	0		0	0
2001	174,000	174,000	0	0	114	1,788	1,368	420	0	0	0	0	0	3,844	1,139	0	0	0	1,000	1,000	0		0	0
2002	312,000	174,000	138,000	60,858	121	1,873	1,384	489	29,775	21,390	10,695	1,979	8,716	4,071	1,206	8,055	10,515	18,570	1,700	1,000	700	4,255	2,979	51,324
2003	332,000	174,000	158,000	69,678	128	1,963	1,400	563	39,205	24,490	12,245	2,265	9,980	4,312	1,277	9,767	12,749	22,516	1,800	1,000	800	4,255	3,404	65,125
2004	353,000	174,000	179,000	78,939	135	2,058	1,418	640	50,553	27,745	13,873	2,566	11,306	4,566	1,353	11,718	15,295	27,013	1,900	1,000	900	4,255	3,830	81,396
2005	375,000	174,000	201,000	88,641	143	2,159	1,436	723	64,064	31,155	15,578	2,882	12,696	4,835	1,433	13,934	18,189	32,123	1,900	1,000	900	4,255	3,830	100,017
2006	391,000	174,000	217,000	95,697	151	2,253	1,453	800	76,517	33,635	16,818	3,111	13,706	5,087	1,507	15,826	20,658	36,484	2,000	1,000	1,000	4,255	4,255	117,256
2007	407,000	174,000	233,000	102,753	159	2,352	1,471	880	90,466	36,115	18,058	3,341	14,717	5,351	1,586	17,876	23,334	41,211	2,100	1,000	1,100	4,255	4,681	136,357
2008	424,000	174,000	250,000	110,250	167	2,456	1,490	965	106,442	38,750	19,375	3,584	15,791	5,629	1,668	20,178	26,339	46,517	2,200	1,000	1,200	4,255	5,106	158,065
2009	442,000	174,000	268,000	118,188	176	2,565	1,510	1,055	124,679	41,540	20,770	3,842	16,928	5,922	1,755	22,756	29,703	52,459	2,300	1,000	1,300	4,255	5,532	182,670
2010	460,000	174,000	286,000	126,126	185	2,680	1,531	1,149	144,924	44,330	22,165	4,101	18,064	6,230	1,846	25,547	33,347	58,893	2,300	1,000	1,300	4,255	5,532	209,349
2011	474,000	174,000	300,000	132,300	193	2,760	1,549	1,231	162,850	46,500	23,250	4,301	18,949	6,498	1,925	27,950	36,483	64,433	2,400	1,000	1,400	4,255	5,957	233,240
2012	489,000	174,000	315,000	138,915	201	2,885	1,569	1,316	182,855	48,825	24,413	4,516	19,896	6,777	2,008	30,609	39,954	70,564	2,500	1,000	1,500	4,255	6,383	259,801
2013	504,000	174,000	330,000	145,530	210	2,994	1,588	1,405	204,524	51,150	25,575	4,731	20,844	7,069	2,094	33,446	43,657	77,102	2,600	1,000	1,600	4,255	6,808	288,435
2014	520,000	174,000	346,000	152,586	219	3,107	1,609	1,498	228,615	53,630	26,815	4,961	21,854	7,373	2,185	36,575	47,742	84,317	2,700	1,000	1,700	4,255	7,234	320,166
2015	537,000	174,000	363,000	160,083	228	3,226	1,631	1,595	255,358	56,265	28,133	5,205	22,928	7,690	2,278	40,022	52,241	92,263	2,700	1,000	1,700	4,255	7,234	354,855
2016	537,000	174,000	363,000	160,083	237	3,338	1,651	1,687	270,031	56,265	28,133	5,205	22,928	7,990	2,367	41,583	54,279	95,862	2,700	1,000	1,700	4,255	7,234	373,126
2017	537,000	174,000	363,000	160,083	246	3,455	1,673	1,782	285,276	56,265	28,133	5,205	22,928	8,301	2,460	43,205	56,395	99,600	2,700	1,000	1,700	4,255	7,234	392,109
2018	537,000	174,000	363,000	160,083	256	3,576	1,695	1,881	301,115	56,265	28,133	5,205	22,928	8,625	2,556	44,890	58,595	103,485	2,700	1,000	1,700	4,255	7,234	411,833
2019	537,000	174,000	363,000	160,083	266	3,701	1,718	1,984	317,572	56,265	28,133	5,205	22,928	8,962	2,655	46,640	60,880	107,521	2,700	1,000	1,700	4,255	7,234	432,326
2020	537,000	174,000	363,000	160,083	276	3,832	1,741	2,091	334,671	56,265	28,133	5,205	22,928	9,311	2,759	48,459	63,254	111,714	2,700	1,000	1,700	4,255	7,234	453,619
2021	537,000	174,000	363,000	160,083	286	3,954	1,764	2,190	350,615	56,265	28,133	5,205	22,928	9,637	2,855	50,156	65,468	115,624	2,700	1,000	1,700	4,255	7,234	473,472
2022	537,000	174,000	363,000	160,083	296	4,080	1,787	2,293	367,117	56,265	28,133	5,205	22,928	9,974	2,955	51,911	67,760	119,671	2,700	1,000	1,700	4,255	7,234	494,021
2023	537,000	174,000	363,000	160,083	306	4,210	1,811	2,400	384,196	56,265	28,133	5,205	22,928	10,323	3,059	53,728	70,131	123,859	2,700	1,000	1,700	4,255	7,234	515,289
2024	537,000	174,000	363,000	160,083	317	4,346	1,835	2,510	401,873	56,265	28,133	5,205	22,928	10,685	3,166	55,608	72,586	128,194	2,700	1,000	1,700	4,255	7,234	537,301
2025	537,000	174,000	363,000	160,083	328	4,485	1,861	2,625	420,169	56,265	28,133	5,205	22,928	11,059	3,277	57,555	75,126	132,681	2,700	1,000	1,700	4,255	7,234	560,083
2026	537,000	174,000	363,000	160,083	340	4,630	1,887	2,743	439,105	56,265	28,133	5,205	22,928	11,446	3,391	59,569	77,756	137,325	2,700	1,000	1,700	4,255	7,234	583,663

Notes: Column (5): Average time value of business passengers from/to Legaspi in 1996 is estimated to be PHP85 per hour.
Minimum income for choosing air transport over surface transport is estimated to be PHP83 for Legaspi-Manila. A rounded number of this value is used for the analysis.
PHP85 is significantly higher than the minimum income of air passengers on Bacolod-Manila, Iloilo-Manila or Tacloban-Manila. This is because bus transport available for Legaspi-Manila is very competitive to air transport.
This value is assumed to increase at the same rate as the projected GDP per capita annual growth rates, i.e., 6.1% (1996-2000), 5.9% (2000-2005), 5.2% (2005-2010), 4.3% (2010-2015), 3.9% (2015-2020) and 3.5% thereafter.

Columns (6) and (7): Travel time and passenger fare by sea and air are estimated as weighted average of Manila and Cebu routes using the number of passengers in 2005 as a weight, 85.2% for Manila and 14.8% for Cebu.
Travel time of Legaspi-Manila is 2.3 hours by air and 12.0 hours by bus. That of Legaspi-Cebu is 2.3 hours by air and 16.0 hours by boat. Those include waiting time of 1.5 hours for air and 1.0 hour for boat.
Travel fare of Legaspi-Manila is PHP1,134 by air and PHP295 by bus. That of Legaspi-Cebu is PHP947 by air and PHP670 by boat.

Columns (14) and (15): Tourism earnings per foreign tourist in 1995 are estimated as PHP 2,250 (daily expenditure) x 4 days (average length of stay) x 30% (rate of value added) based on the data from the Department of Tourism.
Tourism earnings per domestic tourist in 1995 are estimated as PHP 2,000 (daily expenditure) x 2 days (average length of stay) x 20% (rate of value added) based on the data from the Department of Tourism.
Those values are assumed to increase at the same rate as GDP per capita growth rate.

Column (22): Cargo airfare is estimated based on the present airfare on each routes weighted by the projected number of passengers in 2005. Cargo airfare per one kilogram of air cargo from Legaspi is PHP8.72 for Manila and PHP7.28 for Cebu.
Cargo benefit per unit weight of cargo is estimated as 50% of the cargo airfare.
This is based on the consideration that consumers' surplus per unit weight of cargo is 50% of the cargo airfare when a straight line demand curve with a price axis intercept (demand=0) being the twice the airfare is assumed.

Columns (4), (10), (12) and (13): Percentage of business passengers, tourist passengers and their breakdown into foreign and domestic passengers is based on the air passenger interview survey conducted by the JICA Study Team. See Appendix A for details.

Appendix 8.4.3 Incremental Revenues by the Project for Legaspi Airport

Year	Landing Fee					Operational Charge					Aircraft Parking Charge			Passenger Service Charge					Passenger Terminal Space Rental				
	WP		WOP		Incremental	WP		WOP		Incremental	WP	WOP	Incremental	WP		WOP		Incremental	WP		WOP		Incremental
	Total Weigh (ton)	Total Fee ('000 PHP)	Total Weigh (ton)	Total Fee ('000 PHP)	Revenue ('000 PHP)	Aircraft Landings	Total Fee ('000 PHP)	Aircraft Landings	Total Fee ('000 PHP)	Revenue ('000 PHP)	('000 PHP)	('000 PHP)	Revenue ('000 PHP)	Departing Passengers	Total Fee ('000 PHP)	Departing Passengers	Total Fee ('000 PHP)	Revenue ('000 PHP)	Rent Space (sq. m)	Total Fee ('000 PHP)	Rent Space (sq. m)	Total Fee ('000 PHP)	Revenue ('000 PHP)
	(1)	(2)	(3)	(4)	(5)=(2)-(4)	(6)	(7)	(8)	(9)	(10)=(7)-(9)	(11)	(12)	(13)=(11)-(12)	(14)	(15)	(16)	(17)	(18)=(15)-(17)	(19)	(20)	(21)	(22)	(23)=(20)-(22)
1995	46,730	1,122	46,730	1,122	0	1,080	648	1,080	648	0	45	45	0	77,762	778	77,762	778	0	90	54	90	54	0
1996	51,920	1,246	51,920	1,246	0	1,190	714	1,190	714	0	50	50	0	87,000	870	87,000	870	0	90	54	90	54	0
1997	51,920	1,246	51,920	1,246	0	1,190	714	1,190	714	0	50	50	0	87,000	870	87,000	870	0	90	54	90	54	0
1998	51,920	1,246	51,920	1,246	0	1,190	714	1,190	714	0	50	50	0	87,000	870	87,000	870	0	90	54	90	54	0
1999	51,920	1,246	51,920	1,246	0	1,190	714	1,190	714	0	50	50	0	87,000	870	87,000	870	0	90	54	90	54	0
2000	51,920	1,246	51,920	1,246	0	1,190	714	1,190	714	0	50	50	0	87,000	870	87,000	870	0	90	54	90	54	0
2001	51,920	1,246	51,920	1,246	0	1,190	714	1,190	714	0	50	50	0	146,500	870	87,000	870	0	90	54	90	54	0
2002	91,735	17,613	51,920	1,246	16,367	1,845	8,656	1,190	714	8,142	705	50	655	156,000	12,480	87,000	870	11,610	580	2,784	90	54	2,730
2003	97,770	18,772	51,920	1,246	17,526	1,960	9,408	1,190	714	8,694	751	50	701	166,000	13,280	87,000	870	12,410	580	2,784	90	54	2,730
2004	104,095	19,986	51,920	1,246	18,740	2,090	10,032	1,190	714	9,318	799	50	750	176,500	14,120	87,000	870	13,250	580	2,784	90	54	2,730
2005	110,160	21,151	51,920	1,246	19,905	2,180	10,464	1,190	714	9,750	846	50	796	187,500	15,000	87,000	870	14,130	580	2,784	90	54	2,730
2006	132,535	25,447	51,920	1,246	24,201	1,985	9,528	1,190	714	8,814	1,018	50	968	195,500	15,640	87,000	870	14,770	760	3,648	90	54	3,594
2007	138,425	26,578	51,920	1,246	25,332	2,050	9,840	1,190	714	9,126	1,063	50	1,013	203,500	16,280	87,000	870	15,410	760	3,648	90	54	3,594
2008	145,035	27,847	51,920	1,246	26,601	2,115	10,152	1,190	714	9,438	1,114	50	1,064	212,000	16,960	87,000	870	16,090	760	3,648	90	54	3,594
2009	151,460	29,080	51,920	1,246	27,834	2,180	10,464	1,190	714	9,750	1,163	50	1,113	221,000	17,680	87,000	870	16,810	760	3,648	90	54	3,594
2010	159,395	30,604	51,920	1,246	29,358	2,265	10,872	1,190	714	10,158	1,224	50	1,174	230,000	18,400	87,000	870	17,530	760	3,648	90	54	3,594
2011	165,610	31,797	51,920	1,246	30,551	2,315	11,112	1,190	714	10,398	1,272	50	1,222	237,000	18,960	87,000	870	18,090	760	3,648	90	54	3,594
2012	171,105	32,852	51,920	1,246	31,606	2,375	11,400	1,190	714	10,686	1,314	50	1,264	244,500	19,560	87,000	870	18,690	760	3,648	90	54	3,594
2013	176,705	33,927	51,920	1,246	32,681	2,435	11,688	1,190	714	10,974	1,357	50	1,307	252,000	20,160	87,000	870	19,290	760	3,648	90	54	3,594
2014	183,650	35,299	51,920	1,246	34,053	2,500	12,000	1,190	714	11,286	1,412	50	1,362	260,000	20,800	87,000	870	19,930	760	3,648	90	54	3,594
2015	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2016	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2017	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2018	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2019	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2020	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2021	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2022	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2023	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2024	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2025	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594
2026	190,275	36,533	51,920	1,246	35,287	2,565	12,312	1,190	714	11,598	1,461	50	1,411	268,500	21,480	87,000	870	20,610	760	3,648	90	54	3,594

Year	Cargo Terminal Space Rental					Concession Privilege Fee			Aviation Fuel Surcharge					Utilities Services			Traffic Related Services ('000 PHP)	Commercial Services ('000 PHP)	Miscella-neous Revenue ('000 PHP)	Total Incremental Revenue ('000 PHP)
	WP		WOP		Incremental	WP	WOP	Incremental	WP		WOP		Incremental	WP	WOP	Incremental				
	Rent Space (sq. m)	Total Fee ('000 PHP)	Rent Space (sq. m)	Total Fee ('000 PHP)	Revenue ('000 PHP)	('000 PHP)	('000 PHP)	Revenue ('000 PHP)	Fuel Supply (KL)	Total Fee ('000 PHP)	Fuel Supply (KL)	Total Fee ('000 PHP)	Revenue ('000 PHP)	('000 PHP)	('000 PHP)	Revenue ('000 PHP)				
	(24)	(25)	(26)	(27)	(28)=(25)-(27)	(29)	(30)	(31)=(29)-(30)	(32)	(33)	(34)	(35)	(36)=(33)-(35)	(37)	(38)	(39)=(37)-(38)	(40)=(5)+(10)+(13)+(18)	(41)=(23)+(28)+(31)+(36)	(42)=(39)	(43)=(40)+(41)+(42)
1995	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	85	85	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	290	835	0	0	835	1,949	85	1,864	3,283	788	0	0	788	486	0	486	36,774	6,217	486	43,477
2003	290	835	0	0	835	1,949	85	1,864	3,565	856	0	0	856	486	0	486	39,331	6,285	486	46,102
2004	290	835	0	0	835	1,949	85	1,864	3,847	923	0	0	923	486	0	486	42,058	6,352	486	48,896
2005	290	835	0	0	835	1,949	85	1,864	4,129	991	0	0	991	486	0	486	44,581	6,420	486	51,487
2006	410	1,181	0	0	1,181	2,554	85	2,469	4,517	1,084	0	0	1,084	569	0	569	48,753	8,328	569	57,649
2007	410	1,181	0	0	1,181	2,554	85	2,469	4,906	1,177	0	0	1,177	569	0	569	50,861	8,421	569	59,870
2008	410	1,181	0	0	1,181	2,554	85	2,469	5,294	1,271	0	0	1,271	569	0	569	53,193	8,514	569	62,275
2009	410	1,181	0	0	1,181	2,554	85	2,469	5,683	1,364	0	0	1,364	569	0	569	55,508	8,607	569	64,684
2010	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	58,220	8,701	569	67,489
2011	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	60,261	8,701	569	69,530
2012	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	62,246	8,701	569	71,516
2013	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	64,253	8,701	569	73,522
2014	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	66,631	8,701	569	75,900
2015	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2016	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2017	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2018	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2019	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2020	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2021	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2022	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2023	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2024	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2025	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	569	68,906	8,701	569	78,175
2026	410	1,181	0	0	1,181	2,554	85	2,469	6,071	1,457	0	0	1,457	569	0	539	68,906	8,701	569	78,175

Notes: The following prices of airport charges are used for calculation based on the present conditions.
The above table assumes 300% increases in the prices of airport charges in 2001 when the new facilities are completed, and further 100% increases in 2006 when those facilities are expanded.

a) Landing Charges: PHP 24 per ton of landing aircraft. MTOW of MJ, SJ and TP is assumed to be 165 tons, 58 tons and 21 tons respectively.
b) Operational Charges: PHP 600 per landing.
c) Parking Charges: Estimated as 4% of the total landing charges based on the past financial records.
d) Passenger Service Charges: PHP 10 per departing passenger.
e) Passenger Terminal Space Rent: PHP 50 per sq.m per month. It is assumed 20% of the total floor area is rentable.
f) Cargo Terminal Space Rent: PHP 30 per sq.m per month.
g) Concession Fee: Estimated as 70% of the space rent revenues of the passenger terminal building based on the past financial records.
h) Aviation Fuel Surcharge: PHP 30 per kilo liter of aviation fuel sales.
i) Utility Charges: Estimated as 110% of actual anticipated cost.

Present and Future Target Staffing Levels at Bacolod Airport

	Present Level		Indicative Target Staffing Level		
			in 1996	in 2005	in 2015
	Regular	Casual	Regular	Regular	Regular
Airport Manager	1	-	1	1	1
Administration Staff	6	-	3	4	4
Air Traffic Section					
Manager	1	-	1	1	1
Airways Comm. Service	5	-	5	5	5
Air Traffic Control Service	11	-	11	11	13
Airways Navigation Service Section		-			
Manager	1	-	1	1	1
Airways System Maintenance	7	-	7	7	7
Electro-Mechanical	6		6	6	6
Airport Section					
Manager	1	-	1	1	1
Airport Operations	27	22	24	35	44
Airport Maintenance	3	5	8	10	12
Total	69	27	68	82	95

Note 1. Airport Operations staff are subdivided into Terminal Operations, Crash Fire & Rescue, and Airport Security at present. Airport Security does not include AVSECOM staff.

2. Indicative Target Staffing Levels are estimates of the required number of staff if the airport is reasonably equipped with the maintenance equipment, vehicles and computers and the staff are trained to perform various functions.

Present and Future Target Staffing Levels at Iloilo Airport

	Present Level		Indicative Target Staffing Level		
			in 1996	in 2005	in 2015
	Regular	Casual	Regular	Regular	Regular
Airport Manager	1	-	1	1	1
Administration Staff	9	-	4	5	5
Air Traffic Section					
Manager	1	-	1	1	1
Airways Comm. Service	2	-	2	2	2
Air Traffic Control Service	10	-	10	10	12
Airways Navigation Service Section		-			
Manager	1	-	1	1	1
Airways System Maintenance	10	-	10	10	10
Electro-Mechanical	11		11	11	11
Airport Section					
Manager	1	-	1	1	1
Airport Operations	24	12	35	38	47
Airport Maintenance	5	11	10	10	12
Total	75	23	85	90	103

Note 1. Airport Operations staff are subdivided into Terminal Operations, Crash Fire & Rescue, and Airport Security at present. Airport Security does not include AVSECOM staff.

2. Indicative Target Staffing Levels are estimates of the required number of staff if the airport is reasonably equipped with the maintenance equipment, vehicles and computers and the staff are trained to perform various functions.

Present and Future Target Staffing Levels at Tacloban Airport

	Present Level		Indicative Target Staffing Level		
			in 1996	in 2005	in 2015
	Regular	Casual	Regular	Regular	Regular
Airport Manager	1	-	1	1	1
Administration Staff	6	-	3	4	4
Air Traffic Section					
Manager	1	-	1	1	1
Airways Comm. Service	2	-	2	2	2
Air Traffic Control Service	5	-	5	8	10
Airways Navigation Service Section		-			
Manager	1	-	1	1	1
Airways System Maintenance	11	-	11	11	11
Electro-Mechanical	7		7	7	7
Airport Section					
Manager	1	-	1	1	1
Airport Operations	13	9	28	31	34
Airport Maintenance	3	25	8	9	10
Total	51	34	68	76	82

Note 1. Airport Operations staff are subdivided into Concessionaires Unit, Civil Security Unit, and Crash Fire & Rescue Unit at present. Civil Security does not include AVSECOM staff.

2. Indicative Target Staffing Levels are estimates of the required number of staff if the airport is reasonably equipped with the maintenance equipment, vehicles and computers and the staff are trained to perform various functions.

Present and Future Target Staffing Levels at Legaspi Airport

	Present Level		Indicative Target Staffing Level		
			in 1996	in 2005	in 2015
	Regular	Casual	Regular	Regular	Regular
Airport Manager	1	-	1	1	1
Administration Staff	8	-	3	4	4
Air Traffic Section					
Manager	1	-	1	1	1
Airways Comm. Service	8	-	8	8	8
Air Traffic Control Service	6	-	6	8	10
Airways Navigation Service Section					
Manager	1	-	1	1	1
Airways System Maintenance	8	-	8	8	8
Electro-Mechanical	13	-	10	10	10
Airport Section					
Manager	1	-	1	1	1
Airport Operations	20	5	23	28	31
Airport Maintenance	7	16	8	8	9
Total	74	21	70	78	84

Note 1. Airport Operations staff are subdivided into Crash Fire & Rescue, and Civil Security at present. Civil Security does not include AVSECOM staff.

2. Indicative Target Staffing Levels are estimates of the required number of staff if the airport is reasonably equipped with the maintenance equipment, vehicles and computers and the staff are trained to perform various functions.

INSPECTION TIME
STARTED 5:45 PM 3-2-
ENDED 6:05 PM

STARTED - 4:00 HRS AM
ENDED - 4:16 HRS AM

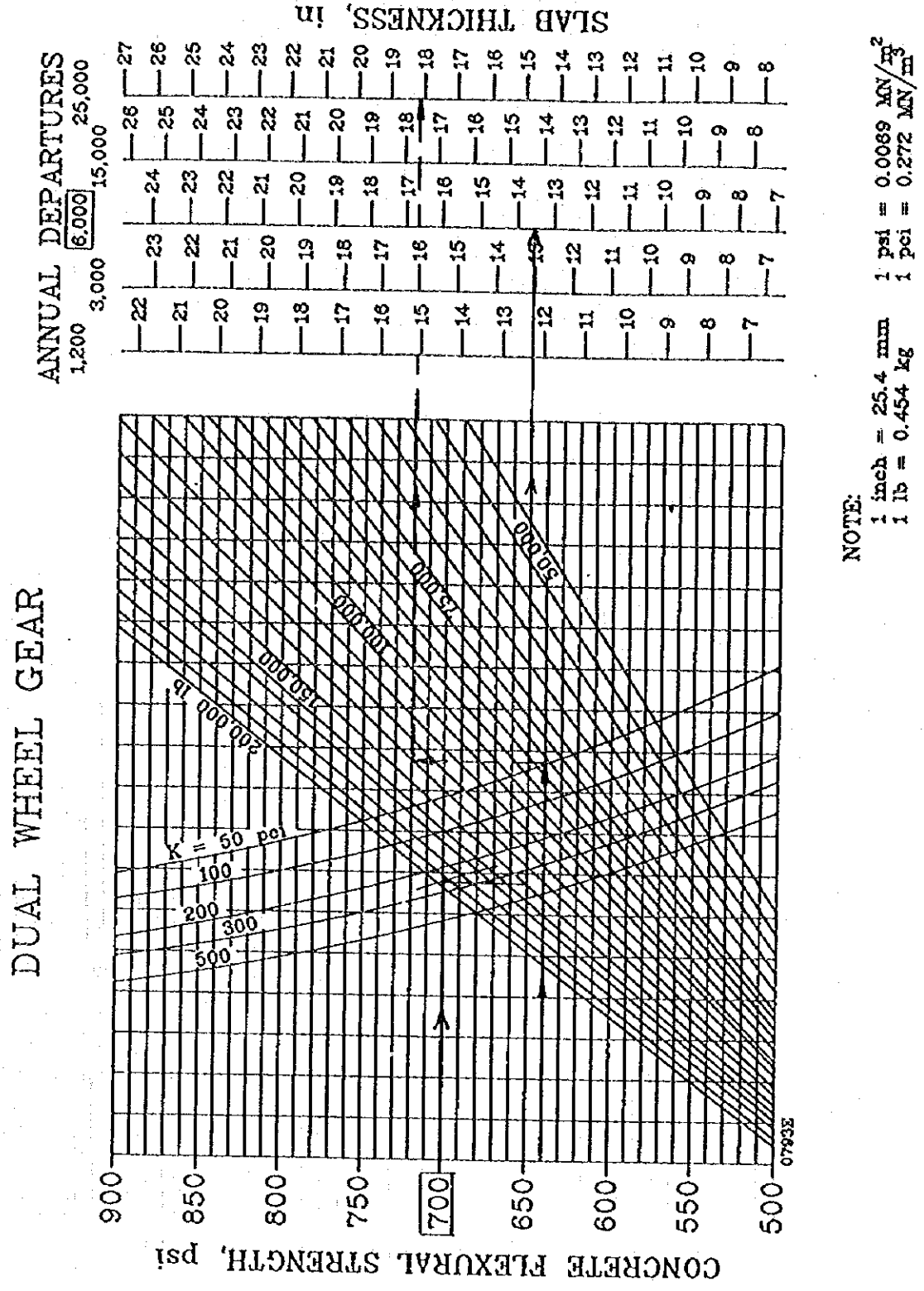
AIRPORT SAFETY INSPECTION CHECKLIST

STATION: ILOILO AIRPORT DATE: 3-3-96 SAFETY INSPECTOR: F. HONRADEZ Jr

SAFETY INSPECTION CHECKLIST	OK	NOT OK	REMARKS
I. RUNWAY			
A-PHYSICAL LAYOUT:			
1. Runway surface has no deterioration		✓	
2. The area is clean and free from FOD potential source	✓		
3. Runway ends markers are clearly visible		✓	
4. Threshold markings are clearly visible		✓	
5. Runway designation markings are clearly visible		✓	
6. Touchdown zone markings are clearly visible		✓	
7. Rubber deposits are minimal	✓		
8. Runway centerline markings are clearly visible		✓	
9. Runway edges markings are clearly visible		✓	
10. Distance-to-go markers are visible and obstructed		✓	
11. Runway lights are operational and obscured	✓		
12. Windcone is serviceable	✓		
13. Perimeter fence is complete		✓	
II. TAXIWAY			
A- PHYSICAL LAYOUT:			
1. Taxi surface has no deterioration	✓		
2. The area is clean and free from FOD potential source	✓		
3. Taxi edge lights are operational and obscured	✓		
4. Vegetation growth does not obscure lights and markers	✓		
5. Movement of unauthorized vehicles, persons, and stray animals is prevented.	✓		
III. RAMP			
A - PHYSICAL LAYOUT:			
1. The ramp has no deterioration	✓		
2. The ramp is clean and free from potential FOD sources	✓		
3. Area is free from standing water after rain	✓		

4. Aircraft parking guidelines are clearly visible	✓		
5. Aircraft taxi guidelines are clearly visible	✓		
6. Equipment parking guidelines are clearly visible	✓		
7. Equipment lanes are clearly visible	✓		
8. Adequate lighting facilities are operational	✓		
C - HOUSEKEEPING:			
1. Fuel and oil spills are cleaned up as they occur	✓		
2. Drainage and waste disposal system are adequatey maintained	✓		
D - WARNING AND SIGNAL DEVICES:			
1. "No Smoking" signs are posted in strategic locations	✓		
2. Speed limit signs are postede in strategic locations	✓		
E - HANDTOOLS AND PERSONAL PROTECTIVE EQPT.:			
1. Aircraft marshalls use prescribed marshalling tools, i.e. marshallers vest, orange paddle, or illuminated wand			
2. Wheel checks are installed on main landing gears of parked aircraft			
3. Ramp personnel wear prescribed aeromuffs or ear plugs			
F - MATERIAL HANDLING EQUIPMENTS:			
1. No persons rides on forks or any part of the vehicle			
2. Material handling equipment are not driven faster than 8 close to aircraft			
3. Equipment are not parked under an aircraft or its part			
4. Rubber bumpers are installed when the equipment docks beside the aircraft			
5. Operators ensure that hoses/cables are disconnected/ stowed away before driving out			
6. Baggage and cargo carts are not parked under aircraft			
7. Numbers of cart towed does not exceed five carts at one time			
G - TRANSPORTATION EQUIPMENT:			
1. Personnel operating vehicle/equipment are properly certified	✓		
2. Properly positioned guidesmen is utilized when equipment is backed up	✓		
3. Vehicles or equipment are not driven towards the aircraft	✓		

before engine shutdown			
4. Vehicles/equipment are not operated near jetblast/ propwash	✓		
5. Prescribed vehicle speed limits are maintained	✓		
6. Unattended vehicle are parked with engine shutdown, gears to neutral with parking brakes set	✓		
7. Steps of autostairs are fully lowered and side railings are stowed when parked	✓		
A I R P O R T S:			
1. Surface Area	✓		
2. Runways	✓		
3. Taxiways	✓		
4. Sterile Areas	✓		
5. Hold Lines	✓		
6. Loading Areas	✓		
7. R a m p	✓		
8. G a t e	✓		
9. Aircraft Parking	✓		
10. Equipment	✓		
11. Obstruction	✓		
12. Signs	✓		
13. Markings	✓		
14. Contamination			
15. Others			
16. Facilities			
17. Approach Aids			
18. NavAids			
19. Communication	✓		
20. Operations	✓		
21. Runway Closure			
22. Vehicles	✓		
23. Security	✓		
24. Public Safety	✓		
25. Manuals			
26. Others			



NOTE:
1 inch = 25.4 mm
1 lb = 0.454 kg
1 psi = 0.0069 MN/m²
1 pci = 0.272 MN/m³

FIGURE 3-18. RIGID PAVEMENT DESIGN CURVES, DUAL WHEEL GEAR

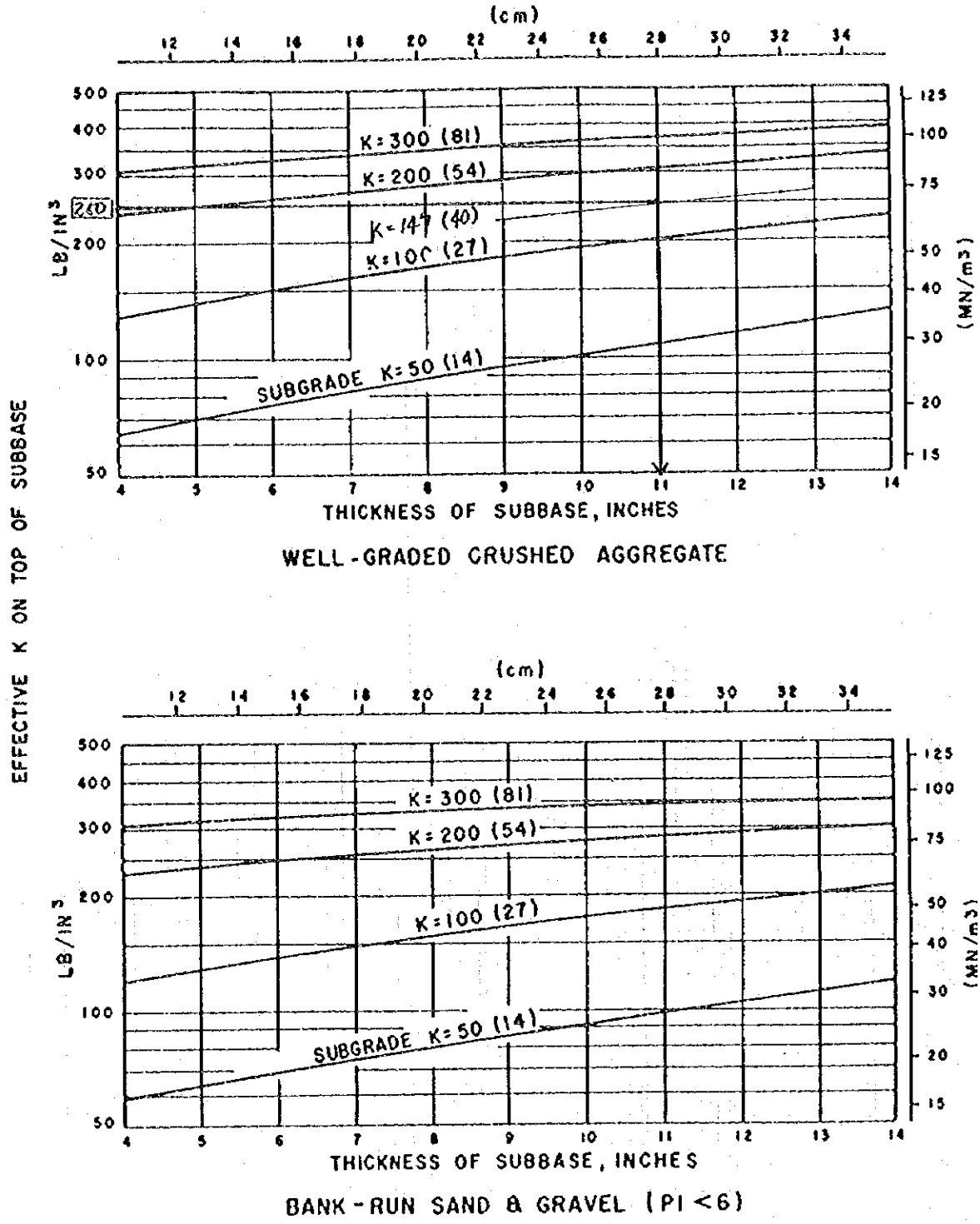


FIGURE 2-4. EFFECT OF SUBBASE ON MODULUS OF SUBGRADE REACTION

Drainage Calculation Table

Middle: Bldg. area 0.90
Lower: Turf area 0.50

Zone No.	No.	Facility t.L.	Length l	Sur. Flow Distance D	Slope S	Time t1	Conduit -run t2	Accum -run t	Rainfall Intensity	Catch. Area A	Runoff Coefficient C	Runoff Q	Accum. Runoff Q	Facility Dimensions	Invert Incline	Roughnes Factor	Flow Velocity V	Facility Capacity Q0	Design Flow Q2	Checks
#	#	M	m	m	%	min.	min.	min.	mm/hr.	ha.		cu.m/sec.	cu.m/sec.	m	%	n	m/sec.	cu.m/sec.	cu.m/sec.	
A	A-1		150							Same as a-4 in future				Trapezoidal B=1.30 H=0.80						
	A-2		200							Same as a-4 in future				Trapezoidal B=1.30 H=0.80						
	A-3		50							Same as a-6 in future										
		0.40								0.85										
	A-4		200	110	1.5	15.07	3.69	18.761	179.0	0.00	0.596	1.185	1.185	Trapezoidal B=1.30 H=0.80	0.2	0.03	0.903	1.366	1.229	Velo. Ok
		0.00								3.15										Capa. Ok
	A-5		200							Same as a-4				Trapezoidal B=1.30 H=0.80						
						from a-4 & a-5				1.70										
	A-6		50					18.761	179.0	0.00	0.596	2.369	2.369	5@Pipe D=0.80	0.15	0.013	1.019	2.561	2.561	Velo. Ok
										6.30										Capa. Ok
	A-7		200							Same as a-4				Trapezoidal B=1.30 H=0.80						
	A-8		200							Same as a-4				Trapezoidal B=1.30 H=0.80						
	A-9		50							Same as a-6				5@Pipe D=0.80						
	A-10		200							Same as a-4				Trapezoidal B=1.30 H=0.80						
	A-11		200							Same as a-4				Trapezoidal B=1.30 H=0.80						
	A-12		50							Same as a-6				5@Pipe D=0.80						
		0.43								0.00										
	A-13		430	330	0.5	44.782	9.34	54.119	101.8	0.00	0.500	1.824	1.824	Trapezoidal B=2.00 H=1.00	0.1	0.03	0.768	2.072	1.865	Velo. Ok
		0.00								12.90										Capa. Ok

Drainage Calculation Table

Upper: Pav. area 0.95
Middle: Bldg. area 0.90
Lower: Turf area 0.50

Zone No.	No.	Facility I.L.	Length	Sur. Flow Distance	Slope	Time	Conduit -run	Accum -run	Rainfall Intensity	Catch. Area	Runoff Coefficient	Runoff	Accum. Runoff	Facility Dimensions	Invert Incline	Roughnes Factor	Flow Velocity	Facility Capacity	Design Flow	Checks
			l	D	S	t1	t2	t		A	C	Q	Q				V	Q0	Q2	
#	#	M	m	m	%	min.	min.	min.	mm/hr.	ha.		cu.m/sec	cu.m/sec	m	%	n	m/sec.	cu.m/sec	cu.m/sec.	
		0.50				from a-12 & a-13				1.70										
	A-14		500				7.70	54.119	101.8	0.00	0.514	8.122	8.122	Trapezoidal B=4.70 H=1.50	0.1	0.03	1.082	9.056	8.151	Velo. Ok
		0.00								54.20										Capa. Ok
		0.19				from a-9 & a-14				3.40										
	A-15		190				2.84	61.82	93.1	0.00	0.521	9.891	9.891	Trapezoidal B=5.80 H=1.50	0.1	0.03	1.117	11.005	9.904	Velo. Ok
		0.00								70.00										Capa. Ok
		0.31				from a-6 & a-17				3.40										
	A-16		310				4.76	48.39	109.2	0.00	0.530	8.272	8.272	Trapezoidal B=4.80 H=1.50	0.1	0.03	1.086	9.232	8.309	Velo. Ok
		0.00								48.10										Capa. Ok
		0.50				from a-3 & a-18				1.70										
	A-17		500				8.38	40.005	124.5	0.00	0.527	5.106	5.106	Trapezoidal B=2.80 H=1.50	0.1	0.03	0.994	5.771	5.194	Velo. Ok
		0.00								26.30										Capa. Ok
		0.20								0.00										
	A-18		200	200	0.5	34.863	5.14	40.005	124.5	0.00	0.500	0.865	0.865	Trapezoidal B=1.00 H=0.90	0.1	0.03	0.648	0.998	0.898	Velo. Ok
		0.00								5.00										Capa. Ok
		0.00				from a-15 & a-16				6.80										
	A-19						0.00	61.82	93.1	0.00	0.524	16.950	16.950	4@Box B=2.00 H=1.50	0.15	0.015	1.837	19.837	17.853	Velo. Ok
		0.00								118.1										Capa. Ok
		0.24								0.66										
B	B-1		160	110	1.5	15.154	3.48	18.634	179.5	0.00	0.593	0.946	0.946	Trapezoidal B=0.80 H=0.90	0.15	0.03	0.766	1.055	0.950	Velo. Ok
		0.00								2.54										Capa. Ok
						from b-1				0.66										
	B-2							18.634	179.5	0.00	0.593	0.946	0.946	1@Pipe D=0.90	0.3	0.013	1.559	0.992	0.992	Velo. Ok
										2.54										Capa. Ok
		0.30								0.76										
	B-3		200	150	1.1	20.186	4.12	24.306	162.4	0.00	0.578	1.140	1.140	Trapezoidal B=0.80 H=1.00	0.15	0.03	0.809	1.311	1.180	Velo. Ok
		0.00								3.61										Capa. Ok
						from b-3				0.76										
	B-4							24.306	162.4	0.00	0.578	1.140	1.140	1@Pipe D=1.00	0.25	0.013	1.526	1.199	1.199	Velo. Ok
										3.61										Capa. Ok
		0.30								0.46										
	B-5		200	175	1.1	23.094	4.12	27.215	154.3	0.00	0.547	1.025	1.025	Trapezoidal B=0.80 H=1.00	0.15	0.03	0.809	1.311	1.180	Velo. Ok
		0.00								3.91										Capa. Ok
						from b-5				0.46										
	B-6							27.215	154.3	0.00	0.547	1.025	1.025	1@Pipe D=1.00	0.25	0.013	1.526	1.199	1.199	Velo. Ok
										3.91										Capa. Ok
		0.25								0.80										
	B-7		125	140	1.5	16.432	2.35	18.787	178.9	0.00	0.613	0.974	0.974	Trapezoidal B=0.80 H=0.90	0.2	0.03	0.885	1.218	1.097	Velo. Ok
		0.00								2.40										Capa. Ok

Drainage Calculation Table

Upper: Pav. area 0.95
Middle: Bldg. area 0.90
Lower: Turf area 0.50

Zone No.	No.	Facility I.L.	Length	Sur. Flow Distance	Slope	Time	Conduit -run	Accum -run	Rainfall Intensity	Catch. Area	Runoff Coefficient	Runoff	Accum. Runoff	Facility Dimensions	Invert Incline	Roughness Factor	Flow Velocity	Facility Capacity	Design Flow	Checks
			l	D	S	t1	t2	t		A	C	Q	Q				V	Q0	Q2	
#	#	M	m	m	%	min.	min.	min.	mm/hr.	ha.		cu.m/sec.	cu.m/sec.	m	%	n	m/sec.	cu.m/sec.	cu.m/sec.	
						from b-7				0.80										
	B-8							18.787	178.9	0.00	0.613	0.974	0.974	1@Pipe D=0.90	0.3	0.013	1.559	0.992	0.992	Velo. Ok
										2.40										Capa. Ok
		0.44				from b-10				1.42										
	B-9		220				2.84	24.95	160.6	0.00	0.527	5.642	5.642	Trapezoidal B=3.30 H=1.20	0.2	0.03	1.292	6.278	5.650	Velo. Ok
		0.00								22.60										Capa. Ok
		0.44				from b-4 & b-11				1.42										
	B-10		220				3.22	21.732	169.6	0.00	0.553	3.132	3.132	Trapezoidal B=2.00 H=1.10	0.2	0.03	1.138	3.493	3.144	Velo. Ok
		0.00								10.60										Capa. Ok
		0.45				from b-2				0.66										
	B-11		225	100	1.0	17.789	3.94	21.732	169.6	0.00	0.554	1.423	1.423	Trapezoidal B=0.90 H=1.00	0.2	0.03	0.951	1.626	1.464	Velo. Ok
		0.00								4.79										Capa. Ok
		0.00				from Regulation Pond				2.22										
	B-12								50.8	0.00	0.800	3.073	3.073	Trapezoidal B=2.40 H=1.00	0.2	0.03	1.119	3.424	3.082	Velo. Ok
		0.00								25.00										Capa. Ok
C	C-1		150							Same as c-4 in future				Trapezoidal B=1.30 H=0.90						
	C-2		200							Same as c-4 in future				Trapezoidal B=1.30 H=0.90						
	C-3		131							Same as c-6 in future										
		0.40								1.53										
	C-4		200	110	1.5	13.416	3.48	16.896	185.9	0.00	0.651	1.533	1.533	Trapezoidal B=1.30 H=0.90	0.2	0.03	0.958	1.706	1.536	Velo. Ok
		0.00								3.03										Capa. Ok
	C-5		200							Same as c-4				Trapezoidal B=1.30 H=0.90						
						from c-4 & c-5				3.06										
	C-6		120				1.96	16.896	185.9	0.00	0.651	3.067	3.067	6@Pipe D=0.80	0.15	0.013	1.019	3.073	3.073	Velo. Ok
										6.06										Capa. Ok
	C-7		200							Same as c-4				Trapezoidal B=1.30 H=0.90						
		0.28				from c-9				6.54										
	C-8		140			31.22	1.75	31.853	142.4	0.00	0.618	6.088	6.088	Trapezoidal B=3.10 H=1.30	0.2	0.03	1.331	6.854	6.169	Velo. Ok
		0.00								18.35										Capa. Ok

Drainage Calculation Table

Upper: Pav. area 0.95
Middle: Bldg. area 0.90
Lower: Turf area 0.50

Zone No.	No.	Facility LL.	Length	Sur. Flow Distance	Slope	Time	Conduit -run	Accum -run	Rainfall Intensity	Catch. Area	Runoff Coefficient	Runoff	Accum. Runoff	Facility Dimensions	Invert Incline	Roughness Factor	Flow Velocity	Facility Capacity	Design Flow	Checks
			l	D	S	t1	t2	t		A	C	Q	Q				V	Q0	Q2	
#	#	M	m	m	%	min.	min.	min.	mm/hr.	ha.		cu.m/sec	cu.m/sec	m	%	n	m/sec.	cu.m/sec	cu.m/sec	
		0.24								5.24										
	C-9		120			30.101	1.12	30.101	146.3	0.00	0.623	4.845	4.845	2@Box B=1.50 H=1.20	0.2	0.015	1.781	5.769	5.192	Velo. Ok
		0.00								13.89										Capa. Ok
		0.80								1.95										
	C-10		400	110	1.5	14.431	6.28	20.712	172.4	0.00	0.617	2.216	2.216	Trapezoidal B=1.00 H=1.20	0.2	0.03	1.061	2.522	2.270	Velo. Ok
		0.00								5.55										Capa. Ok
		0.80								3.29										
	C-11		400	230	0.9	24.213	5.89	30.101	146.3	0.00	0.627	2.964	2.964	Trapezoidal B=1.50 H=1.20	0.2	0.03	1.132	3.302	2.972	Velo. Ok
		0.00								8.34										Capa. Ok
		0.20				from c-8 & c-7				8.07										
	C-12		100			31.85	1.08	31.85	142.4	0.00	0.623	7.262	7.262	5@Pipe D=1.20	0.2	0.013	1.542	8.718	8.718	Velo. Ok
		0.00								21.38										Capa. Ok
		0.40								1.13										
	C-13		200	70	0.6	9.2192	4.08	13.304	203.9	0.00	0.815	0.743	0.743	Trapezoidal B=0.70 H=0.80	0.2	0.03	0.816	0.881	0.793	Velo. Ok
		0.00								0.48										Capa. Ok
		0.32								0.20										
	C-14		160	65	1.5	12.663	3.58	16.246	188.4	0.00	0.549	0.531	0.531	Trapezoidal B=0.60 H=0.70	0.2	0.03	0.744	0.609	0.549	Velo. Ok
		0.00								1.65										Capa. Ok
		0.28								0.00										
	C-15		140	25	2.0	5.1765	2.86	8.0358	248.9	0.77	0.700	0.745	0.745	Trapezoidal B=0.70 H=0.80	0.2	0.03	0.816	0.881	0.793	Velo. Ok
		0.00								0.77										Capa. Ok
		0.64								0.60										
	C-16		320	13	2.0	1.3998	5.94	7.3382	257.3	0.00	0.950	0.406	0.406	U-channel B=0.80 H=0.70	0.2	0.020	0.898	0.453	0.407	Velo. Ok
		0.00								0.00										Capa. Ok
		0.64								1.96										
	C-17		320	60	2.0	4.8117	4.31	9.121	235.8	0.00	0.860	1.380	1.380	U-channel B=1.40 H=1.00	0.2	0.02	1.238	1.559	1.403	Velo. Ok
		0.00								0.49										Capa. Ok
		0.58								0.32										
	C-18		290	25	2.0	6.6001	6.49	13.095	205.3	0.00	0.590	0.538	0.538	Trapezoidal B=0.60 H=0.70	0.2	0.03	0.744	0.609	0.549	Velo. Ok
		0.00								1.28										Capa. Ok
						from c-15 to c-18				3.38										
	C-19		160			13.095	2.31	15.401	191.5	1.27	0.748	3.257	3.257	Trapezoidal B=1.70 H=1.20	0.2	0.03	1.156	3.622	3.259	Velo. Ok
										3.54										Capa. Ok
		0.40				from c-14 & c-19				4.18										
	C-20		200			15.40	2.72	18.12	181.4	1.87	0.728	4.231	4.231	Trapezoidal B=2.40 H=1.20	0.2	0.03	1.226	4.766	4.289	Velo. Ok
		0.00								5.49										Capa. Ok
		0.58				from c-12, c-13 & c-20				13.38										
	C-21		290			32.93	3.18	32.93	140.0	1.97	0.659	10.918	10.918	Trapezoidal B=4.50 H=1.50	0.2	0.03	1.520	12.311	11.080	Velo. Ok
		0.00								27.35										Capa. Ok

Drainage Calculation Table

Middle: Bldg. area 0.90
Lower: Turf area 0.50

Zone No.	No.	Facility I.L.	Length	Sur. Flow Distance	Slope	Time	Conduit -run	Accum -run	Rainfall Intensity	Catch. Area	Runoff Coefficient	Runoff	Accum. Runoff	Facility Dimensions	Invert Incline	Roughness Factor	Flow Velocity	Facility Capacity	Design Flow	Checks
			l	D	S	t1	t2	t		A	C	Q	Q				V	Q0	Q2	
#	#	M	m	m	%	min.	min.	min.	mm/hr.	ha.		cu.m/sec.	cu.m/sec.	m	%	n	m/sec.	cu.m/sec.	cu.m/sec.	
		0.44				from e-19 & c-21				20.2										
	C-22		220				2.16	61.82	93.1	1.9	0.559	24.211	24.211	Trapezoidal B=10.30 H=1.50	0.2	0.03	1.699	27.070	24.363	Velo. Ok
		0.00								145.5										Capa. Ok
		1.00				from c-3				3.06										
	C-23		500				7.45	16.90	185.9	0.00	0.651	3.067	3.067	Trapezoidal B=2.40 H=1.00	0.2	0.03	1.119	3.424	3.082	Velo. Ok
		0.00								6.06										Capa. Ok
		0.00				from Reguration Pond				23.24										
	C-24								50.8	1.87	0.800	19.938	19.938	Trapezoidal B=8.50 H=1.50	0.2	0.03	1.662	22.436	20.193	Velo. Ok
		0.00								151.5										Capa. Ok
D	D-1		145							Same as C-4 in future				Trapezoidal B=1.30 H=0.90						
	D-2		165							Same as c-4 in future				Trapezoidal B=1.30 H=0.90						
	D-3		100							Same as c-6 in future				6@Pipe D=0.80						
		0.29								0.40										
	D-4		145	60	1.5	11.254	3.10	14.356	197.1	0.00	0.590	0.646	0.646	Trapezoidal B=0.80 H=0.70	0.2	0.03	0.779	0.736	0.662	Velo. Ok
		0.00								1.60										Capa. Ok
		0.50								0.21										
	D-5		250	25	2.0	5.1118	4.71	9.8207	227.4	0.84	0.705	0.935	0.935	Trapezoidal B=0.80 H=0.90	0.2	0.03	0.885	1.218	1.097	Velo. Ok
		0.00								1.05										Capa. Ok
		0.33								0.43										
	D-6		165	120	2.0	14.46	3.53	17.99	181.9	0.00	0.590	0.644	0.644	Trapezoidal B=0.80 H=0.70	0.2	0.03	0.779	0.736	0.662	Velo. Ok
		0.00								1.73										Capa. Ok
						from D-3				3.06										
	D-7		250				3.72	16.896	185.9	0.00	0.651	3.067	3.067	Trapezoidal B=2.40 H=1.00	0.2	0.03	1.119	3.424	3.082	Velo. Ok
										6.06										Capa. Ok
						from D-4 & 7				3.46										
	D-8		165				2.41	20.62	172.7	0.00	0.640	3.414	3.414	Trapezoidal B=2.70 H=1.00	0.2	0.03	1.141	3.798	3.418	Velo. Ok
										7.66										Capa. Ok
						from D-5 & 8				3.67										
	D-9		20				0.28	23.03	165.9	0.84	0.650	3.963	3.963	Trapezoidal B=3.20 H=1.00	0.2	0.03	1.172	4.428	3.986	Velo. Ok
										8.71										Capa. Ok
		1.00				from Regulation Pond				4.10										
	D-10		500						50.8	0.84	0.800	1.736	1.736	Trapezoidal B=1.20 H=1.00	0.2	0.03	0.996	1.972	1.775	Velo. Ok
		0.00								10.44										Capa. Ok

Preliminary Design of Regulation Ponds

1. Design Conditions

a) Return Period of Design Rainfall: 5 years

b) Rainfall Intensity Duration Curve:

Duration (min)	Intensity (mm/hr)
5	285.5
10	225.2
15	193.0
20	174.4
30	146.5
45	113.5
60	94.3
80	81.6
100	71.4
120	63.8
150	55.7

c) Allowable Volume of Discharge: Equivalent to runoff of 50.6mm/hr rainfall

d) Rainfall Pattern: Assumed from the above table as follows.

Period	Rainfall (mm)	Rainfall Intensity (mm/hr)
0 - 5min	285.5 / 60 x 5 = 23.8	23.8 / 5 x 60 = 285.5
5 - 10min	225.2 / 60 x 10 - 285.5 / 60 x 5 = 13.7	13.7 / 5 x 60 = 164.4
10 - 15min	193.0 / 60 x 15 - 225.2 / 60 x 10 = 10.8	10.8 / 5 x 60 = 129.6
15 - 20min	174.4 / 60 x 20 - 193.0 / 60 x 15 = 9.9	9.9 / 5 x 60 = 118.8
20 - 30min	146.5 / 60 x 30 - 174.4 / 60 x 20 = 15.1	15.1 / 10 x 60 = 90.6 > 50.6
30 - 45min	113.5 / 60 x 45 - 146.5 / 60 x 30 = 11.9	11.9 / 15 x 60 = 47.6 < 50.6
45 - 60min	94.3 / 60 x 60 - 113.5 / 60 x 45 = 9.2	9.2 / 15 x 60 = 36.8

e) Period of Regulation: Peak 30 min (see above table)

f) Runoff: $V = 10 \times C \times R \times A$

where, V: Runoff (m^3)

C: Runoff Coefficient

R: Rainfall (mm)

A: Catchment Area (ha)

g) Long Term Runoff Coefficient: 0.8

2. **Regulation Pond No.1**

a) Catchment Area: 177 ha

b) Inflow during 30 min:

0 - 5min	$10 \times 0.8 \times 23.8 \times 177 = 33,701m^3$
5 - 10min	$10 \times 0.8 \times 13.7 \times 177 = 19,399m^3$
10 - 15min	$10 \times 0.8 \times 10.8 \times 177 = 15.293m^3$
15 - 20min	$10 \times 0.8 \times 9.9 \times 177 = 14,018m^3$
20 - 30min	$10 \times 0.8 \times 15.1 \times 177 = 21,382m^3$
Total	$10 \times 0.8 \times 15.1 \times 177 = 103,793m^3$

c) Outflow during 30 min: $1/360 \times 0.8 \times 50.6 \times 177 \times 30 \times 60 = 35,825m^3$

d) Capacity of Regulation Pond: $103,793 - 35,825 = 67,968m^3$

3. **Regulation Pond No.2**

a) Catchment Area: 15.4 ha

b) Inflow during 30 min:

0 - 5min	$10 \times 0.8 \times 23.8 \times 15.4 = 2,932m^3$
5 - 10min	$10 \times 0.8 \times 13.7 \times 15.4 = 1,688m^3$
10 - 15min	$10 \times 0.8 \times 10.8 \times 15.4 = 1,331m^3$
15 - 20min	$10 \times 0.8 \times 9.9 \times 15.4 = 1,220m^3$
20 - 30min	$10 \times 0.8 \times 15.1 \times 15.4 = 1,860m^3$
Total	$10 \times 0.8 \times 15.1 \times 15.4 = 9,031m^3$

c) Outflow during 30 min: $1/360 \times 0.8 \times 50.6 \times 15.4 \times 30 \times 60 = 3,117m^3$

d) Capacity of Regulation Pond: $9,031 - 3,117 = 5,914m^3$

4. **Regulation Pond No.3**

a) Catchment Area: 27.2 ha

b) Inflow during 30 min:

0 - 5min	$10 \times 0.8 \times 23.8 \times 27.2 = 5,179m^3$
5 - 10min	$10 \times 0.8 \times 13.7 \times 27.2 = 2,981m^3$
10 - 15min	$10 \times 0.8 \times 10.8 \times 27.2 = 2,350m^3$
15 - 20min	$10 \times 0.8 \times 9.9 \times 27.2 = 2,154m^3$
20 - 30min	$10 \times 0.8 \times 15.1 \times 27.2 = 3,286m^3$
Total	$10 \times 0.8 \times 15.1 \times 27.2 = 15,950m^3$

c) Outflow during 30 min: $1/360 \times 0.8 \times 50.6 \times 27.2 \times 30 \times 60 = 5,505m^3$

d) Capacity of Regulation Pond: $15,950 - 5,505 = 10,445m^3$

Passenger Processing Facility Requirements based on
Abbreviated Capacity Calculation Formula

		Current Data	2005	2015	
a: Number of peak hour originating passengers		140	420	550	
b: Number of peak hour landside transfer passengers		0	0	0	
c: Number of peak hour departing passengers		140	420	550	
d: Number of peak hour terminating passengers		140	420	550	
g: Time of first passenger at gate lounge (mins. before STD)		50	50	50	
m: Maximum number of seats on largest aircraft handled at gate in question		141	240	240	
o: Number of visitors - Originating passengers		1.7	1.7	1.7	
o: Number of visitors - Terminating passengers		1.7	1.7	1.7	
p: Proportion of passengers using car/taxi - Originating passengers		90%	90%	90%	
p: Proportion of passengers using car/taxi - Terminating passengers		90%	90%	90%	
q: Proportion of passengers arriving by wide-body aircraft during peak hour		0%	0%	0%	
r: Proportion of passengers arriving by narrow-body aircraft during peak hour		100%	100%	100%	
s: Maximum number of seats on largest aircraft handled at airport		141	240	240	
t1: Average processing time per passenger at check-in desk (mins.)		2.0	2.0	2.0	
		Required	Required	Required	
1. Departure Curb	L = (0.095 o p) 1.1 =	13	40	52	m
2. Departure Concourse	A = 0.75 [o (1 + o) + b] =	284	851	1,114	sq.m
3. Check-in Queuing Area	A = [0.25 [o + b]] 1.1 =	39	116	151	sq.m
4. Check-in Desks	N = [(o + b) t1 / 60] 1.1 =	5.1	15.4	20.2	
6. Security Check - Centralized	N = (o + b) / 300 =	0.5	1.4	1.8	
8. Security Check - Gate Lounge	N = 0.2 m / (g - 5) =	0.6	1.1	1.1	
9. Gate Lounge	A = 1.375 o x 0.5 x 1.3 =	125	375	492	sq.m
13. Baggage Claim Area	A = (0.9 d) 1.1 =	139	416	545	sq.m
14. Number of Baggage Claim Devices - Narrow Body	N = d r / 300 =	0.5	1.4	1.8	
17. Arrival Concourse Waiting Area	A = [0.375 (d + b + 2 d o)] 1.1 =	254	762	998	sq.m
18. Arrival Curb	L = (0.095 d p) 1.1 =	13	40	52	m

TERMS OF REFERENCE
FOR
ENVIRONMENTAL SURVEY
FOR
THE STUDY ON SELECTED AIRPORT MASTER PLANNING PROJECT

1. General

The objective of this environmental survey is to obtain the historical and existing environmental data and prediction of future environmental conditions without the Project for the implementation of the Study on Selected Airports Master Planning Project in the Republic of the Philippines.

The environmental survey shall include data collection (including hearing from knowledgeable people), site investigation, tests/measurement, perception (interview) survey, analyses and prediction.

A complete report shall include description of the historical trends of the environment in addition to the existing environmental conditions and prediction of future environmental conditions without the Project in accordance with guidelines of Environmental Management Bureau (EMB) and all the data and information obtained by the survey. The final report may form a part of Environmental Impact Statement to be submitted to EMB by the Project Proponent.

2. Scope of Survey

2.1 Climate

Table 1 Item, Area and Method of Climate Survey

Items	Description
Survey Items	1) Location of observation stations 2) Monthly average of daily mean temperature (°C) 3) Monthly average of daily maximum temperature (°C) 4) Monthly average of daily minimum temperature (°C) 5) Monthly precipitation (mm) 6) Extreme value of rainfall (rainfall intensity and duration) 7) Monthly average wind velocity (m/s) 8) Frequency of wind direction (wind rose diagrams) 9) Frequency of thunder storm 10) Frequency and routes of typhoon
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : 2 to 3 points where existing data has been observed. 3) Survey methods : Site investigation, data collection and analysis.

2.2 Terrain

Table 2 Item, Area and Method of Terrain Survey

Items	Description
Survey Items	1) Topography & Geology (1) Geographical, geological and topographical characteristics (including maps). (2) Physical and chemical characteristics of soils and rocks (3) Geographical aspect which may obstruct the project (4) Flood, earthquake and/or landslide prone areas from geographical, geological and hydrological conditions. (5) Special geological, topographical features, rivers and so on. 2) Ground Water (1) Hydro-geological structure and aquifer distribution. (2) Relation between ground water level and aquifer. (3) Distribution and use of wells. (4) Water quality a) Hydrogen power (pH) b) Biochemical oxygen demand (BOD) c) Suspended solid(SS) d) Total nitrogen(T-N) e) Total phosphorus(T-P) f) Color g) Toxic substances h) Water temperature i) Odor j) Air temperature k) Weather 3) Landscape (1) Landscape from the main view-points.
Survey Area	1) Topography & Geology : Proposed airport site and surroundings. 2) Ground Water : River basins where the proposed airport site locates. 3) Landscape : Proposed airport site and surroundings.
Survey Methods	1) Survey times : 1 times 2) Survey points :. (1) Topography & Geology : The same as the survey area (2) Ground Water : The same as the survey area (2 water sampling) (3) Lanscape : Main view points (within 3km of the proposed site) 3) Survey methods : (1) Topography & Geology : Site investigation, data collection (2) Ground Water : Site investigation, tests on water quality, data collection and analysis (3) Landscape : Site investigation, photograph

2.3 Hydrology

Table 3 Item, Area and Method of Surface Water Survey

Items	Description
Survey Items	1) Flood control (1) Conditions of basins (area, surface, slope, etc.) (2) Rainfall (rainfall intensity and duration) (3) Conditions of existing rivers/creeks (capacity, flow volume, water level, etc.) (4) Disasters (frequency, areas, etc.) 2) Water use (1) Water use conditions (2) Water rights 3) Water quality (1) Hydrogen power (pH) (2) Biochemical oxygen demand (BOD) (3) Suspended solid(SS) (4) Total nitrogen(T-N) (5) Total phosphorus(T-P) (6) Color (7) Toxic substances (8) Water temperature (9) Odor (10) Air temperature (11) Weather
Survey Area	River basin where proposed site locates
Survey Methods	1) Survey times : 1 time. 2) Survey points : (1) Flood control The same as survey area (2) Water use: The same as the survey area (3) Water quality: 4 rivers 2 to 3 points each, total 10 points. 3) Survey methods : Site investigation, tests/measurement, data collection and analysis.

2.4 Atmosphere

Table 4 Item, Area and Method of Air Quality Survey

Items	Description
Survey Items	1) Weather (1) Wind direction (every hour) (2) Wind velocity (every hour) 2) Air quality (1) Sulfur dioxide(SO_2) (2) Nitrogen dioxide(NO_2) (3) Carbon monoxide(CO) (4) Suspended particulate matter (SPM) (5) Photochemical oxidant (Ox)
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time, 7 days, 24 hours, 10 minutes continuously from the hour 2) Survey points : 2 points around the proposed site and access road (simultaneously) 3) Survey methods : Test/measurement

Table 5 Item, Area and Method of Noise Survey

Items	Description
Survey Items	1) Environmental noise 2) Traffic noise 3) Aircraft noise
Survey Area	1) Environmental noise: Proposed airport site and area within 3km 2) Traffic noise: Along the access road 3) Aircraft noise: Existing airport surroundings
Survey Methods	1) Survey times : 1 time, 7 days, 24 hours (1) Environmental noise : 10 minutes continuously from the hour (2) Traffic noise: 10 minutes continuously from the hour (3) Aircraft noise: Times of all aircraft takeoff and landing 2) Survey points : (simultaneously) (1) Environmental noise : 2 points in the residential area (2) Traffic noise: 1 point along Route 1 (3) Aircraft noise: 2 points in the residential area 3) Survey methods: Noise level (dB(A)) measurement (date, time, aircraft types, takeoff/landing direction shall be recorded.)

2.5 Vegetation

Table 6 Item, Area and Method of Vegetation Survey

Items	Description
Survey Items	1) Flora (flora, valuable species (Red-data book species)) 2) Vegetation 3) Ecosystem of fauna and flora 4) Possibility of resettlement of rare species
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, data collection and analysis.

2.6 Fish and Wildlife

Table 7 Item, Area and Method of Wildlife Survey

Items	Description
Survey Items	1) Distribution of fauna (the mammals, birds, reptiles, amphibian and insects) 2) Distribution of rare species 3) Fauna ecosystem 4) Possibility of resettlement of rare species
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as survey area. 3) Survey methods : Site investigation, data collection and analysis.

Table 8 Item, Area and Method of Aquatic Life Survey

Items	Description
Survey Items	1) Distribution of aquatic life (fishes and aquatic insects) 2) Distribution of rare species 3) Ecosystem 4) Possibility of resettlement of rare species
Survey Area	Four (4) rivers in the vicinity of the proposed airport site
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, data collection and analysis.

2.7 Land and Resource Use

Table 9 Item, Area and Method of Land and Resource Use Survey

Items	Description
Survey Items	1) Existing land use 2) Existing land use plan (zoning) 3) Specific areas (1) Ecological reserves (2) Natural reserves (3) Campsites (4) Military reserves (5) Scenic spots (6) Areas of religious significance (7) Areas of historic significance (8) Areas of cultural significance (9) Others
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, data collection.

2.8 Socio-economic Aspects

Table 10 Item, Area and Method of Demography Survey

Items	Description
Survey Items	The following items by province, municipality, Barangay and Sitio 1) Population size and distribution 2) Population composition (sex, age) 3) Fertility, mortality and migrational patterns 4) Residential area distribution 5) Family number 6) Family structure 7) Legislation of resettlement 8) Legislation of compensation 9) Others
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : Area same as survey area. 3) Survey methods : Site investigation, perception survey, data collection and analysis.

Table 11 Item, Area and Method of Manpower Survey

Items	Description
Survey Items	1) Occupation (distribution, position) 2) Employment situation 3) Occupation structure 4) Key industries, type 5) Income levels 6) Others
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, perception survey, data collection and analysis.

Table 12 Item, Area and Method of Transportation Survey

Items	Description
Survey Items	1) Transportation network (route number, start and end points of the rout, distance, competent authorities, lane number, width, surface type) 2) Traffic volume include vehicle count 3) Route user structure 4) Others
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area (vehicle count at 2 points) 3) Survey methods : Site investigation, vehicle count, data collection and analysis.

Table 13 Item, Area and Method of Housing and Community Infrastructure Survey

Items	Description
Survey Items	1) Housing (distribution, scale) 2) Company (distribution, scale) 3) Community halls (distribution, scale) 4) Other community infrastructures
Survey Area	Proposed airport area and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, data collection and analysis.

Table 14 Item, Area and Method of Education, Health and Safety and Social Services Survey

Items	Description
Survey Items	1) Schools (distribution, scale) 2) Hospitals/health centers (distribution, scale) 3) Churches (distribution, scale) 4) Clime and violence 5) Social services condition
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, data collection and analysis.

Table 15 Item, Area and Method of Lifestyle Survey

Items	Description
Survey Items	1) Living standards (income, savings, prices, consumption, etc.) 2) Environmental condition (shopping, commutation, schooling) 3) Cultural and spiritual condition (amusement, festival, cultural heritage, etc.)
Survey Area	Proposed airport site and surroundings
Survey Methods	1) Survey times : 1 time. 2) Survey points : The same as the survey area. 3) Survey methods : Site investigation, perception survey, data collection and analysis.

3. Prediction of Environmental Conditions without the Project

Future environmental conditions (covering all subjects in the previous Section 2) without the Project shall be predicted based on the historical trends and existing environmental conditions. Factors and conditions which might have a bearing in the projection of impacts, such as existing projects, shall be taken into account.

4. Survey Organization

The survey shall be conducted by the following specialists and field surveyors.

1) Overall coordinator
2) Specialist on social environment
3) Specialist on flora
4) Specialist on fauna
5) Specialist on air quality
6) Specialist on water quality
7) Specialist on noise

5. Work Results

5.1 General

The Contractor shall keep accurate records of all work accomplished under this Contract and deliver complete legible copy of records to the Consultant upon completion of the work or at such other time or times as it may be directed by the Consultant. The Consultant has the right to examine such records at any time prior to the Contractor's delivery to the Consultant.

5.2 Records and Photographs

Records shall contain the following items :

1) Reference location, date, time and weather of field tests and/or sampling.
2) Photos of all equipment used for the work, samples obtained.
3) Row data of field and laboratory tests and measurement.
4) Data sheets of perception survey.
5) Reference books, sources of data/information, names of organization/personnel interviewed.

5.3 Reports

The following reports shall be prepared in accordance with guidelines of EMB and submitted to the Consultant. Reports shall be properly bound in a folder and submitted in original together with all text, tables, graphs and others in diskettes (MS-DOS format), originals of drawings and negatives of photographs.

Interim Report : Containing summary of all the survey work perfonned, key findings, detailed descriptions of the historical trends and existing conditions of the environment, information deficiencies and all the data and information obtained by the survey.

Draft Final Report : Containing descriptions of the historical trends and existing conditions of the environment, information deficiencies, prediction of future environmental conditions without the Project and other data which are deemed necessary for the Environmental Impact Statement.

Final Report :- Amend the Draft Final Report to incorporate all comments and information given by the Consultants.

Table 13.2.1 Air Quality Measurement Results

Sampling Point		Barangay Panaogao No.1			Barangay Purisima No.2			Barangay Bagtic No.3			Barangay Bagacay No.4		
	Time	SO2	NO2	TSP	SO2	NO2	TSP	SO2	NO2	TSP	SO2	NO2	TSP
05.Sept.96	0700-1000	ND	ND	ND	45.497	31.020	179.841	5.060	9.064	12.889	24.744	13.237	145.377
	1000-1400	21.665	34.963	108.413	30.168	25.652	158.968	34.121	20.526	45.822	39.431	28.764	179.908
	1400-1900	5.055	22.661	185.275	12.132	11.957	22.489	15.165	15.863	34.255	24.265	11.957	192.175
	1900-2500	16.544	14.833	9.300	24.564	12.233	34.872	16.815	13.224	36.417	18.199	7.182	102.221
06.Sept.96	0700-1000	14.410	11.312	60.346	15.166	38.863	71.146	48.530	62.209	14.822	18.712	12.754	180.934
	1000-1400	60.662	76.516	79.051	13.787	10.869	120.772	6.740	15.961	28.622	24.265	35.890	230.890
	1400-1900	30.331	19.138	158.807	10.110	2.989	68.409	30.331	2.388	63.241	22.059	13.042	246.274
	1900-2500	18.198	14.957	79.051	16.851	12.086	23.715	3.033	5.439	33.132	6.070	10.877	54.132
07.Sept.96	0700-1000	11.029	9.890	73.781	14.367	14.312	70.068	8.670	3.885	9.121	4.549	5.439	209.789
	1000-1400	17.693	24.927	50.818	13.270	20.395	109.793	2.757	7.416	48.071	15.165	36.258	212.069
	1400-1900	2.427	29.892	91.627	4.044	44.609	74.110	3.033	9.024	191.339	4.044	43.972	83.442
	1900-2500	3.033	2.387	187.745	40.442	38.236	87.372	3.033	2.387	146.367	10.110	67.793	256.793
08.Sept.96	0700-1000	21.232	16.732	37.729	97.060	19.142	ND	3.033	1.880	ND	3.033	23.927	49.065
	1000-1400	20.221	18.631	ND	25.542	28.247	ND	12.133	14.363	ND	2.890	36.460	ND
	1400-1900	10.110	7.251	ND	15.165	10.198	97.232	2.166	1.942	90.221	16.851	16.618	ND
	1900-2500	6.070	5.438	205.228	24.978	15.996	93.493	10.832	7.769	222.923	12.132	8.158	19.763
09.Sept.96	0700-1000	12.638	3.986	123.319	20.221	2.659	32.513	16.177	3.190	18.972	45.497	40.676	30.670
	1000-1400	12.133	23.932	116.459	16.177	28.677	170.749	2.528	10.772	173.912	5.055	31.903	211.743
	1400-1900	4.044	5.438	49.802	25.998	19.424	86.815	8.921	6.398	212.998	24.265	16.316	173.775
	1900-2500	17.332	21.366	137.548	30.331	16.316	239.623	12.132	3.675	213.902	38.997	31.078	18.242
10.Sept.96	0700-1000	8.272	9.889	166.007	18.198	10.877	274.482	3.250	5.827	186.334	12.638	18.129	204.442
	1000-1400	17.693	11.330	189.266	25.276	27.194	139.920	10.705	12.797	43.326	13.000	11.654	169.687
	1400-1900	15.166	11.957	223.678	6.070	4.785	69.170	3.033	5.734	85.638	7.583	17.937	63.377
	1900-2500	3.033	16.130	20.444	3.033	14.356	29.644	2.528	9.964	122.968	3.791	14.948	95.376
11.Sept.96	0700-1000	5.055	21.940	129.555	10.110	27.915	192.686	2.528	13.160	195.431	6.740	7.976	48.977
	1000-1400	9.099	7.971	68.071	16.851	31.105	173.912	12.638	9.970	206.410	16.851	7.969	47.430
	1400-1900	18.665	10.459	18.242	16.177	21.755	137.176	3.193	2.862	18.600	9.100	9.518	225.295
	1900-2500	6.319	9.064	27.364	7.583	8.158	11.858	4.550	5.438	18.044	8.272	7.416	35.573

Notes: ND = none detected;
Unit = $\mu g/Nm3$

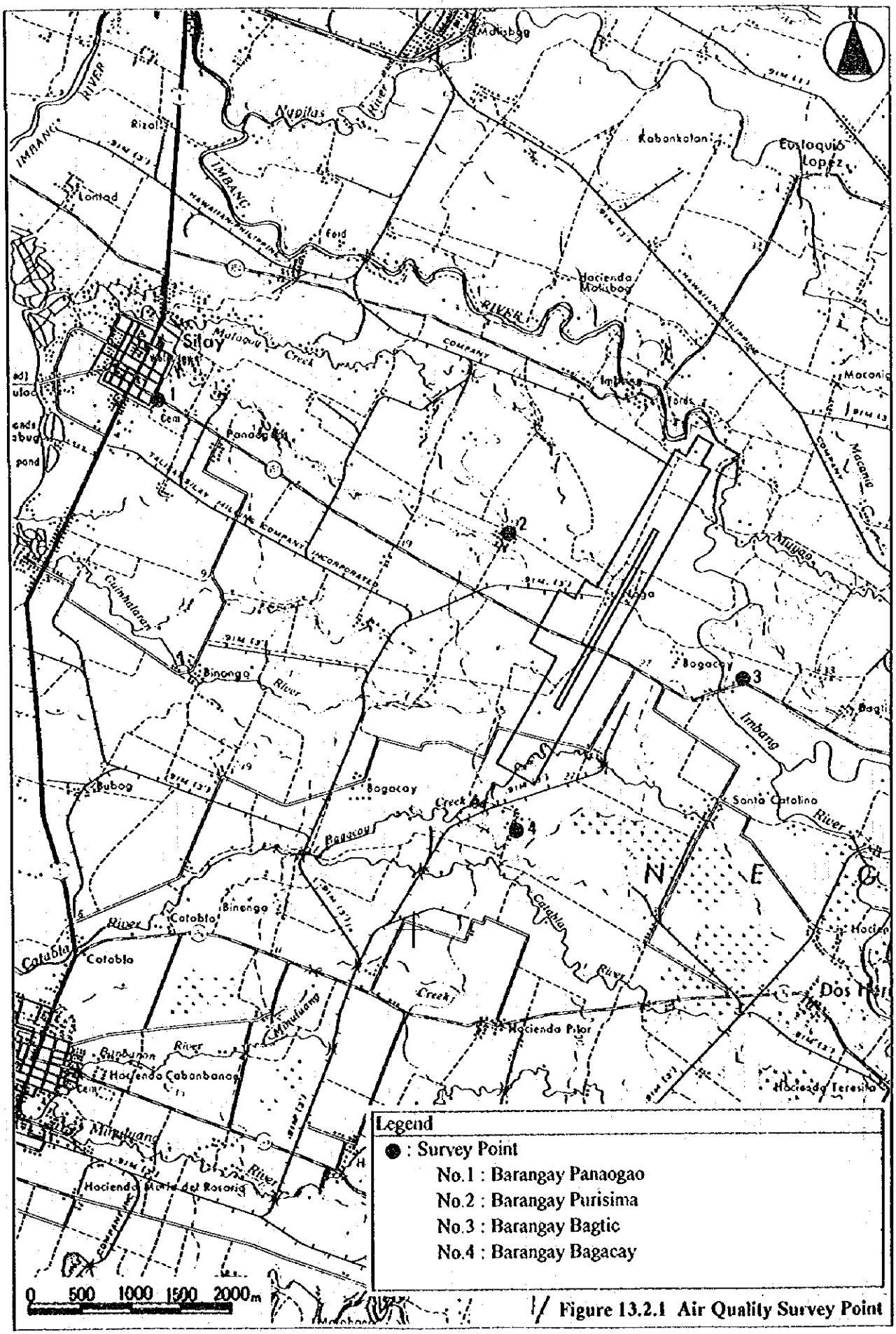


Figure 13.2.1 Air Quality Survey Point

Table 13.2.2 Noise Measurement Results (1)

Time	Station No.1 : Barangay Panaogao						
	05.Sept.96	06.Sept.96	07.Sept.96	08.Sept.96	09.Sept.96	10.Sept.96	11.Sept.96
7:00 A.M.			< 42 - 70	< 42 - 68	< 42 - 58	< 44 - 62	< 44 - 64
8:00 A.M.			< 48 - 68	< 42 - 60	< 46 - 70	< 44 - 60	< 42 - 58
9:00 A.M.			< 46 - 66	< 42 - 64	< 42 - 60	< 42 - 68	< 42 - 54
10:00 A.M.		< 48 - 78	< 46 - 66	< 42 - 66	< 42 - 66	< 42 - 58	< 42 - 58
11:00 A.M.		< 40 - 74	< 40 - 66	< 42 - 54	< 44 - 64	< 44 - 60	< 42 - 60
12:00 A.M.		< 48 - 72	< 40 - 70	< 42 - 62	< 44 - 60	< 44 - 70	< 44 - 56
1:00 P.M.		< 44 - 78	< 40 - 60	< 42 - 60	< 44 - 68	< 42 - 66	< 42 - 56
2:00 P.M.		< 46 - 74	< 40 - 80	< 42 - 68	< 44 - 58	< 44 - 60	< 42 - 56
3:00 P.M.		< 46 - 68	< 50 - 68	< 42 - 70	< 42 - 60	< 44 - 64	< 48 - 70
4:00 P.M.		< 42 - 74	< 40 - 60	< 44 - 68	< 44 - 66	< 46 - 68	< 40 - 66
5:00 P.M.		< 58 - 66	< 44 - 68	< 46 - 70	< 44 - 58	< 46 - 68	< 44 - 60
6:00 P.M.		< 54 - 60	< 46 - 68	< 40 - 64		< 42 - 56	< 42 - 58
7:00 P.M.		< 54 - 66	< 44 - 66	< 52 - 62			
8:00 P.M.		< 52 - 64	< 40 - 54	< 42 - 54			
9:00 P.M.		< 42 - 50	< 42 - 68	< 44 - 60			
10:00 P.M.		< 42 - 50	< 44 - 66	< 42 - 56			
11:00 P.M.		< 46 - 54	< 42 - 66				
12:00 P.M.							

Note : Unit = dB(A)

Table 13.2.2 Noise Measurement Results (2)

Time	Station No.2 : Barangay Bagacay						
	05.Sept.96	06.Sept.96	07.Sept.96	08.Sept.96	09.Sept.96	10.Sept.96	11.Sept.96
7:00 A.M.		< 40 - 44	< 40 - 48	< 40 - 44	< 40 - 48	< 40 - 48	< 50 - 54
8:00 A.M.		< 40 - 44	< 40 - 46	< 40 - 46	< 40 - 44	< 40 - 46	< 50 - 56
9:00 A.M.	< 40 - 46	< 40 - 42	< 40 - 42	< 40 - 42	< 40 - 46	< 40 - 46	< 40 - 45
10:00 A.M.	< 40 - 42	< 40 - 46	< 50 - 58	< 40 - 46	< 40 - 46	< 40 - 44	< 40 - 48
11:00 A.M.	Below 40	< 40 - 42	< 40 - 44	Below 40	< 40 - 48	< 40 - 48	< 40 - 44
12:00 A.M.	< 40 - 44	Below 40	< 40 - 46	< 50 - 58	< 40 - 42	< 50 - 52	< 40 - 46
1:00 P.M.	< 40 - 46	< 40 - 46	< 40 - 46	< 40 - 44	< 40 - 42	< 40 - 48	< 40 - 42
2:00 P.M.	< 40 - 44	Below 40	< 50 - 56	< 50 - 54	< 40 - 46	< 40 - 42	< 40 - 46
3:00 P.M.	< 40 - 45	< 40 - 48	< 40 - 44	< 40 - 46	< 40 - 44	Below 50	< 40 - 46
4:00 P.M.	< 50 - 52	< 50 - 52	< 50 - 52	< 40 - 46	< 40 - 48	< 50 - 52	< 40 - 48
5:00 P.M.	< 40 - 46	< 40 - 46	< 40 - 48	< 40 - 42	< 50 - 52	< 50 - 54	< 50 - 56
6:00 P.M.	< 40 - 42	< 40 - 42	< 40 - 44	< 40 - 48	< 40 - 44	< 40 - 48	< 40 - 48
7:00 P.M.	< 40 - 48	< 40 - 44	< 40 - 42	< 50 - 52	< 40 - 48	< 40 - 44	Below 50
8:00 P.M.	< 50 - 54	< 40 - 46	Below 40	< 40 - 42	< 40 - 46	< 40 - 46	< 50 - 54
9:00 P.M.	< 40 - 44	< 40 - 42	< 40 - 42	< 40 - 48	< 40 - 48	< 40 - 42	
10:00 P.M.	< 40 - 42	< 40 - 44	< 40 - 42	Below 50	< 40 - 42	< 40 - 42	
11:00 P.M.	< 50 - 54	< 40 - 46	Below 40	< 40 - 46	Below 40	< 40 - 48	
12:00 P.M.	< 50 - 52	< 40 - 46	Below 40		Below 40	< 40 - 46	

Note : Unit = dB(A)

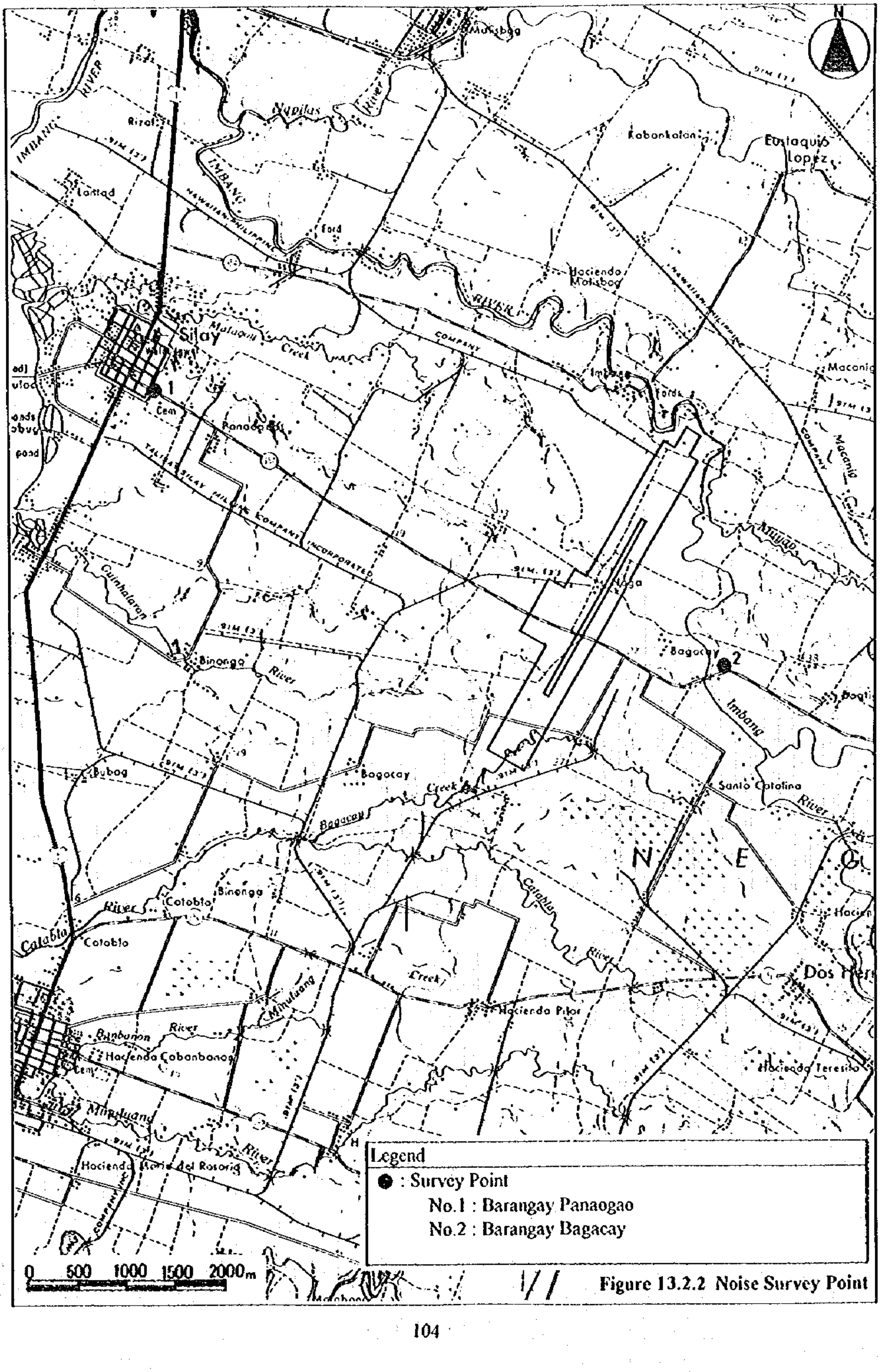


Figure 13.2.2 Noise Survey Point

Table 13.2.3 Maximum Noise Measurement Results (Existing Airport) (1)

			Station No.3 : Asia Brewery, Magsaysay St., Bacolod City						
Flight Number	Time		05.Sept.96	06.Sept.96	07.Sept.96	08.Sept.96	09.Sept.96	10.Sept.96	11.Sept.96
PR131	440	Arrival	88.0	-	90.0	94.0	-	91.0	94.0
PR371	540	Departure	-	86.0	-	-	-	-	-
PR370	735	Arrival	-	-	-	-	91.0	89.0	90.0
PR132	815	Departure	-	-	-	-	-	-	-
PR133	1230	Arrival	-	85.0	90.0	89.0	90.0	92.0	92.0
PR134	1330	Departure	-	-	-	-	-	-	-
PR135	1625	Arrival	85.0	90.0	91.0	90.0	85.0	90.0	91.0
PR136	1715	Departure	89.0	-	-	-	-	-	-
PR137	1915	Arrival	-	91.0	88.0	90.0	85.0	91.0	89.0
PR138	2015	Departure	-	-	-	-	-	-	-

Note : Unit = dB(A)

Table 13.2.3 Maximum Noise Measurement Results (Existing Airport) (2)

			Station No.4 : Saint Vincent Village, Barangay Tangub						
Flight Number	Time		05.Sept.96	06.Sept.96	07.Sept.96	08.Sept.96	09.Sept.96	10.Sept.96	11.Sept.96
PR131	440	Arrival	-	88.9	94.9	95.4	90.4	94.0	99.0
PR371	540	Departure	-	91.8	90.8	89.0	92.3	89.6	90.5
PR370	735	Arrival	-	84.5	87.6	77.2	95.0	96.3	93.1
PR132	815	Departure	-	95.9	96.8	86.9	90.3	97.7	92.1
PR133	1230	Arrival	-	83.9	95.6	93.6	93.1	95.7	80.8
PR134	1330	Departure	-	95.3	95.3	77.6	90.5	97.0	97.8
PR135	1625	Arrival	88.5	81.4	94.1	90.3	83.3	97.7	93.0
PR136	1715	Departure	87.9	100.9	93.4	87.9	94.9	96.6	96.2
PR137	1915	Arrival	82.8	-	100.8	-	92.3	98.3	90.9
PR138	2015	Departure	92.2	93.5	93.8	-	91.1	94.7	91.1

Note : Unit = dB(A)

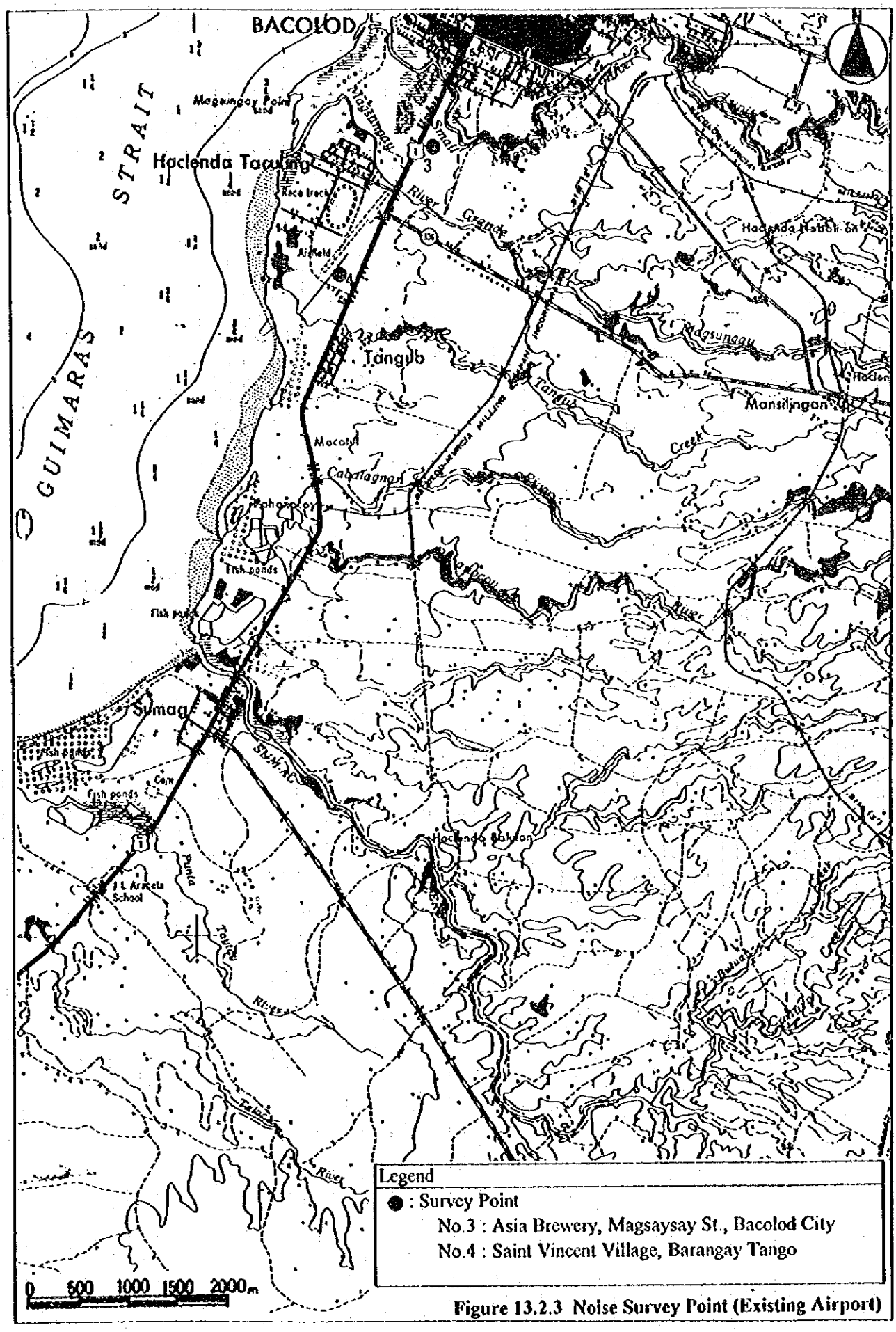


Figure 13.2.3 Noise Survey Point (Existing Airport)

Table 13.2.4 Water Quality Test Results

Sampling Point	Binonga Creek		Matigay Creek		Bagacay Creek			Imbang River		
Parameter	No.1	No.3	No.2	No.5	No.4	No.9	No.10	No.6	No.7	No.8
BOD (5 days, 20 C), mg/l	5.1	2.8	3.2	4.1	2.9	1.9	1.8	3.5	1.5	2.2
Total Suspended Solids, mg/l	43.5	22.5	11.5	ND	38.5	20.0	11.5	9.0	23.5	14.5
Total Phosphorus (P), mg/l	1.5	1.3	0.90	0.20	1.7	1.8	1.3	0.86	0.85	0.77
Total Nitrogen (N), mg/l	14.8	14.4	14.2	ND	ND	ND	ND	ND	ND	ND
Oil and Grease, mg/l	11.2	12.0	9.6	12.8	4.8	14	4.8	2.0	6.8	7.6
pH @ 23.6 C	7.24	7.46	7.22	6.36	7.60	7.28	7.28	7.78	7.82	7.85
Color, PCU	46.0	38.0	58.0	1.0	58.0	72.0	53.0	28.0	25.0	25.0
Odor, T.O.N.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Water Temperature, C	26.0	28.0	26.0	26.0	28.0	28.0	26.0	26.0	26.0	26.0
Air Temperature, C	28.0	30.0	28.0	28.0	30.0	30.0	28.0	28.0	28.0	28.0
Weather	drizzly	sunny	sunny	sunny	sunny	drizzly	drizzly	sunny	cloudy	drizzly

Notes: ND = none detected;
Detection Limit of Total N = 0.4 mg/l

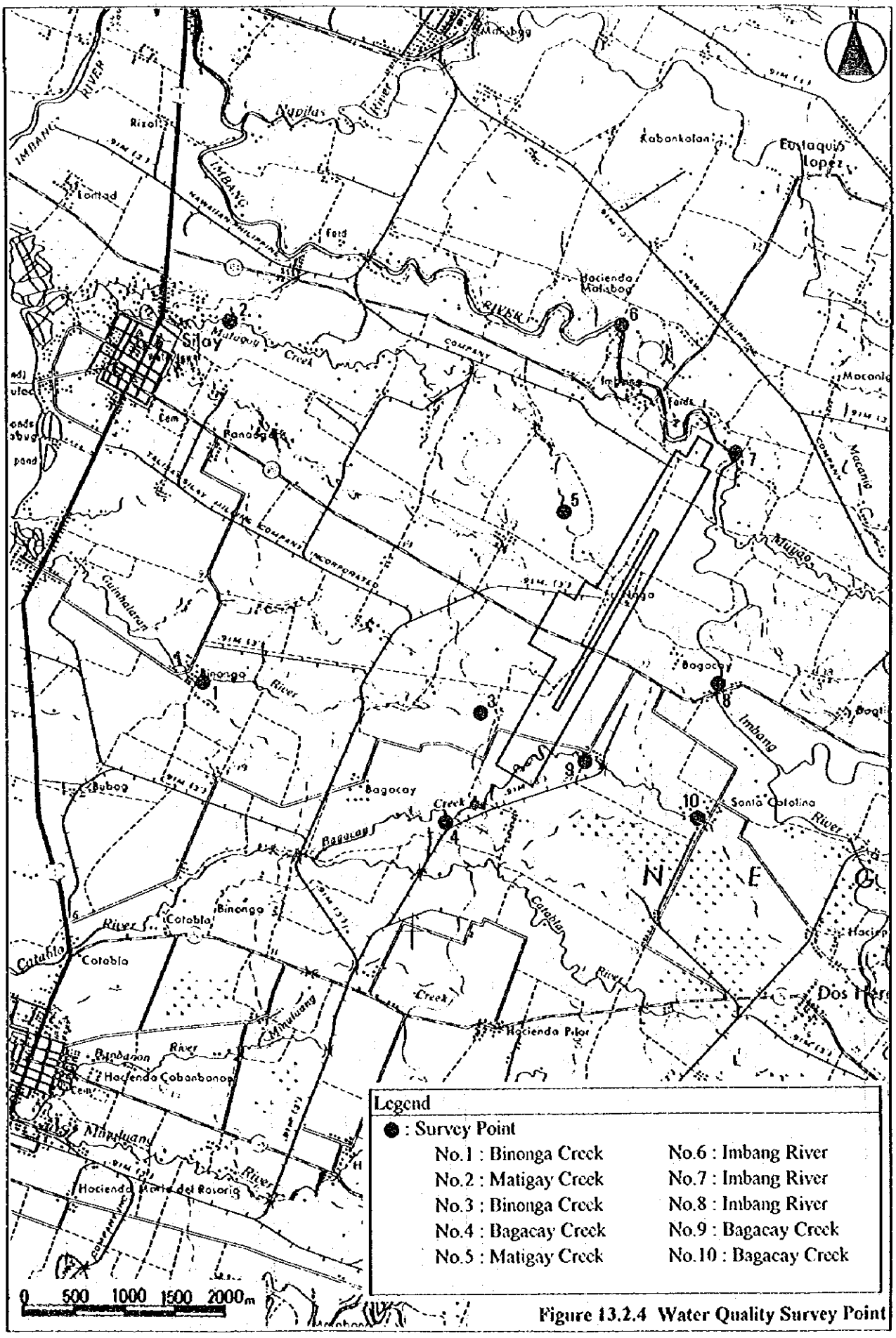


Figure 13.2.4 Water Quality Survey Point

Table 13.2.5 Vegetation (Species of Confirmation)

Scientific Name	Common Name	Economic Importance
Donax cannaeformis	Bamban	Ornamental plant
Philodendron squaniferum	Red bristle philodendron	Ornamental plant
Canna x generalis	Bandera espanola	Ornamental plant
Manihot esculenta	Kamoteng kahoy	Fruit is edible
Artocarpus heterophylus	Langka / Jackfruit	Fruit is edible; wood is used for musical instruments
Mikania scandens	Climbing hemp weed	
Averrhoa carambola	Balimbing	Fruits are eldible and has medicinal value; also used in stain remover
Stachytarpheta jamaicensis	Alipante	
Physalis angulata	Tino-tino	
Tamarindus indica	Sampalok	Young leaves, flowers and pods are used for seasoning foods; fruits used in the manufacture of jams; sweets and drinkss; the bark is a source of ink; the seed is a source of oil for varnish; also used as street ornamental plan
Bixa orellana	Achuete	Seed are used for coloring food and fabrics; can be used for landscaping
Blumea balsaminefera	Sambong	Leaves has medicinal value
Macaranga grandifolia	Takip-asin	Wood can used for fuel; resin is used as astringent gargle for ulcer of the mouth
Capsicum frutescens	Sili	Leaves are used as food flavoring, fruit used as spice
Bauhinia purpurea	Alibangbang	Leaves are edible and can be used as condiment; bark and leaves have medicinal properties; wood can be used for temporary construction, firewood and charcoal
Ervatamia pandacaqui	Pandakaki	
Chromolaena odorata	Hagonoy	
Baugainvellia spectabilis	Boganvilla	Ornamental plant
Urena labata	Dalumpang	
Leucaena leucocephala	Ipil-ipil	Wood is good for firewood and charcoal; bark produces a brown dry; leaves can be used as animal feed; seeds can be substituted for coffee; has medicinal properties
Mangifera indica	Manga / Mango	Fruits are edible; wood is used for cabinet-making
Annona muricata	Guyabano / Banana	Fruits are edible
Gmelina arborea	Gmelina	Reforestation tree species
Cassia alata	Acapulco	
Ficus magnoloifolia	Kanapai	Wood used for light construction
Ficus adorata	Pakiling	Rough leaves are used for scouring
Ficus ulmifolia	Isis	Leaves are used as substitute for sandpaper

Table 13.2.5 Vegetation (Species of Confirmation)(Con't....)

Scientific Name	Common Name	Economic Importance
Trema orientalis	Anabiong	Wood used for temporary construction, wooden shoes, fish net floats, and other uses of soft light wood
Chrysophyllum cainito	Kaimito	Fruits are edible; leaves and bark have medicinal value; wood can be used for light construction
Samanea saman	Rain Tree	Wood is highly valued for manufacture of novelties, furniture and cabinets
Pityrogramma calomelanos	Silver fern	
Eucalyptus robusta	Eucaplytus / Mahogany	Wood used for house shingles, shipbuilding, general construction
Psidium guajava	Guava / Bayabas	Fruit is edible and makes excellent jam; bark and leaves are boiled for diarrhea; wood used for tool handle
Pithecilabium dulce	Camachile	Fruits is edible; wood used for light construction
Colcasia esculentum	Gabi	Fruit/root is used as food
Musa sapientium	Banana	Fruit is used as food; the inner core of the trunk flowers and heart are used as vegetable
Imperata cylindrica	Kogon	The tender shoots of kogon are for grazing; leaves are used for thatching; a decoction of fresh roots is diuretic and used in dysentery; effective for soil erosion and control
Bambusa arundinacea	Bamboo / Kawayan	Used for building and construction purposes and for articles in cottage industry
Bambusa blumeana	Bamboo / Kawayan	The culms are used for building construction and for manufacture of furniture, kitchen utensile, rope, hats, toys, etc.; the edible young shoots are fair source of calcium, iron, protein and carbohydrates

Source : SCHEMA (1996)
Certified by Botany Division / Herbarium of the Philippines (Sept. 1996)

Table 13.2.6 Vehicle Traffic Count Results (1)

	Station No.1 : National Road (Date : 05 Sept., 1996)					
	Car	Jeepney	Bus	Truck	Others	Total
00:00-01:00	39	3	32	9	16	99
01:00-02:00	29	6	19	6	5	65
02:00-03:00	27	8	37	8	23	103
03:00-04:00	16	7	57	5	47	132
04:00-05:00	24	22	89	5	76	216
05:00-06:00	46	64	73	5	156	344
06:00-07:00	119	162	143	7	200	631
07:00-08:00	371	310	234	8	243	1,166
08:00-09:00	443	272	224	6	215	1,160
09:00-10:00	506	229	245	15	340	1,335
10:00-11:00	198	108	152	6	320	784
11:00-12:00	456	220	260	6	245	1,187
12:00-13:00	186	146	105	7	66	510
13:00-14:00	315	180	151	36	141	823
14:00-15:00	223	115	133	41	123	635
15:00-16:00	248	109	94	24	148	623
16:00-17:00	281	144	152	36	286	899
17:00-18:00	291	169	128	20	331	939
18:00-19:00	269	148	96	29	240	782
19:00-20:00	198	120	90	34	200	642
20:00-21:00	155	103	113	12	152	535
21:00-22:00	134	35	74	9	94	346
22:00-23:00	99	8	60	10	65	242
23:00-24:00	58	5	51	5	14	133
Total	2,274	1,411	1,565	86	1,886	7,222

Table 13.2.6 Vehicle Traffic Count Results (2)

	Station No.2 : Brgy. Guimbala-on Road (Date : 05 Sept., 1996)					
	Car	Jeepney	Bus	Truck	Others	Total
00:00-01:00	7	2	0	0	12	21
01:00-02:00	2	0	1	0	3	6
02:00-03:00	3	0	1	0	1	5
03:00-04:00	5	0	3	0	5	13
04:00-05:00	1	0	2	0	11	14
05:00-06:00	7	3	4	0	33	47
06:00-07:00	20	14	11	3	100	148
07:00-08:00	57	21	22	0	105	205
08:00-09:00	32	7	5	1	110	155
09:00-10:00	28	4	6	1	130	169
10:00-11:00	22	3	16	0	121	162
11:00-12:00	40	8	19	2	126	195
12:00-13:00	26	3	12	0	228	269
13:00-14:00	31	4	11	0	223	269
14:00-15:00	33	2	7	0	215	257
15:00-16:00	31	5	8	0	267	311
16:00-17:00	48	5	12	0	340	405
17:00-18:00	35	4	6	0	257	302
18:00-19:00	34	5	5	0	161	205
19:00-20:00	27	0	5	0	102	134
20:00-21:00	17	2	2	0	54	75
21:00-22:00	12	4	0	0	14	30
22:00-23:00	5	0	0	0	5	10
23:00-24:00	2	0	1	0	3	6
Total	301	34	69	0	1,869	2,273

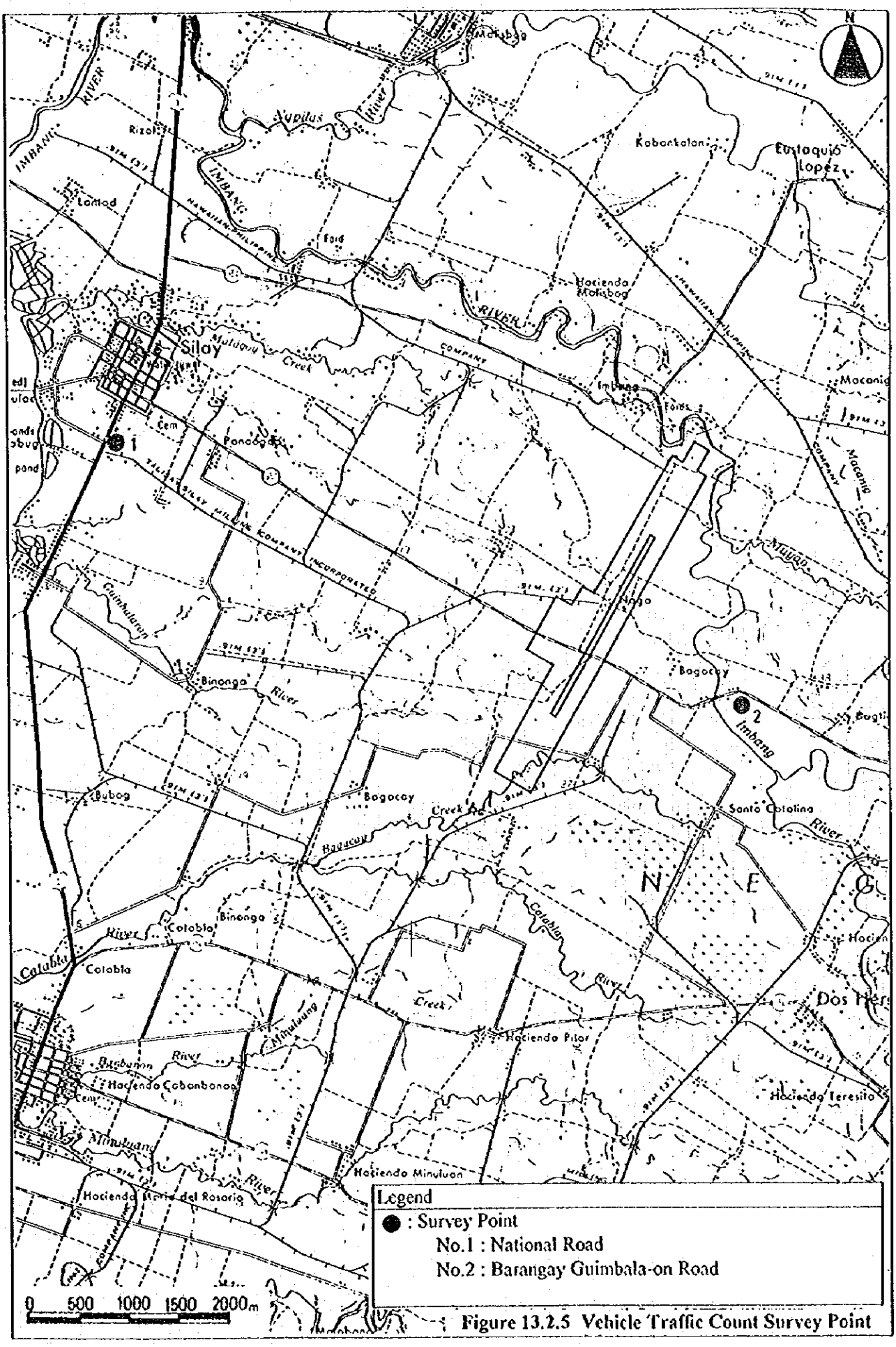


Figure 13.2.5 Vehicle Traffic Count Survey Point

Appendix x.x.x Cost Estimates for Medium Term Development of New Bacolod Airport

Item	Unit	Unit Price		Quantity	Amount ('000)		
		Yen	PHP		YEN	PHP	Combined PHP
1. Land Acquisition and Compensation							
Land Acquisition	sq.m	0	10	1,826,100	0	18,261	18,261
Compensation for Houses	no.	0	200,000	35	0	7,000	7,000
Sub Total					0	**25,261**	**25,261**
2. Preliminary and General	LS				**251,153**	**67,373**	**126,736**
3. Work Cost							
a) Building Work							
Passenger Building	sq.m	55,000	19,500	7,000	385,000	136,500	227,500
Cargo Building	sq.m	25,385	14,000	1,850	46,962	25,900	37,000
Administration Building	sq.m	29,615	13,000	1,680	49,754	21,840	33,600
Control Tower	LS	15,992,308	7,020,000	1	15,992	7,020	10,800
Fire Station	sq.m	27,923	15,400	560	15,637	8,624	12,320
Other Buildings	LS	8,461,538	8,000,000	1	8,462	8,000	10,000
Sub Total					**521,805**	**207,884**	**331,220**
b) Air Navigation Systems							
Aeronautical Ground Lights	LS	515,850,000	6,417,273	1	515,850	6,417	128,345
Nav. Equipment (TWR)	LS	31,654,000	393,782	1	31,654	394	7,876
Nav. Equipment	LS	149,625,000	1,861,364	1	149,625	1,861	37,227
Weather Observation Equipment	LS	88,957,050	1,106,643	1	88,957	1,107	22,133
Sub Total					**786,086**	**9,779**	**195,581**
c) Utilities							
Power Supply System	LS	394,212,000	62,118,255	1	394,212	62,118	155,296
Water Supply System	LS	16,923,077	4,000,000	1	16,923	4,000	8,000
Telephone System	LS	9,519,231	250,000	1	9,519	250	2,500
Sewerage System	LS	30,461,538	16,800,000	1	30,462	16,800	24,000
Incinerator	LS	31,500,000	2,481,818	1	31,500	2,482	9,927
Sub Total					**482,616**	**85,650**	**199,723**
d) Fuel Supply Facility	LS	800,000,000	47,272,727	1	**800,000**	**47,273**	**236,364**
e) Special Equipment							
Rescue and Fire Fighting Vehicles	LS	162,000,000	0	1	162,000	0	38,291
Other Special Equipment ,Security	LS	108,000,000	0	1	108,000	0	25,527
Passenger Loading Bridges	no.	57,115,385	1,500,000	2	114,231	3,000	30,000
Sub Total					**384,231**	**3,000**	**93,818**
f) Civil Works							
Clearing & Grabbing	sq.m	0	8	295,000	0	2,360	2,360
Excavation	cu.m	0	100	84,400	0	8,440	8,440
Embankment-from Borrowed Sailes	cu.m	0	210	1,478,300	0	310,443	310,443
Pavements: PT-1	sq.m	3,025	715	116,700	353,018	83,441	166,881
Pavements: PT-2	sq.m	2,348	555	22,100	51,893	12,266	24,531
Pavements: PT-3	sq.m	1,883	445	45,400	85,474	20,203	40,406
Pavements: PT-4	m	1,862	440	4,900	9,122	2,156	4,312
Pavements: PT-5	m	783	185	9,900	7,749	1,832	3,663
Pavements: PT-6	m	952	225	9,300	8,853	2,093	4,185
Diversion Road: PT-6	m	952	225	36,400	34,650	8,190	16,380
Fences	m	423	1,900	9,000	3,808	17,100	18,000
Drainage: RC-Pipe	L.S.	1,075,673	4,830,750	1	1,076	4,831	5,085
Drainage: Stone Lining Channel	L.S.	0	18,440,000	1	0	18,440	18,440
Drainage: Culverts	L.S.	23,840,385	22,540,000	1	23,840	22,540	28,175
Landscaping (50% Sodding)	sq.m	0	60	1,331,000	0	79,860	79,860
Road Lighting	no.	67,692	4,000	60	4,062	240	1,200
Traffic Sign Board & Markings	L.S.	10,576,923	2,500,000	1	10,577	2,500	5,000
Electrical Ducts & Manholes	L.S.	19,038,462	3,000,000	1	19,038	3,000	7,500
Flood Control Ponds	L.S.	0	8,950,000	1	0	8,950	8,950
Sub Total					**613,158**	**608,883**	**753,811**
Total of Work Cos 3.					**3,587,897**	**962,469**	**1,810,517**
4. Miscellaneous					**179,395**	**48,123**	**90,526**
5. Consultant's Fee					**401,844**	**107,796**	**202,778**
6. Contingency					**442,029**	**121,102**	**226,682**
Grand Total					**4,862,318**	**1,332,125**	**2,481,400**