

MINISTRY OF HEALTH, HIGHWAYS
AND SOCIAL SERVICES
THE DEMOCRATIC SOCIALIST
REPUBLIC OF SRI LANKA

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR ESTABLISHMENT
OF
SCHOOL OF NURSING, SRI JAYWARDENEPURA
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

JANUARY, 1997



JAPAN INTERNATIONAL COOPERATION AGENCY
YAMASHITA SEKKEI INC.

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PREFACE

In response to a request from the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct a basic design study on the Project for Establishment of School of Nursing, Sri Jayewardenepura and entrusted the study to the Japan International Cooperation Agency (JICA).

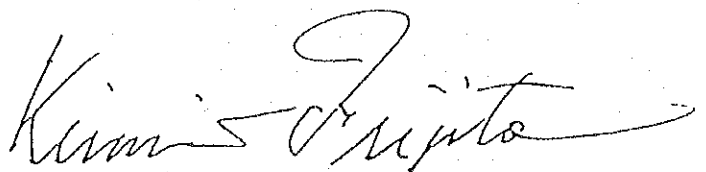
JICA sent to Sri Lanka a study team from May 21 to June 19, 1996.

The team held discussions with the officials concerned of the Government of Sri Lanka, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Sri Lanka in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Democratic Socialist Republic of Sri Lanka for their close cooperation extended to the teams.

January, 1997



Kimio Fujita
President

Japan International Cooperation Agency

January, 1997

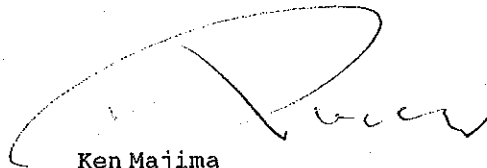
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Establishment of School of Nursing, Sri Jayewardenepura in the Democratic Socialist Republic of Sri Lanka.

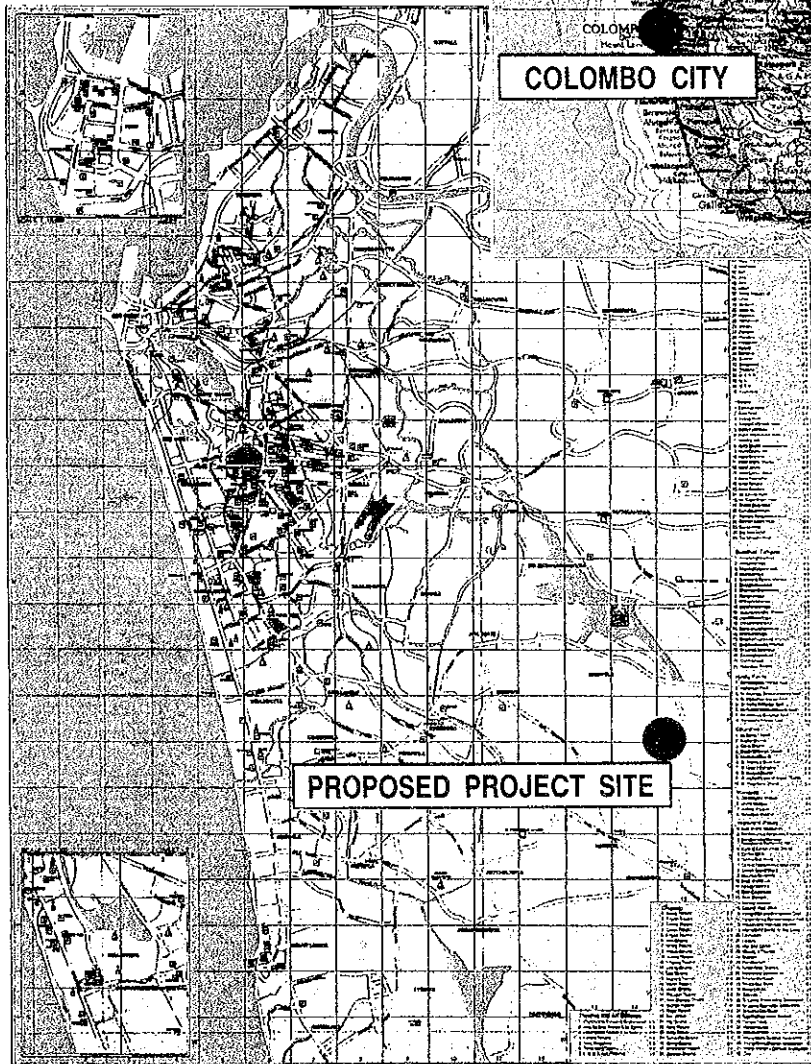
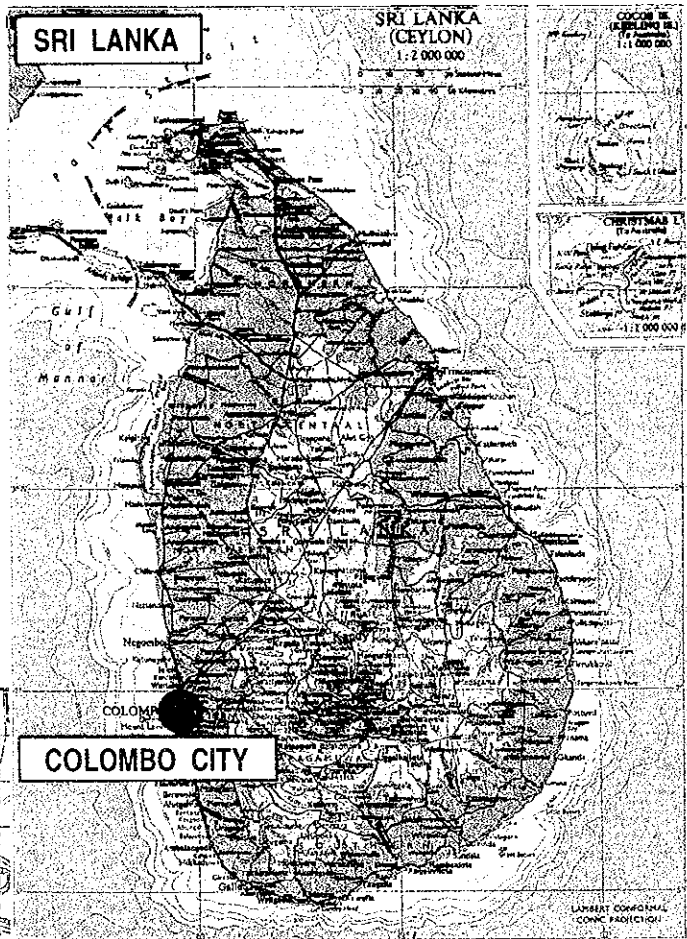
This study was conducted by Yamashita Sekkei Inc., under a contract to JICA, during the period from May 20, 1996 to January 17, 1997. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Sri Lanka and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

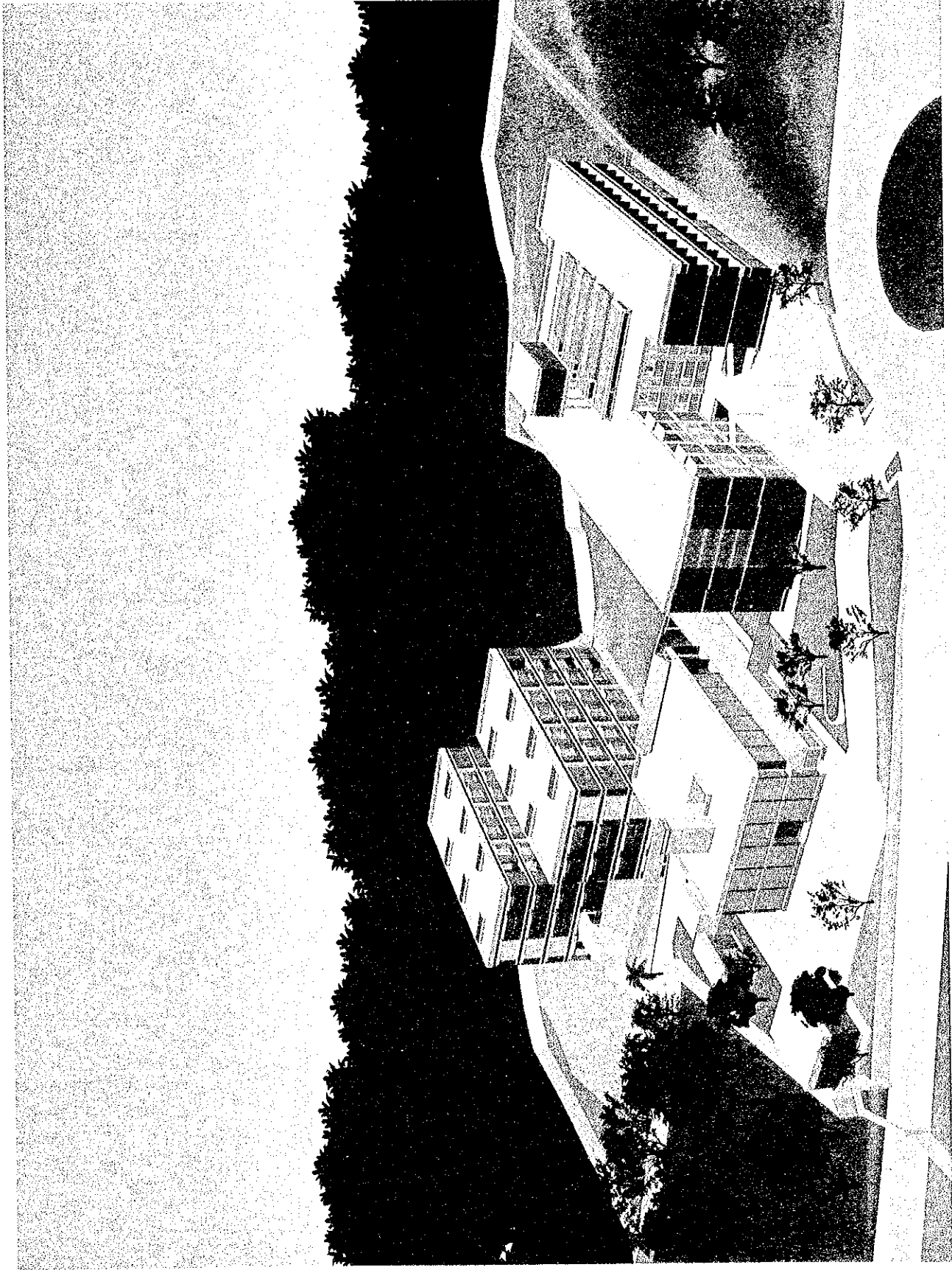
Very truly yours,



Ken Majima
Project manager,
Basic design study team on
The Project for Establishment of School
of Nursing, Sri Jayewardenepura
in the Democratic Socialist Republic
of Sri Lanka
Yamashita Sekkei Inc.



SITE LOCATION MAP



PERSPECTIVE

SCHOOL OF NURSING, SRI JAYEWARDENEPURA

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CHAPTER 1 BACKGROUND OF THE PROJECT

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1-1 Background of the Project

For Sri Lankan people, the average life expectancy and infant mortality rate at the year of 1994 were 71.6 years and 17.0 respectively. The average of life expectancy and infant mortality rate of the countries in South-Western Asia such as India, Nepal, Pakistan and Bangladesh are 47.3 years and 91.0 respectively. In comparison to it, Sri Lanka shows a good numerical values.

On the other hand, the shortfall of nurse is serious problem in Sri Lanka. The Government of Sri Lanka calculated the required number of nurse for the year 1994 as 16,500 but the actual number of nurse was 11,135 and the shortfall was 5,365.

1-1-1 Nursing Education in Sri Lanka

The following diagram shows the positioning of nurse training schools in the educational system of Sri Lanka. Eligibility requirements for the examination for admission to schools of nursing include passing the GCE-O/L after graduating from senior secondary schools, as is the case with other vocational training schools. As mentioned above the GCE-O/L, which is administered by the Department of Education, is the entrance examination for admission to schools of nursing. Every year there are more than 35,000 applications against 1,000 for admission to the schools. Many of these applicants have a high scholastic ability.

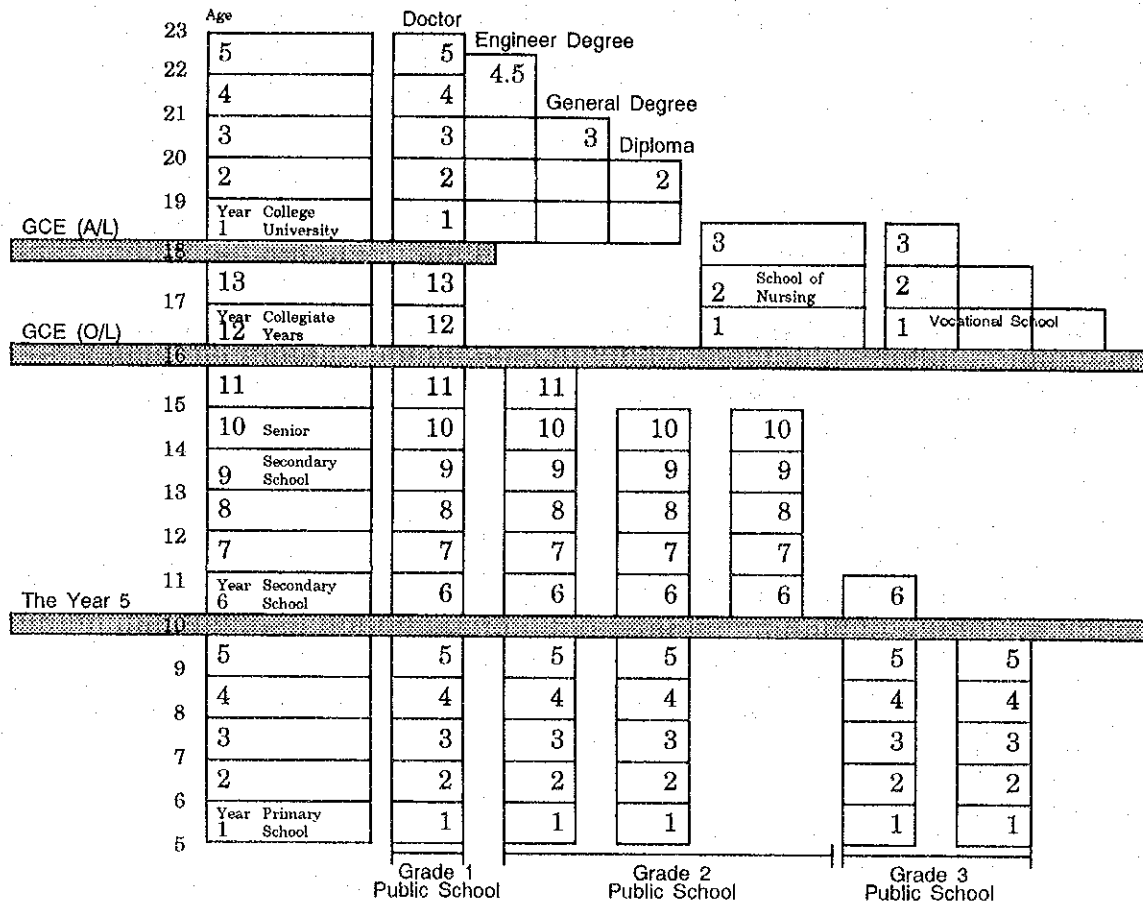
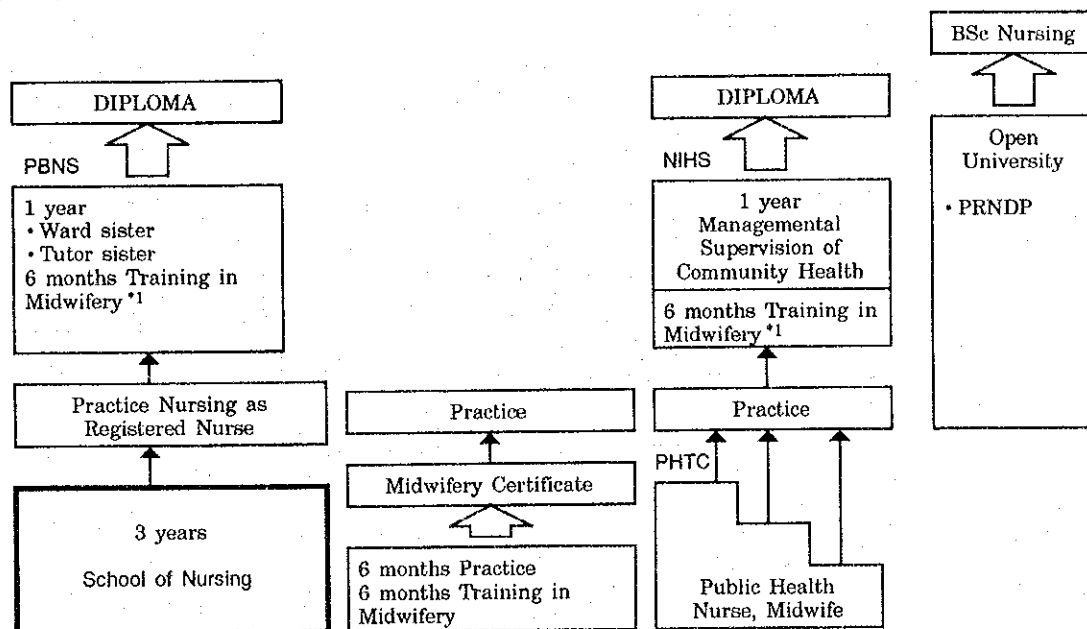


Fig. 1-1 Positioning of Nurse Training Schools in the Educational System of Sri Lanka

1-1-2 Qualifications for the Profession of Nursing

In Sri Lanka, nurses are trained at schools of nursing which offer three-year courses, as well as at the National Institute of Health Science, which trains medical professionals to engage in primary health care. Given below is the outline of the qualifications for the profession of nursing.



- PRNDP : Post Registered Nursing Degree Program
 PBNS : Post Basic School of Nursing
 NIHS : National Institute of Health Sciences
 PHTC : Public Health Training Centers
 *1 : Midwifery Training in the officer does not have midwifery training

Fig. 1-2 Qualifications for the Profession of Nursing

In Sri Lanka, there is a total of 11 schools of nursing (see the portion marked with a bold line in the above diagram) -- 10 existing national schools of nursing and the school of nursing attached to Sri Jayewarudenepura General Hospital. In addition, Mulleriyawa Mental Hospital has a school of nursing to train nurses to specialize in nursing patients suffering from mental diseases. The students enrolled in the 11 schools of nursing are also required to be trained in nursing mental disease patients for a total of five weeks before graduation.

The students who have completed the three-year nurse training course take the national examination for the nursing license administered by the Department of Health, Highways and Social Services. Those who have passed this examination are registered with the Sri Lanka Medical Council and are assigned to national hospitals as Grade II nurses. In the country, the professions of nursing is one of the few jobs which women can practice. Nurses are guaranteed steady incomes as government employees. For these reasons, there are many women who desire to be nurses.

1-1-3 Class of Nursing Staff in Sri Lanka

In Sri Lanka, the class of nursing is indicated in the following figure 1-3.

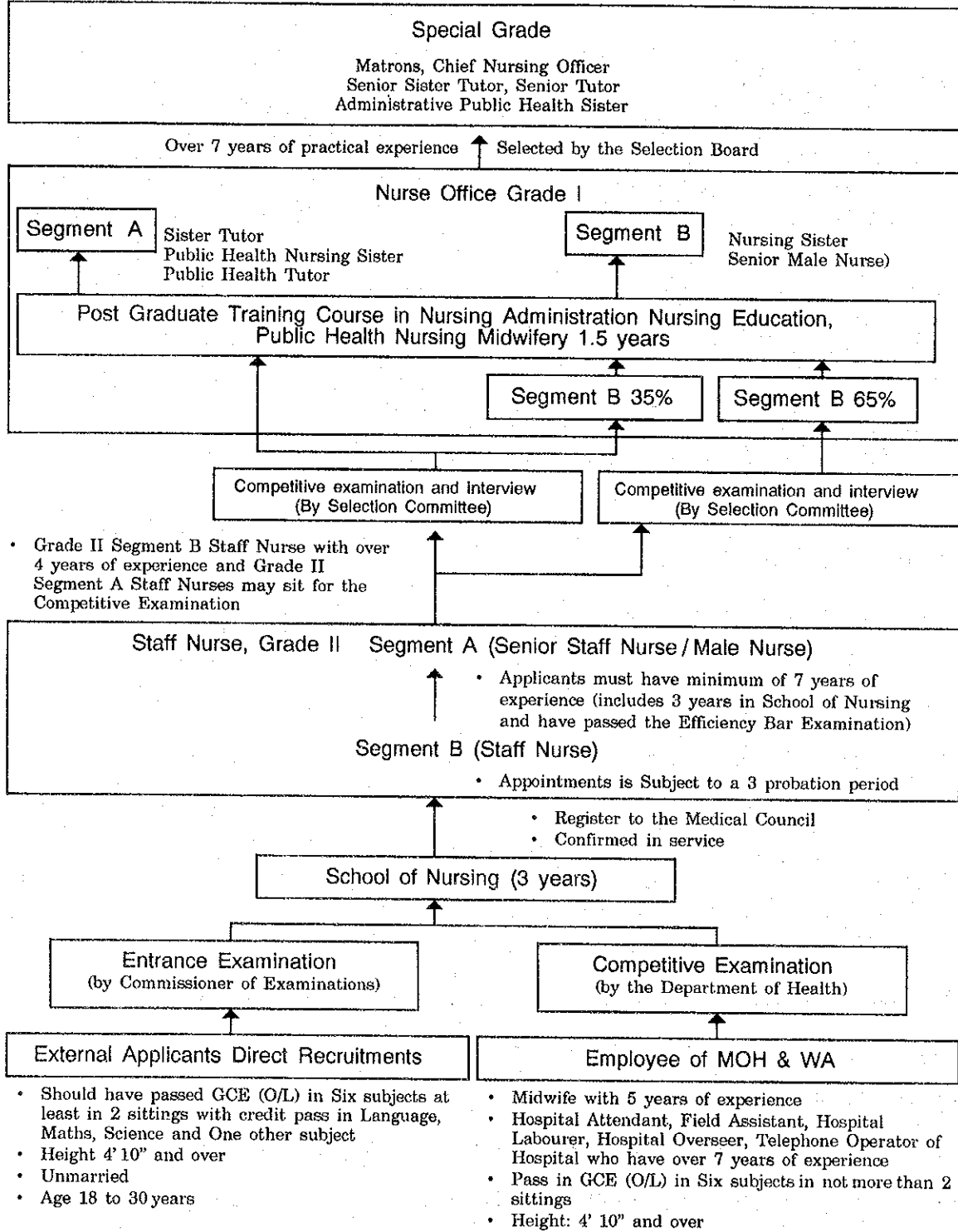


Fig. 1-3 Class of Nursing Staff in Sri Lanka

1-1-4 Present State of the Schools of Nursing in Sri Lanka

(1) Number of the Students Enrolled in Schools of Nursing

The following table gives an outline of the present state of the 10 existing national schools of nursing and the school of nursing operated and managed by Sri Jayewarudenepura General Hospital. There are wide fluctuations in the total annual number of students graduating from these schools of nursing due to the instability of the social and economic environments in the country.

Table 1-1 Number of Student and Tutor in School of Nursing

Number of Student and Tutor	*1 Number of Tutor (incl. principal)	Practical Training Hospital	Nurse Training Course									
			1988	1989	1990	1991	1992	1993	1994	1995	1996	
			New Graduate	New Graduate	New Graduate	New Graduate	New Graduate	New Graduate	New Graduate	New Graduate	New Graduate	
1	Colombo School of Nursing	12+ Librarian 1	Colombo Teaching	328 141	332 140	162 177	181 181	190 184	79 165	0 178	238 162	NA 77
2	Kandy School of Nursing	16	Kandy Teaching	325 90	152 146	176 155	164 307	178 149	0 173	0 168	135 161	NA 19
3	Galle School of Nursing	9	Galle Teaching	243 154	148 129	154 212	126 220	180 142	107 141	0 123	155 NA	NA
4	Kandana School of Nursing	9	Colombo N Teaching	— —	173 —	86 0	99 0	163 166	19 70	0 94	115 107	NA 30
5	Jaffna School of Nursing	4	Jaffna Teaching	59 89	147 36	0 0	0 0	9 127	0 27	0 29	NA NA	NA NA
6	Anuradhapura School of Nursing	5	Anuradhapura Provincial	191 42	79 47	120 55	91 0	119 0	25 116	0 0	113	NA
7	Batticaloa School of Nursing	6	Batticaloa Provincial	94 21	56 39	28 14	61 24	37 100	28 27	0 76	28 20	NA 23
8	Badulla School of Nursing	8	Palagolla Provincial	206 164	111 52	110 109	122 175	100 136	48 8	0 105	95 67	NA
9	Ratnapura School of Nursing	8	Ratnapura Provincial	165 65	50 40	63 64	86 97	79 48	33 53	0 86	71 79	NA
10	Kurunegala School of Nursing	10	Kurunegala Provincial	228 131	87 85	118 127	179 191	156 84	67 100	0 172	130 71	NA 44
Total				87+1								
				1837 897	1335 714	1017 913	1099 1195	1211 1136	406 880	0 1031	1177 319	NA 934
11	SJGH School of Nursing	3	SJGH Autonomy	0 —	41 75	0 0	37 0	43 38	0 0	0 33	0 33	(55) 0

Kandana opened in 1989

SJGH Nursing School opened and 88 students entered in 1986. No students were entered in 1987.

*1 At the field survey in June, 1996

The total number of students to be newly enrolled in these schools of nursing vary widely from year to year. In 1988, in particular, as many as 5,000 applicants passed the entrance examination. But that

was a too large number, with the result that only 1,837 of them were admitted to these schools of nursing in two groups. The other successful applicants only received three month orientation and after that were told to hold themselves in readiness while working at hospitals as trainees. In 1989 and 1990, they were admitted to the schools of nursing in turn. As a result, there was no entrance examination for these schools of nursing in these years. Those successful applicants who were required to stand by were given funds while they were waiting.

There was no entrance examination in 1994 either because that was an election year. At these schools of nursing, the academic year commences in January and ends in December. In 1996, however, the successful applicants have not yet been enrolled in the schools of nursing despite the fact that the entrance examination was held in October last year and the results have become definite.

The graduation examination is held upon completion of the three-year course and it takes two months to put together the results of these examinations, and one to one and a half months to make a final decision on the total number of successful examines. The first graduation examination for the students who were newly enrolled in these schools of nursing in October 1992 were held in October last year and the second one has also been held. The third graduation examination, which is the final one, is scheduled to be held in the same year. The numbers of successful examines in the past two graduation examinations for these students are as shown below.

Of about 1,040 examines, 800 were the students of these schools of nursing, 150 were the staff members of the Department of Health, Highways and Social Services and 90 were servicemen. The number of

successful examines in each of the two graduation examinations are as follows.

The first examination: 750
 The second examination: 230
 The third examination (Number of applicants): 60

It is estimated that about 10 applicants for the third examination will prove unsuccessful.

The actual situation of the students presently enrolled in these school of nursing is described below, taking Colombo School of Nursing and Ratnapura School of Nursing, for which a provincial hospital is serving as the training hospital, as examples.

Table 1-2 Actual Condition of Students on the Register at Colombo School of Nursing, June 1996

	No. of Entered		No. of Withdraw		No. of Transferred In		No. of Transferred Out		Final No. on Register			Graduate Year
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Total	
Entered in April, '91	155	27	3	2	10	1	0	0	154	24	178	'94.04.01
Entered in October, '92	190	21	14	0	1	0	0	0	141	21	162	'95.10.15
Entered in November, '93	70	9	0	0	2	0	0	0	69	8	77	
Entered in March, '95	214	34	24	3	0	1	0	0	178	31	209	

Table 1-3 Actual Condition of Students on the Register at Ratnapura School of Nursing, June 1996

	No. of Entered		No. of Withdraw		No. of Transferred In		No. of Transferred Out		Final No. on Register			Graduate Year
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Total	
Entered in April, '91	66	17	0	0	4	0	1	0	70	16	86	'94.04.01
Entered in October, '92	73	6	0	2	0	0	0	0	74	4	78	'95.10.15
Entered in November, '93	29	0	1	0	0	0	0	0	28	0	28	
Entered in March, '95	89	2	22	0	0	0	0	0	63	2	65	

Enrollment : Senior secondary school graduates who have passed the national examination are assigned to the 10 existing national schools of nursing.

Successful examinees are selected in a fixed number every year, but the actual number of the students admitted to these schools of nursing fluctuates from year to year according to these schools' ability to admit successful trainees.

Withdrawal : The main reasons the students enrolled in these schools of nursing to quit are enrolling in other institutions of higher education such as colleges and universities, finding other kind of work. The cases of inaptitude and insufficient scholastic ability are very few.

In Sri Lanka, it takes considerable time for other institutions of higher education to reach a final decision on the total number of successful applicants, as is the case with the school of nursing. In the case of colleges and universities, successful applicants have to wait for two years until they are finally enrolled in colleges or universities of their choice. As a result, many students of the schools of nursing quit when they know they are included in the successful applicants for admission to colleges or universities of their choice.

Transfer : Students of a school of nursing can transfer to another school of nursing if they so desire and if its principal permits.

(2) Dormitory and Day Students

Each of the schools of nursing has a rather wide school zone and therefore only two to three percent of the total number of the students are commuting from their own home. Since the first period begins at 7:00 a.m. and the students are often required to receive training till late at night, all the schools of nursing are in need of dormitory capable of accommodating all the students. In actuality, however, they are faced with shortages of rooms, with the results that many students have no alternative but to lodge. The following table shows the actual situation of six of the existing schools of nursing at the time of the basic design study.

Table 1-4 Number of Students on Register, in Dormitory and on Commuting, June 1996

Name of Nursing School	Entered year	On Register			In Dormitory			On Commuting		
		Female	Male	Total	Female	Male	Total	Female	Male	Total
Colombo	1993	69	8	77	56	0	56	13	8	21
	1995	178	31	209	102	0	102	76	31	107
Kandy	1993	16	3	19	11	0	11	5	3	8
	1995	91	47	138	91	0	91	30	17	47
Galle	1993	55	49	104	22	0	22	33	49	82
	1995	110	45	155	40	0	40	70	45	115
Kandana	1993	19	0	19	16	0	16	3	0	3
	1995	94	2	96	64	0	64	30	2	32
Ratnapura	1993	28	0	28	22	0	22	6	0	6
	1995	63	2	65	34	0	34	29	2	31
Kurunegala	1993	44	1	45	24	0	24	20	1	21
	1995	121	5	126	90	0	90	31	5	36

(3) Teaching Staffs

Table 1-5 Staff at National School of Nursing

		Colombo	Kandy	Galle	Kandana	Anuradepura	Batticaloa	Badulla	Ratnapura	Kurunegala
Students on Register '95	Nursing	477	316	259	279	216	76	95	178	175
	MCH	131	0		0	64	0	89	15	0
Students in Dormitory		235	150	80	80				56	150
Staff	Principal	1	1	1+1	1	1	1	1	1	1
	Senior Tutor	1	2	1	0	0	0	0	0	0
	Tutor	10	13	6	8	4	5	7	7	9
	Officer	3	2	4	1	3	1		3	3
	Typist	1	1	1	1	1	0		1	1
	Librarian	1	0	0	0	0	0		0	0
	Driver		1	3	3	1	0		2	
	Asst. Officer		1							
	Warden	6	7	3	3	3	2		5	0
	Cook		2	3	3	1	0		2	3
Other Staff			11	18	14	18	5		22	17

The present state of the national schools of nursing in Sri Lanka is as described above. If the country's nurse training system is to grow, the following problems have to be overcome.

- ① There are few opportunities for the students to acquire new knowledge and techniques.
- ② The schools of nursing do not take a keen interest in school management.
- ③ The schools of nursing are unable to train the students in the basics of nursing due to shortages of books and teaching materials and equipment. They are also attaching too much importance to clinical practical training.

1-1-5 Nurse Education Program by Sri Lankan Side

In 1992, the Government of Sri Lanka made a survey of the actual situation of the shortage of medical professionals, which included a forecast of the required number of professionals to be trained to cope with the shortage,

and published a medical professional training program on the basis of the results of the survey. According to the survey, the required number of Grade II nurses for 1994 was 16,500. Since there were actually 11,135 Grade II nurses available in that year, there was a shortfall of 5,365 Grade II nurses. The following table shows yearly changes in the number of Grade II nurses. As is clear from the table, the annual shortfall is on the increase.

Table 1-6 Required and Actual Numbers of Grade II Nurses

		1992	1993	1994	1995	1996
No. of Grade II nurses	Required Number	12,500	14,500	16,500	17,500	18,500
	Actual number (figures in parentheses indicate annual increases)	9,049	10,092 (+1,143)	11,135 (+1,043)	*1 12,178 (1,041)	
	Shortfall	3,451	4,408	5,365	5,324	
Total number of nurses		11,214	11,818	13,060	*2 13,600	

*1 estimated figure

*2 figure estimated by the Ministry of Health

1. Verification of the Required Number of Grade II Nurses

The required number and the shortfalls of nurses calculated by Sri Lankan Side is indicated above. At the time of the basic study, a calculation beyond 1996 was not available.

Therefore, Japanese side decided to verify the required number of nurse in Sri Lanka. Since the required number of nurse is depended on the quantity and quality of medical services provided by each hospital, the hospitals are categorized into four groups; A, B, C, D. Then, a calculation for the required number of nurses is carried out. The information are taken from ANNUAL HEALTH BULLETIN, SRI LANKA, 1994 and National Hospital of Sri Lanka, General Information, 1996.

(1) Items for Calculation of Required Number

Factors for calculating required number of nurses in each group of hospitals are average daily number of in patients and average daily number of outpatients. For group A and B which provide higher medical services, 6 other items are also considered for calculation. See following tables.

Group A

No. of hospitals	No. of beds		Average daily no. of inpatients	General outpatients		Accident Service outpatients	Speciality Clinic outpatients	ICU	Operating dept.	CSSD	Emergency
	General beds	Maternity beds		Total no. of outpatients	Average daily no. of outpatients						
Colombo General Hospital 1	2,658	0	2,631	542,918	1,898	281	2,639	77	24	2	2
Teaching general hospitals 7	5,553	839	5,816	1,700,446	5,946	337 *	3,167 *	80	25 *	6	6 *
Children's hospital 1	667	0	507	636,105	2,224	—	380 *	8	4 *	2	1 *
Gynecological hospitals 2	246	476	599	—	—	—	140 *	8	4 *	1	—
Cancer hospital 1	518	0	534	—	250	—	—	4	2 *	1	—
Total 12			10,087		10,318	618	6,326	177	59	12	9

* estimated figures

Group B

No. of hospitals	No. of beds		Average daily no. of inpatients	General outpatients		Accident Service outpatients	Speciality Clinic outpatients	ICU	Operating dept.	CSSD	Emergency
	General beds	Maternity beds		Total no. of outpatients	Average daily no. of outpatients						
Provincial hospitals 8	5,367	946	6,502	2,397,841	8,384	326 *	3,060 *	74 *	24 *	8	8
Ophthalmological hospital 1	443	0	363	291,952	1,021	—	—	—	2 *	1	—
Base hospital 22	5,444	1,127	5,980	4,347,912	15,202	330 *	No. of units 66	—	44 *	22	—
Mental hospitals 3	2,552	0	2,858	—	200	—	—	—	—	—	—
Fever hospital 1	110	0	26	6,545	—	—	—	—	1	—	—
Other hospitals 6	351	0	221	157,864	—	—	—	—	—	—	—
Total 41	14,267	2,073	15,950		24,807	656	3,060+ 66 units	74	71	31	8

* estimated figures

Group C

	No. of hospitals	No. of beds		Average daily no. of inpatients	General outpatients	
		General beds	Maternity beds		Total no. of outpatients	Average daily no. of outpatients
District hospitals	130	9,958	2,546	7,377	9,744,822	34,073
T.B. hospital	1	595	0	226	—	—
Leprosy hospital	1	187	0	127	—	—
Rehabilitation hospital	1	219	0	158	—	—
Total	133	10,959	2,546	7,888		34,070

Group D

	No. of hospitals	No. of beds		Average daily no. of inpatients	General outpatients	
		General beds	Maternity beds		Total no. of outpatients	Average daily no. of outpatients
Peripheral hospitals	114	3,865	1,358	2,319	5,596,546	19,568
Rural hospitals	113	2,026	723	1,114	3,151,275	11,018
Total	227	5,891	2,081	3,433		30,586

(2) Required Number of Nurses in Each Items

The following need coefficients were set according to the degree of the need for Grade II nurses.

1) Need Coefficient in Terms of the Number of Inpatients

The following standard ward working system was set on the basis of the present state of Grade II nurses' working conditions.

Table 1-7 Ward Working System by Nursing Unit

Nursing unit	Working hours	No. of nurses
Morning duty	7:00 ~ 13:00	3
Afternoon duty	13:00 ~ 19:00	3
Night duty	19:00 ~ 7:00 (the next day)	2

The annual total number of man-days per nursing unit is 2,920 (8 persons × 365 days) plus 730 (the annual total number of day off after night duties = 2 persons × 365 days). On the other hand, the per

capita annual total number of working days is 185 (365 days - 27 national holidays - 104 weekend holidays - prescribed 28 paid holidays - maximum 21 sick leaves). Thus, the required number of Grade II nurses per nursing unit is 20 ($2,920 \text{ man-days} + 730 \text{ man-days} \div 185 \text{ days} = 19.73$). Given that the number of patients per nursing unit is 50, the number of beds per nurse is 2.5 (which is equivalent to the required number of nurses at hospitals that do not have medical care beds as stipulated in the Japanese medical care law.) Thus, the numbers of patients per nurse for groups A, B, C and D are 2.5, 4.0, 5.0 and 7.0 respectively.

2) Need Coefficient in Terms of the Number of General Outpatients

On the basis of 1 nurse for every 30 outpatients as stipulated in the Sri Lankan medical care law, 12 man-minutes ($360 \text{ minutes (6 hours)} \div 30 \text{ outpatients/nurse}$) was set for groups A and B. On the other hand, 1 nurse for every 75 outpatients and 1 nurse for every 100 outpatients apply to groups C and D respectively.

3) Accident Service Outpatients

Sri Lanka's standard (1 nurse for every 10 outpatients) applies.

4) Speciality Clinic Outpatients

One nurse for every 20 outpatients applies to group A, but Sri Lanka's standard (1 nurse/unit) applies to group B.

5) Relevant Sri Lankan standards apply to ICUs, the operating department, CSSDs and Emergency.

(3) Required Number of Nurses

The required number of nurses (Grade II) for 1994 was calculated by multiplying the values of the calculation factors by the relevant need coefficients.

Calculation Table -1

Group	No. of hospitals	Average daily no. of inpatients	Need coefficient (1 nurse for no. of patients)	Required no. of Grade II nurses	General outpatients		
					Average daily no. of outpatients	Need coefficient	Required number of Grade II nurses
A	12	10,087	1 nurse/2.5	4,034	10,318	1 nurse for every 30 outpatients	344
B	41	15,950	1 nurse/4.0	3,988	24,807	1 nurse for every 30 outpatients	827
C	133	7,888	1 nurse/5.0	1,578	34,070	1 nurse for every 75 outpatients	454
D	227	3,433	1 nurse/7.0	490	30,586	1 nurse for every 100 outpatients	306
Total				10,090			1,931

Calculation Table -2

Group	No. of hospitals	Accident Service Outpatients			Speciality Clinic outpatients			ICU		
		Average daily no. of outpatients	Need coefficient	Required no. of Grade II nurses	Average daily no. of outpatients	Need coefficient	Required no. of Grade II nurses	No. of beds	Need coefficient	Required no. of Grade II nurses
A	12	618	1 nurse for every 10 outpatients	62	6,326	1 nurse for every 20 outpatients	316	177	5 nurses / 1 bed	885
B	41	656	1 nurse for every 10 outpatients	66	66 units	1 outpatients / units	66	74	5 nurses / 1 bed	370
Total				128			484			1,255

Calculation Table -3

Group	No. of hospitals	Operating dept.			CSSD			Emergency		
		No. of operating rooms	Need coefficient	Required no. of Grade II nurses	No. of units	Need coefficient	Required no. of Grade II nurses	No. of units	Need coefficient	Required no. of Grade II nurses
A	12	59	15 patients / room	885	12	10 nurses / unit	120	9	8 nurses / unit	72
B	41	71	12 patients / room	852	31	8 nurses / unit	248	8	6 nurses / unit	48
Total				1,737			368			120

$$\begin{aligned} \text{Total required number} &= 10,090+1,931+128+484+1,255+1,737+368+120 \\ &= 16,113 \end{aligned}$$

2. Future Shortfalls

Calculation of the future shortfalls in Grade II nurses.

(1) Future Required Number of Grade II Nurses

The annual mean values of the yearly percentage changes for inpatients and outpatients during the period from 1985 to 1994 were calculated using the figures shown in the following table.

Annual mean value of the yearly percentage changes for inpatients : 3.00%/year

Annual mean value of the yearly percentage changes for outpatients : 2.50%/year

Table 1-8 The Numbers of Inpatients and Outpatients

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Population (in thousands of persons)	15,842	16,127	16,373	16,599	16,825	16,993	17,247	17,405	17,619	17,865
Percentage change	1.53%	1.80%	1.53%	1.38%	1.36%	1.00%	1.49%	0.92%	1.23%	1.40%
No. of beds	44,861					42,079	42,437		48,949	50,091
No. of inpatients	2,494	2,590	2,772	2,543	2,524	2,533	2,629	3,023	3,174	3,204
Percentage change		3.85%	7.03%	▼8.26%	▼0.75%	0.36%	3.79%	14.99%	5.00%	0.95%
No. of outpatients	29,570	32,561	34,139	31,407	31,781	28,401	28,575	36,827	36,656	35,276
Percentage change		10.11%	4.85%	▼8.00%	1.19%	▼10.63%	0.61%	28.89%	▼0.46%	▼3.76%

(2) Future Shortfalls

The following table shows the results of the calculation of shortfalls in Grade II nurses up to the year 2004, which was conducted on the basis of the required number of Grade II nurses for 1994. Values of the yearly shortfalls were calculated by subtracting the actual number of Grade II nurses from the required number of Grade II nurses. The actual number was

calculated by the adding the differential between the number of graduates of the schools of nursing for nurses for the preceding year and that of retired and promoted nurses for the year concerned to the actual number for the preceding year.

1) Calculation Factors

- ① Required number = (Required number of ward nurses for the preceding year \times 1.03)+(required number of other nurses for the preceding year \times 1.025)
- ② Actual number = (actual number for the preceding year) - (no. of retired and promoted nurses) + (no. of graduates of the schools of nursing for the preceding year)
- ③ Shortfall = (required number) - (actual number)
- ④ No. of graduates : Figures for 1994 and 1995 are based on the Ministry of Health's data.
Those for 1996 and 1997 are the actual numbers of graduate for the respective years.
Those 1998 and after were estimated by the Ministry of Health.
- ⑤ No. of retired and promoted nurses = (spontaneous decrease) + (no. of retired at 55 years of age) + (no. of retired at 60 years of age) = (actual number for the preceding year \times 0.01)+(no. of graduates of the schools of nursing 34 years ago \times $0.99^{34} \times 0.5$) + (no. of students of school of nursing 39 years ago \times $0.99^{39} \times 0.5$)

Note : The numbers of graduates of the school of nursing were estimated as follows.

1960-1961 500 person /year
 1962-1966 550 person /year
 1967-1971 600 person /year
 1972-1976 650 person /year
 1977-1980 700 person /year
 1981-1984 750 person /year

2) Calculation of the Shortfalls in Grade II Nurses

The following table shows the yearly shortfalls in Grade II nurses.

Table 1-9 Shortfall of Hospital Nurse in Future

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Population (in thousands of persons)		17,865	18,025	17,850								
Grade II nurses	Required no.	16,113	16,567	17,032	17,512	18,004	18,511	19,033	19,568	20,119	20,687	21,270
	Actual no.	11,135	11,769	11,674	12,145	11,677	12,214	12,728	13,237	13,706	14,170	14,730
	Shortfall	4,978	4,798	5,358	5,367	6,327	6,297	6,305	6,331	6,413	6,517	6,540
	No. of graduates of nurse training schools	1,064	352	934	0	1,000	1,000	1,000	1,000	1,000	1,100	1,100
	No. of retired and promoted nurses	430	447	463	468	463	486	491	531	536	540	546
	Sufficiency Rate	69.1%	71.0%	68.5%	69.3%	64.9%	66.0%	66.9%	67.6%	68.1%	68.5%	69.3%

As can be seen from the above table, there was a shortfall of 4,978 Grade II nurses in 1994. About 69.1 percent of the required number were made up.

The estimated shortfall in Grade II nurses for the year 2004, when the first graduates of the planned school of nursing are expected to start their careers as Grade II nurses, is 6,517, which is on little increasing, although sufficiency rate of about 69.3 percent is almost same, as compared to 69.1 percent for 1994. On the other hand, the shortfalls for the year beyond 2004 calculated without regard to the

possible increase in the required number of Grade II nurses as a result of the improvement in the quality of hospital medical care or the possible changes in the demand for medical care services, is projected to increase from the year 2011. And, the sufficiency rate against the required number of nursing staff will be 71.0% as the peak in year 2010 under the condition of the total students enter yearly is 1,100. If the total student number remained to 1,000, the sufficiency rate will decrease and reach 66.3% at the year of 2014.

1-2 Details of the Request

The Sri Lankan side has made some changes in the details of its request for grant aid cooperation, which was made in December 1992, on the basis of the results of the preliminary survey of the project-type technical cooperation for Nursing Education in the country, the dispatch of a long-term survey (in March 1996) and the details of the discussions held at the time of the implementation study (in May 1996).

Shown below are the changes made in the details of the request which have been made clear during the basic design study.

(1) Changes Made in the Details of the Request

1) Project Implementing Organization

Original Request	Request after Confirmed
Sri Jayewarudenepura General Hospital Board	Ministry of Health, Highways and Social Services

2) Facility

Table 1-10 Contents of Request on Facility

Original Request			Request after Confirmed	
A. Administration	Total	1,087 m ²	Priority	Confirmed Items
1. Teachers' Rm	142 m ²	A	Number of teachers are 7 at 1st year, 12 at 3rd year. To divide room with low partitions. (if possible private room)	
2. Consultation & Meeting Rm	80 m ²	B	For teachers to exchange information and to use for meeting.	
3. Office	140 m ²	A	3 office staffs, 2 typists, 1 copy staff, 1 minor staff	
4. Principal's Office	40 m ²	A		
5. Vice Principal's Office	48 m ²	A		
6. Secretary's Rm	32 m ²	—	No room required due to no secretary it will be used as typing room according to the request.	
7. Visitor's Rm	40 m ²	B	Consulting room for student's family.	
8. Staff Dining Rm	80 m ²	B	Separate from student's dining, it will be dining purpose only.	
9. Laundry	112 m ²	B	Student's uniforms, training linens are washed and pressed by minor staffs.	

	10. Toilet	68 m ²	A	
	11. Corridor, Stair	195 m ²	A	
	12. Hall	110 m ²	C	Not required functionally.
B.	Nurse Training	Total 2,451 m²	Priority	Confirmed Items
	1. Class Rm	720 m ²	A	Required 6-50 student classroom, 3-100 student classrooms, but 2-50 student classrooms separated by movable partition can be utilized as 100 student classroom.
	2. Tutor's Rm	141 m ²	—	No rooms for part time tutors.
	3. Practical Training Rm	660 m ²	A	1-training room for ward, other training room divided by partition and used at same time.
	4. Storage	170 m ²	A	Equipment for practical training.
	5. Toilet	128 m ²	A	
	6. Hall	125 m ²	B	
	7. Corridor, Stair	507 m ²	A	
C.	Common	Total 728 m²	Priority	Confirmed Items
	1. Library	160 m ²	A	To improve the present situation
	2. Main meeting Rm	240 m ²	A	As a auditorium to use for capping ceremony.
	3. Audio Visual Rm	120 m ²	C	Audio-visual equipment in the necessary rooms, so, no special room required.
	4. Preparation Rm	40 m ²	A	Attach to classrooms.
	5. Corridor	168 m ²	A	
D.	Dining, Cafeteria	Total 778 m²	Priority	Confirmed Items
	1. Dining, Cafeteria	570 m ²	A	Can be 2 shifts, and staffs can also use.
	2. Kitchen	112 m ²	A	To use LP gas and steam.
	3. Hall	96 m ²	C	Not required in functionally.
E.	Dormitory	Total 5,671 m²	Priority	Confirmed Items
	1. Trainee's Rm	3,510 m ²	A	150-2bed room, 6-tutors' room and wardens' room, total 156 rooms.
	2. Shower, Toilet	685 m ²	A	
	3. Meeting Rm	105 m ²	A	Multipurpose Room.
	4. Rest Rm	22 m ²	C	Necessity is low.
	5. Halls	730 m ²	B	Hall indicated in request drawing is low necessity.
	6. Corridor, Stair	620 m ²	A	
F.	Others	Total 112 m²	Priority	Confirmed Items
	1. Laundry	112 m ²	A	Trainees wash their clothes.
A+B+C+D+E+F		Total Floor Area	10,827 m²	

Note : Priority A: Most Necessary B: Necessary C: Less Necessary

3) Equipment

Degrees of Need

A : Urgently needed in light of its function in the implementation of this project.

B : Needed but its adoption depends on the financial conditions.

C : Little needed.

Table 1-11 Contents of Request on Equipment

A.Nursing Training Equipment

No.	Name of Equipment	Request	Priority	Planned	Remarks
1	Anatomical Human Body, Male	1	A	1	
2	Anatomical Human Body, Female	1	A	1	
3	Human Skeleton, Articulated	1	A	1	Standing Type
4	Human Skeleton, Disarticulated	1	B	1	Standing Type
5	Circulatory System	1	A	1	
6	Skull	1	A	1	
7	Anatomical Heart	1	A	1	
8	Respiratory Organs	1	A	1	
9	Digestive Organs	1	A	1	
10	Brain and Nervous System	1	A	1	
11	Muscle	1	A	1	
12	Section of Skin	1	A	1	
13	Structure of Eye/Ear	1	A	1	
14	Structure of Teeth	1	A	1	
15	Structure of Nasal Cavity/Throat/Pharynx	1	A	1	
16	Kidney and Urinary System	1	A	1	
17	Pelvis	1	A	1	
18	Pregnant Uterine	1	B	1	
19	Development Stage of Fetus	1	A	1	
20	Conception System	1	B	1	
21	Parasites in Human Body	1	B	1	
22	Feces of Child	1	B	1	
23	Tracoma	1	B	1	
24	Alveolar Pyorrhea	1	B	1	
25	Pathogenic Microbes	1	B	1	
26	Anatomical Charts	2	A	1	
27	X-Ray Film Viewer	1	A	1	

No.	Name of Equipment	Request	Priority	Planned	Remarks
28	Training Dummy	2	A	2	
29	Training Dummy for Baby Bath	5	A	5	
30	Training Dummy for Stomach Pump	1	C	0	Training Dummy includes the function of Stomach Pump(No.28)
31	Training Dummy for Dressing	1	C	0	Training Dummy includes the function of Dressing(No.28)
32	Dummy for Midwifery	1	A	1	
33	Phantom for Delivery	2	A	2	
34	Dummy for Baby Baby Care	2	A	2	
35	Training Set for Mammy Massage	1	B	1	
36	Resuscitation Training Dummy, Adult	1	A	1	
37	Ultrasonic Nebulizer with Floor Stand	1	C	0	It is not used in the Teaching Hospital
38	Nebulizer, Portable Type	1	A	2	
39	Automatic Resuscitator	1	A	1	
40	Infant Resuscitator	1	C	0	For adult can be used(No.36)
41	ECG, Portable Type	1	B	1	
42	Emergency Instrument Set	1	A	1	
43	Standard Bed with Mattress	10	A	10	
44	Paediatric Bed with Mattress	2	A	2	
45	Baby Bassinet and Mobile Stand	2	A	2	
46	Bed Side Table	10	A	10	
47	Bed Side Chair	10	A	10	
48	Over Bed Table	10	A	10	
49	Screen	3	A	3	
50	Body Cleaning Cart	1	C	0	It is not used in the Teaching Hospital
51	Shampoo Cart	1	B	1	
52	Shampoo Tray Set	3	A	3	
53	Baby Bath Tub	5	A	5	
54	Back Rest	2	A	2	
55	Over-bed Cradle	5	B	2	2 set each
56	Decubitus Protecting Mattress	1	B	1	
57	Round Sitting Sand Bag, assorted	3	B	3	
58	Splint, assorted	3	A	3	
59	Wheel Chair	2	A	2	
60	Stretcher	2	A	1	
61	Walking Aid with Casters & Saddle	1	B	1	

No.	Name of Equipment	Request	Priority	Planned	Remarks
62	Litters	1	A	1	
63	Bedpan Rack	1	A	1	
64	Enema Set	3	A	10	To correspond to the number of training beds(No.43)
65	Catheter Set	1	—	0	Supplied by Project-type cooperation
66	Conception Control Training	1	C	1	
67	Set for Milk Preparation	1	B	1	
68	Milking Device, Hand Type	12	A	12	
69	Traube's Obstetric Stethoscope	5	A	5	
70	Syringe Set, Disposal	100	—	0	Supplied by Project-type cooperation
71	Irrigator Stand	1	A	1	
72	Set for Stomach Pump	1	A	1	
73	Ear Scope	1	A	1	
74	Nasal Scope	1	A	1	
75	Proctoscopes	1	A	1	
76	Vaginal Spectrum	1	A	each 1	Each size required
77	Examination Instrument Set	5	A	2	To learn how to use and arrange each instrument
78	Operating Instrument Set	2	A	1	To learn how to use and arrange each instrument
79	Surgery Light, Stand Type	1	C	0	Not required
80	Linen for Surgery	2	A	2	Gown, musk, cap and etc.
81	Orthopedic Instrument Set	2	C	0	To learn in Practical training at the Hospital
82	Traction Set	1	C	0	To learn in Practical training at the Hospital
83	Gypsum Set	2	A	1	To learn how to use each equipment
84	Delivery Set	2	A	1	To learn how to use each equipment
85	Tracheostomy Instrument Set	1	A	1	
86	Adoration Instrument Set	1	C	0	To learn in Practical training
87	Mobile Dispensary Set	1	C	0	Not used in the class
88	Visiting Bag	2	C	0	Not used in the class
89	Medication Trolley Set	1	A	1	
90	Boiling Sterilizer	1	A	2	Need 2 sets to sterilized instrument
91	Gauze Cast, Large/Small	each 1	B	each 1	
92	Instrument Trolley	1	A	2	To use for basic nursing education
93	Blood Sedimentation Rack with Pipettes	1	A	1	
94	Weighing Scale (Adult/Infant)	each 1	A	each 1	
95	Measuring Rod (Adult/Infant)	each 1	B	each 1	

No.	Name of Equipment	Request	Priority	Planned	Remarks
96	Sitting Height Measuring Rod	1	B	1	
97	Dynamometers	1	B	1	
98	Breisky's Pelvimeter	2	A	2	
99	Sphygmomanometer, Portable Type	5	A	5	
100	Temperature Taking Set	10	A	10	
101	Cabinet, steel	3	A	3	
102	Show Cases for Models	1	C	0	Store in class room

B. Audio-Visual and Office Equipment

No.	Name of Equipment	Request	Priority	Planned	Remarks
103	Video Set with Tapes	2	A	2	
104	Overhead Projector with Screen	1	A	3	
105	Slide Projector with Screen	10	A	2	
106	Tape Recorder Set	2	A	2	
107	Audio Tape Set	1	—	0	Supplied by Project-type technical cooperation
108	Video Tape Set	1	—	0	Supplied by Project-type technical cooperation
109	Plain Paper Copier	2	A	1	
110	Printing Machine	1	A	1	
111	Mini Bus	1	A	1	
112	Van	1	C	0	Utilized for field trip and transport teachers, therefore Mini Bus can be Substituted

CHAPTER 2 CONTENTS OF THE PROJECT

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2-1 Objective of the Project

The Government of Sri Lanka has been placing great importance on its educational and health care/welfare policies since the country became independent. As a result of the implementation by the central government of these policies, including reimbursement of educational and health care expenses, the country's health care-related indicators are now at relatively high levels.

On the other hand, however, the country is faced with a serious shortage of nurses. In order to deal with this problem, the Government of Sri Lanka has drawn up a project to improve the facilities and equipment of the national school of nursing, which is located adjacent to Sri Jayewardenepura General Hospital, to train 100 nurses a year, with the Government of Japan's support in the form of project-type technical cooperation. The objective of this project is to establish a School of Nursing, Sri Jayewardenepura and procure equipment required to operate it in association with the above-mentioned project-type cooperation program so that the Government of Sri Lanka's above-mentioned goal may be attained smoothly.

2-2 Basic Concept of the Project

2-2-1 Overall Plan

- (1) Since the project-type technical cooperation program is to be implemented making use of the facilities to be constructed under this project, careful attention should be paid to the contents of the project-type technical cooperation program and the schedule of its implementation while ensuring the consistency of the Government of Japan's cooperation.
- (2) The project meant to build a facility to train 100 students in each grade, 300 students in total. The proposed school of nursing is to offer basic nurse training courses as the country's 11th national school of nursing and the project-type technical cooperation program is going to be implemented with the aim of making the proposed school of nursing serve as a model school.

2-2-2 Facility Plan

(1) Administration Department

The proposed school of nursing is to start with a staff of a principal, a vice principal, 10 tutors, a librarian, an audio-visual engineer, 3 office workers, 2 typists, 2 drivers, 4 wardens and 33 others. The staff plan by Sri Lankan Side is minimum number to operate the proposed facility and is appropriate as it is compared with the existing schools of nursing. The basic concept of each of the main rooms designed for the administration department is as stated below.

① Library

There is a strong need for a library as a facility to support individual students and lectures. In calculating the size of the room, the data from existing school of nursing are used. And the proposed library should be minimal in size. The library should be located in such part of the project site as will make its extension easy.

② Multipurpose Hall

The facilities requested by the Sri Lankan side include as auditorium which can accommodate 300 students to attend the capping ceremony. Since it is unlikely that such an auditorium will be used very often, a multipurpose hall is to be constructed under this project so that it may be used also for the presentation of the results of research work by the students and sports as extracurricular activities. This facility should be located between the administration building and the education building. It should utilize natural ventilation and lighting as much as possible for easy maintenance and management.

③ Principal's Office and Vice Principal's Office

Both the principal's office and the vice principal's office are for the exclusive use of the principal and the vice principal's, respectively. No secretary rooms are to be attached to these offices. No reception rooms are to be attached to these office either, since the meeting room, which is to be located adjacent to these offices, can be used as the reception room for the principal and the vice principal.

④ Office Room

This is a large room for the use of 5 office workers, including the audio-visual engineer and typists.

⑤ Tutor's Room

This is a large room for the use of the 10 tutors. It is to be divided into a number of sections using low partitions so that each of these sections may have the atmosphere of a room and that each tutor may work efficiently. A workshop, where the tutors are to pick up and prepare necessary teaching materials, is to be attached to this room.

⑥ Small Meeting Room

To make the results of the project-type technical cooperation available to the existing 10 national schools of nursing is one of the main missions of the proposed school of nursing. This small meeting room is to be used for seminars held for the Sri Lankan counterparts and representative of the other schools of nursing. It is to be located adjacent to the tutors' room so that it may be used as an additional tutors' room when the number of tutor is increased in the future.

⑦ Large Meeting Room

While the project-type technical cooperation is there, this room utilized by Japanese experts as their office. After that, the room will be widely used as conference or seminar room for the staffs who from other schools.

(2) Academic Department

The proposed school of nursing is to function as a model school which develops a new method of nursing education in association with the Government of Japan's project-type cooperation program and which makes the results of such development work extend to the existing 10 schools of nursing.

The project-type technical cooperation program is started in October 1996 for the purpose of developing a viable new curriculum after the completion of a baseline survey concerning nursing education in Sri Lanka.

Under the current curriculum, there is no possibility for increasing the number of lecture hours, while the quality of lecture will be improved by the technical cooperation. Thus, the proposed plan prepared in accordance with the existing curriculum is appropriate and to secure then minimum requirement for the scale. The basic concept of each of the main rooms for the academic department under this project is as stated below.

① Lecture room for 100 students and lecture room for 50 Students

Five lecture rooms, one for 100 students and four for 50 students each, are to be planed under this project on the basis of the total number of lectures and lecture hours under the current curriculum. Shown below is the use of the lecture rooms and the training rooms during the 17th week, when the teaching schedule is tightest under the current curriculum.

Table 2-1 Lecture Room and Practical Training Room Usage Schedule

Day		Lecture Room (for 100 w/desk) * 70%	Lecture Room (for 50 w/desk) * 63%	Lecture Room (for 50 w/desk) * 63%	Lecture Room (for 50 w/Chair) * 63%	Lecture Room (for 50 w/Chair) * 56%	Practical Training Room	Cooking Training Room
Mon.	10-11	101 Fundamental			200 Group			Preparation
	11-12		103 Science	109 Pharmacology		207 Community		308 Nutrition
	13-14	317 Ward	103 Science	200 Group				308 Nutrition
	14-15	102 Anatomy	Clean		310 Psychology	210 Psychology		Clean
	15-16	111 Sociology	314 Medical/Surgical	214 Medical/Surgical				
Tue.	10-11	307 Community		104 Microbiology			101 Fundamental	Preparation
	11-12	300 Group		209 Pharmacology	200 Group	300 Group		108 Nutrition
	13-14			209 Pharmacology	317 Ward	317 Ward		Clean Preparation
	14-15	314 Medical/Surgical	200 Group	Clean		315 MCH		108 Nutrition
	15-16		104 Microbiology		315 MCH		101 Fundamental	Clean
Wed.	10-11	105 Ethics	314 Medical/Surgical	314 Medical/Surgical	200 Group			
	11-12	106 History	214 Medical/Surgical	214 Medical/Surgical		300 Group		
	13-14	314 Medical/Surgical	209 Pharmacology		102 Anatomy	102 Anatomy		
	14-15	300 Group	209 Pharmacology		101 Fundamental	101 Fundamental		
	15-16	315 MCH	Clean		104 Microbiology		101 Fundamental	
Thu.	10-11	101 Fundamental		103 Science	200 Group			Preparation
	11-12		109 Pharmacology	103 Science		300 Group		308 Nutrition
	13-14	200 Group		Clean	104 Microbiology		101 Fundamental	308 Nutrition
	14-15		214 Medical/Surgical	214 Medical/Surgical	111 Sociology	111 Sociology		Clean
	15-16	314 Medical/Surgical	102 Anatomy	102 Anatomy				
Fri.	10-11	101 Fundamental	300 Group	300 Group	214 Medical/Surgical			
	11-12	Group 200			112 English	112 English		
	13-14	106 History			214 Medical/Surgical	300 Group		
	14-15		102 Anatomy	102 Anatomy		207 Community		
	15-16	314 Medical/Surgical	107 Community	107 Community				
Sat.	10-11				110 Psychology	110 Psychology		
	11-12				112 English	112 English		

100th indicate classes for First year, 200th indicate classes for Second year, 300th indicate classes for Third year
* % indicate room occupancy rate

② Practical training rooms (Ward, Pediatrics, Clean/Dirty Utility)

In nursing education in Sri Lanka, utmost emphasis is placed on clinical training at hospitals. But a viable clinical training system is yet to be established in the country. As this project is to be premised on the country's present educational system, it is important to improve the quality of practical training in the schools under this project prior to the clinical training at hospital.

- The ward practical training room, which is to accommodate 50 students per lecture, is to be provided with 15 beds or 1 bed for every 4 students.
- The pediatrics practical training room, which is to accommodate 25 students per lecture, is to be provided with 5 beds or 1 bed for every 5 students.
- The clean/dirty utility practical training room which is for the students to learn and bring up a hygienic notion is to accommodate 25 students per lecture.

It should be noted that all these practical training rooms are to be located adjacent to each other. However, due to the difference in the contents of the training and in order to achieve a efficient training, to build partition walls between two practical training rooms.

③ Cooking practical training/Chemistry practical training

Under the current curriculum, the total numbers of lecture hours (during 3-year period) are 28 for cooking training class and 83 for chemical training class. The weekly rates of use are 11

percent and 14 percent, respectively. The lecture do not carry out any large scale of experiment nor require a large facility. Therefore, it is not required a special room.

- The cooking practical training room is to serve also as the upper portion of dining hall for the use of the students. According to the current curriculum, the times for practical training is not scheduled to conflict with the time for dining.
- A preparatory room for chemistry practical training is to be attached to a lecture room with a seating capacity of 50 and the lecture room is to serve also as the chemistry practical training room.

(3) Student Life-related Department

At a standard nurse training school in the country, the students receive clinical training from 7:00 a.m. to 10:00 a.m. at the hospital and attend lectures from 10:00 a.m. to noon. In the afternoon, they attend lectures or practical training from 1:00 p.m. to 4:00 p.m. (they also receive clinical training at the hospital in the afternoon).

A school of nursing is not only a place for learning but also a place for working and leading daily lives to its students.

The main rooms to be designed for the student life-related department under this project are as shown below.

① Dining Hall

According to the students' activity schedule, all the students take lunch at a time. Therefore, the dining hall should be

designed to have a space large enough to accommodate all the students who live in the students' hostel. The kitchen, the preparatory room and the staff room should be designed to meet the local requirements.

② Washing room

The students' training sheets and uniforms are to be washed by themselves. The washing room is designed for this purpose.

③ Students' hostel

In Sri Lanka, schools of nursing, in principle require that with the exception of male students, all students live in their hostel. In designing the students' hostel under this project, therefore, the total number of students to live in there will not include the number of male students and female students who can commute from their homes. The total of 210 students are therefore accommodated in the hostel. The floor space per student is to be determined with reference to the size of the existing student hostels.

2-2-3 Facility Equipment Plan

(1) Electrical Facility Equipment

① Electricity

A power station is to be built near the southern boundary of the project site to receive 33kV electricity from the Ceylon Electricity Board (CEB) and reduce its voltage to 415V/230V. Since there will be few serious power stoppages throughout the year, no generator is to be installed.

② Lighting

In working out the lighting design, due consideration should be given to the utilization of natural lighting so that the running cost may be minimized.

③ Telephone

Telephone is to be installed in the principal's office, the vice principal's office, the tutors' office and the experts' office for the technical cooperation. Since there will be no strong need to transfer calls from outside or calls among extensions of the proposed facilities, no switchboard is to be installed.

④ Public address system

A public address system is to be installed for announcing the starting time and other communications.

⑤ Fire alarm equipment

An automatic fire alarm equipment is to be installed in the students' hostel, and a manual fire alarm equipment in the school, in accordance with the instructions of the fire department.

(2) Air Conditioning System

- Although the project site is situated in a region of high temperatures and humidity, there will be no need to air-condition most of the projected rooms if the proposed buildings are designed to make effective use of natural ventilation. For this reason, all the rooms excepting the meeting rooms are not to air-conditioned.

(3) Plumbing System

- City water supplied from the National Water Supply and Drainage Board (NEWS & DB) is to be stored in a water tank and then is to be sent to an elevated water tank.
- Sewage and domestic waste water are to be discharged into the existing drainage basin, which is located on the southern side of the project site, after treated in a septic tank.

2-2-4 Equipment Plan

(1) Existing Items of Equipment

The existing School of Nursing in the proposed site for the project is a school attached to Sri Jayewardenepura General Hospital, and its equipment is purchased and maintained under the control of the hospital. All its existing items of equipment are therefore owned by the hospital. On the other hand, the proposed school of nursing is to be constructed as an independent national school and is to be operated and managed under the control of the Ministry of Health, although clinical training is to be conducted at the hospital. For this reason, none of the hospital's existing items of equipment are to be transferred to the new school of nursing. All the items of equipment to be installed in the new nurse training school under this project are to be purchased.

(2) Guidelines for the Equipment Plan

The items of equipment to be procured under this project include those to be procured for the project-type technical cooperation program, which is to be launched in fiscal 1996, in addition to as those requested by the Sri Lankan side. All these items of equipment were

chosen on the basis of the new school's curriculum and the total number of students to be enrolled in the new school of nursing. In drawing up the equipment plan, careful attention should be given to the following guidelines to ensure a reasonable technical level and adequate quantity.

1. The equipment plan should be drawn up in accordance with the Government of Sri Lanka's nurse education policy as well as the details of the action plan under the project-type technical cooperation program.
2. There should be a clear-cut distinction between the items of equipment to be procured under this project and those to be procured under the project-type technical cooperation program so that equipment procurement may be carried out promptly and smoothly.
3. The equipment plan should be one that minimizes the Sri Lankan side's financial burden in equipment maintenance and management.

1) Items of equipment requested by the Sri Lankan side

The items of equipment requested by the Sri Lankan side when the basic design study was conducted were 102 items for use in nursing education/training and 10 items of audio-visual and office equipment. Table 2-2 shows those items of equipment which it was decided not to include in this project as a result of the subsequent discussions with the Sri Lankan side.

Table 2-2 Items of Equipment Not to Be Included in the Project

A. Equipment for Use in Nursing Education/Training

Item	No. of units requested	Nos of units decided	Reason
Model display case	1	0	There is no strong need to procure this item since models and specimens can be stored in the teaching material room.
Gastric leverage model	1	0	There is no need to procure such item since the training model to be procured under this project can also be used for gastric leverage.
Bandage replacement training model	1	0	There is no need to procure such item since the training model to be procured under this project can also be used for bandage replacement.
Cleaning vehicle	1	0	There is no strong need to use such item in basic nursing training.
Ultrasonic nebulizer	1	0	There is no need to procure such item since a compressor, which is cheaper, can be used.
Disposable syringe	100	0	This is an expendable item and is therefore not to be included in this project.
Resuscitator for use with children	1	0	There is no need to procure such item since the resuscitator to be procured under this project is on for use with both adults and children.
Astral lamp	1	0	There is no need to procure such item since only seminars are to be carried out at the facilities to be built under this project.
Orthopedic surgery set	2	0	There is no need to procure such item since training by the use of such item is not included in the curriculum of the new school of nursing.
Retractor set	1	0	The same as above.
Catheter set	1	0	This is an expendable item and is therefore not to be included in this project.
Abortion equipment	1	0	There is no need to procure such item since training by the use of such item is not included in the curriculum.
Portable medical examination set	1	0	The same as above.
Call bag	2	0	The same as above.

B. Audio-visual / Office Equipment

Item	No. of units requested	No. of units decided	Reason
Car	1	0	There is no need to procure such item since a microbus is to be procured under this project.
Audio tape set	1	0	Procured by the project-type technical cooperation program.
Video tape set	1	0	The same as above.

2) Items of equipment required to implement the project-type technical cooperation program

The items of equipment requested by the project-type technical cooperation team are 162 items for use in nursing education and 25 items of audio-visual and office equipment, some of which overlap

with those requested by the Sri Lankan side. The items of equipment for use in nursing education include those for use in the requested chemical laboratory and cooking training room. The number of items of equipment to be procured and installed in the dining hall for the students, which is a welfare facility for the students, is 14. Table 2-3 shows those items of equipment which was decided not to procure for the project as a result of the discussions with the Sri Lankan side, excepting those which were deleted from the list of items of equipment requested by the Sri Lankan side.

Table 2-3 Items of Equipment Not to Be Procured under This Project

A. Equipment for Use in Nursing Education

Item	No. of items requested	No. of items decided	Reason
Plastic cast set	1	0	There is no need to procure such item since training by the use of such item is not included in the curriculum.
Artificial anus simulator	1	0	The same as above.
CVP measuring stand	1	0	The same as above.
Chemical laboratory equipment	—	0	To be procured by the project-type technical cooperation team.
Microscope	3	1	TV monitor will be attached to microscope and show to students.

B. Audio-visual / Office Equipment

Item	No. of items requested	No. of items decided	Reason
Personal computer	1	0	To be procured by the project-type technical cooperation team since it will be necessary to give technical guidance on its use.
Shredder	1	0	There is no strong need to procure such item since it is unlikely to be used very often.

Table 2-4 shows the results of the comparative analysis of the items of equipment requested by the Sri Lankan side and those requested by the project-type technical cooperation team.

Table 2-4 Results of Comparative Analysis of Items of Equipment Requested by Sri Lankan Side and Those Requested by Project-type Technical Cooperation Team

A. NURSE TRAINING EQUIPMENT

No.	Item requested by Sri Lankan side	No. of items requested	Item requested by project-type technical cooperation team	No. of items requested	No. of items decided	Remarks
1	Anatomical Human Body, Male	1	Anatomical Human Body, Male	1	1	Item required for basic training in anatomy and physiology.
2	Anatomical Human Body, Female	1	Anatomical Human Body, Female	1	1	do
3	Human Skeleton, Articulated	1	Human Skeleton, Articulated	1	1	do
4	Human Skeleton, Disarticulated	1	Human Skeleton, Disarticulated	1	1	do
5	Circulatory System	1	Circulatory System	1	1	do
6	Skull	1	Skull	1	1	do
7	Anatomical Heart	1	Anatomical Heart	1	1	do
8	Respiratory Organs	1	Respiratory Organs	1	1	do
9	Digestive Organs	1	Digestive Organs	1	1	do
10	Brain and Nervous System	1	Brain and Nervous System	1	1	do
11	Muscle	1	Muscle	1	1	do
12	Section of Skin	1	Section of Skin	1	1	do
13	Structure of Eye/Ear	1	Structure of Eye/Ear	1	1	do
14	Structure of teeth	1	Structure of teeth	1	1	do
15	Nasal Cavity/Throat/Pharynx	1	Nasal Cavity/Throat/Pharynx	1	1	do
16	Kidney and Urinary System	1	Kidney and Urinary System	1	1	do
17	Pelvis	1	Pelvis	1	1	Item required for basic training in anatomy, physiology and maternal.
18	Pregnant Uterine	1	Pregnant Uterine	1	1	Item required for basic training in maternal and pediatrics.
19	Development Stage of Foetus	1	Development Stage of Foetus	1	1	do
20	Conception System	1	Conception System	1	1	do
21	Parasites in Human Body	1	Parasites in Human Body	1	1	Item required for basic training in microbiology and bacteriology.
22	Feces of Child	1	Feces of Child	1	1	do
23	Tracoma	1	Tracoma	1	1	do
24	Alveolar Pyorrhea	1	Alveolar Pyorrhea	1	1	do
25	Pathogenic Microbes	1	Pathogenic Microbes	1	1	do
26	Anatomical Charts	2	Anatomical Charts	1	1	Item required for basic training in anatomy and physiology.

No.	Item requested by Sri Lankan side	No. of items requested	Item requested by project-type technical cooperation team	No. of items requested	No. of items decided	Remarks
27			Muscle of Upper Extremity Model	1	1	Item required for basic training in anatomy and physiology.
28			Dynamic Heart with ECG	1	1	do
29	X-ray Film Viewer	1	X-ray Film Viewer	1	1	Item required for basic training in internal medicine and surgery.
30	Training Dummy	2	Training Dummy	2	5	Item required for basic training in nursing.
31	Dummy for Baby Care	2	Dummy for Baby Care	2	2	do
32	Training Dummy for Baby Bath	5	Training Dummy for Baby Bath	5	15	do
33	Dressing Simulator	2	Dressing Simulator	1	1	do
34	Phantom for Delivery	2	Phantom for Delivery	2	2	Basic item required for training in maternal.
35	Training for Mammy Massage	1	Training for Mammy Massage	2	1	Basic item required for training in maternal.
36			I. V. Injection Simulator	3	3	Basic item required for training in nursing.
37			I. M. Injection simulator	3	3	do
38			Catherize Simulator, Male	1	1	do
39			Catherize Simulator, Female	15	15	do
40			Pregnancy Palpation Simulator	2	2	Basic item required for training in maternal.
41	Resuscitation Training Dummy, Adult	1	Resuscitation Training Dummy, Adult	1	1	Basic item required for training in nursing.
42	Nebulizer, Portable Type	1	Nebulizer, Portable Type	2	2	Item required for basic training in basic (artificial breathing)
43	Automatic Resuscitator	1	Automatic Resuscitator	1	1	do (emergency care)
44	ECG, Portable Type	1	ECG, Portable Type	1	1	do (inhalation care)
45	Emergency Instrument	1	Emergency Instrument	1	1	do (emergency care)
46			Oxygenator	1	1	do (inhalation care)
47			Panel with Oxygenator & Suction	1	1	do (inhalation care)
48			Electric Suction Unit	1	1	do (postoperative management)
49			Oxygen Tent	1	1	do (inhalation care)
50			Incubator	1	1	Item required for training in child nursing
51	Standard Bed with Mattress	10	Standard Gatch Bed with Mattress	15	15	Basic item for use in the training room (1 units for every 4 students).
52	Paediatric Bed with Mattress	2	Paediatric Bed with Mattress	5	5	Basic item for use in the training room (1 unit for every 10 students).
53	Baby Bassinet with Casters	2	Baby Bassinet with Casters	2	5	Basic item for use in the training room
54	Bed Side Table	10	Bed Side Table	15	15	Basic item for use in the training room (no. of units to be determined on the basis of no. of beds).

No.	Item requested by Sri Lankan side	No. of items requested	Item requested by project-type technical cooperation team	No. of items requested	No. of items decided	Remarks
55	Bed Side Chair	10	Bed Side Chair	15	15	Basic item for use in the training room (no. of units to be determined on the basis of no. of beds).
56	Over Bed Table	10	Over Bed Table	15	15	The same as above.
57	Screen	3	Screen	8	10	Basic item for use in the training room.
58			Set for Bed Making (Adult)	15	30	Item required for basic training in nursing (no. of units to be determined on the basis of no. of beds).
59			Set for Bed Making	5	10	do
60			Linen for New Born Baby	2	10	Item required for training in maternal and child nursing.
61	Shampoo Cart	1	Shampoo Cart	1	1	Item required for basic training in nursing (health control).
62	Shampoo Tray set	3	Shampoo Tray set	15	15	Item required for basic training in nursing (no. of beds to be determined on the basis of no. of beds).
63	Baby Bath Tub	5	Baby Bath Tub	5	15	Item required for basic training in nursing (no. of units to be determined on the basis of no. of models).
64			Bed Bath Set	15	15	Item required for basic training in nursing (no. of units to be determined on the basis of no. of beds).
65			Mouth Care Set	15	15	do
66			Pajamas for Patient	2	2	Item required for basic training in nursing (health control)
67			Clothes for New Born Baby	2	15	Item required for training in mother nursing (health control)
68			Shampoo Chair	1	1	Item required for basic training in nursing (health control).
69	Back Rest	2	Back Rest	5	5	Item required for basic training in nursing (comfort)
70	Over-bed Cradle	5	Over-bed Cradle	5	5	do
71	Decubitus Protecting Mattress	1	Decubitus Protecting Mattress	1	1	do
72	Round Sitting Sand Bag, assorted	3	Round Sitting Sand Bag, assorted	1	1	do
73	Splint, assorted	3	Splint, assorted	3	3	Item required for basic training in nursing (emergency care, bandaging).
74			Fixing Belt	2	2	do
75	Wheel Chair	2	Wheel Chair	3	3	Item required for basic training in nursing (transfer).
76	Stretcher	2	Stretcher	1	1	do
77	Walking Aid with Casters & Saddle	1	Walking Aid with Casters & Saddle	1	1	do
78			Litters	1	1	Item required for basic training in nursing (transfer, emergency care)
79	Bedpan Rack	1	Bedpan Rack	1	1	Item required for basic training in nursing (patient care in excretion).
80	Enma Set	3	Enma Set	15	15	Item required for basic training in nursing (no. of items to be determined on the basis of no. of beds)
81			Bedpan & Urinal	15	15	do

No.	Item requested by Sri Lankan side	No. of items requested	Item requested by project-type technical cooperation team	No. of items requested	No. of items decided	Remarks
82			Measuring Set	1	1	Item required for basic training in nursing (patient care in excretion)
83			Set for Stoma	1	1	do
84			Feeding Tube Set	5	5	Item required for basic training in nursing (nutrition control).
85	Conception Control Training Set	1	Conception Control Training Set	1	1	Item required for training in maternal nursing (guidance on birth control).
86	Set for Milk Preparation	1	Set for Milk Preparation	1	1	Item required for training in maternal nursing (guidance on breast-feeding)
87	Milking Device, Hand Type	12	Milking Device, Hand Type	15	15	do
88	Examination Instrument Set	5	Examination Instrument Set	2	2	Item required for basic training in nursing (assistance in medical examinations)
89	Traube's Obstetric Stethoscope	5	Traube's Obstetric Stethoscope	5	5	Item required for training in maternal nursing (hearing of cardiac sound).
90	Ear Scope	1	Ear Scope	1	1	Item required for basic training in nursing (care of ENT patients)
91	Nasal Scope	1	Nasal Scope	1	1	do
92	Proctoscope	1	Proctoscope	1	1	Item required for basic training in nursing (surgical care).
93	Vaginal spectrum	1	Vaginal spectrum	1	1	Item required for basic training in nursing (gynecological care)
94	Set for Stomach Pump	1	Set for Stomach Pump	1	1	Item required for basic training in nursing (emergency care and assistance in medical examinations)
95	Irrigator Stand	1	Irrigator Stand	5	5	Item required for basic training in nursing.
96			I. V. Set	15	15	Item required for basic training in nursing (no. of items to be determined on the basis of no. of beds).
97			Eye Applicator	1 case	1 case	Item required for basic training in nursing (ophthalmological care).
98			Examination Bed	1	1	Item required for basic training in nursing.
99			Examination Chair	1	1	do
100	Operating Instrument Set	1	Operating Instrument Set	1	1	Item required for basic training in nursing (aseptic handling, preparatory work, care).
101	Linen for Surgery	1	Linen for Surgery	2	2	Item required for basic training in nursing (gown technique)
102	Delivery set	1	Delivery set	1	1	Item required for basic training in nursing (preparation for and care in deliveries).
103	Tracheostomy Instrument Set	1	Tracheostomy Instrument Set	1	1	Item required for training in maternal nursing (aseptic handling, preparatory work, care)
104			Lumber Puncture Instrument Set	1	1	do
105	Medication Trolley Set	1	Medication Trolley Set	1	1	Item required for training in nursing and pharmacology (dispensing, management)
106			Hot Water Bottle & Ice Bag, Bottle	5	3	Item required for basic training in nursing (Hot water Bottle & Ice Bag)

No.	Item requested by Sri Lankan side	No. of Items requested	Item requested by project-type technical cooperation team	No. of Items requested	No. of items decided	Remarks
107			Blanket	3	3	Item required for basic training in nursing(Hot water Bottle)
108			Ice Cube Machine	1	1	Item required for basic training in nursing(Ice Bag)
109	Boiling Sterilizer (large/small)	1	Boiling Sterilizer (large/small)	1 each	1 each	Item required for basic training in nursing (surgical aseptic method)
110	Gauze Cast (large/small)	1 each	Gauze Cast (large/small)	1 each	1 each	Item required for basic training in nursing.
111	Instrument Trolley	1	Instrument Trolley	5	15	do
112			Set for Dressing	1	1	Item required for basic training in nursing (surgical handling).
113			Kidney Tray	2 each	15 each	Item required for basic training in nursing
114			Waste Receptacle	2	2	do
115			Shaving Set	5	5	Item required for basic training in nursing (surgical aseptic method).
116			Wash Basin	5	6	Item required for basic training in nursing (hand washing method).
117			Wash Basin Stand	3	4	do
118			Hand Brush	1 case	1 case	do
119	Blood Sedimentation Rack with Pipettes	1	Blood Sedimentation Rack with Pipettes	5	5	Item required for basic training in nursing (examinations).
120			Urinometer with Pipettes	2	2	do
121	Measuring Rod (Adult/Infant)	1 each	Measuring Rod (Adult/Infant)	1 each	1 each	Item required for basic training in nursing (physical examination).
122	Weighing Scale (Adult/Infant)	1 each	Weighing Scale (Adult/Infant)	1 each	1 each	do
123	Sitting Height Measuring Rod	1	Sitting Height Measuring Rod	1	1	do
124	Dynamometer	1	Dynamometer	1	1	do
125	Breisky's Pelvimeter	2	Breisky's Pelvimeter	2	2	do
126			Chart of Sight Test	1	1	do
127			Rotary Spirometer	1	1	do
128			Martin's Body Measure	1	1	do
129			Baby Head Measure	1	1	do
130	Sphygmomanometer, Portable Type	5	Sphygmomanometer, assorted	29	29	Item required for basic training in nursing (1 unit for every 2 students).
131	Temperature Taking Set	10	Temperature Taking Set	15	15	Item required for basic training in nursing (no. of units to be determined on the basis of no. of beds).
132			Stethoscope (including Infant & Teaching)	29	29	Item required for basic training in nursing (1 unit for every 2 students).
133			Thermometer (Rectal, Oral, Digital)	1 each	1 each	Item required for basic training in nursing (application of techniques).
134			Conception Control Training	2	1	Item required for washing linen after practice.
135			Waste Receptacle	3	1	Item required for micro biology, bacteriology, nursing education.
136			Pipettes	10	0	Item not required at this time.
137			Plastic Pipettes	1 box	0	do

No.	Item requested by Sri Lankan side	No. of items requested	Item requested by project-type technical cooperation team	No. of items requested	No. of items decided	Remarks
138			Triangle Flask (100cc/500cc)	6 each	0	Item not required for at this time.
139			Beaker (100cc/500cc)	6 each	0	do
140			Alcohol Lamp	3	0	do
141			Tripod with Wire Gauze	3	0	do
142			Test Tube	50	0	do
143			Test Tube Stand	3	0	do
144			Test Tube Pinch	3	0	do
145			Set Square	1	0	do
146			Protractor	1	0	do
147			Compasses	1	0	do
148			Gas Stove	5	6	Item required for cooking training.
149			Food Model	1	1	Item required for seminars in nursing and dietetics (no. of units to be determined on the basis of no. of cooking working surfaces).
150			Sauce Pan Set	5	6	do
151			Kitchen Equipment Set	5	6	do
152			Knife Set	5	6	do
153			Plates	5	6	do
154			Wagon	5	6	do
155			Chopping Board	5	6	do
156			Scale	5	6	do
157			Measuring Cup	5	6	do
158			Refrigerator	1	1	do
159			Rice Cooker	1	1	do
160			Micro Wave	1	1	do

B. Audio-visual/ Office Equipment and Other Items of Equipment

No.	Item requested by Sri Lankan side	No. of items requested	Item requested by project-type technical cooperation team	No. of items requested	No. of items decided	Reason
1	Video set	2	Color TV, S-VHS video player		4	Item required for enhancing students' learning efficiency.
2	Overhead projector (including screen)	3	Overhead projector (including screen)		0	Item not required for this project.
3	Slide projector (including screen)	2	Video monitor TV set		0	do
4	Tape recorder set	2	Headphone		0	do
5			Video deck (S-VHS)		0	do
6			Playback controller		0	do
7			Large overhead projector OHP		1	Item required for enhancing students' learning efficiency.
8			Large screen		1	do
9			Microphone, amplifier, speaker		4	do
10			Microphone, amplifier, speaker (large)		1	do
11			Cassette deck		0	Item not required for this project.
12			Video Tape Ruck		0	do
13			Safe	1	1	Item required for storing valuable such as school register and cash.
14			Refrigerator	1	2	Item required for storing drugs and foods (for use in cooking training).
15	Copier	1	Color copier	1	0	Item not required for this project.
16	Printer	1	Printing Machine	1	1	Item required for printing test papers and other printed matter to be distributed among students.
17			Telephone	1	0	Item not required for this project.
18			White Board (with copier)	3	0	do
19			White Board		2	It is a basic item for training.
20			Blackboard		8	do
21			Pointer		0	Item not required for this project.