

APPENDIX

1. MINUTES

Minutes of Discussions

At the request of HMG of Nepal for assistance in establishing Tribhuvan University Teaching Hospital in Kathmandu (hereinafter referred to as "the Hospital"), the Government of Japan, through Japan International Cooperation Agency (JICA), has sent a survey team to hold the Basic Design Survey on the project.

The team held a series of discussions and exchanged views with the Nepalese authorities concerned on the constructions of the Hospital.

As the result of the discussions, both parties have agreed on the following items:

1. The main purposes of the establishment of the Hospital are for training of medical students, carrying out medical research and providing medical services to the people.
2. To meet the objective of the project, necessary buildings, facilities and equipment for the Hospital will be provided.
3. The Hospital constructed under the Grant Aid by the Government of Japan is aimed at having the capacity of about 300 beds.
4. The scope of works for each side are divided as follows;

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(1) For Japanese side

(a) Contents of facilities

- (I) Outpatient department
- (II) Central diagnostic and therapeutic department
- (III) Ward units
- (IV) Administrative department
- (V) Service department
- (VI) Research department
- (VII) O. T. suite
- (VIII) C .S. S. D.

(b) Medical Equipment

(2) For Nepalese side

- (a) Water supply line(s) to the building site.
- (b) External drainage and sewage line from the building site.
- (c) Electrical power main line to the building site.
- (d) Telephone line and equipment
- (e) Exterior facilities and landscaping
- (f) Provision of space necessary for such construction as temporary office, working area, stock yards and others.
- (g) Beds, Curtains, Blinds, Carpets, Tableware, and others required.
- (h) Maintenance and operation cost and expenses.

5. HMG of Nepal will undertake the following items;

- (1) to provide data and information necessary for the design and the construction.



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- (2) to clear and level the project site before the start of the construction.
 - (3) to ensure prompt customs clearance for imported materials and equipment for the construction, and also facilitate the internal transportation for them.
 - (4) to exempt Japanese nationals concerned from customs duties, internal taxes and other fiscal levies which may be imposed in Nepal on the occasion of the supply of materials and services for construction.
 - (5) to provide and accord necessary permission, licences and other authorization required for carrying out the project.
6. The Nepalese side expressed the desire on the following points;
- (1) Foundation to be reinforced to take up to the fifth floor for the future expansion.
 - (2) Space for library to be enough for use by faculty and students.
 - (3) Auditorium and lecture hall to be included.
 - (4) 60% of the total beds to be used for private cabins.
 - (5) The 300 beds Hospital will be appropriately sited in the Institute of Medicine Complex. Design will be discussed in details later.
 - (6) Provision of duty rooms for staff on 24 hours duty.
 - (7) Telephone exchange, laundry equipment and cooking equipment.



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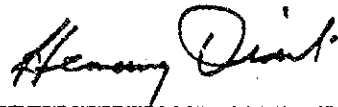
7. The Nepalese side assured that the aquisition of land for the construction had been already completed.
8. These items as agreed are to be recommended to the respective Governments and the authorities concerned of both parties for the realization of the project.

Kathmandu, June 29, 1981



Leader

Japanese Survey Team



Dean

Institute of Medicine

Tribhuvan University

NEPAL: TEACHING HOSPITAL PROJECT

MINUTES OF DISCUSSION

Introduction

1. A mission dispatched by the Japan International Cooperation Agency (JICA) visited Nepal from 14th to 21st October 1981 for the purposes of the submission and the explanation of the Draft Final Report of the Basic Design Study (the Study) on the Teaching Hospital Project of Tribhuvan University (the Project). The mission had a series of discussions with the concerned authorities of His Majesty's Government of Nepal (HMG), and Tribhuvan University.

A final meeting between the members of the Teaching Hospital Coordinating Committee of the Tribhuvan University and the Mission was held on 19th October 1981. This minutes records the major points of understanding reached between both parties regarding the Project, subject to further review and approval of the respective Governments for the implementation of the Project. A list of participants in the final meeting is included as Annex 1 to this minutes.

Basic Design of the Project

2. The Nepalese side was satisfied with the proposed basic design of the Project described in the Draft Final Report except that the design of parking areas with shed was missing. JICA will add this design and drawings in the Final Report of the study. Appropriate alterations in the design agreed during the discussions will be incorporated in the final report.

Medical Equipments of the Project

3. The items of the medical equipments which are necessary for the functioning of the Teaching Hospital were selected by both parties taking into consideration the conditions of medical services in Nepal, the ease of operation, and maintenance and the running cost.

A list of medical equipments attached to this minutes as Annex 2. will be incorporated in the final report.

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Executing Agency for the Project

4. The Executing Agency for the Project will be identified by the middle of November, 1981 which will be responsible for the management of the Project's planning, implementation and operation.

Consultant's Services for the Project

5. Both parties agreed on the urgent need to appoint a consultant firm in view of the shortage of time and recommend for speedy action.

Construction Schedule of the Project

6. Construction of the Project shall be completed by the middle of March 1983, if the period of Exchange of Notes (E/N) for the Project signed on 15th September, 1981 of both Governments is extended by mutual agreement. In this context, construction works contracts for Project will at the latest be awarded by early February 1982, after the competitive bidding among pre-qualified Japanese Contractors.

Nepalese Contribution to the Project

7. In accordance with the E/N, The Executing Agency shall timely execute their contribution items described in Annex 3.

Operation and Maintenance of the Teaching Hospital

8. After completion of the construction of the hospital and installation of the equipment of the Project, the Nepalese side will provide on a timely basis all such funds, personnel and facilities as will be necessary for the operation and maintenance of the Teaching Hospital.

Narayan Rana

Chairman,
Teaching Hospital Committee

Katmandu 19th October 1981.

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Leader
JICA Mission

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List of ParticipantsNepalese Team

1. Dr. Narenara Bahadur Rana - Chairman T.H.C.
2. Dr. Madan Prasad Upadhyay - Member T.H.C.
3. Dr. Purushottam Narayan Shrestha - Member T.H.C.
4. Dr. Mathura Prasad Shrestha - Member T.H.C.
5. Dr. Bishma Raj Prasai - Member T.H.C.
6. Dr. Gopal Prasad Acharya - Member T.H.C.
7. Mr. Krishna Raj Shrestha - Engineer, Dept of Housing
8. Mr. Jagadish Chandra Pokharel - Engineer, Institute of Engineering.
9. Mr. Chandra Bahadur Khadka - Under Secretary, Ministry of Education.
10. Dr. Dwarika Nath Regmi - Superintendent I.D. Hospital, Ministry of Health.
11. Mr. B.P. Lacoul - Section Officer, Foreign Ministry.
12. Dr. Panna Lal Pradhan - Chief, T.U. Planning Division.
13. Mrs. Chapala Pandey - Under Secretary, National Planning Commission.
14. Mr. Dharmendra Purush Dhakal - Section Officer Ministry of Finance.
15. Dr. Gokul Das Shrestha - Asst. Dean, T.U. Institute of Medicine
16. Mr. Naveen Prakash Jung Shah - Asst. Dean. T.U. Institute of Medicine.
17. Mr. Kazuyoshi Takayama - Coordinator, Teaching Hospital Project.

Japanese Team

1. Dr. Nobuyashi Ito - Leader
2. Mr. Kazuhisa Matsueka - Coordinator
3. Mr. Yasuhiro Miyoshi - Architect
4. Mr. Kyoichi Isawa - Medical Equipment Specialist
5. Mr. Toshisada Komori - Counsellor, Japanese Embassy
6. Mr. Yuji Kashiwara - Project Officer, JICA

Medical Equipment List

1. OUT PATIENT DEPARTMENT

- i) O.P.D.
 - a) Diagnostic Instrument Set
 - b) Examination Couch
 - c) O.P.D. Treatment Room Instrument

ii) DISPENSARY SECTION

- a) Water Reginer
- b) Medicine Refrigerator
- c) Prescription Utensil Set

iii) CASUALTY SECTION

- a) Simple Operating Stretcher
- b) Auxiliary Operating Light
- c) Suction Unit
- d) High Speed Autoclave
- e) Observation Bed
- f) Treatment Utensil

2. CENTRAL DIAGNOSTIC & TREATMENT DEPARTMENT

- i) X-RAY SECTION
 - a) X-Ray Angiographic Apparatus
 - b) X-Ray-TV Apparatus
 - c) X-Ray Tomograph Apparatus
 - d) Dark Room Equipments

ii) PHYSIOMETRY SECTION

- a) Endoscope (Various type)
- b) Electrocardiography Apparatus
- c) Electroencephalograph Apparatus

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iii) MORBID ANATOMY SECTION

iv) CLINICAL LABORATORY

v. CLINICAL LABORATORY

- d) Respiratory Test Apparatus
- e) Ultra Sonic Diagnosis Apparatus
- f) Respiration Vitalography Apparatus

- a) Autopsy Table
- b) Mortuary Refrigerator

- (1) a) Centrifuge
- b) Microscope
- c) Hemocytometer
- d) Spectrophotometer

- (2) a) System Spectrophotometer
- b) Centrifuge
- c) Flame Photometer
- d) Water Bath
- e) Water Still
- f) Analytical Balance
- g) PH Meter
- h) Electrophoresis Apparatus
- i) Densitometer
- j) Incubator
- k) Microscope
- l) Spectrophotometer
- m) Deep Freezer
- n) Special Microscope
- o) Anaerobic Incubator
- p) Autoclave
- q) Shaker (For Tissue Fixation)
- r) Microtome Apparatus
- s) Freezing Microtome Apparatus
- t) Prefabric Refrigerator
- u) Hot Air Sterilizer
- v) Water Deionizer Apparatus
- w) Blood Gas Analyzer

vi) CENTRAL STERILIZING AND SUPPLY SECTION

- a) Autoclave
- b) C.S.S.D. Materials

vii) CENTRAL OPERATING THEATER

- a) Operating Light
- b) Universal Operating Table
- c) Anesthesia Apparatus
- d) Electro Surgical Unit
- e) Suction Unit (Heavy Duty Type)
- f) Patient Monitoring Apparatus
- g) Water Sterilizer
- h) Instrument Boiling Sterilizer

viii) PHYSICAL THERAPY SECTION

- a) Physical Exerciser Apparatus
- b) Physical Therapy Apparatus

ix) I.C.U., C.C.U. SECTION

- a) Patient Bed (I.B.U. Type)
- b) Central Patient Monitoring System
- c) Heart Monitoring Defibrillator
- d) Automatic Respirator
- e) Oxygen Therapy Equipment

x) DELIVERY SECTION

- a) Delivery Bed
- b) Operating Light
- c) Water Sterilizer
- d) Delivery Room Materials
- e) Operating Table
- f) Auxiliary Operating Light

xi) NURSERY SECTION

- a) Infant Incubator
- b) Infant Respirator
- c) Infant Phototherapy Apparatus
- d) Nursing Bottle Sterilizer *ml*

3. WARD DEPARTMENT

e) Infant bassinet Stand

a) Patient Stretcher

b) Mobile X-Ray Unit

c) Sterilizer

d) Portable Suction Unit

e) Examination Lamp

f) Nursing Utensil

Nepalese Contribution

The Executing Agency shall complete the following works and procedures by the time therewith described.

1. Clearance and leveling of the site and provision of space necessary for such construction as temporary office, working area, stock yard and others by the end of January 1982.
2. Provision of utility lines for temporary use during the construction of the Hospital such as water supply, electrical power supply and telephone line by the end of January 1982.
3. Construction of utility lines up to the building site for permanent use by the Hospital by the end of February, 1983.
4. Construction of external drainage and sewage line from the Hospital: by the end of February, 1983.
5. Installation of telephone line by the end of February, 1983.
6. Construction of pavement and landscaping.
7. Installation and arrangement of curtains, blinds, carpets, tableware and others required by the end of March, 1983.
8. Facilitate customs clearance for imported materials and equipment as and when necessary.

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2. CONSTRUCTION CONDITION

2.1 Building Regulations

- i) At present, there are no design standards or building regulations stipulated in Nepal and, consequently, Indian standards are applied to structural calculation, etc.
- ii) The Indian Building Code is taken into consideration in dealing with the seismic force with the seismic coefficient of 0.08 adopted for the Kathmandu area.
- iii) Although there are no common specifications for public buildings construction specifications and tender specifications are prepared individually for those works costing more than 2,000,000RS (about 40,000,000 yen)

2.2 List of Some Architect-Engineer Firms in Nepal

1. Mr. & Mrs. M. L. Kayastha & Associates, Tripureswar, Kath. P. N. 16316.
2. CBC Group Jamal, Kathmandu, Nepal. P. Ne. 16935.
3. East Consulting Engineers.
4. Team Consultants Valley Associates, Thapathali.
5. G. M. Consulting, Engineering & Architect Firm. Baneswor.
6. Shanker N. Rimal, Engineers & Architect, Nexal, Kath.
7. Designers Core.
8. Building Designs Associates, Hitt Darbar, Kath.
9. CEMAT Consultants (P) Ltd., Pyukha Tole, Kath.
10. EDAC Engineering Designers & Consultancy. Lalitpur.
11. Niwas Architectural & Engineering Consultant, New Road, Kathmandu.
12. The Hills Architects Engineers & Planners, Canabahal, Kathmandu.
13. Techinal Interface (P) Lts, Chhetrapati, Kathmandu.
14. United Designer & Associates.
15. Le Bon Designers.
16. N. Pradhan Consulting Architect & Planners, Po Box 1141, Kathmandu, Nepal.
17. Institute of Engineering Consultancy Services, Pulchock, Lalitpur.

ANNEX G

CLASS 'A' CONTRACTORS

<u>S.No.</u>	<u>Firm and proprietor's name and address</u>
1. 1	N.C.C.N. Tripureshwar, Kathmandu.
2. 320	Jayee Construction - Indra Prasad Pradhan 6/193 Pako New Road.
3. 273	Nepal Construction P.Ltd. - Yogendra Jha, Rajbiraj.
4. 127	Chitwan Construction & Engineering Co. 8/343 (Pyukha)
5. 1200	Bhandari Builders P.Ltd. (S.A.S. Bhandari) A.S. Bhandari and Mrs. Pushpa Bhandari Post Box 1485, Jawalakhel.
6. 1207	Shree H.S. Construction - Hanuman Pra. Sharada and Shree Niwas Sharad Lahan Bazar, Dist. Siraha.
7. 9	Sharma & Company - Radhakrishna Sharma, Sundhara Kathmandu.
8. 1225	Amrit Bahadur Shrestha 21/165, Dilli Bazar, Kathmandu.
9. 305	Thakali Subba Construction, Shamsher Chand 20/446 Thamel, Kathmandu.
10. 1245	Mini Chaudhari Construction Co. P.Ltd. Lochan Singh 10 Ampaling Silong (Meghalaya) or 3/70 Pulchowk.

ANNEX G

CLASS 'B' CONTRACTORS

<u>S.No.</u>	<u>Firm and Proprietor's name and address</u>
1. 3	Nawin Construction Co. - Rana Pra. Upadhyaya 21/223 Thamel.
2. 4	Mittal & Co. - Banawari Lal Mittal 492 Wotu Tole Kathmandu.
3. 32	Kedar Nath Lohia - Parbat Man Shrestha Mahendrapath Dharan Ward No.5.
4. 117	Sharada Construction Satyanarayan Sharada Lahan Bazar Siraha.
5. 181	Bijaya Construction Co. - Rajendra Man Ser Chandra and Bijaya Man Serchand 15/78 Pakanajol, Kathmandu.
6. 224	Mararaka Construction - Paremeshwar Pra. Muraraka Lahan Bazar, Siraha.
7. 236	D.M. Engineers and Builders - Diwakar Man Serchand 13 Himalaya Height Tahachal Kathmandu.
8. 276	Sherpa Construction Co. - Binod Pra. Mainali 15/105 Thamel.
9. 306	Engineers and Engineering Enterprises - Bishnu Bahadur Karki, Lalitpur, Kopundole.
10. 388	Janata Construction Co. - H.B. Tamang 10/474 Keltole Kathmandu.
11. 401	Reliable Builders - Satyapal Sachdeb and Narayan Shamsher Rana Panchwati Thapathali, Kathmandu.
12. 861	Radha Construction Co. - Radha Prasad Chaudhari Janakpurdham Ward No.5
13. 593	Makabul Construction - Makabul Shah Maitidebi Kathmandu.
14. 599	Jaya Budha Nirman Sewa - Kar Jung Lama and Shanta Bahadur Waiba, Desh Ratna Kansakar 7/229 Lainchaur Kathmandu.

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<u>S.No.</u>	<u>Firm and Proprietor's name and address</u>
15. 608	Kosi Stone Crushing Co. P.Ltd. - Jhamka Bahadur Nirauli Dharan 10 Sunsari.
16. 623	Araniko Nirman Co. - Ganesh Lal Shrestha 9/343 Keltole Kathmandu.
17. 699	Tandan Construction Co. - Birendra Nath Tandan Nepalgunj.
18. 721	Nawin Construction P.Ltd. 12/69 Bangemuda Kathmandu.
19. 793	Co-operative Construction - Amar Bahadur Shrestha Ward No. 13 Kalimati Kathmandu.
20. 846	Khimti Construction Co. - Gyan Bahadur Shrestha East No.2 Those Bazar Ramechhap.
21. 865	R.K.S. Construction - Nanda Kishore Sharada Lahan Nagar Panchayat Ward No.6, Siraha.
22. 895	Laxmi Shrestha & Co. - Laxmi Pd. Shrestha Bhosiko Tole, Kathmandu.
23. 917	Jaya Raj Construction - Rajkumar Agrawal Jayaraj Manapal, Bhadrapur, Jhapa.
24. 14	Gosai Kunda Nirman Co - Ram Krishna 21/224 Thamel.
25. 1041	Projwal Enterprises - Upendra Kumar Malla Lazimpat, Kathmandu.
26. 25	Kailash and Co. - Krishna Malla Manandhar 15/25 Naya Bazar, Kathmandu.
27. 21	Mahalaxmi Construction Concern - Laxmi Bhakta 15/160, Naya Bazar, Kathmandu.
28. 1132	KC Construction Firm - Kirti Bahadur KC Pokhara Na.Pan. 15
29. 264	S.N. Jatia and Co. - Satya Narayan Marawadi Alkhia Road Birgunj.
30. 1166	Himali Construction Bhuaneshwari Nyaupane, Shanti Rana, Bijaya Shahi 13/775, Dhobichaur Kathmandu.

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2.3 Construction Costs

i) Examples

Case 1: National Computer Center (NCC)

Owner	:	NCC HMG of Nepal
Designer	:	Valley Associates
Constructors	:	
Building	:	National Construction Company of Nepal
Electrical, water and sanitary works	:	Balaja Yanta Sala
Air conditioning and interior fittings	:	Undecided (expected to be Indian firms)
Floor space	:	1st floor 1,710m ² 2nd floor 900m ² Total 2,610m ²
Construction period	:	October, 1978 - January, 1981.
Construction costs	:	(INC = ₹20)
Building	:	₹80,000,000.-
Electrical	:	₹86,000,000.-
Sanitary	:	₹6,000,000.-
Interior fittings	:	₹60,000,000.-
External	:	₹1,000,000.-
Fire fighting facilities	:	₹1,000,000.-
Air conditioning	:	₹40,000,000.-
Telephone	:	₹8,000,000.-
Total	:	₹282,000,000.-

Case 2: Patan Hospital

Owner	:	Joint Committee of HMG of Nepal, United Mission and Lalitpur
Designer	:	Architect S. M. Pradhav, Engineer M. Thomas, (Consultant Group from United, Mission)
Constructors	:	Owner

Size : 150 beds (1st phase 90 beds).
Outpatients: 600 persons/day.

Division : Internal, surgery (2 operating theaters), pediatrics, obstetrics, casualty.

Construction period : 1977 -

Outline of buildings :

Structure : RC rahmen structure

Stories : 3 stories above ground (3rd floor for the phase)

Walls : External: brick fancy piling
Internal: on-site terrazo work
Undecided for the upper section

Floor : On-site terrazo

Ceiling : Undecided

Windows : Aluminum sashes

Entrance/exit : Steel sashes

Construction costs : (on commencement)
700,000,000 (for 90 beds) INC=¥20
(60% increase at present)
(including building, electrical work (2 generators), sanitary, external, furniture and medical equipment but excluding air conditioning)

Case 3: Institute of Engineering Development Project

Owner : Institute of Engineering, Tribhunan University

Designer : Institute of Engineering Consultancy Service

Constructors : 1st section = Reliable Builders
2nd section
3rd section National Construction Co., of Nepal
4th section

Outline of sections : 1st section: classroom wing, laboratory wing, advanced laboratory.
2nd section: library, cafeteria, staff dormitory

3rd section: student dormitory
 4th section: road, water lead-in,
 power lead-in

Construction period :

	Start	Completion	
1st section:	1979.11	1981.4	*(Expected to be delayed by 6 months)
2nd section:	1979.11	1981.4	*(Expected to be delayed by 1 year)
3rd section:	1979.11	1981.4	*(Expected to be delayed by 1 year)
4th section:	1980.11	1982.11	

(* 1 Cement and reinforcing bars could not be obtained in 1979. There is no problem at present.

2 There has been a shortage of bricks since 1979.)

Outline of construction and costs (on contract):

1st section :

Structure : RC rahmen structre + brick walls

Finish : Exposed bricks for external walls
 Mortar paint for internal walls
 Terrazo blocks for flooring
 Mortar paint for ceiling
 Roofing: lime concrete + asphalt
 waterproofing + brick tiles

Openings : Wooden sashes

	Classroom wing	Laboratory wing	Advanced laboratory	Total
Floor space	1,825.6m ²	2,611.2m ²	840m ²	5,276.8m ²
Stories	2	2	1	
Floor height	3.6m	3.6m	5.0m	

2nd section :

Structure : Library: RC rahmen structure
 Cafeteria, staff houses:
 brick structures

Finish : Library:
 flooring: terrazo blocks
 roofing : lime concrete double
 asphalt waterproofing

Cafeteria:
 flooring: mosaic tiles
 roofing : same as the library

Staff houses:
 flooring: cement punning
 roofing : wood

	Library	Cafeteria	Staff houses	Total
Floor space	580m	450m	3,355m	4,385m
Stories	1	1	2	

Construction costs : INC=¥20
 on contract

Building : ¥90,000,000.-

3rd section :

Structure : Brick

Finish : Student dormitory:
 flooring: cement panning
 roofing : lime concrete + double
 asphalt felt + bric tiles

Cafeteria and kitchen wing:
 flooring: mosaic tiles
 roofing : same as the student
 dormitory

	Student dormitory	Cafeteria and kitchen wing	Total
Floor space	5,000m ²	1,310m ²	6,310m ²
Stories	3 or 2	1	

Construction costs : INC=¥20
on contract

Building : ¥140,000,000.-

4th section :

Construction costs : ¥232,000,000.-
on contract

Case 4: Embassy of the USSR

Owner : Embassy of the USSR

Designer : Weise Consulting Architects

Constructors : New Evelest Construction

Floor space : 16,560m²

Construction period : 1979.1 - 1981.7

Construction costs : \$1=¥220
¥1,232,000,000.-

ii) Construction costs

Outlines of construction works in progress (Cases 1-4)
may be compared as below.

	Use of building	Total floor space	Stories	Structure	Equip-ment	Costs	Unit price yen/m ²	Remarks
Case 1	Computer center	2,610	2	RC	E AC P	282,000	108,000	Computer room only air conditioned. Costs do not include the computer.
Case 2	Hospital (120 beds)		3	RC	E P EV	1,200,000	1,000	Including external works and medical equipment
Case 3	School	5,276	21	RC	E	176,000	33,000	Classroom wing, laboratory wing. Excluding lead-in and external works
Case 4	Embassy	17,093		RC	E AC P EV	1,232,000	72,000	Including external works and furniture

Nepal produces only simple steel products, bricks, some timber, stones, some cement and aggregate materials, depending on imports for others. In addition, since it is a landlocked country, land transportation is carried out over a long distance and is also subjected to various conditions in those countries through which transportation takes place. Therefore, imports are generally costly and are subjected to unstable supply.

In particular, prices of basic materials have markedly increased from 1980 onward with cement and reinforcing bars showing an increase of 50 - 60%, bricks 25% and timber 130% between the end of 1979 and the beginning of 1981. In general, the Nepalese method of contract allows an increase due to inflation over the contract amount. It will, therefore, be necessary to take into consideration the inflationary allowance in budgeting on the basis of the amounts given in the above cases. Although it is difficult to forecast the future, it will be necessary in the present case to allow an increase of at least 20 - 25% for the construction period of 1982 - 1985.

Another point to be mentioned is that the delivery date in construction work is not strictly adhered to with constructors showing the tendency to sign a contract for a low price, knowing that it will be financially difficult, and to procure materials and service when conditions are favorable even by sacrificing on the construction period. In this respect, it may be appropriate to include for the present project some kind of bonus for shortening the construction period to ensure that the delivery date is kept.

iii) Unit costs (building)

Unit prices of each type of construction work were surveyed at 5 places including the Public Housing Construction Bureau, 2 local design offices and 2 local construction companies according to the Bill of Quantity (Building Construction Part A: Civil Works). (See Appendix.)

They may be outlined as below.

- 1) Unit prices of the Public Housing Construction Bureau are lower than other four. For instance,

	Public Housing Construction Bureau	Other four	Remarks
Brick work	11.19Rs/CF	16.47 - 24.00Rs/CF	Medium sized bricks used
Concrete work	21.92Rs/CF	30.12 - 60.00Rs/CF	Korean cement used

According to the director of a design office, the unit prices of the Bureau were set up 2 - 3 years ago and are, therefore, not applicable. This seems to be endorsed by the comment made by the Chief of Design Section of the Bureau was that the list of unit prices for the current fiscal year is being prepared and the present unit prices should be used only for reference. Accordingly, it is not desirable to use the Bureau unit prices as standard ones. The unit prices of the four private firms also vary greatly according to the type of work.

- 2) The local unit prices are compared with Japanese prices in several cases as shown below at the rate of 1Rs = ¥20.

	Unit	Public Housing Construction Bureau	Other four	Japanese
Trenching		141	141 - 1,272	2,870 Manual excavation
Brick work		7,908	11,639 - 19,081	61,300 Converted from
Concrete work		15,491	21,286 - 42,402	15,800
Reinforcement		156,000	200,600 - 300,000	114,130
Wooden fittings		4,008	5,166 - 13,132	13,587 Plywood flush including metal works

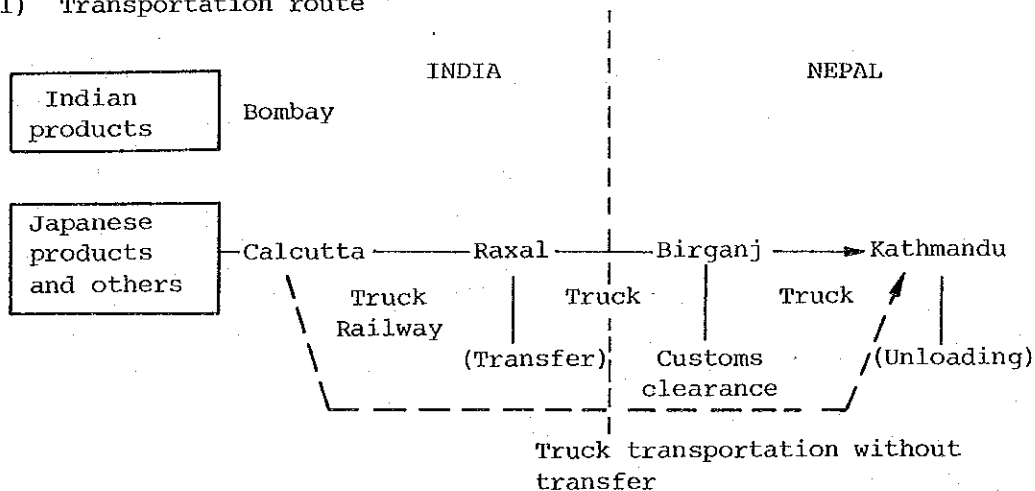
Those works such as trenching and bricklaying based mainly on domestic labor and products cost less than in Japan, whereas those such as concrete work and reinforcement relying on imports tend to be costly. Wooden fittings are relatively costly despite the use of domestic products. This is probably due to the fact that timber prices are relatively high.

The use of aluminum sashes was noticed at one or two places, using Indian and Singapore products. The prices of aluminum sashes made in Singapore used at one site were 35,000 yen/m² (including fixing and glass), which is relatively high compared with Japanese domestic prices: about 20,000 yen/m² (depth 70 ready-made sliding: including 5mm clear glass) or about 33,000 yen/m² (depth 70 semi-AT type: including 5mm clear glass). However, it may be worthwhile to consider the use of them.

2.4 Transportation of Materials (mainly inland transportation)

Since the project site is located in Kathmandu, transportation of domestic products poses no problem. Accordingly, a survey was made on external procurement as shown below.

1) Transportation route



* Reasons for transfer

- 1) Though direct transportation is available, it takes more than one week to obtain permission in India.
- 2) Indian drivers are reluctant to enter Nepal.

2) Transportation period

15 - 30 days from the arrival of the vessel to the completion of unloading at Kathmandu. (However, careful arrangements are necessary, e.g., transportation personnel themselves facilitating formalities in Calcutta.)

3) Transportation costs

A survey was made on three local transport firms regarding the transportation costs for the two routes: Calcutta-Kathmandu and Bombay-Kathmandu. The results show that the Calcutta-Kathmandu route (iron, cement) costs 9,000 yen/t - 11,000 yen/t (as of July, 1981), an increase of 1.2 - 1.45 times compared with a similar survey made about three years ago. The Bombay-Kathmandu costs 18,000 yen/t - 22,000 yen/t (same above).

3. SURVEY OF EXISTING HOSPITALS

Outline of the Survey:

The survey covered a total of five hospital, centering around Nepal's central hospitals. The general tendencies may be outlined as below.

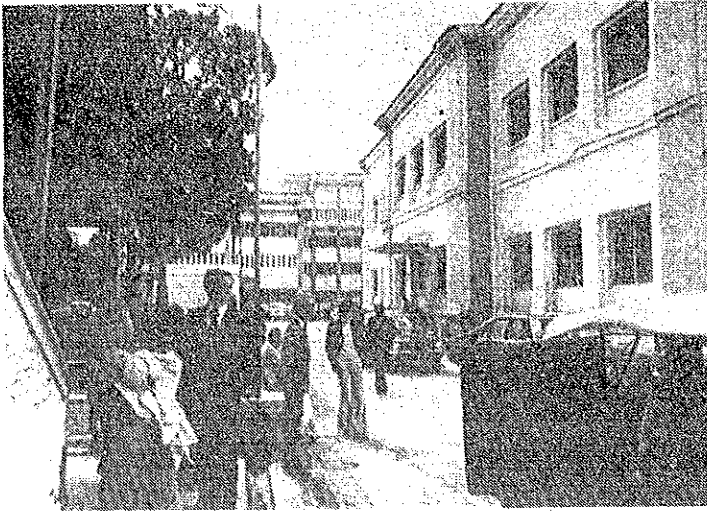
- 1) Facilities including medical equipment are extremely inferior both in quantity and in quality.
- 2) Efficiency is extremely low due to inadequate hospital management.
- 3) The budget is extremely small.
- 4) Since there is no joint use of hospital facilities, a comprehensive network of medical facilities is not yet available.
- 5) An acute shortage of medical manpower.

i) Bir Hospital

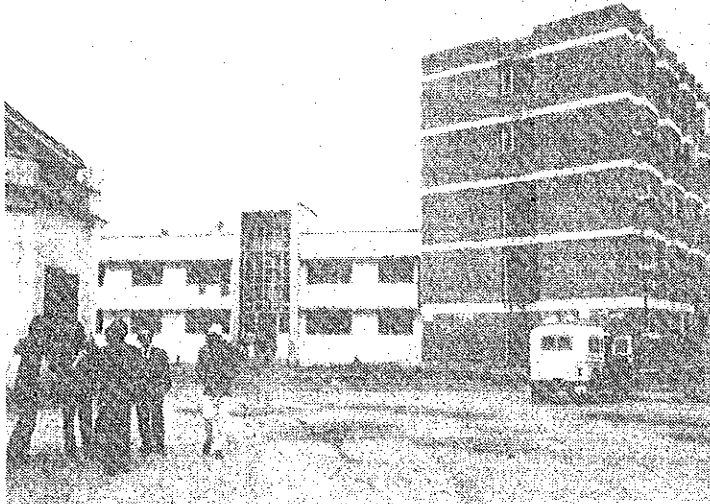
This is the largest hospital in Nepal with a capacity of 300 beds. It consists of reinforced concrete 4-story and 3-story wards and central, administration and casualty wings. In addition, it includes outpatient, nurse training and dormitory wings housed in several blocks across the road. The wards include large sickrooms with a capacity of about 40 beds (men and women are completely separated in different wings). The large sickroom is divided into six corners with centralized observation provided from a nurse station through glass panels. It is equipped with ICU and CCU (a total of 6 beds).

(1) Hospital employees: 735

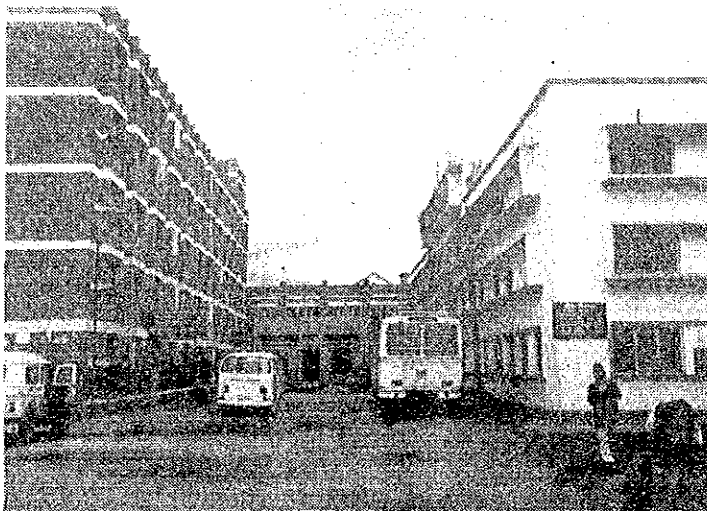
Doctors	:	81 (19 consultants, 40 senior doctors, 22 resident doctors).
Nurses	:	103
Paramedical staff	:	39 (2 radiologists, 0 pharmacist (vacant), 37 outpatient staff, etc.)



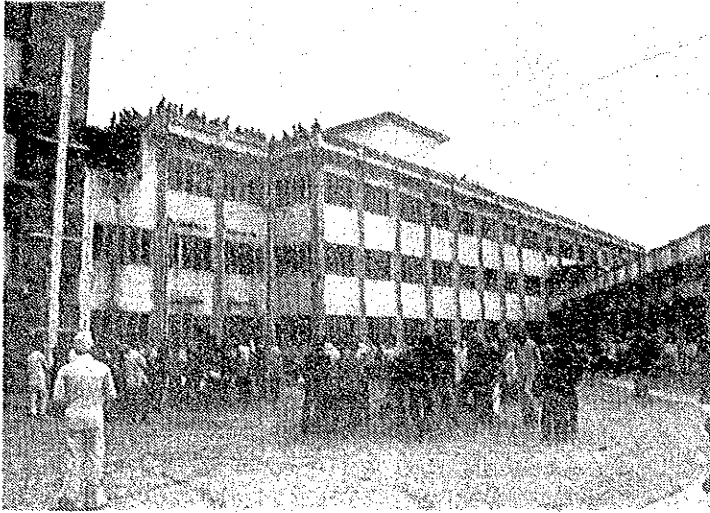
Bir Hospital,
View from Main Gate



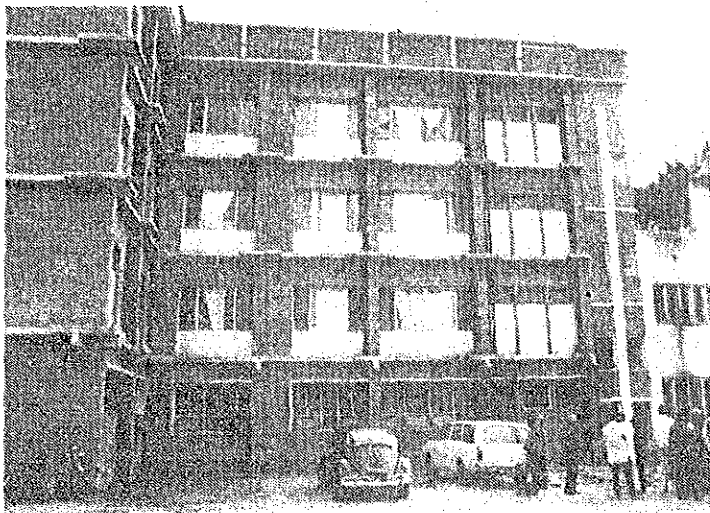
Bir Hospital,
Nurse Dormitory



Bir Hospital,
Dormitory and Training
Center for Nurse



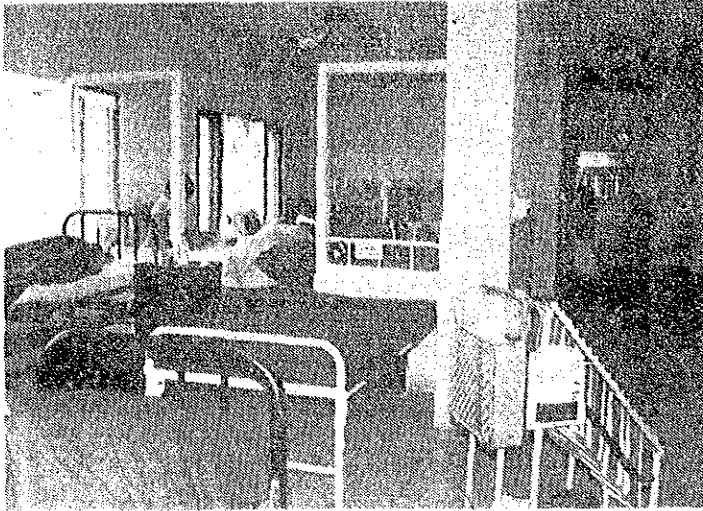
Bir Hospital,
Ward Wing



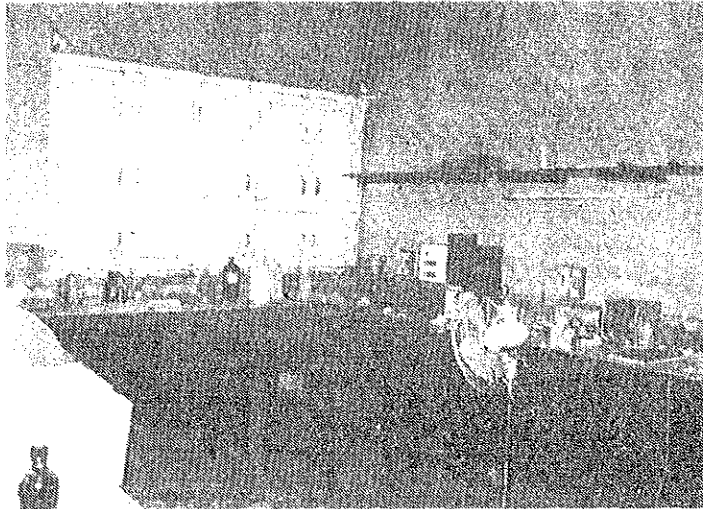
Bir Hospital,
Ward Wing



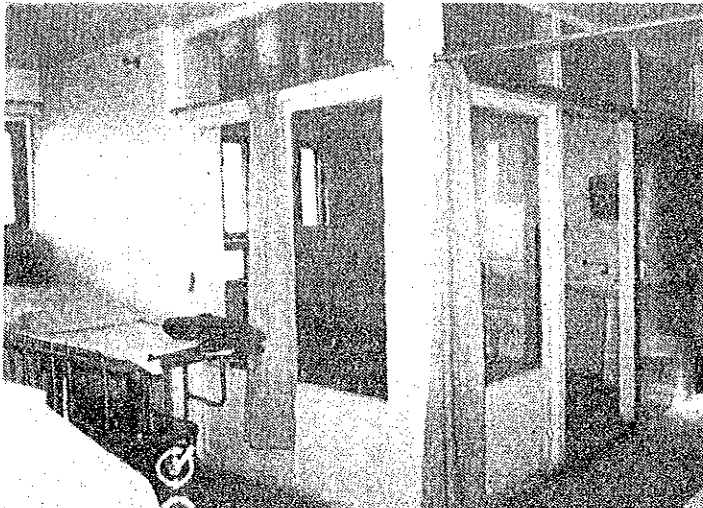
Bir Hospital, OPD



Bir Hospital, Ward



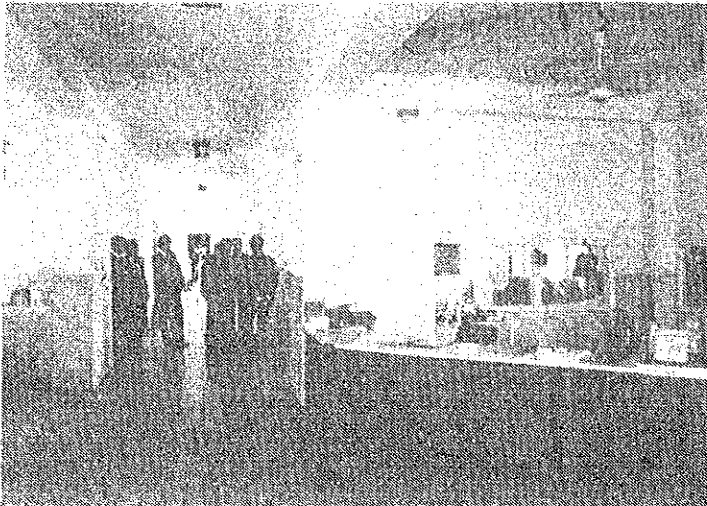
Bir Hospital,
Clinical Laboratory



Bir Hospital, I.C.U.



Bir Hospital, Nurse
Station for I.C.U.



Bir Hospital, Ward



ii) Maternity Hospital

This maternity hospital has a capacity of 170 beds and consists of three 2-story wings, surrounding a beautiful court. The administration wing is located at the front (housing the premature baby room, etc. upstairs) with the diagnosis wing on the left and the ward on the right. The sickrooms are mainly large rooms centering around a nurse station, though single and double rooms are also available.

(1) Number of deliveries:

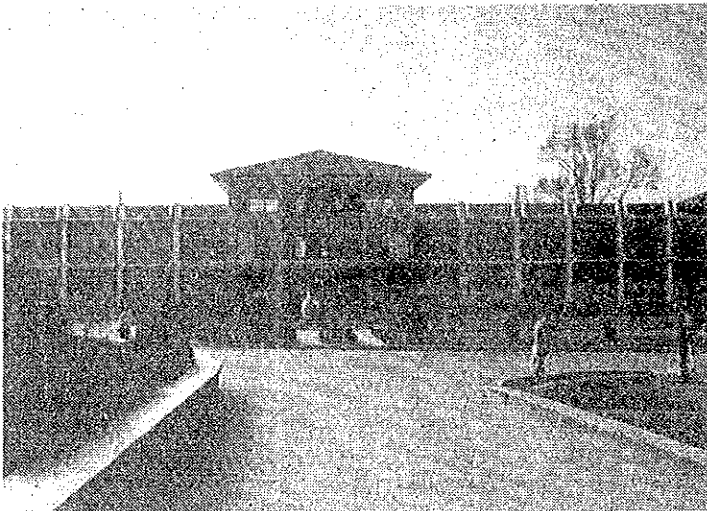
Normal : about 5,400/year

Abnormal: about 670/year

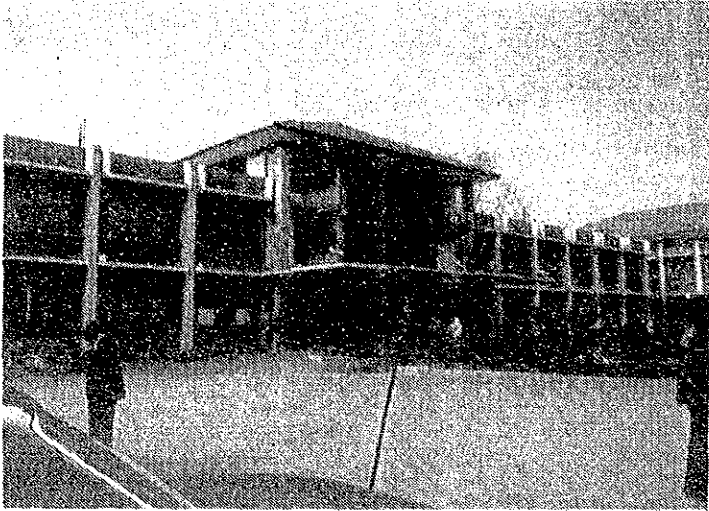
Stillbirth and death on birth: 381/year

(2) Rate of premature babies: about 20%, averaging 100 per month

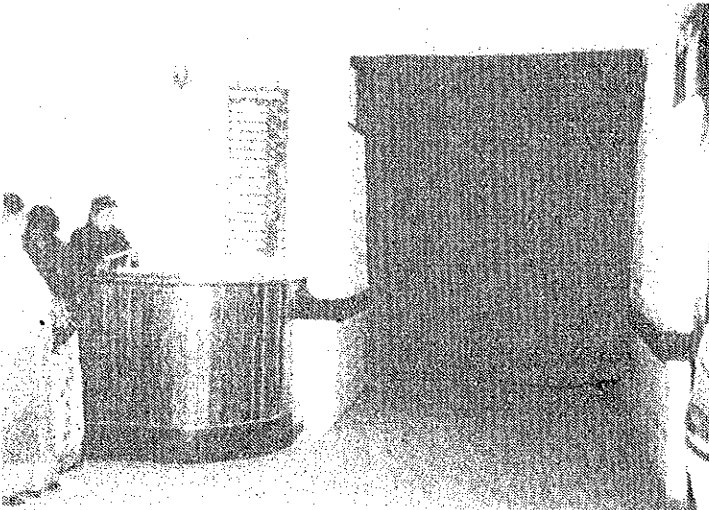
(3) General fees : 10Rs/day (free rooms may be selected after delivery)



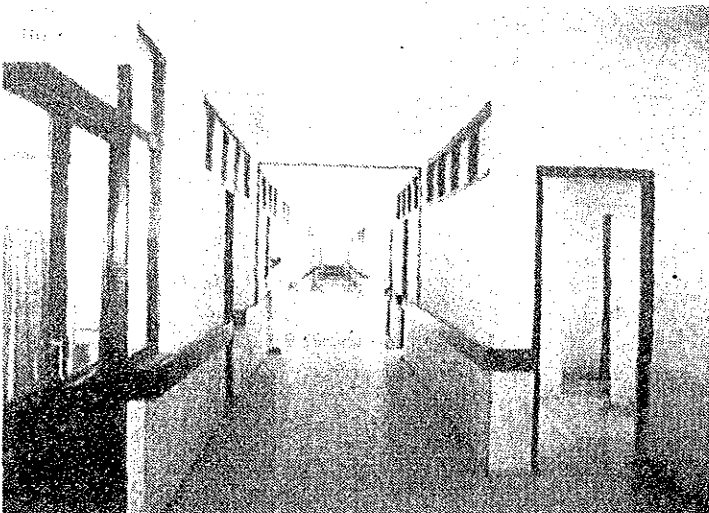
Maternity Hospital,
Front View



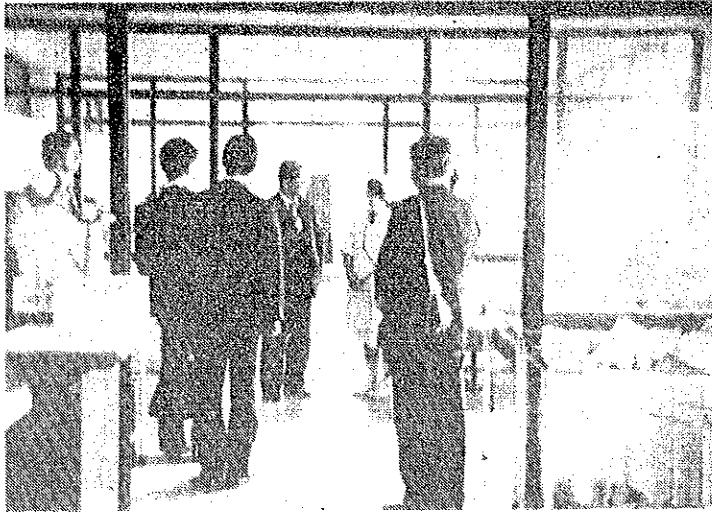
Maternity Hospital,
Outside View



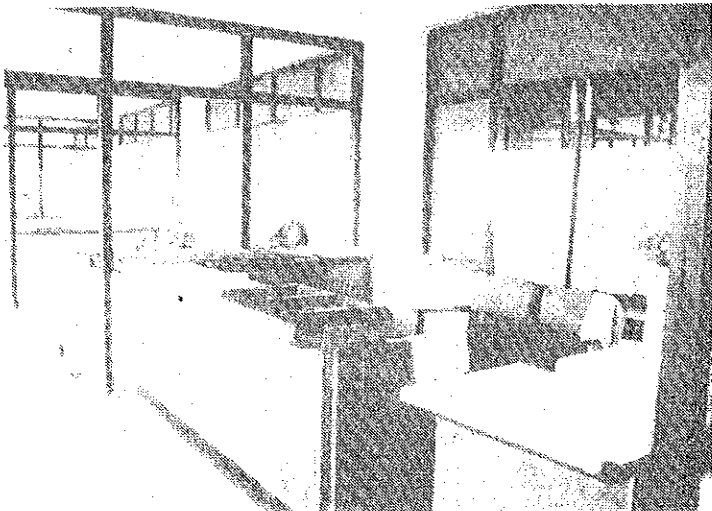
Maternity Hospital,
Main Reception



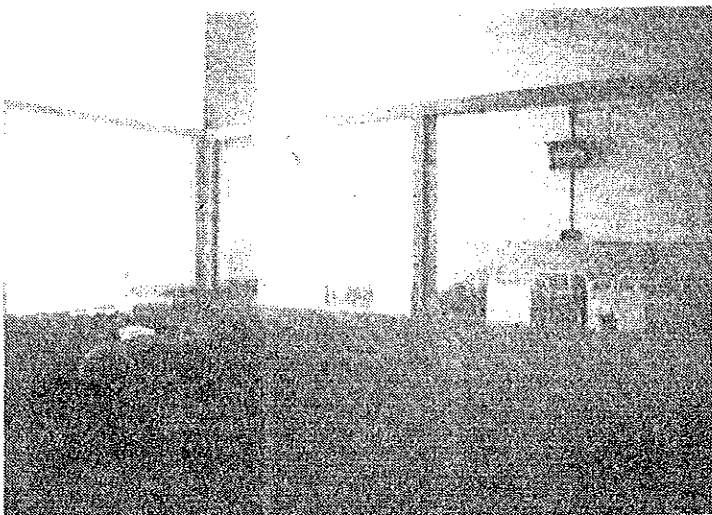
Maternity Hospital,
Ward Corridor



Maternity Hospital,
Ward



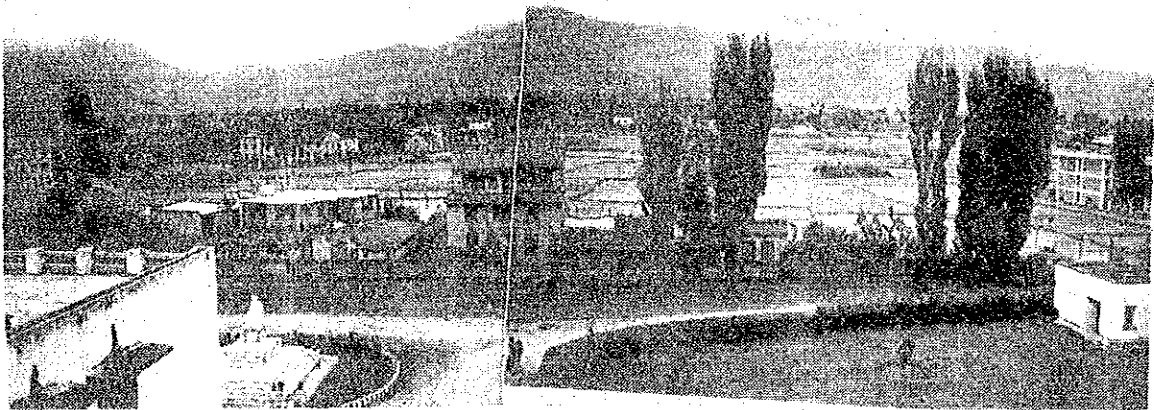
Maternity Hospital,
Ward



Maternity Hospital,
Ward

iii) Kanti Hospital

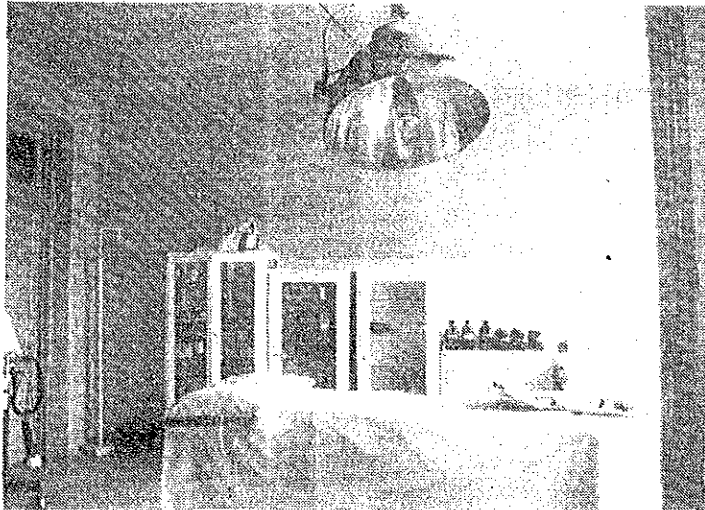
This hospital is located in a corner of the IOM campus. This was constructed with Soviet assistance as a pediatric hospital with a capacity of 100 beds (work in progress to provide the second 50 beds). It is a 3-story reinforced concrete building with partial brick structure. The interior is finished with artificial stone blocks for flooring and mortar paint for walls. Patients are normally accompanied by their families.



Site View from Kanti Hospital



Kanti Hospital,
Outside View



Kanti Hospital, O.T.

iv) Shanta Bahwan Hospital

This is a Protestant private hospital with a capacity of 135 beds.

(1) Outpatient section

Those infants under five are handled separately. Screening is conducted by health assistants and only serious cases are referred to outpatient doctors. General outpatients are handled by 6 or 7 persons. The surgery hours are from 8 to 11 AM. The average number of patients per doctor is 45 per day. Examination fees of 2 to 5Rs are collected. Certain days are allocated to TB and obstetric patients. Separate receptions are provided for new patients and outpatients.

(2) Emergency fees

Foreigners : 80Rs per case
Nepalese : 15Rs per case

(3) Laboratory

Annual total of patho-logical specimens : 1,500
General tests : Blood 30/day
Stool 40/day (parasite test)
Urine 35/day
Blood for transfusion : About 500 cc/person at a time
(collected from kinds)

(4) Radiology section

Film consumption per day : About 90 sheets (60 - 80 persons)

(5) Catering

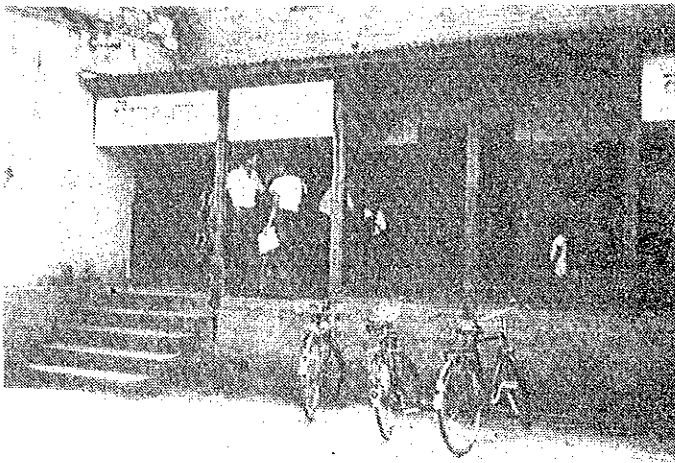
The catering service covers 70% of inpatients. The remainder prepare their own meals because of the caste system and vegetarianism (a separate kitchen is provided).

(6) Wards

Pay wards consist of single, double and 6-bed rooms. The pediatric ward is separated, consisting of pay rooms and isolation rooms.



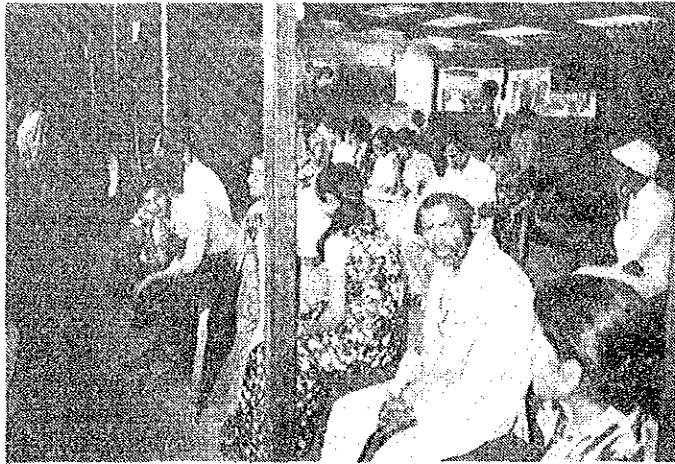
Shanta Bhawan Hospital,
Outdoor Reception



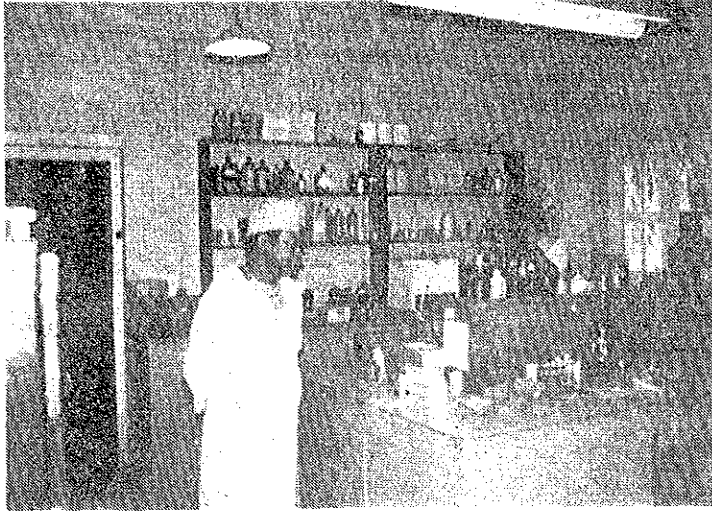
Shanta Bhawan Hospital



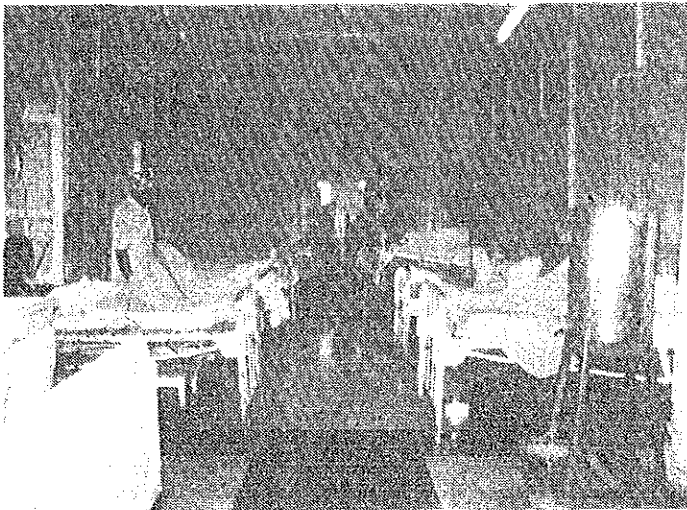
Shanta Bhawan Hospital,
Outdoor Cashier



Shanta Bhawan Hospital,
Outdoor Waiting Area



Shanta Bhawan Hospital,
Clinical Laboratory

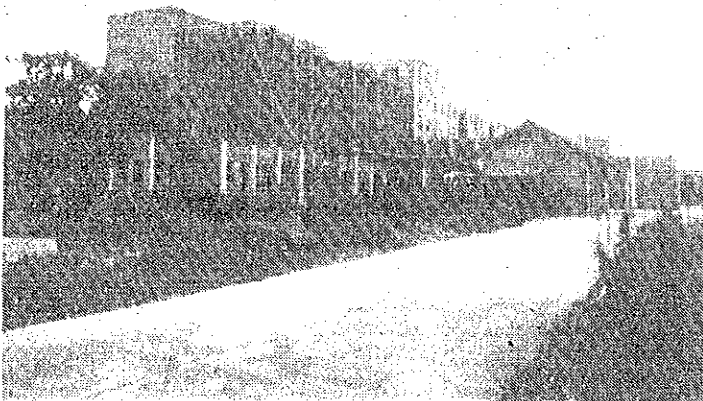


Shanta Bhawan Hospital,
Ward

v) Patan Hospital

This mission hospital under construction is a general hospital with a capacity of 150 beds.

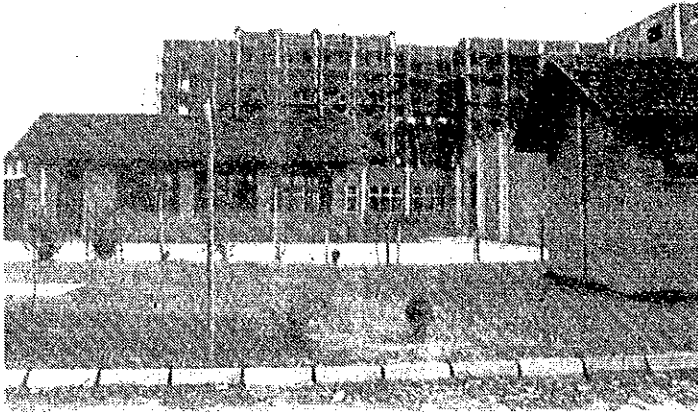
Indian products are used for radiology, autoclaves, kitchen equipment, washing machines, etc. Although their quality poses some problem, after-sales service is expected to be provided. Japanese products are specified for laboratory and surgical equipment (they are expected to be purchased with sufficient spare parts as Indian products cause some concern).



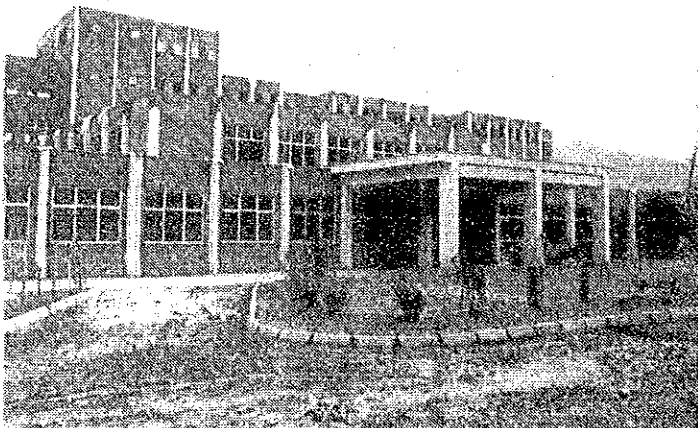
Patan Hospital, Now
under Construction



Patan Hospital, Now
under Construction



Patan Hospital, Now
under Construction



Patan Hospital, Now
under Construction