6-3 SCOPE OF WORK

Scope of work responsible for Bangladesh side and to Japanese side which has been cited in Agreed Minutes of Discussions, following items of work should be arranged for confirmation.

6-3-1 Infrastructure

1. Site preparation

   Bangladesh side: Clearance and levelling of the proposed site.

2. Electricity

   Bangladesh side: Leading in to divisional switchboard in site area, 11kV by 1 circuit.

   Japanese side : Distributing wiring from divisional switchboard and also installation of main switch in the hospital and transformer facilities.

3. Water supply

   Bangladesh side: Branch plumbing work from water main to Japanese side gate valve in the site area

   Japanese side : Water supply facilities successive to the gate valve.

4. Drainage

   Bangladesh side: Completion of street gutter around site.

   Japanese side : Plumbing work of soil, waste and storm water within the site. Installation of septic tank.

5. Gas

   Bangaldesh side: Gas meter include gas governer installation near border line of the site.

   Japanese side : Gas piping after governer

6. Telephone

   Bangladesh side: Leading in and connection to main distribution frame of the hospital.

   Japanese side : Telephone exchange facilities from main distribution frame of the hospital.

7. Others

Bangladesh side: Providing of area for temporary office, working place and material storage area which are necessary for construction work. Supply of power and water, leading in of temporary telephone, storm water drainage during construction work and fuel supply for construction work with priority.

6-3-2 Buildings

Bangladesh side: Construction work for buildings which are not indicated in basic design drawings.

Japanese side : Construction work for buildings which are indicated in basic design drawings.

6-3-3 External work

Bangladesh side: Gate, outer fence, planting work of the proposed site.

Japanese side : Roads in premises, courtyard and parking space.

6-3-4 Medical equipment

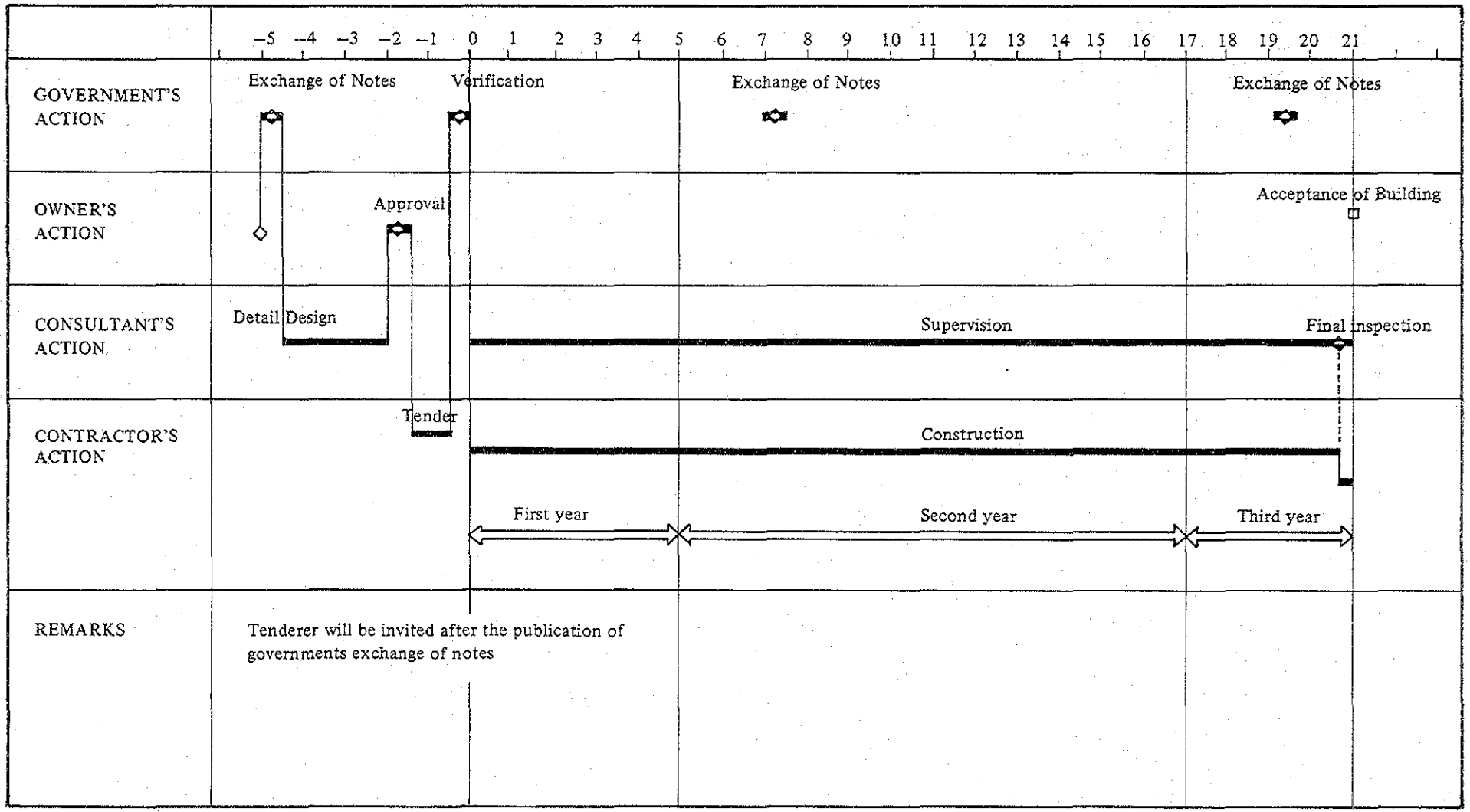
Japanese side : Medical equipment which are indicated in the said list.

6-3-5 Material conveyance

Bangladesh side: Custom formalities for import materials for buildings and commodities for medical equipment at Chittagong, every tariff payment for landing, port charge and inland conveyance.

Japanese side : Packing of export commodities to Chittagong, payment of damage insurance charge, shipment, marine conveyance, landing and inland conveyance.

6–4 CONSTRUCTION SCHEDULE



6-5 TRANSPORTATION AND LABOUR PROCUREMENT

6-5-1 Marine conveyance

As mentioned before, equipment and materials to be applied in the project will be procured locally as much as possible.

Whereas majority of those must be imported from Japan or from the third country. Hence, minute programme will be necessary because material conveyance plan may carry weight on progress of entire construction work. Normally, necessary terms from Yokohama to port of Chittagong in Bangladesh will need one month.

6-5-2 Inland conveyance

All import materials for the project will be landed at port of Chittagong, after custom clearance is completed by Bangladesh side, 300 km inland conveyance from Chittagong to Narayanganj will follows. Measures for inland conveyance will be by truck, railway and shipping through river. Majorities of trucks will be available at port of Chittagong, but in case of using railway transportation or shipping service it will be necessary to make reservation two or three weeks before.

6-5-3 Conveyance terms

Conveyance days from Japan to Narayanganj will need 3 to 3.5 months through shipping of commodities, custom formalities and carrying in to the proposed site. The terms may largely be effected by necessary period for Bangladesh side custom clearance at port of Chittagong.

Conveyance chart and necessary terms are as follows.

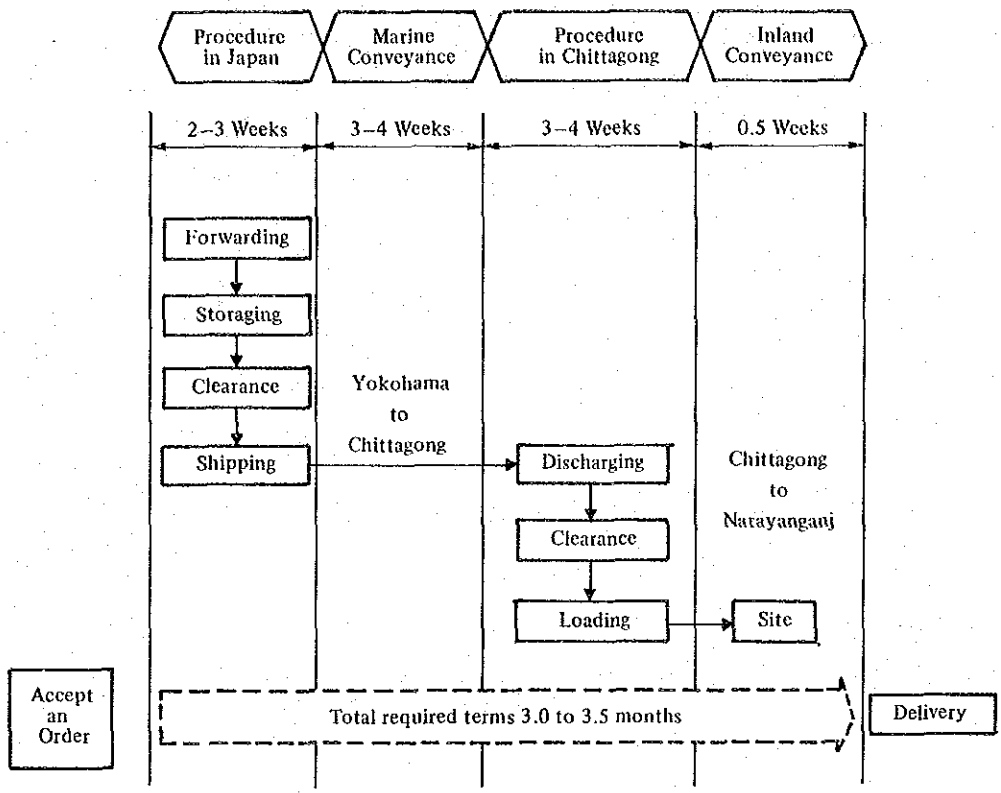


Fig.–10 CONVEYING CHART

6-5-4 Labour procurement

Although skilled labourers are scarce in Bangladesh, normal labours can be procured abundantly. Labour cost per man in fluctuant by degrees of skill, but relatively cheap compared with those in Japan.

For special work, technical instructor is necessary to dispatch from Japan but local labours application is possible at enforcement of the project.

6-6 MAINTENANCE AND MANAGEMENT PROGRAMME

For smooth and efficient operation of the facilities, necessary operational cost for future activities should be integrated. Outgoing expenses for facilities activity are personnel expenses, material cost (drugs, diagnostic materials, meals and medical consuming articles) and running costs (electricity, water, fuel and repair of equipment).

Current exchange rate: 1 US Dollar = 23.0 Taka = 266 Yen,
1 Taka = 11.56 Yen
(As of November, 1982)

1) Personnel expenses

	annual amount (TK/pers.)	number (persons)	annual sum (TK)
Doctors:			
Superintendant	43,800	1	43,800
Senior consultant	32,100	3	96,300
Junior consultant	28,000	4	112,000
Assistant registrar	24,800	8	198,400
Medical officer	21,800	19	414,200
Nurses:			
Matron	24,000	1	24,000
Sister	18,800	7	131,600
Stuff nurse	18,800	55	1,034,000
Others	8,800	165	1,452,000
			3,506,300 ---(1)

i.e. TK 3,506,300 x 11.56 Yen = 40,533 thousand Yen

2) Material cost

	unit price	number of patient (annual)	total amount (TK annual)
Drug:			
Outpatient	3.0 TK/pers.	315,000 pers	945,000
Inpatient	1,000 TK/bed/yr	200 beds	200,000
Others			2,290,000
			TK 3,435,000---(2)

i.e. TK 3,435,000 x 11.56 Yen = 39,709 thousand Yen

3) Maintenance cost which consists building expenses is assumed as follows on the basis of unit cost at local investigation and practical project scale of the hospital.

1. Electrical fares	TK 1,230,700	(794,000KWH x 1.55TK/KWH)
2. Expenses for generator fuel	42,340	(5,866.1 x 7.218 TK/1)
3. Water fares	10,000	(basic fare only)*
4. Gas fares	40,300	(36,643.2m^2 x].]TK/m^3)
5. Cost for consuming articles and for replacing parts	925,500	
	2,248,840	
6. Others (10% of above amount	224,860	
	TK 2,473,700 ----------(3)	

* calculation method: appraised value of building x 10/12 x 7.5%

i.e. TK 2,473,700 x 11.56 Yen/TK = 28,596 thousand Yen

4) Income

i)	Hospital charge	TK 800,000
ii)	Diagnostic charge	TK 150,000
iii)	Others	TK 150,000
		TK 1,100,000 ----------(4)

i.e. TK 1,100,000 x 11.56 Yen = 12,716 thousand Yen

Total amount of annual maintenance cost

(1) + (2) + (3) - (4) = 35.06 + 34.4 + 24.7 - 11.0

= 83.16 lakh TK ----------(5)

8,316,000 x 11.56 Yen = 96,133 thousand Yen

Transitions of the budget for Ministry of Health in Bangladesh are as following table.

F. Year	1977/1978	'78/'79	'79/'80	'80/'81	'81/'82	'82/'83
Rev.	397.80	434.80	588.60	672.40	719.83	758.29
Dev.	430.20	476.50	700.00	672.20	742.50	685.29
Total	809.00	911.30	1288.60	1344.60	1462.33	1443.58

In these amount, budget for maintenance of hospital is approx. 340 million TK annually. Thus, operative maintenance cost of the proposed hospital are as following rate.

i)	to total budget	0.6% (1982/'83)
ii)	to national revenue	1.1% (1982/'83)
iii)	to maintenance budget of the hospital	2.4%

Total numbers of bed over Sub-Divisional Hospital in Bangladesh are 7,784 beds, and it will increase to 7,984 beds after completion of the proposed hospital.

Based on above remarks, budgets for maintenance cost will be 42,590 TK per bed, those amount for the proposed hospital is estimated 41,600 TK per bed, sufficient maintenance and management will also be attained.

CHAPTER 7
EVALUATION OF THE PROJECT

7-1 SOCIAL NEEDS

As a criteria to express medical level in the whole Bangladesh, rate of population per 1 bed in hospital is compared with those of Japan as indicated in following table.

Comparison table on number of hospitals and beds

	Year	No. of hospital	No. of bed	Population/bed
Bangladesh	1976	NA	16,591	4,868
Japan	1976	8,379	1,184,737	95

Source: Statistical Pocketbook of Bangladesh 1980 by Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning.

Medical level is extraordinarily low as indicated in above table. As regards budget for Ministry of Health of Bangladesh, following table will depict the situation, the Government therefore set target on "Irreducible minimum health care for each nation".

Flow of annual expenditure for health

(Unit: Million Taka)

	1977/78	1978/79	1979/80	1980/81
Ministry of Health, Bangladesh (Ratio to total expenditure)	809.00 (9.30%)	911.30 (8.72%)	1,288.60	1,344.60
Total expenditure of Bangladesh*1	8,703.6	10,454.3	11,076.1	13,050.2
(Reference): Budget of Japanese Ministry of Health & Welfare*2	-	21,930	24,020	26,020

Source: *1 Statistical Pocketbook 1980

*2 Trend of national hygiene 1981 by Statistical Institute of Health and Welfare (F)

Conversion: 1 Taka = 11.56Yen (as of November 1982)

The proposed hospital is scheduled to establish in Narayanganj at southern Dhaka with 200 beds accommodation.

Narayanganj is one of 6 Sub-Division in Dhaka District, of densely populated region comprising 1,300,000 inhabitants over 777 km^2 of area. Here exist MSD Hospital and 3 Thanas which are called Thana Health Complex. The MSD Hospital has been founded in 1901, 125 beds inpatients are accepted against 80 beds standard and 500 outpatients are being diagnosed daily, but because of extreme deterioration, the new hospital is projected as substitutive facility and it will provide superior efficiency to local inhabitants.

GNP per 1 nation of the country proclaims 90 US dollars (whereas Japan's GNP is 7,700 US dollars-1980, by World Bank Atlas) and foreign exchange reserve is 235 million SDR, i.e., extraordinarily low degrees are disclosed.

7-2 SOCIAL EXPENDITURES

Out of expenditures in financial analysis, with assumption that approx. 1/2 of architectural construction cost will be paid by local currency, and others will be covered by foreign currency, and considering SCF (Standard Conversion Factor) of the former as 0.8 and SWR (Shadow Wage Rate) of unskilled labor (non-specialist 165 pers.) as 1/2, following flow of expenditure on economic analysis will result.

(Unit: 1,000 Taka)

	1st f.yr.	2nd f.yr.	3rd f.yr.	4th yr. & after
Architectural construction cost	47,490	135,563	48,185	
Operational expenses				6,951*

* it will last during 50 years of project-life until 53rd fiscal year.

Besides, replacement or renewal of medical apparatus or other materials will be necessary at every 10 years, hence, 27,682 thousand taka will be required as new investment at every 10 years after 13th fiscal year during the term of project-life.

7-3 ASSUMPTION OF SOCIAL ADVANTAGES

When Opportunity Cost of Capital of Bangladesh funds is assumed as 12% per year, above related total Present Value will result as follows. But the project-life is defined 50 years from 4th fiscal year after completion of the hospital to 53rd fiscal year as described before.

	Present Value (Unit=1,000 Taka)
Hospital facilities, medical apparatus etc.	183,176
Renewal of medical apparatus etc. (4 times of renewal at every 10 yrs.)	9,256
Operational expenses	41,087
Total	233,519
	(ca. 2,699 million yen)

Reversely, the value can be assumed as an advantages which will be produced uniformly from 4th to 53rd fiscal year.

$$233{,}519 \text{ thousand taka} \div \sum_{i=4}^{53} \frac{1}{(1 + 0.12)i} = 39{,}506 \times 1{,}000 \text{ taka}$$

(ca. 457 million yen)

Eventually, the project will be able to concede that it produces advantage to amount of 39,506,000 taka yearly.

7-4 CONCLUSION

In financial analysis, rate of personnel expenses to operation cost is estimated as 37%.
Other hospital e.g. at Holy Family Red Cross Hospital, the rate arises as 47%, whereas in Japan it is presumed approx. 60%. Because the smaller value is considered to link up with sound operation of the hospital; in the project, the rate will be considered to express ideal value for the present. In social economic evaluation, because of insufficient data, assumed conditions are set up at every instances and results are accumulated, especially rate of local currency which account 50% for payment of direct construction cost is an assumption to any extent.

The project is scheduled for reconstruction and removal of MSDH (Modernized Sub-Divisional Hospital), higher efficiency and superior health care should be offered by the new facility which provide also sufficient advantage for social needs, therefore the project is considered to carry enough validity.

CHAPTER 8
CONCLUSION

8-1 CONCLUSION

In planning the basic design, it has been taken into account that the proposed hospital can not be on an equal level in terms of function and scale as general hospitals in Japan or in western countries; a comprehensive facility is planned conforming to the medical level, public hygiene and financial situation of Bangladesh.

Emphasis is placed specifically on ensuring "cleanliness" as the basic principle of the hospital, and also on capacity to accept large numbers of outpatients.

Moreover, due to the severe economic situation, it is not anticipated that a financial aid for maintenance of facilities will be forthcoming, thus planning of expensive equipment and installations with high running cost are not recommended. Consequently, the project will be settled as follows.

1) The project is planned to be low story structure despite its higher construction cost, because priority is placed upon floor planning which allows greater mobility. As regards building area, the standard area in Bangladesh of a 200 bed hospital is approx. 7,000 M^2; the proposed hospital differs from the standard, the increase in area being mainly due to the following factors.

   (1) Numerous diagnostic departments and anticipation of large numbers of outpatients.

   (2) Fully equipped delivery section.

   (3) Fully equipped administrative section, conference room and cafeteria for staffs.

   (4) Fully equipped mechanical and electrical rooms.

   (5) Adoption of ramp way (with roof for convenience of pantry service; the space must be counted in floor area).

2) On floor planning, together with considerations to local climate, natural features and living customs, principles as irreducible minimum of hospital building are maintained. Out of above considerations the hospital will reveal functions as a core of local health care in the secondary hospital group, and the significance of hospital construction will be revealed quite extensively.

8-2 PROPOSITIONS

We herein intend to suggest following items to the Bangladesh Government, so that the construction project will quickly be realized, and expected purpose will be displayed by smooth and effective operation after completion of the general hospital.

1) Propositions as regards implementation of the construction project.

   (1) Preparation of the construction site.
   (2) Cooperation and assistance essential for executing the design and construction work.
   (3) Prior supply of quality materials and equipment necesary for construction work.
   (4) Execution of various works to be finished by Bangladesh responsibility.
   (5) Cooperation to expedite the work.
   (6) Effective operation and maintenance of the hospital.
   (7) Sufficient maintenance and management for building and equipment.

2) Propositions as regards diagnosis and operation of the hospital.

   (1) Establishment of effective operation, maintenance and control system of the hospital.

   For smooth operation of the hospital and accomplishment of expected purpose, together with preparation of installation and facilities, establishment of corresponding proper diagnosis and operation system is necessary. For the purpose, superintendent, director of each department, administrator, matron, control & operation technician and principal staff for hospital operation should be decided urgently, especially guarantee of nurses is an indispensable matters. If possible, participation of these personnel at design stage of the project is advisable.

   (2) Propositions as regards budget for sufficient maintenance and management expenses of buildings and equipment.

   Preparation of systems which are able to carry out perfect maintenance and inspection of buildings and equipment is necessary. Eventually, airconditioning, electrical and

medical equipment are to be installed in the hospital; guarantee of skilled personnel for maintenance of these equipment will be essential.

Other than general technicians for maintenance control of facility services, necessary technicians to be trained and guaranteed in advance are as follows.

. Technicians relating to medical equipment.
. Technicians relating to radiotherapy equipment.
. Technicians relating to airconditioning.
. Technicians relating to electrical appliances.
. Technicians for energy control.

Principal items in maintenance expenses have been described in the previous chapter, and a generous budget for those items will be necessary.

APPENDIX

1. MEMBER LIST OF THE BASIC DESIGN STUDY TEAM

1-1 Basic Design Study

Dr. T. Shimoyama	Leader	Prof. Hyogo College of Medicine.
Dr. K. Kuwata	Medical Planning	Asst. Prof. Hyogo College of Medicine.
Mr. M. Yamagata	Grant Aid	Deputy Director Second Economic Cooperation Dept., Ministry of Foreign Affairs.
Mr. S. Matsuura	Project Coordinator	Grant Aid Dept. JICA
Mr. S. Nagayama	Project Architect	Yamashita Arch. & Eng. Inc.
Mr. M. Sugano	Architect	Yamashita Arch. & Eng. Inc.
Mr. M. Tanaka	Structural Eng.	Yamashita Arch. & Eng. Inc.
Mr. N. Ishioka	Electrical Eng.	Yamashita Arch. & Eng. Inc.
Mr. T. Tamaki	Mechanical Eng.	Yamashita Arch. & Eng. Inc.
Mr. M. Takagi	Cost Estimate	Yamashita Arch. & Eng. Inc.
Mr. C. Ozaki	Medical Equipment Specialist	Yamashita Arch. & Eng. Inc.

1-2 Explanation of Final Draft Report

Mr. S. Matsuura	Leader	Grand Aid Dept. JICA
Mr. S. Nagayama	Project Architect	Yamashita Arch. & Eng. Inc.
Mr. M. Sugano	Architect	Yamashita Arch. & Eng. Inc.
Mr. C. Ozaki	Medical Equipment Specialist	Yamashita Arch. & Eng. Inc.

Members of Bangladesh Side
(Basic Design Study)

1) Ministry of Finance and Planning (ERD)

Mr. KHALED SHAMS	(Joint Secretary)

2) Ministry of Health and Population Control

Mr. SIDDIQUR RAHMAN	(Secretary)
Brig. YUNUS DEWAN	(Joint Secretary)
Mr. REZA	(Deputy Secretary)
Dr. A. I. BEGUM	(Chief, Planning Cell)
Mr. A. M. DAS	(Deputy Chief)
Dr. P. C. BARUA	(Asst. Chief, Planning Cell)

3) Directorate General of Health Service

Dr. M. A. CHOWDHORY	(Director General)
Mrs. RAHIMAN KHALOU	(Director Nurse Service)
Dr. B. CHOWDHORY	(Deputy Director)
Dr. ABDUL HAI	(Deputy Director)

4) Ministry of Works (PWD)

Mr. S. H. M. ABUL BASHAR	(Chief Architect)
Mr. SHAHIDULLAH	(Deputy Chief, Architecture)
Mr. MD ANWARUL ALAM	(Superintendent Engineer)

Members of Bangladesh Side
(Explanation of Final Draft Report)

1) Ministry of Finance and Planning
(Planning Commission)

Dr. MOBARAK HOSSAIN	(Chief)
Dr. KHALILULLAH	(Deputy Chief)
M.D. KABIR UDDIN	(Asst. Chief)
M. D. MEHBOOFUL ALAM	(Asst. Chief)
(E.R.D.)	
Mr. ABUL BAGHER	(Research Officer)

2) Ministry of Health & Population Control

Brig. YUNUS DEWAN	(Joint Secretary)
Mr. REZA	(Deputy Secretary)
Dr. A.I. BEGUM	(Chief, Planning Cell)
(Directorate General of Health Service)	
Dr. ABDUL RAHMAN	(Director General)

3) Ministry of Works (PWD)

Mr. ABUL BASHAR	(Chief Architect)
Mr. SHAHIDULLAH	(Deputy Chief, Arch.)
Mr. MOHSIN KABIN CHOWDHORY	(Executive Engineer)

2. SURVEY SCHEDULE

2-1 Basic Design Study

1	Oct	28 (Thu)	Left Tokyo
2		29 (Fri)	Arrived Dhaka
3		30 (Sat)	Inspection of projected site at Narayanganj Survey of MSD Hospital
4		31 (Sun)	Discussion with External Resources Division (ERD)
5	Nov	1 (Mon)	Discussion with Public Works Dept. (PWD) Survey of Dhaka Medical College Hospital
6		2 (Tue)	Discussion with Ministry of Health and PWD Market research
7		3 (Wed)	Discussion with Directorate General of Health Service, Courtesy call on Japan Embassy and JICA
8		4 (Thu)	Discussion with Ministry of Health
9		5 (Fri)	Exchanged signing of Agreed Minutes Dr. Shimoyama, Dr. Kuwata, Mr. Yamagata, Mr. Matsuura left Dhaka
10		6 (Sat)	Market research, Collection of construction data and information
11		7 (Sun)	Market research, Collection of construction data and information
12		8 (Mon)	Discussion with Bangladesh Bureau of Statistics, Interim report to Japan Embassy and JICA
13		9 (Tue)	Survey of P.G. Hospital and College of Agricultural & Sciences construction site
14		10 (Wed)	Discussion with Ministry of Health, Market research
15		11 (Thu)	Survey of Dhaka Shishu Hospital
16		12 (Fri)	Arrange the collected data and information in order
17		13 (Sat)	Survey of Holy Family Red Cross Hospital
18		14 (Sun)	Discussion with Ministry of Health and Health Information Unit

19	15 (Mon)	Collection of construction data and information
20	16 (Tue)	Confirmation of proposed site survey map at the site
21	17 (Wed)	Discussion with PWD
22	18 (Thu)	Report the survey result to Japan Embassy, JICA and Ministry of Health
23	19 (Fri)	Left Dhaka
24	20 (Sat)	Arrived Tokyo

Schedule of the Team
(Explanation of Final Draft Report)

1	Mar 4 (Fri)	Left Tokyo
2	5 (Sat)	Arrived Dhaka
3	6 (Sun)	Courtesy call on Japan Embassy and JICA Discussion with Directorate General of Health Service
4	7 (Mon)	Discussion with Planning Commission and Ministry of Health
5	8 (Tue)	Joint meeting at Ministry of Health
6	9 (Wed)	Discussion with PWD, Ministry of Works Report the result to Japan Embassy and JICA
7	10 (Thu)	Left Dhaka
8	11 (Fri)	Arrived Tokyo

3. AGREED MINUTES OF DISCUSSION

Agreed Minutes of Discussions between the Health Division, Government of the People's Republic of Bangladesh and the Basic Design Survey Team from Japan for the construction of a 200-bed general hospital at Narayangonj.

A 11-member Basic Design Study Team led by Professor(Dr.) Takashi Shimoyama, came to Bangladesh on 29.10.1982 to carry out the Basic Design Study of the project for the construction of a 200-bed general hospital at Narayangonj. The leader of the Japanese Team alongwith some members of the team is scheduled to leave Bangladesh on the 5th November, 1982.

2. The Team visited the project site and existing medical facilities and held discussions and exchanged views with the concerned Bangladesh authorities.

3. It was agreed by both the parties that the points mentioned in these minutes of discussion would be considered by the respective governments towards realization of the project.

5/11/82

Mohammad Siddiquer Rahman,
Secretary,
Health Division,
Government of the People's Republic
of Bangladesh.

下山 孝

Professor(Dr.) Takashi
Shimoyama,
Leader of the JICA Study
Team.

1. The hospital to be established under this project will have the following objectives :

(a) To function as a facility of the secondary health Care system in Narayangonj area.

(b) To provide medical services whose fields are as follow

i) Medicine

ii) Surgery

iii) Gynaecology and Obstetrics with family Planning Clinic.

iv) Opthalmology

v) Pediatrics.

vi) Dental Department.

vii) ENT

viii) Emergency

2. The Hospital will be constructed at the selected site near the Children's Park at Narayangonj.

3. Necessary measures to be taken by each side are shown in Annexure-I. The Japanese side suggested that their side can take measures within the scope of Japan's Grant Aid System.

ANNEX 1

TABLE

Necessary Measures to be Taken by Both Governments.

No.	Item	Japan	Bangladesh
1.	To secure a plot of land and clear the site		0
2.	To construct the gate and fence in and around the site		0
3.	To construct the parking lot	0	
4.	To construct the road		
	1) Within the site	0	
	2) Outside the site		0
5.	To construct the building which is composed as listed in Annex II and procurement and Transportation of materials to the site	0	
6.	To provide facilities for distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a) The distributing line to the site		0
	b) The drop wiring and internal wiring within the site	0	
	c) The main circuit breaker and transformer and internal electrical lines	0	
	2) Water Supply		
	a) The city water distribution main to the site		0
	b) The supply system within the site(receiving and elevated tanks)	0	
	3) Drainage		
	a) The drainage city main (for toilet sewer and others) to the site		0
	b) The drainage system(for toilet sewer, ordinary waste, storm drainage and others)within the	0	

ANNEX I

TABLE		JAPAN	BANGLADESH
5.	Telephone system		
	a) The telephone trunk line to the main distribution frame/ panel (MDF) of the building		O
	b) The MDF and the extension after the frame/Panel	O	
6.	a) Equipment as listed in Annex III its transportation and installation	O	
7.	a) To provide necessary data and information to a Japanese Consultants and a Contractor for the detailed engineering services and construction		O
	b) To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant.		O

***

4. The composition of the 200-bed general hospital is given at Annex-II. This is subject to change through further mutual discussions.

5. A list of medical equipments necessary for the project hospital is Annexure III. The number of equipments, their specifications and appropriate Alternatives will be mutually decided upon after the recommendations of the Basic Design Study Team are received.

*** 8.	Gas Supply		
	a) The city gas main to the site		O
	b) The gas supply system within the site	O	

ANNEX II

Composition of the Hospital

1. Out-Patient Department

(a) Internal medicine including Skin and venereal Disease
(b) Surgery
(c) Gynaecology and obstetrics with Family Planning Clinic
(d) Pediatrics
(e) Opthalmology
(f) E.N.T.
(G) Dental Department.
(h) Pharmacy
(i) Medical reception

2. Central diagnosis Department

2-1 X-ray diagnosis Department

(a) X-ray diagnosis rm
(b) X-ray control rm
(c) Film store
(d) Dark rm
(e) Staff rms

2-2 Physiological examination Department

(a) Electrocardiogram (E.C.G.)

2-3 Endoscopic Department

(a) Endoscopic diagnosis rm
(b) Film and instrument rm

2-4 Clinical examination Department

(a) Clinical pathology laboratory
(b) General laboratory (Urine and feces)
(c) Blood and biochemistry laboratory
(d) Bacteriology laboratory
(f) Blood bank

2-5 Operation Department

a) Operation rm and sterilization rm
b) Recovery rm (ICU)
c) Anesthetic rm
d) Equipment rm
e) Staff rm

2-6 Central material supply Department

a) Central supply rm
b) Sterilized operation apparatus Store

2-7 Obstetrics Department

a) Delivery rm
b) Labour rm and observation rm
c) Eclampsia rm (dark rm)
d) New Born Baby rm and premature Baby rm
e) Milk Kitchen and bathing rm
f) Recovery rm
g) Staff rm

3. Emergency Department

a) Cleaning bath rm
b) Emergency rm
c) Observation rm
d) Recovery rm
e) Reception rm
f) Staff rm
g) Nurse station
h) Minor operation room
i) Small Laboratory for Emergency .

4. Ward Department

a) Obstetrics and gynaecology
b) Pediatrics
c) Surgery (M) (Including E.N.T. & Ophthalmology)
d) Surgery (F)
e) Medicine (M) (Including ~~infection~~)
f) Medicine (F)
g) Isolation (Including infection)
h) Nurse station and preparation rm and small emergency medicine store rm
i) Doctors rm
j) Shower and filth treatment rm for each divisional ward

5. Service Department

a) Kitchen with store
b) Cafeteria
c) Laundry
d) Machine rm
e) Elec. rm (Including operator rm)
f) General store
g) Carpenters rm
h) Mending rm for linen

6. Administrative Department

a) Director's rm
b) Secretary rm
c) Reception rm
d) Ass. Director's rm
e) Office rm
f) Locker rm for staff
g) Library
h) Conference rm
i) Telephone exchanger rm
j) Morgue and Autopsy rm.
k) Incinerator

ANNEXURE III

MEDICAL EQUIPMENT

1. Out-patient Department

a. Internal Medicine

Film illuminator, Electro-Cardiograph, portable Diagnostic instrument set

b. Surgery.

Stand spot light
Film illuminator
Diagnostic equipment.

c. Gynaecology and Obstetries

Gynaecological examining table
Diagnostic instrument set

d. Opthalmology

Slit lamp
Sight tester
Lenometer
Test Chart
Tonometer including trail set, trail frame.
Opthalmoscope

e. E N T

equipments needed for diagnosis and treatment of ENT deseases.

f. Dental

Dental unit
X-Ray, for dental
Workshop unit

g. Pharmacy

Counter
Lite bin unit
Stores

2-1 X-ray diagnosis Department

Diagnostic X-ray unit
TV system X-ray unit
Planigraphy X-ray
Mobile x-ray

2-2- Physiological examination Department

E C G

2-3 Endoscopic Department

Fiberscope set.
Endoscope locker
Endoscopic table

2-4 Clinical examination Department

a. Clinical Pathology laboratory

Pathology examination unit

b. Urine and Feces laboratory

Urine & Feces examination unit

c. Blood and Biochemistry laboratory

d. Bacteriology laboratory

Bacteriology examination unit

e. Blood Bank

Blood Bank unit

2-5 Operation Department

a. Operation rm
Operating table
Monitoring system
Anaesthesia unit
Sterilizing system

b. Recovery rm
Recovery bed with accessories
Monitoring system
Cardia resucitation system

2-6 Central material supply Department

Operating instrument unit
High-pressure steam sterilizer

2-7 Obstetrics Department

a. Delivery rm
Obstetric delivery table

b. Labor rm
labor bed

c. New Born Baby rm
Baby bed
Infant incubator
Infant dressing table

3. Emergency Department

a. Emergency rm

Emergency care unit

4. Ward Department

a. Cabin

Gatch bed

b. Ward

Standard bed

c. Nurse station

Nurse station unit

5. Table chair bed and cabinet for diagnosis and examination of each department.

Record of Discussions between the Health Division, Government of the People's Republic of Bangladesh and the Basic Design Survey Team from Japan for the construction of a 200- bed general hospital at Narayangonj.

A 11- member Basic Design Study Team led by Professor (Dr.) Takashi Shimoyama came to Bangladesh on 29.10.1982 to carry out the Basic Design Studyof the Project for the construction of a 200 -bed general hospital at Narayangonj. The leader of the team and some members are scheduled to leave Bangladesh on the 5th November,'82.

The Team visited the Project site and existing medical facilities and held discussions and exchanged views with the concerned Bangladesh authorities.

It was agreed by both the parties that the record of discussions would be examined by their respective Governments for further necessary action.

Mohammad Siddiquer Rahman
Secretary
Health Division
Government of the People's
Republic of Bangladesh.

Professor (Dr.)Takashi Shimoyama
Leader of the JICA Study Team.

1. As for General furnitures (carpet, curtain, table, chair and others) for administrative purposes, the Japanese side proposed that the government of Bangladesh should be responsible for its supply whereas the Bangladesh side felt that those formed essential part of a hospital service and should be covered by the Japanese grant assistance.

2. The Japanese side proposed that the responsibility for the following activities should be with govt. of Bangladesh :

i) To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the banking arrangement :

ii) 1) Advisory Commission of authorization to pay

2) payment commission ;

ii) To ensure prompt unloading and customs clearance at port of disembarkation in Bangladesh of imported materials for the construction and the internal transportation thereof to the project site;

iii) To exempt Japanese nationals concerned from duties, internal taxes and otherfiscal levies which may be imposed in Bangladesh with respect to the supply of materials and services for construction;

iv) To accord Japanese nationals whose services may be required in connection with the supply of materials and services for construction;

v) To bear all the expenses other than those to be borne by the grant.

The Bangladesh side agreed to consider the above proposals and communicate their views to the Japanese Govt.

3. Bangladesh side proposed that staff quarters for attending nurses and doctors and other emergency staff formed essential part of a hospital and should be borne under the Japanese grant assistance. The Japanese side agreed to recommend the proposal to the Japanese Govt.

4. RECORD OF DISCUSSIONS (EXPLANATION OF FINAL DRAFT REPORT)

1) The Bangladesh side suggested that the following items are to be provided in the Hospital facilities in addition to those included in the Draft Report:

1. Space for one lift shaft;
2. Water closets at the ratio of 1 toilet to 8 beds;
3. One community prayer space;
4. Sun/rain Shade over the out side corridor;
5. Out-side screen (grill or brick lattice) to ensure more privacy to nurse's dormitory;
6. One minor operation room in the OPD;
7. More extended corridor width for OPD area in ground floor and first floor;
8. Longer corridor connecting OPD and other area to separate OPD from other hospital area;
9. One guest toilet for meeting room in the first floor;
10. Two parts meter for recording electrical power consumption;
11. One high tension Switch gear panel;
12. A power factor improvement plant;
13. Separate space for Gynaecology and Labour room;
14. One central general storage;
15. One shower room for each personal cabin;
16. Manually operated wall clocks;
17. Emergency electric line in the following areas of the hospital

Operation Theatre,

Post-Operation Theatre,

Pathology Deptt. with Blood Transfusion,

Emergency Deptt.,

Labour Ward and Labour O.P.,

Gynaecological Ward.

All the above items' requirement are agreed to by the Japanese side and will be reflected in the drawings of the Final Report.

2) Discussion was held on the Project cost as follows:

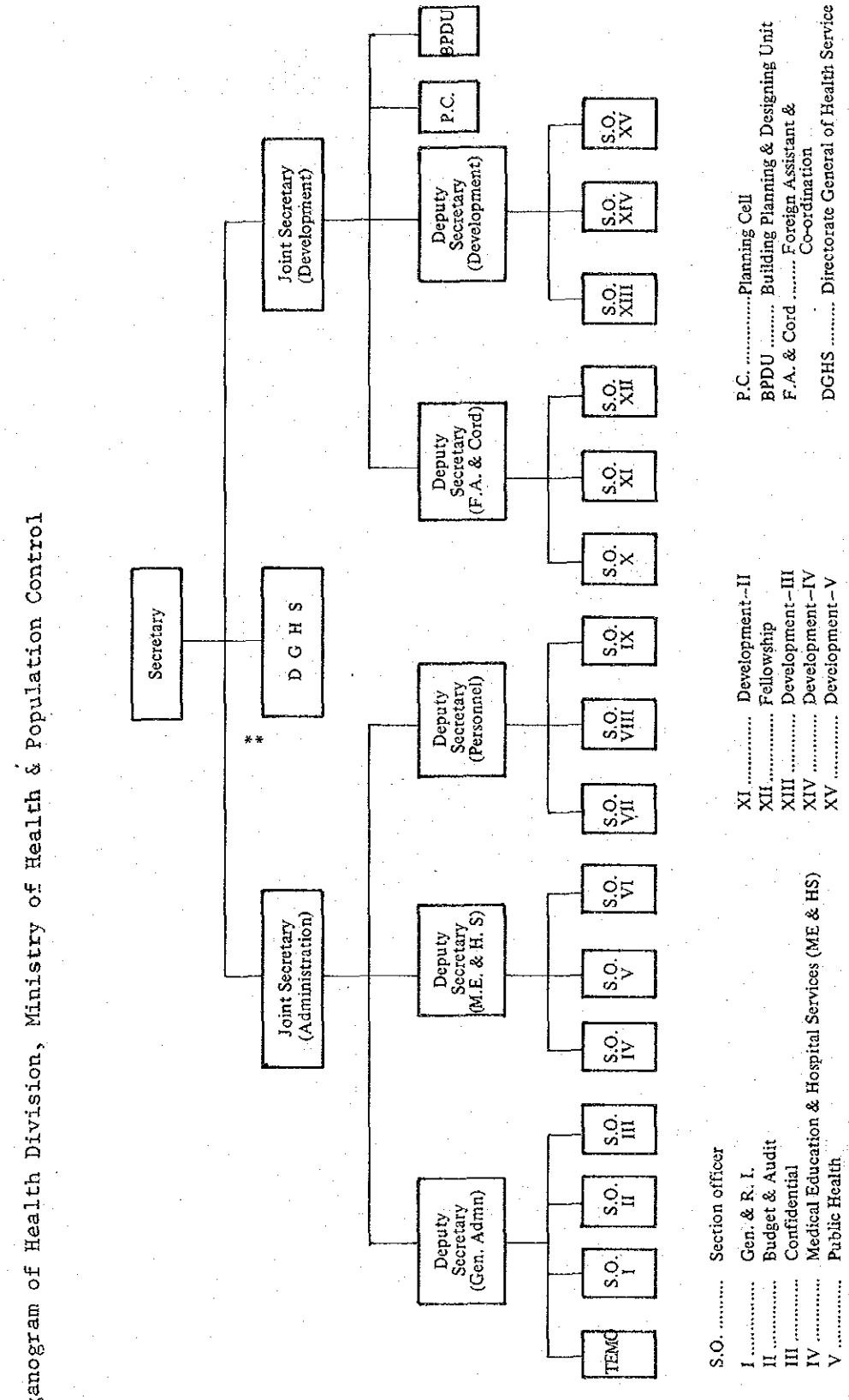
1. The Bangladesh side pointed out that the unit price of construction of the hospital is higher than the standard Bangladesh local price for hospital of such size. The Japanese side explained that the unit price of the project is not higher than other projects completed with Japan's grant aid in Bangladesh, when the difference of category of the building between hospital and Broadcasting station and cost escalation etc. are considered.

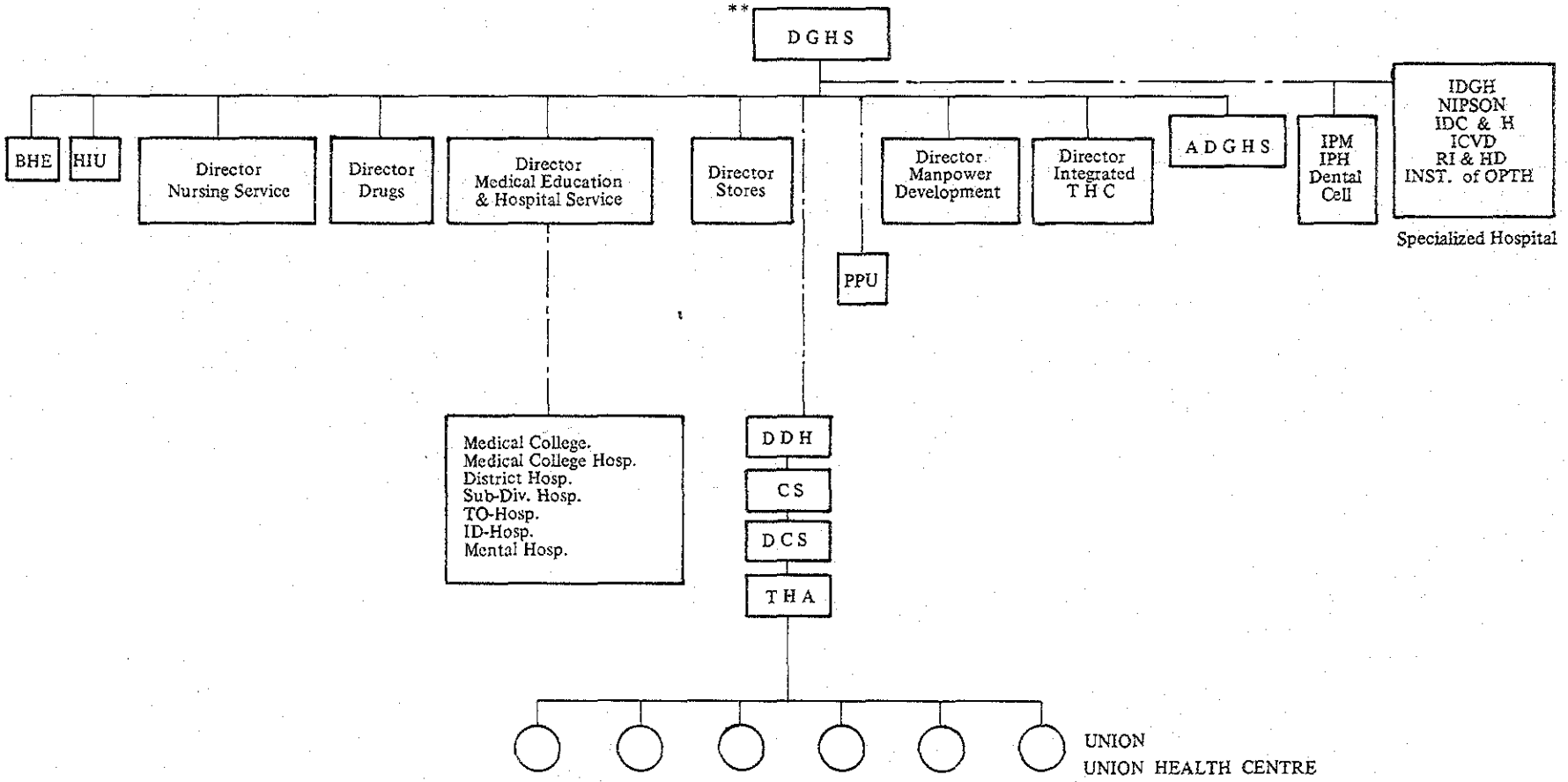
3) The Bangladesh side proposed to use local materials as much as possible in the Project whereas the Japanese side explained that the study already reflected this point in the design and cost estimation within the framework of grant aid project.

4) The Bangladesh side sought help from Japan for training of personnel for the maintenance of different kinds of equipments and installations in the hospital and the Japanese side agreed to consider the proposal.

5) The Bangladesh side pointed out that facilities for further expansion of the bed-capacity of the Hospital in future may be ensured in the design. The Japanese side pointed out that facilities for expansion of one hundred more beds are built in the design.

5. ORGANOGRAM OF HEALTH DIVISION MINISTRY OF HEALTH & POPULATION CONTROL





DGHS: Director General of Health Service
ADGHS: Additional Director General of Health Service
BHE: Bangladesh Health Education
HIU: Health Integration Unit
CS: Civil Surgeon
DCS: Deputy Civil Surgeon
THA: Thana Health Administrator

6. STANDARD SPACE REQUIREMENT FOR 200 BED HOSPITAL

Admn. Block	20,000 sq.ft
Ward Block	36,000
O.T. & Labour	4,800
Kitchen	1,800
Isolation for 8 Beds	1,600
Dead House	200
Library	500
Store	1,200
Corridor & Passage	2,400
Total	68,500

DISTRIBUTION OF BEDS

Discipline	
1. Medicine	45
2. Surgery	50
3. Gynaecology & Obstetrics	40
4. Eye	15
5. Ear	10
6. Pediatrics	20
7. Emergency	5
8. Infectious/Isolation	10
9. Physiatrics	5
Total	200

PROFESSIONAL STAFF FOR 200 BED HOSPITAL

Catagory	
A. Medical	
1. Medical Superintendent (Not below the rank of Sr. Consultant)	1
2. Consultant (Medicine, Surgery, Gynaecology and Eye one for each discipline)	5
3. Residnet Medical Officer (RMO)	1
4. Asstt. Registrar	5
5. Emergency Medical Officer (EMO)	3
6. Radiologist (Consultant)	1
7. Pathologist (Consultant)	2
8. Anaesthetist (Consultant)	2
9. Medical Officer (Outdoor)	6
10. Dental Surgeon	1
11. Blood Bank M.O.	1
	28
B. 1. Matron	1
2. Sister	6
3. Staff Nurse	48
	55
C. Technical/Paramedical	
1. Compounder/pharmacist	6
2. Pathology Technician	6
3. Blood Bank Technician	1
4. X-Ray Technician/Radiographer	2
5. Dental Technician	1
6. Electrician	1
7. Statistical Asstt.	1
8. Steriliser-cum-mechanic	2
9. Dark room Asstt.	2
10. Laboratory Attendant	4
11. Dispensary Attendant	2
12. Carpenter-cum-painter	1
13. Plumber	1
	30

7. OUTLINE OF EXISTING HOSPITAL IN BANGLADESH

A. DHAKA SHISHU HOSPITAL

1. Name and address of the hospital: Dhaka Shishu Hospital, Sher-e-Banglanagar, Dhaka.

2. Total area of the building : 9,351 m^2

3. Number of bed : 215 (Two hundred and fifteen)

4. Kind of department

a) Out-patient

i) Medical
ii) Surgical
iii) Eye
iv) Dental
v) Ear, Nose & Throat
vi) Emergency (24 hours open)

b) Central diagnosis

i) Blood (both indoor & outdoor)
ii) Stool (- do -)
iii) Urine (- do -)
iv) Bio-Chemistry (Indoor)
v) Microbiology
vi) X-Ray

c) Ward for ;

i)	Ward No.1 (I.C.U.)	10 beds
ii)	Ward No.1	30 "
iii)	Ward No.2 (Paying)	38 "
iv)	Ward No.3 (Neonatology)	6 "
v)	Ward No.3 (Non-Paying)	10 "
vi)	Ward No.4 (General Paediatric Neonatology)	40 "
vii)	Ward No.5 (Nutrition)	25 "
viii)	Ward No.6 (Surgical)	40 "
ix)	Observation	12 "
x)	Post operation	4 "
	Total	215 beds

5. Number of doctor, Nurse and other Staff

	a) Doctors	Number
i)	Medical Superintendent	1
ii)	Consultant (full time)	5
iii)	Hone. Consultant	1
iv)	Part time consultant	3
v)	Resident Paediatrician	1
vi)	Resident Physician	1
vii)	Registrar	2
viii)	Resident Medical Officer	27
ix)	Clinical Pathologist	1
x)	Anasthetist	1
xi)	Clinical Asstt.	1
	Sub-total(a)	44

	b) Nurses	Number
i)	Matron	1
ii)	Asstt. Matron	1
iii)	Sister	6
iv)	Staff Nurse	21
v)	Junior Nurse	3
vi)	Aid Nurse	36
	Sub-total(b)	68

c)	Technical/para medical -	15
d)	Administrative staff (including Director & Dy. Director)	21
e)	Sweeper, Aya, Darwan etc.	84
	Total (5)	232

6. Annual maintenance cost of the hospital

A. Expenditure	In lacs taka
i) Personnel cost	23.60
ii) Out-patient medicine (Drugs)	2.55
iii) In-patient medicine (Drugs)	5.56
iv) Others for medical materials	2.85
v) Electricity charges	2.55
vi) Oil for generator	-
vii) Water charges	-
viii) Gas charges	0.30
ix) Spare parts	-
x) Other for building maintenance	0.58
xi) All Other expenses	7.86
Sub-total(A)	45.85

B. Income	
i) Hospitalizing charges (In patient)	8.04
ii) Examination fee	2.61
iii) Others	39.54
Sub-total(B)	50.19

(A) - (B) Annual Income over Expediture (+) 4.34

B. HOLY FAMILY RED CROSS HOSPITAL

1. Name and address of the hospital: HOLY FAMILY RED CROSS HOSPITAL, MAGHBAZAR, DHAKA.

2. Total area of the building : 8 Acres.

3. Number of bed : 294

4. Kind of department

a. Out-patient

i)	Surgery	vi)	Eye
ii)	Medicine	vii)	
iii)	Gynae	viii)	
iv)	Paediatrics	ix)	
V)	Dental	x)	

b. Central diagnosis

i)	Surgery	vi)	Radiology
ii)	Medicine	vii)	
iii)	Gynae	viii)	
iv)	Paediatrics	ix)	
v)	Pathology	x)	

c. Ward for ;

i)	Male Surgical	Dept.	36	beds
ii)	Male Medicine	Dept.	42	beds
iii)	Female Surgical	Dept.	13	beds
iv)	Female Medicine	Dept.	13	beds
v)	Gynae	Dept.	46	beds
vi)	Paediatrics	Dept.	28	beds
vii)	Nursery	Dept.	40	beds
viii)		Dept.		beds
ix)		Dept.		beds
x)		Dept.		beds
	Cabin	-	76	

5. Number of doctor, nurse and other staff

		Number
a.	Doctors	
i)	Director, Asstt. Director	3
ii)	Consultant	14
iii)	Ass. Registrar	17
iv)	Medical Officer	6
b.	Nurses	
i)	Matron/Asstt. Matron	3
ii)	Sister	10
iii)	Staff Nurse	95
iv)	Aid Nurse	75
c.	Technical/Paramedical	30
d.	Others & Clerks	168
e.	Sweeper Aya etc.	50

6. Annual maintenance cost of the hospital

See REVENUE BUDGET SHEET A and B

A. REVENUE BUDGET (RECEIPTS)

Details of Receipts

ITEM (HEAD WISE)	ACTURAL 1981
A. IN-PATIENT	
1. Room, Board and Routine Services	4,781,705.40
2. Nursery	82,122.00
3. Special Services	
a) Operating Room	1,124,116.20
b) Delivery Room	258,048.00
c) Anesthesiology	240,824.40
d) X-Ray (In-patient)	447,225.60
e) Laboratory -do-	1,233,508.80
f) Physiotheraphy (In & Out-pat)	82,432.80
g) Pharmacy In-patient	2,947,901.74
h) Dental	58,721.10
i) Medical & Surgical (Treatment)	60,798.00
j) Urivate Tray (special meal sold)	5,262.00
k) Doctors Visit	242,513.60
4. Auxiliary Services	
a) Telephone	22,225.50
b) Ambulance	19,362.00
B. OUT-PATIENT	
a) Consultancy	249,876.00
b) Laboratory	186,036.00
c) X-Ray	119,486.40
d) Emergency Room	59,577.90
e) Pharmacy	335,727.97
f) Medical check-up	39,300.00
C. DONATION IN KINDS	200,667.96
D. BANK INTEREST	15,368.48
E. MISCELLANCEOUS (Sale of old Materials etc.)	78,856.18 *
F. GRANT FROM SWISS RED CROSS	
a) Re-imbursement against FCP-	560,808.90
b) Medical Apparatus.	-
	13,452,472.93

* includes sale proceeds of Hospital vehicles.

B. REVENUE BUDGET (EXPENDITURE)

Detailed expediture (Headwise)

		Actual 1981
1.	**Salaries**	
	a) Pay	2,722,544.80
	b) Allowances	2,326,829.46
	c) P.F. contribution	42,573.18
	d) Gratuity & Leave pay	69,634.42
	e) Free Medical Assistance (Employees)	415,381.36
	f) Arrear Allowances	282,978.82
2.	**Establishment Expendes**	
	a) Rent, Rates and Taxes -	17,010.00
	b) Telephone, Telegram, Postage, Stamp	158,648.42
	c) Gas, Electricity and Water	456,854.21
	d) Audit fee	12,000.00
	e) Insurance and Bonding	5,600.00
	f) Legal Expenses	4,554.00
	g) Food Patient	1,303,147.74
	h) Housekeeping (Stores & expenses)	20,793.00
	i) Linen (-do-)	167,251.27
	j) Laundry (-do-)	22,889.64
	k) Security (-do-)	-
	l) Repairs & Maintenance of buildings, equipments and Grounds	116,599.97
	m) Repairs & maintenance of Vehicles -	70,000.00
	n) Fuel for Vehicles	165,000.00
	o) Sports and Recreational expenses for Residnetioal Staff only	1,250.00
	p) Conveyances (for misc. Official works)	10,645.32
	q) Advertisement	19,677.60
	r) Miscellaneous/Clearing bills, Carrying & handling of Stores and other materials, Lunch & Conveyance for special works etc.)	11,928.78
	s) Carrying & handling of Dev. Stores.	2,100.00
3.	**Stores Consumed**	
	a) General Store, Stationeries and Printing, etc.	188,525.15
	b) Medical & Surgical Stores	1,260,717.16
	c) Laboratories Re-agents	159,552.00
	d) Pharmaceutical Stores	2,554,114.20
4.	**Provision for Depreciation**	380,000.00
5.	Fee Medical Treatment To the poor Patients -	964,281.35
6.	School of Nursing	469,439.77
7.	Books, Journal and Scientific Publications for Doctors' Library	-
		14,396,792.55

8. BORING DATA OF THE PROPOSED SITE

SUB-SOIL INVESTIGATION WORK
INCONNECTION WITH CONSTRUCTION OF PROPOSED
200 BEDDED HOSPITAL AT KHANPUR,
NARAYANGONJ, DHAKA

1. INTRODUCTION:

A reasonably accurate conception of the physical properties of the sub-soil is essential for rational and intelligent Design of Structure Foundation as well as the Earth Structures. Sub-soil Exploration involving both field and laboratory tests is necessary to obtain such data and information.

FOUNDATION CONSULTANTS LIMITED, Dhaka was entrusted by YAMASHITA ARCHITECTS AND ENGINEERS INC. Tokyo, Japan with exploration of sub-soil condition for the proposed 200 Bedded Hospital, at Khanpur, Narayangonj, Dhaka.

The object of the investigation is to as certain depth, sequence and thickness of various soil strata and evaluation of bearing capacity and settlement behaviour of the sub-soil under sustained leading of the proposed Hospital.

2. SCOPE OF WORK:

With a view to evaluate basic soil properties (bearing capacity parameters, settlement and seepage characteristics) elaborate investigation covering field and laboratory work were proposed for the project.

A. Field Work Includes:

a) Exploratory boring down to a depth of 8 to 20 m from existing ground surface inclusive recording of sub-soil stratification and ground water level, Seven such borings were specified for project.

b) Execution of American Standard Penetration Tests at 1 m intervals of depth to determine relative density/consistency of soil at different elevation inclusive collection of disturbed, semi-disturbed soil samples from each intervals.

c) Collection of Undisturbed soil samples from cohesive layer at reasonable intervals of depth.

B. Laboratory Work Includes:

a) Specific Gravity Test and complete grainsize analysis on soil samples representing different soil strata.

b) Attenberg limits tests on soil samples representing different cohesive soil strata.

c) Natural Moisture Content, Wet & Dry density, Unconfined Compression and Consolidation Tests on undisturbed soil samples representing different cohesive soil strata.

All field and laboratory tests were performed according to ASTM Specification and all bearing capacity and settlement analysis were made as per accepted code and practice adopted in Applied Soil Mechanics and Foundation Engineering.

C. Soil Investigation Review Includes:

Analysis of soild parameters, evaluation of bearing capacity and settlement figures and recommendations of right type of foundation including any such treatment or improvement of the foundation as may be necessary for the construction/erection of the various structures of the project.

3. GEOLOGICAL SETUP:

The project area is located in the southern edte of Madhupur terrace, which is bounded by the flood plains of the river system of the rivers Jamuna, Brarmaputra and the Meghns. Topographically the area lies about 20 ft. above mean sea level. The ground water level fluctuates with respect to the change of seasons at places during the monsoon the level rises very near to the surface and in the dry season it falls down to below 4.5 m depth.

The surface soil of the project area is composed of very loose to loose silty sand and/or black decomposed organic materials and continues down to a depth of 4 m, which are of local deposits composing organic waste and uncompacted dredge fills. The next layer upto 6 m depth is composed of grey soft to medium silt with clay may be described as local deposits which have been deposited under marshy condition and contains organic materials. The underlaying layers

to the full depth of the boring geologically belongs the Madhupur clay Formation of Pleistocene age. The sediments have been deposited under flevielacastrine condition and the deposition has been exaggorated by the glacial action of the pleistocene age.

Tectonically the project area is located in the deeper basinal part of Bengal basin where maximum sedimentation took place throughout the geologic history. No surface folding or faulting has been observed in the area. The regional slope of the area is towards SSE direction.

The project area falls under the seismic zone II of Bangladesh, where the basic seismic co-efficient is 0.05.

4. ENGINEERING PROPERTIES OF SOIL SAMPLES AND FOUNDATION TYPE:

Investigation into the engineering properties of soil samples obtained from seven boreholes drilled down upto the depth of 20 m from existing ground surface indicates that the top soil upto a depth of about 4 m is mainly very soft/very loose organic back fill and/or soft uncompacted dredge fill, having q_u = 486 psf., SPT 1 to 3.

The next layer upto a depth of 6 m is mainly soft to medium clay - silt, SPT are 5, q_u = 1700 psf., C_c = 0.14, c_o = 0.72.

The underlying layer upto the full depth of boring composed of medium to stiff clay silt SPT 9 to 20, q_u = 1700 psf. to 4900 psf., L_w = 60 pi = 35.

Investigation into the probable type of foundation for the proposed structures indicate that the shallow foundation, which in all cases should be established at depth around 4 m from existing ground surface should be technically and economically unreasonable. However in case of such foundation a safe bearing capacity of 1500 may be considered, with Df = 4 m. (min.)

Technically most suitable type of foundation would be R.C.C. friction piles Cast-in-Situ Piles 16" in diam. (which should be best suited for proposed loading condition) length 16 m measured from existing ground surface should carry a safe load of 40M.Tons.

5. GENERAL NOTES OF SOIL INVESTIGATION REVIEW:

Our services consist of professional opinion and recommendations

prepared in accordance with generally accepted principles of Soil Mechanics and Foundation Engineering practice, and no other warrantly is made, either express or implied.

This report has been prepared to aid in design of the project and is based on data obtained from several test borings made at the locations shown in the site plan.

The information shown in the attached Generalize Soil Profile is not identical and is not intended to be identical to the data recorded in the Field Bore Leg or Preliminary Bore Chart.

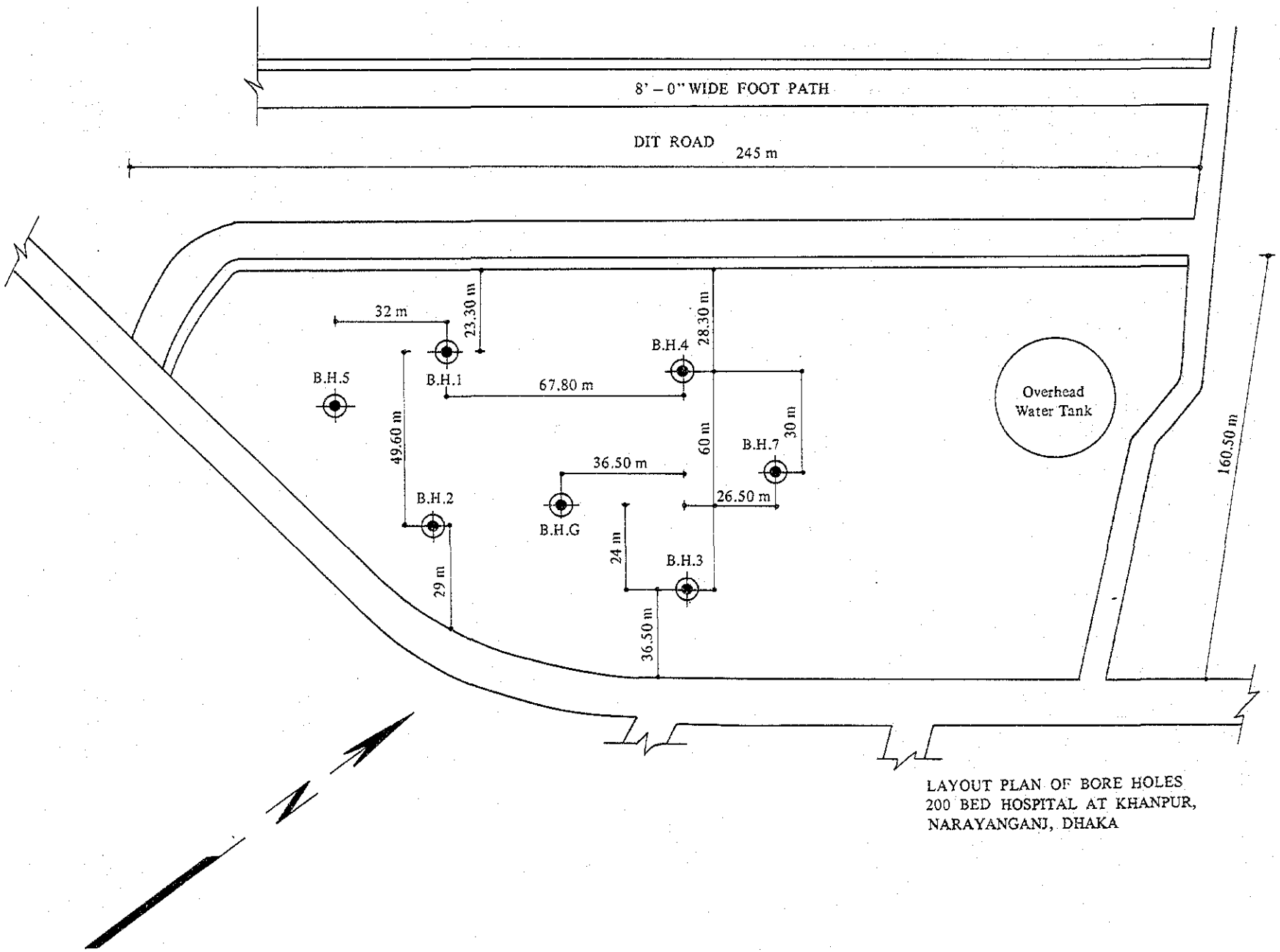
The attached soil profile (Soil Investigation Review Sheet) is intended solely for the purpose of foundation analysis. They represent the Consulting Engineerrs best judgement and interpretation.

The basic field borelog and borehole chart represent sub-surface condition at the time of drilling recorded in the log and at the specific borehole locations shown in the site plan. Soil condition at the other locations are apt to very from those shown.

The presumtive allowable bearing values and settlement estimates are valid only for the footing sizes mentioned in respective review sheet.

The present report is made with the understanding that the information and recommendations presented herein are called to the attention of the Engineers and Architects for the project and observed in construction. In the event conclusions or recommendations based on the present report are made by others, we should be given an opportunity to review and concur in such conclusions or recommendations in writing.

(MD. N. AMIN)



LAYOUT PLAN OF BORE HOLES
200 BED HOSPITAL AT KHANPUR,
NARAYANGANJ, DHAKA

SOIL INVESTIGATION REVIEW

PROJECT 200- BED HOSPITAL, NARAYANGONJ, BANGLADESH

CLIENT YAMASHITA ARCHITECTS & ENGINEERS INC. JAPAN

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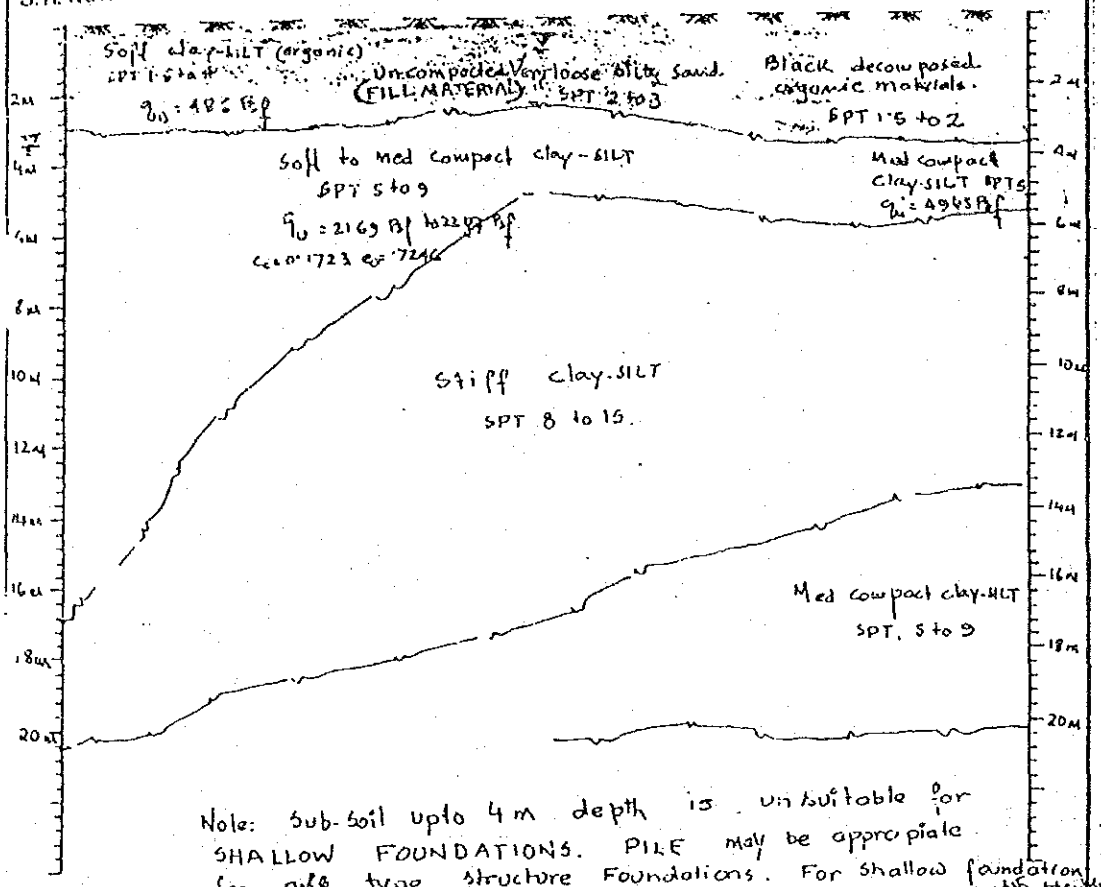

Note: Sub-soil upto 4 m depth is unsuitable for SHALLOW FOUNDATIONS. PILE may be appropiate for any type structure Foundations. For shallow foundation established at 1 m depth a safe bearing capacity of 1500 psf (1 TSF) utilized.

COMMENTS

1. Presumtive allowable bearing capacity _____ psf (_____ TSF)

2. Anticipated settlement of the order of _____ inch and _____ differential settlement is expected

3. Presumtive allowable load bearing capacity of a 16" dia Cast-in-situ friction Pile length 16 m driven to a depth of 16 m from existing G.L. 40 to Tons / Kips

4. Ultimate Skinfriction Values for Piles:

From ground level to	4m	below G.L	- Nil
From	4 m	below G.L. to 6 m below G.L	- 700 Psf
From	6 m	" " to 20 m " "	- 1000 Psf
From		" " to	- Psf
From		" " to	- Psf

5. Ult. Point Bearing Capacity at the Tip of 16 m is Pile 20 Kip

FOUNDATION CONSULTANTS LTD, DACCA

SOIL INVESTIGATION REVIEW

PROJECT 200 BED HOSPITAL NARAYANGONJ. BANGLADESH.

CLIENT Yamashita Architects and Engineers Inc. Japan

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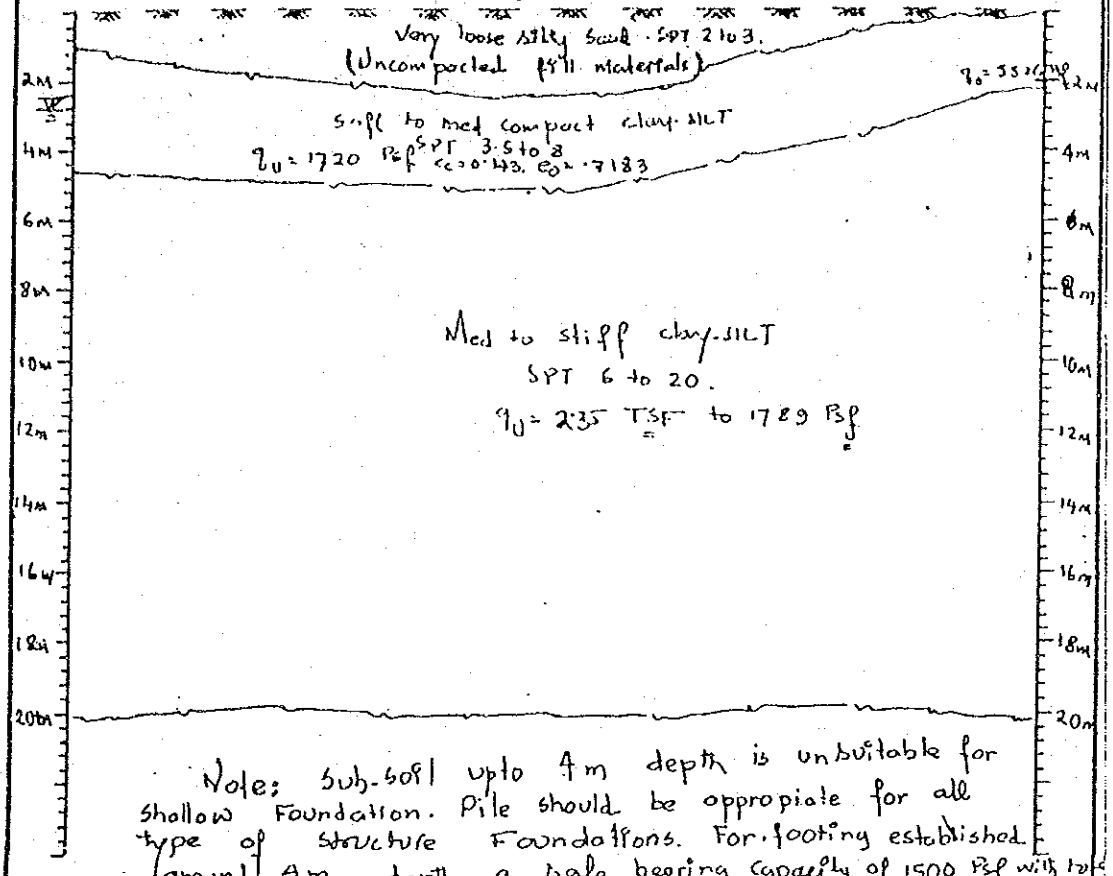


Note: Sub-soil upto 4m depth is unsuitable for shallow Foundation. Pile should be appropiate for all type of structure Foundations. For footing established around 4m depth a safe bearing capacity of 1500 Psf with tolerable settlement may be used.

COMMENTS

1. Presumtive allowable bearing capacity _____ psf (_____ TSF)

2. Anticipated settlement of the order of _____ inch and _____ differential settlement is expected.

3. Presumtive allowable load bearing capacity of a 16" diam Cast-in-situ friction Pile length 16 m driven to a depth of 16 m from existing G.L. 40 M. Tons / ~~Kips~~

4. Ultimate Skinfriction Values for Piles:

From ground level to	Medium sand upto 4m	below G.L.	-	Nil
From	4m	below G.L. to 6m below G.L	-	700 Psf
From	6m	" " to 20m " "	-	1000 Psf
From		" " to	-	" "
From		" " to	-	" "

5. Ult. Point Bearing Capacity at the Tip of 16m ft. Pile 20 Ksf

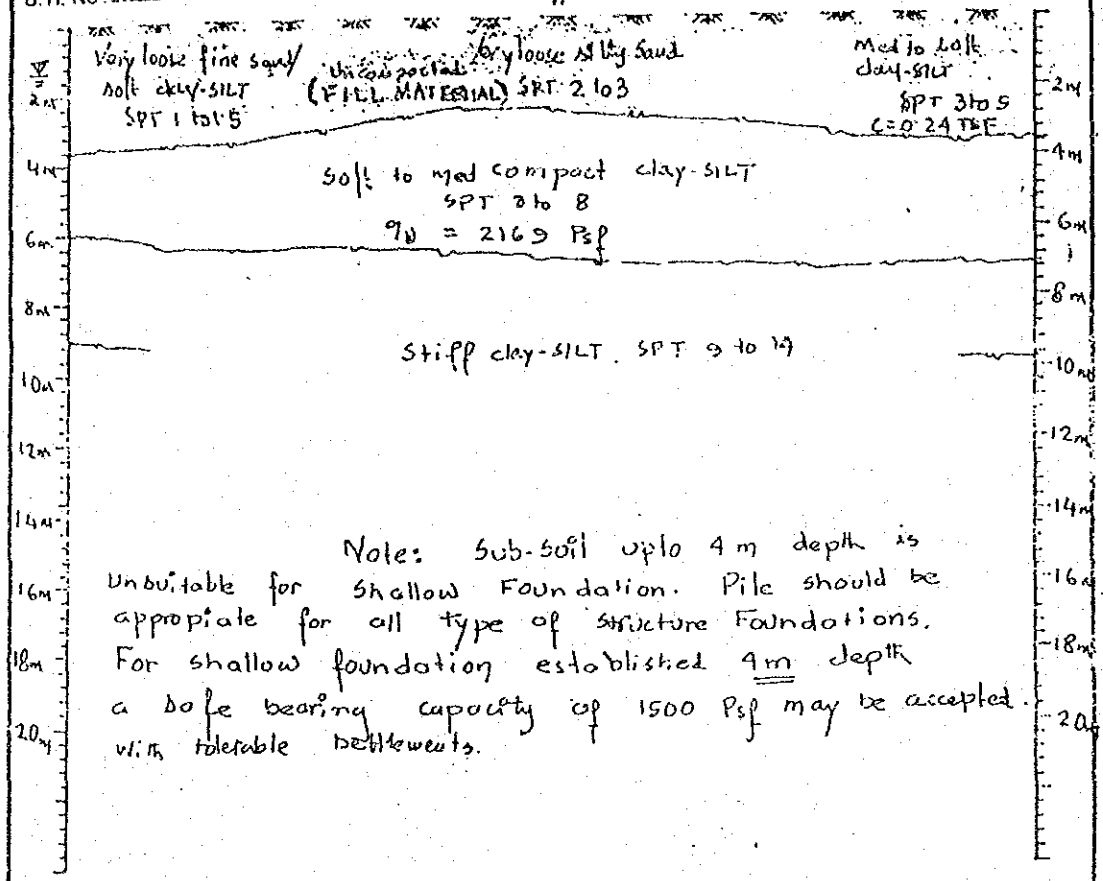
FOUNDATION CONSULTANTS LTD., DACCA

SOIL INVESTIGATION REVIEW

PROJECT 200 BED HOSPITAL, NARAYANGONJ, BANGLADESH

CLIENT Yamashita Acchitects and Engineers Inc. Japan

B.H. NO. 5 dt. 13.11.82 B.H. NO. 6 dt. 13.11.82 B.H. NO. 7 dt. 13.11.82



Note: Sub-soil uplo 4 m depth is Unsuitable for shallow Foundation. Pile should be appropiate for all type of structure Foundations. For shallow foundation estoblished 4m depth a safe bearing capacity of 1500 Psf may be accepted. with tolerable settlements.

COMMENTS

1. Presumtive allowable bearing capacity _____ psf (_____ TSF)

2. Anticipated settlement of the order of _____ inch and _____ differ .tial settlement is expected

3. Presumtive allowable load bearing capacity of a 16" diam cast-in-situ friction Pile length 16m driven to a depth of 16m from existing G.L. 40 M. Tons / Kips

4. Ultimate Skinfriction Values for Piles:

From ground level to	4 m	below G.L	- Nil
From 4 m	below G.L. to	6 m below G.L	- 700 Psf
From 6 m	" " to	20 m - "	- 1000 Psf
From	" " to	" "	- Psf
From	" " to	" -	- Psf

5. Ult. Point Bearing Capacity at the Tip of 16m M Pile 20 K.s

FOUNDATION CONSULTANTS LTD., DACCA

9. LIST OF COLLECTED DATA

1)	Foreign Trade Statistic of Bangladesh	Bangladesh Bureau of Statistics
2)	Bangladesh Standard Trade Classification	"
3)	Economic Indicators of Bangladesh	"
4)	Survey of Health, MCH and Family Planning Infrastructure in Bangladesh	Population Control and Family Planning Div.
5)	Monthly Statistical Bulletin of Bangladesh (August, 1982)	Bangladesh Bureau of Statistics
6)	Annual Report on the Activities of Health Division (July, 1977 to June, 1978)	Health Information Unit
7)	Bangladesh Standard Industrial Classification of All Economical Activities (1980)	Bangladesh Bureau of Statistics
8)	Statistical Pocket Book of Bangladesh (1980)	"
9)	1980 Statistical Yearbook	"
10)	Schedule of Rates (July, 1982)	Public Works Department
11)	Analysis of Rates	"
12)	Bangladesh Guide Map	
13)	Dhaka Guide Map