4. MEDICAL AND TRAINING EQUIPMENT PLANNING

4. MEDICAL AND TRAINING EQUIPMENT PLANNING

4.1 General

High standard of medical and educational equipment will be provided. For the selection of the equipment unnecessary duplication was avoided and convertibility with Cancer Center and joint use facilities was considered.

4.2 Equipment List by Department

(1) O.P.D. - INTERNAL MEDICINE

(2) O.P.D. - SURGERY

(3) O.P.D. - ORTHOPEDICS

(4) O.P.D. - OBSTETRY

(5) O.P.D. - GYNECOLOGY

(6) O.P.D. - PEDIATRICS

(7) O.P.D. - DERMATOLOGY

(8) O.P.D. - UROLOGY

(9) O.P.D. - E.N.T.

(10) O.P.D. - OPHTHALMOLOGY

(11) O.P.D. - PSYCHIATRY

(12) O.P.D. - NEUROLOGY

(13) O.P.D. - PAIN CLINIC

(14) O.P.D. - DENTISTRY

(15) CASUALTY - EXAMINATION & TREATMENT

(16) CASUALTY - X-RAY

(17) CASUALTY - PHARMACY

(18) CASUALTY - LABORATORY

(19) CASUALTY - BLOOD TAKING

(20) I.C.U., C.C.U.

(21) I.C.U., C.C.U. LABORATORY

(22) HEMODIALYSIS

(23) DELIVERY & BABY NURSERY

(24) DELIVERY & BABY NURSERY LABORATORY

(25) WARD - GENERAL

(26) WARD - PEDIATRIC I.C.U. LABORATORY

(27) WARD - NURSE STATION

(28) TRAINING EQUIPMENT

Equipment	Type No.	Quantity
(1) O.P.D. - INTERNAL MEDICINE		
001 Examination Table		7 sets
002 Internal Examination Set		7 sets
003 Sphygmomanometer		7 sets
004 Bone Marrow Punction Set		3 sets
005 Educational Stethoscope		1 set
Ultrasonic Diagnostic App.		
006 Echo Abdomino Graphy		4 sets
007 Echo Cardio Graphy + Doppler		4 sets
(2) O.P.D. - SURGERY		
008 Surgical Bed		5 sets
009 Surgical Set		5 sets
010 Sphygmomanometer		5 sets
011 Infant Surgical Bed		1 set
012 Infant Surgical Set		1 set
013 Surgical Scrubbing Station		3 sets
014 Shadowless Light		1 set
015 Electorical Surgical Unit		1 set
016 Widefield Magnifying Spectacles		2 sets
017 Cryosurgery Unit		1 set
018 Anesthesia Instrument & Chair		1 set
019 Ventilator		1 set
Ultrasonic Diagnostic App.		
020 Echo Abdomino Graphy		3 sets
021 Echo Cardio Graphy + Doppler		3 sets
022 Surgical Laser System YAG		1 set
(3) O.P.D. - ORTHOPEDICS		
023 Orthopedical Exam Bed		2 sets
024 Exam & Treatment Set		2 sets
025 Plaster Bandage Table		1 set
026 Plaster Cutter		1 set
027 Surgical Light		2 sets
028 Intermittence Tractin App.		1 set
029 Surgical Laser System		1 set
(4) O.P.D. - OBSTETRY		
030 Obstetrical Examining Table		2 sets
031 Obstetrical Examining Unit		2 sets
032 Sphygmomanometer		2 sets
033 Surgical Light		1 set

Equipment	Type No.	Quantity
(5) O.P.D. - GYNECOLOGY		
034 Gynecological Examining Table		1 set
035 Gynecological Examining Unit		1 set
036 Colposcope (Fiber Light)		1 set
037 Sphygmomanometer		1 set
038 Artificial Evacuation Set		1 set
039 Surgical Light		1 set
040 Cervicitis Coagulator		1 set
Ultrasonic Diagnostic App.		
041 Echo Abdomino Graphy		1 set
042 Echo Cardio Graphy + Doppler		1 set
043 Microscope		1 set
044 Education Microscope		1 set
(6) O.P.D. - PEDIATRICS		
045 Pediatrics Examination Bed		3 sets
046 Pediatrics Examination Set		3 sets
047 Sphygmomanometer		3 sets
048 Surgical Light		3 sets
049 Blood Taking Table		1 set
050 Lunbar (Spinal) Punction Set		1 set
051 Ultrasonic Abdomino Graphy		2 sets
052 Echo Cardiography + Doppler		2 sets
(7) O.P.D. - DERMATOLOGY		
053 Dermatological Bed		1 set
054 Dermatological Set		1 set
055 Ultraviolet Lamp (Derma Ray)		1 set
056 Ultrasonic Therapy Apparatus		1 set
057 Skin Grinder		1 set
058 Dermatome		3 sets
059 Soft X-ray		1 set
060 Allergy Test Set		2 sets
(8) O.P.D. - UROLOGY		
061 Urological Examination Table		3 sets
062 Urological Examination Set		3 sets
063 Cystoscope		3 sets
064 Medical Video System Camera		
065 Medical Viewer		3 sets
066 Binocular Microscope		3 sets
067 Microscope		3 sets
067 Dornier Kidney Lithotripter		1 set

Equipment	Type No.	Quantity
(9) O.P.D. - E.N.T.		
068 E.N.T. Treatment Chair		2 sets
069 E.N.T. Treatment Set		2 sets
070 Laryngoscope		1 set
071 Audiometer		1 set
072 Function Test of Equilibrium (Static Sensograp)		1 set
073 Cool Light		1 set
074 Nebulizer		2 sets
(10) O.P.D. - OPHTHALMOLOGY		
075 Ophthalmological Chair		2 sets
076 Diagnostic Set		2 sets
077 Fundus Camera		1 set
078 Tonometer		2 sets
079 Perimeter		2 sets
080 Light Coagulation		2 sets
081 Eye-test Apparatus		1 set
082 Color Blindness Test Chart		2 sets
083 Slit-lamp Microscope		1 set
084 Ophthalmoscope		1 set
(11) O.P.D. - PSYCHIATRY		
085 Bed		2 sets
086 Physical Examination Unit		2 sets
(12) O.P.D. - NEUROLOGY		
087 Bed		1 set
088 Physical Examination Unit		1 set
(13) O.P.D. - PAIN CLINIC		
089 Examination Table		2 sets
090 Physical Examination Unit		2 sets
(14) O.P.D. - DENTISTRY		
091 Dental Chair		2 sets
092 Dental Unit		2 sets
093 Dental X-ray		1 set
094 Darkroom Unit with Developer		1 set
095 Dental Laboratory Unit		1 set
096 Ortho-dental Set		3 sets
097 Dental Panolamic X-ray		1 set
098 Light Guide Set		1 set

Equipment	Type No.	Quantity
(15) CASUALTY - EXAMINATION & TREATMENT		
099 Stretcher Trolley		5 sets
100 Wheel Stretcher		5 sets
101 Sphygmomanometer		21 sets
102 E.C.G.		1 set
103 Portable E.C.G.		5 sets
104 Portable Defibrillater		6 sets
105 Resuscitating Apparatus		6 sets
106 Oxygen Tent		6 sets
107 Infant Resuscitater		2 sets
108 Gatch Bed with Mattress		13 sets
109 Operation Table		2 sets
110 Anesthesia Apparatus		2 sets
111 Ventilator		2 sets
112 Electric Suction Unit		2 sets
113 Anesthesia Apparatus Cart		2 sets
114 Detachable Operation Table		6 sets
115 Surgical Unit		8 sets
116 Mini Surgical Unit		8 sets
117 Tracheostomy Set		2 sets
118 Hemostatic Apparatus		5 sets
119 Sutural Apparatus		8 sets
120 Microsurgical Unit		8 sets
121 Electro Surgical Unit		4 sets
122 Bleedingsamount Digital Scale		2 sets
123 Infant Surgical Unit		2 sets
124 Artificial Evacuation Set		2 sets
125 Obstetrical Table (Parturition Table)		1 set
126 Kaizer Apparatus		1 set
Ultra Sonic Diagnostic Apparatus		
127 Echo Abdomino Graphy		3 sets
Echo Cardiography + Doppler		3 sets
128 Operating Microscope		3 sets
129 Sutural Apparatus of Vessel		3 sets
130 Cryosurgery Unit		3 sets
131 Surgical Laser System CO-2 & YAG		2 sets

Equipment	Type No.	Quantity
(16) CASUALTY - X-RAY		
132 Multi-purpose X-ray TV		1 set
133 Chest X-ray		1 set
134 Tomography		1 set
135 Bone X-ray		1 set
136 Portable X-ray		1 set
137 Automatic Develop Tunk		1 set
(17) CASUALTY - PHARMACY		
138 Medicine Cabinet		1 set
139 Narcotic Medicine Cabinet		1 set
140 Ample Cabinet		3 sets
141 Water Distillation Apparatus		1 set
142 High Purity Distilling Apparatus		1 set
143 Medicine Table		1 set
144 Refrigerator for Drug		1 set
(18) CASUALTY - LABORATORY		
145 Blood Gas Analyzer		1 set
146 Biomedical Auto Analyzer		2 sets
147 Automatic Cell Counter		2 sets
148 Clot Timer		2 sets
149 Auto Urine Analyzer		2 sets
150 Microscope		4 sets
151 Differential Counter		3 sets
152 Centrifuge		3 sets
153 High Purity Distilling Apparatus		1 set
154 Refrigerator		1 set
155 Examination Table		1 set
156 Auto Serum Separator		1 set
157 Spectrophotometer		1 set
158 Electrical Auto Balance		1 set
159 Water Bath		1 set
160 Liquid Chromatograph		1 set
(19) CASUALTY - BLOOD TAKING		
161 Blood Taking Table		1 set
162 Bed		3 sets
163 Sphygmomanometer		3 sets
164 Cubic Ice Maker		1 set
165 Blood Stock Refrigerator		1 set
166 Blood Cell Separator		1 set
167 Auto Blood Typing Test		1 set
168 Washing Cell Centrifuge		1 set
169 Microscope		1 set
170 Water Bath		1 set

Equipment	Type No.	Quantity
(20) I.C.U., C.C.U.		
171 I.C.U. Patient Monitor		1 set
172 C.C.U.		1 set
173 Ventilator		9 sets
174 Resuscitating Apparatus		6 sets
175 Respiratory Recording Apparatus		6 sets
176 Anesthesia Instrument		6 sets
177 Electric Suction Unit		6 sets
178 Anesthesia Apparatus Cart		6 sets
179 Electrical Surgical Unit		2 sets
180 Osmometer		9 sets
181 Closed Chest Heart Massager		18 sets
(21) I.C.U., C.C.U. - LABORATORY		
182 Electrolyte Analyzer		1 set
183 Blood Gas Analyzer		1 set
184 Dupont ACA III.		1 set
185 E.C.G. 3Ch.		1 set
186 Ultrasonic Tomography		1 set
187 Echo Cardiogram + Doppler		1 set
(22) HEMODIALYSIS		
188 Hemodialyzer/Person with Water Purifier		4 sets
189 Digital Scale Bed		4 sets
190 Bed Scale		2 sets
191 Shunt Operation Apparatus		1 set
Blood Warmer		1 set

Equipment	Type No.	Quantity
(23) DELIVERY & BABY NURSERY		
192 Parturition Table		2 sets
193 Cesarrean Section Table		1 set
194 Aspirator		2 sets
195 Partus Monitor		2 sets
196 Newborn Treatment Table		3 sets
197 Cesarrean Section Apparatus		1 set
198 Labor Pains Bed		5 sets
199 Labor Pains & Delivery Table		1 set
200 Tocometer		6 sets
201 Uterine Contraction Controller		5 sets
202 Bed for Recovery Room		2 sets
203 Stretcher Trolley		3 sets
204 Immature Foetus Incubator		8 sets
205 Doppler Bloodpressure Meter		5 sets
206 Neonatal I.C.U. (2 beds)		1 set
207 Infantile Resuscitating Apparatus		2 sets
208 Cot		30 sets
209 Baby Scale		10 sets
210 Bath Tub		5 sets
211 Table Top Autoclave		2 sets
212 Boiling Water Sterilizer		2 sets
213 Cubic Ice Maker		1 set
214 Bed for Isolation Room		4 sets
(24) DELIVERY & BABY NURSERY LABORATORY		
215 E.C.G.		2 sets
216 Automatic Cell Count		1 set
217 Electrolyte Analyzer		2 sets
218 Ultra Sonic Diagnostic Apparatus		
219 Echo Cardiography + Doppler		1 set
220 High Purity Distilling Apparatus		1 set
221 Centrifuge		2 sets
222 Refrigerator		2 sets
223 Blood Stock Refrigerator		1 set
224 Microscope		1 set
225 Infant Bilirubinometer		2 sets

Equipment	Type No.	Quantity
(25) WARD - GENERAL		
226 Bed		236 sets
227 Cot		52 sets
228 Gatch Bed with Mattress		114 sets
229 Bedside Cabinet		350 sets
230 Over Bed Table		114 sets
231 Water Treatment Apparatus		1 set
232 Air Floating System Bed		4 sets
233 Isolation Bed		2 sets
234 Cold Jet-air Apparatus		4 sets
235 Bed Sheet for Burns		10 sets
236 Particle Detector Air Sampler		2 sets
237 Core Temperature Monitor		2 sets
238 Ped. I.C.U. & Monitor		4 sets
239 Ped. Resuscitater		4 sets
240 Ped. Ventilator		4 sets
241 Ped. Aspirator		4 sets
242 Bedpan		100 sets
243 Bedpan Rack		16 sets
244 Bedpan Washer		16 sets
245 Autoclave		1 set
246 E.O.G. Gas Sterilizer		1 set
247 E.O.G. Gas Air Rater		1 set
(26) WARD - PEDIATRIC I.C.U. LABORATORY		
248 Electrolyte Analyzer		1 set
249 Blood Gas Analyzer		1 set
250 Blood Chemical Analyzer		1 set
251 Blood Cell Counter		1 set
252 Centrifuge		1 set
253 Refrigerator		1 set

Equipment	Type No.	Quantity
(27) WARD - NURSE STATION		
254 Medicine Cabinet		16 sets
255 Ample Cabinet		16 sets
256 Narcotic Drug Stocker		16 sets
257 Instrument Cabinet		16 sets
258 Nurse Table		16 sets
259 Cubic Ice Maker		16 sets
260 Refrigerator		16 sets
261 Table Top Auto Clave		16 sets
262 Boiling Sterilizer		16 sets
263 Trackcart		32 sets
264 Treatment Carriage		32 sets
265 Body Cleansing Cart		6 sets
266 Medication Cart		16 sets
267 Stretcher Trolley		32 sets
268 Wheel Stretcher		32 sets
269 Sphygmomanometer		48 sets
270 Electrical Thermometer		500 sets
271 Stop Watch		160 sets
272 Monitoring & Resuscitating Apparatus		16 sets
273 Oxygen Tent		16 sets
274 Ultrasonic Nebulizer		16 sets
275 Ventilator		16 sets
276 Electric Suction Unit		16 sets
277 Defibrillater		16 sets
278 Automatic Formalin Sterilizer (Bedding Sterilizing Unit)		1 set
279 Examination Set		16 sets
280 Patient Roller		8 sets
(28) TRAINING EQUIPMENT		
281 Video System		2 sets
282 Tape Recorder		5 sets
283 Over-head Projector		5 sets
284 Slide Projector		2 sets
285 Opaque Projector		2 sets
286 Screen		2 sets

5. MANAGEMENT AND OPERATING PLANNING

5. MANAGEMENT AND OPERATING PLANNING

5.1 Organization

"Dual Structure" organization of both HOSPITAL ADMINISTRATION and MEDICAL ADMINISTRATION is proposed in National Cancer Center Project which cover also General Hospital.

The Hopsital Administration consists of four departments: the General Business, Services, Maintenance and the Computer Center. They will provide services in these areas to the combined institutions. The Medical Administration consists of eight departments as shown in the organizational chart. They will provide professional and technical medical services to the combined institutions.

The manpower control for the Cancer Center and the General Hospital will be the responsibility of the General Business Department of the Hospital Administration. This department will perform such functions as the employment of personnel and dispatching of service personnel where needed in both institutions.

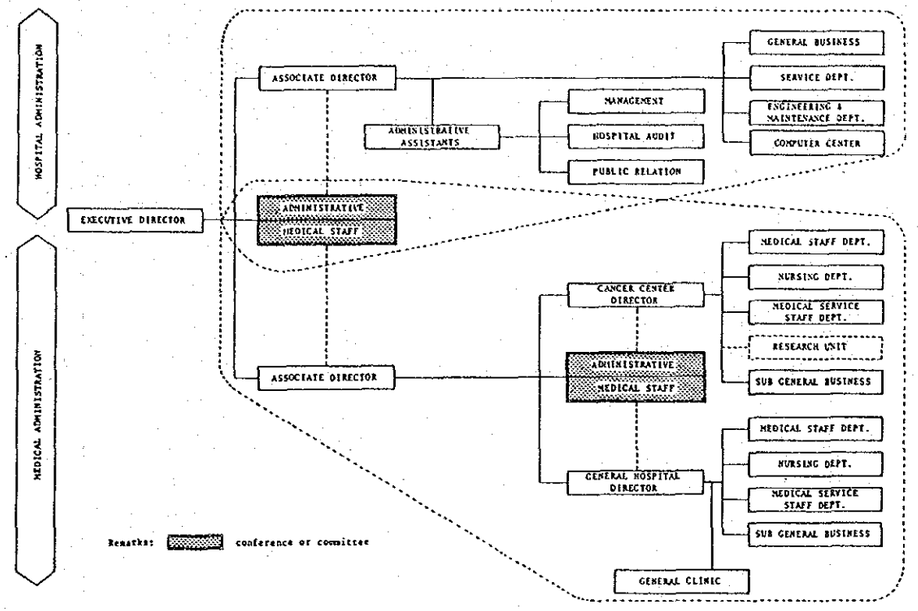
The Research Unit will be within the Medical Science Department of the Medical Administration, but with future growth it may become an independent department along with the others.

The Public Care Service, Cancer Registry Information, Health Education, and Mass Screening will be under the supervision of the Hospital Administration.

In the actual day-to-day operations, administration and medical conferences and meetings will have to be conducted within the two administrative structures and between them for necessary communication and for smooth and efficient operation, good morale, problem-solving, planning, and decision-making.

A management team consisting of the Executive Director and the top administrators of the Cancer Center and the General Hospital will be responsible for the overall budget-making and management control of the Complex.

The Hospital Audit will oversee the medical expenditures, and the Public Relations Department will keep the public informed about health and medical services available.



Organization Chart

5.2 Manpower

1) Estimation of Manpower Allocation

° Authorized manpower allocation during the discussion on the National Cancer Center for the whole complex is as follows:

(For 550 beds)

Medical staff	1,000 persons
Administration	300 "
Energy & Maintenance	130 "
Service & Others	640 "
Total	approx. 2,000 persons

2) Supposed Breakdown of Manpower Allocation

° For the further studies of departmental planning the suppositional breakdown of manpower allocation was made based on the Saudi Arabian Manpower Standard for Present Plan Phase (for 550 beds).

Staff	Present Plan Phase (for 550 beds)
° Doctor	
· Senior	50
· Junior	80
Sub-total	130
° Nurse	620
° Paramedical	
· Clinical labo	90
· X-ray	50
· Pharmacy	40
· Physistherapy	20
· Others	50
Sub-total	250
° Maintenance Staff	130
° Service	
· CSR	40
· Laundry	40
· Kitchen	60
· Store	20
· Security	50
· Transportation	30
· Dormitory	40
· Housekeeping	150
· Others	30
Sub-total	460
° Administration Staff	
· Administrative personnel	10
· Medical record	40
· Admission/discharge	40
· Personnel	30
· Account/finance	60
· General business	30
· Typist	30
· Clerks, reception	50
· Interpreter	10
Sub-total	300
° Other Staff	
· Computer operator, system maintenance, messengers	∿180
Total	∿2,070

5.3 Transportation Plan

° Adequate transportation planning for both peoples and articles is one of important items for hospital planning especially in big complex like this project.

Name of Articles	From ⟶ To	Frequency	Note
1. Information · Clinical chart	Medical record ⟷O.P.D. ward	every day	extreme frequency
· X-ray film	Film store ⟷O.P.D. ward	"	size=large
· Slip	Whole complex network	"	extreme frequency
2. Meal & dishes	Kitchen ⟷ Ward	3 times/ day	peak
3. Specimen	O.P.D. ward ⟶ Labo	every day	possible infection
4. Medicine · General medicine · Injection medicine	Pharmacy → O.P.D. Ward / Central Diagnosis & Therapy	routine non-routine	easy damage
5. Sterilizing material · Normal articles · Large articles · Injector	CSSD → O.P.D. ward / Central Diagnosis & Therapy	"	cleanliness required
6. Sanitary materials · General articles · Disposable article	Central CSSD → O.P.D. Ward / Central Diagnosis & Therapy	"	amount: large
7. Linen	Ward / O.R. ⟷ Laundry ⟷ CSSD / Other	every day	"
8. Stationary	Central Storage ⟶ Whole complex	routine non-routine	"
9. Garbage	Whole complex ⟶ Garbage depo.	every day	possible infection

° Items to be further studied in next stage

(1) Transportation system planning
Criteria and level of mechanization (or human power) shall be more clarified especially for following transporation of articles.

· medicine, sterilized material and specimen to/from ward.
· clinical chart to/from medical record room.
· specimen or slip to/from Central Diagnosis and Therapy.

(2) Vertical and horizontal transportation of people and their peak-hours check.
(ex. horizontal transport of staff to/from housing area)

(3) Parking system, site traffic simulation.
Peak-hours capacity and traffic jam check

(4) Detailed planning for contamination-proof or maintaining of cleanliness during transportation by item.

5.4 Hospital Information System

° Medical information is categorized into two groups. First one is areal medical information which covers information network outside hospital and second one is hospital information.

° For the moment, subject given to the project will be mainly to set-up the hospital information system using computer for the complex with some possible consideration to first group. (for example, infections desease surveillance, health check-up).

° Hospital information can be also sub-categorized into 2 groupes (hospital adm. information and medicare information).

° The period of system development will changes much by how far the systemization will be planned. Those sub-system with many programs already developed (mainly in the field of hospital administration system) will require rather short period, but other sub-systems (mainly in the field of medicare information) will require much longer period because in these fields own program development will be necessary

considering the hospital management system of the hospital or specific items in Saudi Arabia (ex. language selection, free medical service etc.) and its period will differ by the level and number of subsystem.

° For these reason, step by step introduction of hospital information systemization will be realistic.

° Early decision on the selection of sub-system and hard wear to be introduced at the starting point of hospital operation will be strongly recommendable.

° Therefore the promoting organization is necessary to cope with those decision making.

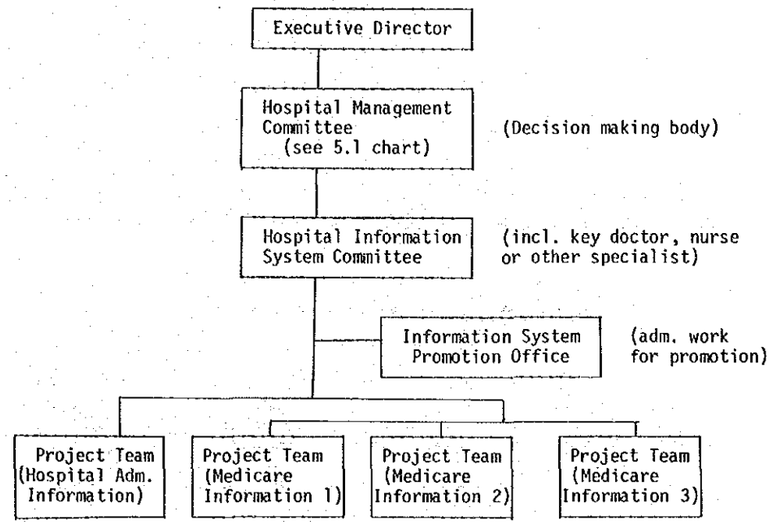
(i) Before the starting of hospital operation

Preparation committee including hospital director, chief administrator, chief nurse and key doctor will be established for following decisions.

- Systemization Scheme
- Target sub-systems to be introduced at the starting point of the hospital operation
- Selection of hardwear
- Selection of system development expert/agent.

(ii) After the starting of hospital operation

Above committee will be re-organized into total hospital organization as follows:



° Project team type promotion is effective because the opinions and ideas from their field can be effectively introduced for the systemization.

° Those proposed items by each project team will be discussed in Hospital Information System Committee and final decision will be made in Hospital Management Committee for implementation.

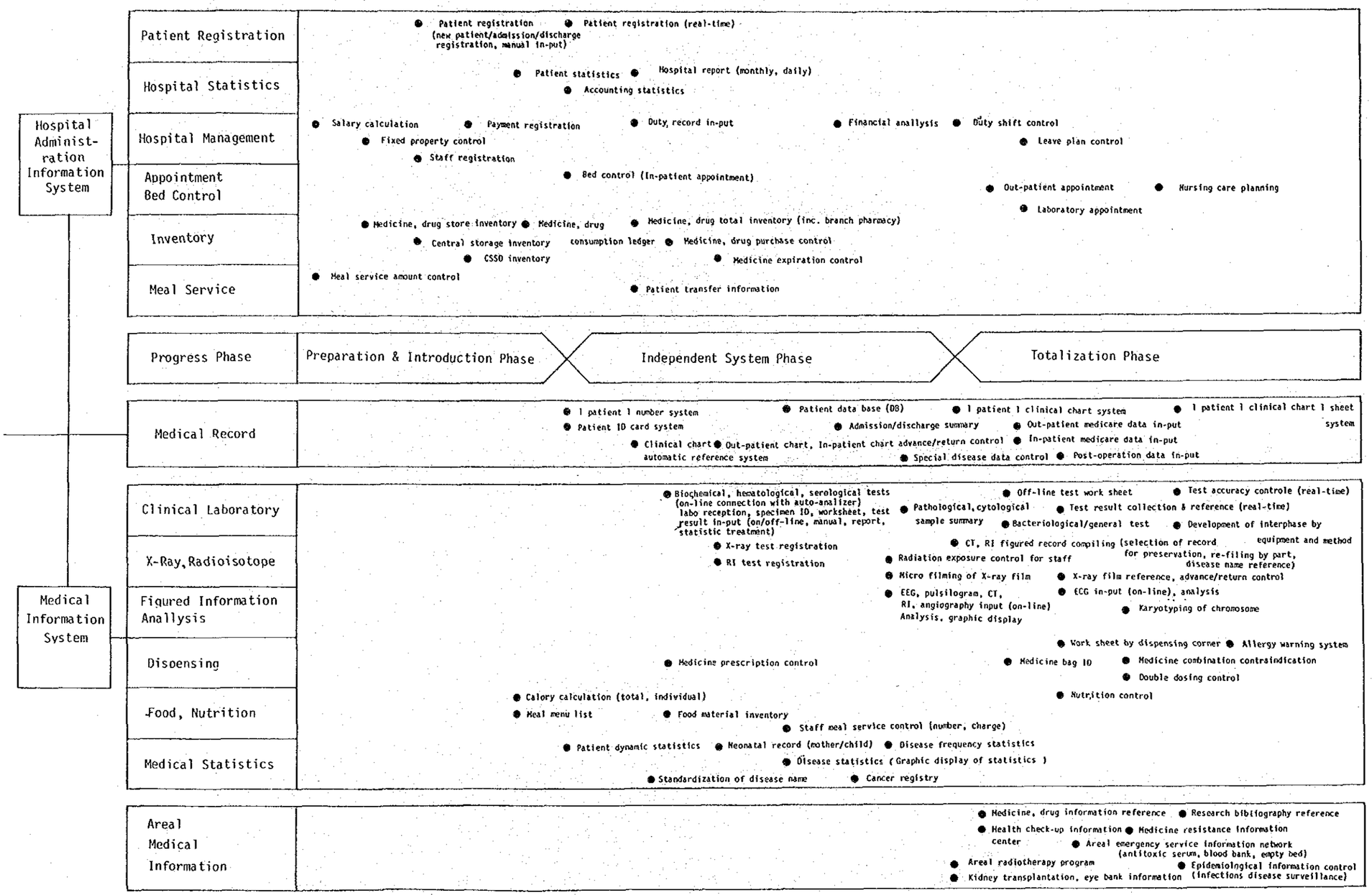
° Example of project teams are shown below;

- Hospital Administration Information Team
- Diagnosis and Therapy Information Team
- Laboratory Information Team
- Pharmacy Information Team
- Nursing care Information Team
- Medical Record Information Team
- Areal Medical Information Team
- Medical Research Information Team

° Example of Medical Information Systemization is made from Japanese hospital case and shown in next page.

COMPUTALIZATION OF MEDICAL INFORMATION

Sub-system

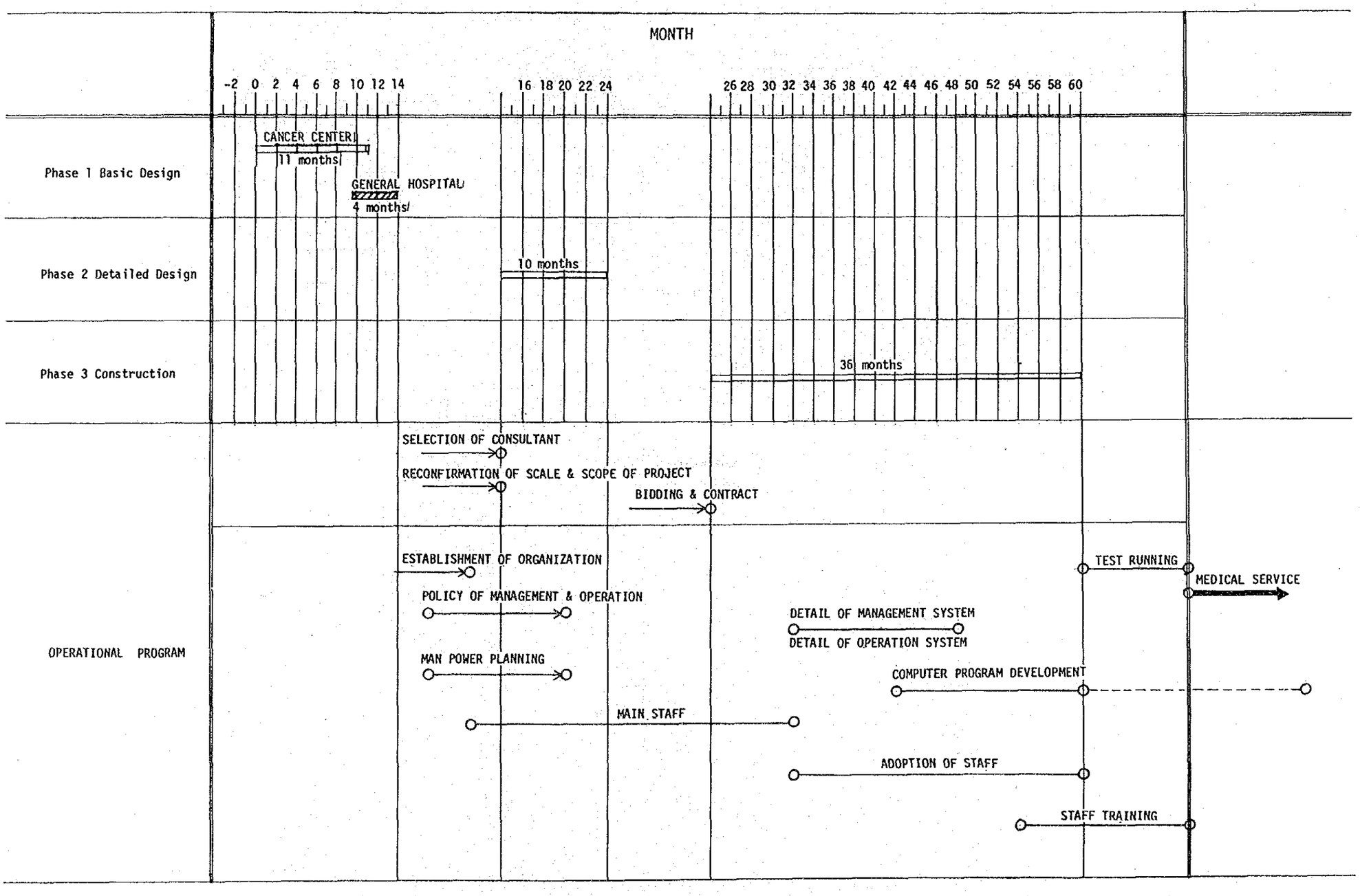


6. CONSTRUCTION AND IMPLEMENTATION SCHEDULE

6. CONSTRUCTION AND IMPLEMENTATION SCHEDULE

6.1 Project Schedule

PROJECT SCHEDULE

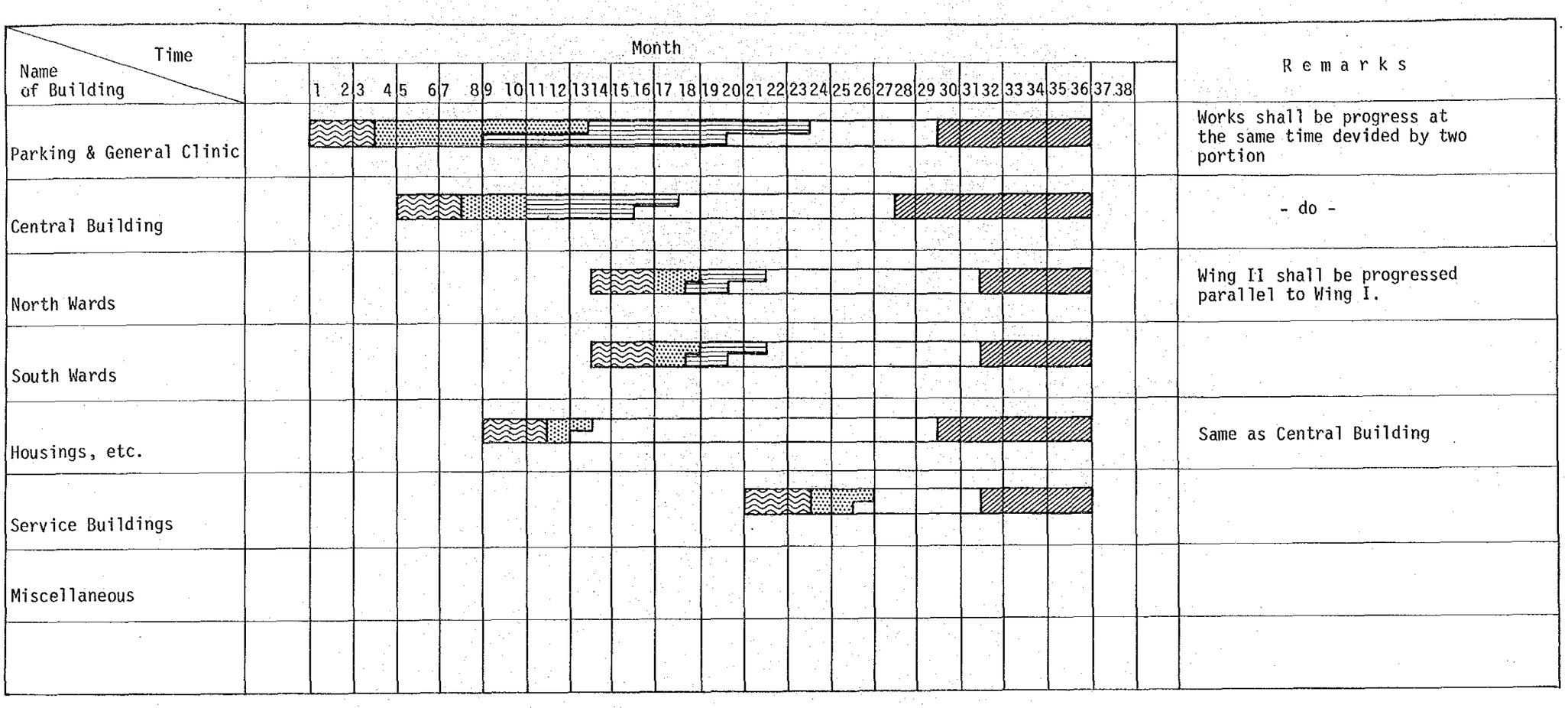


6.2 Schedule of Detail Design

ITEM \ MONTH	-2	-1	1	2	3	4	5	6	7	8	9	10	11
	10 MONTHES												
MEETING WITH M.O.H IN SAUDI ARABIA		⬭			⬭		⬭			⬭			⬭
ITEMS BE DISCUSSED, CONFIRMED & APPROVED		DESIGN CONDITION SCOPE OF WORK SCHEDULE BUDGET			FLOOR PLAN ROOM LAYOUT MANAGEMENT POLICY OPERATION POLICY MEDICAL EQUIPMENT LAYOUT		RECONFIRMATION			FINAL CONFIRMATION CONSIDER POSSIBLE TENDERER			FINAL APPROVE TO TENDER
DRAWINGS			- PLANS - FINISH LIST - ELEVATIONS - SECTION - ROOM LAYOUT SKETCH - DETAIL SKETCH - DETAIL STANDARD			DETAIL DRAWINGS ROOM ELEVATION ROOM DETAIL PLAN		DETAIL DRAWINGS		CHECK FOR CONTRACT			
GENERAL CONDITION SPECIFICATION			- POLICY - STANDARD SPEC.			STANDARD SPEC. SPECIAL SPEC.		SPECIAL SPEC.		CHECK FOR CONTRACT			
BILL OF QUANTITITES										CHECK FOR CONTRACT			
PRICING													
PRINTING OF DOCUMENT													
DELIVERY OF DOCUMENT													

6.3 Construction Schedule

CONSTRUCTION SCHEDULE



Note: 1. Legend

- Temporary Work
- Earth Work
- Sub-structure Work
- Super-structure Work (Inc. curing, taking-off form)
- Finish Work (Inc. Setting medical equipment, Inspection)

2. Calculation of Schedule is adopted the following figures.

   a. Work capacity of earth excavation : 1000 m^3/day for each portion

   b. Work capacity of concrete form : 300 m^2/day for each portion (Assumed that form work decides the clitical path)

3. More than 6 countractors will be required to progress speedily to these works.

7. PROJECT COSTS

7. PROJECT COSTS

7.1 General Hospital Construction Cost

i) Hospital (28,220 M^2)

	Construction Cost (SR)	Unit Cost (SR/M^2)
Architectural	110,611,000	3,920
Electrical	20,089,000	710
Sanitary & Plumbing	14,350,000	510
HVAC	23,252,000	825
Elevator & Lift	4,286,000	150
Furniture & Equipment	9,718,000	345
Total	182,306,000 (12,761,000 x 10^3 yen)	6,460 (452,000 yen/M^2)

ii) Emergency Control Center (110 M^2)

	Construction Cost (SR)	Unit Cost (SR/M^2)
Architectural	301,000	2,740
Electrical	132,000	1,200
Sanitary & Plumbing	56,000	510
HVAC	77,000	700
Furniture & Equipment	12,000	110
Total	578,000 (40,460 × 10^3 yen)	5,260 (368,000 yen/M^2)
i) + ii) Building Total (28,330 M^2)	182,884,000 (12,801,880 x 10^3 yen)	6,455 (452,000 yen/M^2)

iii) Medical Equipment 54,430,000 (3,810,000 x 10^3 yen)

iv) Management Equipment 7,529,000 (527,030 x 10^3 yen)

i) + ii) + iii) + iv) Total	244,843,000 SR (17,139,010 x 10^3 yen)	8,640 SR/M^2 (605,000 x yen/M^2)

7.2 Construction Cost of Total Complex

i) Hospital Zone

	FL. AREA	SR	SR/M²
(1) Cancer Center	21,470	163,670,000	7,623
(2) Joint Use	45,450	327,190,000	7,199
(3) General Hospital	28,220	182,306,000	6,460
(4) Utilities Center	7,080	156,220,000	22,065
(5) Parking Building	95,800	207,980,000	2,170
(6) Mosque	1,100	14,780,000	13,436
(7) Overnight Acom.	2,910	12,310,000	4,230
(8) Emergency Control Center	110	578,000	5,260
(9) External Works (Incl. 130 M² Guard House)	130	30,840,000	-
(10) Medical Equipment (C.C.+J.U.)	-	214,290,000	3,202
(11) Medical Equipment (G.H.)	-	54,430,000	1,929
(12) Management Equipment (C.C.+J.U.)	-	41,540,000	621
(13) Management Equipment (G.H.)	-	7,529,000	267
(1) ∿ (13) Total	202,270	1,413,663,000 (98,956,410 x 10³ yen)	6,989 (489,230 yen/M²)

ii) Housing Zone

(14) Housing	52,450	219,490,000	4,185
(15) Recreation Center	1,040	8,630,000	8,298
(16) External Works (Incl. 30 M² Guard House)	30	33,800,000	-
(14) ∿ (16) Total	53,520	261,920,000	4,894
(1) ∿ (16) Grand Total	255,790	1,675,583,000 (117,290,000 x 10³ yen)	6,551 (458,570 yen/M²)
* (1)+(2)+(3)+(4)	102,220	829,386,000 (58,057,020 x 10³ yen)	8,114 (567,960 yen/M²)

7.3 Consultant Service Fee and Cost (for total complex)

Total service fee and cost: SR 76 million

- Detail design fee and cost (including tender assistance service): SR 34.5 million
- Supervising service fee and costs with one year maintenance Service after completion of project: SR 41.5 million

7.4 Conditions for the Estimation of the Construction Costs and Consultant Service Fee and Cost

- Estimation is made on the premises that the proposed plan will be implemented as is shown in the Report.
- Estimation of consultant service fee and cost is shown as standard figures.
- Exchange rate: 240 yen = US$1
  70 yen = SR1
- Development cost of computer soft wear is excluded.
- Escalation is not considered.
- ZAKAT and tax are not included.
- General conditions and conditions of contract will be provided in both English and Arabic texts, but other tender documents will be provided only in the English text.

APPENDIXES

APPENDIXES

A.1 Resumé of Meetings

Resumé of Meetings
on the General Hospital Establishment Project
in the Kingdom of Saudi Arabia

1. The Japanese Mission headed by Dr. Teruhiko Saburi, Director General, the National Institute of Hospital Administration, Ministry of Health and Welfare visited the Kingdom of Saudi Arabia in May 1983 and had a series of discussions with Dr. Adnan Jamjoom, Superintendant for Western Province Health Affairs, Ministry of Health, concerning the basic design of the General Hospital adjacent to the National Cancer Centre in Jeddah, Kingdom of Saudi Arabia (hereinafter referred to as the General Hospital).

2. As a result of discussions, both sides reconfirmed the general framework of cooperation defined in the Resumé of Meetings of April 6, 1983 and agreed upon the Basic Concept attached hereto.

3. The Japanese mission expressed its intention to start a basic design study on the General Hospital on the basis of the agreed Basic Concept. Both sides agreed that the details and procedures of the study shall be provided for in the Scope of Works attached hereto.

In Jeddah, 29 May, 1983

Dr. Teruhiko Saburi
Head of the Japanese Mission

Dr. Adnan Jamjoom
Superintendant for Western Province Health Affairs, Ministry of Health

A.2 Scope of Works (Attachment I)

Attachment I

SCOPE OF WORKS

FOR

BASIC DESIGN STUDY

OF

THE GENERAL HOSPITAL ESTABLISHMENT PROJECT

IN

THE KINGDOM OF SAUDI ARABIA

1. Introduction

Within the framework of cooperation defined in the Resume of Meeting of April 6, 1983, concerning the General Hospital Project in the Kingdom of Saudi Arabia (hereinafter referred to as the General Hospital), the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of technical cooperation programme of the Government of Japan, will conduct the study in close cooperation with the Saudi Authorities concerned, in accordance with the relevant laws and regulations in force in Japan.

2. Objective of the Study

The objective of the Study is to formulate a basic design of the General Hospital adjacent to the Naitonal Cancer Centre in Jeddah on the basis of the Basic Concept agreed upon between Japan and the Kingdom of Saudi Arabia as attached herewith (Attachment-II).

3. Outline of the Study

The Study will entail field survey in Saudi Arabia and home work in Japan. Items to be covered by the Study are as follows:

(1) basic design

(2) implementation schedule

(3) cost estimation

4. Report

The JICA will prepare and present the following reports in English to the Ministry of Health.

(1) Draft Basic Design Report-I

a. 60 copies

b. within five (5) weeks after the commencement of the Study.

(2) Draft Basic Design Report-II

a. 60 copies

b. within five (5) weeks after the field survey

c. the Ministry of Health shall provide the JICA with its comments within two (2) weeks after receipt of Draft Basic Design Report-II.

(3) Final Report

a. 60 copies

b. The JICA shall present the Report within one (1) month after the receipt of the comments on the Draft Basic Design Report-II.

5. Undertaking of the Saudi Side

To facilitate smooth performance of the Study in the Kingdom of Saudi Arabia, the Saudi side shall take necessary measures:

(1) to provide the Study Team with available data and/or informations.

(2) to make arrangements for the Study Team to collect data and/or informations necessary for the Study.

(3) to assign three counterparts

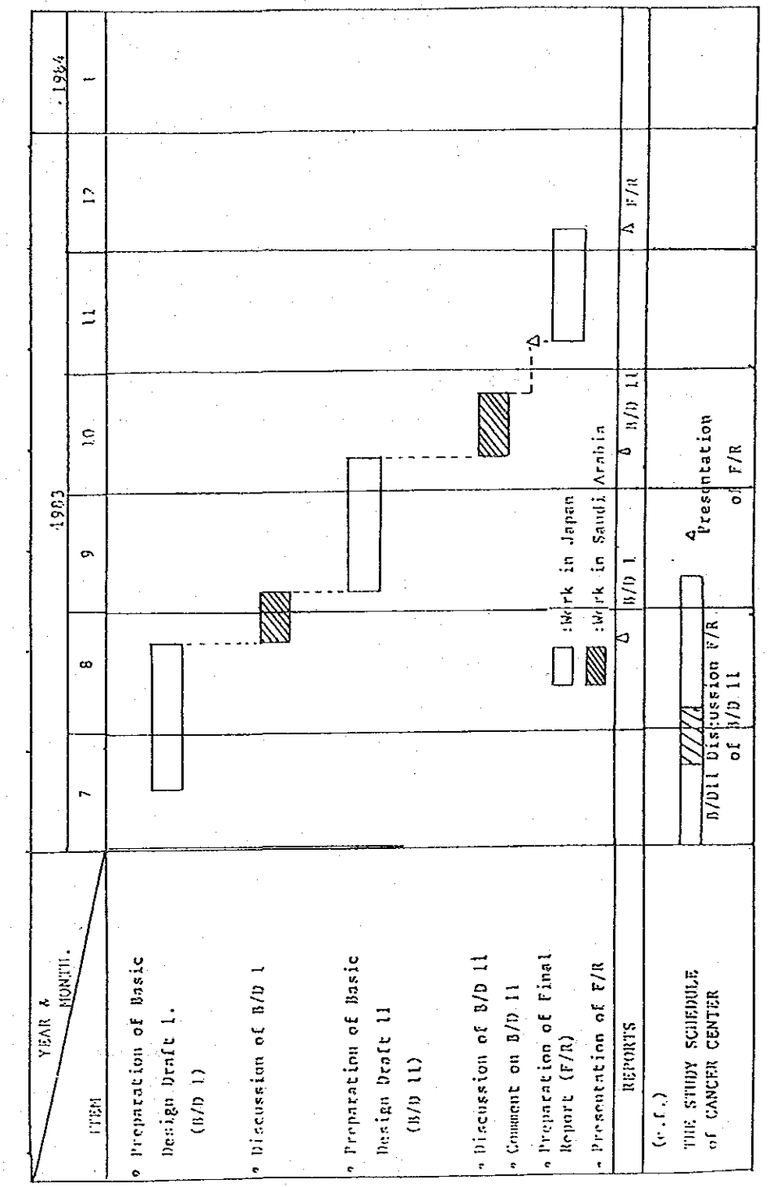
a. a doctor for medical field

b. a doctor for medical equipment

c. an engineer for architectural design

(4) to provide one office room for the Study Team.

THE STUDY SCHEDULE (TENTATIVE)



A.3 Basic Concepts (Attachment II)

Attachment II

Basic Concept of the General Hospital
in Jeddah
in the Kingdom of Saudi Arabia

The proposed General Hospital is expected to provide

(1) a focal point of medical care as a central, general hospital in the western region of the Kingdom

(2) a place for training of doctors, nurses and other para-medical staff, in close relation with such educational institutions as the King Abdul-Aziz University

(3) a centre of medical information as well as infectious disease surveillance

(4) ~~such~~ public health activities and clinical research works ~~as~~ are necessary, in addition to the high standard diagnostic and thereapeutic functions

1. Functional Plan for the General Hospital

(1) Administration

o Function is shared with the cancer centre.

(2) Medical Care Service

o Casualty/Emergency

o Internal Medicine --- General Medicine & Infectious medicine
- Gastroenterology
- Cardiovascular Medicine
- Pulmonary Medicine
- Hematology

- Parasitology
- Hemodialysis

o Surgery ---------- General Surgery
- Abdomen Surgery
- Cardiovascular & Pulmonary Surgery
- Neurosurgery
- Orthopedics
- Pediatric Surgery
- Burn Surgery & Plastic Surgery

o Others ---------- Obstetrics
- Gynaecology
- Pediatrics
- Dermatology
- Urology
- E.N.T.
- Ophthalmology (including Ophthalmic Surgery)
- Psychiatry
- Pain clinic
- Dentistry

Facilities to be shared with the Cancer Centre

- Radiology
- Clinical Laboratory
- Endoscopy
- Rehabilitation
- Anesthesiology
- Pharmacy

- Blood Management
- Central Sterile and Supply Department (C.S.S.D.)
- Operating Theatres
- Pathology/Autopsy

(3) Nursing

Progressive Patient Care (P.P.C.) is introduced for the effective use of limited skilled nursing staff.

2. Design Policy

(1) Site: 140,000m^2 (the same site for the Cancer Centre).

(2) Principle: Functional, efficient and comfortable (for both patients and hospital staff)

o floor space: 1st phase 350 beds 27,550m^2 (78.5m^2/bed)
2nd phase 500 beds 34,800m^2 (69.6m^2/bed)

joint-use facilities with the Cancer Centre
1st pahse 48,900m^2 (61.10m^2/bed)

o future extention: future extention of 150 beds is to be taken into account
flexible planning so that future extention of the diagnostic and therapeutic departments can be accommodated

o Saudi customs: segregation of different sexes
VIP rooms
(particular attention is given to other religious, cultural and local customs)

(3) O.P.D.

o General Clinics and Special Clinics:
diagnostic and therapeutic services for first-visited patients and re-visited patients except for emergency cases

o General Clinics : preliminary clinics (for Cancer Centre as well)

o Special Clinics : Secondary clinics

o Number of emergency cases: 250 p./day

o Number of out patients : 2,400 p./day
mainly referral patients
excluding 600 p./day for the Cancer Centre

1,400 p./day for preliminary clinics including re-visited mild cases

o Medical Services

- I.C.U. 12 beds
- C.C.U. 6 beds
- Burn's Unit 8 beds
- Isolation 12 beds
- V.I.P. bed About 5% of the total number of beds
- Delivery 3 delivery tables
- Nursery

- Special Care Baby Unit

  8 incubaters

  4 N.I.C.U. beds

- Hemodialysis

  4 beds both for inpatients and outpatient

  cooperation with renal transplanting surgery will be considered.

- Hyperbaric Chamber

o Education and Training : Under- and post-graduate education/ training for the medical students from medical schools, doctors, nurses and para-medical staff from other hospitals

The educational and training facilities in the wards and related departments,

o Research : Clinical research department of the Cancer Centre will be shared.

Some space will be secured in the relevant departments and wards for necessary clinical research activities

o Public health services: Infectious disease serveillance, health education, health consultation, health check-up and other public health services should be provided.

(4) Number of staff, staff residences and other related facilities

o Number of staff (minimum requirements):

	1st phase (350 beds)	2nd phase (500 beds)
Physicians	70 (30 senior staff)	100(40 senior staff)
Nurses	225	300
Technicians	(Pharmacists, X-ray technicians, Rehabilitation staff etc.), Laboratory technicians	
	Common to the staff in the Cancer Centre	
Others	260	350
Total	555	750

o Facilities to be shared with the Cancer Centre

- Mosque
- Parking lot (both for patients and staff)
- Staff Residences
- Overnight accommodation for the relatives of inpatients
- Recreation facilities
- Department Stores
- Banks
- Post Office

Appendix 1.

Space Plan for the exclusively used facilities
in the General Hospital

Department	floor area (m^2)	floor area per bed (m^2)	Remarks
Wards	18,250	52.14	350 beds
O.P.D.	5,250	15.00	Incl.Emergency & Day Surgery
Diagnostic & Therapeutic	3,250	9.28	Incl. ICU, CCU, Besrr's Hemodialysis etc.
Services	800	2.29	
Total	27,550	78.71	

Appendix 2.

Space Plan for jointly used
facilities in the General Hospital (for 800 beds)

Departments	floor area (m^2)	floor area per bed (m^2)	Remarks
O.P.D.	4,550	5.68	Preliminary Clinics
Diagnostic & Therapeutic	14,600	18.25	Diagnostic, X-ray Clinical Laboratory, Physiology Examination, Endoscopy, Blood Bank, Pharmacy, Operating Theatres, Autopsy
Admin.	6,700	8.34	
Services	21,050	26.31	C.S.S.D., Catering Dept., Restaurant, Staff Locker Rms., Mechanical Rms., Stores, Post-mortem Rm.
Recreation	2,100	2.63	
Total	42,300	52.88	

A.4 Minutes of Meetings

MINUTES FOR THE GENERAL HOSPITAL DISCUSSIONS

Date & Time : 14th, Aug, 1983, PM 6:00 - PM 8:00

Place : Ministry of Health, Western Region
conference room in 6th floor

Attendants : Saudi Arabia

* Dr. Adnan Jamjoom
Superintendant of Health Affairs,
Western province, M.O.H.

* Dr. Hassan Ghaznawi
Deputy Director General of Health.
in the Western Region M.O.H.

Japan

* Dr. Teruhiko Saburi Japanese advisory Committee
* Dr. Tatsuo Wada "
* Mr. Akitoshi Matsumoto "
* Mr. Masafumi Yamamoto Japanese Embassy
* Mr. Masaru Masuda "
* Mr. Yukihisa Sakurada JICA
* Mr. Mamoru Nakajima Japanese Study Team
* Mr. Haruhide Ohno "
* Mr. Shunran Takahashi "
* Mr. Genji Suganuma "
* Mr. Shunji Kawada "

Articles Submitted :

1) General Hospital Draft Basic Design Report I 30 copies
2) General Hospital Draft Basic Design Report II 30 copies

According to the articles submitted the discussions have been carried out, as the results following items were pointed out and confirmed.

1.O.P.D.

- O.P.D plan of alternative B was basically approved.
- Capacity of waiting space in O.P.D section is about 300 patients
- Lobby will be used as relatives waiting area
- Basically male and female have own waiting corridor but for some department like internal medicine or surgery male and female will share the same corridor when some examination rooms will he used for specialized purpose.
- Restroom (2 - 3 beds) are necessary after minor operation in the centralized treatment area.

2. CASUALITY

- Proposed plan was basically approved
- Entrance controle of relatives shall be done by putting small reception next to police office to avoid those relatives coming into treatment room with patient.
- Washing - vomitting - examination spaces next to treatment shall be rearranged.
- Donner's blood test will cover typing (incl RH),and cross-matching

3. DELIVERY & BABY NURSERY

- Proposed plan was basically approved
- Relatives/husbands who accompany with pregnant ladies shall change cloths befor they enter into labor room
- Changing rooms for relatives will be rearranged in the waiting area.
- Clean zones (both Delivery and Baby Nursery) was discussed and approved.

4. HEMODIALYSIES

- Proposed paln was basically approved

5. I C U & C.C.U.

- Proposed paln was basically approved
- Communication system for I C U. C.C.U. patients are as follows

  C.C.U. patients - Telephone system
  I C U patients - Telephone (inter communication system type)

6. WARD.

- Proposed plan was basically approved
- Post I C U ward and Burns ward shall be blocked
- In pediatrics ward 5 - 6 beds room shall be re-arranged as 3 beds room type.
- In surgical wing of pediatrics ward pediatric ICU with laminor flow system was required and further studies will be made.
- In burns unit a part of ward shall be planned with higher class of cleanlines and the system shall be further studied.
- The purposes of isolation ward was reconfirmed.

Mr. Mamoru Nakajima
Leader of the Japanese
Study Team.

Dr. Adnan Jamjoom
Superintendent of
Health Affairs
Western Province
The Kingdom of Saudi Arabia.

Dr. Adnan Jamjoom
Superintendent of
Health Affairs
Western Province
The Kingdom of
Saudi Arabia

22nd, Aug, 1983

Dear Sir,

We are pleased to submit you the "Summary of the Technical Meeting for the General Hospital Project" which was held on 21st, Aug, 1983 with M.O.H. Headquarterter (Dr. K.M.MORAD AREFIN)

Also we wish to express our gratitude for arranging the visits of many hospitals both in Jeddah and Riyadh which had given us a greate helps for designing the hospital

Si ncerely yours

Enclosure

"Summary of the Technical
Meeting for the General Hos pital

Mamoru Nakajima
Leader of the Japanese
Study Team

SUMMARY OF THE TECHNICAL MEETING FOR THE

GENERAL HOSPITAL

Date & Teime : 21st, Aug, 1983 AM 9:00 - PM 1:00

Place : Ministry of Health, Headquarter
Conference room in 2 nd floor

Attendants : Saudi Arabia

* Dr. K.M. Morad Arefin
Dipl. Engineer, M.O.H.

Japan

* Mr.mamoru Nakajima Japanese Study Team
* Mr. Haruhide Ohno "
* Mr. Shunji . Kawada "

MINUTES FOR THE GENERAL HOSPITAL DISCUSSIONS

Date & Teime : 15th, Aug, 1983 PM 6:00 - 7,00

Pleade : Ministry of Health, wes tern Region
Conference room in 6th floor

Attendants : Saudi Arab ia

* Dr. Adnan Jamjoom
Superintendent of Health Affair s,
Westernprovince, M.O.H.

* Dr. Mustafa Khagali
Prof, of Community Medicine

Japan

* Dr. Terdhiko Saburi Japanese advisory Committed
* Dr. Tatsuo W ada "
* Mr. Akitoshi Matsumoto "
* Mr. Masafmi Yamamoto Japanese Embassy
* Mr. Masaru Masuda "
* Mr. Yukihisa Sakurada JICA
* Mr. Mamouru Nakajima Japanese Study Team
* Mr. Haruhide Ohno "
* Mr. Shurnran Takahashi "
* Mr. Genji Suganuma "
* Mr. Shunji Kawada "

Following items were discussed and confirmed

1- Room for physiotherapist in I.C.U. Department.

- Necessity of the room for physiotherapist in I.C.U. Department was explained by Saudi side and confirmed that the breathing exercices to the pulmonary case patient after operation is effective to quick recovery

2- Pediatric I.C.U.

- The matter was again discussed further and confirmed as follows :
- From the psychlogical point of view pediatric I.C.U. is recommended to put separately from I.C.U. for adults
- From the view point of saving nursing care manpower to put pediatric I.C.U. in the pediatric ward does not give the sharp increase of manpower in pediatric ward.

3- Medical Equipment

- Medical Equipment lists were read through andSaudi side reguested to he given a time to check them and promised to give comments within 4 (four) weeks and send them to the study team through Japanese Embassy

4- Project Schedule

- Following items were reconfirmed as is already confirmed in the meating on 13th Aug, 1983.
- Construction phase 36 months
- Detail Design phase 10 months excluding tender phase

Mr. Mamo ru Nakajima
Leader of the Japanese
Study Team

Dr. Adnan Jamjoom
Superintendent of
Health Affairs
Western Province
The Kingdom of Saudi
Arabia

Dr. Adnan Jamjoom
Superintendent of
Health Affairs
Western Province
The Kingdom of
Saudi Arabia

22nd, Aug, 1983

Dear Sir,

We are pleased to submit you the "Summary of the Technical Meeting for the General Hospital Project" which was held on 21st, Aug, 1983 with M.O.H. Headquarterter (Dr. K.M.MORAD AREFIN)

Also we wish to express our gratitude for arranging the visits of many hospitals both in Jeddah and Riyadh which had given us a greate helps for designing the hospital

Si ncerely yours

Enclosure

"Summary of the Technical Meeting for the General Hos pital

Mamoru Nakajima
Leader of the Japanese
Study Team

SUMMARY OF THE TECHNICAL MEETING FOR THE

GENERAL HOSPITAL

Date & Teime : 21st, Aug, 1983 AM 9:00 - PM 1:00

Place : Ministry of Health, Headquarter
Conference room in 2 nd floor

Attendants : Saudi Arabia

* Dr. K.M. Morad Arefin
Dipl. Engineer, M.O.H.

Japan

* Mr.mamoru Nakajima Japanese Study Team
* Mr. Haruhide Ohno "
* Mr. Shunji. Kawada "

General Hospital Study Team explained all mechanical and electrical items shown in the Draft Basic Design Report (I) and following items were pointed out by Saudi side but the official Comments on this meeting will be sent to Dr. Jamjoom later by Mr. Arefin for confirmation and will be sent further to the General Hospital Study Team by 15th September, 1983 from M.O.H. office in Riyadh.

1- Codes and Standards

- as aplicable codes and standard British standard (B.S.) German standard (DIN) and French standard shall be added in addition to American and Japanese ones

- All planning and design shall be done in principle using international standard so that international tenderer will be able to apply equally

2- Air conditioning and Ventilating System

- As the temperature in Jeddah 40 degree in Summer is recommended by Saudi side and further study was promised
- Temperature controle range in operation rooms shall be within ±1 degree
- Same above in waiting area can be ±2 degree
- The clause 3.2.1.1.(a) shall be replaced by "reliability + stand-by"
- As to clause 3.2.1.2.(a) "of highest international standard" shall be added.
- Minimum outside air change standard of MOH shall be checked by Mr. Arefin and will be informed to the study team.

3- Plumbing system

- The clause 3.3.1.1.(a) shall be replaced by "reliability + stand-by"
- As to chause 3.3.1.2.(a) "of highest international standard" shall be added.

4- Electrical system

- The clause 3.4.1.1.(a) shall be replaced by "reliability + stand-By"
- As to clause 3.4.1.2.(a) "of highest internation standard "shall be added.
- Grounding system standard generally used in this country will be checked by Mr. Arefin and will be informed to the study team
- Telex and facsimile system shall be provided for jointly use of both Cancer center and General Hospital

Mr. Mamoru Nakajima
Leader of the Japanese
Study Team

23/8/83.
Dr. K.M.Morad Arefin
diplom Enginner
M.O.H.

MINUTES FOR THE GENERAL HOSPITAL DISCUSSIONS

Date & Time : 8th, Oct, 1983, PM 6:00 - 9:00

Place : Ministry of Health, Western Region
Conference room in 6th floor.

Attendants : Saudi Arabia

Mr. Adnan Jamjoom	Superintendent of Health Affairs Western proince , MOH
Dr. Hassan Ghaznawi	Deputy Director General MOH in the Western province
Mr. Ekram	Architect MOH
Dr. K.M. Morad Arefin	Dipl. Engineer,MOH

JAPAN

Dr. Teruhiko Saburi	Japanes Advisory Committee
Dr. Junichiro Kikuchi	"
Dr. Akitoshi Matsumoto	"
Mr. Masafumi Y amamoto	Japanese Embassy
Mr. Sudo	"
Mr. Hirotoshi Ihara	JICA
Mr. Hideo Yasuki	JICA
Mr. Mamoru Nakajima	Japanese Study Team
Mr. Masahide Takarada	"
Mr. Shunji Kawada	"

The General Hospital Study team submitted the Basic Design Draft Final Report to Saudi side and after the discussions the report was basically approved. During the discussions following items were discussed and approved.

1. O.P.D.

- The explanations of 4 alternatives were made and discussed and finally alternative D was approved by Saudi side and the matter will be informed to the National Cancer Center Study Team.

2. Casuality

The Casuality plan including emergency controle center was fully accepted.

3. Delivery and Baby Nursery plan was fully accepted

4. ICU ,CCU

ICU & CCU Plan was fully accepted

5. Ward

- Burns & post ICU ward plan was fully accepcted
- Instead of providing the laminar flow system to pediatric ICU, the request was made to introduce the laminor flow system into all the isolation rooms (4 rooms in pediatric isolation room, and 6 rooms in the suspected isolation wards)

6. Construction cost.

- Construction cost for the General Hospital portion(including emergency controle center) w as explained and basically approved

7. Consultant Service Fee and Cost

- It was agreed that the Consultant Service Fee and Cost will be added to the Final Report.
- The above fee and cost will be presented as a standard figure.

8. Soil Investigation Report was submitted to Japanes Study Team and the Team promised to inform the matter also to the National Cancer Center Study Team.

9. The coments on the medical equipment will be informed to the Japanese Embassy within 2 weeks.

Mr. Mamouru Nakajima
Leader of the Japanese
Study Team

Dr. Adnan Jamjoom
Superintendent of Health
Affairs
Western Province the Kingdom
Saudi Arabia

SUMMARY OF THE TECHINICAL MEETING FOR THE
GENERAL HOSPITAL

Date : 9th Oct , 1983 AM 9:00 - PM 1:00

Place : Ministry of Health , Western Region Conference room in 6th floor

Attendants :

Dr. K.M. Morad arefin	Dipl. Engineer MOH
Dr. Akitos hi Matsumoto	Japanese advisory Committee
Mr. Mamoru Nakajima	Japanese Study Team
Mr. Masahide Takarada	"
Mr. Shunji Kawada	"

The General Hospital study Team explained the technical matters and after the discussions the report was basically approved, During the discussions following items were discussed and approved.

1. Code and standard.
Arrangement will be made for the discription of note in chapter 1.4 using "if" at the beginning of the sentence.

2. Air conditioning and Ventilating system
As Dry bulb temperature in summer in Jeddah 41 dergee Centigrade was accepted.
Indoor Temperature and Humidity standard will be corrected as follows :

(Summer Temperature)
- Storage 26 - 30 degree °C
- Pharmacy , clean utility, Hemodialysis, X-ray, Labo, and nursery 26 - 28 degree °C
- Labor room 24 - 26 degree °C
- Bathing 25 - 28 degree °C
- recovery room 25 - 27 degree °C
- operating room 23 - 26 degree °C

(Summer Humidity)
- Labor romm 50% - 60%
- In other rooms where patients stay or recover 45% - 50% shall be applied.
- In other rooms 10 % band will be applied

(Winter, Temperature)
- Operating room 23 - 26 degree Centigrade , °C
- Labor room 22 - 24 degree °C

(Winter, Humidity)
- All standard approved

-Minimum out side air change standard of M.O.H. will be submitted to the study Team.

3. Electrical system
- Grounding system standard generally used in the Kingdom will be ~~submitted to the study team~~ required for all electical points
- Paging system and wireless communication system shall be put together in the same chapter for convinience of the application

4. General Corrections in wording to be changed to
- Reliability and stand-by → rebiability of equipment and standby capacity
for the clause 3.2.1.1."a" , 3,3,1,1,"a") and 3.4.1.1."a"
- " highest international standard" shall be added for the clause 3.2.1.2.A, 3.3.1.2.A and 3.4.1.2.A.

Mr.Mamoru Nakajima
Leader of the Japanese
Study Team

Dr.K.M.Morad arefin
Diplom Engineer M.O.H.