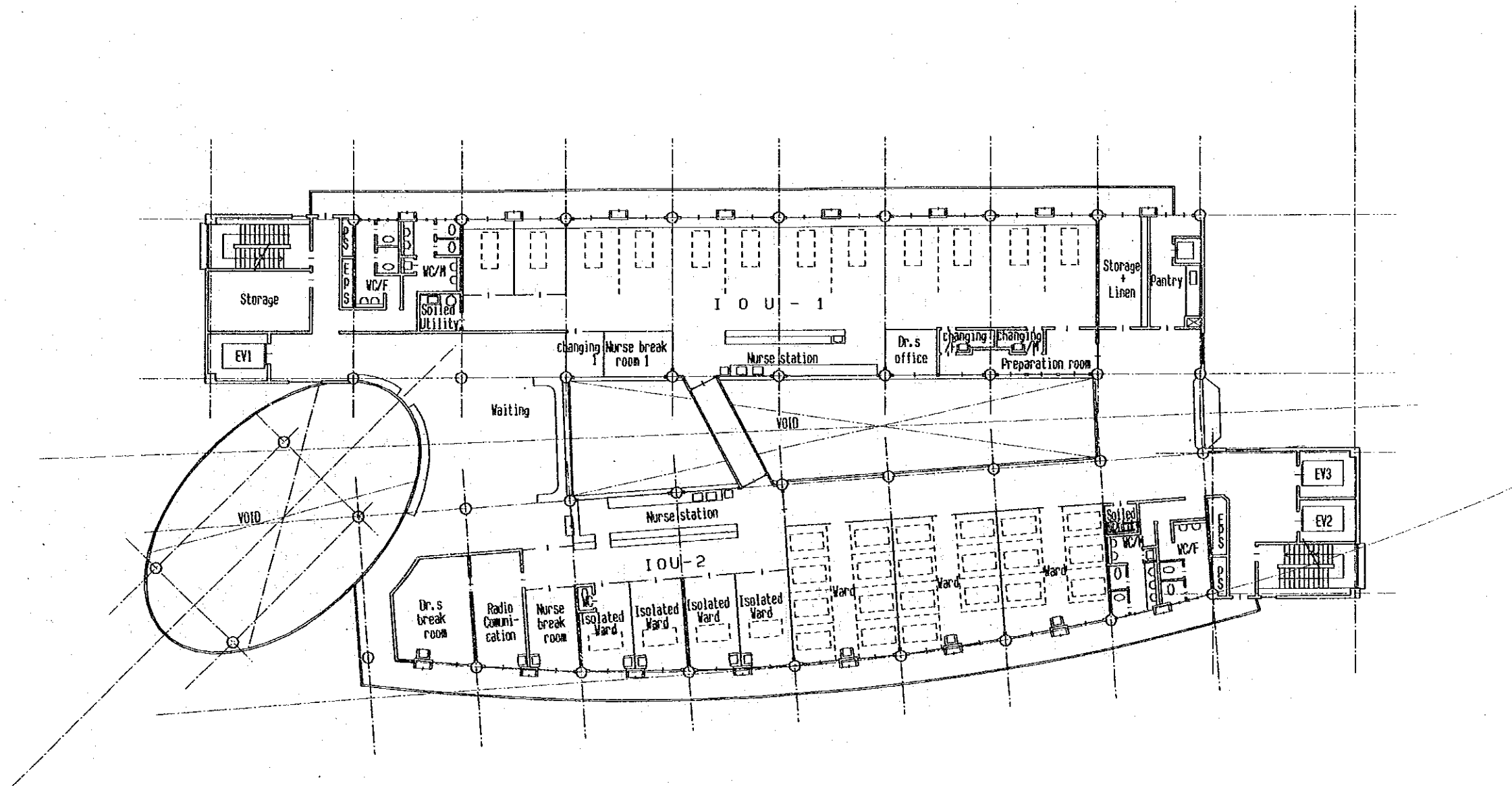
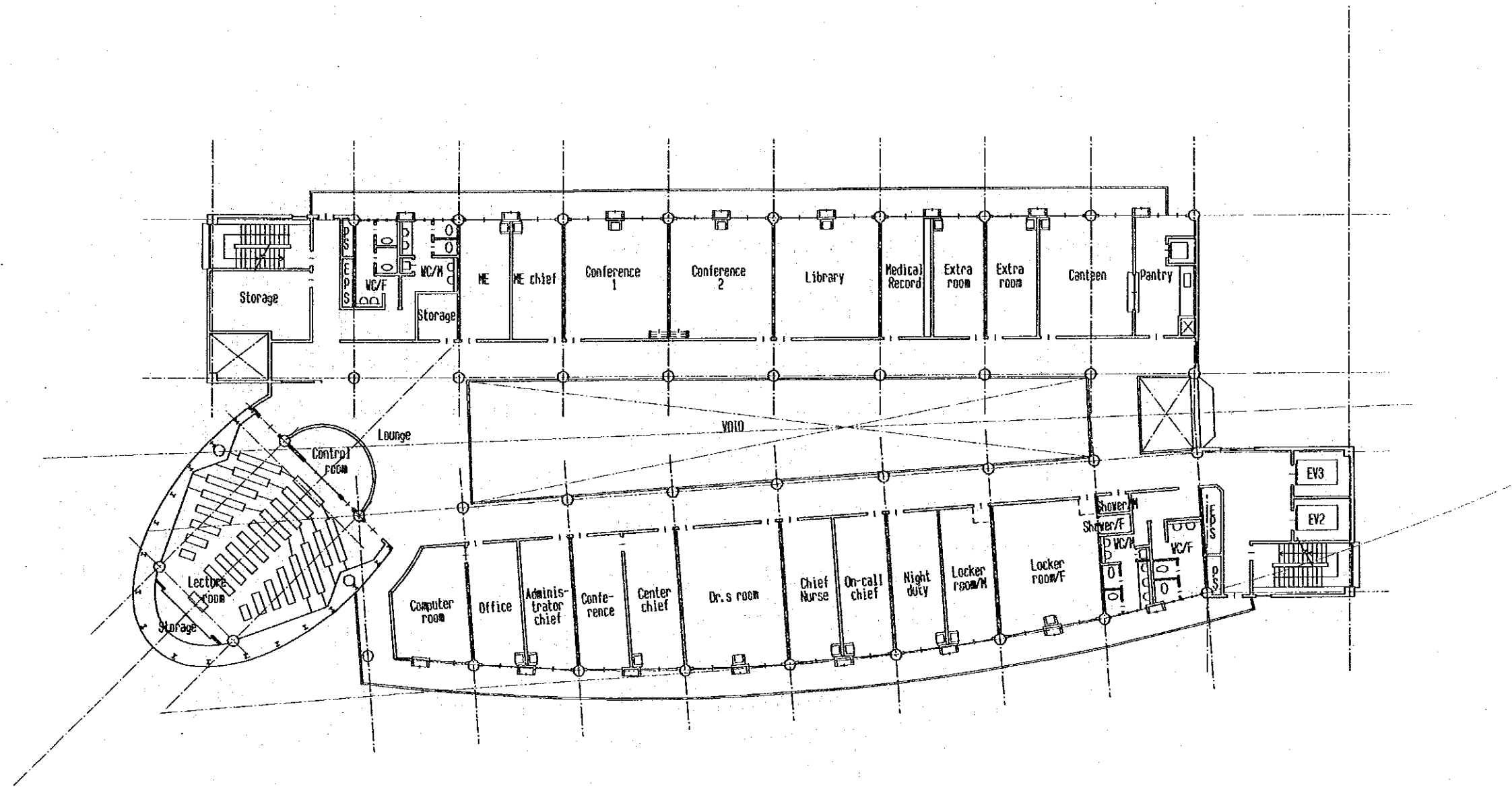


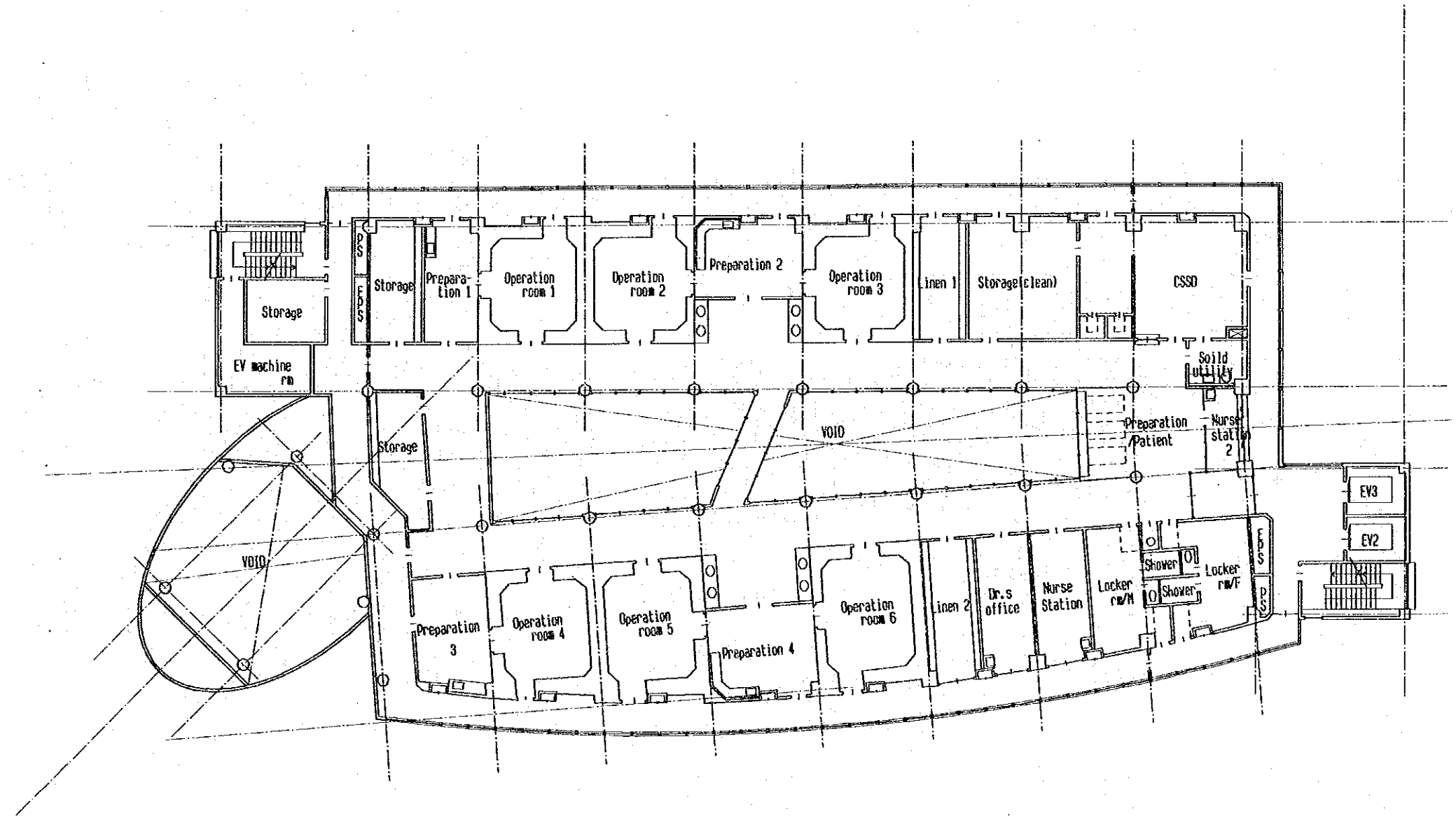
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
 AT DR. SOETOMO HOSPITAL
 2F PLAN / S. 1:300



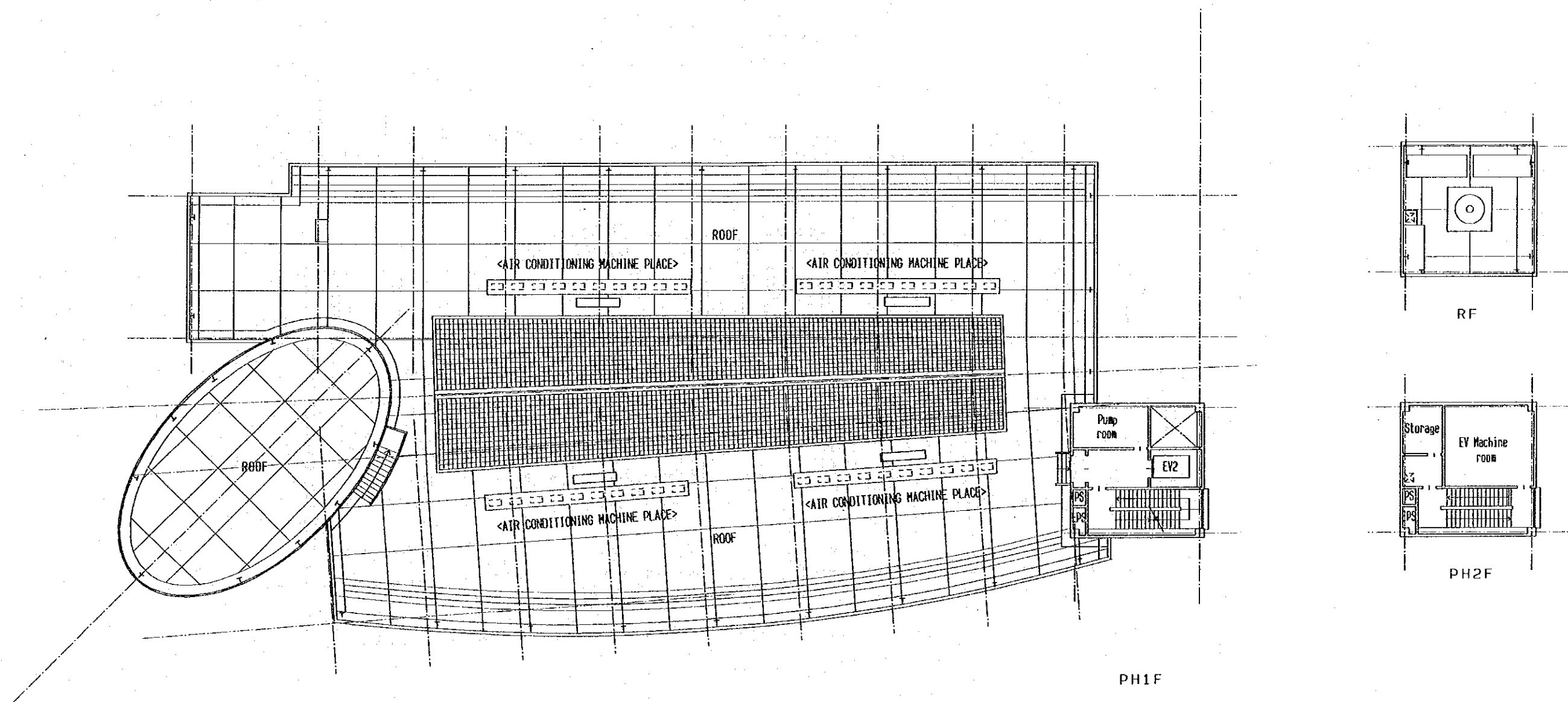
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
 AT DR. SOETOMO HOSPITAL
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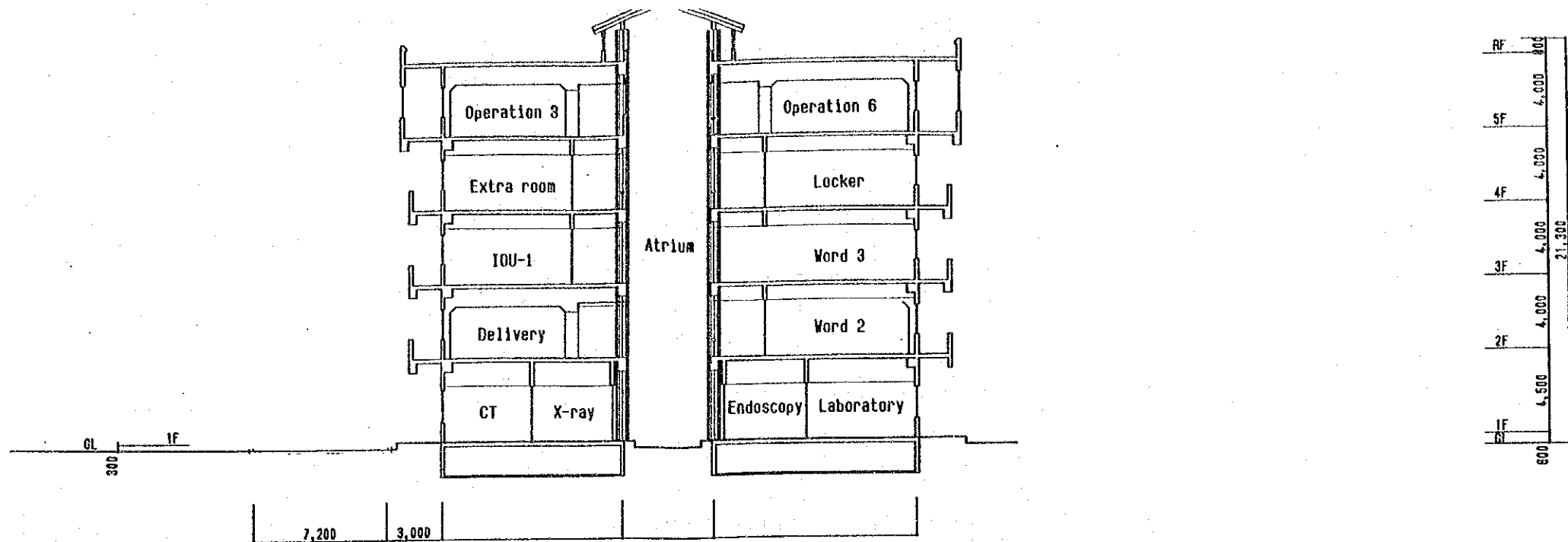
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
 AT DR. SOETOMO HOSPITAL
 4F PLAN / S. 1:300



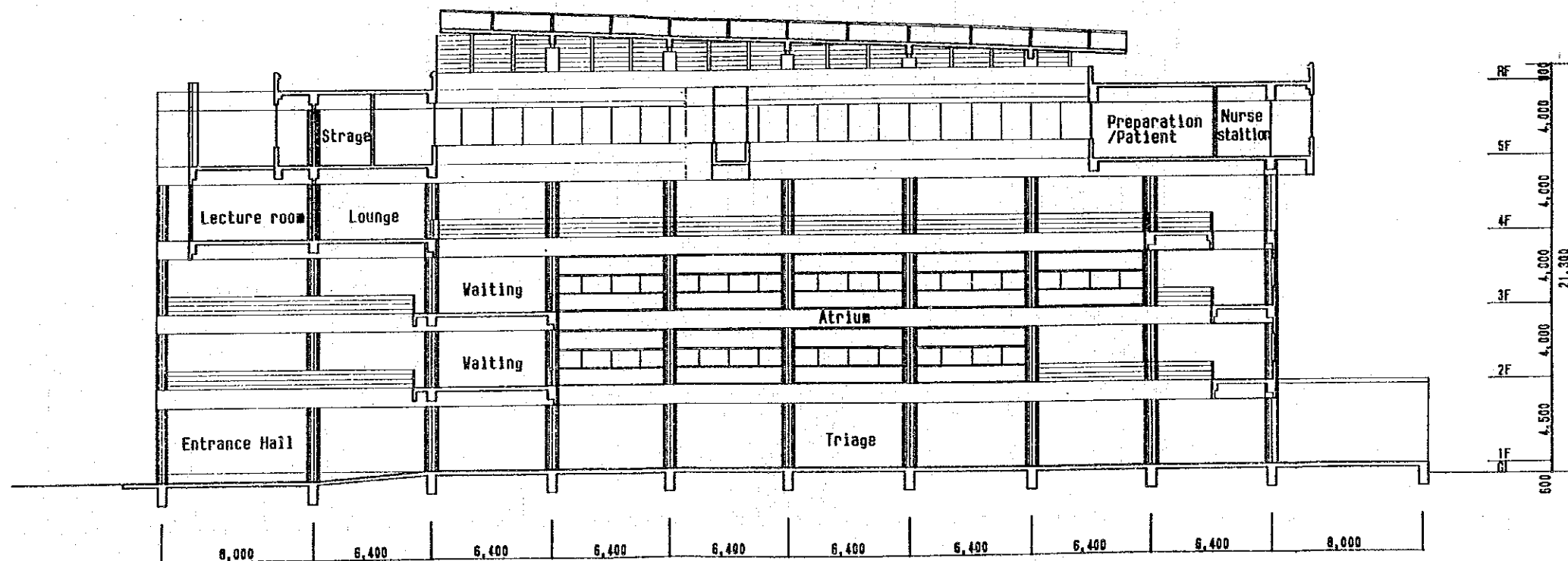
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
 AT DR. SDETOM HOSPITAL
 SF PLAN /S. 1:300



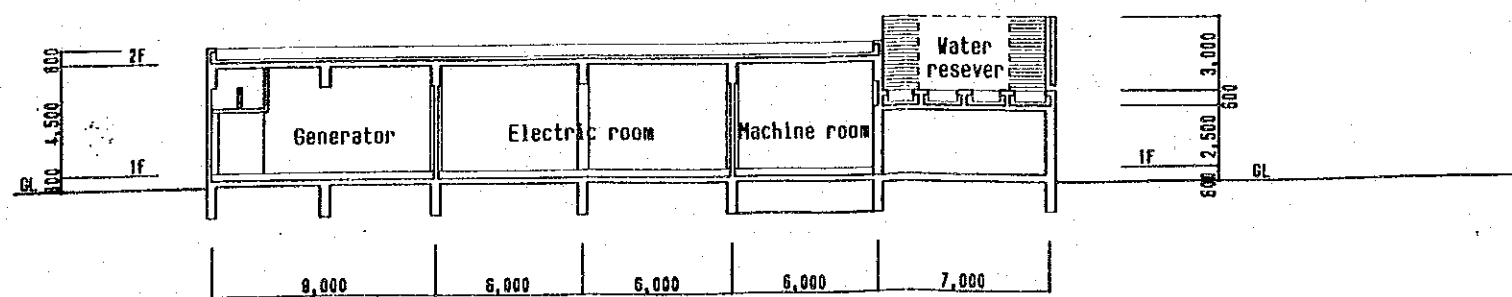
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
 AT DR. SOETOMO HOSPITAL
 ROOF PLAN / S. 1:300



SECTION X-X'

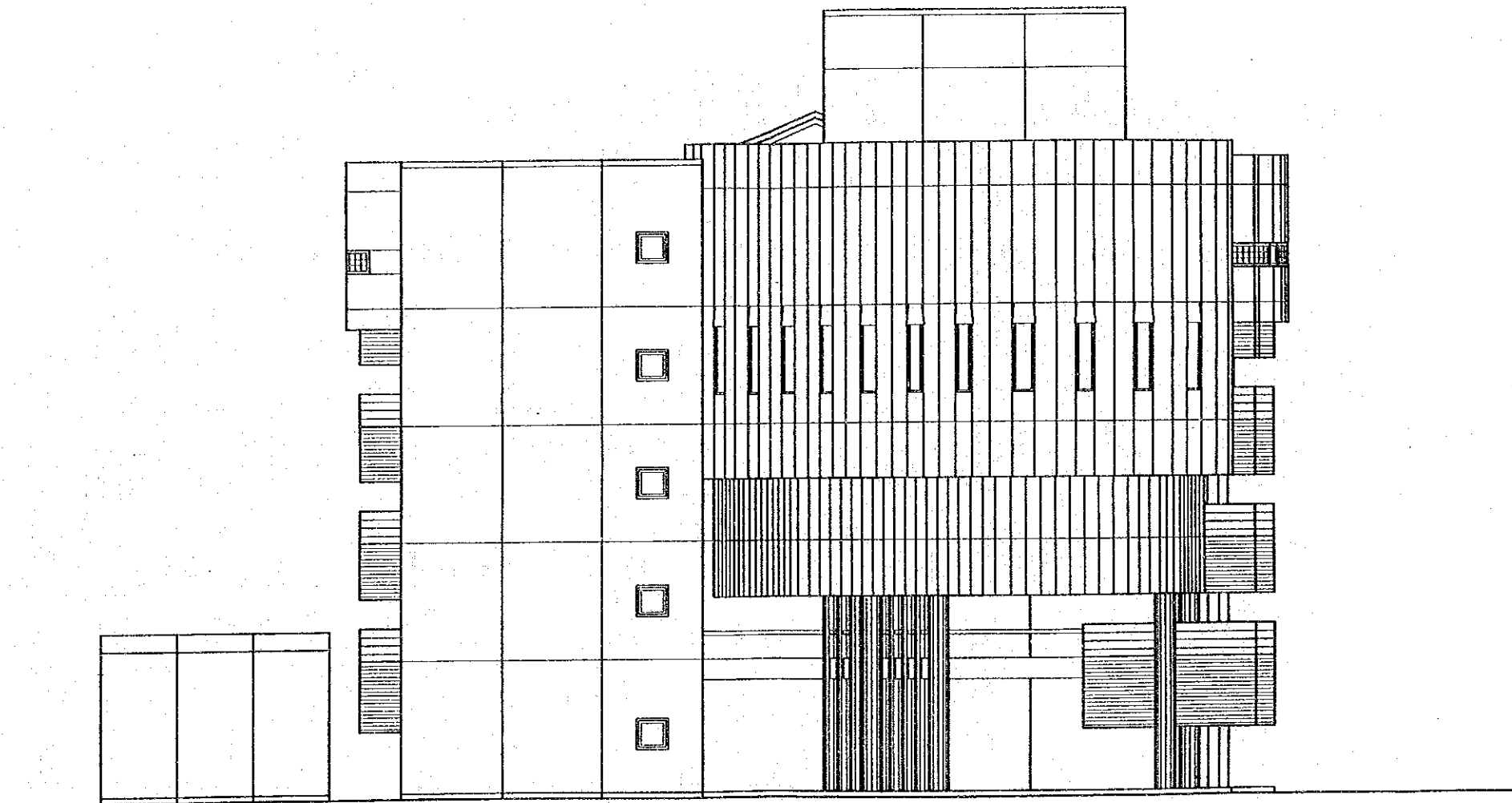


SECTION Y-Y'

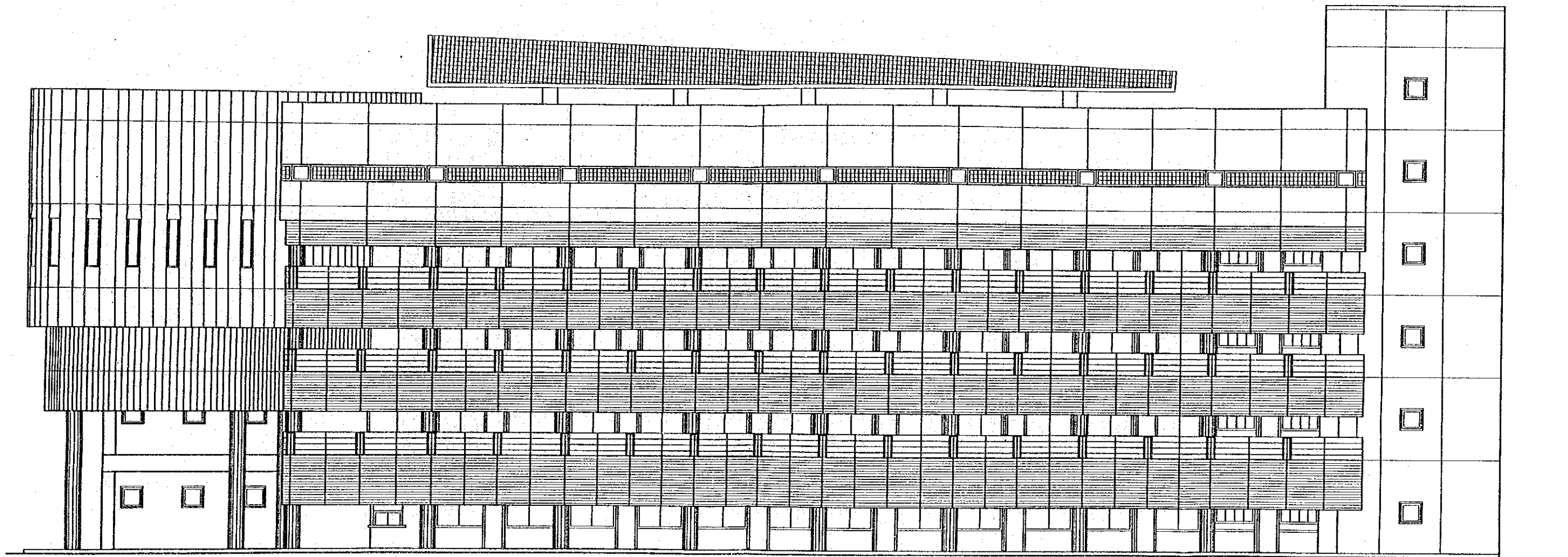


SECTION Z-Z'

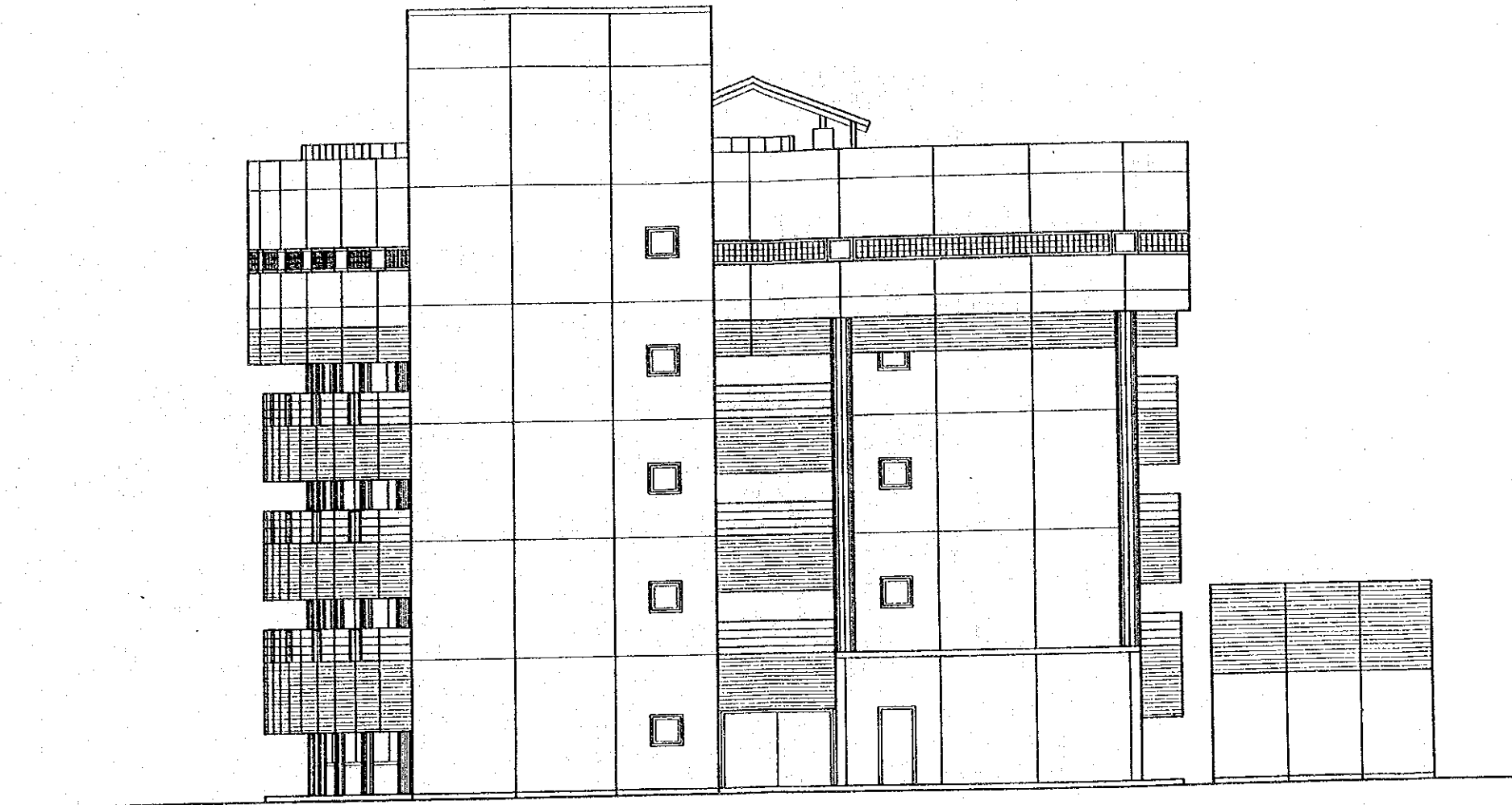
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
 AT DR. SOETOMO HOSPITAL
 SECTION /S. 1:300



THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
AT DR. SUETOMO HOSPITAL
ELEVATION FROM NORTH /S. 1:300



THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
AT DR. SDETOMO HOSPITAL
ELEVATION FROM WEST /S. 1:300



THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
AT DR. SOETOMO HOSPITAL
ELEVATION FROM SOUTH /S. 1:300

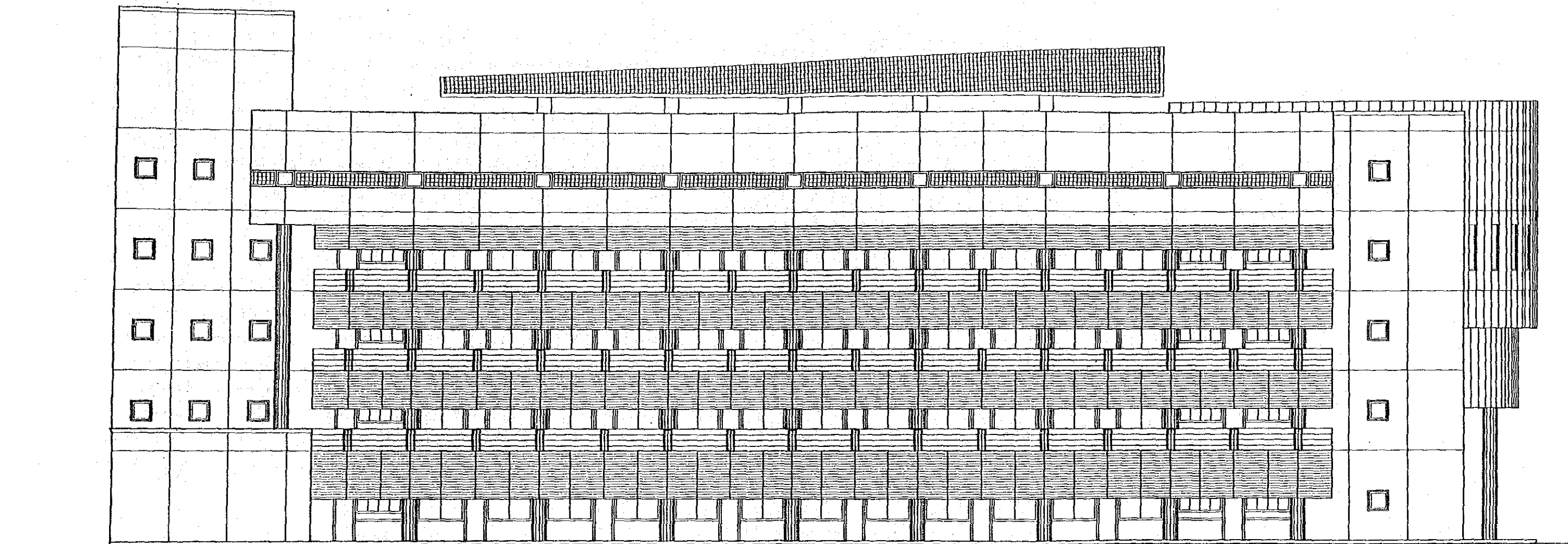


Fig. 4-3-4 (12) Basic Designs
THE PROJECT FOR THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
AT DR. SHETOMO HOSPITAL
ELEVATION FROM EAST /S. 1:300

4-4 Implementation Plan

4-4-1 Implementation Policy

(1) Project Implementation System

This project will be implemented in accordance with the grant aid assistance system of the Government of Japan. The grant aid assistance for this project will begin formally after its approval in a cabinet meeting of the Government of Japan and the signing of the Exchange of Notes (E/N) by the governments of both countries. The Directorate General of Medical Care, Ministry of Health, Republic of Indonesia, will implement the consultant and construction contracts for this project. He will be also be responsible for the implementation of the Republic of Indonesia's work related to this project. The project implementing system is shown in Figure 4-4-1.

(2) Consultant

After the signing of the above mentioned Exchange of Notes, the Directorate General of Medical Care is to conclude a consulting service contract with the Japanese consultant firm which participated in the basic design study for this project. In order to implement this project smoothly, it is important to conclude the contract with the Japanese consultant firm promptly after the signing of the Exchange of Notes. The Japanese consultant, after the verification of the said agreement by the Government of Japan, is to prepare detail design documents such as drawings, specifications, etc., based on the contents of this basic design study. Subsequently the consultant will carry out tender assistance and supervision work.

(3) Contractors

This project consists of construction of the facility and the procurement and installation of the medical equipment. Since the general contractor and trading company can easily cooperate to solve problems which might occur after the execution of the Project, the Project should be done in the form of a joint venture. Within this joint venture, the general contractor for the construction work and the trading company which shall supply and install the medical equipment, should be incorporated in Japan and selected by competitive bidding from prequalified companies. The Directorate General of Medical Care will then conclude the contract with the successful tenderer and will obtain verification of the contract from the Government of Japan.

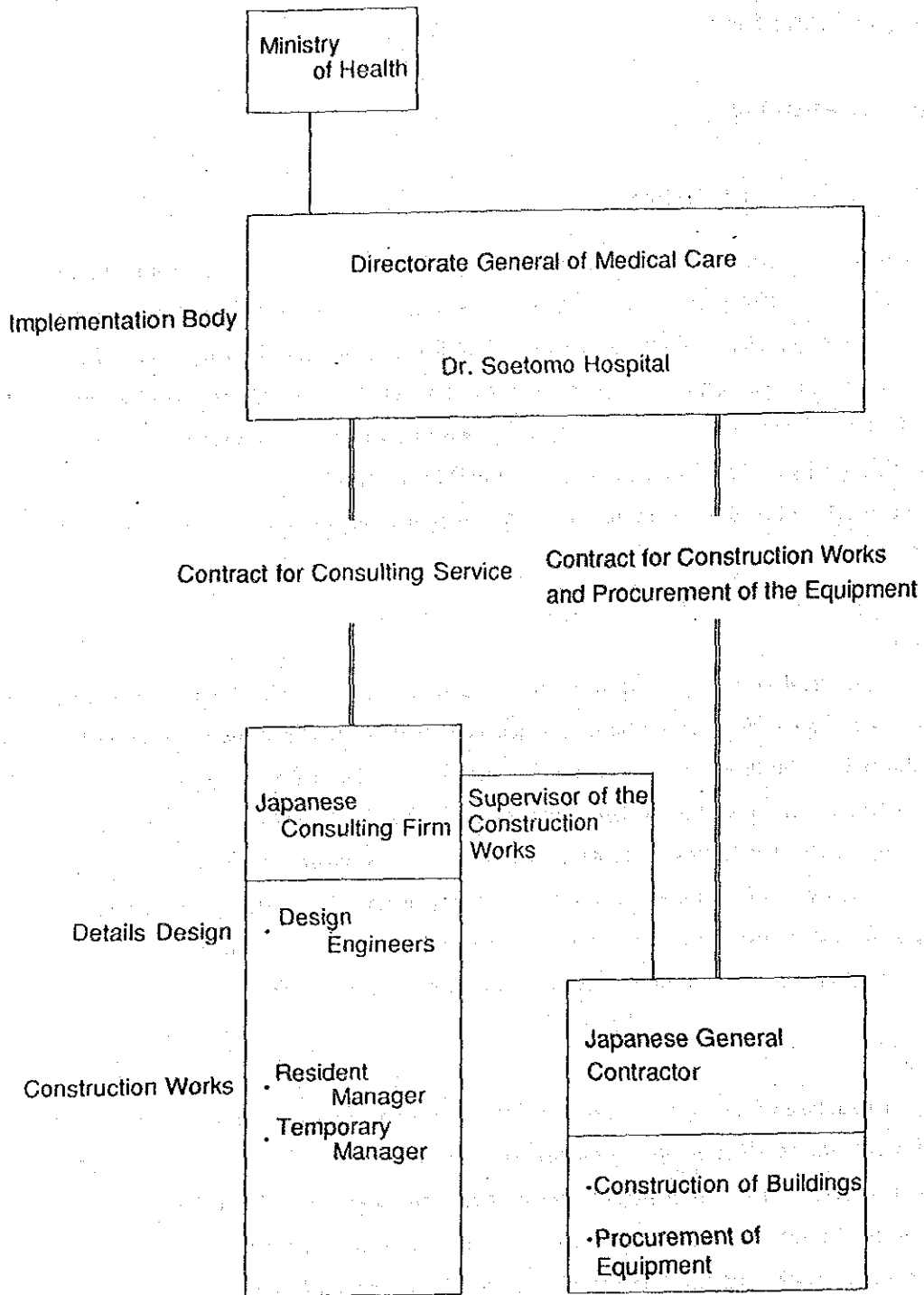


Fig. 4-4-1 System for Project Execution

4-4-2 Construction Conditions and Implementation

(1) Construction Conditions

1) Local consultant

There are substantial numbers of consultants in Jakarta City and Surabaya City. Although companies with improved capabilities in preparing detailed design drawings have increased in recent years, many companies still lack overall cooperation abilities. Since the detailed design of this project will be implemented under the grant aid assistance of the Japanese Government, it will be necessary to implement this project within one fiscal year. Because of the special nature of this project as an emergency medical facility, it will also be necessary for the construction, design and the medical equipment sides to hold frequent discussions in Japan within a short period of time.

For this reason, it will be difficult to request preparation of detailed design drawings required for the project from the local consultant.

2) Local construction company

The construction companies of the Republic of Indonesia belong to either the Construction Industry Association (AKI) or the National Construction Company Union (GAPENSI). When participating in construction of public projects, it is necessary to undergo qualification screening by the Ministry of Public Works and be registered as a qualified company (DRM). Qualified companies are then ranked in A, B and C groups with capital, capability and experience as the criteria, and the scale of the work allocated will be decided accordingly. Of the companies registered, slightly less than 80% are small companies categorized under group B (minimum number of employees 15 to 20).

In major construction companies, construction quality control capabilities are improving due to advancements in mechanization. The contracting company for the construction of this project is a construction company incorporated in Japan. Since it is possible to have construction companies at the site under its control, this company should be used as a sub-contractor from the viewpoint of training technicians in the field as well. Since the number of experienced workers capable of handling special equipment and high level technology is limited, it will be necessary to dispatch technical experts from Japan for training of technicians and management of construction.

3) Construction material

Practically all structural materials for construction are being produced in Indonesia and can be purchased locally. With the exception of special metal components and medical equipment, a number of finishing materials produced in Indonesia or imported are already on the market or can be procured locally. General wiring and piping material can also be procured at the site for electrical and mechanical equipment construction.

4) Application procedures for approval of construction

The project construction site is in Surabaya City. Before commencing construction, it will be necessary for the Directorate General of Medical Care, the Ministry of Health to submit the necessary application forms to Surabaya City for approval of construction.

An outline of the application procedure is as shown below.

Table 4-4-1 Application Procedure for Permission of Construction

| Application step | Required documents | Terms for permission |
|--|--|----------------------|
| ① Guidance for planning | Confirmation of land specifications for the planned site, its measurement rate, floor space rate, height limitation, wall alignment limitation and quantity of obligatory parking spaces | — |
| ② Permission for designed plan | Designed plan, designed cross section, calculation table of areas, etc. | About 1 month |
| ③ Permission for building design | General figures as detailed design plan, elevation, cross section, and perspective with other documents, photos, and model photos which are explained the planned site to be in harmony with environs including tree planting plans, gardening plans and sewage plans. | About 2 months |
| ④ a. Permission for substructures b. Permission for superstructure c. Permission for facilities on electricity, air conditioning and sanitation | Design on foundation and foundation stake, calculation result, data on soil mechanics investigation, and general layout of terrestrial structures and buildings. Design of terrestrial structures and buildings, calculation results. Figures concerned, estimation result on water volume to be used, and detailed disposal plan. | } About 2 months |
| ⑤ Final permission for construction works | | |
| ⑥ Permission for use of buildings | To be issued after completion inspection of the works. | |

As is shown in the above, a minimum period of about three months is required before final approval. This includes about one month for ②, after the preparatory work in ①, and about two months for the simultaneous application of ③ and a. b. c. of ④.

Directorate General of Medical, Ministry of Health must submit the application, with the necessary design documents signed by the registered local architects, to the City of Surabaya.

(2) Points to consider in construction

1) Work by Indonesia

An emergency surgery building is located on the proposed construction site. A part of the adjoining emergency internal medicine building will be remodeled and will be used as temporary EMU during the construction period. Above mentioned emergency surgery building will then be demolished and the land to be leveled. The work must commence after receiving approval of the location plan, and be completed before the commenced of the work by Japan.

2) Work by Japan

After concluding the construction contract, construction will commence in line with verification of the contract by the Japanese Government. The following must be taken into close consideration for construction.

- Since the planned construction site is located in RSS compound and there are adjoining buildings, work must be implemented in limited space by establishing possible temporary work plans.
- Adequate consideration should be given to noise and working times because of the nature of the hospital compound.
- Piling construction will be required because of the weak ground at the construction site.
- Since the five month period from November to March is the rainy season in Surabaya City, the drying time required for plaster work will be longer than during the dry season.

4-4-3 Work Supervision Plan

A consultant contract will be concluded between Directorate General of Medical Care, Ministry of Health of the Republic of Indonesia and a consultant company incorporated in Japan for implementation of the detailed design and supervision of this plan.

The object of the supervision of work is to confirm that construction is being implemented according to the design drawings, and to assure that the terms of the construction contract are being properly performed. The supervision work is composed of the following.

(1) Works relative to tender and contracts

Preparation of tender documents required to select the contractor for the construction and equipment work. In addition, the supervision company will be responsible for tendering work such as advertisement of tender, acceptance of request for participation in tender, prescreening of qualifications holding an explanatory session for the tender, distribution of tender documents, acceptance of tenders and evaluation of tendering results and advice relative to the construction contract concluded between the General Medical Bureau of the Republic of Indonesia and the construction contractors.

(2) Guidance, advice and coordination relative to the general contractor

In addition to studying the execution process, execution plan, construction material procurement plan, procurement of medical equipment and installation plan, guidance, advice and coordination will be provided to the general contractor.

(3) Study and approval of shop drawings

The shop drawings and documents submitted by the contractor will be studied and approved with necessary instructions.

(4) Confirmation and approval of construction materials and medical equipment

Conformity of the construction material and medical equipment being procured by the general contractor to the construction contract will be confirmed and approved relative to use.

(5) Inspection of work

To confirm that quality and performance is being assured.

The inspection will be conducted at the factory manufacturing construction material and medical equipment when necessary

(6) Work progress report

The implementation process and the site conditions will be evaluated and the state of construction progress construction will be reported to the concerned parties of both countries.

(7) Completion inspection and trial test

Completion inspection and trial test will be conducted on the building and facilities and on medical equipment to confirm that the performance indicated in the construction contract are displayed, and the inspection report is then submitted to the Indonesian side.

(8) Construction and medical equipment operation training

In this project, there is some equipment which requires basic knowledge for operation and maintenance. It is therefore considered necessary to provide training at the construction site to have the medical personnel and technicians of Indonesia acquire skills in operation, troubleshooting and repairs during the installation, adjustment and operating period. The consultant will provide guidance and advice in relation to this training plan.

(9) Construction supervision system

In carrying out the above work, the scope of the project will be judged and the consultant will dispatch to Indonesia a technician engineer with abundant experience in all processes as a resident engineer. Corresponding to progress in construction, technician engineers in each field will also be dispatched to the site to conduct the necessary inspection, guidance and coordination. A backup system will also be established in Japan by assigning technician engineers domestically for liaison with the site. Reports will also be submitted to the related government authorities in Japan on such necessary matters as the state of progress of the project, payment procedures and transfer after completion. Construction supervision will be conducted by establishing a system in both Japan and Indonesia, such as shown in Figure 4-4-2.

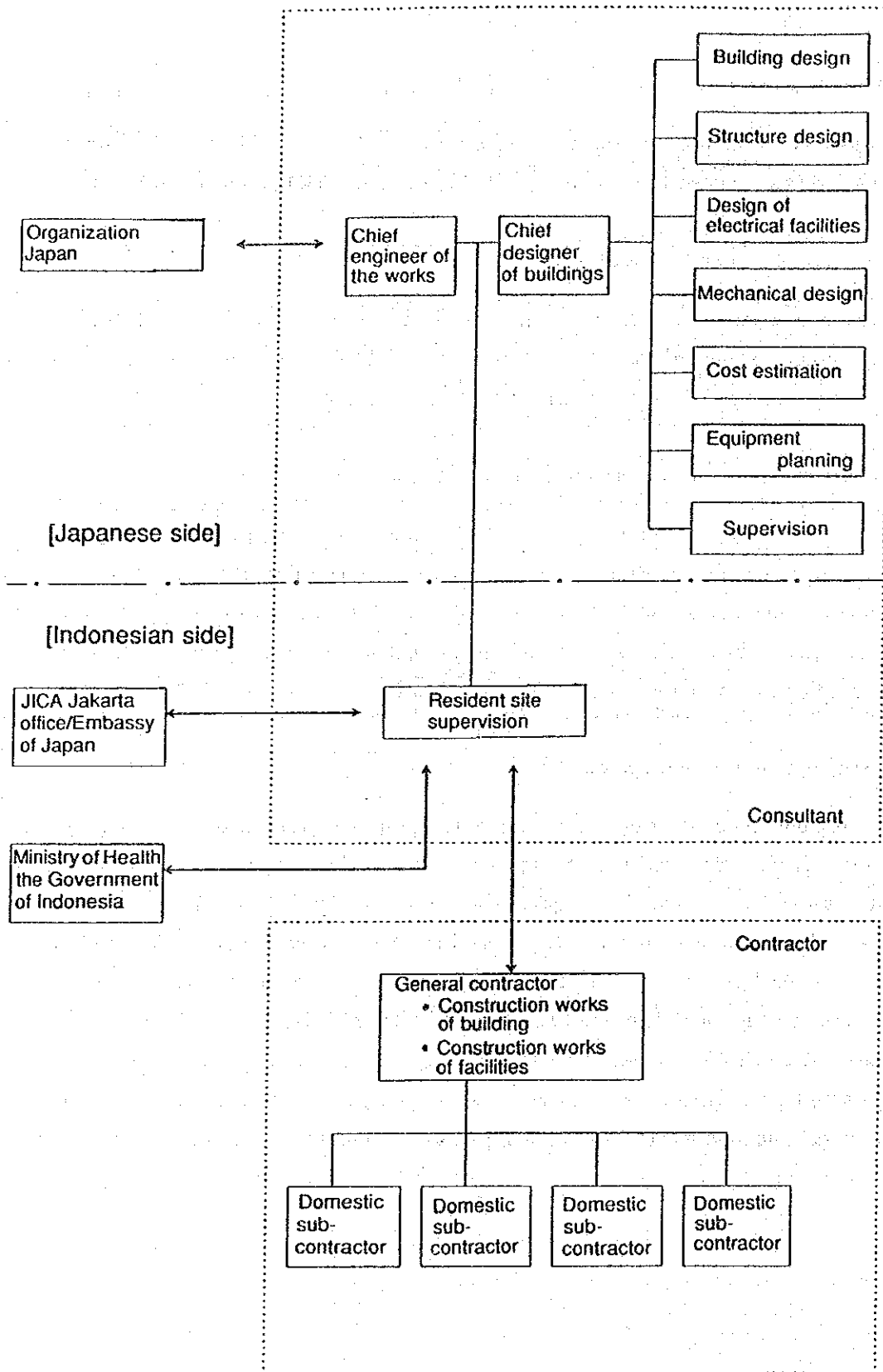


Fig. 4-4-2 Construction Supervision Systems

4-4-4 Procurement Plan for Materials and Equipment

(1) Procurement policy of materials and equipment

Although sturdy materials, that can be kept sanitary and are easy to clean will be procured, since this construction project is for an emergency medical facility, the following points should be considered.

1) Local procurement

Although the materials and equipment to be used will be procured locally, wherever possible, to facilitate easy repair, maintenance and management after completion of construction, it will be necessary to confirm quality and supply volume to avoid adversely affecting the construction process.

2) Import procurement

Materials and equipment impossible to procure locally, do not satisfy the required quality or whose supply volume is judged insufficient, will be imported from Japan. In this case, it will be necessary for the general contractor to arrange with the Directorate General of Medical Care, Ministry of Health, Indonesia for their smooth importation.

3) Transportation plan

Materials and equipment imported from Japan will be transported by ship to the port of Surabaya, Indonesia and transported inland on trucks from Surabaya port to the Dr. Soetomo Hospital site. Since there is the possibility of functions deteriorating from shock, humidity and high temperature on some of the material and equipment included, packing to withstand transportation through tropical zones must be taken into consideration.

(2) Procurement plan of construction materials and equipment

Based on the above procurement policy, Table 4-2-2 (Attached) classifies construction materials and equipment into those locally procured and those procured from Japan.

(3) Procurement plan for medical equipment

Although most of the medical equipment will be imported from Japan since it is not manufactured in Indonesia, points requiring consideration are as follows.

- 1) Since a supply of spare parts and consumables are constantly required for medical equipment, easy obtainability should be the first priority in selecting equipment. For easy maintenance and control, an after-care system will be established by procuring products in Indonesia from companies with an after-service care system.
- 2) Although technical experts will be dispatched from Japan for installation and adjustment of equipment requiring special techniques, the project will be planned to enable other work to be conducted with local labor.

Table 4-4-2 Procurement Plan of Main Equipment and Materials for Construction Works

| Work Item | Materials | Indonesian product | Japanese product | Remarks |
|--|---|-----------------------|------------------|---|
| Land preparation works | Cast-in-place concrete stake | ○ | | |
| Reinforced concrete works | Portland cement Fine aggregate (sand) Coarse aggregate (gravel, crushed stone) Deformed bar Mold | ○ ○ ○ ○ ○ | | |
| Steel works | Die steel Steel sheet | ○ ○ | | Is available (except special large-scale items), but should be minimized due to high cost |
| Masonry works | Concrete block Brick | ○ ○ | | |
| Water-proofing works | Asphalt proofing Diaphragm proofing Sealing material | ○ ○ ○ | ○ | Locally-made items are inadequate because of deterioration over ten years of use. |
| Masonry | Marble | ○ | | |
| Tile works | Earthen tile Ceramic tile Mosaik tile | ○ ○ ○ | | |
| Carpentry | Timber Compiling material Plywood | ○ ○ ○ | | |
| Roofing works | Roof tile | ○ | | |
| Metal works | Light-weight rough steel Aluminum louver Dressed metal Checker plate | ○ ○ ○ ○ | | |
| Plaster works | Cement mortar Plaster | ○ ○ | | |
| Works for wooden fitting of doors and screens | Hinged door Slicing door Wooden frame for doors and windows | ○ ○ ○ | | |
| Works for metal fittings of doors, windows and screens | Aluminum made slicing windows Aluminum made hinged doors Steel made fittings Doors for patient rooms | ○ ○ ○ | ○ | Require high performance for manipulation by physically weak patients |
| Metal fittings | Door checker | | ○ | Hardly any locally-made items |
| Painting | Interior painting Exterior painting | ○ ○ | | |

| Work Item | Materials | Indonesian product | Japanese product | Remarks |
|------------------------------------|--|-----------------------|------------------|--|
| Grazing works | Ordinary plate glass Heat ray absorptive glass Glass block Heat ray reflective glass | ○ ○ ○ ○ | | |
| Painting | Interior painting Exterior painting | ○ ○ | | |
| Interior | Plastics made glass Long size vinyl sheets | ○ | ○ | Should be anti-drug and hard usable ones because for medical use. |
| | Gypsum board Rock wool made sound absorbing board Glass wool Form polystyrene Domestic made is not available | ○ ○ ○ ○ ○ | ○ | Domestic made is not available |
| On operation room | | | | |
| Floor | Long size vinyl sheets | | ○ | } Required to be high quality for keeping good function of medical facilities. |
| Baseboard | Stainless | | ○ | |
| Wall | Ceramic board | | ○ | |
| Ceiling | Metal panel | | ○ | |
| Sealing | Silicone made earing materials | | ○ | |
| Fittings | Fittings, automatic door | | ○ | |
| Miscellaneous works | Sink | | ○ | All cistern type |
| Outer works | Pavement materials (asphalt concrete) Catch basin | ○ ○ | | |
| Works for electrical facilities | Electricity and wiring instrument Luminaire | ○ ○ | | Domestic made ones are for ordinary use |
| | Panels Generator, dry type transformer | ○ ○ | ○ ○ | Those made in Japan are for operation theater Domestic made is not available |
| Works for equipment and facilities | Packaged air conditioner Blowing and exhausting unit | ○ ○ | | Those made in Japan are for operation section Domestic made is not available |
| | Outlet, inlet | ○ | ○ | Those made in Japan are for operation section Domestic made is not available |
| | Sanitary ware Water treatment unit Duct material | ○ ○ ○ | ○ | Domestic made ones are for ordinary use |
| | Piping material | ○ | ○ | Those made in Japan are for operation theater Those made in Japan are for operation theater |
| | Heat insulator Automatic control unit Filter of high quality Micro differential damper | ○ ○ ○ ○ | ○ ○ ○ ○ | Requires good quality Requires good quality Requires good quality |
| Works made is not available | Elevator Dump waiter | | ○ ○ | Domestic made is not available Domestic made is not available |

4-4-5 Implementation Schedule

The implementation process for this project, after concluding exchange of notes, is as shown in Figure 4-4-3. The project is divided into the three stages. Detailed design work and tender work by the consultant, construction by the contractor and supervision of construction by the consultant.

(1) Detailed design work

A consultant contract, that provides for the detailed design and execution supervision of this project, will be concluded between Directorate General of Medical Care, Ministry of Health of the Republic of Indonesia and a consultant company incorporated in Japan. Verification of this contract consultant company incorporated in Japan will be received from the Government of Japan. The consultant then prepares detailed design documents based on this basic design study report, after holding discussions with Directorate General of Medical Care, Ministry of Health, and obtains approval from the Directorate General of Medical Care.

It is estimated that the time required for preparing the detailed design will be about two and a half months.

(2) Tendering

The first stage of this project will be construction which will be comprised of construction work of facilities and procurement and installation work of medical equipment. As proposed in (3) of 4-4-1 Implementation Policy, construction work and equipment work should be ordered on a blanket basis by a joint venture. The companies to form the joint venture should be companies incorporated in Japan and will be selected by general competitive tender from companies with prequalifications.

Tendering is implemented based on detailed design drawings prepared by the consultant. It is announced through the advertisement in newspapers, applications for participation in tender are received, prequalifications checked, tender explanation meetings are held, tender documents are distributed, receiving of application documents are received and, after evaluation of tender results, the construction contractor is designated, and the construction contract is concluded. It is forecasted that the time required for this process is about 1.5 months.

(3) Construction (Construction work by the general contractor and construction supervision by the consultant)

After concluding the construction contract, the general contractor commences construction after receiving verification of the construction contract from the Government of Japan. The consultant supervises the work. The construction period is estimated to be about 12 months considering the scope of the facilities in this project and the state of construction in 4-4-2.

The principal procedural work to be borne by Indonesia is as follows.

- 1) Exemption of all value added tax (VAT) relative to this project.
- 2) Bearing of all handling fees in issuing of banking arrangements (B/A) and authorization for payment (A/P).
- 3) Assurance of speedy unloading of materials and equipment at the port of disembarkation, tax exemption measures, customs clearance and speedy inland transportation.
- 4) Supply of material and equipment based on the verified contract and providing the necessary conveniences for entry into and residing in Indonesia to the Japanese citizens performing their task.
- 5) Exemption from all domestic tariffs and taxes in Indonesia for Japanese citizens engaged in supplying materials and equipment and carrying out work based on the verified contract.
- 6) Budgetary measures for facilities constructed under grant aid assistance and effective operation and maintenance of equipment supplied.
- 7) Bearing of expenses necessary for items other than those supplied under the grant aid assistance.

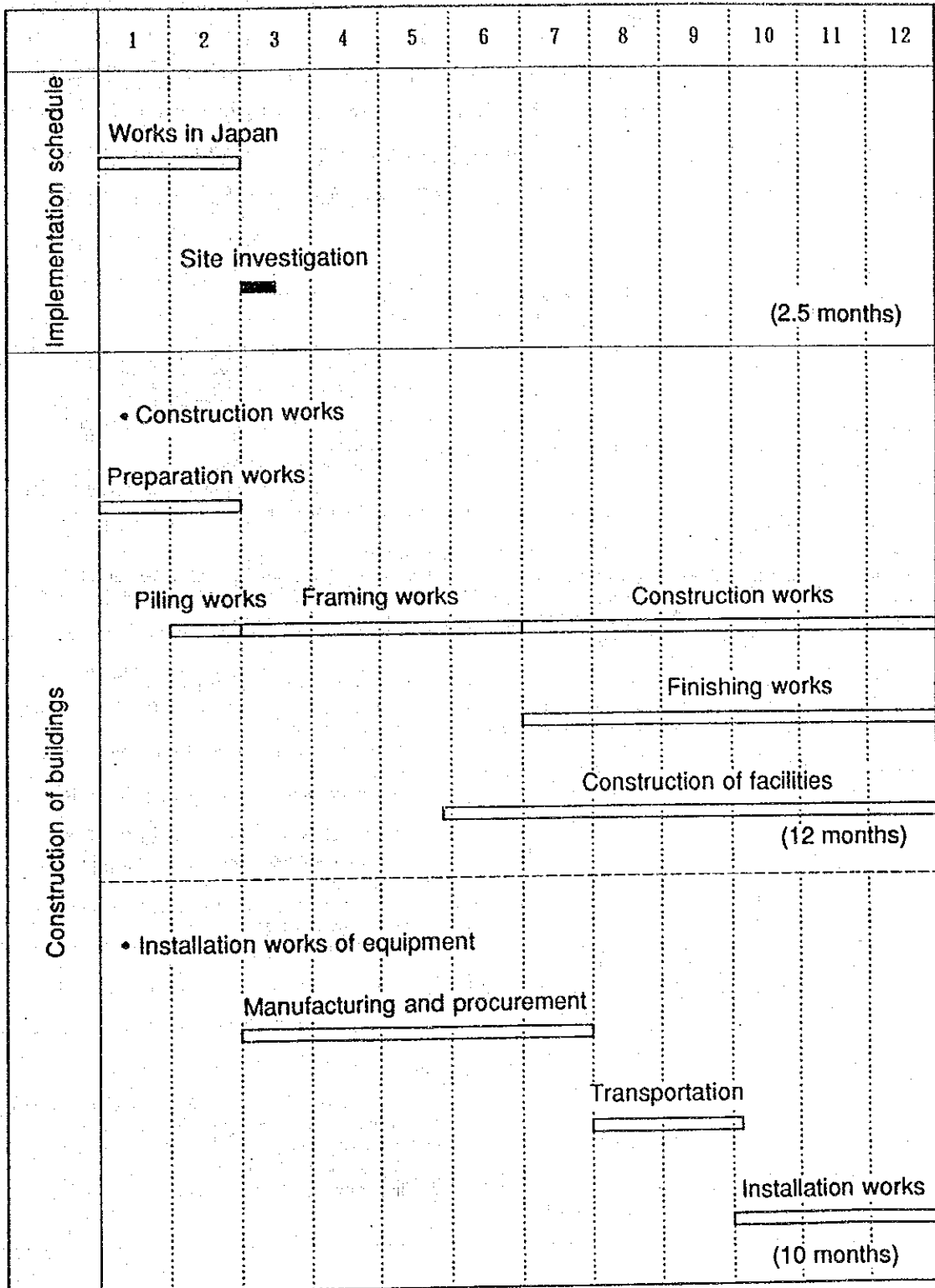


Fig. 4-4-3 Implementation Program

4-4-6 Scope of Work

(1) Construction Cost Classification

Clarification of shared of construction costs by Japan and Indonesia is necessary for smooth execution of all operations in this project. Japan's portion is the facilities and the equipment used in these facilities, and Indonesia's portion is improvement of other infrastructure and effective operation after completion of the project. Details are as shown below.

Table 4-4-3 Portion of the Works

| Works to be born by Japanese side | Works to be born by Indonesian side |
|--|---|
| <p>1. Building construction Framing works, Finishing works, Installation works of standard furnitures.</p> | <p>1. Preparation of construction site for building and its readjustment Dismantling of existing buildings Construction of emergency temporary surgical ward Replacement of piping</p> |
| <p>2. Works for electrical facilities Electrical transforming facilities, Generator and main wiring facilities, Light and wall outlet facilities, Telephone and communication facilities, Broadcasting facilities, Lightning rod facilities, Fire alarm facilities</p> | <p>2. Outer works Gardening, Tree planting, Construction of gate, Construction of wall, Pavement works for road, Construction of out site road</p> |
| <p>3. Sanitary and air conditioning facilities Water supply facilities, Hot water supply facilities, Drainage and ventilation facilities, Sanitation instrument facilities, Air conditioning and ventilation facilities, Hydrant facilities</p> | <p>3. Lead-in works for each infrastructure</p> <ul style="list-style-type: none"> • Lead-in works for electricity, water supply, telephone, drainage canal, • Reconstruction of existing telephone operating system • Generator, and establishment of pumping facilities for it • Establishment of antenna for radio-telecommunication, radio system and its cable, • Preparation of fire extinguishers |
| <p>4. Works for specified facilities Drained water treatment facilities, Emergency spare generator facilities, Nurse call and interphone facilities, Medical gas facilities, Radio-telecommunication facilities, Telemetering facilities, UPS facilities Paging facilities, CVCF facilities, Central monitoring facilities</p> | <p>4. Furniture and utensiles Curtain, blind, ordinary furnitures</p> |
| <p>5. Works for elevator</p> | <p>5. Others</p> <ul style="list-style-type: none"> • Application of permission for construction works of buildings and other necessary procedures • Surveying works by boring • Relocation of existing telecom system • Installation of Repeater System |
| <p>6. Outer works Hydrant and outdoor drainage facilities</p> | |
| <p>7. Medical equipment installation works Procurement and installation of medical equipment</p> | |

(2) Operational responsibility to be borne by the Republic of Indonesia

The principal procedural matters to be borne by the Republic of Indonesia

- 1) Exemption from all value added taxes (VAT) relative to this project.
- 2) Bearing of handling fees resulting from bank arrangement (B/A) and issuance of accounts payable (A/P).
- 3) Immediate unloading of materials and equipment at the port of discharge, guarantee of tariff exemption measures and customs clearance procedures and assurance of speedy inland transportation.
- 4) Providing necessary conveniences to Japanese citizens who enter and reside in Indonesia to supply materials and carry out their duties based on approved contracts.
- 5) Exemption from all tariffs and taxes in Indonesia relative to Japanese Citizens who supply materials and carry out their duties based on approved contracts.
- 6) Budget measures for effective operation, maintenance and control of equipment supplied and facilities constructed under grant-aid cooperation.
- 7) Bearing expenses required other than for procurement under grant-aid cooperation.

(3) Expenses to be borne by the Republic of Indonesia

Expenses to be borne by the Republic of Indonesia are as follows:

| | |
|---|------------------|
| 1) Site preparation work | |
| • Demolition of existing structures | 46,500,000 Rp |
| • Temporary emergency medical building | 100,000,000 Rp |
| 2) Infrastructure work | |
| • Electric power lead-in work | 165,400,000 Rp |
| • Telephone lead-in work | 37,500,000 Rp |
| • City water lead-in work and drain connecting work | 10,000,000 Rp |
| 3) Exterior work | |
| • Surrounding wall around site and greenery work | 16,000,000 Rp |
| 4) Fixture and furniture work | |
| • Fixtures curtains and furniture (general furniture) | 250,000 000 Rp |
| 5) Procedural work | |
| • Expenses for official procedures necessary for the work | 47,000,000 Rp |
| • Banking charge for issuing A/P based on B/A | 41,000,000 Rp |
| Total | 713,400,000 Rp |
| | (43,184,000 Yen) |

CHAPTER 5 THE PROJECT'S EFFECTS AND CONCLUSION

CHAPTER 5 PROJECT EVALUATION AND CONCLUSION

(1) Effect of the Project

When this project is implemented, the following effects and improvements are anticipated relative to improvements in medical standards for emergency medical service in Indonesia.

Table Effects and Improvements by Implementing This Project

| Present condition | Countermeasures enacted through this project | Expected effects and improvements |
|---|---|---|
| <p>The EMU should serve as the main source for emergency medical services in East Java. However, due to the superannuated facilities and equipment of the existing EMU, it will be impossible for it to meet future patient demand which is estimated to increase 50% over the next 10 years.</p> | <p>Construct a new EMU which has necessary facilities and equipment to meet the increasing patient demand in the future. There are currently 7 beds in the existing IOU, however this will be increased to 70 beds through the implementation of the project.</p> | <p>Presently, there are approximately 47 emergency admissions per day. However, the new EMU will be able to handle a 50% increase or 70 admissions per day. Since it will also be able to cope with an increase in the number of outpatients, it will lead to an improvement the quality of emergency medical services in the area. Therefore it will contribute to an upgrade in medical services and to lowering the mortality rate for traffic accidents, fire and other acute diseases.</p> |
| <p>RSS is trying to teach emergency medical services not only to the adjoining Airlangga University Medical Department students, but also to emergency medical personnel throughout the country. However, it is having difficulties in realizing this goal because of the superannuated facilities and equipment.</p> | <p>Based on the emergency medical services conducted in the EMU, install educational and training equipment necessary for emergency medical training and education.</p> | <p>It is anticipated that the effect of establishing the new EMU will subsequently spread nationwide through the annual education and training provided to the 140 Airlangga University medical students, 2000 nursing students and to emergency medical personnel throughout the nation.</p> |

| Present condition | Measures to be taken in this project | Expected effects and improvements |
|---|---|---|
| <p>Since both quality and quantity of medical equipment are inadequate, it is not possible to provide high level diagnosis and treatment to critical emergency patients referred to EMU.</p> | <p>Draw up a medical equipment plan based on the state of present EMU activities and activities forecasted during the next five years. Also, enable diagnosis and treatment activities of higher level than at present by equipping the hospital with a CT scanner, ultrasound diagnostic equipment and an endoscope.</p> | <p>It will become possible to cope adequately with increases in patients and various referral patients, and also provide high level emergency medical service and improve the mortality rate. Independent test facility and proper equipment will enable EMU to serve as a 24 hour emergency medical center.</p> |
| <p>With regard to the referral system, the existing RSS is ranked as the top referral hospital in East Java but it is not being operated efficiently because of the poor condition of the ambulances and the infrastructure, and the superannuated or insufficient telecommunication equipment that serves as the means of transmission of emergency medical information. The present four ambulances out of five are also superannuated.</p> | <p>A radio communications room will be provided and radio communications equipment will be installed so it can function as the key station in East Java. Four Ambulances with equipment suitable as a field emergency system will also be purchased.</p> | <p>Since direct communication will be possible with lower class hospitals and health centers in East Java, it will be possible to transmit knowledge and information on a real time overall basis. As it will also be possible to augment the present shortage of ambulances, operation of a more effective referral system will be possible.</p> |

(2) Appropriateness of the Implementation of the Project

The Feasibility of the Project is examined in terms of the management plan, budgetary allocation and maintenance plan

1) Operation system

The medical services provided at the new EMU are expansions of and improvements to the basic medical services presently provided at the existing EMU and do not vary greatly from services provided to date. Therefore, most of the personnel possess the necessary experience from work carried out in the EMU. There are 67 doctors in the existing emergency section and 71 are planned for the new EMU, an increase of 4. At present there are 291 staff members, excluding doctors, which means an increase of 24 since the EMU will require 315 at the time of opening. This increase will be fulfilled by transfers from within RSS. It is planned to attain the target number of 89 physicians (an increase of 22) and 425 staff members (an increase of 134) by fiscal 2002. This increase in the number of physicians is possible since RSS is an educational hospital that accepts a total of over 260 5th and 6th year interns in the medical school every year and also accepts about 50 resident doctors working towards acquiring qualifications as specialists. In relation to staff members other than physicians, such as nurses, it is possible to increase 87 by reallocating personnel in RSS and by relocating personnel from various cities in East Java Province. Implementing experience the training in this EMU, which is a top referral hospital, is highly significant and, with the backup system of the Ministry of Health of Indonesia relative to this personnel plan, it is judged that transfers from outside EMU will be carried out actively. It is also believed that the nurse training school, to be opened in RSS from June, 1993, will also contribute to this personnel increase plan.

2) Budget

The operational and development budget are to be allocated to RSS by the Ministry of Health. The budget is 19,727,268,000 Rp in 1992/93 FY, and of this, RSS allocates 1,474,722,200 Rp to the EMU the same year. This is 7.5% of the above mentioned RSS budget.

The estimated operational budget for new EMU on the opening year is estimated to be 2,217,587,000 Rp. This is about 8.6% of the RSS budget. And with the introduction of Swadana Concept, RSS can increase the examination and treatment fee and use other autonomously, which will encourage the self-supporting effort of RSS. Therefore the above mentioned estimated new EMU budget is well in the range of execution.

3) Maintenance Plan

This project is planned with easy maintenance in mind. In selecting construction material, extent of durability and possibility of local procurement were main factors. When selecting medical equipment that requires special technical knowledge for maintenance and repair, priority should be given to manufacturers who possess a strong local maintenance system. The architectural plan takes into consideration natural ventilation and shading of direct sunlight to minimize light and heat expenses. In the personnel plan for maintenance, eight people will be assigned to maintenance of building facilities and two maintenance personnel will be assigned to care medical equipment. This is a self-supporting system in which simple repairs will be made and complex problems will be located and reported to the repair agent.

(3) Conclusion

As explained earlier in this report, industrial and economic growth in Indonesia is creating an increased demand for emergency medical services. Through this project, it is anticipated that there will be great improvement in the standards and effectiveness of Indonesia's emergency medical care services. Implementation of this project under Japan's grant aid assistance is judged to be appropriate since many ordinary citizens, including lower income class people, will be beneficiaries of the project. Upon completion there are no problems foreseen in Indonesia's operation, budget measures, maintenance or management of the project.

(4) Proposal

The ultimate goal of this project is to realize the facility in a timely fashion and to operate the new EMU smoothly and effectively. To achieve this goal, the following items are proposed.

1) Smooth procedures at the implementation stage

Since this project will be implemented in accordance with the Japan's grant aid assistance, certain time restrictions exist. For this reason, quick action will be required on the part of Indonesia, particularly in relation to concluding the exchange of notes, the consultant contract, approval of detailed design based on the basic design study report and contracts relating to the work.

2) Smooth implementation of the Indonesian Government's undertaking

Japan's grant aid assistance has already been explained to the officials concerned in the Indonesian government, it is considered that the Indonesian Government's share of work will be implemented without delay. However, it is necessary that budget measures be taken at an appropriate period in line with Indonesia's fiscal year. Demolishing of existing buildings, leveling of the land, obtaining approval for construction, supply work of electric power, telephone and potable water for construction use shall be completed before commencement of construction. It will also be necessary to complete supply work of permanent electric power and potable water at least two months before completion of the projects because they are needed for testing the medical and building equipment and facilities.

3) Appropriate personnel placement plan

It is desirable for the Ministry of Health to place personnel possessing superior work performance capabilities implementation effectiveness of this project in the long run.

4) Improvement of B and C class hospitals

Indonesia's public medical facilities are comprised of the class A, B, C and D hospitals and the health centers.

One of the important targets for the Ministry of Health is to enable lower ranked hospitals to refer different cases to the upper class hospitals under a hierarchy in which class A hospitals are at the top.

Despite this pyramid structure of medical facilities, there are a great number of cases of emergency patients coming directly to the emergency section of class A hospitals because of the limited medical equipment at health centers and at other lower class hospitals. This results in many primary emergency patients concentrating in the emergency departments of class A hospitals and thus creates an inability of these hospitals as final referral hospitals, to serve their primary role of saving lives of top priority emergency patients. Radical improvement of medical facilities is necessary from the base, with improvement of class B and C hospitals desirable as primary measures to improve these conditions.

5) Improvement of emergency transportation and communication systems

Transportation, especially transporting patients to the hospital, and communication system plays a major role in emergency medical activities. Although improvements in transportation and communication systems in this project is concentrated on RSS,

improving and strengthening these systems throughout East Java will also be necessary in the future.

6) **Maintaining a sanitary environment**

Since this EMU handles many serious patients, it will be necessary to maintain hospital facilities in a sanitary state. Areas in which sanitation is especially demanded are the operating theater, IOU, delivery rooms and the newborn room. Therefore, enlightenment of the overall hospital staff, including the service personnel, as to the concept of sanitation is extremely important.

APPENDICES

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[DATA COMPILATION]

1. Member List of the Study Teams

(1) Basic Design Study (I) (Oct. 5th ~ Oct. 25th 1992)

| | |
|-------------------------------|---|
| Dr. Hidekazu URAKAMI (Leader) | Director, ICU Department, St. Mary Hospital |
| Mr. Yasuhiro NAKAJIMA | Chief Engineer, Department of Clinical Engineering, St. Mary Hospital |

(2) Basic Design Study (II) (Nov. 9th ~ Dec. 12th 1992)

| | |
|--|---|
| Dr. Kageshige TODO M.D., Ph. D (Leader) | Vice President, Director Thoracic & Cardiovascular Surgery Department St. Mary Hospital |
| Ms. Noriko SUZUKI (Grant Aid Planner) | First Basic Design Study Division, Grant Aid Study & Design Department, JICA |
| Mr. Ichiro KANAGAWA (Architectural Planner) | Nihon Sekkei, Inc. |
| Mr. Tomonao HAMADA (Architectural Designer) | Nihon Sekkei, Inc. |
| Mr. Shuzo ISHIKAWA (Architectural Engineer) | Nihon Sekkei, Inc. |
| Mr. Masayoshi FUKUOKA (Medical Equipment Planner) | Nihon Sekkei, Inc. |

(3) Draft Explanation (March 15th ~ March 23rd 1993)

| | |
|--|---|
| Dr. Kageshige TODO M.D., Ph. D. (Leader) | Vice President, Director Thoracic & Cardiovascular Surgery Department St. Mary Hospital |
| Ms. Noriko SUZUKI (Grant Aid Planner) | First Basic Design Study Division Grant Aid Study & Design Department, JICA |
| Mr. Ichiro KANAGAWA (Architectural Planner) | Nihon Sekkei, Inc. |
| Mr. Masayoshi FUKUOKA (Medical Equipment Planner) | Nihon Sekkei, Inc. |

2. Itinerary

(1) Basic Design Study (I) (October 5th ~ October 25th 1992)

| No. | Date | Itinerary |
|-----|---------------------|--|
| 1. | Oct.5 (Monday) | • Leave Fukuoka, arrive Jakarta |
| 2. | Oct. 6 (Tuesday) | • Meeting at JICA Indonesia Office • Courtesy call to BAPPENAS • Courtesy call to Japan Embassy |
| 3. | Oct. 7 (Wednesday) | • Visit to ME Technology School • Visit to RSCM Emergency Medical Center • Courtesy call to the Ministry of Health |
| 4. | Oct. 8 (Thursday) | • Visit to RSCM, EMC • Moving from Jakarta to Denpasar |
| 5. | Oct. 9 (Friday) | • Visit to Bali EMC |
| 6. | Oct. 10 (Saturday) | • Visit to Bali EMC |
| 7. | Oct. 11 (Sunday) | • Moving from Denpasar to Surabaya |
| 8. | Oct. 12 (Monday) | • Meeting at Dr. Soetomo Hospital (RSS) |
| 9. | Oct. 13 (Tuesday) | • Meeting at RSS |
| 10. | Oct. 14 (Wednesday) | • Meeting at RSS • Visit to Islamic Hospital, Catholic Hospital |
| 11. | Oct. 15 (Thursday) | • Visit to Gelhankertasusila Hospital • Visit to PUSKESMAS • POSYANDU |
| 12. | Oct. 16 (Friday) | • Meeting at RSS • Visit to Medical Equipment Agents |
| 13. | Oct. 17 (Saturday) | • Visit to industrial area in Surabaya |
| 14. | Oct. 18 (Sunday) | • Internal Meeting |
| 15. | Oct. 19 (Monday) | • Data analysis |
| 16. | Oct. 20 (Tuesday) | • Visit to Bankaran Hospital |
| 17. | Oct. 21 (Wednesday) | • Meeting at RSS • Moving from Surabaya to Jakarta |
| 18. | Oct. 22 (Thursday) | • Meeting at JICA Jakarta Office |
| 19. | Oct. 23 (Friday) | • Report to Ministry of Health • Report to Japan Embassy • Report to JICA Indonesia Office |
| 20. | Oct. 24 (Saturday) | • Internal Meeting |
| 21. | Oct. 25 (Sunday) | • Leave Jakarta – Arrive Fukuoka |

(2) Basic Design Survey (II) (Nov. 9th ~ Dec. 12th, 1992)

| No. | Date | Itinerary |
|-----|---------------------|---|
| 1. | Nov. 9 (Monday) | <ul style="list-style-type: none"> • Dr. Todo: Leave Fukuoka – Arrive Jakarta • Other Member: Leave Tokyo – Arrive Jakarta |
| 2. | Nov. 10 (Tuesday) | <ul style="list-style-type: none"> • Courtesy call to JICA Indonesia office • Courtesy call to the Japan Embassy • Courtesy call to BAPPENAS • Courtesy call to MOH |
| 3. | Nov. 11 (Wednesday) | <ul style="list-style-type: none"> • Visit to Dr. Chipto Mangnkusumo Hospital (RSCM) |
| 4. | Nov. 12 (Thursday) | <ul style="list-style-type: none"> • Data collection • Moving from Jakarta to Denpasar |
| 5. | Nov. 13 (Friday) | <ul style="list-style-type: none"> • Visit to Bali EMC |
| 6. | Nov. 14 (Saturday) | <ul style="list-style-type: none"> • Collection of Data |
| 7. | Nov. 15 (Sunday) | <ul style="list-style-type: none"> • Moving from Denpasar to Surabaya |
| 8. | Nov. 16 (Monday) | <ul style="list-style-type: none"> • Meeting at RSS |
| 9. | Nov. 17 (Tuesday) | <ul style="list-style-type: none"> • Meeting at RSS |
| 10. | Nov. 18 (Wednesday) | <ul style="list-style-type: none"> • Visit to Islamu Hospital & a PUSKESMAS • Meeting at RSS • Moving from Surabaya to Jakarta |
| 11. | Nov. 19 (Thursday) | <ul style="list-style-type: none"> • Meeting at Ministry of Health • Mr. Ishikawa: Study on the existing facility at RSS |
| 12. | Nov. 20 (Friday) | <ul style="list-style-type: none"> • Minutes signal at MOH • Mr. Ishikawa: Moving from Surabaya to Jakarta • Dr. Todo, Ms. Suzuki: Leave Jakarta to Japan |
| 13. | Nov. 21 (Saturday) | <ul style="list-style-type: none"> • Dr. Todo: Arrive Fukuoka, Ms. Suzuki: Arrive Tokyo • Other members: Analysis of data |
| 14. | Nov. 22 (Sunday) | <ul style="list-style-type: none"> • Internal meeting and analysis of data |
| 15. | Nov. 23 (Monday) | <ul style="list-style-type: none"> • Moving from Jakarta to Surabaya • Meeting at RSS |
| 16. | Nov. 24 (Tuesday) | <ul style="list-style-type: none"> • Meeting at RSS • Study of existing facility in RSS |

| No. | Date | Itinerary |
|-----|---------------------|---|
| 17. | Nov. 25 (Wednesday) | <ul style="list-style-type: none"> • Meeting at RSS • Visit medical equipment agents |
| 18. | Nov. 26 (Thursday) | <ul style="list-style-type: none"> • Meeting at RSS |
| 19. | Nov. 27 (Friday) | <ul style="list-style-type: none"> • Meeting a RSS • Signed memorandum of discussions • Moving from Surabaya to Dempasan • Mr. Fukuoka: Continues the study on agents in Surabaya |
| 20. | Nov. 28 (Saturday) | <ul style="list-style-type: none"> • Analysis of data • Internal meeting |
| 21. | Nov. 29 (Sunday) | <ul style="list-style-type: none"> • Analysis of data • Internal meeting |
| 22. | Nov. 30 (Monday) | <ul style="list-style-type: none"> • Meeting at Bali EMC • Moving form Dempasar to Jakarta • Mr. Fukuoka: Study on agents in Surabaya |
| 23. | Dec. 1 (Tuesday) | <ul style="list-style-type: none"> • Meeting at RSCM • Mr. Fukuoka continues study in Surabaya |
| 24. | Dec. 2 (Wednesday) | <ul style="list-style-type: none"> • Meeting at RSCM • Mr. Fukuoka: Continues study in Surabaya |
| 25 | Dec. 3 (Thursday) | <ul style="list-style-type: none"> • Meeting at MOH • Surabaya on the construction in Indonesia • Mr. Fukuoka: Moving from Surabaya to Jakarta |
| 26 | Dec. 4 (Friday) | <ul style="list-style-type: none"> • Analysis of data • Survey on the construction in Indonesia |
| 27 | Dec. 5 (Saturday) | <ul style="list-style-type: none"> • Analysis of data and internal meeting |
| 28 | Dec. 6 (Sunday) | <ul style="list-style-type: none"> • Analysis of data and internal meeting |
| 29 | Dec. 7 (Monday) | <ul style="list-style-type: none"> • Analysis of data • Meeting at MOH |
| 30 | Dec. 8 (Tuesday) | <ul style="list-style-type: none"> • Analysis of data • Meeting at RSCM |
| 31 | Dec. 9 (Wednesday) | <ul style="list-style-type: none"> • Internal meeting and data analysis |
| 32 | Dec. 10 (Thursday) | <ul style="list-style-type: none"> • Report to JICA Indonesia Office • Report to Japan Embassy • Report to MOH |
| 33 | Dec. 11 (Friday) | <ul style="list-style-type: none"> • Preparation • Leave Jakarta to Japan: (Kanagawa, Haneda, Ishikawa, Fukuoka) |
| 34 | Dec. 12 (Saturday) | <ul style="list-style-type: none"> • Arrive Tokyo |

(3) Basic Design Study -- Draft Report Explanation (March 15th ~ March 23rd, 1993)

| No. | Date | Itinerary |
|-----|----------------------|--|
| 1 | March 15 (Monday) | <ul style="list-style-type: none">• Leave Tokyo – Arrive Jakarta• (Dr. Todo) Leave Fukuoka – Arrive Jakarta |
| 2 | March 16 (Tuesday) | <ul style="list-style-type: none">• Meeting at JICA Indonesia Office• Courtesy call to DG of Medical Care• Courtesy call to BAPPENAS |
| 3 | March 17 (Wednesday) | <ul style="list-style-type: none">• Moving from Jakarta to Surabaya• Meeting at RSS |
| 4 | March 18 (Thursday) | <ul style="list-style-type: none">• Meeting at RSS |
| 5 | March 19 (Friday) | <ul style="list-style-type: none">• Meeting at RSS |
| 6 | March 20 (Saturday) | <ul style="list-style-type: none">• Meeting at RSS• Moving from Surabaya to Jakarta |
| 7 | March 21 (Sunday) | <ul style="list-style-type: none">• Data Analysis |
| 8 | March 22 (Monday) | <ul style="list-style-type: none">• Meeting with DG of Medical Care and Signed Minutes• Report to JICA Indonesia Office• Report to Japan Embassy• Leave Jakarta |
| 9 | March 23 (Tuesday) | <ul style="list-style-type: none">• Arrive Tokyo• (Dr. Todo) Arrive Fukuoka via Singapore |

3. List of Persons Interviewed

Indonesia Side

(1) Ministry of Health

| | |
|-----------------------|---|
| Dr. Broto Wasisto | Director General, Directorate General for Medical Care |
| Dr. Bagus Mulyadi | Secretary, Directorate General for Medical Care |
| Dr. Soemarja Aniroen | Director, Directorate for Special and Private Hospitals |
| Ir. Sudiman | Director, Directorate for Medical Instalation |
| Dr. Abdus Radjak | Chief Subdirectorate for Emergency and Evacuation Service |
| Dr. Petrus Maturbongs | Directorate for Special and Private Hospitals |
| Dr. Untung Suseno S. | Directorate General for Medical Care |
| Drs. Nikm | Directorate General for Medical Care |
| Drs. V. Setiyono | Directorate General for Medical Care |
| Ir. Azizah | Directorate for Medical Installation |

(2) BAPPENAS

| | |
|-----------------|--|
| Dr. Fasli Jalal | Chief, Bureau for Health and Nutrition |
|-----------------|--|

(3) Dr. Soetomo Hospital

| | |
|---------------------------|---------------------------------------|
| Dr. Karjadi Wirjoatmodjo | Director |
| Dr. Poedji Rochjati | Vice Director |
| Drs. Doddy Soetojo | Vice Director |
| Dr. Muh Dikman Angsar | Vice Director |
| Dr. Abdus Sjukur | Head of Surgical Emergency Department |
| Dr Betsy Adam | Head of Medical Emergency Department |
| Dr. Santoso Kusumowidagdo | Head of Medical Record |
| Dr. Marsianto | Ob-Gy Department |
| Dr. Bambang Wahjuprajitno | Anesthesiology & ICU Department |

| | |
|------------------------|--|
| Dr. Sutrinso Alibasah | Surgical Emergency Department |
| Dr. Poerwadi | Surgical Emergency Department |
| Dr. Urip Murtedjo | Surgical Emergency Department |
| Dr. Hernomo | Medical Emergency Department |
| Dr. Siswantoro | ENT Department |
| Dr. Tommy Sunariomo | Anesthesiology & ICU Department |
| Dr. Teguh | Anesthesiology Department |
| Dr. Priyanto | Ophtalmology Department |
| Dr. Djoko Marsudl | Clinical Pathology Department |
| Dr. Bambang Widjanarko | Radiology Department |
| Dra. Irma | Head of CSSD, Staff of Pharmacy Department |
| Ir. Mahyarnato | Head of Hospital Equipment Department |
| Ir. Nugroho | Hospital Equipment Department |
| Mr. Joshie Halim | Consultant Architect |

(4) Dr. Cipto Mangunkusumo Hospital

| | |
|----------------|---|
| Dr. Hermansyur | Head of Emergency Medical Center |
| Dr. Basri | Administrator of Emergency Medical Center |

(5) Bali Emergency Medical Center

| | |
|-----------------------|---|
| Dr. Nyoman Sukerena | Head of Emergency Unit |
| Dr. KT Sinardja | Vice Head of Emergency Unit |
| Dr. Irena Sakura Rini | Medical Staff/Triage Doctor |
| Dr. Ngurah Anom | Medical Staff |
| Dr. Antonius N | Coordinator of Medical Support |
| Dr. Ety Herawati | Coordinator of Administration, Finance and Housekeeping |
| Ms. Kartini | Head of Nurse |

| | |
|--------------------|--------------------|
| Ms. Oka Rusmini | Nurse |
| Ms. Agung Adilatri | Nurse |
| Ms. Izumi Okamoto | JICA Junior Expert |
| Ms. Yoko Endo | JICA Junior Expert |

Japanese Side

(1) Embassy of Japan in the Republic of Indonesia

Mr. Hiroshi Moriguchi

(2) JICA Indonesia Office

Mr. Akira Takahashi Resident Representative

Mr. Takashi Kaneko Deputy Resident Representative (former)

Mr. Naoki Saito Deputy Resident Representative

Mr. Satoru Watanabe Assistant Resident Representative

ATTACHMENT

1. Objective

The objective of the Project is to improve emergency medical services in East Java and East Indonesia by strengthening Emergency Care Unit at Dr. Soetomo Hospital (hereinafter referred to as "the Unit", including the construction and provision of necessary facilities and equipment for the following activities.

- 1) Clinical services in the field of emergency medical care
- 2) Referral services in East Java and East Indonesia in the field of emergency medical care
- 3) Training services for health personnel in the field of emergency medical care

2. Project Site

The Project site is located at Surabaya, East Java as shown in Annex I, with the total area of approximately 4,360 m².

3. Executing agency

Directorate General of Medical Care, Ministry of Health is responsible for the administration and execution of the Project.

4. Items requested by the Indonesian side

The following items were finally requested by the Indonesian side.

- 1) Construction of the facilities described in Annex II
- 2) Provision of equipment related to the Project which are described in Annex II

5. Comments by the Japanese side on the requested items mentioned in 4. above

- 1) The Japanese side will review the necessary facilities and equipment for the Project according to the priority order proposed by the Indonesian side.

- 2) The final components of the Project may differ, when considered necessary after further studies in Japan.

6. Japan's Grant Aid system

- 1) The Indonesian side understands the system of Japan's Grant Aid as explained by the team.
- 2) The Indonesian side will take necessary measures, as described in Annex III for the smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

7. Other relevant issues

On condition that Japan's Grant Aid is extended to the Project;

- 1) the Government of Indonesia will allocate the necessary budget to the Project for securing sustainable and proper operation and maintenance of the Unit.
- 2) the Ministry of Health will recruit the necessary personnel (especially nurse/paramedics) for the Unit.
- 3) Dr. Soetomo Hospital will maintain adequate performance and utilization data on the facilities included in the Project. And these data will be submitted annually to the Japanese side.
- 4) Dr. Soetomo Hospital will make an inventory list on the equipment and spare parts included in the Project. And the list will be renewed in accordance with the conditions of the equipment and the consumption of the spare parts.

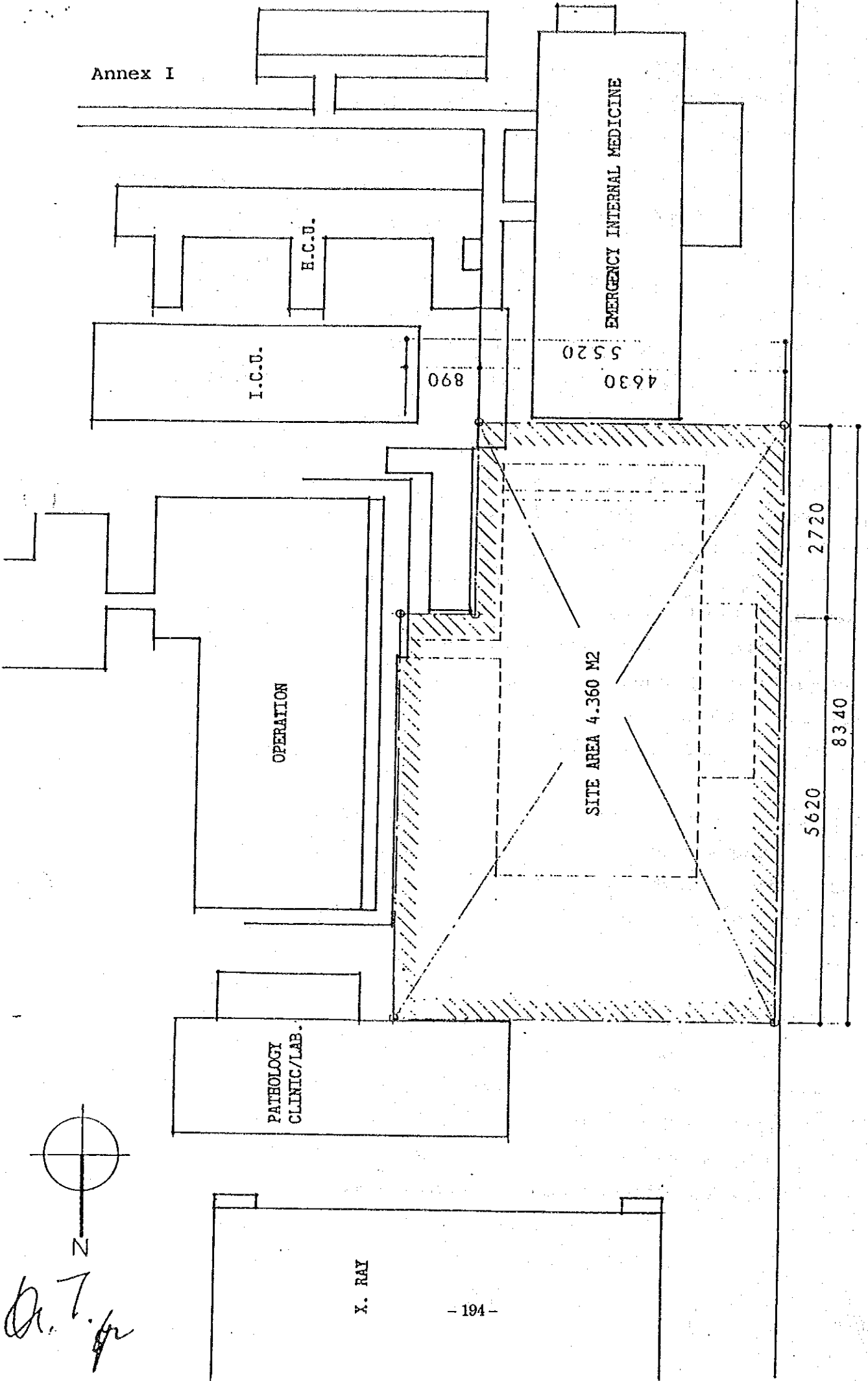
8. Schedule of the Study

- 1) The consultants will proceed to further studies in Indonesia until December 11, 1992.
- 2) Based on the Minutes of Discussions and the results of the study, JICA will compile a draft report and dispatch a mission in order to explain its contents in March, 1993.

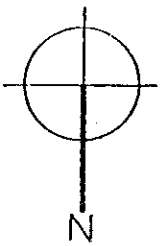
- 3) Upon approval of the said draft report by the Indonesian side, JICA will complete the final report and send it to the Government of Indonesia around April, 1993.

T.
[Signature]

Annex I



PROPOSED SITE



Dr. T. J. [Signature]

X. RAY

Annex II

1. Construction of the facilities

- 1) First Aid (Emergency Treatment)
- 2) Emergency Diagnosis and Examination
- 3) Emergency Operation (Surgery and Delivery)
- 4) Intensive Observation
- 5) Management of Emergency Services
- 6) Training of Emergency Medical Care

2. Provision of equipment related to the Project

- 1) Equipment for Emergency Medical Care
- 2) Equipment for Training Services
- 3) Equipment for Administration Services

B. T. [signature]

Annex III

Necessary measures to be taken by the Government of Indonesia on condition that Japan's Grant Aid is extended:

1. To secure the site for the Project
2. To demolish the present buildings and clear, level and reclaim the site prior to commencement of the construction
3. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting within and around the site
4. To provide facilities for distribution of electricity, water supply, drainage, sewage and other incidental facilities to the Project site
 - 1) City electricity distribution line to the site
 - 2) City water distribution main to the site
 - 3) City drainage main to the site
 - 4) Telephone trunk line to the main distribution frame/panel (MDF) of the building
 - 5) General furniture such as carpets, curtains, tables, chairs, and others
5. To exempt taxes and to take the necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation
6. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Indonesia with respect to the supply of the products and services under the verified contracts

7. To accord Japanese Nationals whose services may be required in connection with the supply of products and the services under the verified contracts, such facilities as may be necessary for their entry into Indonesia and stay therein for the performance of their work
8. To use and maintain properly and effectively the facilities constructed and equipment purchased under the Grant
9. To bear all the expenses other than those to be borne by the Grant, necessary for the Project

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jz

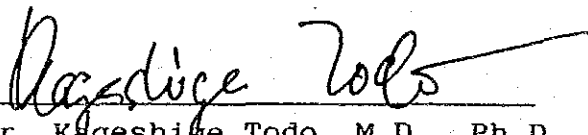
MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY ON THE PROJECT FOR
THE CONSTRUCTION OF THE NEW EMERGENCY UNIT
AT DR. SOETOMO HOSPITAL
IN
THE REPUBLIC OF INDONESIA
(CONSULTATION ON DRAFT REPORT)

In November 1992, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Project for the Construction of the New Emergency Unit at Dr. Soetomo Hospital (hereinafter referred to as "the Project") to the Republic of Indonesia, and based on the discussions with the Indonesian side and the examination of the results of the field survey, JICA has prepared the draft report of the study.

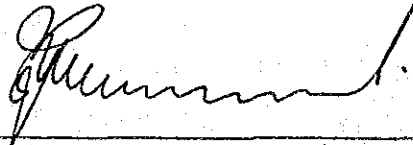
In order to explain and discuss the contents of the draft report, JICA sent to Indonesia a study team, which is headed by Dr. Kageshige Todo, M.D., Ph.D., Director of the Department of Thoracic & Cardiovascular Surgery, Vice President of St. Mary's Hospital from March 15 to 22, 1993.

As a result of discussions, both sides have confirmed the main items described in the attached sheets.

Jakarta, March 22, 1993



Dr. Kageshige Todo, M.D., Ph.D.
Leader
Draft Report Explanation Team
JICA



Dr. Broto Wasisto, MPH
Director General
Directorate General of
Medical Care
Ministry of Health

ATTACHMENT

1. Contents of the Draft Report

The Indonesian side has agreed and accepted in principle the contents of the Draft Report proposed by the team.

2. Japan's Grant Aid system

- 1) The Indonesian side understands the system of Japan's Grant Aid as explained by the team.
- 2) The Indonesian side will take the necessary measures, as described in the Annex I for the smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

3. Other relevant issues

On condition that Japan's Grant Aid is extended to the Project;

- 1) the Government of Indonesia will allocate the necessary budget to the Project for securing sustainable and proper operation and maintenance of the Emergency Care Unit at Dr. Soetomo Hospital (hereinafter referred to as "the Unit").
- 2) the Government of Indonesia will recruit the necessary personnel (especially nurse) for the Unit.
- 3) Dr. Soetomo Hospital will maintain adequate performance and utilization data as described in the Annex II on the facilities included in the Project. And these data will be submitted annually to the Japanese side.
- 4) Dr. Soetomo Hospital will make an inventory list on the equipment and spare parts included in the Project. And the list will be renewed in accordance with the conditions of the equipment and the consumption of the spare parts.

4. Further Study

JICA will complete the final report with the confirmed items, and send it to the Government of Indonesia around April 1993.

Annex I

Necessary measures to be taken by the Government of Indonesia on condition that Japan's Grant Aid is extended:

1. To secure the site for the Project
2. To demolish the present buildings including underground structure and clear, level and reclaim the site prior to commencement of the construction
3. To provide areas for the temporary site office, workshops and yards
4. To provide power, water and telephone facilities to the site for the Japanese work
5. To undertake incidental outdoor works such as gardening and fencing within and around the site
6. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage and other incidental facilities to the Project site
 - 1) High tension power supply line and substation
 - 2) City water lead-in pipe up to the water meter
 - 3) Telephone Central Office line up to the main distribution frame and necessary pay-telephone equipment
 - 4) Drainage city mains to the site
 - 5) General furniture such as carpets, curtains, tables, chairs, and others
7. To obtain the necessary permission for the telecommunication

8. To prepare the necessary facilities to accommodate the telecommunication equipment and install them, except the ones in the Unit and on the ambulances
9. To conclude a Banking Arrangement (B/A) with an authorized Japanese foreign exchange bank and bear the necessary commissions to the Japanese foreign exchange bank for the banking services based upon the B/A
10. To issue necessary Authorization(s) to Pay (A/P) and bear the necessary payment commissions for A/P based upon the B/A
11. To ensure prompt tax exemption and customs clearance of imported materials and equipment brought for the Project at the port of disembarkation in Indonesia
12. To pay customs, internal taxes, value added taxes and other fiscal levies for unloading, customs clearance, inland transportation, etc. of imported materials and equipment for the Project
13. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Indonesia with respect to the supply of the products and services under the verified contracts
14. To accord Japanese Nationals, whose services may be required in connection with the supply of products and the services under the verified contracts, such facilities as may be necessary for their entry into Indonesia and stay therein for the duration of their work
15. To obtain building permission and other necessary permission for the Project

16. To use and maintain properly and effectively the facilities constructed and equipment purchased under the Grant
17. To bear all the expenses other than those to be borne by the Grant

ANNUAL DATA/PERFORMANCE OF THE EMERGENCY CARE UNIT AT DR. SOETOMO HOSPITAL

| ITEM | | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 2000 | 2001 | 2002 |
|------|---|----|----|----|----|----|----|----|------|------|------|
| 1 | Outpatient Activities | | | | | | | | | | |
| | 1) Number of Outpatient (S) | | | | | | | | | | |
| | 2) Number of Outpatient (M) | | | | | | | | | | |
| | 3) Number of Outpatient (Ob/Gy) | | | | | | | | | | |
| | 4) Number of Outpatient (P) | | | | | | | | | | |
| 2 | 5) Number of Discharged | | | | | | | | | | |
| | Emergency Operation | | | | | | | | | | |
| | 1) Number of Emergency Operation | | | | | | | | | | |
| | 2) Number of Delivery | | | | | | | | | | |
| | 3) Number of Caesarean section | | | | | | | | | | |
| 3 | Intensive Observation | | | | | | | | | | |
| | 1) Number of Intensive Observation Cases | | | | | | | | | | |
| | 2) Number of Discharged after Intensive Observation | | | | | | | | | | |
| 4 | Inpatient Activities (referred to Main Hospital) | | | | | | | | | | |
| | 1) Number of Inpatient (S) | | | | | | | | | | |
| | 2) Number of Inpatient (M) | | | | | | | | | | |

| ITEM | | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 2000 | 2001 | 2002 |
|------|--|----|----|----|----|----|----|----|------|------|------|
| 4 | Inpatient Activities (referred to Main Hospital) | | | | | | | | | | |
| | 3) Number of Inpatient (Ob/Gy) | | | | | | | | | | |
| | 4) Number of Inpatient (P) | | | | | | | | | | |
| | Mortality | | | | | | | | | | |
| 5 | 1) Number of Death on Arrival | | | | | | | | | | |
| | 2) Number of Death after Intensive Observation | | | | | | | | | | |
| | 3) Number of Stillbirth | | | | | | | | | | |
| | 4) Number of Neonatal Death (less than 29 days old) | | | | | | | | | | |
| 6 | Training Activities | | | | | | | | | | |
| | 1) Number of Courses | | | | | | | | | | |
| | 2) Number of Students (By Each Courses) | | | | | | | | | | |

Note: (S)=Surgery (M)=Internal Medicine (Ob/Gy)=Obstetrics & Gynecology (P)=Pediatrics



Surabaya, December 29, 1992.

No. : 235/Lb-Mtn/XII/92.
Subject : Preliminary Report of
Soil Investigation.

To : The Head of Dr. Soetomo Hospital.
Jl. Dharma Husada
Surabaya.

Dear Sir,

We would like to send the Preliminary Report of Soil Investigation at U.G.D Area as follows :

A. The soil condition evaluated from 6 (six) boreholes can be concluded that :

- from the ground surface to a depth of -5.00 m, soil layers consist of silty clay and sand with SPT (N number) = 2 - 4 blows/ft.
- soil layers at a depth of -5.00 m to -16.00 m consist of sandy clay with SPT (N number) = 1 blow/ft.
- at a depth of -16.00 m to -24.00 m soil layers consist of silty clay and sand with SPT (N number) = 29 - 50 blows/ft.
- soil layers at a depth of -24.00 m to -30.00 m consist of sand with little silt and clay with SPT (N number) = 40 - 50 blows/ft.

B. For the foundation of 5 (five) stories building, we suggest that the use of bored pile with diameter of 50 cm is better and the depth of embedment is -24.00 m from the ground surface.



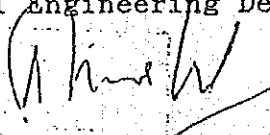
The allowable bearing capacity of single bored pile obtained based on the bearing capacity of the soil is :

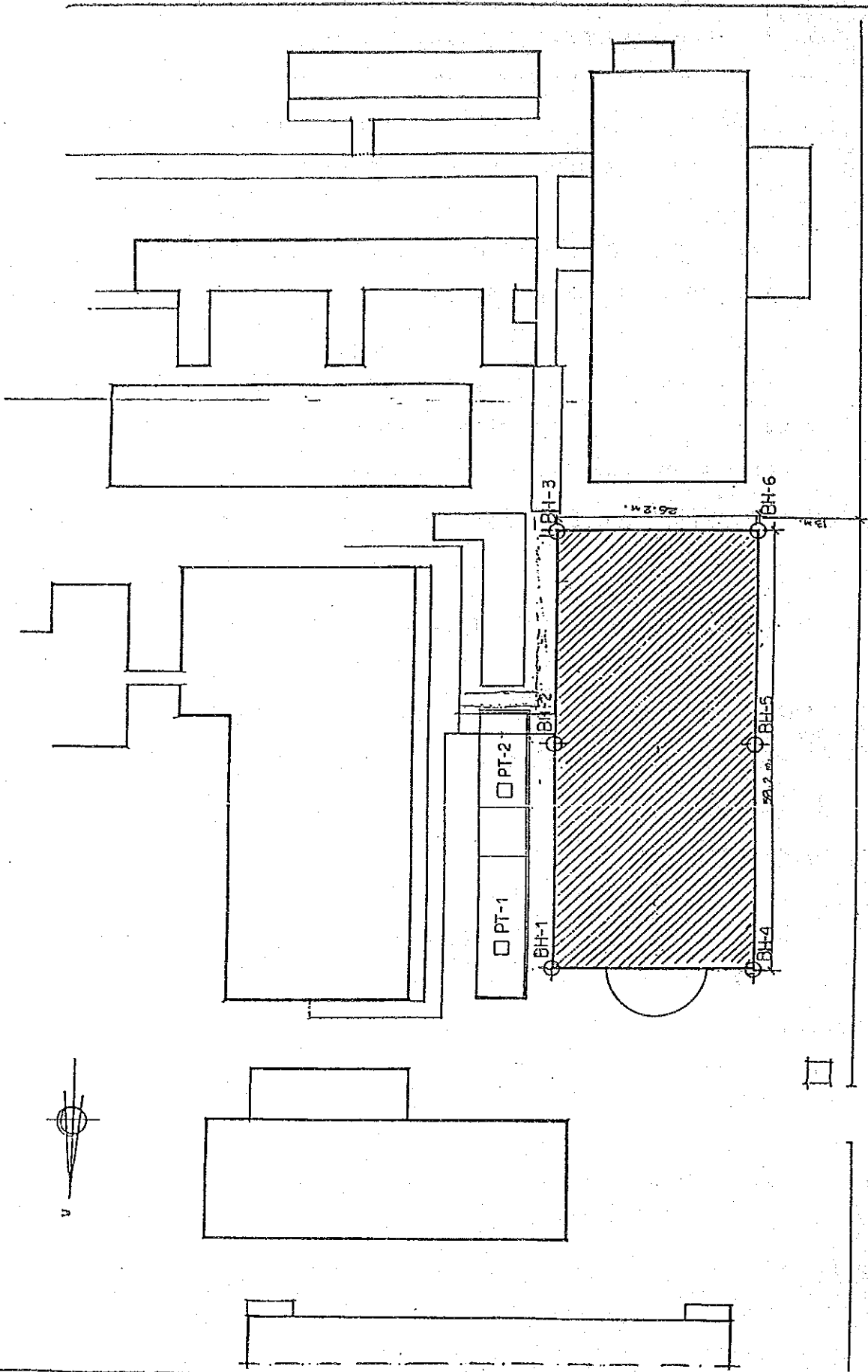
$$\begin{aligned}\bar{P} &= 1/4 [1/4 \times \sqrt{1} \times 50^2 \times 4 \times 40] + [\sqrt{1} \times 50/50 (800 \times 30)] \\ &= 1/4 [314.159 + 75.398] = 97 \text{ tons.}\end{aligned}$$

C. To obtain the confidence about the allowable bearing capacity of single bored pile as mentioned above, we suggest that the pile load test should be conducted to prove the safe prediction of the bearing capacity of the bored pile.

Thank you very much for your attention and cooperation.

Coordinator of Public Service
Soil Mechanics Laboratory of
Civil Engineering Department of ITS.


Ir. H. Afandi Saleh.

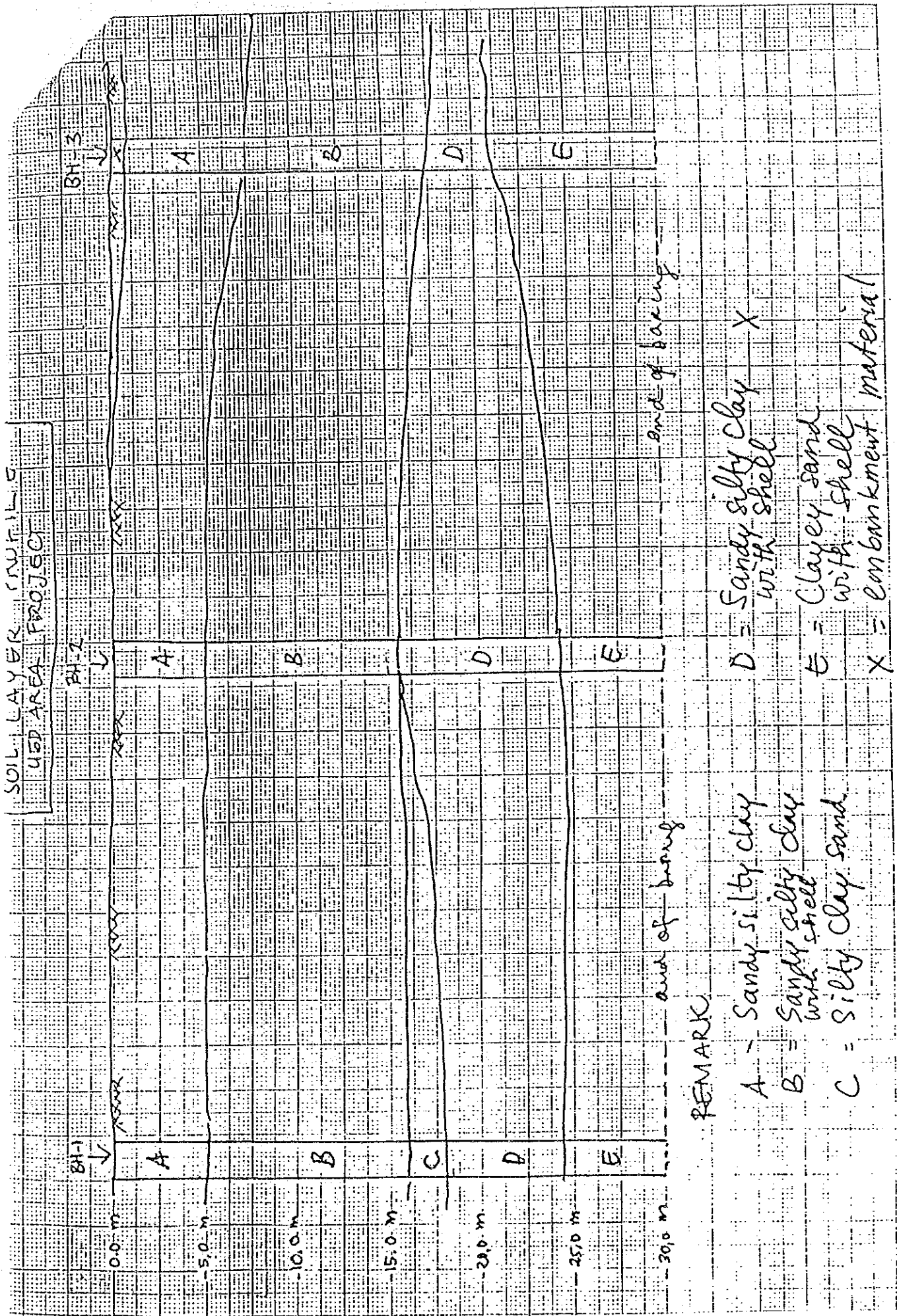


LABORATORIUM MEKANIKA TANAH
 FAKULTAS TEKNIK SIPIL DAN PERENCANAAN
 INSTITUT TEKNOLOGI SEPULUH NOPEMBER
 SURABAYA



GAMBAR SITUASI LETAK TITIK SONDIR DAN BORING
 RENCANA PEMBANGUNAN GEDUNG UNIT GAYAT DARU-
 RAT RSUD. DR. SOETOMO JL. DHARMAWANGSA
 SURABAYA.

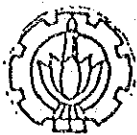
KETERANGAN :
 ▲ = TITIK SONDIR
 ⊙ = TITIK BORING



REMARK

- A - Sandy silty clay
- B = Sandy silty clay with shell
- C = Silty Clay sand

- D = Sandy silty clay with shell
- E = Clayey sand with shell
- X = embankment material



SOIL MECHANICS LABORATORY

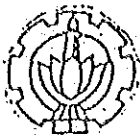
CIVIL ENGINEERING AND PLANNING FACULTY
SEPULUH NOPEMBER INSTITUTE OF TECHNOLOGY

PROJECT : U G D.
LOCATION : Jl. Darmawangsa
ELEVATION : 0.00 U G D AREA

BORING NO : BH.1
DATE : 3 - 12 - 1992

| DEPTH (m) | BOR LOG | S O I L DISCRIPTION | S P T (N) Numbers of (B L O W S / F E E T) | | | | R E M A R K |
|----------------|------------|--------------------------------------|--|----|----|----|-------------|
| | | | 10 | 20 | 30 | 40 | |
| 0 | | | | | | | |
| 2 | | Sandy silty clay (brown - grey) | 9 | | | | |
| 4 | | | 8 | | | | |
| | | | 11 | | | | |
| | | | 10 | | | | |
| 6 | | | 2 | | | | |
| | | | 1 | | | | |
| | | | 1 | | | | |
| 8 | | Sandy clay (grey) | 1 | | | | |
| | | | 1 | | | | |
| 10 | | | 1 | | | | |
| | | | 1 | | | | |
| 12 | | | 1 | | | | |
| | | | 1 | | | | |
| 14 | | Clayey coarsesand (grey) | 1 | | | | |
| | | | 1 | | | | |
| 16 | | | 1 | | | | |
| 18 | | Silty clay (grey) | | | 35 | | |
| | | | | | 35 | | |
| 20 | | | | | 58 | | |
| | | | | | 52 | | |
| 22 | | Sandy silty clay (grey) | | | 52 | | |
| | | | | | 48 | | |
| 24 | | | | | 45 | | |
| | | | | | 42 | | |
| 26 | | | | | 45 | | |
| | | | | | 45 | | |
| 28 | | Clayey sand with shell (grey) | | | 52 | | |
| | | | | | 56 | | |
| 30 | | | | | 56 | | |





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 CIVIL ENGINEERING AND PLANNING FACULTY
 SEPULUH NOPEMBER INSTITUTE OF TECHNOLOGY

PROJECT : U G D .
 LOCATION : Jl. Darmawangsa
 ELEVATION : - 0.00 UGD Area

BORING NO : BH.3
 DATE : 23 - 12 - 1992

| DEPTH (m) | BOR LOG | S O I L DISCRIPTION | S P T (N) Numbers of (B L O W S / F E E T) | | | | R E M A R K |
|----------------|------------|--------------------------------------|--|----|----|----|-------------|
| | | | 10 | 20 | 30 | 40 | |
| 0 | | Sand (dark grey) | 10 | 8 | 10 | | |
| 2 | | | 4 | 6 | 3 | | |
| 4 | | Sadny silty clay (brown) | 2 | 1 | 1 | | |
| 6 | | | 1 | 1 | 1 | | |
| 8 | | | 1 | 1 | 1 | | |
| 10 | | Sandy clay with shell (grey) | 1 | 1 | 1 | | |
| 12 | | | 1 | 1 | 1 | | |
| 14 | | | 1 | 1 | 1 | | |
| 16 | | | 1 | 1 | 1 | | |
| 18 | | Sity clay sand with shell) | 28 | 27 | 25 | | |
| 20 | | | 17 | 50 | 49 | | |
| 22 | | | 49 | 49 | 42 | | |
| 24 | | Sand with little clay (dark grey) | 48 | 49 | 50 | | |
| 26 | | | 52 | 52 | 55 | | |
| 28 | | | | | | | |
| 30 | | | | | | | |



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CIVIL ENGINEERING AND PLANNING FACULTY
SEPULUH NOPEMBER INSTITUTE OF TECHNOLOGY

PROJECT : UGD
 LOCATION : DARMAWANGSA
 ELEVATION : ± 0.00 UGD AREA

BORING NO : BR.4

DATE : 12 - 12 - 1992

| DEPTH (m) | BOR LOG | S O I L DISCRIPTION | S P T (N) Numbers of (BLOWS/FEET) | | | | R E M A R |
|----------------|-------------------|---|---|----|----|----|-----------|
| | | | 10 | 20 | 30 | 40 | |
| 0 | | | | | | | |
| 0 - 2 | [Hatched pattern] | Sandy silty clay (grey) | .2 | | | | |
| 2 - 4 | [Hatched pattern] | Sandy clay with shell (grey) | .1 | | | | |
| 4 - 6 | [Hatched pattern] | | .1 | | | | |
| 6 - 8 | [Hatched pattern] | | .1 | | | | |
| 8 - 10 | [Hatched pattern] | | .1 | | | | |
| 10 - 12 | [Hatched pattern] | | .1 | | | | |
| 12 - 14 | [Hatched pattern] | Sandy clay with shell (grey) | .1 | | | | |
| 14 - 16 | [Hatched pattern] | | .1 | | | | |
| 16 - 18 | [Hatched pattern] | | .1 | | | | |
| 18 - 20 | [Hatched pattern] | | .3 | | | | |
| 20 - 22 | [Hatched pattern] | Sandy silty clay with shell (grey) | | | 26 | | |
| 22 - 24 | [Hatched pattern] | | | | 27 | | |
| 24 - 26 | [Hatched pattern] | Sandy silty clay with shell (grey) | | | 28 | | |
| 26 - 28 | [Hatched pattern] | | | | 30 | | |
| 28 - 30 | [Dotted pattern] | Clayey sand (grey) | | | | 46 | |
| | | | | | | 48 | |
| | | | | | | 50 | |
| | | | | | | 49 | |
| | | | | | | 56 | |
| | | | | | | 55 | |
| | | | | | | 56 | |
| | | | | | | 56 | |
| | | | | | | 57 | |



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CIVIL ENGINEERING AND PLANNING FACULTY
SEPULUH NOPEMBER INSTITUTE OF TECHNOLOGY

PROJECT : U G D.
LOCATION : Jl. Dhamowangsso Sby.
ELEVATION : ± 0.00

BORING NO : D H. 5

DATE : 15 - 12 - 199

| DEPTH (m) | BOR LOG | S O I L DISCRIPTION | S P T (N) Numbers of (B L O W S / F E E T) | | | | R E M A R K |
|----------------|------------|--|--|----|----|----|-------------|
| | | | 10 | 20 | 30 | 40 | |
| 0 | | | | | | | |
| 2 | | Sandy silty clay (brown) | 4 | 3 | | | |
| 4 | | | 2 | | | | |
| 6 | | | 1 | | | | |
| 8 | | | 1 | | | | |
| 10 | | Sandy clay (brown - grey) | 1 | | | | |
| 12 | | | 1 | | | | |
| 14 | | | 1 | | | | |
| 16 | | | 1 | | | | |
| 18 | | Sandy silty clay with shell (grey) | 1 | | 23 | | |
| 20 | | | | | 29 | | |
| 22 | | Silty clayey sand with shell (grey) | | | 30 | | |
| 24 | | | | | 33 | | |
| 26 | | Clayey sand (grey) | | | 34 | | 51 |
| 28 | | | | | 35 | | 52 |
| 30 | | | | | 36 | | 53 |
| | | | | | | | 57 |
| | | | | | | 58 | |
| | | | | | | 60 | |



SOIL MECHANICS LABORATORY

CIVIL ENGINEERING AND PLANNING FACULTY
SEPOLUH NOPEMBER INSTITUTE OF TECHNOLOGY

PROJECT : U G D .
LOCATION : Jl Darmawangsa
ELEVATION : + 0.00

BORING NO : BH.6
DATE : 20 - 12 - 1992

| DEPTH (m) | BOR LOG | S O I L DISCRIPTION | S P T (N) Numbers of (BLOWS/FEET) | | | | R E M A R K |
|----------------|------------|-----------------------------|---|----|----|----|-------------|
| | | | 10 | 20 | 30 | 40 | |
| 2 | | Sandy silty clay (brown) | 6 | 13 | 15 | | |
| 4 | | | 4 | | | | |
| 6 | | | 3 | | | | |
| 8 | | | 2 | | | | |
| 10 | | | 1 | | | | |
| 12 | | | 1 | | | | |
| 14 | | 1 | Sandy clay with shell (grey) | 1 | | | |
| 16 | | 1 | | | | | |
| 18 | | 1 | | | | | |
| 20 | | 1 | | | | | |
| 22 | | 1 | | | | | |
| 24 | | 1 | | | | | |
| 26 | | 1 | Silty clay sand with shell (grey) | 13 | 18 | 24 | |
| 28 | | 26 | | | | | |
| 30 | | 41 | | | | | |
| | | 43 | | | | | |
| | | 43 | | | | | |
| | | 52 | | | | | |
| | 54 | | | | | | |
| | 53 | | | | | | |
| | 54 | | | | | | |
| | 56 | | | | | | |
| | 60 | | | | | | |





DEPARTEMEN KESEHATAN R.I.
 DIREKTORAT JENDERAL PPM DAN PLP, DIREKTORAT PENYELIHATAN LINGKUNGAN PEMUKIMAN
 BALAI TEHNIK KESEHATAN LINGKUNGAN SURABAYA
 JALAN SIDOLUHUR No. 12 Tlp. 22603 SURABAYA, 60175

Pemeriksaan Fisika dan Kimia

1. Jenis air : Air Minum

Dikirim/diambil oleh

By M. Nur dari

BKTL Surabaya

2. Berasal dari :

Kodya Surabaya

Diambil/diterima tgl.

24-8-1992

Kode/Nomor Lab :

2568 Air bak tandon di depan ruangan pompa air RS Dr Soetomo

| No. urut | Parameter yang perlu diperiksa | Satuan | Batas syarat Air minum ±) | HASIL | | KETERANGAN | |
|----------|--|-----------|---------------------------|---------------|----------|---|---------------------------------------|
| | | | | No. Lab. 2568 | No. Lab. | | |
| | A. FISIKA | | | TB | | | |
| 1. | Bau | - | - | | | Tidak berbau | |
| 2. | Jumlah Zat padat terlarut (TDS) | mg/l | 1000 | 234 | | | |
| 3. | Kekeruhan | Skala NTU | 5 | 1,4 | | | |
| 4. | Rasa | - | - | TR | | Tidak terasa | |
| 5. | Suhu | °C | Suhu Udam ±3°C | 29 | | | |
| 6. | Warna | Skala TCU | 15 | 2,2 | | TCU = True Colour Unit | |
| 7. | Daya hantar Listrik (DJL) | Umhos/Cm | - | 468 | | | |
| | B. KIMIA | | | | | | |
| | a. Kimia Anorganik | | | | | | |
| 1. | Air Raksa *) | mg/l | 0,001 | 0,0 | | 1) PER. MEN. KES. R. I. No. : 416/MENKES/PER/IX/90 | |
| 2. | Aluminium | mg/l | 0,2 | 0,0 | | | |
| 3. | Arsen *) | mg/l | 0,05 | - | | | |
| 4. | Barium | mg/l | 1,0 | - | | | |
| 5. | Besi | mg/l | 0,3 | 0,0 | | | |
| 6. | Flourida | mg/l | 1,5 | 0,78 | | | |
| 7. | Kadmium *) | mg/l | 0,005 | - | | | |
| 8. | Kesadahan sebagai CaCO ₃ | mg/l | 500 | 153,26 | | | |
| 9. | Khlorida | mg/l | 250 | 26,6 | | | |
| 10. | Kromium, Valensi 6 *) | mg/l | 0,05 | 0,0 | | | |
| 11. | Mangan | mg/l | 0,1 | 0,0 | | | |
| 12. | Natrium | mg/l | 200 | 1,20 | | | |
| 13. | Nitrat, Sebagai N | mg/l | 10 | 0,0 | | | |
| 14. | Nitrit, Sebagai N | mg/l | 1,0 | 0,0 | | | |
| 15. | Perak *) | mg/l | 0,05 | - | | | |
| 16. | P.H. | - | 6,5 - 8,5 | 6,8 | | | merupakan batas minimum dan maksimum. |
| 17. | Selenium *) | mg/l | 0,01 | - | | | |
| 18. | Seng | mg/l | 5,0 | 0,0 | | | |
| 19. | Sianida *) | mg/l | 0,1 | 0,0 | | | |
| 20. | Sulfat | mg/l | 400 | 18 | | | |
| 21. | Sulfida (Sebagai H ₂ S) | mg/l | 0,05 | 0,0 | | | |
| 22. | Tembaga | mg/l | 1,0 | 0,0 | | | |
| 23. | Timbal *) | mg/l | 0,05 | 0,0023 | | | |
| 24. | Sisa Klor | mg/l | - | 0,0 | | | |
| | b. Kimia Organik | | | | | | |
| 1. | Zat Organik (K _{Mn} O ₄) | mg/l | 10 | 7,98 | | | |
| 2. | Detergent | mg/l | 0,05 | 0,0 | | | |

*) Zat Kimia bersifat racun

-) Tidak diperiksa

Pertimbangan :

Semua parameter memenuhi batas syarat air minum.

Pemeriksaan Balok

Drs. M. Hadi Broto. S.)
NIP. 140093408Surabaya, 24-8-1992
Balai Teknik Kesehatan Lingkungan
Surabaya
Kepala Seksi Kimia(Ir. Edy Wahyu Pudjianto)
NIP. 140146891



DEPARTEMEN KESEHATAN R.I.
DIREKTORAT JENDERAL PPM DAN PLP, DIREKTORAT PENYEHATAN LINGKUNGAN PEMUKIMAN
BALAI TEHNIK KESEHATAN LINGKUNGAN POS SURABAYA
JALAN SIDOLUHUR No. 12 Tilp. 22603 SURABAYA, 60175

Pemeriksaan Fisika dan Kimia

Dikirim/diambil oleh : Dr. H. Nur Jari
BTKL Surabaya

1. Jenis air limbah : Rumah Sakit

2. Berasal dari : Kodya Surabaya

Diambil / diterima tgl. : 24-8-1992

Kode / Nomor Lab. : 2357 Air limbah Rumah Sakit Dr Soetomo dicibil di out let

| No. | Parameter | Satuan | Baku Mutu Air Limbah Sk. Gub. Jatim No. 114/1987 GOLONGAN II | H A S I L | | Keterangan |
|------------------|------------------------------------|--------|--|------------------|----------|------------------------|
| | | | | No. Lab. 2357 | No. Lab. | |
| I. Fisika | | | | | | |
| 1. | Temperatur | °C | 28 | 29 | | |
| 2. | Jumlah padatan terlarut | mg/l | 2000 | 375 | | |
| 3. | Padatan tersuspensi | mg/l | 200 | 25 | | |
| 4. | Zat yang terendap *) | mg/l | -- | 6,7 | | */ = SK. Menkes. 173/7 |
| II. Kimia | | | | | | |
| 1. | pH | -- | 6 - 9 | 7,0 | | |
| 2. | Besi (Fe) | mg/l | 10 | 0,0 | | |
| 3. | Mangan (Mn) | mg/l | 2 | 0,0 | | |
| 4. | Barium (Ba) | mg/l | 2 | -- | | |
| 5. | Tembaga (Cu) | mg/l | 2 | 0,0 | | |
| 6. | Seng (Zn) | mg/l | 10 | 0,0 | | |
| 7. | Krom Heksavalen (Cr) | mg/l | 0,1 | 0,0 | | |
| 8. | Krom total | mg/l | 0,5 | 0,0 | | |
| 9. | Kadmium (Cd) | mg/l | 0,05 | -- | | |
| 10. | Raksa (Hg) | mg/l | 0,002 | 0,0 | | |
| 11. | Timbal (Pb) | mg/l | 0,5 | 0,0329 | | |
| 12. | Timah putih (Sn) | mg/l | 0,05 | -- | | |
| 13. | Arsen (As) | mg/l | 0,1 | -- | | |
| 14. | Selenium (Se) | mg/l | 0,05 | -- | | |
| 15. | Nikel (Ni) | mg/l | 0,2 | 0,0 | | |
| 16. | Kobalt (Co) | mg/l | 0,4 | -- | | |
| 17. | Sianida (CN) | mg/l | 0,1 | 0,0 | | |
| 18. | Sulfida (S) | mg/l | 0,05 | 0,0 | | |
| 19. | Fluorida (F) | mg/l | 15 | 0,73 | | |
| 20. | Sisa Klór bebas (Cl ₂) | mg/l | 0,03 | 0,0 | | |
| 21. | Amonia (NH ₃) | mg/l | 1 | 0,05 | | sebagai N |
| 22. | Nitrat (NO ₃) | mg/l | 20 | 2,5 | | |
| 23. | Nitrit (NO ₂) | mg/l | 1 | 0,092 | | |
| 24. | Kebutuhan Oksigen Biokimia (BOD) | mg/l | 50 | 15 | | |
| 25. | Kebutuhan Oksigen Kimia (COD) | mg/l | 100 | 30 | | |
| 26. | Detergen Anionik | mg/l | 1 | 0,125 | | |
| 27. | Penol | mg/l | 0,05 | 0,0 | | |
| 28. | Minyak dan Lemak (M/L) | mg/l | 5 | 0,0 | | |
| 29. | PCB | mg/l | nihil | -- | | |
| 30. | Phosphat (PO ₄) | mg/l | | 0,125 | | |

Kepala Balai Teknik Kesehatan Lingkungan
SURABAYA
(Drs. S. Broto S.)

Surabaya, 7-9-1992
Balai Teknik Kesehatan Lingkungan
Pos Surabaya
Kepala Seksi Kimia
(Signature)
(Ir. Edy Wahyu Pudjianto)
NIP. 140146891

