

No. 50:

**PRELIMINARY DESIGN
OF
THE LIBRARY & MEDIA BUILDING
ASIAN INSTITUTE OF TECHNOLOGY**

SEP. 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

SDS



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JICA LIBRARY

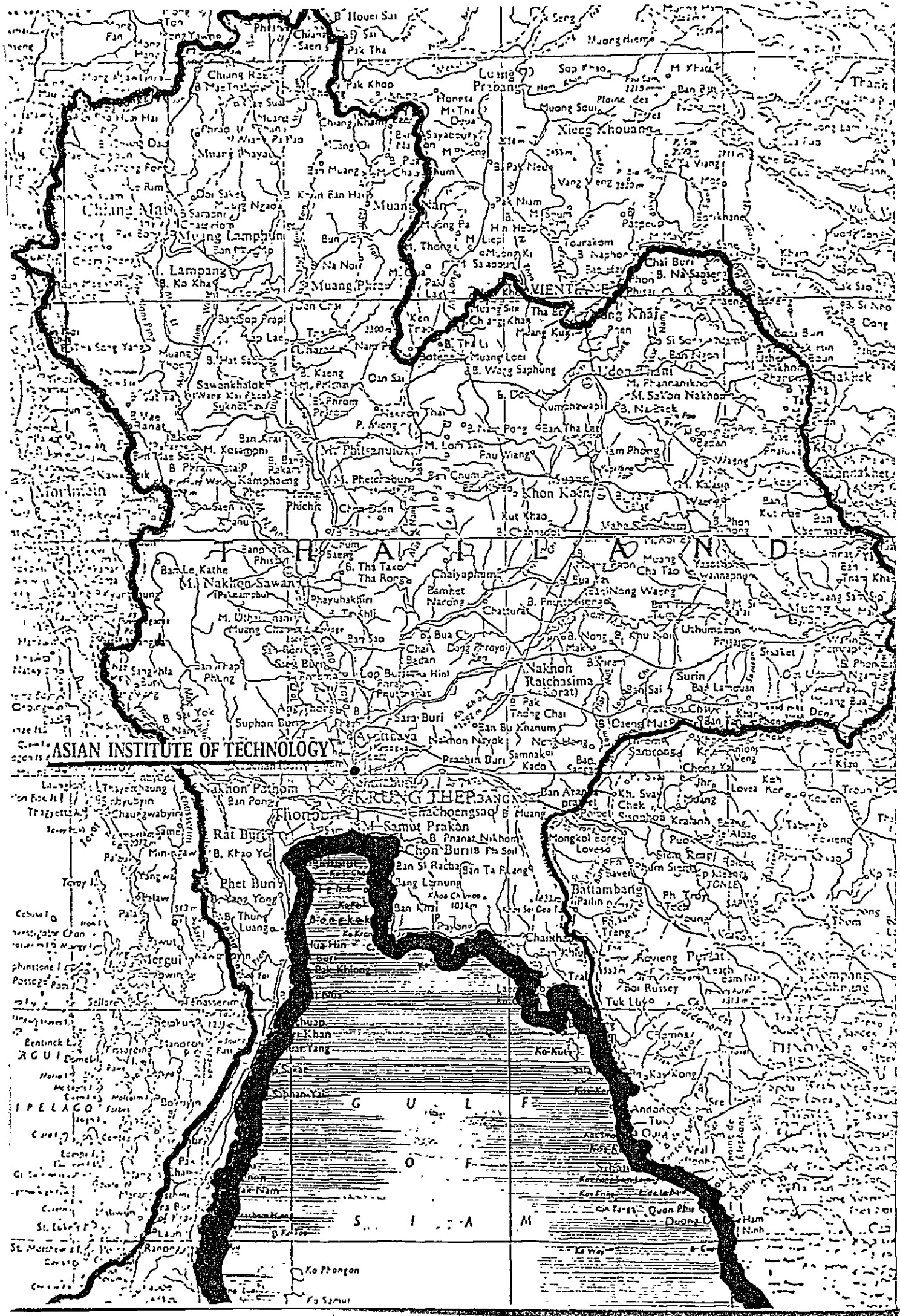


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THE LIBRARY & MEDIA BUILDING
ASIAN INSTITUTE OF TECHNOLOGY**



ASIAN INSTITUTE OF TECHNOLOGY

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PREFACE

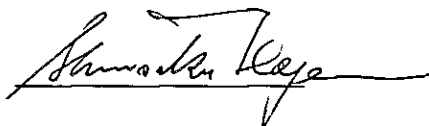
In response to the request of the Asian Institute of Technology (AIT), the Government of Japan decided to carry out a study necessary for the preparation of the preliminary design for Construction Plan of a library for the Institute and the Japan International Cooperation Agency conducted the study.

The Government of Japan has been extending its cooperation to the institute with a view to contributing to the development of Asia by sending professors and sharing the scholarship funds, in addition to the construction of the AIT Center which was provided under the financial assistance program. I am pleased to note that these above cooperation extended to the Institute has been highly appraised by all concerned.

In recognition of an additional merit which the construction of a new library would have to the cooperation currently under way, the Japan International Cooperation Agency sent a survey team to Thailand from May through June 1978. Thanks to the full and extensive cooperation rendered by the Institute, the field survey was carried out smoothly and resulted in confirming the preliminary design in August 1978. After further work in Japan, the survey team is now in a position to submit the final report attached hereto.

I sincerely hope that this report would contribute to the progress of the project express my heartfelt appreciation to all those concerned for their cooperation extended to the survey team.

September 1978



Shinsaku Hogen
President

JAPAN INTERNATIONAL COOPERATION AGENCY

CHAPTER 1 OUTLINE OF THE PROJECT

1.1 SUMMARY OF ASIAN INSTITUTE OF TECHNOLOGY

■ General

The Asian Institute of Technology (AIT) is the international graduate school of technology which provides masters and doctors courses.

■ Background of Founding

The AIT was found in 1959, as the SEATO Graduate School of Engineering and in November 1967, the Institute became a fully dependent international non-profit educational organization with its present title under the Charter of the Asian Institute of Technology, granted as special registration by the Royal Thai Government. Initially, the Institutes shared its facilities in the campus of the Chulalong Korn University and in February 1973, moved to the present location in Rangsit District 40 km North of Bangkok, where approximately 400 acres of land was provided by the Royal Thai Government. With completion of the administration, academic buildings, laboratories, dining hall and dormitory buildings, in the first phase facilities extension plan, it inaugurated the renewed activities.

The Institute started with only one division which is Hydraulics, have been added division of Agricultural and Food Engineering, Human Settlements Development, Environmental Engineering, Geotechnical and Transportation Engineering, Industrial Engineering and Management, Structural Engineering and Construction, Water Resources Engineering and Computer Application Engineering. Energy Technology is being planned to make a fresh-start on the respective courses.

■ Objectives

The AIT has as its primary objectives to nurture and to educate engineers fully qualified to contribute to the development of the economic societies in the Asian countries in the fields of engineering and technology.

Heretofore, a number of students from Asian countries has been abroad to study in advanced countries, often settling live in the country of their study after their graduation. This trend caused the technological buildup for the Asian countries to remain behind the development.

In this respect, the AIT, located physically in Asia, would serve to have a great effect not only on encouraging participation of the students from Asian countries but also preventing the "Brain Draining" out of the region.

On the other hand, the AIT is making its efforts to help develop Asian countries by way of holding international conferences and seminars on important themes such as the Asian countries development programs, and conducting survey and research on the development at requests from the Asian countries.

Graduates from the AIT to date number more than 1,500 in total, and as many as 89% of them have held key positions in government offices, public corporations and business firms in Asian countries. This fact represents that the institute has proven successful in assisting and supporting the development for the Asian countries by preventing "Brain Draining" from the Asia.

■ Organization

Power to manage the affairs of the AIT is vested by the Board of Trustees comprising about 40 board members.

The board holds its annual meeting in January every year in which the members including scholars, businessmen and Ambassadors to Thailand of 17 countries in USA, Europe and the Asian Pacific region also participate. The participants attend the meeting in personal capacity free from governmental representation from the AIT's independent and autonomous point of view. The member's tenure of office is 3 years for a term and may be extended to the next term.

The present chairman of the board is Dr. Thanat Knoman, the former foreign affairs minister of the Royal Thai Government and the vice chairman is Sir. Robert Blackwood, the chairman of the Board of Australian Dunlop Corporation. The members from Japan are Mr. Takeshi Watanabe, the former president of the Asian Development Bank and the present consultant to the Bank of Tokyo, and Dr. Hideo Kikkawa, Professor of Tokyo Institute of Technology (Leader of the Survey Team for this project).

The Executive Committee executes the authorities delegated by the Board of Trustees. The committee consists of the Chairman of the Board of Trustees, the vice-chairman, president, the vice presidents, a faculty representative to total 18 members. The term of the membership is 3 years and an appointment on the successive term is allowed. The committee meetings usually are held 6 times a year.

Appointment of the president and professors are made by the Board of Trustees. The faculty consists at present approximately consisted of about 55 professors.

The tenure of office is normally 2 years but some have served more than 10 years. Dispatch of professors is by either one of two types of arrangement, that the travel expenses, salary

and other expenses for the professor and his dependents are all seconded by their government of origin for the one, or the AIT shares a part of these expenses for the other. Often both types of arrangement are applied to the professors. Those secondment by the governments are 4 from United Kingdom, 3 from West Germany, 6 from Japan and 3 from Australia.

Currently, the president's post is held by Dr. Robert B. Banks (USA) with the vice-president's being held by Dr. Hiroyoshi Shi-igai (professor of Tsukuba University, Japan) and Dr. Ricardo P. Pama (Philippines).

Students totalling 445 are enrolled from more than 20 countries with 20% of them from Thailand followed by Bangladesh, Sri Lanka, Pakistan, Philippines, India and Taiwan.

The AIT is planning to increase the enrollment of students to 800 by 1980.

■ Finance

The Institute is wholly financed by the assistance rendered by donor governments, international organizations, business organizations and foundations. The assistances are broken-down to funds for the facilities construction, secondment of professors, share of scholarship funds, donation of equipment, and materials, and share of operational cost.

The donor countries consists of USA, United Kingdom, Japan, Australia, New Zealand, Canada, Thailand, etc. totalling 17 Nations.

The Japanese Government has been rendering assistance since 1969 in dispatching professors, sharing scholarship funds and donating equipment and materials, and in 1974, constructed AIT Center building at the cost of its total share amounting to ¥870 million.

1.2 FACILITIES DEVELOPMENT PLAN OF AIT

At the request of the AIT Board of Trustees, the Ministry of Overseas Development, the Government of the United Kingdom, had British architects Robert Matthew, Johnson-Marshall & Partners, Scott Wilson, Kirkpatrick & Partners conduct the development survey on the proposed campus site (Rangsit District) provided by the Royal Thai Government and present their report and Master Plan of the Campus during the period from August 1968 to January 1969.

The Master Plan described the construction plan of an advanced community of schools, with objectives of education and research in the fields necessary for technology development, and to meet the needs of all Asian regions. For the construction, the plan is intended to reclaim the proposed campus site of about a 400 acres rice field, 2.2 km x 0.8 km rectangular stretching east-west, located on the west side of a point 17 km north on the National Highway No.1 from the Donmuan International Airport of Bangkok and landscape the campus in accordance with a rural environment.

The Master Plan estimates the maximum number of students to reach 890 by 1979 and based on it, proposes to have 530,000 square feet (49,000 m²) of floor space available for the education and research facilities necessary for accommodating that number of students together with a detailed plan on the environment essential for each facility.

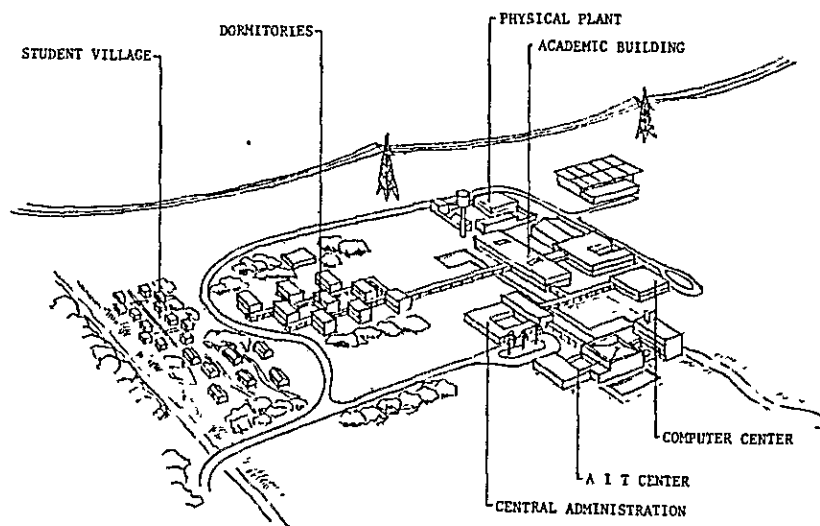
The site is divided into the facility zones of education and housing. Of the flows in the campus, the priority is given to walkway, with the traffic flow of vehicles linking it with the central zone. Also, is planned to be carried out independently so as not to affect the existing facilities.

Robert Matthew and his architectural engineer group reclaimed one third of the total site area on the east side along the National Highway as the first phase of construction work proposed in January 1970 in the Master Plan.

This will comprise the facilities of administration, civil engineering class rooms and laboratories, student dormitories and dining hall complex, energy plant, and the president's quarter and housings for professors. In 1973, upon completion of the work with the basic facilities planning finalized, the new campus of the AIT got off to its start.

Later, based on the Master Plan, the AIT Center (provided by Japan), Regional Experiment Station (by Taiwan), Computer Center (by USA) and Student Dormitory Complex (by Australia and Thailand) were completed one after another and much improvement has been made on the surrounding environment.

The new library of which the Japanese government was requested for the construction, when completed, would finalized the Master Plan and realize the concept of a campus community as proposed in the Plan.



1.3 REQUEST FOR ASSISTANCE FROM AIT TO THE JAPANESE GOVERNMENT

A letter dated May 27, 1977 and addressed to Mr. Hitomi, Envoy Extraordinary and Ambassador plenipotentiary, Embassy of Japan in Thailand, was received from Dr. Robert B. Banks, president of the AIT. The letter expressed appreciation for the assistance being rendered by the Japanese Government which included secondment of 5 professors and short-term experts, sharing of the scholarship funds, and educational equipment and materials furnished, and also, made an inquiry as to possible financial assistance by the Japanese Government for construction of an independent library to make other primary facilities meet the growing requirements for the increase of students year after year.

In February this year, the AIT officially requested the Japanese Government via the Embassy of Japan in Thailand their assistance with the proposal attached for the scale of library and the necessary facilities to be used in equipping the library.

1.4 ROLE OF LIBRARY

Science advances through the process of keeping accumulated facts, confirmed by observation or obtained from experimental studies, and applying them to the firmly established knowledges that have already been recognized. Accordingly, researchers endeavoring to realize something contributing to the advancement and promotion of knowledge, are called in the first place to find what the clearly known facts are in their specialized fields. For this purpose, it is necessary for them to be aware of the literatures describing, as record, the results of observation and experiments heretofore conducted.

In other words, a scientist or an engineer is constantly in need of the scientific, technological information in his specialized field in the usual activity. According to the survey in the western countries, the researchers in science and technological fields usually spends approximately 20% of his working time in information searching (collection and digestion). In fact, the researchers in university are said to have been spending slightly less time, than those of private business firms for information search. At any rate, there is no doubt that a substantially large portion of their research activities is devoted to searching for information. To find the fact that is necessary, there are three ways of approach; i.e. 1) by observation or experimentation on ones own, 2) by making inquiry to someone who has knowledge about the fact or 3) are often used for information requiring accuracy or involving extremely important matters.

In general, information is sought and obtained by looking up literature for the following occasions:

- 1) When one tries to find current information, that is to say, what kind of research other researchers in his field of study are now making or what fact is newly clarified.
- 2) When seeking specific information required for usual activities.

- 3) When a certain matter requires comprehensive information.
- 4) When seeking information vaguely without a definite subject in mind to look for.

In case of 1) above, it is mainly the practice to systematically go through newly-published science journals of relevant fields. Exchanging views informally with fellow researchers is another way tried quite often, which also meets the purpose. In trying to find some information in the related field other than the specialized field of ones own, checking catalogue indexes or abstracts is one way and reading review essays and books written about the subject being sought is another approach.

In case of 2) above, the source of the information does not matter but arrival at the information sought would suffice the need. So, the most sensible approach is to ask some fellow researcher who might be familiar with the information, you are seeking. This is the way most frequently followed. However, this approach often ends up with learning only from literature which contains the information. Reference books or materials such as hand-books, manuals, etc. are frequently used for search for a specific data and simple facts.

In case of 3) above, the publications including periodicals and books are the main source of information as compared with 1) and 2). Further, the approach to the information source is by means of index books and abstracts which enables a systematic search for information to be found.

The case 4) above is used often by researchers in the engineering field, with science journals or periodicals being the source of information. The search for information as introduced above requires a systematic approach to the aimed literature and also, collections which make the literature known from the approach readily available for the seeker. Both of these processes are the very functions which library only can offer. Researchers in western countries have taken it for granted to expect a library for their information searchers, while in Japan, they rely more on their own collections or often go to

the collections at research institutes or academic departments if they have failed with their own. Such being the practice generally prevailing in Japan, there are only a few libraries comparable to the highly advanced facilities as seen in the university libraries of western countries. Moreover, researchers have little opportunity to have experience in excellent library services, unless they are favored by a chance to study abroad in western country. In this situation, there are very few occasions when enthusiastic desire is brought up for improvement of library services.

Now, the amount of natural science literature published has doubled in the brief short period of 10 to 15 years in total volumes, showing a dramatic increase. In fact, even the essays produced exceeds 2 million a year. This reveals it impossible for Japanese researchers to make systematic information research depending on their own collections, no matter how large a volume of books Japanese are able to buy personally. The researchers in the Asian countries do not seem to have personal collections as large as the Japanese. This has made the university library a far more valuable existence. On the other hand, however, the fact that the custom of reading is not as prevalent as in Japan has had an adverse effect on the use of library.

Generally speaking, the library of a technical university has the several roles to play in providing not only information and materials useful for research activities, but also basic level books and materials necessary for the education of the students, and to maintain adequately these collections. The technical university's library has the function of a university library and at the same time, has to be a library specialized in the engineering fields. A specialized library in many cases provides services for literature retrieval and positive documentation services, such as preparation of indexes and abstracts. In the AIT Library, not only is ordinary library service provided to AIT's faculty and students but also it operates as a central organization in the movement under way to form a net-work on the

activities of each library in the region. Included in this preparation of the comprehensive lists by computer of the science journal collections in the major libraries throughout Thailand. Further, as a recent development, the Regional Documentation Center (RDC) was officially established in the library in March 1977 with the aim to play a role as the center of information activities in the engineering literatures available for the South-east Asian areas.

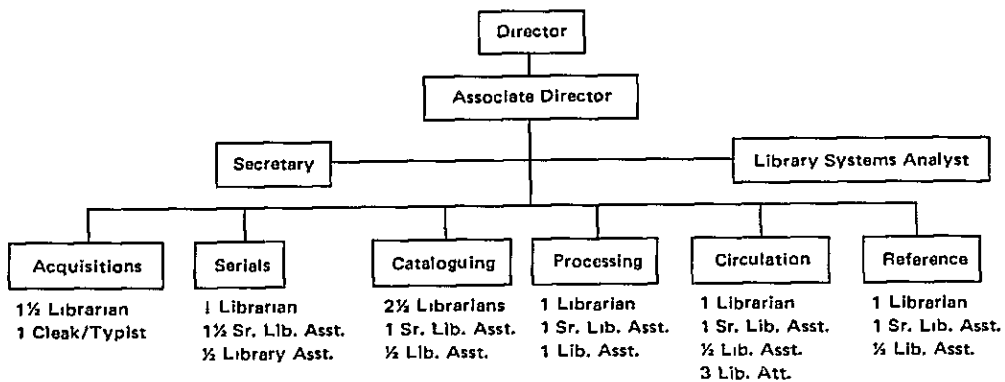
At present, with the funds provided by the donor nations and organizations, including the International Development Research Center (IDRC) of Canada, the government of New Zealand and USAID, the information activities groups formed in the three areas of the Asian Information Center for Geotechnical Engineering (AGE), International Ferrocement Information Center (IFIC) and Renewal Energy Resources Information Center (RERIC) are collecting relevant literatures, analysing the contents, compiling abstracts editing them into journals and publishing news letters.

The AIT has now seven academic courses in Community and Regional Development, Environmental Engineering, Geotechnical and Transportation Engineering, Industrial Engineering and Management, Structural Engineering and Construction, Water Resources Engineering, Agricultural and Food Engineering and Computer Application Engineering, with 100 staff members including about 70 faculty and professional experts, and about 450 students.

The most characteristic aspect of the institute is the international organization which was founded initially by SEATO in 1959 and has now become the institute to provide advanced education in civil engineering for the Asian areas under the charter enacted by Thailand.

Accordingly, faculty members have been recruited from 19 nations, not only from the advanced countries of Japan, Australia, Canada, Denmark, France, West Germany, Netherland, Switzerland, United Kingdom and United States of America, but also from Thailand, India, the Philippines, Nepal and Bangladesh, while the students

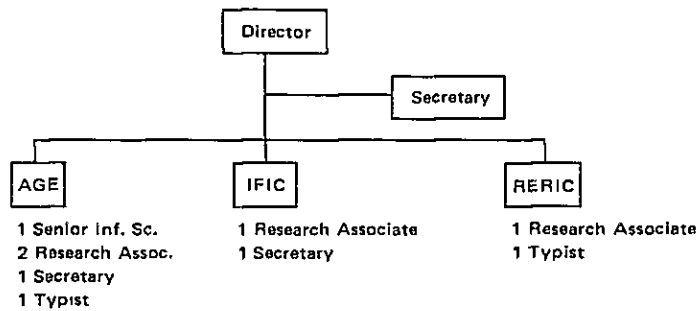
are from 20 countries mainly in Asia and the Middle East. The language used is English. However, it may be well imaginable by thinking of the many different native languages of the professors and students, that the AIT library is somewhat different from libraries of other universities in respect to the influence that language problems may have on the collection, storage and use of the materials and information. The library staff consists of 3 managerial and professional personnel, a French director, who is an expert in technical documentation in the chemical field and concurrently holds the position of director of the Regional Documentation Center, a Canadian associate-director, British specialized in chemistry and an expert in library science and a systems analyst, 21 Thai librarians are 10 Thai personnel in the Documentation Center. 8 of the 21 Thai librarians are specialized in library science and 5 of the Documentation Center are AIT graduates who are specialists in documentation. The excellent staff organization existing in this library has no comparison in other south-east Asian countries and there is probably no such university library comparable in Japan.



The organization chart of the library is as shown in Figure. What attracts one's attention is the staffing of a specialist of system analysis and a relatively large number of personnel placed in the functions of book and material collection, indexing and book processing. In this respect, the libraries for technology in advanced countries including USA have more staff placed in the services of providing information and materials, in respect to the process operation of acquisition and cataloging as the function supporting the information services. This setup is fundamentally different and seems to leave much room for improvement in the library service. There is no heavily staffed management function seen in the organization of Japanese libraries in which unusually many staffs are placed. This may be attributed to the fact that the key staff members of the library and documentation center are all experts in their fields. Also, extensive improvement would be expected to take place in the future of the library organization, with the system analysis specialist being in a management position. However, at present a relatively few number of staff is assigned to the reference function which is supposed to have the responsibilities for providing literature information services to the Institute itself, whereas the Regional Documentation Center is established in the library. This could probably reveal the fact that the information service function in the library remains underdeveloped. Yet the library may be regarded as being in a favorable situation with only 2 1/2 staff members exclusively assigned in each function, as compared with the libraries for technology or other universities libraries in Japan.

By virtue of the AIT having the most developed Computer Center in the region, the library is compiling comprehensive lists of journals for the library net work in Thailand with its computer and is also planning computerization of the recording and cataloging of its own collection. However, not enough thought seems to have been given in respect to the application of information retrieval service.

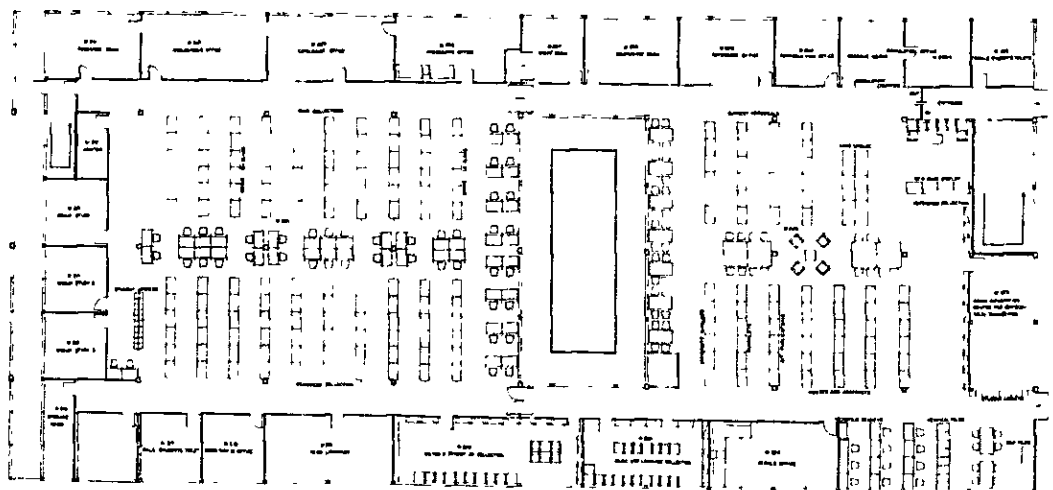
The Regional Documentation Center, as found in the organization chart (below), consists mainly of the group providing information services on the geotechnical engineering (AGE).



The AGE group commenced its activities in 1973 even before establishment of the Regional Documentation Center by securing the funds from the IDRC of Canada in a joint effort with the AIT Geotechnical Engineering Department, Library and Documentation Center, and virtually played the central roles for founding of the RDC. With the objective to function as a clearing house of information relevant to all phases of geotechnical engineering projects being undertaken in the Asian area, the group is publishing abstracts twice a year and also an index called "Digest", still in a twice-a-year cycle, which covers the essays excerpted from about 700 different journals. In addition, the annual edition of Conference Proceedings List, Journal Holdings List, Research Reports Holdings List and Current Awareness Service are being published. The essays compiled in the List have already reached 13,000 publications which are all stored in computer's magnetic tape and the literature is expected to increase in number to about 2,500 every year. The computer services are available for those who desire information retrieval from the data base by filing the application with the center. Further, the group is planning publication of a review booklet for relevant literature. The other two groups for information services concerning ferrocement (IFIC) and renewal energy sources (RERIC), have been in operation for only a short period

since commencement of their activities and the scales of activities remain as yet small as compared with the AGE's. However, the IFIC, formed in collaboration with the AIT Structural Engineering and Construction Department, and the Library and Documentation Center, has undertaken the publication of "Journal of Ferroce-ment", the New Zealand journal in the same field of engineering since July 1977, while the RERIC began its activities this year in a joint effort with the Agricultural and Food Engineering Devision, newly established in the AIT. The Regional Documentation Center has planned to expand its information service activities with one of each of the subjects chosen for respective departments in the AIT and is potentially capable of developing at least 4 or 5 additional information service groups in the present setup, if the funds are available.

The more the literature information service activities called "Documentation Services" becomes active, the more the users demand grows on the original copy of essays or the photocopying service.



Incidentally, the collections held in the AIT Library as of March 1977 were:

Book and Bound Journal	99,036 volumes
Currently collected Journal	2,610 kinds
Microfilm	520 reels
Microfiche	3,720 pieces
Filed materials	4,677
Pamphlet	1,820 volumes
Map	848
Tape, Disk	179

The collections above contain a considerable amount of the contents outstanding in the technical Libraries, with an annual increase of nearly 10,000 volumes.

The collections are relatively abundant in journals and research reports because of educational publications available to the students free of charge, all the students being of postgraduate course and the Documentation Center located in the library building. (For instance, the research reports of RAND of the USA are fully available.) Also, it is one of the characteristic features of the library that it contains many special materials such as micro-materials, maps, filed materials and research reports.

However, use of the library seems to be not necessarily as active as those of Japan, probably because of fewer users and the incentive arrangement that students can obtain study books free of charge. At present, the library and the documentation center are becoming faced with the extremely difficult problem of space allocation. In addition, the documentation services has been quite active recently, affecting the already limited library space to be further oppressed with difficulty providing service points and arranging materials. To cope with the situation, the new building for the library and the documentation center will no doubt help greatly at bringing about improvement in the service function.

The services of the science information dissemination consists of the following 3 phases:

- 1) To provide written information in the form of literature.
- 2) To provide retrieval service for literature information as to which literature contains the information being sought.
- 3) To provide direct information.

The first phase is to collect books and materials the users may require and to make them readily available upon request. The typical and most systematic services are provided by the library. In the second phase, the activities include a documentation service in which index, abstracts bibliography and review are prepared, being instrumental in providing information on literatures and the literature information retrieval services by making use of the data prepared. The typical facilities which provides these services is generally called the documentation center or information center. In the third phase, the reference function in a conventional library provides simple value data, statistics and facts as requested. For the information request requiring complex investigation to some extent, the facilities called the documentation center, information center or "think tank" provides the systematic services. In the case of the AIT, both the Library and the Regional Documentation Center are integrated into a building under the same control and therefore, are capable of conducting considerable thorough activities. Moreover, with the largest computer center operating in the region, they have an advantage of being able to utilize positively the computer capabilities for conducting the science information service activities. In addition, they are intended not only to serve the faculty and students of the AIT but also to play roles in the science information center in the engineering field for the services throughout the south-east Asian areas. In this view, the library will no doubt prove itself a facility to make a greater contribution to the development of science and technology in the engineering fields across the South-east Asian areas, when improvement is made on the physical condition of the building and equipemnt.

CHAPTER 2 SURVERY FOR CONSTRUCTION

2.1 PURPOSE OF SURVEY

As beforementioned, the Japanese Government decided to carry out a preliminary design survey on the matter concerning the financial assistance program for the 1979 fiscal year.

The preliminary design survey team for the construction of THE LIBRARY & MEDIA BUILDING at Asian Institute of Technology, led by Dr. Hideo Kikkawa, Professor of Engineering, Tokyo Institute of Technology, visited the AIT from 28th May to 4th June, 1978, and carried out its survey.

The purpose of this survey team was to exchange views with relevant AIT administration and the Library committee in order to get basic ideas, and to make a rough cost estimation for the budget in connection with the construction of the Library & Midea building with some equipment and to make the on-site survey of the construction site.

2.2 MEMBER OF JAPANESE PRELIMINARY DESIGN SURVEY TEAM

Team Leader	Dr. Hideo Kikkawa Professor of Engineering Tokyo Institute of Technology
Library and Information Science	Prof. Yoshinari Tsuda The School of Library and Information Science Keio University
Coordination	Mr. Youichi Seki Social Development Cooperation Dept. Japan International Cooperation Agency
Architectural Design	Mr. Osamu Matsumura Architect International Dept. Kume Architects-Engineers
Structural Engineering	Mr. Yasuaki Kawabe Architect International Dept. Kume Architects-Engineers
Mechanical Engineering	Mr. Koji Kodama Engineer Architectural Design Dept. Kume Architects-Engineers

Among these team member, Dr. H. Kikkawa, Mr. O. Matsumura and Mr. K. Kodama attended Preliminary Design (Confirmation) Survey Team sent from 20th to 26th Aug.

2.3 AIT PARTICIPANTS

Dr. Robert B. Banks	President
Dr. Hiroyoshi Shi-igai	Vice President and Provost
Mr. H.D. Kammeier	Assistant Professor Chairman of the Library Committee
Dr. J. Valls	Director of LRDC Chairman of the Library Working Committee
Mr. A.J. Kidd	Director of LMC Member of the Library Working Committee
Dr. R.P. Pama	Vice President for Development Chairman of the Campus Planning Committee Member of the Library Working Committee
Mr. J. Lesley	Project Architect Member of the Library Working Committee
Mrs. B. Wroblewski	Associate Director of LRDC Member of the Library Working Committee
Dr. Hideki Kaji	Associate Professor
Mr. Suwit Talawath	Acting Director of Physical Plant

2.4 OFFICIALS OF JAPANESE GOVERNMENT AND JICA STATIONED IN THAILAND

Embassy of Japan in Thailand

Mr. Eiichi Furukawa	Counselor
Mr. Hitoshi Ikeda	Second Secretary

Japan International Cooperation Agency Bangkok office

Mr. Yasuo Kitano	Director
Mr. Hisateru Niwa	Officer

CHAPTER 3 OUTLINE OF THE DISCUSSION AND MINUTES

3.1 PROGRESS OF DISCUSSION

The survey team held discussions on two occasions prior to the departure for AIT in Thailand in order to get them prepared for the field survey for preliminary design. In the meetings, the intent of the Japanese government for the assistance, the items to be covered by the survey and questions to be asked to the AIT were confirmed as well as preparing a list of survey items for a basic plan on the library construction and a layout plan incorporating the proposal on the facilities which accompanied AIT's request to the Japanese Government.

At the AIT, following the welcome remarks given by the President, Dr. Banks on the survey team's arrival, the leader of the survey team briefed about the purpose of the survey and main points of discussion. Subsequently, the AIT Library Working Committee members (consisting of library personnel engaged in the library operations) appointed by the Vice-President and Provost Dr. Shi-igai were introduced. It is noted especially that the vice-president made himself available to attend every meeting with the survey team as a whole through out the survey period and participated earnestly throughout the discussion.

The AIT tabled the Working Document compiled by the Library Working Committee, reflecting the desires brought up for the new library. Views were exchanged in detail in the process of discussion and crosschecking between the Working Document and the layout plan prepared by the survey team beforehand.

The following were the points of discussion with the AIT Library Working Committee member.

- 1) Location of the building.
- 2) Contents of the facilities to be planned in the building.
- 3) Building planning.
- 4) Service facilities planning.
- 5) Contents of equipment and materials requested by AIT.
- 6) Maintenance control planning.

- 7) Status of the existing facilities and marginal points of work under the construction project.
- 8) Measures to be taken by AIT, which are considered necessary for execution of the project.

On the other hand, apart from the general meetings, architectural design consultants of the survey team conducted the field survey on the proposed location for the building construction and the existing pipelines running adjacent to the area, and discussed with the engineering group of the AIT Physical Plant on the capacity of the existing service facilities and power supply currently provided from the specialized, technical points of view. These approaches have had a great effect on working out the preliminary design.

3.2 MINUTES

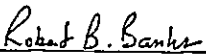
The preliminary design survey team put together an outline of the results of discussions in the form of Minutes.

The Minutes were signed by Dr. Robert B. Banks, president of Asian Institute of Technology and Team Leader, Dr. Hideo Kikkawa on 2 nd June 1978.

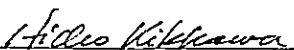
MINUTES OF THE DISCUSSIONS
ON THE DRAFT REPORT OF THE PRELIMINARY DESIGN
FOR THE CONSTRUCTION OF THE LIBRARY & MEDIA
BUILDING OF THE ASIAN INSTITUTE OF TECHNOLOGY

1. The Government of Japan has sent, through Japan International Cooperation Agency (JICA), a Preliminary Design Survey Team led by Dr. Hideo Kikkawa Professor of Tokyo Institute of Technology, from 20 to 26 August 1978 on the second visit to submit the report of the preliminary design for the construction of the Library & Media Building of the Asian Institute of Technology (AIT) which was prepared by JICA in accordance with the Minutes of Discussions between the AIT administration and the Preliminary Survey Team dated June 2, 1978.
2. The Survey Team explained the report to the representatives of AIT and held detailed discussions with the staff concerned.
3. As a result of the discussions, AIT and the Survey Team have confirmed the items attached as the "Confirmation Note of Preliminary Design". The following items were also discussed and confirmed at the meeting:
 - a) The original plan of the preliminary design proposed by the Survey Team was accepted by AIT.
 - b) The location of Audio Visual Section of Language and Media Center was moved from North side to East side of the building. The additional associated changes were made regarding the above modification.
 - c) The attached confirmation note was confirmed, leaving the possibility of minor modifications according to the progress of the detailed design.
 - d) JICA will submit to AIT two copies of the final report by the end of September 1978 through the Embassy of Japan.
4. The list of participants in the meetings attached hereto.

Bangkok, August 25, 1978

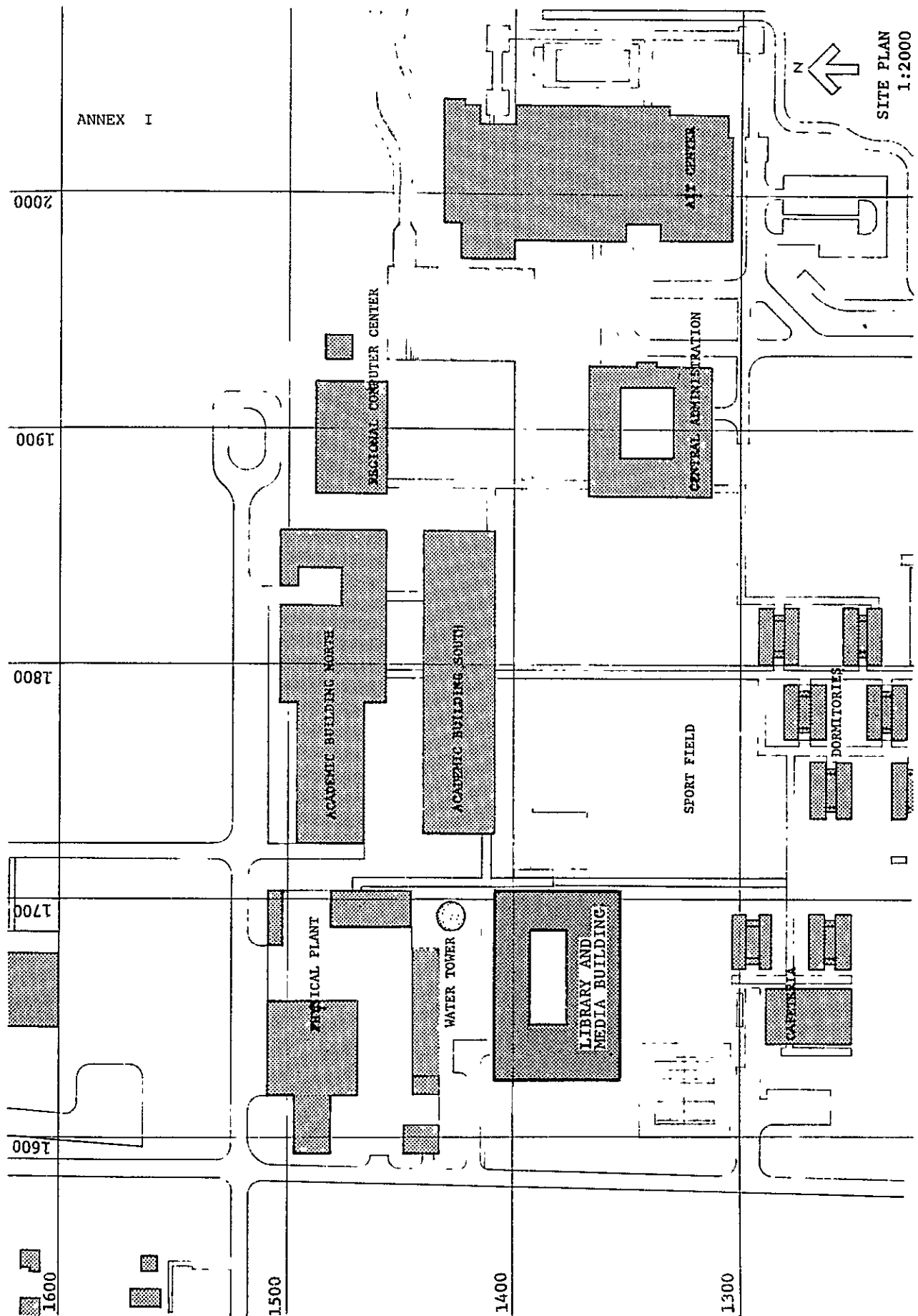


Dr. Robert B. Banks
President
Asian Institute of Technology



Dr. Hideo Kikkawa
Leader
Japanese Survey Team

Dr. Robert B. Banks



ANNEX II

Items of the necessary measures to be taken by the Asian Institute of Technology.

1. The following matters arising until delivery of the Library:
 - 1.1 To provide electricity, water supplies and sewage facilities necessary for Library.
 - 1.2. To take the various necessary procedures in obtaining the various permissions and exemptions of custom duties and taxes from the Government of Thailand for:
 - a. Japanese nationals concerned for this project.
 - b. Construction materials, equipment, vehicles, construction machines, etc.
 - 1.3. AIT will provide enough safety measures according to the Charters approved by the Government of Thailand.
 - 1.4. To provide the space necessary for construction such as temporary offices, working areas, stock yards, etc.
2. To relocate the furniture and other equipment from the existing library to new library building.

Bangkok: June 2, 1978

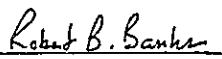
After received letter from Dr. Robert B. Banks, president of AIT, the survey team made further studies for preliminary design and gave some modification to Scheme A, which is recommended by the AIT Executive Committee to the Board of Trustees. From 20th to 26th Aug., the survey team visited on AIT with the draft report of preliminary design in order to confirm. As a result of discussion between AIT and the survey team (for confirmation), the draft report of preliminary design were confirmed with only some modification. The Minutes were signed by Dr. Robert B. Banks, president of AIT, and Dr. H. Kikkawa, team leader of the survey team as follow.

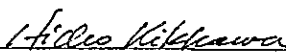
MINUTES OF THE DISCUSSIONS
ON THE PRELIMINARY DESIGN SURVEY
FOR THE CONSTRUCTION OF THE LIBRARY & MEDIA
BUILDING OF THE ASIAN INSTITUTE OF TECHNOLOGY

At the request of the Asian Institute of Technology (hereinafter referred to as "AIT") for the financial assistance of the Government of Japan for construction of a Library and Media Building (hereinafter referred to as "Library"), the Government of Japan has sent a Preliminary Design Survey Team (hereinafter called "Survey Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and led by Dr. Hideo Kikkawa, Professor of Engineering, Tokyo Institute of Technology. The Survey Team visited the AIT for 8 days from 28th May 1978 with the purpose of having detailed discussion on the project so that JICA would be able to make preliminary design for the construction of the Library.

As a result of the discussions and exchanges of views between the Survey Team and AIT administration, both parties agreed to recommend their authorities as follows:

1. The project of the construction of AIT Library and Media Building deserves the most favorable consideration of the Government of Japan to extend the financial assistance for construction of the building and providing equipment at the request of AIT.
2. The building will consist of the following sections:
 - Library: To provide the space for approximately 250,000 collections and 160 carrels.
 - Regional Documentation Center: To provide spaces and functions necessary to meet the requirements of this center
 - Language and Media center: To provide the spaces and functions necessary to meet the requirements of this center.
3. The appropriate building location is at the intermediate point of academic buildings and dormitories as shown in Annex. I.
4. the Asian Institute of Technology will take necessary measures as listed in Annex II.


Dr. Robert B. Banks
President
Asia Institute of Technology


Dr. Hideo Kikkawa
Team Leader
Japanese Preliminary Design
Survey Team

**THE LIBRARY & MEDIA BUILDING
ASIAN INSTITUTE OF TECHNOLOGY**

**CONFIRMATION NOTE OF
PRELIMINARY DESIGN**

**PRELIMINARY DESIGN
CONFIRMATION SURVEY TEAM
JAPAN INTERNATIONAL COOPERATION AGENCY**

August 1978

I. ARCHITECTURAL PLAN

1. Number of Stories

- Two Stories

2. Structural Plan

- Foundation: Precast concrete piling
- Supported Layer: GL-18m ~ 20m (sand layer)
- Frame: Column, beam and slab . . .
reinforced concrete wall . . .
concrete block and brick
- Standard Design Compressive Strength for
Normal Concrete: F28 = 210 kg/cm²
- Bay Spacing: 8.00m x 8.00m

3. Finishing Schedule

- Roof: Corrugated asbestos sheet covering
on concrete roof slab
- Exterior Wall: Colour anodized aluminum
semi air-tight type window
heat absorbing glass
- Entrance Door: Stainless steel
- Heat Insulation: Under roof slab
inside of exterior wall
- Court Yard: Artificial garden
- Interior Finishing Plan
- Entrance Lobby
 - Floor: Polished terrazzo
 - Wall: Washed terrazzo or paint fin.
 - Ceiling: Ditto
- Office, Meeting Room, Director and Secretary Room
 - Floor: Carpet (needle punch type)
 - Wall: Paint fin.
 - Ceiling: Acoustic tile
- Staff Lounge
 - Floor: Carpet (tufted carpet)
 - Wall: Vinyl wall covering
 - Ceiling: Acoustic tile
- Acquisition and Receiving, Cataloging, Processing,
Serials, Microform, Editing, Repair, Graphic, Photo, etc.
 - Floor: Vinyl sheet
 - Wall: Paint Fin.
partition between corridor: glazed
partition
 - Ceiling: Acoustic tile
- Document, Typing Pool, ELT
 - Floor: Carpet (needle punch type)

Wall:	Paint fin.
Ceiling:	Acoustic tile
– Recording Room, A & V	
Floor:	Carpet (needle punch type)
Wall:	Sound absorbing board
Ceiling:	Acoustic tile
– Library, Group-Study Room	
Floor:	Carpet (needle punch type)
Wall:	Paint fin.
Ceiling:	Acoustic tile
– Lavatory	
Floor:	Ceramic mosaic tile
Wall:	Ceramic tile
Ceiling:	Asbestos board
– Machine Room	
Floor:	Mortar fin.
Wall:	Sound proofing board
Ceiling:	Asbestos spray
– Corridor, Staircase	
Floor:	Vinyl sheet

II. AIR CONDITIONING AND VENTILATION PLAN

1. Temperature and Humidity Design Conditions

- Exterior Conditions: Temperature 36.1°C
 Humidity 75%
- Interior Conditions, Reading Hall,
Collecting Section: Temperature 26°C ± 2°C
 Humidity 50% ± 10%
- Office Area: Temperature 26°C ± 2°C
 Humidity 50% ± 20%

2. Air-Conditioning System

- All air single duct system
(independent from the existing Physical Plant of AIT)

3. Air-conditioned Zoning

- 6-Zone: 1) for 1,000 m² approx. at Library on level 1
 2) for the other area at Library on level 1
 3) for office and working area on level 1
 4) for 1/2 area at Library on level 2
 5) – ditto –
 6) for office and working area on level 2

4. Air-Conditioning Machine

- Packaged type air-conditioning unit: 6 unit .

5. Ventilating Plan
 - Ventilation for lavatory, pantry and machine room
 - Cigarette smoke exhausting for meeting room, staff lounge

III. PLUMBING PLAN

1. Necessary Water Capacity
 - for Living water 10,600ℓ/day
 - for Cooling tower 62,550 ℓ/day
 - Total capacity 73,150 ℓ/day
2. Hot Water Supply
 - Electric water boiler for staff lounge
3. Drainage Capacity
 - Living drainage 9,540 ℓ/day
4. Sanitary Fixture
 - Western type, flush valve washing system

IV. ELECTRICAL PLAN

1. Incoming Power: 3-phase, 3-wire, 50 Hz, 24 KV
from #8 Transformer Station
2. Necessary Load:
 - 1) Lighting outlets and receptacles
 - 2) Power for air-conditioning and ventilating facilities
 - 3) Power for water supply and drainage facilities
 - 4) Power for lift
 Total load: 600 KVA
3. Power System
 - 1) Main line for lighting outlets and receptacles: 3-phase, 4-wire, 380V/220V
 - 2) Main line for air-conditioning, sanitation facilities and other power equipment: 3-phase, 3-wire, 380V
4. Lighting Fixture and Receptacles
 - Fluorescent lamp for office, working area and Library, etc.
 - Incandescent lamp for lounge, lobby, etc.
 - Illumination values:
 - 350 ~ 400 lux for office, study room and reading hall, etc.
 - 100 ~ 150 lux for corridor and hall, etc.
 - Receptacle
 - 2 or 3 outlets each to every 40 m² floor space area type wall mount in general
5. Telephone
 - Number of extension 40
 - PABX will be provided at existing Administration Building

6. Public Address System
 - For general communication
 - Amplifier will be installed at office
7. Fire Alarm System
 - Automatic fire alarm system with thermal sensors and manual transmission will be installed
 - Sub-receiving panel will be provided at existing fire station
8. Lighting Protection System
 - Radio - isotope type
9. Outdoor Lighting
 - For court-yard, service road and around building
10. Lift
 - Freight and passenger lift 30 m/min.
 - Dumb waiter load to be carried 30 ~ 50 kg

V. EQUIPMENT

The following furniture and equipment will be expected to provide. Items marked x will not be provided.

REQUIRED EQUIPMENT BY AIT'S LIBRARY COMMITTEE

Library and Regional Documentation Center

I. <u>Furniture</u>	Present	Projected	Balance	Remarks
<u>1. Shelving Units</u>				
Book/periodical stacks (90" x 36" x 8" x 12")	51	148	97	
Periodical display stack (90" x 36" x 10" x 12)	8	12	4	
Office shelving	37	100	63	
Closed cabinets	4	8	4	
Storage shelving	20	60	40	
<u>2. Catalog Card Cabinets</u>				
Public catalogs	5	7	2	
Office catalogs	5	8	3	
<u>3. Study Carrels and Users Tables</u>				
Study carrels (┌ ─ ┐ shaped)	17	25	8	
Study carrels (└ ─ ┘ shaped)	14	20	6	
Study tables	9	12	3	
Index tables (seating for 24)	4	8	4	
<u>4. Miscellaneous</u>				
Language booths	4	8	4	
Microform booths	3	8	5	
<u>II. Special Equipment</u>				
<u>1. Microform Equipment</u>				
Microform reader	1	5	4	
Microform reader/printer	2	4	2	
Microfilm camera	1	2	1	
Microfilm processor	—	1	1	x
Jacket loader	—	1	1	
Microfiche duplicator	—	1	1	
<u>2. Miscellaneous</u>				
Record player	1	1	—	
Cabinet with tape player & head phones	1	5	4	x
<u>3. Control System</u>				
Circulation checking system based on magnetic labelling and detection	—	1	1	x

Language and Media Center

	Present	Projected	Balance	Remarks
I. <u>ELT Section</u>				
1. <u>Language Labs</u>				
Student booths (chair.. not incl.)		60		
Control desks (ditto)		2		
Master tape recorders		2		
Overhead projector		2		
Whiteboard		2		
Screen		2		
2. <u>Seminar Room</u>				
Desks and chairs		20		x
Whiteboard		2		x
Retractable screens		2		x
3. <u>Storage</u>				
Cupboards and/or shelves		1		x
Electric typewriter, variable script		1		x
4. <u>Technician's Room</u>				
Cupboards/shelves		1		x
Bulk tape eraser				x
II. <u>Media Section</u>				
1. <u>Repair Room</u>				
Oscilloscope V30 MHz + RF probe + Hi volt probe + Low cap probe		1		x
RF sweep-marker generator		1		x
AF generator sine and square wave		1		x
Analog multi meter		1		x
Digital multi meter		1		x
Signal tracer – AF – RF		1		x
DC power supply 0–30V, 1–2 Amps		3		x
Tachometer to check tape-record speeds		1		x
Transistor tester		1		x
Tube tester		1		x
Curve tracer		1		x
Resistance substitution boxes 1–10M		4		x
Capacitance substitution boxes 1pF–1μF		4		x
R-L-C Meter – (bridge)		1		x
2. <u>Photo Lab</u>				
Enlarger		1		
Masking plate		1		
Print drier		1		

	Present	Projected	Balance	Remarks
3. Graphics				
Drafting tables		2		
Transparency making machine		1		
Drawing tables/benches		1		x
4. T.V. Equipment				
Cameras:				
a) DXC 1200 P (NB order extra CCY cables, 25 m)		3		
b) DXC 1600 P (portable)		3		
Control Equipment:				
a) MD 1200 P distribution box		1		x
b) SEG 200 P special effects generator		1		
Monitors:				
a) Camera (B & W) PVM 90 CE		4		
b) Colour receiver/mon. CVM 1310 E		2		
c) Colour mon. CVM 1810 E		2		
d) Colour mon. (for replay units) PVM 1810 E		4		
Recorders:				
a) VO 2850 P VTR		2		
b) Edit control RM 400 CE		1		
c) Portable VTR VO 3800 P		3		
Telecine:				
a) VCR – 2		1		
b) Colour optical multiplexer		1		x
Tripods:				
a) SAM (with dolly)		3		
Cine Proj.:				
a) SC 10 S (CCIR, 230V 50Hz, 25 frame)		1		x
Replay Units:				
a) VP 1210		4		
MIC. Mixer:				
a) MX 710		1		
Lights				

AIT Participants

Dr. Robert B. Banks	President
Dr. Hiroyoshi Shi-igai	Vice President and Provost
Mr. H.D. Kammeier	Assistant Professor Chairman of the Library Committee
Dr. J. Valls	Director of LRDC Chairman of the Library Working Committee
Mr. A.J. Kidd	Director of LMC Member of the Library Working Committee
Dr. R.P. Pama	Vice President for Development Chairman of the Campus Planning Committee Member of the Library Working Committee
Mr. J. Lesley	Project Architect Member of the Library Working Committee
Dr. Hideki Kaji	Associate Professor
Mr. Suwit Talawath	Acting Director of Physical Plant

Japanese Participants

Dr. Hideo Kikkawa	Leader of the Survey Team Professor of Civil Engineering Tokyo Institute of Technology
Mr. Osumu Matsumura	Member of the Survey Team Architect of Kume Architects-Engineers
Mr. Koji Kodama	Member of the Survey Team Engineer of Kume Architects-Engineers

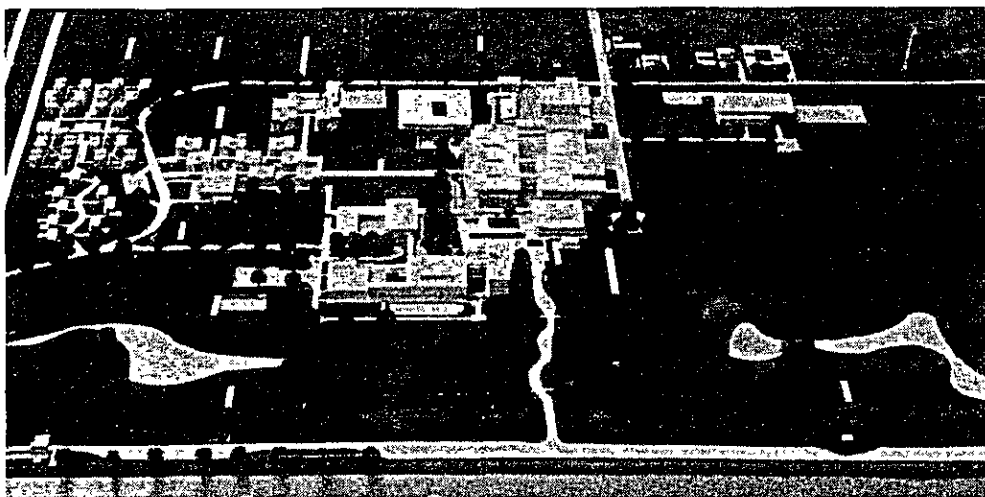
Mr. Eiichi Furukawa	Counsellor Embassy of Japan in Thailand
Mr. Hisateru Niwa	Officer of JICA Bangkok Office

CHAPTER 4 PRELIMINARY DESIGN

4.1 OUTLINE OF PRELIMINARY DESIGN

The AIT's requirements for this project are covered in detail in the "working documents" received by the survey team from AIT. According to the working documents, three functional components of the Library, Regional Documentation Center (RDC) and Language & Media Center (LMC) are required to be included in this project.

The survey team discussed with AIT the requirements in crosschecking between the proposal prepared by the team in advance and the working documents tabled by AIT, and came to a general agreement with AIT on inter-relations between respective functions and space requirement of each room in the arrangement of the library function to be centrally located with RDC and LMC adjacent to it. However, it was decided to work out several alternative plans on the procedures of preliminary design for comparative study on minimizing the operating cost and also to meet the relation to the surrounding campus environment. The preliminary design covered in this report is the one that was arrived at as a result of the studies and with some modifications made.



4.2 BASIC POLICY

Three functional components of Library, RDC and LMC are planned in a New Library and Media Building. So, it is necessary to plan with taking consideration on functional relation among these components and circulation flow of users and materials to fulfil each experted function without confusion. The preliminary Design is compiled under consideration of functional relation principally. And other elements which the basic policy of the preliminary Design comprises are three elements that are minimizing the operating cost first, followed by maintaining a maximum flexibility and further, matching in harmony with entire AIT campus setting.

■ Minimizing Operating Cost

With the climatic condition in Thailand, it is unavoidably required to keep the library rooms air-conditioned with air-conditioning equipment. Moreover, library facilities are characterized by the operation which different from other building including class rooms and are required to make the services available not only for a lengthy span of hours daily from early in morning till late at night but also on holidays including Saturday and Sunday. The air-conditioning cost, accordingly, runs high, posing a grave problem which is obviously adverse to the policy of minimizing operation cost. Yet, along with a strong desire from AIT, minimizing operating cost remains to be one of the important policy which will base this project.

■ Flexibility

The collections of the library is on the increase year after year. The storage capacity of 250,000 volumes as referred to the working document is an estimate of the requirement 15 years ahead from now, assuming the increase rate at 10% a year with

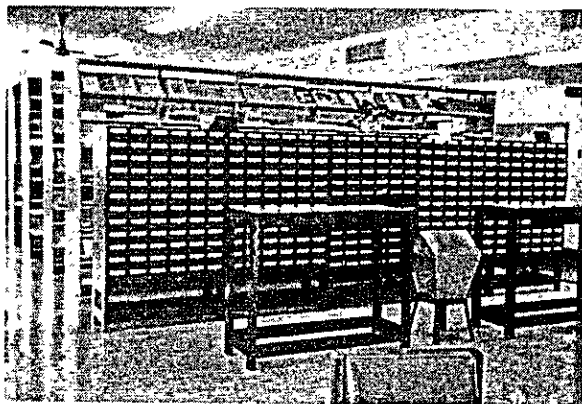
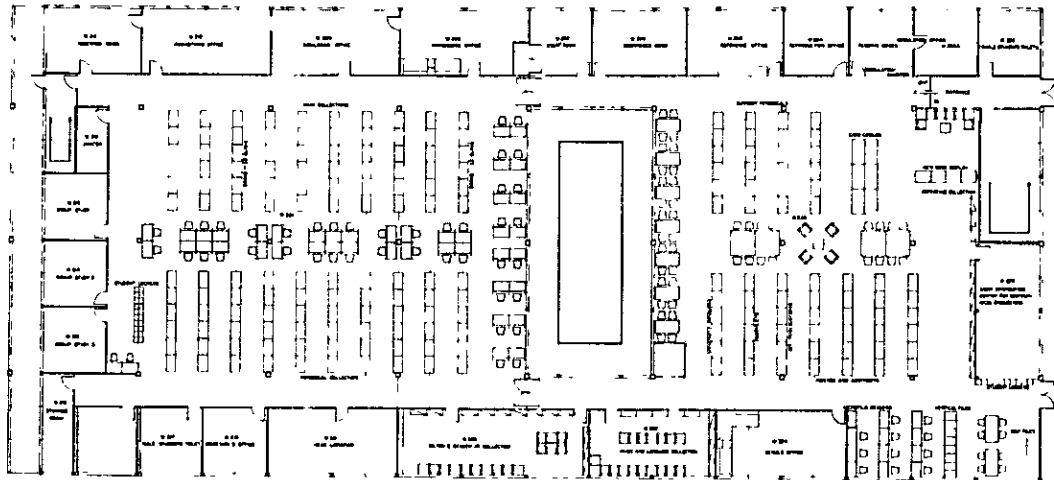
the present collection of 100,000 volumes. It is necessary to estimate the future requirement at this rate of increase at least, or library would soon become too small otherwise. On the other hand, however, the space requirement including that for the technical service offices would most likely vary in 10 to 15 years from now. This necessitates planning have to be flexible enough to meet the varried requirement of space.

The single work of "Flexibility" in this particular case can represent a broad implication as well as connotation and thus, it is necessary to define beforehand the "Flexibility" to the practical point, even in the technical point of view. As far as this project is concerned, it should be taken for granted to proceed with the planning by setting the focus on possible change conceivable of the Reading & Collection section which constitutes main function, occupying the most significant space.

■ Harmony with Campus

The AIT campus which had got off to the construction based on the master plan proposed and finalized by Robert Matthew and others has most of the central facilities completed and already in operation, and is now in the stage of extension and further development. The central facilities designed in harmony among themselves with the gathering of low-rise buildings in a white-tone matching green lawn around them, give ever beautiful view with a moderate expanse of the landscape in scale. This suggests it essential to plan the new building so as to keep harmony with the existing buildings. It is all the more necessary to follow the policy in planning the new library building for the location being at a part of the central area of the campus.

Also, the AIT buildings has been applied with module system made up of a 8 m x 8 m grid unit for measurement and in the modular-coordination point of view, the planning should be made based on the basic module unit, following the grid dimension.

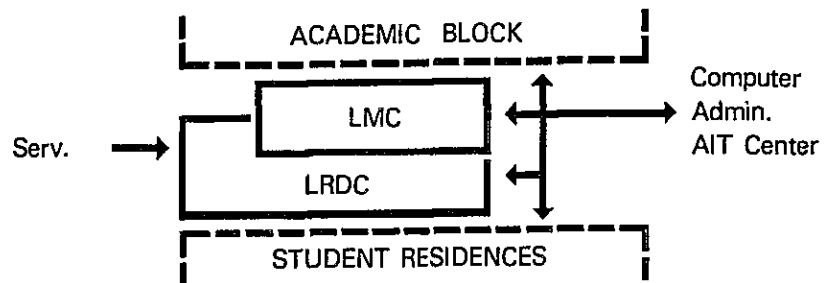


4.3 CONTENTS OF FACILITIES

The facilities are planned to be composed of three main sections that are the Library to perform main function, the RDC with function of relevant information services and the LMC to provide services for audio-visual aids devices. The functional relation to other facilities in the campus can be illustrated in the diagram on the next page.

At present, the Library (including RDC) and LMC are located on the Level 2 of the Academic Building South situated about in the center of the campus. The Library has a collection of about 100,000 volumes and 2,600 periodicals and journals. While, the RDC comprises three documentation units of AGE, IFIC and RERIC. The LMC is conducting the activities centering English language education with the Language Laboratory Rooms equipped with a total of 32 booths, the recording studio and class rooms. These facilities were designed to serve for a capacity of about 600 users including 450 students and professors. With an increase in collection and in the number of users resulted from the increase of academic division, however, these facilities has now become too small to meet the requirement. On the other hand, the LMC function is desired to be provided with the improved facilities for preparation and issue of audio-visual equipments.

<u>Factors</u>	<u>Present</u>	<u>Future</u>
Collection (volumes)	100,000	250,000
Users	600	1,100
Library Staff	24	30
R.D.C. Staff	10	16
L.M.C. Staff	7	16 - 20



■ Library

To serve for a total of 1,100 users including 800 students, professors and other, New Library have a storage capacity of 250,000 volumes and reading area for 160 users. The Library is specialized for a institute of technology and also for the main users of the postgraduate course students and professors. For this reason, openstack system is used for all collections.

Reading & Collection Section ...	250,000 volumes, 160 Carrals
Reader's Service	... Circulation, Reference, Photo-copying, A & V, Microfilm-Reading Area
Technical Service	... Acquisition & Receiving, Cataloging, Processing, Serials, etc.

■ R.D.C.

The function meets in line with the intent of the university established to contribute to Asian development and has its aim to provide information services for the Asian areas. Five Documentation Units in a total are planned in RDC including the existing AGE, IFIC and RERIC.

5 Documentation Unit AGE, IFIC, RERIC etc. Typing pool
----------------------	--------------------------------------------

■ L.M.C.

LMC is divided into two functions of Media Section which prepares and issues audio-visual aids devices and English Language Teaching Section (ELT) for English language education necessary for attending in the institute's lectures. The Media Section will be provided with rooms specialized for recording and editing, while the ELT Section is equipped with two language laboratories.

Media Section	Editing, Recording, Graphic, Repairing, Photo Lab., etc.
E.L.T. Section	2 Language Lab, (30 booth each), E.L. Teacher's offices, etc.

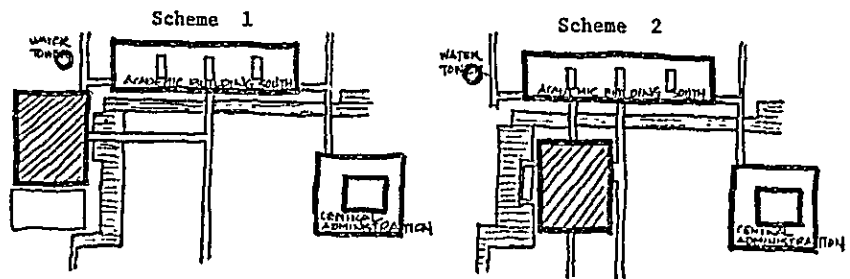
4.4 FLOOR AREA OF FACILITIES

The facilities are planned a little over two times as large a capacity as compared with the existing library and LMC. The number of student users is estimated to increase from 450 to 800, while the collections will expand from 100,000 to 250,000 volumes. In consideration of present condition and future plan of Library and LMC, the size of facilities would be proper for this institute. The increases as compared with the present figures can be itemized in the followings:

	Present	Planned
A. Library		
General Collections	524 m ²	1,944 m ²
Special Collections		
Bender's Collection	48	128
Language Collection	48	32* ¹
Study Areas	249	624
Study Rooms	(2) 32	(6) 96
Library Offices		
Director	32	36
Associate Director	24	24
Secretary Office	16	24
Acquisition & Receiving	56	72
Serials	32	60
Cataloguing	32	60
Processing	32	64
Circulation	32	40
Reference	24	32
System Analyst	16	24
Ancillary Facilities		
Offices	16	36
Staff Lounge	16	48
Meeting Room	—	48
Storage	108	116
Technical Services		
Photo copying	16	24
Microforms	—	36
Computer Terminal	—	24
Total	1,337	3,580

*¹ area only for listening (Audio)

	Present	Planned
B. Regional Documentation Center		
Documentation Unit	(2) 96 m ²	(5) 240 m ²
Typing Pool	—	48
Storage	—	24
Total for LRDC (net)	1,433	3,886
C. Language & Media Center		
ELT Section		
Language Labs.	(2) 94	(2) 144
Class Rooms	184	—
Faculty Offices	(4) 64	(7) 168
Secretary Office	16	24
Technician's Room	23	24
Meeting Room	—	48
Storage	29	48
Lounge	—	30
Media Section		
Recording Room	(2) 53	48
Control Room	—	12
Editing Room	—	60
Repair Room	—	24
Graphics Room	—	48
Photo Lab.	—	24
Director Office	—	24
Secretary Office	—	24
Storage	18	24
Total of LMC (net)	481	774
Total of LRDC & LMC (net)	1,914	4,666
Total Building Space (gross)	2,919	6,444



The site plans on the above 2 types of the alternative scheme which were found most feasible in the total planning of the campus, as selected from among six proposal presented. With further review, the Scheme 1 was adopted for being recognized superior to the Scheme 2 on the following points:

- A open space in the central area of the campus facilities will be preserved.
- Better location in noise and safety control during the construction.
- Short runs of utility pipeline connection, being close to the campus physical plant.
- Easy to arrange service road.

4.5 SITE PLANNING

The Library should be situated at the center of the campus for its functional characteristics. Different from universities in Japan, this institute has in the campus premises dormitories in which 80% of the total students live and also residences for some of staff. From the point of daily use including at night by these users, it would be a natural approach to locate the library in the central area of the campus.

The AIT campus comprises three major zones. They are the Academic zone in which class rooms and research laboratories are located, the Residential Zone for the dormitories and staff housing and the Central Facilities zone for the administrative offices and welfare facilities. These zones are arranged to form a triangle with each zone occupying the angle point respectively.

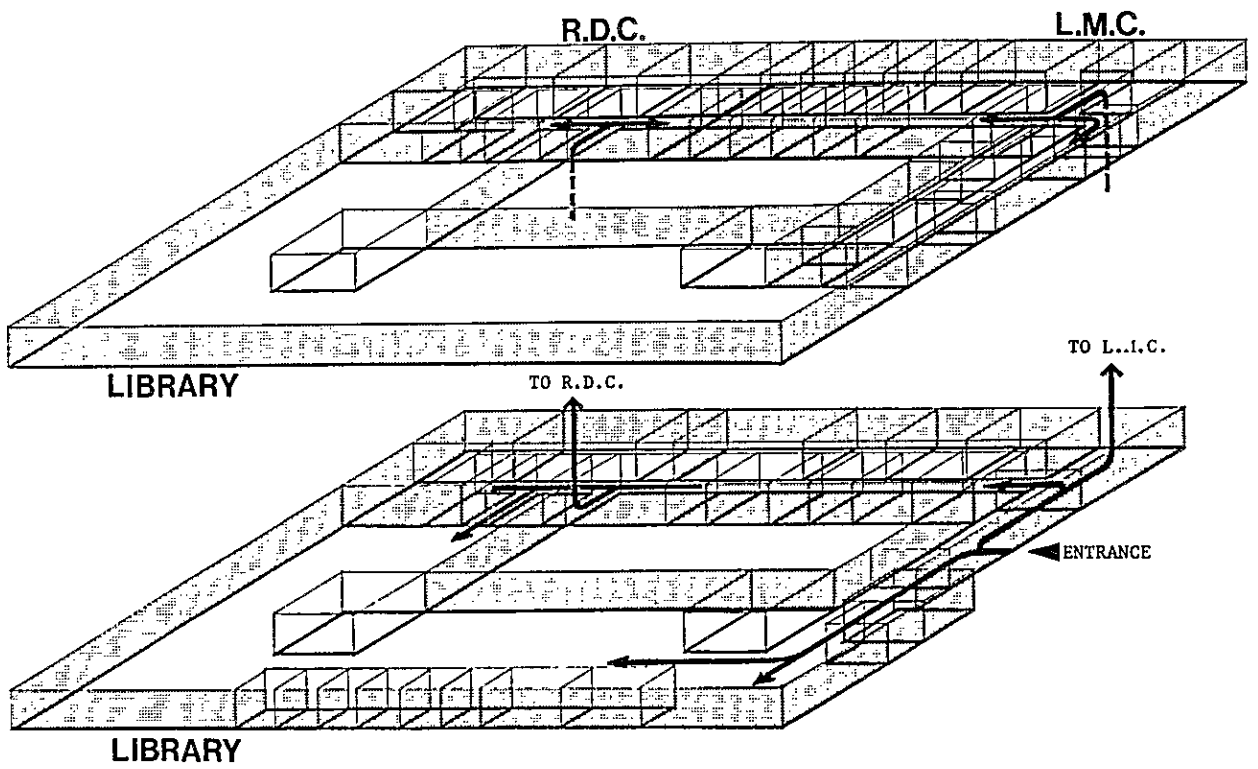
Incidentally, there were six alternatives proposed in the working document received from AIT. These alternatives were found all intended to locate it on the flow line connecting between the Academic and Residential zones for easy access from the both zones. However, the proposed location near the center of the campus in the schemes are considered most suitable in the future and present conditions of the campus, not only from user's point of view but in consideration of AIT's future plan to extend the Residential Zone to the west, although it is somewhat a away from the Central Administration and AIT Center. As a result of the further review made with AIT on the six alternatives, the location was determined to be west of the sports field as proposed on the Scheme 1 in consideration of relation to the future planning and disturbance to the existing facilities during the construction, and in addition, of a merit that it can leave a large enough open space in the central area of the facilities. The preliminary design was worked out based on the decision with keeping in mind flows to be secured for access from both the Academic Buildings and Dormitories.

4.6 ARCHITECTURAL PLANNING

■ Design Process

With the basic policy in mind, studies were made, especially on the architectural planning in which three alternatives were prepared for comparative analysis of the operating cost and inter-active relations among respective functions.

The alternatives are termed Schemes A, B and C respectively. The Scheme A close to an scheme prepared for the first discussion proposes all facilities arranged in a clear-cut rectangular area with the court yard in the center. The Scheme B is intended to keep the users' zone including the Reading & Collection Section clearly separated from the Technical Service offices, RDC and LMC, forming a two-building system. The Scheme C proposes to have a large court yard and provide with a wide opening facing forward the open space on the south-east side. Among these three schemes, the Scheme B offers some advantages of the simplified Reading & Collection Section, better arrangement for book stack and taking good natural ventilation due to the semi-two-building system, while it poses problems which the exterior walls takes a large wall space and in turn, more air-conditioning loads required. The Scheme C has a merit in achieving a harmony of the building with the open space but on the other hand, is handicapped by the shape of building itself which causes to be somewhat complicate, with air-condition zoning and book stack arrangement. As compared with these three schemes, the Scheme A surpasses in terms of the operating cost, most functionally, flexibility to the future planning and is found to be the most balanced design in the over-all aspects. In the AIT's Executive Committee held in July 1978 in which these three alternative schemes were reviewed, it was decided to proceed with the Scheme A as approved by the committee. That is to say, the planning is based on the concept that the scheme has to provide court yard in the center with the Reading & Collection Section and offices around to form a flow loop in a clean-cut rectangular shape.



■ Architectural Planning

The plan was intended to limit the elevation of building to as low level as two-stories in consideration of the balance with the campus and ground condition of the site, and also to realize clear functional flows by studying separation of functions on the horizontal more as well as the relations to each others. In order to make up for lengthy flow caused by the low-rise, to prevent flows from crossing and to keep the Reading & Collection Section, Technical Service offices and LMC clearly separate from each others, the court yard is provided in the center so as to enable the function flows to run around in a loop. This layout has also taken into consideration for minimizing the operation costs in that by providing the court yard, it attempted to save artificial lighting cost by making use of natural light, some of the rooms can depend on natural ventilation and it would even be possible to get a comfortable condition indoors without air-conditioning during the hours when it is easy to get by at relatively low temperature. In zoning the LMC having comparatively less connection to other functions is placed on Level 2 floor on the northside with the entrance located at an appropriate point so as to enable it to perform the function independently from the Library section. Because of least direct use by the users in the Library, the Technical Service offices and Library Director's office are arranged on the Level 1 on the northside underneath the LMC where service access is easily provided. The user's area including the Reading & Collection Section which occupies main part of the Library is located southside to be suitable for reading so that users can enjoy the atmosphere with less noise and view of outdoor open space. On the other hand, the RDC closely related to both User Area and Technical Services is placed on Level 2 north-west corner near the both area at the location not interfering with service flow from the Technical Service to the User Area in consideration of the close functional relations. Further, entrances are provided one each to the Library section, and the LMC and

Technical Service section respectively to achieve efficiency in each function. The entrance lobby with which both of these two entrances are virtually connected is provided to serve as buffer for different environment condition between the indoor and outdoor, which in turn, is expected to help reducing air-conditioning load, in addition to the efficient flow as mentioned above.

The modular system is employed for the planning with the module unit identical with the 8 m x 8 m grid covering the entire campus area in an attempt to keep a uniformity and harmony with other building blocks. At the same time, the modularity is intended to effect coordinated layout within the Library building the book stack and covered arrangement.

■ Library

The book stacks provided in the Library are all of the open stack type which offers the advantage of free access use. Reading accommodations to be placed near book stacks are arranged around the stack blocks, thereby allowing enough natural light to be utilized. The circulation, reference and photocopying facilities to serve users directly are concentrated in a block area surrounded by the periodical collection and other collections frequently used collections, and also the browsing area including the Bender's Collection commemorating the first president of AIT for recreational reading materials. The gathering of these functions and collections forms a concentrated high usage zone is planned to be located near the entrance. This zone is significant for the availability principally at night and on Saturdays, Sundays and holidays (This zone only open everyday all year-around from 7:30 am to 10:30 pm and all other zones available only on week days from 8:30 am to 3:30 pm). While, this zoning is provided with ceiling fan besides the air-conditioning system in an attempt to minimize the operation costs. The Technical Service offices connecting to the Reading & Collection Section and located at a place convenient for receiving incoming materials from service road are arranged so as to ensure ease of operation by librarian.

■ R.D.C.

The Typing Pool and storage for common use are located in the center with each documentation unit. Flow to the Technical Services functionally most closely related to RDC (especially Serials) is planned with care taken of arranging the stairs for exclusive use to connect the flow.

■ L.M.C.

The LMC to be placed as L-shape block on the north-west corner of the Level 2 above the Library's Technical Service offices section is planned accessible directly through the stairs from the entrance lobby so that crossing with other flows can be successfully avoided. The ELT section where many and frequent moves of students takes place is located near the entrance and the Media Section to be kept away from noise and frequent moves of people is planned to be located on the east-side wing of L-shape block where is far from the Physical Plant.

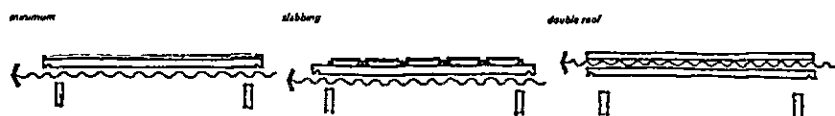
These approaches, in the other words, are all intended to make the LMC section clearly separated from others in the Library and Media building, as if it were independed with an entrance for the exclusive use, although it is only a part of the same building.

4.7 BUILDING ELEMENTS PLAN

In planning building elements, local climatic conditions and requirements of indoor environment are the great factors. Especially in the region under a wet-tropical climate, it is particularly important to deal properly with these factors as the building is greatly affected by sunlight, wind drafting and rain fall as well. In planning and constructing a library which requires the collections of literature and document to be kept moisture-proof and a comfortable interior space environment for reading, it is the more important to deal properly.

■ Roof

Roof is the element greatly affected by sun light and precipitation. A due consideration should be given to strong sun light and heavy precipitation in this region by which buildings are particularly affected. For reinforced concrete buildings, the heat insulation method generally applied in Thailand is to shingle an asbestos roof over the concrete roof slab, thereby preventing heat radiation from entering interior space of the building, making use of the air space beneath the asbestos roof for heat insulating layer. The method, possibly termed "Double Roof Method" is considered most rational for heat insulation purposes.



■ Exterior Walls

Exterior walls are also susceptible to the effects of sun light. However, use of materials with a high over all heat transmission resistance and providing with eaves and louvers serve successfully to avoid much solar radiation. Taking advantage of the ideas, the Academic Building of AIT was designed to draw back exterior walls, and to have canopies, eaves fitted around the building. The same method will be employed in this project to keep the appearance in harmony.

Also, wind blows in south-north direction caused by monsoon in Thailand throughout the year. It may be necessary to take advantage of the draft from the wind flow for creating a comfortable environment of the interior space. However, a building like library requiring humidity control and preventive measures on ingress of insects leaves some questions in applying the natural ventilation without careful consideration. In this view, the natural ventilation should be regarded as secondary means to be utilized for the limited purposes and on limited occasion where the air-conditioning system is out of operation, in such facility as Reading & Collection Section.

■ Floor Levels

During the rainy season, there is a considerable amount of rain fall in Thailand. However, the drainage plan for this campus operates in automatic control system with artificial control pond and well prepared for the local condition. And, there is no risk of flooding as seen in other region of the country. Yet, further consideration will be given to cope with eventuality.

■ Materials Plan

Based on the findings of the survey conducted on locally available materials and taking into consideration the problems involved in maintenance, it is the policy to utilize local materials as much as possible. The materials under consideration for use in this project are as follow:

● Roof

A shingle of corrugated asbestos cement is installed over the concrete roof slab for heat insulating purpose. The material is being manufactured and available in a stable supply in Thailand. No problem was found of quality of the material.

● Wall

Construction techniques of reinforced concrete wall is found generally under-developed. The materials that are stacked to form walls such as brick and block are in common use for wall construction. While movable partition is planned to be applied to some partition walls for flexibility in future plan. Washed terrazzo finish is generally applied to exterior walls and the local laborers in the trade are well experienced in that type of work.

● Floor

PVC tile and polished terrazzo are employed for use in the general areas, while carpet is provided depending on the requirement of specific rooms for sound absorption.

LOG OF BORING NO. 3/5									
OWNER					ARCHITECT/ENGINEER Scott Wilson Kirkpatrick & Partners				
SITE					PROJECT NAME AIT Rangsit				
DEPTH - METRES	DEPTH FEET ELEVATION	SOIL SYMBOL	SAMPLES		DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST BLOW COUNT			
			SAMPLE NO	TYPE OF SAMPLE					
	0				SURFACE ELEVATION 36.92 Metres				
	1		1	PA	Silty clay, highly plastic, medium, light reddish brown, CH.				
			2	ST					
			3	ST					
	2				Silty clay, highly plastic, soft, grey, CH				
	3		4	PA					
			5	ST					
			6	ST					
	4								
	5								
	6				Silty clay, traces of sand and gravel, plastic, stiff, light greyish brown, CL.				
	7		7	PA					
	8								
	9				Fine sandy clay, plastic, medium, brown, CL.				
	10		8	PA					
			9	ST					
			10	ST					
	11				Clayey fine sand, medium dense, light greyish brown, SC				
	12		11	PA					
			12	SS					
			13	SS					
	13				Fine sandy clay, plastic, medium, brown, CL.				
	14		14	SS					
			15	SS					
	15				Silty fine sand, dense, brown, SM.				
	16		16	SS					
			17	SS					
	17				Medium to coarse sand, trace of gravel, dense, brown, SW				
	18		18	SS					
			19	SS					
	19								
	20								
	21				End of Boring 66' - 6"				
	22								

4.8 STRUCTURAL PLANNING

■ Basic Policy for Structural Planning

Thailand is located out of any seismic zone designated in the world, had little experience in earthquake. As for wind pressure, the data show that the yearly average of wind velocity was about 2.0 m/sec. and the maximum wind velocity ever recorded was 28.3 m/sec. Thus, horizontal forces to act on building is extremely small as compared with those in Japan. This would make frame work designing considerably free. In planning building structure for this project of a two-stories level, it is not necessary to provide any special frame resisting against horizontal forces but only frames made up of columns and beams are sufficient to support a building.

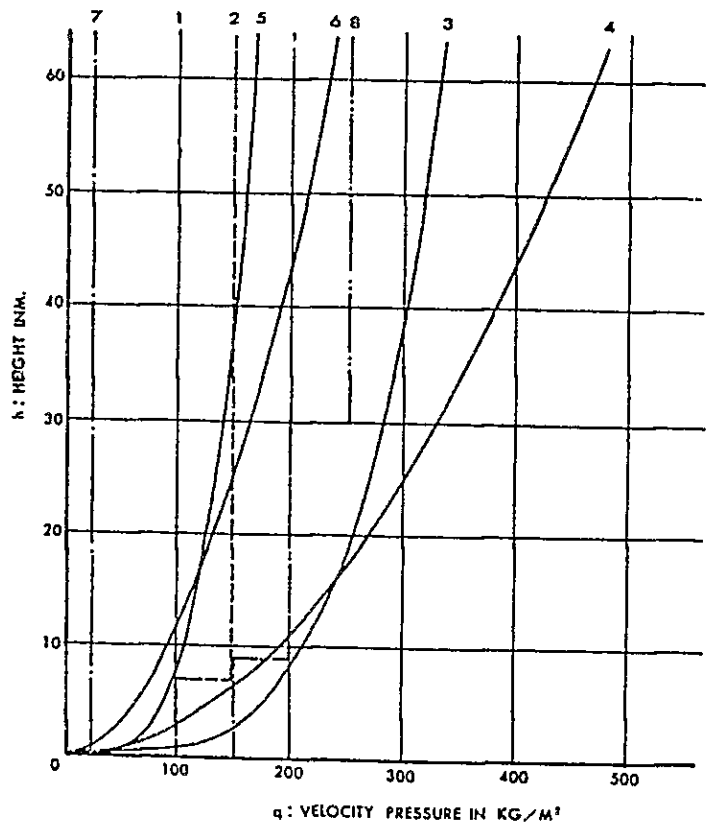
According to the subsurface exploration report conducted in the AIT campus, the ground for the project site consists of alternate layers of sand and clay, approximately 12 meter underneath the thick silty clay layer and the medium coarse sand further below at 18 - 20 meter from the ground level. Supposing the sand layer the supporting soil, concrete PC pile foundation is considered suitable. However, it is preferred to conduct a more accurate soil survey for this project prior to commencement of the Working Design.

The Figure on the left shows the soil composition obtained as a result of the penetration test conducted at a point nearest the project site.

■ Policy for Structural Designing

Since the local codes for structural design being too simple to apply for this project, the standards set forth in the Japanese Building Code are adopted as basis for the designing,

1. SUBURBAN DISTRICTS IN THAILAND : $q=100$ TO 50
(THE CONTROL OF THE CONSTRUCTION OF BUILDINGS ACT)
2. BANGKOK : $q=100$ TO 150
(BYE-LAWS OF THE BANGKOK MUNICIPALITY)
3. JAPAN : $q=120 \sqrt{h}$ FOR TALL BUILDING
4. JAPAN : $q=60 \sqrt{h}$ FOR LOW BUILDING
5. VIETNAM : $q=60 \sqrt{h}$ FOR TALL BUILDING
6. VIETNAM : $q=30 \sqrt{h}$ FOR LOW BUILDING
7. INDONESIA : $q=25$
8. PHILPPINES : $q=150$ TO 250



WIND PRESSURE

supplemented with ASTM and ACI codes. In carrying out the structural design, consideration is to be given to the following points:

- The values of the external forces and the basic design loads applying on the building should be decided upon taking into consideration such factors as conditions of local climate, geography and subsoil, and the usage of buildings.
- The allowable unit stresses for the structural materials should be determined with the values given by the pertinent standards of the Architectural Institute of Japan for the materials produced in Japan and for local materials, modified taking into consideration deviation of the quality.

The external forces and loads applying on the buildings are considered as follows:

1) Dead Load

The fixed weights of all structural components and finishing materials shall be calculated.

2) Live Load

In principle, the values decided by the Building Standard Law of Japan shall be applied, provided that the values for such room for specific uses as machine room and storage are calculated as to meet the conditions exactly. The values of the live loads on the main rooms as specified in the standards of Japan and other countries are shown in the following table:

(unit: Kg/m²)

	Japanese Bldg. Code		American National Standard	British Standard
	Floor Slab	Column, Beam foundation		
Book Collections	500	450	732.4	663
Reading Section	300	180	293.0	255
Office	300	180	244.1	255
Study Room	300	210	195.3	306
Laboratory	300	180	293.0	306

3) Wind Load

The maximum wind velocity is about 28.3 m/sec. Considering the building's life time, it would be proper to set the design value at 40 m/sec. Accordingly, the design value of the wind pressure force can be given as 100 Kg/m².

For reference, the values of wind pressure forces in Thailand and other southeast Asian countries are shown in the graph.

4) Seismic Force

No specific consideration is necessary.

■ Structural Materials and Construction Methods

The type of structural material to be used will be determined by size, structure and usage of the building, supplying capability of the materials, construction methods, transportation condition and prices. For construction of the facilities in this project, the following materials are considered suitable.

1) Concrete

All materials including cement, fine aggregate and coarse aggregate are available in local supply. A concrete batching plant is provided at the construction site to weigh and mix the concrete materials. Regular type concrete is used and the 4 week strength at 210 kg/m² is considered suitable. It is preferred that the design value of compressive strength for mixing to be actually applied is determined by taking into consideration the work variation. Also, the Project site is located in the high temperature region and the concrete must be mixed to a hard consistency to prevent cracks from forming caused by the fast drying and curing processes. Moreover, care must be taken in the curing by sprinkling water frequently after placing the mixed concrete.

2) Reinforcing Bars

The reinforcing bars are locally available from the supply sources to meet fully the requirement. The non-regular type SD35 is employed for main use and arrangement of the bar in fewer number is recommendable. However, it is necessary to bear in mind at the designing stage that the 22 mm dia. type is not being manufactured and the 12 mm type is in wide-spread use in place of the 13 mm type.

3) Pile

The medium coarse sand layer at 18 to 20 meter depth from the ground level is estimated as the supporting soil, yet the circumferential friction force becomes an important factor in the overall bearing capacity of a pile in addition to the supporting capacity of the tip. Since the precast concrete pile manufactured locally has a large circumferential area, it is suitable to meet the capacity factors.

4.9 AIR-CONDITIONING AND VENTILATION SYSTEM PLAN

Air-conditioning and ventilation system is provided for the purpose of creating a satisfactory environmental condition of interior space. Especially in this project of the Library building in the wet-tropical region, the system is particularly of importance and indispensable in view of protecting the collections. However, the operation costs is not easy to stay at a low level, because running hour is long. Care must be taken in this respect. For the reason, the planning was carried out with the economical factors of the operation cost kept in mind, not to mention of the primary objective of maintaining a satisfactory environmental condition of interior space.

■ Design Criteria

(a) Exterior Conditions

Atmospheric temperature	Humidity
36.1°C	75%

(b) Interior Conditions

Reading Section, Collection Section

Room temperature	Humidity
26°C ± 2°C	50% ± 10%

General office area

Room temperature	Humidity
26°C ± 2°C	50% ± 20%

■ Air-conditioning System and Zoning

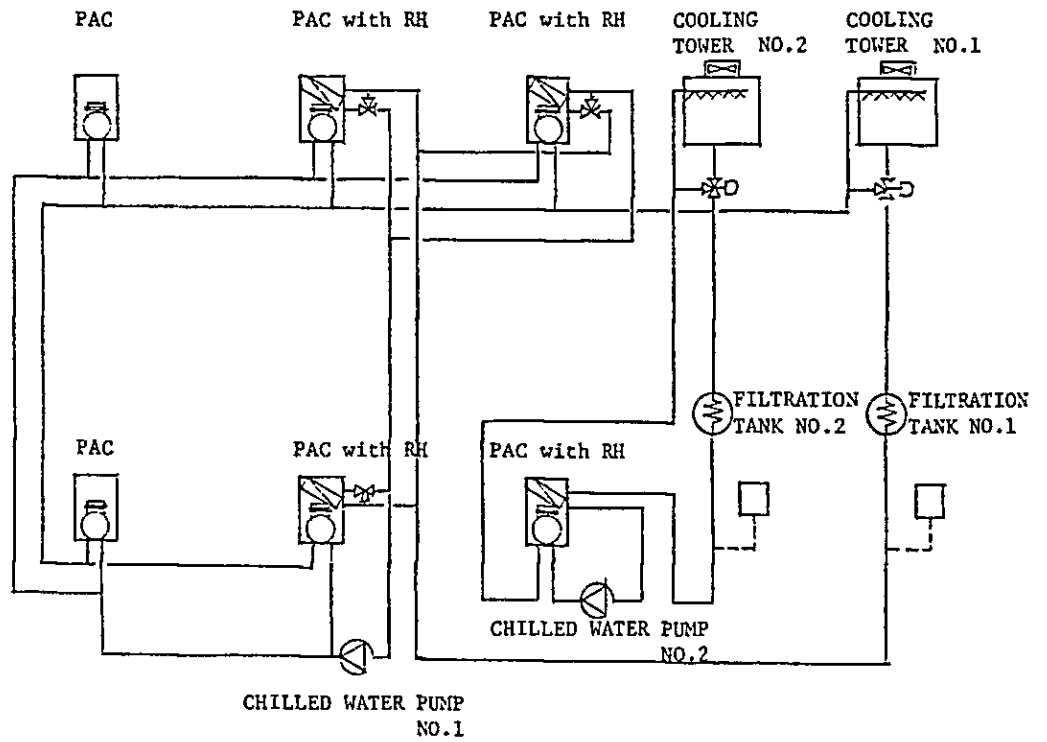
Zoning in planning of air-conditioning shall be carried out by paying attention on the range of service hours and usage of the facilities in consideration for the operation cost and

affecting factors thereto. It is considered reasonable from the size of the building and the interior layout to define a unit of zone to cover about 1,000m² floor space area. By applying the unit measurement, 2 zones is allocated to the Reading Section and a total of 6 zones to the multipartitioned blocks on the both floor, i.e. 3 zones to each aloor. The planning is developed based on the zone allocation. A single duct system is considered most suitable for air-conditioning, in this case, for which zoning is made according to opening time range and usage of the facilities. The Reading Section where book stacks are located will be provided with re-heater for dehumidifying.

■ Heat Source Plan

There are centrifugal-type chilling unit and reciprocating type chilling unit that are considered for applicable heat source in general. In this project, however, the package type air-conditioning unit is employed and installed locally, taking into account the space saving for heat source equipment installation, for minimizing the operating cost and also for ease of maintenance. One of the two air-conditioning systems to serve the first floor of the building is required to operate on a time range diffentiated from the other's and for this reason, two systems of a cooling tower and cooling water pump are installed to enable clear division of the usage between the both systems as well as reduction of the operating costs. For maintaining quality of cooling water, a filter and a corrosion inhibitor injection unit are provided.

HEAT SOURCE SYSTEM FOR AIR-CONDITIONING



PAC : Packaged Air Conditioner
 RH : Reheater

■ Heat Transmission Plan

Cool air from the package type air-conditioning unit is distributed through the duct extended to each room. The air outlet is in principle fitted to the ceiling for a satisfactory temperature distribution and prevention of cold air draft. Air from each room is designed to return to the air-conditioning unit through air in-take on the ceiling and duct provided above ceiling.

■ Ventilation System Plan

A ventilating device is provided to pantry, lavatory and package type air-condition unit rooms. Especially in the air-conditioning equipment room, a part of returned air is utilized for the ventilation so as to help keeping a satisfactory condition of the rooms which the equipment serves. An air-exhaust device is installed in the conference room for cigarette smoke.

■ Automatic Control System Plan

The package type air-conditioning units are controlled with thermostat or humidistat and can also be controlled by unloader. The re-heaters are controlled by signals from thermostat installed in the room. All power machinery and equipment are controlled by calendar timer to make start and stop on a schedule oriented basis, and in principle, no manual start/stop operations are permitted. The monitoring of each machine and equipment is made both on the central panel installed in main air-conditioning room and on the sub panel installed in the Library's administrative office.

■ Estimate of Power Demand for Air-conditioning

(a) Base of calculation

- Machine running hour ... for 1,000m² approx. on level 1
7:30am - 22:30pm
15 hours/day x 30 days
... for the other air-conditioned area
8:30am - 15:30pm
8 hours/day x 20 days
 - Average running days per month 25 days
 - Total electric consumption per month at mid summer season is calculated.
 - Average running rate of Compressor 70%
- (Compressor will stop at the low temperature time)

(b) Specification of Air-conditioner

- 50 USRT packaged air-conditioner for 1,000m² on level 1
(Compressor ... 37^{KW} Fan ... 11^{KW}) 1 set
- 50 USRT packaged air-conditioner for the other air-conditioned area
(Compressor ... 37^{KW} Fan ... 11^{KW}) 5 sets
- Chilled water pump for 1,000m² on level 1
650 ℓ/min x 5.5^{KW} 1 set
..... for the other area
3,125 ℓ/min x 22^{KW} 1 set
- Cooling tower for 1,000m² on level 1
Fan 2.2^{KW} 1 set
..... for the other area
Fan 7.5^{KW} 1 set

(c) Total electric consumption per month

• Electricity for Chilled water pump and Cooling tower
for 1,000m² on level 1

$$(5.5^{KW} + 2.2^{KW}) \times 15^h \times 30^{days} = 3,465^{KW} \dots A$$

for the other area

$$(22^{KW} + 7.5^{KW}) \times 8^h \times 20^{days} = 4,720^{KW} \dots B$$

• Electricity for Fan of packaged Air-conditioner
for 1,000m² on level 1

$$11^{KW} \times 15^h \times 30^{days} = 4,950^{KW} \dots C$$

for the other area

$$11^{KW} \times 5^{set} \times 8^h \times 20^{days} = 8,880^{KW} \dots D$$

• Electricity for Compressor of packaged Air-conditioner
for 1,000m² on level 1

$$37^{KW} \times 70\% \times 15^h \times 30^{days} = 11,655^{KW} \dots E$$

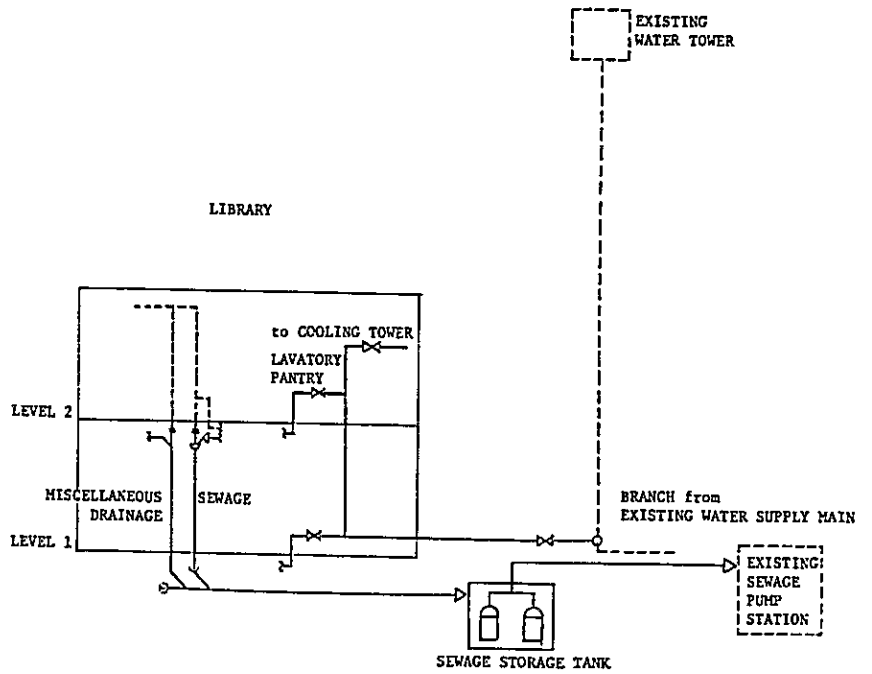
for the other area

$$37^{KW} \times 5^{set} \times 70\% \times 8^h \times 20^{days} = 20,720^{KW} \dots F$$

Total electric consumption for Air-conditioning Machine

$$A + B + C + D + E + F = \underline{54,390^{KW}/month}$$

PLUMBING SYSTEM DIAGRAM



4.10 PLUMBING SYSTEM PLAN

■ Water Supply System Plan

The water supply system is planned to branch the water mains connecting to the existing elevated water tank and extend the pipeline to each building for water distribution. On the other hand, an water well will be provided in the campus to secure water source and supply. The supply main line running within the building shall be loop piping in order to maintain the stable supply flow. Also, for easy access for maintenance operation, all piping for water supply are designed in principle to run either in pit or above ceiling and the underground piping shall be avoided wherever possible. Water usage in the building is estimated as follows:

• Living Water

- Staffs 66 pers. x 100 ℓ/man.day = 6,600 ℓ/day ... A

- Users 160 pers. x 25 ℓ/man.day = 4,000 ℓ/day ... B

• Supply to Cooling Tower

- 650 ℓ/min x 0.03 x 60 x 15hrs/day = 17,550 ℓ/day ... C

- 3,125 ℓ/min x 0.03 x 60 x 8hrs/day = 45,000 ℓ/day ... D

Thus, the aggregated total is:

$$A + B + C + D = 73,150 \text{ ℓ/day}$$

■ Hot Water Supply System Plan

A electrical storage tank type water boiler is provided in the staff lounge for the hot water supply.

■ Drainage System Plan

The sewage and miscellaneous drainage are channeled separately within the building and joined outside to flow into the sewage pump station located adjacent to the existing campus. Rain water is discharged to the open ditch running around the building. The materials for the piping shall be cast iron pipe for the interior sewage piping, galvanized steel pipe for the miscellaneous drainage and vent piping, and centrifugal concrete pipe for exterior drainage. Effluent from the building is estimated as follows:

$$\cdot \text{Living Drainage } 10,600 \text{ /day} \times 90\% = 9,540 \text{ /day}$$

■ Sanitary Fixture Plan

The proper types of sanitary fixture are provided to the location to meet each requirement. The lavatory's closet shall be all western type.

4.11 ELECTRICAL SYSTEM PLAN

■ Main Electrical System

1) Power Station Facilities

3-phase 3-wire 50Hz 24KV incoming power cable is branched off from the existing No.8 Sub-station and drawn underground about 500 meters into the Library Building. The electricity received is stepped down to a low voltage of 380V/220V with the transformer in the Electrical Room and distributed to the respective loads of the building through the low voltage distribution panel.

Loads for the service facilities are as follows:

- (1) Lighting outlets and receptacles.
- (2) Power for air-conditioning and ventilating facilities.
- (3) Power for water supply and drainage facilities.
- (4) Power for lift.

The total loads of about 500KVA shall be applied the planning of the system.

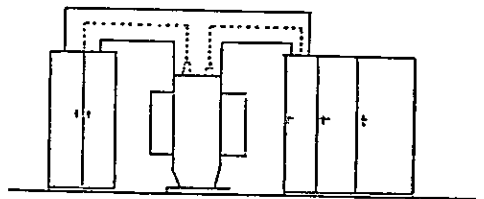
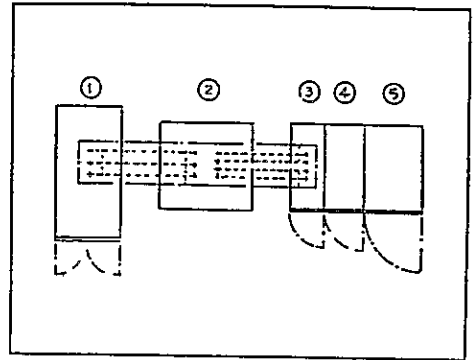
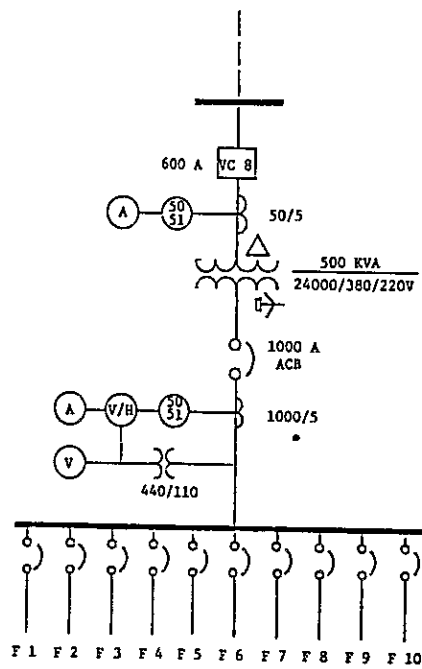
2) Telephone Switchboard Facilities

About 40 units of in-house extension telephone are provided to major rooms in the building and connected to the existing exchange board at the Central Administration building to which 40 loop circuits are added to meet the increases. The wiring to the library building is by cable to run through the covered way from the Central Administration building.

■ General Electrical System

1) Power Circuit System

The power and lighting main lines are protected for the circuit with the circuit breaker provided on the low voltage distribution panel in the Electrical Room. The main lines are extended from the distribution panel to connect to each power control panel



- 1 24KV SWITCHBOARD
- 2 TRANSFORMER
- 3 TR SECONDARY MAIN CUBICLE
- 4 MY SWITCHBOARD
- 5 BATTERY & CHARGER

and lighting distribution panel in the building by means of wiring duct and metal conduit. The distribution wiring of each main line is specified as follow:

(1) Main lines for lighting outlets and receptacles
3-phase 4-wire 380V/220V

(2) Main lines for air-conditioning, plumbing equipments and other power equipment 3-phase 3-wire 380V

Such electrical equipment as fans and pump of air-conditioning units and plumbing equipments operate from the power control panel to start and stop. The power control panel is mounted with motor breaker, magnet switch, start/stop button, operation indicator lamp and ampere meter.

2) Lighting System

Electricity supply line for the lighting and outlets loads is planned to be wired via the branch circuit breaker incorporated in the lighting distribution panel and provided with the circuit protection. In principle, the supply lines for lighting and outlets should be connected to the respective branch circuits separate from each others and the wiring is done with polyvinyl chloride wire housed in metal conduit. The outlets are arranged to the locations convenient for the use and suitable to meet installation plan of each electric appliance. In generally offices are provided with 2 to 3 outlets each to every 40m² floor area. Outlets shall be in principle of wall-mount type compatible to the electric appliances already in use. Electrical equipment is provided with the grounding terminal, if specifically required.

3) Illumination Equipment

Fluorescent lamp is employed mainly for light source of illumination and incandescent light is provided to the location where it is to be used for specific requirement of the building. On/off switch is arranged so as to enable the switching to turn on and off the light in as small a section of area as practical.

The following illumination values are applied to main rooms:

Offices, Reading and Collection Section	350 - 400 lx
Corridor and Hall	100 - 150 lx

4) Telephone Wiring

Telephone wiring is installed in metal conduit. Main rooms are provided with the telephone wire terminal outlet which should be of wall-mount type.

5) Public Address System

Amplifier is installed in office for general communication, paging and back-ground music broadcasting. Speakers shall be of ceiling-mount built-in type and provided to each main room. Also, each room is provided with a sound attenuater.

6) Automatic Fire Alarm System

Fire alarm system operating with thermal detectors and manual push buttons is installed with the main receiving panel located in the Administration office and the sub-receiving panel in the existing fire station.

7) Lightning Arrester System

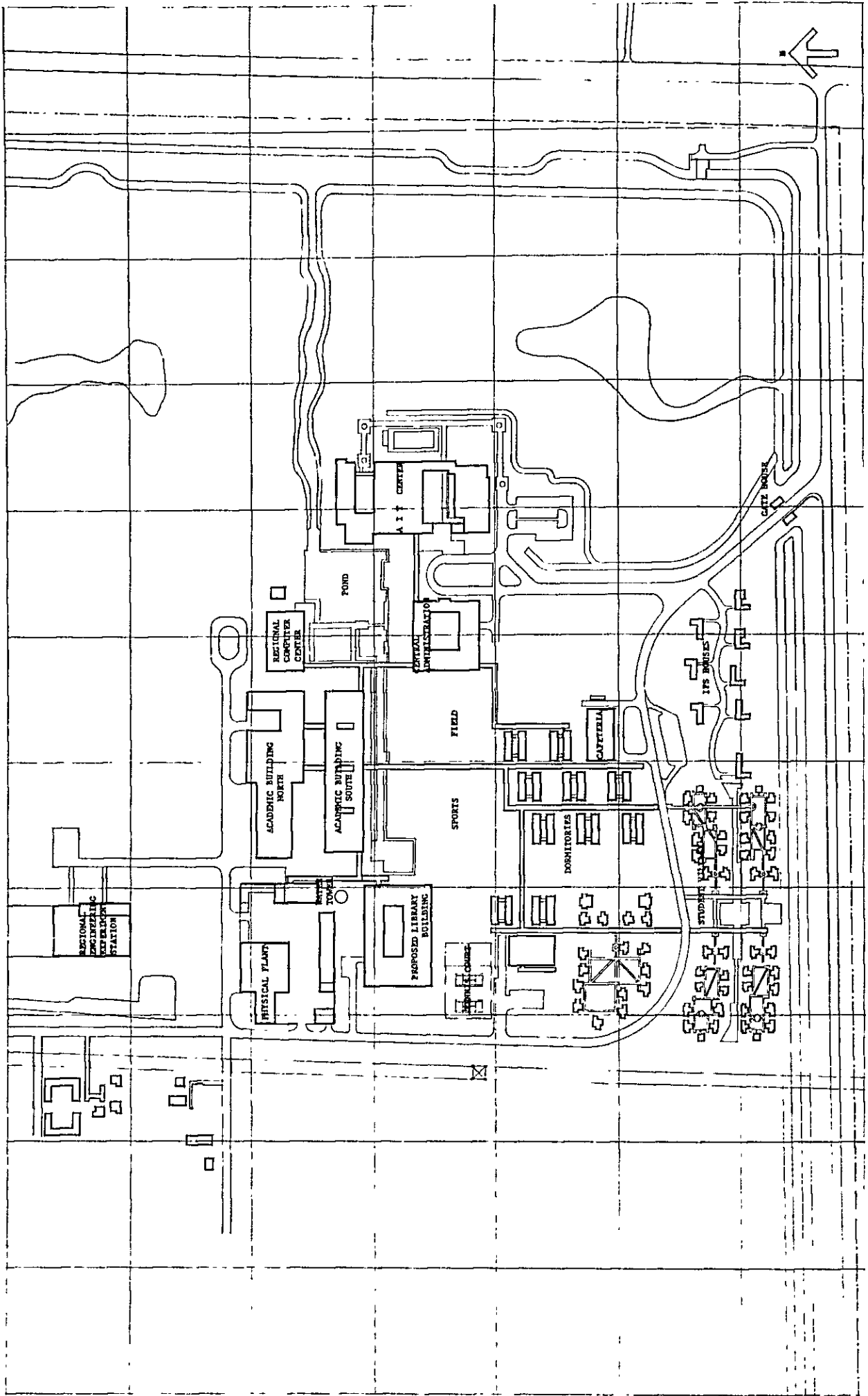
A radio-isotope type lightning arrester is installed on the topmost point of the building to protect the facilities from lightning.

8) Outdoor Lighting System

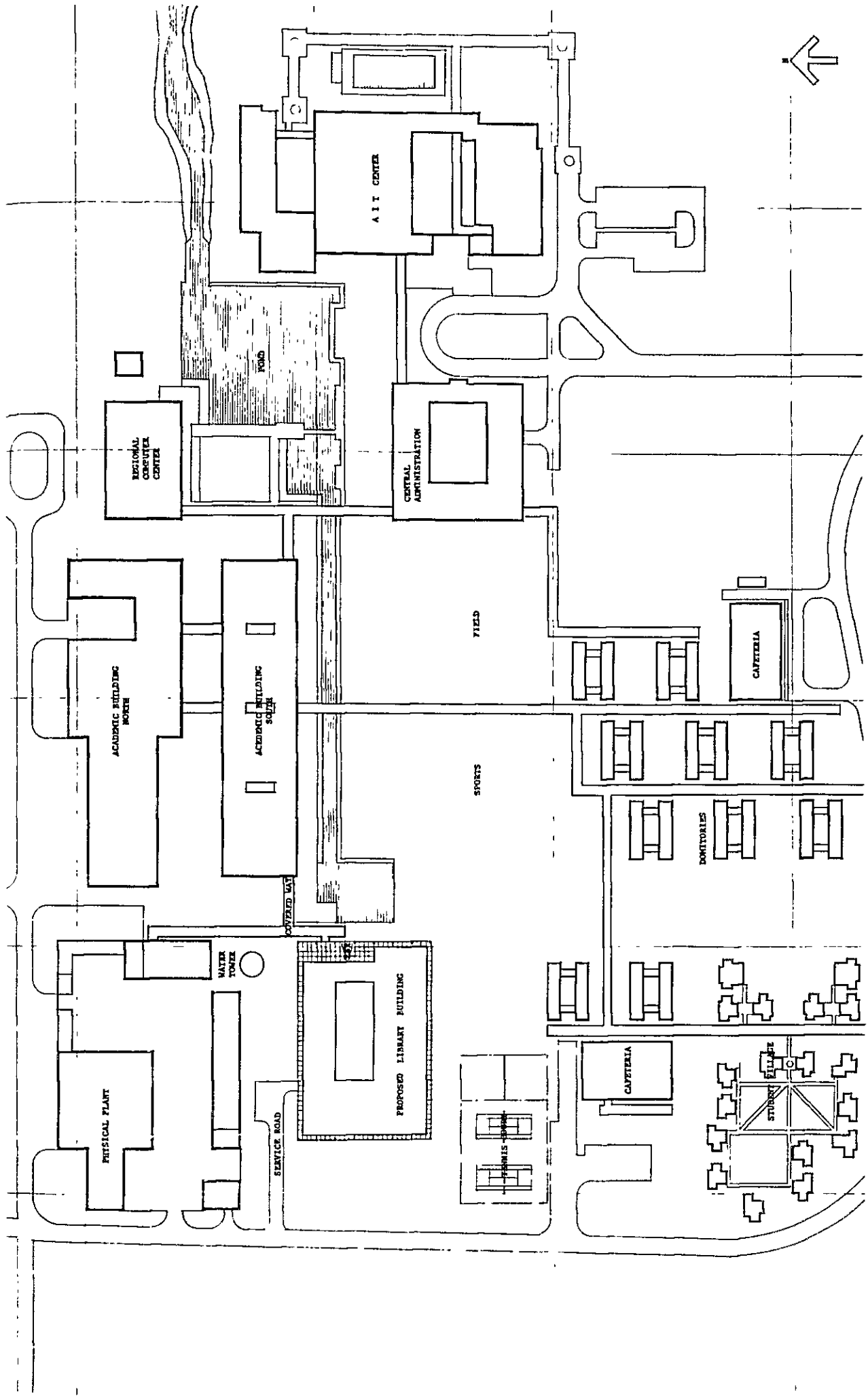
Outdoor lamps are provided taking into consideration the harmony with those of the existing premises. The switches shall be of both automatic and manual types.

DRAWINGS

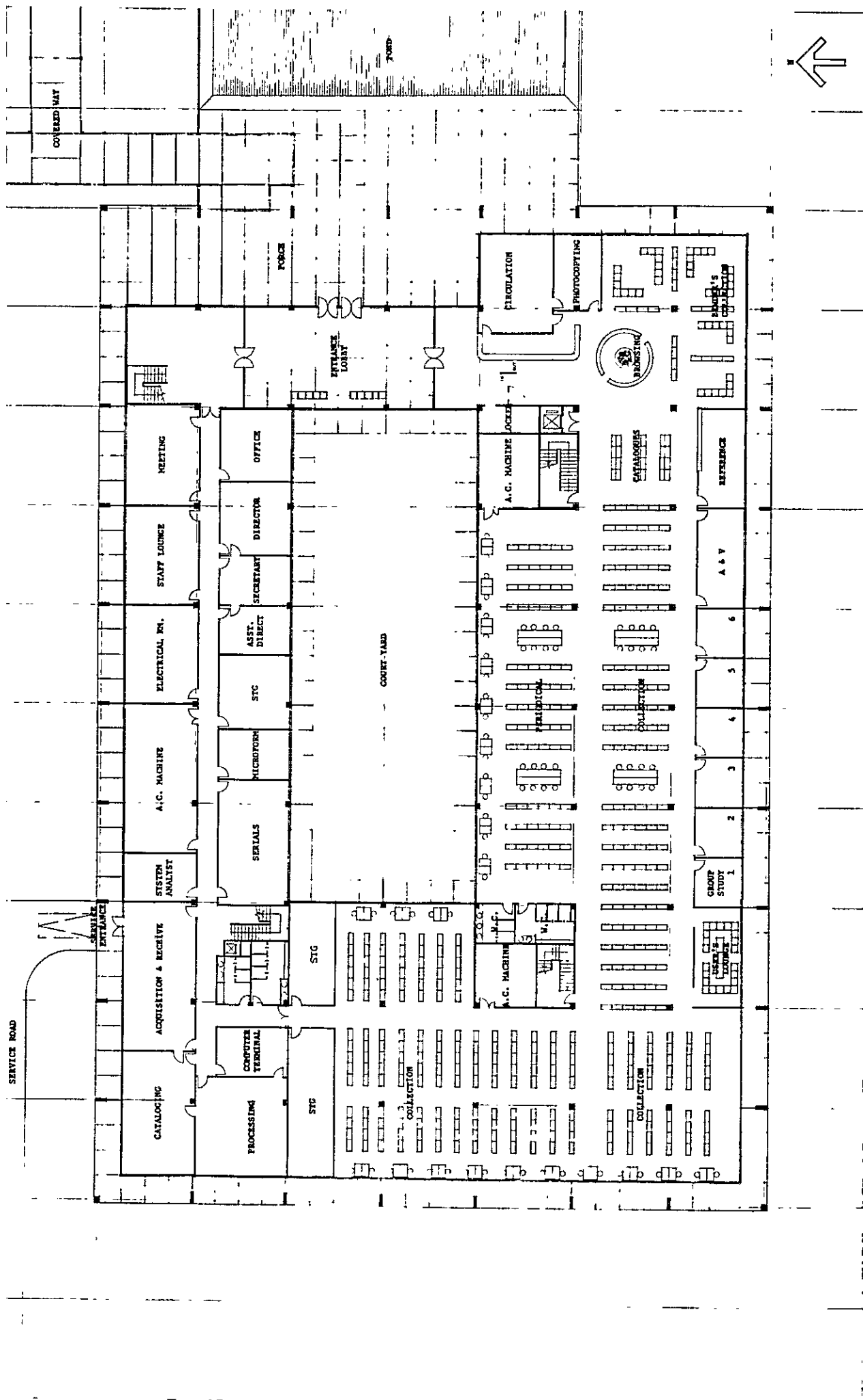
PLOT PLAN	1
SITE PLAN	2
FLOOR PLAN LEVEL 1	3
FLOOR PLAN LEVEL 2	4
ELEVATION & SECTION	5
FOUNDAMENTAL WORK PLAN	6



PLOT PLAN

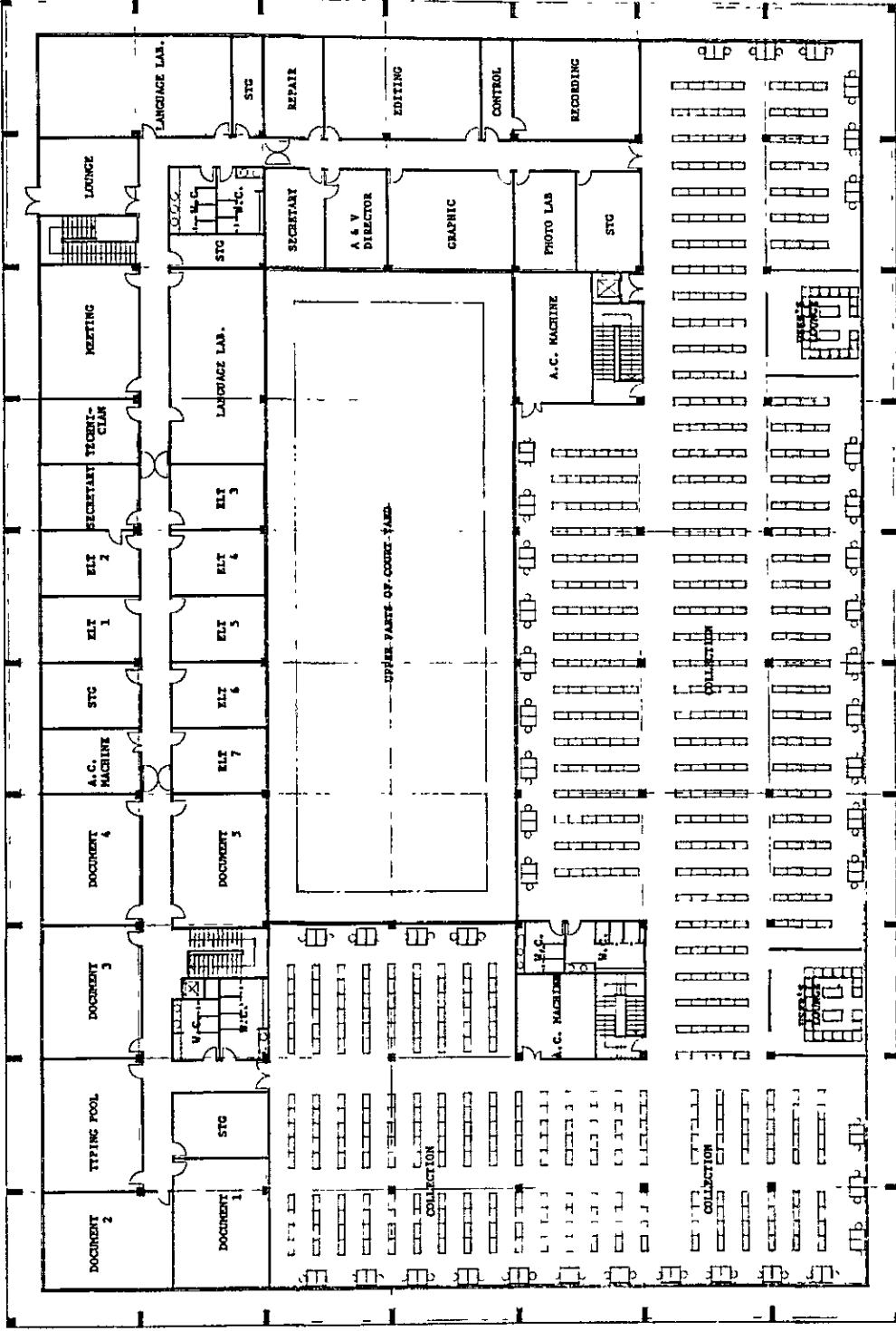


SITE PLAN 2

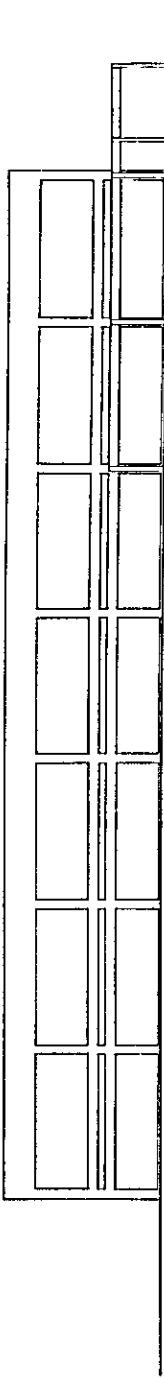


3

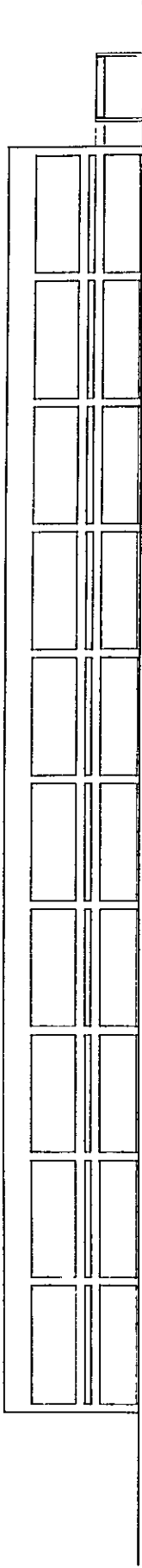
FLOOR PLAN LEVEL-1



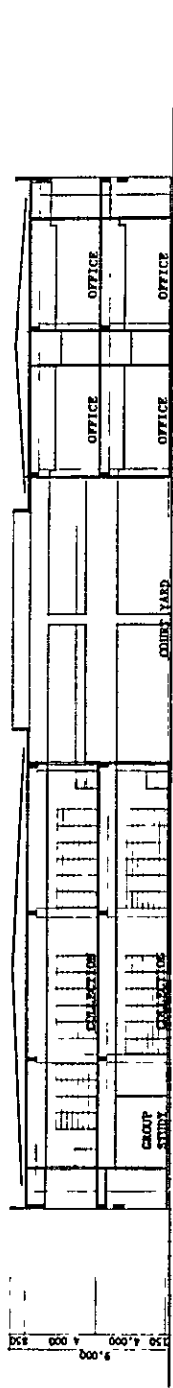
FLOOR PLAN LEVEL-2 **4**



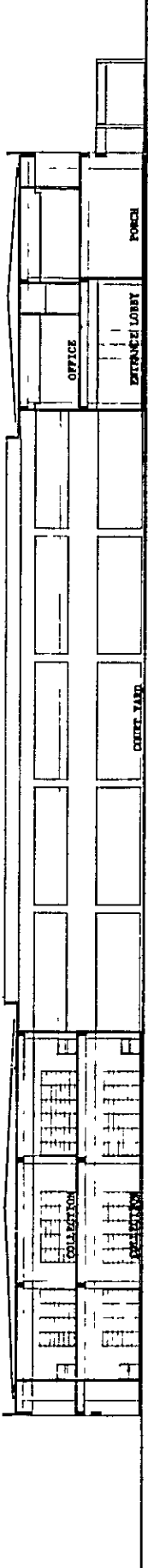
ELEVATION EAST SIDE



ELEVATION SOUTH SIDE

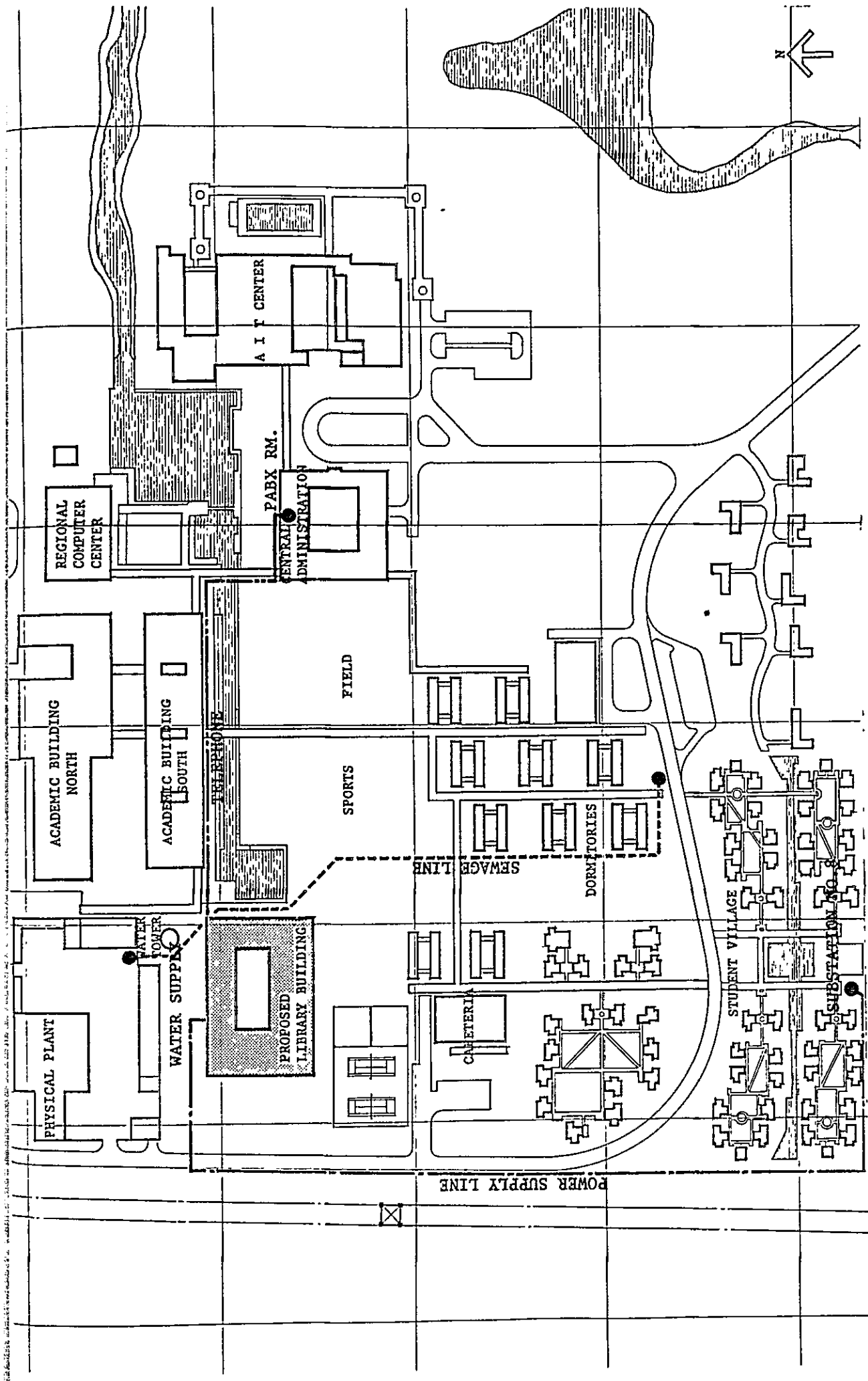


SECTION A A



SECTION B B





FUNDAMENTAL WORK PLAN **6**

CHAPTER 5 SCOPE OF WORK AND CONSTRUCTION SCHEDULE

5.1 SCOPE OF WORK

The AIT Library Preliminary Design Survey Team, during their stay in Thailand, held several meetings with AIT to discuss in detail scope of the construction work as to how AIT and Japanese side demarcate the work.

Scope of construction work and work demarcation

While the scope of work of AIT side were already stated in the minutes. The followings are the summary to clarify the scope of demarcated work by item:

A: Fundamental Work

1) Site Preparation

(AIT) Transplant trees from the construction site before commencement of the construction work.

2) Water Supply

(Japanese side) Supply water piping from the existing elevated water tank and water well to be newly constructed.

(AIT) Provide water as required.

3) Electricity

(Japanese side) Supply Incoming high tension cable from Campus No.8 Sub-station to the Transformer Room to be provided in the new building, and supply power by lowering voltage.

(AIT) Provide the supply capacity as required.

4) Telephone

(Japanese side) Install additional exchange box to the existing Central Administration Building and provide 40 extension lines.

(AIT) Provide telephone trunk lines as required.

5) Drainage

(Japanese side) Lay piping and connect to the sewerage pump station of the existing physical plant.

(AIT) Discharge drainage to sewerage treatment pond.

B: Building

(Japanese side) Carry out all construction of the Library building including the connecting corridor to the existing.

C: External Work

1) Access Road

(Japanese side) Construction of the paved road accessing to the service entrance of the Library from the existing campus road running westside.

2) Planting

(Japanese side) Landscape work including planting on the Library's court yard. Protective care of the plants outlining the site during construction and the restoration thereafter.

(AIT) Maintenance care of plants and lawn around the building.

3) Outdoor lighting

(Japanese side) Installation of outdoor lighting around the new building.

D: Equipments, Furniture and Miscellaneous

(Japanese side) Provide with equipments the aids budget can afford for the Library and audio-visual sections.

Book stack 300 sets

Carrel 160 units

Shelves, Cabinets, Blackboards, Notice-boards

(SIT) Office furniture and miscellaneous goods

E: Material Transportation

(Japanese side) Marine and inland transportation of materials imported to Thailand from Japan.

(AIT) Assistance and cooperation in dealing with the Government of Thailand for procedures, permits, tax exemption and custom clearance on import materials and equipments.

F: Others

(AIT) Take necessary measures under the Charters approved by the Government of Thailand for Japanese personnel engaged in the construction of the Library to ensure their safe stay and travel in Thailand during the period until completion of this project, and their entry in and exit from Thailand.

Provide land space necessary for the temporary site office, work shop and material storage yard for the Library construction.

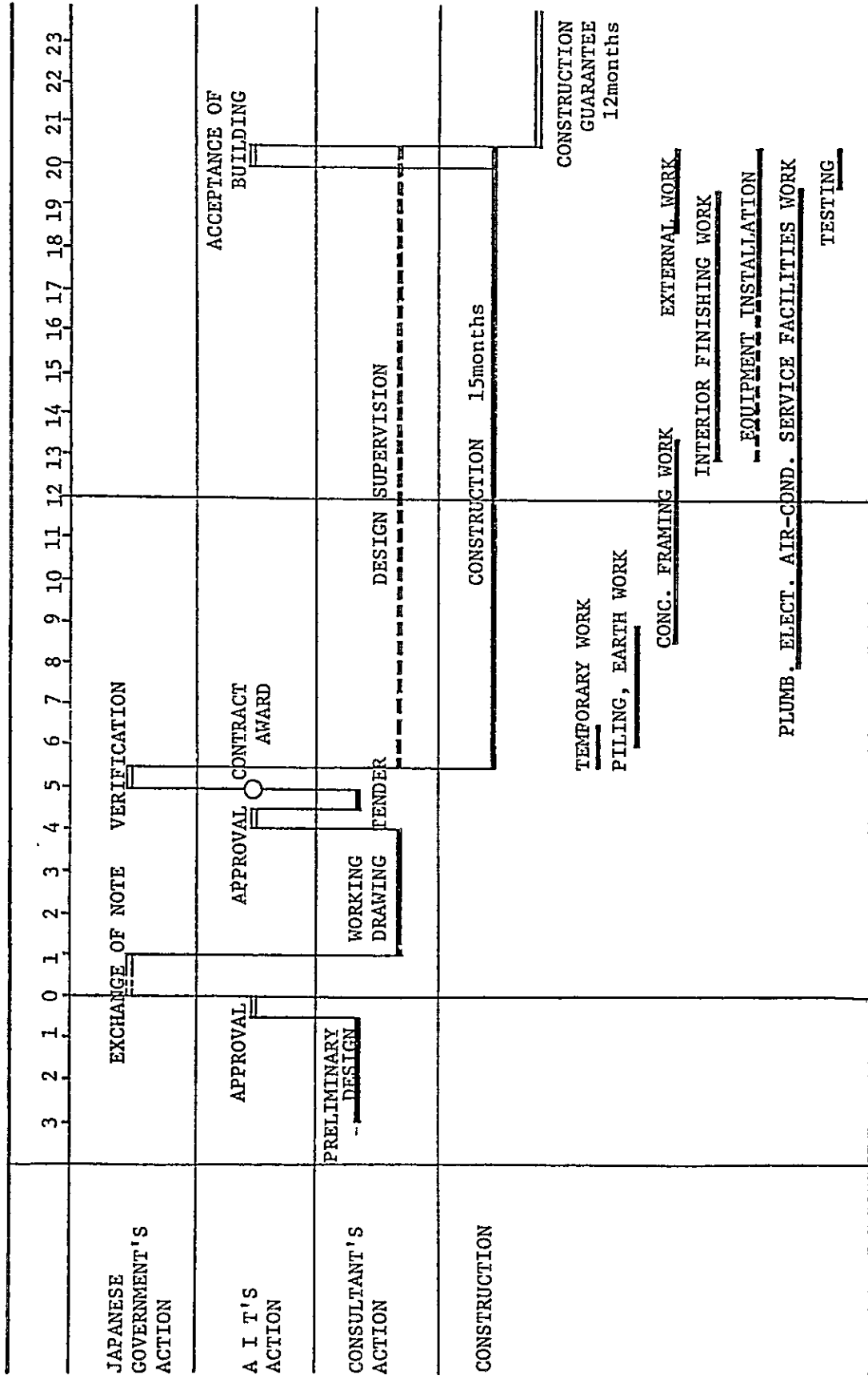
Relocate furniture and equipments into the new Library completed under this project from the existing Library.

5.2 CONSTRUCTION SCHEDULE

The working designing will commence following exchange of the official notes executed between the Government of Japan and the Asian Institute of Technology under the financial assistance in this construction project. All drawings and specifications for the construction and the documents required for tender on the work contract will be prepared during the working design. The tender shall be made with tenderers assembled upon an approval given by the client on the working drawing and documents submitted for review. The work under this project will be commenced after the contract, upon the verification by the Government of Japan. Judging from the scale, structure and contents of the equipment planned for the facilities, it is estimated to take a period of 15 months required for the construction work. The construction guaranty period will be one year following completion of the building and its delivery to the client.

Reference is made to the following page for the construction schedule.

TENTATIVE CONSTRUCTION SCHEDULE



JICA

