No. 08

BASIC DESIGN STUDY ON THE CENTER FOR VOCATIONAL AND EXTENSION SERVICE TRAINING (CEVEST) IN THE REPUBLIC OF INDONESIA

MAY 1983

JAPAN INTERNATIONAL COOPERATION AGENCY

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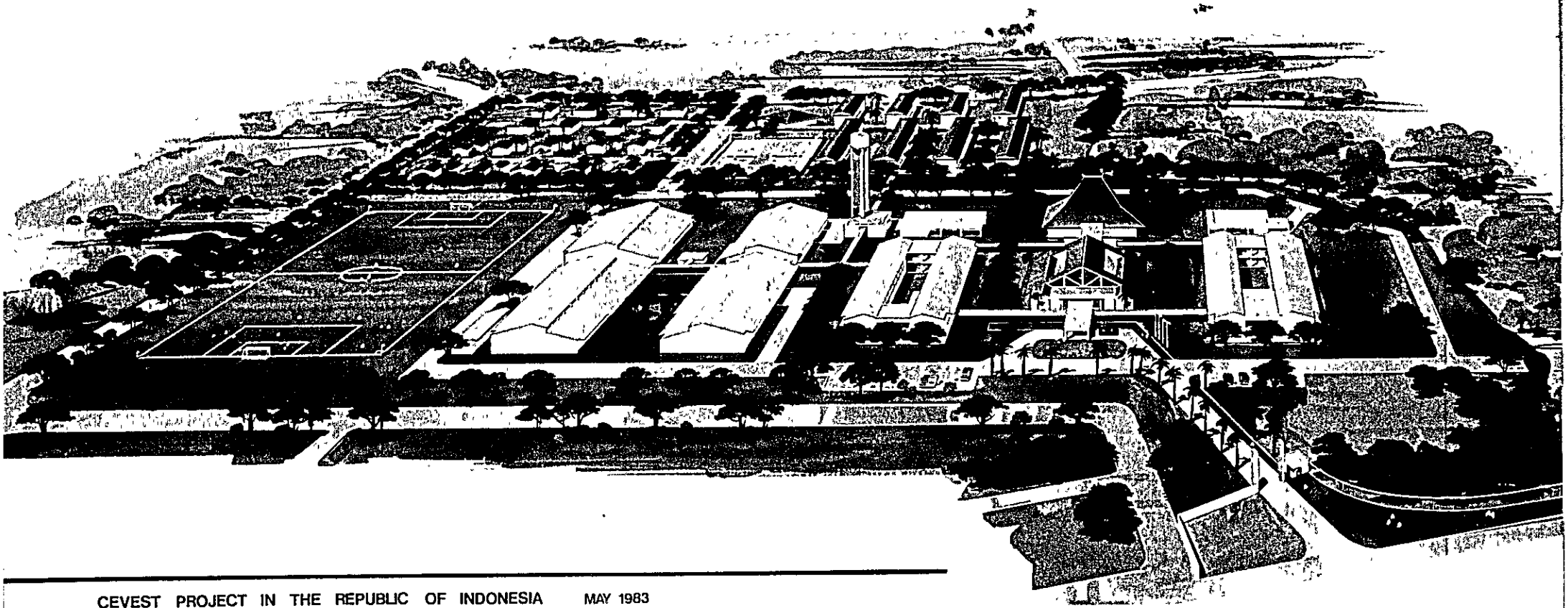


CEVEST PROJECT IN THE REPUBLIC OF INDONESIA MAY 1983

PREFACE

In response to the request of the Government of the Republic of Indonesia, the Government of Japan decided to conduct a Basic Design Study on the Project of Center for Vocational and Extension Service Traiing (CEVEST) and entrusted the survey to the Japan International Cooperation Agency. The J.I.C.A. sent to Indonesia a survey team headed by Tadashi SHINOURA, Head of Basic Design Division, Grant Aid Department, JICA, from 16th January to 8th February, 1983.

The team had discussions with the officials concerned of the Government of Indonesia and conducted a field survey (in Jakarta City and Bekasi City). After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Indonesia for their close cooperation extended to the team.

May, 1983

Keisuke Arita

Keisuke Arita
President
Japan International Cooperation Agency

SUMMARY

The industry sector, the core driving force to develop the Indonesian economy, has been greatly contributing to the development of the national economy. However, since industrialization has been promoted with the emphasis placed on the heavy and chemical industries for the need of the early realization of the industrialization as possible, the same as in other ASEAN countries, small and medium enterprises have not been sufficiently developed and problems resulting from unbalanced national economy are becoming noticeable. The Government of the Republic of Indonesia, therefore, determined that the urgent steps to be taken would be the promotion of employment in the national scale and enforcement of policies to develop small scale enterprises to further develop the industries along the aim of the economical development of the nation, and the government has started to take various measures.

The idea of Human Resources Development Project in the ASEAN countries was initially proposed by H.E. Suzuki, the Prime Minister of Japan during his visit to the ASEAN countries in January, 1981, and it is a project to develop human resources that are essential for growth of these countries. In Indonesia, the proposal of establishing a training center is to develop human resources in the fields of vocational training instructors and small scale industries extension personnel was established through preliminary studies and joint preparation committees held several times since June, 1981, under such circumstances.

The Government of Japan, upon receipt a request from the Government of the Republic of Indonesia for technical and economical cooperation to establish the Center for Vocational and Extension Service Training (CEVEST) conducted several field surveys through the Japan International Cooperation Agency (JICA).

Much is expected from the implementation of the CEVEST project for development of employment and enhancement of labor quality enabling young and unskilled people participating in the labor market and cultivation of instructors for vocational training facilities operating for the

purpose of management improvement of small and medium industries, as well as a propagation of new techniques, and small industries extension personnel, eventually contributing to the development of the national industrialization and economy.

The proposed CEVEST construction site is located in Bekasi City, about 25 km east of Jakarta. There are industrial estates along the JL. Raya Bekasi and the environmental conditions of the center are being good. A site of about 9.3 ha is available for CEVEST. Electricity supply and telephone lines can be easily connected. Necessary water is available by drilling wells and the waste water can be discharged to the existing canal.

The CEVEST facilities consist of Training Buildings for Vocational Training Department and Extension Service Training Department, Central Administration Building, Workshops and others. The Administration building has such rooms as Project Coordinators room, Project officers' room, Audio-visual room, Library, etc., and these are jointly used by the two department.

The Training Building of Extention Service Training Dept. has an office, research and development room, classrooms, multi-purpose rooms, as well as a canteen in the annex.

The Training Building of the Vocational Training Dept. has an office, research and development room, classrooms, drafting room, conference room, as well as a canteen hall in the annex.

The Workshops consist of 5 practice spaces for machining sheet, metal (welding, sheet metal), electricity, electronics and automotive field.

The scales of CEVEST facilities are as shown below:

Vocational Training Dept.		Extension Service Training Dept.	
Training Bldg.	2,288 m^2	Training Bldg.	2,352 m^2
Workshops	4,584 m^2	Canteen	200 m^2
Canteen	300 m^2	Sub-total	2,552 m^2
Sub-total	7,172 m^2		
Central Administration	1,200 m^2	Miscellaneous	1,347 m^2
	Total 12,271 m^2		

The required period for the CEVEST construction is estimated 3.5 months for the implementation design, 3 months for the tender and contract, and 16 months for the actual construction work.

The execution agency for the CEVEST in the Indonesian side is the Execution Committee mainly consisting of officials of the Ministry of Manpower (MOM), Ministry of Industry (MOI).
The CEVEST training programs are operated by the Operation Committee which is established under close coordination between the MOM and MOI as these ministries are administrative organs on matters related to the vocational training and extension service workers training.

Since the CEVEST project is very meaningful to the cultivation of vocational training instructors and small industries extension service personnel, which are very important on the economy development policies of the Indonesian government, as well as for Human Resources Development Projects of the ASEAN countries. The promoting and the implementing of this project based on the grant aid and technical cooperation of Japan has really a great meaning and considerable effects will be expected.

Toward the prompt realization of CEVEST, sufficient follow-up to the construction itself by the related government authorities of the Indonesian side is greatly needed.

Because of the needs of CEVEST, plans are made to train a large number of trainees each year. To accomplish this, a large amount of training expenses and a large number of training staff is essential and the planning should be operated in a rational way.
With a proper planning to the establishment and the implementation of the training programs for the CEVEST, the Indonesian government is recommended to recognize these points.

CONTENTS

Basic Design Drawings

ABBREVIATIONS

AHRDP	ASEAN Human Resources Development Project
BIPIK	Bimbingan Dan Pengembangan Industri Kecil
BLPT	Balai Latihan Pendidikan Teknik
BLKI	Balai Latihan Kerja Industri
CEVEST	Centre for Vocational and Extension Service Training
EST	Extension Service Training Department
VTD	Vocational Training Department
DGMP	Director General for Manpower Development & Utilization
DGSI	Director General of Small Industry
GOI	Government of the Republic of Indonesia
GOJ	Government of Japan
JICA	Japan International Cooperation Agency
MOM	Ministry of Manpower
MOI	Ministry of Industry
MTU	Mobile Training Units
PELITA-III	Third Five-Year Development Plan
TPLS	Tenaga Penyuluh Lapangan (Extension Service Workers)
VTC	Vocational Training Centre

CHAPTER 1. INTRODUCTION

The proposal of ASEAN Human Resources Development Project (AHRDP) was announced by H.E. Prime Minister Zenko Suzuki during his visit to the ASEAN countries from 8th to 20th January 1981.
The Project is aimed at improving the Human Resources Development indispensable for the development of these countries.
At the First Preparatory Meeting of the representatives of the ASEAN countries held in Tokyo on 31th March and 1st April 1981 the request from each country has been proposed and measures should be taken for the soonest realization of the project.
At the ASEAN Standing Committee held in Manila on 18th May 1981 it was recommended to set forth mutual coordination between each ASEAN country and Japan on the fields of the interest of each country in the earliest stage.

With regard to the project of Human Resources Development in the Republic of Indonesia, the Centre for Vocational and Extension Service Training (CEVEST) was proposed by the Government of the Republic of Indonesia (GOI) on the occasion of the visit of the Contact Mission, headed by Mr. Ishibashi, Second Technical Cooperation Division, Economic Cooperation Bureau of the Ministry of Foreign Affairs, in June 1981.
In order to identify the details of CEVEST, principally from the administrative point of view, the Government of Japan (GOJ) had sent the First Preliminary Team from 18th to 22nd August 1981, headed by Mr. Ishibashi, Second Technical Cooperation Division, Economic Cooperation Bureau of Ministry of Foreign Affairs and supported by the staff member from the Ministry of Labor (MOL), the Ministry of International Trade and Industry (MITI) and Japan International Cooperation Agency (JICA).

At the Second Preparatory Meeting held in the ASEAN office in Jakarta from 6th to 7th October 1981, the drafts of the respective Projects proposed by the ASEAN countries were discussed and the scheme was basically reached to the acknowledgement, and it was decided to set forth mutual steps between each ASEAN countries and Japan.

Second Preliminary Team headed by Mr. Ishibashi, Second Technical Cooperation Division, Economic Cooperation Bureau, had been sent by JICA for the purpose of identifying the further details of the CEVEST, principally technical aspects, from 30th November to 20th December 1981.

In order to contribute the establishment of the CEVEST, JICA had sent the Preliminary Survey Team, in parallel to the Preliminary survey team of Technical Cooperation from GOJ, from 11st to 20th October 1982, aiming at carrying out studies referring to the construction of the CEVEST for the purpose of clarifying the scope of work for the Basic Design Survey scheduled to be followed.

The Preliminary Survey Team had discussions with authorities concerned of GOI, and executed following studies.

1) Discussions and confirmation of background of the CEVEST
2) Discussions and confirmation on the contents of the CEVEST
3) Confirmation of executing agency of the CEVEST
4) Confirmation of implementation schedule for the construction
5) Collection of necessary information of construction cost estimation

In accordance with the recommendations of the Preliminary Survey Team, the GOJ had sent through JICA a Basic Design Survey Team, headed by Mr. Tadashi Shinoura, head of Basic Design Division, Department of Grant Aid of JICA for 20 days from 16th January to 8th February 1983.

The Basic Design Survey Team has collected necessary information for the basic design and discussed with government officials of GOI.

The Basic Survey Team formed Minutes of Discussions containing basic items reached an agreement by both GOI and GOJ concerning the objectives of the CEVEST, contents and activities of the CEVEST, the demarcation of works between both governments.
On 31st January 1983, the above Minutes of Discussions had been signed by Mr. Danang D. Joedonagoro, Director General of Manpower Development & Utilization of Ministry of Manpower, Mr. Gitosewojo,

Director General of Small Industry, Ministry of Industry and Mr. Tadashi Shinoura, head of Basic Design Team.

This report includes, based on findings and analysis of collected information, Basic Design Study for the project of CEVEST.

CHAPTER 2. BACKGROUND OF THE PROJECT

2-1. The First Five Year Development Plan (PELITA I) & The Second Five Year Development Plan (PELITA II)

As a national economic development program of GOI, the PELITA I (1969 - 1974) was aimed at improving the agricultural development and expansion of food production. The said plan assumed a target value of 5% for the annual growth rate of the GDP during the period in question, but the result attained in reality was better than the expected one, and the GDP evidenced an annual average growth rate of 7.7% during the period of implementation of the plan.

The PELITA II (1974 - 1979) that came in succession assumed an average annual growth rate of 7.5% in view of the satisfactory results attained during the PELITA I, with special importance to the supply of food and clothes of good quality and the expansion of the infrastructure. The growth rate of 6.9% attained during the period of the implementation of the PELITA II was slightly lower than the planned growth rate, due to the failures occurred in the agricultural sector and in the mining sector.

Nevertheless, significative progresses were attained during the period in question, i.e., the repair of 3,962 km of existing roads and the construction of 643 km of new roads in the transportation sector, the expansion of the power generating capacity of the country from 970 MW in 73/74 to 1,128 MW in 78/79, etc.

The funds required for implementation of the development plans of Indonesia are covered by government surplus and foreign aids. As for the expenditures, the PELITA II consisted of the four principal sectors, such as Agriculture & Irrigation, Transportation & Tourism, Regional development, Power that consumed approximately three quarters of the total budget.

2-2. The Third Five Year Development Plan (PELITA III) & Industrial Development

Following the progress achieved by the Government of Indonesia during the Second Five Year Development Plan (PELITA II) , the Third Five Year Development Plan still emphasizes greater attention in the improvement of people's welfare, the more equitable income distribution and the expansion of employment opportunities.

In concrete terms of the PELITA III, the number of new entrants in the labour market is aimed to be approximately 6.4 million during the PELITA III, and attained to be an annual average economical growth rate of 6.5%, and growths of 11.2% and 12.0% in the exports and imports, respectively.

The target growth rates of the PELITA III are 11% in the industrial sector, 9% in the construction sector, 10% in the transportation & communication sector, 3.5% in the agricultural sector, 4% in the mining sector, etc.

The Indonesian Government considers the industrial sector as a backbone of its economical development, and a high growth rate was attained by this sector in both PELITA I & PELITA II. A high growth rate is also expected to take place in the PELITA III. As a consequence, the small industries of the country, which compose the foundation of the industrialization process, need developping, evidencing unbalances in the economic structure of the nation.

PELITA III, therefore, consists of 4 principal targets for industrial development.

- Creation of new jobs and development of the small industries.
- Supply of the necessities of life.
- Fulfilment of the domestic demand and export of products using domestic raw materials.
- Promotion of industrial sectors supporting the agriculture.

The Ministry of Industry (MOI) is responsible for implementing development of this small industries.

On the other hand, it is proposed the adoption of the promotion of employment consisting of 4 basic policies as a foundation for industrial development of the country.

- Development of labour-intensive industries.
- Increase of the number of workers employed in the infrastructure sector, commerce sector and service sector and upgrading of the manpower quality.
- Increase of the number of workers employed in local districts.
- Development of special professional fields.

The strengthening of the technical training (300 thousand persons during the implementation period of the plans is planned, with the purpose of attaining the proposed targets.

2-3. Sectorial Policy

2-3-1. Manpower Development

1) Manpower Development Policy

Being responsible for practically all Manpower aspects, the Ministry of Manpower (MOM) is, therefore, implementing a nation wide program, introducing an active employment promotion policy.

In line with the objectives of PELITA III and to meet the requirement of the expanding agricultural and industrial development in Indonesia, the expansion of vocational training programmes is necessarily required and this is not only upgrading the skill of adult workers in plant training etc, but also supervisors and instructors as well.

In addition to the 17 existing agricultural and industrial VTCs having an annual capacity of approximately 45,000 trainees and 57 MTUs with annual capacity of about 13,200 students run by the MOM, seventeen new industrial VTCs assisted by the IBRD and 218 MTUs are now being constructed in the 17 provinces of Indonesia. This will increase the training capacity of the country by 60,000 trainees per annum.

During PELITA III, 90 mini scale industrial and agricultural VTCs will be established in the sub-regions (districts) throughout the country. One of the major problems now being faced by the MOM in this program is among others the shortage of instructors, training facilities, well developed curricula, training programmes, training materials and skill testing procedures.

At present, the number of instructors working at the industrial and agricultural VTCs run by the MOM are 913 and 50 persons respectively, while the 57 MTUs now being operated throughout the country only 139 instructors.

The establishment of 300 small size VTCs proposed by the MOM in each Kabupaten/Sub District during PELITA III and PELITA IV requires a total of approximately 6,000 instructors.

The expansion of MTUs during those period also required a great number of instructors which was estimated to be approximately 15,000 persons.

The National Productivity Center of the MOM also conducts program development for small industries, school drop-outs, youth and women through its Productivity Units (UPN) and Management and Productivity Development Offices in the provinces (BPMP). During 1981/ 1982 a

total of 2,400 persons has been trained by a number of about 80 instructors / consultants of the economicaaly weak group. According to the target, the provision of instructors/consultants as required to develop the economically weak group is 20 in each province or approximately 540 instructors for the whole country (Phase I).

2) Needs for CEVEST

Based on the concept that expanding of the vocational training facilities is indispensable for the industrial structure of Indonesia, the MOM is promoting this development in the nation wide since last sixties.

The instructors trained at the CEVEST are expected to function as instructors of the various VTCs in order to upgrade the level of the vocational training in Indonesia. Such being the case, it is necessary to supply instructors with a broad view of things and a sophistcated technical skill.

The demand of instructors expected hereafter is as follows.

(a) Demand related to industrial vocational training centers (BLKI) consisting of new demands due to the expansion of the existing facilities (30 centers), replacement demand due to upgrading the skills of working presently in the existing vocational centers and fulfilment of vacancies of the existing facilities.

(b) An average of 15 instructors (excluding agricultural instructors) is expected to be required by each mini center (BLKIP). Approximately 4,500 instructors are expected to be required new in addition to some replacement demand, because the construction of 300 mini centers is planned hereafter.

(c) There are currently 86 MTU in operation, and the total number of instructors allocated to these units is 112, with an average of 1.6 instructor per unit. According to the future expansion projects (PELITA II 150, PELITA IV 1,532), approximately 2,690 instructors are expected to be required anew, in addition to some replacement demand.

Fig. 2.3.1. Number of Instructors by Age and Trade Area

	BLKI													MTU
	Total	~19	20~29	30~39	40~49	50	51	52	53	54	55	56	57	
I METAL TRADE.														
1 Machine Shop.	104		47	43	10		1		1	1			1	
2. Plumbing/Pipe. Fitting	40		22	17			1			2				
3 Welding/Sheetmetal	78		56	19	1									
II AUTOMOTIVE.														
1 Petrol Engine	88		38	40	6		1	1		1			1	23 (Motor Cycle Repair)
2. Diesel Engine	53		29	21	2	1								
3 Body Repair	29		26	3										
4 Heavy Eg Mechanic	4		2	2										
III ELECTRICAL.														
1 Electr. Installation	54		23	23	3	3			1		1			
						1			1					
2. Electronics	62		38	19	3									23 (Transistor Radio Repair)
3 AC & Refrigeration	31		29	2										
4 House Hold Appl	22		20	2										
IV CONSTRUCTION.														
1 Wood Working.	62		33	25	3			1						23
2 Masonry.	71		45	21	4		1							22 (Bricklaying)
V COMMERCIAL														
1 Secretarial	80		51	21	6		1	1						
2. Book keeping.	37		33	2	1			1						
VI MISCELLANEOUS.														
1 Drafting.	25		25											
2. Handicraft.	66		58	8										10
														11 (Wood Carving)
														27 (mixed Farming)
TOTAL	906		575	268	39	6	6	2	3	4	1		2	139

Fig. 2.3.2. Expansion Plan for Vocational Training Facilities

	Existing centres (DEC. 81)	Pelita III			Pelita IV					Total
		81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	
Industrial VTC (BLKI including Forestry VTC)	14	(注1) 18								30
Agricultural VTC (BLKP)	3				4	4	5	5	4	25
Mini Centres (PLKIP)		60	15	15	40	40	40	50	40	300
(注2) Training Centre for Middle Technicians (BLTM)			(5)							(5)
Total	17	78	20	15	44	44	45	55	44	360
MTU	58		100	50	300	300	332	300	300	1.750

(d) According to the aforementioned figure, the total demand of instructors by 1988, epoch of completion of PELITA IV, is expected to reach a total of approximately 9,000 persons.

The instructors trained at the CEVEST are expected to play a leading part in the various VTCs of the nation, being therefore a determinant factor in this educational sector of Indonesia. Such being the case, it shall be so organized as to provide a permanent technical upgrading an diversification, proficiency in the instruction methods and board view of knowledges.

Consequently it is recommendable to consider the periodic upgrading and development of the professional capacity of the instructors through Upgrading training courses or Retraining Courses including the promotion of the instructors at cycles of approximately 5 years.

Most of the vocational training instructors working in Indonesia have been nominated to their jobs after short training courses, and consequently it is recommendable to submit them to the upgrading courses to be carried out at CEVEST.

Training courses for heads of VTCs are being planned at the present time, but it is indispensable to set up other training courses covering the following fields related to the vocational training schools in order to cope with the rapid expansion of this kind of educational institution.

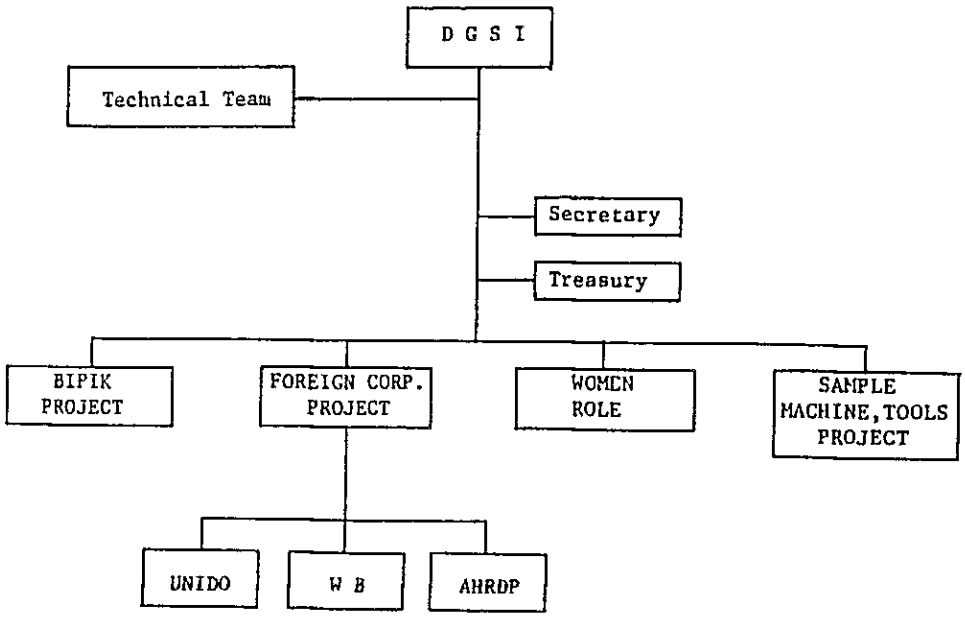
- Management & operation
- Personnel management
- Planning of training courses

On the other hand the promotion of training for trainers from enterprises is indispensable for the economical growth and industrial development of Indonesia. The GOI is considering the following measures for promotion of on-the-job training, but the industrial circles of the country have presented demands referring to the training of management-minded personnel of the middle management and foreman class.

(1) Training of trainers from enterprises

(2) Training of administration staff and supervisor

Fig. 2.3.3. Small Industry Development Project at DGSI



2-3-2. Small Industry Development

The Indonesia's Five Year Development Plan (PELITA III) also laid stress employment creation through the development of labor intensive small scale industries with an estimated total of 2.5 million units and 17 million workers.

The difficulties which are now being faced by small industries scattered over the country are among others the marketing of their products, management, design and technology as well as financing, etc.

These are primarily caused by the lack of entrepreneur's low motivation and cost conciousness.

To solve such problems and to promote the small scale industries sector, the increase of the number of extension service workers be the most effective effort, while motivation through mental changes toward development by entrepreneurs of this sector will form a key factor for the success of extension service activities.

In this context, the fielding of at least one extension service worker in each Kacamatan (Sub District) is necessarilly required, and since there are only 1,500 TPLs working in the field nowdays, 4,900 additional extension workers will be needed during PELITA III and PELITA IV. Besides, there is also a need to train 25,000 entrepreneur of small industries in the field of entrepreneur managerial skill development. To meet the rising demand of TPLs, training courses and upgrading in the form of sectoral and functional generalist and specialist courses and training of entrepreneurship development are now being programmed by the Ministry of Industry (MOI).

However, these are, for the time being, hampered by the limited facilities and capacilities for conducting a well planned comprehensive training.

CHAPTER 3. OUTLINE OF THE PROJECT

3-1. Objectives of the Project

The GOI still emphasizes, through PELITA III & PELITA IV, greater attention in the improvement of people's welfare, the more equitable income distribution, the expansion of employment opportunities and the employment creation through the development of labour intensive small scale industries.

The objectives of the Project is, therefore the establishment of the Centre for Central Vocational and Extension Service Training which have the following objectives.

1). Immediate Objectives

a. As a Centre for training instructors or trainers for various VTCs and extension service for small industries.

b. As a Research and Development Centre of the training program, curricula and syllabus, training equipment, methods of training etc.

c. As a coordinating centre of the training program through seminars, symposia, meetings, etc.

d. As an exchange centre for trainees, trainers/instructors, consultants and experts.

e. As a clearing house for information on Human Resources Development.

2). Long Range Objectives

a. To strengthen the existing VTCs and extension service for small industries.

b. To conduct seminars, symposia etc. in the field of Human Resources Development.

3-2. Contents of the CEVEST

3-2-1. Function of the CEVEST

The CEVEST consists of three principal divisions, i.e., one division related to the Extension Service Training, one division related to the Vocational Training and one administrative division in charge of the coordination and control of the aforementioned divisions. The division related to the Extension Service Training consists of the training section, survey/research/development section and technical consultation & guidance section and is responsible for the fostering of extension workers (TPL) for small scale industries. The division related to the Vocational Training consists of the vocational instructor training section and research & development section and is in charge of the fostering of instructors for the vocational training centers existing or to be set up in the various regions of the countries.

The aforementioned divisions of the CEVEST are required to be able to indentify promptly the various factors related to aspects such as trend of employment, industrial trend, technical progresses, changes in the industrial structure, etc., and to cope swiftly with the changes in the situation. Furthermore, these divisions shall be able to transmit the results of the analysis carried out by the research, survey and development sectors to the instructors and extension workers submitted to training in the CEVEST in such a way to enable them to contribute positively to the Indonesian society by coping with the social and technological changes and making the most of their personality when working either as instructors of Vocational Training Centers or extension workers at the small scale industries scattered throughout the country. Such being the case, the CEVEST shall be provided with the following functions.

1). Training Function

(1) Vocational Training Department (VTD)

Training fields:

Machining, Metal Processing, Automotive, Electric Work

Training courses:

a) Instructor Training course (Type I & Type II)

b) Upgrading/Retraining course

c) Director Training course

d) Training course for Instructors in Enterprises

(2) Extension Service Training Department (EST)

Training fields:

Industrial Development Planning, Industrial Management, Marketing Research, Inventory Control, Quality Control, Process Control, Personnel Management, Cost Accounting.

Training courses:

a) Training courses for different level of extension service workers.

b) Training courses for entrepreneurs to develop their enterpreneurship.

c) Other types of training courses.

2). Research & Development Function

(1) VTD

a) Research and development on training methods and standardization of training curriculum and programmes for vocational training.

b) Research and development on training materials including audio-visual aids.

c) Research and development on trade skill evaluation and certification.

d) Basic studies to provide necessary input to the Ministry of Manpower and Transmigration as recommendations for its policy making on the national vocational training administration.

(2) EST

a) Statistical survey on small industries.

b) Survey on development of production process of small industries.

c) Survey on marketing system of small industries production.

d) Survey on trend of consumption of small industries products.

3). Information, Guidance, Consultation and Advisory Function

(1) VTD

Technical orientation and information services for the vocational training facilities of the country based on research and development results in the various fields.

(2) EST

a) In order to solve the problems with respect to management and production process of small industries, extension service workers conduct diagnosis with clusters and individual small industries.

b) Various seminars and symposia will be held to develop enterpreneurship.

c) Necessary instruction manuals will be updated and published for the purpose of improving the activities of extension service workers.

d) Necessary consultancy and advisory services will be given to extension service workers at CEVEST as well as to the regional small industry development centers (PPIK) by sending roving teams from CEVEST.
Consultancy and advisory service activity will also cover problems such as the promotion of subcontracting system of small industries.

4). Administration Function

The administrative division of the CEVEST will be responsible for the coordination, management and operation of the small scale industry division and vocational training division. Furthermore, it will play a leading role in the CEVEST to keep the connection between the technical aid program provided by Japan and the ASEAN countries and to attain a smooth and efficient operation of the center as a whole.

5). Welfare Function

In addition to the 4 functions as a training and research & development center described in the foregoings, the CEVEST is required to have the following welfare functions.

- Residence:

  Residence for the teaching staff is indispensable.

- Dormitory for trainees:

  Dormitories are required in order to make possible collective and ordinary training.

- Dining room for teachers, staff and trainees.

- Sports facilities:

  Tennis courts, soccer fields, etc., for trainees and training center staff.

Fig. 3.2.1. Training Courses (VTD)

COURSE / FIELD	TRADE	INSTRUCTOR TRAINING		UPGRADING / RETRAINING			DIRECTOR TRAINING	TRAINING FOR INSTRUCTORS OF ENTERPRISES
		TYPE I	TYPE II	ASSISTANT INSTRUCTOR + JUNIOR INSTRUCTOR	JUNIOR INSTRUCTOR + INSTRUCTOR	INSTRUCTOR + SENIOR INSTRUCTOR		
Machining	Machining	20		15	11	8		
Metal Processing	Welding	20		15	11	8		
	Sheet Metal	10		7	5	4		
Automotive	Automobile Repairing	45		33	24	18		
Electric Work	Electricity	20		15	11	8		
	Electronics	30		22	16	12		
Total		145	230	107	78	58	120	400
Remarks	Duration	2 years	4 months	3 months	3 months	3 months	2 months	1-2 weeks or more
	Frequency of Recruitment	once a year	3 times a year	once a year	once a year	once a year	several times a year	about 20 times a year
	Entrance Requirements	high school education with at least two years of related experience or academy education	enough skills and knowledge on the trade	over 5 years of experience as an assistant instructor	over 5 years of experience as a junior instructor	over 5 years of experience as an instructor	incumbent or potential directors of a vocational training facility	instructor, training officer, or training manager of a enterprise
	Others		Lectures on training methodology and teaching practice only					

3-2-2. Contents of the Activities

1). Vocational Training Department (VTD)

(1) Training Activities

The contents of the training to be provided at the Vocational Training Department will consist of following five principal type of courses.

a. Instructor Training Type I
To train for two years those who graduated from senior technical/vocational high schools with minimum two years of practical experience or those who graduated from academies for cultivating assistant instructors.

b. Instructor Training Type II
To train those who have enough skills and professional knowledge by providing them with training methodology for three months and teaching practice for one month for cultivating assistant instructors.

c. Upgrading and Retraining
To train the instructors for three months to upgrade and retrain their skills and knowledge.

d. Training of Principals of Vocational Training Facilities
To provide managerial and administrative skills for those who are or to be principals for vocational training facilities.

e. Training for instructors of Enterprises
For the purpose of promoting vocational training in enterprises, including private vocational training institutions, to train the instructors, training officers and training managers who belong to enterprises in training methodology, curriculum development, supervisory training. etc.
The most important courses of the vocational training division will be the Instructor Training Type I and Instructor Training Type II, followed by the upgrading & retraining courses. The Instructor Training Type I courses will have 2-year duration, the Instructor Training Type II courses will have 4-month duration and the

A: Advanced Skill Training
B: Intermediate Skill Training
C: Basic Skill Training

Fig. 3.2.2. Upgrading/Retraining (VTD)

1. MACHINING

No.	TRAINING-CONTENTS	INSTRUCTOR TRAINING	UPGRADING / RETRAINING			REMARKS
			ASSISTANT INS. JUNIOR INS.	JUNIOR INS. INSTRUCTOR	INSTRUCTOR SENIOR INS.	
1.	Fitting assembling practice.	B	A	A	A	
2.	Various machine tools practice	C	B	A	A	
3.	Veriour tools grinding practice	C	B	A	A	
4.	Precision measuring of components	B	A	A	A	
5.	Reading of engeering drawing	A	A			
6.	Knowledge of machine materials	B	A	A		
7	Heat treatment of metals	B	A	A		
8.	knowledge and ability of machine design and related calculation	B	A	A		
9.	knowledge and ability oi machine maintenance	B	A	A		
10.	knowledge of automatic control	C	B	A	A	

2. WELDING

No.	TRAINING-CONTENTS	INSTRUCTOR TRAINING	UPGRADING / RETRAINING			REMARKS
			ASSISTANT INS. JUNIOR INS.	JUNIOR INS. INSTRUCTOR	INSTRUCTOR SENIOR INS.	
1.	Measuring and finishing practice	A				
2.	Welding practice of steel plate and pipe by Manual metal are Welding	B	A	A	A	
3.	Welding and cutting practice of steel plate and pipe by gas welding and cutting	B	A	A		
4	Welding practice of steel plate and pipe by automatic and semi automatic welding (Co2 welding MIC welding, Submerged are welding)	C	B	A	A	
5	Welding and cutting practis of non-iron alloy materials by TIC welding, MIC welding, plasma welding and cutting	C	B	A	A	
6.	Resistance welding	A				
7.	Sheet metal practice	C	B			
8.	Forging practice	C	B			
9.	Destructive and non-destructive inspection	C	B	A		
10.	Safety and health	A				

3 ELECTRICITY

No.	TRAINING-CONTENTS	INSTRUCTOR TRAINING	UPGRADING / RETRAINING			REMARKS
			ASSISTANT INS. JUNIOR INS.	JUNIOR INS. INSTRUCTOR	INSTRUCTOR SENIOR INS.	
1.	Repairing and adjusting of domestic electrification apparatus	B	A			
2.	Design and assembling of requential control circuits	C	B	A		
3	Installation and alignment of refrigeration and air conditioner	C	C	B	A	

upgrading & retraining courses will have 3-month duration. On the other hand, Principal Training courses will have a further short duration of the order of 2 months, while the courses for Training courses for Instructors of Enterprises will have duration of the order of 1 week to 2 weeks.
The training provided at the vocational training division consists of 4 trades, such as machining, metal processing, automotive and electric work and 6 courses, such as machining, metal processing (welding, sheet metal, pipe fitting), automotive (automobile repairing) and electric work (electricity and electronics).

(2) Contents of the Courses

Machining Field

The job of skilled workers specialized in mechanics is divided in the following types in Indonesia.

a. Maintenance, repair, assembling and adjustment of equipment and facilities for production used in plants of the textile industry, food industry, rubber industry, paper industry etc.

b. Overhaul, repair, assembling and adjustment of automobiles, ships, construction machinery and agricultural machinery.

c. Machining, assembling and adjustment of parts for production of automobiles, ships, construction machinery and agricultural machinery.

d. Plate working and construction of plastic moulding dies related to radio, TV, air-conditioners, freezers and other home domestic appliances.

For the time being, the training courses will cover principally the themes required to carry out the maintenance of the existing machinery, equipment, etc., of the aforementioned item a. and b. Then, the training themes will be gradually expanded to the fields c. and d. in order to cope with the increase of the rate of domestic production of parts and components.

Metal Processing Field

Welding courses

There is a pronounced shortage of skilled welders in Indonesia as a consequence of the modernization of the industry of the country. Accordingly, there is an urgent demand of a large number of skilled workers and upgrading of the technical skill level through an intensive short-term vocational training. As mentioned before, the vocational training of welders carried out in Indonesia at the present time consists principally of basic welding techniques and consequently the welders of this country have only basic technical skill. Such being the case, in the first place it is necessary to upgrade the quality of the skilled manpower of this sector in order to cope with the technical innovations taking place in the firms of the shipbuilding and construction industries. Furthermore, it is necessary to turn out instructors with a wide variety of specialized theoretical welding knowledge and sohphisticated welding skill of various kinds in order to provide the required training to the workers at the various vocational training centers of the country and to install sohphisticated equipment such as the undermentioned ones in the CEVEST.

- Welding machines for non-ferrous metals such as TIG welding, MIG welding, etc.
- Automatic and semi-automatic welding equipment such as CO2 gas are welding machines with high working efficiency.
- Test equipment of various kinds to check the quality of the welding.

Sheet Metal Course

There is shortage of skilled manpower in the sheet Metal and Plumbing sectors as a consequence of the modernization of the Indonesian industry, like in the case of welding sector. Such being the case, it is urgently necessary to turn out skilled manpower able to start immediately their job at the workplace and to upgrade the existing manpower through an intensive short-term vocational training. As mentioned before, the vocational training provided in Indonesia in the sectors of Sheet Metal and Plumbing is focused principally on basic knowledge and techniques, and consequently the workers have only basic technical skill. Such being the case, in the first place it is necessary to upgrade the quality of the skilled manpower of these sectors in order to cope with the technical innovations taking place due to the rapid growth of automotive industry, construction industry, etc., of Indonesia. Furthermore, it is necessary to turn out instructors with a wide repertory of specialized theoretical knowledge on plate working and plumbing and sophisticated technical skill related to these subjects in order to provide the required training to the workers at the various vocational training centers of the country and to install sophisticated equipment such as the undermentioned ones in the CEVEST.

- High-performance automotive vehicle body repair equipment
- Presses of various kinds
- Plate working machinery
- Plumbing machinery

Fig. 3.2.3. Upgrading/Retraining (VTD)

4. SHEET METAL / PIPE FITTING

No.	TRAINING-CONTENTS	INSTRUCTOR TRAINING	UPGRADING / RETRAINING			REMARKS
			ASSISTANT INS. JUNIOR INS.	JUNIOR INS. INSTRUCTOR	INSTRUCTOR SENIOR INS.	
1.	Developing, forming practice of sheet metal	B	B	A	A	
2.	Car body repairing practice	B	A	A	A	
3.	Sheet metal processing by machine and tools	B	B	A	A	
4.	Press machines practice	C	B	A	A	
5.	Pipe processing machine and handling tools	B	B	A	A	
6.	Pipe fitting practice of water, water drain, delete hot water and gas	B	B	A	A	
7.	Metal painting practice	B	A	A	A	
8.	Welding practice	C	B	A	A	
9.	Forging practice	C	B	A		
10.	Measuring and finishing practice	A				
11.	Safety and health control	A				

5 AUTOMOBILE REPAIRING

No.	TRAINING-CONTENTS	INSTRUCTOR TRAINING	UPGRADING / RETRAINING			REMARKS
			ASSISTANT INS. JUNIOR INS.	JUNIOR INS. INSTRUCTOR	INSTRUCTOR SENIOR INS.	
1.	Measuring practice	B				
2.	Hand finishing practice	B				
3.	Machining practice	B				
4.	Sheet metal work and painting practice	C				
5.	Welding practice	C	B			
6.	Forging practice	C				
7.	Repairing of engine	B	A			
8.	Repairing of bodies, frames and chassis	B	A			
9.	Repairing of vehicle electricity	B	A	A		
10.	Repairing of air conditioner		B	A		
11.	Performance test of engine and vehicle			C	B	
12.	Repairing of hydraulic system		C			

6. ELECTRONICS

No.	TRAINING-CONTENTS	INSTRUCTOR TRAINING	UPGRADING / RETRAINING			REMARKS
			ASSISTANT INS. JUNIOR INS.	JUNIOR INS. INSTRUCTOR	INSTRUCTOR SENIOR INS.	
1.	Repairing and adjusting of domestic eletronics apparatus	B	A			
2	Repairing and alignment of colour TV	B	A			
3.	Design and assembling of digital control Circuits	C	B	A		
4.	Application of micro computers	C	C	B	A	

Automotive Field

It is very important to have sufficient quantity of teaching material in order to attain effective results in the automotive vehicle maintenance course. However, second hand automotive vehicles (aged approximately 10 years) are priced from Rp 1 million to Rp 2 million (Approximately ¥350,000 to ¥700,000) and as a matter of fact the Indonesian authorities can not afford to purchase so many vehicles to be used as teaching materials. Such being the case, we felt keenly the necessity of donating automotive vehicles and engines to be used as teaching materials. The effectiveness of the training carried out in the automotive course is expected to improve further skills for repairing vehicles and second-hand vehicles should be added among the teaching materials.

The automotive vehicles being used in Indonesia are shifting to new models, and the durability of the engines is improving considerably. Accordingly, engine maintenance work such as boring, honing, etc., is decreasing, but on the other hand maintenance related to the high-speed performance of the engine, brake, wheel balance, etc., is finding increasing demand as a consequence of construction of expressway in the country.

Vehicles with automatic transmission gear are very rare in Indonesia, but on the other hand there are many vehicles equipped with air-conditioner. Accordingly, emphasis shall be put on equipment for inspection and test of high-speed engine performance, brake, wheels, etc., in addition to equipment and materials for maintenance of air-conditioners and other car equipment, instead of machinery for heavy-maintenance when selecting the teaching materials of this course.

It is recommendable to donate the teaching materials and the items required to carry out the maintenance.

Electricity Field

Electro Technics

At the present time 3 months are spent for basic training of electricity, disassembling/assembling induction motors, winding coils, etc., but it is necessary to turn out skilled workers able to start immediately the work with practical application of their knowledge in order to cope with the rapid growth taking place in the relevant industrial fields. Furthermore, it is necessary to improve the equipment and materials of the vocational training centers and to extend the training period.

The electrical equipment used as power sources in the various industrial fields, the control circuits used to operate the electric equipment, the electrical wiring of homes indispensable for the daily life, etc., are all basic elements for construction of the nation. Furthermore, equipment such as freezers and air-conditioners are indispensable in order to ensure a comfortable life in a tropical country like Indonesia.

Accordingly, the vocational training instructors are required to have a wide repertory of technical skill and they should be submitted to a training program covering the following subjects.

(1) Electric construction work
(2) Electric equipment
(3) Control circuits (sequential circuits)
(4) Freezing/air-conditioning

As a matter of course, it is not possible to cover all of the aforementioned subjects within a 2-year course and accordingly the vocational training instructors shall be submitted to subsequent upgrading training in order to acquire all of the required technical skill and knowledge. As for the freezing/air-conditioning, it may be handled futurely as an independent course, should the demand increase correspondly, because the a considerably long-term training in the fields of welding, plate working, electricity, etc., is required in order to turn out workers able to carry out the maintenance, repair and adjustment of freezing and air-conditioning equipment.

Electronics Courses

The vocational training in the field of electronics carried out at the present time in Indonesia has 3-month duration and comprises both theoretical course and practical training. Such being the case, it is natural that the subjects covered by the course in question comprise only elementary items such as amplifiers and radio, and the scarcity of equipment and materials is comprehensible. The mere addition of the TV course is not expected to make substantial contribution to improve the state of things.

The local authorities seem also to be considering the extension of the training period, but anyway, it is necessary to take urgent measures to cope with the situation. State-of-the-art products such as color TV, digital watches, calculators, etc., are being put on the market and their diffusion is only a matter of time and therefore it is evident that a 3-month vocational training in electronics is not sufficient. The list of equipment of the large-scale vocational training school (being equipped at the present time) includes items such as color TV and digital teaching materials and it is urgent and indispensable to provide instructors to work in the said center.

Under the circumstances, the training courses to be carried out at the CEVEST are required to comprise the following items.

a. Instructor training course
   (a) Repair and adjustment of radio, black & white TV, color TV and other home electronic appliances (vacuum tube, Tr, IC).
   (b) Elementary digital technology

b. Instructor upgrading course
   (a) Digital control technology
   (Including elementary microcomputer control)

(3). Survey, Research and Development Activities

a. Research and development of the training curriculum

i) Research and development of the training targets, curriculum and training methods of the CEVEST.

ii) Standardization of the training targets, curriculum and training methods of the various vocational training centers of Indonesia.

iii) Research and development of the curriculum and other aspects of the upgrading training course.

iv) Production of the instructor's manual.

v) Development of the module training technique in conformity with the state of things of Indonesia.

b. Research and development of teaching materials for vocational training.

The development of training materials and audio-visual teaching materials of good quality is indispensable in order to attain effective results in short-term training. Furthermore, the development of unified teaching materials is closely related with the unification of the training level throughout the country. For the time being, the vocational training division shall set forth the development of teaching materials necessary to carry out the instructor training course in the CEVEST.

i) Production and book binding of guidance documents for practical training.

ii) Production of video teaching materials.

iii) Production of teaching materials such as 16 mm movies, slides and other kinds of films.

iv) Production of TP for OHP.

v) Production of equipment and materials for practical training.

iv) Translation into Indonesian of teaching materials of various kinds available in Japanese.

c. Development of the technical skill evaluation system ... Survey, research and experiments shall be carried out with the purpose of introducing a technical skill evaluation system of nation-wide scale.

d. Basic research ... The vocational training division of the CEVEST will play the following parts with the purpose of attaining effective educational results.

- Collection of statistical data and information
- Establishment of new systems
- Exchange of information between the vocational training instructors
- Connecting link between organization in charge of implementation of vocational training and the administrative authorities.

Research and Development

Subjects of research and development activities			
a. Training methods and standardization of training curricula and facilities for vocational training	b. Training materials including audio-visual aids	c. Evaluation and certification of trade skill standards	d. Basic studies with a view to providing necessary information for national policy making on vocational training

Fig. 3.2.4. Training Course (EST)

(2) EXTENSION SERVICE TRAINING DEPARTMENT

(1) Training Course

	Courses	Enrollment	Duration	Annual number of courses	Qualification of trainees	Contents
Extension Service Workers	1. TPL Generalist	30 ~ 35 persons	2 months	3 courses	Those who have graduated from high school, Academy and University of with equivalent ability.	(1) Duty of extension service worker (2 days) (2) Basic knowledge of extension service worker (9 days) (3) Accounting business and personnel management of small industries (29 days) (4) Field study (10 days) (5) Others
	2. TPL Specialist (Functional)	30 ~ 35 persons	3 months	10 ~ 12 courses	Those personnel who have about two years experiences as TPL or with equivalent experience and ability.	(1) Methodology of finding the actual situation of the management of small industries (20 days) (2) Financing of small industries (35 days) (3) Management of quality control and process control (including field study) (20 days)
	3. Trainer	30 ~ 35 persons	4 months	3 ~ 4 courses	Those personnel who have more than two years experiences as TPLS or with equivalent experience and ability.	(1) Management planning and utilization of related information (42 days) (2) Essential points necessary for the guidance of industries (30 days) (3) Marketing strategy (13 days) (4) Teaching method and field training (15 days)
Others	4. Entrepreneur	30 persons	3 ~ 4 weeks	20 courses	Entrepreneurs from the priority sub-sectors of small industries	(1) Achievement motivation training (2) Socio-economic situation of industries concerned (sector-wise) (3) Basic and practical knowledge required of entrepreneurs (4) Management of stocking, inventory and sales (5) Marketing (6) Personnel management and leadership
	5. Officials	Necessary training courses will be organized as necessity arises.				

(With respect to the contents of training programme, some minor modification may be made in the course of the preparation and implementation of the Project).

2) Extension Service Training Department

(1) Training Activities

The contents of the training to be provided at the Extension Service Training Department will consist of following three type of courses.

a. Training courses for different level of extension service workers.

b. Training courses for entrepreneurs to develop their enterpreneurship.

c. Other types of training courses.
The most important of the aforementioned items will be the training of extension workers (TPL) for improvement of management techniques. It will play a leading part in the measures for promotion of small scale industries in the country and will comprise 3 courses with different grades. These three courses are the generalist course, specialist course and instructor course. The capacity of each course will be of the order of 30 to 35 persons, and the duration will be of the order of 2 to 4 months. The objective of these courses will be the acquisition of knowledge and technique related to management control, quality control, production control and other areas required to determine the guidelines for growth and development of the firms. The duties of the instructors and extension workers trained in the specialist course will be a comprehensive on-the-job training field work covering the areas of administration management, technical orientation, etc., of the small and medium scale firms scattered throughout the country.
As can be seen from the foregoings, the training provided at the EST will consist principally of courses related to the software, and the same tendency prevails also in the courses for management personnel and officers of government departments.
On the other hand, the training methods to be adopted in the various courses of the CEVEST will consist of the followings.

1) Lectures
2) Discussions in small groups
3) Training with utilization of audio-visual equipment

(3). Survey, Research and Development Activities

a. Research and development of the training curriculum

i) Research and development of the training targets, curriculum and training methods of the CEVEST.

ii) Standardization of the training targets, curriculum and training methods of the various vocational training centers of Indonesia.

iii) Research and development of the curriculum and other aspects of the upgrading training course.

iv) Production of the instructor's manual.

v) Development of the module training technique in conformity with the state of things of Indonesia.

b. Research and development of teaching materials for vocational training.

The development of training materials and audio-visual teaching materials of good quality is indispensable in order to attain effective results in short-term training. Furthermore, the development of unified teaching materials is closely related with the unification of the training level throughout the country. For the time being, the vocational training division shall set forth the development of teaching materials necessary to carry out the instructor training course in the CEVEST.

i) Production and book binding of guidance documents for practical training.

ii) Production of video teaching materials.

iii) Production of teaching materials such as 16 mm movies, slides and other kinds of films.

iv) Production of TP for OHP.

v) Production of equipment and materials for practical training.

iv) Translation into Indonesian of teaching materials of various kinds available in Japanese.

c. Development of the technical skill evaluation system ... Survey, research and experiments shall be carried out with the purpose of introducing a technical skill evaluation system of nation-wide scale.

d. Basic research ... The vocational training division of the CEVEST will play the following parts with the purpose of attaining effective educational results.

- Collection of statistical data and information
- Establishment of new systems
- Exchange of information between the vocational training instructors
- Connecting link between organization in charge of implementation of vocational training and the administrative authorities.

Research and Development

Subjects of research and development activities			
a. Training methods and standardization of training curricula and facilities for vocational training	b. Training materials including audio-visual aids	c. Evaluation and certification of trade skill standards	d. Basic studies with a view to providing necessary information for national policy making on vocational training

4) Practice for operation of the test & inspection equipment, etc.

5) Practical training in the firms

Surveys

Subjects of survey on small industries development activities			
a. Statistical survey on small industries	b. Production process development of small industries	c. Marketing system of small industry products	d. Trend of consumption of small industry products

Guidance, Consultation and Advisory Service Activity

Activity	Objective
a. Diagnosis conducted by extension service workers	To solve the problems with respect to management and production process of clusters and individual small industries.
b. Seminars and symposia	To develop entrepreneurship of small industries.
c. Updating and publication of necessary instruction manuals	To improve the activity of extension service workers.
d. Consultancy and advisory services	To solve the problem of the regional small industry development centers (PPIK) by sending roving teams from CEVEST and to cover problems such as the promotion of subcontracting system of small industries.

(2) Survey, Research and Development Activities

The following research and development activities and information service will be carried out in the Extension Service Training Department.

a. Research, development, consulting, counseling and information service.

(a) Basic survey and information analysis - collection, generation and analysis of basic data of various kinds related to the small industries.

i) Collection and analysis of existing data, on behalf of the relevant organizations and departments.

ii) Planning and implementation of surveys of various kinds and analysis of the survey results.

iii) Presentation of reports on the results of the analysis and surveys to the government authorities.

(b) Promotion projects ... Planning and drawing up projects of various kinds to promote the development of small industries. The Extension Service Training Department shall draw up and propose projects and policies in conformity with the state of things of the small industries of Indonesia, based on the aforementioned survey results and analysis results, taking into consideration the measures and policies in force and in cooperation with other policy-implementing organizations and local departments.

i) Development-promotion projects per region and per trade.

ii) Advices referring to development-promotion projects of state governments.

iii) Proposals of new measures and policies.

(c) Extension worker program - Development of teaching & training materials, curricula and training methods.

b. Guidance & Consultation

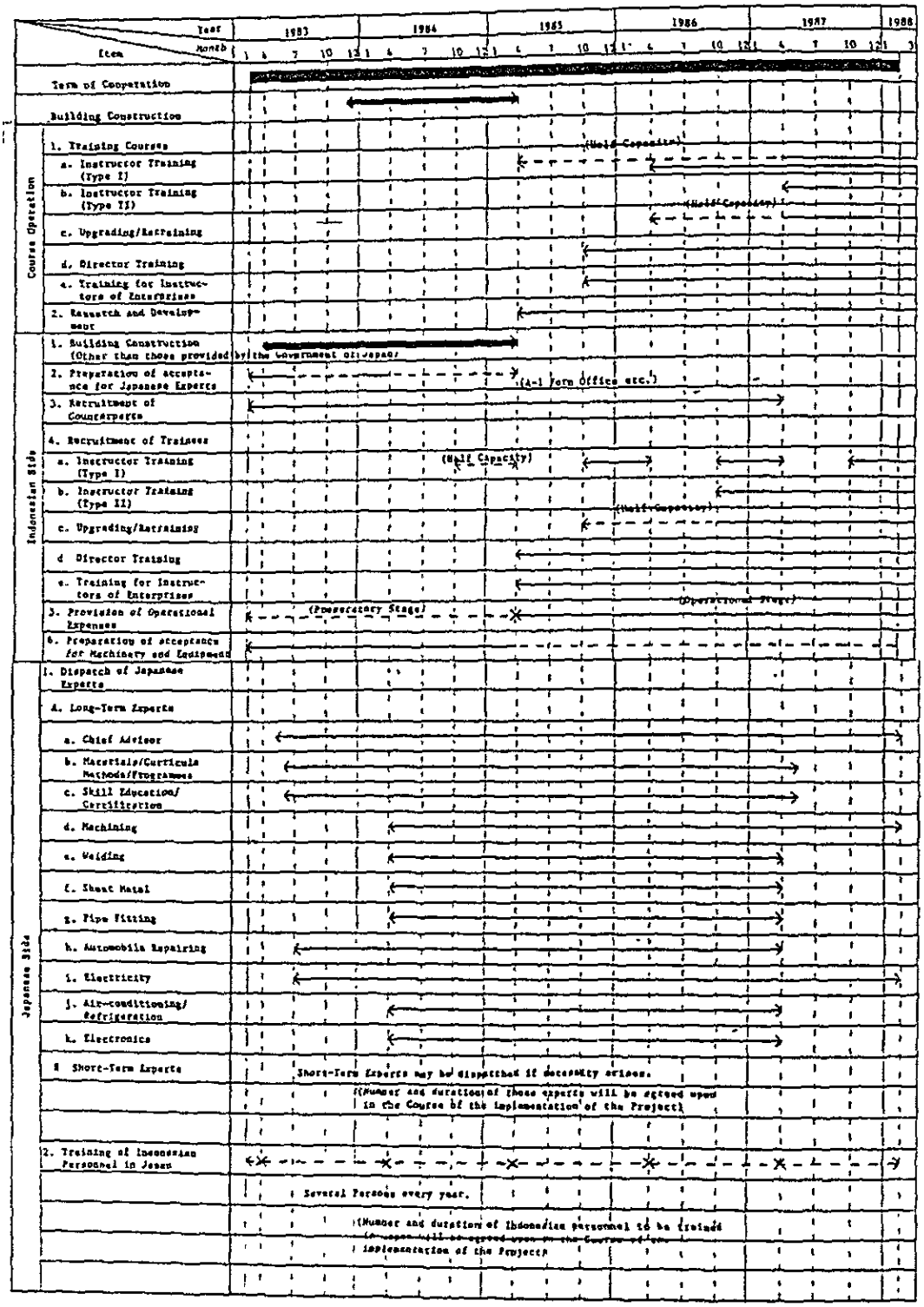
(a) Activities for diffusion and propagation of measures and policies for promotion of development ... In addition to the activities of the TPL, the Extension Service Training Department shall set forth the diffusion of the policies and measures aimed at promoting the development of these industries in order to attain the most effective results. These activities comprehend the preparation of PR materials, pamphlets and events such as lectures and seminars.

(b) Direct counseling services and orientation for owners of small scale industries and diagnosis of firms.

(c) Guidance and consultation of TPL ... Counseling services about guidance problems of the TPL and problems related to the firms that can not be solved by the TPL alone, etc.
It is necessary to identify correctly the state of things related to the guidance of the TPL and to reflect it in the training activities.
This service shall include furthermore the preparation of manual for the TPL and itinerant guidance at the local districts.

The Extension Service Training Department shall allocate the number of researchers required to carry out the aforementioned activities and to provide the relevant laboratories, libraries, meeting rooms and other required facilities. The studio for production of the audio-visual teaching materials shall be used in common with the Vocational Training Department.

Fig. 3.3.1. Tentative Schedule of Implementation (VTD)



3-3. Technical Cooperation

The Japanese Government carried out several field surveys in Indonesia through the Japan International Cooperation Agency (JICA) for the CEVEST project to function in the most effective way and the relevant Record of Discussions (R/D) was signed February 16, 1983 between the team in charge of the implementation of the Technical Cooperation and the authorities of the Indonesian Government in charge of this Project. According to the R/D and the draft schedule for implementation, the contents of the technical aid to be provided by the Japanese Government are as follows.

1) Duration of the Cooperation
   Five years until February 15th 1988.

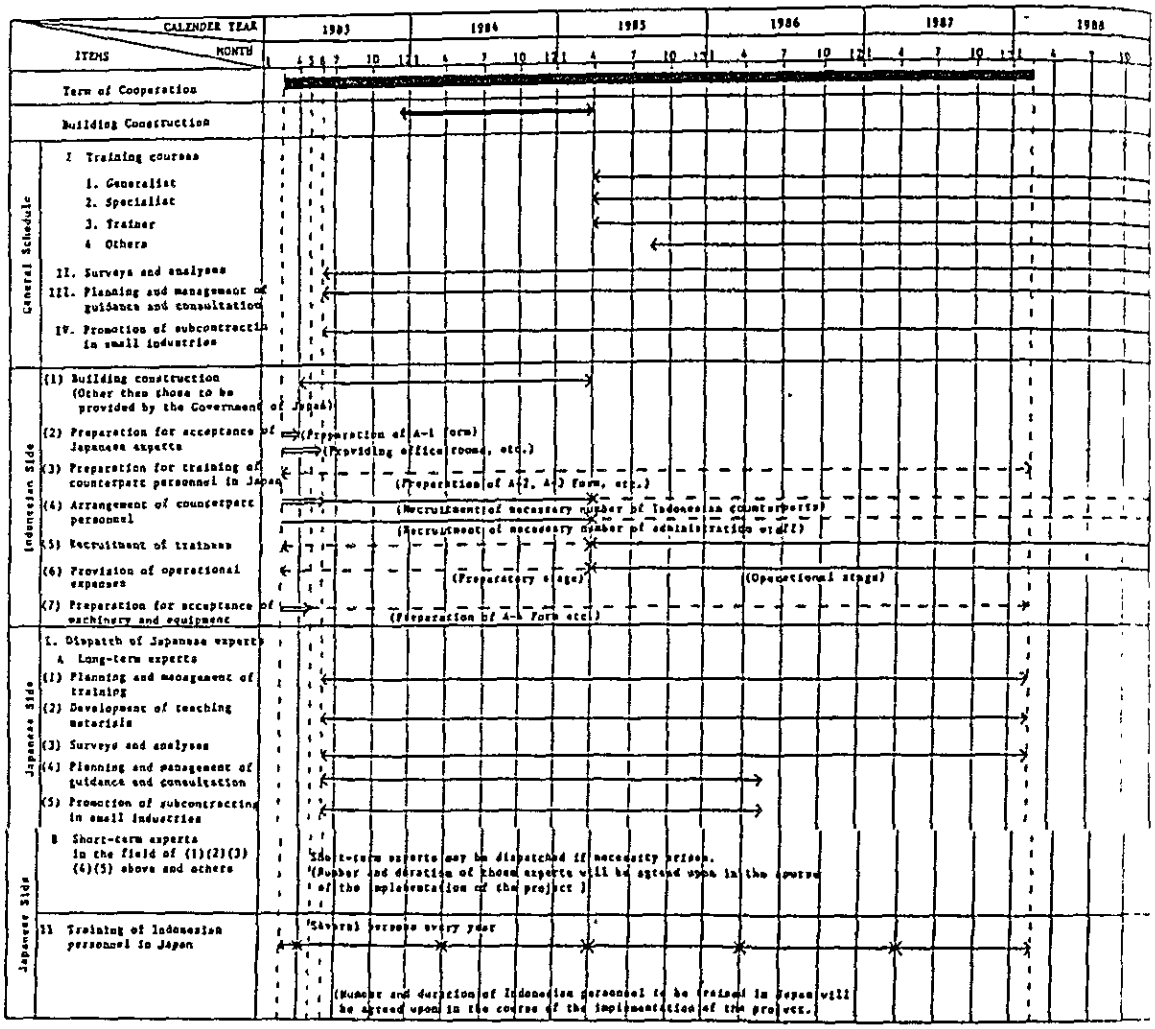
2) Contents of the Cooperation

   (1) Dispatch of experts
   The team of Japanese experts on a long term basis will consist of 17 members, i.e., one chief advisor (project leader), 11 experts for the Vocational Training Dept., 5 experts for the Extension Service Training Dept. and one total coordinator for the project (JICA coordinator). The experts on short-term basis may be dispatched if necessity arises.

   (2) Donation of equipment and materials
   The provision of major equipment required for the operation of the CEVEST will be covered by the funds of the grant aid to be provided by the Japanese Government. As for the other items of the required materials and equipment, they will be donated within the scope of the technical aid of the Colombo Plan.

   (3) Acceptance of Indonesian counterpart personnel in Japan
   The necessary number of Indonesian personnel will be trained every year to Japan during the period of implementation of the Technical Cooperation. The number of Indonesian personnel to be trained in Japan and the duration of the

Fig. 3.3.2 Tentative Schedule of Implementation (EST)



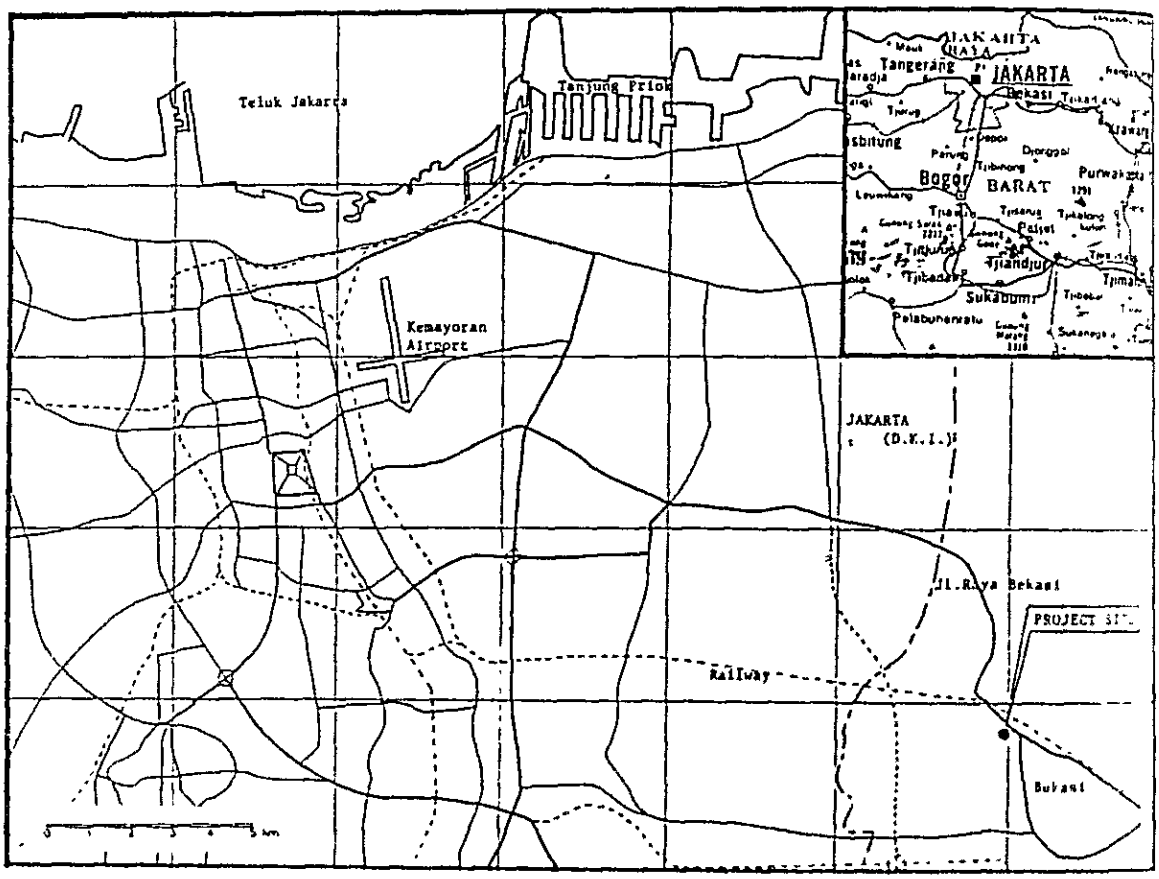
Foot Note: 1. This schedule is subject to conditions that necessary budget will be acquired for the implementation of the Project.
2. This scope of technical cooperation is subject to change within the scope of the provisions given in the Record of Discussions
3 One Coordinator for the CEVEST Project will be dispatched at the earliest appropriate time.

training will be agreed upon in the course of implementation of the project.

(4) Technical aid schedule

The master schedule of the Technical Cooperation is indicated in the Figure 3.3.1. & Fig. 3.3.2.

Site Location Map



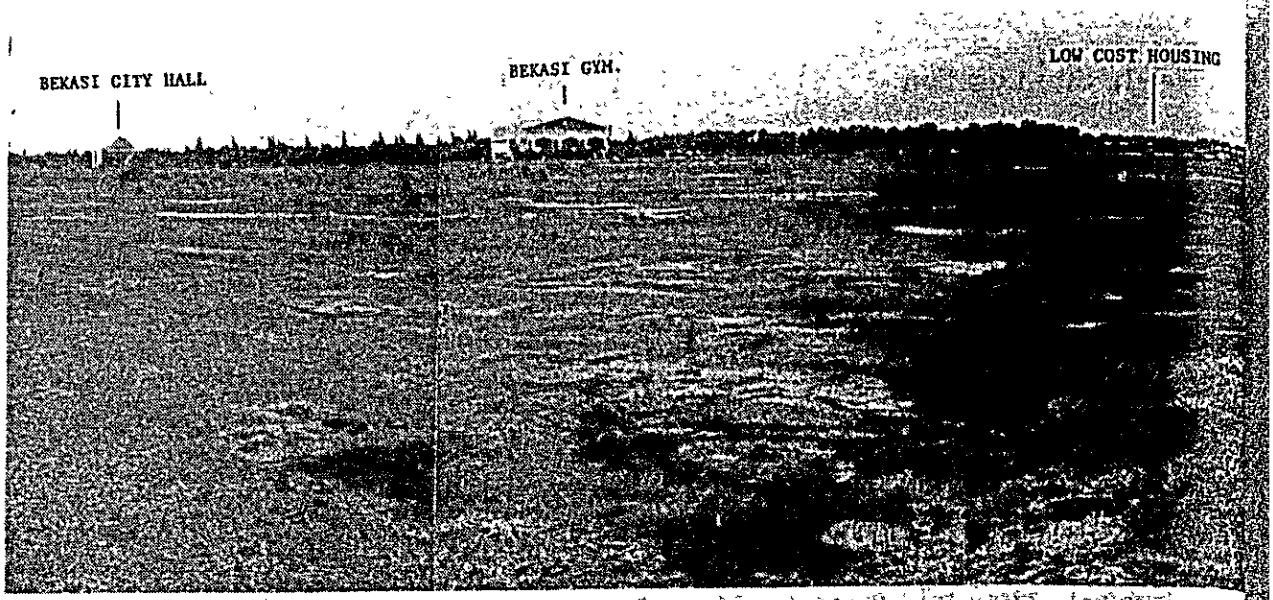
CHAPTER 4. PROJECT SITE

4-1. Site Location

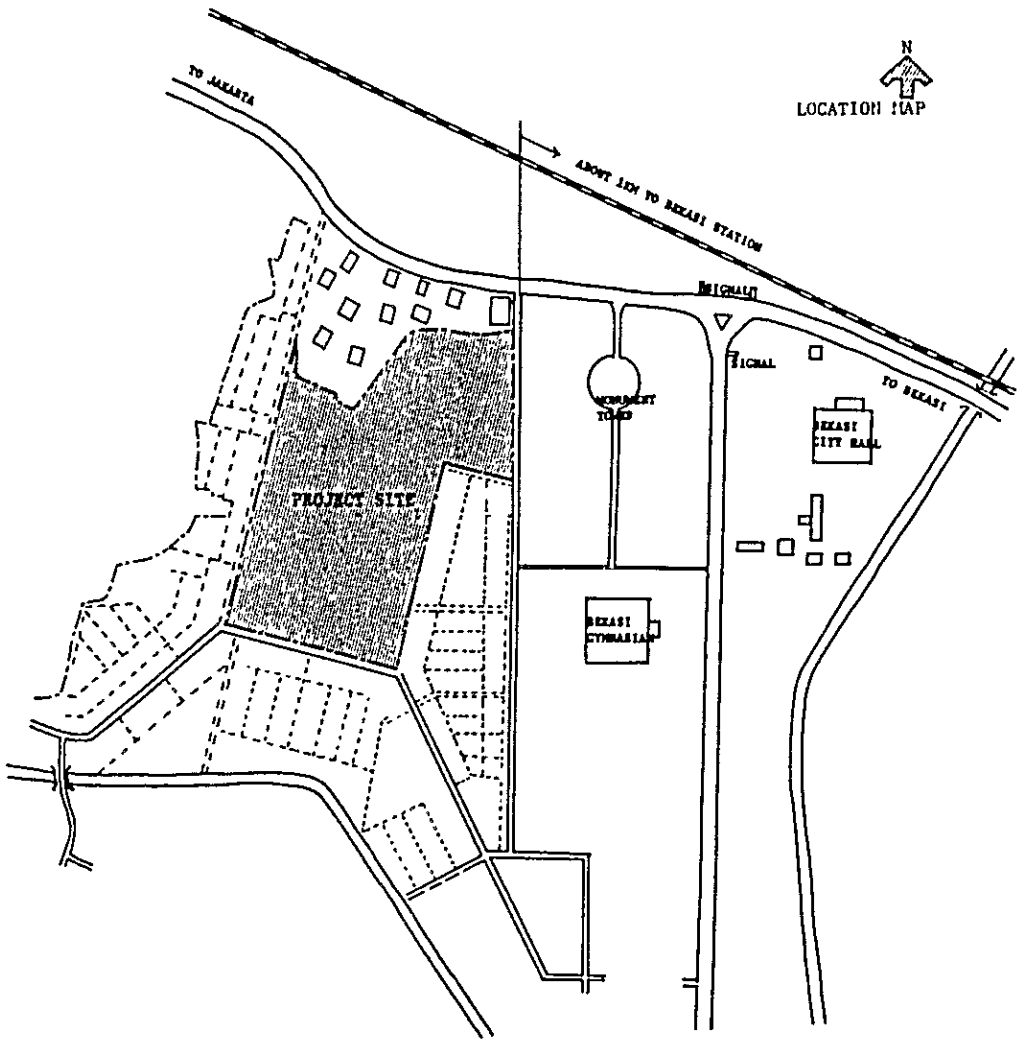
The project site for the CEVEST is located at Bekasi, approximately 25 km east ward of Jakarta city.
The JL. Raya Bekasi road being faced by the site is the trunk line connecting Jakarta and Bekasi.
At the surrounding area of the site Bekai city hall and gymnasium are situated and along the Bekai road, the industries are situated in the industrial park.
Existing site and surrounding area has been developing by the National Public Housing Development Corporation (PERUMNAS) as the project site for low-cost housings, and at the surrounding area low-cost housings have partly been completed.

4-2. Site Condition

The site has already reclaimed by PERUMNAS and the size of the site is approximately 9.3 hectares.
Further land reclamation work will be necessary to leveling about 25 cm higher than the approach road in order to avoid flood in the raining season.
The Site is approached from the Bekasi road, however some expansion work or reinforcement work for the approach road is necessary for the permanent approach to the Site.
The soil condition of the Site is of alluvial silt soil in accordance with the geotechnical investigations executed in the period of Basic Design Survey.
Judging from the standard penetration test at every 1.5 m interval at 4 points within the site, the N-value of 30 will be expected at the level of 20 meter depth from the surface. (Details are shown in Appendix-3)



EAST VIEW FROM SITE CEN



4-3. Related Building Regulations.

According to the advice of BAPPEDA, building regulations concerned for the Site is the building covering rate and the limitation of distance from site boundary line to the building wall surface line.
New tall road is planning to be undertaken which will connect Jakarta and Bekasi.

4-4. Existing Infrastructure

Electricity and telephone can be supplied by branch of main line running along the Bekasi road. Water will be supplied by drilled tube will at the Site.
The depth of tube well is estimated about 120 meter to 150 meter and the number of tube well will need 2 or 3 wells due to the water supply conditions.
The drainage of the site can be discharged by connecting existing canal running south side of the Site, and there is no drainage control.

4-5. Climate Conditions

Jakarta and Bekasi are situated in the tropical zone which is featured by high temperature and humidity; 26 to 28°C at annual average temperature, 84% at average annual humidity.
In architectural planning, space allocation insulating the strong solar radiation, provide good air ventilation and drainage arrangement of storm water is necessary to be considered.

CHAPTER 5. BASIC PLANNING

5-1. Basic Principles

The CEVEST is not merely the training facilities for vocational training and extension service training in Indonesia, but the CEVEST should be the area of cultural exchange for ASEAN countries.
Therefore, the basic principles to be applied in the planning and designing should be on how to provide adequate atmosphere to realize above two functions, in every details, aiming at creation of the space and effective utilization of various facilities.
Different from existing training facilities in Indonesia, the CEVEST facilities must be designed to create an International atmosphere while due consideration and matching in the climate conditions, as well as adapting itself to the natural environment since the CEVEST is constructed in Indonesia and operated by Indonesians.

Harmonization with natural conditions
The climate of Indonesia is tropical, high temperature and high humidity. There is no distinction of four seasons, and the only difference in the climate is dry or wet season.
To harmonize such hard conditions of the climate, the building should be planned to create more comfortable architectural environment on careful consideration of the strong solar radiation and rainfalls, high temperature and humidity not merely depending on the mechanical solutions.

1). Countermeasures to solar radiation

The same in other tropical countries, principally, the CEVEST buildings must be plotted on the east-west axis so as to be lighted on both south and north side, in order to block the strong solar radiation. Also, the construction materials must have large overall heat transfer capacities, and additionally, the eaves and shading louvers must be installed properly.

2). Ventilation arrangement

Needless to say, when designing buildings in the tropical zone, an adequate and sufficient ventilation system should be planned. In addition, since the workshops have to be constructed in this CEVEST, the heat in these spaces must be properly disposed of by an adequate ventilation system. For this purpose, the natural and mechanical ventilation methods are planned to be adopted.

3). Energy conservation measures and easy maintenance

Separate from the subject of air-conditioning heat source, in the basic planning, due consideration should be given to energy conservation by avoiding the direct sunshine, utilizing the natural light and natural ventilation as much as possible. Special care should be given to economy of the running cost and easiness of maintenance of the electricity distribution system.

4). Countermeasures to rainfall

Since floods develop frequently in this area caused by concentrated heavy rainfall, countermeasures to rainfall are extremely important. An open ditch system having a large enough capacity must be planned in the surrounding of the building and site, and at the same time, precaution must be paid to the rain water drainage on the roof and the floor level setting must be designed carefully.

5). Selection of construction materials

While it is desirable to use local materials for economy of the construction cost and easiness of maintenance if there is no problem in the supply situation, some steel and building service equipment should be procured from Japan.
Since there are some problems in the supply ability of construction materials in Indonesia, the procurement plan of these materials must be established in advance matching to the construction schedule.

5-2. Function and Facility Planning

The CEVEST functions can be roughly divided into five groups of training, research and development, information service, management, and welfare. These functions are assigned to two department of Vocational Training Dept. and Extension Service Training Dept. Facilities and material supplies including equipment must be planned so as to ensure multiplied effect of such functions by close interrelationship mutually established for all those different functions.

1). Function as Training Facilities

(1) Vocational Training Department (VTD)

The training contents of the VTD can be divided into five categories as outlined before.

The Type I and Type II training courses form the main part of trainings of this division and the other three courses can be treated as secondary ones.

The estimated number of demanded instructors per year is 374 persons, and this condition is satisfied since the plan contains training of 375 persons. For the short term training course, about 30% of the total skilled labors having experience in the actual work are selected, and three course will be held each year, with each course consisting of 80 trainees and lasting for 4 months. The configuration of skill categories is not determined yet, but in determing these details, the plan must be made not to set lectures as the main contents of the training, being subjected to the field practice schedule of the long-term training courses, by distributing the peak of each training subject, so that no unfovorable influence is given to the facility scale. The training contents are divided into general lectures on common subjects and special lectures.

For training of special subjects, the classroom sizes can be planned according to the scale of each subject. Since the maximum number of trainees for one course is 45, the effective planning is a combination of large and small class rooms for the number of training subjects and for average number of trainees of 30 to 35 for each room, allowing joint use of the rooms with other training courses. The number of

classrooms is to be kept to the bare necessity, so that training curriculums must be programmed giving sufficient consideration to leaving no unused rooms and the number of training courses should be set matching to the program.

The workshops would be the core of all training, in the fields of machinery, electricity, electronics, automobile repair and metal machining. The sizes of machines, work area and training area should be taken into account when designing each workshop and to realize appropriate workshop scales, machines and materials used for the training, as well as the training methods adopted by the trainers should be fully considered.

(2) Extension Service Training Department (EST)

For the EST, the facility scale and arrangement must be planned according to the training contents, types and number of trainees, training methods and training materials, and especially, effective use of the facilities must be taken into consideration when planning them.

The training contents of the EST can be divided into three categories as outlined before. Among the three, the most critical one in the sense of the training scale is the specialist course, and CEVEST must accommodate itself for training of 3,000 persons by 1995. In other words, 300 persons must be trained each year through a course of three months, each course consisting of 30 trainees, and at the peak time the training must be held 10 times a year. The main part of the training is on the software subjects, so that the facilities necessary are mainly those related to the classrooms that allow use of AV apparatus such as blackboards, shutters, screens, etc. Multi-purpose rooms are recommended for practice rooms. These rooms should have facilities for "Testing", "Inspection" and "Measurement", all of which are prerequisites for standardization of industrial products, as well as display facilities for active use of the facilities by external circles. The workshops provided for practice of specific skills such as machinery, metal machining and fabrication, automobile repair and electricity, must be designed to realize full and efficient use.

2). Function as Research and Development

(1) Vocational Training Department (VTD)

As the research and development function of the VTD, the center must have functions for research and development of the training curriculums and training materials, development of technique evaluation systems, and basic researches. Since these research and development efforts are made in cooperation between the Japanese experts and Indonesian counterparts, the facilities must be planned to allow that the joint studies themselves are used as means for technology transfer, and machines and materials for training (video equipment, films, slides, tapes for OHP, etc.) must be utilized effectively.

(2) Extension Service Training (EST)

This center can be positioned as a research and development institute related to the EST based on the regional characteristics of Indonesia. Accordingly, the research facilities to be installed in the center must be able to store the latest information obtained through technical information exchange with various research institutes of industrial fields in the ASEAN countries and Indonesia and to relay the accumulated information to the dissemination personnel.

The research and development function must be able to plan and implement various investigations, analyze the investigation results, and to relay the analysis results to various small scale industry owners through the extension service workers. Therefore, the center must be provided with an enough space for facilities, machines and materials that are necessary for analysis, and the facility plan must be made allowing technology transfer from the Japanese experts and Indonesian counterparts.

ounterparts.

3). Function as Administration Centre

The Administration function of the CEVEST must be able to control and operate the VTD and EST, as well as realizing smooth and efficient operation of lecture in classrooms, practices, development and living accommodation.

As the actual facilities, the VTD and EST must have common facilities such as, the Project Coordinator room, chief advisor room, secretary rooms, conference rooms and auxiliary rooms. The library and Audio visual rooms are common facilities of the two departments and since these are used by various trainees in the CEVEST as well as external persons, they must be positioned as the core of the center.
An office room, expert's rooms, conference rooms and storages must be provided to each department. Furthermore, in the case of the EST, since the training and study contents will be versatile, rest rooms for external lecturers may be needed.

4). Function as Welfare Facilities

In addition to the foregoing three functions as the training center, the following welfare facilities will be required so as to ensure maximum training effect within the short period in the CEVEST, especially in consideration of the need to compensate the local surrounding conditions around the proposed construction site.

Staff quarters and guest house:

These facilities are indispensable as the accommodation for regular full-time teaching staff and other administrative staff of the CEVEST. The guest house may be used to accommodate those experts to be dispatched from Japan for technical cooperation.

Dormitory house:

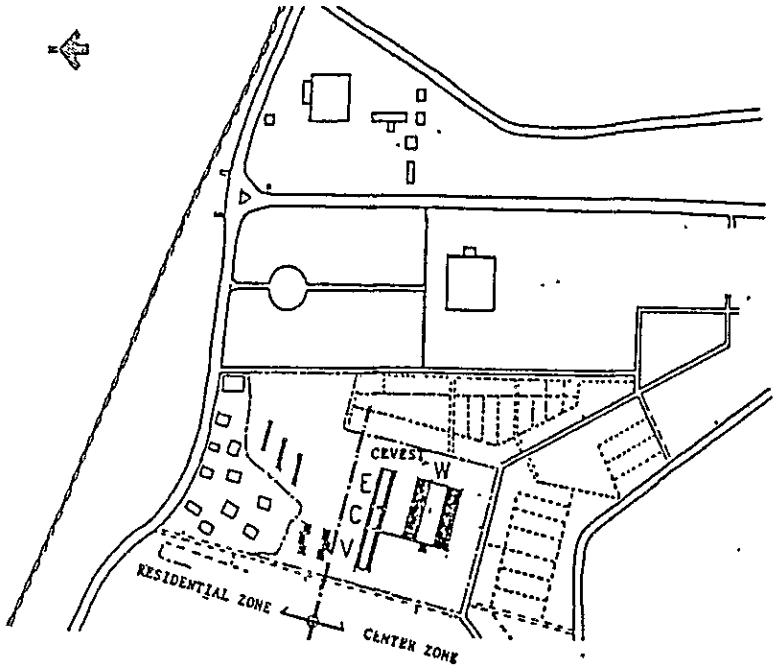
Dormitory house for trainees of VTD and EST will be used for concentrated and partial training for a training period.

Canteen:

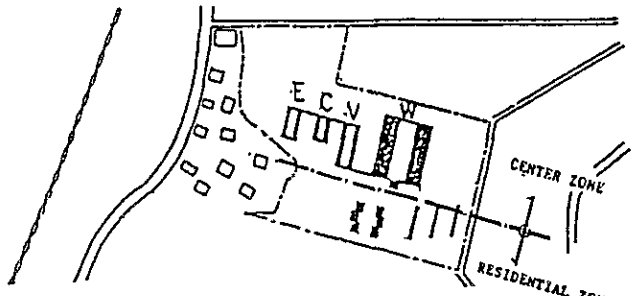
Staff canteen and trainee's canteen

Sports and recreational facilities:

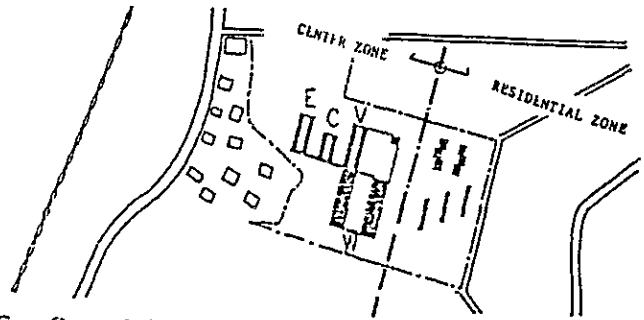
Recreational facilities for staff and trainees, such as gymnasium and tennis court, etc will be necessary.



PLAN A. Central Administration Bldg. (C) and Training Bldgs. (E & V) are vertically plotted.



PLAN B. Central Administration Bldg. (C), and Training Bldgs. (E & V) and workshops are horizontally plotted.



PLAN C. Central Administration Bldg. (C), and Training Bldgs. (E & V) are horizontally plotted and divided by covered way into 2 blocks.

5-3. Process of Planning

Based on the results of study and investigation of the purpose and positioning of this project, the major building facilities that are required are training, research and development and administration rooms for the Extension Service Training Department (EST), research and development rooms and workshops for practice for the Vocational Training Department (VTD), and accommodation for living, such as trainees dormitory, staff housings and canteens.

One building was planned at an initial stage of planning for training, and administration functions of the two department, jointly using the spaces that can be mutually used, for convenience and economy by reducing flow spaces. However, as the result of the basic design study, the separate buildings would be better to allow independent operation and maintenance of the two departments since the two departments had distinctly varied policies on the operation and maintenance. The facility details were determined as follows through discussions with the Indonesian officials in charge and with the Japanese officials concerned with Technical Cooperation for the CEVEST.

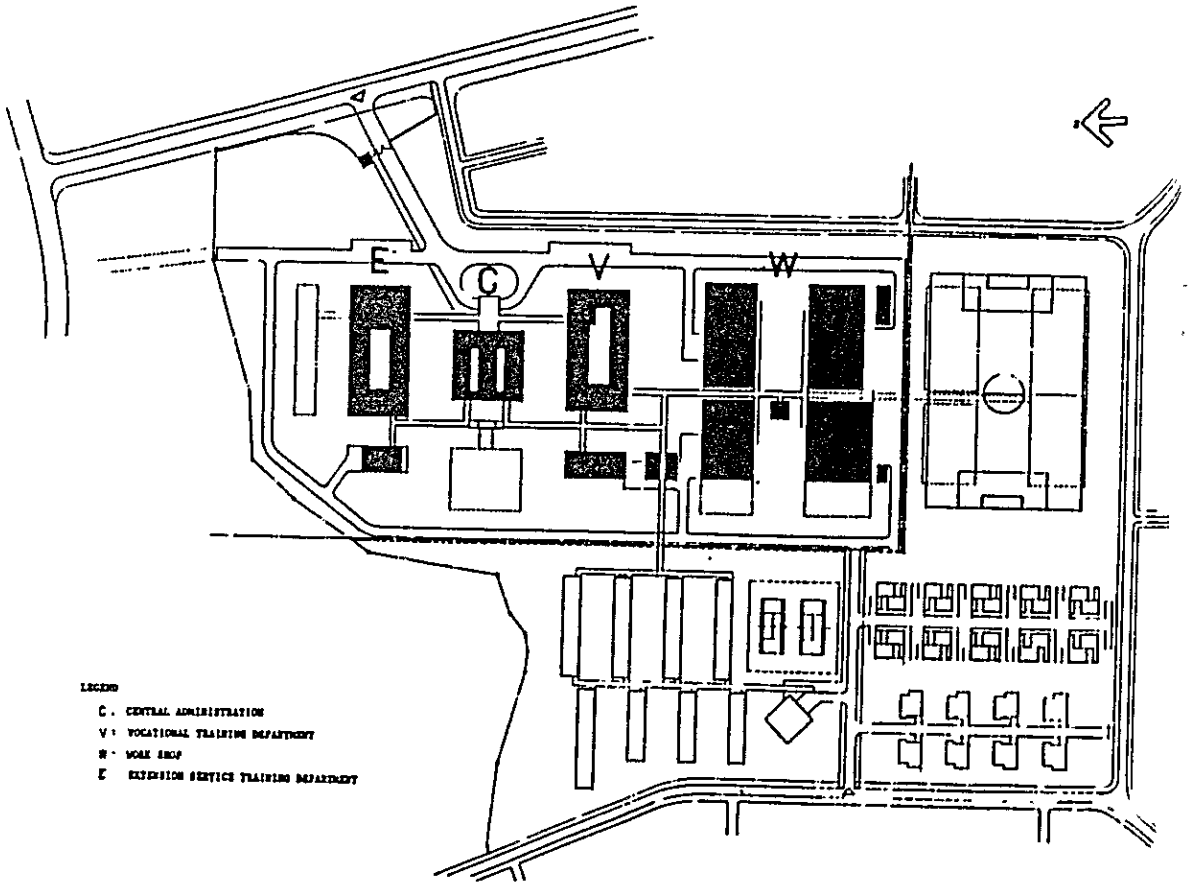
Vocational Training Department:
- Training affairs Building Workshops

Extension Service Training Department:
- Training Affairs Building

Administration:
- Central Administration Building

Other welfare and living facilities

Block plans to give unity and organic character to these facilities by connecting them with covered way were reviewed as shown in Fig. 5.3.


E
C
V
W
LEGEND
C . CENTRAL ADMINISTRATION
V : VOCATIONAL TRAINING DEPARTMENT
W : WORK SHOP
E EXTENSION SERVICE TRAINING DEPARTMENT

5-4. Site Planning

The project site can be effectively used by plotting the CEVEST facilities at the east ward of the Site because of the shape and environment of the site. A good approach to the CEVEST can be got and the space can be left for future expansion of facilities.

The layout of the CEVEST facilities is that the Administration building is to be located in the center as the face of the center, The Training building and canteen for the Extension Service Training Department (EST), are located at the northern side, and the Training building and canteen for the Vocational Trading Department (VTD) are located at the southern side. The workshops are to be installed. A sporting field is provided to this part as a space for future expansion of the workshops.

In consideration of the climatic speciality, the first consideration must be given to how to screen direct sunshine to the building, same as in any other tropical countries. Therefore all the building is recommended to be plotted on the east-west axis so as to be lighted on both south and north sides.

All major buildings are designed for flat open type having a corridor in one side. Each building will have a planted patio for the two purposes of obtaining a better natural ventilation effect and stage of rest for users.

The covered way that connects these buildings runs in the north-south direction, serving as the trunk route to all facilities. The passage layout is planned for effective utilization of it for buildings that may be planned for the future.

The east side road is set as the main approach to the center. The gate house is placed in front of the CEVEST facilities as the landmark, making it a symbolic structure as well as harmonious with the whole facilities. Furthermore, an entrance covered way is installed from the entrance of the service link road for connecting three buildings of the Administration and two Training buildings of VTD and EST providing a good balance to the center structure.

The service link road is to be surrounding the center as a service access to all facilities. It also divides the site for the training area and living area.

In the landscaping of the site, since the site is a developed land, trees will be planted properly to improve the environment of the center and to given refreshing atmosphere.

5-5. Facility Planning

1). Administration Building

The building is to be built as an independent building in the central position between the two Training buildings to collectively control the Extension Service Training Department and Vocation Training Department Department. The building is designed with a large roof for an appeal as the core building of the CEVEST and to present the image of traditional buildings of Indonesia.
The building contains clerical spaces such as administration office, Project Coordinator's room, conference hall, printing room, etc. and spaces that are jointly used by the two departments such as library and audio-visual room.

2). Training Building (Extension Service Training Dept.)

The building for the Extension Service Training Dept. consists of various rooms for clerical use such as office room, expert's rooms, conference rooms, rooms for survey research and development of small scale industries, and 5 small and 2 large classrooms as training spaces. In addition, there is a multi-purpose room that can be used for various purposes such as display of Industrial manufactures, conference and practice training.

3). Training Building (Vocational Training Dept.)

The building for the Vocational Training Dept. consists of various rooms for clerical use such as office room, expert's rooms, conference rooms, rooms for research and development of training curriculums and methods, and a number of classrooms used for vocational training re-training, director training, and training for enterprise instructor. It also has workshops as practice spaces for machinery, metal processing (welding, sheet metal and pipe fitting), automotive, electric and electronic.

4). Canteen

A building each for the Extension Service Training Dept. and Vocational Training Dept. are constructed close to each training building, with capacities of 130 seats for the former and 200 seats for the latter. These canteens are to be used for lunch also, jointly with the dining hall belonging to the trainees dormitory. The self-service system will be adopted for these dining halls.

5). Gate house

As the landmark for entrance, the gate house will be designed.

6). Covered way

The covered way connects all buildings and it is used as the trunk line of the services of the facilities.
The front covered way of the administration building entrance will be designed with a stress placed for its being the front of the connection between the training buildings for Extension Service Training Dept. and Vocational Training Dept.

7). Trainees dormitory

The dormitory will have 168 double rooms, or the total capacity of 336 trainees.

8). Staff housings

Type B 8 houses of 72.0 m^2 size (3 living rooms and a dining kitchen, servant room, with a garage)
Type C 20 houses of 57.0 m^2 size (2 living rooms and a dining kitchen, servant room)

9). Auditorium

The Auditorium will be designed on a step floor, containing about 600 seats. The appearance of the Auditorium will be in a traditional Indonesian style, matching to the large roof of the Administration building.

Among these buildings, 7), 8) and 9) buildings will be constructed by the Indonesian side.

5-6. Scale of Facilities

The building floor area is planned on the following scale for individual facilities:

Facility	Room No.	Floor Area (SQ.M.)
(1) Vocational Training Dept.		
a. Training Bldg.		
Expert's & Counterperts Room	1	168
General Affairs	1	196
Reception Room	1	28
Meeting Room	1	84
Office Supply Room	1	56
Research & Development	$84m^2$ x 2	168
Classroom	$36m^2$ x 1	36
Classroom	$48m^2$ x 2	96
Classroom	$60m^2$ x 2	120
Classroom	$72m^2$ x 4	288
Drawing Room	1	96
Locker Room	2	52
Corridor, W.C, etc.		900
Sub-Total		2,288
b. Workshops		
Machining course	1	900
Welding course	1	808
Sheet Metal & Pipe Fitting course	1	500
Automotive course	1	1,112
Electric course	1	800
Electronic course	1	400
W.C.		64
Sub-Total		4,584
Canteen		300
Total for Vocational Training Dept.		7,172
(2) Extension Service Training Dept.		
a. Training Bldg.		
Expert's Room	1	48

General Affairs	1	120
Reception Room	1	24
Meeting Room	2	48
Visiting Lecture's Room	1	56
Office Supply Room	1	56
Survey, Research and Development	$72m^2$ x 4	288
Multi-purpose Room	1	290
Classroom	$82m^2$ x 2	168
Classroom	$56m^2$ x 5	280
Locker Room	2	56
Corridor, W.C., etc.		918
Canteen		200
Total for Extension Service Training Dept.		2,552

(3) Administration & Common		
Staff Room	$24m^2$ x 5	120
Reception	1	24
Secretariat Office	1	24
Meeting Room	2	72
Library	1	200
Health Nurse Room	1	24
Janitor Room	1	24
Audio-visual Room	1	108
Audio-visual material Preparation Room	1	90
Printing Room	1	48
Corridor, W.C., etc.		466
Total for Administration & Common		1,200

(4) Miscellaneous	
a. Covered Way	1,172
b. Others	
(Gate house, Utility, Sub-station)	175
Total for Miscellaneous	1,347

GRAND TOTAL	12,271

5-7. Element Planning

Weather conditions and interior environment conditions of the area are large factors for decision of building elements. In the project area in which solar radiation, ventilation and rainfall extent major influence over buildings, the technique for suitably treated these factors is important for element planning.

1) Roof

The roof of building is strongly affected by solar radiation. Therefore, it requires waterproofing that withstands strong solar radiation and violent rainfall for a long period of time. For preventing transmission of radiant heat to the interior, provision of a heat insulation layer between roof surface and interior and security of sufficient ventilation are effective for maintaining the interior temperature at a suitable level.

2) Outside walls

Outside walls are also largely affected by solar radiation. It is necessary to take measures for avoiding solar radiation by provision of eaves or louvers besides use of materials largely resistive to heat transmission. Openings which are effective for ventilation will be suitably provided in outside walls for introducing seasonal wind which is available throughout the year into the interior, for making natural ventilation as the main means of ventilation.

3) Floor level

Sufficient consideration is required for setup of the floor level in order to avoid flooding of buildings at occasions of localized torrential downpour during the rainy season.

5-8. Material Planning

Refinforced concrete structure will be used for principal frame works such as columns and beams of each building and steel strucutre will be used for the workshops.

The basic policy will be to use as much local materials, considering the needs to lower the construction costs and to make easiness of maintenance. The following materials will be used as the materials of the CEVEST facilities with quality, supply capacity, princes and so forth of materials taken into account.

1). Administration Building

a. Structural materials

The basic structure is reinforced concrete structure and brick will be used for partition walls.

b. External finish schedule

1. Roof materials
   - Administration Bldg. : Roof cement tile
   - Training Bldgs. : Large corrugated slates
2. External Wall : Mortal and paint finish
   Sashes & Fixtures : Wood Sashes

c. Interior finish schedule

1. Floor (a) General office, class room, conference room: Vinyl tiles
   (b) Corridor, lobby hall : Washed terrazo
   (c) Laboratory : Washed terrazo
2. Wall : Mortar-trowelled paint finish
   Ceiling : Acoustic board, paint finish on plywood

2). Workshops

a. Structural materials

The basic structure is steel structure.

b. Extension finish schedule

1. Roof materials : Large corrugated slates
2. External wall : Large corrugated slates laying

5-9. Structure Plan

(1) Background of Structure Plan

Natural and environmental conditions to set external forces that apply to the buildings are not as critical as in Japan. As for the wind, the annual average wind speed is 1.6 m/sec., and the recorded instantaneous maximum wind speed is 14.0 m/sec. Since Indonesia is located in the southwestern part of the Pan-Pacific Seismic Belt, earthquakes occur often, but the frequency is pretty small especially on the side of the Strait of Malacca including Java City.
The subsurface ground of the proposed construction site consists of a silty alluvial soil layer and is very soft.
Almost all structural materials are available in Indonesia. The construction techniques available in Indonesia are good enough to build the center buildings except the parts where highly advanced skill is needed.

(2) Structural Design

Indonesia has the load Regulations for structural design (Peraturan Pembebanan Indonesia untuk gedung 1981) and all structural design and construction are under guidance and control of the regulations. Basically, plans of the proposed buildings must be made in conformity with these regulations but various Japanese design codes will also be used as references.
The following loads are taken into consideration as external forces or loads imposed to these buildings:

1) Dead loads
Weights of structural materials, finishing materials and fixed equipments are all calculated.

2) Live loads
Table 5-9-1 shows the live loads for design of the proposed building in accordance with Indonesian regulations. Live loads for special equipments and heavy machines are calculated separately in consideration with the actual conditions to be used.

Table 5-9-1. Live Loads (Unit: Kg/m^2)

Room	For the design of Floor slab	Beam, Column & Foundation	Seismic
Office Rm. Meeting Rm. Class room	250	225	125
Library	*550	450	400
Stair Corridor	300	225	150

* Live load in accordance with Japanese general practice.

3) Wind load

Wind load of 25 kg/m^2 is adopted in conformity with load Regulation in Indonesia since the construction site is away from the cost by more than 5 km.

4) Seismic force

Horizontal Seismic force is calculated using the following formula, in conformity with Seismic Load regulation in Indonesia (Peraturan Perencanaan Tahan Gempa Indonesia Untuk Gedung, 1981)

$V = Cd \times Wt$

V; Horizontal seismic force

Wt; Weight of building

Cd; Seismic coefficient

$Cd = C \times I \times K$

C; Basic seismic coefficient

Proposed building is in seismic zone 4

The period of structure of proposed Building

estimated $T = 0.06H^{3/4} \fallingdotseq 0.23$ for RC building

Subsoil condition of proposed site is soft soil

$C = 0.05$ refer to fig. 5-9-1

I; Importance factor ($I = 1.0$)

K; Structural type factor ($K = 1.0$ for RC Frame)

According by; the horizontal coefficient of seismic intensity to be adopted is 0.05 ($Cd = 0.05 \times 1.0 \times 1.0$)

5) Structural analysis

Reinforce building will be designed in accordance with Indonesian Reinforce Concrete code (Peraturan beton bertulang Indonesia 1971) and also be referred to Japanese code.

Steel building will be designed in accordance with Japanese code.

(3) Foundation of Building

The ground close to the surface of the proposed construction site is configulated with silty alluvial soil, and no distinctively hard supporting layer exists. However, starting from the level of GL-20 m, N value of standard penetration test rises to 50 or greater and the soil becomes tighter.

For the foundation of light weight buildings such as workshops and covered way, footings of the buildings will be laid directly on the soil in consideration with its bearing capacity and settlement characteristic based on the results of geological survey. For the foundation of buildings such as management building, training buildings, etc. whose column loads are comparatively big, concrete piles are driven into the level of about 20 m to support the buildings.

(4) Structural Materials and Construction Method

In principle, locally available materials are used as much as possible, and such construction method as to be common in Indonesia is adopted.

1) Concrete

Generally, cement, fine and coarse aggregates are available locally. Normal weight concrete is used and its design strength (Fc) is set to 210 kg/cm^2. In order to obtain satisfactory quality of the concrete under the high temperature condition, the concrete is to be mixed with less water contents, and care must be paid to curing after the placement.

2) Reinforcing bar

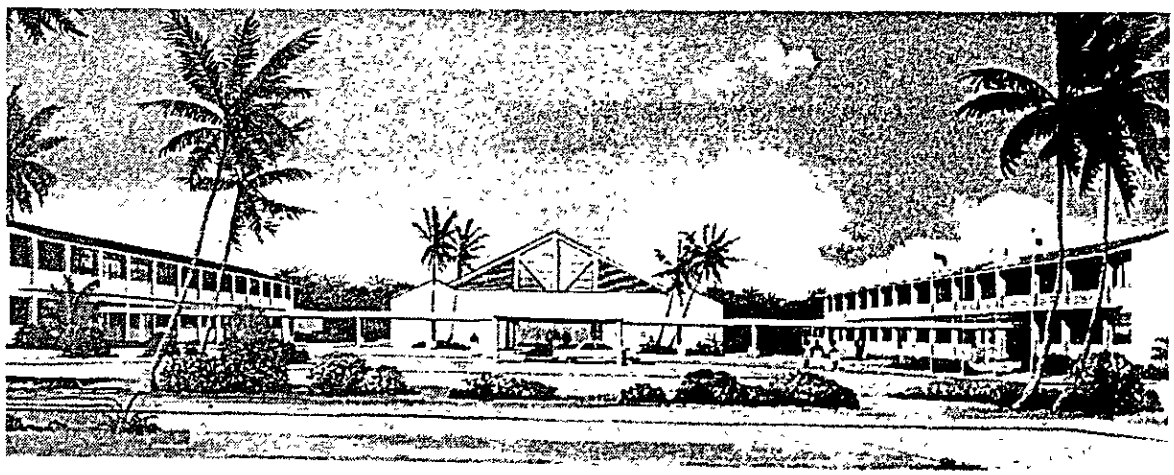
Reinforcing bars producted in Indonesia are mainly D10 to D25, in sizes of $\phi 6$ to $\phi 25$.

For the proposed buildings, reinforcing bars of SD-30 and SD-35 will be used mainly.

3) Structural steel

There are some products of light gauge steels of SSC41 material quality and small angle steels equivalent to SS41 in Indonesia but majority of structural steels are being imported. In this project, Japanese steel members of SS41 and SSC41 are used on any parts that are not obtainable in Indonesia.

As a rule, high strength bolt method is applied when connecting steel frame members at the construction site.



5-10. Air-conditioning and Ventilation System

1). General

Air-conditioning and ventilation system will be designed based on economic running cost and easy maintenance.

2). Design Condition

Out-door condition: 31.4°C and 80% RH
Room condition: 28°C and about 50% RH

3). Air-conditioning System

Window type air conditioners will be installed in as following rooms;

1) Meeting room
2) Reception room
3) Project coard
4) Project officer
5) Japanese expert's room

and packaged type air conditioners will be installed in Audio Vidual Room.

4). Ventilation System

Generally, each room will be designed to suitable natural ventilation system from architectural view points. However, mechanical ventilation system will be applied at kitchens, lavatories and a part of workshop areas where welding and painting machines will be provided.
Mechanical ventilation system will be provided on welding booth equipment, exhaust air will be extracted through ducting. Wall type ventilators will be installed a for other necessary areas.

5-11. Plumbing System

1). Water Resource

Two wells water will be applied for this project, since it is not available to get city water service on the site.
There is well water capacity rures which is not able to lift up more than 200 liters per minutes at each well point.
Accordingly, two (2) numbers of submersible pump will be installed which capacity is as follows;

Discharge outlet:	65 mm diameter
Lifting capacity:	200 liters per minutes
Head:	70 m
Motor:	5.5 Kw

Each deep well is necessary of 150 mm diameter, 100 m to 150 m depth and 288 cubic meters per day of minimum acceptable well capacity.
Pumps and well driving works shall be scope of Indonesia.

2). Required Water Quantity Analysis

(1) Numbers of People
Students + Staffs; 1,020 peoples
Staff housing; 180 peoples
(6 peoples x 30 housings)
Total 1,200 peoples

(2) Required Water Quantity
1,200 peoples x 250 liters = 300,000 liters
Consumption time; 10 hr.
300,000 liters ÷ 10 hours = 30,000 liters/h.

(3) Well Capacity
Lifting capacity: 200 liter/m. = 12,000 liter/hr.
Submersible pump operation: 15 hr.
Well capacity: 12,000 liter x 15 hr. = 180,000 liter/day
300,000 ÷ 180,000 = 1.67
Two (2) numbers of well is necessary Minimum acceptable well capacity: 12,000 liter x 24 hr = 288,000 liter/day

3). Water Supply System

At the first, well water will be put into the sand setting reservoir using submersible pumps, and then water will be lifted into elevated tank using lifted pump. Water will be distributed to each required points by grabity from elevated tank.
Elevated tank and lift pumps will have satisfy capacity to supply all buildings.

4). Drainage System

The drainage system will be designed to meet full function of buildings. The drainage system will be classified into three (3) systems; Soil drainage, waste drainage and storm water drainage. Each drainage will be discharged into gutters on the around site.

(1) Soil Drainage
Soil drain from each toilet will be gathered into soalead type septic tanks.

(2) Water Drainage
Waste drain from each place will be collected into open ditch.

(3) Storm Water Drainage
Storm water from roof and open space within the site will be gathered into open ditch and then discharged into gutters as same as waste drainage system.

5). Sanitary Fixtures

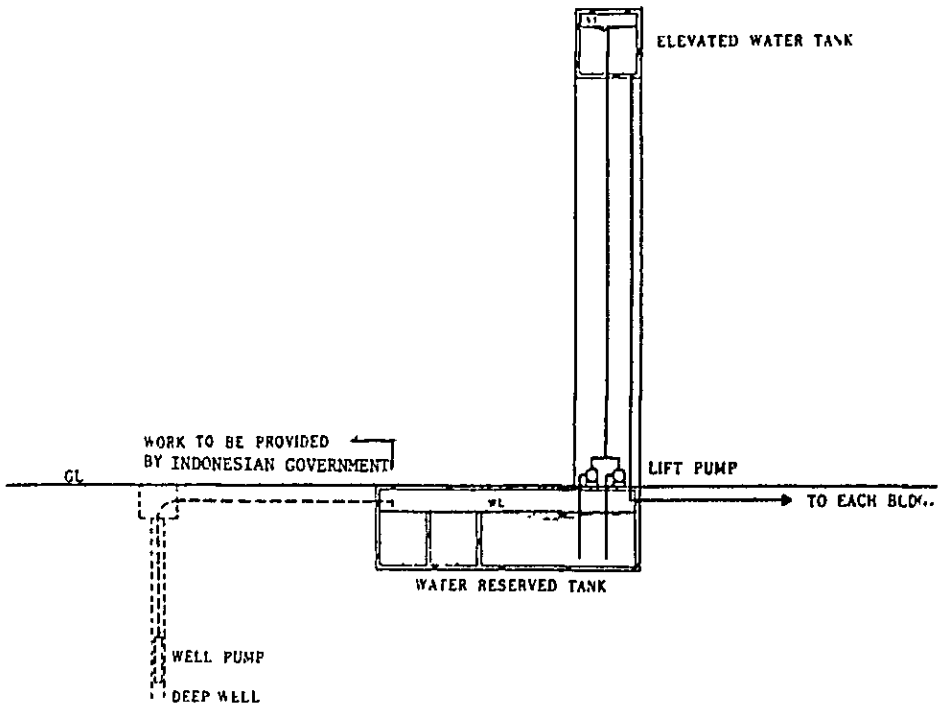
Lavatories, urinals and water closets will be installed in toilets and lavatories as required the Architectural planning. Especially, local traditional style water closets will be applied for students use.

6). Sewage Treatment System

Septic tanks will be installed for each toilets.

7). Fire Protection System

Automatic fire protection system will be installed which consist of interior fire hydrants, and fire pumps with related electrical works.



WATER SUPPLY SYSTEM DIAGRAM

5-12. Electrical System

1). Power Receiving System

Transformer sub-station will be planned inside the site, electricity incoming cable by aerial wiring from the 20 KV, 50 Hz distribution line operated by PLN (Perusahaan Umum Listrik Negara).
1,000 KVA transformer will be installed inside the transformer sub-station by PLN.

2). Power Circuit System

Power will be distributed through underground cable the MCB to the electricity room and from the MCB the power will be supplied to each distribution panel and power switch Board through the metal conduit wiring system running under the ceiling of the Covered way. The Voltage classifications are graded as follows:

Power Load	: 3 phase 4 wire, 380/220V
Lighting Receptacle Load	: Single phase 2 wire, 220V
Power Load for Fan & Pump.	: 3 phase 3 wire, 380V

3). Lighting Wiring System

a. Lighting System

Fluorescent lamps will be mainly provided as lighting sources considering of saving of running cost. Incandescent lamps will be used if required for specific purposes.
Wiring will be laid through metal conduit after distribution panel to lighting fixtures. Section switches will be provided for each small some so as to on/off the lighting circuit at each room for considering running cost.
The scheduled intensity of illumination in main rooms as follows:

Office, Lecture room, Laboratories	: 350 - 400 lx.
Drawing room	: 500 lx
Workshop	: 300 - 350 lx.
Hall	: 150 - 200 lx.
Corridor and lavatory	: 50 - 100 lx.

b. Receptacles

Plug type receptacles are provided in the office, laboratory and other rooms where use of electrical devices is expected in the number and location matching to the layout and capacities of using devices. The connecting is provided to outlets that require special grounding depending on the type of electric devices in the Workshops.

4). Power System

A power control panel is installed in each machine room to start/stop motors for fans and pumps. Alarms for abnormal load or water level are gathered and displayed on the alarm panel in the unit of the control panel or machine room for efficient counteractions.
It is planned also for supply source to equipments in each workshop, to provide panelboards and power control bonds.

5). Telephone System

a. Telephone line receiving

Three to five telephone lines will be installed into the site. For the telephone incoming a service pole is built in the site and a terminal box is placed on the post. The wire up to the terminal box and the terminal box are installed by the telephone company (TELEKOM). The wiring after the terminal box to MDF (Main Distribution Frame) in the building switchboard is underground.

b. Telephone outlet

The cable conduit line is led from the MDF through the IDF board to each wall outlet.
Outlet boxes are to be of wall-mounted type.

c. Telephone exchange system

Telephone exchange system is of cross bar type, and planning is made to install about 50 extension telephone lines.

6). Public Address System

Speakers are installed in major rooms for transmission of messages within the center and for paging. An amplifier is installed in the administration office for loud speaker announcement. The output system is designed to allow use of the speaker system separately by each building. An independent public address system is installed in the Workshops.

7). Interphone Equipment

An interphone system is installed to permit close and frequent communication between rooms for the need of the center management. Another interphone system is provided for maintenance and management of the electrical and mechanical facilities.

8). Fire Alarm System

A system that permits ringing of alarm bells by manual operation on occurrence of a fire will be provided for permitting the people in building to take refuge.

9). TV Community Antenna Equipment

The TV outlets will be provided to the audiovisual room and electronic workshop. A master TV community antenna is installed to distribute the received signals via coaxial cables.

10). Lighting Arrester

A lightning conductor is installed to each building to protect the building and facilities and ensure safety of persons.

11). Outdoor Lighting

Outdoor lamps are installed within the site for the security at night. Fluorescent mercury lamps are used for the purpose and the lamps can be controlled on off either automatically or manually.

5-13. Equipment Planning

Preferred selection of equipment should require special consideration as itemized hereunder: (Major equipment list is as Appendix 4)

1) Teaching materials for training and experimental purpose should be selected at such content and level as may ensure enhancement of educational effects, aiming at skill improvement of the Vocational training instructors.

2) Instead of introducing the modernized training equipment only for modernizing purpose, the prior selection of equipment made from easier approach to maintenance by periodical inspection and availability of the machinery and equipment. Such selection must be made together with selection of maintenance materials.

3) Equipment which requires high running cost shall be avoided, and also equipment with easy maintenance shall be selected mainly.

4) Quantity of equipment shall be determined with due consideration to the training programme and the number of operation staff.
Equipment, if possible, shall be utilized in common by departments of the CEVEST for its effective utilization purpose.

In order to hold equipment as originally aimed at, it is necessary to provide guidance to technical staff in Indonesia with regard to technologies on maintenance and operation of such equipment and furthermore, to follow up such guidance periodically after completion of the CEVEST. To meet this purpose, by close relationship with the Japan's technical cooperation programme on a project basis to the CEVEST must establish the organization system for reception of technical staff, provide guidance for the operating technology and supply necessary spare parts for the equipment.

5-14. Project Cost

The total investiment cost for the CEVEST facilities which is expected to be covered by Indonesian Government as immediately follows.

ITEMS TO BE DONE BY "I" SIDE	JAN. 26 REPLY BY MOM Thousand RP	TO BE ADDED	Thousand RP
1. To secure a lot of land.	1,000		
2. To clear, level and reclaim the site. (25 cm higher than road level)	10,000	*-1	250,000
3. To construct the gate and fence in and around the site.	60,000		
4. To construct the road outside the site which is used for temporary construction purpose, and reinforce or reconstruct the access road to the site.	60,000	*-2	15,000
5. To construct the buildings other than those to be provided by Japanese side.			
5-1. Dormitory $1{,}200\ m^2$ x 150,000 RP	180,000	*-3 *-4	270,000 180,000
5-2. Staff housing 45 houses x 12,000,000 RP	540,000		
5-3. Garage $250\ m^2$ x 100,000 RP	25,000		
5-4. Shed for substation $500\ m^2$ x 100,000 RP	50,000		
5-5. Auditorium $1{,}000\ m^2$ 600 seats	150,000	*-5	45,000
6. To provide facilities for distribution of electricity, water supply, drainage and other incidental facilities.			

ITEMS TO BE DONE BY "I" SIDE	JAN. 26 REPLY BY MOM Thousand RP	TO BE ADDED Thousand RP
6-1. Electricity		
a. The distribution line to the site.	100,000	
b. The main circuit breaker and transformer with capacity of approx. 1000 KVA.		
6-2. Water Supply		
a. Well water drilling within the site. (150 m. deep well with water supply capacity of 360 ton/day)		30,000
6-3. Drainage		
a. Drainage from the site to the canal.	30,000	
b. Storm reserver within the site.		
6-4. Telephone System		
a. Telephone trunk line to the Terminal box in the site. 300,000 RP/1 line x 3		900
		600
b. All application procedures for telephone line connection and construction cost.	3 lines	2 lines to be added
6-5. Furnitures and Furnishings	not yet	*-6 250,000
a. General furnitures (Carpet, curtain, table, chair and others)		
6-6. Landscaping within the site.	15,000	
6-7. Sports facilities	15,000	
8. To bear the following commissions or charges to the Indonesian Government authorities concerned.		
8-1. Application charges for power supply authorities (PLN).		
8-2. Application charges for telephone	incl. 6-4	
8-3. Application charges for getting Building permit.	10,000	
9. To unsure prompt unloading and customs clearance in Indonesia of imported materials and equipment for the implementation of the Project and to expedite the internal transportation for them.	75,000	

ITEMS TO BE DONE BY "I" SIDE	JAN. 26 REPLY BY MOM Thousand RP	TO BE ADDED Thousand RP
10. To exempt Japanese nationals concerned from customs duties, internal taxes and other fiscal levies which may be imposed in Indonesia on the occasion of the supply of materials and services for the Project.		
11. To provide and accord necessary permission licenses and other authorization required to carry out the Project.		2,000
12. To maintain and use properly and effectively that the facilities constructed and equipment purchased under the grant.		
TOTAL	1,353,900	1,00,600

TOTAL 2,354,500,000 RP

*-1. 95,000 m^2 (site area) x (0.5 m + 0.25 m)
= 71,250 m^3
@ RP 3,500/m^3

*-2. 5,000,000 RP shall be added as demolition of existing pavement.

*-3. in the first phase of Training plan, total capacity of 250 persons' dormitory shall be built (VOCATIONAL T.) therefore additional 150 persons' dormitories shall be added.
* Outdoor's work does not included in this cost such as premises road.

*-4. in the first phase of Training plan total capacity of 100 persons' dormitory shall be built.
* Outdoor's work does not included in this cost such as premises road.

*-5. Air conditioning, mechanical and electrical work shall be added within 30% of standard unit cost.

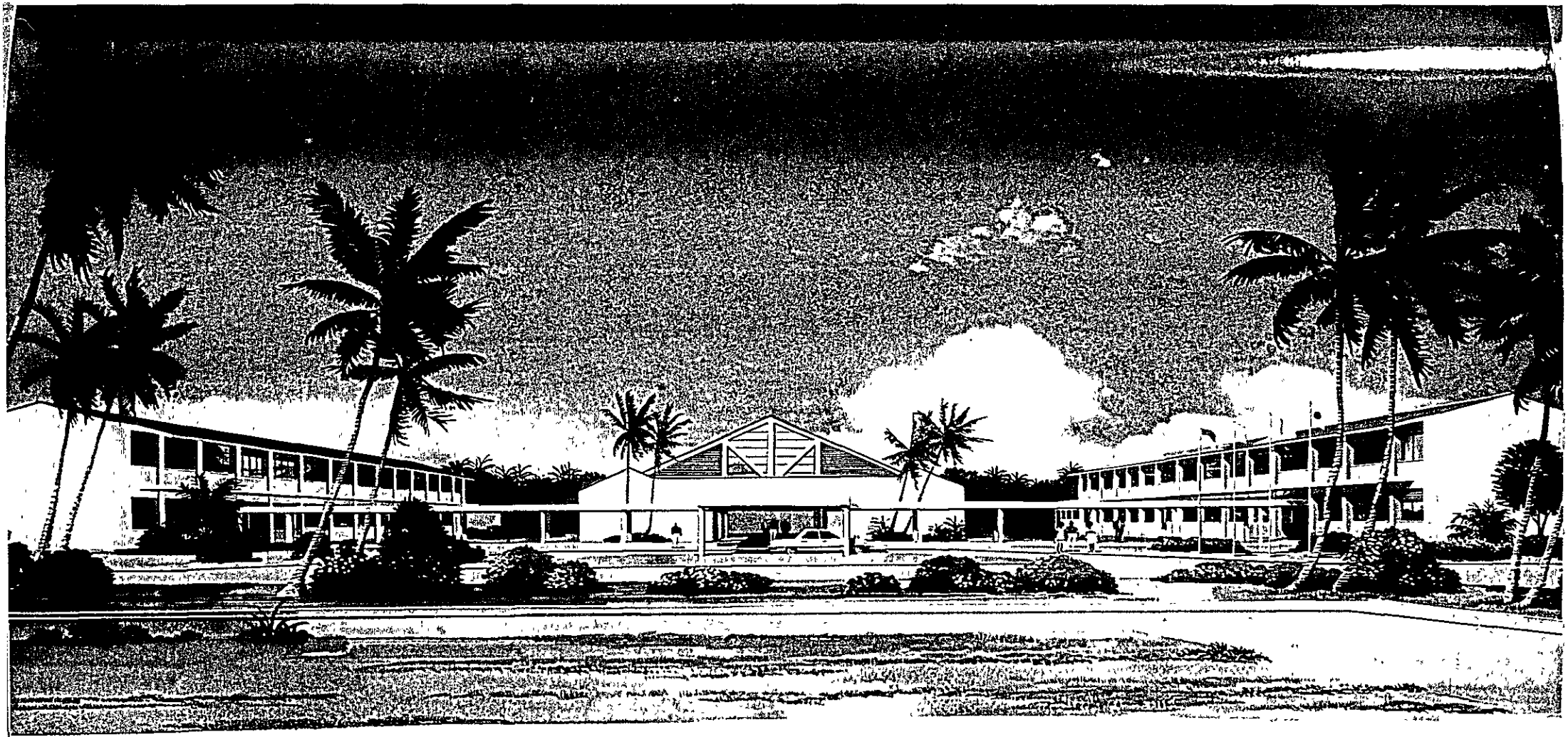
*-6. furnitures' budgetory cost for both "E" and "V" training dept.
"E" 100,000,000 RP
"V" 150,000,000 RP

*-7. These budgetory cost to be added does not include additional requirement facilities of work shop of "V" and does not include dormitories finally required by "E" and "V".

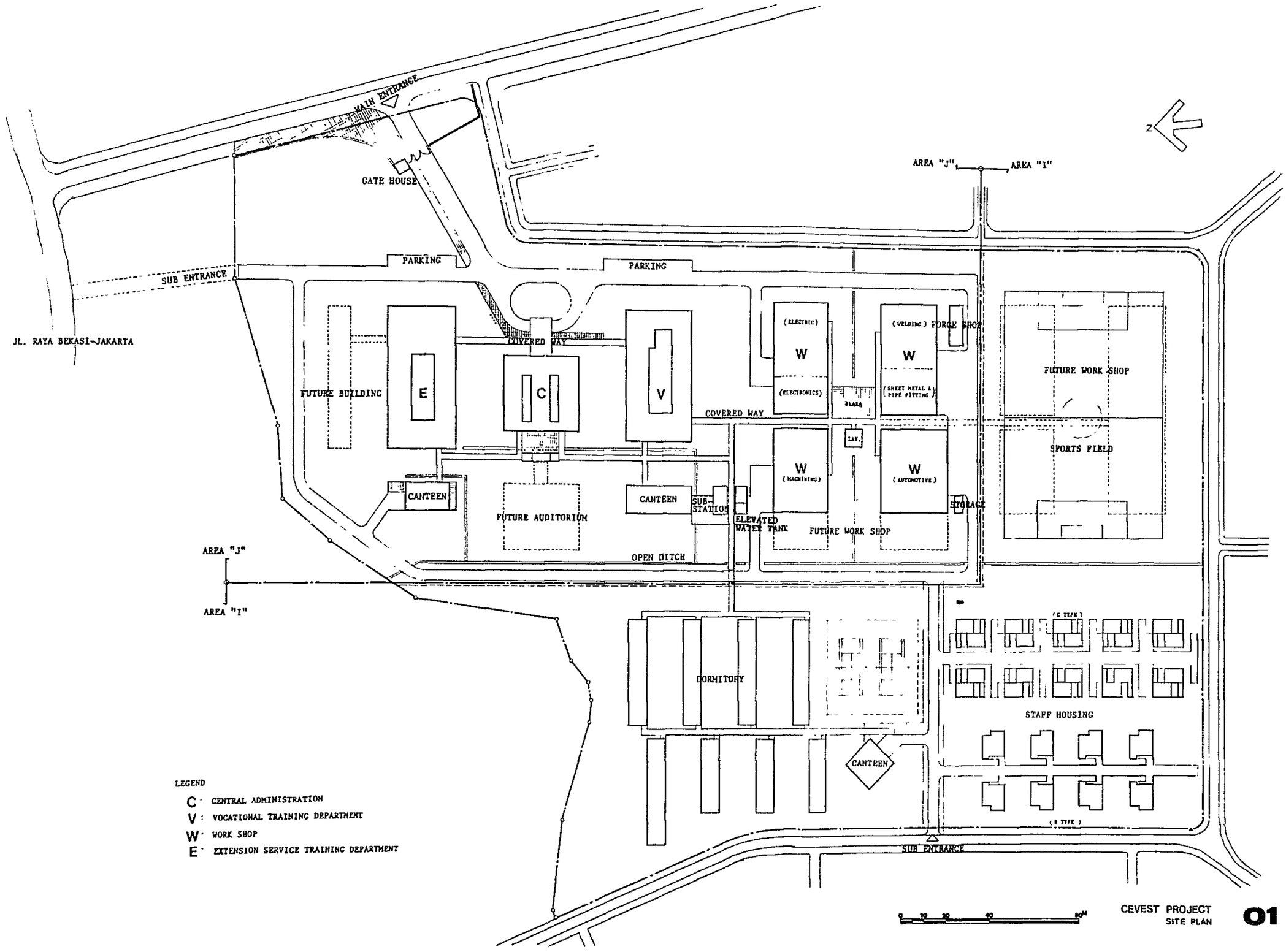
Basic Design Drawings

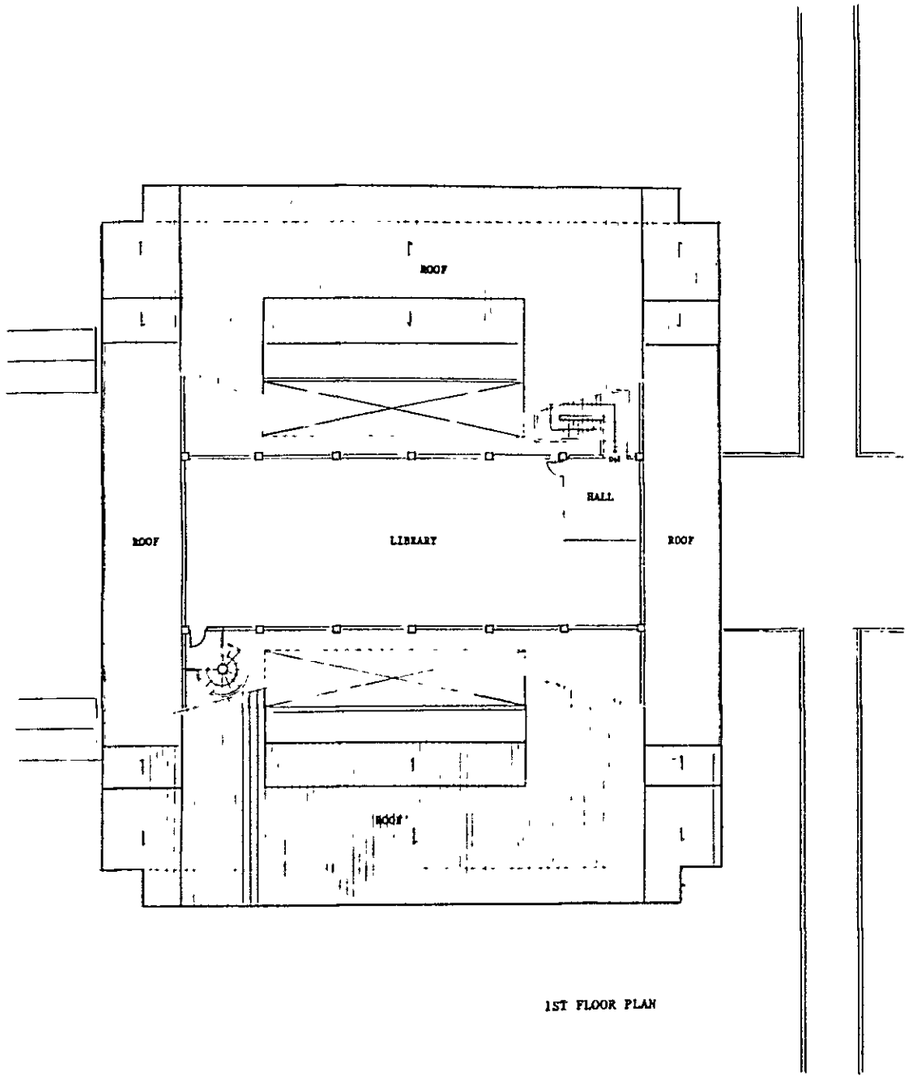
List of Drawings

01	Site Plan
02	Plan for Central Adm. Bldg.
03	Elevation & Section for Central Adm. Bldg.
04	Plan for Training Bldg. (VTD)
05	Elevation & Section for Training Bldg. (VTD)
06	Plan for Workshops
07	Elevation & Section for Workshops
08	Elevation & Section for Workshops
09	Plan for Training Bldg. (EST)
10	Elevation & Section for Training Bldg. (EST)
11	Training Equipment Layout
12	Training Equipment Layout
13	Auditorium
14	Dormitory, Staff Housing
15	Water Supply System
16	Drainage System
17	Electrical System
18	Telephone System

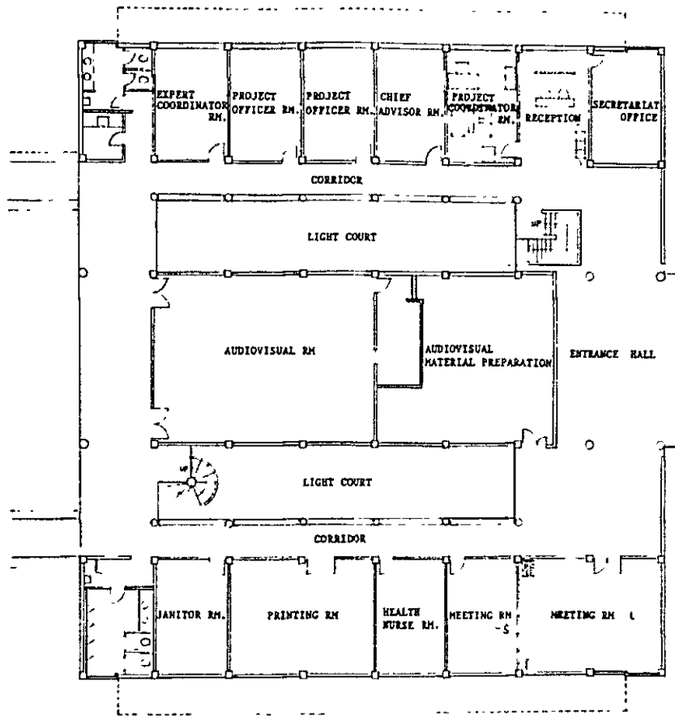


CEVEST PROJECT IN THE REPUBLIC OF INDONESIA MAY 1983

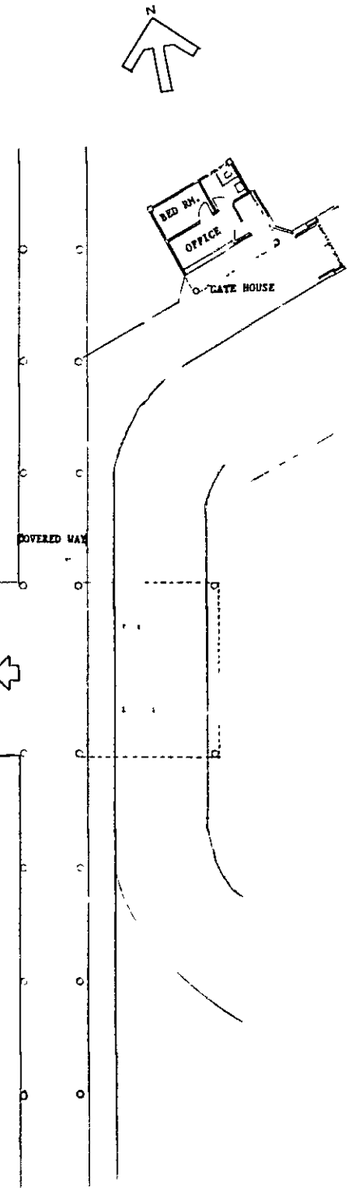

MAIN ENTRANCE
GATE HOUSE
AREA "J"
AREA "I"
N
SUB ENTRANCE
PARKING
PARKING
JL. RAYA BEKASI-JAKARTA
FUTURE BUILDING
E
C
V
COVERED WAY
(ELECTRIC)
W
(ELECTRONICS)
(WELDING)
FORGE SHOP
W
(SHEET METAL & PIPE FITTING)
FUTURE WORK SHOP
COVERED WAY
LAV.
SPORTS FIELD
W
(MACHINING)
W
(AUTOMOTIVE)
STORAGE
CANTEEN
FUTURE AUDITORIUM
CANTEEN
SUB-STATION
ELEVATED WATER TANK
FUTURE WORK SHOP
OPEN DITCH
AREA "J"
AREA "I"
DORMITORY
(C TYPE)
STAFF HOUSING
CANTEEN
(B TYPE)
SUB ENTRANCE
LEGEND
C : CENTRAL ADMINISTRATION
V : VOCATIONAL TRAINING DEPARTMENT
W : WORK SHOP
E : EXTENSION SERVICE TRAINING DEPARTMENT
0 10 20 40 80M
CEVEST PROJECT
SITE PLAN
01



1ST FLOOR PLAN

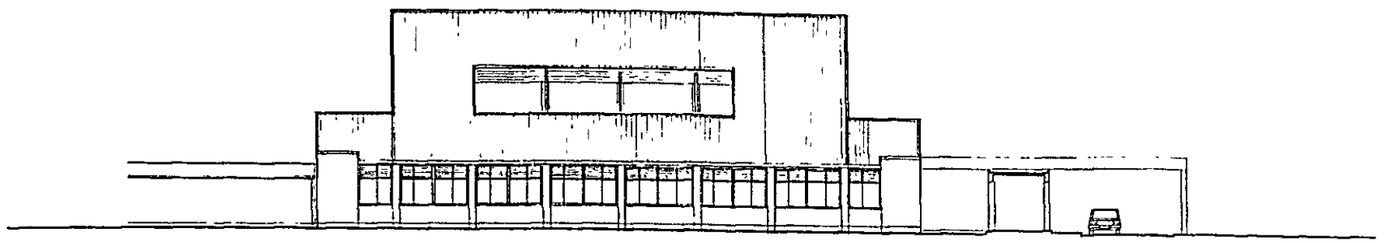


GROUND FLOOR PLAN

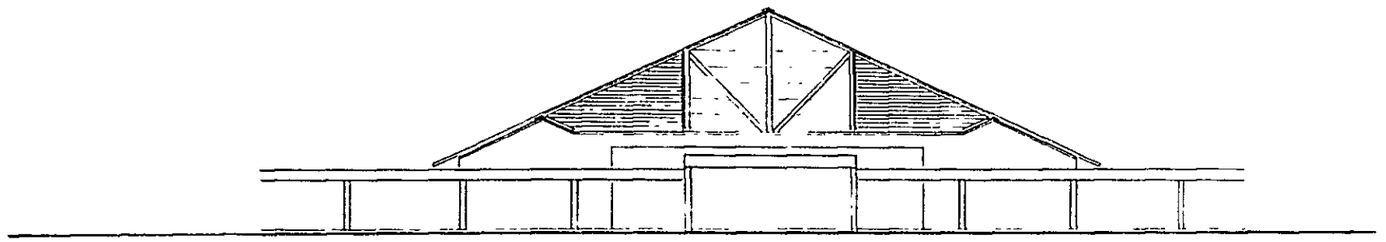


CEVEST PROJECT
CENTRAL ADMINISTRATION BUILDING

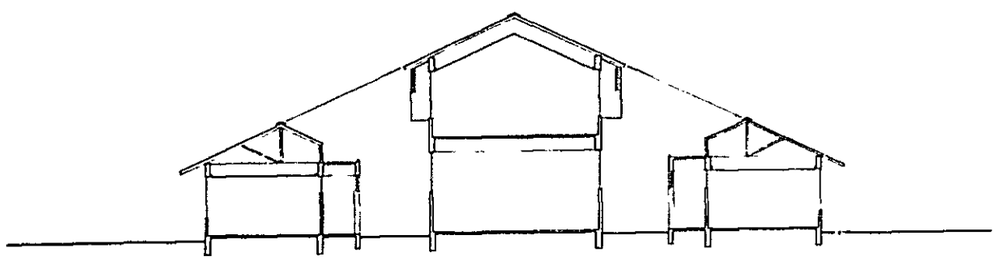
02



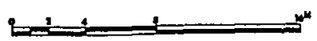
SOUTH ELEVATION



EAST ELEVATION

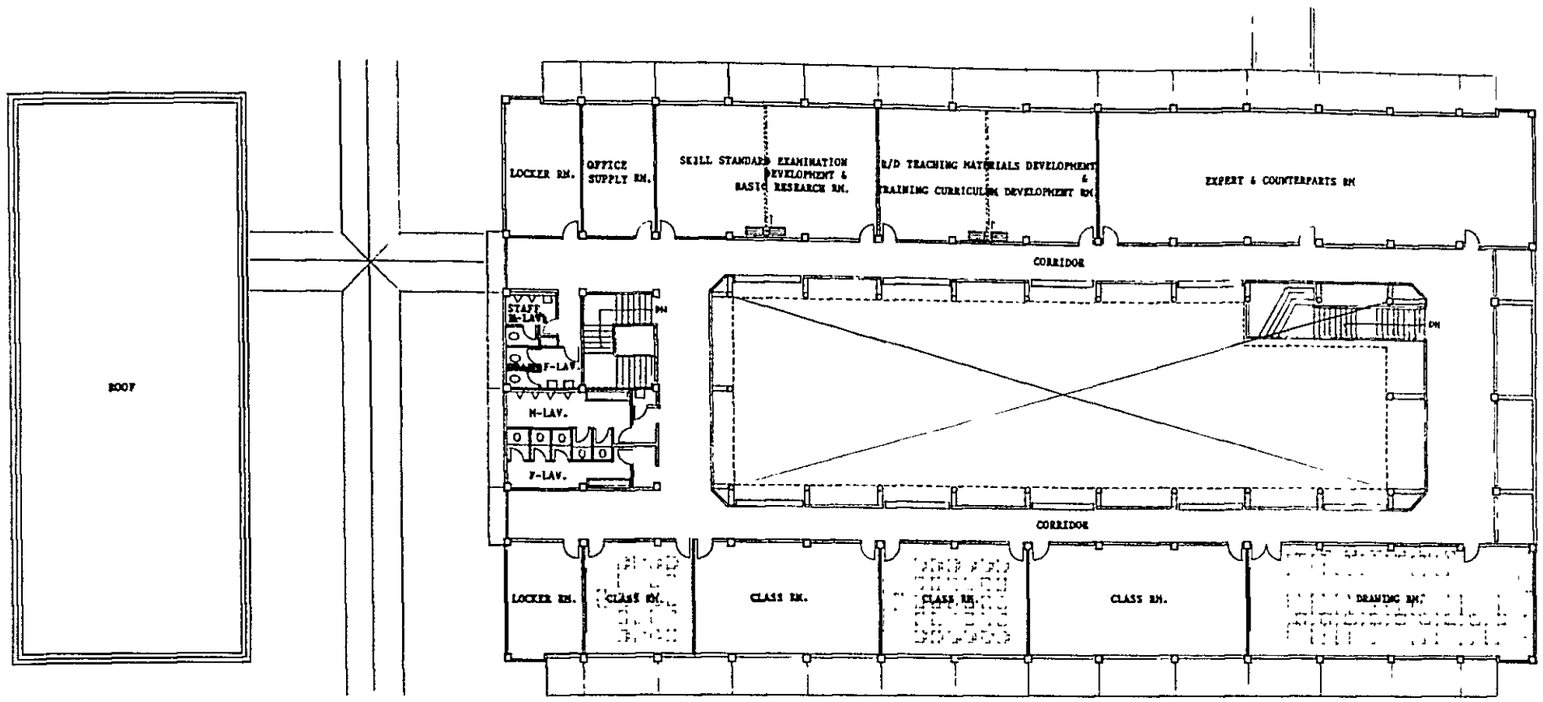


SECTION

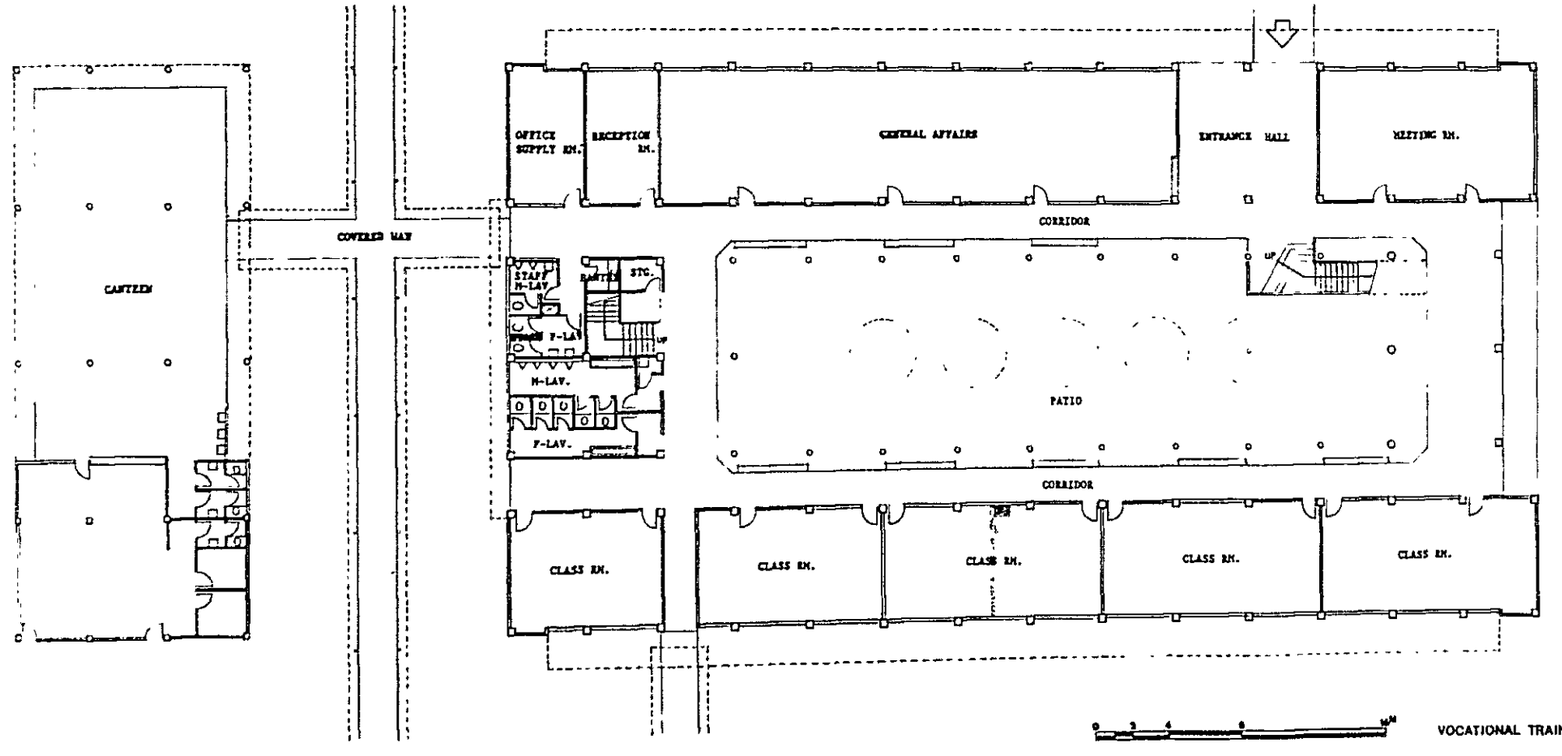


CEVEST PROJECT
CENTRAL ADMINISTRATION BUILDING

03



1ST FLOOR PLAN



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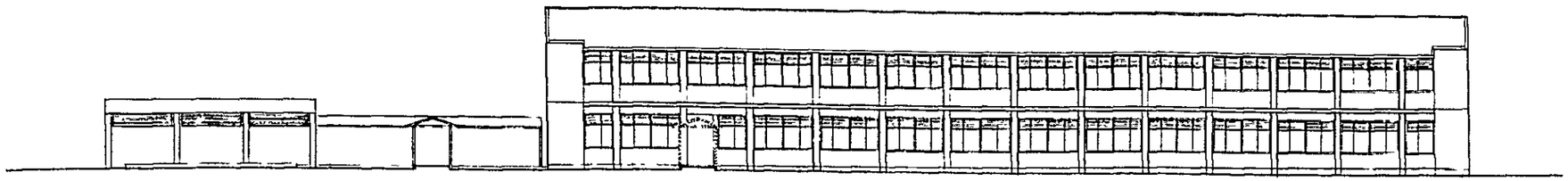

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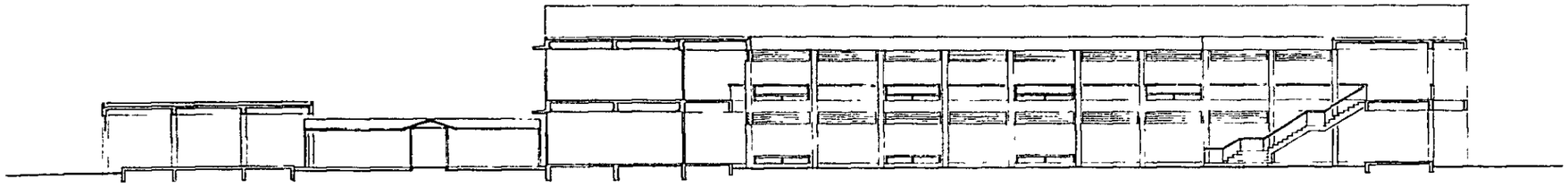

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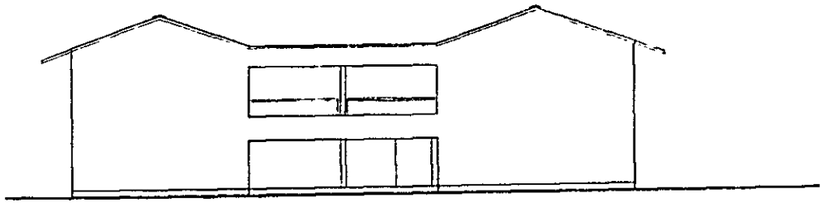
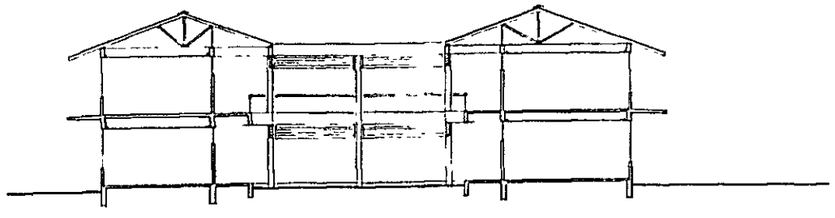
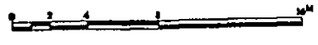


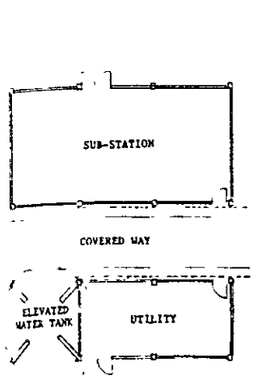
EAST ELEVATION



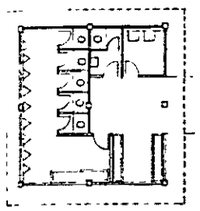
SECTION - B



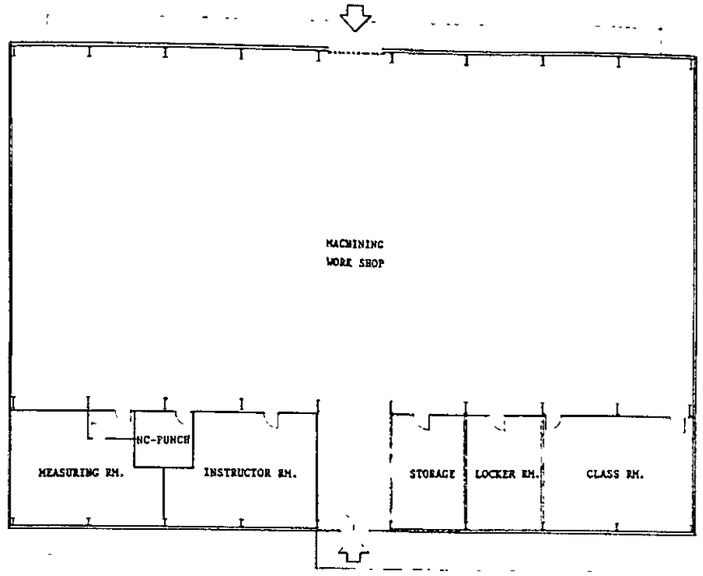
CEVEST PROJECT
VOCATIONAL TRAINING DEPARTMENT BUILDING **05**



SUB-STATION &
ELEVATED WATER TANK

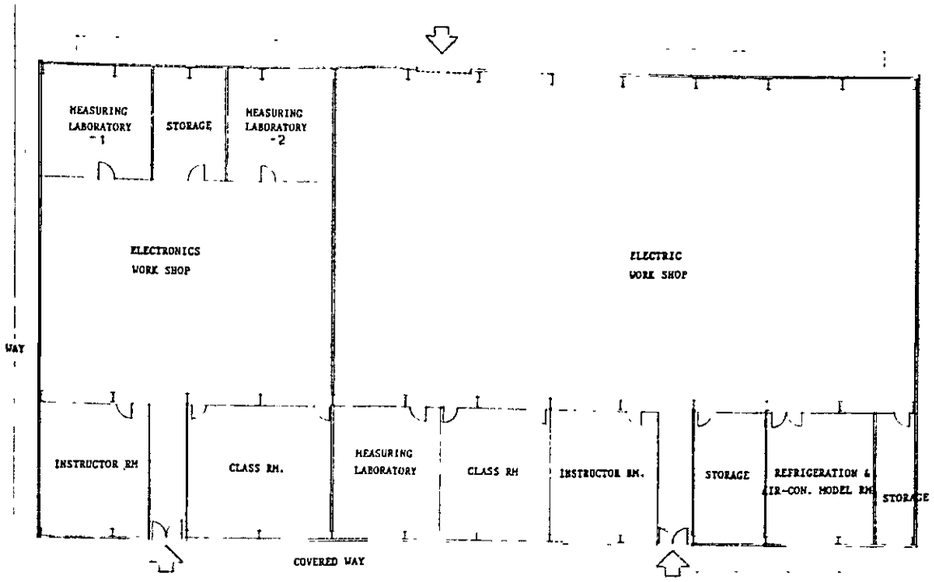


LAVATORY



MACHINING SHOP

AUTOMOTIVE SHOP

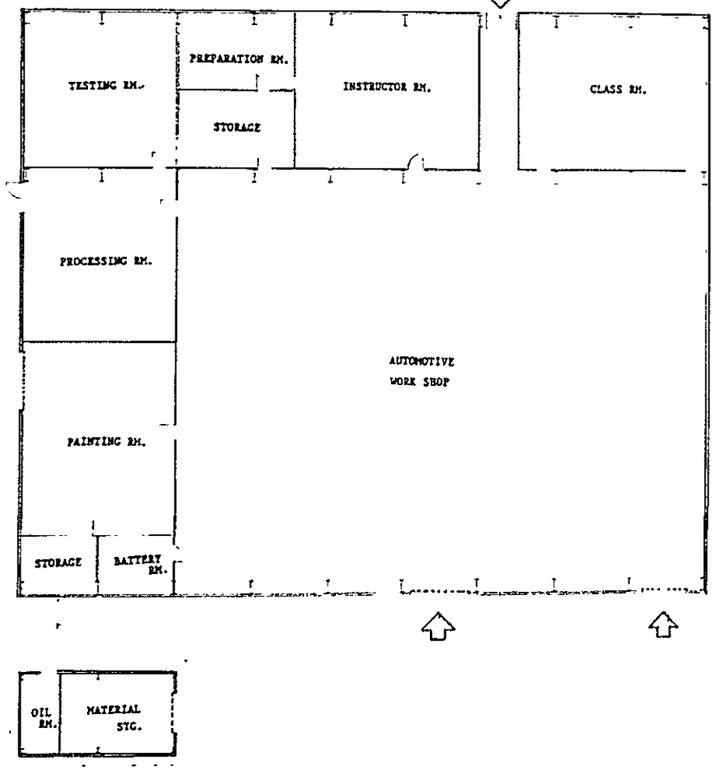


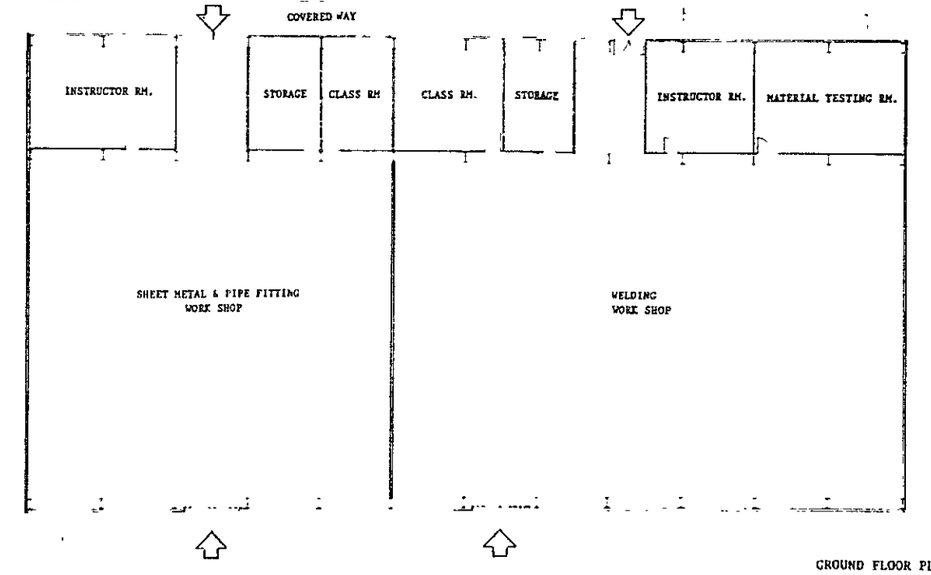
ELECTRONICS SHOP

ELECTRIC SHOP

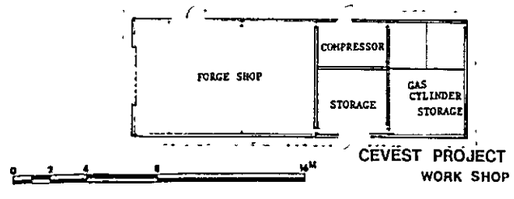
SHEET METAL & PIPE FITTING SHOP

WELDING SHOP



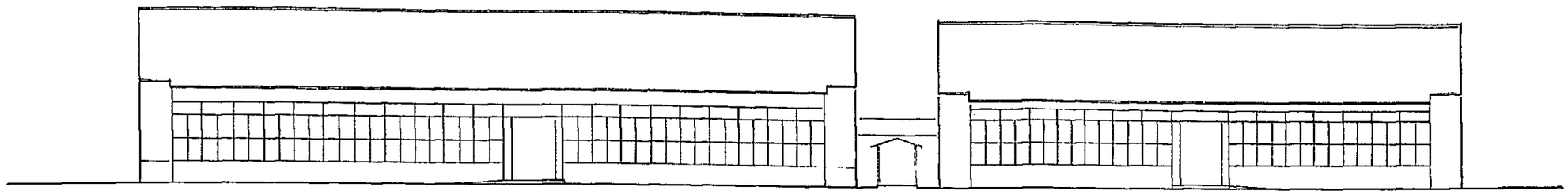


GROUND FLOOR PLAN

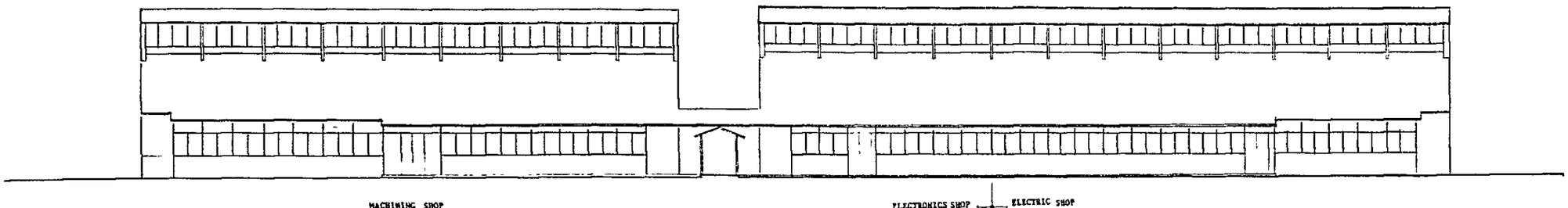


CEVEST PROJECT
WORK SHOP

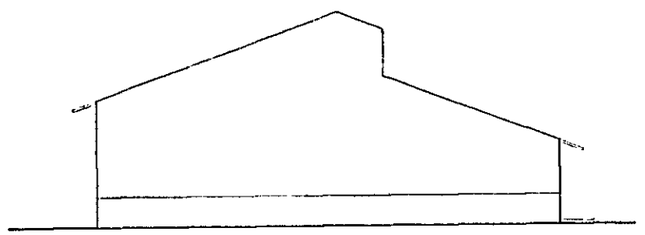
06



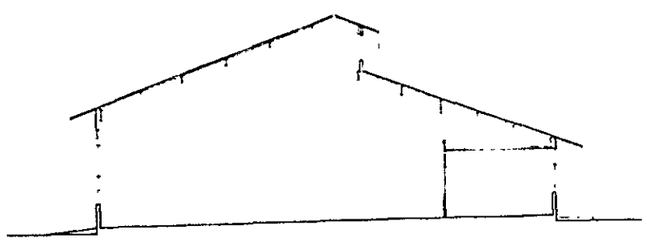
NORTH ELEVATION



SOUTH ELEVATION



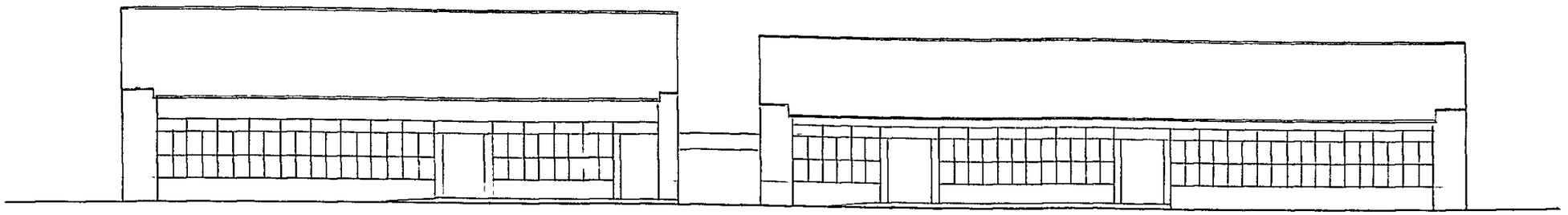
EAST ELEVATION



SECTION

CEVEST PROJECT
WORK SHOP

07



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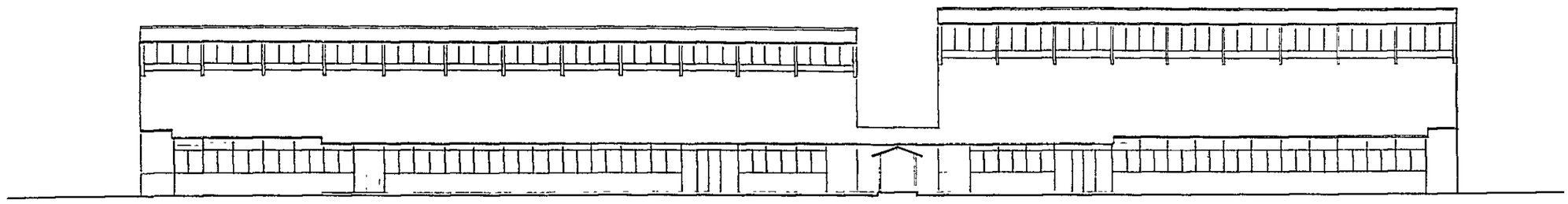

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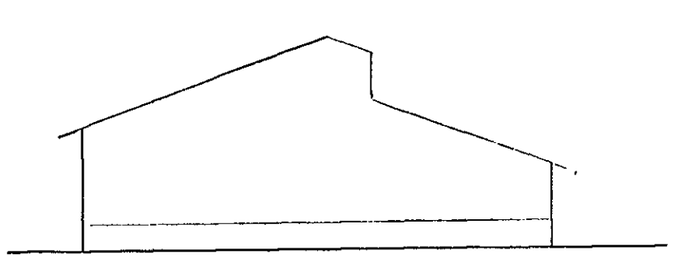
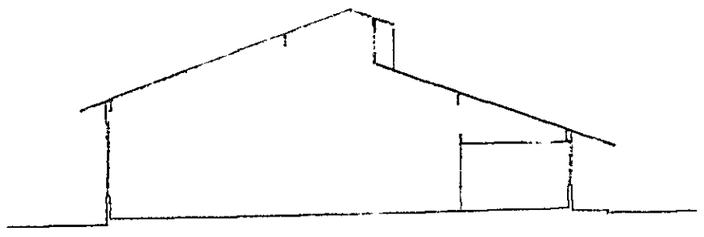


WEST ELEVATION



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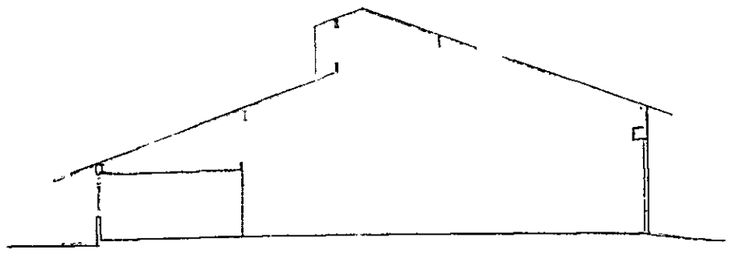
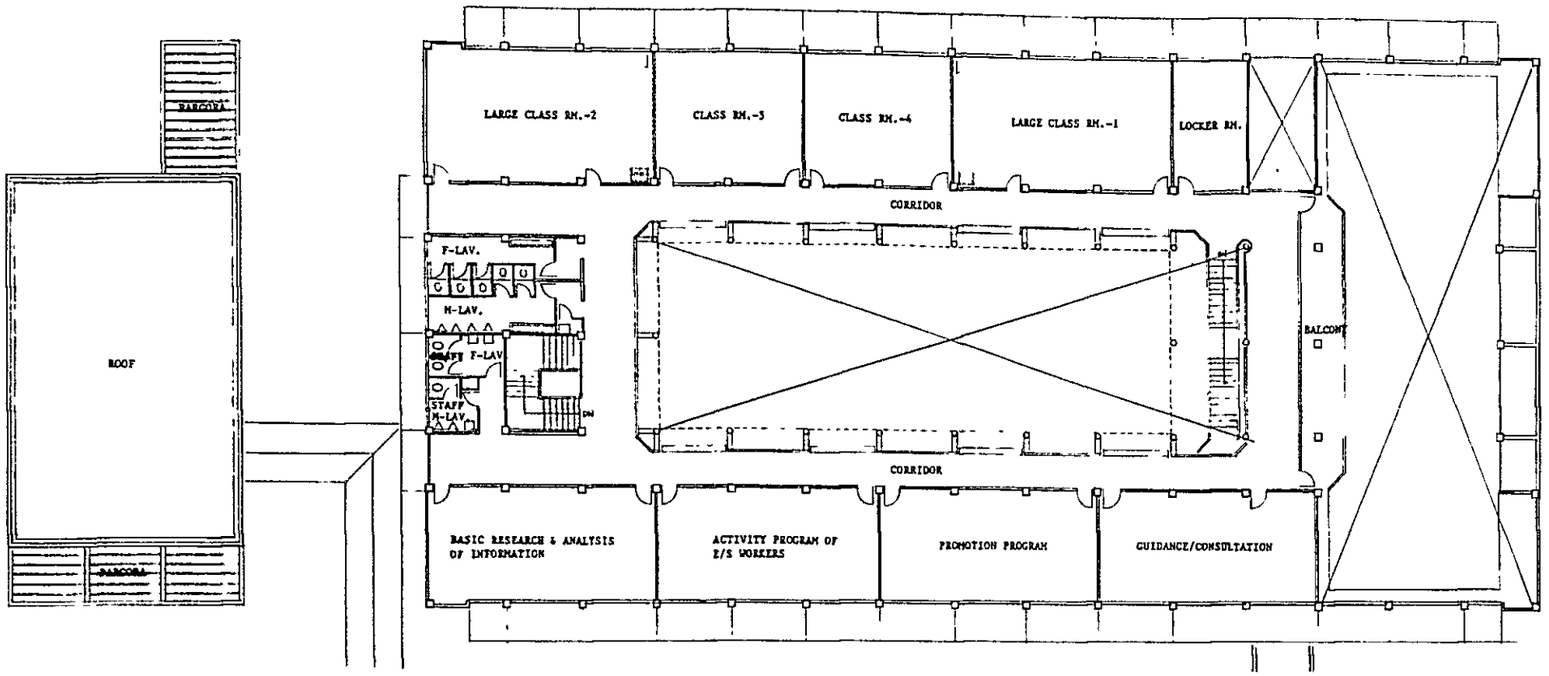
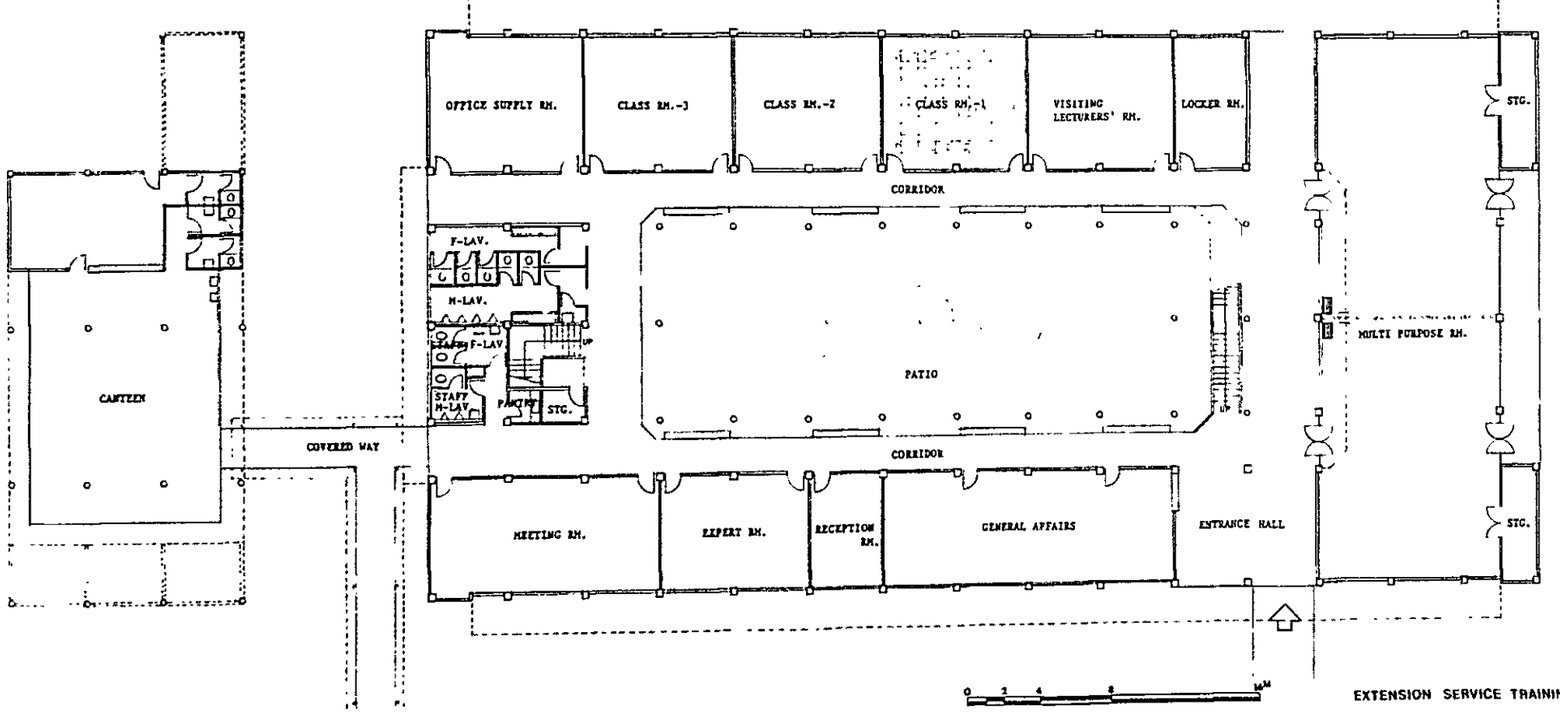


CEVEST PROJECT
WORK SHOP

08



1ST FLOOR PLAN



GROUND FLOOR PLAN

CEVEST PROJECT
EXTENSION SERVICE TRAINING DEPARTMENT BUILDING

09