2. Background of the Project

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2. Background of the Project

2-1 Industrial Background of Malaysia

Malaysian industries have developed around primary products, including unprocessed rubber and tin. While Malaysia still remains dependent on those industries, a series of government-led industrialization projects, which went into force in the latter half of the 1960s, have been proving effective in increasing the percentages of secondary, manufacturing and processing industries. According to the Economic Report 1981∿1982 issued by Malaysia's Ministry of Finance, the share of the manufacturing industry in the country's gross domestic product (GDP) reached 16.8 percent in 1980, and its average yearly growth rate stood at 13.0 percent for the 1975∿1980 period.

In observing this sector more closely, the increase in production share was accompanied by a trend where produced goods became more diversified and more improved in quality. Areas of the manufacturing industry are wide-spread, covering foodstuff processing, textiles, metal processing, machinery, electrical and electronic products, and transportation equipment and systems. In recent years, companies affiliated with foreign capitals have been flooding such fields as large-scale synthetic fibers, electronic equipment and assembling, precision machinery and automobiles.

All these recent situations indicate the fact that Malaysia is coming out of the mono-cultural industrial society, and subsequently its demand for labor resources has undergone noticeable changes both quantitatively and qualitatively.

Malaysia's industrial policies today are being mapped out within the framework of the Fourth Malaysian Plan (FMP) a project covering the years between 1981 and 1985. The national plan calls for the country to press ahead further with industrialization, thereby its manufacturing industrial manpower will be stepped up by estimated 200,000 workers from 1980 to 1985.

2-2 Background of the Vocational Training and Education in Malaysia

Education in Malaysia in the past was devoted to human science fields, rather than those in natural science. Not less than 40 percent of college or university graduates now come from the natural science section.

As far as vocational training is concerned, apart from the Industrial Training Institutes under the Ministry of Labour and Manpower, the MARA Training Institute, the Ministries of Culture, Youth and Sports and the Ministry of Education operate their own facilities and provide vocational training courses. A major obstacle to effective execution of vocational training programmes is the critical deficiency in the quantity and quality of instructors and supervisors and the limited facilities available to train them.

While professional training for engineers and engineering technicians are adequately provided by the Universities, Colleges and polytechnics on one hand and basic skill training by the various vocational training institutes on the other, there is not a single centre in the country to cater for advanced skills training for skillworkers and Industrial technicians who require such higher level of skills training.

The vocational trainings by the Ministry of Education, the Ministry of Labour and Manpower, MARA and the Ministry of Culture, Youth and Sports and others are as follows.

(1) MARA

Presently, a total of nine centres under MARA, training institutes are programmed to provide with industrial skills to the unemployed youth and thus enhance their employment opportunities. Training courses are on mechanics, construction, tailoring/beauty culture, electrical/electronics, draughtsmanship, electroplating, planner moulder operation, sawmilling book-keeping and printing, etc. The total trainees for the year 1978 and 1979 were 1070 and 1190 respectively.

(2) Culture, Youth and Sports Ministry

Similar programmes were also operated in the three centres under the Ministry except the element of para-military discipline was made compulsory to all trainees. The training courses include motor mechanics, heavy plant mechanic, commerce, carpentry, furniture-making, weaving, air-conditioning, photography, cooking, catering and tailoring, etc. The total trainees for the year 1978 and 1979 were 749 and 1041 respectively.

(3) The Ministry of Education

There are 23 vocational secondary schools in the country (including 5 agricultural and 5 home economic schools). The remainders are for those providing the following courses:

- Electrical installation and maintenance
- Wood working and building construction
- Welding and sheet metal work
- Machine shop practice and fitting
- Motor mechanics
- Radio and TV and electronic servicing

Number of students trained in 1978, 1979 are 4760 and 5557.

(4) The Ministry of Labour and Manpower

The industrial training programme conducted by the Industrial Training Institutes both in Kuala Lumpur and Prai are wide and flexible to respond to the demand from industries and individuals. In 1979, trainees at the two institutes accounted for 9.1 percent of all vocational trainees in Malaysia and 12.2 percent in 1978.

At present the Training Service Division of the Manpower Department through its Industrial Training Institutes provide the following training programmes/schemes.

a) The National Apprenticeship Scheme

The NAS provides training for normal labour requirement of industry from both public and private sector. The course is of four years duration consisting of 22 weeks for 1st year and 11 weeks for subsequent years. It consists of a combination of institutional and on-the-job training. All trainees are compulsory to sit for NITTCB examination on completion of the 1st year course and 3rd year course for basic and intermediate level NITTCB respectively.

ENTRANCE	22 wks.	6 mos.	11 wks.	1.5 yrs.	11 wks.	12 mos.	11 wks.	COMPLETION
	ITI	OJT	ITI	OJT	ITI	OJT	ITI	

The NAS caters for the training of apprentices in the following "declared" apprenticeship trades in the mechanical, electrical, building and printing.
The number of apprentices trained in 1978, and 1979 were 643 and 481 respectively.

b) The Preparatory Trade Course

These courses are primarily for school leavers and unemployed. The courses are designed to give the trainees basic skills at the job entry level and thus enhance their job opportunities. Duration of institutional training is 22 weeks and the same duration for on-the-job training. The trade courses are Mechanical, Electrical, Building and Printing.
The number of trainee trained in 1978 and 1979 were 167 and 280 respectively.

c) Ex-Serviceman-Settlement Course

The retired military personnel required to receive at least 12 months institutional training and 6 months on-the-job training. The number of trainees were 124 and 80 in 1978 and 1979 respectively.

d) Skill Upgrading Courses

This programme is to look after the improving of skills and knowledge of workers and also to enable them to learn new skills in place of obsolete skill consequent to rapid technological changes. Courses are provided on request by employers on a cost-recovery basis, and training is available in the trades listed under the apprenticeship programme. The number of trainees were 28 and 20 in 1978 and 1979 respectively.

e) Instructional Techniques Courses

Aimed to provide courses for training instructors and supervisors responsible for on-the-job training and education. This course covers techniques to instruct on expertise and skills in an effective way which will help promote on-the-job training. In response to demand by corporate owners, these courses are also offered in evening for a total of 55 hours. The course also costs $22.5 per student. The number of students were 84 in 1978 compared to 76 in the preceding year.

f) Trade Instructor Training Course

The Trade Instructor Training programme is designed to train instructing staff for trade training in Government, Quasi-Government, and private establishment and training institutions. Its principle objective is to enable skilled workers who have been given instructing responsibilities to acquire comprehensive training and practises in all phases of instructional techniques so that they can successfully plan and conduct trade training courses and evaluate their effectiveness. 158 instructor trainees were trained during the year 1978 to 1979.

g) In-Plant Training Course

Offered to make advisory service for those responsible for on-the-job training. Twenty-five students took this course in 1979, while 183 studied in 1978.

2-3 Circumstances of the Establishment of the CIAST

Under these circumstances, the Manpower Development Board (MDB) has previously discussed ways and means in a bid to establish the Centre for Instructor and Advanced Skill Training (CIAST) as the nerve organization which is aimed to provide training in the fields of teaching skills training, methodology and teaching materials developments for vocational instructors in all government and provide training agencies other than those under the Ministry of Education. This Centre is also to provide supervisory and advanced skills training for vocational instructors and supervisors in both public and private sectors.

The establishment of CIAST together with five Industrial Training Institutes was a project by the Ministry of Labour and Manpower, originally to be financed by the World Bank. Later CIAST became one of the projects which would depend on the technical cooperation and grant aid from the Japanese government as part of Japanese Prime Minister Zenko Suzuki's pledge in a project to assist ASEAN nations to cultivate human resources.

3. Outline of the Proposed Site

3-1 Outline of Shah Alam

3-2 Climate of Shah Alam

3-3 Construction Site

3-4 Topographical Conditions

3-5 Infrastructure in the Peripheral Areas

(1) Road

(2) Water Supply

(3) Sewage and Drainage System

(4) Electrical Power Supply

(5) Telephone System

(6) Gas Supply

3. Outline of the Proposed Site

3-1 Outline of Shah Alam

The City of Shah Alam is the state capital of Selangor and is located at 3° 4' N. latitude and 101° 32' E. longitude. The city is approximately 25 km west-south west of Kuala Lumpur and about half hour drive from the Malaysian capital. The population of Shah Alam is approximately 30,000 at present, and according to the city planning of Selangor the projected population for the year 1995 will be 200,000. City planning is under way in Shah Alam, and progress in construction works of condominiums, roads, factories, schools and other infrastructure elements are being made.

3-2 Climate of Shah Alam

In Shah Alam, with an oceanic and tropical climate, the temperature and humidity persist high throughout thn year with much rain. The average yearly temperature stands at about 26.3°C which translates into a scant 1°C to 2°C in the yearly change of average monthly temperature. Daily changes of temperatures range from 7°C to 10°C, enabling citizens to keep out the heat comfortably at night. The highest average monthly temperature ever was 36.0°C recorded in March, 1970. The average annual humidity, on the other hand, is about 84.0 percent, and the yearly change of average monthly humidity is 8 percent.

Average monthly precipitation is large in the period from March to May and from September to November every year; however the city rarely has a long rain spell. Average annual precipitation, meanwhile, is about 2,400 mm, about 1.65 times larger than in Tokyo. Its hourly average precipitation also is large, reaching the level of almost 100 mm on several occasions.

3-3 Construction Site

The CIAST plans to be constructed at a southern point within Shah Alam's city planning district which is at the intersection of the main road, running from north to south, and the railway line.

The flat site, which is almost square, has an area of about 6.4 hectare, each side being about 250 meters. The main road and part of the peripheral roads already were roughly prepared. The lot for the CIAST, which is about two meters lower than the level of the prepared land, is thickly forested with gum trees about fifteen meters high. The site also has a considerable amount of sustained rainwater. The construction of CIAST buildings will take place after deforestation of these trees and the banking of mounds as high as about two and a half meters.

3-4 Topographical Conditions

The nature of the soil in and around the construction site can be summarized from the facts and data obtained through the boring and laboratory testing during the latest survey.

For down to about ten meters deep from the ground surface, the value of N stands at levels lower than five. The silt clay, loosely layered, sustains high volumes of water, and consequently, no high levels of earth-resistance can be expected. Underneath is a tight arenaceous layer which is supported by a solid silt layer with an N value of thirty or so. At a point about twenty meters or deeper, shale, with an N value of fifty or more, spreads.

The buildings are to be supported by piles, which we advise be driven into this layer of shale. The subterranean water level is as shallow as 0.3 meter under the ground surface.

3-5 Infrastructure in the Peripheral Areas

The projected site is located in an area covered by the city planning of Shah Alam. The area, north of the railway line, is presently being developed and the area immediately north of the railway line has already been developed with a group of light industrial plants that went into operation. The installation of the infrastructure to the proposed site should not be difficult, for it is adjacent to the developed area. The infrastructure, south of the railway line, will be installed along the main road.

The PKNS (Selangor State Development Corporation, the District Water Works Department) has a direct control over the development of roads, water supplies, and sewage systems. Construction of electrical power lines and telephone cables is to be supervised by the LLN (National Electricity Board) and the JT (Telecommunication Department).

The PKNS plan on the development of the areas surrounding the projected construction site is as follows:

End of 1982 ..... Completion of filling the site
End of 1983 ..... Completion of main road
End of 1983 ..... Completion of installation of water supplies, sewage, telephone cables, and power supplies.

If the first phase of construction works of the CIAST is inaugurated in March, 1983 and completed and partially put into operation in March, 1984, as scheduled, the needed services should be available for the infrastructure in the main road will already have been installed. However, building construction and civil engineering procedures must go on simultaneously, therefore, close coordination with the PKNS will be necessary. Furthermore construction scheduling must be well considered in order for construction to proceed smoothly.

Also required is for the methods of intaking services to be closely negotiated with the supervisory authorities of each facility when submitting the planning approval. In addition,

consultations should be made with regard to the conditions of renting temporary construction facilities and contribution to expenses of the work as well.

(1) Road

The main road is scheduled to run from north to south in the western part of the site. This main road will constitute an elevated bridge at a point over the railway line which runs along the north side of the site.

An access road to the site intersects the main road at the south-west corner of the site. The main gate is requested to be more than 250 feet from this intersection. The eastern and northern edges of the site are also bounded by roads.

(2) Water Supply

The intaking of water can be extended from the main pipe scheduled to be laid under the southern access road. Judging from chemical analysis data of supply water, obtained from District Water Works Department, quality of the water is generally good and drinkable. The District Water Works Department is to perform supervisory and maintenance operations. Water pressure stands at 2.0 kg/cm^2 to 3.5 kg/cm^2; therefore, water can be supplied directly to the buildings without reservoir tanks.

(3) Sewage and Drainage System

A public terminal sewage treatment for this area is now under construction at a location around two kilometers south-east of the site and is expected to be completed at the end of 1983. Sewer pipes from the buildings can be connected directly to the sewer main pipe scheduled to be laid under the access road. Meanwhile, rainwater can be drained directly to open channels planned at the side of the road.

(4) Electrical Power Supply

Electrical power is supplied by the LLN. Access is possible from a high voltage (11 kV) power line scheduled to be

installed under the access road. Voltages can be lowerd through transformers at the planned substation to 415 V to 240 V; therefore, the necessary voltages for the various buildings can be obtained. The LLN is going to improve the conditions of the power supply in Shah Alam.

(5) Telephone System

The telephone system in Shah Alam which is operated by the JT has generally been good. A telephone line is scheduled to be installed under the southern access road, where a connection is possible to the Main Distribution Frame in the main building.

(6) Gas Supply

Presently, a gas system does not exist in the city; therefore, gas will have to be supplied by installing LPG (Liquid Propane Gas) tanks which have a calorific value of about 11,000 kcal/kg. The provision of gas supplies have been improved to a satisfactory level.

4. Project

4. Project

4-1 The Basic Conceptual Framework

4-1-1 Objective of the Project

With its industrial development, Malaysia is now faced with the urgent necessity to train its skilled technical workers. While it is expanding vocational training facilities the need arised to expand vocational instructors training and the establishment of advanced skills and supervisory training facilities. The purpose of this project is to train vocational training instructors and provide advanced skills and upgrading training for supervisors and technical workers after undergoing training as well as for those who presently work as training instructors.

4-1-2 Outline of CIAST

As a result of a preliminary survey and having thoroughly discussed between the Japanese and Malaysian Authorities, the basic concepts of CIAST is provisionally agreed by both parties. Under this provisional agreement, the main functions of CIAST, the outline of its training system, its training program, its structure and the details of its technical cooperation are as follows:

(1) Main Functions of CIAST

① To provide and conduct training courses in the fields of pedagogy (teaching skills) and training materials development for potential vocational training instructors, as part of the training programme for them;

② To provide and conduct advanced skill training courses for existing vocational training instructors, supervisors and skilled workers, as their upgrading programme;

③ To provide and conduct training courses in the fields of training methodology, supervisory skills and training materials development for existing vocational training instructors and supervisors, as their upgrading programme;

④ To design, develop and produce curriculum, other training software and control system for programmes conducted by CIAST;

⑤ To monitor and supervise internship of trainee instructors and trade instructors provided and conducted in other training institutions;

⑥ To conduct any other advanced training programmes.

(2) Outline of Training System

Type of Training	Entry Qualification	Capacity	Duration	Training System
1. Pedagogy Training		60		
a. Trainee Instructor Training Course	SPM or its equivalent; and Completed two years of Trade Training with NITTCB Intermediate Grade Certificate or its equivalent.	20	6 months	Module
b. Trade Instructor Training Course	a) SPM or its equivalent; and Intermediate Grade NITTCB Certificate plus two years of industrial experience.	20	6 months	
	b) SPM or its equivalent; and N.A.S. Certificate of Proficiency plus one year industrial experience.	10	6 months	
	c) SPM or its equivalent; and five years of industrial experience.	10	6 months	
2. Supervisory Skill Training	Vocational Training Instructors and Supervisors	60	1~4 weeks	Module
3. Advanced Skill Training	Vocational Training Instructors, Supervisors and Skilled Workers	255		Module
a. Automotive Department		45	4~8 weeks	
b. Machine Operation and Die Making Department		45	10 weeks	
c. Heavy Shop Department		45	4~10 weeks	
d. Electrical and Electronic Department		45	3~10 weeks	
e. Instrument and Automatic Control Department		45	8 weeks	
f. Fabrication Department		30	5~20 weeks	
	Total:	375		

To train new vocational training instructors, training courses will be conducted in and outside CIAST in the following manner, to be monitored and supervised by CIAST.

Programme / Duration / Course	Phase I Trade Skill Training	On-the-Job Training	Phase II Trade Skill Training	Pedagogy Training	Internship
	6 to 12 months	3 to 6 months	6 to 12 months	6 months	6 months
Trainee Instructor Training Course	In VTIs	In-plant	In VTIs	In CIAST	In VTIs
Trade Instructor Training Course				In CIAST	In VTIs

In relation to the technical improvement training mentioned above, a separate unit called 'Testing and Inspection Unit' will be set up in CIAST. The 'Testing and Inspection Unit' consists of 1) Test and Inspection Room, and 2) Central Tool Storage. Within these, appropriate testing and inspecting equipment, and tools, will be centrally kept.

(3) Training Programme

A. ADVANCED SKILL TRAINING

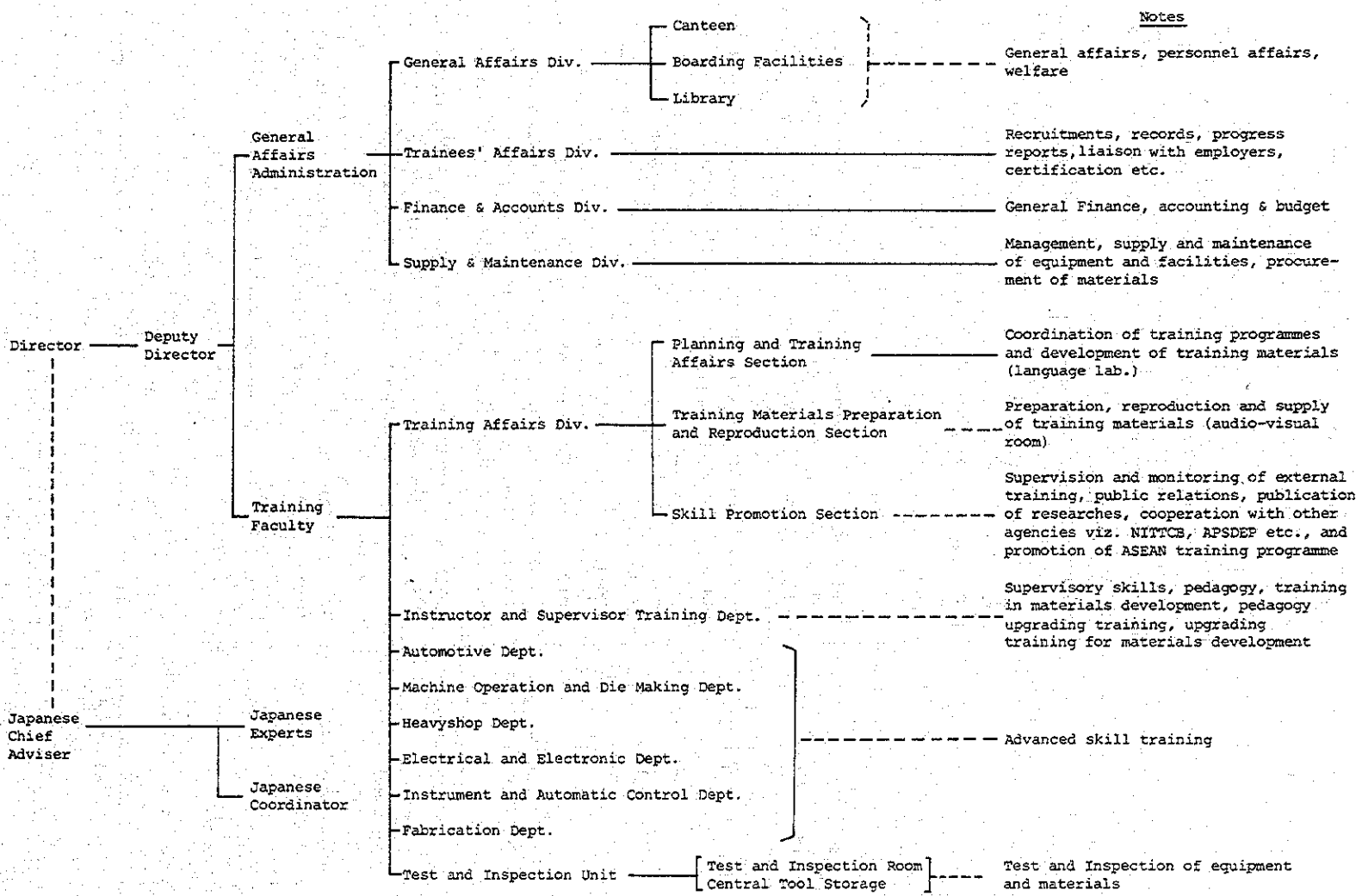
Module	No. of Trainee	Duration	Courses to be run Concurrently
1. AUTOMOTIVE DEPARTMENT			
A1. Petrol/diesel engine Services (Max. 8 Cylinder)	12	8 weeks	four
A2. Trouble analysis	10	6 weeks	
A3. Performance test	10	6 weeks	
A4. Vehicle chassis repair	10	6 weeks	
A5. Vehicle body repair (except bus)	12	8 weeks	
A6. Vehicle inspection	10	4 weeks	
2. MACHINE OPERATION AND DIE MAKING DEPARTMENT			
MD1. Die making and repair	10∿12	10 weeks	all
MD2. Tool making, jig boring and repair	10∿12	10 weeks	
MD3. Finishing/fitting	10∿12	10 weeks	
MD4. Machining (including NC machine)	10∿12	10 weeks	
3. HEAVYSHOP DEPARTMENT			
H1. Forging and heat treatment	10∿12	10 weeks	four
H2. Foundry	10∿12	10 weeks	
H3. Die casting technique	10	5 weeks	
H4. Investment casting technique	10	10 weeks	
H5. Rubber moulding technique	10	5 weeks	
H6. Plastic moulding technique	10	4 weeks	

	Module	No. of Trainee	Duration	Courses to be run Concurrently
4.	ELECTRICAL AND ELECTRONIC DEPARTMENT			
EE1.	Relay maintenance and repair (mainly for high power electric control)	10∿12	10 weeks	four
EE2.	Motor trouble analysis and repair	10∿12	8 weeks	
EE3.	Motor testing	10∿12	3 weeks	
EE4.	Advanced radio service and repair	10∿12	5 weeks	
EE5.	Advanced TV service and repair	10∿12	5 weeks	
EE6.	Inter-office communication equipment service and repair	10∿12	5 weeks	
EE7.	Electric/electronic office equipment service and repair	10∿12	5 weeks	
5.	INSTRUMENT AND AUTOMATIC CONTROL DEPARTMENT			
I1.	Process measurement	15	8 weeks	all
I2.	Industrial instruments	15	8 weeks	
I3.	Electrical (Hydraulic) control	15	8 weeks	
6.	FABRICATION DEPARTMENT			
F1.	Welding	10	10 weeks	all
F2.	Metal fabrication	10	20 weeks	
F3.	Press work	10	5 weeks	

B. INSTRUCTOR AND SUPERVISOR TRAINING DEPARTMENT

Module	No. of Trainee	Duration	Courses to be run Concurrently
Training Methodology:			
TM1. Pedagogy Training:			
a) Trainee instructor training course	20	6 months	two
b) Trade instructor training course	40	6 months	
TM2. Basic training methodology for instructor	12	1∿4 weeks	five
TM3. Skill analysis	12	1∿4 weeks	
TM4. Written instructional material	12	1∿4 weeks	
TM5. Audio-visual aids	12	1∿4 weeks	
TM6. Test and testing	12	1∿4 weeks	
TM7. Training administration	12	1∿4 weeks	
TM8. Instructional techniques for in-plant trainers	12	1∿4 weeks	
TM9. Basic instructional techniques for in-plant supervisors	12	1∿4 weeks	
TM10. Module training systems design	12	1∿4 weeks	
Supervisory Skill Training:			
ST1. Method and work study	12	1∿4 weeks	
ST2. Quality control	12	1∿4 weeks	
ST3. Production planning and control	12	1∿4 weeks	
ST4. Maintenance management	12	1∿4 weeks	
ST5. Industrial safety	12	1∿4 weeks	
ST6. Leadership and human relation	12	1∿4 weeks	
ST7. Discipline in industry	12	1∿4 weeks	

(4) Organizational Structure of CIAST



4-1-3 Necessary Facilities

Facilities necessary to accomplish the purpose and realize the details of this project are as follows:

Department	Necessary Room
Administration	Reception, General Office, Principal's Room, Deputy Principal's Room, Secretary Room, Meeting Room, Conference Room, Lavatory, Storage, Machine Room, etc.
Training Faculty (Instructor Training)	Classroom, Drawing Room, Audio-visual Classroom, Language Laboratory Classroom, Preparatory Room, Training Material Production Room, Audio-visual Aid Production Room, Library, Laboratory, Printing Room, Darkroom, Lavatory, etc.
Training Faculty (Advanced Skill Training) Automotive Department	General Workshop, Painting Room, Engine Dinamometer Room, Fuel Injection Pump Test Room, Tool Room, Supplies Room, Group Room, Instructors' Room
Machine Operation and Die Making Department	General Workshop, NC Room, Tool Room, Supplies Room, Classroom, Instructors' Room
Fabrication Department	Welding Workshop, Press Workshop, Metal Fabrication Workshop, Tool Room, Supplies Room, Classroom, Instructors' Room
Heavyshop Department	Rubber and Plastic Molding Workshop, Test Room, Metal Casting Workshop, Constant Temperature Room, Forging and Heat Treatment Workshop, Tool Room, Supplies Room, Classroom, Instructors' Room
Electrical and Electronic Department	General Workshop, Laboratory, Classroom, Micro-Computer Classroom, Instructors' Room, Tool Room, Measuring Instruments and Materials Storage, Darkroom
Instrument and Automatic Control Dept.	General Workshop, Compressor Room, Measuring Instruments and Materials Storage, Classroom, Instructors' Room
Central Tool Storage	Tool Storage, Office
Test and Inspection Room	Testing Room, X-ray, Darkroom, Office
General Affairs Div. Dining Hall Student Housing Others	 Dining Hall, Kitchen, LPG Depository Dormitory Rooms, Warden, Laundry, Lavatory, Shower Room Covered Walkway, Lavatory, Shower Room, Electricity Receiving/Transforming Station, Fire Fighting Water Pump Room, etc.