

**CHAPTER FIVE**  
**PROJECT IMPLEMENTATION**



## CHAPTER FIVE PROJECT IMPLEMENTATION

### A. SCOPE OF IMPLEMENTATION

#### 1. PREPARATION OF THE SITE

a. Removal of Existing Obstacles

b. Earthfill

#### 2. BUILDINGS AND FACILITIES

Construction of the following buildings and facilities, including their structure, finishing and utilities:

(1) Main Building	Reinforced concrete construction, three stories	2,944.4 m <sup>2</sup>
(2) Workshops	Steel construction, single story, partially with mezzanine, two buildings,	3,937.0 m <sup>2</sup>
(3) Utility Buildings	Reinforced concrete construction, four single story buildings,	92.0 m <sup>2</sup>
(4) Dormitory	Reinforced concrete construction, three stories,	815.0 m <sup>2</sup>
(5) Canteen	Reinforced concrete construction, single story,	186.0 m <sup>2</sup>
	Total	<u>7,974.4 m<sup>2</sup></u>
(6) Exterior Facilities		

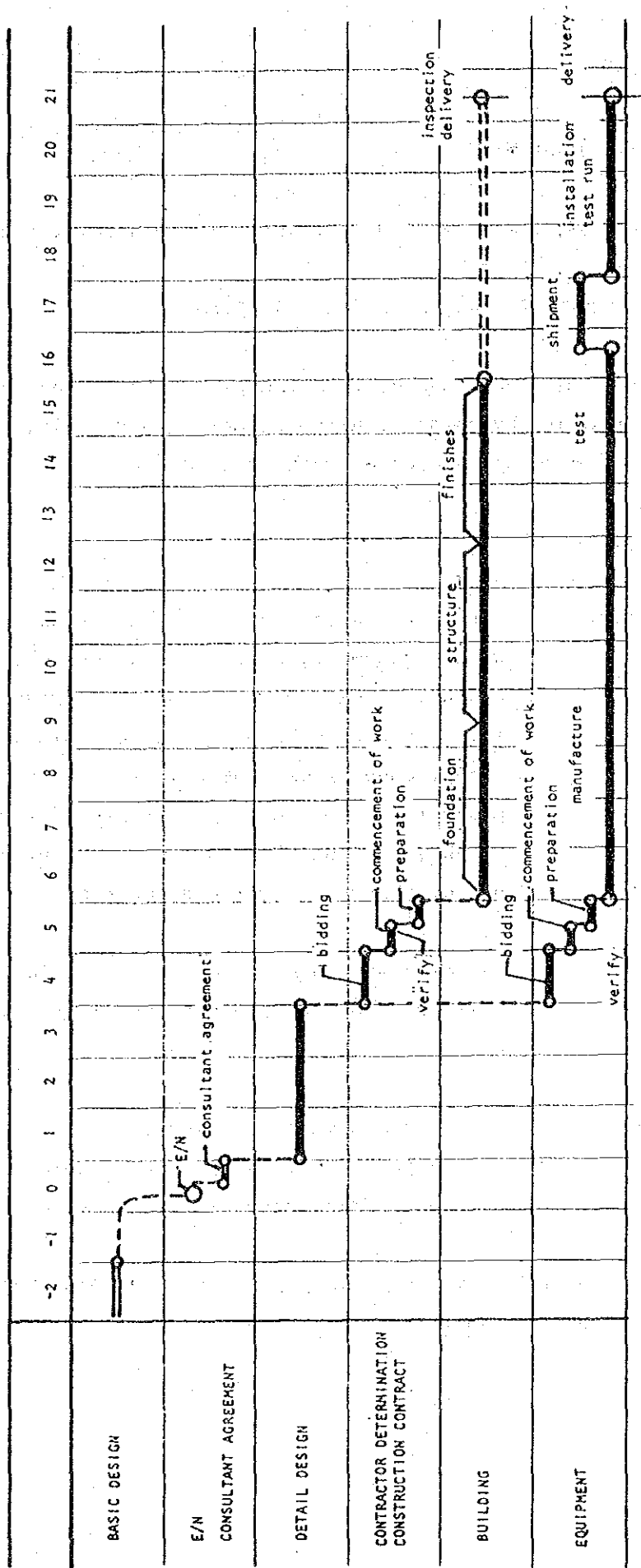
### 3. MACHINERY AND EQUIPMENT

Furnishment, installation and test runs of the following machinery and equipment:

- (1) Audio-visual teaching equipment
- (2) Material testing and inspection equipment
- (3) Equipment for collection of information and data and for public relations activities
- (4) Foundry equipment
- (5) Machine working equipment
- (6) Welding equipment
- (7) Heat treatment equipment
- (8) Low-cost automation equipment
- (9) Forging equipment
- (10) Plating and waste-water treatment equipment
- (11) Die and mold testing equipment

## **B. IMPLEMENTATION SCHEDULE**





IMPLEMENTATION SCHEDULE

## C. PROCUREMENT

### 1. MACHINERY AND EQUIPMENT

Machinery and equipment will be procured, in principle, from Japan.

### 2. CONSTRUCTION MATERIAL AND BUILDING UTILITIES

For construction works, the basic principle is to lessen the construction costs by using local construction materials, utility equipment and working methods as much as possible.

#### a. Local Procurement

Construction structural steel, reinforcement steel, aluminum window sashwork, cement, sand, gravel, concrete blocks, precast concrete piles, forms, roofing tile, exposed pebble aggregate finish, ceramic tiles, pane glass, lumber, paint, steel, roofing, precast concrete siding, furniture, terrazzo blocks, parquet flooring, calking material, gypsum boards, cement boards, etc.

Electric manholes and manhole covers, electric wire, switches, convenience outlets, lighting fixtures, etc.

Plumbing manholes and manhole covers, concrete pipes, cast iron pipes, sanitary fixtures, piping materials, overhead water tanks, water reservoir tank, etc.

Air-conditioning vinyl chloride pipes, ceiling fans, ventilation fans, etc.



b. Procurement from Japan

Construction	finish hardware, vinyl flooring sheets, felt carpet, aluminum louvers, material, roll screens, white boards, stainless steel handrail piping, sound absorbing boards, floor paint, etc.
Electric	distribution panels, special lighting fixtures, pull boxes, fire alarm equipment, interphone equipment, transformers, etc.
Plumbing	valves, pumps, grease traps, etc.
Air-conditioning	air-conditioners, piping, valves, roof exhaust fans, etc.
Special	elevator

## D. SHARING OF RESPONSIBILITIES

### 1. RESPONSIBILITIES OF THE JAPANESE SIDE

- a. Construction of the buildings as outlined by the Basic Design
- b. Furnishment, installation and test runs of machinery and equipment outlined by the Basic Design.
- c. Transfer of existing machinery and equipment from ISD to the new buildings.

### 2. RESPONSIBILITIES OF THE THAI SIDE

#### a. Machinery and Equipment

Provision of existing equipment within the premises of MIDI which are to be removed to the new buildings by the Japanese side.

#### b. Buildings and Facilities

##### 1) Preparation of the construction site

Removal of existing buildings inclusive of concrete floor slabs, foundations and pilings. Earth filling and leveling of the site.

##### 2) Provision of land for temporary construction offices, materials and equipments sheds and workshop required for construction operations.

##### 3) Supply up to the site of temporary electric power and water services. Consumption expenses to be borne by the Contractors.

##### 4) Provision up to the site of electric power, telephone connections, water, drainage facilities and other out-of-the-site service facilities required for the project.

##### 5) Outdoor facilities such as fencing, plantings and gates.

c. Provision of Conveniences

- 1) Import duty and tax exemption of individuals and firms of Japanese nationality who are engaged in the project.
- 2) Duty exemption and clearance of imported materials, equipment and software to be incorporated into or to be used for the project.
- 3) Maintenance and management of building facilities, machinery, equipment and software transferred to the Government of Thailand under this project.

d. Estimated preparation expenses to be borne by the Thai side:

Removal of existing building	1,038,000 Baht
Removal of concrete floor and foundations	295,000
Removal of existing piling	35,000
Earth filling and leveling of the site	<u>2,356,000</u>
Total Amount	3,724,000 Baht



**CHAPTER SIX**  
**OPERATION AND MAINTENANCE**



## CHAPTER SIX OPERATION AND MAINTENANCE

### A. OPERATION AND ADMINISTRATION

#### 1. OPERATING POLICY

MIDI is to be placed under the department of Industrial Promotion, Ministry of Industry of the Royal Thai Government with the intent of promoting and supporting the growth of mainly the medium and small scale enterprises in technical matters along the policy line of the Thai industry promotion plan as its driving organization.

Accordingly, the basic policy for its operation is planned to be discussed and determined by the following committee composed of members from government, academic and private circles.

Chairman	:	Full-time, Ministry of Industry official
Vice-Chairman	:	Director-General, Department of Industrial promotion
Members	:	National Economic and Social Development Board
	:	Board of Investment
	:	Thai Industrial Standards Institute
	:	Thai Institute of Scientific and Technological Research
	:	National Institute of Skill Development
	:	Office of Fiscal Policy
	:	Industrial Development Bank
	:	Association of Thai Industries
	:	Experts
Secretariat	:	Director of MIDI
	:	Representative of DIP

#### a. Operating Budget and Personnel

It is needless to say that securing of budget and personnel necessary for operation is important. Regarding budget appropriations and arrangement for additional personnel, a plan is already being prepared.

b. Technology Transfer and Accumulation

The most desirable way in which technology transfer and accumulation can be accomplished is for the educated and experienced personnel to remain long enough with the Institute to participate in its operation and bring up the successors. Staff turnover however seems inevitable due to transfer and resignations. In order to make up for such a shortcoming, it has been planned that scenes of daily activities and technical work should be recorded by the use of audio-visual equipment as a means to prevent a break in the transfer of technical knowhow which otherwise might hinder the Institute's operation and activities.

c. Lecturers and Instructors for Education and Training

In principle, the lecturers and instructors who will teach and train will be the MIDI personnel. If there is any field of study which the MIDI personnel is incapable of coping with, competent temporary instructors shall be invited from the following sources:

- \* Universities and research institutions within Thailand
- \* Private enterprises within Thailand (regardless of whether such enterprises happen to be of Japanese, foreign or indigenous capital)
- \* foreign countries (JICA experts included)

2. STAFFING AND STAFF TRAINING

a. Necessary Number of Personnel and Experts

MIDI personnel                      Based on the scale, function and activities plan of this Institute, the necessary number of personnel for each phase is as shown in Table 6-1.

As the types of equipment and apparatus used in forging/material testing and machining/



measurement are many, 9 persons and 10 persons are respectively needed for these work. Also, as soundness of operation and administration are indispensable for the Institute to achieve its objectives, it is hoped that competent persons with ability of planning will be assigned to those work.

Dispatching of  
experts

The success or failure of this Institute will depend solely on the quality and quantity of its personnel. It is necessary therefore to dispatch Japanese experts to train and develop these personnel and assist them in their activities. The dispatching of experts for an extended period is necessary for processes that involve many varieties of equipment and which require a considerably long time for technology transfer and for such department of the Institute as planning, education and training system, etc. Where technology transfer is relatively easy such as in welding, low cost automation, design, drawing and managerial control techniques or processes in which the weight of training is relatively small, the experts may be dispatched only for a brief period.

b. Personnel Training and Development Plan

The importance of developing competent personnel has been discussed before. The development of personnel must be carefully planned and implemented prior to the opening of this Institute upon an examination of the current number of ISI personnel in each field of specialization and the above study on the necessary number of personnel as well as the activities plan of MIDI.

The following methods may be considered for training.

Overseas training: Mainly upper and middle class personnel shall be eligible for training in advanced countries such as Japan, Europe and America. A training of 3 to 6 months duration primarily in administration and operation of research institutions, education and training system and in fields that require complicated and advanced technology is considered appropriate.

Domestic training: Middle and lower class personnel shall be eligible for training at public institutions or at Japanese capital based companies with relatively advanced technology and equipment within Thailand.

Inhouse training: When various equipment has been installed, the upper and middle class personnel shall train the lower class and newly recruited personnel.

For the development of these personnel, it would be necessary to establish a long range plan and to implement it without fail.



Table 6-2 Staff Training and Development Program

	Current State		Prior to construction (1985-1986)			Phase 1 (1987-1989)			Phase 2 (1990-1992)			Phase 3 and thereafter		
	Government staff	Hired staff	Overseas training	Domestic training	Inhouse training	Overseas training	Domestic training	Inhouse training	Overseas training	Domestic training	Inhouse training	Overseas training	Domestic training	Inhouse training
Adminis- tration and control	1		1			1		1				Two or three men a year as re- quired	A couple of men a year as re- quired	Senior staff will train newly hired
			1			1		1						
		1												
		1	2			2		2						
Technol- ogies	4	1	1	2		1	2	2			2			
	2	1	1			1		2			1			
	2	1		1			1	2			1			
	8	4	2	2	2	2		4			2			
	2	3						2			1			
	3	-				1		1			1			
		1		1		1		1			1			
			1					1			1			
			1					1			1			
		21	11	5	6	2	8		18		7			
Control tech- niques				1		1		1						
				1		1		1						
			1					1						
			1					1						
			2	2		2	2	4			2			
Grand Total	22	12	9	8		12		9		9				

## B. MAINTENANCE

### a. Maintenance and Preservation

The production factory normally has a specialized function for maintenance and upkeep of machinery and equipment, but as this Institute will not have much extra manpower to spare and its machinery would not be operated continuously throughout the year, the instructor in each shop should be responsible for the maintenance of equipment assigned to him. However, a man to be responsible for overall supervision and electrical engineers will also be needed for general service.

Maintenance and upkeep will have to be performed systematically beginning with a daily routine of cleaning and repairs, periodical checks on lubricants and expendable supplies. For systematic control which is important, technical assistance will probably be needed during the initial period.

Systematic control of cutters and other expendables and spare parts is necessary by periodically checking them and appropriating the necessary amount for them in the annual budget.

### b. Replacement or Renewal of Equipment

Equipment was selected with due consideration to the current level of the Thai industry and to the technologies that will be demanded several years from now. They are therefore not necessarily of the same level as those of the advanced industrial nations.

Accordingly, some of them will inevitably become obsolete five or ten years later and no longer match the future technological level of Thailand. If the Institute is to assume the leading role in the industrial technology of Thailand, it must always be able to foretell the technological trend at home and abroad and induce whatever education and training program and equipment that are in keeping with that trend.

### C. OPERATION AND MAINTENANCE EXPENSES

Total amount of operating and maintenance expenses as of 1988 for this Institute are roughly estimated as:

11,360,000 Baht

Breakdown is as follows:

#### 1. PERSONNEL, TRAINING AND EQUIPMENT EXPENSES 10,799,000 Baht

##### a. Personnel Expenses

Senior government personnel	12,000/m	x 12 m	x 5	=	720,000
Middle class "	"	9,500/m	x 12 m	x 33	= 3,762,000
Junior "	"	5,400/m	x 12 m	x 42	= 2,722,000
Personnel on a long term contracts					
		3,800/m	x 12 m	x 44	= 2,006,000

Total 9,210,000

##### b. Education and Training Expenses

Following expenses are for education and training only, and do not include revenues and expenditures pertaining to consignment processing and others.

#### 1) Electricity Consumption and Charges other than for Lighting and Cooling

Consumption	28,500 kwh	
Charges	28,500 kwh x 2.23 Baht/kwh	= 64,000 Baht

#### 2) Water Consumption and Charges for Training

Consumption	25,000 m <sup>3</sup>	
Charges	2,500 m <sup>3</sup> x 4.5 Baht/m <sup>3</sup>	= 12,000 Baht

#### 3) Gas Consumption and Charges for Training (various kinds)

Charges		129,000 Baht
---------	--	--------------

4) Materials		
Foundry		130,000
Heat Treatment		100,000
Welding		36,000
Machining		64,000
Others		15,000
Subtotal		345,000 Baht
5) Training Materials		
Textbook Preparation		140,000
Audio-visual Material		300,000
Subtotal		440,000 Baht
Total for Education and Training Expenses		990,000 Baht
c. Equipment Maintenance Expenses		
for 1st year (1988)		0 Baht
d. Traveling Expenses		254,000 Baht
e. Other Expenses		
1) Books and Reference Material		200,000
2) Repairs of Office Machines		25,000
3) Fuel for Vehicles		120,000
Subtotal		345,000 Baht
2. BUILDING AND FACILITIES		557,160 Baht
1) Electricity Consumption and Charges		
Consumption	19,000 kwh/m x 12 m	= 228,000 kwh/yr
Charges	228,000 kwh x 2.23/kwh	= 508,440 Baht
2) Water Consumption and Charges		
Consumption	22 m <sup>3</sup> /day x 20 days x 12 mon	= 5,280 m <sup>3</sup> /year
Charges	5,280 m <sup>3</sup> x 4.5 Baht /m <sup>3</sup>	= 23,760 Baht
3) Gas Consumption and Charges		
Consumption		
50 kg cylinders:	4 each/mon x 12 mon	= 48 pcs
Charges	48 pcs x 520 Baht/pcs	= 24,960 Baht





**CHAPTER SEVEN**  
**PROJECT EVALUATION**



## CHAPTER SEVEN PROJECT EVALUATION

It is needless to say that industrialization is necessary for the social and economic development of the Kingdom of Thailand, and the role of the medium and small scale metal-working industries in supporting industrialization is indeed important. And the role played by MIDI which aims at improving the technical competence and business capabilities of the medium and small scale metal-working industries is most important and wide-ranging.

When the activities of MIDI are launched on the right track, the following effects can be anticipated.

- (1) Reeducating and training of technicians, craftsmen and entrepreneurs will help improve the overall technology and management of the medium and small scale enterprises. This in turn will reduce the technical gap with the big enterprises and strengthen the linkage between them.
- (2) An attempt will be made to modernize management practice by improving the managerial and control techniques which will lead to mutual interchange among the trade circles and to the organization and development of cooperative unions and the like.
- (3) Such activities as itinerant guidance, trial fabrication, testing and inspection will activate business improvement, quality improvement and development of appropriate technology.
- (4) The provision of technical information and its utilization will stimulate the medium and small scale enterprises into pursuing technological innovation and motivate them to self-enlightenment.
- (5) Production activities which had been impossible with the facilities of the medium and small scale industries will be enlarged by consignment processing which, as a result, will enlarge the scope of their business activities.

As above, MIDI's activities will contribute not only to the development of the medium and small scale metal-working industries, but also help enhance the economic development in the Kingdom of Thailand. The implementation of this proposed project at an early date is therefore strongly desired, and we are confident that Japan's assistance will greatly contribute to further cementing the friendly relationship that already exists between the two countries.

**CHAPTER EIGHT**  
**CONCLUSION AND RECOMMENDATIONS**



## CHAPTER EIGHT. CONCLUSION AND RECOMMENDATIONS

The purpose of this project is to establish an institution that offers reeducation and retraining, itinerant guidance service and extension of technology in order to improve the technology and business strength of the metal-working and machinery industries which play an important role in the economic development of the Kingdom of Thailand.

We have evaluated the far-reaching effects after implementation of this project and reached the conclusion that Japan's participation in the project by extending assistance in the form of grant aid is of absolute necessity for its success and will have a great significance in future relationship between the two countries. In view of its urgency for the economy and welfare of Thailand, early implementation is most desirable.

In implementing this project, we offer the following recommendations to the Government of Thailand:

- (1) Secure, develop and retrain talented manpower for this Institute

The key to success or failure in achieving the objective of this Institute rests with the willingness and ability of each and every one of its staff. In recruiting the staff for this Institute, they should be selected not only for their capability but for their zeal and willingness to shoulder the industrial development of Thailand.

- (2) Secure operating budget

In order to smoothly carry out the function and activities of this Institute and to assure its continuity, efforts must be made to secure the necessary budget to cover the cost of its operation, maintenance and administration over the years.

- (3) Cooperative Arrangement with Relevant Organizations and Extension of its Repurcussive Impact on the Local Provinces

It is desirable that the industrial technology promotion system of Thailand be reexamined and that a systematic linkage be established with primary educational institutions such as public and private technical schools as well as with universities and research institutes in order that they will all cooperate in the national aims of the project.

(4) Foresight on Future Activities and Facilities

The contents of this basic design is based on the present and immediate future level of industries in this country. The contents are based on practicability and are not necessarily the most advanced. With improvement in the levels of the local industries, it is needless to say that activities will advance and become diversified. As this Institute is to assume the leading role in promoting the metal-working and machinery industries of this country, it must always maintain the lead in terms of technology and management. Addition and replacement of its facilities will become necessary, and more important, its staff must be constantly on the alert to keep up with advances in their field.

(5) Publicity and Advertisement of MIDI

Since the objective of MIDI lies in improving the technology and managerial and control capabilities of the medium and small scale enterprises, the existence of MIDI, its role, its activities, etc. must be widely disseminated among the medium and small scale enterprises. For this purpose, MIDI must adequately perform publicity and advertisement activities, and must maintain itself readily accessible to the medium and small scale enterprises at all times.



The following are our recommendations to the Government of Japan:

As forementioned, the success or failure of the operation of MIDI will depend on the ability and willingness of all staff members of MIDI. Accordingly, sufficient efforts must be made in developing its personnel before and after MIDI's completion.

Part of the training and development of personnel may be accomplished by Thai efforts alone, but some of the training that involve advanced technology will necessitate the help of Japanese experts. Dispatching of experts from Japan therefore will undoubtedly be requested by the Thai side, and it is also very likely that there will be a request to accept Thai trainees.

We hope that the Government of Japan will adequately prepare to meet Thailand's expectations in this respect.



## APPENDIXES



## APPENDIX I

### BASIC DESIGN TEAM PARTICIPANTS

#### 1. Basic Design Study Team

- |  |  |
|--|--|
| (1) Kazutoshi Iwanami<br>Team Leader                                 | Head<br>Basic Design Division<br>Grant Aid Department<br>Japan International Cooperation Agency  |
| (2) Toshihiro Obata<br>Project Coordination                          | Grant Aid Division<br>Economic Cooperation Bureau<br>Ministry of Foreign Affairs   |
| (3) Mitsunori Nishimoto<br>Metalworking                              | Casting and Wrought Products Division<br>Machinery and Information Industries<br>Bureau<br>Ministry of International Trade and<br>Industry |
| (4) Kenji Tomita<br>Technical Cooperation                            | Senior Technical Advisor<br>Japan International Cooperation Agency   |
| (5) Masao Takahashi<br>Architectural<br>Planning and<br>Coordination | Senior Executive Director<br>Matsuda, Hirata & Sakamoto<br>Architects, Planners & Engineers, Inc.  |
| (6) Tadamasa Goto<br>Architectural Design                            | Project Architect<br>Matsuda, Hirata & Sakamoto<br>Architects, Planners & Engineers, Inc.  |
| (7) Shigeru Fujii<br>Electrical and<br>Mechanical Utilities          | Project Engineer<br>Matsuda, Hirata & Sakamoto<br>Architects, Planners & Engineers, Inc.   |
| (8) Isamu Taki<br>Machinery and<br>Equipment                         | Advisor<br>Technical Department<br>The Materials Process Technology<br>Center  |
| (9) Kisao Abe<br>Machinery and<br>Equipment                          | Department Head<br>Technical Department<br>The Materials Process Technology<br>Center  |

2. Basic Design Study Report Confirmation Team

- |  |   |
|--|---|
| (1) Kazutoshi Iwanami<br>Team Leader                                 | Head<br>Basic Design Division<br>Grant Aid Department<br>Japan International Cooperation Agency   |
| (2) Masao Takahashi<br>Architectural<br>Planning and<br>Coordination | Senior Executive Director<br>Matsuda, Hirata & Sakamoto<br>Architects, Planners & Engineers, Inc. |
| (3) Tadamasa Goto<br>Architectural Design                            | Project Architect<br>Matsuda, Hirata & Sakamoto<br>Architects, Planners & Engineers, Inc.         |
| (4) Isamu Taki<br>Machinery and<br>Equipment                         | Advisor<br>Technical Department<br>The Materials Process Technology<br>Center                     |

## APPENDIX II

### SCHEDULE OF BASIC DESIGN STUDY TEAM IN THAILAND

#### 1. Basic Design Study (14 January to 2 February 1985)

January 1985

- (1) 14th                   Arrival in Bangkok  
                              (Iwanami, Obata, Nishimoto, Tomita, Takahashi,  
                              Goto, Taki, Abe)
- (2) 15th                   Embassy of Japan, JICA Bangkok Office  
                              - Courtesy call and discussions regarding study  
                              schedule
- Industrial Service Institute  
                              - Organization, Function & Activities explained by  
                              ISI  
                              - Investigation of the site
- Team Meeting  
                              (Iwanami, Obata, Nishimoto, Tomita, Takahashi,  
                              Goto, Taki, Abe)
- (3) 16th                   Ministry of Industry  
                              Minister of Industry, Mr. Ob. Vasurat
- Department of Industrial Promotion  
                              - Director General, Mr. Visith Noiphan  
                              - Explanation of Grant Aid Program  
                              - Explanation of Inception Report  
                              - Explanation of Background by DIP  
                              (Iwanami, Obata, Nishimoto, Tomita, Takahashi,  
                              Goto, Taki, Abe)
- (4) 17th                   Department of Technical and Economic Cooperation  
                              (Iwanami, Obata, Nishimoto, Tomita)
- Department of Industrial Promotion  
                              - Confirmation of the requests of DIP &  
                              Discussions  
                              (Iwanami, Obata, Nishimoto, Tomita, Takahashi,  
                              Goto, Taki, Abe)
- (5) 18th                   Department of Industrial Promotion  
                              - Answers to Questionnaire
- Visit to  
                              - The Trade Training Center  
                              (Iwanami, Obata, Nishimoto, Tomita, Takahashi,  
                              Goto, Taki, Abe)

- (6) 19th Visits to
- The Institute for Japanese Studies, Thammasat University
  - Asian Institute of Technology
  - Siam Machinery and Equipment Co.
- Preparation of Draft Minutes  
(Iwanami, Obata, Nishimoto, Tomita, Takahashi, Goto, Taki, Abe)
- (7) 20th Visits to
- Marine Science Center (Ban Saeng)
  - Sathaheep Commercial Port
- Analysis of data  
(Iwanami, Obata, Tomita, Takahashi, Goto, Virat, Phaibul)
- Arrival (Fujii)
- (8) 21st Department of Industrial Promotion
- Answers to Questionnaire
  - Discussions regarding priority of equipment items and building requirements  
(Iwanami, Obata, Nishimoto, Tomita, Takahashi, Goto, Fujii, Taki, Abe)
- (9) 22nd Department of Industrial Promotion
- Answers to Questionnaire
  - Discussions regarding Draft Minutes  
(Iwanami, Obata, Nishimoto, Tomita, Takahashi)
- Field Survey at MIDI Site
- Site Survey (Goto, Fujii)
  - Investigation of existing equipment (Taki, Abe)
- Team Meeting
- (10) 23rd Department of Industrial Promotion
- Discussed Draft Minutes  
(Iwanami, Obata, Nishimoto, Tomita, Takahashi)
- Industrial Service Institute
- Survey & Investigation of Existing Buildings  
(Goto, Fujii)
  - Soil Boring Data obtained from Highway Department
  - Investigation of Existing Equipment (Taki, Abe)
  - Confirmation of Requests & Priorities for Buildings
- Visits to
- Related factories of small industries in Bangkok  
(Iwanami, Obata, Nishimoto, Tomita)
- Requested Soil Boring Estimates



- (11) 24th Department of Industrial Promotion  
 - Signing and Exchange of Minutes of Discussions  
 Report to Embassy of Japan and JICA Bangkok Office  
 Field Survey of Related Facilities  
 - Faculty of Engineering, Chulalongkorn University  
 (Tomita, Takahashi, Goto, w/ Mr. Sivasakdi)  
 - Research and Training in Re-Afforestation  
 Projects, Kasetsart University  
 (Iwanami, Obata, Fujii)  
 Industrial Service Institute  
 - Discussed equipment details  
 - Drawings of existing equipment obtained  
 (Taki, Abe)
- (12) 25th Investigation of related similar facilities  
 - Ladkrabang Campus, King Mongkhut's Institute of  
 Technology  
 (Iwanami, Obata, Tomita, Takahashi, Goto, Fujii,  
 Damri)  
 - Primary Health Care Center, Salaya Campus,  
 Mahidon University  
 (Iwanami, Obata, Tomita, Takahashi, Goto, Fujii)  
 Industrial Service Institute  
 - Discussed equipment details for forging, heat  
 treatment, machinery, precision measurement,  
 test, inspection, welding & plating  
 (Taki, Abe)
- (13) 26th Departure for Tokyo  
 (Iwanami, Obata, Nishimoto, Tomita, Abe)  
 Team Meeting  
 (Takahashi, Goto, Fujii, Taki)  
 - Received and checked soil boring estimates from  
 3 firms
- (14) 27th Team Meeting, rescheduling and analysis of data  
 (Takahashi, Goto, Fujii, Taki)
- (15) 28th Industrial Service Institute  
 - Discussed building details  
 (Takahashi, Goto, Fujii, Taki)  
 - Space requirements and use conditions for each  
 room explained by Dr. Damri  
 - Discussed equipment details  
 Preparation of schematic floor plans

- (16) 29th                    Investigations of related infrastructure  
   (Goto, Fujii w/ Mr. Phaibul)
- Telephone Organization of Thailand (TOT)  
   Confirmed telephone circuit and wiring  
   service conditions
  - Bangkok Metropolitan Administration (BMA)  
   Confirmed city planning road available  
   and building code  
   Confirmed routes and sizes of drainage piping  
   and flood records around the site at Drainage  
   Department
  - Metropolitan Electricity Authority (MEA)  
   Confirmed power supply and branch service  
   condition at the site
  - Metropolitan Water Works Authority (MWWA),  
   Phakanong Branch Office  
   Confirmed pipe sizes, supply pressure, quality  
   and capacity of cold water supply system around  
   the site
  - Military Map Division  
   Purchased Vicinity Map of the site (S=1:20000)
- Discussed equipment details  
 (Takahashi, Taki)
- Preparation of schematic floor plans  
 (Main Building, Dormitory, Canteen)
- (17) 30th                    Industrial Service Institute
- Presentation of schematic floor plans and  
   discussion for Main Building and Dormitory
  - Workshop floor area and use requirements  
   explained by ISI
- Preparation of schematic floor plans of Workshop and  
 site plans
- Investigation of small metalwork factories
- Determined soil boring contractor
- (18) 31st                    Industrial Service Institute
- Discussed layout of buildings and building  
   requirements for Workshop, Main Building,  
   Dormitory and Canteen
  - Determined outlines of schematic plans of each  
   building
  - Questioned and discussed equipment planning
  - Analysis of data
- Confirmed commencement of soil boring

February 1985

(19) 1st

Visits and reports to

- Embassy of Japan
- JICA, Bangkok Office
- Department of Industrial Promotion  
(Takahashi, Goto, Jujii, Taki)

Industrial Service Institute

- Confirmed progress of soil boring, No. 1, 15 m  
in depth

Analysis of data

(20) 2nd

Departure for Tokyo

(Takahashi, Goto, Fujii, Taki)

2. Basic Design Study Report Confirmation (3 to 9 July 1985)

July 1985

- (1) 3rd Arrival in Bangkok  
(Iwanami, Takahashi, Goto, Taki)
- (2) 4th Embassy of Japan, JICA Bangkok Office  
- Courtesy call and submission of Basic Design Report to  
  
Department of Industry Promotion (DIP)  
- Courtesy call and submission of Draft Report of the Basic Design Report to  
Director General, Mr. Visith Noiphan  
  
Ministry of Industry (MOI)  
- Courtesy call and submission of Basic Design Report to  
Deputy Permanent Secretary, Mr. Pisan Kongsamran
- (3) 5th Department of Industry Promotion (DIP)  
- Explanation and discussion of Draft Report of the Basic Design Report to  
  
Department of Technical and Economic Cooperation (DETEC)  
- Courtesy call and submission of Draft Report of the Basic Design Report to  
Deputy Director General, Mr. Kasem Unahasuvan
- (4) 6th Drafting of Minutes of Discussions
- (5) 7th Analysis of data
- (6) 8th Department of Industrial Promotion (DIP)  
- Signing and Exchange of Minutes of Discussions  
  
Report to Embassy of Japan and JICA Bangkok office
- (7) 9th Departure for Tokyo  
(Iwanami, Takahashi, Goto, Taki)

## APPENDIX III

### A. LIST OF PERSONS INTERVIEWED FOR BASIC DESIGN STUDY

Ministry of Industry      Ob Vasurat, Minister

Department of Industrial Promotion  
    Visith Noiphan, Director General  
    Thein Mekanontchai, Deputy Director General  
    Padetpai Mee Khuneam, Director, Planning  
        Division  
    Prakob Janma, Planning Division

Industrial Service Institute  
    Insorn Pinkayan, Director  
    Damri Sukhotanang, Director,  
        Engineering Industry Development Office  
    Virat Tandaechanurat, Chief,  
        Industrial Technology Development Section  
    Sivasakdi Boonodom, Chief,  
        Metal Working Section  
    Phaibul Choopungartm, Engineer  
    Somsak Ratanakomol, Training Officer  
    Paiboon Tekapan, Engineer  
    Sirichai, Engineer  
    Sutep Chombootaveep, Architect  
    Chumpol  
    Katsuji Nakamura, Technical Expert (JICA)

Embassy of Japan      Takima Chikyu, First Secretary

JICA Bangkok Office      Norimoto Goto, Resident Representative  
    Ikufumi Tomimoto, Assistant Resident  
        Representative

Trade Center      Kiyoshi Aonuma, Advisor

Marine Science Center      Pichai Sonchaeng  
    Waewtaa Thongra-ar

Chulalongkorn University, Faculty of Engineering  
    Tavee Lertpanyavit, Dean  
    Sutham Vanichseni, Associate Dean  
    Somsak Panyakeow, Professor

King Mongkut's Institute of Technology  
    Kosol Petchsuwan, Vice Rector  
    Pisit Viriyavadhana, Assistant Rector

Thamasat University, Japanese Study Institute  
    Tetsuji Hatano, Kisho Kurokawa Architect &  
        Associates  
    Kiyokazu Osaki, Shimizu Construction Co.

Asean Training Center for Primary Health Care Project  
Kiyoto Kondo, Ishimoto Architectural &  
Engineering Firm, Inc.

Research and Training in Re-afforestation Project (Thai-Japan)  
Hirotaka Ishikawa, Chief Advisor  
T. Shiga, Coordinator

Bangkok Metropolitan Administration  
Varavit Lotong, City Planning Division  
Mana Noppun, Department of Drainage and  
Sewerage

Metropolitan Water Works Authority, Phrakanon Branch  
Amonsah Twesikarej, Assistant Director

Metropolitan Electricity Authority  
Kasem Kularbkeo, Assistant General Manager

Telephone Organization of Thailand, Department of Operation  
Paiboon Limpaphayom, Assistant Director

Industrial Rehabilitation Centre  
Yonekawa, Chief Advisor  
Aoki, Coordinator (JICA Expert)

**B. LIST OF PERSONS INTERVIEWED FOR DRAFT REPORT OF  
THE BASIC DESIGN STUDY**

Ministry of Industry . . . Pisan Kongsamran, Deputy Permanent Secretary

Department of Industrial Promotion

Visith Noiphan, Director General  
Thien Mekanontchai, Deputy Director General  
Padetpal Mee Khuneam, Director Planning  
Division  
Prakob Janma, Engineer Planning Division  
Theerapol Pramualgidja, Industrial Engineer

Industrial Service Institute

Insorn Pinkayan, Director  
Damri Sukhotanang Director  
Engineering Industry Development Office  
Virat Tandaechanurat, Chief, Metal Working  
Section  
Phaibul Choopungartm, Engineer  
Paiboon Tekapan, Engineer

Department of Technical and Economic Cooperation

Kasem Unahasuvan, Deputy Director General  
Sutin Susila, Chief Japanese Planning Sub  
Division  
Surayuth Kungsadan, Member Japanese Planning  
Sub Division

APPENDIX IV

MINUTES OF DISCUSSIONS

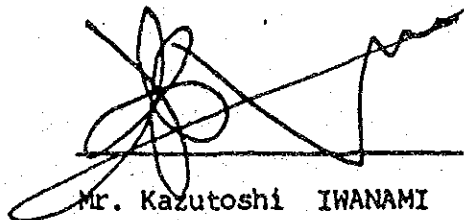
MINUTES OF DISCUSSIONS  
ON  
THE ESTABLISHMENT OF THE METAL-WORKING AND MACHINERY INDUSTRIES  
DEVELOPMENT INSTITUTE  
IN  
THE KINGDOM OF THAILAND

In response to the request made by the Government of the Kingdom of Thailand for the Establishment of the Metal-Working and Machinery Industries Development Institute in Bangkok (hereinafter referred to as "the Project"), the Government of Japan decided to conduct a basic design study and the Japan International Cooperation Agency (hereinafter referred to as "JICA") has sent to the Kingdom of Thailand the team headed by Mr. Kazutoshi IWANAMI, Head of Basic Design Division of Grant Aid Department, JICA from January 14th to February 2nd, 1985.

The Team has carried out a field survey, held a series of discussions and exchanged views with the authorities concerned of the Government of the Kingdom of Thailand.

As a result of the study and discussions, both parties have agreed to recommend to their respective Governments to examine the results of the study attached herewith towards the realization of the Project.

January 24th, 1985



Mr. Kazutoshi IWANAMI

Team Leader

The Japanese Basic Design Study Team

JICA



Mr. Visith NOIPHAN

Director General

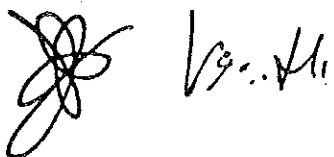
Department of Industrial Promotion,

Ministry of Industry




## ATTACHMENT

1. The objective of the Project is to provide necessary buildings, facilities and equipment for the establishment of the Metal-Working and Machinery Industries Development Institute (hereinafter referred to as "the Institute").
2. Main goal of the Institute is to restructure the engineering industry for higher production efficiency with emphasis on improving and developing technologies for small and medium scale Metal-Working and Machinery Industries both in central and regional areas.
3. The Institute is to be a government agency under the supervision of the Department of Industrial Promotion, Ministry of Industry, as shown in Annex I.
4. The proposed site of the Institute, acquired by the Government of the Kingdom of Thailand, is located at the south of the site of the Industrial Service Division of the Department of Industrial Promotion at Soi Kluaynamthai, Rama IV Road, Bangkok as shown in Annex II.
5. The Institute will undertake its activities with following basic objectives;
  - (1) to hold seminars and training courses and to provide extension and consulting services in order to support and assist in technological and managerial improvement,
  - (2) to provide services on testing, inspection and trial production,
  - (3) to undertake research and development of technology appropriate to Thailand,
  - (4) to play a role as a technical information center and a center for coordination.

Handwritten signature and initials, possibly 'Vg. H1', in black ink.

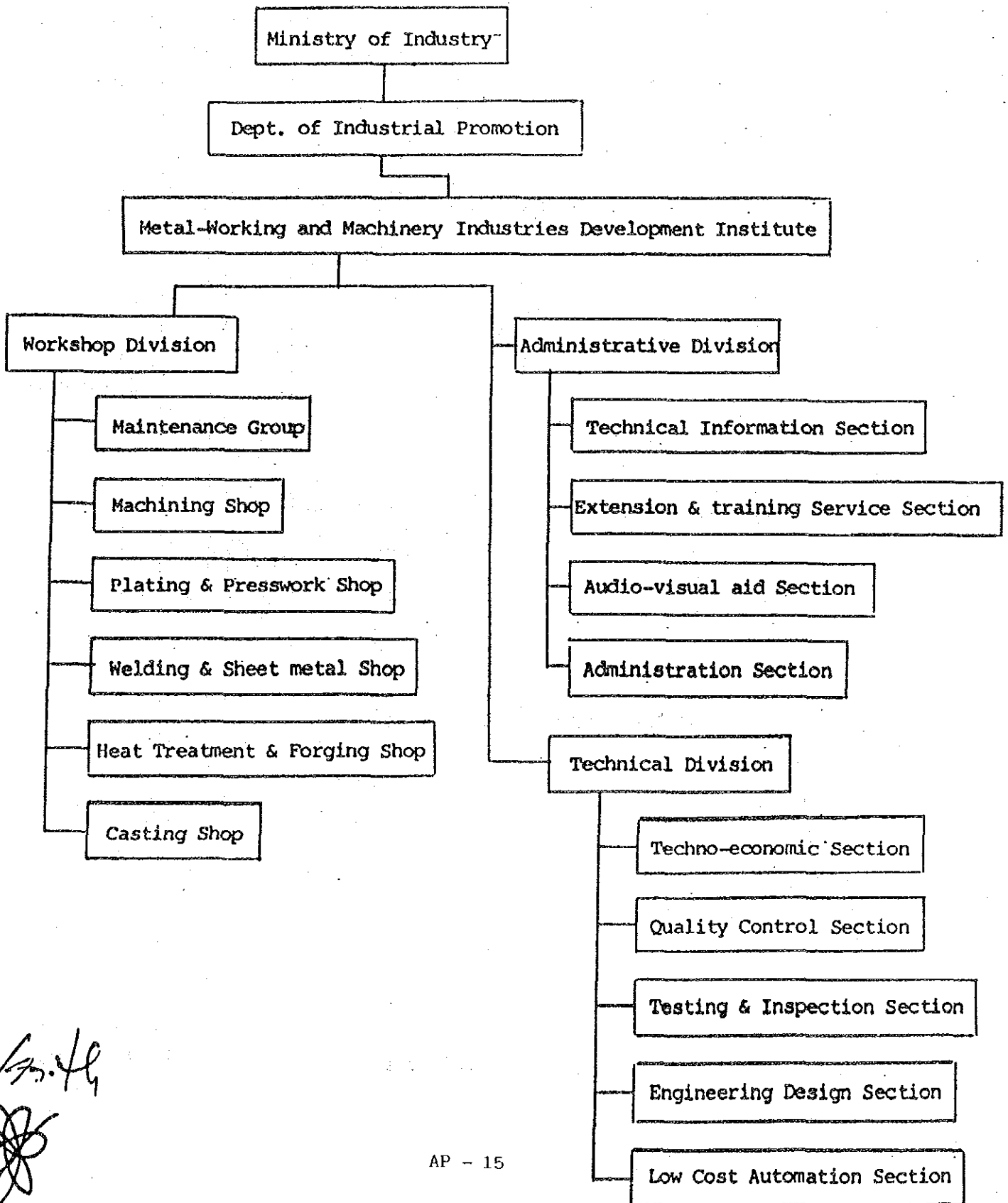
6. The Japanese Study Team will convey to the Government of Japan the desire of the Government of the Kingdom of Thailand that the former takes necessary measures to co-operate in implementing the Project and provides buildings and other items listed in Annex III within the scope of Japanese economic cooperation programme in grant form.
7. The Japanese Study Team will convey to the Government of Japan the desire of the Government of the Kingdom of Thailand that Technical Cooperation Programme is needed for the smooth and effective operation of the Institute on and after the establishment.
8. The Government of the Kingdom of Thailand will take necessary measures listed in Annex IV on condition that the grant assistance by the Government of Japan is extended to the Project.
9. Both sides confirmed that the Japanese Study Team explained Japan's Grant Aid Programme, including the principle of the use of Japanese consulting firm(s) and Japanese general contractor(s), and that the Thai side understood it.



V. V. V.

Annex I

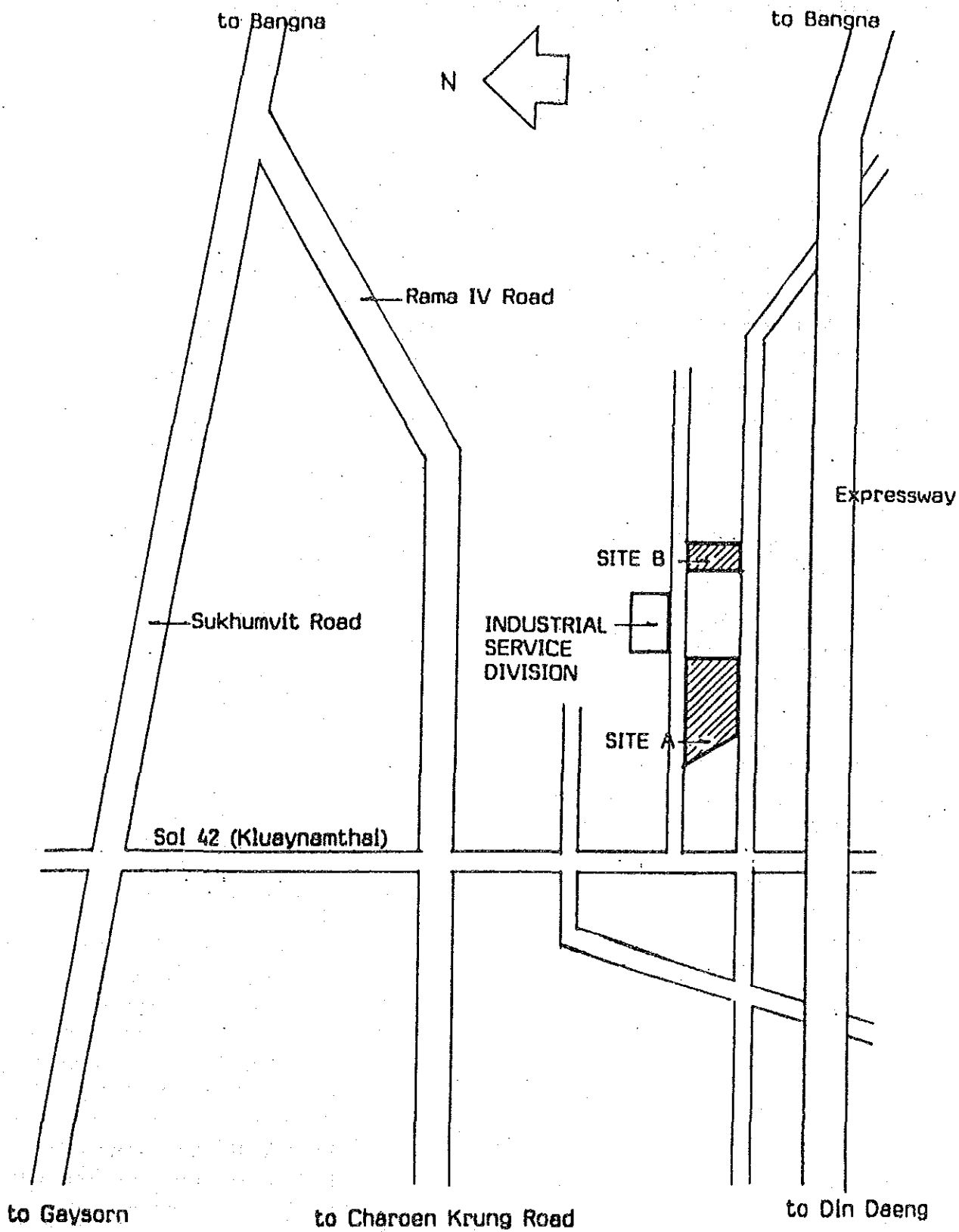
Organization Chart  
of  
The Metal-Working and Machinery Industries Development Institute



*V. S. 49*  
*[Signature]*

ANNEX II

Location of the Site



*Handwritten signature and initials*

Annex III

Items requested by the Government of the Kingdom of Thailand are as follows in priority order;

1. Buildings

(1) Main Building for

administrative office  
lecture and seminar rooms  
testing and inspection laboratories  
low-cost automation laboratory  
audio-visual and information service rooms  
library

(2) Workshops for

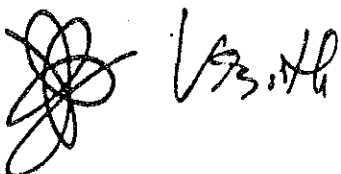
- 1) Casting
- 2) Machining
- 3) Welding, sheetmetal-work and presswork
- 4) Heat treatment
- 5) Plating
- 6) Forging

(3) Dormitory


(4) Canteen

2. Machinery and Equipment for

- (1) seminar and training courses (including audio-visual aids and materials)
- (2) Testing and Inspection



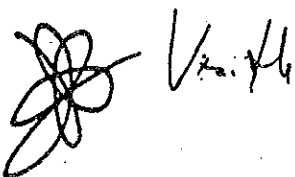
- (3) Information Services
- (4) Casting
- (5) Machining
- (6) Welding and Sheetmetal-work
- (7) Heat Treatment
- (8) Low-cost Automation
- (9) Forging
- (10) Plating
- (11) Presswork

 V. Smith


#### Annex IV

Following arrangements are required to be undertaken by the Government of the Kingdom of Thailand:

1. To provide necessary data and information for basic design, detailed design and construction.
2. To secure a lot of land necessary for the construction of facilities and to clear, fill and level the site as needed before the start of the construction.
3. To provide connections for electricity, telephone, water supply and drainage to the site.
4. To undertake incidental civil work such as planting and fencing, if needed.
5. To provide the space necessary for temporary offices, working areas, stock yards and others necessary for construction.
6. To ensure prompt unloading, tax exemption, customs clearance at ports of disembarkation in Thailand, and prompt internal transportation therein of the products purchased under the grant.
7. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Thailand with respect to the supply of the products and the services under the verified contracts.
8. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Thailand and stay therein for the performance of their work.



9. To maintain and use properly and effectively the facilities constructed and equipment purchased under the grant.
10. To bear all the expenses, other than those to be borne by the grant aid, necessary for the construction of the facilities as well as for the transportation and installation of the machinery and equipment.

 Vic. H. L.



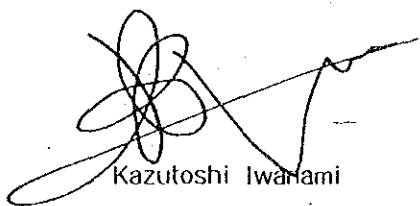
MINUTES OF DISCUSSIONS  
ON  
THE DRAFT REPORT OF THE BASIC DESIGN STUDY  
ON  
THE METAL-WORKING AND MACHINERY INDUSTRIES  
DEVELOPMENT INSTITUTE

For the Government of Japan, the Japan International Cooperation Agency (JICA) has sent a Basic Design Study Team to the Kingdom of Thailand from July 3rd to July 9th, 1985 for the purpose of presenting and explaining the draft of the final report of the Basic Design Study on the Establishment Project of the Metal-working and Machinery Industries Development Institute (MIDI) in Bangkok.

The Team held meetings with officers of the Department of Industrial Promotion, Ministry of Industry and other government agencies concerned to explain and discuss the Report. Results of the meetings between both parties are as follows:

1. The Report principally satisfied the Thai side with minor but appropriate alterations in design mutually agreed upon to be incorporated in the Final Report.
2. The Final Report (20 copies in English) on the project will be submitted to the Government of Thailand by the end of August, 1985.
3. The Department of Industrial Promotion, Ministry of Industry of the Kingdom of Thailand understood the system of Grant Aid Programme of the Government of Japan, and confirmed the measures to be undertaken towards the realization of the Project as agreed upon in the "Minutes of Discussions" dated January 24th, 1985.

July 8th, 1985



Kazutoshi Iwanami  
Leader  
Japanese Study Team  
JICA



Visith Noiphan  
Director General  
Department of Industrial Promotion  
Ministry of Industry

JICA