

3. NAKHON RATCHASIMA AGRICULTURAL COOPERATIVE  
(NAKHON RATCHASIMA PROVINCE)

1) General situation of the area

Nakhon Ratchasima Agricultural cooperative (formally Muang Nakhon Ratchasima Agricultural Cooperative) is located in Muang Nakhon Ratchasima (also called Korat), which is the capital town of Nakhon Ratchasima Province. Nakhon Ratchasima is located at the entrance to the northeastern region of the country, and is the third largest city in Thailand next to Bangkok and Chiang Mai.

The Don Pya Yen Mountain Range that runs in south to north direction on the west side of the province is the border line that separates the province from the central region of the country. The province border on the south side is also in contact with the central region through the Son Kon Peng Mountain Range that runs in east to west direction. The corner at which these two mountain ranges are disconnected is the mountain pass of the national highway that connects Bangkok with the northeastern region. After this pass, all rivers flow toward the east and run into the Mekong River located at the national border with Laos and Cambodia. The entire Nakhon Ratchasima Province is located on the Plateau of Korat.

The Plateau is a flat land of 100 to 200 m that is tilted by a minor rate toward the north and the east. The northeastern region is surrounded by mountains on four sides and is thus separated from the sea. And therefore, its climate is more continental than other regions. Although the northeastern region is located in the southwest monsoon area together with the central region the rainfall is particularly small in Nakhon Ratchasima Province located on the east side of Don Pya Yen Mountain Range of altitude 1,000 m, as the southwest monsoon is interrupted by this mountain range. The average annual rainfall in Nakhon Ratchasima is 1,150 mm, and records indicate that the largest was 1,359 mm and the smallest was 643 mm (1979). In the period of 1976 through 1979 in particular, the annual rainfall kept on decreasing as 988 mm, 884 mm, 759 mm and 643 mm, and drought was continued. The average temperature was 27.6° C in 1979, and the maximum was 42.7° C and the minimum 12.9° C in the same year.

These figures indicate particularly large temperature differences. Red sandy soil is often observed in many places. Rock salt is contained in the sandstone, and there are places where white salt appears on the ground surface.

Such severe natural conditions are reflected on the agricultural production and living of farmers in the northeastern region.

According to the agricultural census in 1978, the total planted area in Nakhon Ratchasima Province is 5,416,000 rai. Paddy farming is made in 3,043,000 rai, which is equivalent to 56.2 per cent of the total planted area, and extensive cultivation of glutinous rice is partially observed. Dry field farming is performed in 2,091,000 rai, which is equivalent to 38.6 per cent of all. According to the crop statistics for 1979/1980, tapioca (1,445,000 rai), maize (1,085,000 rai) and kenaf (60,000 rai) are mainly grown. However, productivity of paddy and maize is low and yearly variation is also large. It is understood from Table 2-17 that production of these crops is strongly affected by natural conditions. What is growing with relative stability is tapioca, but its yield per rai has been decreasing year after year in the past five years.

According to the agricultural census in 1978, the number of farm households in Nakhon Ratchasima District is 11,152 and the farmland area is 215,436 rai. The average farmland area per farm household is 19.3 rai. When planted area classified by crop is observed, the paddy planted area is 118,637 rai which is equivalent to 55.1 per cent of all, and dry field crop planted area is 85,684 rai which is equivalent to 39.8 per cent of all. The ratio of dry field crop planted area is slightly larger than that of the entire province. Farmers of 93.5 per cent are owner farmers, and tenant farmers are as minor as 5.1 per cent.

Korat being the third largest city in Thailand, the majority of commercial banks have branch offices in this district. There a large number of merchants and retail stores have large volume of business.

Table 2-17 Production of main agricultural products  
in Nakhon Ratchasima Province

Year	Paddy			Tapioca			Maize			Kenaf		
	Planted area (1,000 rai)	Production (1,000 t)	Yield per rai (kg)	Planted area (1,000 rai)	Production (1,000 t)	Yield per rai (kg)	Planted area (1,000 rai)	Production (1,000 t)	Yield per rai (kg)	Planted area (1,000 rai)	Production (1,000 t)	Yield per rai (kg)
1975/76	2,017	401	199	506	1,182	2,338	975	272	279	173	24	139
76/77	1,480	298	201	755	1,712	2,268	1,549	414	267	109	22	199
77/78	2,313	248	107	1,068	2,328	2,179	807	167	207	42	6	142
78/79	1,875	388	207	1,567	3,333	2,127	1,067	261	244	90	14	158
79/80	2,196	425	194	1,445	2,868	1,984	1,085	289	266	60	9	142

Source: Same as that of Table 1-3.

Table 2-18 General situation of agriculture in  
Nakhon Ratchasima Province and Nakhon Ratchasima District

Unit: Household, rai

	Nakhon Ratchasima Province				Nakhon Ratchasima District				
	Farm household		Area		Farm household		Area		Per house- hold
Total	184,042	-	5,415,555	-	11,152	-	215,436	-	19.3
of which no land owned	1,876	-	-	-	522	-	-	-	-
Land owned	182,166	100.0	5,415,555	100.0	10,166	100.0	215,436	100.0	21.2
Owner farmer	163,890	90.0	4,897,129	90.4	9,503	93.5	192,079	89.2	20.2
Owner/tenant farmer	5,469	3.0	212,498	3.9	238	2.3	8,323	3.9	35.0
Tenant/owner farmer	3,236	1.8	98,757	1.8	277	2.7	6,329	2.9	22.8
Tenant farmer	5,800	3.2	100,881	1.9	514	5.1	7,292	3.4	14.2
Others	3,771	2.1	106,290	2.0	98	1.0	1,413	0.7	14.4
Culti- vated crop	Paddy	72,080	39.6	1,571,356	29.0	5,033	71,943	33.4	14.3
	Vegetables, field crops	31,610	17.4	822,125	15.2	1,438	32,191	14.9	22.4
	Permanent crops	1,606	0.9	19,077	0.4	327	1,835	0.9	5.6
Mixed	Paddy & others	73,061	40.1	2,855,374	52.7	3,551	103,507	48.0	29.1
	Other than paddy	3,017	1.7	140,733	2.6	128	5,554	2.6	43.4
No cultivation	792	0.4	6,890	0.1	153	1.5	406	0.2	2.7

Source: Same as that of Table 2-2.

Table 2-19 Changes in number of members  
of Nakhon Ratchasima Agri. Coop.

Year		1979	1980
Beginning of the terms		1,202	1,456
During the term	Increase	299	104
	Decrease	45	51
End of the term		1,456	1,509

Source: Annual Report for each year.  
(Same hereinafter, unless otherwise specified.)

2) Outline of organization of agricultural cooperative

This agricultural cooperative was started in 1971 as a result of merger of 40 credit cooperatives, and again merger was made with two paddy marketing cooperatives. The number of members as of the end of March, 1981 is 1,509 and membership ratio in the district is estimated as 14 per cent. These members belong to 26 community groups. Recent entry and withdrawal of members are as shown in Table 2-19.

Affiliation of new members with the agricultural cooperative is of such a system that a list of those who want to be members is submitted from each community group, and the approval is given at the directors' meeting after hearing on family composition, management scale and so forth. Increase of the membership, however, depends on the credit line from BAAC. Although the affiliation of new members is increasing, farmers' wishes to be members are not necessarily satisfied.

The staff members of this agricultural cooperative are 15 directors and 16 employees. The breakdown of employees is one each of manager and assistant manager, four credit clerks, two accounting clerks, three general affairs clerks and five warehouse clerks. The term of the office of directors is one year, and all of them also act as group leaders.

This agricultural cooperative does not adopt representative system, but its general meeting is attended by all members. The attendance ratio is high, and about 1,000 members attended the last meeting. Dividend on paid-up capital (8 per cent) and patronage dividend

(the recent standard was 5 baht per bag of paddy, 5 baht per bag of fertilizer and return of 4 per cent of amount of paid interest on the loan) were paid in cash at the general meeting. Thus efforts are made to raise the member consciousness by showing economical benefits obtained by the affiliation with the cooperative.

What is noteworthy in the operation of this cooperative is that community group leaders other than directors are always invited to observe directors' meetings since five years.

This is a very effective measure for upbringing successors of leaders of the agricultural cooperative and for quickening transmission of information to members. Employment of this measure should also be considered by other agricultural cooperatives.

### 3) Outline of businesses of agricultural cooperative

The outline of businesses of this agricultural cooperative is described below as classified by the field.

(Credit)

A credit line of 11.7 million baht is given by BAAC and 4 million baht (scheduled for 1981) is given from Bangkok Bank to this cooperative as resources for its members. Besides, a credit line of 2 million baht has been given by BAAC as funds for purchasing business and 2.6 million baht as collection funds accompanying participation in the cooperative rice marketing project under the agreement between ACFT and BAAC. The credit line of 1.17 million baht as funds for general farming and living has been kept unchanged in the past two years because the repayment performance dropped due to drought continued for three years.

Loans to members in the past three years are as shown in Table 2-20.

The purposes of loans to members are as shown in Table 2-21. What are characteristic are that farming funds have a major share in short-term loans and that land purchase funds and farm machinery funds have a major share in the medium-term loans.

As shown in the progress of mid-term loan value shown in Table 2-20, the value in 1980 dropped by as much as 21 per cent compared to the previous year subsequent to a drop by 16 per cent in 1979 compared to the previous year. The cause for such drops is that the credit line for new loans was not expanded by BAAC because of reduction of the repayment ratio from members due to drought continued for three years. Special consideration on financing should be made for agricultural cooperatives such as those in this region under severe natural conditions where it is unavoidable to suffer from natural calamity once every two to three years.

Table 2-20 Loans to members of Nakhon Ratchasima Agri. Coop.

Unit: Thousand baht, %

	Year	Short-term	Medium-term	Total
Loaning during the term	1978	2,864 (32.2)	6,032 (67.8)	8,896
	79	3,564 (47.6)	3,918 (52.4)	7,482
	80	2,066 (34.9)	3,846 (65.1)	5,912
Balance at end of the term	1978	3,041 (24.9)	9,130 (75.1)	12,171
	79	4,395 (29.8)	10,354 (70.2)	14,749
	80	4,334 (28.2)	11,050 (71.8)	15,384
Recovery ratio within term	1978	52.71	35.79	42.11
	79	65.39	45.29	52.60
	80	48.12	42.82	44.80

Note: Figures in ( ) are component ratios.

Table 2-21 Loans classified by purpose  
in Nakhon Ratchasima Agri. Coop.

Unit: Thousand baht, %

Short-term			Medium-term		
(Purpose)	Amount	%	(Purpose)	Amount	%
Farming	1,234	59.7	Land	1,388	36.0
Seeds	38	2.0	Building	551	14.3
Livestock	690	33.3	Farm machinery	1,209	31.4
Capital increase	103	5.0	Livestock	506	13.1
			Capital increase	192	5.2
Total	2,066	100.0	Total	3,846	100.0

Note: This table indicates breakdown of loans provided during the term of 1980.

Table 2-22 Changes of paddy marketing business  
of Nakhon Ratchasima Agri. Coop.

Year	Quantity (t)		Amount (1,000 baht)	
	Government purchase	Free market	Government purchase	Free market
1976	-	587	-	1,297
1977	-	1,274	-	2,593
1978	911	135	2,090	311
1979	401	223	1,198	632
1980	273	53	903	184

(Marketing)

It is estimated that paddy (23,000 tons), tapioca (120,000 tons), maize (12,000 tons) and so forth are grown in the area. However, what is currently marketed by the agricultural cooperative is paddy alone, and its volume is as little as 273 tons of cooperative rice marketing project under the agreement between ACFT and BAAC and 53 tons of freely marketable rice. Considering the fact that this agricultural cooperative has an accomplishment of marketing of paddy of as much as 1,274 tons in 1977, the volume of business in 1980 in which the new project was commenced is abnormally small. The reasons for it are that merchants offered higher prices than those of the agricultural cooperative



and that the means for collection and transportation of the agricultural cooperative are insufficient compared to merchants. What was spent out of the credit line of 2.6 million baht given by BAAC as paddy collection funds for 1980 was 0.9 million baht only, which is 35 per cent of the planned value.

The agricultural cooperative is obliged to make efforts to largely increase the repayment performance for strengthening its management. In order to accomplish this objective, it is necessary to handle paddy of a volume that corresponds to the credit line allowed by BAAC as the minimum requirement for some time and to appropriate a part of this collected paddy to repayment of loans in kind. It is also necessary to make earnest examination to start handling of tapioca, which is a major product in this area.

(Purchasing)

The progress of purchasing business at this agricultural cooperative is as shown in Table 2-23.

The key items of purchasing business are fertilizers, feeds and farm machinery. Rapid growth of purchasing business is noteworthy while both of credit and marketing departments are in slump. What requires attention at the same time is accrued accounts which are growing far above the growth rate of the business. Increase of accrued accounts causes worsening of fund position and management of the agricultural cooperative. Urgent improvement is required in this matter.

As for feeds, the volume of business is large at present. Feeds are now supplied to swine farmers through Nakhon Ratchasima cooperative. But the swine marketing association (Office in the same building with N.R. Coop), the area of which is the entire province, is considering the direct and independent purchase of feeds. However, continuation of the present system is desirable from the standpoints of merits of purchase of large quantity and contribution to management of the agricultural cooperative.

As for fertilizers, it is estimated 47 per cent of the total demand of members is handled, but this value is considerably low compared to the values at other agricultural cooperatives at which studies

Table 2-23 Changes of purchasing business of  
Nakhon Ratchasima Agri. Coop.

Unit: Thousand baht, %

Year	1978	1979	1980
Fertilizer	2,616	3,056	4,850
Feed	-	882	527
Farm chemical	17	124	90
Rice	-	712	1,155
Farm machinery	2,854	1,648	2,729
Total	5,816 (100)	6,422 (110)	9,350 (161)
Accrued account at end of the term	1,704 (100)	2,255 (132)	3,438 (202)
Accounts payable at end of the term	333	44	1,064

Note: Figures in ( ) represent growth rate based on  
the values of 1978 as 100.

Table 2-24 Cost ratio in purchasing business of  
four coops at which studies were conducted

Unit: %

Name of Agri. Coop.	1979	1980
Nakhon Ratchasima	94.0	92.5
Hat-Yai	93.7	90.0
Koksamrong	88.4	84.5
Doi-Saket	86.9	88.0

were made. It is also desired that the volume of supply of rice for  
consumption is further increased in the future.

#### 4) Outline of management of agricultural cooperative

The main financial situation and outline of management of this  
agricultural cooperative are as shown in Table 2-4.

While businesses of credit and marketing departments are in slump,  
purchasing business indicates a remarkable growth at this agricultural  
cooperative as already described, and the weight of the purchasing

business in the total business value is particularly large. Furthermore, the cost ratio in the purchasing business (ratio of purchase cost to handling value of purchasing business) is particularly high compared to other agricultural cooperatives at which studies were made. This fact indicates that there is a sufficient room for larger return of merits of joint purchase to members in the future.

5) Problems and basic direction of improvement

This cooperative has drastically expanded the purchasing business under the strong advice from the district CPD officer, but the ranking of the cooperative dropped from the first class to the second class. It is considered necessary to improve the four points with a view to develop the cooperative activities as follows.

(1) To establish the autonomous operation system independent from the district CPD officer

This cooperative's employees and district CPD officers are working in the same room with face to face, and the fact that the general manager of the cooperative is a wife of the CPD officer makes the relationship between the CPD and the cooperative more complicated.

The practical counter-measures such as separating the room will be of urgent necessity to clarify the situation.

Otherwise, the actual decision making relating to the organizational operation, management, personnel affairs, and cooperative business will be all in the hands of CPD officers, and it will give a severe damage to the autonomous management of the cooperative.

(2) To overcome the vicious circle in business activities

The shortage of fund for making loans has a close relation to the deterioration of the ratio of repayment performance.

Continuous poor harvest caused by the drought for recent three years has been the main reason for the worsening of ratio of repayment performance and the amount of credit from BAAC has been fixed for these years.

The marketing and credit businesses have showed the poor returns, on the other hand the purchasing business has been drastically expanded, eventually accrued accounts for supplied goods have been

abnormally increased, and the lending fund to members has also been restricted by these conditions. Both members and the cooperative have had the same attitude not to make payment of old debts unless they can get the new loan.

It is the only way to cut the vicious circle that the cooperative carries out the marketing business actively and improve the cooperative management as well as the farmers' income. Furthermore, the cooperative is carrying out the marketing business of paddy.

However, it entrusts the actual marketing business with the provincial federation, and what the cooperative does is no more than a paper work and account settlement.

In order to develop the cooperative activities, the followings have to be considered;

- To reform their negative attitude to marketing business which both the cooperative and the provincial federation have maintained.
- The provincial federation should continue the marketing of paddy in the free market taking advantage of its own established sales channel.
- The paddy handling system of the cooperative should be strengthened on the premise of the improved marketing business of the provincial federation.
- To equip with the necessary facilities such as trucks for collection and transport.

The joint purchasing of the feed-stuff carried out in collaboration with the swine raising group should be continued, thereby profitable conditions can be maintained for the member farmers. Although the cooperative takes the over-due interest on the supplied goods, the problem of the sharp increase of accrued account should be solved by the immediate collection. In order to improve the ratio of repayment performance before due date, the directors and employees should visit members' houses and request the payment of debt.

(3) To secure the supply of irrigation water

As the shortage of irrigation water supply has been a serious problem which needs an urgent counter measure in this area, the action by the cooperative has been strongly expected by the members

but the cooperative has not taken any step for the solution of the problem.

Although, the solution of this problem will fundamentally depend on the realization of the Government rural development project, the systematic expression of opinions by members to place the first priority on the construction of the water-channels and the irrigation ponds seems to be needed.

Because, the cooperative as an independent organization of farmers cannot avoid the problems from which farmers suffer. By doing so, the unity of members will become stronger. What the cooperative can do at present may be to conduct the survey on the situation of water-shortage in detail and ask the expert team to carry out the survey on the under-ground water.

(4) To consolidate the daily management system

The group leaders are invited to attend the monthly meeting of the directors as observers, where the cooperative confirms whether necessary information was conveyed to members or not, and also educates the group leaders as to-be-successors in the future. This is one of the best methods to form the better communication between the cooperative and members. In order to make the cooperative organizational and business activities positive, to respect the group leaders' role in strengthening group activities is quite necessary. It is also important that the cooperative will be well equipped with the staff to expand the farming guidance and marketing business.

Nevertheless, the general manager and district CPD officer do not know the program under which CPD subsidizes cooperatives to employ the new staff and are eventually convinced that the cooperative can not afford to employ staff any more.

The full-time staff who can promote the better communication between the cooperative and members and who do not hesitate to visit members' houses are especially important to establish the autonomous management system of the cooperative and to improve the system of cooperative marketing, purchasing and credit businesses.

Followings are recommended to be carried out for strengthening the cooperative.

- To educate the personnel by taking a chance at CPD training service.
- To find out and educate the new leaders among the well-minded farmers and utilize their know-how.

6) Development Plan

(1) Organizational Strengthening

- \* By directing efforts into marketing business and raising the loan repayment ratio, the membership ratio to be raised to 20 %.

	Present	1st year	2nd year	3rd year
Membership ratio	14 %	16 %	18 %	20 %
Cooperative members (Persons)	1,509	1,780	2,000	2,230

- \* The District CPD Office and Agricultural Cooperative Office are to be separated; the latter's daily businesses are to be carried out by the farm leaders and the general manager at the center.
- \* The president of the cooperative and the general manager are to attend the group meetings. Explanations are to be made by the officers of the cooperative.

(2) Credit Business

- \* Elevate the repayment ratio of loan and enter into the 1st ranking group; expand the lending resources for the cooperative members. The loan repayment ratio target to be 55 %.

	Present	1st year	2nd year	3rd year
Loan recovery ratio	44 %	45 %	50 %	55 %

- \* For the time being, improve the daily loan control system conducted by the internal personnel, and make efforts to recover loans within due time. Strengthen the saving promotion activity and increase the per capita annual average of saving by members by 100 bahts.

\* Targets of outstanding balance of loan and saving at the end of fiscal year.

(In 1,000 bahts)

	Present	1st year	2nd year	3rd year
Loan	15,384 (10,195)	18,700 (10,500)	21,000 (10,500)	23,400 (10,500)
Saving	829 (549)	1,160 (650)	1,500 (750)	1,900 (850)

( ) Average amount of cooperative members in bahts.

### (3) Purchasing Business

\* By expanding the membership ratio from 14 % to 20 % and elevating the cooperative utilization ratio by members on fertilizer and rice for consumption, the independent operational system of purchasing business will be strengthened.

\* Presently, the agricultural cooperative is handling 47 % of the cooperative members' fertilizer demand. This is raised to 60 % by the target year. As a result, the quantity of transaction will be 1,400 t.

\* At present the cooperative coverage of the demand for rice for consumption by the non-rice-growing member farmers is 31 %, this will be raised to 50 %.

\* As for agricultural machinery, currently what the agricultural cooperative is doing is "supply" only and aftercare services are not made.

The structure including the training of repair and maintenance personnel will be improved. Also, the possibility is for more services such as cultivation of members' lands by the cooperative. In addition, irrigation service for member farmers by pump and hose rental will be planned. For the cultivation of members' lands and irrigation services members' labour will be employed.

\* The transaction target is 13 million bahts a year.

(In 1,000 bahts)

	Present	1st year	2nd year	3rd year
Turn over	9,350	9,500	11,000	13,000
(of which, fertilizer)	741 t	940 t	1,160 t	1,400 t
(of which, rice)	129 t	170 t	220 t	300 t

\* Establish an early collection system on accrued accounts for supplied goods and levy a default interest after a prescribed time limit without fail.

#### (4) Marketing Business

\* Together with the strengthening of the current paddy handling, the marketing of tapioca, a principal product of the area, will be started.

\* As for the handling of paddy, the annual handling in the past was 1,247 t. This was 30 % of the quantity sold by members at that time. For the time being the BAAC collection fund of 500 t will be utilized to the fullest extent and will increase to 2,000 t in the 3rd fiscal year.

\* As for tapioca, preparations will be made to handle 1,000 t in tuber. A tapioca dehydrating facility is to be installed which will enable the sale in dry chip form when a pellet factory is established.

\* The marketing transaction will amount to 5 million bahts in the 3rd fiscal year.

\* The construction and equipment of facilities for stronger marketing promotion is as shown in the attached paper.

(In 1,000 bahts)

	Present	1st year	2nd year	3rd year
Turn over	1,118	1,200	2,500	5,000
(of which, paddy)	(328 t)	500 t	1,000 t	2,000 t
(of which, tapioca)	-	-	500 t	1,000 t

\* Marketing business system of the cooperative will be improved.



For this purpose, the necessary personnel training will be carried out.

- \* Studies will be undertaken on large area joint use facilities, such as, improvement of rice mill of the provincial federation and the establishment of tapioca pellet factory.

(5) Farm Management Guidance

- \* Strengthen and expand the farm guidance system aimed at providing advice and guidance to members concerning farm technology and management.

- \* Grasp of area fundamentals; survey of actual farm conditions; guidance of simple farm management record with cooperative members (as model); and promotion of farm management plan in combination with the establishment of area agricultural development program.

\* The First Year

- a. Training and fostering of personnel (by attending the training courses under CPD sponsorship).
- b. Grasp of area fundamentals (total number of houses, farm households, land utilization, cropping condition, output and sales conditions, etc. in the village).
- c. Compilation of cooperative members' farm management registry (farming area; planting, production and sales conditions by crop, family composition and labour conditions, etc.).
- d. Compilation of farm management record (model plan).

\* The Second Year

- a. Starting of farm management record by model farmers; farming program making (in model area).
- b. Drafting of plan and discussions on area agricultural development program in each village (priority items).

\* The Third Year

- a. Diffusion of farm management registry and farming program making.
- b. Area agricultural development program making in each village, and program making for the district.

## (6) Development of Facilities

For the facilities the construction will be started by the Third Year at the latest; for the large area joint use facilities, the construction will be started by the Fifth Year. (Details are shown on the attached paper)

### (Facilities and equipments)

- \* Means of transportation ----- 2 small-size trucks (3 t) for collection and distribution and 1 big-size truck (10 t) for marketing use.
- \* Means of collection ----- paddy threshing machines with pulling tractor attached; truck scale; paddy moisture meters.
- \* Drying facility ----- cassava drying place (including chip machine).
- \* Storage facilities ----- Rice warehouse (1,000 t), tapioca warehouse (660 m<sup>2</sup>) and materials warehouse (garage combination, 700 m<sup>2</sup>).
- \* Irrigation equipments ----- engine pumps and water hose to be lent to members.
- \* Machinery for cultivation ----- tractors for cultivation and attachments to be used for the cultivation of members' lands.

### (Large Area Facilities)

- \* Rice mill ----- rice polishing machine and warehouse (1,000 t) attached.
- \* Tapioca pellet mill.

## (7) Training and Fostering of Personnel

- \* Supplement and strengthen personnel in the following fields.  
Personnel matters will be met mostly by internal reassignments; actual increase in personnel will be 1 person.  
CPD's subsidizing system will be utilized.

Marketing,          Farm guidance,          Field activities,          Purchasing  
(a)                                  (b)                                  (c)                                  (d)

(Persons)

Present	1st year	2nd year	3rd year
16	17	17	17
(Actual increase)	(1)	(0)	(0)
(Assignment)	(a) & (b)	(c)	(d)

- \* CPD's personnel training program will be utilized for bringing up personnel with the purpose of strengthening independent cooperative operation, improving recovery and control of loans and accrued accounts for supplied goods, improvement of marketing business and farm guidance, introduction of field work system, establishing the works of agricultural machinery repairs, etc. CPD regional training center will be established.
- \* Warehouse personnel, farm machine operators will be temporarily employed from among cooperative members.

(8) Improvement of Management and Financial Affairs

- \* While increasing cooperative membership, efforts will be made toward sound management and sound financial position. For this purpose, it is important to recover loans and accrued accounts for supplied goods within due time, and to guarantee this, positive action for cooperative marketing of agricultural products is required. In the strengthening of marketing business, it is necessary to establish a collection fund loan system by BAAC, CPD and ACFT for other agricultural products than paddy. It is desirable to accumulate, at the CPD, agricultural cooperative promotion funds which can constitute the financial resources for the collection fund of agricultural products. Moreover, it is necessary to take measures in order to increase and strengthen owned capital through own efforts of the agricultural cooperative, such as, faster recovery of loans and accrued accounts, saving promotion, capital increasing activities, etc.
- As the basis for making these activities successful, efforts should be made to develop mutual trust and confidence in the relations between the cooperative and its members through daily

business activities, and particularly to improve the services offered by the cooperative through furthering the advisory functions such as farm guidance activities.

\* The period of three years is for building up of basic conditions for conversion to agricultural cooperative operation with priority on marketing business. The basic task would be to further strengthen the business and management system while carefully maintaining intimate relation with the cooperative members' groups.

\* Capital paid up

(In 1,000 bahts)

Present	1st year	2nd year	3rd year
2,727	3,330	3,900	4,460
(1,807)	(1,870)	(1,950)	(2,000)

( ) Amount in bahts per cooperative member.

HAT-YAI AGRICULTURAL COOPERATIVE  
(SONG KHLA PROVINCE)

1) General situation of the area

Hat-Yai Agricultural Cooperative is located in Hat-Yai District, Song Khla Province. The peninsula part of Thailand is the region in which rainfall is large particularly among Southeast Asia noted for heavy rainfall, and rainfall of over 2,000 mm is concentrated in summer. But the east coast along which Song Khla Province is located has a feature that rainfall is rather large in October and November, as rainfall is minor in summer because southwest monsoons are interrupted by Phuket Mountain Range and Kao Luang Mountain Range which run along the peninsula and northeast monsoons which come across the Siam Bay bring humidity. The average annual rainfall in Song Khla is 2,254 mm, and records indicate that the maximum rainfall was 3,354 mm and the minimum was 1,336 mm (1978). The average temperature is 28.6° C in 1979, and temperature differences in a year is minor as represented by the maximum of 35.4° C and minimum of 22.0° C in the same year. An alluvial plain that extends in south to north direction is located along the coastline, but hilly areas are continued toward Kao Luang Mountain Range which forms the border with Krabi Province located on the west side.

Of total planted area of 1,474,000 rai in Song Khla Province, 764,000 rai which is 52 per cent of all is tree planted land, and 662,000 rai of which is rubber planted. The area of the rubber planted land in the whole Thailand is estimated to be 4,432,000 rai, and Song Khla has a share of its 15 per cent.

The situations in Hat-Yai District are identical, and 204,000 rai which is 69 per cent of total planted area of 296,000 rai is tree planted, and occupies 27 per cent of all tree planted area in Song Khla Province.

Let us observe the situation of ownership of rubber planted area in Song Khla Province as compared with the whole Thailand, based on the agricultural census in 1978.

The average area per proprietor is 18.8 rai in Song Khla, which is slightly larger than the national average of 16.6 rai. However, the ratio of high yield variety is 20 per cent in the area and 28 per cent in the number of proprietors, which are far less than the national average of 32 per cent and 35 per cent respectively. Furthermore, while rubber plantation proprietors of the highest class of 140 rai or more of proprietorship cultivate high yield variety in more than a half (54 per cent) of the planted area in the national average, the situation in Song Khla Province is such that the area ratio of high yield variety is less than that of low yield variety in all classes including the highest. (In the highest class, high yield variety 38 per cent, low yield variety 48 per cent, natural wood, 13.8 per cent.) When a comparison is made by yield per 10 rai, it is reported that production of 30 kg per day can be obtained with high yield variety while it is 5 kg per day with low yield variety. If it is assumed that production is made on 180 days per year, a significant difference between 0.9 ton and 5.4 tons per 10 rai comes out.

According to the same agricultural census of 1978, the number of farm households in Hat-Yai District is 16,177, the farmland area is 296,116 rai, and the average farmland area per household is 18.3 rai, which is close to the national average. When planted area classified by crop is observed, paddy planted area is 82,084 rai which is as low as 27.7 per cent of all, tree planted area is 204,255 rai, which is 69.0 per cent, and dry field crop area is 1,907 rai (0.6 per cent). These figures indicate that the pattern of agriculture in this area is such that rubber plantation is the nucleus. Farmers of 97.4 per cent are owner farmers, it is overwhelming, and the total of tenant farmers (0.3 per cent), owner/tenant farmers (1.6 per cent) and tenant/owner farmers (0.5 per cent) is as small as 2.4 per cent. Rubber combined with rice occupies the majority of the pattern of farm management.

Hat-Yai is the largest city in the southern region of Thailand, and most banks have branch offices in this city. In addition, large commercial firms including traders are making activities using the city as the base for export of rubber, fruits and sugar. These big businesses are, beside distribution, positively challenging processing businesses for increasing added values of exported agricultural products such as operating rubber smoke plants and food processing plants.

Table 2-25 Ownership, variety of rubber plantation in whole Thailand and Song Khla Province

Unit: Thousand rai, % (in parentheses)

	Whole Thailand		Song Khla Province		
	Area	Proprietors	Area	Proprietors	
High yield variety	1,412 (31.9)	93,020 (34.8)	134 (20.2)	9,861 (28.0)	
Low yield variety	2,047 (46.2)	132,252 (49.5)	264 (55.0)	19,806 (56.1)	
Natural wood	376 ( 8.5)	31,564 (11.8)	126 (19.0)	8,680 (24.6)	
Others	596 (13.4)	41,228 (15.4)	38 ( 5.7)	2,842 ( 8.1)	
Total	4,432(100.0)	266,917 ( - )	662(100.0)	35,274 ( - )	
Scale of proprietorship	Less than 2 rai	0 ( - )	19 ( 0 )	0 ( - )	0 ( - )
	" 6 rai	53 ( 1.2)	16,798 ( 6.3)	6 ( 0.9)	1,862 ( 5.3)
	" 10 rai	138 ( 3.1)	29,370 (11.0)	16 ( 2.4)	3,626 (10.3)
	" 20 rai	699 (15.8)	83,269 (31.2)	91 (13.7)	11,069 (31.4)
	" 40 rai	1,495 (33.7)	91,564 (34.3)	221 (33.4)	12,059 (34.2)
	" 60 rai	817 (18.4)	27,716 (10.4)	139 (21.0)	4,054 (11.5)
	" 140 rai	829 (18.7)	16,435 ( 6.2)	146 (22.1)	2,396 ( 6.8)
	140 rai or more	401 ( 9.0)	1,746 ( 0.6)	42 ( 6.3)	208 ( 0.6)

(Component ratio)

Unit: %

	Whole Thailand				Song Khla Province			
	High yield	Low yield	Natural	Others	High yield	Low yield	Natural	Others
Less than 2 rai	21.1	57.9	10.5	10.5	-	-	-	-
" 6 rai	26.3	46.7	12.0	15.0	17.1	50.6	17.6	14.7
" 10 rai	30.7	45.1	10.7	13.6	20.3	50.9	20.1	8.6
" 20 rai	30.9	45.4	9.3	14.3	20.3	53.1	20.6	6.0
" 40 rai	28.8	47.7	9.1	14.3	18.7	54.4	21.3	5.7
" 60 rai	29.2	48.1	8.9	13.8	18.1	56.4	19.4	6.1
" 140 rai	30.7	48.2	8.2	12.8	19.6	58.7	16.8	4.9
140 rai or more	53.6	34.1	3.2	9.1	38.2	48.1	10.2	3.6
(Average)	31.9	46.2	8.5	13.4	20.2	55.0	19.0	5.7

Source: Same as that of Table 2-2.

Table 2-26 General situation of agriculture in  
Song Khla Province and Hat-Yai District

Unit: Household, rai

	Song Khla Province			Hat-Yai District		
	Farm household	Area	Per household	Farm household	Area	Per household
Total	80,592	1,474,327	18.3	16,177	296,116	18.3
of which no land owned	455	-	-	95	-	-
land owned	80,137	1,474,327	18.4	16,082	296,116	18.4
Owner farmer	70,608	1,330,175	18.8	15,662	290,163	18.5
Owner/tenant	4,287	81,666	19.0	259	4,770	18.4
Tenant/owner	2,323	29,694	12.8	78	672	8.6
Tenant farmer	1,608	12,667	7.9	50	252	5.0
Other	1,311	20,125	15.4	33	259	7.8
Culti- vated crop	Paddy	32,020	11.6	3,302	23,270	7.0
	Vegetables, field crops	254	7.5	56	262	4.7
	Permanent crops	14,022	27.1	3,078	82,911	26.9
	Paddy & others	33,058	21.5	9,482	188,096	19.8
	Mixed					
Other than paddy	367	22.9	62	62	20.7	
No cultivation	416	3.5	102	102	2.9	

Source: Same as that of Table 2-2.



2) Outline of organization of agricultural cooperative

Hat-Yai Agricultural Cooperative was established on June 18, 1969 as a credit cooperative and was performing loaning and savings. It was then reorganized into an agricultural cooperative on October 3, 1973.

Purchasing business was started in 1972 and at first fertilizers were handled. Then rubber collection and marketing were carried out for three years starting in March, 1976. However, problems arose in the quality grading of rubber sheets and marketing business has not been made at all since May, 1979.

The number of members is 988 as of June 30, 1981. The membership ratio is less than 6 per cent and is the lowest among four agricultural cooperatives at which studies were conducted. This number of members is less than that as of December 31, 1979 by 15 persons. The reason for this reduction is that the agricultural cooperative was not capable of coping with the request for a loan of 10,000 baht from members. These unsatisfied members withdrew and joined the group of BAAC.

Members belong to 34 community groups. The smallest group is composed of 7 members and the largest is of 38 members.

From the administrative need works for establishment of a semi-district in Hat-Yai District are currently carried out. As one agricultural cooperative will also be established in this semi-district based on the principle of one agricultural cooperative in every district, and the office for this new agricultural cooperative has been opened on the same floor with Hat-Yai Agricultural Cooperative.

It is scheduled that when this new agricultural cooperative starts its activities, 197 members will leave Hat-Yai Agricultural Cooperative and join the new cooperative.

The number of staff members who are performing works at Hat-Yai Agricultural Cooperative are 13 directors and 5 employees.

Directors have not been recruited after two directors resigned their posts in January, 1981. Eleven out of remaining 13 directors are group leaders.

The breakdown of five employees is one each of manager, accounting clerk, credit clerk, marketing clerk and general affairs clerk. The manager pays particular attention to the credit business. The full amount of personnel expenses is subsidized by CPD for four employees except for one general affairs clerk.

The directors' meeting is held every month and major agenda are reporting on loaning situation and changes in members. Group meetings, however, are held only once a year in April or May.

The general meeting is held once a year for settlement of account and decision of business plans, but attendance of members is around 200 persons, which is a very low ratio.

### 3) Outline of businesses of agricultural cooperative

The loan balance of Hat-Yai Agricultural Cooperative as of June 30, 1980 is 4.08 million baht, the savings balance is 189,000 baht and fertilizers handled in the six-month period beginning in January of the same year is 5,000 baht. These figures represent entire operation of this cooperative.

The volume of business of fertilizers handled in the whole 1979 was 128,000 baht, the loan balance was 3,899,000 baht and savings balance was 188,000 baht as of December 31, 1979.

(Credit)

The credit line for this agricultural cooperative approved by BAAC has remained unchanged at 4.6 million baht since 1978. The borrowing balance as of December 31, 1978 was 4.578 million baht and the loan balance was 3.668 million baht. As of December 31 of 1979, the borrowing balance was 4.707 million baht and the loan balance was 3.901 million baht. When the figures as of June 30, 1980 are observed by the same method, the borrowing balance was 4.844 million baht and the loan balance was 4.08 million baht.

On the other hand, repayment performance by members is as shown in Table 2-30. The repayment ratio was as low as 21.3 per cent as of June 30, 1980.

Table 2-27 Changes in number of members of Hat-Yai Agri. Coop.

	Members
Dec. 31, 1978	903
Dec. 31, 1979	988 ( 85)
June 30, 1980	973 (Δ15)

Table 2-28 Changes in borrowings of Hat-Yai Agri. Coop.

Unit: Thousand baht

	1979	1980
Balance at beginning of the term	4,578	4,707
During the term	Borrowing	340
	Repayment	202
Balance at end of the term	4,707	4,844

Note: 1980 is practically of six-month period between January 1 through June 30.

Table 2-29 Changes in loans of Hat-Yai Agri. Coop.

Unit: Thousand baht, %

	Year	Short-term	Medium-term	Total
Loaning during the term	1978	152	1,250 (89.2)	1,402
	1979	278	1,472 (84.1)	1,750
	1980	32	639 (95.2)	671
Balance at end of the term	1978	340	3,327 (90.7)	3,667
	1979	458	3,441 (88.3)	3,899
	1980	439	3,640 (89.2)	4,079

Note: Same as that of Table 2-28.  
 Figures in ( ) represent shares of loaning during the term.

Table 2-30 Loan repayment ratio from members  
in Hat-Yai Agri. Coop.

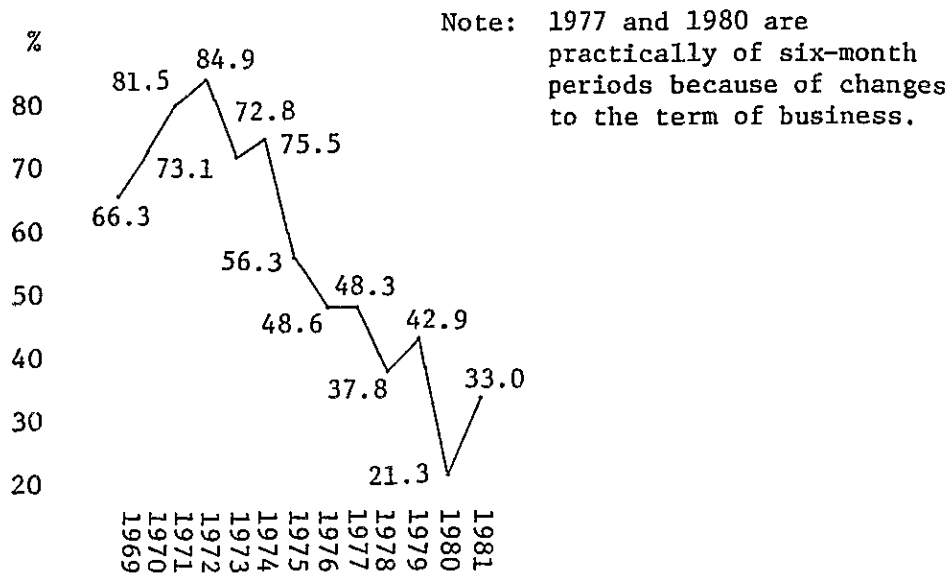


Table 2-31 Total dealings of rubber sheets

	Dealings (t)
1976 (May ~ Dec.)	129
1977 (Jan. ~ Dec.)	226
1978 (Jan. ~ Dec.)	163
1979 (Jan. ~ Apr.)	85

Although it increased to 33.0 per cent as of June 30, 1981, these figures are ranked at the worst group and next-to-worst position in the past records.

(Marketing)

Rubber sheets were handled for three years only between May, 1976 and April, 1979 by the cooperative. The figures are indicated in Table 2-31.

Rubber sheets were collected from members and grading was entrusted to the Rubber Research Center. However, it was not possible to handle rubber sheets in a large quantity because of lack of funds for collection, and marketing of rubber sheets was discontinued. No marketing business is operated at present.

(Purchasing)

Fertilizers only are handled as purchasing business of this cooperative, and the quantity is very minor.

As fertilizers for rubber plantation are supplied at low prices by the Rubber Research Center. Therefore, it is considered that it is better for the agricultural cooperative to handle other materials and production equipments for rubber as well as consumers goods such as rice and sugar.

4) Outline of management of agricultural cooperative

It is not exaggerating to say that Hat-Yai Agricultural Cooperative is operating credit business only, not as the main line of operations and the scale is very small.

The financial situation as of June 30, 1980 was such that the paid-up capital was 662,000 baht, which is about one sixth of that of Koksamrong Agricultural Cooperative, and the reserve was 5,000 baht. The total owned capital was 667,000 baht. The fixed assets were about one million baht, which is 1.5 times of owned capital. The figures as of December 31, 1979 were identical.

When figures on the management (Table 2-4) are observed, the ratio of the total turn-over of the business to the cost is 1.23 times (1.07 times in 1979), which is lower by 0.63 than 1.86 times of Doi-Saket Agricultural Cooperative. As a result, the business gross profit is 47,000 baht (122,000 baht in 1979), which is as low as 1/34 (about 1/10 in 1979) of that of Doi-Saket Society. The personnel expenses are as small as 34,000 baht for three employees for six months as of June 30, 1980. But because of the fact that personnel expenses are subsidized unlike other agricultural cooperatives, the subsidy should be deducted, and it is difficult to make a simple comparison.

Losses were counted in the settlement of accounts for continuous two years, probably due to sudden change of business year.

#### 5) Problems and basic direction of improvement

It is considered necessary to improve the five points with a view to develop the cooperative activities as follows.

##### (1) To restore the trust of the members

The first priority action of this cooperative is to restore the trust of the members. There are three main reasons why this cooperative has lost the trust of members.

- a. The cooperative spent 800,000 - Baht of loan from BAAC to purchase the land and to build up an office of the cooperative, the fund of which had to be lent out to the members in 1975. Since 1975 to 1981, the cooperative has not been able to provide the members with the amount of 800,000 - Baht for loan.
- b. Since May, 1979, the marketing business has been completely suspended, by reason of a very small deficit caused by the marketing business of rubber sheets. This suspension means the cooperative has lost the important means to recover the loans, and has made the recovery more difficult than before.
- c. Because of the new modification of the fiscal year of the cooperative in June 1980, the cooperative did not have enough time to recover the loan and was forced to settle the account, so the ratio of repayment performance dropped to 21.3 % which marked the lowest figure.

The modifications of the fiscal year were made two times within last four years.

Since 1975, the ratio has suddenly dropped, and the reason does not come from worsening of farmer's income, many of whom have large amount of deposit with the commercial banks and have been able to repay their debts.

The amount of 800,000 - Baht spent for the purchase of land and building of the office has reduced the amount of loans to members, and increased accrued interest has become the main reason of deteriorated management of the cooperative. In order to remedy the situations, the long-term loan with low interest will be provided for the land and the office, and the marketing business of rubber sheets will be started again.

(2) To insure the leadership

The second problem is lack of leadership in running the cooperative. 34 groups of members hold meetings in April or May once a year. Although these meetings are held under the name of the cooperative the president attended only two or three meetings, the general manager attended 14 - 15 meetings, on the other hand, the CPD officer, made all the explanation on the cooperative activities even in case of absence of directors or the manager.

In view of the present conditions of the society, the president, deputy president and general manager should attend the group's meetings as many as possible without any excuse, because strengthening the relationship between the cooperative and members be regarded as the essential task for the top management of the cooperative.

The following measures are necessary to utilize effectively the members' group as the basic organization of cooperative operation.

- Holding the group leaders' meetings regularly,
- Training of directors and managers,
- Special training for group leaders,
- Practical training for marketing manager,
- Constructing the CPD training center.

Training courses above mentioned should be organized by CPD.

Especially, in the southern part of Thailand, it is necessary to hold the specific course which offers special training such as grading of rubber sheets.

(3) To resume the marketing business

As mentioned before, the handling rubber sheets, which is only one commodity the cooperative has marketed, was suspended at the group leaders' meeting in April, 1979, because of its deficit without any consultation with the board of directors. The marketing business has been profitable (the gross profit) every year except 1976 with its efforts, and showed only a small deficit (2,911 - Baht from January to April, 1979) after the deduction of the cost of sales and management. The small deficit can arise from the very nature of marketing business, and it is not reasonable to suspend the handling of rubber sheets.

On the other hand, to analyze the reasons properly is necessary for the further development of marketing business.

The marketing business of rubber sheets will make a great contribution to extend the favorable price to the members and will improve the cooperative management.

- As the group leaders have been well experienced in trading rubber sheets, the cooperative had better utilize their know-how.
- In order to protect the producers' benefits, the cooperative should promote the rubber sheet handling with strict grading, standing on the basis of bargaining ability accumulated by the group leaders.
- 30 marketing groups in this area have already secured the commission (50 ~ 70 satang per kg.) of the middle-man at village-level through the direct negotiation with merchants in Hat-Yai.  
For the time being, the cooperative will play the same role as small merchants in Hat-Yai with trading target quantity of 1,000 ~ 2,000 kg. a day, and be able to ensure members the profit which marketing groups are already enjoying.
- When the cooperative is able to collect the quantity handled by 30 marketing groups, it can play the same function as the middle-size merchants.



- A 6 ton-truck for collection will bring more advantages to cooperative marketing business.
- After the cooperatives have enough experience of rubber sheet handling, the smoke plant to be operated by the provincial federation can be constructed.
- It does not need to say that the personnel concerned who grade strictly the rubber sheets and make the negotiation should be trained, and that CPD should support the cooperative marketing business in extending the fund for collection.

(4) To expand positively the purchasing business

As the fertilizer for rubber plantation has been supplied by the Rubber Research Center, the cooperative should study to supply the fertilizer for paddy rice, the materials for rubber plantation and primary processing of rubber, milled rice and sugar to the members.

(5) To improve the credit business

It is necessary to improve the credit business besides the marketing business.

As the loan conditions extended by the cooperatives have greater advantages than those by merchants and commercial banks, a large number of members do not willingly repay loan to cooperative before due date.

The loan with higher interest is repayed first as a very nature of credit business, but the very low ratio of repayment performance is the main reason of a vicious circle, -- to restrict the loans to members, reduce the amount of new loans, and not to increase the credit line from BAAC. In order to avoid such a circle, the "penalty interest" which is now popular among the cooperatives in the north will be introduced to the cooperatives in the south.

For the further improvement of credit business, the nation wide common problems will be studied. For example to increase the interest rate on the saving with cooperative up to the same level with commercial banks, and to expand the commission of cooperatives in BAAC's credit system, they will be worth while to be studied.

6) Development Plan

(1) Organizational Strengthening

\* The membership ratio to be raised to 10 % by resuming rubber marketing business, and improvement of loan repayment ratio which will expand lending resources and activate purchasing business.

	Present	1st year	2nd year	3rd year
Membership ratio	6 %	7 %	8 %	10 %
Cooperative members (persons)	973	1,130	1,300	1,620

\* The 800,000 bahts applied to the purchase of land and building will be transferred to a special long-term borrowing account with the view to unifying the cooperative members. Increase the attendance of the president and general manager at the group meetings so that explanations may be made by the cooperative officials.

(2) Credit Business

\* By raising the repayment ratio of the loans to 55 %, the lending resources to the cooperative members will be expanded.

Above all entrance into the 2nd ranking will be realized.

	Present	1st year	2nd year	3rd year
Loan repayment ratio	21.3 %	45 %	50 %	55 %

\* In the first place, the control system will be established for loan recovery in due time by internal personnel. Interest for members' saving will be improved thereby encourage and promote savings. Average increase of 100 bahts a year to be realized.

\* Targets for outstanding balances of loans and savings at the end of fiscal year.

(In 1,000 bahts)

	Present	1st year	2nd year	3rd year
Loan	4,080 (4,193)	5,100 (4,500)	5,900 (4,500)	7,300 (4,500)
Saving	189 (194)	340 (300)	520 (400)	810 (500)

( ) Average amount per cooperative members in bahts.

### (3) Purchasing Business

- \* Reorganize the business structure by expanding fertilizer supply for paddy growing and starting the supply of rice for consumption. Basic principle of strengthening purchasing activities will be to increase the membership ratio and to raise the utilization ratio by members.
- \* Since the supply of fertilizer for rubber plantation is handled by the Rubber Research Center, the agricultural cooperative will intensify its handling of paddy growing fertilizer. The members' utilization ratio to be raised to 60 % from 50 %, and the handling volume to be expanded two-fold to 60 t from 30 t.
- \* Supply of rice for consumption will be started. The target is to cover the demand of 50 % from non-paddy-growing member farmers.
- \* Handling of farm machinery for paddy growing and farm materials for rubber plantation will be started. Also whenever necessary, such services as cultivation of members' lands by the cooperative with charge and repairs of machineries will be made. For this purpose, the fostering and training of maintenance personnel on farm machinery will be undertaken, and besides, machinery operators for cultivation with charge will be secured from among cooperative members.
- \* The target amount for business handling will be 1.6 million bahts.

(In 1,000 bahts)

	Present	1st year	2nd year	3rd year
Turn over	128	400	900	1,600
(of which, fertilizer)	(30 t)	35 t	45 t	60 t
(of which, rice)	-	40 t	110 t	200 t

Present refers to the fiscal year 1979.

- \* Establish an early recovery system on accrued accounts for supplied goods and levy a default interest after the due time without fail.

### (4) Marketing Business

- \* To resume operations as quickly as possible on the currently suspended rubber marketing business, and to expand the turnover year after year.

\* As for rubber marketing, in the past (fiscal 1979) the performance record was 226 t. With improvement of the cooperative marketing system, it is possible to realize the handling of 250 t in the nearest future. The 250 t is equivalent to 16 % of the cooperative members' marketing quantity (at that time). Henceforth, with the increase in cooperative members (membership ratio of 10 % to be realized) and elevation of the utilization ratio by members, the handling quantity can be raised to 500 t in the 2nd fiscal year, and further to 700 t in the 3rd fiscal year.

\* Next to rubber, experimental handling of paddy will be started. As there are many rice growing farmers for their own use, investigations will be made for the establishment of rice polishing mill (large area facility) for processing with charge.

\* The target amount of marketing turnover is 10 million bahts for the 3rd fiscal year.

(In 1,000 bahts)

	Present	1st year	2nd year	3rd year
Turn over	1,246	3,500	7,000	10,000
(of which, rubber)	(226 t)	250 t	500 t	700 t
(of which, rice)	-	-	-	300 t

Present refers to fiscal 1979.

\* To foster and train personnel in charge of marketing.

\* Facilities expansion plan is as shown in the attached paper.

\* Regarding the establishment of large area joint use facilities such as rice mill and rubber smoke factory, consultations with neighboring cooperatives are to be started.

#### (5) Farm Management Guidance

\* Strengthen and expand the farm guidance system aimed at providing advice and guidance to members concerning farm technology and management.

\* Grasp of area fundamentals; survey of actual farm conditions; guidance of simple farm management record with cooperative members (as model); and promotion of farm management plan in combination

with the establishment of area agricultural developmental program.

\* The First Year

- a. Training and fostering of personnel (by attending the training courses under CPD sponsorship).
- b. Grasp of area fundamentals (total number of houses, farm households, land utilization, cropping condition, output and sales conditions, etc. in the village).
- c. Compilation of cooperative members' farm management registry (farming area; planting, production and sales conditions by crop, family composition and labour conditions, etc.).
- d. Compilation of farm management record (model plan).

\* The Second Year

- a. Starting of farm management record by model farmers; farming program making (in model area).
- b. Drafting of plan and discussions on area agricultural development program in each village (priority items).

\* The Third Year

- a. Diffusion of farm management registry and farming program making.
- b. Area agricultural development program making in each village, and program making for the district.

(6) Development of Facilities

For the facilities of the cooperative the construction will be started by the Third Year at the latest; for the large area joint use facilities, the construction will be started by the Fifth Year. (Details are shown on the attached paper)

(Individual Facilities)

- \* Means of Transportation ----- 1 small-size trucks (3 t) for collection and distribution.
- \* Means of collection ----- paddy threshing machine with pulling tractor attached; truck scale; paddy moisture meters.

- \* Primary rubber sheet processing facilities ----- for primary rubber processing 34 location sets of buildings, processing instruments, and drying room (1 set for each group).
- \* Storage facilities ----- besides the existing warehouse, rubber collecting-sorting lot in combination with storage warehouse (330 m<sup>2</sup>), and materials warehouse (jointly used as garage, 700 m<sup>2</sup>).
- \* Machinery for cultivation ----- tractors with attachments for lent.

(Large Area Facilities)

- \* Rubber smoke plant ----- smoke facility and water washing, selecting, packaging facilities, storage warehouse attached.
- \* Rice polishing machine, warehouse attached.

(7) Training and Fostering of Personnel

- \* Supplement and strengthen personnel in the following fields.  
Internal reassignments will meet the necessary requirements to a large extent; actual increase in personnel will be 2 persons.  
CPD's subsidizing system will be utilized.

Marketing, (a)	Farm Guidance, (b)	Assistant manager, (c)	Purchasing (d)
(Persons)			

Present	1st year	2nd year	3rd year
3	4	5	5
(Actual increase)	(1)	(1)	(0)
(Assignment)	(a) & (b)	(c)	(d)

- \* Resume the marketing business, place the farm guidance structure on a firm basis, establish leadership for strengthening independent operation, build up the recovery and control system on loans, and for training personnel in charge of purchasing business and repairing of farm machinery, CPD and other training facilities will be utilized, and the Regional Training Center will be established.
- \* When necessary, temporary employment from among the cooperative members will be relied upon.

(8) Improvement of Management and Financial Affairs

\* While increasing cooperative membership, efforts will be made toward sound management and sound financial position. For this purpose, it is important to recover loans and accrued accounts for supplied goods within due time, and to guarantee this, positive action for cooperative marketing of agricultural products is required. In the strengthening of marketing business, it is necessary to establish a collection fund loan system by BAAC, CPD and ACFT for other agricultural products than paddy. It is desirable to accumulate, at the CPD, agricultural cooperative promotion fund which can constitute the financial resources for the collection fund of agricultural products. Moreover, it is necessary to take measures in order to increase and strengthen owned capital through own efforts of the agricultural cooperative, such as, faster recovery of loans and accrued accounts, savings promotion, capital increasing activities, etc. As the basis for making these activities successful, efforts should be made to develop mutual trust and confidence in the relation between the cooperative and its members through daily business activities, and particularly to improve the services offered by the cooperative through furthering the advisory functions such as farm guidance activities.

\* The first task is to make the marketing business successful. Also at the management level, must be solved the problem of the fund for land and building of the office which has become a heavy financial burden, and to improve the financial situation through business expansion. It is essential to shift the management stance so as to make it more positive.

\* Capital paid up (In 1,000 bahts)

Present	1st year	2nd year	3rd year
622	890	1,170	1,620
(680)	(780)	(900)	(1,000)

( ) Amount in bahts per cooperative member.

### CHAPTER III. AGRICULTURAL COOPERATIVES PROMOTION PROJECT

#### 1. Objectives of the Project

Objectives of the project are as follows;

Upbring agricultural cooperatives in Thailand through the way of approach by total system so that agricultural cooperatives can meet various needs of small member farmers with a view to raise the agricultural production of cooperative member farmers and improve their socio-economic well-being more efficiently.

In order to achieve the objectives above mentioned, following items will be realized centering on the model agricultural cooperatives.

- (1) Establish the consulting unit for agricultural cooperatives, which will be responsible to give advice and guidance through travelling guidance on farming programmes including member farmers' plan of production, marketing and finance and on the area agricultural development plan at the village and cooperative level based on the farmers' programmes above mentioned, as well as on cooperative business and managerial programme.
- (2) Strengthen the training of cooperative officials and staff-members as well as government officers by improving and expanding functions of the main training center at the capital area and establishing sub-centers at regional level to meet more efficiently the regional requirements.
- (3) Construct facilities for marketing and processing of farm products in order to promote more profitable sales of products. As for facilities difficult to be operated by individual societies, establish the joint use system in a large area.
- (4) Expand the provision of production loans required for the implementation of farming programmes of individual farmers, and provide necessary fund for cooperative marketing of farm products or for the construction of indispensable facilities.

Explanations in detail on the above will be given later.



## 2. Project Area - Selection of the Model Agricultural Cooperatives -

The Agricultural Cooperatives Promotion Project in Thailand will be completed through execution of the development plan in the model agricultural cooperatives. The four agricultural cooperatives which are the objects in this survey and for which the development plan was proposed were selected from the four provinces of Thailand, Chiangmai, Lopburi, Nakhonratchasima and Songkla. They are, as it were, four points dispersed over the country. For the realization of various targets presented in the plan, it is essential that those four agricultural cooperatives will cooperate with their neighbouring agricultural cooperatives. Especially among others the facilities required for developing positively activities by agricultural cooperatives to market their agricultural products are a matter which individual agricultural cooperative can not cope with. It would be, therefore, necessary to study establishing facilities in a large area of the province which can be used jointly by several agricultural cooperatives of similar agricultural conditions. It can be the cooperation of cooperatives.

It is proposed, therefore, that, for the solution of the various problems which have been revealed in this survey, four more agricultural cooperatives in each province are selected for the time being to form the project as four-area project, each project containing altogether five agricultural cooperatives, and thus dealing with, as it were, an area represented by those five agricultural cooperatives. In this way efforts on the point may develop into efforts on the facet.

Here, the four agricultural cooperatives which are the objects in this survey will be called the "Pilot Model Agricultural Cooperatives" and the four agricultural cooperatives around each of those pilot agricultural cooperatives will be called the "Extension Model Agricultural Cooperatives". With those pilot model agricultural cooperatives, considering the facts revealed by the survey, execution of the plan to develop the agricultural cooperative will be started one year earlier to verify the method of the development in Thailand and to measure its effects.

The extension model agricultural cooperatives will put the development plan into practice together with the pilot model agricultural cooperatives and participate in the studies for promoting establishment and management of the large area joint use facilities. After the second year the pilot model agricultural cooperatives and the extension model agricultural cooperatives will have the same status, and they will become a project with plane extension over each province and will be regarded as models by other agricultural cooperatives in the province and also in other provinces.

The names of the pilot model agricultural cooperatives and the extension model agricultural cooperatives are as follows;

North (Chiangmai Province)

Doi-Saket Agricultural Cooperative

San Sai "

San Kan Phaeng "

Hangdong "

Saraphi "

Central (Lopburi Province)

Koksamrong Agricultural Cooperative

Ban-mi "

Muang Lop Buri "

Tha-woong "

Pra Budda Bad Land Settlement Cooperative

North-East (Nakhon Ratchasima Province)

Muang Nakhon Ratchasima Agricultural Cooperative

Pak-Thong Chai "

Chak-Raj "

Kong Samakki "

Pimai "

South (Songkla Province)

Hat-Yai Agricultural Cooperative

Chana "

Thebha "

Nathavi "

Rat-Phum "

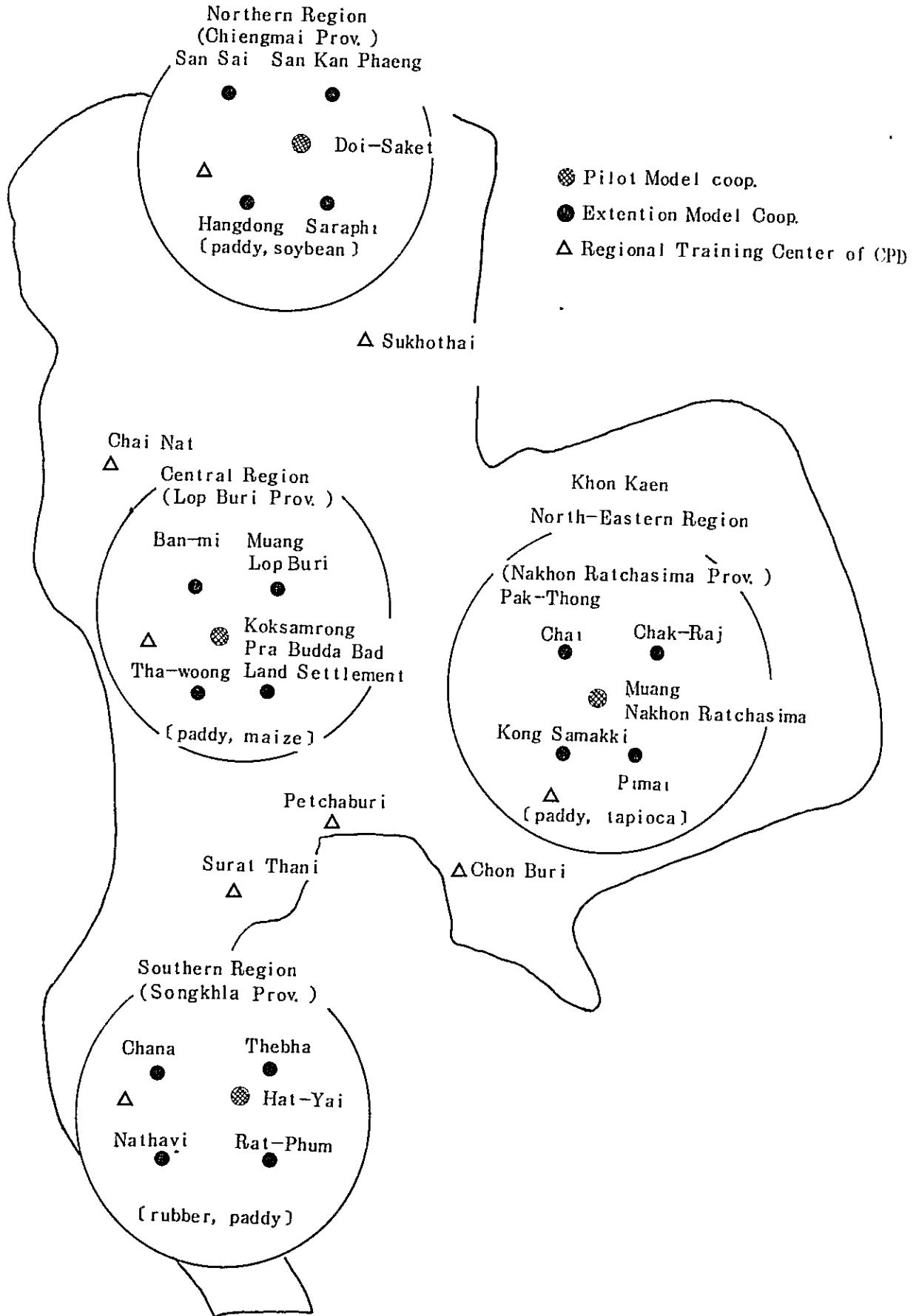
Table 3-1 Outline of Agriculture and Agr. Coops in Project Areas

Outline of Agriculture	Province Coops			Chiangmai Prov. (North)					Lop Buri Prov. (Central)			Nakhonratchasima Prov. (N-E)					Songkhla Prov. (South)						
	Name of Coop	Doi Saket	San Sai	San Nhaeng	San Kan	Hang dong	Sara phi	Koksa-mrong	Ban-muang	Ahuang Buri	Tha-wong	Pra-Buddha Bad	Miang-Nakhon	Pak-Thong-chai	Chak-Raj	Kong-Sama-Ke	Pimai	Hai-Yai	Chann	Thab-Na	Ra-Vi	Ra-Phum	
Outline of Agriculture	Number of farmer families	6,660	4,703	6,677	8,438	5,849	6,379	15,768	8,152	10,851	5,580	6,896	11,152	12,795	8,682	7,096	10,602	16,177	8,868	4,952	4,638	8,861	
	Families growing paddy	5,806	4,381	5,955	7,220	5,273	5,035	7,835	6,862	7,234	4,798	2,016	8,584	9,896	7,443	6,750	9,155	12,784	8,060	3,212	2,273	8,122	
	Owner farmer	3,650	4,198	4,198	5,754	3,911	3,757	11,126	2,457	5,841	2,701	6,121	9,503	11,395	8,248	6,387	9,132	15,662	8,157	4,846	4,371	7,975	
	(%)	(54.8)	(62.9)	(62.9)	(68.2)	(66.9)	(58.9)	(70.6)	(30.1)	(53.8)	(48.4)	(89.3)	(85.2)	(89.0)	(95.0)	(90.0)	(84.5)	(96.8)	(92.0)	(97.9)	(94.2)	(90.0)	
	Tenant farmer	1,523	1,507	1,507	1,514	1,266	1,382	2,194	2,801	2,257	1,019	253	514	320	51	337	569	50	69	6	57	64	
	(Rate)	(22.9)	(22.6)	(22.6)	(18.3)	(21.6)	(21.7)	(13.9)	(34.1)	(20.8)	(18.3)	(3.7)	(4.6)	(2.5)	(0.6)	(4.7)	(5.3)	(0.3)	(0.8)	(0.2)	(1.2)	(0.7)	
	Paddy	18,788	47,703	65,639	31,091	32,822	20,134	261,407	171,334	118,486	11,685	118,637	125,320	132,485	172,239	239,571	82,084	66,642	33,728	11,910	584	2,960	
	Vegetable, Field crops	1,570	1,591	1,591	1,617	1,465	414,057	56,917	98,119	4,773	239,389	85,684	159,824	75,284	28,903	122,312	1,907	1,404	941	584	584	2,960	
	Tree crops	5,348	5,295	3,924	3,080	5,720	4,966	1,124	7,609	1,257	8,179	5,639	7,669	5,973	539	1,393	201,255	86,610	65,088	103,809	44,183	7,272	
	Forest or Pasture	338	491	216	326	33	1,451	111	149	76	3,780	2,280	11,206	9,682	4,699	1,695	4,178	6,928	15,193	5,247	5,247	7,272	
Others	1,530	1,096	269	288	826	1,356	2,130	1,357	651	2,246	3,196	1,291	7,922	992	4,450	3,692	3,825	5,151	5,085	5,216	5,216		
Total	57,574	58,969	71,639	39,402	43,866	628,964	321,992	278,568	125,215	295,277	215,136	305,310	231,316	207,372	369,421	296,116	165,409	120,101	126,635	142,399	142,399		
(Area per family)	(8.6)	(8.8)	(8.8)	(6.7)	(6.9)	(39.9)	(39.5)	(25.7)	(22.4)	(13.1)	(19.3)	(23.9)	(26.6)	(29.2)	(18.7)	(24.3)	(18.3)	(18.7)	(24.3)	(27.3)	(16.1)		
Outline of Coop. Organization, Business and Management	Number of Members	1,385	2,023	1,286	1,706	2,818	3,343	2,187	1,749	1,818	1,818	1,818	1,509	1,876	1,356	2,177	2,487	973	896	711	717	911	
	(Membership Ratio)	(21)	(30)	(15)	(27)	(18)	(41)	(20)	(31)	(27)	(14)	(14)	(15)	(16)	(31)	(10)	(23)	(6)	(10)	(14)	(15)	(10)	
	Loan	13,394	22,521	12,206	12,359	26,627	19,783	15,275	10,600	6,037	15,381	12,392	5,002	11,692	21,571	4,080	3,008	4,324	3,821	4,324	3,821	3,821	
	Accounts Receivable	1,021	589	174	718	2,805	1,721	1,274	1,118	5,011	1,526	763	201	1,723	3,299	34	28	1	62	439	1	62	439
	Borrowing	5,362	6,870	8,889	10,716	25,333	11,732	9,572	7,935	6,200	14,993	9,026	6,189	10,790	22,558	1,924	3,960	3,061	4,273	3,814	3,814	3,814	
	Saving	1,657	5,337	1,434	1,159	1,256	78	2,136	1,085	166	829	362	141	167	255	189	433	14	14	14	14	14	
	Capital paid-up	2,409	4,786	2,370	2,391	1,601	1,662	1,120	2,534	1,215	2,727	1,497	781	1,580	1,408	662	872	432	490	499	499	499	
	Reserves	4,718	6,007	1,839	2,645	8,097	10,391	5,642	10,416	661	2,118	2,722	1,126	2,947	1,054	565	179	85	50	50	50	50	
	Recovery of Loans in term	57.19	77.85	75.63	56.49	18.47	60.19	66.87	51.83	35.27	44.81	50.18	31.81	21.12	50.28	19.16	81.34	59.98	68.53	34.48	26.9	26.9	
	Fertilizer	967	2,603	1,289	1,788	610	189	780	115	7,115	2,729	177	0	332	4,359	5	80	146	269	142	142	142	
Agricultural Machinery	52	-	-	20	141	-	2,923	-	1,115	-	-	-	-	-	-	-	-	-	-	-	-		
Rice	286	942	55	353	578	197	101	657	31	165	-	-	-	-	-	-	-	-	-	-	-		
Others	1,305	3,545	1,344	2,161	1,285	386	2,487	2,660	8,560	9,350	257	887	1,256	8,258	5	92	160	1,043	294	294	294		
Total	95	95	-	1,088	705	(1,595)	1,611	3,195	-	-	-	-	-	-	-	-	-	-	-	-	-		
Paddy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Maize	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Rubber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Marketing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Others	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total	1,101	1,400	604	319	1,781	1,013	1,241	734	22	652	448	116	559	1,331	197	26	82	10	10	10	10		
Net Profit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

(Note) Based on 1978 Agriculture census for agriculture, and on the latest Annual Report (for fiscal year 1979 or 1980) of each coop, providing asterisks means 18 month balance and \*\*6 month balance for Songkhla Province.

Figure 3-2

Project Areas



### 3. Contents of the Project

#### 1) Establishment of Consulting Unit and Travelling Guidance

Guidance services are essential for the agricultural cooperatives to carry out integrated activities. Lack of human resources is often pointed out as one of the problems which hinders the cooperative development in Thailand. It is the biggest task for agricultural cooperatives to secure now senior staff-members who have the ability of management and control or staff members with practical business experiences. Under these circumstances it is of urgent necessity to make efforts to bring up personnel by strengthening education and training on one hand, and it is useful on the other to have the consulting unit which is responsible to give advice and guidance through travelling guidance on how to make business and managerial plan and on how to make the agricultural development plan including plans of production, marketing and finance of member farmers.

##### (1) Objectives

Objectives of consulting unit are as follows;

- a. Give advice and guidance to agricultural cooperatives on how to guide member farmers in making farming plans (including programmes of production, marketing of products and financial matters) and on how to make the agricultural development plan at the village and cooperative level.
- b. Give advice and guidance to the cooperatives on how to solve problems in various fields of business and management which occur in the course of implementation of the development plan in the pilot model cooperatives.
- c. Give advice and guidance on how to make and implement the development plans in the extension model cooperatives.
- d. Give advice and guidance on the consolidation of basic conditions necessary for the construction or the expansion of facilities for marketing and processing of farm products, and on their management after the construction

##### (2) Composition

The consulting unit will be composed of experts as follows, mainly from CPD (head office and local offices) and other competent agencies including ACFT.

- a. Leader (General controller)
- b. Expert in Cooperative management

- c. Expert in cooperative marketing and purchasing
- d. Expert in farm credit
- e. Expert in farm guidance (making of farming plan)
- f. Expert in cooperative administration
- g. Expert in Agricultural Economics

(3) Activities

Give guidance in visiting regularly twenty agricultural cooperatives of four project areas, and arrange or control the progress of project works, for which annual programme will be set up including following items.

- a. Travelling guidance will take one month for five cooperatives of a project area, thus four months for four project areas. Guidance will be given to all the project areas two times a year.
- b. Works of arrangement and control will be made for each project area in Bangkok, and the outcome will be informed to the respective area through the CPD channel, and the guidance team of a small number of experts will be sent on request from the project areas.

2) Expansion of CPD Training Centre and strengthening of trainings for cooperative officials and employees as well as for Government Officers.

With a view to strengthen agricultural cooperative organization CPD has made every effort to bring up human resources in the cooperatives at each level, including farm leaders, cooperative officials and employees as well as government officers. In spite of these efforts men of ability in the cooperative organization are not enough from the view point of today's urgent task of securing the personnel of ability in the cooperative system.

In order to solve the problem it is of urgent necessity to improve the training programmes and to expand the training facilities. For this purpose the training centre at the capital area will be improved and expanded so that it functions as the Main Training Centre, and regional training centres will be established as Sub Centre to give sufficient trainings which can meet the local requirements.

(1) Objectives

Strengthen the education and training for cooperative officials and employees as well as government officers in order to bring up and secure sufficient men of ability required by all the fields of cooperative activities like organizational set-up, business performance and management. For this purpose the CPD training Centre will be strengthened and expanded at the capital area (Main Centre) and at the regional level (Sub Centres).

(2) Division of Functions

Functions of main centre and sub-centres are as follows;

a. Main Centre

Main centre will be located at Bangkok area and its functions are to hold trainings for officers of CPD and CAD of national, regional and provincial levels, long term and specific trainings for senior staff and experts of gricultural cooperatives and also trainings with a view to bring up trainers at sub-centres.

b. Sub Centres

Sub-centres will be established in four provinces of project area, and trainings will be conducted to well meet the local requirements of agriculture and agricultural cooperatives. Trainees will be cooperative farm advisers, staff-members in charge of management and control, specialists in charge of rice-mill or farm machinery and marketing, board members, members' group leaders. Contents of trainings will be practical. Trainings for CPD officers in charge of training fresh men will also be given.

(3) Course Distribution

Courses held at Main Centre and Sub Centres will be as follows;

a. Main Training Centre (Bangkok)

(CPD staff training)

- \* District officers,  
4 - week course, 100 persons
- \* Provincial officers,  
2 - week course, 144 persons
- \* Permanent teaching staff (trainers)  
4 - week course, 40 persons
- \* Cooperative students  
1 - year course, 90 persons
- \* Officers in charge of farming guidance,  
4 - week course, 36 persons
- \* Orientation of newly recruited officers,  
5 days course, 160 persons
- \* Development Management Course,  
2 - week course, 36 persons

- \* Development skills course,  
2 - week course, 50 persons
- \* Inservice Training for district officers  
2 - week course, 50 persons
- \* Follow-up course for cooperative students course  
1 - week course, 40 persons
- \* National Seminars  
3 times a year

(Cooperative staff training)

- \* Managers  
8 - week course, 30-40 persons
- \* Accountants  
4 - week course, 30-40 persons
- \* Marketing officers  
4 - week course, 30-40 persons
- \* Creditmen  
4 - week course, 30-40 persons

b. Regional Training Centres (Sub Centres)

(CPD staff training)

- \* Regional seminar officers,  
5 - day course, 589 persons

(Cooperative training)

- \* Farm guidance course,  
4 - week course
- \* Inservice training course for coops managerial staff  
2 - week course, 400 persons
- \* Rice mill management course,  
2 - week course
- \* Farm machinery course,  
2 - week course
- \* Marketing course,  
2 - week course



- \* Committe members,  
5 - day course, 6,000 persons
- \* Chairman and Secretary of group members  
2 - day course, 9,000 persons

(4) Construction and Expansion of Facilities

As Central (main) Training Centre is old and decrepit the construction of new facilities will be required, and regional centres will be newly established.

a. Main Training Centre

- 1 auditorium for 150 persons
- 6 class rooms
- 1 library
- Domitory for 100 persons,  
kitchen and canteen, dining room, lounge room, game room
- Supplemental equipment

b. Regional Training Centres

New construction for three regional centres  
(Chiang Mai, Nakhon Ratchasima and Songkhla)

- 1 auditorium for 80 persons,
- 2 class rooms,
- Study rooms
- Domitory for 50 persons,  
Kitchen and canteen, dining room, lounge rooms, game rooms

(Chiang Mai, Lop Buri, Nakhon Ratchasima and Songkhla)

- Workshop for machinery training and garage
- Supplemental and equipment

For detail of facilities please refer Appendix.

### 3) Facilities required for Marketing and Processing in Agricultural Cooperatives

It is essential to have enough facilities for marketing, storage and processing of farm products in order to strengthen the integrated activities of agricultural cooperatives and to increase their bargaining power. Necessary facilities will be established or expanded corresponding with the major crops of the area and the handling programme of main products by agricultural cooperatives in order to meet the requirements of member farmers who make up their farming programme and put it into practice. For large scale facilities beyond the ability of individual cooperatives, joint use facilities will be constructed and joint management system will be set up.

#### (1) Objective

In response to making and implementing farming programmes by farmers, facilities for collection and marketing will be constructed so as to strengthen cooperative bargaining power and improve cooperative services to member farmers.

#### (2) Major crops in each area

Kind and capacity of facilities required are different by marketing programme of each area.

Major crops in each area based on the development plan of the pilot model cooperatives are as follows.

Chiangmai Province (North)	Paddy and Soy bean
Lopburi Province (Central)	Paddy and Maize
Nakkonratchasima Province (North East)	Paddy and Tapioca
Sangkhla Province (South)	Rubber and Paddy

Based on the development plan of individual cooperatives which was described in the previous Chapter, and taking the actual situations of four neighbouring societies into consideration, the plan on the production of major crops in the area and handling by agricultural cooperatives in the project areas is shown in the table 3-3. In this table the production by member farmers is estimated based on the present production in the area, and 30% of which is estimated to be handled by cooperatives. At the same time the membership ratio will increase to 30% in the North and the Central, 25% in the North-East and 15% in the South respectively in three years of development plan, and the cooperatives handle 30% of the production by member farmers. Handling plan of the agricultural cooperatives is drawn up on the above projection.

Table 3-3 The Production of Main Agricultural Products in Project Areas and the Marketing Plan by the Agricultural Cooperatives

		A. North Chiengmai Province	B. Central Lop Buri Province	C. North East Nakohanratchasima Province	D. South Songkhla Province	
(Number of District)		(19)	(6)	(21)	(10)	
Number of Farmers (Province) Nu		113,562	59,418	184,042	80,592	
Families (5 Districts) Nu		34,003	47,210	50,527	43,496	
Present	Number of Membership Nu (Membership Ratio) %	6,400 22.7	11,945 25.3	9,405 18.6	4,208 9.7	
	Paddy	Planted Area Rai	229,000	797,046	788,252	277,132
		Yield per Rai Kg	509	300	194	294
		Production ton Members'	116,561	239,112	152,920	81,474
	Others	Production ton (30% of Members)	26,494	60,495	28,458	7,903
		(7,948)	(18,149)	(8,538)	(2,371)	
Name of Main Crop		Soybean	Maize	Tapioca	Rubber	
Plan	Planted Area Rai	43,374	624,252	326,352	438,429	
	Yield per Rai Kg	197	342	1,984	69	
	Production ton Members' Produc- tion ton (30% of Members)	8,543	213,491	647,482	30,250	
	1,942	54,013	120,496	2,934		
	( 583)	(16,204)	(36,149)	( 880)		
	Target of Membership Ratio %	30%	30%	25%	15%	
Paddy	Members' Production ton Coop Utiliza- tion Ratio by Members %	34,968 (30)	71,734 (30)	38,230 (50)	12,221 (30)	
	5 Coops' Marketing ton	10,490	21,520	19,115	3,666	
	Others	Members' Production ton Coop Utiliza- tion Ratio by Members %	Soybean 2,565 (50)	Maize 64,047 (60)	Tapioca 161,871 (30)	Rubber 4,538 (50)
5 Coops' Marketing ton		1,283	38,428	48,561	2,269	

Project Area [Region Province]	Month of Shipment								Transaction		
	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Five Coops (Plan)	Average per coop	Monthly average per coop
A North Chiengmai			Soybean			Paddy			10,490t 1,283	2,098t 257	700t 129
B Central Lopburi			Maize			Paddy			21,520 38,428	4,303 7,686	1,435 1,922
C North-East Nakhon- ratchasima			Tapioca			Paddy			19,115 48,561	3,823 9,712	1,274 3,237
D South Songkhla			Rubber			Paddy			3,666 2,269	733 454	244 57

After the calculation as mentioned above the handling of paddy and other major crops by agricultural cooperatives and the cooperative share in the area is estimated as follows:

A. North (Chiangmai)	Paddy 10,490 ton	Soybean 1,283 ton
	$30\% \times 30\% = 9\%$	$30\% \times 50\% = 15\%$
B. Central (Lopburi)	Paddy 21,520 ton	Maize 38,428 ton
	$30\% \times 30\% = 9\%$	$30\% \times 60\% = 18\%$
C. North-East (Nakhonratchasima)	Paddy 19,115 ton	Tapioca 48,561 ton
	$25\% \times 50\% = 13\%$	$25\% \times 30\% = 8\%$
D. South (Songkhla)	Paddy 3,666 ton	Rubber 2,269 ton
	$15\% \times 30\% = 5\%$	$15\% \times 50\% = 8\%$

### (3) Facilities and equipments required

Facilities and equipments required for cooperative marketing and processing and their capacity as well as units are planned as follows, based on the above handling plan and considering situations surrounding marketing of farm products.

#### a. Facilities and equipments for individual cooperatives

(Paddy)

At present no cooperative has threshers for collection at farmers' yard and farmers thresh with their own or rent from merchant and ship the paddy to the cooperative. In this plan half of paddy handled by cooperative will be processed with thresher owned by the society and collected, considering the ability and the actual situation on the side of farmers. A thresher of capacity of one ton per hour can process 450 tons of paddy during three months of season, then required number of threshers by each cooperative will be two in Chiangmai, four in Lopburi and Nakhonratchasima respectively and one in Songkhla. Since the thresher is equipped with tractor, while the thresher is working the tractor can be used as a means of transportation.

Equipments required for collection such as testing husker, testing polisher and moisture metre are needed both at farmers' yard and at the cooperative warehouse and the required number of sets will be one more than that of thresher.

The plan on warehouse for paddy is made on the basis of handling plan of each cooperative and that the turnover of the warehouse including existing one is two or three times. In this way warehouses to be constructed are of the capacity of 500 tons in Chiangmai and Lopburi, and 1,000 tons in Nakhonratchasima. In Songkhla the warehouse for paddy will not be required, because the handling of paddy there is very small and it is not the marketing of paddy but processing with fee like polishing rice that the cooperative is expected to do. On trucks for collecting paddy explanation will be given later.

(Soybean)

It is only in Chiangmai Province where the soybean is a major crop. The thresher of capacity of one ton per hour is planned to be arranged, and three hundred tons of soybean can be threshed in two months of season, thus one thresher is enough.

A soybean dryer can process two tons a day, and three dryers are required. Four testing equipments will be needed, one each for thresher and truck for collection, two for warehouse.

One building of 330 m<sup>2</sup> for warehouse cum collection and grading lot will be required, of which about one third will be used as warehouse. At the part of collection and grading, a dryer and a grading machine will be installed.

(Maize)

Facilities and equipments for maize will be constructed or installed for five cooperatives in Lopburi Province. There are two routes of collecting and marketing maize. One is that maize of 30° of moisture naturally dried on the farm are harvested and dried at farmers' yard till it becomes 25° of moisture, then threshed at the farmers' yard, and collected to the cooperative warehouse, and shipped out. Another is that maize in the form of ear is collected and dried in the sun at the elevated floor cage till it becomes 20° of moisture, then it is threshed, after that it is dried in the kernel dryer till it becomes 15° of moisture. By the second route maize can be sold more profitably. Out of 7,700 tons of planned handling of maize by agricultural cooperatives, 3,700 tons will be marketed by the first route, of which 2,400 tons will be collected by the cooperative maize thresher at the farmers' yard, and 1,300 tons will be brought to the cooperative by farmers threshed by rented thresher.

Facilities and equipments are required to handle 4,000 tons of maize by the second route. First of all four mobile threshers of capacity of one ton

per hour are required. Tractor equipped to it can be used as means of transportation like the tractor of paddy thresher.

Four ear drying cages of 150 m<sup>2</sup> each as one set will be constructed along with the warehouse.

A maize kernel dryer with thresher (fixed style) of capacity of 5 ton per hour will be installed.

Six testing equipments for collecting at farmers' yard and accepting at the society will be arranged.

One warehouse of 1,000 ton for maize will be constructed, the turnover of which will be eight times.

(Tapioca)

The method is planned to collect tapioca in the form of tuber from farmers and to cut in chips and dry them in the cooperative drying facility and sell to the pellet plant. A part of tapioca is brought directly to the cooperative by farmers who process in chips and dry themselves.

Facilities required are trucks for collection, drying lot of 1,000 m<sup>2</sup> in the sun, and warehouse cum workshop of making chip (660 m<sup>2</sup>). They will be built in five cooperatives in Nakhonratchasima Province.

(Rubber)

Rubber milk is collected by farmers on their farms and primary processing and primary drying are made at the joint workshops established in each group. Thirty-four joint workshops will be built for each cooperative.

Rubber sheet after primary drying is collected and graded by each cooperative and sold to the smoke plant. Collection and grading lot cum warehouse of 330 m<sup>2</sup> will be used. Facilities and equipments for rubber is considered for five cooperatives in Sangkhla Province.

(Facilities and Equipments commonly required for various crops)

Facilities and equipments commonly required for various crops are means of transportation, tractors for rent and irrigation facilities as follows.

Tracks for collection (3 tons)

Introduce tracks which can go to farmers' yard, based on the handling plan of each cooperative. One track in each society of provinces of Chiangmai and Songkhla and two in each society of provinces of Lopburi and Nakhonratchasima. Tractors and trailers attached to threshers can also be utilized for collection during the busy season. In drawing the plan attention was paid so that cooperatives can collect, using their own means of transportation, paddy handled by the societies.

More maize (in Lopburi) and Tapioca (in Nakhonratchasima) will be collected than paddy. The season of collection of maize and tapioca is partly overlapped with paddy for as long as one month in two areas. In such a case the collection of products will be entrusted to private dealers. Out of season of collection trucks can be used for the distribution of goods handled in the purchasing business.

#### Trucks for Shipment (10 ton)

Trucks of large size of ten tons are used for transportation in bulk to the rice mill or to the maize silo. Each of cooperatives of Chiangmai, Lopburi and Nakhonratchasima will be equipped with one of this truck. Three ton truck, which is mainly for collection, can be used also for shipment in Songkhla.

#### Truck scale

Each cooperative will be equipped with one truck scale for receiving farm products.

#### Tractor for rent

Tractor for rent will be introduced. Operators will be secured by renters. A tractor will be of 80 HP and attached with three row plough, and the capacity will be 0.3 ha per hour. Therefore 288 ha of land can be tilled in the working period of eight months a year. The target of working of a rental tractor is 10% of farm land in each project area, and one tractor in Chiangmai and Songkhla respectively and three in Lopburi and Nakhonratchasima respectively will be introduced.

#### Garage cum workshop for repair (700 m<sup>2</sup>)

Building will be constructed for housing threshers and tractors as well as for repairing them. Repairing lot will be also used in the near future for machinery owned by farmers.

#### Facilities and Equipment for irrigation

In order to solve the shortage of water, the most difficult problem, from which farmers are very much suffering, cooperatives will start the cooperative utilization system of irrigation facilities of small scale, which is within the capacity of agricultural cooperatives. Each cooperative except Songkhla will introduce one set of removable pump and hoses of 1,000 metres, which will be rented to member farmers.

The largest line of supply in the area will be 2.5 km in Chiangmai, 5 km in Lopburi and 10 km in Nakhonratchasima, and two lines of this distance will be secured in each area. The total of the number of pumps and the length of hoses will be six and five km in Chiangmai, ten and ten km in Lopburi and twenty and twenty km in Nakhonratchasima.

b. Large area joint use facilities

(Paddy) Rice Mill

In accordance with the paddy handling programmes of five cooperatives in each area and taking the capacity of existing mills operated by provincial federations into account, rice mills of following capacity will be constructed.

Mill of 5 tons per hour (10,000 tons in a year) in Chiangmai and Lopburi respectively, and of 3 tons per hour (3,600 tons in a year) in Songkhla.

(Maize) Assorted Feed Plant

Construct an assorted feed plant with capacity of 15 tons per hour, annual output of 30,000 tons, for which maize is the main material, and 9,000 tons of maize will be required.

A rice bran oil extraction plant will be constructed near by the rice mill, because the oil removed rice bran can be used as a supplementary material for assorted feed. The 30 tons of bran crude oil will be produced for which 35,000 tons of rice bran will be required. Supply from five cooperatives in the area will not be enough and purchase from provinces near by will be necessary.

(Tapioca) Tapioca Pellet Plant

Establish a tapioca pellet plant which can process 30,000 tons, for which 150,000 tons of tapioca tuber will be required, of which 100,000 tons will be purchased from outside.

(Rubber) Rubber Sheet Smoke Plant

Establish a smoke plant of capacity of 300 tons a month. 2,400 tons of rubber sheet will be smoked in eight months of operation in a year.

Capacity of facilities and annual output which were explained above are summarized in Table 3-4.



Table 3-4 FACILITIES AND EQUIPMENTS REQUIRED

(Facilities for Individual Coops)

Crop	Facility, Equipment	Capacity	Number of facilities, Annual Dealing per Coop
Paddy	① Rice thresher with tractor of 80HP	1 <sup>t</sup> /h	$1^t \times 6^h \times 25^{\text{day}} \times 3^{\text{month}} = 450^t$ { A. 2 unit $2.098^t \div 2 \div 450^t = 2$ unit B. 4 $4.304 \div 2 \div 450 = 4$ C. 4 $3.823 \div 2 \div 450 = 4$ D. 1 $733 \div 2 \div 450 = 1$
	② Testing husker, Testing polisher, Moisture metre		{ A. 3 unit B. 5 unit C. 5 unit D. 2 unit
	③ Warehouse for Paddy		{ A. $500^t \times 1$ $2,098^t \div (500+500) = 2.1$ B. $500 \times 1$ $4,304 \div (500+1000) = 2.8$ C. $1000 \times 1$ $3,823 \div (1000+500) = 2.5$
Soy-bean	① Soybean thresher with tractor 80HP	1 <sup>t</sup> /h	$1^t \times 6^h \times 25^{\text{day}} \times 2^{\text{month}} = 300^t$ A. 1 unit $257^t \div 300^t = 1$ unit
	② Dryer	2 <sup>t</sup> /day	A. 3 $2^t \times 3 \times 25^{\text{day}} \times 2^{\text{m}} = 300^{\text{ton}}$
	③ Grading machine	0.5 <sup>t</sup> /h	A. 2 $0.5 \times 2 \times 6^h \times 25^{\text{day}} \times 2^{\text{m}} = 300^{\text{ton}}$
	④ Testing equipment		A. 4
	⑤ Collection, grading cum warehouse	330m	A. $330^{\text{m}^2} \times 1$ (One third of space will be used for warehouse)
Maize	① Maize ear dryer (cage)	150m <sup>3</sup> × 0.4	B. 4 unit $150\text{m}^3 \times 0.4 \times 30^{\text{day}} / 7 \times 25^{\text{day}} \times 4^{\text{m}} = 1.030^{\text{ton}}$ $4,000^t \div 1030^t = 4$
	② Maize thresher with tractor, 80HP	Mobile 1t/h	B. 4 unit $1^t \times 6^h \times 25^{\text{day}} \times 4^{\text{m}} = 600^{\text{ton}}$ $2,400^t \div 600 = 4$
	③ Maize thresher	Fixed 5t/h	B. 1 unit $5^t \times 8^h \times 25^{\text{day}} \times 4^{\text{m}} = 4000^{\text{ton}}$ $4,000^t \div 4000^t = 1$
	④ Maize kernel dryer with bin	5t/h	B. 1 unit $5^t \times 8^h \times 25^{\text{day}} \times 4^{\text{m}} = 4000^{\text{ton}}$
	⑤ Testing equipment		B. 6 unit
	⑥ Warehouse	1,000 <sup>t</sup>	B $1,000^t \times 1$ $7,686^t \div 8^{\text{turnover}} = 1,000^{\text{ton}}$

Crop	Facility, Equipment	Capacity	Number of facilities, Annual Dealing per Coop
Tapioca	① Concrete ground to suncure tapioca	1,000 m <sup>2</sup>	C. $1,000\text{m}^2 \times 30/5^{\text{day}} \times 25^{\text{day}} \times 4^{\text{month}}$ $= 9000^{\text{t}}$ $9,712^{\text{t}} \div 9,000^{\text{t}} \approx 1$
	② Workshop for chip making ③ Warehouse	660 m <sup>2</sup>	C. $660\text{ m}^2 \times 1$ (about 1/6 of space can be used for workshop)
Rubber	① Primary rubber sheet processing facility	Workshop, Processing facility and drying room	D. .One facility for each group, 34 facilities for coop. $60\text{ kg} \times 30\text{day} \times 8\text{month} \times 34 = 490\text{ ton}$ $454\text{t} \div 490\text{t} \approx 1$
	② Rubber sheet collection and grading lot ③ Warehouse	330 m <sup>2</sup>	D. $330\text{ m}^2 \times 1$ (about 1/3 of space can be used for warehouse)
Commonly required for various crops	① Truck for collection	3 <sup>t</sup>	Monthly transportation $3\text{t} \times 4/\text{day} \times 25\text{day} = 300^{\text{t}}/\text{month}$ Transportation by tractor $5\text{t} \times 1/1\text{day} \times 25\text{day} = 125^{\text{t}}/\text{month}$ A. Tractor $125\text{t} \times 3 = 380\text{t}/\text{month}$ (Paddy) $(700\text{t}/\text{m} - 380\text{t}/\text{m}) \div 300\text{t} = \underline{1}$ B. Tractor $125\text{t} \times 8 = 1000\text{ t}/\text{month}$ (Paddy) $(1,430\text{t}/\text{m} - 1,000\text{t}/\text{m}) \div 300 = \underline{2}$ C. Tractor $125\text{t} \times 4 = 500\text{t}/\text{month}$ (Paddy) $(1,274\text{t}/\text{m} - 500\text{t}/\text{m}) \div 300\text{t}/\text{m} = \underline{2}$ D. Tractor $125\text{t} \times 1 = 125\text{t}/\text{month}$ (Paddy) $(244\text{t}/\text{m} \times 2 - 125\text{t}/\text{m}) \div 300\text{t} = \underline{1}$ (At D tractor is also used for shipment)
	② Truck for shipment	10 <sup>t</sup>	t/month A. (Paddy) $10\text{t} \times 3/1\text{day} \times 25\text{ day} = 750$ 1 unit $700\text{t} \div 750\text{t} = 1$ t/month B. (Maize) $10\text{t} \times 1/1\text{day} \times 20\text{day} = 200$ 1 unit $1922\text{t} \div 200\text{t} = 10 \rightarrow 1$ (Transportation for 9 trucks will be entrusted to private dealer) (Paddy) $1,435\text{t} \div 750\text{t} \approx 2 \rightarrow 1$ (Transportation for one truck will be entrusted to private dealer)

Crop	Facility, equipment	Capacity	Number of facilities, Annual Dealing per Coop
Commonly required for various crops	② Truck for shipment (cont'd)		C. (Paddy) 1,274t ÷ 750t ≈ 2 1 1 unit (Transportation for one truck will be entrusted to private dealer)  (Dried tapioca) 800t ÷ 750t ≈ 1
	③ Truck scale	30 t	A.B.C.D 1 for each coop
	④ Tractor for rent	3row plough 16 inches 0.3 ha/h.	Cultivable area 0.3ha×6h×20day×8m=288 ha  A. Paddy Soybean (2,198ha+416ha) × 1/10=261ha 1 unit 261ha ÷ 288 ≈ 1 B. Paddy Maize (7,651ha+5,993ha) × 1/10=1,364ha 5 unit 1,364 ha ÷ 288 ha ≈ 5 C. Paddy Tapioca (6,306ha + 2611ha) × 1/10 = 892ha 3 unit 892 ha ÷ 288 ha ≈ 3 D. Paddy Rubber (1,330ha +2,104ha) × 1/10=343 ha 1 unit 343ha ÷ 288ha ≈ 1
	⑤ Garage cum Repair workshop	700 m <sup>2</sup>	A.B.C.D. One building for each coop.
	⑥ Equipment for irrigation	Removable Pump for rent 8 ( HP) Hose(1km)	2 lines for each coop. A. { Pump 2.5km ÷ 1km × 2line = 6 unit Hose 2.5km × 2 = 5 km B. { Pump 5km ÷ 1km × 2 line = 10 unit Hose 5km × 2 = 10 km C. Pump 10km ÷ 1km × 2 = 20 unit Hose 10km × 2 = 20 km
	(Large Area Joint Use Facilities)		
Rice (Paddy)	Rice Mill	5t/h with Warehouse of 1000 ton and attachments  3 t/h	5 <sup>t</sup> × 8 <sup>h</sup> × 250 <sup>day</sup> = 10,000 <sup>t</sup> A. 10,490t ÷ 10,000t ≈ 1 B. 21,520t ÷ (10,000+*11,000t) ≈ 1 C. 19,115t ÷ (10,000+* 9,000t) ≈ 1  3t × 8h × 150 day = 3,600t 3,666t ÷ 3,600 ≈ 1

Crop	Facility, equipment	Capacity	Number of facilities, Annual Dealing per Coop
Soy-bean	Soybean Oil extraction plant with attachment	25t/day	Annual out-put $25t \times 25day \times 2month = 1,250 t$ A. $1283t \div 1250t \approx 1$
Maize	Assorted Feed Plant	15 t/h	Annual out-put $15t \times 8h \times 250day = 30,000 t$ B. Material required (Maize) 9000tons
	Rice bran oil extraction plant	30t/day	Annual out-put $30t \times 150day = 4,500tons$ B. Rice bran required 25000 t to be purchased from near-by provinces
Tapi-oka	Tapioca pellet plant	15 t/h	Annual out-put $15t \times 8h \times 250day = 30,000^t$ C. Tapioca required 150,000t 100,000 tons of tapioca (tuber) tuber will be purchased from outside
Rubber	Rubber sheet smoke plant	300t/month	Annual treatment $300t \times 8month = 2400t$ D. $2269t \div 2400t = 1$

Remark: A. Chiangmai                      m = month  
B. Lopburi  
C. Nakhonratchasima  
D. Songkhea

(4) Management of facilities

Facilities will be constructed by CPD as an essential means to promote the Development Project, and will be lent out to agricultural cooperatives which use them.

For the large area joint use facilities, joint committee composed of delegates of societies concerned and relevant agencies will be established to manage them.

4) Fund for Farmers' Farming, Cooperative Business and for the Construction of Facilities

In order to promote the cooperative marketing of farm products through increased collection, to raise the membership ratio and to improve the repayment ratio of loans, it is essential that agricultural cooperatives provide more fund for farmers' farming. Expanded fund is indispensable to strengthen the power of cooperative marketing. Fund for the construction of facilities is also required. To meet the expanded requirements of fund cooperatives' own efforts to improve repayment ratio of loans are basic, but at the same time, it is desirable to expand in a planified way the financial support from BAAC, CPD and other government agencies towards agricultural cooperatives.

(1) Objective

In order to encourage the implementation of farmers' farming programmes and to strengthen the integrated activities of agricultural cooperatives, provision of fund for farmers' farming operation as well as fund for cooperative business activities and for the construction of facilities by agricultural cooperatives will be expanded.

(2) Provision of fund

Together with cooperatives' own efforts following ways to increase provision of fund will be realized.

a. Fund for farming operation

In accordance with financial programme of member farmers as well as that of production and marketing, all of which are conducted by agricultural cooperatives in the framework of farm guidance, every effort will be made to meet members' requirements as much as possible.

Marketing programme by cooperatives will be also made so as to make possible to recover the loans from the proceeds of marketed products.

Main resources of fund for farming are loans provided by BAAC, and as for loans provided by BAAC to farmers through cooperative channel, the increasing rate and the ratio in the total loans of BAAC are declining in recent years. Improvement will be made in this connection. It is desirable that the ratio of loans from BAAC for farmers through cooperative channel and those for cooperative business will be increased to 50% at the minimum (today 31%). Needless to say that at the cooperative side improved relation with member farmers through farm guidance and expanded cooperative marketing of farm products is indispensable.

b. Fund for Cooperative Business Activities

With regard to fund for cooperative business activities, the collection of fund maize has been provided by ACFT and fund for purchasing activities by BAAC. However agricultural cooperatives have suffered from shortage of fund for cooperative marketing of farm products. The Cooperative Rice Marketing Project supported by the agreement between ACFT and BAAC, which was started in 1980, is playing an important part to improve the situations.

It will be indispensable to expand such a system to other crops based on the model of the Cooperative Rice Marketing Project.

c. Fund for the Construction of Facilities

CPD will ensure the fund for the construction of facilities required for the encouragement of Agricultural Cooperatives Promotion Project. Fund for the construction of facilities should be of low interest and of long term as much as possible, and the foundation of Agricultural Cooperative Development Fund will be studied and started.

4. Time Schedule of the Project

It is desirable to promote the agricultural cooperatives promotion project along the time schedule as shown in the attached chart, which is made in accordance with the development plans of individual cooperatives.

There may be some time lags by item, however every effort will be made so that all items start in the third year at the latest.

Table 3-5 Tentative Schedule of the Agri. Coop. Promotion Project

	1st year	2nd year	3rd year	4th year	5th year
(1) Consulting Unit	<ul style="list-style-type: none"> <li>① Organizing a Consulting Unit</li> <li>② Development Plan for 16 coops</li> </ul>	<p>Travelling Guidance for Model Coops (① Farm Planning, ② Management &amp; Credit Business, Purchasing Business, ③ Marketing &amp; Business)</p>			
(2) Training Program & Training Centre by CPD	<ul style="list-style-type: none"> <li>① Training Programme for each field</li> <li>② Training for leaders</li> </ul>	Construction of Main & Sub Training Centre by CPD	<ul style="list-style-type: none"> <li>① Training for Coop. leaders &amp; staff-members (at the Regional centres)</li> <li>② Training for CPD trainers &amp; Specialists for the Project (at the Main Centre)</li> </ul>		
(3) Establishment of Facilities of individual coops	(Consulting Unit works to strengthen the Marketing Activities)	Establishment of Facilities of individual coops	Working of individual facilities		
(4) Establishment of Large-area Joint-use Facilities		Establishment of Joint Committee by neighbouring coops under initiative of CPD (mainly for discussion on Joint activities in the field of Marketing Business)	Establishment of large-area Joint-use Facilities		
(5) Expansion of Fund for Farming & Fund for Marketing Business	<ul style="list-style-type: none"> <li>① Expansion of Fund for Farming</li> <li>② Expansion of Fund for Marketing Business</li> </ul>	Working			

## CHAPTER IV JUSTIFICATION

Justification of the project can be described from two points. One is the economic effects and the other is the social effects.

### 1) Economic Effects

The first is the economic effects of the project. The agricultural co-operatives are in their nature not a profit making organization different from ordinary private enterprises, and investments and loans made in connection with the project do not intend that the agricultural cooperatives get profit from them, but the important objective is to render services to member farmers. However as the agricultural cooperatives are concurrently business organizations, their management must not be harmed because they render services to members.

In order to clarify the economic effects of the project, it will be required to examine the economic benefits brought by the facilities constructed or expanded and strengthened advice or guidance to member farmers through advisory works of the cooperatives. However it may be rather the social effects than the economic effects. At the same time it will be necessary to examine whether the expected management and financial conditions are satisfactory or not after the promotion of the project. In this regard the expectation analysis was made for the four pilot model cooperative on how the management and financial conditions go on in three years along with the execution of their development plans and of the works of the project as observed in the table (Expected profit and loss statement of four cooperatives). The analysis shows that three societies except one, which is now in deficit, make favourable progress in their management and financial conditions and that for the deficit society its financial conditions will be improved year after year.

Major points of the expected profit and loss statement of four agricultural cooperatives for three years are as follows. As for the fundamentals, changes in the number of members and employees, loans, savings and paid up capital are estimated in accordance with their development plans. For accrued accounts, at first the plan to improve the ratio of accrued accounts in the total transaction of purchasing business was set up and the amount was estimated based on the plan. Reserves and surplus reserves were calculated so that fifty per cent of the profit of the term is to be put in according to the regulation of the law.



Table 4-1 Expected Profit and Loss Statement of Four Agricultural Cooperatives

( 1982-1984 )

(Unit:1,000 bahts)

Agricultural cooperative	Doi - Saket				Koksamrong				Nakhon Ratchasima				Hat - Yai			
	Fiscal Year															
	Present	'82	'83	'84	Present	'82	'83	'84	Present	'82	'83	'84	Present	'82	'83	'84
Cooperative members	1,385	1,600	1,800	2,000	2,848	3,000	3,160	3,470	1,509	1,780	2,000	2,230	973	1,130	1,300	1,620
Employees	5	7	8	9	17	18	18	19	16	17	17	17	3	4	5	5
Loans	13,494	16,000	18,000	20,000	26,627	28,500	30,000	33,000	15,384	18,700	21,000	23,400	(3,998)	5,100	5,900	7,300
Accounts receivable	1,021	1,280	1,610	1,950	2,805	3,000	3,630	4,250	4,526	4,560	5,280	6,240	(3,34)	120	270	480
Borrowings	5,362	6,750	7,130	7,890	25,333	26,000	26,500	27,000	14,993	17,050	18,970	21,060	(4,734)	4,980	5,470	6,340
Saving	1,857	2,160	2,700	3,300	1,256	1,920	2,650	3,610	829	1,160	1,500	1,900	(1,888)	340	520	810
Capital	2,409	2,080	3,420	4,000	4,601	5,100	5,530	6,250	2,727	3,330	3,900	4,460	(6,552)	890	1,170	1,620
Reserves	4,718	5,720	6,220	6,920	8,097	9,600	10,400	11,500	2,116	2,720	2,910	3,220	(5)	30	120	120
Credit	2,127	2,400	2,700	3,000	3,874	3,990	4,200	4,620	2,117	2,520	2,830	3,160	(501)	670	800	1,000
Purchasing	1,305	1,700	2,300	3,000	4,285	5,000	6,600	8,500	9,350	9,500	11,000	13,000	(128)	400	900	1,600
Marketing	--	1,600	3,000	5,000	5,909	7,000	9,000	13,000	1,118	1,200	2,500	5,000	(1,246)	3,500	7,000	10,000
Total	3,432	5,700	8,000	11,000	11,068	15,990	19,800	26,120	12,585	13,220	16,330	21,160	(1,875)	4,570	8,700	12,600
Credit	693	880	970	1,030	2,111	2,160	2,200	2,240	1,525	1,730	1,920	2,130	(406)	450	490	570
Purchasing	1,154	1,500	2,020	2,640	3,623	4,250	5,610	7,230	8,636	8,710	10,120	11,960	(120)	360	810	1,440
Marketing	--	1,540	2,880	4,800	5,692	6,720	8,640	12,400	1,086	1,170	2,430	4,850	(1,227)	3,450	6,860	9,800
Total	1,817	3,920	5,870	8,170	11,426	13,130	16,450	21,950	11,245	11,640	14,470	18,940	(1,753)	4,260	8,160	11,810
Credit	1,434	1,520	1,730	1,970	1,762	1,830	2,000	2,380	592	790	910	1,030	(95)	220	310	430
Purchasing	150	200	280	360	662	750	990	1,270	713	760	880	1,040	(8)	40	90	160
Marketing	--	60	120	200	216	280	360	520	34	30	70	150	(19)	50	140	200
Total	1,584	1,780	2,130	2,530	2,640	2,860	3,350	4,170	1,339	1,580	1,860	2,220	(122)	310	540	790
Business expenses	15	20	30	40	215	240	300	390	293	310	380	490	(54)	130	250	370
Direct business profits	1,569	1,760	2,100	2,490	2,425	2,620	3,050	3,780	1,017	1,270	1,480	1,730	(68)	180	290	420
Other profits	75	128	186	240	155	176	220	296	355	376	460	606	(27)	70	130	180
Business profits	1,644	1,888	2,286	2,730	2,580	2,796	3,270	4,076	1,402	1,646	1,940	2,336	(95)	250	410	600
Personnel expenses	162	230	260	290	377	420	420	450	282	300	300	300	(53)	70	90	90
Saving interest	235	310	380	470	95	150	210	290	47	70	90	110	(11)	20	30	50
Others	145	190	240	280	307	320	370	420	421	890	930	960	(81)	100	110	110
Total	542	730	880	1,040	799	890	1,000	1,160	750	1,260	1,320	1,370	(145)	190	230	250
Net profit	1,101	1,150	1,400	1,690	1,781	1,900	2,270	2,910	652	380	620	960	(250)	60	180	350
(Cumulative Deficit)	--	--	--	--	--	--	--	--	--	--	--	--	(239)	△225	△45	305
Interest on Fund for facilities	--	--	360	360	--	--	450	450	--	--	450	450	--	--	400	400
Net profit	1,101	1,150	1,040	1,330	1,781	1,900	1,820	2,460	652	380	170	510	△46	60	△220	△50

(Notes) Figures in parentheses under "Present" in "Hat-Yai" are for fiscal 1979. others are fiscal 1980

Saving interest is listed under Administrative Expenses according to the current procedures in Thailand

Profile under "Reference" are after deduction of interest on borrowings relating to improvement of facilities.

Borrowings were estimated to meet the fund requirements by societies based on the financial conditions estimated above. In the business transaction account, the figures of credit business were calculated in accordance with the guide line given by the government, that is received interests on loans. For those of marketing and purchasing figures of the development plan were adopted.

As for business expenses, interests for borrowings in the credit business, costs of marketing and purchasing were calculated based on the ratio which was reckoned beforehand, by the materials of each society in the past. After that the gross profit was obtained. Other business expenses than direct costs and other profits were calculated by the materials of each society in the past. Personnel expenses were estimated based on the average wages of each society. Amount of interests on savings are based on the rates of each society.

After the calculation by the way as described above the expected profit and loss statement was obtained, according to which three societies get net profit excluding the accounts relating to the newly constructed or expanded facilities. For Hat-Yai Cooperative which is now in deficit, it can get profit in the first year excluding the retained losses, and it is expected that the retained losses will completely be solved in the third year.

It is presumed that the account of borrowings required for the facilities constructed or expanded is separated from the general account (borrowings of this nature are not included in the general conditions of the fund), and that principal will be unredeemable for five years, and the interests will be paid from the second year. Net profit including the account for facilities is shown on the foot-note, according to which it is expected that three societies except Hat-Yai get net profit, and even Hat-Yai Cooperative gets a small amount of loss of 50,000 Bht in the third year and net profit will be expected from the fourth year and after.

## 2) Social Effects

The second is the social effects.

As described in the Chapter I, the development in agricultural cooperatives has a significant meaning, considering the present situations of the rural society, distribution of farm products and farm credits.

It is not an exaggeration to say that agricultural cooperatives, rural society and farmers' way of living in Thailand enter into the new era, when the project has successful achievements in the model cooperatives and its skills are difused

to other societies. Particularly it will be the first step for the realization of the objective to rationalize the distribution of farm products which is stressed as "strengthening the bargaining power of farmers through agricultural cooperatives, minimizing various interventions in the market and correcting strains in the distribution of farm products" by the government in the Fifth Economic and Social Development Plan.

In addition followings are expected to be social effects of the project. All of them have been important tasks, for the realization of which the government of Thailand has long made efforts.

- (1) Difusion of relevant technological and managerial information to farmers. Farm guidance activities conducted by agricultural cooperatives not only spread the agricultural techniques among farmers but also opens the new way of supplying information on agricultural management including market conditions and thereby contributes to strengthen the bargaining power of farmers.
- (2) Development of rural industries and increased opportunity of employment. When facilities for marketing and processing farm products are established by agricultural cooperatives, new industries will grow up there and employment opportunity will be expanded.
- (3) Raise farmers' income. The development of cooperative economic activities contributes to increase farmers' income.
- (4) Correct disparities betwen urban and rural areas as well as between non-farming and farming people. Farmers will increase their income through expanding business activities of agricultural cooperatives, and it means the first step to correct existing disparities unfavourable to them.
- (5) Stabilize the national well-being. When farmers contribute to the agricultural development of the area through affiliation with agricultural cooperatives and raise their living standard, then they can settle in the rural community. It contributes to stabilize the national well-being.

Thai farmers have been forced to devote themselves only in agricultural production and eliminated from the fields of distribution and financing.

Mail reasons why the fruits of rising productivity in agriculture do not come to increase farmers, income and improve disparities with non-farming people lie there.

Taking the opportunity of putting the project into practice and standing on the activities at the grass root level, Thai farmers are expected to participate in the operation of agricultural cooperatives including production, distribution and financing.

## CHAPTER V RECOMMENDATION

For the successful promotion of the project followings are recommended by the team.

- (1) The project is an attempt to be the model of developing agricultural cooperatives in the country through the accumulation from the grass root level and multiple approach in four areas of different basic conditions, and it is expected that the project has successful achievements as the common task of the government of Thailand, not merely the task of CPD. In this case it is important to keep firmly in mind that farm leaders, cooperative development and that government officers are their supporters.
- (2) The content of the project is the integrated and multiple improvement of cooperative activities, and particularly strengthened farm guidance and cooperative marketing of farm products must be most emphasized. In this context an active exhibition of initiative by CPD as well as ACFT is expected.
- (3) For integrated improvement of cooperative activities, lack of fund and human resources is the most impeding factor. When agricultural cooperatives attempt to cope with it through business activities organized on the farming programmes of farmers, financial support by the government institutions, together with efforts by agricultural cooperatives to increase their own funds and to improve the management, is indispensable. In this context efforts by BAAC to expand loans to farmers through cooperative channel and those to cooperatives are most desirable.
- (4) The cooperative rice marketing project under the agreement between ACFT and BAAC can be a model for the future development of cooperative marketing of farm products. It is most desirable that the system continues and is further developed, and will also be applied and expanded to other crops.
- (5) With a view to improve daily works along the line of total system as the realization of planed management based on the farming programmes of member farmers, followings are recommended to be studied; payment of proceeds for marketed products in the accounts opened in the society by members, shift of saving business from administration to credit department and other manners of dealing works. CPD is requested to make efforts to give guide line to cooperatives in collaboration with CAD and other related agencies.



APPENDIX

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II. CHRONOLOGICAL DESCRIPTION OF THE STUDY





TOTAL ESTIMATED COSTS FOR  
FACILITIES & EQUIPMENTS

(Unit: Baht 1,000)

(Local procurement)

1. Facilities & equipments for primary cooperatives	..... 332,200	(83,800)
2. CPD training center	..... 262,000	
3. Joint use facilities	..... 462,500	(65,200)

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Total : 1,046,700

Remarks: Overseas procurement : 897,700  
Local procurement : 149,000  
(Land cost, import tax etc. not included)

The estimated costs shown here are as of January, 1982 and are subject to price changes thereafter.

As regards overseas procurements, the prices shall be considered to increase annually 8 % on the basis of the International Price Index announced by the World Bank. With reference to local procurements, the prices shall be regarded to increase annually 10 % according to the forecast of National Economic & Social Development Board (NESDB), Thailand.

**ESTIMATED COSTS FOR FACILITIES & EQUIPMENTS  
REQUIRED BY PRIMARY COOPERATIVES**

1.

(Unit: Baht 1,000)

Name of facilities & equipments	Capacity	Unit price (Baht 1,000)	CHIANG MAI (each coop)		LOP RURI (each coop)		NAKHON RATCHASIMA (each coop)		SONG KHLA (each coop)		TOTAL (20 coops)	
			No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount
[Transportation equipments]												
1. Truck for collection	3 ton	330	1	330	2	660	2	660	1	330	30	9,900
2. Truck for marketing	10 ton	500	1	500	1	500	1	500			15	7,500
[Grain threshing equipments]												
3. Rice thresher and 80 HP tractor with trailer	1 ton/hr	420	2	840	4	1,680	4	1,680	1	420	55	23,100 (3,850)
4. Maize thresher and 80 HP tractor with trailer	1 ton/hr	420			4	1,680					20	8,400 (1,400)
5. Soybean thresher and 80 HP tractor with trailer	1 ton/hr	450	1	450							5	2,250 ( 350)
[Drying facilities]												
6. Maize ear dryer (corn crib)	150 m <sup>3</sup> x 4	500			1	500					5	2,500 (2,500)
7. Maize kernel dryer with bin	5 ton/hr	1,200			1	1,200					5	6,000 (5,000)
8. Concrete ground to sun-dry cassava	1,000 m <sup>2</sup>	1,000					1	1,000			5	5,000 (5,000)
9. Soybean dryer	2 ton/day	60	3	180							15	900
[Collection equipments]												
10. For rice: testing husker, testing polisher, moisture meter.		50	3	150	5	250	5	250	2	100	75	3,750
11. 1) Soybean selecting machine	500 kg/hr	80	2	160							10	800
2) Soybean & maize moisture meter		20	4	80	6	120					50	1,000
12. Tractor with attachments for rent	80 HP	500	1	500	5	2,500	3	1,500	1	500	50	25,000 (3,500)
13. Truck scale	30 ton	400	1	400	1	400	1	400	1	400	20	8,000

**ESTIMATED COSTS FOR FACILITIES & EQUIPMENTS  
REQUIRED BY PRIMARY COOPERATIVES**

1.

Name of facilities & equipments	Capacity	Unit price (Baht 1,000)	CHIANG MAI (each coop)		LOP BURI (each coop)		NAKHON RATCHASIMA (each coop)		SONG KHLA (each coop)		TOTAL (20 coops)	
			No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Local procurement
[Storage facilities]												
14. Warehouse for paddy	500x1,000 ton 330x660 m <sup>2</sup>	3,000/ 6,000	1 (500 ton)	3,000	1 (500 ton)	3,000	1 (1,000 ton)	6,000			15	60,000 (9,000)
15. Warehouse for maize & others	330x660 m <sup>2</sup>	3,000/ 6,000	1 (330 m <sup>2</sup> )	3,000	1 (1,000 ton)	6,000	1 (660 m <sup>2</sup> )	6,000			15	75,000 (11,000)
16. Simple warehouse for equipments with workshop	700 m <sup>2</sup>	1,000	1	1,000	1	1,000	1	1,000	1	1,000	20	20,000 (20,000)
[Irrigation equipments]												
17. Pump with engine		50	6	300	10	500	20	1,000			180	9,000
18. Water hose for above		50/km	5 km	250	10 km	500	20 km	1,000			175 km	8,750
[Primary rubber sheet processing facilities]												
19. Simple factory building		30							34	1,020	170	5,100 (5,100)
20. Processing equipments		45							34	1,530	170	7,650 (2,300)
21. Drying facility		30							34	1,020	170	5,100 (5,100)
22. Rubber sheet collection & selecting facility		2,500							1	2,500	5	12,500 (12,500)
23. Warehouse for rubber sheet	300 m <sup>2</sup>	3,000							1	3,000	5	15,000 (2,200)
Total (each cooperative) :				11,140		20,490		20,990		11,820		
Total (5-cooperatives) :				55,700		102,450		104,950		59,100		
				Facilities & equipments required by primary cooperatives		TOTAL (20 cooperatives):						322,200 (83,800)

\* Basis of Local procurement:  
 (1) Tractor for rent and thresher ..... 5 ton trailer. 70/Unit  
 (2) Reinforced concrete warehouse & factory building ..... abt. 15 % for costs  
 (3) Rubber sheet processing equipment ..... pool, working table etc. abt. 30 %  
 (4) Installation for joint use facility ..... abt. 80 % for costs

2.

ESTIMATED COSTS FOR CPD TRAINING CENTER
--

(Unit: Baht 1,000)

Location:	No. of Building	Amount (Baht 1,000)	Local procurement
Central training center BANGKOK			
Regional training center CHIANG MAI, NAKHON RATCHASIMA, SONG KHLA			
Workshop & garage above 4 & LOP BURI			
1. CPD Central training center 90,000 × 1 building	1	90,000	
(1) Ground floor : 2,488 m <sup>2</sup> First floor : 1,928 m <sup>2</sup> <u>Total</u> : 4,416 m <sup>2</sup>			
(2) Structure : Reinforced concrete			
(3) Auditorium & dining room : 150 persons			
(4) Class room : 6 rooms			
(5) Dormitory : 100 persons			
(6) Supplemental equipment			
2. CPD Regional training center 45,000 × 3 buildings	3	135,000	
(1) Ground floor & first floor : 2,189 m <sup>2</sup>			
(2) Structure : Reinforced concrete			
(3) Auditorium & dining room : 80 persons			
(4) Class room : 2 rooms			
(5) Dormitory : 50 persons			
(6) Supplemental equipment			
3. Workshop & garage for training center 5,600 × 5 buildings	5	28,000	
(1) Floor space : 504 m <sup>2</sup>			
(2) Structure : Reinforced concrete			
(3) Supplementary equipments for training: 1,800 × 5	5	9,000	
CPD training center TOTAL :		<u>262,000</u>	

3. ESTIMATED COSTS FOR  
JOINT USE FACILITIES

(Unit: Baht 1,000)

1. <u>RICE MILLING PLANT</u>	No. of plant	Amount (Baht 1,000)	Local procurement
Capacity : Paddy 5 ton/hr (SONG KHLA: 3 ton/hr)			
Location : CHIANG MAI, LOP BURI, NAKHON RATCHASIMA, SONG KHLA. (4 plants)			
(1) Paddy warehouse 500 ton (300 m <sup>2</sup> )	3,000		( 400)
(2) White rice warehouse 1,000 ton (500 m <sup>2</sup> )	4,500		( 600)
(3) Paddy dryer	1,000		
(4) Rice milling equipments consist of : pre-cleaner, huller, polisher, selecting machine etc.	7,000		
(5) Husk boiler/turbine generator 200 kW & Diesel generator 120 kW	15,000		
(6) Factory building with workshop & laboratory (1,000 m <sup>2</sup> )	13,500		(2,000)
(7) Installation etc.	3,000		(2,400)
Total	47,000	4	188,000
(5,400 × 4)			<u>(21,600)</u>
<b>2. <u>SOYBEAN OIL EXTRACTION PLANT</u></b>			
Capacity : Soybean 25 ton/hr			
Location : CHIANG MAI			
(1) Oil extraction equipments	22,000		
(2) Oil tanks, conveyers	2,000		
(3) Steam boiler	1,000		
(4) Factory building with storage room and workshop (1,300 m <sup>2</sup> )	17,500		(2,600)
(5) Installation etc.	5,000		(4,000)
Total	47,500	1	47,500
			<u>(6,600)</u>

3. ESTIMATED COSTS FOR  
JOINT USE FACILITIES

(Unit: Baht 1,000)

3. <u>RICE BRAN CRUDE OIL EXTRACTION PLANT</u>	No. of plant	Amount (Baht 1,000)	Local procurement
Capacity : Crude oil 30 ton/day			
Location : LOP BURI			
(1) Oil extraction equipments	32,000		
(2) Materials for piping, heat insulation & supplemental equipments	5,500		
(3) Factory building with workshop (1,800 m <sup>2</sup> )	24,300		(3,600)
(4) Oil & bran storage house (600 m <sup>2</sup> )	5,400		( 800)
(5) Installation etc.	5,000		(4,000)
Total	72,200	1	72,200
<u>(8,400)</u>			
4. <u>ASSORTED ANIMAL FEED MAKING PLANT</u>			
Capacity : 15 ton/hr (30,000 ton/year)			
Location : LOP BURI			
(1) Animal feed making equipments	40,000		
consist of:			
grain silo, grinding, sub-material receiving, pre-mixing, dosing, re-grinding, pelleting, packaging bulk discharge, etc.			
(2) Factory building (1,500 m <sup>2</sup> )	20,200		(3,000)
(3) Feed storage house (500 m <sup>2</sup> )	4,500		( 600)
(4) Installation etc.	15,000		(12,000)
Total	79,700	1	79,700
<u>(15,600)</u>			

3. ESTIMATED COSTS FOR  
JOINT USE FACILITIES

(Unit: Baht 1,000)

5. <u>TAPIOCA PELLETT MAKING PLANT</u>	No. of plant	Amount (Baht 1,000)	Local procurement
Capacity : 15 ton/hr (30,000 ton/year) Location : NAKHON RATCHASIMA			
(1) Pellet making equipments consists of: feeding, pelleting, weighing, packaging, stand and duct, control panel, etc.                      34,000			
(2) Factory building (900 m <sup>2</sup> )                      12,100			(1,800)
(3) Cassava tip & pellet storage house (500 m <sup>2</sup> )                      4,500			( 600)
(4) Installation etc.                      5,000			(4,000)
Total                      55,600	1	55,600	<u>(6,400)</u>
 <u>6. RUBBER SHEET SMOKE PLANT</u>			
Capacity : 10 smoke rooms Location : SONG KHLA			
(1) Smoke rooms (10 mL. x 10 mW. : 10 rooms)                      10,000			(4,000)
(2) Supplemental facilities :                      5,000 washing pool, selecting table, packaging machine, etc.			(2,000)
(3) Smoke rubber sheet storage house                      4,500 (500 m <sup>2</sup> )			( 600)
Total                      19,500	1	19,500	<u>(6,600)</u>
Joint use facilities                      TOTAL (9 plants)	9	<u>462,500</u>	<u>(65,200)</u>

4. MAIN SPECIFICATIONS FOR  
FACILITIES & EQUIPMENTS REQUIRED  
BY PRIMARY COOPERATIVES

1. Truck for collection

- (1) Loading capacity : 3 ton
- (2) Engine output : 110 PS. diesel engine
- (3) Lading area : 4,300 L. × 2,090 W. (mm)
- (4) Wheel base : 3,300 × 1,580 (mm)
- (5) Drive : Rear drive

2. Truck for marketing

- (1) Loading capacity : 10 ton
- (2) Engine output : 320 PS. diesel engine
- (3) Loading area : 9,745 L. × 2,450 W. (mm)
- (4) Wheel base : 5,150 L. × 2,050 W. (mm)
- (5) Drive : Rear drive

3. Rice thresher and 80 HP tractor with trailer

◦ Rice thresher:

- (1) Capacity : 1 ton/hr
- (2) Threshing drum : 736 W. × 360 Dia. (mm)
- (3) Revolutions : 550 ~ 600 R.P.M.
- (4) Horsepower : 1.5 ~ 2 HP driven by tractor P.T.O. or gasoline engine.

◦ Tractor:

- (1) Bare engine horsepower : 80 HP at 2,400 R.P.M.
- (2) Engine type : Water cooled 4 cycle diesel engine
- (3) Speed change : Forward 8, reverse 2.
- (4) Drive : 4 wheel drive
- (5) Wheel base : 2,175 (mm)

◦ Trailer:

- (1) Loading capacity : 5 ton
- (2) Type : Stationary trailer towed by tractor



4. MAIN SPECIFICATIONS FOR  
FACILITIES & EQUIPMENTS REQUIRED  
BY PRIMARY COOPERATIVES

4. Maize thresher and 80 HP tractor with trailer

◦ Maize thresher:

- (1) Capacity : 1 ton/hr.
- (2) Horsepower : 2 HP driven by tractor P.T.O. or gasoline engine.
- (3) Revolutions : 300 ~ 500 R.P.M.

◦ Tractor & trailer:

Same as item 3.

5. Soybean thresher and 80 HP tractor with trailer

◦ Soybean thresher:

- (1) Capacity : 1 ton/hr.
- (2) Horsepower : 7 HP driven by tractor P.T.O. or gasoline engine.

◦ Tractor & trailer:

Same as item 3.

6. Maize ear dryer (corn crib)

- (1) Structure : All-weather steel net
- (2) Capacity : 150 m<sup>3</sup>/unit
- (3) Dimensions : 5,000 Dia. × 7,650 H. (mm)
- (4) Drying method : Suncure
- (5) Supplement : Inlet, outlet conveyers

7. Maize kernel dryer with bin

- (1) Structure : All-weather steel enclosure
- (2) Capacity : 5 ton/hr.
- (3) Fuel : Heavy oil or light oil
- (4) Moisture content : To reduce moisture content from 20 % to 15 % W.B.
- (5) Supplement : Steel bin

4. MAIN SPECIFICATIONS FOR  
FACILITIES & EQUIPMENTS REQUIRED  
BY PRIMARY COOPERATIVES

8. Concrete ground to suncure cassava

Concrete ground and chopper for cassava.

9. Soybean dryer

- (1) Structure : Steel
- (2) Type : Box type
- (3) Fuel : Light oil
- (4) Capacity : 2,000 kg/batch
- (5) Moisture content : To reduce moisture content from 20 %  
to 15 % W.B.

10. Collection equipments for rice

◦ Testing husker:

- (1) Rubber roll : 27 Dia. (mm)
- (2) Capacity : 10 g/batch

◦ Testing polisher:

- (1) Capacity : 100 g

◦ Moisture meter:

- (1) Measuring range : 12 ~ 30 %
- (2) Power supply : Batteries
- (3) Accuracy : ±0.5 %

11. Collection equipments for soybean & maize

◦ Selecting machine:

- (1) Structure : Steel
- (2) Capacity : 500 kg/hr.
- (3) Selecting system : Combination system, belt & rotary  
steel net
- (4) Feeding system : Bucket conveyer

◦ Moisture meter:

- (1) Measuring range : 7 ~ 30 %
- (2) Power supply : Batteries
- (3) Accuracy : ±0.5 %

4. MAIN SPECIFICATIONS FOR  
FACILITIES & EQUIPMENTS REQUIRED  
BY PRIMARY COOPERATIVES

12. Tractor with attachments for rent

◦ Tractor & trailer:

Same as item 3.

◦ Attachments:

- (1) Disc plow : 26" × 3 row
- (2) Disc Harrow : 20" × 24 row
- (3) Sub-soiler

13. Truck scale

- (1) Type : Pendulum cam type
- (2) Capacity : 30 ton
- (3) Graduation : 20 kg
- (4) Platform dimensions : 3,000 × 7,500 (mm)

14. Warehouse for paddy

- (1) Structure : Reinforced concrete
- (2) Storage capacity : 500 ton paddy
- (3) Dimensions : 13.5 × 24.5 × 5 H. (M), 330 m<sup>2</sup>

15. Warehouse for maize & others

- (1) Structure : Reinforced concrete
- (2) Storage capacity : 500 & 1,000 ton
- (3) Dimensions : 500 ton ..... 330 m<sup>2</sup>  
1,000 ton .... 660 m<sup>2</sup>  
15 × 44 × 5 H. (M)

16. Simple warehouse for equipments with workshop

- (1) Structure : Wood
- (2) Dimensions : 700 m<sup>2</sup>
- (3) Supplement : Bench for repair, tools

4. MAIN SPECIFICATIONS FOR  
FACILITIES & EQUIPMENTS REQUIRED  
BY PRIMARY COOPERATIVES

17. Pump with engine

- (1) Engine : 22 kW diesel engine
- (2) Discharge dia : 125 mm
- (3) Capacity : 1 m<sup>3</sup>/min.
- (4) Total head : 90 M

18. Water hose for above

- (1) Diameter : 125 mm
- (2) Materials : Wirebraid vinyl hose

19. Simple factory building

- (1) Structure : Wood
- (2) Dimensions : 20 × 40 × 5 H (M)

20. Processing equipments

- (1) Collecting tank
- (2) Coagulating tank
- (3) Roller press.

21. Drying facility

- (1) Drying bar for natural drying

22. Rubber sheet collection & selecting facilities

- (1) Working bench
- (2) Trimming tools

23. Warehouse for rubber sheet

- (1) Structure : Reinforced concrete
- (2) Dimensions : 12 × 25 × 5 H. (M), 300 m<sup>2</sup>

5.            MAIN SPECIFICATIONS FOR  
                 CPD TRAINING CENTER

CPD Central training center

1. Structure        : Reinforced concrete
2. Floor space    :    Ground floor    2,488.8 m<sup>2</sup>  
                              First floor        1,928.1 m<sup>2</sup>  
    Total            4,416.9 m<sup>2</sup>
3. Ground floor   :
  - (1) Entrance hall & lounge
  - (2) Office room
  - (3) Auditorium (150 persons)
  - (4) Study room & library
  - (5) Dining room & kitchen (150 persons)
  - (6) Game room & canteen
4. First floor     :
  - (1) Class room (6 rooms)
  - (2) Dormitory (100 persons)
5. Supplementary equipments:
  - (1) Air conditioner
  - (2) Micro bus
  - (3) Motion picture projector
  - (4) Over head projector
  - (5) Testing & analysing equipments (soil, fertilizer, moisture, etc.)
  - (6) Typewriter, copying machine, tape recorder.

CPD Regional training center

1. Structure        : Reinforced concrete
2. Floor space    :    Ground floor    1,501.2 m<sup>2</sup>  
                              First floor        688.5 m<sup>2</sup>  
    Total            2,189.7 m<sup>2</sup>
3. Ground floor   :
  - (1) Entrance hall & lounge
  - (2) Office room
  - (3) Auditorium (80 persons)
  - (4) Class room (2 rooms)
  - (5) Study room

5. MAIN SPECIFICATIONS FOR  
CPD TRAINING CENTER

continued:

(6) Dining room & kitchen (80 persons)

(7) Game room & canteen

4. First floor:

(1) Dormitory (50 persons)

5. Supplementary equipments:

Same as central training center

Workshop & garage for training center

1. Structure : Reinforced concrete

2. Floor space : 504 m<sup>2</sup>

3. Ground floor (one-storied house):

(1) Garage

(2) Workshop

(3) Spare parts room

(4) Office

(5) Storage room

4. Supplementary equipments:

(1) 80 HP tractor & attachments

(2) Rice thresher

(3) Bean thresher

(4) Dryer

1. RICE MILLING PLANT

Capacity	:	Paddy 5 ton/hr & 3 ton/hr
Required electric power	:	150 kW 380 V × 50 Hz × 3 P
Diesel generator	:	100 kVA

Outline of facilities

- (1) Paddy warehouse 300 m<sup>2</sup> (500 ton)
- (2) White rice warehouse 500 m<sup>2</sup> (1,000 ton)
- (3) Paddy dryer
- (4) Rice milling equipments
- (5) Husk boiler / turbine generator 250 kW & diesel generator 100 kVA
- (6) Factory building with workshop & laboratory (1,000 m<sup>2</sup>)

Main equipments

- (1) Paddy dryer
  - a) Type : Recirculation type (outdoor)
  - b) Holding capacity : 15 ton × 2
  - c) Air temperature : 50 °C
  - d) Furnace : Kerosene direct heating
- (2) Hulling section
  - a) Paddy hopper
  - b) Pre-cleaner
  - c) Scale
  - d) Huller (Rubber roller system or combination system by disc-huller & rubber roll huller)
  - e) Paddy separator
  - f) Others: tanks, conveyers

6.            MAIN SPECIFICATIONS FOR  
                 JOINT USE FACILITIES

(3) Milling section

- a) Scale
- b) Stoner
- c) Whitener
- d) Polisher
- e) Sifter
- f) Color selector
- g) Grader
- h) Automatic scale
- i) Husk, bran, broken rice collector
- j) Others: tanks, conveyers, etc.

(4) Husk boiler / turbine generator

[Boiler]

- a) Heating surface                    : 170 m<sup>2</sup>
- b) Steam pressure                     : 13 kg/cm<sup>2</sup>
- c) Steam temperature                : 270 °C (super-heated steam)
- d) Steam evaporation                : 6,000 kg/hr

[Husk combustion equipment]

- a) Type                                : Inclined grate with rotary feeder
- b) Fuel                                 : Rice husk and heavy oil
- c) Grate area                         : 6.6 m<sup>2</sup>

[Steam turbine]

- a) Type                                : Single stage condensing turbine
- b) Inlet steam                         : 12 kg/cm<sup>2</sup> G × 250 °C
- c) Output                              : 250 kW
- d) Steam consumption                : 5,600 kg/hr

[Turbine generator]

- a) Type                                : 3-phase synchronous generator
- b) Output                              : 315 kVA (250 kW)



2. SOYBEAN OIL EXTRACTION PLANT

Capacity : Soybean 25 ton/8 hr  
Required electric power : 300 kW

Outline of facilities

- (1) Oil extraction equipments
- (2) Oil tanks, conveyers
- (3) Steam boiler
- (4) Factory building with storage room & workshop (1,300 m<sup>2</sup>)

Main equipments

- (1) Soybean crusher
  - a) Capacity : 1,000 kg/hr
  - b) Electric power : 3.7 kW
  - c) No. of units : 4
- (2) Soybean scorcher
  - a) Capacity : 180 g/min.
  - b) Electric power : 0.75 kW + 0.4 kW
  - c) No. of units : 8
- (3) Oil expeller
  - a) Capacity : 10 ton/24 hr
  - b) Electric power : 30 kW
  - c) No. of units : 8
- (4) Filter press
  - a) Capacity : 40 gallons/hr
  - b) Electric power : 0.75 kW
  - c) No. of units : 4
- (5) Steam boiler
  - a) Capacity : 1,200 kg/hr
- (6) Others; Tanks, conveyers, etc.

3. RICE BRAN CRUDE OIL EXTRACTION PLANT

Capacity : Crude oil 30 ton/day

Outline of facilities

- (1) Oil extraction equipments
- (2) Supplemental equipments, piping & heat insulation
- (3) Factory building with workshop (1,800 m<sup>2</sup>)
- (4) Oil bran storage house (600 m<sup>2</sup>)

Main equipments

- (1) Preparation process
  - a) Double-shaker shifter
  - b) Jacket type conditioner
  - c) Dryer
  - d) Others; tanks, conveyers pumps, etc.
- (2) Extraction process
  - a) Vertical extractor
  - b) Desolventizer (toaster type)
  - c) Vacuum evaporator
  - d) Oil stripper
  - e) Others
- (3) Meal treatment process
  - a) Cooler
  - b) Magnet separator
  - c) Crusher
  - d) Others

6. MAIN SPECIFICATIONS FOR  
JOINT USE FACILITIES

4. ASSORTED ANIMAL FEED MAKING PLANT

Capacity : 15 ton/hr (30,000 ton/year)  
Required electric power : 580 kW

Outline of facilities

- (1) Animal feed making equipments
- (2) Factory building (1,500 m<sup>2</sup>)
- (3) Feed storage house (500 m<sup>2</sup>)

Main equipments

- (1) Grain silo : 800 m<sup>3</sup> 4 units (2,000 ton)
- (2) Sub-material receiving equipments
  - a) Shaking screen : 30 ton/hr
  - b) Hopper scale : 0.5 ton/batch
  - c) Bag filter
- (3) Grinding equipments
  - a) Hammer mill : 15 ton/hr
  - b) Bag filter
- (4) Non-grinding sub-material receiving equipments
  - a) Shaking screen : 30 ton/hr
  - b) Distributor : 250 mm dia × 9-way
- (5) Pre-mixing equipments
  - a) Pre-mixer : 0.2 ton/hr
  - b) Distributor : 200 mm dia × 4-way
- (6) Dosing & re-grinding equipments
  - a) Dosing hopper scale : 1.5 ton/batch
  - b) Batch mixer : 1 ton/batch
  - c) Hammer mill : 15 ton/hr
  - d) Bag filter

6. MAIN SPECIFICATIONS FOR  
JOINT USE FACILITIES

(7) Pelleting equipments

- a) Pellet mill : 15 ton/hr
- b) Pellet cooler : 15 ton/hr
- c) Pellet shaker : 15 ton/hr
- d) Pellet crumbler : 15 ton/hr

(8) Packaging equipments

- a) Packer scale : 600 bag/hr
- b) Bag closing machine : 600 bag/hr

(9) Bulk discharging equipments

- a) Platform scale : 500 kg/batch

(10) Others;

- a) Steam boiler : 1,000 kg/hr
- b) Level indicator : Revolutionary type
- c) Electric control board :

5. TAPIOCA PELLETT MAKING PLANT

- Capacity : 15 ton/hr
- Required electric power : 1,130 kW

Outline of facilities

- (1) Pellet making equipments
- (2) Factory building (900 m<sup>2</sup>)
- (3) Cassava tip & pellet storage house (500 m<sup>2</sup>)

Main equipments

- (1) Pre-grinding mill : 75 kW × 2 units
- (2) Re-grinding mill : 75 kW × 2 units
- (3) Pellet mill : 150 kW × 4 units
- (4) Pellet cooler : 2-stage horizontal type.  
10 ton/hr × 2 units
- (5) Double cyclone with fan : 7 m<sup>3</sup>/min × 2 units
- (6) Others : Shaker, packer scale, etc.

6. MAIN SPECIFICATIONS FOR  
JOINT USE FACILITIES

6. RUBBER SHEET SMOKE PLANT

Capacity : 10 smoke rooms, 2,400 ton/year

Outline of facilities

- (1) Smoke rooms (10 rooms)
- (2) Supplemental facilities
- (3) Smoked rubber sheet storage house (500 m<sup>2</sup>)

Main facilities

- (1) Smoke room:
  - a) No. of rooms : 10
  - b) Dimensions : 10 × 10 × 5 H. (M)/room
  - c) Structure : Fire brick
  - d) Temperature of smoke : 70 °C
- (2) Supplemental facilities
  - a) Washing pool
  - b) Selecting bench
  - c) Packaging machine

1.

ESTIMATED COSTS FOR FACILITIES & EQUIPMENTS  
REQUIRED BY PRIMARY COOPERATIVES

(UNIT : BAHT 1,000)

Name of facilities & equipments	Capacity	Unit price (Baht 1,000)	CHIANG MAI (each coop)		LOP BURI (each coop)		NAKHON RATCHASIMA (each coop)		SONG KHLA (each coop)		TOTAL (20 coops)		
			No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	Local procurement
[Transportation equipments]													
1. Truck for collection	3 ton	330	1	330	2	660	2	660	1	330	30	9,900	
2. Truck for marketing	10 ton	500	1	500	1	500	1	500			15	7,500	
[Grain threshing equipments]													
3. Rice thresher and 80 HP tractor with trailer	1 ton/hr	420	2	840	4	1,680	4	1,680	1	420	55	23,100	(3,850)
4. Maize thresher and 80 HP tractor with trailer	1 ton/hr	420			4	1,680					20	8,400	(1,400)
5. Soybean thresher and 80 HP tractor with trailer	1 ton/hr	450	1	450							5	2,250	( 350)
[Drying facilities]													
6. Maize ear dryer (corn crib)	150m <sup>3</sup> × 4	500			1	500					5	2,500	(2,500)
7. Maize kernel dryer with bin	5 ton/hr	1,200			1	1,200					5	6,000	
8. Concrete ground to suncure cassava	1,000 m <sup>2</sup>	1,000					1	1,000			5	5,000	(5,000)
9. Soybean dryer	2 ton/day	60	3	180							15	900	
[Collection equipments]													
10. For rice: testing husker, testing polisher, moisture meter.		50	3	150	5	250	5	250	2	100	75	3,750	
11. 1) Soybean selecting machine	500Kg/hr	80	2	160							10	800	
2) Soybean & maize moisture meter		20	4	80	6	120					50	1,000	
12. Tractor with attachments for lent	80 HP	500	1	500	5	2,500	3	1,500	1	500	50	25,000	(3,500)
13. Truck scale	30 ton	400	1	400	1	400	1	400	1	400	20	8,000	

1.

ESTIMATED COSTS FOR FACILITIES & EQUIPMENTS  
REQUIRED BY PRIMARY COOPERATIVES

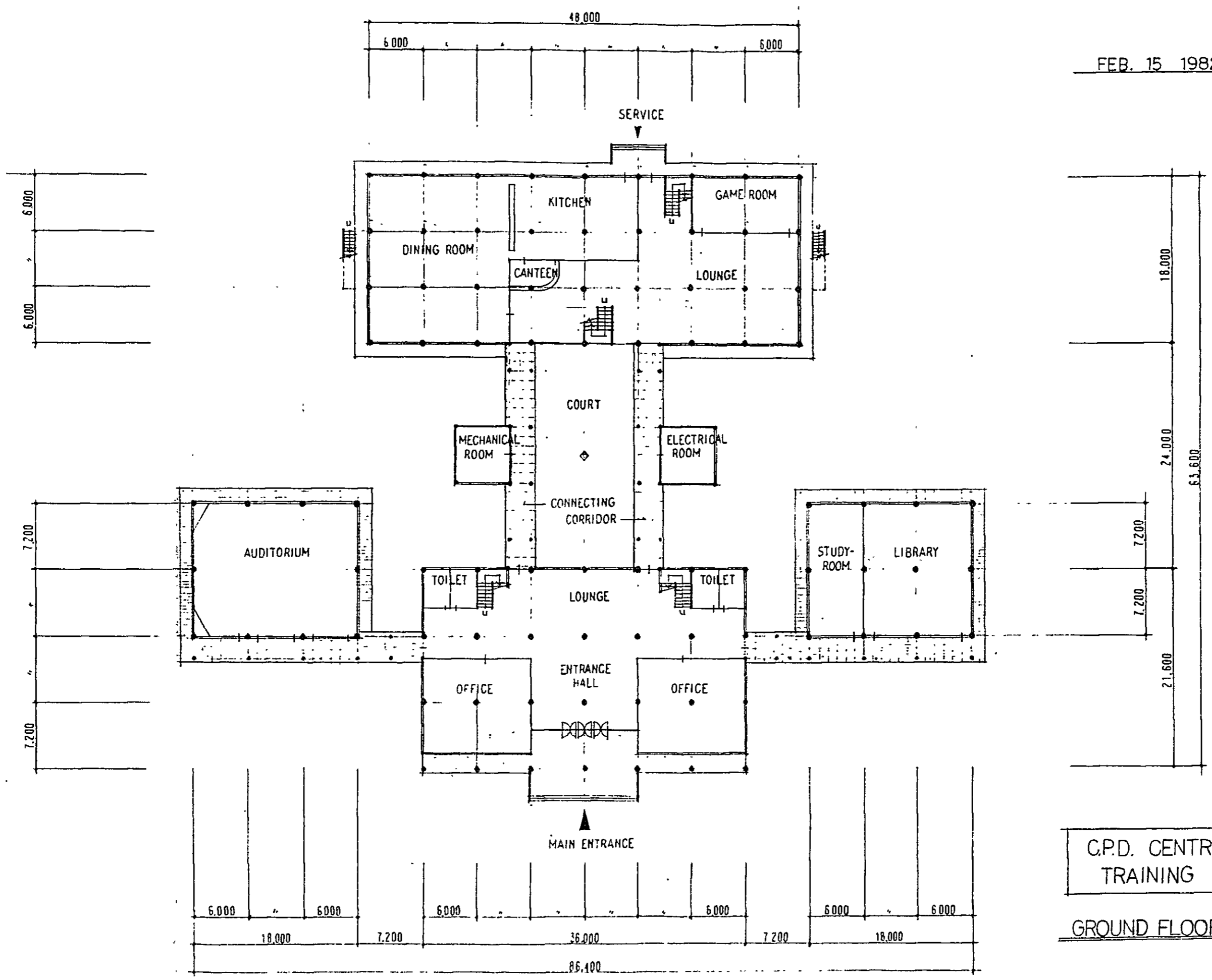
(UNIT : BAHT 1,000)

Name of facilities & equipments	Capacity	Unit price (Baht 1,000)	CHIANG MAI (each coop)		LOP BURI (each coop)		NAKHON RATCHASIMA (each coop)		SONG KHLA (each coop)		TOTAL (20 coops)			
			No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	No. of unit	Amount	Local procurement	
[Storage facilities]														
14. Warehouse for paddy	500-1,000 <sup>ton</sup> 330-660 m <sup>2</sup>	3,300/6,000	1 (500ton)	3,000	1 (500ton)	3,000	1 (1000ton)	6,000			15	60,000	(9,000)	
15. Warehouse for maize & others	330-660 m <sup>2</sup>	3,000/6,000	1 (330 m <sup>2</sup> )	3,000	1 (1000ton)	6,000	1 (660 m <sup>2</sup> )	6,000			15	75,000	(11,000)	
16. Simple warehouse for equipments with workshop	700 m <sup>2</sup>	1,000	1	1,000	1	1,000	1	1,000	1	1,000	20	20,000	(20,000)	
[Irrigation equipments]														
17. Pump with engine		50	6	300	10	500	20	1,000			180	9,000		
18. Water hose for above		50/km	5 km	250	10 km	500	20 km	1,000			175 km	8,750		
[Primary rubber sheet processing facilities]														
19. Simple factory building		30							34	1,020	170	5,100	(5,100)	
20. Processing equipments		45							34	1,530	170	7,650	(2,300)	
21. Drying facility		30							34	1,020	170	5,100	(5,100)	
22. Rubber sheet collection & selecting facility	} 330 m <sup>2</sup>	2,500							1	2,500	5	12,500	(12,500)	
23. Warehouse for rubber sheet		3,000							1	3,000	5	15,000	(2,200)	
Total (each cooperative) :				11,140		20,490		20,990		11,820				
Total (5-cooperatives) :				55,700		102,450		104,950		59,100				
Facilities & equipments required by primary cooperatives											TOTAL ( 20 cooperatives ) :		322,200	(83,800)

\* Basis of Local procurement :

(1) Tractor for lent and thresher	..... 5 ton trailer. 70/UNIT
(2) Reinforced concrete warehouse & factory building	..... abt. 15 % for costs
(3) Rubber sheet processing equipment	..... pool, working table etc. abt. 30 %
(4) Installation for joint use facility	..... abt. 80 % for costs

FEB. 15 1982

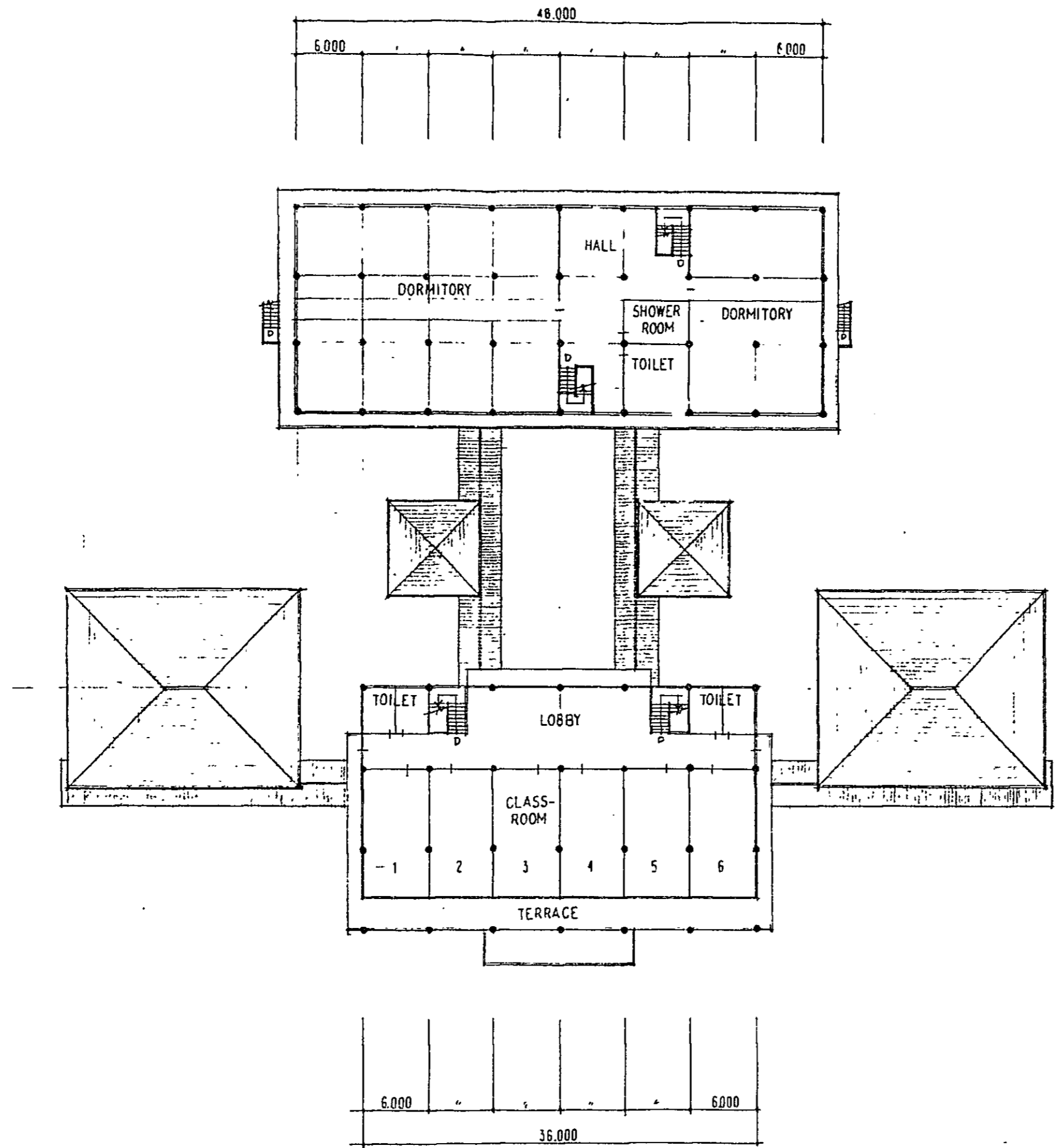


C.P.D. CENTRAL  
TRAINING CENTRE

GROUND FLOOR PLAN 1/400



FEB. 15 1982



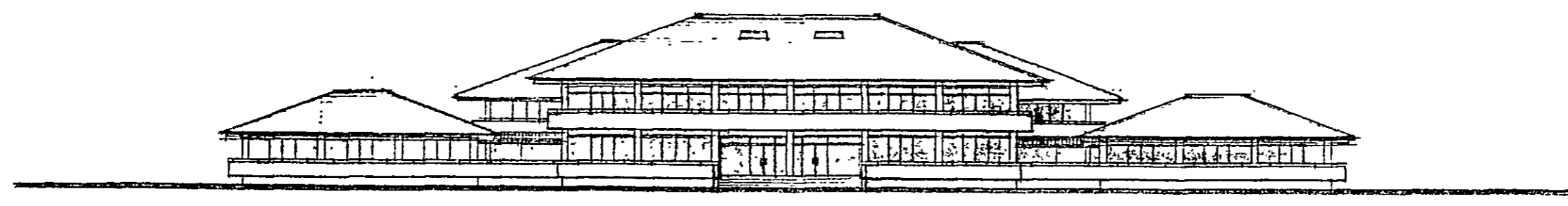
CPD CENTRAL  
TRAINING CENTRE

FIRST FLOOR PLAN S = 1/400

FEB. 15 1982

FLOOR AREA SCHEDULE

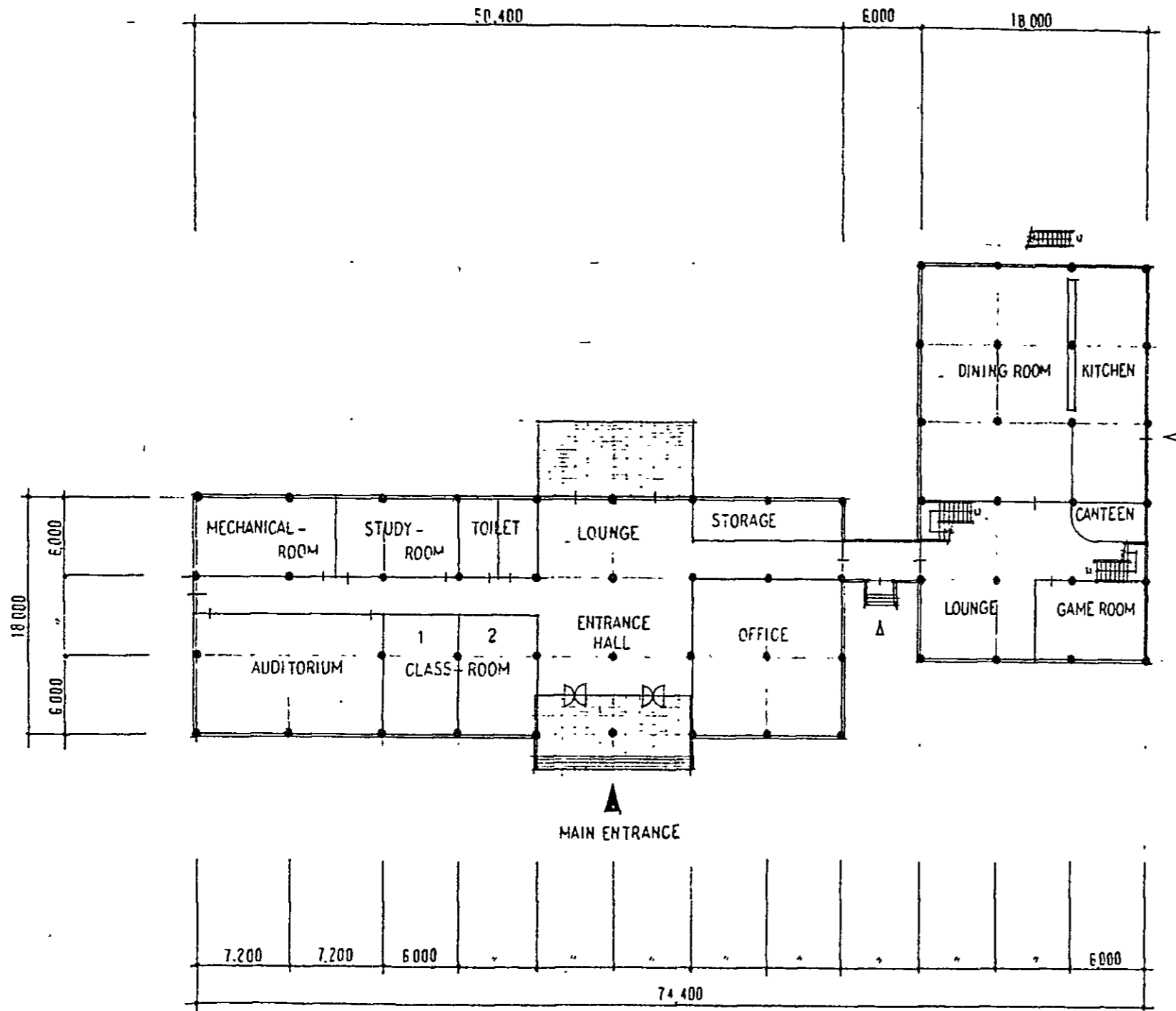
FLOOR	FLOOR AREA (m <sup>2</sup> )
FIRST F.	1 928 . <sup>1</sup>
GROUND F.	2 488 . <sup>8</sup>
TOTAL	4 416 . <sup>9</sup> (m <sup>2</sup> )



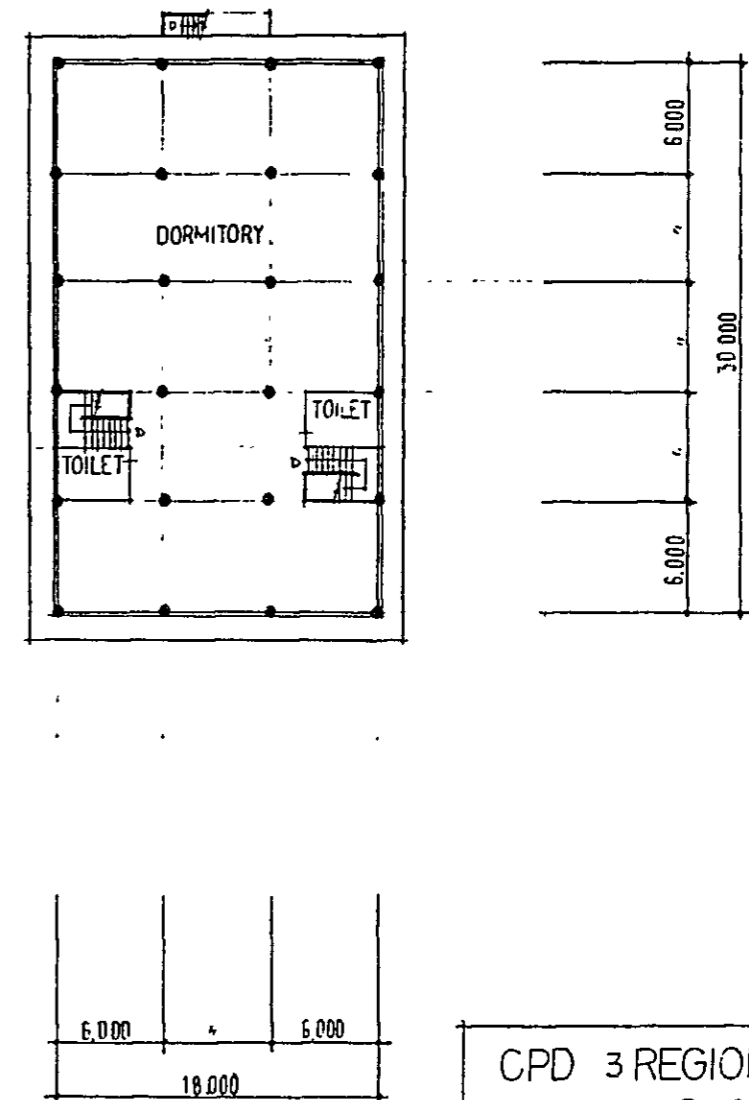
FRONT ELEVATION s = 1/400

CPD CENTRAL  
TRAINING CENTRE

FEB. 15 1982



GROUND FLOOR PLAN S: 1/400



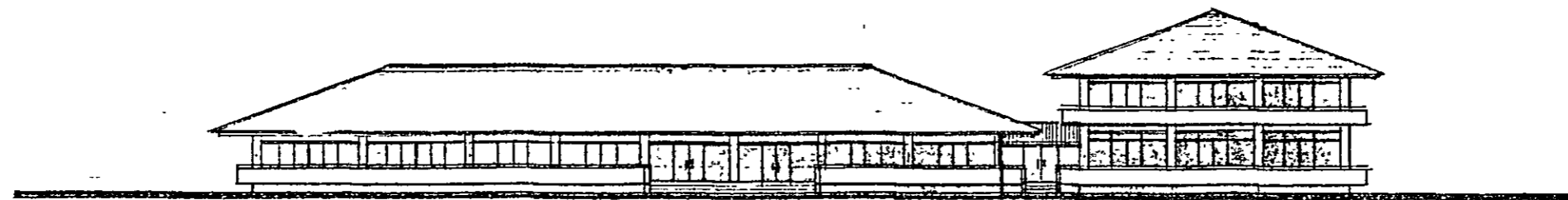
FIRST FLOOR PLAN S: 1/400

CPD 3 REGIONAL TRAINING CENTRE

FEB. 15 1982

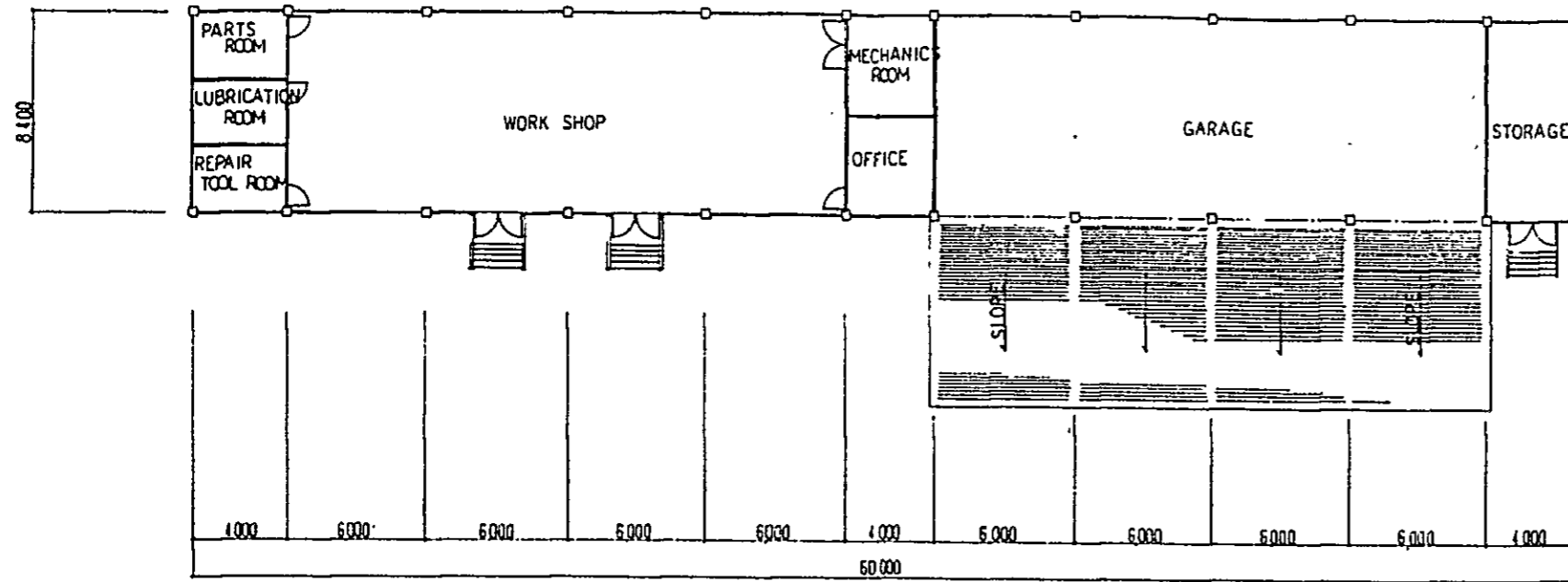
FLOOR AREA SCHEDULE

FLOOR	FLOOR AREA (m <sup>2</sup> )
FIRST F.	688.5
GROUND F.	1501.2
TOTAL	2189.7 (m <sup>2</sup> )



FRONT ELEVATION S.A. 1/100

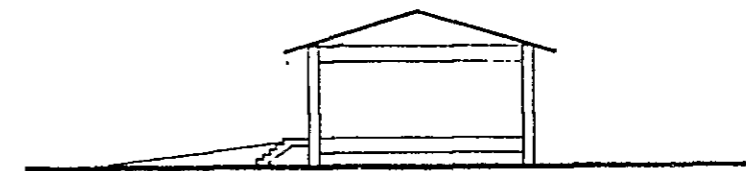
CPD 3 REGIONAL  
TRAINING CENTRE



WORK SHOP & GARAGE PLAN S 1 : 200

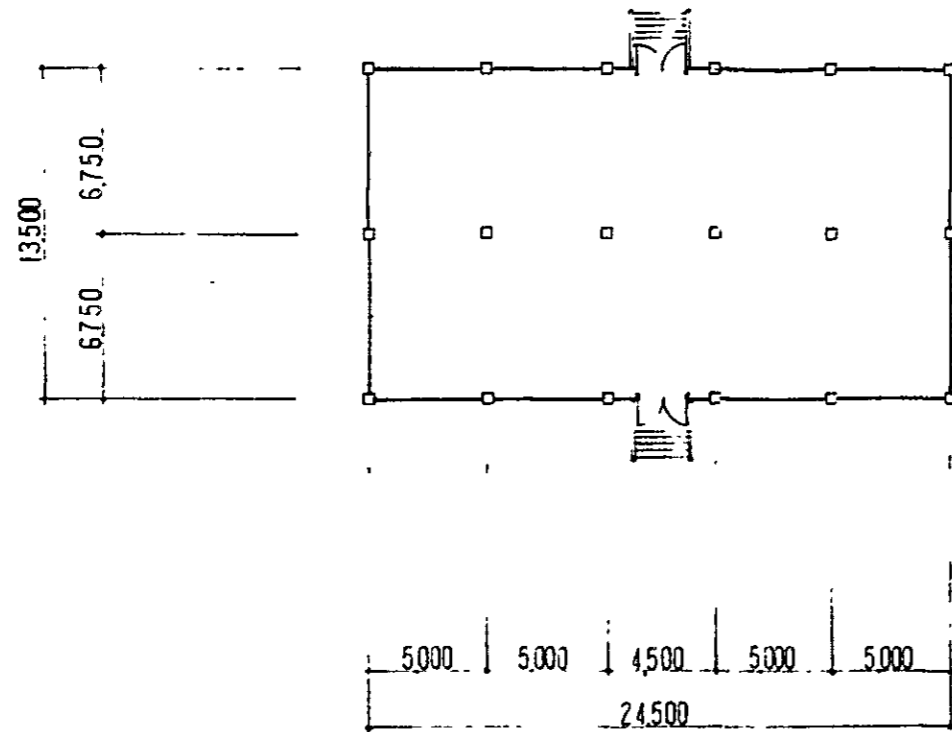


FRONT ELEVATION S 1 : 200

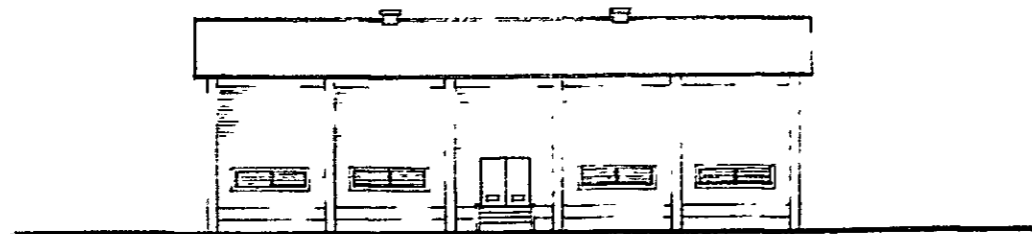


SIDE ELEVATION S 1 : 200

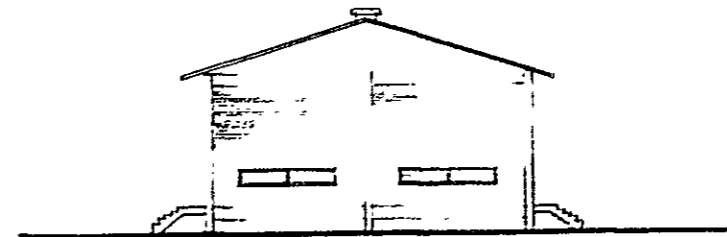
WORK SHOP & GARAGE, FOR TRAINING CENTER



PLAN S 1:100

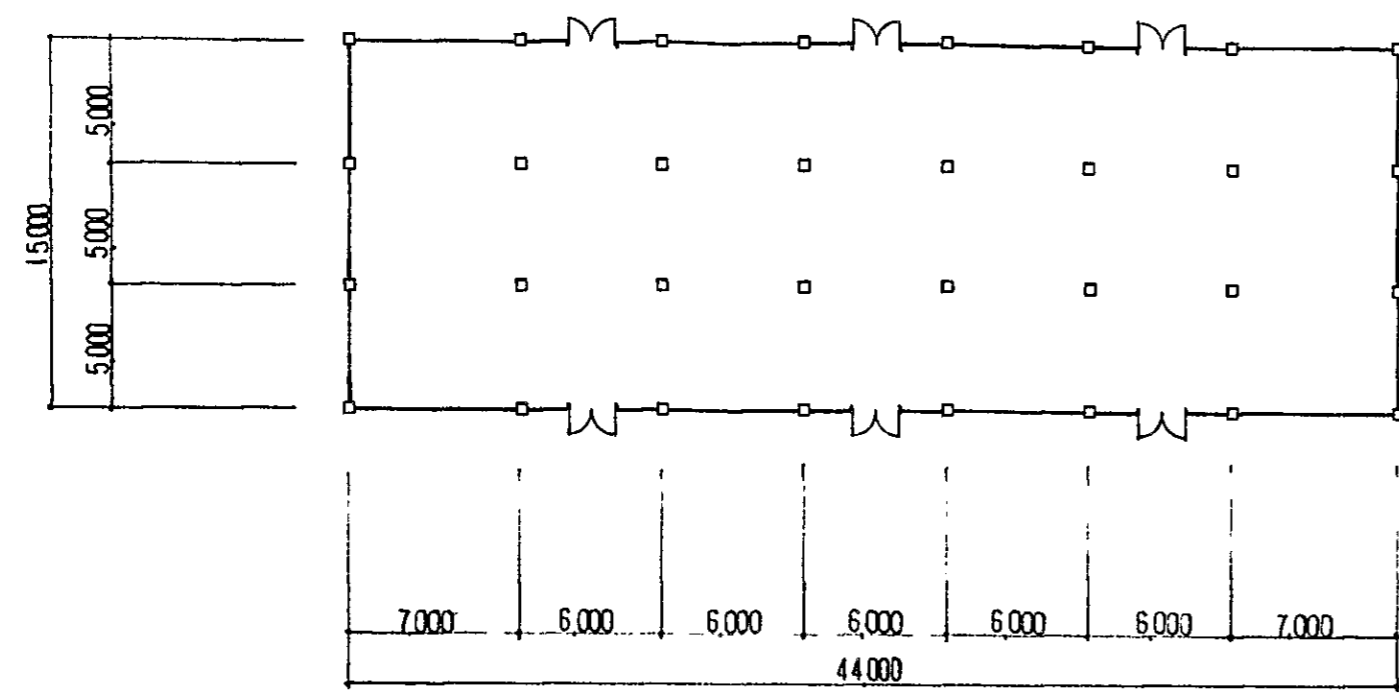


FRONT ELEVATION

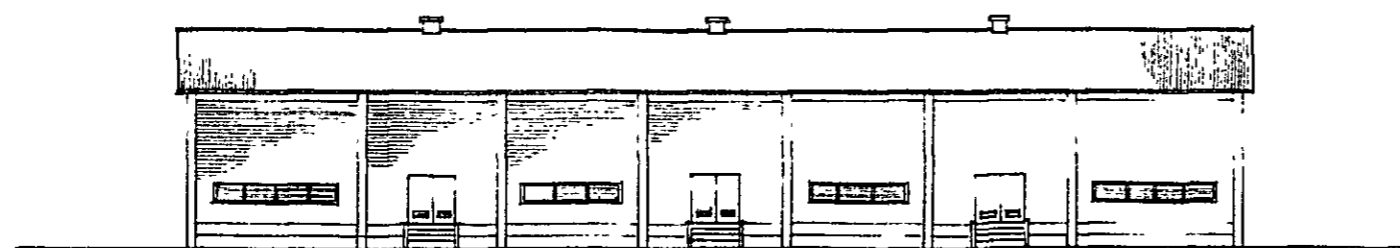


SIDE ELEVATION

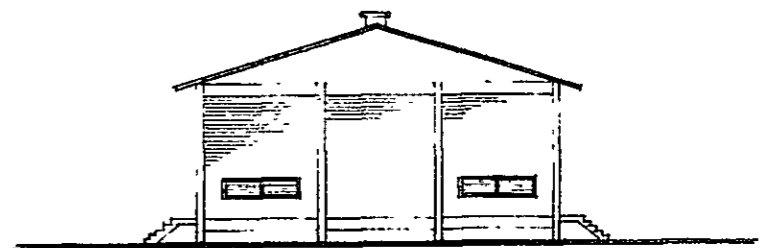
AREA (S.M.)



PLAN S 1.2.20



FRONT ELEVATION S 1.2.20

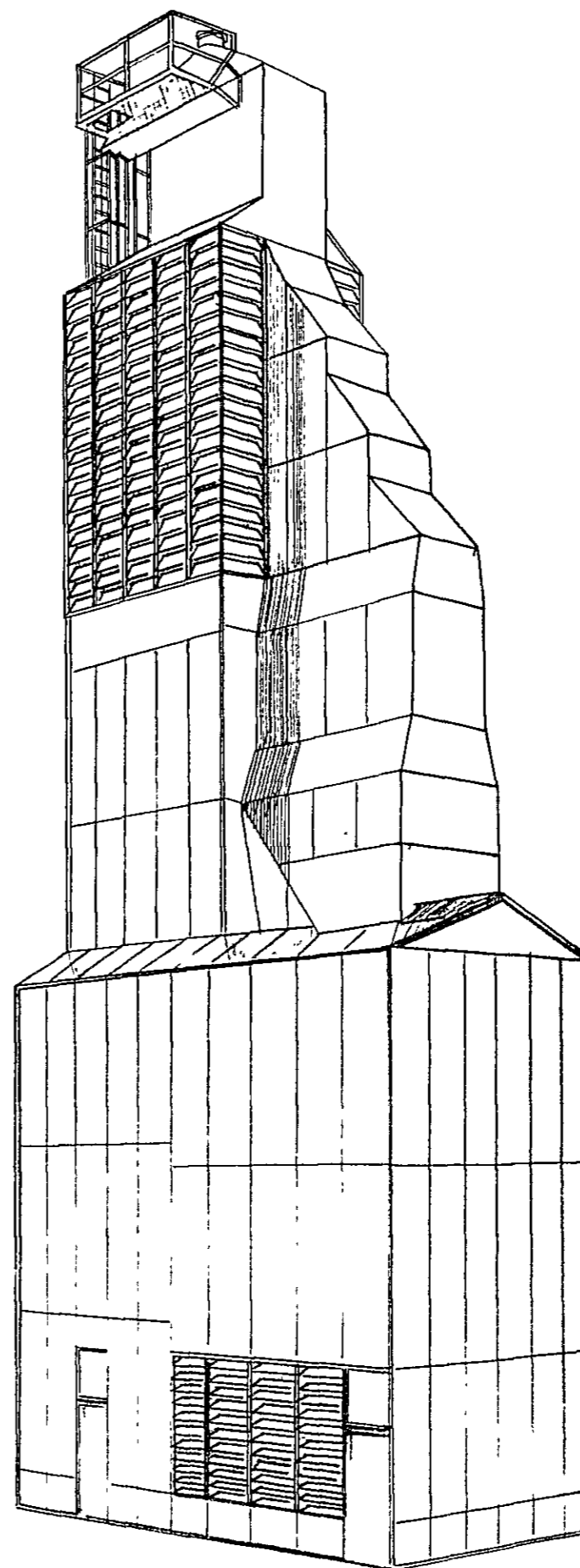
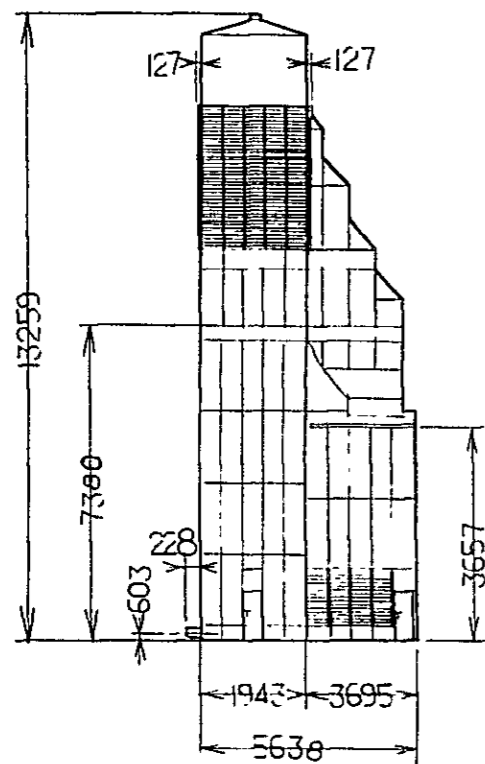
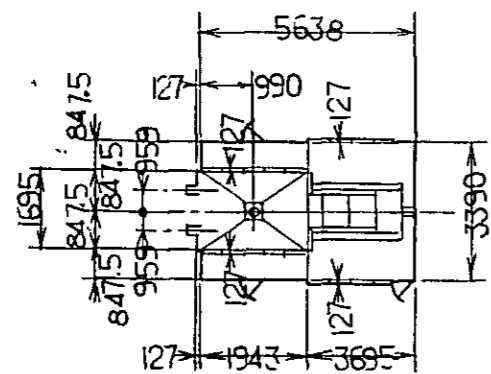


SIDE ELEVATION S 1.3.20  
WAREHOUSE (660<sup>m<sup>2</sup></sup>)

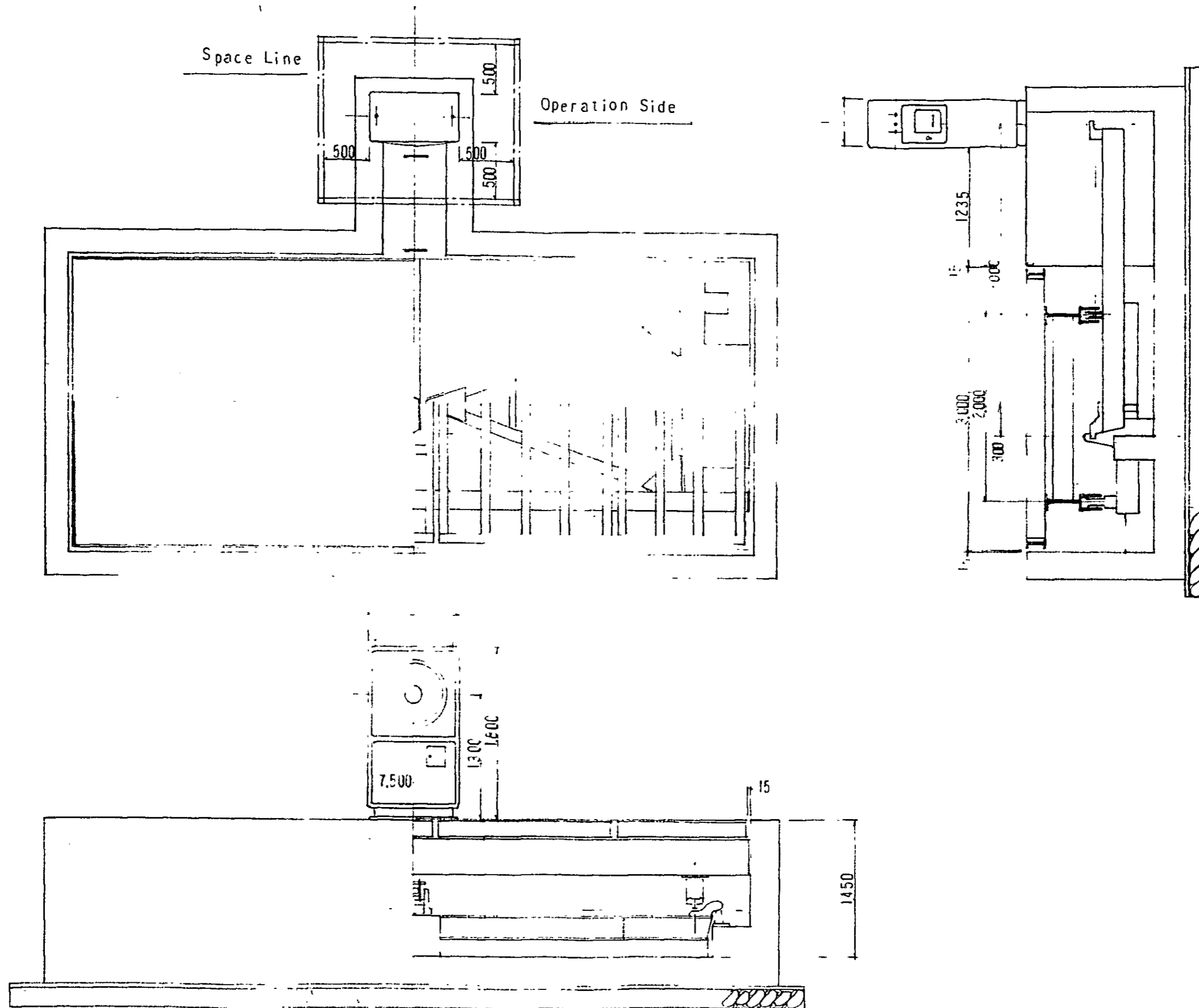
# OUTLINE OF STRUCTURE

STRUCTURE	TRAINING CENTER	WORKSHOP & GARAGE	STORAGE
FOUNDATION	R.C	R.C	R.C
CORUMN	R.C	R.C	R.C
GIRDER	R.C	R.C	R.C
FROOR SLAB	R.C	R.C	R.C
EXTERIOR WALL	BRICK	BRICK	BRICK
ROOF	COLOR ROOF TILE	CORRUGATED ASBESTOS CEMENT SHEET	CORRUGATED ASBESTOS CEMENT SHEET
( ROOF TRUSS )	WOOD	WOOD	WOOD
STAIR CASE	R.C	—	—
EXTERIOR DOOR			
& WINDOW			
WINDOW SASH	ALUMINUM SLIDING WINDOW	GLASS JALOUSIE (WOODEN FRAME)	GLASS JALOUSIE (WOODEN FRAME)
"	GLASS JALOUSIE (WOODEN FRAME)		
ENTRANCE DOOR	ALUMINUM SWINGING DOOR	ALUMINUM SWINGING DOOR	STEEL DOOR - O.P.
INTERIOR FINISH SCHEDULE			
FLOOR	POLISHED TERRAZZO	MORTAR	MORTAR
BASE BOARD	POLISHED TERRAZZO	MORTAR	MORTAR
WALL	MORTAR - E.P.	MORTAR - E.P.	MORTAR
CEILING	GYPSUM BOARD - E.P.	GYPSUM BOARD - E.P.	GYPSUM BOARD - E.P.
NOTE	PROJECTOR O.H.P	DRYING MACHINE	
	PHOTO COPIER	THRESHING MACHINE	
	TYPEWRITER	DISINTEGRATON	
	TAPE RECORDER	CULTIVATOR	
	ANALYSIS LABORETORY INSTRUMENT	TRACTOR	
	AIRCONDITION		

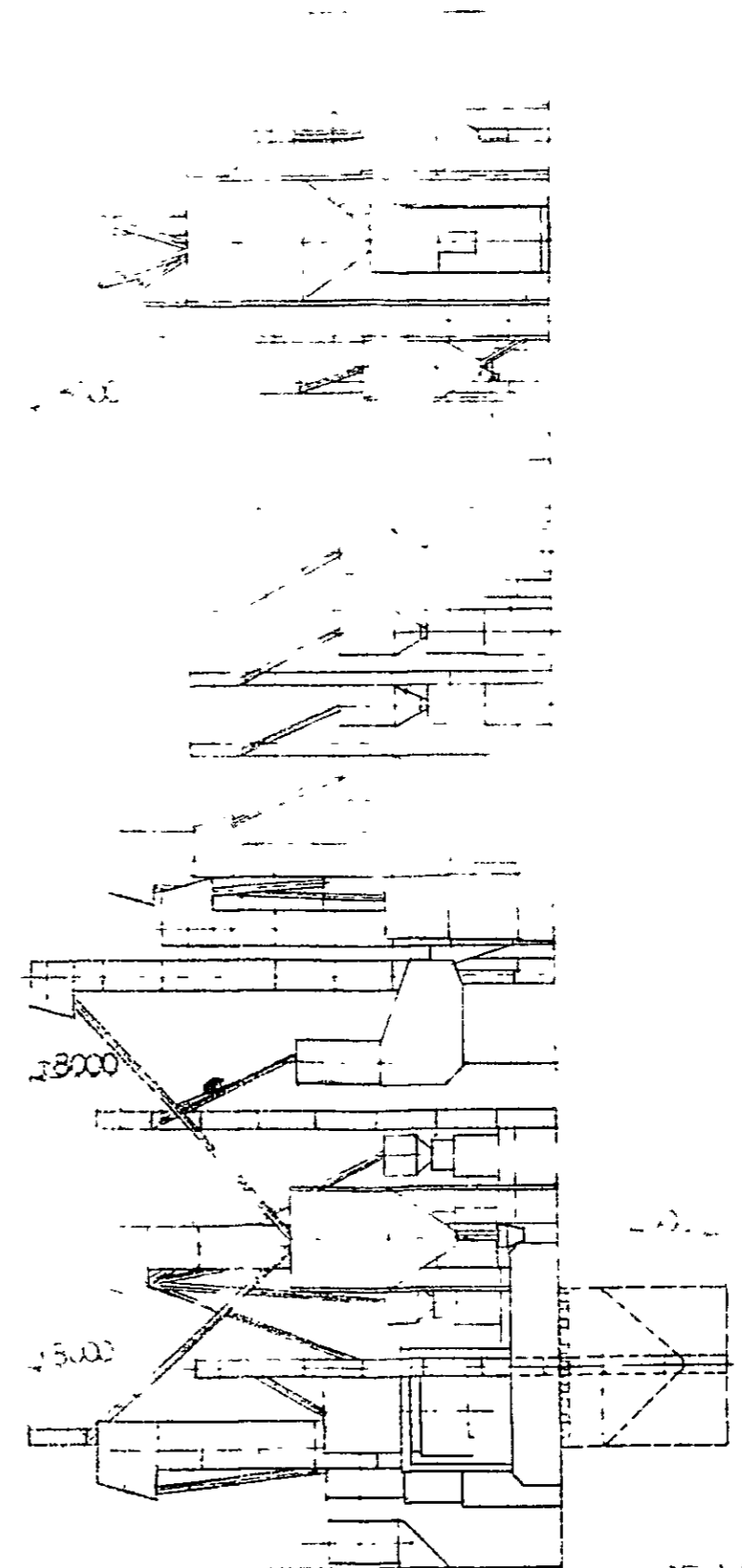
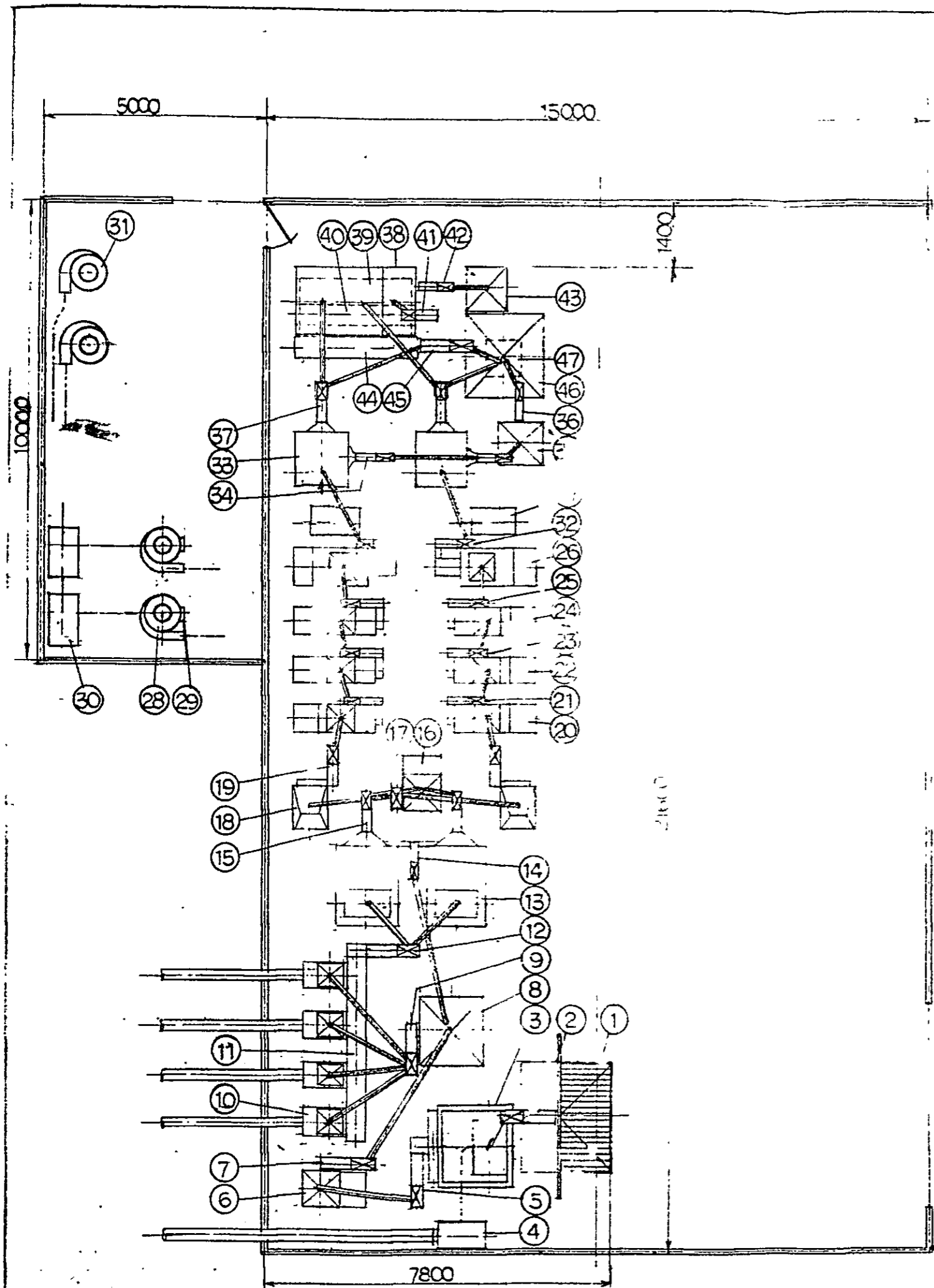




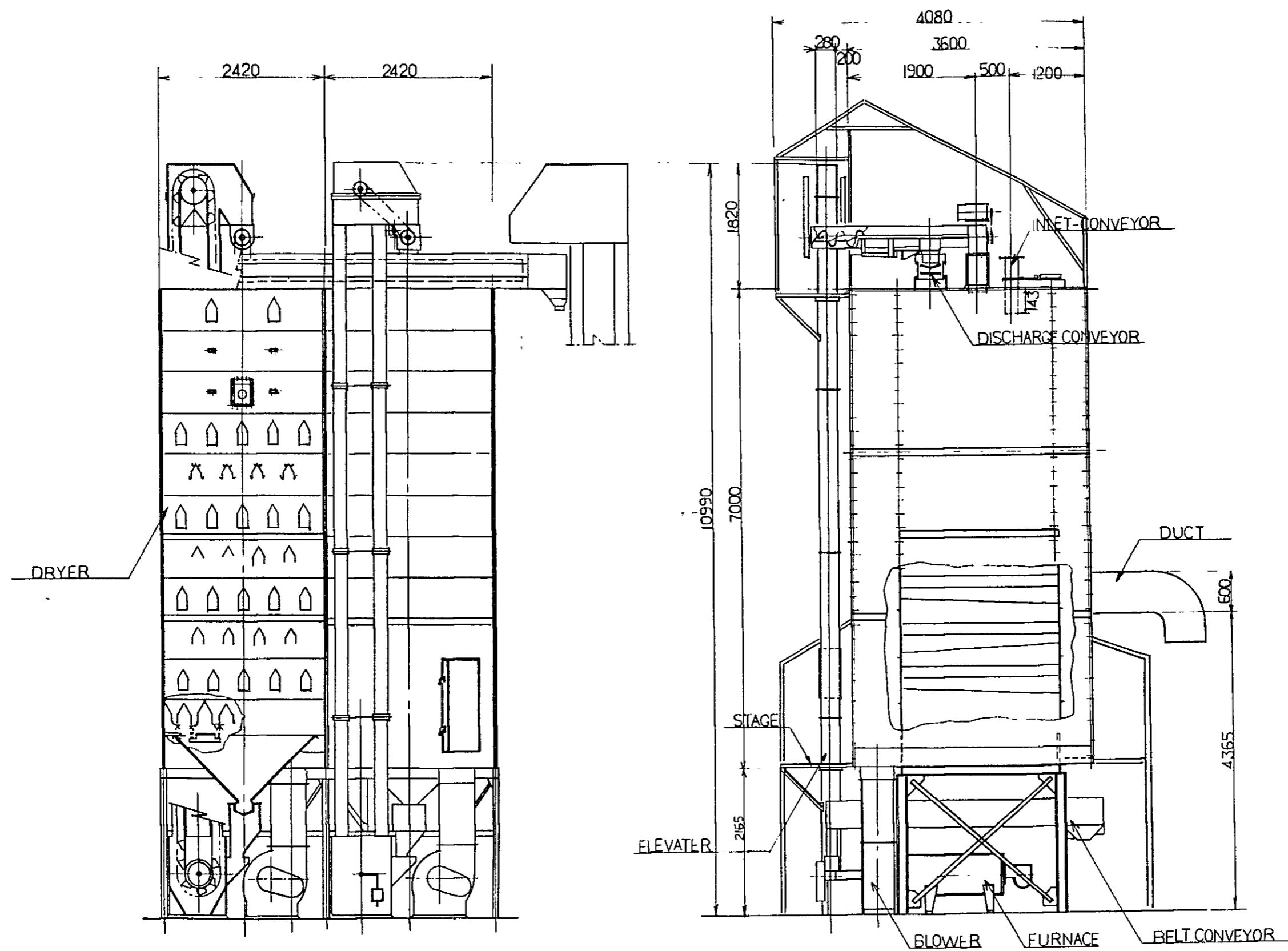
MAIZE DRYER



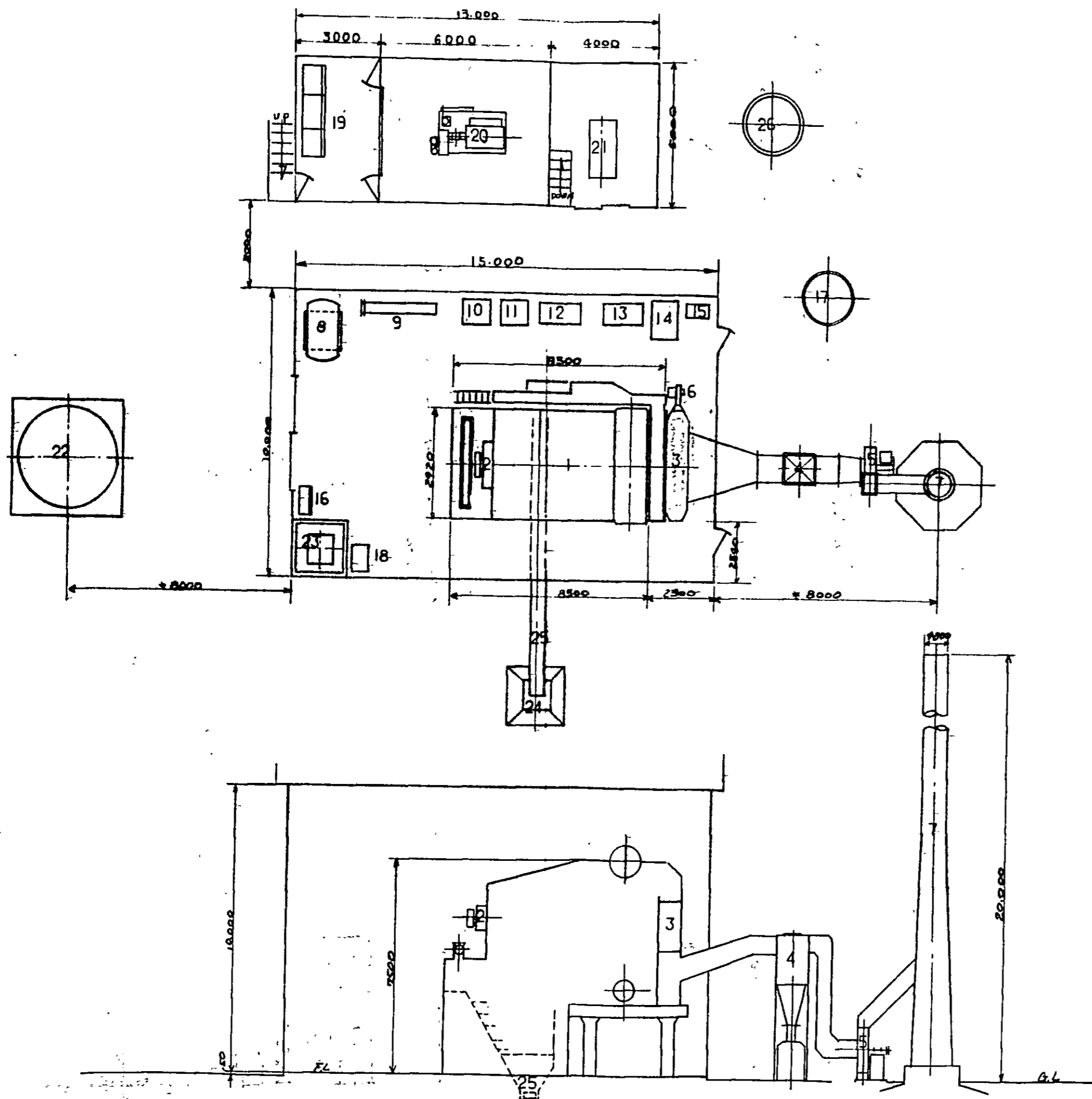
TRUCK SCALE



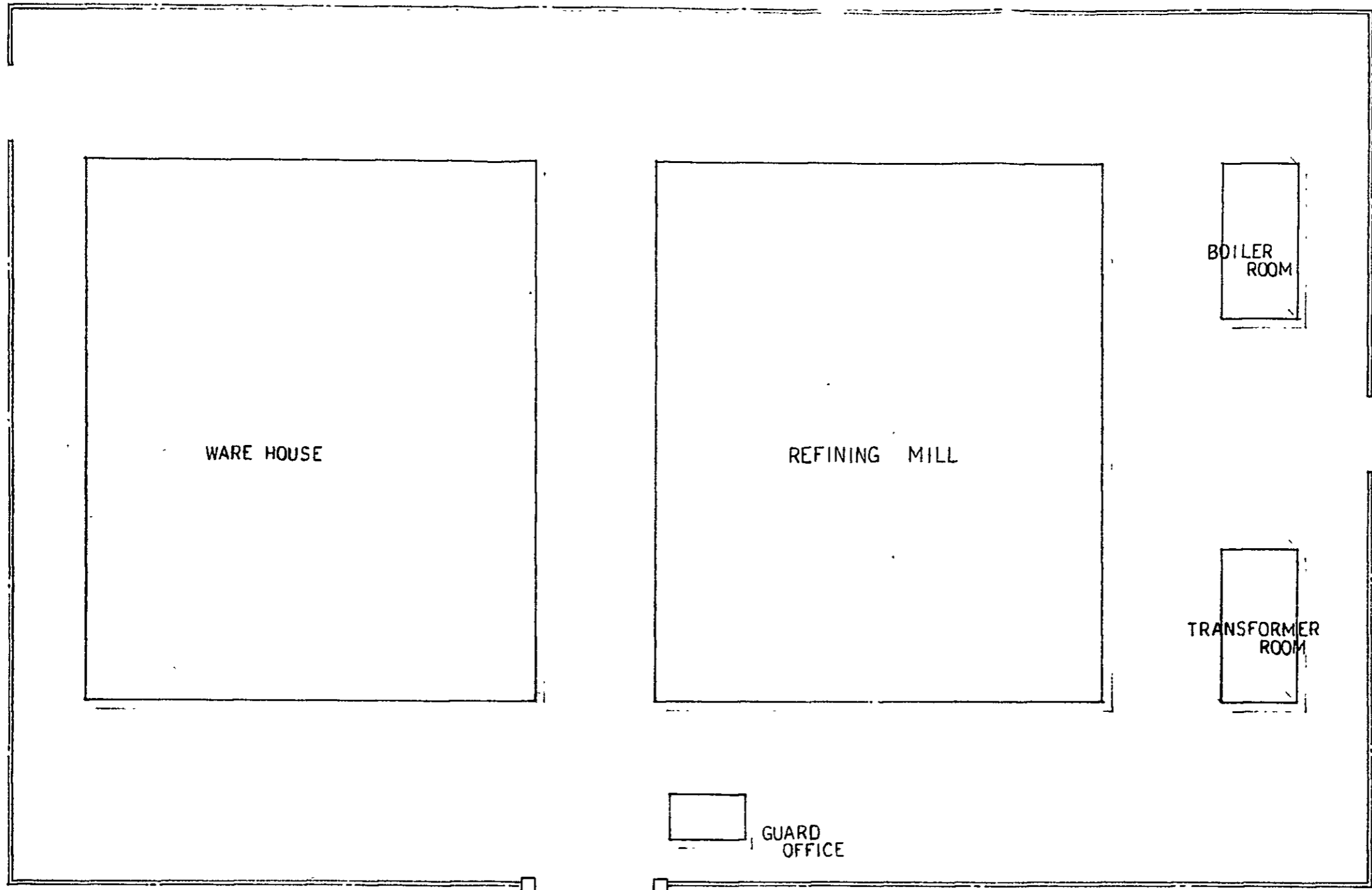
RIE MILL PLANT



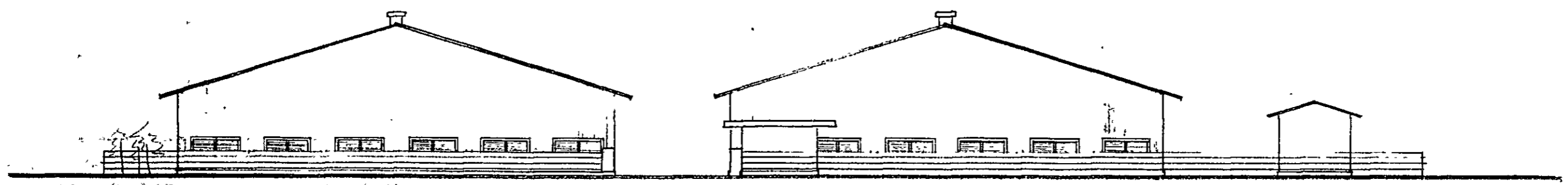
DRYER FOR RICE MILL



HUSK BOILER \ GENERATOR.  
FOR RICE MILL

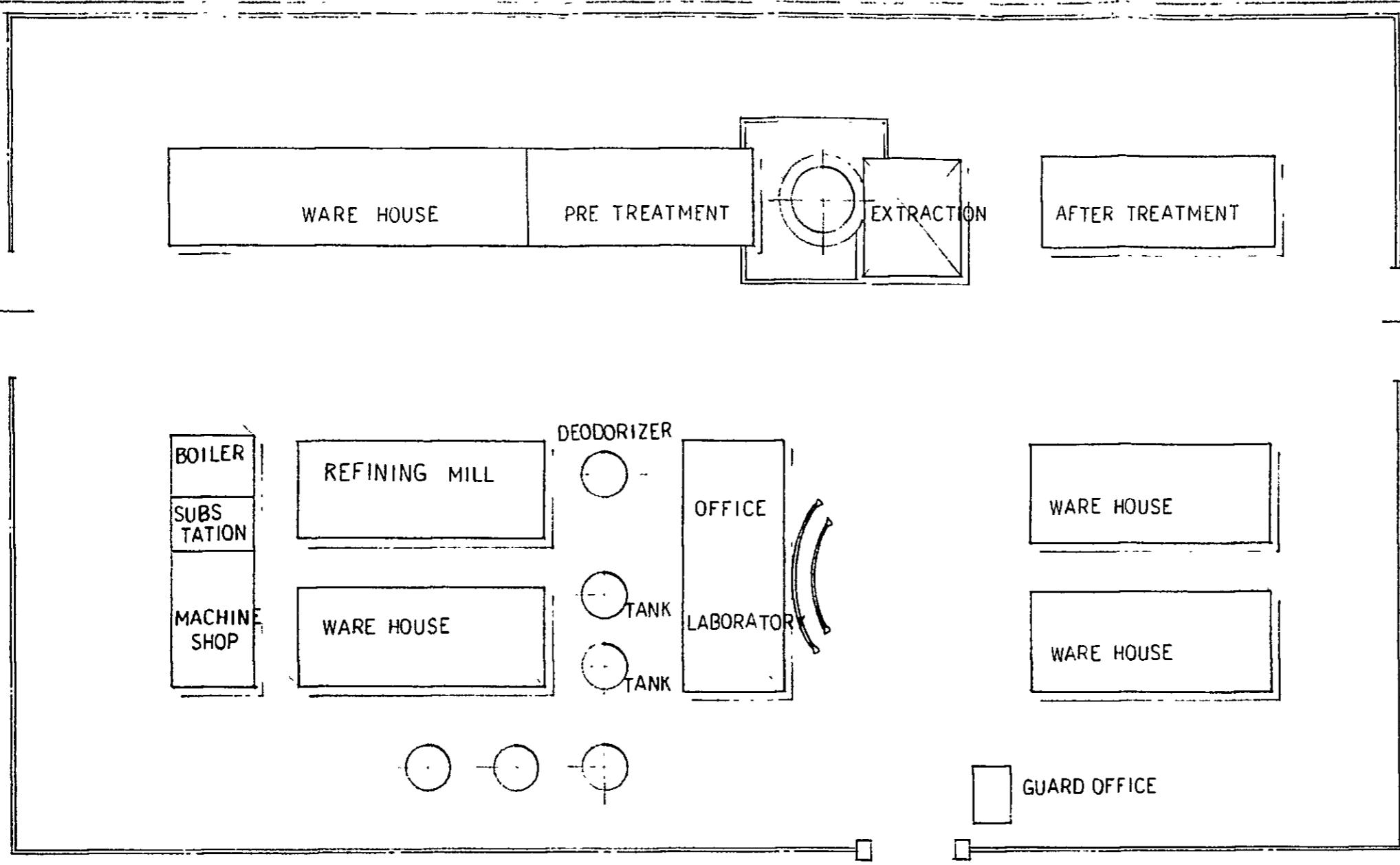


BLOCK PLAN S 1:200

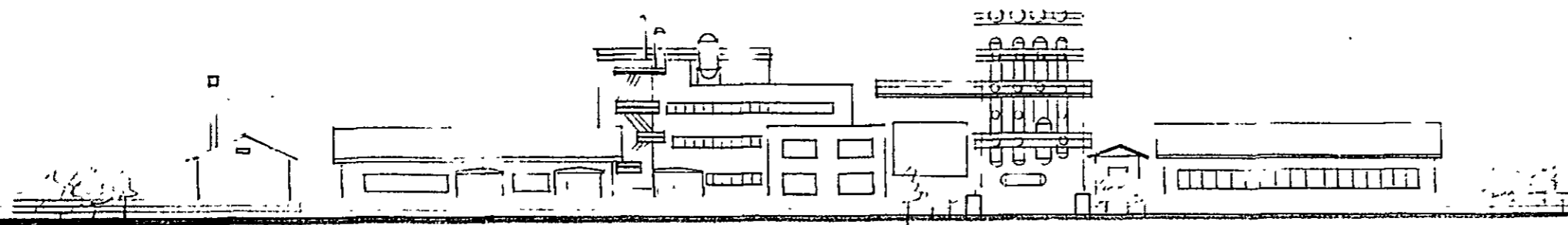


ELEVATION

SOYBEAN OIL EXTRACTION PLANT

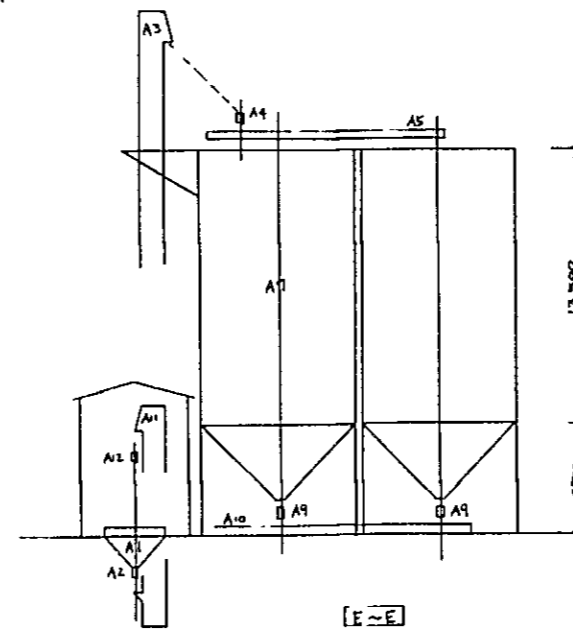
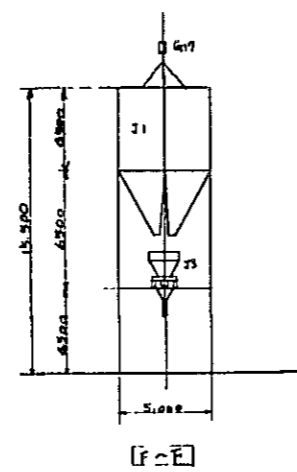
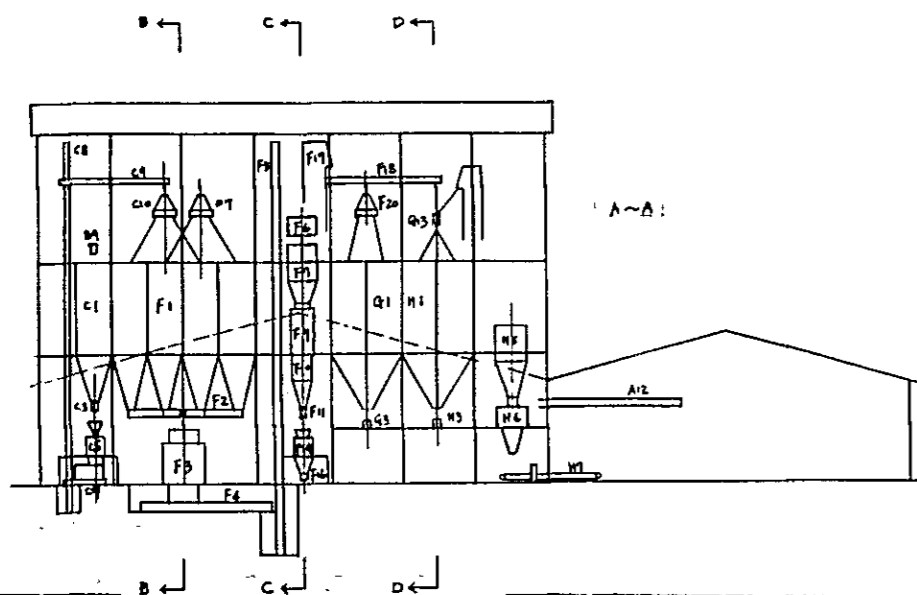
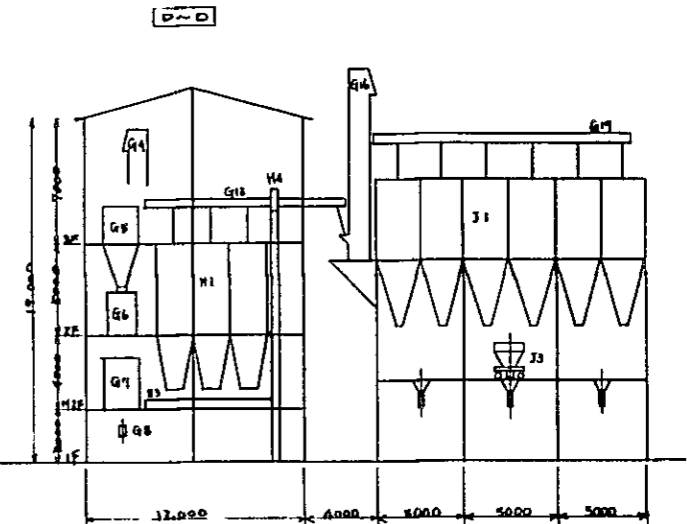
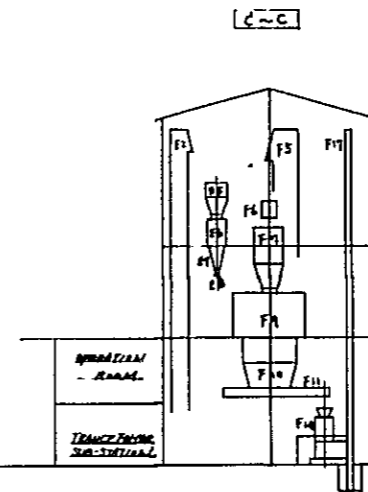
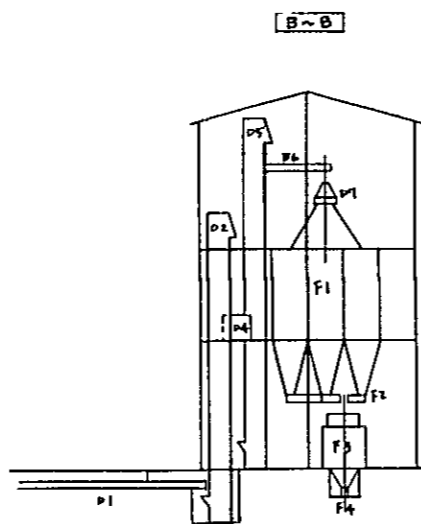
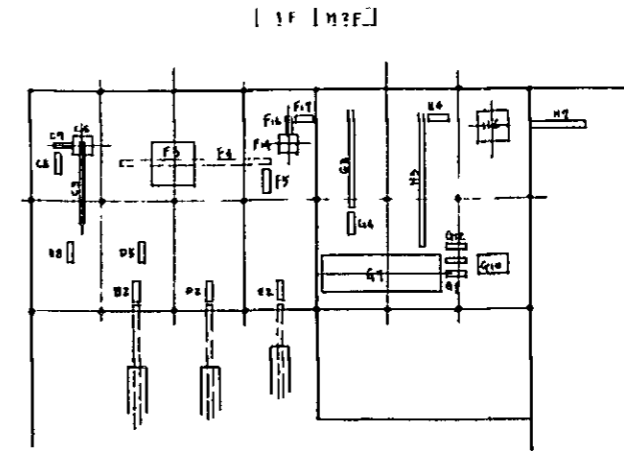
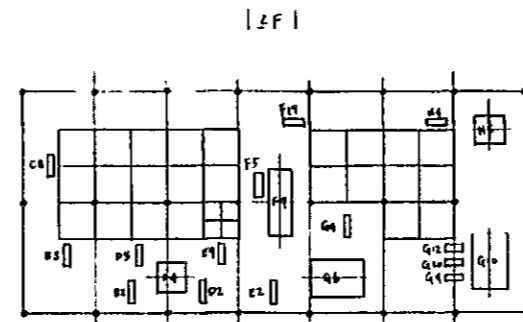
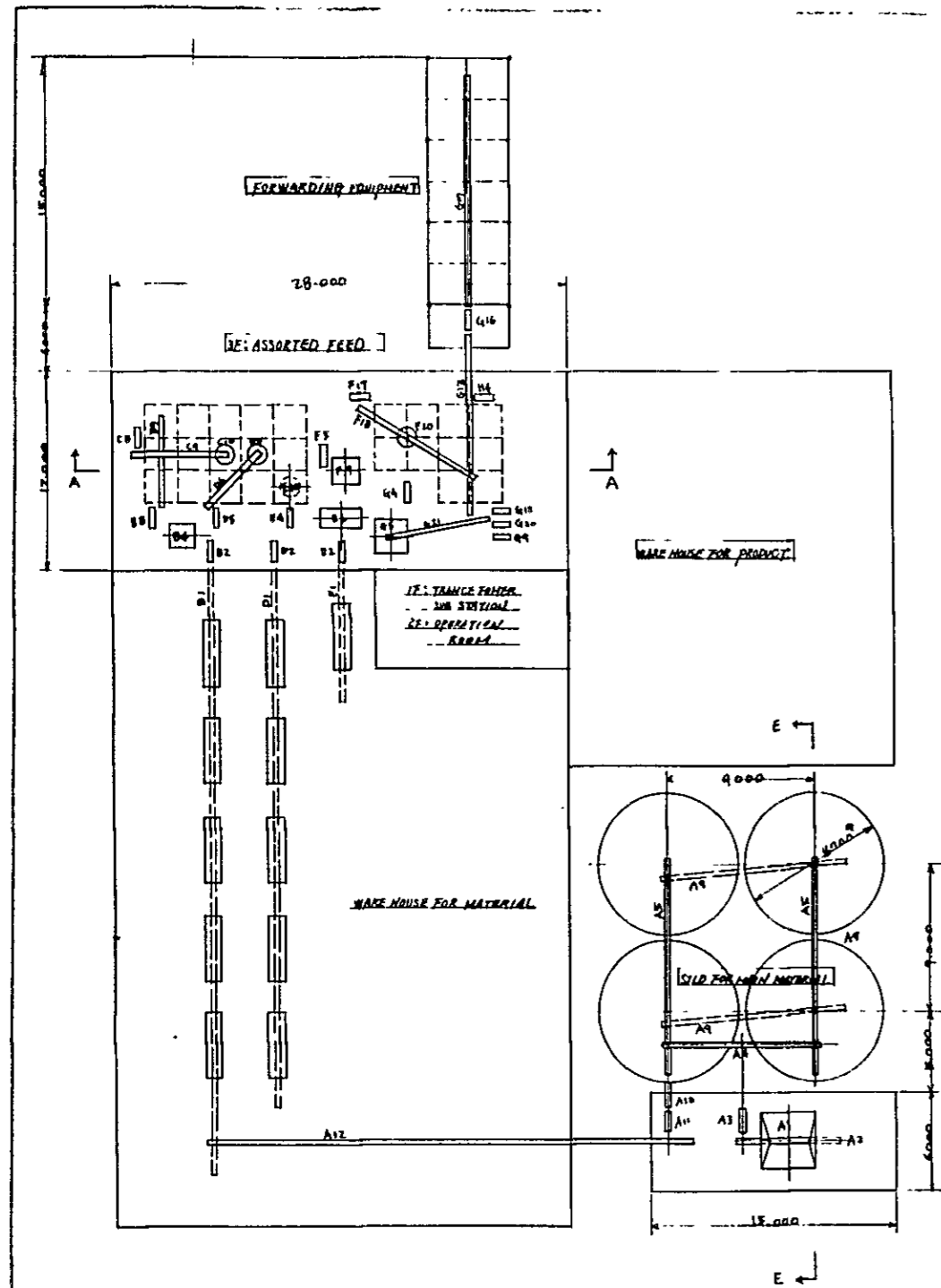


BLOCK PLAN



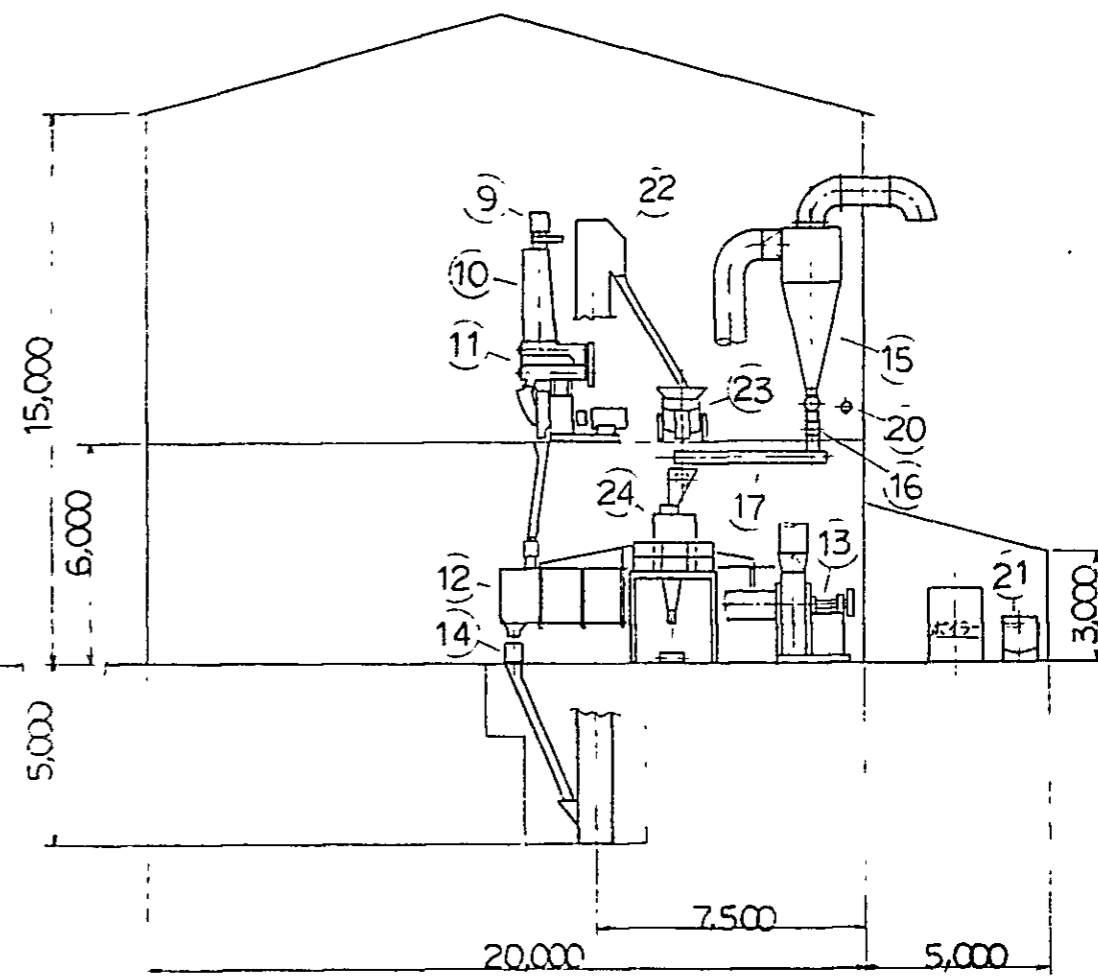
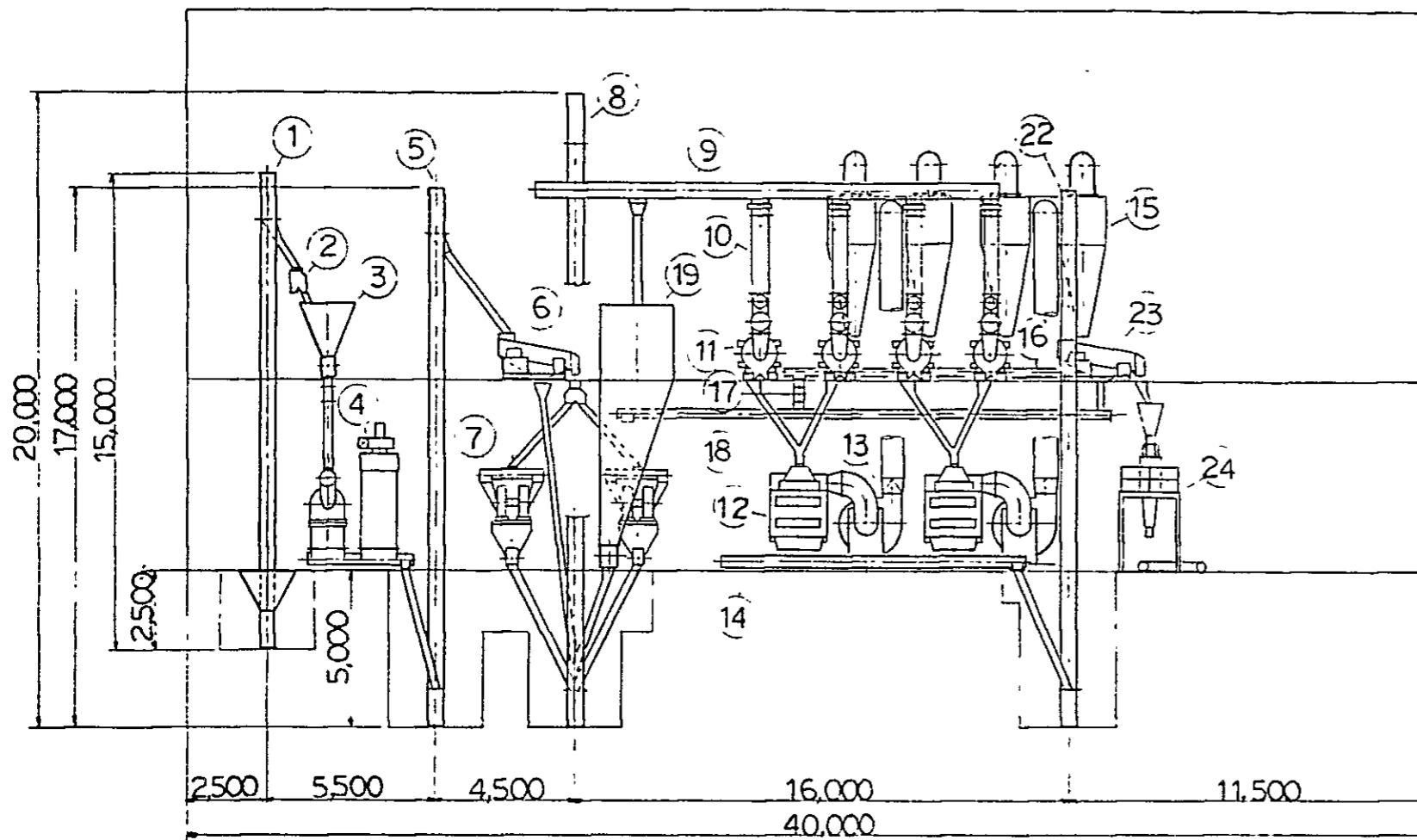
ELEVATION

RICE BRAN CRUDE OIL EXTRACTION PLANT



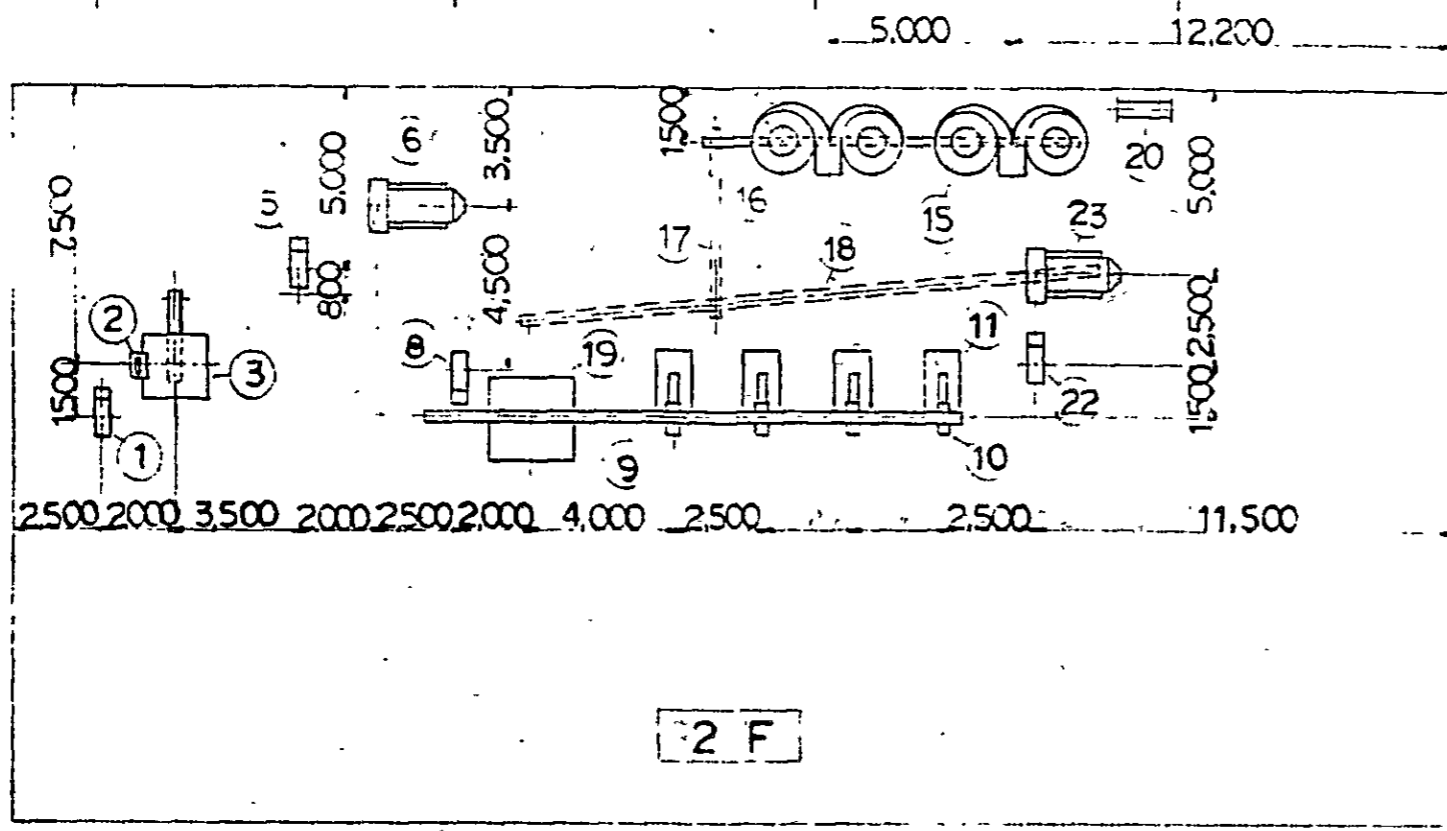
ASSORTED ANIMAL FEED MAKING PLANT



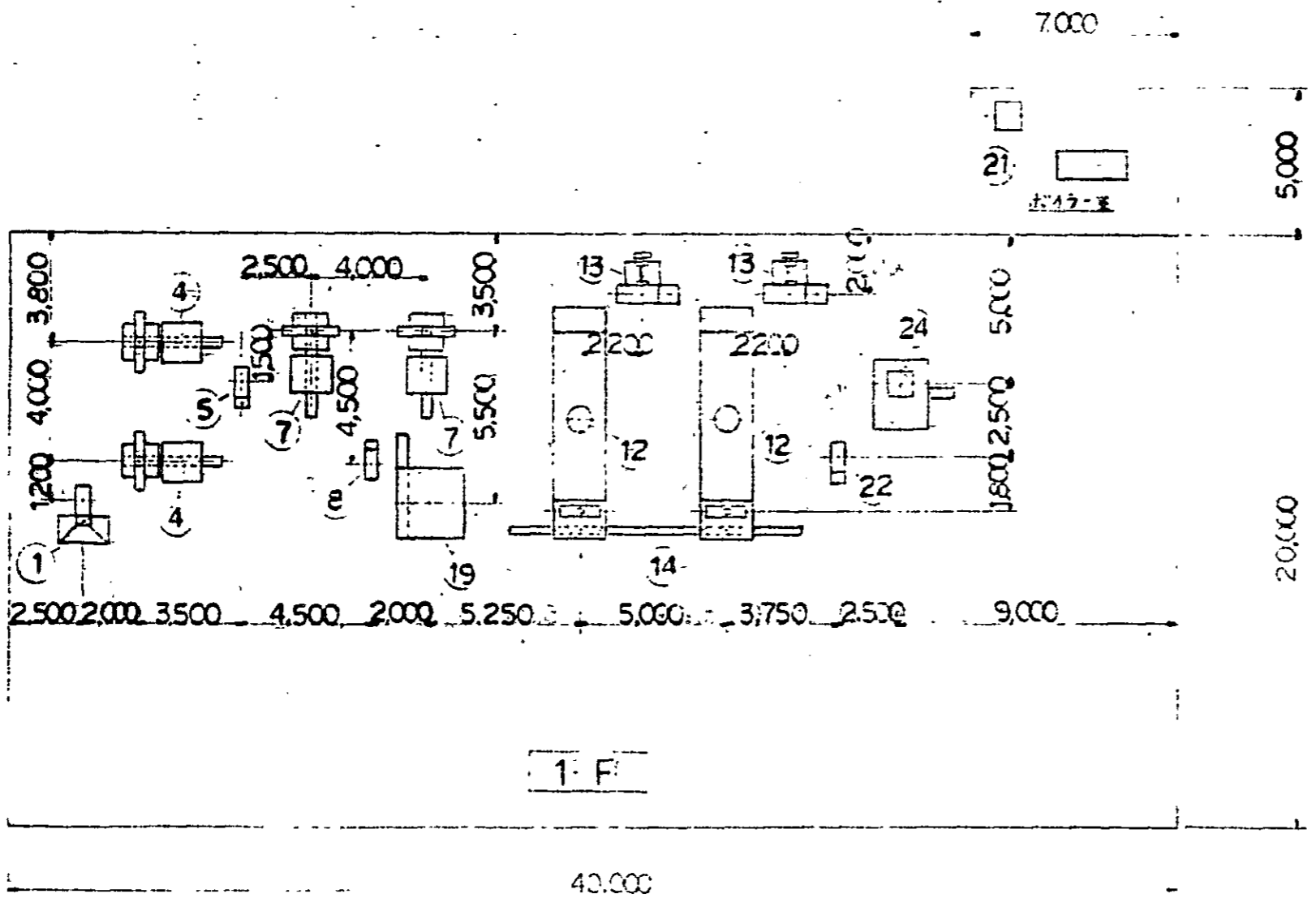


DWG No TA 0002

TAPIOCA PELLET MAKING PLANT (NO.-1)



DWG. No. TA 00C3



TANK DA PELL-T... PL P ANT (10-2)



## II. CHRONOLOGICAL DESCRIPTION OF THE STUDY

In response to the request made by the Government of Thailand, the Government of Japan decided to cooperate with the Government of Thailand in conducting a study on Agricultural Cooperatives Promotion in Thailand.

The preliminary study team (leader: Mr. Kazuyoshi Inose) was sent to Thailand for twenty days from 19th November, 1979, for the purpose of confirming the contents of the request, making necessary consultation with Thai officials concerned on the scope of works (draft) for the main study and making collection of pertinent information and materials on agricultural cooperatives.

Subsequently, the second study team (leader: Mr. Motonaga Ohto) was sent to Thailand for two weeks from 3rd April, 1980 to make final consultation on the scope of works and to collect supplementary information and materials.

The main study in Thailand was carried out jointly by the teams from both Japan and Thailand for two months beginning on 1st July, 1980. (Japanese leader: Mr. Hiroshi Yamamoto)

It was consisted of a case study of eight selected primary agricultural cooperatives, collection of information and materials regarding the present situation of agricultural cooperatives and analysis of findings and the recommendation of the promotion project was submitted to the Thai authority. The Thai team visited Japan to jointly make the draft report with the Japanese team for eighteen days from 8th December, 1980. The consultation team of the final report visited Thailand for six days from 25th January, 1981 and the final report was submitted in February, 1981.

The Government of Thailand (CPD) accepted the recommendation made by the final report - total system to develop comprehensively all the activities, the credit, economic businesses, farm guidance of agricultural cooperatives - and presented to the Government of Japan the official request for the technical cooperation in April, 1981 in order to get the collaboration from the Government of Japan, main content of which was to develop one hundred agricultural cooperatives as the model in five years. The consultation mission on the scope of work was sent to Thailand for six days from 12th July, 1981 for conducting the feasibility study. The feasibility study was carried out jointly by the teams from both Japan and Thailand for fifty nine days from 29th July, 1981.

(Japanese leader: Mr. Hidetane Togawa). The objectives of the feasibility study confirmed by the scope of work were following two points.

- (1) To draw up the concrete development plan for four agricultural cooperatives as the model.
- (2) To serve as the on-the-job training for cooperatives staffs through their participation in the study.

The first draft of the feasibility study was framed from the end of September through the middle of December, and two officers from the team of Thailand took part in making the draft for ten days from 24th November, 1981. This report was finalized after the final draft was consultated between the Government Authorities concerned of Thailand and the Japanese mission who visited Thailand for six days from 10th January, 1982.

SCHEDULE of the FEASIBILITY STUDY

July	29 (We)	Air travel (Tokyo - Bangkok)
	30 (Th)	Courtesy call to Japanese Embassy, JICA office, CPD
	31 (Fr)	Discussion with CPD
August	1 (Sa)	Data arrangement
	2 (Su)	At own disposal (Holiday)
	3 (Mo)	Travel by road (Bangkok - Lop Buri) (visit maize center at Phra Buddha Bad)
	4 (Tu)	Discussion at Koksamrong agricultural cooperative (Hearing on organization and business activities)
	5 (We)	" " " (visit paddy rice, corn, milo growing farmers')
	6 (Th)	" " " (Problems and direction of development) Visit the provincial federation of Lop Buri
	7 (Fr)	Travel by road (Lop Buri - Bangkok)
	8 (Sa)	Data arrangement
	9 (Su)	At own disposal (Holiday)
	10 (Mo)	Discussion with CPD (Collection of informations)
	11 (Tu)	Joint meeting of study teams (Development Plan of Koksamrong agricultural cooperative)
	12 (We)	Holiday
	13 (Th)	Discussion with CPD
	14 (Fr)	" "
	15 (Sa)	Data arrangement
	16 (Su)	At own disposal (Holiday)
	17 (Mo)	Air travel (Bangkok - Hat-Yai) Visit rubber smoke plant and Rubber Research Center
	18 (Tu)	Discussion at Hat-Yai agricultural cooperative (Hearing on organization and business activities)
	19 (We)	" " " (Visit rubber growing farmer)
	20 (Th)	Discussion at Hat-Yai agricultural cooperative (Problems and direction of development)
	21 (Fr)	Joint meeting of study teams (Development plan of Hat-Yai agricultural cooperative)
	22 (Sa)	Air travel (Hat-Yai - Bangkok)
	23 (Su)	Data arrangement
	24 (Mo)	Travel by road (Bangkok - Nakhon Ratchasima) Visit maize distribution center at Tarua

August 25 (Tu) Discussion at Nakhon Ratchasima agricultural cooperative  
(Hearing on organization and business activities)

26 (We) " " "  
(Visit paddy, tapioca growing and pig raising farmers)

27 (Th) " " "  
(Problems and direction of development)  
Visit the provincial federation of Nakhon Ratchasima

28 (Fr) Travel by road (Nakhon Ratchasima - Bangkok)

29 (Sa) Data arrangement

30 (Su) At own disposal (Holiday)

31 (Mo) Air travel (Bangkok - Chiang Mai)  
Joint meeting of study teams (Development plan of  
Nakhon Ratchasima agricultural cooperative)

September 1 (Tu) Discussion at Doi-Saket agricultural cooperative  
(Hearing on organization and business activities)

2 (We) " " "  
(Visit paddy, fruit, vegetable, growing and livestock  
raising farmers)

3 (Th) " " "  
(Problems and direction of development)

4 (Fr) Joint meeting of study teams (Development plan of Doi-Saket  
agricultural cooperative)

5 (Sa) Air travel (Chiang Mai - Bangkok)

6 (Su) Data arrangement

7 (Mo) Preparation of the rough draft of interim report

8 (Tu) " " "

9 (We) Discussion at BAAC (Mr. Chamlong Tohtong, General Manager)

10 (Th) Internal discussion for the rough draft of interim report

11 (Fr) Discussion with CPD on the rough draft of interim report

12 (Sa) Data arrangement

13 (Su) At own disposal (Holiday)

14 (Mo) Discussion with CPD on the rough draft of interim report

15 (Tu) Translating the draft of interim report into Thai and  
typewriting in English. Arrival of advisory team.

16 (We) Discussion with leaders of agricultural cooperatives on  
the interim report  
(Hat-Yai, Koksamrong agricultural cooperatives)

17 (Th) Discussion with leaders of agricultural cooperatives on  
the interim report  
(Doi-Saket, Nakhon Ratchasima agricultural cooperatives)

18 (Fr) Discussion with CPD and members of advisory team

19 (Sa) Data arrangement

20 (Su) At own disposal

21 (Mo) Final Discussion with CPD (Col, Surin, Director General)

September 22 (Tu) Discussion with ACFT (Mr. Vichien, General manager)  
23 (We) Discussion with CPD on the schedule of works  
24 (Th) Presentation of interim report to CPD  
Courtesy call to Japanese Embassy, JICA Office  
25 (Fr) Air travel (Bangkok - Tokyo)



Members of the Joint Study Team

Thai Team : Leader (Organization and Management)  
Miss Peerarat Aungurarat  
Planning Division, Cooperatives Promotion Department

Member (Marketing Business)  
Mr. Virasak Choypat  
Agricultural Cooperative Federation of Thailand

Member (Credit Business)  
Miss Chongolnee Sriprasert  
Agricultural Cooperatives Division  
Cooperatives Promotion Department

Member (Farm Guidance)  
Mr. Chertchai Mathurot  
Agricultural Cooperatives Division  
Cooperatives Promotion Department

Member (Economic Activities and Coordinator)  
Mr. Ruangchai Boonyananta  
Planning Division, Cooperatives Promotion Department

Japanese Team: Leader (Management)  
Mr. Hidetane Togawa  
Institute for the Development of Agricultural Cooperation  
in Asia (IDACA)

Member (Farm Guidance)  
Mr. Kazuo Kumazawa (IDACA)

Member (Organization)  
Mr. Hiroshi Yamamoto (IDACA)

Member (Marketing Business)  
Mr. Mikio Suzuki (IDACA)

Member (Credit Business)  
Mr. Shyuichi Matsuhisa (IDACA)

Observer (Administration)  
Mr. Isamu Akiyama  
Agricultural Cooperative Division  
Economic Affairs Bureau  
Ministry of Agriculture, Forestry and Fisheries

Minutes of Discussions

on

The Scope of Works for the Feasibility Study on  
The Agricultural Cooperatives Promotion Project in Thailand

The Government of Japan dispatched a mission to Thailand for discussion with authorities concerned on the Scope of Works for the Feasibility Study of the Agricultural Cooperatives Promotion Project in Thailand.

The mission, headed by Mr. Motonaga Ohto, arrived in Thailand on 12 July 1981 and had a series of discussion with the Director-General of the Cooperatives Promotion Department, Ministry of Agriculture and Cooperatives, and his staff on the Scope of Works. The Office of Agricultural Economics of the Ministry of Agriculture and Cooperatives, and the Department of Technical and Economic Cooperation also participated in the discussion at the final meeting, held on 15 July 1981.

The Scope of Works agreed upon between the mission and the authorities concerned of the Thai government is attached herewith for record.

Bangkok, July 15, 1981

Col. \_\_\_\_\_

Surin Cholpraserd  
Director-General  
Cooperatives Promotion Department

\_\_\_\_\_

Motonaga Ohto  
Leader, the Japanese Team  
for the Scope of Works

THE SCOPE OF WORKS FOR THE FEASIBILITY STUDY OF  
THE AGRICULTURAL COOPERATIVES PROMOTION PROJECT  
IN  
THAILAND

I. Introduction

In response to the request of the Government of Thailand, the Government of Japan has decided to conduct a study on Agricultural Cooperatives Promotion Project in Thailand.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA") responsible for the implementation of the Technical Cooperation Programme of the Government of Japan, will carry out the study in close cooperation with the Cooperatives Promotion Department (hereinafter referred to as "CPD") and the Thai authorities concerned.

Basing on the Integrated Plan (Total System) for strengthening and promoting agricultural cooperatives which was recommended by the joint study in 1980, the Scope of Works is prepared and described the items to be studied, the time schedule of the study, and services and facilities to be provided by the Government of Thailand and the Government of Japan for the smooth and effective execution of the study.

II. Objectives of the Study

The objectives of the study will be;

- 1) to work out the concrete plan for promoting and strengthening a total of four (4) primary cooperatives as attached.
- 2) to undertake on-the-job training of the CPD officers and staff of cooperatives in the course of the study.

III. Outline of the Study

In order to achieve the objectives above-mentioned, the study will be carried out by the Joint Study Team consisted of the CPD and JICA and will be divided into three phases.

## PHASE I (Study in Thailand)

The study will cover the following items.

- 1) Regional situation surrounding the respective primary cooperatives
  - a) General condition
  - b) Agricultural production flow
  - c) Infrastructure
  - d) Agricultural marketing
- 2) Administration
  - a) Organization
  - b) Members
  - c) Member communication
- 3) Activities
  - a) Credit business
  - b) Marketing & Purchasing
  - c) Farm guidance
- 4) Management
- 5) Education & training

## PHASE II (Study in Japan)

- 1) To analyse and evaluate the results of the study of the primary cooperatives
- 2) To form the Draft of concrete plan for the promoting and strengthening of the primary cooperatives

PHASE III (Finalization in Thailand) to finalize the development plan of the primary cooperatives

## IV. Work Schedule

Referred to the attached tentative work schedule.

## V. Reports

JICA will prepare and submit to the Government of Thailand the following reports in English during the course of study.

1) Inception report (15 copies)

This report will contain the detailed programme of the study with its schedule and will be discussed by the joint study team at the beginning of the study in Thailand.

2) Interim Report (15 copies)

This report will be submitted at the end of the study in Thailand.

3) Draft Report (30 copies)

This report will be submitted within two and a half ( $2\frac{1}{2}$ ) months after submitting the interim report.

4) Final Report (50 copies)

This report will be submitted within one (1) month after receiving comments from the Government of Thailand on the draft report.

VI. Undertaking of the Government of Thailand

In order to facilitate smooth performance of the study in Thailand, the Government of Thailand is requested;

- 1) to provide the data and information necessary for the study
- 2) to exempt the study team from taxes, duties for materials and equipment brought into Thailand by the team members for the study
- 3) to make arrangement of exemption of taxes, duties and levies incurred during the study by the team
- 4) to request the Ministries and other authorities concerned to cooperate with the team in smooth execution of the study
- 5) to designate the Thai members of the joint study team in the following fields of agricultural cooperatives
  - a) Marketing and purchasing business
  - b) Credit business
  - c) Management
  - d) Farm guidance
- 6) to provide the team with a suitable office necessary for conducting the study
- 7) to provide the team with transportation facilities necessary for conducting the study

8) to guarantee the security for the team members during the staying period

VII. Undertaking of the Government of Japan











The Government of Japan is requested;

- 1) to transfer the knowledge and technology of cooperative development planning to the CPD officers and staff of agricultural cooperatives
- 2) to designate the Japanese members of the joint study team

Attached

Name of Cooperatives	Region	Province	District	Main Crop	Second Crops
1. Doi-Saket Agri. Coop	North	Chieng-Mai	Doi-Saket	Soybean	Rice, Garlic
2. Koksamrong Agri. Coop	Central	Lopburi	Koksamrong	Maize	Rice, Sorghum, Beans, Cotton
3. Muang Nakhonrachasima Agri. Coop	Northeast	Nakhonrachasima	Muang Nakhonrachasima	Rice	Maize, Cotton
4. Hat-Yai Agri. Coop	South	Songkla	Hat-Yai	Rubber	Rice

Tentative Schedule

	1981						1982
	July	August	September	October	November	December	January
Visit of Scope of Works Mission							
Study in Thailand							
Study in Japan							
Submission of Reports	 Inception Report		 Interim Report			 Draft Report	 Final Report
Visit of Advisory Group						 Finalization of the plan	



