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The Feasibility Study Report on Serial Meat Rabbit Developing Project of Teng County -
The Planning Committee of the Teng County - January 1988

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MOUNTAIN

The Comprehensive Developing
Project of Agriculture in
Shandong Province, China

THE FEASIBILITY STUDY REPORT ON
SERIAL MEAT RABBIT DEVELOPING PROJECT
OF TENG COUNTY

(DRAFT)

Originals

THE PLANNING COMMITTEE OF TENG COUNTY

Jan. , 1988

F 28504

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Chapter 1: General Description

Name of the project: Meat-Rabbit Developing Project of Teng County

Sponsor Unit: Planning Committee of Teng County

Person in Charge: Shan Qi Yan

Undertaker: The Animal Husbandry, Industry and Commerce United Company in South Shandong Province, China

Person in Charge: Yue Cai Si

The Feasibility Research Is Written By Office in Charge of Introducing and Using Foreign-Currency in Agricultural Projects in Teng County

Person in Charge of Main Technical and Economical Data of the Project:

Wang Ming Guang

Persons Taking Part in Writing:

Sun Lan Yi, Hou Yi Mi,

Jian Hong Shen, Liou Yu Xun,

Song Zi Cai, Li De Zhang

Section 1 The Background, Necessity of Investment and Economic Significance of the Project

Teng County which covers an area of 148,542 hectares is located in the southern part of Shandong province with industry, agriculture and animal husbandry as its main economic supports. Its total agricultural production value reached to 428,170,000 yuan (RMB) in the year of 1986, of which 113,210,000 yuan is animal husbandry production value, which accounted for 26.5% of the total. Animal husbandry has become an important role in the county's economy, and further development in animal husbandry has been listed as one of the most important measures of "Doubling total economic value" of the county and it is developing with each year passing.

Teng County is a national base of commodity grains. Its total grain output was 530,000 tons in 1986, of which 85,000 tons were handed to the State. Subtracting 275,000 tons of rationed grain and 50,000 tons for seeds and other needs, there

were 170,000 tons of grains remained, 190,000 tons of wheat bran, soybean cake and dregs which could be used in the development of animal husbandry. Moreover, there were 750,000 tons of crop straws. All this laid the material foundation for animal husbandry development.

The internal structure of animal husbandry in Teng County has become reasonable after proper adjustment. The local government has proposed a guiding principle of "stabilizing the production of chickens and pigs and actively developing the production of grass-eating domestic stocks" in order to make full use of its abundant forage resources. The production of meat rabbits characterises itself with a shorter feeding period, less investment, quicker return of investment and higher economical benefits.

The location of the Project is in the boundary area of Shandong, Jiangsu, Henan and Anhui provinces which is not only in an economic developing zone with Golden Lake Development District as its center, but also in a district quite near

to Taian city and Qufu city, which are two cities of tourist interests. All this provides the Project with a bright market prospect.

The raise of the Project is based on the above reasons.

After the Project is put into production, the annual total income will be 55,960,000 yuan (RMB) each year which is estimated on the actual price in 1986. The social net benefits will be 4,140,000 yuan, and the enterprise profits can reach to 1,790,000 yuan, among them, 920,000 yuan is tax. The fact that the State, enterprise and society will all benefit from the Project has already confirmed the necessity of investment and its economic significance.

Section 2. The Basis for the Feasibility Research

The Feasibility Research of the Project is based on collected basic data related to the Project from survey and investigation. And it is only after a careful analysis of technology, fi-

nance, economy, organizational system and society that the Feasibility Research is put forward.

1. "Suggestions on Animal Husbandry Development Projects, Using the World Bank Loan" Made by the Ministry of Agriculture, Animal Husbandry and Fishery.

Circular No.3 of Agriculture (Animal Husbandry).
(1987)

2. "The Seventh Five-year Plan of National Economic and Social Development of Teng County" Made by the People's Government of Teng County. (1986)

3. "Statistics of National Economy of Teng County" Prepared-by Statistics Bureau of Teng County.
(1985, 1986)

4. "Agricultural resources and Districts of Teng County" Made by the Office of Agricultural District Committee of Teng County. (1982)

Chapter 2 A Prediction for Market Demand

Section 1. Demand at Home and Abroad in Recent Years

The final products of the Project are rabbit meat and products of rabbit leather. In recent years, the supply of these products can not meet the growing market demand, especially the gap between supply and demand of rabbit meat products is becoming larger and larger on domestic and foreign market with each passing year. In the following table are some information provided by Business Department, Foreign Trade Agency and the Scientific and Technological Information Research Institute of the Academy of Agriculture of China. See tables 2-1 and 2-2.

Meat Production of the World Per Person
in 1981

Table 2-1

Unit: kg

Nation	New Zealand	Denmark	Australia	Dutch	Argentina	U.S.	Soviet Union	China
kg/yr	379	261	179	142	140	109	59	13

Demand of domestic and Foreign markets

Table 2-2

Year	Demand at Home & Abroad	Rabbit meat				Rabbit fur products				
		At Home		Abroad		Unit	At Home		Abroad	
		Unit	Demand	Actual Supply	Demand		Demand	Actual Supply	Demand	Actual Supply
Total		ton	545,000	362,000	225,000	81,600	10,000 pieces	4950	2940	3350 2810
1980		"	35,000	20,000	30,000	9,000	"	400	290	300 100
1981		"	44,000	35,000	35,000	11,000	"	500	350	300 250
1982		"	51,000	48,000	35,000	14,000	"	550	450	400 350
1983		"	78,000	60,000	30,000	14,000	"	550	500	500 460
1984		"	97,000	60,000	25,000	13,000	"	650	450	600 500
1985		"	110,000	74,000	30,000	11,000	"	700	500	650 600
1986		"	130,000	85,000	30,000	11,000	"	700	500	650 600

Section 2 A Prediction for the Market Demands at Home and Abroad

With the improvement of the living conditions of the people, they will know that rabbit meat has a lot of good features, such as high protein and low fat contents, easy digestion and nutrition. Statistical figures show that there is a great demand for rabbit meat at the domestic market. See Table 2-3. A prediction of demand abroad can not be concluded because of lack of information.

Prediction of Demand at Domestic Market

Table 2-3

Description Year	Total Amount of Production (10,000 tons)	Demanded amount (10,000 tons)	The ratio of rabbit meat to all kinds of meats (%)
1980, actual amount	6	3.5	0.47
1985, actual amount	3.5	11	1.98
1990, predicted amount	23	35	2.44
2000, predicted amount	130	340	5.00

Note: Figures shown in Table 2-3 are based on "The Prediction of Development of Animal Husbandry and Veterinary in China in 2000" made by the Scientific and Technological Information Research Institute of China's Agricultural Academy.

Chapter 3 The Basic Conditions and Choice of Location of the Project Re- gion

Section 1 The Basic Conditions of the Whole County and the Project Region

The Comprehensive meat rabbit developing project is to be located in Teng County, Shandong Province, China. All sub-projects will be located on a principle of relatively centralized and properly separated. Households specialized in raising meat-rabbits will distribute over 21 villages and towns in the county. But they are relatively dense in villages and towns near the county. So the basic conditions in the whole county are just same as that in the Project region.

Section 2 Natural Conditions in the Project Region

1. Geographical Conditions:

A Table of Basic Conditions in Teng County in 1987

Total Area (hectare)	Cultivable Land (hectare)	Farmland (hectare)	Governments of Villages & towns	Committees of Villagers	Farm Households	Total population	Agricultural population	Farm Labourers
148542	38795	78108	22	1210	264116	1,238,900	1,115,000	574,000

Teng County belongs to the southwest wing of Tai Long inclined back plane in south Shandong province. Sedimentary lay of North China type has fully developed. After many times of mountain-making movements, the rock lay were folded and became broken. According to surveys, there are about 100 broken lays which are longer than 2 kilometres. The longer broken lays are Yi Shan, Fu Shan and Zhuang Li broken lays. Most of them are covered by the Quaternary System. Its geographical conditions are that there are low hilly area in the east, lakes and low-lying area in the west, plains in the central area. The depth of underground water is 0.9-20 metres.

The physical geographical conditions of this Project region still need to be surveyed by constructional geographical teams.

2. Weather conditions:

The weather of this region is warm with seasonal wind. And this region belongs to con-

Item	absolute value	increase over the last year (%)
1. Total value of industrial and agricultural output (10,000 yuan)	128341	20.0
(1) The value of industrial output	85524	26.1
(2) The value of agricultural output	42817	9.5
1) The value of planting output	28781	9.4
2) The value of forestry output	945	43.5
3) The value of livestock breeding output	11321	2.9
4) The value of sideline occupation output	1591	58.5
5) The value of the fishery output	170	18.9
2. The ratio of 3) to (2)	26.5	1.6
3. Net income per farmer (yuan)	511	37.5
4. Net income of animal husbandary per farmer (yuan)	55	27.3

Note: The output values are calculated using fixed prices in 1980 while income
is calculated using actual prices in 1986.

tinental climate. The continentality is 66.4%. The annual average temperature is 13.5°C . The lowest temperature ever recorded is -21.8°C and the highest 40.5°C . The maximum depth of frozen earth lay ever recorded is 30cm. The max. snow depth is 19cm. The annual average frostless period are 197 days. The annual average rainfall is 764.9mm. The mean relative humidity in summer in the past years is 74% and the mean relative humidity in winter in the past years is 66%. The main wind direction is southeast wind in summer and northeast wind in winter and mean wind speed is 2.8 metre/second. The annual mean sunshine hours are 2384.4 hours and is 54% of sunshine percentage. The sun's radiant energy of the whole year is 117.9 kcal/cm^2 and the physiological radiation of the whole year is 59 kcal/cm^2 .

Section 3 The Social and Economical Conditions of the Project Region

The main social and economic figures of the Project region in 1986 are shown in the following table.

From the above table, it can be seen that the total value of industrial and agricultural output in the Project region increases with each passing year. The development of livestock breeding lays a solid foundation for putting the Project into effect.

Section 4 The Scientific and Technological Conditions in the Project Region

Now there are 396 veterinary surgeons in Teng County, of which 14 are mid-grade, 26 assistants and 195 technicians. The Veterinary Technical Service Centre of the County under the Company has established many units such as fine breed, feed monitor, disease prevention, chemical analysis, veterinary hygienic conditions monitor and technical consultation. Each village and town has its own veterinary technical service center. A management district (Local office) has a branch center. And the average villages also have anti-epidemic disease members, forming a technical

service network at four levels of village, management district (local office), town and county. The enterprises for processing animal husbandry products of the company have a certain number of technicians and managerial personnel with rich experience in animal husbandry production.

Section 5 The Choice of Location of the Project

The Project is located in Teng County, Shandong Province. The choosing of sub-project locations is based on the climatic, geographical, transportation, and disease prevention conditions supply of energy sources, comprehensive services. They are studied and reviewed many times and are decided on the optimum conditions.

(Please see the General Location of the Project)

1. The Fine Breed of Rabbit Farm:

The original fine breed of rabbit farm of the company is located at the northeast part

of the Teng County in Dongge Town, on the north side of Teng-Ping Highway and 8 km away from the County. It covers an area of 3.3 hectares and is far away from villages and towns therefore it is very convenient to prevent diseases. It possesses an water tower with the capacity of 15 cubic metres, a power supply of 50KVA and Living facilities. In order to use capital and original facilities effectively, the new fine breed of rabbit farm will be enlarged based upon original conditions and the new enlarged one is in the south of the old one. It can supply fine breed of rabbits within an area of 25 kilometres around it. (Please see the plane view of the Project)

2. The Granulated Feed Plant:

The granulated feed plant is in the north of Teng County, west of the State Road No. 104 and in Chenjiao Town, a newly developed industrial region of the county with better conditions

for energy supply and transportation. It can supply the users with granulated feeds in an area of 18 km around it.

The plant covers 1.7 hectare. (Please see the plane view of the plant)

3. The Meat Rabbit Processing Factory

The Meat Rabbit Processing Factory of this Project will be enlarged based on the original one. The original Meat Rabbit Processing Factory is in the southwest of the Teng County, 3km away from the county, and in the west of the State Road No.104 and in Hong Xu Town. The factory covers an area of 3.3 hectares and is in the middle of the commercial rabbit base. Farmers who live in an area of 15 km around the factory sell their rabbits to the factory.

This factory was built in 1981. They have had 6 years of experience in marketing and managing. All these are the fundamental conditions for enlarging the factory and for putting it into

smooth operation.

Another good condition is that it has two electrical power systems and convenient transportation. (Please see the plane view of the factory).

4. The Fur Processing Factory:

The new fur processing factory is enlarged based on the original one. It is located in the west of the County and the west of the State Road No.104. It covers an area of 3.3 hectares and has convenient transportation. It is 3 km away from the meat rabbit processing factory. It has a short raw material supply line. It has a good supply of water and power now and enough land for enlargement, saving investment. (Please see the plane view of the factory.)

5. The technical consultation unit is set up within the courtyard of the Veterinary Technical Service Centre in order to provide with techni-

cal Service and consultation, feed monitor and disease prevention to sub-projects.

6. The commercial rabbit raisers live around the Meat Rabbit Processing Factory. According to raising technical level and feed source conditions, the rabbit raisers are living in more than 500 natural villages of 21 towns. All together, there are 7800 rabbit raisers in the villages and towns. (Please see General Plane View of the Project for Details.)

Chapter 4 Resources, Raw Materials, Fuels and Public Facilities:

Section 1. The Local Resources Relating to the Project

Teng County is one of the bases producing commercial grain in China. The crop-growing area is 138,800 hectares. The total grain output is 570,000 tons. The crop-growing area of all kinds of grains and their outputs are shown in the following table:

Crop-growing Area and Their Output Table
in Teng County in 1986

Description of Crop	Area (hectare)	Total output (ton)
Total	114353	577465
Wheat	57173	279459
Corn	38253	209419
Sorghum	2187	8024
Millet	1520	5494
Soybean	1793	3435
Miscellaneous crops	13427	71634

Table of Feed Resources in 1986

Item	Total Amount (ton)
Total	360000
Feed grain available	160000
Wheat bran	60000
Soybean cake	85000
dreg	55000

Table of Animal Husbandry Production in the Project Region

Year Description	Qty Raised (unit: 10,000)	Concentrated feed (unit: 10,000 ton)	Grass consumption (unit: 10,000 ton)	Qty raised (unit: 10,000)	Concentrated feed (unit: 10,000 ton)	Grass consumption (unit: 10,000 ton)
Total		15.43	20.52		21.01	21.86
Draught animal	5.5	1.33	6.6	2.66	0.77	3.19
Pig	26	11.05		33	14.03	
Sheep	35	0.35	12.25	44	0.44	14.98
Rabbit	10	0.05	0.9	34	0.17	2.89
Poultry	170	2.6	0.77	376	5.6	1.7

Main Raw Materials and Power Consumption

Table 4-2

Item No.	Description	Unit	Annual Consumption by fine breed rabbit farm	Annual consumption by granulated feed plant	Annual consumption by meat rabbit processing factory	Annual consumption by fur processing factory	Annual consumption by raising households	Total
1	Concentrated feed	ton	120				29880	30000
2	Grass						60000	60000
3	Water	10,000 tons	1.5	1.0	3.5	4		10
4	Electricity	10 KW	5	60	80	80		225
5	Coal	ton	200	100	800	800		1900
6	Diesel oil, gasoline, lubricant	ton	5	30	50	40		125
7	Salt for industry	ton				20		20
8	Glauber's salt	ton				40		40
9	Sodium carbonate	ton				15		15
10	Sulphuric acid	ton				10		10
11	Detergent	ton				12.5		12.5

Grass Resources in Teng County in 1986

Item	Amount (ton)
Total	1,000,000
Crops straws	750000
Grass from desert land	7640
Grass rom lake coast	1750
Grass from strips of farm lands, river beaches, and tree leaves	240610

The County's Grass & Feed Resources and Their Use
Before and After the Project in Application

(unit: 10,000 tons)

Amount Resources	Time	Before the project in application (1986)			After the project in application (1989, prediction)				Note
		Actual output	Actually consumption	Actually remained	Output	Consumption	Of which consumed by rabbits	Remained	
Grass		100	20	80	110	33	6	77	
Feed		36	21	15	40	28	3	12	

It can be seen from the 4 tables above that when the Project starts, feed and grass with a large potential remained.

Section 2. The Supply of Fuels and Other Raw Materials

Fine Breed Rabbit Farm:

Fine Breed Rabbits will be imported from France and the United States, which are white New Zealand and California rabbits. Feed will be provided by the feed processing plant, and disease prevention medicines by the Technical Consultative Service Center.

Meat Rabbit Processing Plant:

The supply of rabbits are from rabbit production base. In addition, the rabbit supply can be ensured by getting rabbits from nearby districts. Therefore there is a guaranteed supply of rabbits.

Fur Processing Plant:

Rabbit fur comes from meat rabbit processing plant. Other materials are available at domestic

market.

Feed Processing Plant:

The main raw materials (grains, soybean cakes) are available in the county. Feed additives can be purchased at home and abroad. Table 4-2 shows the consumption of materials and power.

This Project is located in the mining area of Zao Zhuang and Teng County. There are 5300 millions tons of coal in the coal field of Teng County according to data supplied by the Coal Company of Teng County. There are Four large and mediate size of mines owned by the State and six mines owned by the Country. There are many supply channels for coal with a guaranteed supply of coal.

Section 3. The Supply of Water and Electricity & Other Public Facilities

There is a rich underground water resources in Teng County with a reserve of about 2000 mil-

lion m³ and water quality is better. According to chemical analysis, it is up to the standard required by industry, agriculture and living. It is of carbonate type and includes average mineral of 0.2-0.4 gram.

	Year		
	1980	1990	2000
Description			
Water extractable (m)	27874	31166	33295
Rate of net supply (%)	70.1	78.4	84.3

The fine Breed Rabbit Farm, Granulated Feed Plant, Meat-Rabbit processing Factory under the Project will all use under ground water as their water supply. The average depth of underground water is 15m. Each factory will build their own water supply facilities. Water supply is no problem.

The power supply for the project belongs to the network of Su-Lu area. The amount of power supply is 3,500,000 billion watts which

can meet the demand of industry, agriculture and lighting of the whole county. There is a power station of 7000 kw in Teng County. The government there plans to build a power station of 12000 kw, totalling 19000 kw. It is evident that there is a guaranteed power supply for the Project.

Teng County has a high level post and telecommunication facilities among the counties around the whole country. There are 38 direct-dialing long distance lines, four connecting Jinan, 14 connecting Zaoahuang and 4 linking Jinin. The County's automatic telephone exchange can handle 2000 sets of telephones. There are 47 telephone exchanges in the villages around the county, which can handle 2430 sets of telephones. All this has formed a telecommunication network. The postoffice of Teng County has now telex and decoder machines. Its income for 1986 is 1,680,000 yuan.

Beijing-Shanghai Railway Road runs across the County from north to south. State Road No.104 runs next to the railway road. There are 29 highways in the County with a total of 450 km highway. The amount of transported goods reached 5.916 million tons in

1986. The amount of circulated goods reached 112.77 million ton-kms. Therefore, there is a good network of highways and railway roads, linking different places with convenient transportation.

Chapter 5 The Design Plan for the Project

Section 1. Scale of Construction:

1) Fine Breed Rabbit Farm: 1,100 fine breed rabbits (among them 100 male rabbits) and 200 supporting rabbits will be raised. There will be an annual supply of 22,000 rabbits for the Base.

2) Meat-Rabbit Processing Plant: The annual processing capacity is 3 million rabbits, producing 2.240 tons of frozen boneless rabbit meat.

3) Granulated Feed Processing Factory:

Its annual production capacity is 10,000 tons of granulated feed.

4) Rabbit Fur Processing Factory:

It can process 3 million pieces of rabbit furs and produce 60,000 pieces of fur coats, and 50,000 pieces of fur products.

5) Commodity Rabbit Production Base:

There are 7,800 households raising rabbits.

Each household can provide with 400 rabbits. There will be an annual supply of 3.12 million commercial rabbits in the whole County.

Section 2. Contents of Construction:

The fine breed rabbit farm, meat-rabbit processing plant and fur processing factory are the main projects to be enlarged and rebuilt. The newly set-up projects are the granulated feed processing plant, a technical consultative service center and a commercial rabbits raising base.

Section 3. Plan of Products:

The final products of the Project are frozen rabbit meat, fur coats and fur products. The Granulated Feed Processing Plant will guarantee the supply of feed for meat-rabbits, and it will also produce some feed for other kinds of animals and poultries.

The quality of frozen rabbit-meat products is

up to the standards stipulated by the European Common Market's hygienic organization. (The products produced in recent years are registered according to export standards). The fur products are produced in accordance with the fur products quality standards set up by the Ministry of Light Industry, which enables the products to have competitive capacity.

Section 4. Technical Plan:

The best will be done to have a proper choice of location for the Project with a big margin for future development, to enlarge and rebuild the facilities it has now, to enable the sub-projects to produce series of products and to meet actual production needs more satisfactorily.

1) Fine Breed Rabbit Farm:

Scientific breeding and managing techniques will be used to breed high-quality rabbits, to keep the reproducing ability of original breed rabbits to provide the commercial rabbits production base

with fine breed rabbits, to improve rabbit quality through hybridization in a planned way by using artificial insemination, to supply the Base with hybridized rabbits which have high ability of reproducing and high rate of meat production.

Rabbit-shed will be "two-row-open type" with 3 layers of cages made of ready-made cement plates on each south and north side, with feeding channels and baby-rabbits cages in the middle and with manure outlet channels located along south and north walls. The top of rabbitshed will be clock-tower style to facilitate wind circulation and light in and easy management.

Manual feeding and automatic supply of water will be used. Scrape plates will be used to clean rabbits manure.

2) Feed Processing Plant:

In order to guarantee the products' quality, computer technique will be used in the Feed Processing Plant to screen out the best formulation for feed production. The main processing machine and

premixing equipment will be imported from the United States, West German or Hungary.

3) Meat-rabbit Processing Plant:

Meat-rabbits are the main products of the Project. Their quality depends on the processing technique used. Therefore, a careful study of the choice of processing technique was carried out. After screening, a new processing route was adapted using "cooling in the middle and totally processed by chains". The equipment will be provided by Shanghai Light & Food Equipment Company. The hygienic standards will be carried out in accordance with that of the European Common Market' Hygienic Organization.

4) Rabbit Fur Processing:

Fur processing will use the newest technology of "831" tanning method. Fur coats and fur products will be produced by using continuous production lines.

5) Commercial Rabbits Production Base:

All the rabbit-raising households in the Project region will use "Single-row-open type" 3-lay cages and use scientific breeding and managing way

to replace the old and traditional way of raising to increase economical benefits.

6) Technical Consultation, Feed Monitor and Disease Prevention:

The set-up of comprehensive service units is to ensure the smooth carry-out and healthy development of various sub-projects. Therefore, unit of technical information must be established and training of its staff be carried out.

Please refer to Fig. 5-1, 2, 3 and 4 "Benefits Comparison Between Scientific and Traditional Raising Ways" for detailed production routes for various sub-projects.

Section 5 Ecological and Environmental Protection Plan:

In order to protect sub-projects, surrounding environment and workers from suffering from dusts and noises, the "3 kinds of wastes" in production will be cured and comprehensively used.

1) All equipment used in raw material transportation, crushing and packing of finished products in workshops will be closed type, and mounted with ventilation and dust removing devices. Relating buildings will be mounted with Lightning protection device. Where the cables enter various workshops will have double grounding measures in the buildings inlet places. The Cold Storage Workshop will be designed according to Q-3 Grade Anti-exptosion Workshop.

2) Manure will be processed and then used in farm fields. Secondary processing method will be used in the treatment of waste water for it contains high contents of organic material but no poisonous material. After treatment, it will meet the standards of industrial outlet waste water set by the State.

Section 6 The Amount of Construction and the Budget of Investment:

1) The estimation of investment for various sub-

projects is based on their features, designed production capacity and processing route.

2) Estimation is calculated based on the current prices of materials, wages, and various fees paid in Zaozhuang District, Shandong Province without consideration of negotiable prices of construction materials.

*physical
contingency*

3) Intangible construction expenditure is calculated based on 10% of "construction expenditure" plus other civil construction expenditure. Other civil construction expenditure includes technical training fee, and interests and commitment fee for the World Bank Loans during the construction period.

*price
contingency*

4) Equipment mounting fee is based on 15% of equipment ex-works price. Transportation and miscellaneous fees are based on 5%.

5) Calculation will be made relating to the civil construction, mounting, processing equipment and other construction expenditure of various sub-projects under the Project. Also calculated items are supply of power and water, and investment on roads outside

factories, matching production facilities and circulating capital. But original civil construction and equipment of enlarged projects will not be calculated again. Their fixed assets will be discounted.

6) See Table 5-1-3 for the Planned Investment Estimation of Civil Construction for the Project.

Section 7 Equipment Procurement Plan:

The principle of ordering main equipment for the Project is that a few of manufacturers of the same products will be chosen so as to purchase high-quality products.

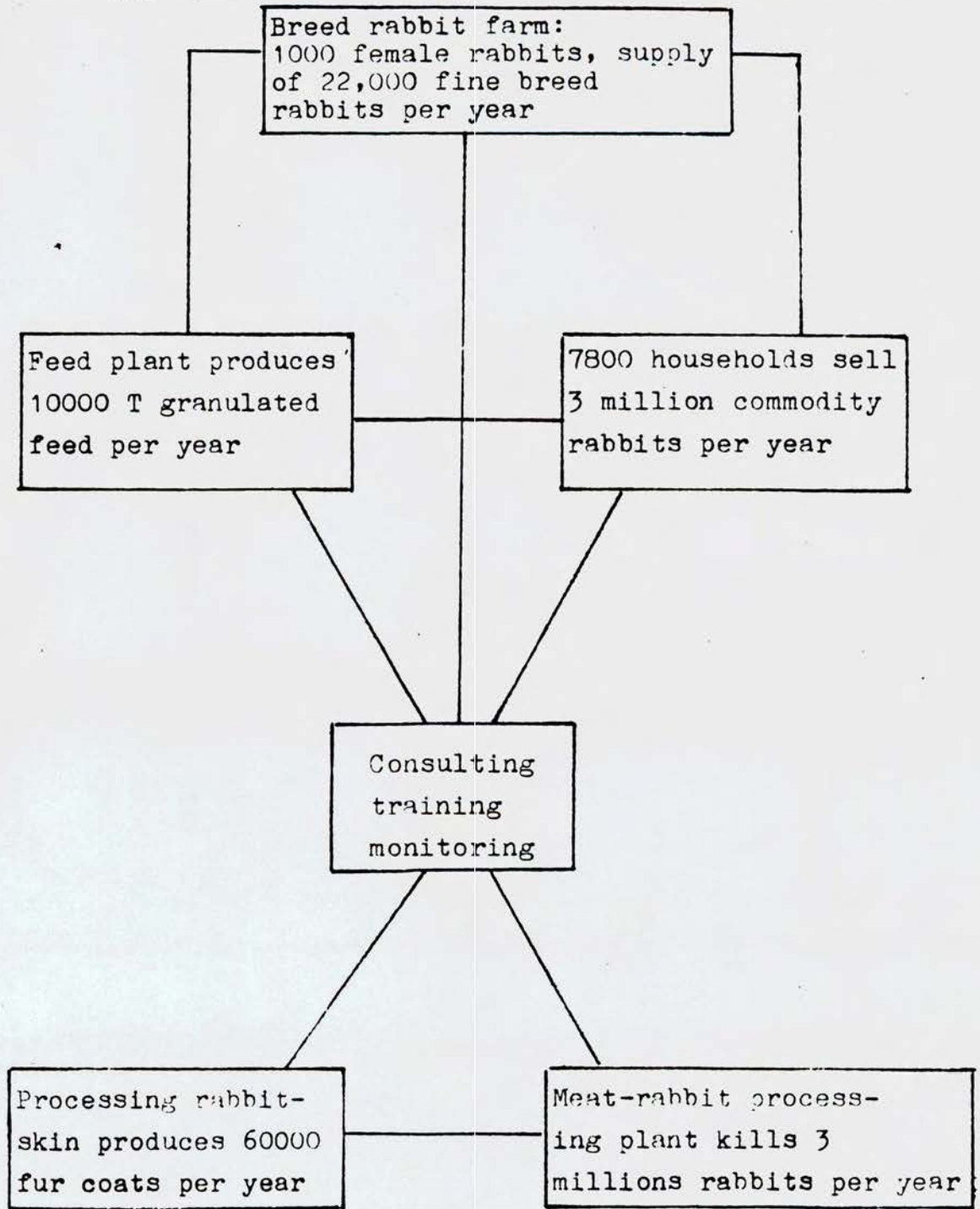
Other materials needed in civil construction will be purchased in accordance with supply channels of civil construction in China. The unsufficient portion will be solved by relative departments in local area.

See Table 5-4 for Main Equipment Procurement.

Baby-rabbits per birth	Live baby rabbits birth	Live rate	Average weight of 90-day old meat rabbits	Ratio of feed to meat	Ratio of grass to meat	Annual income of female meat rabbit	Remarks
5.5	5	91%	2.4 kg	2.28	10.87	162.00 yuan	1. Free of charge technical consultation is provided to model families
9	7.9	88%	2.1 kg	2.46	12.00	226.80 yuan	
7.1	6	85%	2.2 kg	2.51	11.80	178.20 yuan	
7.2	7	93%	2.0 kg	2.39	12.21	189.00 yuan	2. The average weaning period of baby-rabbits is 30 to 35 days
8	8	100%	2.2 kg	2.20	11.53	237.00 yuan	
5.5	5.5	100%	2.5 kg	2.14	10.20	185.63 yuan	
6.2	6	97%	2.45kg	2.01	10.13	198.45 yuan	3. The annual income of each female meat rabbit: The meat rabbit of model families using more scientific feeding methods gives 5 births each year. The meat rabbit of families using traditional feeding methods gives 4.6 births each year. The selling price is 2.70 yuan/kg.
7.4	7	94%	2.3 kg	2.13	10.05	217.35 yuan	
6.5	6.5	100%	2.6 kg	1.89	9.57	228.15 yuan	
8.7	8	96%	2.4 kg	2.16	9.64	259.20 yuan	
70.7	67	94.7%	23.15kg	22.26	108.09	2082.38 yuan	
	6.7		2.31kg	2.36	10.8	208.24 yuan	
6	5	83%	1.9	2.5	13.6	119.99	
4.6	3	65%	2.0	2.60	13.1	74.52	
8	5.8	72%	1.7	2.55	12.9	126.68	
1.9	4	81%	1.85	2.50	14.7	91.91	
3.9	2.4	62%	1.8	2.62	15.8	44.71	4. The ratio of feed to meat of the families using traditional feeding methods: Convert the leftovers into concentrated feeds, then, calculating the ratio of feed to meat.
4.2	4	95%	2.1	2.30	12.9	104.33	
5.8	5.2	90%	1.8	2.24	12.2	111.73	
4	3.1	78%	1.75	2.7	15.0	65.21	
5	3.74	74%	1.95	2.49	13.8	96.88	
5.3	5	94%	1.6	2.63	13.2	99.36	
51.4	41.2		18.45	25.10	141	935.73	
5.1	4.1	80.1%	1.845	2.51	14.1	93.57	

Production Route of Meat-Rabbit Comprehensive
Developing Project

Fig. 5-1



Meat-Rabbit Processing Route

Fig. 5-2

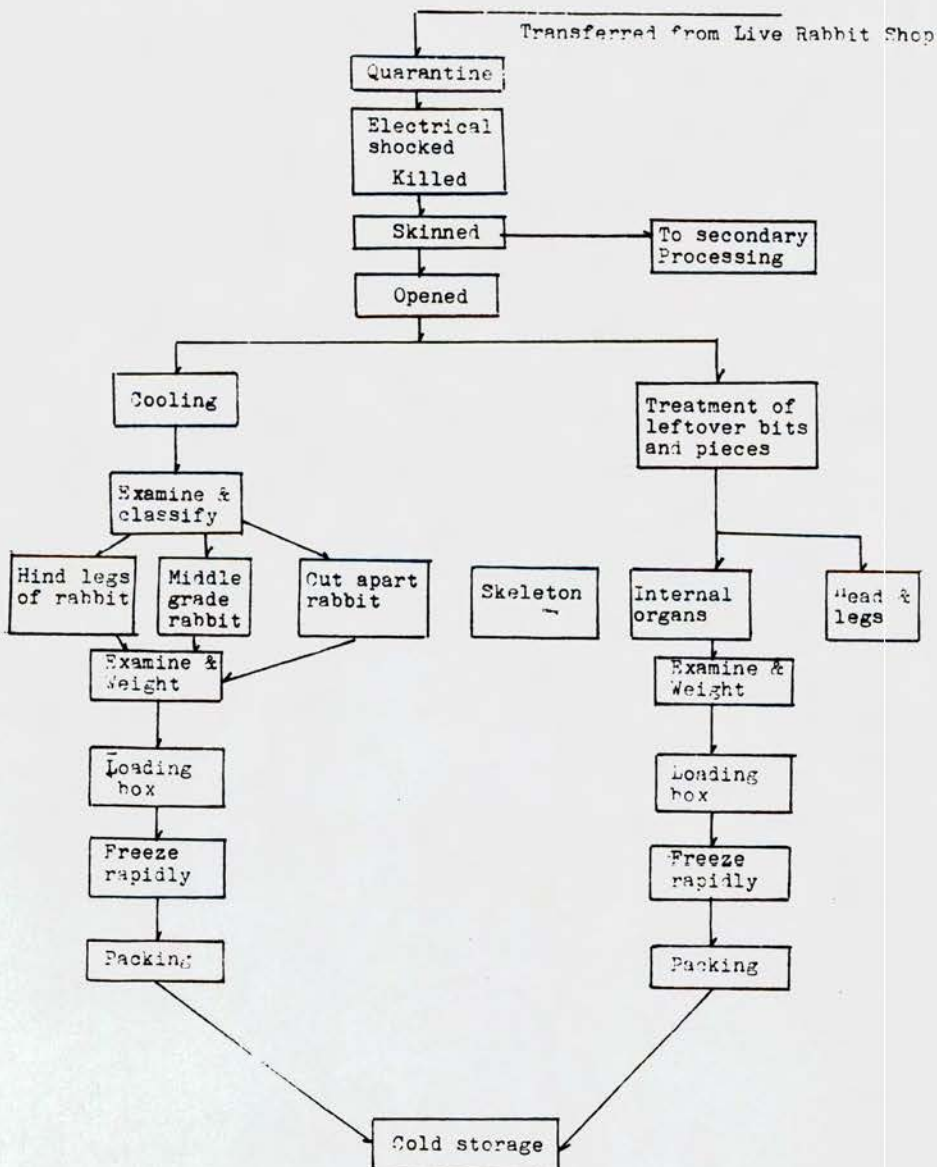
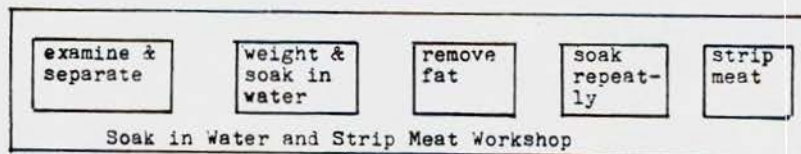
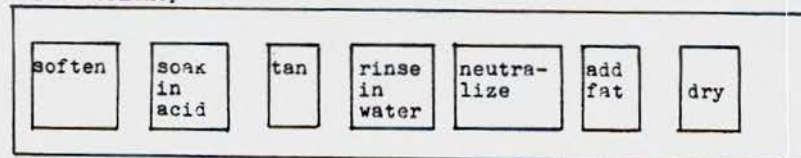


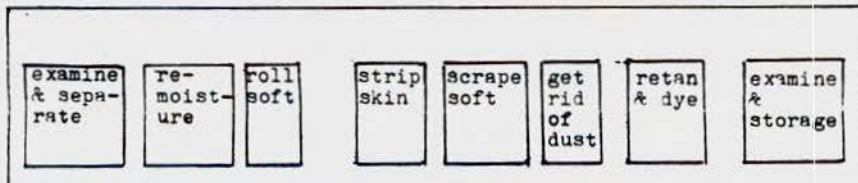
Fig. 5-3 Production Route (Fur Processing) of Secondary



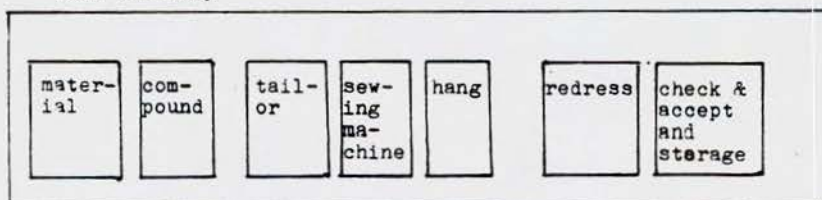
Tan Workshop



Dying Workshop



Coat Workshop



Investment Estimation

Table 5-1

Item No.	Project Description Project Plan	Estimated Investment						Total
		Fine breed rabbit farm	Feed plant	Meat-rabbit processing factory	Fur process- ing factory	Consultation service	Project management	
1	Civil Construction	91.04	42.5	131.7	41	15	45	406.24
2	Processing Equipment	31.95	187.5	112.2	11	40	20	402.65
3	Installation	2.85	40.8	15.6				59.25
4	Other Construction	44	46.5	44.4	2	5		141.9
5	Intangible Expenditure	16.16	35.7	33.1	5			89.96
6	Circulating Capital	10	50	240	100			400
7	Sub-total	196	443	577	159	60	65	1500

Estimation of Three Kinds of Materials Used

Table 5-2

Item	Unit	Amount	Remark
Cement	ton	5000	
Timber	m ³	80	
Mould plate	m ³	300	
Reinforce bar	ton	400	
Steel	ton	200	

The Investment Estimation for the Project

Table 5-3

Description of Construction or Expenditure	Estimated cost (Unit: 10,000 yuan)					Constructional area	
	Construction	Equipment	Installation	Other Expenditure	Total	Unit	Quantity
1	2	3	4	5	6	7	8
Wine Breed Rabbit Farm							
First part: Engineering cost							
I. Workshop							
Double-row rabbit shed	19	5	0.75		24.75	sq.m	1000
Support rabbit shed	4.75	1.25	0.2		6.2	"	250
Baby rabbit shed	4.75	1.5	0.2		6.45	"	250
Fine breed rabbit and semen room	3.74	3	0.5		7.24	"	220
Sub-total	32.24	10.75	1.65		44.64	"	1720
II. Public and supplement- ary construction							
Feed storehouse	6.16				6.16	sq.m	280
Grass storehouse	4.03				4.03	"	336
Drugstore	0.86	0.5			1.36	"	48
Chemical Analysis room	1.3	1.5	0.2		3	"	72
Cure room	0.86	0.5			1.36	"	48
Disinfectant room	1.3	0.5			1.8	"	72
Dressing room and bath room	2.58	2.5	0.3		3.38	"	144

(to be continued)

Table 5-3 (continue)

Investment Estimation for the Project

1	2	3	4	5	6	7	8
dining room	2.88	1			3.88	sq.m	160
office building	7.43	2	0.5		9.93	"	450
dormitory	4.30	1			5.30	"	270
outside engineering	10	0.8			10.8		
sub-total	42.3	11.2	1.2		54.7	"	1920
III. engineering outside factories							
drain channel					3	"	600
roadbuilding	13.5				13.5	"	3000
sub-total	16.5				16.5	"	3600
total construction expenditure	91.04	21.95	2.85		115.84		
second part: other construction expenditure							
land procurement				32	32		
transportation and vehicle		10			10		
introduction of fine breed				10	10		
other expenditure				2	2		
sub-total		10		44	54		
third part: intangible expenditure					16.16		

Table 5-3 (Continue)

Investment Estimation for the Project

1	2	3	4	5	6	7	8
Fourth part: Circulating Capital					10		
Total of fine breed rabbit farm	91.04	31.95	2.85	44	196		
Granulated feed plant							
First part: Civil construction							
I. Workshop							
Feed compound workshop	8.8	4	1		13.8	sq.m	400
Granulated material workshop	4	150	30		184	"	200
Sub-total	12.8	154	31		197.8	"	600
II. Public and supplementary construction							
Raw material storehouse	16	1.5	0.2		17.7	"	800
Finished products storehouse	8				8	"	400
Power distribution room	1.4	12	2.4		15.8	"	80
Garage	3.2				3.2	"	160
Chemical analysis room	1	1.5	0.2		2.7	"	80
Office room	6				6	"	300
Dormitory	4.5				4.5	"	250
Dining-room	3.6	1			4.6	"	200
Outside Construction	23	2.5	0.5	0.5	26.5		
Sub-total	66.7	18.5	3.3	0.5	89	"	2270
III. outside plant construction							

(to be continued)

Table 5-3 (continue)

Investment Estimation for the Project

1	2	3	4	5	6	7	8
Power Transfer line			4.5		4.5		
Water supplying equipment			2		2		
Roads and sewer	3				3		
Sub-total	3		6.5		9.5		
Total of construction	82.5	172.5	40.8	0.5	296.3		
Part II. Other construction expenditure							
Land procurement				40	40		
Trucks		15			15		
Other Expenditure				6	6		
Sub-total		15		46	61		
Part III. Intangible expenditure					35.7		
Part IV. Circulating Capital					50		
Total of granulated feed plant	82.5	187.5	40.8	46.5	143		
Enlarging meat rabbit Processing Plant							
Part I. Expenditure of construction							
I. Workshop							
Room for live rabbits	19.5			2	21.5		
Rabbit processing Shop	30	50	7.5	15	102.5		
Room of freezing machines	6.24	23	4.6	2	35.84		

Table 5-3 (Continue)

Investment Estimation for the Project

1	2	3	4	5	6	7	8
Cold storage house	36	9	2	1.6	48.6	m ²	900
Sub-total	91.74	82	14.1	20.6	208.44	"	3640
2. Office and Auxiliary construction							
Boiler room	6.72			1.5	8.22	"	240
Power distribution station	2.4	4	1		7.4	"	120
Water tower	4.5	1	0.5		6	"	50
Chemical analysis room	1.54	1.2		0.3	3.04	"	128 (Reconstructed)
Sewage treatment	2	4			6	"	300
Office, dormitory and dining-room	18			1	19	"	600
Garage	4.8				4.8	"	200
Outdoor construction				4	4		
Sub-total	39.96	10.2	1.5	6.8	58.46	"	1638
Total of construction expenditure	131.7	92.2	15.6	27.4	266.9		
Part II. Other construction expenditure							
Land procurement				12	12		15 (the previous land not included)
Trucks		20			20		
Other expenditure				5	5		
Sub-total		20		17	37		

(to be continued)

Table 5-3 (continue)

Investment Estimation for the Project

1	2	3	4	5	6	7	8
Part III. Intangible expenditure					33.1		
Part IV. Circulating capital					240		
Total of meat rabbit processing plant	131.7	112.2	15.6	44.4	577		
Fur processing plant (the second processing line)							
Part I. Construction expenditure							
1. workshop							
Shop reconstruction	20	11		2	33		
2. Office and auxiliary construction							
Unprocessed fur storehouse	10.8				10.8	m ²	600
Finished products storehouse	5.4				5.4	"	300
Office	4.8				4.8		300
Sub-total	21				21	"	1200
Total of construction expenditure	41	11		2	54		
Part II. Intangible expenditure					5		
Part III. Circulating capital					100		
Total of fur processing plant	41	11		2	159		

(to be continued)

Table 5-3 (continue)

Investment Estimation for the Project

1	2	3	4	5	6	7	8
Consultative service							
Construction expenditure	15	40		5	60	m ²	900
Total of consultative service	15	40		5	60	"	9000
Management units of the Project							
Office and dormitory	45				45	"	2500
Automobiles		20			20		
Total	45	20			65	"	2500
Grand Total	406.24	402.65	59.25	141.9	1500	"	19988

Table 5-4

Main Equipment

Sub-Projects	Item No.	Equipment Description	Unit	Qty	Type & Features	Remark
1	2	3	4	5	6	7
Fine Breed Rabbits Farm	1	Semen-collecting and injection equipment	set	2		
	2	Deep-well pump	"	1		
	3	Automobile	"	2	"Dongfeng" 140 of Tian-jin	LCB
Forage plant	1	Electronic scales	"	1		To be imported X.
	2	Grain-making machine	"	1	with an output of 3000 kg/hr.	"
	3	Crushing machine	"	3		Datong, Shanxi Province
	4	Mixer	"	1		
	5	Vibrating seperating screen	"	1		
	6	Sugar-honey-coating-oil machine	"	1		
	7	Centrifugal fan	"	1		
	8	Hopper style conveyor	"	2	Gss 20 35000 kg/hr.	ZhengZhou Grains Machine Factory
	9	Baking equipment	"	1		
	10	Grain-cooling machine	"	1		

Table 5-4 (Continued)

Main Equipment

1	2	3	4	5	6	7
Fur Processing Plant	3	Suspending turning drum	set	2	GT0AJ-220 x 200	Liaoyang, Liaoning
	4	Fur sewing machine	"	20	GP-1	"
	5	Industrial sewing-machine	"	20	VTG-1000	Shanghai
	6	Water-shedding machine	"	2	ATG-1000	Penglai, Shandong
Technical Consultative Service Center	1	Gas phase chromatograph				
	2	Amino acid analyser				
	3	Computerised thermometer				
	4	Analysis scales				
	5	Computer				
	6	Consultative service car				
	7	Videocorder				
	8	Camera				
	9	Projection apparatus				
	1	Fluorescent camera				
Management Department	1	Biological microscope				
		Automobiles		2	"Santana" of Shanghai Volkswagen Beijing new jeep	ICB

Table 5-4 (continue)

Main Equipment

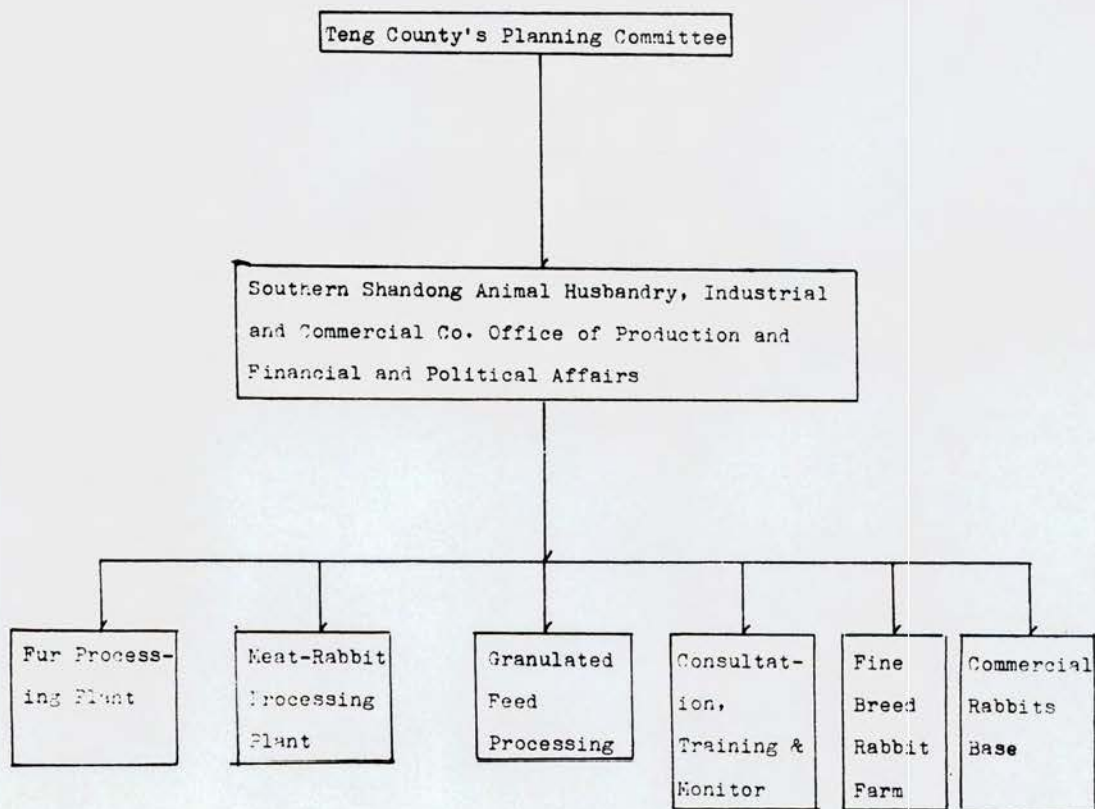
1	2	3	4	5	6	7
Feed process- ing plant	11	Air-current separator	set	1		
	12	Steam boiler	"			
	13	Transformer	"	1	320 KVA	Shanghai transformer plant
	14	Automobile	"	3	"Dongfeng" 140 of Tianjin	
Meat- rabbit process- ing plant	1	Chain-production line	"	1	1000 rabbits/hr	Shanghai Light Industrial Machinery Company
	2	Ammonia compressor	"	2	SB-12.5A	Yantai Freezing-Machine Factory
	3	"	"	1	AV-12.5A	"
	4	Vertical condenser	"	1	WH-40/8	"
	5	Low pressure circulating tube	"	1	DVB-2.5	"
	6	Ammonia pump	"	2	AB-3	Zhengzhou Ammonia Pump Plant
	7	Cool water tower	"	2	2 m ³	Shanghai Glass Steel Plant
	8	Transformer	"	1		
	9	Automobile	"	5		1 CVB
	1	Meat-cleaning machine	"	5	HJB-45	Zhangjiakou Fur Machinery Plant
	2	Dry scraping machine	"	8	MP-35	"

Chapter 6 The Organization and Administration of the Project

Section 1. Network of the Project Administrative System:

The County's Planning Committee will be in charge of the planning of the Complete Project and the co-ordination of its civil construction. In consideration of saving investment and facilitating work, the Project's managing units and technical Consultative Service Center will be located in the Animal Husbandary, Industrial and Commercial Company and Veterinary Technical Service Center respectively with a little increase of public facilities, equipment and persons. The Animal Husbandary, Industrial and Commercial Company will be in charge of the Project's application. Following is the managing system of the Project.

Section 2. Establishment of Various Units for the



Project and their Number of Personnel:

The set-up of units and their number of personnel for the Project is strictly based on production needs. The households raising commercial rabbits in the countryside are not calculated in detail.

See Table 6-1 and 2 for Various units of sub-projects and their number of personnel.

Section 3 Training Plan and Expenditure Estimation:

The Meat-Rabbit Processing Plant under the Project was built in 1980, which has been listed as a meat-rabbit export factory by the State. Its products quality is in far front of its counterparts. It has certain processing techniques. The training of newly enrolled persons will be carried out in its own factory. The technical training for other sub-projects will be conducted by groups and terms at different time. Refer to Table 6-3 for details.

Chapter 7 Schedule of the Project

Section 1. Schedule of Construction for the Project:

Please see the chart for the schedule of construction for the Project. (The starting time will be Jan. 1989.)

Section 2. Annual Investment Plan:

See Table 7-1.

Chapter 8 Revenues of Capital and Repayment
Terms

Section 1. Annual Revenue Plan of Capital and Investment Method:

See Table 8-1 and 2 for details.

Capital Revenue Plan

Table 8-1

Units of Revenues	Invest Value (unit: 10,000 yuan)	Percentage
World Bank	650	43%
Shandong Province	200	14%
The County	650	43%
Total	1500	100%

Note: The capital raised by the County includes 2 million yuan supplied by the County's financial ability, 500,000 yuan raised by the enterprise itself and 4 million yuan of bank loan.

Various Units and Their Numbers of Personnel for
the Comprehensive Meat-Rabbit Production Project

Table 6-1

Sub-projects Number of persons	Fine Breed Rabbit Farm	Granulated Meat Feed Process- ing Plant	Rabbit Process- sing Plant	Fur Proces- sing Plant	Technical Consulta- tive ser- vice cen- ter	Project Manage-	Total
Party and Admini- strative	9	10	26	43		3	91
Management	9	11	42	40	12	18	132
Production	46	37	325	808			1216
Total	64	58	393	891	12	2	1439

Number of Personnel for Various Sub-projects

Table 6-2

Sub-pro- ject	Item No.	Dept.	Number of Personnel				Remark
			Technician	Staff	Contracted workers	Total	
2nd pro- duction Line (Fur Processing)	I	Party Government					
	1	Factory Office				3	
	2	Party, Youth Lea- gue, Labour Union, Youth and Women Depts.				8	
	3	Office				24	
	4	Personnel Secu- rity Section				8	
	II	Tech. Admi.					
	1	Production & Tecn. Section				8	
	2	Inspect Section				12	
	3	Supply & Marke- ting Section				15	
	4	Accounting Section	3	2		5	
	III	Production System					
	1	Water Soak & Meat Strip Shop	5	30	45	80	
	2	Tanning Shop	3	10	35	48	
	3	Dying & Dressing Shop	5	15	35	55	
	4	Ready-made Coat Shop	8	242	350	600	
	5	Machine Repair Shop	4	5	16	25	
		Sub-total	28	304	481	891	

Number of Personnel for Various Sub-projects

Table 6-2 (continue)

Sub-Pro- ject	Item No.	Dept.	Number of Personnel			Total	Remark
			Technician	Staff	Contracted Workers		
Fine Rabbits Breeding Farm	I.	Party & Govern.					
	1	Factory Office	2			2	
	2	Office	2	5		7	
	II	Tech. Admi.					
	1	Productive & Technical Section	2	1		3	
	2	Supply & Marke- Section		3		3	
	3	Accounting Section	1	2		3	
	III	Production System					
	1	Fine Rabbits Breeding Shop	3		20	23	
	2	Support Rabbits Breeding Shop	2		3	5	
	3	Baby Rabbits Breeding Shop	3		12	15	
	4	Artificial Inse- mination Room	3			3	
		Sub-total	18	11	35	64	
Granula- Feed Pro- cessing Plant	I	Party & Govern.					
	1	Factory Office	3			3	
	2	Office	2	2	3	7	
	II	Tech. Admi.					
	1	Productive & Tech. Section	2	3		5	
	2	Supply & Marketing Section		3		3	
	3	Accounting Section	2	1		3	

	III	Production Shops					
	1	Material Compound Shop	3		15	18	
	2	Finished Products Shop	5		8	13	
	3	Machine Repair					
		Sub-total	19	9	30	58	
Meat Rabbits Processing Plant	I	Party & Governmt					
	1	Factory Office	3			3	
	2	Party, Youth League, Labour Union, Youth and Women Depts	3	4		7	
	3	Security Office		8		8	
	4	Office		3	5	8	
	II	Tech. Admi.					
	1	Productive & Tech. Section	3	15	6	24	
	2	Inspect Section	2	2	4	8	
	3	Supply & Marketing Section	2	1	2	5	
	4	Accounting Section	2	3		5	
	III	Production Shops					
	1	Live Rabbits Shop	2	4	16	22	included- ing sell
	2	Rabbits Processing Shop	5	30	250	285	
	3	Machine Room	1	2	5	8	
	4	Machine Repair Shop	1	3	6	10	
		Sub-total	24	75	294	393	

Training Plan and Expenditure Estimation

Table 6-3

Unit: Ten Thousand Yuan

Annual Plan Training Contents	1989				1990				Remark
	Training Month	Number of Persons Trained	Training Unit	Expenditure Estimation	Training Month	Number of Persons Trained	Training Unit	Expenditure Estimation	
Enterprise Admini- tration	6	30	Shandong University	3	6	20	Shandong University	1	
Raising Administration	1	1800	Consulta- tive Center	0.5	1	1500	Consulta- tive Center	0.5	
Epidemic and Disease protection	1	1800	"	0.5	1	1500	"	0.5	
Feed Processing	3	20	Jinan Feed Factory	1	6	3	Shandong Agricultural University	0.6	
Tanning Technology	6	50	Jiang Xiu- hua Leather	2.5	12	3	Fur Depart- ment of SAU	0.6	
Dyeing Process	6	10	"	0.5	12	2	"	0.4	
Dress Designing	6	20	Shanghai Garments Factory	1.3	6	5	Dress De- signing	0.5	
Freeze Process	6	2	Jinan Commercial School	0.2	6	2	Jinan Commercial School	0.2	
Equipment Repair	6	10	Jinan Ma- chine-tool Works	0.5	3	5	Animal Breeding Factory	0.4	
Total				10					

Schedule of the Comprehensive Development project of Meat Rabbit Production

[illegible]

Annual Investment Plan

Table 7-1

Unit: Ten Thousand Yuan (RMB)

Item	Total Investment	1st year	2nd year	3rd year	4th year
Total	1500	769	481	150	100
1. Sub-total of construction	1100	629	471		
1) Civil construction	406.24	250	156.24		
2) Equipment	402.65	250	152.65		
3) Equipment installation	59.25	20	39.25		
4) Other construction	141.9	79	62.9		
5) Intangible expenditure	89.96	30	59.96		
2. Circulating Capital	400	140	10	150	100

Note: 1.4 million Yuan in the circulating capital is planned annually to be in the development of the production base, which will be listed in the investment portion of the Meat-Rabbits Processing Plant's circulating capital and will be returned through the sale of commercial rabbits.

Annual Revenue of Cash

Table 8-2

Unit: Ten Thousand Yuan

	Item of construction Annual revenue	Civil construction	Equipment	Equipment installation	Other construction	Intangible expenditure	Circulating capital	Total investment
the 1st year	Total	406.24	402.65	59.25	141.9	89.96	400	1500
	From World Bank		250	20	50	30		
	From Province	200						
	From County	50			29		140	
	Sub-total	250	250	20	79	30	140	769
the 2nd year	From World Bank	50	150	30	40	30		
	From Province							
	From County	160.24	2.65	9.25	22.9	29.96	10	
	Sub-total	156.24	152.65	39.25	62.9	59.96	10	481
the 3rd	From County						150	
	Sub-total						150	150
the 2th	From County						100	
	Sub-total						100	100

Section 2. Annual Repayment Plan and Term

The interests of the loan will be calculated by compound interests during the construction period. The annual interests rate is 7.92%. The principal and interests will be returned to investment units according to their investment ratio after the Project has been put into operation. The revenues for making repayment are the enterprise's profits, part of depreciation of fixed assets and other benefits.

See Table 8-3 and 4 for the profits of the Project and repayment for principal and interests of civil construction loan.

Chapter 9. Financial and National Economic Evaluation of the Project

Section 1. Production Cost and Estimation of Sales Income

Table 9-1 and 2 show the annual production cost and sales of the Project income which are

based on the production features, capacity and technology of various sub-projects and references are made to the business of their counterparts and the prices of raw materials in the project region and the actual business of our company in the past ten years.

Section 2. Analysis of Financial Benefits of the Project

Table 9-3,4 and 5 show the Statistic Investment Return Period, Annual Return Rate and Dynamic Analysis of Internal Return Rate. The basic internal return rate is 8.4% according to relating regulations.

Section 3. National Economical Evaluation of the Project

After the Project is put into operation, 1,439 people will be directly employed with monthly wages and other bonuses reach 100 Yuan per person. Indirect employment (means rabbits raising Households) will be 2600 persons with an income of 3 Yuan per man-day (calculation is made based on each household has a hundred standard working-days). The

average annual income is 1080 Yuan per person. The net annual profit for each household can reach 530 Yuan. There are 7800 rabbits raising households in the whole County with a total investment of 3 million Yuan of which includes 1.6 million Yuan raised by the households themselves and net annual profit of 4.14 million Yuan.

1. Net National Income Increase (the total value of the Project serving 20 years):

$$\text{Profit} + \text{Tax} + \text{Wages} = (3679 + 8284) + 1757 + (3454 + 5616) = 22790 \text{ (Unit: 10,000 Yuan)}$$

2. National Income Rate of the Project's Investment:

$$\frac{\text{Net annual increase}}{\text{total project's investment}} \times 100$$

$$= \frac{22790/20}{1500+30} \times 100 = 63.3 \text{ (Yuan/100Yuan)}$$

3. Social Return Rate of the Investment:

$$\frac{\text{annual project+tax}}{\text{total project's investment}} \times 100\%$$

$$= \frac{179+414+92}{1800} \times 100\% = 38\%$$

4. Employment: It is shown by number of persons employed per 10,000 Yuan:

$$\text{Total employment rate} = \frac{1439+2600}{1800}$$

=2.24 persons/10,000 Yuan

$$\text{Direct employment rate} = \frac{1439}{1500} = 0.96 \text{ per-}$$

sons/10,000 Yuan

$$\text{Indirect employment rate} = \frac{2600}{300} = 8.67 \text{ per-}$$

sons/10,000 Yuan

It can be seen from above 4 evaluations that the Project is feasible in national economy and has the same result of financial evaluation.

Section 4. Break-even Point, Sensibility and Risk Analysis of the Project

1. Break-even Point:

Because this project is a comprehensive one with several products, it is difficult to calculate the output of break-even products for the comprehensive project. Therefore, only the break-even point of the critical product-

the boneless frozen rabbit-meat production is analysed.

After the Meat-Rabbit Processing Plant is put into operation, the total sales income in a normal year will be 23.03 million Yuan, and total production cost 20.79 million Yuan. The total completed cost of the plant (which is total production cost minus side-products' income) 15.50 million Yuan, of which 1.54 million Yuan is fixed cost, and 13.96 million Yuan varied cost, producing 2,246 tons of boneless rabbit meat, with sales price of 7,900 Yuan/ton. Therefore,

$$\text{Break-even Point} = \frac{\text{annual fixed cost}}{\text{product unit price} - \text{varied unit price}}$$

$$= \frac{154}{0.79 - \frac{1396}{2246}} = 906 \text{ tons}$$

This means that after the plant put into operation, it can reach break-even point provided its annual output reaches 906 tons of

boneless rabbit-meat, neither profit nor lose.

2. Sensibility Analysis

The internal return rate of original design plan is calculated using basic data of the income, cost and expenses of the cash-flow of the constructed projects. Analysis of the sensibility of the Project to variable factors will be made and evaluated, assuming that factors which effect the benefits of the Project become unfavourable to the economical benefits.

There are many factors which will effect the Project's economical benefits, and sensibility analysis need a lot of data. Its calculation is very complicated. Therefore, only the main 3 factors, prices of raw materials, sales price of products and production capacity, will be analused. Their results are shown in the following table.

Variable conditions	IRR(%)	Increase or decrease compared with original IRR (%)
Item		
Original conditions	14.6	0
5% of increase in raw material prices	6.28	-8.32
5% if decrease of sales prices of main products	5.17	-9.43
Production capacity decrease 5%	13.79	-0.81

It can be seen from the above table that the economical benefits of the Meat-Rabbit Processing Plant is sensible to raw material price as well as to products sales prices, but not so sensible to its variation of production capacity.

Total Profits of the Comprehensive Development Project of Meat Rabbit Production

Unit: ten thousand Yuan, rounded

Table 8-3

Year Item	1	2	3	4	5-18	19	20	21	22	Total
1. Sales income		33	1869	2797	3724x14	3724	3724	3724	3691	71698
2. Sales cost		31	1758	2606	3453x14	3422	3378	3378	3347	66262
1) which includes depreciation		10	75	75	75x14	44				1254
2) interets of circulating capital		1	12	24	32x14	32	32	32	31	612
3. tax			37	64	62x14	92	92	92	92	1757
4. Technical transfer fee		2								
5. Profits		2	74	127	179x14	210	351	351	351	3679

Note: (5) = (1) - (2) - (3) - (4)

Return Plan of the Principal and Interests of Loan for Meat-rabbit Production Comprehensive Development

Table 8-4

Unit: ten thousand Yuan, rounded

year	1	2	3	4	5	6	7	8	9	10	11
Item											
1. Loan, accumulated amount at the beginning in the year		659	1189	1149	1053	897	751	593	423	240	42
2. Loan expense in the year	629	471									
3. Interests in the year	30	69	94	91	83	71	59	47	34	19	3
4. Interests should be paid in the year		10	134	140	83	71	59	47	34	19	3
5. Principal should be paid in the year				47	156	146	158	170	183	198	42
6. Loan, accumulated amount at the end of the year	659	1189	1149	1053	897	751	593	423	240	42	+172
among: interests accumulated	30	89	49								
7. Total of the sources of paying principal and interests		10	134	187	239	217	217	217	217	217	217
1) Profit		2	74	217	179	179	179	179	179	179	179
2) Depreciation for repaying		8	60	60	38	38	38	38	38	38	38
3) Other profits											
4) Income kept for the enterprise during repayment period											

Repaying construction loan period = $10 + (3 + 42) \div (217) = 10.2$ (year)

Note: 1. Compound interests for construction loan is calculated, half interests for loan borrowing year, and full interests for loan returning year. In the to-be-paid interests in the 1st and 2nd years, there is the interests of 1.4 million Yuan of circulating capital of the meat-rabbits base, which is counted as borrowed loan for civil construction.

2. Depreciation for repayment is in accordance with regulations in this field. 30% will be for repayment in the first 3 years after putting into operation, 50% for repayment after 3 years. 30% will be handed to higher authority and 70% left for enterprise itself.

3. Profit left for the enterprise during repayment period are not included in the Table.

Annual Sales Cost of the Fine Breed Rabbit Farm

Table 9-1

Item No.	Item	Unit	Price	Qty.	Value	Remark
1	Granulated feed for fine breed rabbits	ton	600	94.9	5.69	0.2 Kg/day (one rabbit) x 365 days x 1300 rabbits
2.	Granulated feed for baby rabbits	"	600	40	2.4	30 days old: No milk feeding 50 days old: On sale, feed of 1 Kg/each
3	Cost of medicines				0.58	1.5¥ for each fine breed rabbits, 0.5¥ for each support rabbits, and 0.1¥ for each baby rabbit.
4	Water	"	0.10	1500	0.15	
5	Power	10KW/h	0.18	50000	0.9	
6	Coal	ton	80	200	1.6	
7	Wages & others	¥	80/man.month	46 men	4.42	
8.	Costs of breed rabbits	piece	12	1100/3	0.44	Fine breed rabbit can be used for 3 years averagely.
9.	Costsoof rabbits death	"	21.9	55	0.12	Death rate is 5% every half year.
10	Depreciation of fixed assets				9.84	Depreciation rate is 6%. 200,000¥ of assets for orginal rabbits Farm.
11	Shop and enterprise expense				3.22	Baby rabbit and male rabbit left account for 10% of income.
12	Cost of management				0.48	Baby rabbits and male rabbit left account for 1.5% of income.
13	Sales costs				0.48	"
14	Interests of circulating capital				0.79	
15	Total cost of sales				31.11	

Annual Sales Cost of the Granulated Feed Processing Plant

(.continue)

I	II	III	IV	V	VI	VII
1	Raw grain	ton	460	4500	207	Refer to various raw grains and soy-bean cakes, also including transport fee.
2	Raw grain consumption	"	460	45	2.07	Loss rate is 1%.
3	Grass powder	"	360	5000	180	
4	Fish power and additives	"	2400	500	120	
5	Water	"	0.1	10000	0.10	
6	Electricity	10 KW/h	1200	60	7.2	
7	Coal	ton	80	100	0.8	
8	Depreciation of fixed assets				21.18	Annual depreciation rate is 6%.
9	Dreewithdraw of midiate and overall repair fee				6.37	
10	Packing				12	
11	Wages and bonus	Yuan	80 man.month	37 persons	3.55	
12	Work shop expenses				12	Based on 2% of sales income
13	Sales expenses				12	Based on 2% of sales income
14	Interests of cuirculating capital				3.96	Annual interests rate is 7.92%.
15	Management fee handed to higher authority				9	Based on 1.5% of sales income
16	Total costs				597.23	

Estimation of Sales Cost of the Fur Processing Factory

(continue)

I	II	III	IV	V	VI	VII
	raw materials					
	rabbit furs	10000 pieces	15000	300	450	
B	Fuel and Power					
1	coal	T	80	400	6.4	
2	water	10000 T	1000	4	0.4	
3	Electricity	10KW/h	1200	80	9.6	
C	other materials					
1	industrial salt	T	90	20	0.18	
2	alkali powder	T	450	15	0.68	
3	sulphuric acid	T	650	10	0.65	
4	detergent	T	1500	12.5	1.25	
5	mirabilite	T	150	40	0.6	
6	red vitriol	T	5800	3	1.74	
	fat	T	1500	12	0.4	
	antifreeze	T	1000	5	1.25	

(continue)

I	II	III	IV	V	VI	VII
9	Proteinase	T	11000	1	1.1	
10	Alum	T	450	20	0.9	
11	Talcum	T	250	80	2	
12	Cloth	10 ⁴ m	60000	12	72	
13	Adhesive lining cloth	10 ⁴ m	18700	12	22.44	
14	Bow-shaped buttons	10 ⁴ sets	4000	18	7.2	
15	Others				2	
D	Worker's wages	Yuan	83 man.month	808 persons	80.48	
E	Shop expenses				21	(including ready-made coat fee)
F	Depreciation of fixed assets				14.94	The fixed assets of the original factory is 1.90 million Yuan.
G	Costs of administration				11.7	Based on 1.5% of fur coats sales income.
H	Sales cost				23.4	Based on 3% of fur coats sales income.
I	Interests of circulating capital				7.92	Annual interests rate is 7.92%.
	Total costs				745.96	

Estimation of Sales Cost of the Meat-Rabbit Processing Factory

(continue)

I	II	III	IV	V	VI	VII
A	Raw materials					
1	Live rabbits	T	3000	6000	1800	
2	Loss of live rabbits	T	3000	180	54	Loss rate is 3%.
B	Fuel and Power					
1	Coal	T	80	800	6.4	
2	Water	T	0.1	3500	0.35	
3	Electricity	KW/h	0.12	800000	9.6	
C	Auxiliary materials					
1	Small plastic bags		0.07	449200	3.14	200 bags/T x 2246 T
2	Big plastic Bags		0.11	112300	1.23	50 bags/T
3	Paper cartons		2.70	112300	30.32	50 cartons/T
4	Nylon bags		0.10	112300	1.12	50 bags/T
D	Worker's wages	Yuan	90/man.month	325 persons	35.1	
E	Workshop expenses				36	Based on 2% of sales income.
F	Depreciation of fixed assets				29.22	Annual depreciation rate is 6%. Fixed assets of the original factory is 1.62 million Yuan.
G	Cost of administration				27	Based on 1.5% of sales income.
H	Sales cost				27	"
I	Interests of circulating capital				19	Annual interests rate is 7.92%.
	Total				2079.48	

Estimation of Annual Feeding Cost of Per Meat-Rabbit Raising Household

(Based on raising 10 female rabbits, 1 male rabbit and supply of 400 rabbits)

(continue)

I	II	III	IV	V	VI(Yuan)	VII
1	Granulated feed for fine breed rabbits	Kg	0.60	602	361.2	0.15 Kg for each rabbit-day.
2	Concentrated feed for commercial rabbits	"	0.50	1800	900	0.75 feed for each rabbit-day, 60 days.
3	Grass for commercial rabbits	"	0.08	4800	384	0.2 Kg for each rabbit-day, 60 days.
4	Medical expenses for fine breed rabbits	piece/year	1.50	11	16.5	
5	Medical expenses for commercial rabbits	piece	0.30	400	120	
6	Share of fine breed rabbits death	piece/year	32.8/2	1.1	18	Death rate is 10%. Based on 50% of the annual expenses.
7	Share of commercial rabbits death	piece	1.60	12	19.2	Death rate is 3%. Average 1Kg death.
8	Other expenses				50	
9	Total costs				1868.9	

Estimation of Annual Sales income for Various Sub-project

Table 9-2

Item	Description of products	Unit	Unit price (Yuan)	Qty.	Value (10,000 Yuan)	Remarks
Fine breed rabbits farm	New born rabbits	pieces	12	22000	26.40	Male to female 1:10
	Male rabbits left	"	3	18000	5.40	Every male rabbit producing 40 rabbits a year
	Eliminated fine breed rabbits each year	"	9	360	0.32	1100 rabbits divide 3 year time 3Kg time 3 Yuan
	Rabbit manure	Kg	0.05	130000	0.65	
	Sub-total				32.77	
Granulated plant	Granulated feed	T	600	10000	600	
Meat-rabbit processing Factory	Boneless frozen meat	T	7900	2246	1774.34	
	Rabbit furs	piece	1.50	2940000	441	Loss 2%
	Left over	"	0.30	2940000	88.2	Loss 2%
	Sub-total				2303.54	
Fur processing factory	Fur coats	"	130	60000	780	
	Fur products	"	1.50	50000	7.5	
	Sub-total				787.5	
	Total				3723.81	
Each meat-rabbit raising household	Rabbits for sale	"	6	400	2400	Each rabbit weighs 2Kg on average.
Note: The revenue of rabbits leftover and rabbit manure equals the payment for introducing fine breed rabbits and wages of the workers.						

Investment Plan for the Comprehensive Development Project for Meat-Rabbit Production

Table 9-3

Unit: 10,000 Yuan

Item	year	total	1	2	3	4	5-18	19	20	21	22
1. Total investment		1500									
1) Loan for civil construction		1100	629	471							
2) Loan for circulating capital		400	140	10	150	100					
2. Total income		71698		33	1869	2797	3724x14	3724	3724	3724	3691
3. Operation costs		64383		20	1821	2584	3347x14	3304	3272	3272	3252
4. Depreciation of fixed assets		1254		10	75	75	75x14	44			
5. Taxes		1757			37	64	92x14	92	92	92	92

- Note: 1. Fine Breed Rabbit Farm and Granulated Feed Factory will reach the designed production capacity in the same year of investment. It will take 2 years for the Meat-Rabbit Processing Plant and the Fur Processing Plant to be put into operation, reaching 40% of their designed capacity in 1st year and 70% in 2nd year.
2. The products sales cost minus depreciation and the interests of circulating capital is the operation cost in investment period.
3. Fixed cost (minus depreciation) plus variable cost (minus the interest of circulating capital) times production capacity is the operation cost during the operation period.
4. Calculation of tax is as follows: Tax paid by the Meat-Rabbit Processing Plant is based on 3% of the sales income of frozen boneless rabbit-meat, that by the Fur Processing Factory is based on 5% of the sales income of fur coats. The Fine Breed Rabbits Farm and the Granulated Feed Processing Plant won't pay any tax.

Total Invested Cash-flow for the Comprehensive Development Project for ,eat-Rabbit Production

Table 9-4

Unit: 10,000 Yuan , rounded

[illegible]

Table 9-4 (continue)

	13	14	15	16	17	18	19	20	21		Total
(A) Cash flow-in											
1. Sales income	3724	3724	3724	3724	3724	3724	3724	3724	3724	3691	7110
2. Return of circulating capital									150	250	400
Sub-total of flow-in	3724	3724	3724	3724	3724	3724	3724	3724	7324	3874	7209
(B) Cash flow-out											
1. Civil construction investment											111
2. Circulating Capital investment											400
3. Operation cost	3347	3347	3347	3347	3347	3347	3304	3272	3272	3252	6435
4. Sales tax	92	92	92	92	92	92	92	92	92	92	175
Sub-total of flow-out	3439	3439	3439	3439	3439	3439	3396	3364	3364	3304	6764
(C) Amount of net cash-flow	285	285	285	285	285	285	285	285	285	285	444
(D) Accumulated amount of net cash-flow	1258	1543	1828	2093	2378	2663	3011	3271	3681	4473	
(a) Net present value											
1. $P=8.4\%$	0.350	0.325	0.298	0.275	0.251	0.221	0.215	0.199	0.181	0.170	
2. Net present value	134	108	85	63	47	37	32	27	24	21	101
Total present value	36	178	363	341	415	480	505	527	521	522	
(b) Internal rate of return											
1. $P=14\%$	0.182	0.160	0.140	0.123	0.108	0.095	0.083	0.073	0.064	0.056	
Net present value	52	46	40	35	31	27	29	26	33	33	37
2. $P=15\%$	0.163	0.141	0.123	0.107	0.093	0.081	0.070	0.061	0.055	0.046	
Net present value	16	40	35	30	27	24	24	21	17	27	-1

Capital Balance of the Comprehensive Development Project for the Meat-Rabbit Production

Table 9-5

Unit: 10,000 Yuan

Item \ Year	1	2	3	4	5	6	7
A. Resources of capital							
1. Sales profit		2	74	127	179	179	179
2. Depreciation		10	75	75	75	75	75
of which depreciation can be used for repayment of loan		(8)	(60)	(60)	(60)	(38)	(38)
3. Loan for civil construction investment	629	471					
4. Loan for circulating capital	140	10	150	100			
Sub-total of the resources	769	493	299	302	254	254	254
B. Usages of capital							
1. civil construction investment	629	471					
2. Circulating capital investment	140	10	150	100			
3. Remained profit for enterprise in the period of repay.							
4. Depreciation remained for enterprise		2	15	15	15	37	37
5. Depreciation handed over to the state							
6. Repayment of interests of civil construction loan		10	134	140	83	71	
7. Repayment of principal of civil construction				47	150	146	158
8. Taxes							
9. Surplus capital							
Sub-total	769	493	299	302	254	254	254

Note: Taxes are not calculated in this table.

Variable conditions	IRR(%)	Increase or decrease compared with original IRR (%)
Item		
Original conditions	14.6	0
5% of increase in raw material prices	6.28	-8.32
5% if decrease of sales prices of main products	5.17	-9.43
Production capacity decrease 5%	13.79	-0.81

It can be seen from the above table that the economical benefits of the Meat-Rabbit Processing Plant is sensible to raw material price as well as to products sales prices, but not so sensible to its variation of production capacity.

Chapter 10 Conclusion of the Feasibility Research

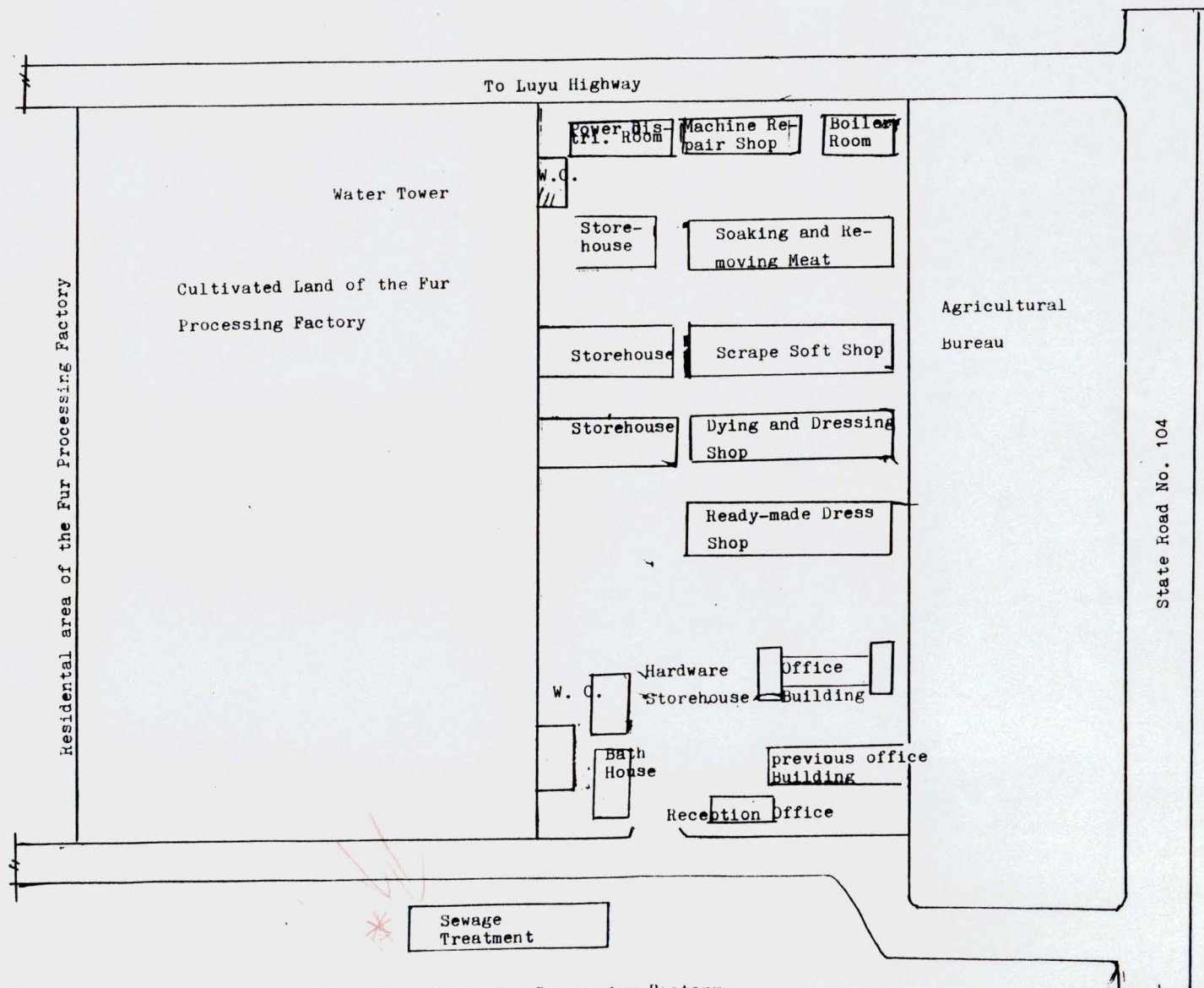
Our conclusion is that the Project is feasible in production, advance in technique, reliable in construction, reasonable in economy, profitable in finance, beneficial to society and has a good result in ecological and environmental protection after a careful survey, investigation, study and analysis in the fields of technology, economy, society and ecology.

*integrate,
production, processing
and marketing*

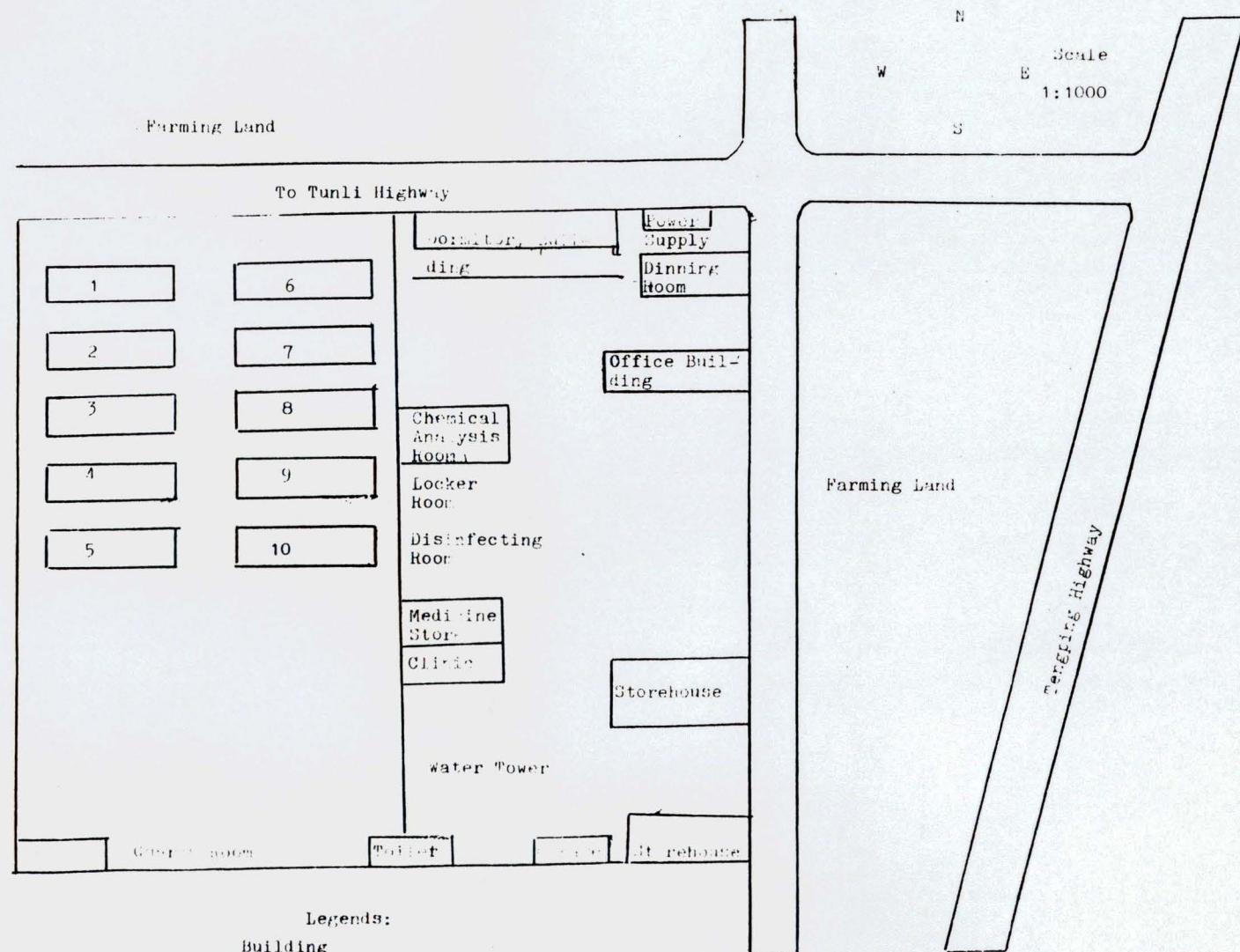
It is a " Umbrela Project including fine breed rabbits, feed processing, meat-rabbits and fur processing and their marketing, forming a company with production, supply and sales.

The life of to-be-constructed Project is years with a total investment of 15 million Yuan and annual profits of 1.79 million Yuan. The comprehensive internal rate of return is 14.6% with a 12.1 years dynamic investment return period and 10.2 years of loan return period.

It is suggested to grant loan to this Project and to supervise its application. The Southern Shandong Animal Husbandry, Industrial and Commercial Company is in charge of this Project and should exercise its management of the Project. The Meat-rabbits Processing Plant is the key sub-project which has a great influence on the economic benefits of the whole Project. Supply of raw material is an important factor which effects the factory's economical benefits. It is very important to strengthen the building of the meat-rabbits production Base, to have a good technical consultative service, to guarantee a bumper supply of raw materials. At same time, attention should paid to closely watching the market changes and to mastering market information so as to realize the enterprise's social and economical benefits.



Plan view of the Fur Processing Factory



Legends:

Building

Wall

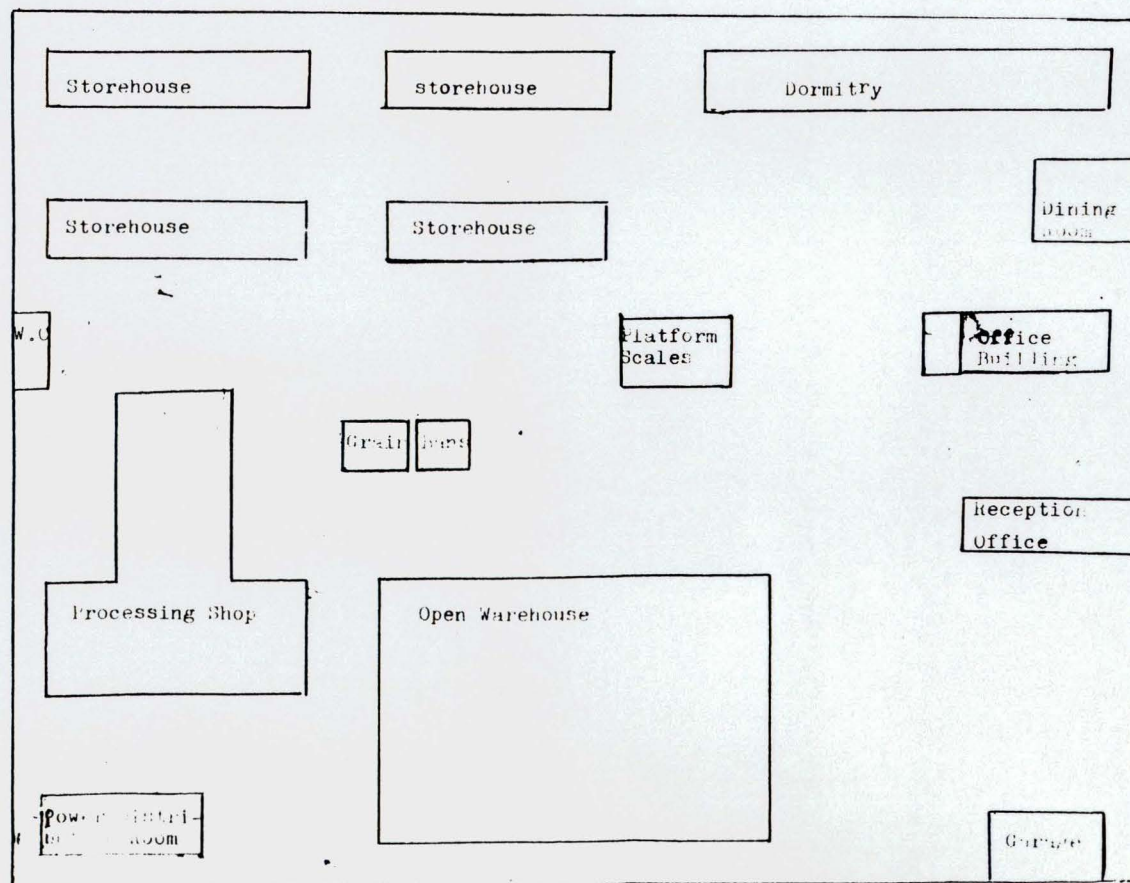
1-10 Rabbit Shed

Plan view of Fine Breed Rabbits Farm

Plan View of the Granulated Feed Processing Plant

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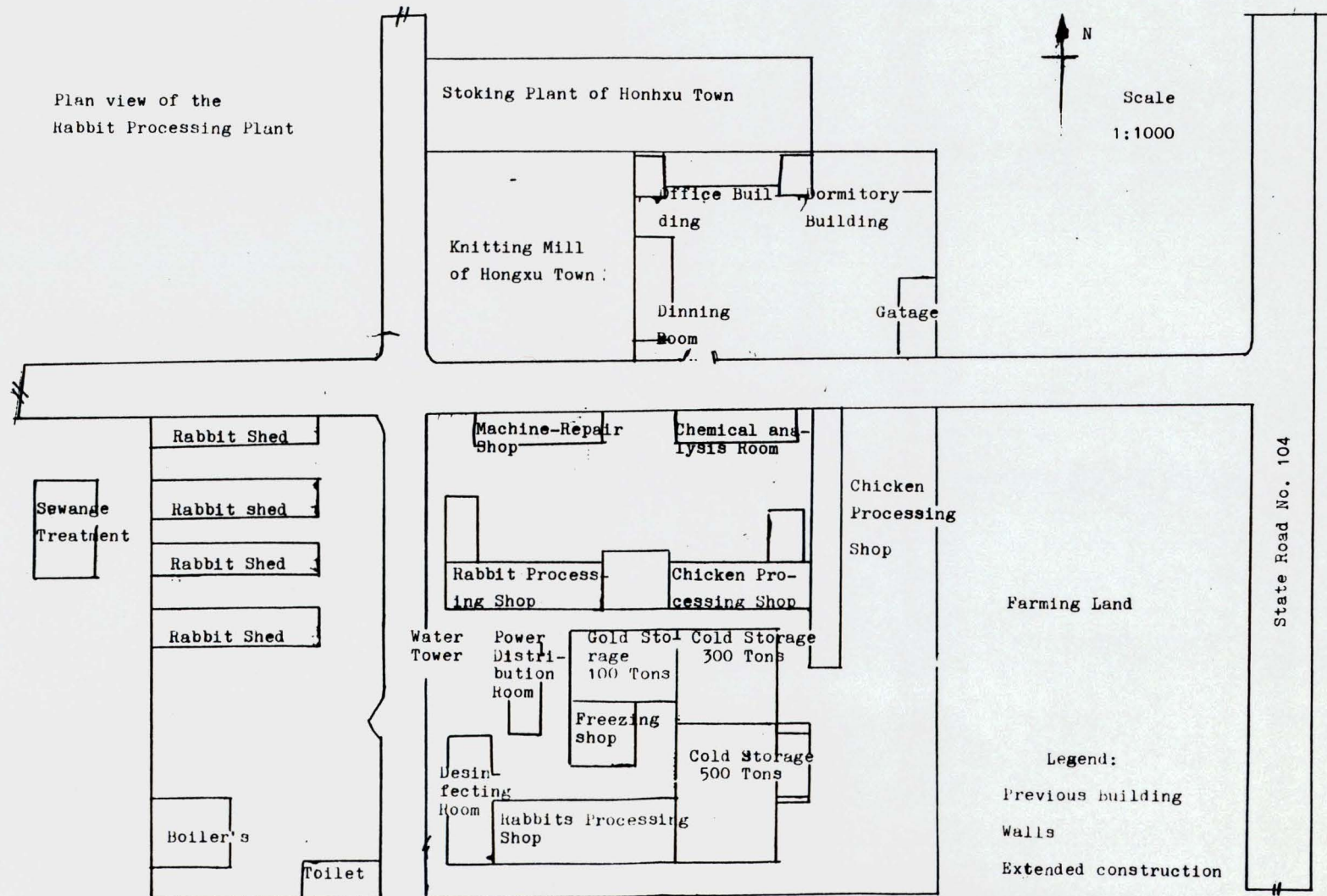


Legend:

Wall

Building

Plan view of the
Rabbit Processing Plant



Development of Meat Rabbit
Development project of Teng County

滕县肉兔项目开发分区图

