

Annex 1

Plan of Pilot Project

The Formulation of pilot projects was made on the Field StudyIV, extending from July 2004 to December 2004, as an initial stage of the Phase 2 of the Study. Details of the Plan are summarized below.

1.1 Ziobwe Rice Processing and Marketing Project

(1) Objectives

- To increase income of small scale farmers, through the improved post harvest processing of upland rice.
- To encourage farmers to sell milled rice for value addition by farmers' organization with participation of the private sector.

(2) Activities

- To establish solid organization for rice processing and marketing
- To provide rice milling services to rice growing farmers
- To ensure sustainable management and operation of rice mill
- To disseminate appropriate post-harvest processing technologies such as drying and cleaning of paddy.
- To develop and disseminate new technology on effective utilization of by-products

(3) Location

The rice mill facility was built within the Sub-county's premise of Ziobwe Sub-county, Luwero District. The site was located near the sub-county's office and it takes about 1 hour drive from Kampala.

(4) Organization Structure and Management System

(4)-1 Background of organization

a. Organization as parent body

The project in Luwero has two key organizations, which are farmers' group, ZAABTA, and NGO, Share an Opportunity (SAO). The project has proceeded by forming an independent organization through joint venture style by two parties.

ZAABTA

ZAABTA is the farmers' organization composed of 64 farmers' groups supported by SG2000 in Ziobwe sub-county, Luwero district.

Rice production has been on the increase as cash crop in the area, though, the planted area and production volume are still limited yet. Among all the 64 farmers' groups 18 groups are categorized as rice farmers' groups as shown in the TableA.1.1.

Table A.1.1 Rice Productions by Rice Farmers Groups in ZAABTA (extracted)

Group name	Member	2003			2004 (planned)		
		Acre	Production (paddy,ton)	Rice farmer	Acre	Production (paddy,ton)	Rice farmer
Ffena Tukole	16	7.5	6.0	10	15.5	12.4	16
Ngalonkalu Farmers G	30	1.0	0.8	1	26.0	20.8	30
Manyama Farmers Youth G	30	6.0	4.8	6	28.8	23.0	28
Manyama Farmers G	27	25.3	20.2	27	51.5	41.2	27
Tusutukire Wamu Farmers G	17	2.0	1.6	4	32.5	26.2	17
Tusutukire Wamu Women's G	14	0.5	0.4	2	11.7	9.4	14
Nambi Dev. Agency	23	1.5	1.2	2	24.0	19.2	23
Matovu and Sons Farmers G	20	2.5	2.0	3	20.0	16.0	20
Doboozi Lyamukama	25	1.0	0.8	1	25.0	20.0	25
Nayaso Farmers G	26	4.8	3.8	3	38.5	30.4	26

Group name	Member	2003			2004 (planned)		
		Acre	Production (paddy,ton)	Rice farmer	Acre	Production (paddy,ton)	Rice farmer
Kamu-kamu Mgalowkalu	25	4.3	3.4	5	27.0	21.6	25
Kasoso Women's G	15	1.0	0.8	1	16.0	12.8	15
TOTAL	268	57.4	45.8	65	316.5	253.0	266

Source: Resident extension officer at Zirobwe Sub-county

Share an Opportunity (SAO)

Share an Opportunity UGANDA is a locally registered NGO coming originally from Australia. Activities in Uganda cover wide ranges in agriculture, education, nutrition, water supply and small business support. SAO has conducted such various activities in Luwero since 1996. Zirobwe Sub-county has been one of its project coverage areas.

b. Process of the new organization established

In the beginning phase, the pilot project in Luwero had proceeded only with ZAABTA as a solely representing farmers' group in the targeted area. However, through the discussion between the Study team and ZAABTA from April to May 2004, both recognized the necessity of inviting a business partner from private sector for smooth management of rice mill business. ZAABTA selected SAO as a business partner for the project, and then the two parties established Zirobwe Rice Mill as a partnership company. The current share holdings of Zirobwe Rice Mill are respectively ZAABTA, 40% and SAO, 60%.

As of December 2004 Zirobwe Rice Mill already completed legal process of company's registration.

(4)-2 Current status of organization for the project implementation

a. Organizational structure

a-1. Organizational structure

Zirobwe Rice Mill has organizational structure as shown in the following Figure A.1.1.

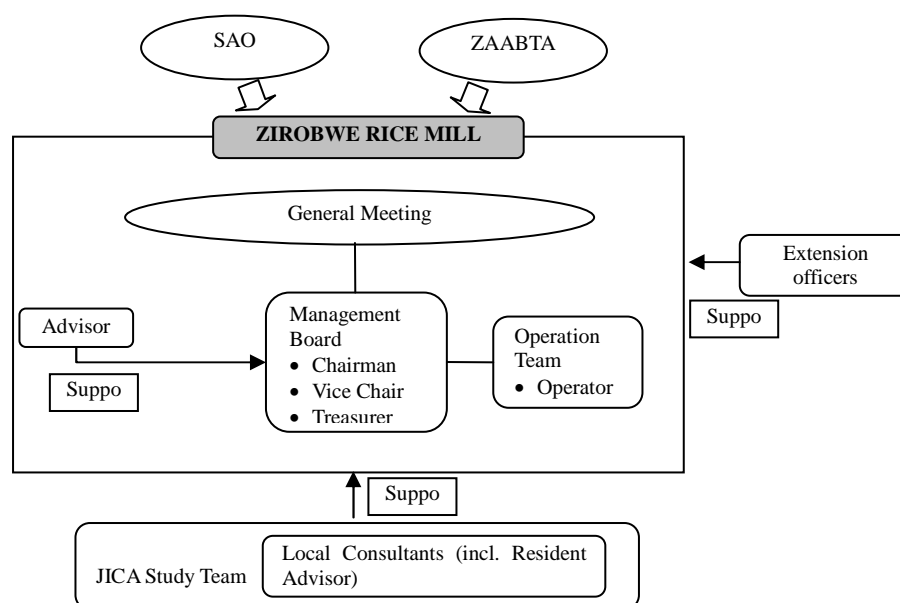


Figure A.1.1 Organizational Structure of Zirobwe Rice Mill

a-2. Management Board

Management Board comprises four members, two from ZAABTA and two from SAO. In addition, an advisor coming from ZAABTA, who has been well trained as an accountant in activities of NGO, supports accounting matters of the project.

A Resident advisor is also dispatched by the Study team during initial stage of its implementation to assist them in all the aspects of the project.

Roles of Management Board

Management Board has following roles:

(Management)

- Capital management (to manage/supervise money handling on daily basis as well as mid-long term basis; provide authorization of access to the organization's account)
- Legal management (to prepare and proceed legal actions such as company registration and commercial permission)

(Operation)

- Financial plan (to prepare income and expenditure plan)
- Operation plan (to set up operation schedule including collection of paddy schedule)
- Marketing promotion (to expand sales routes through contacts with traders/middlemen and city market)
- Maintenance of equipment (to carry out proper maintenance of equipments and procure necessary consumables)

Other functions not mentioned here will be discussed by general meeting such as Audit system.

a-3. Operation team

In the beginning phase, operation team will be composed of one operator and several casual workers. The composition of the team will be flexibly adjusted to volume of brought paddy at seasons.

b. Legal status

Zirowwe Rice Mill already completed official registration in December 2004.

c. Internal rule

Draft internal rules regarding operation, profit and loss sharing, membership status and others will be made by Management Board for a resolution by general meeting of the group.

(4)-3 Challenges forward

a. Capacity building of organization

(Management aspect)

Neither organization of ZAABTA nor SAO has business experiences on rice mill operation. Technical support from the Study team including local consultants to Management Board is essential.

Zirowwe Rice Mill can take advantage of full support from the well trained local accountant presently taking position of an advisor for Management Board of the organization. In addition, support for project management by SAO also will be a positive factor for smoother operation.

(Operation/Technical aspect)

Capacity building of technical aspect particularly in rice mill operation and proper maintenance should be focused. Training opportunities are provided by the Study team including local consultants.

b. More production of rice

Even though the target area shows increase in rice production for the past years, the current production volume does not meet yet for full capacity of the rice mill facilities. More rice production is required for cost-effective operation. Promotion of rice production undertaken by SG2000 in the area is strongly expected.

(4)-4 Further schedule and Support from the Study team

a. Training support

The Study team provides operators with training by use of the rice mill facilities of the project. Local consultants will also make a follow up training towards operation that is expected to start by

early January next year.

b. Human resource support

In order to assist smooth management and operation particularly in the initial stage, the Study team assigns a Resident advisor. The Resident advisor assists all the aspects of management and operation and also functions as a liaison between Zirowwe Rice Mill and the Study team.

(5) Physical Infrastructure

(5)-1 Acquisition of Land

Land of one acre is leased to ZAABTA from Zirowwe Sub-county for 99 years for rice mill with free of charge.

(5)-2 Investments

• Building Facility

The mill house is constructed by bricks with plaster and colored roofing material (see attached photos) having 100 m² space (10x10 meters) of milling and storing area and 30 m² veranda (10x3 meters).

The floor is made by concrete slab with 150mm thickness and the eave height is 3.5 meters.

An office room has the space of 12.5 m².

• Machines and equipment

Following machines and equipment are procured.

TableA.1.2 Machines and Equipment for Rice Mill

	Machines/Equipment	Specification	Nos.
1	Moisture Meter	For paddy and milled rice	1
2	Rice mill	One pass type with rubber roll type Capacity 0.5~0.6ton/hour/paddy 15kW Electric motor driven	1
3	Table scale	For rice and rice bran weighing, 250kg type	1
4	Broken rice separator	Sieve (1x0.5Meter), Manual operation	2
5	Husk stove	For cooking (demonstration), Bricks construction and fire grids	1
6	Others	Desk and chairs, Book stand, Brooms, Shovels, Machine base, Pp-sheets, etc.	1 lot

(5)-3 Investment cost

- Mill house: 40.50 million Ush.
- Machines and equipment: 11.50 million Ush.
- Total: 52.00 million Ush.

(5)-4 Construction

- The mill house construction had started in the beginning of September 2004 and was handed over to the Study team at the end of November 2004 after the final acceptance inspection by the Study team and ZAABTA.
- The workmanship of the construction was generally acceptable.
- The delivery of rice mill ordered to Agro-Sokoni delayed due to unexpected time required for import procedure from China and custom clearance.
- Therefore, mechanical installation scheduled in November, could start in the beginning of December.

(6) Operation and Management

(6-1) Management plan

ZIROBWE Rice Mill has formed an executive body, Management Board (MB) consisting of four (4) members, two each from ZAABTA and SAO. MB is responsible for the operation and management of the rice mill.

A residential advisor (local consultant) recruited by the Study team assists MB.

MB is also for mobilizing farmers to deliver paddy for milling. MB needs to control/ adjust the volume and timing of incoming paddy for efficient mill capacity utilization. This will be done through farmers groups of ZAABTA.

Collection and distribution of market information on paddy/milled rice is another role of MB.

MB has recruited an operator and workers. The Study team with the local consultants has started training of these staff for proper operation and management

(6-2) Operation plan

Upland rice production in the area in 2003 was reported at around 45.8 ton and that of 2004 was initially estimated at 253 ton by ZAABTA and the extension officer (Feb. 2004). However, severe drought attacked this year negatively affected the expansion of upland rice cultivation in this area. Current estimation for 2004 production is 50 ton only, of which 10 ton is the 1st crop (July to Sep. 2004), while 40 ton for the 2nd crop (Dec.2004 to Feb.2005).

As 2nd crop harvest of 2004 will start in the middle of December, the rice mill will start milling service under the trial basis from the end of December.

Major points to be mentioned are;

- i) MB mobilizes farmers to bring dried and cleaned paddy to the rice mill individually or by groups according to the established schedule for milling services.
- ii) The operator will demonstrate the level of moisture content of paddy using the moisture meter and will advice proper paddy drying practice to farmers.
Strict check of the moisture contents and purity of paddy will be made by the mill operator. If the moisture is over 15%, the mill operator will instruct the farmer to dry paddy further using plastic sheets provided within this rice mill compound.
If mixture of foreign materials such as straw, chaffs, string and etc. is high, the operator shall instruct the farmer to clean the paddy before milling.
- iii) Milling fee is tentatively set at 50Ush./kg of milled rice weight, at the same level of nearby town Semuto.
- iv) MB will provide market information to the farmers who deliver paddy to the mill for milling. Further, MB will inform the traders/ middlemen the schedule of mill operation so as each farmer can negotiate with them at the mill.
- v) Rice bran will be collected and sold as animal feed to feed-mills in Kampala. The sales shall be income of rice mill.
- vi) Husk from rice mill shall be burned as cooking fuel by Husk Stove provided. Husk ash shall be utilized for soil improvement material.
- vii) Maintenance of machines shall be strictly carried out by operator according the Operation Manual to be provided by the Team

High quality of milled rice is one of the major targets of the milling enterprise to capture attractive rice market. MB will encourage high quality rice (without broken) production by the use of broken rice separating tray-sieves provided to the mill.

Rice mill will remain to provide only milling services at the initial stage. Collective marketing by the organization will be considered in the course of the development of the enterprise.

(6-3) Financial operation

Initial fund prepared by Zirowbe Rice Mill of 6,000,000 Ush. will be used as the initial operation fund. The expected expenditure such as electricity, wages for the operator and other workers will be

covered by the fund.

Estimated balance for 2005 is as follows.

(Assumption)

1. Annual processing amount of paddy: 100MT
2. Milling fee: 50 Ush./kg of milled rice
3. Milling recovery rate: 65%
4. Depreciation: Building 0 Ush., Machines 6 years
5. Rice bran: 8% of paddy weight, with selling price of 60 Ush./kg

Total: 2.11million Ush.

(Operation cost)

1. Repair fee : 5% of the machine per year
2. Electricity : 15Kw/hr x200 hr
3. Rubber roll: Pair/50 MT
4. Milling screen : Pair/ 100MT
5. Wages: Mill operator 6 month
Workers 6 month, 2 persons
6. Others: 10% of the above
7. Depreciation: 0.617 million Ush.

Total: 2.11million Ush. (without depreciation)

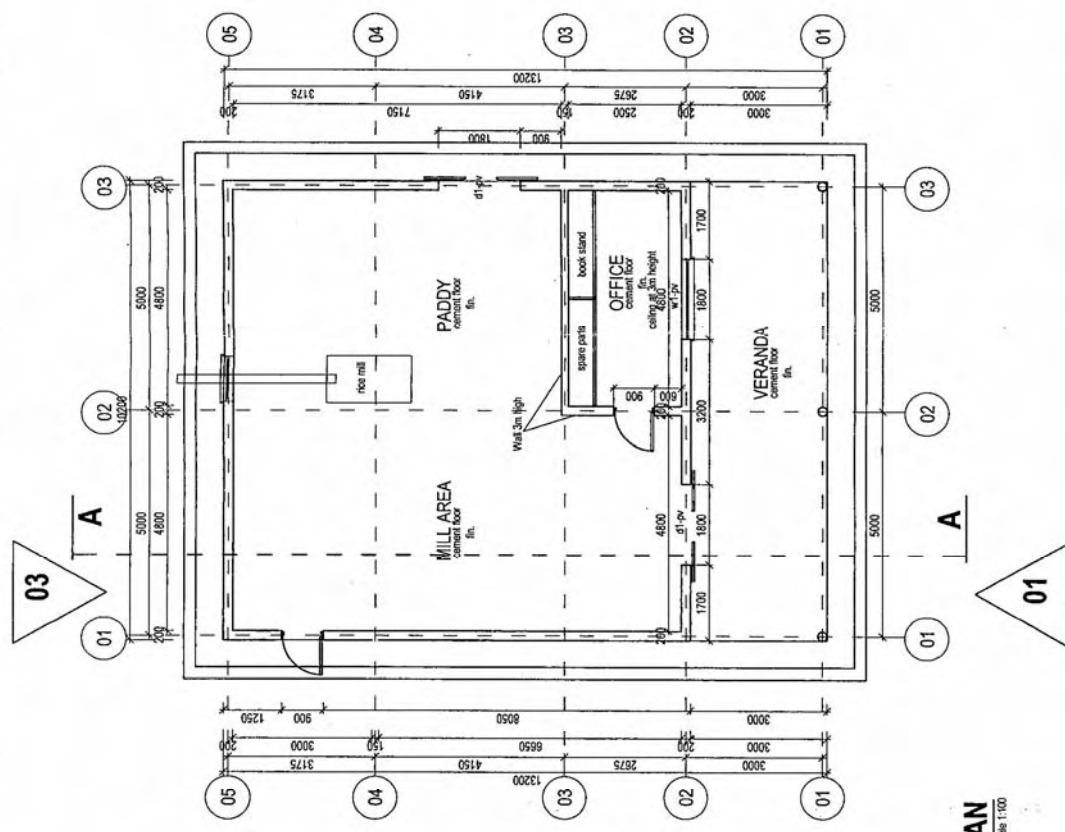
2.177million Ush. (2.794 Million Ush.)

(Income)

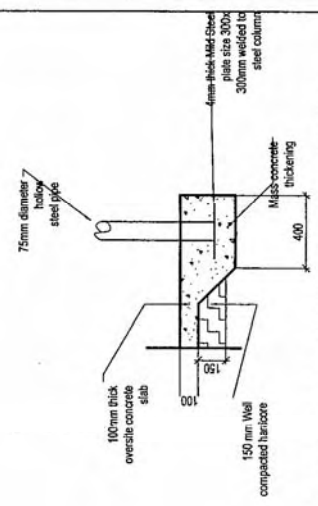
1. Milling fee: 100MT @ 50 Ush. x 0.65
2. Rice bran 8MT @ 60 Ush.

Total: 3.73 million Ush.

(Balance) 0.936 million Ush.

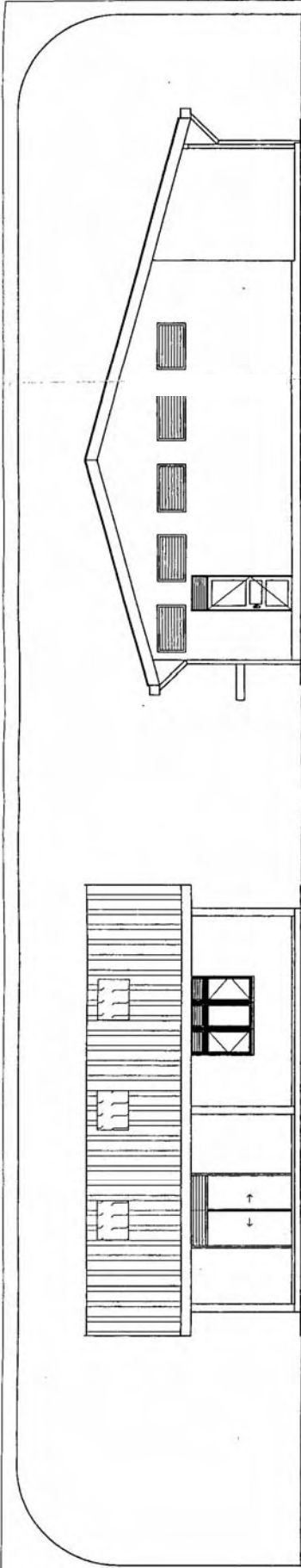


FLOOR PLAN
scale 1:100



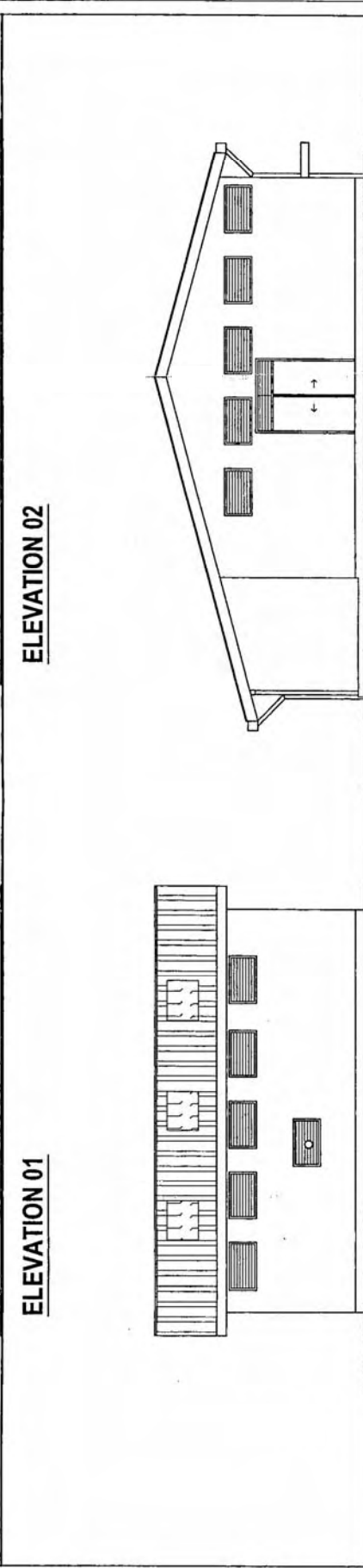
DETAIL OF FIXING OF STEEL PIPE

PROJECT: PROPOSED RICE MILL AND STORES	SCALE:	1:100
	NOTES:	
DRAWING TYPE: WORKING DRAWINGS	DRAWN BY:	
	CHECKED BY:	
EMPLOYEE: ZIROBWE / LUWERO	DATE:	Apr 2004
	DRAWING NO.:	LW001/01
	SHEET NO.:	1 OF 3



ELEVATION 02

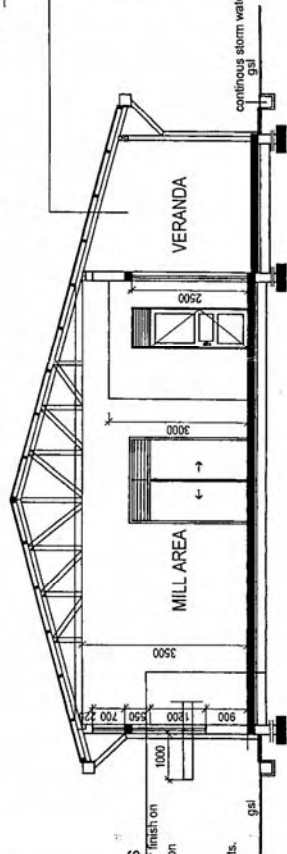
ELEVATION 01



ELEVATION 04

ELEVATION 03

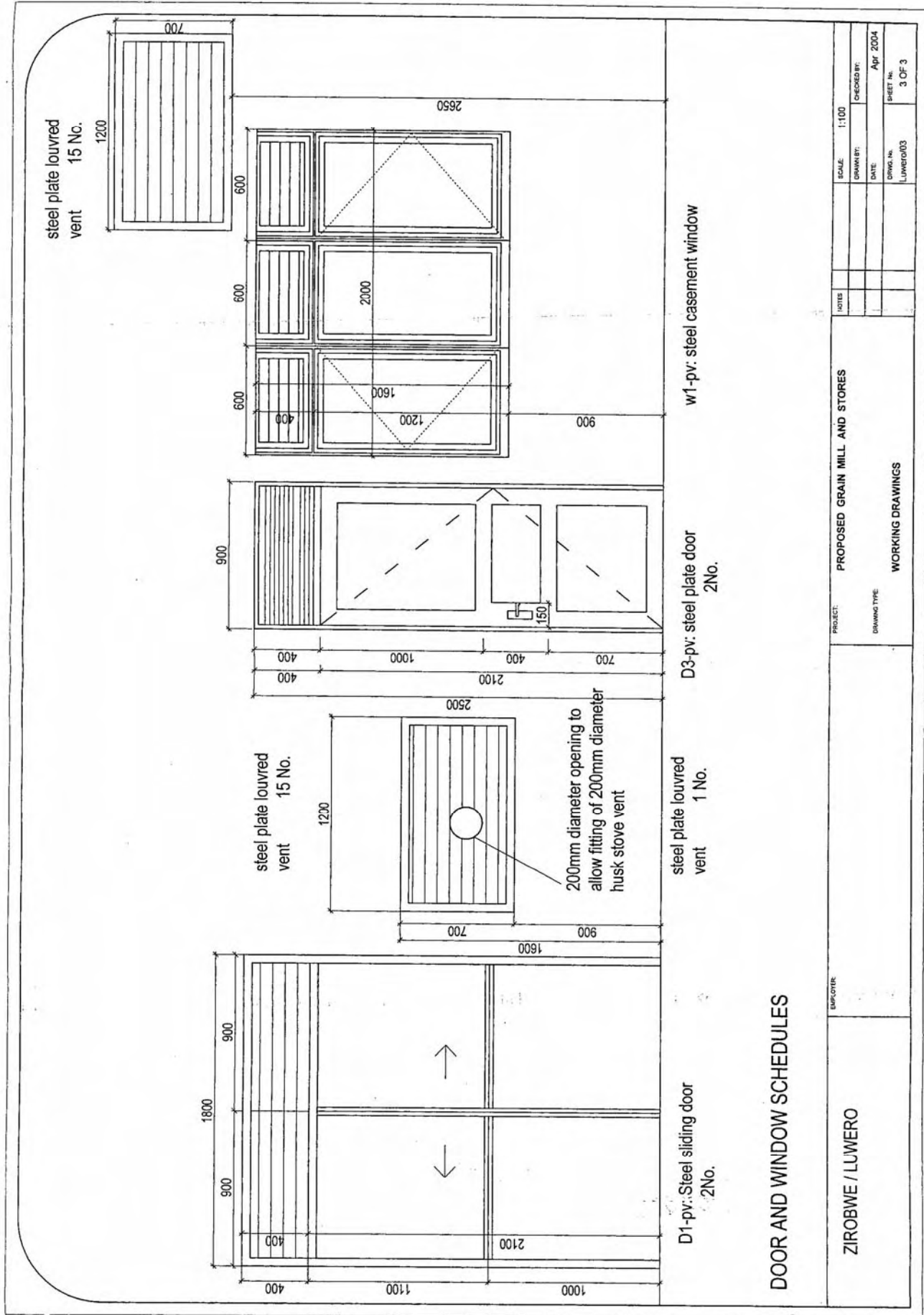
ROOF NOTES:
 15 degrees roof pitch on
 c / sheet ridges on
 c galvanized iron sheets on
 100x50mm purlins rafters, struts, & ties on
 150x50mm double tie beams on
 100x75mm walpoles
 25x250mm fascia boards
 gal iron rain water gutters
 ,100 mm down pipes and
 accessories



FOUNDATION NOTES
 25mm thick cam screed floor finish on
 150 mm thick concrete slab on
 200 mm thick hardcore on
 Well compacted murrum.
 strip foundation to str. eng detls.

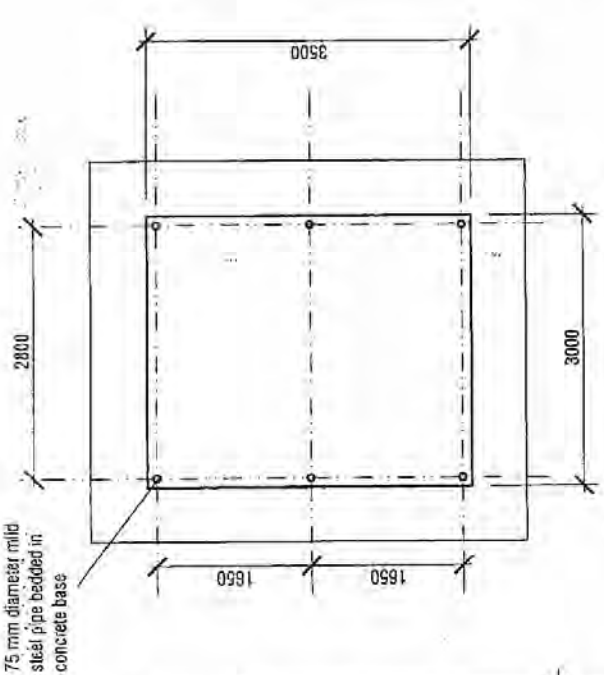
SECTION A-A

EMPLOYER:	ZIROBWE / LUWERO
PROJECT:	PROPOSED RICE MILL AND STORES
DRAWING TYPE:	WORKING DRAWINGS
SCALE:	1:100
DRAWN BY:	
CHECKED BY:	
DATE:	July 2004
DWG. NO.:	LUWERO02
SHEET NO.:	2 OF 3

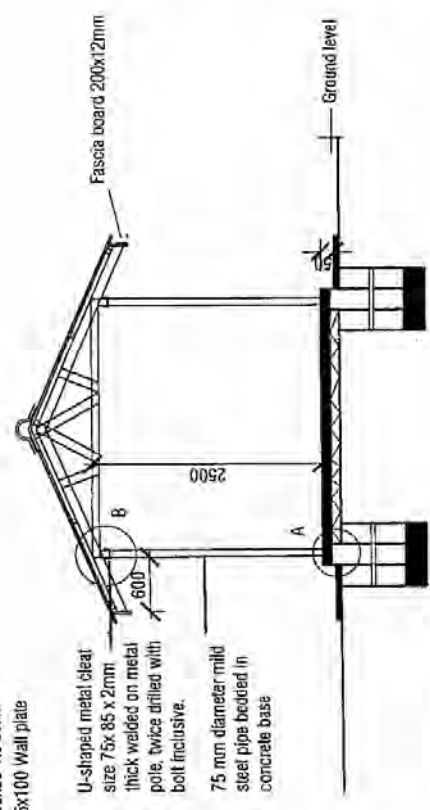


ROOF SPECIFICATIONS Pitch = 22.5

- GI roof ridge on Galv. Corr. Iron sheaths or 150x50 Purlins
- 100x50 Rattlers
- 100x50 Struts and ties
- 150x50 Tie beam
- 75x100 Wall plate



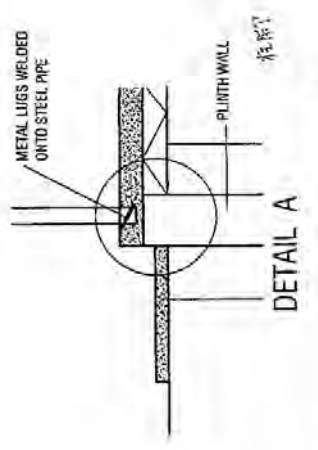
GROUND FLOOR PLAN



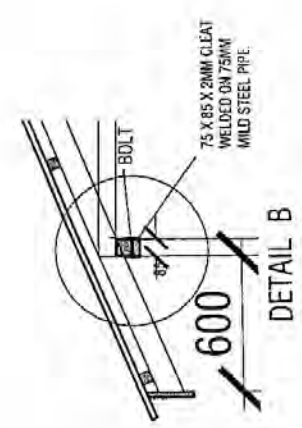
SECTION B-B

FOUNDATION CONSTRUCTION NOTES

- 25mm thick Cement Screed on 100mm thick Conc. Slab (1:3:6 mix)
- 150mm thick Hard core fill on well compacted murrum
- 600x230 Conc Strip foundation min. depth to be determined on site



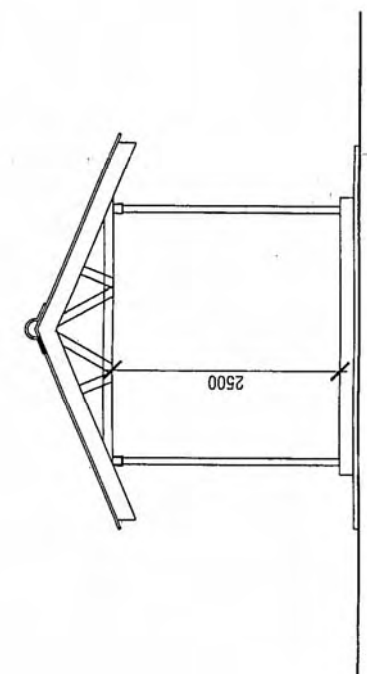
DETAIL A



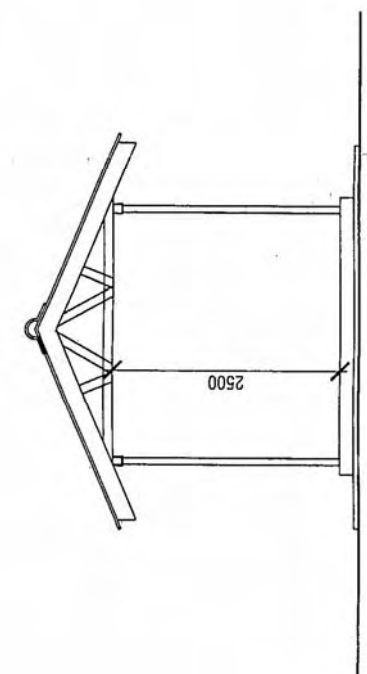
DETAIL B

Issued by	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
M M Khobe	J Husisi	Approved by - date	Date March 2004
		File name	Scale 150, 120
JICA			Proposed Husk Stove Shed
Edition 0			Sheet 1/2

A B C D E F



LONGITUDINAL SIDE ELEVATION



TRAVERSE SIDE ELEVATION

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by M H Kinobe		Checked by J Musisi	Date March 2004
		Approved by - date	Scale 1:50
		File name	
JICA		Proposed Husk Stove Shed	
		Edition 0	Sheet 1/1

1 2 3 4 5 6 7 8

1.2 Bulamogi Rice Processing and Marketing Project

(1) Objectives

- To increase in income of small-scale rice growing farmers through improved post harvest processing.
- To encourage paddy bulking and collective milled rice marketing system.

(2) Activities

- To provide milling services to rice growing farmers' groups under GISPUB Area Cooperative Enterprise (ACE).
- To establish new primary cooperative society for collective post-harvest processing and marketing.
- To strengthen the capacity of the society on proper operation and management of rice mill enterprise
- To disseminate adequate technologies on drying and cleaning of paddy
- To develop and disseminate new technology on effective utilization of by-products

(3) Location

The rice mill facility is built in communal land of Namwiwa Sub-county, Kamuli district located near the center of Namwiwa town. It takes about 1 hour drive from Iganga City.

(4) Organizational Structure and Management System

(4)-1 Background of organization

a. Organization as a parent body

The pilot project in Kamuli is currently in the process of forming a new organization for this rice mill project, whose parent body is an Area Cooperative Enterprise in the target area, called GISPUB.

GISPUB

GISPUB Area Cooperative Enterprise was established in November 2002 by the initiative of Uganda Cooperative Alliance (UCA). GISPUB consists astride two Sub-counties having 8 farmers groups with the total members of 1,143 farmers as of early 2004 (the number of members is still on the increase).

GISPUB has no working experiences in bulking and collective marketing except for cotton and maize in a limited scale.

TableA.1.3 Rice Productions by Member Groups in GISPUB

Group name	Member	Rice farmer	2002/03		2003/04 (planned)	
			Acres	Production (paddy/ton)	Acres	Production (paddy/ton)
Gadumire Primary Society	150	150	319	679	630	1,134
IsiNGO/Local Consultants Primary	150	150	226	339	404	666
Saaka Parish Farmers' Association	75	70	140	210	202	364
Panyolo primary Society	201	194	388	582	820	1,476
Bupyana Primary Society	153	150	351	122	838	1,608
Buyinda Parish Farmers Association	94	94	188	382	624	1,123
Bukonde Parish Farmers Association	117	115	230	345	394	709
Busulumba Primary Society	203	200	402	603	903	1626
TOTAL	1,143	1,123	2,244	3,262	4,815	8,706

b. Establishment process of the new organization

During the course of discussion on strengthening the organization for rice mill operation and management of the pilot project, it was recognized that a separate organization of GISPUB should be formed for sound and transparent management. Therefore, it was agreed that a new primary

cooperative society by rice farmers was to be established under GISPUB.

(4)-2 Current status of organization for the project implementation

a. Organizational structure

GISPUB has organizational structure as shown in the following figure.

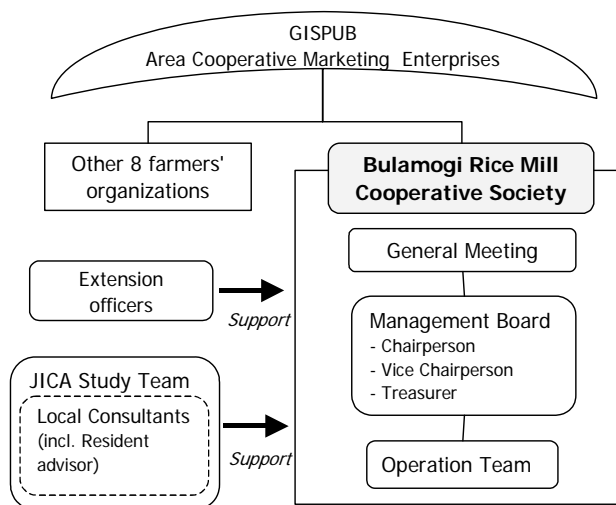


Figure A.1.2 Organizational Structure of GISPUB

a-1. Group Members of the new Primary Society

The new group has confirmed 126 members as of early December 2004 among approximately 1,200 rice farmers under GISPUB. The group members of the project signify individual shareholders of the group as well, by which the members can expect profit sharing besides opportunities to access to rice milling facilities.

a-2. Management Board

The new group selected 6 members for Management Board. The positions as well as the roles of chair, vice chair, treasurer and others are the topics in the next general meeting to be held in December 2004.

a-3. Operation team

Numbers and positions of the team will be determined in accordance with the operation plan.

b. Legal status

The new organization for the pilot project is now under the process of acquiring legal status as a primary cooperative society.

c. Internal rule

Draft internal rule regarding operation, profit and loss sharing, membership status and others will be prepared by Management Board in reflection with members' opinions. This will be submitted in general meeting of the group.

(4)-3 Challenges forward

a. Capacity building of organization

Most of the newly elected Management Board as well as operation team have nearly no experiences on organization management and operation of rice mill.

Therefore, capacity building of all the aspects: management and operation/techniques are necessary. Besides those aspects, capacity building effort also should put stress on moral aspect particularly in money handling to regain trust of farmers in the area.

b. More participants to be involved

It is necessary that the project involves more members for efficient operation and management. Public relation activities through consecutive village-level meetings to explain the project will contribute to more participants involved. All the possible modes such as radio and posters also can be considered.

c. External environment

Severe natural condition, particularly drought in the year 2004, affected agricultural production. Further, as of December 2004, cotton price is estimated to decline to nearly half the price of last year, which has been the major cash crop in the area. Farmers on precarious living expenses seem to hesitate to take any risks for a while.

(4)-4 Further schedule and support from the Study team

a. Training support

The Study team and local consultants provide training to operators by use of the rice mill of the project. During the absence of the Study team, follow-up trainings at the project's facility or private milling facilities also should be conducted.

b. Human resource support

In order to assist smooth management and operation, the Study team assigns a Resident advisor. Although the Resident advisor assists all the aspects of management and operation, in the case of Kamuli, the advisor will emphasize the support to Management Board on financial management and promotion of more participants in the current stage.

(5) Physical Infrastructure

(5)-1 Acquisition of land

The permission was granted to use the land by Sub-county Council resolution, minute No. 38/12/03 dated on 16/12/2003. The place was formerly used as an open market for Namwiwa Sub-county. An old shed as market office exists in the spot nearby.

(5)-2 Investments

• **Building Facility**

The mill house is constructed by bricks with plaster and colored roofing material (see attached photos) having 150 m² space (15x10 meters) of milling and storing area and 84 m² veranda (15x3 + 3x13 meters). The floor is made by concrete slab with 150mm thickness and the eave height is 3.5 meters. An office room having the space of 12.5 m² is provided.

Concrete yard for paddy drying is provided adjoining to rice mill having the space of 200 m².

• **Machines and equipment**

Following machines and equipment are procured.

TableA.1.4 Equipment List for Rice Mill

	Equipment	Specification	Nos.
1	Moisture Meter	For paddy and milled rice	1
2	Cart	Manual operation	2
3	Paddy Cleaner	5 HP engine driven	1
4	Rice mill	One pass type with rubber roll type, Capacity 0.5~0.6ton/hour/paddy 20HP diesel engine driven	1
5	Table scale	For paddy, milled rice weighing、 250kgtype	1
6	Broken rice separator	Sieve (1x0.5Meter) Manual operation	2
7	Husk stove	For cooking (demonstration), bricks construction	1

	Equipment	Specification	Nos.
8	Others	Desk and chairs, Book stand, Brooms, Shovels, Machine base, Pp-sheets, etc.	1 lot

(5)-3 Investment cost

- Mill house: 53.00 million Ush.
- Machines and equipment: 19.10million Ush
- Total: 72.10million Ush.

(5)-4 Construction

- The mill house construction started in the end of August 2004 and was handed over to the Study team at the end of November 2004 after passing the final acceptance inspection by the Study team and GISPUB.
- The workmanship of the construction is generally acceptable.
- All machines and equipment were ordered before/in November. The delivery of rice mill machine ordered to Agro-Sokoni has delayed due to the unexpected time required for import procedure and custom clearance.
- Therefore, the installation of machinery started at the beginning of December and completed on the 10th December. Trail operation and on the job training to the operation team were carried out soon after the installation.

(6) Operation and Management

(6)-1 Management plan

Initially GISPUB was assumed to be responsible on mill operation and management, through the Rice Mill Committee (RMC) to be established as an executive organ. Thus, GISPUB had appointed 7(seven) R M C members. However during the course of mobilization of rice growing farmers by RMC, it was felt that relation between GISPUB and RMC was not clearly defined, particularly on the accounting. To secure an autonomy and transparent accounting on the pilot project on rice processing, it was agreed among concerned parties that a new Primary Cooperative for rice processing and marketing, composed of rice growing farmers, should be established under GISPUB.

Thus, a new Primary Society was formed as a responsible farmers' organization for rice mill operation and management. The preparatory meeting for the society was held on the 6th of December 2004, with the participation of around 80 rice-growing farmers. Proposed draft idea was unanimously approved and tentative members of MB were elected. Through discussions that followed among MB members and the Study team, draft By-Law and internal rules and regulation were discussed for the First General Meeting.

MB consists of 6 members. MB is responsible not only to supervise the operation to be carried out by the employees but also to mobilize rice farmers to supply their paddy to this rice mill according to the mill operation schedule. The delivery schedule of paddy to the rice mill from farmers shall be emphasized and controlled by MB.

MB will recruit an operator and workers for the operation in letter part of December 2004. The Study team including Resident advisor will train them on operation maintenance and others on-the-job-training basis in December.

Paddy production by GISPUB members exceeded 3,000 ton in 2002/03 production year. As the capacity of rice mill is 1,500 ton/year, delivery schedule needs to be well designed and carefully controlled by MB.

(6)-2 Operation plan

In principle, the project aims at collective marketing of rice by member farmers.

The proposed system is as follows:

- i) Each farmer delivers paddy to the rice mill individually or jointly by a group after harvesting, drying and cleaning of paddy.

- ii) Rice mill purchases paddy from the farmers at pre-determined paddy price with the condition of differed payment.
- iii) Paddy is milled and sold to traders/ wholesalers collectively.
- iv) After the sales of milled rice, farmers receive his/her payment in cash within 1 month after the delivery on pre-determined payment day.

However, this differed payment system is not well accepted by farmers in this region, although GISPUB has some experience in bulking of maize and cotton. It will take some time for full understanding of the member farmers and for the capability of MB to adopt and manage efficiently of this system. Gradual shift to the collective marketing shall be realized with consensus of members.

Therefore, initial approach on marketing is basically individual selling in the form of milled rice, where the rice mill provides milling services on milling fee basis.

However, MB provides not only the milling services but also marketing support to farmers through supply of market information and inviting traders to the mill when mill is operated.

This year, lowland rice harvest had started in August and completed in November in this area. As some farmers store paddy in their own houses, the rice mill will start trial operation in December under milling fee basis at first.

The initial operation plan is as follows:

- i) Rice mill, through MB will mobilize farmers to bring paddy to rice mill individually or by a group(s) for milling according to the mill operation plan.
- ii) For transportation of paddy from farms to the mill, ox-cart will be considered for remote farmers. Manual carts are also provided for trial use for the transportation mainly for farmers located not so far from the rice mill.
- iii) The moisture contents will be checked using a moisture meter provided. The operator will demonstrate the level of moisture content of paddy using the moisture meter and will advice proper paddy drying practice to farmers.
If the moisture is over 15%, the operator will instruct the farmer to dry paddy further.
If mixture of foreign materials such as straw, chaffs, string and etc. is high, the operator shall instruct the farmer to clean the paddy before milling.
- iv) Milling fee is fixed same as in Kaliro town, i.e. 40 Ush. per kg of milled rice weight.
- v) Each farmer will sell his/her milled rice to middlemen/wholesalers at the mill. Rice mill will assist such price negotiation for farmers whenever deemed appropriate.
- vi) Rice bran from rice milling will be collected and sold as animal feed in Jinja or Kampala.
- vii) Husk from rice mill shall be burned as cooking fuel by Husk Stove provided. Husk ash after burning shall be utilized for soil improvement material in their garden.
- viii) The maintenance of the machines shall be carried out by operator according to the manual provided for achieving good milling performance and long life of machines.
- ix) As the white rice volume of individual rice growers is a few hundred kilograms only (2-3 bags of 100kg each), the price negotiation with middlemen for sale will be tough unless bulking or standard quality control by farmers are made. MB supports farmers for group activities for such bulking or quality control if so required.

There exists big difference in prices of milled rice at supermarkets in Kampala. For example, Kibinba Tilda Rice supplies small broken rice package at the retail price of 1,000 Ush./kg while that of high quality (without broken grain) at 2,500 Ush./kg.

MB shall try to capture such attractive rice market through its activities steps by steps.

As broken rice separating tray-sieves are provided to the mill, farmers are encouraged to utilize this device for increase the sales price of their product.

The Resident advisor from the Study team will support MB in operation and management.

The operation will temporary close in January 2005 and resume in August 2005 when the harvest season will start.

Schematic flow diagram of paddy purchase and differed payment system is attached in annex 2 and

3.

(6)-3 Financial Operation

Due to the reorganization of the farmers' group as a primary cooperative society, initial fund collection is going on. These will cover the expenses of fuel, oil and wages.

The estimated balance and the cash flow in the year 2005 are as follows.

(Assumption)

1. Annual processing amount of paddy: 500MT
2. Milling fee :40 Ush./kg of milled rice
3. Milling recovery rate: 65%
4. Depreciation: Building 0.00Ush. and Machines for 6years
5. Rice bran: 8% of paddy weight, with selling price of 50 Ush./kg

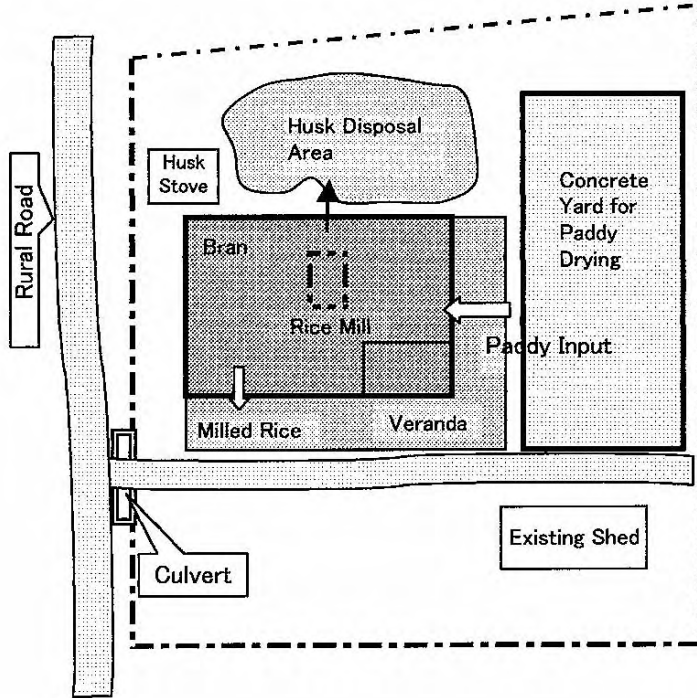
(Operation cost)

1. Repair fee: 5% of the machine per year
2. Fuel fee: 2lit./hr @ 1,510 Ush.
3. Oil fee : 3% of fuel fee
4. Rubber roll : 50MT/pair,
5. Milling screen:100MT/pair,
6. Wages: Mill operator 6 months
Workers 2. 6 months
7. Miscellaneous: 10% of the above cost
Total: 7.272 million Ush

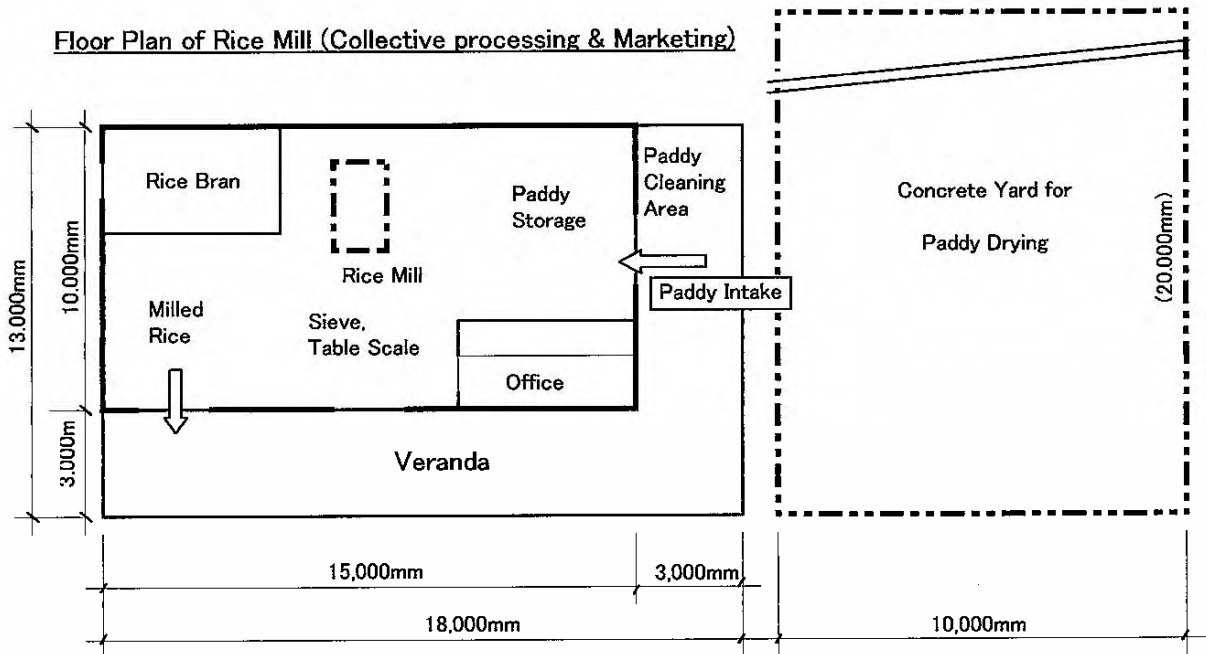
(Income)

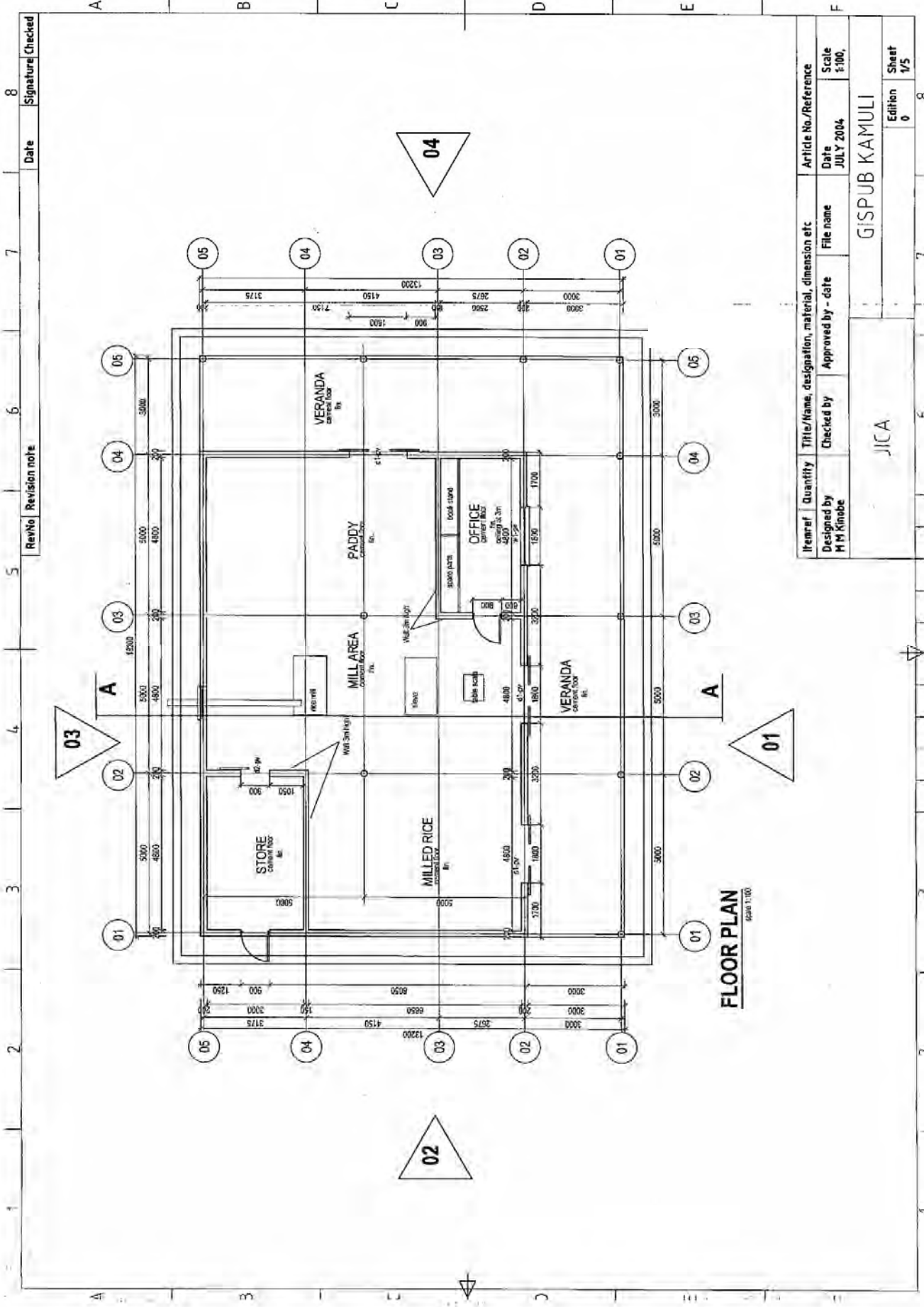
1. Milling fee: 500MT@ 40Ush/kg x0.65
2. Rice bran: 500MTx0.08 @ 50Ush./kg
Total : 15.00 million Ush.
Balance : 7.728 million Ush.

GISPUB Site Map & Layout Plan

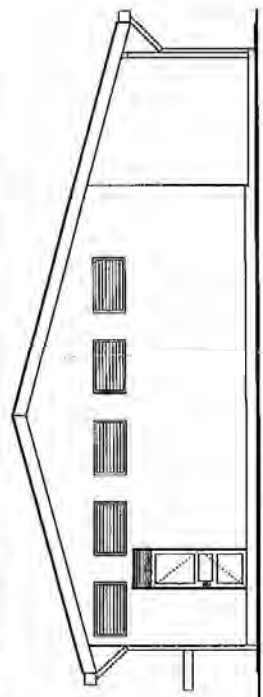


Floor Plan of Rice Mill (Collective processing & Marketing)

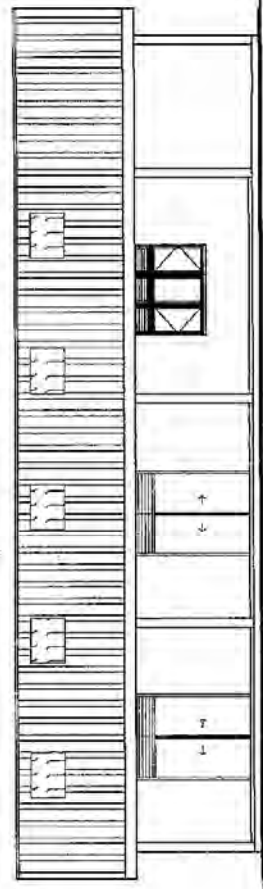




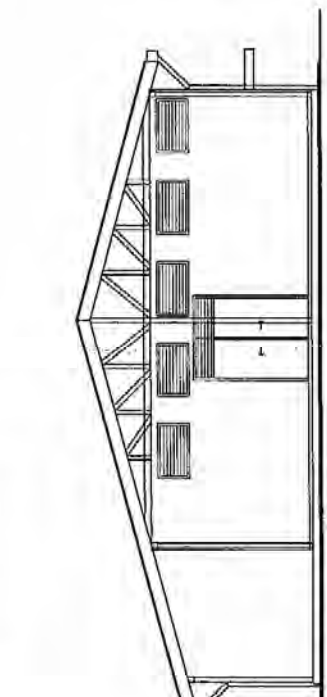
8	Signature Checked
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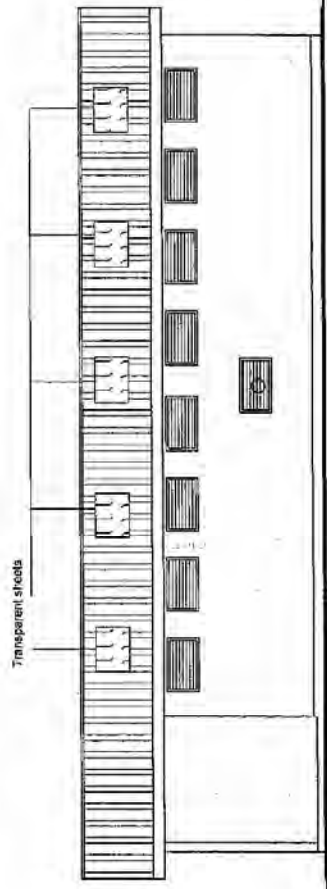
ELEVATION 01



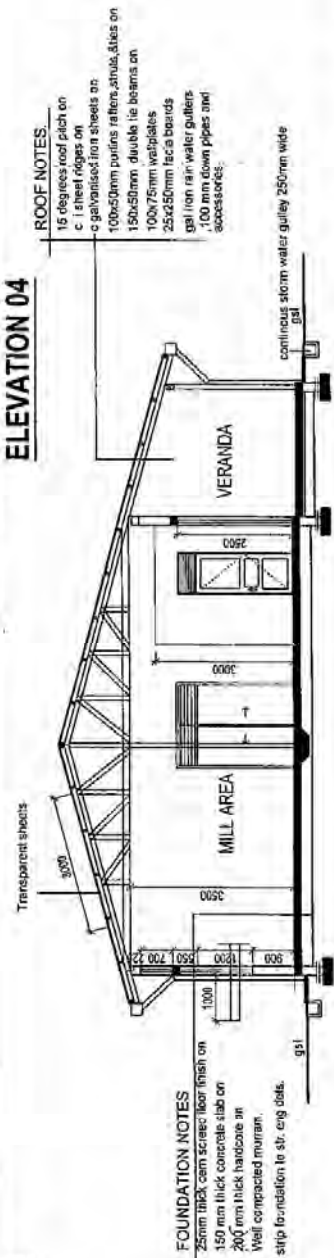
ELEVATION 02



ELEVATION 03



ELEVATION 04

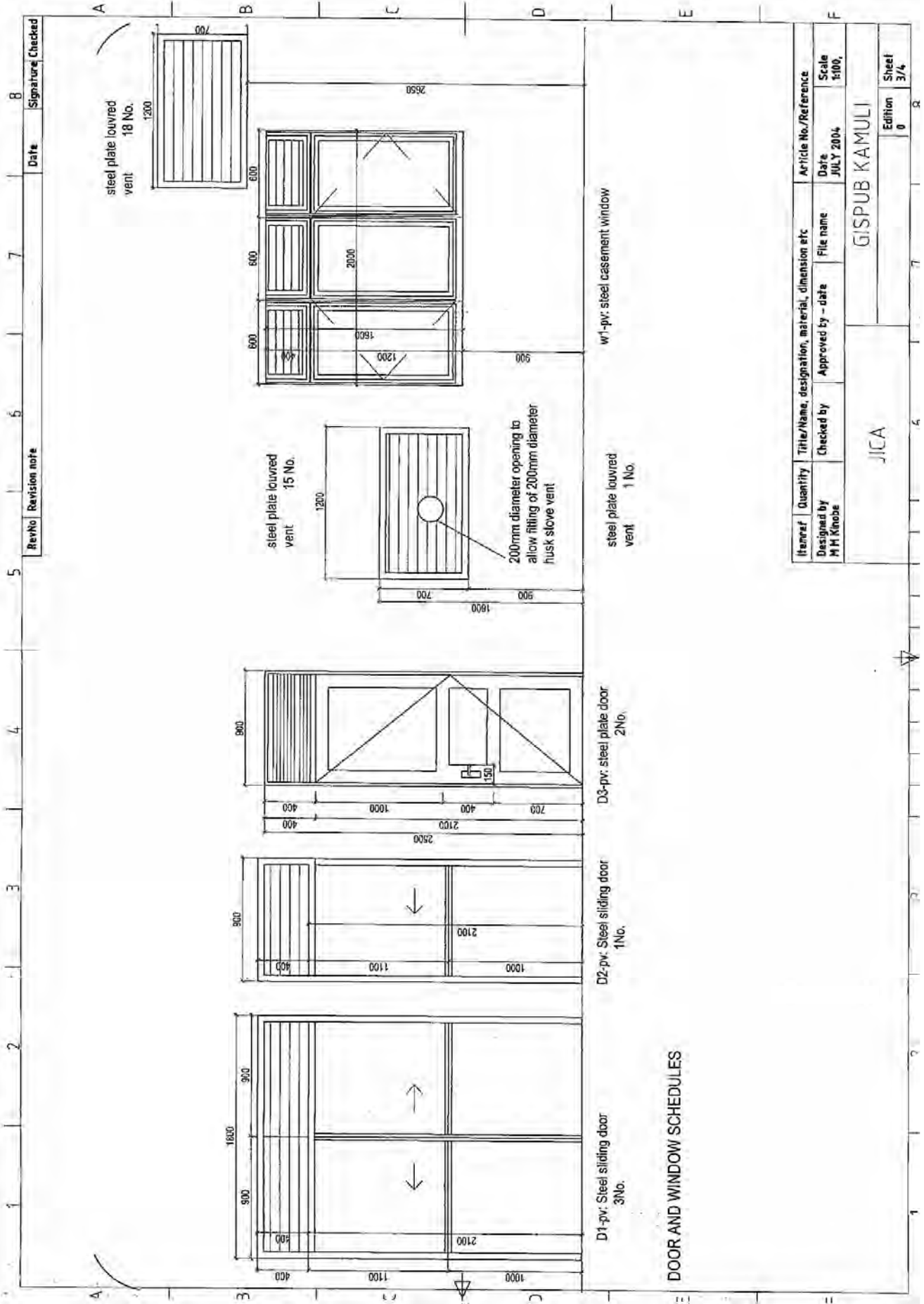


SECTION A-A

ROOF NOTES:
 15 degrees roof pitch on
 c. lateral ridges on
 c. galvanised iron sheets on
 100x50mm porous rafters, struts, ties on
 150x50mm double tie beams on
 100x75mm wallplates
 25x250mm fascia boards
 gal/iron air/water outlets
 100 mm down pipes and
 accessories.

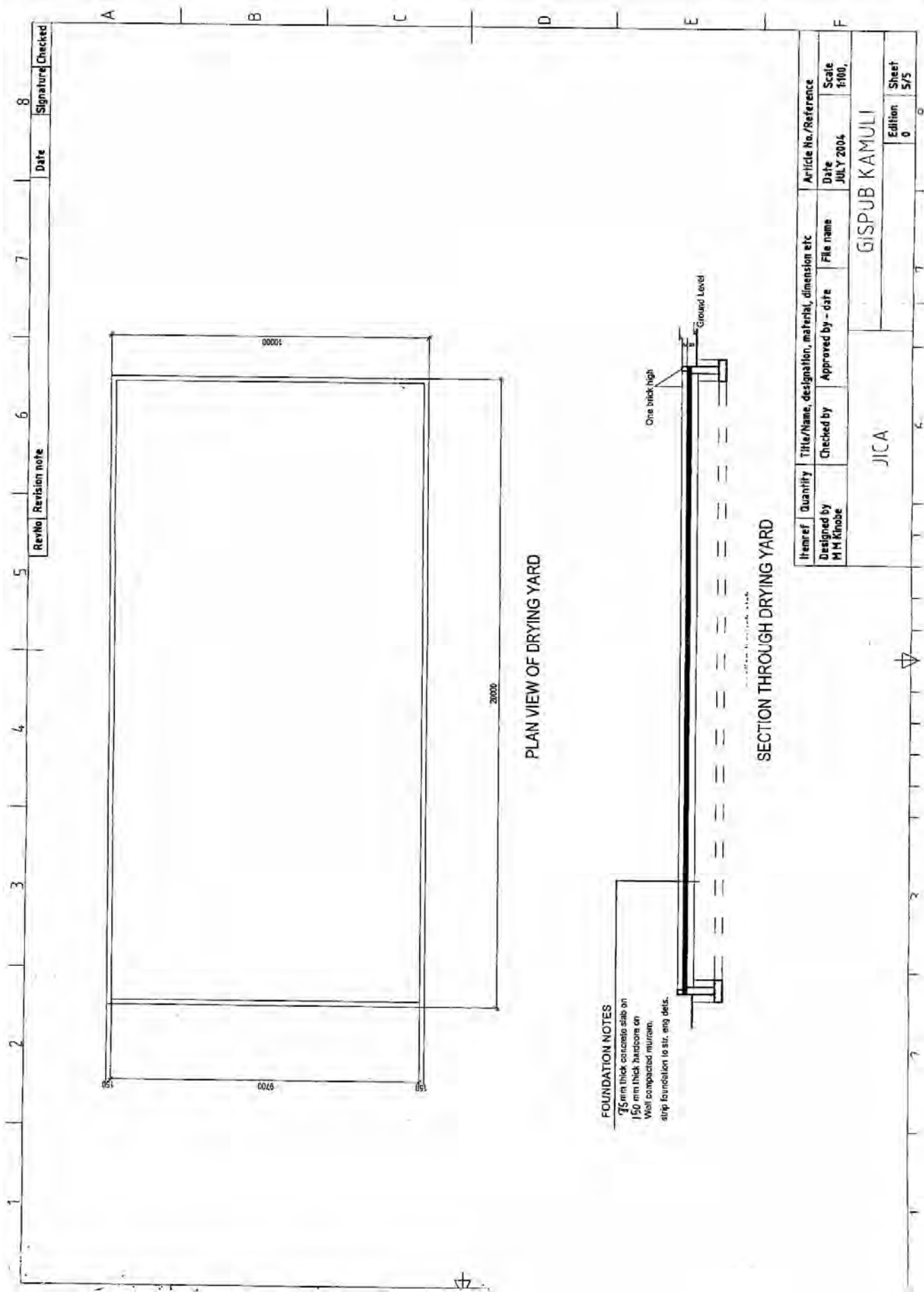
FOUNDATION NOTES
 25mm thick cam screws floor finish on
 150 mm thick concrete slab on
 200 mm thick hardcore on
 well compacted murrum.
 strip foundation to str. cog dots.

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by H M Kinobe	Checked by	Approved by - date	Date JULY 2004
			Scale 1:100.
JICA		GISPUB KAMULI	
		Edition 0	Sheet 2/4



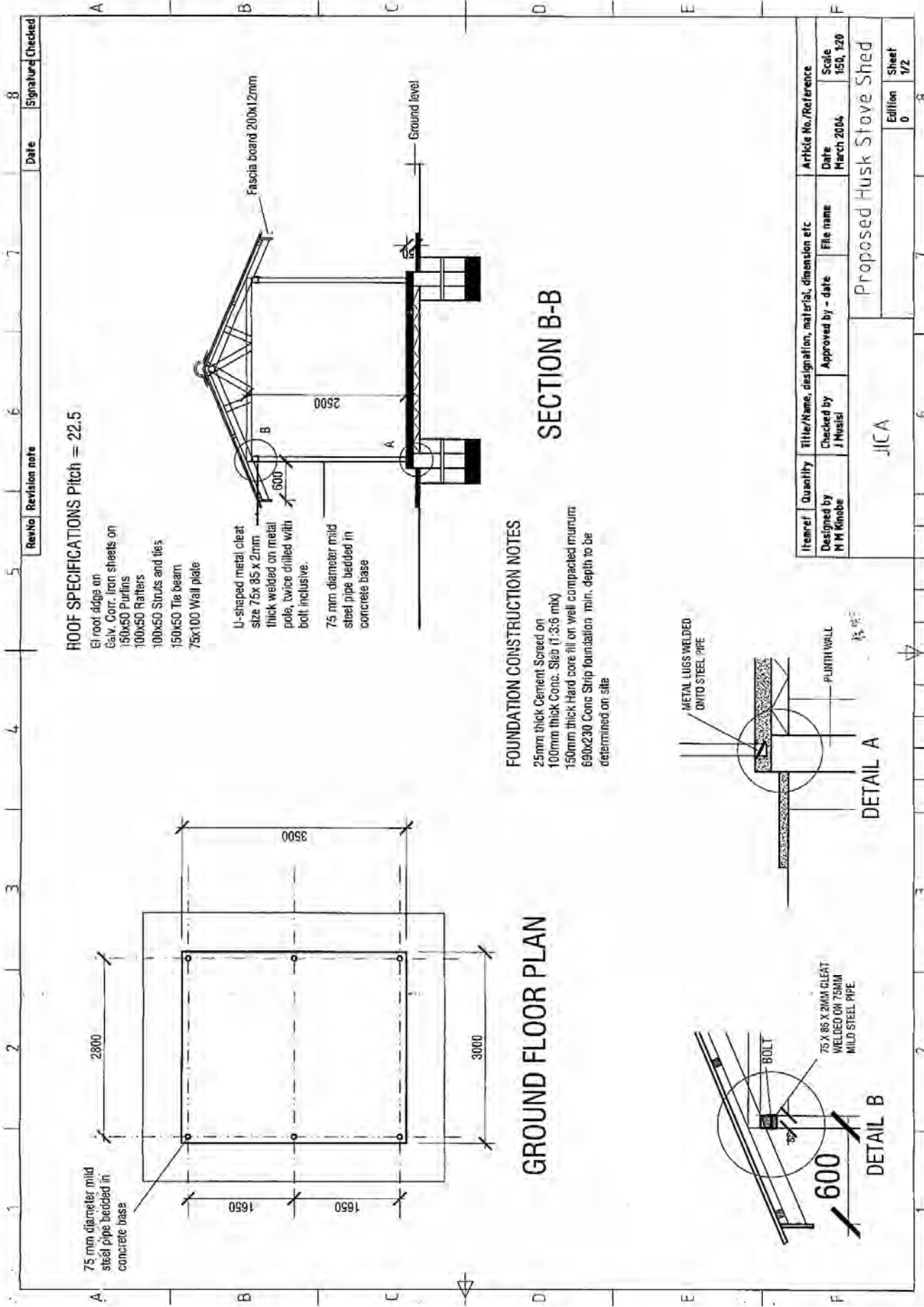
Item No.	Quantity	Title/Name, designation, material, dimension etc.	Article No./Reference
15	15	steel plate louvred vent	
18	18	steel plate louvred vent	
3	3	Steel sliding door	
1	1	Steel sliding door	
2	2	steel plate door	
		w1-pv: steel casement window	

Designed by M H Kinobe	Checked by JICA	Approved by - date GISPUB KAMULI	Date JULY 2004	Scale 1/100
Edition 0			Sheet 3/4	



8	Signature	Checked
7	Date	
6	Revision note	
5	RevNo	

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by	Checked by	Approved by - date	Date
MH Kinobe	JICA		JULY 2004
			Scale
			1:100
			File name
			GISPUB KAMULI
			Edition
			0
			Sheet
			5/5



ROOF SPECIFICATIONS Pitch = 22.5

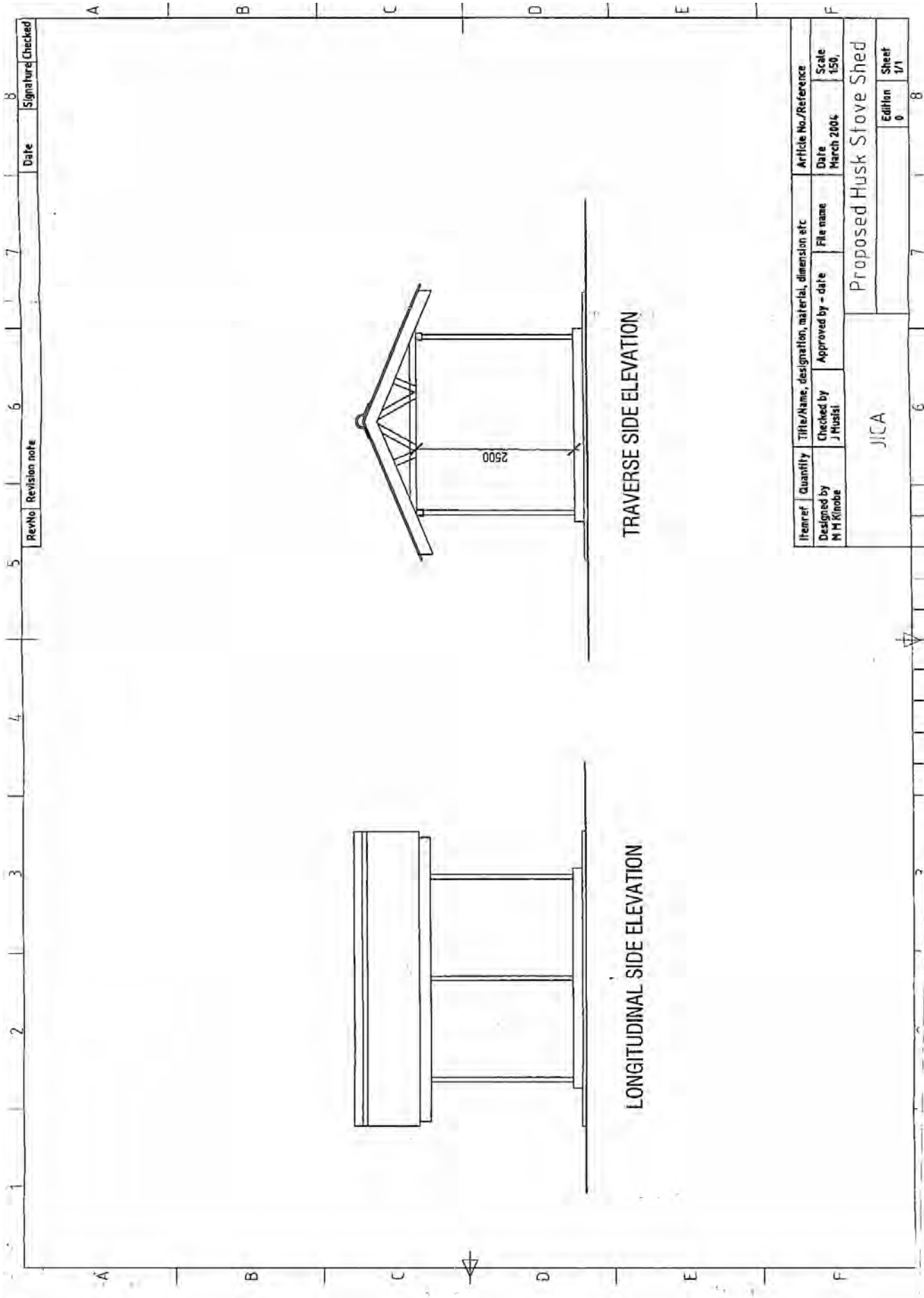
- 61 roof ridge on Galv. Corr. Iron sheets on 150x50 Purlins
- 100x50 Rafters
- 100x50 Struts and ties
- 150x50 Tie beam
- 75x100 Wall plate

- U-shaped metal cleat size 75x 85 x 2mm thick welded on metal pole, twice drilled with bolt inclusive.
- 75 mm diameter mild steel pipe bedded in concrete base

FOUNDATION CONSTRUCTION NOTES

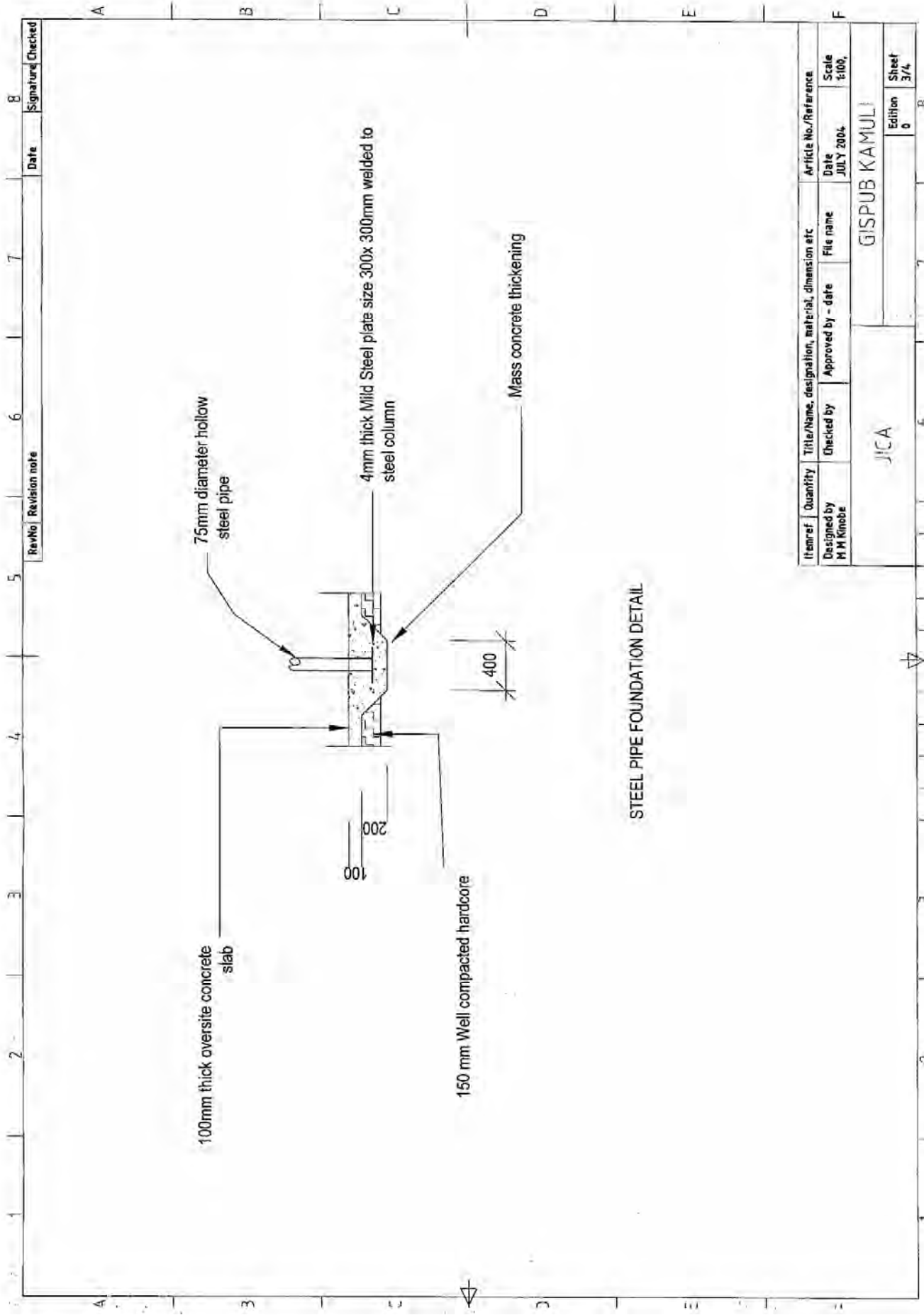
- 25mm thick Cement Screed on 100mm thick Conc. Slab (1:3:6 mix)
- 150mm thick Hard core fill on well compacted murrum
- 600x230 Conc Strip foundation min. depth to be determined on site

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by	M M Kinobe	Checked by	J Musisi
Approved by - date		File name	
Date	March 2004	Scale	150, 1/20
JICA		Proposed Husk Stove Shed	
Edition		Sheet	
0		1/2	



RevNo	Revision note	Date	Signature	Checked
5				
6				
7				

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by M M Kinobe	Checked by J Musti	Approved by - date	Date March 2004
JICA		File name	Scale 1:50
Proposed Husk Stove Shed		Edition	Sheet
		0	1/1



STEEL PIPE FOUNDATION DETAIL

Rev/No	Revision note	Date	Signature	Checked
5				
6				
7				
8				

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by M H Kinobe	Checked by JICA	Approved by - date JICA	Date JULY 2004
		File name GISPUB KAMULI	Scale 1:100
		Edition 0	Sheet 3/4

1.3 ACAPROMA Cassava Flour Production and Marketing Project

(1) Objectives

Pilot Project aims at verifying the viability of collective processing and marketing of high quality cassava flour.

The project also aims at introducing a package of processing technology for high quality cassava flour production appropriate to the rural condition.

(2) Activities

High quality cassava flour production by farmers' organization

Collective marketing of cassava flour

(3) Location

The site is located at shore of Lake Kyoga in Nakasongola district, astriding two Sub-counties of Luwanpanga and Lwabyata.

(4) Organization Structure and Management System

(4)-1 Background of organization

a. Organization as parent body

The project in Nakasongola has three key organizations, which are two of Community Based Organizations (CBO), Kiwembi Farmers Group and Eyebikire Kisalizi Women's Group, and Namika Primary Cooperative Society. The project has proceeded by forming a new organization consisted of these three parties.

Kiwembi Farmers Group

The group formed in 2003 as CBO has 63 members in total as of December 2004. The group has held no functions more than as a contact point to receive material support such as seeds and fertilizer from the government. No commercial activities by the group have been conducted yet.

Eyebikiire Kisalizi Women's Group

The women's group as CBO has now counted 56 members, whose number has been steadily on the increase since its establishment in 2002. Most activities by the group are mutual aid works within their communities on child education, support for the elderly and others, which exclude commercial activities.

Namika Primary Cooperative Society

There are 62 members in total in the group as of December 2004. Although the group has the status of primary cooperative society allowing commercial activities, experiences of commercial activities are limited.

b. Establishment process of the new organization

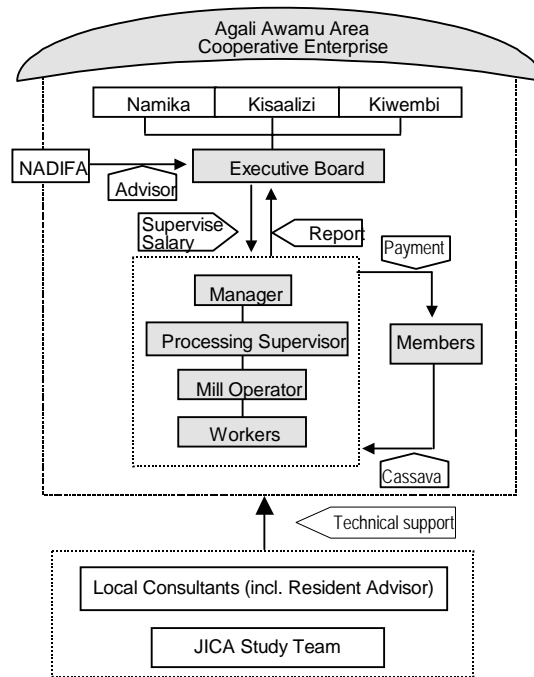
In the planning meeting for the pilot project, the above 3 groups agreed to establish a new organization as an independent body for the project as an Area Marketing Cooperative Enterprise. Thus the new organization called Agali Awamu Cassava Processing and Marketing Cooperative Society (ACAPROMA) completed its registration in July 2004.

(4)-2 Current status of organization for the project implementation

a. Organizational structure

a-1. Organizational structure

ACAPROMA has organizational structure as shown in the following Figure A.1.3.



FigureA.1.3 Organizational Structure of ACAPROMA

a-2. Members of ACAPROMA

The new ACAPROMA has 3 member groups covering 181 farmers in total of the three groups.

a-3. Executive Board and Operation team

Supreme organ of ACAPROMA is the general meeting. Only the meeting holds a power to make final resolution of the agendas arisen in the Cooperative. Executive Board being in charge of management of operation is also elected only in the general meeting.

Executive Board of the ACAPROMA consists of 9 members, 3 members each from 3 group/society .

Roles of Executive Board and operation team are as follows:

Actors		Role/Job (Way of recruitment)	Salary/wage
Executive Board		Supervise operation, financial control, operation planning, budget planning. Prepare settlement of account, and recruit personnel	Sitting allowance (3,000 Ush./month)
Operation Team	Manager	Take responsibility for operation, administration and accounting.	5,000 Ush./day + lunch
	Casher (Treasurer of ACAPROMA)	Take responsibility for cash handling (working hours will be 2-3 hours per day)	2,000 Ush./day + lunch
	Processing Supervisor	Supervise processing works, store keeping, quality control	4,000 Ush./day + lunch
	Machine operator	Operate milling machine and chipper, maintenance, record keeping for receiving.	3,500 Ush./day + lunch
	Machine operator trainee		2,000 Ush./day + lunch
	Workers	Assist chipping, milling and packing work. Carry out drying work and other physical works.	2,000 Ush./day + lunch
	Collection sub-groups	Deliver fresh cassava, then peel and wash. About 20 farmers per group	Premium price + 17 Ush./kg for peeling & washing

Other functions not mentioned here will be discussed by the general meeting such as audit system. (Working hours will be 2-3 hours per day)

b. Legal status

ACAPROMA is registered as the Area Marketing Cooperative Enterprise, and opened its own bank account.

c. Internal rule

Draft internal rule regarding operation and others now reached the final phase by Executive Board. This will be submitted to the general meeting for resolution, scheduled to be held before the end of year 2004.

(4)-3 Capacity building of organization

(Management aspect)

Executive Board with others from the groups received training course, “Start Your Business” on business skills covering financial planning, costing, marketing and others. The training showed positive results in improvement of basic skills of the board and contributed to encourage participants towards more active participation in the project.

Since basic training on management ended, venue for capacity building of management will be transferred to the actual business field though OJT style. Many aspects ranging from operation to marketing have to be learned with the assistance of local consultants.

(Operation/Technical aspect)

Members have already obtained basic skills corresponding to each procedure of cassava flour from raw condition including machine use through training opportunities offered by the Study team.

As well management aspect, capacity building of operation and techniques will be moved to OJT style.

(4)-4 Further Schedule and Support from the Study team

In order to assist smooth management and operation particularly in the initial stage, the Study team assigns a Resident advisor. The Resident advisor engages in all the aspects of management and operation and also functions as a liaison between the ACAPROMA and the Study team.

(5) Physical infrastructure

(5)-1 Acquisition of land

The land for cassava processing facility is located in Kisalizi parish and was owned by a member. ACAPROMA purchased this land of about one (1) acre at the cost of 750,000 Ush. in the middle of year 2004.

(5)-2 Investments

Building

Building of concrete slab floor with plaster, burnt brick wall and colored iron sheet roofing, has total floor area of 265m², consisting of 6 parts/rooms as follows.

Peeling & washing area	126m ²	13.5 x 9.3m
Chip store	19m ²	5.1 x 3.7m
Store	9m ²	2.5 x 3.7m
Office	9m ²	2.5 x 3.7m
Packing & Machine (Milling) room	29m ²	3.8 x 7.6m
Flour store	29m ²	3.8 x 7.6m

Utilities

1000 liter water tank for rain water catchments	x 2
Waste water channel and soak away pit	x 1

Machines and equipment for cassava processing

Major procured items are shown below.

TableA.1.5 Major Equipment Procured/Installed

Work process	Items
Collecting	Ox-cart
Peeling & washing	Aluminum pans, knife, stools
Receiving	Platform scale
Chipping	Engine-drive chipper, manual chipper, work table
Material handling	2-wheel cart, collection hopper, trolley
Drying	Solar dryers (drying tray area 100m ²), blue sheets
Milling	Milling machine w/diesel engine, cyclone, service tools.
Packing	Portable sewing machine, portable generator
Storing	Pallet, shelves
Admin. & Marketing	Desk, shelf

(5)-3 Investment cost

Building facility (includes utilities): 58.65 million Ush.

Machines and equipment: 19.50 million Ush.

Total: 78.15 million Ush.

(5)-4 Construction

Construction works started on 25 August 2004 and completed on 9 November 2004. Workmanship of the construction was fairly good, though there were minor improvement works required.

The building facility had been handed over on 12 November 2004.

(6) Operation and Management Plan**(6)-1 Training**

Particular emphasis has been placed on training, as the project activities were not familiar to the member farmers.

Following are the programs prepared in February 2004 and their progress.

TableA.1.6 Training Plan for Cassava Flour Processing

Subjects	Trainee	Trainer	Type	Progress
Bookkeeping & Accounting	Manager	Private institution	Intensive course	Looking for adequate program
	Manager, Executive Board	NGO/Local consultants	OJT	
Record keeping	Manager, Processing Supervisor, Operator	NGO	OJT	
Store management	Manager, Processing Supervisor, Operator	NGO	OJT	
Business management & planning	Manager, Executive Board	NGO	OJT	Partly covered by SYB Training
Marketing	Manager	NGO	OJT	
Processing operation	Operation unit	JICA, NGO	OJT	
Processing operation: work procedure and quality requirements	All member	Manager, NGO	Explanatory, OJT	Explanatory training was completed.
Ox-cart operation *	Selected members	Local Ox trainer	Intensive course(s)	

* This program will be implemented if the feasibility of collective usage is observed in a trial use.

Among the subjects above, following two trainings have been conducted.

a. SYB (Start Your Business) training

5-days course SYB training was conducted from 9 November to 13 November 2004 at the project site by ILO-SIYB Master Trainer, Mr. David Mulya, Consult (U) Ltd. Number of participants was 16 people with 9 women. Major subjects covered by the training are; Business idea, SWOT

analysis, Marketing plan, Required staff, Costing, Financial planning and Start-up capital.

b. Processing training

For the purpose to familiarize all the members with processing operation/work procedure, trainings were conducted from 23 to 25 November. As many members participated, same program was repeated 6 times in 3-days. Training consisted of lecture and practice by the local consultant.

(6)-2 Improvements and modification of machines/equipment

a. Equipment for sun drying

Through solar dryer tests twice at the project site with participation of the Executive Board members of ACAPROMA, the design and materials to be used for dryer fabrication were finalized on August 2004. Site for solar dryers and open drying yard was cleared and leveled through voluntary work by the members after the completion of the facility construction during November. Weed control (spray of herbicide) was postponed until the early December because of weather (rain).

One (1) unit of solar dryer (equip with 10 m² 2 drying tray) was installed in November for the processing training. Other nine (9) units were fabricated through the voluntary work by the operation unit staff recruited (Processing Supervisor and three casual workers) with guidance of the Resident supervisor in early December.

Number of solar dryers will be increased in parallel to increased production. Improvement works on the solar dryer and the open drying yard will also be continued.

b. Ox-cart

Transportation of cassava is a serious issue for farmers. Ox-cart is new to the people in the area and people's interest is observed high.

Ox-cart of SAIMMCO LTD in Soroti was tested on August 2004 at the site. It became clear that smaller/lighter cart needs to be fabricated and, specific oxen need to be trained for cart-pulling although those were trained for plowing. Smaller/lighter cart was designed by local consultant and fabricated in October 2004.

A pair of oxen was provided by the members for oxen-training. Training by the local ox-trainer, who was trained by SG2000, commenced on 15 November. Training period is scheduled for three weeks. After the training, a test will be carried out to confirm that they can transport cassava to expectation.

At present time, all the collecting groups are hoping to use it. Way of collective (share) usage has been formulated through the discussion with the Executive Board members.

c. Modification of manual chipper to improve the workability

Several modifications and tests were carried out with the cooperation of the fabricator (TONNET, Kampala) during September 2004. To prevent scattering of chips and to reduce un-chipped volume, anti-scattering side cover was attached and feeder part was improved.

d. Material handling equipment

Following equipment were designed by the JICA Study team and fabricated by local workshops.

- Manual 2-wheel cart for carrying wet/dried chips in the facility
- Hopper for dried chip collection

Necessity of additional or new type of material handling equipment will be determined through the study on work efficiency of the actual processing operation.

(6)-3 Market sounding

Market soundings were carried out to flour mills and pan-cake maker in Kampala in April and September 2004 with samples produced by tests operation at the site. General reaction was seemed positive with some comments on the specification of the flour. Trial to use cassava flour for chapatti making was conducted, with different mixing-ratios (10-30%) of composite flour at the project site in August 2004. 10 and 20% gave good results for chapatti.

Those different ratios of composite flours were tested by some chapatti makers. Serious business talks shall be made at the time of start up. Marketing advisor (local consultant) will assist the marketing activities of the ACAPROMA.

(6)-4 Immediate actions for start-up of Business Operation

The meeting between the Study team and the Executive Board members was held on 01 December 2004, to discuss the required immediate actions as follows for start-up the business operation.

Schedule of Action - Cassava Processing Project / Nakasongola as at 10 Dec. 2004, Modified version

Action	Responsible person	Dec. 2004					Jan. 2005
		1	6	13	20	27	3
Trading license							
Collect information	Mr. Magodo	X					
Application	Manager						
Drying yard							
Herbicide spray (1st)	Manager	X					
Herbicide spray (2nd)	Manager			X			
Planting Grass	Manager	< April 2005, Detail planning will be in Feb/Mar. 2005 >					
Planting Hedge	Manager	< April 2005, Detail planning will be in Feb/Mar. 2005 >					
Solar dryer							
Procure bricks (450pcs.)	Resident advisor						
Fabrication training	JICA		X				
Fabricatoin	Resident advisor / Operation unit staff						
Mill operator							
Recruitment	Exective board						
Training (arrangement)	JICA						
Training (implementation)				X			
Documentation							
Accounting form	JICA/Local consultant						
Operation rules	JICA/Local consultant						
Determination of buying price	Exective board						
General meeting				X			
Start up the operation						X	

* Note: The first schedule prepared on OL-DEL was corrected according to the progress of activities.

At present time, it is supposed that the date for start up of operation is 27 December 2004 (Monday). The date will be concluded in the general meeting held on 18 December.

Documentation works

Prior to the start-up, manuals for the operation shall be documented systematically. Simplified cost accounting system will be used in the project. Unique record keeping forms, such as good received daily summary, processing summary monthly cost accumulation sheet need to be designed.

This work is now ongoing by the local consultant and the Study team, expected to complete before the Dec-18 General Meeting.

General meeting

Following matters shall be discussed and concluded in the meeting.

- Personnel of the operation unit, including roles, responsibility and salary/wage
- Operation plan (systems/rules)
- Cash management and Transparency
- Production plan and budget for initial 3 months
- Collection schedule

Regarding the production plan, production volume in the initial stage will be at 500kg per day, which is 25% of the full-scale level, according the plan in ITR (2). Production volume will be increased gradually according the performance and it shall reach to the full-scale operation level in Dec-2005.

(7) Future works/ Future Activities

(7)-1 Intensive on-the-job training during the start-up period

At the beginning of the operation, intensive OJT (support) will be provided to the operation unit staff by the local consultant to ensure the smooth operation as well as to strengthen the capability of the staff.

(7)-2 Technology Test Components

Following test activities shall be implemented after starting operation.

Collective usage of ox-cart

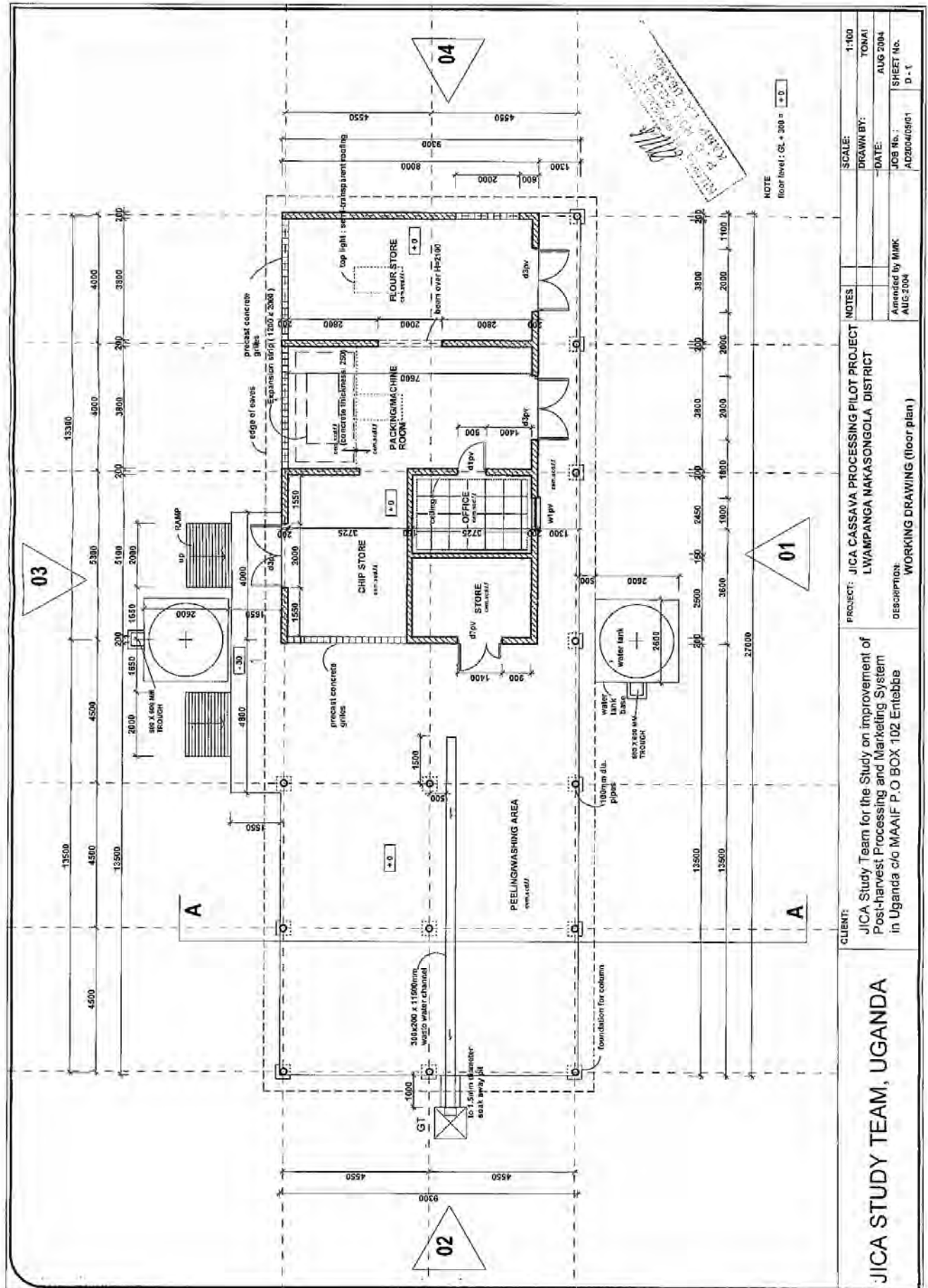
Purpose of test	Identify the feasibility/system for collective utilization of ox-cart(s) for collection of cassava
Contents of test	Trial use of ox-cart to study the carry efficiency (speed, live load, etc.)
	Discuss about better system (feeding arrangement, location of keeping cows at night, operator, ownership of trained cows, time schedule, cost for operation, etc.)
Time of implementation	Immediately after completing the ongoing oxen training (Dec.-Jan. 2005)

Improvement of Material-Handling System

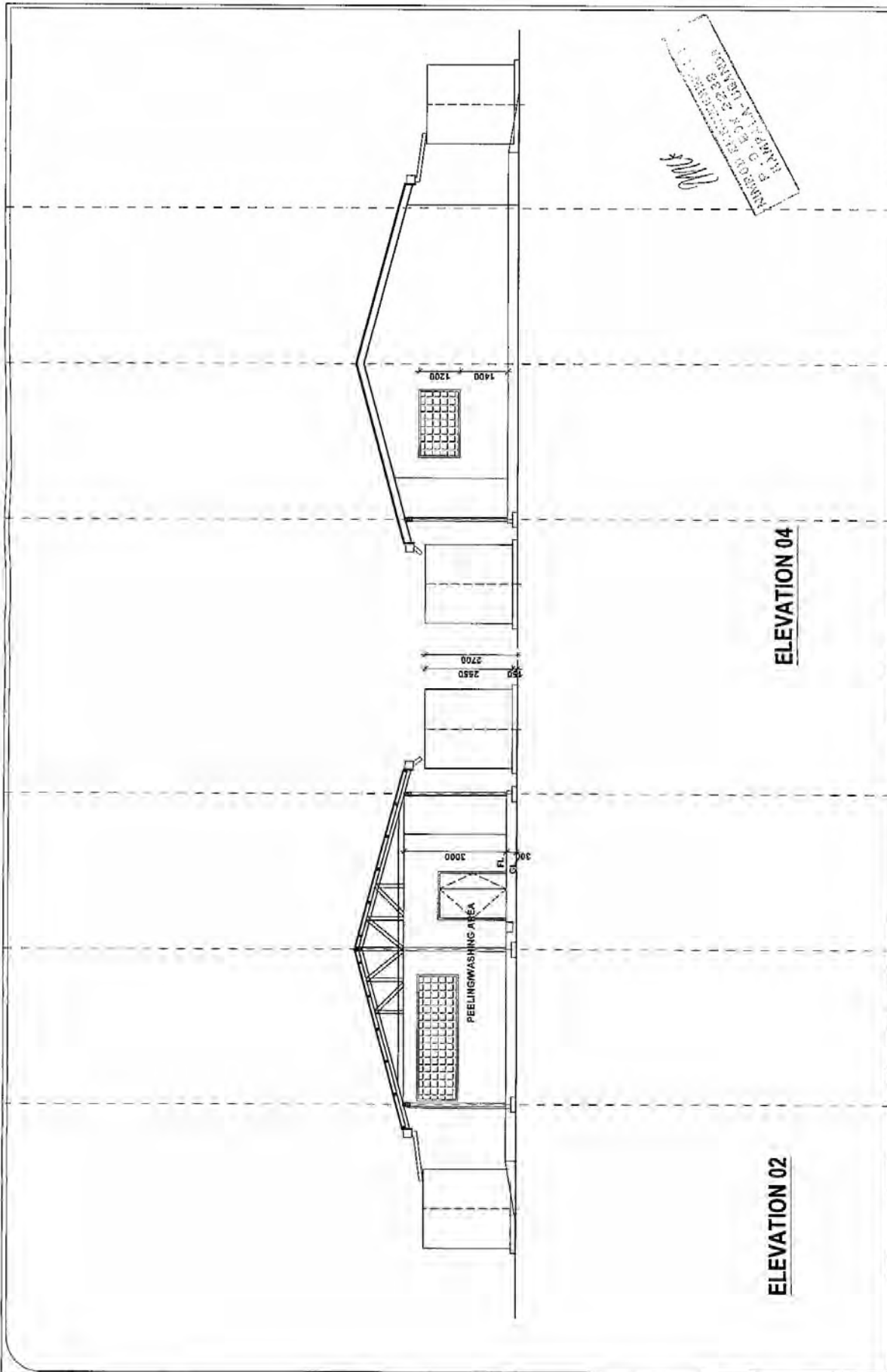
Purpose of test	Improve the material handling equipment in terms of quantity, type, and specification to increase work efficiency.
Contents of test	Measure the work speed of peeling, chipping & drying.
	Design the modified work procedure/method. Design and procure the necessary tools/equipment.
Time of implementation	February 2005

Utilization of peels

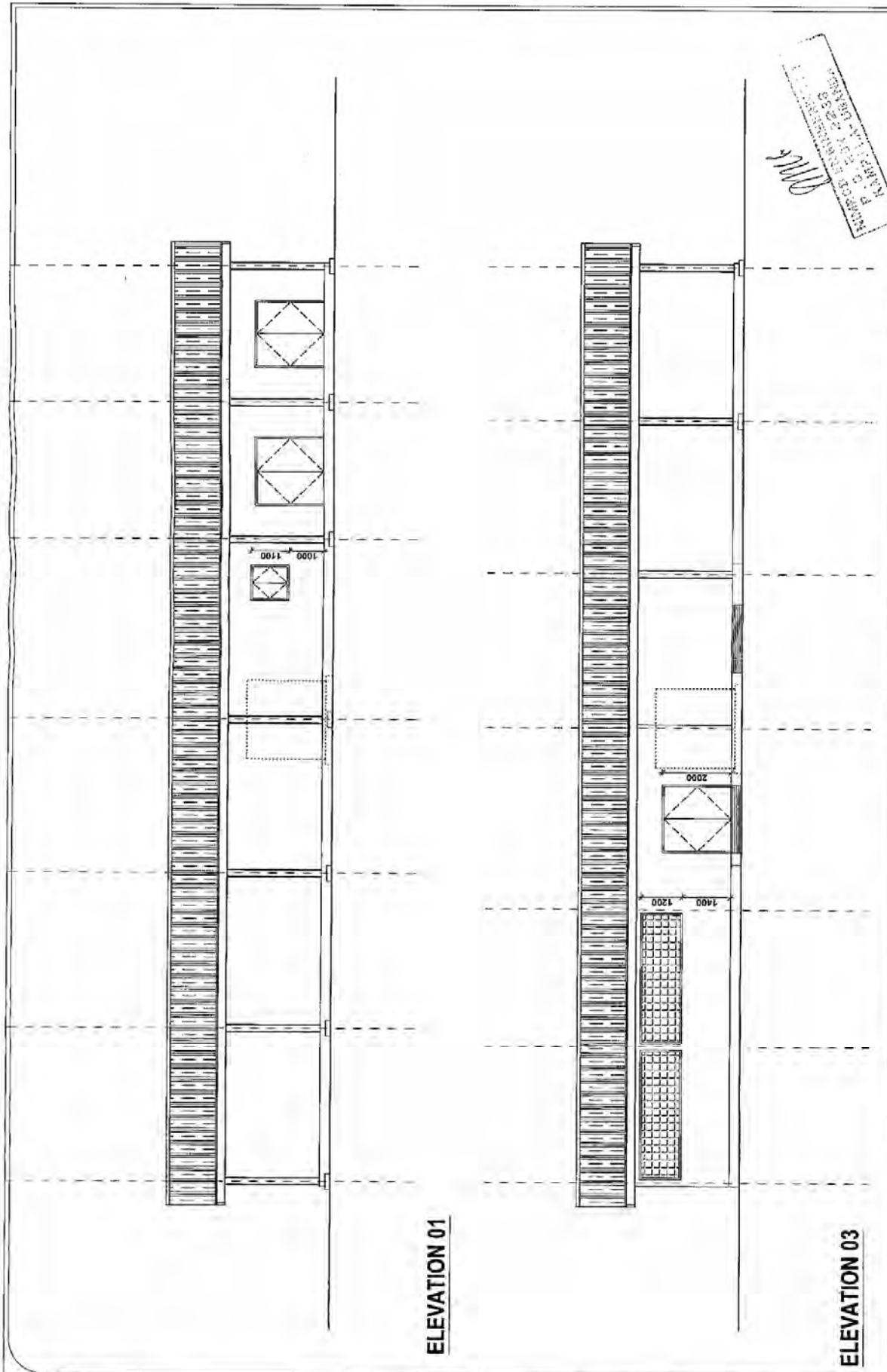
Purpose of test	Identify buyers and their requirements such as shape/form, cleanliness, volume and etc.
Contents of test	Canvass the feed mills and other potential buyers
	Prepare samples
	Nutrition analysis (if necessary)
	Study and design the processing method
Time of implementation	After starting the operation



CLIENT: JICA Study Team for the Study on Improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O. BOX 102 Entebbe	PROJECT: JICA CASSAVA PROCESSING PILOT PROJECT LWAMPANGA NAKASONGOLA DISTRICT		SCALE: 1:100	TOTAL SHEETS: 1
	DESCRIPTION: WORKING DRAWING (floor plan)		DRAWN BY: TONAI	DATE: AUG 2004
		Amended by: MIMK AUG 2004	JOB No.: AD2004/0961	SHEET No.: D - 1



JICA STUDY TEAM, UGANDA	CLIENT: JICA Study Team for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT: JICA CASSAVA PROCESSING PILOT PROJECT LWAMPANGA MAKASONGOLA DISTRICT	NOTES:	SCALE: 1:100
	DESCRIPTIONS: WORKING DRAWING (elevations)	DATE: AUG 2004	DATE: AUG 2004	DRAWN BY: TONAI
				JOB No.: AC29040501
				SHEET No. D - 2



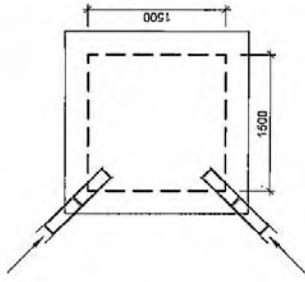
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ELEVATION 03

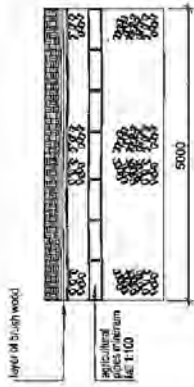
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CLIENT: JICA Study Team for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT: JICA CASSAVA PROCESSING PILOT PROJECT LWAMPANGA NAKASONGOLA DISTRICT	DISCUSSION: WORKING DRAWING (elevations)	NOTES	SCALE: 1:100
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			DATE: AUG 2004	JOB No.: AC200405/01
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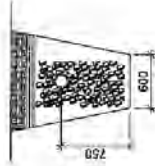
JICA STUDY TEAM, UGANDA



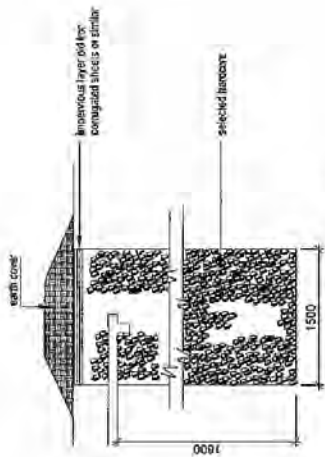
PLAN OF SOAKAWAY PIT



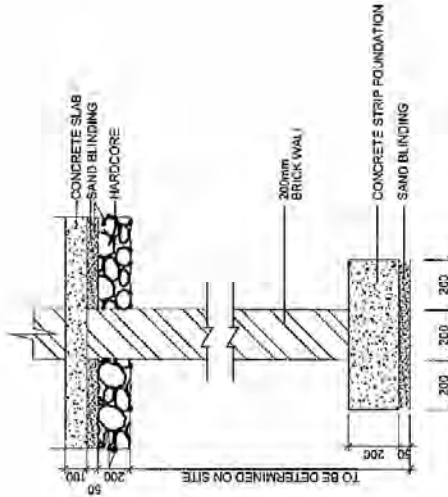
PERCOLATION TRENCH SECTIONS



SECTION THROUGH SOAKAWAY PIT



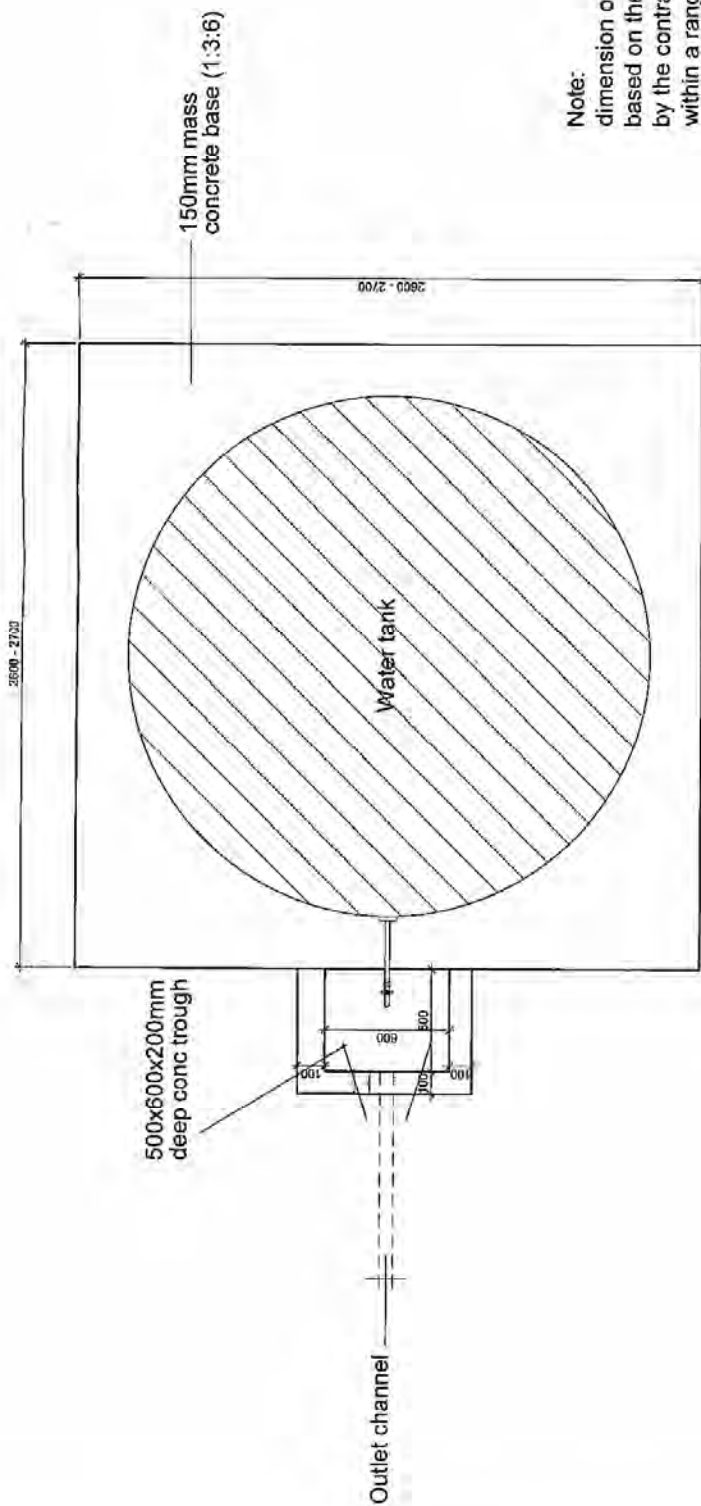
TYPICAL PIPE COLUMN FOUNDATION



TYPICAL SECT. 1-1



JICA STUDY TEAM, UGANDA	CLIENT:	JICA Study Team for the Study on Improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT:	JICA CASSAVA PROCESSING PILOT PROJECT LWAMPANGA, NAKASONGOLA DISTRICT	NOTES:		SCALE:	1:20	
	DESCRIPTION: PIPE COLUMN FOUNDATION & CONC STRIP FOUNDATION DETAILS	DRAWN BY:	MMK	DATE:	AUG 2004	JCB No.:	AU200407020	SHEET No.:	D - 4

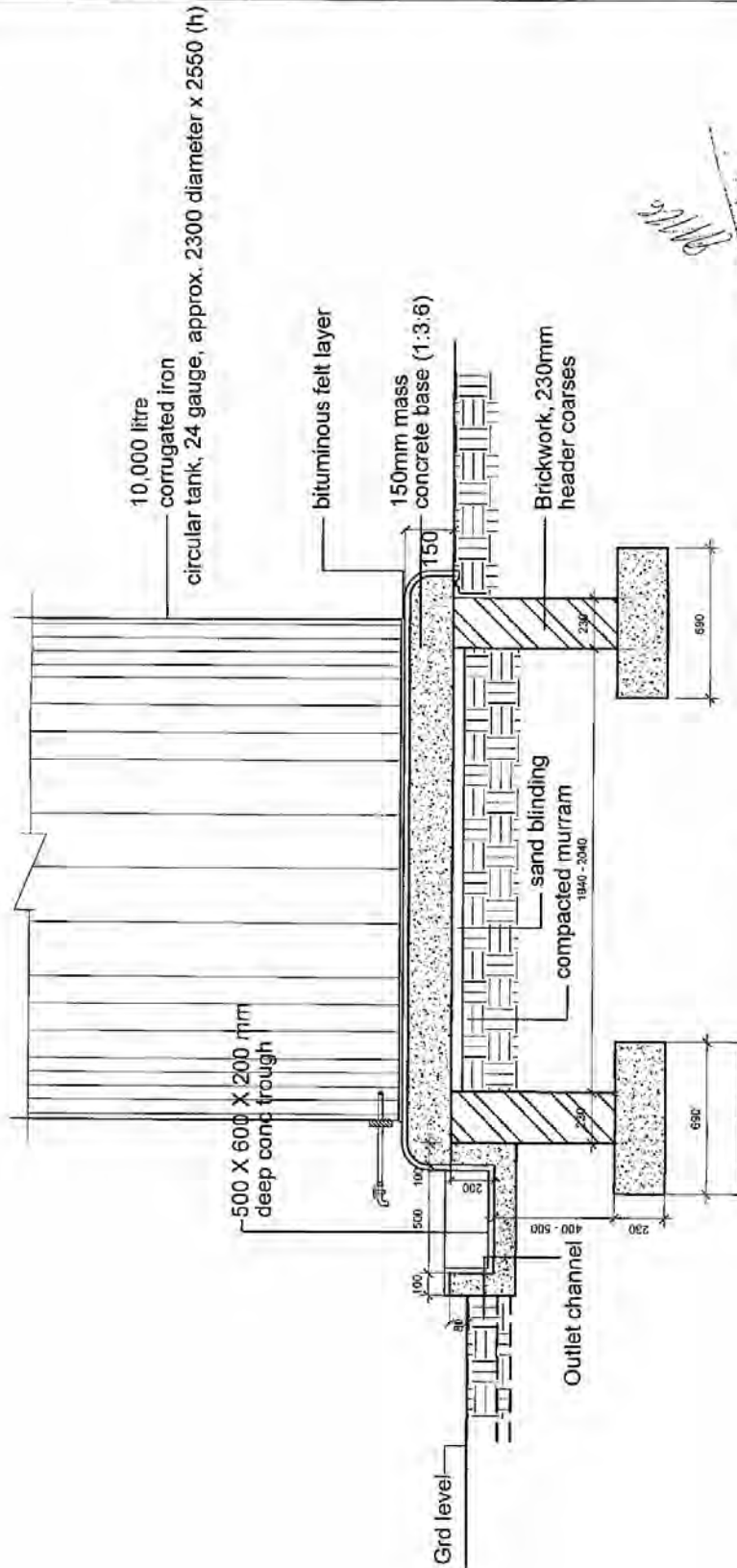


Note:
dimension of tank Base shall be based on the tank size provided by the contractor within a range of 2600-2700

MIB
 100%
 2004/07/020
 AUG 2004
 AUG 2004
 AUG 2004

WATER TANK BASE PLAN

JICA STUDY TEAM, UGANDA CLIENT: JICA Study Team for the Study on Improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT: JICA CASSAVA PROCESSING PILOT PROJECT LWAMPANGA NAKASONGOLA DISTRICT DESCRIPTION: WATER TANK PLAN BASE DETAIL	NOTES:	SCALE: 1:20
		DRAWN BY: MMK DATE: AUG 2004 JOB No.: A02004/07/020 SHEET No.: D-5	



WATER TANK BASE DETAIL

JICA STUDY TEAM, UGANDA CLIENT: JICA Study Team for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT: JICA CASSAVA PROCESSING PILOT PROJECT LWAMPANGA NAKASONGOLA DISTRICT	NOTES:	SCALE: 1:20
	DESCRIPTION: WATER TANK BASE DETAIL	DRAWN BY: MMK	DATE: AUG 2004
		JOB NO.:	SHEET NO.:
		AUTOCAD:	P. 5

1.4 Kangulumira Fruit Processing and Marketing Project

(1) Objectives

Pilot Project aims at verifying the viability of collective processing and marketing of fruit by farmer's group. The project aims at improving the quality control technique and introducing new fruit products. In terms of post-harvest technology, the project aim at improving the quality control technique and at introducing new fruit products to the Uganda market.

It also aims at disseminating viable fruit processing technologies to other groups in Kangulumira Area Cooperative Enterprise (KACE) through providing on-the-job-trainings.

(2) Activities

Activities included in the plan are;

Processing of fresh pineapple to pineapple juice, pineapple wine and dried pineapple.

The development of appropriate processing method for the above products, and new products.

Technology transfer to other farmers' groups of KACE.

In February 2004 (Interim Report 2) the tentative plan of operation was prepared.

Overall progress is behind the schedule of the above plan of operation, due mainly to the delay of the start of the previous fieldwork and the delay of construction works.

(3) Location

Project site is located at Kangulumira sub-country of Kayunga district, Uganda's major pineapple producing area. Pineapple is intensively grown in large area for commercial purpose.

(4) Organizational Structure and Management System

(4)-1 Background of organization

a. Organization

Natural Taste Food Processors (NFTP) is the organization to execute the fruit processing and marketing, was registered in August 2004 by the chore members of CBO, High Quality Farmers' Association (HQFA) which was selected as a rep group by Kangulumira Area Cooperative Enterprise (CBO) for the Pilot Project in November 2003. The summary of NFTP and KACE is as below.

TableA.1.7 Summary of Organization

	Natural Taste Food Processor	Kangulumira Area Cooperative Enterprise
Present status	Partnership	CBO
Registration	Aug-2004	Sep-2003
Membership	15 persons	14 farmers' groups, about 1,290 persons
Distribution of the member	9 villages	Cover all (6) parishes in Kangulumira sub-county
Land possessed	233 acres	N.A.
Pineapple cultivation	82 acres	N.A.

b. Process of the acquiring new legal status

The status of HQFA was CBO registered to the Ministry of Gender & Community Development. To acquire a more adequate status to perform a consecutive commercial activity. Since the number of HQFA could not reach the minimum 30 required for the Primary Co-operative Society, the members of HQFA decided to acquire a "Partnership" status stipulated in commercial law.

However, some members began to express their objection on producing alcohol due to religious reasons, and the acquisition processes were postponed to in July 2004. After the discussions with the Study team, the members of HQFA made a decision that was; 4 members left from the project and other 11 members would implement the project with 4 new participants invited from outside to HQFA.

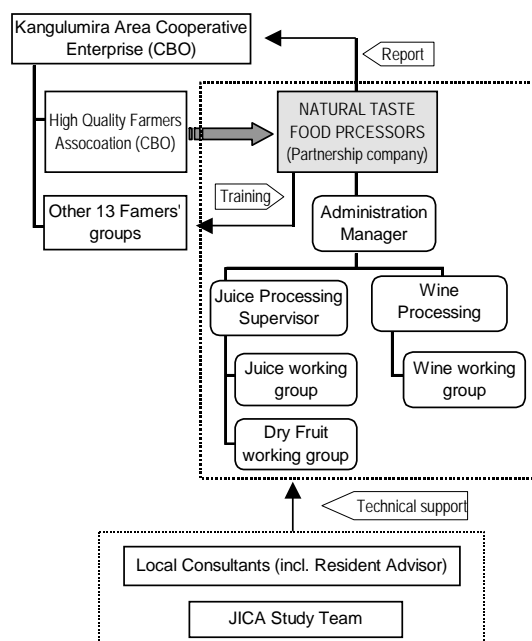
A new entity was named Natural Taste Food Processors (NTFP) and completed its registration on 28 July 2004 by the 15 members. Partnership agreement was concluded with consultation of the Study team and the local consultant in August 2004.

(4)-2 Current status of organization for the project implementation

a. Organizational structure

a-1. Organizational structure

The following figure shows the structure of the organization



FigureA.1.4 Organizational Structure of Natural Taste Food Processor

a-2. Executive Board and Operation team

All the members of the group participate in planning and operation. Special framework such as Executive Board was omitted because all the members can/must participate in the activities as the number of the group members is limited. The group nominated an Administration Manager and a Processing Supervisor and 3 working group's leaders.

b. Legal status

Natural Taste Food Processors already completed official registration as Partnership organization in August 2004, and opened its own bank account.

c. Internal rule

Partnership agreement concluded in Aug. 2004 contains internal rule regarding membership status, profit and loss sharing and others,

(4)-3 Capacity building of organization

(Management aspect)

“Start Your Business” training course on basic business skills including financial planning, costing, marketing and others were completed in November 2004. Consecutive training by OJT basis will be followed from trial/initial period of its operation in January 2005.

(Operation/Technical aspect)

5day training session on fruit processing was held using the newly furnished project facility. As well management aspect, capacity building of operation and techniques will be moved to OJT style.

(4)-4 Further schedule and Support from the Study team

a. Human resource support

In order to assist smooth management and operation particularly in the initial stage, the Study team

assigns a Resident advisor. The Resident advisor assists all the aspects of management and operation and also functions as a liaison between the NTFP and the Study team.

(5) Physical Infrastructure

(5)-1 Acquisition of land

The site for processing facility is located next to HQFA's office. Land Lease Offer for approx. 1 acre was obtained on 09 August 2004.

(5)-2 Investments

• Building Facility

The building is of concrete floor with plaster, wall of burnt brick with plaster and colored iron sheet roofing. Total floor area is 175 m² with 7 parts consisting of

Changing room	4 m ²	1.5 x 2.8m	
Store (raw materials)	6 m ²	2.1 x 2.8m	
Store	6 m ²	2.1 x 2.8m	
Office	6 m ²	2.1 x 2.8m	
Preparation room	37 m ²	4.8 x 7m	(Ceiling, Tile floor)
Stove room	6 m ²	2.1 x 2.8m	
Storage (wine & product)	67 m ²	8.6 x 7.8m	
Verandah & Corridor	23 m ²		

• Utilities

- 1000 liter water tanks for rain water catchments x 2
- 500 liter water tank with steel support framework x 1
- Waste water channels and soak away pits x 2
- Service counters x 2
- Electrical supply (3 Lightings & 3 Sockets)
- Water supply (2 taps)

• Machines and equipment

Major procured items are shown in below.

Works / Rooms	Items
Receiving	Platform scale
Processing	Aluminum pans, Kitchen utensils, Fruit press, Fermentation tanks, Maturation tanks, Table top scales, Slicer Water filter unit, Foot pump, Fire wood stove, Sink, Work tables
Drying	Solar dyers *
Packing	Heat sealer, Table top scale
Quality control	Brix meter, pH paper, Thermometer, Alcoholmeter, Hydrometer
Store	Shelves, Pallet
Office	Table, Chair, Shelf

* Fabrication is on going.

Quantity of aluminium pans, kitchen utensils, fermentation tanks, maturation tanks, shelves will increase in accordance with the increase in production volume.

In making fence of the facility, hedge planting was made with material and labour provided by the group.

(5)-3 Investment cost

Building (include utilities):	57.75 million Ush.
Machine and equipment:	21.50 million Ush.
Total:	79.25 million Ush.

(5)-4 Construction

Construction works started on 30 August 2004 and completed on 17 November 2004. Workmanship of the construction was generally acceptable, though there were minor improvement works

required.

The building facility had been handed over on 25 November 2004.

(6) Operation and Management

(6)-1 Training

In management and operation of the project, training has been emphasized.

In preparatory stage, Feb.2004, training plan was prepared. Following shows the plan and their progress.

Subjects	Trainee	Trainer	Type	Progress
Bookkeeping & Accounting	Manager	Private institution	Intensive	Looking for adequate program
	Manager	NGO/Consultants	OJT	
	All members	NGO/Consultants	Explanatory	
Business management & planning	Manager	NGO/Consultants	OJT	Partly covered by SYB training
	All members	NGO/Consultants	Explanatory	
Marketing	Manager	NGO/Consultants	OJT	
Record keeping & Cost calculation	Processing Supervisor, Working groups leader	NGO/Consultants	OJT	Cost calculation was done in the SYB training and Processing training.
Stock management	Processing Supervisor	NGO/Consultants	OJT	
Processing	Processing Supervisor	Small-scale processor	OJT	
	Core members of working groups	Private	Intensive	5-days Processing training was conducted

Among the subject above, following two trainings were completed.

a. SYB (Start Your Business) training

SYB training of 5-days course was conducted from 16 to 20 November 2004 at the project site. ILO-SIYB Master Trainer, Mr. David Mulya, Consult (U) Ltd. was invited as trainer. The training was planned for 20 people including the outsiders who were selected from various groups within the KACE. Number of participants was 19 including 5 women, though the number of participants fluctuated between 12 and 19. Major subjects covered by the training are; Business idea, SWOT analysis, Marketing plan, Required staff, Costing, Financial planning and Start-up capital.

b. Fruit processing training

Intensive 5-days training course on fruit processing was conducted from 29 November to 04 December 2004 at the project facility. 19 members participated in the training including 11 female members. Trainer was Mr. Kasirye Peter, from Kasper Food Enterprise/Pilot Center, who was trained in the UNIDO's Master Kraftman Program.

The training focused on the practical knowledge/skills of the pineapple processing and quality control/hygiene control. Therefore, the practices of actual producing were the main part of the program. Theories/explanations were mainly given in the course of the practices.

During the 5-days training, following products were produced.

	Products	Volume	Pineapple fruit used
Day 2	Wine Juice (dilution type), with orange Juice (ready to serve type), with orange	50 liters 12 liters 6 liters	42 fruits
Day 3	Jam Wine	50 liters	
Day 4	Juice (ready to serve type), with passion fruit, papaya Wine	50 liters	

	Products	Volume	Pineapple fruit used
Day 5	Jam, with jack fruit, mango, carrot Juice (ready to serve type), with passion fruit, papaya Wine	50 liters	

The participants were eager to continue more practices and decided to conduct practices by themselves. It took place on 07-Dec and 14-Dec with presence of the Resident advisor. 2-days follow-up training will be conducted on 17 - 18 December to teach the methods of racking (separating sediment from wine by siphon), which should be made about 2 weeks after fermentation start. Material pineapple for the processing training were all provided by NPFT.

(6)-2 Operation and Management system

Structure of the organization is rather simplified, since the number of the members is limited as mentioned earlier. Decision making will be through discussions of all 15-group members.

The Administration Manager was elected from among the members for daily operation and management of the processing facility.

Three (3) Working Groups (wine group, juice group and jam/dried fruit group) were organized for processing operation of each specialized in particular processing/product. To coordinate 3groups and to assist manager in processing operation arrangements and marketing, Processing Supervisor was also chosen from among the members. Each working group is composed of group leader and some workers. The member of each working group shall be fixed, a) in order to keep the quality constant, b) it takes time to acquire the processing skill, and c) requirement of periodical health examination as well as a work permit from the district health department.

Salary/wedge is set as follows by the members.

Administration Manager	10,000 Ush./day (250,000 Ush./month) + lunch
Processing Supervisor	6,000 Ush./day + lunch
Wine group leader	5,000 Ush./day + lunch
Juice group leader	4,000 Ush./day + lunch
Jam/dried fruit group leader	4,000 Ush./day + lunch
Worker	2,500 Ush./day + lunch

Administration Manager shall be engaged in the business operation on a full-time basis. However payment of salary/ wage is paid on daily basis according to the actual working days of each member.

For the selection of workers, 10 candidates were invited to participate in the 5-days processing training, which took place 29 Nov – 03 Dec. 2004 at the project facility, to assess their capability/performance. 6 workers were selected for the start up stage of the operation.

	Required conditions	Way of recruiting
Group Leader	Minimum O level. Healthy and have knowledge about the importance of hygienic practice.	Select from the group member.
Workers	Healthy and have some knowledge about the importance of hygienic practice. Capable to measure the volume/weight and to memory the sequence of works. Presume minimum P7 level.	External employment. Put priority to KACE member who reside near to the facility.

(6)-3 Immediate actions for start-up of Business Operation

At the closing day of the processing training (03 Dec.), immediate actions to be taken for start-up the business operation were discussed with key members and the Study team. Required actions, time line and responsible persons were confirmed as follows:

Schedule of Actions - Fruit Processing Project / Kayunga

as at 11 Dec. 2004

Action	Responsible person	Assist / External resource	Dec. 2004				Jan. 2005	
			6	13	20	27	3	10
1 Open bank account (Allied Bank, Jinja branch)	Manager		█					
2 Obtain trading license	Manager / Production supervisor		█	(acquired)				
3 Health inspection	Manager / Production supervisor		█					
4 Solar dryer								
Fabrication of test units (2types)	JICA	Local carpenters		█				
Test use	Production supervisor				█	█	█	
5 Hygiene control manual/rules		Resident advisor						
Review training & List key points for hygiene/quality control	Group leaders / Production supervisor	Resident advisor, JICA		█				
Documentation	JICA				█			
6 Training / Processing skills								
Review training & Prepare processing charts	Group leaders / Production supervisor		█					
Self-lessons (practice)	Group leaders	Resident advisor	█	█				
Follow-up training (wine only)	Group leaders	Kasper Enterprises		█				
7 Products (recipe) selection								
Sample production and evaluation (Juice)	Manager / Production supervisor / Group leaders	Local consultant		█	17-Dec.			
8 Processing manual for the Juice products								
Documentation	Group leaders / Production supervisor	Resident advisor			█	█		
9 Product name/logo, label								
Basic ideas	Key staff	Local consultant	█					
Designing - paper label	Local consultant	Out source or JICA			█	█		
Designing - pouch	Local consultant	Out source		█	█	█		
Printing	Local consultant	Out source				█	█	
10 Market sounding								
Planning	Production supervisor	Resident advisor		█				
Implementation	Production supervisor	Resident advisor			█	█	█	
Report making	Production supervisor	Resident advisor				█	█	
11 Production plan & budget for initial 3 month	Manager	Local consultant				█	█	
12 Purchase consumables	Mr. Ngolo	Resident advisor					█	█
13 Start up the operation								█

Note: The first schedule made on 03-Dec. has been corrected according to the progress of activities and the status of available resources to JICA study team & Local consultant.

At present, the date for start up of operation is scheduled to be 10 January 2005.

Documentation works

Prior to the start up, hygiene control manual/rules and processing manual shall be documented systematically. In addition to, specific record keeping forms for simplified cost accounting system, such as goods received daily summary, processing summary, monthly cost accumulation sheet, etc. shall be designed. These works are now ongoing by the key member of NTFP and the local consultant/Study team.

Market sounding & Production plan

Operation plan for the initial 3 months starting Jan. 2005 will be finalized based on the results of market sounding. Target outlets by kind of product and by type of packaging are considered as follows:

Products	Packaging	Target outlets
Juice (ready to drink type)	Pouch 100ml	School canteen, around the site
Juice (ready to drink type)	PET bottle 500ml	Retail/wholesale shop, Kangulumira/Jinja
Juice (dilution type)	PET bottle 1 or 2 liter	Retail/wholesale shop, Kangulumira/Jinja
Wine	PET bottle 300ml	Retail/wholesale shop, Mukono/Jinja/Kampla
Dried fruit		Fruits of the Nile
Jam	PE jar 100g	Retail/wholesale shop, Kangulumira/Jinja

To prepare for the market sounding, key members of NTFP have started listing of the outlets and listing of juice products sold in the local market.

In general, sales in supermarket require relatively high quality packaging. Also it is informed that bill collection takes long time and many efforts. Therefore supermarket is considered out of tentative target for marketing activity for the initial stage.

(7) Future Works/ Future Activities

(7)-1 Improvement of quality control method

Due to the all of the staff for processing are beginners of juice/wine/jam making, simple method (recipe) and basic usage of essential instruments for quality control such as brix meter, thermometer, and hydrometer were taught in the training.

Sometime after mastering the simple method, better method in terms of quality control, work efficiency and cost control will be delivered by the local consultant and the Study team.

(7)-2 Training provision to other KACE member

Training to other KACE members will be provided in the form of on-the-job trading. 1 to 2 persons from KACE will join the each working group. The reward to labour is not paid. Trainees shall be selected by KACE. Starting schedule will be discussed.

(7)-3 Technology test

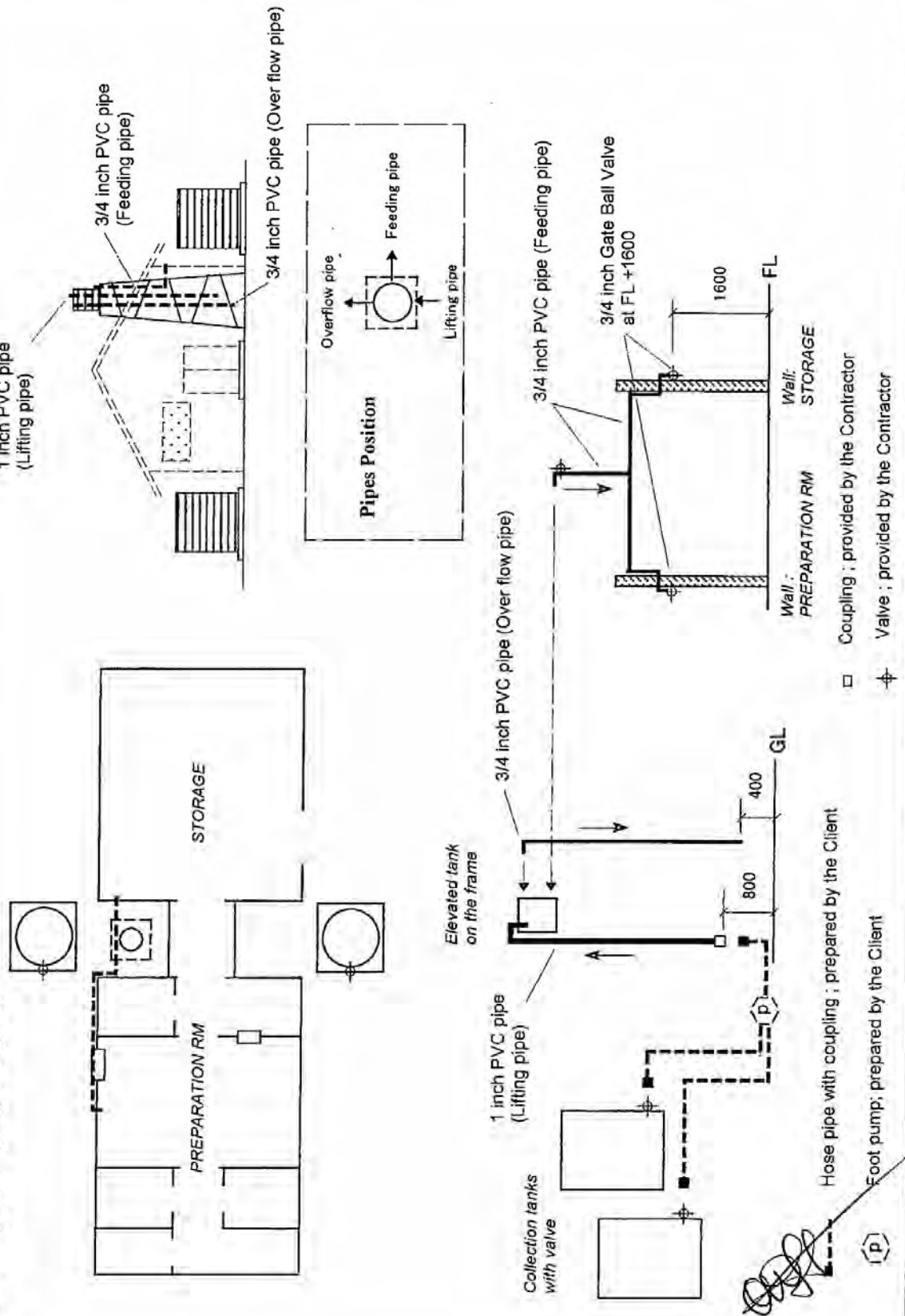
Following test program shall be implemented.

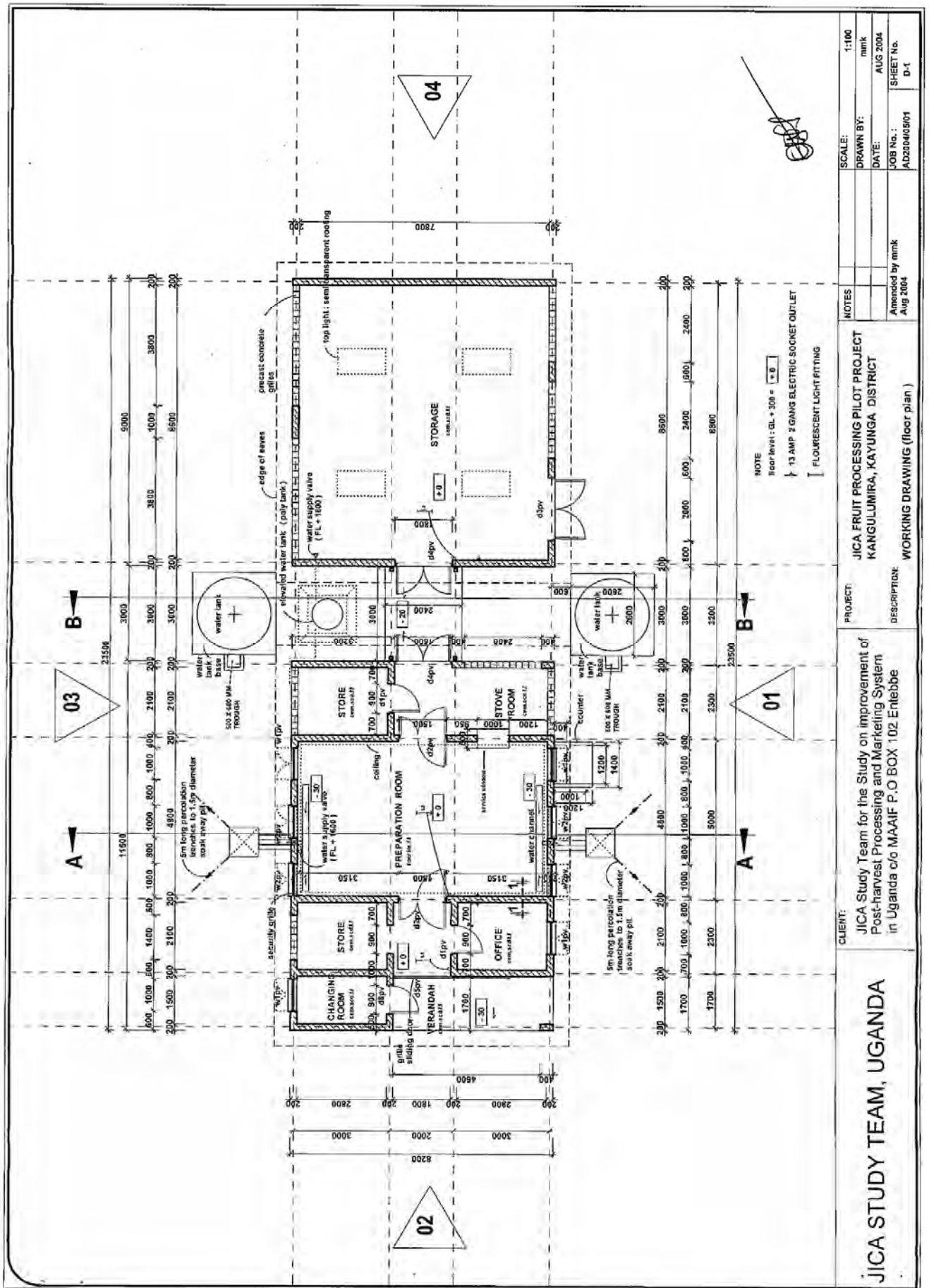
TableA.1.8 Test Production of New Products

Purpose of test	Introduce processed fruit products which new to the Uganda market
Contents of test	Trial production of mango wine and exam the marketability
	Trial production of mango bar and exam the marketability
Time of Implementation	July or August 2005

Fruit Pilot Project Facility in Kayunga District

Water Supply Piping Diagram





SCALE:	1:100
DRAWN BY:	mmk
DATE:	AUG 2004
JOB No.:	A02040501
Amended by:	mmk
Aug 2004	
SHEET No.:	D-1

NOTES

JICA FRUIT PROCESSING PILOT PROJECT
KANGULUMIRA, KAYUNGA DISTRICT

Amended by mnk
Aug 2004

DESCRIPTION:
WORKING DRAWING (floor plan)

CLIENT:

JICA Study Team for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe

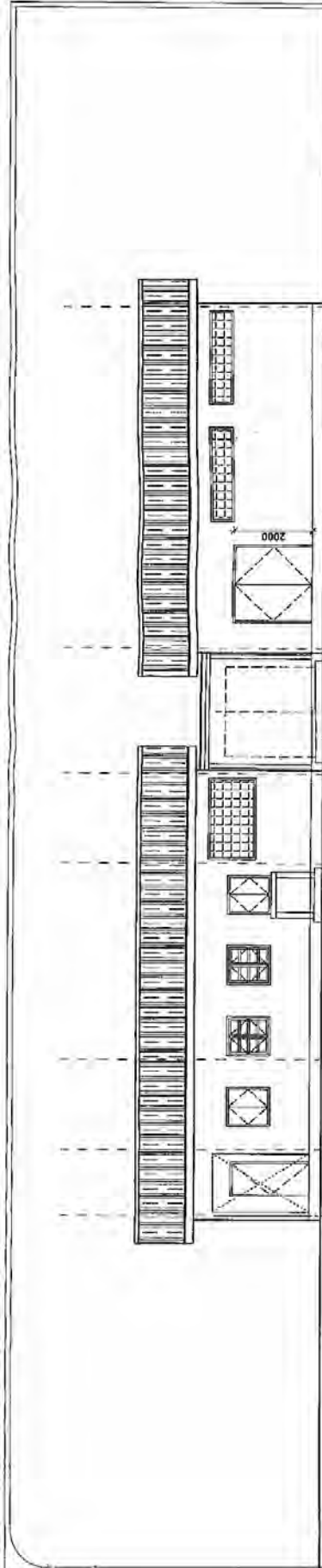
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NOTE

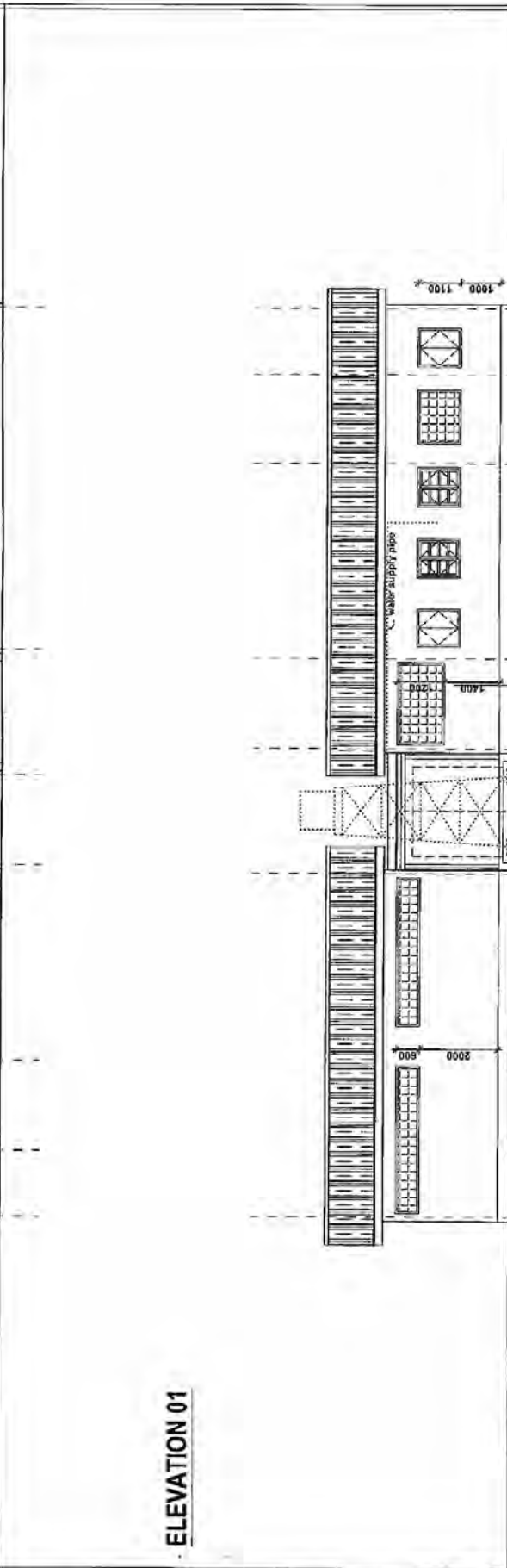
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13 AMP 2 GANG ELECTRIC SOCKET OUTLET

FLUORESCENT LIGHT FITTING



ELEVATION 01

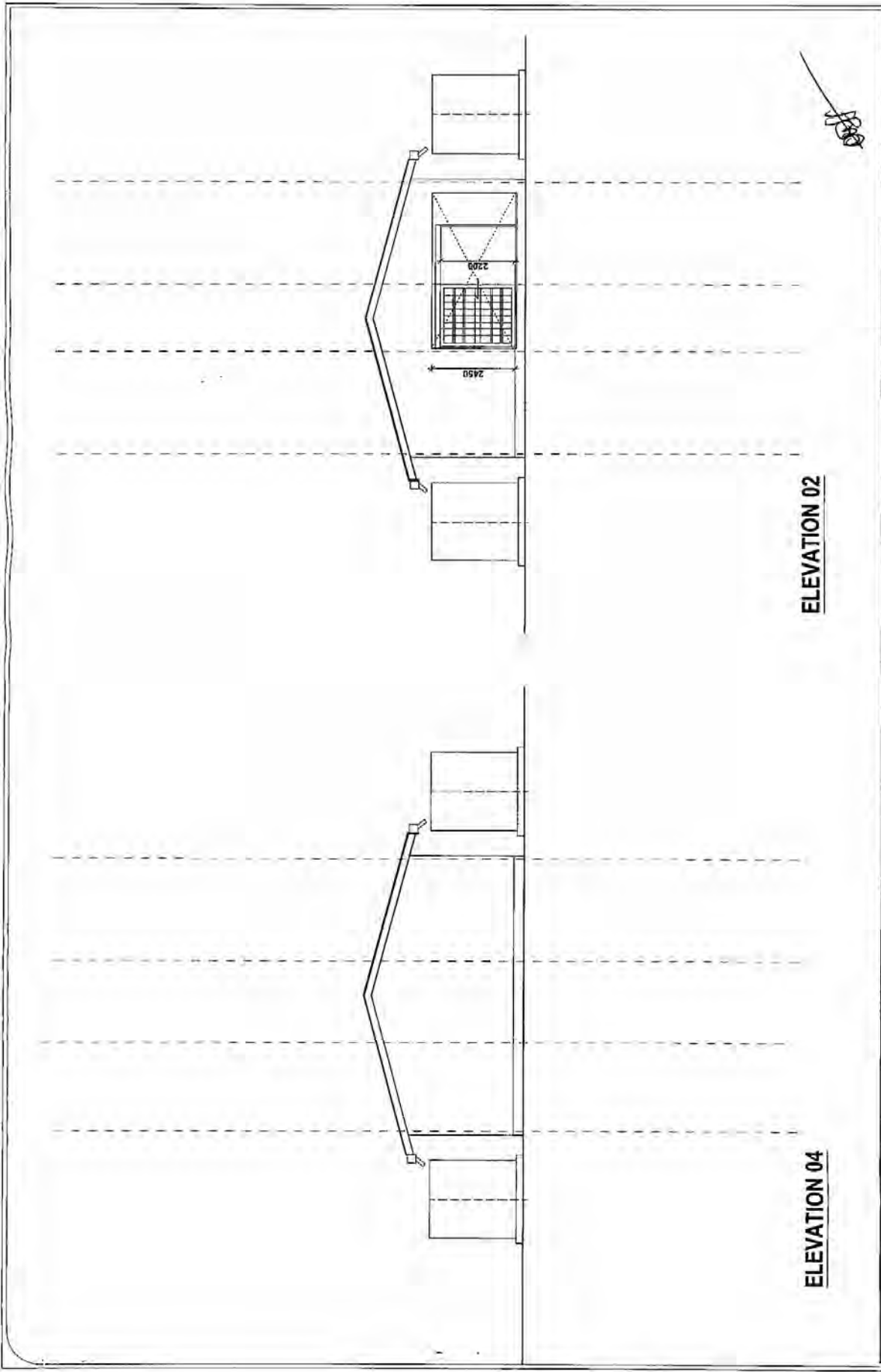


ELEVATION 04

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CLIENT: JICA Study Team for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P. O BOX 102 Entebbe	PROJECT: JICA FRUIT PROCESSING PILOT PROJECT KANGULUMIRA, KAYUNGA DISTRICT	NOTES:	SCALE: 1:100
			DRAWN BY: mmk
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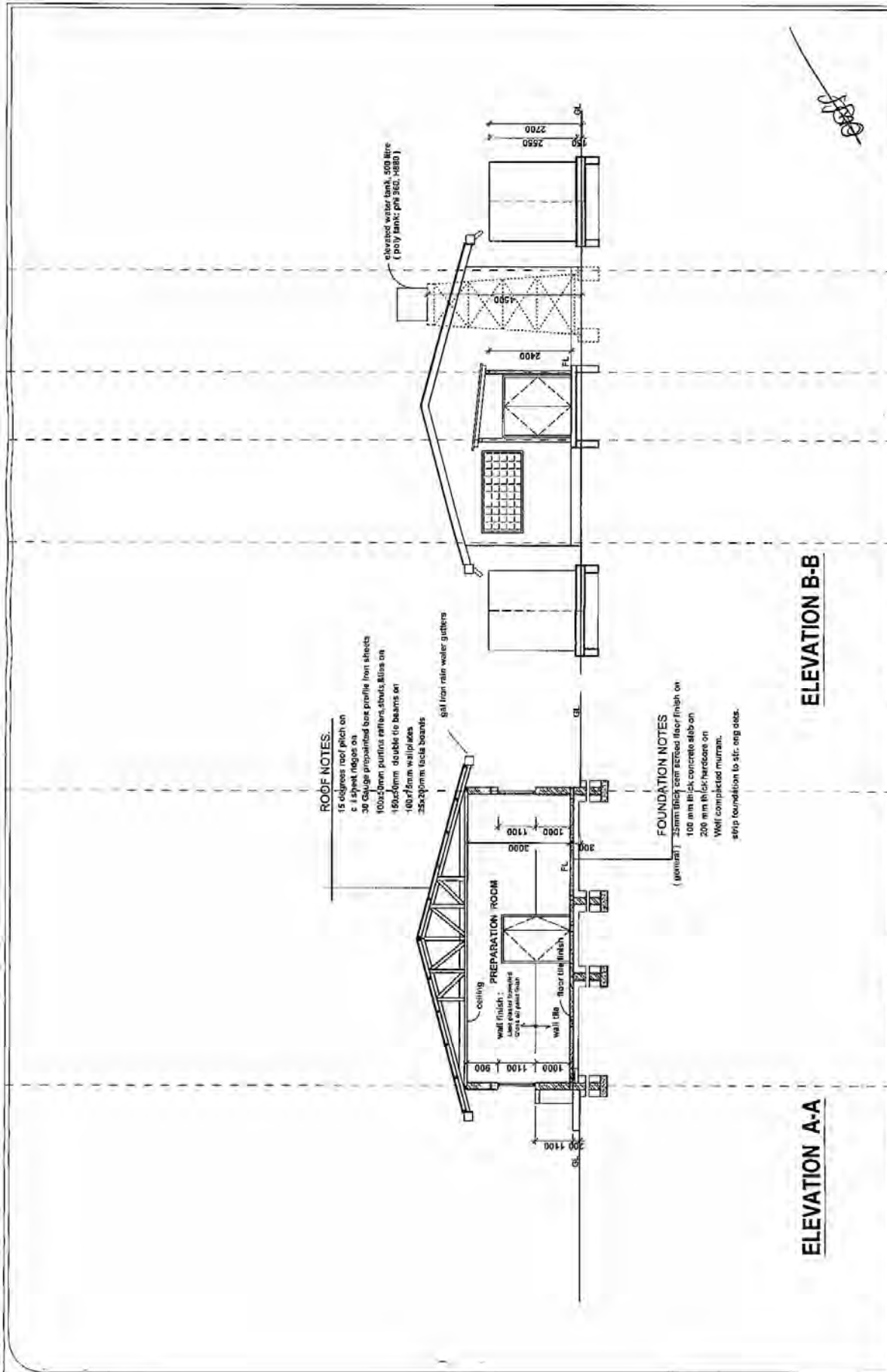
JICA STUDY TEAM, UGANDA



ELEVATION 04

ELEVATION 02

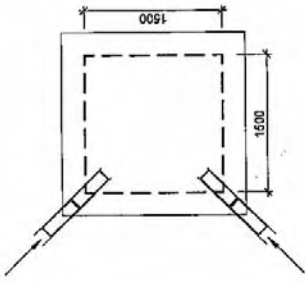
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		Amended by mmk Aug 2004	DATE: AUG 2004 JOB No. : AD2004/0501 SHEET No. D - 3
JICA STUDY TEAM, UGANDA			



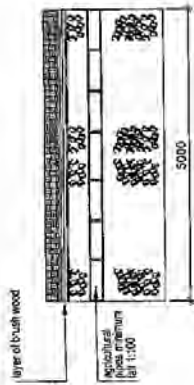
ELEVATION B-B

ELEVATION A-A

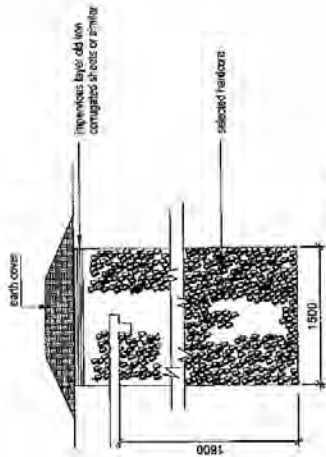
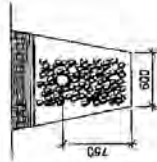
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			NOTES: Announced by mark Aug 2004
			DRAWN BY: mmk
			DATE: AUG 2004
JICA STUDY TEAM for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P O BOX 102 Entebbe			JOB No.: AD2004G001
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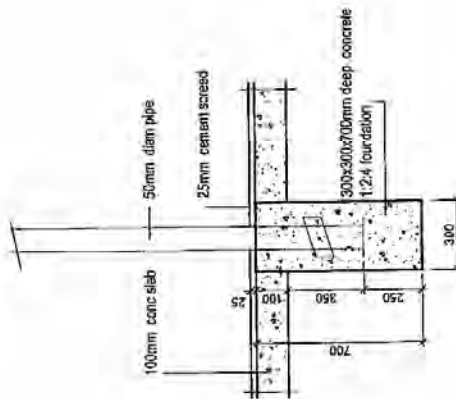
PLAN OF SOAKAWAY PIT



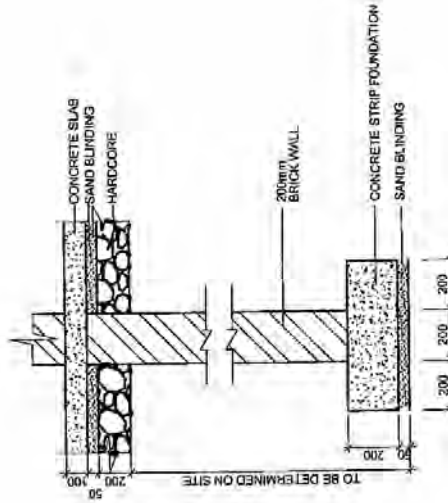
PERCOLATION TRENCH SECTIONS



SECTION THROUGH SOAK PIT

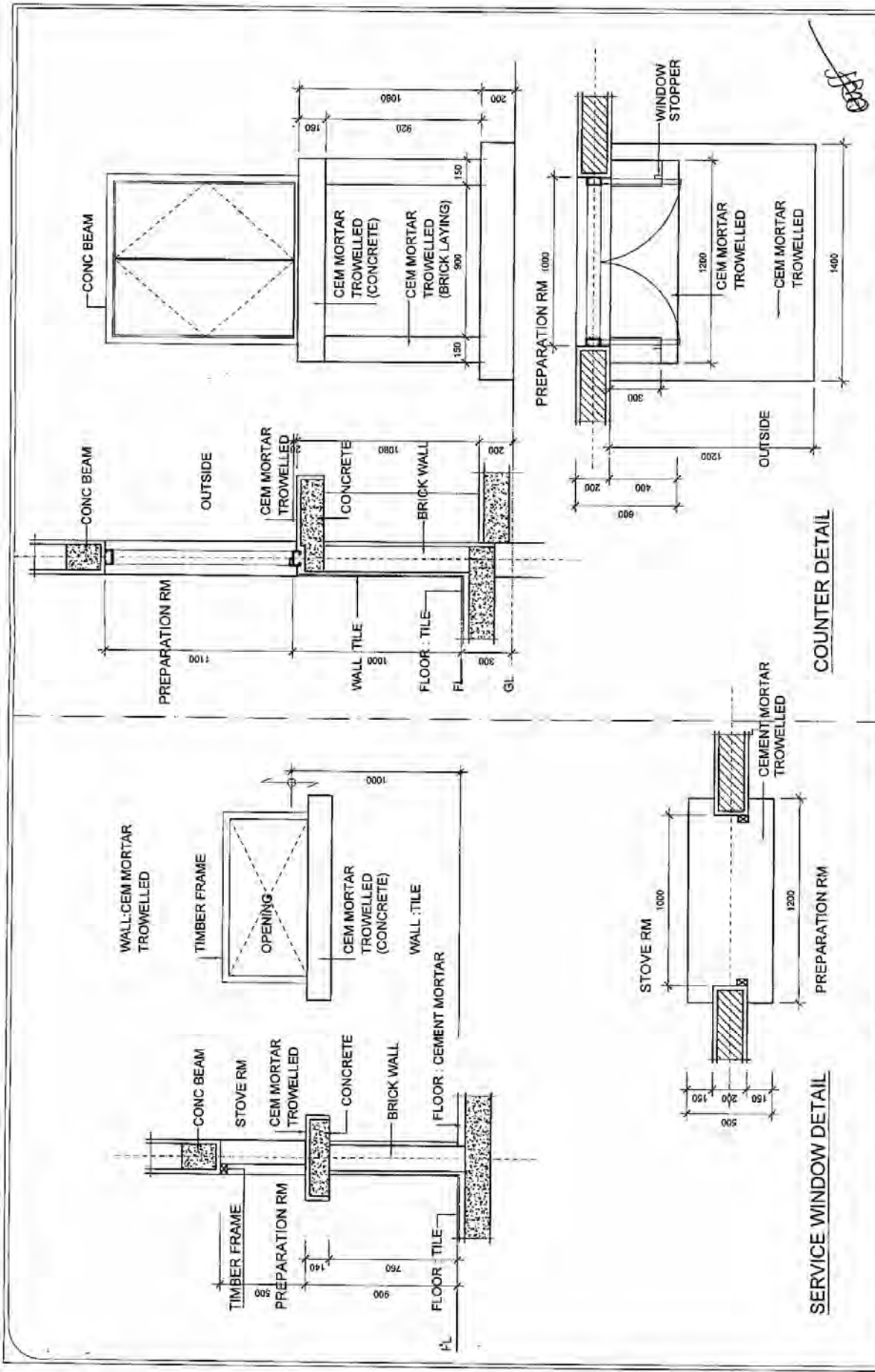


TYPICAL PIPE COLUMN FOUNDATION

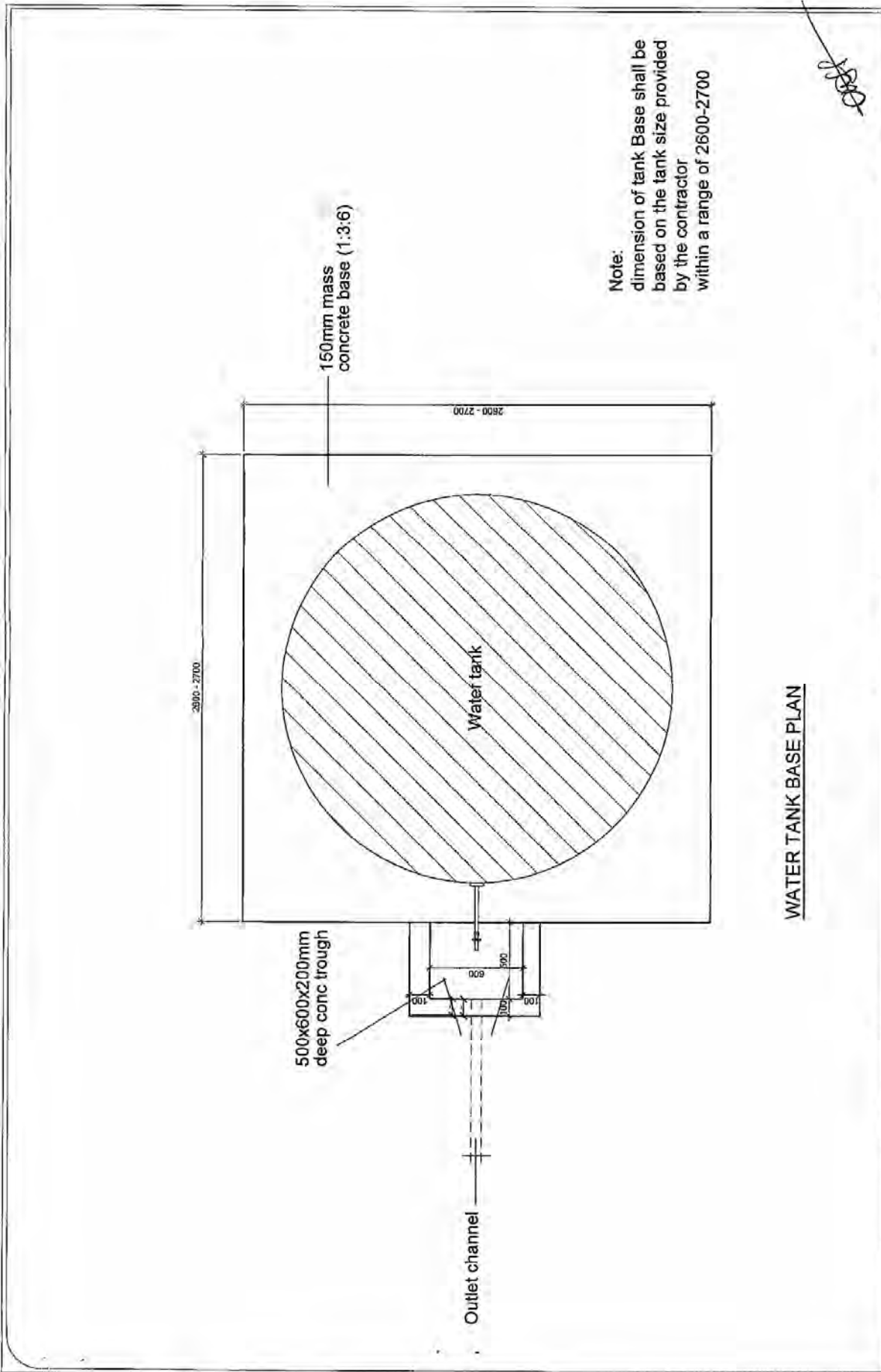


TYPICAL SECT: 1-1

<p>JICA STUDY TEAM, UGANDA</p>	<p>CLIENT: JICA Study Team for the Study on Improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P O BOX 102 Entebbe</p>	<p>PROJECT: JICA FRUIT PROCESSING PILOT PROJECT KANGULUMIRA, KAYUNGA DISTRICT</p>	<p>NOTES</p>	<p>SCALE: 1:20</p>
	<p>DESCRIPTION: PIPE COLUMN FOUNDATION & CONC STRIP FOUNDATION DETAILS</p>	<p>DATE: AUG 2004</p>	<p>DRAWN BY: Muzono</p>	<p>SHEET No. D-5</p>



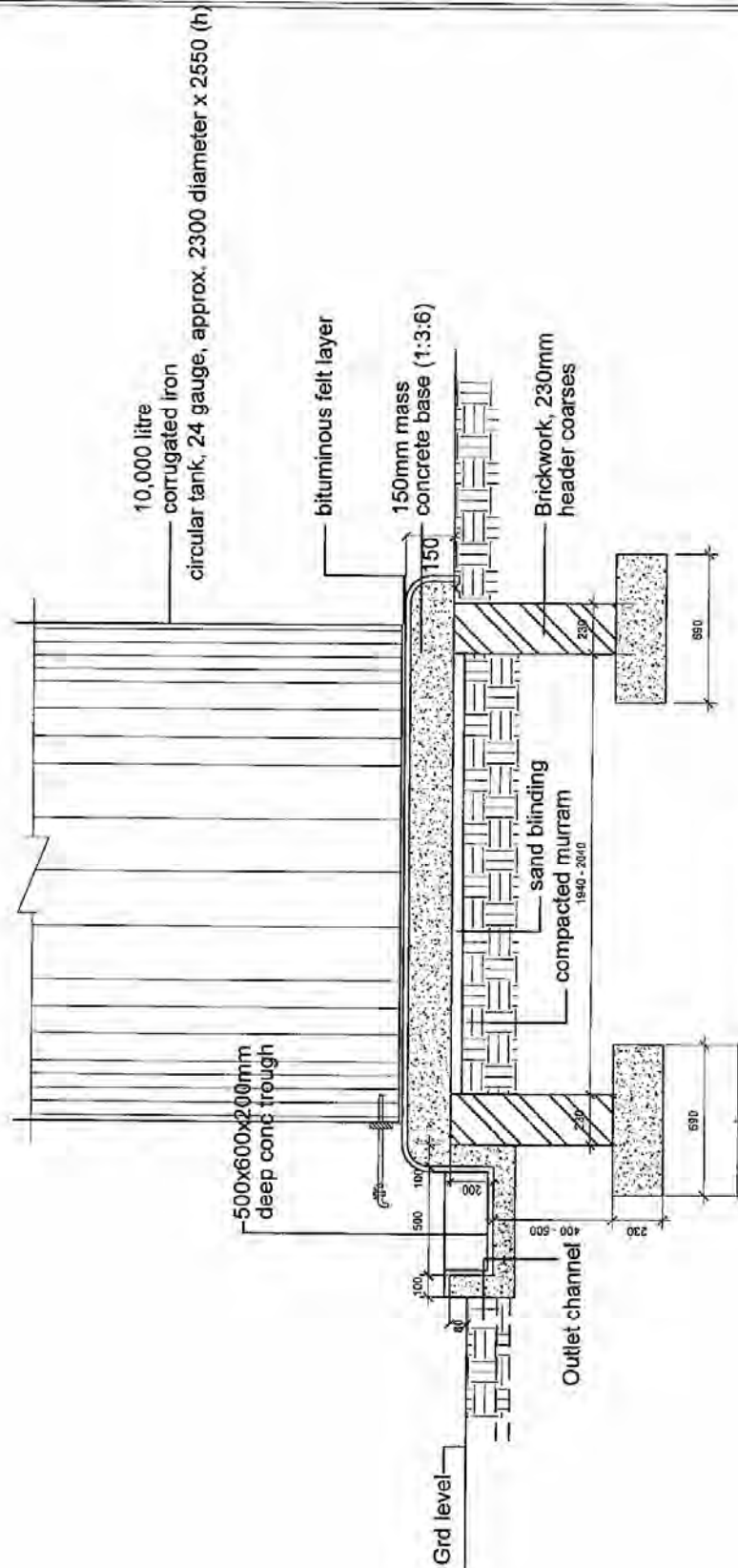
JICA STUDY TEAM, UGANDA CLIENT	PROJECT: JICA FRUIT PROCESSING PILOT PROJECT KANGULUMIRA, KAYUNGA DISTRICT		SCALE: 1:20
	DESCRIPTION: SERVICE WINDOW AND COUNTER DETAILS		DRAWN BY: Kusasa
	JICA Study Team for the Study on Improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe		DATE: AUG 2004
			JOB NO.: AD2004/07/023 SHEET NO.: D-6
		NOTES	



Note:
dimension of tank Base shall be
based on the tank size provided
by the contractor
within a range of 2600-2700

WATER TANK BASE PLAN

JICA STUDY TEAM, UGANDA CLIENT: JICA Study Team for the Study on improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT: JICA FRUIT PROCESSING PILOT PROJECT KANGULUMIRA, KAYUNGA DISTRICT DESCRIPTION: WATER TANK PLAN BASE DETAIL	NOTES	SCALE: 1:20
		DRAWN BY: Kusuma	DATE: AUG 2004
		JOB No.: AU200407620	SHEET No. 0 - 1



WATER TANK BASE DETAIL

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JICA STUDY TEAM, UGANDA CLIENT: JICA Study Team for the Study on Improvement of Post-harvest Processing and Marketing System in Uganda c/o MAAIF P.O BOX 102 Entebbe	PROJECT: JICA FRUIT PROCESSING PILOT PROJECT KANGULUMIRA, KAYUNGA DISTRICT DESIGNATION: WATER TANK BASE DETAIL	NOTES	SCALE: 1:20
			DRAWN BY: Kusain
		DATE: AUG 2004	JOB No.: AD202-027603
		SHEET No. D-9	

Annex 2

Baseline Survey

2.1. Objectives of the Survey

The baseline survey was carried out at the initial stage of the pilot project. The main objective was to clarify present socio-economic conditions of each pilot project area. The data and information will be utilized for the mid-term and final evaluation of the pilot project implementation. The outline of the baseline survey is described in the following table.

Table A.2.1 Outline of Baseline Survey

Item	Outline
Survey area	4 study sites <ul style="list-style-type: none"> • Luwero District Ziobwe Sub-county • Kamuli District Gadumira/Namuwiwa Sub-county • Nakasongola District Lwanpanga Sub-county • Kayunga District Kanglumira Sub-county
Implementer	JICA Study Team with assistant surveyors Local consultant
Target	Farmers in the areas Community leaders and group leaders District officers including extension officers
Main survey items	Production of target commodities Qualities of target commodities Market of target commodities (market price, outlet, etc) Situation of by-products of target commodities Farm economy (income, expenditure, crop budget, etc.) Others (Road condition, transport condition, etc.)
Survey method	Collection of relevant data Secondary data from reports Questionnaire survey (sample survey) Interview survey

2.2. Results of the Survey

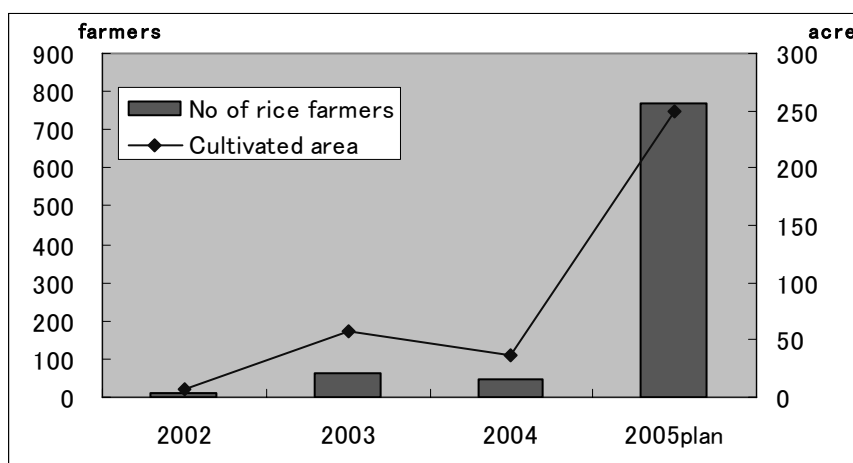
2.2.1 Ziobwe Rice Processing and Marketing Project

(1) Rice production

Upland rice production in the Project Area has increased rapidly in recent years. Farmers replace coffee to rice as a cash crop. The rice cultivated area in ZAABTA expanded from 7 acre in 2002 to 57 acre in 2003. In 2004, the planted area decreased due to drought.

In the year 2005, numbers of farmers who wish to cultivate rice are increasing sharply as the rice mill of this project has been completed.

Number of rice growing farmers and cultivated area in ZAABTA are shown in the following table.



FigureA.2.1 Rice production in ZAABTA

Two main upland rice varieties used are Superica and Wabu-65. Two rice crops in a year are possible in the area. Cropping calendar in Project area is as shown below.

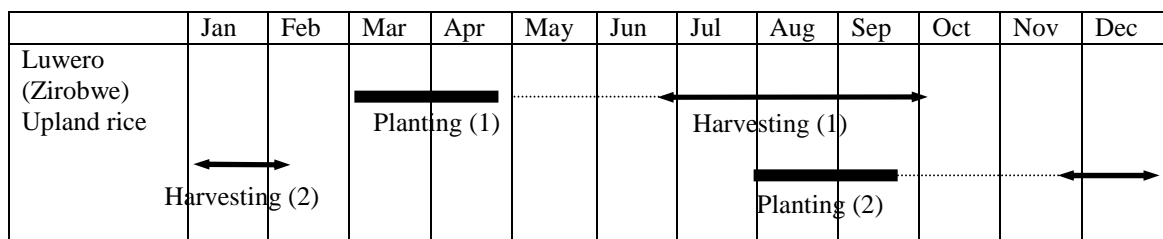


Figure A.2.2 Cropping Calendar of Rice

(2) Post-Harvest & Milling Method

Post-Harvest

The major problem on post-harvest processing in Project area is the lack of proper threshing and drying technology.

For threshing, usually farmers beat rice straw on wooden bar on the ground. For drying, farmers spread their paddy on plastic sheets or paved roads for sun drying without proper control of moisture contents. When paddy is rapid dried, the moisture contents at outer layer and inner layer of a grain becomes different. This difference causes a stress to a grain inside, eventually making broken rice during milling process. These methods also cause to mix small pebbles in rice, leading to lower market value of milled rice.

Milling method

No rice mill had existed in the Project Area before this Project. Farmers carried their paddy to rice mills in Semuto town about 50km away from the Project Area.

There are 6 private rice mills in Semuto town. Small scale milling machines are dominant and three different types of milling machines are used. Most popular one is Engerberg type rice mill and the next is Friction type rice mill, followed by a limited number of Rubber Roll type.

The result of interview survey to rice millers at Semuto in Luwero District reveals the performance of these three (3) different types as follows.

Table A.2.2 Milling recovery rate by type of rice mill

Type of Rice Mill	Milling Recovery (Average)	Broken Rice (Average)
Rubber Roll Type	68-70%	30%
Friction Type	60%	30-50%
Engerberg Type	55-60%	50%

Source: JICA Study Team, Survey result in Semuto, Luwero district

(3) Marketing

Rice farmers in Ziobwe have to transport their paddy to Semuto town for rice milling. About 50 km away from their places required transportation cost of 90,000 Ush for a 5ton pick up truck. Farmers receive milling service there by paying milling service fee of 50 Ush/kg on milled rice weights. After milling, farmers sell the milled rice at 750 to 900 Ush/kg to brokers who normally wait for milled rice at the mill. Otherwise, rice-growing farmers in Ziobwe have to sell their rice in a form of paddy at farm gates to collectors with prices reported as 300 to 500 Ush/kg. In generally, most of rice produced in the area seems to be consumed locally without shipping to Kampala. The flow chart of rice in the Project Area was as follows.

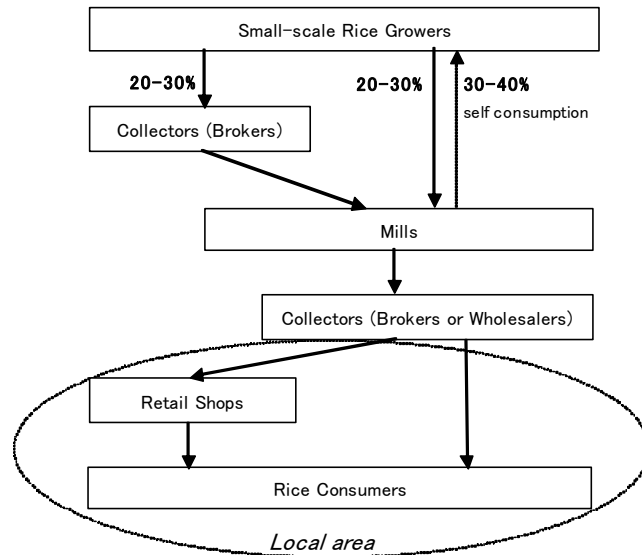


Figure A.2.3 Trading Chain of Rice

Price Trend at Project Area

Paddy rice price was 325-500 Ush/kg at farm gate and milled rice price was 750-900 Ush/kg at mill in Semuto in the year 2004. The recent price trend is shown in the following table.

Table A.2.3 Price trend at project area

		2004				2005	
		Sep.	Oct	Nov	Dec	Jan	Feb
Farm gate price (paddy)	Superica	325	500				
Price at mill (Milled rice)	Superica	750	900			900	

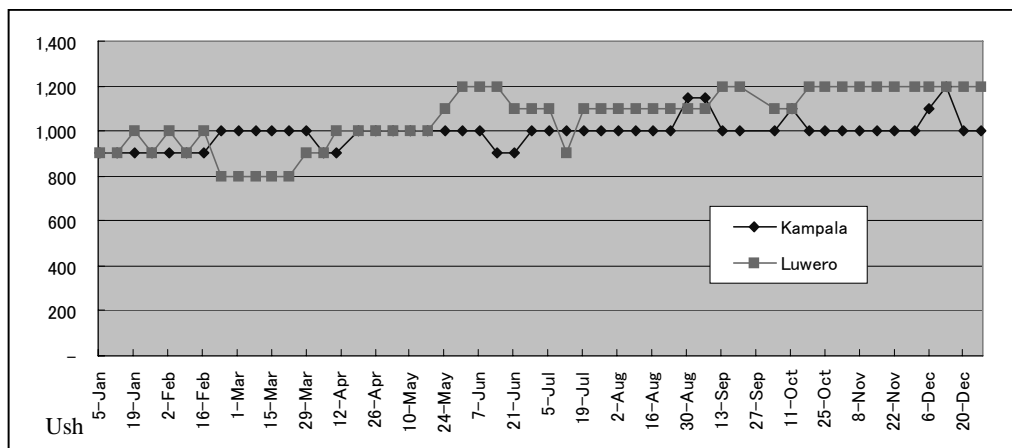
Source: JICA Study Team

Price Trend at Kampala and Lwero town

Following figures show that the retail and wholesale prices of milled rice in Kampala and Lwero town in the year 2004.

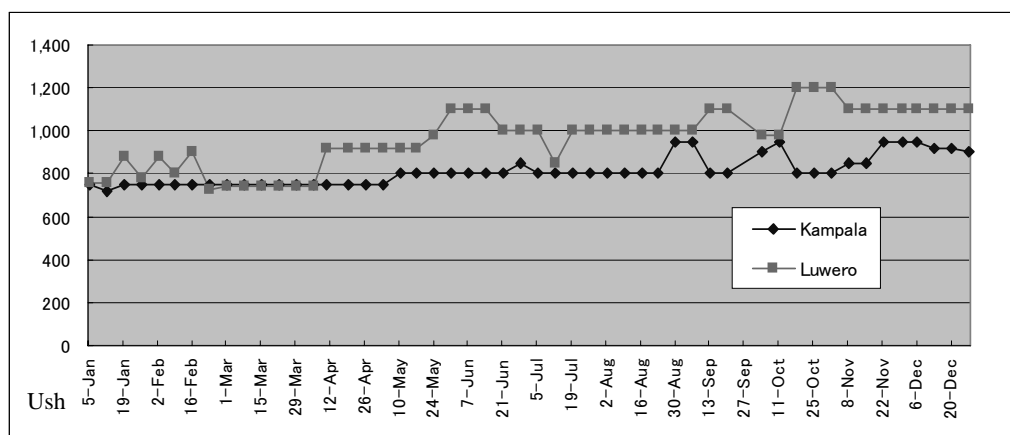
Prices in Lwero town show an upward trend in the retail and the wholesale than in Kampala. This means that most of rice produced in the Project Area are consumed locally.

Seasonal fluctuation is not clear as seen in the below figures. It is considered that the price seems to be influenced by price of imported rice.



Source: the IITA

Figure A.2.4 Retail price- Kampala (Owino) and Lwero town (year 2004)



Source: the IITA

Figure A.2.5 Wholesale price- Kampala (Owino) and Luwero town (year 2004)

(4) By-Product

Rice bran is used for animal feed but husk is not well utilized yet.

Husk can be used for fuel and bran can be used for oil extraction. Rice bran is rich in oil and but without reducing moisture content less than 7%, it can not be stored in long period.

(5) Farmer's household economy

The farmer's household survey was carried out by interview with 30 farmers who are involved in the Pilot Project. Most of the farmers did not have the record on their farming activities. All their responses came from their memories.

The major findings from the survey are described below.

Household

The average family size was 6.07. Almost all family live on agriculture, mainly food crops production. It was noted that, in an ordinary farm household, only 2 persons were working in agriculture. There were many school goers, while aged people over 60 were very limited in number.

Land ownership

Average size of land holding is 12 acre, with arable land of 4 acre, though actual cultivated land is one third of arable land. Almost none of households were landless.

The forms of land tenure vary by the histories of development of the area. In this area, Miloland is the main form.

TableA.2.4 Household Size and Land Use

Number of family members	6.07
Occupation	
Farmer	1.23
Housewife (Farmer)	0.80
Schooling	2.83
Pre-schooling	1.07
Others	0.13
Average holding area (acre)	12.28
Land use (acre)	
Cultivated land	3.95
Grass land	5.58
Swamp (paddy -irrigated)	0.00
Others	2.74
Land tenure	
Miloland	99.92%
Customary land	0%
Leased hold from	
Other farmer	0.08%
Community	0%
Public land	0%

Source: JICA Study Team

Income

Table shows the average income realized by the farmer's households who are involved in the Pilot Project. The average household income was 782,000 Ush. A greater percentage of their income (72%), 566,000 Ush was realized from agricultural production. The major sources of income were maize, rice and vegetable production.

Expenditure

The average household monthly expenditure was from 55,000 Ush in cash. School fee, medical fee and food are major cash the expenses of household.

Table A.2.5 Income and Expenditure per Household

	Rice Project Area		
	Quantity sold	Unit price	Income
INCOMES			
Farm cash incomes			
Sold products of annual crops	Kg	Ush/kg	Ush
Maize	1,996	198	394,550
Sweet potato	1,740	43	74,333
Cassava	47	74	3,500
Rice	366	569	208,100
Groundnut	1	1,100	1,320
Beans	247	396	97,767
Millet			
Cotton			
Vegetable	264	430	113,633
Others			4,667
Sold products of perennial crops	Kg	Ush/kg	Ush
Coffee	336	200	67,200
Banana (bunch)	43	1,941	83,467
Pineapple (pcs)			
Orange			
Others			9,367
Sold livestock	head or l	Ush/head	Ush
Cattle	0.1	200,000	20,000
Pork	0.3	50,813	13,567
Chicken	3.1	3,183	9,867
Milk	189	296	55,950
Egg (tray)	5	83	416
Others			6,000
Sub-Total			1,163,704
Farming cost			597,182
Farm cash net incomes			566,522
Non-Farm incomes			
Salary from other occupation			Ush 165,200
Wages from working on other farm			
Wages for casual worker			
Earnings from cottage industry			
Renting farm machinery and work animals			
Renting farm land			
Interest earned from money loan			38,040
Other non-farm income			12,000
Sub-Total			215,240
Grand Total			781,762

EXPENDITURE	monthly	Ush
Household's cash expenditure	55,058	660,696

Source: JICA Study Team

2.2.2 Bulamogi Rice Processing and Marketing Project

(1) Rice Production

This area is located in north-eastern part in Kamuli District and north and east part of this area faces vast swampland connecting to Nakuwa Lake. Rice production using this swamp-edge has been carried out for long years. Many farmers engage in rice growing both by direct sowing and transplanting on the swamp edge.

The total production is estimated at over 3,000 ton in paddy in GISPUB. However, in 2004 production decreased to 970 ton mainly due to drought.

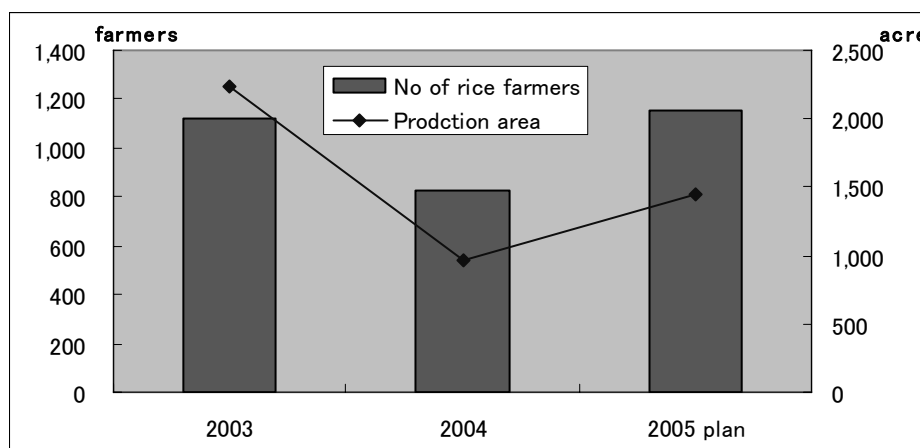


Figure A.2.6 Rice Productions by Farmers' Groups in GISPUB

Two main paddy rice varieties, Super and K5 are widely grown. Two rice crops in a year are possible on lowland and upland. Cropping calendar of rice in Namwiwa, in eastern region of Kamuli is shown below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Namwiwa Lowland rice	Planting						Harvesting					
Namwiwa Upland rice	Harvesting (2)		Planting (1)			Harvesting (1)		Planting (2)				

Note: Harvesting period of lowland rice in Namwiwa is very long (more than 3 months). The reason here is that rice cultivation is carried out on swamp edges where water level vary in long period.

FigureA.2.7 Cropping calendar of rice

(2) Post-Harvest & Milling method

Post-Harvest

The major problem on post-harvest processing in Project area is same as Ziobwe area, the lack of proper threshing and drying technology.

Their method causes increased broken rice during milling process and small pebbles are mixed. This causes lower milling recovery rate and lower market value of milled rice. Rice farmers and millers should be careful for the inclusion of impurities in rice, especially of stones.

Milling method and Quality of Milled Rice

No rice mills existed in the Project area before. 6 private rice mills exist in Kaliro town, about 30km from the Project Area, providing milling service at fee. Two different types of milling machine are used. Most popular one is Engerberg type and another is Friction type which is also used for maize milling.

The result of survey on milled rice at Kaliro reveals the performance of these two (2) different types of milled machine as follows.

Table A.2.6 Quality of Milled Rice

Engerberg Type		Friction Type	
	Rate (%)		Rate (%)
Milling Recovery	50.0	Milling Recovery	61.7
Broken Rice	78.1	Broken Rice	54.5
Large broken rice	9.3	Large broken rice	11.7
Mid broken rice	52.2	Mid broken rice	34.3
Small broken rice	14.0	Small broken rice	6.8
Minimum broken rice	2.6	Minimum broken rice	1.7

Source: JICA Study Team

(3) Marketing

Most of rice growers sold their rice either in paddy or in milled rice individually. Normally after harvesting and drying, farmers carried their paddy to rice mills nearby and mill paddy paying milling fee 50 Ush/kg, and then they sold the milled rice to traders who usually waited for the milled rice in front of rice mills. In case in villages with limited access to rice mill, middlemen purchased paddy at farm gate.

Collective marketing of rice by bulking was almost none. In transportation of paddy from the field to farmhouse and from farmhouse to rice mill, farmers normally used bicycle.

The flow chart of rice in this area was as follows

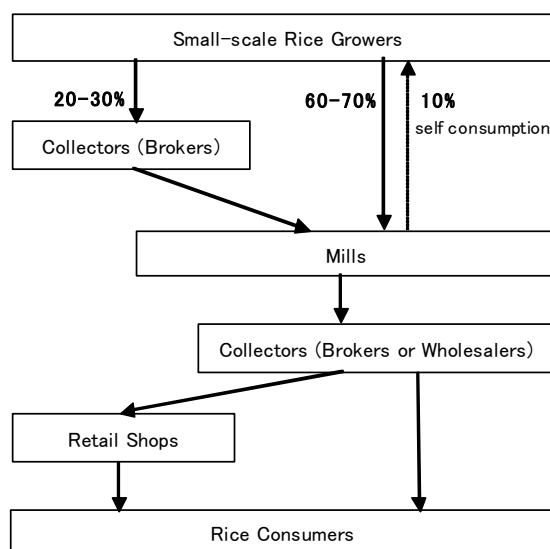


Figure A.2.8 Trading Chain of Rice

Price Trend at Project Area

Farm gate paddy price was 400-500 Ush/kg and milled rice price is 750-850 Ush/kg at mill in Kaliroin the year 2004. The latest price trend is shown in the following table.

Table A.2.7 Price Trend at Project Area

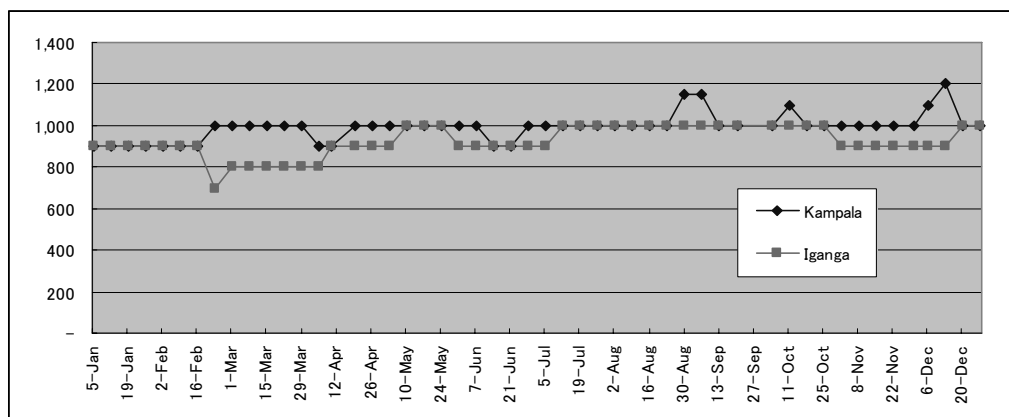
		2004				2005	
	Variety	Sep.	Oct	Nov	Dec	Jan	Feb
Farm gate price (paddy)	K5	400					
	Super	400	500				
Price at mill (Milled rice)	K5	750				850	
	Super	800	850			900	

Source: JICA Study Team

Price Trend at Kampala and Iganga town

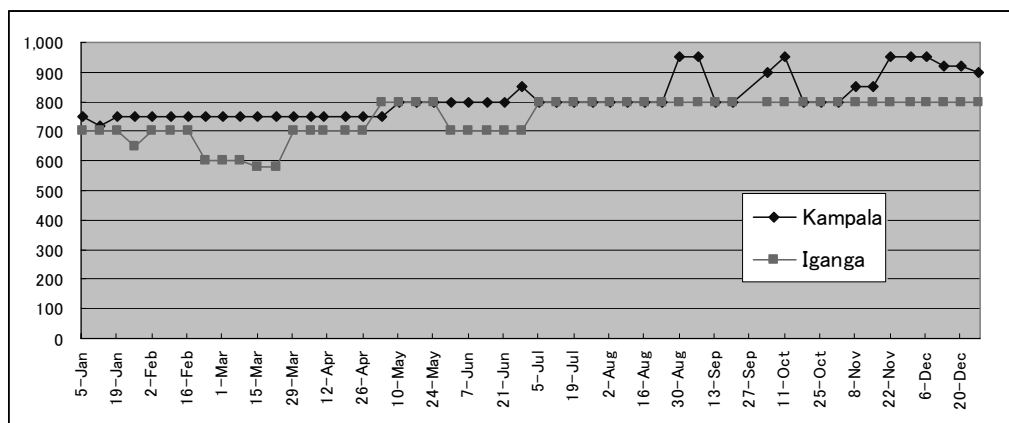
Following figures show that the retail and wholesale prices of milled rice in Kampala and Iganga town in the year 2004.

Prices in Kampala show higher tendency in retail and wholesale prices than those in Iganga.



Source: the IITA

Figure A.2.9 Retail price- Kampala (Owino) and Iganga town (year 2004)



Source: the IITA

Figure A.2.10 Wholesale price- Kampala (Owino) and Iganga town (year 2004)

(4) By-product

Rice bran is partly used for animal feed but husk is not well utilized yet. Farmers in the area have not been accustomed to the use of bran as animal feed.

(5) Farmer's household economy

The farmer's household survey was carried out by interview survey of 30 farmers. The major findings from the survey are described below.

Household

The average family size ranges from 9.8. All farm households live on agriculture. It was noted that, in an ordinary farm household, only 3 persons were working in agriculture.

Land ownership

Average size of land holding was 12 acre, with arable land of 7 acre. Almost none of households were landless. Customary land is the main form of land tenure.

Table A.2.8 Household Size and Land Use

Number of family members	9.08
Occupation	
Farmer	2.13
Housewife (Farmer)	0.88
Schooling	4.02
Pre-schooling	2.33
Others	0.51
Average holding area (acre)	11.94
Land use (acre)	
Cultivated land	7.40
Grass land	2.96
Swamp (paddy -irrigated)	0.15
Others	1.36
Land tenure	
Miloland	0%
Customary land	100%
Leased hold from	
Other farmer	0%
Community	0%
Public land	0%

Source: JICA Study Team

Income

Table shows the average income of 519,000 Ush realized by the farmer's households who are involved in the Pilot Project. The major sources of income were rice, cotton, maize and income from non-farm occupation. A greater percentage of their income (66%), 345,000 Ush was realized from agricultural production.

Expenditure

The average household monthly expenditure was from 57,000 Ush in cash. School fee, medical fee and food are major cash the expenses of household.

The main problem related to expenditure is that, in many case, farmers face the lack of cash. Whenever they obtain cash income, they are forced to pay the daily necessities and others.

Table A.2.9 Income and Expenditure per Household

	Rice Project Area		
	Quantity sold	Unit price	Income
INCOMES			
Farm cash incomes			
Sold products of annual crops	Kg	Ush/kg	Ush
Maize	713	157	112,267
Sweet potato			
Cassava	13	185	2,400
Rice	555	547	303,733
Groundnut	25	813	20,333
Beans			
Millet	76	284	21,616
Cotton	452	552	249,650
Vegetable			
Others			
Sold products of perennial crops	Kg	Ush/kg	Ush
Coffee	19	334	6,337
Banana (bunch)	1	2,853	2,083
Pineapple (pcs)			
Orange	9	300	2,700
Others			2,366
Sold livestock	head or l	Ush/head	Ush
Cattle	0.1	146,154	19,000
Pork	0.2	49,274	11,333
Chicken	1.0	3,265	3,167
Milk	6	3,000	18,000
Egg (tray)			
Others			
Sub-Total			774,985
Farming cost			430,455
Farm cash net incomes			344,530
Non-Farm incomes			
Salary from other occupation			Ush 150,600
Wages from working on other farm			
Wages for casual worker			15,333
Earnings from cottage industry			
Renting farm machinery and work animals			7,500
Renting farm land			1,500
Interest earned from money loan			
Other non-farm income			
Sub-Total			174,933
Grand Total			519,463
EXPENDITURE	monthly		Ush
Household's cash expenditure	56,861		682,333

Source: JICA Study Team

2.2.3 ACAPROMA Cassava Flour Production and Marketing Project

(1) Cassava production

Cassava is widely grown in the Project Area, mostly for home consumption. Cassava is the most important staple food crop in the area where climate is semi-arid.

It is difficult to accurately assess the cassava cultivation area as it is grown with other crops or in the hedge of field. According to the estimation, 181 members of the Project grow cassava in 566 acres.

Generally, cassava is grown throughout the year with harvest six to seven months after planting. Cropping calendar of cassava in eastern region of Nakasongola is shown below.

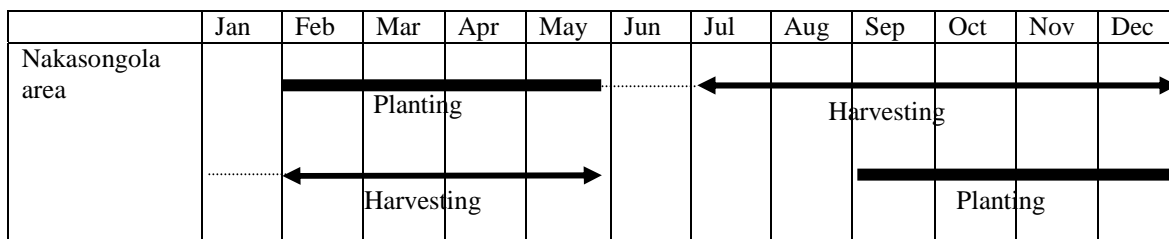


Figure A.2.11 Cropping Calendar of Cassava

(2) Post-Harvest

As fresh cassava is perishable by nature, dry chip processing has been widely practiced by farmers. Drying of chips is usually done at farmyard directly on the earth. Therefore, earth or sand dusts are often mixed and original white colour of the flour cannot be obtained. Vascular streaking is also a factor for colouring of the products. To avoid these, drying needs to be completed within a day. However, since most of the farmers do not possess any facilities for drying, it is often difficult to complete drying in a limited time, particularly in rainy season.

(3) Marketing

At Project Area, surplus cassava was sold to fishermen at lakeshore in a fresh form and occasionally sold in a form of dried chip to traders who come from Kampala. According to the farmers, no trader came to purchase fresh cassava in this area. Farmers in this relatively remote area have limited access to the major market.

Price Trend at Project Area

Farm gate price of cassava chip was 300 Ush/kg in the year 2004. The latest price trend is shown in the following table.

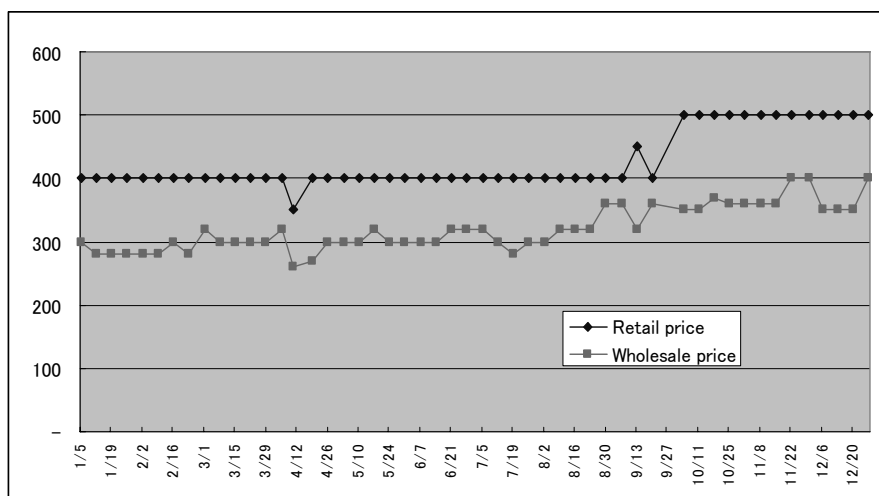
Table A.2.10 Price Trend of Cassava Chips in the Project Area

	2004				2005	
	Sep.	Oct	Nov	Dec	Jan	Feb
Farm gate price (chip)	273				300	

Source: survey at Kisaalizi by JICA Study Team

Price Trend at Kampala

Following figures show that the retail and wholesale prices of cassava flour in Kampala in the year 2004. Retail prices show less fluctuation than wholesale ones.



Source: the IITA

Figure A.2.12 Retail and wholesale price-Owino market in Kampala (year 2004)

(6) Farmer's household economy

The farmer's household survey as carried out in interview survey for 24 farmers who are concerning with the Pilot Project. The major findings from the survey are described below.

Household

The average family size ranges from 9.1. Almost family live on agriculture, including food crops production and livestock rearing. It was noted that, in an ordinary farm household, only 3 persons were working in agriculture. There were many school goers, while aged people over 60 were very limited in number.

Land ownership

Average land size of holding is 31 acre, with arable land of 12 acre. Almost none of households were landless. The forms of land tenure vary by the histories of development of the area. Different forms of land tenure are seen in Project Area. Milo and Public land are popular, while Customary land is seen.

TableA.2.11 Household Size and Land Use

Number of family members	9.08
Occupation	
Farmer	2.63
Housewife (Farmer)	0.86
Schooling	3.62
Pre-schooling	0.94
Others	0.37
Average holding area (acre)	30.63
Land use (acre)	
Cultivated land	11.50
Grass land	15.85
Swamp (paddy -irrigated)	0.06
Others	3.22
Land tenure	
Miloland	46%
Customary land	8%
Leased hold from	
Other farmer	2%
Community	3%
Public land	40%

Source: JICA Study Team

Income

The major sources of income, about 596,000 Ush were cattle, maize, cotton, groundnut, salary from non-farm occupation.

Non-farm incomes are unexpectedly high because of the wealthy households were accidentally selected as the survey object.

Expenditure

The average household monthly expenditure was from 59,000 Ush in cash. School fee, medical fee and food are major cash the expenses of household.

TableA.2.12 Income and Expenditure per Household

	Cassava Project Area		
	Quantity sold	Unit price	Income
INCOMES			
Farm cash incomes			
Sold products of annual crops	Kg	Ush/kg	Ush
Maize	393	186	73,215
Sweet potato	54	123	6,667
Cassava	9	237	2,167
Rice			
Groundnut	56	517	28,958
Beans	6	515	3,000
Millet			
Cotton	96	549	52,833
Vegetable			
Others			1,792
Sold products of perennial crops	Kg	Ush/kg	Ush
Coffee			
Banana (bunch)			
Pineapple (pcs)			
Orange	43	296	12,708
Others			917
Sold livestock	head or l	Ush/head	Ush
Cattle	0.42	274,802	115,417
Pork	0.50	29,166	14,583
Chicken	3.38	3,827	12,917
Milk	133	175	23,317
Egg (tray)			
Others			4,083
Sub-Total			352,574
Farming cost			204,034
Farm cash net incomes			148,540
Non-Farm incomes			Ush
Salary from other occupation			376,000
Wages from working on other farm			10,000
Wages for casual worker			12,500
Earnings from cottage industry			10,625
Renting farm machinery and work animals			13,042
Renting farm land			13,333
Interest earned from money loan			
Other non-farm income			12,000
Sub-Total			447,500
Grand Total			596,040
EXPENDITURE	monthly		Ush
Household's cash expenditure	58,655		703,860

Source: JICA Study Team

2.2.4 Kangulumira Fruit Processing and Marketing Project

(1) Pineapple production

Generally, many kinds of the fruits such as mango, papaya and avocado are grown in the backyards of farmhouse or grown in wild without any care in Uganda.

In the Project Area, pineapple, banana and passion fruits are the major fruits grown with some intensive care and for commercial purpose. Particularly, there are a large number of pineapples in the Project Area.

TableA.2.13 Pineapple Productions by Farmers' Groups in NTFP

Name of Members	Land possessed acre	2003				2004			
		Land occupied by Pineapples acre	Production Pcs	Where and how many sold		Land occupied by Pineapples acre	Production Pcs	Where and how many sold	
				HGFA Pcs	Middleman Pcs			HGFA Pcs	Middleman Pcs
Goofrey Kizito	45	15	50,000	2,100	47,900	16	70,000	-	70,000
Adam Mutebi	30	8	50,000	800	49,200	6	40,000	-	40,000
Luutu Muhammad	12	8	20,000	300	19,700	3	10,000	-	10,000
William Nyanja	5	3	10,000	900	9,100	4	10,000	-	10,000
Hadja Namufiwaaya	10	2	20,000	1,400	18,600	3	30,000	-	30,000
Kazibwe Musoke	20	4	40,000	700	39,300	6	20,000	-	20,000
Lutaama Moses	4	3	40,000	500	39,500	5	30,000	-	30,000
Kimbombo Husein	6	2	20,000	500	19,500	4	30,000	-	30,000
Ronald Kanya	8	3	20,000	200	19,800	4	20,000	-	20,000
Micheal Kizito	15	7	70,000	700	69,300	7	80,000	-	80,000
Mutwalibi Ngoolo	5	4	10,000	800	9,200	5	30,000	-	30,000
Ruth Kizito	2	2	15,000	-	15,000	2	20,000	-	20,000
Harriet Kakima	2	2	10,000	-	10,000	2	15,000	-	15,000
Ruth Kibanja	20	10	100,000	-	100,000	15	100,000	-	100,000
Total	184	73	475,000	8,900	466,100	82	505,000	-	505,000

Source: JICA Study Team

The first harvest of pineapple is, in general, one year and a half after planting. After that, the harvest comes every half a year for 5 – 6 years. Cropping calendar of pineapple in Kayunga is shown below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kayunga area												
		Planting								
	← Harvesting →											

Figure A.2.13 Cropping Calendar of Pineapple

(2) Processing

There exist many cottage scale enterprises processing and preserving fruits and vegetables in the surroundings of Kampala area. In some District towns, there are cottage scale fruit processors who make wine, juice and dried fruits, but the numbers of processors as well as the volume of production are limited.

In the project area, fruits processing is not commonly practiced, except some types of banana processing for the traditional brewing. There are no cottage scale fruit processors in the Project Area except out-growers to Fruit of the Nile Ltd.

(3) Marketing

Normally farmers sell their pineapple to traders/middlemen at farm gates. Most of growers sell their products individually. Collective marketing of pineapple by bulking is observed in some limited areas.

The flow chart of pineapple in this area is as follows

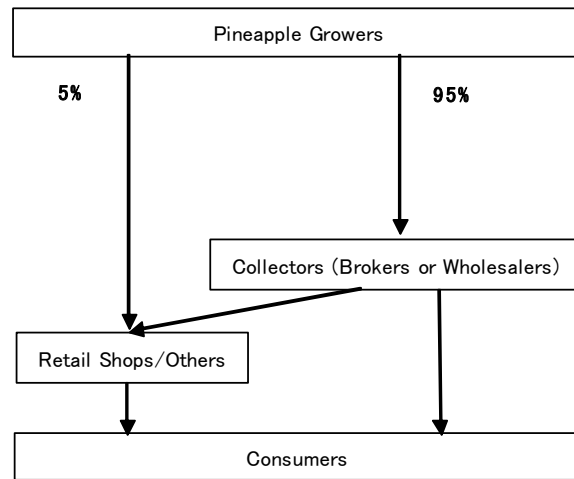


Figure A.2.14 Trading Chain of Pineapple

Price Trend at Project area

Pineapple farm gate price was 300 to 800 Ush/kg (700-800 Ush/kg for large size) in the off-season and 100 to 400 Ush/kg (400 Ush/kg for large size) in the peak season.

Table A.2.14 Price Trend at Project Area

Size	2004				2005	
	Sep.	Oct	Nov	Dec	Jan	Feb
≥ 3kg	700	800			700	
2-3kg					500	
1-2kg					300	

Source: survey at Kangulumira by JICA Study Team

(4) Farmer’s household economy

The farmer’s household survey was carried out by interviews of 15 farmers. The major findings from the survey are described below.

Household

The average family size was 8.1 persons. Almost all families lived on agriculture, mainly food crops production. It was noted that, in an ordinary farm household, only 2 persons were working on agriculture.

Land ownership

Average size of land holding was 15 acre, with arable land of 11 acre, though actual cultivated land was two third of the arable land. There was no landless household.

The forms of land tenure vary by the histories of development of the area. In this area, public land was the main form.

Table A.2.15 Household Size and Land Use

Number of family members	8.13
Occupation	
Farmer	1.30
Housewife (Farmer)	0.75
Schooling	4.71
Pre-schooling	2.19
Others	0.27
Average holding area (acre)	15.46
Land use (acre)	
Cultivated land	11.00
Grass land	1.97
Swamp (paddy -irrigated)	1.33
Others	1.16
Land tenure	
Miloland	0.5%
Customary land	0%
Leased hold from	
Other farmer	0.5%
Community	0%
Public land	99%

Source: JICA Study Team

Income

The average household income was about 4,237,000 Ush. The major source of income was pineapple. It was noted that one member farmer was raising about 10,000 chickens with 15 employees.

Expenditure

The average household monthly expenditure was from 253,000 Ush in cash. School fee, medical fee and food are major cash the expenses of household.

Table A.2.16 Income and Expenditure per Household

	Fruit Project Area		
	Quantity sold	Unit price	Income
INCOMES			
Farm cash incomes			
Sold products of annual crops	Kg	Ush/kg	Ush
Maize	1,640	211	345,467
Sweet potato			
Cassava			
Rice			
Groundnut			
Beans	55	648	35,667
Millet			
Cotton			
Vegetable	100	200	20,000
Others			
Sold products of perennial crops	Kg	Ush/kg	Ush
Coffee	306	311	95,267
Banana (bunch)	7	1,990	13,333
Pineapple (pcs)	6,523	293	1,908,333
Orange			
Others			53,333
Sold livestock	head or l	Ush/head	Ush
Cattle	1	100,000	100,000
Pork			
Chicken	333	3,504	1,166,667
Milk			
Egg (tray)	90,000	80	7,200,000
Others			133
Sub-Total			10,938,200
Farming cost			7,789,400
Farm cash net incomes			3,148,800
Non-Farm incomes			
			Ush
Salary from other occupation			280,000
Wages from working on other farm			-
Wages for casual worker			272,000
Earnings from cottage industry			-
Renting farm machinery and work animals			-
Renting farm land			-
Interest earned from money loan			-
Other non-farm income			535,867
Sub-Total			1,087,867
Grand Total			4,236,667
EXPENDITURE			
Household's cash expenditure	monthly		Ush
	253,333		3,039,996

2.2.5 Other Data Collected

The data on sub-country level was obtained by interview with relevant officers in the District government.

The population data was from 2002 Population Census. Data on infrastructure was collected from relevant Departments in the district, which included schools, clinics and others. Most of these data were reliable.

Though the data on agricultural production and household income seems low authenticity, these may show general tendency of agricultural production and household income.

(1) Population

Pilot Project's sub-county population stood at 10 - 45 thousand persons as per the results of the 2002 census.

Population density of the Project area is thus comparatively equal compared to national average of 121ps/km². However, differences are observed in Lwabyata/Lwanpanga, of 66 ps/km² and in

Kanglumira, of 377 ps/km².

The ratios of the sex composition were over 100 by Lwampanga area and below 100 by others.

Table A.2.17 Sub-county Data Sheet (1)

	Zirowbe Rice Processing and Marketing Project	Bulamogi Rice Processing and Marketing Project		ACAPROMA Cassava Flour Production and Marketing Project		Kanglumira Fruit Processing and Marketing
Sub-County:	ZIROBWE	NAMWIWA	GADUMIRE	LWABIYATA	LWAMPAMGA	KANGLUMIRA
Center town/village of project area	Zirowbe	Namiwiwa		Lwampanga		Kanglumira
Land area sq.km	202.73	148.6	158.7	488.4		117.74
Administrative structure						
Number of LC2 (parishes)	8	4	5	6	3	6
Number of LC1 (villages)	43	38	44	31	24	37
Population						
Male	17,388	12,030	10,681	5,293	11,089	21,627
Female	17,848	12,526	10,969	5,334	10,627	22,812
Total	35,236	24,556	21,650	10,627	21,716	44,439
Sex composition (male/female)	97.4	96.0	97.4	99.2	104.3	94.8
Population density sq.km	174	165	136	66		377
Family structure						
Number of household	no data	4,625	no data	2,095	4,879	9,529
Average household size	no data	5.31	no data	5.07	4.45	4.66
Household Income Claseses						
0-50,000 shs (monthly)	no data	44%		39%		18%
50,001-100,000 shs	no data	28%		26%		24%
100,001-150,000 shs	no data	11%		12%		20%
150,001-200,000 shs	no data	7%		7%		8%
Above 200,000 shs	no data	10%		16%		30%

(2) Agricultural production

Kanglumira and Zirowbe had been the heartland of traditional Uganda agriculture, producing coffee, bananas, cassava and sweet potato. Today, a fruit project area, Kanglumira produces higher value crops like pineapple, chilies, okra and fresh vegetables. In case of rice project area, Zirowbe has introduced upland rice as a cash crop.

Cassava project area, Lwabiyata/Lwampanga, located comparatively remote than other project areas, are producing cassava, sweet potatoes, maize and groundnuts for self-consumption. Only cotton is taken as cash crop in this area.

Another rice project area, Namiwiwa/Gadumire is also remote from Kampala, but produces rice traditionally in swamp-edge of river.

The livestock includes poultry, cattle, sheep, goats and pigs. 95-87% of the households interviewed had some kinds of livestock. There were a few farmers who are performing good livestock enterprise with strong entrepreneurship. In the fruit project area, it was noted that one farmer was raising about 10,000 chickens with 15 employees. In the rice project area (ZAABTA); a farmer is raising 15 dairy cattle producing 20 l milk every day.

Table A.2.18 Sub-county Data Sheet (2)

	Zirowbe Rice Processing and Marketing Project	Bulamogi Rice Processing and Marketing Project		ACAPROMA Cassava Flour Production and Marketing Project		Kanglumira Fruit Processing and Marketing
Sub-County:	ZIROBWE	NAMWIWA	GADUMIRE	LWABIYATA	LWAMPAMGA	KANGLUMIRA
Center town/village of project area	Zirowbe	Namiwiwa		Lwampanga		Kanglumira
Agricultural production						
Major crops (Cultivated area) in order of area covered	Coffee Cassava Maize Potato Beans Bananas	Cotton Maize Rice Groundnut Cassava Millet		Cassava Sweet potatoes Cotton Maize Groundnut		Coffee Sweet potatoes Maize Matooke Beans Cassava
Major fruit				Orange		Pineapple
Animal production	Poultry Cattle Pigs	Cattle Poultry		Cattle Poultry		Poultry Cattle

(3) Agro-processing facilities

The current situation of the processing facilities differs by commodities and regions. However, agro-processing are limited in rural area in general. Most popular facilities are maize/cassava flourmills or rice mills privately operated at district towns. A very limited number of mills or other processing facilities exist in the Sub-county where the pilot projects are to be implemented.

Table A.2.19 Sub-county Data Sheet (3)

	Zirobwe Rice Processing and Marketing Project	Bulamogi Rice Processing and Marketing Project		ACAPROMA Cassava Flour Production and Marketing Project		Kangulumira Fruit Processing and Marketing Project
Sub-County:	ZIROBWE	NAMWIWA	GADUMIRE	LWABIYATA	LWAMPAMGA	KANGLUMIRA
Center town/village of project area	Zirobwe	Namiwiwa		Lwampanga		Kanglumira
Agricultural processing facilities						
Maize/Cassava/Millet Mill	1	1	0	3	7	8
Maize/Rice Mill	0	0	0	0	0	0
Coffee huller	0	0	0	0	0	6

(4) Infrastructure

Current road network in the Project area is considered fairly thin and not well equipped. Road densities (road km / area sq.km) in respective sub-country are 0.50 for Kanglumira, followed by Lwabiyata/Lwanpanga of 0.46, Zirobwe of 0.21, Namiwa of 0.13, Gadumire of 0.05, when compared to the road density of 1.77 in Kampala.

Among the roads referred, share of tarmac road is limited, with gravel or dirt road being dominant.

The provision of water is inadequate for the area. It is estimated that more than 50% of the community do not have access to safe water. They rely on streams, dams and springs. Only about 10-50% has access to reliable water.

Only 1% of the households in the municipality are electrified.

Sub-country has about 4-36 schools in its jurisdiction. This includes primary and secondary schools. Visits to some of the schools revealed that there was poor sanitation at the schools. Toilets were few and in all cases were latrines. There was no running water at the schools visited.

There was no hospital, 1-4 health-centers, 0-2 dispensaries and 0-20 clinics in each Sub-country. This number seems not sufficient to meet the requirements. In addition, due to the lack of electricity in the area, the clinics cannot operate on a 24-hour basis.

Table A.2.20 Sub-county Data Sheet (4)

	Zirobwe Rice Processing and Marketing Project	Bulamogi Rice Processing and Marketing Project		ACAPROMA Cassava Flour Production and Marketing Project		Kangulumira Fruit Processing and Marketing Project
Sub-County:	ZIROBWE	NAMWIWA	GADUMIRE	LWABIYATA	LWAMPAMGA	KANGLUMIRA
Center town/village of project area	Zirobwe	Namiwiwa		Lwampanga		Kanglumira
Land area sq.km	202.73	148.6	158.7	488.4		117.74
Infrastructure						
Road						
Major (tarmac) road km	0	0	0	0	0	6
Feeder road km	42	20	8	120	107	53
road km/ area sq.km	0.21	0.13	0.05	0.46		0.50
Water (access to water) % of household	40%	no data	no data	no data	no data	50
Electricity (access to electricity) % of household	1%	0%	0%	0%	0%	no data
Social infrastructure						
Health						
Number of hospitals	0	0	0	0	0	0
Number of health centers	3	1	1	4	3	3
Number of Dispensaries	2	0	1	0	0	0
Number of Clinics (Private)	20	4	8	3	2	0
Education						
Number of primary schools (with p7)	28	11	7	7	4	23
Number of secondary schools (with s4)	7	1	1	2	0	5
Number of higher secondary schools (with s4)	1	0	0	1	0	2
Number of vocational training schools	2	0	0	0	0	1
Literacy rate	no data	no data	no data	no data	no data	58%
Primary school enrollment	no data	no data	no data	no data	no data	70%

