OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

15189

RESTRICTED

DP/ID/SER/A/ 667
13 August 1985

ENGLISH

LEATHER PRODUCTS DEVELOPMENT CENTRE

DP/PAK/79/022

PAKISTAN

Technical report: Leather garment design and production

Prepared for the Government of Pakistan
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of E. Chehwan, leather garments expert

United Nations Industrial Development Organization

Vienna

373

V.85-29777
2583T

ABSTRACT

As part of the ongoing project "Leather Products Development Centre" (DP/PAK/79/022), a leather garments expert was sent by the United Nations Industrial Development Organization (UNIDO), acting as executing agency of the United Nations Development Programme (UNDP), to the Islamic Republic of Pakistan to assist the Government in the establishment of the Leather Products Development Centre (LPDC). The expert's mission lasted 31 months, beginning on 25 August 1982.

The report containsa summary ofthe situation of the leather garments industry in Pakistan. The training programmes held at the LPDC on design, pattern making, processing and production of leather garments are described, together with consultancy services carried out by the expert for various firms.

In the report, the expert recommends that additional space, equipment and staff be made available at the LPDC, that a research unit be established and that a methodology of raining be given.

At the industrial level, he makes recommendations on personnel, production processing and design, material and accessories, international contacts, and incentives that could be made to the leather garments manufacturing industry.

The report also contains factory layout plans and designs for leather garments.

CONTENTS

INTRODUCTION

As part of the ongoing project "Leather Products Development Centre" (DP/PAK/79/022), a leather garments expert was sent by the United Nations Industrial Development Organization (UNIDO), acting as executing agency of the United Nations Development Programme (UNDP), to the Islamic Republic of Pakistan to assist the Government in the establishment of the Leather Products Development Centre (LPDC). The expert's mission lasted 31 months, beginnng on 25 August 1982.

This report largely reflects the situation in the Pakistani leather garments industry. The success of the LPDC is due to the demand by the industry for technical assistance, particularly during recent months. At the start of the project the leather garments industry consisted of not more than 25 cottage industries, the largest of these having a maximum daily output of 30-40 garments. Now there are over 100 factories, the largest daily output being 370 garments. During the last 18 months, more than 40 factories came into existence, the majority of them with the assistance of the LPDC. The largest investment in the leather garments industry was motivated by the technical capabilities and responsibilities of the LPDC. There is concern that the end of this assistance will affect the development of the industry.

The emphasis given to the industry in this introduction does not reflect the actual activities of the LPDC. Priority was given to the training programmes carried out each year, which were very much in demand from all categories of candidates. The increase in interest among the young Pakistanis applying to the LPDC training programmes during the last three years is illustrated by the increase in the number of applications received, as follows:

1982-1983	30 applications
1983-1984	70 applications
1984-1985	over 100 applications

It is not necessary to make a sophisticated analysis of the market situation to show that the LPDC has significantly increased the development of the leather garments industry.

The report presents an analysis of the various aspects of the mission, indicating the important technical inputs in the training programmes and the industries services. It considers the results achieved in relation to the project document and includes the market reaction towards the development of the trade. Consequently this report has two basic themes, technical aspects and commercial strategy, which are both analysed in detail.

Recommendations are made for improving training activities and advice is given on the industrial situation.

The information and the data given in this report are accurate and may be used as a reference to demonstrate the possibilities for trade in the country.

RECOMMENDATIONS

The following recommendations are grouped into suggestions for improving the training activities and advice on the industrial situation.

Training activities

1. The LPDC can receive and train 20 students, namely, one fifth of the trainees that applied for the leather garments section. Additional space and stitching machines are urgently needed to cope with the development of the trade and the LPDC activities.

2. Additional staff were already requested in recommendations made in progress reports in June 1985 to be trained and ready to help LPDC instructors, who need time for self improvement.

3. A research section should be formed as soon as possible to develop the training programmes and products processing to stay ahead of the industry.

4. Major assistance should be given to the staff in the form of short seminars in methodology training oriented towards achieving professionalism.

5. In accordance with the standard training programme, the amount of training given should depend on the job specification and probably on the different categories of job, as follows:

(a) The training period for material selection, colour matching and cutting should be less than six months;

(b) The design and pattern-making course should be extended to two years;

(c) There should be a one-year course in the supervision of processing and production.

Industrial situation

6. Over the last year, the project promoted an investment of over two million United States dollars in the development of the infrastructure for new industries alone, by providing technical know-how, machinery selection and production systems. This investment should be safeguarded in a variety of ways:

(a) By having production initially supervised by experienced personnel not currently available in the country. The LPDC could then be responsible for providing the training required to produce qualified supervisors;

(b) By understanding that investment should not stop at the infrastructure level, but rather extend to assembly systems, which can help in different ways to ensure uniform quality and organized production in the future;

(c) By making major advances in design, so that a proper programme can be adopted that imposes a new commercial strategy based on targeting the products for selected markets;

(d) By improving the finishing of the leather according to international requirements that reflect changes in fashion;

(e) By giving special consideration to image, which is important in supporting increases in production. This could be enhanced by participating in the various international exhibitions;

(f) By preparing a collective publicity programme to be proposed to the international fashion magazines.

7. A study programme should be organized similar to that of the International Trade Center (ITC) to cover the United States market and take into account the following: Canada; Europe; Japan and other markets.

8. The Government should take the following measures to improve the situation in the industry:

(a) Provide more facilities for importing certain accessories, interlining and cotton fusing material to be used in the processing of the garments;

(b) Impose certain restrictions on the export of leather, especially to countries considered competitors, to stop the rise in the price of leather, or give the tanneries incentives to sell locally the leather that is destined to be exported in products.

9. Special care should be taken to provide the northern area and the Punjab with services and follow-up projects as an incentive to new ventures in the leather garments business. This is justified by the experience obtained by the LPDC in Lahore and the rapid development achieved. It may be possible to obtain even better results because of the ability of the people in handicraft jobs and in certain other disciplines reflected in various sectors, for example, woodwork, carpets and ceramics.

I. COUNTERPART TRAINING

According to his job description, the major part of the expert's mission was to train counterparts in order to ensure the successful continuation of the project. However, full advantage could not be taken of the opportunities that arose because of the limited number of available counterparts. A two-stage programme was prepared, covering all the technical needs of the institutional work at the Leather Products Development Centre (LPDC) and the needs of the services to the industries.

The counterpart training programme was divided into three periods: technical know-how training; training capacity formation; and creativity training.

A. Technical know-how training

The technical know-how training lasted 10 months and was the most successful period. The activities of the LPDC were limited and the experts could devote all their time to the counterparts, providing them with the basic knowledge and techniques required for constructing all types of leather garments. The counterparts were also introduced to the routines required to develop manual skills and were able to become familiar with the existing machines. A period of time was then devoted to pattern construction and fitting adjustments. The work programme was designed to cover a wide range of processes reflecting the actual methods and techniques that are used to manufacture leather garments in the developed countries.

This introduction served to prepare the counterparts for the reality of trade outside the country. In fact, in 1982, this training reflected the actual situation in the Islamic Republic of Pakistan: a lack of both technical know-how in processing and knowledge about the trade.

The range of samples consisted of jackets and trousers in 40 different winter and summer models. The range covered 80 per cent of the leather wear known as manufactured types of products, designed according to European fashions, fittings and manufacturing complexities. The necessary changes were made immediately to ensure a quick transformation in attitudes towards possible future improvements at the LPDC and in industry.

The training programme covered the following areas:

(a) Selecting the appropriate leather for each type of item;

(b) Selecting the complementary material involved in the processing;

(c) Selecting the correct ways to use the interlining, fusing and accessories;

(d) Building a skilled capacity in the various operations involved in processing;

(e) Selecting the simplest processing procedures required to achieve the desired results,

(f) Cancelling all restrictions on the processing of products, to allow individual views to be expressed and modes of operation to be selected;

(g) Allowing access to all the possibilities for mechanization available at the LPDC, to ensure that optimum results are obtained.

The programme was adopted to achieve the following goals:

(a) To introduce the latest information;

(b) To create a difference in knowledge and quality between the LPDC and the industries;

(c) To prepare the counterparts to use their training confidently and professionally, as demanded by the industry;

(d) To create a team spirit among the counterparts to be able to differentiate the specializations according to requirements;

(e) To build self-confidence in technical aspects and a professional consciousness among the counterparts.

B. Training capacity formation

Unfortunately due to the various activities at the LPDC, this period of professional training formation for the counterparts had to be carried out alongside the technical know-how training programme.

The work was divided into normal training duties in the morning and practical work in the afternoon. The important factors to be considered were as follows:

(a) Ensuring the trainees receive a complete knowledge of and capacity for technical matters;

(b) Adapting training methods to the different types of trainees taking the same courses;

(c) Orientating each individual technically according to ability and final job orientation;

(d) Collecting statistics about the interest shown and results achieved during the training period;

(e) Building an analytical ability to evaluate the problems that could arise from an excess or lack of information.

In practice, most of the work was done with the help of evaluation controls and extensive meetings between the counterparts and the experts, analysing carefully all the aspects mentioned above.

Theoretical lessons concerning the methodologies of training to be followed in the training programme were also given.

Regular meetings were held to prepare the work programme, consider the views of the counterparts and involve them gradually in selecting the content of the programme.

C. Creativity training

There is no doubt that there are a few laws of creativity that can be learned. However, if we consider that design is a scientific process,

especially when it is related to industry, part of the creativity follows naturally from technical requirements.

Industrial design is not art. It also differs from what most people benefiting from it consider it to be. The industrial designer is a collector of know-how and economic and social requirements, which are analysed and adopted to the productivity problems and presented in the best way possible. Thus, the artistic part of the work of a designer is believed to be very limited and is incorporated into the general problems of the industry.

The design programme could not be implemented as an isolated matter or subject. It had to follow the technical progress of the LPDC, considering all the variations in the processing and productivity methods. Various factors had to be elaborated to stimulate the possibility of learning creativity. Different types of information were gathered to build on technical design ability by using the following exercises:

(a) Free-hand exercises;

(b) Object design;

(c) Geometrical design;

(d) Proportions of the human body;

(e) Details from various positions of parts of the human body;

(f) Technical aspects of the human body;

(g) Technical presentation of the proportions in the garments being designed;

(h) Different ways of presenting the variations in the material according to the positions of the body;

(i) Information about fashion history and its development in the last 50 years, with reference in particular to the industrialization of fashion in the early 1950s and the change of identification of fashion in the 1960s.

Particular consideration was given to describing the economic and social factors that were most important in changing the identity of fashion in the various periods. The cultural movements were also responsible for diverting fashion from being a way of presentation to a kind of self-expression.

The most important change that occurred in fashion history was the integration of fashion at the industry level to give rise to the fashion industry.

II. TRAINING ACTIVITIES

Various types of training activities were carried out during this mission. The basic one year course is now being conducted for the third time.

As mentioned in the introduction, there has been a tremendous increase in interest in our training programme from the various social classes. One of the problems faced at the LPDC during the first three years was the limited number of interested trainees, and policies had to be introduced to attract young Pakistanis in particular to the leather business. Publicity in newspapers and other media helped this process, but the basic strategy to be followed was to modify the training level and classify it so as to cover different interests and different social levels.

The policy adopted was to conduct two experimental training programmes that would enable a final standard programme to be concluded, which would be followed during subsequent years. The final training programme had to be adapted to provide both personal satisfaction to the trainees from self improvement and the knowledge, skill and ability to be used in practical ways in the industrial field.

Like any other industry, the leather garment industry is divided into three different areas that must be integrated to complete the phases required to manufacture a product. The training programme had to cover the following areas involved in the manufacturing of leather garments:

Design and pattern construction
Processing and production
Management and commercialization

Only the first two components are covered in this report.

The programmes were divided into units providing packages of information and exercises, with a certain flexibility to include or exclude information depending on the needs emerging during the course. A technical course based on 70 per cent practical work cannot be limited to short sequences unless part of the practical course is based on mathematical results or mechanized operations. In the present case, most jobs rely on handicrafts. The time periods required could be calculated approximately, depending on the following:

(a) Variations in the levels of ability of the trainees;

(b) Variations in the materials, as they are natural products;

(c) The rate of absorption by the students of some areas or details of those areas;

(d) Various obstacles, resulting from psycho-social problems that could not be identified a priori, required the information to be amplified in order to reach the acceptance level demanded.

A. Design programme

The design programme could not attempt to create qualified designers able immediately to provide an identity to Pakistani leather wear. However, rather than trying to Europeanize Pakistani thinking, a new identity was introduced to compete with international fashion. It was also concluded that copying was not a substitute for training designers in this country. From 350 to 400

original designs were made exclusively in Pakistan, demonstrating that copying is not necessary and that there is a logic-based solution to all the problems that might arise related to technical, productivity, economic and social factors.

Of course to consider each of these factors in detail requires a certain expertise that is impossible to develop in one year. However, excluding the personal artistic touch produces technical design critics and not designers. It is considered that a long-term education based 60 per cent on self conduct and personal improvement is required to develop artistic ability.

The programme was mainly oriented towards design techniques and to improving students' ability to observe and then express their ideas easily in a technical way.

B. Pattern-making course

This course includes the construction of patterns for the basic modern and classic products usually manufactured in the leather garments industry. The patterns are based on a synthesis of measurements and fittings statistically elaborated in the international market and formulated in relation to chest, hip and height measurements.

The pattern-making course prepares the trainees for constructing patterns as used in industry.

C. Processing and production course

The largest part of the processing and production course concentrates on the processes as a basic preparation for understanding the design and production of the product. In fact the process programme runs parallel to the design programme and is divided into two parts: the process of manufacturing and pilot production. In the process part, skills are developed in the manual and mechanized operations, with emphasis on cultivating quality consciousness.

Two pilot productions were carried out in the two courses. They consisted of setting up small manufacturing units using team work and assigned jobs to achieve the following:

(a) To create an industrial environment;

(b) To amplify the technical information into realistic production possibilities;

(c) To acquaint the trainees with the productivity problems arising when attempting to achieve a balance between quality and speed;

(d) To accustom the trainees to the proper organization of the area.

The first pilot production started in July 1983 and ended successfully after three months. The production was used as a sampling collection in the Italian market. Over 100 good quality complicated jackets were produced to a standard higher than that of local industries. The general results achieved were the following:

(a) A harmonious atmosphere was created among the trainees;

(b) A directive group was set to work as a research team to sample and study the production operations;

(c) The trainees showed responsibility by respecting estimated dates and work deadlines

It should be mentioned that this pilot production allowed experimentation with an assembly system on the basis of the realistic situation the industries will face in the country. It also served to prove that the system is valid and could be implemented on a large scale. The extreme difficulties that can arise in production were introduced to study further possibilities of improvement and perfection. Various industrialists were interested and visited the LPDC to observe the assembly system, which was the first of its kind to be introduced in Pakistan.

The success of the pilot production initiated an intensive demand for industrial consultancy from the LPDC.

III. STANDARD TRAINING PROGRAMME

After the introduction of the two training courses, an accurate analysis of the results achieved was made with the help of the counterparts, considering the following:

(a) The positive and negative points achieved;

(b) The various transformations in the abilities of the trainees during the courses;

(c) The interest of the trainees in the different areas;

(d) The needs of the industries for qualified personnel in the different specialized jobs;

(e) The capacity of the students to absorb the subject matter.

The analysis helped in the design of a standard programme, which was divided into two sections: design and pattern making; and production and production processes.

The programme provided specific information required to qualify the students for specialized areas. It also allowed the LPDC to accept twice the normal number of trainees. The programme was designed to be a general preparation for the different specializations. Special attention was paid to design and patterns in the first section and skill and production methods in the second section.

In addition to the training courses, other short seminars consisting of advanced courses lasting from two weeks to three months were conducted in pattern making, production methods and design.

A. Design and pattern making

1. Design programme

(a) Theory

Movement of fashion during the last century:

Analysis of the changes in the aesthetic due to social, economic and political factors;

Selection of materials.

Design related to industry:

General idea about industrial design;
Industrialization of fashion;
Problems related to design for industrial production.

(b) Design practice

Drawing exercises:

Object design;
Geometrical design;
Body anatomy;
Different ways of presenting a design.

Aspects of creativity

Design techniques:

- Graphitic;
- Water colour;
- Pastel colour;
- Mixed technique.

2. Patterns

(a) Knowledge about sizes

(b) Pattern construction

Skirts:

- Classic;
- Four panels;
- Half circular;
- Overlapping.

Men's trousers:

- Jeans;
- Classic.

Women's trousers:

- Jeans;
- Classic;
- Fashionable.

Men's jackets:

- Two-button;
- Double-breasted;
- Three-buttons.

Men's overcaots:

- Normal;
- Double-breasted;
- Raglan.

Women's jackets:

- Single-breasted;
- Double breasted;
- Raglan.

Overcoats for women

Samples of textiles for important classic items

Sizes for sportswear

Men's sportswear:

Basic short jacket;
Safari;
Different types of collars (application);
Variation of pattern according to design and fittings.

3. Leather exercises

(a) Knowledge about machines

(b) Knife cutting exercises

(c) Exercises on straight stitching

Inside seam;

Top stitching

Length stitching

(d) Folding straight

Curve

Angles

(e) Leather stitching

Button holes:

various types.

Pocket lining:

various types of pockets.

Pocket piping

Cuff:

With elastic;
With opening;
With strips.

Belts:

With full elastic;
With elastic on sides;
With half elastic or down portion;
With strips.

B. Production and production processes

1. Knowledge about machines

(a) Specifications of machine adjustment

(b) Specifications on length stitching quality

(c) Controlling the speed of the machine

2. Training in round and straight stitching

3. Training in different processes on textiles

(a) Flaps

Square
Round
Non-systematic
Dart type

(b) Button holes

Front-finish type
With trimming
Double finish

(c) Collars

Korean
Double
With extension
Classic
Double-breasted type
Banana
Shirt
With piping

(d) Cuffs

Classic folded bottom
Ending close
With opening
Open, with extension
Open, with leather finishing on opening side
Doubled, with thread inside
With strips
With zip

(e) Pockets

Cut
Piping
Classic double bon
Side box pleat
Full box pleat
Zip
Classic upper

(f) Arm holes

Normal
With gathering
Raglan
With dart

(g) Pleats

Side:

Inside look;
Outside look.

Box
Double

(h) Use of elastic

In belts
In straps
In cuffs
In pockets

4. Sewing four different jackets in textile using all the processes in 3

5. Leather quality

(a) Different types of leather
(b) Selection of skins
(c) Colour matching
(d) Skin defects

6. Knife cutting

(a) Knife quality
(b) Sheets quality
(c) Knife sharpener
(d) Knife positions
(e) Consumption of leather
(f) Cutting practice

7. Preparation processes

(a) Fusing

Quality of fusing
Use of fusing

(b) Use of glue

Seam opening
Pockets
Hems

8. Production processes

(a) Classic items

Two-button jacket for men
Double-breasted jacket for men
Overcoat for men
Tailleur for women, single-breasted
Tailleur for women, double-breasted
Overcoat for women

(b) Sportswear

Blouson for men, normal type
Blouson for women, normal type

9. Production and production systems

(a) Knowledge about systematic production

Chain system
Unitary system

(b) Production

Establishment of production departments:

Cutting department;
Manufacturing department;
Co-ordination and timing department;
Sampling department.

(c) Pilot production

Production of four classic items
Sportswear production for men and women (20 different models or more)

IV. CONSULTANCY SERVICES

The LPDC was set up mainly to direct training efforts and available capacity towards industrial technical help.

Training programmes were designed to provide qualified technicians for industry. It was also necessary to prepare industry for the trainees, to give better chances of success to the training programmes. The success of this approach was illustrated by the ease with which the trainees could be filled in the various leather garments factories, even before completing the course.

It is not necessary to justify the direct interaction with industry, since it is recommended in the objectives of the project document. Occasionally, the success of developing a close relationship with industry produced confused interpretations about the nature of the project, in that priority was incorrectly being given to training and not to industry. However, this view ignores the fact that training should be the first action in developing the economy and improving the industrial situation. Developing human beings and individual knowledge is not a requirement unless made part of an integrated programme materialized on a general national scale that is reflected in Pakistan, both at the industrial level and in the private sector.

The project succeeded in gaining the confidence of industry and in motivating much development at various levels of the leather garments manufacturing industry.

Various types of consultancy are provided by the LPDC:

(a) Technical know-how transfer;

(b) Design services;

(c) Market orientation and publicity.

An indirect approach, through the development of the LPDC, was followed to win the trust of the private sector. The profile of the training programmes was modified, with particular attention being paid to various exhibitions.

The policy was to establish a distinct difference between the level of the LPDC and that of industry. Direct approaches to manufacturers started in March 1983.

After the Leather Exhibition '83, the industry approached the LPDC for help with fashion trends, designs and pattern construction. This relationship became stronger and the help of the LPDC was needed after the pilot production in September 1983. During 1984, the LPDC was fully involved with industry at all levels.

It is impossible to cite all the services and consultancy given by the LPDC during the period of the mission. Selected cases are described where a full programme was assisted by the LPDC, although details are omitted that could be considered harmful at a competitive level.

A. Motif Leather

Motif Leather, which was one of the first leather garments factories established in Karachi, supported by its own tannery (SHAFI), is now one of

the largest in the country. The previous production capacity of the company was 50 garments per day using 50 machines.

According to the results of the pilot production, a plan was requested for an experimental unit to produce 60 garments per day. It was the first factory planned by the LPDC and it introduced the assembly-line system and new production methods. The factory was planned according to the space available. All the operations were located in the same hall, without partitions, for easy control and to allow for the shortage of qualified supervisors (see figures I and II).

The stitching area was divided into two rows each containing eight machines, with the flexibility to increase after three months to three rows, depending on the productivity achieved.

A former student of the LPDC followed the supervision of the work. Good results were achieved within a few months, particularly with respect to quality, and productivity was satisfactory after four months. However, there was no possibility for further progress owing to a shortage of space, which prevented support elements from being introduced to organize the flow of the work. On the basis of the experience gained with the experimental unit, the company decided to implement a new plan for a larger factory.

The new leather garments factory consisted of two storeys, each occupying 900 m^2, built according to the requirements of the LPDC. Two proposals were made for the layout of the factory:

(a) The first proposal introduced a circular production method where all the operations are done on the ground floor (see figure III). The space was divided according to the nature of the operation into the following areas:

A central area cutting section;

A circular area surrounding the cutting section, which includes numbering, fusing and manufacturing;

Corner areas reserved for individual operations of support and finishing, including matching, pressing and lining cutting.

Both the first and second areas could be split into one or more units, according to the productivity, using full lines of machinery and splitting part of the cutting section. The smallest unit recommended is two lines of machinery, using three cutters. The flexibility of being able to split the units helps the factory to select a sales programme with variations in the quantities and quality of products. The factory is able to work with various models at the same time without reducing productivity. Similarly, it is possible to concentrate on a selection of pieces to maximize daily output.

For example, an order for 500 pieces would take 10 days on two lines but only 1 1/2 days using the full capacity.

In this proposal, the stores, offices, stock and other services were located in an extended area shown on the plan.

(b) The second proposal (see figure IV) divided the factory into five independent departments, situated on two floors:

First floor:

Matching and cutting department;

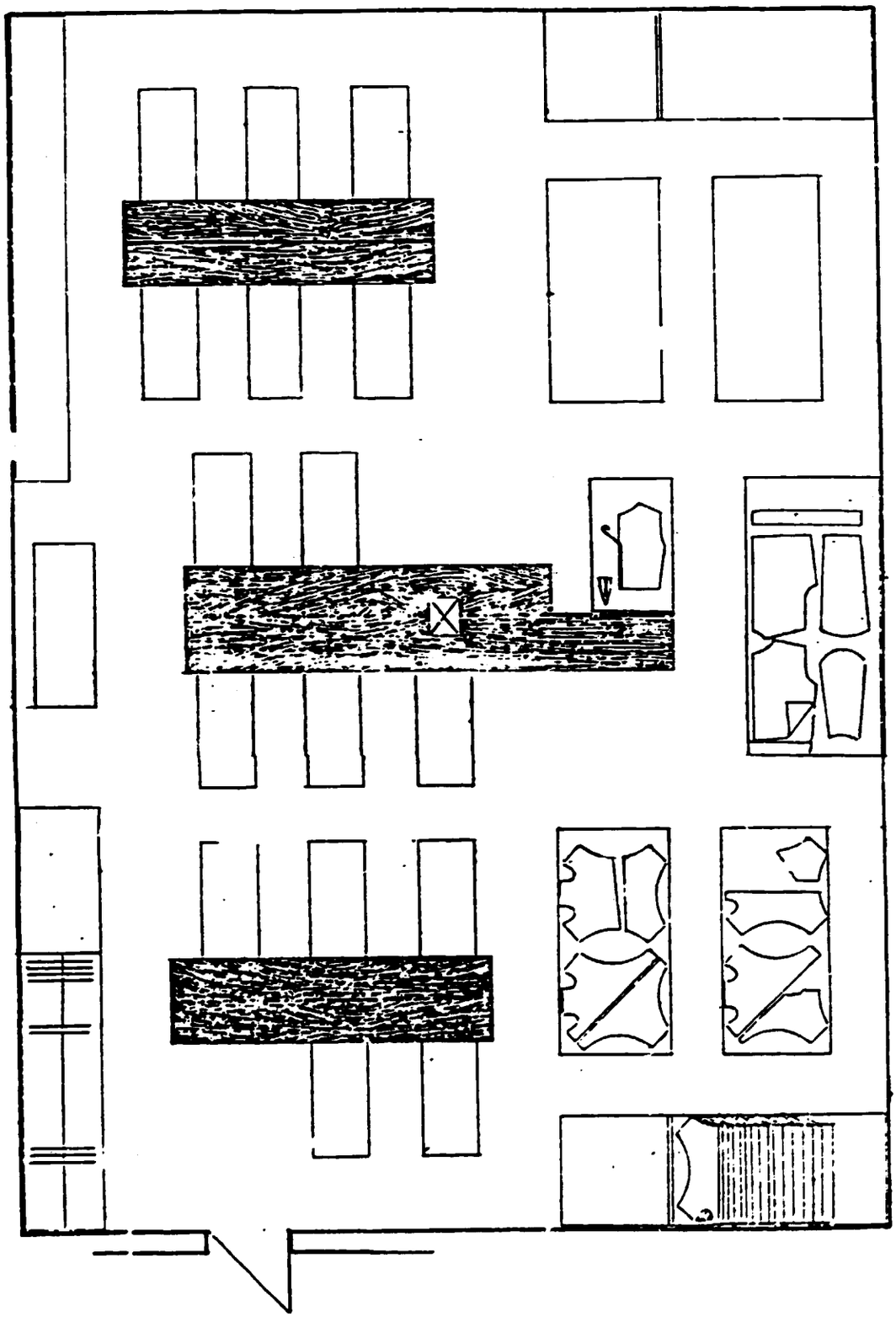


Figure I. Plan of the experimental unit designed by the LPDC for Motif Leather

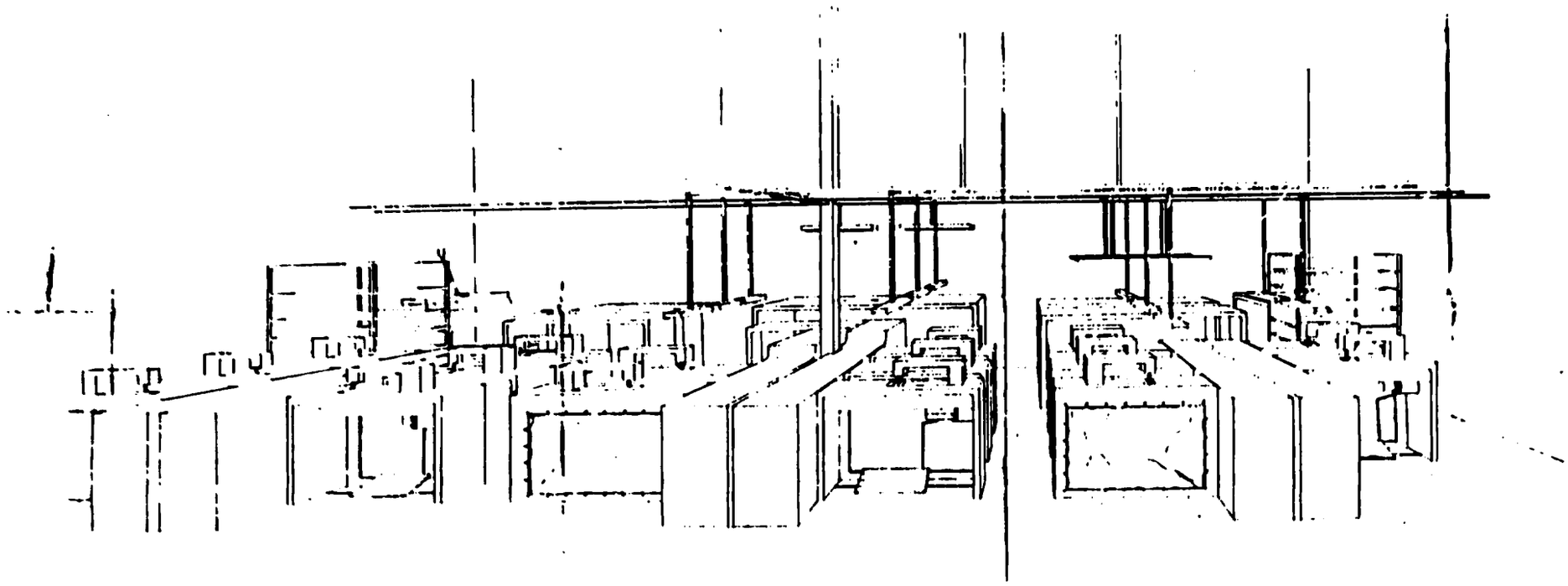


Figure II. General view of the experimental unit designed by the LPDC for Motif Leather

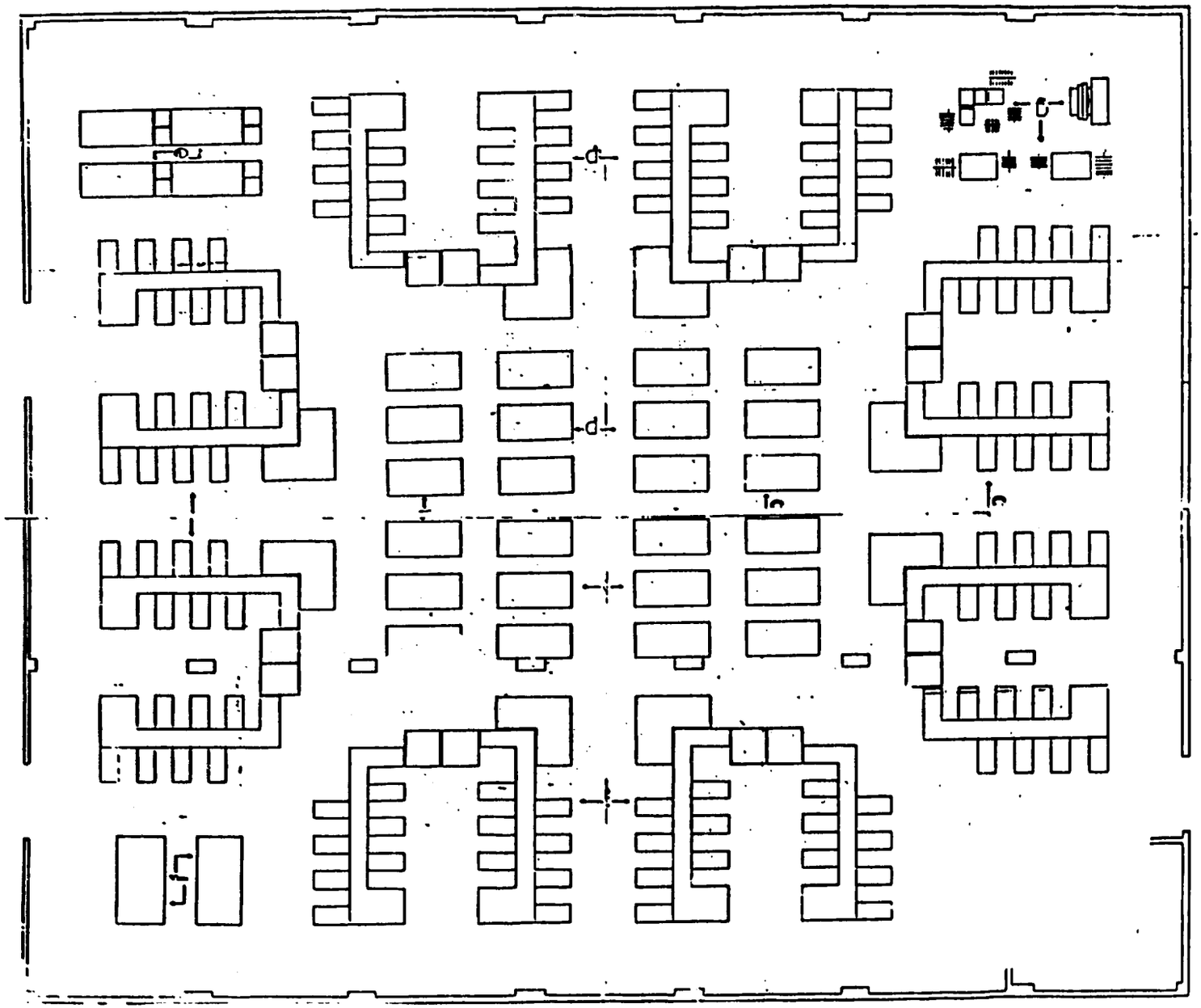


Figure III. Plan of the first layout proposed by the LPDC for the new leather garments factory of Motif Leather

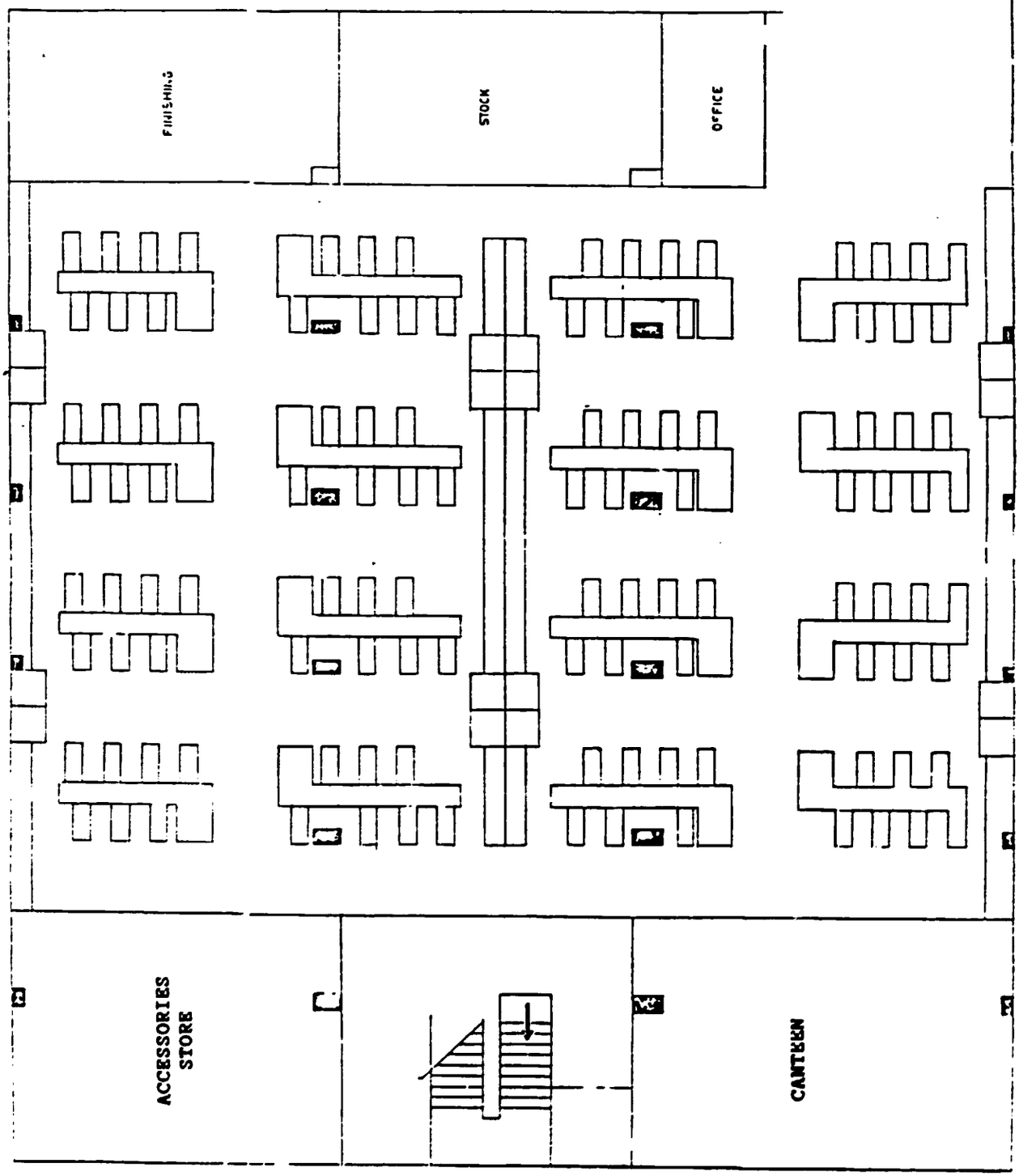


Figure IV. Plan of the ground floor of the second layout proposed by the LPDC for the new leather garments factory of Motif Leather

Display setting, including: numbering, fusing, first folding operations, and pieces checking;

Sampling department, including: pattern making, grading, sampling and production programme;

Ground floor:

Manufacturing department, including: 16 stitching units with all the support facilities (display-folding tables etc.);

Finishing department, including: cleaning, checking, steaming, and packaging.

The second proposal was adopted for the following reasons:

(a) It provides the possibility to separate female and male workers for social reasons;

(b) It is easier to train supervisors and their counterparts for small departments than to generalize supervisory duties;

(c) It facilitates the checking of the job in particular areas, thus avoiding making mistakes before reaching the manufacturing step;

(d) Less area is occupied, as the expansion is vertical rather than horizontal.

Production capacity is programmed to be 350 garments per day.

The factory started in June 1984, using one quarter of its capacity in the training programme under the supervision of the LPDC.

Four former graduate trainees from the LPDC were employed to oversee the various departments.

By December 1984, production was 80 garments per day using four lines of machinery.

The factory was completed in stages. At present, four lines are being used in the training programme and the first floor is being set up. By June 1985, the two floors should be finished and a full work programme will be required to synchronize the system:

(a) There will be 263 employees in the production section from the five departments;

(b) Ninety-six stitching machines are employed, with 16 in reserve. All the machines were imported from Europe;

(c) One steaming machine with a daily capacity of 400 jackets is already in operation. It was the first to be introduced in the country and serves also as a final quality control operation.

B. Skin Trends

The Skin Trends factory was established in the middle of 1982. The sales programme was set up in association with a British company, to cover the

entire production. After one year, the situation in the factory was as follows:

(a) There were 60 labourers working on 28 machines, producing 30-35 garments per day;

(b) Over 60 per cent of the production was rejected due to manufacturing mistakes;

(c) The production problems affected the sales programme and delivery commitments;

(d) There were large financial losses and the market lacked confidence.

The owner of the factory requested the urgent intervention of the LPDC to examine the situation in a last effort to save the factory from closure.

After an expert from the LPDC had made an urgent 24-hour visit to the factory, the LPDC proposed a work programme divided into three phases:

(a) Training the personnel;

(b) Providing a new setting, including infrastructure and new installation according to the production system to be adopted;

(c) Training the supervisors and the labourers to follow the proposed system.

A second visit was made to the factory in December 1983, to put forward the details of the work plan and the new setting for the factory. Three former students from the LPDC followed the three phases of the work plan.

During the initial one-month phase, one of the students from the LPDC carried out a personnel training programme to qualify and develop the skills of the labourers in the cutting, stitching and finishing sections.

The cutting section was transformed from scissor to knife cutting. Particular attention was given to training the helpers in the manual operation of folding. The major interest in this phase was to build a certain quality consciousness among the labourers.

In the second phase, which lasted two months, the factory was adapted to the new LPDC design. Additional furnishing, new tables and other accessories were constructed. A new power system was installed, additional machinery was purchased and the store and stock rooms were reorganized. This phase was controlled by one of the LPDC graduate students.

The first and second phases were overlapped to save time. The third phase started early in February 1984 and consisted of running an assembly system employing three stitching lines with 18 machines. This phase was supposed to be completed in three months and to achieve a production rate of 60-80 garments per day.

Surprisingly, after two months the production rate rose to 130 garments per day using 18 machines, which is more efficient than the normal European standard. As the manufacturing section was designed to handle a maximum of 80 garments per day, an urgent study was done to ensure that quality and levels of production could be maintained.

Additional cutters were used to support the increased output, accessories were proposed and finishing staff were recruited under an extensive training programme.

The Skin Trends factory (see figure V) is considered to be the most successful intervention made by the LPDC in the industrial area. The following factors contributed to this success:

The full confidence of the owner in the expertise at the LPDC;

The discipline of the students supervising the programmes designed at the LPDC;

The direct contact of LPDC staff with the labourers during visits, small seminars and reunions to explain developments and the reasons for any changes required;

The understanding of the company in sponsoring travel and hotel expenses, since expenses charged to the project by experts and counterparts could have produced a shortage in the budget, leading to obstacles or delays in the programme.

C. Lyra Company

After manufacturing military shoes for 30 years, the Lyra Company decided to expand into the leather garment trade. The company intends to serve a restricted market with medium to high quality garments.

A plan for the factory (figure VI) was designed by the LPDC according to space available for a production capacity of 100 garments per day. To achieve this target, a long-term programme consisting of the following was required:

(a) Involving the owner and the supervisors in the LPDC training programme;

(b) Establishing a leather finishing unit parallel to the manufacturing unit, to be able to fulfil the requirements of customers quickly and to handle small quantities;

(c) Giving a special personnel training programme for a period of six months;

(d) Giving major consideration to the collection and the image of the company;

(e) Adopting a sales programme to try to impose the company's own collection on the customers instead of manufacturing the various models supplied by the customers.

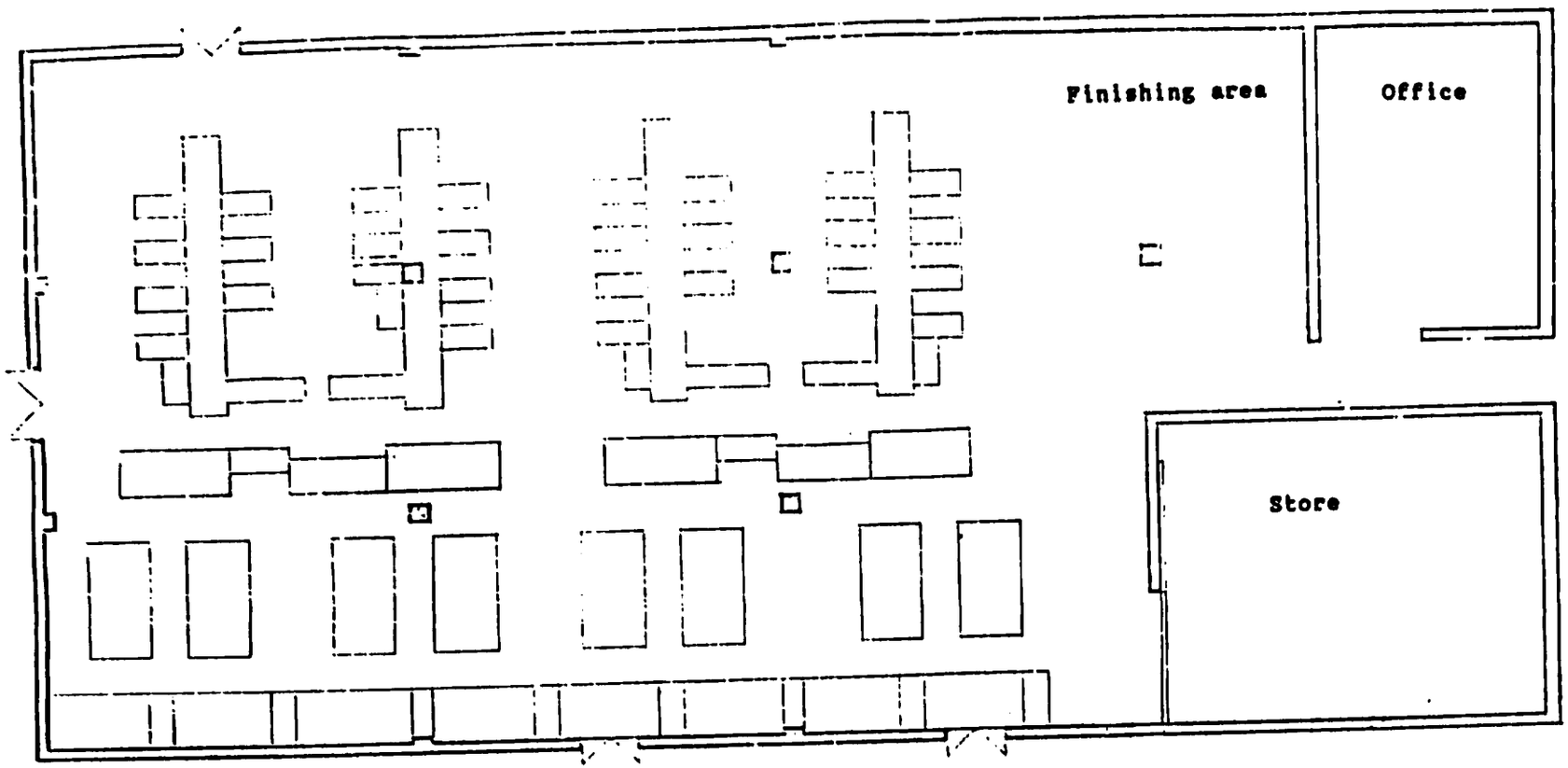


Figure V. Plan of the layout put forward by the LPDC for Skin Trends

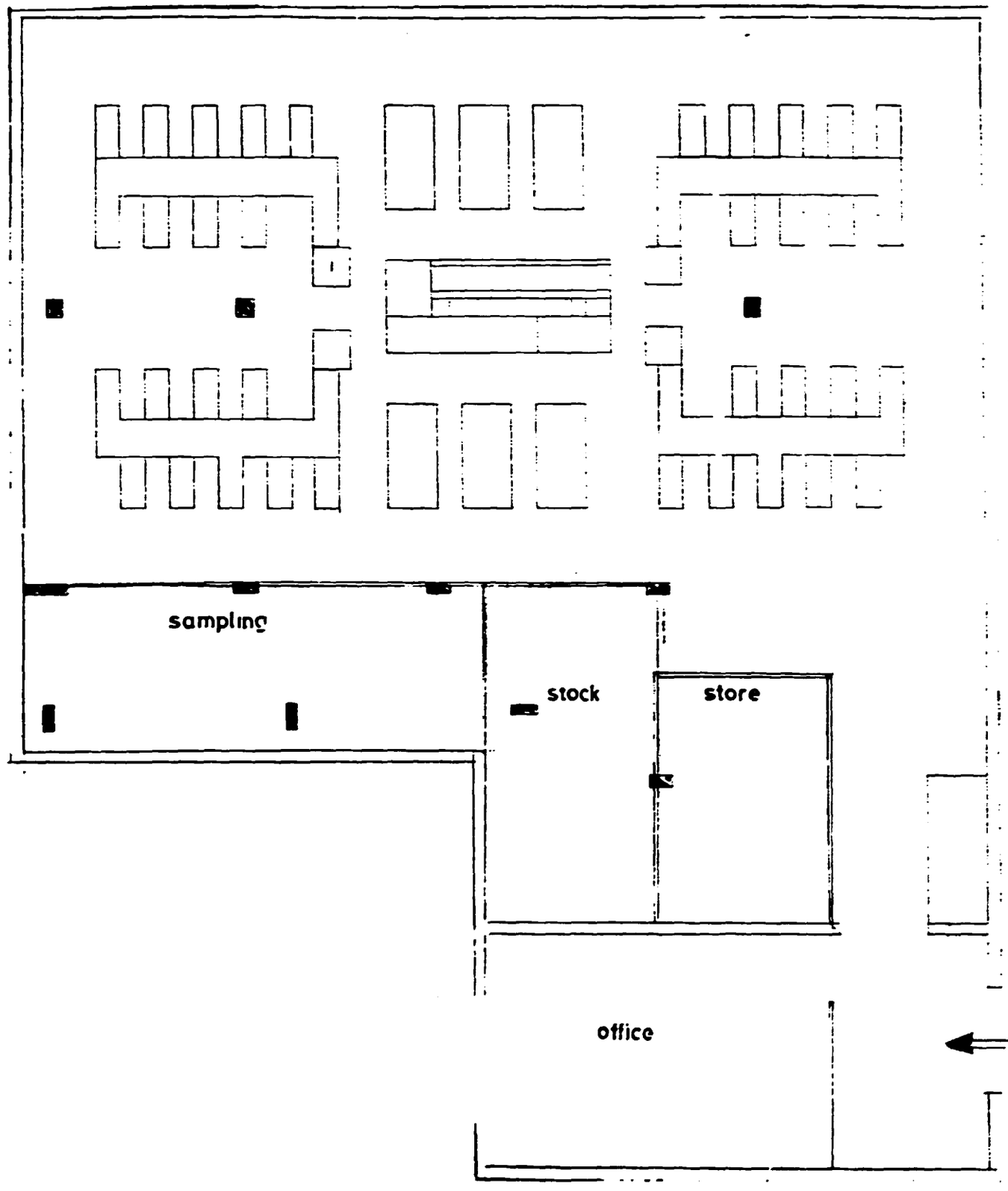


Figure VI. Plan of the factory designed by the LPDC for the Lyra Company

The programme basically followed these steps and the factory started its training phase in May 1984. The LPDC assisted in the following:

Setting up the factory;
Following the training of the personnel;
Designing the various collections for the different markets;
Designing the logo for the factory;
Monitoring sampling and production.

The company is currently producing highly complicated models at an acceptable level of quality. Over the last eight months, priority has been given to quality, although now emphasis in the programme is oriented towards increasing output gradually without diminishing the quality.

The company is running at half capacity with 40 garments produced daily. It is estimated that the plan will be completed in six month's time.

The company meets the requirements of the European market in the design and quality of the garments produced, using processes and operations chosen basically to improve the quality but with some sacrifice in productivity. The policy adopted is supported by the complexity of the designs, which justify a relatively high price.

This strategy seems to be right for penetrating the international market by avoiding competition problems with manufacturing sources, particularly when labour costs are less than 6.5 per cent of the unit cost. The only disadvantages are that a long-term training programme is required and the general implementation of the factory depends very much on the design section, the diffusion of publicity and the main sales programme, which sometimes require a considerable investment as they are remote from the market.

The quality of the garments produced by the company surprised the international market and shows that Pakistan is not destined to supply only cheap quality leather garments.

D. S. M. Din Company

The S. M. Din Company is currently the largest manufacturer of leather garments in Pakistan. Originally tanners and exporters of sheepskin, the company entered product manufacturing in 1984.

Its finished leather is well accepted in the international market and it gives particular consideration to making available a wide range of colours that closely follow European trends.

In its collaboration with the company, the LPDC provided the following:

Technical know-how;
Production management;
Personnel training;
Production system adaptation;
Publicity programme.

A technical feasibility study was requested in February 1984 to determine the investment required and the possibility of achieving an eventual production rate of 300 garments per day. On the basis of the study, a pre-project was presented at the end of March 1984 to be studied and finalized.

After only three weeks, construction had started according to the pre-project. Construction work was completed in July 1984, by which time the necessary machinery had already been imported.

The covered area of the factory is 435 m^2 divided into three independent units each with a production capacity of 100 garments per day (figure VII).

Each unit is self sufficient in both support and manufacturing operations.

Material supplies, management, finishing and design are considered common services departments for the three units. The factory was divided for the following reasons:

For social reasons regarding labourers' problems;
To divide responsibilities;
To allow the levels of production to be differentiated;
To allow different production systems to be used;
To allow male and female workers to work in separate areas.

The setting up and organization of the factory was directed by the LPDC, with the implementation of an efficient control system. The entire production management is shown in a communication chart (figure VIII), which indicates the duties and responsibilities of the supervisors. It also shows the direct connections among the various departments and the indirect communication through the other supervisors. The circular signs with the oblique bars indicate the position of checking keys for time and quality.

The lines indicate the direct connections and the movement of supplied and returned materials.

The characteristic of the system is that responsibility is not concentrated in one element but is divided equally among three supervisors: co-ordinator, quality supervisor and timing supervisor.

The duties of each supervisor depend indirectly on the duties of the other two, which ensures indirect control.

The material supplied to the various supervisors through the co-ordinator has to be distributed to the departments concerned and returned to the timing supervisor as a finished product, after being processed and checked by the quality supervisor, in the quantities established by the sampling department. The timing supervisor has to deliver it to the co-ordinator, who is responsible for giving it to the packaging department.

The sampling department is related to the following:

The co-ordinator, who determines the maximum average consumption (footage) of leather for each item;

The quality supervisor, who provides the right processes and indicates the difficult points in the manufacture of the product;

The timing supervisor, who prepares a time chart for each machine required to process the product, assuming an efficiency of 80 per cent.

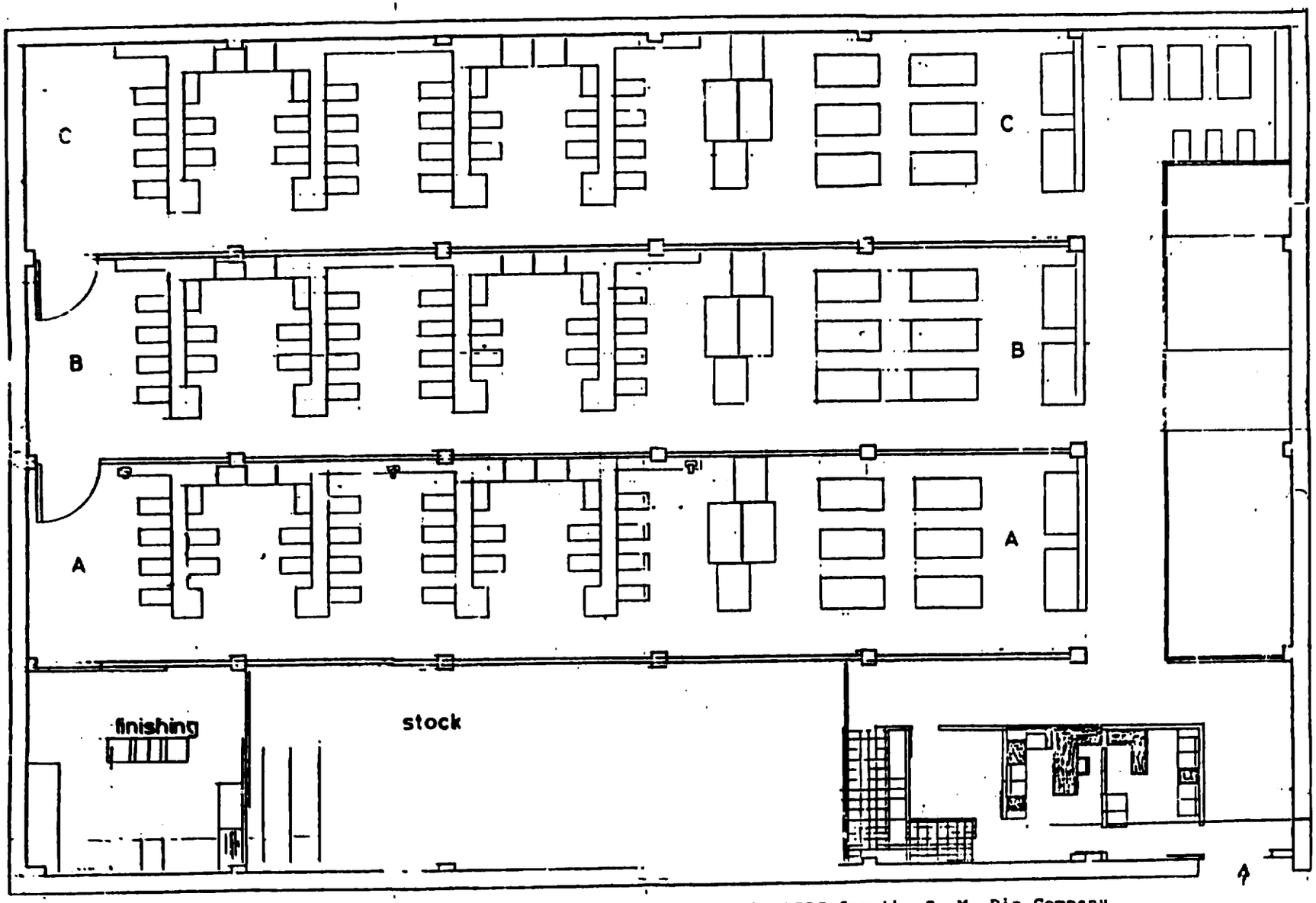
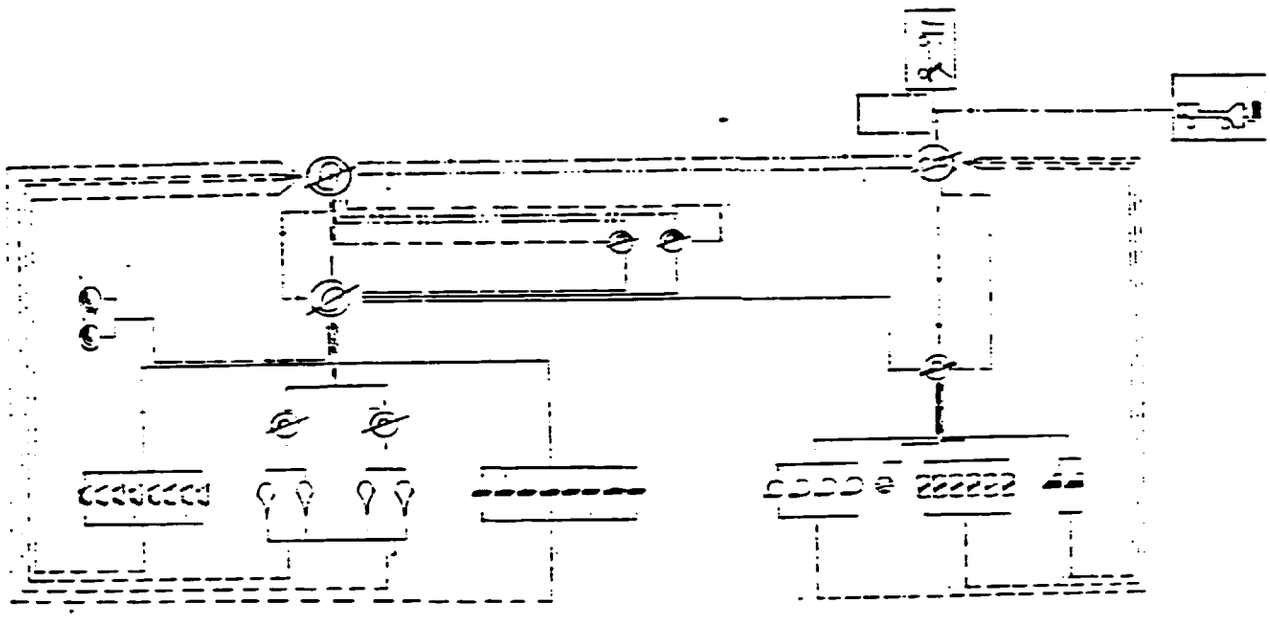


Figure VII. Plan of the factory designed by the LPDC for the S. M. Din Company



Key:

- Stitching line
- Helper
- Folder
- Fuser
- Cutter
- Macher
- Timing supervisor
- Co-ordinator
- Quality supervisor
- Cutting checker
- Line checker
- Quality control
- Time control
- Material supply
- Material return
- Material control
- Numbering

Figure VIII. Communication chart showing the duties and responsibilities of the supervisors, the direct connections among the various departments and the indirect communication through the other supervisors

The LPDC also assisted the factory with the following in the preparation of a catalogue to present the company and not the product:

Ideas;
Selecting models;
Selecting products;
Making the arrangements and designing the sets for the photographs;
Collaborating partially with the photographing service;
Selecting colours and monitoring the printing process;
Testing and incorporating comments in the presentation of the catalogue.

The catalogue was successful in presenting the company and raised the image of its products in Europe.

The S. M. Din Company is the only factory in Pakistan where the LPDC was able to complete 50 per cent of the original full programme. This is due in large part to the efficiency and the desire of the owners to develop the factory quickly. The production capacity of the company was increased from August 1984 to March 1985 to reach 370 garments per day.

Part of this development was also due to the adoption of the correct sales programme, which accepted orders only if they allowed for a minimum production period of more than two weeks.

E. Haji Abdul Latif Company

The Haji Abdul Latif Company, already one of the largest tanners in Pakistan, is currently building the largest leather garments manufacturing unit, with an estimated production rate of 500 garments per day.

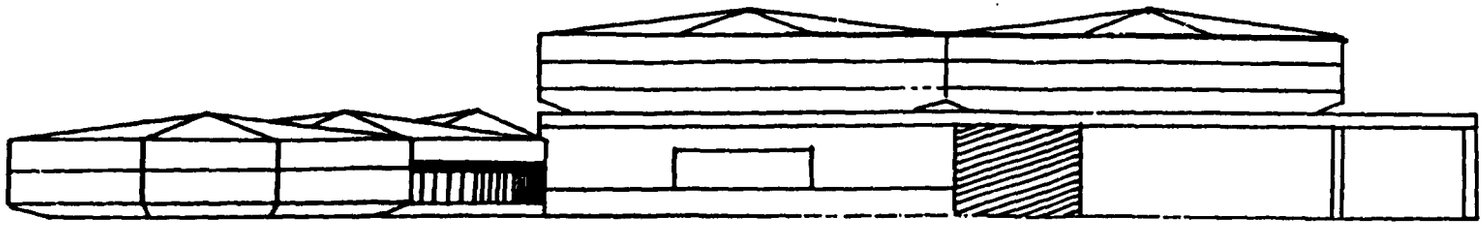
At the request of the company, the LPDC presented a proposal for a very sophisticated production system and architectural construction. The proposal was accepted and studies were made in collaboration with architects and engineers to resolve the construction problems.

The factory is divided into five satellites for manufacturing, which communicate with the other common services (stores, cutting and finishing departments, and stocks) with the help of a conveyor system. The cutting and finishing departments are centralized to serve the five satellites.

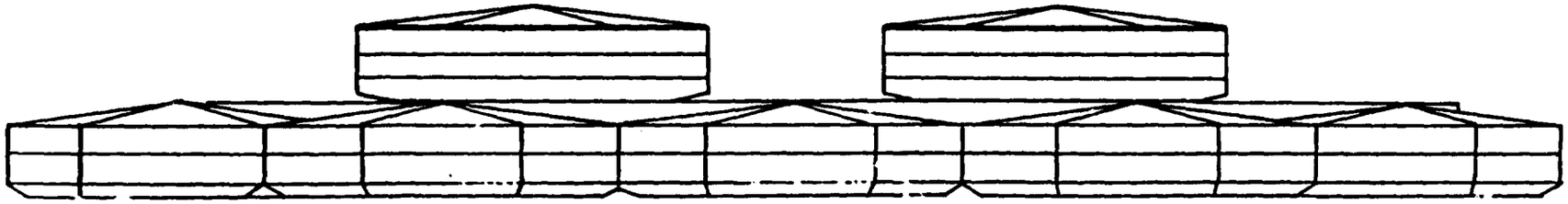
The manufacturing units are organized from the centre outwards: the preparation work is situated at the centre point; the stitching lines are located in a circle; and the finishing of the product is done at the periphery of the satellite. The supply of materials is achieved through communication tunnels at pre-determined times. The same tunnels serve to transfer the products to the steaming and packaging unit.

An area of 4,600 m^2 is included in the factory for theoretical and practical lessons. The training period required to qualify the personnel lasts from two to three months.

Two satellites are situated on the first floor, one as an office and one as a design and sampling department. A detailed plan of the factory is not included in this report. However, two elevations and the plan de masse are given (figures IX and X). The elevation AA shows the five satellites of the production and the two towers for the office and the design and sampling department.



elevation BB



elevation AA

Figure IX. Two elevations of the factory designed by the LPDC for the Haji Abdul Latif Company

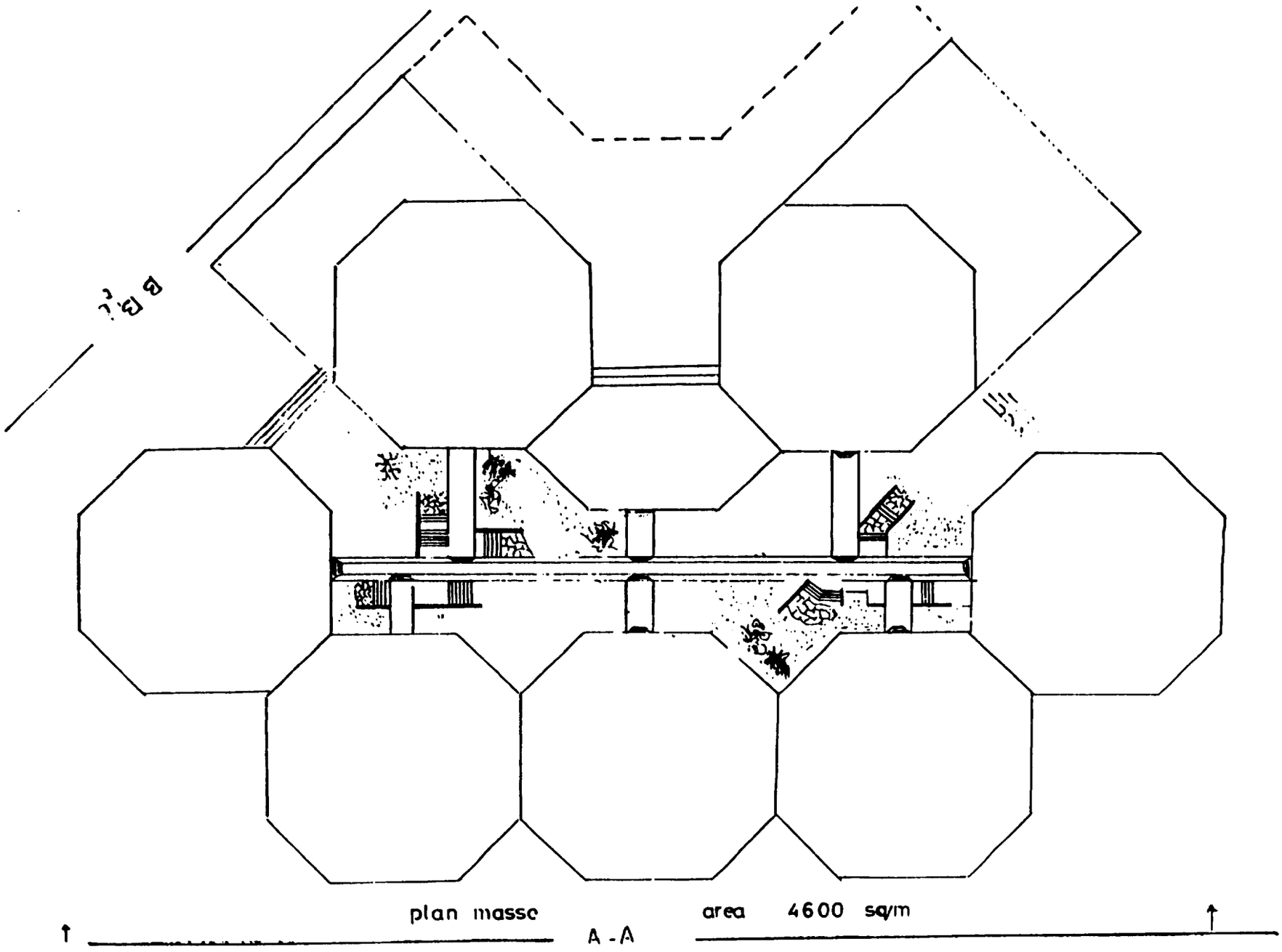


Figure X. Plan de masse of the factory designed by the LPDC for the Haji Abdul Latif Company

The elevation BB shows part of the communications tunnel, the cutting department with the store and the finishing departments with the stock room. The plan de masse shows the distribution of the five satellites and the towers on top of the common services departments.

The communication system between the units and the departments occupies the passages under the communications tunnels. The passages serve only for personnel.

The plan has been finalized and construction began early in May 1985.

The 140 stitching machines required for the project are already being imported.

F. Alliances Industries

The Alliances Industries company has had no previous relation with the leather business but is now interested in investing in leather garments manufacturing.

This factory is included in this report as the type of production system used was an initial experiment before the development of the actual system supplied to other industries in a second phase. The production system, including cutting and finishing and also manufacturing, is divided into small departments. The production area is divided into specialized spaces, where each line of machinery is assigned to a particular job carried out on each machine (figure XI).

The first three lines each contain three machines and do the preparatory work to be supplied to one of the lines of six machines.

The first line of six machines assembles the various pieces composing the body of the product.

The second line of six machines joins the body to the lining produced by the last line of three machines and then finishes the product.

The advantages of this system are:

The easy control of quality;
The specialization of the supervisors in limited areas;
An estimated increase in productivity of up to 20 per cent;
The easy co-ordination of the flow of the work.

The major disadvantage of the system is that there is no way to split the units, as the work is done by a block of machinery.

The system had to be tried in at least one plant so that it could be implemented later on a larger scale.

The production capacity of this plant is estimated to be 100-120 garments per day.

The disadvantages of the system could be resolved if the sales programme was oriented more to production requirements.

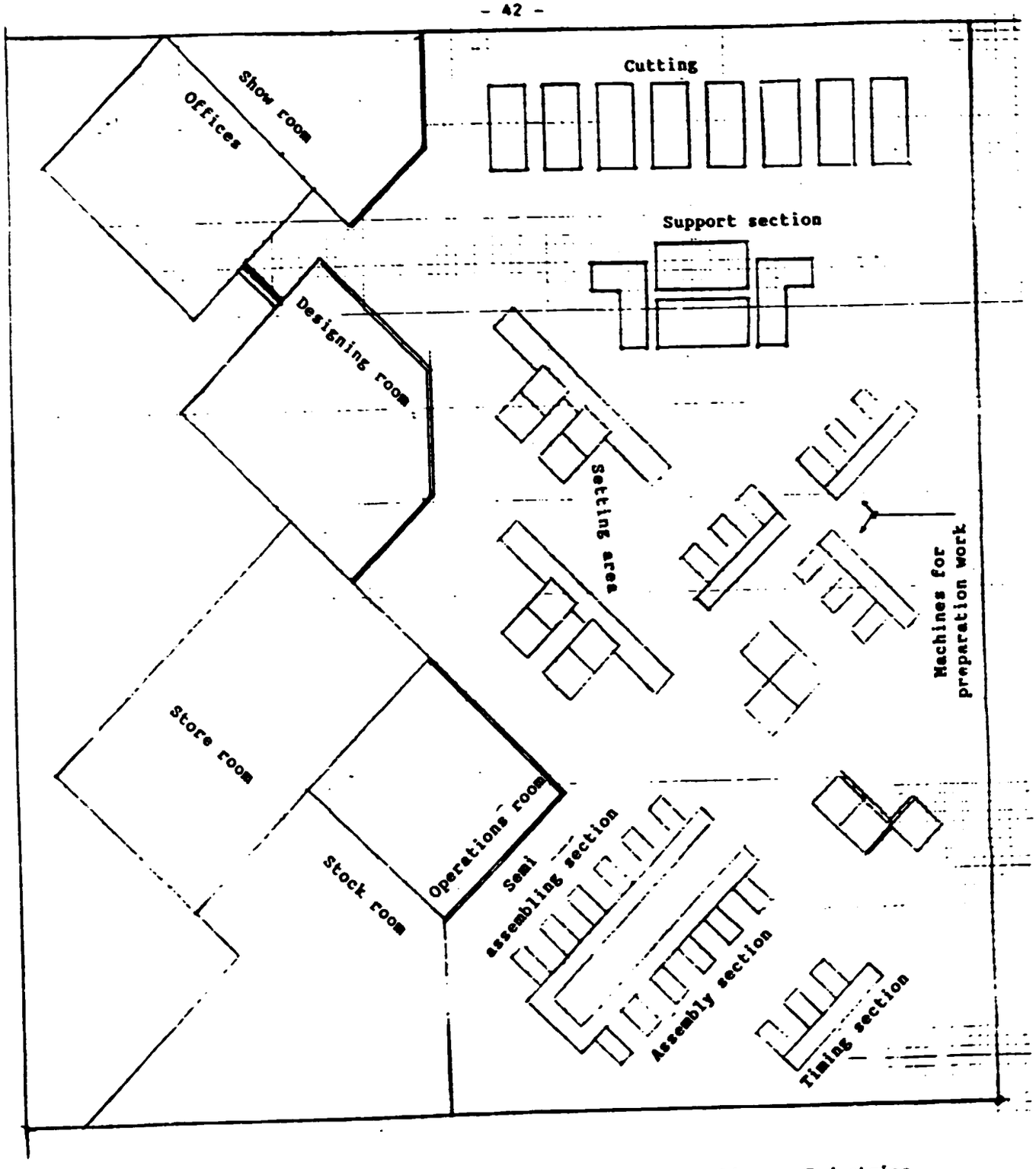


Figure XI. Plan of the factory designed by the LPDC for Alliances Industries

G. Other companies

As mentioned previously, it is impossible to cite all the consultancy services rendered by the LPDC to the industry and foreign buyers.

Some of the companies currently working with the LPDC are given, with their production capacities, in the following:

Leather On, 100 garments per day;
Shaikh Brothers, 150 garments per day;
MF Corporation, 100 garments per day;
Siddiqui, 60 garments per day;
Al-Hassan Associates, 100 garments per day;
Shaukat International, 250 garments per day;
Ijaz Company, 100 garments per day.

In addition, there are many other factories that continue to seek help from the LPDC in the various industrial matters related to design, production and markets, for example, Leather Goods International, Pak Leather Craft, Hub Leather, Mariam Garments, and Firhaj and Company.

V. THE CARL DUISBERG GESELLSCHAFT PROGRAMME AND THE COLOGNE FAIR

The Carl Duisberg Gesellschaft (CDG) programme is a long-term project financed by the Government of the Federal Republic of Germany, and the European Economic Community (EEC) and to a small extent by the Government of Pakistan.

The project considered two aspects of the trade:

Technical know-how;
Management and factory organization.

Both aspects served to introduce the right product to the market in the Federal Republic of Germany.

The programme was developed in 16 stages, including seminars, a visit to the Federal Republic of Germany and participation in the Cologne Fair 1985 by the manufacturers. The seminars were organized and held by a team of experts in tanning management and production at the LPDC. The LPDC was deeply involved in developing a major part of the technical aspect of the project. The major contribution of the CDG programme on the technical side was to improve the finishing of the leather. Part of the project was oriented to give expertise in tanning and finishing leather, which was made successful with the help of the CDG tanning expert.

In addition to assisting in co-ordination, the LPDC covered pattern making in the seminars and designed the collection to be presented at the Cologne Fair. Twenty manufacturers participated in the project. It was a large responsibility to organize the collection of 100 garments, supply all the patterns and co-ordinate the work, while ensuring a certain homogeneity in quality.

The work was programmed in three phases (a)-(c).

(a) Information and market selection:

Visiting the different companies and getting accurate knowledge about their production possibilities;

Holding individual meetings at the LPDC with each company to advise them, from the technical point of view, on the selection of the type of market most suited to their production capacity, considering both quality and quantity.

(b) Designing the collection:

Sketching approximately 200 designs and developing ideas and details;

Elaborating the ideas, selecting 100 designs and studying the technical details associated with processing and the production difficulties;

Selecting the designs for each manufacturer according to their production possibilities.

(c) Preparing the collection:

Distributing the designs and proceeding to pattern construction;

Monitoring the manufacture of the first set of samples to be checked and corrected;

Manufacturing the second set of samples to be shown at the Fair;

Manufacturing a third set as a counter sample.

All the terms were respected:

(a) The designs were distributed as planned on 26 September 1984;

(b) The entire collection was ready by the middle of January 1985.

The collection consisted of many levels of quality according to consumption and prices and many types of garment, depending on market destination. A selection of the designs exhibited is shown in figure XII. Only 15 per cent of the collection was made for women as the Cologne Fair specializes in men's wear.

The collection was composed of the following:

Forty-five per cent sports wear, of economic and medium quality;
Twenty-five per cent classic garments;
Twenty per cent fashionable garments of medium quality;
Ten per cent high quality garments.

The last 30 per cent of the collection was created to give a better image to the Pakistani products.

The results of the Fair can be summarized as follows:

The quality of the garments exhibited made a surprising impression on the market in the Federal Republic of Germany;

Satisfactory responses were obtained for most manufacturers;

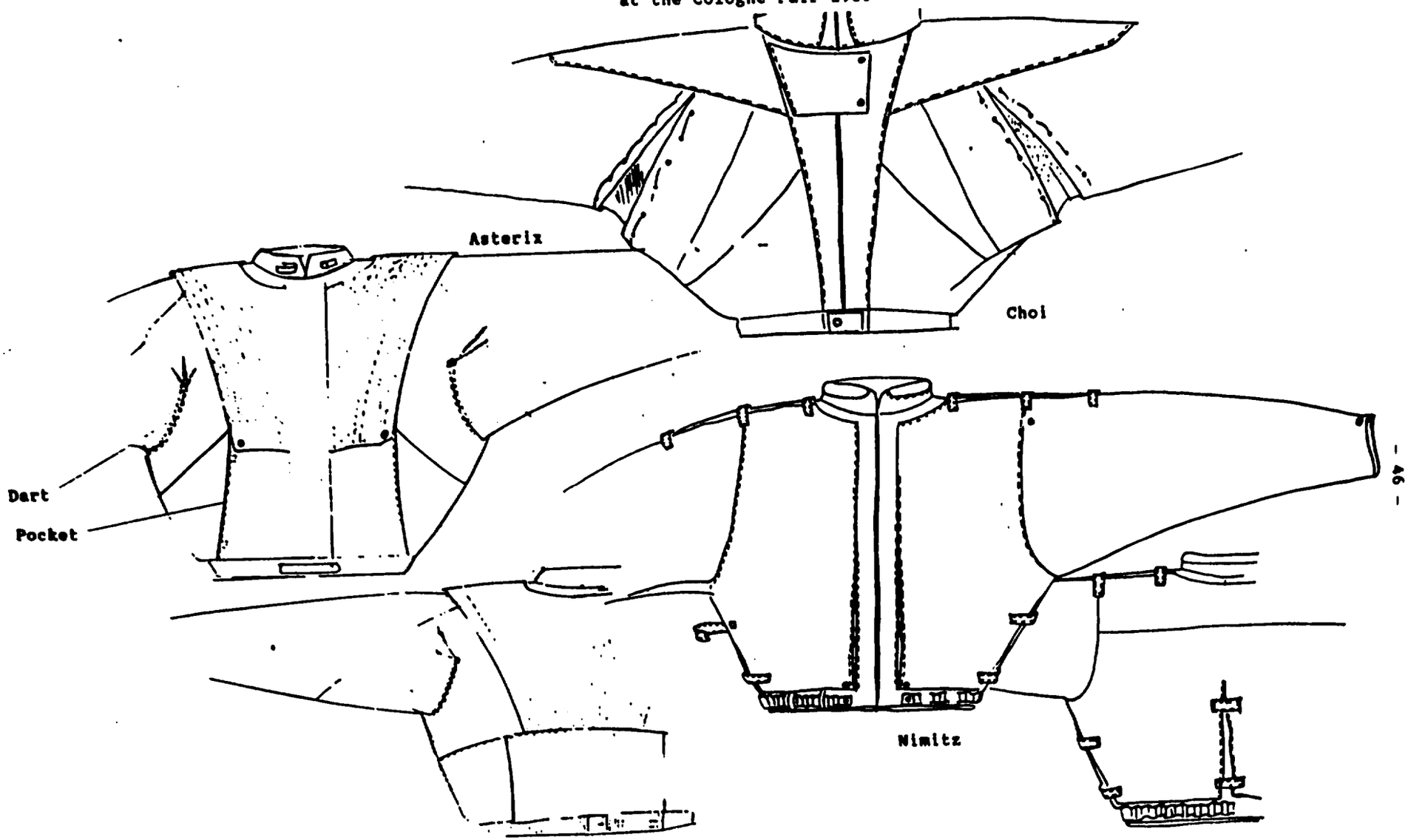
A large part of the collection was of interest to the various buyers;

There were surprising results for some of the manufacturers, especially those that adopted proper advertising programmes following the suggestions of the LPDC (one manufacturer had orders for over 25,000 pieces).

The project was indeed a promotional tool to help penetrate the stronger markets. Better results would have been obtained with better advertising support, both before and during the Fair. No publicity reports were made in fashion magazines to indicate the participation of the Pakistani manufacturers in the Fair. The booth could have been located better, to favour more contact with visitors. No advertising posters were placed at the entrance to or inside the Fair.

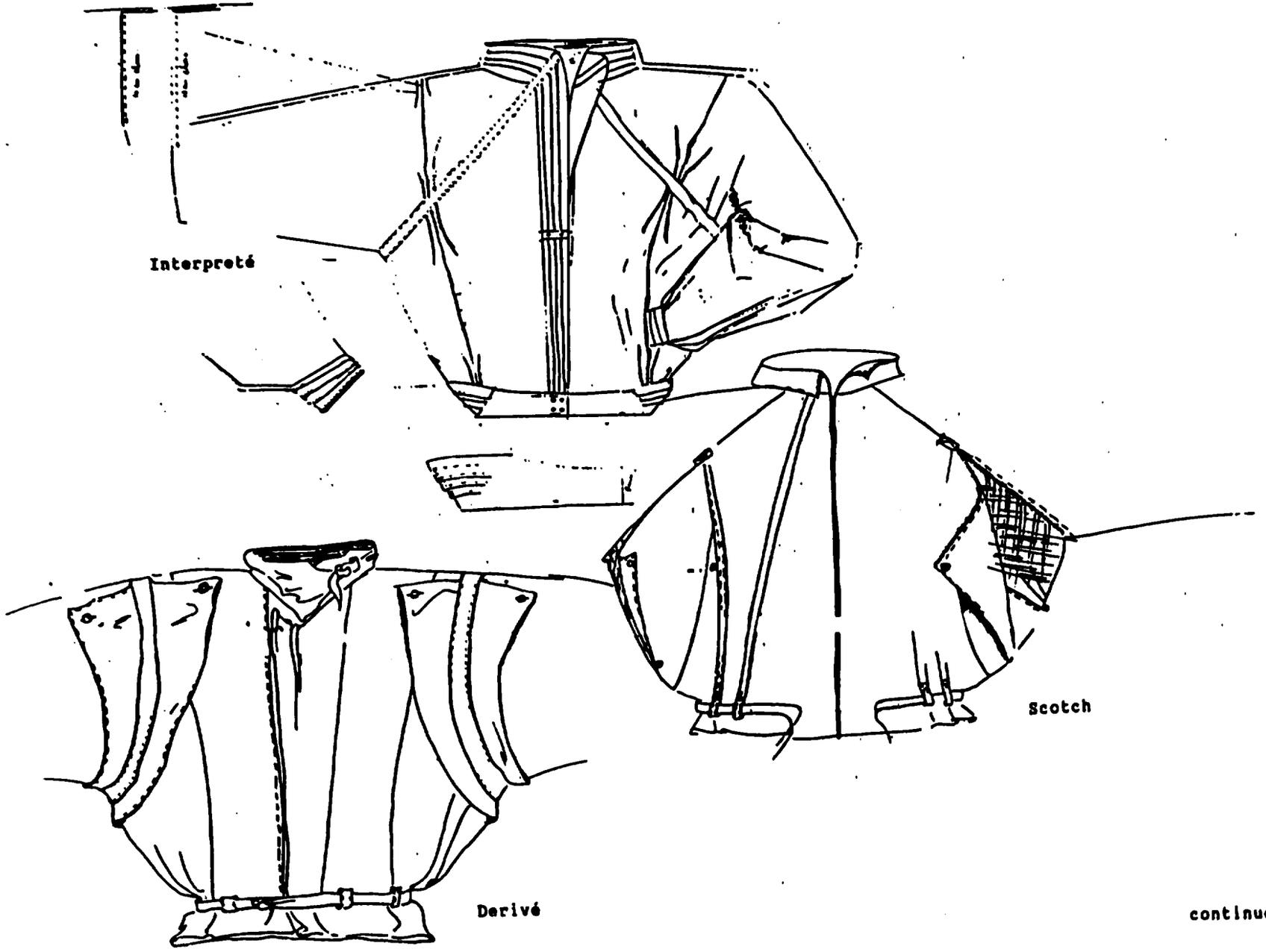
The programme gave some Pakistani manufacturers the opportunity to observe directly the requirements of the market in the Federal Republic of Germany and the policies to be adopted to expand sale figures in this market.

Figure XVI. A selection of the designs prepared by the LPDC for presentation at the Cologne Fair 1985



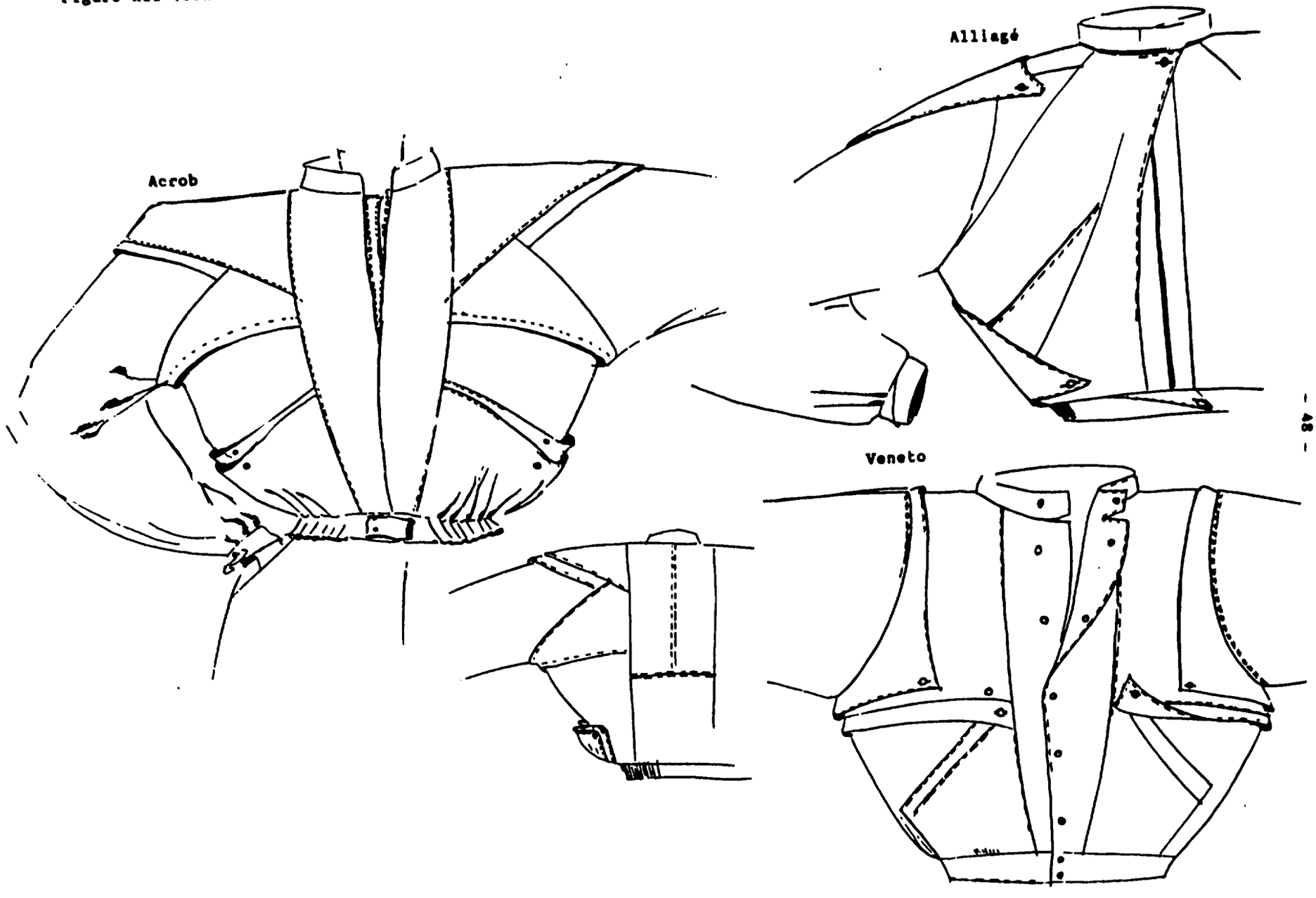
continued

Figure XII (continued)



continued

Figure XII (continued)



VI. PROPOSED PLAN FOR A NEW LEATHER PRODUCTS DEVELOPMENT CENTRE

Only the technical structural part of the new project is analysed here, as the expert's involvement was limited to providing a new structure that was similar to the existing LPDC but that took into account the development of the activities of the LPDC since its inception five years ago. However, there are probably enough activities of the LPDC Centre described here to justify the construction of a new project and the provision of the facilities and space required.

The plan (figures XIII and XIV) includes the following facilities.

(a) Training section

Four training halls for different specializations:

- Leather garments;
- Leather goods;
- Leather gloves;
- Footwear.

Each hall contains a lecture room and processing area. The lecture room is designed as an auditorium to concentrate attention better to the teaching area from all points of the room. Each section can accommodate a minimum of 50 students.

(b) Integrating element

The integrating element is easily connected to the four training sections, and includes:

- Store room;
- Offices at the top of the element;
- Conference room constructed with the same design as the lecture room, with a capacity of 150 seats.

(c) Two buildings serving as hostels with 12 rooms each, which could be increased by expanding vertically. Each room has its own bath and can accommodate three persons.

(d) Two shopping areas, each with eight shops, which would cover part of the expenses of the Centre.

The complex provides other facilities, such as a restaurant, a Mosque and a house for the supervisor. It includes two parking areas, one inside and one outside the complex, and additional space for a recreation ground. The total area occupied is approximately 7,600 m^2.

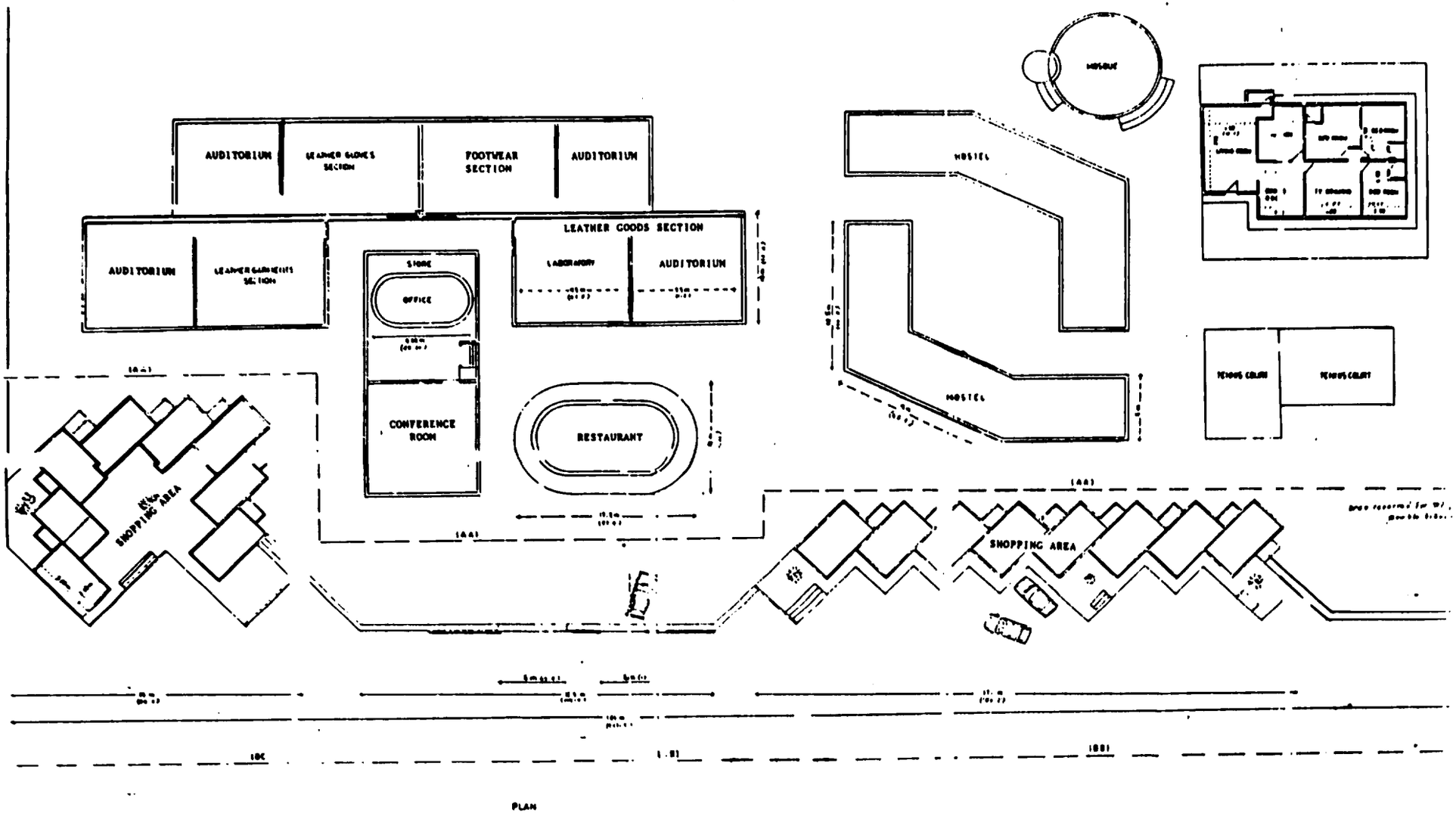


Figure XIII. Proposed plan for a new Leather Products Development Centre

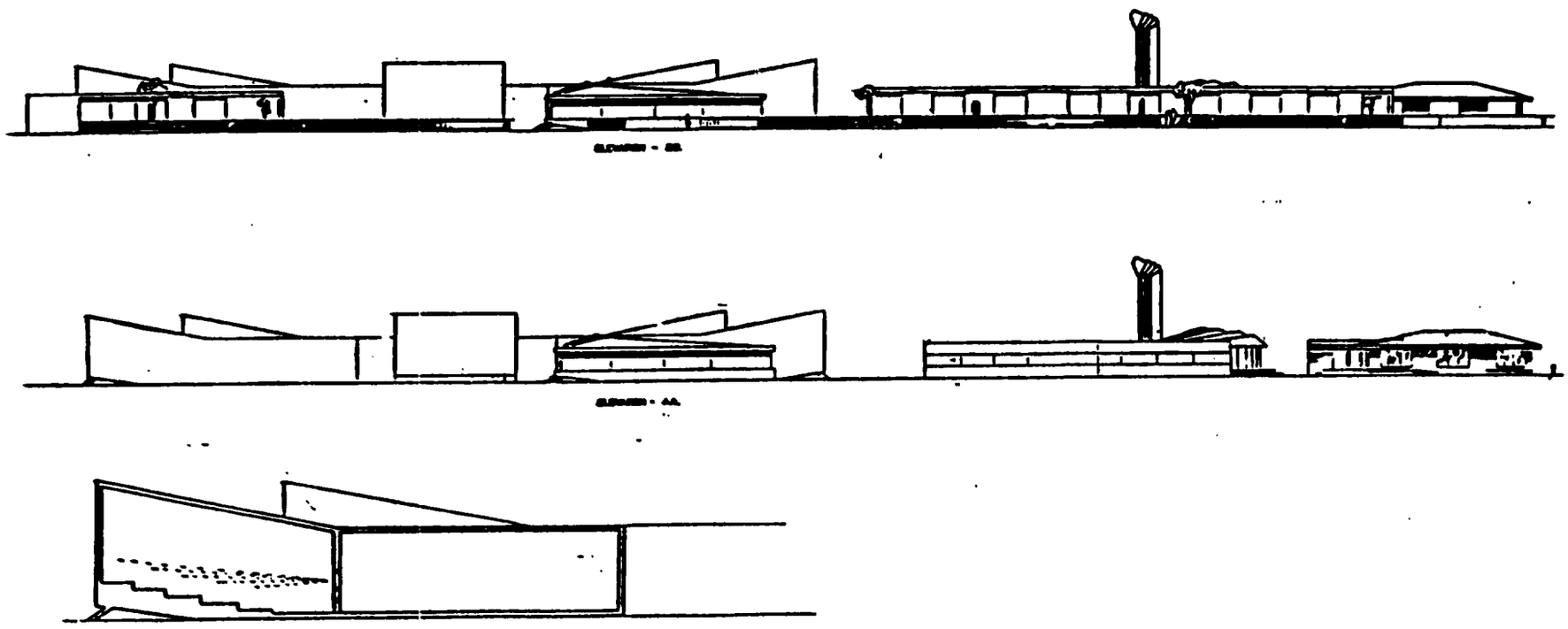


Figure XIV. Various elevations of the proposed Leather Products Development Centre