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Indiz.

PROCESS-CUM-PRODUCT DEVELOPMENT CENTRE FOR
SPORTS GOODS AND LEISURE-TIME EQUIPMENT .
DP/IND/84/009

INDIA

Technical report: Project work plan*

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

Based on the work of F. Schmöl,
Chief Technical Adviser

United Nations Industrial Development Organization
Vienna

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EXPLANATORY NOTES

The monetary unit of India is rupee (Rps.). The official exchange rate was on 21st June 1985 1 US \$ = Rps. 12.50 or Rps. 1 = \$ 0.08.

Abbreviations

CTA	Chief Technical Adviser (UNIDO)
IIFT	Indian Institute of Foreign Trade (Delhi)
ILO	International Labour Office (Geneva)
ITC	International Trade Centre (UNCTAD/GATT)
PC/EVL	Evaluation Unit of Division of Policy Co-ordination (UNIDO)
SG	Sports Goods
SGEPC	Sports Goods Export Promotion Council (Delhi)
SIDFA	Senior Industrial Field Adviser (UNIDO)
SISI	Small Industries Service Institute (Meerut)
TDA	Trade Development Authority (Delhi)
UNCTAD	United Nations Conference on Trade and Development (Geneva)
UNDP	United Nations Development Programme (New York)
UNIDO	United Nations Industrial Development Organization (Vienna)

Countries

FRG	Federal Republic of Germany
UK	United Kingdom
USA	United States of America

Monetary Units

Rps.	Rupees of India
US\$	Dollars of United States of America

ABSTRACT

The CTA after having visited the construction works on PPDC and various SG production units in Meerut found the preparation made so far by the local counterparts satisfactory. The PPDC premises will be available by end 1985, so immediate actions are required for placing orders for equipment, recruitment of international and local staff. It is recommended to implement the project on a step-by-step basis and field the CTA and the first expert early 1986. Recommendations are made for the Ministry of Industry, UNDP, PPDC and UNIDO, all of them are to serve the proposed workplan (Fig. 1). A revised list of equipment, machine layouts, job descriptions for experts and requisitions for equipment are also to embody the results of this mission.

The SG industry of India, concentrated chiefly in Jalandhar and Meerut, has real potentials to fetch a higher share of the international market. The most important constraints, such as low productivity due to extensive use of manual work and the not always satisfactory quality due to lack of know how and suitable testing facilities. These problems are to be partly solved by PPDC services, which - according to the CTA's opinion - will be able to meet its objectives.

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INTRODUCTION

Based on various studies and recommendations made by the Indian Institute of Foreign Trade (IIFT), the Sports Goods Exports Promotion Council (SGEPC) and the Trade Development Authority (TDA), the Government of India decided to establish the Process-cum-Product Development Centre (PPDC) for sports goods and leisure time equipment in Meerut, Uttar Pradesh (Meerut is one of the centre, where the sports goods manufacture is concentrated, the other one is Jalandhar in Punjab). The United Nations Development Programme (UNDP) through its country programme provides international assistance, which is to be embodied by the project DP/IND/84/009 under the execution of the United Nations Industrial Development Organization (UNIDO). UNIDO assigned the expert against the post of the Chief Technical Adviser (CTA) for one month duration.

The expert arrived in Delhi on 31 May 1985 and left for his duty station being in Meerut, on 2 June 1986. He returned to Delhi on 14 June and left India on 23 June 1985 (The job description for his preliminary mission is enclosed in Annexure 1).

The objectives of the expert's mission were to:

- a) elaborate a realistic workplan for the implementation of the project;
 - b) advise on final selection of machinery and equipment;
 - c) prepare layouts for the laboratory and workshops;
 - d) prepare Job Descriptions for the international experts to be assigned to the project;
- assist in organizing the first study tour.

These tasks were fulfilled, as it can be seen from the detailed technical report.

I. RECOMMENDATIONS

A. To the Ministry of Industry (Government of India)

representing the Government of India in this project

1. Release funds required for completion of PPDC Building. This would enable the contractor to finish by the end 1985 the premises on the first floor of the building where the laboratory will be installed.
2. Take decision concerning the selection of CTA until 15th October 1985, reconsidering candidates submitted so far and those will be submitted by UNIDO. The emphasis should be on the managing ability and international experiences of candidates, since it is highly unprobable to find experts who would be equally qualified in all kind of sports goods concerned.
3. Appoint the Principal Director of PPDC until the end 1985. At the same time a final and official decision is to be taken regarding the post of the National Project Director, because he will be expected to submit his first Progress Report by December 1985 (see p. 21, paragraph C in the signed Project Document).
4. Make all necessary efforts in terms of finance, staff and legislation required for the successful implementation of the recommended workplan (Fig. 1).

B. To UNDP

5. Adopt the project revision ("E") as per Annex I. The changes are minor compared to the most recent revision "D" but this is the most important and urgent pre-requisite for the implementation of the recommended workplan. The allocation of funds should be:

PROJECT IMPLEMENTATION WORKPLAN

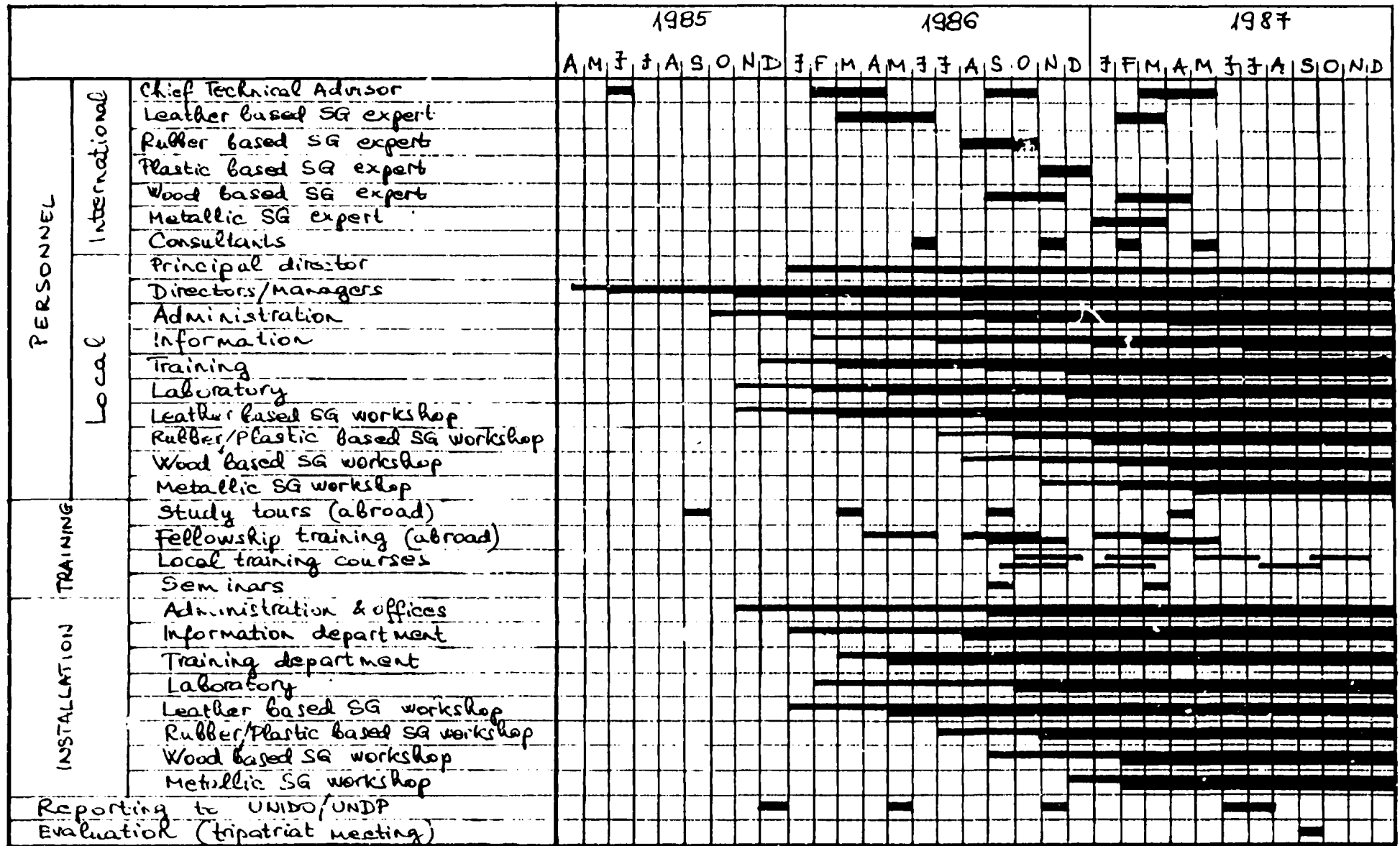


Fig 1

	<u>Recommended Revision "E"</u>	<u>Most Recent Revision "D" in effect</u>
1985	\$ 104,250	\$ 35,550
1986	\$ 309,650	\$ 330,300
1987	\$ 174,200	\$ 222,250
Total	<u>\$ 588,100</u>	<u>\$ 588,100</u>

Note: The proforma costs used in revision "D" were also adopted for revision "E"

C. To PPDC

acting as the executing agency for the Government of India

6. To implement the project on a step-by-step basis whereas the following stages may be introduced:

- a) installation of building utility equipment (eg. boiler, coolers, water supply system, communication) and move into the new building;
- b) installation and starting up the
 - i) laboratory and the information unit;
 - ii) stitching room and the leather based sports goods workshop;
 - iii) rubber and plastic based sports goods workshop;
 - iv) training rooms and offices (completion);
 - v) wood based sports goods workshop;
 - vi) metallic sports goods workshop;
- c) start-up rendering services in
 - i) testing and quality control,
 - ii) technical information and product development;
 - iii) process development and control;
 - iv) mechanization of manual operations;
- d) carry out seminars and training courses.

All these principles are incorporated by the recommended workplan

(Fig. 1)

7. Select a candidate for the first study tour to be conducted in FRG and Austria by September 1985. (It is recommended to provide the National Project Director with an opportunity to visit the international exhibition of sports goods "SPOGA" in Cologne and to the "FISCHER" company near Vienna). The nomination form for this study tour should be sent to UNIDO until end July 1985.

8. Collect bids and technical information on all the equipment to be obtained within India, make the selection and start place orders by October 1985. Priority should be given to furniture, building utilities, laboratory equipment and machines for the leather based sports goods workshop. It is strongly recommended to install:
 - a) a generator for lighting and the laboratory equipment (approximately 20 kw power) besides the electric substation;
 - b) an air-conditioner for the laboratory;
 - c) a central compressor with pipe-network for compressed air distribution.

The incoming equipment may be installed as shown in Annex 3 or stored on the first floor in case the premises are not fully completed. It is however, recommended to consult with the CTA and, whenever it is possible, with the respective experts concerning the final location of machines.

9. Collect information most probable available with IIFT, SGEPC, TDA, manufacturers and trading organizations concerning periodicals and journals dealing with sports goods and place subscriptions for the coming 1986 year.

10. Make preliminary arrangements for housing the international experts to be fielded from early 1986, since suitable hotel accommodation is not available in Meerut.

11. It is recommended to start PPDC activities on the basis of traditional sports goods manufactured in India so far. The product development has to always take into account:
 - a) the local market potential for the articles in question, since no one manufacturer can rely only on export;
 - b) the availability of the most important raw or basic materials in India, as the necessary precondition for increase of value added on products.

The product and process development should not exclude R&D activities concerned with basic materials used for various sports goods. In the majority of cases these commodities need specially prepared materials, which PPDC has to deal with. For instance in case of leather the PPDC may co-operate with SISI, provided the equipment in the later's premises will be upgraded

D. TO UNIDO

acting as the executing agency for IDP

12. Submit candidates for the CTA post (11-01) reconsidering some of these, who have already submitted to the Government of India. It is highly important to appoint the CTA early 1986.
13. Start recruitment actions for the experts' posts (the respective Job Descriptions are attached as Annex 5). The proposed work plan suggests a co-ordinated approach towards fielding the experts; it is, therefore, strongly recommended to assign each expert according to the time-schedule (Fig.1)
14. The revised Project Budget (Annex 2) provides four man-months consultancy fund instead of the leisure time equipment expert foreseen by the project document. This allocation may be utilized either for short term consultants to solve specific problems (e.g. shuttle cork manufacturing, special tannage) or for extension of experts' services if it seems necessary.

15. The team of international experts together with the local staff of PPDC should - besides those indicated in Job Descriptions - pay special attention to the following issues:
- a) suitable tanning and finishing technology in order to obtain waterproof leather for various balls;
 - b) study the future trends of leather and other genuine materials used for sports goods manufacturing with special reference to strategy to be followed by the SG subsector of India;
 - c) application of intermediate technology in SG manufacturing rather than relying on manual skills or introducing high technology (e.g. electronics or automation);
 - d) there is a demand for more mechanization and profound quality control in case of all kinds of SG, special efforts are required for upgrading manufacturing processes of
 - sport and fishing nets (knotting and twisting);
 - shuttle corks;
 - cemented and synthetic soccer balls.
16. Organize specific tours to the most important exhibitions and fairs of sports goods and leisure time equipment (e.g. "SPOGA" in Cologne - every autumn and "ISPO" in Munich - every spring). It is recommended to connect these study tours with visits to sports goods manufacturing units. The most interesting countries for fellowship programmes are FRG, UK, Belgium, Japan, Taiwan, USA, Australia.

17. The slightly revised list of manufacturing, testing and training equipment is enclosed as Annex 3. There are provisions of \$38,500 and Rps. 1,700,000 without specification. These funds should be utilized by the CTA (in agreement with the experts) for equipment, tools and other items, which seems to be unavoidable to make the PPDC facilities as complete as possible.
18. Collect bids and place orders for equipment as specified by the requisitions (Annex 6). All deliveries have to be forwarded by sea/surface whereas the port of discharge will be Bombay for items coming from the West and Calcutta for items delivered from the East; the destination is Meerut, Uttar Pradesh, India.
19. Issue field purchase authorizations to the National Project Director and to the CTA for collection of samples (both materials and sports goods) and auxiliary materials. The first such authorization worth of \$2,000 is due to be issued by September 1985.
20. Request the National Project Director to submit his first Progress Report by December 1985, setting out facts about utilization of the Indian contribution, acquisition of PPDC premises, recruitment of local staff and preparations undertaken for receiving international experts.
21. Request the specialized agencies of the United Nations (such as ILO, ITC, UNCTAD etc.) to provide the PPDC with all available information and studies in connection with sports goods. (The list of UNIDO reports left with PPDC is attached as Annex 7).
22. It is recommended to field a UNIDO evaluation mission by September 1987, in which the UNIDO backstopping officer, PC/EVL, the SIDFA and representatives of the Government of India would participate.

II. FINDINGS

A. Sports goods markets

Sports goods and leisure time equipment are becoming more and more popular not only in industrialized countries where working hours have been shortened considerably during the past two-three decades, but also in developing countries, where the governments provide education facilities for the local population. Higher the living standard in a given country or a particular social group, more expressive the fashion aspect in the range of sports goods consumed. At the same time certain local conditions, such as climate, traditions, links with other countries etc. have determining effect on sports and leisure time entertainments and, consequently, they have an impact on demand of specific sports goods.

The living standard of the population in India is steadily increasing, more and more children have the opportunity to attend schools - where the education includes sport exercises as well. India participates in international sport tournaments actively and as a host of the Asian Olympic Games in 1982 expressed intention to develop the local sport activities.

All that means that there is a substantial local market for sports goods. The demand is really big for the traditional sports equipment, especially for:

- cricket balls, bats and protective equipment;
- field hockey accessories (sticks and leg guards);
- tennis, squash and badminton rackets;
- all kinds of inflated balls.

The request for newer items, such as physical fitness, track, field and athletic equipment, various sports gloves etc. has also been increasing as the Government promoted the local professional sport.

On the other hand, a number of sports goods used in other countries (eg. skis, special shoes, sails) and most of the leisure time equipment (e.g. tents, camping and garden furniture, swimming and diving accessories) would not find market in India. The reasons are: camping and caravanning are not practised here, mountaineering and skiing are limited to a very small area, those who still interested are in the position to afford high quality or fashion articles to import.

To give an impression the following local prices were recorded in Meerut and Delhi:

- leather balls (soccer)	Rps. 20-60
- cricket balls	Rps. 15-50
- discuses	Rps. 40-160
- boxing gloves	Rps. 70-150
- tennis tackets	Rps. 70-200
- shuttle corks	Rps. 30-70

The world market is expanding fairly rapidly providing both opportunities and challenges to those interested in the sports goods business. A range of SG and leisure time equipment is widening as new functions and materials (especially synthetics) penetrate this field. Since a number of SGs requires considerable amount of direct labour, the production has been partly shifted to East and South where cheap labour is available. India is among these countries, but there are some others (eg. South-Korea, Taiwan, Hong Kong, China) having even cheaper labour and adopting fairly mechanized - sometimes even automated technology. That creates a quite heavy competition on the international market and only those SGs made in India are able to fetch reasonable share, which prove decent quality, regular and reliable supply.

B. Material Availability

The majority of basic materials required by SG manufacturing is available in India as far as quantities are concerned. The quality aspect is, however, more complex and this creates one of the problems the local SG manufacturers are to face. The main constraints in this context are the following:

- a) there is no special R&D programme dealing with specific requirements towards materials to be used for various sports goods;
- b) the material manufacturers and suppliers do not specialize their production on SG, as the orders are not large enough to justify the economic aspect of production of these materials;
- c) the range of materials, their physical properties are much too wide to handle, at the same time the SG manufacturers are not willing to cooperate among themselves regarding each other as only competitors.

Usually wet blues are purchased (in some cases splits) which are then retanned and finished within ball manufacturing units. The locally available cow raw hides are rather thin, while the buffaloes' leather substance is not sufficiently strong. There are problems as to the quality of surfaces (grain finish) and waterproofness of leather used .

Textile materials only of inferior quality are available in India. For higher quality wood based SG ash and willow are imported (mainly from UK and Australia) since the same local species are used only for cheaper sorts of rackets. All the cork required for cricket and hockey balls, shuttle corks and other SG are imported from Portugal. Goose and duck feathers are also imported from the Far East.

Rubber, PVC, synthetic resins, metals and glove leather are all available in India.

The following data are to provide basic ideas about the material prices:

- leather	Rps. 15-15/M ²
- cork	\$ 400-470/to
- melton cloth	Rps.420-450/M ²

C. Manufacturing Industry

The SG manufacturing industry is concentrated in Jalandhar and Meerut, although there are sizable manufacturing units in Jammu and Kashmir, Delhi, Calcutta etc. The traditional SG products are balls, cricket equipment, field hockey accessories, bladders, rackets and some athletic equipment.

SG are manufactured by the private small scale industry sub-sector supervised by the Ministry of Industry of the state and the Government of India. The manufacturing units employ 20-400 direct labour, usually under the supervision of the owner. Most of the companies are based on family ownership, whereas the majority of owners are those who come from Sialcot (today in Pakistan) in 1947. Although the manual work dominates the technological process, there are intentions to mechanize the production to the possible extent. 80-85% of the direct labour is employed and paid on the piece work basis. Some of the manufacturers (eg. Greenlands, NELCO, RAMA) maintain

reasonable standard of productivity, well prepared work schedule system, fairly mechanized processes, thorough quality control. It is not surprising that the same companies are capable to sell majority of their products abroad (usually under well known brand names using franchise agreements) and they have less complaints against local material suppliers. Most of the owners/managing directors are highly educated having engineer degree in one of the fields of technology.

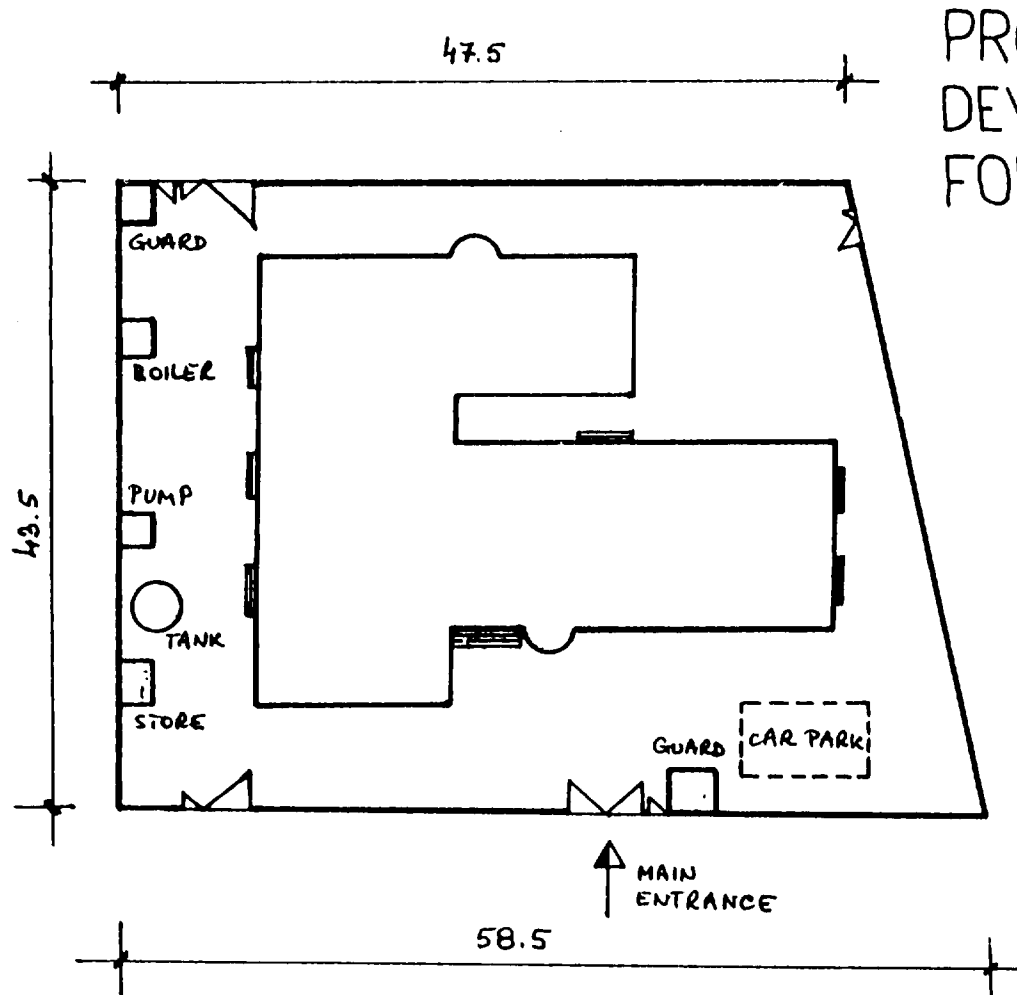
The SG manufacturers are very keen to improve their production - in terms of productivity and quality. They all see the role of the quality and intend to compete by producing better and more reliable commodities. All of them are looking for technological know-how and looking forward to the services what PPDC can offer.

The list of visited manufacturers and other organizations is attached as Annex 8.

D. Process-cum-Product Development Centre

A number of SG manufacturers are setting up new production units and/or moving their facilities to the Sports Goods Complex, which is located just at the city border of Meerut, besides the road leading to Delhi. The newly installed building designs meet the international standard and provide good working conditions.

The PPDC building (Fig. 2) is coming up also in the Meerut Sport Goods Complex. The two level building has a total surface of premises of 1,450 M² and will provide excellent conditions for the Centre's activity. Out of these 910 M² are allocated for laboratory and manufacturing equipment. The construction work started in October 1984 and by the expert's visit the ground floor and half of the first floor has been built up and the utility installation has started. According to the plans (and the working temp observed by the experts seems to prove it) the building is to be ready by December 1985 - provided the funds for the final stage will be released by the Government of India.



PROCESS-CUM-PRODUCT
DEVELOPMENT CENTRE
FOR SPORTS GOODS

Meerut, India

M 1:500

Fig. 2.1

PROCESS-CUM-PRODUCT DEVELOPMENT CENTRE FOR SPORTS GOODS

Meerut, India

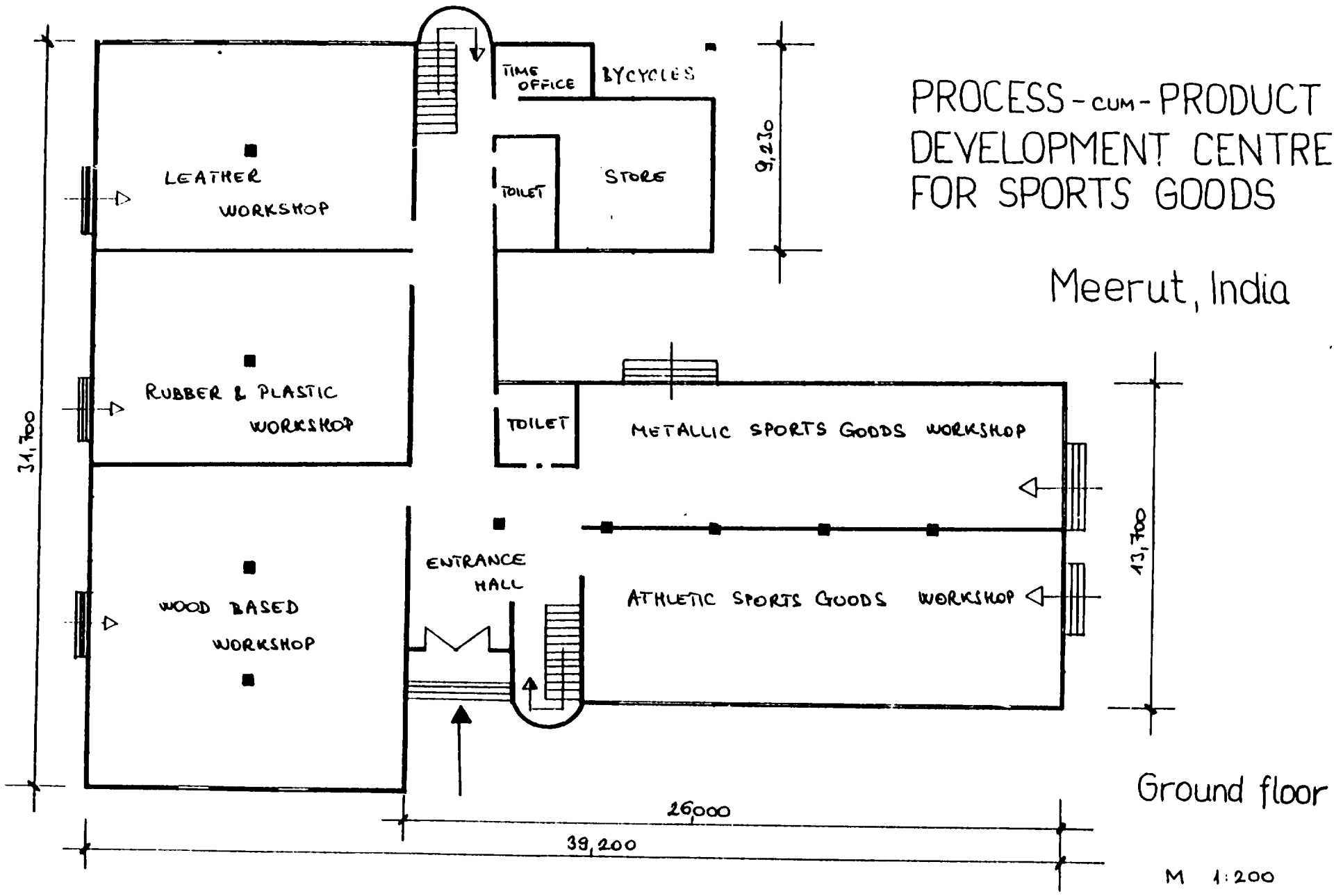


Fig 2.2

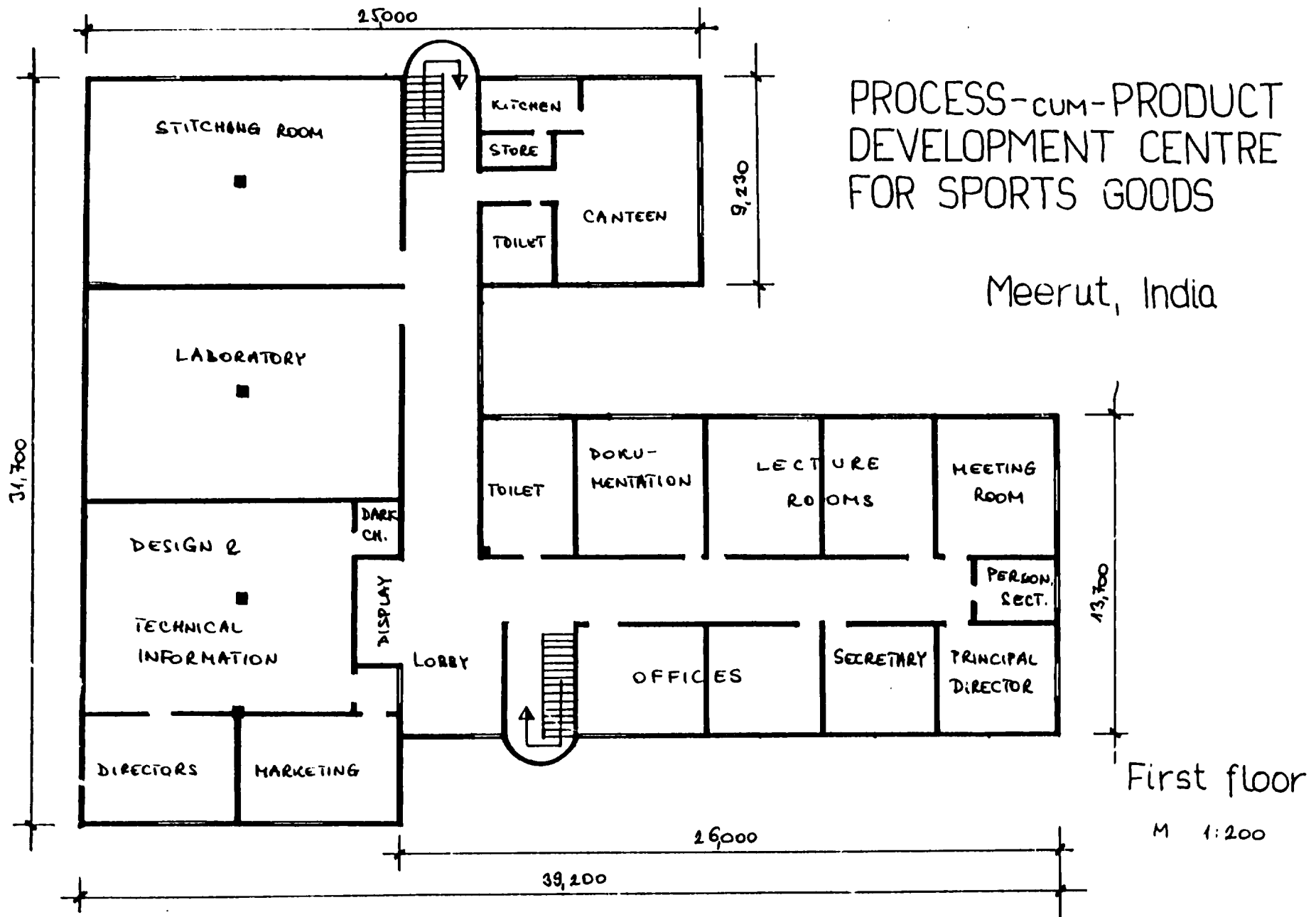


Fig. 2.3

UNITED NATIONS

Annex 1



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

6 March 1985

PROJECT IN THE REPUBLIC OF INDIA

JOB DESCRIPTION

DP/IND/84/009/11-01/31.7.D/Rev. 1

Post title Chief Technical Adviser (preparatory mission)

Duration One month (first part of a split mission, total duration nine months)

Date required As soon as possible

Duty station Meerut (U.P.) with travel within the country

Purpose of project To assist in setting up a Process-cum-Product Development Centre for sports goods and leisure equipment.

Duties The expert will be attached to the Ministry of Industry through the Development Commissioner for Small Scale Industry. He will be stationed at the SISI Extension Centre in Meerut and will specifically be expected to:

1. Prepare a plant layout of the Centre;
2. Advise on the selection of machinery and equipment and prepare relevant requisitions;
3. Prepare field purchase orders for expendable equipment and materials needed at the initial stage of project activities;
4. Advise on the organization of fellowships and study tours;
5. Prepare job descriptions for experts to be engaged;
6. Prepare a work plan for the implementation of the project.

The expert will also be expected to prepare a technical report setting out the findings of the preparatory mission and recommendations to the Government on further action which might be taken.

.... / ..

Applications and communications regarding this Job Description should be sent to:
Project Personnel Recruitment Section, Industrial Operations Division
UNIDO, VIENNA INTERNATIONAL CENTRE, P.O. Box 300, Vienna, Austria

Qualifications Engineer with experience in leather goods manufacture and knowledge of machinery requirements for different productions. Previous experience with UNIDO leather and leather products industry projects required.

Language English.

Background information During the previous decade, the Indian Institute of Foreign Trade, the Sports Goods Export Promotion Council and the Trade Development Authority have carried out a number of market surveys and buyers-sellers meetings, and have formed trade delegations in order to identify products with good export potential. Although such surveys have indicated a marketing potential of the products identified, no further steps have been taken by these organizations to promote their development and export. Neither is adequate technology available indigenously. The Process and Product Development Centre will, therefore, be in a position to bridge this technology gap by developing appropriate technology and product development, thereby helping existing as well as new entrepreneurs in manufacturing these items in a phased manner for promoting their export.

A joint UNIDO-ITC project AR/IND/79/001 - Assistance to the Trade Development Authority in Product Adaptation and Provision of Expert Services on Production Techniques to the Sports Goods Export Promotion Council - financed from non-IPF funds, was implemented in India and provided expert services in the area of production of leather for sports goods and manufacture of leather-based sports goods. The experts strongly recommended that centralized facilities be set up for up-grading products, quality control, standardization etc. of the sports goods.

The sports goods industry, predominantly in the small and cottage industry sectors, is at present mainly concentrated at Jalandhar, Meerut, Delhi, Moradabad and Allahabad. Some items of sports goods are also being manufactured in Bombay, Calcutta, Bareilly, Patiala and a few other centres. There is also an encouraging trend for developing the small-scale sports goods industry in other states, such as Jammu and Kashmir, Karnataka, Bihar and Kerala. Governments of UP and Punjab are setting up sports goods complexes in Meerut and Jalandhar, respectively.

PROJECT BUDGET COVERING UNDP CONTRIBUTION

(in US \$)

Country: INDIA

Project No: IND/84/009/E/01/37

Title: Process-cum-Product Development Centre
for Sports Goods

	<u>Total</u>		<u>1985</u>		<u>1986</u>		<u>1987</u>	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$
10. PROJECT PERSONNEL								
11. <u>International Professionals</u>								
11.01 Chief Tech. Adviser	9	62,500	1	6,600	6	41,400	2	14,500
11.02 Leather S.G. expert	6	42,100			4	27,600	2	14,500
11.03 Wood-based S.G. expert	6	42,450			3	20,700	3	21,750
11.04 Rubber-based S.G. expert	2	13,800			2	13,800		
11.05 Plastic-based S.G. expert	2	13,800			2	13,800		
11.06 Metallic S.G. expert	3	21,750					3	21,750
11.60 Consultants	4	28,300			2	13,800	2	14,500
11.99 Sub-total	32	224,700	1	6,600	19	131,100	12	87,000
15 Travel Cost		5,850				3,850		2,000
16 Other cost		3,000						3,000
19 Component Total		233,550		6,600		134,950		92,000

(Annex 2 contd.)

PROJECT BUDGET COVERING UNDP CONTRIBUTION
(in US \$)

Country: INDIA
Project No: IND/84/009/E/01/37
Title: Process-cum-Product Development Centre for Sports Goods

	<u>Total</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	\$	\$	\$	\$
30 TRAINING				
31 Fellowships	73,500		43,500	30,000
32 Group Training	40,000	6,000	20,000	14,000
39 Component Total	113,500	6,000	63,500	44,000
40 EQUIPMENT				
41 Expendable equipment	40,800	2,000	28,000	10,800
42 Non-expendable equipment	186,150	88,800	77,200	20,150
49 Component Total	226,950	90,800	105,200	30,950
50 MISCELLANEOUS				
51 Miscellaneous	14,100	850	6,000	7,250
59 Component Total	14,100	850	6,000	7,250
99 PROJECT TOTAL	588,100	104,250	309,650	174,200

Annex 3

LIST OF EQUIPMENT

No.	Denomination	Quantity	Cost	
			US\$	Rps.
A.	<u>LABORATORY</u>			
1.	Tensile strength tester with load cells and grips	1	16,000	
2.	Abrasion tester	1	1,500	
3.	Finish rub tester	1	1,200	
4.	Tensometer	1	1,800	
5.	Flexometer	1	2,000	
6.	Penetrometer	1	2,200	
7.	Electronic balance	1	800	
8.	Mechanical balances	2		8,000
9.	Muffle furnace	1		14,000
10.	Desktop pH-meter	1	600	
11.	Portable pH-meter	1	400	
12.	Soxlet extractor	1 set		2,000
13.	Water distillation unit	1		6,000
14.	Drying chamber	1		10,000
15.	Stirrer (electric)	1	700	
16.	Other equipment to be specified by experts		6,000	80,000
	Subtotal		34,200	154,000

No.	Denomination/Description	Quantity	Cost	
			US\$	Rps
B. LEATHER BASED SPORTS GOODS MANUFACTURING				
17.	Swing arm hydraulic clicking machine	1	2,600	
18.	Skiving machine	1		15,000
19.	Leather splitting machine	1	12,000	
20.	Belt/Strap cutting machine	1		5,000
21.	Eyeletting machine (thread operated)	1		2,000
22.	Flat-bed, single needle sewing machine	1	1,400	
23.	Heavy-duty, cylinder bed, single-needle sewing machine	1	1,800	
24.	Post-bed, single-needle sewing machine with trimmer	1	2,800	
25.	Zig-zag sewing machine	1	1,700	
26.	Experimental drums	2		12,000
27.	Leather shaving machine	1		15,000
28.	Oscillating buffing machine	1		12,000
29.	Staking machine	1		15,000
30.	Spray booths with spray guns	2		20,000
31.	Football rounding machine	1	900	
32.	Universal hydraulic press	1		7,000
33.	Equipment for cemented football manufacturing	1 set	18,000	
34.	Surface measuring machine	1	10,000	
35.	Clicking die making equipment	1 set	12,000	
36.	Stretching frames and tools for leather finishing	1 set		15,000
37.	Other equipment to be specified by international experts		6,000	120,000
	Subtotal		68,200	243,000

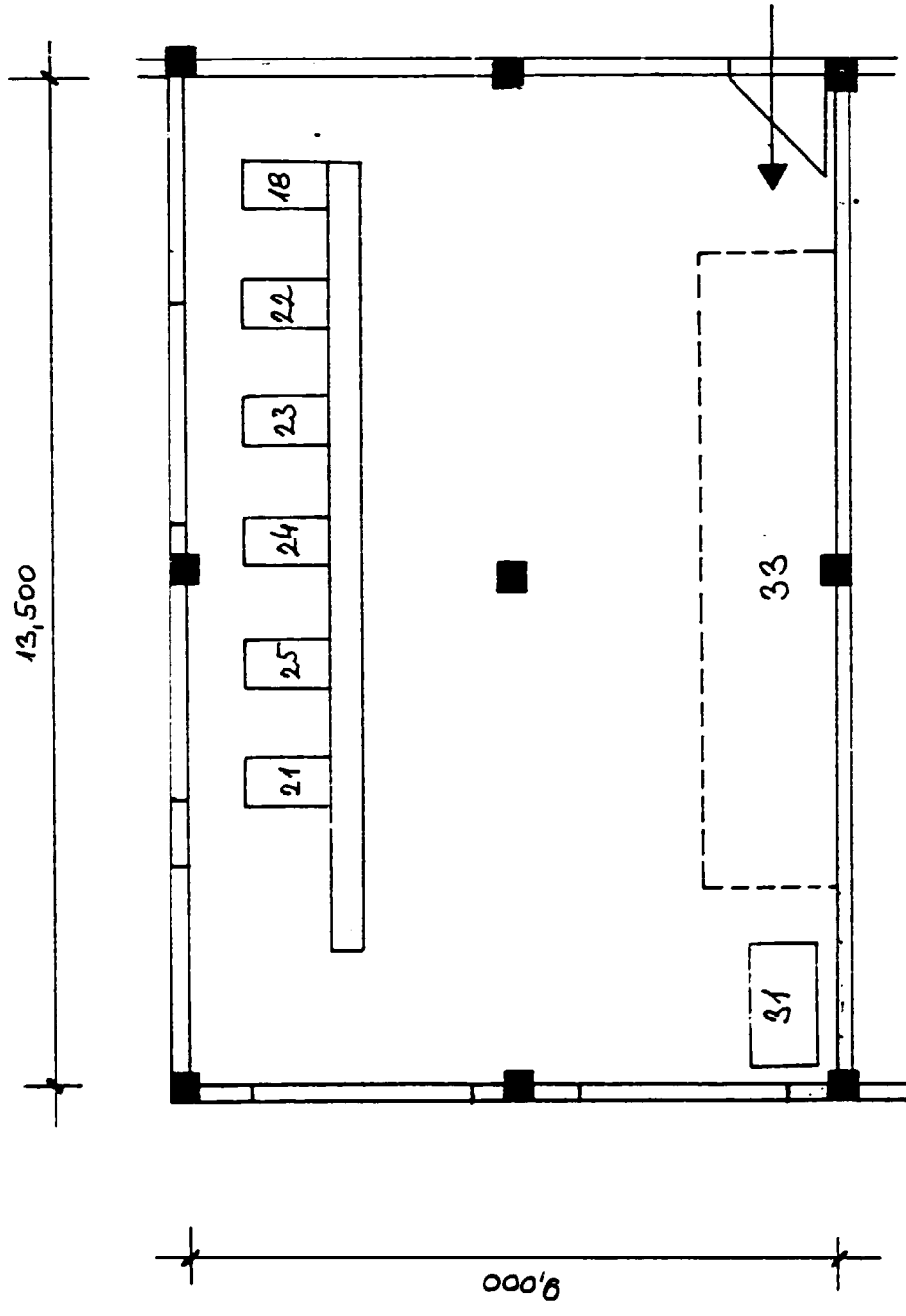
No.	Denomination/Description	Quantity	Cost	
			US \$	Rps
C. RUBBER AND PLASTIC BASED SPORTS GOODS MANUFACTURING				
38.	Rubber mixing mill (internal)	1		30,000
39.	Rubber calendar	1		20,000
40.	Rubber vulcanizing machine with measuring equipment	1		40,000
41.	Extruder	1		75,000
42.	Small injection-moulding machine for PVC and TR	1	15,000	
43.	Small PUR moulding machine	1	10,000	
44.	Vulcanizing/drying chamber	1		20,000
45.	Set of moulds, gauges, tools etc.	1	3,000	20,000
46.	Other equipment to be specified by international experts		7,000	200,000
	Sub-total		35,000	40,000

D. WOOD BASED SPORTS GOODS MANUFACTURING				
47.	Band saw	1		12,000
48.	Circular Saw	1		12,000
49.	Surface and thickness planner	1		25,000
50.	Universal woodworking machine	1		30,000
51.	Woodworking lathe (spindle)	1		5,000
52.	Drilling machine	1		10,000
53.	Portable drilling machine	1		5,000
54.	Buffing/sanding machine	1		5,000
55.	Spraying equipment with guns	1 set		15,000
56.	Handle tapering machine	1		3,000
57.	Mechanic clicking machine	1		5,000
58.	Stamping machine	1		2,000

No.	Denomination/Description	Quantity	Costs	
			US\$	Rps
59.	Plywood bending machine	1	600	
60.	Hockey blade shaping machine	1	300	
61.	Hockey blade stringing machine	1	2,000	
62.	Racket frame bending machine	1		15,000
63.	Drying oven with measuring equipment	1		20,000
64.	Ordinary round press	1		10,000
65.	Shuttle cork processing equipment	1 set		15,000
66.	Racket Stringing machine	1	3,000	
67.	Other equipment to be specified by international experts		7,000	250,000
Subtotal				
E. METALLIC SPORTS GOODS MANUFACTURING EQUIPMENT				
68.	Guillotine type shearing machine	1		30,000
69.	Bench type lathe	1		50,000
70.	Centre lathe	1		40,000
71.	Hydraulic surface grinder	1		75,000
72.	Universal milling machine	1		100,000
73.	Power back saw	1		5,000
74.	Drilling machine	1		10,000
75.	Portable drilling machine	1		3,000
76.	Arc welding machine	1		10,000
77.	Polishing machine	1		3,000
78.	Power press	1		30,000
79.	Spring manufacturing machine	1		40,000
80.	Spray painting equipment	1		10,000
81.	Grinding machines	3		15,000
82.	Work benches and tools			10,000
83.	Other equipment to be specified by international experts		8,000	250,000
Sub total			8,000	681,000

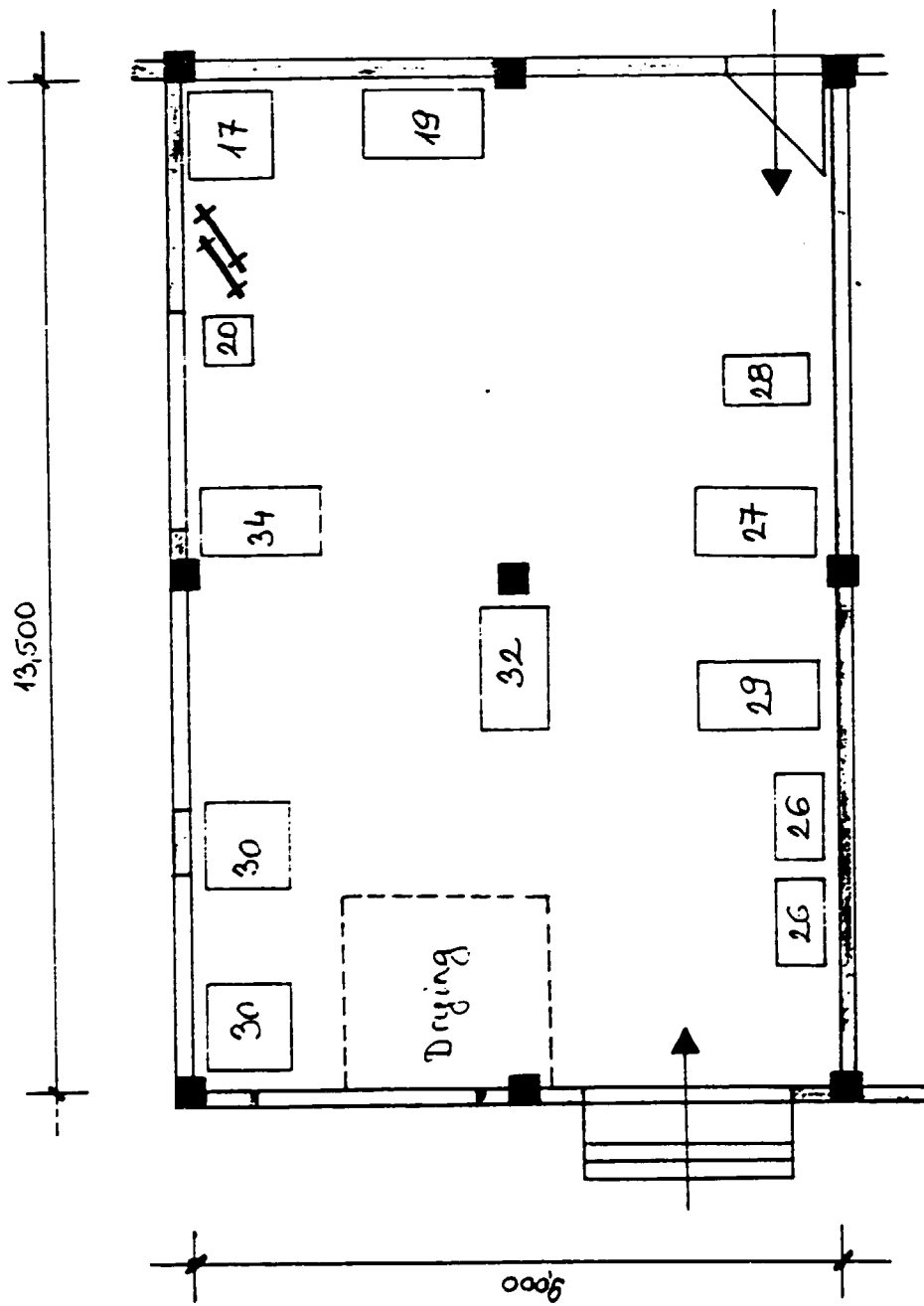
No.	Denomination/Description	Quantity	Cost	
			US \$	Rps
<u>F. EXPENDABLE EQUIPMENT AND MATERIALS</u>				
84.	Glassware for the laboratory		800	40,000
85.	Initial stock of chemicals		1,000	25,000
86.	Measuring equipment, gauges etc.		8,000	80,000
87.	Hand Tools		7,000	70,000
88.	Basic materials for training		2,000	250,000
89.	Samples of sports goods for product development		22,000	200,000
Sub-total			40,800	665,000
<u>G. AUDIO VISUAL EQUIPMENT</u>				
90.	Videorecorder (portable, VHS system) with camera and monitor	1 set	4,000	
91.	Photocamera with flash	1 set	800	
92.	Diaslide projector with screen	1 set	300	
93.	Overhead projector	1	200	
94.	Copying machine	1	11,000	
Sub-total			16,300	
<u>H. OTHER EQUIPMENT AND RELATED EXPENSES</u>				
95.	Furniture and office equipment			300,000
96.	Store equipment			66,000
97.	Vehicles (1 car + 1 landrover)			200,000
98.	Provision for transport			500,000
99.	INSTALLATION			500,000
100.	Other expenses		11,550	1,000,000
Sub-total			11,550	2,566,000
TOTAL			226,950	5,153,000

Annex. 4



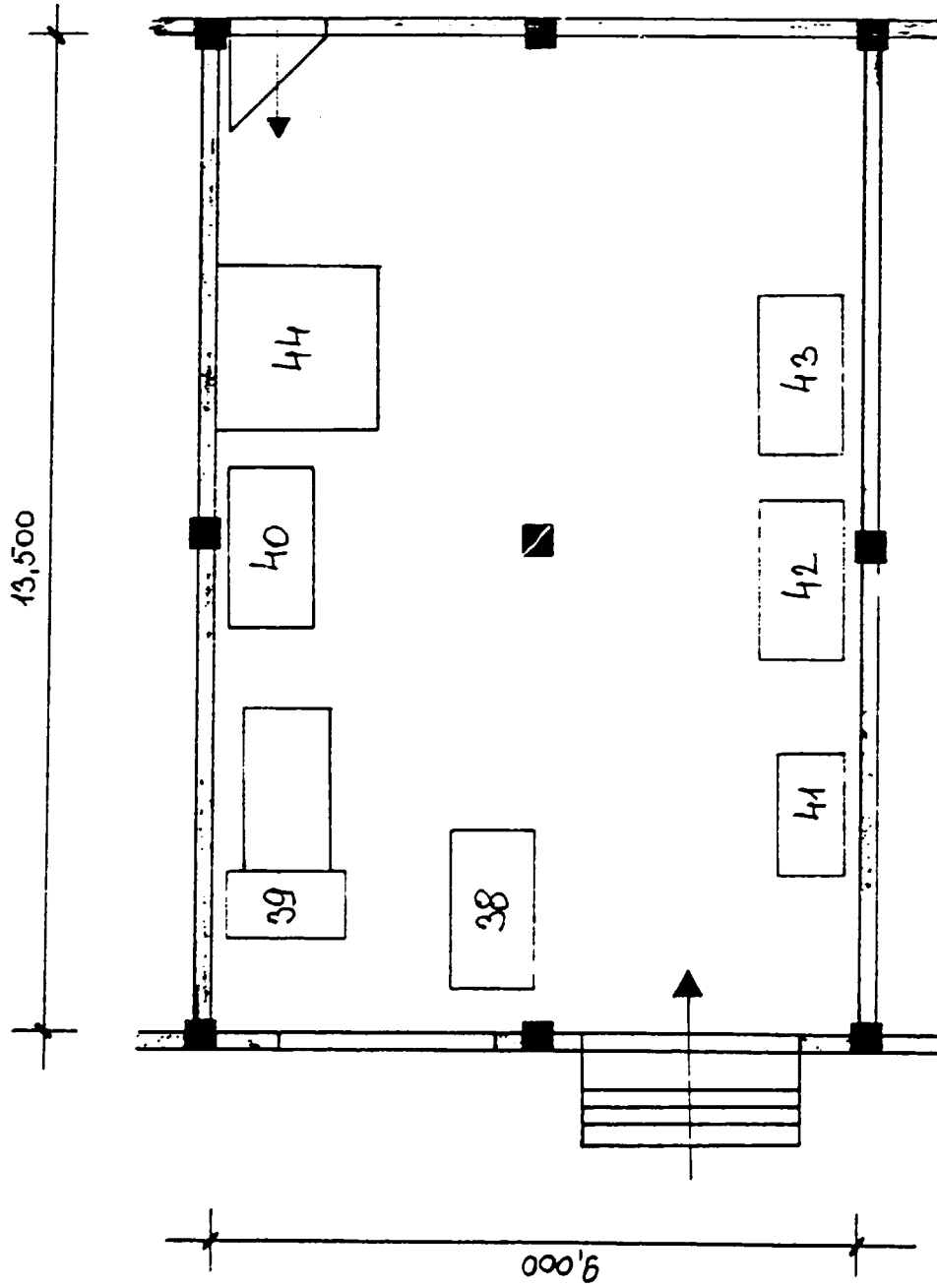
STITCHING ROOM

M 1:100



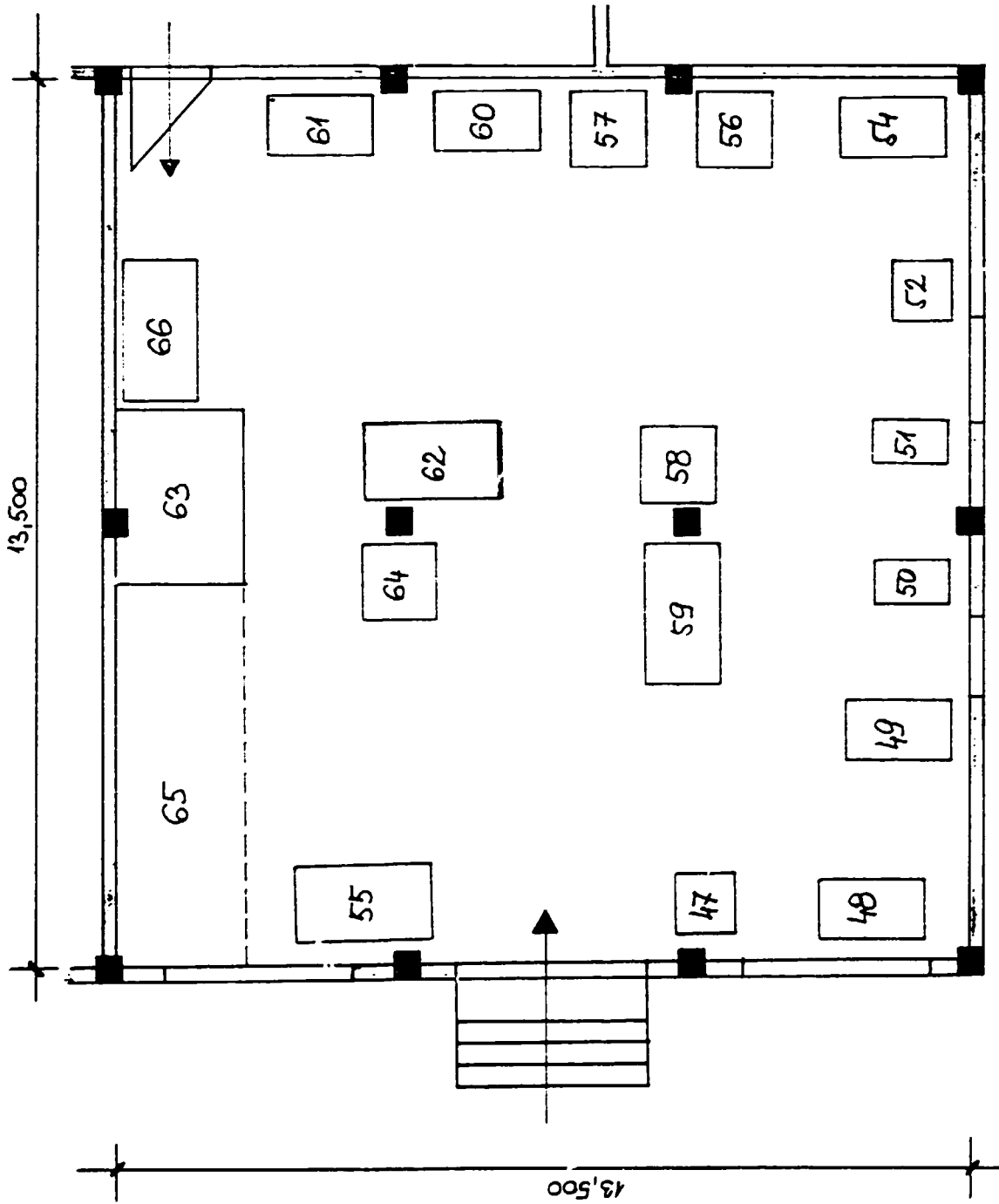
LEATHER WORKSHOP

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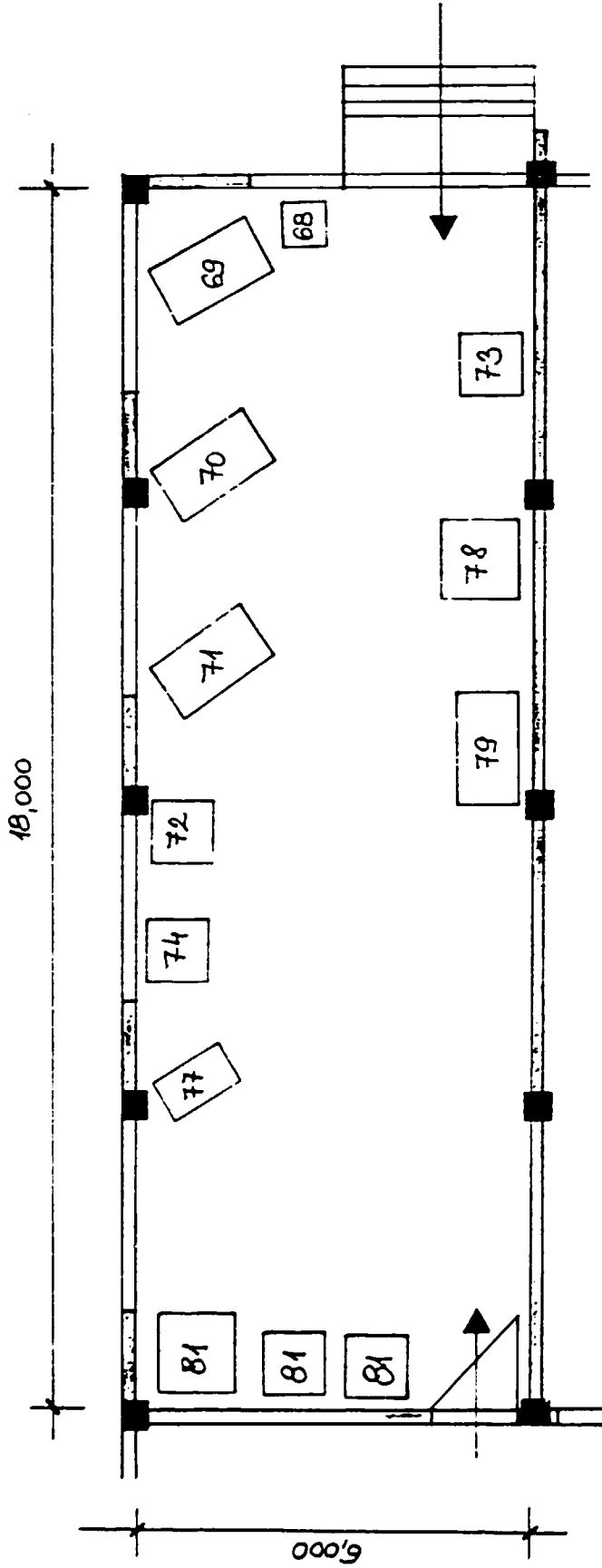
M 1:100

RUBBER & PLASTIC WORKSHOP



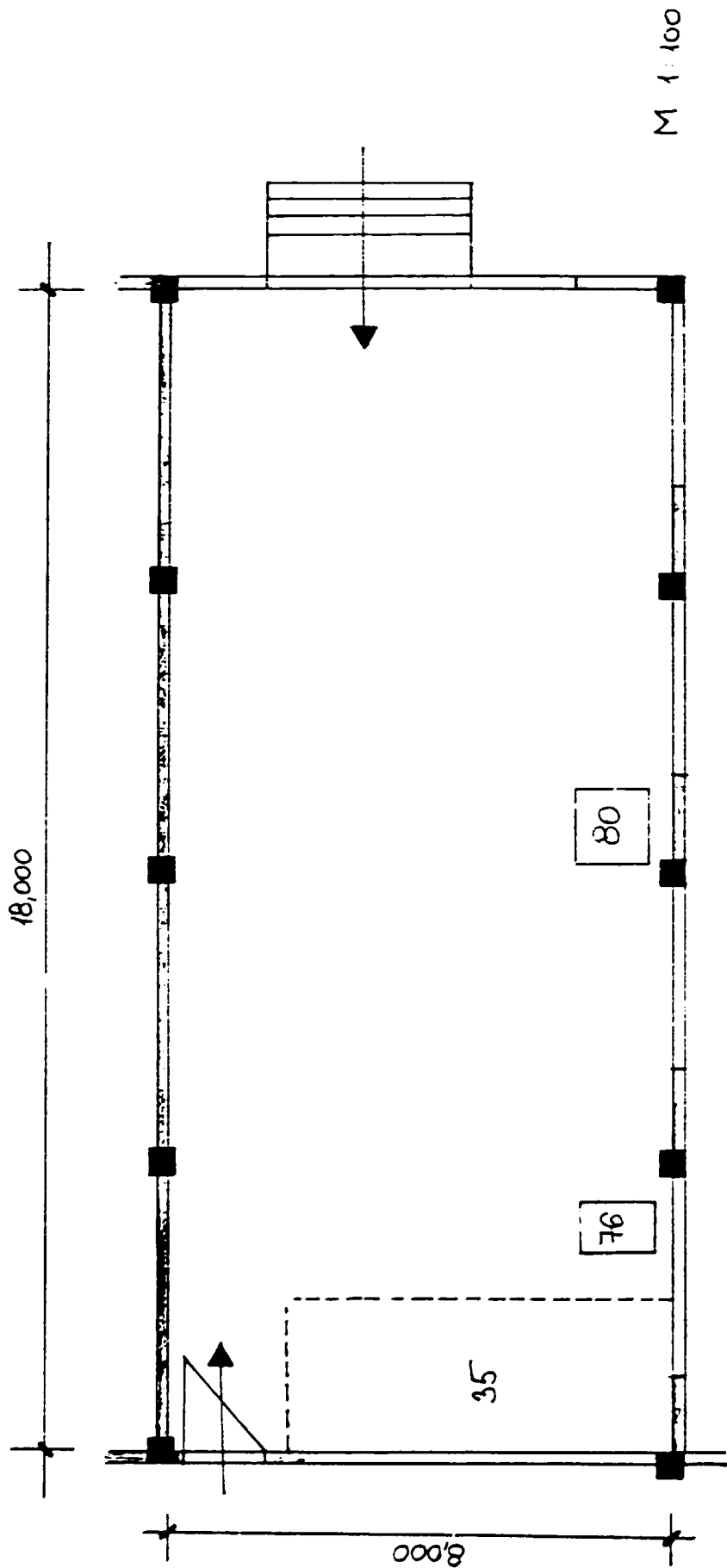
WOOD BASED WORKSHOP

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M 1:100

METALLIC SPORTS GOODS WORKSHOP



PHYSICAL FITNESS & ATHLETIC
EQUIPMENT WORKSHOP

Annex 5

JOB DESCRIPTIONS

For all posts the followings are the same:

Duty Station: Meerut (Uttar Pradesh) with travel within the country.

Purpose of Project:

To assist in setting up the Process-cum-Product Development Centre (PPDC) for Sports Goods and Leisure Equipment in Meerut.

Duties

The expert will be attached to the Ministry of Industry through the Development Commissioner for Small-Scale Industry, and will be stationed during the mission at the PPDC building in Meerut. The expert will specifically be required to:

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. .
. . .
. . . .
.

The expert will also be expected to prepare a final report setting out the finding of the mission and recommendations to the Government on further actions which might be taken.

Language: English

Background Information: as per 11-01 of 6 July 1984

/...

11-01 CHIEF TECHNICAL ADVISOR

Duration: Eight months, split mission (3+2+3 months)

Date required: February 1986 (1st part)
September 1986 (2nd part)
March 1987 (3rd part)

Duties (...)

- (1) Supervise the starting-up of the Centre's activities as specified in the Project Document;
- (2) Provide guidance to the international experts and local counterparts on technical matters relating to their work;
- (3) Assist in the organization of study tours and fellowship training to be conducted abroad;
- (4) Advise on the selection of a suitable product mix of various sports goods, leisure time and athletic equipment for domestic and export markets.
- (5) Assist in starting-up the training and product development services of PPDC to be rendered for the local sports goods industry.

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Qualification:

Engineer/technologist specializing in one or more types of sports goods and/or their basic materials manufacturing industry and technology. Experience in similar projects or UNIDO project management relating to other developing countries, an asset.

11-02 LEATHER BASED SPORTS GOODS EXPERT

Duration:

Six months, split mission (4+2 months)

Dates required:

March 1986 (1st part)

February 1987 (2nd part)

Duties: (...)

- (1) Assess the quality standards achieved by local leather based sports goods manufacturers and advise on ways and means of quality improvement.
- (2) Assist in installation of the laboratory equipment and machines for the leather section of PPDC.
- (3) Train local counterparts in laboratory testing methods and operation of machines for leather based sports goods manufacturing.
- (4) Advise on diversification of material base and leather based sports goods to be developed for export markets.

/...

- (5) Assist in identification of exhibitions, fairs, advanced manufacturing units to be visited through the fellowship programme, as well as in making contacts with the same.

Qualification:

Engineer/technologist specializing in leather based sports goods manufacturing and quality control. Experience in marketing is an asset.

11-03 RUBBER BASED SPORTS GOODS EXPERT

Duration: Two months

Date required: August 1986

Duties: (...)

- (1) Assist in installation of rubber processing and quality control equipment of PPLC.
- (2) Train local counterparts to operate machinery and test equipment.
- (3) Advise on formulas and technological processes for rubber based sports goods with special references to inflated balls, cricket and hockey balls.
- (4) Recommend on diversification of traditional local products to be marketed abroad.

(...)

Qualification:

Rubber technologist (preferable chemical engineer) having wide experience in manufacturing rubber based sports goods. Previous services in developing countries and/or experience in marketing is an asset.

11-04 PLASTIC BASED SPORTS GOODS EXPERT

Duration: Two months

Date required: November 1986

Duties: (...)

- (1) Assist in installation and training local counterparts in operation of plastic processing and quality control.
- (2) Recommend formulas and technologies (process descriptions) for manufacturing plastic based sports goods or their components.
- (3) Advise on possible diversification of traditional products and on substitution of natural materials used for various sports goods.

Qualification:

Technologist/chemical engineer with experience in manufacturing plastic based sports goods.

11-05 WOOD BASED SPORTS GOODS

Duration: Six months, split mission (3+3 months)

Dates required: September 1986 (1st part)
February 1987 (2nd part)

Duties: (...)

- (1) Assist in installation of wood processing and special equipment in PPDC.
- (2) Train local counterparts in operating the wood processing equipment and the quality control of both materials and products.
- (3) Advise on improvement of quality and productivity in wood based sports goods manufacturing with special references to rackets, cricket bats and badminton shuttle corks.
- (4) Recommend suitable countries and institutions for study tours and fellowship training, assist in making contacts with the same.
- (5) Advise on possible diversification of the locally manufactured product range in order to achieve higher export share.

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Qualification:

Technologist specializing in wood based sports goods manufacturing having service experience in other developing countries. The knowledge of marketing and international trade are desirable.

11-06 METALLIC SPORTS GOODS EXPERT

Duration: Three months

Dates required: January 1987

Duties: (...)

- (1) Assist in installation and training of local personnel in operating the equipment of PPDC.
- (2) Advise on the system and practice of maintenance of equipment in PPDC.
- (3) Recommend on improvement both in designing and manufacturing processes of various metallic sports goods with special references to physical fitness and athletic equipment.
- (4) Assist in design and introduction of supplementary equipment/mechanism applicable in manufacturing processes of selected sports goods.

Qualification:

Mechanical engineer with wide experience in technology and assemble of metal based commodities; ability to create small equipment required for process mechanisation. Experience in sports goods manufacturing is also required.

Requisition

For equipment to be ordered in 1985

A. LABORATORY EQUIPMENT

Reg. No. 85/1

Quantity	Item	Estimated Cost US\$
1 ea	Tensile strength testers with load cells for 5000N and 50N and grisps for various materials (Suppliers: INSTRON, SANZO, ZWICK, KENNEDY)	16,000
1 ea	Abrasion tester	1,500
1 ea	Finish sub-tester	1,200
1 ea	Tensometer	1,800
1 ea	Flexometer	2,000
1 ea	Penetrometer	2,200
	(Suppliers for above: SATRA, BALLY, SPECHT, SANZO, SIDECO, TECHNOIMPEX)	
1 ea	Electronic balance (200 g)	800
1 ea	Desletop pH-meter	600
1 ea	Portable pH-meter	400
1 ea	Stirrer	700
	(Supplier for above: GALLENKAMP, SANZO, STRUER, BODE)	
Total:		28,200

Transport: By sea

Requisition

For equipment to be ordered in 1985

B. LEATHER PRODUCTS MACHINERY

Req. No. 85/2

Quantity	Item	Estimated Cost US\$
1 ea	Swing arm hydraulic cutting machine (Suppliers: ATOM, BUSM, SANDT, SCHON, TECHNOIMPEX)	2,600
1 ea	Leather splitting machine 400 mm (Supplier: FORTUNA, CAMOGA, ALBEKO, SVIT)	12,000
1 ea	Flat-bed, single-needle sewing machine	1,400
1 ea	Heavy-duty cylinder-bed sewing machine	1,800
1 ea	Post-bed, single-needle sewing machine with trimmer	2,800
1 ea	Zig-zag sewing machine (Suppliers for above: ADLER, PFAFF, NECCHI, BROTHERS, TECHNOIMPEX)	1,700
1 ea	Surface measuring machine (Supplier: METRAPLAN, SIDECO)	10,000
1 set	Cutting die making machines (Supplier: SKOMAB, SANDVIK, SIDECO)	12,000
Total:		44,300

Transport: By sea/surface

Requisition

For equipment to be ordered in 1985

C. AUDIO VISUAL EQUIPMENT

Req. No. 85/3

Quantity	Item	Estimated Cost US\$
1 set	Video recorder (portable) with tuner, VHS system for PAL	2,000
1 ea	Video camera with power pack	1,700
1 ea	Colour TV set (medium size), PAL system (Suppliers for above: PHILIPS, GRUNDIG, SIEMENS, SHARP, CANON, PANASONIC, BRAUN, SONY)	300
1 ea	Copying machine for normal paper	11,000
1 ea	Photo camera with built-in light measuring equipment and with variable focus-length lens	650
1 ea	Electric flash with rechargable batteries (Suppliers for above: CANON, MINOLTA, PENTAX)	150
1 ea	Overhead projector	200
1 ea	Dia-slide projector with remote control	250
1 ea	Projecting screen (Suppliers for above: ZEISS, CANON etc.)	50
Total:		16,300

Transport: By sea/surface

UNIDO EXPERTS' REPORTS

handed over to PPDC

The CTA handed over to PPDC the copies of following earlier reports based on UNIDO experts' works in India and other countries.

For Adoption in PPDC Services

- DP/IND/72/045 - Ways and methods to improve the manufacture of sporting goods in India (by Mr L. Soesley expert on leather tanning)

- AR/IND/79/011 - Manufacture of Rubber Moulded Balls (by Mr D.S. Brkish, expert in rubber moulded goods)

- AR/IND/79/011 - Production of Leather for Sports Goods (by Mr M. Haecker, expert in production of leather)

For Information

- DP/IND/71/613 - Leather Goods Development-cum-Demonstration Centre, Madras (by Mr.F.A. Rant, consultant on the leather goods industry)

/...

- AR/IND/79/011 - Integrated Programme of Technical
Cooperation in Trade Promotion with
the Government of India - Production of
Leather Goods (by Mr B. Van Poelgeest,
expert in the production of leather goods)
- DP/BUR/82/OC8 - Rubber Products Marketing
(by Mr K.F. Heinisch, rubber products
marketing expert)

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/...

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