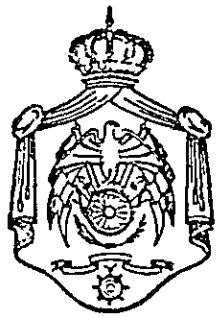
ANNEX

Annex 1.1 Scope of Work for the Feasibility Study of Irbid Industrial Estate

بسم الله الرحمن الرحيم

THE HASHEMITE KINGDOM
OF JORDAN
NATIONAL PLANNING COUNCIL
AMMAN
Tel. 44466 — 44470
Tlx : 21319 - P.O. Box 555
Teleg. NPC - Amman



المملكة الأردنية الهاشمية
المجلس القومي للتخطيط
عمان
الهاتف : ٤٤٤٦٦ - ٤٤٤٧٠
تلكس : ٢١٣١٩ - ص.ب ٥٥٥

No. 128/20 / 6/27 — الرقم

Date 18/12/1980 — التاريخ

Ref. — المرافق

Dr. K. Mera
Team Leader
JICA Team for
Feasibility Study of
Irbid Industrial Estate

Dear Dr. Mera,

Please find attached a signed copy of the Scope of Work for the Feasibility Study of Irbid Industrial Estate. I would like to inform you that the counterpart agency for this Study will be a committee consisting of representatives from:

- Ministry of Municipal, Rural and Environmental Affairs
- Industrial Estate Corporation
- Industrial Development Bank

It is to be noted that this committee will be responsible for following up this study in all its phases and will also be the agency responsible for approval in all phases, of reports for this Study. Furthermore, your point of contact with the Government with regard to this Study will be the Ministry of Municipal, Rural and Environmental Affairs.

Yours sincerely,

President

cc: Ministry of Municipal,
Rural and Environmental Affairs
cc: Industrial Estate Corporation
cc: Industrial Development Bank.

SCOPE OF WORK

FOR

THE FEASIBILITY STUDY

OF

IRBID INDUSTRIAL ESTATE

Agreed

Between

NATIONAL PLANNING COUNCIL

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Dated : December , 1980

(Hanna Odeh)
President
National Planning Council

(Koichi Mera)
Team Leader
Feasibility Study Team
Japan International Cooperation Agency

I. Introduction

1.1 In response to the request of the Government of the Hashemite Kingdom of Jordan, the Government of Japan has agreed to extend technical assistance to conduct a feasibility study of Irbid Industrial Estate (hereinafter called the Industrial Estate) of Jordan in accordance with laws and regulations in force in Jordan as far as field activities of this Study are concerned and, in Japan for the other Study activities. The Study will be carried out through the Japan International Cooperation Agency (hereinafter called JICA), which is the official agency responsible for the implementation of technical cooperation programs of the Government of Japan. JICA will provide a team of Japanese experts (hereinafter called the Team) for this purpose.

1.2 The Hashemite Kingdom of Jordan accepts the above-mentioned assistance, and in connection thereof, will, through the National Planning Council (hereinafter called NPC) of the Hashemite Kingdom of Jordan in close coordination with other agencies of the Hashemite Kingdom of Jordan, set up a coordinating authority to conduct the above-mentioned Study with JICA.

1.3 The present document sets forth the scope of work with regard to the above-mentioned Study.

II. Background of the Study

2.1 In the Hashemite Kingdom of Jordan, the Five Year Development Plan (1976-1980) is being carried out. In order to further achieve the dynamic economic and social development already initiated through this plan, a comprehensive regional development plan entitled Integrated Regional Development Study of Northern Jordan was formulated by the Ministry of Municipal, Rural and Environmental Affairs and the teams commissioned from JICA in 1978 and 1979. The study was composed of two phases, i.e., Phase I and Phase II. In Phase I of the study, overall development objectives for the Northern Jordan were generated in accordance with the national development objectives, and, accordingly, a comprehensive development strategy was formulated toward year 2000. Within the framework of the development strategy, identification of high priority projects and programs was made by the Government of Jordan. These were the Ring Roads of Irbid, the Irbid Industrial Estate, and the tourism development plan of the Northern Jordan. In Phase II, the pre-feasibility studies of the above-mentioned two projects and the plan making were carried out.

2.2 The outputs of the Phase II Study with regard to each of the Ring Roads of Irbid and the Irbid Industrial Estate were:

(1) Preliminary design of an appropriately selected project based on comparison of alternatives.

(2) A cost estimate of the above designed project,

(3) Financial and economic evaluation, and

(4) Recommendation of arrangements for implementation.

The outputs of the tourism development plan were:-

(1) An appropriately phased long-term tourism plan up to year 2000,

(2) Detailed plans for development cores, and

(3) List of projects to be implemented, their cost estimates, and investment schedule.

2.3 Based on the outputs of Phase I and Phase II studies, this feasibility study (hereinafter called the Study) of the Irbid Industrial Estate will be carried out.

III. The Objective

The objective of the Study is to assist the Government of the Hashemite Kingdom of Jordan to prepare a feasibility study of the Industrial Estate of Irbid as an extension of the pre-feasibility study conducted in the Phase II. The Study will provide detailed information to the Government of Jordan for decision on further implementation of the proposed Irbid Industrial Estate.

IV. Scope of the Study

In order to attain the stated objective, the Study will be carried out within the framework formulated in the Phase II Study, supplement necessary information which was not covered in the Phase I Study and the pre-feasibility study of Phase II, and make in-depth analyses of the following twelve major study items, to the extent which is necessary to confirm the feasibility of the Industrial Estate within the time and resources earmarked for the Study.

4.1 Investment Environment

In this section, the Team will examine and evaluate factors which are considered to be of crucial importance for individual entrepreneurs in deciding to locate plants in the proposed Industrial Estate. The following items will be briefly examined as environment of the proposed IIE:

- Conditions of labor market,
- Financial institutions and their guidelines,
- Marketing and transportation conditions,
- Environmental problems and regulations, and
- Activities of local industries in and around Irbid city.

4.2 Demand Projection of Manufactured Products

In this section, the Team will undertake demand projections for selected manufactured products which are necessary in the later stages of this Study. A particular attention will be given on several industries among the industries which were selected in the Phase II Study. The projection period will be the ten-year between 1980 and 1990, and the projections will be made for the domestic demands and foreign demands for each selected industry to the extent possible within the data constraints.

4.3 Selection of Industries and Determination of Project Size

Twenty-three industries have been identified as likely industries to be located in the proposed Industrial Estate in the Phase II Study. In this section, the Team will make use of the results so far completed from a general Industrial Programming Study for Jordan including identification of industrial development potentialities over the next ten years.

The Team will undertake an interview survey of present manufacturing establishments in Irbid and Amman in order to identify potential investors in the proposed Industrial Estate.

In addition, with the use of interviews, the analysis of current trends in the development of the Northern Region

and analyses of other relevant factors, the Team will make a final list of industries which are considered to be feasible in locating in the proposed Industrial Estate. An in-depth study for selected industries will be undertaken for identifying feasibility of locating in the proposed Industrial Estate by considering the level of technology used, operational scale, market conditions, regional comparative advantage and government policies.

Further, the possibility of relocation of existing industries in the center of Irbid city will be also examined in this section. The number of establishments, employment, amount of production, and value added will be estimated for 1985 and 1990, and these figures will be used in determining the total land area and the size of factory buildings in the proposed projects.

4.4 Incentive Systems for the Promotion of Industries

In this section, the Team will examine incentive systems which are required to encourage potential industries to locate in the Industrial Estate as well as to support maintenance and management of the Industrial Estate itself. For example, a system of industrial promotion suggested by JIEC on the Amman Industrial Estate and Free Zone, as well as policies and institutions for industrial promotion suggested in the current Industrial Programming Study or being

applied by Irbid city on the existing industrial estate need to be reviewed and analysed as to their relevance to the Irbid Industrial Estate Project. Recommendations will be made on how to provide incentives to the potential entrepreneurs in order to attract them to the Industrial Estate. Specifically, the following will be studied:

- Existing policy and system of industrial promotion,
- examination of problems of individual entrepreneurs in locating or relocating into the Industrial Estate, and
- Recommendations to establish a well organized system of industrial promotion incentive in accordance with the development of the Industrial Estate.

4.5 Utility Facilities and Infrastructure

In this section, the Team will examine the present conditions and development schedule of utility facilities and infrastructure in the area around the proposed Industrial Estate. In the Phase II Study information related to utility facilities and infrastructure was surveyed. This Study will review the information and obtain up-to-date information about the availability of utility facilities and infrastructures. The items to be studied are as follows:

- Water supply system,
- Drainage system,
- Electric power supply,
- Communication system,
- Road conditions and transportation system, and
- Others (waste disposal system, energy generating facilities, etc.).

4.6 Site Selection of the Industrial Estate

In this section, the Team will select most appropriate site for the Industrial Estate in consideration of the needs of potential entrepreneurs especially in reference to projects recognized as viable as well as the interests of Irbid Municipality. As the organization which will be in charge of development and management of the Industrial Estate has not been determined yet, the site selection will be determined in consultation with the authorities presently in charge of administration of this project.

4.7 Land Use Plan of the Industrial Estate

In this section, land use plan will be proposed within the site selected for the Industrial Estate. The Team will review the land use standards of existing industrial estates such as the Amman Industrial Estate and Free Zone in order to provide good working conditions for expected workers. With regard to the subdivision of plots, it will be intended to provide well coordinated

subdivisions system with enough flexibility, adaptability, and rooms for expansion in order to respond unanticipated changes of location of factories. Alternatives of land use plan will be formulated and evaluated with respect to the following items:

- Layout of general service center, utility facilities, parks and recreation facilities, feeder roads.
- The size of a standard unit for factory land and buildings,
- Standard sheds for relocated industries,
- Grouping of industries and allotment, and
- Relation to infrastructure.

4.8 Preliminary Engineering Design of the Industrial Estate

In order to confirm in details the feasibility of the Industrial Estate, a preliminary engineering design at feasbility study level will be carried out in this section based on the proposed land use plan as well as present and projected conditions of utility facilities and infrastructure. For the purpose of estimating construction costs, the preliminary engineering design will be made for the site and utilities (scale : 1/2500), and plan and sections of major facilities to be constructed in the Industrial

Estate. Major Items to be designed are as follows:

- Levelling and drainage facilities,
- Feeder roads,
- Piped water supply,
- Waste water disposal facility, together with preliminary design for cleaning industrial waste, as needed, with special reference to the selected and potential projects,
- Telephone and communication facilities,
- Solid waste disposal facility,
- Electricity Distribution,
- Other supply facilities such as gas, petroleum, etc.
- General service center (scale: 1/200), and
- Standard factory buildings (scale: 1/100 and 1/50)

4.9 Administration and Management

Although two specific proposals with regard to a desired administrative and managing body were made in the pre-feasibility study, a further clarification will be necessary in conjunction with existing organizational and administrative framework of various governmental agencies concerning the project. The Study will also examine other factors such as number of required staffs and cost of maintaining a management body. Recommendations will be made with regard to the organizational structure of management of the Industrial Estate.

4.10 Schedule of Implementation and Estimation of Costs

Based on the preliminary engineering design, the Team will estimate implementation costs and revenues of the Industrial Estate, breakdown costs into domestic portion and foreign portion, and formulate implementation schedule. Information derived in this section will be used in the following financial and economic analyses.

4.11 Financial Analysis

Given costs of construction, maintenance and operation, and revenue schedules based on several alternatives as to sales policy of the Industrial Estate, the financial rate of return of the Industrial Estate will be examined by using the discount cash flow analysis. In estimating costs and revenues of the Industrial Estate, an attempt will be made to reduce uncertain factors as much as possible. Also, existing framework of guidelines of financial institutions will be fully utilized in making alternatives with regard to investment schedules, and priority of alternatives will be evaluated. Sensitivity analysis will be applied in assuming fluctuations of major cost and revenue items, with special reference for the latter to the eventual number of establishments attracted to the Estate. Finally, recommendations will be made based on computed financial rate of return.

4.12 Economic Analysis

The main objective of the economic analysis in this Study is the appraisal of the economic feasibility of the project primarily on the basis of a comparison between products and services to be generated and the project cost in national economic terms. In estimating benefits of the project, the study will also consider the effect of the project on foreign exchange savings or earnings, creation of employment opportunities in Northern region, contribution to the regional development policies of the Government, as well as the indirect effects of the project such as relocation of industries from the center of Irbid city. In estimating costs, the concept of opportunity cost will be introduced on major items. Based on the estimated benefits and costs, the economic rate of return will be computed to clarify the magnitude of economic impact of the project, and factors influential to the project will be identified by sensitivity analysis.

V. Reports

The Team will prepare and submit to the NPC the following reports, including all related maps and plans, in English, within the time period indicated:

(1) Interim Report, at the end of field survey. (50 copies)

(2) Draft Final Report, within three months after the end of field survey. (50 copies)

(3) The Final Report, within three months after the receipt of comments on the Draft Final Report. (100 copies of the Final Report with 200 copies of Summary).

VI. Contribution of the Government of Japan

6.1 The Government of Japan will, through JICA, provide a team of experts (the Team). The Team shall include the following experts:

- Project Manager
- Land Use Planner
- Industry Specialist
- Commerce and Marketing Specialist
- Institutional and Organizational Specialist
- Engineering Designer
- Economic/Financial Analyst

6.2 The Government of Japan will aim at assisting the Jordanian counterparts to further their skills to the extent possible through interaction with the Japanese experts during the course of the Study.

6.3 The Government of Japan will provide the Final Report to the Government of Jordan after the completion of the Study.

VII. Contribution of the Government of the Hashemite Kingdom of Jordan

7.1 The Government of the Hashemite Kingdom of Jordan will designate the counterpart agency and sufficient number of full-time counterparts, at least in the fields corresponding to the Japanese Team experts, at the starting date of the Study.

7.2 The Government of Jordan will contribute to cover the cost for the following items:

(1) Local non-technical staff such as: secretaries, typists, draftmen and housekeepers.

(2) Part-time helpers (university students) for the field survey.

(3) A furnished office in Amman.

(4) A furnished office in Irbid.

(5) Office supplies and maintenance including three IBM typewriters.

(6) Two cars with drivers for the field survey in Irbid.

7.3 The Government of the Hashemite Kingdom of Jordan will provide the Team with all relevant study reports and available data as well as aerial photogrpahs and maps of scale 1/2,500 and 1/10,000.

7.4 The Government of the Hashemite Kingdom of Jordan will grant necessary approvals for the special field survey work upon request by the Team. The Government will also make the utmost effort to ensure the security of the Team during its stay in Jordan.

Annex 1.2 Interim Report of the Feasibility Study of Irbid Industrial Estate

THE HASHEMITE KINGDOM OF JORDAN

THE FEASIBILITY STUDY OF IRBID INDUSTRIAL ESTATE

INTERIM REPORT

Dec. 20, 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

1. According to the agreement on the Scope of Work reached earlier this month in Amman between the National Planning Council of the Government of Jordan and representatives of Japan International Cooperation Agency on the Feasibility Study of Irbid Industrial Estate (hereinafter called IIE), a team of experts from JICA, led by Dr. Koichi Mera started to undertake the Study in Amman and Irbid on December 2.

2. In this Interim Report the JICA team wishes to present tentative findings so far obtained from its investigations. Our findings are necessarily tentative because there are more materials than we can digest within the short span of time we spent in Jordan this time, and we shall be preparing a Draft Final Report after returning to Japan. Tentative as our findings may be at present, we wish to present them for the purpose of exchanging views at this stage with concerned officials. The views obtained at this occasion would become important guides for our future work.

3. We wish to express sincere gratitudes to a numerous Government officials and other individuals in Jordan who have helped us in our undertaking of this Study. Particular thanks are due to Dr. Sufyan Tell and his colleagues in the Department of Regional Planning who have spent an enormous amount of time and energy with us, and Lord Mayor of Irbid, Dr. Abdul-Razak Tubishat and his staff who supported us with unparalleled enthusiasm.

II. PROSPECTS OF INDUSTRIAL DEVELOPMENT IN JORDAN WITH PARTICULAR REFERENCE TO THE NORTHERN REGION

1. GDP at factor cost is growing at a respectable average annual rate of 12.8% and the manufacturing sector is growing at a sound averaging rate of 17.2% during 1969-1979. There is no reason to believe such healthy growth rates cannot be continued into the future.

2. The Country has been importing several times more than she has been exporting. There is a large scope for further import substitution, if not export. The recent trend of increasing importation of machinery is an encouraging sign.

3. Due to outmigration of skilled Jordanians to other Arab nations, there is scarcity of skilled labor in Jordan. But, recently some of them are coming back. With better opportunities created in Jordan, more will come back. Meanwhile, foreign skilled and non-skilled workers have been increased rapidly recent year. The numbers of foreign workers registered at the Ministry of Labor were 26,450 in 1979.

4. Although there are demands for more simplified application-approval procedure and easier terms of lending, financing for industrial investment is provided mainly by the competent Industrial Development Bank of Jordan.

5. Incentives for industrial development are provided in terms of custom duties, income tax holidays, concessional loans and selective licensing. Although there is a scope for further improvements, these incentives have helped to make a good environment for industrialists to invest in Jordan.

6. Industry was little developed in the Northern Region until few years ago, but we have identified a rapid growth of manufacturing establishments in and around the city of Irbid. The establishment of an industrial zone several years ago by the Municipality of Irbid has helped industrial investment there. There are several additional encouraging signs: (1) The construction boom to be created by the construction of Yarmouk University, and (2) agricultural development in Jordan Valley for increasing supply of agricultural materials for processing. Proximity of the area to Syria and Iraq makes this location further attractive.

7. There are 4,283 foreign workers in Irbid region as of November 1980, and further increment of these foreign workers supplied from Arab and Asian countries will meet with new labor demand created by industrial development in the Northern Region. Besides, Vocational Training Center at Hakama/Irbid which is scheduled for operation from 1982 will provide 300 skilled graduates annually, in addition to the existing program of on-the-job-training in Irbid region.

8. The demand for domestically manufactured products is able to expand by cutting off the demand for imports. If this is successfully done, the output of most products can be increased enormously. If the share of the demand for domestic products remains the same, it will increase at the rate of the growth of GDP adjusted with the elasticity of demand for the particular product. If GDP is to grow at 10% per annum, and the elasticity is assumed to be unity, then the demand will increase by 61% in 5 years and 159% in 10 years. If export is counted, then the demand will grow at a much greater rate. On the whole, the growth of the manufacturing sector would be much greater than those moderate projections.

9. Industries we are considering below will certainly grow at a much faster rate as we have chosen potential growth industries. In the Prefeasibility Study report of JICA of March, 1980, we estimated the incremental land demand for manufacturing in the Northern Region as 16.8 ha from 1980 to 1985, and 26.2 ha from 1986 to 1980. These

estimates imply that the manufacturing sector will grow at the rate of about 19% per year during the 1980's. This assumption has been confirmed by our survey of manufacturing establishments in Irbid undertaken during the past few weeks. In terms of the number of establishments, employment or land demand, the manufacturing sector in Irbid and its vicinity has been growing at about 19% per year since 1974.

III. THE SELECTION OF INDUSTRIES FOR THE PROPOSED IRBID INDUSTRIAL ESTATE

1. In the Prefeasibility Study, 23 industries have been identified as likely industries which would be located in the proposed IIE. They have been chosen mainly on the basis of:

   (1) The availability of materials in the area,
   (2) The proximity to markets,
   (3) The linkage with existing and probable industries in the region and,
   (4) The technological appropriateness in the region.

   These industries have become the basis of our examination.

2. For further identifying the feasibility of each industry in the proposed IIE, the following materials have been used:

   (1) The Industrial Programming Study being undertaken by Dar Al-Handasah,
   (2) An interview survey of manufacturing establishments in Irbid,
   (3) An interview survey of manufacturing establishments in Amman-Zarqa,
   (4) A survey of those applicants who applied manufacturing license for a factory to be established in Irbid,
   (5) A survey of those existing and prospective industrialists who registered at the office of the Municipality of Irbid from December 6 to December 10, 1980 in response to newspaper advertisements, and radio broadcasting, initiated by the Mayor of Irbid, requesting registration to those who wish to locate their factory at the proposed IIE when it becomes available.
   (6) In-depth surveys of the Team members with knowledgeable individuals in Amman and Irbid, and
   (7) Analysis of government policies and statistical information obtained from various government organizations.

3. Implications derived from a review of the Industrial Programming Study executed by the National Planning Council are as follows:

   a. This study is aimed at identifying industrial projects which are possibly established in Jordan with particular emphasis on medium to large scale and export-oriented industrial establishments. The entire country of Jordan is covered. This Study is different from the Feasibility Study for IIE in important respects. This Feasibility Study is limited in spatial terms to Irbid Municipality and its surrounding areas, and in terms of scale to small and medium scale industries most of which would depend on local markets.

   b. The Industrial Programming Study proposed 40 priority projects which would be medium or large in scale. Besides those, 11 other small scale projects have been identified as possible projects. Among these 51 projects, more than half (31 projects) have been included in the list of industries selected in the Prefeasibility Study for IIE. The Prefeasibility Study recommended 23 kinds of industries, six of which were deleted from the proposed projects list by the Industrial Programming Study. Those deleted industries mainly belong to the food and beverage sector, and most of them depend on local markets.

   c. With regards to around 20 projects which were not included in the proposed list of industries of the Prefeasibility Study, 10 of those are chemical industries which are based on domestic resources. These raw material-oriented industries would be impossible to be located in the northern region because the region lacks in relevant raw materials. Other ten projects which belong to such kind of industries as made-up textile goods, wearing apparel, printing and publishing, and machinery are worth thorough investigation in the Feasibility Study for IIE.

4. Interview Surveys of Manufacturing Establishments in Irbid

   a. Two separate questionnaire surveys were conducted for the purposes described below:

      (1) To find out establishments interested in moving into IIE as a result of their expansion or relocation plans;

      (2) To find out land and floor demand, i.e., size and year of demand by those establishments who are interested in IIE.

b. The two surveys were conducted as follows:

(1) General Interview Survey (hereinafter referred to as the General Survey) of manufacturing establishments in Irbid which was held by a team of Yarmouk University students from December 6 to December 11, 1980, covering almost all of the major establishments in Irbid; and

(2) Applicant Interview Survey (hereinafter referred to as the Applicant Survey) of those existing and prospective industrialists who registered at the office of the Municipality of Irbid from December 6 to December 10, 1980 in response to newspaper advertisement, and radio broadcasting, initiated by the Mayor of Irbid, requesting registration to those who wish to locate their factory at the proposed IIE when it becomes available.

c. As to the General Survey, 234 factories registered at the Chamber of Commerce, Irbid, plus 9 factories which are major factories outside of Irbid Municipality but with large size and close to the Municipality plus 3 factories which recently obtained industrial license from the Ministry of Industry and Trade were listed up as a comprehensive list of industries in Irbid. Out of these 248, 68 registered factories plus 9 outside-of-Irbid plus 3 licensed-factories totaling 80 were surveyed. Out of 80, effective data were collected from 64 factories.

d. As to the Applicant Survey, there were 110 applicants to the Municipality office, and out of them 2 were excluded from the survey because they were already covered by the General Survey. As a result, effective data were collected from 108 present and prospective industrialists, none of which is overlapping with the factories covered by the General Survey.

e. In addition to the above two Surveys, there is a list of factories waiting for moving into the existing industrial estate. On the list, 81 are registered as waiting factories, out of which 6 were covered by the Application Survey, and there is no overlapping factory between the General Survey and those in the waiting list. Consequently, 75 factories independent to those covered by the two Surveys are waiting for moving into the existing industrial zone which is now fully occupied and has no space for them. Consequently, these 75 factories should be accommodated by the new IIE.

f. Table 1 shows the number of factories interested in moving into the IIE. As a result of the General Survey, 34 out of 64 effective answers said "Yes" or "Maybe" to buy or lease the land of the new IIE. It is to be noted that only very few answers "Maybe". 11 factories expressed preference to buy the land; 7 to lease the land; 14 were willing to accept either buying or leasing, and 2 did not specify their preference. These add up to 34.

g. As a result of the Applicant Survey, 101 out of 108 factories showed their interest in IIE but the rest 7 said "No" to move into the IIE, although their "No"s contradict to their coming to the Municipality office for application to the IIE. 101 consists of 7 factories who want to purchase the land, 62 factories who want to lease, 30 factories who accept either buying or leasing, and 2 factories who do not specify their desire.

h. As to the factories on the waiting list, we consider them being the candidates for the new IIE since there is no space left for them in the existing industrial estate. Since they are the applicant to the standard factory units, we also consider that they want to lease the land. Combining these two surveys and one list, in total we have 210 factories as candidate for the IIE.

i. Table 2 shows the land demand by these 210 factories classified into two groups by the land size. The land demand whose desired size was 0.5 donum or greater is considered to be the demand for a custom built factory in the IIE, while the land demand less than 0.5 donum is considered to be the floor demand for a standard factory building with the size of $100m^2$ regardless of their requested size of land. As shown in the total column, there are 60 factories requesting the total land of 123.67 donum, of which 46 donum (37%) is requested to be sold and 19.8 donum (16%) to be leased, and there are 150 factories being mainly interested in the standard factory buildings. The floor area demand by these 150 is estimated to be $15,000m^2$, almost all of which is demands for leased space but $600m^2$ (4%) of which is demands for space for sale. Although our surveys were extensive and covered the substantial number of factories in Irbid, there certainly are factories which were not covered by the General Survey or who failed to come for registration. So the land and floor demands estimated above are conservative ones and we can assume there are greater demands than the above figures indicate.

Table 1. Number of Factories Interested in Moving into the I.I.E.

	General Survey	Applicant Survey	Waiting Factories for Existing Industrial Zone.
Effective Answer	64	108	
Factory Answered Yes or May be to Move Into I.I.E.	34	101	75
Factory Wanting to Buy	11	7	0
Factory Wanting To Lease	7	62	75
Factory Accepting Both	14	30	0
Not Specified	2	2	0

Source: The Study Team.

Table 2. Number of Factories and Their Land Demand Estimated for 1981.

		General Survey		Applicant Survey		Waiting Factories		Total		
		≥0.5d	<0.5d	≥ 0.5d	< 0.5d	≥ 0.5d	< 0.5d	≥0.5d	< 0.5d	Total
Factory wanting to buy.	No.	11 2/	1	2	5	0	0	13	6	19
	Donums.	40.5 2/	100 1/ m2	5.5	500 1/ m2			46.00	600m2	
Factory wanting to lease.	No.	4	3	16	47 2/	0	75	20	125	145
	Donums.	4.5	300 1/ m2	15.3	4700 1/ m2		7500 1/ m2	19.80	12500m2	
Factory Accepting either Buying or Leasing.	No.	13 2/	2	14 2/	17	0	0	27	19	46
	Donums.	34.0 2/	200 1/ m2	23.87 2/	1700 1/ m2			57.87	1900 m2	
Total	No.	28	6	32	69	0	75	60	150	210
	Donums.	79.0	600 1/ m2	44.67	6900 1/ m2	0	7500 1/ m2	123.67	15000m2	

1/ In order to translate the land demand (donums) into the floor demand, 100 m2/factory was adopted.

2/ Number of factories and their land demand which were not specified to be bought or leased are added to this number.

Source: The Study Team

j. As to the timing of the demand, we did not ask such a question as "when do you want to have a land" but asked about factories' investment plans. According to their investment plans, most of factories have plans to invest in 1981. In addition to this, it can naturally be assumed that all the factories covered by the Applicant Survey expected to have land in 1981. Thus, it is reasonable to assume that the estimated demand is the one for 1981.

k. Based on the demand in 1981 described above, assuming very conservatively that the industrial land demand grows at 7% per annum, the land and floor demands in 1985 were estimated as shown in Table 3. In 1985, 78 factories are estimated to need 162 donum of land, and additional 197 factories are estimated to require 19,700m^2 of floor, totaling 275 factories demanding land or floor.

l. Table 4 shows the size distribution of land demand equal to or more than 0.5 donum. As shown in the Table, most (62%) of the factories are requesting land size between 0.5 donum and 1.5 donum, which is substantially smaller than the smallest industrial plot recommended by the Prefeasibility Study. So it seems to be necessary to make the smallest industrial plot be the size around 0.5 donum.

m. Table 5 shows the size distribution of land demand whose size is less than 0.5 donum. Most (72%) of the factories want to have the land ranging from less than 50m^2 to 150m^2, and if we look at the present floor area that those factories are occupying now, it is easily understood that this range of land demand actually means the size of the industrial floor they need. These are the reasons why we adopted the average floor demand of 100m^2/factory in the previous section

6. An Analysis of License Applicants

a. According to a list of license applicants during years from 1977 to 1979 under the Law for Encouragement of Investment, the number of applicants in Irbid-Ramtha-Mafraq region has increased as follows:

Year	Total Number of Applicants	Number of Applicants in Irbid-Ramtha-Mafraq Region	
1977	128	2	(1.56%)
1978	110	3	(2.73%)
1979	117	5	(4.27%)

Table 3. Estimated Land Demand and Floor Demand for 1985.

		Demand for Land Larger than 0.5 Donum.	Floor Demand	Total
Factory Wanting to Buy.	Number	17	8	25
	Land or Floor Demand.	60 d	800 m^2	
Factory Wanting to Lease.	Number	26	164	190
	Land or Floor Demand.	26 d	16,400 m^2	
Factory Accepting either Buying or Leasing.	Number	35	25	60
	Land or Floor Demand.	76 d	2,500 m^2	
Total	Number	78	197	275
	Land or Floor Demand.	162 d	19,700 m^2	

Source : The Study Team

Table 4. Size Distribution of Land Demand in I.I.E.

	General Survey		Applicant Survey		Total	
(Land Size) Donum	Number of Factories	Land Demand Donum	Number of Factories	Land Demand Donum	Number of Factories	Land Demand
$0.5 \leq S < 1.0$	5	2.5	15	7.5	20	10.0
$1.0 \leq S < 1.5$	6	6.0	11	11.4	17	17.4
$1.5 \leq S < 2.0$	1	1.5	1	1.7	2	3.2
$2.0 \leq S < 3.0$	5	10.0	3	6.1	8	16.1
$3.0 \leq S < 5.0$	6	20.0	0	0	6	20.0
$5.0 \leq S < 10.0$	4	24.0	1	5.0	5	29.0
$10.0 \leq S$	1	15.0	1	13.0	2	28.0
	28		32	44.7	60	123.7

Source : The Study Team

Table 5. Size Distribution of Land Demand Less Than 0.5 Donum.

Size	General Survey		Applicant Survey		Total	
Donums	Number of Factories	Land Demand Donums	Number of Factories	Land Demand Donums	Number of Factories	Land Demand Donums.
≤ 0.05	1	0.05	15	0.61	16	0.66
≤ 0.1	2	0.16	24	2.05	26	2.21
≤ 0.15	2	0.26	10	1.36	12	1.62
≤ 0.2	0	0	7	1.34	7	1.34
≤ 0.3	1	0.25	3	0.77	4	1.02
≤ 0.4	0	0	9	3.47	9	3.47
< 0.5	0	0	1	0.45	1	0.45
Total	6	0.72	69	10.05	75	10.77

Source : The Study Team

b. Products of these applicants are wheat flour, nails, ice-cubes, cast iron products (pipes, manholes and siphons), marble (cutting), flour and by-products, T.V. antennas, metal smelting and forming, tippers, tanks and carts, lamp bases, plastic covers and boxes. Although the size of factory by the number of workers varied from 7 to 37, they all are small scale industries which depend on local markets.

7. The most of enterpreneurs in Irbid are suffering from insufficiency in such infrastructure as water supply, adequate land and building, electricity and telecommunication. Our survey of industrialists in Irbid indicates that many of them are waiting for the completion of an industrial estate.

8. Besides the relocation and expansion of existing industries, the industrial estate shall bring an opportunity to establish new pioneer industries to Irbid and its surrounding region. At present, socio-economic conditions of the northern region seem to be comparatively disadvantageous relative to the metropolitan region (Amman-Zerka), particularly in the size of market, agglomeration economies,and communication and transportation services. Such disadvantages which tend to aggravate regional difference in economic growth can be overcome by the provision of an adequate infrastructure for industrial development. The comparative advantage of Irbid region will be much improved by a systematic provision of infrastructure needed by industries. This can be done by the establishment of an industrial estate.

9. Knowledgeable individuals in Jordan know that one of the most important factors for industrial development in the northern region is the necessary link between the agricultural sector and the manufacturing sector. So, the agro-industries, particularly those industries which are instrumental in promoting and improving the agricultural production are expected to grow in the northern region.

10. With regards to local markets, the construction expenditures for the new campus of Yarmouk University should be noted. The total amount of investment will be more than 80 million J.D., which brings an enormous additional demand for construction related industries in the northern region. In order to meet this large potential demand by

local industries, the level of technology of industries in the northern region should be advanced markedly. The proposed Industrial Estate ought to have the function of improving the technological level of local industries and to encourage new investments, and it will be able to achieve these objectives.

11. The conditions of Irbid for industrial development relative to other parts of the country will be evaluated below:

    a. The small size of domestic and local markets is a critical condition for identifying appropriate industries in Jordan as well as in the Northern Region. Attention has been given to those industries which can profitably utilize intermediate technologies in identifying high priority industries for IIE.

    b. Another point of view is the promotion of integration of related industries so that agglomeration economies can be generated among participants. Agglomeration of small and medium scale industries in the Industrial Estate makes it possible to reduce production costs, to expand market areas and to bring about more profits. It should be noted that there are many applicants who wish to locate their factories in the Industrial Estate in Irbid. When these factories agglomerate in one location, it is possible to utilize common facilities and services at relatively low costs to every one's advantage. The provision of these in the proposed Industrial Estate will enhance the comparative advantage of IIE relative to attractive locations.

    c. The ease of materials supply from northern countries through the Syrian border is an advantageous condition of the northern region. The improvement of transportation system (including the establishment of distribution center) and customs's services (including the expanded authority of Ramtha Custom Office) will encourage investments in this region. The existence of a large amount of transit cargoes through Ramtha indicates there is a good opportunity for investment in the Ramtha-Irbid area. Another advantage is excellent accessibility to such foreign markets as Syria, Lebanon, Iraq and Saudi Arabia. The railway construction directed to Saudi Arabia (Hajaz Railway) is expected to encourage the investment in the northern region, as the comparative advantage of proximity will be reduced.

d. The huge amount of investment in the construction of Yarmouk University will provide investors with new markets. Procurement of construction materials and equipment would take place to a large extent within the region. The construction of Yarmouk Reservoir, irrigation works of Jordan Vally, housing construction of the northern region will also encourage the industrial production.

e. Irbid is situated close to the agricultural area in Jordan. The agricultural sector supplies raw materials for the industrial sector and the industrial sector provides to the agricultural sector such necessary products as fertilizers, animal feeds, insecticides, tools, equipments and machines.

f. Besides those advantages above mentioned, incentives in financial, institutional and economic terms are available to the industrial development in less developed regions.

g. Based on these points of view, the feasibility of proposed industries shall be analyzed by dividing industries into such sub-sectors as follows:

(1) Agriculture oriented industries
(2) Wooden products and furnitures
(3) Metal works and machinery
(4) Non-metallic mineral products and construction materials
(5) Plastic products, ceramics and glass products
(6) Other industries (including distribution, repairing and services).

h. The nucleus sub-sector of Irbid Industrial Estate would be defined as metal works and machinery. This sub-sector produces basic elements for wide range of industries. At present, metal works and machinery industries in Irbid stay in an elementary stage, but there is a base. However, we have confirmed through interviews that many of them want to expand and to improve their production by moving into the Industrial Estate. So, the possibility to establish a common metal work shop will be considered in this Feasibility Study. In this common workshop, several kinds of metal working machinery will be installed and be served for registered participants, who are not able to own these machines because those are too much costly for their small size of production. Although it may be difficult to keep a high rate of utilization of the machines in the initial stage of

installation, users of those could find out advanced products and improve their technological abilities. In later stages, some of autorepair shops will start the production of spare parts, and some of metal work shops which need to produce door and window frames would grow to machine parts producers. After then, such machines as bicycles, room fans and more complicated machines could be produced.

i. For this sub-sector of industry, the comparative advantage of Irbid is not apparent. But, there is a good reason to think that the machinery industry will grow in Irbid. First, the Irbid region is the most important and the only significant agricultural area of the country and the demand for agricultural machinery and implements exist. Second, the machinery industry is relatively footloose. Therefore, any region may claim its location. Third, there exist already a large number of automobile and machinery repair shops in Irbid. The basic skills are already there. Fourth, there are at least three medium-size cast-iron factories in and around the city of Irbid. This is indeed an important basis for the development of the machinery industry. In addition, they are supplying not only to the country as a whole but also to abroad. If they are given a better environment and better technology, they would be able to expand significantly.

j. The furniture and other wood products industry in Irbid is largely supplying to the regional market. One furniture factory is well equipped and is supplying quality products to Yarmouk University. This industry will certainly grow as the construction of the main campus of Yarmouk University starts, but can expand without it by catering to ever expanding local markets due to increases in income and housing.

k. The food and beverage industry will largely depend on agricultural products produced in the region itself, Jordan Valley and those supplied from Syria and Lebanon. As it is usually weight reducing activities, the region has, in most cases, clear comparative advantage.

l. The auto repair industry is a clear case of market oriented industries. Already, there are a large number of those, but the number will increase as the number of cars used in the region increases.

m. The construction materials industry such as stone cutting, the production of cement blocks, bricks and tiles is also largely market oriented. This sector will also be stimulated significantly by the construction of Yarmouk University. However, the industry is bound to expand even without it in response to the growth of construction activities in the area.

12. Summary of Projected Industries in IIE, a Preliminary Observation

a. Industries which shall be located in IIE could be classified into two types, one of which consists of small scale workshops such as auto repair, blacksmith, carpentry mainly due to relocation from the city center, and the other type consists of medium scale factories such as proposed in the Prefeasibility Study.

b. The land demand in the immediate future which was derived from the factory survey and applicants list was around 13 ha. Among them 60 factories required more than 0.05 ha's of land and total land demand of those was 12 ha's. Remaining 1.0 ha was due to less than 0.05 ha of demand by 75 factories. The kind of industries, which required more than 0.05 ha's land and had investment plan, is as follows:

	Kind of Industries	Number of Factories		Land Demand	
1	Metal Works	15	25.0%	4.350 ha	36.3%
2	Furniture	11	18.3%	1.312 ha	11.0%
3	Food and Beverage	3	5.0%	0.800 ha	6.7%
4	Autorepair Shop	11	18.3%	2.290 ha	19.1%
5	Garment	2	3.4%	0.350 ha	2.9%
6	Construction Materials	17	28.3%	2.775 ha	23.2%
7	Plastic Products	1	1.7%	0.100 ha	0.8%
	Total	60	100.0%	11.977 ha = 12 ha	100.0%

c. These composition of industrial sector seems to reflect well the potential land demand by medium scale industries. After reviewing such land demand by factory survey as mentioned above and the Industrial Programming Survey, the land demand of medium scale industries in IIE could be assumably allocated to major industrial sectors as follows:

(1)	Agriculture oriented Industries	10%
(2)	Wooden Products and Furniture	15%
(3)	Metal Works and Machines	40%
(4)	Non-Metallic Mineral Products and Construction Materials.	20%
(5)	Plastic Products, Ceramics and Glass Products	5%
(6)	Other Industries	10%

d. These figures should be investigated to more extent in terms of market potentials, availability of materials and comparative advantage to other region particularly to the metropolitan region. An uncertain condition as to the administrative organization and possible incentives for IIE will give much influences to the land demand of these newly established industries. After these conditions are set up, accurate land demand for whole IIE itself as a whole and allocation by industrial sectors might be identified.

IV. SITE SELECTION OF THE PROPOSED IRBID INDUSTRIAL ESTATE

1. In the Prefeasibility Study, the area adjacent in the east to the existing municipal industrial zone was recommended. The present study reconfirms this site selection.

2. This site has advantage over or equal advantage as alternative sites in the following criteria:

   (1) presently not urbanized,

   (2) the availability of a sufficiently large area,

   (3) minimal slope of the land surface,

   (4) wind direction,

   (5) the availability of the necessary utilities in the present and the future,

   (6) compatibility with the present pattern of land use,

   (7) the price of land, and

   (8) the relative ease of land acquisition.

3. In particular, the relatively cheap price of land and its proximity to the presently existing municipal industrial zone are important assets of this site. Inter-linkages among the various kinds of industries and common use of infrastructure are important factors for selecting this proposed site. The question of access will be solved by constructing the proposed ring roads: Boundary Ring Road and Outer Ring Road.

4. Although the proposed IIE will be the largest industrial area in the Municipality of Irbid, it does not necessarily preclude any other industrial area in a smaller scale within the city.

V. UTILITY FACILITIES AND INFRASTRUCTURE

1. Power Supply

a. Electricity supply to the Governorate of Irbid and, particularly to the Municipality of Irbid, is the responsibility of Irbid District Electric Company (IDECO), which is a concession company of Jordan Electric Authority (JEA). Electricity distribution

system of IDECO is currently connected to two HV transmission systems, i.e., 132KV/60MW transmission line from Zarqa, and 230KV/100MW transmission line from Syria. The latter was completed in June, 1980, but IDECO has not imported any electricity from Syria yet. Besides these outer supplies, IDECO operates three diesel electricity generators of each 3MW.

b. The maximum demand recorded during 1980 in the city was 9.6MW. The present supply capacity of IDECO at the main substation is 17MW/6.6KV. IDECO has already initiated construction works to change the distribution system from 6.6KV to 11KV. New substation will be installed near the center of the city which will be connected to the present main substation by two 33 KV cables of each 22MW. From the new substation, two ring main cables of 11 KV will be extended, and one of them will cover the area which include the existing industrial estate with three package substations of each 630KW. This project will be completed in October of 1981. Upon the completion of this project, the electricity supply capacity of IDECO to the city of Irbid will be substantially expanded.

c. Demand for electricity generated by the proposed IIE is tentatively estimated in the magnitude of 2.5MW. According to IDECO, they do not foresee any difficulty in supplying estimated 2.5MW electricity to IIE. Distribution system to IIE will be connected to one of the two ring main cables mentioned in the previous paragraph.

2. Water Supply

a. Management and operation of water distribution system in the city of Irbid is the responsibility of the Water Department of the Municipality. However, the quantity and quality of water supplied to the Municipality is the responsibility of the Water Supply Corporation. Besides, Jordan Valley Authority has several projects with regard to water supply to the Northern Region of Jordan. Among them, Yarmouk Reservoir and the surface water intake project at Yarmouk River as well as the ground water pmping project are major components.

b. The Water Department of the Municipality has two wells in the north of the city, one is Rahoub Pumping Station and the other Khreiba Pumping Station. Currently, 2000M^3 of water is used daily by the city from these two wells. However, they are operated only for few hours per day. According to the Water Department, their capacities of discharge are not fully exploited.

c. The Water Supply Corporation supplies water to the Municipality from four ground water wells- Dhuleil, Azraq, Sama and Zatari, each of which is located roughly 100 Km to the east and south of Irbid. These water sources are connected to two main supply pipes in the Municipality, one is via two storage tanks located 10 km to the south of the city, each of which has the capacity of $6,000M^3$.

The Municipality consumes $5,500M^3$/day of water from the WSC sources at present. This limitation in supply quantity is largely due to the narrow diameter of main supply pipe (8") connecting the city with two storage tanks. WSC is presently undertaking the project which replaces the old main of 8" with 14" main. The project will be completed in 1981 and, then, the supply capacity will be increased to $26,400m^3$/day instead of $5,500m^3$/day at present.

d. Although Jordan Valley Authority is programming Yarmouk Reservoir Project as well as the ground water pumping project at the Yarmouk River, the possibility to implement the former project does not appear good for the time being, at least, due to political relationship between Syria and Jordan. With regard to the ground water pumping project, JVA has already examined three wells along the Yarmouk River. It was suggested that two of the three wells could be utilized with the maximum discharge capacity of each $3,000m^3$/day. According to JVA, a reservoir is planned to be constructed at Beit Ras, 5 km north of the city, and from there water will be distributed to Irbid. In order to bring this project to realization, close coordination between JVA and WSC will be required.

e. A master plan of water distribution within the Municipality was formulated by Weston, Inc., in 1979. According to the Weston Report, 15 cm water main will be installed through the existing industrial zone during the Phase One which will be completed in 1982. During the Phase Two, the target year of which is not clearly specified in the Weston Report, another 15cm water main is planned to be extended to the existing industrial zone, following roughly the same route as the proposed Boundary Ring Road.

f. The quantity of water required for IIE is tentatively estimated at 500m^3/day. This quantity is less than 2% of the proposed supply capacity of WSC (26,500m^3) after 1981. Also, additional water would become available (1) by utilizing the Municipality owned wells which are not fully operated at present, and (2) by implementing the ground water pumping project of Yarmouk River. The Team recommends that the management and operating body of IIE should coordinate with those relevant governmental agencies in order to secure the supply of water to IIE.

3. Sewerage System

a. Weston, Inc. undertook a comprehensive study of sewerage collection for the Municipality in 1979. Weston Report recommended to install two main sewerage collector pipes, one covers the southern part of the city and the other the northern part of the city, these parts being bounded roughly by Baghdad Road. A sewerage treatment plant is planned to be located at a site approximately 2 km north-west of the city center.

b. The ground level of the existing industrial zone as well as of proposed industrial estate is lower than that of the rest of the city. According to the Weston Report, a pump station for the sewerage will be installed near the existing industrial zone from which a pressure pipe will be extended about 1 km to connect to the sewerage collection main pipe.

c. According to the Municipal Government, the project will be initiated in September of 1981, and the entire system including the sewerage treatment plant will be completed in 1984.

d. Sewers generated in IIE will be discharged into the pump station mentioned above upon the completion of the sewerage collection system project. Besides using the pump station, sewers generated in IIE will be pre-treated inside IIE.

4. Storm Water Drainage

a. Although Weston Report proposed storm water drainage system for the Municipality, the north-eastern part of the city including the existing industrial zone as well as IIE is excluded from the Study area.

b. Topographically, the north-eastern part of the city in which the site of IIE is proposed gently slopes to the north-eastern direction. Until urbanization takes place in immediate surrounding areas of IIE, storm water could be largely absorbed naturally into the surrounding area which is currently used as agricultural land. After the construction of proposed ring roads, storm water can also be discharged into open box culverts along these ring roads.

5. Telecommunication

a. The provision of telecommunication facilities to the Irbid Governorate as well as to the Municipality is the responsibility of Telecommunication Authority which is currently undertaking a project for increasing the telecommunication capacity of the Governorate and Municipality with the target year of 1985.

b. According to Telecommunication Authority, the line capacity of Irbid city will be expanded from the present 4000 lines to 8554 lines.

c. A new main switching center for telecommunication is currently under construction in the central part of the city. According to the information given by Nippon Telecommunication Consulting Co. (NTC) which is a telecommunication facilities contractor in Irbid, the main pipe capable of containing 600 telephone lines has been already installed from the new main switching center to the corner of Hakama Street and the road from the existing industrial zone.

d. An extension of 1 km of the above mentioned cable to IIE is able to meet the demand from IIE which is tentatively estimated in the magnitude of 250 telephone lines.

6. Road Infrastructure

a. At present, there is 20m wide road connecting the existing industrial zone to Hakama Street. Although traffic volume which will be generated from IIE is not yet estimated, it is quite clear that future traffic volume from IIE will exceed the road capacity of the existing connector and accelerate traffic congestion in the center of the city, given the size of IIE, unless some measure is undertaken.

b. In the Phase II Report of JICA in March 1980, two ring roads were proposed. The Boundary Ring Road was proposed so as to run through the area just between the eixsting industrial zone and IIE, connecting to Baghdad Street which is the main route to Amman, Syria and Iraq.

c. A feasibility study of these ring roads will be carried out by a team of experts commissioned from JICA in 1981. Since IIE project and ring roads projects are mutually complementary, it is highly recommended that the ring roads projects should be examined on the assumption that the proposed IIE will be implemented according to the schedule described later.

VI. LAND USE PLAN AND PRELIMINARY ENGINEERING DESIGN

1. Conditions of the Proposed Site

a. The site has a topography of gently decending toward northeast. Maximum difference of land level is approximately 10m with average slope gradient of 2 percent. Accordingly, necessary earth works will be minimal.

b. The site is mostly covered with red and brown soil mixed with sandstone, limestone, chalk and basalt. Though it may partly require removal of some stones, land preparation will not require any major work.

c. In addition to the Tile Factory previously located, a small new commercial building was recently put up within the proposed site. Judging from the size and structure of those two buildings, it will not cost much to relocate them if the owners do not refuse.

2. Standard Factory Buildings for Relocated Industries

a. The quality of the existing standard factory buildings operated by the Municipality is minimal. It is considered necessary to provide better facilities in the proposed IIE to match the expected improvements in productivity. To provide a good working environment and amenity to workers, a water closet and office space will be provided to each factory.

b. According to the results of the industrial survey conducted by the team in Irbid, it is found that the popular sizes of factory unit are the following two types:

Type A : 6m x 12m = $72m^2$ (work area : about $50m^2$)

Type B : 8m x 16m = $128m^2$ (work area : about $100m^2$)

Note: The above units are smaller by 15 to 30 percent than those planned in the Phse II Study.

c. It is assumed that major occupants of the standard factory buildings are autorepair, blacksmith, carpentry shops. In addition, those who engage in wholesale of auto parts and building materials should also be accommodated for they will support the manufacturing activities through their services. The result of the industrial survey reveals that about 150 enterprises are hoping to move into IIE by 1981. This demand will grow to about 200 by 1985. By including wholesalers, the total demand for standard factory units is estimated to be 250 by 1985.

3. Standard Units of Factory Plot

The standard factory plot recommended in the Phase II Study was a multiple of $2,500m^2$. However, it now looks larger than actual demand revealed by the industrial survey. Accordingly the standard factory plot plan has been adjusted. The following two types are now suggested, subject to further adjustment after a detailed study on industry selection:

Type A : $500m^2$ (20m x 25m)

Type B : $1,500m^2$ (30m x 50m)

Another important revision is made in this Study. It is now proposed that custom-built factories tailored to meet each occupant's requirement be provided on rental basis in those factory plots. This arrangement will economize the cost of buildings while maintaining a high standard.

4. Infrastructure and Services

a. Water Distribution System

It is planned that water comes through the external main water pipe and will be stored in ground water tanks and then pumped up to the elevated water tanks for distribution to the users. Water pipes will be laid down in grid along the roads. Water demand is estimated at 250 L/day per worker.

b. Sewage Disposal Facility

The Municipality of Irbid is planning to complete the construction of sewage disposal facility with an activated sludge system. Therefore, any industrial waste water not suitable for this treatment system is not allowed to be discharged. Such unsuitable waste water as well as those harmful waste water containing heavy metal should be individually treated by the factories. Sewer will be collected by gravity method and then discharged into the public sewerage system by a pump installed outside of IIE. The pump is included in the entire program of the sewage disposal of the Municipality, cost of which can be excluded from the costs of IIE.

c. Electricity Supply System

A transmission line (11 KV) is going to be installed along the Boundary Ring Road. There are two electricity receiving methods, i.e., a collective receiving system and an individual receiving system. Choice of the systems depend on the type of industry introduced and timing of their actual location. However, as IIE is a comparatively small estate designed to accommodate small and medium scale industries, it may be advantageous for those occupants to have a collective receiving facility (11KV/0.4KV). Wiring will be of overhead system. Power demand is estimated at 100VA/m^2 of the building floor area.

d. Telecommunication System.

Telephone demand is estimated at one line/enterprise. Since the demand is within the capacity of the planned cable capacity, it is not necessary to install PBX at IIE.

e. Solid Waste Disposal

The Municipality of Irbid presently provides solid waste collection service to its residents and firms in the Municipality. Therefore, it is planned that IIE will be services by the Municipality and any special disposal facility will not be required for IIE.

5. Supporting Facilities

a. It is recommended that the area serviced by the proposed supporting facilities in IIE should include the existing industrial zone due to the fact that there are practically no such facilities.

b. The following facilities deem necessary as supporting ones.

U S E	T Y P E
Administration	IDA Administration Office Car Parking for Visitors
Public	Fire Station Post Office Police Station*
Common	Common Metal Workshop* Weigh Bridge* Clinic* Small Park and a Sporting Space Meeting Rooms
Commercial	Shops Offices Bank Restaurants Gas Station

Note: The facilities with mark * are additionally listed to those planned in the Phase II Study. A mosque is excluded from the list because there is a plan to build a mosque nearby the site and its land was previously secured.

6. Land Area of IIE.

a. The area required for the standard factory buildings becomes 5.0 - 6.0 ha on the net basis in total according to the survey which is about 1.7 times bigger than that estimated in the Phase II Study.

b. Also the Survey shows that there will be around 11.0 ha of the potential land demand from the new industries. Pending on the result of in-depth study on industrial selection, it can be said that the net area of 15.7 ha estimated in the Phase II Study will be demanded without much risks.

c. Since the land price of the area of IIE is relatively high, it is necessary to secure leasable land area as much as possible while meeting the needs for creation of better environment. Assuming that the percentage of the leasable land area is 75 to 80% of the total land area, the total area required will become about 27.0 ha.

7. A Rough Site Plan

a. The following two alternative plans are prepared to deal with the existing two buildings in the proposed site:

(1) To transfer these two buildings as planned in the Phase II Study, and

(2) To exclude the area where these two buildings are located and secure the same space of area.

b. Consideration of the future expansion of IIE which was not made in the Phase II Study.

c. Features of each plan are:

(1) Plan A

(a) The problem of transfer of the two buildings.

(b) The primary road will divide IIE into two parts which may disturb unified management of the entire area.

(c) Storm drainage may cost more if the secondary road planned in the north boundary will not be extended to the proposed outer ring road.

(d) Provides more area for the future expansion.

(e) Workshops in the standard factory buildings have closer access to the existing factory buildings.

(2) Plan B

(a) Through traffic is avoided.

(b) Less cost in storm drainage.

(c) Less space for future expansion.

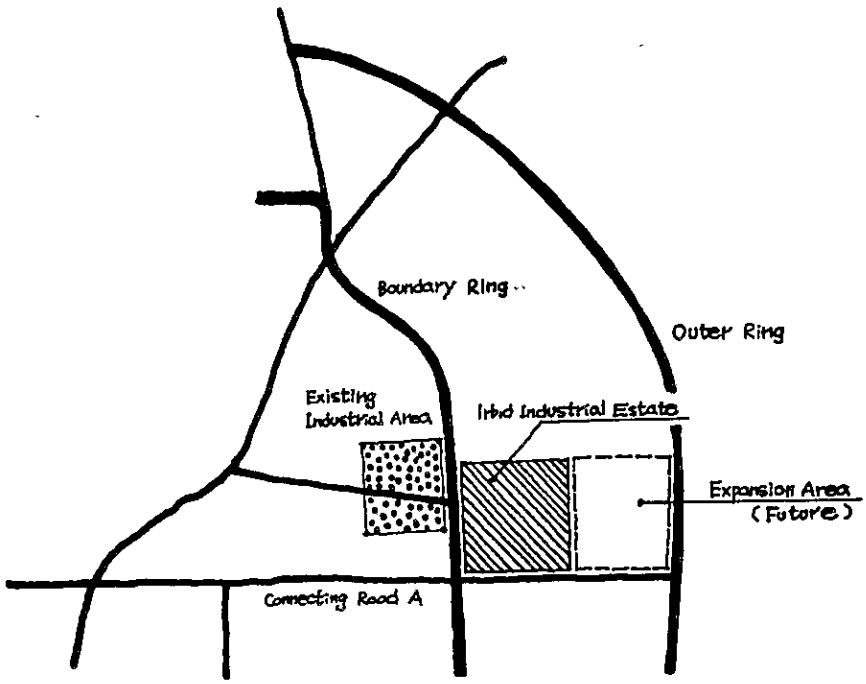


Fig. 1 Plan A

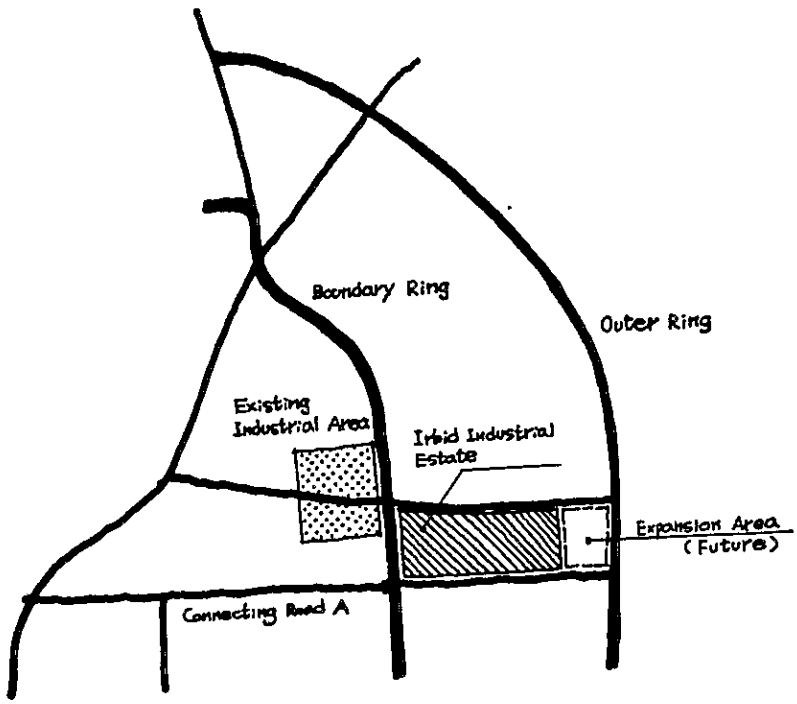


Fig. 2 Plan B

VII INCENTIVE SYSTEM FOR THE PROMOTION OF INDUSTRIES IN IIE

1. The existing "Encouragement of Investment Law No. 52 of 1972" provides a number of incentives for industrial promotion, particularly for those industries situated outside of Amman Governorate. Also, the Government is reportedly reviewing the said law for possible amendment, so that a larger period of tax holiday can be given in general and particularly for those which will be located in Sahab Industrial Estate being developed by Jordan Industrial Estate Corporation.

   Since the rectification of regional imbalance is one of the basic goals clearly stated in the current national development policies, the existing margin of incentives for the less-developed regions should be maintained at same ratio when amendments are made. In addition, two years' extra tax holiday available in JIEC managed industrial estates should also be made available in the proposed IIE.

2. From the industrial investor's point of view, the above incentives are relevant only when he can make profits. The provision of fully-serviced industrial plots readily available to those investors with simplified procedures and easy access to licensing and financing would be the most important incentive for prospective investors. In addition, the proposed Industrial Estate is recommended to have a common machinery workshop which contains sophisticated and expensive machinery which can hardly be purchased by small-scale factories.

3. Another incentive available in the proposed IIE is easy occupancy of an industrial building. Land and building will be available for lease by prospective industrialists. So, the initial capital required to start manufacturing will be substantially reduced.

4. Although it is not necessarily within our scope of work, the role of the Customs Office at Ramtha should be substantially expanded so that importing and exporting from and to Syria, Lebanon and the north and Iraq may not require those involved to go to Amman to have the papers processed and pay duties. This decentralization of authority to the Ramtha Customs Office would become a significant incentive for the development of IIE.

VIII ORGANIZATION AND MANAGEMENT

1. As the proposed site is within the Municipality of Irbid and the Municipality already has experience in developing and managing an industrial zone with rental factory buildings, the possibility of the Municipality undertaking and managing this proposed IIE is first considered. The problems with this alternative are:

   (1) The resources of the Municipality are not sufficient to undertake this development.

   (2) The Municipality is quite unfamiliar with measures related to industrial promotion, licensing and financing, and

   (3) The Municipality does not have enough competent engineers and management experts to do this job.

   However, there are a number of advantages for the Municipality to be involved:

   (1) Most of the services are provided by the Municipality such as water supply, drainage, road and waste disposal,

   (2) The Municipality is familiar with the needs of the residents including those industrialists who are either voluntarily or compulsarily relocated from the city center,

   (3) The Municipality is most concerned with economic development of Irbid itself, and

   (4) The proposed site faces with the existing industrial area operated by the Municipality. Unified management of the both areas will allow the Municipality to improve services to those who are already located.

2. The public organizations responsible for industrial promotion and development are the Ministry of Industry and Trade, the Industrial Development Bank and Jordan Industrial Estate Corporation. MIT is well qualified to provide development guidelines for industries and IDB is well qualified for appraising individual investment projects. JIEC is gaining experience in the development and management of industrial estates. In particular, IDB was instrumental in executing

development planning of Sahab Industrial Estate and organizing JIEC, and having a good size of qualified industrial management experts. It is, therefore, considered essential that IDB provide substantial assistance to the proposed IIE.

3. The Ministry of Municipal, Rural Affairs and the Environment has responsibility in regional planning. This project has been identified by a regional planning study initiated by the Ministry and the Ministry has so far acted as the counterpart organization for the JICA mission for the feasibility study of IIE. The Ministry already initiated within the Government a procedure for purchase of the land in the proposed site. However, this Ministry is again a planning and coordinating organiation, and when the project reaches the implementation stage, it should transfer much of its responsibilities to an executing organization.

4. Another institution relevant to this project is the Cities and Villages Development Bank which provides financing to municipalities and village councils. As the resources of the Municipality of Irbid are meager, CVDB could stand behind it to support the Municipality financially and provide not only a loan to the Municipality but also equity funds when required. Indeed, this would be likely the case.

5. National Planning Council naturally has been interested in this project as the organization in charge of national planning and also as the organization which channels all public development assistance projects. Therefore, its involvement is essential during the planning stage. But, in later stages, it does not have to be directly involved.

6. Yarmouk University is an important organization for the region and has built substantial facilities in Irbid and is further going to develop a huge main campus which is planned to be completed in 10 years from now with the estimated cost of 80 million J.D. The University itself has plan to have own workshops to produce necessary building materials and components required for construction of the facilities in order to save construction costs and also to provide practice for their students. However, there are a number of products to be purchased from outside the campus which will offer significant opportunities to those industrialists in Irbid.

Also the University is aimed at being an open university to the surrounding communities. Specifically, it will allow industrialists easy access to the technical infrastructure developed and owned by the University. Therefore, Yarmouk University should have interest in the proposed IIE and have influence on its policy.

7. Upon considering the factors described above and also the future development needs of Irbid Municipality in various fields such as urban renewal in association with the relocation of factories, it is recommended that an authority tentatively called "Irbid Development Authority (IDA)" be established for implementation and management of the Irbid Industrial Estate as its first project under a similar legal framework as that of Amman Development Authority established July 17, 1979. An outline of the characteristics of the proposed IDA is as follows:

(1) Geographical Scope : Irbid Municipality's administrative area but is allowed to expand to the surrounding areas if it becomes necessary and approved by an amendment in the law.

(2) Scope of Business : Planning, implementation and management of the following facilities on rental and sale basis.

Industrial Buildings
Housing
Office Buildings
Commercial Buildings
Car Parking
Truck and Bus Terminals
Other Related Facilities

(3) Equity Participants :
1. The Municipality of Irbid
2. The Cities and Villages Development Bank
3. The Industrial Development Bank
4. The Housing Bank
5. Pension Fund
6. Yarmouk University Trust Fund

(4) Share Distribution : It all depends on the respective laws and policies of each participating organization and their financial capability. However, it is recommended that the Municipality of Irbid have a budget share and the rent is equally divided by the other participants.

(5) Capitalization : Authorized 10 million J.D.

8. The Government of Jordan will not be directly involved in shareholding of IDA but will have representatives on its board to assess IDA's proper function. Also it is recommended that the Government of Jordan will provide IDA with the required land on lease basis to allow IDA sub-lease to the occupants with the following two reasons.

   (1) To alleviate the initial financial burden of the Municipality for equity participation, and

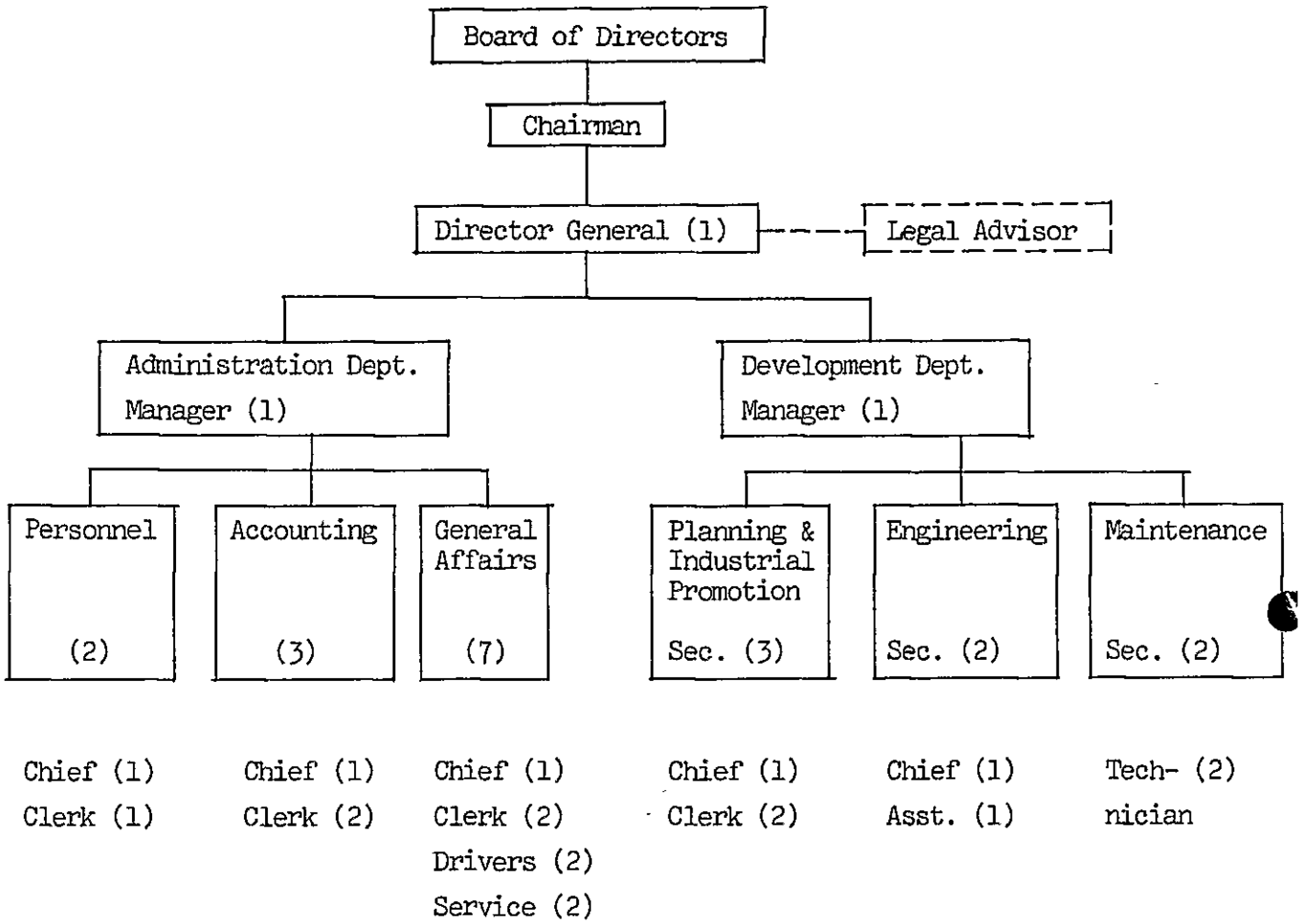
   (2) To hold permanent control on the particular national land.

9. The highest decision-making body of IDA will be the Board of Directors which should be represented by:

   (1) The Municipality of Irbid
   (2) Ministry of Municipal, Rural Affairs and the Environment
   (3) Ministry of Industry and Trade
   (4) The Cities and Villages Development Bank
   (5) The Industrial Development Bank
   (6) The Housing Bank
   (7) Pension Fund
   (8) Yarmouk University Trust Fund

10. Proposed Organizational Structure and Staffing Needs:

Irbid Development Authority



It is wise to keep the Organizational Structure simple and limit the number of permanent staff as small as possible. Professional services required for the project should be met to maximal extents by outside consulting firms.

11. The Director General should be nominated by the Board of Directors. In selecting one from a number of candidates, special attention should be given to:

(1) Knowledge and understanding of industrial development,
(2) Experience in financial and organizational management, and
(3) Knowledge of project appraisal.

12. An arrangement should be made with IDB so that the projects approved by IDA are able to obtain a loan from IDB with normal terms. For this purpose, at least two to three persons should be seconded to IDA from IDB.

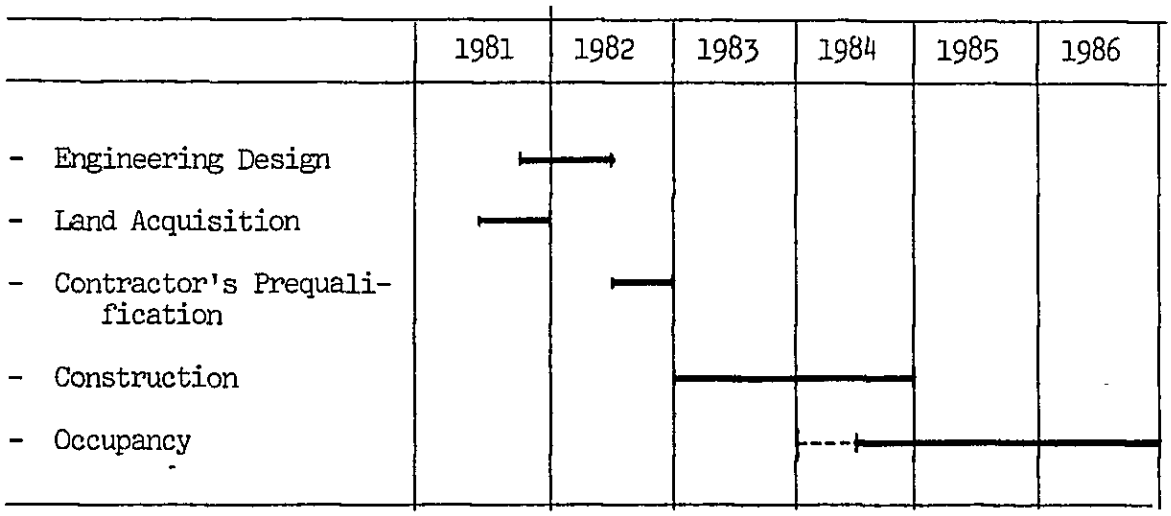
13. The estate management policies should be as follows:

(1) Standard factory buildings should be leased for 5 years, renewable indefinitely at a rent representing costs plus a 10 percent profit margin. The rental should be subjected to change at the time of lease renewal, based on the prevailing market price.

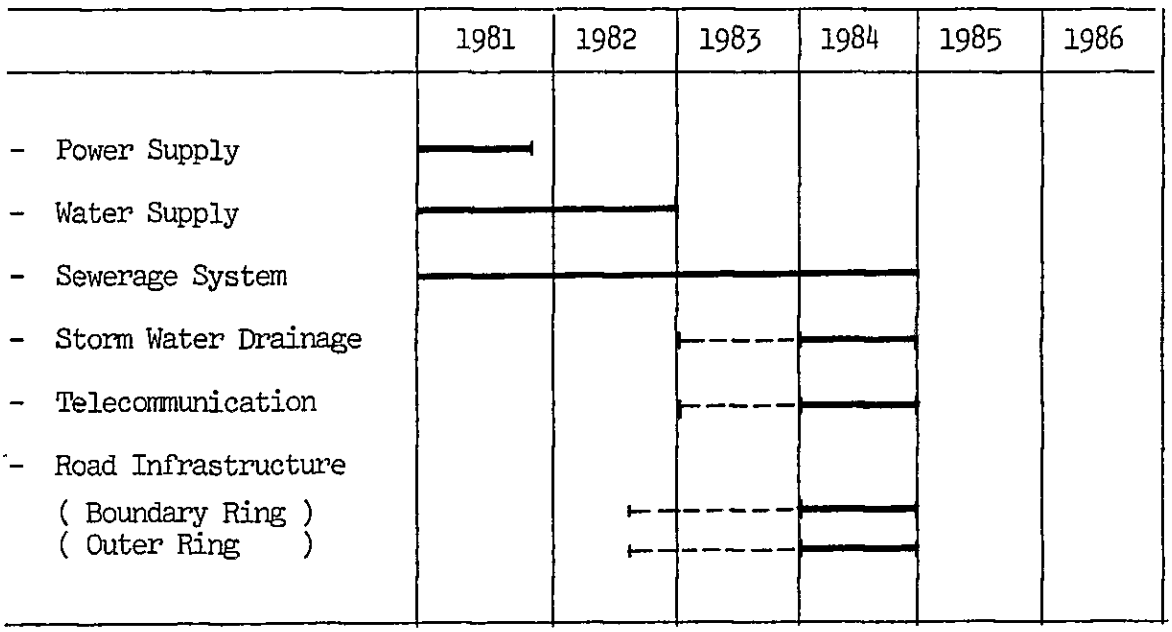
(2) The factory land should be leased together with a custom built factory building to prospective manufacturing firms on the same condition as for standard factory buildings.

IX SCHEDULE OF IMPLEMENTATION

1) Investment Schedule for IIE Project



2) Development Schedule of Utility Facilities and Infrastructure



X FINANCIAL AND ECONOMIC ANALYSIS

1. At this time it is not possible to forecast what would be the results of our financial analysis of this project. We shall just describe below major changes which have been either observed or decided by the Team since the Prefeasibility Study.

2. One is the price of land in the selected site. We observed this time it has risen some 50% since we last observed them to the range of JD.4,000 to JD.10,000 per donum. Similarly, the prices are generally gone up during the past one and a half years. Therefore, the estimated cost of JD.2,865 million should naturally be revised upwards. The estimated cost of the project has been increased also due to quality improvements and the addition of all factory building costs to the project.

3. At the same time, the rentals to be charged for land and buildings will also be increased accordingly. We shall try to find rental rates which will provide a comfortable rate of return to IDA for its investment and at the same time are acceptable to prospective industrialists in the Northern Region.

4. It is more difficult to predict the results of our economic analysis. In this present analysis, we shall give more attention to the benefits obtainable through relocation of existing factories. At the same time, we shall revise the expected rate of urbanization on the basis of the results of the census of population of 1979.

Annex 1.3 Official Comments of the Counterpart Committee on the Interim Report of the Feasibility Study of Irbid Industrial Estate

11 2045=02903 +
DEVCENT J25338

JAN. 11, 81 TLX NO. (604)

DR. K. MERA,
JICA TEAM LEADER FOR IIE FEASIBILITY STUDY,
TOKYO- JAPAN

RE: 1) NPC LETTER REF. 128/20/6127 OF 18/12/1980.
2) YOUR INTERIM REPORT ON IIE OF 20/12/1980.

FOLLOWING ARE THE MAJOR COMMENTS OF THE COUNTERPART COMMITTEE ON YOUR INTERIM REPORT:-

1. LOCATION

1.1 SITE AS PER FIG. 1PLAN (A) IS APPROVED, PROVIDED THAT INCREASE IN LAND COST DOES NOT RENDER THE WHOLE PROJECT UNVIABLE, AND THAT SUBSEQUENT INCREASE IN RENTS DOES NOT RENDER THEM TO BE UNACCEPTABLE TO THE INVESTORS AND INCOMPETITIVE WITH THOSE OF SAHAB.

1.2 TO PROVIDE FOR FUTURE EXPANSION AND TO AVOID LAND PRICE INCREASES IT IS RECOMMENDED THAT 50 HECTARES BE ACQUIRED.

1.3 TO AVOID UNORGANISED BUILDING ACTIVITIES IN THE SURROUNDING AREAS OF IIE SITE IT IS RECOMMENDED THAT IMMEDIATE ACTION BE TAKEN TO PREPARE DETAILED LAND USE PLANS FOR THOSE AREAS.

2. ADMINISTRATION

2.1 SINCE OWNERSHIP OF IIE BY JIEC IS IMPOSSIBLE, THOUGH CONSIDERED MOST APPROPRIATE, ESTABLISHMENT OF IDA IS APPROVED.

2.2 IDB DUE TO LIMITATIONS BY ITS BYLAWS MAY NOT SUBSCRIBE TO IDA CAPITAL.

2.3 IDB CANNOT COMMIT ITSELF TO SECOND STAFF MEMBERS TO IDA, BUT IS WILLING TO TRAIN IDA STAFF.

3. DEMAND ESTIMATES

IN THE ADOPTED PROCEDURES TO ESTIMATE DEMAND FOR 1985, IT APPEARS THAT NO CONSIDERATION HAS BEEN GIVEN TO PROSPECTIVE CLIENTS, WHO BY THE LAPSE OF TIME, MAY HAVE SOLVED THEIR LOCATION PROBLEMS ON THEIR OWN INITIATIVES.

CONSEQUENTLY THE RESULTS APPEAR TO BE INACCURATE AND TEND TO BE UNREASONABLY HIGH.

4. LAND AND FLOOR AREA FOR EACH FACTORY

4.1 IT APPEARS THAT NO ACCOUNT HAS BEEN TAKEN TO MEET FUTURE EXPANSION NEEDS OF PLOTS ASSIGNED TO EACH FACTORY.

4.2 DETERMINATION OF FACTORY FLOOR AREAS IS APPARENTLY BASED ON RESULTS OF THE ENQUIRIES. IT IS THOUGHT MORE APPROPRIATE IF MODERN PLANNING TECHNIQUES HAVE BEEN ALSO TAKEN INTO CONSIDERATION.

4.3 STANDARD FACTORY BUILDINGS SHOULD BE PREFERABLY OF MODULAR TYPE DESIGNED TO SATISFY DEMAND OF MAJORITY OF INDUSTRIES. CUSTOM BUILT FACTORIES SHOULD BE A LOWEST MINIMUM.

5. INCENTIVES TO CLIENT INDUSTRIES SHOULD BE AT LEAST SIMILAR TO THOSE OF JIEC. PROPOSAL OF ADDITIONAL INCENTIVES DUE TO IRBID LOCATION ARE VERY MUCH DESIRED.

6. PROJECTED INDUSTRIES

THEY ARE SIMILAR TO THOSE COMMON FOR JORDAN. EXCEPT FOR ADVANTAGES OF IRBID REGION TO AGRICULTURAL INDUSTRIES, SPECIFIC LOCATIONAL ADVANTAGES FOR THE OTHER INDUSTRIES ARE NOT HIGHLIGHTED.

7. TERM OF REFERENCE 4.3 IS NOT TREATED IN THE INTERIM REPORT.

8. THE MMRA IS TO PURSUE THE QUESTION OF DEVELOPING RAMTHA CUSTOMS OFFICE TO BE CAPABLE OF INDEPENDANTLY HANDLING CUSTOMS CLEARANCES.

KIND REGARDS.
COUNTERPART COMMITTEE.

THIS TLX IS SENT THROUGH IDB AMMAN JORDAN TLX NO. 21349 IDB JO

21349 IDB JO
MMMM

Annex 1.4 Official Comments of the Counterpart Committee on the Draft Final Report of the Feasibility Study of Irbid Industrial Estate

The Counterpart Committee for
the Feasibility Study of I.I.E.,
C/O Ministry of Municipal
Rural and Environmental Affairs,
Amman - Jordan.

ت ق د/س/ ٤٥٤

Amman July 29th, 1981

Dr. Koichi Mera,
The International Development
Center of Japan
Shuwa Daini Toranomon Bldg.
21-19 Toranomon 1-Chome,
Minato - Ku Tokyo 105,
Japan.

Dear Dr. Mera,

Re: Feasibility Study of I.I.E.
Draft Final Report

Following are the major observations and comments of the counterpart committee on your A.M. Report.

A- Chapters 1 to VI

A-1 Check whether 8m width of passage/service road between standard factories is sufficient.

A-2 Location of the fire station is not indicated on the drawings.

A-3 No account is made on the drawings (ESPEC. Fig 5.13) For locating El. substations.

A-4 In chapter VI water and electricity demand were taken as for AIE without verification or discussion. especially electricity demand is considered by JEA and JEPCO to be very high compared by local standards.

B- Chapter VII

B-1 Define the method used for computing each cost items listed in table 7.4

B-2 Project estimated cost shall be adjusted to the year 1983 taking inflation into account. The so adjusted project cost shall be basic for all other calculations.

2/...

B-3 50 percent of the cost of electricity distribution system and substations shall be charged to the project cost. Same for telecom.

B-4 Project cost shall also include working capital and preliminary expenses (including interest during construction.)

C- Chapter VIII

C-1 In addition to the proposal of creating IDA, the possibility of excluding IIE from Irbid Municipal Boundaries - in order to be owned by JIEC - is stressed by certain governmental bodies.

D- Chapter IX

D-1 Check area of custom built factory (PARA 903)

D-2 In table 9.1 clarify how land rent W. Cont. was computed.

D-3 Check compliance of figures in PARA 949 with table 9.16.

D-4 We believe that the financial analysis should be redone taking into consideration the following:-

D-4.1 Cost of land should be part of IIE project cost (I.E. it will not be rented. But Bought and paid for by IDA or JIFC).

D-4.2 Based on the revised project cost referred to above, the debt/equity ratio shall be computed to an optimum proposal.

D-4.3 For the debt financing interest rate on local borrowing shall not be less than 12 percent and not 9 percent. (E.G. interest on syndicated loans in 1980 was 10.25 percent). For foreign financing interest payable on Japanes export credits (1983) shall be preferably applied.

D-4.4 All Project financial analysis shall be made without inflation, save the increase in rental rates.

D-4.5 The financial analysis shall include (in addition to what is done in the report and to be reexamined in the light of these comments), detailed calculations (for every year of the projected life) of profits to the owners (investors), cash flows, and proforma balance sheets, in the manner discussed with Mr. Oueno during the teams last visit to Jordan.

D-4.6 The sensitivity analysis shall be also made on the following 2 alternatives:
1- Land to be given at no cost to IDA or JIEC.
2- Land cost 100% more than calculated in the project cost.

3/....

E- General

E-1 It is desired that the possibility of phasing the project rxecution be seriously considered. A plan for such phasing shall be proposed. The committee feels that 320 factories are too many to construct and rent in 1 step.

E-2 The possibilities of renting serviced land W/O buildings shall also be discussed.

E-3 The committee emphasizes the need for a planned physical distribution of the various industries within IIE according to industry type. Re final report vol. 5, fig. 324 page III - 120).

E-4 The draft needs editing espec. regarding typing and calculation mistakes.

E-5 Translations of comments received from concerned department are enclosed herewith. These are for your information only.

Before concluding this letter we like to express our deep appreciation for the sincere efforts made by the Japanes team in preparing the report.

Our comments were also subject of telex message No. 740 of July 9, 1981 which was sent directly to you.

Kind Regards.

Dr. S. Tell
for The Counterpart Committee

Enclosures

C.C. Embassy of Japan - Amman

C.C. National Planning Council (NPC) Amman.

TW/NS

Annex 1.5 Answers to the Comments on the Draft Final Report of the Feasibility Study of Irbid Industrial Estate

Following answers are provided within the context of the Scope of Works, The Interim Report, Comments on the Interim Report and the Draft Final Report of this Study.

Chapters I to VI

A-1 The comment refers to para 605 of the Draft Final Report (DFR para 605) and to fig. 6.2 of the Draft Final Report (DFR fig. 6.2). The Team provides a supplementary explanation to DFR para 605 as it is seen in para 605 of the Final Report (FR para 605). The capacity of 8m width road is 870 cars/hour, while the generated traffic volume on that road is 520 cars/day, Therefore, the width of the road is sufficient. In addition, pedestrianas can use a space between Standard Factory Buildings.

A-2 Location of the fire station is indicated in FR fig. 5.16 which was not previously included in DFR.

A-3 Location of the electricity substations is indicated in FR fig. 5.16.

A-4 Water demand in IIE was estimated in DFR para 608 and 609. The Team supplements an additional information by using data of Japanese small and medium scale factories as indicated in FR para 608 and 609. The result is that Japanese standard is higher than the local standard. However, water supply in Irbid is rather tight and the Team recommends to keep the local standard as it was originally indicated. Electricity demand was estimated in DFR para 619 given the premise that the unit value of electricity demand used in Amman Industrial Estate (AIE) was approved by a Jordanian authority. However, the Team supplements an additional information based on Japanese data as indicated in FR para 609. The result is that, in fact, the local standard is higher than the Japanese standard. Accordingly, the estimated demand is revised as shown in FR para 609.

Chapter VII

B-1 The comment refers to DFR table 7.4. The Team supplements FR Annex 7.1 which contains quantity and unit prices of each cost item with domestic as well as foreign distinction, and hence, can be used as a reference to FR table 7.4.

B-2 The comment refers to DFR table 7.4. In the financial analysis, it is a common practice, as the Team did in DFR, to estimate development cost by using the prevailing prices at the time of the Study. Various alternatives can first be examined based on the estimated cost at the time of the Study, i.e., for instance, financial internal rate of return, and then the best alternative is selected based on above. After this process, effects of inflation on the project would be examined as the team did in DFR section 9.4.6. The process should take account of not only inflation up to the year 1983 in which the construction of IIE is scheduled to start but also price increase of various cost components after 1983. However, in response to the request from the Counterpart Committee, all figures related to the development cost of IIE are inflated to 1983 prices as shown in FR table 7.5. An inflation rate is assumed to be 15 percent.

B-3 The comment refers to DFR table 7.1. Accordingly, cost bearers of electricity distribution and substations as well as telephone are amended as shown in FR table 7.1 and, consequently, FR tables 7.4, 7.5 and 7.6 are amended.

B-4 The comment refers to working capital and preliminary expenses (including interest during construction). Chapter VII basically deals with the development cost of IIE itself. Working capital is included in FR table 7.4. Preliminary expenses was indicated in DFR section 9.3 and DFR table 9.14. Promotional expenses, facility maintenance expenses, and office overhead expenses are covering the preliminary expenses. With regard to other preliminary expenses, the Team recommended that "all the preparatory works should be handled by the Committee organized for this study" in order to reduce the required pre-operating expenses for IDA (refer to DFR para 823). Finally, interest during construction is taken into consideration in FR table 9.20.

Chapter VIII

C-1 The comment states "the possibility of excluding IIE from Irbid Municipal Boundaries - in order to be owned by JIEC - is stressed by certain governmental bodies". In the Interim Report, the Team proposed two alternative sites for IIE (refer to page 28, para 7 and page 30, fig. 1 and 2 of the Interim Report). The Counterpart Committee approved fig. 1, plan A as the site of IIE by the official comments on the Interim Report (comment 1.1). Accordingly, the Team proceeded the works of DFR based on that comment. Also, the Team recommended to establish IDA in the Interim Report. In response to this recommendation, the Counterpart Committee approved the establishment of IDA (comment on the Interim Report 2.1). In addition, the word "possibility" used in this comment is quite ambiguous in the context of this study, since, in order to analyze "possibility", many factors such as outer utility facilities, demand conditions, site conditions, organizations, etc., may need to be re-examined. Such tasks are obviously outside the scope of this study.

Chapter IX

D-1 This was a typographical error. Accordingly, DFR para 903 is corrected in FR para 903.

D-2 The Team supplements a footnote on FR table 9.1 in order to clarify how land rent with contingency was computed.

D-3 Compliance of figures in DFR para 949 with table 9.16 is checked and, accordingly, they are corrected in the Final Report.

D-4.1 With regard to the land acquisition, the Team recommended in the Interim Report that "the Government of Jordan will provide IDA with the required land on lease basis to allow IDA sub-lease to the occupants (page 35, para 8)". There was no comment from the Counterpart Committee on this recommendation. Hence, our basic stance is kept to be the one we recommended in the Interim report. However, we supplement an additional financial analysis in the Final Report in which the land is bought and paid by IDA. In this case, the land cost is part of IIE project cost as indicated in FR table 9.16.

D-4.2 In the due course to incorporate the comment D-4.1 above, an optimum debt/equity ratio is newly proposed as shown is FR section 9.4.5.

D-4.3 With regard to an interest rate, the Team recommended in the Interim Report that "An arrangement should be made with IDB so that the projects approved by IDA are able to obtain a loan from IDB with normal terms (page 37, para 12)", which, as explained in DFR para 226 and 946, is 8 percent per annum. Therefore, the Team still believes that 9 percent interest rate used in the financial analysis of DFR is appropriate, given the development objectives of IIE. However, assuming a case in which IDB loan be not available, the Team uses 12 percent interest rate in the financial analysis of the Final Report. Accordingly, figures related with the change in the interest rate are ammended.

D-4.4 This comment contradict the comment B-2. For instance, site development and building construction will be undertaken ever after 1983. In this case, if we use the estimated cost at 1983 prices without taking into consideration of inflation after 1983, the resulted cost structure will be distorted. However, in response to the request from the Counterpart Committee, the Team undertakes the financial analysis without inflation as explained in section 9.4.7 in the Final Report.

D-4.5 As it is requested by the comments, the Team provides detailed calculations of profits to the owners and cash flows in the Final Report (refer to FR section 9.4.8). However, we don't see any necessity of providing proforma balance sheets at this level since the cash flow shows all the necessary money movement of the project during its life.

D-4.6 With regard to the first alternativeof the comment, i.e., "land to be given at no cost to IDA or JIEC", it contradicts the comment D-4.1 which stated that "cost of land should be part of IIE project cost." However, on the basis of the request from the Counterpart Committee, the alternative is considered in the Final Report (refer to FR para 964). With regard to the secend alternative, i.e., "land cost 100% more than calculated in the project cost", the Team considers that the assumed situation be unlikely. In order to avoid any misunderstanding, the Team would like to point out that the land price of JD 12,000 per donum in 1980 as indicated in DFR para 1014 was the average subdivided urbanized land price including the land development cost such as road, water and power, and, therefore, the pure housing land price at the urban fringe was estimated to be JD 8,400 per donum. Given these data as well as the data supplied by the Land Assessment Committee of Irbid, the agricultural land price of JD 6,600 per donum in the IIE site seems quite reasonable, since the site is predominantly used as agricultural land (see DFR para 403) and is lacated outside the present urban fringe (see, for instance, DFR section 5.3 and fig. 5.7). However, on the basis of the request from the Counterpart Committee, this alternative is also considered in the Final Report (refer to FR para 964).

General

E-1 All the factories will not be constructed and rented in one step. Rather, as indicated in FR fig. 7.1, Standard Factory Buildings will constructed in three steps and Custom Built Factories in two steps. Also, Standard Factory Buildings will be rented in two-year period and Custom Built Factories will be rented in three-year period as indicated in DFR para 935 and table 9.11. The Team would like to point out that, even this construction and lease schedule, it would be difficult to cope with the local demand for serviced industrial plots as detailed in chapter III of the Draft Final Report and the Final Report.

E-2 As to Standard Factory Buildings, it would be very difficult to rent only serviced land without buildings as explained in DFR para 308, 827 and 828. As to Custom Built Factories, the Team undertook the analysis of several alternatives as shown in FR table 9.16.

E-3 A proposal for the grouping of industries in terms of physical distribution is supplemented in the Final Report (see FR fig. 5.15).

Annex 1.6 UN's Definitions of Industrial Zone, Area and Estate

An industrial zone, an industrial area and an industrial estate can be used to invite or locate industries, but have different effects on the industrial development. The UN's "Guidelines for the Establishment of Industrial Estates in Developing Countries" has defined them as follows:

i) Industrial Zone:

An industrial zone is merely an area of raw land set aside for industry. In general, it is created by a municipal by-law and is part of an urban renewal or development program. Any promotional effect it may have is dependent on its location in relation to transport and distribution facilities, and the price of land within the zone.

ii) Industrial Area:

An industrial area is a parcel of improved land subdivided into plots for the accommodation of industrial establishment and offered for sale or for lease.

It can be an effective stimulant to industrial development, especially in the large- and medium-scale sectors. Its size may allow an advantage of economies of scale in the formation of the infrastructure, which may be passed on to the occupants. An attraction for a prospective occupier is the time saved in finding a site and in preparing the land. The industrial area is essentially a piece of real estate promotion.

iii) Industrial Estate:

An industrial area may approximate an industrial estate, but the essential difference is that in the former there is no unified and continuous management and that, beyond land and utilities, it provides no additional incentive to industry. The term "industrial estate" is taken to mean "a tract of land developed and subdivided into plots according to a comprehensive plan with provision for roads, transport and public utilities with or without built-up (Advance) factories, sometimes with common facilities and sometimes without them, for the use of a community of industrialists."

Annex 2.1 Indexes of External Trade Statistics on the Selected Industries and Products

Code	ISIC	Industries (Products)	Indexes of Data Sources			
			Export		Import	
			UN SITC	Jordan BTN	UN SITC	Jordan BTN
1	3115	Vegetable oil, Fruit oil and Animal fats	-	15	-	15
2	3117	Bakery (Biscuits, Cake, Pastry, Confectionary, etc.)	-	19/8/A & 19/8/B	-	19/8/A & 19/8/B
3	3122	Animal feeds	081		081	
4	3233	Leather products	-	42	-	42
5	3240	Leather footwear	85102	-	85102	-
6	3311	Saw mill (Sawn timber)	243	-	243	-
7	3312	Wooden cases, Boxes, Containers and Cabinets	632	44	-	44
8	3319	Other wooden products	-	45	632	-
9	3320	Furniture and Fixtures	821	94	821	94
10	3412	Paper boxes and Containers	-	48	6421	48
11	3512	Fertilizer (compounded and Organic Fertilizer)	271	-	561	31
12	3560	Plastic products (Egg trays, Boxes, Containers)	581	-	581	39
13	3610	Ceramics (Pottery, China and Earthenware)		69		69
14	3620	Glass products (Glassware, Glass sheet, blocks, bottles, etc.)	-	70		70
15	3691	Structural clay products	662	-	662	-
16	3692	Cement	6612	-	6612	-
17	3699	Non-metallic mineral products	66	-	66	-
18	3811	Cutlery, Hand tools and General handware of metal	-	82	-	82
19	3813	Metal products (Curtain, Window frame, Fixture, Kitchen ware, Table ware, etc.)	691 & 6921 & 6989	-	6783 & 691	81
20	3819	Fabricated metal products (locks, Springs, etc.)	692-6921 & 698-6989	83	68421 & 692	83
21	3822	Agricultural machinery and Equipment	7125	-	7125	-
		Additional Products Item (not classified by ISIC)				
22		Chicken (Broilers)	-	1/5/A	-	1/5/A
23		Fruit and Vegetable	-	01-20 (except 15)	-	01-20 (except 15A)
24		Bottling (Beverages)	-	22	-	22
25		Printing and Publishing	-	49	-	49

Sources: Study Team UN, Yearbook of International Statistics,
The Hashemite Kingdom of Jordan Department of Statistics, External Trade Statistics.

Annex 2.2 Composition of Private Consumption Expenditure During 1970 - 1978

(Million JD)

Article	1970	1971	1972	1973	1974	1975	1976	1977	1978
1) Food	83.50	88.00	93.00	107.34	127.44	140.18	162.50	216.40	268.90
2) Beverages	1.25	1.80	1.90	2.00	2.30	2.90	3.10	4.50	4.90
3) Tobacco	4.33	4.50	5.50	5.77	6.63	6.80	7.40	9.15	10.10
4) Clothing & textile	11.28	12.00	12.50	14.50	16.67	19.15	22.38	26.65	29.25
5) Footwear	1.70	1.90	1.95	2.05	2.35	2.95	3.25	5.90	6.50
6) Furniture & household equipment	9.50	9.00	10.00	11.10	12.76	15.60	17.50	22.40	26.60
7) Housing	12.80	13.70	14.20	15.00	17.25	18.30	20.12	25.20	27.70
8) Domestic services	0.60	0.60	0.60	0.65	0.70	0.75	0.80	1.50	1.70
9) Personal care and health	6.85	7.20	7.50	8.20	9.43	10.18	12.10	17.90	19.80
10) Transport	15.60	16.00	16.50	17.10	19.66	20.16	33.20	26.86	28.88
11) Total recreation and other services	10.01	11.10	12.10	13.61	15.64	4.86	5.78	7.45	9.80
(a) Hotels, restaurants & cafe	3.41	3.45	3.75	3.85	4.42	6.88	1.40	1.60	2.45
(b) Cinemas	0.46	0.50	0.55	0.67	0.87	6.88	8.10	9.40	11.45
(c) Education	3.41	3.80	4.20	5.29	6.49	4.67	6.90	9.80	12.90
(d) All other	3.33	3.35	3.60	3.80	4.37	17.36	22.88	28.25	31.60
12) All other good & services	15.70	19.49	22.27	25.40	29.21	30.68	36.65	40.95	43.60
Total Current expenditure in Jordan	173.72	185.29	198.02	222.72	260.04	285.01	331.88	425.66	504.53

Source: Jordan Department of Statistics, Statistical Yearbook, 1975 and 1979.

Annex 2.3 Price Index of Jordan (1975 = 100)

Item	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Cost of Living Index 1)						100	111.5	127.7	136.6	156.0
2)	105.9	111.0	119.5	132.8	158.6	177.6	204.8			
Adjusted 3)	59.6	62.5	67.3	74.8	89.3	100.0	111.5	127.7	136.6	156.0
GDP Factor Cost (Current)	154.7	166.0	182.8	188.9	242.4	269.4	358.5	403.3	487.1	588.2
GDP Factor Cost (Real) 4)	259.5	265.6	271.6	252.5	271.4	269.4	321.5	315.8	356.6	377.1

Source: The Hashemite Kingdom of Jordan Department of Statistics, Statistical Yearbook.

Notes: 1/ The East Bank Cost of Living Index for 1976-1979 (Base Year 1975=100)

2/ The East Bank Cost of Living Index for 1970-1975 (Base year 1969=100)

3/ Adjusted from 1) and 2) above. (Base year 1975=100)

4/ GDP Factor Cost (Real price) = GDP Factor Cost (Current price) ÷ Adjusted Cost of Living Index 3)

Annex 2.4 Wholesale Price Index (1975 = 100)

Items	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
1) Seeds & Pulses	46.5	57	68	78.5	89	100	126.31	132.83	132.75	141.32
2) Vegetables						100	176.22	194.56	226.39	241.37
3) Fruits						100	147.48	169.70	213.63	215.29
4) Meat & Fish	65.5	72	79	86	93	100	104.48	116.87	124.08	127.81
5) Fuels	65	72	79	86	93	100	109.94	115.18	121.01	161.09
6) Grocery Items	95.2	96.1	97.1	98.05	79	100	102.01	104.54	101.71	103.22
7) Clothes & Textiles	60.5	68.5	76	84	92	100	110.04	117.04	122.78	131.59
8) Durable Consumer Goods	70	76	82	88	94	100	110.31	116.13	114.49	120.04
9) Paper & Wood	77	82	86.5	91	95.5	100	99.43	104.26	112.15	118.34
10) Construction Materials	56.5	65	73.5	82	91	100	124.35	131.12	141.29	154.48
11) Pharmaceutical Drugs						100	100.72	113.96	115.16	116.43
12) Transport Equipment	63	70.5	78	85	92.5	100	109.42	116.71	124.80	129.85
13) Other	79.5	83.5	87.5	91.5	95.5	100	103.92	114.41	109.79	115.01

Source: Central Bank of Jordan, Monthly Statistical Bulletin.

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Vegetable Oil, Fruit Oil (and Animal Fats) (Code: FS=#1, ISIC=3115)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	4,481	8,110	10,033	8,799	-	7,613	14,716	11,916	13,696	13,387				
	Value	508	830	1,163	1,575	-	2,021	4,217	3,674	4,594	3,987				
Export	Volume	1,134	910	1,142	579	1,600[2]	1,128	1,621	1,235	1,544	1,000				
	Moving Ave.	-	-	1,062	877	1,107	1,102	1,450	1,328	1,467	1,260	1,630	2,000	2,500	4.4
	Value	205	289	307	136	-	407	710	362	787	487				
	Real Value[3]	441	507	451	173	300	407	562	273	593	345				
	Moving Ave.	-	-	466	377	308	293	485	414	476	404	500	600	700	3.4
Production	Volume	-	1,790	2,574	-	-	-	-	-	-	-				
	Value [1]	6,611	6,834	7,025	7,425	546[2]	9,961	9,911	14,557	18,397	21,683				
Consumption	Volume	5,687	8,990	11,465	-	11,875	-	-	-	-	-				
	Value [1]	6,914	7,375	7,881	8,864	10,350	11,575	13,418	17,869	22,204	25,183				
	Real Value[3]	14,869	12,939	11,590	11,292	11,629	11,575	10,649	13,435	16,695	17,860				
	Moving Ave.	-	-	13,133	11,940	11,504	11,499	11,284	11,886	13,593	15,997	16,797	23,780	33,665	7.2[4]

Source: Study Team

Notes 1) Vetetable oil + Olive oil.

2) Department of Statistics, Industrial Census 1975.

3) Deflated by wholesale price index item: (1) Seeds and Pulses.

4) Elasticity of real value = $\frac{5.0\% \text{ (Industry growth during 1973-1979)}}{6.9\% \text{ (GDP growth during 1973-1979)}} = 0.72$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Bakery (Code: FS=#2, ISIC=3117)

Unit: Volume ton
Value 1,000 JD

Items		Year 1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	571	579	104	437	-	630	1,349	1,814	1,559	1,099				
	Value	105	137	15	132	7	229	565	904	796	660				
Export	Volume	-	22	32	67	-	233	272	21	160	498				
	Moving Ave.	-	-	-	40	83	150	218	175	151	226	250	376	502	7.2
	Value	-	4	6	8	2	50	89	12	48	165				
	Real Value 1)	-	4	6	8	2	50	87	11	47	160				
	Moving Ave.	-	-	-	6	5	20	46	49	48	72	72	118	165	8.6
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	8,929	9,502	10,287	11,456	13,517	14,944	17,055	22,454	28,262	32,493				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	9,033	9,635	10,297	11,580	13,522	15,123	17,531	23,346	29,010	32,989				
	Real Value 1)	9,488	10,026	10,605	11,810	13,659	15,123	17,187	22,341	28,525	31,960				
	Moving Ave.	-	-	10,040	10,814	12,025	13,531	15,323	18,217	22,684	27,609	32,275	96,542	288,776	24.5 2)

Source: Study Team

Notes 1) Deflated by wholesale price index item : (6) Grocery.

2) Elasticity of real value = $\frac{16.9\% \text{ (Industry growth during 1973-1979)}}{6.9\% \text{ (DGP growth during 1973-1979)}} = 2.45$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Animal Feeds (Code: FS=#3, ISIC=3122)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	9,126	8,783	13,291	13,352	16,613	15,107	38,681	39,302	49,787	62,930				
	Value	601	721	1,081	1,459	1,980	1,757	3,643	4,915	6,603	8,868				
Export	Volume	1,753	3,549	2,747	689	162	956	14,660	26,662	32,691	41,011				
	Moving Ave.	-	-	2,683	2,328	1,199	602	5,259	14,093	24,671	33,455	21,000	32,000	43,000	7.4
	Value	78	65	60	28	4	74	1,461	2,725	3,341	4,099				
	Real Value 1)	168	114	88	36	4	74	1,160	2,049	2,512	2,907				
	Moving Ave.	-	-	123	79	43	38	413	1,094	1,907	2,489	1,820	3,100	4,360	9.1
Production	Volume	25,603	34,204	44,200	41,500	33,300	41,456	50,933	42,024	51,841	51,707				
	Value	2,322	3,102	4,009	3,764	3,020	3,760	4,619	3,811	4,702	4,689				
Consumption	Volume	32,976	39,438	54,751	54,163	49,751	55,607	74,954	54,664	68,937	74,526	80,190	121,135	182,986	8.6 2)
	Moving Ave.	-	-	42,388	49,451	52,888	53,174	60,104	61,742	66,185	66,042				
	Value	3,029	3,622	5,029	5,195	4,996	5,443	6,801	6,002	7,964	9,458				
	Real Value 1)	6,514	6,354	7,396	6,618	5,613	5,443	5,398	4,513	5,988	6,708	7,070	9,506	12,781	6.1 3)
	Moving Ave.	-	-	6,755	6,789	6,542	5,891	5,485	5,118	5,300	5,736				

Source: Study Team

Notes 1) Deflated by wholesale price index item : (1) Seeds and Pulses.

2) Elasticity of $= \frac{7.6\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 0.86$

3) Elasticity of real value $= \frac{5.4\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 0.61$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Leather Products (Code: FS=#4, ISIC=3233)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	78	80	80	104	-	368	316	344	454	543				
	Value	219 1)	79	71	78	31	302 1)	292	578	469	671				
Export	Volume	4	18	6	15	-	7	16	24	46	35				
	Moving Ave.	-	-	9	13	-	11	12	16	29	35	42	70	100	9.0
	Value	1 1)	8	3	19	-	12 1)	28	38	84	69				
	Real Value	2	11	4	22	-	12	27	33	68	54				
	Moving Ave.	-	-	6	12	-	17	20	24	43	52	60	104	147	9.4
Production	Volume	277	397	661	370	556	531	163	346	198	191				
	Value	292 1)	561	715	911	1,171	1,200 1)	1,581	1,746	2,447	2,907				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	510 1)	632	783	970	1,202	1,490 1)	1,845	2,286	2,832	3,509				
	Real Value	779	878	991	1,128	1,292	1,490	1,767	1,957	2,284	2,746				
	Moving Ave.	-	-	883	999	1,137	1,303	1,516	1,738	2,003	2,329	2,683	7,251	19,598	21.0 3)

Source: Study Team

Notes 1) Source: Jordan External Statistics and Industrial Survey Report (Cited from UNIDO report).

2) Deflated by wholesale price index item: (4) Meat and Fish.

3) Elasticity of real value = $\frac{15.2\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.20$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Leather Footwear (Code: FS=#5, ISIO=3240)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	294	370	384	215	187	310	614	836	971	1,127				
	Value	205	191	259	126	159	831	759	939	1,166	1,449				
Export	Volume	205	257	417	262	88	392	338	1,013	1,270	1,595				
	Moving Ave.	-	-	293	312	256	247	273	581	874	1,293	1,440	2,160	2,880	7.2
	Value	24	51	27	23	51	96	180	404	604	906				
	Real Value 1)	37	71	34	27	55	96	172	346	487	709				
	Moving Ave.	-	-	47	44	39	59	108	205	335	514	520	920	1,320	9.8
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	200	309	298	520	626	132	444	670	859	1,132				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	381	449	529	624	736	867	1,023	1,206	1,421	1,676				
	Real Value 1)	582	624	670	726	791	867	980	1,033	1,146	1,311				
	Moving Ave.	-	-	625	673	729	795	879	960	1,053	1,163	1,273	2,430	4,637	13.8 2)

Source: Study Team

Notes 1) Deflated by wholesale price index item (4): Meat and Fish.

2) Elasticity of real value = $\frac{9.5\% \text{ (Industry growth 1973-1975)}}{6.9\% \text{ (GDP growth 1973-1975)}} = 1.38$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Wood Products [1] (Code: FS=#6, 7, 8, ISIC=3311, 3312, 3319)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	-	-	-	-	7,251	8,306	11,269	11,988	12,795				
	Value	-	-	-	-	-	4,331	8,000	10,675	13,550	18,633				
Export	Volume	-	-	-	-	-	75	960	10,240	9,093	11,743				
	Moving Ave.	-	-	-	-	-			3,758	6,764	10,359	13,400	29,700	46,000	13.1
	Value	-	-	-	-	-	23	295	3,149	4,899	5,209				
	Real Value [2]	-	-	-	-	-	23	297	3,019	4,366	4,403				
	Moving Ave.	-	-	-	-	-	-	-	1,113	2,561	3,929	5,300	12,300	19,300	13.8
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	-	3,523	3,773	4,041	4,328[3]	4,635[3]				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	-	7,831	11,478	11,567	12,979[3]	18,059[3]				
	Real Value [2]	-	-	-	-	-	7,831	11,547	11,101	11,568	15,265	18,043	46,222	118,408	
	Moving Ave.	-	-	-	-	-	-	-	10,160	11,405	12,645				20.7[4]

Source: Study Team

Notes
1) Included sawmill, Wooden cases, Boxes, Containers and Cabinets, Other wooden products.
2) Deflated by wholesale price index item : (9) Paper and Wood.
3) Estimates
4) Elasticity of real value = $\frac{18.2\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 2.07$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Furniture and Fixtures (Code: FS=#9, ISIC=3320)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	269	347	146	317	245	419	1,781	4,309	8,198	9,983				
	Value	140[1]	428	78	176	184	482[1]	1,464	5,011	7,232	9,626				
Export	Volume	-	-	-	-	78	88	401	171	3,415	2,802				
	Moving Ave.	-	-	-	-	-	-	189	220	1,329	2,129	2,750	6,500	10,000	13.8
	Value	3[1]	-	11	-	22	20[1]	156	737	1,644	1,276				
	Real Value	-	-	-	-	23	20	141	635	1,436	1,063				
	Moving Ave.	-	-	-	-	-	-	61	265	737	1,045	1,350	2,980	4,600	13.0
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	2,392[1]	2,264	2,801	2,878	2,494	3,001[1]	3,098	3,277	3,428	3,585				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	2,528[1]	2,693	2,868	3,054	3,252	3,463[1]	4,406	7,464	8,918	11,935				
	Real Value	3,611	3,543	3,498	3,470	3,460	3,463	3,995	6,429	7,789	9,946				
	Moving Ave.	-	-	3,551	3,504	3,476	3,464	3,639	4,629	6,071	8,054	9,254	24,604	60,229	21.6[3]

Source: Study Team

Notes:
1) Source: Jordan External Statistics and Industrial Survey Report (Cited from UNIDO report).
2) Deflated by wholesale price index item : (8) Durable Consumer Goods.
3) Elasticity of real value = $\frac{14.9\% \text{ (Industry growth 1973-1970)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.16$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Paper Boxes and Containers (Code: FS=#10, ISIC=3412)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	3,241	2,563	3,910	4,640	4,861	4,086	2,856	3,307	26,215	32,360				
	Value	355	271	493	637	1,176	987	638	875	6,001	8,930				
Export	Volume	2,774	1,671	1,671	2,968	3,265	4,063	4,595	5,166	5,043	5,256				
	Moving Ave.	-	-	2,039	2,103	2,635	3,432	3,974	4,608	4,935	5,155	5,700	8,200	10,700	6.5
	Value	150	229	104	355	434	513	682	980	1,167	1,177				
	Real Value 2)	195	279	120	390	454	513	686	940	1,047	995				
	Moving Ave.	-	-	198	263	321	452	551	713	891	994	1,020	1,540	2,070	7.3
Production	Volume	2,864	3,078	3,007	4,913	3,403	10,634	14,754	18,193	23,160	26,925				
	Value	142	370	158	404	119 1)	608	1,399	1,807	2,212	2,544				
Consumption	Volume	3,331	3,970	5,246	6,585	8,264	10,387	13,015	16,333	20,499	25,726				
	Moving Ave.	-	-	4,182	5,267	6,698	8,412	10,555	13,245	16,616	20,853	26,233	128,464	629,094	37.4 3)
	Value	347	412	547	686	861	1,082	1,356	1,701	2,135	2,680				
	Real Value 2)	451	502	632	754	902	1,082	1,364	1,632	1,905	2,265				
	Moving Ave.	-	-	528	629	762	913	1,116	1,359	1,634	1,934	2,332	8,625	31,902	29.9 4)

Source: Study Team

Notes: 1) Industrial Census 1975.

2) Deflated by wholesale price index item : (9) Paper and Wood.

3) Elasticity of volume $= \frac{25.8\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 3.74$

4) Elasticity of value $= \frac{20.6\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.99$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Fertilizer (Code: FS=#11, ISIC=3512, (Excluded Pesticides))

Unit: Volume ton
Value 1,000 JD

Items		Year 1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Projected Value 1982	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	15.6	11.5	9.7	14.7	12.3	24.0	17.3	34.2	39.9				
	Value	-	304	281	254	341	848	1,258	872	1,537	1,928				
Export	Volume	-	-	-	-	-	-	0.15	0.03	-	0.0065	156.2 2)	240.9 2)	495.2 2)	15.5
	Moving Ave.	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	-	-	3.4	1.7	-	0.02	48,000 2)	74,000 2)	152,104 2)	
	Real Value 1)	-	-	-	-	-	-	3.3	1.5	-	0.02	34,560	53,280	109,514	15.5
	Moving Ave.	-	-	-	-	-	-	-	-	-	-				
Production	Volume	-	-	-	-	-	-	-	-	0	0				
	Value	-	-	-	-	-	-	-	-	0	0				
Consumption	Volume	-	15.6	11.5	9.7	14.7	12.3	23.9	17.3	34.2	39.9	50.5	555.8 2)	60.6 2)	36.6 3)
	Value	-	304	281	254	341	848	1,254	870	1,537	1,928	109,410 2)	170,700 2)	92,596 2)	
	Real Value	-	364	321	277	357	848	1,207	761	1,400	1,677	78,775	122,903	66,669	-2.1

Source: Study Team

Notes: 1) Deflated by wholesale price index item : (13) Other.

2) Projection is derived from the preliminary plan target of NPC.

3) Elasticity of volume = $\frac{26.6\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 3.86$

4) Elasticity of real value = $\frac{35\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 5.07$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Plastic Products (Egg Trays, Boxes, Containers) (Code: FS=#12, ISIC=3560)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978[2]	1979[2]	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	-	3,502	2,590	3,474	4,672	10,739	11,499	25,203	30,657				
	Value	-	-	564	517	1,035	1,324	3,152	3,660	4,869	6,476				
Export	Volume	-	-	-	-	302	1,152	1,672	1,943	2,525	7,749				
	Moving Ave.	-	-	-	-	-	-	1,042	1,589	2,047	4,072	4,400	9,000	13,600	11.9
	Value	-	-	6	5	83	280	655	750	1,141	1,736				
	Real Value [3]	-	-	7	6	88	280	594	646	997	1,447				
	Moving Ave.	-	-	-	-	34	125	321	507	746	1,030	1,150	2,100	3,050	10.2
Production	Volume [1]	-	-	1,782	2,207	4,250	6,000	7,750	9,500	13,281	18,567				39.8
	Value	-	-	1,782	2,207	-	1,459	-	6,004	7,655	9,760				27.5
Consumption	Volume	-	-	2,122	2,731	5,160	6,048	7,706	10,261	35,969	41,475				66.4[4]
	Moving Ave.	-	-	-	-	3,338	4,646	6,305	8,005	17,978	29,235	46,308	117,906	235,812	58.4
	Value	-	-	2,340	2,719	-	2,503	-	8,913	11,383	14,500				
	Real Value [3]	-	-	2,854	3,090	2,797	2,503	5,090	7,677	9,942	12,079				
	Moving Ave.	-	-	-	-	2,914	2,797	3,463	5,090	7,570	9,899	13,571	78,629	455,567	37.1 42.1[5]

Source: Study Team

Notes: 1) Source: Department of Statistic, Census of Manufacturing Report 1974.

2) Figures of 1978 and 1979 were estimated by the linear extrapolation method of past trend.

3) Deflated by wholesale price index-item = (8) Durable Consumer Goods.

4) Elasticity of volume = $\frac{58.4\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 6.64$

5) Elasticity of real value = $\frac{37.1\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 4.21$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Ceramic Products (Code: FS=#13, ISIC=3610)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	-	-	-	-	6,032	12,605	18,424	14,221	17,939				
	Value	-	-	-	-	-	1,192	2,194	4,075	3,085	3,908				
Export	Volume	-	-	-	-	-	1,025	6,101	4,645	3,025	4,707				
	Moving Ave.	-	-	-	-	-	-	-	3,924	4,590	4,126	4,500	5,100	5,700	2.4
	Value	-	-	-	-	-	12	91	380	130	328				
	Real Value 2)	-	-	-	-	-	12	83	327	114	273				
	Moving Ave.	-	-	-	-	-	-	-	141	175	238	262	444	626	9.1
Production	Volume	-	-	-	-	-	2,700	6,200	4,700	6,199	8,177				
	Value	-	-	-	-	-	346	107	370	1,691	1,798				
Consumption	Volume	-	-	-	-	-	7,707	12,704	18,479	21,409	24,672		46,000	66,800	38.4 3)
	Moving Ave.								12,963	17,531	21,520				
	Value 1)	-	-	-	-	-	1,526	2,210	4,065	4,646	5,378				
	Real Value 2)	-	-	-	-	-	1,526	2,003	3,642	4,058	4,480	5,864	26,392	118,781	35.2 4)

Source: Study Team

Notes: 1) Estimates based on the Unit price of import.

2) Deflated by wholesale price index item : (8) Durable Consumer Goods.

3) Elasticity of volume = $\frac{33.8\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 3.84$

4) Elasticity of real value = $\frac{30.9\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 3.51$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Glass Products (Code: FS=#14, ISIC=3620)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	6,661	7,043	3,145	7,040	9,820	13,525	20,258	18,479	23,867				
	Value	292	580	696	561	1,103	1,659	2,433	3,657	3,345	4,584				
Export	Volume	76	62	4	214	-	59	198	190	-	553				
	Moving Ave.	-	-	47	93	118	136	131	149	194	371	420	650	890	7.8
	Value	3	1	1	40	-	31	68	76	98	152				
	Real Value 1)	4	1	1	45	38	31	62	65	86	127				
	Moving Ave.	-	-	2	16	28	38	44	53	71	93	100	164	228	8.6
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	150 2)	165	182	200	220	242				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	1,253	1,793	2,546	3,780	3,466	4,674				
	Real Value 1)	-	-	-	-	1,333	1,793	2,308	3,256	3,030	3,895	4,729	14,032	41,637	
	Moving Ave.	-	-	-	-	-	-	1,811	2,452	2,865	3,394				24.3 3)

Source: Study Team

Notes: 1) Deflated by wholesale price index item : (8) Durable Consumer Goods.

2) Department of Statistics, Industrial Census 1975.

3) Elasticity of real value = $\frac{21.4\% \text{ (Industry growth 1975 - 1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 2.43$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Structural Clay Products (Code: FS=#15, ISIC=3691)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	-	-	-	4,088	4,126	9,426	12,529	18,778	28,185				
	Value	-	-	-	-	513[1]	688	1,146	1,896	3,016	4,792				
Export	Volume	-	-	-	-	324	1,025	6,265	4,591	5,509	6,611				
	Moving Ave.	-	-	-	-	-	-	2,538	3,960	5,455	5,570	6,600	11,000	15,300	8.8
	Value	-	-	-	-	18	11	122	363	436	523				
	Real Value [2]	-	-	-	-	20	11	98	277	309	339				
	Moving Ave.	-	-	-	-	-	-	43	129	228	308	380	825	1,270	12.8
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	143[1]	157	173	190	209	230				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	638	835	1,197	1,723	2,789	4,499				
	Real Value [2]	-	-	-	-	701	835	963	1,314	1,975	2,914	3,983	22,754	129,990	
	Moving Ave.	-	-	-	-	-	-	833	1,037	1,417	2,068				41.7[3]

Source: Study Team

Notes: 1) Industrial Census 1975.

2) Deflated by wholesale price index item : (10) Construction materials.

3) Elasticity of real value = $\frac{36.7\% \text{ (Industry growth 1975-1979)}}{8.8\% \text{ (GDP growth 1975-1979)}} = 4.17$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Unit: Volume ton
Value 1,000 JD

Cement (Code: FS=#16, ISIC=3692)

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985[2]	1990[2]	Growth Rate(%) 1980-1990
Import	Volume	57	315	5	8	8	8	135	418	623	927				
	Value	-	-	143	-	185	215	2,699	8,344	12,422	26,133				
Export	Volume	56	91	299	196	209	73	2	3	-	-				
	Moving Ave.	-	-	149	195	235	159	94	26	-	-				
	Value	320	471	1,922	1,283	4,066	1,658	25	57	116	236		17,000	18,326	
	Real Value[1]	566	725	2,615	1,565	4,468	1,658	20	43	82	153	230	12,240	13,195	49.9
	Moving Ave.	-	-	1,302	1,635	2,883	2,564	2,049	574	48	93				
Production	Volume	378	419	661	617	615	598	586	538	564	623		3,200		
	Value	4,564	5,705	7,131	8,914	7,304	7,108	6,968	6,388	12,400	13,708		70,400	102,486	
												(Real)	50,688	73,789	
Consumption	Volume	379	643	367	429	413	533	719	953	1,186	1,325				
	Moving Ave.	-	-	463	480	403	458	555	735	953	1,155	1,337	3,749	10,512	22.9[3]
	Value	4,244	5,234	5,352	7,631	3,423	5,665	9,642	14,675	24,707	39,606				
	Real Value[1]	7,512	8,052	7,282	9,306	3,762	5,665	7,757	11,194	17,498	25,652				
	Moving Ave.	-	-	7,615	8,213	6,783	6,244	5,728	8,205	12,150	18,115	20,669	52,294	132,308	20.4[4]

Source: Study Team

Notes: 1) Deflated by wholesale price index item : (10) Construction Materials.

2) Projection for production and export demand is derived from the preliminary plan target of NPC.

3) Elasticity of volume = $\frac{15.8\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.29$

4) Elasticity of value = $\frac{14.1\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.04$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Non-metalic Mineral Products (Code: FS=#17, ISIC=3699)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	1,354[1]	1,695	2,122	2,657	3,327	4,169[1]	5,214	6,528	8,174	10,233				
Export	Volume	-	-	-	-	-	-	-	-	-	-				
	Moving Ave.														
	Value	366[1]	513	718	1,005	1,406	1,967[1]	2,757	3,859	5,403	7,564				
	Real Value [3]	460	614	821	1,098	1,472	1,967	2,654	3,373	4,925	6,577				
	Moving Ave.	-	-	632	844	1,130	1,512	2,031	2,665	3,651	4,958	4,750	7,430	10,130	7.9
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	1,546[1]	1,557	1,567	1,578	1,589[2]	1,600[1]	1,611	1,622	1,634	1,645				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	2,534[1]	2,739	2,972	3,231	3,509	3,802[1]	4,069	4,292	4,404	4,314				
	Real Value [3]	3,187	3,280	3,397	3,531	3,674	3,802	3,916	3,752	4,015	3,751				
	Moving Ave.	-	-	3,288	3,403	3,534	3,669	3,797	3,823	3,894	3,839	3,916	4,518	5,212	2.9[4]

Source: Study Team

Notes: 1) Source: Jordan External Statistics and Industrial Survey Report (Cited from UNIDO Report).

2) : Dept. of Statistics, Industrial Census 1975.

3) Deflated by wholesale price index item : (13) Other.

4) Elasticity of real value = $\frac{2.0\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 0.29$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Metal (Code: FS=#18, 19, 20, ISIC=3811, 3813, 3819)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	2,126	1,383	2,156	2,398	-	2,569	4,130	5,884	5,995	6,776				
	Value	1,171	857	1,350	1,249	-	2,387	3,668	5,337	5,901	7,214				
Export	Volume	-	4.3	6.9	-	-	71.6	258.8	133.8	292	622.4				
	Moving Ave.			6			39	165	155	228	349	420	750	1,100	10.1
	Value	-	0.4	0.7	-	-	15	49.5	25	101.6	239.5				
	Real Value 1)	-	0.5	0.8	-	-	15	47.6	22.4	92.5	214.8				
	Moving Ave.	-	-	0.7	-	-	7.9	31.3	85	54.2	109.9	135	265	395	11.3
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	5,380	5,213	6,277	7,558	9,099	6,900	13,190	15,847	19,121	23,021				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	6,530	6,060	7,596	8,789	-	9,223	16,723	20,968	24,710	29,996				
	Real Value 1)	8,214	7,257	8,681	9,605	9,414	9,223	16,095	18,329	22,505	26,083				
	Moving Ave.	-	-	8,051	8,514	9,233	9,414	11,577	14,549	18,976	22,306	26,187	80,557	247,815	25.2 2)

Source: Study Team

Notes: 1) Deflated by wholesale price index item : (13) Other.

2) Elasticity of real value = $\frac{17.4\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.52$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Agricultural Machinery and Equipment (Code: PS=#21, ISIC=3822)

Unit: Numbers of tractors
Value 1,000 JD

Items		Year 1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	148	177	161	235	252	501	437	278	-	-				
	Value	333	288	729	571	696	1,549	1,672	1,690	-	-				
Export	Volume	27	7	156	25	100	12	33	7	-	-				
	Moving Ave.	-	-	63	62	94	46	48	17	-	-				
	Value	184	56	113	15	193	95	93	31	29	28				
	Real Value 1)	231	67	129	16	202	95	90	27	26	24				
	Moving Ave.	-	-	142	71	116	104	129	71	48	26				
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	-	-	-	-	-	-	-	-	-	-				
Consumption	Volume	96	98	204	284	203	201	166	160	149	120				
	Moving Ave.	-	-	133	195	230	229	190	176	158	143	-	-	-	-
	Value	333	288	729	571	696	1,549	1,672	1,690	1,991	2,346				
	Real Value 1)	419	345	833	624	729	1,549	1,609	1,477	1,815	2,040				
	Moving Ave.	-	-	532	601	729	967	1,296	1,545	1,634	1,777	2,129	7,517	26,544	28.7 2)

Source: Study Team

Notes: 1) Deflated by wholesale price index item : (13) Other.

2) Elasticity of real value = $\frac{19.8\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 2.87$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Chiken[1] (Code: FS=#22, ISIC=-)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	26	12	12	9	-	20	35	50	65	39				
	Value	46	27	37	43	-	90	196	315	427	306				
Export	Volume	1	-	-	46	-	46	63	96	50	192				
	Moving Ave.	-	-	-	-	-	46	52	68	70	113	114	190	265	9.2
	Value	2	-	-	89	-	88	132	216	112	304				
	Real Value [2]	3	-	-	103	96	88	126	185	90	238				
	Moving Ave.						96	103	133	134	171	182	252	332	6.2
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	3,524	3,779	4,030	4,620	-	5,972	6,861	9,122	11,144	12,717				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	3,568	3,806	4,067	4,575	5,341	5,974	6,925	9,222	11,459	12,719				
	Real Value [2]	5,447	5,286	5,148	5,320	5,743	5,974	6,633	7,896	9,241	9,952				
	Moving Ave.	-	-	5,294	5,251	5,404	5,679	6,117	6,834	7,923	9,030	9,888	18,872	36,019	13.6[3]

Source: Study Team

Note: 1) Live Poultry (Chiken) Less than 24 hours Age.

2) Deflated by wholesale price index item : (4) Meat and Fish.

3) Elasticity of real value = $\frac{9.5\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 1.38$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Fruit and Vegetable (Code: FS=#23, ISIC=-)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	4,196 1)	5,623	7,534	10,096	13,528	18,116 1)	24,291	32,549	43,615	58,444				
Export	Volume	-	-	-	-	-	-	-	-	-	-				
	Moving Ave.														
	Value	321 1)	390	474	576	700	852 1)	1,033	1,255	1,524	1,852				
	Real Value 2)	404	467	542	630	733	852	994	1,097	1,389	1,610				
	Moving Ave.	-	-	471	546	635	738	860	981	1,160	1,365	1,456	2,120	2,780	6.7
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	11,241 1)	12,468	13,667	14,752	15,593	16,000 1)	15,714	26,310	11,349	5,986				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	15,116 1)	17,701	20,727	24,272	28,422	33,265 1)	38,972	45,636	53,440	62,577				
	Real Value 2)	19,014	21,199	23,688	26,527	29,761	33,265	37,509	39,892	48,715	54,415				
	Moving Ave.	-	-	21,300	23,805	26,659	29,851	33,512	36,889	42,039	47,674	53,538	121,447	275,495	17.8 3)

Source: Study Team

Notes: 1) Source: Jordan External Trade Statistics and Industrial Survey Report (Cited in UNIDO Report).

2) Deflated by wholesale price index item : (13) Other.

3) Elasticity of real value = $\frac{12.3\% \text{ (Industry 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 1.78$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Bottling(Beverages) (Code: FS=f24, ISIC=-)

Unit: Volume 1,000 liter
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	475	529	799	864	1,480	1,968	2,832	4,287	6,423	7,142				
	Value	117[1]	131	197	213	365	486[1]	774	1,058	1,585	1,763				
Export	Volume	55[1]	165	189	349	646	1,194	1,960	1,385	2,013	2,433				
	Moving Ave.			136	234	395	730	1,266	1,513	1,786	1,944	2,100	3,400	4,700	8.4
	Value	11[1]	33	38	70	130	240[1]	393	278	404	488				
	Real Value [2]	14	40	43	77	136	240	378	243	368	424				
	Moving Ave.	-	-	32	53	85	151	251	287	330	345	410	660	910	8.3
Production	Volume	2,162	2,396	2,421	2,927	3,288	5,503	6,294	5,749	5,654	7,207				
	Value	536[1]	730	993	1,351	1,839	2,500[1]	3,406	4,636	6,310	8,587				
Consumption	Volume	2,581	2,761	3,031	3,442	4,123	6,277	7,166	8,652	10,063	11,916				
	Moving Ave.			2,791	3,078	3,532	4,614	5,855	7,365	8,627	10,210	12,466	49,957	200,201	32.0[3]
	Value	642[1]	827	1,152	1,494	2,075	2,746[1]	3,788	5,416	7,491	9,862				
	Real Value [2]	808	990	1,317	1,633	2,173	2,746	3,646	4,734	6,829	8,576				
	Moving Ave.	-	-	1,038	1,313	1,708	2,184	2,855	3,709	5,070	6,713	8,814	57,279	372,234	45.4[4]

Source: Study Team

Notes: 1) Source: Jordan External Trade Statistics and Industrial Survey Report (Cited in UNIDO Report).

2) Deflated by wholesale price index item: (13) Other.

3) Elasticity of volume = $\frac{22.1\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 3.20$

4) Elasticity of real value = $\frac{31.3\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 4.54$

Annex 2.5 Statistical Back Data of Demand Projection of Selected Industries

Printing and Publishing (Code: FS=#25, ISIC=-)

Unit: Volume ton
Value 1,000 JD

Items		1970	1971	1972	1973	1974	Year 1975	1976	1977	1978	1979	Projected Value 1980	1985	1990	Growth Rate(%) 1980-1990
Import	Volume	565	858	853	1,107	-	718	887	1,189	1,530	2,068				
	Value	175	415	406	382	-	577[1]	714	1,120	1,554	1,645				
Export	Volume	-	9.9	19.8	-	-	31	36	45	198	173				
	Moving Ave.	-	-	15	-	-	25	34	37	93	139	142	220	300	7.8
	Value	-	3.5	7	-	-	6	18	18	321	316				
	Real Value [2]	-	4	8	-	-	6	18	17	70	283				
	Moving Ave.	-	-	6	-	-	6	12	14	35	123	143	244	345	9.2
Production	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	817	655	761	894	-	923[1]	930	667	691	765				
Consumption	Volume	-	-	-	-	-	-	-	-	-	-				
	Value	980[1]	1,066	1,160	1,262	1,373	1,494[1]	1,626	1,769	1,924	2,094				
	Real Value [2]	1,273	1,300	1,341	1,387	1,438	1,494	1,636	1,698	1,716	1,770				
	Moving Ave.	-	-	1,305	1,343	1,389	1,440	1,523	1,609	1,683	1,728	1,802	2,434	3,289	6.2[3]

Source: Study Team

Notes: 1) Industrial Survey Report, 1975.

2) Deflated by wholesale price index item: (9) Paper and Wood.

3) Elasticity of real value = $\frac{4.3\% \text{ (Industry growth 1973-1979)}}{6.9\% \text{ (GDP growth 1973-1979)}} = 0.62$

Annex 3.1 Industrial Survey Questionnaire 1/

INDUSTRIAL SURVEY

PURPOSE OF THE SURVEY

1. Purpose of the Survey:

   (1) to assess the needs and potentialities of an industrial estate development in the suburbs of Irbid.

   (2) to identify the needs, potentialities and future plan of private manufacturing enterprises.

2. Confidentiality:

   All the information obtained will be kept strictly confidential and will not be used for any other purposes except for those stated above. None of the individual name of factories will be used in the report, and all the survey results will be disposed after the analysis.

3. Surveying Body:

   (1) IURPG and the Japanese Team.

   (2) IURPG is the one branch of the Central Government of Jordan to promote economic development in Irbid Region.

   (3) The Japanese Team is dispatched by the Japanese Government to assist IURPG to undertake the feasibility study of the Industrial Estate of Irbid.

4. Base Year: Without specification, 1979 data are requested.

Note: 1/ In the Applicant Interview Survey, part C of Industrial Survey Questionnaire was omitted.

Annex 3.1 (Continued) No. _____

Confidential

INDUSTRIAL SURVEY QUESTIONNAIRE

Part A Present Status: Production and Size

1. Major Products: (a) _____
   (b) _____
   (c) _____

2. Production

Major Products	(a)	(b)	(c)
1979 Volume:	( )	( )	( )
Price:	JD/( )	JD/( )	JD/( )
Value:	JD	JD	JD
Share in Domestic Mkt.:	%	%	%
1975 Volume (Proportion to 1979):	%	%	%

3. Market

	(a)	(b)	(c)
1979 Irbid:	%	%	%
Other Domestic:	%	%	%
Foreign-Arab:	%	%	%
-Non-Arab:	%	%	%

4. Size

4-1. No. of Employee	Male No.	Frmale No.	Foreign Nationals No., Nationality
Skilled:			
Unskilled:			
Part-timer:			

4-2. Capital	Year	Land	Building	Machinery
Initial Investment:		JD	JD	JD
Total Additional Investment:		JD	JD	JD
Expected Service Life:			Years	Years

Source of Initial Investment (Capital):

JD	%	by _____
JD	%	by _____
JD	%	by _____

4-3. Physical Size

Land Area: _____ donums

Building Floor: _____ m^2

Production Capacity: ( ) at ( ) hours/day

Annex 3.1 (Continued)

Part B Future Plan

I. Expansion or Relocation Plan

1. Future Prospects of Market Demand in the 1980s.

Domestic:	Excellent	Good	Fair	Bad
Export:	Excellent	Good	Fair	Bad

2. Total Demand Growth Rate

	1980-85	1985-90
Annual Rate:	_____ %	_____ %

3. Future Prospects for Your Industry in 1980s.

Excellent Good Fair Bad

4. Future Plan

Expansion ---------- What are the reasons _____
When _____ Where _____

Relocation ---------- What are the reasons _____
When _____ Where _____

New Business ---------- Please go to new sheets and fill them up.

No Change

Reduction ---------- What are the reasons _____

II. Investment Plan

1. Do you have a plan to invest in the future (within 10 years)?

Yes No

2. Total Production Plan (1979 Price)

	1981	1985	1990
Volume:	( )	( )	( )
Market Share - Irbid:		%	
- Other Domestic:		%	
- Foreign - Arab:		%	
- Non-Arab:		%	

3. Investment Plan (1979 Price)

	Land	Building	Equipment
Amount:	JD	JD	JD
Volume:	m^2	m^2	( )
Year:			
Place:			

4. Joint Venture with Foreign Enterprises

4-1. Possibility of Joint Venture: _____
4-2. Foreign Share in Capital: _____ %
4-3. Any Constraints: _____

Annex 3.1 (Continued)

III. Locational Preference

1. What are the important factors choosing your new site?

(1) Inherited from previous owner
(2) Availability of raw materials
(3) Availability of land at reasonable price
(4) Availability of labor (skilled & unskilled)
(5) Large space
(6) Close to market
(7) Availability of utility (water, electricity, telephone)
(8) Access road (major highway, transportation)
(9) Others (specify)

2. Do you have any special area for your plant site in your mind?

(1) Already acquired
(2) Already decided
(3) Not decided

If (1) (2) : Where _____ (Distance from Amman)
_____ (Distance from Irbid)
Size of Land _____
Price of Land _____

IV. Possibility of Locating in IIE

1. Irbid Municipality has a plan of building a new Irbid Industrial Estate (IIE) in its suburbs. Do you consider the IIE for new plant site?

Yes Maybe No

If no, why?
(1) No expansion
(2) No finance
(3) Not profitable
(4) Too far
(5) Inconvenience
Specify _____
(6) Others
Specify _____

2. If "Yes" or "Maybe" what kind of services do you want at the IIE?

(1) Land Size: _____ donums at Sale or Lease
(2) Access: _____ km from Bagdad Road
_____ km from the Center of Irbid City
(3) Utility
(3)-1 Paved road:
(3)-2 Water: _____ liter/day
(3)-3 Power: _____ kw at _____ v
(3)-4 Telephone: _____ subscribers lines

Annex 3.1 (Continued)

(3)-5 Storm drainage:
(3)-6 Sewer treatment:
(3)-7 Solid waste:
(4) Financial Arrangement: _____

3. With complete availability of above requirements, what is the reasonable price range you will pay for the land?

(1) If you want purchasing, _____ JD/donums
(2) If you want lease, _____ JD/donums

Part C Present Status

I. Input and Production Cost

1. Raw Materials, 1979

Major Raw Material:	(a) _____	(b) _____	(c) _____
Volume/Month	_____	_____	_____
Unit Cost:	JD/( )	JD/( )	JD/( )
Major Country of Supply:	1. _____	1. _____	1. _____
	2. _____	2. _____	2. _____

2. Wages

Skilled:	_____ JD/day
Unskilled:	_____ JD/day
Part-timer:	_____ JD/day

3. Production Cost

All Salaries and Wages:	_____ JD/year
Land Rent and Floor Rent:	_____ JD/year
OM Cost - Raw Material and Inputs:	_____ JD/year
- Subcontracting Cost:	_____ JD/year
- Utilities--Water:	_____ JD/year
Power:	_____ JD/year
Tel.:	_____ JD/year
etc.:	_____ JD/year
- Others (Transp., Sales, Repair, etc.):	_____ JD/year
Depreciation:	_____ JD/year
Interest:	_____ JD/year
Tax:	_____ JD/year
Total:	_____ JD/year

4. Working Capital

	1979
Cash:	_____ JD
Products in Storage:	_____ JD
Spare Parts:	_____ JD
Total:	_____ JD

Annex 3.1 (Continued)

5. Privileges Enjoying

Subsidy:	JD
Tax Holiday:	Years
Interest Rate:	%
Technical Assistance:	

6. Subcontracting

Major Items:	(a)	(b)	(c)
Volume:	( )	( )	( )
Value:	JD	JD	JD

7. Utilities

7-1. Water

Source of Water:	City Water	Well	Others ( )
Consumption:			m^3/month
Treatment Before Use:	Yes	No	

7-2. Power

Contracted Power:	kw
Self Generating Capacity:	kw
Consumption (total):	kwh/month

7-3. Transportation of Products and Raw Material

	Products	Raw Material
Truck:	%	%
Train:	%	%
Others:	%	%
Major Destination and Origin:	%	%

7-4. Industrial Waste and Pollution

	Type	Volume	Treatment Method
Solid Waste:		( )	
Waste Water:		( )	

II. Problems and Needs	Problems	Needs
1. Technology - Proudcts:		
- Process:		
- Managerial:		
2. Material:		
3. Market - Sales system (direct or agent):		
- Constraints of distribution channel:		

Annex 3.1 (Continued)

	Problems	Needs
4. Land - Lack of space:	_____	_____
- Others about Land:	_____	_____
5. Transportation - Constraints and shares (%) by mode:	_____,	_____
- Networks:	_____	_____
- Tariff:	_____	_____
6. Labor - Local availability of skilled workers:	_____	_____
- Foreman and middle managers:	_____	_____
- Availability of labor from other region and abroad:	_____	_____
- Constraints and remedies toward youth workers, different races and religion, etc.:	_____	_____
- grading up of quality by local labors (relation with vocational training centers and technical schools):	_____	_____
7. Infrastructure - Water:	_____	_____
- Electricity:	_____	_____
- Telephone:	_____	_____
8. Finance - Kind of financing sources:	_____	_____
- Conditions and interest rate, etc.:	_____	_____
9. Industrial Pollution - Kind and volume:	_____	_____
- Cordination needs between sewerage planning and industrial estates:	_____	_____
10. Possibility of distribution and transportation complex such as distribution center at industrial estate:	_____	_____
11. Complaint from neighbors - Noise:	_____	_____
- Pollution:	_____	_____
12. Others (specify):	_____	_____

Date: _____, 1980

Interviewee: Name: _____

Title: _____

Tel.: _____

Interviewer: _____

1. Name of the Firm: _____
2. Name of the Factory: _____
3. Address of the Factory: _____
4. Date of Establishment: _____

Annex 3.2.1 Overall Results of Factory Interview Survey: Factories Having Investment Plan in the General Survey in Irbid, December, 1980

Sample Number	Sales (S) Lease (L) Either(E)	Land Demand (donum)	Payable Cost Purchase (JD/d)	Payable Cost Lease (JD/d/year)	Products
1	S	5.0	1,000	-	Cast iron
7	E	5.0	500	50	Bedroom furnitures
8	E	3.0	4,500	50	Soft drink
14	S	2.0	2,500	-	Bread, Cake, Sweets
15	E	0.5	3,000	600	Motor cars, Workshop
17	S	4.0	1,000	-	Truck bones, Car repair
18	E	3.0	1,000	300	Pickup body covers
19	S	0.5	500	-	Camping tents
25	E	0.05	2,000	300	Auto repair
31	E	1.5	3,500	200	Floor tile
39	L	0.112	2,000	150	Beds, Cupboards
40	S	1.0	5,000	-	Cupboards
42	L	0.100	-	300	Bedroom furnitures, Doors
43	L	0.250	-	500	Cupboards, Wooden doors
47	S	0.150	5,000	-	Alm. window, Alm. door
48	E	0.5	5,000	100	Alm. window, Alm. door
49	E	0.060	3,000	200	Alm. windows, Alm. doors
50	E	0.5	500	200	Car lock
51	L	5.0	-	160	Cylinder boring
52	E	1.0	1,500	150	Doors
55	L	1.0	-	100	Chairs, Sofas
59	S	2.0	3,000	-	Bricks
60	E	3.0	500	100	Bricks
61	S	4.0	3,000	-	Brick, Tile
62	L	0.5	-	500	Lathery, Car repair
63	E	1.0	1,500	300	Mechanic repair
66	L	2.0	-	100	Tile
67	L	1.0	-	500	Chairs, Sofas
101	-	15.0	-	-	Cast iron
104	S	1.0	5,000	500	Fluorescent lamp body

Annex 3.2.1 (Continued)

Sample Number	Sales (S) Lease (L) Either (E)	Land Demand (donum)	Payable Cost Purchase (JD/d)	Payable Cost Lease (JD/d/year)	Products
107	E	3.0	1,500	1,000	Cheese
109	S	9.0	5,000	-	Alm. door frame
228	S	2.0	3,000	300	Wheel repair
302	E	2.0	2,000	300	Block
2	-	-	-	-	Pipes for electricity
4	-	-	-	-	Clips for electricity wire
9	-	-	-	-	Soft yoghurt
26	-	-	5,000	500	Bulldozer and Tracter
33	-	-	-	-	Socks, Ready wears
36	-	-	-	1,000	Invitation card
54	-	-	15,000	2,000	Metal cupboard
250	-	-	-	-	Juice, Mineral water

Source : Study Team

Annex 3.2.2 Overall Results of Factory Interview Survey: Applicant Survey in Irbid, December, 1980

Sample Number	Sales (S) Lease (L) Either(E)	Land Demand (donum)	Payable Cost Purchase (JD/d)	Payable Cost Lease (JD/d/year)	Products
1	S	0.1	2,000	-	Breaks
2	S	0.05	2,000	-	Carpet trade
3	S	0.12	2,000	-	Breaks
4	L	0.15	-	150*1/	Lathery
5	L	0.6	-	150*	Car repairing
6	L	0.54	-	750	Car springs
7	L	0.06	-	200*	Car repairing
8	L	0.325	-	350*	Car cleaning
9	E	0.5	MKT2/	MKT	Black Smith
10	E	0.2	-	-	Black Smith
11	L	0.1	-	250*	Ovens, Water trunks
12	E	1.0	MKT	MKT	Lathery
13	E	1.0	2,000	100	Trade, Water tanks
14	L	1.0	-	MKT	Cement blocks
15	S	0.5	2,000	-	Cabinets
16	L	0.05	-	150*	Auto repair
18	E	0.5	10,000	200	Cabinet cloth,
21	L	0.06	-	325*	Carpentry
22	L	0.046	-	300*	Black Smith
23	L	0.2	-	200*	Car repairing
24	E	0.064	2,000	200*	Auto repair
25	L	0.032	-	60*	Carpenter
28	L	0.16	-	260	Black Smith
29	L	0.1	-	-	Doors, Windows
30	L	0.1	-	150*	Black Smith
31	L	0.1	-	100*	Lathery
32	L	0.14	-	250*	Hydraulic Jack
33	-	1.0	-	-	Auto body repair
34	L	0.1	-	200*	Auto repair
35	S	0.35	1,500	-	Auto repair
36	L	0.1	-	MKT	Auto parts dealer

Annex 3.2.2 (Continued)

Sample Number	Sales (S) Lease (L) Either(E)	Land Demand (donum)	Payable Cost Purchase (JD/d)	Payable Cost Lease (JD/d/year)	Products
37	L	0.12	-	320*	Black Smith
38	L	0.1	-	MKT	Auto parts dealer
40	L	0.25	-	250*	Body car
41	E	0.45	500	100*	Spare parts
42	L	0.1	-	150	Repairing cars
43	L	0.15	-	150*	Electrical parts for cars
44	E	0.054	MKT	100	Spare parts
45	L	0.4	-	270*	Spare parts, Second hand
46	L	0.15	-	150	Body cars
47	L	0.5	-	400*	Car painting
48	L	0.05	-	-	Tyre repair
49	L	0.04	-	100*	Spare parts
50	L	1.0	-	250*	Block factory
51	L	0.6	-	150*	Repairing car chair
53	E	13	3,000	2,000	Selling cars, Car parts
54	E	0.6	1,000	100	Spare parts, Tyres
55	L	0.4	-	150	Black Smith
56	L	0.4	-	150	Black Smith
57	L	1.0	-	100	Block
58	E	1.0	3,000	100	Block factory
59	L	1.0	-	150	Block factory
60	L	0.4	-	150	Black Smith
61	S	0.1	3,000	-	Black Smith
62	L	0.04	-	100	Maintenance car bodies
63	L	0.035	-	100	Metalic doors, Windows
64	L	1.0	-	300	Block manufacturing
65	L	2.0	-	100	Block manufactury
66	L	0.08	-	MKT	Doors, Alm. windows
67	L	2.0	-	300	Block factory
68	E	0.2	2,000	260	Alminium doors
69	E	0.1	3,000	200	Selling car oil
70	E	0.11	3,000	500	Selling tractors parts

Annex 3.2.2 (Continued)

Sample Number	Sales (S) Lease (L) Either(E)	Land Demand (donum)	Payable Cost Purchase (JD/d)	Payable Cost Lease (JD/d/year)	Products
71	E	1.4	1,500	300	
72	E	0.3	2,000	300	Iron for building
73	E	2.15	2,000	200	Block factory
74	E	0.15	2,000	350	Repairing cars
75	-	0.72	-	-	Carpenter
76	L	0.2	-	150	Boxes trucks
77	L	1.0	-	300	Repairing tire
78	L	0.4	-	150	Car painting
79	L	0.4	-	150	Maintaining body cars
80	L	0.5	-	200	Building materials
81	L	0.04	-	150	Repairing cars
82	E	0.1	2,000	180	Spare parts
83	L	0.024	-	100	Car electric
84	L	0.045	-	MKT	Black Smith
85	L	0.07	-	120	Building materials
87	L	0.12	-	120	Carpenter
88	E	0.05	5,000	300	Black Smith
89	L	0.024	-	100	Electric parts
90	L	0.225	-	250	Alminium
91	E	0.5	2,000	200	Car maintenance
92	E	0.1	1,000	200	Car painting
93	L	0.6	-	170	Spare parts
94	S	5.0	5,000	-	Factory for spring
96	L	0.6	-	200	
97	L	0.5	-	200	Block factory
98	L	1.0	-	250	Block factory
99	L	0.04	-	150	Repairing cars
103	L	0.04	-	200	Repairing cars
104	E	0.15	MKT	MKT	Doors
105	E	0.1	2,000	200	Repairing trucks
106	E	0.04	MKT	MKT	Selling car parts
107	L	0.072	-	150	Repairing tyre cars

Annex 3.2.2 (Continued)

Sample Number	Sales (S) Lease (L) Either(E)	Land Demand (donum)	Payable Cost Purchase (JD/d)	Payable Cost Lease (JD/d/year)	Documents
108	L	0.1	-	260	Spare parts
110	E	0.2	MKT	150	Bedrooms
111	E	0.5	MKT	MKT	Doors, Windows

Source : Study Team

Notes: 1/ * indicates payable lease per building

2/ MKT indicates market price

Annex 3.2.3 Overall Results of Factory Interview Survey:
Amman Interview Survey, December, 1980

Sample Number	Possibility to Move into IIE Yes/maybe	Sales (S) Lease (L) Either(E)	Land Demand (donum)	Desired Cost Purchase (JD/d)	Desired Cost Lease (JD/d/Year)
1	Yes	E	100	1,500	300
2	Yes	S	3	10,000	-
3	Yes	-	-	-	-
4	Yes	-	1.5	-	-
5	Yes	S	1.5	10,000	-
6	Yes	E	2	1,000	500
7	Yes	S	18	750	-
8	Maybe	E	10	5,000	50
9	Yes	E	2.4	5,000	200
10	Yes	E	1	5,000	100
11	Yes	-	10	-	-
12	Yes	E	-	10,000	2,000
13	Yes	-	5	-	-

Source : Study Team

Annex 3.3 Land and Floor Area Estimate for 101 Factories in the Applicant Survey

(Unit: m^2)

Sample Number	Industry Code	Land Area	Floor Area
1	7	60	36
2	8	980*2/	98
3	7	120	35*
4	1	130*	48
5	7	200*	60
6	7	180*	54
7	7	200*	60
8	7	300	150
9	1	500	90
10	1	500	200
11	1	270*	100
12	1	2,000	700
13	8	1,000	32
14	6	1,000	133*
15	2	500	205*
16	7	170*	50
17	2	500	205*
18	2	150*	60
19	1	120*	46
20	7	160	40
21	7	220*	64
22	2	80*	32
23	1	210*	80
24	2	100	50
25	1	100	50
26	1	160*	60
27	1	800*	250*
28	7	200*	60*
29	7	100	50
30	7	200*	60*
31	7	340*	100
32	1	330*	122
33	8	100	100
34	1	500	19*
35	7	200	50
36	7	200	100
37	7	100	50
38	1	150	56*
39	7	120	34
40	7	200*	60*

Annex 3.3 (Continued)

(Unit: m^2)

Sample Number	Industry Code	Land Area	Floor Area
41	7	200*	60*
42	7	200*	60*
43	7	200*	60*
44	7	200*	60*
45	6	1,200*	150*
46	7	200*	60*
47	7	200*	60*
48	8	3,000	120
49	7	600	176
50	1	800*	250*
51	1	800*	250*
52	6	1,200*	150*
53	6	1,200*	150*
54	6	1,200*	150*
55	1	800*	250*
56	1	270*	100
57	7	200*	60*
58	2	500*	200*
59	6	1,200*	150*
60	6	1,200*	150*
61	1	800*	250*
62	8	1,000*	100*
63	8	1,000*	100*
64	6	1,200*	150*
65	2	500*	200*
66	2	1,000*	400
67	6	1,200*	150*
68	6	2,000	150
69	7	200*	60*
70	2	500*	200*
71	7	200*	60*
72	7	1,000	294*
73	7	140*	40
74	2	980*	40
75	6	1,200	150
76	7	220*	64
77	7	340*	100
78	7	80*	24
79	1	800	250
80	6	1,200	150

Annex 3.3 (Continued)

Sample Number	Industry Code	Land Area	Floor Area
81	2	500	200
82	1	130*	50
83	1	60*	24
84	1	800	250
85	7	220*	64
86	2	240*	100
87	7	140*	40
88	1	5,000	2,000
89	2	150*	60
90	6	500	40
91	6	1,000	24
92	7	200	60
93	2	500	200
94	7	140*	40
95	2	500	200
96	7	340*	100
97	7	140*	40
98	7	610	32
99	7	340*	100
100	2	490*	200
101	2	490*	200

Source : Study Team

Note : 1/ Types of industries used here is as follows:

1 Metal Works; 2 Furniture and Room Units; 3 Food and Beverages; 4 Garments and Clothes; 5 Plastics and Chemicals; 6 Construction Materials; 7 Auto-repair Shops; 8 Trading; 9 Paper and Paper Products

2/ * indicates projected value based on the projection method mentioned in Section 3.3.2.

Annex 3.4 Result of the Survey of Small Scale Factories in Amman and Zarga Region Which Have Wished to Move into AIE: Industrial Development Bank

Type of Industry	Number of Workers	Present Floor Area (m^2)	Floor Area Demand (m^2)	Purchasing(P) or Renting(R)
1. Sesame	5	280*[1/]	550	P
2. Sesame	8	550	550	P
3. Sesame	6	380*	750	P
4. Iron chairs and Soffa	6	65*	200	P
5. Metalic materials for construction	4	650*	650	P
6. Furniture	18	400*	1,200	P
7. Plastic bags	10	300*	800	P
8. Detergents	2	200*	500	P
9. Nylon bags	4	120*	150	P
10. Tricot-clothes	22	253*	400	R
11. Trading	6	232*	390	R
12. Refrigerators and boilers	6	175	825	R
13. Housing materials of alminium	15	3,250	3,250	P
14. Trading	6	84	220	P
15. Carpentry	4	50	150	P
16. Carpentry	5	212*	390	P
17. Carpentry	3	120*	420	P
18. Alminium products	10	52*	650	P
19. Alminium products	8	350	1,050	P
20. Blacksmith	2	99*	550	P
21. Blacksmith	3	50	145	R
22. Blacksmith	3	40	40	P
23. Blacksmith	5	80	280	R
24. Lathing	2	176*	490	R
25. Lathing	3	100	200	P
26. Lathing	5	80	280	R
27. Lathing	3	60*	70	P
28. Lathing	5	60*	120	P

(cont'd)

Type of Industry	Number of Workers	Present Floor Area (m^2)	Floor Area Demand (m^2)	Purchasing(P) or Renting(R)
29. Lathing	4	100	550	P
30. Lathing	5	125	600	R
31. Lathing	15	3,000	3,000	P
32. Car-repairing	3	52*	155	P
33. Repairing	4	90	290	P
34. Repairing	5	100	230	R
35. Repairing	3	100	250	R
36. Repairing	3	40	250	R
37. Repairing	3	80	365	P
38. Repairing	7	409	480	R
39. Repairing	5	109	180	R
40. Repairing	4	70	230	P
41. Repairing	3	40	75	P
42. Repairing	3	60	255	P
43. Repairing	2	90	280	R
44. Repairing	6	600	490	R
45. Repairing	3	130	290	P
46. Repairing	6	100	140	P
47. Repairing	4	70	236	R

Source: Industrial Development Bank

Note: * indicates rental floor.

Annex 3.5 Distribution of Agricultural Production by Governorate

(1) Field Crops

Districts / Products	Ma'an	Karak	Balqa	Irbid	Amman	Total	(Production in tons)
Wheat	0.0523	0.2608	0.0284	0.3865	0.2720	1.0000	(15002.8)
Barley	0.1420	0.3604	0.0277	0.2030	0.2669	1.0000	(4404.5)
Lentils	0.0069	0.1421	0.0679	0.4886	0.2945	1.0000	(792.3)
Vetch	0.0001	0.0677	0.1108	0.7628	0.0586	1.0000	(1077.7)
Check, Peas	0.0197	0.3783	0.0522	0.2733	0.2766	1.0000	(416.1)
Broom Millet	-	0.7560	-	0.2062	0.0378	1.0000	(532.0)
Tobacco, Local	-	-	0.3726	0.0499	0.5775	1.0000	(186.5)
Vetch Common	-	-	-	0.1987	0.8013	1.0000	(46.3)
Tobacco	-	-	0.8939	-	0.1061	1.0000	(180.9)
Clover	0.8116	0.0565	-	-	0.1319	1.0000	(5840.4)
Maize	-	0.0346	-	0.0106	0.9548	1.0000	(395.9)
Broad Beans (dry)	0.0018	-	-	0.9982	-	1.0000	(54.8)
Onion (dry)	-	-	-	1.0000	-	1.0000	(169.7)
Sesame	-	-	0.1364	0.8636	-	1.0000	(6.6)
Fenugreek	-	-	-	1.0000	-	1.0000	(7.4)

(2) Vegetables

Products \ Districts	Ma'an	Karak	Balqa	Irbid	Amman	Total	(Production in tons)
Tomato	0.0109	0.0087	0.1186	0.3136	0.5482	1.0000	(33662.5)
Eggplant	0.0026	-	-	0.1536	0.8438	1.0000	(2693.0)
Squash (summer)	0.0075	0.0484	0.0094	0.8278	0.1069	1.0000	(1377.6)
Cucumber	0.0167	0.0038	0.2228	0.3139	0.4428	1.0000	(6693.4)
Pepper	0.0144	-	-	0.4604	0.5252	1.0000	(430.1)
Cauliflower	0.0007	-	-	0.2744	0.7249	1.0000	(3205.1)
Okra	0.0006	0.0101	0.0412	0.8581	0.0900	1.0000	(1462.6)
Snake Cucumber	0.0157	0.1273	-	0.7430	0.1140	1.0000	(1111.5)
Sweet Melon	0.0184	0.0093	-	0.7678	0.2045	1.0000	(5947.7)
Water Melon	0.0075	0.0058	-	0.8530	0.1337	1.0000	(3232.5)
Cow-peas	-	-	0.0063	0.8224	0.1713	1.0000	(143.0)
Pumpkin	-	-	-	1.0000	-	1.0000	(11.8)
String Beans	0.0497	-	0.0970	0.1456	0.7077	1.0000	(84.5)
Peas	0.0148	-	-	0.0922	0.8930	1.0000	(27.1)
Broad Beans	0.0080	-	0.1133	0.6612	0.2175	1.0000	(1052.6)
Radish	0.0268	-	-	0.1407	0.8325	1.0000	(78.2)
Onion (green)	0.0054	0.1581	0.0112	0.6433	0.1819	1.0000	(277.0)
Potato	0.1504	-	-	0.0775	0.7721	1.0000	(318.6)
Parsley	0.0030	-	-	-	0.9970	1.0000	(237.0)
Lettuce	0.0012	-	-	0.9988	-	1.0000	(1018.8)
Cabbage	-	-	-	1.0000	-	1.0000	(706.4)
Jew's Mallow	0.0129	-	-	0.9871	-	1.0000	(100.6)

(3) Fruits

Products \ Districts	Ma'an	Karak	Balqa	Irbid	Amman	Total	(Production in tons)
Olives	0.0092	0.0828	0.1203	0.6983	0.0894	1.0000	(6842.0)
Grapes	0.0175	0.1305	0.1162	0.4329	0.3029	1.0000	(22669.7)
Figs	0.0452	0.1577	0.0289	0.6136	0.1546	1.0000	(422.3)
Pomegranats	0.0108	0.0295	0.0143	0.7430	0.2024	1.0000	(1778.3)
Almonds	0.0114	0.0647	0.1032	0.4949	0.4018	1.0000	(888.2)
Apricots	0.0944	0.1940	0.1781	0.4760	0.0575	1.0000	(233.0)
Apples	0.1521	0.0237	0.0070	0.7457	0.0715	1.0000	(847.5)
Pears	0.1668	0.0456	0.0765	0.1840	0.5271	1.0000	(116.3)
Peaches	0.2130	0.0650	0.2518	0.1489	0.3213	1.0000	(337.1)
Plums	0.0083	0.0763	0.1264	0.5250	0.2640	1.0000	(205.7)
Cherries	0.1339	0.1156	0.0872	0.0872	0.5761	1.0000	(49.3)
Berries	-	-	0.3520	0.5306	0.2194	1.0000	(19.6)
Quince	0.0214	0.0062	-	0.0209	0.9515	1.0000	(177.3)
Pistschienut	0.9806	-	0.0194	-	-	1.0000	(10.3)
Walnut	-	-	-	0.0703	0.9297	1.0000	(12.8)
Lemon	-	0.0012	0.0568	0.7701	0.1719	1.0000	(498.0)
Orange	-	0.0044	-	0.9956	-	1.0000	(1766.7)
Clementine	-	-	-	0.7436	0.2564	1.0000	(70.2)
King Mandarin	-	-	-	1.0000	-	1.0000	(75.9)
Sourorange	-	-	-	-	-		
Pummelor	-	-	-	1.0000	-	1.0000	(6.6)
Grape Fruit	-	-	-	1.0000	-	1.0000	(11.3)
Green Prunes	-	-	-	0.3196	0.6804	1.0000	(165.5)
Prunes	0.0333	0.0530	0.0717	0.6917	0.1503	1.0000	(117.1)
Bananas	-	-	0.0078	0.9922	-	1.0000	(540.0)
Loquat	-	0.0092	0.0015	0.8484	0.1409	1.0000	(65.3)
Nectarin	1.0000	-	-	-	-	1.0000	(3.8)
Date Palm	0.9928	-	-	0.0072	-	1.0000	(13.9)
Citrusfruits	1.0000	-	-	-	-	1.0000	(0.4)

Source: Agricultural Sample Survey, Ministry of Agriculture, 1979.

Annex 3.6 Provisional Composition of Common Metal Workshop

The provisional composition of common metal workshop is as follows:

(Price: in thousand yen)

Machines	Quantity	Unit Price on Site of Maker's Plant	Total Price
(1) Cutting and Welding Machines			
High-speed Cut off Machine	3 units	500	1,500
Pipe Threading Machine	3 units	500	1,500
Band Sawing Machine	1 unit	5,000	5,000
Cutting Machine (by gas barner)	4 units	200	800
Cutting and Welding Machine (by prazma arc)	1 unit	3,500	3,500
Electric Welder (Arc Welder)	3 units	500	1,500
Argon Welder	2 units	1,000	2,000
Sub-total	-	-	(15,800)
(2) Machine Tools			
Precision Engine Lathe	1 unit	5,000	5,000
Precision Lathe	3 units	2,000	6,000
Hydraulic Pipe Bender	3 units	1,500	4,500
Hydraulic Pushing Press	1 unit	2,000	2,000
Hydraulic Bending Roll	1 unit	5,000	5,000
Square Shearing Machine	1 unit	3,000	3,000
Thereading Machine	2 units	2,000	4,000
Upright Drilling Machine	2 units	1,500	3,000
Bench Drilling Machine	2 units	300	600
Cast Iron Surface Plate	3 units	1,000	3,000
Radial Drilling Machine	1 unit	4,000	4,000
Shopping Machine	1 unit	3,500	3,500
Surface Grinder	1 unit	4,000	4,000
Face Lathe	1 unit	4,000	4,000

(cont'd)

Machines	Quantity	Unit Price on Site of Maker's Plant	Total Price
Universal Milling Machine	1 unit	5,000	5,000
Electric Spot Welding Machine	2 units	2,000	4,000
Hydraulic Press Broke	1 unit	3,000	3,000
Angle Bender	1 unit	2,500	2,500
By-blow Shearing Machine	2 units	1,500	3,000
Sub-total	-	-	(69,100)
(3) Tooling Machines			
Universal Tool and Cutter Grinder	1 unit	1,000	1,000
Drill Grinder	2 units	900	1,800
Bits Grinder	2 units	900	1,800
Hardness Tester (Shore Type)	3 units	300	900
V Block with Clamp	4 units	150	600
Baby Compressor	2 units	500	1,000
Sub-total	-	-	(7,100)
(4) Other Equipments			
Overhead Travelling Crane	1 unit	3,000	3,000
Steel Rock, Adjusting Shelf	1 unit	1,000	1,000
Carrier (for materials, parts and tools)	1 unit	3,000	3,000
Hand Tools	1 unit	3,000	3,000
Working Tables	1 unit	2,000	2,000
Sub-total	-	-	(12,000)
Total			(104,000)

The delivered price on site of common workshop with regard to a typical machine can be estimated by to the following procedures.

(1) In the case of a Precision Engine Lathe, price on site of maker's plant in Japan is 5 million yen in 1980. Net weight of this machine is 2,150 kg.

(2) FOB price of this machine will be:

5 million yen x 1.10 = 5.50 million yen (A)

(3) Ocean Freight will be:

5.50 million yen x 0.10 = 0.55 million yen (B)

(4) Insurance will be:

5 million yen x 0.05 = 0.25 million yen (c)

(5) CIF price at Aqaba port shall be:

(A + B + C) = 6.30 million yen (D)

(6) Import tax will be:

CIF price x 0.06 = 0.378 million yen (E)

(7) CIF price including import tax will be:

D + E = 6.678 million yen (F)

Since the exchange rate was Yen 1,000 = JD 1,333, 6.678 million yen is equal to JD 8,904.

(8) Multiplier for CIF price against price on site of maker's plant will be:

F/(price on site of maker's plant) = 6.678/5.000
= 1.3356 (G)

(9) Transportation expence from Aqaba to Irbid (on site) will be:

2.150 tons x 5.5 JD/ton = 11.825 JD (H)

(10) Delivery price at site of common workshop will be:

8,904 + 11.825 = 8,915.825 JD (I)

(11) Multiplier for delivery price at site against CIF price at Aqaba (including import tax) will be:

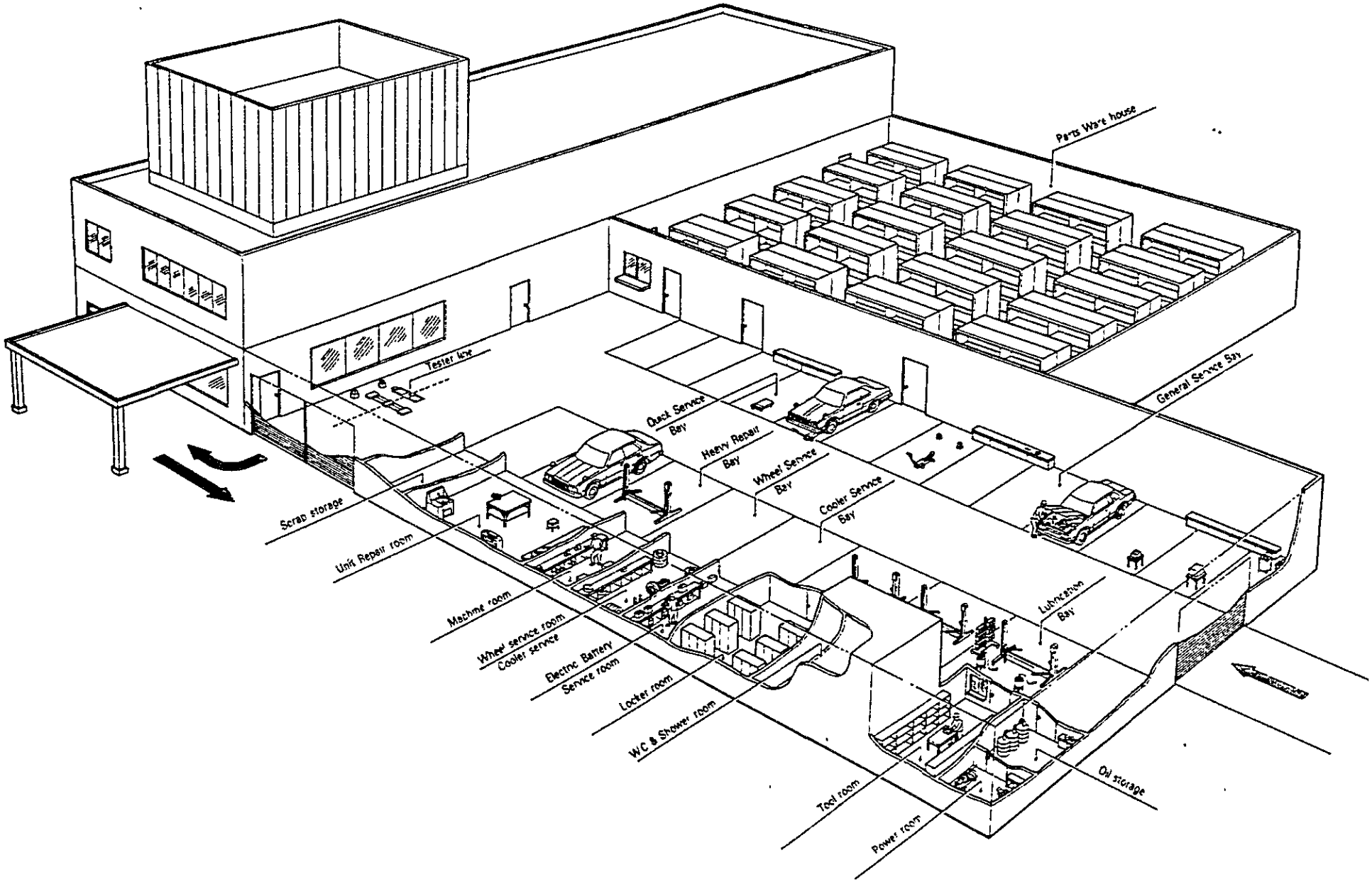
(I)/(F) = 1.0013 (J)

By using (G) and (J), the total price of machineries and equipments can be roughly estimated based a total price on the site of maker's plant. Total price of machineries and equipments on the site of maker's plant was estimated as 104 million yen. CIF price at Aqaba including import tax will be 139.4 million yen which is equal to JD185,200. Then, the price at the site of common workshop will be JD185,400.

104 million yen x 1.3356 = 139.4 million yen
≒ JD 185,200

JD 185,200 x 1.0013 ≒ JD 185,400

Annex 3.7 A Scope of Automobile Service Shop



Annex 3.8 Provisional Composition of Comprehensive Automobile Service Shop

Following equipment is required for each job in Comprehensive service shop.

(1) Equipment for Quick (General) Service Bay (2 bays)

Head light tester	1 unit
Engine checker	1 "
Tool porter	1 "
Fender cover	2 units
Seat cover	2 "
Compression gauge	1 unit
Radiater cap tester	1 "
Plug gap gauge	1 "
Hand tool set in box	1 "

(2) Equipment for Heavy Repair Bay

2-post lift	1 unit
Auto-crane	1 "
Tool porter	1 "
Parts cady	1 "
Hand tool set in box	1 "
Hydraulic press	1 "
Parts washer	1 "
Electric drill	1 "
Electric grinder	1 "
Work bench	1 "
V block	1 "
Surface plate	1 "
Dial gauge	1 "
Vernier caliper	2 units
Torque wrench	2 "
Micro meter	1 unit
Bearing puller	1 "
Thickness tape	2 units

(3) Equipment for Wheel and Cooler Service Bay

Wheel balancer (off the car)	1 unit
Tire inflator	1 "
Tire gauge	2 units
Cooler charger	1 unit
Gas leak detector	1 "
Hand tool set in box	1 "
Tool porter	1 "
Parts cady	1 "
Brake tube lock nut wrench	1 "
Garage jack	1 "
Rigid rack	4 units

(4) Equipment for Lubrication Bay

Portable oil lubricator	2 units
Drum can pump	1 unit
Drum can wrench	1 "
Oiler	2 units
Oil drain	1 unit
Grease gun	1 "
Hand tool set in box	1 "
Tool porter	1 "

(5) Equipment for Washing Bay

Steam cleaner	1 unit

(6) Equipment for Body Repair and Painting Bay

Fender tool set	1 unit
Power set	1 "
Body puller	1 "
Disc grinder	1 "
Disc sander	1 "
Spot welder	1 "
Gas welder	1 "
Infrared drier stand	4 units
Hand tool set in box	1 unit

(7) Equipment for Electric and Battery Service Bay

V.A. ohm meter	1 unit
Meggar	1 "
Spark plug cleaner and tester	1 "
Air filter tester	1 "
Dynamo regulator tester	1 "
Starter tester	1 "
Battery charger	1 "
Battery hydrometer	1 "

Annex 4.1 Water Quality at the Sources of Supply

Source	Date	TDS mg/ℓ	Cl- mg/ℓ	Ca++ mg/ℓ	Mg++ mg/ℓ	Na++ mg/ℓ	K+ mg/ℓ	So_4-- mg/ℓ	Co_3-- mg/ℓ	NO_3 mg/ℓ	PH
1. Azraq-Urah	Dec. 9, 1980	326	32.13	16.6	9.48	33.87	3.23	54.00	7.20	10.85	8.36
2. Azraq-Qesiyah	Oct. 7, 1980	1,186	213.86	42.2	16.80	154.55	7.41	98.80	10.80	16.61	8.10
3. Azraq-Soda	Oct. 7, 1980	928	154.53	27.4	16.32	113.63	6.84	74.00	10.20	16.26	8.10
4. Dhuleil No.25	Oct. 6, 1980	1,814	389.47	172.2	139.44	96.14	7.98	152.40	0	93.92	7.80
5. Dhuleil No.17	Oct. 6, 1980	1,942	437.24	89.80	213.72	110.55	8.93	187.60	0	88.60	7.80
6. Sumayeh No.7	Dec. 30, 1979	411	51.68	22.20	20.16	44.00	3.04	35.60	0	25.25	7.87
7. El Aqib No.93	Nov. 24, 1980	375	37.91	24.00	7.80	37.40	3.23	28.80	4.80	22.14	8.10
8. Sumayeh No.6	May 5, 1980	418	44.20	21.60	17.04	42.90	3.04	40.00	4.80	21.61	8.18
9. Yarmouk River	May 15, 1980	554	51.51	48.80	33.00	38.50	2.09	56.00	8.70	19.70	8.10

Source: Natural Resources Authority, Water Research Laboratories, Report on Water Examination.

Annex 4.2 Projected Water Deamnd for Commercial and Industrial Use

This is a summary presentation of water demand projection made by Weston, Inc. in "The Feasibility Report and Preliminary Engineering Studies, Irbid Municipal Water Distribution, Sewerage, Storm Drainage and Solid Waste Disposal Project."

First, the following rates of domestic and total demand per capita per day are used as the basis for demand projection.

Rates of Water Demand

(Unit: liters/capita/day)

	Year			
	1975	1980	1990	2000
(1) Domestic	70	75	85	95
(2) Total (Gross)	118	126	144	160

The total gross figures includes an allowance of 20 percent for system losses. Therefore, the total net figures can be derived by subtracting an allowance of 20 percent.

Rates of Total Net Demand

(Unit: liter/capita/day)

	Year			
	1975	1980	1990	2000
(3) Total (Net)	94.4	100.8	115.2	128.0

The difference between the net total demand and domestic demand becomes commercial and industrial demand in term of liter/capita/day as follows:

Commercial and Industrial Demand

(Unit: liter/capita/day)

	Year			
	1975	1980	1990	2000
(4) Commercial and Industrial Demand	24.4	25.8	30.2	33.0

Commercial and industrial demand in the Municipality can be derived by multiplying commercial and industrial demand in terms of per capita per day by the projected population of the Municipality.

Commercial and Industrial Demand in the Municipality

	Year			
	1975	1980	1990	2000
(5) Projected Population	128,000	166,000	242,000	353,400
Commercial and Industrial Demand (5)x(4)	3,123 m^3/day	4,283 m^3/day	7,308 m^3/day	11,649 m^3/day

Annex 4.3 Excerpt of Electricity Tariffs, 1980[1/]

First: Bulk Supply Tariff:

1. By virtue of Article (31) of the General Electricity Law No. (8) of 1976, the prices of electrical energy supplied by Jordan Electricity Authority are determined as follows:

   A. Maximum Demand Tariff:

   The maximum demand tariff is a monthly lump sum for monthly maximum load which occures at the peak period (defined below) for a duration of half an hour at least:

   . All governorates J D 2.40/kW/month

   B. Day Energy Tariff:

   The day Energy Tariff is applied for each kWh sold during the day period between 0700 hours and 2300 hours, or any period may be defined by JEA in the future.

. Amman and Balqa governorates	18.5 Fils/kWh
. Irbid governorate	17.5 Fils/kWh
. Other governorates	18.5 Fils/kWh

   C. Night Energy Tariff:

   The night energy tariff is applied for each kWh sold during the night period between 2300 hours and 0700 hours or any other period may be defined by JEA in the future.

. Amman and Balqa governorates	13.5 Fils/kWh
. Irbid governorate	12.5 Fils/kWh
. Other governorates	13.5 Fils/kWh

2. The above energy rates will be increased by 0.041 fils/kWh for each 100 fils increase in the cost of fuel oil and diesel above JD (30)/ton of fuel oil and JD (42.0)/ton of diesel. In this case, the price of the kWh sold in the concession areas of the Power companies may be increased by 0.047 fils/kWh for each (100) fils increase in the fuel prices as above and after the official approval of JEA.

1/ Source: Jordan Electric Authority, February 1980

3. Electricity bills should be paid monthly. Whenever delay of payment of bills exceeds a period of one month after these payments are due, an interest of 1 percent per month will be applied on amounts due and not paid.

4. The monthly maximum demand is defined as the maximum load in kW occures during the peak period defined below for a period of half an hour at least.

5. The peak period is defined as the period between 1800 hours and 2300 hours in Summer (from May, 1st to October, 31st) and between 1600 hours and 2300 hours in Winter (from November, 1st to April, 30th). This time could be changed by JEA.

6. The consumers should undertake to improve the power factor at their premises at their own expenses to be not less than (0.85). In case of any decrease in the power factor below (0.85), the consumer will pay in addition to his electricity bill the following penalties:

Consumers Power Factor	Penalties
0.85 or more	Nill.
0.85 - 0.70	0.77 percent of the total bill for every 0.01 of the power factor less than 0.85.
0.70 - 0.60	0.95 percent of the total bill for every 0.01 of power factor less than 0.85.
0.60 - 0.50	1.2 percent of the total bill for every 0.01 of power factor less than 0.85.
less than 0.50	1.5 percent of the total bill for every 0.01 of power factor less than 0.85.

JEA has the right not to supply any consumer if his low power factor affects the system and no action has been taken by him to improve it.

Second: Retail Tariff:

By virtue of articles (31) and (32) of the General Electrical Law No. (8) of 1976 the prices of electrical energy supplied in retail

by JEA and electricity companies in their concession areas are determined as follows:

A. Domestic Tariff:

This tariff is applied to domestic purposes, public buildings, hospitals, worship places, broadcasting and TV single and three phase supplies:

. Amman and Balqa governorates	37 Fils/kWh
. Irbid governorate	52 Fils/kWh
. Other governorates	37 Fils/kWh

B. Commercial Tariff:

This tariff is applied to commercial stores, hotels, restaurant, entertainment centers, cinemas, and etc., single and three phase supplies.

. Amman and Balqa governorates	45 Fils/kWh
. Irbid governorate	57 Fols/kWh
. Other governorates	45 Fils/kWh

C. Small Industries Tariff:

This tariff is applied to small industrial consumers who are supplied from LV networks for single and three phase.

First Block: From 1-2500 kWh/month

. Amman and Balqa governorates	39 Fils/kWh
. Irbid governorate	44 Fils/kWh
. Other governorates	39 Fils/kWh

Second Block: over 2500 kWh/month

. Amman and Balqa governorates	27 Fils/kWh
. Irbid governorate	34 Fils/kWh
. Other governorates	27 Fils/kWh

D. Large Industries Tariff:

This tariff is applied to large industrial consumers who are supplied from the H V networks or supplied from L V networks and their maximum demand exceeds 500 kW.

D-1 Maximum Demand Tariff:

As a monthly lump sum for monthly maximum demand which occures at the peak period for half an hour at least.

. Amman and Balqa governorate	JD 3.050/kW
. Irbid governorate	JD 3.050/kW
. Other governorates	JD 3.050/kW

D-2 Day Energy Tariff:

The day energy tariff is applied for each kWh sold during the day period between 0700 hours and 2300 hours or any period may be defined by JEA in the future.

. Amman and Balqa governorates	23 Fils/kWh
. Irbid governorate	22 Fils/kWh
. Other governorates	23 Fils/kWh

D-3 Night Energy Tariff:

Night energy tariff is applied for each kWh sold during the night period between 2300 hours and 0700 hours, or any orher period may be defined by JEA in the future.

. Amman and Balqa governorates	15 Fils/kWh
. Irbid governorate	14 Fils/kWh
. Other governorates	15 Fils/kWh

D-4 Flat Rate Tariff:

As an alternative for the large industries tariff JEA could apply in its distribution areas a bulk supply flat rate tariff of 33 fils/kWh.

Annex 7.1 Unit Cost by Work Item

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
I. Land Development					
1. Earth Work and Site Preparation (per 1,000m^2)				1,000	
Fuel	ℓ	480	1	480	F
Material	set	1		50	L
S. Labor 1/	person	4	10	40	L
Us. Labor 2/	person	5	8	40	L
Us. Labor	person	5	8	40	F
Machine (Bullodozer 11 t)	set	1		300	F
C. P. 3/	set	1		50	
2. Road Pavement (per 100m^2)				665	
Asphalt	t	26.0	16	416	F
Fuel	ℓ	43.0	1	43	F
Quarrying	m^3	37.667	3	113	L
S. Labor	person	1.32	10	13.2	L
Us. Labor	person	3.30	8	26.4	F50% L50%
Machine	set	1		20.1	F
C. P.	set	1		33.3	
3. Street Light (per 100m)				1,737	
Street Light		10	100	1,000	F
Material	set	1		290	F
S. Labor	person	16.1	10	161.3	L
Us. Labor	person	6.25	8	49.7	F
Us. Labor	person	4.625	8	37.2	L
Machine	set	1		111.7	F
C. P.				87	
4. Drainage (per 100m)				2,090	
Concrete	m^3	13.428	35	470	F75% L25%
Stone	m^3	25.33	3	76	L
Form	m^2	75	5.2	390	L
Fuel	ℓ	106.5	1	106.5	L
S. Labor	person	31.45	10	314.5	L
Us. Labor	person	63.125	8	505	F50% L50%
Machine	set	1		124	F
C. P.	set	1		104	

Note: 1/ Skilled labor
2/ Unskilled labor
3/ Contractor's profit

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
5. Sewerage Pipe and System (per 100m)				4,062	
Pipe ϕ200	m	88	6.0	624	L
ϕ250		12	8.0		
Concrete	m^3	10.65	35	373	F75% L25%
Stone	m^3	105	3	315	L
Form	m^2	37.5	5.2	195	L
Fuel	ℓ	87	1	87	L
Manhole		5.5	129.2	711	L
S. Labor	person	44.9	10	449	L
Us. Labor	person	91.875	8	735	F50% L50%
Machine	set	1		368	L
C. P.	set	1		205	
6. Sewerage Pump Station				69,000	
Sewerage Pump ($750m^3$/day)	set	1		41,000	F75% L25%
Concrete	m^3	250	35	8,750	F75% L25%
Reinforcing Bar (SD 30)	t	32	170	5,440	L
Stone	m^3	316.7	3	950	L
Form	m^2	800	5.2	4,162.5	L
Fuel	ℓ	497.5	1	497.5	L
Material	set	1		2,000	F50% L50%
S. Labor	person		10	700	
Us. Labor	person		8	1,400	F50% L50%
Machine	set	1		700	
C. P.	set	1		3,400	
7. Water Supply System (per 100m)				899	
Dactile Pipe (ϕ100)	m	19	3.0	57	F
Dactile Pipe (ϕ150)	m	32	4.5	144	F
Dactile Pipe (ϕ200)	m	49	6.0	294	F
Other Material	set	0.5	300.0	150	F
Fuel	ℓ	74	1.0	74	F
S. Labor	person	3.48	10.0	34.8	F50% L50%
Us. Labor	person	4.35	8.0	34.8	F50% L50%
Machine	set	1		63.9	F
C. P.	set	1		46.5	

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
8. Water Reservoir				126,000	
Pump (750m³/day)	set	1		52,800	F75% L25%
Concrete	m^3	500	35	17,500	F75% L25%
Reinforcing Bar (SD 3D)	t	64	170	10,880	L
Steel Frame	t	38.235	170	6,500	L
Stone	m^3	300	3	900	L
Form	m^2	1,408.6	5.2	7,325	L
Fuel	ℓ	995	1	995	L
Material	set	1		4,000	F50% L50%
S. Labor	person			5,000	L
Us. Labor	person			10,000	F50% L50%
Machine	set			3,800	L
C. P.	set			6,300	
9. Landscaping (per 100m²)				209.7	
Plants & Others	m^2	1	1,153	115.3	L
S. Labor	person	3.31	10	33.1	L
Us. Labor	person	6.35	8	50.8	F50% L50%
C. P.	set	1		10.5	

II. Standard Factory Building Type A (Unit = 72m²)

1. Material				2,591.3	F 906.355 L1684.945
Temporary Works	m^2	72	1.8	129.6	
Earth Works	m^2	72	1.2	86.4	
Concrete	m^3	14.34	35	501.9	F50% L50%
Form	m^2	52	5.2	270.4	F5% L95%
Reinforcing Bar	t	1.8	170	306	F50% L50%
Steel Frame	t	3.8	170	646	F50% L50%
Plaster	m^2	61.2	2.5	153	
Concrete Block	m^2	30.6	6	183.6	
Other Works	set	1		314.4	14% of the above

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
2. Machine				907	
Water Pipe	m^2	72	2.1	151.2	
Drainage Pipe	m^2	72	2.1	151.2	
Sanitary	m^2	72	1.62	116.64	
Other Works	set	1		442.6	
Hire	set	1		45.36	5% of the above
3. Labor				604.76	
Us. Labor	person	21.61	8	172.88	F
Us. Labor	person	21.61	8	172.88	L
S. Labor	person	25.9	10	259	L
4. Contractor's Profit				215.783	
C. P.	set	1		215.783	
Total				4,318.843	

III. Standard Factory Building Type B (Unit = 128m^2)

1. Material				4,606.8	F1,611.3 L2,995.5
Temporary Works	m^2	128	1.71	218.88	
Earth Works	m^2	128	1.14	145.92	
Concrete	m^3	28	35	980	F50% L50%
Form	m^2	91.3	5.2	474.76	F5% L95%
Reinforcing Bar	t	3.9	170	663	F50% L50%
Steel Frame	t	5.5	170	935	F50% L50%
Plaster	m^2	93.5	2.5	233.75	
Concrete Block	m^2	46.7	6	280.2	
Other Works	set	1		675.29	17% of the above

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
2. Machine				1,612.43	
Water Pipe	m^2	128	1.14	145.92	
Drainage Pipe	m^2	128	1.14	145.92	
Sanitary	m^2	128	0.855	109.44	
Other Works	set	1		1,130.51	
Hire	set	1		80.64	5% of the avobe
3. Labor				1,075.13	
Us. Labor	person	38.4175	8	307.34	F
Us. Labor	person	38.4175	8	307.34	L
S. Labor	person	46.045	10	460.45	L
4. Contractor's Profit				383.615	
C. P.	set	1		383.615	
Total				7,677.975	

IV. Custom Built Factory Type I (Unit = $360m^2$)

1. Material				14,038	F5,381.0 L8,657.0
Temporary Works	m^2	360	1.95	702	
Earth Works	m^2	360	1.625	585	
Concrete	m^3	64.6	35	2,261	F70% L30%
Form	m^2	133.25	5.2	692.9	F5% L95%
Reinforcing Bar	t	4.94	170	839.8	F70% L30%
Steel Frame	t	18.98	170	3,226.6	F70% L30%
Plaster	m^2	682.5	2.5	1,706.25	
Concrete Block	m^2	341.25	6	2,047.5	
Other Works	set	1		1,976.95	14% of the above

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
2. Machine				4,913.2	
Water Pipe	m^2	360	0.975	351	
Drainage Pipe	m^2	360	0.975	351	
Sanitary	m^2	360	0.975	351	
Other Works	set	1		3,614.5	
Hire	set	1		245.7	5% of the above
3. Labor				3,276.02	
Us. Labor	person	117.045	8	936.36	F
Us. Labor	person	117.045	8	936.36	L
S. Labor	person	140.33	10	1,403.3	L
4. Contractor's Profit				1,169.42	
C. P.	set			1,169.42	
Total				23,396.64	

V. Custom Built Factory Type II (Unit = $720m^2$)

1. Material				28,076	F10,762.115 L17,313.885
Temporary Works	m^2	720	2.5	1,836	
Earth Works	m^2	720	2.1	1,530	
Concrete	m^3	125	35	4,375	F70% L30%
Form	m^2	242.25	5.2	1,259.7	F5% L95%
Reinforcing Bar	t	6.29	170	1,069.3	F70% L30%
Steel Frame	t	40.8	170	6,936	F70% L30%
Plaster	m^2	986	2.5	2,465	
Concrete Block	m^2	493	6	2,958	
Other Works	set	1		5,647	25% of the above

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
2. Machine				9,826.5	
Water Pipe	m^2	720	1.275	918	
Drainage Pipe	m^2	720	1.275	918	
Sanitary	m^2	720	1.275	918	
Other Works	set	1		6,581.2	
Hire	set	1		491.3	
3. Labor				6,552.04	
Us. Labor	person	234.09	8	1,872.72	F
Us. Labor	person	234.09	8	1,872.72	L
S. Labor	person	280.66	10	2,806.6	L
4. Contractor's Profit				2,338.46	
C. P.	set	1		2,338.46	
Total				46,793	

VI. Center Building (Unit = 3,500m^2)

1. Material				199,600	F76,562.48 L123,237.52
Temporary Works	m^2	3,500	1.6	5,600	
Earth Works	m^2	3,500	6	21,000	
Concrete	m^3	886	35	31,010	F70% L30%
Form	m^2	5,468	5.2	28,433.6	F5% L95%
Reinforcing Bar	t	109.2	170	18,564	F70% L30%
Plaster	m^2	3,400	2.5	8,500	
Glass	m^2	582.8	25	14,570	F70% L30%
Steel Fittings	set	216	200	43,200	F70% L30%
Water Proof	m^2	775.2	5	3,876	
Other Works	set	1		24,846.4	14.2% of the above

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
2. Machine				69,900	
Water Pipe	m^2	3,500	1.6	5,600	
Drainage Pipe	m^2	3,500	2	7,000	
Sanitary	m^2	3,500	0.6	2,100	
Other Works	set	1		51,705	
Hire	set	1	-	3,495	5% of the machine
3. Labor				46,600	
Us. Labor	person	1,662.5	8	13,300	F
Us. Labor	person	1,662.5	8	13,300	L
S. Labor	person	2,000	10	20,000	L
4. Contractor's Profit				16,700	
C. P.	set	1		16,700	5% of the works
Total				333,000	

Annex 7.2 Reduced Unit Cost of Buildings

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
I. Standard Factory Buildings Type B (Unit 72 m^2)					
1. Material				2,072.4	F 725.1 L 1,347.3
Temporary Works	m^2	72	1.8	129.6	
Earth Works	m^2	72	1.2	86.4	
Concrete	m^3	9.5	35	332.5	F50% L50%
Form	m^2	35	5.2	182	F 5% L95%
Reinforcing Bar	t	1.0	170	170	F50% L50%
Steel Frame	t	3.6	170	612	F50% L50%
Asbest Cement Board	m^2	35.7	5	178.5	
Concrete Block	m^2	15.3	6	91.8	
Other Materials	set	1		289.6	F54.8% L45.2%
2. Machine				725.3	F
Water Pipe	set	1		120.8	
Drainage Pipe	set	1		120.8	
Sanitary	set	1		93.6	
Other Works	set	1		354.1	
Hire	set	1		36	
3. Labor				483.8	
Us. Labor 1/	person	17.3	8	138.4	F
Us. Labor	person	17.3	8	138.4	L
S. Labor 2/	person	20.7	10	207	L
4. Contractor's Profit				173.5	
C.P. 3/	set	1		173.5	
Total				3,455	

Notes: 1/ Unskilled labor
2/ skilled labor
3/ Contractor's profit

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
II. Standard Factory Building Type B (Unit = 128 m^2)					
1. Material				3,685.0	F 1,289 L 2,396
Temporary Works	m^2	128	1.7	217.6	
Earth Works	m^2	128	1.1	140.8	
Concrete	m^3	19.7	35	689.5	F50% L50%
Form	m^2	64.1	5.2	333.3	F 5% L95%
Reinforcing Bar	t	2.0	170	340	F50% L50%
Steel Frame	t	6.4	170	1,088	F50% L50%
Asbest Cement Board	m^2	57.4	5	287	
Concrete Block	m^2	24.6	6	147.6	
Other Materials	set	1		441.2	F48.4% L51.6%
2. Machine				1,289.4	F
Water Pipe	set	1		116.7	
Drainage Pipe	set	1		116.7	
Sanitary	set	1		87.5	
Other Works	set	1		904.0	
Hire	set	1		64.5	
3. Labor				859.2	
Us. Labor	person	30.7	8	245.6	F
Us. Labor	person	30.7	8	245.6	L
S. Labor	person	36.8	10	368	L
4. Contractor's Profit				306.9	
C.P.	set	1		306.9	
Total				6,140.5	

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
III. Custom Built Factory Type I (Unit = 360 m^2)					
1. Material				11,230.4	F 4,304.1 L 6,926.3
Temporary Works	m^2	360	1.9	684	
Earth Works	m^2	360	1.6	576	
Concrete	m^3	49.7	35	1,739.5	F70% L30%
Form	m^2	102.5	5.2	533	F 5% L95%
Reinforcing Bar	t	3.8	170	646	F70% L30%
Steel Frame	t	18	170	3,060	F70% L30%
Asbest Cement Board	m^2	367.5	5	1,837.5	
Concrete Block	m^2	157.5	6	945	
Other Materials	set	1		1,209.4	F38.5% L61.5%
2. Machine				3,930	F
Water Pipe	set	1		280.8	
Drainage Pipe	set	1		280.8	
Sanitary	set	1		280.8	
Other Works	set	1		2,891.6	
Hire	set	1		196	
3. Labor				2,620.6	
Us. Labor	person	93.6	8	748.8	F
Us. Labor	person	93.6	8	748.4	L
S. Labor	person	112.3	10	1,123	L
4. Contractor's Profit				935.5	
C.P.	set	1		935.5	
Total				18,716.5	

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
IV. Custom Built Factory Type II (Unit = 720 m^2)					
1. Material				22,461.1	F 8,610.1 L 13,851
Temporary Works	m^2	720	2.5	1,800	
Earth Work	m^2	720	2.1	1,512	
Concrete	m^3	102.9	35	3,601.5	F70% L30%
Form	m^2	228	5.2	1,185.6	F 5% L95%
Reinforcing Bar	t	4.4	170	748	F70% L30%
Steel Frame	t	39.6	170	6,732	F70% L30%
Asbest Cement Board	m^2	406	5	2,030	
Concrete Block	m^2	360	6	2,160	
Other material	set	1		2,692	F29.5% L70.5%
2. Machine				7,861.2	F
Water Pipe	set	1		734.4	
Drainage Pipe	set	1		734.4	
Sanitary	set	1		734.4	
Other Works	set	1		5,265	
Hire	set	1		393	
3. Labor				5,241.8	
Us. Labor	persons	187.3	8	1,498.4	F
Us. Labor	person	187.3	8	1,498.4	L
S. Labor	person	224.5	10	2,245	L
4. Contractor's Profit				1,870.8	
C.P.	set	1		1,870.8	
Total				37,434.9	

Work Item	Unit	Quantity	Unit Price (JD)	Total (JD)	Remarks
V. Center Building (Unit = 3,500 m^2)					
1. Material				159,839.5	F 61,249.4 L 98,590.1
Temporary Works	m^2	3,500	1.6	5,600	
Earth Works	m^2	3,500	6	21,000	
Concrete	m^3	886	35	31,010	F70% L30%
Form	m^2	4,785	5.2	24,882	F 5% L95%
Reinforcing Bar	t	109	170	18,530	F70% L30%
Plaster	m^2	2,975	2.5	7,437.5	
Glass	m^2	583	10	5,830	F100%
Steel Fittings	set	189	200	37,800	F50% L50%
Water Proof	m^2	678	5	3,390	
Other Material	set	1		4,360	F13.7% L86.3%
2. Machine				55,920	
Water Pipe	set	1		4,480	
Drainage Pipe	set	1		5,600	
Sanitary	set	1		1,680	
Other Works	set	1		41,364	
Hire	set	1		2,796	
3. Labor				37,280	
Us. Labor	person	1,330	8	10,640	F
Us. Labor	person	1,330	8	10,640	L
S. Labor	person	1,600	10	16,000	L
4. Contractor's Profit				13,360	
C.P.	set	1		13,360	
Total				266,399.5	

Annex 8.1 Financial and Organizational Profile of the Municipality of Irbid

A. Financial Outlook of the Irbid Municipality (Fiscal 1979)

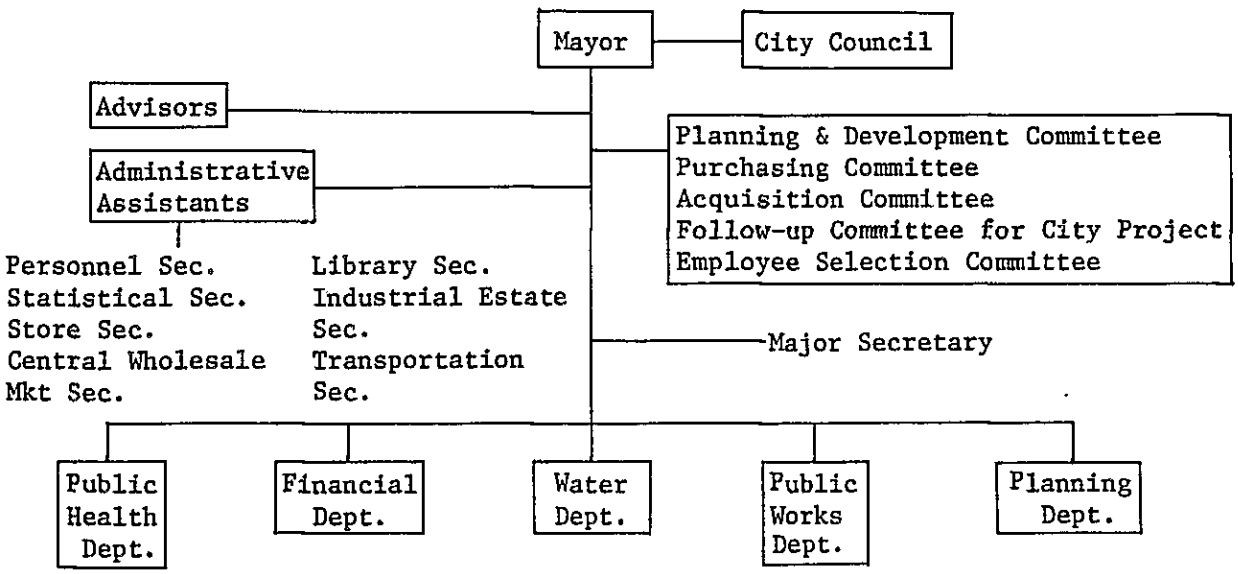
Revenues	JD. 1,880,000
Expenditures	JD. 1,960,200
(incl. Development)	80,200

B. Development Expenditures (Fiscal 1979) JD. 503,222

C. Total Number of Employee 838 (Dec. 1980)

D. Professional Staffs

Electrical Engineer	2
Geologist	1
Mechanical Engineer	1
Architect	1
Civil Engineer	2
Planner	1
Veterinarian	1
Doctor	1
Legal	1
Financial	1



Annex 9.1 Rent Paid by Industrialists Leasing 0.5 Donum or More in Irbid, 1980

Factory Number	Land (Donum)	Rent (JD/Yr)	Rent/Land (JD/d/Yr)	Year of Establish	Facing Problem
18	2.5	760	304	1959	-
302	1	550	550	1964	-
63	1	300	300	1968	-
66	1	200	200	1968	-
11	1	240	240	1973	-
28	1.5	360	240	1975	Expensive electricity
59	1.5	150	100	1976	Training
101	9	5,000	556	1976	Many
31	1.6	300	188	1977	-
301	1	245	245	1977	-
1	5	750	150	1979	Water, electricity, telephone
104	0.5	400	800	1979	Telephone

Source: General Interview Survey in Irbid by the Study Team.

Annex 9.2 Rent Paid by Industrialists Leasing 0.5 Donum or More in Amman, 1980

Factory Number	Land (Donum)	Rent (JD/Yr.)	Rent/Land (JD/d/Yr.)	Year of Establishment	Facing Problem
147	3.5	5,000	1,429	1964	Nil
17	1	1,000	1,000	1968	-
16	0.7	300	429	1970	-
5	4	2,000	500	1970	Limited availability of infrastructures
920	5	3,300	660	1972	Nil
1116	26	30,000	1,154	1974	-
1307	25	1,000	400	1974	-
1921	3	10,000	3,333	1975	-
9	1	2,000	2,000	1976	-
2682	3	4,000	1,333	1978	-
399/321/29	8	1,000	125	1978	No telephone & electricity
4	10	3,000	300	1978	Limited availability
260/1/338	20	10,000	500	1979	Break-down of electricity
32/384/1/21	2	4,000	2,000	1979	Not always available infrastructures
399/1/33	0.6	1,000	1,667	1980	-

Source: Amman Survey by the Study Team.

Annex 9.3 Rents Paid by Entrepreneurs in Irbid, 1980

Factory Number	Activity	Rent per Donum	Date of Establish-ment	Distance from Irbid Center (Km)	Road Service	Water Service	Elec-tricity Service	Tele-phone Service
101	Manuf.	1111	1976	10	Bad	No	No	No
301	Concrete Block	245	1977	3	Yes	No	Yes	Yes
302	Block	550	1964	3	-	-	-	Yes
(1)	Whole-sale of Iron Bar	500	1980	3	Bad	No	Yes	n.a.

Source: Applicant Interview Survey in Irbid by the Study Team.

Annex 9.4 Rent Paid by Industrialists Leasing Less Than 0.5 Donum in Irbid

Factory Number	Land (Donum)	Floor (m^2)	Rent (JD/Yr)	Rent/m^2 (JD/m^2 /Yr)	Year of Establish-ment	Facing Problems	Note
52	0.1	100	216	2.2	1956	-	Extreme value
37	0.120	120	20	0.2	1957	-	
67	0.084	84	500	6.0	1963	-	
23		140	300	2.1	1964	-	
13	0.25	250	400	1.6	1965	Elec. price is high	
40	0.200	200	500	2.5	1969	Power fluc-tuation	
51	0.032	32	160	5	1973	-	
50	0.063	63	300	4.8	1974	-	
38	0.120	120	850	7.1	1975	Price of Electricity	
39	0.09	90	300	3.3	1975	Price is high	
42	0.048	48	170	3.5	1975	-	
43	0.080	80	1,000	12.5	1975	-	
53	0.085	85	160	1.9	1975	No telephone	
26		152	1,200	7.9	1977	No water No telephone	
64	0.04	40	160	4	1977	Water	
228	0.3	150	600	4	1977	Electricity telephone	
14	0.3	300	800	2.7	1978	-	
36	0.120	120	350	2.9	1978	Break down of electricity	
25		24	500	20.8	1979	No water No telephone	Extreme value
49	0.036	36	120	3.3	1979	-	
62		120	560	4.7	1979		
15		140	520	3.7	1980	Teleph. water	
47		48	650	13.5	1980	-	
48	0.05	50	240	4.8	1980	No telephone	
55	0.084	84	500	6.0	1980	-	

Source: General Interview Survey in Irbid by the Study Team.

Annex 9.5 Rent Paid by Industrialists Leasing Less Than 0.5 Donum in Amman, 1980

Factory Number	Land (Donum)	Floor (m^2)	Rent (JD/Yr)	Rent/m^2 (JD/m^2/Yr)	Year of Establish-ment	Note
15	0.2	200	1,500	7.5	1964	
181	0.33	50	1,000	20.0	1970	
2	0.2	200	2,000	10.0	1970	
6	0.25	250	3,100	12.4	1973	
12	0.1	100	420	4.2	1974	
3	0.25	250	5,000	20.0	1975	
9	0.15	150	500	3.3	1976	
17	0.2	200	1,000	5.0	1977	
1	0.22	220	700	0.3	1977	Extreme value
10	0.1	100	2,000	20.0	1978	
14	0.25	250	2,000	8.0	1979	

Source: Amman Survey by the Study Team.

Annex 9.6 Financial Analysis of Alternative 1[1/]

(Unit: Million JD at Mid-1980 Prices)

		Cost								Rent or Price		Revenue From								
		Capital Investment																		
		Land Cost Plus Cont.	Engi-neering Plus Cont.	Land Dev. Plus Cont.	Bldg. Plus Cont.	Machine & Equip. Plus Cont.	Working Capital Plus Cont.	O/M Cost	Total Cost	Land Price (JD/m²)	Floor Price (JD/m²)	Custom Built Factory		Standard Factory		Commer-cial Floor	Gas Station	Users' Charge	Final Value of Land	Total
												Land	Floor	Land	Floor					
1981	0	1.815	0.210					0	2.025											0
82	1		0.419					0.096	0.515											0
83	2			1.040	1.658			0.114	3.812											0
84	3			0.273	3.317	0.215	0.037	0.119	3.961	29	121	0.770	1.054	0.039	0.069			0.005		1.937
85	4							0.172	0.172			1.926	2.635	0.117	0.206	0.005	0.002	0.011		4.902
86	5							0.219	0.219			1.156	1.581	0.156	0.274	0.014	0.005	0.016		3.202
87	6							0.267	0.267					"	"	0.019	"	"		0.470
88	7							"	"					"	"	"	"	"		"
89	8							"	"					"	"	"	"	"		"
90	9							"	"					"	"	"	"	"		"
91	10							"	"					"	"	"	"	"		"
92	11							"	"					"	"	"	"	"		"
93	12							"	0.267					"	"	"	"	"		"
94	13					0.215		"	0.482					"	"	"	"	"		"
95	14							"	0.267					"	"	"	"	"		"
96	15							"	"					"	"	"	"	"		"
97	16							"	"					"	"	"	"	"		"
98	17							"	"					"	"	"	"	"		"
99	18							"	"					"	"	"	"	"		"
2000	19							"	"					"	"	"	"	"		"
01	20							"	"					"	"	"	"	"		"
02	21							"	"					"	"	"	"	"		"
03	22							"	"					"	"	"	"	"		0.470
04	23							0.267	0.267					0.156	0.274	0.019	0.005	0.016	0.224	0.694

Source: Study Team

Note: 1/ For the specification, refer to the Table 9.16.
FIRR = 8.91(%)[2/]
NPV = Δ0.67 (Million JD) at 12%[2/]

2/ Computed by DCF of IBM.

Annex 9.7 Financial Analysis of Alternative 2[1/]

(Unit: Million JD at Mid-1980 Prices)

Year		Total Cost	Rent or Price: Land Rent (JD/m²)	Rent or Price: Floor Rent (JD/m²)	Revenue From: Custom Built Factory: Land	Custom Built Factory: Floor	Standard Factory: Land	Standard Factory: Floor	Commercial Floor	Gas Station	Users' Charge	Total
1981	0	0.210										
82	1	0.515										
83	2	2.994										
84	3	4.143	2.9	12.1	0.039	0.053	0.039	0.069			0.005	0.205
85	4	0.354			0.173	0.237	0.117	0.206	0.005	0.002	0.011	0.751
86	5	0.401			0.327	0.448	0.156	0.274	0.014	0.005	0.016	1.240
87	6	0.449			0.385	0.527	"	"	0.019	"	"	1.382
88	7	"			"	"	"	"	"	"	"	"
89	8	"			"	"	"	"	"	"	"	"
90	9	"			"	"	"	"	"	"	"	"
91	10	"			"	"	"	"	"	"	"	"
92	11	"			"	"	"	"	"	"	"	"
93	12	0.449			"	"	"	"	"	"	"	"
94	13	0.664			"	"	"	"	"	"	"	"
95	14	0.449			"	"	"	"	"	"	"	"
96	15	"			"	"	"	"	"	"	"	"
97	16	"			"	"	"	"	"	"	"	"
98	17	"			"	"	"	"	"	"	"	"
99	18	"			"	"	"	"	"	"	"	"
2000	19	"			"	"	"	"	"	"	"	"
01	20	"			"	"	"	"	"	"	"	"
02	21	"			"	"	"	"	"	"	"	"
03	22	"			"	"	"	"	"	"	"	"
04	23	0.449			0.385	0.527	0.156	0.274	0.019	0.005	0.016	1.382

Source: Study Team

Note : 1/ For the specification, refer to the Table 9.16. FIIR = 8.6(%)[2/] NPV = Δ1.34(Million JD) at 12%[2/]

2/ Computed by DCF of IBM.

Annex 9.8 Financial Analysis of Alternative 3[1/]

(Unit: Million JD at Mid-1980 Prices)

		Cost								Rent or Price		Revenue From								
		Capital Investment																		
		Land Cost Plus Cont.	Engi-neering Plus Cont.	Land Dev. Plus Cont.	Bldg. Plus Cont.	Machine & Equip. Plus Cont.	Working Capital Plus Cont.	O/M Cost	Total Cost	Land Price (JD/m²)	Floor Price (JD/m²)	Custom Built Factory Land	Custom Built Factory Floor	Standard Factory Land	Standard Factory Floor	Commer-cial Floor	Gas Station	Users' Charge	Final Value of Land	Total
1981	0	1.815	0.106					0	1.921											0
82	1		0.211					0.096	0.307											0
83	2			1.040	0.620			0.114	1.774											0
84	3			0.273	1.241	0.215	0.037	0.119	1.885	29		0.770		0.039	0.069			0.005		0.883
85	4							0.144	0.144			1.926		0.117	0.206	0.005	0.002	0.011		2.267
86	5							0.163	0.163			1.156		0.156	0.274	0.014	0.005	0.016		1.621
87	6							0.182	0.182					"	"	0.019	"	"		0.470
88	7							"	"					"	"	"	"	"		"
89	8							"	"					"	"	"	"	"		"
90	9							"	"					"	"	"	"	"		"
91	10							"	"					"	"	"	"	"		"
92	11							"	"					"	"	"	"	"		"
93	12							"	0.182					"	"	"	"	"		"
94	13					0.215		"	0.397					"	"	"	"	"		"
95	14							"	0.182					"	"	"	"	"		"
96	15							"	"					"	"	"	"	"		"
97	16							"	"					"	"	"	"	"		"
98	17							"	"					"	"	"	"	"		"
99	18							"	"					"	"	"	"	"		"
2000	19							"	"					"	"	"	"	"		"
01	20							"	"					"	"	"	"	"		"
02	21							"	"					"	"	"	"	"		"
03	22							"	"					"	"	"	"	"		0.470
04	23							0.182	0.182					0.156	0.274	0.019	0.005	0.016	0.579	1.049

Source: Study Team

Note: 1/ For the specification, refer to the Table 9.16.
FIRR = 8.15(%)[2/]
NPV = Δ0.86 (Million JD) at 12%[2/]

2/ Computed by DCF of IBM.

Annex 9.9.1. Financial Analysis of Alternative 4[1/]

(Unit: Million JD at Mid-1980 Prices)

		Cost								Rent or Price		Revenue From						
		Capital Investment																
		Land Cost Plus Cont.	Engi-neering Plus Cont.	Land Dev. Plus Cont.	Bldg. Plus Cont.	Machine & Equip. Plus Cont.	Working Capital Plus Cont.	O/M Cost	Total Cost	Land Price (JD/m²)	Floor Price (JD/m²)	Custom Built Factory Land	Custom Built Factory Floor	Standard Factory Land	Standard Factory Floor	Commer-cial Floor	Gas Station	Users' Charge	Total
1981	0		0.106					0	0.106										0
82	1		0.211					0.096	0.307										0
83	2	0.182		1.040	0.620			0.114	1.956										0
84	3	"		0.273	1.241	0.215	0.037	0.119	2.067	2.8		0.039		0.039	0.069			0.005	0.152
85	4	"						0.144	0.326			0.173		0.117	0.206	0.005	0.002	0.011	0.514
86	5	"						0.163	0.345			0.327		0.156	0.274	0.014	0.005	0.016	0.792
87	6	"						0.182	0.364			0.385		"	"	0.019	"	"	0.855
88	7	"						"	"			"		"	"	"	"	"	"
89	8	"						"	"			"		"	"	"	"	"	"
90	9	"						"	"			"		"	"	"	"	"	"
91	10	"						"	"			"		"	"	"	"	"	"
92	11	"						"	"			"		"	"	"	"	"	"
93	12	"						"	0.364			"		"	"	"	"	"	"
94	13	"				0.215		"	0.579			"		"	"	"	"	"	"
95	14	"						"	0.364			"		"	"	"	"	"	"
96	15	"						"	"			"		"	"	"	"	"	"
97	16	"						"	"			"		"	"	"	"	"	"
98	17	"						"	"			"		"	"	"	"	"	"
99	18	"						"	"			"		"	"	"	"	"	"
2000	19	"						"	"			"		"	"	"	"	"	"
01	20	"						"	"			"		"	"	"	"	"	"
02	21	"						"	"			"		"	"	"	"	"	"
03	22	"						"	"			"		"	"	"	"	"	"
04	23	0.182						0.182	0.364			0.385		0.156	0.274	0.019	0.005	0.016	0.855

Source: Study Team

Note: 1/ For the specification, refer to the Table 9.16.
FIRR = 7.7(%)[2/]
NPV = Δ0.96(Million JD) at 12%[2/]

2/ Computed by DCF of IBM.

Annex 9.9.2 Financial Analysis of Alternative 5[1/]

(Unit: Million JD at Mid-1980 Prices)

		Cost								Revenue From								
		Capital Investment																
		Land Cost Plus Cont.	Engi-neering Plus Cont.	Land Dev. Plus Cont.	Bldg. Plus Cont.	Machine & Equip. Plus Cont.	Working Capital Plus Cont.	O/M Cost	Total Cost	Custom Built Factory Land	Custom Built Factory Floor	Standard Factory Land	Standard Factory Floor	Commer-cial Floor	Gas Station	Users' Charge	Final Value of Land	Total
1981	0	1.815	0.210					0	2.025									
82	1		0.419					0.096	0.515									
83	2			1.040	1.658			0.114	2.812									
84	3			0.273	3.317	0.215	0.037	0.119	3.961	0.039	0.053	0.039	0.069			0.005		0.205
85	4							0.172	0.172	0.173	0.237	0.117	0.206	0.005	0.002	0.011		0.751
86	5							0.219	0.219	0.327	0.448	0.156	0.274	0.014	0.005	0.016		1.240
87	6							0.267	0.267	0.385	0.527	"	"	0.019	"	"		1.382
88	7							"	"	"	"	"	"	"	"	"		"
89	8							"	"	"	"	"	"	"	"	"		"
90	9							"	"	"	"	"	"	"	"	"		"
91	10							"	"	"	"	"	"	"	"	"		"
92	11							"	"	"	"	"	"	"	"	"		"
93	12							"	0.267	"	"	"	"	"	"	"		"
94	13					0.215		"	0.482	"	"	"	"	"	"	"		"
95	14							"	0.267	"	"	"	"	"	"	"		"
96	15							"	"	"	"	"	"	"	"	"		"
97	16							"	"	"	"	"	"	"	"	"		"
98	17							"	"	"	"	"	"	"	"	"		"
99	18							"	"	"	"	"	"	"	"	"		"
2000	19							"	"	"	"	"	"	"	"	"		"
01	20							"	"	"	"	"	"	"	"	"		"
02	21							"	"	"	"	"	"	"	"	"		"
03	22							"	"	"	"	"	"	"	"	"		1.382
04	23					0		0.267	0.267	0.385	0.527	0.156	0.274	0.019	0.005	0.016	1.456	2.838

Source: Study Team

Note: 1/ For the specification, refer to the Table 9.16.
FIRR = 8.68(%)[2/]
NPV = Δ1.81 (Million JD) at 12%[2/]

2/ Computed by DCF of IBM.

Annex 9.9.3 Financial Analysis of Alternative 1-a[1/]

(Unit: Million JD at 1980 Prices)

Year	Total Cost	Total Revenue
1981	1.992	0
82	0.450	0
83	2.480	0
84	3.298	1.937
85	0.172	4.902
86	0.219	3.202
87	0.267	0.470
88	0.267	0.470
89	0.267	0.470
90	0.267	0.470
91	0.267	0.470
92	0.267	0.470
93	0.267	0.470
94	0.482	0.470
95	0.267	0.470
96	0.267	0.470
97	0.267	0.470
98	0.267	0.470
99	0.267	0.470
2000	0.267	0.470
01	0.267	0.470
02	0.267	0.470
03	0.267	0.470
04	0.267	0.694

Source: Study Team

Note: 1/ IRR = 12.83(%)[2/]
NPV = Δ0.16(Million JD at 1980 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.9.4 Financial Analysis of Alternative 2-a[1/]

(Unit: Million JD at 1980 Prices)

Year	Total Cost	Total Revenue
1981	0.177	0
82	0.448	0
83	2.662	0
84	3.480	0.205
85	0.354	0.751
86	0.401	1.240
87	0.449	1.382
88	0.449	1.382
89	0.449	1.382
90	0.449	1.382
91	0.449	1.382
92	0.449	1.382
93	0.449	1.382
94	0.664	1.382
95	0.449	1.382
96	0.449	1.382
97	0.449	1.382
98	0.449	1.382
99	0.449	1.382
2000	0.449	1.382
01	0.449	1.382
02	0.449	1.382
03	0.449	1.382
04	0.449	1.382

Source: Study Team

Note: 1/ IRR = 10.57(%)[2/]
NPV = Δ0.51(Million JD at 1980 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.9.5 Financial Analysis of Alternative 3-a[1/]

(Unit: Million JD at 1980 Prices)

Year	Total Cost	Total Revenue
1981	1.909	0
82	0.282	0
83	1.661	0
84	1.660	0.883
85	0.144	2.267
86	0.163	1.621
87	0.182	0.470
88	0.182	0.470
89	0.182	0.470
90	0.182	0.470
91	0.182	0.470
92	0.182	0.470
93	0.182	0.470
94	0.397	0.470
95	0.182	0.470
96	0.182	0.470
97	0.182	0.470
98	0.182	0.470
99	0.182	0.470
2000	0.182	0.470
01	0.182	0.470
02	0.182	0.470
03	0.182	0.470
04	0.182	1.049

Source: Study Team

Note: 1/ IRR = 9.29(%)[2/]
NPV = Δ0.58(Million JD at 1980 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.9.6 Financial Analysis of Alternative 4-a[1/]

(Unit: Million JD at 1980 Prices)

Year	Total Cost	Total Revenue
1981	0.094	0
82	0.282	0
83	1.843	0
84	1.842	0.152
85	0.326	0.514
86	0.345	0.792
87	0.364	0.855
88	0.364	0.855
89	0.364	0.855
90	0.364	0.855
91	0.364	0.855
92	0.364	0.855
93	0.364	0.855
94	0.579	0.855
95	0.364	0.855
96	0.364	0.855
97	0.364	0.855
98	0.364	0.855
99	0.364	0.855
2000	0.364	0.855
01	0.364	0.855
02	0.364	0.855
03	0.364	0.855
04	0.364	0.855

Source: Study Team

Note: 1/ IRR = 8.77(%)[2/]
NPV = Δ0.67(Million JD at 1980 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.9.7 Financial Analysis of Alternative 5-a[1/]

(Unit: Million JD at 1980 Prices)

Year	Total Cost	Total Revenue
1981	1.992	0
82	0.448	0
83	2.480	0
84	3.298	0.205
85	0.172	0.751
86	0.219	1.240
87	0.267	1.382
88	0.267	1.382
89	0.267	1.382
90	0.267	1.382
91	0.267	1.382
92	0.267	1.382
93	0.267	1.382
94	0.482	1.382
95	0.267	1.382
96	0.267	1.382
97	0.267	1.382
98	0.267	1.382
99	0.267	1.382
2000	0.267	1.382
01	0.267	1.382
02	0.267	1.382
03	0.267	1.382
04	0.267	2.838

Source: Study Team

Note: 1/ IRR = 10.06(%)[2/]
NPV = Δ0.98(Million JD at 1980 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.9.8 Financial Analysis of Alternative 5-1-a[1/]

(Unit: Million JD at 1980 Prices)

Year	Total Cost	Total Revenue
1981	1.992	0
82	0.448	0
83	2.480	0
84	3.298	0.164
85	0.172	0.600
86	0.219	0.990
87	0.267	1.102
88	0.267	1.102
89	0.267	1.321
90	0.267	1.321
91	0.267	1.321
92	0.267	1.321
93	0.267	1.321
94	0.482	1.577
95	0.267	1.577
96	0.267	1.577
97	0.267	1.577
98	0.267	1.577
99	0.267	1.898
2000	0.267	1.898
01	0.267	1.898
02	0.267	1.898
03	0.267	1.898
04	0.267	3.726

Source: Study Team

Note: 1/ IRR = 10.07(%)[2/]
NPV = Δ1.10(Million JD at 1980 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.10 Financial Sensitivity Analysis,[1/]
Case 1: Cost Increase by 10%

(Unit: Million JD at 1983 Prices)

Year	Total Cost	Total Revenue
1981	3.333	0
82	0.749	0
83	4.149	0
84	5.517	0.249
85	0.288	0.913
86	0.366	1.506
87	0.447	1.676
88	0.447	1.676
89	0.447	2.009
90	0.447	2.009
91	0.447	2.009
92	0.447	2.009
93	0.447	2.009
94	0.806	2.398
95	0.447	2.398
96	0.447	2.398
97	0.447	2.398
98	0.447	2.398
99	0.447	2.887
2000	0.447	2.887
01	0.447	2.887
02	0.447	2.887
03	0.447	2.887
04	0.447	5.667

Source: Study Team

Note: 1/ IRR = 8.85(%)[2/]
NPV = Δ2.90(Million JD at 1983 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.11 Financial Sensitivity Analysis,[1/]
Case 2: Revenue Reduction by 10%

(Unit: Million JD at 1983 Prices)

Year	Total Cost	Total Revenue
1981	3.030	0
82	0.681	0
83	3.772	0
84	5.016	0.224
85	0.262	0.821
86	0.333	1.355
87	0.406	1.508
88	0.406	1.508
89	0.406	1.808
90	0.406	1.808
91	0.406	1.808
92	0.406	1.808
93	0.406	1.808
94	0.733	2.159
95	0.406	2.159
96	0.406	2.159
97	0.406	2.159
98	0.406	2.159
99	0.406	2.598
2000	0.406	2.598
01	0.406	2.598
02	0.406	2.598
03	0.406	2.598
04	0.406	5.100

Source: Study Team

Note: 1/ IRR = 8.73(%)[2/]
NPV = Δ2.73(Million JD at 1983 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.12 Financial Sensitivity Analysis,[1/]
Case 3: Occupancy Delay by 2 Years

(Unit: Million JD at 1983 Prices)

Year	Total Cost	Total Revenue
1981	3.030	0.000
82	0.681	0.000
83	3.772	0.000
84	5.016	0.179
85	0.262	0.538
86	0.333	0.900
87	0.406	1.261
88	0.406	1.560
89	0.406	2.009
90	0.406	2.009
91	0.406	2.009
92	0.406	2.009
93	0.406	2.009
94	0.733	2.398
95	0.406	2.398
96	0.406	2.398
97	0.406	2.398
98	0.406	2.398
99	0.406	2.887
2000	0.406	2.887
01	0.406	2.887
02	0.406	2.887
03	0.406	2.887
04	0.406	5.667

Source: Study Team

Note: 1/ IRR = 9.14(%)[2/]
NPV = Δ2.56(Million JD at 1983 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.13 Financial Sensitivity Analysis,[1/]
Case 4: All of Cases 1 to 3

(Unit: Million JD at 1983 Prices)

Year	Total Cost	Total Revenue
1981	3.333	0.000
82	0.749	0.000
83	4.149	0.000
84	5.517	0.162
85	0.288	0.485
86	0.366	0.810
87	0.447	1.135
88	0.447	1.404
89	0.447	1.808
90	0.447	1.808
91	0.447	1.808
92	0.447	1.808
93	0.447	1.808
94	0.806	2.159
95	0.447	2.159
96	0.447	2.159
97	0.447	2.159
98	0.447	2.159
99	0.447	2.598
2000	0.447	2.598
01	0.447	2.598
02	0.447	2.598
03	0.447	2.598
04	0.447	5.100

Source: Study Team

Note: 1/ IRR = 6.79(%)[2/]
NPV = Δ4.77(Million JD at 1983 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.14 Financial Sensitivity Analysis,[1/]
Case 5: No Land Cost

(Unit: Million JD at 1983 Prices)

Year	Total Cost	Total Revenue
1981	0.269	0
82	0.681	0
83	3.772	0
84	5.016	0.249
85	0.262	0.913
86	0.333	1.506
87	0.406	1.676
88	0.406	1.676
89	0.406	2.009
90	0.406	2.009
91	0.406	2.009
92	0.406	2.009
93	0.406	2.009
94	0.733	2.398
95	0.406	2.398
96	0.406	2.398
97	0.406	2.398
98	0.406	2.398
99	0.406	2.887
2000	0.406	2.887
01	0.406	2.887
02	0.406	2.887
03	0.406	2.887
04	0.406	5.667

Source: Study Team

Note: 1/ IRR = 13.69(%)[2/]
NPV = 1.09(Million JD at 1983 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 9.15 Financial Sensitivity Analysis,[1/]
Case 6: Land Cost Increase by 100%

(Unit: Million JD at 1983 Prices)

Year	Total Cost	Total Revenue
1981	5.790	0
82	0.681	0
83	3.772	0
84	5.016	0.249
85	0.262	0.913
86	0.333	1.506
87	0.406	1.676
88	0.406	1.676
89	0.406	2.009
90	0.406	2.009
91	0.406	2.009
92	0.406	2.009
93	0.406	2.009
94	0.733	2.398
95	0.406	2.398
96	0.406	2.398
97	0.406	2.398
98	0.406	2.398
99	0.406	2.887
2000	0.406	2.887
01	0.406	2.887
02	0.406	2.887
03	0.406	2.887
04	0.406	5.667

Source: Study Team

Note: 1/ IRR = 7.81(%)[2/]
NPV = Δ4.43(Million JD at 1983 prices discounted at 12%)[2/]

2/ Computed by DCF of IBM.

Annex 10.1 Computation of Standard Conversion Factor

(Unit: Million JD)

	1975	1976	1977	1978	1979	Average
Total Import, c.i.f. M	234.0	339.5	454.4	458.8	589.5	
Total Export, f.o.b. X	48.9	68.7	82.1	90.9	120.9	
Customs Tm	20.9	40.0	64.0	60.8	71.2	
Fuel Support Sm			3.0	3.0	20.0	
Taxes on Export Tx	6.9	2.2	1.1	0	0	
M + X	282.9	408.2	536.5	549.7	710.4	
M + X + Tm - Sm - Tx	296.9	446.0	596.4	607.5	761.6	
SCF at Current Price	0.953	0.915	0.900	0.905	0.933	
Price Index						
Wholesale	100	119.2	122.0	128.5	136.9	
Consumer Goods	100	111.5	127,7	136.6	156.0	
Average	100	112.9	124.9	132.6	146.5	
M + X at 1980 prices			703.6	679.0	794.3	725.6
M + X - Tm - Sm - Tx at 1980 Prices			782.1	750.4	851.5	794.7
SCF						0.913

Source: Central Bank of Jordan, Monthly Statistical Bulletin, Sept. 1980, 1980.

Annex 10.2 Computation of Consumption Goods Conversion Factor

(Unit: Million JD)

	1975	1976	1977	1978	1979	Average
Consumption Good, Import, c.i.f. Mc'	90.5	133.3	147.2	175.7	215.2	
Consumption Good, Export, f.o.b. Xc	16.0	25.4	32.2	32.6	42.0	
% of Consumption Good in Miscellaneous Import "	39.25	39.45	32.53	38.68	36.59	
Consumption Good in Miscellaneous Import	1.3	0.6	0.6	1.8	0.5	
Total Consumption Good, Import Mc	91.8	133.9	147.8	177.5	215.7	
Taxes on Mc Tmc	20.9	40.0	64.0	60.8	71.2	
Fuel Support x 1/2 Smc			1.5	1.5	10.0	
Taxes on Export Txc	0	0	0	0	0	
Mc + Xc	107.8	159.3	180.0	210.1	257.7	
Mc + Xc + Tmc - Smc - Txc	128.7	199.3	242.5	269.4	318.9	
CGCF' at Current Price	0.838	0.799	0.742	0.780	0.808	
Consumer Price Index	100	111.5	127.7	136.6	156.0	
Mc + Xc at 1980 Price	187.5	248.5	245.1	267.5	287.3	247.2
Mc + Xc - Tmc - Smc - Txc at 1980 Price	223.8	310.8	330.2	343.0	355.5	312.7
CGCF						0.791

Source: Central Bank of Jordan, Monthly Statistical Bulletin, Sept. 1980.

Note: It is assumed that all customs are collected from consumption goods.

Annex 10.3 Population Projection Revised

	Pre-feasibility Population Projection		Population Projection Adjusted to New 1979 Census	
	Projection	Inter-polation	Population and Assumption	Extra-polation
1975	128,000			
1979		147,548	112,954	
1980		152,885		117,040
1981	3.6%/Yr	158,415		121,273
1982		164,147		125,659
1983		170,082		130,204
1984		176,234		134,914
1985	182,600		3.6%/Yr	139,794
1986		183,814		144,850
1987		185,037		150,089
1988		186,267		155,518
1989		187,506		161,143
1990		188,753		166,972
1991		190,008		173,011
1992	0.7%/Yr	191,271		179,269
1993		192,543		185,753
1994		193,824		187,053
1995		195,113		188,363
1996		196,410	0.7%/Yr	189,681
1997		197,716		191,009
1998		199,031		192,346
1999		200,355		193,692
2000	201,675	201,675		195,048
2001				196,414
2002				197,789
2003				199,173

Source: Pre-feasibility Report and Preliminary Result of 1979 Population Census of Jordan, 1980.

Annex 10.4 Economic Sensitivity Analysis, Case 1: Economic Development Cost Increase by 10 percent 1/

		Economic Cost				Economic Benefit
		Development Cost	O/M Cost	Land Cost	Total Cost (-)	(+)
1981	0	0.197	0	0.001	0.198	0
82	1	0.393	0.087	"	0.481	0
83	2	2.427	0.104	"	2.532	0
84	3	3.487	0.108	"	3.596	0.184
85	4		0.156	"	0.157	0.685
86	5		0.200	"	0.201	1.141
87	6		0.244	0.001	0.245	1.276
88	7		"	0.020	0.264	1.276
89	8		"	0.055	0.299	1.526
90	9		"	0.090	0.334	"
91	10		"	0.124	0.368	"
92	11		"	0.159	0.403	"
93	12		"	0.193	0.437	1.526
94	13		"	0.195	0.439	1.822
95	14		"	0.196	0.440	"
96	15		"	0.197	0.441	"
97	16		"	0.199	0.443	"
98	17		"	0.200	0.444	1.822
99	18		"	0.202	0.446	2.189
2000	19		"	0.203	0.447	"
01	20		"	0.204	0.448	"
02	21		"	0.206	0.450	"
03	22		"	0.207	0.451	2.189
04	23		0.244	0.209	0.453	2.617

Notes : 1/ For the specification, refer to Section 10.5.1 of this Report.

IRR = 14.38(%) 2/
NPV = 2.62 (Million JD) at 8.2% 2/

2/ Computed by DCF of IBM.

Annex 10.5 Economic Sensitivity Analysis, Case 2: Economic Land Cost Increase by 10 percent

		Economic Cost				Economic Benefit
		Development Cost	O/M Cost	Land Cost	Total Cost (-)	(+)
1981	0	0.179	0	0.001	0.180	0
82	1	0.357	0.087	"	0.445	0
83	2	2.206	0.104	"	2.311	0
84	3	3.170	0.108	"	3.279	0.184
85	4		0.156	"	0.157	0.685
86	5		0.200	"	0.201	1.141
87	6		0.244	0.001	0.245	1.276
88	7		"	0.022	0.266	1.276
89	8		"	0.061	0.305	1.526
90	9		"	0.099	0.343	"
91	10		"	0.136	0.380	"
92	11		"	0.175	0.419	"
93	12		"	0.212	0.456	1.526
94	13		"	0.215	0.459	1.822
95	14		"	0.216	0.460	"
96	15		"	0.217	0.461	"
97	16		"	0.219	0.463	"
98	17		"	0.220	0.464	1.822
99	18		"	0.222	0.466	2.189
2000	19		"	0.223	0.467	"
01	20		"	0.224	0.468	"
02	21		"	0.227	0.471	"
03	22		"	0.228	0.472	2.189
04	23		0.244	0.230	0.474	2.617

Notes: IRR = 15.55(%) 1/

NPV = 4.11 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

Annex 10.6 Economic Sensitivity Analysis, Case 3: Economic O/M Cost Increase by 10 percent

		Economic Cost				Economic Benefit
		Development Cost	O/M Cost	Land Cost	Total Cost (-)	(+)
1981	0	0.179	0	0.001	0.180	0
82	1	0.357	0.096	"	0.454	0
83	2	2.206	0.114	"	2.321	0
84	3	3.170	0.119	"	3.290	0.184
85	4		0.172	"	0.173	0.685
86	5		0.220	"	0.221	1.141
87	6		0.268	0.001	0.269	1.276
88	7		"	0.020	0.288	1.276
89	8		"	0.055	0.323	1.526
90	9		"	0.090	0.358	"
91	10		"	0.124	0.392	"
92	11		"	0.159	0.427	"
93	12		"	0.193	0.461	1.526
94	13		"	0.195	0.463	1.822
95	14		"	0.196	0.464	"
96	15		"	0.197	0.465	"
97	16		"	0.199	0.467	"
98	17		"	0.200	0.468	1.822
99	18		"	0.202	0.470	2.189
2000	19		"	0.203	0.471	"
01	20		"	0.204	0.472	"
02	21		"	0.206	0.474	"
03	22		"	0.207	0.475	2.189
04	23		0.268	0.209	0.477	2.617

Notes: IRR = 15.30(%) 1/

NPV = 3.99 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

Annex 10.7 Economic Sensitivity Analysis, Case 4: Combined Case of Cases 1, 2 and 3

		Economic Total Cost (-)	Economic Benefit (+)
1981	0	0.119	0
82	1	0.490	0
83	2	2.542	0
84	3	3.607	0.184
85	4	0.173	0.685
86	5	0.221	1.141
87	6	0.270	1.276
88	7	0.290	1.276
89	8	0.329	1.526
90	9	0.367	"
91	10	0.405	"
92	11	0.443	"
93	12	0.481	1.526
94	13	0.483	1.822
95	14	0.484	"
96	15	0.485	"
97	16	0.487	"
98	17	0.488	1.822
99	18	0.490	2.189
2000	19	0.492	"
01	20	0.493	"
02	21	0.495	"
03	22	0.496	2.189
04	23	0.498	2.617

Notes: IRR = 13.93(%) 1/

NPV = 3.42 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

Annex 10.8 Economic Sensitivity Analysis, Case 5: Occupancy Delay by 2 years

		Economic Total Cost (-)	Economic Benefit (+)
1981	0	0.180	0
82	1	0.445	0
83	2	2.311	0
84	3	3.279	0.136
85	4	0.157	0.409
86	5	0.201	0.684
87	6	0.245	0.958
88	7	0.264	1.185
89	8	0.299	1.526
90	9	0.334	"
91	10	0.368	"
92	11	0.403	"
93	12	0.437	1.526
94	13	0.439	1.822
95	14	0.440	"
96	15	0.441	"
97	16	0.443	"
98	17	0.444	1.822
99	18	0.446	2.189
2000	19	0.447	"
01	20	0.448	"
02	21	0.450	"
03	22	0.451	2.189
04	23	0.453	2.617

Notes: IRR = 13.89(%) 1/

NPV = 3.39 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

Annex 10.9 Economic Sensitivity Analysis, Case 6: Combined Case of Cases 1, 2, 3 and 5

		Economic Total Cost (-)	Economic Benefit (+)
1981	0	0.199	0
82	1	0.490	0
83	2	2.542	0
84	3	3.607	0.136
85	4	0.173	0.409
86	5	0.221	0.684
87	6	0.270	0.958
88	7	0.290	1.185
89	8	0.329	1.526
90	9	0.367	"
91	10	0.405	"
92	11	0.443	"
93	12	0.481	1.526
94	13	0.483	1.822
95	14	0.484	"
96	15	0.485	"
97	16	0.487	"
98	17	0.488	1.822
99	18	0.490	2.189
2000	19	0.492	"
01	20	0.493	"
02	21	0.495	"
03	22	0.496	2.189
04	23	0.498	2.617

Notes: IRR = 12.35(%) 1/

NPV = 2.62 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

Annex 10.10 Economic Sensitivity Analysis, Case 7: Economic Benefit Decrease by 10 percent

		Economic Total Cost (-)	Economic Benefit (+)
1981	0	0.180	0
82	1	0.445	0
83	2	2.311	0
84	3	3.279	0.166
85	4	0.157	0.617
86	5	0.201	1.027
87	6	0.245	1.148
88	7	0.264	1.148
89	8	0.299	1.373
90	9	0.334	"
91	10	0.368	"
92	11	0.403	"
93	12	0.437	1.373
94	13	0.439	1.640
95	14	0.440	"
96	15	0.441	"
97	16	0.443	"
98	17	0.444	1.640
99	18	0.446	1.970
2000	19	0.447	"
01	20	0.448	"
02	21	0.450	"
03	22	0.451	1.970
04	23	0.453	2.355

Notes : IRR = 13.75(%) 1/

NPV = 3.00 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

Annex 10.11 Economic Sensitivity Analysis, Case 8: Combined Case of Cases 1, 2, 3, 5 & 7

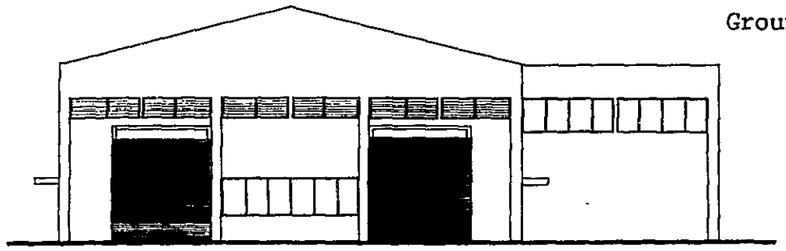
		Economic Total Cost (-)	Economic Benefit (+)
1981	0	0.199	0
82	1	0.490	0
83	2	2.542	0
84	3	3.607	0.122
85	4	0.173	0.368
86	5	0.221	0.616
87	6	0.270	0.862
88	7	0.290	1.067
89	8	0.329	1.373
90	9	0.367	"
91	10	0.405	"
92	11	0.443	"
93	12	0.481	1.373
94	13	0.483	1.640
95	14	0.484	"
96	15	0.485	"
97	16	0.487	"
98	17	0.488	1.640
99	18	0.490	1.970
2000	19	0.492	"
01	20	0.493	"
02	21	0.495	"
03	22	0.496	1.970
04	23	0.498	2.355

Notes: IRR = 10.69(%) 1/

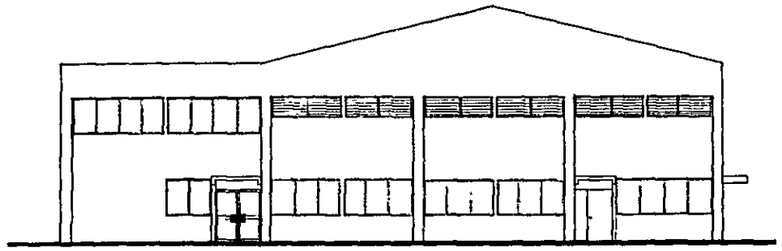
NPV = 1.50 (Million JD) at 8.2% 1/

1/ Computed by DCF of IBM.

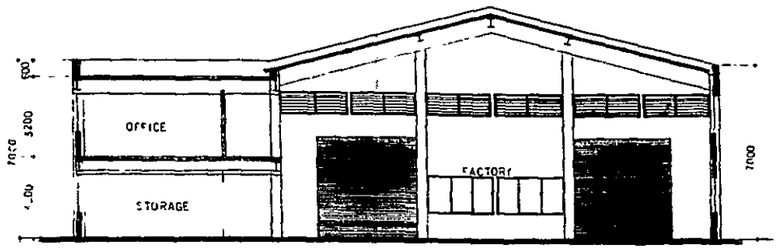
Drawing No 5.1 Custom Built Factory Type I,
Ground Floor Plan, Elevation, Section



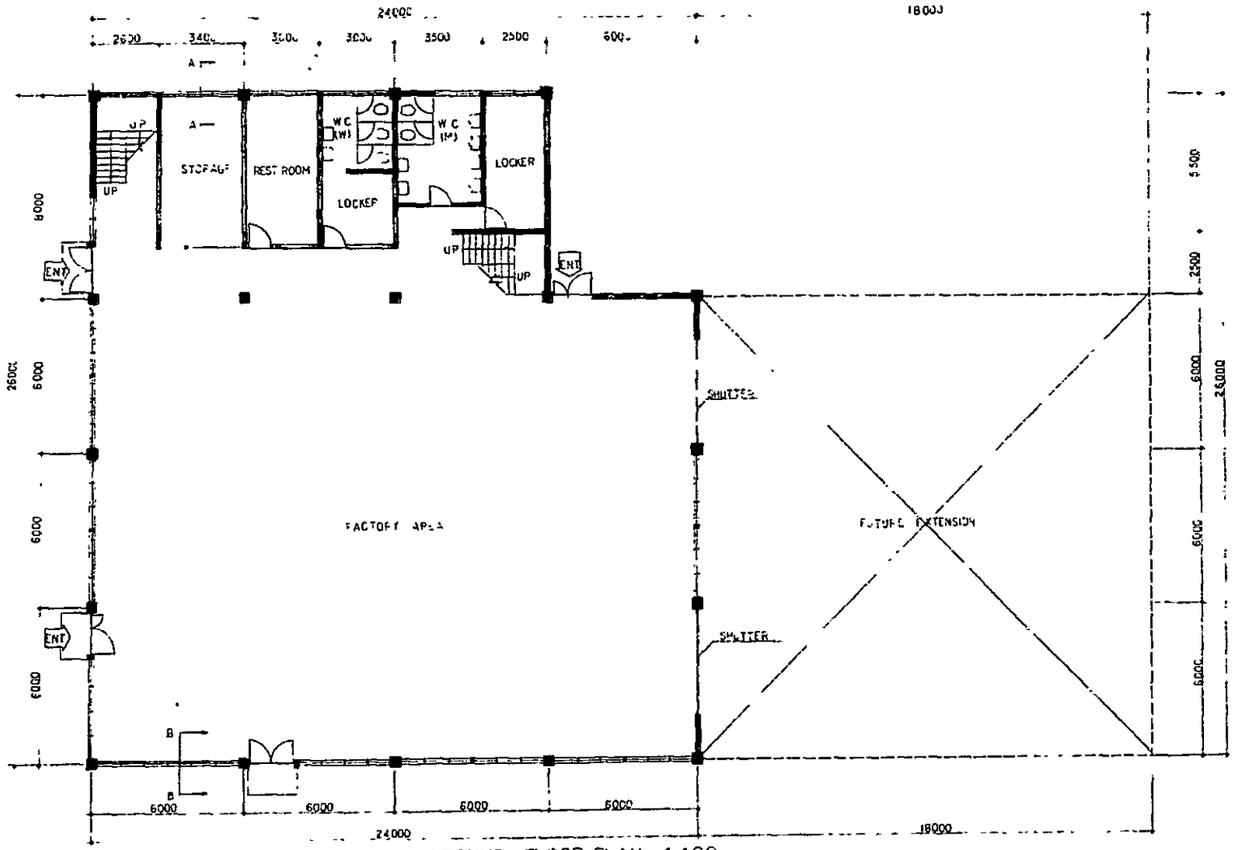
BACK ELEVATION 1 100



FRONT ELEVATION 1 100

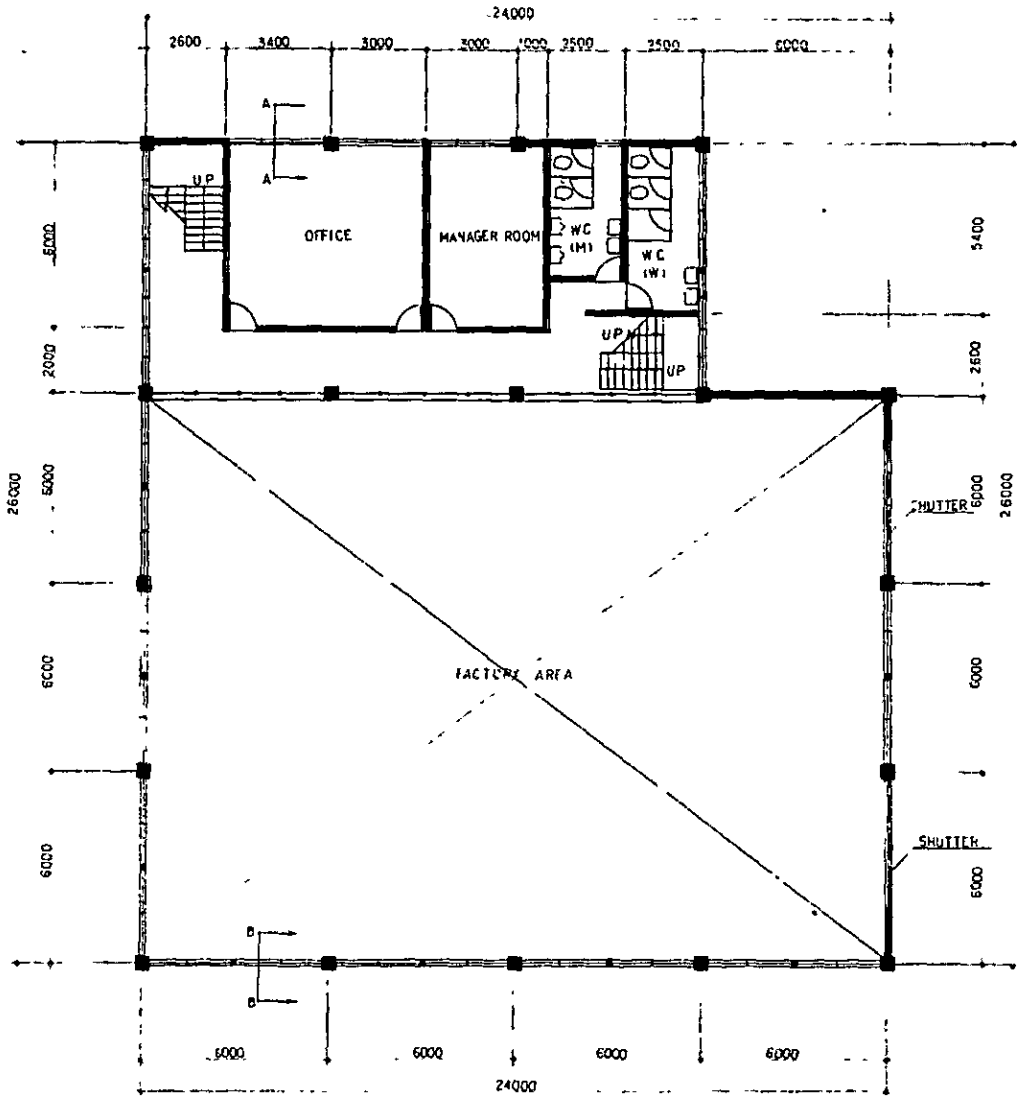


SECTION 1 100



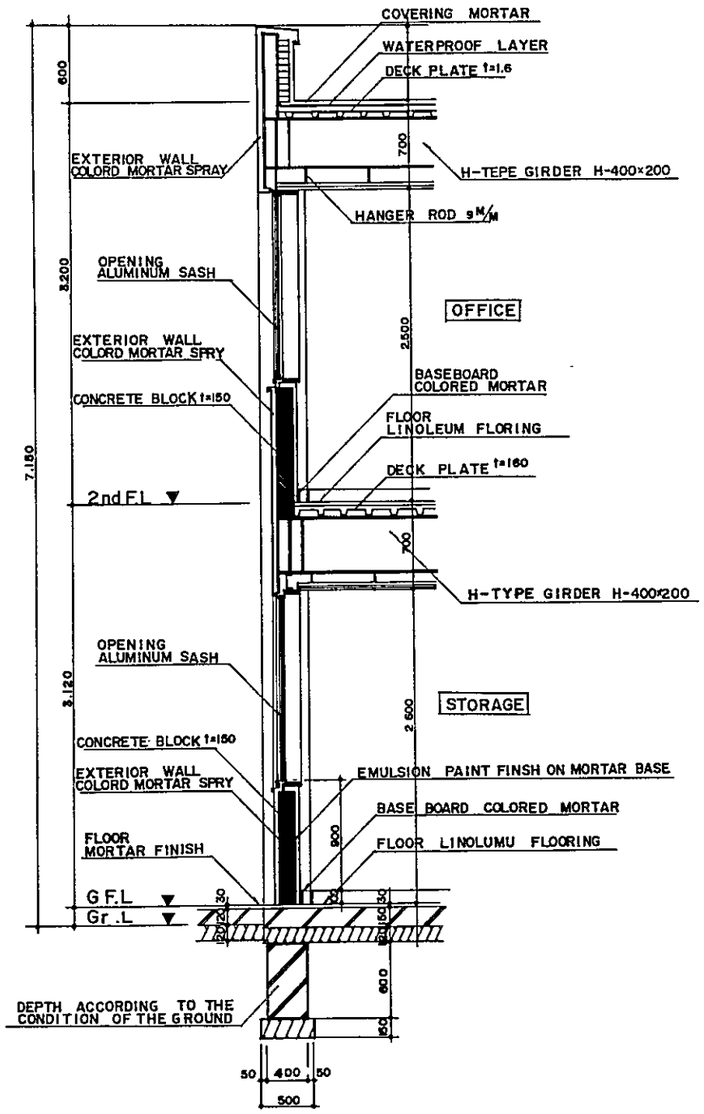
GROUND FLOOR PLAN 1 100

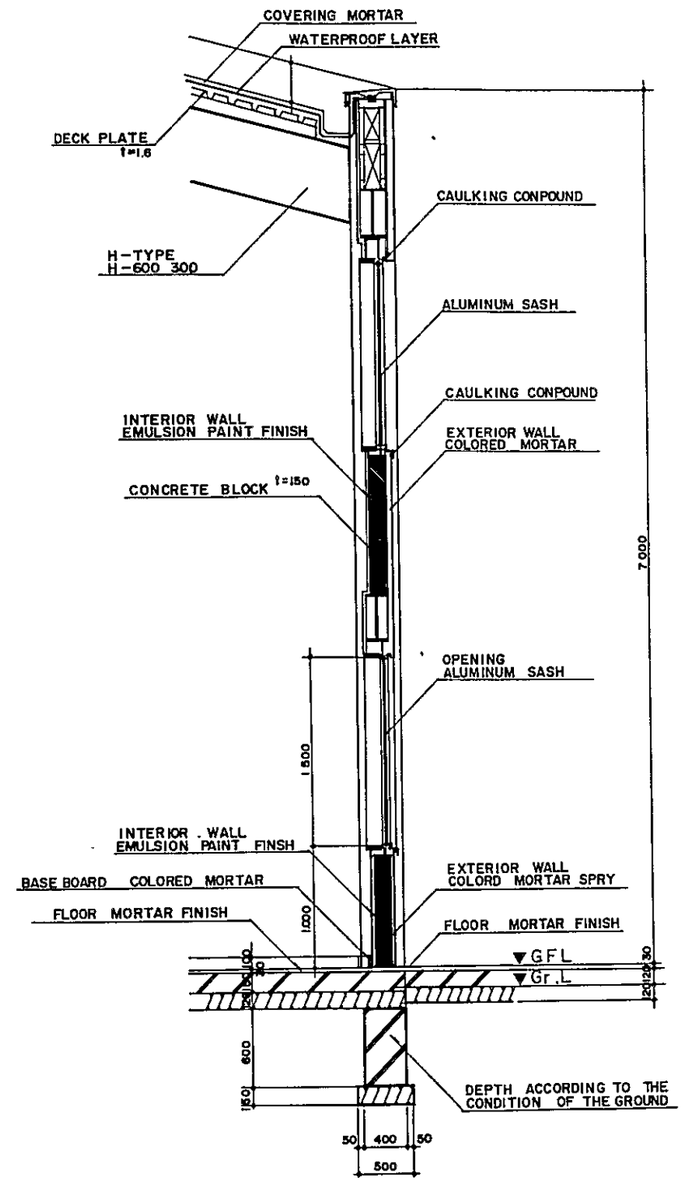
Drawing No 5.2 Custom Built Factory Type I,
Second Floor Plan



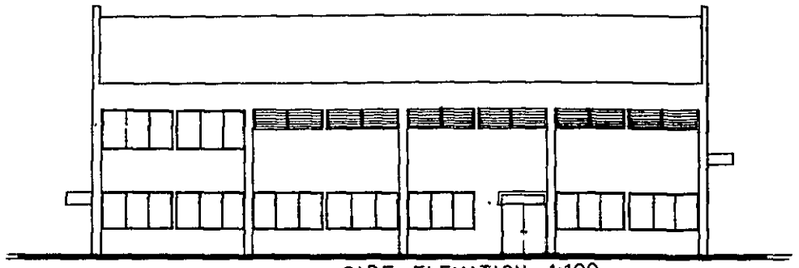
SECOND FLOOR PLAN 1:100

Drawing No 5.3 Custom Built Factory Type I,
Sectional Detail

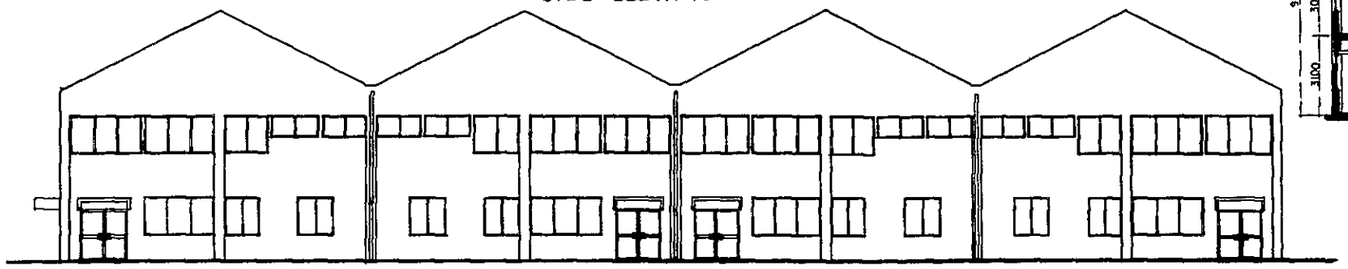




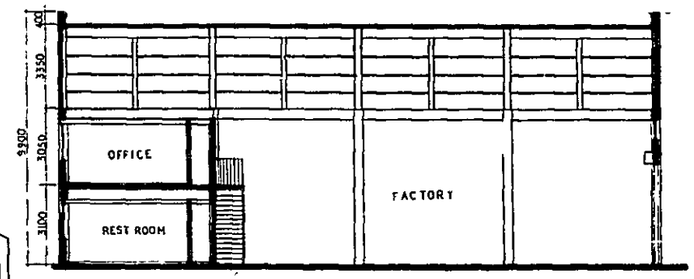
Drawing No 5.4 Custom Built Factory Type II,
Ground Floor Plan, Elevation, Section



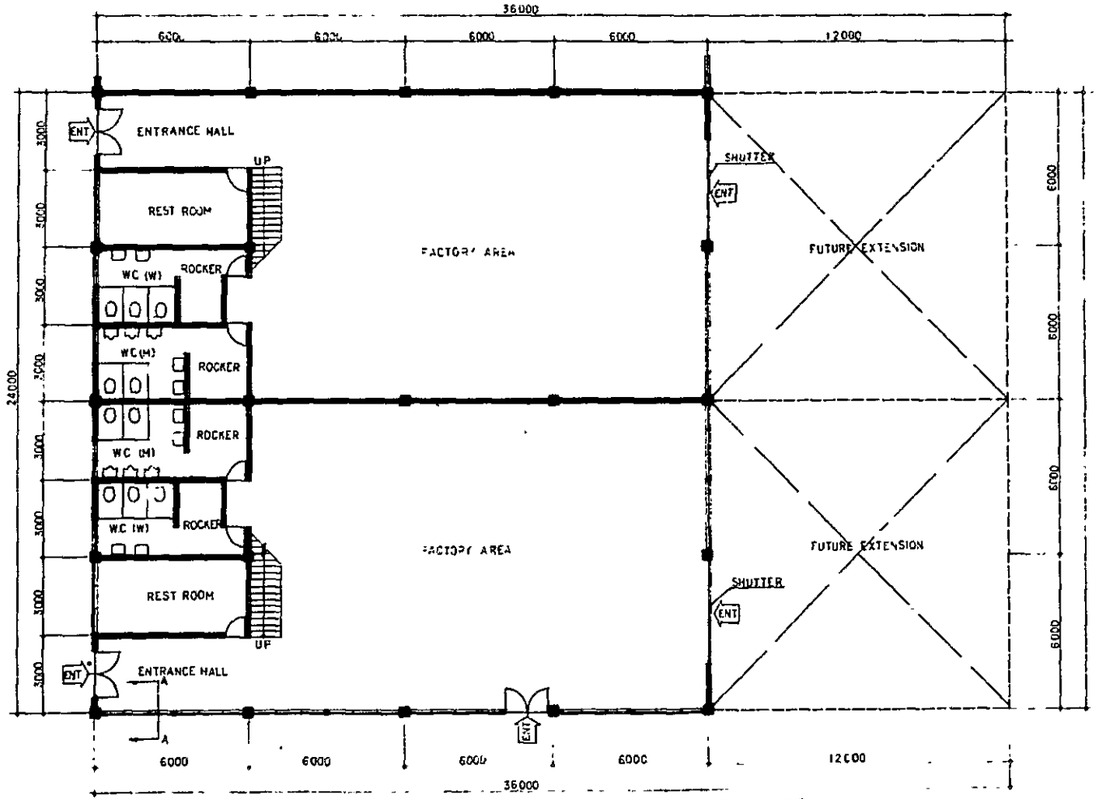
SIDE ELEVATION 1:100



FRONT ELEVATION 1:100

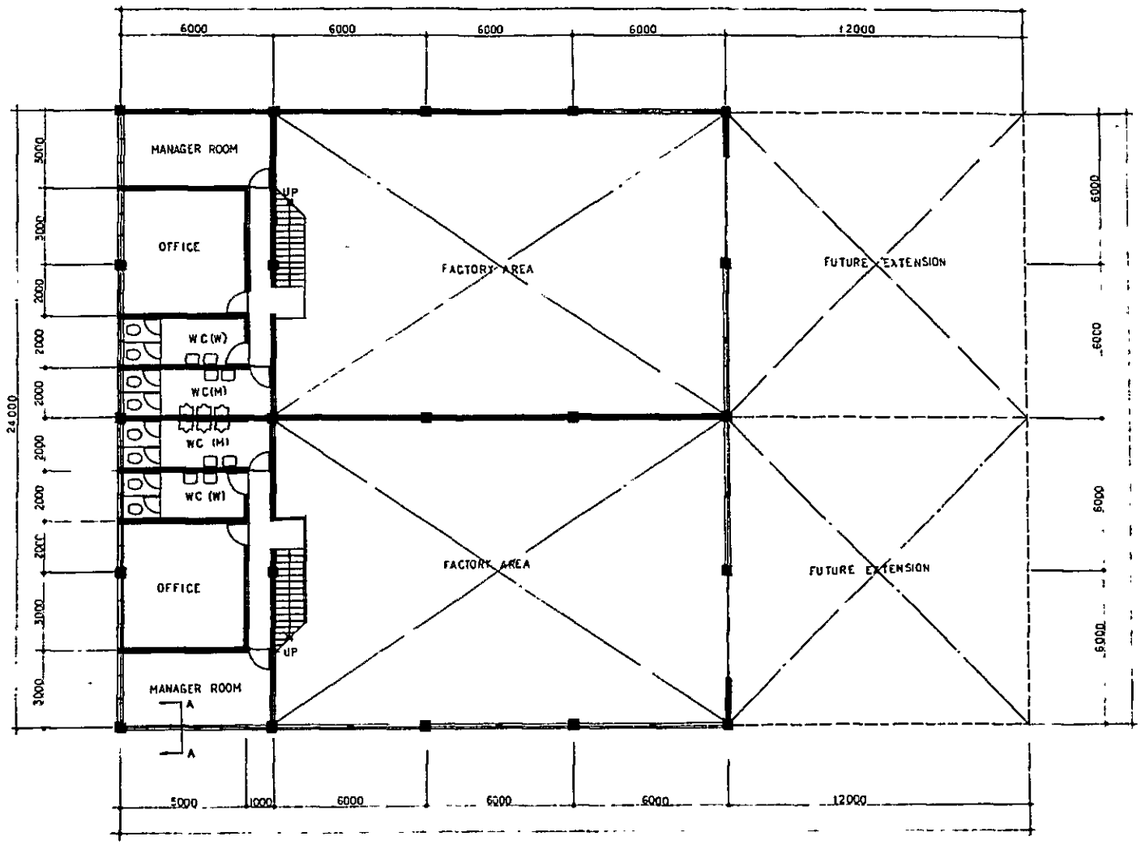


SECTION 1:100



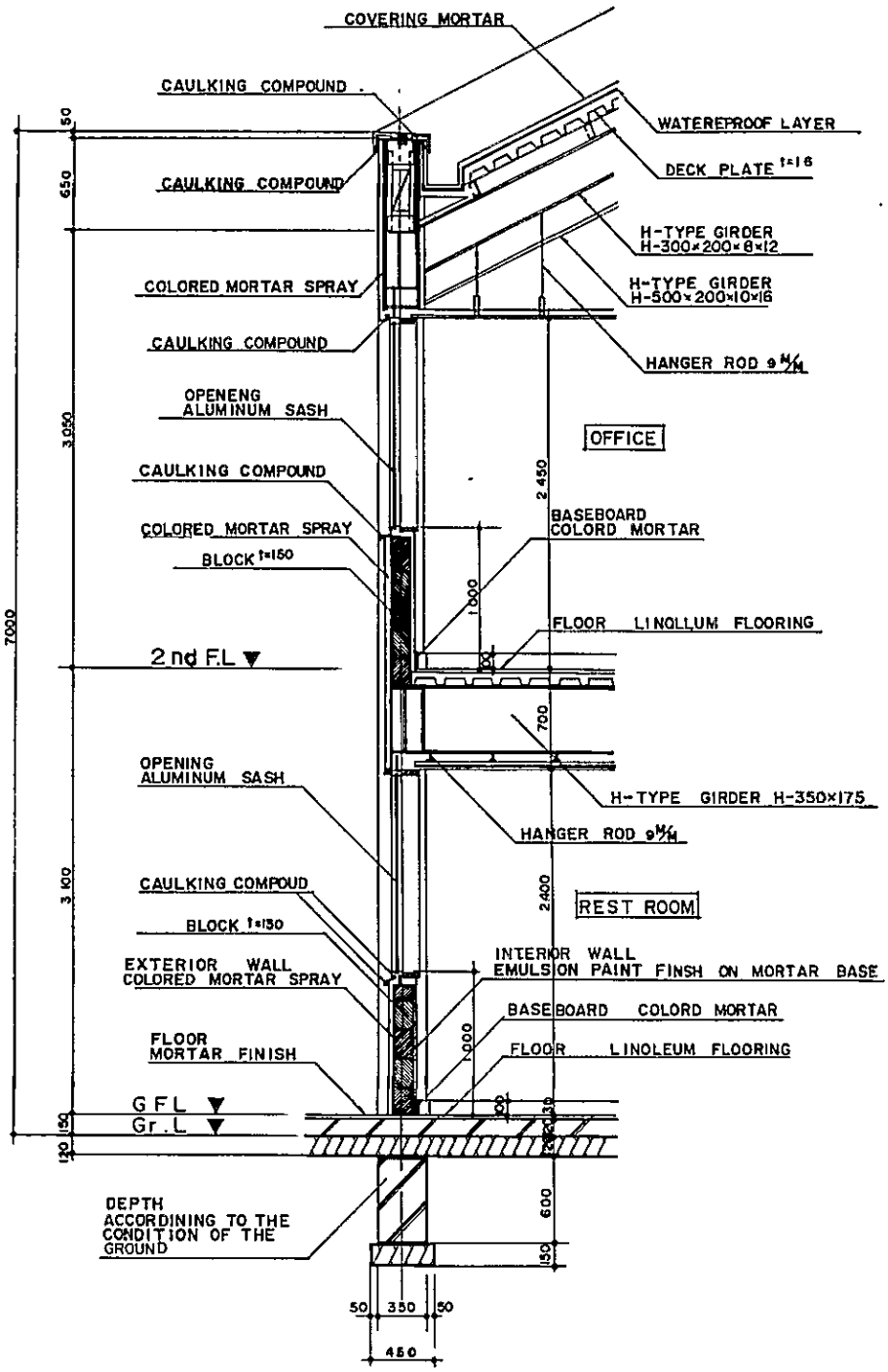
GROUND FLOOR PLAN 1:100

Drawing No 5.5 Custom Built Factory Type II,
Second Floor Plan

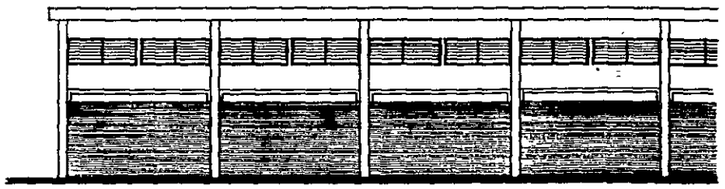


SECOND FLOOR PLAN 1:100

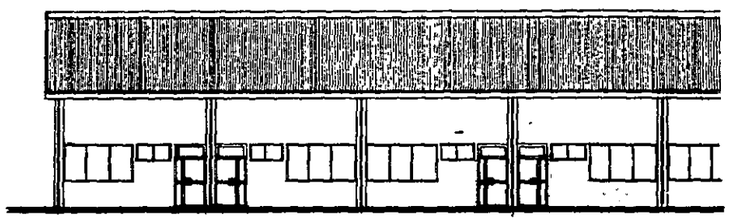
Drawing No 5.6 Custom Built Factory Type II, Sectional Detail



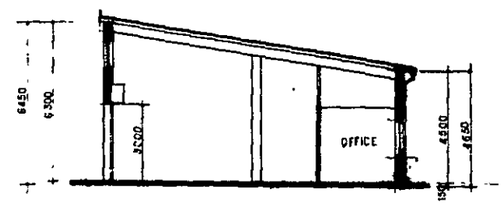
Drawing No 5.7 Standard Factory Building Type A,
Floor Plan, Elevation, Section



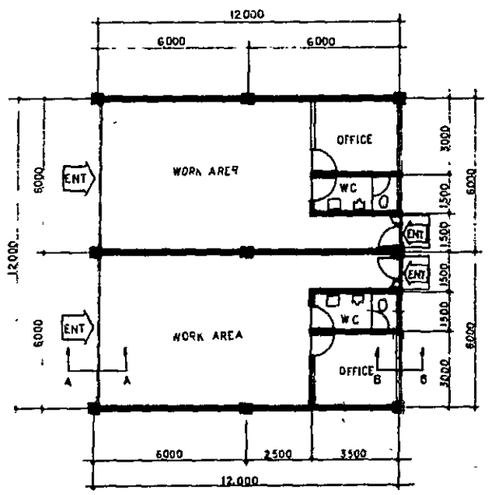
BACK ELEVETION 1:100



FRONT ELEVETION 1:100

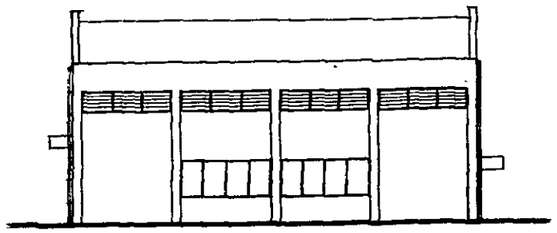


SECTION 1:100

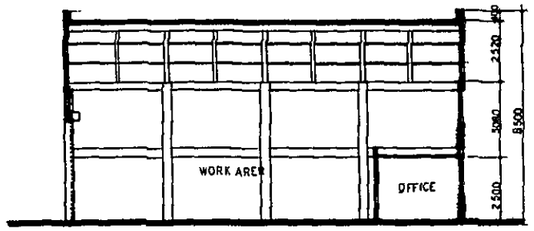


FLOOR PLAN 1:100

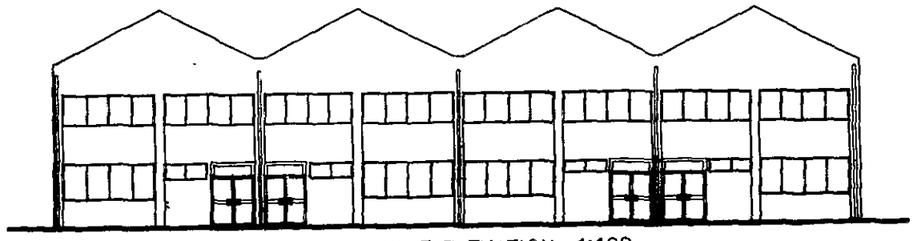
Drawing No 5.9 Standard Factory Building Type B,
Floor Plan, Elevation, Section



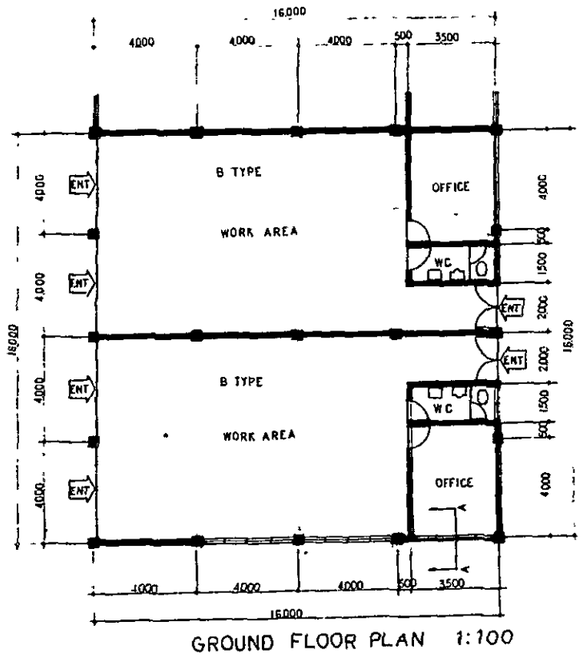
SIDE ELEVATION 1:100



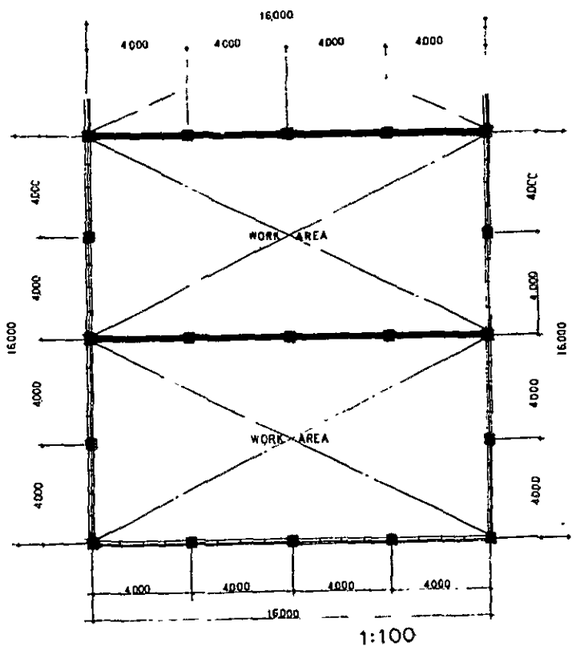
SECTION 1:100



FRONT ELEVATION 1:100

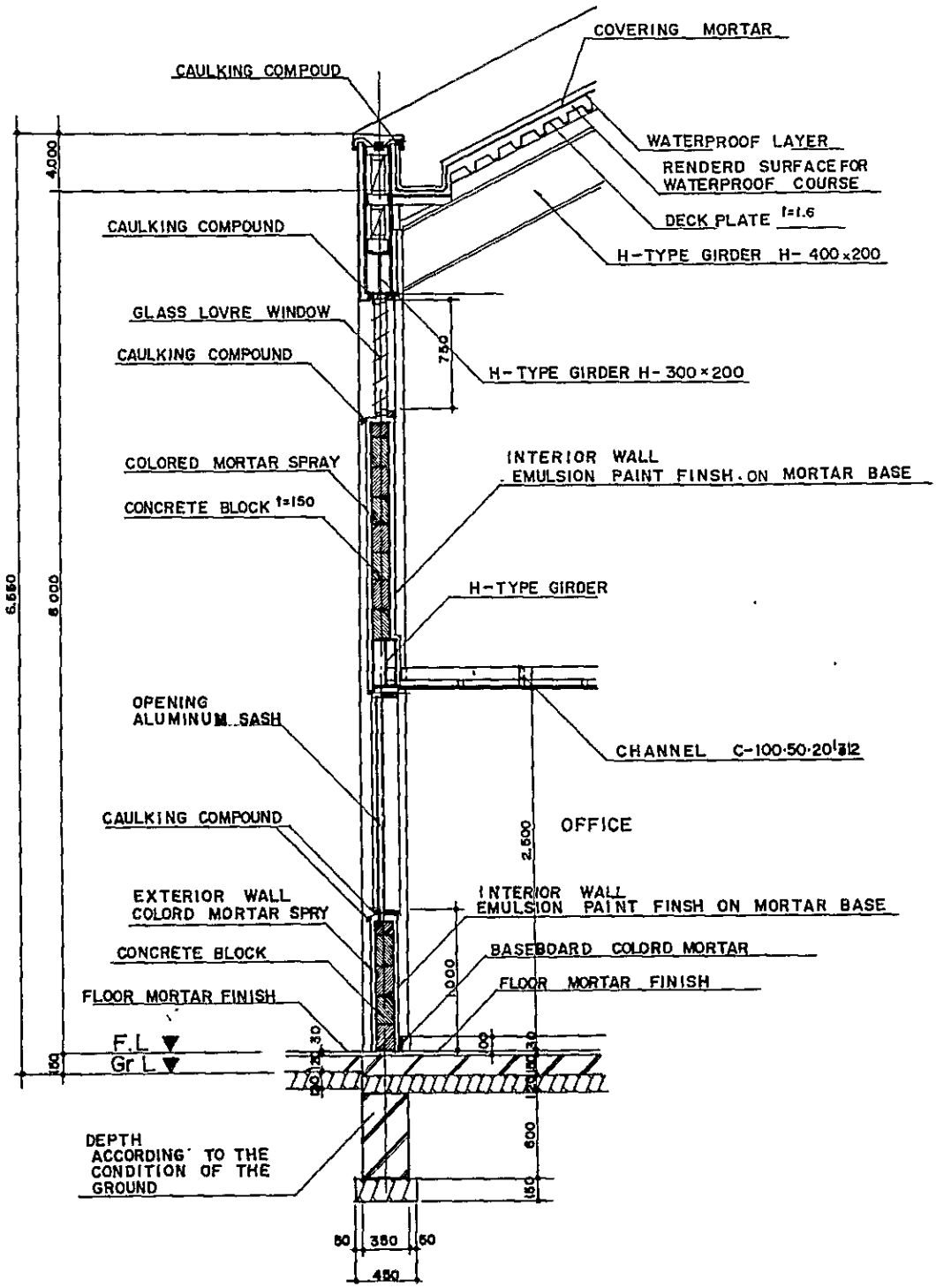


GROUND FLOOR PLAN 1:100

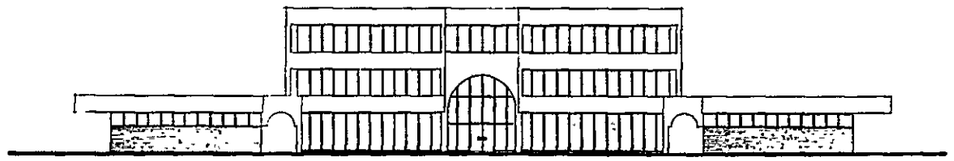


1:100

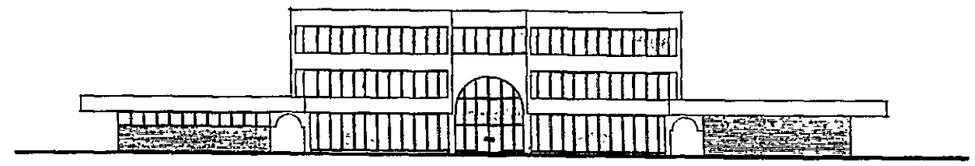
Drawing No 5.10 Standard Factory Building Type B, Sectional Detail



Drawing No 5.11 Center Building, Elevation

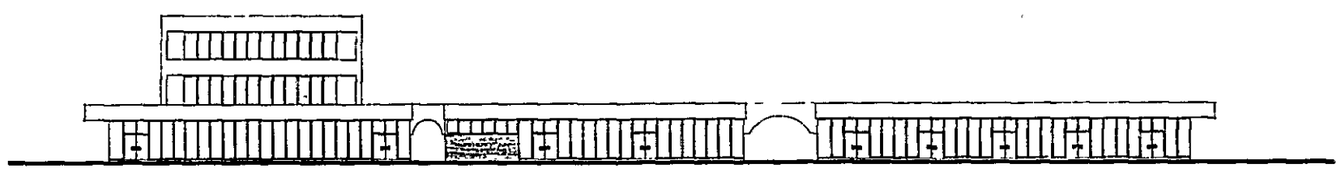


NORTH ELEVATION 1:200



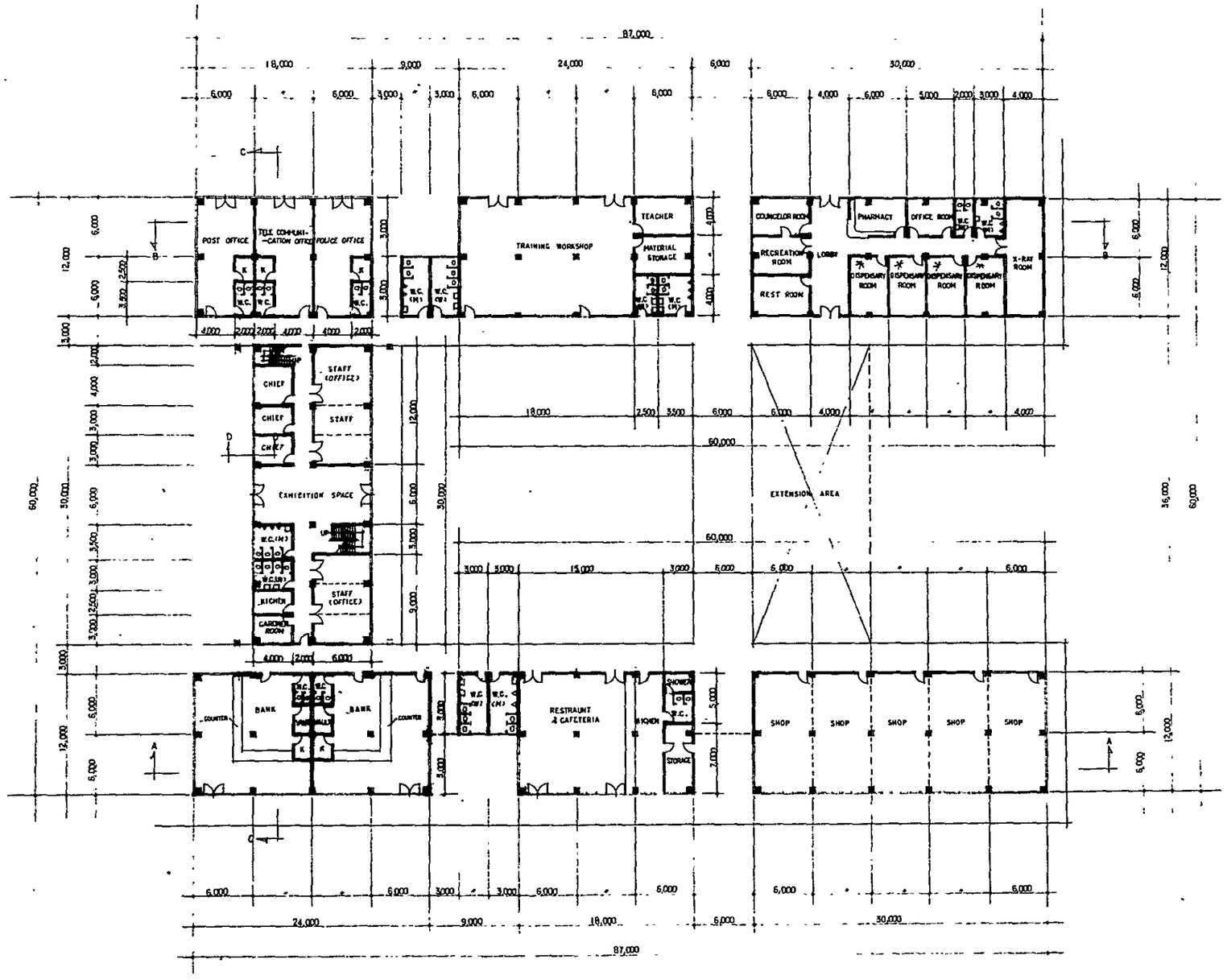
SOUTH ELEVATION 1:200

WEST ELEVATION 1:200



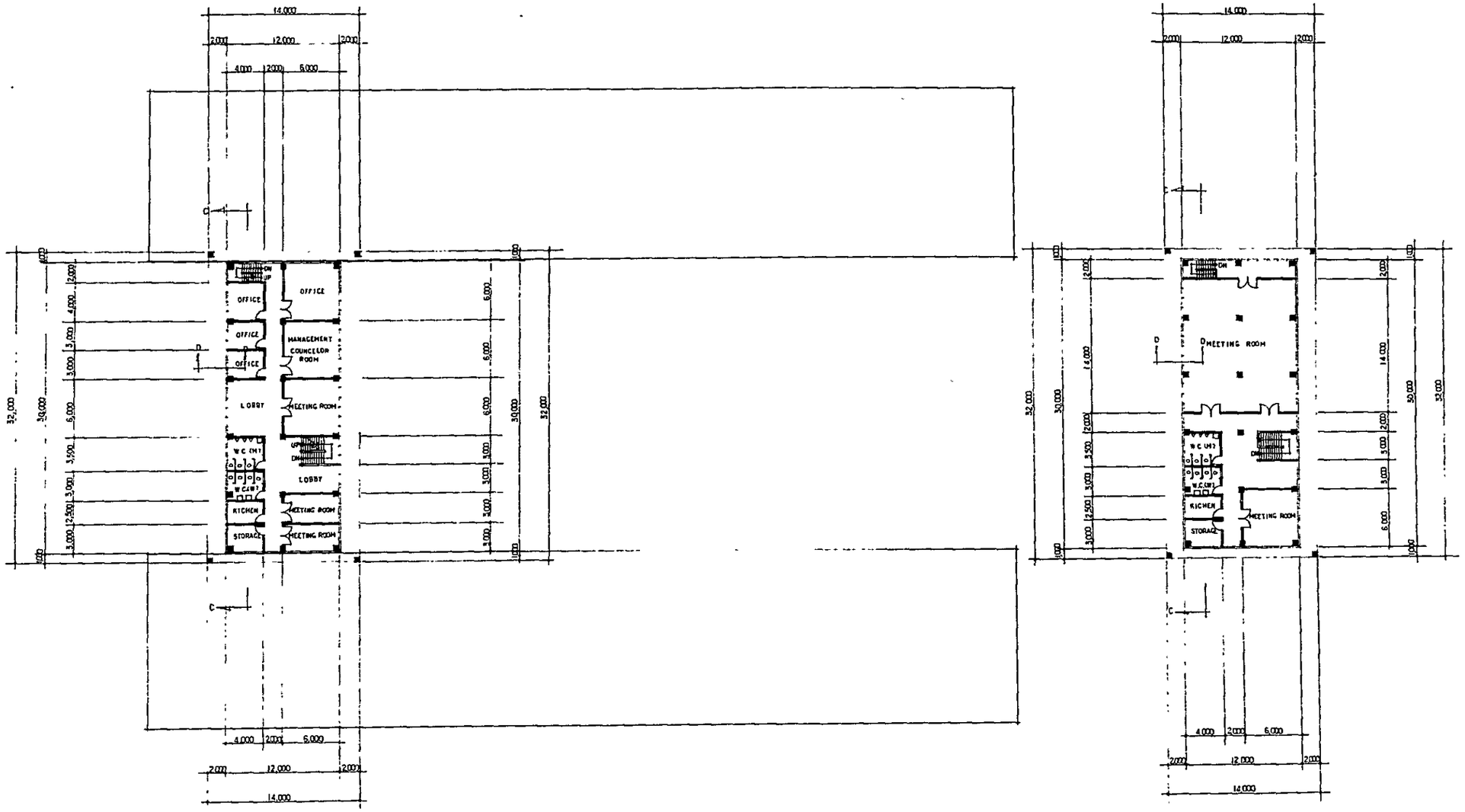
EAST ELEVATION 1 200

Drawing No 5.12 Center Building, Ground Floor Plan



GROUND FLOOR PLAN 1:200

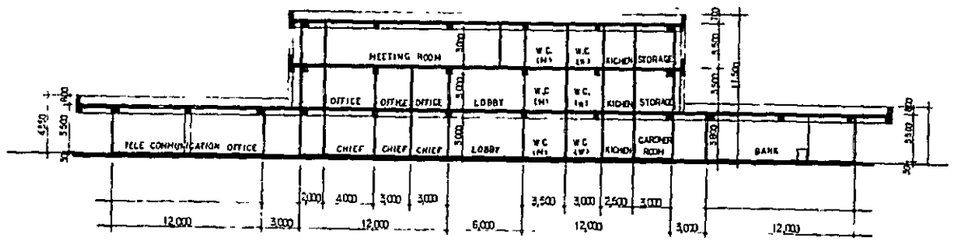
Drawing No 5.13 Center Building, 2nd & 3rd Floor Plans



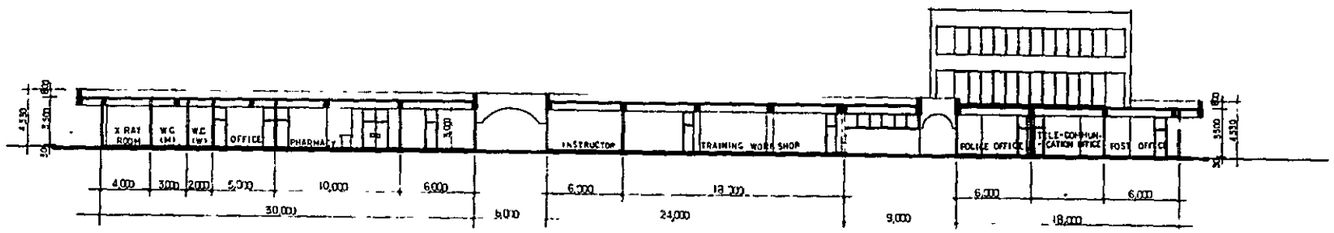
2nd FLOOR PLAN 1:200

3 rd FLOOR PLAN 1:200

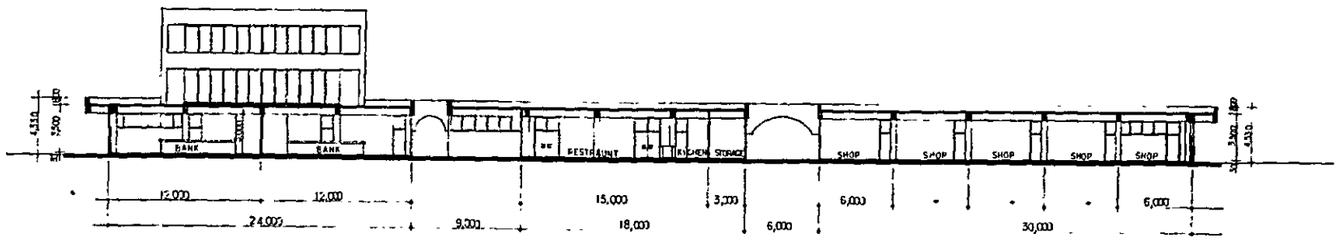
Drawing No 5.14 Center Building, Section



C-C SECTION PLAN 1:200

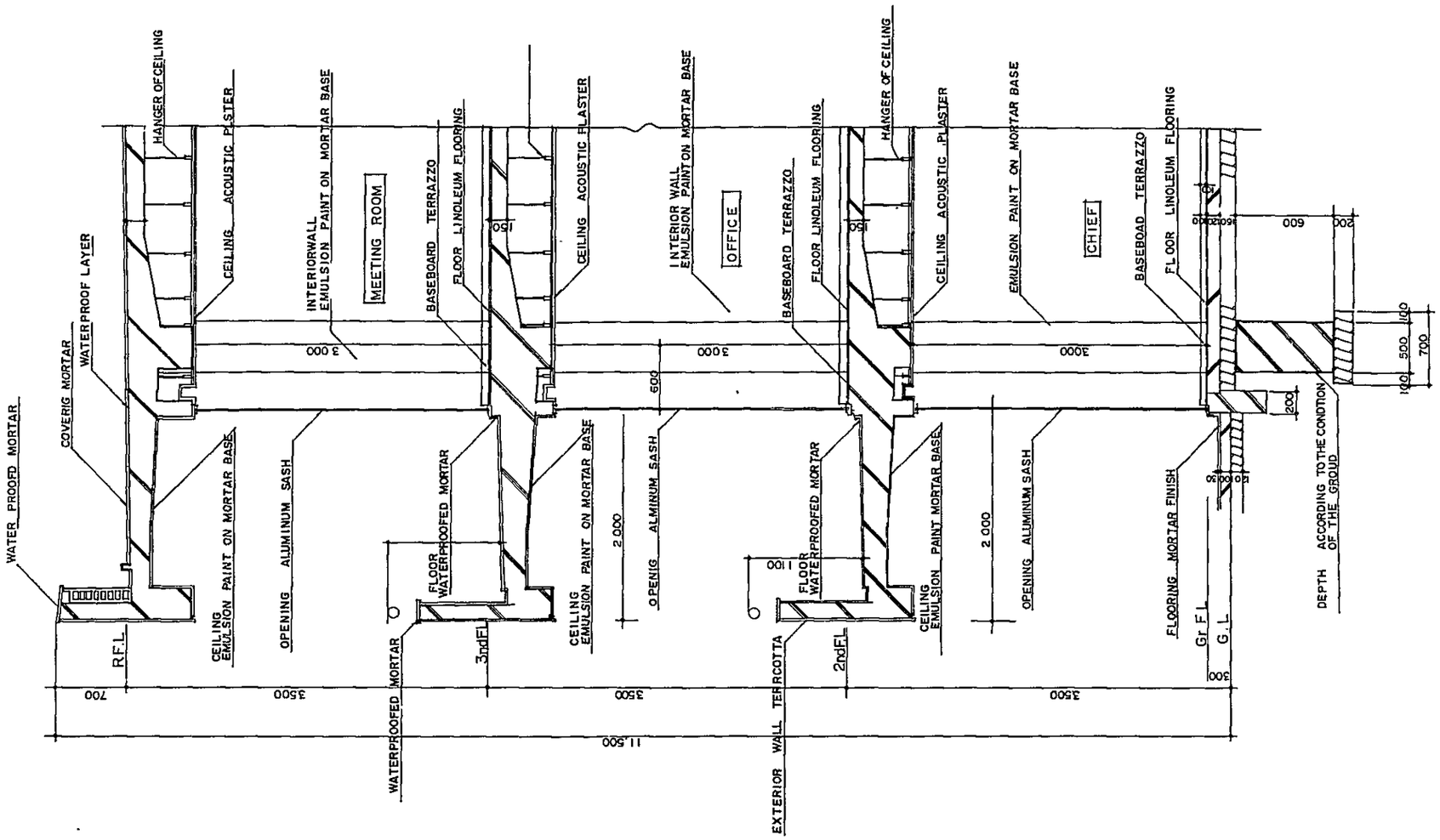


B-B SECTION PLAN 1:200



A-A SECTION PLAN 1:200

Drawing No 5.15 Center Building, Sectional Detail



JICA

THE HASHEMITE KINGDOM OF JORDAN
FEASIBILITY STUDY OF IRBID
INDUSTRIAL ESTATE, FINAL REPORT

OCT. 81

JICA