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ASSISTANCE TO INDUSTRIAL DEVELOPMENT OF BUILDING MATERIALS MANUFACTURE*

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INDONESIA

Technical report: Proposed development programme for the construction industry

Prepared for the Government of Indonesia by the
United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

United Nations Industrial Development Organization
Vienna

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Preface

This report is prepared at the request of Ministry of Public Works and Electric Power by Mr. Lars Gravesen M.Sc., during a mission as UNIDO Consultant in October – December 1977. The mission was supported by Mr. Kurt Sorensen, Adviser to the Danish Construction Industry, and by Mr. Gerrit C. Verkerk, Special Technical Adviser to UNIDO Headquarters.

The Report presents an outline of a comprehensive, multi-years development programme for the Construction Industry in Indonesia, and proposes a detailed planning exercise to be carried out in 1978.

The proposal is worked out in cooperation with an Indonesian Steering Committee and a Working Group established for this purpose.

T. Ringsholt
UNIDO Project Manager

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Currency Equivalents :

US $	**: Rupiahs (Rp) 415**
Rp 100	**: US $ 0.241**
Rp 1 million	**: US $ 2,410**

SUMMARY & RECOMMENDATIONS

Summary

The construction industry is an essential industry in any economy and plays an important role in economic development. It supplies physical infrastructure for economic and social progress, provides 60% of the fixed capital investment and contributes to employment opportunities.

Development of the domestic construction industry may contribute to national development by increased employment, socio-political benefits, lower construction costs and foreign exchange savings.

It is therefore justified, that the domestic construction industry is recognized as a vital factor in national development.

In the preparations for the third National Five-Years Development Plan, REPELITA III (1979 – 1984), the Ministry of Public Works and Electric Power decided to prepare a comprehensive programme for development of the domestic construction industry. The Ministry approached UNIDO with a request for assistance to formulate this programme for presentation to the National Development Board, BAPPENAS, at the end of 1977. A UNIDO mission worked during October – December 1977 with officials from the Ministry of Public Works and Electric Power on this task, and the present report contains the missions proposal

The proposed 5-years development programme consists of 32 project activities, grouped in 5 Basic Projects as suggested in chapter 4. As part of the programme, the Basic Project will be applied in 4 selected Demonstration Schemes in various regions, for testing, training and demonstration of the proposed methods, ref. chapter 5.

Recommendations

1. The development of the domestic construction industry in Indonesia should be planned and implemented in close cooperation between the Government and the private sector.

2. Considering the national importance and the magnitude of the task, further UNIDO assistance should be requested for the detailed analysis and formulation of the programme during a one year planning phase in 1978 as suggested in chapter 6

3. The proposed, integrated 5-years development programme, covering the period of REPELITA III, should be initiated with full commitment and support by the involved Government agencies and the private sector. Different national and international resources should be activated in this phase to secure the means for the implementation as preliminarly indicated in chapter 7.

4. The Government and the private sector should secure that the activities and development initiated by the projects during this period are carried on as required after the completion of the proposed 5 year programme.

1. INTRODUCTION

1.0. UNIDO's Assistance in Formulation of Programme.

In July 1977, Indonesia's Ministry of Public Works & Electric Power requested assistance by UNIDO in formulating a Draft Project Proposal, to be submitted before the end of 1977 by the Ministry to BAPPENAS as a working document in connection with the preparation of the third 5 years plan, REPELITA III, with the aim of establishing a special programme for the development of the domestic construction industry.

For this purpose a special UNIDO-Mission to Indonesia was established in September 1977, and visited Indonesia in October - December 1977.

The Mission's Working Programme is given in Annex 1.

The Mission's Terms of Reference are given in Annex 2.

Available background information is listed in Annex 3.

This Proposal was prepared in November - December 1977 in cooperation between a Working Group established by the Ministry, and the UNIDO Mission.

It must be emphasized that this report is meant to be a draft only for the proposed integrated, multi years development programme. Considering the wide scope of the programme, the current deficiencies in relevant Indonesian planning data, and shortage of background information in English (several surveys and studies which have been carried out on the subject during the previous years have not yet been translated), a complete analysis of the problems will require much more time than has been available at this stage. The Mission recommends, therefore, that the final formulation of the Programme and the detailed planning of the project activities, be carried out during a 9 months Planning Phase in 1978. For this planning exercise more complete background information and planning data should be made available, and more extensive UNIDO-assistance mobilised as suggested in chapter 6 of this report.

1.1. Need for Promotion of the Construction Industry in Indonesia.

1.1 0. General Background

With a population of about 135 million (1976). Indonesia is the fifth most populous country in the world. The land area of about 2 million km2 is spread over more than 3.000 islands, covering an archipelago of about 5,000 km by 1,800 km.

The island of Java with an area of 131,000 km2 has a population of about 80 million and is one of the most densely populated areas in the world. About 18% of the population is living in urban areas. The Jakarta Metropolitan area has about 10 million inhabitants (1976). The average population growth rete is about 2.3% annually In the Jakarta Metropolitan area the growth rate is about 3.8% annually. Other main growing centres are Surabaya and Semarang (Java), Medan and Palembang (Sumatera), Ujung Pandang (Sulawesi) and East & South Kalimantan. The central Government of Indonesia is in Jakarta. There are 26 Provincies with each a Local Government.

The geographical, ethnological and economic conditions vary largely throughout the country, from remote and scarcely inhabited provinces through the highly sophisticated and overpopulated metropolis of Jakarta. This uneven distribution of population is creating serious problems. With an extensive transmigration programme, aiming at moving about 100,000 families per year from Java to scarcely inhabited areas of other islands, the Government seeks to establish a better balance of population and to support social progress. It is evident that most development programmes have to be analysed separately for different regions according to their special conditions and potentials.

From 1966 the economic and social development of Indonesia has shown remarkable progress. The Gross Domestic Product has increased at an annual rate of 7 - 11 % and is now estimated at about 27 billion US $, or about US $ 200 per capita. The known resources in raw materials such as oil, gas, wood, minerals etc. together with a restrictive economic policy have secured a favourable balance of foreign payments, and seem promising with regard to future aspects. Compared to most other developing countries, both the social problems and the economic potentials are of an unusual magnitude.

1.1.1. Construction in Indonesia

According to "World Tables 1976" published for the World Bank, the volume of Construction in Indonesia has developed as follows:

Table 1 : Growth in Production, investment and construction in Indonesia 1960 - 1972. Index 1960 = 100, constants prices :

Year	GDP	GDI	Value added in construction	Population
1960	100	100	100	100
1965	110	118	100	110
66	113	133	62	112
67	115	108	94	114
68	127	132	133	117
69	136	170	185	119
1970	146	226	217	121
71	156	264	260	125
72	167	316	292	127

Notes : GDP = Gross Domestic Product at market prices
GDI = Gross Domestic Investment at market prices

Although the figures are indicative only, they may give an idea of the main development lines. It seems that both Investment and Value Added in Construction have approximately trebled in the five year Period 1967-72, a rather impressive economic performance. According to the forecasts of REPELITA II (Doc.00)[x] the share of construction in GDP is estimated to increase from 3,8% in 1973/74 to 4.1% in 1978/79.
For comparison with the development of construction in other countries of relevance for Indonesia, the following figures may be quoted from "World Tables 1976" :

Table 2 : Comparative Figures on Construction

	Popula-tion 1972	GNP per Capita 1973	Average annual figures 1965 73				
			Growth of		Share of GDP		Constr VA pe Capita
			Popula-tion	GDP	GDI	Constr. VA	
	Million	US $	%	%	%	%	US $
Burma	28.9	99	2.3	3.0	12.5	2.1	1.4
India	563.5	120	2.3	3.5	15.6	4.9	4.9[xx]
Indonesia	121.6	130	2.2	6.8	14.7	3.0	3.2
Nigeria	69.5	210	2.5	8,7	19.1	6.1	10.2
Egypt	34.8	250	2.5	3.3	13.8	4.3	7.0
Thailand	38.2	270	3.0	7.4	24.0	6.5	10.3
Philippines	39.0	280	3.0	5.8	20.6	3.1	5.5
S. Korea	32.4	400	1.9	10.9	24.8	5.3	13.7
Columbia	23.0	440	3.2	6.1	20.4	5.1	17.3
Malaysia	11.6	570	2.8	5.8	17.2	4.1	14.8
Turkey	37.0	600	2.5	6.6	20.1	6.8	23.7
Mexico	54.2	890	3.5	6.5	20.1	5.1	40.4
Hong Khong	4.1	1 430	1.9	7.4	22.6	4.6	37.2
Singapore	2.1	1.830	1.8	12.7	22.4	5.6	94.6
Japan	107.0	3.630	1.2	10.8	37.4	7.6	181.5

xx) 1971

Notes : GDP = Gross Domestic Product
GNP = Gross National Product minus net factor income from abroad.
GDI = Gross Domestic Investment
VA = Value Added

x) (Doc ...) refers to List of Documents, Annex 3.

Although these data may be inaccurate, some general trends may be concluded from them :

a). The economic policy of Indonesia in the above mentioned period has been restrictive as regards investments in construction.

b). With further growth of GDP it may be expected that value added in construction could be increased at a higher rate than GDP. As an average of the above mentioned data, a 20% higher growth rate would be normal.

The investments in construction in Indonesia are primarily concerned with :

a). Communication throughout the archipelago, which calls for large schemes of roads etc.

b). Agricultural development incl. irrigation etc.

c). Peoples Housing, incl. Low Cost Housing Schemes, development of urban infrastructure, water supply, Kampong improvement, rural housing improvement, Schools etc.

d). Industrial development, incl. mining, power supply, etc.

In all these sectors, a substantial part of the financing is supported by foreign loans, e.g. from the World Bank.

The Government's economic policy as laid out in the current 5 years plan REPELITA II, 1974-79, (Doc.00) does not give separate identification of planned investments in construction Table 3 indicates the Sectorial Scope of construction in REPELITA II.

Table 4 gives a similar illustration of the institutional scope of Public construction administration.

Also there are no figures available for assessment of the actual volume of construction investment according to the current yearly Government budgets or accounts of past years expenditures by the Government agencies. Neither do the available statistical data present overall physical quantities produced in construction, nor of private investments in construction.

Table 3 :

Existing Sectorial Scope of Construction Industry.

Planned yearly Investments according to 5 years plans.

Clssification of Construction Industry. / Sectors of aconomic planning	BUILDING			CIVIL ENGINEERING						R & M	Notes
	Housing	Public buildings	Commercial Buildings	Sites & Services	Roads & railways	Irrigation	Power, gas Water supp.	Marine works	Dams Etc.	Repair & Maintenance	
1. Agriculture and Irrigation	X		?	?	?	X			X	X	
2. Industry and Mining	?		?	X	X					X	Factories Querries Office etc.
3. Electric Power	?						X		X	X	Powerplents Dams.
4. Communication snd Tourism.	?	X	?	X	X			X		X	Roads, Rsilweys Harbours Airports
5 Trsde & Cooperstions	?	X	?	X						X	
6. Manpower & Transmigre-tion.	X	X	?	X	X	?	X			X	Tranamigr. Sattlements, Schools, etc.
7. Ragionel and Local Developmant.	?	X		X	X		?	?		X	Public and Private Developments
8. Religion	?	X		X						X	
9. Educetion	?	X		X						X	Schools Univercities Etc.
10. Health	?	X		X						X	Hospitels Clinics Etc.
11. Housing end Water supply.	X	X		X			X			X	Public end Private housing.
12. Law Enforcement	?	?									Offices
13. Defence	?	X		X						X	Bsracks Magezins
14. Information & Comm.	?	X								X	
15. Sciance, Research	?	X									Lsboratories Others
16. Ststa Operetions	X	X	?	X						X	Offices
17 Public Corporations	?	X	X	X	?	?	?	?	?	X	Patromina Othars

X = Figures not yet available - should be collected before 1 April 1978.

Table 4 :

Existing Institutional Scope of Construction Industry
Investments 1976 / 1977 by Central Government Agencies X)

Classification of Construction Industry / Government Agencies	BUILDING			CIVIL ENGINEERING						R & M	TOTAL Bio Rp X)
	Housing	Public Buildings	Commercial buildings	Site & Services	Roads & railways	Irrigation	Power, Gas, Water Supply	Marine Works	Dams Etc.	Repair & Maintenance	
Min. Public Works	X	X	–	X	X	X	X	–	X	X	
Min, Religious Aff.	X	X	–	–	–	–	X	–	–	X	
Min. Finance	X	X	X	–	–	–	X	–	–	X	
Min. Social Affairs	X	X	–	–	–	–	X	–	–	X	
Min. Foreign Aff.	X	X	–	–	–	–	X	–	–	X	
Min. Agriculture	X	–	–	–	–	–	X	–	–	X	
Min. Mining	X	X	–	–	X	–	X	–	–	X	
Min. Transportation	X	X	–	–	X	–	X	X	–	X	
Min. Trade	X	X	–	–	–	–	X	–	–	X	
Min. Justice	X	X	–	–	–	–	X	–	–	X	
Min. Education	X	X	–	–	–	–	X	–	–	X	
Min. Industry	X	X	–	–	X	–	X	–	–	X	
Min. Information	X	X	–	–	–	-	X	–	–	X	
Min. Defence	X	X	–	X	X	–	X	X	–	X	
Min. Manpower	X	X	–	X	X	–	X	–	–	X	
Min. Health	X	X	–	–	–	–	X	–	–	X	
Min. Home Affairs incl. INPRES.	X	X	–	X	X	X	–	–	X	X	
Total Central Government Bio. Rp. X)											

X) = Figures not yet available. Should be collected before 1 April 1978.

1.1.2. The Domestic Construction Industry

The resources available to the construction industry in Indonesia are :

a). Abundance of labour, although there is a shortage of skilled labour of all categories, and

b). Abundance of domestic raw materials, only iron ore deposits are limited (Doc.07).

The domestic building materials industry (Doc.07, 09, 10, 11, 12) comprises traditional, small scale production based on timber, bamboo, clay, lime, puzzolana , cement etc. as well as some modern industries producing cement , asbestos – cement, particle board, steel sheets and bars etc. Both sectors are being developed to meet the demand for quality and/or quantity.

The domestic contracting industry also covers a wide range of firms, comprising traditional, small firms working locally in a single area, as well as modern, large companies, operating in several regions and in command of advanced technologies in building construction and in civil engineering works (Doc 02 and 04).

Indonesian consultants are established mainly in the greater cities Architects and engineers with good technical background are capable of handling the design of any kind of normal buildings and civil engineering works as well as city planning etc.

Data are not available to allow assessment of the Domestic Construction Industry's present share of the total construction volume in Indonesia. It is evident, however, that its share is high, and still growing.

Foreign consultants and contractors have of course been employed on major Civil engineering works and specialized industrial projects, but mostly they are working with Domestic firms in Joint Ventures or as sub-contractors. In later years, however, important works in civil engineering and in building construction are being awarded to Indonesian firms. This is partly due to a 7.5% preferential rate as applied on international bidding for protection of the Domestic contractors. But also the reason is that the most advanced Indonesian consultants and contractors are becoming competitive on such projects. One Indonesian contractor has even recently been awarded a first contract in a highly competitive market abroad.

It seems evident that the modern segment of the Domestic Construction industry in Indonesia has already grown far beyond the early phases of development as envisaged in most developing countries. This may partly be attributed to the high level of technical education and research as practised in Bandung. These assets have already given Indonesia a leading role to play in the technical cooperation among developing countries in the South East Asiatic region.

The present policy of the Indonesian Government calls for private enterprise to further develop the Domestic Construction industry. Exceptions are Government investments in projects of basic importance for the country's economy such as the expansion of the cement industry with the purpose of

making Indonesia self-sufficient and perhaps even cement exporting by 1985. Also some major contracting firms are Government owned since they were nationalized during the first period of the republic after the second world war.

Private consultants are hired by government agencies for planning and design work on individual projects. Up till now, however, there is a preference for using government employed architects and engineers for project management and supervision.

It has been made clear, however, that further development of the domestic construction industry will be a field for private investment and enterprise whereas the Government will support and stimulate such development. The proposed development programme may be seen as a suggestion for formulating a government policy to such effect.

1.1.3. Need for Support and Promotion

In the present stage of development, the domestic construction industry in Indonesia is suffering from several handicaps and obstacles which appear to impede or delay further progress. Studies carried out in recent years e.g. by Institute of Technology, Bandung (Doc.04), University of Indonesia, Indonesian Chamber of Commerce and Industry (Doc.02) and Ministry of Public Works and Electric Power (Doc.01 and Annex 4) as well as the findings of the UNIDO Mission indicate the following main symptoms :

a). Further development of the capacity and efficiency of the domestic construction industry to meet the country's increasing demand for construction is hampered by lack of adequate long term planning and of administrative coordination of the construction activities.

b). In facing competition from foreign firms, the modern segment of the domestic construction industry is handicapped e.g. by lack of national technical codes and standards, inadequate contracting procedures, high interest rates on working capital, shortage of equipment, etc.

c). The traditional segment of the construction industry is weakened by irregular competition and inadequate business administration, whereby the share of the more labour intensive, conventional and traditional working methods in construction is declining.

d). The general trend towards equipment intensive construction technology as developed in the industrialized countries is inconsistent with the need for increase of employment opportunities in construction.

e). There is a general shortage of technical and managerial skill at all levels and in all sectors of the industry, incl. a shortage of skilled workers in factories and at building sites.

It is evident that the problems indicated above, and further analysed in chapter 2, can be solved only through appropriate action by the Government as suggested in the present Development Programme.

1.2. Scope of Development Programme

The proposed Development Programme for the construction Industry in Indonesia includes all important aspects of the domestic Construction industry.

1.2.1. **Scope of production**

In accordance with UN Recommendations for classification of construction activities, the following categories of production are included :

a. Buildings : Housing (residential buildings)
Non-residential :
Public buildings.
Commercial buildings.

b. Civil Engineering Works : Sites and Services
Roads and bridges
Irrigation
Supply of power, gas, water and sewerage
Marine works, dams, etc.

c. Current Repair and Maintenance : in all sectors of a and b.

1.2.2. **Scope of Trades**

The Construction Industry is meant to include the following parties :

a). Consultants : architects and engineering, for planning design, supervision.
Management
Administration

b). Contractors : site work, whether by contractors or by own account.

c). Manufacturers : of building materials, e.g. bricks, cement, concrete, gravel, timber, etc.

d). Research and Testing : Laboratories, etc.

e). Investors and clients : the planning, management and supervision by clients, in particular agencies of Central and Local Governments.

f). Public Authorities : involved in quality control and enforcement of regulations and standards, etc. in construction.

1.2.3. **Institutional Scope**

In relation to Public Administration, the Construction Industry has a cross-sectorial scope and is involved in budgets of a number of different ministries (viz Table 4, chapter 1.1.). Further a substantial part of the public construction investments are included in the budgets of local governments, who are responsible for a share of several sectors in the National Budget. Through the INPRES budget a part of the Central Governments budget allocations for construction is also administrated by local Governments.

1.2.4. **Geographical Scope**

In general, the proposed development programme refers to Indonesia as a whole, according to the National Development Plan. As pointed

out before (chapter 1.1.), however, regional or provincial sub-programmes will have to be specified in accordance with the individual geographical, ethnological and economic conditons of separate areas.

1.3. Objectives of Development Programme

The Ministry of Public Works and Electric Power has defined the main objectives of the proposed development programme as follows :

1.3.0. The Domestic Construction Industry should be identified as a vital factor in national economic growth and be allowed to develop efficient production of the physical infrastructure of economic and social progress.

1.3.1. Development of a mass-producing low-cost housing supply industry which will be able to meet the Governments targets for provision of housing within the reach of most of the people.

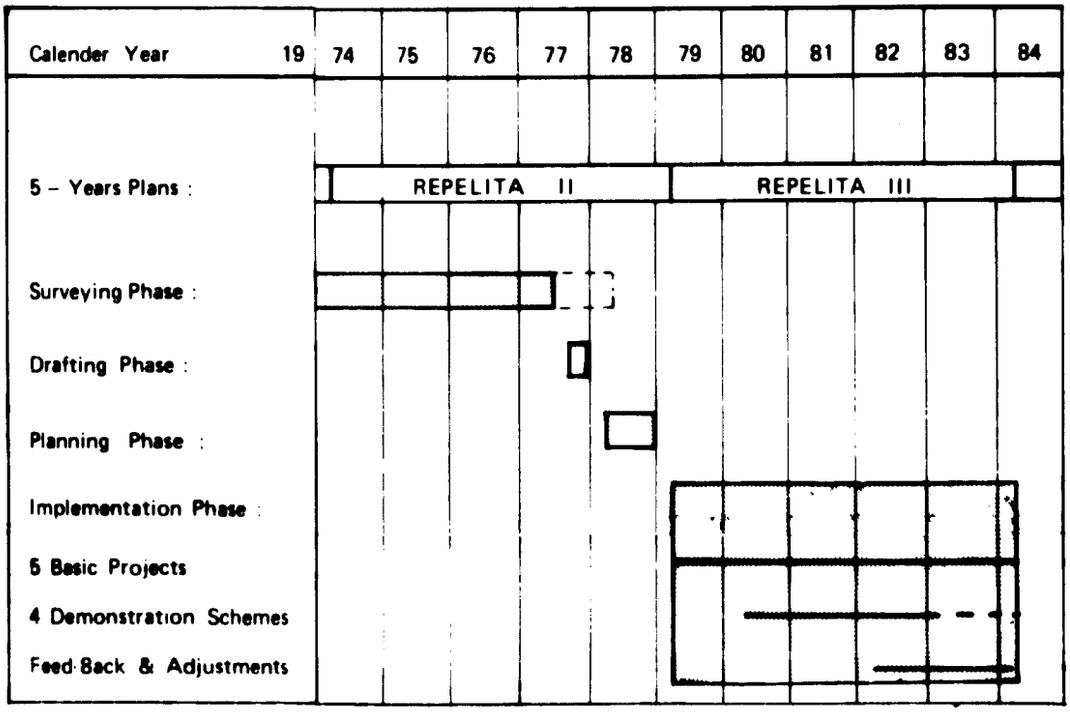
1.3.2. Improving the capabilities of the modern segment of Indonesia's construction industry to cope with competition from foreign firms in the domestic market as well as in overseas markets.

1.3.3. Strengthening of the traditional segment of the construction industry to make the best use of domestic materials and human resources in catering efficiently for the local demand for construction in all regions of the country.

1.3.4. Increase employment generation in the construction industry by promoting employment oriented construction methods.

1.4. Timing of Development Programme

Main Time Schedule
for proposed Development Programme of the
Construction Industry in Indonesia.



The proposed Development Programme comprises 4 main Phases as illustrated in the above diagram :

1.4.1. Surveying Phase : Studies and analysis of the present situation in the domestic construction industry, carried out 1973-77 by various institutions and associations and discussed in a series of seminars and workshops for formulation of policies and development plans Such surveys will have to be carried on in order to collect all necessary background information and planning data for subsequent phases.

1.4.2 Drafting Phase : Preparation of the present outlines of an integrated, multi years development programme to promote the domestic construction industry. Carried out in October - December 1977.

1.4.3. Planning Phase : Detailed design of the development programme to be carried out in 1978 as described in chapter 6 of this report.

1.4.4. Implementation Phase : Realization of the development plans comprising 5 Basic Projects with a total of 32 project actives as described in chapter 4 of this report, and application of these basic projects in 4 Demonstration Schemes as outlined in chapter 5.
These activities are planned for the 5 years period of REPELITA III, i.e. 1979-84, and will partly be continued and further developed under subsequent 5 Years Plans.

1.5. Task of the Government and of the Private Sector

The domestic construction industry is of primary significance to national development. Essential achievements of construction are :

- Supply of the physical infrastructure of ecnomic and social progress.
- Provision of up till 60% of fixed capital investments, thereby creating permanent assets of the national economy and contributing 3 - 7% to GDP.
- Contribution to employment opportunities.

By replacing foreign construction activities, the indigeneous industry may accomplish :

- Greater local employment
- Socio-political benefits
- Lower construction costs
- Foreign exchange savings

It is therefore justified that the domestic construction industry is recognized as a vital factor in the national economy and identified as an important sector of the indigeneous industry for which special development efforts are essential.

For this purpose a close cooperation between the Government and the private sector is necessary.
The Government is responsible for the legislative, administrative, planning, economic and educational conditions necessary to create a favorable climate for industrial development in construction (Doc.01, 02 and 04).

Given a favorable climate, the private sector is responsible for developing efficient planning and management to secure rational production.

Technical research and development activities in this field should be carried out by both Government institutions and by the industry, in mutual cooperation.

A successful planning and implementation of the proposed development programme, therefore, will depend upon efficient cooperation and co-ordination between the two parties as well as between the various sectors within Public Administration and within the industry, i.e. designers, manufacturers and contractors.

Finally, it should be mentioned that the proposed development programme is in general accordance with the policies of both UNIDO and the World Bank as regards promotion of domestic construction industries in developing countries (Doc. 18, 19, 22 and 23). It might be useful, therefore, if the Indonesian Government would invite cooperation of these agencies in planning and implementation of the programme.

2. IDENTIFICATION OF PROBLEMS

2.0. Demand versus Capacity

This chapter will attempt to identify the factors which cause the problems as described in section 1.1.3.

It seems, in the first place, that there may be an inconsistency between the present demand for construction in Indonesia and the potential production capacity of the domestic construction industry as related to the population. As appears from Table 2, chapter 1.1.1., the value added in construction (which measures mainly the input of labour) is only 3.2 US $ per capita in Indonesia as compared to US $ 10 – 15 per capita in most other countries of relevance. This might indicate an underemployment of the domestic construction industry in Indonesia which would explain the problems of irregular competition as pointed out by various surveys (Doc. 02 and 04).

Without long term planning of the construction demand by the government, and without adequate statistical data to illustrate the present situation, the industry is unable to make proper analysis of the capacity problems and to take precautions for the future.

2.1. Influence of Government Policies and Administration

The various surveys of recent years (Doc. 01, 02 and 04) have indicated a number of problems in connection with the Government policy and Public administration of construction.

In view of the fact that 60 – 70% of all consideration activities are being financed and/or managed by Government agencies, it seems evident that the "environmental factors", which govern the development of the domestic construction industry are largely dependent upon the Government's policies and administration of construction.

In the following some of these environmental problems have been identified as basis for activities within Basic Project 1 of the proposed development programme.

2.1.2. Problems of Financing, Housing Programme

A critical path to the success of housing programmes passes through monetary policy, financial systems and their institutions (Doc. 06). Although action have already been taken by the Government by assigning the National Savings Bank to provide long-term loans to buyers of low-cost houses, it seems desirable that further plans be developed to increase the possible investments in people's housing.

2.1.3. Aspects of Protection Policy, Taxation and Duties.

A recent report by the Indonesian Chamber of Commerce (Doc 02) has criticized the Government's present protection policy and the effect of current taxation and duties stipulations.

Although the 7.5% nominal preference in favour of domestic contractors, which is practised presently on international bidding for projects in Indonesia, is in accordance with the policy of the World Bank, (Doc. 23) it is suggested that the effect and the justification of this policy be analysed

and re-evaluated.

2.1.4. **Problems of Public Procurement and Contracting Methods.**

The existing practice of Government procurement of construction seems to create problems to the domestic consultants and contractors.
One handicap is caused by the DIP system of yearly budget allocations, which generally prohibits coherent contracting on multi years projects.
Another handicap is due to different systems of prequalification and selection of contractors as practiced by the various agencies in charge of public investments in construction.
Problems are also caused by differencies in contract conditions as stipulated by foreign inventors and/or consultants according standards of their home country, lacking Indonesian standard conditions in this field.

2.1.5. **Financial Support to Entrepreneurs.**

The report by the Indonesian Chamber of Commerce (Doc. 02) also explains the problems of the domestic contractors caused by the high interest on loans for working capital from Indonesian banks.

2.1.6. **Problems in Building Legislation, Regulations, Codes and Standards.**

Indonesia has sa set of building laws, regulations and codes, partly originating from before the last world war. The escallation of construction during the REPELITA I and II, with introduction of modern construction techniques, and the increased complexity and size of construction projects, have confronted Indonesian Authorities and the construction industry with all kinds of technologies and standards, imported from various countries.
It has been observed that these conditions have already affected the efficiency of the domestic construction industry, and caused problems in controlling construction performance. They may also have serious implications on public safety
The present trend towards further increase in the construction volume, in the number of high-rise buildings and other Sophisticated Structures, and the use of new materials etc. may aggrevate these problems in the future.
It is also observed that there are problems in enforcing the present standards on the production of traditional building materials.
It is assumed that one reason may be inadequate standarded requirements, which may hamper a rational product development in the future.
Basic Project 1 6, 1.7 and 1.8 are suggested to solve these problems.

2.1.7. **Problems in Enforcement of Standards and Quality Control.**

In addition to the problems mentioned in 2.1.6. there seems to be lack of understanding of the importance of quality standards, both with producers, clients and with the local building authorities, and with regard to both the economic and the safety aspects.
Information and education in this field is needed.
Also the shortage of testing facilities at the regional level is a practical

limitation to implementation of quality control.

2.1.8. Public Administration of Construction

The report by Indonesian Chamber of Commerce (Doc. 02) has listed a number of problems ascribed to inadequate administration of construction by the Government agencies and local authorities.

It is only natural that the development of the construction industry should motivate current updating and strengthening of the related Public Administration, which has great effect on the possibilities for progress in the industry. Project 1.8 is giving some suggestions for possible action to this effect.

2.1.9. Deficiencies in Planning Data.

The existing deficiencies in statistical data on construction have become evident during the UNIDO Mission's attempts to quantify the problems, which have been indicated so far only in general terms, without assessment of their scope and magnitude.

It is observed that lack of facts and figures on present and future demand and supply of construction is hampering the necessary planning and programming by the Government as well as within the industry.

2.2. Industries Internal Handicaps

Reference is made to the PUTL staff working paper (Doc. 01) and the report by Indonesian Chamber of Commerce (Doc 02) in which the present situation of the domestic construction industry has been analysed in great detail.

2.3. Technical Restraints

Apart from the political, financial, legal, and other "environmental" factors dealt with in Basic Project 1 there are a series of technical restraints which hamper rational and efficient production by the domestic construction industry.

Basic Project 3 is dealing with the individual, technical shortcomings of the building materials industry, the contractors and the consultants respectively, as well as with some major, overall problems of coordination, planning and management of the production.

2.4. Manpower Problems

The PUTL Staff Working Paper 1977 (Doc. 01) has emphasized the importance of increasing employment opportunities in construction.

At the same time, the capabilities and the efficiency of the domestic construction industry should be improved.

In order to accomplish these two, partly conflicting objectives, great efforts have to be made in research and development on employment oriented technologies, with the purpose of finding possibilities for job creation at reasonable costs, and without hampering a competitive performance by the industry. Since the private industry has no motivation for making such efforts, and cannot be expected to invest time and money in such research work, Basic Project 4 is suggesting activities to this effect to be organized by the Govern-

ment.

However manpower problems also comprise a serious shortage of skilled labour in all fields of construction. These problems are dealt with in Basic Project 5.

2.5. Education Bottlenecks

The general shortage of properly educated and trained manpower at all levels is a serious constraint for the development of an efficient construction industry.

Several manpower studies carried out in Indonesia (Project evaluation: Technical Education, Vocational and Management Training, INS/TF/1V ED/Voc) have shown that the shortage is particularly serious at the technician and skilled worker level, and that the existing training capacity is insufficient. Also there seems to be a general need for better "performance discipline" at the various staff levels and sense of responsibility of both public and private services. This might partly be a result of inadequate salaries, but perhaps also other causative factors may be identified.

To cope with increased construction activity, the engineering and professional staff will have to develop organizational and managerial skills.

People with poor education and training can never become first class building and civil works contractors. A diversified construction industry capable of carrying out a wide range of work may not develop unless the qualifications of the contractors and their staff can be improved.

3. SUGGESTED REMEDIES

3.0. Assessment and Planning of Demand

It is suggested that in preparing the third 5 years Development Plan REPELITA III the Government should single out the construction industry as one of the sectors for which targets are defined and whose relationship with other sectors of the economy is examined in detail (Doc. 22).

This means that REPELITA III should specify the total volume of construction demand according to the annual development targets, and forecast the composition by categories of construction work and its regional distribution. But, at the same time, construction demand should be the subject of conscious, rational long term programming, in respect of both demand and supply, within the framework of the national economic plan, and the Government's employment strategy (ref. chapter 3.4.).

Construction objectives should be coordinated with the planning of supply of materials and with the physical planning of building sites, transport net-work and other infrastructure.

Public investment has to be coordinated with private investment to ensure continuous activity within the industry and to ensure harmony with the desired levels of regional and local economic activity (Doc. 19).

Such long term planning of the demand for construction is necessary to analyse the limits within which the domestic construction industry ought to be developed, and to assess the industry's requirements for capital investment, manpower, materials, and equipment.

It is desirable that the capacity of the domestic construction industry could be adjusted to the volume of continuous demand, which to a large extend is depending upon Public investments in construction.

Fluctuations in demand add to the risks of the industry. It may be advisable therefore to plan for necessary peaks in demand to be covered as far as possible by foreign companies, whereas the domestic construction industry should be appropriately dimensioned in accordance with the planning of a permanent, basic construction activity to meet the long term needs of the country. Considering the relatively low rate of construction investments in the past (table 2, section 1.1.1.), it seems likely that the economic policy of the Government in the third 5 years plan will call for a considerablle further increase of the construction volume.

Under such circumstances it is particularly important for the Government to provide a realistic basis for adequate, long term production planning in order to avoid the problems of "overheating" the industry as caused by unforeseen rise in demand.

For programming of continuous construction activities, the usual practice of economic planning within 5 years time frames is not adequate, because it often leads to "bunching" of projects start in the middle years of each plan period and decline of new committments toward the end of the old and the beginning of the new plan. Therefore a system of "rolling" 5 years construction programming ought to be developed, which allows for yearly updating and revision of 5 years programme projections.

3.1. Evaluation of Government Policies and Construction Administration.

Some comments are given in the following on the proposed activities in Basic Project 1, Government Policies and Construction Administration :

3.1.0. Long Term Planning, and

3.1.1. Investment Policies

The project activities 1.0 and 1.1. are in accordance with chapter 3.0 : Assessment and Planning of Demand.

3.1.2. Housing Financing/Mortgage Systems

The proposed analysis and possible suggestions for new institutions and systems for long term loans should be planned in cooperation with the National Housing Policy Board.

3.1.3. Revision of Protection Policy, Taxation and Duties

Apart from the suggested re-evaluation of the present nominal preference rate (ref. 2.1.3.) it seems desirable that a total analysis be organized to identify the effect of the present taxation and duties stipulations as regards the desirable development of the domestic construction industry. Revisions should be suggested with the purpose of creating financial incentives for investments in domestic industries and stimulate technical innovations and increased efficiency in production.

Also the desirable stimulation of repair and maintainance work (ref. Project 4.4.) could be achieved through adequate taxation policies.

3.1.4. Procurement Policies and Contract Procedures

Considering the dominating role of the Government Agencies in construction management in Indonesia, the procurement policies and contract procedures stipulated and/or practiced by the Government is of primary significance to the development of the domestic construction industry. It is therefore suggested that project 1.4 will analyse the existing practice and suggest revisions which may support or stimulate the domestic industry in developing efficient production and management.

In particular the modern segment of the industry should be given better conditions for competition against foreign firms, and the traditional segment should be given better opportunities for developing their capabilities for coping with local construction activities.

It is suggested that national standards of procurement policy and contract conditions be developed, which will secure sound competition, smooth payment processing, reasonable distribution of risks and proper arbitrage stipulations.

Also standard conditions of joint venture contracts and of sub-contracts between domestic and foreign firms might land to adequate transfer of experience and technology through such arrangements.

In order to improve the contractor's cost estimation and to stimulate cost conscious design by the consultants, it is also suggested that Bill of Quantities should be standardized as part of project documents, e.g. in accordance with the FIDIC proposal for standard conditions of construction

contracts.

In preparing the proposed standards, the existing experience within the Ministry of Public Works and other agencies should of course be made use of.

3.1.5. **Financial Support to Entrepreneurs**

As suggested by the recent report from Indonesian Chamber of Commerce (Doc. 02), Project 1.5 is proposed to analyze the existing financial problems of the domestic contractors with regard to operation capital.

3.1.6. **Upgrading of Building Legislation, Standards and Public Safety.**

Considering the problems mentioned in Chapter 2.1.6., it is deemed necessary to initiate a comprehensive revision and updating of the existing technical legislation, codes and standards governing the performance of the construction industry and the Public Safety aspects.

The purpose will be to establish an integrated modern system of construction legislation and standards, which is in accordance with international standards (ref. C.I.B., I.S.O., etc.) but adjusted to Indonesian conditions.

The new standards should allow for appropriate application of a wide range of local building materials and products, and of employment oriented technologies.

By introducing the modern "Performance Concept", the new standards should support the construction industry in developing and introducing technical innovations for higher efficiency.

By abolishing unnecessary deviations between the local regulations in various provincies, a uniform, national construction market should be created for building materials and components.

The new building regulations should be based on rational safety criteria and on adequate performance criteria in accordance with domestic production capabilities.

They should be formulated in a simple way for easy implementation by the industry and reliable enforcement and control by the local building authorities.

After the proposed system of national technical regulations has been established, it will be possible to preclude the application of foreign norms and standard on projects to be executed in Indonesia, which will be of advantage to the domestic construction industry in the competition against foreign firms.

Basic Project 1.6. is suggested to develop the above mentioned system of construction legislation and standards after establishing of an adequate institutional framework, in which also future monitoring and current updating of the system could take place.

It should be mentioned, that by solving this problem, Indonesia may well provide useful guidelines for other developing countries who are facing similar problems.

3.1.7. **Enforcement of Standards and Quality Control.**

In connection with the proposed introduction of modern, appropriate

technical legislation and standards, the question of enforcement and of quality control is of importance with regard to aspects of both national economy and public safety.
Therefore a plan is suggested for upgrading the technical capacity for inspection, both by the local authorities and by the client or his consultants, and for expansion of the testing facilities.

3.1.8. **Public Administration of Construction.**

Regarding the proposed activities in Basic Project 1.8. (viz. chapter 4.1.8) the following general considerations may be suggested :

a) The scattered nature of the existing institutional framework of construction administration (Table 3 and 4, chapter 1.1.1.) is bound to complicate and delay the coordination and rationalization which is necessary for development of the construction industry. Therefore it might be advisable (ref. Doc. 01 and 02) to consider a more concentrated type of organization for overall policy making, coordination and management of public construction activities, at least for a 20 – 30 years development period. Some alternatives might be :

Alt. I An interministerial "Construction Development Council" to give advice to the individual ministries involved in construction.

Alt. II An interministerial coordinating body with authority for giving directions on policies and administration to the ministries involved in construction, and with responsibility for the overall development of the construction industry

Alt. III A reorganization of the Government construction administration into one Directorate responsible for all Governmental investment in construction.

b) In view of the regional differences in geographical, ethnological, and economic conditions, a higher degree of decentralization might be considered in the management and physical planning of individual schemes, in accordance with general guidelines by the central authorities and the overall principles of development.

c) As suggested in chapters 3.1.7 and 3.1.9, a strengthening of the local building authorities might be useful for enforcing technical codes and standards, and for establishing reliable input to central construction statistics.

3.1.9. **Proposed Construction Statistics.**

Realizing the current short comings of construction statistics in Indonesia, the Central Bureau of Statistics has already organized a first "Construction Census" to be held in June - August 1978. The output of this exercise will provide useful information as basis for future planning, and in particular for the implementation of the proposed development programme.
In the proposed Project 1.9 it is suggested to establish a permanent system of data registration and collection, through the strengthening of the local building authorities (Project 1.8), for processing and publication of all

data necessary for specified assessment and planning of construction demand as well as the actual and potential capacity of the industry.
The proposal should be prepared in close cooperation with the Central Bureau of Statistics and with the current UN-OTC Programme for Statistical Development, and in accordance with the UN International Recommendations for Construction Statistics.

3.2. Strengthening of the Industry

Based on the available surveys (Doc. 01 and 02) some activities have been suggested in Basic Project 2 with the purpose of strengthening the domestic construction industry rationalizing the structure of its organization, and by upgrading its Trade Associations.
Thereby it is intended that the Trade Associations should expand their activities for the benefit of their members, and escalate their contribution to development of the industry by cooperation with the Government on the planning and implementation of the prepared development programme.
The suggested activities will have to be discussed in details with the involved associations before initiating the project.

3.3. Production Rationalization and "Open System" Concept

Based Project 3 is suggested to tackle some major technical problems to achieve a necessary rationalization of the production, with the purpose of increasing the overall capacity of the domestic construction industry, and of improving the quality and the economy of its output.
Project 3.2, 3.4 and 3.5 are dealing with the efficiency of the existing building materials industry, the contractors and the consultants, and comprise proposals for a mutual coordination of production planning and management in order to secure maximum overall efficiency in using the available resources.
In addition, Project 3.1 suggests implementation of dimensional coordination in order to rationalize production, reduce waste of materials and simplify planning and management of the supply of products.
According to international experience, modular coordination is also effective as a key to gradual industrialization of construction (Doc. 03), by combining the necessary standardization of prefabricated components, which is necessary for industrial production, with freedom in planning of individual buildings, both architectural and technical. Therefore, the implementation of modular coordination in Indonesia will open an attractive market for investors to establish advanced industries for mass production of building components.
Project 3.3 suggests further activities to stimulate the creation of a new component industry, to serve both a rationalization of the conventional construction methods and a development of more advanced construction techniques in the first place to accomplish a higher production of low cost housing.
For this purpose the *"Open System" Concept* should be introduced in Indonesia (Doc. 27) in order to provide a rational development of gradual industrialization of construction.

3.4. Employment Promotion

The Government's employment strategy calls for increased generation of employment in construction.

It should be emphasized, in the first place, that the most efficient way to achieve this objective will be to *increase investments* in construction and thereby boosting the volume of construction. This should be a major consideration in the long term planning of construction investments as referred to in chapter 3.0.

Secondly, the job opportunities in construction could be increased by :

a) *favouring employment oriented construction* methods by awarding contracts e.g. to the traditional segment of contractors whereever adequate for local construction work throughout the provinces, and

b) *developing labour intensive technology* with proper regard to economy and the cost of job creation. Project 4.1, 4.2, 4.3 and 4.5 suggest R & D activities to this effect.

Third, it might promote employment in construction if investment priority be given to the types of construction work in which the share of labour wages in relation to the investment is relatively high.

This, in particular, is true about *repair and maintainance* work on buildings and civil engineering structures such as roads. At the same time, increased repair and maintainance work would be of advantage to the national and the the private economy by protecting the physical assets of the economy and by prolonging the lifetime of the completed construction work. Therefore Project 4.4 suggests R & D to promote budget allocations for repair and maintainance work (ref. also Project 1.1 and 1.3) and to develop adequate technologies for their purpose.

Finally, it must be stressed, that job opportunities will always be available only to people with appropriate skill. Therefore, the escalation of training programmes as suggested in Basic Project 5, is of primary significance to the generation of employment in construction.

3.5. Educational Development

It is necessary to formulate a comprehensive programme for education and training at all levels, within construction. The programme shall provide theoretical as well as practical training, and must be coordinated with the other activities suggested in this development programme.

At present a number of educational and training programmes are being undertaken by national and international agencies and several new programmes are being planned, including technical and managerial training.

Some of the programmes are directly connected with the construction industry and other touch upon segments of the industry.

It is important that a survey be made to get a clear picture of the situation in order to coordinate the various education and training activities within the construction sector, and match the capacity of the training facilities with the demand for skilled personnel.

Furthermore it is important that these activities be adjusted to be in agree-

ment with the general objectives of the construction industry development programme.

Besides the need for technical qualifications it might be advisable also to analyse the psychological aspects of the "performance discipline" at the various staff levels, and in connection with the proposed technical training to suggest ways of improving the general sense of responsibility and the general moral engagement with the personnel.

4. PROPOSED BASIC PROJECT ACTIVITIES

4.0. General

The BASIC PROJECTS have been selected to form an integrated programme of action oriented operations, each with a well defined scope and of a manageable size.

During the Planning Phase each Basic Project shall be analyzed and designed in accordance with the relevant Government policies and guidelines and with the main objectives of the Development Programme as formulated in chapter 1.3. The project activities will be coordinated with other on-going projects in similar fields.

The individual project activities indicated in the following are to be elaborated in detail during the Planning Phase as described in chapter 6, and are meant to be implemented during the Third 5 Year Development Plan as indicated in chapter 7.

The duration of each project as estimated in the following should be seen only as a preliminary indication of the long- or short-term nature of the project and of its approximate placing in the overall time schedule of the programme. The detailed time table and the sequence of the various projects should be analyzed and worked out during the Planning Phase.

Although the individual Basic Project activities have been selected with regard to separate management and implementation, they are of course strongly interwoven with each other and with other on-going projects in similar fields. Proper coordination must therefore be secured throughout the planning and implementation.

4.1. BASIC PROJECT 1 : Government Policies & Construction Administration.

4.1.0 Long Term Planning

Estimated duration of Project : 1979 – 82
Parties involved : to be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase will include :

a) Development of a Model for "rolling" 5 years planning of investments in construction, with forecast of the composition of construction work by categories and the regional distribution.

b) Evaluation of the existing physical planning of national and regional development for coordination with suggested programming of construction.

Estimated work in Planning Phase

Indonesian Planning Staff	:	3.0 m/m
Indonesian Consultants	:	2.0 m/m
International Consultants	:	4.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	24 m/m
Equipment	:	–

4.1. BASIC PROJECT 1 : Government Policies & Construction Administration

4.1.1. Investment Policies

Estimated duration of Project : 1979 – 82
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Development of a Model for regrouping of existing sectorial economic plans to identify construction investments as a separate sector.
b) Analysis of and suggestions for a special construction investment policy and method of programming.
c) Evaluation of the Government's investment policy for housing, and suggestions for possible escallation of financial support to increased housing production.
d) Analysis and preparation of guidelines for introduction of separate budget allocations for repair and maintainance of public buildings and civil engineering works (ref. Project 1.3.c and 4.4.e).

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultants	:	2.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	24 m/m
Equipment	:	–

4.1. **BASIC PROJECT 1** : Government Policies & Construction Administration

4.1.2. **Housing Financing/Mortgage Systems**

Estimated duration of Project : : 1979 – 81

Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Analysis of and suggestions for institutions and systems for providing term loans to support individual buyers of buildings in particular low cost housing

Estimated work in Planning Phase :

Indonesian Planning Staff	:	**2.0 m/m**
Indonesian Consultants	:	**1.0 m/m**
International Consultants	:	**2.0 m/m**

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	**24 m/m**
Equipment	:	

4.1. BASIC PROJECT 1 : Government Policies & Construction Administration

4.1.3. Protection Policy, Taxation & Duties

Estimated duration of Project : 1979 – 81
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Analysis and re-evaluation of existing protection policy.
b) Analysis of the influence of existing taxation and duties on the prices of production factors and on the development of the domestic construction industry. Suggestions for adjustments to support development and stimulate investments in domestic industries.
c) Suggestion for a taxation policy so stimulate budget allocations for repair and maintainance of commercial and private buildings (ref. Project 1.1.c and 4.4.c).

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultants	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	12 m/m
Equipment	:	–

4.1. **BASIC PROJECT 1** : Government Policies & Construction Administration

4.1.4. **Procurement Policies, Contracting Procedures**

Estimated duration of Project : 1979 – 81
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Analysis of the existing practice of construction procurement and contractors procedures as applied by Government Agencies and evaluation of the effect upon the development of the domestic construction industry.
b) Suggestion for Indonesian standards of procurement policy and contract conditions to be applied in public and private construction projects to secure sound competition and reasonable business climate for the domestic industry.
c) Suggestion for introduction of Bill of Quantities in the national standards for construction contracts.
d) Suggestions for standard conditions of joint venture contracts and subcontracts between domestic and foreign firms to secure adequate transfer of technology.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultant	:	2.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	24 m/m
Equipment	:	–

4.1. **BASIC PROJECT 1** : Government Policies & Construction Administration

4.1.5. **Financial Support to Entrepreneurs :**

Estimated duration of Project : 1980 – 81
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase.

- Analysis of existing payment conditions in Government construction contracts and suggestion of guidelines for adequate payment procedures.
- Suggestions for Government support to credit availability for entrepreneurs.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	– m/m
Equipment	:	–

4.1. BASIC PROJECT 1 : Government Policies & Construction Administration

4.1.6. Building Legislation, Standards, Public Safety.

Estimated duration of Project : 1979 – 84
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Analysis and evaluation of the existing system of technical legislation, regulations and codes and its practical effect regarding economy and public safety.
b) Suggestions for an institutional framework for developing a modern, Indonesian system of technical legislation and standards and training of Indonesian specialists for work in this field.
c) Elaboration of basic technical principles in accordance with international standards, Indonesian conditions and development objectives, suggestions for an adequate legal framework, and for a time schedule for completion and introduction of the various elements of the new system.
d) Development of the various elements of the new system according to c). (ref. Project 1.7).

Estimated work in Planning Phase :

Estimated Planning Staff	:	2.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultants	:	2.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	60 m/m
Equipment	:	–

4.1 BASIC PROJECT 1 : Government Policies & Construction Administration

4.1.7. Enforcement of Standards, Quality Control

Estimated duration of Project : 1979 – 84
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Analysis and evaluation of the existing practice of complying with standards, and of quality control in construction and building materials manufacture.
b) Development of guidelines for future enforcement of the new system of standards according to Project 1.6, e.g. by certification programmes and and classification of manufacturers and contractors.
c) Suggestions for strengthening of quality control through supervision by the clients or their consultants, and by the local building authorities (ref. Project 1.8.).
d) Suggestions for development of decentralized materials testing facilities on a regional level, and of field testing techniques.
e) Development of information and training programmes for producers, clients and inspectors (ref. Basic Project 5).

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultants	:	2.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	60 m/m
Equipment	:	–

4.1. BASIC PROJECT 1 : Government Policies & Construction Administration

4.1.8. Public Administration of Construction

Estimated duration of Project : 1979 – 84
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase.

a) Analyze the existing institutional framework of construction administration and management within the central government agencies, and study possibilities within the construction sector, and the professional management of public construction projects.
b) Analyse the existing construction management within the Provincial Governments and suggest possibilities for strengthening investments and physical planning of construction within the province.
c) Analyse the existing technical administration within the local building authorities and suggest possibilities for strengthening with regard to :
   - technical examination and apporval of projects
   - administration of building permits and licences.
   - technical supervision of works for enforcement of codes and standards (ref. Project 1.7) and for improvement of safety of buildings.
   - registration of construction activities for input to central construction statistics (ref. Project 1.9).

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultants	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	36 m/m
Equipment	:	–

4.1. BASIC PROJECT 1 : Government Policies & Construction Administration

4.1.9. Construction Statistics :

Estimated duration of Project : 1979 – 82
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Suggestions for a permanent system of national data registration and collection through the local building authorities (ref. Project 1.8) and other adequate sources, for continuous processing and publication by the Central Bureau of Statistics, in accordance with UN International Recommendations for Construction Statistics.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultants	:	2.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	12 m/m
Equipment	:	–

4.2. BASIC PROJECT 2 : Trade Associations Development

4.2.0. Rationalization of Structure

Estimated duration of Project : 1979 – 81
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

- Analysis of the existing structure of the construction industry, the grouping in various trade associations and their tasks and performance.
- Suggestions for rationalization of the structure and strengthening of trade associations for expansion of activities and participation in the development programme.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.0 m/m
International Consultants	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	12 m/m
Equipment	:	–

4.2 BASIC PROJECT 2 : Trade Association Development

4.2.1 Classification, Certification Programmes

Estimated duration of Project : 1979 – 81
Parties involved : To be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a) Analysis of existing registration of manufacturers, contractors and consultants and plans for classification programmes and certification regulations.

b) Suggestions for guidelines on classification and certification with regard to a rationalized structure of the industry and its institutional framework, as well as to adequate technical criteria and norms, comprising building materials industries, contractors and consultants.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.0 m/m
International Consultants	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	12 m/m
Equipemt	:	–

4.2. BASIC PROJECT 2 : Trade Associations Development

4.2.2. Terms of Sales & Contracts

Estimated duration of Project : 1980 – 82
Parties involved : To be decided during the Planning Phase

Project Activities

a) Analysis of the existing practice for terms of sales and contracts, and suggestions for cooperation with the Government for development and approval of adequate standards

Estimated work in Planning Phase

Indonesian Planning Staff	:	0.5 m/m
Indonesian Consultants	:	0.5 m/m
International Consultants	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	12 m/m
Equipment	:	–

4.2 BASIC PROJECT 2 : Trade Associations Development

4.2.3 R & D Activities : Standardization, Typification etc.

Estimated duration of Project : 1981 – 83
Parties involved : To be decided during the Planning Phase

Project Activities

a) Suggestions and guidelines for R & D activities by Trade Associations for promotion of adequate standardization and typification of the production with the purpose of rationalization and improved efficiency.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	0.5 m/m
Indonesian Consultants	:	0.5 m/m
International Consultants	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	24 m/m
Equipment	:	– US $

4.2 BASIC PROJECT 2 : Trade Associations Development

4.2.4. Training Activities

Estimated duration of Project : 1979 – 84
Parties involved : To be decided during the Planning Phase

Project Activities

a) Suggestions for training activities by the Trade Associations for improving the skills of the member firms and their staff, in cooperation with the Educational programmes organized by Government Agencies and other parties (ref. Project 5).

Estimated work in Planning Phase :

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultants	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	36 m/m
Equipment	:	100,000 US $

4.2. BASIC PROJECT 2 : Trade Associations Development

4.2.5. Publicity

Estimated duration of Project : 1981 – 83
Parties involved : To be decided during the Planning Phase

Project Activities

a) Suggestions for information and publicity activities by the Trade Associations towards their member firms and towards the public.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	0.5 m/m
Indonesian Consultants	:	0.0 m/m
International Consultants	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	12 m/m
Equipment	:	– US $

4.2. BASIC PROJECT 2 : Trade Associations Development

4.2.6. Statistics, Market Research

Estimated duration of Project : 1982 – 84
Parties involved : To be decided during the Planning Phase

Project Activities

a) Suggestions for cooperation with the official statistics institutions by the Trade Associations, for contribution to registration and collection of data, and for making use of available data in preparing market analysis etc.

Estimated work in Planning Phase :

Indonesian Planning Staff	:	0.5 m/m
Indonesian Consultants	:	0.5 m/m
International Consultants	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase :

International Consultants	:	12 m/m
Equipment	:	– US $

4.3. BASIC PROJECT 3 : Production Rationalization

4.3.0. General

The formulation of the Project Activities shall be based upon the government policies regulations, standards etc. as developed through Basic Project 1 and upon the managerial capabilities within the industry as developed through Basic Project 2.

In accordance with the main objectives specified in chapter 1.3 the proposed production rationalization within the individual enterprises and branches will accomplish improved efficiency and optimized capacity of the construction industry.

The proposed project activities will develop efficient planning, management and selection of appropriate technologies in the production.

The project activities should primarily be implemented by the private industry through the trade organizations, with strong support by the Ministry of Public Works and other related ministries,scientific institutions etc.

4.3. BASIC PROJECT 3 : Production Rationalization

4.3.1. Implementation of Modular coordination

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities :

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Preparation of Indonesian MC-Standards in accordance with ISO Recommendations and international experience (ref.Project 1.6)

b). Information, publicity, courses, seminars, advisory services, input to technical education etc. on modular planning and design.

c). Introduction of MC in building legislation & regulations to enforce MC in planning & design from 1981.

d). Create financial incentives for new production of standardized, modular building components and support to adjustment of existing production.

e). Develop typical modular plans of low-cost housing for application in Government sponsored schemes.

f). Develop and organize MC pilot projects for housing, primarily within Demonstration Schemes A – D.

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	48 m/m
Equipment	:	– US $.

4.3. BASIC PROJECT 3 : Production Rationalization

4.3.2. Rationalization of Building Materials Production and Supply.

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase, in coordination with the ongoing UNIDO Project INS/74/034 :

a). Analysis of the long term demand for building materials in selected regions according to prognoses of construction activities

b). Analysis of existing building materials production in the same regions and plans for timing of necessary expansions of production capacity to meet the demand

c). Study existing logistics, marketing and distribution arrangements and propose rationalization and improvements

d). Plans for strengthening and industrial implementation of ongoing R & D activities on production techniques, standards and quality control

e). Identification of possible areas for development of advanced domestic processing industries for building products which can replace imported products on the domestic market and provide export possibilities to replace export of raw materials. Propose adequate action.

Estimated work in Planning Phase

Indonesian Planning Staff	:	0.5 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	48 m/m
Equipment	:	– US $

4.3. BASIC PROJECT 3 : Production Rationalization

4.3.3. Development of Building Components Industries

Estimated duration of Project : 1979 -- 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Assemble prerequisites for development of a building component industry e.g. standards, modular coordination, codes, performance requirements and market potentials

b). Prepare guidelines for introduction of building components by gradual industrialization of building construction according to "open system" concepts

c). Assist in product development and establisment of specialized mass producing component industries, and suggest financial incentives.

d). Develope a catalogue of standardized, modular building components as guideline for design and production.

e). Design prototypes of buildings based on the catalogue of components comprising examples of low cost housing, schools, industrial buildings, agricultural buildings etc, incl. cost estimates, and suggest their application in projects by central and local governments.

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	36 m/m
Equipment	:	– US $

4.3. BASIC PROJECT 3 : Production Rationalization

4.3.4. Strengthening of Contractors Efficiency

Estimated duration of Project : 1979 - 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Analysis of the long term demand for construction in selected regions according to development plans and prognoses
b). Evaluation of existing contractors capacity in relation to forecast of demand
c). Propose plan for structural rationalization , specialization and development of contractors activities in accordance with market potentials
d). Develop guidelines for contractors production planning, management and technical rationalization.
e). Develop guidelines for appropriate use of prefabricated building components.

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	1.0 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	36 m/m
Equipment	:	- US $

4.3. BASIC PROJECT 3 : Production Rationalization

4.3.5. Rationalization of Consultants Practice

Estimated duration of Project : 1979 – 84
Parties involved to be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

Develop guidelines and provide advisory service on :

a). Design in accordance with standards and codes revised according to Basic Project 1
b). Modular planning and design
c). Project design according to the performance specification concepts
d). Design in relation to appropriate technologies
e). Design in relation to appropriate use of prefabricated components.
f). Project management and planning in relation to appropriate tech - nologies.

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	36 m/m
Equipment	:	– US $

4,3. BASIC PROJECT 3 : Production Rationalization

4.3.6. Rationalization of Equipment Supply

Estimated duration of Project	:	1979 - 84
Parties involved	:	to be decided during the Planning Phase

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Analysis of the long term demand for the various types of construction equipment in building construction and civil engineering work

b). Preparation of guidelines for selection and/or development of appropiate equipment for Indonesian conditions

c). Estimation and evaluation of existing equipment resources, and indicate need for future equipment procurement

d). Prepare proposal for establisment of regional equipment pools combined with maintenance workshops and training courses in operation and maintenance

e). Initiation of R & D activities on appropiate types of construction equipment and feasibility studies for domestic manufacture.

Estimated work in Planning Phase

Indonesian Planning Staff	:	0.5 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	36 m/m
Equipment	:	1,000,000 US $

4.4. BASIC PROJECT 4 : Employment Generation

4.4.0. General

The formulation of the project activities shall be based on the general principles and guidelines of the Government's employment policy and strategy and be coordinated with ongoing research and development programmes for employment generation in construction including ILO and IBRD Projects. Contacts should be made with international research organizations working in this field, such as C.I.B.

Parties involved will be the Ministry of Manpower and other related Ministries and institutes as well as the Private Sector through related Trade Associations and Organizations.

4.4. BASIC PROJECT 4 : Employment Generation

4.4.1. Socio - Economic Studies and Technical Research & Development Employment oriented technology in Building Materials Manufacturing.

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase, in coordination with the ongoing UNIDO Project INS/74/034 :

a). International survey of existing experience and ongoing R & D activities regarding employment generation in building materials production

b). Evaluation of the Government's policy for development of the building materials industries with regard to employment strategy and economy.

c). Socio-economic analysis of existing and planned building materials industries in different regions with regard to employment aspects, for identification of fields in need of research and development.

d). Organizing R & D activities according to c), including labour intensive technologies and related studies of production economy and socio-economic implications.

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	120 m/m
Equipment	:	200,000 US $.

4.4. BASIC PROJECT 4 : Employment Generation

4.4.2. Socio - Economic Studies and Technical Research & Development on Employment oriented technology in Building Construction

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). International Survey of existing experience and ongoing R & D activities regarding employment generation in building construction.

b). Evaluation of the Governments policy for building construction, including housing and urban development programmes, with regard to employment strategy and economy

c). Socio-economic analysis of ongoing and planned building and housing schemes in different regions with regard to employment aspects, for identification of fields in need of research and development.

d). Organizing R & D activities according to c), including labour intensive technologies and related studies of construction economy and socio - economic implications.

Estimated work in Planning Phase

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	1.0 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	60 mm
Equipment	:	200,000 US $

4.4 BASIC PROJECT 4 : Employment Generation

4.4.3. Socio - Economic Studies and Technical Research & Development on Employment oriented technology in Civil Engineering Construction

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). International Survey of existing experience and ongoing R & D activities regarding employment generatio in civil engineering work.

b). Evaluation of the Government's policy for implementation of civil engineering projects with reference to the employment strategy.

c). Socio-economic analysis of ongoing and planned civil engineering work in different regions, for identification of fields in need of research and development.

d). Organizing R & D activities according to c), including labour intensive technologies and related studies of construction economy and socio-economic implications.

Estimated work in Planning Phase

Indonesian Planning Staff	:	2.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	60 m/m
Equipment	:	200,000 US $

4.4. BASIC PROJECT 4 : Employment Generation

4.4.4. Socio - Economic Studies and Technical Research & Development on Employment oriented technology in Repair & Maintenance

Estimated duration of Project : 1979 – 82
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). International Survey of existing experience and ongoing R & D activities regarding the economy and employment aspects of repair and maintenance of buildings and civil engineering works.

b). Evaluation of the Government's existing policy for repair and maintenance work with regard to budget allocations and employment strategy.

c). Analysis of the existing practice of repair and maintenance on different categories of buildings and civil engineering works in different regions, for identification of fields in need of further studies, research and development.

d). Organizing R & D activities according to c), including appropriate technologies and relevant cost/benefit studies, with special regard to employment aspects

e). Submit proposal for adequate formulation of new government policy, budgeting and taxation guidelines regarding repair and maintenance, (ref. Project 1.1.c and 1.3.c).

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.5 m/m
International Consultant	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	60 m/m
Equipment	:	200,000 US $

4.4. BASIC PROJECT 4 : Employment Generation

4.4.5. Socio - Economic Studies and Technical Research & Development on Employment oriented technology in Labour Complementing Equipment

Estimated duration of Project : 1979 - 84
Parties involved : to to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). International Survey of existing experience, ongoing R & D activities and appropriate equipment and tools available on the market

b). Analysis of existing equipment and tools used in Indonesian building materials production and on construction sites with regard to labour supplementation and identify possible types of equipment in need of research & development with regard to Indonesian conditions

c). Organizing R & D activities according to c) and develop prototype equipment and tools for testing in practice. Study feasibility of Indonesian production of appropriate equipment

d). Submit proposals for Indonesian manufacture of selected, appropriate equipment and tools.

Estimated work in Planning Phase

Indonesian Planning Staff	:	1.0 m/m
Indonesian Consultants	:	0.0 m/m
International Consultant	:	0.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	:	60 m/m
Equipment	:	200,000 US $

4.5. BASIC PROJECT 5 : Educational Development

4.5.0. General

The formulation of the project activities shall be based on the general principles and guidelines of the government's education policy and be coordinated with ongoing educational programmes, including ILO and IBRD projects.

Parties involved will be the ministry of education and other related universities and educational institutes, as well as the private sector through related trade associations and organizations.

4.5. BASIC PROJECT 5 : Educational Development

4.5.1. Vocational Training

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities :

Preliminary indication of activities to be planned and designed during the Planning Phase

a). Analysis of the need for further development of ongoing vocational training programmes.

b). Formulation of performance standards of skilled workers to be achieved by vocational training programmes, comprising: carpenter, joiner, bricklayer, concrete worker, painter, plasterer, plumber, mechanic, electrician, equipment operator.

c). Planning of curriculae.

d). Planning of training organization & facilities.

Estimated work in Planning Phase

Indonesian Planning Staff	: 2.0 m/m
Indonesian Consultants	: 0.5 m/m
International Consultant	: 1.5 m/m

Estimated work for Technical Assistance in Implementation Phase

International Consultants	: 60 m/m
Equipment	: 100,000 US $

4.5. BASIC PROJECT 5 :Educational Developemnt

4.5.2. Technicians Training

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities :

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Analysis of the need for further development of ongoing tecnicians training programmes.

b). Formulation of performance standards of the technicians to be achieved by training programmes comprising :

- foreman for skilled workers, incl. understanding of drawings and specifications, scheduling of work;
- Assistant surveyor;
- inspector of constructions ;
- independant small contractor.

c). Planning of curriculae.

d). Planning of training organization & facilities.

Estimated work in Planning Phase

Indonesian Planning Staff	: 2.0 m/m
Indonesian Consultants	: 0.5 m/m
International Consultant	: 1.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	: 60 m/m
Equipment	: 100,000 US $

4,5. BASIC PROJECT 5 : Educational Development

4.5.3. Architectural & Engineering Education

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Analysis of the need for further development of ongoing architectural and engineering education programmes.

b). Subjects of education to be derived from the activities of the basic projects 1, 2, 3, and 4.

Special programmes shall be developed for :

- Professionals responsible for design and supervision,
- Professionals in contracting business, and
- Professionals in Government service.

However, to have a better appreciation of each other's role and responsibilities part of the programmes for each group should be made common to all.

All professionals should be trained in programming and scheduling of work.

c). Training in the above subjects should be introduced in the formal education of existing universities and also be made available for graduates.

Estimated work in Planning Phase

Indonesian Planning Staff	: 2.0 m/m
Indonesian Consultants	: 0.5 m/m
International Consultant	: 1.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	: 60 m/m
Equipment	: 100,000 US $

4.5. BASIC PROJECT 5 : Educational Development

4.5.4. Managerial Training

Estimated duration of Project : 1979 – 84
Parties involved : to be decided during the Planning Phase.

Project Activities

Preliminary indication of activities to be planned and designed during the Planning Phase :

a). Analysis of the need for further development of ongoing managerial training programmes.

b). Training programmes should be developed for personnel occupied with management of the construction industry taking into consideration the various levels of previous experience of the students.

The training should cover a variety of subjects, including :
- General orientation in all problems involved in construction;
- Estimating and pricing of construction work;
- Record-keeping for cost control;
- Understanding drawings and specifications;
- Programming and scheduling of work;
- Financial planning; and
- Personnel management and training.

c). Planning of training organization and facilities.

Estimated work in Planning Phase

Indonesian Planning Staff	: 2.0 m/m
Indonesian Consultants	: 0.5 m/m
International Consultant	: 1.5 m/m

Estimated need for Technical Assistance in Implementation Phase

International Consultants	: 60 m/m
Equipment	: 100,000 US $

5.0. Planning of Demonstration Schemes :

5.0.1. General

The basic project activities described in chapter 4 form the foundation for the development programme. These cannot stand alone without coordination and without application on real construction projects.

Individually each of the projects will contribute to the development, but overall effect can not be achieved until the activities are coordinated in an integrated programme. It is therefore suggested that the Basic Project programme be supplemented with a number of demonstration schemes on which the various elements of the basic projects can be applied. Thereby testing the proposed methods,demonstrating the effect of the basic projects, and providing the feed-back for necessary adjustments to the programme. Thus, this part of the project is of equal importance to the programme as are the basic projects.

It would not be possible to apply all elements of the basic projects in a single demonstration scheme. The scope of the programme is too wide for that and it is therefore suggested that this part of the programme be divided into four demonstration schemes with the purpose of demonstrating the effects of the basic project activities in four different fields of the construction industry and in different regions of the country.

Each of the proposed four demonstration schemes will refer in particular to one of the main development objectives as specified in chapter 1 :

A. "Open System" Housing Supply Scheme,
B. Strengthening of the Modern Segment of Domestic Contractors,
C. Strengthening of the traditional Segment of Domestic Contractors, and
D. Implementation of Employment Oriented Technology in the Building Materials Production and Construction Industry.

Considering the large number of low-cost housing and other construction schemes being planned in Indonesia, it will be recommendable to select the demonstration schemes amongst these.

The four demonstration schemes together form a programm. module. It is suggested to start with one module and then later – as experience is gained – to start new modules to spread the effect out over the country in accordance with the overall development programme for Indonesia.

The first module will serve as the training basis for the Indonesian counterparts, who will then be able to carry out the following modules, which gradually will transform into actual construction projects : the final goal.

5.0.2. Time schedule

It is of great importance that a detailed time schedule be prepared for the implementation of the development programme, allowing the basic projects to start early and include some of their results in the preparations for the demonstration schemes. As the demonstration schemes are suggested to be selected from already planned projects, which again have to run through a programming phase, is it necessary that the time-scheduling carefully takes into consideration the planning of the demonstration schemes.

5.0.3 Input from Basic Projects

As mentioned above the demonstration schemes will be selected to serve four different fields of the construction industry, therefore the various elements of the basic projects will be incorporated in the demonstration schemes with varied scope and importance. However, taken together the four schemes will contain all elements of the basic projects. A matrix will have to be developed in the planning phase to describe the detailed input from the basic projects in the demonstration schemes.

5.0.4. Size of Demonstration Schemes

It is not possible at this stage to decide on the size of the demonstration schemes as it depends on the activity level of the proposed development programme which will have to be olicided by the Indonesian Government. However, it will be advisable to limit the size to make them manageable and at the same time select a size large enough to make them effective with regard to training and experience-gaining outputs.

5.0.5. Organization

A very important part of the tasks of the Planning Centre will be to coordinate the basic project activities within the demonstration schemes. Also the actual implementation of the Basic Project activities in the demonstration schemes should be the responsibility of the Basic Project Manage ments.

5.0.6. Monitoring end Project Adjustments

It is important that a monitoring unit be established at the time of implementation of the demonstration schemes in order to secure the feed-back of experience gained for adjustment of the project activities. This will ensure that the development programme will always be in tune with the actual Indonesian conditions.

5.0.7. Description of the four Demonstration Schemes

In the following paragraphs the four prototypes for the demonstration schemes will be described to form basis for the detailing of the schemes during the planning phase.

5.1. DEMONSTRATION SCHEME A :

5.1.1. Title :
"Open System" Housing Supply Scheme.

5.1.2. Main objective :
Development of a mass-producing low-cost housing supply scheme.
A large number of low-cost housing projects are planned as part of the Indonesian development programme. This programme would benefit greetly from the development of mass-production.

5.1.3. Timing :
Implementation during REPELITA III.

5.1.4. Location :
Large urban area, perhaps Jakarta

5.2. DEMONSTRATION SCHEME B

5.2.1. Title :
Strengthening of the Modern Segment of Domestic Construction Industry.

5.2.2. Main objective :
Improvement of the efficiency of advanced groups of consultants, contractors, and manufactorers in competition with foreign firms, on major civil engineering and building work. The construction industry faces the problem of international competition which hampers the development of a domestic construction industry if measures are not taken to strengthen this part of the industry.

5.2.3. Timing :
Implementation during REPELITA III.

5.2.4. Location :
In rapid growing development centre.

5.3. DEMONSTRATION SCHEME C :

5.3.1. Title :
Strengthening of the Traditional Segment of Domestic Contractors.

5.3.2. Main objective :
Assistance and training in technical and administrative skill with small contractors and subcontractors operating within a region or a province.

5.3.3. Timing :
Implementation during REPELITA III.

5.3.4. Location :
A smaller urban area; a transmigration area could also be considered, and perhaps INPRES projects

5.4. DEMONSTRATION SCHEME D :

5.4.1. Title :
Implementation of Employment Oriented Technology in the Building Materials Production and Construction Industry.

5.4.2. Main objective :
Creation of Employment possibilities in the Building materials and construction industry and trying out labour intensive technologies.

5.4.3. Timing :
Implementation during REPELITA III.

5.4.4. Location :
A rural area, perhaps INPRES projects.

6. PLANNING PHASE 1978.

6.0. **General :**

In order to start implementation of the proposed Development Programme at the beginning of REPELITA III, i.e. 1 April 1979, a comprehensive planning work must be carried out during 1978. Definite plans including 5 years cost estimates and final budget figures for the first years of REPELITA III must be presented before December 1978 in order to be included in the yearly budgets of the involved Ministries for the fiscal year 1979/80.

6.1. **Organization of the Planning Work.**

6.1.0. Considering the magnitude of the proposed Development Programme, its inter-ministerial engagements and its multi-disciplinary aspects, it is important that an efficient operation centre be organized, together with a high level steering group for policy and decision making.

The following organization is proposed for the *Planning phase* in 1978. For the *implementation period* beginning 1979, this organization should be further reinforced and perhaps expanded into several operation centres and steering groups, one for each Basic Project.

6.1.1. **A Planning Centre** should be established early 1978, perhaps in the MPW & EP as a separate unit within the Planning Bureau and under the direct supervision of the head of the Planning Bureau.The Planning Centre should be manned with several experienced and qualified (English speaking) engineers and economists, recruited perhaps from several ministries and institutions. They should be working full time on this task during most of 1978, also as counterparts to the Indonesian and foreign consultants.

Also the necessary secretarial assistance etc. should be available, and office space must be provided in connection with the Planning Centre for the International Consultants during their activities in the Planning phase. (Preliminary Organization Diagram : see 6.4 below. Estimate of the manpower : see 6.6 below).

6.1.2. **A Steering Committee** or Planning Council should be established at an inter-ministerial level to make policies and decisions, to coordinate the planning work within the various Ministries, associations and institutions involved, and to review and approve the plans as worked out by the Planning Centre and the consultants before final edition.

6.1.3. **Scientific and Professional Consultants** should be assigned to the Planning Centre. They will be both Indonesian and foreign specialists.

Indonesian consultants may be available from Directorate of Building Research, ITB, University of Indonesia, Central Bureau of Statistics and others. The necessary foreign consultants will be appointed by UNIDO and DANIDA as requested by Indonesia's Government. The estimated need for international consultants is specified below in section 6.7.

6.2. **Planning Work during 1978.**

For each Basic Project activity the following detailed planning must be performed during 1978 :

6.2.1. **Preparatory Work** to be carried out by the Planning Centre before 1 april 1978;

a) Formulate Project policies to be coordinated and approved by the Steering Group and Terms of Reference for the Planning Work of each Basic Project in accordance with the outlines prepared in Dec. 1977.

b) Prepare a detailed time table for the Planning Work, also specifying the tasks and the working periods of the consultants to be employed.

c) Complete the collection of relevant planning data, reports and other background information to be at the disposal of consultants at the beginning of their working period.

6.2.2. **Project Planning Work** to be carried out by the Planning Centre with the assistance of the Consultants for each Basic Project :

a) Analyse the present state of affairs according to the available background information.

b) Specify the target state of affairs at the end of REPELITA III in accordance with the Government policy and growth rates projected by BAPPENAS.

c) Design a Development Project which will fulfill the targets by 1983/84 in coordination with the other Basic Projects and give annual specifications of the need for

resources in materials
resources in manpower
resources in land
resources in buildings
resources in equipments

d) Regional or Provincial distribu ion of the activities in accordance with existing plans and forecasts for development.

e) Suggest the organization, the institutional framework, Project management, staff and location of operation centre for the implementation phase.

f) Specify the need for Consultancy and equipment during the implementation of the project.

g) Estimate the annual expenses and/or output as well as the total expenses in the 5 year period 1979/84, and suggest sources of financing. Specify the budget for the first year of REPELITA III to be included in the annual budgets of the various Ministries and other institutions for the fiscal year 1979/80. Study cost/benefit of Project.

h) Prepare a Draft Project Document presenting the above proposal and covering the 5 year implementation period, to be ready for review during September 1978, and arrange meetings and discussions with all parties affected by the Project.

i) Revise the Project Document to meet the approval of the steering Committee and publish the final edition by Nov. 1978 as basis for the implementation of the Project from April 1979.

6.3. **Involved Government Agencies, Institutions and Trade Associations :**
It is suggested that a number of Ministries, sceintific & technical instutions, Trade Associations, and others who are involved in various aspects of construction, should be invited to cooperate in the Planning in order to secure proper coordination.
The following is a preliminary list of participating Indonesian bodies :

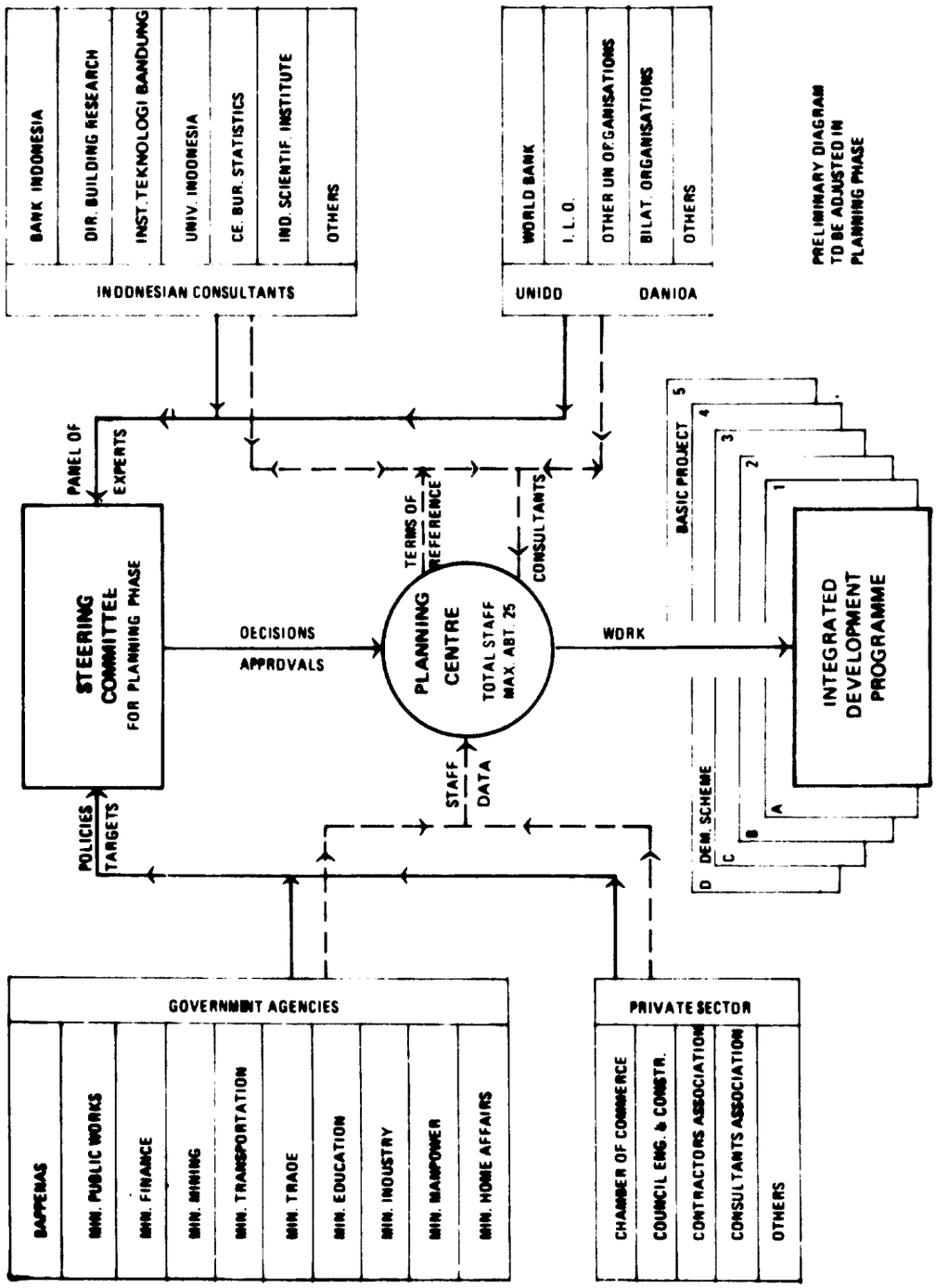
National Development Planning Agency – BAPPENAS
Ministry of Public Works & Electric Power
Ministry of Finance
Ministry of Mining
Ministry of Transportation & Telecommunication.
Ministry of Trade
Ministry of Education & Culture
Ministry of Industry
Ministry of Manpower, Transmigration and Co-operatives
Ministry of Home Affairs

Indonesian Chamber of Commerce and Industry (KADIN – Indonesia).
Indonesian Council for Engineering and Construction (Dewan Tehnik), with all members represented.
Association of Indonesian Consultants (IKINDO), with all members represented.

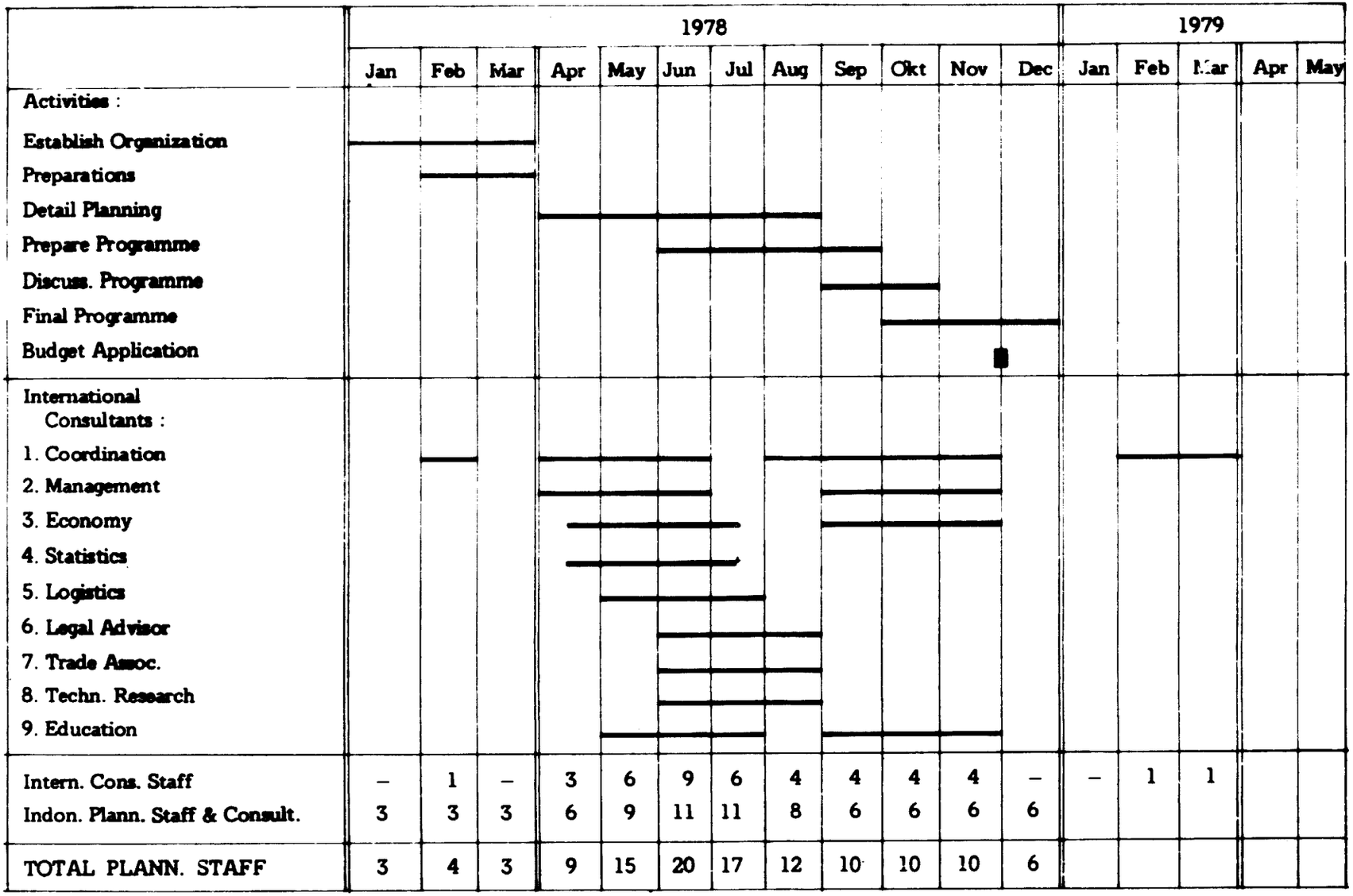
Bank of Indonesia.
Directorate of Building Research, DBR.
Institute of Technology, Bandung, ITB.
University of Indonesia, Faculty of Economics.
Central Bureau of Statistics, BPS.
Indonesian Scientific Institute.
Indonesian Foundation for Normalization & Standardizations.

Also existing Committees, Councils, etc., who are dealing with construction activities, should be invited to contribute during the Planning Phase, e.g. :
Investment Board (BKPM)
National Housing Policy Board (BKPN)
Coordination Board, Min. Industry &
Min. Public Works (BKS)
National Team for the Indonesian Consultancy.

6.4. Preliminary Organization Diagram for the Planning Phase



6.5. Preliminary Time Schedule for Planning Phase :



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Okt	Nov	Dec	Jan	Feb	Mar	Apr	May
Intern. Cons. Staff	–	1	–	3	6	9	6	4	4	4	4	–	–	1	1		
Indon. Plann. Staff & Consult.	3	3	3	6	9	11	11	8	6	6	6	6					
TOTAL PLANN. STAFF	3	4	3	9	15	20	17	12	10	10	10	6					

6.6. Estimated need for Indonesian Staff and Consultants in the Planning Phase 1978

As suggested in chapter 6.1., the work during the Planning Phase should be carried out by a Planning Centre with a staff of qualified, English speaking engineers and economists, working full time on this task during most of 1978. It is envisaged that this staff will continue its service also during the 5 years Implementation Phase.
The permanent staff of the Planning Centre should be recruited according to the following list. Besides the staff, resource persons should be selected and nominated within the various ministries involved in the planning, to provide authorized input to the planning work
For carrying out special tasks and surveys, scientific and professional Indonesian consultants will be employed according to need.
An estimate of the necessary magnitude of man months is indicated at the bottom line of the table 6.5.

Full-time Staff in Planning Centre :

6.6.1. Project coordinator

6.6.2. Construction Management Engineer

6.6.3. Technical Research, Training and Education Engineer

6.6.4. General Economist

6.6.5. Statistics and Logistics Engineer

6.6.6. Lawyer (Building Law and Trade Associations Development)

6.6.7. Lawyer (Administrator of Planning Centre Office)

6.6.8. Supporting Personnel (including English speaking Secretaries).

6.7. Estimated need for international consultants assistance in the Planning Phase April – Nov. 1978

BASIC PROJECT No. :		1	2	3	4	5		
International Consultants :	Establish Organization & Preparation	Government Policies & Construction Adm.	Trade Associations Development	Production Rationalization	Employment Generation	Educational Development	Preliminary Planning Demonstration Schemes	TOTAL man/months
1. Coordination	1	2	1	1	1	2	2	10
2. Management	–	3	1	1	–	–	1	6
3. Economy	–	3	1	1	–	–	1	6
4. Statistics	–	3	–	–	–	–	–	3
5. Logistics	–	1	–	2	–	–	–	3
6. Legal Advisor	–	2	1	–	–	–	–	3
7. Trade Associations	–	3	–	–	–	–	–	3
8. Techn. Research	–	–	–	1	2	–	–	3
9. Education	–	1	1	–	–	4	–	6
TOTAL man/months	1	18	5	6	3	6	4	43

The international consultants for the detailed planning of 5 Basic Projects with abt. 32 Project Activities and preliminary planning of 4 Demonstration Schemes as indicated in the above table comprise a team of 9 Specialists with a total working period of abt. *43 man/months*. They should be selected as follows :

6.7.1. **Project Coordination :** **abt 10 man/months**
Senior consultant with university degree and international experience in the construction industry, and knowledge of planning, management, marketing, administration, research and development, standardization and education. The job will consist in harmonizing the planning of the various projects and advising on general policies formulation.

6.7.2. **Construction Management :** **abt 6 man/months**
Senior consultant, with university degree and international experience in planning, management and administration of construction.

6.7.3. **Economy :** **abt 6 man/months**
General Econonist, Senior Consultant with university degree and international experience in economic planning at government level, with particular knowledge of construction investments and financing systems.

6.7.4. **Statistics :** **abt 3 man/months**
Economist, with university degree in statistics, with experience in national construction statistics and organization of data registration.

6.7.5. **Logistics :** **abt 3 man/months**
Economist, with university degree, with experience in techno-economic analysis and planning of production, supply and distribution of construction materials and resources, also in developing countries.

6.7.6. **Building Law :** **abt 3 man/months**
Senior legal advisor with university degree in Law and international experience in building legislation and administration, contracting procedures and (if possible) trade association activities.

6.7.7. **Trade Association Development :** **abt 3 man/months**
Expert with university degree and experience in organization and administration of activities in contractors and/or consultants associations re technical development, rationalization, training and public relations.

6.7.8. **Technical Research :** **abt 3 man/months**
Engineer and/or Architect, with university degree and experience in research, development & standardization, with extensive experience in employment oriented technology in civil engineering and/or building construction in developing countries.

6.7.9. **Educational Planning :** **abt 6 man/months**
Expert with university degree and international experience in planning & administration of vocational and technological training, in particular on government level, also in developing countries.

The above mentioned team of International Consultants will be organized by UNIDO in cooperation with DANIDA according to agreement with the Indonesian Government. Possible Consultancy by other UN-Organizations and/or other Bilateral Agencies in accordance with their field of competence will be co-ordinated by UNIDO.

6.8. **Coordination with other Development Programmes.**

Several Development Programmes within the construction industry in Indonesia are already underway or have been planned for the near future. It is essential that they are coordinated with the planning of the present Programme, so duplication of work is avoided and additional effect is achieved.

The attached Annex 5 is a preliminary list of Technical Assistance Proposals 1977/78 and of ongoing UNDP and IBRD Projects. In particular attention is drawn to the following development programmes :

6.8.1. **UNIDO Project INS/74/034** : Assistance to Industrial Development of Building Materials Manufacture.
This Project in fact is meant to represent the above mentioned Basic Project activity 3.2, in which mainly a coordination with 3.3, 3.4, 3.5, and 3.6 is meant to be planned within the present Programme.

6.8.2. **I.L.O. Projects** for "Development of Management Training and Appropriate Technology in the Construction Sector" as well as "Planning, Implementation and Evaluation of Labour-Intensive Works Programme" as regards construction, may be a valuable contribution to the Basic Project 4 as specified above.

6.8.3. **Project for Development of Indonesian Consultancy** – PPKI has been in operation since 1976 with assistance from the Dutch Government. This project covers several objectives of Basic Project 2 and 5 of the present Programme as regards the field of consultants in construction.

6.8.4 **Kampung Improvement Programme** – K.I.P. as expanded by the Government during REPELITA II is already a major step towards a development as indicated in the above Basic Project 1.

The same refers to :

6.8.5. **Low Cost Housing Programme** – LCH, and

6.8.6. **Sites and Services Programme** – S&S – as supported by the World Bank, and to

6.8.7. **Rural Houses Improvement Programme as coordinated by the**
Ministry of Interior,
Ministry of Social Affairs,
Ministry of Public Works, and
Ministry of Health.

6.8.8. **Construction Census 1978 as planned by Central Bureau of Statistics, will** provide important input to Basic Project 1.

7. IMPLEMENTATION PHASE

7.0. General :

The final formulation of the Development Programme, its strategy, organization, financing, management, timing and monitoring will take place in the Planning Phase, as described in chapter 6. Here are given only some main principles and a preliminary indication of the magnitude of the work.

7.1. Implementation Strategy.

The construction industry with its full range of activities must be considered as one entirety, in which all the parties involved are interdependent and most activities interlinked. Therefore, the Proposed integrated Development Programme should be seen as one total package, from which no element can be left out or delayed without impeding the overall effect. As pointed out before, the development of a construction industry is entirely dependent on the volume and the continuity of the market, i.e. a well planned, well organized and well administered demand for construction. In Indonesia the demand for construction is largely decided by the Government and its economic policy. Therefore the Government, primarily is responsible for the development of the domestic construction industry to become an important factor in the progress of the national economy.

7.2. National & International Cooperation & Coordination

The success of the Programme will depend upon an intensive cooperation between the Government and the private sector, and with the international agencies to be involved in the Programme.

Both in the planning and in the implementation, an unprecedented coordination must take place, at an inter-ministerial and cross-sectorial level, and between the foreign international and bilateral Technical Assistance Projects which substantially may contribute to the Programme.

7.3. Timing of the Implementation

Although some of the proposed Project activities should be implemented within a short time, most elements of the Development Programme will call for an implementation period of at least 5 years, and even a longer period is needed before the ultimate effects of the programme can be achieved. The implementation phase therefore, will cover REPELITA III and probably one or two subsequent 5 years plans.

7.4. Organization of the Implementation Phase.

The organization established during the planning phase will have to be expanded and reinforced in order to handle the implementation of the Programme. Policy making, coordination, steering and monitoring should be organized at an interministerial level, perhaps through a "Construction Development Council" as suggested in Basic Project 40, including also representatives of the private sector.

Project Management should be established for each of the 5 Basic Projects, and the executing agencies may be different ministries according to the main

characteristics of each Basic Project. The final proposal for the organization will be worked out in the Planning phase.

7.5. **The need for Technical Assistance**

Also the necessary cooperation with foreign expertise during the implementation of the Development Programme will have to be designed during the Planning Phase. Probably all aspects of official and private consultancy in international and bilateral Technical Assistance projects as well as direct employment of expert consultants may contribute to the Programme.

A very preliminary estimate of the need for international technical assistance during the first 5 years implementation period = REPELITA III is as follows :

Implementation of Development Programme 1979 – 1984 :	Preliminary Estimate of Technical Assistance : Consultants man/years	Equipment 1000 $
Coordination of Programme	20	100
BASIC PROJECT 1 : Government Policies & Construction Administration	20	–
BASIC PROJECT 2 : Trade Association Development	10	100
BASIC PROJECT 3 : Production Rationalization	20	1.000
BASIC PROJECT 4 : Employment Generation in Construction	30	1.000
BASIC PROJECT 5 : Education Development	20	400
Implementation of Basic Projects in Demonstration Schemes	40	400
Total Estimate, for 5 years	160	3.000

7.6. **Commitment by Indonesian Government**

It should be emphasized that the Programme will succeed only if there is an evident, political and moral commitment by the Government to the basic principles from the very beginning of the planning. The Government should make clear that it is prepared to make the domestic construction industry the object of coherent and conscious planning and development.

ANNEX 1

MISSIONS WORKING PROGRAMME

1. **Timing of Mission :**

23 Sep 1977 : Briefing of the Mission in UNIDO Headquarters, Vienna, by Mr. Verkerk.

25 Sep 1977 : The UNIDO Mission consisting of Mr. Lars Gravesen (week 39 - 52) and Mr. Kurt Sorensen (week 39 and 48 – 49) arrived in Jakarta.

29 Sep 1977 : Decree No. 258/KPTS/1977 issued by the Minister of Public Works and Power to establish a Steering Group and a Working Group for cooperation with the UNIDO Mission

(Group members : see "Terms of Reference", Annex 2).

03, 10 and 17 Oct 1977 : Meetings No. 1, 2 & 3 held by the Working Group in MPW & EP.

13 Oct 1977 : "Explanatory Notes" issued as a guideline for the collection of statistical planning data.

17 Oct 1977 : "Terms of Reference" for the preparation of a Draft Proposal, dated 11 Oct 1977, were approved by the chairman of the Steering Group (see Annex 2).

: "Draft Lay-out" for the final report was submitted for approval

24 – 25 Oct 1977 : Mission to UNIDO Headquarters, Vienna, meeting with Mr. Verkerk and Mr. Rydeng. "Draft Lay-out" approved.

26 Oct. – 05 Nov 1977 : Mission to Copenhagen for consultation with DANIDA, Denmarks Ministry of Housing, and other experts.

31 Oct 1977 : Letters by Secr. Gen. MPW & EP, to various Government Agencies, requesting cooperation on the collection of planning data.

06 Nov 1977 : Mr. Gravesen returned to Jakarta, accompanied by Mr. Verkerk from UNIDO Headquarters (staying until 30 Nov.).

07, 14 and 28 Nov 1977 : Meetings No. 4, 5 & 6 held by the Working Group in MPW & EP.

15 Nov 1977 : 3-party meeting by MPW & EP, Central Bureau of Statistics and University of Indonesia, about collection of planning data.

19 Nov 1977 : Discussion in Bureau of Planning, MPW & EP, about the organization of the Planning Phase.

27 Nov 1977 : Mr. K. Sorensen returned to Jakarta (staying until 10 Dec.).

28 Nov 1977 : Approval of "Chapter 6" of the report with organization of Planning Phase.
Approval of revised "Grouping of Project Activities". Lay-out of Report adjusted accordingly.

29 Nov 1977 : Request by MPW & EP for assistance in the Planning Phase from UNIDO/DANIDA submitted to BAPPENAS.

30 Nov – 27 Dec 1977 : Report finalized in Jakarta and Bandung.

29-30 Dec 1977 : De-briefing at UNIDO Headquarters, Vienna.

2. **List of Contacts :**

In addition to the above mentioned main schedule, and to current working sessions with members of the Steering Group and the Working Group of MPW & EP, a series of personal contact meetings were held by the Mission in Jakarta and in Bandung, mostly with the participation of the chairman of the Working Group, Mr. S. Danunagoro, in Jakarta, and the Project Manager, Mr. T. Ringsholt, in Bandung.

The following is a list of persons who have been interviewed and/or have given advice and information for the benefit of the Mission's work :

Ministry of Public Works & Electric Power :

Mr. Ely Soengkono, Secretary General
Mr. Poernomosidi Hadjisarosa, Dir. General BINA MARGA
Mr. Hendropranoto, Planning Section, CIPTA KARYA.
Mr. Soenarjono Danoedjo, Centre of Research
Mr. Soefaat, Centre of Training Development
Ir. Sri Hadiarti, Building Information Centre
Ir. Suwarno Prawirasumantri, Director of Housing

National Development Planning Agency (BAPPENAS)

Mr. Slamet Danudirdjo, Dep. Chairman

National Housing Policy Board

Ir. Sardjono, Head of Secretariat

National Urban Development Corp. PERUMNAS

Ir. Radinal Moochtar, Man. Director
Ir. Suyono, Dir. Planning
Mr. Robert N. Merrill, Consultant
Mr. Bob Horman, Consultant.
Ir. Umar Komarraningrat, Proj. Manager Depok
Ir. Ali Bassa, Proj. Manager, Klender
Mr. M. Saleh Amirudin, Proj. Manager, Bandung

Ministry of Manpower, Transmigration & Cooperatives

Mr. Danang D. Joedonagoro, Dir. Vocational & Higher Skill Levels Development
Mr. Suroto, Dir. Manpower Program Development
Mr. Kunadi, Senior Adviser.

Ministry of Education & Culture

Drs. Sunaryo, Director Technical & Vocational Education
Ir. Bagiono Johosumbogo, Regional Office, Medan.

Ministry of Industry

Mr. Benito Kodijat ,adviser to the Minister.

Central Bureau of Statistics

Mr. M. Abdoelmadjid, Man. Director
Mr. Harnandi, Analysis Dir.
Mr. Soenardi Sosrooetoyo, Dir. Census Bureau.

Indonesian Chamber of Commerce & Industry

Ir. Ciputra, Dir. P.T. Pembangunan Jaya
Ir. Siswono Judo Husodo, Dir. P.T. Bangun Tjipta Sarana.

Indonesian Contractors Association AKI

Ir. H. Secakusuma, Chairman
Ir. Santoso, Secr. General.

Association of Indonesian Consultants -- IKINDO

Prof. Ir. Dr. Roosseno, Chairman
Ir. Ilhamy Elias, Secretary of the Board.

Indonesian Council for Engineering & Construction

Ir. R.E. Padmakoesoema, Chairman
Ir. Soearli Salam, Secretary of the Board.

Indonesian Consultancy Development Project, PPKI

Mr. R. Hertatijanto, Project Manager
Ir. E. Goedhart, Ass. Project Manager
Ir. P Slikker, Project Engineer.

University of Indonesia

Faculty of Economics :
Mr. Moh. Arsjad Anwar, Ass. Dir. Research
Mr. Dorodjatun Kuntjoro Fakti, Research Associate.

Institute of Technology, Bandung, ITB

Professor Hasan Poerbo
Professor Dr. Matthias Aroef

Directorate of Building Research, Bandung

Mr. A. Kartahardja, Director
Mr. S.M. Ritonga, Head Bldg, Materials & Construction
Mr. Djauhari Sumintardja, Information Div.
Mr. Soearli Salam

Materials Testing Institute, Bandung

Mr. J. Kusnadi, Director
Mr. Sumardi Kartomidjojo, Concrete Laboratory

Ceramic Research Institute, Bandung

Mr. Darubroto, Director

World Bank, Jakarta Office

Mr. Jean Baneth, Director
Mr. John Malone, Dep. Director
Mr. Robert Alexander, Senior Engineer
Mr. Alain F. Ballereau
Mr. Roger V. Key

International Labour Organization, ILO

Mr. W. Bartsch, Adviser to Ministry of Manpower
Mr. Prasim Sen Gupta, Adviser to Ministry of Manpower.
Mr. Sven Brandt, Technical adviser to Ministry of Manpower.

UNDP, Jakarta

Mr. Himalaya Rana, Resident Representative
Mr. Richard M. Brown, Ass. Res. Rep.
Mr. F.M. Iqbal, Senior Industrial Development Field Adviser (UNIDO)

UN–OTC Project INS/72/002.

Mr. K.G.C. Nair, Project Manager, Statistical Development Programme.

UNIDO Project INS/74/034, Bandung.

Dr. T. Ringsholt, Project Manager, Building Materials Manufacture Development
Prof. Torben C. Hans ., UNIDO Consultant.

ANNEX 2

TERMS OF REFERENCE
for the preparation of a Draft Project Proposal
to be Worked out in Oct.–Dec 1977,
by a Working Group of Indonesia's
Ministry of Public Works & Electric Power,
with the Cooperation of UNIDO – Consultants.

1. **Introductory Discussions.**

The following Terms of Reference have been established during introductory discussions on Sept. 25 – Oct. 1 in Jakarta and Bandung between the UNIDO consultants and :

Mr. Ely Soengkono, Secretary General of Ministry of Public Works & Electric Power.
Mr. Rachmat Wiradisuria, Director General of Housing, Building, Planning & Urban Development.
Mr. Lego Nirwhono, Head of Planning Bureau, Ministry of Public Works & Electric Power
Mr. S. Danunagoro, Adviser to Ministry of Public Works & Electric Power.
Mr. Slamet Danudirdjo, Deputy-Chairman, Bappenas.
Mr. A. Kartahardja, Director, Directorate of Building Research.
Mr. J. Kusnadi, Director, Materials Testing Inst., Bandung.
Mr. Hasan Poerbo, Professor, Institute of Technology, Bandung.
Mr. John Malone, I.B.R.D., Jakarta.
Mr. Richard M. Brown, U.N.D.P., Jakarta.

The UNIDO Consultants are :
Mr. Thomas Ringsholt, Project Manager, UNIDO, Bandung.
Mr. Kurt Sorensen
Mr. Lars Gravesen.

2. **Purpose of the Work :**

The Draft Project Proposal is intended to be submitted before the end of 1977 by Ministry of Public Works & Electric Power to BAPPENAS as a working document in connection with the preparation of the third 5 years plan, REPELITA III, with the aim of establishing a special programme for the development of the construction industry.

3. **Organization of the Work :**

The Secretary General of Ministry of Public Works & Electric Power has for this purpose established :

a) **A steering Committee :**
Mr. Rachmat Wiradisuria, Director General of Housing, Building, Planning & Urban Development.

Mr. Suhardja Tjakradipura, Head of Construction Enterprise Development Bureau, Ministry of Public Works & Electric Power.

Mr. Lego Nirwhono, Head of Planning Bureau, Ministry of Public Works & Electric Power.

b) and a Working Committee

Mr. S. Danunagoro, Secretariate General, Ministry of Public Works & Electric Power.

Mr. Azhar, Directorate General of Housing, Building, Planning & Urban Development,

Mr. Suarli Salam, Directorate General of Housing, Building, Planning & Urban Development.

Mr. Omar, Bureau of Construction Enterprise Development.

Mr. Djoewarin, Bureau of Construction Enterprise Development.

Mr. Soekrisno, Bureau of Planning.

Mr. Pasaribu, Bureau of Planning.

Mr. Thomas Ringsholt.

Mr. Kurt Sorensen (week 39 and 48 – 49).

Mr. Lars Gravesen (week 39 - 50).

During October – December, office space and facilities will be made available by M.P.W. & EP. as an operation centre of the Working Group while preparing the Draft Proposal, including secretarial assistance, transportation etc.

4. Background Data

The following documents are available :

a) An English Summary of MPW & EP's Working paper "Pattern for the Development of the Construction Industry in relation to Employment Opportunities", giving the Basic Premisses, Aims and Objectives, The Problem Structures, the Results of study and Analysis, Implementation strategy, Feasibility Considerations and Policy Suggestions.

b) An English Summary of a report by Chamber of Commerce "The National capability in the Construction Industry Sector", 1977.

c) Reports by the University of Indonesia, Economic Faculty, Dec. 1976, "Role and Prospects of the Construction Industry Sector in the light of the National Economic Development" and "Role and Prospects of the Construction Industry Sector and Problems faced by the National Contractors" (not available in English).

d) ITB Report 1973 and 1974 "Engineering Construction Capabilities, Costs and Control in Indonesia".

e) Reference is made in particular to a Memorandum by IBRD, dated July 12, 1973 and entitled "Promotion of Domestic Construction Industries in Developing Countries" and to a UNIDO Report from an Expert Group Meeting in Vienna, 1973, entitled "The Construction Industry in Developing Countries".

f) Further relevant data will be collected by the Working Group e.g. from BAPPENAS, Ministry of Manpower, Transmigration and Cooperatives, Ministry of Industry, Ministry of Education and Culture, C.B. Statistics, IBRD,

ILO and UNIDO, in order to ensure that the Project Proposal will fit into the overall policy and predictions of REPELITA III and into existing plans for related projects and developments.

5. **Scope of the Proposal**

The Proposal will comment upon the long term development of Indonesia's domestic construction industry as a whole, including contractors, manufacturers and consultants.

The proposal will deal with construction industries serving the production of housing and other building as well as Civil Works, in urban as well as in rural areas.

The proposal will analyse the problems in the modern segment of the industry as well as in the tradition al segment.

In covering this wide field, the Proposal will seek to formulate realistic long term policies for achieving the goals set by the Government, including an increase of employment possibilities. In particular the Proposal is expected to identify and to formulate a limited programme of suitable projects and to suggest appropriate actions to be taken during the period of REPELITA III, i.e. 1979 – 1984 with the purpose to implement a first phase of the proposed long term development programme, and to indicate the magnitude of funds involved during this 5 years period.

6. **Time table :**

Week	40 – 42	Collect data
	Oct 2 – Oct 23	Specify Scope
		Prel. lay out
Week	**43 – 44**	Work out data
	Oct 23 – Nov 6	Discuss proposal
		in UNIDO Hq etc. (Sorensen-Gravesen)
Week	**45 – 46**	Draft Proposal
	Nov 6 – Nov 20	
Week	**47 – 48**	Discuss draft, incl. panel discussion
	Nov 20 – Dec 4	and workshop
Week	**49**	Final manuscript
	Dec 4 – Dec 11	
Week	**50**	Printing
	Dec 11 – Dec 15	
December	16th	submit to M.P.W. & E.P.

Approved, Jakarta 17 Oct 1977

Ir. RACHMAT WIRADISURIA
Chairman of Steering Committee.

ANNEX 3

LIST OF DOCUMENTS.

The following documents were available in English for background information and reference during the work of the Mission :

Doc. 00 : *"The Second Five Year Development Plan"* (1974/75 – 1978/79). Department of Information, Volume I - IV.

Doc. 01 : *"Pattern for the Development of the Construction Industry with a view to increasing Employment Opportunities"*. An English Summary of a Staff Working Paper 1977 of the Ministry of Public Works (Annex 4).

Doc. 02 : *"The National Capability in the Construction Industry Sector"*. An English Summary of a report by Indonesian Chamber of Commerce, Jakarta 1977.

Doc. 03 : *"The Gradual Industrialization of Housing Construction in Indonesia"*, by Albert Kartahardja, Masalah Bangunan, No. 2. June 1977.

Doc. 04 : "Engineering *Construction Capabilities, Costs and Control in Indonesia"*. Report 1973 and 1974 by Institute of Technology, Bandung I.T.B.

Doc. 05 : *"Rational Designs for Low Cost Houses in Indonesia"*, by Djauhari Sumintardja, Exposition & Workshop on Small-scale Building Materials Industries for Rural Development, Bandung, Aug. 1977.

Doc. 06 : *"An Outline of National Housing Policy & Programs in Indonesia"*, by Ir. Sardjono. Publ. by PUTL, Jakarta.

Doc. 07 : *"Low Cost Housing in Indonesia"*, a study by the Canadian International Development Research Centre (IDRC), Bandung 1975.

Doc. 08 : *"The Development of Building Materials for Housing in Indonesia"*, by Z.A. Abbas. Publ. by Directorate of Building Research, Bandung

Doc. 09 : *"Rural Housing Improvement in Indonesia"*, by Ir. Sardjono, Ir. Mardjono, Drs. Suhud Pribadi and Ir. Widodo Purbokusumo, Bandung 1974.

Doc. 10 : *"Progress Report 1976"* U.N. Housing Centre for the ESCAP Region, Bandung.

Doc. 11 : *"A Study and Piloting Activity of Roof-Tile & Earthernware Industry in Plered, West Java"*, by Ceramic Research Institute, Bandung 1977.

Doc. 12 : *"Assistance to Industrial Development of Building Materials Manufacture"*, Project Document, UNIDO Project INS/74/034, Bandung 1976.

Doc. 13 : *"Project Progress Report No. 3"*, UNIDO Project INS/74/034, Bandung 1977.

Doc. 14 : *"Programme for Upgrading the Concrete Construction Industry and the Sand and Gravel Industry in Indonesia"*. Technical Paper No. 6, by Professor Torben C. Hansen, UNIDO Project INS/74/034, Bandung 1977.

Doc. 15 : *"The Training in Indonesia"*, *"Training Facilities in Indonesia"*. Papers by the Indonesian Delegation to Machine Asia Seminar, Singapore 1977.

Doc. 16 : *"Development of Technical and Vocational Education in Indonesia"*, Publication by Ministry of Education & Culture, Jakarta 1976.

Doc. 17 : *"Implementation of Modular Co-ordination and Component Building in Asia and the Pacific"*, ESCAP Report 1975.

Doc. 18 : *"The Construction Industry in Developing Countries"*. Report of an Expert Group meeting, UNIDO, Vienna, 1973.

Doc. 19 : *"Construction Industry"*, UNIDO monograph on Industrial Development, U.N. New York, 1969 : Industrialization of Developing Countries, Problems and Prospects.

Doc. 20 : *"Building Materials Industry"*, UNIDO monograph on Industrial Development, U.N. New York 1969. Industrialization of Developing Countries, Problems and Prospects.

Doc. 21 : *"Study of the Subtitution of Labour and Equipment in Civil Construction"*, Final Report, International Bank for Reconstruction and Development, 1974.

Doc. 22 : *"A Framework for the Promotion of Construction Industries in the Developing Countries"*. IBRD Staff Working Paper 1973.

Doc. 23 : *"Promotion of Domestic Construction Industries in Developing Countries"*, Memo from IBRD, 1973.

Doc. 24 : *"International Recommendations for Construction Statistics"*, U.N. New York 1968, Statistical Papers Series M. No. 47.

Doc. 25 : *"Yearbook of Construction Statistics"*, 1976, U.N. New York 1977.

Doc. 26 : *"Annual Bulletin of Housing and Building Statistics* for Europe" 1976, U.N. New York, 1977.

Doc. 27 : "Industrial Housing in Denmark" by Marius Kjeldsen. Danish Building Centre, Copenhagen, 1976.

ANNEX 4

Staff working paper, Ministry of Public Works and Electric Power :
PATTERN FOR THE DEVELOPMENT OF THE CONSTRUCTION INDUSTRY WITH A VIEW TO INCREASING EMPLOYMENT OPPORTUNITIES

BASIC PREMISES

1. According to the General Outlines of National Policy (GBHN) as elaborated in detail in the First Five Year Development Plan - the REPELITA I - the Construction Industry is considered to be of primary significance for the overall development program.

   Indeed the Construction Industry effects economic growth through its contribution to the following factors :

   - The creation of permanent assets for the economy.
   - Its contribution to the Gross Domestic Product (GDP).
   - Its contribution to employment opportunities.

   These are vital factors for economic development, and they also provide standards for the quantification of the contribution given by the Construction Industry to the national economy.

   In consideration of these facts, the Government must make efforts for directing, improving and stabilization of the Construction Industry. In the efforts to achieve the objectives of this Industry with its economic, social and cultural implications, the program must be divided in short, medium and long-term projects. And these programs must be studied as to their individual desirability, consistency, feasibility and efficiency. Thereby attention must be given to both the sectorial and the regional approach.

2. The Ministry Of Public Works and Electric Power, as the government agency which is functionally responsible for the creation and management of infrastructural assets, such as roads and bridges, power stations, and habitation and urban planning and development, which constitute the permanent assets of the national economy, is most interested in the development of the construction industry.

3. It is realized that the Construction Sector is facing a number of difficulties, due to external circumstances as well as some internal conditions.

   If the existing anomalies are allowed to persist, this could give rise to unsound competition between the various segments of the construction industry, which can be categorized as follows :

   - Modern foreign construction industries.
   - Modern domestic construction industries.

Conventional (transitional) domestic construction companies.
- Traditional domestic construction firms.

The pressure of competition is giving rise to a dualistic pattern in the industry, and to polarization of the various segments in the construction industry, which adversely affects the national development efforts.

4. It is therefore desirable to formulate and enforce policies and regulations for the promotion and development of the construction sector, taking into account the existing conditions and the development objectives.

AIMS AND OBJECTIVES

5. Within the framework of the development objectives outlined in the Second Five Year Development Plan (REPELITA II), the objectives for the development of the domestic industries include :

- Boosting overall industrial activities.
- Boosting the share of the *weaker segments of the national industries*.
- Preferential treatment for labour intensive industries.
- A more even geographical distribution of overall industrial activities.

With special regard to the construction industry the policy objectives include :

- Increasing the share of all segments of domestic construction industries in the overall construction activities.
- Safeguarding and ultimately increasing the share of the conventional-transitional and the traditional segments of the construction industry.

The development targets include :

- Improving the capabilities of the modern domestic construction industries to enable them more successfully to compete with the advanced foreign construction industries, and ultimately to play a dominant role in an orderly, competitive market.
- Promoting and developing the conventional-transitional and traditional segments of the domestic construction industry, as a vehicle for the expansion of job opportunities, while preserving proper standards of efficiency and productivity.

The absence of an overall agency for promotion and regulating the national construction industry constitutes an institutional handicap which has given rise to the following problems.

i. Fierce competition detrimental to the domestic industry, between the domestic and foreign construction industries.
ii. The uneven, and often ruinous, competition among the modern and conventional segments of the domestic construction industries, and between both segments and the traditional industries.

7. As mentioned earlier, the share of the domestic construction industries must be boosted during the REPELITA II Period, particularly with a view to expanding employment opportunities and ensuring a more suitable distribution of income. To this effect the policy in drafting the general program and its specifications must be aiming a balanced solution of the various problem

structures and at developing the construction industry to reach a stage, in which there exists sound competition between the various segments of the construction industry.

For this purpose it is desirable to establish an *institution which shall be responsible for the promotion and development of the construction industry*, taking into account the short, medium and long-term targets.

THE PROBLEM STRUCTURES

8 With existing trend of polarization in the construction industry sector, the *share of the modern construction industries and their productivity keeps increasing*, in a manner *not accomodating* an appropriate technology for the *expansion of employment* opportunities while on the other hand the share of the more labour-intensive conventional and traditional construction industries declining.

There are no adequate statutory regulations for safe-guarding the overall development of the construction industry, ensuring the viability of the modern domestic industries side-by-side and in *operational integration* with the conventional and traditional construction industries.

9. In addition to the inadequacy of statutory regulations, there are such environmental factors as the problems with regard to capital, marketing and technology. The operational position of the domestic construction industries is handicapped by a lack of financial resources and by inadequate technological capabilities. There is a need for a special institution for *financing the operations of the domestic construction industries*.

THE RESULT OF STUDY AND ANALYSIS OF THE ALTERNATIVES.

10. According to the *statistics used by the World Bank*, the contribution of the industrial sector to the national economy in the developing countries show the following figures.

- The construction industry sector contributes approximately 3% – 5% of the Gross Domestic Product.
- This sector provides between 2% and 6% of the total job opportunities.
- This sector contributes approximately 50% to 60% of the permanent capital assets of the national economy.

Statistics show that the construction sector in this country has grown since the beginning of PELITA II, during the period 1969–1973 at an average rate of 21.07% per annual, compared with a GDP average annual growth rate of 8.66% during the same period.

The operations of the Construction Industry are closely related to the creation of permanent assets, and consequently to the GDP growth rate. During periods of stagnation the industry's growth rate even exceeds that of the GDP.

Regrettably however, the Construction Industry's contribution to the GDP has not been matched by its contribution to job opportunities.

11. The Census returns for 1961 and 1971 show that the Construction Industry's

contribution to job opportunities have even declined from 1.81% in 1961 to 1.71% in 1971. These figures surely are disappointing, compared with the *2 – 6% share of* the construction industry *in overall job opportunities* according to the normal pattern for the developing countries.

Projections for the period up to 1985 predict an average GDP growth for Indonesia for the periods 1974 – 1975, 1975 – 1980 and 1980 – 1985 of respectively 7.10%, 7.54 – 8.10% and 8.04% – 8.57% per annum.

For the *Construction Industry the growth rate in that period is projected at averagely 10.70 – 11.86% per annum.*

Job opportunities in the Construction Industry are projected to *increase at an average rate of 6.10 – 6.82% p.a.* during the period 1975 – 1980 and 5.19 – 5.80% during the period 1980 – 1985.

According to these projections the *Construction Industry's share in the GDP is expected to increase* from *4.00 – 4.30% in 1975* to *4.42% – 4.99% in 1980* and *4.53 – 5.39% in 1985.*

As regards its contribution to overall *job opportunities,* this will increase from a *2.53% share in 1975 to 3.48 – 3.62% in 1985.*

Evidently this sector is growing at a good rate, exceeding the normal pattern in the developing countries, but its success is not being matched by an equivalent contribution to job opportunities, which for 1985 is projected to be at the intermediate range of the normal pattern in the developing countries.

12. In Indonesia still are found a number of retarded areas, beside the greatly developed areas, some of which have even exceeded the saturation point, notably on Java in general and in Jakarta in particular.

In view of this it is possible to *apply a range of technologies*, from the most simple grade to the most sophisticated grades. The grade of technology can be adapted to local requirements, as technology must be considered as a means, and not as an end in itself.

With regard to the construction sector, it is hoped that domestic industries can ultimately play a dominant part. For this purpose it will be necessary to enhance the capabilities and the efficiency of those domestic industries, to enable these to compete successfully with foreign construction industries.

On the other hand it is desirable that the construction sector can give an increasing contribution to employment opportunities.

The experiences in a number of developing countries have shown that the application of labour-intensive technologies result in low productivity rates, rendering the operations uneconomic.

13. The need is felt at present for a *research and development program for an appropriate technology* aiming at the expansion of employment opportunities.

Such a program would not be attractive for private enterprises–in the equipment manufacturing industry or in the construction industry proper and it would therefore be necessary that the *government takes the initiative* with the cooperation of the appropriate international agencies.

IMPLEMENTATION STRATEGY

14. Generally speaking the strategy for the development of the construction industry calls for *basic development, promotion and regulating programs.*

The basic development programs should emphasize the operations connected with the physical development efforts.

The basic regulating program calls for legislative action for enactment of the *appropriate laws and ordinances.*

The basic promotion programs calls for development of the *managerial aspects* in the construction industry.

15. The *strategy* with regard to the *pro*motion of the construction industry should aim at the *expansion of employment opportunities,* and in the first growing and stable employment opportunities should be created.

16. The characteristics of the development projects carried out under the auspices of the Ministry of Public Works are of a widely varying nature, and special studies are necessary to ensure taking the optimal advantage of these varying characteristics, with a view to *promoting the interests of the modern, conventional and traditional segments of* the construction sector, while care should be taken to *prevent unsound competition* which would be detrimental to the interests of the weaker construction firms.

17. More interest and action can be expected with regard to the *transmigration* of population from Java to the other islands. It is understood that the targets for the 1977 - 1978 fiscal year calls for resettling some 20,000 family units, the number to be increased to *30,000 family units* in 1978 - 1979, and to much higher numbers during the PELITA III Period.

Future developments and planning can be expected to be more adapted to the area theories. Consequently we can expect area development projects to be included in package programs, which can be taken advantage of by the construction industry, particularly for the application of an appropriate technology for the expansion of employment opportunities, while preserving efficiency and productivity standards.

18. The modern domestic construction industries in principle need finance facilities which can be mobilized on short notice and at low cost.

These financing facilities are particularly needed for providing permanent as well as fluctuating operating capital as well as for investment in modern equipment.

This segment of the construction industry also has to be provided with facilities for on the job and academic training, in this country and overseas, and also for upgrading the skills of the workers.

Beside this it is desirable to propagate information among the employers and builders, to *persuade them* to give opportunities for expansion to all segments of the domestic construction industry.

19. The domestic construction industries of the conventional transitional and

the traditional categories suffer most from the *current uncontrolled competitive conditions*, and are most dependent for their existence from government patronage.

Expanding employment opportunities through the application of an appropriate technology is most essential, therefore desirable to carry out research for ways and means to ensure the survival and even the progress of these categories of the construction industry.

Research will have to be carried out for formulating an appropriate technology for application in the conventional and traditional categories of the construction industry, each within its own field. This research will also produce designs for equipment which can serve as an extension rather than a substitute to manpower. This research also hopefully will discover appropriate training methods for enhancing engineering capabilities.

20. It is also desirable to consider rendering *financial assistance* in the shape of overbridging credits for these conventional and traditional industries who have been awarded government works contracts. Assistance in the shape of capital funds and technology, offered by such international agencies as the IBRD, the ILO and the UNIDO should be processed and utilized.

Works tender systems should be adapted to educative purpose, to encourage cooperation through *joint operations* among domestic construction industries; such joint operations should be taken benefit of as a vehicle for advancement. In view of the major importance of modern construction equipment for the development of domestic construction industries, particularly of the modern category, while on the other hand ownership of such equipment calls for huge investments accompanied by the risk of idle time due to lack of continuity of operations, the establishment of *equipment and plant hire services* must be promoted.

21. To this date the Government has failed to provide adequate legislation and regulations providing a legal basis for the *registration, classification and qualification of contractor and consultant service units*. Such regulations could enable the government to acquire a comprehensive picture about the capabilities of individual companies in the construction sector, and would provide it with a basis for determining its policy with regard to the construction industry.

Moreover, the existence of such registration, classification and qualification regulations would discourage unsound practices by less bonafide contractors and consultants, who may harm the interests of the employers and owners in the construction sector.

For multi-annual projects the awarding of *multi-annual contracts* could be considered, as this would ensure *continuity of operations* to the contractors.

22. In consideration of the limited financial resources of the average construction works operator, there is need for a *streamlined payment procedure*, as this would greatly enhance the financial position of the contractors.

It is also desirable to have government ordinances determining the *class of works for which foreign construction companies may compete*, with a view to *restricting competition*. A government ordinance should also make it *man-*

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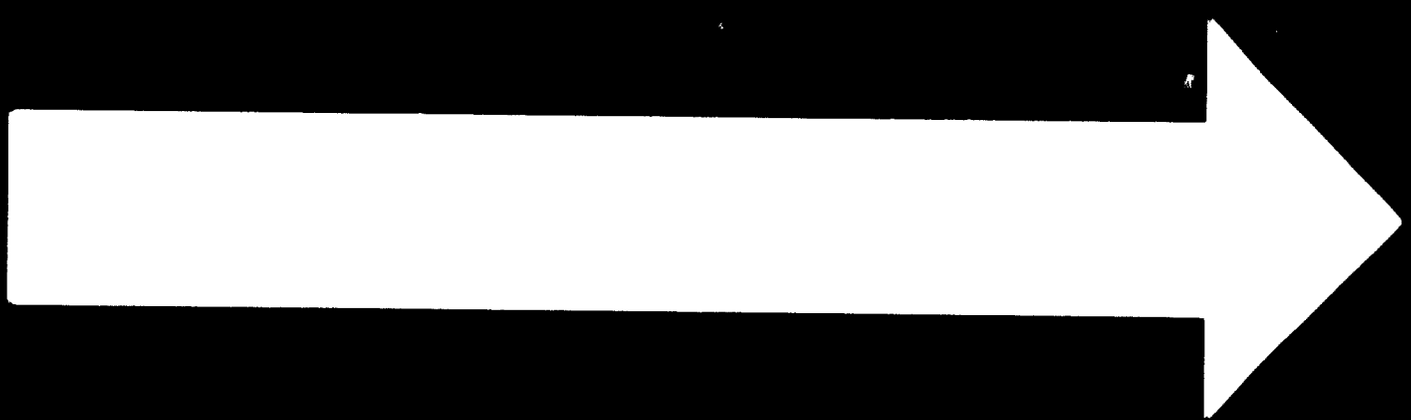

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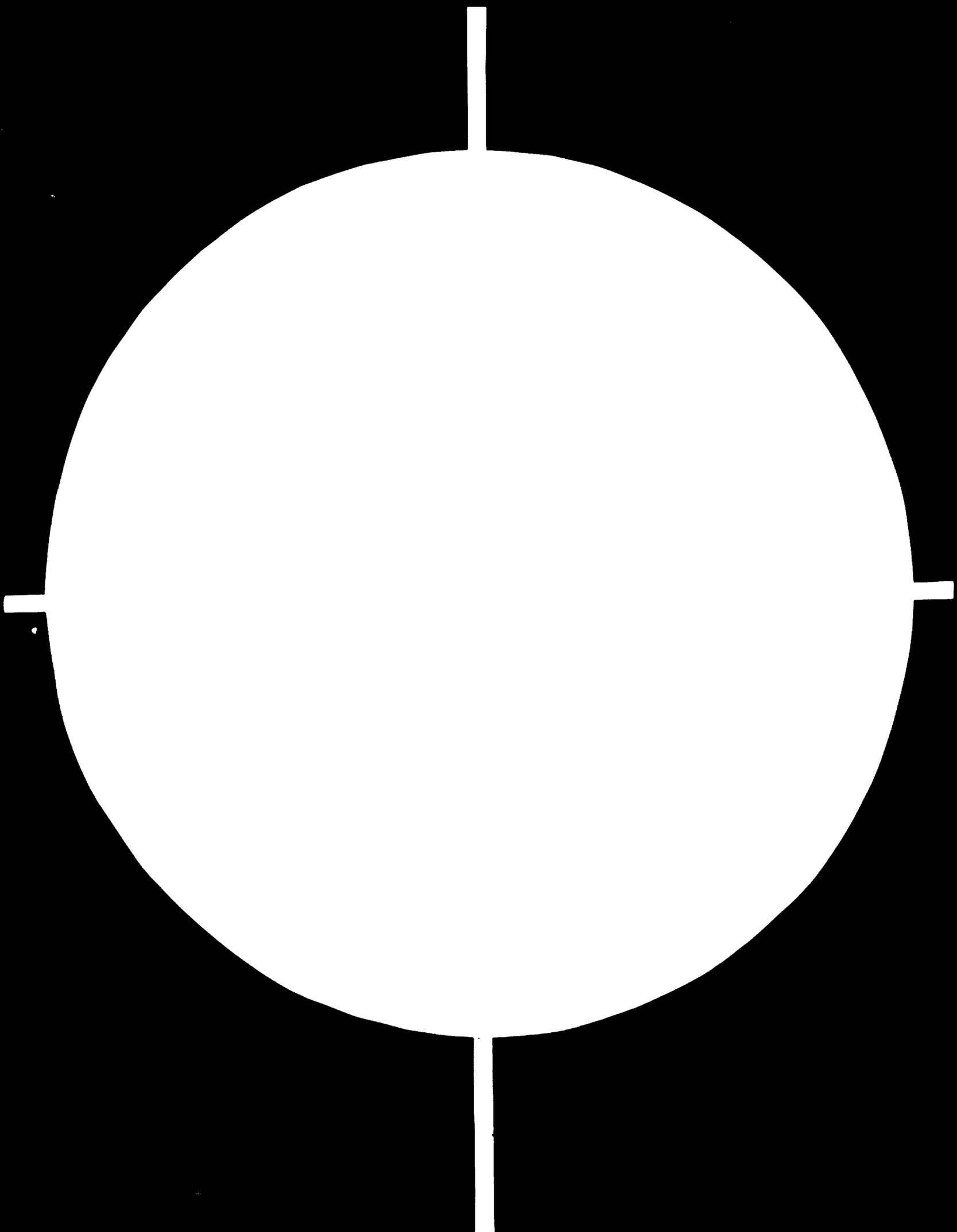

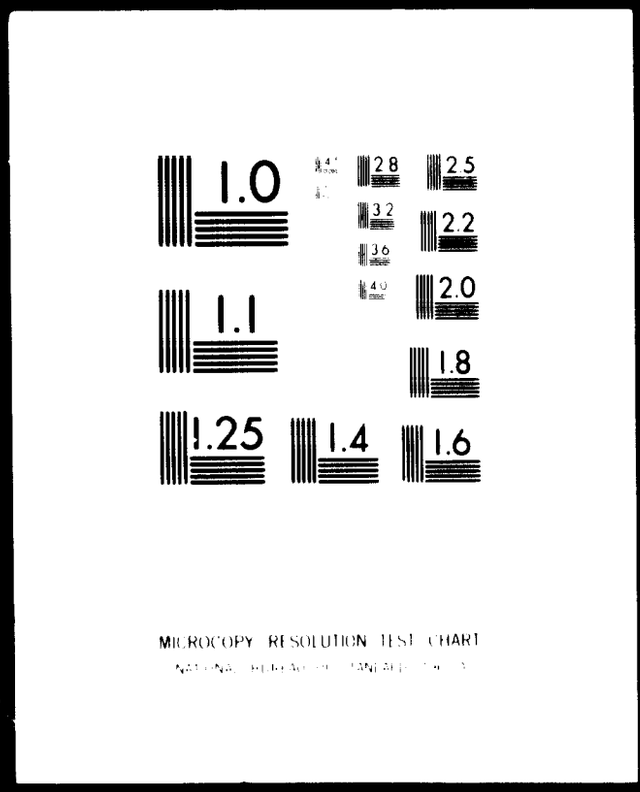

datory to train the employees of construction industries, to provide in the need of supervisory staff.

FEASIBILITY CONSIDERATIONS

23. Among a number of factors restricting the feasibility of a development program for the construction industry, the principal one is related to the budget constellation.

The *budgeting procedure* as applied by the government in general and the Ministry of Public Works in particular, is not favourable for the efforts for acceleration of development through the optimal utilization for the existing limited capabilities.

24. Other limitations are connected with the internal handicaps within the domestic construction industry, which hamper their efforts in competing with foreign construction industries.

These *handicaps* include :

- the lack of *capital* and financial resources in general;
- inadequacy of *manpower* and of the capabilities of the *available personnel;*
- inadequate *engineering capabilities* and equipment;
- inadequate organizational and *managerial skills.*

These handicaps are a general phenomena within the domestic construction industries in the developing countries; these handicaps are most pronounced within the medium and small size construction industries. And these handicaps constitute a major hazard for their survival, because it concerns factors which are decisive in the *evaluation* for *pre-qualification* in tenders.

25. In addition there are some external factors which tend to aggravate these handicaps, viz. :

- The fluctuating and precarious nature of the *demand* for construction industry services.
- The industry's absolute *dependence* on the national development budget.
- The lack of *dynamism* in the domestic business world.
- The lack of statutory *regulations governing competition,* both between domestic and foreign industries and among the domestic industries.
- The absence of a *system for registration, classification and qualification* within this industry.
- The lack of an adequate *system for training and education* to meet the industry's needs for engineering and professional staff.
- The absence of statutory *regulations* adapted to local conditions for the construction industry, which does not add to the financial burdens and provides equitable *sharing of business risks between the contractors and their employers.*
- The lack of a system or institution specializing in the industry's needs for *financing sources.*

26. The matter of the absence of an appropriate system or institution for catering to the industry's needs for a variegated source of finance already has drawn

the attention of the *IBRD*, which has in 1973 held discussions on "the promotion of construction industries in developing countries". The paper on this subject put forward the possibility of rendering technical as well as direct financial assistance. Technical assistance is given to the developing countries in *formulating a policy* and a series of measures necessary for the *promotion of domestic construction* industries. Direct financial assistance is being considered for the *governments* of developing countries, which can *hannel the capital funds* to domestic construction industries through what is termed "local intermediaries".

Prompt attention need to be given to the realization of such direct financial assistance.

27. Past studies have shown the *limited amount of available data*. The conclusions based on these data must necessarily be of a tentative nature only. In this connection the government's efforts in preparing a *Construction Industry Census in 1978 merits full support.*

POLICY SUGGESTIONS

28. The exposition in earlier chapters concerning the problems currently facing the Construction industry and the desired objectives which expectedly shall emerge as priority projects in the construction sector within the framework of the overal development efforts under the subsequent Five Year Development Plans, have been used as a basis for some policy suggestions with regard to the development of the construction sector.

29. These policy suggestions are adapted to a managerial approach of the development efforts now and in the near future, using a *regional approach* directed toward an integrated spatial development policy with a view to achieving a better balance between population growth and the increase of food production, and between the growth in the agricultural and the manufacturing sectors, accompanied by a more balanced geographical distribution of the population.

30. With regard to the development efforts the *construction industry is viewed as a system comprising the marketing, financing and technological subsystems,* providing the principal foundations to be related with the overall development efforts.

The solution of the problems regarding the establishment of a sound construction industry may be regarded as finding the way to achieve a balance between the various subsystems, within the wider framework of the national development program.

For this purpose basic programs for the establishment, development and regulation of the construction industry will have to be implemented; simultaneously there must be provided an arena within which the various subsystems can interact freely and openly, while also there must be provided the statutory regulations for ensuring an orderly implementation of these programs.

31. Based upon findings of the research with regard to conditions in the Construction industry, the existing problems and the phasing of the solution can

be categorized as follows :

1. The problems with regard to the *expansion of employment opportunities* within the construction industry, and the phasing of the solutions.

THE PROBLEMS

Employment opportunities in the construction sector are inadequate :

Causative Factors	Phasing of Solution		
1. Design practices and standards applicable in the construction sector in Indonesia tend to develop toward capital intensive operations.	S	M	L
2. Lack of skills with management and with operating personnel.	S	M	L
3. Development efforts are directed toward the sectors that are inherently capital intensive.	S	M	L
4. Inadequacy of control and direction through statutory regulations opens opportunities for application of capital-intensive methods.	S	M	L
5. Existing Time Schedules often calls for application of capital intensive methods.	S	M	L
6. Rates of interest, customs duties and foreign exchange encourage use of capital intensive methods.	S	M	L
7. The major part of construction *equipment* is being imported, while there virtually do not exist any domestic innovations aiming at labour-intensive methods.	S	M	L
8. A major part of construction *materials* are still being imported.	S	M	L

NOTE : S = short term (1 – 3 years)
M = medium term (3 – 5 years)
L = long term (5 years and longer)

2. Increasing the share in construction activities for the modern and conventional domestic construction industries.

THE PROBLEM :

The *share of the domestic modern* and *conventional construction industries in construction activities in Indonesia,* particularly with regard to civil engineering works, *is still too small.*

Causative Factors	Phasing of Solution		
1. Inadequate efficiency standards in the modern and conventional domestic construction industries.	S	M	L

2.	Lack of stability of prices and supplies of construction materials	S	M	L
3.	Abundance of "invisible costs" burdening domestic construction industries	S	M	
4.	Lack of *continuity* of operations	S	M	
5.	Non-existence of regulations governing competition within the construction industry, specifically with regard to the *registration, classification* and *qualification*	S	M	
6.	Uneven and unfair competition by foreign construction industries	S	M	
7.	Insufficient availability of construction equipment	S	M	
8.	Inadequacy of *information about* the construction market	S	M	
9.	Absence of a credit system specially catering to the needs of the domestic construction industries	S	M	L
10.	The complicated system for the payment of works contractors	S	M	

As a direct consequence of the above-mentioned problems, the following objectives and ways and means have been formulated :

OBJECTIVES :

Increasing employment opportunities of the construction & industry	Increasing the share of domestic modern & conventional construction industries	Safeguarding and increasing the share of traditional domestic construction industries
(1)	(2)	(3)

WAYS & MEANS :

1. Adjusting the design, *practices & standards*	1. Improving efficiency standards in the domestic modern & conventional construction industries	1. Improving efficiency standards in the domestic traditional construction industries.
2. Improving the *skills* of supervisory & operating staff	2. Establishing relevant *pre-qualification standards*	2. Establishing relevant pre-qualification standards
3. Adjusting the pattern of economic development	3. Establishing relevant *contracting procedures*	3. Establishing relevant contracting procedures

4. Establishing relevant *administration* and institutions	4. Providing *information regarding prospective demand* for construction services	4. Providing information regarding prospective demand for construction services
5. Establishing relevant *time-scheduling* for construction	5. Improving financial position and capabilities	5. Improving financial position and capabilities
6. Establishing relevant system of production factor *prices*		
7. Promoting domestic production of construction equipment		
8. Encouraging use of domestic construction *materials*		

With regard to the individual items, the following policy suggestions are presented :

1. Suggestions with regard to the expansion of employment opportunities.

1.1. Design, practices and standards :
The work volume should be adapted to the capabilities of domestic construction, through a segmentation of construction operation successively to be stepped up in accordance with the standards. The establishment of standards conducive to absorption of more manpower, in a selective manner.

1.2. Enhancing skills.
- Improving the supervisory skills of managers.
- Improving the skills of the operating staff to increase productivity.

1.3. Pattern of Economic Development..
- Promoting the construction of physical infra-structures through application of labour intensive methods.
- This policy should be comprised within an integrated spatial policy.

1.4. Administration and Institutionalization.
The technology to be applied should be adapted to the requirements and nature of the relevant construction works.

The adjustment should be effected following an administrative-institutionalized procedure.

1.5. Adjustment of Time Scheduling.
Time scheduling with regard to construction operations should be arranged with a view to :
- providing employment opportunities through application of appropriate technology.
- discouraging the application of excessively advanced technologies.

1.6. Establishing a price system for production factors.

Establishing of *rates of interest, customs duties* and foreign exchange with a view to encourage the application of the appropriate technology for each individual construction works.

1.7. Promoting *domestic production of construction equipment*.
- Domestic production of construction equipment should be promoted with a view to expanding employment opportunities.
- For this purpose efforts must be made for
  - promoting a spirit of enterprise,
  - providing *facilities and incentives for innovators,*
  - improving the efficiency of the domestic construction equipment manufacturing industries,
  - providing protection against the competition of imported construction equipment.

1.8. Promoting the use of domestic construction materials.
This is self-evident.

2. Increasing the share of the modern and conventional domestic construction industries in construction activities.

2.1. Improving efficiency standards of domestic industries.
- Improving the managerial qualities and entrepreneurial skills of domestic enterpreneurs.
- Improving financial management skills, particularly regarding the engineering aspects.
- Developing *control systems* for operational projects, by application of advanced methods, as. e.g. OR, PERT – CPM.
- Efforts for improving efficiency standards should be related to the expansion of employment opportunities, and the upgrading of the skills of construction workers.

2.2. Improving the financial/capital position.
- Providing incentives for re-investment of profits.
- Promoting the sales of equity stock of domestic construction
- Taking steps to ensure smooth *processing of payments* to contractors.
- Establishing a *credit system* specially for the construction industries.
- Promoting the utilization of *"soft loans"* from the IBRD for improving the financial position.
- Establishing a system of *"equipment hire and purchase"*.

3. Increasing the share of the domestic traditional construction industries.

3.1. Improving efficiency standards of the traditional domestic construction industries.
- Upgrading the skills and *supervisory qualities* with regard to the work labour gangs.
- Improving *managerial qualities* and enterpreneurial skills in small size industries.
- Development of effective and efficient hand tools.
- Establishing *performance standards* with regard to the *training of qualified*

workers.

- Establishing a system for *performance evaluations.*
- Making efforts with a view to ensuring *stabilization of prices and supplies* of construction *materials.*
- Making efforts for the gradual elimination of the so-called "invisible costs".

3.2. Pre-qualification Standards.

- It should be made a matter of principle that construction works financial as *INPRES Projects* should be carried out by, or with the participation of, small local contracting firms.
- Establishing a *pre-qualification system* for INPRES Project construction works.
- Ensuring the widest possible participation of small local firms for the construction projects financed from government savings.
- Establishing a *pre-qualification system* for small construction firms as a follow-up to the statutory regulations regarding nation-wide registration, classification and qualification.

3.3. Contracting Procedures.

- According priority to qualified small local firms.
- Establishing a rotation system to ensure stability and continuity of operations.
- Establishing *"Building Authorities"* in First Grade (Provincial) and Second Grade (Municipal) Regional Administration Units to *Safeguard fair contracting procedures.*
- Establishing systems of cooperation stipulating the rights and responsibilities of owners/employers, the supervisory agencies and the contractors, to be specified plainly and clearly in works contracts.

3.4. Information about prospective demand.

- Information to be propagated by the Government, cq. the Building Authority regarding prospects for construction operations, specifically the budget-connected projects, to ensure stability and continuity of construction operations.

3.5. Improving capital and financial position.

- Arrangement of payments in adjustment with the terms and volume of operations.
- Establishing a system for leasing essential construction equipment with a view to preserving the financial resources of small contracting firms.

* * *

ANNEX 5

LIST OF TECHNICAL ASSISTANCE PROPOSALS 1977/78

From list prepared by BAPPENAS

(a) Proposal carried forward

(b) New proposal.

related to proposed Construction Industry Development Programme.

	Code Number	Title
(a)	DTA 132	Cement Distribution System Study
(a)	FTA 167	Study on Examination of Supply System of Hire Leasing Plant for Heavy Equipment.
(b)	FTA 173	Technical Advising Services for Central Road Institute.
(b)	FTA - 177	Engineering Service for Prefabricated Concrete Plant of Small Bridge Construction.
(a)	JTA - 55	Establishment of Vocational Education Guidance.
(a)	KTA - 5 (b)	Production Unit of Building Materials for Housing Construction.
(a)	KTA - 6 (b)	Study on Highrise Building Foundation.
(a)	KTA 15	Rural Housing Development Programme.
(a)	KTA - 17	Development of Building Information Centres.
(a)	KTA - 18	Development of Local Building Materials Through the Effective Use of Indigeneous Raw Materials Inclusive Waste Products.
(a)	KTA - 20	Studies, Site Development, Management and Staff Development for Sites and Services Development for Low Cost Housing Projects.
(a)	KTA - 23	Training of Projects Leaders and Supervisors for Housing Development Projects.
(a)	KTA - 24	Survey and Study of Traditional Buildings and Rural Houses in Indonesia.
(a)	KTA - 28	Training Centre for Urban Housing Development Jakarta.
(b)	KTA - 29	Strengthening of Local Housing Corporation.
(b)	KTA - 30	Advisory Team for Formulation of National Housing Act and Relevant Legislatures in Support of Housing Development Programme.
(a)	LTA - 22	Regional and Urban Planning Advisory Services.
(a)	LTA - 32	Formulation on Housing and Planning Sector

(a)	PTA - 32	Strengthening the Development of Labour Statistics, Jakarta.
(a)	PTA - 35	Rural Works Programme Evaluation.
(a)	PTA - 36	Workers Education Project.
(a)	PTA - 37	Study on Labour Intensive Techniques in Road Construction & Housing Construction.
(a)	RTA - 44	Improvement of Government Procurement System.
(a)	RTA - 47	Indonesian Consultancy Development Project (Extension).
(a)	RTA - 50	Development of Financial Institutions and Markets (Jakarta).
(b)	RTA 55	Specialized Training for Heavy Construction Equipment and Construction Materials Personnel.
(b)	RTA - 56	Training Assistance for Technical Surveyor.
(b)	RTA - 57	Engineering Information System.

LIST OF ON-GOING UNDP AND IBRD PROJECTS

Related to Proposed Construction Industry Development Programme.

Agency	Code Number		
UNOTC	INS/77/XQ.1	:	Management Training Project.
UNOTC	INS/72/002	:	Assistance to Central Bureau of Statistics.
ILO	INS/72/030	:	Manpower and Employment Strategy Planning.
ILO	INS/74/047	:	Advisory Team on Labour Affairs.
ILO	INS/75/029	:	National Productivity and Management Development Centre.
ILO	INS/TF/IV. EP	:	Vocational Training Project.
UNIDO	INS/74/012	:	Industrial Policy Analyst.
UNIDO	INS/74/034	:	Assistance to the Industrial Development of Building Materials Manufacture.
IBRD	--	:	Second Urban Development Project.
IBRD	--	:	Fourth Highway Project.
IBRD	--	:	Fourth Education Project.

ANNEX 6

LIST OF ABREVIATIONS & ACRONYMS

AKI	Indonesian Contractors Association
BAPPENAS	National Development Planning Agency
BINA MARGA	Directorate General of Roads and Bridges
BKPM	Investment Board
BKPN	National Housing Policy Board
BKS	Coordination Board, Ministry of Industry & Ministry of Public Works
BPS	Central Bureau of Statistics
CIPTA KARYA	Directorate General of Housing, Building, Planning and Urban Development in the Ministry of Public Works and Electric Power.
DANIDA	Danish International Development Aid, Ministry of Foreign Affairs, Denmark
DBR	Directorate of Building Research
DKI	Special Provincial Government of Jakarta
ESCAP	Economic and Social Commission for Asia and the Pacific
GBHN	General Outlines of National Policy
GDP	Gross Domestic Product
IBRD	International Bank for Reconstruction and Development World Bank
IDRC	International Development Research Centre
IKINDO	Association of Indonesian Consultants
ILO	International Labour Organization
INPRES	National Program for Local Civil Works
ITB	Institut Technologi Bandung
KADIN	Indonesian Chamber of Commerce and Industry
KIP	Kampong Improvement Programme
LCH	Low Cost Housing Programme
MPW & EP	Ministry of Public Works & Electric Power
PERUMNAS	National Urban Development Corporation
PPKI	Indonesian Consultancy Development Project
PUTL	Ministry of Public Works and Electric Power
REPELITA I	First Five - year Development Plan (1969 - 74)
REPELITA II	Second Five - year Development Plan (1974 - 79)
REPELITA III	Third Five - year Development Plan (1979 - 84)
S & S	Sites and Services Programme
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
UNOTC	United Nations Office for Technical Cooperations

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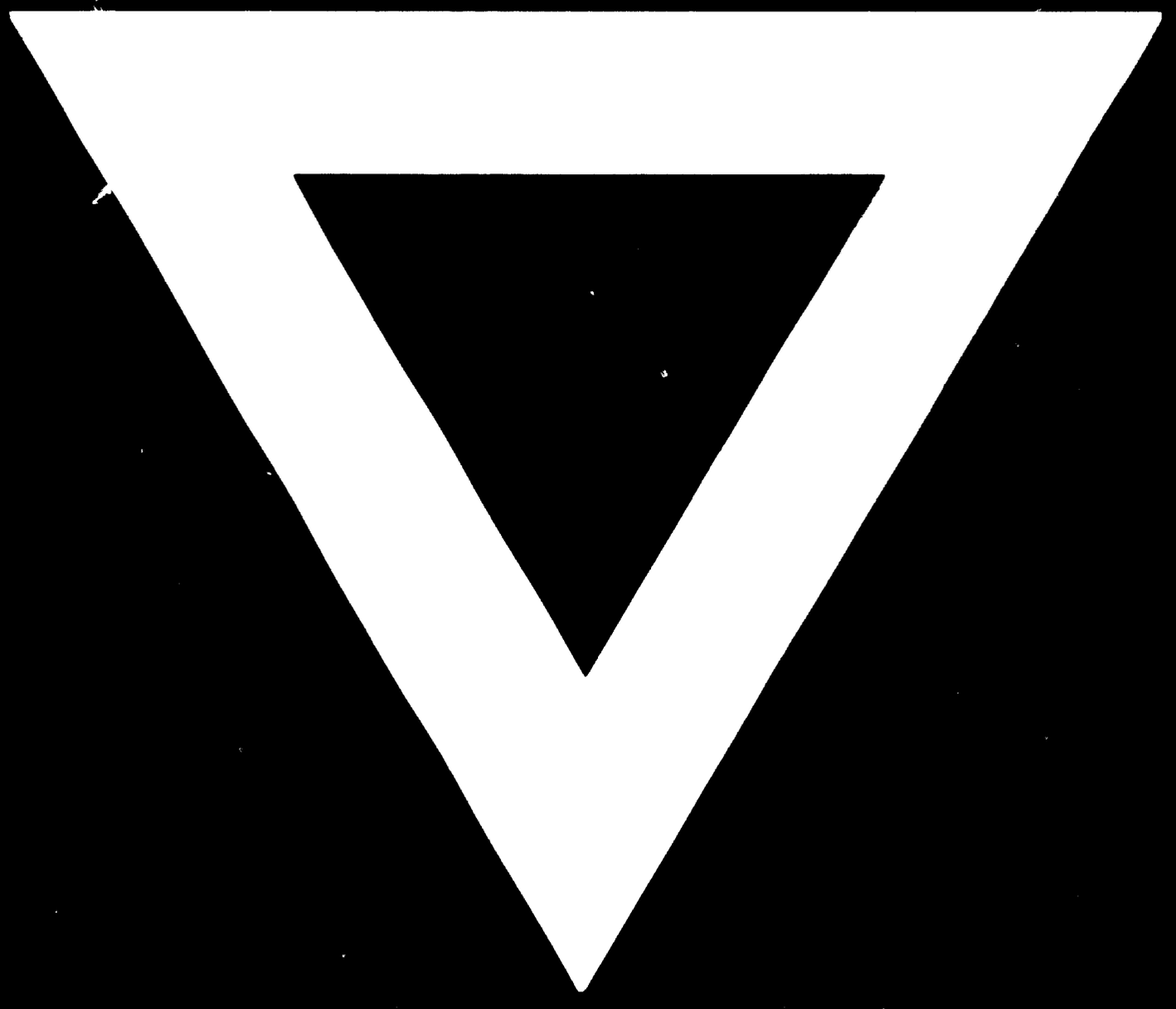

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