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UNITED NATIONS INDUSTRIAL DEVELOPMENT
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FEASIBILITY STUDIES IN SUPPORT OF THE INTERNATIONAL
DRINKING WATER SUPPLY AND SANITATION DECADE

FEASIBILITY STUDY FOR 200 TPD CEMENT PLANT AT LASHIO,
SHAN STATES, BURMA
PROJECT DP/BUR/80/015

F I N A L R E P O R T

POLYTECHNA Technical Cooperation Agency, PRAGUE
and
KERAMOPROJEKT consultants and Engineers, TRENČÍN
CZECHOSLOVAKIA

June 1988

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EXPLANATORY NOTES

Measurement and weight units used in the present Study are in accordance with the International System of Measurement (SI) unless otherwise stated.

The following technical and economic abbreviations have been used hereinafter:

TPH	tons per hour
TPD	tons per day
TPW	tons per week
TPY	tons per year
HT(HV)	high tension (voltage)
LT(LV)	low tension (voltage)
MCC	motor control centre
RC	reinforced concrete
FYP	Four Year Plan
SEE	State Economic Enterprise
CIC	Ceramic Industries Corporation
IPD	Industrial Planning Department
MEB	Myanna Economic Bank
BRC	Burma Railways Corporation
RTC	Road Transport Corporation
IWTC	Inland Water Transport Corporation
GST	Goods and Services Tax
CT	Commodity Tax
GDP	Gross Domestic Product
TNO	Total National Output
CO	Construction Output
SRD	Social Rate of Discount
IRR	Internal Rate of Return
NNVA	Net National Value Added
CIF	cost, insurance, freight
FOB	free on board

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INTRODUCTION

The Socialist Republic of the Union of Burma requested UNIDO to prepare a feasibility study for setting up a mini-cement plant in Lashio Township, the Shan States.

In response to the request of the Government UNIDO decided to prepare the said study and appointed POLYTECHNA Technical Cooperation Agency, Czechoslovakia as contracted Consultant for the study. In compliance with the contract made between UNIDO and the Consultant, the latter dispatched the Field Team to the project area on November 14, 1987.

The Field Team consisted of the following experts:

1. Mr. Anton Mikula, Team leader/cement process engineer
2. Mr. Ján Benčík, industrial economist
3. Mr. Stanislav Mikoláš, geologist
4. Mr. Igor Kostelný, mechanical engineer
5. Mr. Pavel Strapec, power plant specialist
6. Mr. Jaroslav Navrátil, financial analyst.

The Field Team have collected data and information necessary for the preparation of the Study with assistance of UNDP DP/BUR/80/015 Project staff from November 16 to December 27, 1987.

During visit to the Project area the Field Team visited LASHIO, examined the preselected sites and also visited the NAMMA coal mines and the MANSAN and KONG-NYAUNG hydroelectric stations. The visit paid to the KYANGIN cement plant enabled to obtain data on particularities of operating conditions in Burma.

The findings obtained during the visit to the Project area have been checked in detail and employed during works related to the preparation of the Feasibility Study, carried out at the Consultant's home office in Czechoslovakia.

The financial evaluation of the studied Project has been prepared using UNIDO's software for feasibility analysis and reporting: COMFAR. The COMFAR schedules are an integral part of this Study.

Chapter I.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

1.1 Project Background and History

1.1.1 Project Background

Burma has achieved considerable growth rates of GDP in the past. Due to various circumstances the process has slowed down in the last years and at the moment the immediate prospects for speeding up the development are uncertain. This fact reflects itself in the rates of GDP, Gross Investment and Construction.

The main factor of the current economic problems is the deterioration of the terms of trade.

Increase of money in circulation together with shortages in supplies result in illegal black market operations reflected both in black market exchange rate and in black market prices for some products, particularly those produced by the State sector; this dualism of prices complicates any project evaluation.

To moderate the pressure the government authorities undertake measures. In financing public investment with external resources efforts are being made to obtain concessional loans so as not to increase the external debt service burden. In the selection of projects stringent tests including financial viability and export potential are being applied.

1.1.2 Project Promoter

Project promoter is the Ceramic Industries Corporation (CIC). Under the existing economic system the CIC is one of the State Economic Enterprises (SEE) which function as economic units. The Balance Sheet of the CIC reveals considerable accumulated loss and unfavourable long term debt-equity ratio (72:28). The Net Income Statement discloses a net loss

which equals almost 10 per cent of sales. It is evident the CIC has no retained profits to raise equity capital for any new project.

As regards the cement production CIC operates three existing plant mills. The financial position of the cement plants is not better than that of the CIC as a whole. The most satisfactorily performing cement plant No. 2 at Kyangin has been generating net losses for several successive years. No local loan repayments are effected in the years when net losses are incurred. As the Myanna Economic Bank is budget-associated and the deficits are covered by the state budget the irrationality of operations can continue. To rehabilitate the economic mechanism it is necessary, i.a., to adjust the price structure, particularly to increase the price of cement. The CIC has already made some efforts in this direction.

1.1.3 Project History

Implementation of the national programme for water supply and sanitation development projects has been considerably hampered by lack of various equipment and materials, such as drilling equipment, pumping units, piping and cement.

To overcome these shortages, establishment of several mini-cement plants of an individual capacity of approx. 200 TPD has been proposed.

In 1985 Terms of Reference for preparation of the feasibility study for several mini-cement plants based on limestone and the paddy husk ash were prepared by UNIDO. Laboratory investigations proved, however, disqualification of the rice-husk ash cement for the water supply and sanitation scheme.

Thereupon IPD recommended to prepare feasibility studies for two Portland mini-cement plants with capacities 100-200 TPD, one of them located in Shan States. The pertinent Terms of Reference were finalized in March 1987.

1.2 Market and Plant Capacity

1.2.1 Market

The demand for cement in Burma can be estimated as follows:

	10^3 t
1990/91	550 - 700
1995/96	700 - 850

Comparing the demand forecast with the anticipated production capacity of 700 000 t/y results in conclusion that the existing production facilities could possibly meet the local demand up to the beginning of the nineties but not by the middle of the nineties when a gap up to 150 000 tons would call for a new production capacity.

The gap increases when export targets are taken into account (130 000 t/y); it can be concluded that up to 130 000 tons of cement may be lacking at the beginning of nineties, the gap increasing up to 130 000 - 280 000 tons by the middle of the nineties (assuming the same level of exports).

The estimates provide a basic framework for considering a new plant capacity in Burma. They do not imply that a new plant of this capacity should be constructed in the Lashio region because it is the transport problem which is going to be decisive for determining the plant capacity in the region concerned.

Comparison of transport costs of 1 ton of cement to Mandalay depot indicates that the transport costs from Lashio are not competitive with those from Thayet particularly when disregarding the railway transport. Based on the comparison of the transport costs the Mandalay depot could be more economically supplied by the Thayet plant. Thus the Lashio plant should confine itself primarily to the market consisting in geographic terms from the northern part of the Shan States and the Kachin State. Only if a decision is taken to undertake profound rehabilitation of the railway traffic and to increase considerably its capacity could the Mandalay depot be included in the "Lashio region". For the time being it does not seem realistic.

1.2.2 Plant Capacity

In contrast to previous assumptions based on official transport tariffs this Study reveals that transport costs stand for a very significant component of total cement production and distribution costs; the transport costs may be higher than the depreciation + interest; they may exceed even the total fixed production costs. This may justify the Government decision to locate a plant in the Lashio region.

This generally valid conception is, however, subject to verification using the data for the region concerned. The actual consumption of cement in the Lashio region in 1985/86 can be estimated at approx. 15 000 t. Assuming the potential demand to be twice as high as the actual consumption (the discrepancy between the consumption and the demand being here probably greater than in the country as a whole) the present potential demand in the Lashio region can be estimated at 30 000 t.

The demand for cement in the forthcoming years shall be influenced primarily by new projects in the Government sector. Besides the housing projects for teachers and doctors, new laboratories and extension of the hospital the most important cement consuming projects shall be the irrigation projects (Nomeik and Asenwi Valley Irrigation Projects). In the period 1992-96 these two irrigation projects alone shall need 6 000 tons of cement annually. (At present the irrigation projects consume a maximum of 300 t/y cement.). Taking into account the above mentioned projects the local demand for cement can be estimated as follows:

<u>Years</u>	<u>10³ t</u>
1992/93	40
1995/96	45

As the new plant in Lashio is expected to start production in 1993 at the earliest it is evident that a 200 t/d capacity equalling 63 000 t/y output would be more than sufficient. For several years it will be necessary to transport the amount of cement exceeding local demand out of the region (to Mandalay). A larger capacity (400 t/d) would imply that all the additional output would have to be transported to Mandalay. Smaller capacity is not feasible for a rotary kiln dry process technology. Nevertheless, basic data and evaluation of a 400 TPD plant are presented in the COMFAR Annex for reference purposes; it should be noted that due to higher power input requirements it is not possible in this case to substitute the diesel generator by a hydropower station.

1.2.3 Production Programme

Production capacity of the proposed cement plant at Lashio is 63 000 TPY of Portland Cement.

If the actual demand for cement and its forecast are taken into consideration it is evident that production surplus will have to be transported to Mandalay.

The pattern will be following:

Year (1)	Production(2)	Local Sales(3)	Sales to MANDALAY(4)
1993	34 650	34 650	--
1994	59 850	41 600	18 250
1995	63 000	43 200	19 800
1996	63 000	45 000	18 000
1997	63 000	47 200	15 800
1998	63 000	49 600	13 400
1999	63 000	52 100	10 900
2000	63 000	54 700	8 300
2001	63 000	57 400	5 600
2002	63 000	60 300	2 700
2003	63 000	63 000	-

1.2.4 Distribution System and Price of Cement

The cement produced in the cement plants can be sold directly at the plants but the overwhelming share of the output is transported to cement depots (warehouses) located at Rangoon, Mandalay, Myede and Moulmein (the last one serving the Pa-an plant has started operations only recently).

The ex factory price was fixed at 336,6 K/t a few years ago, based on average costs of production ("standard costs"). The ex factory price applies to all cement plants. It includes Goods and Services Tax (GST) in the amount of 67,3 K (25 per cent on ex factory price minus the GST).

At the depots the cement is sold at a price including transport costs from the cement plant to the depot; at present the prices are fixed as follows (K/t):

Mandalay	494
Rangoon	488
Myede	413

There is no further distribution network handled by the CIC; the customers themselves have to care for the transport of cement from the depot (or plant) to the site of consumption.

The present price levels are no more adequate and economically sound. The ex factory price of 236,6 K/t does not cover the manufacturing costs any more (this applies particularly to the new plants with higher capital costs), the actual transport costs from plants to the depots are also higher than those calculated years ago. Rehabilitation of sound economic relations calls for elevating the price of cement to the true value of the product reflecting both the average manufacturing costs and the value of the product to the users. The marginal value of the product to the users can be represented by the black market price of cement; in the Rangoon area it amounts to 100 K per 50 kg bag (= 2 000 K/t), in the Lashio region up to 180 K per bag (= 3 600 K/t). These prices can be considered as ultimate retail prices indicating the willingness to pay on the part of the private customers representing 15-20 per cent of the cement consumption at present; the value of the product to the public sector would probably be lower.

On the other side of the scale the price should be limited by the costs. The cost basis would differ depending on the type of price; for ex factory price the total production

costs should be relevant, for wholesale price the production and transportation and handling) should be relevant.

For the sake of evaluating this particular project it is suggested to apply the following alternative prices:

- A - Present ex factory price (336,6 K/t)
- B - New ex factory price. It is suggested to consider the manufacturing costs achieved under the prevailing conditions (450 K/t) increased by 15 per cent profit margin and 25 per cent GST; the new ex factory price should thus be fixed at 650 K/t
- C - New wholesale price, applicable to the Lashio plant, constructed as follows:
 - new ex factory price (as under B)
 - + weighted average of transport costs from Thayet to the region of consumption
 - + allowance for average transport and handling wastage (6 per cent).

The resulting Lashio wholesale price 800 K/t becomes identical with the ex factory price for the output sold at the plant; for the cement transported to Mandalay the ex factory price 650 K/t should be adhered to.

These project-oriented considerations should not prevent the authorities from setting a generally applicable ex factory price above the 650 K/t level; in fact an ex factory price even above 800 K/t could be justified.

1.3 Materials and Inputs

1.3.1 Raw Materials

Cement clinker can be processed from limestone and clay which are available in abundance in the MEHAN deposit, situated some 10 km south of Lashio Township.

Additives, i.e. sand and haematite are also available in the area.

Gypsum and coal are available at HSI-PAW and NAMMA mines respectively.

Laboratory investigations proved qualification of the said materials for production of Portland cement using coal-fired dry process technology.

Estimated quantities of limestone and clay at the deposit are following:

- Limestone, reserves	40 684 000 tons
resources	19 095 000 tons
- Clay, reserves	2 349 000 tons
resources	112 000 tons

Following raw-mix composition is recommended:

Limestone	80 %
Clay	19 %
Coal Ash	1 %

Resources of raw materials are sufficient for more than 100 years of operation of the proposed plant.

1.3.2 Fuel

Coal (lignite) from NAMMA shall be used for firing.

Specifications (wet test):

- moisture content	20,33 %
- ash content	7,34 %
- calorific value	18,93 MJ/kg
- volatiles	49,00 %

ESTIMATE OF PRODUCTION COSTS: MATERIALS AND INPUTS

Schedule 1.1

Quantity	Unit	Item description	Unit cost in K			Total costs _K in thousands		
			Foreign	Local	Total	Foreign	Local	Total
		<u>Raw materials</u>						
3 060	t	Gypsum	-	235,83	235,83	-	721,64	721,64
		<u>Auxiliary materials</u>						
1 323	1000pcs	Paper bags	-	6150,0	6150,0	-	8136,55	8136,45
15	t	Explosives	-	1760,0	1760,0	-	26,40	26,40
4	1000pcs	Cap primers	-	3200,0	3200,0	-	12,80	12,80
4 000	m	Detonating fuse	-	1,15	1,15	-	4,60	4,60
100	t	Lining and thermal insulation	-	5800,0	5800,0	-	580,0	580,0
32	t	Grinding balls	3960,0	2390,0	6350,0	126,72	76,48	203,2
21	t	Armouring	14100,0	7700,0	22100,0	302,40	161,70	464,1
20	t	Oils and lubricants	-	6650,0	6650,0	-	133,0	133,0
30	t	Spare parts	33900,0	22850,0	56750,0	1017,0	685,5	1702,5
	1000 K	Overhead materials	-	-	-	-	400,0	400,0
		<u>Fuel and energy</u>						
13 560	t	Coal	-	147,0	147,0	-	1993,32	1993,32
140	m ³	Diesel oil	-	1100,0	1100,0	-	154,0	154,0
260	MWh	Electric power	-	250,0	250,0	-	65,0	65,0
-	-	TOTAL	-	-	-	1446,12	13150,89	14597,01

1.3.3 Power Supply

Specific consumption of electric energy is estimated at 120 kWhrs. per ton of cement. The annual consumption of electric power estimated at 7 700 MW hrs will be covered by:

- Own generation in hydro-electric power plant KON YAUNG II,
MW hrs 14 000
- utility power purchased at E.P.C., MW hrs 260
- power available for sale, MW hrs 6 560

1.3.4 Water Supply

Water is available at the creek of NARYAFMA in sufficient quantity.

1.3.5 Supply Programme

Most items of material inputs are available at the local market. Grinding media, armouring and spare parts shall be imported.

1.4 Location and Site

The proposed cement plant is intended to set up in the northern part of the Shan State in the vicinity of Lashio due to cement shortages in this area.

From among three alternatives, a plant site situated one km south to the LASHIO-MANDALAY-NAMMA crossroads, was selected.

1.5 Project Engineering

1.5.1 Scope of the Project

This Study evaluates a cement plant with capacity of 200 TPD.

1.5.2 Technology

The proposed plant shall produce Portland cement conforming the specifications of B.S. 12:1958.

Two-component raw-mix composition:

- Limestone80 %
- Clay19 %
- Coal ash 1 %

Three-component raw-mix composition:

- Limestone80 %
- Clay14 %
- Sand 5 %
- Coal ash 1 %

Cement will be ground from clinker (95 %) and gypsum (5 %).

Annual production capacity is estimated at:

- clinker60 000 TPY
- cement63 000 TPY

Specific consumptions of:

- heat3,98 MJ/kg of clinker
- electric power.....120 kWhrs/ton of cement

The proposed technology using dry process in a short rotary kiln / preheater is now commonly used. It is more economical than the outdated wet process in a rotary kiln or in shaft kilns. Furthermore, shaft kilns are disqualified due to using coal with high content of volatiles.

1.5.3 Equipment

The plant consisting of a crushing plant, storage hall, raw grinding plant, homo silos, rotary kiln and coal grinding plant will prepare raw meal and consequently burn clinker.

INVESTMENT COSTS: EQUIPMENT

Schedule 1.2

in thousands K

		Cost		
		Foreign	Local	Total
1	Production equipment	27 398	902	28 300
2	Auxiliary equipment	6 326	1 958	8 284
3	Service equipment	184	260	444
4	Spare parts	3 780	270	4 050
5	Hydro electric power plant	11 108	-	11 108
	Subtotal	48 796	3 390	52 186
6	Project planning	1 315	-	1 315
7	CIF Rangoon	2 806	-	2 806
8	Transport Rangoon - Lashio	-	1 081	1 081
9	Erection	-	5 295	5 295
10	Contigencies	2 646	488	3 134
	Subtotal	55 563	10 254	65 817
11	Customs, taxes charges (on CIF value minus project)			
	- 15% Customs duty	-	8 137	8 137
	- 30% Commodity service tax	-	16 274	16 274
	- 6% Clearance handling charges	-	3 255	3 255
	TOTAL	55 563	37 920	93 483
	of that			
	- fixed assets	51 405	35 475	86 880
	- current assets (spare parts)	4 158	2 445	6 603

INVESTMENT COSTS:
CIVIL ENGINEERING WORKS

Schedule 1.3

in thousands K

No.	I t e m	Cost		
		Foreign	Local	Total
1	Site preparation and development	-	3 180	3 180
2	Buildings and special civil works	8 287	19 110	27 397
3	Outdoor works	-	1 498	1 498
4	Housing quarters	-	1 860	1 860
	Subtotal	8 287	25 648	33 935
5	Project planning	-	1 020	1 020
6	CIF Rangoon	456	-	456
7	Transport Rangoon - Lashio	-	945	945
8	Contingencies	437	1 381	1 818
	Subtotal	9 180	28 994	38 174
9	Customs, taxes charges (on CIF valued)			
	- 15% Customs duty	-	1 377	1 377
	- 30% Commodity service tax	-	2 754	2 754
	- 6% Clearance handling charges	-	551	551
	TOTAL	9 180	33 676	42 856

The plant consisting of clinker storage, cement grinding plant, cement silos and packing plant will produce, pack and despatch cement.

1.5.4 Civil Engineering

Site area:

- basic 41 658 sq.m
- extension included 65 500 sq.m

Built up area:

- production departments 6 727 sq.m
- auxiliary/service buildings..... 3 120 sq.m

Roads, parking areas 11 570 sq.m

Built up space 143 020 cu.m

Landscaping 20 294 sq.m

1.6 Plant Organization and Overhead Costs

1.6.1 Plant Organization

The proposed organizational chart reflects general organizational outline as applied in other Burmese cement plants.

The plant organization comprises the following departments:

- Planning
 - . planning
 - . stores
 - . workshops
 - . utilities
 - . transportation

- Production
 - . quarry
 - . process
 - . Quality Control
- Finance
- Administration

1.6.2 Overhead costs

	Th. K	
	Factory	Administrative
1. Overhead materials	280	120
2. Maintenance	429	-
3. Salaries wages	586,8	269,1
4. General costs and expenses	-	300
5. Depreciation	-	5 865,8
6. Depreciation of preproduction capital expenditures ^{1/}	-	2 815,6

^{1/}First 5 years of production only

1.7 Manpower

The total number of personnel required for the proposed mini-cement plant - 286 persons-is categorized form the following points of view:

- Organization
 - . planning department 122
 - . production department 103
 - . quality control department 18
 - . finance department 13
 - . administration department 30

- Production	
. production personnel	103
thereof labour	92
. non - production personnel	140
thereof labour	124
. administration	43
- Skill	
. skilled personnel	272
. unskilled personnel	14

Total cost of salaries and wages per annum 1 299 636,-K
Average salary/wage per month and person 454,-K

During start-up, following foreign personnel requirements shall be taken into consideration:

- First three months: 5 experts (15 man/months)
- Further 15 months : 2 experts (30 man/months).

1.8 Implementation Scheduling

1.8.1 Duration of Plant Erection and Installation

Period of preparatory work including decision, setting up a project implementation management, tendering, evaluation of bids and contracting will take 18 months.

Construction period will include following activities:

- Site preparation and development, soil tests..... 3 months
- Project planning..... 9 months
- Civil engineering works.....27 months
- Erection of machinery, equipment18 months
- Testing..... 3 months
- Training..... 6 months

Taking account of simultaneity of the said activities, duration of setting up of the plant covering the period from submission of the Feasibility Study until the end of testing of the erected plant is estimated at 54 months (4 1/2 years).

1.8.2 Duration of Start-up and Running-in Period

Start-up including trial runs will take 3 months and running-in of the plant until the normal production capacity is reached is estimated at 18 months.

Production during running-in will be following:

- 1 st semestre : 40 % of the nominal capacity
- 2 nd semestre : 70 %
- 3 rd semestre : 90 %

1.9 Financial Evaluation

Financial evaluation has been done in 3 variants: A, B and C. The individual variants differ one from another in sales revenue only due to using different unit prices of cement. The A variant follows the actual unit price of 336,6 K per ton and the B variant refers to that of 650,-K per ton which has resulted from initial findings of the financial analysis and from conclusions of the economic evaluation. The C variant is based on an alternative ex factory price of 800K per ton of cement at the plant and 650K for cement transported to Mandalay.

The mini-cement plant project as per A variant is not feasible, therefore data stated below refer to the B variant, only.

1.9.1 Initial Investment Costs (K thousand)

I t e m	Foreign	Local	Total
Equipment	51 405	35 475	86 880
Civil Engineering	9 180	33 676	42 856
Fixed Investment Costs	60 585	69 151	129 736
Preproduction capital Expenditures	6 234	7 844	14 078
Fixed Assets	66 819	76 995	143 814
Working Capital	4 158	2 445	6 603
Current Assets	4 158	2 445	6 603
Total Initial	70 977	79 440	150 417
Ditto in %	47,2	52,8	100

1.9.2 Source of Finance (K thousand)

	<u>Foreign</u>	<u>Local</u>
1. Foreign loan A. 12 years of repayment, 3% interest rate 2 years grace period	70 977	
2. Local loan A: 5 years of repayment 5% interest rate no grace period		79 440
Total	70 977	79 440

1.9.3 Production Costs and Selling Price (K)

Production costs per ton of cement =====	10 th year of production =====
Materials and inputs	232,2
Direct labour	7,0
Factory overheads	13,8
Factory costs	253,0
Administrative overheads	10,9
Sales and distribution costs	-
Operating costs	263,9
Depreciation	88,3
Financial costs	14,1
Production costs	366,3
Ex factory selling price, thereof	650
25 % goods and services tax	130
factory price	520

1.9.4 Financial Evaluation

Net present value at 5 %	8 012 840,- K
Internal rate of return	5,60 %
Pay-back period, years	10,5
Simple rate of return	4,97 %
Break-even point (capacity utilization)	60,0 %

1.10 Economic Evaluation

The economic cost benefit analysis (ECBA) has been carried out under the following assumptions:

- annual production of 63000 tons of cement from the 3rd year of operations onwards
- selling prices
 - 1283 K/t - for cement sold ex factory
 - 945 K/t - for cement sold at Mandalay
- transport costs Lashio - Mandalay: 319 K/t (incl. 10 K for unloading)
- project inputs adjusted by
 - . reclassification of local and foreign costs (specification of indirect import component in locally procured goods and services)
 - . application of the adjusted foreign exchange rate 1 US \$ = 18 K (factor 2,74)
 - . elimination of transfer payments (15 % import duties, 30 % Commodity Tax, 25 % Goods and Services Tax, 6 % port clearance fees)
- two variants of financing:

1000 Kyats	Total Initial Investment (Adjusted)	Source of Finance	
Var. E 1 - credits and loans only			
Foreign	73 426,5	73 426,5	credit, loan
Local	36 053,3	36 053,3	MEB loan
Total	109 479,8	109 479,8	
Var. E 2 - credits, loan and local equity			
Foreign	73 426,5	73 426,5	credit, loan
Local	33 890,9	25 055,0	equity
		8 835,9	MEB loan
Total	107 317,4	107 317,4	

- Social rate of discount (S 10 %

The analysis results in the following conclusions:

- a/ The project passes the absolute efficiency test; the net national value added is positive and higher than the volume of wages.
- b/ The project shows a high economic internal rate of return (approx. 18 %) which is considerably above the SRD and implies high profitability of total investment for the national economy.
- c/ The project shall have considerable indirect impact upon the economic and social development of the Lashio region and the Shan States.

In view of the above mentioned partial conclusions it is possible to recommend the project for a further follow up aiming at implementation.

The only negative aspect of the project is the negative net foreign exchange effect (in total approx. 54 mil. K or 8,2 mil. US \$). In order to keep this negative effect at the lowest possible level efforts should be made to secure grants or soft term loans for financing the foreign investment costs and to increase gradually the substitution of imported production materials by local production. Foreign technical assistance should also be minimized by making use of the expertise acquired in the existing cement plants.

The difference in the structure of local finances does not influence the economic impact of the project upon the national economy; preference for a financing pattern should be derived from the financial evaluation of the project.

The positive outcome of the economic evaluation of the project rests mainly on the price of cement as specified under the assumptions. However high the price may appear when compared with the present ex factory price it is well substantiated by the high transport costs of cement from alternative sources.

The economic evaluation based on this price is therefore valid irrespective of what the official ex factory price is or shall be.

AS the economic internal rate of return is not going to decline below the SRD level even if the prices decline by 30 % it can be deduced that the economic IRR would not decline below the SRD level even if the volume of output decreases by 30 % and even slightly more. Full capacity utilization should, however, remain to be the ultimate goal of the management policy as it will be the decisive factor for the efficiency of the plant.

1.11 Conclusions

The conclusions are valid under the assumptions specified above. The recommendation to go ahead with the project (200 TPD plant) should be considered within a broader context of the cement industry, taking into account questions which could not be answered in this Feasibility Study:

- feasibility and efficiency of rehabilitating the kiln No. 1 at the Thayet plant (if the projects compete for scarce resources)
- feasibility and efficiency of establishing a new cement plant with a larger capacity at Mandalay (the centre of cement consumption in Upper Burma)
- feasibility of rehabilitating the railway Mandalay-Lashio.

As evident from the Annex No. 2 the capacity of 400 TPD would reduce the unit production costs by approx. 50 - 70 K/t. Rehabilitation of the railway system may justify the larger capacity at Lashio if the unit cost of transport could be kept below the cost saving effect of the larger capacity.

It is however highly improbable that the transport costs could be reduced below the costs saving effect of the larger capacity so that the issue is rather theoretical.

Chapter II.

PROJECT BACKGROUND AND HISTORY

PROJECT BACKGROUND AND HISTORY

2.1. Project Background

In order to understand better some elements of the project formulation (financing, implementation, capacity, etc.) relevant background information about the country and its economic development is presented at the very beginning of the feasibility study.

- Area of the country	: 678528 km ²
- Population (1986/87)	: 37.8 million
- Density per km ²	: 56
- Rate of growth of population	: approx. 2%
- Population in the working age category	: 21.3 mill. (56%)

The Union of Burma has a mixed economy (shares of GDP: State sector: 41%, Co-operative sector: 9%, Private sector: 50%) with key positions of the State sector in mining, manufacturing, power, construction and services excluding transportation and prevailing role of the private sector in agriculture, fishery, forestry and transportation (shares in trade being equal). Long term and short term plans are important instruments of the government economic policy. In 1970/71 the Twenty Year Long Term Plan was launched; it has been specified in more detail in five Four Year Plans (FYP).

Burma has achieved considerable growth rates of GDP in the past. Due to various circumstances the process has slowed down in the last years and at present the immediate prospects for speeding up the development are uncertain. This fact reflects itself in the rates of GDP, Gross Investment and Construction over time.

	<u>Actual</u>			<u>Planned</u>	
	2nd FYP 74-78	3rd FYP 78-82	4th FYP 82-86	5th FYP 86-90	1986/87 (1st year)
GDP	5.1	6.6	5.5	4.5	3.6
Gross Investment	16.6	14.4	2.3	1.4	-0,5
Construction	5.9	17.7	5.4	2.4	0.0

The main factor of the current economic problems is the deterioration of the terms of trade (1969/70 = 100) :

Years	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
Terms of Trade	104.2	106.7	86.3	96.5	89.7	75.6

As a consequence, the Balance of Trade has a deficit :

Trade balance (Kyat million) :

Year	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
Exports	3225.1	3452.8	3036.3	3419.5	3194.5	2653.9	2925.1
Imports	4635.0	5611.3	6313.6	5197.3	5041.2	4802.0	4512.9 ^x
Deficit	-1409.9	-2158.5	-3277.3	-1777.8	-1847.7	-2148.1	-1587.8

^xprovisional

The Balance of Payments is levelled off only by grants and loans exceeding the repayment of principal and interest. Decreasing imports cause tensions and shortages in supplies of some commodities, including spare parts (raw materials and spare parts represent almost 40% of total imports). The State Economic Enterprises (SEEs) had been exerting every effort to raise their level of production as well as operating efficiency. The operating and investment costs of the SEEs had been increasing due to rise in the prices of imported capital goods, spare parts and raw materials as well as financial costs.

However, the state had been trying to control the prices and tariffs of the commodities and services produced by the SEEs in order to maintain domestic price stability, and to contain the increases in the cost of living.

Thus, there had been a decline in the current account surpluses of the SEEs, and some of them had to finance their current and capital expenditures with bank borrowings.

This is reflected in the State Budget estimates for 1986/87 where Part II: "State Economic Enterprises" anticipates the following receipts and expenditures (mil. kyats):

	<u>Receipts</u>	<u>Expenditures</u>
Current account	27697	26646
Surplus	+1051	
Capital account	164	4947
Deficit	-4873	
Loan account	1775	1301
Surplus	+ 472	
Bank financing	3257	

The expansion in bank credit extended to the SEEs, provision of seasonal loans and medium-term loans for purchasing agricultural implements and disbursement of advance payments for industrial crops to the farmers resulted in a yearly increase in the volume of currency in circulation. Currency in circulation rose from K 8683.5 million in September 1981 to K 13037.1 million in September 1985 at an average annual rate of 10.7 per cent over the four-year period.

Increase of money in circulation together with shortages in supplies result in illegal black market operations reflected both in black market exchange rate and in black market prices for some products, particularly those produced by the State sector; this dualism of prices complicates any project evaluation.

To moderate the pressure the government authorities undertake measures. In financing of public investment with external resources, efforts are being made to obtain concessional loans so as not to increase the external debt service burden. In the selection of projects, stringent tests, including financial viability and export potential are being applied. These policies have a distinct impact upon the guidelines given by the Government authorities for the formulation of the mini-cement plant project.

2.2. Project Promoter

Name	:	Ceramic Industries Corporation (CIC)
Ministry	:	Ministry of No. 1 Industry
Address	:	192, Kaba-Aye Pagoda Road 11201 Bahan P.O. Rangoon
Cable	:	CERAMICS
Telex	:	21500 SETTMU BM 21513 SETTMU BM
Phone	:	56074, 56078, 56077, 56073
Duties Responsibilities	:	Production of construction materials and consumer goods such as cement, bricks, asbestos-cement sheets and pipes, porcelainware, marbles, tiles, glass hollow-ware, glazed and unglazed structural clay blocks, refractories, sheet glass.

Total number of employees (1987): 10714
of which permanent : 6262

Under the existing economic system the CIC is one of the State Economic Enterprises (SEE) which function as economic units; the economic performance is being evaluated at this level,

the Net Income Statements and the Balance Sheets are worked out in aggregated forms, integrating the data from all their plants and organizations, as well as for individual plants.

The most recent Audited Balance Sheet (1983-84) reveals the following structure of liabilities and assets of the CIC (10⁶ Ks):

Ceramic Industries Corporation
Balance Sheet for 1983-84 (Audited)
(10⁶ Ks)

Liabilities		Assets	
Equity	849,7	Fixed Assets	2307,0
Capital	902,2	Land and Building	472,9
Profit/Loss	-52,5	Machineries	1426,9
		Office Furniture	2,5
Long Term Credit	2191,0	Vehicles	80,3
		Sundry Assets	324,6
Current Liabilities	276,1	Current Assets	1009,7
		Bank Balance	14,2
		Sundry Debtors	749,2
		Stock Balance	246,3
	3316,7		3316,7

The Balance Sheet reveals considerable accumulated loss, unfavourable long term debt-equity ratio (72:28) and a satisfactory current ratio (3,6). The Net Income Statement for the same year discloses a net loss in the amount of 30,6 x 10⁶ Ks which equals almost to 10 per cent of sales. The Net Income Statements for the following years, though unaudited, reveal a very similar picture: recurrent net losses permanently increase the accumulated loss in the Balance Sheet. The importance of long term credits (provided mainly by MEB- Myanna Economic Bank) in the Balance Sheet grows, the long term debt-equity ratio becomes more and more unfavourable. It is evident the CIC has no retained

profits to raise equity capital for any new project. As regards the cement production, CIC operates three existing cement mills, the capacity and production of which are indicated in Table 2.1.

The financial position of the cement plants is not better than that of the CIC as a whole. The most satisfactorily performing cement plant No. 2 at Kyangin has been generating net losses for several successive years. No local loan repayments are effected in the years when net losses are incurred. As the MEB is budget associated and the deficits are covered by the state the irrationality of operations can continue. To rehabilitate the economic mechanism it is necessary, i.a., to adjust the price structure, particularly to increase the price of cement. The CIC has already made some efforts in this direction.

Table 2.1: EXISTING CEMENT PLANTS

Mill	Production Line	Present Capacity 10 ³ t/y		Production 1986/ 10 ³ t
		Nominal	Actual	
No. 1 - THAYET		240	120	113.9
	1 - Wet Process 200 TPD FLS 1937			out of operation
	2 - Wet Process 400 TPD GDR 1956			to be closed down
	3 - Wet Process 400 TPD Japan 1962			to be rehabilitated
No. 2 - KYANGIN		480	360	286.4
	1 - Wet Process 2 x 400 TPD, Japan, 1976			
	2 - Wet Process 2 x 400 TPD, Japan 1985			
No. 3 - PA-AN		240	216	51.2
	1 - Dry Process 800 TPD, France, 1986			

2.3. Project History

The Socialist Republic of the Union of Burma gives high priority to raising of the standard of living of its population.

Health is one of the most important sub-sectors of the social sector. Safe drinking water and sanitation are considered as prerequisites to health.

Though achievements of the First, Second and Third Four-Year Plans in the field of water supply and sanitation projects have been impressive, still and large part of the Burmese Population is unserved with drinking water and without adequate sanitation. If the targets of the Fourth and Fifth Year Plans in this field are reached, drinking water and sanitation will be provided to 50% of the country's population by 1990.

In January 1980, a National Committee to deal with the national strategy for the International Drinking Water Supply and Sanitation Decade Programme, was formed.

Implementation of the national programme for Water Supply and Sanitation Development Projects was, however, greatly hampered by lack of various equipment and materials, such as drilling equipment, pumping units, piping and cement.

In order to overcome these shortages and at the same time to reduce the requirements of foreign exchange, establishment of various production units including several mini-cement plants of an individual capacity of approximately 200 tpd, has been proposed.

In order to obtain the required capital financing (preferably in the form of grant aid) the national authorities concerned are obliged to submit to the financing institutions comprehensive and reliable technical and economical evaluation of the identified projects.

Since national consultancy organizations still require some assistance in preparation of feasibility studies for the production units in support of the Water Supply and Sanitation Programme, UNDP co-operation was requested.

In May 1984 the project document was finalized, approved and signed by the Socialist Republic of the Union of Burma and Resident Representative of the UNDP.

A Project Director from the Industrial Planning Department and four Project Managers from three different Industries Corporations were selected and the project Office was established under the control of the Industrial Planning Department.

In November 1984, a data collecting mission on mini-cement plant from the Ceramic Industries Corporation went to Lashio Township and the report was submitted in December 1984.

In February 1985, Dr. George R. Gouda, UNIDO Consultant came to Burma to prepare Terms of Reference for preparation of the feasibility study for several mini-cement plants based on limestone and the paddy husk ash. Consequent laboratory investigations proved, however, the disqualification of the rice husk ash cement to utilize in the Water Supply and Sanitation scheme.

In November 1985, the Industrial Planning Department issued a recommendation to prepare feasibility studies for two Portland mini-cement plants with capacities of 100-200 tpd each, a coal-fired one and a gas-fired one, instead of the rice husk-ash based ones.

Mr. Alexander Grisar, UNIDO Cement Consultant prepared Terms of Reference for the preparation of the Feasibility Study for a 200 tpd cement plant in Lashio, during his mission to Burma from September to November 1986. Mr. Carl Rydeng, UNIDO Senior Industrial Development Officer, finalized the said

Terms of Reference in March 1987.

The national authorities consider the need for establishing a mini-cement plant in the Shan States as particularly urgent. Due to their geographical situation and inadequate transport conditions the shortage of cement is alarming there; it is evident that both the shortage of cement and its high price (caused by high transport costs) hamper construction activities and economic development in the region in general which may become potential factors of social and political tensions. On the other hand it is believed that availability of cement in the region will not only support the implementation of infra-structural and industrial projects but stimulate market oriented activities in the private sectors/agriculture, forestry, services etc./ as well. It is for this reason that the Lashio region was selected as the priority region for studying the feasibility of establishing the first mini-cement plant in Burma.

The contract for the preparation of the said Feasibility Study has been awarded to POLYTECHNA Technical Cooperation Agency, Prague, Czechoslovakia in August 1987.

2.4. Feasibility Study

Title : Feasibility Studies in Support of the
International Drinking Water Supply
and Sanitation Decade;
Feasibility Study on a Mini-Cement Plant
in LASHIO, Shan States, Burma.

Author : Polytechna, Technical Co-operation
Agency, Prague
in cooperation with
KERAMOPROJEKT Consultants Engineers,
Trenčín, Czechoslovakia

Ordering Party : UNIDO, Vienna, Austria

2.5 Cost of preparatory Studies

Apart from the preparatory work for the mini-cement plant proper as specified in Chapters VI and IX it is recommended to arrange for a mission on the hydropower station with the purpose of

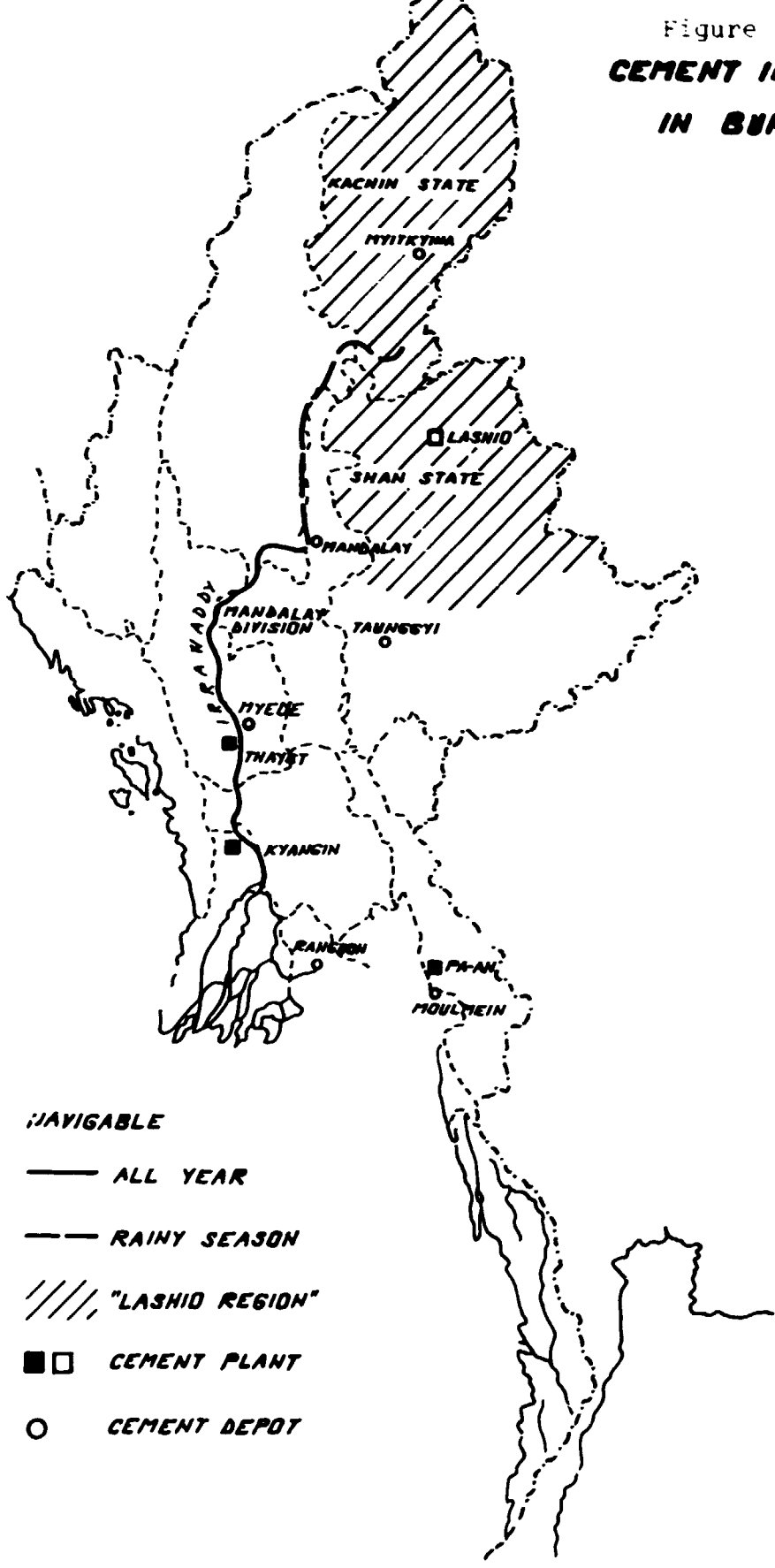
- verifying the assumptions applied in this study
- defining the locational and technical solutions
- specifying requirements for the geological survey
- drafting the tender specifications

Duration: 2 man-month

Costs

- foreign: 78 900 K (12 000)
- local 7 900 K

Figure 2.1
**CEMENT INDUSTRY
 IN BURMA**



- NAVIGABLE
- ALL YEAR
- - - RAINY SEASON
- //// "LASHIO REGION"
- □ CEMENT PLANT
- CEMENT DEPOT

0 50 100 150 MILES
 0 80 160 240 KM

CHAPTER III
MARKET AND PLANT CAPACITY

MARKET AND PLANT CAPACITY

According to the Terms of Reference for this Feasibility Study "... it has been decided that the location should be adjacent to Lashio in the Shan States". The Terms of Reference are "... concerned with the Feasibility Study for a coal fired Mini Portland Cement Plant with a capacity of 200 metric tons per day (MTPD)".

At the same time it is - rather contradictorily - required to undertake "selection of plant capacity from two or more alternatives". In view of that, this Chapter sets the cement demand evaluation of the region concerned within a broader context of the cement demand and supply of the whole country.

3.1 Cement Supply and Demand in Burma

As evidenced in Chapter II, cement has been produced in Burma since 1937. Considerable increase in production capacity was achieved in 1976. Since then the nominal capacity of cement production grew as shown in Table 3.1. At present the nominal maximum capacity (300 days per year) amounts to 960,000 t/y. Due to various constraints the actual feasible capacity and the present output are considerably lower (10^3 t/y):

Plant	Capacity		Production
	Nominal	Actual	1986/87
Thayet	240	120	113,9
Kyangin	480	360	286,4
Pa-an	240	216	51,2
Total	960	696	451,5

The constraints are mainly of "external" nature: lack of supplies in general (spare parts, paper etc.), abrupt interruptions of electricity supply particularly at Pa-an (due to shortages of oil), insufficient capacity of the transportation media to handle the cement output particularly at Kyangin etc.

Table 3.1 Capacity, Production and Consumption of Cement in Burma (10^3 t)

Years	Nominal capacity	Production	Export	Consumption	Nominal demand	<u>Demand</u> Consumption
1977-78	540	273,0	97,6	175,4	230,4	1,3
1978-79	540	274,0	109,7	164,3	239,9	1,5
1979-80	540	387,8	122,0	265,8	320,0	1,2
1980-81	540	376,9	71,8	305,1	384,6	1,3
1981-82	540	307,6	100,3	206,3	408,7	2,0
1982-83	540	335,4	14,4	320,9	645,7	2,2
1983-84	480	323,9	-	323,9	785,1	2,4
1984-85	480	299,4	-	299,4	815,3	2,7
1985-86	720	434,6	-	434,6	948,7	2,2
1986-87	960	451,5	46,1	405,4	684,6	1,7

A better output performance of the plants thus depends to a large extent on factors beyond the scope of responsibility and influence of the plants' management. In view of that it may be doubted if the total output of the plants can be increased to the level anticipated by CIC as specified in Table 3.2 (768 000 t/y) but the desire to make maximum use of the existing capacities prior to constructing new ones is sound and should be strongly supported by all means including the government policy measures in the field of price policy, foreign trade policy, transport policy etc.

Table 3.2 Cement Demand and Production Anticipated
by CIC (10³t)

Year	Demand		Production				Balance	
	Domestic	Export	Total	Thayet	Kyangin	Pa-an		Total
1987-88	665,5	123	788,5	120	360	192	672	-116,5
1988-89	698,1	130	828,1	120	432	216	768	- 60,1
1989-90	702,7	130	832,7	120	432	216	768	- 64,7
1990-91	717,4	130	847,4	120	432	216	768	- 79,4

Source: CIC, December 1987

Even if the CIC target of 768 000 t/y of cement output is not fully achieved it can be assumed that the existing plants can supply approx. 700 000 t/y of cement at the beginning of the nineties (potential rehabilitation of kiln No. 1 at the Thayet plant not included).

Analysing the effective demand is more complicated. Table 3.1 contains, i.a., the figures about the nominal demand for cement calculated as the sum of requirements for cement presented annually by all government sectors (the demand of the private sector used to be calculated as 15% of the government demand; in more recent forecast it is included under the Ministry

of Trade, Ministry of Co-operatives and Others). Comparing the nominal demand for cement with the cement consumption in the country indicates a ratio ranging from 1,3 to 2,7. Even if one assumes that the nominal demand is inflated (under the planning system allocating shortage goods the applicants anticipating cuts in their requirements tend to inflate the requirements) the deficit remains considerable. (In this context the fact that cement is exported is irrelevant; the export is enforced by shortage of foreign currency as explained in Chapter II.).

The deficit reflects itself also in the black market prices of cement; in some regions and particularly during the dry season the price of cement surpasses five times and more the official price.

The notion of considerable deficit of cement in the country is indirectly supported also by the fact that its per capita cement consumption is very low (12 kg in 1985/86).

It can be concluded that the deficit of cement in Burma has been undisputable in the past years and at present. Let us now have a look at the forecast for the future.

The nominal (official) demand for cement in the forthcoming years as provided by the CIC was compiled and ascertained by procedures involving all government ministries (sectors). However, the forecasts differ depending on the time of data (requirements) compilation. The most recent CIC forecast of cement demand during the 5 FYP is presented in Table 3.2. Information released previously indicates higher total demand estimates (see Table 3.3). The difference is not only in the total demand figures but also in the fact that the latest forecast (Table 3.2) assumes higher export quantities than the previous one (in the Table 3.3 the export can be assumed only under the Ministry of Trade figures). It follows that a lower increase in domestic cement demand is implied in the latest official demand forecast. This fact probably reflects the slowdown of construction activities planned for 5 FYP as against 5.4 per cent and 17.7 per cent achieved during 4 FYP and 3 FYP respectively).

However useful the officially ascertained demand figures may be it is advisable to compare them with forecast established by other methods. The results thereof are presented in Table 3.4. Column (1) repeats and integrates the data from Tables 3.1 and 3.2. Column (2) stands for the extrapolation of the trend achieved during the last 10 years. (Table 3.5 shows that cement consumption grew in the period 1976/77 - 1986/87 at the rate of 9.7 per cent on average).

The growth of cement consumption in the country is correlated with its macroeconomic performance expressed in Burma's statistics as Total National Output (TNO) and the performance of the construction sector expressed as Construction Output (CO). Based on the input data presented in Table 3.5 regression analyses have been calculated correlating the cement consumption (CC) both to TNO and CO.

In both cases two types of functions (linear and exponential) were tested in searching for the highest correlation coefficient. The results are as follows:

$CC = 31,4 \times TNO - 247,1$	$r = 0,885$	(1)
$CC = 0,855 \times 10^{-4} \times (TNO)^{1,539}$	$r = 0,780$	(2)
$CC = 212,2 \times CO + 2,3$	$r = 0,817$	(3)
$CC = 0,18 \times (CO)^{1,033}$	$r = 0,838$	(4)

Table 3.3 Ministry - wise Cement Demand 1986/87 - 1990/91

Sr. No.	Name of Ministries	1986-87	1987-88	1988-89	1989-90	1990-91
1	Ministry of Defence	29,200	29,200	29,200	29,200	29,200
2	Ministry of Construction	130,000	130,000	130,000	130,000	130,000
3	Ministry of Agriculture & Forests	98,500	99,000	99,000	99,200	99,500
4	Ministry of No.2 Industry	53,984	50,400	77,130	69,630	76,000
5	Ministry of Power & Energy	27,560	27,560	27,560	27,560	27,560
6	Ministry of Transport & Communication	11,320	11,320	11,320	11,320	11,320
7	Ministry of No.1 Industry	88,595	52,800	88,595	88,595	88,595
8	Ministry of Livestock & Fisheries	11,570	11,570	11,570	11,570	11,570
9	Ministry of Mines	5,240	5,240	5,240	5,240	5,240
10	Ministry of State & Religious Affairs	26,000	26,000	26,000	26,000	26,000
11	Ministry of Education	18,670	18,670	18,670	18,670	18,670
12	Ministry of Co-operatives	48,000	51,200	55,020	57,020	60,020
13	Ministry of Trade	80,000	90,000	100,000	110,000	120,000
14	Ministry of Health	12,000	12,000	12,000	12,000	12,000
15	Ministry of Information	320	320	320	320	320
16	Ministry of Culture	120	120	120	120	120
17	Ministry of Planning & Finance	1,585	1,585	1,585	1,585	1,585
18	Ministry of Social Affairs	26	26	26	26	26
19	Ministry of Labour	150	150	150	150	150
20	Welfare, Development & Others	127,500	171,295	134,600	134,500	129,500
	Total	770,340	788,456	828,106	832,706	847,376
21	Potential Demand (15%)	115,551	118,268	124,215	124,905	127,106
	Grand Total	885,891	906,724	952,321	957,611	974,482

Table 3.4

Forecast of Cement Demand by Various Methods (10^3t)

Years	Nominal (Requirements by G.Ministries)	Extrapolation of the last 10 years	Forecasts Based on Regression Analysis					
			with TNO ^{1/} ; growth rate; 5,98 4,50 3,50			with CO ^{2/} ; growth rate 10,92 5,00 2,40		
1986-87	684,6	405,4	441,5	432,1	425,5	428,1	404,6	394,3
1987-88	665,5	444,9	482,9	462,5	449,0	476,4	425,5	404,0
1988-89	698,1	488,3	526,6	493,9	473,5	530,1	447,5	414,1
1989-90	702,7	539,9	573,1	527,8	498,6	589,9	470,6	424,3
1990-91	717,4	588,2	622,1	562,7	524,7	656,5	495,0	434,8
1991-92		645,5	672,9	597,6	550,5	730,5	520,6	445,6
1992-93		708,5	729,4	638,4	578,7	812,9	547,5	456,7
1993-94		777,5	786,0	676,1	607,0	904,6	575,8	468,0
1994-95		853,3	848,8	720,1	638,4	1006,6	605,5	479,6
1995-96		936,5	914,7	760,8	669,8	1120,2	636,8	491,5

1/ TNO ... Total National Output

2/ CO Construction Output

Table 3.5

Input Data for Regression Analysis

Years	Cement Consumption(CC) 10 ³ t	Total National Output (TNO) 10 ⁶ kyats	Construction Output (CO) 10 ⁶ kyats
1977-78	175,4	12 996	730
1978-79	164,3	13 843	962
1979-80	265,8	14 562	1 070
1980-81	305,1	15 718	1 282
1981-82	206,3	16 717	1 303
1982-83	320,9	17 654	1 466
1983-84	323,9	18 429	1 532
1984-85	299,4	19 464	1 650
1985-86	434,6	20 675	1 673
1986-87	405,4	...	...
Aver.growth (per cent)	9,75	5,98	10,92

Source: Report to the PYITHU HLUTTAW

In view of the results the equation (1) was preferred when forecasting CC through correlation with the growth of TNO and equation (4) in case of correlation with CO.

When calculating the future cement consumption several growth rates were assumed both in case of TNO and CO. In case of TNO the growth rate of 5.98 per cent stands for average growth rate achieved during the last 9 years. The growth rate of 4,5 per cent corresponds to the target of the 5 FYP. In view of declining economic performance in the recent years a rate of growth lower than the one planned for the 5 FYP can not be excluded, therefore a growth rate of 3,5 per cent is also considered.

The growth rates of CO applied in the calculations range from 10,9 percent achieved during the last 9 years to 2,4 per cent set for the 5 FYP. (It should be noted that a zero rate of growth was planned for 1986/87, that is, for the first year of the 5 FYP.) As a compromise a growth rate of 5 per cent is suggested for long-term considerations.

All the forecasts based on the past imply a certain deficiency: the past consumption of cement has been sub-optimal; it would have been higher had there been sufficient supply of cement. All the forecasts based on the extrapolation of the past trends (column 2) and the correlation with macroeconomic data (columns 3-8) are, therefore, underestimated.

With the exception of officially stipulated demand forecast (column 1) the forecasts calculated by other methods are estimated for a 10-year period. (The official forecast covers basically the period of the 5 FYP; official demand data for longer term are not available.) It must be realized, however, that the reliability of estimates decreases with time. As the recent experience shows the performance of the national economy and hence the correlated demand for cement can change considerably within a short period: a few years ago it was estimated that the construction output would grow at an average rate of at least 10 per cent over the next 10 years; shortly after that the 5 FYP put the rate of growth of construction output at 2,4 per cent only. Such abrupt changes can be experienced in the future as well. In view of that it is advisable to

- consider the demand forecast within a certain range rather than as single figures
- apply different growth rate assumptions for different time horizons.

Taking into consideration the underestimation of all the forecasts based on the past cement consumption it is suggested to consider the local demand for cement at the beginning and in the middle of the nineties as follows:

	10^3 t
1990/91	550 - 700
1995/96	700 - 850

For the years 190/91 the columns (4) and (8) were considered when estimating the lower limit and column (1) when estimating the upper limit. For the years 1995/96 columns (4) and (7) were taken as relevant for estimating the lower limit and columns (2) and (3) for estimating the upper limit (paying due attention to anticipated lower rates of growth during the 5 FYP).

Comparing the demand forecast with the anticipated production capacity of 700 000 t/y results in conclusion that the existing production facilities could possibly meet the local demand up to the beginning of the nineties but not by the middle of the nineties when a gap up to 150 000 tons would call for a new production capacity.

The gap increases when export targets (see Table 3.2) are taken into account (130 000 t/y). The past experience proves that the planning system can enforce export of cement even if the local demand is not covered and the efficiency of cement export is questionable. (FOB price of the exported cement - excluding paper bags which are provided in kind by the customer - oscillates around 25 \$ per ton). Exports of this magnitude have already been recorded in the past (see Table 3.1). Export plans should, therefore, be taken into consideration seriously when evaluating the capacity/demand relation.

Following up these assumptions it can be concluded that up to 130 000 tons of cement may be lacking at the beginning of the nineties, the gap increasing up to 130 000 - 280 tons by the middle of the nineties (assuming the same level of exports).

The estimates provide a basic framework for considering a new plant capacity in Burma. They do not imply that a new plant of this capacity should be constructed in the Lashio region. As the next sections suggest it is the transport problem which is going to be decisive for determining the plant capacity in the region concerned.

3.2 Geographical limits of the market for Lashio Cement Plant

Lashio is located in the northern part of the Shan States. Almost the whole area of the Shan States lies on a mountain plateau distinctly separated from the Irrawaddy Valley region by several hundred meters of altitude difference (the altitude of Lashio is 850 m). The hilly terrain of the Shan States (peaks above 2000 m) makes the transportation system in the Shan States very sparse.

The road network is inadequate both in terms of density and quality; on many roads the average travelling speed of a car is about 20 km/hour, in the case of a truck even less. Only some of the roads are all-weather roads so that during the monsoon season the southern part of the Shan states including the capital Taunggyi is accessible from Lashio only via Mandalay.

Similar description applies to the neighbouring Kachin State in the north; in this case the road Lashio - Bhamo - Myitkyina is an all-weather road so that the southern part of the Kachin State is accessible by road all year round.

Lashio is also a terminal station of the railway Mandalay - Lashio which has the following parameters:

gauge	: 1 m
length	: 291 km
number of stations	: 18
maximum cargo load per train	
section Lashio - Anisakan (0-182 km):	250 t
section Anisakan - Mandalay (182-291 km):	180 t
maximum cargo load per wagon:	18 t

The reduced train load in the section Anisakan - Mandalay is due to steep profile of the railway track; the difference in altitudes within a short distance even necessitates at four places a zig-zag routing of the track. In many sections a maximum speed of only 35 km/hour is allowed. Because of that it takes about 12 hours for a passenger train to get from Mandalay to Lashio (or back) and up to 5 days for a cargo train.

Each day at least one passenger train leaves Lashio for Mandalay, on alternate days 2 passenger trains (so that 3 sets of passenger train operate between Lashio and Mandalay).

The cargo trains carry approximately 36000 t/y from Lashio. The most important volume (about 30000 t/y) represents the coal hauled to Anisakan. After unloading the coal at Anisakan most of the wagons return to Lashio empty.

Thus most cargo wagons (out of 120-150 wagons operating between Lashio and Mandalay) operate in fact between Lashio and Anisakan.

This may be one of the reasons why only approximately 500 t of cement per year (on average) is transported to Lashio by railway. Most of the cement transported to Lashio is hauled by trucks. This is surprising in view of the fact that transport costs Mandalay - Lashio per ton of cement differ significantly in favour of the railway:

Mandalay - Lashio		Tariffs (K)	
	km	per ton	per ton-km
Railway (BRC)	291	70	0.24
Road (RTC)	280	442	1,58

In spite of consultations with the Burma Railway Corporation (BRC) and Road Transport Corporation (RTC) it was not possible to pinpoint definite reasons for the above mentioned prevailing role of road transport. In addition to probable lack of wagons at Mandalay some other reasons were suggested, such as the long duration of the cargo train journey from Mandalay to Lashio (up to 5 days), necessity of reloading and administrative constraints. There may be other reasons associated with the mechanism of decision making such as preference for operational feasibility, low significance of costs, etc. Otherwise, it is not easy to explain why the cement is transported to Lashio by trucks not only from Mandalay but even from Rangoon.

Whatever the reasons might be it is evident that under the existing system the railway is not considered as functional for transporting cement.

This applies to the railway section Lashio - Mandalay in particular, where any additional cargo would call for an extension of the rolling stock. Assuming

- 5 days turnover of the wagons (one day each: loading; Lashio - Anisakan; Anisakan - Mandalay; unloading;

Mandalay - Lashio:

- 3 days turnover of the locomotive
- splitting the trains at Anisakan
- co-ordinated utilization of the "new" and existing rolling stock

it can be estimated that newly acquired 14 wagons and one locomotive may carry approximately 15000 t/y of cement from Lashio to Mandalay (300 days per year). With the prices for the rolling stock (1 wagon = 20000 K; 1 locomotive HP 1600 = 7 million K) the total investment costs included in the rolling stock would amount to 7.28 million K.

Greater quantities of cement cargo would call for corresponding increase in rolling stock and investment; it is highly improbable that - given the shortage of capital funds and the BRC running a deficit at the level of 29.3 million K. in 1986/87 - the planning authorities can approve such a scheme. (Since 1981/82 the number of wagons has been decreasing).

The incremental increase in number of trucks and investment costs involved would be far less impressive. To handle the same amount of cargo (15000 t/y) about 23 trucks at 6.5 t would be required (assuming 250 working days, 3 days for one turnover including loading and unloading); at the cost of 225600 K. per one MAZDA TE-21AZ, the total incremental investment would amount to 5.19 million K. (as against 7.28 million K. in case of BRC).

This is a theoretical calculation, **however**. Because it is the customer's responsibility to secure the transportation of cement for his construction purposes many existing lorries of the government organizations would be used. A certain amount of the cement cargo increase can be handled by private transporters whose outlays (for new trucks) do not draw on budgetary resources. Thus only a part of incremental requirements for new trucks would be borne by the state transportation organization (Road Transport Corporation).

The question is whether the transport costs from Lashio to Mandalay are competitive with transport costs from alternative sources. The most suitable existing alternative source of cement is the Thayet cement plant located 560 km downstream on the Irrawaddy river. When transported by the Inland Water Transport Corporation (IWT) boats standard loading capacity 300 t the transport cost amounts to 64.6 K/ton. The transport tariffs applied by IWT are very low due to old vessels and depreciation charges and subsidies to IWT. The new boats operated by ITC (Myaingalay barges) are much more expensive. The boat 300 t costs 10.2 million K and annual costs run as follows (K Year):

Particulars	For one year 'Kyats'
Salaries and Wages	43056
Depreciation	459225
Maintenance	306150
Insurance	323100
Interest	510250
Fuel	140400
Petrol, Oil Lubricants	14040
Overhead Expenses	102050
Total Expenses	1898271 =====

The cost per day is 6327.6 K (300 days per year). Because one turnover from Thayet to Mandalay takes 11 days (6 days upstream, 3 days downstream, 2 days loading and unloading), the transport cost per ton amounts to

$$(6327.6 \times 11) : 300 = 232 \text{ k/t}$$

Comparison of transport costs of 1 ton of cement to Mandalay indicates that the transport costs from Lashio are not competitive with those from Thayet particularly when disregarding the railway transport:

	Plant - Railway	Reloading	Tariff	Deficit ¹⁾ Adjustment	Total
Lashio plant - Mandalay					
BRC	25 ²⁾	10	70	15	120
RTC	-	-	417 ³⁾		417
Thayet plant - Mandalay					
IWTC			65	46	111
CIC boat			232	-	232

1) estimated on the basis of deficit planned for 1986/87 and transport volume (Report to the Pyithu Hluttaw for 1986/87)

2) 16 km

3) 264 km

Based on the comparison of the transport costs the Mandalay depot could be more economically supplied by the Thayet plant. Thus the Lashio plant should confine itself primarily to the market consisting in geographic term from the northern part of the Shan States and the Kachin State. Only if a decision is taken to undertake profound rehabilitation of the railway traffic and to increase considerably its capacity could the Mandalay depot be included in the "Lashio region". For the time being it does not seem realistic. (This fact-finding conclusion, relevant for defining the present scope of the "Lashio region", should not sanction the present state of affairs: all efforts should be undertaken to rehabilitate the railway system as it will result in reducing the transport costs including those of the Lashio cement.)

3.3 Plant Capacity

In contrast to previous assumptions based on official transport tariffs this study reveals that transport costs stand for a very significant component of total cement production and distribution costs (K/t):

Transport

Lashio - Mandalay

- railway	120
- road	417

Thayet - Mandalay

- IWTC	111
- CIC boat	232

Production

	"Standard" 1980/81	Thayet 1983/84	Kyangin 1985/86
Operating costs	209,5	204,1	261,5
Depreciation	23,2	59,4	36,0
Interests	4,7	20,0	111,8
Production costs	246,4	283,5	409,3
of which fixed costs	50,6	105,3	190,6

It follows from the comparison of selected transport and production costs that the transport costs may be higher than the depreciation + interest; they may exceed even the total fixed costs.

This is a factor influencing optimal capacity of the cement plants in general. In case of a larger capacity the economy of scale in the production proper should at least offset the transport costs increased due to larger distribution distances. If the transport costs are generally high the production units with a smaller capacity may prove competitive as they may result in lower production cum transport costs per one ton of cement.

This may preliminarily justify the Government decision to locate a plant in the Lashio region. This generally valid conception is, however, subject to verification using the data for the region concerned. The available data about regional distribution of cement (see Table 3.6) cover about 70 per cent of domestic cement consumption, the regional distribution of the remaining 30 per cent being unknown. As indicated in Table 3.6 about 60 per cent of cement are distributed to Lower Burma and 40 per cent to Upper Burma where the Shan and Kachin States are located. The share of these two states in the cement consumption of the Upper Burma is, however, very low (less than 10 per cent on average); most of the Upper Burma cement consumption is concentrated in the Mandalay Division.

As evident from Table 3.6 the peak consumption recorded so far (1985/86) in both states (Shan and Kachin) amounted to 16409 tons. Adjusting it by consumption uncovered by Table 3.6 (30 per cent) would increase the consumption of cement to approx. 23400 t/y in both states.

As explained in the preceding Chapter 3.2 the Lashio plant can be competitive in terms of transport costs only within the northern part of the Shan States and the Kachin state. Thus the actual consumption of cement in the "Lashio region" in 1985/86 can be estimated at approx. 15000 t. Assuming the potential demand to be twice as high as the actual consumption (the discrepancy between the consumption and the demand being here probably greater than in the country as a whole) the present potential demand in the Lashio region can be estimated at 30 000 t.

The demand for cement in the forthcoming years shall be influenced primarily by new projects in the Government sector. Besides the housing projects for teachers and doctors, new laboratories and extension of the hospital the most important cement consuming projects shall be the irrigation projects (Nomeik and Asenwi Valley Irrigation Projects). In the period 1992-96 these two irrigation projects alone shall need 6000 tons of cement annually. (At present the irrigation projects consume a maximum of 300 t/y of cement).

Taking into account the above mentioned projects the local demand for cement can be estimated as follows:

Years	10^3t
1992/93	40
1995/96	45

This increase represents a growth rate of approx. 5 per cent over the 10-years period (1985/86 - 1995/96). To be on the safe side, the same rate of growth can be assumed in the period afterwards.

As the new plant in Lashio is expected to start production in 1992/93 (01/1993) at the earliest it is evident that a 200 t/d capacity equalling 63 000 t/y output would be more than sufficient. For several years it will be necessary to transport the amount of cement exceeding local demand out of the region (to Mandalay). A larger capacity (400 t/d) would imply that all the additional output would have to be transported to Mandalay.

There are two uncertainties in the preceding justification of the plant capacity:

- a) The actual demand for cement may be different from what is assumed. If the demand is lower, more cement will have to be transported outside the region, with no impact on the capacity. If the demand is higher, less cement will have to be transported outside the region; it is, however, not probable that the demand could be high enough to justify a larger capacity of the plant.
- b) The feasible capacity of the plant (63 000 t/y) will not be achieved (similarly to the case of other plants). This deviation can not justify a higher capacity either.

The feasibility study is, therefore, worked out for a cement plant with the capacity of 200 t/d; information about the capacity of 400 t/d is provided primarily in order to demonstrate to what degree the reduction of unit manufacturing costs in the larger plant can or can not make up for the costs of transporting the cement to Mandalay.

In technical and economic terms the proposed 200 t/d capacity is the smallest feasible capacity in this category of rotary kiln dry process technology. Smaller capacities are feasible either in the category of shaft kilns or wet process technology. In this particular case the shaft kiln is excluded due to high contents of volatile matters in the local coal which makes it unsuitable for firing in a shaft kiln. The wet process is not considered because it consumes twice as much energy as the dry process and requires high inputs of water which is not available in the vicinity of the sites.

It should be noted, however, that from technical point of view the plant with the 200 t/d capacity can in fact be operated within the range of 120-220 t/d, 200 t/d being the most economic and yet reliably achievable capacity utilization. Operating the plant below the 200 t/d level results in high unit costs, including some components of the operating costs. If necessary or desirable, it is, therefore, preferable to achieve lower annual output by decreasing the number of days under operation while keeping the daily capacity utilization as close as possible to the maximum feasible capacity of 200 t/d.

Table 3.6 Distribution of Cement to Upper and Lower Burma (t)

Upper Burma	1981-82	1982-83	1983-84	1984-85	1985-86	Ave %
<u>a) States</u>						
- Kachin	1,629	1,843	2,392	1,976	2,703	2.20
- Shan	3,956	5,757	6,692	4,985	13,706	7.32
- Chin	521	2,064	2,819	1,811	1,860	1.89
<u>b) Divisions</u>						
- Sagaing	7,556	21,735	14,857	6,994	10,314	12.82
- Mandalay	20,459	29,551	36,564	45,711	61,456	40.43
- Magwe	27,060	40,758	35,469	28,702	37,296	35.34
Upper Burma Total	61,181	101,708	98,793	90,179	127,335	100.00
%	(42.75)	(43.60)	(41.00)	(41.40)	(40.50)	
Lower Burma						
<u>a) States</u>						
- Rakhine	1,641	2,751	2,563	2,572	4,740	2.12
- Kayah	1,454	1,223	1,454	874	1,171	0.92
- Karen	2,414	7,173	6,267	3,043	4,936	3.56
- Mon	8,048	12,440	15,499	10,860	13,129	8.95
<u>b) Divisions</u>						
- Pegu	16,810	22,253	25,939	26,741	38,828	19.48
- Irrawaddy	8,644	23,288	25,771	20,157	32,838	16.52
- Rangoon	40,759	60,178	62,785	61,207	86,395	46.44
- Tenasserim	2,137	2,210	1,887	2,233	4,992	2.01
Lower Burma Total	81,907	131,516	142,165	127,642	187,029	100.00
%	(57.24)	(56.39)	(58.99)	(58.59)	(59.49)	
Total Lower+ Upper Burma	143,088	233,224	240,958	217,821	314,364	

3.4 Production Programme

3.4.1 Production of Cement

Estimated production capacity of the proposed cement plant in LASHIO is 63 000 TPY of cement.

Detailed data on cement to be produced and the production itself are described in Chapter VI - Project Engineering.

It is assumed the design production rate will be reached within 18 months after putting the plant into operation. The increase of production during start up and running-in period shall be following:

- First semester : 40% of full capacity
- Second semester: 70% of full capacity
- Third semester : 90% of full capacity

If the actual regional demand for cement and its forecast are taken into consideration, it is evident that production surplus shall be transported to Mandalay.

The pattern will be following:

tons			
Year (1)	Production (2)	Local Sales (3)	Sales to MANDALAY (4)
1993	34 650	34 650	-
1994	59 850	41 600	18 250
1995	63 000	43 200	19 800
1996	63 000	45 000	18 000
1997	63 000	47 200	15 800
1998	63 000	49 600	13 400
1999	63 000	52 100	10 900
2000	63 000	54 700	8 300
2001	63 000	57 400	5 600
2002	63 000	60 300	2 700
2003	63 000	63 000	-

3.4.2 Production of Electricity

Installation of a 4x0,8 MW hydropower station will make it possible during the rainy season to sell part of the electricity output to the Electricity Power Corporation (EPC). During the repair and maintenance months of August and September the total output of 3,2 MW could be sold to EPC.

The total annual production of electricity is estimated at 14 000 MWh, the output for sales to EPC at 6560 MWh (for details see Chapter IV).

3.5 Distribution System and the Price of Cement

The cement produced in the cement plants can be sold directly at the plants but the overwhelming share of the output is transported to cement depots (warehouses) located at Rangoon, Mandalay, Myede and Moulmein (the last one serving the Pa-an plant has started operations only recently).

The ex factory price was fixed at 336,6 K/t a few years ago, based on average costs of production ("standard costs"). The ex factory price applies to all cement plants. It includes Goods and Services Tax (GST) in the amount of 67,3 K/25 per cent on ex factory price minus the GST).

At the depots the cement is sold at a price including transport costs from the cement plant to the depots, at present the prices are fixed as follows (K/t):

Mandalay	494
Rangoon	488
Myede	413

Loading (6K/t) is included in the ex factory price, unloading (10 K/t) is covered by the ex warehouse price.^{1/} There is no further distribution network handled by the CIC; the customers themselves have to care for the transport of cement from the depot (or plant) to the site of consumption.

Thus the price ex warehouse can be considered both as wholesale and retail; the difference in transport costs borne by the customers is, of course, immense, particularly in the remote areas.

The present price levels are no more adequate and economically sound. The ex factory price of 336,6 K/t does not cover the manufacturing costs any more (this applies particularly to the new plants with higher capital costs), the actual transport costs from plants to the depots are also higher than those calculated years ago. CIC has already voiced the necessity of increasing the ex factory price in order to stop subsidizing the cement industry. This is, however, not the only reason for increasing the price. Distorted prices hinder economic subjects from efficient operations and sound economic decisions; they become factors of malfunctioning of the economy and illegal operations damaging i.a., the state budget. Rehabilitation of sound economic relations calls for elevating the price of cement to the true value of the product reflecting both the average manufacturing costs and the value of the product to the users. The marginal value of the product to the users can be represented by the black market price of cement; in the Rangoon area it amounts to 100 K per 50 kg bag (= 2000 K/t), in the Lashio region up to 180 K per bag (= 3600 K/t). These prices can be considered as ultimate retail prices indicating the willingness to pay on the part

1/ The Mandalay depot is located at the Irrawaddy river bank, at the distance of about 700 m from the railway station so that any shipment of cement from Thayet via Mandalay to Lashio involves reloading.

of the private customers representing 15-20 per cent of the cement consumption at present; the value of the product to the public sector would probably be lower.

On the other side of the scale the price should be limited by the costs. The cost basis would differ depending on the type of price: for ex factory price the total production costs should be relevant, for wholesale price the production and transportation costs /considering average wastage during the transportation and handling/ should be relevant.

All the prices should be parametric in the sense that they should not be derived from individual production conditions.

When increasing the price it is possible to choose among the following options:

- To increase the unified ex factory price taking into consideration the manufacturing costs achieved under prevailing production conditions and to increase the wholesale prices accordingly but with due respect to differences in transport costs.
- To introduce a unified wholesale price valid for sales at all depots and plants based on the average manufacturing costs and the average transport costs from the plants to the depots.
- To introduce regionally diversified wholesale prices based on average manufacturing costs or manufacturing costs achieved under prevailing conditions and specific transport costs from the relevant producer (source) to the region of consumption.

All these changes would take place within the area of CIC operations; it is understood that in all cases the "beyond the depot" transport and distribution costs would be borne by the customers themselves.

The first scheme respects the present price system, the other two deviate from it. As it is the matter of policy influencing the whole cement industry the issue will have to be decided by the policy making body.

For the sake of evaluating this particular project it is suggested to apply the following alternative prices:

- A - Present ex factory price (336,6 K/t)
- B - New ex factory price. It is suggested to consider the manufacturing costs achieved under the prevailing conditions as represented by the Kyangin plant after extension (450 K/t) increased by 15 percent profit margin and 25 per cent GST; the new ex factory price should thus be fixed at 650 K/t.
- C - New wholesale price, applicable to the Lashio plant, constructed as follows:

- new ex factory price (as under B)
- + weighted average of transport costs from Thayet to the region of consumption,
- + allowance for average transport and handling wastage (6 per cent)

The Thayet plant represents the closest alternative source of cement for the Lashio region. Because a part of the cement cargo hauled from Thayet via Mandalay to Lashio can be unloaded at locations en route between Mandalay and Lashio it is estimated that on average 70 per cent of the transport costs Mandalay - Lashio should be considered when calculating the wholesale price of cement to be sold at the Lashio plant. The following wholesale prices can, therefore, be suggested for cement produced at the Lashio plant (K/t):

	Wholesale price of cement to be sold at:	
	Lashio plant	Mandalay depot
ex factory price	650	650
transport cost: Thayet-Mandalay		
IWTC tariff + unloading (10K)	75	75
transport costs Mandalay-Lashio		
0,7 x BRC tariff (70K)	49	
Reloading and unloading	20	
sub-total	794	725
Wastage (6 per cent)	48	44
Total wholesale price	842	769 ^{1/}

To be on the safe side and to exclude the motivation to transport cheaper cement from Mandalay by railway to Lashio the cheaper modes of transport are taken into consideration when calculating the price even though in reality they may not be available to meet the increased volume of transport. In spite of that the regional diversification of the wholesale prices may have an adverse impact upon the choice of cement source by consumers located between Mandalay and Lashio: due to lower price of cement at the Mandalay depot they would be motivated to buy the cement at Mandalay depot as long as the difference is not balanced by higher transport costs; as long as the output of the Lashio plant exceeds the local demand and part of the production of cement has to be "exported" to Mandalay the above mentioned motivation would be uneconomical. To counteract it the wholesale price at Lashio should be reduced to approx. 800 K/t.

^{1/}The price would apply to cement delivered from both the LASHIO and THAYET plants.

The resulting Lashio wholesale price 800 K/t becomes identical with the ex factory price for the output sold at the plant; for the cement transported to Mandalay the ex factory price 650 K/t should be adhered to.

These project-oriented considerations should not restrain the preference of the authorities for any of the above mentioned options of the price ammendment. If the present system of a standard and generally valid ex factory price is preferred it should be noted that - for the following reasons - the ex factory price could be set even above the 650 K/t level:

- the manufacturing costs achieved by the Kyangin plant (450 K/t) may prove to be significantly below the average manufacturing costs of the whole cement industry once the Pa-an plant becomes fully operational;
- asuming the price of cement imports at the level of 36 \$/t CIF Rangoon the true value of the import to the national economy could be estimated at $36 \text{ K/t} \times 18 \text{ K/\$}^{1/} = 648 \text{ K/t}$; taking into consideration the structure of the factory price (25% GST) it could be set even above the 800 K/t level ($648 \text{ K/t} : 0,75 = 864 \text{ K/t}$).

Even when the ex factory price is set around or above the 800 K/t it would still lay below the willingness-to-pay level.

3.6 Estimate of Production Costs and Sales Revenues

3.6.1 Production Costs

3.6.1.1 Distribution and Sales

Evaluation of the Project is based on the ex-factory selling prices, i.e. supplies of cement directly at factory, therefore no costs of distribution and sales are foreseen.

As for the goods and service tax included in the ex-factory selling prices, they are described in Chapter X - FINANCIAL EVALUATION.

^{1/} see Chapter 11.1.2.

3.6.1.2 Emission Disposal

In Burma, there are no governmental regulations specifying fines, reimbursement for pollution by industrial emissions, therefore no such costs are assessed.

3.6.2 Sales Revenues

Annual sales revenues as shown on the Schedule 3.1 have been determined from:

Alternative A - the actual state ex-factory selling price of cement equal to 336,6 K per ton

Alternative B - the proposed new ex-factory selling price of cement equal to 650 K per ton.

Alternative C - the proposed new wholesale price of cement equal to 800 K per ton sold at the cement plant (and 650 K per ton transported to Mandalay during the first ten years of operation only)

Total sales revenues:

- Alternative A: 63 000 tons at 336,6 K 21.205 th.K per year
- Alternative B: 63 000 tons at 650,- K 40.950 th.K per year
- Alternative C: 63 000 tons at 800,- K 50.400 th.K per year

Produced cement is intended for local consumption only, not for export.

The electricity sold to EPC is priced at 200 K/MWh; the price is derived from the 250 K/MWh EPC selling rate reduced by the provision for the 25% GST which is supposed to be paid by the EPC when re-selling the electricity.

Annual revenue from the sales of electricity:

$$6560 \text{ MWh} \times 200 \text{ K/MWh} = 1\,312\,000 \text{ K}$$

Schedule 3.1

ESTIMATE OF SALES REVENUES

Product	Unit price in K	PRODUCTION					
		Year 1		Year 2		Year 3-15	
		Quantities to be sold in K	Sales revenues in K	Quantities to be sold in t	Sales revenues in K	Quantities to be sold in t	Sales revenues in K
Portland cement							
- variant A	336,6	34 650	11663190	59 850	20145510	63 000	21205800
- variant B	650,0	34 650	22522500	59 850	38902500	63 000	40950000

Schedule 3.1

ESTIMATE OF SALES REVENUES

Product	Unit price in K	PRODUCTION							
		Quantities to be sold in K	Sales revenues in K	Quantities to be sold in K	Sales revenues in K	Quantities to be sold in K	Sales revenues in K		
Portland cement - variant C	800,0	Year 1		Year 2		Year 3			
		34 650	27720000	41 600	33280000	43 200	34560000		
	650,0	-		18 250		19 800			
		-	-	18 250	11862500	19 800	12870000		
	Total	34 650		27720000		59 850		45142500	
		63 000		47700000		63 000		48390000	
	800,0	Year 4		Year 5		Year 6			
		45 000	36000000	47 200	37760000	49 600	39680000		
	650,0	18 000		11700000		13 400		8710000	
		18 000	11700000	15 800	10270000	13 400	8710000		
Total	63 000		47700000		63 000		48030000		
	63 000		48765000		63 000		49155000		
800,0	Year 7		Year 8		Year 9				
	52 100	41680000	54 700	43760000	57 400	45920000			
650,0	10 900		7085000		5 600		3640000		
	10 900	7085000	8 300	5395000	5 600	3640000			
Total	63 000		48765000		63 000		49155000		
	63 000		48240000		63 000		50400000		
800,0	Year 10		Year 11-15						
	60 300	48240000	63 000	50400000					
650,0	2 700		1755000						
	2 700	1755000	-	-					
Total		63 000	49995000	63 000	50400000				

CHAPTER IV
MATERIALS AND INPUTS

MATERIALS AND INPUTS

4.1 Characteristics of Raw Materials, Admixtures

Cement clinker will be processed from two essential raw-material components—limestone and clay. There is availability of other additive components - sand (silicic correction) and haematite (ferric correction). Gypsum admixture shall be used as a retarder.

It is foreseen the proposed LASHIO mini-cement plant shall be supplied with:

- limestone from the MEHAN deposit;
- clay from the MEHAN deposit;
- sand from the SE-ENG deposit;
- haematite from the NAM-HPAT deposit;
- gypsum from the HSI-PAW deposit and
- coal from the NAMMA deposit.

Basic raw materials, limestone and clay, can be quarried at the MEHAN deposit situated some 2 km from the proposed plant.

Correction additives - sand is found in the NA-LONG river wash, 24 km from the proposed plant;

- haematite is found in the NAM-HPAT deposit, situated 4 km from the site.

Gypsum shall be purchased at the HSI-PAW mine, situated 63 km from the proposed plant.

Coal shall be purchased at the NAMMA coal mine situated 36 km from the proposed plant.

4.1.1 Raw Materials, Composition

Data on physical and chemical properties of raw materials, additives, coal and water, as stated hereinafter, were available at the Project Office of UNDP, Project DO/BUR/80/015.

Further data on properties of raw materials were made available by CRO (Central Research Organization) Lab and by making check analyses of raw materials and coal in GEOLOGICKÝ PRIESKUM, Spišská N. Ves, laboratories.

4.1.1.1 MEHAN Limestone Deposit

During the period from 1979 till 1983, geological survey of the MEHAN deposit was carried out. The exploitation works consisted of eight (8) bore-holes and four (4) test pits. No bore-hole showed presence of subsoil water. Taken samples were analysed to know contents of SiO_2 , Fe_2O_3 , Al_2O_3 , CaO , MgO , Na_2O and K_2O . Investigations showed limestone is of a very good quality with following contents: $\text{CaO} = 51,89\%$; $\text{MgO} = 1,74\%$; $\text{SiO}_2 = 2,2\%$; $\text{Fe}_2\text{O}_3 = 0,33\%$; $\text{Al}_2\text{O}_3 = 0,77\%$; $\text{Na}_2\text{O} = 0,006\%$; $\text{K}_2\text{O} = 0,043\%$. Moisture content of fresh limestone is about 1% H_2O .

The MEHAN deposit takes 1100 m from East to West and 1830 m from South to North and 1,83 sq.km. in area. The highest level is 61 m from the ground level (970 m a.s.l.).

The amount of the reserves according to the drilling studies are as follows:

P_2 - 40,68 million tons

Mineable reserve P_2 - 19,10 million tons.

The reserves are sufficient for 190 years of operation of a 63 000 TPY cement plant.

In order to carry out a more detailed evaluation of the MEHAN limestone the investigation on quality and quantity was made.

The comparison of average chemical composition of limestone from different sources is shown on the Table 4.1.

One of the main objectives of the field mission was to verify the reliability of evaluation methods. Chemical analyses of the limestone samples collected during the field mission and the comparison of the basic and check analyses are shown on the Tables 4.2 and 4.4.

Since the method of a clinal section was adopted to determine quantity of limestone reserves, the quality was evaluated per each bench. The quality of limestone as per bench is shown on the Table 4.6.

4.1.1.2 MEHAN Clay Deposit

Clay can be quarried at the common deposit with limestone. Clay fills depressions among faults of limestone deposits in the Southern side.

Presence of subsoil water during the field investigation was not observed.

Over the whole year round, the deposit is dry except of monsoon period when rain water flows over the surface.

Reserves of clay are sufficient.

Normal moisture content is less than 30%.

Since no data on physical/chemical properties of clay were available, samples of clay were taken during the field mission.

From the petrographical point of view, clay can be characterized as red-brown or dark brown "terra rossa" with variable chemical composition. The following minerals were detected: quartz, illite, caolinite, goethite, calcite, dolomite and feldspar.

The granulometric analysis showed clay consists of 10-18% of sand grains of size of 0,063 to 2 mm, 68-57% of dust particles of size of 0,001 to 0,063 m and approx. 22-25% of clay particles of size below 0,002 mm.

Average quality	Chemical composition in %							
	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	L.O.I.
Average quality of bore - holes BH 1- 8 Source 1.	2,2	0,33	0,77	51,89	1,74	0,006	0,043	
Average quality of samples MDH 1 - 8 Source 2.	1,25	0,30	0,61	54,25	0,75			42,67
Average quality of reserves (resources) of the Mehan dep Source 3.	1,790	0,118	0,710	53,322	0,86	0,009	0,048	
Average quality of samples LL - 7,8,10 Source 4.	0,497	0,15		52,996	0,56	0,67	0,23	43,18
Average quality of samples LL - 1,2,3,10 Source 5.	0,515	0,132	0,165	55,12	0,395	>0,02	0,02	43,45

Table -No. 4.1 Comparison of chemical composition of limestone of the MEHAN deposit.

Source 1 : Report of the data collecting mission for the implementation of preliminary study on Mini-cement Plant in LASHIO Township.

Source 2 : Chemical composition of limestone of the MEHAN deposit, tested by cement mill No.1.

Source 3 : Chemical composition of limestone of the MEHAN deposit, recalculated by mission works in 1987.

Source 4 : Analysis by Central Research Organization Ministry of No.2, Industry, RANGOON.

Source 5 : Analysis by Geological Survey, National Enterprise, Spišská Nová Ves.

Sample No.	Source	Chemical composition in %												
		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	TiO ₂	P ₂ O ₅	Na ₂ O	K ₂ O	MnO	SO ₃	Cl	L.O.I.
LL- 1	A						*							
	B	0,93	0,26	0,13	54,69	0,39	0,014	Tr.	Tr.	0,03	0,003	0,09	TR	43,26
	Diff.													
LL- 2	A						*							
	B	0,43	0,15	0,16	55,40	0,26	0,010	Tr.	Tr.	Tr.	0,005	0,04	TR	43,48
	Diff.													
LL- 3	A						*							
	B	0,29	0,11	0,13	55,20	0,57	0,009	0,03	Tr.	Tr.	0,006	Tr.	TR	43,64
	Diff.													
LL- 7	A	0,73		0,18	52,42	0,48			0,67	0,24				43,24
LL- 8	A	0,50		0,13	53,64	0,48			0,67	0,21				43,11
LL-10	A	0,26		0,14	52,93	0,72			0,67	0,24				43,18
	B	0,41	0,14	0,11	55,20	0,36	0,009	0,02	Tr.	0,02	0,001	0,14	TR	43,42
	Diff.	0,15		0,03	2,27	0,36				0,22				0,24
Average	A													
	B	0,515	0,165	0,132	55,12	0,395	0,042		Tr.		0,004			43,45

Table - No. 4.2 Chemical composition of limestone of the MEHAN deposit

Explanations: A - Analysis by Central Research Organization Ministry of No2 Industry, RANGOON; B - Check analysis (Analysis by Geological Survey, National Enterprise Spišská Nová Ves; Tr. - Traces < 0.02; *) Data not available; TR = < 0,01

Block of reserves (resources) No.	Reserves (resources)	Bench in m a.s.l.	Chemical composition in %									
			SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	MS	MA	
1C ₂	reserves	1029	0,892	0,084	0,721	49,04	4,89	0,007	0,014	1,11	3,54	
		1014	1,072	0,099	0,625	54,16	0,57	0,008	0,047	1,48	6,32	
		999	1,233	0,108	0,518	53,22	1,60	0,008	0,038	1,97	4,80	
		984	2,215	0,150	0,590	53,62	0,44	0,008	0,036	3,00	3,93	
		969	1,849	0,112	0,860	52,80	1,11	0,009	0,061	1,90	7,68	
		954	1,447	0,090	0,818	53,86	0,77	0,009	0,038	1,59	9,09	
		939	2,039	0,137	0,614	53,00	1,04	0,009	0,054	2,72	4,48	
2P	resources		1,55	0,11	0,70	53,27	0,97	0,009	0,046	1,91	6,36	
3P			1,81	0,12	1,04	53,52	0,41	0,010	0,058	1,56	8,67	
Average quality of reserves			1,790	0,118	0,710	53,32	0,86	0,009	0,048	2,16	6,02	
Average quality of resources			1,62	0,11	0,8	53,34	0,81	0,009	0,049	1,78	7,27	

Table - No. 4.3 Quality of limestone of the MEHAN deposit.

Sample No.	Source of analysis	Spectrographic analysis					
		B	Cd	Cu	Pb	Zn	Sb	Sr
LL-1	A				*)		
	B		Tr	4 ppm	Tr	9 ppm	Tr
LL-2	A				*)		
	B		Tr	4 ppm	Tr	5 ppm	Tr
LL-3	A				*)		
	B		Tr	4 ppm	Tr	4 ppm	Tr
LL-7	A	T	Nd	W	Nd	Nd	Nd
LL-8	A	T	Nd	W	Nd	Nd	Nd
LL-10	A	T	Nd	W	Nd	Nd	Nd
	B		Tr	4 ppm	Tr	11 ppm	Tr

Table - No. 4.4 Results of spectrographic analysis

Explanations: FT = < 0.001% ; T = 0.001 - 0.01% ; W = 0.01 - 0.1% ;

Nd = Not detected ; Tr = Traces < 0.001%

A - Analysis by Central Research Organization,
Ministry of No.2 Industry, RANGOON;

B - Analysis by Geological Survey, National Enterprise
Spišská Nova Ves

*) - Data not available

Specifications	Sample No.		
	LL-7	LL-8	LL-10
specific gravity (kg/m ³)	2682	2693	2700
specific density (kg/m ³)	2707	2708	2711
soaking (%)	0.3	0.2	0.1
soaking (calculated) (%)	0.8	0.5	0.3
void ratio (%)	0.9	0.55	0.4
relative density (%)	99.1	99.45	99.6
crushing strength (MPa)	34		
grindability (VTI)			1,286

Table - No. 4.5 Physical tests of the limestone of the MEHAN deposit.

LIMESTONE - Reserves

Block No.	Bench in m a.s.l.	Limestone in m ³	Spec. gravity g/cm ³	Limestone in t	Chemical composition in %									
					SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	M _S	M _A	S _{LP}
1C₂	1029	16 727	2,69	44 996	0,892	0,084	0,721	49,040	4,886	0,007	0,014	1,11	8,54	1441,1
	1014	154 305	2,69	415 080	1,072	0,099	0,625	54,156	0,573	0,008	0,047	1,48	6,32	1423,9
	999	472 145	2,69	1 270 070	1,233	0,108	0,518	53,216	1,601	0,008	0,038	1,97	4,80	1287,3
	984	951 537	2,69	2 559 635	2,215	0,150	0,590	53,618	0,444	0,008	0,036	3,00	3,93	766,4
	969	1465 990	2,69	3 943 513	1,849	0,112	0,860	52,801	1,106	0,009	0,061	1,47	2,18	844,4
	954	1874 769	2,69	5 043 129	1,447	0,090	0,818	53,861	0,771	0,009	0,038	1,59	9,09	1061,2
	939	2 163 051	2,69	5 818 607	2,039	0,137	0,614	53,004	1,043	0,009	0,054	2,72	4,48	812,6
Total		7 098 524	2,69	19 095 030	1,790	0,118	0,710	53,322	0,86	0,009	0,048	2,16	6,02	899,7

- Resources

2P		10 861 993	2,69	29 218 761	1,55	0,11	0,7	53,27	0,97	0,009	0,046	1,91	6,36	1017,1
3P		4 262 000	2,69	11 464 780	1,81	0,12	1,04	53,52	0,41	0,010	0,058	1,56	8,67	839,8
Total		15 123 993		40 683 541	1,62	0,11	0,8	53,34	0,81	0,009	0,049	1,78	7,27	960,8

Table - No. 4.6 Reserves (resources) of limestone of the MEHAN deposit

During the field visit, trenches 1,5 m deep were dug out in the close vicinity of the TP-2 and TP-3 test pits and the samples identified as LL-5 and LL-6 were collected for chemical analysis. The samples from the test pits, identified as LTP-1 and LTP-2, dug out for soil tests, were also collected for chemical analysis. Samples are identified as LM-1 and LM-2. Other two samples were collected in the vicinity of NAMKHAL village (LC-1) and KHA-SHI village (LC-2).

Results of chemical analyses and the comparison of the basic and check ones are shown on the Table 4.7.

Sample No.	Source of anal.	Chemical composition in %												
		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	MnO	P ₂ O ₅	Na ₂ O	K ₂ O	SO ₃	Cl	L.O.I.
LL - 5	A	43,68	14,16	8,51		n.d.	1,38							31,98
	B	56,50	20,63	8,83	1,172	0,07	0,53	0,156	0,20	0,07	1,24	Tr.	TR	10,08
	Diff.	12,82	6,47	0,32			0,85							
LL - 6	A	53,55	15,05	7,46		n.d.	1,26							22,34
	B	50,58	23,30	10,59	1,221	0,17	0,61	0,143	0,23	0,04	1,12	0,03	TR	11,32
	Diff.	2,97	8,25	3,13			0,65							
LM - 1	A	52,77	6,68	5,25		n.d.	0,85							34,01
LM - 2	A	59,56	11,58	4,83		n.d.	0,72							22,95
	B	74,75	12,13	5,35	0,730	0,03	0,40	0,092	0,04	0,02	0,92	Tr.	TR	4,94
	Diff.	15,19	0,55	0,52			0,32							
LM - 3	A	30,87	20,30	11,27		n.d.	0,42							36,42
LM - 4	A	30,91	20,79	9,38		n.d.	0,70							38,09
	B	43,68	27,65	12,05	1,460	0,05	0,56	0,122	0,17	0,02	1,31	Tr.	TR	12,32
	Diff.	12,77	6,86	2,67			0,14							
LC - 1	A	83,99	5,58	2,12		n.d.	1,02							6,24
LC - 2	A	56,42	13,59	8,16		n.d.	1,18							20,29

Table - No. 4.7 Chemical composition of clay of the MEHAN deposit and LASHIO Township

Explanations: A - Analysis by Central Research Organization, Ministry of No.2 Industry, RANGOON; B - Analysis by Geological Survey National Enterprise, Spišská Nová Ves; Tr. - Traces; n.d. - not detected.
 TR = < 0,01
 * < 0,02

CLAY — Reserves

Block No.	Bench in m a.s.l.	Clay in m ³	Spec. gravity g/cm ⁻³	Clay in t	Chemical composition in %									
					SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	M _S	M _A	S _{LP}
4C ₂		443 296	2,0	886 592	56,50	8,83	20,63	0,07	0,53	0,07	1,24	1,92	2,34	0,04
5C ₂		716 087	2,0	1432 174	50,58	10,59	23,30	0,17	0,61	0,04	1,12	1,49	2,20	0,10
Total		1159 383		2348 766	52,84	9,92	22,28	0,13	0,58	0,05	1,17	1,64	2,25	0,07

— Resources

6P		56 033	2,0	112 066	52,84	9,92	22,28	0,13	0,58	0,05	1,17	1,64	2,25	0,07
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Table - No. 4.8 Reserves (resources) of clay of the MEHAN deposit.

4.1.1.3 SE-ENG Sand Deposit

In case of insufficient content of SiO_2 in limestone and clay, shall have to be used.

Sand of the LASHIO Township is an alluvial wash of the NAM-YAO (SE-ENG sand reserves) and of the NAM-PAWNG (north of Old LASHIO) creeks.

Mineralogical analysis showed concentration of the following minerals: quartz, mica, caolinite and calcite.

Granulometry showed the following contents: 2% of clay particles (below 0,002 mm), approx. 11% of dust particles (below 0,063 mm), 87% of sand particles - thereof 50% of fine sand (0,063-0,250 mm) and 37% of medium size sand grains (0,250-0,500 mm).

Chemical composition of sand is following: SiO_2 - 81,44%; Al_2O_3 - 6,47%; Fe_2O_3 - 2,89%; TiO_2 - 0,353%; CaO - 1,48%; MgO - 0,61%; MnO - 0,03%; P_2O_5 - 0,02%; Na_2O - 0,12%; K_2O - 2,10%; SO_3 - 0,06%; L.O.I. - 3,42%.

(Source: GEOLOGICKÝ PRIESKUM, N.P., Spišská N.Ves)

4.1.1.4 NAM-PHAT Haematite Deposit

If the content of Fe_2O_3 in limestone and clay is lower than required, haematite can be used as additive.

During the field visit a sample of haematite was received and chemically analysed.

X-Ray and DTA analyses have proved presence of goethite and quartz.

No detailed information on haematite resources was acquired.

Chemical composition (%): SiO_2 - 14,79; Al_2O_3 - 5,30; Fe_2O_3 - 67,08; TiO_2 - 0,204; CaO - 0,04; MgO - 0,18; MnO - 0,017;

P_2O_5 - 0,13; Na_2O - tr.; K_2O - 0,35; SO_3 - tr.; L.O.I. = 10,78.

4.1.1.5 Raw-Mix Composition

Taking into consideration geological reserves of raw material and additives as well as their physical/chemical properties, setting up of a mini-cement plant is justified.

Using parameters of individual components, calculations of raw-mix composition for

$$S_{LP} = 96 - 103$$

$$M_S = 2,3 - 2,6$$

were done for the mix proportions both for two raw-material and three raw-material components.

The two-raw-material-component mix is based on limestone and clay, taking account of coal ash. The three-raw-material-component mix is based on limestone, clay and sand, taking account of coal ash.

Chemical composition of raw-material components used for raw-mix calculations:

Component	CaO %	SiO ₂ %	Al ₂ O ₃ %	Fe ₂ O ₃ %	L.O.I. %
Limestone	53,32	1,79	0,71	0,118	43,42
Clay	0,07	56,30	20,43	8,73	10,08
Sand	1,48	80,24	6,47	2,89	3,42
Ash	36,79	7,61	7,10	7,22	0,50

Calculations of Two-Raw-Material-Component Mixes:

- Raw Mill Feed :

Particulars	S _{LP}				
	99	100	101	102	103
Limestone, %	79,62	79,80	79,98	80,16	80,34
Clay, %	20,38	20,20	20,02	19,84	19,66
CaO, %	42,47	42,56	42,66	42,75	42,85
SiO ₂ , %	12,90	12,80	12,70	12,60	12,51
Al ₂ O ₃ , %	4,73	4,70	4,66	4,66	4,59
Fe ₂ O ₃ , %	1,87	1,86	1,84	1,83	1,81
L.O.I., %	36,62	36,68	36,74	36,80	36,86
S _{LP}	98,93	99,94	100,95	101,95	102,96
M _S	1,95	1,95	1,95	1,95	1,95
M _A	2,52	2,53	2,53	2,53	2,53

- Kiln Feed (taken account of coal ash):

Particulars	S _{LP}				
	99	100	101	102	103
Limestone, %	78,89	78,97	79,15	79,33	79,50
Clay, %	20,17	19,99	19,81	19,63	19,46
CaO, %	42,41	42,50	42,60	42,69	42,79
SiO ₂ , %	12,85	12,75	12,65	12,55	12,46
Al ₂ O ₃ , %	4,75	4,72	4,68	4,65	4,61
Fe ₂ O ₃ , %	1,93	1,91	1,90	1,88	1,87
L.O.I., %	36,25	36,31	36,37	36,43	36,48
S _{LP}	99	100	101	102	103
M _S	1,92	1,92	1,92	1,92	1,92
M _A	2,46	2,47	2,47	2,47	2,47

- Clinker :

Particulars	SLP				
	99	100	101	102	103
C ₃ S, %	60,75	65,35	66,60	69,82	72,01
C ₂ S, %	12,43	8,17	6,08	4,02	1,99
C ₃ A, %	14,74	14,55	14,46	14,37	14,28
C ₄ AF, %	9,27	9,13	9,07	9,00	8,94
CaO, %	66,30	66,73	66,95	67,15	67,36
SiO ₂ , %	20,29	20,01	19,88	19,74	19,61
Al ₂ O ₃ , %	7,51	7,41	7,36	7,31	7,26
Fe ₂ O ₃ , %	3,05	3,00	2,98	2,96	2,94
Mix/clinker, kg/kg	1,57	1,57	1,57	1,57	1,57
Burnability Modulus	4,74	4,74	4,74	4,75	4,75
Quality of clinker	Good	Good	Good	Good	Good

Calculations of Three-Raw-Material-Component-Mixes:

-Raw Mill Feed :

Particulars	S _{LP} / M _S				
	98	98	100	100	100
	2,5	2,6	2,4	2,5	2,6
Limestone, %	80,41	80,55	80,63	80,78	80,90
Clay, %	14,45	13,62	15,04	14,17	13,35
Sand, %	5,14	5,83	4,32	5,06	5,74
CaO, %	42,96	43,04	43,07	43,15	43,23
SiO ₂ , %	13,70	13,79	13,38	13,50	13,57
Al ₂ O ₃ , %	3,85	3,73	3,93	3,79	3,67
Fe ₂ O ₃ , %	1,50	1,45	1,53	1,48	1,43
L.O.I., %	36,55	36,55	36,67	36,67	36,67
S _{LP}	97,92	97,93	99,94	99,94	99,94
M _S	2,55	2,66	2,45	2,56	2,66
MA	2,56	2,57	2,56	2,57	2,57

- Kiln Feed (taken account of coal ash) :

Particulars	S_{LP}/M_S				
	98	98	100	100	100
	2,5	2,6	2,5	2,5	2,6
Limestone, %	79,58	79,71	79,80	79,94	80,07
Clay, %	14,30	13,48	14,88	14,02	13,21
Sand, %	5,08	5,77	4,28	5,00	5,68
CaC, %	42,90	42,98	43,00	43,09	43,17
SiO ₂ , %	13,63	13,72	13,32	13,42	13,51
Al ₂ O ₃ , %	3,89	3,77	3,96	3,83	3,71
Fe ₂ O ₃ , %	1,56	1,51	1,59	1,54	1,49
L.O.I., %	36,17	36,17	36,30	36,30	36,30
S_{LP}	98	98	100	100	100
M_S	2,5	2,6	2,4	2,5	2,6
M_A	2,49	2,49	2,49	2,49	2,49

- Clinker

Particulars	S_{LP}/M_S				
	98	98	100	100	100
	2,5	2,6	2,4	2,5	2,6
C ₃ S, %	66	67,54	70,44	71,30	72,11
C ₂ S, %	10,98	10,79	6,90	6,69	6,49
C ₃ A, %	12,00	11,63	12,24	11,85	11,48
CuAF, %	7,45	7,20	7,60	7,34	7,10
CaO, %	67,21	67,36	67,51	67,64	67,76
SiO ₂ , %	21,36	21,50	20,91	21,06	21,21
Al ₂ O ₃ , %	6,09	5,90	6,21	6,01	5,82
Fe ₂ O ₃ , %	2,45	2,37	2,50	2,41	2,33
Mix/Clinker, kg/kg	1,57	1,57	1,57	1,57	1,57
Burnability Modulus	6,21	6,47	5,96	6,22	6,48
Quality of Clinker	Good	Good	Good	Good	Good

The following raw-mix composition of kiln feed is foreseen for the Project:

Limestone	80%
Clay	19%
Ash	1%

One ton of clinker produced will require 1,6 tons of kiln feed including loss at handling.

Demand in raw-material components in dry condition for a capacity of 200 TPD of clinker is as follows:

Component	%	TPD	TPY
Limestone	80	256	76.800
Clay	19	60,8	18.240
Ash	1	3,2	960
Total	100	320	96.000
Raw materials only	99	316,8	95.040

Demand in raw-material components in natural condition for a capacity of 200 TPD of clinker is following:

Component	%	Mixture content, %	TPD	TPY
Limestone	77,1	1	260	77.600
Clay	21,95	18	74	22.240
Ash	0,95	0	3,2	960
Total	100,00	-	337,2	100.800
Raw materials only	99,05	5,5	334	99.840

NOTE: Moisture content of fresh clay after monsoon season

varies from 28 to 33% H₂O.

Quarried clay shall be stored in a sheltered storage hall with a capacity of 60 days. There, the moisture content will be reduced to less than 18% H₂O due to the natural drying out effect.

4.1.2 Admixtures

4.1.2.1 Gypsum

Gypsum shall be obtained from a gypsum mine under Mining Corporation No. 3 at MANHAR in HSI-PAW. This deposit is satisfactorily explored containing sufficient reserves. Gypsum from this mine, is supplied to the three existing cement mills in the country.

Admixing ratio of gypsum in cement is 5%.

More detailed data on gypsum are shown on the Tables 4.9, 4.10 and 4.11.

Year	Sample	Chemical composition in %						
		CaSO ₄ x 2H ₂ O	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	L.O.I.
1980	Tracks 6	65,71	6,32	-	1,01	0,6	30,3	19,39
1981	Storage 23	85,60	11,57	2,05	0,80	-	30,7	14,25
1982	Storage 9	84,68	11,81	2,22	0,93	-	32,4	11,90
Average		85,33	9,90	2,14	0,87	-	31,13	15,31

Table- No 4.9 Chemical composition of Gypsum

Source: Feasibility Study Rehabilitation and Extension
THAYETMYO Cement Factory

Laboratory	Chemical composition in %												
	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅	MnO	SO ₃	Cl	L.O.I.
A	2,01	-	0,25	0,11	0,43	30,6	-	-	-	-	44,9	-	21,26
B	1,25	0,10	0,46	0,27	0,56	31,24	0,08	0,09	0,03	0,0	43,89	27 ppm	21,90
C	5,72	0,079	1,62	0,74	2,37	30,59	Tr.	0,52	0,01	0,0	35,57		7,23

Table- No.4.10 Chemical composition of Gypsum

Source: A - THAYETMYO Laboratory
B - Dickerhoff Engineering
C - Geological Survey, National Enterprise, Spišská Nová Ves.

Amount of reserves (mil. ton)	Production	
	Fiscal year	Production (ton)
12,3	1980 - 81	15 904
	1981 - 82	13 290
	1982 - 83	16 976
	1983 - 84	17 754
	1984 - 85	23 407
	1985 - 86	35 262
	1986 - 87	22 989
	1987 - 88	6 823

Table - No.4.11 Amount of Reserves and Production of Gypsum. Data is up to the end of August for the fiscal year 1987 - 88

4.1.3 Fuel

Coal purchased at the NAMMA Coal Deposit under Mining Corporation No.3, shall be used for firing of clinker.

The deposit is layered by three seams with respective thicknesses as follows:

- upper seam	1,5 - 3,5 m
- Middle seam	1,5 - 4,6 m
- lower seam	6,1 - 15,2 m

In order to obtain more detailed data on properties of coal to be used as fuel, four samples of coal were collected (LU-1, LU-2, LU-3 and LU-4). The first three samples were analysed at the Central Research Organization, Ministry of No.2 Industry, Rangoon and the fourth sample was analysed in laboratories of GEOLOGICKÝ PRIESKUM, National Enterprise, Spišská N. Ves, Czechoslovakia.

Properties of mined coal from the deposit is shown in the Table No. 4.12.

Particulars	Results of analysis					
	level 470 - 525 M.A.S.C.	level 410 - 470 M.A.S.C.	upper seam LU-1	middle seam		lower seam
				LU-2	LU-4	LU-3
W _f [%]	15,28	8,64	22,62	26,73	25,09	23,64
A _f [%]	9,95	13,04	5,99	5,34	5,56	3,56
A _d [%]	11,60	20,69	7,74	8,11	7,42	4,66
Q _f [MJ.hg]	18,09	21,20	19,40	18,33	17,71	18,86
Q _f [Btu]	7771,29	9107,31	9333,16	7872,30	7608,24	8103,60
Q _d [MJ.hg]	21,79	23,42	25,79	25,91	24,47	25,46
Q _d [Btu]	9360,0	10061,0	11079,13	11130,68	10512,07	10937,37
V _{daf} [%]	59,32	55,97	48,91	42,68	46,39	40,34
VN _{daf} [%]	40,68	44,13	51,09	57,32	53,61	59,66
S _d [%]	1,2	1,44	1,26	0,71	1,15	
As ^e [g.t ¹]					10 ppm	
da _f [g.cm ³]	1,3	1,3			1,33	

Table - No. 4.12 Coal Specifications

The average properties obtained from the four collected samples including the data provided by the Coal Mine Owner, are following:

	Average	Min.	Max.
- Original water content- w^r (%)	20,33	8,64	26,73
- Original ash content - A^r (%)	7,34	3,56	13,04
- Ash content - dry basis- A^d (%)	10,04	4,66	20,69
- Wet test calorific value Q_i^r (MJ.kg ⁻¹)	18,93	17,71	21,20
- Dry basis calorific value- Q_i^d "	24,47	21,79	25,91
- Inflammable volatile - V^{daf} (%)	48,92	40,34	59,32
- Fixed carbon - VN^{daf} (%)	51,08	59,66	40,68
- Sulphur (dry basis) - S^d (%)	1,05	0,55	1,44
- Arsenic (dry basis) - As^e (g.t ⁻¹)	10	10	10
- Specific gravity - d_a^r (g.cm ⁻³)	1,31	1,30	1,33

Combustible of the examined coal has following composition (natural state):

- Carbon	69,46%
- Hydrogen	4,45%
- Organic sulphur	1,21%
- Nitrogen	1,79%
- Oxygen	23,08%
- Index of coalification	37,58%

According to drilling tests carried out by Mining Corporation No.3 up to October, 1982, the deposit contains 2,8 million tons of coal. No 4.12.

Specifications of coal from the deposit are shown on the following Table.

Chemical Composition of Ash

Particulars	LU-1	LU-2	LU-3	LU-4
SiO ₂ (%)	6,98	6,78	10,73	9,01
Al ₂ O ₃ (%)	6,46	6,78	5,36	8,76

Fe ₂ O ₃ (%)	12,27	11,71	15,45	8,54
CaO (%)	25,84	24,78	33,48	44,38
MgO (%)	22,22	24,07	11,80	5,53
TiO ₂ (%)				0,39
MnO (%)				0,07
K ₂ O (%)				0,14
Na ₂ O (%)				0,02
P ₂ O ₅ (%)				0,04
SO ₃ (%)				17,79
Loss on ignition				0,50
H ₂ O				0,32

The capacity of the mining plant is 40 000 TPY. Until now some 110 000 tons of coal have been mined.

The reserves of the deposit are for 67 years of mining operations.

Evaluation of quality of coal:

For the evaluation, the following data on coal were taken into consideration:

Ash content (natural condition), %	5,56
Moiture content, %	25,09
Calorific value (natural condition), %	17,71
Ash content (dry basis), %	7,42

For firing in a rotary kiln, a dry coal with moisture content of less than 5% shall be used. Then, the content of ash will be 7,05% and the calorific value 23,07 MJ/kg.

For calculation of flame temperature, the following data were used:

- Content of volatile matter, %	42,95
- Temperature of primary air, °C	20
- Air excess ratio	1,1
- Coefficient of secondary air	0,8
- Temperature of secondary air, °C	400 to 600

and the following results were obtained:

Secondary Air Temperature °C	Actual Flame Temperature °C
400	1 652
500	1 673
600	1 693

Assuming that the required temperature of material inside the kiln is equal to 1450°C and more, the actual temperature of flame must be more than 1680°C.

The above said results show that the evaluated coal may be used as a sole fuel under the conditions as stated below:

1. Quality of coal must be uniform;
2. Air excess ratio shall not be more than 1,1;
3. 80% of combustion air shall be covered by secondary air;
4. Temperature of secondary air shall not be less than 600°C;
5. Moisture content of ground coal shall not be more than 5%;
6. Fineness of grinding of coal shall be as high as possible.

If the above mentioned conditions cannot be maintained another type of fuel shall be used, e.g. combined firing of coal and heavy fuel.

4.1.4 Power Supply

Electric power necessary for operation of the cement plant, lighting and the housing colony, will be supplied by Electric Power Corporation (utility) by tapping from the existing 33 kV overhead transmission line, erected along the LASHIO-MANDALAY highway.

At present, the said transmission line provides electric power generated by hydro-electric stations at MANSAN and KONG NYAUNG, to the LASHIO Township.

Specifications:

- Voltage, kV3-phase 3-wire 33 kV, 50 Hz
- Conductors,3x AlFe 7/3,45 mm
- Length:
 - . MANSAN - LASHIO, km36
 - . MANSAN-Site, km.....26
- Load (actual):
 - . day-time 0,6 MW
 - . evening peak-hours 1,8 MW
- Load bearing capacity 6,8 MW

SOURCE: Electric Power Corporation, LASHIO

Estimated power demand of the proposed cement factory is approximately 2,1 MW, therefore, total load of the transmission line is estimated at $1,8+2,1 = 3,9$ MW.

At present, the electric power generated by the two above mentioned hydro-electric stations on the river of NEMYO, under the Mining Corporation No.1, Ministry of Mines, is supplied to mines and smelters in NAMTO, and LASHIO Township.

Installed capacity of the MANSAN H.E. station is 8 MW but feasible maximum output does not exceed 6,7 MW due to age of the generators (production year 1928).

Installed capacity of the KONG NYAUNG H.E. station is 6,8 MW and was put into operation in May '86.

Hence, the total maximum output of both stations amounts to 13,5 MW.

According to information provided by the Mining Corporation No.1, average power demand of the installations in NAMTU and the LASHIO Township equals to 7,9 MW.

Theoretically, there is reserve in generation equal to $13,5 \text{ MW} - 7,9 = 5,6 \text{ MW}$ which is more than enough for power supply of the proposed cement factory.

The feasible normal generating capacity of the H.E. stations depends, however, on flow of the NEMYO river which during the season of February through June will drop so drastically as generation in the H.E. stations is reduced to some 6 MW. This will cause cut-down in operation of the NAMTU installations as well as in power supply for LASHIO.

Hence, electric power supply during the said season to the proposed cement factory may be jeopardized.

It is proposed, therefore, to set up another hydroelectric power plant rated $4 \times 0,8 \text{ MW}$ to be owned by Ministry of No.1 Industries as described in para 6.2.2, Department 46 - Hydroelectric Power Plant.

The said power plant is to be located between the existing stations.

Issues concerning electric power supply for the proposed cement factory shall be settled by an Agreement to be made between Ministry of Industries No.1, Ministry of Mines and Ministry of Energy prior to decision on setting up of the mini-cement plant.

Data:

- Utility voltage, kV 3-phase 33 kV, 50 Hz
- Maximum power demand of cement
factory, MW 2,1
- Planned annual consumption,
MW hrs 7 700
- Expected annual own generation
of power supply in HE power plant,
MW hrs 14.000
- Electric power available for sale, MWhrs 6 560
- Electric power to purchase, MW hrs 260

4.1.5 Water Supply

Water will be supplied from the creek of NARYARMA by a pipeline, 5 km long.

Chemical test of water:

Sample No.: 275/87-88

Sample marked: S.No.(2) Naryarma Stream

Dissolved solids, p.p.m.	204,00
Total hardness as CaCO ₃ , p.p.m.	220,00
Alcalinity as CaCO ₃ , p.p.m.	289,00
Calcium as Ca, p.p.m.	34,00
Magnesium as Mg, p.p.m.	38,88
Potassium as K, p.p.m.	1,00
Sodium as Na, p.p.m.	Nil
Chlorides as Cl, p.p.m.	7,03
Sulphates as SO ₄ , p.p.m.	2,63
Soluble Iron as Fe, p.p.m.	N.D.
Lead as Pb, p.p.m.	N.D.
Sediment, p.p.m.	Nil
Turbidity, p.p.m.	Nil
Carbon Dioxide as CO ₂ , p.p.m.	8,00
Dissolved Oxygen, p.p.m.	6,40
Colour, Pt.unit	Nil
PH Value	7,75

Standard method for the examination of water and sewage, 8th Edition (A.P.H.A.).

4.2 Supply Programme

4.2.1 Production Programme

Number of working days/year	300
Annual production of clinker, tons	60.000
Annual production of cement, tons	63.000

4.2.1.1 Raw Materials

Annual consumption of raw materials in natural condition:

- Limestone, TPY	77.600
- Clay , TPY	22.240
- gypsum , TPY	3.060

4.2.1.2 Inputs

- Paper sacks, pcs/year	1,323.000
- Refractories, insulation, TPY	100
- Lubricants, kg/year	20.000
- Explosives, kg/year	15.000
- Primers , pcs/year	4.000
- Detonating fuse, km/year	4
- Lining , TPY	21
- Grinding media, TPY	32
- Spare parts , TPY	30
- Consumables , pcs/year	414

4.2.1.3 Utilities

- Fresh coal, TPY	13.560
- Diesel oil, cu.m/year	140
- Services water, cu.m/year	65.000
- Potable water:	
. factory, cu.m/year	5.000
. housing, cu.m/year	20.000
- Electric power:	
. own generation, MWhrs/year	14.000
. available for sale, MWhrs/year ...	6.560
. purchase, MWhrs/year	260

4.2.2 Supplies

4.2.2.1 Raw Materials

Limestone and clay: deposits are at MEHAN situated 2 km from the site (own resource).

Sand: deposits are in the river of NA-LONG in the vicinity of the SE-ENG village, 24 km from the site (own resource).

Haematite: deposits are near the NAM-PHAT village, 4 km from the site (own resource).

Gypsum: is to be purchased at HSI-PAW, 63 km from the site.

4.2.2.2 Inputs

Some inputs, e.g. paper sacks, refractories, insulation material, lubricants, explosives shall be purchased at the local market.

Items, such as lining of mills, grinding media and spare parts shall be imported.

Consumables are mostly available at the local market.

4.2.2.3 Utilities

Coal: necessary for firing shall be purchased at the NAMMA coal deposit and transported to the site by own truck over the distance of 36 km.

Diesel oil: shall be purchased at and supplied from MANDALAY by bowsers owned by local transport corporations.

Power: shall be generated in an own hydroelectric power plant and surplus sold to Electric Power Corporation.

Service and potable water: shall be obtained from the NARYARMA creek by an own pipeline.

4.2.3 Supply Schedule

Limestone and clay shall be supplied by own trucks. The capacity of the storage hall respects requirements of a two-months operation of the plant during the monsoon season

Storage capacity of limestone 60 days

Storage capacity of clay 60 days

Gypsum shall be supplied from HSI-PAW by own trucks. The road is trafficable the whole year round.

Storage capacity of gypsum 30 days

Storage capacity of clinker 30 days

Storage capacity of cement 8 days

Coal shall be supplied by own trucks.

Storage capacity of coal 30 days.

Diesel oil shall be supplied by local transport companies.

Storage capacity of diesel oil 100 days.

Inventory of paper sacks 2 months.

Inventory of spare parts, grinding media and linings 1 year.

Inventory of imported consumables 6 months.

Inventory of locally available consumables 3 months.

4.3 Unit Prices

In general, all unit prices of materials and inputs were stated according to valid state ex factory selling prices, or were taken from:

- "List of Data and Information for the Preparation of the Feasibility Study on Mini-cement Plant Project (Lashio)" prepared by UNDP Project Office;
- Data acquired during the mission to Burma.

The individual unit prices were complemented by transport costs, i.e. they equal to franco mini-cement plant prices.

Comments:

- Gypsum:

The applied state ex factory selling price does not include cost of transport due to transport by factory-owned trucks.

- Paper sacks:

Own paper sacks manufacture has not been considered due to following:

- . Available sack-manufacturing plants are of capacities widely exceeding the actual requirements of the proposed cement plant;
- . The existing sack-manufacturing plant at KYANGIN has capacity able to cover requirements of the proposed LASHIO minicement plant.

Savings in capital investment costs estimated at 18 million K in foreign currency are decisive in spite of a slightly increased unit price of paper sacks compared with that of own manufacture. The applicable unit price is based on production costs in KYANGIN plus 10% profit plus 25% goods and service tax plus transport costs.

- Explosives, cap primers, detonating fuse, lining and thermic insulation, lubricants:
Unit prices were assessed similarly as that of paper sacks.
- Grinding media, armouring and spare parts:
Unit prices are based on European prices CIF Rangoon including taxes and transport costs.
- Overhead materials:
Unit prices were estimated and refer to cleansing means, stationery goods, etc.
- Coal:
A state ex factory selling price in NAMMA coal mine is applicable without modification since coal shall be supplied by own transport.
- Diesel oil:
A unit price as presently applied at LASHIO, is employed.
- Electric power
E.P.C. unit price per 1 kWhr is 0,25 K.

A survey of particular unit prices as well as total production cost of materials and inputs are shown on the Schedule 4.1 - "Estimate of Production Cost: Materials and Inputs".

ESTIMATE OF PRODUCTION COSTS: MATERIALS AND INPUTS

Schedule 4.1

Quantity	Unit	Item description	Unit cost in K			Total costs in thousands		
			Foreign	Local	Total	Foreign	Local	Total
		<u>Raw materials</u>						
3 060	t	Gypsum	-	235,83	235,83	-	721,64	721,64
		<u>Auxiliary materials</u>						
1 323	1000pcs	Paper bags	-	6150,0	6150,0	-	8136,55	8136,45
15	t	Explosives	-	1760,0	1760,0	-	26,40	26,40
4	1000pcs	Cap primers	-	3200,0	3200,0	-	12,80	12,80
4 000	m	Detonating fuse	-	1,15	1,15	-	4,60	4,60
100	t	Lining and thermal insulation	-	5800,0	5800,0	-	580,0	580,0
32	t	Grinding balls	3960,0	2390,0	6350,0	126,72	76,48	203,2
21	t	Armouring	14100,0	7700,0	22100,0	302,40	161,70	464,1
20	t	Oils and lubricants	-	6650,0	6650,0	-	133,0	133,0
30	t	Spare parts	33000,0	22850,0	56750,0	1017,0	685,5	1702,5
	1000 K	Overhead materials	-	-	-	-	400,0	400,0
		<u>Fuel and energy</u>						
13 560	t	Coal	-	147,0	147,0	-	1993,32	1993,32
140	m ³	Diesel oil	-	1100,0	1100,0	-	154,0	154,0
260	MWh	Electric power	-	250,0	250,0	-	65,0	65,0
-	-	TOTAL	-	-	-	1446,12	13150,89	14597,01

Table 4.13

ELECTRIC POWER BALANCE SHEET

Month	Demand		Generation		Surplus/deficit	
	MW	MWhrs	MW	MWhrs	MW	MWhrs
January	2,1	840	2,7	1 360	0,6	520
February	2,1	840	1,8	900	-0,3 ^{3/}	65 ^{3/}
March	2,1	840	1,5	760	0,6 ^{4/}	-80 ^{4/}
April	1,0 ^{1/}	400 ^{1/}	1,0	510 ^{3/}	0,0	110 ^{3/}
May	1,0 ^{1/}	400 ^{1/}	0,6	305	-0,4 ^{4/}	-95 ^{4/}
June	2,1	840	1,5	755	-0,6 ^{4/}	-90 ^{4/}
July	2,1	840	3,2	1 610	1,1	770
August	0,2 ^{2/}	90	3,2	1 610	3,0	1 520
September	0,2 ^{2/}	90	3,2	1 610	3,0	1 520
October	2,1	840	3,2	1 610	1,1	770
November	2,1	840	3,2	1 610	1,1	770
December	2,1	840	2,7	1 360	0,6	520
T O T A L	-	7 700	-	14 000	-	6 300

1/ Production of cement limited due to deficit (in availability) of electric power

2/ Annual maintenance of the cement plant - period of heavy rains

Capacity of generators due to lack of water cannot make up for ununiformity

4/ Purchase of electricity from E.P.C.

Chart 4 1

ELECTRIC ENERGY

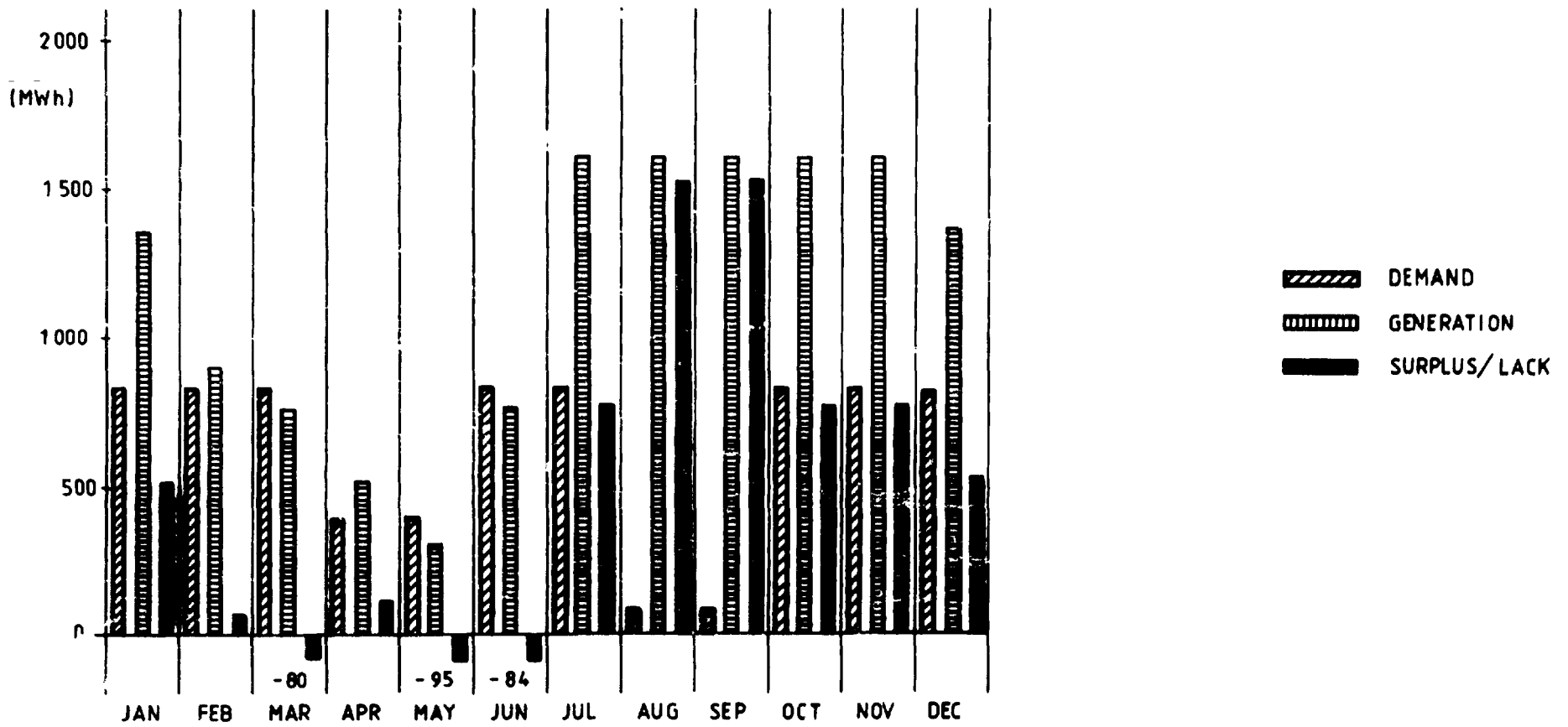
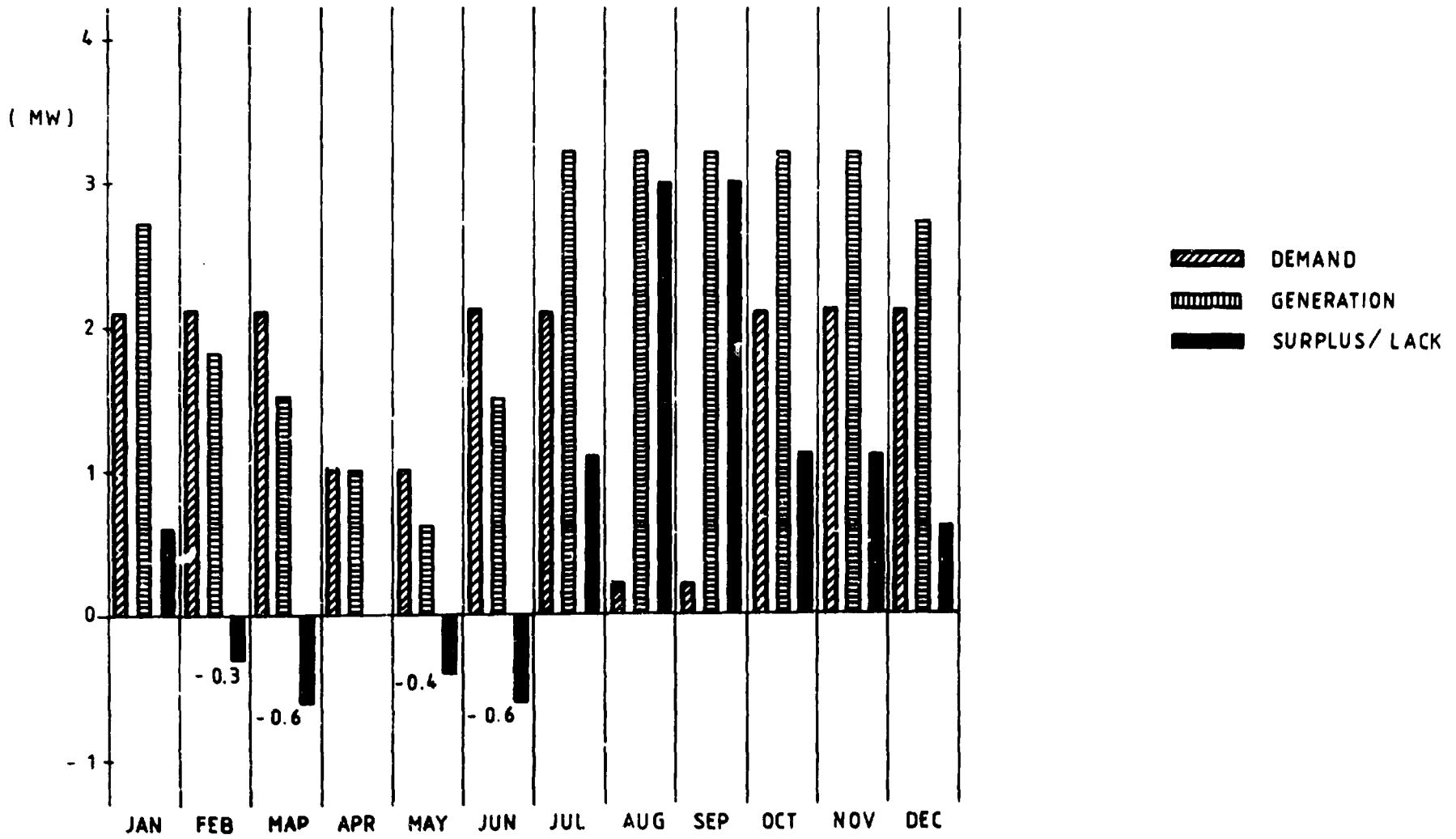


Chart 4.2

ELECTRIC POWER



Chapter V

LOCATION AND SITE

LOCATION AND SITE

5.1 Location

Burma has experienced a cement shortage in recent years while total production capacity is 700.000 TPY approximately.

Cement shortages have been particularly marked in remote areas of the country, one of these being the northern part of the Shan State.

It is therefore intended to set up a cement plant in LASHIO in order to improve industrial and economic activities of the area.

Establishment of the cement plant in this area is supported by availability of the essential raw materials, limestone and clay in the vicinity of the LASHIO township.

5.2 Site

5.2.1 Site Requirements

Requirements on a site for a cement plant erection and operation are the following:

Site area:

- basic area: 250 (L) x 150 (W) m
- additional area for future extension: 250 (L) x 100(W)m
- Area for housing of exxential personnel and guest house: 160,000 sq.m.

Soil load-bearing capacity: 0.15 - 0.20 t/sq.m.

Character of land: - Surface shall be even;
accessibility by common
communication means;
- level of underground water deeper than 5 m
from the surface;

- vicinity of raw materials deposits;
- water and electric power available.

5.2.2 Site Alternatives

During November and December 1984, Ceramic Industries Corporation formed a data collecting mission which visited the project area and carried out necessary findings for the implementation of a preliminary study on a mini-cement plant in LASHIO Township.

The mission prepared a report where three possible site alternatives were identified and described as shown on the map at the end of this Chapter.

Their brief description is the following:

Site No. 1 is situated 16 km south of the town of Lashio, more precisely 1 km south of the crossroad and east of the LASHIO-MANDALAY highway. The area is not sufficient for the factory and other buildings. The land is now used for farming (rice, sessamum and sugar cane growing).

Site No. 2 is situated 15 km south of the town of LASHIO at the crossroads, west of the LASHIO-MANDALAY highway. The surface is even, slightly declining towards south. Similarly, the land is used for farming (maize growing).

Site No. 3 is situated in the vicinity of the village of NARYARMA. The land is now used for farming (coffee plantation).

The Team of Consultants made a survey of the above-described sites in December 1987 and came to the following conclusions:

Site No. 1 is unsuitable for erection of a cement plant due to insufficient surface area. Instead, an area on the other

side of the LASHIO-MANDALAY highway has been proposed which will be referred to as Site No. 1A hereafter.

Site No. 2 is suitable for erection of an industrial unit without any obvious objections.

Site No 3 is unsuitable due to considerable terrain undulation and moreover, the land has been taken by the Ministry of Forests some time ago. Instead, an area on the other side of the highway is deemed to be suitable, hereinafter referred to as Site No. 3A.

5.2.3 Site Selection

The considered site alternatives were scrutinized, taking into account decisive aspects of implementation, and operation of the project and environmental impacts.

The judgement given in the Table 5-1 was prepared employing the value-analysis method where each criterion is evaluated by number of points. The selected criteria take into account geologicogeographical conditions, distance to raw-materials deposits, connection to road and facilities and extension of the existing social infrastructure.

The individual criteria are evaluated as follows:

- unsuitable = 0 points
- less suitable = 1 point
- suitable = 2 points
- very good = 3 points

As the Table 5-1 shows, Site No.1A is the most suitable for setting up the cement plant.

Site Selection

Table 5-i

Site Criteria	1A		2		3A	
	Description	Points	Description	Points	Description	Points
Geographical cond's	Very good	3	Very good	3	Very good	3
Geological cond's	Good	2	Good	2	Good	2
Traffic connections:						
- Road	50 m	3	50 m	3	50 m	3
- Railway	16 km	2	15 km	2	24 km	1
Utility connections:						
- Water	5 km	2	6 km	1	3 km	3
- Power	50 m	3	50 m	3	50 m	3
Raw Materials						
Deposits:						
- limestone	2 km	3	1.5 km	3	10 km	1
- clay	2 km	3	1.5 km	3	10 km	1
- sand	24 km	2	25 km	2	16 km	3
- hematite	4 km	3	5 km	3	4 km	3
- gypsum	63 km	2	64 km	2	55 km	2
- coal	36 km	2	35 km	2	44 km	1
Area	Sufficient including reserve for extension	3	Sufficient including reserve for extension	3	Sufficient including reserve for extension	3
Farming	No	3	Yes	1	No	3
Land preparation Requirements	Moderate	2	Moderate	2	Extensive	1
Social Infrastructure	Existing	3	Existing	3	Limited	2
Total	-	41	-	38	-	35
Priority	First	-	Second	-	Third	-

The site is situated one km south of the LASHIO-MANDALAY-NAMMA crossroads and is adjacent to the LASHIO-MANDALAY highway. The altitude is 970 m above the sea level. The selected area for the project is several times larger than required. The longitudinal boundary of the Site is situated approximately 50 m west of the highway, i.e. the access road to the plant will be 50 m long.

The land is overgrown with high bush-like plants. The distance between Site and the nearest settlement (MEHAN village) is 1.5 km.

There is an overhead 33 kV electric line set up along the highway across the free patch of land between the selected Site and the LASHIO-MANDALAY highway which will be used for power supply during erection and later for operation of the proposed plant. There are no existing obstacles and structures in the area that would hinder smooth implementation of the building and civil works.

Following up an agreement between the Consultant and the CIC the General Layout was complemented by an additional site for the mini-cement plant and the related residential area; the new site is situated approx. 1 km closer to Lashio when compared with the originally proposed site. The character of the new site is more or less identical with the site 1 A as described in the table 5-1.

The original (Variant I) as well as the new site (Variant II) are presented in the drawing No. 1.

No direct connection with the railway is possible due to land undulation. Indirect connection would be feasible by road transport between the proposed plant and the LASHIO railway station.

Water can be supplied from the fresh-water stream in the village of NARYARMA by means of a water pipeline 5 km long.

The road distance between Site and deposits of the essential raw materials (limestone, clay) is 2 km.

Sand will be supplied from SE-ENG at NAMMA Creek, 24 km south of the Site.

Hematite will be obtained from the deposit near NAMPHAT village, some 4 km from Site.

Gypsum and coal will be obtained from the existing mines in MANHAR and NAMMA run by the Mining Corporation No.3, 63 and 36 km to the Site, respectively.

Manpower will be recruited from the LASHIO Township population.

It is proposed to erect adequate housing facilities for the essential staff and labour in the area across the LASHIO-MANDALAY highway east of the said highway). This will also include a guest house.

5.3 Local Conditions

5.3.1 Geographical and Geological Conditions

The land for Site is a part of the Shan plateau, its altitude is 970 m above the sea level. The landscape is moderately undulated, the surface of the terrain being generally declined towards South-West.

The existence of underground water is not probable since the land consists basically of limestone and the terrain morphology will not make way to accumulation of underground water. This assumption was confirmed by a probe pit, three meters deep.

Subsoil consists of compact clay-type earth of moderate to high plasticity. The estimated subsoil load-bearing capacity is 0,07 MPa.

5.3.2 Climate

5.3.2.1 Temperature

Temperature data from 1980 to 1987 :

Year	Minimum		Maximum		Average (°C)
	°C	Month	°C	Month	
1980	1.0	January	38.0	May	22.5
1981	2.0	January	34.0	April	21.8
1982	2.0	Jan., Febr.	35.6	May	21.6
1983	0.3	January	35.8	Apr, May	21.3
1984	1.0	December	37.4	April	21.2
1985	2.1	January	37.8	May	21.3
1986	1.0	January	37.4	April	21.8
1987	1.7	Jan., Febr.	36.6	May	22.3

Source: Office of the Department of Meteorology and Hydrology (LASHIO)

5.3.2.2 Rainfall

Rainfall in LASHIO Township in selected years:

in mm

Year Month	1980	1985	1986	1987
January	-	-	-	14.0
February	-	1,0	-	46.0
March	-	4.0	5.0	21.8
April	38.8	40.9	68.0	95.0
May	355.0	228.0	70.0	37.8
June	280.9	142.0	210.0	279.9
July	395.0	281.0	314.0	114.8
August	292.8	261.0	199.0	326.9
September	320.0	250.0	82.0	322.8
October	139.7	75.0	367.0	52.8
November	36.0	79.0	26.0	95.0
December	8.9	-	1.0	x)
Total	1.867,1	1.361,9	1.342,0	1.406,8

x) Data not available

Source: Office of the Department of Meteorology
and Hydrology, LASHIO.

5.3.2.3 Wind

Data on wind speed and direction are shown in Table
5-2 overleaf.

5.3.2.4 Sunshine

Data on sunshine hours in the project are as shown
in Table 5-3.

WIND SPEED (MEAN) AND DIRECTION

Table 5-2

In. km per hour

MONTH / HOUR	1 9 8 3		1 9 8 4		1 9 8 5		1 9 8 6		1 9 8 7		REMARKS
	0930	1830	0930	1830	0930	1830	0930	1830	0930	1830	
JANUARY	0.48	1.28	0.64	2.41	0.0	0.0	0.0	0.24	0.37	0.48	
FEBRUARY	1.77	3.54	0.64	3.38	0.0	3.06	0.0	1.61	0.67	0.67	
MARCH	0.96	3.54	0.0	4.67	0.48	2.24	0.0	2.73	0.24	2.03	
APRIL	1.93	2.25	2.83	3.35	2.09	2.74	3.09	3.09	0.38	2.24	
MAY	2.41	2.73	2.73	3.86	1.37	3.06	1.87	1.85	0.37	1.29	
JUNE	5.15	3.54	5.34	3.32	4.67	1.77	4.18	3.22	1.92	0.70	
JULY	4.51	1.06	2.57	2.57	3.38	2.57	2.80	0.37	3.39	0.84	
AUGUST	2.09	2.25	1.45	1.77	2.25	0.80	2.48	0.61	1.36	0.30	
SEPTEMBER	2.57	1.29	1.32	2.80	7.08	0.0	0.64	0.26	0.83	0.32	
OCTOBER	0.16	0.15	0.37	0.13	1.0	0.13	0.11	0.00	0.0	0.0	
NOVEMBER	0.64	1.29	0.32	0.0	0.13	0.48	0.51	0.0	x)	x)	
DECEMBER	0.64	0.0	0.24	0.31	0.11	0.0	0.0	2.48	x)	x)	

x) Data not available

Wind direction is South-West and North-West.

SOURCE: Office of the Department of Meteorology and Hydrology (Lashio)

1981 -- 1987 SUNSHINE HOURS

Table 5-3

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1981	249.7	261.4	214.2	186.2	137.8	118.8	112.7	138.4	138.5	169.4	158.6	220.8	2106.5
1982	257.7	242.4	277.7	183.9	211.2	114.9	94.0	108.9	143.7	186.2	164.7	209.6	2194.9
1983	247.8	190.3	227.0	234.2	249.8	134.3	104.2	112.1	135.9	198.9	145.8	204.4	2185.0
1984	241.6	254.3	269.4	208.4	186.8	97.1	76.2	117.8	154.5	153.9	241.0	205.8	2206.8
1985	243.4	229.8	175.3	196.3	210.6	94.2	89.5	96.7	122.6	185.1	179.7	239.5	2042.7
1986	243.2	259.9	259.2	230.9	255.4	121.4	67.4	155.0	159.0	195.8	201.7	247.6	2393.5
1987	234.4	228.1	249.9	214.0	277.0	102.8	77.9	116.1	110.5	217.8	x)	x)	x)

x) Data not available

Source: Office of the Department of Meteorology and Hydrology (LASHIO)

5.3.2.5 Humidity

Data on evaporation and relative humidity from January through December 1986 are shown in the following review:

Evaporation and Relative Humidity

Mean daily average

1986

Lashio

Latitude 85°56' - Longitude 97°45'

<u>Evaporation in mm</u>	<u>Relative Humidity %</u>
January - 2.34	88.3
February - 3.56	82
March - 3.71	73
April - 6.53	46.8
May - 5.33	83
June - 5.84	66.3
July - 2.97	80.4
August - 3.05	83
September - 3.30	87.1
October - 1.57	52.9
November - 3.56	84.7
December - 3.05	82.6

Source: Department of Meteorology and Hydrology (RANGOON).

5.3.2.6 Abnormal Meteorological Conditions

Date	Descript.
27.03.1979	Strong wind which caused damage to some houses;
21.08.1982	Heavy rain; precipitations, 143 mm;
25.10.1982	Squall, wind speed 96 km p.hr., SW direction;
06.04.1984	Squall, wind speed 72 km p.hr., SW direction;
24.04.1984	Earthquake, duration 5 sec., magnitude 6' according to Mercalli international scale;
01.05.1986	Hailstorm, duration from 02.30 to 02.35 P.M.;
07.08.1986	Squall, wind speed 72 km p.hr., SE direction;
10.11.1986	Heavy rain, precipitations 168 mm;
03.03.1987	Hailstorm, duration from 12.15 to 12.25 hrs;
10.04.1987	Squall, wind speed 80 p.hr., NE direction;
23.04.1987	Squall, wind speed 80 km p.hr., SW direction;
10.05.1987	Squall, wind speed 96 km p.hr., NW direction.

5.3.3 Waste Disposal

Basically, process of cement production does not bring about any industrial waste except of dust that will be collected by means of dedusting units (electric precipitators, etc.) and conveyed back to the production process.

A plant sewage system will receive slops and feed it to a sewage treatment plant being a part of the plant facilities.

5.3.4 Manpower

Management and qualified staff will be provided by CIC from the existing production units. Semi-qualified and non-qualified staff will be recruited from the LASHIO Township and its vicinity.

5.3.5 Construction and Erection Facilities

There is a branch office of Construction Corporation in the town of LASHIO.

5.3.6 Living Conditions for Foreign Personnel

There are no adequate housing facilities in the area, therefore camp-type houses and/or bungalows for the Contractor's personnel will have to be set up prior to beginning of construction works.

These facilities will later be used for accomodation of the managerial staff.

5.4 Environment Impact

Operation of the cement plant will cause increased intensity of road transport due to provision of supplies and inputs and shipment of cement.

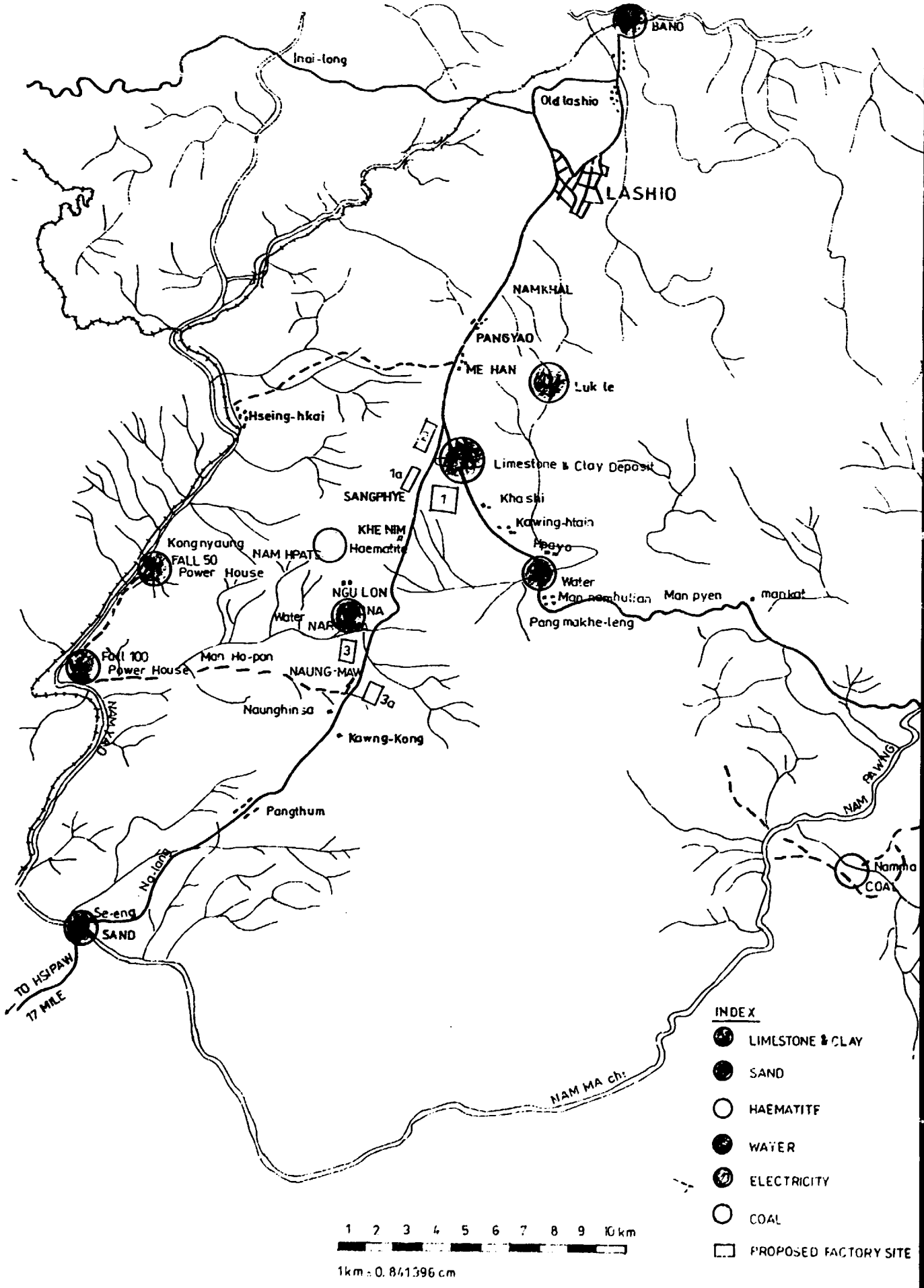
Total rate of dust emissions will amount to 150 kg per day, i.e. 45 tons per year.

5.5 Cost Estimate

All land in Burma is owned by the State and any site not densely populated is available for the proposed project.

There will be no cost of land since it will be allocated for this use without charge to the Ministry who will manage it on behalf of the State.

Figure 5.1



- INDEX**
- LIMESTONE & CLAY
 - SAND
 - HAEMATITE
 - WATER
 - ELECTRICITY
 - COAL
 - PROPOSED FACTORY SITE

1 2 3 4 5 6 7 8 9 10 km
 1km = 0.841396 cm

Chapter VI
PROJECT ENGINEERING

PROJECT ENGINEERING

6.1 Project Layouts

6.1.1 Production Programme

The objective of this Study is to set up a mini-cement plant at LASHIO, Shan State.

Since a coal-fired type of a plant is proposed using a low-calorific value coal (lignite) with high content of volatile matter, the only alternative to be adopted is a dry process clinker production in a short rotary kiln and a preheater.

Production of clinker in a shaft kiln cannot be adopted due to high content of volatile matter in coal.

Similarly, a wet-process clinker production in a rotary kiln is out of question being out-dated with poor economy.

The proposed plant shall produce 63 000 TPY. Daily production is rated at 200 TPD in the dry-process short rotary kiln-and-preheater type of plant.

The plant shall produce a common Portland cement conforming to specifications of B.S.12:1958.

6.1.2 Supply Programme

Technology of cement production is based on essential raw materials (limestone and clay) with addition of sand and haematite, if necessary.

Other materials, such as coal and gypsum will be purchased from local mines and supplied to the cement factory by factory vehicles.

6.1.2.1 Limestone

The annual consumption of limestone in natural condition (1% H₂O) will amount to 77 600 tons. Limestone will be extracted in a quarry belonging to the factory situated 2 km away and supplied by truck over the existing roads.

6.1.2.2 Clay

The annual consumption of clay in natural condition (18% H₂O) will amount to 21 300 tons, in fresh condition (30% H₂O) 26 000 tons. Clay will be extracted at deposits situated in the vicinity of limestone deposits, 2 km from the factory. Trucks will be used for transportation.

6.1.2.3 Sand

Sand deposits are in the NA-LONG creek in the vicinity of the village of SE-ENG, 24 km from the factory.

6.1.2.4 Haematite

Deposits of hæmatite are situated at the village of NAM-PHAT, 4 km from the factory.

6.1.2.5 Gypsum

The annual consumption of gypsum in natural condition (2% H₂O) will amount to 3 060 tons. It will be purchased from the HSI-PAW deposits, 63 km from the factory. Trucks will be used for transportation.

6.1.2.6 Coal

The annual consumption of coal in natural condition will amount to 13 560 tons. Coal will be purchased at NAMMA coal mine situated 36 km from the factory. Trucks will be used for transportation.

6.2 Scope of the Project

6.2.1 Scope of Delivery

The contract for setting up of a cement plant will include following deliveries and services:

- Machinery and equipment completely with erection;
- Complete electrical equipment, instrumentation and controls completely with erection;
- Construction materials completely with building and civil works;
- Metal products, windows, doors, metal plates, etc.;
- Soil tests of site;
- Electric power supply;
- Water supply
- Training of personnel;
- Management of start-up, guarantee tests;
- Setting up of residential quarters.

The said items also include mobile equipment for transportation of materials and inputs.

Shipment of cement will be carried out by customers.

6.2.2 Basic Data

The preparation of this Study is based on the following:

- a) Data provided by Project Office and Ministry of No.1 Industries:
 - Industrial Planning Department
 - Ceramic Industries Corporationon raw materials, fuel, climatic conditions, financing, etc.
- b) Data aquired and verified by the Consultant's Team during their mission in Burma, concerning limestone, clay, coal, site, power and water supply, manpower, etc.

6.2.3 Cement Plant Departments

6.2.3.1 Production Departments

- 01 Limestone and Clay Extraction
- 02 Sand and Haematite Extraction
- 03 Raw Materials Crushing
- 04 Storage
- 05 Raw Grinding
- 06 Homogenizing
- 07 Clinker Burning and Cooling
- 08 Gypsum and Coal Crushing
- 09 Coal Grinding
- 10 Cement Grinding
- 11 Cement Storage
- 12 Packing and Loading
- 13 Electrical Equipment
- 14 Instrumentation and Controls

6.2.3.2 Auxiliary Departments

- 20 Substation
- 21 Diesel Power Plant
- 22 Compressed-Air Plant
- 23 Heating Station and Air-Conditioning
- 24 Water Supply and Distribution
- 25 Laboratory
- 26 Workshops
- 27 Stores
- 28 Diesel Oil Tank
- 29 Lubricants Store
- 30 Transport Facilities

6.2.3.3 Service Departments

- 40 Drain and Sewage Disposal
- 41 Outdoor Lighting

- 42 Roads
- 43 Administration Building
- 44 Gate-House and Fencing
- 45 Residential Area
- 46 Hydro-electric Power Plant

6.3 Technology

6.3.1 Data

Proposed composition of raw mix:

- limestone 80%
- clay 19%
- coal ash 1%

Output of the kiln, TPD	200
Effective working days per year	300
Annual production of cement, TPY	63.000
Annual production of clinker, TPY	60.000
Consumption of raw material in dry condition, TPY	96.000
Consumption of raw material in dry condition, TPD	320
thereof: - ash (1%) , TPY	1 960
detto , TPD	3,2
- raw materials in dry condition (99%), TPY	95 040
detto , TPD	316,8

Consumption of limestone in dry condition, TPY	76 800
Detto , TPD	256

Consumption of limestone in natural condition (1% H ₂ O), TPY	77 600
Detto , TPD	260

Consumption of clay in		
dry condition, TPY	18	240
Detto , TPD		60,8
Consumption of clay in		
fresh condition (30% H ₂ O), TPY	26	000
natural condition (18% H ₂ O), TPY	22	240
Detto TPD		74
Consumption of gypsum in		
dry condition, TPY	3	000
Detto , TPD		10
Consumption of gypsum in		
natural condition (2% H ₂ O), TPY	3	060
Detto , TPD		10,2

6.3.1.1 Coal Consumption

Brown coal will be used for clinker burning.

Low calorific value, kcal/kg	5	250
kJ/kg	22	000

It is considered that 950 kcal per kg of clinker (3980 kJ/kg) will be required.

a) Consumption of coal clinker burning

Natural moisture content in fresh coal is 14%

Consumption of coal

$$\frac{200.000 \times 3980}{2.000} = 36.182 \text{ kg/D}; \quad 36,2 \text{ t/D}$$

Consumption of coal in dry condition,

TPY	10	860
TPD		36,2
Consumption of fresh coal (14% H ₂ O)		
TPY	12	600
TPD		42

b) Consumption of coal for coal grinding

Evaporated water from coal, TPY 1600

Evaporation of 1 kg of water during drying of coal from 14% H₂O down 3% H₂O requires 5 440 kJ (1300 kcal).

Consumption of coal

$$\frac{1.600.000 \times 5440}{22.000} = 395.600 \text{ kg PY}$$

Consumption of coal, TPY	395,6
Consumption of coal in dry condition	
TPY	400
TPD	1,33
Consumption of fresh coal, TPY	460
TPD	1,53

c) Consumption, TPY	500
TPD	1,66

Total consumption of coal for cement plant in fresh coal

Clinker burning TPY	12 600
Coal grinding TPY	460
Heating station TPY	500
Total TPY	13 560

6.3.1.2 Water Consumption

Process water demand, 1/sec	2,5
cu.m/y	65 000
(Circulating cooling water, 1/sec	15

Potable water demand (factory), cu.m/y	5.000
l/sec	0,2
Potable water demand (residential area)	
cu.m/y	20.000
l/sec	0,6
TOTAL	
cu.m/y	90.000
l/sec	3,3

6.3.1.3 Power Consumption

Specific power consumption per one ton of cement

kWhrs	120
Annual power consumption MWhrs	7.560
Residence and reserve <u>MWhrs/y</u>	140
Total MWhrs/y	7.700

6.3.2 Description of Departments

6.3.2.1 Production Departments

01 Limestone and Clay Extraction

Limestone and clay deposits are situated at MEHAN, 17 km south to LASHIO Township.

Limestone is very pure over the whole deposit area (CaO content above 52%) with very low content of harmful concentrations.

It is a case of high-quality and homogenous raw material where chemical composition does not change substantially either over the surface or over the depth of the deposit. Taking into account chemical composition, limestone is fully suitable for cement as well as lime production. Reserves estimated at 19,10 million tons are sufficient for 200 years of cement production in a 200 TPD cement plant.

Clay represents fill of depressions among partial fractures of limestone from the southern side. Clay reserves are sufficient.

Before beginning of any quarrying operation access to both deposits shall be set up by a gravel-paved road.

Limestone will be quarried by using the conventional benching technique with height of bench of 15 m, quarry face advance is from south to north upwards. Two benches situated at 970 and 985 m respectively from the sea level are proposed. They will be connected one to another by a haulage road.

Breaking out the rock will be carried out by single-row blasting technique. Bore-holes for blasting will be prepared by a drilling machine. Compressed air as prime mover will be supplied by a compressor in tow.

Broken-out stone will be loaded to haulage trucks by a wheel loader with bucket capacity of 2cu.m.

The trucks will be of 6 t payload.

Clay will also be quarried by using the benching technique, height of face equal to 5 m.

Clay will be mined by a front loader from the face and loaded onto haulage trucks.

Capacity requirements:

Raw mix shall consist of 80% of limestone and 19% of clay. Taking account of 1% of loss during quarrying and loading, 1% of moisture content in limestone and 18% of moisture content in clay, capacity of quarry shall be as follows:

Annual limestone output, TPY	78 400
Annual clay, TPY	26 300
Total	104 700

Single-shift operations in quarrying of limestone and clay are proposed.

Working days per year	230
Daily output, TPD	455
Hourly output (6,5 effective hours per shift), TPH	70

The loader and the haulage trucks will work in one-week cycles as follows: four days in limestone quarry and one day in clay pit.

02 Sand and Hematite Extraction

Since a two-component raw-mix is proposed to adopt no extraction of sand and hematite is taken into account.

These correction components should be available for production of high-quality a special cements.

03 Raw Materials Crushing

The crushing plant is intended for crushing of limestone.
Input rock size 600x600x600 mm
Output rock size 0-25 mm

Limestone hauled from quarry will be discharged into the receiving hopper under which is installed a variable-speed apron feeder which in turn will feed bulk limestone into an impact-hammer crusher. Crushed limestone will be discharged onto a stockpile which is inside of the storage hall, by means of a conveying belt.

Throughput of the crushing plant is estimated at 70 TFH.

Requirements on crushing:

Annual demand of limestone, TPY	77 600
Daily demand of limestone, TPD	337
Hourly output of the plant, (6,5 effective hours per shift), TPH	52

04 Storage

A grab-crane contained roofed-hall will store limestone, clay, gypsum, coal and clinker.

Individual components will be conveyed to the hall as follows:

- limestone by conveying belts from the crushing plant;
- clay by trucks tipped directly to the respective storage compartment;
- gypsum and coal by a conveying belt and a bucket elevator from the gypsum and coal crushing plant.

Handling of various materials inside the storage hall will be provided by two (2) grab cranes with grab capacity of 2,5 cu.m. One of them will be used for handling raw materials, the other one for gypsum, coal and clinker.

Storage capacity

Component	t	Reserve, days
Limestone	15 600	60
Clay	4 500	60
Gypsum	300	30
Coal	1 400	30
Clinker	6 000	30

Extended storage capacity of raw materials is justified by requirement of extended production of clinker by 2 months during the rainy season when quarrying operations are difficult.

05 Raw Grinding

Components of raw materials are continuously fed from storage by the grab crane to the respective bins, situated in the storage hall. Components are proportioned by automatic weigh-feeders to the raw mill. Proposed output of the grinding unit shall be 18 TPH grinding fineness 12 to 14% residue on the sieve with 4900 mesh per sq.cm.

A pneumatic closed-circuit grinding plant including tube mill, air separator, double cyclone separator and mill fan, is proposed. Drying takes place simultaneously with grinding by using waste hot gases from preheater.

Dust separation of the raw grinding plant will be provided by

an electric precipitator completely with a spray tower common both for the raw grinding plant and the kiln. Estimated dust pollution shall be below 0,150 g per cu.m.

Raw meal is conveyed from the mill to the homo silos by pneumatic troughs and a bucket elevator.

The conveying system includes a sampler designed to check chemical composition of raw meal.

Annual consumption

of raw meal incl. coal ash, TPY	96 000
thereof: - coal ash (1%), TPY	960
- raw meal, TPY	95 040

Daily consumption of raw meal, TPD

Weekly consumption of raw meal, TPW

Grinding plant output, TPH

Effective running time

..... 3 shifts/day

..... 6 days/week

..... 257 days/year

06 Homogenizing

Raw meal will be homogenized by a continuous blending system consisting of two combined silos. Raw meal will be conveyed to the silos by a bucket elevator and pneumatic troughs. Homogenization process takes place both by feeding the silo at several inlets at the same time and by fluidization by means of admission of compressed air at the bottom of the silos. Compressed air for aeration and fluidization will be supplied by rotary air blowers. Raw meal is discharged from the silos to a weighing system and fed to the kiln preheater by a bucket elevator.

The weighing system consists of a proportioning bin mounted on load-cells and a flowmeter.

Storage capacity of silos, t

Daily consumption in kiln, TPD

Raw-meal storage reserve, days

07 Clinker Burning

Clinker will be burned in a kiln system including a preheater and a short rotary kiln equipped with a planetary cooler. Raw meal enters to the upper part of the preheater to be heated up by hot waste gases from the kiln during tangential fall through the preheater.

Preheated and precalcined raw meal enters the rotary kiln where final calcining and sintering take place.

Clinker will be cooled down in the planetary cooler by secondary air. Raw meal gate systems between stages of preheater and kiln consist of swinging flaps.

Oversized lumps of clinker (30 mm and more) shall be ground by a clinker jaw grinder.

Cooled down clinker will be conveyed to the storage hall by a bucket conveyer.

Dedusting of waste gases will be provided by a system consisting of a kiln fan, a spray tower, an electric precipitator and a chimney fan.

In case of a simultaneous operation of the kiln with the raw mill, hot waste gases are used in the raw mill for drying. Dust separated in the electric precipitator will be handled as follows:

- In case of simultaneous operation raw mill/kiln, dust will be conveyed with raw meal to the homo silos;
- In case of operation of the kiln alone dust will be conveyed via the kiln-feeding system back to the kiln.

Kiln output:

TPY	60 000
TPD	200
TPH	8,33
Heat consumption, kJ/kg clinker	3 980
kcal/kg clinker	950
Effective working days per year	300
Time utilization of kiln, %	82

08 Gypsum and Coal Crushing

Gypsum and coal will be purchased from existing mines. It is proposed supplies will be provided by the factory transportation.

Gypsum transportation distance : 63 km

Coal transportation distance : 36 km

Gypsum and coal of input size of 0 to 350mm will be crushed in the vicinity of the storage hall.

In order to maintain the required purity of individual products of crushing, supplies shall be provided in weekly cycles, e.g. four days of coal supplies and one day of gypsum supplies.

Gypsum and coal will be tipped into a receiving hopper of the crushing plant. Under the hopper is a speed-controlled apron feeder designed to feed a hammer crusher. Crushed product with size of 0 to 20 mm is conveyed to pertinent compartments of the storage hall by means of a bucket elevator.

Capacity requirements:

	Gypsum	Coal
Annual consumption, TPY	3 060	13 560
Daily consumption, TPD (230 effective days/year)	13,3	59

Proposed output of the crushing plant is 30 TPH.

09 Coal Grinding

Coal (lignite) of lower calorific value of 22 MJ/kg in fresh state will be used as fuel for clinker burning.

A grab crane will feed coal from the stockpile inside the storage hall into a bin. Coal is fed from the bin to an air-sweet mill by means of a table feeder and a belt conveyor.

Ground coal passes then through a bladed rotor separator to a cyclone collector. The pulverized coal collected in the cyclone is temporarily accommodated in an intermediate storage bin from which it is automatically fed to the kiln burner by a screw feeder.

The proposed throughput of the coal grinding plant is 1,5 to 2 TPH.

Annual consumption of coal, TPY	12 600
Daily consumption of coal, TPD	36,2
Hourly consumption of coal, TPH	1,51

10 Cement Grinding

Portland cement will be product of grinding of clinker with gypsum.

The cement grinding will be situated in close vicinity of the storage hall. The storage hall includes feeding bins for gypsum and clinker. The feeding bins will be filled by the grab crane. Under the feeding bins are weighers feeding the components in the mill.

The open-circuit grinding plant includes a tube mill. After grinding, cement is transported to cement silos by a bucket elevator and a screw conveyor.

Dust emissions from the cement mill and the conveying system will be separated by a fabric filter.

Cement grinding plant throughput
 at 2 700 sq.cm/g fineness (Blaine): 15 TPH

Annual production of cement, TPY 63 000

Daily production of cement at 230
 eff.days/year TPD 274

Hourly production of cement at
 20 hrs/day, TPH 13,7

11 Cement Storage

Cement will be held two concrete silos with total storage capacity 2 500 t.

The silos will be emptied by pneumatic discharge devices and

cement will be conveyed to an intermediate bin in the packing plant by screw conveyors and a bucket elevator.

Dust emissions will be collected in a fabric filter. It is recommended to equip the silos with side discharge devices for bulk loading.

Storage capacity of silos, t	2 500
Daily production of cement, TPD	300
Storage reserve, days	8

12 Packing and Loading

Cement will be despatched exclusively packed in six-ply paper sacks by road vehicles. A four-spout packing machine with capacity of 800 sacks per hour shall be used.

The filled sacks will be conveyed by flat belt conveyors to the loading ramp. The sacks will be placed and stacked on the floor of vehicles by means of two belt mobile loaders.

Annual production of cement, TPD	63 000
Daily production, TPD	274
Packing machine output, TPH	40

The pack-house includes a store of paper sacks.

Annual consumption of sacks, pcs	1 323 000
Daily consumption, pcs	6 000
Reserve of sacks (300 000 pcs), days	50
Required storing area, sq.m.	200

13 Electrical Equipment

Data:

- Power demand	kW
. High tension consumers	1 710
. Low tension consumers	1 770
. Light and power	400
Installed kW total	3 880

. Maximum effective power demand 2 100

- High tension system: 3-phase, 3-wire, 6600 V, 50 Hz
- Low tension system : 3-phase, 4-wire, 400 V, 50 Hz
- Short circuit capacity of HT bus: 250 MVA
- Power factor required $\cos \varphi = 0,95$

Scope of Electrical Equipment:

- Feeding system completely with transformers
- Distribution system
- Motors
- Cabling
- Lighting system
- Earthing system
- Power factor correction and measurement

Feeding system of the cement factory will consist of HT incoming feeder and two transformer outgoing feeders, two step-down transformers and LT feeders to MCC's and panels.

Distribution system will comprise outlets for HT motors, motor control centres and outlets and distribution panels.

Motors rated 110 kW and more will be supplied with 6 600 V and will be of slip-ring type.

Motors rated up to 100 kW will be supplied from 400 V system. Those rated below 30 kW will be of a squirrel-cage type and 30 kW and more of a slip-ring type.

The slip-ring asynchronous motors shall be complete with oil-immersed starters.

Machinery where variable speed is required will be equipped with DC motors complete with solid-state control units.

Lighting system will include a separate step-down lighting transformer, a lighting main switchboard, lighting distribution panels and incandescent/fluorescent lighting fixtures.

Feeding and distribution cables will be mounted on trays separately for each system both in cable ducts and fixed on walls of building.

Earthing system for electrical circuits will consist of earthing galvanized-steel conductor properly laid in earth with connection outlets in each electrical room. Required resistance shall be below 2 Ohms. Lightning protection systems shall have their own earthing system individually for each building. Required resistance shall be below 15 Ohms.

Both central and individual power correction will be used. Central power factor correction units will consist of low-voltage panels containing capacitor banks. The panels will be connected to LT bus.

Individual power factor correction system will be used for HT motor and will consist of capacitor banks connected directly to HT motor terminals.

Power measuring device will be installed at each transformer receiving cell of the switchgear.

HT feeding and distribution system will be integrated in HT switchgear which will be installed in the Substation building. LV feeding system will be integrated in LT switchgear to be installed in the Substation building.

MCC's and panels will be put up in electrical rooms pertinent to individual plant departments.

14 Instrumentation and Controls

This equipment will enable the control engineers to safely control and monitor operation of machinery and process variables.

It will consist of two basic groups:

- a) Motor control and monitoring
- b) Measuring and control

The cement plant will be controlled and monitored from three decentralized control panels as follows:

- Crushing plant control panel
- Central control panel in CCR
- Packing and loading control panel

Any panel will basically consist of three parts:

- Panel with mimic diagram
- Panel with indicating instruments
- Panel with controls.

The classical hard-wired relay system will be used for motor control and monitoring. Motor control system must be so designed that no local start/stop function is possible without permission of the control panel operator for safety reasons. Motor-control process-input/output equipment will include MCC's, limit switches, safety devices, etc.

Process variables will be measured, indicated, recorded and controlled, if necessary by analogue instruments. Standard analogue signal (e.g. 4-20 mA) will be used.

Electrical rooms housing control equipment shall be air-conditioned and pressurised.

Control equipment will also include telephone system, public-address system and paging devices necessary for communication reasons.

6.3.2.2 Service Equipment

20 Substation

Substation is utility equipment to be owned by Electric Power Corporation permitting to connect the plant-owned electrical equipment to a power-supply system.

It will comprise a circuit-breaker, an isolator, lightning arrestors, a utility step-down transformer, measuring devices and conductors. All items of substation equipment shall be of out-door design.

Utility voltage	: 3phase, 3wire, 33 kV 50 Hz
Plant voltage	: 3phase, 3wire, 6,6kV 0,4kV 50 Hz
Maximum power demand	: 2100 kW

21 Diesel Power Station

The objective the Diesel power station is standby power supply.

In case of blackout, the 200 kVA (184 kW) generator will automatically start and after run-up feed a section of low-tension bus in turn feeding selected electric consumers, e.g. kiln auxiliary drive, cooling fans, emergency lighting with electric power until utility power supply is restored. Utility power is actually generated by the KON-NYAUNG and MANSAN hydro-electric power plants, belonging to Ministry of Mines, Mining Corporation No.1 who sell electric power to Electric Corporation, LASHIO.

Preferably a 6-cylinder, 4-stroke, 1000 RPM Diesel engine-driven generating set, rating 3-phase 380 V A.C., 50 Hz, 200 kVA, should be selected. With respect of simple operation and maintenance, the Diesel generating set is to be equipped with a radiator cooling system.

The set shall be installed in a separate building-power house. Provisions must be made for sufficient machinery space, floor with adequate load-bearing capacity and with cable ducts, power house ventilation, silencing and sound-proofing.

Automatic control and monitoring device shall provide following functions:

- starting (by means of a storage battery or starting air)
- monitoring (enable, fault message, safety shut-down)
- stopping (load remove, generator cut out, stop).

22 Compressed-Air Plant

Compressed air will be used for:

- aeration and fluidization of cement in silos and packing plant, rated p. 0,3 MPa
- control of some instruments, cooling, cleaning and maintenance work, rated pressure 0,6 MPa.

Consumption of compressed-air (0,3 MPa), cu.m.p.hr. 1500
" " " (0,6 MPa), cu.m.p.hr. 300

23 Heating Station, Air-conditioning

This station will be designed for heating of water for central heating during cold season and water supply for air-conditioning units.

Coal (lignite) will be used as fuel.

Consumption of coal, TPY 500

24 Water Supply and Distribution

Water supply system shall be designed so as to meet requirements in service water, cooling water and water which is lost by evaporation or leakage as well as potable water for personnel and near-by residential area.

The required quantity of water shall be obtained from NARYAMA creek flowing in the distance of 5 km from the proposed Site. The existing abundance of the water source is 80-100 l/sec.

Rise of the supply line between the water source and the proposed plant is 140 m. The water drop of the first part of the line will be collected in a pumping station. From the pumping station to the Site shall water be pumped. Pumping shall be provided by two pumps, one of them as a stand-by. The pumping station shall also be equipped with a pressure tank in order to damp shocks caused by outlet pipeline.

The factory-side water station shall comprise:

- A steel reservoir for accumulation of raw water;
- A mechanical water treatment plant consisting of pressure sand filters and spiral pumps used for washing of the filters;
- A waste water disposal equipment consisting of collectors of effluents, sludge pumps, sedimentation tanks and drying fields.

The in-plant water distribution system shall comprise an automatic pumping station with output of 4,5-10 l/sec.

The cooling water system shall in principle consist of a pumping station providing circulation of cool and warmed-up water. Output of the pumps should be designed at 7-20 l/sec.

Water delivered from the machinery and equipment will be cooled in cooling towers rated at 15-54 cu.m/hr and 5-30⁰C temperature drop.

Potable water supply system will use mechanically prepared raw water for further chemical treatment and bacteriological purification. Treated water shall be accumulated in an underground-reservoir and subsequently delivered to the potable-water distribution system by an automatic pumping plant.

25 Laboratory

The laboratory shall be equipped with suitable office furniture as well as the apparatus required for quality control.

The scope of duties to perform by the laboratory should include chemical and physical analyses of raw materials, raw meal, coal, coal ash, clinker and cement in conformity to the relevant standards.

The laboratory facilities will be a part of the Administration Building and consist of preparation of samples, technical laboratory, laboratory for physical analysis, weighing room.

26 Workshops

The cement factory shall be equipped with facilities for carrying out routine repairs in its own workshops. The workshop will include following facilities: machine shop, fitters shop, smiths' shop, electrical repair shop, welders' shop, etc.

27 Stores

The stores shall contain spare parts, grinding media, refractories, auxiliary materials and consumables.

28 Diesel Oil Tank

Two underground tanks with capacity of 25 cu.m each, for storing of Diesel oil, will be set up.

Diesel oil will be delivered to the factory by bowlers

Diesel oil will be distributed by pumping stands. Supply of Diesel oil for the Diesel Power Plant shall be provided by an adequate feeding system.

Diesel Oil consumption:	Cu.m/year
- Quarry	54
- Coal, Gypsum Transport	82
- Diesel Power Station	4
<hr/>	
Total	140
Diesel oil reserve, days	100

29 Store of Lubricants

Oils will be stored in vertical tanks and metal drums and greases in tins or cans placed on shelves.

Consumption of lubricants, kg/year	20 000
Current reserves, kg	5 400
Reserves of lubricants, days	90

30 Transport Facilities

These facilities include any vehicles, lorries for transport of coal and gypsum, personal cars.

46 Hydro-electric Power Plant

Main objective of setting-up a hydro-electric power plant is making provision of continuous power supply in order to meet requirements of the planned cement plant for electric power supply and boost capacity of the E.P.C. power line. The existing hydro-electric power plants in MANSAN and KON-NYAUNG will most probably fail to supply enough power during dry season due to low flow of water in the NEMYO creek.

The proposed HE power plant shall be set up downstream KON-NYAUNG and upstream MANSAN at a waterfall. It shall be called KON-NYAUNG II. It shall consist of four generating sets, each rated 0,8 MW. Each set shall be provided with a separate steel penstock supplying water to a turbine. No flume-line should be foreseen due to the design of the penstock (see Figure 6.1 overleaf). A synchronous generator coupled with the turbine shall have its own electric panel housing power-receiving apparatus, synchro and control devices. The electric panels shall be housed together with generating sets in a simple-design building. Output of the HE power station shall be controlled by:

- a) output of turbines (angle of blades) and
- b) number of sets in parallel operation.

Generated power shall be supplied to the E.P.C. power system via a step-up 6,6/33kV transformer rated 3,2-4 MVA.

Specifications:

Head = 29 m; water flow = 16 cu.m/sec.

Rating of one set: electric output = 0,8 MW; flow = 5,3 cu.m/sec.

Number of generating sets = 4

Output voltage = 3-phase 6,6 kV 50 Hz

Annual generated power = 14.000 MW hours

Cement plant requirements = 7.700 MW hours; 2,1 MW peak load

Surplus of electric power will be available for sale to E.P.C.

6.4 Equipment

6.4.1 Production Equipment

01 - Limestone and Clay Extraction

Item	Qty	Name	Power	Weight
01.01	1	Drilling rig	-	1,4
01.02	1	Towed compressor	-	2,6
01.03	4	Pneumatic hammer	-	0,1
01.04	1	Loader, capacity 2 cu.m.	-	26,5
01.05	4	Truck	-	28,0
Power demand, kW			-	-
Total weight, tons			-	58,6

03 - Raw Materials Crushing

Item	Qty	Name	Power	Weight
03.01	1	Hopper	-	6,0
03.02	1	Apron feeder	14	18,0
03.03	1	Crusher, 70 TPH	100	11,5
03.04	1	Belt conveyor	22	12,0
03.05	1	Conveyor bridge	-	12,2
03.06	1	Manual Hoist, 100 kN	-	2,6
03.07	1	Bag fabric filter	1	3,9
03.08	1	Radial fan	11	0,8
03.09	set	Troughs, hoppers	-	1,8
03.10	set	Steel supporting structures	-	3,2
03.11	set	Dedusting pipeline	-	1,2
Power demand, kW			148	
Total weight, tons				73,2

04 - Storage

Item	Qty	Name	Power	Weight
04.01	2	Bridge crane, 125 kN	84	95,0
04.02	5	Steel bin	-	30,0
04.03	6	Bin valve	-	1,2
04.04	set	Troughs, dischargers	-	1,4
04.05	set	Steel structures	-	6,3
04.06	1	Loader, 2 cu.m.	-	26,5

Power demand, kW 84

Total weight, tons 160,4

05 - Raw Grinding

Item	Qty	Name	Power	Weight
05.01	1	Limestone weigh-feeder	1,5	0,6
05.02	1	Clay weigh-feeder	1,5	0,6
05.03	1	Sand weigh-feeder	1,5	0,6
05.04	1	Belt conveyor	5,0	3,4
05.05	1	Conveyor bridge	-	6,0
05.06	1	Double-Butterfly gate	5,5	2,2
05.07	1	Tube mill, 18 TPH/including grinding media/	776	108,0
05.08	1	Bladed rotor separator	-	4,1
05.09	2	Cyclone air separator	-	4,0
05.10	2	Rotary valve	2,2	0,9
05.11	1	Mill fan	90	8,3
05.12	1	Flow weigh feeder	0,5	0,4
05.13	1	Hot gas producer, 2,1 GJ/hr	10	3,5
05.14	1	Pneumatic trough	-	1,2
05.15	1	Pneumatic trough	-	1,6
05.16	2	Fan	20	0,6
05.17	1	ID kiln fan	110	6,8
05.18	1	Spray tower	-	29,9
05.19	set	Water-Spray system	14	2,0

05.20	1	Electric precipitator incl. electrical equipment	118	90,0
05.21	1	Chimney fan	75	4,4
05.22	2	Screw conveyor	11	1,9
05.23	1	Reversible screw conveyor	4,4	1,2
05.24	2	Fabric filter	2,0	7,7
05.25	2	Radial fan	15,0	1,7
05.26	set	Piping incl. flaps	3,0	22,0
05.27	set	Troughs, outlets, slides	-	8,5
05.28	set	Steel structures	-	7,8
05.29	3	Manual hoist, 32 kN	-	0,4
05.30	3	Grinding media charger	-	0,9
05.31	set	Water and compressed air piping	-	2,0
		Power demand, kW	1 266,1	
		Total weight, tons		333,2
		Refractories, insulations, tons		50,0

06 - Homogenizing

Item	Qty	Name	Power	Weight
06.01	1	Bucket elevator, 18 TPH	15	9,5
06.02	set	Feeding troughs incl. distribu- tion vessels	-	2,4
06.03	2	Fan	20	0,6
06.04	1	Bag filter	1	3,9
06.05	1	Radial fan	7,5	0,9
06.06	set	Silo aeration	-	4,2
06.07	2	Rotary air blower	15	0,9
06.08	2	Rotary air blower	11	0,8
06.09	2	Rotary air blower	15	0,9
06.10	2	Silo discharger	-	0,8
06.11	2	Pneumatic trough conveyor	-	0,6
06.12	2	Fan	7,0	0,6
06.13	1	Bucket elevator	5,5	6,1
06.14	1	Pneumatic trough conveyor	-	0,2

06.15	1	Fan	3,5	0,3
06.16	1	Test bin incl. feeding and conveying	5,5	3,2
06.17	1	Flow weigh feeder	-	0,4
06.18	1	Air trough conveyor	-	0,3
06.19	1	Fan	3,5	0,3
06.20	1	Bag filter	1,0	3,9
06.21	1	Radial fan	7,5	0,9
06.22	set	Slides, dischargers	-	2,1
06.23	set	Steel structures	-	3,2
06.24	set	Dedusting piping	-	2,4
06.25	set	Compressed air distribution	-	1,8

Power demand, kW 118,0

Total weight, t51,2

07 - Clinker Burning and Cooling

Item	Qty	Name	Power	Weight
07.01	1	Pneumatic vertical conveyor, 15 TPH	-	2,8
07.02	2	Rotary blower	48	3,0
07.03	1	Preheater	3	55,8
07.04	1	Rotary kiln incl. planetary cooler, 2,5x40/60m; 8,5 TPH	62,5	220,0
07.05	1	Burner incl. accessories	60	6,8
07.06	1	Primary air fan	30	1,4
07.07	1	Secondary air fan	7,5	0,9
07.08	1	Planetary cooler cooling fan	5,5	0,8
07.09	1	Clinker jaw crusher	30	5,3
07.10	1	Bucket conveyor. 15 TPH	15	20,9
07.11	1	Bucket conveyor, 15 TPH	15	18,0
07.12	1	Bag filter	1	3,9
07.13	1	Radial fan	7,5	0,8
07.14	1	Manual bridge hoist, 50 kN	-	1,1
07.15	set	Slides, dischargers	-	4,5

07.16	set	Steel structures	-	1,6
07.17	set	Dedusting piping	-	1,2

Power demand, kW 285
 Total weight, t 348,8
 Refractories, insulations, t 150

08 - Gypsum and Coal Crushing

Item	Q'ty	Name	Power	Weight
08.01	1	Armoured hopper	-	4,2
08.02	1	Apron feeder	7,5	5,9
08.03	1	Hammer crusher, 30 TPH	45	5,5
08.04	1	Belt conveyor	5,0	3,0
08.05	1	Bucket elevator	11,0	4,4
08.06	1	Manual bridge hoist, 100 kN	-	2,6
08.07	1	Bag filter	1,0	3,9
08.08	1	Radial fan	7,5	0,8
08.09	set	Slides, dischargers	-	1,2
08.10	set	Steel structure	-	3,0
08.11	set	Dedusting piping	-	1,2

Power demand, kW 77,0
 Total weight, t 35,7

09 - Coal Grinding

Item	Q'ty	Name	Power	Weight
09.01	1	Belt weigh-feeder	1,5	0,6
09.02	1	Belt conveyor, 5 TPH	5,0	3,4
09.03	1	Conveyor bridge	-	6,0
09.04	1	Double-Butterfly gate	3,0	1,4
09.05	1	Tube mill; 2,2 TPH	76,0	16,3
		grinding media		5,6
09.06	1	Bladed rotor separator	-	1,4
09.07	1	Cyclone air-separator	-	1,8

09.08	1	Rotary valve	1,1	0,4
09.09	1	Pulverized coal bin, 10 cu.m.	-	2,5
09.10	1	Outlet gate	-	0,2
09.11	1	Double screw conveyor feeder; 2,2 TPH	3,0	0,9
09.12	1	Mill fan	22,0	2,0
09.13	1	Bag filter	2,2	3,9
09.14	1	Radial fan	7,5	0,8
09.15	set	Inert gas arrangement	3,0	1,3
09.16	set	Fire-fighting equipment	3,0	1,3
09.17	set	Explosion-resistant devices	-	0,3
09.18	set	slides, dischargers	-	1,8
09.19	set	Steel structures	-	2,6
09.20	set	Air-supply piping	-	3,0
09.21	1	Manual hoist 50 kN	-	1,1
09.22	2	Manual hoists	-	0,3
09.23	1	Hot gas producer; 0,85 GJ/hr	10,0	2,0

Power demand, kW 137,3
 Total weight, t 60,9
 Insulation, t 3,8

10 - Cement Grinding

Item	Qty	Name	Power	Weight
10.01	1	Clinker belt weighfeeder	1,5	0,6
10.02	1	Gypsum belt weighfeeder	1,5	0,6
10.03	1	Belt conveyor	3,0	2,4
10.04	1	Tube mill incl. grinding media, 15 TPH	525,0	137,0
10.05	1	Double-Butterfly gate	-	0,5
10.06	1	Screw conveyor	18,0	4,0
10.07	1	Bag filter	3,0	11,2
10.08	1	Radial fan	30,0	2,1
10.09	set	Slides, dischargers	-	4,2
10.10	set	Steel structures	-	4,8
10.11	set	Dedusting piping	-	2,2
10.12	set	Cooling water piping	-	1,3

10.13	1	Electric bridge crane, 125 kN	38,0	12,6
10.14	2	Manual hoist, 32 kN	-	0,6
10.15	3	Grinding media charger	-	0,9

Power demand, kW620

Total weight, t 185,0

11 - Cement Storage

Item	Qty	Name	Power	Weight
11.01	1	Bucket elevator, 15 TPH	15,0	8,5
11.02	2	Slide gate incl. remote control	0,6	0,3
11.03	2	Screw conveyor	11,0	3,8
11.04	1	Bag filter	1,0	3,9
11.05	1	Radial fan	7,5	0,8
11.06	2	Silo aeration system	-	6,4
11.07	2	Bulk cement loading device	-	1,5
11.08	2	Bottom silo discharging system	-	1,2
11.09	set	Pneumatic control system	3,0	1,5
11.10	2	Screw conveyor	11,0	3,8
11.11	1	Bucket elevator, 40 TPH	15,0	6,6
11.12	1	Screw conveyor	5,5	1,9
11.13	1	Steel gangway	-	2,7
11.14	set	Slides, discharge outlets	-	1,5
11.15	set	Steel structures	-	1,8
11.16	set	Dedusting piping	-	1,1
11.17	set	Compressed-air piping	-	0,9

Power demand, kW 69,6

Weight, t 48,2

12 - Packing and Loading

Item	Qty	Name	Power	Weight
12.01	1	Rotary sieve	3,0	1,9
12.02	1	Steel bin, 6 cu.m.	-	2,8

12.03	1	Four-spout packing machine, 800 bags/hr	0,3	1,7
12.04	1	Belt conveyor	4,0	4,5
12.05	1	Rotary bag cleaner	1,1	0,3
12.06	1	Bag applicator	1,2	0,4
12.07	2	Mobile belt loader	15,0	7,2
12.08	2	Belt tracks	-	3,6
12.09	1	Cement collecting bin, 4.5 cu.m	-	2,5
12.10	1	Screw conveyor	5,5	1,9
12.11	1	Bag filter	2,7	7,8
12.12	1	Radial fan	15,0	1,1
12.13	set	Slides, discharge outlets	-	4,5
12.14	set	Steel structures	-	6,5
12.15	set	Dedusting piping	-	2,1
12.16	set	Compressed air piping	-	0,9
12.17	1	Electric hoist, 32 kN	5,8	0,6
12.18	2	Manual hoist, 32 kN	-	0,6
12.19	2	Fork-lift truck, c. 1000 kg	-	4,2
12.20	1	Road weigh-bridge, 50 Mp	1,0	24,0

Power demend, kW 54,6

Total weight, t 79,1

13 - Electrical Equipment

Item	Qty	Name
13.01	1	6,6 kV switchgear line-up, short-circuit capacity of 250 MVA, consisting of 14 cubicles with small-volume oil circuit breakers;
13.02	1	Storage battery, 110 V D.C. completely with charger;
13.03	1	High-voltage power-factor correction capacitors, rating 370 kVar;
13.04	2	Dry insulation power transformer, rating 1000 kVA, connection Dy, ratio 6,6/0,4 kV, ONAF type of cooling;
13.05	2	Depto, rating 250 kVA, for lighting and residential area;
13.06	1	0,4 kV switchgear line-up completely with transformer-receiving cubicles, consisting of 14 cubicles,

- rated current 2000 Amps;
- 13.07 2 Low-voltage automatic power-factor correction panel with capacitor banks, rating 160 kVAR
- 13.08 1 Lighting distribution panel, 400V 3-phase 400 Amps
- 13.09 8 Motor control centres, 3-phase 400V, 600 Amps
- 13.10 set Copper cables, PVC-insulated
- 13.11 set Earthing system of galvanized steel strip

Total weight, tons 70

14 - Instrumentation and Controls

Item	Qty	Name
14.01	3	Control panel, consisting of 3 sections: <ul style="list-style-type: none"> a) flow diagram b) indicating instruments c) controls, located in following departments: <ul style="list-style-type: none"> - Central control room - Crushing plant - Packing and loading;
14.02	150	Instrumentation circuits for measurement and control, if required, of process variables, e.g. temperature, pressure, level, flow, speed, position, consistency, electrical variables;
14.03	7	Proportioning and weighing devices for: <ul style="list-style-type: none"> - raw mill feed (4) - kiln feed (1) - cement mill feed (2)
14.04	300	Local switching cabinets for maintenance and repair of machinery
14.05	1	P.A.B.X. completely with equipment for 20 in-plant extensions
14.06	1	Public address system consisting of one central station, fifteen (15) local distributed stations;
14.07	set	Copper multicore PVC insulated cables

Total weight, tons 6

20 - Substation

Item	Qty	Name
20.01	1	Outdoor circuit-breaker, 33 kV 400 Amps;
20.02	1	Outdoor isolator, 33 kV 400 Amps;
20.03	3	Lightning arrester;
20.04	1	Outdoor oil transformer, rating 3200 kVA, ratio 33/6.6 kV, connection Yd;
20.05	set	Current and potential transformers for measuring of power supply;
20.06	set	Copper conductors
20.07	set	Steel supporting structures

Total weight, t 90

21 - Diesel Power Station

Item	Qty	Name	Weight
21.01	1	Diesel generating set, ratings 200 kVA, three-phase 400 V	14,2
21.02	1	Power distribution panel	-

Total weight 14,2

22 - Compressed-Air Plant

Item	Qty	Name	Power	Weight
22.01	2	Piston compressor, 1500 cu.m/hr; 0,3MPa	150,0	12,0
22.02	2	Piston compressor, 300 cu.m/hr. 0,7MPa	55,0	6,3
22.03	2	Air cooler	-	1,6
22.04	4	Pressure vessel, 10 cu.m.	-	6,6
22.05	1	Air filter	-	0,1
22.06	set	piping, fittings	-	4,7

Power, kW 205

Total weight, t 31,3

23 - Heating Station, Air Conditioning

Item	Qty	Name	Power	Weight
23.01	1	Complete heating plant	12,0	10,0

24 - Water Supply

Item	Qty	Name	Power	Weight
24.01	2	Horizontal pump; 4,5 l/sec.	15,8	0,4
24.02	1	Pressure vessel, v.1000 l,2PMa	-	1,8
24.03	5km	Steel pipeline. insulated;1,6MPa	-	60,4
24.04	1	Steel water-reservoir, 25 cu.m	-	5,5
24.05	2	Pressure filter	-	3,2
24.06	2	Spiral pump, 10 l/sec.	9	0,4
24.07	1	Back-wash water reservoir,45cu.m.	-	5,5
24.08	2	Immersible sludge pump, 15l/sec.	3	0,2
In-plant automatic pumping station for water distribution consisting of:				
24.09	2	Horizontal pump	7,5	0,3
24.10	2	Pressure tank, cap. 1600 l	-	2,4
24.11	1	Compressor	2,5	0,5
24.12	2100m	Steel piping; 1,6 MPa	-	29,4
Automatic cooling water pumping station consisting of:				
24.13	2	Horizontal pumps	11,1	0,3
24.14	2	Pressurized tank, cap. 1600 l	-	2,4
24.15	1	Compressor	2,5	0,5
24.16	2	Spiral pump, 15 l/sec	7,5	0,5
24.17	1	Microcooler, 15-54 cu.m/hr	4,5	1,5

Power demand, kW69,4

Total weight 115,3

25 - Laboratory

Item	Qty	Name	Power	Weight
25.01	1	Preparation of samples	2,0	1,5

25.02	1	Preparation of standard specimens	3,0	0,3
25.03	set	Shift laboratory	-	0,2
25.04	set	Technical laboratory	3,0	1,1
25.05	set	Laboratory for chemical analysis	-	0,7
25.06	set	Water distillation apparatus	1,0	0,1
25.07	set	Fuel analysis device	1,0	0,1
25.08	set	Glassware	-	0,8
25.09	set	General laboratory apparatus	-	0,3
25.10	set	Chemicals	-	0,4

Power demand, kW 10

Total weight, t 5,5

26 - Workshops

Item	Q'ty	Name	Power	Weight
26.01	2	Engine lathe, distance - 1000 mm	12,0	3,8
26.02	2	Universal milling machine	6,0	2,6
26.03	1	Vertical shaping machine	7,0	5,2
26.04	1	Horizontal shaping machine	3,0	1,8
26.05	2	Double-wheel grinding machine	3,0	1,6
26.06	1	Universal tool-sharpening grinding machine	2,0	1,4
26.07	1	Grinding attachment for twist drills	3,0	1,1
26.08	2	Upright drilling machine	3,0	0,8
26.09	1	Manual bending machine	-	1,2
26.10	1	Universal shearing machine	4,0	2,3
26.11	1	Smith's shop	2,2	0,3
26.12	3	Arc-welding machine	42,0	1,3
26.13	1	Welding work-table	0,6	1,1
26.14	1	Column drilling machine	1,5	0,6
26.15	4	Work bench	-	1,3
26.16	1	Vulcanizing set	12,0	1,2
26.17	1	Power hacksaw	1,5	0,9
26.18	1	Shearing machine for sections	1,5	1,5

26.19	4	Tool-box	-	0,3
26.20	4	Single-row rack	-	0,4

Power demand, kW 104,3
Total weight, t 32,7

27 - Stores

Item	Q'ty	Name	Power	Weight
27.01	4	Rack for round material	-	1,2
27.02	8	Single-row rack	-	1,9
27.03	2	Column hoist	2,2	3,7
27.04	4	Tool-box	-	0,3

Power demand, kW 2,2
Total weight 7,1

28 - Diesel Oil Storage

Item	Q'ty	Name	Power	Weight
28.01	2	Underground reservoir 25 cu.m.		7,0
28.02	2	Fuel stand	1,2	0,4
28.03	set	Piping, fittings, accessories	-	3,3

Power demand, kW 1,2
Total weight, t 10,7

29 - Lubricants Store

Item	Q'ty	Name	Power	Weight
29.01	1	Vertical reservoir 1,25 cu.m.	-	0,5
29.02	4	Vertical reservoir 0,6 cu.m.	-	1,3
29.03	2	Vertical waste oil tank; 0,6 cu.m.	-	0,7

29.04	7	Oil pumps	10,5	0,9
29.05	7	Wall-type measuring device	-	0,5
29.06	set	Piping, fittings, accessories	--	0,9
29.07	set	Single-row rack	-	0,3

Power demand, kW 10,5
 Total weight, t 5,1

30 - Transport Facilities

Item	Qty	Name	Power	Weight
30.01	8	Truck	-	56
30.02	1	4WD car	-	1,2
30.03	1	Saloon	-	0,8
30.04	1	Hydraulic lifting unit	2,2	0,4
30.05	1	Pulley-block; 1,6 Mp	-	0,2
30.06	2	Work bench	-	0,6
30.07	1	Drilling machine	1,5	0,4
30.08	set	Tools	-	0,2

Power demand, kW 3,7
 Total weight 59,8

46 - Hydro-electric Power Plant

Item	Qty	Name	Power	Weight
46.01	4	Hydro-electric generating set 0,8 MW completely with electric panel	3 200	64
46.02	4	Penstock	-	48
46.03	4	Outlet piping	-	8

Installed capacity, kW 3 200
 Total weight, t 120

6.5 Civil Engineering

Design of buildings and structural works results from requirements on installation of machinery and equipment as well as those on architectural design and environmental impact.

Design of structures of production buildings shall be based on using concrete and/or reinforced concrete elements.

Simple timber structures with brick masonry and galvanized steel-sheet roofing shall be used for auxiliary and service buildings.

Building and structural materials of local origin, such as stone, cement, wood, concrete, bricks, should be used to the maximum extent.

Importation shall be limited to deliveries of special materials, such as doors, windows steel structures etc.

6.5.1 Data

Site area:

- basic, sq.m. 41 658
- extension included, sq.m. 65 500

Built-up area:

- production departments, sq.m. 6 727
- auxiliary and service buildings, sq.m. 3 120

Roads, parking areas, sq.m. 11 517

Landscaping, sq.m. 20 294

Built-up space, cu. m. 143 020

The total area of the site takes account of future extension of the plant, if required.

6.5.2 Classification of Buildings and Civil Works

6.5.2.1 Site Preparation and Development

Firstly, roads enabling access to the site (0,1 km) and to limestone/clay deposits (0,5 km) from the national road network shall be made.

Secondly, surface of the site shall be rid of any vegetation, and evened.

Thirdly, the construction Contractor will set up his facilities, such as site workshops and stores.

Fourthly, provisions for power and water supplies, as described in 6.3, shall be made.

Fifthly, housing for construction workers and a guest-house for Contractor's delegated supervising staff and project implementation management.

6.5.2.2 Description of Buildings and Civil Works

Production buildings for the following departments: crushing plant, raw/cement grinding plants, clinker burning and packing plant, shall be erected by using a reinforced concrete monolithic structural system.

Foundations for heavy equipment shall be prepared from reinforced monolithic concrete. Design of the foundations will take account of load-bearing capacity of subsoil (clay). Pile and slab base foundations will be considered. Skeletons shall be made of RC columns beams. RC plates with steel cladding will be used for roofing.

Facing of the building shall be made where necessary for operational reason and galvanized steel sheets or bricks shall be applied.

The storage hall will consist of concrete columns and overhead-crane rails. The hall shall have no facing and roofing shall consist of steel structure and galvanized steel plates.

Compartments for storing of individual components shall be set up by concrete monolithic walls.

The hall will include monolithic reinforced concrete bins for storage of raw materials, coal clinker and gypsum.

The raw-meal and cement silos shall be of the following design: the facing will be set up by means of sliding hydraulically-operated framework and the whole structure shall be based on a RC foundation slab. Roofing shall be of RC plates combined with a steel structure.

Since the load-bearing capacity of subsoil clay sediments is not more than 0,07 MPa in case of erection of the heavy buildings, i.e. silos the load-bearing capacity of soil shall be increased by substitution of sediments by compacted gravel layer.

Auxiliary buildings (substation, Diesel power plant, compressed air plant, heating station, workshops and stores) shall be designed as woodwork consisting of timber columns and lattice girders. These buildings shall be based on monolithic RC foots and faced by brickmasonry filling of the woodwork. Doors and windows frames shall be metallic. Roofing structure shall comprise galvanized steel sheets.

Water-supply pipeline shall be made from steel tubes laid in trenches.

Building for pumping stations shall be of the same design as auxiliary buildings. Rain shall be disposed of by gutters.

Waste sewage system shall consist of a sump and waste disposal piping.

Lamps for outdoor lighting as well as wiring shall be mounted on top of the wooden poles. Roads and parking areas shall be made from compacted fine aggregates on a stone sublayer.

Arrangements should be made for future concrete surface. Roadway width: 6 m.

The Administration building including Laboratory shall be erected by making a load-bearing woodwork laid on concrete foots and roofing by steel plates on wooden lattice girders. The building shall be faced by brick masonry and wooden doors and windows. The Administration building will also include a canteen, area of 150 sq.m., rated for 120 personnel. The offices shall be equipped with air-conditioning and furniture adequate to position of particular staff.

Fencing shall be prepared by RC columns and wired network.

The Gate-house will be a brick-filled woodwork with galvanized steel-plate roofing.

The housing quarters shall comprise:

- 10 one-family houses, surface area of 9x12 m
- 50 two-family houses, surface area of 9x12 m
- 2 supermarkets, surface area of 12x18 m
- 1 school, surface area of 12x18 m.

Utility connections:

- Access road to LASHIO-MANDALAY highway.
- Power and water will be supplied from the factory.

Houses shall be of woodwork frame, filled with brick masonry, roofing of steel galvanized plates on wooden trusses. Doors and windows shall be made of wood.

A guest-house will be a separate building erected off the housing quarters.

6.5.2.3 Operational Requirements

Lay-out of the factory shall be designed so as to respect safe distances between individual buildings due to fire prevention requirements. Stores of inflammables shall be set up in a sufficient distance from other departments.

The in-plant water distribution system includes a number of fire-fighting hydrants.

The lay-out of the factory shall also take into account safety regulations applicable in most of the countries.

6.6 Cost Estimate

6.6.1 Investment Costs

6.6.1.1 Machinery and Equipment

Machinery and equipment will be imported as a whole except of trucks and office furniture which are available at the local market.

Cost of imported machinery and equipment have been determined on the basis of the bid submitted by an European manufacturer, F.O.B. European port. Cost of the items available locally has been estimated according to the "Budget Estimate in Fiscal Year 1985-86 for Departments and Corporations under the Ministry of No. 1 Industries".

Survey of total costs is shown on the Schedule 6.1 "ESTIMATE OF INVESTMENT COST: EQUIPMENT".

Here are remarks to particular items:

- Item No. 7: CIF Rangoon,
includes freight charges and marine insurance from the European port to Rangoon;
- Item No. 8: Transport Rangoon-Lashio,
includes transport costs of 2260 tons of equipment, whereof 50% by trucks and 50% by railway;
- Item No. 9: Erection,
Based on experience, cost of erection is estimated at 11% of the cost of machinery and equipment (items 1+2+3+4)
- Item No.10: Contingencies,
include cost reserves estimated at 5% of total of items 1 to 9.
- Item No.11: Customs, taxes and charges,
respect tariffs and charges as acquired at Ceramic Industries Corporation.

6.6.1.2 Civil Engineering

Buildings and civil works will be carried out by the Construction Corporation. Steel structures, reinforcement bars and metallic products shall be imported.

Costs of civil works and buildings have been estimated by taking account of unit prices made available by CC, Rangoon and Lashio. The abstract of unit prices of particular civil works is stated below.

Survey of total costs is shown on the Schedule 6.3 "ESTIMATE OF INVESTMENT COST: CIVIL ENGINEERING WORKS" and the remarks referring to individual items are similar to those as stated in "EQUIPMENT".

Cost data:

- All kind of excavations
 - a) depth up to 2,m per 100 cu.ft K 24,-
 - b) 3,m 100 cu.ft K 31,-
 - c) 4,m 100 cu.ft K 38,-
 - d) 5,m 100 cu.ft K 45,-

- Backfillings
 - a) by using of excavated soil,
no transport included 100 cu.ft K 15,-
 - b) by using of excavated
soil, its transport
to the site 100 cu.ft K 30,-

- Removal of excess excavated
soil out of the site on
a heap 100 cu.ft K 10,-

- Levelling of the terrain 100 cu.ft K 8,-

- Basic layers with concrete mortar
 - a) of reinforced concrete 100 cu.ft K 195,80
 - b) of cement concrete 100 cu.ft K 118,-

- Structures
 - a) foundation structures
of ordinary concrete 100 cu.ft K 102,-
 - b) vertical structures
of reinforced concrete 100 cu.ft K 195,80
 - c) horizontal structures
of reinforced concrete 100 cu.ft K 180,-

- All kinds of shuttering and its removal	100 sq.ft	K 130,-
- Erection of steel structure	1 t	K 2000,-
- Assembly of cladding set of shaped galvanized steel sheets	100 sq.ft	K 32,-
- Supply and assembly of roofing set of asbestos-cement sheets	100 sq.ft	K 64,-
- Supply and assembly of cladding set of asbestos-cement sheets	100 sq.ft	K 54,-
- Brick masonry	100 sq.ft	K 198,-
- Pointing with cement mortar	100 sq.ft	K 54,-
- 1/2" Plastering	100 sq.ft	K 54,-
- 1/2" Cement overcoat	100 sq.ft	K 40,-
- Assembly and setting of fillings into openings		
a) door	1 sq.ft	K 8,50
b) gates	1 sq.ft	K 3,75
c) windows	1 sq.ft	K 10,15
d) louver	1 sq.ft	K 7,50
- Coating of steel structures	100 sq.ft	K 56,-
- Sand, sorted	100 cu.ft	K 150,-
- Gravel sand, sorted	100 cu.ft	K 125,-
- Aggregates, crushed grit	100 cu.ft	K 190,-

- Red brick	1 pc	K 0,75
- Wall and floor tiles	1 sq.ft	K 5,-
- One family house, Ist class	1 pc	K 20.000,-
- Two family house, IInd class	1 pc	K 20.000,-

6.6.2 Production Costs

The Industrial Planning Department of the Ministry of No. 1 Industry assumes that maintenance rates will be following:

- 2,5 % of the cost of machinery and equipment
- 2 % of the cost of mobile equipment
- 5 % of the cost of buildings and civil works.

6.6.2.1 Machinery and Equipment

Maintenance and repair costs include costs of spare parts and wages of maintenance/workshop personnel. These are discussed elsewhere, therefore no additional maintenance costs are considered.

The Schedule 6.3 "ESTIMATE OF PRODUCTION COSTS: EQUIPMENT" includes, no maintenance costs.

6.6.2.2 Civil Engineering

The rate of maintenance of buildings and civil works is estimated at 1% of the cost of buildings and civil works.

The Schedule 6.4 "ESTIMATE OF PRODUCTION COST: CIVIL ENGINEERING WORKS" shows costs of maintenance of buildings and civil works.

ESTIMATE OF INVESTMENT COSTS:
EQUIPMENT

Schedule 6.1

in thousands K

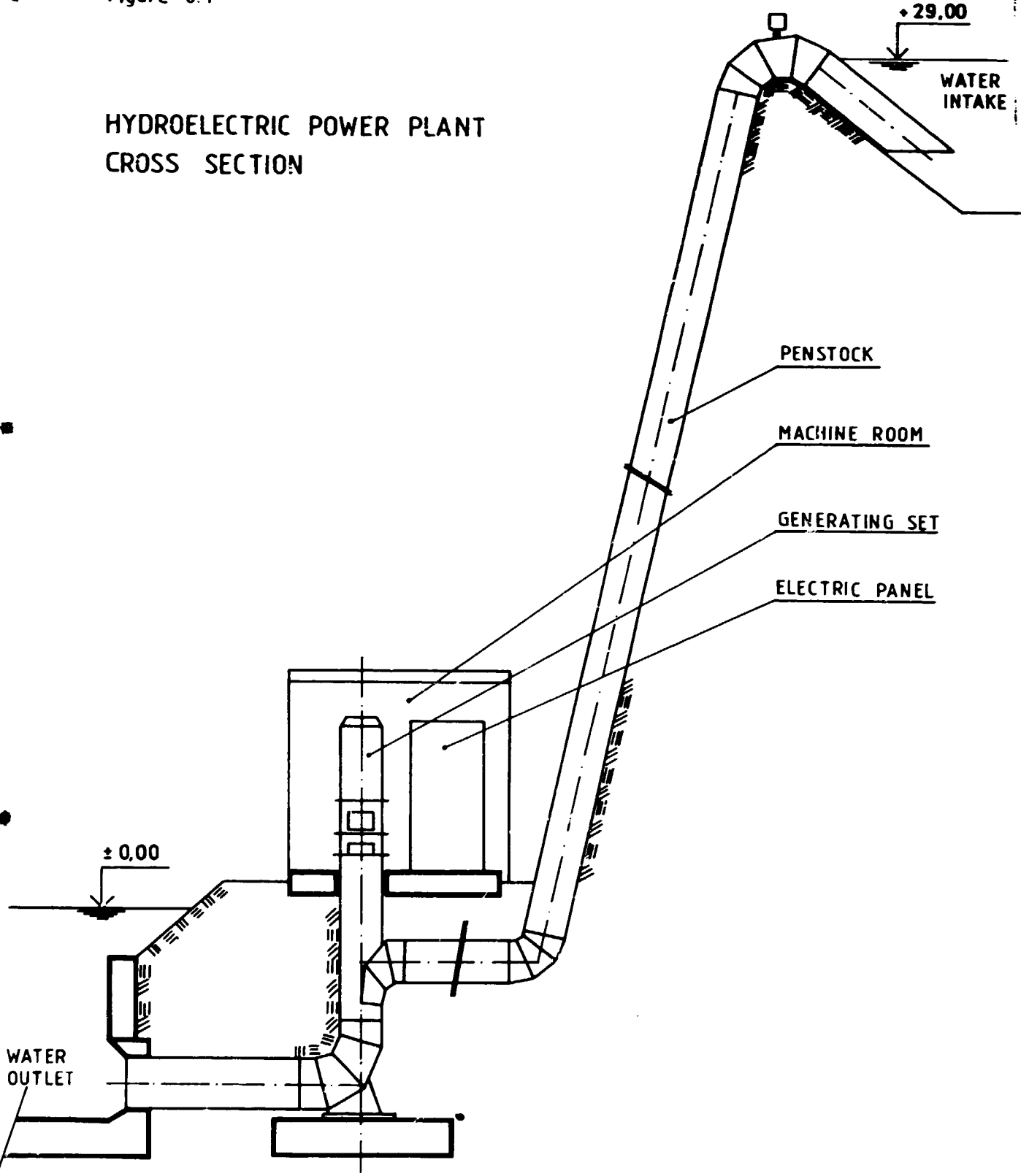
		Cost		
		Foreign	Local	Total
1	PRODUCTION EQUIPMENT			
01	Limestone and Clay Extraction	1 609	902	2 511
02	Sand and Haematite Extraction	-	-	-
03	Raw Materials Crushing	1 010	-	1 010
04	Storage	1 687	-	1 687
05	Raw Grinding	5 095	-	5 095
06	Homogenizing	1 313	-	1 313
07	Clinker Burning and Cooling	7 263	-	7 263
08	Gypsum and Coal Crushing	493	-	493
09	Coal Grinding	1 064	-	1 064
10	Cement Grinding	3 162	-	3 162
11	Cement Storage	1 140	-	1 140
12	Packing and Loading	1 196	-	1 196
13	Electrical Equipment	2 070	-	2 070
14	Instrumentation and Controls	296	-	296
	Subtotal	27 398	902	28 300
2	AUXILIARY EQUIPMENT			
20	Substation	2 278	-	2 278
21	Diesel Power Plant	495	-	495
22	Compressed-Air Plant	535	-	535
23	Heating Station	138	-	138
24	Water Supply and Distribution	1 213	-	1 213
25	Laboratory	427	-	427
26	Workshops	968	-	968
27	Stores	47	-	47
28	Diesel Oil Tank	127	-	127
29	Lubricants	51	-	51
30	Transport Facilities	47	1 958	2 005

in thousands K

		Cost		
		Foreign	Local	Total
Sub total		6 326	1 958	8 284
3	SERVICE EQUIPMENT	184	260	444
4	HYDROELECTRIC POWER PLANT	11 108	-	11 108
5	SPARE PARTS	3 780	270	4 050
Subtotal		48 796	3 390	52 186
6	Project Planning	1 315	-	1 315
7	CIF Rangoon	2 806	-	2 806
8	Transport Rangoon-Lashio	-	1 081	1 081
9	Erection	-	5 295	5 295
10	Contingenies	2 646	488	3 134
Subtotal		55 563	10 254	65 817
11	Customs, taxes, charges (on CIF value minus project)			
	-15%	-	8 137	8 137
	-30%	-	16 274	16 274
	-6%	-	3 255	3 255
TOTAL		55 563	37 920	93 483
of that				
-	fixed assets	51 405	35 475	86 880
-	current assets (spare parts)	4 158	2 445	6 603

Figure 6.1

HYDROELECTRIC POWER PLANT CROSS SECTION



ESTIMATE OF INVESTMENT COSTS:
CIVIL ENGINEERING WORKS

Schedule 6.2

in thousands K

		Cost		
		Foreign	Local	Total
1	Site preparation and development	-	3 180	3 180
2	Buildings and special civil works	8 287	19 110	27 397
3	Outdoor works	-	1 498	1 498
4	Housing quarters	-	1 860	1 860
	Subtotal	8 287	25 648	33 935
5	Project planning	-	1 020	1 020
6	CIF Rangoon	456	-	456
7	Transport Rangoon - Lashio	-	945	945
8	Contingencies	437	1 381	1 818
	Subtotal	9 180	28 994	38 174
9	Customs, taxes charges (on CIF value)			
	- 15 % Customs duty	-	1 377	1 377
	- 30 % Commodity service tax	-	2 754	2 754
	- 6 % Clearance handling charges	-	551	551
	TOTAL	9 180	33 676	42 856

ESTIMATE OF PRODUCTION COST :
EQUIPMENT

Schedule 6.3

in thousands K

No.	I t e m	Cost		
		Foreign	Local	Total
	No other costs besides consumption of spare parts, grinding media, armouring, refractories and wages are not considered.			

ESTIMATE OF PRODUCTION COST :
CIVIL ENGINEERING WORKS

Schedule 6.4

in thousands K

No.	I t e m	Cost		
		Foreign	Local	Total
1	Cost of maintenance carried out by Construction Corporation (considered 1% of the value of the initial fixed investment costs)	92,0	3370	429,0

Chapter VII.

PLANT ORGANIZATION AND
OVERHEAD COSTS

PLANT ORGANIZATION AND OVERHEAD COSTS

7.1 Plant Organization

The overall organization of the proposed mini-cement plant and the lines of hierarchy are shown on the ORGANIZATIONAL CHART, Figure 7.1. It reflects general organizational outline as applied in other Burmese cement plants.

Horizontally, the plant organization comprises the following departments:

- Planning
- Production
- Quality control
- Finance
- Administration

7.1.1 Planning Department

Consists of five sections with the following responsibilities:

- Planning:
 - . cement sale, purchasing of inputs according to production schedule;
 - . maintenance and development planning;
 - . safety inspection;
 - . documentation.
- Stores
 - . storing and issuing of spare parts, supplies and consumables necessary for operation of the plant
- Utilities
 - . electric power supply and control;
 - . compressed-air generation and distribution;
 - . water supply and generation.

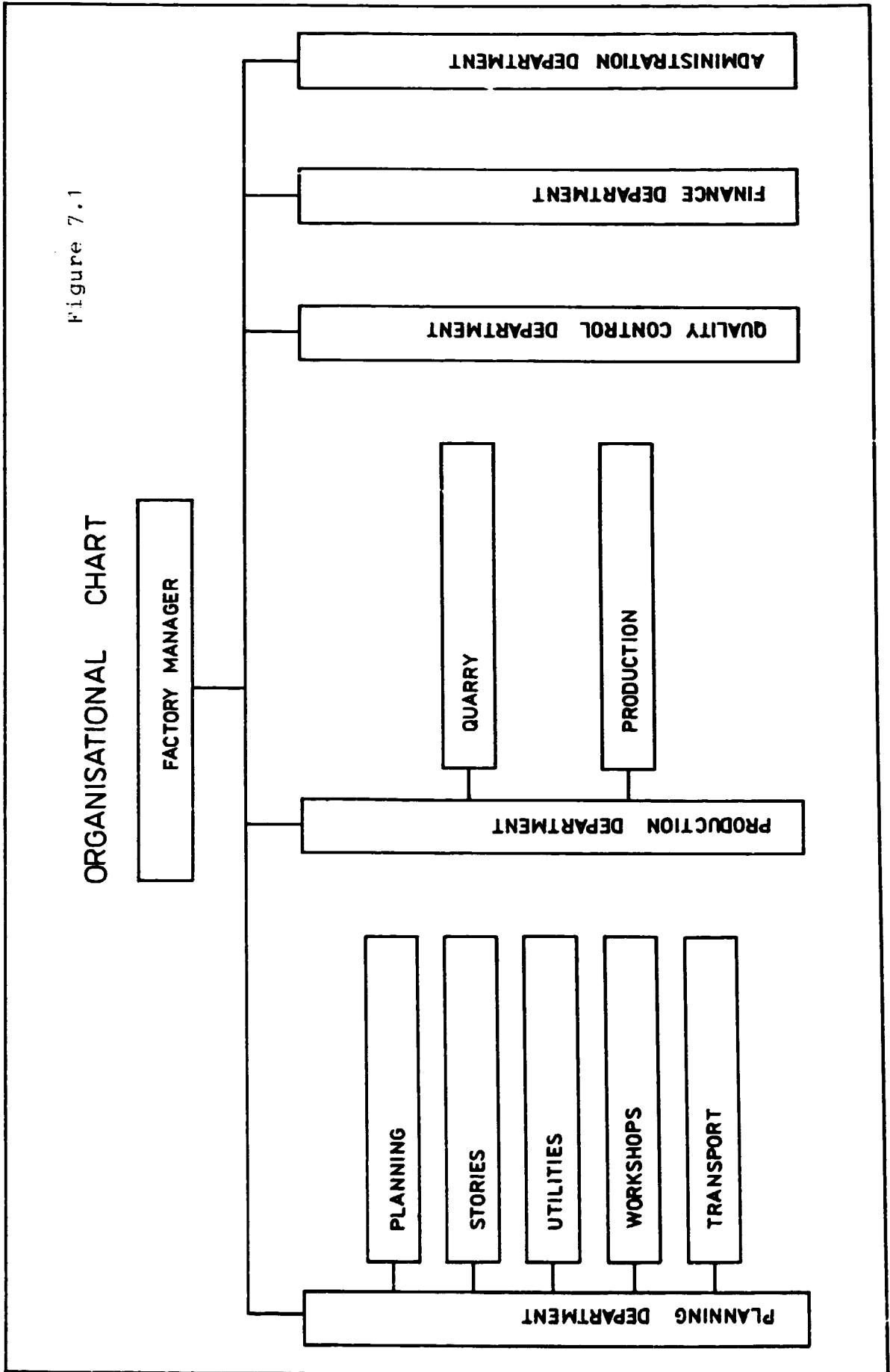


Figure 7.1

ORGANISATIONAL CHART

- Workshops

- . maintenance of mechanical and electrical equipment of the plant;
- . repairs and production of some spare parts;
- . repairs of buildings, general service.

- Transportation

- . transport of gypsum and coal;
- . meeting requirements on personal and goods transport;
- . maintenance and repairs of mobile equipment (in cooperation with Workshops).

7.1.2 Production Department

Consists of two sections as follows:

- Quarry
- Production of cement

Their headings are self explanatory, therefore need no further comments.

7.1.3 Quality Control Department

Is responsible for chemical and physical analyses of raw materials, raw meal, coal, coal ash, clinker and cement carried out in conformity to the relevant standards.

7.1.4 Finance Department

Performs all duties connected with

- budgeting
- cost accounting
- wages/salaries
- auditing

7.1.5 Administration Department

Covers all general services and duties including security, recruitment of personnel, welfare, etc.

7.2 Cost Centres

Regarding cost calculation and analysis, the cement plant shall be divided into the following cost centres:

- direct production;
- services (factory overhead costs)
- administration and finance (administration overhead costs).

It implies that this division of the plant in many aspects correspond to the division, as stated by the ORGANIZATIONAL CHART.

The Schedule 7 - "OVERHEAD COSTS" indicates the costs produced in the individual cost centres excluding those stated in the Chapters IV - "MATERIALS AND INPUTS" and VIII - "MANPOWER".

OVERHEAD COSTS

Schedule 7

in thousands K

No.	I t e m	Overhead costs	
		Factory	Administrat.
1.	Maintenance (from schedule 6.4)	429,0	
2.	General costs and expenses (communication, travel, S.S.B contribution, others)		300,0
3.	Depreciation		
	- civil engineering works - 2,5 %		1 071,40
	- equipment - 5,0 %		4 193,80
	- vehicles -20,0 %		600,60
	SUBTOTAL	429,0	6 165,80
4.	Depreciation of preproduction capitals expenditures (the first five years of production only)		
	TOTAL	429,0	8 981,4

Chapter VIII.

MANPOWER

MANPOWER

All personnel of the proposed cement plant shall be recruited prior to putting the plant into operation. Time schedule of recruitment depends on the character of training requirements by individual jobs. Number of personnel to undertake training either in Contractor's facilities or in the PA-AN cement plant or during erection and start-up is specified in Chapter IX - IMPLEMENTATION SCHEDULING, including the estimation of pertinent costs.

It is foreseen that semi-skilled and unskilled labour will be recruited from the Township of LASHIO. Skilled graduates and technicians will be recruited at MANDALAY where local colleges and schools bring up required candidates. Key personnel and top executives shall be transferred from the existing cement plants in Burma.

Personnel requirements, qualifications, jobs and salaries/wages are surveyed on pertinent Schedules of this Chapter. They have been determined with respect to operation, organization, management requirements and assignment to individual position with pertinent salaries/wages as indicated in the "Administration Department and accounting Department, Pharmaceutical Industries Corporation".

Schedule 8.1 Manning Table: Labour and Staff

Column 1 - Job

Column 2 - Number of working days per week/
number of shifts per day

Column 3-7 - Number of personnel per shift

Column 8 - Number of personnel per position

Column 9 - Salary/Wage class

Number of personnel required per position is based on the following determination of working days per man and year:

	<u>Days</u>
Number of day per year	365
- Saturdays and Sundays	- 104
- Official and religious holidays	- 20
- Leave	<u>- 10</u>
Subtotal	231
- One day leave after 11 working days	<u>- 19</u>
Subtotal	212
- Sickness (3%)	<u>- 6</u>
Effective working days per year equivalent to 1650 effective working hours per year (8-hour working day).	206

Schedule 8.2 Summary Manning Table - Labour and Staff

The data are based on the Schedule 8.1 summarizing number of personnel by position and organization units.

Schedule 8.3 Estimate of Production Costs -
Wages and Salaries

- Column 1 - Salary/wage class (this classification has been used for this Study only);
- Column 2 - shows the scope of salaries/wages, e.g. 1000-50-1200 means:
1000 - lower limit
50 - increase per annum
1500 - upper limit;
- Column 4 - Social insurance contribution paid by the factory (included in Administration Overhead - see Chapter VII);
- Column 5 - Average monthly salary/wage per person over 15 years of operation of the plant;
- Column 6 - Effective personnel (from Schedule 8.2);
- Column 7 - Annual cost of salaries/wages;
- Column 8 - Direct production personnel (column 9 - Schedule 8.2);

- Column 9 - Salaries/wages related to column 8;
- Column 10 - Factory Overheads personnel (service cost centres
- total of columns 5, 6, 7, 8, 12 of Schedule 8.2);
- Column 11 - Total of salaries related to column 10;
- Column 12 - Administrative/finance overheads personnel (total
of columns 4,13,14 of Schedule 8.2);
- Column 13 - Salaries related to column 12.

In estimating costs of salaries and wages of foreign experts the following facts have been taken into account:

- Putting into operation, months	3	
. Number of experts	5	
. Average salary per month, K	19.982	
. Total salaries, K	299.730	
. Others in foreign currency, K	46.011	
in local currency, K	150.000	
Total		<u>495.741 Kyats</u>
- Start up, months	15	
. Number of experts	2	
. Average salary per month, K	20.376	
. Total salaries, K	611.280	
. Others in foreign currency, K	92.022	
In local currency, K	300.000	
Total		<u>1 003 302 Kyats</u>

Costs related to foreign experts during the first two years of operation of the plant are included in the administrative overhead costs; they are estimated at 1 499 043 K (1 049 043 K in foreign currency).

1	2	3	4	5	6	7	8	9
Shift maintenance mechanical	7/3	2	2	2	2	2	10	11
dtto electrical	7/3	1	1	1	1	1	5	8
dtto electrical	7/3	1	1	1	1	1	5	11
Workshops foreman	5/1	1	-	-	-	-	1	6
Machine-tool operator	5/2	1	1	-	-	-	2	8
dtto	5/1	2	-	-	-	-	2	1
dtto	5/2	1	1	-	-	-	2	13
Fitter	5/2	2	2	-	-	-	4	13
Electrician	5/2	2	2	-	-	-	4	13
General service foreman	5/1	1	-	-	-	-	1	11
Building worker	5/1	1	-	-	-	-	1	13
dtto	5/1	1	-	-	-	-	1	15
Helper	5/1	2	-	-	-	-	2	18
- Transport	-	15	5	-	-	-	20	-
Transport manager	5/1	1	-	-	-	-	1	6
Drivers	5/1	1	-	-	-	-	1	11
dtto	5/1	3	-	-	-	-	3	13
dtto	5/1	5	-	-	-	-	5	16
Mobile equipment maintenance	5/2	5	5	-	-	-	10	11
PRODUCTION DEPARTMENT	-	44	24	14	11	10	103	-
- Quarry	-	11	-	-	-	-	11	-
Mining engineer	5/1	1	-	-	-	-	1	4
Foreman	5/1	1	-	-	-	-	1	5
Drilling machine operator	5/1	1	-	-	-	-	1	6
dtto	5/1	1	-	-	-	-	1	8
Miner	5/1	1	-	-	-	-	1	11
Compressor operator	5/1	1	-	-	-	-	1	11
Loader operator	5/1	1	-	-	-	-	1	11
Drivers	5/1	4	-	-	-	-	4	13
- Production	-	33	24	14	11	10	92	-
Production manager	5/1	1	-	-	-	-	1	3
Assistant	5/1	1	-	-	-	-	1	4
Secretary	5/1	1	-	-	-	-	1	8

(continued)

1	2	3	4	5	6	7	8	9
Typist	5/1	1	-	-	-	-	1	15
Helper	5/1	1	-	-	-	-	1	15
Shift coordinator	7/3	1	1	1	1	-	4	5
Raw material crushing								
Loader operator	5/1	1	-	-	-	-	1	11
Crusher operator	5/1	1	-	-	-	-	1	11
Hopper attendance	5/1	1	-	-	-	-	1	13
Storage								
Crane operator	7/3	2	2	2	2	2	10	11
Helper	7/3	1	1	1	1	1	5	13
Raw grinding								
Raw mill operator	6/3	1	1	1	1	1	5	11
Homogenizing								
Silos attendance	7/3	1	1	1	1	1	5	11
Clinker burning								
Burner	7/3	1	1	1	1	1	5	11
Clinker transport helper	7/3	1	1	1	1	1	5	13
Gypsum and coal crushing								
Crusher operator	5/1	1	-	-	-	-	1	11
Coal mill operator	7/3	1	1	1	1	1	5	11
Cement grinding								
Cement mill operator	5/3	1	1	1	-	-	3	11
Cement storage								
Cement transport helper	5/3	1	1	1	-	-	3	13
Packing and loading								
Packing machine operator	5/1	1	1	-	-	-	2	13
Helper (paper bags)	5/1	2	2	-	-	-	4	15
Helper (loading)	5/1	6	6	-	-	-	1	15

(continued)

1	2	3	4	5	6	7	8	9
Weighing operator	5/2	1	1	-	-	-	2	13
Instrumentation and controls								
Control room operator	7/3	3	3	3	2	2	13	8
QUALITY CONTROL DEPARTMENT								
Chief chemist	5/1	1	-	-	-	-	1	4
Assistant chemist	5/2	1	1	-	-	-	2	5
dtto	7/3	1	1	1	1	1	5	8
Sample preparation	7/3	1	1	1	1	1	5	11
Sampling	7/3	1	1	1	1	1	5	13
FINANCE DEPARTMENT								
Section head	5/1	1	-	-	-	-	1	4
Assistant	5/1	2	-	-	-	-	2	5
Budgeting		2	-	-	-	-	2	6
Cost accounting		2	-	-	-	-	2	8
Wages and salaries	5/1	2	-	-	-	-	2	11
Cash and payments		2	-	-	-	-	2	15
Auditing								
Ancillary clerk/Typist	5/1	2	-	-	-	-	2	15
ADMINISTRATION DEPARTMENT								
General manager	5/1	1	-	-	-	-	1	2
Assistant	5/1	1	-	-	-	-	1	4
Secretary	5/1	1	-	-	-	-	1	6
Typist	5/1	1	-	-	-	-	1	12
dtto	5/1	1	-	-	-	-	1	15
Helper	5/1	1	-	-	-	-	1	18
Personnel section head	5/1	1	-	-	-	-	1	5
dtto clerk	5/1	1	-	-	-	-	1	6
dtto clerk	5/1	1	-	-	-	-	1	9
dtto clerk	5/1	4	-	-	-	-	4	12
dtto clerk	5/1	2	-	-	-	-	2	15
Security and fire chief	5/1	1	-	-	-	-	1	8
Gate - keeper	7/3	1	1	1	1	-	4	17
Guardian (watchman)	7/3	1	1	1	1	-	4	18
Canteen manager	5/1	1	-	-	-	-	1	12

(continued)

1	2	3	4	5	6	7	8	9
Cook	5/1	2	-	-	-	-	2	15
Servants	5/1	3	-	-	-	-	3	18
Total cement plant	-	149	53	31	28	25	286	-

Schedule 3.2 SUMMARY MANNING TABLE - LABOUR AND STAFF

Salary /wage class	Designation	Department												TOTAL
		PLANNING	of that					PRODUCTION	of that		QUALITY CONTROL	FINANCE	ADMINISTRATION	
			Planning	Stores	Utilities	Workshops	Transport		Quarry	Production				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	General Manager	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Deputy General Manager	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Assistant Factory Manager	1	-	-	-	-	1	-	1	1	-	-	-	2
4	Deputy Assistant Manager	1	-	-	-	-	1	1	1	2	1	1	1	6
5	Head of Division	1	-	1	1	-	3	1	4	5	2	2	1	13
6	Technician Grade 10 Superintendent	2	-	5	6	1	14	1	-	1	-	2	2	19
7	Technician Grade 9	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Technician Grade 8	3	1	10	12	-	26	1	14	15	5	2	1	49
9	Branch Clerk	2	-	-	-	-	2	-	-	-	-	-	1	8
10	Technician Grade 7	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Technician Grade 6	2	3	15	18	11	49	3	31	34	5	2	-	90
12	Upper division Clerk	-	-	-	-	-	-	-	-	-	-	-	6	6
13	Technician Grade 5	1	3	-	11	3	18	4	23	27	5	-	-	50
14	Technician Grade 4	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Lower Division Clerk Technician Grade 3	-	-	-	1	-	1	-	18	18	-	4	5	28
16	Technician Grade 2	-	-	-	-	5	5	-	-	-	-	-	-	5
17	Technician Grade 1	-	-	-	-	-	-	-	-	-	-	-	4	4
18	Apprentice and Office Helper	-	-	-	2	-	2	-	-	-	-	-	8	10
TOTAL		13	7	31	51	20	122	11	92	103	18	13	30	286

Schedule 8.3 ESTIMATE OF PRODUCTION COSTS : W A G E S A N D S A L A R I E S

Salary Wage class	Day Wage in K per month	Special Allowance	S.S.B. Contribution	Average month salary/wage	No. of employees	Salaries and wages per year in K	of that			Administrative overheads			
							Direct production	Factory overheads					
1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1300-1400	120/130	7,80	1,210	1	14,520	-	-	-	-	1	14,520	
2	500-50-1100	110	7,80	1,000	2	24,000	1	12,000	-	-	1	12,000	
3	800-40-1000	100	7,80	740	2	17,280	2	17,760	1	8,880	3	26,640	
4	500-30-800	90	7,80	665	13	103,245	5	39,900	4	31,920	4	31,920	
5	450-25-700	90	7,80	550	19	125,400	1	6,600	12	79,200	6	39,600	
6	400-20-520	85	7,80	465	49	133,410	15	83,700	28	156,240	6	33,480	
7	370-15-440	85	7,80	415	3	16,020	-	-	-	-	3	16,020	
8	300-15-410	85	7,80	350	90	18,000	34	142,800	52	318,400	4	16,800	
9	260-15-280	80	7,80	315	6	23,400	-	-	-	-	6	23,400	
10	210-15-330	80	7,80	275	90	165,000	17	89,100	22	72,600	1	3,300	
11	185-15-305	75	7,80	240	18	80,640	18	51,840	1	2,880	9	25,920	
12	150-10-270	75	7,80	208	5	12,480	-	-	5	12,480	-	-	
13	130-10-200	70	4,50	187	4	8,736	-	-	-	-	4	8,736	
14	125-5-150	70	3,25	175	10	21,000	-	-	2	4,200	8	16,800	
15	110-3-125	70	3,25	175	10	21,000	-	-	-	-	-	-	
16	100-2-110	70	3,25	175	10	21,000	-	-	-	-	-	-	
T O T A L							1,299,636	103	443,700	127	586,800	56	269,136

Chapter IX

IMPLEMENTATION SCHEDULING

IMPLEMENTATION SCHEDULING

9.1 Data and Activities

The project implementation phase will embrace the period of 36 months from award of contract to the start of production.

The implementation phase includes following stages:

- Setting up project implementation management;
- Detailed engineering, tendering and evaluation of bids;
- Award of contract;
- Site preparation and development;
- Soil study;
- Civil works;
- Erection of machinery and equipment;
- Finalizing of civil works;
- Trial runs, testing;
- Start-up and commissioning;
- Training of staff and labour.

Duration of these stages and their mutual time overlapping is shown on the Schedule 9-1.

9.1.1 Tendering

The Project Management Team set up in order to prepare tendering documents will organize tendering, evaluation of bids and decide on awarding of contract.

It is intended that the team should later form nucleus of the managerial, technical and operational staff to be put in charge of running the plant.

9.1.2 Contracting

Based on evaluation of bids, contract negotiations will start which shall result in awarding of contract to a selected Contractor.

9.1.3 Site Preparation and Development

Since land is owned by the State preparation and development of the site can be triggered as soon as the Contract has been signed.

9.1.4 Soil Studies

Prior to planning of buildings and civil works, Contractor will prepare the soil studies including test trenches, pertinent in site examinations enabling to obtain an exact interpretation concerning foundations of building and civil works.

9.1.5 Civil Work Study

Results of the soil studies shall be used for the planning of the following civil works:

- Land preparation and roads;
- Outdoor works;
- Auxiliary buildings;
- Foundations of production buildings.

9.1.6 Detailed Engineering of Equipment and Civil Works

Study of technology and machinery should precede study of buildings and both will provide basic data for the preparation of study of electrical equipment and machinery.

9.1.7 Execution of Civil Works

There will be five construction areas:

- the plant itself;
- quarry facilities;
- housing;
- water supply pipeline
- hydro power plant

The scope of initial building and civil works will mainly include those giving way to erection of heavy machinery and equipment.

9.1.8 Erection of Machinery and Equipment

The sequence of erection works will be following:

- production machinery and equipment;
- electrical equipment;
- instrumentation and controls;
- connection to utilities.

Erection works will be performed by Ceramic Industries Corporation manpower supervised by Contractor's delegated staff.

9.1.9 Final Building and Civil Works

These will be continuously performed together with erection of machinery in order to provide uninterrupted follow-up of the latter.

9.1.10 Trial Runs, Testing

Individual plant departments will be put into run by tests without and subsequently with material according to time-schedule as per Contract.

9.1.11 Start-up and Commissioning

After the tests described in 9.1.10 are successfully accomplished the plant production will start running in. It is expected that full production rate of the plant will be achieved within 24 months after start-up. Within this period production tests and commissioning will be performed as per pertinent stipulations of the Contract.

9.1.12 Training

It is considered the basic training will take place during erection and start-up.

The specialised personnel will receive additional training in some Contractor's amenities and in the PA-AN cement factory.

9.2 Selection of Project Implementation Programme and Time Schedule

The Table 9-1 that could be found at the end of this chapter lists individual activities and their duration during project implementation.

9.2.1 Decisive Activities

Preconstruction phase:

- Setting up of management, tendering evaluation
of bids, award of contract 7 months
- Contracting and subcontracting 5 months
- Comming of Contract into Force 2 months

Construction phase:

- Project planning 12 months
- Civil works 15 months
- Delivery of machinery and equipment 9 months
- Erection 15 months
- Final building and civil works 12 months
- Testing, trial runs 3 months

9.2.2 Further Activities

Hereinafter, interacting activities bringing about different implications on implementation, are listed:

- Delivery of Machinery and equipment shall be materialized from 12-th to 18-th month;
- Delivery of electrical equipment, instrumentation and controls shall be materialized from 15-th to 18-th month;
- Training of specialized personnel in the Contractor's amenities shall be finalized by the end of the 25-th month;
- Recruitment of staff shall be finalized by the end of 15-th month;
- Recruitment of labour shall be finalized by the end of erection;
- Ran materials, coal, fuel and inputs for production of cement as well as power and water supply shall be available one month before the end erection at the latest.

9.2.3 Manpower and Skills

9.2.3.1 Civil works

Civil works shall be carried out by Construction Corporation under the Contractor's supervision. The supervision personnel will consist of one specialist.

Total number of civil works manpower will amount to 350 in the peak construction stage up to 600.

9.2.3.2 Erection

Erection of the plant will be managed, coordinated and supervised by the following Contractor's personnel:

- One (1) mechanical erection supervisor
- One (1) electrical erection supervisor
- Three (3) mechanical erection specialists
- Two (2) electrical erection specialists
- One (1) refractory brick-laying specialist

Total: eight (8) staff

The Contractor's personnel shall be assisted by local skilled manpower recruited by Ceramic Industries Corporation. Number of local personnel will amount to 150.

Total number of erection personnel will thus amount to 120, in the peak erection stage up to 150.

9.2.3.3 Start-up

The plant will be started up under management and supervision of the following Contractor's staff:

- One (1) senior engineer
- Three (3) engineers/specialists
- Two (2) chemists
- Two (2) kiln operators
- Two (2) mill operators

Total: ten (10) staff

The Contractor's staff shall be assisted by skilled production personnel as per Chapter 8.

9.2.3.4 Training

The Contractor shall organize training of the local specialized staff in his amenities and in the PA-AN cement plant.

This staff will consist of:

- one (1) production manager (Contractor)
- one (1) quality control manager (Contractor)
- one (1) mechanical engineer (PA-AN)
- one (1) electrical engineer (PA-AN)
- two (2) kiln operators (PA-AN)
- two (2) mill operators (PA-AN)

Total: eight (8) staff

Training of other personnel shall be ensured during erection and commissioning.

9.2.3.5 Start-up

It is considered the stage of start-up and running-in of the plant will take two (2) years at the end of which the normal rated production capacity will be reached.

Production will continuously rise during start-up period as follows:

- 1st semestre : 40 %
- 2nd semestre : 70 %
- 3rd semestre : 90 %
- 4th semestre : 100 %

9.2.4 Site Development

In the frame of civil works it will be necessary to make road connection, water and power supply.

The Contractor will set up stores to shelter various supplies and deliveries and housing for erection and supervising personnel.

9.3 Cost Estimate of Project Implementation

9.3.1 Management of Project Implementation

Number of staff, persons 3
Duration, months 42
Average salary per month, K 850
Total cost of salaries, K 107 100

9.3.2 Coordination at Project Implementation

Number of foreign experts 1
Duration, months 39
Average salary per month, K 21 034
Total salary, K 820 326
Other expenses (air-tickets), K 69 017
Board and accommodation, K 390 000
Total costs, K 1 279 343

9.3.3 Erection

Number of foreign supervisors
and specialists, persons 8
Duration, man/months 69
Average salary per month, K 19.949
Total salaries, K 1 376 481
Other expenses, K 184 044
Board and accommodation, K 690 000
Total costs, K 2 250 525

9.3.4 Start-up

Number of foreign specialist 10
Duration of stay, man/months 30
Average salary per month, K 19 785
Total salaries, K 593 542
Other expenses (air tickets), K 92 022
Board and accommodation, K 300
Total costs, K 985 564

9.3.5 Training

Number of locally trained specialists	6
Duration of training, man/months	36
Average salary/wage per month, K	350
Total salaries/wages, K	12 600
Other expenses, K	9 000
Total costs	21 600

9.3.6 Other General Costs

Rent and operation of offices, motor cars,
travel and telecommunication expenses,
etc., K 300 000

Materials and inputs for trial run
and start-up, K 180 000

Salaries and wages of recruited
personnel during project
implementation period, K 350 000
Contingencies, K 280.000
Total costs, K 1 110 000

9.3.7 Interests During Construction

Foreign loan interests, K 3 020 360
Local loans interests, K 5 210 150

ESTIMATE OF INVESTMENT COST :
PROJECT IMPLEMENTATION

Schedule 9

in thousands K

No.	I t e m	Cost		
		Foreign	Local	Total
1	Project implementation management	-	114,75	114,75
2	Co-ordination	889,34	390,0	1 279,34
3	Erection	1 560,53	690,0	2 250,53
4	Start-up	685,56	300,0	985,56
5	Training	-	21,6	21,60
6	General costs	-	1 110,0	1 110,0
7	Interests during construction	3 020,36	5 210,15	8 230,51
	TOTAL	6 155,79	7 836,50	13 992,29

PROJEKT DER EMERGENCY PROGRAMME

Kategorie	1974				1983				1990				1991				1992			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Personal																				
2. Material																				
3. Transport																				
4. Administration																				
5. Health Services																				
6. Education																				
7. Food and Nutrition																				
8. Housing																				
9. Water and Sanitation																				
10. Energy																				
11. Agriculture																				
12. Forestry																				
13. Fisheries																				
14. Livestock																				
15. Other																				
16. Total																				
17. Start-up																				
18. Training of Personnel																				

Chapter X
FINANCIAL EVALUATION

FINANCIAL EVALUATION

The objective of this Feasibility Study is a minicement plant project with production capacity of 200 tons of clinker per day (corresponding to 63 000 tons of cement per year).

Taking account of the actual finance conditions in the existing cement plants in Burma which are rather unfavourable due to discrepancy between production costs per ton of cement and the State-fixed unit price, the financial analysis has been done in three variants differing one from another by the ex factory prices adopted, as follows:

- A-variant: the annual sales revenues are based on the State-fixed ex factory price of 336,60 K per one ton of cement.
- B-variant: the annual sales revenues are based on an alternative ex factory unit price of 650 K resulted from the preliminary financial analysis (average production costs plus max. 15% profit margin plus 25% goods and services tax) and from the economic evaluation.
- C-variant: the annual sales revenues are based on an alternative ex factory price of 800 K per one ton of cement sold at the plant and 650 K for cement transported to Mandalay.

This chapter offers survey and commentary concerning the principal data of the financial analysis prepared by using the UNIDO software, called COMFAR. References are made to results as shown in respective schedules in Annex No.1. This chapter comprises:

- Summary Sheets
- Total Initial Investment
- Total Production Costs
- Net Working Capital
- Source of Finance
- Cashflow Tables
- Net Income Statement

Data usable for all variants are not separately identified. Data referring to either variant are identified either A, B or C correspondingly. All values are in K thousands and those which are to be understood in Kyats are accompanied with the K letter.

10.1. Total Investment Costs

10.1.1 Initial Investment Costs

10.1.1.1 Fixed Investment Costs (fixed assets)

Taking into account the fact that the land is State-owned no cost of land for erection of the proposed plant and of the housing colony is foreseen. Therefore, fixed investment costs include merely those of machinery, equipment, buildings, civil works, housing colony and ancillary facilities.

Data on fixed investment costs are taken from Chapter VI, Schedule 6.1 - "Equipment" and Schedule 6.3 - "Civil Engineering Works".

I t e m	C o s t		
	Foreign	Local	Total
Equipment	51 405	35 475	86 880
Civil Engineering	9 180	33 676	42 856
Fixed investment costs	60 585	69 151	129 736
Percentage	46,7	53,3	100

10.1.1.2 Preproduction Capital Expenditures (fixed assets)

The individual items of the preproduction capital expenditures are evaluated in Chapter IX, Schedule 9 plus costs of the preparatory studies from Chapter II.

Their sum total is following:

	Foreign	Local	Total
Preproduction Capital Expenditures	6 234	7 844	14 078
Percentage	44,3	55,7	100

10.1.1.3 Working Capital (current assets)

Spare parts necessary for 2-3 years of operation of the proposed plant being an integral part of machinery and equipment supply are the only item of this cost and its value is taken from Chapter VI, Schedule 6.1 - "Equipment".

	Foreign	Local	Total
Working Capital	4 158	2 445	6 603
Percentage	63,0	37,0	100

10.1.1.4 Summary of Initial Investment Costs

I t e m	C o s t		
	Foreign	Local	Total
Fixed assets	66 819	76 995	143 814
- fixed investment costs	60 585	69 151	129 736
- preproduction capital expenditures	6 234	7 844	14 078
Current assets			
- working capital	4 158	2 445	6 603
Total initial investment costs	70 977	79 440	150 417
Percentage	47,2	52,8	100

Specific investment costs per one ton of cement are 2388,- K (363,2 USD).

Initial investment expenditures during implementation of the project are shown on the "Total Initial Investment" chart of the enclosed COMFAR calculations.

10.1.2 Investment Costs during Production

10.1.2.1 Fixed Investment Costs

Expected life of the mobile equipment is 5 years (20 % depreciation / year), therefore two replacements of the truck pool during 15 years of operation of the plant (cost of replacement is 3 003 th.K) are considered.

10.1.2.2 Working Capital

Increase of value of working capital during initial three years of operation equalling 4 618 210,-K is shown on the "Total Current Investment" and "Net Working Capital" charts of the enclosed COMFAR calculations completely with calculation inputs - variant B.

10.2 Project Financing

Due to general lack of finance CIC, the Project Promoter, assumes the following project financing:

- Long term foreign loan to cover costs in foreign currency under the following terms:
 - . repayment period: min. 15 years
 - . interest rate : max. 3 % year
 - . grace period : min. two years

- Local loan by MYANMA ECONOMIC BANK (M.E.B.) to cover costs in local currency.

During preparation of this Study no information on long-term loan as provided by potential contractors or any kind of foreign financial assistance were available, therefore financial analysis was computed under following assumptions:

- Costs in foreign currency shall be covered by Contractor's long-term loan payable in 12 years, annual interest rate of 3% and two years of grace period (foreign loan A)
- Costs in local currency shall be covered by M.E.B loan payable in 5 years, annual interest rate of 5%, no grace period (local loan A).

Requirements in financial sources as well as distribution of finance into individual years of the construction period are taken from the "Source of Finance, Construction" chart of the enclosed COMFAR calculations.

Source of Finance	Total	Construction		
		1 st year	2 nd year	3 rd year
Foreign Loan A	70 977	4 867	58 110	8 000
Local loan A	79 440	11 326	46 565	21 449
Total	150 417	16 193	104 775	29 449

10.3 Production Costs

Survey of production costs is prepared using data from the pertinent Chapters which are inserted into individual cost items as follows:

- Costs as per Chap. IV, Schedule 4.1 : items 1,2,3,6,7
- Costs as per Chap.VII, Schedule 7 : items 4,7,9
- Costs as per Chap.VIII,Schedule 8.3 : items 3,6,7.

Particular items of operating costs, depreciation, interest rate and production costs are taken from the "Total Production Costs" chart of the enclosed COMFAR calculations.

Production costs per individual year differ due to variability of depreciation and of financial costs.

The below stated survey employs data referring to 5 th and 10 th year of operation.

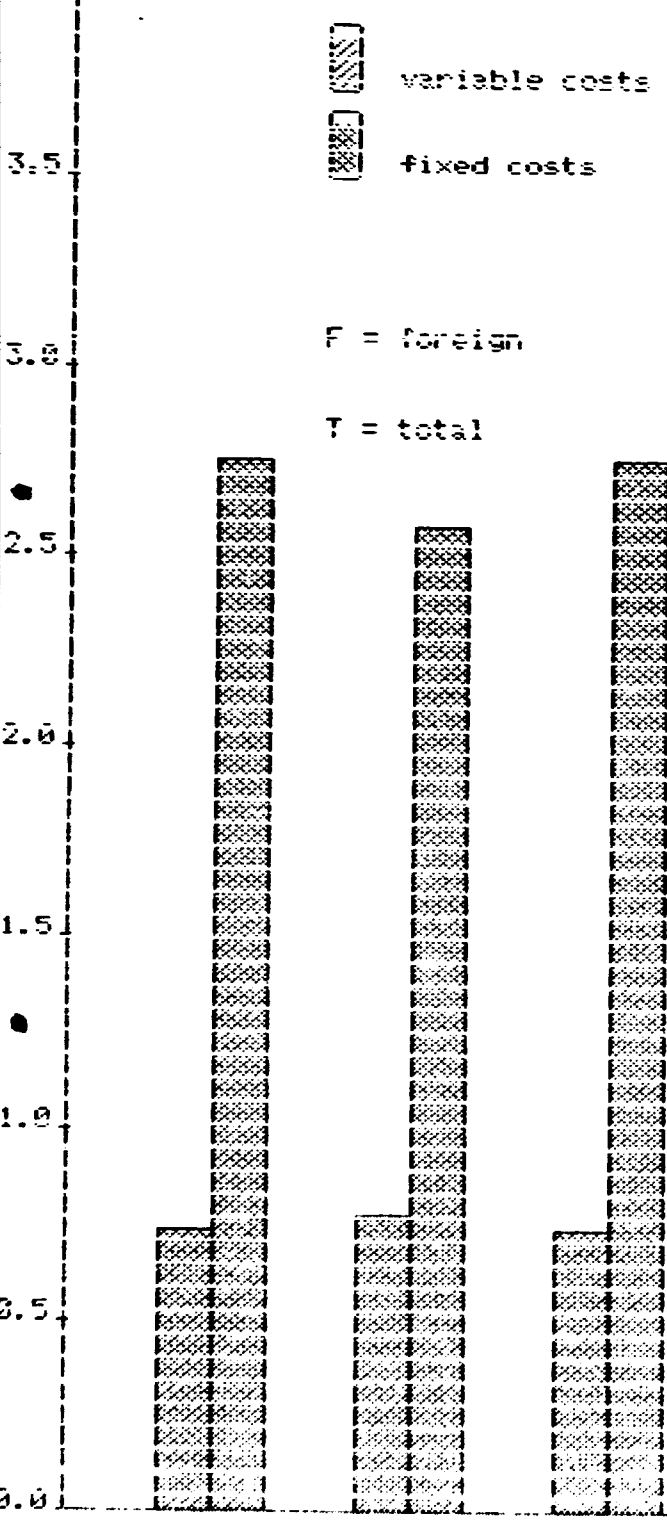
Production costs	Production	
	5 th year	10 th year
1. Raw material	721,60	721,60
2. Other materials	9 560,60	9 560,60
3. Fuel and energy	2 212,30	2 212,30
4. Direct labour	443,70	443,70
5. Maintenance	429,0	429,0
6. Spare parts	1 702,50	1 702,50
7. Factory overheads	866,80	866,80
Factory costs	15 936,50	15 936,50
8. Administrative overheads	689,10	689,10
9. Sales and distribution costs	Ø	Ø
Operating costs	16 625,60	16 625,60
10. Depreciation	8 381,15	5 565,55
11. Financial costs	2 568,83	887,21
Total production costs	27 575,58	23 078,36
of that: in foreign currency	26,69%	22,64%
Production costs per 1 t cement in K		
Factory costs	252,96	252,96
Operating costs	263,90	263,90
Total production costs	437,71	366,32

Chart 10.1

Structure of Production Costs

5th year of production

10⁴ 1000 K



Nominal	Start up	
2.62	1.54	raw material
34.67	20.36	other RM
8.24	8.15	utilities
7.79	4.66	energy
1.61	1.72	labour
1.56	0.43	maintenance
6.17	3.63	spares
5.64	10.27	overheads
30.39	33.61	depreciation
9.32	23.62	interest
100.00	100.00	Total Prod C.

F T F T F T
 Nominal Start B. Even
 production level

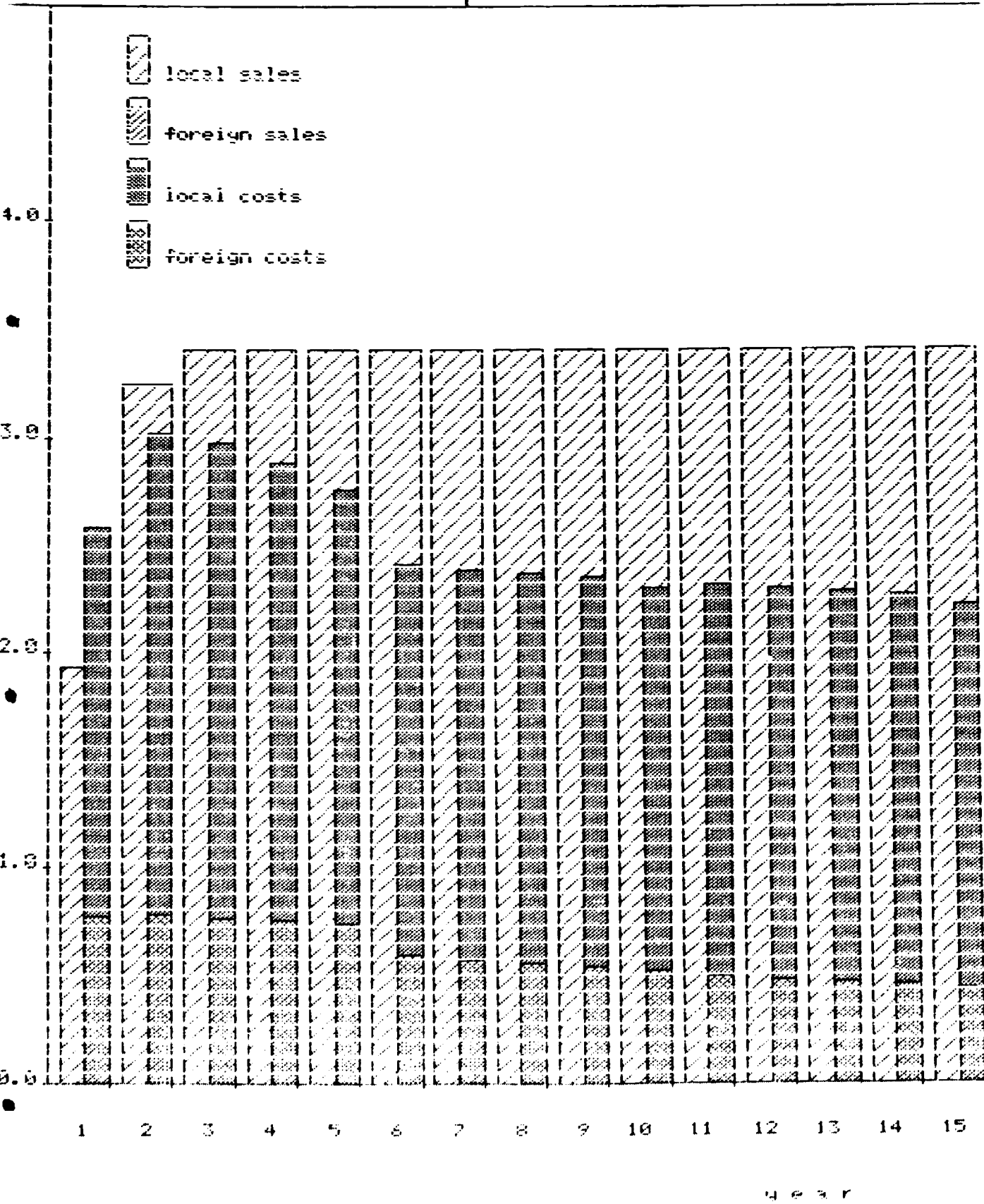
Chart 10.2

Total Sales & Production Costs

Variant B - Selling price K 550

1000 K

-  local sales
-  foreign sales
-  local costs
-  foreign costs



Year

10.4 Financial Evaluation

10.4.1 Net Present Value (NPV)

NPV calculated by using discount factor at rate of 5%, is taken from the 1st page of COMFAR calculations and is equal to:

- A variant	- 112 031 800,- K
- B variant	8 012 840,- K
- C variant	- 50 034 950,- K

10.4.2 Internal Rate of Return (IRR)

IRR was calculated similarly as NPV and is equal to:

- A variant	- 4,45 %
- B variant	5,60 %
- C variant	8,53 %

10.4.3 Pay-back Period

The pay-back period is determined by the method from the "Manual for the Preparation of Industrial Feasibility Studies" and data inputs were taken from the "Total Initial Investment" and "Cashflow from operations" charts of the enclosed COMFAR calculations.

Calculation of pay-back period:

a) Total initial investment costs 150 417 thousands K

b) Annual net profit plus interest plus depreciation

A variant		
	Amount paid back	Balance end of year
Year 1 (construction)	-	- 16 193
2 "	-	-120 968
3 "	-	-150 417
4 (production)	- 401,9	-150 818,9
5 "	-1 267,1	-149 551,8
6 "	-1 651,7	-147 900,8
7 "	-1 651,0	-146 249,8
8 "	-1 651,0	-144 598,8
9 "	-1 651,0	-142 947,8
10 "	-1 651,0	-141 296,8
11 "	-1 651,0	-139 645,8
12 "	-1 651,0	-137 994,8
13 "	-1 651,0	-136 343,8
14 "	-1 651,0	-134 692,8
15 "	-1 651,0	-133 041,8
16 "	-1 651,0	-131 390,8
17 "	-1 651,0	-129 739,8
18 "	-1 651,0	-128 088,8
Pay-back period	0	10,5 years
(production period only)		

B variant		
	Amount paid back	Balance end of year
Year 1 (construction)	-	- 16 193
2 "	-	-120 968
3 "	-	-150 417
4 (production)	8 285,5	-142 131,5
5 "	15 587,4	-126 544,1
6 "	16 170,7	-110 373,4
7 "	15 879,1	- 94 494,3
8 "	15 497,5	- 78 996,8
9 "	14 451,3	- 64 545,5
10 "	14 398,1	- 50 147,4
11 "	14 344,9	- 35 802,5
12 "	14 291,6	- 21 510,9
13 "	14 148,3	- 7 362,6
14 "	14 185,2	-
Pay-back period (production period only)	∅	10,5 years

C variant		
	Amount paid back	Balance at end of year
Year 1 (construction)		- 16 193
2 "		-120 968
3 "		-150 417
4 (production)	12 443,5	-137 973,5
5 "	19 081,8	-118 891,7
6 "	19 799,5	- 99 092,2
7 "	19 659,1	- 79 433,1
8 "	19 462,3	- 59 970,8
9 "	18 953,7	- 41 017,1
10 "	18 774,5	- 22 242,6
11 "	18 939,7	- 3 302,9
12 "	19 113,2	
Pay-back period (production period only)	∅	8,2 years

10.4.4 Simple Rate of Return (SRR)

SRR was computed by using the formula from the "Manual for Evaluation of Industrial Projects":

$$R = \frac{F + Y}{I} \cdot 100$$

where

R = SRR on total investment costs

F = mean year net profit during production period after making provisions for depreciation, interest charges and profit taxes

Y = mean year interest charges on loans

I = total initial investment costs.

A variant:

$$R = \frac{-7.256,8 + 2.001,0}{150.417} = -3,49 \%$$

B variant:

$$R = \frac{5.478,5 + 2.001,0}{150.417} = 4,97 \%$$

C variant:

$$R = \frac{10.068,3 + 2.001,0}{150.417} = 8,02\%$$

SRR was calculated by using data from the "Cashflow from Operations" chart of the enclosed COMFAR calculations.

10.4.5 Break - even Point (BEP)

BEP is the point at which sales revenues equal production costs (mean year of production period).

BEP in terms of physical units produced:

$$BEP_d = \frac{FC}{SP - VC}$$

BEP in terms of level of capacity utilization:

$$BEP_b = SP \frac{FC}{SP-VC}$$

where

FC = total fixed costs

SP = unit sales price (minus goods and service tax)

	A variant	B-variant	C variant
ex factory selling price	336,6 K	650 K	800
minus 25 % GST	-67,3 K	-130 K	160
factory unit price	269,3 K	520 K	640 K

VC = variable unit costs

Calculation was done using data from "Production Costs" chart as per 10.3 where depreciation and financial costs are average values from 15 years of operation.

	Production Costs	
	Fixed	Variable
Raw materials	-	721,6
Other materials	-	9 560,6
Fuel, energy	-	2 147,3
Direct labour	443,7	-
Maintenance	429,0	-
Spare parts	-	1 702,50
Factory overheads	866,8	-
Administrative overheads	689,1	-
Depreciation	6 744,3	-
Financial costs	2 001,0	-
Total production costs	11 173,9	14 132,0

A variant:

$$BEP_a = \frac{11\,173,9}{0,2693-0,2243} = 248\,309 \text{ t cement}$$

$$BEP_b = 0,2693 \frac{11\,173,9}{-0,2693-0,2243} = 66\,870 \text{ thousand K}$$

$$BEP = \frac{248\,309}{63\,000} = \frac{66\,870}{16\,965,9} = 394,1 \text{ \% capacity utilization}$$

B variant:

$$BEP_a = \frac{11\,173,9}{0,520-0,2243} = 37\,788 \text{ t cement}$$

$$BEP_b = 0,520 \frac{11\,173,9}{0,520-0,2243} = 19\,650 \text{ thousand K}$$

$$BEP = \frac{37\,788}{63\,000} = \frac{19\,650}{32\,760} = 60,0 \text{ \% capacity utilization}$$

C variant:

$$BEP_a = \frac{11\,173,9}{0,640-0,2243} = 26\,880 \text{ t cement}$$

$$BEP_b = 0,640 \frac{11\,173,9}{0,640-0,2243} = 17\,203 \text{ thousand K}$$

$$BEP = \frac{26\,880}{63\,000} = \frac{17\,203}{40\,320} = 42,7 \text{ \% capacity utilization}$$

10.4.6 Sensitivity Analysis

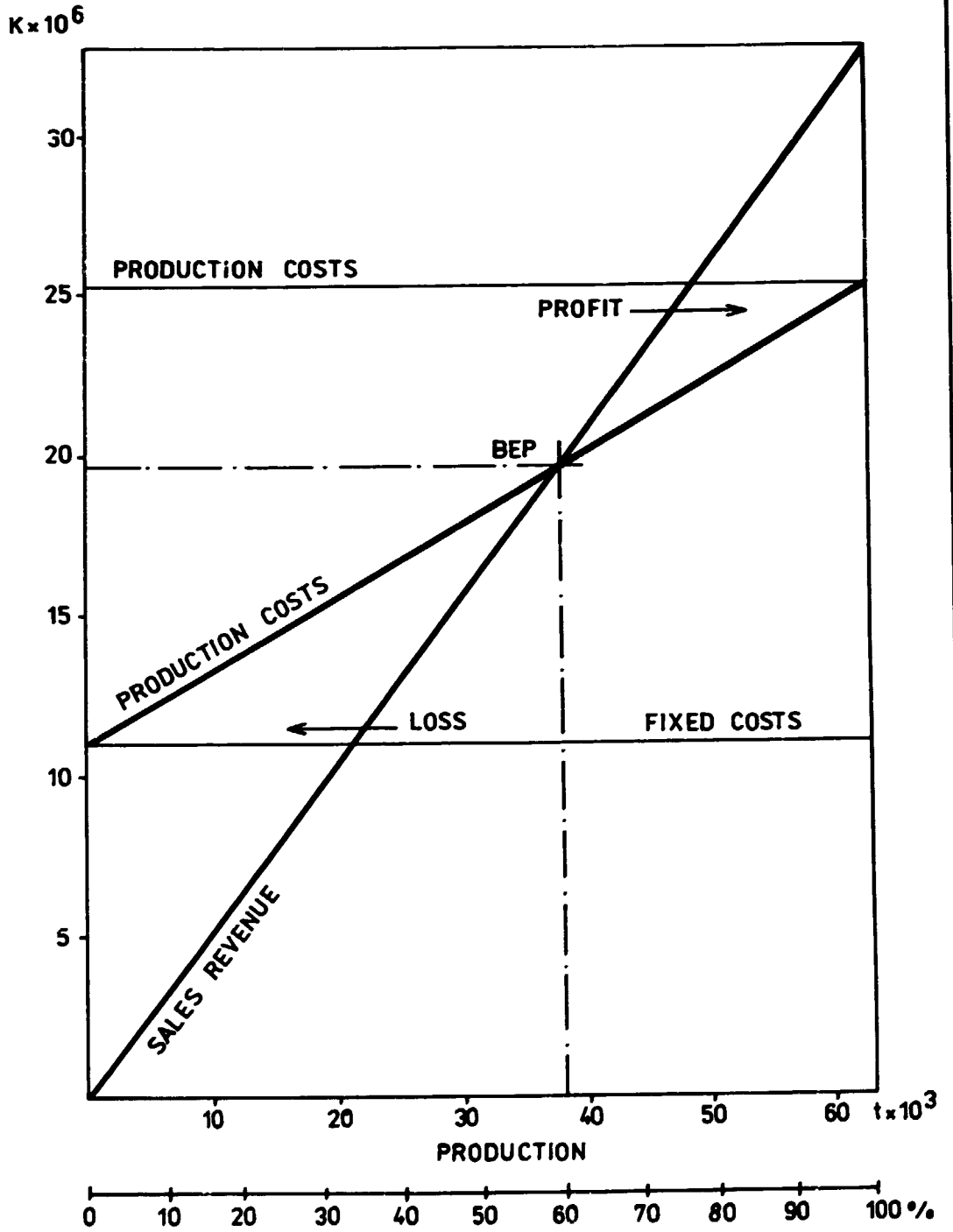
Sensitivity analysis shows change of IRR due to variations of:

- sales price
- operating costs
- initial investment.

Variations scale is from -20 to +20 per cent. The chart enclosed was set up by means of COMFAR software.

Chart 10.3

BREAK-EVEN POINT VARIANT B



10.5 Conclusions

The A variant representing the actual economic conditions is not feasible due to the actual State - fixed ex factory selling price which is lower than total production costs.

The B and C variants are feasible in spite of possible lack of sources of finance during the operation period and negative cashflow. Feasibility of the project strongly depends on the following three factors: unit price of cement, tax system and project financing.

10.5.1 Unit Price of Cement

The actual unit price equal to 336,60 K is not realistic since it is lower than production costs in the existing cement plants, therefore it does not create profit and deficit is balanced by the Government.

Ex factory selling price should be calculated, as follows:

Production costs
+ <u>Profit margin (max. 15 %)</u>
= Factory price
+ <u>Goods and service tax (25 %)</u>
= Ex factory selling price

It is obvious that profit limitation prevents from creation of adequate sources of financing necessary for operation causing negative cumulative cashflow.

10.5.2 Custom Duty and Tax Policy

Development of national economy of the Socialist Republic of the Union of Burma depends on projects of which materialization requires import of machinery, equipment and some materials.

Implementation and later operation of such projects bring about heavy burden of custom duties and taxes which produce negative effect on the investment and production costs, unit price of products and profit creation. It stands to reason whether the State - preferred projects should not enjoy tax holiday referring to following items:

- 15 % custom duty on CIF value of import;
- 30 % commodity and service tax on CIF value of import;
- 25 % goods and service tax on ex factory selling price;
- 30 % cooperative tax on profit.

10.5.3 Project Financing

As it was said earlier financing of this project shall be covered exclusively by foreign and local loans without equity capital.

Profitability of the project strongly depends on terms under which loans are provided. This Study takes into consideration the terms which were made available by the Burmese counterpart.

Provision of equity normally being equal to 30-40 % of the total investment cost would favourably affect cashflow and debt - service balance during operation of the proposed plant.

10.5.4 Conclusion

When making decision on implementation of the project it will be necessary to consider the said three aspects at least related to the C variant and take into consideration results of the economic analysis as evaluated in the following chapter.

Chapter XI.

ECONOMIC EVALUATION

ECONOMIC EVALUATION

Financial evaluation applying the market prices and the official exchange rate may result in conclusions irrelevant for the evaluation of the project in terms of its real contribution to the economy of the country. This applies particularly to this project, in the case of which the official exchange rate and the market prices of output and some inputs are considerably distorted and transfer payments represent about 50 % of the market prices of the imported technology. Great attention has been therefore paid to the determination of national parameters and to an adjustment of market prices; in both cases the Industrial Planning Department of Ministry of Industry No. 1 was consulted.

11.1 National Parameters

11.1.1 Social Rate of Discount (SRD)

Due to shortage of domestic financial resources and the position of the country as a capital borrower the social rate of discount should be higher than the interest rate at which the project can actually borrow capital from local financial institutions (5 per cent) and from abroad. Even though the Government policy aims at accepting only soft-term loans from abroad (up to 3 per cent interest), the actual discrepancy between the financial resources and the capacity of the country to absorb them urges that only highly profitable projects should be implemented. To support this policy it is recommended to consider the social rate of discount even though 6.5 per cent is used by the IPD.

11.1.2 Adjusted Foreign Exchange Rate

The current official foreign exchange rate 1\$ = 6.573 K differs strikingly from the black market foreign exchange rate oscillating around the level of 1\$ = 35K. The black market exchange rate is essentially a marginal exchange rate and, therefore, not suitable for measuring the (average) value of foreign exchange for the national economy.

The Manual for Evaluation of Industrial Projects proposes, i.a., to calculate the adjusted value of foreign exchange P^F by deficit/receipts method using the formula

$$P^F = R^F \frac{M}{B}, \text{ where}$$

P^F = adjusted rate of foreign exchange

R^F = official rate of foreign exchange

M = value of visible and invisible payments in domestic currency

B = value of visible and invisible receipts expressed in domestic currency

The main account (net of interest) of the Balance of Payments for the last 6 years is specified and corresponding deficit/receipts ratios are calculated below:

Main account of the Balance of Payments, net of interest (10^6 K)

	1979/81	1981/82	1982/83	1983/84	1984/85	1985/86
Payments	5002,9	6444,4	7371,0	5374,0	5169,1	5375,9
Receipts	3627,2	3899,4	3470,7	4018,4	3769,4	3979,3
Ratio	1,38	1,65	2,12	1,37	1,37	1,35

The ratio varies from 1,35 to 2,12; no definite trend can be predicted for the future.

The method has, however, little validity in a country where foreign trade is regulated by administrative (planning) instruments. Should there be no such regulation the Balance of Trade deficit would be larger and the deficit/receipt ratio higher. The foreign exchange rate computed in this way represents thus the lower limit of the scale within which the true value of foreign exchange is to be found.

The upper limit of the scale is the black market exchange rate, giving a ratio $\frac{35}{6.57} = 5.3$. Sometimes an average of these

two ratios is taken as the indication of true value of foreign exchange.

In this case the ratio would amount to approx. 3,5, giving the adjusted rate of exchange of approx. 23 K per US \$. This approach is, however, rather formal; it computes an average of the values with incompatible contents. An attempt was, therefore, made to calculate the true value of foreign exchange by comparing the unit FOB prices of the most important export commodities with the unit domestic costs (wholesale price + local transport to the border/port) of those commodities.

The 1985/86 FOB prices per one ton of the following commodities were ascertained from the Report to Pyithu Hluttaw: rice 1317 K, broken rice 1159 K, rubber 5365 K, zinc concentrate 1083 K, refined lead 3445 K, tungsten concentrate 37197 K, teak 4715 K. Knowledge of the wholesale prices + domestic transport costs (to the port or border) would make it possible to calculate foreign exchange ratios for individual commodities; the weighted average (the share of commodities in the total volume of export earnings serving as the weight) would indicate the average performance of the export sector in producing foreign currency. Unfortunately, it was not possible to obtain the required data before the departure of the mission. It is, therefore, necessary to make a professional estimate subject to amendment should the data become available. The adjusted rate of foreign exchange is estimated at 1 US \$ = 18 K. At this exchange rate the ratio $\frac{P^F}{R^F} = 2,74$.

11.1.3 Unskilled Labour

The national parameter for re-evaluating the costs of unskilled labour to the national economy is set at 0,5. However, since the wages of unskilled labour are in any case very low (6 K per day on average) and their share in the labour costs of the project is rather low it was agreed upon not to apply this parameter.

11.2. Prices

As explained in Chapter II, most of the prices are considerably distorted; due to the rigid price policy on one side and the changing production conditions on the other the prices very often underestimate the real market values of the products. This applies particularly to the products manufactured in the public sector.

The indirect tax system also contributes to differential deviation of the prices from the market values of products. A Goods and Services Tax (GST) of 25 per cent is levied on every domestically manufactured product (on ex factory basis). A Commodity Tax (CT) of 30 per cent is levied on CIF values of imported goods in addition to import duties; in the case of machinery and spare parts they amount to 15 per cent on average.

It is not possible to calculate and introduce shadow prices for all project inputs and outputs but an effort is made to adjust the prices of the most important ones.

11.2.1 Prices of Outputs (Cement, Electricity)

The necessity to increase the price of cement was explained in Chapter III. The determination of the price of cement to be applied in the economic evaluation follows the following reasoning:

a) The price should not be higher than the willingness to pay for cement in the Lashio region (3600 K/t).

b) Cement to be produced in the Lashio plant is basically a non-tradable product; its economic price equals the costs of providing the cement from an alternative source. The closest alternative source is the Thayet plant; economic costs of providing cement to Lashio region can be estimated as follows (K/t):

New ex factory price (see Chapter III)	650
transport costs Thayet-Mandalay (CIC boat)	232

unloading	10
allowance for wastage (6 per cent)	<u>53</u>
sub-total: economic price at Mandalay depot	945
transport cost Mandalay-Lashio (0,7 x road tariff)	309
reloading	10
allowance for wastage (6 per cent)	<u>19</u>
total: economic price at the Lashio plant	1283

The construction of the price is similar to that explained in Chapter III, in this case it is assumed, however, that all the incremental volume of cement transport will have to be handled by the more expensive modes of transport as the cheaper ones will not be available to meet the increased demand for transport services.

c) Even if it is assumed that the cement can be imported from abroad the economic costs to the country will be probably in the same order of magnitude:

CIF Rangoon 36 US \$ per ton x 18 K/\$	648 K/t
transport Rangoon-Lashio (road)	<u>677 K/t</u>
	1325 K/t

Using railway transport at least in the section Rangoon-Mandalay could somewhat reduce the costs.

The following prices of cement from the Lashio plant are, therefore, suggested for the purposes of economic evaluation of the project:

- 1283 K/t - cement sold at the plant
- 945 K/t - cement sold at the Mandalay depot (transport costs not considered)

Both prices are well below the willingness-to-pay level.

The price of electric power is set at 250 K/MWh (actual EPC selling rate).

11.2.2 Adjusting Prices of Input Items

Prices of some domestic products are far below their true market value. If their role in the manufacturing costs of cement is low the price distortions can be tolerated. This does not apply to the diesel oil the official price of which 2,30 K per gallon in Rangoon is far below the potential FOB price; an adjusted price of 10 K per gallon is used in the economic evaluation of the project.

There is one input item which should be mentioned separately: the land. Zero price of land is applied in the financial evaluation as the land is Government-owned and available for the project free of charge. In the economic evaluation the price can be expressed in terms of opportunity costs, as the benefit foregone in the case of alternative land use. The site is covered by bush at present but it could be converted into agricultural land. Under optimistic assumptions the land could produce 1800 K/ha of net benefit annually. Given the social rate of discount at 10 per cent the capitalized rent would amount to 18000 K/ha. About 5,2 ha is needed for the project (4,2 ha for the plant, approx. 1 ha for the quarry, roads etc.); the resulting amount of 93 600 K is high enough to cover any potential increase of the land value in the future.

Transfer payments are eliminated by

- a/ separating the import duties (15 %), the Commodity Tax (30 %) and the port clearance charges (6 %) from the costs of imported project inputs
- b/ reducing the costs of goods and services purchased locally by 20% (to eliminate the GST).

The elimination of GST is partial only; it is possible to eliminate it at the last step in the chain of selling operations the GST accumulated in the price in the course of preceding operations can not be reliably detected.

The most important value distorting factor is the foreign exchange rate. It is, however, desirable to accompany the application of the adjusted foreign exchange rate (factor 2.74) by more exact specification of the volume of imports: in addition to CIF values of direct imports it is desirable to estimate the indirect import (foreign exchange) component in the goods procured locally. Though this procedure operates with estimates only it encompasses the import impact of the project in more realistic terms because some of the domestically produced goods is heavily import-based.

The procedure of adjusting the costs of the input items concerned is described in the Explanatory Notes to the Tables 11.1 and 11.2 ("Adjusted Input Items").

11.3. Calculation of the Economic Cost Benefit Analysis (ECBA)

For calculating the ECBA standard COMFAR programmes were used but a modified procedure was applied: because the input data were adjusted prior to their processing by the computer the modified procedure consists in:

- filling in the COMFAR input data forms with adjusted input data (using, i.a., the Tables 11.1 and 11.2)
- processing the adjusted data by the COMFAR main (basic) system (used for financial analysis)
- processing the results of the preceding computation by the ECBA programme (transfer of the foreign salvage values into local ones, application of the factor for the adjusted foreign exchange rate).

Adjusted input data were compiled and ECBA calculations were carried out for two variants of project financing, namely:

1000 Kyats	Total Initial Investment (Adjusted)	Source of Finance	
Var. E 1 - credits and loans only			
Foreign	73 426,5	73 426,5	credit, loan
Local	<u>36 053,3</u>	<u>36 053,3</u>	MEB loan
Total	109 479,8	109 479,8	
Var. E 2 - credits, loan and local equity			
Foreign	73 426,5	73 426,5	credit, loan
Local	33 890,9	25 055,0	equity
		<u>8 835,9</u>	MEB loan
Total	107 317,4	107 317,4	

The calculations and their results are stored at a disquette under the following denominations:

Var. E 1 - "BURMA 4"

Var. E 2 - "BURMA 5"

Because the variant with equity is preferable from the financial point of view the main data describing the Var. E 2 are presented in the text as well while the description of Var. E 1 refers to Var. E 2 wherever applicable.

In the ANNEX No.1 (COMFAR) copies of the following computer prints are presented for the Var. E 2.

- TABI (adjusted input data)
- TABO
- Total Cashflows at Adjusted Exchange Rates
- Foreign Cashflows at Adjusted Exchange Rates^{1/}
- Absolute Efficiency Test
- Foreign Exchange Effect^{1/}

^{1/} Identical with Var. E 1

- Distribution of Net domestic Value Added
- Cashflows at Adjusted Exchange Rate (Grafix)
- Accumulated Cashflow at Adjusted Exchange Rate (Grafix)

TABI for Var.C 1 differs only in terms of financing local investment and in the corresponding interests during construction comprised in the pre-production expenditures.

In order to exclude misunderstanding it is repeated here that two prices are applied identically in both variants:

1283 K/t - cement sold ex factory at Lashio

945 K/t - cement sold at Mandalay depot.

The sales at Mandalay are accompanied by transport cost 319 K/t; the distribution of volume of output between Lashio and Mandalay over time is specified in Chapter 3.4 (see also TABI).

11.4 Comments on the Calculation Results

11.4.1 Absolute Efficiency Test (E)

Absolute efficiency test at adjusted foreign exchange rate (E_{Adj}) based on Var. E2 brings about the following result (in 1000 K):^{1/}

	<u>Grand Total</u>	<u>Construction</u>	<u>Production</u>
Value of Output	1155385,00	0,0	1155385
Material Inputs	442937,00	228284,50	214652,50
of which: Investment	200325,70	228284,50	-27958,77
Operation	242611,30	0,0	242611,30
Net Domestic Value Added	712447,50	-228284,50	940732,00
Repatriated Payments	253014,00	0,0	251314,00

1/ Var. E 1 and E2 differ only in local sources of finance; the differences of E_{Adj} are marginal

	Grand Total	Construction	Production
Net National Value Added (NNVA)	459433,70	-228284,50	687718,10
of which: Wages	14016,26	0,0	14016,26
Social Surplus	445417,50	-228284,50	673701,90
Present Values at 10 %			
Net National Value Added	55641,42		
Wages	6917,40		
Social Surplus	48724,02		

The E_{Adj} presents highly satisfactory results. The present value of the NNVA at the Social Rate of Discount (10 %) is positive; due to the very low wages it consists mainly of social surplus (approx. 90 %). This result has been achieved in spite of adjusting the costs of all direct and indirect import inputs by the factor 2,74 (adjusted foreign exchange rate); the positive outcome can be ascribed partly to the elimination of transfer payments but mainly to higher sales prices. It can be estimated that re-inclusion of transfer payments in project costs would not turn the present value of the NNVA negative but a drastic reduction of the sales price to say 650 K/ton would result in negative NNVA; this, however, is a formal consideration only because the economic price applied in the calculation is well substantiated.

The absolute efficiency test for the Var. E 1 differs insignificantly:

Present values at 10% (1000 K)	E 1	E 2
net national value added	53665,75	55641,42
wages	6917,40	6917,40
social surplus	46748,33	48724,02

11.4.2 Relative Efficiency Test (RE)

Relative efficiency tests serve ranking purposes is there are more projects under consideration. This is not the case in this Feasibility Study but more projects are considered by the CIC both in the field of cement industry and in other industry branches. The relative efficiency tests are related to two scarce factors: capital (C) expressed by total investment costs and foreign exchange (FE); they indicate how many units of NNVA are generated by one unit of the scarce factor (all in present values).

	E1	E2
RE^C	0,26	0,27
RE^{FE}	-0,38	-0,39

When applying adjusted inputs and adjusted foreign exchange rate one unit of present value of total investment generates 0,26 or 0,27 units of present value of the NNVA.

The negative ratio RE^{FE} reflects the fact that the project is neither export nor import-substitution oriented.

When comparing these relative efficiency tests with other projects the differences in project data adjustments should be considered.

11.4.3 Economic Internal Rate of Return / IRR_E /

	E 1	E 2
IRR_E	18,40	18,56

The IRR_E is well above the SRD (10%); the project would generate net benefits to the national economy above the standard level. The difference between the Var. E 1 and E 2 is marginal which implies that the difference in the structure of financing has little impact upon the total investment profitability of the project.

The IRR_E is much higher than the IRR calculated for the financial evaluation; the highly positive outcome of the economic evaluation can be ascribed partly to the elimination of the transfer payments and mainly to higher sales prices. Sensitivity of the present value of the net cashflows (and thus of the IRR_E to sales prices is considerable (see the Chart 11.1) but the net cashflows are high enough to compensate for a potential sales price decrease of up to 30%; a 30% sales price decrease would reduce the IRR_E to 10% which is considered to be the cut-off rate for the economic evaluation.

One of factors influencing the high level of the price of cement in the economic evaluation is the assumed cost of transport of cement from the Mandalay depot to Lashio (338 K/t). Even if railway transport could be considered (70 K tariff, 15 K subsidy, 10 K unloading = 95 K/t) the resulting decrease of the price (338-95 = 243 K/t) would be well within the 30 % price tolerance (1 283 x 0,30 = 383 K/t).

Similarly a decline of capacity utilization would also reduce the economic IRR_E but here the relation is less sensitive for two reasons:

- lower production would decrease the variable costs as well
- lower production would result in lower volume of cement transported to Mandalay (lower price, transport costs).

A COMFAR calculation proves that giving up the production for sales at Mandalay (implying capacity underutilization from 31 % in 1995 to 4 % in 2002) would reduce the economic IRR from 18,85 % to 16,38 % only.

The sensitivity of the present value (and IRR_E) to variations of initial investment costs is less significant: even an increase of initial investment costs by 40 % would not reduce the IRR_E below the 10 % level. On the other side, a decline of investment costs by 30 % would elevate the IRR_E above the 25 % level.

Similarly, the sensitivity of the present value to the variations of operating costs is also relatively low (see Chart 11.3).

11.4.4 Net Foreign Exchange Effect

Because the project is neither export-oriented nor does it substitute import the net foreign exchange effect must be negative.

In addition to the debt service the project will induce a lasting flow of direct and indirect imports (materials) at the level of approx. 2,1 mil. K (0,325 mil. US \$) per annum, (This would allow for approx. 9000 tons of cement imports). The present value of the stream of foreign exchange outflows discounted at 10 % amounts to approx. 54,6 mil. K (8,2 mil. US \$).

(The salvage value of foreign investment costs considered as local). The total amount would be higher if a lower rate of discount is applied.

A copy of the COMFAR calculation print is in the Annex No.1.

11.4.5 Other Effects

The project will generate approx. 250 job opportunities for local people, of which about 20 unskilled. The employment effect is not very significant in terms of the absolute number of people to be employed by the cement plant but under the conditions of the Lashio region the plant would become a pivot industrial undertaking bringing in to the remote region a relatively advanced technology and changing the traditional employment pattern.

The regional development impact is the crucial benefit of the project. Not so much, however, for the value added generated by the project and retained in the region because the "standard" regional distribution effect is not very impressive: due to low wages the amount of national wages retained mainly in the region is about 712 000 K per year only. Much more important are the indirect effects induced by the availability of cement in the region. The availability of cement in the region will make it possible to:

- implement the projects under the International Drinking Water Supply and Sanitation Decade (IDWSSD)

- implement other projects important for the economic development of the region, particularly the irrigation projects
- stimulate economic activities in general by providing a product for which there is urgent demand.

The project could also have non-economic effects the specification and importance of which can be best assessed by the Burmese authorities themselves.

11.5 Conclusions

The economic cost benefit analysis (ECBA) has been carried out under the following assumptions:

- annual production of 63000 tons of cement from the 3rd year of operations onwards
- selling prices
 - 1283 K/t - for cement sold ex factory
 - 945 K/t - for cement sold at Mandalay
- transport costs Lashio - Mandalay: 319 K/t (incl. 10 K for unloading)
- project inputs adjusted by
 - . reclassification of local and foreign costs (specification of indirect import component in locally procured goods and services)
 - . application of the adjusted foreign exchange rate 1 US \$ = 18 K (factor 2,74)
 - . elimination of transfer payments (15 % import duties, 30 % Commodity Tax, 25 % Goods and Services Tax, 6 % port clearance fees)
- two variants of financing: without equity and with equity (approx. 75% of local funds or 23% of total funds).

- Social rate of discount (SRD) 10%

The analysis results in the following conclusions:

- a/ The project passes the absolute efficiency test; the net national value added is positive and higher than the volume of wages.

- b/ The project shows a high economic internal rate of return (approx. 18%/ which is considerably above the SRD and implies high profitability of total investment for the national economy.

- c/ The project shall have considerable indirect impact upon the economic and social development of the Lashio region and the Shan States.

In view of the above mentioned partial conclusions it is possible to recommend the project for a further follow up aiming at implementation. The only negative aspect of the project is the negative net foreign exchange effect (in total approx. 5,4 mil. K or 8,2 mil. US \$).

In order to keep this negative effect at the lowest possible level efforts should be made to secure grants or soft term loans for financing the foreign investment costs and to increase gradually the substitution of imported production materials by local production. Foreign technical assistance should also be minimized by making use of the expertise acquired in the existing cement plants.

The difference in the structure of local finances does not influence the economic impact of the project upon the national economy; preference for a financing pattern should be derived from the financial evaluation of the project.

The positive outcome of the economic evaluation of the project rests mainly on the price of cement as specified under the assumptions. However high the price may appear when compared with the present ex factory price it is well substantiated by the high transport costs of cement from alternative sources. The economic evaluation based on this price is therefore valid irrespective of what the official ex factory price is or shall be.

As the economic internal rate of return is not going to decline below the SRD level even if the prices decline by 30 % it can be deduced that the economic IRR would not decline below the SRD level even if the volume of output decreases by 30 % and even slightly more. Full capacity utilization should, however, remain to be the ultimate goal of the management policy as it will be the decisive factor for the efficiency of the plant.

+ + +

+ + +

The conclusions are valid under the assumptions specified above. The recommendation to go ahead with the project (200 TPD plant) should be considered within a broader context of the cement industry, taking into account questions which could not be answered in this Feasibility Study:

- feasibility and efficiency of rehabilitating the kiln No. 1 at the Thayet plant (if the projects compete for scarce resources)
- feasibility and efficiency of establishing a new cement plant with a larger capacity at Mandalay (th centre of cement consumption in Upper Burma)
- feasibility of rehabilitating the railway Mandalay-Lashio.

Rehabilitation of the railway system may justify a larger capacity at Lashio if the unit cost of transport could be kept below the cost saving effect of the larger capacity. As evident from the Annex No. 2 the capacity of 400 TPD would reduce the unit production costs by approx. 50-70 K/t. It is highly improbable that the transport costs could be reduced below the costs saving effect of the larger capacity so that the issue is rather theoretical and a decision to establish the 200 TPD plant at Lashio is well justified.

Table 11.1 ADJUSTED INPUT ITEMS I (10³ K)

Items	CIF	DC	IFCC	IFCC	NFCC	LC	ALC	TFC
			%					
	1	2	3	4	5	6	7	8

Schedule 4.1 Adj.: Materials and inputs

Raw Materials (first)

Gypsum	-	721,6	10	72,1	47,7	649,5	519,6	47,7
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Raw Materials (others)

Paper bags	-	8.136,5	10	813,6	538,8	7.322,9	5.858,3	538,8
Explosives	-	26,4	25	6,6	4,4	19,8	15,8	4,4
Cap primers	-	12,8	-	-	-	12,8	10,2	-
Detonating fuse	-	4,6	-	-	-	4,6	3,7	-
Refractories	-	580,0	-	-	-	580,0	464,0	-
Grinding balls	126,7	11,8	-	-	-	11,8	9,4	126,7
Armouring	302,4	7,5	-	-	-	7,5	6,0	302,4
Oils + lubricants	-	133,0	30	39,9	26,4	93,1	74,5	26,4
sub - total							6.441,9	998,7

Utilities

Electric power	-	65,0	-	-	-	65,0	52,0	-
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Energy

Coal		1.993,0	10	193,3	132,0	1.794,0	1.435,2	132,0
Diesel oil ^{1/}							308,0 ^{1/}	
							1.743,2	132,0

Spare parts	1.017,0	166,8	-	-	-	166,8	133,4	1.017,0
Factory Overhead	-	280,0	-	-	-	280,0	224,0	-
Admin., non-labour	-	120,0	-	-	-	120,0	96,0	-

1/ At 10 K per gallon (as against the official price 2,30 K per gallon and the price at Lashio 5 K per gallon)

Explanatory Notes :

- (1) ... Items imported for the project
- (2) ... Domestic costs (of locally purchased goods and services)
- (3) ... Indirect foreign currency component (percentage)
in domestic costs (variable costs only)
- (4) ... dtto, in Kyats $(4) = (2) \times (3)$
- (5) ... Net foreign currency component $(5) = (4) : 1,51^1)$
- (6) ... Local costs $(6) = (2) - (4)$
- (7) ... Adjusted local costs $(7) = (6) \times 0,8^2)$
- (8) ... Total foreign costs $(8) = (1) + (5)$

1) to eliminate : Import duties	0,15
Commodity Tax	0,30
port handling fees	0,06
	<hr/>
	0,51

2) to eliminate Goods and Services Tax (25%)

Under the "Investment during Construction" input data the costs of the service equipment (lorries) was adjusted similarly - see COMFAR TABI entry lines 34 and 46. On the other hand the material components of the Factory Overheads (entry line 89) and Administration, non-labour (entry line 91) are kept unadjusted due to their low share in the costs concerned.

Table 11.2 ADJUSTED INPUT ITEMS II (10³ K)

Items	CIF	DC	IFCC %	IFCC	NFCC	LC	ATC	TFC
	1	2	3	4	5	6	7	8
<u>Schedule 6.1 Adj.: Equipment - Investment Costs</u>								
Production equip.	27.398	902	50	451	298,7	451	360,8	27.696,7
Auxiliary equip. ^{1/}	17.434	1.958	50	979	648,3	979	783,2	18.082,3
Service equipment	184	260	20	52	34,4	208	136,4	218,4
Spare parts	3.780	270	70	189	125,2	81	64,8	3.905,2
Freight	2.806	1.081	-	-	-	1.081	864,8	2.806,0
Erection	-	5.295	-	-	-	5.295	4.236,0	-
Project planning	1.315	-	-	-	-	-	-	1.315,0
Contingencies	2.646	488	50	244,0	162,7	244,0	195,2	2.808,7
							6.671,2	56.832,3
<u>Schedule 6.3 Adj.: Civil Engineering - Investment</u>								
Site preparation	-	3.180	-	-	-	3.180	2.544,0	-
Buildings	8.287	19.110	-	-	-	19.110	15.288,0	8.287,0
Outdoor works	-	1.498	10	149,8	99,2	1.348,2	1.078,6	99,2
Housing quarters	-	1.860	-	-	-	1.860	1.488,0	-
Freight	456	945	-	-	-	945	756,0	456,0
Project planning	-	1.020	-	-	-	1.020	816,0	-
Contingencies	437	1.381	-	-	-	1.381	1.104,8	437,0
							23.075,4	9.279,2
<u>Schedule 6.4 Adj.: Civil Engineering - Production</u>								
Maintenance by CC	92	387	-	-	-	337	269,6	92,0

^{1/} inc. hydroel. station

Chart 11.1

Present value, adj. exchange rate

variation of sales prices

10^6 1000 K (Kyats)

NPV at economic prices

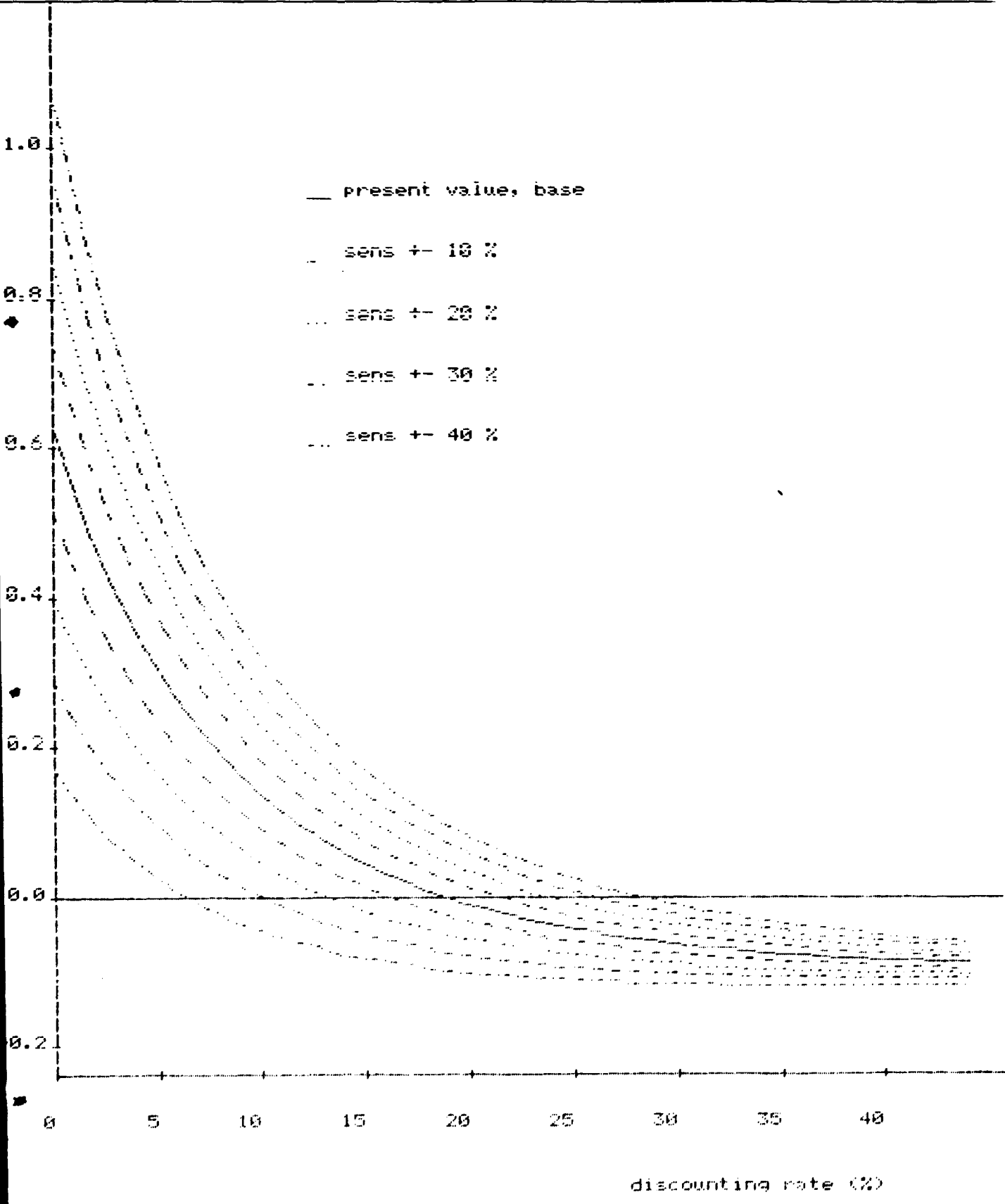


Chart 11.2

Present value, adj.exchange rate	variation of initial investment
1000 K (Kyats)	NPV at economic prices

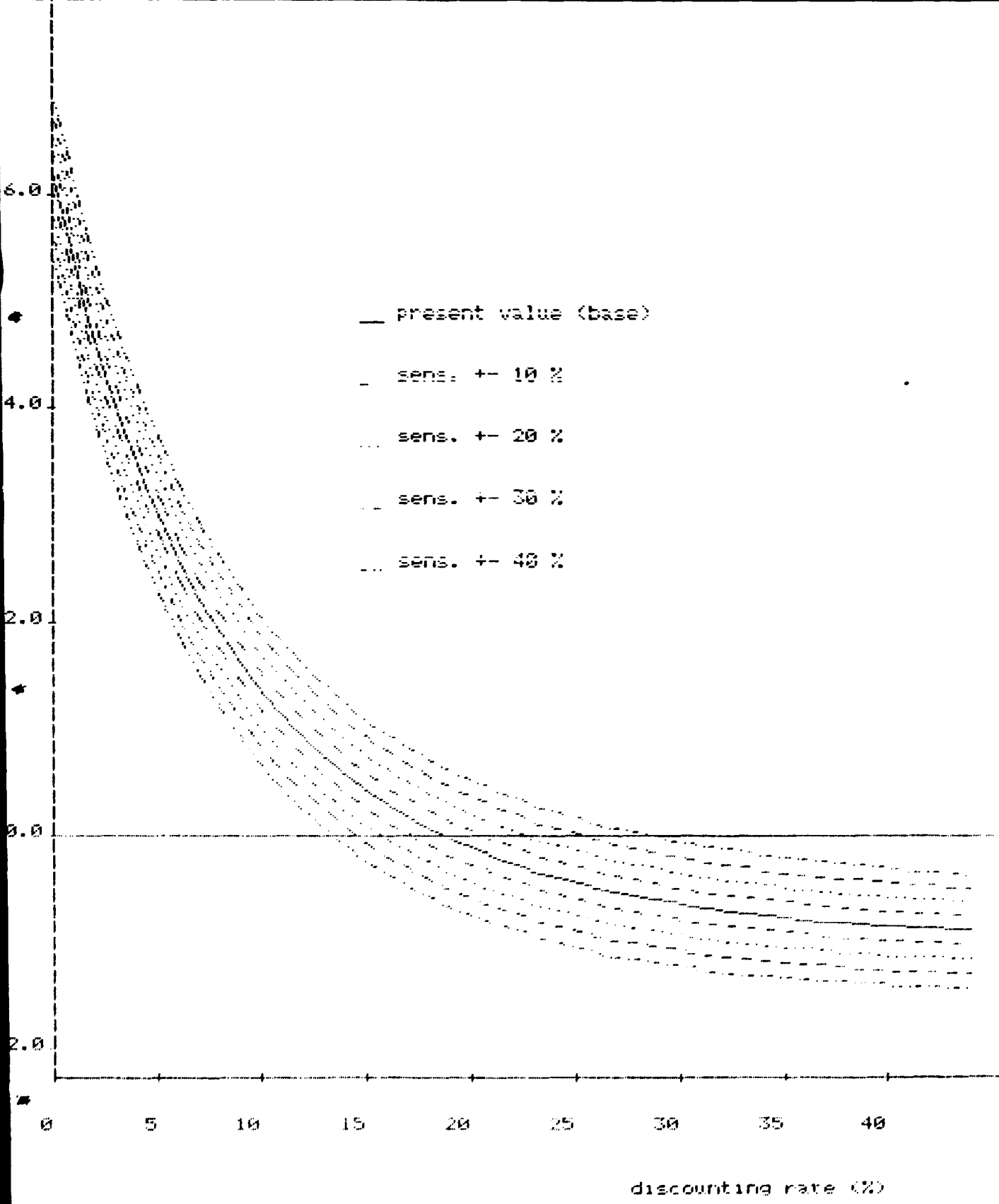
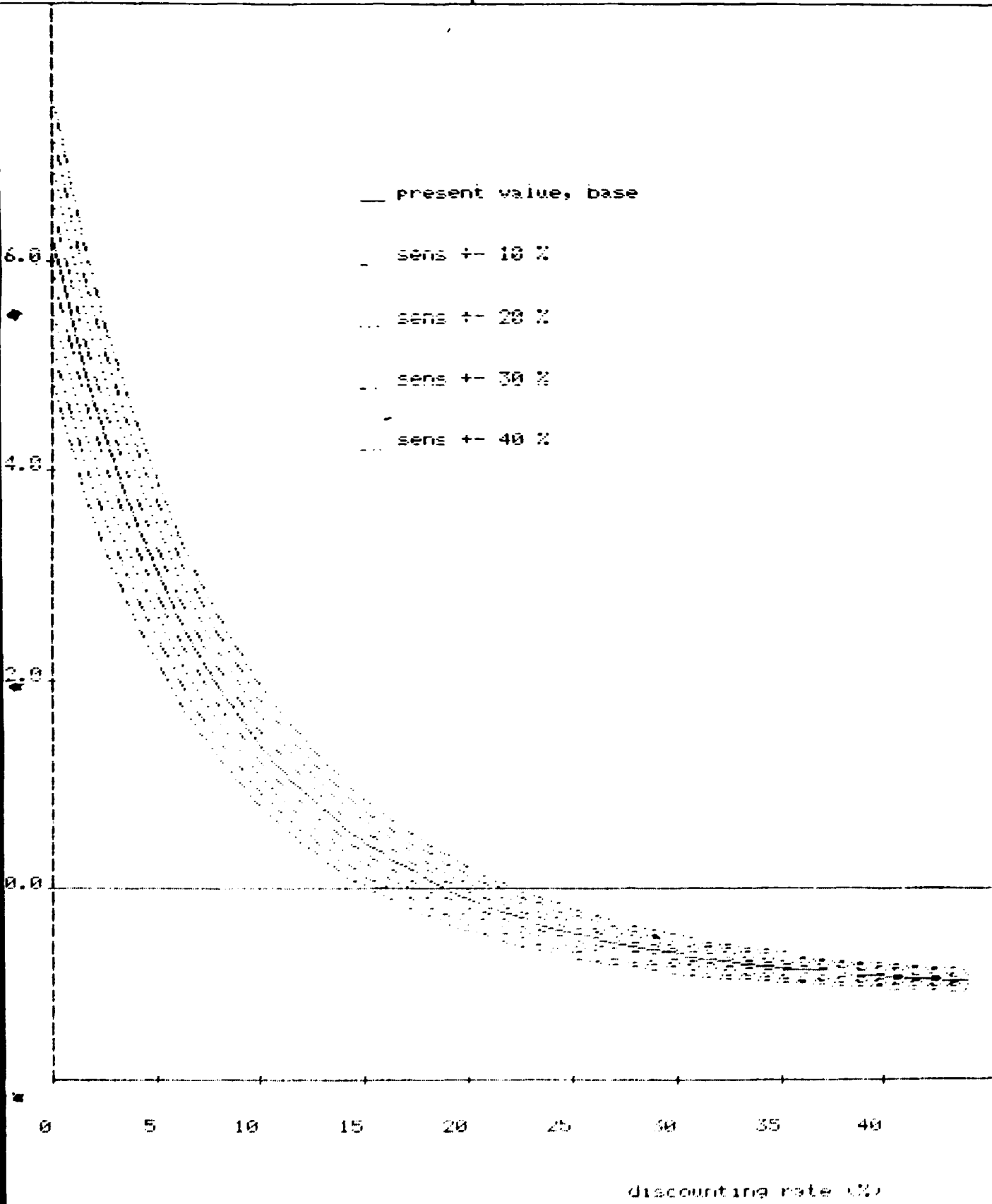


Chart 11.3

Present value, adj. exchange rate

variation of operating costs

0.5 1000 K (Kyats)



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A N N E X E S

Contents

- I. COMFAR
- II. 400 TPD CEMENT PLANT

Annex I.

C O M F A R

1. COMFAR - FINANCIAL ANALYSIS

- A Variant - Selling Price 336,60 K
- B Variant - Selling Price 650,-- K
- C Variant - Selling Price 800,-- K

2. COMFAR - ECONOMIC ANALYSIS

- E₂ Variant - With Equity

COMFAR - FINANCIAL ANALYSIS

A Variant

Selling Price 336,60 K

Tab: BURMA1 : Text Variables

CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA

Project Name: Mini - Cement Plant at Lashio
Date: 27-06-1988
Name of Alternative: Variant A - Selling Price 336.6 K
Accounting currency: 1988 K
Name of Product (A): Portland Cement
Name of Product (B): Electric Power

Tab: BURMA1 : General Variables

CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA

Multiplier to compute foreign into accounting currency: 1.000
Multiplier to compute local into accounting currency: 1.000
Construction phase: 3 year(s), planned yearly
Interest rate for computation of future values in % p.a.: 8.000
Percent rate for CF-discounting: 5.000

Tabi BURMA1 : Source of finance - foreign funds

CONFAM 2.1 - POLYTECHNIK, PRAGA, CZECHOSLOVAKIA -----

Equity - B: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 12 year(s)
 rates are paid yearly
Period of grace: 3 year(s)
Interests payable: 3.0 % for year 4 through 17

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Equity - G: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 5 year(s)
 rates are paid yearly
Period of grace: 1 year(s)
Interests payable: 5.0 % for year 4 through 8

Loan B: not specified

Loan C: not specified

Overdraft: not specified



Mini - Cement Plant at Lashio
27-06-1985
Variant A - Selling Price 336.5 K

3 year(s) of construction, 15 years of production
currency conversion rates:
foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6685.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	70977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	11044.50	16161.30	16625.60
depreciation :	8681.45	8681.45	8681.45
interest :	6101.31	5306.91	4512.51
production costs	25827.26	30149.66	29819.56
thereof foreign	29.9% %	26.13 %	25.87 %
total sales :	12975.19	21457.51	22517.00
gross income :	-15184.67	-12721.25	-11542.96
net income :	-15184.67	-12721.25	-11542.96
cash balance :	-25051.17	-21612.17	-24061.30
net cashflow :	-3061.06	-417.27	1453.88

Net Present Value at: 5.00 % = -112031.00
Internal Rate of Return: 4.45 %
Return on equity1: not found
Return on equity2: -9.43 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAMA, CZECHOSLOVAKIA

Bini - Cement Plant at Lashio
27-06-1989
Variant A - Selling Price 336.6 K

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143014.00	46.462 % foreign
current assets:	6603.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	70977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	4	5	6
operating costs:	16625.60	16625.60	16625.60
depreciation :	8681.45	8381.15	5865.65
interest :	3540.67	2568.83	1596.98
production costs	28247.72	27575.57	24808.43
thereof foreign	26.13 %	26.67 %	24.64 %
total sales :	22517.00	22517.00	22517.00
gross income :	-10571.12	-9298.98	-5811.83
net income :	-10571.12	-9298.98	-5811.83
cash balance :	-23692.42	-25723.57	-5868.73
net cashflow :	1651.00	-1332.00	1651.00

Net Present Value at: 5.00 % = -112051.00
Internal Rate of Return: -4.45 %
Return on equity1: not found
Return on equity2: -9.43 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIO

COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-86-1986
Variant A - Selling Price 336.6 K

3 year(s) of construction, 15 years of production
currency conversion rates:
foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6603.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	78977.00	
local loans :	79440.00	
total funds :	158417.00	47.187 % foreign

Cashflow from operations

Year:	7	8	9
operating costs:	16625.60	16625.60	16625.60
depreciation :	5865.95	5865.85	5865.95
interest :	1419.54	1242.10	1864.66
production costs	23918.99	23733.55	23556.11
thereof foreign	24.03 %	23.51 %	22.93 %
total sales :	22517.80	22517.80	22517.80
gross income :	-5634.39	-5456.95	-5279.51
net income :	-5634.39	-5456.95	-5279.51
cash balance :	-5623.29	-5505.85	-5328.40
net cashflow :	1651.00	1651.00	1651.00

Net Present Value at: 5.00 % = -112031.80
Internal Rate of Return: -4.45 %
Return on equity1: not found
Return on equity2: -9.43 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1988
Variant A - Selling Price 336.6 K

3 year(s) of construction, 15 years of production
currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6605.00	62.971 % foreign
total assets:	150417.00	47.197 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans:	79977.00	
local loans:	79440.00	
total funds:	150417.00	47.197 % foreign

Cashflow from operations

Year:	13	14	15
operating costs:	16625.60	16625.60	16625.60
depreciation :	5865.85	5865.95	5565.55
interest :	354.89	177.44	0.00
production costs	22946.34	22668.89	22191.15
thereof foreign	20.54 %	19.92 %	19.55 %
total sales :	22517.80	22517.80	22517.80
gross income :	-4569.74	-4392.29	-3914.55
net income :	-4569.74	-4392.29	-3914.55
cash balance :	-4618.63	-4441.19	1651.00
net cashflow :	1651.00	1651.00	1651.00

Net Present Value at: 5.00 % = -112031.00
Internal Rate of Return: -4.45 %
Return on equity1: not found
Return on equity2: -9.43 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



Total Initial Investment in 1000 K

Year	1990	1991	1992
Fixed investment costs			0.00
Land, site preparation, development	0.00	0.00	7023.00
Buildings and civil works	13760.00	22096.00	3605.00
Auxiliary and service facilities	0.20	0.00	0.00
Incorporated fixed assets	0.00	0.00	4000.00
Plant machinery and equipment	1315.00	70562.00	
Total fixed investment costs	15075.00	100658.00	14923.00
Pre-production capital expenditures.	1112.00	4117.00	8043.00
Net working capital	0.00	0.00	6605.00
Total initial investment costs	16193.00	104775.00	29449.00
Of it foreign, in %	30.06	55.46	27.17



COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Current Investment in 1000 K

Year	1993	1994	1995	1996	1997	1998-2001
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities	0.00	0.00	0.00	0.00	3003.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	3003.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	2659.95	1664.37	197.12	0.00	0.00	0.00
Total current investment costs	2659.95	1664.37	197.12	0.00	3003.00	0.00
Of it foreign, X	20.12	19.26	13.24	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-06-1922

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Current Investment in 1000 K

Year	2002
Fixed investment costs	
Land, site preparation, development	0.00
Buildings and civil works	0.00
Auxiliary and service facilities	3003.00
Incorporated fixed assets	0.00
Plant, machinery and equipment	0.00
Total fixed investment costs	3003.00
Preproduction capitals expenditures.	0.00
Working capital	0.00
Total current investment costs	3003.00
Of it foreign, X	0.00

Mini - Cement Plant at Lashio --- 27-06-1922



COMFAR
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNIA, PRAGA, CZECHOSLOVAKIA -----

Total Production Costs in 1990 K

Year	1993	1994	1995	1996	1997	1998
I of man. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	396.90	635.50	-721.60	721.50	721.60	721.50
Other raw materials	5250.30	9052.60	9560.60	9560.60	9560.60	9560.60
Utilities	39.00	65.00	65.00	65.00	65.00	65.00
Energy	1204.60	2039.90	2147.30	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	112.00	278.00	429.00	429.00	429.00	429.00
Spares	936.40	1617.40	1702.50	1702.50	1702.50	1702.50
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	9257.70	15070.90	15936.50	15936.50	15936.50	15936.50
Administrative overheads	1796.00	1090.40	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	8681.45	8681.45	8681.45	8681.45	8381.15	5065.05
Financial costs	6181.31	5326.91	4512.51	3540.67	2560.83	1596.92
Total production costs	25827.26	30149.66	29819.56	28847.72	27575.57	24093.43
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, I	29.96	26.13	25.07	26.13	26.67	24.64
Of it variable, I	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	1810.50	1114.10	712.00	712.00	712.00	712.00

----- Mini - Cement Plant at Lashio --- 27-05-1998 -----



COMFAR
2.1 UNIO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	1999	2000	2001	2002	2003	2004
% of new capacity (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Raw material 1	721.60	721.60	721.60	721.60	721.60	721.60
Other raw materials	9560.60	9560.60	9560.60	9560.60	9560.60	9560.60
Utilities	65.00	65.00	65.00	65.00	65.00	65.00
Energy	2147.30	2147.30	2147.30	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	429.00	429.00	429.00	429.00	429.00	429.00
Spares	1702.50	1702.50	1702.50	1702.50	1702.50	1702.50
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	15936.50	15936.50	15936.50	15936.50	15936.50	15936.50
Administrative overheads	689.10	689.10	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	5865.05	5865.05	5865.05	5565.55	5865.05	5865.05
Financial costs	1419.54	1292.10	1064.66	837.21	709.77	532.33
Total production costs	23910.99	23733.55	23556.10	23078.36	23201.22	23023.78
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, %	24.00	23.51	22.93	22.64	21.76	21.15
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	712.00	712.00	712.00	712.00	712.00	712.00

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	2005	2006	2007
I of non. capacity (single product)	0.00	0.00	0.00
Raw material I	721.60	721.60	721.60
Other raw materials	9560.60	9560.60	9560.60
Utilities	65.00	65.00	65.00
Energy	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70
Repair, maintenance	429.00	429.00	429.00
Spares	1702.50	1702.50	1702.50
Factory overheads	866.80	866.80	866.80
Factory costs	15936.50	15936.50	15936.50
Administrative overheads	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	5865.85	5865.85	5565.55
Financial costs	354.89	177.44	0.00
Total production costs	22946.33	22662.80	22191.15
Costs per unit (single product)	0.00	0.00	0.00
Of it foreign, I	20.54	19.92	19.55
Of it variable, I	0.00	0.00	0.00
Total labour	712.80	712.80	712.80

Mini - Cement Plant at Lashio --- 27-26-1968



COMFAR
2.1 UNIO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Working Capital in 1000 K

Year	1993	1994	1995	1996-200?
Coverage ndc coto				
Current assets &				
Accounts receivable 7 51.4	260.11	392.59	405.74	405.74
Inventory and materials 83 4.1	7989.25	8995.76	9121.64	9121.64
Energy 30 12.0	103.38	167.99	178.94	178.94
Spares 190 2.0	468.28	803.70	851.25	851.25
Work in progress 8 45.0	106.05	303.36	319.96	319.96
Finished products 12 30.0	316.05	482.00	502.92	502.92
Cash in hand 15 24.0	172.74	178.68	172.13	172.13
Total current assets	9495.78	11351.06	11552.58	11552.58
Current liabilities and				
Accounts payable 9 39.1	230.83	383.76	488.14	488.14
Net working capital	9262.95	10947.32	11144.44	11144.44
Increase in working capital	2659.95	1684.37	197.12	0.00
Net working capital, local	4569.84	5929.87	6100.54	6100.99
Net working capital, foreign	4693.11	5017.45	5043.54	5043.54

Note: ndc = minimum days of coverage ; coto = coefficient of turnover .

Mini - Cement Plant at Lashio --- 27-06-1985



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Source of Finance, construction in 1000 K

Year	1990	1991	1992
Equity, ordinary ..	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00
Loan A, foreign .	4867.00	58110.00	8323.00
Loan B, foreign..	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00
Loan A, local....	11326.00	46665.00	21449.00
Loan B, local....	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00
Total loan	16193.00	104775.00	29449.00
Current liabilities	0.00	0.00	0.00
Bank overdraft	0.00	0.00	0.00
Total funds	16193.00	104775.00	29449.00

Mini - Cement Plant at Lashio --- 27-05-1983



COMFAR
21 UNIO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Source of Finance, production in 1000 K

Year	1993	1994	1995	1996	1997	1998	1999
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-15000.00	-15000.00	-15000.00	-15000.00	-15000.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-15000.00	-15000.00	-21002.75	-21002.75	-21002.75	-5914.75	-5914.75
Current liabilities	230.93	152.95	24.30	0.00	0.00	0.00	0.00
Bank overdraft	25051.17	21612.16	24051.30	23692.41	25723.50	5060.73	5003.30
Total funds	9394.00	5077.09	3023.02	1009.66	3920.05	-54.02	-231.45

Mini - Cement Plant at Lashio --- 27-06-1900

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Source of Finance, production in 1000 K

Year	2000	2001	2002	2003	2004	2005	2006
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Current liabilities	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bank overdraft	5505.04	5320.41	0153.97	4973.52	4790.09	4610.63	4441.20
Total funds	-400.91	-506.34	2239.22	-941.23	-1110.66	-1296.13	-1475.55

Mini - Cement Plant at Lashio --- 27-06-1900



COMFAR[®]
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Source of Finance, production in 1988 K

Year	2007
Equity, ordinary ..	0.00
Equity, preference.	0.00
Subsidies, grants .	0.00
Loan A, foreign .	0.00
Loan B, foreign..	0.00
Loan C, foreign .	0.00
Loan A, local....	0.00
Loan B, local....	0.00
Loan C, local....	0.00

Total loan	0.00
Current liabilities	0.00
Bank overdraft	-1651.00

Total funds	-1651.00

Mini - Cement Plant at Lashio --- 27-05-1998



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Cashflow Tables, construction in 1000 K

Year	1990	1991	1992
Total cash inflow . .	16193.00	104775.00	29449.00
Financial resources . .	16193.00	104775.00	29449.00
Sales, net of tax . .	0.00	0.00	0.00
Total cash outflow . .	16193.00	104775.00	29449.00
Total assets	16193.00	104775.00	29449.00
Operating costs . . .	0.00	0.00	0.00
Cost of finance . . .	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax . . .	0.00	0.00	0.00
Dividends paid . . .	0.00	0.00	0.00
Surplus (deficit) .	0.00	0.00	0.00
Cumulated cash balance	0.00	0.00	0.00
Inflow, local	11326.00	46665.00	21449.00
Outflow, local	11326.00	46665.00	21449.00
Surplus (deficit) .	0.00	0.00	0.00
Inflow, foreign . . .	4867.00	58110.00	8000.00
Outflow, foreign . . .	4867.00	58110.00	8000.00
Surplus (deficit) .	0.00	0.00	0.00
Net cashflow	-16193.00	-104775.00	-29449.00
Cumulated net cashflow	-16193.00	-120968.00	-150417.00

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Cashflow tables, production in 1990 K

Year	1993	1994	1995	1996	1997	1998
Total cash inflow . .	18673.42	17581.34	18389.92	18276.60	18276.60	18276.60
Financial resources .	230.93	152.93	24.38	0.00	0.00	0.00
Sales, net of tax . .	18442.59	17428.41	18276.62	18276.60	18276.60	18276.60
Total cash outflow . .	35924.59	39193.52	45162.36	41769.82	44000.17	24137.33
Total assets	2890.78	1837.30	221.50	0.00	3033.00	0.00
Operating costs . . .	11844.50	16161.30	16625.60	16625.50	16625.60	16625.60
Cost of finance . . .	6101.31	5386.91	4512.51	3540.57	2568.93	1596.98
Repayment	15882.00	15853.60	21902.75	21802.75	21502.75	5914.75
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	-25051.17	-21612.17	-24661.38	-23692.42	-25723.57	-5230.73
Cumulated cash balance	-25051.17	-46663.34	-71524.72	-95217.14	-120940.70	-126801.50
Inflow, local	18807.13	17529.30	18291.13	18276.60	18276.60	18276.60
Outflow, local	31638.79	34986.62	33544.25	32564.30	34772.89	15887.50
Surplus (deficit) .	-20823.65	-17457.32	-15253.12	-14287.70	-16496.30	3199.10
Inflow, foreign	66.28	52.04	9.85	0.00	0.00	0.00
Outflow, foreign . . .	4293.80	4286.90	9618.10	9404.72	9227.28	9049.83
Surplus (deficit) .	-4227.52	-4154.85	-9608.25	-9404.72	-9227.28	-9049.83
Net cashflow	-3061.86	-417.27	1433.83	1651.80	-1352.00	1651.80
Cumulated net cashflow	-153478.90	-153896.10	-152442.20	-150791.20	-152143.20	-150492.20

Mini - Cement Plant at Lashio --- 27-05-1988



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Cashflow tables, production in 1020 K

Year	1989	2000	2001	2002	2003	2004
Total cash inflow . .	18276.60	18276.60	18276.60	18276.60	18276.60	18276.60
Financial resources .	0.00	0.00	0.00	0.00	0.00	0.00
Sales, net of tax . .	18276.60	18276.60	18276.60	18276.60	18276.60	18276.60
Total cash outflow . .	23959.89	23762.44	23625.00	26430.56	23250.12	23072.67
Total assets	0.00	0.00	0.00	3003.00	0.00	0.00
Operating costs . . .	16625.50	16625.60	16625.60	16625.60	16625.60	16625.60
Cost of finance . . .	1419.54	1242.10	1064.66	897.21	700.77	532.33
Repayment	5914.75	5914.75	5914.75	5914.75	5914.75	5914.75
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	-5683.29	-5585.95	-5528.40	-8153.96	-4973.52	-4796.00
Cumulated cash balance	-132404.80	-137992.60	-143319.00	-151473.00	-156446.50	-161242.60
Inflow, local	18276.60	18276.50	18276.60	18276.60	18276.60	18276.60
Outflow, local	15007.50	15007.50	15007.50	18090.50	15007.50	15007.50
Surplus (deficit) .	3189.10	3189.10	3189.10	186.10	3189.10	3189.10
Inflow, foreign	0.00	0.00	0.00	0.00	0.00	0.00
Outflow, foreign . . .	8072.39	8694.95	8517.50	8340.06	8162.62	7955.10
Surplus (deficit) .	-8072.39	-8694.95	-8517.50	-8340.06	-8162.62	-7955.10
Net cashflow	1651.00	1651.00	1651.00	-1352.00	1651.00	1651.00
Cumulated net cashflow	-140041.20	-147190.20	-145539.20	-146091.20	-145240.20	-143539.20

----- Mini - Cement Plant at Lashio --- 27-05-1989 -----



COMFAR[©]
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Cashflow tables, production in 1000 K

Year	2005	2006	2007
Total cash inflow	18276.50	18276.60	18276.60
Financial resources	0.00	0.00	0.00
Sales, net of tax	18276.50	18276.60	18276.60
Total cash outflow	22895.23	22717.79	16625.62
Total assets	0.00	0.00	0.00
Operating costs	16625.60	16625.60	16625.60
Cost of finance	354.89	177.44	0.00
Repayment	5914.75	5914.75	0.00
Corporate tax	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00
Surplus (deficit)	-4618.63	-4441.19	1651.00
Cumulated cash balance	-165961.20	-179382.48	-168651.48
Inflow, local	18276.50	18276.60	18276.50
Outflow, local	15887.50	15887.50	15887.50
Surplus (deficit)	3189.10	3189.10	3189.10
Inflow, foreign	0.00	0.00	0.00
Outflow, foreign	7807.74	7630.29	1533.10
Surplus (deficit)	-7807.74	-7630.29	-1533.10
Net cashflow	1651.00	1651.00	1651.00
Cumulated net cashflow	-141938.20	-143297.20	-136636.20

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----

Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	-74727.92 at	5.00 %
Internal Rate of Return (IRRE1) ..	not found	
b) Net Worth versus Net cash return:		
Net present value	-97275.05 at	5.00 %
Internal Rate of Return (IRRE2) ..	-9.45 %	
c) Internal Rate of Return on total investment:		
Net present value	-112031.88 at	5.00 %
Internal Rate of Return (IRR) ..	-4.45 %	
Net Worth = Equity paid plus reserves		

Prni - Cement Plant at Lashio --- 27-05-1983



COMFAR[®]
21 UNIDO

COMFAR 2.1 - PGLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	1993	1994	1995	1996	1997
Total sales, incl. sales tax	12975.19	21457.51	22517.89	22517.69	22517.89
Less: variable costs, incl. sales tax.	2332.60	4029.10	4241.20	4241.20	4241.20
Variable margin	10642.59	17428.41	18276.69	18276.69	18276.69
As % of total sales	82.02	81.22	81.17	81.17	81.17
Non-variable costs, incl. depreciation	19725.95	24642.75	25307.85	25307.85	25308.75
Operational margin	-9083.36	-7414.34	-7031.45	-7030.45	-6730.15
As % of total sales	-70.81	-34.55	-31.22	-31.22	-29.86
Cost of finance	6101.31	5306.91	4512.51	3540.67	2568.83
Gross profit	-15184.67	-12721.25	-11542.96	-10571.12	-9298.98
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-15184.67	-12721.25	-11542.96	-10571.12	-9298.98
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-15184.67	-12721.25	-11542.96	-10571.12	-9298.98
Dividends paid	0.00	0.00	0.00	2.00	0.00
Undistributed profit	-15184.67	-12721.25	-11542.96	-10571.12	-9298.98
Accumulated undistributed profit	-15184.67	-27985.92	-39443.88	-50023.88	-59318.98
Gross profit, % of total sales	-117.03	-59.29	-51.26	-46.95	-41.30
Net profit, % of total sales	-117.03	-59.29	-51.26	-46.95	-41.30
RCE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	-5.93	-4.79	-4.54	-4.54	-4.26

Nini - Cement Plant at Lashio --- 27-06-1993



COMFAR
21 UNIO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	1998	1999	2000	2001	2002
Total sales, incl. sales tax	22517.90	22517.80	22517.80	22517.80	22517.90
Less: variable costs, incl. sales tax.	4241.20	4241.20	4241.20	4241.20	4241.20
Variable margin	18276.60	18276.60	18276.60	18276.60	18276.60
As % of total sales	81.17	81.17	81.17	81.17	81.17
Non-variable costs, incl. depreciation	22491.45	22491.45	22491.45	22491.45	22191.15
Operational margin	-4214.85	-4214.85	-4214.85	-4214.85	-3914.55
As % of total sales	-18.72	-18.72	-18.72	-18.72	-17.36
Cost of finance	1596.98	1419.54	1242.10	1064.66	857.21
Gross profit	-5811.83	-5634.39	-5456.95	-5279.51	-4881.77
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-5811.83	-5634.39	-5456.95	-5279.51	-4881.77
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-5811.83	-5634.39	-5456.95	-5279.51	-4881.77
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-5811.83	-5634.39	-5456.95	-5279.51	-4881.77
Accumulated undistributed profit	-65152.81	-70765.28	-76222.16	-81581.66	-86385.43
Gross profit, % of total sales	-25.81	-25.02	-24.23	-23.45	-21.32
Net profit, % of total sales	-25.81	-25.02	-24.23	-23.45	-21.32
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit/interest, % of invest.	-2.67	-2.67	-2.67	-2.67	-2.45

Mini - Cement Plant at Lashio --- 27-06-1993



COMFAR
2.1 UNICO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	2003	2004	2005	2006	2007
Total sales, incl. sales tax	22517.00	22517.00	22517.00	22517.00	22517.00
Less: variable costs, incl. sales tax.	4241.20	4241.20	4241.20	4241.20	4241.20
Variable margin	18276.60	18276.60	18276.60	18276.60	18276.60
As % of total sales	81.17	81.17	81.17	81.17	81.17
Non-variable costs, incl. depreciation	22491.45	22491.45	22491.45	22491.45	22191.15
Operational margin	-4214.85	-4214.85	-4214.85	-4214.85	-3914.55
As % of total sales	-18.72	-18.72	-18.72	-18.72	-17.38
Cost of finance	789.77	532.33	354.89	177.44	0.00
Gross profit	-4924.62	-4747.18	-4569.74	-4392.29	-3914.55
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-4924.62	-4747.18	-4569.74	-4392.29	-3914.55
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	-4924.62	-4747.18	-4569.74	-4392.29	-3914.55
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-4924.62	-4747.18	-4569.74	-4392.29	-3914.55
Accumulated undistributed profit . . .	-91228.05	-95975.23	-100545.00	-104937.30	-108851.80
Gross profit, % of total sales	-21.87	-21.08	-20.29	-19.51	-17.38
Net profit, % of total sales	-21.87	-21.08	-20.29	-19.51	-17.38
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	-2.62	-2.62	-2.62	-2.62	-2.43

Mini - Cement Plant at Lashio --- 27-06-1985



COMFAR
2.1 UNICO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Projected Balance Sheets, construction in 1000 K

Year	1990	1991	1992
Total assets	16193.00	120968.00	150417.00
Fixed assets, net of depreciation	0.00	16193.00	120968.00
Construction in progress	16193.00	104775.00	22846.00
Current assets	0.00	0.00	6503.00
Cash, bank	0.00	0.00	4.00
Cash surplus, finance available .	0.00	0.00	0.00
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	16193.00	120968.00	150417.00
Equity capital	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	16193.00	120968.00	150417.00
Current liabilities	0.00	0.00	0.00
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	16193.00	120968.00	150417.00
Equity, % of liabilities	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-00-1968



COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Projected Balance Sheets, Production in 1000 K

Year	1993	1994	1995	1996	1997	1998
Total assets	159811.00	165688.10	168771.10	178668.88	174581.60	174527.60
Fixed assets, net of depreciation	135132.50	125451.10	117769.68	109858.20	103707.00	97544.19
Construction in progress	0.00	0.00	0.00	0.00	3083.00	8.20
Current assets	9321.04	11152.40	11380.45	11380.45	11380.45	11380.45
Cash, bank	172.74	178.68	172.13	172.13	172.13	172.13
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	0.00	15184.67	27985.92	37448.86	50028.00	59318.98
Loss	15184.67	12721.25	11542.96	18571.12	9298.98	5811.83
Total liabilities	159811.00	165688.10	168771.10	178668.88	174581.60	174527.60
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00	0.00	0.00	0.00
Profit	0.00	0.00	0.00	0.00	0.00	0.00
Long and medium term debt	134529.88	118641.88	96338.25	75835.58	53232.75	47319.88
Current liabilities	238.83	383.76	488.14	488.14	488.14	488.14
Bank overdraft, finance required	25051.17	46663.34	71524.78	95217.14	128948.78	126881.48
Total debt	159811.00	165688.10	168771.10	178668.88	174581.60	174527.60
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

Nini - Cement Plant at Lashio --- 27-06-1998

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Projected Balance Sheets, Production in 1000 K

Year	1999	2000	2001	2002	2003	2004
Total assets	174296.18	173887.20	173388.90	175548.18	174598.90	173488.20
Fixed assets, net of depreciation	91978.34	85112.48	80246.63	74681.89	71819.23	65952.38
Construction in progress	0.00	0.00	0.00	3083.00	0.00	0.00
Current assets	11380.45	11380.45	11380.45	11380.45	11380.45	11380.45
Cash, bank	172.13	172.13	172.13	172.13	172.13	172.13
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	65138.81	78765.28	76222.16	81581.66	86383.43	91223.85
Loss	5634.39	5456.75	5279.51	4881.77	4924.62	4747.18
Total liabilities	174296.18	173887.20	173388.90	175548.18	174598.90	173488.20
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00	0.00	0.00	0.00
Profit	0.00	0.00	0.00	0.00	0.00	0.00
Long and medium term debt	41483.25	35488.58	29573.75	23639.88	17744.25	11829.58
Current liabilities	488.14	488.14	488.14	488.14	488.14	488.14
Bank overdraft, finance required	132484.78	137998.68	143319.88	151473.88	156446.58	161242.58
Total debt	174296.18	173887.20	173388.90	175548.18	174598.90	173488.20
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

Nini - Cement Plant at Lashio --- 27-06-1998



COMFAR
21 UNIO

----- COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1000 K

Year	2005	2006	2007
Total assets	172184.18	170710.50	169059.50
Fixed assets, net of depreciation	60006.53	54220.60	48655.15
Construction in progress	0.00	0.00	0.00
Current assets	11380.45	11580.45	11380.45
Cash, bank	172.15	172.15	172.15
Cash surplus, finance available	0.00	0.00	0.00
Less carried forward	95975.23	100545.00	104937.30
Loss	4569.74	4392.29	3914.55
Total liabilities	172184.18	170710.50	169059.50
Equity capital	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	5914.75	0.00	0.00
Current liabilities	400.14	400.14	400.14
Bank overdraft, finance required.	165861.20	170302.40	168651.48
Total debt	172184.18	170710.50	169059.50
Equity, % of liabilities	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-06-1920

COMFAR - FINANCIAL ANALYSIS

B Variant

Selling Price 650,-- K
(incl. Tabi, Tabo and Graphix)

Tabi BURMA2 : Text Variables

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Project Name: Mini - Cement Plant at Lashio
Date: 27-06-1983
Name of Alternative: Variant B - Selling Price 650 K
Accounting currency: 1000 K
Name of Product (A): Portland Cement
Name of Product (B): Electric Power

Tabi BURMA2 : General Variables

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Multiplier to compute foreign into accounting currency: 1.000
Multiplier to compute local into accounting currency: 1.000
Construction phase: 3 year(s), planned yearly
Interest rate for computation of future values in % p.a.: 0.000
Percent rate for CF-Discounting: 5.200

Tabi BURMA2 : Source of finance - foreign funds

CONFAR 2.1 - POLYTECHNIK, PRAGA, CZECHOSLOVAKIA -----

Equity - O: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 12 year(s)
 rates are paid yearly
Period of grace: 3 year(s)
Interests payable: 3.0 % for year 4 through 17

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Tabi BURMA2 : Source of finance - local funds

CONFAR 2.1 - POLYTECHNIK, PRAHA, CZECHOSLOVAKIA

Equity - Q: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 5 year(s)
 rates are paid yearly
Period of grace: 1 year(s)
Interests payable: 5.0 % for year 4 through 8

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Tabi BURMA2 : Subtable Initial Fixed Investment - foreign

								CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA		
Col	1	2	3	4	5	6	7			
	Deprec-	Type of de	Scrap -	Depreciati	Amount- P1	Amount- P2	Amount- P3			
L 1 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 2 Site preparation and developme	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 3 Structures and civil (a).....	2.50	1.00	10.00	40.00	3060.00	6120.00	0.00			
L 4 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 5 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 6 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 7 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 8 Plant machinery and equipa-(a)	5.00	1.00	5.00	20.00	1315.00	5000.00	0.00			
L 9 Plant machinery and equipa-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 10 Auxiliary and service faciliti	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 11 Pre-production expenditures...	20.00	1.00	0.00	5.00	492.00	1900.00	3842.00			
L 12 Inventory, working capital....	5.00	1.00	10.00	20.00	0.00	0.00	4158.00			

Tabi BURMA2 : Subtable Initial Fixed Investment - local

								CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA		
Col	1	2	3	4	5	6	7			
	Deprec-	Type of de	Scrap -	Depreciati	Amount- P1	Amount- P2	Amount- P3			
L 13 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 14 Site preparation and developme	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 15 Structures and civil (a).....	2.50	1.00	10.00	40.00	10700.00	15976.00	7000.00			
L 16 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 17 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 18 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 19 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 20 Plant machinery and equipa-(a)	5.00	1.00	5.00	20.00	0.00	20472.00	4000.00			
L 21 Plant machinery and equipa-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00			
L 22 Auxiliary and service faciliti	20.00	1.00	10.00	5.00	0.00	0.00	3200.00			
L 23 Pre-production expenditures...	20.00	1.00	0.00	5.00	626.00	2217.00	5001.00			
L 24 Inventory, working capital....	5.00	1.00	10.00	20.00	0.00	0.00	2445.00			

Tabl BURMA2 : Subtable Current Fixed Investment - foreign

Col	CONFAR 2.1 - POLYTECHNA, PRANS, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Deprec-n I	Depreciati	Scrap - I	Depreciati	Amount- Y1	Amount- Y2	Amount- Y3
L 25 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 26 Site preparation and developoe	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 27 Structures and civil (a).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 28 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.20	0.00
L 29 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 30 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 31 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 32 Plant machinery and equipm-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 33 Plant machinery and equipm-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 34 Auxiliary and service faciliti	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 35 Pre-production expenditures...	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 36 Inventory, working capital....	0.00	1.00	0.00	0.00	0.00	0.00	0.00

Tabl BURMA2 : Subtable Current Fixed Investment - local

Col	CONFAR 2.1 - POLYTECHNA, PRANS, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Deprec-n I	Depreciati	Scrap - I	Depreciati	Amount- Y1	Amount- Y2	Amount- Y3
L 37 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 38 Site preparation and developoe	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 39 Structures and civil (a).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 40 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 41 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 42 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 43 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 44 Plant machinery and equipm-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 45 Plant machinery and equipm-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 46 Auxiliary and service faciliti	20.00	1.00	10.00	5.00	0.00	0.00	0.00
L 47 Pre-production expenditures...	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 48 Inventory, working capital....	0.00	1.00	0.00	0.00	0.00	0.00	0.00

Tabi BURMA2 : Subtable Production Costs - foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Inflator I	Adjust- Y1	Adjust- Y2	Adjust- Y3	Adjust- Y4	Adjust- Y5	Adjust- Y6
L 52 Raw material, annual cost (a).	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 53 Raw material, annual cost (b).	0.00	236.00	437.70	429.10	429.10	429.10	429.10
L 54 Utilities, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 55 Energy, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 56 Labour (direct), annual cost..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 57 Maintenance, annual cost.....	0.00	0.00	46.00	92.00	92.00	92.00	92.00
L 58 Spares, annual cost.....	0.00	559.42	965.20	1017.00	1017.00	1017.00	1017.00
L 59 Factory overheads, annual cost	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 60 Administration, labour cost...	0.00	767.70	291.30	0.00	0.00	0.00	0.00
L 61 Administration, non-labour cos	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 62 Marketing, labour cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 63 Marketing, non-labour cost....	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tabi BURMA2 : Subtable Standard Production Costs - foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Quanti- A	Variat- A	Quanti- B	Variat- B	Quanti- C	Variat- C	Quanti- D
L 64 Raw material (a).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Product A	Not used	Product B	Not used	Product C	Not used	Product D
L 65 Raw material, unit price (a)..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Quanti- A	Variat- A	Quanti- B	Variat- B	Quanti- C	Variat- C	Quanti- D
L 66 Raw material (b).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Product A	Not used	Product B	Not used	Product C	Not used	Product D
L 67 Raw material, unit price (b)..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Standa- A	Variat- A	Standa- B	Variat- B	Standa- C	Variat- C	Standa- D
L 68 Utilities, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 69 Energy, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 70 Labour (direct), annual cost..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 71 Maintenance, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 72 Spares, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 73 Factory overheads, annual cost	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 74 Administration, labour cost...	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 75 Administration, non-labour cos	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 76 Marketing, labour cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 77 Marketing, non-labour cost....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Foreign- A	Foreign- B	Foreign- C	Foreign- D	Foreign- E	Foreign- F	Local - A
L 78 % of annual depreciation costs	102.00	0.00	0.00	0.00	0.00	0.00	100.00

Tabi BURMA2 : Subtable Production Costs - local

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Inflator I	Adjust- Y1	Adjust- Y2	Adjust- Y3	Adjust- Y4	Adjust- Y5	Adjust- Y6
L 82 Raw material, annual cost (a).	0.00	376.90	685.50	721.60	721.60	721.60	721.60
L 83 Raw material, annual cost (b).	0.00	5022.30	8674.90	9131.50	9131.50	9131.50	9131.50
L 84 Utilities, annual cost.....	0.00	39.00	65.00	65.00	65.00	65.00	65.00
L 85 Energy, annual cost.....	0.00	1204.60	2039.90	2147.30	2147.30	2147.30	2147.30
L 86 Labour (direct), annual cost..	0.00	443.70	443.70	443.70	443.70	443.70	443.70
L 87 Maintenance, annual cost.....	0.00	112.00	224.00	337.00	337.00	337.00	337.00
L 88 Spares, annual cost.....	0.00	377.00	651.20	685.50	685.50	685.50	685.50
L 89 Factory overheads, annual cost	0.00	866.00	866.00	866.00	866.00	866.00	866.00
L 90 Administration, labour cost...	0.00	599.10	389.10	269.10	269.10	269.10	269.10
L 91 Administration, non-labour cos	0.00	420.00	420.00	420.00	420.00	420.00	420.00
L 92 Marketing, labour cost.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 93 Marketing, non-labour cost....	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tabi BURMA2 : Subtable Standard Production Costs - local

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Tabi BURMA2 : Subtable Production Program and Sales - foreign

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Col	1	2	3	4	5	6	7
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 110 Yearly production, export - A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- I	1st year	2nd year	3rd year	4th year	5th year	6th year
L 111 Unit price, export product A..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 112 Sales tax, export product A..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 113 Other direct variable cost- A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 114 Direct non-variable cost, - A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 115 Labour included in direct - A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 116 Yearly production, export - B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- I	1st year	2nd year	3rd year	4th year	5th year	6th year
L 117 Unit price, export product B.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 118 Sales tax, export product B..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 119 Other direct variable cost- B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 120 Direct non-variable cost, - B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 121 Labour included in direct - B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 122 Yearly production, export - C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- I	1st year	2nd year	3rd year	4th year	5th year	6th year
L 123 Unit price, export product C.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 124 Sales tax, export product C..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 125 Other direct variable cost- C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 126 Direct non-variable cost, - C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 127 Labour included in direct - C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 128 Yearly production, export - D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- I	1st year	2nd year	3rd year	4th year	5th year	6th year
L 129 Unit price, export product D.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 130 Sales tax, export product D..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 131 Other direct variable cost- D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 132 Direct non-variable cost, - D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 133 Labour included in direct - D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 134 Yearly production, export - E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- I	1st year	2nd year	3rd year	4th year	5th year	6th year
L 135 Unit price, export product E.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 136 Sales tax, export product E..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 137 Other direct variable cost- E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 138 Direct non-variable cost, - E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 139 Labour included in direct - E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 140 Yearly production, export - F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- I	1st year	2nd year	3rd year	4th year	5th year	6th year
L 141 Unit price, export product F.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 142 Sales tax, export product F..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 143 Other direct variable cost- F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 144 Direct non-variable cost, - F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 145 Labour included in direct - F	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tabi BURMA2 : Subtable Production Program and Sales - local

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Col	1	2	3	4	5	6	7
	Reference	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6

Tabi BURMA2 : Subtable Working Capital Requirements - f/1

Col	CONFAR 2.1 - POLYTECHNIK, PRAGA, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Covera- F	Covera- L	Covera- F	Covera- L	Not used	Not used	Not used
L 182 Accounts receivable C1/C2; cas	7.00	7.00	15.00	15.00	1.00	1.00	1.00
	Covera- F	Covera- L	not used	not used	Not used	Not used	Not used
L 183 Inventory, raw material (a)...	0.00	30.00	1.00	1.00	1.00	1.00	1.00
L 184 Inventory, raw material (b)...	360.00	80.00	1.00	1.00	1.00	1.00	1.00
L 185 Inventory, utilities.....	1.00	1.00	1.00	1.00	1.00	1.00	1.00
L 186 Inventory, energy.....	0.00	30.00	1.00	1.00	1.00	1.00	1.00
L 187 Inventory, spare parts.....	190.00	180.00	1.00	1.00	1.00	1.00	1.00
L 188 Inventory, work-in-progress...	0.00	8.00	1.00	1.00	1.00	1.00	1.00
L 189 Inventory, finished products..	0.00	12.00	1.00	1.00	1.00	1.00	1.00
L 190 Accounts payable.....	30.00	7.00	1.00	1.00	1.00	1.00	1.00

Tabi BURMA2 : Subtable Production Costs - foreign

										CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA	
8	9	10	11	12	13	14	15	16	17	18	
Adjust- Y7	Adjust- Y8	Adjust- Y9	Adjust-Y10	Adjust-Y11	Adjust-Y12	Adjust-Y13	Adjust-Y14	Adjust-Y15	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
429.10	429.10	429.10	429.10	429.10	429.10	429.10	429.10	429.10	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
92.00	92.00	92.00	92.00	92.00	92.00	92.00	92.00	92.00	0.00	0.00	
1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Tabi BURMA2 : Subtable Standard Production Costs - foreign

										CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA	
8	9	10	11	12	13	14	15	16	17	18	
Variat- D	Quanti- E	Variat- E	Quanti- F	Variat- F	Not used	Not used	Not used	Not used	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Not used	Product E	Not used	Product F	Not used	Not used	Not used	Not used	Not used	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Variat- D	Quanti- E	Variat- E	Quanti- F	Variat- F	Not used	Not used	Not used	Not used	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Not used	Product E	Not used	Product F	Not used	Not used	Not used	Not used	Not used	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Variat- D	Standa- E	Variat- E	Standa- F	Variat- F	Not used	Not used	Not used	Not used	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Local - B	Local - C	Local - D	Local - E	Local - F	Not used	Not used	Not used	Not used	Not used	Not used	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Tabi BURMA2 : Subtable Production Costs - local

										CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA	
8	9	10	11	12	13	14	15	16	17	18	
Adjust- Y7	Adjust- Y8	Adjust- Y9	Adjust-Y10	Adjust-Y11	Adjust-Y12	Adjust-Y13	Adjust-Y14	Adjust-Y15	Not used	Not used	
721.60	721.60	721.60	721.60	721.60	721.60	721.60	721.60	721.60	0.00	0.00	
9131.50	9131.50	9131.50	9131.50	9131.50	9131.50	9131.50	9131.50	9131.50	0.00	0.00	
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	0.00	0.00	
2147.50	2147.50	2147.50	2147.50	2147.50	2147.50	2147.50	2147.50	2147.50	0.00	0.00	
443.70	443.70	443.70	443.70	443.70	443.70	443.70	443.70	443.70	0.00	0.00	
337.00	337.00	337.00	337.00	337.00	337.00	337.00	337.00	337.00	0.00	0.00	
685.50	685.50	685.50	685.50	685.50	685.50	685.50	685.50	685.50	0.00	0.00	
866.00	866.00	866.00	866.00	866.00	866.00	866.00	866.00	866.00	0.00	0.00	
269.10	269.10	269.10	269.10	269.10	269.10	269.10	269.10	269.10	0.00	0.00	
420.00	420.00	420.00	420.00	420.00	420.00	420.00	420.00	420.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Tabi BURMA2 : Subtable Standard Production Costs - local

----- CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Tabu BURMA2 : Subtable Working capital req., foreign

Col	COMPAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	ndc	costo required						
		Y1	Y2	Y3	Y4	Y5	Y6	Y6
L 1 receivables.....	7.00	51.43	30.39	33.00	29.91	29.91	29.91	29.91
L 2 raw material 1st..	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 3 raw material other	360.00	1.00	236.00	407.70	429.18	429.10	429.10	429.10
L 4 utilities.....	1.00	360.00	0.00	0.00	0.00	0.00	0.00	0.00
L 5 energy.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 6 spare-parts.....	182.00	2.00	279.70	403.10	503.50	503.50	503.50	503.50
L 7 work-in-progress..	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 8 finished products.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 9 liabilities.....	30.00	12.00	66.20	110.33	120.10	120.10	120.10	120.10
L 10 cash in hand.....	15.00	29.00	55.30	55.90	46.21	46.21	46.21	46.21
L 11 current assets....	563.00	430.43	601.39	977.77	1013.72	1013.72	1013.72	1013.72
L 12 net work'g capital	553.00	426.43	535.11	859.45	805.54	805.54	805.54	805.54
L 13 IWC increase.....	0.00	0.00	555.11	329.34	26.00	0.00	0.20	0.00

Tabu BURMA2 : Subtable Working capital req., local

Col	COMPAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	ndc	costo required						
		Y1	Y2	Y3	Y4	Y5	Y6	Y6
L 14 receivables.....	7.00	51.43	271.95	432.46	452.62	452.62	452.62	452.62
L 15 raw material 1st..	30.00	12.00	33.00	57.13	60.13	60.13	60.13	60.13
L 16 raw material other	00.00	4.50	1116.07	1927.76	2029.22	2029.22	2029.22	2029.22
L 17 utilities.....	1.00	360.00	0.11	0.10	0.10	0.10	0.10	0.10
L 18 energy.....	30.00	12.00	100.30	169.99	170.94	170.94	170.94	170.94
L 19 spare-parts.....	160.00	2.00	180.50	325.60	342.75	342.75	342.75	342.75
L 20 work-in-progress..	0.00	45.00	100.05	305.36	319.96	319.96	319.96	319.96
L 21 finished products.	12.00	30.00	316.05	402.00	502.92	502.92	502.92	502.92
L 22 liabilities.....	7.00	51.43	164.54	265.44	279.97	279.97	279.97	279.97
L 23 cash in hand.....	15.00	24.00	117.44	124.70	125.92	125.92	125.92	125.92
L 24 current assets....	363.00	540.93	2331.62	3025.25	4012.65	4012.65	4012.65	4012.65
L 25 net work'g capital	356.00	409.50	2167.09	3557.02	3732.69	3732.69	3732.69	3732.69
L 26 IWC increase.....	0.00	0.00	2167.09	1390.74	174.06	0.00	0.00	0.00

Tabu BURMA2 : Subtable Working capital req., consolidated

Col	COMPAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	ndc	costo required						
		Y1	Y2	Y3	Y4	Y5	Y6	Y6
L 27 IWC,consol.....	009.30	915.93	2702.10	4417.27	4610.22	4610.22	4610.22	4610.22
L 28 increase consol...	0.00	0.00	2702.10	1715.00	200.95	0.00	0.00	0.00

Tabo BURMA2 : Subtable initial fixed investment - foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	sum foreign	sum fval/f			invest- P1	invest- P2	invest- P3	invest- P4
L 1 land, site.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 2 civil A+B.....	9189.00	9189.00	0.00	0.00	3060.00	6120.00	0.00	0.00
L 3 equipment A+B.....	51485.00	51485.00	0.00	0.00	1315.00	53290.00	0.00	0.00
L 4 equipment C.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 5 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 6 pp-expenses.....	6234.00	6234.00	0.00	0.00	492.00	1900.00	3842.00	0.00
L 7 total fixed.....	66819.00	66819.00	0.00	0.00	4867.00	58110.00	3842.00	0.00
L 8 inventory.....	4158.00	4158.00	0.00	0.00	0.00	0.00	4158.00	0.00
L 9 receivables.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 10 total.....	70977.00	70977.00	0.00	0.00	4867.00	58110.00	8000.00	0.00

Tabo BURMA2 : Subtable initial fixed investment - local, consolidated

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	sum local	sum fval/l	sum consol	sum fval/c	invest- P1	invest- P2	invest- P3	invest- P4
L 11 land, site.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 12 civil A+B.....	33676.00	33676.00	42856.00	42856.00	13760.00	22095.00	7800.00	0.00
L 13 equipment A+B.....	32472.00	32472.00	83877.00	83877.00	1315.00	78562.00	4200.00	0.00
L 14 equipment C.....	3083.00	3083.00	3083.00	3083.00	0.00	0.00	3083.00	0.00
L 15 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 16 pp-expenses.....	7844.00	7844.00	14078.00	14078.00	1119.00	4117.00	8343.00	0.00
L 17 total fixed.....	76995.00	76995.00	143814.00	143814.00	16193.00	184775.00	22846.00	0.00
L 18 inventory.....	2445.00	2445.00	6603.00	6603.00	0.00	0.00	6603.00	0.00
L 19 receivables.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 20 total.....	79440.00	79440.00	150417.00	150417.00	16193.00	184775.00	29449.00	0.00

Tabo BURMA2 : Subtable initial fixed investment - consolidated, foreign, local

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	grant total	FVAL	sum nval	sum fval	sum P1	sum P2	sum P3	sum P4
L 21 sum, cons/f.....	150417.00	150417.00	70977.00	70977.00	4867.00	58110.00	8000.00	0.00
L 22 sum, local.....	0.00	3.00	79440.00	79440.00	11326.00	46565.00	21449.00	0.00

Tabo BURMA2 : Subtable investment during production, foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcui	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 151 land, site.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 152 civil A+B.....	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00
L 153 equipmt A+B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 154 equipment C.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 155 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 156 pp-expenses.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 157 total fixed.....	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00
L 158 in progress.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 159 inventory.....	4158.00	515.70	375.10	46.00	0.00	0.00	0.00	0.00
L 160 receivables.....	0.00	30.39	2.69	-3.17	0.00	0.00	0.00	0.00
L 161 cash, bank.....	0.00	55.30	-1.43	-7.69	0.00	0.00	0.00	0.00
L 162 tot.current.....	4158.00	601.39	376.39	35.94	0.00	0.00	0.00	0.00
L 163	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 164 total asset.....	4158.00	601.39	376.39	35.94	0.00	0.00	0.00	0.00
L 165 depreciation.....	0.00	4946.55	4946.55	4946.55	4946.55	4946.55	2799.75	2799.75

Tabo BURMA2 : Subtable investment during production, consolidated

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcui	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 166 land, site.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 167 civil A+B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 168 equipmt A+B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 169 equipment C.....	0.00	0.00	0.00	0.00	0.00	3085.00	0.00	0.00
L 170 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 171 pp-expenses.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 172 total fixed.....	0.00	0.00	0.00	0.00	0.00	3085.00	0.00	0.00
L 173 in progress.....	0.00	0.00	0.00	0.00	0.00	3085.00	0.00	0.00
L 174 inventory.....	6605.00	2457.95	1692.60	214.94	0.00	0.00	0.00	0.00
L 175 receivables.....	0.00	392.34	165.19	16.99	0.00	0.00	0.00	0.00
L 176 cash, bank.....	0.00	172.74	5.94	-6.55	0.00	0.00	0.00	0.00
L 177 tot.current.....	6605.00	2935.01	1869.02	225.34	0.00	0.00	0.00	0.00
L 178 less c/f.....	0.00	6497.26	0.00	0.00	0.00	0.00	0.00	0.00
L 179 total asset.....	6605.00	2935.01	1869.02	225.34	0.00	3085.00	0.00	0.00
L 180 depreciation.....	0.00	8681.45	8681.45	8681.45	8681.45	8381.15	5665.95	5665.95

Tabo BURMA2 : Subtable investment during production, local

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcui	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 181 total fixed.....	0.00	0.00	0.00	0.00	0.00	3085.00	0.00	0.00
L 182 tot.current.....	2445.00	2331.62	1491.63	189.40	0.00	0.00	0.00	0.00

Tabo BURMA2 : Subtable production costs, foreign

COMPAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA

Col	COMPAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 106 raw material.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 107 other RM.....	0.00	236.00	407.70	429.10	429.10	429.10	429.10
L 100 utilities.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 109 energy.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 110 labour.....	0.00	0.00	45.00	92.00	92.00	92.00	92.00
L 111 maintenance.....	0.00	0.00	0.00	1017.00	1017.00	1017.00	1017.00
L 112 spares.....	0.00	559.40	966.20	0.00	0.00	0.00	0.00
L 113 factory ovh.....	0.00	0.00	0.00	1538.10	1538.10	1538.10	1538.10
L 114 sub-total.....	0.00	795.40	1419.90	1538.10	1538.10	1538.10	1538.10
L 115 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 116 admin. ovh.....	0.00	767.70	201.30	0.00	0.00	0.00	0.00
L 117 R-distrib.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 118 operating c.....	0.00	1563.10	1701.20	1538.10	1538.10	1538.10	1538.10
L 119 depreciation.....	0.00	4046.55	4046.55	4046.55	4046.55	4046.55	4046.55
L 120 sub-total.....	0.00	5639.65	5747.75	5584.65	5584.65	5584.65	5584.65
L 121 interest.....	0.00	2129.31	2129.31	2129.31	1951.07	1774.43	1596.90
L 122 total PCost.....	0.00	7738.96	7877.06	7713.96	7536.52	7359.08	5934.05
L 123 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 124 (labour).....	0.00	767.70	201.30	0.00	0.00	0.00	0.00

Tabo BURMA2 : Subtable production costs, consolidated

CONFAR 2.1 - POLYTECHNIA, PRAMA, CZECHOSLOVAKIA								
Col	1	2	3	4	5	6	7	8
	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7	
L 126 raw material.....	0.00	376.90	685.50	721.60	721.60	721.60	721.60	721.60
L 127 other Mt.....	0.00	3250.50	9002.60	9560.60	9560.60	9560.60	9560.60	9560.60
L 120 utilities.....	0.00	39.00	65.00	65.00	65.00	65.00	65.00	65.00
L 129 energy.....	0.00	1204.60	2039.90	2147.50	2147.50	2147.50	2147.50	2147.50
L 130 labour.....	0.00	443.70	443.70	443.70	443.70	443.70	443.70	443.70
L 131 maintenance.....	0.00	112.00	270.00	429.00	429.00	429.00	429.00	429.00
L 132 spares.....	0.00	936.40	1617.40	1702.50	1702.50	1702.50	1702.50	1702.50
L 133 factory ovh.....	0.00	066.00	066.00	066.00	066.00	066.00	066.00	066.00
L 134 sub-total.....	0.00	9257.70	15070.90	15936.50	15936.50	15936.50	15936.50	15936.50
L 135 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 136 admin. ovh.....	0.00	1706.00	1090.40	609.10	609.10	609.10	609.10	609.10
L 137 R+distrib.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 130 operating c.....	0.00	11044.50	16161.30	16625.60	16625.60	16625.60	16625.60	16625.60
L 139 depreciation.....	0.00	0601.45	0601.45	0601.45	0601.45	0601.45	0601.45	0601.45
L 140 sub-total.....	0.00	19725.95	24042.75	25307.05	25307.05	25306.75	22491.45	22491.45
L 141 interest.....	0.00	6101.31	5336.91	4512.51	3540.67	2560.03	1596.90	1419.54
L 142 total PCost.....	0.00	25027.26	30149.66	29819.56	26347.72	27575.57	24090.43	23910.99
L 143 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 144 (labour).....	0.00	1010.50	1114.10	712.00	712.00	712.00	712.00	712.00
L 145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tabo BURMA2 : Subtable local costs; marketing distribution foreign, consolidated

CONFAR 2.1 - POLYTECHNIA, PRAMA, CZECHOSLOVAKIA								
Col	1	2	3	4	5	6	7	8
	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7	
L 146 variable.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 147 labour.....	0.00	1042.00	032.00	712.00	712.00	712.00	712.00	712.00
L 140 total PCost.....	0.00	10403.30	22272.60	22105.60	21511.20	20216.50	18153.60	18153.60

Tabo BURMA2 : Subtable funds during production, foreign

Col	COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 185 equ.O paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 186 equ.P paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 187 balance ret.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 188 profit dist.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 189 loanA,cflow.....	78977.00	0.00	0.00	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
L 190 loanB,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 191 loanC,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 192 debt A.....	78977.00	78977.00	78977.00	65862.25	59147.50	53232.75	47318.00	41483.25
L 193 debt B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 194 debt C.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 195 subsidies.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 196 net worth.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 197 total loan.....	78977.00	78977.00	78977.00	65862.25	59147.50	53232.75	47318.00	41483.25
L 198 s.tera,bank.....	0.00	66.28	52.04	9.85	0.00	0.00	0.00	0.00
L 199 total funds.....	78977.00	65.28	52.04	-594.70	-5914.75	-5914.75	-5914.75	-5914.75

Tabo BURMA2 : Subtable funds during production, local

Col	COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 200 equ.O paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 201 equ.P paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 202 balance ret.....	0.00	2184.19	10290.49	11658.16	12338.45	12928.65	12854.35	12978.56
L 203 profit dist.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 204 loanA,cflow.....	79440.00	-15888.00	-15888.00	-15888.00	-15888.00	-15888.00	0.00	0.00
L 205 loanB,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 206 loanC,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 207 debt A.....	79440.00	63552.00	47664.00	31776.00	15888.00	0.00	0.00	0.00
L 208 debt B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 209 debt C.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 210 subsidies.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 211 net worth.....	0.00	2184.19	10290.49	11658.16	12338.45	12928.65	12854.35	12978.56
L 212 total loan.....	79440.00	63552.00	47664.00	31776.00	15888.00	0.00	0.00	0.00
L 213 s.tera,bank.....	0.00	154.54	188.89	14.53	0.00	0.00	0.00	0.00
L 214 total funds.....	79440.00	-13539.26	-5586.62	-4215.31	-3549.55	-2959.35	12854.35	12978.56

Tabo BURMA2 : Subtable funds during production, consolidated

Col	COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 215 equity paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 216 net worth.....	0.00	2184.19	10290.49	11658.16	12338.45	12928.65	12854.35	12978.56
L 217 long term.....	150417.00	-15888.00	-15888.00	-21882.75	-21882.75	-21882.75	-5914.75	-5914.75
L 218 short term.....	0.00	250.83	152.93	24.38	0.00	0.00	0.00	0.00
L 219 total funds.....	150417.00	-13472.96	-3454.58	-18128.21	-9464.30	-8874.10	6939.60	7063.81
L 220 loan repay.....	150417.00	15888.00	15888.00	21882.75	21882.75	21882.75	5914.75	5914.75

Tabo BURMA2 : Subtable funds income, cashflows, consolidated

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Col		1	2	3	4	5	6	7	8
	cf flow. c/f	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7	
L 221 gross profit.....	0.00	-6497.26	2294.34	4252.44	5224.28	6496.45	9983.57	10161.01	
L 222 foreign inc.....	0.00	-7732.95	-7877.05	-7713.96	-7536.52	-7359.08	-5934.05	-5757.39	
L 223 allowances.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
L 224 taxable inc.....	0.00	-6497.26	2294.34	4252.44	5224.28	6496.45	9983.57	10161.01	
L 225 income tax.....	0.00	0.00	685.30	1275.75	1567.20	1948.95	2995.07	3048.30	
L 226 net income.....	0.00	-6497.26	1599.04	2976.71	3657.00	4547.50	6988.50	7112.71	
L 227 tx/dividend.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
L 228 net dividend.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
L 229 acc. income.....	0.00	-6497.26	-4898.22	-1921.51	1735.49	6262.95	13271.49	20384.19	
L 230 incl interest.....	0.00	-395.95	6512.00	13999.22	21196.08	26513.21	36898.69	45438.95	
L 231 CF-out,prod.....	150417.00	13746.60	18551.69	18182.29	16192.09	21577.55	19638.67	19673.99	
L 232 CF-in,prod.....	0.00	19338.00	32434.00	34872.00	34872.00	34872.00	34872.00	34872.00	
L 233 net CF,prod.....	-150417.00	5583.32	13872.31	15969.71	15879.11	12494.47	14451.35	14598.10	
L 234 acc. net-CF.....	-150417.00	-144833.70	-130961.40	-114991.70	-97112.55	-86618.08	-72166.75	-57768.66	
L 235 equ. NPV/IRR.....	0.00	45349.50	55.71	22769.59	9.69	0.00	0.00	0.00	
L 235 NCF/sales %.....	0.00	25.45	34.53	37.79	37.57	29.56	34.19	34.07	
L 237 NCF/invest %.....	0.00	3.65	0.96	10.30	18.24	7.91	9.14	9.11	
L 238 net income ROE1...	0.00	-6497.26	1599.04	2976.71	3657.00	4547.50	6988.50	7112.71	
L 239 NPV, IRR.....	0.00	8012.04	5.60	0.00	0.00	0.00	0.00	0.00	
L 240 netCF (ROE2).....	0.00	-16485.99	-7322.69	-10345.55	-9464.30	-11877.11	6739.60	7065.00	
L 241 total CF,out.....	150417.00	35735.99	39756.60	44417.55	43536.30	45949.11	27132.48	27300.20	
L 242 total CF, in.....	150417.00	19338.00	32434.00	34872.00	34872.00	34872.00	34872.00	34872.00	
L 243 total netCF.....	0.00	-16485.99	-7322.69	-10345.55	-9464.30	-11877.11	6739.60	7065.00	
L 244 acc. netCF.....	0.00	-16485.99	-23728.59	-34874.14	-43538.44	-55415.55	-48475.95	-41412.15	
L 245 depr. allow.....	0.00	8681.45	8681.45	8681.45	8681.45	8381.15	5855.85	5665.05	
L 246 tax if var.....	0.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	
L 247 tax due.....	0.00	0.00	685.30	1275.75	1567.20	1948.95	2995.07	3048.30	
L 248 acc. investa.....	150417.00	153119.20	154834.38	155035.20	155035.20	150238.20	150038.20	150038.20	

Tabo BURMA2 : Subtable production costs, consolidated

CONFAR 2.1 - POLYTECHNKA, PRAHA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	Not used	Not used
721.60	721.60	721.60	721.60	721.60	721.60	721.60	721.60	0.00	0.00 L 126
9560.60	9560.60	9560.60	9560.60	9560.60	9560.60	9560.60	9560.60	0.00	0.00 L 127
65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	0.00	0.00 L 128
2147.30	2147.30	2147.30	2147.30	2147.30	2147.30	2147.30	2147.30	0.00	0.00 L 129
443.70	443.70	443.70	443.70	443.70	443.70	443.70	443.70	0.00	0.00 L 130
429.00	429.00	429.00	429.00	429.00	429.00	429.00	429.00	0.00	0.00 L 131
1702.50	1702.50	1702.50	1702.50	1702.50	1702.50	1702.50	1702.50	0.00	0.00 L 132
066.20	066.00	066.00	066.00	066.00	066.00	066.00	066.00	0.00	0.00 L 133
15936.50	15936.50	15936.50	15936.50	15936.50	15936.50	15936.50	15936.50	0.00	0.00 L 134
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 135
609.10	609.10	609.10	609.10	609.10	609.10	609.10	609.10	0.00	0.00 L 136
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 137
16625.60	16625.60	16625.60	16625.60	16625.60	16625.60	16625.60	16625.60	0.00	0.00 L 138
5065.05	5065.05	5065.55	5065.05	5065.05	5065.05	5065.05	5065.55	0.00	0.00 L 139
22491.45	22491.45	22191.15	22491.45	22491.45	22491.45	22491.45	22191.15	0.00	0.00 L 140
1242.19	1064.66	807.21	709.77	532.33	354.09	177.44	0.00	0.00	0.00 L 141
23753.55	23556.11	23070.36	23201.22	23023.70	22846.34	22669.09	22191.15	0.00	0.00 L 142
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 143
712.00	712.00	712.00	712.00	712.00	712.00	712.00	712.00	0.00	0.00 L 144
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 145

Tabo BURMA2 : Subtable local costs; marketing distribution foreign, consolidated

CONFAR 2.1 - POLYTECHNKA, PRAHA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	Not used	Not used
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 146
712.00	712.00	712.00	712.00	712.00	712.00	712.00	712.00	0.00	0.00 L 147
10153.60	10153.60	17053.30	10153.60	10153.60	10153.60	10153.60	17053.30	0.00	0.00 L 148

Tabo BURMA2 : Subtable funds during production, foreign

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	for Calc	for Calc
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 185
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 186
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 187
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 188
-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	0.00	0.00	0.00 L 189
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 190
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 191
35489.58	29575.75	23659.00	17744.25	11829.58	5914.75	0.00	0.00	0.00	70977.00 L 192
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 193
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 194
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 195
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 196
35489.58	29575.75	23659.00	17744.25	11829.58	5914.75	0.00	0.00	0.00	0.00 L 197
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 198
-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	0.00	0.00	0.00 L 199

Tabo BURMA2 : Subtable funds during production, local

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	for Calc	for Calc
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 200
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 201
13182.77	13226.98	13261.10	13475.40	13599.61	13725.81	13849.03	13882.15	0.00	46655.15 L 202
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 203
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 204
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 205
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 206
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79449.00 L 207
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 208
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 209
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 210
13182.77	13226.98	13261.10	13475.40	13599.61	13725.81	13849.03	13882.15	0.00	0.00 L 211
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 212
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 213
13182.77	13226.98	13261.10	13475.40	13599.61	13725.81	13849.03	13882.15	0.00	0.00 L 214

Tabo BURMA2 : Subtable funds during production, consolidated

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	for Calc	for Calc
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 215
13182.77	13226.98	13261.10	13475.40	13599.61	13725.81	13849.03	13882.15	0.00	0.00 L 216
-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	0.00	0.00	0.00 L 217
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 218
7188.02	7312.23	7346.35	7568.65	7684.86	7829.06	7933.28	13882.15	0.00	0.00 L 219
5914.75	5914.75	5914.75	5914.75	5914.75	5914.75	5914.75	0.00	0.00	0.00 L 220

Tabo BURMA2 : Subtable funds income, cashflows, consolidated

CONFAR 2.1 - POLYTECHNKA, PRAHA, CZECHOSLOVAKIA

9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	salvage va	for Calcu
18338.45	18515.87	18993.64	18978.78	11848.22	11225.66	11483.11	11888.95	0.00	0.00 L 221
-5379.95	-5482.58	-5225.86	-5847.62	-4878.18	-4692.74	-4515.29	-4337.85	0.00	0.00 L 222
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 223
18338.45	18515.87	18993.64	18978.78	11848.22	11225.66	11483.11	11888.95	0.00	0.00 L 224
3181.54	3154.77	3298.89	3261.23	3314.47	3367.70	3428.95	3564.25	0.00	0.00 L 225
7236.92	7361.13	7695.55	7689.55	7733.76	7857.96	7982.18	8316.59	0.00	0.00 L 226
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 227
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 228
27621.11	34982.23	42677.70	58287.32	58821.88	65879.85	73841.22	82177.81	0.00	0.00 L 229
53989.95	62335.73	70918.49	79237.81	87583.98	95716.75	103876.48	112193.88	0.00	0.00 L 230
19727.14	19788.37	22926.67	19856.84	19948.87	19993.38	20246.53	20189.86	0.00	0.00 L 231
34872.88	34872.88	34872.88	34872.88	34872.88	34872.88	34872.88	34872.88	0.00	0.00 L 232
14344.86	14291.63	11145.31	14195.16	14131.93	14878.78	14825.47	13862.14	59876.37	0.00 L 233
-43423.79	-29132.16	-17986.86	-3881.69	18338.24	24488.94	38434.41	52316.55	112192.98	0.00 L 234
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 235
33.94	33.82	26.37	33.56	33.44	33.31	33.19	32.85	0.81	0.00 L 236
9.88	9.84	6.92	8.81	8.78	8.74	8.71	8.62	0.88	0.00 L 237
7236.92	7361.13	7695.55	7689.55	7733.76	7857.96	7982.18	8316.59	0.00	0.00 L 238
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 239
7188.82	7312.22	4343.35	7568.64	7684.85	7889.86	7933.27	13882.14	59876.37	0.00 L 240
26383.92	26759.78	29728.65	26511.36	26387.15	26262.94	26138.73	28189.86	0.00	0.00 L 241
34872.88	34872.88	34872.88	34872.88	34872.88	34872.88	34872.88	34872.88	0.00	0.00 L 242
7188.82	7312.22	4343.35	7568.64	7684.85	7889.86	7933.27	13882.14	0.00	0.00 L 243
-34224.13	-26911.91	-22568.56	-15387.92	-7323.86	486.88	8419.27	22381.42	0.00	0.00 L 244
5865.85	5865.85	5865.55	5865.85	5865.85	5865.85	5855.85	5865.55	0.00	0.00 L 245
38.88	38.98	38.88	38.88	38.88	38.88	38.88	38.88	0.00	0.00 L 246
3181.54	3154.77	3298.89	3261.23	3314.47	3367.70	3428.95	3564.25	0.00	0.00 L 247
158838.28	158838.28	161841.28	161841.28	161841.28	161841.28	161841.28	161841.28	0.00	0.00 L 248



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1988
Variant B - Selling Price 650 K

3 year(s) of construction, 15 years of production
currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6685.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	78977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	11044.50	16161.30	16625.60
depreciation :	8581.45	8681.45	8681.45
interest :	6101.31	5306.91	4512.51
production costs	25827.26	30149.66	29819.56
thereof foreign	29.96 %	26.13 %	25.87 %
total sales :	23934.58	40214.50	42262.00
gross income :	-6497.26	2284.34	4252.44
net income :	-6497.26	1599.04	2976.71
cash balance :	-16405.99	-7322.60	-10345.55
net cashflow :	5985.32	13872.31	15967.71

Net Present Value at: 5.00 % = 8012.84
Internal Rate of Return: 5.60 %
Return on equity1: 53.71 %
Return on equity2: 9.69 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR[®]
2.1 UNIO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Nini - Cement Plant at Lashio
27-06-1988
Variant B - Selling Price 650 K

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143314.00	46.462 % foreign
current assets:	6683.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	70977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	4	5	6
operating costs:	16625.60	16625.60	16625.60
depreciation :	8631.45	8381.15	5865.85
interest :	3548.67	2568.85	1596.98
production costs	28847.72	27575.57	24888.43
thereof foreign	26.13 %	26.69 %	24.64 %
total sales :	42262.00	42262.00	42262.00
gross income :	5224.28	6496.43	9983.57
net income :	3657.00	4547.50	6989.50
cash balance :	-9464.30	-11877.11	6939.60
net cashflow :	15879.11	12494.47	14451.33

Net Present Value at: 5.00 % = 8012.84

Internal Rate of Return: 5.60 %

Return on equity1: 53.71 %

Return on equity2: 9.69 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAGA, CZECHOSLOVAKIA

Bini - Cement Plant at Lashio
27-06-1988
Variant B - Selling Price 650 K

3 year(s) of construction, 15 years of production
currency conversion rates:
foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6603.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	70977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	7	8	9
operating costs:	16625.60	16625.60	16625.60
depreciation :	5865.85	5865.85	5865.85
interest :	1419.34	1292.10	1064.66
production costs	23910.99	23733.55	23356.11
thereof foreign	24.00 %	23.51 %	22.93 %
total sales :	42262.00	42262.00	42262.00
gross income :	10161.01	10338.45	10515.89
net income :	7112.71	7236.92	7361.13
cash balance :	7063.00	7103.02	7312.22
net cashflow :	14398.10	14344.06	14291.63

Net Present Value at: 5.00 % = 8012.04
Internal Rate of Return: 5.60 %
Return on equity1: 33.71 %
Return on equity2: 9.69 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1983
Variant B - Selling Price 650 K

3 year(s) of construction, 15 years of production
currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1200 K

Total initial investment during construction phase

fixed assets:	147314.00	46.462 % foreign
current assets:	6685.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans:	70977.00	
local loans:	79440.00	
total funds:	150417.00	47.187 % foreign

Cashflow from operations

Year:	10	11	12
operating costs:	16625.60	16625.60	16625.60
depreciation :	5565.55	5065.85	5065.85
interest :	887.21	789.77	532.33
production costs	23078.36	23201.22	23025.78
thereof foreign	22.64 %	21.76 %	21.15 %
total sales :	42262.00	42262.00	42262.00
gross income :	10993.64	13870.78	11948.22
net income :	7695.55	7609.55	7733.76
cash balance :	4343.35	7560.64	7684.85
net cashflow :	11145.31	14185.16	14131.93

Net Present Value at: 5.00 % = 8012.04
Internal Rate of Return: 5.60 %
Return on equity¹: 53.71 %
Return on equity²: 9.69 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1983
Variant B - Selling Price 650 K

3 year(s) of construction, 15 years of production
currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143614.00	46.462 % foreign
current assets:	6693.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	78977.00	
local loans :	79440.00	
total funds :	158417.00	47.187 % foreign

Cashflow from operations

Year:	13	14	15
operating costs:	16625.60	16625.60	16625.60
depreciation :	5865.85	5865.85	5555.55
interest :	354.89	177.44	0.00
production costs	22846.34	22668.89	22191.15
thereof foreign	20.54 %	19.92 %	19.55 %
total sales :	42262.00	42262.00	42262.00
gross income :	11225.66	11493.11	11800.95
net income :	7857.96	7982.10	8316.59
cash balance :	7809.06	7933.27	13802.14
net cashflow :	14870.70	14925.47	13802.14

Net Present Value at: 5.00 % = 8012.84
Internal Rate of Return: 5.60 %
Return on equity1: 53.71 %
Return on equity2: 9.69 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR[®]
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Initial Investment in 1000 K

Year	1990	1991	1992
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	13760.00	22096.00	7000.00
Auxiliary and service facilities . .	0.00	0.00	3003.00
Incorporated fixed assets	0.00	0.00	0.00
Plant machinery and equipment . . .	1315.00	70502.00	4000.00
Total fixed investment costs	15075.00	100658.00	14003.00
Pre-production capital expenditures.	1118.00	4117.00	8843.00
Net working capital	0.00	0.00	6603.00
Total initial investment costs . . .	16193.00	104775.00	29449.00
Of it foreign, in I	30.06	55.46	27.17

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Current Investment in 1990 K

Year	1993	1994	1995	1996	1997	1998-2001
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities .	0.00	0.00	0.00	0.00	3003.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment ..	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	3003.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	2702.18	1715.93	200.95	0.00	0.00	0.00
Total current investment costs . . .	2702.18	1715.93	200.95	0.00	3003.00	0.00
Of it foreign, %	19.80	18.91	12.90	0.00	0.00	0.00

----- Mini - Cement Plant at Lashio --- 27-06-1988 -----

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Current Investment in 1999 K

Year	2002
Fixed investment costs	
Land, site preparation, development	0.00
Buildings and civil works	0.00
Auxiliary and service facilities .	3003.00
Incorporated fixed assets	0.00
Plant, machinery and equipment ..	0.00
Total fixed investment costs	3003.00
Preproduction capitals expenditures.	0.00
Working capital	0.00
Total current investment costs . . .	3003.00
Of it foreign, %	0.00

----- Mini - Cement Plant at Lashio --- 27-06-1988 -----

Total Production Costs in 1000 K

Year	1993	1994	1995	1996	1997	1998
% of nom. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	396.90	685.50	721.60	721.60	721.60	721.60
Other raw materials	5258.30	9082.60	9560.60	9560.60	9560.60	9560.60
Utilities	39.00	65.00	65.00	65.00	65.00	65.00
Energy	1204.60	2039.90	2147.30	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	112.00	270.00	429.00	429.00	429.00	429.00
Spares	936.40	1617.40	1702.50	1702.50	1702.50	1702.50
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	9257.70	15070.90	15936.50	15936.50	15936.50	15936.50
Administrative overheads	1706.00	1090.40	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	8681.45	8681.45	8681.45	8681.45	8681.15	8685.85
Financial costs	6101.31	5306.91	4512.51	3540.67	2560.83	1596.90
Total production costs	25827.26	30149.66	29819.56	28647.72	27575.57	24998.43
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, %	29.96	26.13	25.07	26.13	26.69	24.64
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	1810.50	1114.10	712.00	712.00	712.00	712.00



COMFAR
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COMFAR 2.1 - POLYTECHNIK, PRAMA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	1999	2000	2001	2002	2003	2004
I of non. capacity (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	721.69	721.60	721.60	721.60	721.60	721.60
Other raw materials	9560.60	9560.60	9560.60	9560.60	9560.60	9560.60
Utilities	65.00	65.00	65.00	65.00	65.00	65.00
Energy	2147.30	2147.30	2147.30	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	429.00	429.00	429.00	429.00	429.00	429.00
Spares	1702.50	1702.50	1702.50	1702.50	1702.50	1702.50
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	15936.50	15936.50	15936.50	15936.50	15936.50	15936.50
Administrative overheads	689.10	689.10	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	5065.85	5065.85	5065.85	5565.55	5665.85	5065.85
Financial costs	1419.54	1242.10	1064.66	837.21	709.77	532.33
Total production costs	23910.99	23733.55	23556.10	23076.36	23201.22	23023.79
Costs per unit (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, Z	24.00	23.51	22.93	22.64	21.76	21.15
Of it variable, Z	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	712.00	712.00	712.00	712.00	712.00	712.00

Mini - Cement Plant at Lashio --- 27-06-1999



COMFAR^{2.1}
UNIDO

COMFAR 2.1 - POLYTECHNIK, PRAGA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	2005	2006	2007
I of non. capacity (single product) .	0.00	0.00	0.00
Raw material I	721.60	721.60	721.60
Other raw materials	9560.60	9560.60	9560.60
Utilities	65.00	65.00	65.00
Energy	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70
Repair, maintenance	429.00	429.00	429.00
Spares	1782.50	1782.50	1782.50
Factory overheads	866.00	866.00	866.00
Factory costs	15936.50	15936.50	15936.50
Administrative overheads	669.10	669.10	669.10
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	5055.05	5055.05	5565.55
Financial costs	354.07	177.44	0.00
Total production costs	22856.33	22668.09	22191.15
Costs per unit (single product) .	0.00	0.00	0.00
Of it foreign, I	20.54	19.92	19.55
Of it variable, I	0.00	0.00	0.00
Total labour	712.00	712.00	712.00

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR[®]
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Net Working Capital in 1000 K

Year		1993	1994	1995	1996-2007
Coverage	ndc coto				
Current assets k					
Accounts receivable	7 51.4	302.34	465.54	482.55	482.55
Inventory and materials	06 4.1	7589.25	8995.76	9121.64	9121.64
Energy	30 12.0	189.38	169.99	178.94	178.94
Spares	100 2.0	468.70	888.78	851.25	851.25
Work in progress	8 45.8	186.05	305.36	319.96	319.96
Finished products	12 30.0	316.85	482.00	582.92	582.92
Cash in hand	15 24.0	172.74	179.68	172.13	172.13
Total current assets		9536.01	11494.83	11629.36	11629.36
Current liabilities and					
Accounts payable	9 39.1	238.85	305.76	406.14	406.14
Net working capital		9305.18	11228.27	11221.22	11221.22
Increase in working capital		2782.18	1715.08	288.95	0.00
Net working capital, local		4612.00	6092.82	6177.66	6177.66
Net working capital, foreign		4693.11	5017.45	5043.54	5043.54

Note: ndc = ninious days of coverage ; coto = coefficient of turnover .

----- Mini - Cement Plant at Lashio --- 27-25-1998



Source of Finance, construction in 1000 K

Year	1990	1991	1992
Equity, ordinary ..	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00
Loan A, foreign .	4857.00	50110.00	8900.00
Loan B, foreign..	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00
Loan A, local....	11325.00	46465.00	21449.00
Loan B, local....	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00
Total loan	16193.00	104775.00	29449.00
Current liabilities	0.00	0.00	0.00
Bank overdraft	0.00	0.00	0.00
Total funds	16193.00	104775.00	29449.00

Source of Finance, production in 1988 K

Year	1993	1994	1995	1996	1997	1998	1999
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-15000.00	-15000.00	-15000.00	-15000.00	-15000.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-15000.00	-15000.00	-21002.75	-21002.75	-21002.75	-5914.75	-5914.75
Current liabilities	230.05	152.93	24.38	0.00	0.00	0.00	0.00
Bank overdraft	16405.90	7322.59	10345.55	9464.30	11077.10	-6939.60	-7063.00
Total funds	740.00	-0412.47	-11432.01	-12339.45	-9925.65	-12054.35	-12976.55

Nini - Cement Plant at Lashio --- 27-06-1988

Source of Finance, production in 1988 K

Year	2000	2001	2002	2003	2004	2005	2006
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Current liabilities	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bank overdraft	-7100.02	-7312.25	-4343.34	-7560.65	-7604.05	-7323.03	0.00
Total funds	-13102.77	-13226.90	-10258.09	-13475.40	-13599.60	-13237.78	-5914.75

Nini - Cement Plant at Lashio --- 27-06-1988



Cashflow Tables, construction in 1000 K

Year	1990	1991	1992
Total cash inflow . .	16193.00	104775.00	29449.00
Financial resources .	16193.00	104775.00	29449.00
Sales, net of tax . .	0.00	0.00	0.00
Total cash outflow . .	16193.00	104775.00	29449.00
Total assets	16193.00	104775.00	29449.00
Operating costs . . .	0.00	0.00	0.00
Cost of finance . . .	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00
Surplus (deficit) .	0.00	0.00	0.00
Cumulated cash balance	0.00	0.00	0.00
Inflow, local	11326.00	46665.00	21449.00
Outflow, local	11326.00	46665.00	21449.00
Surplus (deficit) .	0.00	0.00	0.00
Inflow, foreign . . .	4867.00	58110.00	8899.00
Outflow, foreign . . .	4867.00	58110.00	8899.00
Surplus (deficit) .	0.00	0.00	0.00
Net cashflow	-16193.00	-104775.00	-29449.00
Cumulated net cashflow	-16193.00	-120968.00	-150417.00



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA

Cashflow tables, production in 1000 K

Year	1993	1994	1995	1996	1997	1998
Total cash inflow . .	19560.83	32586.95	34096.30	34072.00	34072.00	34072.00
Financial resources .	230.93	152.93	24.30	0.00	0.00	0.00
Sales, net of tax . .	19330.00	32434.00	34072.00	34072.00	34072.00	34072.00
Total cash outflow . .	35966.02	39909.53	44441.93	43536.30	45949.11	27132.40
Total assets	2933.01	1058.02	225.34	0.00	3003.00	0.00
Operating costs . . .	11844.50	16161.30	16625.60	16625.60	16625.60	16625.60
Cost of finance . . .	6101.31	5306.91	4512.51	3540.67	2560.05	1556.90
Repayment	15960.00	15000.00	21002.75	21002.75	21002.75	5914.75
Corporate tax	0.00	635.30	1275.73	1567.29	1948.93	2995.07
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	-16405.99	-7322.59	-10345.55	-9464.30	-11977.11	6739.60
Cumulated cash balance	-16405.99	-23728.59	-34074.13	-43530.43	-55415.54	-48475.94
Inflow, local	19494.54	32534.07	34025.53	34072.00	34072.00	34072.00
Outflow, local	31673.02	35702.63	34023.63	34131.59	36721.05	18002.57
Surplus (deficit) .	-12178.48	-3167.74	-737.30	-59.59	-2649.05	15909.43
Inflow, foreign . . .	66.20	52.04	9.05	0.00	0.00	0.00
Outflow, foreign . . .	4293.00	4206.90	9618.10	9404.72	9227.20	9049.83
Surplus (deficit) .	-4227.52	-4154.85	-9608.25	-9404.72	-9227.20	-9049.83
Net cashflow	5503.32	13072.31	15769.71	15679.12	12494.47	14451.33
Cumulated net cashflow	-144033.70	-130961.40	-114991.70	-79112.54	-86610.06	-72166.73

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
2.1 UNIOO

COMFAR 2.1 - POLYTECHNKA, PRAHA, CZECHOSLOVAKIA

Cashflow tables, production in 1000 K

Year	1997	2000	2001	2002	2003	2004
Total cash inflow . .	34072.00	34072.00	34072.00	34072.00	34072.00	34072.00
Financial resources .	0.00	0.00	0.00	0.00	0.00	0.00
Sales, net of tax . .	34072.00	34072.00	34072.00	34072.00	34072.00	34072.00
Total cash outflow . .	27009.19	26803.99	26759.77	29720.55	26511.35	26387.14
Total assets	0.00	0.00	0.00	3003.00	0.00	0.00
Operating costs . . .	16625.62	16625.60	16625.52	16625.60	16625.62	16625.60
Cost of finance . . .	1419.54	1242.10	1064.66	887.21	789.77	532.33
Repayment	5914.75	5914.75	5914.75	5914.75	5914.75	5914.75
Corporate tax	3040.30	3101.54	3154.77	3298.09	3261.25	3314.47
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	7063.01	7188.02	7312.23	4343.35	7560.65	7684.86
Cumulated cash balance	-41412.13	-34224.12	-26911.09	-22560.54	-15007.90	-7323.04
Inflow, local	34072.00	34072.00	34072.00	34072.00	34072.00	34072.00
Outflow, local	19135.00	16109.64	18242.27	21380.59	18348.73	18401.97
Surplus (deficit) .	15936.20	15882.96	15829.73	12683.41	15723.27	15670.03
Inflow, foreign . . .	0.00	0.00	0.00	0.00	0.00	0.00
Outflow, foreign . . .	8872.39	8694.95	8517.50	8340.05	8162.62	7935.18
Surplus (deficit) .	-8872.39	-8594.95	-8517.50	-8340.06	-8162.62	-7935.18
Net cashflow	14398.10	14344.86	14291.63	11145.31	14165.17	14131.93
Cumulated net cashflow	-57769.64	-43423.77	-29132.14	-17936.83	-3801.67	10330.27

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Cashflow tables, production in 1000 K

Year	2005	2006	2007
Total cash inflow . .	34072.00	34072.00	34072.00
Financial resources .	0.00	0.00	0.00
Sales, net of tax . .	34072.00	34072.00	34072.00
Total cash outflow . .	26262.93	26130.72	20189.86
Total assets	0.00	0.00	0.00
Operating costs . . .	16625.60	16625.60	16625.60
Cost of finance . . .	354.89	177.44	0.00
Repayment	5914.75	5914.75	0.00
Corporate tax	3367.70	3420.93	3564.25
Dividends paid	0.00	0.00	0.00
Surplus (deficit) .	7809.07	7933.28	13882.14
Cumulated cash balance	496.03	8419.30	22301.45
Inflow, local	34072.00	34072.00	34072.00
Outflow, local	18455.20	18500.45	18651.75
Surplus (deficit) .	15616.80	15563.57	15420.25
Inflow, foreign	0.00	0.00	0.00
Outflow, foreign . . .	7607.74	7630.29	1530.10
Surplus (deficit) .	-7607.74	-7630.29	-1530.10
Net cashflow	14078.70	14025.47	13882.15
Cumulated net cashflow	24409.97	30454.44	52316.58

Mini - Cement Plant at Lashio --- 27-06-1988



Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	45349.58	at 5.00 %
Internal Rate of Return (IRR1) ..	55.71 %	
b) Net Worth versus Net cash return:		
Net present value	22769.59	at 5.00 %
Internal Rate of Return (IRR2) ..	9.69 %	
c) Internal Rate of Return on total investment:		
Net present value	8612.84	at 5.00 %
Internal Rate of Return (IRR) ..	5.60 %	
Net Worth = Equity paid plus reserves		



COMFAR
2.1 UNIO

COMFAR 2.1 - POLYTECHNIKA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1980 K

Year	1993	1994	1995	1996	1997
Total sales, incl. sales tax	25854.50	49214.50	42262.00	42262.00	42262.00
Less: variable costs, incl. sales tax.	4564.50	7700.50	8190.00	8190.00	8190.00
Variable margin	19350.00	32434.00	34072.00	34072.00	34072.00
As % of total sales	81.10	82.65	82.62	82.62	82.62
Non-variable costs, incl. depreciation	19725.95	24842.75	25307.05	25307.05	25306.75
Operational margin	-395.95	7591.25	8764.95	8764.95	9065.25
As % of total sales	-1.66	16.88	20.74	20.74	21.45
Cost of finance	6101.31	5306.91	4512.51	3540.57	2566.85
Gross profit	-6497.26	2284.34	4252.44	5224.20	6496.43
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-6497.26	2284.34	4252.44	5224.20	6496.43
Tax	0.00	685.30	1275.73	1567.20	1940.93
Net profit	-6497.26	1599.04	2976.71	3657.00	4547.50
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-6497.26	1599.04	2976.71	3657.00	4547.50
Accumulated undistributed profit . . .	-6497.26	-4899.22	-1921.51	1735.49	6262.96
Gross profit, % of total sales	-27.26	5.68	10.06	12.36	15.37
Net profit, % of total sales	-27.26	3.98	7.04	8.65	10.76
RCE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	-0.26	4.46	4.83	4.64	4.50

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR
2.1
UNITO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	1998	1999	2000	2001	2002
Total sales, incl. sales tax	42262.00	42262.00	42262.00	42262.00	42262.00
Less: variable costs, incl. sales tax.	8190.00	8190.00	8190.00	8190.00	8190.00
Variable margin	34072.00	34072.00	34072.00	34072.00	34072.00
As % of total sales	80.62	80.62	80.62	80.62	80.62
Non-variable costs, incl. depreciation	22491.45	22491.45	22491.45	22491.45	22191.15
Operational margin	11580.55	11580.55	11580.55	11580.55	11680.85
As % of total sales	27.40	27.40	27.40	27.40	28.11
Cost of finance	1596.98	1419.54	1242.10	1064.66	867.21
Gross profit	9983.57	10161.01	10338.45	10515.89	10993.64
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	9983.57	10161.01	10338.45	10515.89	10993.64
Tax	2995.07	3048.30	3101.54	3154.77	3298.09
Net profit	6988.50	7112.71	7236.92	7361.13	7695.55
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	6988.50	7112.71	7236.92	7361.13	7695.55
Accumulated undistributed profit	13271.48	20384.19	27621.11	34982.25	42677.78
Gross profit, % of total sales	23.62	24.04	24.46	24.96	26.01
Net profit, % of total sales	16.54	16.83	17.12	17.42	18.21
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	5.43	5.48	5.37	5.33	5.33

Mini - Cement Plant at Lashio --- 27-00-1998



COMFAR[®]
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	2083	2084	2085	2086	2087
Total sales, incl. sales tax	42262.00	42262.00	42262.00	42262.00	42262.00
Less: variable costs, incl. sales tax.	8190.00	8190.00	8190.00	8199.00	8190.00
Variable margin	34072.00	34072.00	34072.00	34072.00	34072.00
As % of total sales	80.62	80.62	80.62	80.62	80.62
Non-variable costs, incl depreciation	22491.45	22491.45	22491.45	22491.45	22191.15
Operational margin	11580.55	11580.55	11580.55	11580.55	11890.85
As % of total sales	27.40	27.40	27.40	27.40	28.11
Cost of finance	789.77	532.33	354.89	177.44	0.00
Gross profit	10870.78	11048.22	11225.66	11403.11	11890.85
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	10870.78	11048.22	11225.66	11403.11	11890.85
Tax	3261.23	3314.47	3367.70	3420.93	3564.25
Net profit	7609.55	7733.76	7857.96	7982.18	8316.59
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	7609.55	7733.76	7857.96	7982.18	8316.59
Accumulated undistributed profit	50287.32	56021.08	63079.05	73061.22	82177.81
Gross profit, % of total sales	25.72	26.14	26.56	26.98	28.11
Net profit, % of total sales	18.01	18.30	18.59	18.69	19.68
ROE, Net profit, % of equity	9.00	8.00	8.00	8.00	8.00
ROI, Net profit+interest, % of invest.	5.17	5.13	5.10	5.07	5.16

Mini - Cement Plant at Lashio --- 27-06-1980



COMFAR
2.1 UNIO

----- COMFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----

Projected Balance Sheets, construction in 1993 K

Year	1990	1991	1992
Total assets	16193.00	120968.00	150417.00
Fixed assets, net of depreciation	0.00	16193.00	120968.00
Construction in progress	16193.00	104775.00	22846.00
Current assets	0.00	0.00	663.00
Cash, bank	0.00	0.00	0.00
Cash surplus, finance available .	0.00	0.00	0.00
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	16193.00	120968.00	150417.00
Equity capital	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	16193.00	120968.00	150417.00
Current liabilities	0.00	0.00	0.00
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	16193.00	120968.00	150417.00
Equity, % of liabilities	0.00	0.00	0.00

----- Mini - Cement Plant at Lashic --- 27-06-1993



Projected Balance Sheets, Production in 1000 K

Year	1993	1994	1995	1996	1997	1998
Total assets	151165.00	144352.40	134297.20	122639.10	115339.40	109473.60
Fixed assets, net of depreciation	135132.50	126451.10	117769.60	109058.20	100707.00	97044.17
Construction in progress	0.00	0.00	0.00	0.00	3235.00	0.00
Current assets	9363.27	11229.35	11457.25	11457.25	11457.25	11457.25
Cash, bank	172.74	179.60	172.13	172.13	172.13	172.13
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	0.00	6497.26	4898.22	1921.51	0.00	3.00
Less	6497.26	0.00	0.00	0.00	0.00	0.00
Total liabilities	151165.00	144352.40	134297.20	122639.10	115339.40	109473.60
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00	0.00	1735.49	6202.99
Profit	0.00	1599.04	2976.71	3657.00	4547.50	6958.50
Long and medium term debt	134529.00	118641.00	96039.25	75035.50	53232.75	47310.00
Current liabilities	258.03	303.76	400.14	400.14	400.14	400.14
Bank overdraft, finance required	16405.90	23720.50	34074.13	43538.42	55415.53	48475.93
Total debt	151165.00	142733.30	131320.50	119902.10	109956.40	96202.07
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-03-1993

Projected Balance Sheets, Production in 1000 K

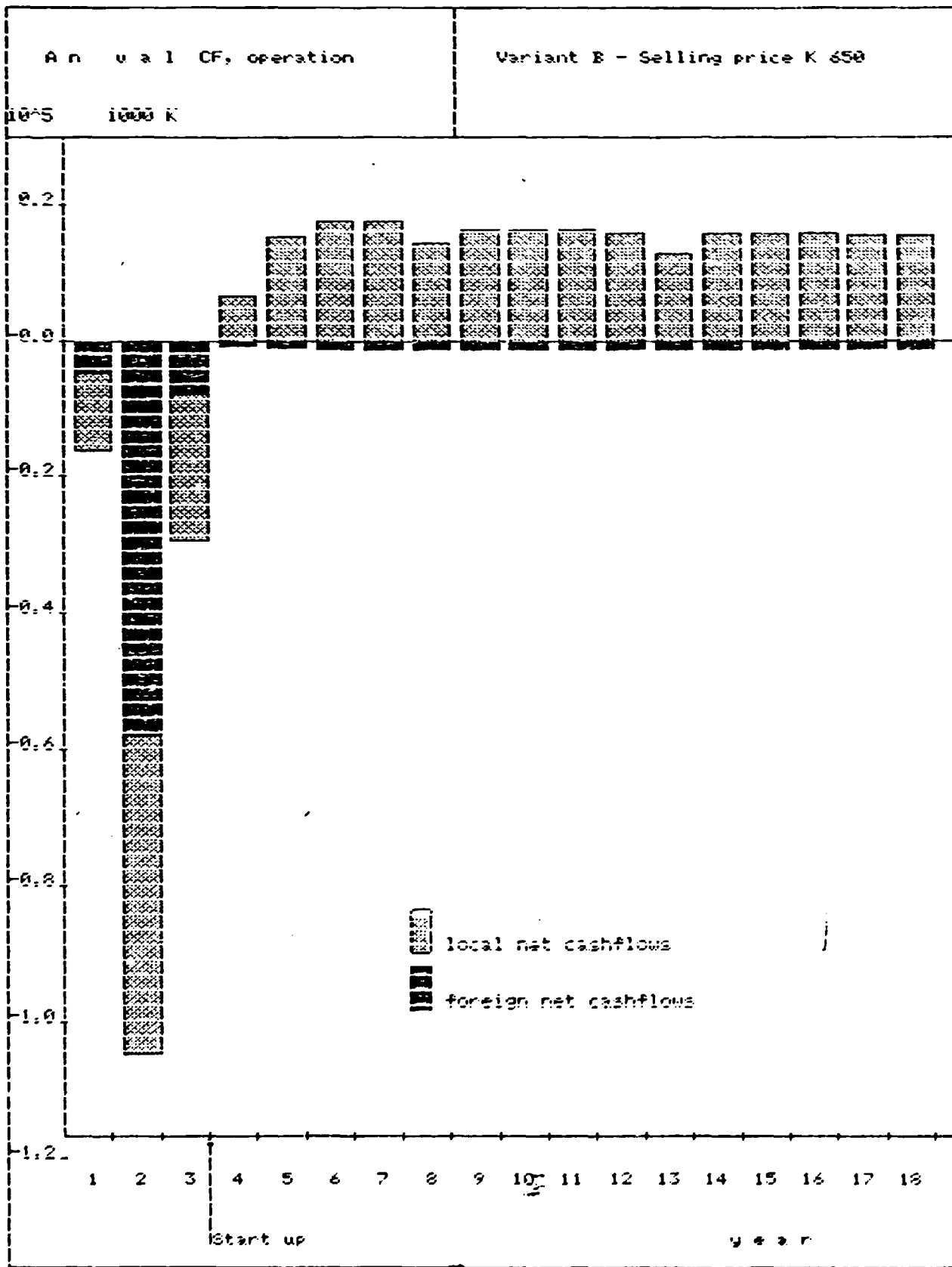
Year	1999	2000	2001	2002	2003	2004
Total assets	103607.70	97741.05	91076.00	89313.45	83447.60	77501.75
Fixed assets, net of depreciation	91570.34	86112.40	80246.65	7101.09	71010.23	65952.30
Construction in progress	0.00	0.00	0.00	235.00	0.00	0.00
Current assets	11457.23	11457.23	11457.23	11457.23	11457.23	11457.23
Cash, bank	172.13	172.13	172.13	172.13	172.13	172.13
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	103607.70	97741.05	91076.00	89313.45	83447.60	77501.75
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	13271.40	20304.19	27621.11	34902.23	42677.70	50207.32
Profit	7112.71	7236.92	7361.13	7655.55	7609.55	7733.76
Long and medium term debt	41403.25	35400.50	29573.75	23639.00	17744.25	11029.50
Current liabilities	400.14	400.14	400.14	400.14	400.14	400.14
Bank overdraft, finance required	41412.12	34224.10	26951.00	22560.53	15007.03	7325.05
Total debt	83223.52	70120.75	56093.77	46635.60	33140.29	19560.60
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

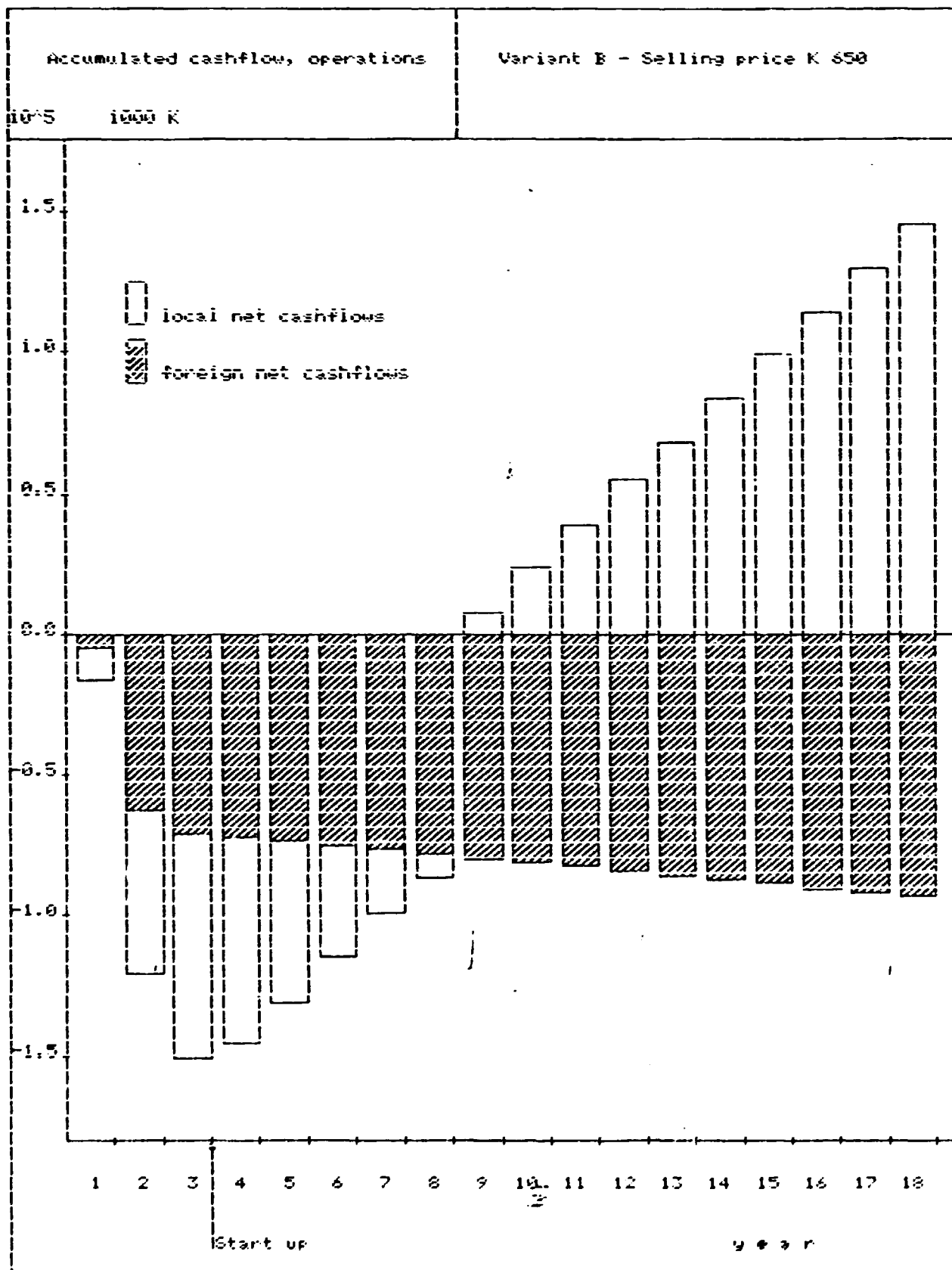
Mini - Cement Plant at Lashio --- 27-03-1998

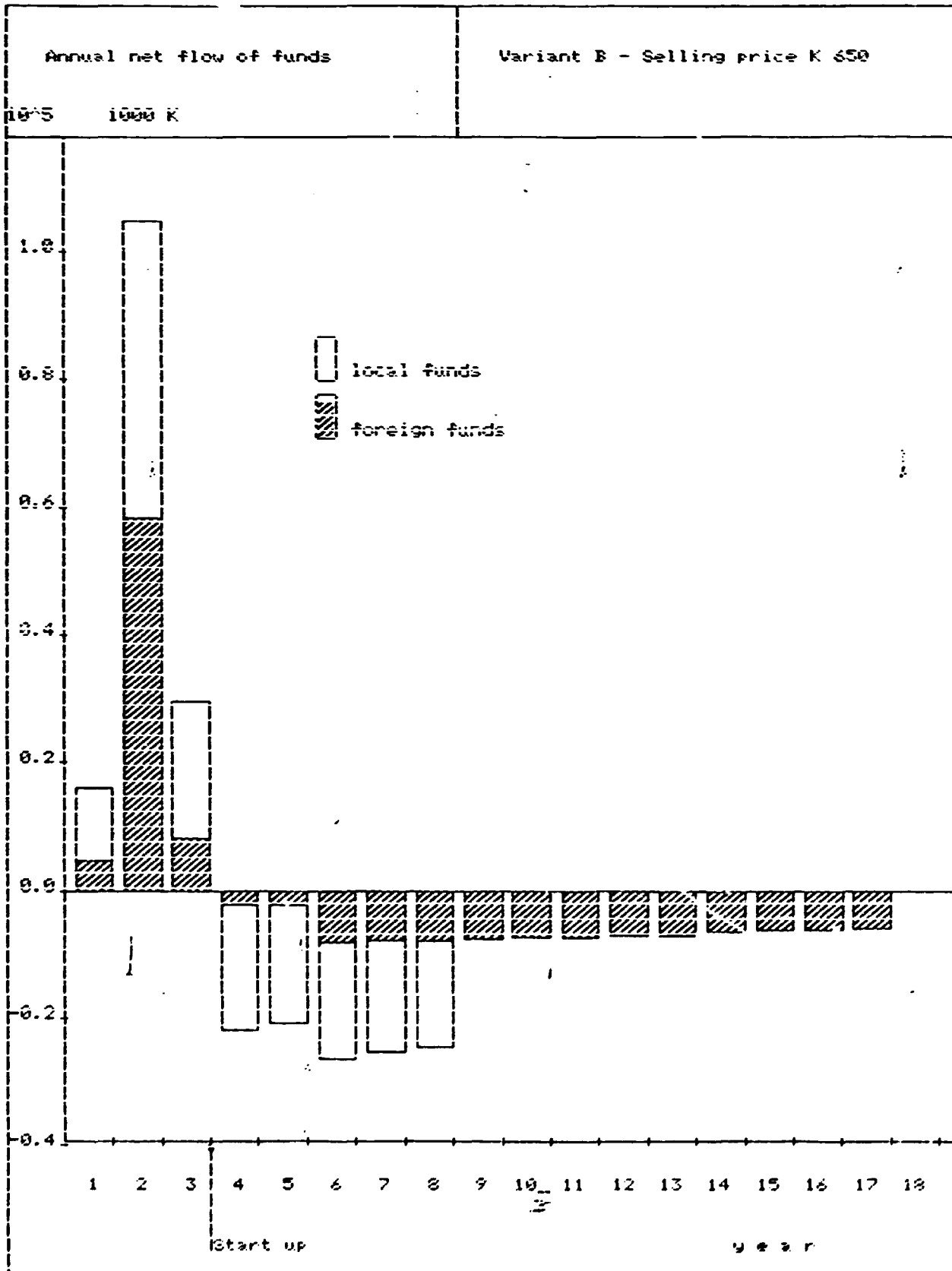


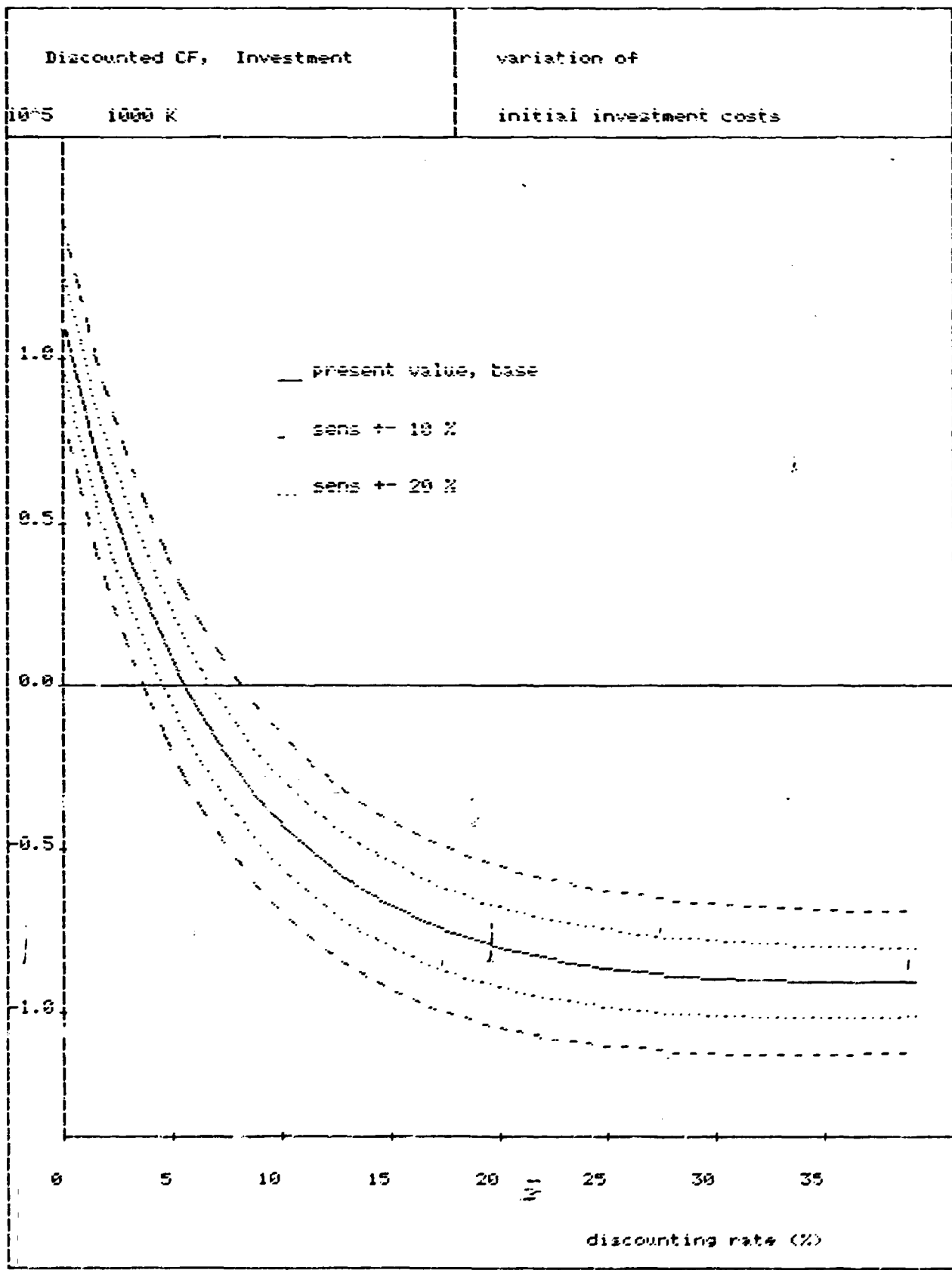
Projected Balance Sheets, Production in 1988 X

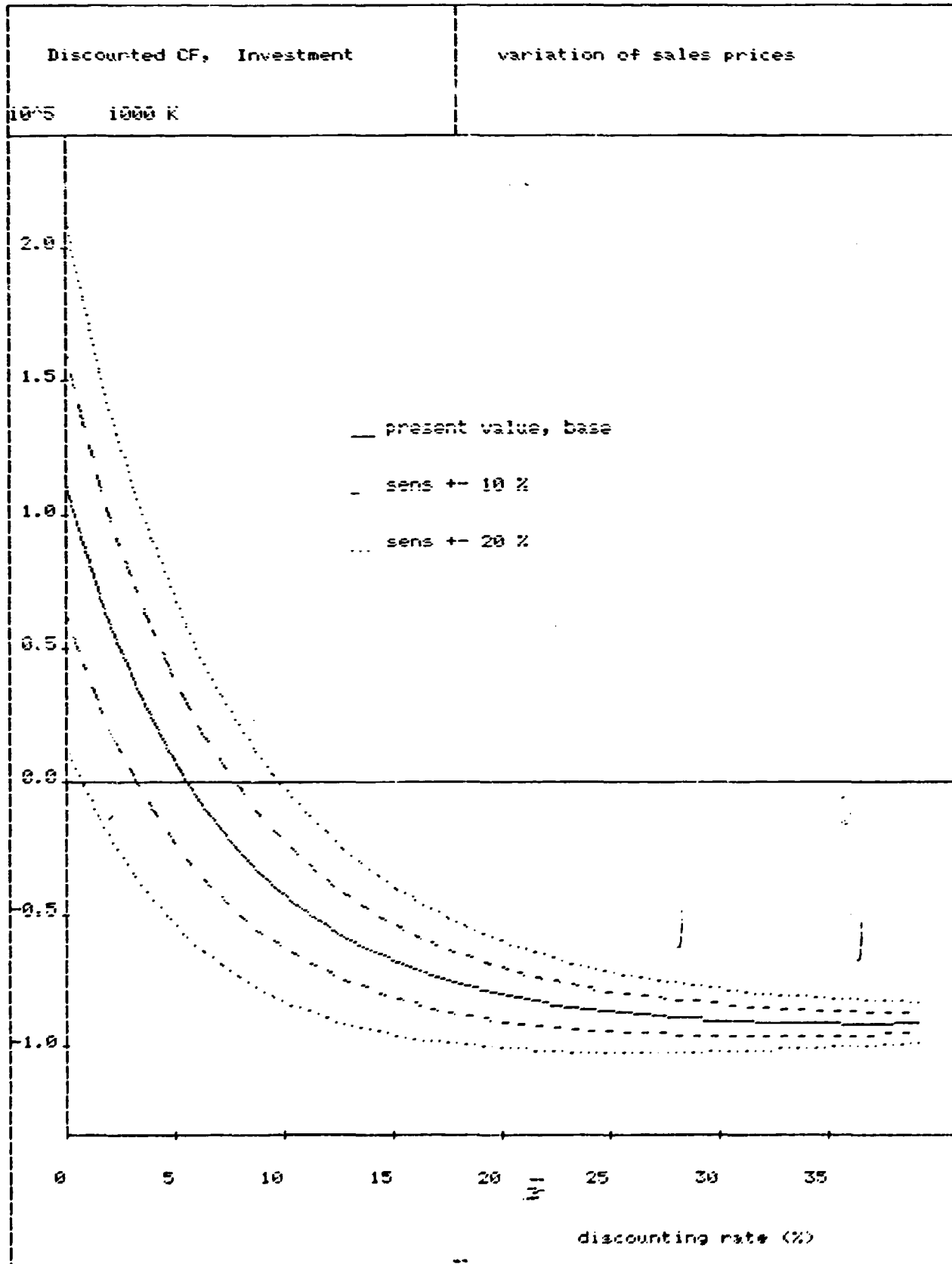
Year	2085	2086	2087
Total assets	72201.94	74269.36	82585.95
Fixed assets, net of depreciation:			
Construction in progress	0.00	0.00	0.00
Current assets	11457.23	11457.23	11457.23
Cash, bank	172.13	172.13	172.13
Cash surplus, finance available .	486.04	8419.31	22301.46
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	72201.94	74269.36	82585.95
Equity capital	0.00	0.00	0.00
Reserves, retained profit	50021.00	65879.05	75861.22
Profit	7857.96	7982.10	8316.59
Long and medium term debt	5914.75	0.00	0.00
Current liabilities	486.14	486.14	486.14
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	6322.89	486.14	486.14
Equity, % of liabilities	0.00	0.00	0.00

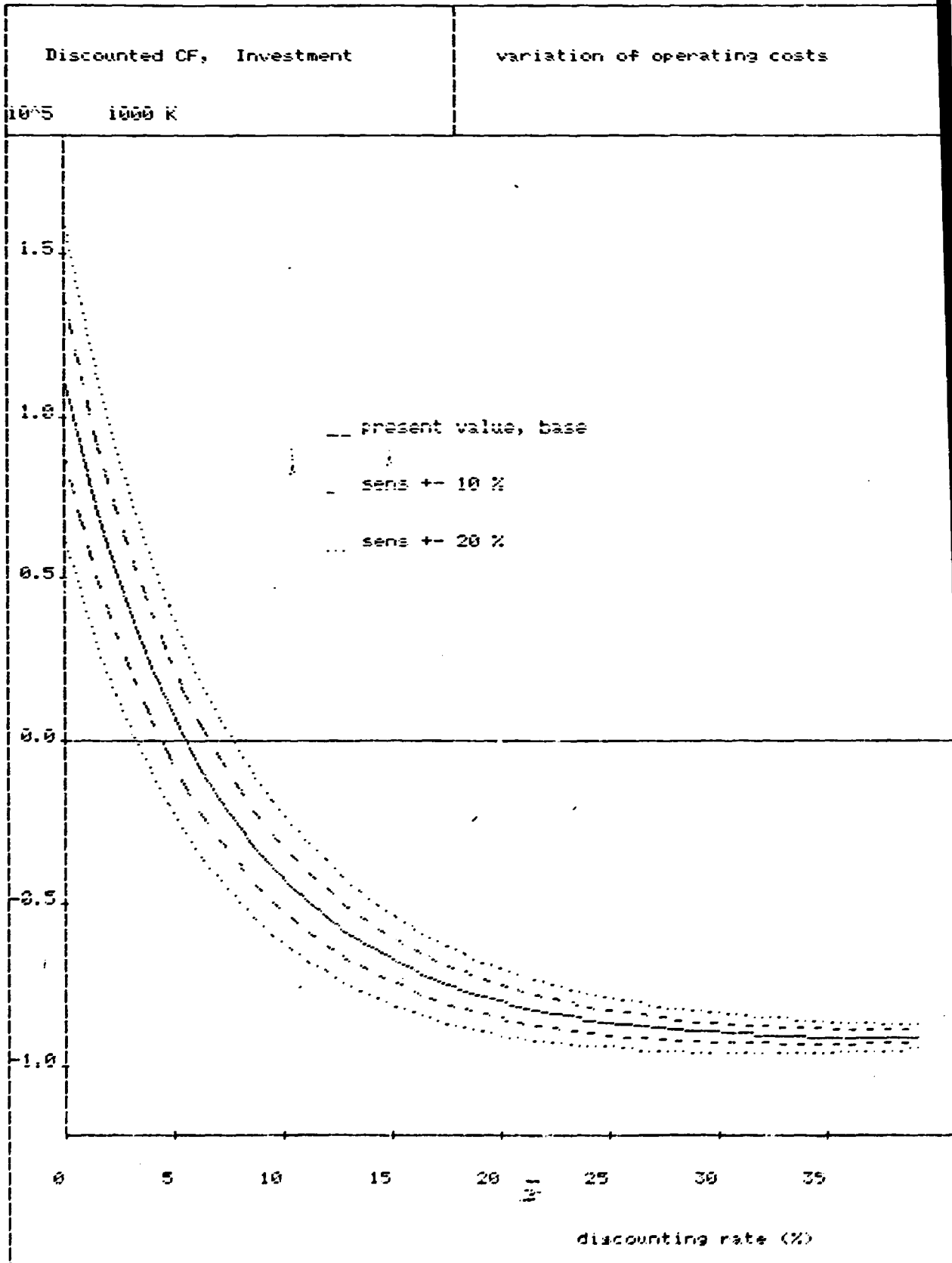


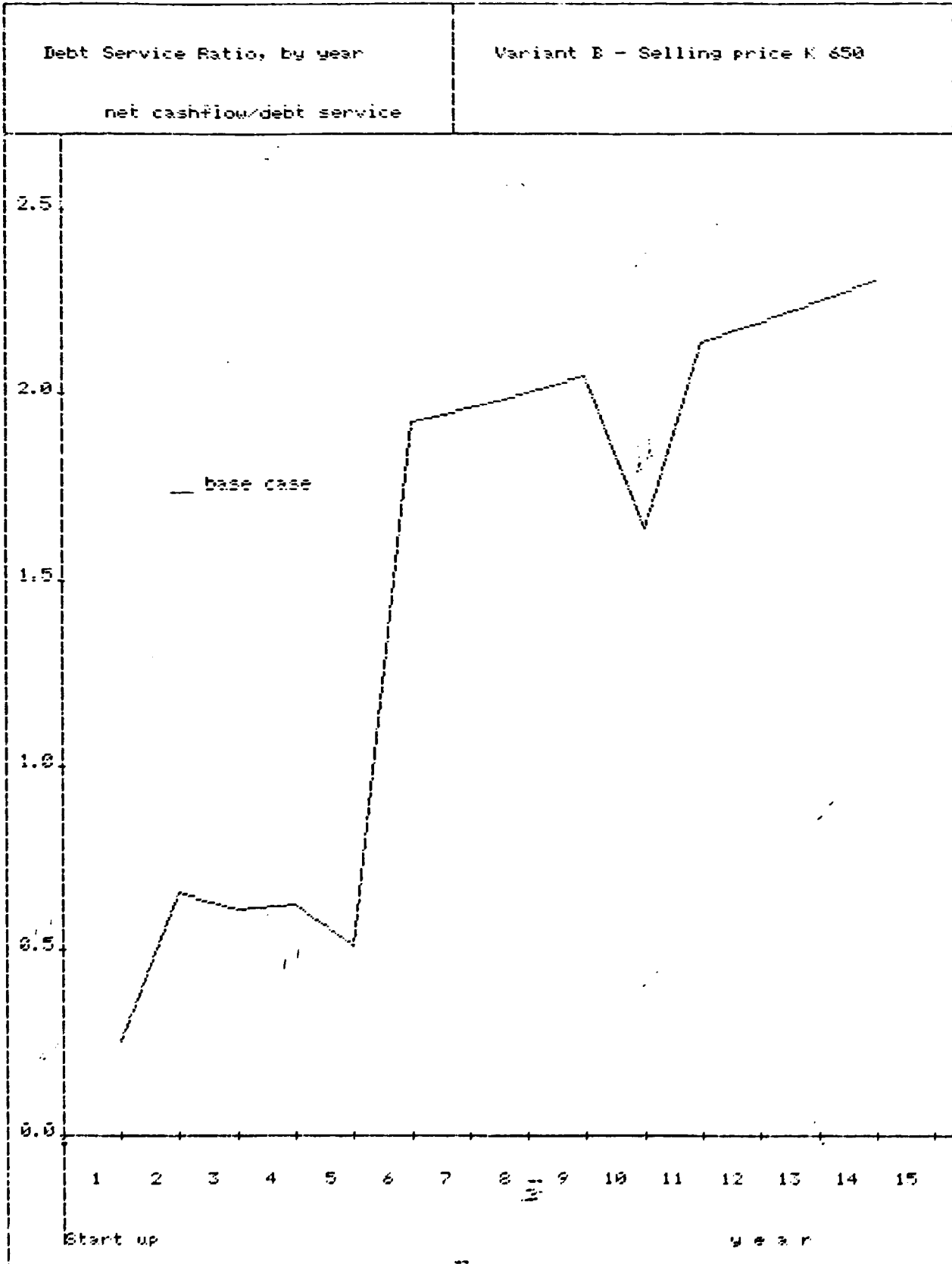












COMPAR - FINANCIAL ANALYSIS

C Variant

Selling Price 800,-- K

Tabl BURMA3 : Text Variables

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Project Name: Cement Plant at Lashio
Date: 27-06-1988
Name of Alternative: Variant C - Selling Price 800 K
Accounting currency: 1000 K
Name of Product (A): Portland Cement - Lashio
Name of Product (B): Portland Cement - Mandalay
Name of Product (C): Electric Power

Tabl BURMA3 : General Variables

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Multiplier to compute foreign into accounting currency: 1.000
Multiplier to compute local into accounting currency: 1.000
Construction phase: 3 year(s), planned yearly
Interest rate for computation of future values in % p.a.: 0.000
Percent rate for CF-Discounting: 5.000

Tab: BURMA3 : Source of finance - foreign funds

CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Equity - O: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 12 year(s)
 rates are paid yearly
Period of grace: 3 year(s)
Interests payable: 3.0 % for year 4 through 17

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Tabl BURMA3 : Source of finance - local funds

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Equity - O: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 5 year(s)
 rates are paid yearly
Period of grace: 1 year(s)
Interests payable: 5.0 % for year 4 through 6

Loan B: not specified

Loan C: not specified

Overdraft: not specified



COMFAR
21 UNITED

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Mini - Cement Plant at Lashio
27-06-1988
Variant C - Selling Price 800 K

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6683.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	70977.00	
local loans :	79440.00	
total funds :	150417.00	47.197 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	11044.50	16161.30	16625.60
depreciation :	8681.45	8681.45	8681.45
interest :	6101.31	5306.91	4512.51
production costs	25827.26	38149.66	29819.56
thereof foreign	29.96 %	26.13 %	25.87 %
total sales :	29032.00	46454.50	48742.00
gross income :	-2339.26	7276.34	9436.44
net income :	-2339.26	5093.44	6685.51
cash balance :	-12268.20	-3832.25	-6717.58
net cashflow :	9721.11	17362.66	19597.58

Net Present Value at: 5.00 % = 50034.95

Internal Rate of Return: 8.53 %

Return on equity1: not found

Return on equity2: 20.58 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1983
Variant C - Selling Price 800 K

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6603.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	73977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	4	5	6
operating costs:	16625.60	16625.60	16625.50
depreciation :	8631.45	8391.15	5865.85
interest :	3540.67	2562.83	1596.98
production costs	28847.72	27575.57	24086.43
thereof foreign	26.13 %	26.69 %	26.64 %
total sales :	49012.00	49342.00	49702.00
gross income :	10624.28	12162.43	16415.57
net income :	7437.00	9512.30	11490.90
cash balance :	-5685.36	-7913.59	11449.93
net cashflow :	19658.06	16437.99	18961.66

Net Present Value at: 5.00 % = 30034.93
Internal Rate of Return: 8.33 %
Return on equity1: not found
Return on equity2: 20.50 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1988
Variant C - Selling Price 600 K

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6603.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	70977.00	
local loans :	79440.00	
total funds :	150417.00	47.187 % foreign

Cashflow from operations

Year:	7	8	9
operating costs:	16625.60	16625.60	16625.60
depreciation :	5865.85	5865.85	5865.85
interest :	1419.54	1242.10	1064.66
production costs	23918.99	23733.55	23556.11
thereof foreign :	24.00 %	25.51 %	22.93 %
total sales :	50877.00	50467.00	50872.00
gross income :	15413.01	16702.45	17403.99
net income :	11489.11	11631.72	12102.75
cash balance :	11429.41	11781.30	12132.25
net cashflow :	10763.71	10958.14	19111.66

Net Present Value at: 5.00 % = 50034.95

Internal Rate of Return: 0.53 %

Return on equity1: not found

Return on equity2: 20.58 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHN. PRAMA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1988
Variant C - Selling Price 500 K

3 year(s) of construction, 15 years of production
currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	143814.00	46.46% foreign
current assets:	6585.00	62.97% foreign
total assets:	150417.00	47.18% foreign

Source of funds during construction phase

equity & grants:	0.00	0.00% foreign
foreign loans :	78777.00	
local loans :	79440.00	
total funds :	158417.00	47.18% foreign

Cashflow from operations

Year:	10	11	12
operating costs:	16625.60	16625.60	16625.60
depreciation :	5565.55	5865.85	5865.85
interest :	887.21	709.77	532.33
production costs	23079.36	21461.22	23023.78
thereof foreign	22.64 %	21.76 %	21.15 %
total sales :	51307.00	51712.00	51712.00
gross income :	18229.64	18430.78	18608.22
net income :	12768.75	12981.55	13025.76
cash balance :	9406.85	12851.07	12976.85
net cashflow :	16288.82	19475.59	19423.93

Net Present Value at: 5.00 % = 50034.95
Internal Rate of Return: 8.53 %
Return on equity1: not found
Return on equity2: 28.38 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA

Mini - Cement Plant at Lashio
27-06-1988
Variant C - Selling Price 500 K

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 Z

Total initial investment during construction phase

fixed assets:	143814.00	46.462 % foreign
current assets:	6605.00	62.971 % foreign
total assets:	150417.00	47.187 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	78977.00	
local loans :	79440.00	
total funds :	158417.00	47.187 % foreign

Cashflow from operations

Year:	13	14	15
operating costs:	16625.60	16625.60	16625.60
depreciation :	5805.85	5805.85	5565.55
interest :	354.89	177.44	0.00
production costs	22846.34	22660.89	22191.15
thereof foreign	20.54 %	19.92 %	19.55 %
total sales :	51712.00	51712.00	51712.00
gross income :	18785.66	18905.11	19448.85
net income :	13149.96	13274.17	13688.59
cash balance :	13181.06	13225.27	19174.14
net cashflow :	19378.78	19217.46	19174.14

Net Present Value at: 5.00 % = 50034.95

Internal Rate of Return: 8.53 %

Return on equity1: not found

Return on equity2: 20.58 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR[©]
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Initial Investment in 1000 K

Year	1990	1991	1992
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	13760.00	22096.00	7000.00
Auxiliary and service facilities .	0.00	0.00	3205.00
Incorporated fixed assets	0.00	0.00	0.00
Plant machinery and equipment . . .	1315.00	70562.00	4000.00
Total fixed investment costs	15875.00	19658.00	14005.00
Pre-production capital expenditures.	1119.00	4117.00	8043.00
Net working capital	0.00	0.00	6603.00
Total initial investment costs . . .	16993.00	18475.00	29449.00
Of it foreign, in %	30.06	55.46	27.17

Mini - Cement Plant at Lashio --- 27-86-1965



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Current Investment in 1000 K

Year	1993	1994	1995	1996	1997	1998
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities	0.00	0.00	0.00	0.00	3003.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	3003.00	0.00
Preproduction capitals expenditures	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	2722.39	1719.14	201.99	1.05	1.28	-7.93
Total current investment costs	2722.39	1719.14	201.99	1.05	3004.28	-7.93
Of it foreign, Z	19.66	10.07	12.92	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-06-1986

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Current Investment in 1000 K

Year	1999	2000	2001	2002	2003
Fixed investment costs					
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities	0.00	0.00	0.00	3003.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	3003.00	0.00
Preproduction capitals expenditures	0.00	0.00	0.00	0.00	0.00
Working capital	10.79	1.52	1.58	1.69	1.58
Total current investment costs	10.79	1.52	1.58	3004.69	1.58
Of it foreign, Z	0.00	0.00	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-06-1986



COMFAR
21
UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Production Costs in 1990 K

Year	1993	1994	1995	1996	1997	1998
I of max. capacity (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	396.90	685.50	721.60	721.60	721.60	721.60
Other raw materials	5258.30	9022.60	9560.60	9560.60	9560.60	9560.60
Utilities	39.00	65.00	65.00	65.00	65.00	65.00
Energy	1204.62	2039.90	2147.30	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	112.00	270.83	429.00	429.00	429.00	429.00
Spares	936.40	1617.40	1702.50	1702.50	1702.50	1702.50
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	9257.70	15070.90	15936.50	15936.50	15936.50	15936.50
Administrative overheads	1766.00	1090.40	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	8681.45	8681.45	8681.45	8681.45	8381.15	5855.05
Financial costs	6181.31	5336.91	4512.51	3548.67	2568.03	1596.98
Total production costs	25827.26	30149.66	29919.56	28847.72	27575.57	24868.43
Costs per unit (single product)	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, I	29.9%	26.15	25.97	26.13	26.69	24.64
Of it variable, I	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	1010.50	1114.10	712.00	712.00	712.00	712.00

----- Mini - Cement Plant at Lashio --- 27-06-1986 -----



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAMA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	1995	2000	2001	2002	2003	2004
% of nom. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material 1	721.60	721.60	721.60	721.60	721.60	721.60
Other raw materials	9560.60	9560.60	9560.60	9560.60	9560.60	9560.60
Utilities	65.00	65.00	65.00	65.00	65.00	65.00
Energy	2147.30	2147.30	2147.30	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	429.00	429.00	429.00	429.00	429.00	429.00
Spares	1702.50	1702.50	1702.50	1702.50	1702.50	1702.50
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	15936.50	15936.50	15936.50	15936.50	15936.50	15936.50
Administrative overheads	689.10	689.10	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	5065.05	5065.05	5065.05	5065.05	5065.05	5065.05
Financial costs	1419.54	1242.10	1064.56	887.21	709.77	532.33
Total production costs	23918.99	23733.55	23556.10	23078.36	23201.22	23023.70
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, %	24.00	23.51	22.93	22.64	21.76	21.15
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	712.00	712.00	712.00	712.00	712.00	712.00

Mini - Cement Plant at Lashio --- 27-06-1986



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Production Costs in 1000 K

Year	2005	2006	2007
% of max. capacity (single product)	0.00	0.00	0.00
Raw material I	721.60	721.60	721.50
Other raw materials	9560.60	9560.60	9560.60
Utilities	65.00	65.00	65.00
Energy	2147.30	2147.30	2147.30
Labour, direct	443.70	443.70	443.70
Repair, maintenance	429.00	429.00	429.00
Spares	1702.50	1702.50	1702.50
Factory overheads	866.80	866.80	866.90
Factory costs	15936.50	15936.50	15936.50
Administrative overheads	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	5865.85	5865.85	5565.55
Financial costs	354.89	177.44	0.00
Total production costs	22846.33	22668.89	22191.15
Costs per unit (single product)	0.00	0.00	0.00
Of it foreign, %	20.54	19.92	19.55
Of it variable, %	0.00	0.00	0.00
Total labour	712.80	712.60	712.80

Nini - Cement Plant at Lashio --- 27-06-1983



----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Net Working Capital in 1990 K

Year		1993	1994	1995	1996	1997
Coverage	mdc coto					
Current assets &						
Accounts receivable	7 51.4	322.55	489.80	507.75	508.78	512.06
Inventory and materials	88 4.1	7983.25	8995.76	9121.64	9121.64	9121.64
Energy	38 12.8	188.53	167.79	178.94	178.94	178.94
Spares	100 2.0	463.20	880.70	851.25	851.25	851.25
Work in progress	8 45.8	188.05	303.56	319.96	319.96	319.96
Finished products	12 30.8	316.05	462.88	502.92	502.92	502.92
Cash in hand	15 24.0	172.74	178.68	172.15	172.15	172.15
Total current assets		9556.22	11423.29	11654.56	11655.61	11655.90
Current liabilities and						
Accounts payable	9 39.1	258.85	387.76	488.14	488.14	488.14
Net working capital		9325.39	11044.53	11246.42	11247.47	11248.75
Increase in working capital		2722.39	1719.14	201.89	1.05	1.28
Net working capital, local		4632.29	6027.08	6282.38	6283.95	6285.21
Net working capital, foreign		4693.11	5017.45	5043.54	5043.54	5043.54

Note: mdc = minus days of coverage ; coto = coefficient of turnover .

Mini - Cement Plant at Lashio --- 27-06-1988

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Net Working Capital in 1990 K

Year		1998	1999	2000	2001	2002
Coverage	mdc coto					
Current assets &						
Accounts receivable	7 51.4	502.13	512.92	514.43	516.81	517.78
Inventory and materials	88 4.1	9121.64	9121.64	9121.64	9121.64	9121.64
Energy	38 12.8	178.94	178.94	178.94	178.94	178.94
Spares	100 2.0	851.25	851.25	851.25	851.25	851.25
Work in progress	8 45.8	319.96	319.96	319.96	319.96	319.96
Finished products	12 30.8	502.92	502.92	502.92	502.92	502.92
Cash in hand	15 24.0	172.13	172.13	172.13	172.13	172.13
Total current assets		11646.96	11659.75	11661.27	11662.85	11664.54
Current liabilities and						
Accounts payable	9 39.1	488.14	488.14	488.14	488.14	488.14
Net working capital		11248.82	11251.61	11253.13	11254.70	11256.39
Increase in working capital		-7.95	18.79	1.52	1.58	1.69
Net working capital, local		6197.28	6289.87	6289.59	6281.16	6282.85
Net working capital, foreign		5043.54	5043.54	5043.54	5043.54	5043.54

Note: mdc = minus days of coverage ; coto = coefficient of turnover .

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR[®]
2.1 UNIOO

----- COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Net Working Capital in 1000 K

Year		2003	2004- 7
Coverage	mdc coto		
Current assets &			
Accounts receivable	7 51.4	519.28	519.28
Inventory and materials	89 4.1	9121.54	9121.64
Energy	30 12.0	178.74	178.94
Spares	180 2.0	851.25	851.25
Work in progress	8 45.0	319.96	319.96
Finished products	12 30.0	502.92	502.92
Cash in hand	15 24.0	172.15	172.15
Total current assets		11565.11	11665.11
Current liabilities and			
Accounts payable	9 39.1	488.14	488.14
Net working capital		11257.97	11257.97
Increase in working capital		1.57	0.00
Net working capital, local		6214.43	6214.43
Net working capital, foreign		5043.54	5043.54

Note: mdc = minimum days of coverage ; coto = coefficient of turnover .

----- Mini - Cement Plant at Lashio --- 27-0e-1988 -----



COMFAR^{2.1}
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA

Source of Finance, construction in 1000 K

Year	1990	1991	1992
Equity, ordinary ..	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00
Loan A, foreign .	4867.00	56110.00	9000.00
Loan B, foreign..	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00
Loan A, local....	11326.00	46665.00	21449.00
Loan B, local....	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00
Total loan	16193.00	104775.00	29449.00
Current liabilities	0.00	0.00	0.00
Bank overdraft	0.00	0.00	0.00
Total funds	16193.00	104775.00	29449.00

Mini - Cesent Plant at Lashio --- 27-06-1988



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Source of Finance, production in 1993 K

Year	1993	1994	1995	1996	1997	1998	1999
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	-5914.75	-5914.75	-5914.75	-5914.75	-5914.75
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-15889.00	-15889.00	-15889.00	-15368.00	-15889.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-15889.00	-15889.00	-21802.75	-21992.75	-21992.75	-5914.75	-5914.75
Current liabilities	230.95	152.95	24.38	0.00	0.00	0.00	0.00
Bank overdraft	12268.19	3832.25	6717.78	5685.34	7913.59	-11449.93	-11429.42
Total funds	-3388.98	-11902.92	-15868.67	-16117.41	-13889.16	-17364.68	-17344.17

Mini - Cement Plant at Lashio --- 27-06-1996

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Source of Finance, production in 1993 K

Year	2000	2001	2002- 6
Equity, ordinary ..	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00
Loan A, foreign .	-5914.75	-5914.75	-5914.75
Loan B, foreign..	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00
Loan A, local....	0.00	0.00	0.00
Loan B, local....	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00
Total loan	-5914.75	-5914.75	-5914.75
Current liabilities	0.00	0.00	0.00
Bank overdraft	-11781.30	-1756.41	0.00
Total funds	-17696.05	-7671.16	-5914.75

Mini - Cement Plant at Lashio --- 27-06-1996



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA

Cashflow Tables, construction in 1000 K

Year	1990	1991	1992
Total cash inflow . .	16195.00	104775.00	29449.00
Financial resources .	16195.00	104775.00	29449.00
Sales, net of tax . .	0.00	0.00	0.00
Total cash outflow . .	16195.00	104775.00	29449.00
Total assets	16195.00	104775.00	29449.00
Operating costs . . .	0.00	0.00	0.00
Cost of finance . . .	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00
Surplus (deficit) .	0.00	0.00	0.00
Cumulated cash balance	0.00	0.00	0.00
Inflow, local	11326.00	46665.00	21449.00
Outflow, local	11326.00	46665.00	21449.00
Surplus (deficit) .	0.00	0.00	0.00
Inflow, foreign	4867.00	58110.00	8000.00
Outflow, foreign . . .	4867.00	58110.00	8000.00
Surplus (deficit) .	0.00	0.00	0.00
Net cashflow	-16195.00	-104775.00	-29449.00
Cumulated net cashflow	-16195.00	-120960.00	-150417.00

Mini - Cement Plant at Lashio --- 27-05-1983

Cashflow tables, production in 1000 K

Year	1993	1994	1995	1996	1997	1998
Total cash inflow . .	23719.83	37578.95	39259.38	39472.88	39756.88	48584.88
Financial resources .	238.83	152.95	24.38	0.88	0.88	0.88
Sales, net of tax . .	23480.88	37426.88	39256.88	39472.88	39756.88	48584.88
Total cash outflow . .	35927.83	41411.18	45992.87	45157.36	47649.59	29854.87
Total assets	2953.22	1872.87	226.27	1.85	3884.28	-7.95
Operating costs . . .	11844.58	16161.58	16625.68	16625.68	16625.68	15625.68
Cost of finance . . .	6181.31	5386.21	4512.51	3548.67	2562.87	1596.98
Repayment	15888.88	15888.88	21882.75	21882.75	21882.75	5914.75
Corporate tax	0.88	2192.98	2838.95	3157.25	3642.15	4924.67
Dividends paid	0.88	0.88	0.88	0.88	0.88	0.88
Surplus (deficit) .	-12268.28	-3832.25	-6717.68	-5685.36	-7913.59	11449.95
Cumulated cash balance	-12268.28	-16188.45	-22919.14	-25585.49	-36417.88	-24967.15
Inflow, local	23652.54	37526.89	39278.55	39472.88	39756.88	48584.88
Outflow, local	31693.23	37284.29	36379.96	35752.64	38422.51	28884.24
Surplus (deficit) .	-8848.69	322.68	2898.57	3719.36	1313.69	28499.76
Inflow, foreign	66.28	52.84	9.85	0.88	0.88	0.88
Outflow, foreign . . .	4293.88	4285.98	9618.18	9484.72	9227.29	9849.62
Surplus (deficit) .	-4227.52	-4154.65	-9608.25	-9484.72	-9227.22	-9349.83
Net cashflow	9721.11	17362.66	19597.58	19659.36	16457.99	18961.66
Cumulated net cashflow	-148695.98	-123333.28	-183755.78	-84877.57	-67619.68	-48657.94



COMFAR[®]
21 UNIO

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA

Cashflow tables, production in 1000 K

Year	1999	2000	2001	2002	2003	2004
Total cash inflow . .	40324.00	40636.00	40960.00	41309.00	41632.00	41632.00
Financial resources .	0.00	0.00	0.00	0.00	0.00	0.00
Sales, net of tax . .	40324.00	40636.00	40960.00	41309.00	41632.00	41632.00
Total cash outflow . .	29994.58	28854.70	28827.75	31901.14	26750.93	26655.14
Total assets	10.79	1.52	1.50	3004.69	1.50	0.00
Operating costs . . .	16625.60	16625.60	16625.60	16625.60	16625.60	16625.60
Cost of finance . . .	1419.54	1242.10	1064.56	887.21	709.77	532.33
Repayment	5914.75	5914.75	5914.75	5914.75	5914.75	5914.75
Corporate tax	4923.90	5070.74	5221.17	5460.99	5529.23	5507.47
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	11429.42	11781.30	12132.25	9406.86	12851.07	12976.86
Cumulated cash balance	-13337.73	-1756.43	13375.02	19782.60	32633.75	45610.61
Inflow, local	40324.00	40636.00	40960.00	41309.00	41632.00	41632.00
Outflow, local	20022.20	20159.75	20310.24	23561.00	20615.31	20669.97
Surplus (deficit) .	20301.80	20476.25	20649.76	17746.92	21013.69	20962.03
Inflow, foreign	0.00	0.00	0.00	0.00	0.00	0.00
Outflow, foreign . . .	0072.39	0694.95	0517.50	0340.06	0162.62	7965.10
Surplus (deficit) .	-0072.39	-0694.95	-0517.50	-0340.06	-0162.62	-7965.10
Net cashflow	10763.71	10938.15	19111.66	16208.92	19475.59	19423.93
Cumulated net cashflow	-29094.23	-10956.08	0155.57	24564.39	43839.93	63263.92

Mini - Cement Plant at Lashio --- 27-96-1998



COMFAR
2.1 UNIOO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Cashflow tables, production in 1000 K

Year	2005	2006	2007
Total cash inflow . .	41632.00	41632.00	41632.00
Financial resources .	0.00	0.00	0.00
Sales, net of tax . .	41632.00	41632.00	41632.00
Total cash outflow . .	28538.93	28486.73	22457.85
Total assets	0.00	0.00	0.00
Operating costs . . .	16625.60	16625.60	16625.60
Cost of finance . . .	354.99	177.44	0.00
Repayment	5914.75	5914.75	0.00
Corporate tax	5635.70	5688.93	5052.25
Dividends paid	0.00	0.00	0.00
Surplus (deficit) .	13101.07	13225.27	19174.14
Cumulated cash balance	50711.66	71936.95	91111.09
Inflow, local	41632.00	41632.00	41632.00
Outflow, local	20725.20	20776.43	20919.75
Surplus (deficit) .	20906.80	20855.57	20712.25
Inflow, foreign	0.00	0.00	0.00
Outflow, foreign . . .	7807.74	7638.29	1538.10
Surplus (deficit) .	-7807.74	-7638.29	-1538.10
Net cashflow	19370.70	19517.47	19174.14
Cumulated net cashflow	82634.62	101952.10	121126.20

Mini - Cement Plant at Lashio --- 27-06-1980



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Cashflow Discounting:

a) Equity paid versus Net income flow:

Net present value 117384.94 at 5.00 %
Internal Rate of Return (IRRE1) .. not found

b) Net Worth versus Net cash return:

Net present value 64791.68 at 5.00 %
Internal Rate of Return (IRRE2) .. 20.52 %

c) Internal Rate of Return on total investment:

Net present value 50054.95 at 5.00 %
Internal Rate of Return (IRR) .. 8.53 %

Net Worth = Equity paid plus reserves

Mini - Cement Plant at Lashio --- 27-06-1988



COMFAR 21 UNIO

COMFAR 21 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	1993	1994	1995	1996	1997
Total sales, incl. sales tax	29032.00	46454.50	48742.00	49012.00	49342.00
Less: variable costs, incl. sales tax.	5544.00	9020.50	9486.00	9540.00	9606.00
Variable margin	23488.00	37426.00	39256.00	39472.00	39736.00
As % of total sales	80.90	80.56	80.54	80.54	80.55
Non-variable costs, incl. depreciation	19725.95	24042.75	25307.05	25307.05	25006.75
Operational margin	3762.05	12583.25	13949.95	14164.95	14729.25
As % of total sales	12.96	27.09	28.62	28.90	29.85
Cost of finance	6101.31	5306.91	4512.51	3540.67	2560.83
Gross profit	-2339.26	7276.34	9436.44	10624.29	12160.43
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-2339.26	7276.34	9436.44	10624.29	12160.43
Tax	0.00	2182.90	2030.93	3107.20	3640.13
Net profit	-2339.26	5093.44	6605.51	7437.00	8512.30
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-2339.26	5093.44	6605.51	7437.00	8512.30
Accumulated undistributed profit . . .	-2339.26	2754.18	9599.69	16796.57	25300.98
Gross profit, % of total sales	-0.86	15.66	19.36	21.60	24.65
Net profit, % of total sales	-0.86	10.95	13.55	15.17	17.25
ROE, Net profit, % of equity	0.00	0.00	0.00	2.00	0.00
ROI, Net profit:interest, % of invest.	2.46	6.72	7.17	7.00	7.01

Mini - Cement Plant at Lashio --- 27-26-1990



COMFAR
2.1 UN100

COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	1978	1979	2000	2001	2002
Total sales, incl. sales tax	49702.00	50077.00	50467.00	50072.00	51307.00
Less: variable costs, incl. sales tax.	9170.00	9753.00	9851.00	9912.00	9999.00
Variable margin	40504.00	40324.00	40656.00	40950.00	41308.00
As % of total sales	81.47	80.52	80.52	80.52	80.51
Non-variable costs, incl. depreciation	22491.45	22491.45	22491.45	22491.45	22191.15
Operational margin	18012.55	17832.55	18144.55	18468.55	19116.85
As % of total sales	36.24	35.61	35.95	36.30	37.26
Cost of finance	1596.90	1419.54	1342.10	1054.66	887.21
Gross profit	16415.57	16413.01	16902.45	17403.89	18229.64
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	16415.57	16413.01	16902.45	17403.89	18229.64
Tax	4924.67	4925.90	5070.74	5221.17	5468.89
Net profit	11490.90	11487.11	11831.72	12182.72	12760.75
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	11490.90	11487.11	11831.72	12182.72	12760.75
Accumulated undistributed profit . . .	36799.28	48228.99	60120.71	72503.44	85064.19
Gross profit, % of total sales	33.03	32.70	33.49	34.21	35.53
Net profit, % of total sales	23.12	22.94	23.44	23.95	24.87
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit/interest, % of invest.	0.28	0.17	0.27	0.38	0.47

Mini - Cement Plant at Lashio --- 27-06-1983



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K

Year	2005	2004	2005	2006	2007
Total sales, incl. sales tax	51712.00	51712.00	51712.00	51712.00	51712.00
Less: variable costs, incl. sales tax	10090.00	10090.00	10090.00	10090.00	10090.00
Variable margin	41632.00	41632.00	41632.00	41632.00	41632.00
As % of total sales	80.51	80.51	80.51	80.51	80.51
Non-variable costs, incl. depreciation	22491.45	22491.45	22491.45	22491.45	22191.15
Operational margin	19140.55	19140.55	19140.55	19140.55	19440.85
As % of total sales	37.01	37.01	37.01	37.01	37.59
Cost of finance	709.77	532.33	354.89	177.44	0.00
Gross profit	18430.78	18608.22	18795.66	18963.11	19440.85
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	18430.78	18608.22	18795.66	18963.11	19440.85
Tax	5529.25	5502.47	5635.70	5660.93	5032.25
Net profit	12901.55	13025.76	13149.96	13274.17	13608.59
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	12901.55	13025.76	13149.96	13274.17	13608.59
Accumulated undistributed profit	97965.73	110991.50	124141.50	137415.68	151024.20
Gross profit, % of total sales	35.54	35.99	36.32	36.67	37.59
Net profit, % of total sales	24.95	25.19	25.42	25.67	26.32
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit-interest, % of invest.	0.45	0.42	0.36	0.35	0.45

Mini - Cement Plant at Lashio --- 27-26-1989



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA

Projected Balance Sheets, construction in 1000 K

Year	1990	1991	1992
Total assets	16193.00	120968.00	150417.00
Fixed assets, net of depreciation	0.00	16193.00	120968.00
Construction in progress	16193.00	104775.00	22846.00
Current assets	0.00	0.00	6603.00
Cash, bank	0.00	0.00	0.00
Cash surplus, finance available	0.00	0.00	0.00
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	16193.00	120968.00	150417.00
Equity capital	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	16193.00	120968.00	150417.00
Current liabilities	0.00	0.00	0.00
Bank overdraft, finance required	0.00	0.00	0.00
Total debt	16193.00	120968.00	150417.00
Equity, % of liabilities	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-06-1995



COMFAR
2.1 UNIO

----- COMFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1990 K

Year	1993	1994	1995	1996	1997	1998
Total assets	147028.00	140218.60	129424.20	120743.00	115566.90	109495.20
Fixed assets, net of depreciation	135132.50	126451.10	117769.50	109003.20	100707.00	97344.19
Construction in progress	0.00	0.00	0.00	0.00	3003.00	0.00
Current assets	9385.49	11249.61	11482.43	11495.40	11489.77	11476.93
Cash, bank	172.74	170.50	172.15	172.15	172.15	172.15
Cash surplus, finance available	0.00	0.00	0.00	0.00	0.00	0.00
Loss carried forward	0.00	2339.26	0.00	0.00	0.00	0.00
Loss	2339.26	0.00	0.00	0.00	0.00	0.00
Total liabilities	147028.00	140218.60	129424.20	120743.00	115566.90	109495.20
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	2751.10	9359.69	16796.69	25385.90
Profit	0.00	5095.44	6695.51	7457.00	8512.30	11490.90
Long and medium term debt	134529.00	118641.00	96070.25	75035.50	53252.75	47510.00
Current liabilities	230.83	383.76	400.14	400.14	400.14	400.14
Bank overdraft, finance required.	12268.20	16100.45	22013.15	28507.40	36417.06	24967.13
Total debt	147028.00	135125.20	120064.50	103947.10	90057.95	72695.29
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

----- Mini - Cement Plant at Lashio --- 27-06-1988 -----

----- COMFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1993 K

Year	1999	2000	2001	2002	2003	2004
Total assets	103630.10	97773.76	102205.30	109151.30	116110.10	123229.10
Fixed assets, net of depreciation	91970.34	86112.40	80246.53	74601.09	71015.25	65952.30
Construction in progress	0.00	0.00	0.00	3005.00	0.00	0.00
Current assets	11407.63	11409.14	11490.72	11492.41	11493.90	11495.90
Cash, bank	172.13	172.13	172.15	172.15	172.15	172.15
Cash surplus, finance available	0.00	0.00	10375.04	19702.70	32655.77	45610.63
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	103630.10	97773.76	102205.30	109151.30	116110.10	123229.10
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	36799.00	40200.99	60120.71	72303.44	85064.19	97965.75
Profit	11409.11	11831.72	12132.75	12760.75	12901.55	13025.76
Long and medium term debt	41403.25	35400.50	29515.75	23659.00	17744.25	11029.50
Current liabilities	400.14	400.14	400.14	400.14	400.14	400.14
Bank overdraft, finance required.	13537.71	1756.41	0.00	0.00	0.00	0.00
Total debt	55349.11	37655.05	29901.09	24067.14	18152.39	12237.64
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

----- Mini - Cement Plant at Lashio --- 27-06-1988 -----



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA

Projected Balance Sheets, Production in 1980 X

Year	2005	2006	2007
Total assets	130464.30	137023.60	151432.40
Fixed assets, net of depreciation	60006.53	54220.60	48553.13
Construction in progress	0.00	0.00	0.00
Current assets	11493.98	11493.98	11493.95
Cash, bank	172.15	172.15	172.15
Cash surplus, finance available .	50711.70	71936.97	91111.12
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	130464.30	137023.60	151432.40
Equity capital	0.00	0.00	0.00
Reserves, retained profit	110991.50	124141.50	137415.50
Profit	13149.96	13274.17	13609.59
Long and medium term debt	5914.75	0.00	0.00
Current liabilities	400.14	400.14	400.14
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	6322.89	400.14	400.14
Equity, % of liabilities	0.00	0.00	0.00

Mini - Cement Plant at Lashio --- 27-28-1988

COMFAR - ECONOMIC ANALYSIS

E₂ Variant

With Equity

(incl. Tabi, Tabo and Graphic)

Tabi BURMAS : Text Variables

CONFAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA -----

Project Name: Mini - Cement Plant at Lashio
Date: 28-06-1982
Name of Alternative: Variant E2 - with equity
Accounting currency: 1000 K
Name of Product (A): Portland Cement - Lashio
Name of Product (B): Portland Cement - Mandalay
Name of Product (C): Electric Power

Tabi BURMAS : General Variables

CONFAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA -----

Multiplier to compute foreign into accounting currency: 1.000
Multiplier to compute local into accounting currency: 1.000
Construction phase: 3 year(s), planned yearly
Interest rate for computation of future values in % p.a.: 0.000
Percent rate for CF-discounting: 10.000

Tabi BURMAS : Source of finance - foreign funds

CONF# 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----

Equity - O: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 12 year(s)
 rates are paid yearly
Period of grace: 3 year(s)
Interests payable: 3.0 % for year 4 through 17

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Tabi BURMAS : Source of finance - local funds

CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Equity - 0: first disbursement in year 1

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 5 year(s)
 rates are paid yearly
Period of grace: 1 year(s)
Interests payable: 5.0 % for year 4 through 8

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Tabi BURMAS : Subtable Initial Fixed Investment - foreign

Col	CORPOR 2.1 - POLYTECHNA, PRAGUE, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Deprec- I	Type of de	Scrap - I	Depreciati	Amount- P1	Amount- P2	Amount- P3
L 1 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 2 Site preparation and developme	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 3 Structures and civil (a).....	2.50	1.00	10.00	40.00	3093.10	6186.10	0.00
L 4 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 5 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 6 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 7 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 8 Plant machinery and equipo-(a)	5.00	1.00	5.00	20.00	1354.00	5157.10	0.00
L 9 Plant machinery and equipo-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 10 Auxiliary and service faciliti	20.00	1.00	10.00	5.00	0.00	0.00	994.40
L 11 Pre-production expenditures...	20.00	1.00	0.00	5.00	495.00	1925.99	3981.70
L 12 Inventory, working capital....	5.00	1.00	10.00	20.00	0.00	0.00	3905.20

Tabi BURMAS : Subtable Initial Fixed Investment - local

Col	CORPOR 2.1 - POLYTECHNA, PRAGUE, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Deprec- I	Type of de	Scrap - I	Depreciati	Amount- P1	Amount- P2	Amount- P3
L 13 Land.....	5.00	1.00	50.00	20.00	95.60	0.00	0.00
L 14 Site preparation and developme	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 15 Structures and civil (a).....	2.50	1.00	10.00	40.00	7331.00	10947.00	4796.60
L 16 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 17 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 18 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 19 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 20 Plant machinery and equipo-(a)	5.00	1.00	5.00	20.00	0.00	5792.60	013.00
L 21 Plant machinery and equipo-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 22 Auxiliary and service faciliti	20.00	1.00	10.00	5.00	0.00	0.00	1201.20
L 23 Pre-production expenditures...	20.00	1.00	0.00	5.00	350.00	540.00	1959.50
L 24 Inventory, working capital....	5.00	1.00	10.00	20.00	0.00	0.00	64.00

Tabi BURMAS : Subtable Current Fixed Investment - foreign

Col	COMPAR 2.1 - POLYTECHNA, PRANS, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Deprec-n I	Depreciati	Scrap - I	Depreciati	Amount- Y1	Amount- Y2	Amount- Y3
L 25 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 26 Site preparation and developme	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 27 Structures and civil (a).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 28 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 29 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 30 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 31 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 32 Plant machinery and equipm-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 33 Plant machinery and equipm-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 34 Auxiliary and service faciliti	20.00	1.00	10.00	5.00	0.00	0.00	0.00
L 35 Pre-production expenditures...	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 36 Inventory, working capital....	0.00	1.00	0.00	0.00	0.00	0.00	0.00

Tabi BURMAS : Subtable Current Fixed Investment - local

Col	COMPAR 2.1 - POLYTECHNA, PRANS, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Deprec-n I	Depreciati	Scrap - I	Depreciati	Amount- Y1	Amount- Y2	Amount- Y3
L 37 Land.....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 38 Site preparation and developme	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 39 Structures and civil (a).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 40 Structures and civil (b).....	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 41 Incorporated fixed assets,-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 42 Incorporated fixed assets,-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 43 Incorporated fixed assets,-(c)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 44 Plant machinery and equipm-(a)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 45 Plant machinery and equipm-(b)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 46 Auxiliary and service faciliti	20.00	1.00	10.00	5.00	0.00	0.00	0.00
L 47 Pre-production expenditures...	0.00	1.00	0.00	0.00	0.00	0.00	0.00
L 48 Inventory, working capital....	0.00	1.00	0.00	0.00	0.00	0.00	0.00

Tab: BURMAS : Subtable Production Costs - foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Inflator I	Adjust- Y1	Adjust- Y2	Adjust- Y3	Adjust- Y4	Adjust- Y5	Adjust- Y6
L 52	Raw material, annual cost (a).	0.00	26.20	45.30	47.70	47.70	47.70
L 53	Raw material, annual cost (b).	0.00	549.30	948.70	998.70	998.70	998.70
L 54	Utilities, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 55	Energy, annual cost.....	0.00	72.60	125.40	132.00	132.00	132.00
L 56	Labour (direct), annual cost..	0.00	0.00	0.00	0.00	0.00	0.00
L 57	Maintenance, annual cost.....	0.00	0.00	46.00	92.00	92.00	92.00
L 58	Spares, annual cost.....	0.00	559.40	566.20	1017.00	1017.00	1017.00
L 59	Factory overheads, annual cost	0.00	0.00	0.00	0.00	0.00	0.00
L 60	Administration, labour cost...	0.00	767.72	281.30	0.00	0.00	0.00
L 61	Administration, non-labour cos	0.00	0.00	0.00	0.00	0.00	0.00
L 62	Marketing, labour cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 63	Marketing, non-labour cost....	0.00	0.00	0.00	0.00	0.00	0.00

Tab: BURMAS : Subtable Standard Production Costs - foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Quanti- A	Variat- A	Quanti- B	Variat- B	Quanti- C	Variat- C	Quanti- D
L 64	Raw material (a).....	0.00	0.00	0.00	0.00	0.00	0.00
	Product A	Not used	Product B	Not used	Product C	Not used	Product D
L 65	Raw material, unit price (a)..	0.00	0.00	0.00	0.00	0.00	0.00
	Quanti- A	Variat- A	Quanti- B	Variat- B	Quanti- C	Variat- C	Quanti- D
L 66	Raw material (b).....	0.00	0.00	0.00	0.00	0.00	0.00
	Product A	Not used	Product B	Not used	Product C	Not used	Product D
L 67	Raw material, unit price (b)..	0.00	0.00	0.00	0.00	0.00	0.00
	Standa- A	Variat- A	Standa- B	Variat- B	Standa- C	Variat- C	Standa- D
L 68	Utilities, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 69	Energy, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 70	Labour (direct), annual cost..	0.00	0.00	0.00	0.00	0.00	0.00
L 71	Maintenance, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 72	Spares, annual cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 73	Factory overheads, annual cost	0.00	0.00	0.00	0.00	0.00	0.00
L 74	Administration, labour cost...	0.00	0.00	0.00	0.00	0.00	0.00
L 75	Administration, non-labour cos	0.00	0.00	0.00	0.00	0.00	0.00
L 76	Marketing, labour cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 77	Marketing, non-labour cost....	0.00	0.00	0.00	0.00	0.00	0.00
	Foreign- A	Foreign- B	Foreign- C	Foreign- D	Foreign- E	Foreign- F	Local - A
L 78	% of annual depreciation costs	100.00	0.00	0.00	0.00	0.00	100.00

Tab: BURMAS : Subtable Production Costs - local

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA						
	1	2	3	4	5	6	7
	Inflator I	Adjust- Y1	Adjust- Y2	Adjust- Y3	Adjust- Y4	Adjust- Y5	Adjust- Y6
L 82	Raw material, annual cost (a).	0.00	285.00	493.66	519.60	519.60	519.60
L 83	Raw material, annual cost (b).	0.00	3543.00	6119.00	6441.90	6441.90	6441.90
L 84	Utilities, annual cost.....	0.00	29.00	52.00	52.00	52.00	52.00
L 85	Energy, annual cost.....	0.00	950.00	1656.00	1743.20	1743.20	1743.20
L 86	Labour (direct), annual cost..	0.00	443.70	443.70	443.70	443.70	443.70
L 87	Maintenance, annual cost.....	0.00	89.60	179.20	269.60	269.60	269.60
L 88	Spares, annual cost.....	0.00	73.40	126.70	133.40	133.40	133.40
L 89	Factory overheads, annual cost	0.00	866.00	866.00	866.00	866.00	866.00
L 90	Administration, labour cost...	0.00	599.10	389.10	269.10	269.10	269.10
L 91	Administration, non-labour cos	0.00	420.00	420.00	420.00	420.00	420.00
L 92	Marketing, labour cost.....	0.00	0.00	0.00	0.00	0.00	0.00
L 93	Marketing, non-labour cost....	0.00	0.00	0.00	0.00	0.00	0.00

Tab: BURMAS : Subtable Standard Production Costs - local

Tabi BURMAS : Subtable Production Program and Sales - foreign

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Col	1	2	3	4	5	6	7
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 110 Yearly production, export - A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- 1	1st year	2nd year	3rd year	4th year	5th year	6th year
L 111 Unit price, export product A.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 112 Sales tax, export product A..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 113 Other direct variable cost- A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 114 Direct non-variable cost, - A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 115 Labour included in direct - A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 116 Yearly production, export - B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- 1	1st year	2nd year	3rd year	4th year	5th year	6th year
L 117 Unit price, export product B.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 118 Sales tax, export product B..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 119 Other direct variable cost- B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 120 Direct non-variable cost, - B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 121 Labour included in direct - B	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 122 Yearly production, export - C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- 2	1st year	2nd year	3rd year	4th year	5th year	6th year
L 123 Unit price, export product C.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 124 Sales tax, export product C..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 125 Other direct variable cost- C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 126 Direct non-variable cost, - C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 127 Labour included in direct - C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 128 Yearly production, export - D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- 2	1st year	2nd year	3rd year	4th year	5th year	6th year
L 129 Unit price, export product D.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 130 Sales tax, export product D..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 131 Other direct variable cost- D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 132 Direct non-variable cost, - D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 133 Labour included in direct - D	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 134 Yearly production, export - E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- 2	1st year	2nd year	3rd year	4th year	5th year	6th year
L 135 Unit price, export product E.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 136 Sales tax, export product E..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 137 Other direct variable cost- E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 138 Direct non-variable cost, - E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 139 Labour included in direct - E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Not used	Quanti- Y1	Quanti- Y2	Quanti- Y3	Quanti- Y4	Quanti- Y5	Quanti- Y6
L 140 Yearly production, export - F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inflat- 2	1st year	2nd year	3rd year	4th year	5th year	6th year
L 141 Unit price, export product F.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 142 Sales tax, export product F..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 143 Other direct variable cost- F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 144 Direct non-variable cost, - F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 145 Labour included in direct - F	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tabi BURMAS : Subtable Production Program and Sales - local

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Col	1	2	3	4	5	6	7
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Tabi BURMAS : Subtable Working Capital Requirements - f/1

Col	COMPAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----						
	1	2	3	4	5	6	7
	Covera- F	Covera- L	Covera- F	Covera- L	Not used	Not used	Not used
L 182 Accounts receivable C1/C2; cas	7.00	7.00	15.00	15.00	1.00	1.00	1.00
	Covera- F	Covera- L	not used	not used	Not used	Not used	Not used
L 183 Inventory, raw material (a)...	0.00	30.00	1.00	1.00	1.00	1.00	1.00
L 184 Inventory, raw material (b)...	360.00	90.00	1.00	1.00	1.00	1.00	1.00
L 185 Inventory, utilities.....	1.00	1.00	1.00	1.00	1.00	1.00	1.00
L 186 Inventory, energy.....	1.00	1.00	1.00	1.00	1.00	1.00	1.00
L 187 Inventory, spare parts.....	100.00	100.00	1.00	1.00	1.00	1.00	1.00
L 188 Inventory, work-in-progress...	8.00	8.00	1.00	1.00	1.00	1.00	1.00
L 189 Inventory, finished products..	0.00	12.00	1.00	1.00	1.00	1.00	1.00
L 190 Accounts payable.....	30.00	7.00	1.00	1.00	1.00	1.00	1.00

Tabi BURMA5 : Subtable Production Costs - foreign

											CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA	
8	9	10	11	12	13	14	15	16	17	18		
Adjust- Y7	Adjust- Y8	Adjust- Y9	Adjust- Y10	Adjust- Y11	Adjust- Y12	Adjust- Y13	Adjust- Y14	Adjust- Y15	Not used	Not used		
47.70	47.70	47.70	47.70	47.70	47.70	47.70	47.70	47.70	0.00	0.00		
998.70	996.70	998.70	998.70	998.70	992.70	998.70	998.70	998.70	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
132.00	132.00	132.00	132.00	132.00	132.00	132.00	132.00	132.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
92.00	92.00	92.00	92.00	92.00	92.00	92.00	92.00	92.00	0.00	0.00		
1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	1017.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Tabi BURMA5 : Subtable Standard Production Costs - foreign

											CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA	
8	9	10	11	12	13	14	15	16	17	18		
Variat- D	Quanti- E	Variat- E	Quanti- F	Variat- F	Not used	Not used	Not used	Not used	Not used	Not used		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Not used	Product E	Not used	Product F	Not used	Not used	Not used	Not used	Not used	Not used	Not used		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Variat- D	Quanti- E	Variat- E	Quanti- F	Variat- F	Not used	Not used	Not used	Not used	Not used	Not used		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Not used	Product E	Not used	Product F	Not used	Not used	Not used	Not used	Not used	Not used	Not used		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Variat- D	Standa- E	Variat- E	Standa- F	Variat- F	Not used	Not used	Not used	Not used	Not used	Not used		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Local - B	Local - C	Local - D	Local - E	Local - F	Not used	Not used	Not used	Not used	Not used	Not used		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Tabi BURMA5 : Subtable Production Costs - local

											CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA	
8	9	10	11	12	13	14	15	16	17	18		
Adjust- Y7	Adjust- Y8	Adjust- Y9	Adjust- Y10	Adjust- Y11	Adjust- Y12	Adjust- Y13	Adjust- Y14	Adjust- Y15	Not used	Not used		
519.60	519.60	519.60	519.60	519.60	519.60	519.60	519.60	519.60	0.00	0.00		
6441.90	6441.90	6441.90	6441.90	6441.90	6441.90	6441.90	6441.90	6441.90	0.00	0.00		
52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	0.00	0.00		
1743.20	1743.20	1743.20	1743.20	1743.20	1743.20	1743.20	1743.20	1743.20	0.00	0.00		
443.70	443.70	443.70	443.70	443.70	443.70	443.70	443.70	443.70	0.00	0.00		
269.60	269.60	269.60	269.60	269.60	269.60	269.60	269.60	269.60	0.00	0.00		
133.40	133.40	133.40	133.40	133.40	133.40	133.40	133.40	133.40	0.00	0.00		
866.80	866.80	866.80	866.80	866.80	866.80	866.80	866.80	866.80	0.00	0.00		
269.10	269.10	269.10	269.10	269.10	269.10	269.10	269.10	269.10	0.00	0.00		
420.00	420.00	420.00	420.00	420.00	420.00	420.00	420.00	420.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Tabi BURMA5 : Subtable Standard Production Costs - local

Tab. BURMAS : Subtable Working capital req., foreign

Col	COMPAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	adc	coto required Y1		required Y2	required Y3	required Y4	required Y5	required Y6
L 1 receivables.....	7.00	51.43	38.41	46.92	44.48	44.48	44.48	44.48
L 2 raw material 1st..	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 3 raw material other	368.00	1.00	549.30	948.70	998.70	998.70	992.70	998.70
L 4 utilities.....	1.00	368.00	0.00	0.00	0.00	0.00	0.00	0.00
L 5 energy.....	1.00	368.00	0.20	0.35	0.37	0.37	0.37	0.37
L 6 spare-parts.....	180.00	2.00	279.70	483.18	583.50	583.50	588.50	588.50
L 7 work-in-progress..	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 8 finished products.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 9 liabilities.....	38.00	12.00	189.65	177.65	198.62	198.62	198.62	198.62
L 10 cash in hand.....	15.00	24.00	55.30	55.93	46.21	46.21	46.21	46.21
L 11 current assets....	564.00	798.43	922.98	1532.96	1593.25	1598.25	1598.25	1598.25
L 12 net work'g capital	534.00	786.43	822.28	1355.33	1407.64	1407.64	1407.64	1407.64
L 13 NWC increase.....	0.00	0.00	822.28	535.05	52.31	0.00	0.00	0.00

Tab. BURMAS : Subtable Working capital req., local

Col	COMPAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	adc	coto required Y1		required Y2	required Y3	required Y4	required Y5	required Y6
L 14 receivables.....	7.00	51.43	142.12	288.97	215.99	216.99	216.99	216.99
L 15 raw material 1st..	30.00	12.00	23.82	41.13	43.30	43.30	43.30	43.30
L 16 raw material other	80.00	4.50	787.53	1359.96	1431.53	1431.53	1431.53	1431.53
L 17 utilities.....	1.00	368.00	0.88	0.14	0.14	0.14	0.14	0.14
L 18 energy.....	1.00	368.00	2.66	4.58	4.84	4.84	4.84	4.84
L 19 spare-parts.....	180.00	2.00	36.78	65.35	66.78	66.78	66.78	66.78
L 20 work-in-progress..	0.00	45.00	139.78	228.94	232.67	232.67	232.67	232.67
L 21 finished products.	12.00	30.00	243.64	358.23	371.98	371.98	371.98	371.98
L 22 liabilities.....	7.00	51.43	122.31	193.24	203.59	203.59	203.59	203.59
L 23 cash in hand.....	15.00	24.00	183.86	181.86	188.11	188.11	188.11	188.11
L 24 current assets....	334.00	883.93	1488.00	2358.28	2469.26	2468.26	2468.26	2468.26
L 25 net work'g capital	327.00	837.58	1357.69	2145.85	2264.68	2264.68	2264.68	2264.68
L 26 NWC increase.....	0.00	0.00	1357.69	887.36	99.63	0.00	0.00	0.00

Tab. BURMAS : Subtable Working capital req., consolidated

Col	COMPAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	adc	coto required Y1		required Y2	required Y3	required Y4	required Y5	required Y6
L 27 NWC,consol.....	861.00	1623.93	2179.97	3528.38	3672.31	3672.31	3672.31	3672.31
L 28 increase consol...	0.00	0.00	2179.97	1348.41	151.93	0.00	0.00	0.00

Tabo BURMAS : Subtable initial fixed investment - foreign

COMPAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA								
Col	1	2	3	4	5	6	7	8
	sum foreign	sum fval/f			invest- P1	invest- P2	invest- P3	invest- P4
L 1 land, site.....	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 2 civil A+B.....	9279.20	9279.20	0.00	0.00	3895.10	4196.10	0.00	0.00
L 3 equipment A+B.....	52927.10	52927.10	0.00	0.00	1054.00	51573.10	0.00	0.00
L 4 equipment C.....	994.40	994.40	0.00	0.00	0.00	0.00	994.40	0.00
L 5 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 6 pp-expenses.....	4320.60	4320.60	0.00	0.00	493.00	1925.90	3901.70	0.00
L 7 total fixed.....	69521.30	69521.30	0.00	0.00	4948.10	59605.10	4896.10	0.00
L 8 inventory.....	3905.20	3905.20	0.00	0.00	0.00	0.00	3905.20	0.00
L 9 receivables.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 10 total.....	73426.50	73426.50	0.00	0.00	4948.10	59605.10	8801.30	0.00

Tabo BURMAS : Subtable initial fixed investment - local, consolidated

COMPAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA								
Col	1	2	3	4	5	6	7	8
	sum local	sum fval/l	sum consol	sum fval/c	invest- P1	invest- P2	invest- P3	invest- P4
L 11 land, site.....	93.60	93.60	93.60	93.60	93.60	0.00	0.00	0.00
L 12 civil A+B.....	23875.40	23875.40	32354.60	32354.60	13424.90	17133.10	4796.60	0.00
L 13 equipment A+B.....	6606.40	6606.40	59533.50	59533.50	1054.00	57365.70	615.00	0.00
L 14 equipment C.....	1201.20	1201.20	2195.60	2195.60	0.00	0.00	2195.60	0.00
L 15 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 16 pp-expenses.....	2849.50	2849.50	9170.10	9170.10	843.00	2465.90	5851.20	0.00
L 17 total fixed.....	33826.10	33826.10	103347.40	103347.40	12715.50	76964.70	15667.20	0.00
L 18 inventory.....	44.80	44.80	3970.80	3970.80	0.00	0.00	3970.80	0.00
L 19 receivables.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 20 total.....	33870.90	33870.90	107317.40	107317.40	12715.50	76964.70	17637.20	0.00

Tabo BURMAS : Subtable initial fixed investment - consolidated, foreign, local

COMPAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA								
Col	1	2	3	4	5	6	7	8
	grant tota	FVAL	sum nval	sum fval	sum P1	sum P2	sum P3	sum P4
L 21 sum, cons/f.....	107317.40	107317.40	73426.50	73426.50	4948.10	59605.10	8801.30	0.00
L 22 sum, local.....	0.00	3.00	33890.90	33890.90	7775.40	17279.60	8835.90	0.00

Tabo BURMAS : Subtable investment during production, foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 151 land, site.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 152 civil A+B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 153 equipm A+B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 154 equipment C.....	0.00	0.00	0.00	0.00	0.00	994.40	0.00	0.00
L 155 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 156 pp-expenses.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 157 total fixed.....	0.00	0.00	0.00	0.00	0.00	994.40	0.00	0.00
L 158 in progress.....	0.00	0.00	0.00	0.00	0.00	994.40	0.00	0.00
L 159 inventory.....	3905.20	829.20	602.95	75.42	2.90	0.00	0.00	0.00
L 160 receivables.....	0.00	38.41	0.51	-2.44	0.00	0.00	0.00	0.00
L 161 cash, bank.....	0.00	55.38	-1.40	-7.69	0.00	0.00	0.00	0.00
L 162 tot.current.....	3905.20	922.90	610.05	65.29	0.00	0.00	0.00	0.00
L 163	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 164 total asset.....	3905.20	922.90	610.05	65.29	0.00	994.40	0.00	0.00
L 165 depreciation.....	0.00	4341.35	4341.35	4341.35	4341.35	4341.05	3077.21	3077.21

Tabo BURMAS : Subtable investment during production, consolidated

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 166 land, site.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 167 civil A+B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 168 equipm A+B.....	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 169 equipment C.....	0.00	0.00	0.00	0.00	0.00	2195.60	0.00	0.00
L 170 incorporate.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 171 pp-expenses.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 172 total fixed.....	0.00	0.00	0.00	0.00	0.00	2195.60	0.00	0.00
L 173 in progress.....	0.00	0.00	0.00	0.00	0.00	2195.60	0.00	0.00
L 174 inventory.....	3970.00	2065.22	1417.19	175.35	0.00	0.00	0.00	0.00
L 175 receivables.....	0.00	100.55	75.36	5.50	0.00	0.00	0.00	0.00
L 176 cash, bank.....	0.00	159.15	-4.20	-8.64	0.00	0.00	0.00	0.00
L 177 tot.current.....	3970.00	2402.90	1488.35	175.27	0.00	0.00	0.00	0.00
L 178 loss c/f.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 179 total asset.....	3970.00	2402.90	1488.35	175.27	0.00	2195.60	0.00	0.00
L 180 depreciation.....	0.00	6063.36	6063.36	6063.36	6063.36	5945.00	4229.34	4229.34

Tabo BURMAS : Subtable investment during production, local

Col	CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 181 total fixed.....	0.00	0.00	0.00	0.00	0.00	1201.20	0.00	0.00
L 182 tot.current.....	64.00	1400.00	878.20	109.90	0.00	0.00	0.00	0.00

Tabo BURMAS : Settable production costs, foreign

CONFAS 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Col	1	2	3	4	5	6	7	8
	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7	
L 106 raw material.....	0.00	26.28	45.30	47.70	47.70	47.70	47.70	47.70
L 107 other RM.....	0.00	549.30	948.78	998.78	998.78	998.78	998.78	998.78
L 108 utilities.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 109 energy.....	0.00	72.68	125.40	132.00	132.00	132.00	132.00	132.00
L 110 labour.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 111 maintenance.....	0.00	0.00	46.00	92.00	92.00	92.00	92.00	92.00
L 112 spares.....	0.00	559.40	965.20	1017.00	1017.00	1017.00	1017.00	1017.00
L 113 factory ovh.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 114 sub-total.....	0.00	1207.50	2131.50	2287.40	2287.40	2287.40	2287.40	2287.40
L 115 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 116 admin. ovh.....	0.00	767.70	281.30	0.00	0.00	0.00	0.00	0.00
L 117 Redistrib.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 118 operating c.....	0.00	1975.20	2412.90	2287.40	2287.40	2287.40	2287.40	2287.40
L 119 depreciation.....	0.00	4341.33	4341.33	4341.33	4341.33	4241.59	3877.21	3877.21
L 120 sub-total.....	0.00	6316.54	6754.24	6629.73	6629.73	6529.29	5364.61	5364.61
L 121 interest.....	0.00	2202.79	2202.79	2019.23	2019.23	1635.56	1632.18	1468.55
L 122 total FCost.....	0.00	8519.33	8957.03	8631.53	8647.96	8164.96	7016.71	6833.14
L 123 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 124 (labour).....	0.00	767.70	281.30	0.00	0.00	0.00	0.00	0.00

Tabo BURMAS : Subtable production costs, consolidated

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----								
Col	1	2	3	4	5	6	7	8
	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7	
L 126 raw material.....	0.00	312.00	538.90	567.30	567.30	567.30	567.30	567.30
L 127 other MR.....	0.00	4892.30	7858.50	7440.60	7440.60	7440.60	7440.60	7440.60
L 128 utilities.....	0.00	29.00	52.00	52.00	52.00	52.00	52.00	52.00
L 129 energy.....	0.00	1031.46	1791.40	1875.20	1875.20	1875.20	1875.20	1875.20
L 130 labour.....	0.00	443.70	443.70	443.70	443.70	443.70	443.70	443.70
L 131 maintenance.....	0.00	87.60	225.20	361.60	361.60	361.60	361.60	361.60
L 132 spares.....	0.00	632.60	1092.90	1150.40	1150.40	1150.40	1150.40	1150.40
L 133 factory ovh.....	0.00	866.00	856.00	966.00	856.00	866.00	866.00	866.00
L 134 sub-total.....	0.00	7497.62	12067.42	12757.62	12757.62	12757.62	12757.62	12757.62
L 135 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 136 admin. ovh.....	0.00	1785.00	1099.40	689.10	689.10	689.10	689.10	689.10
L 137 re-distrib.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 138 operating c.....	0.00	9284.40	13159.00	13446.70	13446.70	13446.70	13446.70	13446.70
L 139 depreciation.....	0.00	6063.36	6063.36	6063.36	6063.36	5643.00	4229.34	4229.34
L 140 sub-total.....	0.00	15347.76	19223.16	19510.06	19510.06	19290.50	17676.04	17676.04
L 141 interest.....	0.00	2644.59	2556.23	2467.67	2195.95	1924.02	1652.18	1440.55
L 142 total PCost.....	0.00	17992.35	21779.39	21977.95	21706.01	21214.52	19528.14	19144.57
L 143 (variable).....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 144 (labour).....	0.00	1810.50	1114.10	712.00	712.00	712.00	712.00	712.00
L 145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tabo BURMAS : Subtable local costs; marketing distribution foreign, consolidated

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----								
Col	1	2	3	4	5	6	7	8
	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7	
L 146 variable.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 147 labour.....	0.00	1042.00	832.00	712.00	712.00	712.00	712.00	712.00
L 148 total PCost.....	0.00	9473.02	12022.36	13146.40	13058.06	12347.50	12511.42	12511.42

Tabo BURMAS : Subtable funds during production, foreign

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 185 equ.O paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 186 equ.P paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 187 balance ret.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 188 profit dist.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 189 loanA,cflow.....	73426.50	0.00	0.00	-6118.00	-6118.00	-6118.00	-6118.00	-6118.00
L 190 loanB,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 191 loanC,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 192 debt A.....	73426.50	73426.50	73426.50	67387.63	61188.75	55869.68	48951.02	42832.15
L 193 debt B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 194 debt C.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 195 subsidies.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 196 net worth.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 197 total loan.....	73426.50	73426.50	73426.50	67387.63	61188.75	55869.68	48951.02	42832.15
L 198 s.tera,bank.....	0.00	100.63	77.01	12.90	0.00	0.00	0.00	0.00
L 199 total funds.....	73426.50	100.63	77.01	-6185.09	-6118.00	-6118.00	-6118.00	-6118.00

Tabo BURMAS : Subtable funds during production, local

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 200 equ.O paid.....	25055.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 201 equ.P paid.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 202 balance ret.....	0.00	34063.01	56326.97	59633.43	60517.35	61537.28	62625.20	63658.77
L 203 profit dist.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 204 loanA,cflow.....	8835.90	-1767.18	-1767.18	-1767.18	-1767.18	-1767.18	0.00	0.00
L 205 loanB,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 206 loanC,cflow.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 207 debt A.....	8835.90	7068.72	5331.54	3534.36	1767.18	-0.00	-0.00	-0.00
L 208 debt B.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 209 debt C.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 210 subsidies.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 211 net worth.....	25055.00	34063.01	56326.97	59633.43	60517.35	61537.28	62625.20	63658.77
L 212 total loan.....	8835.90	7068.72	5331.54	3534.36	1767.18	-0.00	-0.00	-0.00
L 213 s.tera,bank.....	0.00	122.31	70.93	10.55	0.00	0.00	0.00	0.00
L 214 total funds.....	33890.90	32418.14	54630.71	57876.60	58750.17	59770.10	62625.20	63658.77

Tabo BURMAS : Subtable funds during production, consolidated

Col	CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA							
	1	2	3	4	5	6	7	8
	for Calcul	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 215 equity paid.....	25055.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 216 net worth.....	25055.00	34063.01	56326.97	59633.43	60517.35	61537.28	62625.20	63658.77
L 217 long tera.....	82262.40	-1767.18	-1767.18	-7886.06	-7886.06	-7886.06	-6119.23	-6118.00
L 218 short tera.....	0.00	222.93	147.94	23.34	0.00	0.00	0.00	0.00
L 219 total funds.....	107317.40	32418.75	54707.72	51770.71	52631.29	53651.23	56506.33	57539.09
L 220 loan repay.....	107317.40	1767.18	1767.18	7886.06	7886.06	7886.06	6119.00	6118.00

Tabu BURMAS : Subtable funds income, cashflows, consolidated

Col	CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----							
	1	2	3	4	5	6	7	8
	cflow. c/f	cashfl- Y1	cashfl- Y2	cashfl- Y3	cashfl- Y4	cashfl- Y5	cashfl- Y6	cashfl- Y7
L 221 gross profit.....	0.00	27999.65	50263.61	53570.07	54453.99	55693.40	50395.06	59429.43
L 222 foreign inc.....	0.00	-8519.33	-8957.03	-8931.53	-8647.96	-8364.96	-7016.71	-6833.14
L 223 allowances.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 224 taxable inc.....	0.00	27999.65	50263.61	53570.07	54453.99	55693.40	50395.06	59429.43
L 225 income tax.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 226 net income.....	0.00	27999.65	50263.61	53570.07	54453.99	55693.40	50395.06	59429.43
L 227 tx/dividend.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 228 net dividend.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 229 acc. income.....	0.00	27999.65	78263.26	131633.30	186297.30	241980.00	300376.70	359026.12
L 230 incl interest.....	0.00	30544.24	82464.00	139502.00	186152.00	253767.50	313617.40	374715.40
L 231 CF-out, prod.....	107317.40	11464.37	14500.21	13596.64	13446.70	15642.30	13446.70	13446.70
L 232 CF-in, prod.....	0.00	45992.00	72043.00	75540.00	76160.00	76900.00	77724.00	78574.00
L 233 net CF, prod.....	-107317.40	34527.63	57542.79	61943.36	62713.30	61265.70	64277.30	65127.30
L 234 acc. net-CF.....	-107317.40	-72789.77	-15246.97	46702.39	109415.70	170621.40	234952.70	300066.00
L 235 equ. NPV/IRR.....	0.00	315489.40	76.85	328692.10	77.70	0.00	0.00	0.00
L 236 MCF/sales %.....	0.00	75.07	79.07	82.00	82.34	79.66	82.70	82.89
L 237 MCF/invest %.....	0.00	31.53	51.92	55.02	56.50	54.13	56.79	57.54
L 238 net income ROE1...	0.00	27999.65	50263.61	53570.07	54453.99	55693.40	50395.06	59429.43
L 239 NPV, IRR.....	0.00	291664.30	36.04	0.00	0.00	0.00	0.00	0.00
L 240 netCF (ROE2).....	0.00	30115.86	53219.38	51595.44	52631.30	51455.62	56506.33	57539.89
L 241 total CF, out.....	107317.40	15076.13	18023.62	23952.56	23529.71	25452.30	21217.67	21034.11
L 242 total CF, in.....	107317.40	45992.00	72043.00	75540.00	76160.00	76900.00	77724.00	78574.00
L 243 total netCF.....	0.00	30115.87	53219.38	51595.44	52631.30	51455.62	56506.33	57539.89
L 244 acc. netCF.....	0.00	30115.87	83335.25	134930.70	187562.00	239017.60	295523.90	353063.90
L 245 depr. allow.....	0.00	6063.36	6063.36	6063.36	6063.36	5847.00	4229.34	4229.34
L 246 tax% if var.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 247 tax due.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L 248 acc. investo.	107317.40	109497.40	110037.00	110909.70	110999.70	113135.30	113135.30	113135.30

Tabc BURMAS : Subtable production costs, consolidated

----- COMPAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	Not used	Not used
567.30	567.30	567.30	567.30	567.30	567.30	567.30	567.30	0.00	0.00 L 125
7440.60	7440.60	7440.60	7440.60	7440.60	7440.60	7440.60	7440.60	0.00	0.00 L 127
52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	0.00	0.00 L 128
1875.20	1875.20	1875.20	1875.20	1875.20	1875.20	1875.20	1875.20	0.00	0.00 L 129
443.70	443.70	443.70	443.70	443.70	443.70	443.70	443.70	0.00	0.00 L 130
361.60	361.60	361.60	361.60	361.60	361.60	361.60	361.60	0.00	0.00 L 131
1150.40	1150.40	1150.40	1150.40	1150.40	1150.40	1150.40	1150.40	0.00	0.00 L 132
866.90	866.90	866.90	866.90	866.90	866.90	866.90	866.90	0.00	0.00 L 133
12757.60	12757.60	12757.60	12757.60	12757.60	12757.60	12757.60	12757.60	0.00	0.00 L 134
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 135
689.10	689.10	689.10	689.10	689.10	689.10	689.10	689.10	0.00	0.00 L 136
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 137
13446.70	13446.70	13446.70	13446.70	13446.70	13446.70	13446.70	13446.70	0.00	0.00 L 138
4229.34	4229.34	4099.70	4224.66	4224.66	4224.66	4224.66	4095.10	0.00	0.00 L 139
17676.04	17676.04	17456.40	17671.36	17671.36	17671.36	17671.36	17451.90	0.00	0.00 L 140
1294.96	1191.40	917.97	734.27	559.70	367.13	183.57	0.00	0.00	0.00 L 141
18961.00	18777.44	18374.31	18405.63	18222.06	18030.49	17854.93	17451.00	0.00	0.00 L 142
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 143
712.00	712.00	712.00	712.00	712.00	712.00	712.00	712.00	0.00	0.00 L 144
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 145

Tabc BURMAS : Subtable local costs; marketing distribution foreign, consolidated

----- COMPAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	Not used	Not used
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 146
712.00	712.00	712.00	712.00	712.00	712.00	712.00	712.00	0.00	0.00 L 147
12311.42	12311.42	12191.30	12306.74	12306.74	12306.74	12306.74	12185.63	0.00	0.00 L 148

Tabo BURMAS : Subtable funds during production, foreign

CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	for Calcu	for Calcu
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 185
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 186
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 187
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 188
-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	0.00	0.00	0.00 L 189
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 190
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 191
36713.25	30594.38	24475.50	19356.63	12237.75	6118.88	0.00	0.00	0.00	73426.50 L 192
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 193
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 194
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 195
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 196
36713.25	30594.38	24475.50	19356.63	12237.75	6118.88	0.00	0.00	0.00	0.00 L 197
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 198
-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	0.00	0.00	0.00 L 199

Tabo BURMAS : Subtable funds during production, local

CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	for Calcu	for Calcu
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 200
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 201
64726.34	65827.91	66997.47	68099.03	68282.60	68466.17	68649.73	68833.30	0.00	35818.48 L 202
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 203
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 204
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 205
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 206
-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	8835.92 L 207
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 208
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 209
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 210
64726.34	65827.91	66997.47	68099.03	68282.60	68466.17	68649.73	68833.30	0.00	0.00 L 211
-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	0.00 L 212
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 213
64726.34	65827.91	66997.47	68099.03	68282.60	68466.17	68649.73	68833.30	0.00	0.00 L 214

Tabo BURMAS : Subtable funds during production, consolidated

CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA									
9	10	11	12	13	14	15	16	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	for Calcu	for Calcu
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 215
64726.34	65827.91	66997.47	68099.03	68282.60	68466.17	68649.73	68833.30	0.00	0.00 L 216
-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	-6118.88	0.00	0.00	0.00 L 217
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 218
58697.46	59789.03	60878.59	61980.16	62163.73	62347.30	62530.86	62714.43	0.00	0.00 L 219
6118.88	6118.88	6118.88	6118.88	6118.88	6118.88	6118.88	0.00	0.00	0.00 L 220

Tabo BURMAS : Subtable funds income, cashflows, consolidated

CONFAR 2.1 - POLYTECHNA, PRAGA, CZECHOSLOVAKIA

9	10	11	12	13	14	15	15	17	18
cashfl- Y8	cashfl- Y9	cashfl-Y10	cashfl-Y11	cashfl-Y12	cashfl-Y13	cashfl-Y14	cashfl-Y15	salvage va	for Calcul
68497.02	61598.56	62987.69	63874.38	64857.94	64241.51	64425.87	64828.28	0.00	0.00 L 221
-6449.58	-6466.01	-6182.81	-6898.86	-5915.31	-5731.75	-5548.18	-5265.17	0.00	0.00 L 222
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 223
68497.00	61598.56	62987.69	63874.38	64857.94	64241.51	64425.87	64828.28	0.00	0.00 L 224
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 225
68497.00	61598.56	62987.69	63874.38	64857.94	64241.51	64425.87	64828.28	0.00	0.00 L 226
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 227
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 228
428283.10	481981.70	544889.49	608765.88	672821.78	737863.28	801438.38	866316.48	0.00	0.00 L 229
428497.38	477497.38	563182.98	627711.48	692328.18	756928.78	821577.38	886265.58	0.00	0.00 L 230
13446.78	13446.78	13442.38	13446.78	13446.78	13446.78	13446.78	13446.78	0.00	0.00 L 231
79458.00	88376.88	81362.88	82288.88	82288.88	82288.88	82288.88	82288.88	0.00	0.00 L 232
66811.38	66929.38	65719.78	68833.38	68833.38	68833.38	68833.38	68833.38	43253.91	0.00 L 233
368997.38	433828.68	498746.38	567579.68	636412.98	705246.28	774079.58	842912.88	856166.88	0.00 L 234
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 235
83.88	83.27	88.77	83.66	83.66	83.66	83.66	83.66	0.00	0.00 L 236
58.32	59.13	56.96	59.66	59.66	59.66	59.66	59.66	0.00	0.00 L 237
68497.00	61598.56	62987.69	63874.38	64857.94	64241.51	64425.87	64828.28	0.00	0.00 L 238
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 239
58687.46	59789.82	58682.99	61988.16	62163.73	62347.29	62538.86	68833.38	43253.91	0.00 L 240
28858.54	28666.98	22679.81	28299.84	28116.28	19932.71	19749.14	13446.78	0.00	0.00 L 241
79458.88	88376.88	81362.88	82288.88	82288.88	82288.88	82288.88	82288.88	0.00	0.00 L 242
58687.46	59789.82	58682.99	61988.16	62163.72	62347.29	62538.86	68833.38	0.00	0.00 L 243
412671.38	471388.38	538263.38	592843.38	654287.38	716554.68	779835.48	847919.88	0.00	0.00 L 244
4229.34	4229.34	4889.78	4224.66	4224.66	4224.66	4224.66	4825.18	0.00	0.00 L 245
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 246
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 L 247
113185.38	113185.38	115388.98	115388.98	115388.98	115388.98	115388.98	115388.98	0.00	0.00 L 248



Mini - Cement Plant at Lashio
28-06-1988
Variant E2 - with equity

5 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	103347.40	67.270 % foreign
current assets:	3978.00	98.369 % foreign
total assets:	107325.40	68.420 % foreign

Source of funds during construction phase

equity & grants:	25055.00	0.000 % foreign
foreign loans :	75426.50	
local loans :	8255.90	
total funds :	107327.40	68.420 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	9224.48	13157.00	13446.70
depreciation :	6063.36	6063.36	6063.36
interest :	2644.59	2556.23	2467.27
production costs	17992.35	21779.39	21977.95
thereof foreign	47.35 %	41.13 %	40.18 %
total sales :	45992.00	72845.00	75548.00
gross income :	27999.65	50265.61	53570.07
net income :	27999.65	50265.61	53570.07
cash balance :	30115.07	53219.38	51595.44
net cashflow :	34527.65	57542.79	61949.36

Net Present Value at: 10.00 % = 291664.30
Internal Rate of Return: 36.84 %
Return on equity1: 76.03 %
Return on equity2: 77.78 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Mini - Cement Plant at Lashio
29-85-1952
Variant E2 - with equity

3 year(s) of construction, 15 years of production
currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	103347.40	67.270 % foreign
current assets:	3970.00	99.366 % foreign
total assets:	107317.40	68.420 % foreign

Source of funds during construction phase

equity & grants:	25055.00	6.800 % foreign
foreign loans :	73426.50	
local loans :	8935.90	
total funds :	107317.40	68.420 % foreign

Cashflow from operations

Year:	4	5	6
operating costs:	13446.70	13446.70	13446.70
depreciation :	6063.36	5843.00	4229.34
interest :	2195.95	1924.02	1652.10
production costs	21706.01	21214.52	19320.14
thereof foreign:	39.04 %	39.43 %	36.30 %
total sales :	76168.00	76900.00	77724.00
gross income :	54453.99	55693.48	58395.86
net income :	54453.99	55693.48	58395.86
cash balance :	52631.30	51455.62	56506.33
net cashflow :	62713.30	61265.70	64277.30

Net Present Value at: 10.00 % = 291564.30
Internal Rate of Return: 36.84 %
Return on equity1: 76.83 %
Return on equity2: 77.78 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIOD

----- COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Mini - Cement Plant at Lashio
28-06-1985
Variant E2 - with equity

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 Y

Total initial investment during construction phase

fixed assets:	103347.40	67.270 % foreign
current assets:	3970.00	98.368 % foreign
total assets:	107317.40	68.420 % foreign

Source of funds during construction phase

equity & grants:	25055.00	0.000 % foreign
foreign loans :	73426.50	
local loans :	6835.90	
total funds :	107317.40	68.420 % foreign

Cashflow from operations

Year:	10	11	12
operating costs:	13446.70	13446.70	13446.70
depreciation :	4839.78	4224.66	4224.66
interest :	917.83	734.27	550.70
production costs	10374.31	10405.63	10222.06
thereof foreign	33.65 %	33.14 %	32.46 %
total sales :	81362.00	82290.00	82290.00
gross income :	62987.69	63874.30	64057.94
net income :	62987.69	63874.30	64057.94
cash balance :	58692.99	61900.16	62163.72
net cashflow :	65719.70	68833.30	68833.30

Net Present Value at: 10.00 % = 291664.30
Internal Rate of Return: 36.84 %
Return on equity1: 76.93 %
Return on equity2: 77.78 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance

**COMFAR**
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Mini - Cement Plant at Lashio
28-86-1988
Variant E2 - with equity

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K

Total initial investment during construction phase

fixed assets:	103347.40	67.270 % foreign
current assets:	3970.00	98.368 % foreign
total assets:	107317.40	68.428 % foreign

Source of funds during construction phase

equity & grants:	25855.00	0.000 % foreign
foreign loans :	73426.50	
local loans :	8835.90	
total funds :	107317.40	68.428 % foreign

Cashflow from operations

Year:	13	14	15
operating costs:	13446.70	13446.70	13446.70
depreciation :	4224.66	4224.66	4005.10
interest :	367.13	183.57	0.00
production costs	18038.49	17854.93	17451.60
thereof foreign	31.78 %	31.07 %	30.17 %
total sales :	82280.00	82280.00	82280.00
gross income :	64241.51	64425.07	64828.20
net income :	64241.51	64425.07	64828.20
cash balance :	62347.29	62538.96	68833.30
net cashflow :	68833.30	68833.30	68833.30

Net Present Value at: 10.00 % = 291664.30

Internal Rate of Return: 36.84 %

Return on equity1: 76.83 %

Return on equity2: 77.78 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR^{2.1}
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Initial Investment in 1000 K

Year	1990	1991	1992
Fixed investment costs			
Land, site preparation, development	93.52	0.00	0.00
Buildings and civil works	10424.90	17133.10	4796.60
Auxiliary and service facilities	0.00	0.00	2195.60
Incorporated fixed assets	0.00	0.00	0.00
Plant machinery and equipment	1354.00	57505.70	813.82
Total fixed investment costs	11872.50	74498.80	7806.00
Pre-production capital expenditures.	843.00	2465.90	5661.20
Net working capital	0.00	0.00	3970.00
Total initial investment costs	12715.50	76964.70	17637.20
Of it foreign, in Z	30.85	77.55	49.90

----- Mini - Cement Plant at Lashio --- 28-06-1988 -----



COMFAR
2.1
UNIDO

COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	1993	1994	1995	1996	1997	1998
% of non. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	312.00	538.90	567.30	567.30	567.30	567.30
Other raw materials	4092.30	7060.50	7440.60	7440.60	7440.60	7440.60
Utilities	29.00	52.00	52.00	52.00	52.00	52.00
Energy	1031.40	1781.40	1875.20	1975.20	1875.20	1875.20
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	89.60	225.20	361.60	361.60	361.60	361.60
Spares	632.00	1092.00	1150.40	1150.40	1150.40	1150.40
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	7497.60	12069.40	12757.60	12757.60	12757.60	12757.60
Administrative overheads	1706.00	1890.40	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	6063.36	6063.36	6063.36	6063.36	5643.00	4229.34
Financial costs	2644.59	2556.23	2467.87	2195.95	1924.02	1652.10
Total production costs	17992.35	21779.39	21977.93	21706.01	21214.52	19326.13
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, %	47.35	41.13	40.18	39.34	39.43	36.30
Of it variable, %	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	1010.50	1114.10	712.00	712.00	712.00	712.00

Mini - Cement Plant at Lashio --- 22-06-1998



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Production Costs in 1000 K

Year	1999	2000	2001	2002	2003	2004
% of nom. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material 1	567.30	567.30	567.30	567.30	567.30	567.30
Other raw materials	7440.60	7440.60	7440.60	7440.60	7440.60	7440.60
Utilities	52.00	52.00	52.00	52.00	52.00	52.00
Energy	1875.20	1875.20	1875.20	1875.20	1875.20	1875.20
Labour, direct	443.70	443.70	443.70	443.70	443.70	443.70
Repair, maintenance	361.60	361.60	361.60	361.60	361.60	361.60
Spares	1150.40	1150.40	1150.40	1150.40	1150.40	1150.40
Factory overheads	866.00	866.00	866.00	866.00	866.00	866.00
Factory costs	12757.60	12757.60	12757.60	12757.60	12757.60	12757.60
Administrative overheads	689.10	689.10	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	4229.34	4229.34	4229.34	4009.78	4224.66	4224.66
Financial costs	1460.53	1294.96	1101.40	917.93	734.27	550.70
Total production costs	19144.57	18961.00	18777.44	18374.31	18405.63	18222.06
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, Z	35.69	35.07	34.44	33.65	33.14	32.46
Of it variable, Z	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	712.00	712.00	712.00	712.00	712.00	712.90

Mini - Cement Plant at Lashio --- 28-06-1988



Total Production Costs in 1000 K

Year	2005	2006	2007
I of nos. capacity (single product).	0.00	0.00	0.00
Raw material I	567.30	567.30	567.30
Other raw materials	7440.60	7440.60	7440.60
Utilities	52.00	52.00	52.00
Energy	1875.20	1875.20	1875.20
Labour, direct	343.70	443.70	443.70
Repair, maintenance	361.60	361.60	361.60
Spares	1150.40	1150.40	1150.40
Factory overheads	866.00	866.00	866.00
Factory costs	12757.60	12757.60	12757.60
Administrative overheads	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	4224.66	4224.66	4005.10
Financial costs	367.13	183.57	0.00
Total production costs	18038.49	17854.93	17451.00
Costs per unit (single product) .	0.00	0.00	0.00
Of it foreign, I	31.78	31.07	30.17
Of it variable, I	0.00	0.00	0.00
Total labour	712.00	712.00	712.00



Net Working Capital in 1000 K

Year	1993	1994	1995	1996-2007
Coverage sdc coto				
Current assets &				
Accounts receivable 7 51.4	180.53	255.89	261.46	261.46
Inventory and materials 111 3.2	5330.53	6319.93	6443.60	6443.68
Energy 1 368.0	2.87	4.95	5.21	5.21
Spares 180 2.0	316.40	546.45	575.20	575.20
Work in progress 6 45.0	139.78	228.84	232.67	232.67
Finished products 12 30.0	243.64	358.23	371.98	371.98
Cash in hand 15 24.0	159.15	154.96	146.32	146.32
Total current assets	6372.90	7661.25	8036.51	8036.51
Current liabilities and				
Accounts payable 11 32.4	222.93	370.87	394.20	394.20
	-----	-----	-----	-----
Net working capital	6149.97	7490.38	7642.31	7642.31
Increase in working capital	2379.97	1340.41	151.93	0.00
Net working capital, local	1422.49	2229.85	2329.48	2329.48
Net working capital, foreign	4727.48	5260.53	5312.84	5312.84

Note: sdc = minus days of coverage ; coto = coefficient of turnover .



Source of Finance, construction in 1000 K

Year	1990	1991	1992
Equity, ordinary ..	7775.40	17279.60	0.00
Equity, preference.	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00
Loan A, foreign .	4940.10	59685.10	8301.50
Loan B, foreign..	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00
Loan A, local....	0.00	0.00	8235.90
Loan B, local....	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00
Total loan	4940.10	59685.10	17637.20
Current liabilities	0.00	0.00	0.00
Bank overdraft	0.00	0.00	0.01
Total funds	12715.50	76964.70	17637.21



Source of Finance, production in 1990 K

Year	1993	1994	1995	1996-97	1998-2006
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	-6118.88	-6118.88	-6118.88
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-1767.18	-1767.18	-1767.18	-1767.18	0.00
Loan B, local....	0.00	0.00	0.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00
Total loan	-1767.18	-1767.18	-7886.06	-7886.06	-6118.88
Current liabilities	222.93	147.94	25.34	0.00	0.00
Bank overdraft	-0.01	0.00	0.00	0.00	0.00
Total funds	-1544.26	-1619.24	-7852.72	-7886.06	-6118.88

Mini - Cement Plant at Lashio --- 28-06-1998



Cashflow Tables, construction in 1000 K

Year	1990	1991	1992
Total cash inflow . .	12715.50	76964.70	17637.20
Financial resources .	12715.50	76964.70	17637.20
Sales, net of tax . .	0.00	0.00	0.00
Total cash outflow . .	12715.50	76964.70	17637.20
Total assets	12715.50	76964.70	17637.20
Operating costs . . .	0.00	0.00	0.00
Cost of finance . . .	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax . . .	0.00	0.00	0.00
Dividends paid . . .	0.00	0.00	0.00
Surplus (deficit) .	0.00	0.00	0.00
Cumulated cash balance	0.00	0.00	0.00
Inflow, local	7775.40	17279.60	6835.90
Outflow, local	7775.40	17279.60	6835.90
Surplus (deficit) .	0.00	0.00	0.00
Inflow, foreign . . .	4940.10	59685.10	8001.30
Outflow, foreign . . .	4940.10	59685.10	8001.30
Surplus (deficit) .	0.00	0.00	0.00
Net cashflow	-12715.50	-76964.70	-17637.20
Cumulated net cashflow	-12715.50	-89680.20	-107317.40



COMFAR
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----- COMFAR 2.1 - POLYTECHNA, PRANA, CZECHOSLOVAKIA -----

Cashflow tables, production in 1000 K

Year	1993	1994	1995	1996	1997	1998
Total cash inflow . .	46214.93	72198.94	75571.54	76160.00	76700.00	77724.00
Financial resources .	222.93	147.94	23.34	0.00	0.00	0.00
Sales, net of tax . .	45992.00	72051.00	75548.20	76160.00	76700.00	77724.00
Total cash outflow . .	16099.07	18971.55	23975.90	23529.71	25452.05	21217.60
Total assets	2402.90	1400.35	175.27	0.00	2195.60	0.00
Operating costs . . .	9294.40	13159.00	13446.71	13446.71	13446.71	13446.71
Cost of finance . . .	2644.59	2556.25	2467.07	2195.95	1924.02	1652.10
Repayment	1767.18	1757.15	7036.06	7066.06	7006.06	6110.66
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	30115.87	53219.38	51595.64	52631.29	51248.02	56506.40
Cumulated cash balance	30115.87	83335.25	134930.70	187562.00	238810.02	295316.42
Inflow, local	46114.31	72113.93	75550.35	76160.00	76700.00	77724.00
Outflow, local	18998.17	13745.00	13301.54	13105.20	14216.04	11159.30
Surplus (deficit) .	35116.14	58368.93	62248.81	63054.80	62483.96	66564.70
Inflow, foreign	100.62	77.01	12.98	0.00	0.00	0.00
Outflow, foreign . . .	5100.90	5225.75	10674.36	10425.50	11236.34	10950.37
Surplus (deficit) .	-5000.27	-5148.74	-10661.38	-10425.50	-11236.34	-10950.37
Net cashflow	34527.64	57542.79	61949.37	62713.30	61265.70	64377.33
Cumulated net cashflow	-72709.77	-15246.97	46702.39	109415.70	170681.40	234958.73

----- Mini - Cement Plant at Lashio --- 28-06-1988 -----



Cashflow tables, production in 1000

Year	1979	2000	2001	2002	2003	2004
Total cash inflow . .	78574.00	79450.00	80376.00	81362.00	82280.00	82280.00
Financial resources .	0.00	0.00	0.00	0.00	0.00	0.00
Sales, net of tax . .	78574.00	79450.00	80376.00	81362.00	82280.00	82280.00
Total cash outflow . .	21034.11	20650.54	20366.90	21679.81	20799.84	20116.29
Total assets	0.00	0.00	0.00	2155.50	0.00	0.00
Operating costs . . .	13446.71	13446.71	13446.71	13446.71	13446.71	13446.71
Cost of finance . . .	1460.53	1204.96	1101.40	917.05	734.27	550.70
Repayment	6110.80	6110.23	6110.35	6110.89	6110.29	6110.93
Corporate tax	0.00	0.00	0.00	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	57539.89	58807.46	59709.12	59682.19	61480.16	62163.72
Accumulated cash balance	353063.00	411671.30	471390.30	520063.30	592043.50	654207.30
Inflow, local	78574.00	79450.00	80376.00	81362.00	82280.00	82280.00
Outflow, local	11159.30	11159.30	11159.30	12360.50	11159.30	11159.30
Surplus (deficit) .	67414.70	68290.70	69216.70	69001.49	71120.70	71120.70
Inflow, foreign	0.00	0.00	0.00	0.00	0.00	0.00
Outflow, foreign . . .	9074.01	9691.24	9507.67	10319.51	9140.54	8956.97
Surplus (deficit) .	-9074.01	-9691.24	-9507.67	-10319.51	-9140.54	-8956.97
Net cashflow	55127.30	66011.30	66929.30	65719.30	68033.30	66033.30
Accumulated net cashflow	300006.00	366097.30	433026.60	493746.30	567579.60	636412.90



Cashflow tables, production in 1000 K

Year	2005	2006	2007
Total cash inflow . .	82280.00	82280.00	82280.00
Financial resources .	0.00	0.00	0.00
Sales, net of tax . .	82280.00	82280.00	82280.00
Total cash outflow . .	19972.71	19749.15	13446.71
Total assets	0.00	0.00	0.00
Operating costs . . .	13446.71	13446.71	13446.71
Cost of finance . . .	367.13	183.57	0.00
Repayment	6118.88	5118.82	0.00
Corporate tax	0.00	0.00	3.00
Dividends paid	0.00	0.00	0.00
Surplus (deficit) .	62347.29	62530.95	68833.30
Cumulated cash balance	716354.69	779005.40	847918.88
Inflow, local	82280.00	82280.00	82280.00
Outflow, local	11159.30	11159.30	11159.30
Surplus (deficit) .	71120.70	71120.70	71120.70
Inflow, foreign	0.00	0.00	0.00
Outflow, foreign . . .	8773.41	8539.84	2297.40
Surplus (deficit) .	-8773.41	-8529.84	-2297.40
Net cashflow	68833.30	68833.30	68833.30
Cumulated net cashflow	785246.20	774879.50	842918.88



Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	319489.40 at	10.00 %
Internal Rate of Return (IRR1) ..	76.83 %	
b) Net Worth versus Net cash return:		
Net present value	320862.10 at	10.00 %
Internal Rate of Return (IRR2) ..	77.70 %	
c) Internal Rate of Return on total investment:		
Net present value	291564.30 at	10.00 %
Internal Rate of Return (IRR) ..	36.84 %	
Net Worth = Equity paid plus reserves		



Net Income Statement in 1000 K

Year	1993	1994	1995	1996	1997
Total sales, incl. sales tax	45992.00	72043.00	75548.00	76160.00	76900.00
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	45992.00	72043.00	75548.00	76160.00	76900.00
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	15347.76	19203.16	19510.06	19510.06	19290.50
Operational margin	30644.24	52839.84	56037.94	56649.94	57617.50
As % of total sales	66.65	73.32	74.16	74.35	74.92
Cost of finance	2644.59	2556.00	2427.37	2195.55	1924.00
Gross profit	27999.65	50283.61	53570.07	54453.99	55693.40
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	27999.65	50283.61	53570.07	54453.99	55693.40
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	27999.65	50283.61	53570.07	54453.99	55693.40
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	27999.65	50283.61	53570.07	54453.99	55693.40
Accumulated undistributed profit . . .	27999.65	78263.26	131833.33	186287.33	241980.90
Gross profit, % of total sales	60.89	69.77	70.91	71.50	72.42
Net profit, % of total sales	60.80	69.77	70.91	71.53	72.42
ROE, Net profit, % of equity	111.75	200.61	213.91	217.34	222.20
ROI, Net profit+interest, % of invest.	27.99	47.66	50.49	51.84	53.91



Net Income Statement in 1000 K

Year	1998	1999	2000	2001	2002
Total sales, incl. sales tax	77724.00	78574.00	79458.00	80376.00	81362.00
Less: variable costs, incl. sales tax	0.00	0.00	0.00	0.00	0.00
Variable margin	77724.00	78574.00	79458.00	80376.00	81362.00
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	17676.04	17676.04	17676.04	17676.04	17456.46
Operational margin	60047.96	60897.96	61781.96	62699.96	63905.52
As % of total sales	77.26	77.50	77.75	78.01	78.54
Cost of finance	1652.10	1468.53	1284.96	1101.40	917.83
Gross profit	58395.86	59429.43	60497.00	61598.56	62987.69
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	58395.86	59429.43	60497.00	61598.56	62987.69
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	58395.86	59429.43	60497.00	61598.56	62987.69
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	58395.86	59429.43	60497.00	61598.56	62987.69
Accumulated undistributed profit	320376.70	359006.10	420303.10	481901.70	544289.40
Gross profit, % of total sales	75.15	75.63	76.14	76.64	77.42
Net profit, % of total sales	75.13	75.63	76.14	76.64	77.42
ROE, Net profit, % of equity	233.07	237.20	241.46	245.05	251.40
ROI, Net profit+interest, % of invest.	53.05	53.00	54.58	55.40	55.39



Net Income Statement in 1000 K

Year	2003	2004	2005	2006	2007
Total sales, incl. sales tax	82280.00	82280.00	82280.00	82280.00	82280.00
Less: variable costs, incl. sales tax.	0.00	0.00	0.00	0.00	0.00
Variable margin	82280.00	82280.00	82280.00	82280.00	82280.00
As % of total sales	100.00	100.00	100.00	100.00	100.00
Non-variable costs, incl. depreciation	17671.36	17671.36	17671.36	17671.36	17451.90
Operational margin	64608.64	64608.64	64608.64	64608.64	64828.10
As % of total sales	78.52	78.52	78.52	78.52	78.79
Cost of finance	754.27	550.70	367.13	163.57	0.00
Gross profit	63874.38	64057.94	64241.51	64425.07	64828.10
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	63874.38	64057.94	64241.51	64425.07	64828.10
Tax	0.00	0.00	0.00	0.00	0.00
Net profit	63874.38	64057.94	64241.51	64425.07	64828.10
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	63874.38	64057.94	64241.51	64425.07	64828.10
Accumulated undistributed profit	608763.00	672621.70	737063.20	801489.30	866316.40
Gross profit, % of total sales	77.63	77.85	78.08	78.30	78.79
Net profit, % of total sales	77.63	77.85	78.08	78.30	78.79
ROE, Net profit, % of equity	254.94	255.67	256.40	257.13	258.74
ROI, Net profit+interest, % of invest.	56.00	56.00	56.00	56.00	56.19



COMFAR
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UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Projected Balance Sheets, construction in 1988 K

Year	1986	1991	1992
Total assets	12715.56	69682.20	107317.62
Fixed assets, net of depreciation	0.00	12715.56	89689.30
Construction in progress	12715.56	76964.70	13667.20
Current assets	0.00	0.00	3570.00
Cash, bank	0.00	0.00	0.00
Cash surplus, finance available	0.00	0.00	2.98
Loss carried forward	0.00	0.00	0.02
Loss	0.00	0.00	0.00
Total liabilities	12715.56	89682.20	127317.49
Equity capital	7775.40	25055.00	25055.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	4940.10	64625.20	82262.40
Current liabilities	0.00	0.00	0.00
Bank overdraft, finance required	0.00	0.00	0.00
Total debt	4940.10	64625.20	82262.40
Equity, % of liabilities	61.15	27.94	23.55

Mini - Cement Plant at Lashio --- 28-05-1988



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----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1988 K

Year	1993	1994	1995	1996	1997	1998
Total assets	133772.80	162417.20	258124.50	274692.50	322499.90	374776.90
Fixed assets, net of depreciation	97294.85	91228.69	85157.33	79093.97	73258.17	71212.47
Construction in progress	0.00	0.00	0.00	0.00	2195.60	0.00
Current assets	6213.75	7726.29	7890.20	7890.20	7890.20	7890.20
Cash, bank	159.15	154.96	146.32	146.32	146.32	146.32
Cash surplus, finance available .	30115.87	83355.23	134930.70	197562.00	239017.60	295524.00
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	133772.80	162417.20	225124.50	274692.50	322499.90	374776.90
Equity capital	25055.00	25055.00	25055.00	25055.00	25055.00	25055.00
Reserves, retained profit	0.00	27999.65	72263.26	131333.30	182207.30	241900.00
Profit	27999.65	50263.61	53570.87	54453.99	55693.40	50375.00
Long and medium term debt	80495.22	76728.04	70841.98	62955.93	55069.00	48951.00
Current liabilities	222.93	370.87	394.20	394.20	394.20	394.20
Bank overdraft, finance required.	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	80718.15	79098.91	71236.19	63350.13	55464.00	49343.20
Equity, % of liabilities	18.73	15.74	10.93	9.12	7.77	6.69

----- Mini - Cement Plant at Lashio --- 28-06-1983 -----

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1988 K

Year	1999	2000	2001	2002	2003	2004
Total assets	429087.40	482465.60	537945.20	594014.10	652569.60	710500.60
Fixed assets, net of depreciation	66987.09	62757.75	58526.41	54510.63	52409.57	46264.91
Construction in progress	0.00	0.00	0.00	2195.60	0.00	0.00
Current assets	7890.20	7890.20	7890.20	7890.20	7890.20	7890.20
Cash, bank	146.32	146.32	146.32	146.32	146.32	146.32
Cash surplus, finance available .	353063.80	411671.3	471380.30	530063.30	592043.50	654207.20
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	429087.40	482465.60	537945.20	594014.10	652569.60	710500.60
Equity capital	25055.00	25055.00	25055.00	25055.00	25055.00	25055.00
Reserves, retained profit	300376.70	359306.10	420303.16	481901.70	544989.40	608763.30
Profit	59429.43	60497.00	61593.56	62907.69	63874.30	64057.94
Long and medium term debt	42832.13	36713.25	30594.30	24475.50	18356.63	12237.75
Current liabilities	394.20	394.20	394.20	394.20	394.20	394.20
Bank overdraft, finance required.	0.00	0.00	0.00	0.00	0.00	0.00
Total debt	43226.33	37107.45	30988.58	24069.70	18750.83	12631.95
Equity, % of liabilities	5.85	5.19	4.66	4.21	3.84	3.53

----- Mini - Cement Plant at Lashio --- 28-06-1983 -----

**Projected Balance Sheets, Production in 1980 K**

Year	2005	2006	2007
Total assets	762631.30	826937.40	891765.60
Fixed assets, net of depreciation	44840.25	39815.59	35910.49
Construction in progress	0.00	0.00	0.00
Current assets	7890.20	7890.20	7890.20
Cash, bank	146.32	146.32	146.32
Cash surplus, finance available .	71654.50	77905.30	847913.60
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	762631.30	826937.40	891765.60
Equity capital	25055.00	25055.00	25055.00
Reserves, retained profit	672921.70	737063.20	801468.30
Profit	64241.51	64425.07	64828.20
Long and medium term debt	6118.67	-0.00	-0.00
Current liabilities	394.20	394.20	394.20
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	6513.00	394.20	394.20
Equity, % of liabilities	3.26	3.03	2.81



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Foreign Cashflows at Adjusted Exchange Rates in 1000 K
Economic Analysis excluding indirect effects

	preliminarily adjusted PV			factor	adjusted present values		
	at 2 Z	at 18.00 Z	at 20.00 Z		at 0 Z	at 18.00 Z	at 20.00 Z
foreign cashflow:							
net cashflow, operation	-189539.60	-82291.18	-69186.52	2.68	-293343.48	-219362.18	-184552.38
sales revenue, incl. tax	0.00	0.00	0.00	0.00	0.00	0.00	0.00
other income	0.00	0.00	0.00	0.00	0.00	0.00	0.00
indirect effects, benefit							
cash outflow, operation:							
fixed investment	71518.18	64072.78	58466.80	2.74	195937.70	175559.48	160199.00
net working capital . . .	3905.20	3938.61	3413.81	2.74 =>	3905.20	5313.05	4632.87
operating costs	34.24.38	14229.78	7336.71	2.74	93500.59	38989.61	20028.38
materials	33875.38	13468.87	6726.78	2.74	92626.33	36682.76	19431.38
unskilled labour . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
supervision & skilled	1049.00	760.92	579.93	2.74	2874.26	2106.85	1589.00
taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00
indirect effects, costs							



Total Cashflows at Adjusted Exchange Rates in 1980 K
Economic Analysis excluding indirect effects

	preliminarily adjusted P/			factor	adjusted present values		
	at 2 Z	at 10.00 Z	at 20.00 Z		at 2 Z	at 10.00 Z	at 20.00 Z
t o t a l cashflow :							
net cashflow	292395.70	296926.00	160009.20	0.79	692591.02	152415.10	-14856.60
net indirect effects							
total cash inflow	1155545.00	466021.30	232367.40	1.00	1155545.00	466021.30	232367.40
total cash outflow	273149.40	175035.30	151558.20	2.35 >=	456953.30	313406.20	247224.00
taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00
flow of funds:							
net flow of funds	5005.85	52914.04	66226.02	2.74 >=	-27575.47	102794.00	157400.00
total funds, inflow	107711.60	97542.65	69310.54	2.35 >=	235005.40	213442.90	195259.60
equity	25055.00	23484.13	22175.07	1.00	25055.00	23484.13	22175.07
subsidies, grants	0.00	0.00	0.00	0.00	0.00	0.00	0.00
loans & overdraft	82656.61	74058.50	67135.47	2.74 >=	210750.40	187958.80	173084.60
total funds, outflow	102705.00	44628.59	23034.51	2.74 >=	263379.90	111040.90	59779.59
interest	20049.14	10545.04	6320.16	2.74 >=	52622.40	27356.90	16109.76
repayment	82656.60	34083.54	16794.36	2.74 >=	210750.40	83684.00	39539.84
dividends distributed	0.00	0.00	2.00	0.00	0.00	0.00	0.00
net flow, foreign funds	-10723.77	20456.75	42100.01	2.74	-51305.12	77916.70	115354.00
foreign funds, inflow	73617.12	66609.34	60293.28	2.74	201710.90	102509.60	160339.40
equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
subsidies, grants	0.00	0.00	0.00	0.00	0.00	0.00	0.00
loans & overdraft	73617.12	66609.34	60390.28	2.74	201710.90	102509.60	160339.40
foreign funds, outflow	92340.97	30172.59	16790.28	2.74	253014.00	104592.90	51405.36
dividends distributed	0.00	0.00	0.00	0.00	0.00	0.00	0.00
debt service	92340.87	30172.59	16790.28	2.74	253014.00	104592.90	51405.36
interest paid	13723.76	9662.03	5605.60	2.74	51305.10	26473.96	15573.27
loan repayment	73617.12	28510.56	13186.50	2.74	201710.90	78118.92	35912.09
financial rate of return (market prices)		36.03 %					
economic rate of return (prelia.adjust)		36.03 %					
economic rate of return (econom.prices)		18.56 %					



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COMFAR 2.1 - POLYTECHNIKA, PRAGA, CZECHOSLOVAKIA

Absolute Efficiency Test - 2 in 1990 K

Economic Analysis at Economic Prices, excluding indirect effects

	grand total	total constr.	total produc.	.....construction.....			production	
				1990	1991	1992	1993	1994
value of output, O	1155385.00	0.00	1155385.00	0.00	0.00	0.00	45992.00	72043.00
material input, I+M	442937.00	228204.50	214652.50	21511.20	190216.00	26156.41	17300.90	16201.00
investment, I	200325.70	228204.50	-27959.77	21511.20	190216.00	26156.41	3506.00	2466.31
operation, M	242611.30	0.00	242611.30	0.00	0.00	0.00	9574.90	15754.60
net domestic VA	712447.50	-228204.50	940752.00	-21511.20	-190216.00	-26156.41	32911.00	50322.00
repatriated payments	253014.00	0.00	253014.00	0.00	0.00	0.00	6035.60	6035.60
net national VA	459433.70	-228204.50	687738.00	-21511.20	-190216.00	-26156.41	26875.37	47786.34
national wages	14016.26	0.00	14016.26	0.00	0.00	0.00	3146.30	1500.50
social surplus	445417.50	-228204.50	673701.90	-21511.20	-190216.00	-26156.41	23729.07	46182.73
present values at 10.00 %								
PV, net national VA	55641.42							
PV, national wages	6917.40							
PV, unskilled labour	0.00							
PV of social surplus	40724.02							

relative efficiency of: capital invested, E(C) : 0.27
foreign exchange, E(FE) : -0.39
skilled labour, E(L) : 0.04

Absolute Efficiency Test - 2 in 1988 K

Economic Analysis at Economic Prices, excluding indirect effects

	1995	1996	1997	production 1998	1999	2000	2001	2002
value of output, 0	75548.00	76169.00	76908.00	77724.00	78574.00	79458.00	80376.00	81362.00
material input, I+M	17023.54	16713.98	20639.83	16713.98	16713.98	16713.98	16713.98	20639.83
investment, I	303.56	0.00	3925.35	0.00	0.00	0.00	0.00	3925.35
operation, M	16713.98	16713.98	16713.98	16713.98	16713.98	16713.98	16713.98	16713.98
net domest : VA	55524.46	59446.02	56268.17	61010.02	61860.02	62744.02	63652.02	64722.17
repatriated payments	22801.39	22298.43	21795.43	21292.46	20789.46	20286.50	19783.53	19280.57
net national VA	35723.07	37147.59	34472.75	39717.56	41070.56	42457.52	43878.49	45441.59
national wages	712.89	712.89	712.89	712.89	712.89	712.89	712.89	712.89
social surplus	35010.29	36434.62	33759.83	39004.67	40357.67	41744.63	43165.60	44728.70
present values at 10.00 %								
PV, net national VA	55641.42							
PV, national wages	6917.40							
PV, unskilled labour	0.00							
PV of social surplus	48724.02							

relative efficiency of: capital invested, E(C) : 0.27
 foreign exchange, E(FE) : -0.39
 skilled labour, E(L) : 0.24



Absolute efficiency test - 2 in 1000 K
Economic Analysis at Economic Prices, excluding indirect effects

	2083	2084	production 2085	2085	2087	2085
value of output, O	82289.00	82289.00	82289.00	82289.00	82289.00	-169.38
material input, I-MI	16713.98	16713.98	16713.98	16713.98	16713.98	-42892.38
investment, I	0.00	0.00	0.00	0.00	0.00	-42892.38
operation, MI	16713.98	16713.98	16713.98	16713.98	16713.98	0.00
net domestic V _N	65566.02	65566.02	65566.02	65566.02	65566.02	41932.07
repatriated payments	18777.68	18274.65	17771.64	17268.69	0.00	522.29
net national V _N	46788.42	47291.37	47794.36	48297.34	65566.02	41489.79
national wages	712.00	712.00	712.00	712.00	712.00	0.00
social surplus	46076.42	46579.37	47082.36	47585.34	64854.02	41489.79
present values at 10.00 %						
PV, net national V _N	55641.42					
PV, national wages	6917.40					
PV, unskilled labour	0.00					
PV of social surplus	46724.02					

relative efficiency of: capital invested, E(C) : 0.27
foreign exchange, E(FE) : -0.39
skilled labour, E(L) : 0.34



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----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Foreign Exchange Effect in 1988 k
Economic Analysis excluding indirect effects
100 units foreign CU = 100.00 units local CU

	grand total	total constr.	total produc.	construction		production	
				1990	1991	1992	1993
total foreign inflow . .	73617.12	73426.50	198.62	4942.10	59585.10	8921.30	100.65
equity capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00
subsidies, grants . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
loans & overdraft . . .	73617.12	73426.50	198.62	4942.10	59585.10	8921.30	100.65
exports	0.00	0.00	0.00	0.00	0.00	0.00	0.00
indirect effects . . . .	.....	.....	.....	.....	.....	.....	.....
total foreign outflow .	201050.50	73426.50	120454.00	4942.10	59585.10	2021.30	5100.90
royalties	0.00	0.00	0.00	0.00	0.00	0.00	0.00
equipment	73415.30	73426.50	1922.90	4942.10	59585.10	8521.30	922.90
imported materials . . .	33075.30	0.00	33075.30	0.00	0.00	0.00	1207.50
repayment loans & overd.	73617.12	0.00	73617.12	0.00	0.00	0.00	0.00
other repayments	0.00	0.00	0.00	0.00	0.00	0.00	0.00
repatriated wages . . .	1049.00	0.00	1049.00	0.00	0.00	0.00	767.73
dividends paid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
interests	16725.76	0.00	16725.76	0.00	0.00	0.00	2202.79
indirect costs . . . . .	.....	.....	.....	.....	.....	.....	.....
net foreign exchge flow	-128263.40	0.00	-128263.40	0.00	0.00	0.00	-5000.27
import substit'n effect	0.00	0.00	0.00	0.00	0.00	0.00	0.00
net forgn exchge effect	-128263.40	0.00	-128263.40	0.00	0.00	0.00	-5000.27
present values at 10.00 %							
foreign exchange flow .	-53956.39						
net forgn exchge effecc	-53956.39						



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COMFAR 2.1 - POLYTECHNA, PRNHA, CZECHOSLOVAKIA

Foreign Exchange Effect in 1000 K
Economic Analysis excluding indirect effects
100 units foreign CU = 100.00 units local CU

	1994	1995	1996	production 1997	1998	1999	2000
total foreign inflow . .	77.81	12.92	0.00	0.02	0.33	0.33	0.32
equity capital	0.00	0.00	0.20	0.20	0.20	0.22	0.23
subsidies, grants . . .	0.00	0.00	0.00	0.22	0.00	0.00	0.22
loans & overdraft . . .	77.81	12.92	0.20	0.02	0.33	0.22	0.32
exports	0.00	0.22	0.22	0.22	0.22	0.00	0.22
indirect effects							
total foreign outflow . .	5225.75	10674.36	12425.50	11236.34	12053.37	9374.81	9691.24
royalties	0.00	0.00	0.00	0.00	0.20	0.30	0.00
equipment	618.06	65.29	0.00	934.42	0.20	0.00	0.00
imported materials . . .	2151.50	2287.43	2287.43	2287.43	2267.43	2287.43	2267.43
repayment loans & overd.	0.00	6118.88	6118.28	6118.83	6118.88	6118.69	6118.83
other repayments	0.00	0.22	0.20	0.20	0.00	0.22	0.00
repatriated wages . . .	281.38	0.22	0.22	0.00	0.20	0.20	0.20
dividends paid	0.02	0.00	0.00	0.00	0.22	0.20	0.22
interests	2282.79	2282.79	2019.23	1935.66	1652.18	1443.53	1284.7e
indirect costs							
net foreign exchge flow	-5148.74	-12661.38	-12425.50	-11236.34	-12053.37	-9374.81	-9691.24
import substit'n effect	0.20	0.00	0.00	0.22	0.02	0.22	0.00
net forgn exchge effect	-5148.74	-12661.22	-12425.50	-11236.34	-12053.37	-9374.81	-9691.24
present values at 10.00 %							
foreign exchange flow . .	-53956.39						
net forgn exchge effect	-53956.39						



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COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA

Foreign Exchange Effect in 1988 K
Economic Analysis excluding indirect effects
100 units foreign CU = 100.00 units local CU

	2001	2002	2003	production 2004	2005	2006	2007
total foreign inflow . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
equity capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00
subsidies, grants . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
loans & overdraft . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
exports	0.00	0.00	0.00	0.00	0.00	0.00	0.00
indirect effects							
total foreign outflow .	9507.67	10318.51	9140.54	8956.97	8773.41	8539.84	2207.40
royalties	0.00	0.00	0.00	0.00	0.00	0.00	0.00
equipment	0.00	954.40	0.00	0.00	0.00	0.00	0.00
imported materials . . .	2207.40	2207.40	2207.40	2207.40	2207.40	2207.40	2207.40
repayment loans & overd.	6119.00	6119.00	6119.00	6119.00	6119.00	6119.00	0.00
other repayments	0.00	0.00	0.00	0.00	0.00	0.00	0.00
repatriated wages . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
dividends paid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
interests	1101.40	917.93	734.27	550.72	367.13	193.57	0.00
indirect costs							
net foreign exchge flow	-9507.67	-10318.51	-9140.54	-8956.97	-8773.41	-8539.84	-2207.40
import substit'n effect	0.00	0.00	0.00	0.00	0.00	0.00	0.00
net forgn exchge effect	-9507.67	-10318.51	-9140.54	-8956.97	-8773.41	-8539.84	-2207.40
present values at 10.00 %							
foreign exchange flow .	-53956.39						
net forgn exchge effect	-53956.39						



Foreign Exchange Effect in 1000 K
Economic Analysis excluding indirect effects
100 units foreign CU = 100.00 units local CU

	production 2000
total foreign inflow . .	0.00
equity capital	0.00
subsidies, grants . . .	0.00
loans & overdraft . . .	0.00
exports	0.00
indirect effects	
total foreign outflow .	-1407.64
royalties	0.00
equipment	-1598.25
imported materials . . .	0.00
repayment loans & overd.	190.62
other repayments	0.00
repatriated wages . . .	0.00
dividends paid	0.00
interests	0.00
indirect costs	
net foreign exchange flow	1407.64
import substit'n effect	0.00
net foreign exchange effect	1407.64
present values at	10.00 %
foreign exchange flow .	-53956.39
net foreign exchange effect	-53956.39



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COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Distribution of Net Domestic Value Added in 1992 K
Net Income Flow Analysis excluding indirect effects

	grand total	total constr.	total produc.	.....construction.....			production	
				1992	1991	1992	1993	1994
gross domestic VA .	966528.40	-3978.00	970498.40	0.00	0.00	-3978.00	36454.86	58588.11
annual depreciation	71923.12	0.00	71923.12	0.00	0.00	0.00	6253.36	6263.36
net domestic VA . .	894605.10	-3978.00	898575.10	0.00	0.00	-3978.00	30591.52	52324.75
repatriated payments	93389.87	0.00	93389.87	0.00	0.00	0.00	2978.49	2484.89
wages	1049.00	0.00	1049.00	0.00	0.00	0.00	767.70	281.32
interest, f.loans	18723.76	0.00	18723.76	0.00	0.00	0.00	2202.77	2202.77
dividends, repatr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
other payments .	73617.12	0.00	73617.12	0.00	0.00	0.00	0.00	0.00
net national VA . .	801210.30	-3978.00	805188.30	0.00	0.00	-3978.00	27421.03	50032.56
wage earners VA w	11142.00	0.00	11142.00	0.00	0.00	0.00	1042.80	833.60
profit, interest VA p	1325.38	0.00	1325.38	0.00	0.00	0.00	441.79	353.44
government VA g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
undistributed VA u	788742.90	-3978.00	792712.90	0.00	0.00	-3978.00	25936.43	48246.43
distribution indices								
(VA w)/VA . . .	0.01	0.00	0.01	0.00	0.00	0.00	0.04	0.02
(VA p)/VA . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
(VA g)/VA . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(VA u)/VA . . .	0.98	1.00	0.99	0.00	0.00	1.00	0.95	0.98



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COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Distribution of Net Domestic Value Added in 1988 K
Net Income Flow Analysis excluding indirect effects

	1995	1996	1997	production 1998	1999	2000	2001	2002
gross domestic VA .	62635.77	63426.10	64174.10	64970.10	65840.10	66724.10	67642.10	68620.10
annual depreciation	6065.36	6065.36	5845.00	4229.34	4229.34	4229.34	4229.34	4089.79
net domestic VA . .	56572.41	57362.74	58330.30	60740.76	61610.76	62494.76	63412.76	64530.31
repatriated payments	8321.67	8130.10	7954.54	7770.91	7587.41	7403.04	7220.27	7036.71
wages	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
interest, f.loans	2202.79	2019.23	1935.66	1652.10	1493.53	1284.96	1181.40	917.35
dividends, repatr	0.00	0.00	0.00	0.00	0.00	0.00	3.30	0.00
other payments .	6118.88	6110.89	6118.88	6118.89	6118.89	6118.88	6119.88	6119.88
net national VA . .	48250.74	49224.64	50375.77	52989.79	54023.36	55090.92	56192.49	57501.61
wage earners VA w	712.00	712.00	712.00	712.00	712.00	712.00	712.00	712.00
profit, interest VA p	265.00	176.72	88.36	0.00	0.00	0.00	0.00	0.00
government VA g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
undistributed VA u	47272.87	48335.12	49574.61	52276.99	53310.55	54378.12	55479.67	56868.61
distribution indices								
(VA w)/VA . . .	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
(VA p)/VA . . .	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(VA g)/VA . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(VA u)/VA . . .	0.93	0.98	0.98	0.99	0.99	0.99	0.99	0.99

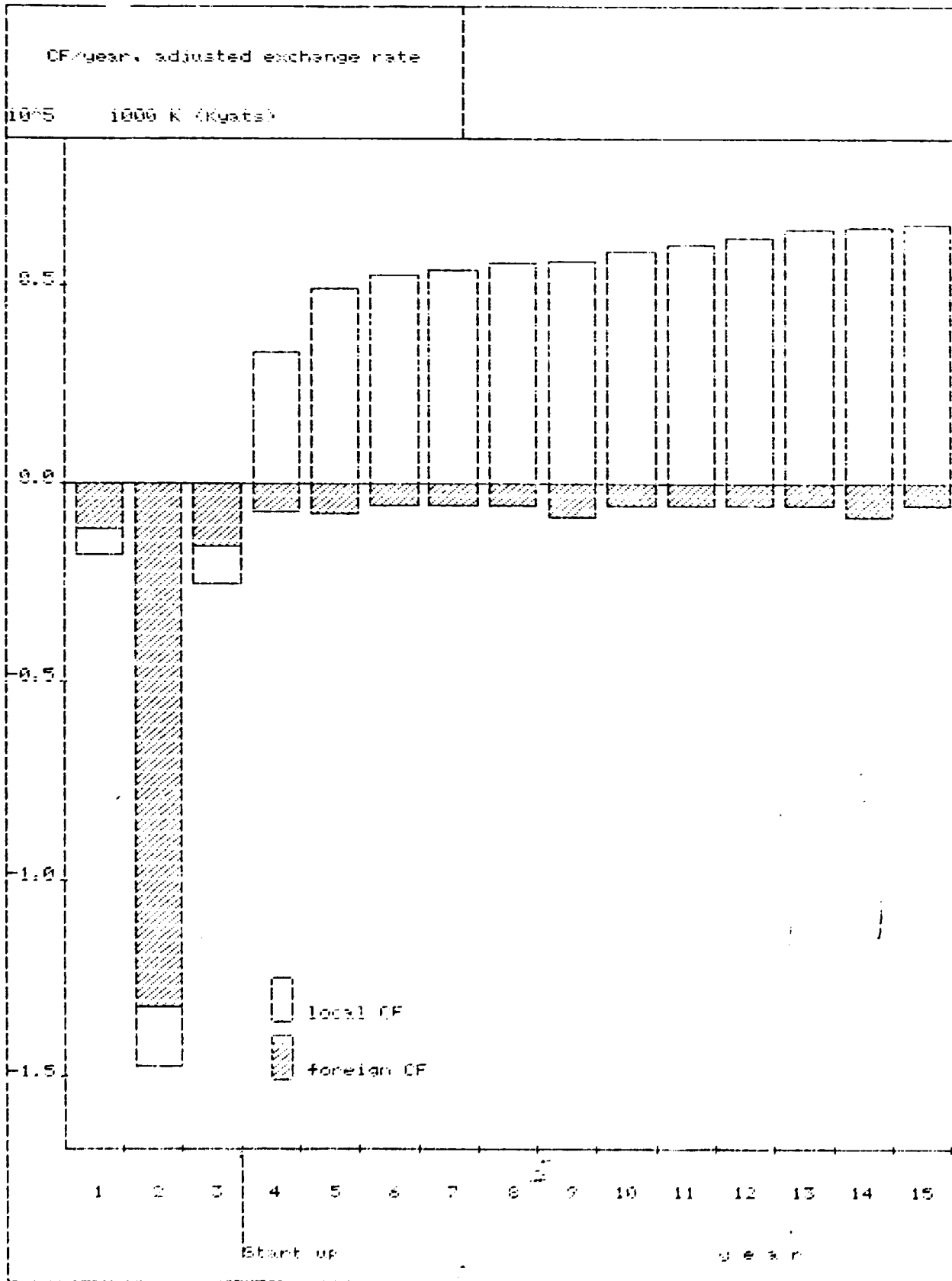


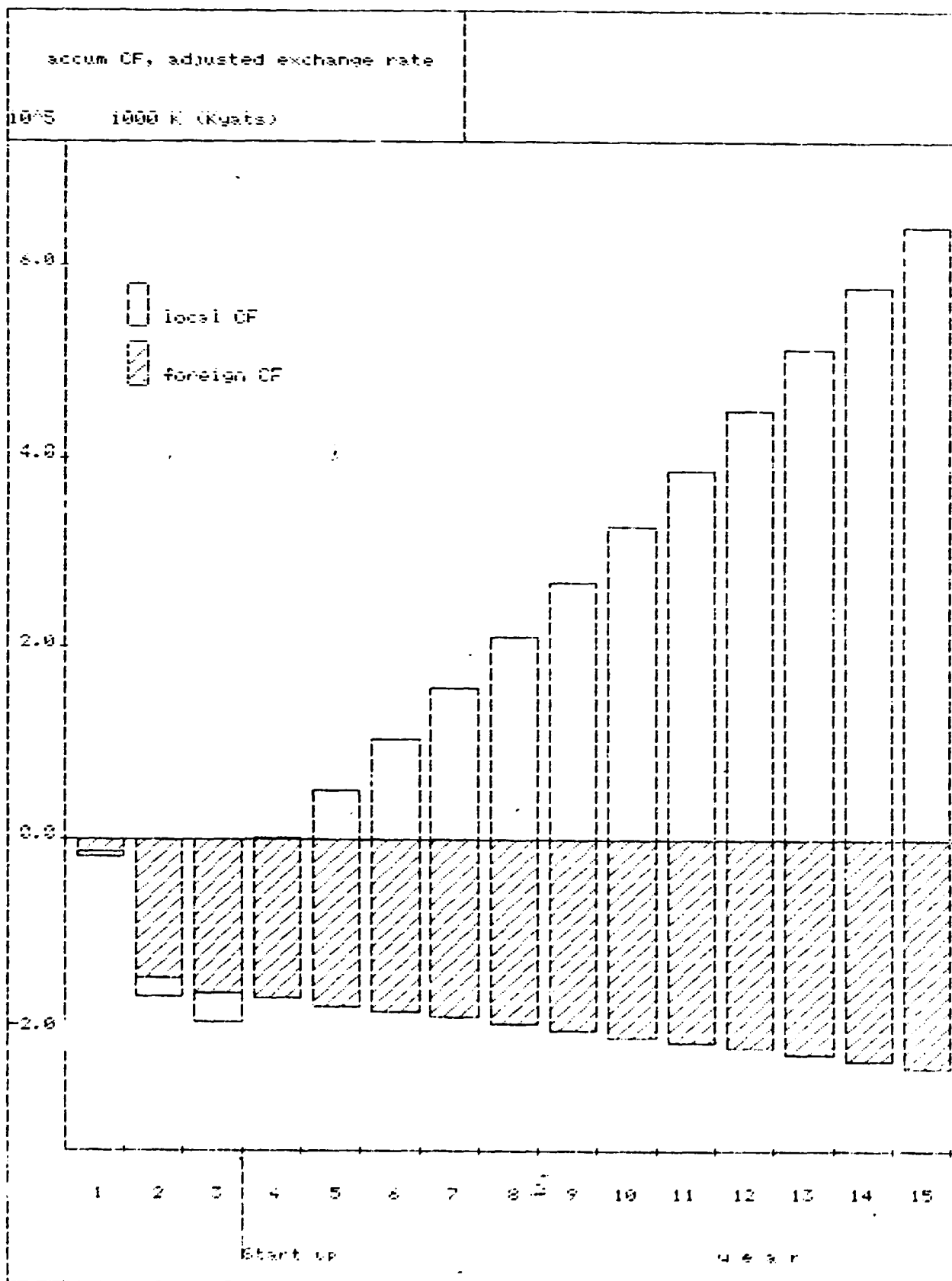
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----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Distribution of Net Domestic Value Added in 1988 K
Net Income Flow Analysis excluding indirect effects

	2003	2004	production 2005	2006	2007	2008
gross domestic VA .	69546.10	69546.10	69546.10	69546.10	69546.10	3672.31
annual depreciation	4224.66	4224.66	4224.66	4224.66	4225.10	0.00
net domestic VA . .	65321.44	65321.44	65321.44	65321.44	65541.00	3672.31
repatriated payments	6353.14	6669.57	6466.01	6302.44	0.00	190.62
wages	0.00	0.00	0.00	0.00	0.00	0.00
interest, f.loans	734.27	550.79	367.15	105.57	0.00	0.00
dividends, repatr	0.00	0.00	0.00	0.00	0.00	0.00
other payments .	6118.88	6118.88	6118.86	6118.88	0.00	190.62
net national VA . .	58468.30	58651.97	58855.43	59219.00	65541.00	3481.69
wage earners VA w	712.00	712.00	712.00	712.00	712.00	0.00
profit, interest VA p	0.00	0.00	0.00	0.00	0.00	0.00
government VA g	0.00	0.00	0.00	0.00	0.00	0.00
undistributed VA u	57755.50	57939.97	58122.63	59306.20	64829.20	3481.69
distribution indices						
(VA w)/VA	0.01	0.01	0.01	0.01	0.01	0.00
(VA p)/VA	0.00	0.00	0.00	0.00	0.00	0.00
(VA g)/VA	0.00	0.00	0.00	0.00	0.00	0.00
(VA u)/VA	0.99	0.99	0.99	0.99	0.99	1.00





Annex II.

400 TPD CEMENT PLANT

400 TPD CEMENT PLANT (126 00 TPY of cement)

Technology, machinery and equipment are similar to those used for capacity of 200 TPD being evaluated in this Study.

Assessment of investment and production costs, project financing as well as further factors of financial analysis were carried out in the same way as done in the B variant of 200 TPD.

Essential data taken or computed from the enclosed financial analysis are compared with the B variant of 200 TPD, as stated below.

1. Initial Investment Costs (K thousand)

I t e m s	Foreign	Local	Total
- Equipment	53 887	42 246	101 133
- Civil Engineering	11 775	41 030	52 805
Fixed Inv't costs	70 662	83 276	153 938
- Preproduction capital expenditures	7 797	9 322	17 119
Fixed assets	78 459	92 598	171 057
- Working capital	5 245	3 135	8 380
Total	83 704	95 733	179 437
Percentage	46,6	53,4	100

4. Manpower

	200 TPD	400 TPD	Ratio
Effective number of manpower	253	270	1,07

5. Financial Evaluation

	<u>200 TPD</u>	<u>400 TPD</u>
Net present value at 5%	39 300,- K	73 453 030,-K
Internal rate of return	5 %	9,27 %
Pay-back period	11,1 years	7,5 years
Simple rate of return	4,45 %	9,65 %

6. Conclusions

Even though parameters of the 400 TPD plant show good results of financial analysis when deciding it will be important to take into account realistic demands of the regional market. Conclusions of marketing (see Chapter III) make obvious that great portion of produced cement would have to be transferred to MANDALAY. Transport costs would, however, make up for savings in production costs (compared with the 200 TPD plant).

Tabi BURMB4 : Text Variables

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Project Name: Mini-Cement Plant at Lashio, Burma (84)
Date: 10.02.1988
Name of Alternative: Variant B - Capacity 400 t/a - K 650
Accounting currency: 1000 K (Kyats)
Name of Product (A): Cement

Tabi BURMB4 : General Variables

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Multiplier to compute foreign into accounting currency: 1.000
Multiplier to compute local into accounting currency: 1.000
Construction phase: 3 year(s), planned yearly
Interest rate for computation of future values in % p.a.: 0.000
Percent rate for CF-Discounting: 5.000

Tabi BURMB4 : Source of finance - foreign funds

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Equity - D: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 12 year(s)
 rates are paid yearly
Period of grace: 3 year(s)
Interests payable: 3.0 % for year 4 through 10

Loan B: not specified

Loan C: not specified

Overdraft: not specified

Tabi BURMB4 : Source of finance - local funds

CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Equity - Q: not specified

Equity - P: not specified

Subsidies : not specified

Loan A: first disbursement in period 1
Amortization: constant principal
 lasting for 5 year(s)
 rates are paid yearly
Period of grace: 1 year(s)
Interests payable: 5.0 % for year 4 through 9

Loan B: first disbursement in period 1
Amortization: constant principal
 lasting for 5 year(s)
 rates are paid yearly
Period of grace: 1 year(s)
Interests payable: 2.5 % for year 4 through 9

Loan C: not specified

Overdraft: not specified



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Mini-Cement Plant at Lashio, Burma (B4)
19.02.1980
Variant B - Capacity 400 t/d - K 650

3 year(s) of construction, 15 years of production
currency conversion rates:
foreign currency 1 unit = 1.0000 units accounting currency
local currency 1 unit = 1.0000 units accounting currency
accounting currency: 1000 K (Kyats)

Total initial investment during construction phase

fixed assets:	171857.00	45.867 % foreign
current assets:	8380.00	62.589 % foreign
total assets:	179437.00	46.648 % foreign

Source of funds during construction phase

equity & grants:	8.00	8.000 % foreign
foreign loans :	83704.00	
local loans :	95733.00	
total funds :	179437.00	46.648 % foreign

Cashflow from operations

Year:	1	2	3
operating costs:	21826.38	32955.00	34314.00
depreciation :	10405.22	10405.22	10465.22
interest :	6347.54	5580.26	4812.98
production costs	37779.07	48940.49	49532.20
thereof foreign	25.20 %	20.63 %	20.15 %
total sales :	45845.00	77805.00	81980.00
gross income :	-1743.07	13303.51	15987.80
net income :	-1743.07	9312.46	11191.46
cash balance :	-15664.07	-2899.78	-4951.12
net cashflow :	9838.07	21827.07	25983.00

Net Present Value at: 5.00 % = 73453.03
Internal Rate of Return: 9.27 %
Return on equity1: not found
Return on equity2: 24.88 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Mini-Cement Plant at Lashio, Burma (04)

10.02.1988

Variant B - Capacity 400 t/d - K 650

3 year(s) of construction, 5 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K (Kyats)

Total initial investment during construction phase

fixed assets:	171057.23	45.867 % foreign
current assets:	6388.00	62.589 % foreign
total assets:	179437.00	46.648 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans:	93704.00	
local loans:	95733.00	
total funds:	179437.00	46.648 % foreign

Cashflow from operations

Year:	4	5	6
operating costs:	34314.00	34314.00	34314.00
depreciation:	10405.22	10405.22	6981.42
interest:	3836.43	2859.08	1083.34
production costs	48555.66	47579.11	43178.77
thereof foreign	20.12 %	20.10 %	18.05 %
total sales:	81900.00	81900.00	81900.00
gross income:	16964.34	17940.89	22341.23
net income:	11875.84	12558.62	15638.06
cash balance:	-3841.67	-7199.09	15644.96
net cashflow:	26116.70	21742.73	24503.63

Net Present Value at: 5.00 % = 73453.03

Internal Rate of Return: 9.27 %

Return on equity1: not found

Return on equity2: 24.88 %

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Total initial investment	Cashflow Tables
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COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Mini-Cement Plant at Lashio, Burma (B4)

10.02.1968

Variant B - Capacity 400 t/d - K 650

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K (Kyats)

Total initial investment during construction phase

fixed assets:	171037.00	45.867 % foreign
current assets:	8388.00	62.589 % foreign
total assets:	179437.00	46.648 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	82784.00	
local loans :	95733.00	
total funds :	179437.00	46.648 % foreign

Cashflow from operations

Year:	7	8	9
operating costs:	34314.00	34314.00	34314.00
depreciation :	6981.42	6981.42	6981.42
interest :	1674.00	1464.82	1255.56
production costs	42969.50	42760.25	42550.98
thereof foreign	17.65 %	17.25 %	16.04 %
total sales :	81900.00	81900.00	81900.00
gross income :	22550.50	22759.75	22969.02
net income :	15785.35	15931.83	16078.31
cash balance :	15791.44	15937.92	16084.41
net cashflow :	24448.85	24378.07	24315.30

Net Present Value at: 5.00 % = 73453.03

Internal Rate of Return: 9.27 %

Return on equity1: not found

Return on equity2: 24.88 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
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Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Mini-Cement Plant at Lashio, Burma (B4)

10.02.1988

Variant B - Capacity 400 t/d - K 650

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K (Kyats)

Total initial investment during construction phase

fixed assets:	171057.00	45.867 % foreign
current assets:	8380.00	62.589 % foreign
total assets:	179437.00	46.648 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	83784.00	
local loans :	95733.00	
total funds :	179437.00	46.648 % foreign

Cashflow from operations

Year:	10	11	12
operating costs:	34314.00	34314.00	34314.00
depreciation :	6981.42	6981.42	6981.42
interest :	1046.30	837.04	627.78
production costs	42341.73	42132.46	41923.20
thereof foreign	16.43 %	16.01 %	15.59 %
total sales :	81900.00	81900.00	81900.00
gross income :	23178.27	23387.54	23596.80
net income :	16224.79	16371.27	16517.76
cash balance :	12199.89	16377.37	16523.85
net cashflow :	28221.52	24189.74	24126.96

Net Present Value at: 5.00 % = 73453.03

Internal Rate of Return: 9.27 %

Return on equity1: not found

Return on equity2: 24.88 %

Index of Schedules produced by COMFAR

Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



COMFAR[©]
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Mini-Cement Plant at Lashio, Burma (B4)

18.02.1988

Variant B - Capacity 400 t/d - K 650

3 year(s) of construction, 15 years of production

currency conversion rates:

foreign currency 1 unit = 1.0000 units accounting currency

local currency 1 unit = 1.0000 units accounting currency

accounting currency: 1000 K (Kyats)

Total initial investment during construction phase

fixed assets:	171057.00	45.867 % foreign
current assets:	8380.00	62.589 % foreign
total assets:	179437.00	46.648 % foreign

Source of funds during construction phase

equity & grants:	0.00	0.000 % foreign
foreign loans :	83704.00	
local loans :	95733.00	
total funds :	179437.00	46.648 % foreign

Cashflow from operations

Year:	13	14	15
operating costs:	34314.00	34314.00	34314.00
depreciation :	6981.42	6981.42	6981.42
interest :	418.52	289.26	-0.00
production costs	41713.95	41504.68	41295.41
thereof foreign	15.17 %	14.74 %	14.31 %
total sales :	81900.00	81900.00	81900.00
gross income :	23886.05	24015.32	24224.59
net income :	16664.24	16810.72	16957.21
cash balance :	16670.33	16816.81	23938.63
net cashflow :	24064.18	24001.41	23938.63

Net Present Value at: 5.00 % = 73453.83

Internal Rate of Return: 9.27 %

Return on equity1: not found

Return on equity2: 24.88 %

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Total initial investment	Cashflow Tables
Total investment during production	Projected Balance
Total production costs	Net income statement
Working Capital requirements	Source of finance



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21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Initial Investment in 1000 K (Kyats)

Year	1950	1951	1952
Fixed investment costs			
Land, site preparation, development	0.00	0.00	0.00
Buildings and civil works	16135.00	27230.00	9440.00
Auxiliary and service facilities	0.00	0.00	4831.00
Incorporated fixed assets	0.00	0.00	0.00
Plant machinery and equipment	1380.00	91957.00	3765.00
Total fixed investment costs	17515.00	119187.00	17236.00
Pre-production capital expenditures.	1431.00	6075.00	9615.00
Net working capital	0.00	0.00	8380.00
Total initial investment costs	18946.00	125260.00	35231.00
Of it foreign, in Z	30.14	54.70	26.91

----- Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988 -----



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Total Current Investment in 1000 K (Kyats)

Year	1993	1994	1995	1996	1997	1998-2001
Fixed investment costs						
Land, site preparation, development	0.00	0.00	0.00	0.00	0.00	0.00
Buildings and civil works	0.00	0.00	0.00	0.00	0.00	0.00
Auxiliary and service facilities . .	0.00	0.00	0.00	0.00	4031.00	0.00
Incorporated fixed assets	0.00	0.00	0.00	0.00	0.00	0.00
Plant, machinery and equipment . .	0.00	0.00	0.00	0.00	0.00	0.00
Total fixed investment costs	0.00	0.00	0.00	0.00	4031.00	0.00
Preproduction capitals expenditures.	0.00	0.00	0.00	0.00	0.00	0.00
Working capital	5179.63	3470.87	425.86	0.00	0.00	0.00
Total current investment costs . . .	5179.63	3470.87	425.86	0.00	4031.00	0.00
Of it foreign, %	18.02	17.71	14.78	0.00	0.00	0.00

----- Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988 -----

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Total Current Investment in 1000 K (Kyats)

Year	2002
Fixed investment costs	
Land, site preparation, development	0.00
Buildings and civil works	0.00
Auxiliary and service facilities . .	4031.00
Incorporated fixed assets	0.00
Plant, machinery and equipment . .	0.00
Total fixed investment costs	4031.00
Preproduction capitals expenditures.	0.00
Working capital	0.00
Total current investment costs . . .	4031.00
Of it foreign, %	0.00

----- Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988 -----



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Total Production Costs in 1000 K (Kvats)

Year	1993	1994	1995	1996	1997	1998
1 of non. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material 1	793.00	1371.00	1443.20	1443.20	1443.20	1443.20
Other raw materials	10423.50	10004.30	10951.90	10951.90	10951.90	10951.90
Utilities	505.30	331.30	875.00	875.00	875.00	875.00
Energy	4386.00	7215.00	7595.00	7595.00	7595.00	7595.00
Labour, direct	437.70	437.70	437.70	437.70	437.70	437.70
Repair, maintenance	176.00	353.00	528.00	528.00	528.00	528.00
Spares	1560.60	2695.70	2037.50	2037.50	2037.50	2037.50
Factory overheads	956.60	956.60	956.60	956.60	956.60	956.60
Factory costs	19239.50	31664.60	33624.90	33624.90	33624.90	33624.90
Administrative overheads	1786.00	1090.40	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	10405.22	10405.22	10405.22	10405.22	10405.22	6981.42
Financial costs	6347.54	5500.26	4012.90	3036.43	2659.00	1003.34
Total production costs	37779.07	48940.46	49532.20	48555.66	47579.11	43178.77
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, 1	25.20	20.63	20.15	20.12	20.10	10.05
Of it variable, 2	0.00	0.00	0.00	0.00	0.00	0.00
Total labour	1804.50	1100.10	706.00	706.00	706.00	706.00

Mini-Cement Plant at Lashio, Burma (B4) --- 10.02.1998



COMFAR
2.1 UNIOU

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Total Production Costs in 1000 K (Kyats)

Year	1999	2000	2001	2002	2003	2004
X of non. capacity (single product).	0.00	0.00	0.00	0.00	0.00	0.00
Raw material I	1443.20	1443.20	1443.20	1443.20	1443.20	1443.20
Other raw materials	18951.90	18951.90	18951.90	18951.90	18951.90	18951.90
Utilities	875.00	875.00	875.00	875.00	875.00	875.00
Energy	7595.00	7595.00	7595.00	7595.00	7595.00	7595.00
Labour, direct	437.70	437.70	437.70	437.70	437.70	437.70
Repair, maintenance	528.00	528.00	528.00	528.00	528.00	528.00
Spares	2837.50	2837.50	2837.50	2837.50	2837.50	2837.50
Factory overheads	956.60	956.60	956.60	956.60	956.60	956.60
Factory costs	33624.90	33624.90	33624.90	33624.90	33624.90	33624.90
Administrative overheads	689.10	689.10	689.10	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	6981.42	6981.42	6981.42	6981.42	6981.42	6981.42
Financial costs	1674.00	1454.82	1255.56	1046.30	837.04	627.70
Total production costs	42969.50	42760.25	42550.98	42341.73	42132.46	41923.21
Costs per unit (single product) .	0.00	0.00	0.00	0.00	0.00	0.00
Of it foreign, Z	17.65	17.25	16.84	16.43	16.01	15.59
Of it variable, Z	0.60	0.00	0.00	0.00	0.00	0.00
Total labour	706.00	706.00	706.00	706.00	706.00	706.00

Mini-Cement Plant at Lashio, Burma (04) --- 10.02.1988



Total Production Costs in 1000 K (Kyats)

Year	2005	2006	2007
I of non. capacity (single product).	0.00	0.00	0.00
Raw material 1	1443.20	1443.20	1443.20
Other raw materials	18951.98	18951.98	18951.98
Utilities	875.00	875.00	875.00
Energy	7595.00	7595.00	7595.00
Labour, direct	437.70	437.70	437.70
Repair, maintenance	528.00	528.00	528.00
Spares	2837.50	2837.50	2837.50
Factory overheads	956.60	956.60	956.60
<hr/>			
Factory costs	33624.90	33624.90	33624.90
Administrative overheads	689.10	689.10	689.10
Indir. costs, sales and distribution	0.00	0.00	0.00
Direct costs, sales and distribution	0.00	0.00	0.00
Depreciation	6981.42	6981.42	6981.42
Financial costs	418.52	209.26	-0.00
<hr/>			
Total production costs	41713.95	41504.69	41295.41
<hr/>			
Costs per unit (single product) .	0.00	0.00	0.00
Of it foreign, Z	15.17	14.74	14.31
Of it variable, Z	0.00	0.00	0.00
Total labour	706.80	706.80	706.80



COMFAR[®]
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UNIDO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Net Working Capital in 1000 K (Kyats)

Year		1993	1994	1995	1996-2007
Coverage	ndc coto				
Current assets &					
Accounts receivable . . .	7 51.4	584.02	943.37	985.72	985.72
Inventory and materials .	88 4.1	11129.59	13129.33	13379.29	13379.29
Energy	25 14.4	304.50	501.04	527.43	527.43
Spares	180 2.0	700.30	1347.05	1410.75	1410.75
Work in progress	0 45.0	395.45	652.42	607.06	607.06
Finished products	12 30.0	627.15	1005.00	1054.76	1054.76
Cash in hand	15 24.0	204.90	230.56	227.04	227.04
Total current assets		14026.00	17810.17	18200.04	18200.04
Current liabilities and					
Accounts payable	9 40.9	466.37	779.67	824.48	824.48
Net working capital		13559.63	17030.50	17456.37	17456.37
Increase in working capital		5179.63	3470.07	425.07	0.00
Net working capital, local		7391.37	10237.51	10600.78	10600.78
Net working capital, foreign		6178.25	6792.99	6855.58	6855.58

Note: ndc = minimum days of coverage ; coto = coefficient of turnover .

----- Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988 -----



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Source of Finance, construction in 1000 K (Kyats)

Year	1990	1991	1992
Equity, ordinary ..	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00
Loan A, foreign .	5712.60	68514.20	9480.00
Loan B, foreign..	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00
Loan A, local....	11285.00	23823.00	22516.00
Loan B, local....	1951.00	32923.00	3135.00
Loan C, local....	0.00	0.00	0.00
Total loan	18946.00	125260.00	35231.00
Current liabilities	0.00	0.00	0.00
Bank overdraft	0.00	0.00	0.00
Total funds	18946.00	125260.00	35231.00

Mini-Cement Plant at Lashio, Burma (B4) --- 18.02.1988



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Source of Finance, production in 1000 K (Kyats)

Year	1993	1994	1995	1996	1997	1998	1999
Equity, ordinary ..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity, preference.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies, grants .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, foreign .	0.00	0.00	-6975.33	-6975.33	-6975.33	-6975.33	-6975.33
Loan B, foreign..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan C, foreign .	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loan A, local....	-11544.00	-11544.00	-11544.00	-11544.00	-11544.00	0.00	0.00
Loan B, local....	-7601.00	-7601.00	-7601.00	-7601.00	-7601.00	0.00	0.00
Loan C, local....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total loan	-19146.60	-19146.60	-26121.93	-26121.93	-26121.94	-6975.33	-6975.33
Current liabilities	466.37	313.30	44.01	0.00	0.00	0.00	0.00
Bank overdraft	15664.06	2899.01	4951.12	3841.66	7189.08	-15644.94	-15791.44
Total funds	-3016.17	-15933.49	-21126.00	-22280.27	-18932.86	-22620.27	-22766.77

Mini-Cement Plant at Lashio, Burma (04) --- 10.02.1988

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Source of Finance, production in 1000 K (Kyats)

Year	2000	2001- 6
Equity, ordinary ..	0.00	0.00
Equity, preference.	0.00	0.00
Subsidies, grants .	0.00	0.00
Loan A, foreign .	-6975.33	-6975.33
Loan B, foreign..	0.00	0.00
Loan C, foreign .	0.00	0.00
Loan A, local....	0.00	0.00
Loan B, local....	0.00	0.00
Loan C, local....	0.00	0.00
Total loan	-6975.33	-6975.33
Current liabilities	0.00	0.00
Bank overdraft	-3109.37	0.00
Total funds	-10084.70	-6975.33

Mini-Cement Plant at Lashio, Burma (04) --- 10.02.1988



COMFAR
21 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Cashflow Tables, construction in 1000 K (Kyats)

Year	1990	1991	1992
Total cash inflow . .	18946.00	125260.00	35231.00
Financial resources .	18946.00	125260.00	35231.00
Sales, net of tax . .	0.00	0.00	0.00
Total cash outflow . .	18946.00	125260.00	35231.00
Total assets	18946.00	125260.00	35231.00
Operating costs . . .	0.00	0.00	0.00
Cost of finance . . .	0.00	0.00	0.00
Repayment	0.00	0.00	0.00
Corporate tax	0.00	0.00	0.00
Dividends paid	0.00	0.00	0.00
Surplus (deficit) .	0.00	0.00	0.00
Cumulated cash balance	0.00	0.00	0.00
Inflow, local	13236.00	56746.00	25751.00
Outflow, local	13236.00	56746.00	25751.00
Surplus (deficit) .	0.00	0.00	0.00
Inflow, foreign . . .	5710.00	68514.00	9480.00
Outflow, foreign . . .	5710.00	68514.00	9480.00
Surplus (deficit) .	0.00	0.00	0.00
Net cashflow	-18946.00	-125260.00	-35231.00
Cumulated net cashflow	-18946.00	-144206.00	-179437.00

Mini-Cement Plant at Lashio, Burma (B4) --- 10.02.1988

Cashflow tables, production in 1800 K (Kyats)

Year	1993	1994	1995	1996	1997	1999
Total cash inflow . .	36502.37	62557.30	65554.00	65520.00	65520.00	65520.00
Financial resources .	466.37	313.30	44.91	0.00	0.00	0.00
Sales, net of tax . .	36036.00	62244.00	65520.00	65520.00	65520.00	65520.00
Total cash outflow . .	52166.45	65457.09	70515.91	69361.66	72709.09	49875.04
Total assets	5646.00	3704.17	470.67	0.00	4031.00	0.00
Operating costs . . .	21026.30	32955.00	34314.00	34314.00	34314.00	34314.00
Cost of finance . . .	6347.54	5500.26	4812.98	3836.43	2059.00	1833.34
Repayment	19146.60	19146.60	26121.93	26121.93	26121.94	6975.33
Corporate tax	0.00	3991.05	4796.34	5009.30	5392.27	6702.37
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	-15664.07	-2899.79	-4951.11	-3641.66	-7189.09	15644.96
Cumulated cash balance	-15664.07	-18563.86	-23514.97	-27356.63	-34545.72	-18900.76
Inflow, local	36302.02	62468.85	65551.01	65520.00	65520.00	65520.00
Outflow, local	46309.02	59455.00	50231.06	57413.27	60969.95	38345.17
Surplus (deficit) .	-10007.00	3012.97	7219.13	8106.73	4550.05	27174.83
Inflow, foreign . . .	120.35	88.45	13.00	0.00	0.00	0.00
Outflow, foreign . . .	5776.63	6001.21	12234.05	11943.39	11739.13	11529.07
Surplus (deficit) .	-5656.27	-5912.75	-12220.25	-11943.39	-11739.13	-11529.07
Net cashflow	9830.07	21827.07	25903.00	26116.70	21792.74	24503.63
Cumulated net cashflow	-169606.90	-147779.90	-121796.10	-95679.36	-73886.63	-49302.99

**COMFAR**
2.1 UNION

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Cashflow tables, production in 1000 K (Kyats)

Year	1999	2000	2001	2002	2003	2004
Total cash inflow . .	65520.00	65520.00	65520.00	65520.00	65520.00	65520.00
Financial resources .	0.00	0.00	0.00	0.00	0.00	0.00
Sales, net of tax . .	65520.00	65520.00	65520.00	65520.00	65520.00	65520.00
Total cash outflow . .	49728.55	49582.07	49435.59	53720.11	49142.63	48996.15
Total assets	0.00	0.00	0.00	4831.00	0.00	0.00
Operating costs . . .	34314.00	34314.00	34314.00	34314.00	34314.00	34314.00
Cost of finance . . .	1674.00	1464.02	1255.56	1046.30	837.04	627.70
Repayment	6975.33	6775.33	6975.33	6975.33	6975.33	6975.33
Corporate tax	6765.15	6827.93	6890.71	6953.48	7016.26	7079.04
Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus (deficit) .	15791.45	15937.73	16094.41	12199.89	16377.37	16523.85
Cumulated cash balance	-3109.31	12628.61	28913.02	41112.91	57490.28	74014.13
Inflow, local	65520.00	65520.00	65520.00	65520.00	65520.00	65520.00
Outflow, local	38407.95	38470.72	38533.50	42627.20	38659.06	38721.04
Surplus (deficit) .	27112.05	27049.28	26986.50	22892.72	26860.94	26798.16
Inflow, foreign	0.00	0.00	0.00	0.00	0.00	0.00
Outflow, foreign . . .	11320.61	11111.35	10902.09	10692.83	10483.57	10274.31
Surplus (deficit) .	-11320.61	-11111.35	-10902.09	-10692.83	-10483.57	-10274.31
Net cashflow	24440.86	24378.00	24315.30	20221.52	24109.74	24126.96
Cumulated net cashflow	-24942.14	-564.06	23751.24	43972.76	68162.50	92289.47

----- Mini-Cement Plant at Lashio, Burma (04) --- 10.02.1998 -----



COMFAR
2.1 UNIDO

----- COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Cashflow tables, production in 1000 K (Kyats)

Year	2005	2006	2007
Total cash inflow . .	65520.00	65520.00	65520.00
Financial resources . .	0.00	0.00	0.00
Sales, net of tax . .	65520.00	65520.00	65520.00
Total cash outflow . .	48949.66	48703.19	41561.37
Total assets	0.00	0.00	0.00
Operating costs . . .	34314.00	34314.00	34314.00
Cost of finance . . .	418.52	209.26	-0.00
Repayment	6975.33	6975.34	0.00
Corporate tax	7141.82	7204.60	7267.30
Dividends paid	0.00	0.00	0.00
Surplus (deficit) . .	16670.34	16816.81	23938.63
Cumulated cash balance	90604.47	107501.30	131439.90
Inflow, local	65520.00	65520.00	65520.00
Outflow, local	38794	38847.39	38910.17
Surplus (deficit) . .	26735.59	26672.61	26609.83
Inflow, foreign	0.00	0.00	0.00
Outflow, foreign . . .	10065.05	9855.00	2671.20
Surplus (deficit) . .	-10065.05	-9855.00	-2671.20
Net cashflow	24064.19	24001.41	23938.63
Cumulated net cashflow	116353.70	140355.10	164293.70

Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988



COMFAR
2.1 UNIDO

----- CONFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA -----

Cashflow Discounting:

a) Equity paid versus Net income flow:		
Net present value	121827.40	at 5.00 %
Internal Rate of Return (IRRE1) ..	not found	
b) Net Worth versus Net cash return:		
Net present value	93230.42	at 5.00 %
Internal Rate of Return (IRRE2) ..	24.88 %	
c) Internal Rate of Return on total investment:		
Net present value	73453.03	at 5.00 %
Internal Rate of Return (IRR) ..	9.27 %	
Net Worth = Equity paid plus reserves		

Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1989



Net Income Statement in 1000 K (Kyats)

Year	1993	1994	1995	1996	1997
Total sales, incl. sales tax	45045.00	77805.00	81900.00	81900.00	81900.00
Less: variable costs, incl. sales tax	9009.00	15561.00	16300.00	16300.00	16300.00
Variable margin	36036.00	62244.00	65520.00	65520.00	65520.00
As % of total sales	80.02	80.02	80.00	80.00	80.00
Non-variable costs, incl. depreciation	31431.53	43360.23	44719.23	44719.23	44719.23
Operational margin	4604.47	16883.77	20800.77	20800.77	20800.77
As % of total sales	10.22	24.27	25.40	25.40	25.40
Cost of finance	6347.54	5500.26	4812.90	3036.43	2959.80
Gross profit	-1743.07	13303.51	15987.00	16964.34	17940.89
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	-1743.07	13303.51	15987.00	16964.34	17940.89
Tax	0.00	3991.05	4796.34	5089.30	5362.27
Net profit	-1743.07	9312.46	11191.46	11875.04	12558.62
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	-1743.07	9312.46	11191.46	11875.04	12558.62
Accumulated undistributed profit	-1743.07	7569.39	18760.85	30635.39	43194.51
Gross profit, % of total sales	-3.87	17.10	19.52	20.71	21.91
Net profit, % of total sales	-3.87	11.97	13.66	14.50	15.33
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	2.49	7.92	8.49	8.33	8.21

**COMFAR**
21 UNIDO

----- COMFAR 2.1 - POLYTECHNIA, PRAHA, CZECHOSLOVAKIA -----

Net Income Statement in 1000 K (Kyats)

Year	1998	1999	2000	2001	2002
Total sales, incl. sales tax	81900.00	81900.00	81900.00	81900.00	81900.00
Less: variable costs, incl. sales tax	16380.00	16380.00	16380.00	16380.00	16380.00
Variable margin	65520.00	65520.00	65520.00	65520.00	65520.00
As % of total sales	80.00	80.00	80.00	80.00	80.00
Non-variable costs, incl. depreciation	41295.43	41295.43	41295.43	41295.43	41295.43
Operational margin	24224.57	24224.57	24224.57	24224.57	24224.57
As % of total sales	29.58	29.58	29.58	29.58	29.58
Cost of finance	1883.34	1674.08	1464.82	1255.56	1046.50
Gross profit	22341.23	22550.50	22759.75	22969.02	23178.27
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	22341.23	22550.50	22759.75	22969.02	23178.27
Tax	6702.37	6765.15	6827.93	6898.71	6953.48
Net profit	15638.86	15785.35	15931.83	16070.31	16224.79
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	15638.86	15785.35	15931.83	16070.31	16224.79
Accumulated undistributed profit	58833.37	7469.72	98550.55	106628.92	122853.68
Gross profit, % of total sales	27.28	27.53	27.79	28.05	28.30
Net profit, % of total sales	19.10	19.27	19.45	19.63	19.81
RDE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	9.10	9.07	9.04	9.00	8.79

Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1998



COMFAR
2.1 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

Net Income Statement in 1000 K (Kyats)

Year	2005	2004	2005	2006	2007
Total sales, incl. sales tax	61900.00	61900.00	61900.00	61900.00	61900.00
Less: variable costs, incl. sales tax.	16380.00	16380.00	16380.00	16380.00	16380.00
Variable margin	65520.00	65520.00	65520.00	65520.00	65520.00
As % of total sales	80.00	80.00	80.00	80.00	80.00
Non-variable costs, incl. depreciation	41295.43	41295.42	41295.43	41295.42	41295.41
Operational margin	24224.57	24224.58	24224.57	24224.58	24224.59
As % of total sales	29.58	29.56	29.58	29.58	29.58
Cost of finance	837.04	627.78	418.52	205.26	-0.00
Gross profit	23387.54	23596.80	23806.05	24015.32	24224.59
Allowances	0.00	0.00	0.00	0.00	0.00
Taxable profit	23387.54	23596.80	23806.05	24015.32	24224.59
Tax	7016.26	7079.04	7141.82	7204.60	7267.36
Net profit	16371.27	16517.76	16664.24	16810.72	16957.21
Dividends paid	0.00	0.00	0.00	0.00	0.00
Undistributed profit	16371.27	16517.76	16664.24	16810.72	16957.21
Accumulated undistributed profit	139224.90	155742.70	172406.90	189217.60	206174.30
Gross profit, % of total sales	28.56	28.81	29.07	29.32	29.58
Net profit, % of total sales	19.99	20.17	20.35	20.53	20.70
ROE, Net profit, % of equity	0.00	0.00	0.00	0.00	0.00
ROI, Net profit+interest, % of invest.	0.75	0.72	0.69	0.66	0.63

Mini-Cement Plant at Lashio, Burma (04) --- 10.02.1963



Projected Balance Sheets, construction in 1000 K (Kzats)

Year	1990	1991	1992
Total assets	18946.00	144206.00	179437.00
Fixed assets, net of depreciation	0.00	18946.00	144206.00
Construction in progress	18946.00	125260.00	26351.00
Current assets	0.00	0.00	8380.00
Cash, bank	0.00	0.00	0.00
Cash surplus, finance available	0.00	0.00	0.00
Loss carried forward	0.00	0.00	0.00
Loss	0.00	0.00	0.00
Total liabilities	18946.00	144206.00	179437.00
Equity capital	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	0.00
Profit	0.00	0.00	0.00
Long and medium term debt	18946.00	144206.00	179437.00
Current liabilities	0.00	0.00	0.00
Bank overdraft, finance required	0.00	0.00	0.00
Total debt	18946.00	144206.00	179437.00
Equity, % of liabilities	0.00	0.00	0.00



COMFAR
21 UNIDO

----- CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1000 K (Kyats)

Year	1993	1994	1995	1996	1997	1998
Total assets	176420.80	169799.80	158122.20	147717.00	141342.70	134361.30
Fixed assets, net of depreciation	168651.80	158246.60	139841.30	129436.10	119830.90	116360.50
Construction in progress	0.00	0.00	0.00	0.00	4831.00	0.00
Current assets	13821.09	17579.61	18053.80	18053.80	18053.80	18053.80
Cash, bank	284.98	238.56	227.84	227.84	227.84	227.84
Cash surplus, finance available	0.00	0.09	0.00	0.00	0.00	0.00
Loss carried forward	0.00	1743.87	0.83	0.00	0.00	0.00
Loss	1743.87	0.00	0.00	0.00	0.00	0.00
Total liabilities	176420.80	169799.80	158122.20	147717.00	141342.70	134361.30
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	0.00	0.00	7569.39	18768.85	38635.89	43194.51
Profit	0.00	9312.46	11191.46	11875.84	12558.62	15638.86
Long and medium term debt	168290.48	141143.88	115821.98	88899.92	62777.99	55882.66
Current liabilities	466.37	779.67	824.48	824.48	824.48	824.48
Bank overdraft, finance required	15664.86	18563.89	23515.80	27356.66	34545.74	18988.80
Total debt	176420.80	160487.48	139361.30	117881.10	98148.21	75527.94
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

----- Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988 -----

----- CONFAR 2.1 - POLYTECHNA, PRAMA, CZECHOSLOVAKIA -----

Projected Balance Sheets, Production in 1000 K (Kyats)

Year	1999	2000	2001	2002	2003	2004
Total assets	127379.90	133227.00	142338.00	151579.50	168975.40	178517.00
Fixed assets, net of depreciation	109899.00	102117.60	95136.20	88154.78	85284.36	78222.94
Construction in progress	0.00	0.00	0.00	4831.00	0.00	0.00
Current assets	18053.80	18053.80	18053.80	18053.80	18053.80	18053.80
Cash, bank	227.84	227.84	227.84	227.84	227.84	227.84
Cash surplus, finance available	0.00	12828.56	28912.97	41112.83	57490.20	74814.85
Loss carried forward	0.00	0.00	0.00	0.00	0.00	0.00
Loss	0.00	0.00	0.00	0.00	0.00	0.00
Total liabilities	127379.90	133227.00	142338.00	151579.50	168975.40	178517.00
Equity capital	0.00	0.00	0.00	0.00	0.00	0.00
Reserves, retained profit	58833.37	74618.72	98558.55	106628.98	122853.60	139224.90
Profit	15785.33	15931.83	16878.31	16224.79	16371.27	16517.76
Long and medium term debt	48827.33	41852.00	34876.66	27981.33	28926.00	13958.66
Current liabilities	824.48	824.48	824.48	824.48	824.48	824.48
Bank overdraft, finance required	3189.37	0.00	0.00	0.00	0.00	0.00
Total debt	52761.17	42676.47	35781.14	28725.80	21750.47	14775.14
Equity, % of liabilities	0.00	0.00	0.00	0.00	0.00	0.00

----- Mini-Cement Plant at Lashio, Burma (84) --- 10.02.1988 -----



COMFAR
21 UNIDO

COMFAR 2.1 - POLYTECHNA, PRAHA, CZECHOSLOVAKIA

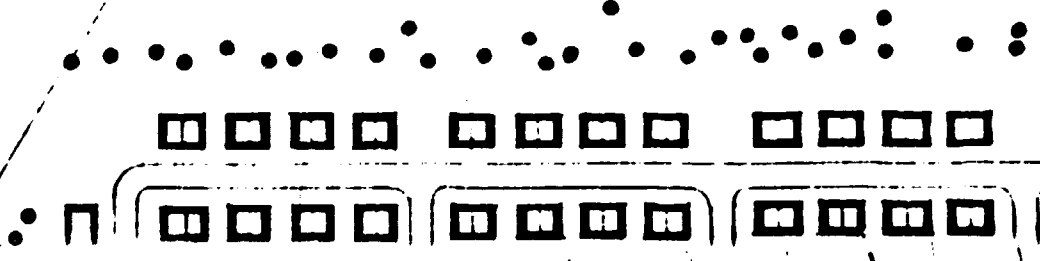
Projected Balance Sheets, Production in 1000 Y (Kyats)

Year	2005	2006	2007
Total assets	180206.70	190042.10	206999.30
Fixed assets, net of depreciation	71241.52	64268.09	57270.68
Construction in progress	0.00	0.00	0.00
Current assets	108955.00	125774.01	149728.62
Cash, bank	227.04	227.04	227.04
Cash surplus, finance available .	90684.30	107501.20	131439.00
Loss carried forward	0.00	0.00	0.00
Less	0.00	0.00	0.00
Total liabilities	180206.70	190042.10	206999.30
Equity capital	0.00	0.00	0.00
Reserves, retained profit	155742.70	172406.90	189217.60
Profit	16664.24	16810.72	16957.21
Long and medium term debt	6975.33	-0.01	-0.01
Current liabilities	824.40	824.49	824.40
Bank overdraft, finance required.	0.00	0.00	0.00
Total debt	7799.81	824.47	824.47
Equity, % of liabilities	0.00	0.00	0.00

Mini-Cement Plant at Lashio, Burma (04) --- 10.02.1989

SECTION 1

11.

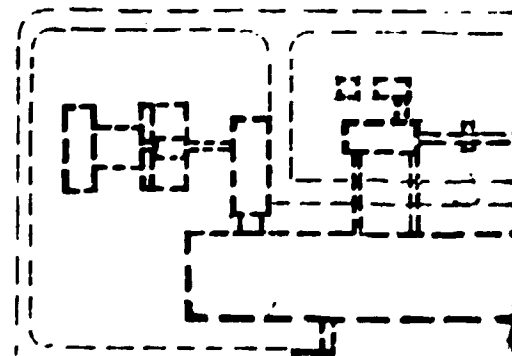


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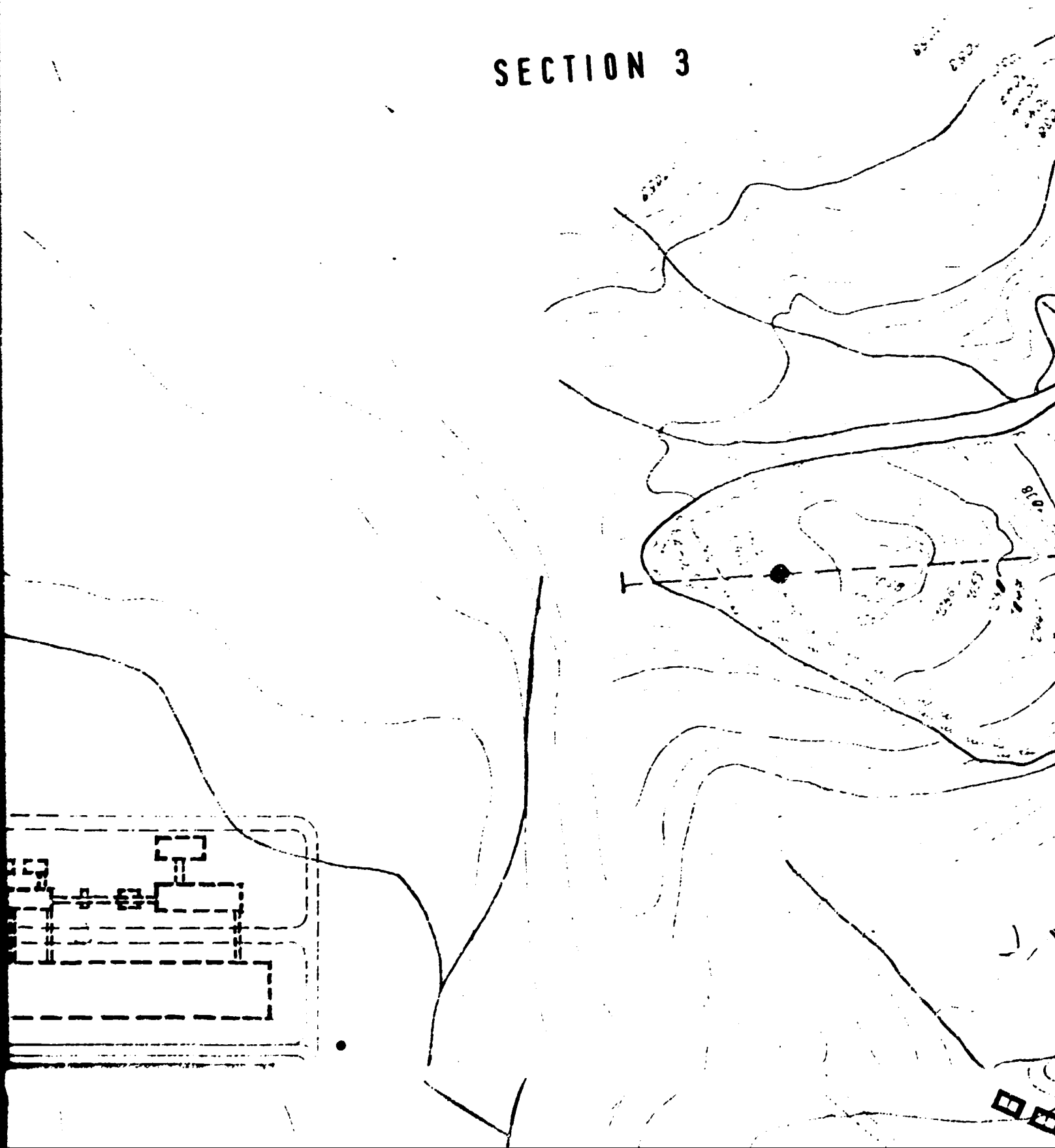
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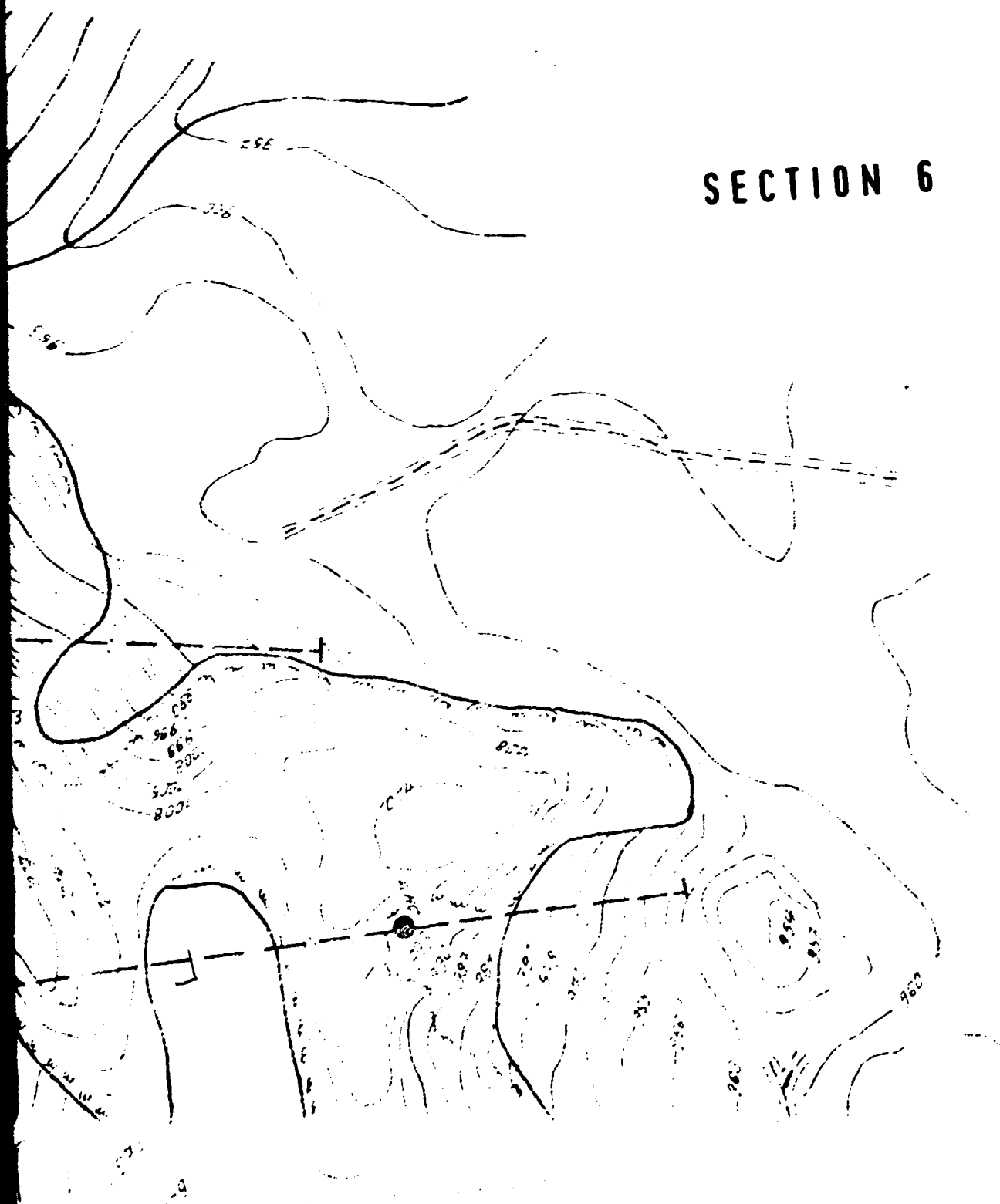
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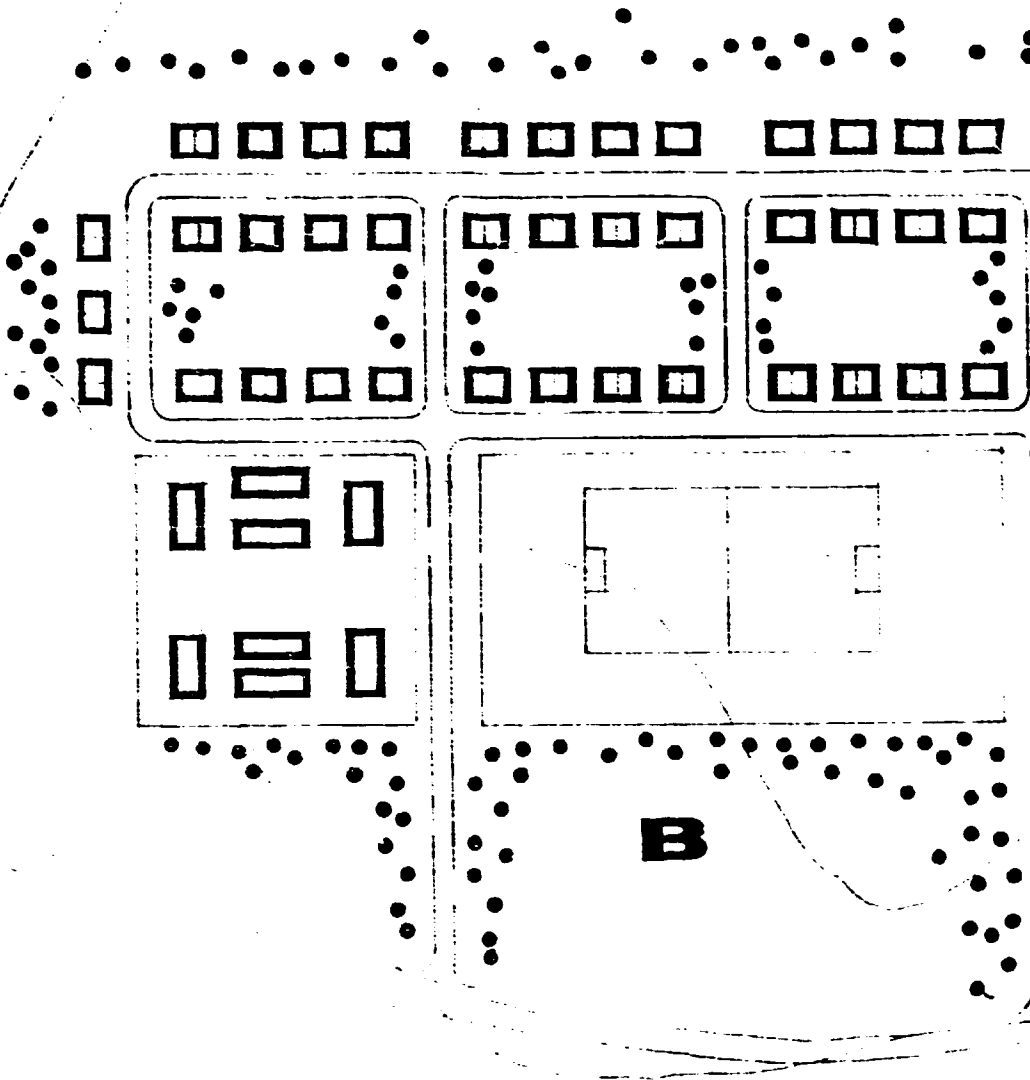
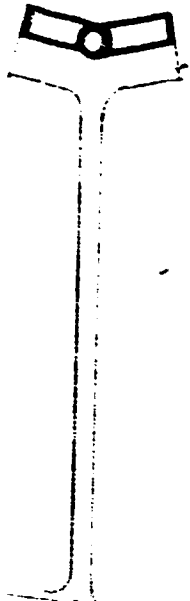


SECTION 3



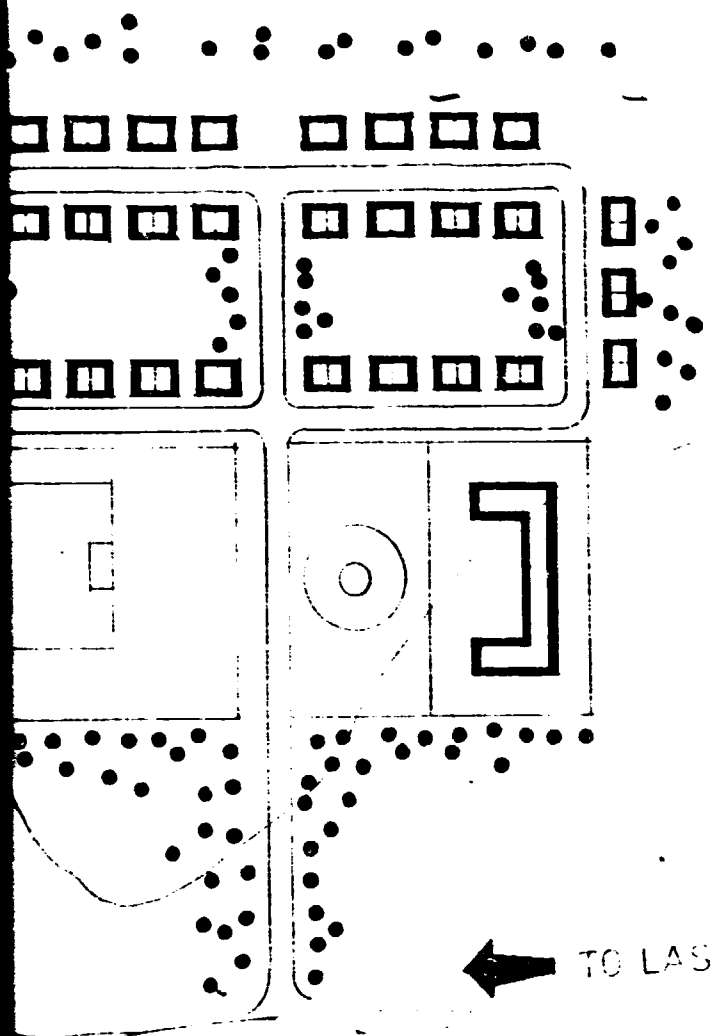
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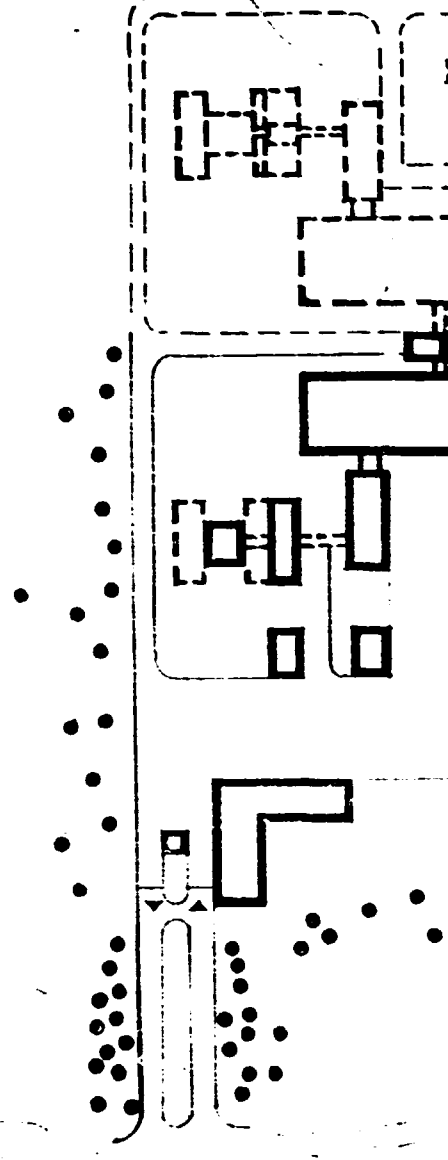
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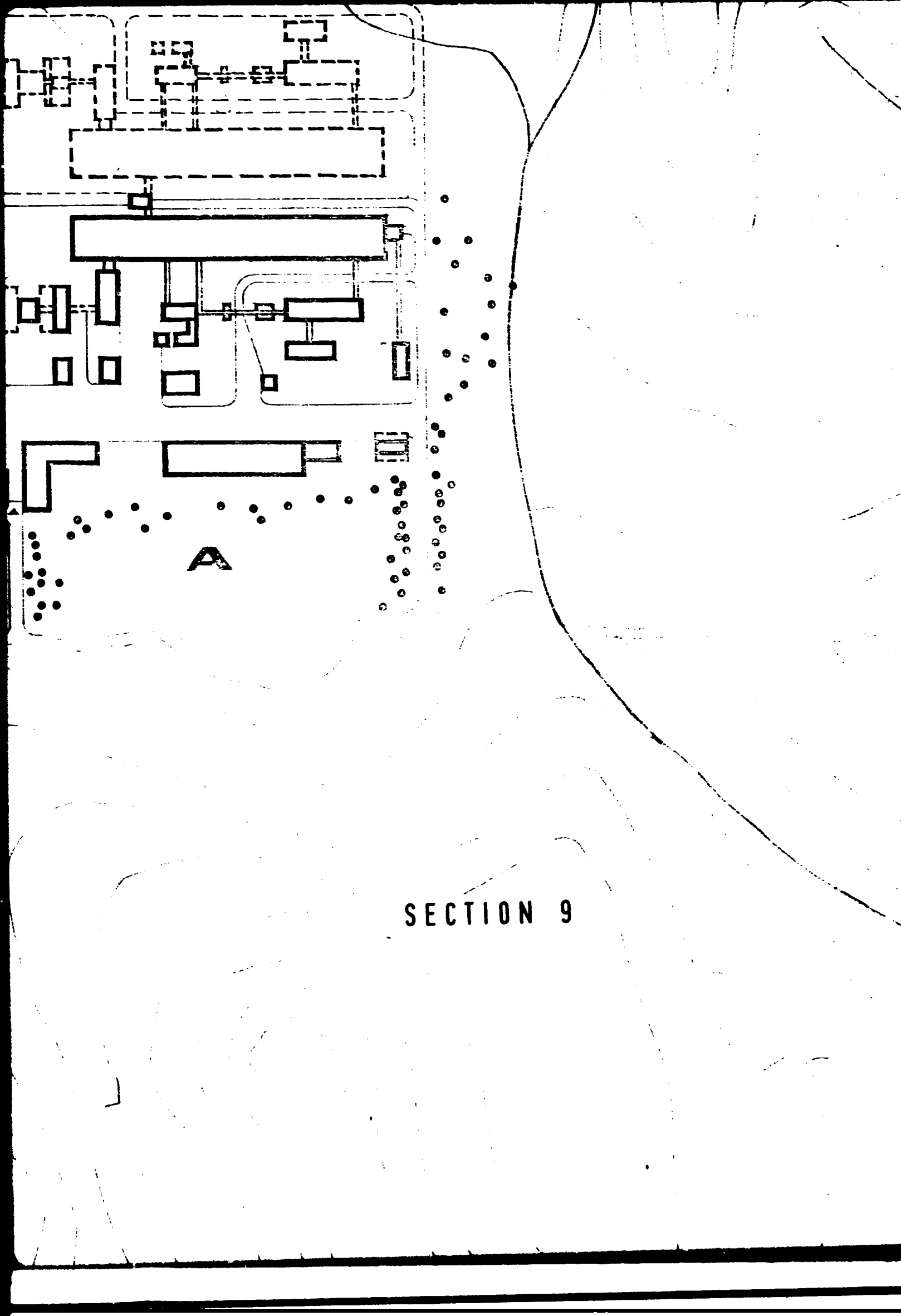
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SECTION 8

← TO LASHIO

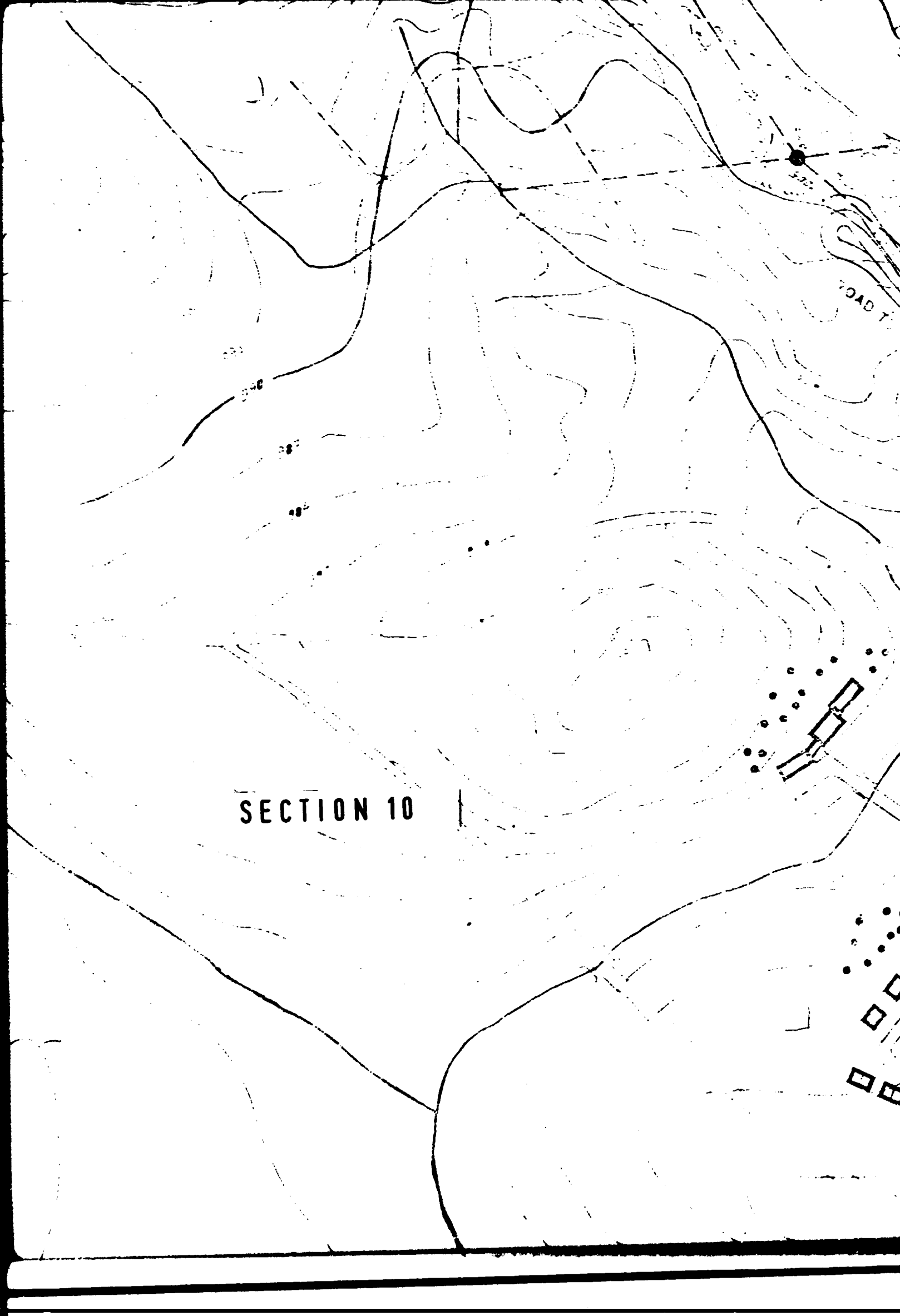


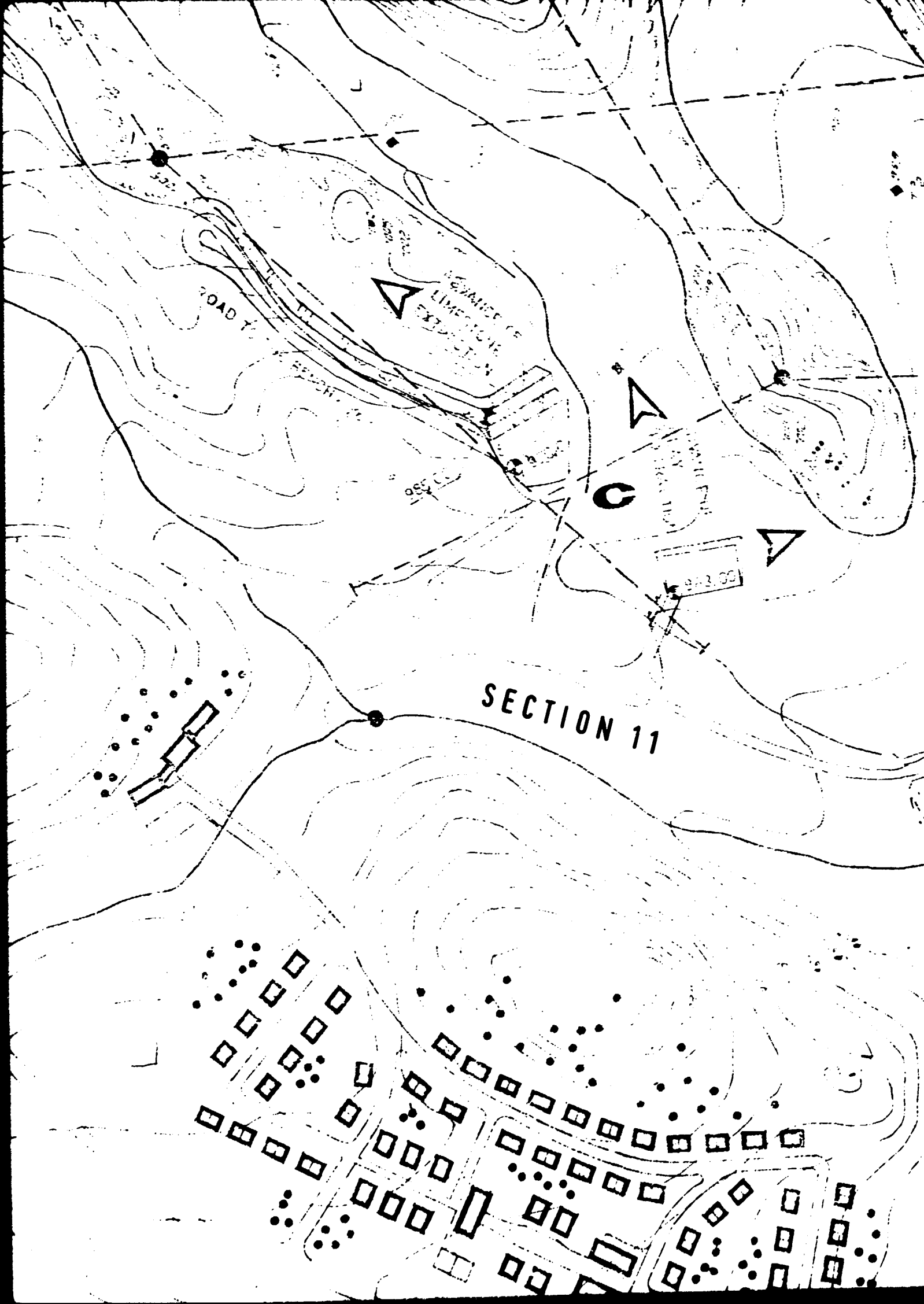


SECTION 9

SECTION 10

ROAD T





QUARRY OF
LIMESTONE
EXTENSION

ROAD T

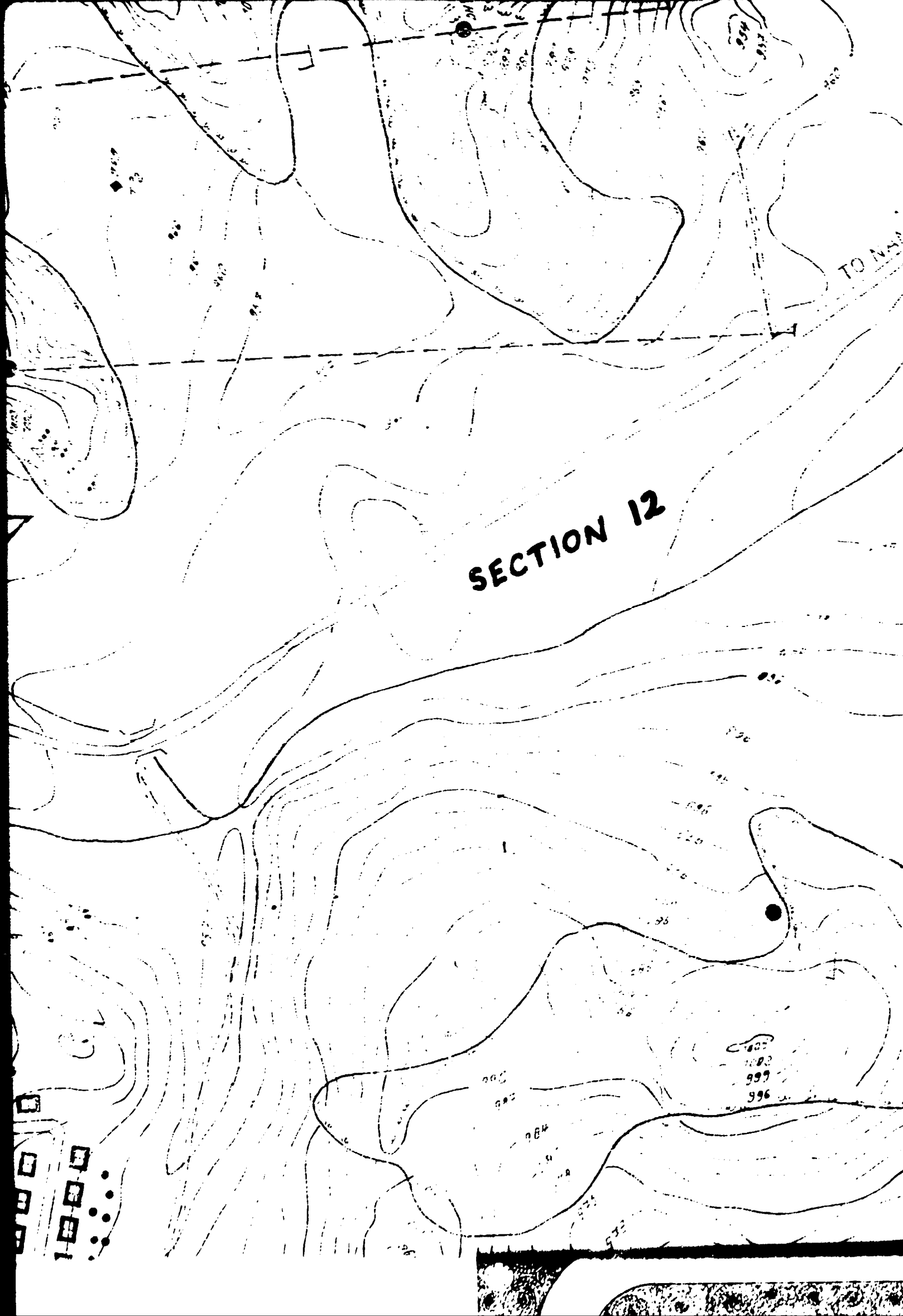
SECTION 11

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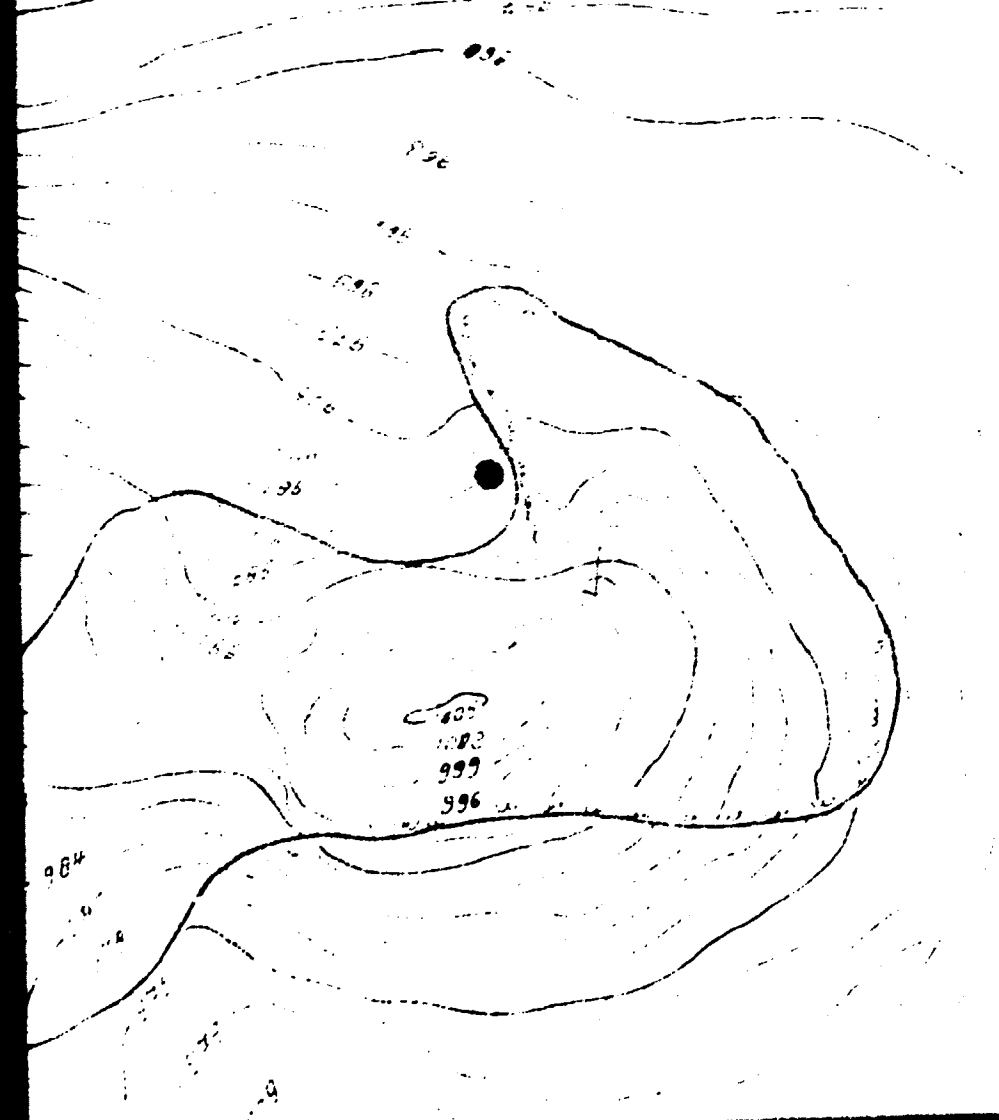
SECTION 12





TO NAMMA

SECTION 13



984

SECTION 14



SECTION 15

MINI-GEM

SECTION 16

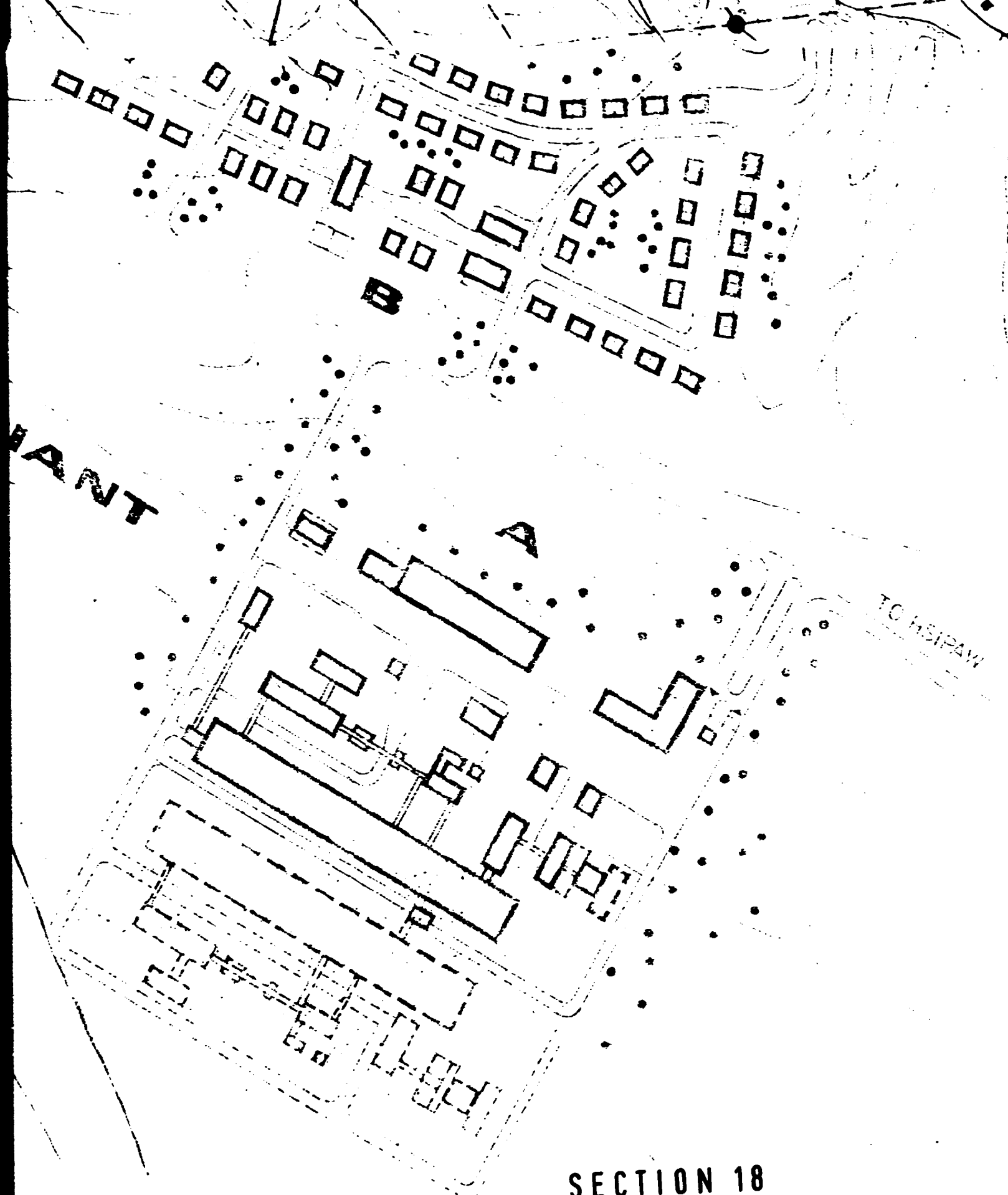
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E. VARIAN

SECTION 17

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SECTION 18

BURMA

27

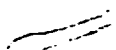
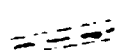

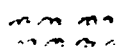
26

LEGEND

I. VARIANT

- A** CEMENT PLANT
- B** HOUSING QUARTERS
- C** PLAN OF EXPLOITATION

II. VARIANT

- A** CEMENT PLANT
- B** HOUSING QUARTERS.
-  CAR ROAD
-  CART TRACK
-  STREAM
-  CLIFF
- DRILL HOLE
- TEST PIT

TO HSIPAW



SECTION 19

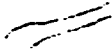
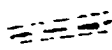

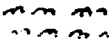




LEGEND

I. VARIANT

- A** CEMENT PLANT
- B** HOUSING QUARTERS
- C** PLAN OF EXPLOITATION

II. VARIANT

- A** CEMENT PLANT
- B** HOUSING QUARTERS
-  CAR ROAD
-  CART TRACK
-  STREAM
-  CLIFF
-  DRILL HOLE
-  TEST PIT

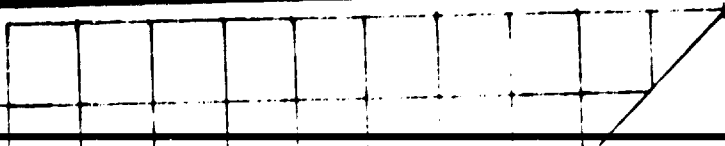
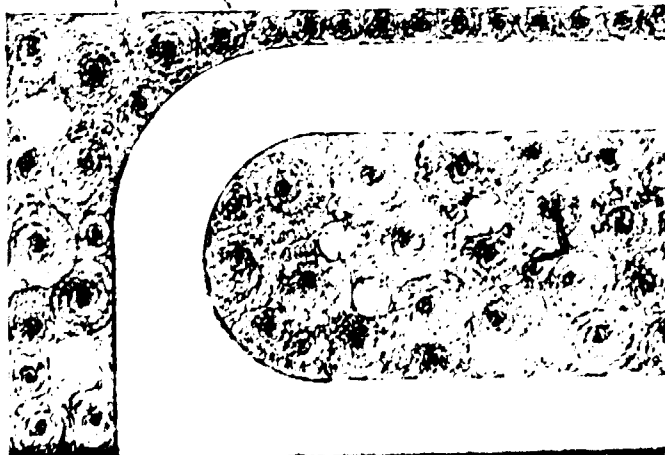
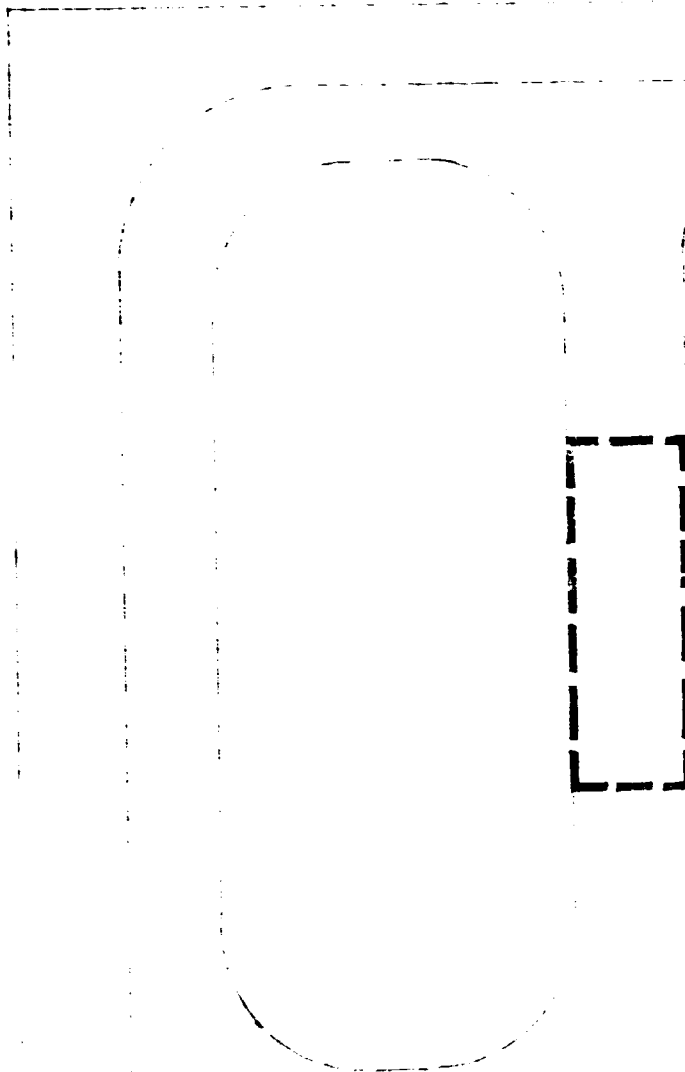
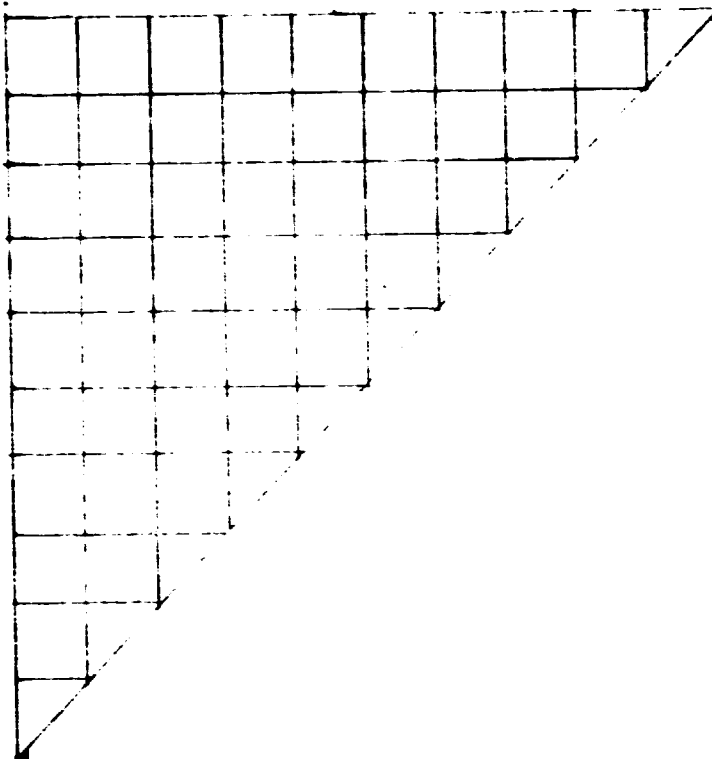
SECTION 20

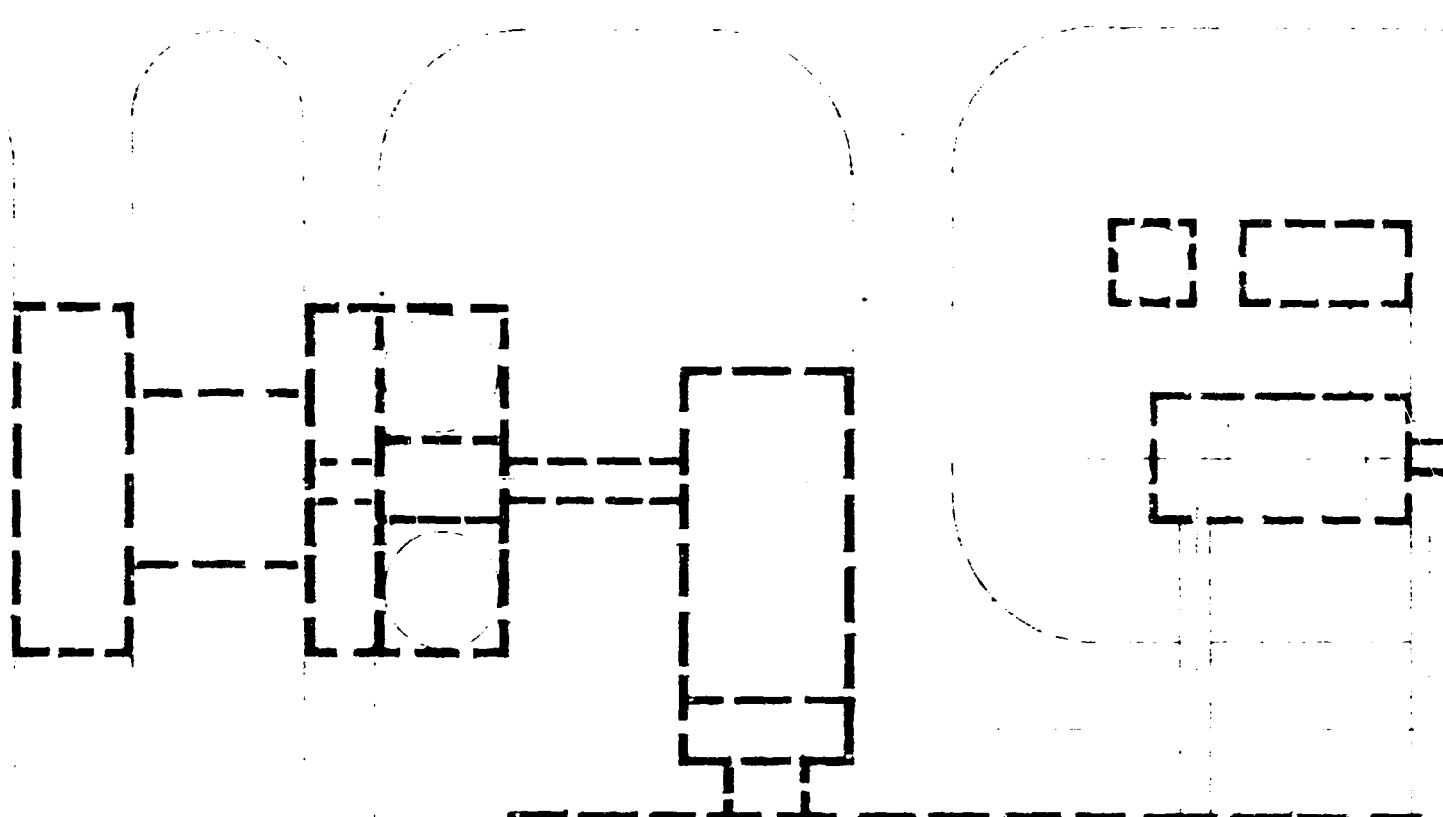


1

POLY-CHINA TRADING	ARRANGEMENT	DATE	JUNE 1988
MINI-CEMENT PLANT IN LASHIO - BURMA		SCALE	1:2000
GENERAL LAYOUT		DRAWING NO.	1

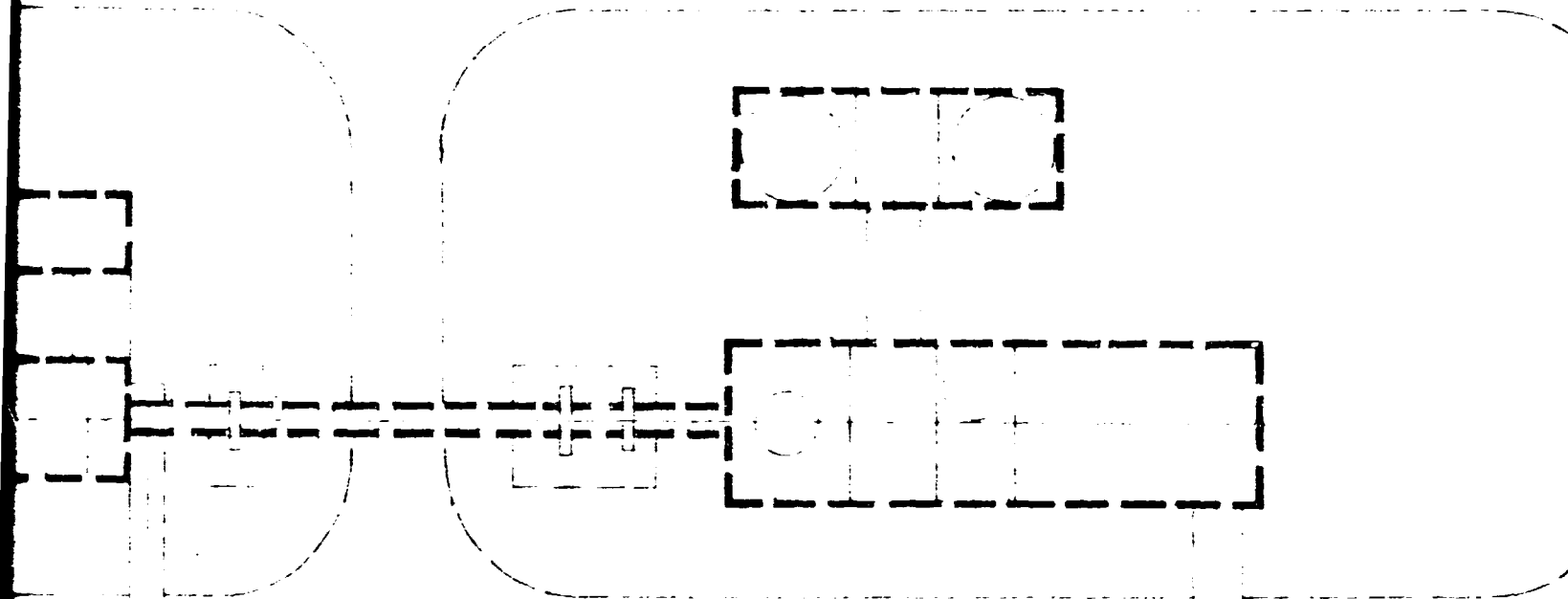
SECTION 1





SECTION .2

08



SECTION 3

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SECTION 4

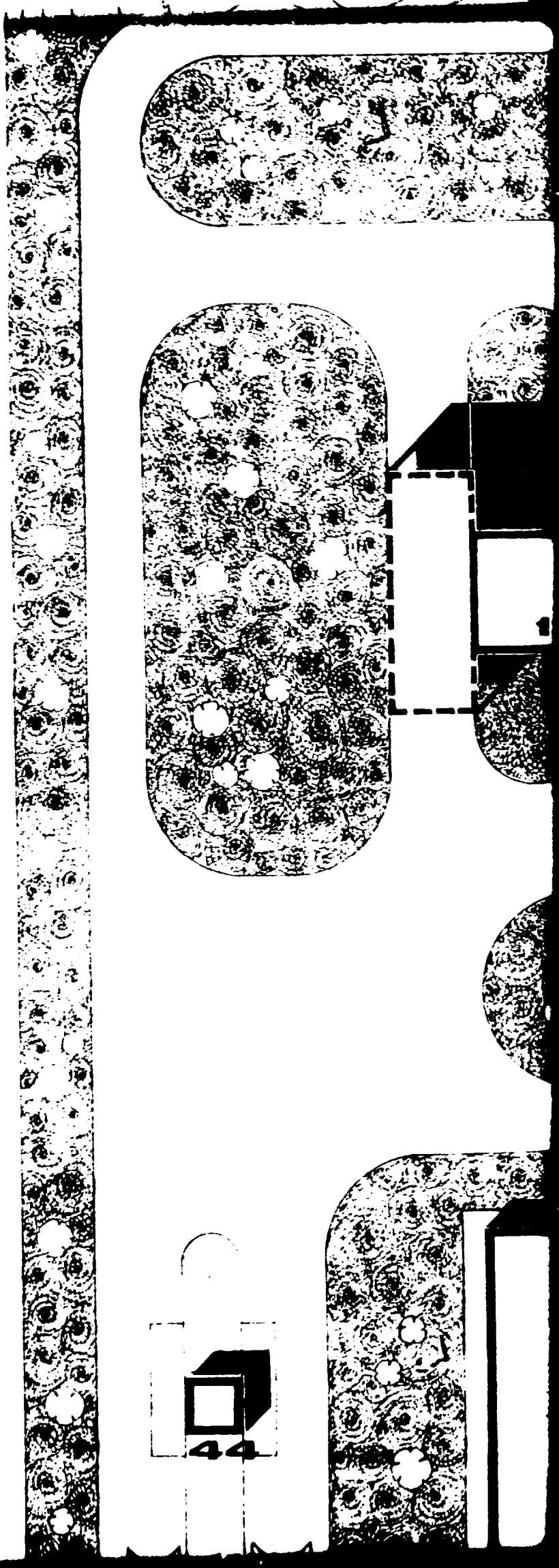
LEGEND

- 03** RAW MATERIAL CRUSHING
- 04** STORAGE
- 05** RAW GRINDING
- 06** HOMOGENIZING
- 07** CLINKER BURNING AND COOLING
- 08** GYPSUM AND COAL CRUSHING
- 09** COAL GRINDING
- 10** CEMENT GRINDING
- 11** CEMENT STORAGE
- 12** PACKING AND LOADING
- 14** INSTRUMENTATION AND CONTROLS
- 20** SUBSTATION
- 21** DIESEL POWER PLANT
- 22** COMPRESSED-AIR PLANT
- 23** HEATING STATION AND AIR-CONDITIONING
- 24** WATER SUPPLY AND DISTRIBUTION
- 25** LABORATORY
- 26** WORKSHOPS
- 27** STORES
- 28** DIESEL OIL TANK
- 29** LUBRICANTS STORE
- 30** TRUCK AND TRAILER FACILITIES

- 42** HOUSE
- 43** ADMINISTRATIVE BUILDING
- 44** BATH HOUSE AND REFINING

SECTION 5

SECTION 6



08

12

11

10

09

14

21

20

24

SECTION 7

25

23 22

43

04

05

07

06

03

42

SECTION 8

29 28

30

26

27

22

9

14

24

04

05

06

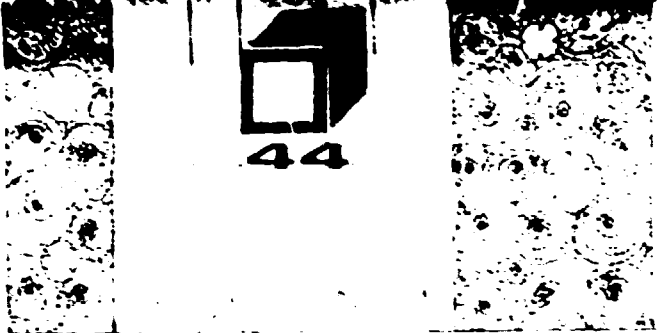
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SECTION 9

29 28

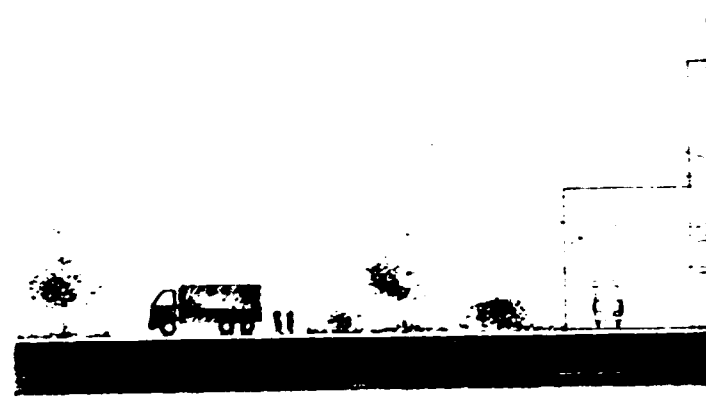
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26



CEMENT PL

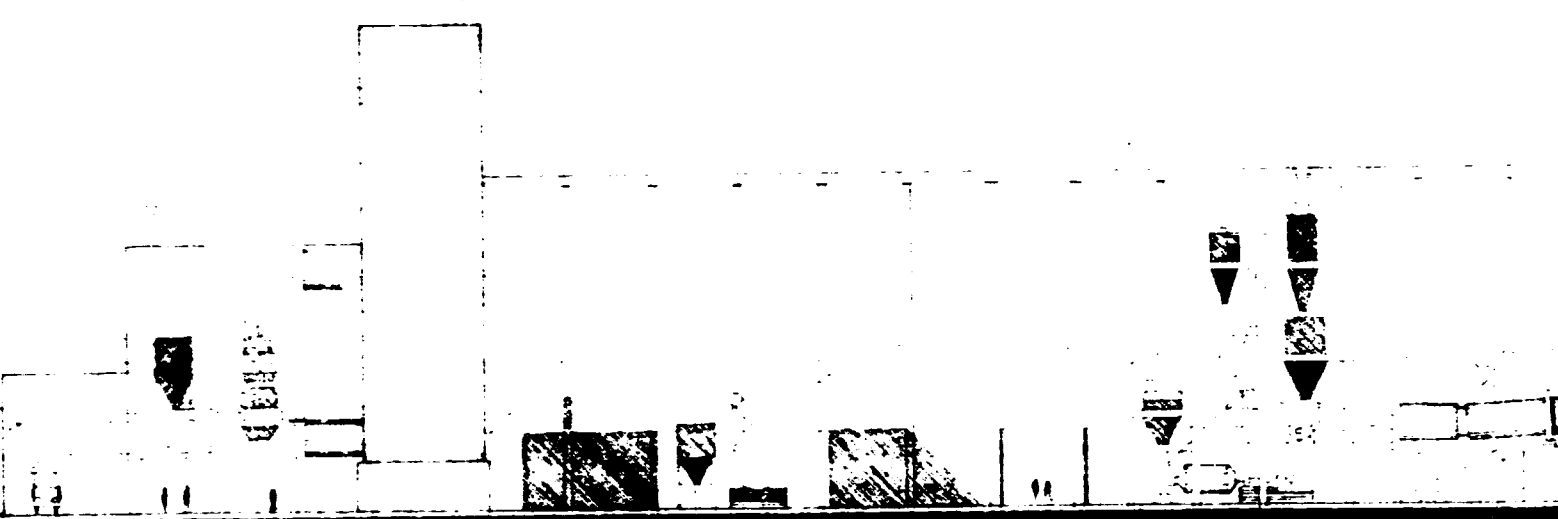
SECTION 10



SOUTH-EAS

MINI-CEM

PLANT LAYOUT



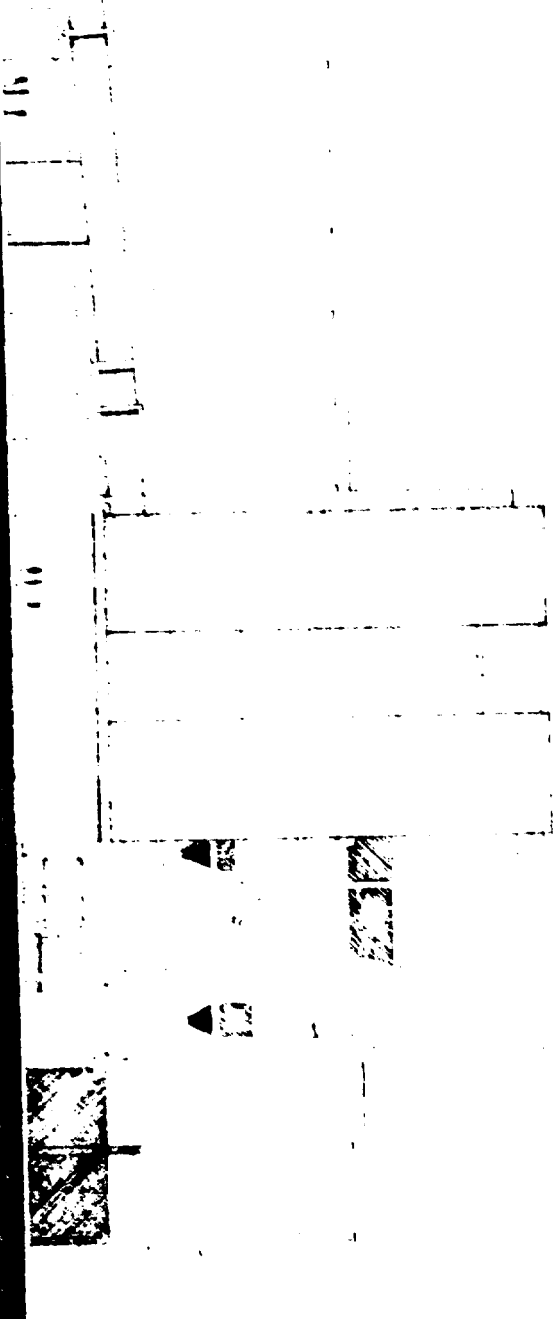
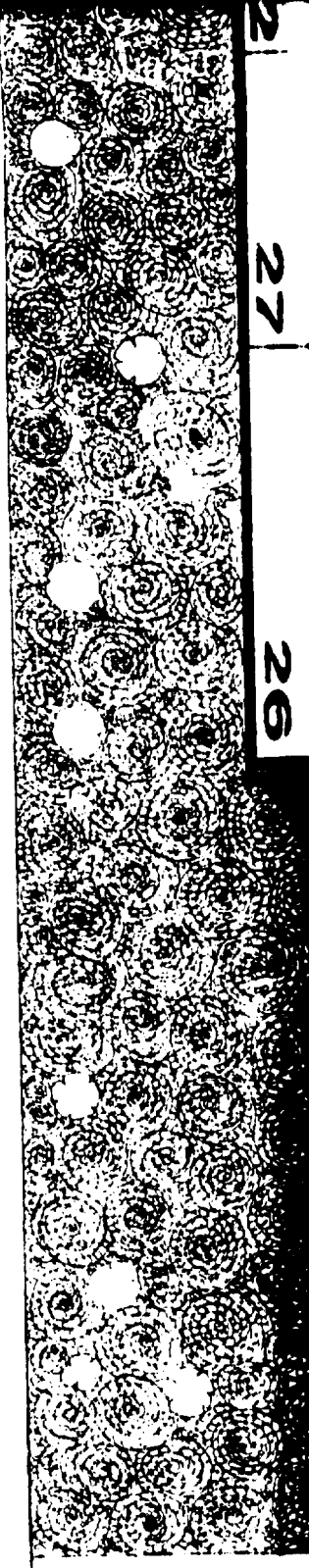
EAST VIEW

SECTION 11

EMENT PLANT I

27

26



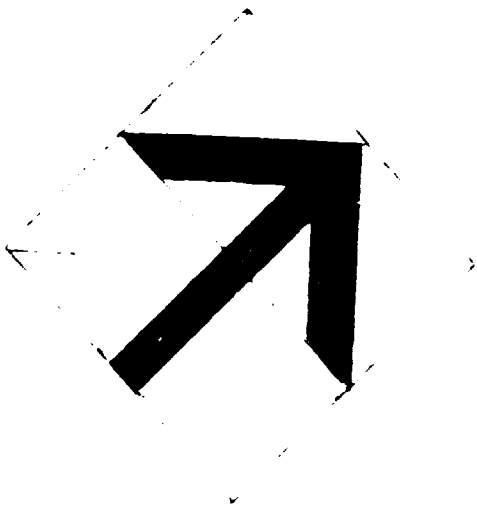
SECTION 12

T IN LA SHIO - BU

SECTION 13

BURMA

SECTION 14

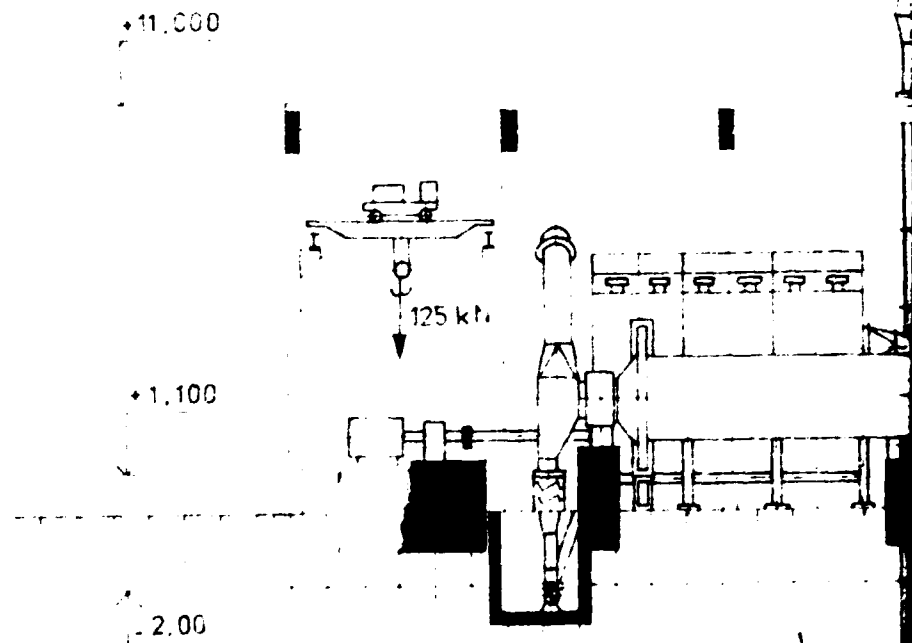


2

MINI-CEMENT PLANT (LACHIO-BURMA)		2
MINI-CEMENT PLANT (LACHIO-BURMA)		2

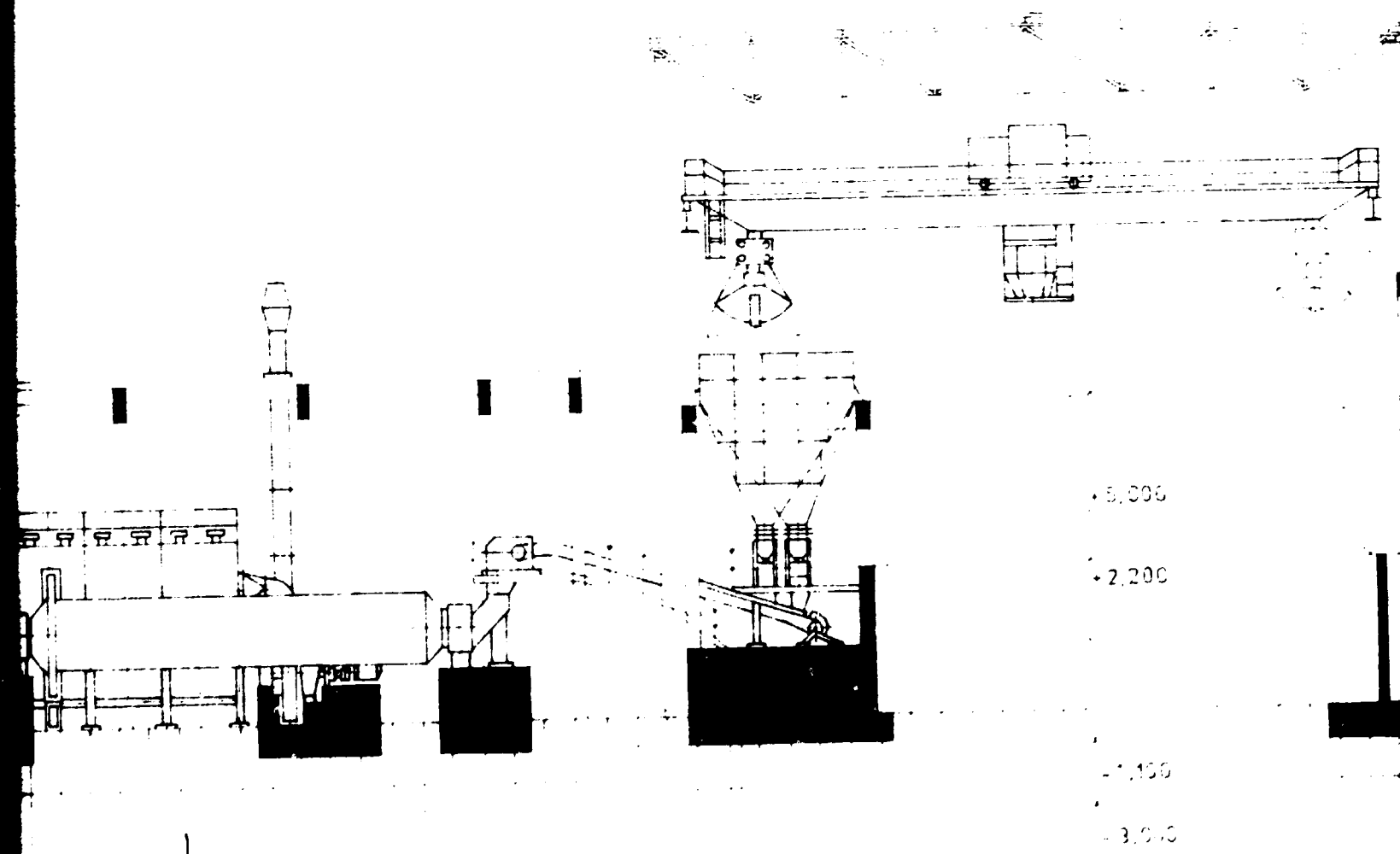
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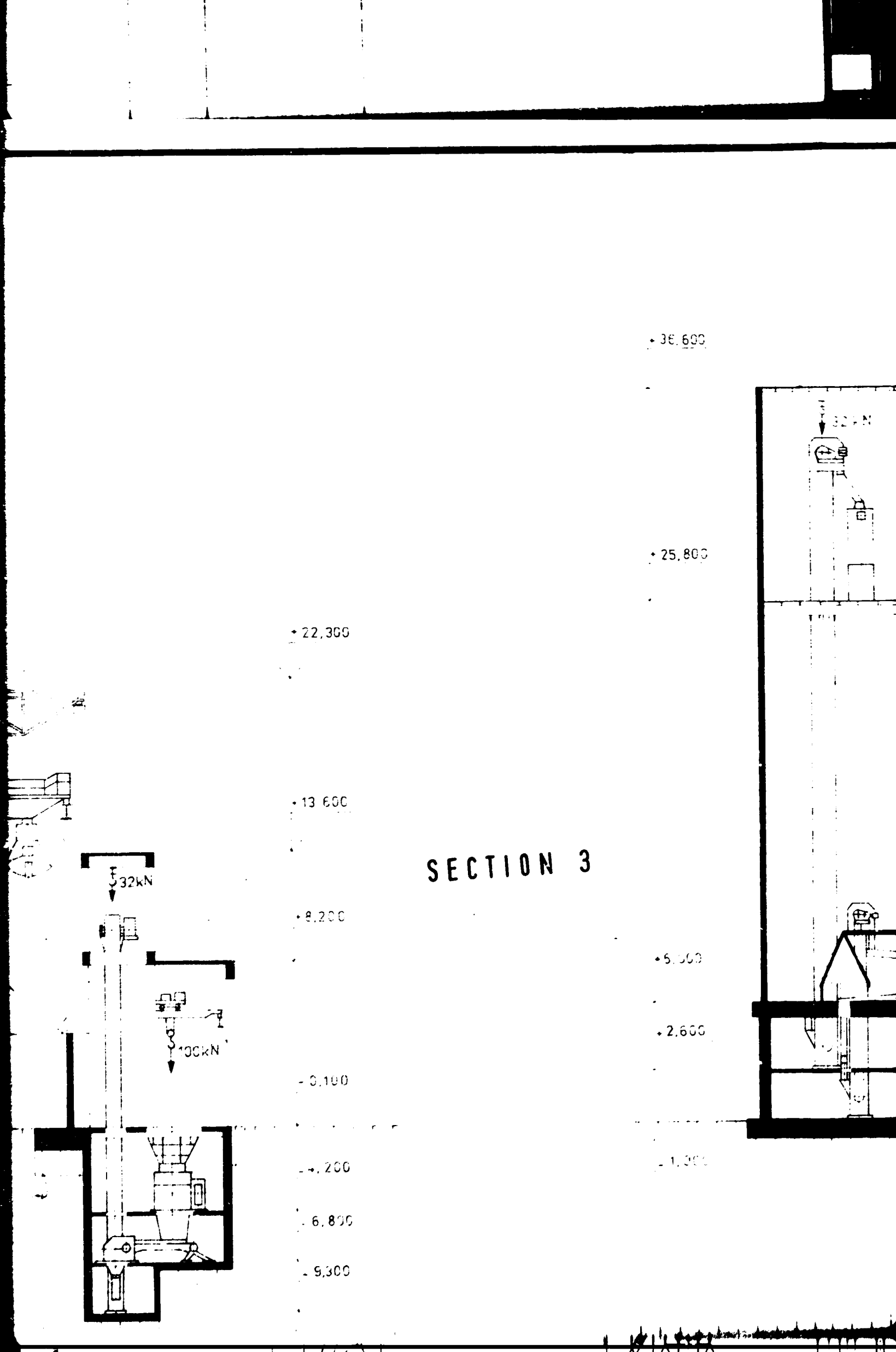
SECTION 1



SECTION 1

SECTION .2





+ 36.600

+ 25.800

+ 22.300

+ 13.600

SECTION 3

+ 8.200

+ 5.500

+ 2.600

- 0.100

- 1.000

- 1.200

- 6.800

- 9.300

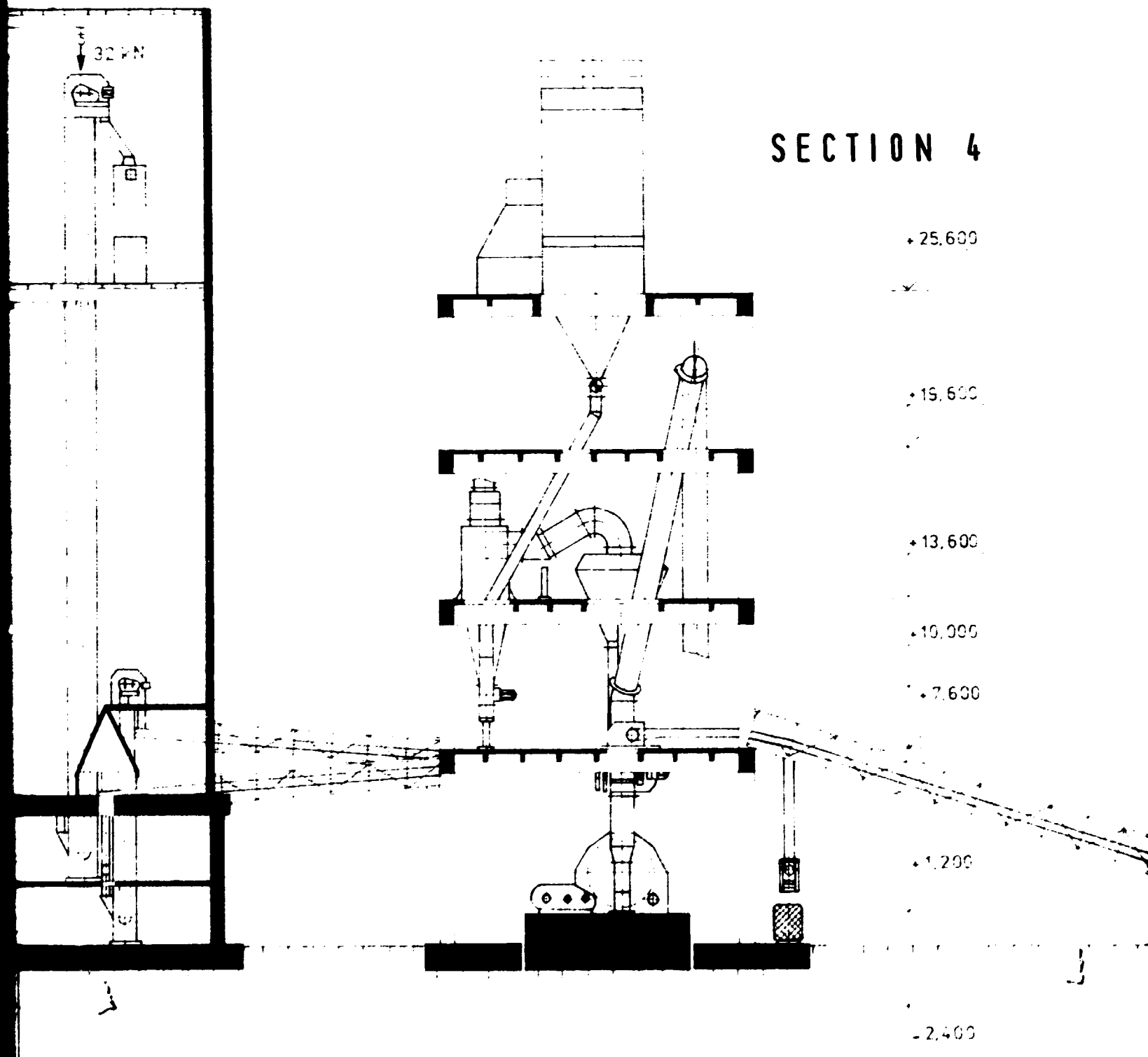
32kN

100kN

32kN

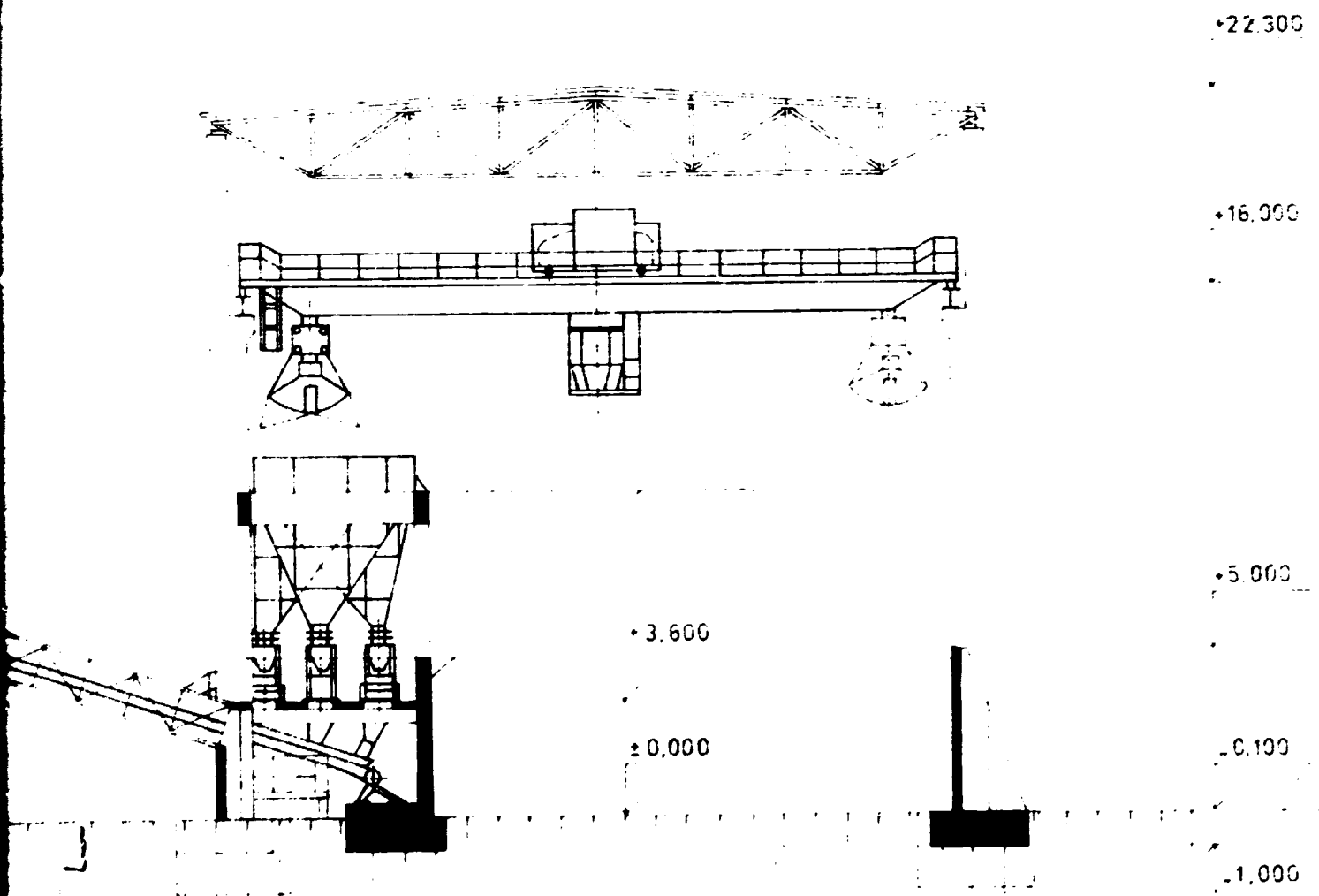
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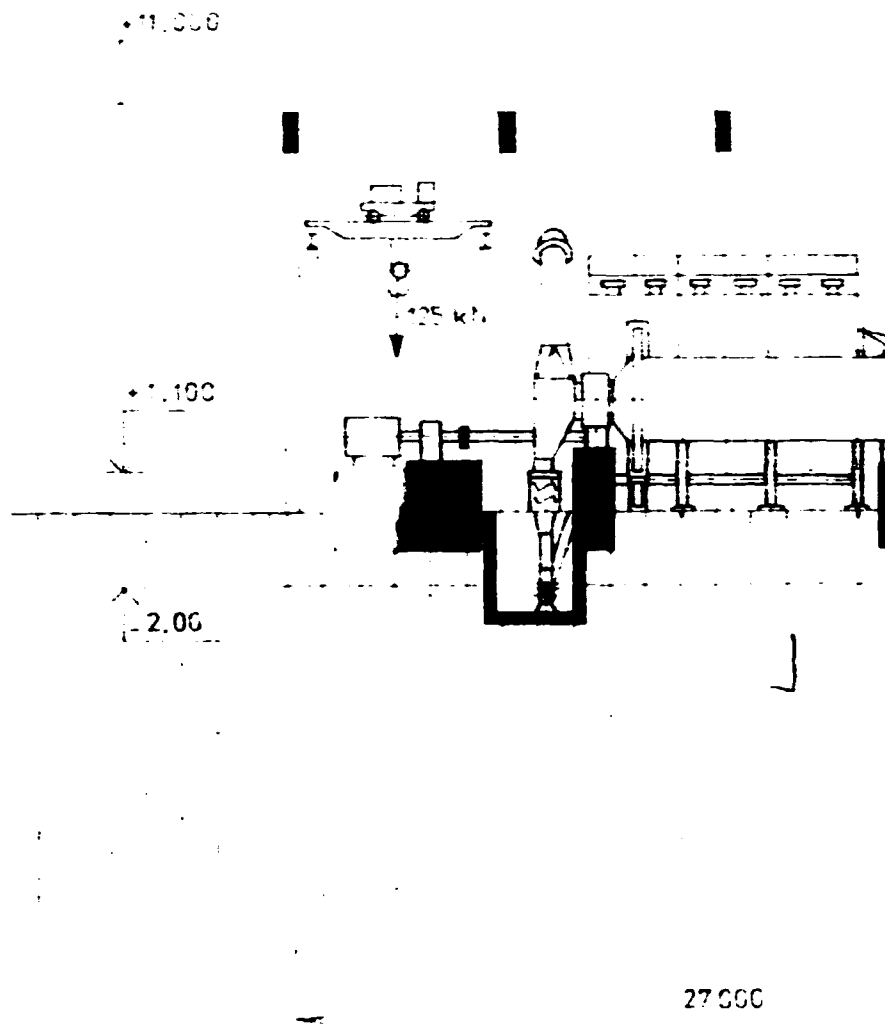
SECTION 4



SECTION 2

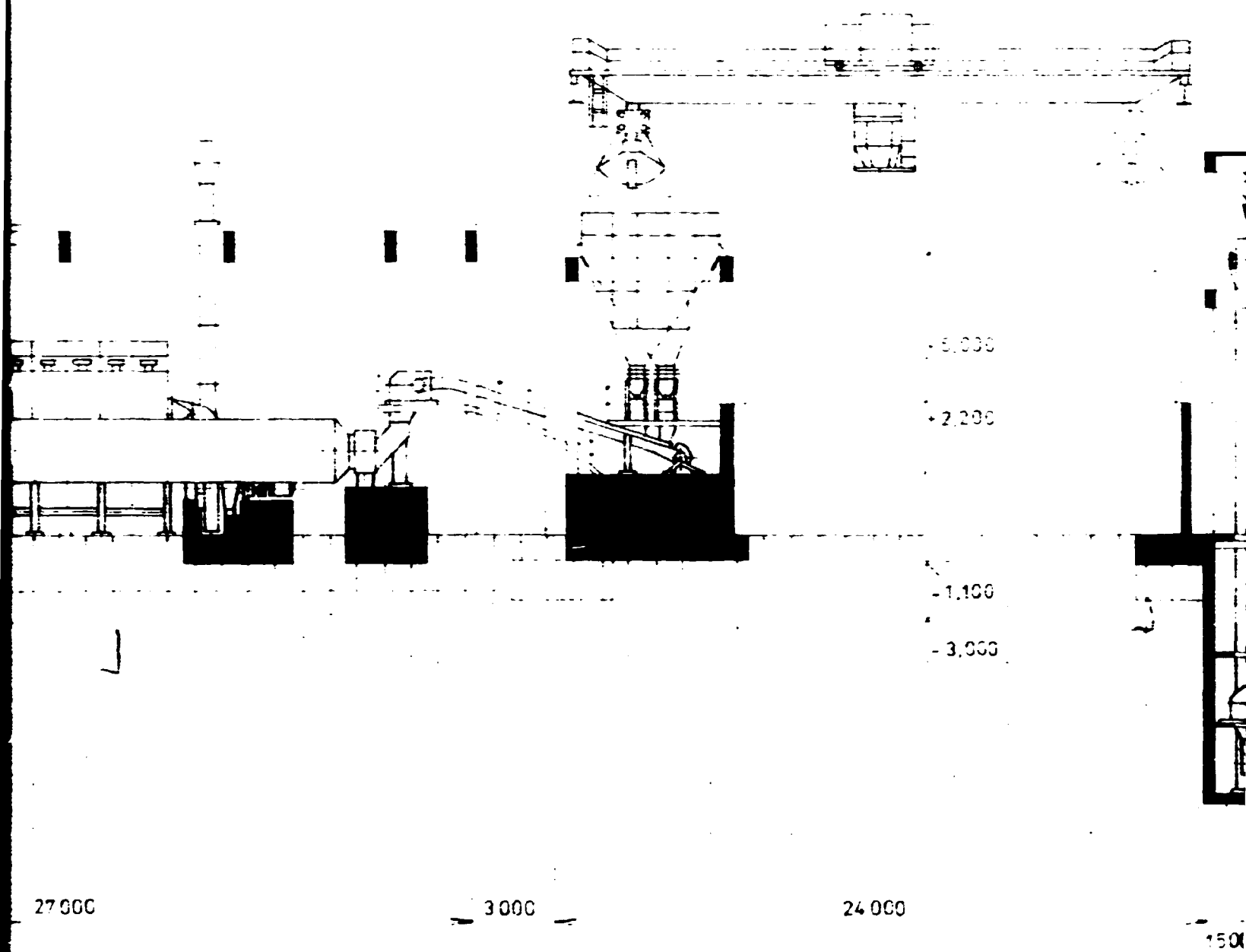
SECTION 5





SECTION 6

MI



SECTION 7

MINI-CEMENT F

+22.300

+13.600

+8.200

+0.100

-1.200

-6.800

-9.300

+5.000

+2.600

-1.000

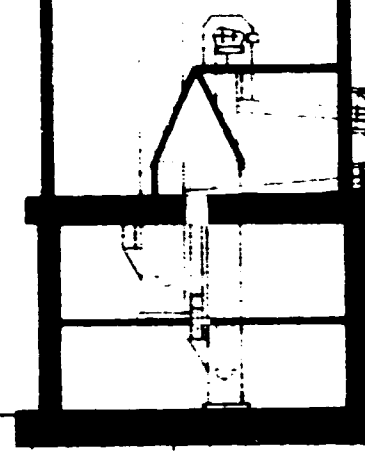
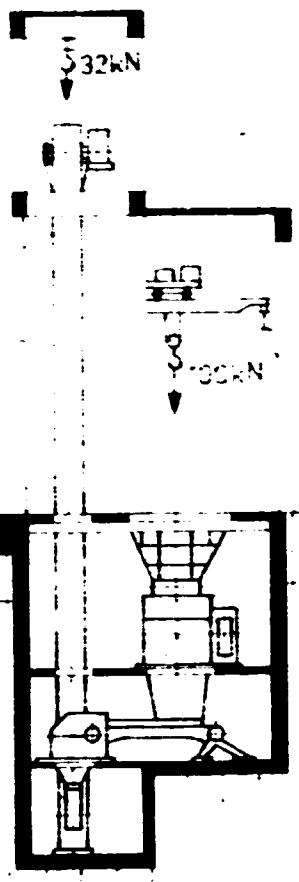
6000

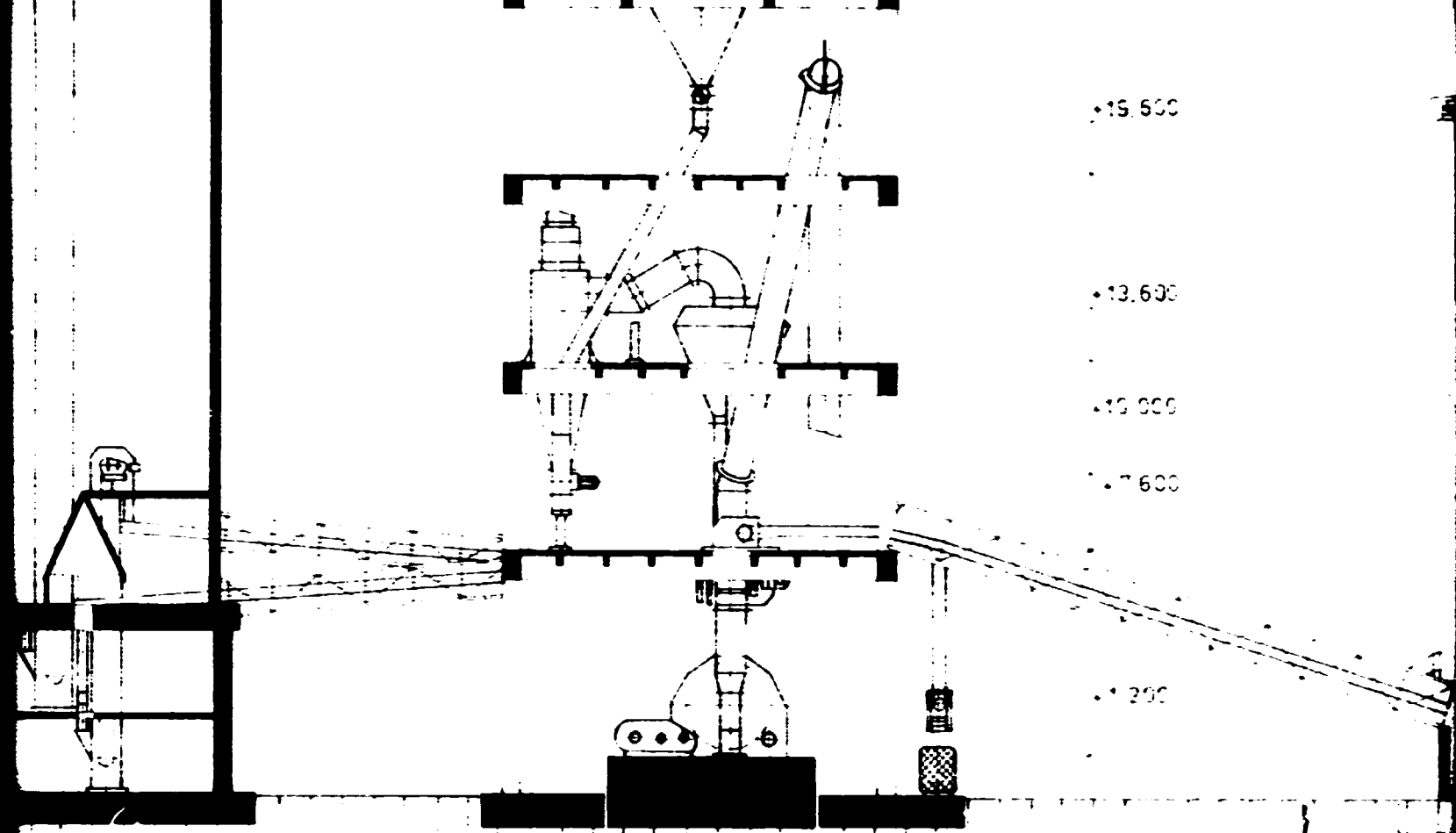
9000

1500

SECTION 8

PLANT IN LASER





+15.500

+13.600

+10.000

+7.600

+2.000

-2.400

9000

9000

12 000

18 000

SECTION 9

ASHIO - BURMA

MINI-CEM

+22 300

+16 000

+5 000

+3 600

+3 000

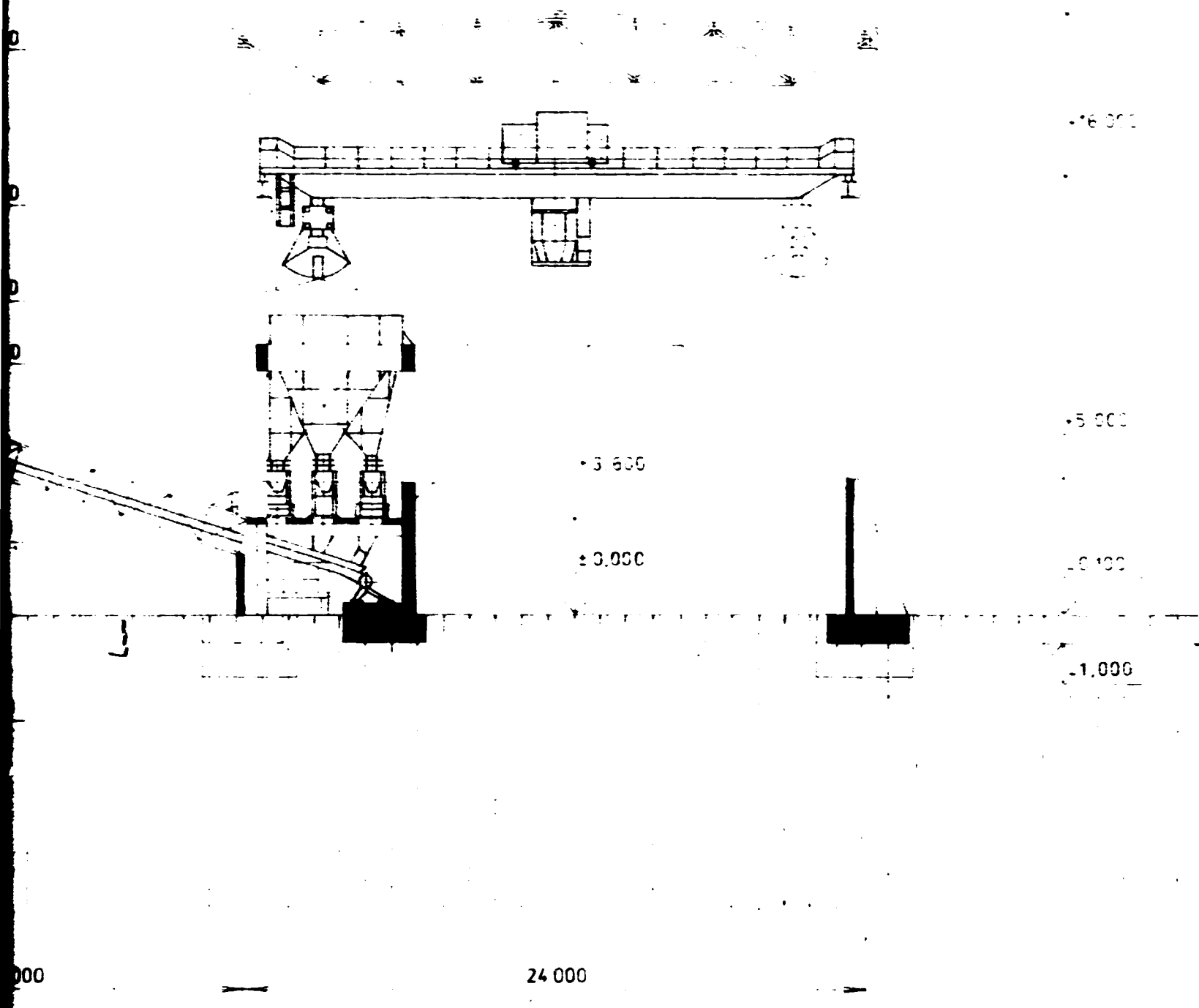
+0 100

-1 000

24 000

SECTION 10

A



EMENT PLAN I

16.000

5.000

0.100

1.000

SECTION 11

3

POLYTECHNA PRAGUE

KERAMOPROJEKT TRNÁVKA

DATE JUNE 1986

MINI-CEMENT PLANT IN LASHIO-BURMA

FILES NO. 62 8904

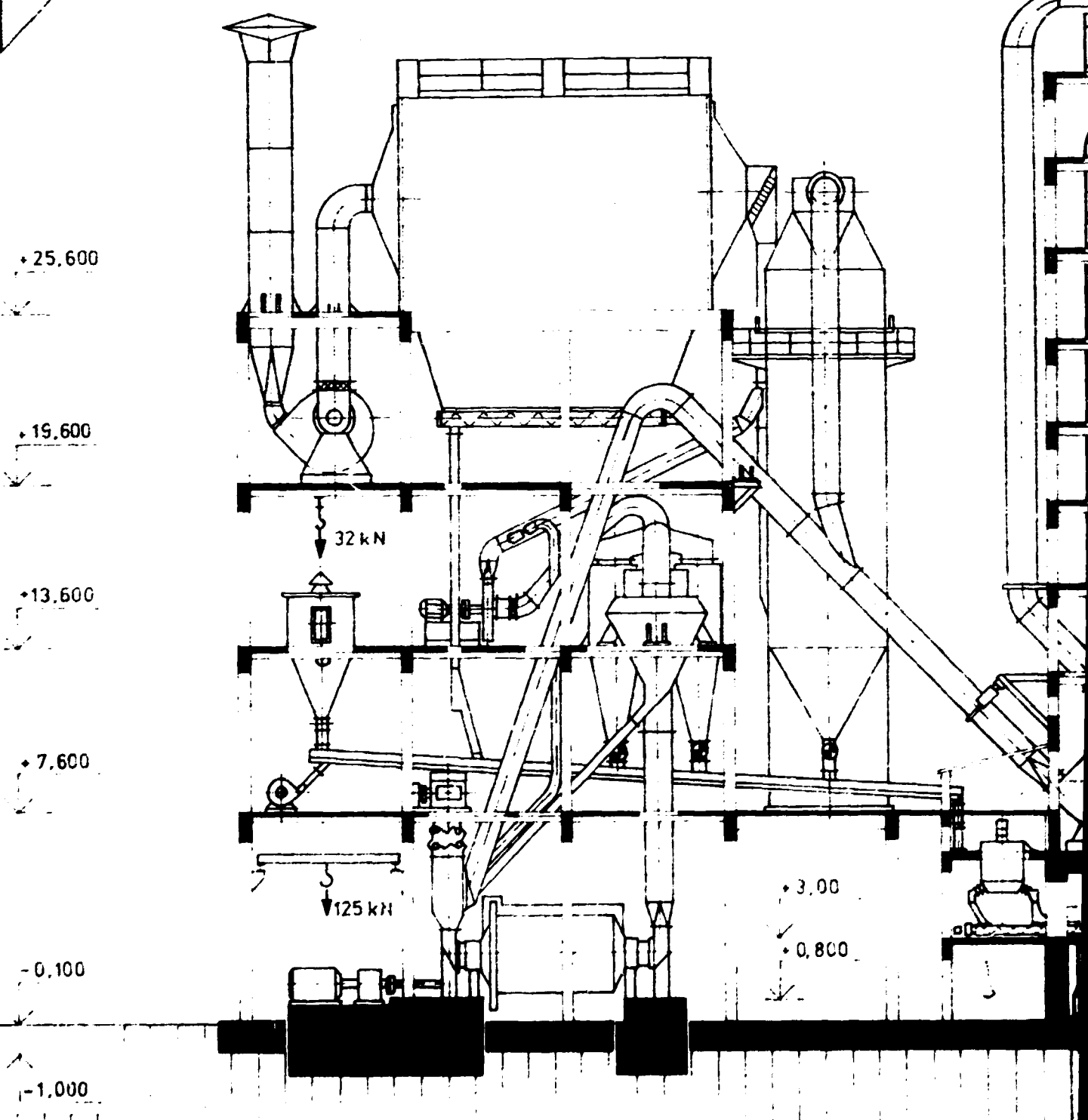
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SCALE 1:100

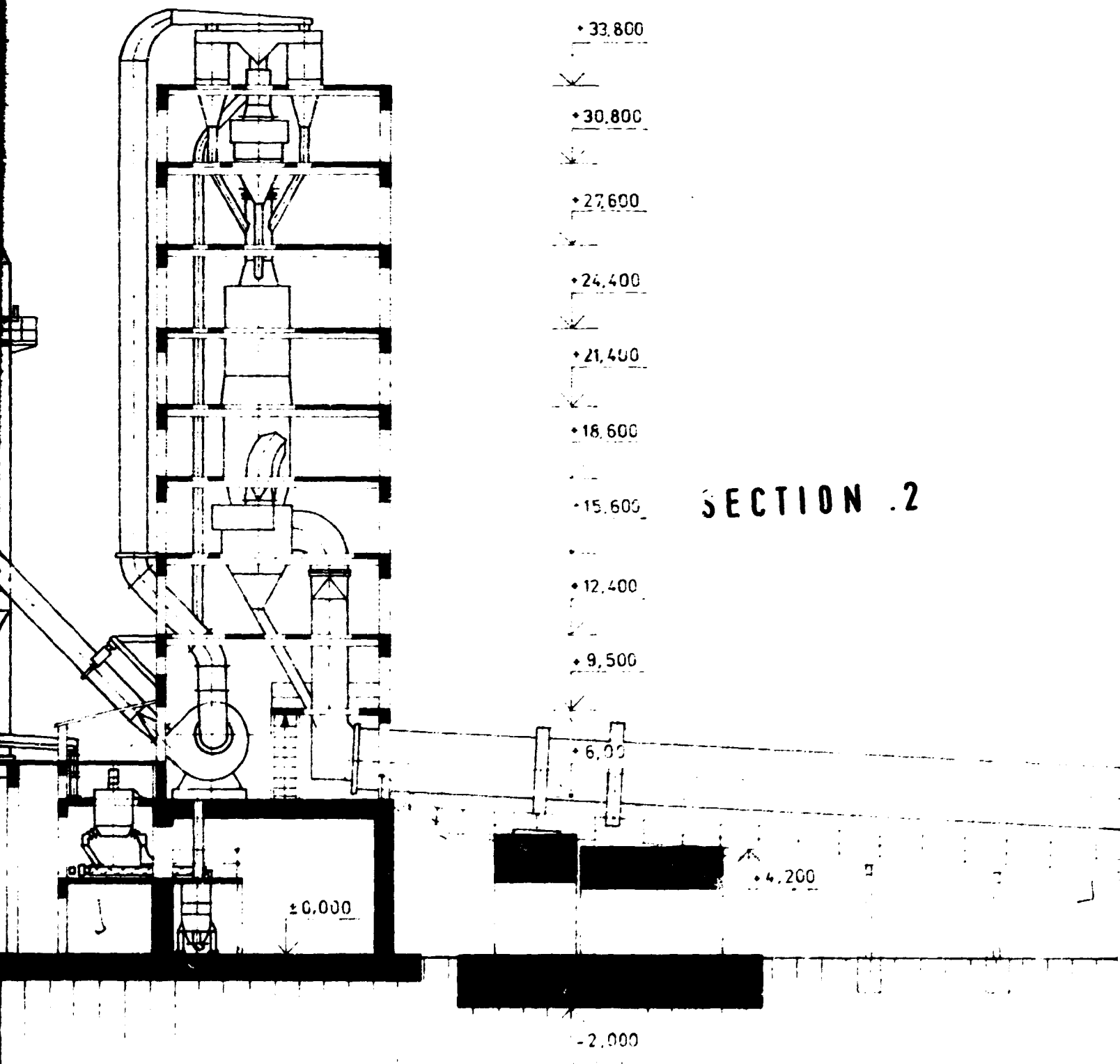
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LONGITUDINAL

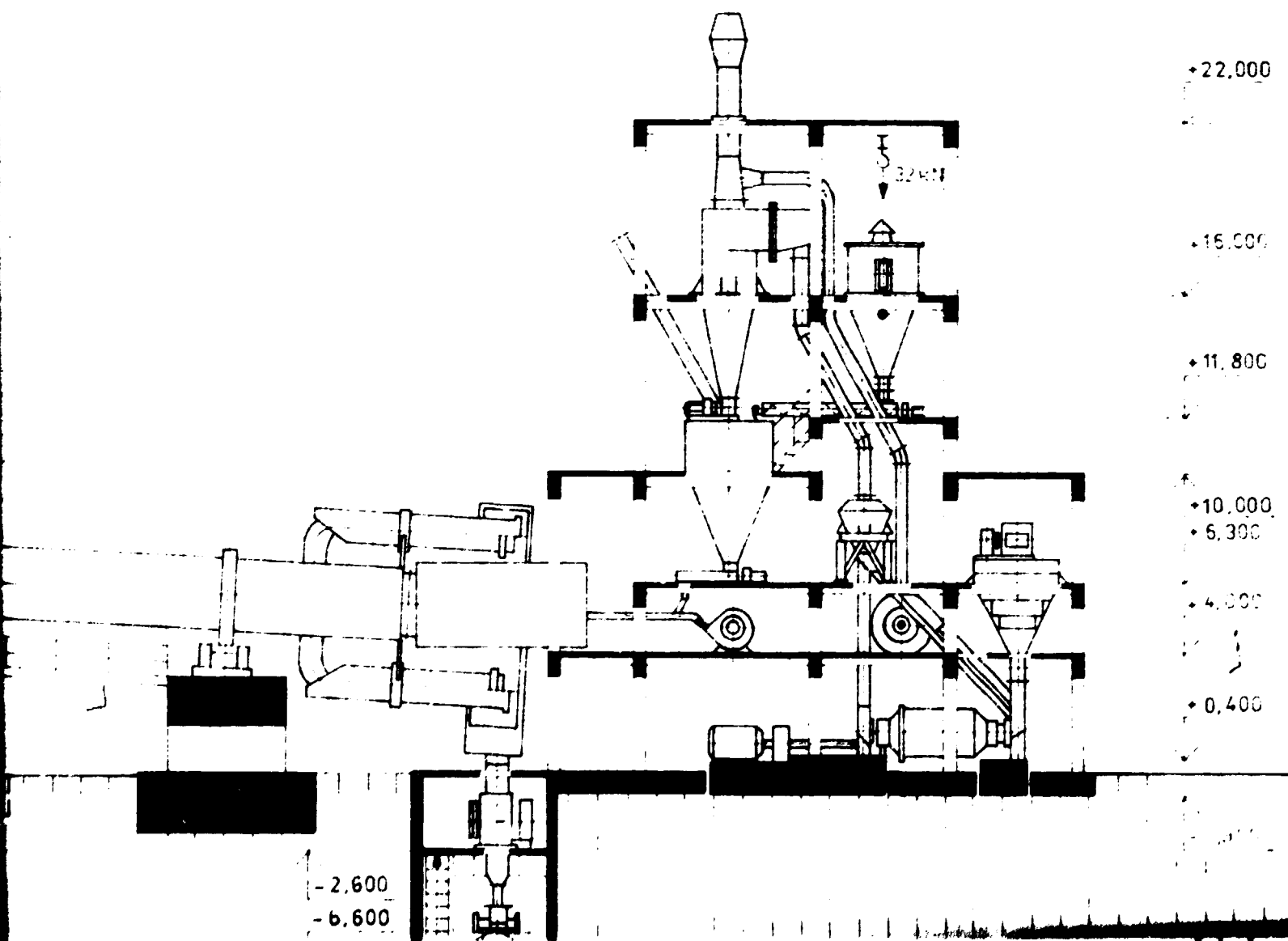
SECTION 1



PRINCIPAL SECTION 3



SECTION 3



+22.000
+15.000
+11.800
+10.000
+6.300
+4.800
+0.400

-2.600
-6.600

SECTION 4

+22.000

+15.000

+11.800

+10.000

+6.300

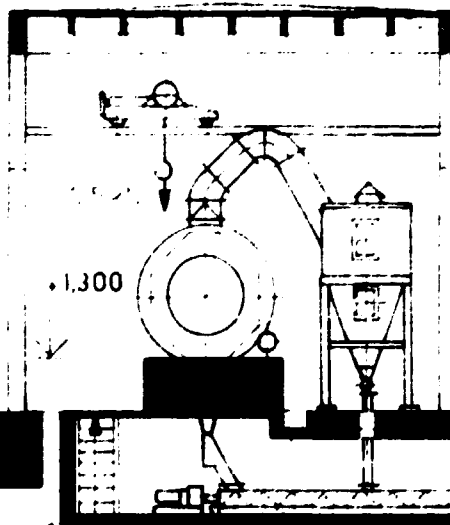
+4.000

+0.400

+11.000

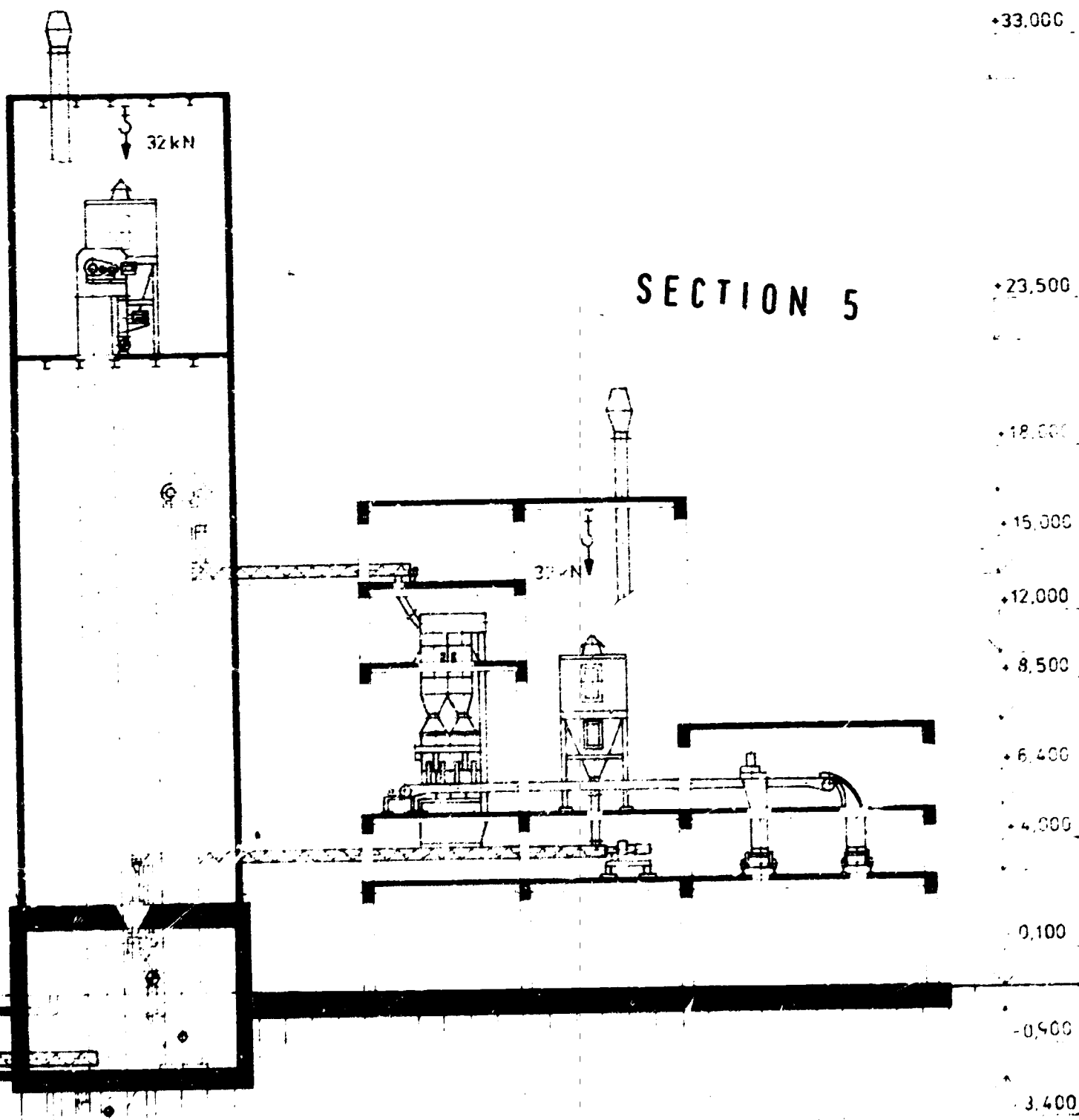
+3.300

-0.500



-3.000

-5.600



9.300

+25.600

+19.600

+13.600

+7.600

-0.100

-1.000

30 kN

125 kN

+3.00

+0.800

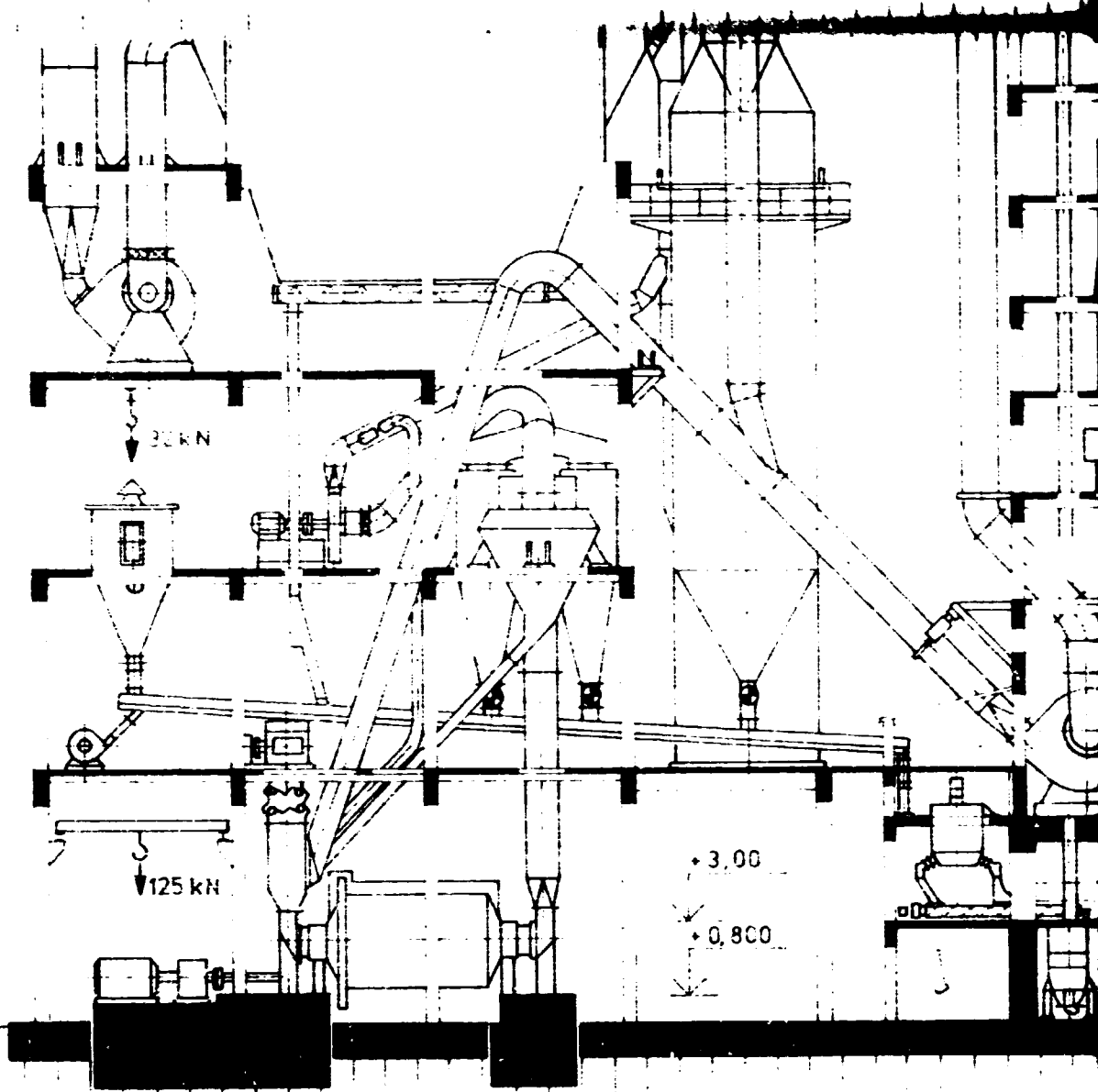
24.000

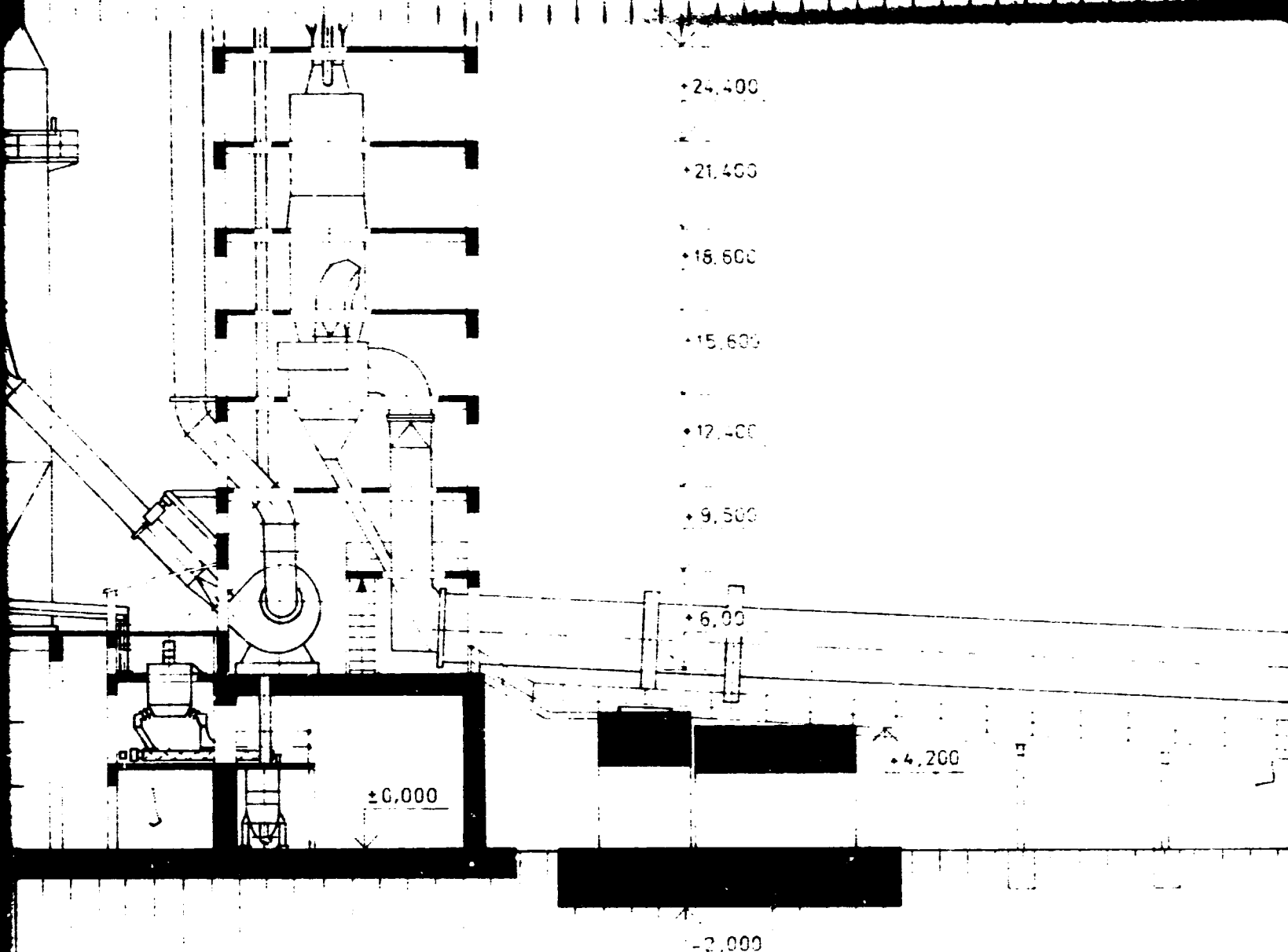
4.000

6.000

SECTION 6

MIR





SECTION 7

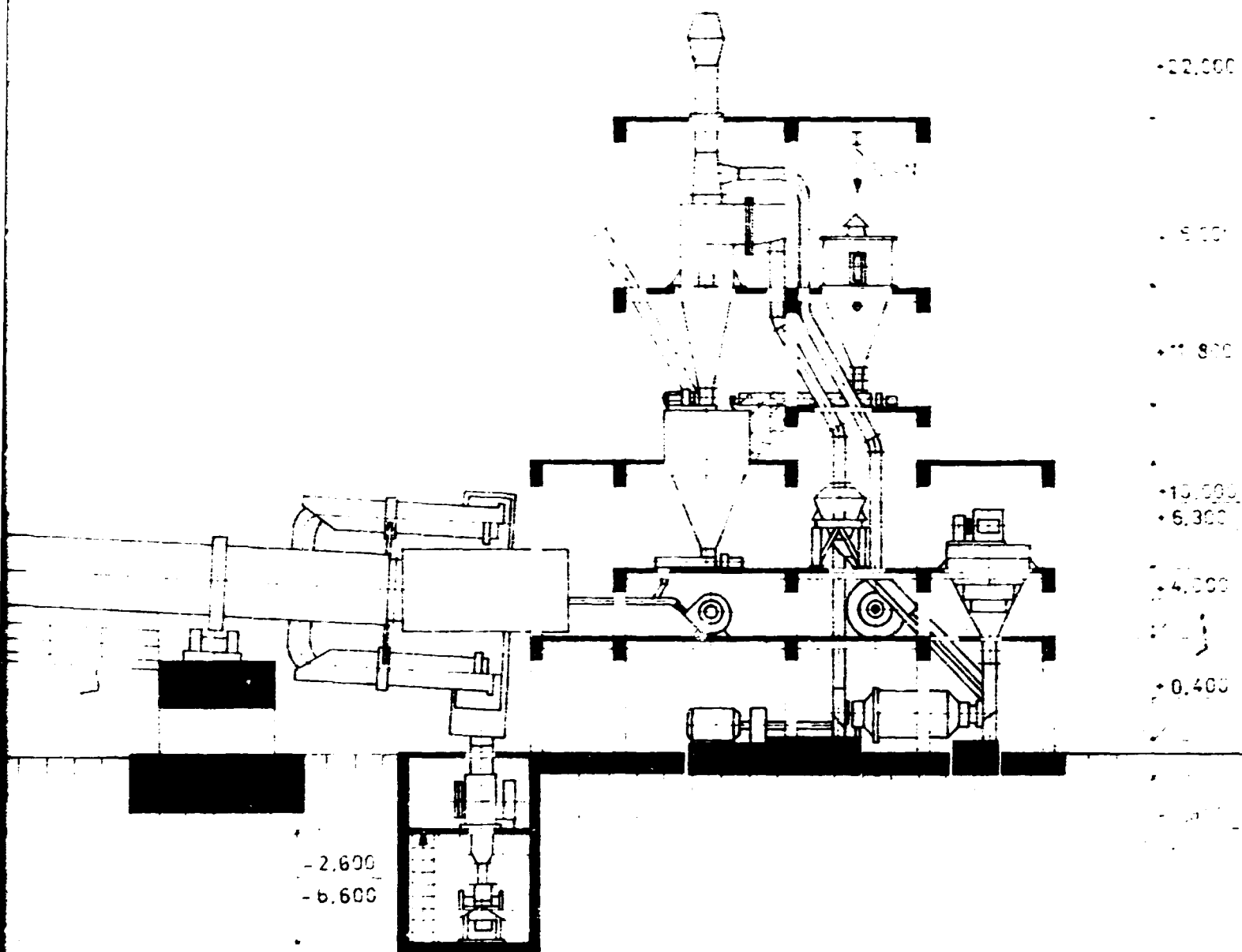
4 000

5 000

9 000

44 000

MINI-CEMENT



SECTION 8

18 000

180 500

PLANT IN LAS

+22.000

+16.000

+11.800

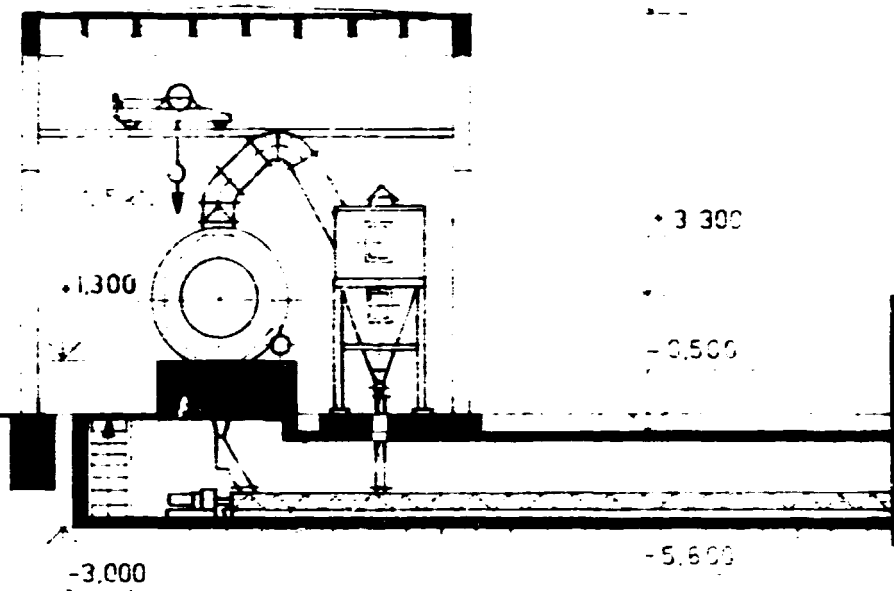
+10.000

+6.300

+4.000

+0.400

SECTION 9

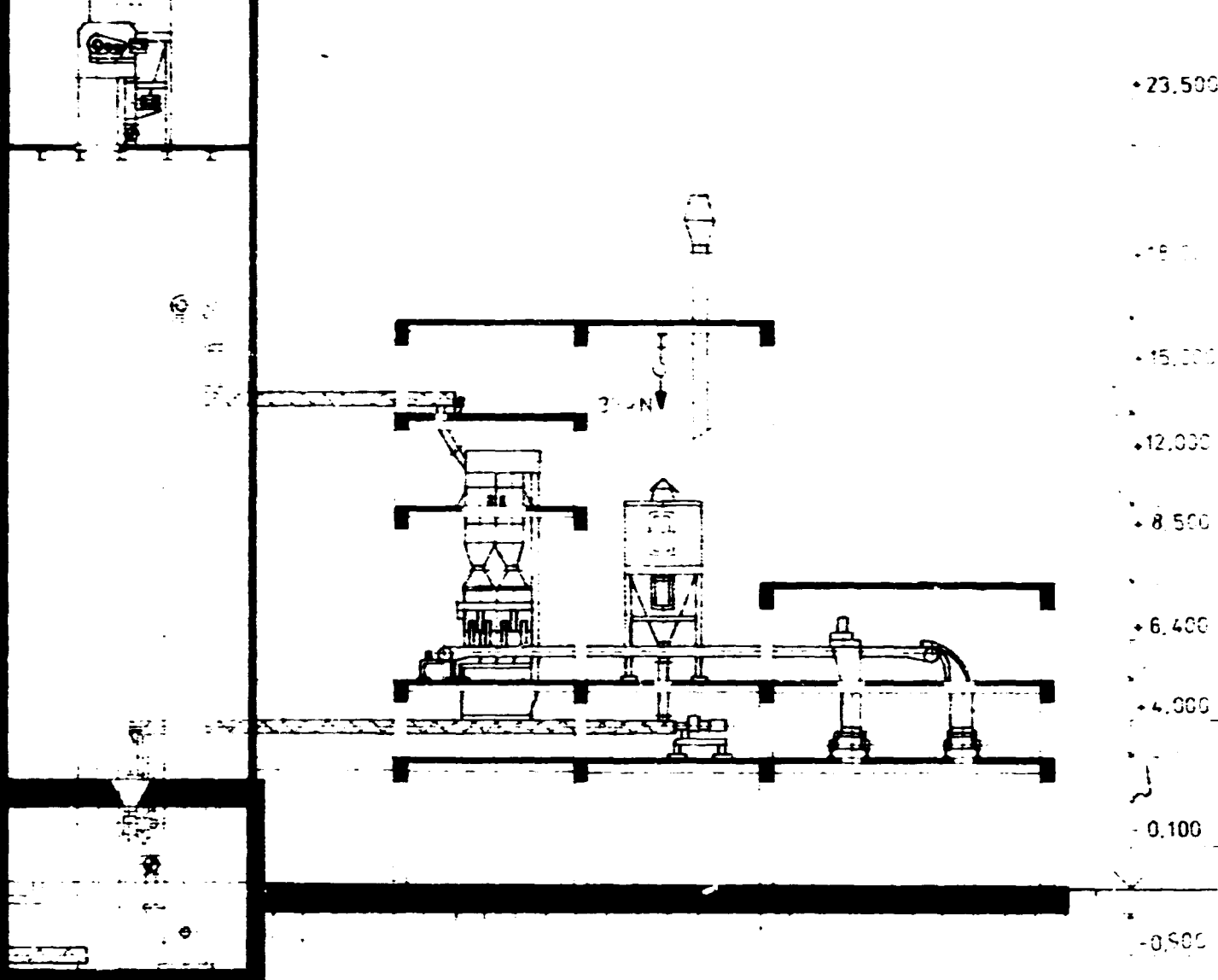


21 000

12 000

12 000

ASHIO - BURMA



+23.500

+19.000

+15.000

+12.000

+8.500

+6.400

+4.000

-0.100

-0.500

-3.400

9 000

4 500

12 000

9 000

SECTION 10

POLY
MIN
ION

+23.500

+18.00

+15.000

+12.000

+8.500

+6.400

+4.000

-0.100

-0.500

-3.400

SECTION 11

4

POLYTECHNIK PRAGUE

INSTRUMENT PROJECT

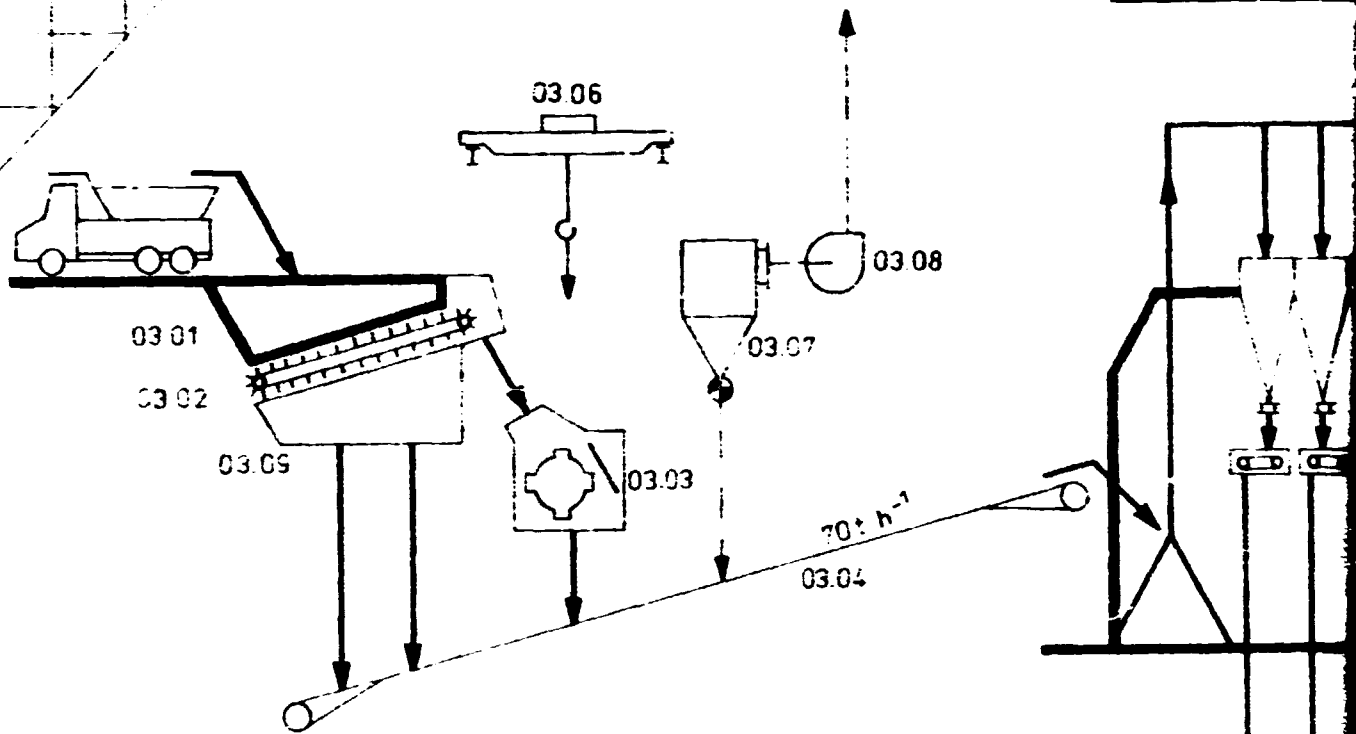
DATE JUNE 1989

MINI-CEMENT PLANT IN LASHIO - BURMA

EMERSON No. 4984

LONGITUDINAL SECTION

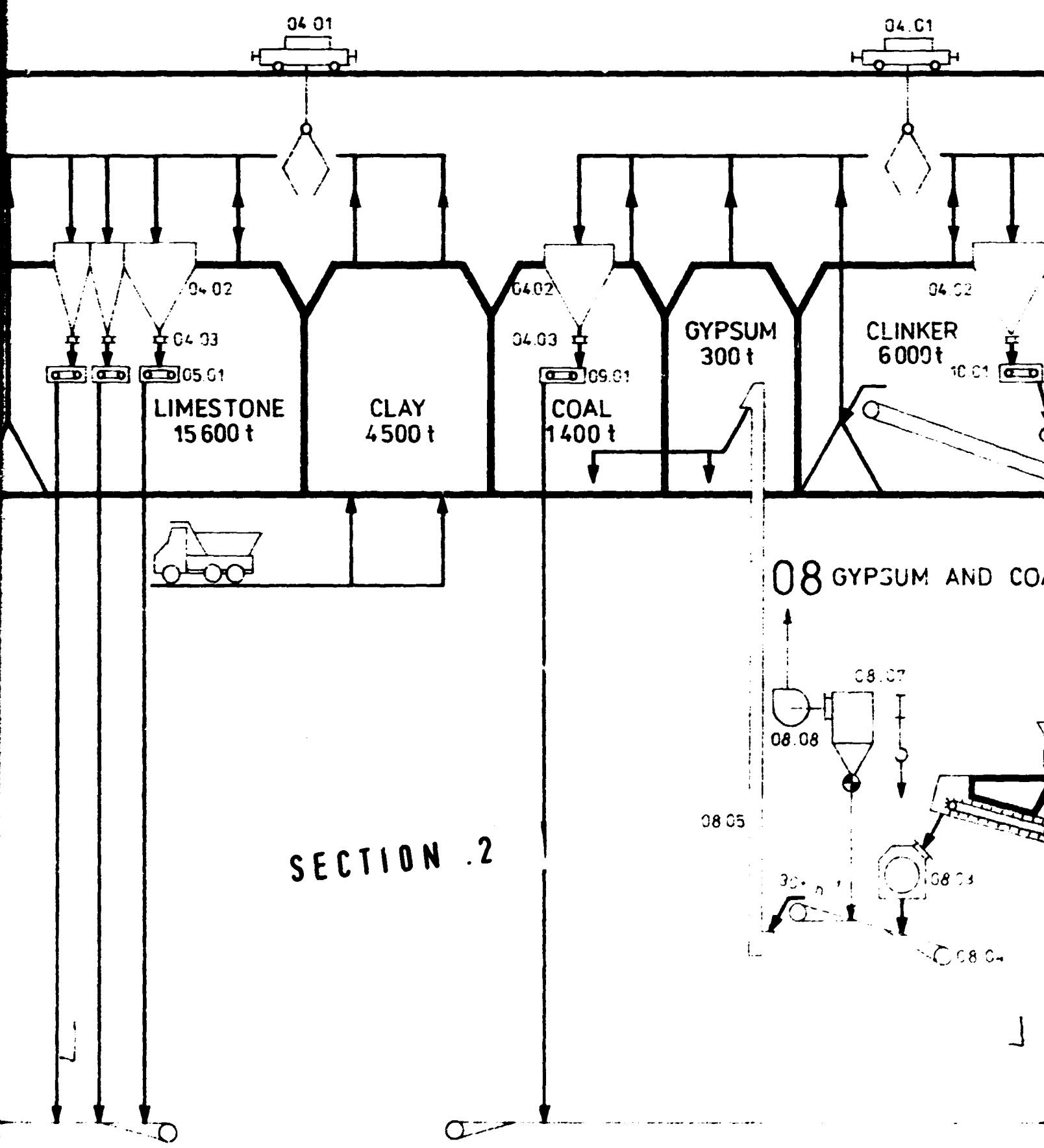
DRAWING NO. 4



03 RAW MATERIAL CRUSHING

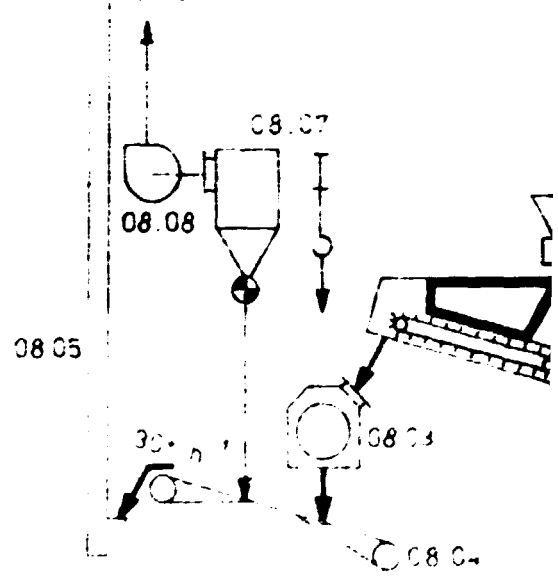
SECTION 1

04 STORAGE

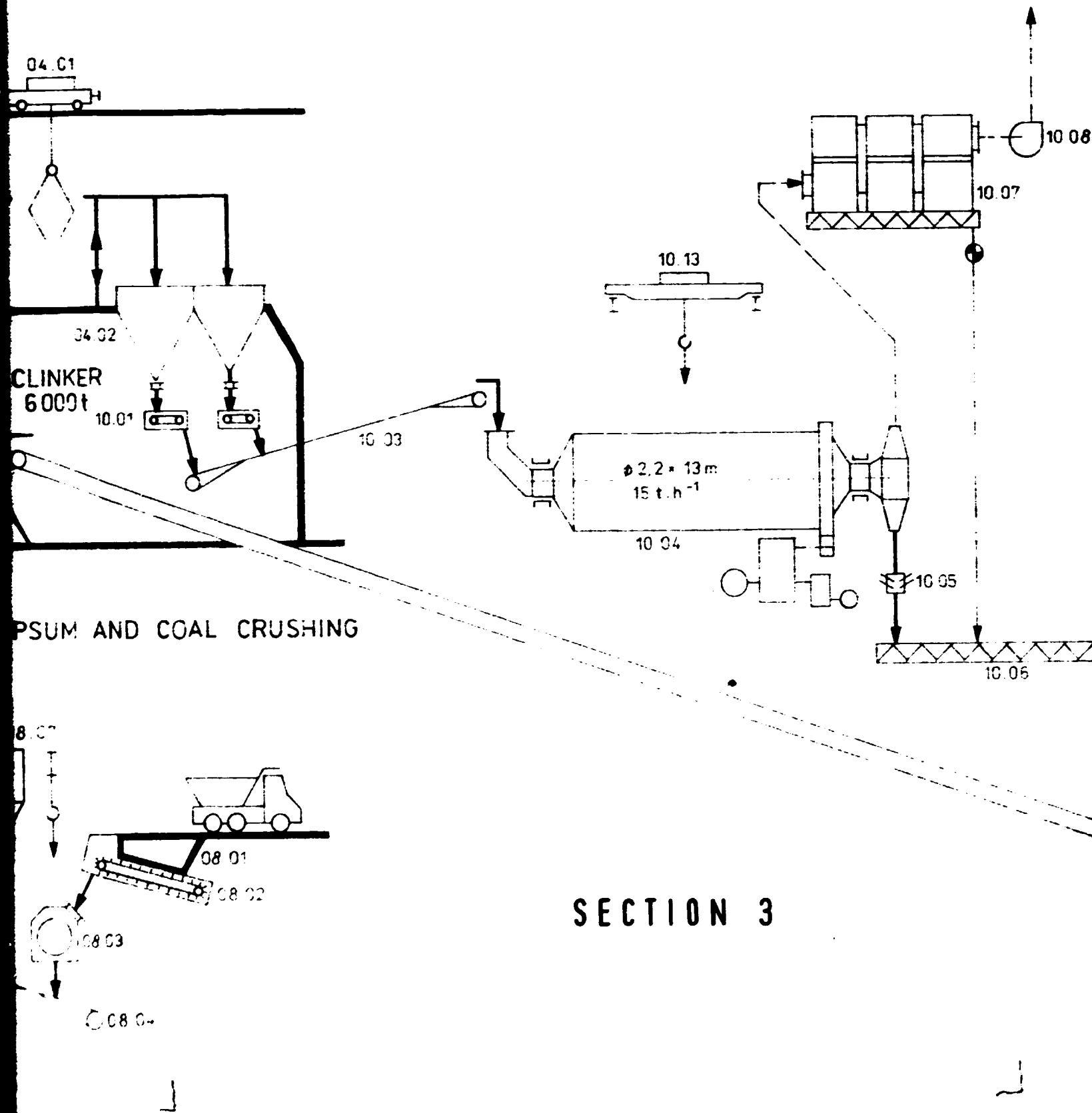


SECTION .2

08 GYPSUM AND COAL



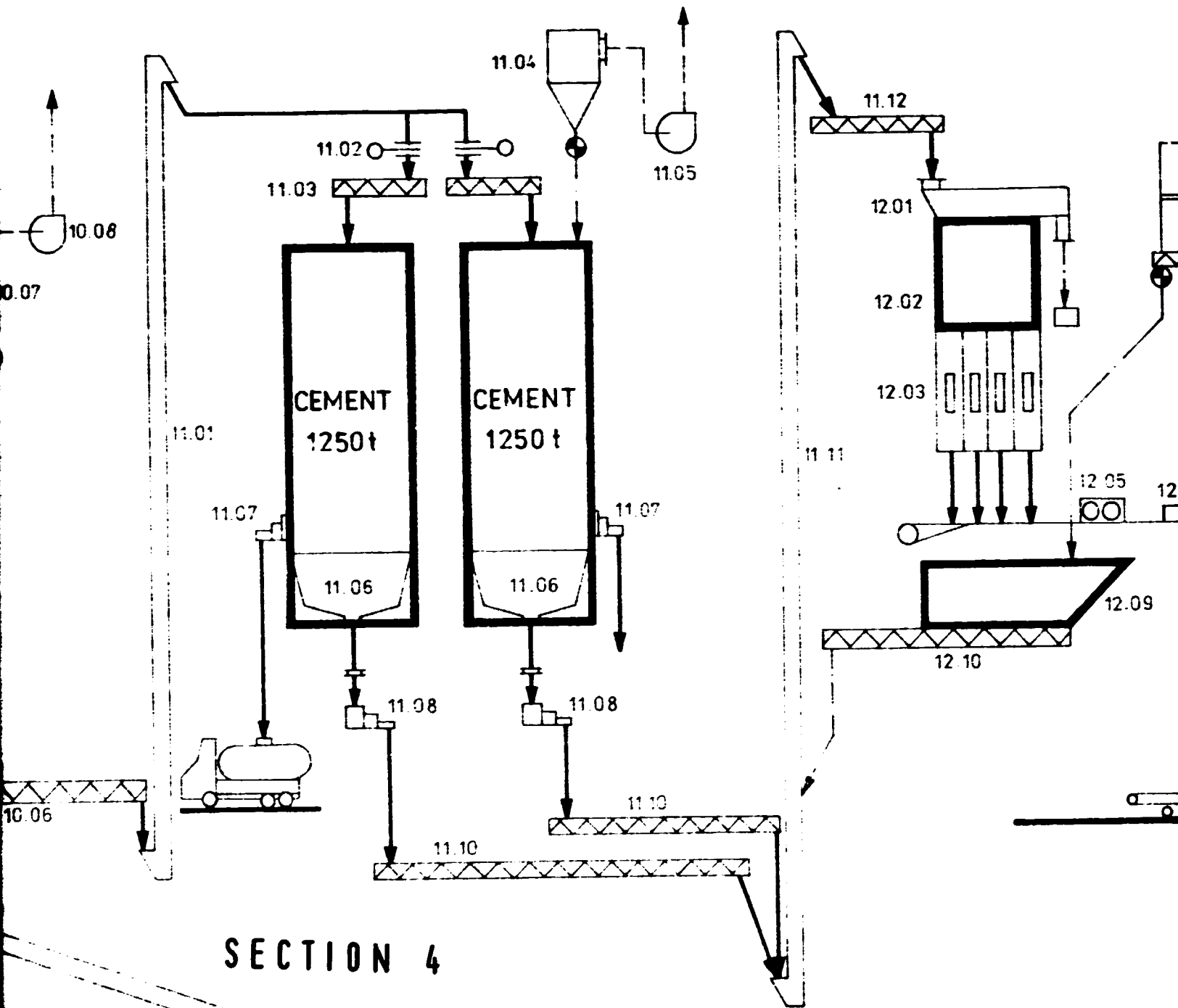
10 CEMENT GRINDING



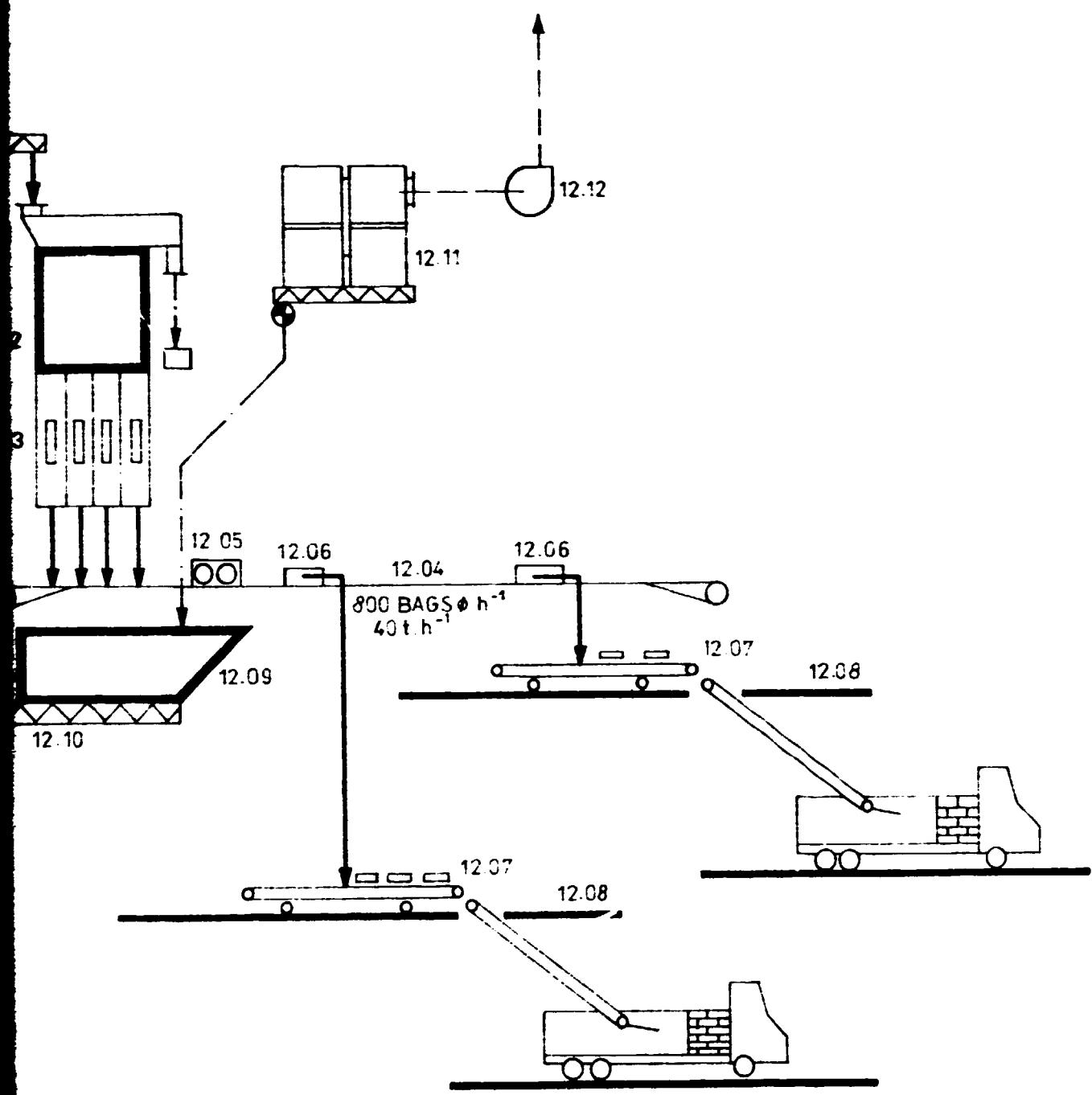
SECTION 3

11 CEMENT STORAGE

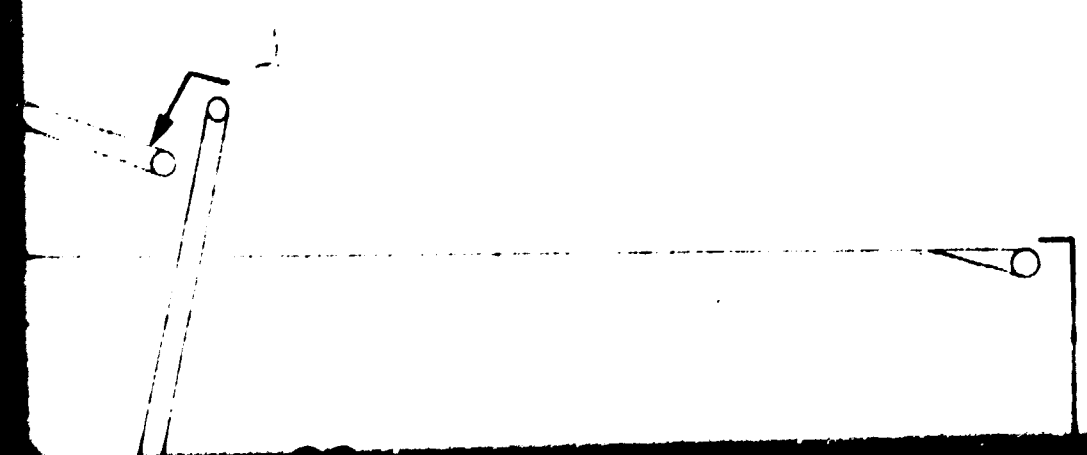
12 PACKING AND LOADING



UNLOADING AND LOADING



SECTION 5

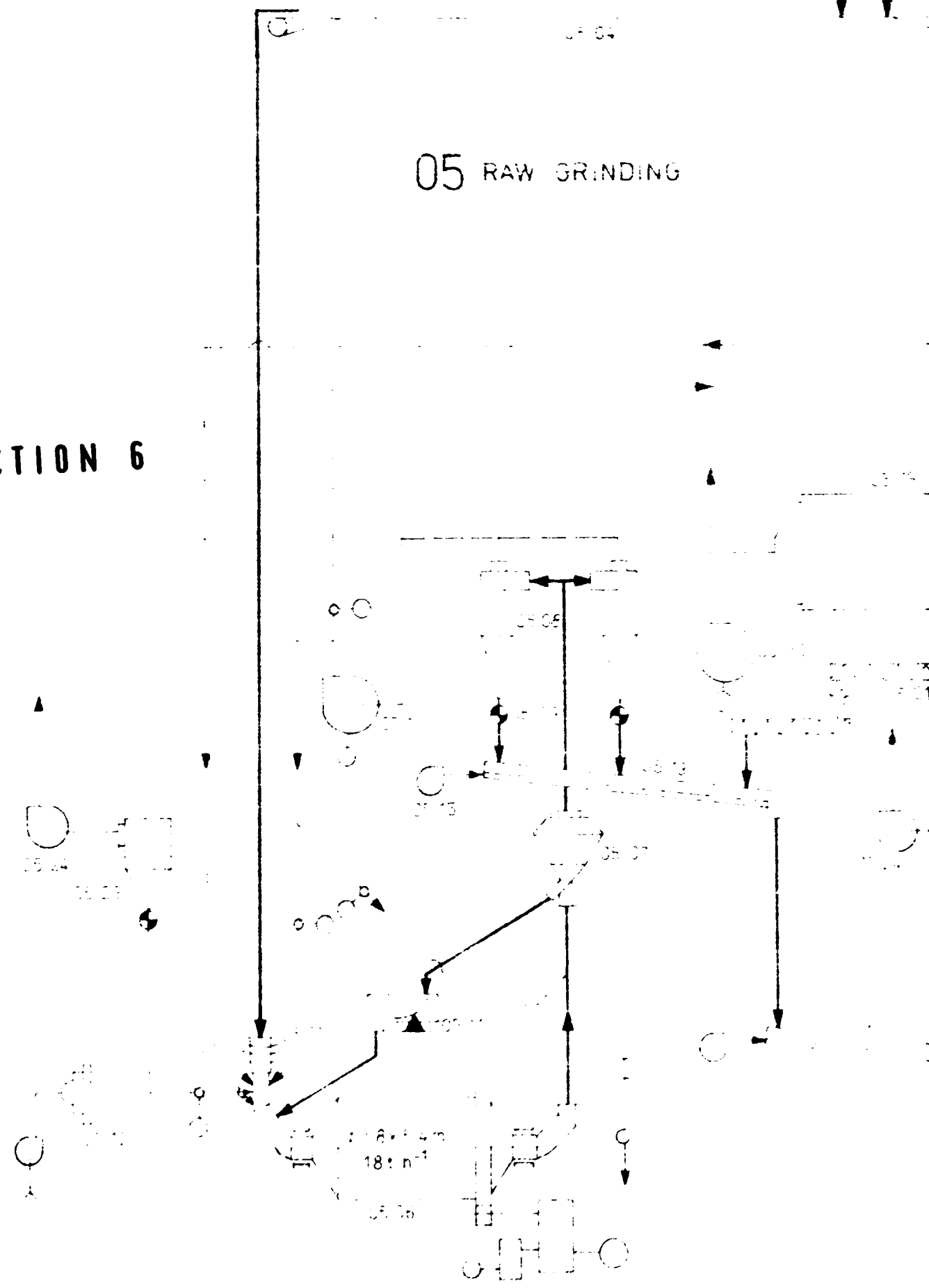


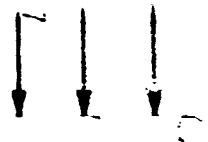
- 2.600
- 6.600



SECTION 6

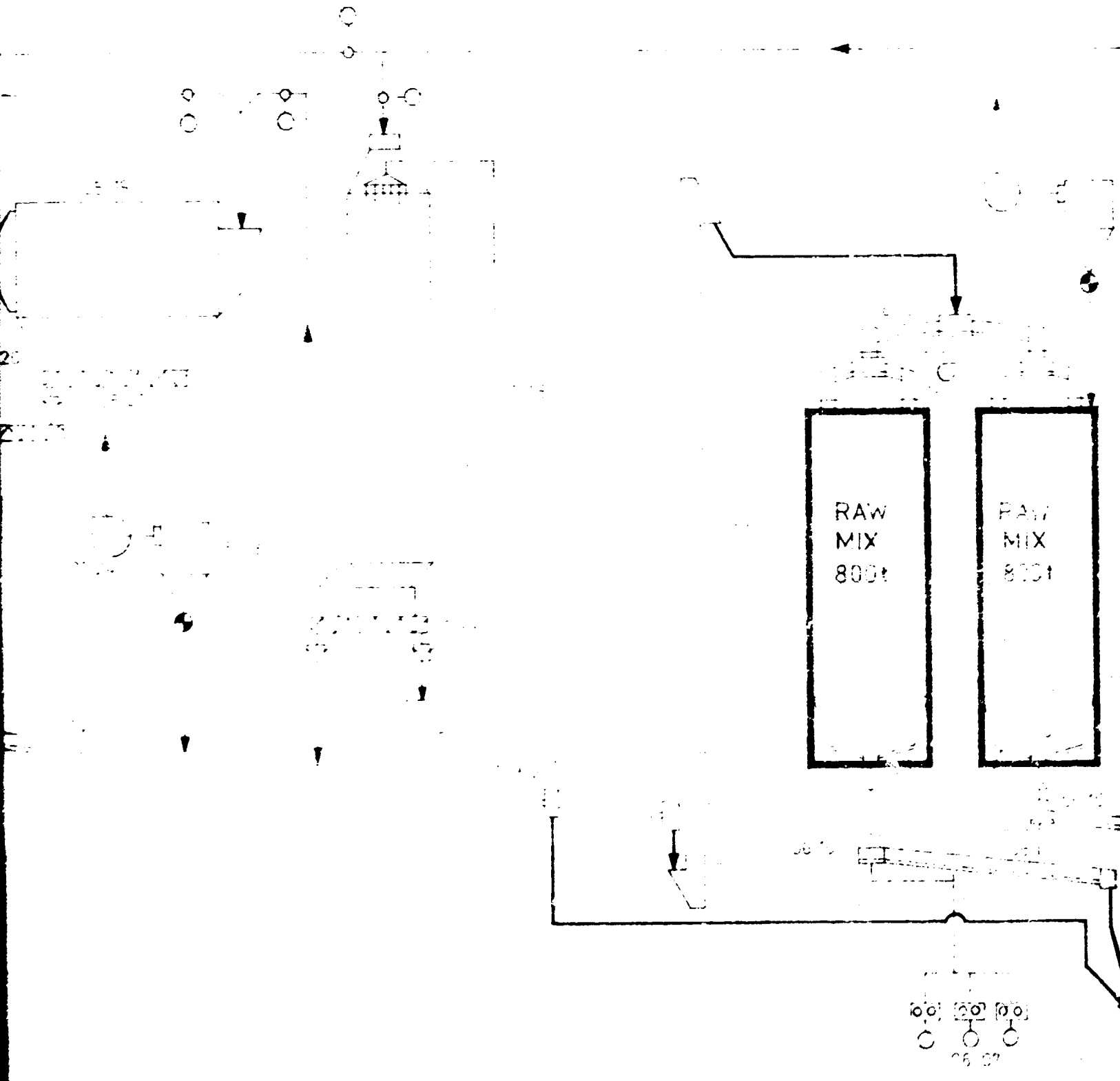
05 RAW GRINDING





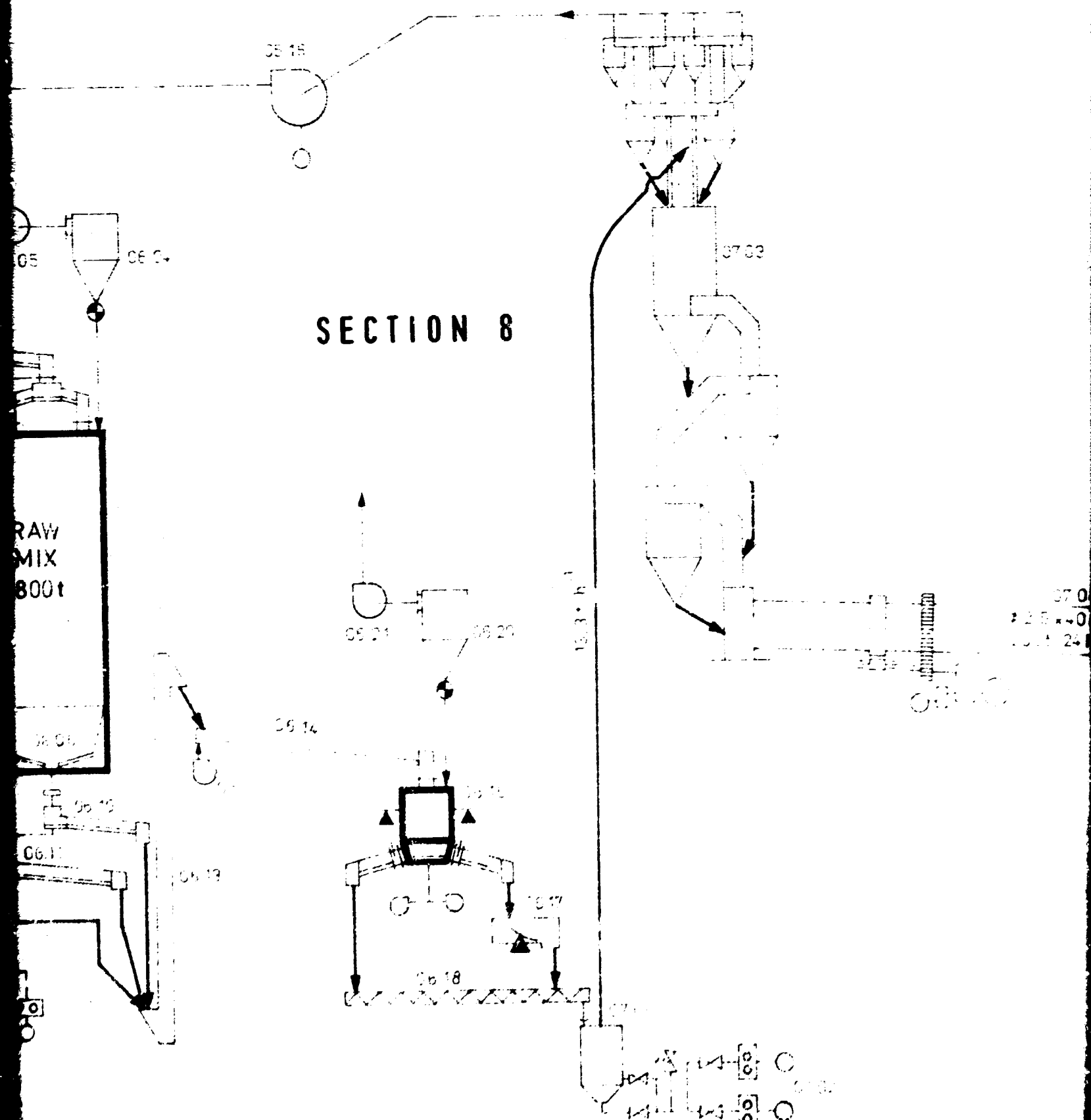
06 HOMOGENIZING

SECTION 7



07 CLINKER BURNING AND COOLING

SECTION 8

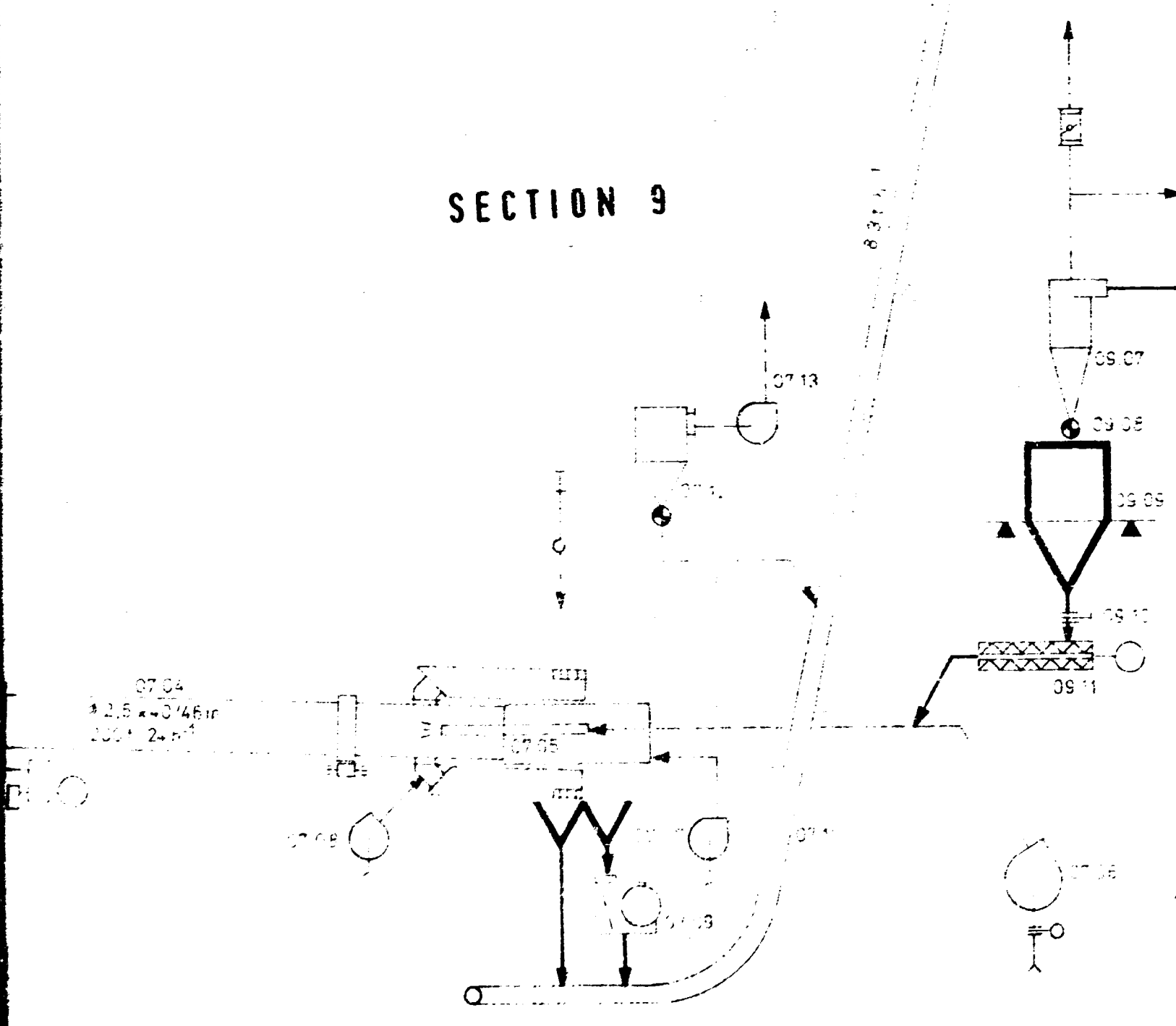


AND COOLING

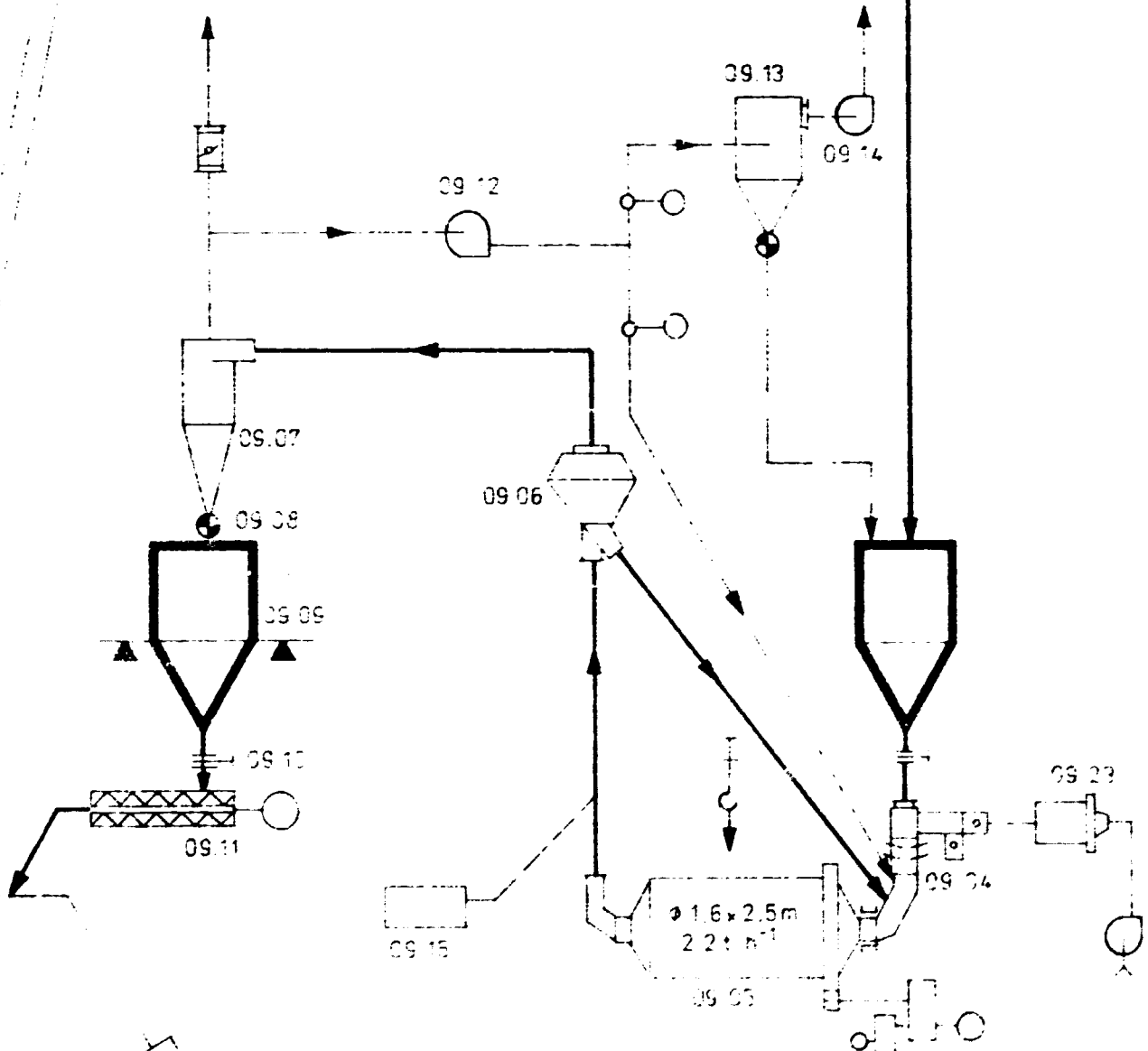
09 COA

SECTION 9

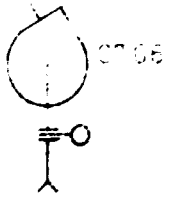
831.1



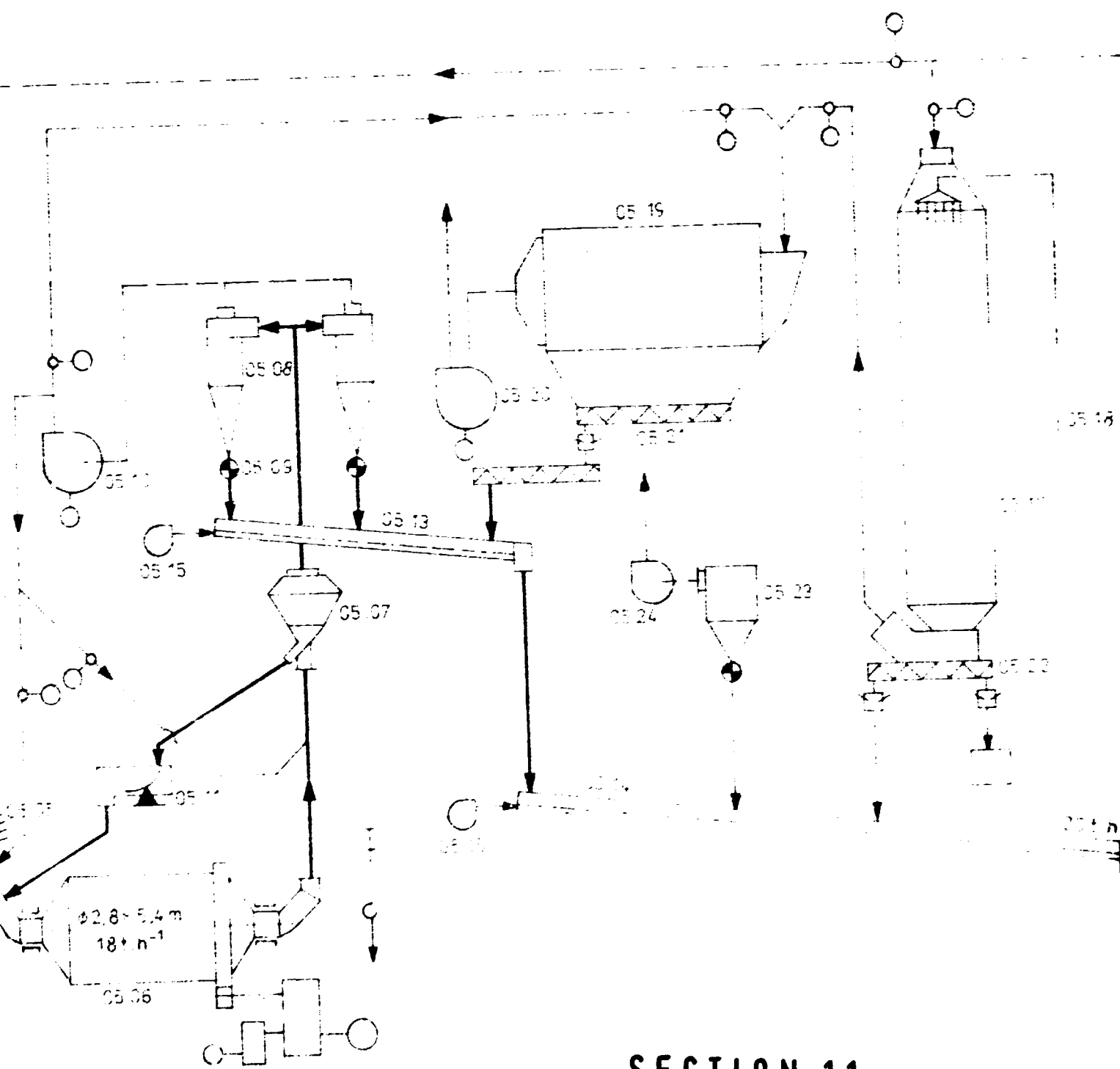
09 COAL GRINDING



SECTION 10



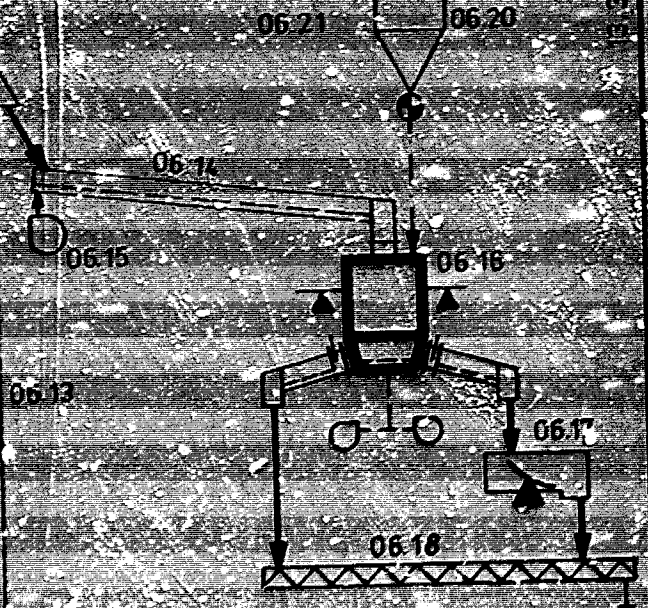
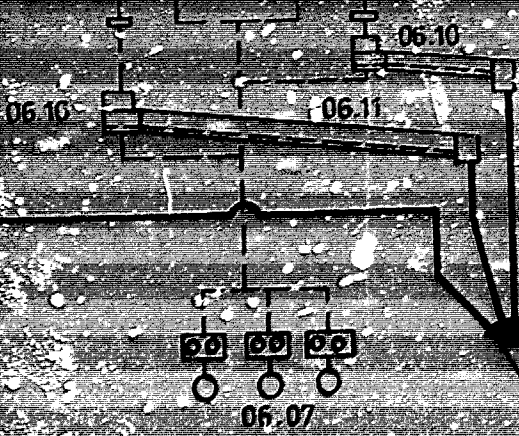
5



SECTION 11

MINI-CEMENT

05-15



SECTION 12

PLANT IN LASH



C7.06

ø 2.5 x 40/46 m
2001 kg

C7.05

C7.08

C7.07

C7.02

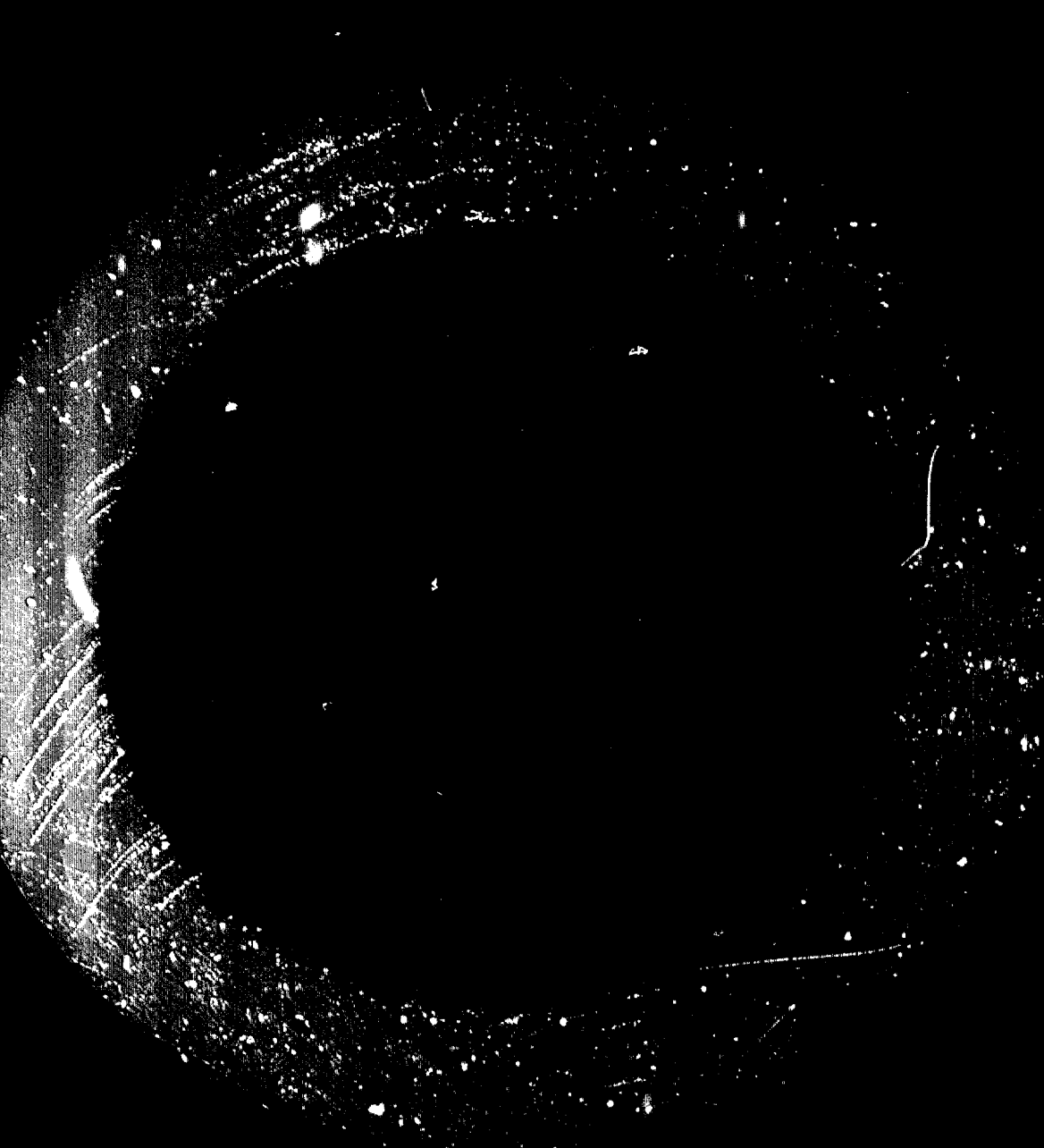
SECTION 13

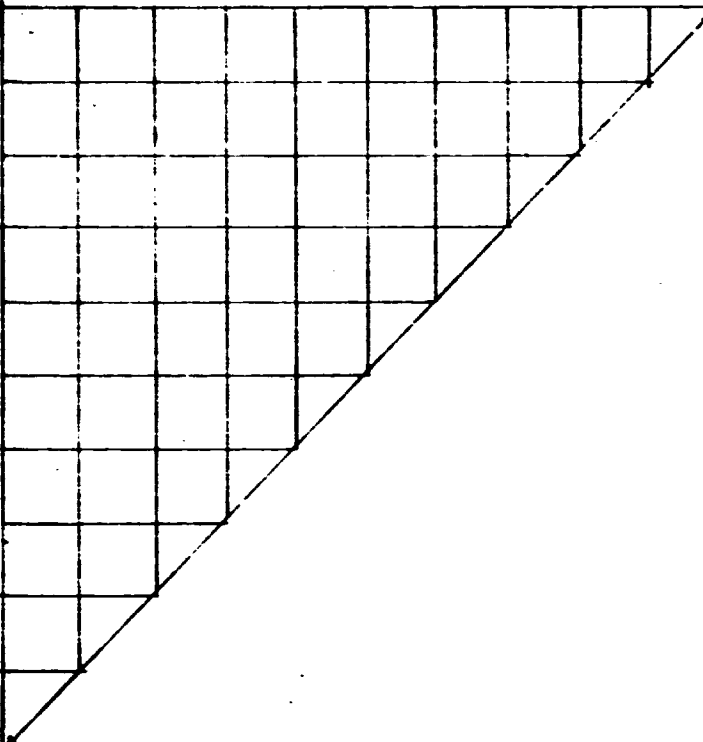
SHIP - BURMA



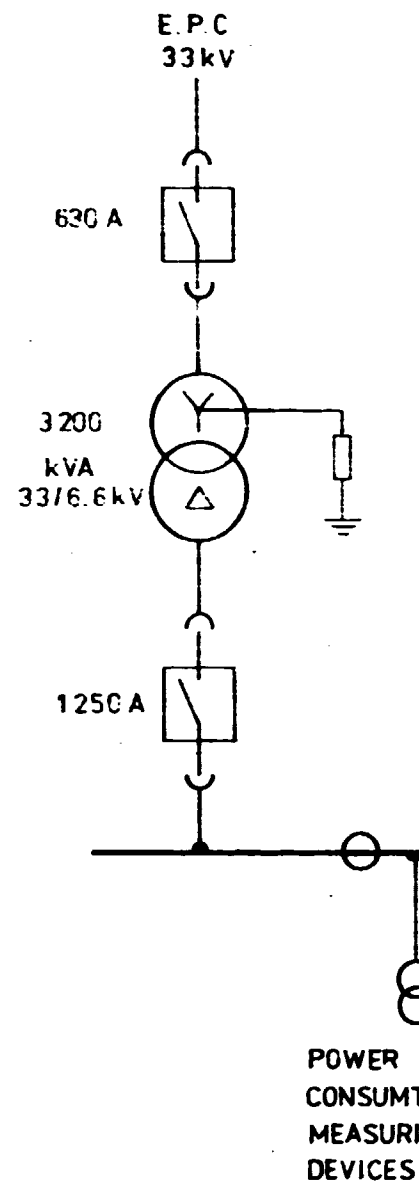
SECTION 16

POLYTECHNA PRAGUE	KERAMOPROJEKT TRENČIN	DATE	JUL
MINI - CEMENT PLANT IN LASHIO - BURMA		FILE NO	56
FLOW SHEET		SCALE	DRAWING NO





SECTION 1

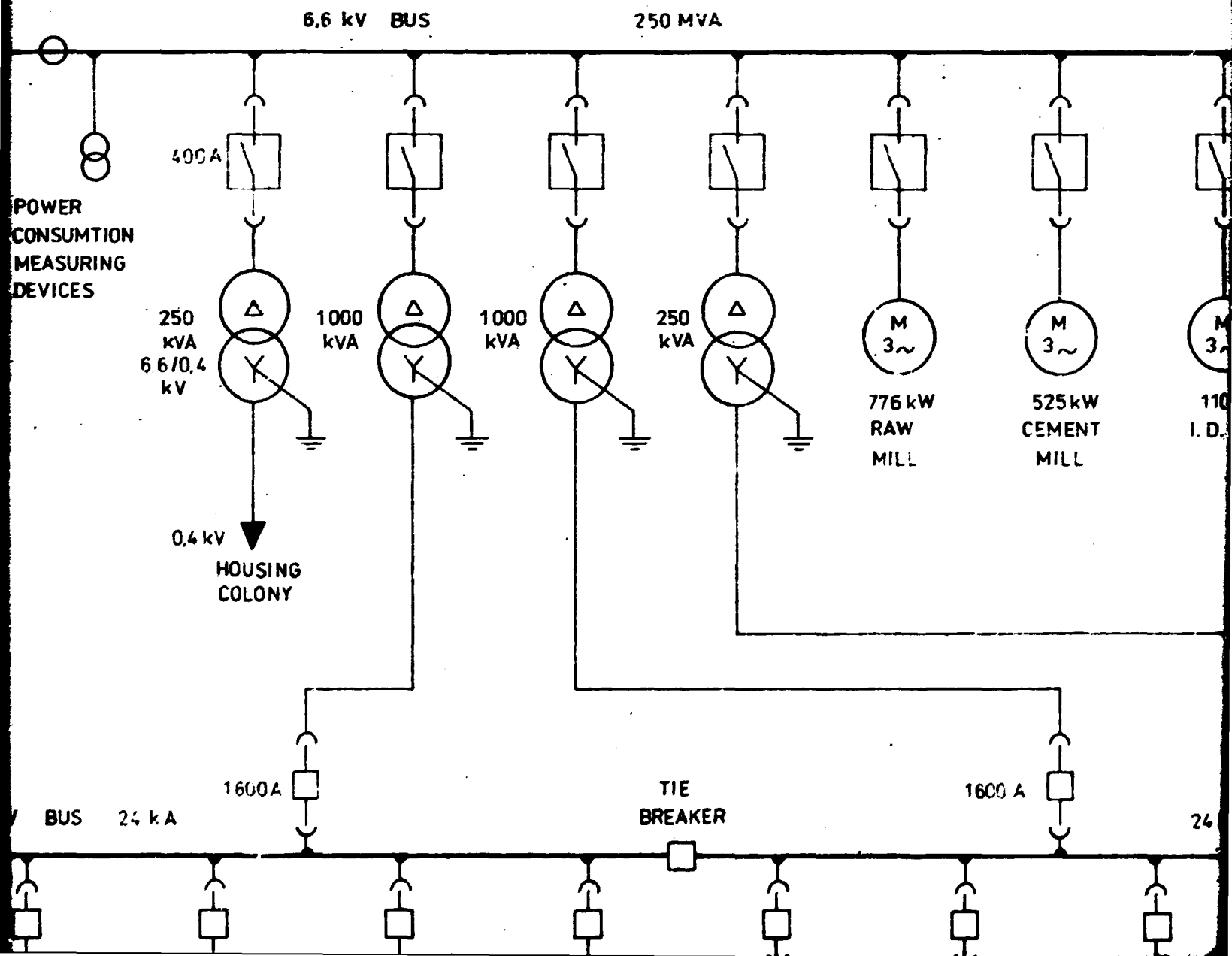


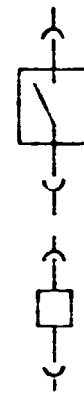
0.4 kV BUS

TN SYSTEM

800A

SECTION .2



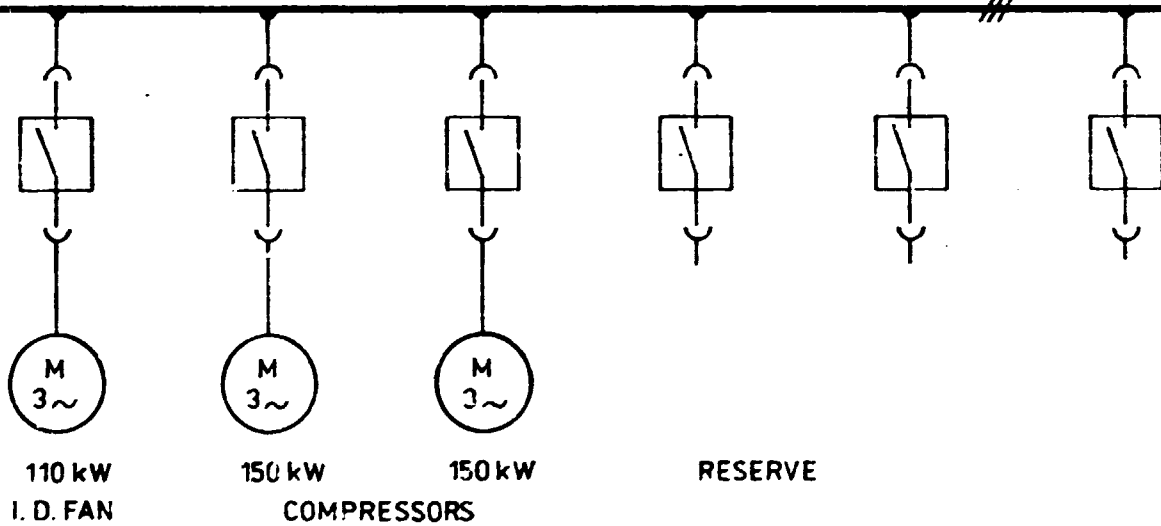


HIGH VOLTAGE
DRAW-OUT TYPE
CIRCUIT BREAKER

LOW VOLTAGE
DRAW-OUT TYPE
CIRCUIT BREAKER

SECTION 3

IT SYSTEM



EMERGENCY
GENERATOR
200kVA



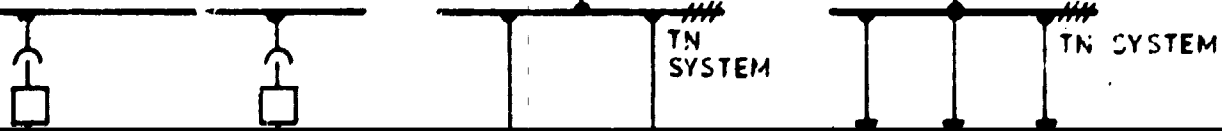
24 kA

800 A
0,4kV

6 kA
TN SYSTEM

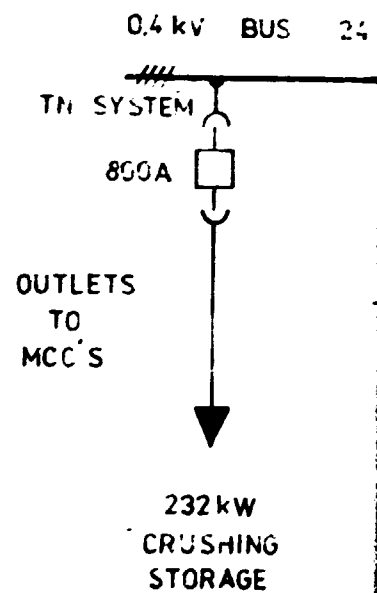
800 A
0,4kV

6 kA
TN SYSTEM



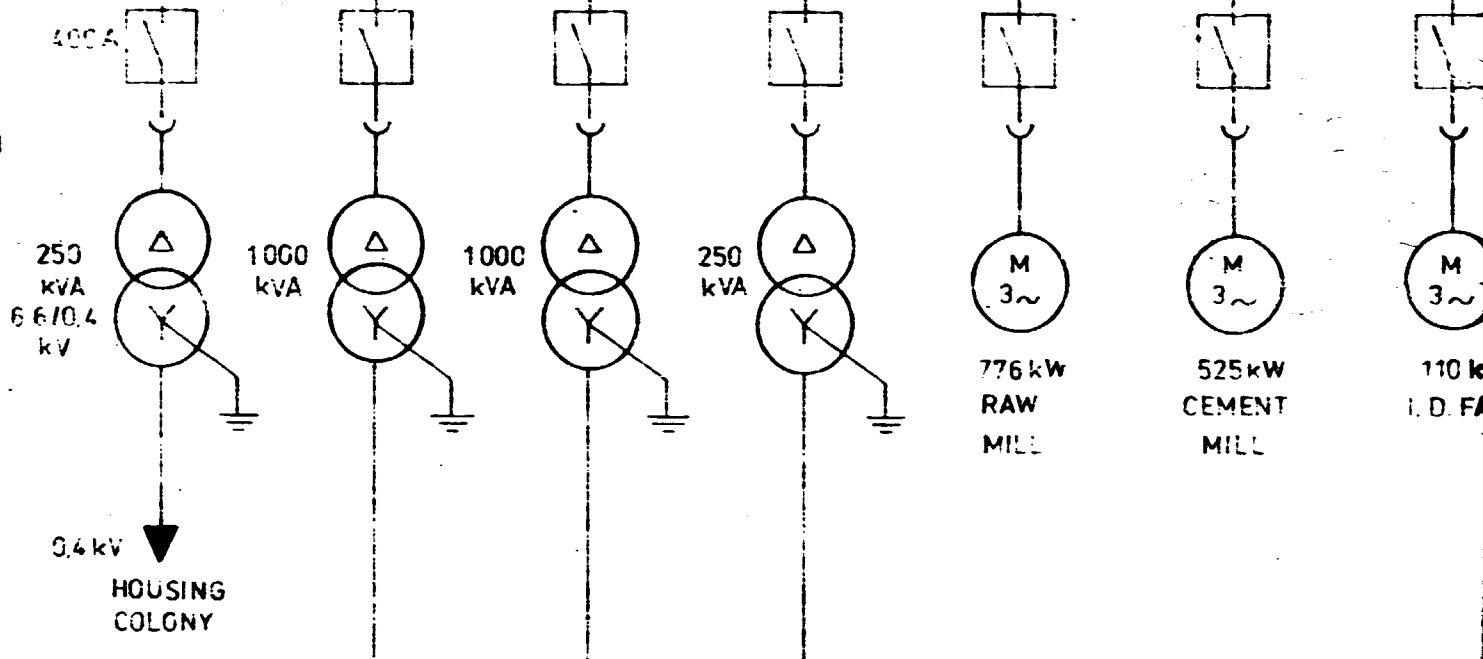
SECTION 4

POWER
CONSUMPTION
MEASURING
DEVICES



MINI-CEMENT

POWER
CONSUMPTION
MEASURING
DEVICES



BUS 24 kA

1600A

TIE
BREAKER

1600 A

24 kA

kw
HING
AGE

132 kW
LABORATORY
WORKSHOPS
STORES

118 kW
HOMO SILOS

380 kW
RAW
GRINDING

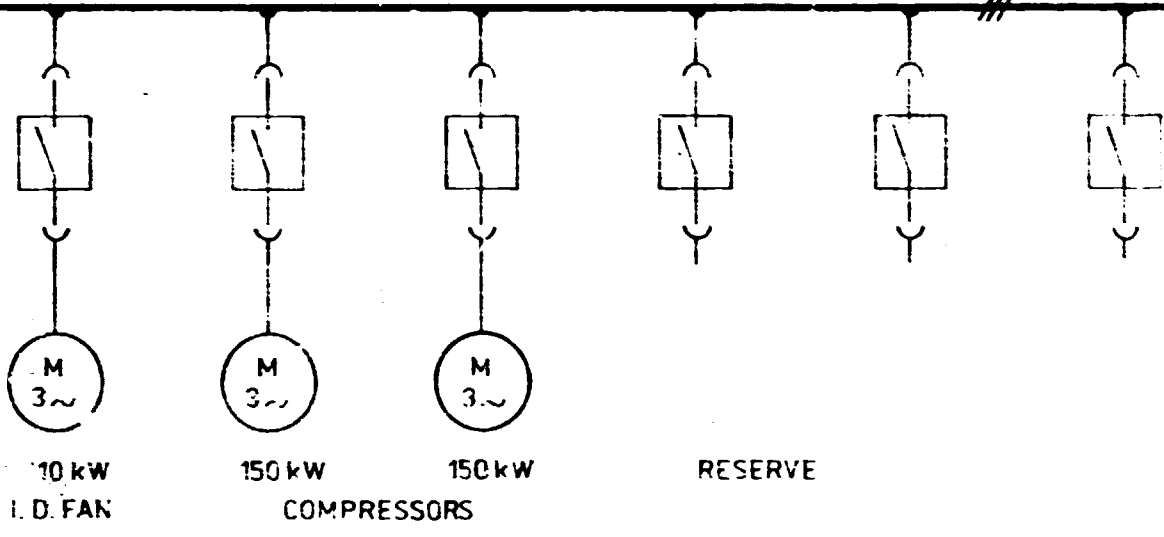
285 kW
KILN
CLINKER
CCR

219 kW
CEMENT
GRINDING
CEMENT
SILOS
PACKING
PLANT

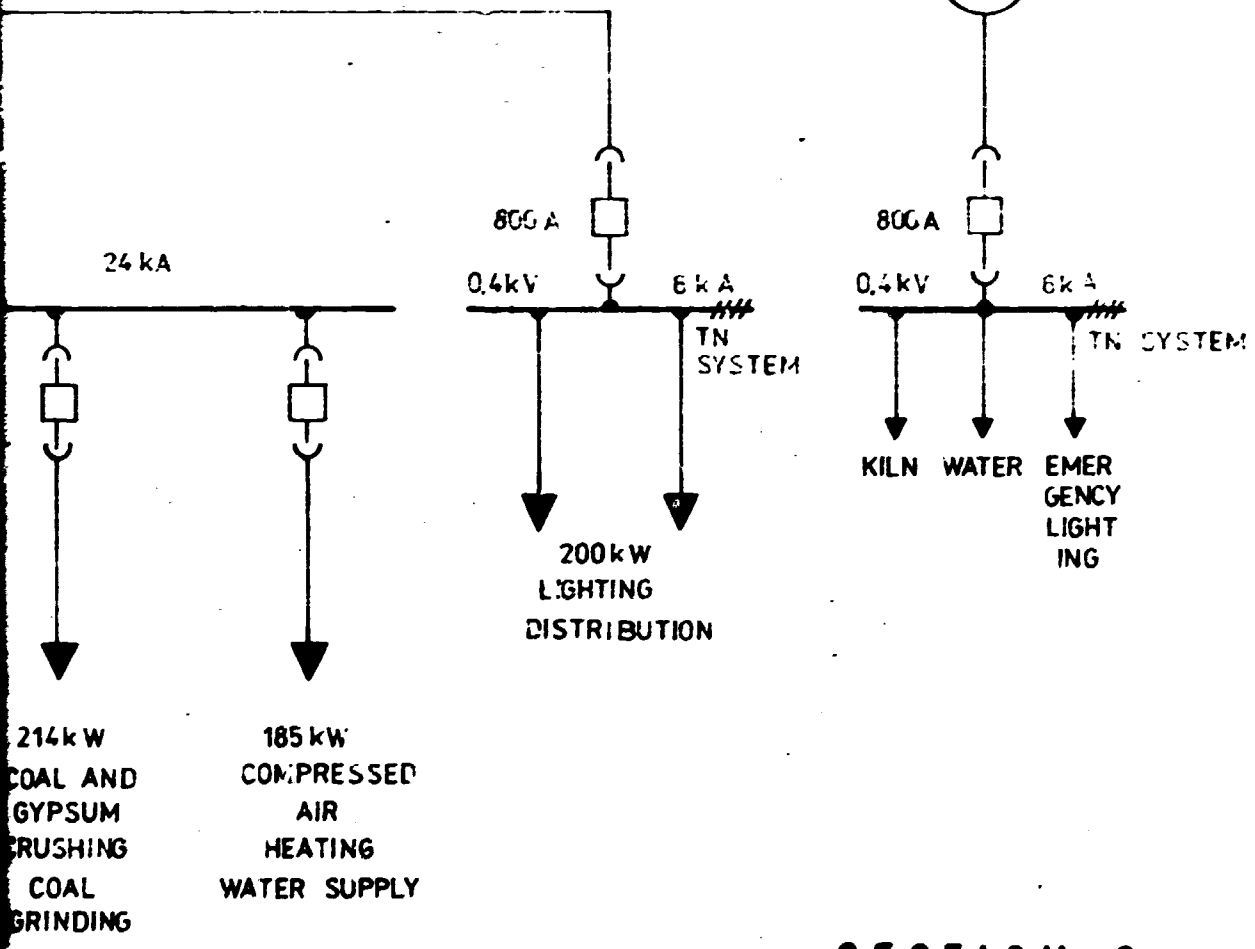
214 kW
COAL AND
GYPSUM
CRUSHING
COAL
GRINDING

SECTION 5

T PLANT IN LAS



EMERGENCY GENERATOR 200kVA



SECTION 6

SECTION 7

6

POLYTECHNA PRAGUE	KERAMOPROJEKT TREŇCÍN	DATE : JUNE 1988
MINI-CEMENT PLANT IN LASHIO-BURMA		FILES NO : 66-8994
		SCALE —