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**ENGINEERING PLANNING
FOR INDUSTRIAL
DEVELOPMENT IN
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I. A. ZAFAR

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The diminishing trends in export of raw material will be an index about their utilisation within our country and a yardstick to measure our industrial development. Though we have already made an encouraging start in this respect, there is still need to eradicate all possible handicaps which impede the healthy growth of industry. Proper engineering planning in setting up factories is a major contribution to overcome not only many bottle necks but also for efficient running of the manufacturing process. The problems facing industrialisation are typical of our conditions and quite different from the developed countries. Therefore we can best learn to improve from our own experience. Generally speaking time factor is of great importance in setting up an industrial project because of the quick turnover and increased dividends desirable on capital.

Various stages coming within the purview of engineering planning can be roughly classified as follows;

- (i) Selection of site, and engineering and resource survey
- (ii) Economic and financial appraisal
- (iii) Drafting the schedule of requirement for the machinery
- (iv) Planning of site development

- (v) Construction of transport facilities prior to receipt of machinery
- (vi) Synchronisation of the building execution with receipt of machinery
- (vii) Scope for future development and improvements
- (ix) Testing performance and output of the machinery as connected with construction of various buildings.

When selecting a site following points should be kept in mind. Cost of land, utilisation of any existing facilities and proximity of any villages for labour, watersupply, existing sewerage system and waste disposal, availability of electric power. Other similar considerations will result in reduction of the overall cost of construction.

As local stuff has to enter the market in keen competition with imported products, the financial appraisal is essential to determine the production costs for the present and the future. It will assist in planning to keep this as low as possible and to have a better hold in the market than imported items. Cost benefit relations and amortization value of the project must be established.

Before purchasing the machinery, it is essential that detailed requirements should be known. Delivery period and facility for supply of spares, maintenance and servicing may be considered for selection. Layout of the factory units should be carefully planned. Factory units include gate house, weigh bridge, parking, offices, welfare building, sanitary facilities, canteen, first aid centre, power house, material stocking buildings and silos, loading and unloading platforms and test laboratories etc. If volume of raw material and of finished products justifies a rail siding it should be provided. Treatment of industrial waste should be given due consideration. The predominant requirement for industrial waste control is to check pollution of streams or complications caused to the town sewage disposal system than the profits expected by the recovery operation.

In the new industrial projects the structure should be studied simultaneously with the mechanical layout and operating procedures.

Opinion of the insurance companies may be sought regarding design of such building units as doors, windows, partition walls, stocking godowns for inflammable products, fuel oil handling structures etc. Type of materials which are available and are most suitable for the construction should be determined. The design of the factory should be such that day light as well as electric light ventilation and unobstructed working space are provided for. Human efficiency, capacity and mental alertness is best at a particular temperature and relative humidity. Therefore opinion of machine manufactures can be sought as to which operations require air conditioning. Specialised service of consulting engineers may be obtained for engineering planning and erection of industrial concerns, with the following advantages:

- (a) Eliminated, of delays in manufacture and deficiencies of fabrication and supply machinery.
- (b) Saving of time in writing tenders and checking
- (c) Economy of construction,
- (d) Selection of reputed contractors with proper tools and plant to undertake the job
- (e) Availability of materials of best quality and specifications for construction.

It requires considerable experience and years of handling of industries for framing any recommendations for guidance of private or government enterprise. To render help to guide those who venture to set up industrial concerns it is necessary for some organisation to collect all sorts of statistics and data on various lines so that whatever guidance is sought, is readily available without ambiguities.

This paper does not claim authority on the subject nor is it backed by any large scale field experience. But the author believes that an engineer can apply his mind to any technical problem in the sphere of our national development and by utilising his power of observation can produce commendable results. The author also believes that by a scientific approach, by reading plans, and by discussion with the non-

technical people or entrepreneurs, the engineers can grasp the problem. The knowledge and experience of the engineers has to be propagated and shared for the benefit of many others beset with similar problems. While recording our appreciation of a problem, our ideas may not be perfect and our recommendations may not cut much ice but we certainly would be doing a service to humanity.

Note :

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