ESSENTIAL POINTS GOVERNING THE FINANCIAL VALUE OF AN ENGINEERING PROPERTY

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649400041

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Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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Trieste

Essential Points Governing the Financial Value of an Engineering Property.

An attempt to explain the influence of the engineer on the financial success of any of the following subjects, and written with the intention of making the relations of the engineer to the general public more definitely understood.

By

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NEW YORK
Printed by The Richardson Press
1912

Classes of Properties Considered

Introductory

THE first point to be made clear is to define the term "Engineering Property." By this is usually meant a large class of industrial properties that would require the services of an engineer in estimating their cost and in designing their arrangement. That would include water works, railroads, gas and electric light plants, water power companies, and projects of that kind.

It is evident that the first question which would naturally arise concerning an engineering property, is whether it will return a satisfactory income on the investment, as well as whether the original capital is there to stay or will eventually deteriorate in value. To determine this it is necessary to go through a certain line of reasoning and to make the proper deductions from that reasoning. The purpose of this book is not to go into any specific property, but is to show the line of reasoning to be used in each class of property in such a way that it can be understood by any one that is not an engineer and to be of assistance to him if he may be connected in any one of the following projects. It is not in-

tended to be a technical work in the sense that it is instructive to engineers in their professional capacity. Instead it is intended to make clear the financial side of the subjects taken up, and to show the professional duties of an engineer which would have an influence on it.

It may seem as though few people would be interested in the properties mentioned below, but it is the purpose of this book to show conclusively that practically any one who is interested actively in business can find something of value in studying out these problems. A promoter would want to know the cost of a property as well as have a fair idea based on the records of similar work, or what the property in question is going to return to him financially. Similarly, an investor would not only be interested in the probable income, but would want to find out whether the bonds or stocks issued against the property under his consideration are backed by actual values of construction. The owner of any manufacturing plant is naturally interested in whether he will be able to cut down his expenses by adding equipment, such as conveying machinery, and the various kinds of loading and unloading devices. To the public at large, the value of a property as determined by an engineer is important in the fact that when municipal im-

provements are considered, such as water power and the like, he practically pays through his taxes and assessments for the cost of this work, and any economy would be for his benefit.

An investigation to ascertain the first cost of an engineering project or to investigate the probable earnings would naturally apply to a small property as well as to a large one, and it is pertinent to say that no property, however small, should be carried out without the assistance of a member of the engineering profession. The tremendous scope covered by it makes it impossible for any one to cover the whole class of subjects covered by the profession, and requires him to specialize along certain lines which he may consider most interesting. This book, therefore, does not attempt to cover all branches of engineering. Some of which that are not included would be natural and artificial gas projects, roads and pavements, drainage systems for waste matter, canals, and problems dealing with the efficiency of management of industrial system. The class of properties considered here makes it necessary to take up surveying, tunneling and electric lighting, but only in their relation to the subjects as given and not as a separate and

distinct class of work as undertaken by some engineers.

In taking up the methods by which the financial value can be reached, it will be necessary to consider separately each class of property which this book will cover. This is due to the fact that not only will the parties interested be of different class, but the methods by which the value would be reached would be treated in a different manner and the results obtained would be considered from a different standpoint in each case.

One thing is in common in all of the following subjects. It is necessary for every engineer to fulfil through himself or his staff the duties of inspector. It is obvious that he must see that his designs are carried out according to his ideas, and that all his specifications are lived up to. In the subjects following, his specifications in regard to the quality of any materials which are to be used, are of the greatest importance. Through his knowledge of the physical properties of steel, concrete and earth, he can obtain the most economical results possible and yet insure absolute safety. The time to be allowed for any contract, and the manner in which it should be done, would also be embodied in any specifications. By restricting any builder to a specified method of

erection he may ensure the completion of a contract on time, and do so before any contract has been consummated.

Any deductions in regard to the cost and future success of any of these enterprises would be obtained by comparing the results of properties similar to the one under consideration, taking into account any features which may differ. It follows then that the investigation of every property is a separate problem by itself with its deductions based on previous experience. It must be born in mind that the subjects taken up in the following chapters can be considered among the most conservative investments because of the fact that they have an actual property value behind them. This property and the usual franchises and rights that permit their operation, as obtained by the following methods of reasoning, guarantee their fundamental or capital value.