proaching railroads are to operate, may materially alter the general conception. These predetermined conditions may force unsatisfactory arrangements, but care must be given to eliminate constrictions at any point on the approach which will develop neck-of-the-bottle effects and limit the full use of the property.

Change in value of real estate and dock property should be considered. Property may become too valuable for use as originally intended and require a change to justify the interest charge which is always to be governed by present values.

Having in mind the property to be used, the possible approaches to it and the nature of service to be rendered





by the developed work, a further discussion of the determining factors is given to show how wide the divergence in conception may go. With many factors, some natural and unchangeable, some man-made and changeable, some business and economic which are man- or communitymade, but of such nature as not to be altered to any large degree, each person who has the duty of judging will put a different valuation and develop a different conception. Each factor has a different valuation for a short-life structure than for a long-time development.

The character of the service to be rendered is of prime importance. The effort should be to get the best degree of service because the welfare of the business depends upon the quality. Success in service promotes success in business.

Failure to select a layout which gives the best service will surely lead to a revamping, a process which nearly always entails loss of capital.

If the plant is to accommodate passenger service, its arrangement as to safety and convenience should be given careful attention. Ease of transferring passengers from trains or from land approaches to floating equipment, ample room for allowing rapid and safe movements, are factors which will largely control the general conception, as will also the passenger service whether ocean-going, long voyages or short-voyage ferry service. The character and number of passengers handled influence the valuation to be given to convenience and comfort. Passenger service coming in contact with human and psychological factors requires a higher state of perfection, dependability and safety, especially so if in competition.

If the dock and wharf property is owned and to be developed by an owner having diversified freight and passenger business to transact, a careful composition of all the factors of possible business development will be necessary.

The relation between the ownership of the docks and transportation equipment calls for attention. If the ownership of both is in the same interests, greater permanence to the business justifies broader development of the property.

At the present time the tendency toward government ownership and control may influence the amount of the expenditure to be made. In case of a transfer of ownership a permanent structure would bring a larger proportion of returns than one of temporary character.

The fire hazard and insurance rate on property of this kind is very important. If located in the immediate vicinity of structures whose materials increase the fire hazard, fire resistant construction would be advisable. Rates of insurance in different localities should be carefully considered.

The height of the structure is often determined by its location on a shore line subject to rise and fall of the water due to tides, wind action or flood conditions of a river.

The action of salt water upon different structural materials, the climatic and atmospheric conditions, decay and deterioration due to marine growths, violence of wave action, general prevalence of storm conditions, and ice accumulation will all have their influence on the choice of materials. The life of wood commonly used in each locality is a factor in choice of timber or some more permanent form of structure.

The foundation details are variously affected by the character of the soil upon which the structure is to rest. Soft alluvial deposit or sand will often require very long piles, while if rock bottom may be reached without great expense, cribs or piers may be economically constructed. River or stream flow may wash out foundations or fill up adjacent docks. The seasons of the year when wharf may be started might determine the character of construction chosen.

In most of our harbors conditions imposed by the general layout of the government harbor lines affect the general shape of the work. Where the government harbor lines are laid out far from the natural shore line, construction will develop into long and slender wharves, while if the harbor lines are close in shore, structures will