

CHAPTER 54
CHANGING SITE REQUIREMENT FOR PORT OPERATIONS

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ABSTRACT

Site selection and site adaptation for construction of port terminals require evaluation of the natural or man-made environment of each specific project. Common to most projects, however, is the need for analyzing present and anticipating future operational requirements. Recent developments in vessel design and cargo handling methods have brought about changes not only in navigational criteria for channels and harbor basins, but also in space requirements for shore facilities. In this paper an attempt is made to define some aspects of land area requirements for future port operations.

There has been a change in general approach toward problems of site planning for ports; the emphasis given in the past to the number of vessel berths that could be accommodated, has gradually shifted to the amount of land area available to "support" each berth. This has been caused, in part, by the increased rate and volume of cargo movement by modern methods, leading to greater requirements for in-transit storage and a larger scale of transfer operations at the terminals. High costs of vessel operation and waterfront construction dictate design of most berths with provisions for ultimate maximum capacity of cargo transfer. According to present trends, for a given tonnage movement the required number of berths will decrease and the total required land area at the terminal will increase.

A distinction is made between transit-storage areas and transit-handling areas adjacent to berths; different criteria govern the amount required for each. The effects of the type of cargo, handling methods and other characteristics of the traffic have been analysed by recent studies and some standards have been developed by the Port of New York Authority and data on a number of large terminals have recently been compiled by the American Association of Port Authorities. It is of interest to compare these area requirements with the first known data on container and roll-on roll-off operations.

The relative location of shore facilities to vessel berths, another aspect of site planning, is also affected by the type of cargo traffic and handling methods used. While proximity of transit areas to berths is essential at general cargo terminals, it is of little significance at many types of bulk facilities and may not be of great importance to some of the future container operations. The effectiveness of site development for a port depends on the recognition of present trends and on finding means of financing construction now for the requirements of the future.