

ABSTRACT

Pile foundations are widely used in construction and building marine structures. This paper presents a thorough review of the application of numerous types of piles in the marine construction industry. The paper reviews the purposes of pile foundations in waterfront structures and the factors involved in the selection of types of piles. When designing and planning foundations for a marine structure, engineers must perform the proper structural analysis, which will dictate required loads and the required pile material based on the load and subsurface conditions. Emphasis is placed on general, physical, and structural characteristics of the piles as well as durability and fabrication. Other factors to be considered are costs, feasibility, subsurface conditions, soil conditions, environmental factors, availability, and means and methods. Data and various case studies are presented to display the advantages and disadvantages of each type of pile. These provide further backup into the decision and factors considered behind each method, as well as the historic successes and failures of utilizing one pile type over another. Ultimately, the most efficient, economical, and durable design of pile type is sought within any particular marine structure.