

HYDRAULIC WORKS IN A SUBMERGED MARINE ENVIRONMENT

DEFINITION AND ROLE

These works apply to all of the constructions carried out in maritime and port environments and in lagoon zones. Maritime constructions are defined as works in which a substantial part of the structure is permanently in contact with sea water or the seabed: landing stages, pontoons, wharf defences, breakwaters, etc. The platforms of pontoons and landing stages are designed to accommodate the public and boaters. They are wooden coverings intended to allow users to walk about (they are not in direct contact with water).

STRESSES

These structures are subject to permanent moisture and undergo mechanical stresses linked to the function they provide. A landing stage protects a sea area from the effects of waves and swells, and it mitigates the amplitude of waves. A pontoon which allows access to areas above the marine environment is swayed by the tides and potentially the shocks of boats. The wharf defences must be able to resist the shocks and friction of ships. The decks must be able to withstand vertical loads and the shocks caused by the handling and passage of the pontoon's users.

REQUIRED PROPERTIES

Submerged timber must be sufficiently durable to withstand attacks by marine borers and certain wood boring molluscs. They must be dense and hard to withstand shocks and other mechanical stresses. The decking timber must be mechanically effective and have excellent preservation qualities in order to face bad weather and the proximity of sea water.

The timber boards must have low-split thread and demonstrate good resistance against shocks.

PRINCIPLES OF IMPLEMENTATION

The heavy structures of these marine works are assembled using simple techniques involving strutted and bolted parts. Other techniques based on woodworking (tenon, mortise, half-wood, etc.) are not retained for reasons linked to sturdiness and durability.

USAGE CLASS

Timber that is permanently immersed in marine or brackish waters falls under usage class 5. Tidal zones, revealed by low tides, and structural parts installed outside of water are not considered as falling under usage class 5. However, for all uses that are not permanently immersed, usage class 4 is required because of the risk of attack by lignivorous fungi.



Photo: Landing stage © M. Vernay



Photo: Wharf defences© WIJMA