

164 MARINE IMPROVEMENTS

This basic category provides structures for protecting the harbor, land area, or coastline from current or wave action and from flood conditions.

164 10 BREAKWATER (LF)

A breakwater is a free-standing barrier designed to break up and disperse heavy seas and to shield the waters of a harbor from wave action. Breakwaters are planned where primary protection is necessary to create or shelter a harbor or a basin for vessels from wave action. The type and quantity of breakwater is determined by local design considerations. Types of breakwater structures are shown in DEFINITIVE DESIGNS, NAVFAC P-272. See HARBOR AND COASTAL FACILITIES, NAVFAC DM-26, for technical design information.

164 20 GROINS AND JETTIES (LF)

Groins and jetties are structures built to intercept and deflect currents to control drift and deposit of sand and silt.

Groins are generally classified according to the principal construction materials used; that is, steel sheet piling, timber, stone, or concrete. A series of groins usually extending at right angles to the shoreline will protect the beaches from erosion. A groin serves to intercept currents that cause littoral drift of sand along a beach and under favorable conditions causes the deposition of sand, so as to reduce shore erosion.

Jetties are planned at harbor entrances and channels to control unstable conditions of silting and deposit of sand caused by river flow or tidal or wave action. A properly located jetty system will encourage scouring and maintain channel depth with a minimum of maintenance dredging. Jetties are similar in design to breakwaters, but are smaller.

The types and lengths of groins and jetties will vary with local design considerations. Types and applications of groins and jetties are shown in DEFINITIVE DESIGNS, NAVFAC P-272. See Harbor and Coastal Facilities, NAVFAC DM-26, for design details.

164 30 LEVEES (LF)

Levees are earthen embankments designed to protect property from water damage during the flood stage of rivers and/or other high water. The size and length of a levee will vary with local design considerations. Levees may be justified at air installations and at other naval installation where usable property must be protected from water damage.