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# Impact of Groyne Construction on Beach; Case Study Anzali & Astara Coasts

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**Abstract**

The groyne is an important sea engineering adopted much to protect beaches and the silt project in the present coast of many countries. the object of construction a groyne or groyne system is to stabilize a stretch of beach against erosion where that erosion is due primarily to a net alongshore loss of sand. The design and construction of groins requires the services of a professional engineer and a contractor To construct the coastal protective structures, it is necessary to estimate the scouring depth and bed level changing in the vicinity of such structures. Due to the construction on the Caspian Sea coastals especially Anzali and Astara beaches in the Gilan province, which are used as commercial banks and recreational beaches, groynes application can have an important role in stabilizing these beaches. first in the article the groyne impact on beach was investigated, however design criteria in to other coastal's books has been observed, The Scour criteria at this structure is paid less. At the end of the paper to the Scour risk of Anzali and Astara coast predicted, considering the results found Scour risk of Anzali coast be observed to a greater degree.

**Keywords: groyne, scour, erosion, Caspian Sea.**

## 1. INTRODUCTION

Groyens are often used in river engineering for navigation improvement or bank support, as well as in coastal engineering for bank or beach protection. Groyens are 'hard' engineering structures specifically deployed for shoreline protection and/or stabilisation [1,2]. In some specifically-designed cases, they are employed to facilitate enhancement of navigation channel tidal flows, in order to promote sediment scouring. When located in estuaries, tidal inlets. or back-barrier coastal lagoon areas, such structures are sometimes also known as 'training walls'(refer [3]),or 'training works'(refer [4]). they have been deployed on open-sea coastlines and in tidal inlets and estuaries for centuries(refer [5]) according to the river design criteria of Korea the definition of groyne is a structure installed the front side of bank nor revetment to protect the bank or levee from the erosion,with the control of flow direction and velocity[6]. Groyens are popular river-training structures.in the past they were mostly used for stabilizing eroding banks in incised channels and for flood control. In resent years there is growing interest in using groyens for stream corridor restoration projects. the embayment region between successive groyens acts as a dead water zone where the local residence time of suspended particulate matter is much larger under certain condition groyne fields can provide condition necessary for natural growth of the vegetation in the river or coast [7,8,9].

## 2. REVIEW OF GROYNE CLASSIFIED BY TYPE OF CONSTRUCTION AND MATERIAL

Groynes can be built with different planview shapes. Examples are straight groynes, T head, L head, hockey stick, inverted hockey stick groynes, straight groynes with pier head, wing, and tail groynes[figur1]. Groynes can be submerged or not under normal conditions. Usually impermeable groynes are non-submerged, since flow over the top of solid groynes may cause severe erosion along the shanks. Submerged groynes, on the other hand, may be permeable depending on the degree of flow disturbance needed. Groynes are routinely constructed of sheet piling, Older groins made with timber or steel sheet-pile, recent ones constructed with armor stone and concrete blocks [10, 11, 12] [figur2, 3, 4].At exposed caspian coast , groins are most often of rubble-mound construction. Because the rubble-mound groynes are advantageous with respect to the steel, concrete and wooden ones, as they better dissipate energy of waves and currents. For economic reasons, Groynes are often constructed of riprap and are commonly designed to be submerged during high flows.