

Repurposing Concrete Security Barriers in Hydraulic Structures

Rafid Alboresha

Abstract

This paper aims to shed light on the concrete security barriers that have become out of service and widespread in Iraq, as well as the possibility of employing them in some sections of hydraulic structures. The majority of them were used to protect military points or to block roads, and Iraqi authorities are now attempting to find a way to use them for civilian purposes. The importance of repurposing concrete security barriers benefits and advantages are discussed, as well as methods of employing them to be a successful alternative to some of the components and parts used in hydraulic structures. This paper addresses an identified need by applying the principle of sustainability to find a successful alternative for some parts of the hydraulic structures, whereas repurposing concrete security barriers will reduce visual and physical pollution and find a practical use for them. The methodology of this paper is based on a discussion and comparison of several scenarios in which concrete security barriers are used as alternative parts in hydraulic structures. The main emphasis is on the parts used to stop water seepages, such as cutoff walls. Two case studies were used to demonstrate the application of repurposing concrete security barriers to address issues with specific hydraulic structures and water channels in order to prevent or reduce seepage problems. The SEEP/W software was used to create the scenarios and calculate the seepage values. The study found that using concrete security barriers as a cutoff or/and a horizontal floor can significantly reduce the amount of seepage beneath the hydraulic structure