

Abstract:

Iran is a country which is regarded as one of the semi-dry and dry areas of the world and water shortage has been a long-standing major problem for Iranians to deal with. To address this problem, having used their technical knowledge, Iranians have utilized new significant innovations such as building up Shotorgaloo hydraulic systems. Shotorgaloo is a traditional hydraulic system which is used to transfer water from one place to another. Mahan, a city in Kerman province, is one of the areas in which this hydraulic system can be found. There are unique hydraulic systems in Mahan and there even exists a building named after them indicative of their significance, Mahan's Shotorgaloo building. Along with this structure's eminence that stems from the existence of Shotorgaloo hydraulic system in it, it's important because of its aesthetic and architectural features. There's a Hozkhane at the center of this structure which is encircled by rooms and porticos, as well as corridors that lead the air current out through two symmetrical Badgirs (wind catchers) and water's coolness which emanates from the fountains. Also, the existence of plaster ornamentation throughout the building makes it even more important. In this study, efforts have been made to thoroughly examine Mahan's Shotorgaloo building in general and Mahan's Shotorgaloo hydraulic structure in particular through library research, field study, and analytical methods. The purpose of this study is to introduce Mahan's Shotorgaloo's system technically and architecturally, also introduce Shotorgaloo hydraulic systems from structural and hydraulic engineering point of view, and finally provide a restoration plan and revitalization one to this structure so that any further erosion and destruction is prevented and the prosperousness of its surrounding is achieved. The most important result of the present study is a thorough identification and introduction of Shotorgaloo structure considering its restoration and new functions; moreover, it underscores the conservation of such structures. It also introduces and analyzes Shotorgaloo hydraulic structures as the mother and prototype of modern inverted siphons.

Keywords: Mahan, Shotorgaloo building, restoration, revitalization

