

A study on comparing D1557 and D4718 ASTM standard tests to select the appropriate criteria for controlling the crust compaction of Herat earthen dam and evaluating the results of test embankment

Authors:**Elham Zare¹****Hamid Mehr Nahad² and Afshin Alemi³****Institution:**

1. MSc Student, Geology Engineering, Yazd University, Yazd, Iran

2. Assistant Professor, Department of Civil Engineering, Faculty of Engineering, Yazd University, Yazd, Iran

3. MS in Soil Mechanics and Foundation, Yazd Regional Water Organization, Yazd, Iran.

Corresponding author:**Elham Zare****ABSTRACT:**

Herat dam is located at the south-western part of Herat region at Yazd province, Iran. This dam is an earthen dam with clay core. Coarse aggregate materials used in the dam crust are exploited from Hasan Abad village mines located at about 12 Km from the site. These materials completely (100%) pass through a sieve of 200 mm size and sand component constitutes more than 60 percent of the materials. In the present study, modified compaction as well as minimum and maximum density tests were used based on the ASTM standard to evaluate and control the compaction of crust materials. According to the type of the grading curve of materials used in Herat dam and results obtained from test crust compaction, it was shown that ASTM standard modified compaction calculation methods are not suitable for controlling the compaction of crust materials, and it is better to control the compaction based on the relative density. Moreover, compaction criteria was tested and determined based on the results obtained from operating the test embankment according to the thickness of embankment, type of the roller, number of roller passes, and type of the material and moisture content.

Keywords:

Herat dam, test embankment, modified compaction test, density test, crust compaction