

ABSTRACT

The present study focuses on evaluating the effect of post-compaction moisture content on the resilient modulus of selected soils in Oklahoma. The soils are selected to represent a wide variation of soil types in Oklahoma. The resilient modulus tests were performed on specimens compacted and subjected to a wetting and drying process. After the completion of resilient modulus testing, the filter paper tests are performed in accordance with the filter paper technique. The same technique is used to establish the soil-water characteristic curves.

Results for the tested soils, namely, Burleson, Binger, Kirkland, Port, Minco, Sandy soil, Kingfisher, Renfrow, showed that the resilient modulus (M_r) exhibited a hysteric loop with moisture variations. The M_r values due to wetting are lower compared to the corresponding values after drying. It was also found that the initial compaction moisture content followed by drying or wetting affect the hysteric loop of both SWCC and the M_r -moisture variation curve (M_rMC). It was also observed that the resilient modulus increased as the soil suction increased; however, such increase varies from one soil to another.

This study generated useful information that would enrich the database pertaining to resilient modulus and suction of selected soils in Oklahoma. An enriched database would benefit highway agencies, specifically pavement engineers, when dealing with construction of new pavements or rehabilitation of existing pavements. It will also facilitate the implementation of the new AASHTO 2002 pavement design guide.

