Teaching & Education Research Association

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| Name of the Conference | Teaching & education Research Association(TERA) |
| Conference Dates | From: (20/11/2023)To: (21/11/2023) |
| Participant’s Name | Freweyni Kassa Gebremariam |
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| Participation Status (Select one by highlighting with yellow colour) | Oral Presenter |
| Online Presenter |
| Listener |
| Online Listener |
| Absentia |
| Poster Presenter |
| Paper Title(Not applicable for Listener & Online Listener) |  Compaction Characteristics Predictive Model from Index Properties of Fine - Grained Soils Case in Mekelle City, Northern part of Ethiopia |

Abstract/ Full Text Article

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Abstract

The compaction test Optimum moisture content (OMC) and Maximum dry density (MDD) has been acknowledged as an important parameter to characterize the strength/bearing capacity of earth structures. Technically, the compaction tests are carried out in the laboratory or in the field. However, in large construction sites, the test is a routine time-consuming which requires large amount of soils for laboratory testing and is infrequently performed due to the equipment needed and the fact that the field moisture content keeps changing over time. Over the years, many correlations have been developed for the prediction of OMC and MDD by various researchers. However, in this paper the data are transformed and the empirical predictive models have checked the multicoliniarity and interaction of the predictor parameter was analyzed through the NCSS software and it gives better R2 and RMSE value compared with other models. Therefore, the objective is to develop a compaction predictive model of fine grained soil from their index properties. Accordingly, a total of 24 primary, 91 secondary standard proctor tests data and 114 secondary modified proctor test data were collected from the northern Ethiopia. Specific to this research, statistical software (NCSS-12) was employed. NCSS software has a full array of powerful software tools for regression analysis. The results show that about five (5) equations with subset selection trials for each modelling one, two and three Parameters OMC and MDD models from various soil index properties were performed. Subset selection with interaction option of the NCSS-12 statistical software is used for the task of finding variables that does a good job of predicting the dependent variable. Moreover, the unique nature of the developed models utilizes only three parameters namely percentage pass of (P200), Liquid limit (LL) and plastic limit (PL) which are simple and to test than compaction tests.

Key words: Compaction, index properties, Predictive model, NCSS-12, North Ethiopia.)

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