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Secondary Compression Behavior of Organic Soils in One-Dimensional Consolidation Tests

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Abstract : The standard one-dimensional consolidation test is used to find the consolidation behaviour of artificially consolidated organic soils. Incremental loading tests were conducted on the clay without and with organic matter. The study was conducted with soil having different organic content keeping all other parameters constant. The tests were conducted on clay and artificially prepared organic soil sample at different vertical pressure. The load increment ratio considered for the test is equal to one. Artificial organic soils are used for the test by adding starch to the clay. The percentage of organic content in starch is determined by adding 5% by weight starch into the clay (inorganic soil) sample and corresponding change in organic content of soil was determined. This was expressed as percentage by weight of starch, and it was found that about 95% organic content in the soil sample. Accordingly percentage of organic content fixed and added to the sample for testing to understand the consolidation behaviour clayey soils with organic content. A detailed study of the results obtained from IL test was investigated. The main items investigated were (i) coefficient of consolidation (cv), (ii) coefficient of volume compression (mv), (iii) coefficient of permeability (k). The consolidation parameter obtained from IL test was used for determining the creep strain and creep parameter and also predicting their variation with vertical stress and organic content.

Keywords : consolidation, secondary compression, creep, starch
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