

C - 07.

A SIMPLE APPROACH TO THE DETERMINATION OF THE BEARING CAPACITY OF A LAYERED SOIL

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The method of stress characteristics is usually used for the determination of the bearing capacity of a homogenous soil. This method which has been derived for a weightless soil is extended to cover a real soil with weight. In contrast to this lower bound approach, it is possible to estimate the bearing

capacity by an upper bound approach using assumed failure surfaces. It is shown both theoretically and experimentally that, contrary to current assumptions, failure surfaces lie along velocity characteristics and not along stress characteristics.

In the case of a layered soil when a weak soil underlies a hard stratum current methods of analysis are adequate. However difficulties arise when a weak soil of limited thickness overlies a stronger soil. It is shown that in this case the upper bound approach gives a more realistic estimate for the bearing capacity than the lower bound approach. This method is illustrated with an example of an embankment which was designed to stand on a foundation soil consisting of peat underlain by a stronger soil.