

Beams on Elastic Foundation. The Simplified Continuum Approach

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Abstract text:

The key aspect in the design of flexible structural elements in contact with bearing soils is the way in which soil reaction, referred to qualitatively as soil's reactive pressure (p), is assumed or accounted for in analysis. A magnitude and distribution of p might be preliminary assumed, or some mathematical relationships could be incorporated into the analysis itself, so that p is calculated as part of the analysis. In order to eliminate the bearing soil reaction as a variable in the problem solution, the simplified continuum approach is presented. This idealization provides much more information on the stress and deformation within soil mass compared to ordinary Winkler model, and it has the important advantage of the elimination of the necessity to determine the values of the foundation parameters, arbitrarily, because these values can be computed from the material properties (deformation modulus, E_s , Poisson ratio, ν_s and depth of influence zone, H , along the beam) for the soil. A numerical investigatio proach is also presented.

Key Words:

Beams; elastic foundations; Winkler foundation; Vlasov foundation; two-parameter elastic foundation; EBBEF2p computer code.

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