Journal of geotechnical engineering

Abstrak

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For dynamic excitation, it is convenient to idealize homogeneous soil under a base mat by a semi-infinite truncated cone. It is easy to analyze the cone model for vertical and horizontal translation, as well as for rocking and torsional rotation. The accuracy by comparison to rigorous half-space solutions is quite adequate for practical applications. Time-domain computational methods for translational and rotational motions are described in both the stiffness and flexibility formulations and elucidated by examples. The infinite cone is dynamically equivalent to a discrete element representation of the soil, consisting of an interconnection of a small number of masses, springs, and dashpots. As an alternative to the physical-component model, the response may be determined directly by simple recursive numerical procedures. The recursive methods are exact and particularly well suited for hand calculations of short-duration excitations.