عنوان مقاله:

The Inspection of Site Characteristicson Far Field Dynamic Stiffness of Unbounded Media in Coupled Soil-Structure Interaction Analyses Using the Cone Model

محل انتشار:

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خلاصه مقاله:

To anticipate the response of a foundation to seismic excitations including earthquakes,machineryloadings and explosions,it is essential to have at hand the dynamic stiffness of each two media which areattached to each other using the substructure method; otherwise rigorous methods are applied to analyzethe whole system at once. In coupled analysis methods, on the other hand, both techniques are made useof each involving its own advantages and the whole putting aside individuals' disadvantages. In thispaper, assuming the Cone Model as the method going to be used for the far field impedance calculation,different site characteristics variations have been inspected and their effects on dynamic stiffness of thefar field are observed. Having categorized the problem into three major unbounded media classesincluding uniform infinite sand, continuously non-uniform infinite sand and continuously non-uniformsand resting on bedrock, amplitudes of dynamic stiffness of assumed media are calculated using thementioned model and it is observed that for the infinite sand, as could be expected, the more the depthgets resulting in a bigger interface between the media, the more the impedance amplitude results; andthis is the case for all different site considerations. On the other hand, convergence is observed for nonuniforminfinite sand around a frequency of about 10 rad/sec with discrepancies observed for biggerfrequencies. This is while for the half space consisting of uniform sand the convergence is observed for afrequency between 20 and 30 rad/sec and no discrepancy is observed afterwards. For the half spacerestricted to bedrock, the impedance amplitude period against .frequency decreases with depth and noconvergence is observed except for greater depths

کلمات کلیدی:

seismic excitation, impedance, far field, Cone Model, half space