

The amplification characteristics of ground motions in the 3-D underground structure beneath Kobe City compared with 2-D results

Masayuki Nagano[1], Ariyoshi Yamada[1]

[1] Kobori Research Complex, Kajima Corporation

Amplification characteristics of the strong ground motions are investigated using the 3-D finite element method considering the 3-D site effects beneath the Kobe City during the 1995 Hyogo-ken Nanbu earthquake. The bedrock motions deconvolved from recorded motions are used as the vertically or obliquely incident S-waves. Recorded seismograms are well simulated by the 3-D FEM. The contour map of the peak velocities roughly explains the actual damaged zone intermittently appeared in the Kobe urbanized area. Between the 3-D and 2-D results, significant difference cannot be seen in the distributions of the peak ground velocity and the velocity seismograms. This implies that the ground-motion amplification adjacent to the basin edge is greatly attributed to the 2-D effects.