

DISCUSSION OF "On the Characteristics of Seismic Motion in Soft Layers" by A Asada, F Kawakami, and M Kamiyama, paper 37, Session 1D: Dynamics of Soils and Soil Structures

by

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Comparing the soil profile at the Sendai Steam Power Plants, studied by the authors, with that under Mexico City, two differences stand out:

1. At Sendai the upper formations are noncohesive. Under Mexico City noncohesive materials are confined by clay that behaves almost linearly up to failure.
2. The contrast in shear-wave velocities between rock and soil is many times greater in Mexico City than at Sendai.

The situation in Mexico City is such that the one-dimensional linear theory considering only plane shear waves^(1,2) has yielded satisfactory results, at least for distant, moderate or relatively strong earthquakes⁽³⁾. The first difference between the two sites casts doubts on the applicability of the assumption of linear behavior for even moderate quakes. The second difference raises the question of the validity of extrapolating the authors' results to conditions in which one would expect surface waves to be less significant. Indeed, the ratio of maximum vertical to maximum horizontal accelerations for distant earthquakes is typically 27 percent in Mexico City⁽²⁾.

REFERENCES

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