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Study the Impact of Directivity for Strong-Motion Effective Duration on High-Rise Building

In building case, mostly scientists assume that maximum amplitude and longest duration of strong motion are on highest structure. However, this study does not work like that. This study used three waveform of events were recorded on accelerographs array on a 12-storey building in Jakarta. Those are M6.5 Kebumen, M5.6 Pandeglang, and M4.7 Lebak earthquakes. It shows effective duration of M6.5 Kebumen is shortest and high amplitude in the highest structure, but M5.6 Pandeglang, and M4.7 Lebak are in contrary. Based on source mechanism data, seismic wave of M6.5 Kebumen is directly travel to Jakarta, in one direction on strike. Rupture directivity will release high amplitude and short duration of strong motion on forward directivity or contrary for strike indirectly. According to this study, it known that the object of energy compensation of M5.6 Pandeglang and M4.7 Lebak is on duration, whereas the object of energy compensation of M6.5 Kebumen is on amplitude. This study was strengthened by similar method and result on Aceh Sumatra earthquake.

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