Perbandingan respon seismik pondasi mesin tunggal dan grup dengan variasi perletakan fleksibel dan pegas tanah = Comparison of seismic response of single and group machine foundation with variation of flexible bearing and soil spring constant

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Abstrak

Penelitian ini membahas mengenai perbandingan karakteristik dinamik dan respon seismik struktur pondasi mesin yang dimodelkan secara tunggal dan grup dengan perletakan fleksibel (base isolation-Elastomeric Bearing). Struktur pondasi secara keseluruhan terdiri dari dua bagian, yaitu tiga blok pondasi mesin pada bagian atas dan blok beton pada bagian bawah. Elastomeric Bearing disisipkan diantara blok pondasi mesin dan blok beton. Permodelan secara tunggal hanya memodelkan satu blok pondasi mesin dengan base isolation yang bertumpu di atas tanah yang dianggap rigid. Permodelan grup memodelkan keseluruhan bagian utama pondasi dengan mengikutsertakan efek pegas tanah (soil spring constant) di bawah blok beton. Eksitasi gempa berupa gempa megathrust, Kobe, yang disesuaikan dengan respon spektrum Indonesia. Respon seismik dari pondasi tunggal dan grup dibandingkan dengan memvariasikan properti base isolation dan konstanta pegas tanah dalam kondisi linier. Hasil penelitian menunjukkan penggunaan pegas tanah pada pondasi yang dimodelkan secara grup memperbesar respon seismik struktur.

.....This study discusses the comparison of dynamic characteristic and seismic response of machine foundation that is modeled as single and group system using flexible bearing (base isolation-Elastomeric Bearing). The whole structure of machine foundation consists of two main parts of block of machine foundation (the top part) and block of concrete (the bottom part). Elastomeric Bearing is inserted between those parts. The behaviour of single foundation is modeled as one single block of machine foundation with the base isolation, the soil is assumed as rigid material. While group behaviour is modeled by three block of machine foundation, base isolation, block of concrete and soil spring component. The earthquake excitation is megathrust earthquake, Kobe, that is matched to Indonesian response spectra. Seismic response is compared between two conditions above with variation of base isolation and soil spring constant with linear condition is considered. The soil spring provides the higher value of seismic response of structure.