Perbandingan desain antara struktur gedung fixed base dan struktur gedung terisolasi dengan mempertimbangkan faktor-faktor struktural yang utama = Comparison of design between fixed base building and isolated base building considering significant structural factors

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Abstrak

Penelitian ini membahas mengenai perbandingan desain antara struktur dengan perletakan biasa dengan yang menggunakan base isolation (High Damping Rubber Bearing). Faktor-faktor struktural tersebut adalah metode desain (Strength Based Design dan Performance Based Design), basement, dan pengaruh P-Delta. Struktur dengan perletakan biasa didesain dengan Sistem Rangka Pemikul Momen Biasa (SRPMB) dan Sistem Rangka Pemikul Momen Khusus (SRPMK), sedangkan struktur dengan base isolation didesain dengan metode Strength Based Design dan Performance Based Design.

Dari hasil penelitian menunjukkan penggunaan base isolation dapat meningkatkan periode getar. Struktur terisolasi dengan metode Strength Based Design dapat mengurangi gaya gempa, displacement, simpangan antar lantai, dan rasio tulangan, dibandingkan dengan struktur SRPMB (konvensional). Pengaruh P-Delta memberikan tambahan gaya geser pada struktur terisolasi, dan penambahan basement dalam modelisasi struktur dapat mengurangi gaya geser struktur secara signifikan.

.....This study discusses the design comparison between structure with conventional restraint with the use of base isolation (High Damping Rubber Bearing). Those structural factors are design method (Strength Based Design and Performance Based Design), basement, and effect of P-Delta. Structure with regular restraint is designed with Ordinary Moment Resisting Frame (OMRF) and Special Moment Resisting Frame (SMRF), while structure with base isolation is designed with Strength Based Design and Performance Based Design method.

The results shows that the use of base isolation can increase the natural period of structure. Isolated structure with Strength Based Design method can reduce the earthquake forces, displacement, story drift, and rebar ratio, compared with conventional OMRF structure. The effect of P-Delta provides additional shear forces on the isolated structure and the addition of basement in structural modeling can significantly reduce shear forces on the structure.