

Evaluasi Kinerja Seismik Struktur Bangunan Gedung 8 Lantai dengan Variasi Kolom Miring Akibat Penurunan Kualitas Beton Berbasis Prosedur ASCE 41-17 = Seismic Performance Evaluation of an 8-Story Building Structure with Inclined Columns Variations Due to Concrete Quality Degradation Based on ASCE 41-17 Procedures

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Abstrak

Penurunan kualitas beton pada struktur bangunan merupakan permasalahan umum yang disebabkan oleh kondisi lapangan dan proses perawatan yang tidak optimal. SNI 2847:2019 menetapkan batas maksimum penurunan kualitas beton hingga 25% dari mutu desain, namun pengaruhnya terhadap kinerja seismik dan kebutuhan tulangan belum banyak diteliti. Penelitian ini mengevaluasi dampak variasi penurunan kualitas beton sebesar 7,5%, 15%, dan 25% pada gedung 8 lantai dengan bentang tunggal yang dirancang menggunakan sistem rangka pemikul momen khusus (SRPMK) dengan bantuan software ETABS. Evaluasi dilakukan dengan analisis linear dinamik berbasis ASCE 41-17 menggunakan skenario gempa desain dan gempa maksimum. Analisis dilakukan dengan hipotesis bahwa penurunan kualitas beton berkontribusi pada peningkatan kebutuhan tulangan struktur yang kemudian juga berimplikasi pada perubahan kinerja struktural.

.....Concrete quality degradation in building structures is a common issue caused by suboptimal site conditions and inadequate curing processes. SNI 2847:2019 allows a maximum reduction of concrete strength up to 25% from the design strength. However, its impact on seismic performance and reinforcement demand has not been widely studied. This research evaluates the effects of concrete quality reduction at levels of 7.5%, 15%, and 25% on an 8-story building with a single-span layout, designed using a Special Moment Resisting Frame (SMRF) system with the aid of ETABS software. The evaluation is carried out through linear dynamic analysis based on ASCE 41-17, considering both design-level and maximum-level earthquake scenarios. The analysis is conducted under the hypothesis that concrete quality degradation leads to increased reinforcement demand, which consequently affects the structural performance.