

# KERUSAKAN BANGUNAN PADA GEMPA YOGYAKARTA 27 MEI 2006 : AKIBAT KEBELUM JELASAN CODE, SOSIALISASI ATAU PELAKSANAAN ?

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## **ABSTRAK**

Sampai saat ini masih banyak aspek perancangan maupun pelaksanaan elemen-elemen struktur yang masih menjadi problem. Problem tersebut telah mengakibatkan banyak kerusakan bangunan bertingkat beton bertulang pada gempa Yogyakarta 27 Mei 2006 yang lalu. Agar hal-hal yang menjadi problem tersebut tidak terulang kembali, maka sangatlah perlu untuk diadakan evaluasi/pengkajian tentang banyak hal mulai dari Code terdahulu sampai Code yang sedang berlaku, sosialisasi maupun pelaksanaan bangunan bertingkat beton bertulang di daerah rawan gempa.

Investigasi lapangan terhadap kerusakan struktur beton yang menyangkut banyak aspek telah dilakukan. Investigasi meliputi beberapa bangunan teknis yang mengalami kerusakan, mulai yang rusak ringan sampai bangunan yang runtuh sama sekali. Kesalahan yang terjadi diukur/ditetapkan berdasarkan teori standard baik pada perencanaan, perancangan maupun pelaksanaan bangunan. Selain itu tolok ukur kemaungkinan adanya problem juga didasarkan atas peraturan/Code saat bangunan sedang mulai dari PBI 1971, SK-SNI 1991, RSNi 2002

Hasil investigasi ternyata sangat menarik dan banyak hikmah/pelajaran yang dapat dipetik. Kerusakan bangunan bertingkat beton bertulang disebabkan oleh kesalahan-kesalahan mendasar yang disebabkan mulai dari kesalahan menurut design philosoph (struktur kurang kuat), konfigurasi (distribusi massa, kekakuan, deletasi), *sway mechanism* (kolom lemah balok kuat), element effect (*short element effect*) dan detailing (tulangan geser kolom dan joint). Kerusakan terutama terjadi pada kolom-kolom luar/tepi di tingkat dasar. Kesalahan juga timbul karena kebelum fahaman terhadap Code, ketidak lengkapan cakupan Code yang berlaku, sosialisasi Code maupun kesalahan pada tahap pelaksanaan.

**KATA KUNCI** : *Code developments*, prinsip desain, kolom kuat balok lemah, rusak join, rusak geser, efek elemen pendek, benturan bangunan.

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## **ABSTRACT**

Nowdays, there are many problems exist in both design and constructions of the reinforced concrete structures. Those problems has caused structural damage during the 27<sup>th</sup> of May 2006 Yogyakarta earthquake. In order to those the similar damages will not occur in the future, it is necessary to investigate the buildings in many aspects including the current and the previous Codes, the dessimination as well as the material and construction qualities in the multistorey reinforced concrete structures.

Field eivestigation on the structural damage covering several aspects has been conducted. Inves-tigation including several engineered reinforced concrete structures not only for the heavy and moderate damaged structures but also the light damaged buildings as well. The inadequacy of the structural design and its constructions have been defined according to the fulfillment to the current Code when the buildings were being constructed. Those Codes are PBI 1971, SK SNI 1991 and the RSNi 2002.

Result of the investigation is very intersting and many aspects can be used for the lesson learned. The damaged of the reinforced concrete structure were caused by the several basic defects not only in the design but also in the constructions. Those defects are the buildings didn't met with the design philosophy (lack of structural strength), building configuration problem, building sway mechanism problem, short element effects, shear reinforcement problems as well as the desiminations of the Codes.

**KEYWORDS** : Code developments, design philosophy, strong column weak beam, joint failure, shear failure, short element effects, structural pounding.