INTISARI

Elemen nonstruktural merupakan elemen yang terpasang pada gedung tetapi tidak berfungsi sebagai komponen penahan beban utama. Salah satu komponen nonstruktural gedung adalah dinding. Pada gedung auditorium di Yogyakarta, terdapat komponen *free standing wall* yang jarang diaplikasikan pada bangunan gedung. Pada bangunan ini, *free standing wall* terdiri dari kolom praktis, balok, dan partisi bata ringan yang menumpu pada pelat lantai. Dalam desain *free standing wall*, digunakan prosedur desain seismik elemen nonstruktural.

Beban gempa perlu diperhitungkan dalam desain elemen nonstruktural gedung. Desain seismik struktural dan nonstruktural di Indonesia didasarkan pada SNI 1726:2019, yang mana peraturan tersebut mengacu pada ASCE 7-16. Struktur gedung dengan *free standing wall* dimodelkan dengan program ETABS untuk memperoleh nilai defleksi lantai dan percepatan lantai maksimum. Elemen partisi bata ringan, balok, dan kolom praktis diberi beban seismik nonstruktural SNI 1726:2019. Model *free standing wall* mengacu pada *Detail Engineering Design*.

Setelah pemodelan, dilakukan analisis perpindahan relatif dan kapasitas komponen partisi, balok, dan kolom praktis. Perpindahan relatif komponen *free standing wall* melampaui batas izin, sehingga ditambahkan perkuatan lateral dengan baja IWF 150x75x5. Pada analisis kapasitas, partisi dicek tegangan tekan-tarik, tegangan lentur, tegangan geser, kapasitas geser, dan defleksi akibat beban desain seismik nonstruktural SNI 1726:2019 terhadap batas izin yang berlaku. Sedangkan pada elemen struktural sekunder dibandingkan kapasitas aksial, lentur, dan gesernya dengan syarat SNI 2847:2019.

Dari hasil analisis partisi, didapatkan partisi memenuhi syarat desain tegangan tarik-tekan, tegangan lentur, tegangan geser, kapasitas geser, dan defleksi maksimum. Komponen balok dinding memenuhi syarat desain lentur, geser, dan torsi maksimum. Sedangkan komponen kolom praktis memenuhi syarat desain aksial, lentur, dan geser maksimum.

Kata kunci: desain, nonstruktural, dinding, gempa, SNI.

ABSTRACT

Non-structural elements are elements that are installed in a building but do not function as the main load-bearing components. One of the non-structural components of a building is the walls. In the auditorium building in Yogyakarta, there is a free standing wall component which is rarely used in buildings. In this building, the free standing wall consists of practical columns, beams and light brick partitions that support the floor plate. In free standing wall design, seismic design procedures for non-structural elements are used.

Earthquake loads need to be taken into account in the design of non-structural building elements. Structural and non-structural seismic design in Indonesia is based on SNI 1726:2019, which regulations refer to ASCE 7-16. The building structure with free standing walls was modeled using the ETABS program to obtain maximum floor deflection and floor acceleration values. Practical light brick partition elements, beams and columns are given non-structural seismic loads to SNI 1726:2019. The free standing wall model refers to the Detailed Engineering Design.

After modeling, analysis of the relative displacement and capacity of practical partition, beam and column components is carried out. The relative displacement of the free standing wall components exceeded the permit limits, so lateral reinforcement was added with IWF 150x75x5 steel. In the capacity analysis, the partition is checked for compressive-tensile stress, bending stress, shear stress, shear capacity, and deflection due to non-structural seismic design loads SNI 1726:2019 against the applicable permit limits. Meanwhile, the secondary structural elements are compared for their axial, flexural and shear capacities with the requirements of SNI 2847:2019.

From the results of participant analysis, it was obtained that participants met the design requirements for tensile stress, bending stress, shear stress, shear capacity and maximum deflection. Wall beam components meet maximum bending, shear and torsion design requirements. Meanwhile, practical column components meet the maximum axial, flexural and shear design requirements.

Keywords: *design, non-structural, wall, earthquake, SNI*