

# Studi perilaku sistem struktur staggered truss baja dengan kombinasi panel vierendeel berdasarkan desain berbasis kinerja terhadap analisis statik non linear = Study of steel Staggered Truss structure system behaviour in combination of vierendeel panel based on performance based design by pushover analysis

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## Abstrak

[Pada tahun 1960, MIT menemukan sistem struktur yang efisien untuk tipe bangunan seperti hotel dan apartemen yaitu sistem struktur staggered truss. Tesis ini meneliti pengaruh jumlah panel vierendeel terhadap perilaku inelastik pada struktur rangka staggered truss dimana objek penelitian ini berupa bangunan hotel yang memiliki 6, 12, dan 18 lantai yang dievaluasi dengan analisis pushover dengan desain berbasis kinerja menggunakan perangkat lunak SAP200. Hasil yang diperoleh menunjukkan bahwa sistem struktur ini mampu mencapai kinerja

Life Safety dengan dilakukan desain berbasis kinerja. Hasil yang diperoleh menunjukkan bahwa jumlah panel vierendeel mempengaruhi perilaku inelastik bangunan, salah satunya dimana sistem struktur dengan tiga panel vierendeel memberikan faktor daktilitas yang lebih besar dibandingkan dengan satu panel vierendeel terlihat dari kurva pushover yang dihasilkan oleh struktur tiga panel vierendeel memiliki perpindahan maksimum yang lebih besar. Distribusi sendi plastis kebanyakan terjadi di komponen sekitar panel vierendeel yaitu batang tepi, batang vertikal, dan rangka batang diagonal.

.....In 1960, MIT found the economically efficient structure system for buildings such as hotel and apartment, which is called staggered truss structure system. This research studied the effect of the number of vierendeel panel towards the inelastic behaviour of staggered truss structure system. Object of this research consists of building which have 6, 12, and 18 story which is evaluated by pushover analysis using SA2000. The results showed that the number of vierendeel panel influence the inelastic behavior, one of the results was the structure with three vierendeel panel gives higher ductility factor than the structure with one panel vierendeel. It is also displayed by pushover curve which have larger maximum displacement than one panel vierendeel structure. Plastic hinges formed at structural component along the vierendeel panel that is horizontal chord, vertical chord and diagonal truss. , In 1960, MIT found the economically efficient structure system for

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