

# ANALISA DEFORMASI PONDASI DAN ABUTMENT JEMBATAN MELALUI *SMALL SCALE MODELLING* DI LABORATORIUM

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## ABSTRAK

Jembatan Jadugan, terletak di Kecamatan Puger Kulon memiliki karakteristik tanah berupa tanah pasir peneliti ingin menganalisa penurunan (deformasi) dan daya dukung pondasi dengan *small scale modeling* di laboratorium dengan beban yang bekerja di atasnya. Karakteristik tanah didapat dari hasil *Cone Penetrometer Test (CPT)*. Metode penelitian ini menggunakan alat *shaking table* sebagai pemodelan di laboratorium dan analisa *plaxis 2000 3d frame* sebagai kontrol dari analisa percobaan penelitian di laboratorium. Berdasarkan hasil pemodelan alat *shaking table* didapatkan hasil deformasi vertical sebesar 0,01 cm dan deformasi lateral 0,02 cm. Sedangkan untuk analisa *Plaxis 2000 3d frame* didapatkan hasil deformasi vertical sebesar 0,009 cm dan deformasi lateral 0,003 cm. Dari kedua hasil kedua pemodelan maka deformasi pada pondasi sumuran di Jembatan Jadugan Kecamatan Puger masih aman digunakan untuk beban yang bekerja di atasnya. Untuk daya dukung pondasi sumuran di Jembatan Jadugan, Kecamatan Puger, aman digunakan karena beban ultimate yang ditahan oleh pondasi beban izin (*allowable*) untuk pondasi sumuran tersebut, yaitu sebesar  $1122,0 > 1101,9$  kN. Diharapkan alat *shaking table* dan aplikasi software *plaxis 2000 3d frame* ini dapat dipublikasikan dan bermanfaat bagi semua pihak. dan diharapkan untuk alat *shaking table* di laboratorium lebih ditingkatkan menjadi alat *Cenrifug* guna lebih detail membaca suatu gerakan gempa.

**Keywords** : pondasi sumuran, *shaking table*, *plaxis 2000 3d frame*, daya dukung, deformasi.

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## ABSTRACT

*Jadugan Bridge, located in Puger Kulon District has soil characteristics in the form of sand soil, researchers want to analyze the decline (deformation) and carrying capacity of the foundation with small scale modeling in the laboratory with the load working on it. Soil characteristics are obtained from the results of the Cone Penetrometer Test (CPT). This research method uses shaking table tools as modeling in the laboratory and plaxis analysis of 2000 3d frames as a control from the analysis of research experiments in the laboratory Based on the results of modeling shaking table tools obtained the results of vertical deformation of 0.01 cm and lateral deformation of 0.02 cm. As for the analysis of Plaxis 2000 3d frame, the results of vertical deformation of 0.25 cm and lateral deformation of 0.47 cm were obtained. From the two results of the two modeling, the deformation on the well foundation on the Jadugan Bridge, Puger District, is still safe to use for the load that works on it. For the carrying capacity of the well foundation at Jadugan Bridge, Puger District, it is safe to use because the ultimate load held by the permit load foundation (allowable) for the well foundation, which is 1102,0 > 1101,9 kN. It is hoped that this shaking table tool and plaxis 2000 3d frame software application can be published and useful for all parties. and it is hoped that the shaking table tool in the laboratory will be further upgraded to a Cenrifug tool to more detailedly read an earthquake movement.*

**Keywords** : well foundation, shaking table, plaxis 2000 3d frame, carrying capacity, deformation.