# Analysis of Large Deformation of the Elastic Simply Support Overhang Thin Plates


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**ABSTRACT**

The major concern of this study is the small strain, large deformation of elastic thin plates. To analyze various behavious of a simply support overhang plate under a regional, evenly distributed load.The influence of the load on the stress, the strain,the clamping force and the in plane force are studied. The theories of Von Karman and Berger are used to derive the governing equations and mathematical equations for the physical quantities for both small deflections and large deflections. The polar coordinate model of the finite difference method are used to analyze the behaviours of axis- symmetric circular plates. The results are very close to what could be obtained by the exact theoretical analysis. It can be shown from these results for small deflections, that the radial stress and strain of a simply supported point have their maximum negative values. Also, the radial strain and circumferential strain are very small. As concerning non-linear .Alpha. values, the smaller the value of .Alpha., the larger the deflection. Theoretically the blank-holder force can be assumed to be linearly distributed; however in order to require a zero clearance between the thin plate and the die set. The adjustment for the distribution of Blank-holden force must be concerned. The results for large deflections are similar to that for small deflections. However, in order to get higher accuracy, for large deflections, the membrane strain should be considered.



Keywords : Elastic thin plate ; Large deformation small strain ; Clamping


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