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Investigation of the earthquake behavior of deformed systems due to temperature variation effects

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During the engineering investigations of destructive earthquakes like 1966 Taşkent (Uzbekistan), 1976 Gazlı (Uzbekistan), 1981 İzmit (Turkey) and 1999 Düzce (Turkey) different damage characteristics have been encountered. As the height of these buildings increases, the degree of damage increases. Furthermore, the length of building increases the length and thickness of the cracks also increases. Collapsing of the masonry buildings exterior walls to the outside of the buildings and heavily damage at the corner columns of the carcass buildings has been encountered. These cracking characteristics have been studied and interpreted by different manner by different researchers. In our opinion, these damages are related to prestress-strain situation of the buildings structural systems before the earthquake occurred. In addition, structural system is deformed before earthquake effect. Analysis of the behavior of the structural system with involvement of prestressing state of the load resisting system into account takes place at different sources. The analysis of the structural system due to its deformed condition still exists. This paper presents the result of the investigation of the behavior of steel structural systems of industrial buildings, under the influence of horizontal and vertical loads in case of seasonal variation of temperature. Structural system behavior was investigated by using ANSYS program depending on numerical calculation results. It is also given here that the effect of deformed shape of the structural system is on the behavior of load resisting systems of building and design of structural members.

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