

## Structural Analysis and Strengthening of the National Youth Foundation Building in Igoumenitsa, Greece

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**Abstract :** The current paper presents a structural assessment and proposals for retrofit of the National Youth Foundation Building, an existing reinforced concrete (RC) building in the city of Igoumenitsa, Greece. The building is scheduled to be renovated in order to create a Municipal Cultural Center. The bearing capacity and structural integrity have been investigated in relation to the provisions and requirements of the Greek Retrofitting Code (KAN.EPE.) and European Standards (Eurocodes). The capacity of the existing concrete structure that makes up the two central buildings in the complex (buildings II and IV) has been evaluated both in its present form and after including several proposed architectural interventions. The structural system consists of spatial frames of columns and beams that have been simulated using beam elements. Some RC elements of the buildings have been strengthened in the past by means of concrete jacketing and have had cracks sealed with epoxy injections. Static-nonlinear analysis (Pushover) has been used to assess the seismic performance of the two structures with regard to performance level B1 from KAN.EPE. Retrofitting scenarios are proposed for the two buildings, including type  $\lambda$ ; steel bracings and placement of concrete shear walls in the transverse direction in order to achieve the design-specification deformation in each applicable situation, improve the seismic performance, and reduce the number of interventions required.

**Keywords :** earthquake resistance, pushover analysis, reinforced concrete, retrofit, strengthening

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