

## **EXPERIMENTAL AND ANALYTICAL STUDY ON THE DYNAMIC BEHAVIOR OF FRAMES UNDER RELATIVE DISPLACEMENT BETWEEN SUPPORT POINTS**

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### **ABSTRACT**

This study is concerned with the feasibility of the equation of motion considering dynamic relative displacement between support points. It provides an experimental result of a testing frame structure under dynamic relative displacement and simulation of the dynamic behavior using the equation. The results showed that the simulation could represent the dynamic behavior of the frame under relative displacement between support points and it could be concluded that the analytical method could represent the effect of both internal force and relative displacement. Based on the investigation, non-linear analyses of a rigid-frame bridge were carried out. According to the results, it was found that the amount of relative displacement between support points affected the extent of bridge damage.

**KEYWORDS:** Equation of Motion, Inertial Force, Relative Displacement, Non-Linear Dynamic Response Analysis