

## **Evaluation of structural behavior of externally prestressed segmented bridge with shear key under torsion**

### **ABSTRACT**

Externally Prestressed Segmented (EPS) concrete beams are generally used in the construction of bridge structures. External Prestressed technique uses tendons that are placed completely outside the concrete section and attached to the concrete at anchorages and deviators only. Segmented bridge is a bridge built in short sections. Segmented bridge applies smart technique that is a part of an engineering management. EPS bridges are affected by combined stresses i.e., bending, shear, normal, and torsion stresses especially at the segments interface joints. Previous studies on EPS bridges did not include the effect of torsion in the load carrying capacity and other structural behavior. This paper presents an experimental investigation of the structural behavior of EPS bridged under combined bending, shear, normal, and torsion stresses. The aim of this paper is to improve the existing equation to include the effect of torsion in estimating the failure load of EPS bridge. A parametric study was carried out to investigate the effect of different external tendon layouts and different levels of torsion.

**Keyword:** Combined load; Externally prestressed; Segmented concrete bridge; Torsion