

Global design of bridges utilizing Ultra High-Performance Concrete Link-Slabs

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UHPC Link Slabs
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Extended Abstract

Link-slabs made of Ultra-High Performance Concrete (UHPC) connecting individual spans in a bridge can be used to eliminate joints. Due to the deck continuity, the distribution of forces and displacements at the supports is different than the distribution from a structural system composed of multiple single spans. This is of importance in rehabilitation or retrofit projects, where many times the original structural system consists of multiple single spans with a line of expansion bearings or a line of fixed bearings at each end of the spans.

The NY State Department of Transportation is using UHPC link-slabs as a way of eliminating joints in several rehabilitation and maintenance projects. Methods to evaluate and distribute lateral loads to the substructure, like those created by temperature, wind, braking, and seismic effects, have been developed.

This presentation will address the challenges in global design of UHPC link-slab systems due to combining multiple spans into a contiguous superstructure system. Computational methods, code compliance issues, and methods of dealing with insufficient structural capacity of existing substructures when that problem arises will be covered.