

#### عنوان مقاله:

Bridge Columns and Systems of the Future - Resilient and Deconstructible

### محل انتشار:

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## خلاصه مقاله:

This article presents the highlights of a research project aimed at developing a new paradigm in bridgeengineering: bridge components and systems designed for disassembly and reassembly to foster sustainability ofbridges while ensuring sufficient seismic performance and resiliency. The system comprises replaceable plastichinges equipped with novel materials that minimize damage and permanent bridge in bridge substructures in highseismic areas. This is done with the purpose of keeping bridges operational after strong earthquakes and reducing the economic impact of bridge repair and replacement. Since the components in the new system are designed to bedisassembled and reassembled, they have the potential of being reused, which is expected to minimize theenvironmental impact of extracting and manufacturing new construction materials. The study comprised large-scaleshake-table tests on individual column models and two-span bridge systems. Both the individual column models andbridge systems were tested under a series of strong near-fault earthquake motions, disassembled and inspected, andsubsequently reassembled and retested. The new plastic hinge elements and columns were successfully reused, andtheir .performance was found to be unaffected by having been subjected to earlier intense earthquakes

# کلمات کلیدی:

novel materials; shake table; design for disassembly; earthquakes; resiliency

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