

Title: Technology for Expansion Joint-Free Bridge Deck System Using Engineered Cementitious Composites (ECC-EXF)

Duration: April 2024 to March 2026

Objectives:

- Design of ECC link slabs as a replacement of conventional expansion joints
- Experimental and numerical investigations to evaluate the performance of the developed system under static and cyclic loading scenarios
- Implementation of the developed link slab in scaled bridge structure and evaluation of performance under static, cyclic and fatigue loading
- Development of indigenous technology, full-scale demonstration and recommendations for the construction of joint-less bridge deck system

Progress Highlights:

- ❖ Preliminary design has been carried out for development of the proposed system using minimal reinforcements so as to make the implementation easier and to take full advantage of high tensile performance of ECC
- ❖ Fabrication of the full-scale model of the joint portion between two simply supported spans for laboratory investigations using specially designed fabrication set-up
- ❖ Experimental investigations under static loading condition to evaluate the performance of the proposed system in terms of deformability, bending resistance, strain distribution and interface characteristics



Demonstrating high bendability



Demonstrating multiple-cracking phenomenon

Laboratory investigations under static loading condition using reverse-loading protocol

Future Programme:

- Experimental and numerical investigations to evaluate the performance of the developed system under static and cyclic loading scenarios

PI and Co-PI

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