

Smooth and durable transition structure for long concrete bridges

Expansion joint | bridge | integral bridge | tension member | precast element | bond action

Deformations occur in long concrete bridges due to seasonal temperature changes. The transition structure is built of small concrete elements, spacing out evenly the deformations. A flexible pavement structure absorbs the resulting small gaps, providing optimal driving comfort. Investment costs as well as control and maintenance costs are extremely reduced in relation to state of the art expansion joints, reducing traffic interruptions to a minimum and saving on reinvestment costs.

Background

Examples of today's expansion joints are finger joints, elastomeric mat joints, roller shutter and cover plate joints. Building costs are high due to sophisticated materials, complex structures and the need to install these complex joints on a waterproof sealing layer. State of the art in expansion joints is characterized by high costs for control and maintenance as well as limited service life.

Technology

The new building technology comprises:

- Building material concrete having the same creep and shrinking behavior than adjoining surfaces
- Precast elements connected by a tension member allowing for flexibility in lane width and joint length
- Tension member protected from corrosion
- Easy assembly combining precast elements with in-situ concrete

Advantages

- Low building costs
- Low noise level
- No corrosion risk
- Long service life

Potential applications

Potential applications can be found in all sectors of infrastructure construction, where expansion joints are needed. The technology is especially suited for the construction of integral bridges but also the rehabilitation and repair of conventional bridges.



Fig. 1: Construction of the pilot on the Austrian motorway in 2017 by the Austrian motorway operator ASFINAG: A5, Satzengrabenbrücke

State of development

Pilot built in Austria, as part of the construction of a new integral bridge with a length of 112 m.

IPR

Patent EP 2959060 granted

Options

License agreement, sale, R & D cooperation

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