



# Road Bridge Expansion Joints - Reduction of the overrolling Noise caused of Vehicles during crossing the Expansion Joints

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## Summary

Our modern understanding of environment protection encloses the protection from noise, especially the protection from traffic noise. Therefore, the company RW Sollinger Hütte GmbH (RWSH) in Uslar, Germany, developed a noiseless Modular Expansion Joint (MEJ) characterized by a lamella structure of the surface. This MEJ is equipped with especially extruded elastomeric profile which is inserted between the middle and edge steel profiles.

The new-developed elastomeric profile should fulfil several functions: Beside the known sealing function (watertight surface) the profile can cause a level surface of the lamella crossing and is likely to control the gap openings between the middle and edge steel profiles.

The level surface is the most important new property of the MEJ to reduce the noise which is caused by running over by cars and trucks.

The new developed low noise MEJ was already tested under practically oriented conditions. Besides, comparative measurements with other designs of expansion joints have been carried and evaluated.

## Keywords

Expansion joint, low noise design, rubber mat, elastomeric seal. level of noise pollution

## 1 Objective

Modular Expansion Joints between roads and bridges are necessary to compensate length changes of the bridge as a result of temperature changes and load influences. From 33,000 bridges of the federal major roads approx. 5800 have a length over 30 m. For these bridges are suited MEJ. Approximate 5%, so approx. 300 these bridges are close to settlements.

If MEJ between bridges and roads are run over by vehicles, originate especially with such MEJ in watertight lamella design after [1] crossing noise, the people living in the neighborhood of the bridge often as a disturbance feel. For approx. 25 years these MEJ are used preferentially in the lamella design whose across orientation of the lamellae causes noise in the roadway surface (washing board effect). With the noise it concerns the pulse-containing, sudden noises which contrast with the tyre roadway noises strongly.

### 1.1 Setting of tasks

Because the lamellae design has reached a very high level concerning functioning and life span after long-standing costly developments and often shows in the concrete case the only sensible technical solution, acoustic improvements of the lamella design should be reached within the scope of the promotion plan „ Quiet Traffic “ in the sense that their sound issue does not lie substantially about that of the adjoining road surface.