



research bridges railways tunnelling monitoring technology management international

## Konrad-Adenauer-Bridge/Lahn-Bridge

The Konrad-Adenauer-Bridge is part of the entrance to the city-center of Gießen, Germany, and leads across the Lahn River. The prestressed concrete structure is a three span bridge – was built in 1969 – and has a total length of 166 m. The main span is 71 m long, while the outer spans have a length of 49 m and 46 m. The bridge’s geometry follows a curved ground view. The bridge deck is 12.25 m in width, its cross section is represented by a continuous single-cell box girder. The deck slab is additionally pre-stressed in transversal direction.

In the course of the prevailing investigation a dynamic monitoring campaign was undertaken in order to determine the global condition of maintenance (the structure’s integrity) as well as the load bearing capacity by means of BRIMOS®. Along with the conventional bridge assessment this investigation supports the determination and localisation of potential problem zones based on the measured structure’s vibration behaviour. Due to the fact that the undamaged reference condition was not stated at the beginning of the bridge’s service life by means of a dynamic measurement a finite element model was developed. The calculated parameters serve as expected values based on the undamaged condition. The comparison of the results from the numerical model with those of the measurements supports the assessment of the structural condition.

The present investigation (measurement 2010) is to be understood as an initial measurement. Possible upcoming measurements are to be referred to this initial one - possible changes of the structure’s operational integrity can be quantified with this approach.

- Client:                    Universitätsstadt Gießen  
Der Magistrat, Tiefbauamt,  
Brückenbau
- Location:                Gießen, Germany
- Checking Period:      2010
- Services:                Dynamic measurement  
Finite Element Simulation  
BRIMOS® - Assessment and rating



### BRIMOS® Services conducted:

- |                              |                                                          |                                               |                                                   |                                          |
|------------------------------|----------------------------------------------------------|-----------------------------------------------|---------------------------------------------------|------------------------------------------|
| <b>Lifecycle Management:</b> | <input checked="" type="checkbox"/> Condition Assessment | <input type="checkbox"/> Condition Monitoring | <input type="checkbox"/> Rehabilitation Planning  | <input type="checkbox"/> Quality Control |
|                              | <input type="checkbox"/> Lifetime Assessment             | <input type="checkbox"/> Traffic Analysis     | <input type="checkbox"/> Environmental Influences | <input type="checkbox"/> Risk Assessment |
| <b>Special Measurements:</b> | <input type="checkbox"/> Attendant Monitoring            | <input type="checkbox"/> Noise and Vibrancy   | <input type="checkbox"/> Deflection Measurements  | <input type="checkbox"/> Seismics        |