



research bridges railways tunnelling monitoring technology management international

Lagos Ring Road Marina Section at King George V Road

The bridge object is part of the Lagos Ring Road, in particular the Marina Section at King George V Road, Lagos Island and was built between 1975 and 1979. The six-span bridge has a total length of 168 m consisting of two 24 m long outer spans and four 30 m long inner spans. The bridge’s geometry follows a curved ground view. The prestressed concrete bridge consists of two separate load-bearing structures – one for each driving direction. Each of them has a width of 11.75 m.

On the 19th of March in 2010 a fire caused extensive damage to the underside of the superstructure and the piers of Lagos Ring Road, Marina Section at King George V Road. Because of the fire the concrete cover at the superstructure’s underside, at the abutment walls and at some columns shows severe damage. The 1st Site Inspection Report stated that without immediate investigations of the structure the safety and stability of the bridges could not be reviewed.

The dynamic monitoring campaign at the Bridge object Lagos Ring Road, Marina Section was undertaken in order to determine the structure’s global condition (structural integrity) as well as the load bearing capacity by means of BRIMOS® Structural Health Monitoring. Along with the conventional bridge assessment this investigation supports the determination and localization of problem zones based on the measured vibration behaviour of the structure.

Particularly judgements and evaluations, to what extent the fire has caused serious damage and tailored recommendations regarding possible retrofit and maintenance interventions are needed to support the decision process of the bridge owner.

The present investigation is to be understood as an initial measurement. Possible upcoming measurements are to be referred to this initial one – a possible change of the structure’s operational integrity can be quantified with this approach.

- Client: BBV Systems
- Location: Lagos, Nigeria
- Checking Period: 2010
- Services: Dynamic measurement
BRIMOS Assessment and rating



BRIMOS® Services conducted:

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|------------------------------|--|---|---|--|
| Lifecycle Management: | <input checked="" type="checkbox"/> Condition Assessment | <input type="checkbox"/> Condition Monitoring | <input checked="" 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 |
| Special Measurements: | <input type="checkbox"/> Attendant Monitoring | <input type="checkbox"/> Noise and Vibrancy | <input type="checkbox"/> Deflection Measurements | <input type="checkbox"/> Seismics |