



research bridges railways tunnelling monitoring technology management international

Eko Bridge (Main Bridge East) in Ijora, Lagos

The Eko Bridge is located in Ijora, Lagos and connects Lagos Mainland with Lagos Island. The prestressed structure consists of two separate load-bearing structures – one for each driving direction. The Main Bridge East which was part of the BRIMOS® investigation has a total length of 190 m and was opened to traffic in the early 1970ies. The cross-section of the superstructures comprises of a three cellular box girder and has a width of 14m.

On the 11th of July in 2008 a fire caused extensive damage to the underside of the superstructure and the piers of the Eko Bridge. Because of the fire the concrete cover at the superstructure’s underside failed and the exposed reinforcement bars were partly buckled. Furthermore at several piers concrete has broken off up to a depth of the first reinforcement layers. In those areas where fire caused the most excessive damage, additional temporary supports were erected – surrounding certain piers. The 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 Eko Bridge, Main Bridge East was undertaken in order to determine the structure’s global condition (the structure’s 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 |