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**STRUCTURAL ENGINEERING / EARTHQUAKE ENGINEERING**

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[\[PDF \(794K\)\]](#) [\[References\]](#)**LONG-TERM DETERIORATION OF HIGH DAMPING RUBBER BRIDGE BEARING**Yoshito ITOH<sup>1)</sup>, Haosheng GU<sup>1)</sup>, Kazuya SATOH<sup>1)</sup> and Yoshihisa YAMAMOTO<sup>2)</sup>

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In recent years, high damping rubber (HDR) bridge bearings have become widely used because of the excellent ability to provide high damping as well as flexibility. However, there are few systematic studies on the deterioration problems of HDRs during their service life, and usually the long-term performance was not considered in the design stage. In this research, through accelerated thermal oxidation tests on HDR blocks, the property variations inside the HDR bridge bearing are examined. A deterioration prediction model is developed to estimate the property profiles. Then using a constitutive model and carrying out FEM analysis, the behavior of a HDR bridge bearing during its lifespan is clarified. A design procedure is proposed that takes the long-term performance in the site environment into consideration.

**Key Words:** high damping rubber bearing, thermal oxidation, deterioration, long-term performance

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