

Fatigue Crack Inspection and Acoustic Emission Characteristics of Precast RC Beam Under Repetition Loading

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Fatigue crack of the precast reinforced concrete beam under repetition loading is significantly vital to be examined. In real phenomenon, most of the reinforced concrete structures are exposed to repetition loading which leads to the failure of the structures. In order to examine the active fatigue crack, the reinforced concrete beams were subjected to three-point repetition maximum loading. Eight phases of maximum fatigue loading with sinusoidal wave, frequency of 1 Hz and 5000 cycles for each phase were performed on the reinforced concrete beams. The inspection was carried out using visual observation of the crack pattern and acoustic emission technique for each load phase. The signal strength of acoustic emission was investigated. It is found that the signal strength of acoustic emission and crack pattern of the reinforced concrete beam subjected to repetition loadings showed promising results.

fatigue crack; repetition loading; acoustic emission; signal strength; reinforced concrete