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## **Seismic Consideration of a RC Frame Building from the Sustainability Aspect**

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### **Abstract**

In terms of earthquake engineering buildings need to be functional and resilient at post-earthquake events. During earthquake events, the performance of the building degrades. It is required to evaluate the actual performance of the buildings in terms of ductility and strength at different intensity of earthquakes so that the appropriate repair and strengthening can be done to improve the future performance. In the present study, a 5 storey RC building has been considered and the performance of the buildings has been determined with variation of the material properties as referred in various country codes all over the world. For the study purpose, the building has been analyzed for different levels of earthquake ground motion with return period of 475 years, 950 years, 2475 years and 4950 years. It has been observed that the ductility and performance of the building have been influenced by variation of engineering properties of materials. In terms of design consideration from the sustainable point of view, a balance between the reduction of force and achievement of ductility can be made based on the current study.

**Keywords:** Building, Earthquake, Ductility, Performance, Sustainability