World Academy of Science, Engineering and Technology
International Journal of Mechanical and Materials Engineering
Vol:11, No:12, 2017

Seismic Behavior of Concrete Filled Steel Tube Reinforced Concrete Column

Authors : Raghabendra Yadav, Baochun Chen, Huihui Yuan, Zhibin Lian

Abstract : Pseudo-dynamic test (PDT) method is an advanced seismic test method that combines loading technology with computer technology. Large-scale models or full scale seismic tests can be carried out by using this method. CFST-RC columns are used in civil engineering structures because of their better seismic performance. A CFST-RC column is composed of four CFST limbs which are connected with RC web in longitudinal direction and with steel tube in transverse direction. For this study, a CFST-RC pier is tested under Four different earthquake time histories having scaled PGA of 0.05g. From the experiment acceleration, velocity, displacement and load time histories are observed. The dynamic magnification factors for acceleration due to Elcentro, Chi-Chi, Imperial Valley and Kobe ground motions are observed as 15, 12, 17 and 14 respectively. The natural frequency of the pier is found to be 1.40 Hz. The result shows that this type of pier has excellent static and earthquake resistant properties.

Keywords : bridge pier, CFST-RC pier, pseudo dynamic test, seismic performance, time history
Conference Title : ICCMSE 2017 : International Conference on Composite Materials in Structural Engineering
Conference Location : San Diego, United States
Conference Dates : December 18-19, 2017